# “MEJORAMIENTO Y CONSTRUCCIÓN DEL ESCENARIO RECREODEPORTIVO “EL PARQUE” PARA EL FORTALECIMIENTO DEL DEPORTE Y MEJORAMIENTO DE LA CALIDAD DE VIDA, DISTRITO DE SANTA MARTA”

## DISEÑO DE CUBIERTA GRADERIAS


**CALCULÓ Y DISEÑÓ:**

**ING. FRANCISCO DUICA BARRERA**

**ESP. EN ESTRUCTURAS**

**M.P. 08202-415834 ATL**


**SANTA MARTA, MAGDALENA**

**AGOSTO DE 2025**

## 1. Localización

El presente diseño se refiere al proyecto CONSTRUCCIÓN DE CANCHA PARA EL BARRIO EL PARQUE en el municipio de Santa Marta, departamento del Magdalena.

## 2. Estudio de suelos

El estudio de suelos utilizado para los diseños estructurales fue ejecutado por el Ing. MIGUEL ANGEL VILLAZON con matrícula profesional T.P. 08202-280925, de fecha de junio de 2025.

## 3. Normas

Ley 400 de 1997 y sus decretos reglamentarios

- Decreto 926 del 19 de marzo de 2010
- Decreto 2525 del 13 de julio de 2010
- Decreto 092 del 17 de enero de 2011
- Decreto 340 del 13 de febrero de 2012
- Decreto 945 del 5 de junio de 2017
- Decreto 2113 del 25 de noviembre de 2019
- Resolución 0017 del 4 de diciembre de 2017

## 4. Descripción de la estructura.

Es una cubierta liviana soportada por cerchas metálicas apoyadas por medio de placa base a columnas en concreto reforzado.

| | |
|---|---|
| CIMENTACIÓN | "Dada las características del proyecto se cons entonces viable el uso de un sistema de ciment superficial para la transmisión de las cargas d estructuras al terreno por medio de zap desplantadas a una profundidad mínima de metros y unidas entre sí por vigas de amarr capacidad admisible del terreno será de Ton/m2." |
| SISTEMA ESTRUCTURAL | Sistema de pórtico espacial resistente a mom con capacidad moderada de disipación de en DMO. |
| SISTEMA DE RESISTENCIA SÍSMICA | De concreto DMO |
| COEFICIENTE DE DISIPACIÓN DE ENERGÍA BÁSICO | 5.00 |
| FACTOR DE SOBRE RESISTENCIA | 3.00 |
| ALTURA MÁXIMA | Sin límites. |
| GRADO DE CAPACIDAD DE DISIPACIÓN DE ENERGÍA | Moderado - DMO |

## 5. Parámetros De Diseño Sísmico

| | |
|---|---|
| PERFIL DE SUELO | D |
| ACELERACIÓN HORIZONTAL PICO EFECTIVA Aa | 0.15 |
| VELOCIDAD HORIZONTAL PICO EFECTIVA Av | 0.10 |
| COEFICIENTE DE AMPLIACIÓN SÍSMICA EN PERIODOS CORTOS Fa | 1.50 |
| COEFICIENTE DE AMPLIACIÓN SÍSMICA EN PERIODOS MEDIOS Fv | 2.40 |
| GRUPO DE USO | II – Estructuras de ocupación espe |
| COEFICIENTE DE IMPORTANCIA | 1.10 |

| PARÁMETROS DE DISEÑO SÍSMICO | | | | | |
|---|---|---|---|---|---|
| **UBICACIÓN** | Municipio de Santa Marta - Magdalena | | | | |
| **DATOS** | | | | | |
| **GRUPO DE USO** | II | **COEFICIENTE DE IMPORTANCIA** | | | 1,1 |
| **PERFIL DE SUELO** | C | **Fa** | 1,5 | **Fv** | 2,4 |
| **AaFaI** | 0,2475 | **Aa** | 0,15 | **Av** | 0,1 |
| **Sa** | 0,61875 | **T0** | 0,10666667 | **Tc** | 0,512 |

| T (s) | Sa (g) |
|---|---|
| 0 | 0,248 |
| 0,106666667 | 0,619 |
| 0,512 | 0,619 |
| 0,9 | 0,320 |
| 1 | 0,288 |
| 1,5 | 0,192 |
| 2 | 0,144 |
| 2,5 | 0,115 |
| 3 | 0,096 |
| 3,5 | 0,082 |
| 4 | 0,072 |
| 4,5 | 0,064 |
| 5 | 0,058 |
| 5,5 | 0,052 |
| 5,76 | 0,050 |




## 6. Características de materiales

Los elementos estructurales de las estructuras se analizaron en concreto reforzado con las siguientes características:

**Resistencia a compresión del concreto**

La resistencia a la compresión del concreto establecida es de:

- Columnas: 28 MPa.
- Vigas y Losas: 28 MPa.
- Cimentación: 28 MPa.

**Módulo de elasticidad del concreto**

El agregado usado para el concreto estructural deberá ser de origen metamórfico.

Su módulo de elasticidad se calcula según lo indica C.8.5.1.

Módulo de elasticidad del concreto: 3900√28MPa=20636 MPa

**Acero de refuerzo**
El refuerzo de los elementos de concreto consiste en varillas corrugadas de acero con diámetros desde 4mm hasta 1" y las siguientes resistencias a tensión fy.

- Varillas de refuerzo: 420 MPa. Mallas Electrosoldadas: 480 MPa.
- Perfiles estructurales Tipo I: ASTM A572 G50 Fy=345 MPa Fu= 450 Mpa
  Tuberia estructural: ASTM A500 Fy=345 MPa Fu=425 MPa
- Platinas: ASTM A36
- Tornillos y Pernos: A325

El acero de refuerzo utilizado debe cumplir con la norma NTC-2289, con módulo de elasticidad de 200000 MPa

## 7. Cargas

Peso propio de los elementos estructurales:

- Todos los elementos de concreto reforzado: 2400 Kg/m3
- Todos los elementos en acero: 7800 Kg/m3

Cargas adicionales al peso propio de los elementos estructurales (gravitacionales):

- Carga Viva en cubierta: 50 Kg/m2 (Tabla B.4.2.1-2 NSR-10)
- Carga muerta sobreimpuesta en cubierta: 30 kg/m2 (Peso lámina arquitectónica más acabados)
- Carga viento a succión en cubierta: 149.70 kg/m2
- Carga viento a compresión en cubierta: 99.85 kg/m2

## 8. Identificación de cargas en modelo

**Condiciones de carga:**

- D Carga muerta – Peso Propio
- DS Carga muerta sobreimpuesta
- L Carga Viva
- SX Cargas sísmicas En dirección X
- SY Cargas sísmicas En dirección Y
- W Cargas de viento

## 9. Combinaciones de carga

| Name | Load Name | SF | Load Name | SF | Load Name | SF | Load Name | SF |
|---|---|---|---|---|---|---|---|---|
| CIM 0,6D | Dead | 0.6 | DS | 0.6 | | | | |
| CIM 0,6D+0.7SX | Dead | 0.6 | DS | 0.6 | SX | 0.7 | | |
| CIM 0,6D+0.7SY | Dead | 0.6 | DS | 0.6 | SY | 0.7 | | |
| CIM 1.0D | Dead | 1 | DS | 1 | | | | |
| CIM 1.0D+0.7SX | Dead | 1 | DS | 1 | SX | 0.7 | | |
| CIM 1.0D+0.7SY | Dead | 1 | DS | 1 | SY | 0.7 | | |
| CIM 1.0D+0.75L+0.5SX | Dead | 1 | DS | 1 | Live | 0.75 | SX | 0.5 |
| CIM 1.0D+0.75L+0.5SY | Dead | 1 | DS | 1 | Live | 0.75 | SY | 0.5 |
| CIM 1.0D+1.0L | Dead | 1 | DS | 1 | Live | 1 | | |
| DES 0.6D+1.0SX | Dead | 0.6 | DS | 0.6 | SX | 1 | | |
| DES 0.6D+1.0SY | Dead | 0.6 | DS | 0.6 | SY | 1 | | |
| DES 1.0D+0.75L+0.75SX | Dead | 1 | DS | 1 | Live | 0.75 | SX | 0.75 |
| DES 1.0D+0.75L+0.75SY | Dead | 1 | DS | 1 | Live | 0.75 | SY | 0.75 |
| DES 1.0D+1.0SX | Dead | 1 | DS | 1 | SX | 1 | | |
| DES 1.0D+1.0SY | Dead | 1 | DS | 1 | SY | 1 | | |
| ELS 0.6D+0.7SX | Dead | 0.6 | DS | 0.6 | SX | 0.7 | | |
| ELS 0.6D+0.7SY | Dead | 0.6 | DS | 0.6 | SY | 0.7 | | |
| ELS 0.6D+1.0W1 | Dead | 0.6 | DS | 0.6 | W1 | 1 | | |
| ELS 0.6D+1.0W2 | Dead | 0.6 | DS | 0.6 | W2 | 1 | | |
| ELS 1.0D | Dead | 1 | DS | 1 | | | | |
| ELS 1.0D+0.7SX | Dead | 1 | DS | 1 | SX | 0.7 | | |
| ELS 1.0D+0.7SY | Dead | 1 | DS | 1 | SY | 0.7 | | |
| ELS 1.0D+0.75L | Dead | 1 | DS | 1 | Live | 0.75 | | |
| ELS 1.0D+0.75L+0.525SX | Dead | 1 | DS | 1 | Live | 0.75 | SX | 0.525 |
| ELS 1.0D+0.75L+0.525SY | Dead | 1 | DS | 1 | Live | 0.75 | SY | 0.525 |
| ELS 1.0D+0.75W1+0.75L | Dead | 1 | DS | 1 | Live | 0.75 | W1 | 0.75 |
| ELS 1.0D+0.75W2+0.75L | Dead | 1 | DS | 1 | Live | 0.75 | W2 | 0.75 |
| ELS 1.0D+1.0L | Dead | 1 | DS | 1 | Live | 1 | | |
| ELS 1.0D+1.0W1 | Dead | 1 | DS | 1 | W1 | 1 | | |
| ELS 1.0D+1.0W2 | Dead | 1 | DS | 1 | W2 | 1 | | |
| ELU 0.9D | Dead | 0.9 | DS | 0.9 | | | | |
| ELU 0.9D-1.0SX-0.3SY | Dead | 0.9 | DS | 0.9 | SX | -1 | SY | -0.3 |
| ELU 0.9D-1.0SX+0.3SY | Dead | 0.9 | DS | 0.9 | SX | -1 | SY | 0.3 |

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| Name | Load Name | SF | Load Name | SF | Load Name | SF | Load Name | SF |
|---|---|---|---|---|---|---|---|---|
| ELU 0.9D-1.0SY-0.3SX | Dead | 0.9 | DS | 0.9 | SX | -0.3 | SY | -1 |
| ELU 0.9D-1.0SY+0.3SX | Dead | 0.9 | DS | 0.9 | SX | 0.3 | SY | -1 |
| ELU 0.9D+1.0SX-0.3SY | Dead | 0.9 | DS | 0.9 | SX | 1 | SY | -0.3 |
| ELU 0.9D+1.0SX+0.3SY | Dead | 0.9 | DS | 0.9 | SX | 1 | SY | 0.3 |
| ELU 0.9D+1.0SY-0.3SX | Dead | 0.9 | DS | 0.9 | SX | -0.3 | SY | 1 |
| ELU 0.9D+1.0SY+0.3SX | Dead | 0.9 | DS | 0.9 | SX | 0.3 | SY | 1 |
| ELU 0.9D+1.6W1 | Dead | 0.9 | DS | 0.9 | W1 | 1.6 | | |
| ELU 0.9D+1.6W2 | Dead | 0.9 | DS | 0.9 | W2 | 1.6 | | |
| ELU 1.2D+0.8W1 | Dead | 1.2 | DS | 1.2 | W1 | 0.8 | | |
| ELU 1.2D+0.8W2 | Dead | 1.2 | DS | 1.2 | W2 | 0.8 | | |
| ELU 1.2D+1.0L-1.0SX-0.3SY | Dead | 1.2 | DS | 1.2 | Live | 1 | SX | -1 |
| ELU 1.2D+1.0L-1.0SX-0.3SY | | | | | | | SY | -0.3 |
| ELU 1.2D+1.0L-1.0SX+0.3SY | Dead | 1.2 | DS | 1.2 | Live | 1 | SX | -1 |
| ELU 1.2D+1.0L-1.0SX+0.3SY | | | | | | | SY | 0.3 |
| ELU 1.2D+1.0L-1.0SY-0.3SX | Dead | 1.2 | DS | 1.2 | Live | 1 | SX | -0.3 |
| ELU 1.2D+1.0L-1.0SY-0.3SX | | | | | | | SY | -1 |
| ELU 1.2D+1.0L-1.0SY+0.3SX | Dead | 1.2 | DS | 1.2 | Live | 1 | SX | 0.3 |
| ELU 1.2D+1.0L-1.0SY+0.3SX | | | | | | | SY | -1 |
| ELU 1.2D+1.0L+1.0SX-0.3SY | Dead | 1.2 | DS | 1.2 | Live | 1 | SX | 1 |
| ELU 1.2D+1.0L+1.0SX-0.3SY | | | | | | | SY | -0.3 |
| ELU 1.2D+1.0L+1.0SX+0.3SY | Dead | 1.2 | DS | 1.2 | Live | 1 | SX | 1 |
| ELU 1.2D+1.0L+1.0SX+0.3SY | | | | | | | SY | 0.3 |
| ELU 1.2D+1.0L+1.0SY-0.3SX | Dead | 1.2 | DS | 1.2 | Live | 1 | SX | -0.3 |
| ELU 1.2D+1.0L+1.0SY-0.3SX | | | | | | | SY | 1 |
| ELU 1.2D+1.0L+1.0SY+0.3SX | Dead | 1.2 | DS | 1.2 | Live | 1 | SX | 0.3 |
| ELU 1.2D+1.0L+1.0SY+0.3SX | | | | | | | SY | 1 |
| ELU 1.2D+1.6L | Dead | 1.2 | DS | 1.2 | Live | 1.6 | | |
| ELU 1.2D+1.6W1+1.0L | Dead | 1.2 | DS | 1.2 | Live | 1 | W1 | 1.6 |
| ELU 1.2D+1.6W2+1.0L | Dead | 1.2 | DS | 1.2 | Live | 1 | W2 | 1.6 |
| ELU 1.4D | Dead | 1.4 | DS | 1.4 | | | | |

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## 10. Modelo analítico

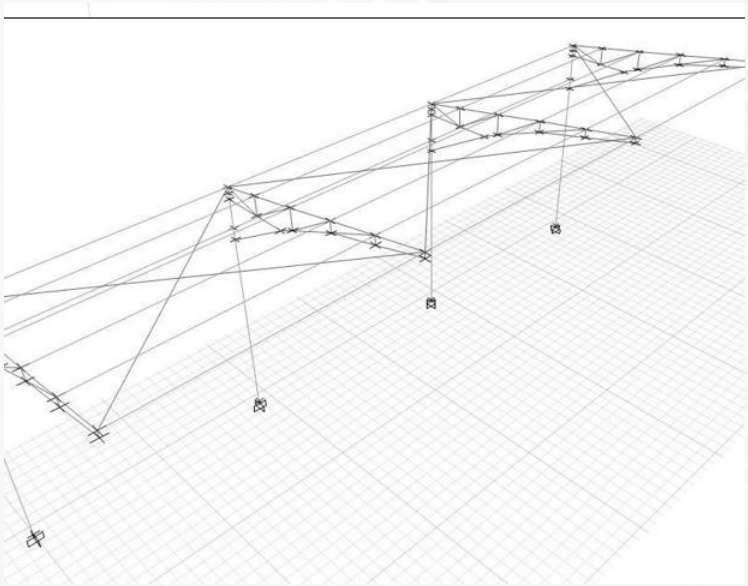


*Ilustración 1.Modelo tridimensional.*

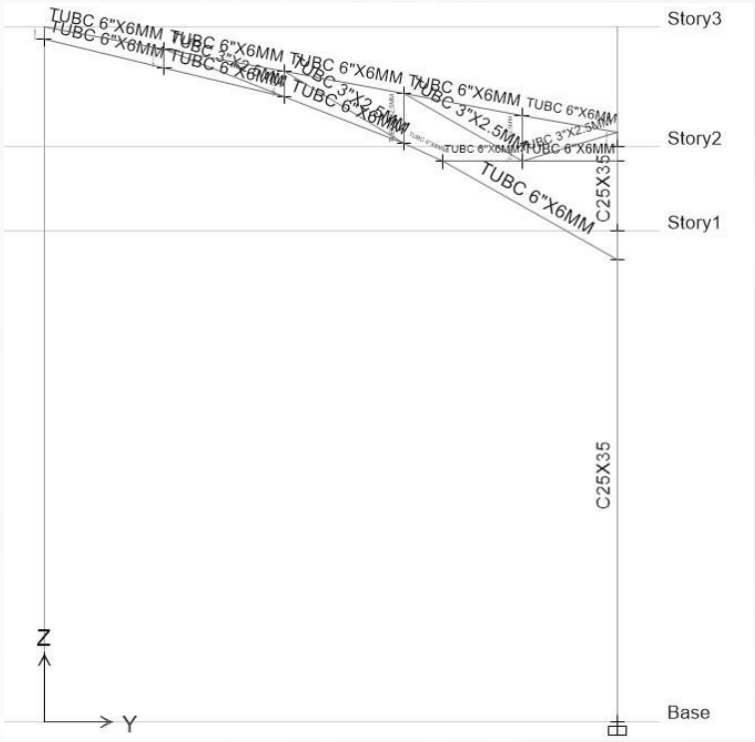



*Ilustración 2. Alzado tipo de estructura de cubierta. Identificación de secciones elementos estructurales*

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## 11. Introducción De Cargas En Cubierta

| Story | Label | UniqueName | Load Pattern | Load Type | Direction | Absolute Distance B | Force A | Force B |
|---|---|---|---|---|---|---|---|---|
| | | | | | | m | tonf/m | tonf/m |
| Story3 | B35 | 84 | L | Force | Gravity | 4,74 | 0,02 | 0,02 |
| Story3 | B36 | 85 | L | Force | Gravity | 4,95 | 0,02 | 0,02 |
| Story3 | B37 | 86 | L | Force | Gravity | 4,72 | 0,02 | 0,02 |
| Story3 | B38 | 87 | L | Force | Gravity | 4,74 | 0,045 | 0,045 |
| Story3 | B39 | 88 | L | Force | Gravity | 4,95 | 0,045 | 0,045 |
| Story3 | B40 | 89 | L | Force | Gravity | 4,72 | 0,045 | 0,045 |
| Story3 | B41 | 90 | L | Force | Gravity | 4,74 | 0,05 | 0,05 |
| Story3 | B42 | 91 | L | Force | Gravity | 4,95 | 0,05 | 0,05 |
| Story3 | B43 | 92 | L | Force | Gravity | 4,72 | 0,05 | 0,05 |
| Story3 | B44 | 93 | L | Force | Gravity | 4,74 | 0,05 | 0,05 |
| Story3 | B45 | 94 | L | Force | Gravity | 4,95 | 0,05 | 0,05 |
| Story3 | B46 | 95 | L | Force | Gravity | 4,72 | 0,05 | 0,05 |
| Story3 | B60 | 119 | L | Force | Gravity | 4,74 | 0,05 | 0,05 |
| Story3 | B61 | 120 | L | Force | Gravity | 4,95 | 0,05 | 0,05 |
| Story3 | B62 | 121 | L | Force | Gravity | 4,72 | 0,05 | 0,05 |
| Story3 | B63 | 122 | L | Force | Gravity | 4,74 | 0,025 | 0,025 |
| Story3 | B64 | 123 | L | Force | Gravity | 4,95 | 0,025 | 0,025 |
| Story3 | B65 | 124 | L | Force | Gravity | 4,72 | 0,025 | 0,025 |
| Story3 | B35 | 84 | DS | Force | Gravity | 4,74 | 0,012 | 0,012 |
| Story3 | B36 | 85 | DS | Force | Gravity | 4,95 | 0,012 | 0,012 |
| Story3 | B37 | 86 | DS | Force | Gravity | 4,72 | 0,012 | 0,012 |
| Story3 | B38 | 87 | DS | Force | Gravity | 4,74 | 0,027 | 0,027 |
| Story3 | B39 | 88 | DS | Force | Gravity | 4,95 | 0,027 | 0,027 |
| Story3 | B40 | 89 | DS | Force | Gravity | 4,72 | 0,027 | 0,027 |
| Story3 | B41 | 90 | DS | Force | Gravity | 4,74 | 0,03 | 0,03 |
| Story3 | B42 | 91 | DS | Force | Gravity | 4,95 | 0,03 | 0,03 |
| Story3 | B43 | 92 | DS | Force | Gravity | 4,72 | 0,03 | 0,03 |
| Story3 | B44 | 93 | DS | Force | Gravity | 4,74 | 0,03 | 0,03 |
| Story3 | B45 | 94 | DS | Force | Gravity | 4,95 | 0,03 | 0,03 |
| Story3 | B46 | 95 | DS | Force | Gravity | 4,72 | 0,03 | 0,03 |
| Story3 | B60 | 119 | DS | Force | Gravity | 4,74 | 0,03 | 0,03 |
| Story3 | B61 | 120 | DS | Force | Gravity | 4,95 | 0,03 | 0,03 |
| Story3 | B62 | 121 | DS | Force | Gravity | 4,72 | 0,03 | 0,03 |

| Story | Label | UniqueName | Load Pattern | Load Type | Direction | Absolute Distance B | Force A | Force B |
|---|---|---|---|---|---|---|---|---|
| | | | | | | m | tonf/m | tonf/m |
| Story3 | B63 | 122 | DS | Force | Gravity | 4,74 | 0,015 | 0,015 |
| Story3 | B64 | 123 | DS | Force | Gravity | 4,95 | 0,015 | 0,015 |
| Story3 | B65 | 124 | DS | Force | Gravity | 4,72 | 0,015 | 0,015 |
| Story3 | B35 | 84 | W1 | Force | Gravity | 4,74 | -0,06 | -0,06 |
| Story3 | B36 | 85 | W1 | Force | Gravity | 4,95 | -0,06 | -0,06 |
| Story3 | B37 | 86 | W1 | Force | Gravity | 4,72 | -0,06 | -0,06 |
| Story3 | B38 | 87 | W1 | Force | Gravity | 4,74 | -0,135 | -0,135 |
| Story3 | B39 | 88 | W1 | Force | Gravity | 4,95 | -0,135 | -0,135 |
| Story3 | B40 | 89 | W1 | Force | Gravity | 4,72 | -0,135 | -0,135 |
| Story3 | B41 | 90 | W1 | Force | Gravity | 4,74 | -0,15 | -0,15 |
| Story3 | B42 | 91 | W1 | Force | Gravity | 4,95 | -0,15 | -0,15 |
| Story3 | B43 | 92 | W1 | Force | Gravity | 4,72 | -0,15 | -0,15 |
| Story3 | B44 | 93 | W1 | Force | Gravity | 4,74 | 0,1 | 0,1 |
| Story3 | B45 | 94 | W1 | Force | Gravity | 4,95 | 0,1 | 0,1 |
| Story3 | B46 | 95 | W1 | Force | Gravity | 4,72 | 0,1 | 0,1 |
| Story3 | B60 | 119 | W1 | Force | Gravity | 4,74 | 0,1 | 0,1 |
| Story3 | B61 | 120 | W1 | Force | Gravity | 4,95 | 0,1 | 0,1 |
| Story3 | B62 | 121 | W1 | Force | Gravity | 4,72 | 0,1 | 0,1 |
| Story3 | B63 | 122 | W1 | Force | Gravity | 4,74 | 0,05 | 0,05 |
| Story3 | B64 | 123 | W1 | Force | Gravity | 4,95 | 0,05 | 0,05 |
| Story3 | B65 | 124 | W1 | Force | Gravity | 4,72 | 0,05 | 0,05 |
| Story3 | B35 | 84 | W2 | Force | Gravity | 4,74 | 0,04 | 0,04 |
| Story3 | B36 | 85 | W2 | Force | Gravity | 4,95 | 0,04 | 0,04 |
| Story3 | B37 | 86 | W2 | Force | Gravity | 4,72 | 0,04 | 0,04 |
| Story3 | B38 | 87 | W2 | Force | Gravity | 4,74 | 0,09 | 0,09 |
| Story3 | B39 | 88 | W2 | Force | Gravity | 4,95 | 0,09 | 0,09 |
| Story3 | B40 | 89 | W2 | Force | Gravity | 4,72 | 0,09 | 0,09 |
| Story3 | B41 | 90 | W2 | Force | Gravity | 4,74 | 0,1 | 0,1 |
| Story3 | B42 | 91 | W2 | Force | Gravity | 4,95 | 0,1 | 0,1 |
| Story3 | B43 | 92 | W2 | Force | Gravity | 4,72 | 0,1 | 0,1 |
| Story3 | B44 | 93 | W2 | Force | Gravity | 4,74 | -0,15 | -0,15 |
| Story3 | B45 | 94 | W2 | Force | Gravity | 4,95 | -0,15 | -0,15 |
| Story3 | B46 | 95 | W2 | Force | Gravity | 4,72 | -0,15 | -0,15 |
| Story3 | B60 | 119 | W2 | Force | Gravity | 4,74 | -0,15 | -0,15 |
| Story3 | B61 | 120 | W2 | Force | Gravity | 4,95 | -0,15 | -0,15 |
| Story3 | B62 | 121 | W2 | Force | Gravity | 4,72 | -0,15 | -0,15 |

| Story | Label | UniqueName | Load Pattern | Load Type | Direction | Absolute Distance B | Force A | Force B |
|---|---|---|---|---|---|---|---|---|
| | | | | | | m | tonf/m | tonf/m |
| Story3 | B63 | 122 | W2 | Force | Gravity | 4,74 | -0,075 | -0,075 |
| Story3 | B64 | 123 | W2 | Force | Gravity | 4,95 | -0,075 | -0,075 |

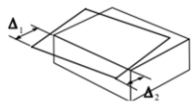
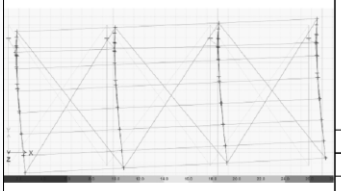
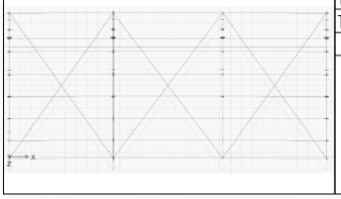
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| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Story3 | B65 | 124 | W2 | Force | Gravity | 4,72 | -0,075 | -0,075 |

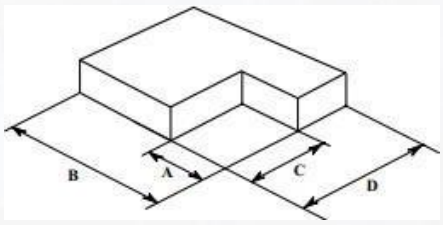
## 12. Análisis de irregularidades

### Irregularidades en planta

- **Tipo 1aP y 1Bp**

| IRREGULARIDAD TORSIONAL - TIPO 1aP | | IRREGULARIDAD TORSIONAL EXTREMA - TIPO 1bP | | |
|---|---|---|---|---|
| $\phi p = 0.90$ | | $\phi p = 0.80$ | | |
| $1.4\left(\frac{\Delta1+\Delta2}{2}\right) \geq \Delta1 > 1.2\left(\frac{\Delta1+\Delta2}{2}\right)$ | | $\Delta1 > 1.4\left(\frac{\Delta1+\Delta2}{2}\right)$ | | |
|  | | DATOS DE ENTRADA | | |
| | | $\Delta1 =$ | 19.63 mm | PISO 1 |
| | | $\Delta2 =$ | 9.83 mm | |
| | | SISMO X | | |
| | | TIPO 1aP | ¡NO CUMPLE! OP=1.0 | |
| | | TIPO 1bP | ¡NO CUMPLE! OP=1.0 | |
| SISMO X | | | | |
|  | | $1.4\left(\frac{\Delta1+\Delta2}{2}\right) = 20.622$ mm | | |
| | | $1.2\left(\frac{\Delta1+\Delta2}{2}\right) = 17.676$ mm | | |
| | | $\Delta1 =$ | 31.37 mm | PISO 1 |
| | | $\Delta2 =$ | 22.61 mm | |
| SISMO Y | | SISMO Y | | |
|  | | TIPO 1aP | ¡NO CUMPLE! OP=1.0 | |
| | | TIPO 1bP | ¡NO CUMPLE! OP=1.0 | |
| | | $1.4\left(\frac{\Delta1+\Delta2}{2}\right) = 37.786$ mm | | |
| | | $1.2\left(\frac{\Delta1+\Delta2}{2}\right) = 32.388$ mm | | |

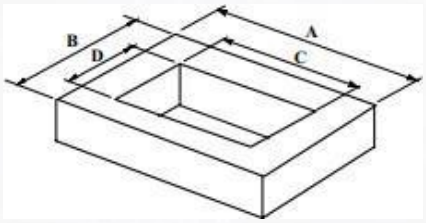
- **Tipo 2p**

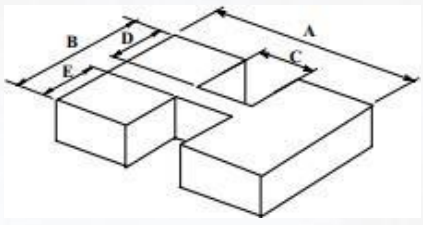
| | RETROCESO EN LAS ESQUINAS - TIPO 2P | | | |
|---|---|---|---|---|
| | Φp=0.90 | | | |
| | | | | |
| | $A > 0.15B \; y \; C > 0.15D$ | | | |
| N O A P L I C A |   | | | |
| | | | | |
| | DATOS DE ENTRADA | | | |
| | A= | 0 | mm | |
| | B= | 0 | mm | |
| | C= | 0 | mm | |

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| | | | | |
|---|---|---|---|---|
| | D= | 0 | mm | N+ |
| | | | | |
| | A>0.15B | ¡NO CUMPLE! OP=1.00 | | |
| | C>0.15D | ¡NO CUMPLE! OP=1.00 | | |

- **Tipo 3p**

| | | | | |
|---|---|---|---|---|
| NO APLICA | IRREGULARIDAD DEL DIAFRAGMA - TIPO 3P | | | |
| | Φp=0.90 | | | |
| | | | | |
| | $C * D > 0.5A * B$ | | | |
| |  | | | |
| | | | | |
| | DATOS DE ENTRADA | | | |
| | A= | 0 | mm | N+ |
| | B= | 0 | mm | |
| | C= | 0 | mm | |
| | D= | 0 | mm | |
| | | | | |
| | C*D= | 0 | 0.5A*B= | 0 |
| | ¡NO CUMPLE! OP=1.00 | | | |

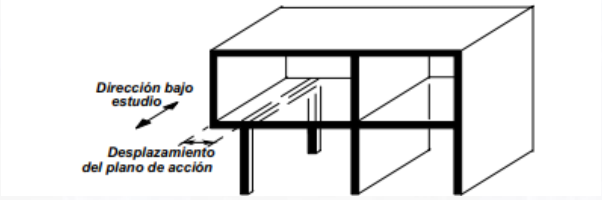
| | | | | |
|---|---|---|---|---|
| NO APLICA | IRREGULARIDAD DEL DIAFRAGMA - TIPO 3P | | | |
| | Φp=0.90 | | | |
| | | | | |
| | $(C * D + C * E) > 0.5A * B$ | | | |
| |  | | | |
| | | | | |
| | DATOS DE ENTRADA | | | |
| | A= | 0 | mm | N+ |
| | B= | 0 | mm | |
| | C= | 0 | mm | |
| | D= | 0 | mm | |
| | E= | 0 | mm | |

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| | | | | |
|---|---|---|---|---|
| (C*D+C*E)= | 0 | 0.5A*B= | 0 |
| ¡NO CUMPLE! OP=1.00 | | | |

- **Tipo 4p (No aplica)**

**Tipo 4P — Desplazamiento de los planos de Acción — $\phi_p = 0.8$**



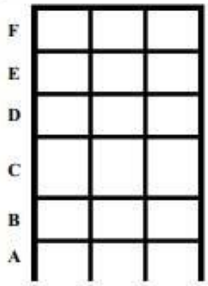

Tipo 5p (No aplica)

**Tipo 5P — Sistemas no paralelos — $\phi_p = 0.9$**




**Irregularidades en altura**

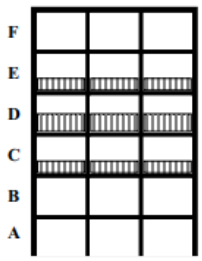
- **Tipo 5aA y 5bA (No Aplica.)**

| | |
|---|---|
| **Tipo 1aA — Piso flexible**<br>$\phi_a = 0.9$<br>$0.60$ Rigidez $K_D \leq$ Rigidez $K_C < 0.70$ Rigidez $K_D$<br>o<br>$0.70\ (K_D+K_E+K_F)\ /3 \leq$ Rigidez $K_C < 0.80\ (K_D+K_E+K_F)\ /3$ |  |
| **Tipo 1bA — Piso flexible extremo**<br>$\phi_a = 0.8$<br>Rigidez $K_C < 0.60$ Rigidez $K_D$<br>o<br>Rigidez $K_C < 0.70\ (K_D+K_E+K_F)\ /3$ | |

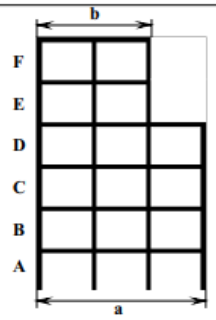


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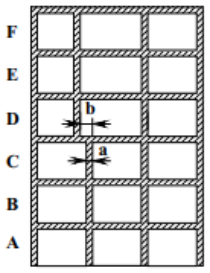
- **Tipo 2A (No Aplica)**

| | |
|---|---|
| **Tipo 2A — Distribución masa — $\phi_a = 0.9$**<br><br>$m_D > 1.50\ m_E$<br>o<br>$m_D > 1.50\ m_C$ |  |

- **Tipo 3A (No Aplica)**

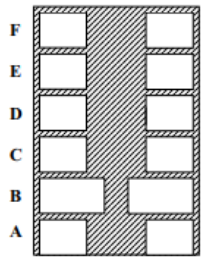
| | |
|---|---|
| **Tipo 3A — Geométrica — $\phi_a = 0.9$**<br><br>$a > 1.30\ b$ |  |

- **Tipo 4A (No Aplica)**

| | |
|---|---|
| **Tipo 4A — Desplazamiento dentro del plano de acción — $\phi_a = 0.8$**<br><br>$b > a$ |  |

- **Tipo 5aa Y 5ba (No Aplica)**

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| | |
|---|---|
| **Tipo 5aA — Piso débil**<br>$\phi_a = 0.9$<br>**0.65 Resist. Piso C ≤ Resist. Piso B < 0.80 Resist. Piso C** |  |
| **Tipo 5bA — Piso débil extremo**<br>$\phi_a = 0.8$<br>**Resistencia Piso B < 0.65 Resistencia Piso C** | |

**Ausencia de redundancia**

Acorde a lo mencionado en el artículo A.3.3.8 de la norma NSR-10, se evalúa que el factor de reducción por ausencia de redundancia será:

$$\emptyset rx = 0.90$$
$$\emptyset ry = 0.75$$

En conclusión, los factores de reducción de sismo quedan así:

$\emptyset a$ = 1.0
$\emptyset p$ = 1.0
$\emptyset rx$ = 0.90
$\emptyset ry$ = 0.75

## 13. Análisis sísmico

Del programa de análisis estructural se obtienen los valores de cortante basal en las direcciones X y Y, además del valor de masa participante en el sísmo.

| Output Case | Case Type | Step Type | FX | FY | FZ |
|---|---|---|---|---|---|
| | | | tonf | tonf | tonf |
| Dead | LinStatic | | 0 | 0 | 9,6112 |
| Live | LinStatic | | 0 | 0 | 3,4584 |
| SX | LinRespSpec | Max | 5,5335 | 0,0052 | 0 |
| SY | LinRespSpec | Max | 0,0052 | 6,372 | 0 |
| SXEST | LinStatic | | -5,2748 | 0 | 0 |
| SYEST | LinStatic | | 0 | -5,2748 | 0 |
| DS | LinStatic | | 0 | 0 | 2,075 |
| W1 | LinStatic | | 0 | 0 | -1,3689 |
| W2 | LinStatic | | 0 | 0 | -2,0895 |

| | | | |
|---|---|---|---|
| PESO DE LA ESTRUCTURA: | 11,69 Ton | Sa: | 0,61875 |
| Vs Estático: | 7,23 Ton | Vs Dinámico: | 6,51 |
| CORTANTE SÍSMICO: | 5,27 Ton | Factor de corrección: | 1,37 |
| CORTANTE DINÁMICO X: | 5,53 Ton | Factor de corrección: | 1,18 |

| | | | |
|---|---|---|---|
| CORTANTE DINÁMICO Y: | 6,37 Ton | Factor de corrección: | 1,02 |

### a. Porcentaje de participación de masas

Número De Modos De Vibración: Deben incluirse en el análisis dinámico todos los modos de vibración que contribuyan de una manera significativa a la respuesta dinámica de la estructura. Se considera que se ha cumplido este requisito cuando se demuestra que, con el número de modos empleados, p, se ha incluido en el cálculo de la respuesta, de cada una de las direcciones horizontales de análisis, j, por lo menos el 90% de la masa participante de la estructura. La masa participante, Mj, en cada una de las direcciones de análisis, j, para el número de modos empleados, p.
Para nuestro caso se alcanzó el 90% de aportes de masa en el modo 3 en X y en el modo 1 en Y.

| Case | Mode | Period sec | UX | UY | UZ | SumUX | SumUY |
|---|---|---|---|---|---|---|---|
| Modal | 1 | 0,439 | 0 | 0,9514 | 0 | 0 | 0,9514 |
| Modal | 2 | 0,374 | 0,2088 | 2,448E-06 | 0 | 0,2088 | 0,9514 |
| Modal | 3 | 0,266 | 0,7842 | 0 | 0 | 0,993 | 0,9514 |
| Modal | 4 | 0,099 | 0 | 0,0003 | 0 | 0,993 | 0,9517 |
| Modal | 5 | 0,092 | 0,006 | 0 | 0 | 0,9989 | 0,9517 |
| Modal | 6 | 0,074 | 0,0006 | 0 | 0 | 0,9996 | 0,9517 |
| Modal | 7 | 0,061 | 0 | 0,0337 | 0 | 0,9996 | 0,9854 |
| Modal | 8 | 0,057 | 2,193E-06 | 1,512E-06 | 0 | 0,9996 | 0,9854 |
| Modal | 9 | 0,047 | 0 | 0,0124 | 0 | 0,9996 | 0,9979 |
| Modal | 10 | 0,047 | 0 | 0,0007 | 0 | 0,9996 | 0,9986 |
| Modal | 11 | 0,031 | 0 | 1,075E-05 | 0 | 0,9996 | 0,9986 |
| Modal | 12 | 0,026 | 0 | 0 | 0 | 0,9996 | 0,9986 |
| Modal | 13 | 0,024 | 1,488E-05 | 0 | 0 | 0,9996 | 0,9986 |
| Modal | 14 | 0,023 | 0 | 0 | 0 | 0,9996 | 0,9986 |
| Modal | 15 | 0,019 | 0 | 0 | 0 | 0,9996 | 0,9986 |
| Modal | 16 | 0,018 | 0,0004 | 0 | 0 | 1 | 0,9986 |
| Modal | 17 | 0,016 | 0 | 7,865E-07 | 0 | 1 | 0,9986 |
| Modal | 18 | 0,016 | 0 | 0,001 | 0 | 1 | 0,9996 |
| Modal | 19 | 0,015 | 0 | 0 | 0 | 1 | 0,9996 |
| Modal | 20 | 0,013 | 0 | 0,0002 | 0 | 1 | 0,9998 |
| Modal | 21 | 0,013 | 0 | 0,0002 | 0 | 1 | 1 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Modal | 22 | 0,012 | 0 | 0 | 0 | 1 | 1 |
| Modal | 23 | 0,007 | 7,348E-07 | 0 | 0 | 1 | 1 |
| Modal | 24 | 0,006 | 0 | 0 | 0 | 1 | 1 |

## b. Chequeo de deflexiones

**TABLA C.9.5(b) — Deflexión máxima admisible calculada**

| Tipo de elemento | Deflexión considerada | Límite de deflexión |
|---|---|---|
| Cubiertas planas que no soporten ni estén ligadas a elementos no estructurales susceptibles de sufrir daños debido a deflexiones grandes. | Deflexión inmediata debida a la carga viva, **L** | $\ell/180$ * |
| Entrepisos que no soporten ni estén ligados a elementos no estructurales susceptibles de sufrir daños debido a deflexiones grandes. | Deflexión inmediata debida a la carga viva, **L** | $\ell/360$ |
| Sistema de entrepiso o cubierta que soporte o esté ligado a elementos no estructurales susceptibles de sufrir daños debido a deflexiones grandes. | La parte de la deflexión total que ocurre después de la unión de los elementos no estructurales (la suma de la deflexión a largo plazo debida a todas las cargas permanentes, y la deflexión inmediata debida a cualquier carga viva adicional)† | $\ell/480$ ‡ |
| Sistema de entrepiso o cubierta que soporte o esté ligado a elementos no estructurales no susceptibles de sufrir daños debido a deflexiones grandes. | | $\ell/240$§ |

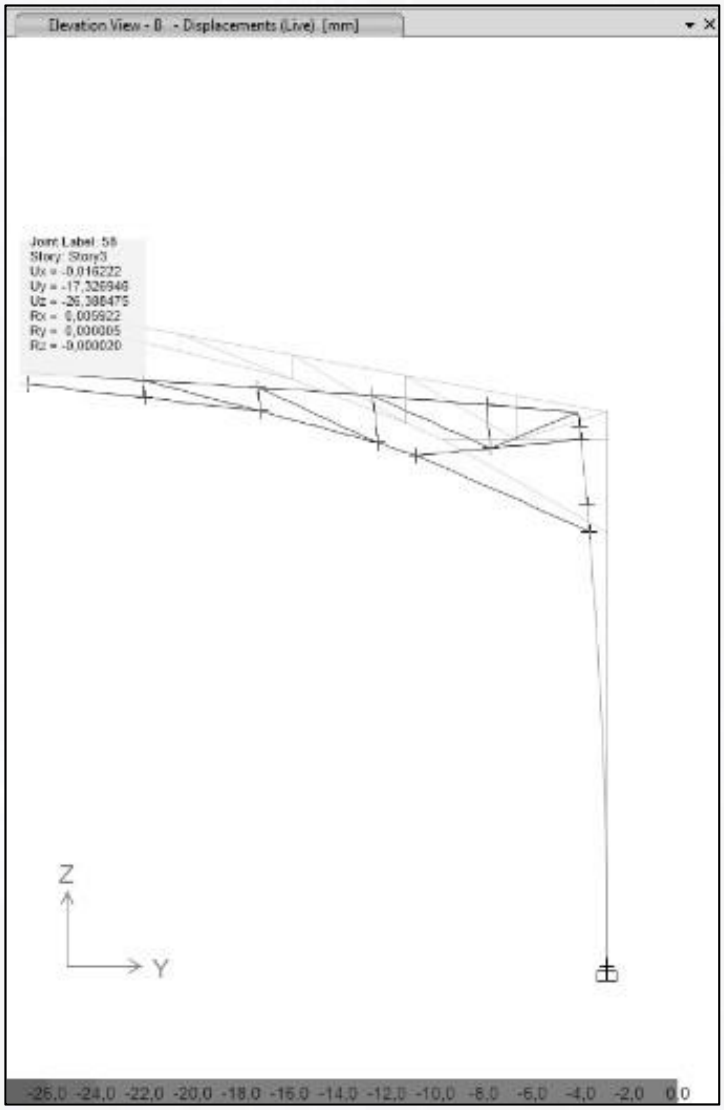



*Ilustración 3. Deflexión de eje B en cercha por carga viva + carga muerta. DMAX=24.47MM*

## 14. Diseño de elementos estructurales

Verificados los chequeos de deflexiones y análisis, procedemos a reducir el sismo de acuerdo con el capítulo A3 de la norma NSR-10.
Acorde a lo mencionado en la descripción de la estructura y análisis de irregularidades

Ro = 5.0
$\emptyset a$ = 1.0
$\emptyset p$ = 1.0
$\emptyset rx$ = 0.9
$\emptyset ry$ = 0.75
$Rx = Ro * \emptyset a * \emptyset p * \emptyset rx$ = 4.50
$Ry = Ro * \emptyset a * \emptyset p * \emptyset ry$ = 3.75
Aplicados los valores de reducción en el sísmo procedemos a diseñar.

### a. Diseño de elementos en concreto reforzado

| Story | Label | UniqueName | DesignSect | Station | AsMinTop | AsTop | AsMinBot | AsBot | VRebar | TLngRebar | TTrnRebar |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | m | cm² | cm² | cm² | cm² | mm²/m | cm² | mm²/m |
| Story1 | B1 | 9 | V35X35 | 0,125 | 0,9 | 0,9 | 0,6 | 0,6 | 96 | 4,1 | 149,5 |
| Story1 | B1 | 9 | V35X35 | 0,62389 | 0,5 | 0,5 | 0,8 | 0,8 | 96 | 4,1 | 149,5 |
| Story1 | B1 | 9 | V35X35 | 1,12278 | 0,3 | 0,3 | 0,8 | 0,8 | 96 | 4,1 | 149,5 |
| Story1 | B1 | 9 | V35X35 | 1,62167 | 0,3 | 0,3 | 0,8 | 0,8 | 96 | 4,1 | 149,5 |
| Story1 | B1 | 9 | V35X35 | 2,12056 | 0,3 | 0,3 | 0,7 | 0,7 | 96 | 4,1 | 149,5 |
| Story1 | B1 | 9 | V35X35 | 2,61944 | 0,3 | 0,3 | 0,5 | 0,5 | 96 | 4,1 | 149,5 |
| Story1 | B1 | 9 | V35X35 | 3,11833 | 0,3 | 0,3 | 0,4 | 0,4 | 96 | 4,1 | 149,5 |
| Story1 | B1 | 9 | V35X35 | 3,61722 | 0,3 | 0,3 | 0,3 | 0,3 | 96 | 4,1 | 149,5 |
| Story1 | B1 | 9 | V35X35 | 4,11611 | 0,7 | 0,7 | 0,3 | 0,3 | 96 | 4,1 | 149,5 |
| Story1 | B1 | 9 | V35X35 | 4,615 | 1,3 | 1,3 | 0,4 | 0,4 | 96 | 4,1 | 149,5 |
| Story1 | B2 | 10 | V35X35 | 0,125 | 1,1 | 1,1 | 0,4 | 0,4 | 0 | 0 | 0 |
| Story1 | B2 | 10 | V35X35 | 0,595 | 0,6 | 0,6 | 0,2 | 0,2 | 0 | 0 | 0 |
| Story1 | B2 | 10 | V35X35 | 1,065 | 0,3 | 0,3 | 0,2 | 0,2 | 0 | 0 | 0 |
| Story1 | B2 | 10 | V35X35 | 1,535 | 0,2 | 0,2 | 0,3 | 0,3 | 0 | 0 | 0 |
| Story1 | B2 | 10 | V35X35 | 2,005 | 0,2 | 0,2 | 0,4 | 0,4 | 0 | 0 | 0 |
| Story1 | B2 | 10 | V35X35 | 2,475 | 0,2 | 0,2 | 0,4 | 0,4 | 0 | 0 | 0 |
| Story1 | B2 | 10 | V35X35 | 2,945 | 0,2 | 0,2 | 0,4 | 0,4 | 0 | 0 | 0 |
| Story1 | B2 | 10 | V35X35 | 3,415 | 0,2 | 0,2 | 0,3 | 0,3 | 0 | 0 | 0 |
| Story1 | B2 | 10 | V35X35 | 3,885 | 0,3 | 0,3 | 0,2 | 0,2 | 0 | 0 | 0 |
| Story1 | B2 | 10 | V35X35 | 4,355 | 0,6 | 0,6 | 0,2 | 0,2 | 0 | 0 | 0 |
| Story1 | B2 | 10 | V35X35 | 4,825 | 1,1 | 1,1 | 0,4 | 0,4 | 0 | 0 | 0 |

| Story | Label | UniqueName | DesignSect | Station | AsMinTop | AsTop | AsMinBot | AsBot | VRebar | TLngRebar | TTrnRebar |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | m | cm² | cm² | cm² | cm² | mm²/m | cm² | mm²/m |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Story1 | B3 | 11 | V35X35 | 0,125 | 1,3 | 1,3 | 0,4 | 0,4 | 95,1 | 4,1 | 150,5 |
| Story1 | B3 | 11 | V35X35 | 0,62167 | 0,7 | 0,7 | 0,3 | 0,3 | 95,1 | 4,1 | 150,5 |
| Story1 | B3 | 11 | V35X35 | 1,11833 | 0,3 | 0,3 | 0,3 | 0,3 | 95,1 | 4,1 | 150,5 |
| Story1 | B3 | 11 | V35X35 | 1,615 | 0,3 | 0,3 | 0,4 | 0,4 | 95,1 | 4,1 | 150,5 |
| Story1 | B3 | 11 | V35X35 | 2,11167 | 0,3 | 0,3 | 0,5 | 0,5 | 95,1 | 4,1 | 150,5 |
| Story1 | B3 | 11 | V35X35 | 2,60833 | 0,3 | 0,3 | 0,7 | 0,7 | 95,1 | 4,1 | 150,5 |
| Story1 | B3 | 11 | V35X35 | 3,105 | 0,3 | 0,3 | 0,8 | 0,8 | 95,1 | 4,1 | 150,5 |
| Story1 | B3 | 11 | V35X35 | 3,60167 | 0,3 | 0,3 | 0,8 | 0,8 | 95,1 | 4,1 | 150,5 |
| Story1 | B3 | 11 | V35X35 | 4,09833 | 0,5 | 0,5 | 0,8 | 0,8 | 95,1 | 4,1 | 150,5 |
| Story1 | B3 | 11 | V35X35 | 4,595 | 0,9 | 0,9 | 0,6 | 0,6 | 95,1 | 4,1 | 150,5 |

| Story | Label | UniqueName | DesignSect | Station | DesignOpt | AsMin | As | Mid Bar As | CornerBarAs | VMajRebar | VMinRebar |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | m | | cm² | cm² | cm² | cm² | mm²/m | mm²/m |
| Story2 | C1 | 5 | C25X35 | 0 | Design | 8,8 | 8,8 | 0,7 | 0,7 | 208,3 | 0 |
| Story2 | C1 | 5 | C25X35 | 0,35 | Design | 8,8 | 8,8 | 0,7 | 0,7 | 208,3 | 0 |
| Story2 | C1 | 5 | C25X35 | 0,58 | Design | 8,8 | 8,8 | 0,7 | 0,7 | 208,3 | 0 |
| Story2 | C1 | 5 | C25X35 | 0,58 | Design | 8,8 | 8,8 | 0,7 | 0,7 | 0 | 0 |
| Story2 | C1 | 5 | C25X35 | 0,7 | Design | 8,8 | 8,8 | 0,7 | 0,7 | 0 | 0 |
| Story2 | C2 | 6 | C25X35 | 0 | Design | 8,8 | 11,3 | 0,9 | 0,9 | 458,8 | 0 |
| Story2 | C2 | 6 | C25X35 | 0,35 | Design | 8,8 | 8,8 | 0,7 | 0,7 | 460,2 | 0 |
| Story2 | C2 | 6 | C25X35 | 0,58 | Design | 8,8 | 8,8 | 0,7 | 0,7 | 461 | 0 |
| Story2 | C2 | 6 | C25X35 | 0,58 | Design | 8,8 | 8,8 | 0,7 | 0,7 | 0 | 0 |
| Story2 | C2 | 6 | C25X35 | 0,7 | Design | 8,8 | 8,8 | 0,7 | 0,7 | 0 | 0 |
| Story2 | C3 | 7 | C25X35 | 0 | Design | 8,8 | 11,2 | 0,9 | 0,9 | 457,4 | 0 |
| Story2 | C3 | 7 | C25X35 | 0,35 | Design | 8,8 | 8,8 | 0,7 | 0,7 | 458,7 | 0 |
| Story2 | C3 | 7 | C25X35 | 0,58 | Design | 8,8 | 8,8 | 0,7 | 0,7 | 459,5 | 0 |
| Story2 | C3 | 7 | C25X35 | 0,58 | Design | 8,8 | 8,8 | 0,7 | 0,7 | 0 | 0 |
| Story2 | C3 | 7 | C25X35 | 0,7 | Design | 8,8 | 8,8 | 0,7 | 0,7 | 0 | 0 |
| Story2 | C4 | 8 | C25X35 | 0 | Design | 8,8 | 8,8 | 0,7 | 0,7 | 208,3 | 0 |
| Story2 | C4 | 8 | C25X35 | 0,35 | Design | 8,8 | 8,8 | 0,7 | 0,7 | 208,3 | 0 |
| Story2 | C4 | 8 | C25X35 | 0,58 | Design | 8,8 | 8,8 | 0,7 | 0,7 | 208,3 | 0 |
| Story2 | C4 | 8 | C25X35 | 0,58 | Design | 8,8 | 8,8 | 0,7 | 0,7 | 0 | 0 |
| Story2 | C4 | 8 | C25X35 | 0,7 | Design | 8,8 | 8,8 | 0,7 | 0,7 | 0 | 0 |
| Story1 | C1 | 1 | C25X35 | 0 | Design | 8,8 | 16 | 1,3 | 1,3 | 0 | 0 |
| Story1 | C1 | 1 | C25X35 | 1,875 | Design | 8,8 | 12,8 | 1,1 | 1,1 | 0 | 0 |
| Story1 | C1 | 1 | C25X35 | 3,75 | Design | 8,8 | 10,2 | 0,9 | 0,9 | 0 | 0 |

| Story | Label | UniqueName | DesignSect | Station | DesignOpt | AsMin | As | Mid Bar As | CornerBarAs | VMajRebar | VMinRebar |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | m | | cm² | cm² | cm² | cm² | mm²/m | mm²/m |
| Story1 | C2 | 2 | C25X35 | 0 | Design | 8,8 | 14 | 1,2 | 1,2 | 0 | 0 |
| Story1 | C2 | 2 | C25X35 | 1,875 | Design | 8,8 | 12,9 | 1,1 | 1,1 | 0 | 0 |
| Story1 | C2 | 2 | C25X35 | 3,75 | Design | 8,8 | 14,5 | 1,2 | 1,2 | 0 | 0 |
| Story1 | C3 | 3 | C25X35 | 0 | Design | 8,8 | 14 | 1,2 | 1,2 | 0 | 0 |
| Story1 | C3 | 3 | C25X35 | 1,875 | Design | 8,8 | 12,9 | 1,1 | 1,1 | 0 | 0 |
| Story1 | C3 | 3 | C25X35 | 3,75 | Design | 8,8 | 14,4 | 1,2 | 1,2 | 0 | 0 |

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| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Story1 | C4 | 4 | C25X35 | 0 | Design | 8,8 | 16 | 1,3 | 1,3 | 0 | 0 |
| Story1 | C4 | 4 | C25X35 | 1,875 | Design | 8,8 | 12,8 | 1,1 | 1,1 | 0 | 0 |
| Story1 | C4 | 4 | C25X35 | 3,75 | Design | 8,8 | 10,2 | 0,9 | 0,9 | 0 | 0 |

**b. Diseño de elementos metálicos**

| Story | Label | UniqueName | Design Section | PMM Ratio | P Ratio | M Major Ratio | M Minor Ratio | V Major Ratio | V Minor Ratio |
|---|---|---|---|---|---|---|---|---|---|
| Story3 | C5 | 15 | TUBC 4"X4MM | 0,017 | 0,017 | 0 | 0 | 0 | 0 |
| Story3 | C5 | 15 | TUBC 4"X4MM | 0,023 | 0,023 | 0 | 0 | | |
| Story3 | C10 | 25 | TUBC 3"X2.5MM | 0,174 | 0,011 | 0,004 | 0,163 | 0,002 | 0,144 |
| Story3 | C10 | 25 | TUBC 3"X2.5MM | 0,118 | 0,009 | 0,003 | 0,11 | | |
| Story3 | C15 | 36 | TUBC 3"X2.5MM | 0,126 | 0,01 | 0,02 | 0,115 | 0,017 | 0,082 |
| Story3 | C15 | 36 | TUBC 3"X2.5MM | 0,186 | 0,006 | 0,014 | 0,179 | | |
| Story3 | C18 | 43 | TUBC 3"X2.5MM | 0,059 | 0,02 | 0,0003095 | 0,038 | 0,004 | 0,013 |
| Story3 | C18 | 43 | TUBC 3"X2.5MM | 0,009 | 0,003 | 0,005 | 0,002 | | |
| Story3 | C20 | 47 | TUBC 4"X4MM | 0,031 | 0,031 | 0 | 0 | 0 | 0 |
| Story3 | C20 | 47 | TUBC 4"X4MM | 0,04 | 0,04 | 0 | 0 | | |
| Story3 | C21 | 49 | TUBC 3"X2.5MM | 0,331 | 0,022 | 0,001 | 0,309 | 0,001 | 0,273 |
| Story3 | C21 | 49 | TUBC 3"X2.5MM | 0,248 | 0,018 | 0,001 | 0,229 | | |
| Story3 | C22 | 53 | TUBC 3"X2.5MM | 0,234 | 0,019 | 0,001 | 0,214 | 0,015 | 0,14 |
| Story3 | C22 | 53 | TUBC 3"X2.5MM | 0,317 | 0,014 | 0,008 | 0,303 | | |
| Story3 | C23 | 57 | TUBC 3"X2.5MM | 0,102 | 0,035 | 0,001 | 0,067 | 0,002 | 0,024 |
| Story3 | C23 | 57 | TUBC 3"X2.5MM | 0,011 | 0,005 | 0,003 | 0,005 | | |
| Story3 | C24 | 60 | TUBC 4"X4MM | 0,031 | 0,031 | 0 | 0 | 0 | 0 |
| Story3 | C24 | 60 | TUBC 4"X4MM | 0,04 | 0,04 | 0 | 0 | | |
| Story3 | C25 | 62 | TUBC 3"X2.5MM | 0,33 | 0,022 | 0,001 | 0,309 | 0,001 | 0,272 |
| Story3 | C25 | 62 | TUBC 3"X2.5MM | 0,247 | 0,018 | 0,001 | 0,229 | | |
| Story3 | C26 | 66 | TUBC 3"X2.5MM | 0,233 | 0,019 | 0,001 | 0,214 | 0,015 | 0,14 |
| Story3 | C26 | 66 | TUBC 3"X2.5MM | 0,317 | 0,014 | 0,008 | 0,303 | | |
| Story3 | C27 | 70 | TUBC 3"X2.5MM | 0,102 | 0,035 | 0,001 | 0,067 | 0,002 | 0,024 |

| Story | Label | UniqueName | Design Section | PMM Ratio | P Ratio | M Major Ratio | M Minor Ratio | V Major Ratio | V Minor Ratio |
|---|---|---|---|---|---|---|---|---|---|
| Story3 | C27 | 70 | TUBC 3"X2.5MM | 0,011 | 0,005 | 0,003 | 0,005 | | |
| Story3 | C28 | 73 | TUBC 4"X4MM | 0,017 | 0,017 | 0 | 0 | 0 | 0 |
| Story3 | C28 | 73 | TUBC 4"X4MM | 0,023 | 0,023 | 0 | 0 | | |
| Story3 | C29 | 75 | TUBC 3"X2.5MM | 0,173 | 0,01 | 0,004 | 0,162 | 0,002 | 0,144 |
| Story3 | C29 | 75 | TUBC 3"X2.5MM | 0,118 | 0,009 | 0,003 | 0,109 | | |
| Story3 | C30 | 79 | TUBC 3"X2.5MM | 0,126 | 0,01 | 0,019 | 0,114 | 0,017 | 0,082 |
| Story3 | C30 | 79 | TUBC 3"X2.5MM | 0,185 | 0,006 | 0,014 | 0,178 | | |
| Story3 | C31 | 83 | TUBC 3"X2.5MM | 0,059 | 0,02 | 0,0002735 | 0,038 | 0,004 | 0,013 |
| Story3 | C31 | 83 | TUBC 3"X2.5MM | 0,009 | 0,003 | 0,005 | 0,002 | | |
| Story3 | C32 | 97 | TUBC 3"X2.5MM | 0,121 | 0,01 | 0,014 | 0,11 | 0,001 | 0,203 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Story3 | C32 | 97 | TUBC 3"X2.5MM | 0,084 | 0,007 | 0,011 | 0,076 | | |
| Story3 | C33 | 105 | TUBC 3"X2.5MM | 0,246 | 0,021 | 0,0002683 | 0,226 | 0,001 | 0,418 |
| Story3 | C33 | 105 | TUBC 3"X2.5MM | 0,184 | 0,016 | 0 | 0,168 | | |
| Story3 | C34 | 108 | TUBC 3"X2.5MM | 0,246 | 0,02 | 0,0003245 | 0,225 | 0,001 | 0,417 |
| Story3 | C34 | 108 | TUBC 3"X2.5MM | 0,183 | 0,016 | 0 | 0,168 | | |
| Story3 | C35 | 111 | TUBC 3"X2.5MM | 0,12 | 0,01 | 0,014 | 0,109 | 0,001 | 0,203 |
| Story3 | C35 | 111 | TUBC 3"X2.5MM | 0,084 | 0,007 | 0,011 | 0,075 | | |
| Story3 | C38 | 129 | TUBC 3"X2.5MM | 0,189 | 0,01 | 0,015 | 0,179 | 0,002 | 0,213 |
| Story3 | C38 | 129 | TUBC 3"X2.5MM | 0,129 | 0,008 | 0,012 | 0,121 | | |
| Story3 | C41 | 134 | TUBC 3"X2.5MM | 0,365 | 0,02 | 0,002 | 0,345 | 0,002 | 0,412 |
| Story3 | C41 | 134 | TUBC 3"X2.5MM | 0,271 | 0,016 | 0,001 | 0,255 | | |
| Story3 | C44 | 139 | TUBC 3"X2.5MM | 0,364 | 0,02 | 0,002 | 0,345 | 0,002 | 0,411 |
| Story3 | C44 | 139 | TUBC 3"X2.5MM | 0,27 | 0,016 | 0,001 | 0,255 | | |
| Story3 | C47 | 144 | TUBC 3"X2.5MM | 0,188 | 0,01 | 0,015 | 0,178 | 0,002 | 0,212 |
| Story3 | C47 | 144 | TUBC 3"X2.5MM | 0,129 | 0,008 | 0,012 | 0,12 | | |
| Story3 | B12 | 34 | TUBC 6"X6MM | 0,044 | 0,017 | 0,027 | 0,007 | 0,009 | 0,003 |
| Story3 | B12 | 34 | TUBC 6"X6MM | 0,064 | 0,024 | 0,04 | 0,006 | | |
| Story3 | B15 | 42 | TUBC 6"X6MM | 0,058 | 0,026 | 0,032 | 0,001 | 0,004 | 0,001 |
| Story3 | B15 | 42 | TUBC 6"X6MM | 0,085 | 0,038 | 0,048 | 0,002 | | |
| Story3 | B16 | 35 | TUBC 6"X6MM | 0,048 | 0,019 | 0,03 | 0 | 0,005 | 0,001 |
| Story3 | B16 | 35 | TUBC 6"X6MM | 0,07 | 0,027 | 0,043 | 0,001 | | |
| Story3 | B20 | 51 | TUBC 6"X6MM | 0,087 | 0,034 | 0,053 | 0,003 | 0,015 | 0,003 |
| Story3 | B20 | 51 | TUBC 6"X6MM | 0,116 | 0,046 | 0,07 | 0,004 | | |
| Story3 | B21 | 52 | TUBC 6"X6MM | 0,098 | 0,038 | 0,06 | 0,0002063 | 0,008 | 0,001 |
| Story3 | B21 | 52 | TUBC 6"X6MM | 0,13 | 0,051 | 0,079 | 0,0004688 | | |
| Story3 | B22 | 56 | TUBC 6"X6MM | 0,117 | 0,052 | 0,065 | 0,0003875 | 0,007 | 0,0002201 |
| Story3 | B22 | 56 | TUBC 6"X6MM | 0,156 | 0,068 | 0,088 | 0,001 | | 6 |

| Story | Label | UniqueName | Design Section | PMM Ratio | P Ratio | M Major Ratio | M Minor Ratio | V Major Ratio | V Minor Ratio |
|---|---|---|---|---|---|---|---|---|---|
| Story3 | B26 | 64 | TUBC 6"X6MM | 0,087 | 0,034 | 0,053 | 0,003 | 0,015 | 0,003 |
| Story3 | B26 | 64 | TUBC 6"X6MM | 0,116 | 0,046 | 0,07 | 0,004 | | |
| Story3 | B27 | 65 | TUBC 6"X6MM | 0,098 | 0,038 | 0,06 | 0,0001815 | 0,008 | 0,001 |
| Story3 | B27 | 65 | TUBC 6"X6MM | 0,129 | 0,051 | 0,079 | 0,0004393 | | |
| Story3 | B28 | 69 | TUBC 6"X6MM | 0,116 | 0,051 | 0,065 | 0,0003639 | 0,007 | 0,0002193 |
| Story3 | B28 | 69 | TUBC 6"X6MM | 0,156 | 0,068 | 0,088 | 0,001 | | |
| Story3 | B32 | 77 | TUBC 6"X6MM | 0,044 | 0,016 | 0,027 | 0,007 | 0,009 | 0,003 |
| Story3 | B32 | 77 | TUBC 6"X6MM | 0,064 | 0,024 | 0,039 | 0,006 | | |
| Story3 | B33 | 78 | TUBC 6"X6MM | 0,048 | 0,019 | 0,029 | 0 | 0,004 | 0,001 |
| Story3 | B33 | 78 | TUBC 6"X6MM | 0,07 | 0,027 | 0,043 | 0,001 | | |
| Story3 | B34 | 82 | TUBC 6"X6MM | 0,057 | 0,026 | 0,032 | 0,001 | 0,004 | 0,001 |
| Story3 | B34 | 82 | TUBC 6"X6MM | 0,085 | 0,037 | 0,047 | 0,002 | | |
| Story3 | B49 | 102 | TUBC 6"X6MM | 0,052 | 0,017 | 0,035 | 0,001 | 0,01 | 0,0002231 |
| Story3 | B49 | 102 | TUBC 6"X6MM | 0,075 | 0,025 | 0,051 | 0,001 | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Story3 | B50 | 103 | TUBC 6"X6MM | 0,016 | 0,006 | 0,01 | 0,0003231 | 0,005 | 0,0004555 |
| Story3 | B50 | 103 | TUBC 6"X6MM | 0,023 | 0,008 | 0,015 | 0,0004021 | | |
| Story3 | B54 | 113 | TUBC 6"X6MM | 0,106 | 0,034 | 0,072 | 0,0004363 | 0,019 | 0,0001885 |
| Story3 | B54 | 113 | TUBC 6"X6MM | 0,141 | 0,044 | 0,097 | 0,0003976 | | |
| Story3 | B55 | 114 | TUBC 6"X6MM | 0,032 | 0,009 | 0,023 | 0 | 0,01 | 0,0002661 |
| Story3 | B55 | 114 | TUBC 6"X6MM | 0,043 | 0,012 | 0,031 | 0 | | |
| Story3 | B56 | 115 | TUBC 6"X6MM | 0,106 | 0,033 | 0,072 | 0,0004502 | 0,019 | 0,0001883 |
| Story3 | B56 | 115 | TUBC 6"X6MM | 0,141 | 0,044 | 0,097 | 0,0004144 | | |
| Story3 | B57 | 116 | TUBC 6"X6MM | 0,032 | 0,009 | 0,023 | 0 | 0,01 | 0,0002683 |
| Story3 | B57 | 116 | TUBC 6"X6MM | 0,042 | 0,012 | 0,031 | 0 | | |
| Story3 | B58 | 117 | TUBC 6"X6MM | 0,052 | 0,017 | 0,034 | 0,001 | 0,01 | 0,0002216 |
| Story3 | B58 | 117 | TUBC 6"X6MM | 0,075 | 0,025 | 0,05 | 0,001 | | |
| Story3 | B59 | 118 | TUBC 6"X6MM | 0,016 | 0,006 | 0,01 | 0,0003215 | 0,005 | 0,000455 |
| Story3 | B59 | 118 | TUBC 6"X6MM | 0,023 | 0,008 | 0,015 | 0,0004 | | |
| Story3 | B66 | 126 | TUBC 6"X6MM | 0,069 | 0,017 | 0,053 | 0,001 | 0,01 | 0,0003505 |
| Story3 | B66 | 126 | TUBC 6"X6MM | 0,046 | 0,011 | 0,035 | 0,001 | | |
| Story3 | B67 | 127 | TUBC 6"X6MM | 0,024 | 0,008 | 0,016 | 0,001 | 0,005 | 0,0002568 |
| Story3 | B67 | 127 | TUBC 6"X6MM | 0,016 | 0,005 | 0,011 | 0,000133 | | |
| Story3 | B68 | 131 | TUBC 6"X6MM | 0,133 | 0,033 | 0,1 | 0 | 0,019 | 0,0002018 |
| Story3 | B68 | 131 | TUBC 6"X6MM | 0,097 | 0,024 | 0,073 | 0 | | |
| Story3 | B69 | 132 | TUBC 6"X6MM | 0,05 | 0,017 | 0,033 | 0 | 0,01 | 0,0002065 |
| Story3 | B69 | 132 | TUBC 6"X6MM | 0,036 | 0,012 | 0,024 | 0 | | |
| Story3 | B70 | 136 | TUBC 6"X6MM | 0,133 | 0,033 | 0,1 | 0 | 0,019 | 0,000202 |

| Story | Label | UniqueName | Design Section | PMM Ratio | P Ratio | M Major Ratio | M Minor Ratio | V Major Ratio | V Minor Ratio |
|---|---|---|---|---|---|---|---|---|---|
| Story3 | B70 | 136 | TUBC 6"X6MM | 0,097 | 0,024 | 0,073 | 0,0001056 | | |
| Story3 | B71 | 137 | TUBC 6"X6MM | 0,049 | 0,017 | 0,033 | 0 | 0,01 | 0,0002077 |
| Story3 | B71 | 137 | TUBC 6"X6MM | 0,036 | 0,012 | 0,024 | 0 | | |
| Story3 | B72 | 141 | TUBC 6"X6MM | 0,069 | 0,017 | 0,053 | 0,001 | 0,01 | 0,0003484 |
| Story3 | B72 | 141 | TUBC 6"X6MM | 0,046 | 0,011 | 0,035 | 0,001 | | |
| Story3 | B73 | 142 | TUBC 6"X6MM | 0,024 | 0,008 | 0,016 | 0,001 | 0,005 | 0,0002565 |
| Story3 | B73 | 142 | TUBC 6"X6MM | 0,016 | 0,005 | 0,011 | 0,0001323 | | |
| Story3 | B13 | 29 | TUBC 3"X2.5MM | 0,423 | 0,398 | 0,023 | 0,008 | 0,003 | 0,006 |
| Story3 | B13 | 29 | TUBC 3"X2.5MM | 0,298 | 0,281 | 0,017 | 0,005 | | |
| Story3 | B14 | 33 | TUBC 3"X2.5MM | 0,248 | 0,232 | 0,014 | 0,009 | 0,002 | 0,005 |
| Story3 | B14 | 33 | TUBC 3"X2.5MM | 0,099 | 0,075 | 0,002 | 0,024 | | |
| Story3 | B17 | 44 | TUBC 3"X2.5MM | 0,422 | 0,398 | 0,023 | 0,008 | 0,003 | 0,006 |
| Story3 | B17 | 44 | TUBC 3"X2.5MM | 0,298 | 0,28 | 0,017 | 0,005 | | |
| Story3 | B18 | 50 | TUBC 3"X2.5MM | 0,248 | 0,231 | 0,014 | 0,009 | 0,002 | 0,005 |
| Story3 | B18 | 50 | TUBC 3"X2.5MM | 0,098 | 0,075 | 0,002 | 0,024 | | |
| Story2 | B4 | 12 | TUBC 6"X6MM | 0,054 | 0,001 | 0,054 | 0,0004895 | 0,017 | 0,001 |
| Story2 | B4 | 12 | TUBC 6"X6MM | 0,063 | 0,007 | 0,056 | 0,001 | | |
| Story2 | B5 | 13 | TUBC 6"X6MM | 0,055 | 0,022 | 0,032 | 0,009 | 0,011 | 0,005 |
| Story2 | B5 | 13 | TUBC 6"X6MM | 0,075 | 0,039 | 0,035 | 0,004 | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Story2 | B6 | 14 | TUBC 6"X6MM | 0,088 | 0,005 | 0,083 | 0 | 0,028 | 0,0003457 |
| Story2 | B6 | 14 | TUBC 6"X6MM | 0,103 | 0,011 | 0,092 | 0,000187 | | |
| Story2 | B7 | 16 | TUBC 6"X6MM | 0,102 | 0,04 | 0,062 | 0,002 | 0,021 | 0,005 |
| Story2 | B7 | 16 | TUBC 6"X6MM | 0,13 | 0,063 | 0,066 | 0,004 | | |
| Story2 | B8 | 17 | TUBC 6"X6MM | 0,088 | 0,005 | 0,083 | 0 | 0,027 | 0,0003503 |
| Story2 | B8 | 17 | TUBC 6"X6MM | 0,102 | 0,011 | 0,092 | 0,0002025 | | |
| Story2 | B9 | 18 | TUBC 6"X6MM | 0,102 | 0,04 | 0,062 | 0,002 | 0,021 | 0,005 |
| Story2 | B9 | 18 | TUBC 6"X6MM | 0,13 | 0,063 | 0,066 | 0,004 | | |
| Story2 | B10 | 19 | TUBC 6"X6MM | 0,054 | 0,001 | 0,054 | 0,001 | 0,017 | 0,001 |
| Story2 | B10 | 19 | TUBC 6"X6MM | 0,062 | 0,007 | 0,056 | 0,001 | | |
| Story2 | B11 | 20 | TUBC 6"X6MM | 0,055 | 0,022 | 0,032 | 0,009 | 0,011 | 0,005 |
| Story2 | B11 | 20 | TUBC 6"X6MM | 0,074 | 0,039 | 0,035 | 0,004 | | |
| Story3 | D3 | 38 | TUBC 6"X6MM | 0,066 | 0,032 | 0,033 | 0,003 | 0,002 | 0,001 |
| Story3 | D3 | 38 | TUBC 6"X6MM | 0,048 | 0,021 | 0,027 | 0,001 | | |
| Story3 | D4 | 39 | TUBC 6"X6MM | 0,107 | 0,041 | 0,066 | 0,00018 | 0,026 | 0,001 |
| Story3 | D4 | 39 | TUBC 6"X6MM | 0,057 | 0,027 | 0,03 | 0,002 | | |
| Story3 | D6 | 54 | TUBC 6"X6MM | 0,126 | 0,064 | 0,063 | 0 | 0,004 | 0,0001905 |
| Story3 | D6 | 54 | TUBC 6"X6MM | 0,102 | 0,046 | 0,056 | 0,0002366 | | ∞ |

| Story | Label | UniqueName | Design Section | PMM Ratio | P Ratio | M Major Ratio | M Minor Ratio | V Major Ratio | V Minor Ratio |
|---|---|---|---|---|---|---|---|---|---|
| Story3 | D7 | 55 | TUBC 6"X6MM | 0,191 | 0,08 | 0,111 | 0,001 | 0,043 | 0,001 |
| Story3 | D7 | 55 | TUBC 6"X6MM | 0,117 | 0,057 | 0,06 | 0,0001379 | | |
| Story3 | D9 | 67 | TUBC 6"X6MM | 0,126 | 0,063 | 0,063 | 0 | 0,004 | 0,0001903 |
| Story3 | D9 | 67 | TUBC 6"X6MM | 0,102 | 0,046 | 0,056 | 0,0001994 | | |
| Story3 | D10 | 68 | TUBC 6"X6MM | 0,19 | 0,08 | 0,11 | 0,001 | 0,043 | 0,001 |
| Story3 | D10 | 68 | TUBC 6"X6MM | 0,117 | 0,057 | 0,059 | 0,0001878 | | |
| Story3 | D12 | 80 | TUBC 6"X6MM | 0,065 | 0,032 | 0,033 | 0,003 | 0,002 | 0,001 |
| Story3 | D12 | 80 | TUBC 6"X6MM | 0,048 | 0,021 | 0,027 | 0,001 | | |
| Story3 | D13 | 81 | TUBC 6"X6MM | 0,107 | 0,041 | 0,066 | 0 | 0,026 | 0,001 |
| Story3 | D13 | 81 | TUBC 6"X6MM | 0,057 | 0,027 | 0,03 | 0,002 | | |
| Story3 | D1 | 21 | TUBC 3"X2.5MM | 0,133 | 0,08 | 0,052 | 0,0001522 | 0,005 | 0 |
| Story3 | D1 | 21 | TUBC 3"X2.5MM | 0,092 | 0,054 | 0,037 | 0 | | |
| Story3 | D2 | 22 | TUBC 3"X2.5MM | 0,112 | 0,071 | 0,041 | 0,0004735 | 0,002 | 0,0001078 |
| Story3 | D2 | 22 | TUBC 3"X2.5MM | 0,074 | 0,045 | 0,029 | 0 | | |
| Story3 | D15 | 27 | TUBC 3"X2.5MM | 0,092 | 0,068 | 0,024 | 0 | 0,002 | 0,0002308 |
| Story3 | D15 | 27 | TUBC 3"X2.5MM | 0,124 | 0,085 | 0,039 | 0,002 | | |
| Story3 | D16 | 30 | TUBC 3"X2.5MM | 0,069 | 0,041 | 0,028 | 0,002 | 0,003 | 0,0001634 |
| Story3 | D16 | 30 | TUBC 3"X2.5MM | 0,043 | 0,025 | 0,018 | 0,001 | | |
| Story3 | D20 | 31 | TUBC 3"X2.5MM | 0,06 | 0,037 | 0,023 | 0,005 | 0,002 | 0,0003426 |
| Story3 | D20 | 31 | TUBC 3"X2.5MM | 0,035 | 0,021 | 0,014 | 0,002 | | |
| Story3 | D21 | 32 | TUBC 3"X2.5MM | 0,049 | 0,036 | 0,012 | 0,003 | 0,002 | 0,001 |
| Story3 | D21 | 32 | TUBC 3"X2.5MM | 0,074 | 0,05 | 0,024 | 0,003 | | |
| Story3 | D22 | 37 | TUBC 3"X2.5MM | 0,132 | 0,08 | 0,052 | 0,0001533 | 0,005 | 0 |
| Story3 | D22 | 37 | TUBC 3"X2.5MM | 0,091 | 0,054 | 0,037 | 0 | | |

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|---|---|---|---|---|---|---|---|---|---|
| Story3 | D23 | 40 | TUBC 3"X2.5MM | 0,112 | 0,07 | 0,041 | 0,0004892 | 0,002 | 0,0001084 |
| Story3 | D23 | 40 | TUBC 3"X2.5MM | 0,074 | 0,045 | 0,029 | 0 | | |
| Story3 | D24 | 41 | TUBC 3"X2.5MM | 0,092 | 0,068 | 0,024 | 0,0001169 | 0,002 | 0,0002348 |
| Story3 | D24 | 41 | TUBC 3"X2.5MM | 0,124 | 0,085 | 0,039 | 0,002 | | |
| Story3 | D25 | 45 | TUBC 3"X2.5MM | 0,068 | 0,04 | 0,028 | 0,002 | 0,003 | 0,0001625 |
| Story3 | D25 | 45 | TUBC 3"X2.5MM | 0,043 | 0,025 | 0,018 | 0,001 | | |
| Story3 | D26 | 46 | TUBC 3"X2.5MM | 0,059 | 0,036 | 0,023 | 0,005 | 0,002 | 0,0003419 |
| Story3 | D26 | 46 | TUBC 3"X2.5MM | 0,035 | 0,021 | 0,014 | 0,002 | | |
| Story3 | D27 | 48 | TUBC 3"X2.5MM | 0,049 | 0,036 | 0,012 | 0,003 | 0,002 | 0,001 |
| Story3 | D27 | 48 | TUBC 3"X2.5MM | 0,074 | 0,049 | 0,024 | 0,003 | | |
| Story2 | D14 | 98 | TUBC 6"X6MM | 0,113 | 0,045 | 0,068 | 0,006 | 0,006 | 0,001 |
| Story2 | D14 | 98 | TUBC 6"X6MM | 0,055 | 0,022 | 0,033 | 0,0003544 | | |
| Story2 | D17 | 106 | TUBC 6"X6MM | 0,182 | 0,083 | 0,099 | 0,001 | 0,008 | 0,0002922 |

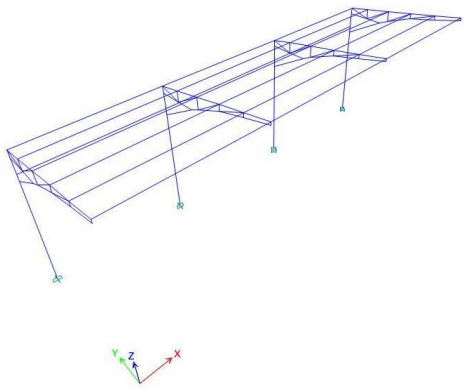
| Story | Label | UniqueName | Design Section | PMM Ratio | P Ratio | M Major Ratio | M Minor Ratio | V Major Ratio | V Minor Ratio |
|---|---|---|---|---|---|---|---|---|---|
| Story2 | D17 | 106 | TUBC 6"X6MM | 0,102 | 0,048 | 0,054 | 0,001 | | |
| Story2 | D18 | 109 | TUBC 6"X6MM | 0,182 | 0,083 | 0,099 | 0,001 | 0,008 | 0,0002976 |
| Story2 | D18 | 109 | TUBC 6"X6MM | 0,102 | 0,048 | 0,054 | 0,001 | | |
| Story2 | D19 | 112 | TUBC 6"X6MM | 0,113 | 0,045 | 0,067 | 0,006 | 0,006 | 0,001 |
| Story2 | D19 | 112 | TUBC 6"X6MM | 0,055 | 0,022 | 0,033 | 0,000415 | | |

### c. Cargas para diseño de elementos de cimentación

| Story | Label | Output Case | Case Type | Step Type | FZ | MX | MY |
|---|---|---|---|---|---|---|---|
| | | | | | tonf | tonf-m | tonf-m |
| Base | 1 | Live | LinStatic | | 0,54 | -2,29 | 0,00 |
| Base | 1 | SX | LinRespSpec | Max | 0,28 | 1,00 | 0,75 |
| Base | 1 | SY | LinRespSpec | Max | 0,02 | 2,03 | 0,00 |
| Base | 1 | ELS 1.0D | Combination | | 2,24 | -2,25 | 0,08 |
| Base | 2 | Live | LinStatic | | 1,19 | -1,85 | 0,00 |
| Base | 2 | SX | LinRespSpec | Max | 0,11 | 0,33 | 0,82 |
| Base | 2 | SY | LinRespSpec | Max | 0,02 | 2,10 | 0,00 |
| Base | 2 | ELS 1.0D | Combination | | 3,61 | -1,94 | -0,01 |
| Base | 3 | Live | LinStatic | | 1,19 | -1,85 | 0,00 |
| Base | 3 | SX | LinRespSpec | Max | 0,11 | 0,33 | 0,82 |
| Base | 3 | SY | LinRespSpec | Max | 0,02 | 2,10 | 0,00 |
| Base | 3 | ELS 1.0D | Combination | | 3,60 | -1,94 | 0,01 |
| Base | 4 | Live | LinStatic | | 0,53 | -2,29 | 0,00 |
| Base | 4 | SX | LinRespSpec | Max | 0,28 | 1,00 | 0,75 |
| Base | 4 | SY | LinRespSpec | Max | 0,02 | 2,02 | 0,00 |
| Base | 4 | ELS 1.0D | Combination | | 2,23 | -2,25 | -0,08 |

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# CESSummary Report

Model File: CafeteriaAstrea, Revision 0





## 1 Structure Data

This chapter provides model geometry information, including items such as story levels, point coordinates, and element connectivity.

### 1.1 Story Data

Table 1.1 - Story Definitions

| Tower | Name | Height m | Master Story | Similar To | Splice Story | Color |
|---|---|---|---|---|---|---|
| T1 | Story3 | 1 | Yes | None | No | Gray8Dark |
| T1 | Story2 | 0,7 | Yes | None | No | Gray8Dark |
| T1 | Story1 | 4,1 | No | Story2 | No | Blue |





## 2 Loads

This chapter provides loading information as applied to the model.

### 2.1 Load Patterns

Table 2.1 - Load Pattern Definitions

| Name | Is Auto Load | Type | Self Weight Multiplier | Auto Load |
|---|---|---|---|---|
| ~LLRF | Yes | Other | 0 | |
| D | No | Dead | 1 | |
| DS | No | Super Dead | 0 | |
| L | No | Live | 0 | |
| SX | No | Seismic | 0 | User Coefficient |
| SY | No | Seismic | 0 | User Coefficient |
| W1 | No | Wind | 0 | None |
| W2 | No | Wind | 0 | None |

### 2.2 Functions

#### 2.2.1 Response Spectrum Functions

Table 2.2 - Functions - Response Spectrum - Columbia NSR-10

| Name | Period sec | Value | Aa | Av | Ae | Ad | Group of Use | Fa | Fv | Damping Ratio |
|---|---|---|---|---|---|---|---|---|---|---|
| Santa Marta | 0 | 0,61875 | 0,15 | 0,1 | 0,1 | 0,04 | 2 | 1,5 | 2,4 | 0,05 |
| Santa Marta | 0,1 | 0,61875 | | | | | | | | |
| Santa Marta | 0,2 | 0,61875 | | | | | | | | |
| Santa Marta | 0,3 | 0,61875 | | | | | | | | |
| Santa Marta | 0,4 | 0,61875 | | | | | | | | |
| Santa Marta | 0,5 | 0,61875 | | | | | | | | |
| Santa Marta | 0,6 | 0,528 | | | | | | | | |
| Santa Marta | 0,7 | 0,452571 | | | | | | | | |
| Santa Marta | 0,8 | 0,396 | | | | | | | | |
| Santa Marta | 0,9 | 0,352 | | | | | | | | |
| Santa Marta | 1 | 0,3168 | | | | | | | | |
| Santa Marta | 1,2 | 0,264 | | | | | | | | |
| Santa Marta | 1,5 | 0,2112 | | | | | | | | |
| Santa Marta | 1,7 | 0,186353 | | | | | | | | |
| Santa Marta | 2 | 0,1584 | | | | | | | | |
| Santa Marta | 2,5 | 0,12672 | | | | | | | | |
| Santa Marta | 3 | 0,1056 | | | | | | | | |
| Santa Marta | 3,5 | 0,090514 | | | | | | | | |
| Santa Marta | 4 | 0,0792 | | | | | | | | |
| Santa Marta | 5 | 0,06336 | | | | | | | | |
| Santa Marta | 8 | 0,028512 | | | | | | | | |
| Santa Marta | 11 | 0,015081 | | | | | | | | |
| Santa Marta | 15 | 0,00811 | | | | | | | | |

### 2.3 Load Cases

Table 2.3 - Load Case Definitions - Summary

| Name | Type |
|---|---|
| Modal | Modal - Eigen |
| Dead | Linear Static |





| Name | Type |
|---|---|
| Live | Linear Static |
| SX | Response Spectrum |
| SY | Response Spectrum |
| SXEST | Linear Static |
| SYEST | Linear Static |
| DS | Linear Static |
| W1 | Linear Static |
| W2 | Linear Static |

# 3 Analysis Results

This chapter provides analysis results.

## 3.1 Structure Results

Table 3.1 - Base Reactions (Part 1 of 2)

| Output Case | Case Type | Step Type | FX tonf | FY tonf | FZ tonf | MX tonf-m | MY tonf-m | MZ tonf-m | X m |
|---|---|---|---|---|---|---|---|---|---|
| Dead | LinStatic | | 0 | 0 | 9,6112 | 42,7256 | -69,2726 | 0 | 0 |
| Live | LinStatic | | 0 | 0 | 3,4584 | 8,3182 | -24,9178 | 0 | 0 |
| SX | LinRespSpec | Max | 1,451 | 0,0014 | 0 | 0,0065 | 6,6605 | 8,9989 | 0 |
| SY | LinRespSpec | Max | 0,0014 | 1,7332 | 0 | 8,2562 | 0,0074 | 12,4825 | 0 |
| SXEST | LinStatic | | -7,2265 | 0 | 0 | 0 | -31,2044 | 34,6873 | 0 |
| SYEST | LinStatic | | 0 | -7,2265 | 0 | 31,2044 | 0 | -52,0787 | 0 |
| DS | LinStatic | | 0 | 0 | 2,075 | 4,9909 | -14,9507 | 0 | 0 |
| W1 | LinStatic | | 0 | 0 | -1,3689 | -14,093 | 9,8633 | 0 | 0 |
| W2 | LinStatic | | 0 | 0 | -2,0895 | 5,7748 | 15,0545 | 0 | 0 |
| ELS 1.0D | Combination | | 0 | 0 | 11,6862 | 47,7165 | -84,2233 | 0 | 0 |
| ELS 1.0D+1.0L | Combination | | 0 | 0 | 15,1446 | 56,0346 | -109,1411 | 0 | 0 |
| ELS 1.0D+0.75L | Combination | | 0 | 0 | 14,28 | 53,9551 | -102,9116 | 0 | 0 |
| ELS 1.0D+0.7SX | Combination | Max | 1,0157 | 0,001 | 11,6862 | 47,721 | -79,5609 | 6,2992 | 0 |
| ELS 1.0D+0.7SX | Combination | Min | -1,0157 | -0,001 | 11,6862 | 47,7119 | -88,8856 | -6,2992 | 0 |
| ELS 1.0D+0.7SY | Combination | Max | 0,001 | 1,2132 | 11,6862 | 53,4958 | -84,2181 | 8,7377 | 0 |
| ELS 1.0D+0.7SY | Combination | Min | -0,001 | -1,2132 | 11,6862 | 41,9371 | -84,2284 | -8,7377 | 0 |
| ELS 1.0D+0.75L+0.525SX | Combination | Max | 0,7618 | 0,0007 | 14,28 | 53,9585 | -99,4148 | 4,7244 | 0 |
| ELS 1.0D+0.75L+0.525SX | Combination | Min | -0,7618 | -0,0007 | 14,28 | 53,9517 | -106,4084 | -4,7244 | 0 |
| ELS 1.0D+0.75L+0.525SY | Combination | Max | 0,0007 | 0,9099 | 14,28 | 58,2896 | -102,9077 | 6,5533 | 0 |
| ELS 1.0D+0.75L+0.525SY | Combination | Min | -0,0007 | -0,9099 | 14,28 | 49,6206 | -102,9155 | -6,5533 | 0 |
| ELS 0.6D+0.7SX | Combination | Max | 1,0157 | 0,001 | 7,0117 | 28,6344 | -45,8716 | 6,2992 | 0 |
| ELS 0.6D+0.7SX | Combination | Min | -1,0157 | -0,001 | 7,0117 | 28,6253 | -55,1963 | -6,2992 | 0 |
| ELS 0.6D+0.7SY | Combination | Max | 0,001 | 1,2132 | 7,0117 | 34,4092 | -50,5288 | 8,7377 | 0 |
| ELS 0.6D+0.7SY | Combination | Min | -0,001 | -1,2132 | 7,0117 | 22,8505 | -50,5391 | -8,7377 | 0 |
| ELU 1.4D | Combination | | 0 | 0 | 16,3607 | 66,803 | -117,9126 | 0 | 0 |
| ELU 1.2D+1.6L | Combination | | 0 | 0 | 19,5569 | 70,5688 | -140,9364 | 0 | 0 |
| ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Max | 1,4514 | 0,5213 | 17,4818 | 68,0613 | -119,323 | 12,7436 | 0 |
| ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Min | -1,4514 | -0,5213 | 17,4818 | 63,0945 | -132,6484 | -12,7436 | 0 |
| ELU 1.2D+1.0L+1.0SY+0.3SX | Combination | Max | 0,4367 | 1,7336 | 17,4818 | 73,8361 | -123,9802 | 15,1821 | 0 |
| ELU 1.2D+1.0L+1.0SY+0.3SX | Combination | Min | -0,4367 | -1,7336 | 17,4818 | 57,3197 | -127,9912 | -15,1821 | 0 |
| ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Max | 1,4514 | 0,5213 | 17,4818 | 68,0613 | -119,323 | 12,7436 | 0 |
| ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Min | -1,4514 | -0,5213 | 17,4818 | 63,0945 | -132,6484 | -12,7436 | 0 |
| ELU 1.2D+1.0L+1.0SY-0.3SX | Combination | Max | 0,4367 | 1,7336 | 17,4818 | 73,8361 | -123,9802 | 15,1821 | 0 |
| ELU 1.2D+1.0L+1.0SY-0.3SX | Combination | Min | -0,4367 | -1,7336 | 17,4818 | 57,3197 | -127,9912 | -15,1821 | 0 |
| ELU 1.2D+1.0L-1.0SX+0.3SY | Combination | Max | 1,4514 | 0,5213 | 17,4818 | 68,0613 | -119,323 | 12,7436 | 0 |
| ELU 1.2D+1.0L-1.0SX+0.3SY | Combination | Min | -1,4514 | -0,5213 | 17,4818 | 63,0945 | -132,6484 | -12,7436 | 0 |
| ELU 1.2D+1.0L-1.0SY+0.3SX | Combination | Max | 0,4367 | 1,7336 | 17,4818 | 73,8361 | -123,9802 | 15,1821 | 0 |
| ELU 1.2D+1.0L-1.0SY+0.3SX | Combination | Min | -0,4367 | -1,7336 | 17,4818 | 57,3197 | -127,9912 | -15,1821 | 0 |
| ELU 1.2D+1.0L-1.0SX-0.3SY | Combination | Max | 1,4514 | 0,5213 | 17,4818 | 68,0613 | -119,323 | 12,7436 | 0 |
| ELU 1.2D+1.0L-1.0SX-0.3SY | Combination | Min | -1,4514 | -0,5213 | 17,4818 | 63,0945 | -132,6484 | -12,7436 | 0 |
| ELU 1.2D+1.0L-1.0SY-0.3SX | Combination | Max | 0,4367 | 1,7336 | 17,4818 | 73,8361 | -123,9802 | 15,1821 | 0 |
| ELU 1.2D+1.0L-1.0SY-0.3SX | Combination | Min | -0,4367 | -1,7336 | 17,4818 | 57,3197 | -127,9912 | -15,1821 | 0 |
| ELU 0.9D | Combination | | 0 | 0 | 10,5176 | 42,9448 | -75,801 | 0 | 0 |
| ELU 0.9D+1.0SX+0.3SY | Combination | Max | 1,4514 | 0,5213 | 10,5176 | 45,4282 | -69,1382 | 12,7436 | 0 |
| ELU 0.9D+1.0SX+0.3SY | Combination | Min | -1,4514 | -0,5213 | 10,5176 | 40,4614 | -82,4637 | -12,7436 | 0 |
| ELU 0.9D+1.0SY+0.3SX | Combination | Max | 0,4367 | 1,7336 | 10,5176 | 51,203 | -73,7954 | 15,1821 | 0 |
| ELU 0.9D+1.0SY+0.3SX | Combination | Min | -0,4367 | -1,7336 | 10,5176 | 34,6866 | -77,8065 | -15,1821 | 0 |
| ELU 0.9D+1.0SX-0.3SY | Combination | Max | 1,4514 | 0,5213 | 10,5176 | 45,4282 | -69,1382 | 12,7436 | 0 |
| ELU 0.9D+1.0SX-0.3SY | Combination | Min | -1,4514 | -0,5213 | 10,5176 | 40,4614 | -82,4637 | -12,7436 | 0 |





| Output Case | Case Type | Step Type | FX tonf | FY tonf | FZ tonf | MX tonf-m | MY tonf-m | MZ tonf-m | X m |
|---|---|---|---|---|---|---|---|---|---|
| ELU 0.9D+1.0SY-0.3SX | Combination | Max | 0,4367 | 1,7336 | 10,5176 | 51,203 | -73,7954 | 15,1821 | 0 |
| ELU 0.9D+1.0SY-0.3SX | Combination | Min | -0,4367 | -1,7336 | 10,5176 | 34,6866 | -77,8065 | -15,1821 | 0 |
| ELU 0.9D-1.0SX+0.3SY | Combination | Max | 1,4514 | 0,5213 | 10,5176 | 45,4282 | -69,1382 | 12,7436 | 0 |
| ELU 0.9D-1.0SX+0.3SY | Combination | Min | -1,4514 | -0,5213 | 10,5176 | 40,4614 | -82,4637 | -12,7436 | 0 |
| ELU 0.9D-1.0SY+0.3SX | Combination | Max | 0,4367 | 1,7336 | 10,5176 | 51,203 | -73,7954 | 15,1821 | 0 |
| ELU 0.9D-1.0SY+0.3SX | Combination | Min | -0,4367 | -1,7336 | 10,5176 | 34,6866 | -77,8065 | -15,1821 | 0 |
| ELU 0.9D-1.0SX-0.3SY | Combination | Max | 1,4514 | 0,5213 | 10,5176 | 45,4282 | -69,1382 | 12,7436 | 0 |
| ELU 0.9D-1.0SX-0.3SY | Combination | Min | -1,4514 | -0,5213 | 10,5176 | 40,4614 | -82,4637 | -12,7436 | 0 |
| ELU 0.9D-1.0SY-0.3SX | Combination | Max | 0,4367 | 1,7336 | 10,5176 | 51,203 | -73,7954 | 15,1821 | 0 |
| ELU 0.9D-1.0SY-0.3SX | Combination | Min | -0,4367 | -1,7336 | 10,5176 | 34,6866 | -77,8065 | -15,1821 | 0 |
| CIM 1.0D | Combination | | 0 | 0 | 11,6862 | 47,7165 | -84,2233 | 0 | 0 |
| CIM 1.0D+1.0L | Combination | | 0 | 0 | 15,1446 | 56,0346 | -109,1411 | 0 | 0 |
| CIM 0.6D | Combination | | 0 | 0 | 7,0117 | 28,6299 | -50,534 | 0 | 0 |
| CIM 0.6D+0.7SX | Combination | Max | 1,0157 | 0,001 | 7,0117 | 28,6344 | -45,8716 | 6,2992 | 0 |
| CIM 0.6D+0.7SX | Combination | Min | -1,0157 | -0,001 | 7,0117 | 28,6253 | -55,1963 | -6,2992 | 0 |
| CIM 0.6D+0.7SY | Combination | Max | 0,001 | 1,2132 | 7,0117 | 34,4092 | -50,5288 | 8,7377 | 0 |
| CIM 0.6D+0.7SY | Combination | Min | -0,001 | -1,2132 | 7,0117 | 22,8505 | -50,5391 | -8,7377 | 0 |
| CIM 1.0D+0.7SX | Combination | Max | 1,0157 | 0,001 | 11,6862 | 47,721 | -79,5609 | 6,2992 | 0 |
| CIM 1.0D+0.7SX | Combination | Min | -1,0157 | -0,001 | 11,6862 | 47,7119 | -88,8856 | -6,2992 | 0 |
| CIM 1.0D+0.7SY | Combination | Max | 0,001 | 1,2132 | 11,6862 | 53,4958 | -84,2181 | 8,7377 | 0 |
| CIM 1.0D+0.7SY | Combination | Min | -0,001 | -1,2132 | 11,6862 | 41,9371 | -84,2284 | -8,7377 | 0 |
| CIM 1.0D+0.75L+0.5SX | Combination | Max | 0,7255 | 0,0007 | 14,28 | 53,9583 | -99,5814 | 4,4994 | 0 |
| CIM 1.0D+0.75L+0.5SX | Combination | Min | -0,7255 | -0,0007 | 14,28 | 53,9518 | -106,2419 | -4,4994 | 0 |
| CIM 1.0D+0.75L+0.5SY | Combination | Max | 0,0007 | 0,8666 | 14,28 | 58,0832 | -102,9079 | 6,2412 | 0 |
| CIM 1.0D+0.75L+0.5SY | Combination | Min | -0,0007 | -0,8666 | 14,28 | 49,827 | -102,9153 | -6,2412 | 0 |
| DES 1.0D+1.0SX | Combination | Max | 1,451 | 0,0014 | 11,6862 | 47,723 | -77,5628 | 8,9989 | 0 |
| DES 1.0D+1.0SX | Combination | Min | -1,451 | -0,0014 | 11,6862 | 47,7099 | -90,8838 | -8,9989 | 0 |
| DES 1.0D+1.0SY | Combination | Max | 0,0014 | 1,7332 | 11,6862 | 55,9727 | -84,2159 | 12,4825 | 0 |
| DES 1.0D+1.0SY | Combination | Min | -0,0014 | -1,7332 | 11,6862 | 39,4602 | -84,2307 | -12,4825 | 0 |
| DES 1.0D+0.75L+0.75SX | Combination | Max | 1,0883 | 0,001 | 14,28 | 53,96 | -97,9162 | 6,7492 | 0 |
| DES 1.0D+0.75L+0.75SX | Combination | Min | -1,0883 | -0,001 | 14,28 | 53,9502 | -107,907 | -6,7492 | 0 |
| DES 1.0D+0.75L+0.75SY | Combination | Max | 0,0011 | 1,2999 | 14,28 | 60,1473 | -102,9061 | 9,3618 | 0 |
| DES 1.0D+0.75L+0.75SY | Combination | Min | -0,0011 | -1,2999 | 14,28 | 47,7629 | -102,9171 | -9,3618 | 0 |
| DES 0.6D+1.0SX | Combination | Max | 1,451 | 0,0014 | 7,0117 | 28,6364 | -43,8735 | 8,9989 | 0 |
| DES 0.6D+1.0SX | Combination | Min | -1,451 | -0,0014 | 7,0117 | 28,6234 | -57,1945 | -8,9989 | 0 |
| DES 0.6D+1.0SY | Combination | Max | 0,0014 | 1,7332 | 7,0117 | 36,8861 | -50,5266 | 12,4825 | 0 |
| DES 0.6D+1.0SY | Combination | Min | -0,0014 | -1,7332 | 7,0117 | 20,3736 | -50,5413 | -12,4825 | 0 |
| ELS 1.0D+1.0W1 | Combination | | 0 | 0 | 10,3172 | 33,6235 | -74,36 | 0 | 0 |
| ELS 1.0D+1.0W2 | Combination | | 0 | 0 | 9,5967 | 53,4913 | -69,1688 | 0 | 0 |
| ELS 1.0D+0.75W1+0.75L | Combination | | 0 | 0 | 13,2533 | 43,3854 | -95,5141 | 0 | 0 |
| ELS 1.0D+0.75W2+0.75L | Combination | | 0 | 0 | 12,7129 | 58,2862 | -91,6207 | 0 | 0 |
| ELS 0.6D+1.0W1 | Combination | | 0 | 0 | 5,6428 | 14,5369 | -40,6707 | 0 | 0 |
| ELS 0.6D+1.0W2 | Combination | | 0 | 0 | 4,9223 | 34,4047 | -35,4795 | 0 | 0 |
| ELU 1.2D+0.8W1 | Combination | | 0 | 0 | 12,9283 | 45,9854 | -93,1773 | 0 | 0 |
| ELU 1.2D+0.8W2 | Combination | | 0 | 0 | 12,3519 | 61,8796 | -89,0243 | 0 | 0 |
| ELU 0.9D+1.6W1 | Combination | | 0 | 0 | 8,3273 | 20,396 | -60,0197 | 0 | 0 |
| ELU 0.9D+1.6W2 | Combination | | 0 | 0 | 7,1745 | 52,1845 | -51,7138 | 0 | 0 |
| ELU 1.2D+1.6W1+1.0L | Combination | | 0 | 0 | 15,2915 | 43,0292 | -110,2045 | 0 | 0 |
| ELU 1.2D+1.6W2+1.0L | Combination | | 0 | 0 | 14,1387 | 74,8176 | -101,8985 | 0 | 0 |
| DStD1 | Combination | | 0 | 0 | 11,6862 | 47,7165 | -84,2233 | 0 | 0 |
| DStD2 | Combination | | 0 | 0 | 15,1446 | 56,0346 | -109,1411 | 0 | 0 |

Table 3.1 - Base Reactions (Part 2 of 2)

| Y m | Z m |
|---|---|
| 0 | 0 |
| 0 | 0 |
| 0 | 0 |

| SpecCase | ModalCase | Mode | Period sec | DampRatio | U1Acc m/sec2 | U2Acc m/sec2 | U3Acc m/sec2 | U1Amp mm | U2Amp mm | U3Amp mm |
|---|---|---|---|---|---|---|---|---|---|---|
| SX | Modal | 7 | 0,061 | 0,05 | 1,5901 | 0 | 0 | -8E-06 | 0 | 0 |
| SX | Modal | 8 | 0,057 | 0,05 | 1,5901 | 0 | 0 | 0,00064 | 0 | 0 |
| SX | Modal | 9 | 0,047 | 0,05 | 1,5901 | 0 | 0 | 1,2E-05 | 0 | 0 |
| SX | Modal | 10 | 0,047 | 0,05 | 1,5901 | 0 | 0 | -5,1E-05 | 0 | 0 |
| SX | Modal | 11 | 0,031 | 0,05 | 1,5901 | 0 | 0 | 3,376E-07 | 0 | 0 |
| SX | Modal | 12 | 0,026 | 0,05 | 1,5901 | 0 | 0 | 1E-06 | 0 | 0 |
| SX | Modal | 13 | 0,024 | 0,05 | 1,5901 | 0 | 0 | -0,000283 | 0 | 0 |
| SX | Modal | 14 | 0,023 | 0,05 | 1,5901 | 0 | 0 | 3E-06 | 0 | 0 |
| SX | Modal | 15 | 0,019 | 0,05 | 1,5901 | 0 | 0 | 2,9E-05 | 0 | 0 |
| SX | Modal | 16 | 0,018 | 0,05 | 1,5901 | 0 | 0 | 0,000908 | 0 | 0 |
| SX | Modal | 17 | 0,016 | 0,05 | 1,5901 | 0 | 0 | -3,745E-08 | 0 | 0 |
| SX | Modal | 18 | 0,016 | 0,05 | 1,5901 | 0 | 0 | 2,627E-08 | 0 | 0 |
| SX | Modal | 19 | 0,015 | 0,05 | 1,5901 | 0 | 0 | -2E-06 | 0 | 0 |
| SX | Modal | 20 | 0,013 | 0,05 | 1,5901 | 0 | 0 | -1E-06 | 0 | 0 |
| SX | Modal | 21 | 0,013 | 0,05 | 1,5901 | 0 | 0 | 1E-06 | 0 | 0 |
| SX | Modal | 22 | 0,012 | 0,05 | 1,5901 | 0 | 0 | -9,994E-08 | 0 | 0 |
| SX | Modal | 23 | 0,007 | 0,05 | 1,5901 | 0 | 0 | 6E-06 | 0 | 0 |
| SX | Modal | 24 | 0,006 | 0,05 | 1,5901 | 0 | 0 | -2,158E-08 | 0 | 0 |
| SY | Modal | 1 | 0,439 | 0,05 | 0 | 1,6493 | 0 | 0 | -25,85698 | 0 |
| SY | Modal | 2 | 0,374 | 0,05 | 0 | 1,6493 | 0 | 0 | -0,030135 | 0 |
| SY | Modal | 3 | 0,266 | 0,05 | 0 | 1,6493 | 0 | 0 | -0,001772 | 0 |
| SY | Modal | 4 | 0,099 | 0,05 | 0 | 1,6493 | 0 | 0 | -0,023574 | 0 |
| SY | Modal | 5 | 0,092 | 0,05 | 0 | 1,6493 | 0 | 0 | 1,3E-05 | 0 |
| SY | Modal | 6 | 0,074 | 0,05 | 0 | 1,6493 | 0 | 0 | -2E-05 | 0 |
| SY | Modal | 7 | 0,061 | 0,05 | 0 | 1,6493 | 0 | 0 | -0,094355 | 0 |
| SY | Modal | 8 | 0,057 | 0,05 | 0 | 1,6493 | 0 | 0 | -0,000551 | 0 |
| SY | Modal | 9 | 0,047 | 0,05 | 0 | 1,6493 | 0 | 0 | 0,033535 | 0 |
| SY | Modal | 10 | 0,047 | 0,05 | 0 | 1,6493 | 0 | 0 | 0,007869 | 0 |
| SY | Modal | 11 | 0,031 | 0,05 | 0 | 1,6493 | 0 | 0 | -0,000419 | 0 |
| SY | Modal | 12 | 0,026 | 0,05 | 0 | 1,6493 | 0 | 0 | -1E-06 | 0 |
| SY | Modal | 13 | 0,024 | 0,05 | 0 | 1,6493 | 0 | 0 | -2,276E-07 | 0 |
| SY | Modal | 14 | 0,023 | 0,05 | 0 | 1,6493 | 0 | 0 | 1,5E-05 | 0 |
| SY | Modal | 15 | 0,019 | 0,05 | 0 | 1,6493 | 0 | 0 | -1,752E-07 | 0 |
| SY | Modal | 16 | 0,018 | 0,05 | 0 | 1,6493 | 0 | 0 | 3,731E-08 | 0 |
| SY | Modal | 17 | 0,016 | 0,05 | 0 | 1,6493 | 0 | 0 | 3,3E-05 | 0 |
| SY | Modal | 18 | 0,016 | 0,05 | 0 | 1,6493 | 0 | 0 | -0,001124 | 0 |
| SY | Modal | 19 | 0,015 | 0,05 | 0 | 1,6493 | 0 | 0 | -9E-06 | 0 |
| SY | Modal | 20 | 0,013 | 0,05 | 0 | 1,6493 | 0 | 0 | 0,000297 | 0 |
| SY | Modal | 21 | 0,013 | 0,05 | 0 | 1,6493 | 0 | 0 | 0,000346 | 0 |
| SY | Modal | 22 | 0,012 | 0,05 | 0 | 1,6493 | 0 | 0 | 1,032E-07 | 0 |
| SY | Modal | 23 | 0,007 | 0,05 | 0 | 1,6493 | 0 | 0 | -3,341E-12 | 0 |
| SY | Modal | 24 | 0,006 | 0,05 | 0 | 1,6493 | 0 | 0 | 1,286E-10 | 0 |

3.2 Story Results

Table 3.3 - Story Drifts

| Story | Output Case | Case Type | Step Type | Direction | Drift | Label | X m | Y m | Z m |
|---|---|---|---|---|---|---|---|---|---|
| Story2 | Dead | LinStatic | | Y | 0,001869 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | Live | LinStatic | | Y | 0,004704 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | SX | LinRespSpec | Max | X | 0,00028 | 1 | 0 | 4,8 | 4,8 |
| Story2 | SX | LinRespSpec | Max | Y | 0,000991 | 4 | 14,41 | 4,8 | 4,8 |
| Story2 | SY | LinRespSpec | Max | Y | 0,002514 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | SXEST | LinStatic | | X | 0,001283 | 1 | 0 | 4,8 | 4,8 |
| Story2 | SYEST | LinStatic | | Y | 0,008646 | 2 | 4,74 | 4,8 | 4,8 |





| Story | Output Case | Case Type | Step Type | Direction | Drift | Label | X m | Y m | Z m |
|---|---|---|---|---|---|---|---|---|---|
| Story2 | DS | LinStatic | | Y | 0,002823 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | W1 | LinStatic | | Y | 0,004254 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | W2 | LinStatic | | Y | 0,008958 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELS 1.0D | Combination | | Y | 0,004692 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELS 1.0D+1.0L | Combination | | Y | 0,009396 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELS 1.0D+0.75L | Combination | | Y | 0,00822 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELS 1.0D+0.7SX | Combination | Max | Y | 0,004437 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELS 1.0D+0.7SX | Combination | Min | Y | 0,005034 | 1 | 0 | 4,8 | 4,8 |
| Story2 | ELS 1.0D+0.7SY | Combination | Max | Y | 0,002932 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELS 1.0D+0.7SY | Combination | Min | Y | 0,006452 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELS 1.0D+0.75L+0.525SX | Combination | Max | Y | 0,008029 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELS 1.0D+0.75L+0.525SX | Combination | Min | Y | 0,008411 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELS 1.0D+0.75L+0.525SY | Combination | Max | Y | 0,0069 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELS 1.0D+0.75L+0.525SY | Combination | Min | Y | 0,00954 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELS 0.6D+0.7SX | Combination | Max | Y | 0,00256 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELS 0.6D+0.7SX | Combination | Min | Y | 0,003298 | 1 | 0 | 4,8 | 4,8 |
| Story2 | ELS 0.6D+0.7SY | Combination | Max | Y | 0,001055 | 3 | 9,69 | 4,8 | 4,8 |
| Story2 | ELS 0.6D+0.7SY | Combination | Min | Y | 0,004575 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 1.4D | Combination | | Y | 0,006568 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 1.2D+1.6L | Combination | | Y | 0,013157 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Max | Y | 0,009216 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Min | Y | 0,011452 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 1.2D+1.0L+1.0SY+0.3SX | Combination | Max | Y | 0,007711 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 1.2D+1.0L+1.0SY+0.3SX | Combination | Min | Y | 0,012957 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 1.2D+1.0L-1.0SX+0.3SY | Combination | Max | Y | 0,009216 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 1.2D+1.0L-1.0SX+0.3SY | Combination | Min | Y | 0,011452 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 1.2D+1.0L-1.0SY+0.3SX | Combination | Max | Y | 0,007711 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 1.2D+1.0L-1.0SY+0.3SX | Combination | Min | Y | 0,012957 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Max | Y | 0,009216 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Min | Y | 0,011452 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 1.2D+1.0L+1.0SY-0.3SX | Combination | Max | Y | 0,007711 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 1.2D+1.0L+1.0SY-0.3SX | Combination | Min | Y | 0,012957 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 0.9D | Combination | | Y | 0,004222 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 0.9D+1.0SX+0.3SY | Combination | Max | X | 0,000427 | 1 | 0 | 4,8 | 4,8 |
| Story2 | ELU 0.9D+1.0SX+0.3SY | Combination | Max | Y | 0,003104 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 0.9D+1.0SX+0.3SY | Combination | Min | Y | 0,005636 | 1 | 0 | 4,8 | 4,8 |
| Story2 | ELU 0.9D+1.0SY+0.3SX | Combination | Max | Y | 0,001599 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 0.9D+1.0SY+0.3SX | Combination | Min | Y | 0,006846 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 0.9D+1.0SX-0.3SY | Combination | Max | X | 0,000427 | 1 | 0 | 4,8 | 4,8 |
| Story2 | ELU 0.9D+1.0SX-0.3SY | Combination | Max | Y | 0,003104 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 0.9D+1.0SX-0.3SY | Combination | Min | Y | 0,005636 | 1 | 0 | 4,8 | 4,8 |
| Story2 | ELU 0.9D+1.0SY-0.3SX | Combination | Max | Y | 0,001599 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 0.9D+1.0SY-0.3SX | Combination | Min | Y | 0,006846 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 0.9D-1.0SX+0.3SY | Combination | Max | X | 0,000427 | 1 | 0 | 4,8 | 4,8 |
| Story2 | ELU 0.9D-1.0SX+0.3SY | Combination | Max | Y | 0,003104 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 0.9D-1.0SX+0.3SY | Combination | Min | Y | 0,005636 | 1 | 0 | 4,8 | 4,8 |
| Story2 | ELU 0.9D-1.0SY+0.3SX | Combination | Max | Y | 0,001599 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 0.9D-1.0SY+0.3SX | Combination | Min | Y | 0,006846 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 0.9D-1.0SX-0.3SY | Combination | Max | X | 0,000427 | 1 | 0 | 4,8 | 4,8 |
| Story2 | ELU 0.9D-1.0SX-0.3SY | Combination | Max | Y | 0,003104 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 0.9D-1.0SX-0.3SY | Combination | Min | Y | 0,005636 | 1 | 0 | 4,8 | 4,8 |





| Story | Output Case | Case Type | Step Type | Direction | Drift | Label | X m | Y m | Z m |
|---|---|---|---|---|---|---|---|---|---|
| Story2 | ELU 0.9D-1.0SY-0.3SX | Combination | Max | Y | 0,001599 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 0.9D-1.0SY-0.3SX | Combination | Min | Y | 0,006846 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | CIM 1.0D | Combination | | Y | 0,004692 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | CIM 1.0D+1.0L | Combination | | Y | 0,009396 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | CIM 0,6D | Combination | | Y | 0,002815 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | CIM 0,6D+0.7SX | Combination | Max | Y | 0,00256 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | CIM 0,6D+0.7SX | Combination | Min | Y | 0,003298 | 1 | 0 | 4,8 | 4,8 |
| Story2 | CIM 0,6D+0.7SY | Combination | Max | Y | 0,001055 | 3 | 9,69 | 4,8 | 4,8 |
| Story2 | CIM 0,6D+0.7SY | Combination | Min | Y | 0,004575 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | CIM 1.0D+0.7SX | Combination | Max | Y | 0,004437 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | CIM 1.0D+0.7SX | Combination | Min | Y | 0,005034 | 1 | 0 | 4,8 | 4,8 |
| Story2 | CIM 1.0D+0.7SY | Combination | Max | Y | 0,002932 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | CIM 1.0D+0.7SY | Combination | Min | Y | 0,006452 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | CIM 1.0D+0.75L+0.5SX | Combination | Max | Y | 0,008038 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | CIM 1.0D+0.75L+0.5SX | Combination | Min | Y | 0,008402 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | CIM 1.0D+0.75L+0.5SY | Combination | Max | Y | 0,006963 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | CIM 1.0D+0.75L+0.5SY | Combination | Min | Y | 0,009477 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | DES 1.0D+1.0SX | Combination | Max | Y | 0,004328 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | DES 1.0D+1.0SX | Combination | Min | Y | 0,005331 | 1 | 0 | 4,8 | 4,8 |
| Story2 | DES 1.0D+1.0SY | Combination | Max | Y | 0,002177 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | DES 1.0D+1.0SY | Combination | Min | Y | 0,007206 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | DES 1.0D+0.75L+0.75SX | Combination | Max | Y | 0,007947 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | DES 1.0D+0.75L+0.75SX | Combination | Min | Y | 0,008493 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | DES 1.0D+0.75L+0.75SY | Combination | Max | Y | 0,006334 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | DES 1.0D+0.75L+0.75SY | Combination | Min | Y | 0,010105 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | DES 0.6D+1.0SX | Combination | Max | X | 0,000377 | 1 | 0 | 4,8 | 4,8 |
| Story2 | DES 0.6D+1.0SX | Combination | Max | Y | 0,002451 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | DES 0.6D+1.0SX | Combination | Min | Y | 0,003595 | 1 | 0 | 4,8 | 4,8 |
| Story2 | DES 0.6D+1.0SY | Combination | Max | Y | 0,000302 | 3 | 9,69 | 4,8 | 4,8 |
| Story2 | DES 0.6D+1.0SY | Combination | Min | Y | 0,005329 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELS 1.0D+1.0W1 | Combination | | Y | 0,008945 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELS 1.0D+1.0W2 | Combination | | Y | 0,004267 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELS 1.0D+0.75W1+0.75L | Combination | | Y | 0,01141 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELS 1.0D+0.75W2+0.75L | Combination | | Y | 0,001501 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELS 0.6D+1.0W1 | Combination | | Y | 0,007069 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELS 0.6D+1.0W2 | Combination | | Y | 0,006143 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 1.2D+0.8W1 | Combination | | Y | 0,009033 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 1.2D+0.8W2 | Combination | | Y | 0,001537 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 0.9D+1.6W1 | Combination | | Y | 0,011029 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 0.9D+1.6W2 | Combination | | Y | 0,010111 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 1.2D+1.6W1+1.0L | Combination | | Y | 0,01714 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | ELU 1.2D+1.6W2+1.0L | Combination | | Y | 0,003999 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | DStID1 | Combination | | Y | 0,004692 | 2 | 4,74 | 4,8 | 4,8 |
| Story2 | DStID2 | Combination | | Y | 0,009396 | 2 | 4,74 | 4,8 | 4,8 |
| Story1 | Dead | LinStatic | | Y | 0,000892 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | Live | LinStatic | | Y | 0,002178 | 1 | 0 | 4,8 | 4,1 |
| Story1 | SX | LinRespSpec | Max | X | 0,000606 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | SX | LinRespSpec | Max | Y | 0,000676 | 4 | 14,41 | 4,8 | 4,1 |
| Story1 | SY | LinRespSpec | Max | Y | 0,001569 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | SXEST | LinStatic | | X | 0,002991 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | SYEST | LinStatic | | Y | 0,005689 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | DS | LinStatic | | Y | 0,001307 | 1 | 0 | 4,8 | 4,1 |
| Story1 | W1 | LinStatic | | Y | 0,001987 | 1 | 0 | 4,8 | 4,1 |
| Story1 | W2 | LinStatic | | Y | 0,004165 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELS 1.0D | Combination | | Y | 0,002198 | 1 | 0 | 4,8 | 4,1 |





| Story | Output Case | Case Type | Step Type | Direction | Drift | Label | X m | Y m | Z m |
|---|---|---|---|---|---|---|---|---|---|
| Story1 | ELS 1.0D+1.0L | Combination | | Y | 0,004376 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELS 1.0D+0.75L | Combination | | Y | 0,003832 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELS 1.0D+0.7SX | Combination | Max | X | 0,000424 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELS 1.0D+0.7SX | Combination | Max | Y | 0,00202 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELS 1.0D+0.7SX | Combination | Min | X | 0,000424 | 3 | 9,69 | 4,8 | 4,1 |
| Story1 | ELS 1.0D+0.7SX | Combination | Min | Y | 0,002671 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELS 1.0D+0.7SY | Combination | Max | Y | 0,001131 | 4 | 14,41 | 4,8 | 4,1 |
| Story1 | ELS 1.0D+0.7SY | Combination | Min | Y | 0,003283 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELS 1.0D+0.75L+0.525SX | Combination | Max | Y | 0,003678 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELS 1.0D+0.75L+0.525SX | Combination | Min | Y | 0,004186 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELS 1.0D+0.75L+0.525SY | Combination | Max | Y | 0,00303 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELS 1.0D+0.75L+0.525SY | Combination | Min | Y | 0,004633 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELS 0.6D+0.7SX | Combination | Max | X | 0,000424 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELS 0.6D+0.7SX | Combination | Max | Y | 0,001146 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELS 0.6D+0.7SX | Combination | Min | X | 0,000424 | 3 | 9,69 | 4,8 | 4,1 |
| Story1 | ELS 0.6D+0.7SX | Combination | Min | Y | 0,001792 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELS 0.6D+0.7SY | Combination | Max | Y | 0,000252 | 4 | 14,41 | 4,8 | 4,1 |
| Story1 | ELS 0.6D+0.7SY | Combination | Min | Y | 0,002409 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 1.4D | Combination | | Y | 0,003077 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELU 1.2D+1.6L | Combination | | Y | 0,006123 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Max | X | 0,000606 | 3 | 9,69 | 4,8 | 4,1 |
| Story1 | ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Max | Y | 0,004071 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Min | X | 0,000606 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Min | Y | 0,005949 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELU 1.2D+1.0L+1.0SY+0.3SX | Combination | Max | Y | 0,003139 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 1.2D+1.0L+1.0SY+0.3SX | Combination | Min | Y | 0,006545 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Max | X | 0,000606 | 3 | 9,69 | 4,8 | 4,1 |
| Story1 | ELU 1.2D+1.0L-1.0SX+0.3SY | Combination | Max | Y | 0,004071 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 1.2D+1.0L-1.0SX+0.3SY | Combination | Max | X | 0,000606 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 1.2D+1.0L-1.0SX+0.3SY | Combination | Min | Y | 0,005949 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELU 1.2D+1.0L-1.0SY+0.3SX | Combination | Max | Y | 0,003139 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 1.2D+1.0L-1.0SY+0.3SX | Combination | Min | Y | 0,006545 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Max | X | 0,000606 | 3 | 9,69 | 4,8 | 4,1 |
| Story1 | ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Max | Y | 0,004071 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Min | X | 0,000606 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Min | Y | 0,005949 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELU 1.2D+1.0L+1.0SY-0.3SX | Combination | Max | Y | 0,003139 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 1.2D+1.0L+1.0SY-0.3SX | Combination | Min | Y | 0,006545 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELU 0.9D | Combination | | Y | 0,001978 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELU 0.9D+1.0SX+0.3SY | Combination | Max | X | 0,000606 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 0.9D+1.0SX+0.3SY | Combination | Max | Y | 0,00126 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 0.9D+1.0SX+0.3SY | Combination | Min | X | 0,000606 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 0.9D+1.0SX+0.3SY | Combination | Min | Y | 0,003112 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELU 0.9D+1.0SY+0.3SX | Combination | Max | X | 0,000183 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 0.9D+1.0SY+0.3SX | Combination | Max | Y | 0,000328 | 3 | 9,69 | 4,8 | 4,1 |
| Story1 | ELU 0.9D+1.0SY+0.3SX | Combination | Min | Y | 0,003708 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELU 0.9D+1.0SX-0.3SY | Combination | Max | X | 0,000606 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 0.9D+1.0SX-0.3SY | Combination | Max | Y | 0,00126 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 0.9D+1.0SX-0.3SY | Combination | Min | X | 0,000606 | 2 | 4,74 | 4,8 | 4,1 |

| Story | Output Case | Case Type | Step Type | Direction | Drift | Label | X m | Y m | Z m |
|---|---|---|---|---|---|---|---|---|---|
| Story1 | ELU 0.9D+1.0SX-0.3SY | Combination | Min | Y | 0,003112 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELU 0.9D+1.0SY-0.3SX | Combination | Max | X | 0,000183 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 0.9D+1.0SY-0.3SX | Combination | Max | Y | 0,000328 | 3 | 9,69 | 4,8 | 4,1 |
| Story1 | ELU 0.9D+1.0SY-0.3SX | Combination | Min | Y | 0,003708 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELU 0.9D-1.0SX+0.3SY | Combination | Max | X | 0,000606 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 0.9D-1.0SX+0.3SY | Combination | Max | Y | 0,00126 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 0.9D-1.0SX+0.3SY | Combination | Min | X | 0,000606 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 0.9D-1.0SX+0.3SY | Combination | Min | Y | 0,003112 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELU 0.9D-1.0SY+0.3SX | Combination | Max | X | 0,000183 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 0.9D-1.0SY+0.3SX | Combination | Max | Y | 0,000328 | 3 | 9,69 | 4,8 | 4,1 |
| Story1 | ELU 0.9D-1.0SY+0.3SX | Combination | Min | Y | 0,003708 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELU 0.9D-1.0SX-0.3SY | Combination | Max | X | 0,000606 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 0.9D-1.0SX-0.3SY | Combination | Max | Y | 0,00126 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 0.9D-1.0SX-0.3SY | Combination | Min | X | 0,000606 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 0.9D-1.0SX-0.3SY | Combination | Min | Y | 0,003112 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELU 0.9D-1.0SY-0.3SX | Combination | Max | X | 0,000183 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELU 0.9D-1.0SY-0.3SX | Combination | Max | Y | 0,000328 | 3 | 9,69 | 4,8 | 4,1 |
| Story1 | ELU 0.9D-1.0SY-0.3SX | Combination | Min | Y | 0,003708 | 1 | 0 | 4,8 | 4,1 |
| Story1 | CIM 1.0D | Combination | | Y | 0,002198 | 1 | 0 | 4,8 | 4,1 |
| Story1 | CIM 1.0D+1.0L | Combination | | Y | 0,004376 | 1 | 0 | 4,8 | 4,1 |
| Story1 | CIM 0,6D | Combination | | Y | 0,001319 | 1 | 0 | 4,8 | 4,1 |
| Story1 | CIM 0.6D+0.7SX | Combination | Max | X | 0,000424 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | CIM 0.6D+0.7SX | Combination | Max | Y | 0,001146 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | CIM 0.6D+0.7SX | Combination | Min | X | 0,000424 | 3 | 9,69 | 4,8 | 4,1 |
| Story1 | CIM 0.6D+0.7SX | Combination | Min | Y | 0,001792 | 1 | 0 | 4,8 | 4,1 |
| Story1 | CIM 0.6D+0.7SY | Combination | Max | Y | 0,000252 | 4 | 14,41 | 4,8 | 4,1 |
| Story1 | CIM 0.6D+0.7SY | Combination | Min | Y | 0,002409 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | CIM 1.0D+0.7SX | Combination | Max | X | 0,000424 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | CIM 1.0D+0.7SX | Combination | Max | Y | 0,00202 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | CIM 1.0D+0.7SX | Combination | Min | X | 0,000424 | 3 | 9,69 | 4,8 | 4,1 |
| Story1 | CIM 1.0D+0.7SX | Combination | Min | Y | 0,002671 | 1 | 0 | 4,8 | 4,1 |
| Story1 | CIM 1.0D+0.7SY | Combination | Max | Y | 0,001131 | 4 | 14,41 | 4,8 | 4,1 |
| Story1 | CIM 1.0D+0.7SY | Combination | Min | Y | 0,003283 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | CIM 1.0D+0.75L+0.5SX | Combination | Max | Y | 0,003684 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | CIM 1.0D+0.75L+0.5SX | Combination | Min | Y | 0,004169 | 1 | 0 | 4,8 | 4,1 |
| Story1 | CIM 1.0D+0.75L+0.5SY | Combination | Max | Y | 0,003068 | 1 | 0 | 4,8 | 4,1 |
| Story1 | CIM 1.0D+0.75L+0.5SY | Combination | Min | Y | 0,004595 | 1 | 0 | 4,8 | 4,1 |
| Story1 | DES 1.0D+1.0SX | Combination | Max | X | 0,000606 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | DES 1.0D+1.0SX | Combination | Max | Y | 0,001949 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | DES 1.0D+1.0SX | Combination | Min | X | 0,000606 | 3 | 9,69 | 4,8 | 4,1 |
| Story1 | DES 1.0D+1.0SX | Combination | Min | Y | 0,002874 | 1 | 0 | 4,8 | 4,1 |
| Story1 | DES 1.0D+1.0SY | Combination | Max | Y | 0,000674 | 4 | 14,41 | 4,8 | 4,1 |
| Story1 | DES 1.0D+1.0SY | Combination | Min | Y | 0,003754 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | DES 1.0D+0.75L+0.75SX | Combination | Max | X | 0,000454 | 3 | 9,69 | 4,8 | 4,1 |
| Story1 | DES 1.0D+0.75L+0.75SX | Combination | Max | Y | 0,003625 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | DES 1.0D+0.75L+0.75SX | Combination | Min | X | 0,000454 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | DES 1.0D+0.75L+0.75SX | Combination | Min | Y | 0,004338 | 1 | 0 | 4,8 | 4,1 |
| Story1 | DES 1.0D+0.75L+0.75SY | Combination | Max | Y | 0,002687 | 1 | 0 | 4,8 | 4,1 |
| Story1 | DES 1.0D+0.75L+0.75SY | Combination | Min | Y | 0,004979 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | DES 0.6D+1.0SX | Combination | Max | X | 0,000606 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | DES 0.6D+1.0SX | Combination | Max | Y | 0,001075 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | DES 0.6D+1.0SX | Combination | Min | X | 0,000606 | 3 | 9,69 | 4,8 | 4,1 |
| Story1 | DES 0.6D+1.0SX | Combination | Min | Y | 0,001994 | 1 | 0 | 4,8 | 4,1 |
| Story1 | DES 0.6D+1.0SY | Combination | Max | Y | 0,000257 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | DES 0.6D+1.0SY | Combination | Min | Y | 0,00288 | 2 | 4,74 | 4,8 | 4,1 |





| Story | Output Case | Case Type | Step Type | Direction | Drift | Label | X m | Y m | Z m |
|---|---|---|---|---|---|---|---|---|---|
| Story1 | ELS 1.0D+1.0W1 | Combination | | Y | 0,004185 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELS 1.0D+1.0W2 | Combination | | Y | 0,001967 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELS 1.0D+0.75W1+0.75L | Combination | | Y | 0,005322 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELS 1.0D+0.75W2+0.75L | Combination | | Y | 0,000723 | 2 | 4,74 | 4,8 | 4,1 |
| Story1 | ELS 0.6D+1.0W1 | Combination | | Y | 0,003306 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELS 0.6D+1.0W2 | Combination | | Y | 0,002846 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELU 1.2D+0.8W1 | Combination | | Y | 0,004227 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELU 1.2D+0.8W2 | Combination | | Y | 0,000695 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELU 0.9D+1.6W1 | Combination | | Y | 0,005157 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELU 0.9D+1.6W2 | Combination | | Y | 0,004686 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELU 1.2D+1.6W1+1.0L | Combination | | Y | 0,007995 | 1 | 0 | 4,8 | 4,1 |
| Story1 | ELU 1.2D+1.6W2+1.0L | Combination | | Y | 0,001848 | 1 | 0 | 4,8 | 4,1 |
| Story1 | DStlD1 | Combination | | Y | 0,002198 | 1 | 0 | 4,8 | 4,1 |
| Story1 | DStlD2 | Combination | | Y | 0,004376 | 1 | 0 | 4,8 | 4,1 |

Table 3.4 - Story Forces (Part 1 of 2)

| Story | Location | Output Case | Case Type | Step Type | P tonf | VX tonf | VY tonf | T tonf-m |
|---|---|---|---|---|---|---|---|---|
| Story3 | Top | Dead | LinStatic | | 0,0681 | 0 | 0 | 0 |
| Story3 | Bottom | Dead | LinStatic | | -0,8746 | 0 | 0 | -1,057E-05 |
| Story3 | Top | Live | LinStatic | | 0,3602 | 0 | 0 | 0 |
| Story3 | Bottom | Live | LinStatic | | -2,2031 | 0 | 0 | -0,0002 |
| Story3 | Top | SX | LinRespSpec | Max | 0 | 0,3132 | 0,0004 | 1,2133 |
| Story3 | Bottom | SX | LinRespSpec | Max | 0,0003 | 0 | 0 | 0,1205 |
| Story3 | Top | SY | LinRespSpec | Max | 0 | 0,0008 | 0,5253 | 3,7828 |
| Story3 | Bottom | SY | LinRespSpec | Max | 0,3691 | 0 | 0 | 0,0001 |
| Story3 | Top | SXEST | LinStatic | | 0 | 0 | 0 | 0 |
| Story3 | Bottom | SXEST | LinStatic | | 2,325E-06 | 0 | 0 | 0,0706 |
| Story3 | Top | SYEST | LinStatic | | 0 | 0 | 0 | 0 |
| Story3 | Bottom | SYEST | LinStatic | | -0,0058 | 0 | 0 | 0,0002 |
| Story3 | Top | DS | LinStatic | | 0,2162 | 0 | 0 | 0 |
| Story3 | Bottom | DS | LinStatic | | -1,3219 | 0 | 0 | -0,0001 |
| Story3 | Top | W1 | LinStatic | | 0,7205 | 0 | 0 | 0 |
| Story3 | Bottom | W1 | LinStatic | | -5,6642 | 0 | 0 | -0,0002 |
| Story3 | Top | W2 | LinStatic | | -1,0808 | 0 | 0 | 0 |
| Story3 | Bottom | W2 | LinStatic | | 7,8673 | 0 | 0 | 0,0004 |
| Story3 | Top | ELS 1.0D | Combination | | 0,2843 | 0 | 0 | 0 |
| Story3 | Bottom | ELS 1.0D | Combination | | -2,1965 | 0 | 0 | -0,0001 |
| Story3 | Top | ELS 1.0D+1.0L | Combination | | 0,6445 | 0 | 0 | 0 |
| Story3 | Bottom | ELS 1.0D+1.0L | Combination | | -4,3996 | 0 | 0 | -0,0003 |
| Story3 | Top | ELS 1.0D+0.75L | Combination | | 0,5545 | 0 | 0 | 0 |
| Story3 | Bottom | ELS 1.0D+0.75L | Combination | | -3,8488 | 0 | 0 | -0,0003 |
| Story3 | Top | ELS 1.0D+0.7SX | Combination | Max | 0,2843 | 0,2192 | 0,0003 | 0,8493 |
| Story3 | Bottom | ELS 1.0D+0.7SX | Combination | Max | -2,1963 | 0 | 0 | 0,0843 |
| Story3 | Top | ELS 1.0D+0.7SX | Combination | Min | 0,2843 | -0,2192 | -0,0003 | -0,8493 |
| Story3 | Bottom | ELS 1.0D+0.7SX | Combination | Min | -2,1967 | 0 | 0 | -0,0845 |
| Story3 | Top | ELS 1.0D+0.7SY | Combination | Max | 0,2843 | 0,0006 | 0,3677 | 2,6479 |
| Story3 | Bottom | ELS 1.0D+0.7SY | Combination | Max | -1,9381 | 0 | 0 | -0,0001 |
| Story3 | Top | ELS 1.0D+0.7SY | Combination | Min | 0,2843 | -0,0006 | -0,3677 | -2,6479 |
| Story3 | Bottom | ELS 1.0D+0.7SY | Combination | Min | -2,4548 | 0 | 0 | -0,0002 |
| Story3 | Top | ELS 1.0D+0.75L+0.525SX | Combination | Max | 0,5545 | 0,1644 | 0,0002 | 0,637 |
| Story3 | Bottom | ELS 1.0D+0.75L+0.525SX | Combination | Max | -3,8487 | 0 | 0 | 0,063 |
| Story3 | Top | ELS 1.0D+0.75L+0.525SX | Combination | Min | 0,5545 | -0,1644 | -0,0002 | -0,637 |
| Story3 | Bottom | ELS 1.0D+0.75L+0.525SX | Combination | Min | -3,849 | 0 | 0 | -0,0636 |
| Story3 | Top | ELS 1.0D+0.75L+0.525SY | Combination | Max | 0,5545 | 0,0004 | 0,2758 | 1,9859 |





| Story | Location | Output Case | Case Type | Step Type | P tonf | VX tonf | VY tonf | T tonf-m |
|---|---|---|---|---|---|---|---|---|
| Story3 | Bottom | ELS 1.0D+0.75L+0.525SY | Combination | Max | -3,6551 | 0 | 0 | -0,0002 |
| Story3 | Top | ELS 1.0D+0.75L+0.525SY | Combination | Min | 0,5545 | -0,0004 | -0,2758 | -1,9859 |
| Story3 | Bottom | ELS 1.0D+0.75L+0.525SY | Combination | Min | -4,0426 | 0 | 0 | -0,0003 |
| Story3 | Top | ELS 0.6D+0.7SX | Combination | Max | 0,1706 | 0,2192 | 0,0003 | 0,8493 |
| Story3 | Bottom | ELS 0.6D+0.7SX | Combination | Max | -1,3177 | 0 | 0 | 0,0843 |
| Story3 | Top | ELS 0.6D+0.7SX | Combination | Min | 0,1706 | -0,2192 | -0,0003 | -0,8493 |
| Story3 | Bottom | ELS 0.6D+0.7SX | Combination | Min | -1,3181 | 0 | 0 | -0,0845 |
| Story3 | Top | ELS 0.6D+0.7SY | Combination | Max | 0,1706 | 0,0006 | 0,3677 | 2,6479 |
| Story3 | Bottom | ELS 0.6D+0.7SY | Combination | Max | -1,0595 | 0 | 0 | -9,858E-07 |
| Story3 | Top | ELS 0.6D+0.7SY | Combination | Min | 0,1706 | -0,0006 | -0,3677 | -2,6479 |
| Story3 | Bottom | ELS 0.6D+0.7SY | Combination | Min | -1,5762 | 0 | 0 | -0,0002 |
| Story3 | Top | ELU 1.4D | Combination | | 0,398 | 0 | 0 | 0 |
| Story3 | Bottom | ELU 1.4D | Combination | | -3,075 | 0 | 0 | -0,0002 |
| Story3 | Top | ELU 1.2D+1.6L | Combination | | 0,9175 | 0 | 0 | 0 |
| Story3 | Bottom | ELU 1.2D+1.6L | Combination | | -6,1608 | 0 | 0 | -0,0005 |
| Story3 | Top | ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Max | 0,7014 | 0,3135 | 0,158 | 2,3481 |
| Story3 | Bottom | ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Max | -4,7279 | 0 | 0 | 0,1202 |
| Story3 | Top | ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Min | 0,7014 | -0,3135 | -0,158 | -2,3481 |
| Story3 | Bottom | ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Min | -4,9499 | 0 | 0 | -0,1209 |
| Story3 | Top | ELU 1.2D+1.0L+1.0SY+0.3SX | Combination | Max | 0,7014 | 0,0948 | 0,5254 | 4,1467 |
| Story3 | Bottom | ELU 1.2D+1.0L+1.0SY+0.3SX | Combination | Max | -4,4697 | 0 | 0 | 0,0359 |
| Story3 | Top | ELU 1.2D+1.0L+1.0SY+0.3SX | Combination | Min | 0,7014 | -0,0948 | -0,5254 | -4,1467 |
| Story3 | Bottom | ELU 1.2D+1.0L+1.0SY+0.3SX | Combination | Min | -5,208 | 0 | 0 | -0,0366 |
| Story3 | Top | ELU 1.2D+1.0L-1.0SX+0.3SY | Combination | Max | 0,7014 | 0,3135 | 0,158 | 2,3481 |
| Story3 | Bottom | ELU 1.2D+1.0L-1.0SX+0.3SY | Combination | Max | -4,7279 | 0 | 0 | 0,1202 |
| Story3 | Top | ELU 1.2D+1.0L-1.0SX+0.3SY | Combination | Min | 0,7014 | -0,3135 | -0,158 | -2,3481 |
| Story3 | Bottom | ELU 1.2D+1.0L-1.0SX+0.3SY | Combination | Min | -4,9499 | 0 | 0 | -0,1209 |
| Story3 | Top | ELU 1.2D+1.0L-1.0SY+0.3SX | Combination | Max | 0,7014 | 0,0948 | 0,5254 | 4,1467 |
| Story3 | Bottom | ELU 1.2D+1.0L-1.0SY+0.3SX | Combination | Max | -4,4697 | 0 | 0 | 0,0359 |
| Story3 | Top | ELU 1.2D+1.0L-1.0SY+0.3SX | Combination | Min | 0,7014 | -0,0948 | -0,5254 | -4,1467 |
| Story3 | Bottom | ELU 1.2D+1.0L-1.0SY+0.3SX | Combination | Min | -5,208 | 0 | 0 | -0,0366 |
| Story3 | Top | ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Max | 0,7014 | 0,3135 | 0,158 | 2,3481 |
| Story3 | Bottom | ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Max | -4,7279 | 0 | 0 | 0,1202 |
| Story3 | Top | ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Min | 0,7014 | -0,3135 | -0,158 | -2,3481 |
| Story3 | Bottom | ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Min | -4,9499 | 0 | 0 | -0,1209 |
| Story3 | Top | ELU 1.2D+1.0L+1.0SY-0.3SX | Combination | Max | 0,7014 | 0,0948 | 0,5254 | 4,1467 |
| Story3 | Bottom | ELU 1.2D+1.0L+1.0SY-0.3SX | Combination | Max | -4,4697 | 0 | 0 | 0,0359 |
| Story3 | Top | ELU 1.2D+1.0L+1.0SY-0.3SX | Combination | Min | 0,7014 | -0,0948 | -0,5254 | -4,1467 |
| Story3 | Bottom | ELU 1.2D+1.0L+1.0SY-0.3SX | Combination | Min | -5,208 | 0 | 0 | -0,0366 |
| Story3 | Top | ELU 1.2D+1.0L-1.0SX-0.3SY | Combination | Max | 0,7014 | 0,3135 | 0,158 | 2,3481 |
| Story3 | Bottom | ELU 1.2D+1.0L-1.0SX-0.3SY | Combination | Max | -4,7279 | 0 | 0 | 0,1202 |
| Story3 | Top | ELU 1.2D+1.0L-1.0SX-0.3SY | Combination | Min | 0,7014 | -0,3135 | -0,158 | -2,3481 |
| Story3 | Bottom | ELU 1.2D+1.0L-1.0SX-0.3SY | Combination | Min | -4,9499 | 0 | 0 | -0,1209 |
| Story3 | Top | ELU 1.2D+1.0L-1.0SY-0.3SX | Combination | Max | 0,7014 | 0,0948 | 0,5254 | 4,1467 |
| Story3 | Bottom | ELU 1.2D+1.0L-1.0SY-0.3SX | Combination | Max | -4,4697 | 0 | 0 | 0,0359 |
| Story3 | Top | ELU 1.2D+1.0L-1.0SY-0.3SX | Combination | Min | 0,7014 | -0,0948 | -0,5254 | -4,1467 |
| Story3 | Bottom | ELU 1.2D+1.0L-1.0SY-0.3SX | Combination | Min | -5,208 | 0 | 0 | -0,0366 |
| Story3 | Top | ELU 0.9D | Combination | | 0,2558 | 0 | 0 | 0 |
| Story3 | Bottom | ELU 0.9D | Combination | | -1,9768 | 0 | 0 | -0,0001 |
| Story3 | Top | ELU 0.9D+1.0SX+0.3SY | Combination | Max | 0,2558 | 0,3135 | 0,158 | 2,3481 |
| Story3 | Bottom | ELU 0.9D+1.0SX+0.3SY | Combination | Max | -1,8658 | 0 | 0 | 0,1205 |
| Story3 | Top | ELU 0.9D+1.0SX+0.3SY | Combination | Min | 0,2558 | -0,3135 | -0,158 | -2,3481 |
| Story3 | Bottom | ELU 0.9D+1.0SX+0.3SY | Combination | Min | -2,0878 | 0 | 0 | -0,1207 |
| Story3 | Top | ELU 0.9D+1.0SY+0.3SX | Combination | Max | 0,2558 | 0,0948 | 0,5254 | 4,1467 |
| Story3 | Bottom | ELU 0.9D+1.0SY+0.3SX | Combination | Max | -1,6077 | 0 | 0 | 0,0362 |





| Story | Location | Output Case | Case Type | Step Type | P tonf | VX tonf | VY tonf | T tonf-m |
|---|---|---|---|---|---|---|---|---|
| Story3 | Top | ELU 0.9D+1.0SY+0.3SX | Combination | Min | 0,2558 | -0,0948 | -0,5254 | -4,1467 |
| Story3 | Bottom | ELU 0.9D+1.0SY+0.3SX | Combination | Min | -2,346 | 0 | 0 | -0,0364 |
| Story3 | Top | ELU 0.9D+1.0SX-0.3SY | Combination | Max | 0,2558 | 0,3135 | 0,158 | 2,3481 |
| Story3 | Bottom | ELU 0.9D+1.0SX-0.3SY | Combination | Max | -1,8658 | 0 | 0 | 0,1205 |
| Story3 | Top | ELU 0.9D+1.0SX-0.3SY | Combination | Min | 0,2558 | -0,3135 | -0,158 | -2,3481 |
| Story3 | Bottom | ELU 0.9D+1.0SX-0.3SY | Combination | Min | -2,0878 | 0 | 0 | -0,1207 |
| Story3 | Top | ELU 0.9D+1.0SY-0.3SX | Combination | Max | 0,2558 | 0,0948 | 0,5254 | 4,1467 |
| Story3 | Bottom | ELU 0.9D+1.0SY-0.3SX | Combination | Max | -1,6077 | 0 | 0 | 0,0362 |
| Story3 | Top | ELU 0.9D+1.0SY-0.3SX | Combination | Min | 0,2558 | -0,0948 | -0,5254 | -4,1467 |
| Story3 | Bottom | ELU 0.9D+1.0SY-0.3SX | Combination | Min | -2,346 | 0 | 0 | -0,0364 |
| Story3 | Top | ELU 0.9D-1.0SX+0.3SY | Combination | Max | 0,2558 | 0,3135 | 0,158 | 2,3481 |
| Story3 | Bottom | ELU 0.9D-1.0SX+0.3SY | Combination | Max | -1,8658 | 0 | 0 | 0,1205 |
| Story3 | Top | ELU 0.9D-1.0SX+0.3SY | Combination | Min | 0,2558 | -0,3135 | -0,158 | -2,3481 |
| Story3 | Bottom | ELU 0.9D-1.0SX+0.3SY | Combination | Min | -2,0878 | 0 | 0 | -0,1207 |
| Story3 | Top | ELU 0.9D-1.0SY+0.3SX | Combination | Max | 0,2558 | 0,0948 | 0,5254 | 4,1467 |
| Story3 | Bottom | ELU 0.9D-1.0SY+0.3SX | Combination | Max | -1,6077 | 0 | 0 | 0,0362 |
| Story3 | Top | ELU 0.9D-1.0SY+0.3SX | Combination | Min | 0,2558 | -0,0948 | -0,5254 | -4,1467 |
| Story3 | Bottom | ELU 0.9D-1.0SY+0.3SX | Combination | Min | -2,346 | 0 | 0 | -0,0364 |
| Story3 | Top | ELU 0.9D-1.0SX-0.3SY | Combination | Max | 0,2558 | 0,3135 | 0,158 | 2,3481 |
| Story3 | Bottom | ELU 0.9D-1.0SX-0.3SY | Combination | Max | -1,8658 | 0 | 0 | 0,1205 |
| Story3 | Top | ELU 0.9D-1.0SX-0.3SY | Combination | Min | 0,2558 | -0,3135 | -0,158 | -2,3481 |
| Story3 | Bottom | ELU 0.9D-1.0SX-0.3SY | Combination | Min | -2,0878 | 0 | 0 | -0,1207 |
| Story3 | Top | ELU 0.9D-1.0SY-0.3SX | Combination | Max | 0,2558 | 0,0948 | 0,5254 | 4,1467 |
| Story3 | Bottom | ELU 0.9D-1.0SY-0.3SX | Combination | Max | -1,6077 | 0 | 0 | 0,0362 |
| Story3 | Top | ELU 0.9D-1.0SY-0.3SX | Combination | Min | 0,2558 | -0,0948 | -0,5254 | -4,1467 |
| Story3 | Bottom | ELU 0.9D-1.0SY-0.3SX | Combination | Min | -2,346 | 0 | 0 | -0,0364 |
| Story3 | Top | CIM 1.0D | Combination | | 0,2843 | 0 | 0 | 0 |
| Story3 | Bottom | CIM 1.0D | Combination | | -2,1965 | 0 | 0 | -0,0001 |
| Story3 | Top | CIM 1.0D+1.0L | Combination | | 0,6445 | 0 | 0 | 0 |
| Story3 | Bottom | CIM 1.0D+1.0L | Combination | | -4,3996 | 0 | 0 | -0,0003 |
| Story3 | Top | CIM 0,6D | Combination | | 0,1706 | 0 | 0 | 0 |
| Story3 | Bottom | CIM 0,6D | Combination | | -1,3179 | 0 | 0 | -0,0001 |
| Story3 | Top | CIM 0.6D+0.7SX | Combination | Max | 0,1706 | 0,2192 | 0,0003 | 0,8493 |
| Story3 | Bottom | CIM 0.6D+0.7SX | Combination | Max | -1,3177 | 0 | 0 | 0,0843 |
| Story3 | Top | CIM 0.6D+0.7SX | Combination | Min | 0,1706 | -0,2192 | -0,0003 | -0,8493 |
| Story3 | Bottom | CIM 0.6D+0.7SX | Combination | Min | -1,3181 | 0 | 0 | -0,0845 |
| Story3 | Top | CIM 0.6D+0.7SY | Combination | Max | 0,1706 | 0,0006 | 0,3677 | 2,6479 |
| Story3 | Bottom | CIM 0.6D+0.7SY | Combination | Max | -1,0595 | 0 | 0 | -9,858E-07 |
| Story3 | Top | CIM 0.6D+0.7SY | Combination | Min | 0,1706 | -0,0006 | -0,3677 | -2,6479 |
| Story3 | Bottom | CIM 0.6D+0.7SY | Combination | Min | -1,5762 | 0 | 0 | -0,0002 |
| Story3 | Top | CIM 1.0D+0.7SX | Combination | Max | 0,2843 | 0,2192 | 0,0003 | 0,8493 |
| Story3 | Bottom | CIM 1.0D+0.7SX | Combination | Max | -2,1963 | 0 | 0 | 0,0843 |
| Story3 | Top | CIM 1.0D+0.7SX | Combination | Min | 0,2843 | -0,2192 | -0,0003 | -0,8493 |
| Story3 | Bottom | CIM 1.0D+0.7SX | Combination | Min | -2,1967 | 0 | 0 | -0,0845 |
| Story3 | Top | CIM 1.0D+0.7SY | Combination | Max | 0,2843 | 0,0006 | 0,3677 | 2,6479 |
| Story3 | Bottom | CIM 1.0D+0.7SY | Combination | Max | -1,9381 | 0 | 0 | -0,0001 |
| Story3 | Top | CIM 1.0D+0.7SY | Combination | Min | 0,2843 | -0,0006 | -0,3677 | -2,6479 |
| Story3 | Bottom | CIM 1.0D+0.7SY | Combination | Min | -2,4548 | 0 | 0 | -0,0002 |
| Story3 | Top | CIM 1.0D+0.75L+0.5SX | Combination | Max | 0,5545 | 0,1566 | 0,0002 | 0,6066 |
| Story3 | Bottom | CIM 1.0D+0.75L+0.5SX | Combination | Max | -3,8487 | 0 | 0 | 0,06 |
| Story3 | Top | CIM 1.0D+0.75L+0.5SX | Combination | Min | 0,5545 | -0,1566 | -0,0002 | -0,6066 |
| Story3 | Bottom | CIM 1.0D+0.75L+0.5SX | Combination | Min | -3,8489 | 0 | 0 | -0,0606 |
| Story3 | Top | CIM 1.0D+0.75L+0.5SY | Combination | Max | 0,5545 | 0,0004 | 0,2626 | 1,8914 |
| Story3 | Bottom | CIM 1.0D+0.75L+0.5SY | Combination | Max | -3,6643 | 0 | 0 | -0,0002 |
| Story3 | Top | CIM 1.0D+0.75L+0.5SY | Combination | Min | 0,5545 | -0,0004 | -0,2626 | -1,8914 |

| Story | Location | Output Case | Case Type | Step Type | P tonf | VX tonf | VY tonf | T tonf-m |
|---|---|---|---|---|---|---|---|---|
| Story3 | Bottom | CIM 1.0D+0.75L+0.5SY | Combination | Min | -4,0333 | 0 | 0 | -0,0003 |
| Story3 | Top | DES 1.0D+1.0SX | Combination | Max | 0,2843 | 0,3132 | 0,0004 | 1,2133 |
| Story3 | Bottom | DES 1.0D+1.0SX | Combination | Max | -2,1962 | 0 | 0 | 0,1204 |
| Story3 | Top | DES 1.0D+1.0SX | Combination | Min | 0,2843 | -0,3132 | -0,0004 | -1,2133 |
| Story3 | Bottom | DES 1.0D+1.0SX | Combination | Min | -2,1967 | 0 | 0 | -0,1207 |
| Story3 | Top | DES 1.0D+1.0SY | Combination | Max | 0,2843 | 0,0008 | 0,5253 | 3,7828 |
| Story3 | Bottom | DES 1.0D+1.0SY | Combination | Max | -1,8274 | 0 | 0 | -2,029E-05 |
| Story3 | Top | DES 1.0D+1.0SY | Combination | Min | 0,2843 | -0,0008 | -0,5253 | -3,7828 |
| Story3 | Bottom | DES 1.0D+1.0SY | Combination | Min | -2,5655 | 0 | 0 | -0,0002 |
| Story3 | Top | DES 1.0D+0.75L+0.75SX | Combination | Max | 0,5545 | 0,2349 | 0,0003 | 0,91 |
| Story3 | Bottom | DES 1.0D+0.75L+0.75SX | Combination | Max | -3,8486 | 0 | 0 | 0,0901 |
| Story3 | Top | DES 1.0D+0.75L+0.75SX | Combination | Min | 0,5545 | -0,2349 | -0,0003 | -0,91 |
| Story3 | Bottom | DES 1.0D+0.75L+0.75SX | Combination | Min | -3,849 | 0 | 0 | -0,0907 |
| Story3 | Top | DES 1.0D+0.75L+0.75SY | Combination | Max | 0,5545 | 0,0006 | 0,394 | 2,8371 |
| Story3 | Bottom | DES 1.0D+0.75L+0.75SY | Combination | Max | -3,572 | 0 | 0 | -0,0002 |
| Story3 | Top | DES 1.0D+0.75L+0.75SY | Combination | Min | 0,5545 | -0,0006 | -0,394 | -2,8371 |
| Story3 | Bottom | DES 1.0D+0.75L+0.75SY | Combination | Min | -4,1256 | 0 | 0 | -0,0004 |
| Story3 | Top | DES 0.6D+1.0SX | Combination | Max | 0,1706 | 0,3132 | 0,0004 | 1,2133 |
| Story3 | Bottom | DES 0.6D+1.0SX | Combination | Max | -1,3176 | 0 | 0 | 0,1205 |
| Story3 | Top | DES 0.6D+1.0SX | Combination | Min | 0,1706 | -0,3132 | -0,0004 | -1,2133 |
| Story3 | Bottom | DES 0.6D+1.0SX | Combination | Min | -1,3182 | 0 | 0 | -0,1206 |
| Story3 | Top | DES 0.6D+1.0SY | Combination | Max | 0,1706 | 0,0008 | 0,5253 | 3,7828 |
| Story3 | Bottom | DES 0.6D+1.0SY | Combination | Max | -0,9488 | 0 | 0 | 3,259E-05 |
| Story3 | Top | DES 0.6D+1.0SY | Combination | Min | 0,1706 | -0,0008 | -0,5253 | -3,7828 |
| Story3 | Bottom | DES 0.6D+1.0SY | Combination | Min | -1,6869 | 0 | 0 | -0,0002 |
| Story3 | Top | ELS 1.0D+1.0W1 | Combination | | 1,0048 | 0 | 0 | 0 |
| Story3 | Bottom | ELS 1.0D+1.0W1 | Combination | | -7,8607 | 0 | 0 | -0,0003 |
| Story3 | Top | ELS 1.0D+1.0W2 | Combination | | -0,7965 | 0 | 0 | 0 |
| Story3 | Bottom | ELS 1.0D+1.0W2 | Combination | | 5,6708 | 0 | 0 | 0,0002 |
| Story3 | Top | ELS 1.0D+0.75W1+0.75L | Combination | | 1,0948 | 0 | 0 | 0 |
| Story3 | Bottom | ELS 1.0D+0.75W1+0.75L | Combination | | -8,0969 | 0 | 0 | -0,0004 |
| Story3 | Top | ELS 1.0D+0.75W2+0.75L | Combination | | -0,2561 | 0 | 0 | 0 |
| Story3 | Bottom | ELS 1.0D+0.75W2+0.75L | Combination | | 2,0517 | 0 | 0 | -1,765E-06 |
| Story3 | Top | ELS 0.6D+1.0W1 | Combination | | 0,8911 | 0 | 0 | 0 |
| Story3 | Bottom | ELS 0.6D+1.0W1 | Combination | | -6,9821 | 0 | 0 | -0,0003 |
| Story3 | Top | ELS 0.6D+1.0W2 | Combination | | -0,9102 | 0 | 0 | 0 |
| Story3 | Bottom | ELS 0.6D+1.0W2 | Combination | | 6,5494 | 0 | 0 | 0,0003 |
| Story3 | Top | ELU 1.2D+0.8W1 | Combination | | 0,9175 | 0 | 0 | 0 |
| Story3 | Bottom | ELU 1.2D+0.8W1 | Combination | | -7,1671 | 0 | 0 | -0,0003 |
| Story3 | Top | ELU 1.2D+0.8W2 | Combination | | -0,5235 | 0 | 0 | 0 |
| Story3 | Bottom | ELU 1.2D+0.8W2 | Combination | | 3,6581 | 0 | 0 | 0,0001 |
| Story3 | Top | ELU 0.9D+1.6W1 | Combination | | 1,4086 | 0 | 0 | 0 |
| Story3 | Bottom | ELU 0.9D+1.6W1 | Combination | | -11,0395 | 0 | 0 | -0,0004 |
| Story3 | Top | ELU 0.9D+1.6W2 | Combination | | -1,4734 | 0 | 0 | 0 |
| Story3 | Bottom | ELU 0.9D+1.6W2 | Combination | | 10,6109 | 0 | 0 | 0,0005 |
| Story3 | Top | ELU 1.2D+1.6W1+1.0L | Combination | | 1,8542 | 0 | 0 | 0 |
| Story3 | Bottom | ELU 1.2D+1.6W1+1.0L | Combination | | -13,9016 | 0 | 0 | -0,0006 |
| Story3 | Top | ELU 1.2D+1.6W2+1.0L | Combination | | -1,0278 | 0 | 0 | 0 |
| Story3 | Bottom | ELU 1.2D+1.6W2+1.0L | Combination | | 7,7488 | 0 | 0 | 0,0002 |
| Story3 | Top | DStlD1 | Combination | | 0,2843 | 0 | 0 | 0 |
| Story3 | Bottom | DStlD1 | Combination | | -2,1965 | 0 | 0 | -0,0001 |
| Story3 | Top | DStlD2 | Combination | | 0,6445 | 0 | 0 | 0 |
| Story3 | Bottom | DStlD2 | Combination | | -4,3996 | 0 | 0 | -0,0003 |
| Story2 | Top | Dead | LinStatic | | -0,8746 | 0 | 0 | -1,057E-05 |
| Story2 | Bottom | Dead | LinStatic | | -0,2172 | 7,765E-06 | 3,8762 | 27,9413 |





| Story | Location | Output Case | Case Type | Step Type | P tonf | VX tonf | VY tonf | T tonf-m |
|---|---|---|---|---|---|---|---|---|
| Story2 | Top | Live | LinStatic | | -2,2031 | 0 | 0 | -0,0002 |
| Story2 | Bottom | Live | LinStatic | | -2,1191 | 3,652E-05 | 9,4956 | 68,4158 |
| Story2 | Top | SX | LinRespSpec | Max | 0,0003 | 0,3434 | 0,0003 | 2,5149 |
| Story2 | Bottom | SX | LinRespSpec | Max | 0,0003 | 0,645 | 0,0012 | 4,9834 |
| Story2 | Top | SY | LinRespSpec | Max | 0,3691 | 0,0002 | 0,403 | 2,9023 |
| Story2 | Bottom | SY | LinRespSpec | Max | 0,4201 | 0,0009 | 1,5833 | 11,4013 |
| Story2 | Top | SXEST | LinStatic | | 2,325E-06 | -2,251 | 0 | 10,8755 |
| Story2 | Bottom | SXEST | LinStatic | | 0 | -2,4508 | 1,593E-06 | 11,5263 |
| Story2 | Top | SYEST | LinStatic | | -0,0058 | 0 | -2,251 | -16,2226 |
| Story2 | Bottom | SYEST | LinStatic | | 0,0641 | -0,0001 | -2,1827 | -15,7301 |
| Story2 | Top | DS | LinStatic | | -1,3219 | 0 | 0 | -0,0001 |
| Story2 | Bottom | DS | LinStatic | | -1,2714 | 2,191E-05 | 5,6974 | 41,0495 |
| Story2 | Top | W1 | LinStatic | | -5,6642 | 0 | 0 | -0,0002 |
| Story2 | Bottom | W1 | LinStatic | | -6,6329 | 3,152E-05 | 9,1998 | 66,2844 |
| Story2 | Top | W2 | LinStatic | | 7,8673 | 0 | 0 | 0,0004 |
| Story2 | Bottom | W2 | LinStatic | | 8,7519 | -0,0001 | -18,6955 | -134,7002 |
| Story2 | Top | ELS 1.0D | Combination | | -2,1965 | 0 | 0 | -0,0001 |
| Story2 | Bottom | ELS 1.0D | Combination | | -1,4887 | 2,968E-05 | 9,5736 | 68,9908 |
| Story2 | Top | ELS 1.0D+1.0L | Combination | | -4,3996 | 0 | 0 | -0,0003 |
| Story2 | Bottom | ELS 1.0D+1.0L | Combination | | -3,6078 | 0,0001 | 19,0692 | 137,4066 |
| Story2 | Top | ELS 1.0D+0.75L | Combination | | -3,8488 | 0 | 0 | -0,0003 |
| Story2 | Bottom | ELS 1.0D+0.75L | Combination | | -3,078 | 0,0001 | 16,6953 | 120,3026 |
| Story2 | Top | ELS 1.0D+0.75X | Combination | Max | -2,1963 | 0,2404 | 0,0002 | 1,7603 |
| Story2 | Bottom | ELS 1.0D+0.75X | Combination | Max | -1,4885 | 0,4515 | 9,5744 | 72,4792 |
| Story2 | Top | ELS 1.0D+0.75X | Combination | Min | -2,1967 | -0,2404 | -0,0002 | -1,7605 |
| Story2 | Bottom | ELS 1.0D+0.75X | Combination | Min | -1,4889 | -0,4515 | 9,5727 | 65,5024 |
| Story2 | Top | ELS 1.0D+0.75Y | Combination | Max | -1,9381 | 0,0001 | 0,2821 | 2,0315 |
| Story2 | Bottom | ELS 1.0D+0.75Y | Combination | Max | -1,1947 | 0,0007 | 10,6819 | 76,9717 |
| Story2 | Top | ELS 1.0D+0.75Y | Combination | Min | -2,4548 | -0,0001 | -0,2821 | -2,0317 |
| Story2 | Bottom | ELS 1.0D+0.75Y | Combination | Min | -1,7827 | -0,0006 | 8,4653 | 61,0099 |
| Story2 | Top | ELS 1.0D+0.75L+0.525SX | Combination | Max | -3,8487 | 0,1803 | 0,0002 | 1,32 |
| Story2 | Bottom | ELS 1.0D+0.75L+0.525SX | Combination | Max | -3,0778 | 0,3387 | 16,6959 | 122,9189 |
| Story2 | Top | ELS 1.0D+0.75L+0.525SX | Combination | Min | -3,849 | -0,1803 | -0,0002 | -1,3206 |
| Story2 | Bottom | ELS 1.0D+0.75L+0.525SX | Combination | Min | -3,0782 | -0,3386 | 16,6947 | 117,6864 |
| Story2 | Top | ELS 1.0D+0.75L+0.525SY | Combination | Max | -3,6551 | 0,0001 | 0,2116 | 1,5234 |
| Story2 | Bottom | ELS 1.0D+0.75L+0.525SY | Combination | Max | -2,8575 | 0,0005 | 17,5265 | 126,2883 |
| Story2 | Top | ELS 1.0D+0.75L+0.525SY | Combination | Min | -4,0426 | -0,0001 | -0,2116 | -1,524 |
| Story2 | Bottom | ELS 1.0D+0.75L+0.525SY | Combination | Min | -3,2985 | -0,0004 | 15,8641 | 114,317 |
| Story2 | Top | ELS 0.6D+0.75X | Combination | Max | -1,3177 | 0,2404 | 0,0002 | 1,7603 |
| Story2 | Bottom | ELS 0.6D+0.75X | Combination | Max | -0,893 | 0,4515 | 5,745 | 44,8828 |
| Story2 | Top | ELS 0.6D+0.75X | Combination | Min | -1,3181 | -0,2404 | -0,0002 | -1,7605 |
| Story2 | Bottom | ELS 0.6D+0.75X | Combination | Min | -0,8934 | -0,4515 | 5,7433 | 37,9061 |
| Story2 | Top | ELS 0.6D+0.75Y | Combination | Max | -1,0595 | 0,0001 | 0,2821 | 2,0315 |
| Story2 | Bottom | ELS 0.6D+0.75Y | Combination | Max | -0,5992 | 0,0007 | 6,8524 | 49,3754 |
| Story2 | Top | ELS 0.6D+0.75Y | Combination | Min | -1,5762 | -0,0001 | -0,2821 | -2,0317 |
| Story2 | Bottom | ELS 0.6D+0.75Y | Combination | Min | -1,1873 | -0,0006 | 4,6358 | 33,4136 |
| Story2 | Top | ELU 1.4D | Combination | | -3,075 | 0 | 0 | -0,0002 |
| Story2 | Bottom | ELU 1.4D | Combination | | -2,0842 | 4,155E-05 | 13,403 | 96,5871 |
| Story2 | Top | ELU 1.2D+1.6L | Combination | | -6,1608 | 0 | 0 | -0,0005 |
| Story2 | Bottom | ELU 1.2D+1.6L | Combination | | -5,177 | 0,0001 | 26,6813 | 192,2543 |
| Story2 | Top | ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Max | -4,7279 | 0,3435 | 0,1212 | 3,3852 |
| Story2 | Bottom | ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Max | -3,7792 | 0,6453 | 21,4601 | 159,6086 |
| Story2 | Top | ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Min | -4,9499 | -0,3435 | -0,1212 | -3,3859 |
| Story2 | Bottom | ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Min | -4,0318 | -0,6452 | 20,5077 | 142,801 |
| Story2 | Top | ELU 1.2D+1.0L+1.0SY+0.3SX | Combination | Max | -4,4697 | 0,1032 | 0,4031 | 3,6564 |





| Story | Location | Output Case | Case Type | Step Type | P tonf | VX tonf | VY tonf | T tonf-m |
|---|---|---|---|---|---|---|---|---|
| Story2 | Bottom | ELU 1.2D+1.0L+1.0SY+0.3SX | Combination | Max | -3,4854 | 0,1945 | 22,5676 | 164,1011 |
| Story2 | Top | ELU 1.2D+1.0L+1.0SY+0.3SX | Combination | Min | -5,208 | -0,1032 | -0,4031 | -3,6571 |
| Story2 | Bottom | ELU 1.2D+1.0L+1.0SY+0.3SX | Combination | Min | -4,3257 | -0,1944 | 19,4003 | 138,3084 |
| Story2 | Top | ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Max | -4,7279 | 0,3435 | 0,1212 | 3,3852 |
| Story2 | Bottom | ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Max | -3,7792 | 0,6453 | 21,4601 | 159,6086 |
| Story2 | Top | ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Min | -4,9499 | -0,3435 | -0,1212 | -3,3859 |
| Story2 | Bottom | ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Min | -4,0318 | -0,6452 | 20,5077 | 142,801 |
| Story2 | Top | ELU 1.2D+1.0L+1.0SY-0.3SX | Combination | Max | -4,4697 | 0,1032 | 0,4031 | 3,6564 |
| Story2 | Bottom | ELU 1.2D+1.0L+1.0SY-0.3SX | Combination | Max | -3,4854 | 0,1945 | 22,5676 | 164,1011 |
| Story2 | Top | ELU 1.2D+1.0L+1.0SY-0.3SX | Combination | Min | -5,208 | -0,1032 | -0,4031 | -3,6571 |
| Story2 | Bottom | ELU 1.2D+1.0L+1.0SY-0.3SX | Combination | Min | -4,3257 | -0,1944 | 19,4003 | 138,3084 |
| Story2 | Top | ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Max | -4,7279 | 0,3435 | 0,1212 | 3,3852 |
| Story2 | Bottom | ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Max | -3,7792 | 0,6453 | 21,4601 | 159,6086 |
| Story2 | Top | ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Min | -4,9499 | -0,3435 | -0,1212 | -3,3859 |
| Story2 | Bottom | ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Min | -4,0318 | -0,6452 | 20,5077 | 142,801 |
| Story2 | Top | ELU 1.2D+1.0L+1.0SY-0.3SX | Combination | Max | -4,4697 | 0,1032 | 0,4031 | 3,6564 |
| Story2 | Bottom | ELU 1.2D+1.0L+1.0SY-0.3SX | Combination | Max | -3,4854 | 0,1945 | 22,5676 | 164,1011 |
| Story2 | Top | ELU 1.2D+1.0L+1.0SY-0.3SX | Combination | Min | -5,208 | -0,1032 | -0,4031 | -3,6571 |
| Story2 | Bottom | ELU 1.2D+1.0L+1.0SY-0.3SX | Combination | Min | -4,3257 | -0,1944 | 19,4003 | 138,3084 |
| Story2 | Top | ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Max | -4,7279 | 0,3435 | 0,1212 | 3,3852 |
| Story2 | Bottom | ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Max | -3,7792 | 0,6453 | 21,4601 | 159,6086 |
| Story2 | Top | ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Min | -4,9499 | -0,3435 | -0,1212 | -3,3859 |
| Story2 | Bottom | ELU 1.2D+1.0L+1.0SX-0.3SY | Combination | Min | -4,0318 | -0,6452 | 20,5077 | 142,801 |
| Story2 | Top | ELU 1.2D+1.0L+1.0SY-0.3SX | Combination | Max | -4,4697 | 0,1032 | 0,4031 | 3,6564 |
| Story2 | Bottom | ELU 1.2D+1.0L+1.0SY-0.3SX | Combination | Max | -3,4854 | 0,1945 | 22,5676 | 164,1011 |
| Story2 | Top | ELU 1.2D+1.0L+1.0SY-0.3SX | Combination | Min | -5,208 | -0,1032 | -0,4031 | -3,6571 |
| Story2 | Bottom | ELU 1.2D+1.0L+1.0SY-0.3SX | Combination | Min | -4,3257 | -0,1944 | 19,4003 | 138,3084 |
| Story2 | Top | ELU 0.9D | Combination | | -1,9768 | 0 | 0 | -0,0001 |
| Story2 | Bottom | ELU 0.9D | Combination | | -1,3398 | 2,671E-05 | 8,6162 | 62,0917 |
| Story2 | Top | ELU 0.9D+1.0SX+0.3SY | Combination | Max | -1,8658 | 0,3435 | 0,1212 | 3,3854 |
| Story2 | Bottom | ELU 0.9D+1.0SX+0.3SY | Combination | Max | -1,2135 | 0,6453 | 9,0924 | 70,4955 |
| Story2 | Top | ELU 0.9D+1.0SX+0.3SY | Combination | Min | -2,0878 | -0,3435 | -0,1212 | -3,3857 |
| Story2 | Bottom | ELU 0.9D+1.0SX+0.3SY | Combination | Min | -1,4662 | -0,6452 | 8,14 | 53,6879 |
| Story2 | Top | ELU 0.9D+1.0SY+0.3SX | Combination | Max | -1,6077 | 0,1032 | 0,4031 | 3,6566 |
| Story2 | Bottom | ELU 0.9D+1.0SY+0.3SX | Combination | Max | -0,9197 | 0,1945 | 10,1999 | 74,988 |
| Story2 | Top | ELU 0.9D+1.0SY+0.3SX | Combination | Min | -2,346 | -0,1032 | -0,4031 | -3,6569 |
| Story2 | Bottom | ELU 0.9D+1.0SY+0.3SX | Combination | Min | -1,76 | -0,1944 | 7,0326 | 49,1954 |
| Story2 | Top | ELU 0.9D+1.0SX-0.3SY | Combination | Max | -1,8658 | 0,3435 | 0,1212 | 3,3854 |
| Story2 | Bottom | ELU 0.9D+1.0SX-0.3SY | Combination | Max | -1,2135 | 0,6453 | 9,0924 | 70,4955 |
| Story2 | Top | ELU 0.9D+1.0SX-0.3SY | Combination | Min | -2,0878 | -0,3435 | -0,1212 | -3,3857 |
| Story2 | Bottom | ELU 0.9D+1.0SX-0.3SY | Combination | Min | -1,4662 | -0,6452 | 8,14 | 53,6879 |
| Story2 | Top | ELU 0.9D+1.0SY-0.3SX | Combination | Max | -1,6077 | 0,1032 | 0,4031 | 3,6566 |
| Story2 | Bottom | ELU 0.9D+1.0SY-0.3SX | Combination | Max | -0,9197 | 0,1945 | 10,1999 | 74,988 |
| Story2 | Top | ELU 0.9D+1.0SY-0.3SX | Combination | Min | -2,346 | -0,1032 | -0,4031 | -3,6569 |
| Story2 | Bottom | ELU 0.9D+1.0SY-0.3SX | Combination | Min | -1,76 | -0,1944 | 7,0326 | 49,1954 |
| Story2 | Top | ELU 0.9D-1.0SX+0.3SY | Combination | Max | -1,8658 | 0,3435 | 0,1212 | 3,3854 |
| Story2 | Bottom | ELU 0.9D-1.0SX+0.3SY | Combination | Max | -1,2135 | 0,6453 | 9,0924 | 70,4955 |
| Story2 | Top | ELU 0.9D-1.0SX+0.3SY | Combination | Min | -2,0878 | -0,3435 | -0,1212 | -3,3857 |
| Story2 | Bottom | ELU 0.9D-1.0SX+0.3SY | Combination | Min | -1,4662 | -0,6452 | 8,14 | 53,6879 |
| Story2 | Top | ELU 0.9D-1.0SY+0.3SX | Combination | Max | -1,6077 | 0,1032 | 0,4031 | 3,6566 |
| Story2 | Bottom | ELU 0.9D-1.0SY+0.3SX | Combination | Max | -0,9197 | 0,1945 | 10,1999 | 74,988 |
| Story2 | Top | ELU 0.9D-1.0SY+0.3SX | Combination | Min | -2,346 | -0,1032 | -0,4031 | -3,6569 |
| Story2 | Bottom | ELU 0.9D-1.0SY+0.3SX | Combination | Min | -1,76 | -0,1944 | 7,0326 | 49,1954 |
| Story2 | Top | ELU 0.9D-1.0SX-0.3SY | Combination | Max | -1,8658 | 0,3435 | 0,1212 | 3,3854 |
| Story2 | Bottom | ELU 0.9D-1.0SX-0.3SY | Combination | Max | -1,2135 | 0,6453 | 9,0924 | 70,4955 |





| Story | Location | Output Case | Case Type | Step Type | P tonf | VX tonf | VY tonf | T tonf-m |
|---|---|---|---|---|---|---|---|---|
| Story2 | Top | ELU 0.9D-1.0SX-0.3SY | Combination | Min | -2,0878 | -0,3435 | -0,1212 | -3,3857 |
| Story2 | Bottom | ELU 0.9D-1.0SX-0.3SY | Combination | Min | -1,4662 | -0,6452 | 8,14 | 53,6879 |
| Story2 | Top | ELU 0.9D-1.0SY-0.3SX | Combination | Max | -1,6077 | 0,1032 | 0,4031 | 3,6566 |
| Story2 | Bottom | ELU 0.9D-1.0SY-0.3SX | Combination | Max | -0,9197 | 0,1945 | 10,1999 | 74,988 |
| Story2 | Top | ELU 0.9D-1.0SY-0.3SX | Combination | Min | -2,346 | -0,1032 | -0,4031 | -3,6569 |
| Story2 | Bottom | ELU 0.9D-1.0SY-0.3SX | Combination | Min | -1,76 | -0,1944 | 7,0326 | 49,1954 |
| Story2 | Top | CIM 1.0D | Combination | | -2,1965 | 0 | 0 | -0,0001 |
| Story2 | Bottom | CIM 1.0D | Combination | | -1,4887 | 2,968E-05 | 9,5736 | 68,9908 |
| Story2 | Top | CIM 1.0D+1.0L | Combination | | -4,3996 | 0 | 0 | -0,0003 |
| Story2 | Bottom | CIM 1.0D+1.0L | Combination | | -3,6078 | 0,0001 | 19,0692 | 137,4066 |
| Story2 | Top | CIM 0,6D | Combination | | -1,3179 | 0 | 0 | -0,0001 |
| Story2 | Bottom | CIM 0,6D | Combination | | -0,8932 | 1,781E-05 | 5,7441 | 41,3945 |
| Story2 | Top | CIM 0,6D+0.75X | Combination | Max | -1,3177 | 0,2404 | 0,0002 | 1,7603 |
| Story2 | Bottom | CIM 0,6D+0.75X | Combination | Max | -0,893 | 0,4515 | 5,745 | 44,8828 |
| Story2 | Top | CIM 0,6D+0.75X | Combination | Min | -1,3181 | -0,2404 | -0,0002 | -1,7605 |
| Story2 | Bottom | CIM 0,6D+0.75X | Combination | Min | -0,8934 | -0,4515 | 5,7433 | 37,9061 |
| Story2 | Top | CIM 0,6D+0.75Y | Combination | Max | -1,0595 | 0,0001 | 0,2821 | 2,0315 |
| Story2 | Bottom | CIM 0,6D+0.75Y | Combination | Max | -0,5992 | 0,0007 | 6,8524 | 49,3754 |
| Story2 | Top | CIM 0,6D+0.75Y | Combination | Min | -1,5762 | -0,0001 | -0,2821 | -2,0317 |
| Story2 | Bottom | CIM 0,6D+0.75Y | Combination | Min | -1,1873 | -0,0006 | 4,6358 | 33,4136 |
| Story2 | Top | CIM 1.0D+0.75X | Combination | Max | -2,1963 | 0,2404 | 0,0002 | 1,7603 |
| Story2 | Bottom | CIM 1.0D+0.75X | Combination | Max | -1,4885 | 0,4515 | 9,5744 | 72,4792 |
| Story2 | Top | CIM 1.0D+0.75X | Combination | Min | -2,1967 | -0,2404 | -0,0002 | -1,7605 |
| Story2 | Bottom | CIM 1.0D+0.75X | Combination | Min | -1,4889 | -0,4515 | 9,5727 | 65,5024 |
| Story2 | Top | CIM 1.0D+0.75Y | Combination | Max | -1,9381 | 0,0001 | 0,2821 | 2,0315 |
| Story2 | Bottom | CIM 1.0D+0.75Y | Combination | Max | -1,1947 | 0,0007 | 10,6819 | 76,9717 |
| Story2 | Top | CIM 1.0D+0.75Y | Combination | Min | -2,4548 | -0,0001 | -0,2821 | -2,0317 |
| Story2 | Bottom | CIM 1.0D+0.75Y | Combination | Min | -1,7827 | -0,0006 | 8,4653 | 61,0099 |
| Story2 | Top | CIM 1.0D+0.75L+0.5SX | Combination | Max | -3,8487 | 0,1717 | 0,0002 | 1,2572 |
| Story2 | Bottom | CIM 1.0D+0.75L+0.5SX | Combination | Max | -3,0778 | 0,3226 | 16,6959 | 122,7943 |
| Story2 | Top | CIM 1.0D+0.75L+0.5SX | Combination | Min | -3,8489 | -0,1717 | -0,0002 | -1,2577 |
| Story2 | Bottom | CIM 1.0D+0.75L+0.5SX | Combination | Min | -3,0782 | -0,3224 | 16,6947 | 117,8109 |
| Story2 | Top | CIM 1.0D+0.75L+0.5SY | Combination | Max | -3,6643 | 0,0001 | 0,2015 | 1,4509 |
| Story2 | Bottom | CIM 1.0D+0.75L+0.5SY | Combination | Max | -2,868 | 0,0005 | 17,4869 | 126,0033 |
| Story2 | Top | CIM 1.0D+0.75L+0.5SY | Combination | Min | -4,0333 | -0,0001 | -0,2015 | -1,4514 |
| Story2 | Bottom | CIM 1.0D+0.75L+0.5SY | Combination | Min | -3,288 | -0,0004 | 15,9037 | 114,602 |
| Story2 | Top | DES 1.0D+1.0SX | Combination | Max | -2,1962 | 0,3434 | 0,0003 | 2,5147 |
| Story2 | Bottom | DES 1.0D+1.0SX | Combination | Max | -1,4884 | 0,645 | 9,5748 | 73,9742 |
| Story2 | Top | DES 1.0D+1.0SX | Combination | Min | -2,1967 | -0,3434 | -0,0003 | -2,515 |
| Story2 | Bottom | DES 1.0D+1.0SX | Combination | Min | -1,489 | -0,645 | 9,5723 | 64,0074 |
| Story2 | Top | DES 1.0D+1.0SY | Combination | Max | -1,8274 | 0,0002 | 0,403 | 2,9021 |
| Story2 | Bottom | DES 1.0D+1.0SY | Combination | Max | -1,0686 | 0,001 | 11,1568 | 80,3921 |
| Story2 | Top | DES 1.0D+1.0SY | Combination | Min | -2,5655 | -0,0002 | -0,403 | -2,9024 |
| Story2 | Bottom | DES 1.0D+1.0SY | Combination | Min | -1,9087 | -0,0009 | 7,9903 | 57,5895 |
| Story2 | Top | DES 1.0D+0.75L+0.75SX | Combination | Max | -3,8486 | 0,2576 | 0,0002 | 1,8859 |
| Story2 | Bottom | DES 1.0D+0.75L+0.75SX | Combination | Max | -3,0778 | 0,4838 | 16,6962 | 124,0402 |
| Story2 | Top | DES 1.0D+0.75L+0.75SX | Combination | Min | -3,849 | -0,2576 | -0,0002 | -1,8864 |
| Story2 | Bottom | DES 1.0D+0.75L+0.75SX | Combination | Min | -3,0782 | -0,4837 | 16,6944 | 116,5651 |
| Story2 | Top | DES 1.0D+0.75L+0.75SY | Combination | Max | -3,572 | 0,0001 | 0,3022 | 2,1764 |
| Story2 | Bottom | DES 1.0D+0.75L+0.75SY | Combination | Max | -2,763 | 0,0008 | 17,8828 | 128,8536 |
| Story2 | Top | DES 1.0D+0.75L+0.75SY | Combination | Min | -4,1256 | -0,0001 | -0,3022 | -2,177 |
| Story2 | Bottom | DES 1.0D+0.75L+0.75SY | Combination | Min | -3,393 | -0,0006 | 15,5078 | 111,7517 |
| Story2 | Top | DES 0.6D+1.0SX | Combination | Max | -1,3176 | 0,3434 | 0,0003 | 2,5148 |
| Story2 | Bottom | DES 0.6D+1.0SX | Combination | Max | -0,8929 | 0,645 | 5,7454 | 46,3779 |
| Story2 | Top | DES 0.6D+1.0SX | Combination | Min | -1,3182 | -0,3434 | -0,0003 | -2,5149 |

| Story | Location | Output Case | Case Type | Step Type | P tonf | VX tonf | VY tonf | T tonf-m |
|---|---|---|---|---|---|---|---|---|
| Story2 | Bottom | DES 0.6D+1.0SX | Combination | Min | -0,8935 | -0,645 | 5,7429 | 36,4111 |
| Story2 | Top | DES 0.6D+1.0SY | Combination | Max | -0,9488 | 0,0002 | 0,403 | 2,9022 |
| Story2 | Bottom | DES 0.6D+1.0SY | Combination | Max | -0,4732 | 0,0009 | 7,3274 | 52,7958 |
| Story2 | Top | DES 0.6D+1.0SY | Combination | Min | -1,6869 | -0,0002 | -0,403 | -2,9024 |
| Story2 | Bottom | DES 0.6D+1.0SY | Combination | Min | -1,3133 | -0,0009 | 4,1609 | 29,9932 |
| Story2 | Top | ELS 1.0D+1.0W1 | Combination | | -7,8607 | 0 | 0 | -0,0003 |
| Story2 | Bottom | ELS 1.0D+1.0W1 | Combination | | -8,1215 | 0,0001 | 18,7734 | 135,2752 |
| Story2 | Top | ELS 1.0D+1.0W2 | Combination | | 5,6708 | 0 | 0 | 0,0002 |
| Story2 | Bottom | ELS 1.0D+1.0W2 | Combination | | 7,2633 | -3,837E-05 | -9,1219 | -65,7094 |
| Story2 | Top | ELS 1.0D+0.75W1+0.75L | Combination | | -8,0969 | 0 | 0 | -0,0004 |
| Story2 | Bottom | ELS 1.0D+0.75W1+0.75L | Combination | | -8,0526 | 0,0001 | 23,5952 | 170,0159 |
| Story2 | Top | ELS 1.0D+0.75W2+0.75L | Combination | | 2,0517 | 0 | 0 | -1,765E-06 |
| Story2 | Bottom | ELS 1.0D+0.75W2+0.75L | Combination | | 3,486 | 6,035E-06 | 2,6737 | 19,2775 |
| Story2 | Top | ELS 0.6D+1.0W1 | Combination | | -6,9821 | 0 | 0 | -0,0003 |
| Story2 | Bottom | ELS 0.6D+1.0W1 | Combination | | -7,5261 | 4,933E-05 | 14,944 | 107,6789 |
| Story2 | Top | ELS 0.6D+1.0W2 | Combination | | 6,5494 | 0 | 0 | 0,0003 |
| Story2 | Bottom | ELS 0.6D+1.0W2 | Combination | | 7,8587 | -0,0001 | -12,9513 | -93,3058 |
| Story2 | Top | ELU 1.2D+0.8W1 | Combination | | -7,1671 | 0 | 0 | -0,0003 |
| Story2 | Bottom | ELU 1.2D+0.8W1 | Combination | | -7,0927 | 0,0001 | 18,8481 | 135,8164 |
| Story2 | Top | ELU 1.2D+0.8W2 | Combination | | 3,6581 | 0 | 0 | 0,0001 |
| Story2 | Bottom | ELU 1.2D+0.8W2 | Combination | | 5,2151 | -1,882E-05 | -3,4681 | -24,9713 |
| Story2 | Top | ELU 0.9D+1.6W1 | Combination | | -11,0395 | 0 | 0 | -0,0004 |
| Story2 | Bottom | ELU 0.9D+1.6W1 | Combination | | -11,9524 | 0,0001 | 23,3359 | 168,1467 |
| Story2 | Top | ELU 0.9D+1.6W2 | Combination | | 10,6109 | 0 | 0 | 0,0005 |
| Story2 | Bottom | ELU 0.9D+1.6W2 | Combination | | 12,6633 | -0,0001 | -21,2965 | -153,4287 |
| Story2 | Top | ELU 1.2D+1.6W1+1.0L | Combination | | -13,9016 | 0 | 0 | -0,0006 |
| Story2 | Bottom | ELU 1.2D+1.6W1+1.0L | Combination | | -14,5181 | 0,0001 | 35,7036 | 257,2598 |
| Story2 | Top | ELU 1.2D+1.6W2+1.0L | Combination | | 7,7488 | 0 | 0 | 0,0002 |
| Story2 | Bottom | ELU 1.2D+1.6W2+1.0L | Combination | | 10,0976 | -3,674E-05 | -8,9288 | -64,3156 |
| Story2 | Top | DStlD1 | Combination | | -2,1965 | 0 | 0 | -0,0001 |
| Story2 | Bottom | DStlD1 | Combination | | -1,4887 | 2,968E-05 | 9,5736 | 68,9908 |
| Story2 | Top | DStlD2 | Combination | | -4,3996 | 0 | 0 | -0,0003 |
| Story2 | Bottom | DStlD2 | Combination | | -3,6078 | 0,0001 | 19,0692 | 137,4066 |
| Story1 | Top | Dead | LinStatic | | 3,8034 | 7,765E-06 | 3,8762 | 27,9413 |
| Story1 | Bottom | Dead | LinStatic | | 9,6112 | 0 | 0 | 0 |
| Story1 | Top | Live | LinStatic | | -2,1191 | 3,652E-05 | 9,4956 | 68,4158 |
| Story1 | Bottom | Live | LinStatic | | 3,4584 | 0 | 0 | 0 |
| Story1 | Top | SX | LinRespSpec | Max | 0,0003 | 1,474 | 0,0019 | 10,3234 |
| Story1 | Bottom | SX | LinRespSpec | Max | 0 | 1,451 | 0,0014 | 8,9989 |
| Story1 | Top | SY | LinRespSpec | Max | 0,4201 | 0,0013 | 2,3839 | 17,1674 |
| Story1 | Bottom | SY | LinRespSpec | Max | 0 | 0,0014 | 1,7332 | 12,4825 |
| Story1 | Top | SXEST | LinStatic | | 0 | -7,4263 | 1,593E-06 | 35,4087 |
| Story1 | Bottom | SXEST | LinStatic | | 0 | -7,2265 | 0 | 34,6873 |
| Story1 | Top | SYEST | LinStatic | | 0,0641 | -0,0001 | -7,1582 | -51,586 |
| Story1 | Bottom | SYEST | LinStatic | | 0 | 0 | -7,2265 | -52,0787 |
| Story1 | Top | DS | LinStatic | | -1,2714 | 2,191E-05 | 5,6974 | 41,0495 |
| Story1 | Bottom | DS | LinStatic | | 2,075 | 0 | 0 | 0 |
| Story1 | Top | W1 | LinStatic | | -6,6329 | 3,152E-05 | 9,1998 | 66,2844 |
| Story1 | Bottom | W1 | LinStatic | | -1,3689 | 0 | 0 | 0 |
| Story1 | Top | W2 | LinStatic | | 8,7519 | -0,0001 | -18,6955 | -134,7002 |
| Story1 | Bottom | W2 | LinStatic | | -2,0895 | 0 | 0 | 0 |
| Story1 | Top | ELS 1.0D | Combination | | 2,532 | 2,968E-05 | 9,5736 | 68,9908 |
| Story1 | Bottom | ELS 1.0D | Combination | | 11,6862 | 0 | 0 | 0 |
| Story1 | Top | ELS 1.0D+1.0L | Combination | | 0,4129 | 0,0001 | 19,0692 | 137,4066 |
| Story1 | Bottom | ELS 1.0D+1.0L | Combination | | 15,1446 | 0 | 0 | 0 |





| Story | Location | Output Case | Case Type | Step Type | P tonf | VX tonf | VY tonf | T tonf-m |
|---|---|---|---|---|---|---|---|---|
| Story1 | Top | ELS 1.0D+0.75L | Combination | | 0,9427 | 0,0001 | 16,6953 | 120,3026 |
| Story1 | Bottom | ELS 1.0D+0.75L | Combination | | 14,28 | 0 | 0 | 0 |
| Story1 | Top | ELS 1.0D+0.75X | Combination | Max | 2,5322 | 1,0318 | 9,5749 | 76,2171 |
| Story1 | Bottom | ELS 1.0D+0.75X | Combination | Max | 11,6862 | 1,0157 | 0,001 | 6,2992 |
| Story1 | Top | ELS 1.0D+0.75X | Combination | Min | 2,5318 | -1,0317 | 9,5723 | 61,7644 |
| Story1 | Bottom | ELS 1.0D+0.75X | Combination | Min | 11,6862 | -1,0157 | -0,001 | -6,2992 |
| Story1 | Top | ELS 1.0D+0.75Y | Combination | Max | 2,826 | 0,001 | 11,2423 | 81,008 |
| Story1 | Bottom | ELS 1.0D+0.75Y | Combination | Max | 11,6862 | 0,001 | 1,2132 | 8,7377 |
| Story1 | Top | ELS 1.0D+0.75Y | Combination | Min | 2,2379 | -0,0009 | 7,9048 | 56,9736 |
| Story1 | Bottom | ELS 1.0D+0.75Y | Combination | Min | 11,6862 | -0,001 | -1,2132 | -8,7377 |
| Story1 | Top | ELS 1.0D+0.75L+0.525SX | Combination | Max | 0,9428 | 0,7739 | 16,6963 | 125,7224 |
| Story1 | Bottom | ELS 1.0D+0.75L+0.525SX | Combination | Max | 14,28 | 0,7618 | 0,0007 | 4,7244 |
| Story1 | Top | ELS 1.0D+0.75L+0.525SX | Combination | Min | 0,9425 | -0,7738 | 16,6943 | 114,8829 |
| Story1 | Bottom | ELS 1.0D+0.75L+0.525SX | Combination | Min | 14,28 | -0,7618 | -0,0007 | -4,7244 |
| Story1 | Top | ELS 1.0D+0.75L+0.525SY | Combination | Max | 1,1632 | 0,0008 | 17,9468 | 129,3155 |
| Story1 | Bottom | ELS 1.0D+0.75L+0.525SY | Combination | Max | 14,28 | 0,0007 | 0,9099 | 6,5533 |
| Story1 | Top | ELS 1.0D+0.75L+0.525SY | Combination | Min | 0,7221 | -0,0006 | 15,4438 | 111,2898 |
| Story1 | Bottom | ELS 1.0D+0.75L+0.525SY | Combination | Min | 14,28 | -0,0007 | -0,9099 | -6,5533 |
| Story1 | Top | ELS 0.6D+0.75X | Combination | Max | 1,5194 | 1,0318 | 5,7454 | 48,6208 |
| Story1 | Bottom | ELS 0.6D+0.75X | Combination | Max | 7,0117 | 1,0157 | 0,001 | 6,2992 |
| Story1 | Top | ELS 0.6D+0.75X | Combination | Min | 1,519 | -1,0318 | 5,7428 | 34,1681 |
| Story1 | Bottom | ELS 0.6D+0.75X | Combination | Min | 7,0117 | -1,0157 | -0,001 | -6,2992 |
| Story1 | Top | ELS 0.6D+0.75Y | Combination | Max | 1,8132 | 0,001 | 7,4129 | 53,4117 |
| Story1 | Bottom | ELS 0.6D+0.75Y | Combination | Max | 7,0117 | 0,001 | 1,2132 | 8,7377 |
| Story1 | Top | ELS 0.6D+0.75Y | Combination | Min | 1,2252 | -0,0009 | 4,0754 | 29,3773 |
| Story1 | Bottom | ELS 0.6D+0.75Y | Combination | Min | 7,0117 | -0,001 | -1,2132 | -8,7377 |
| Story1 | Top | ELU 1.4D | Combination | | 3,5448 | 4,155E-05 | 13,403 | 96,5871 |
| Story1 | Bottom | ELU 1.4D | Combination | | 16,3607 | 0 | 0 | 0 |
| Story1 | Top | ELU 1.2D+1.6L | Combination | | -0,3521 | 0,0001 | 26,6813 | 192,2543 |
| Story1 | Bottom | ELU 1.2D+1.6L | Combination | | 19,5569 | 0 | 0 | 0 |
| Story1 | Top | ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Max | 1,0456 | 1,4744 | 21,7009 | 166,6784 |
| Story1 | Bottom | ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Max | 17,4818 | 1,4514 | 0,5213 | 12,7436 |
| Story1 | Top | ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Min | 0,793 | -1,4743 | 20,2669 | 135,7311 |
| Story1 | Bottom | ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Min | 17,4818 | -1,4514 | -0,5213 | -12,7436 |
| Story1 | Top | ELU 1.2D+1.0L+1.0SY+0.3SX | Combination | Max | 1,3395 | 0,4436 | 23,3684 | 171,4692 |
| Story1 | Bottom | ELU 1.2D+1.0L+1.0SY+0.3SX | Combination | Max | 17,4818 | 0,4367 | 1,7336 | 15,1821 |
| Story1 | Top | ELU 1.2D+1.0L+1.0SY+0.3SX | Combination | Min | 0,4992 | -0,4435 | 18,5995 | 130,9403 |
| Story1 | Bottom | ELU 1.2D+1.0L+1.0SY+0.3SX | Combination | Min | 17,4818 | -0,4367 | -1,7336 | -15,1821 |
| Story1 | Top | ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Max | 1,0456 | 1,4744 | 21,7009 | 166,6784 |
| Story1 | Bottom | ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Max | 17,4818 | 1,4514 | 0,5213 | 12,7436 |
| Story1 | Top | ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Min | 0,793 | -1,4743 | 20,2669 | 135,7311 |
| Story1 | Bottom | ELU 1.2D+1.0L+1.0SX+0.3SY | Combination | Min | 17,4818 | -1,4514 | -0,5213 | -12,7436 |
| Story1 | Top | ELU 1.2D+1.0L+1.0SY+0.3SX | Combination | Max | 1,3395 | 0,4436 | 23,3684 | 171,4692 |
| Story1 | Bottom | ELU 1.2D+1.0L+1.0SY+0.3SX | Combination | Max | 17,4818 | 0,4367 | 1,7336 | 15,1821 |
| Story1 | Top | ELU 1.2D+1.0L+1.0SY+0.3SX | Combination | Min | 0,4992 | -0,4435 | 18,5995 | 130,9403 |
| Story1 | Bottom | ELU 1.2D+1.0L+1.0SY+0.3SX | Combination | Min | 17,4818 | -0,4367 | -1,7336 | -15,1821 |
| Story1 | Top | ELU 1.2D+1.0L-1.0SX-0.3SY | Combination | Max | 1,0456 | 1,4744 | 21,7009 | 166,6784 |





| Story | Location | Output Case | Case Type | Step Type | P tonf | VX tonf | VY tonf | T tonf-m |
|---|---|---|---|---|---|---|---|---|
| Story1 | Bottom | ELU 1.2D+1.0L-1.0SX-0.3SY | Combination | Max | 17,4818 | 1,4514 | 0,5213 | 12,7436 |
| Story1 | Top | ELU 1.2D+1.0L-1.0SX-0.3SY | Combination | Min | 0,793 | -1,4743 | 20,2669 | 135,7311 |
| Story1 | Bottom | ELU 1.2D+1.0L-1.0SX-0.3SY | Combination | Min | 17,4818 | -1,4514 | -0,5213 | -12,7436 |
| Story1 | Top | ELU 1.2D+1.0L-1.0SY-0.3SX | Combination | Max | 1,3395 | 0,4436 | 23,3684 | 171,4692 |
| Story1 | Bottom | ELU 1.2D+1.0L-1.0SY-0.3SX | Combination | Max | 17,4818 | 0,4367 | 1,7336 | 15,1821 |
| Story1 | Top | ELU 1.2D+1.0L-1.0SY-0.3SX | Combination | Min | 0,4992 | -0,4435 | 18,5995 | 130,9403 |
| Story1 | Bottom | ELU 1.2D+1.0L-1.0SY-0.3SX | Combination | Min | 17,4818 | -0,4367 | -1,7336 | -15,1821 |
| Story1 | Top | ELU 0.9D | Combination | | 2,2788 | 2,671E-05 | 8,6162 | 62,0917 |
| Story1 | Bottom | ELU 0.9D | Combination | | 10,5176 | 0 | 0 | 0 |
| Story1 | Top | ELU 0.9D+1.0SX+0.3SY | Combination | Max | 2,4051 | 1,4744 | 9,3332 | 77,5653 |
| Story1 | Bottom | ELU 0.9D+1.0SX+0.3SY | Combination | Max | 10,5176 | 1,4514 | 0,5213 | 12,7436 |
| Story1 | Top | ELU 0.9D+1.0SX+0.3SY | Combination | Min | 2,1525 | -1,4743 | 7,8992 | 46,6181 |
| Story1 | Bottom | ELU 0.9D+1.0SX+0.3SY | Combination | Min | 10,5176 | -1,4514 | -0,5213 | -12,7436 |
| Story1 | Top | ELU 0.9D+1.0SY+0.3SX | Combination | Max | 2,6989 | 0,4436 | 11,0006 | 82,3561 |
| Story1 | Bottom | ELU 0.9D+1.0SY+0.3SX | Combination | Max | 10,5176 | 0,4367 | 1,7336 | 15,1821 |
| Story1 | Top | ELU 0.9D+1.0SY+0.3SX | Combination | Min | 1,8586 | -0,4435 | 6,2318 | 41,8273 |
| Story1 | Bottom | ELU 0.9D+1.0SY+0.3SX | Combination | Min | 10,5176 | -0,4367 | -1,7336 | -15,1821 |
| Story1 | Top | ELU 0.9D-1.0SX+0.3SY | Combination | Max | 2,4051 | 1,4744 | 9,3332 | 77,5653 |
| Story1 | Bottom | ELU 0.9D-1.0SX+0.3SY | Combination | Max | 10,5176 | 1,4514 | 0,5213 | 12,7436 |
| Story1 | Top | ELU 0.9D-1.0SX+0.3SY | Combination | Min | 2,1525 | -1,4743 | 7,8992 | 46,6181 |
| Story1 | Bottom | ELU 0.9D-1.0SX+0.3SY | Combination | Min | 10,5176 | -1,4514 | -0,5213 | -12,7436 |
| Story1 | Top | ELU 0.9D-1.0SY+0.3SX | Combination | Max | 2,6989 | 0,4436 | 11,0006 | 82,3561 |
| Story1 | Bottom | ELU 0.9D-1.0SY+0.3SX | Combination | Max | 10,5176 | 0,4367 | 1,7336 | 15,1821 |
| Story1 | Top | ELU 0.9D-1.0SY+0.3SX | Combination | Min | 1,8586 | -0,4435 | 6,2318 | 41,8273 |
| Story1 | Bottom | ELU 0.9D-1.0SY+0.3SX | Combination | Min | 10,5176 | -0,4367 | -1,7336 | -15,1821 |
| Story1 | Top | ELU 0.9D-1.0SX-0.3SY | Combination | Max | 2,4051 | 1,4744 | 9,3332 | 77,5653 |
| Story1 | Bottom | ELU 0.9D-1.0SX-0.3SY | Combination | Max | 10,5176 | 1,4514 | 0,5213 | 12,7436 |
| Story1 | Top | ELU 0.9D-1.0SX-0.3SY | Combination | Min | 2,1525 | -1,4743 | 7,8992 | 46,6181 |
| Story1 | Bottom | ELU 0.9D-1.0SX-0.3SY | Combination | Min | 10,5176 | -1,4514 | -0,5213 | -12,7436 |
| Story1 | Top | ELU 0.9D-1.0SY-0.3SX | Combination | Max | 2,6989 | 0,4436 | 11,0006 | 82,3561 |
| Story1 | Bottom | ELU 0.9D-1.0SY-0.3SX | Combination | Max | 10,5176 | 0,4367 | 1,7336 | 15,1821 |
| Story1 | Top | ELU 0.9D-1.0SY-0.3SX | Combination | Min | 1,8586 | -0,4435 | 6,2318 | 41,8273 |
| Story1 | Bottom | ELU 0.9D-1.0SY-0.3SX | Combination | Min | 10,5176 | -0,4367 | -1,7336 | -15,1821 |
| Story1 | Top | CIM 1.0D | Combination | | 2,532 | 2,968E-05 | 9,5736 | 68,9908 |
| Story1 | Bottom | CIM 1.0D | Combination | | 11,6862 | 0 | 0 | 0 |
| Story1 | Top | CIM 1.0D+1.0L | Combination | | 0,4129 | 0,0001 | 19,0692 | 137,4066 |
| Story1 | Bottom | CIM 1.0D+1.0L | Combination | | 15,1446 | 0 | 0 | 0 |
| Story1 | Top | CIM 0,6D | Combination | | 1,5192 | 1,781E-05 | 5,7441 | 41,3945 |
| Story1 | Bottom | CIM 0,6D | Combination | | 7,0117 | 0 | 0 | 0 |
| Story1 | Top | CIM 0,6D+0.7SX | Combination | Max | 1,5194 | 1,0318 | 5,7454 | 48,6208 |
| Story1 | Bottom | CIM 0,6D+0.7SX | Combination | Max | 7,0117 | 1,0157 | 0,001 | 6,2992 |
| Story1 | Top | CIM 0,6D+0.7SX | Combination | Min | 1,519 | -1,0318 | 5,7428 | 34,1681 |
| Story1 | Bottom | CIM 0,6D+0.7SX | Combination | Min | 7,0117 | -1,0157 | -0,001 | -6,2992 |
| Story1 | Top | CIM 0,6D+0.7SY | Combination | Max | 1,8132 | 0,001 | 7,4129 | 53,4117 |
| Story1 | Bottom | CIM 0,6D+0.7SY | Combination | Max | 7,0117 | 0,001 | 1,2132 | 8,7377 |
| Story1 | Top | CIM 0,6D+0.7SY | Combination | Min | 1,2252 | -0,0009 | 4,0754 | 29,3773 |
| Story1 | Bottom | CIM 0,6D+0.7SY | Combination | Min | 7,0117 | -0,001 | -1,2132 | -8,7377 |





| Story | Location | Output Case | Case Type | Step Type | P tonf | VX tonf | VY tonf | T tonf-m |
|---|---|---|---|---|---|---|---|---|
| Story1 | Top | CIM 1.0D+0.7SX | Combination | Max | 2,5322 | 1,0318 | 9,5749 | 76,2171 |
| Story1 | Bottom | CIM 1.0D+0.7SX | Combination | Max | 11,6862 | 1,0157 | 0,001 | 6,2992 |
| Story1 | Top | CIM 1.0D+0.7SX | Combination | Min | 2,5318 | -1,0317 | 9,5723 | 61,7644 |
| Story1 | Bottom | CIM 1.0D+0.7SX | Combination | Min | 11,6862 | -1,0157 | -0,001 | -6,2992 |
| Story1 | Top | CIM 1.0D+0.7SY | Combination | Max | 2,826 | 0,001 | 11,2423 | 81,008 |
| Story1 | Bottom | CIM 1.0D+0.7SY | Combination | Max | 11,6862 | 0,001 | 1,2132 | 8,7377 |
| Story1 | Top | CIM 1.0D+0.7SY | Combination | Min | 2,2379 | -0,0009 | 7,9048 | 56,9736 |
| Story1 | Bottom | CIM 1.0D+0.7SY | Combination | Min | 11,6862 | -0,001 | -1,2132 | -8,7377 |
| Story1 | Top | CIM 1.0D+0.75L+0.5SX | Combination | Max | 0,9428 | 0,737 | 16,6962 | 125,4643 |
| Story1 | Bottom | CIM 1.0D+0.75L+0.5SX | Combination | Max | 14,28 | 0,7255 | 0,0007 | 4,4994 |
| Story1 | Top | CIM 1.0D+0.75L+0.5SX | Combination | Min | 0,9425 | -0,7369 | 16,6944 | 115,141 |
| Story1 | Bottom | CIM 1.0D+0.75L+0.5SX | Combination | Min | 14,28 | -0,7255 | -0,0007 | -4,4994 |
| Story1 | Top | CIM 1.0D+0.75L+0.5SY | Combination | Max | 1,1527 | 0,0007 | 17,8872 | 128,8864 |
| Story1 | Bottom | CIM 1.0D+0.75L+0.5SY | Combination | Max | 14,28 | 0,0007 | 0,8666 | 6,2412 |
| Story1 | Top | CIM 1.0D+0.75L+0.5SY | Combination | Min | 0,7326 | -0,0006 | 15,5033 | 111,7189 |
| Story1 | Bottom | CIM 1.0D+0.75L+0.5SY | Combination | Min | 14,28 | -0,0007 | -0,8666 | -6,2412 |
| Story1 | Top | DES 1.0D+1.0SX | Combination | Max | 2,5323 | 1,474 | 9,5754 | 79,3142 |
| Story1 | Bottom | DES 1.0D+1.0SX | Combination | Max | 11,6862 | 1,451 | 0,0014 | 8,9989 |
| Story1 | Top | DES 1.0D+1.0SX | Combination | Min | 2,5317 | -1,4739 | 9,5717 | 58,6674 |
| Story1 | Bottom | DES 1.0D+1.0SX | Combination | Min | 11,6862 | -1,451 | -0,0014 | -8,9989 |
| Story1 | Top | DES 1.0D+1.0SY | Combination | Max | 2,952 | 0,0014 | 11,9574 | 86,1582 |
| Story1 | Bottom | DES 1.0D+1.0SY | Combination | Max | 11,6862 | 0,0014 | 1,7332 | 12,4825 |
| Story1 | Top | DES 1.0D+1.0SY | Combination | Min | 2,1119 | -0,0013 | 7,1897 | 51,8234 |
| Story1 | Bottom | DES 1.0D+1.0SY | Combination | Min | 11,6862 | -0,0014 | -1,7332 | -12,4825 |
| Story1 | Top | DES 1.0D+0.75L+0.75SX | Combination | Max | 0,9429 | 1,1055 | 16,6967 | 128,0452 |
| Story1 | Bottom | DES 1.0D+0.75L+0.75SX | Combination | Max | 14,28 | 1,0883 | 0,001 | 6,7492 |
| Story1 | Top | DES 1.0D+0.75L+0.75SX | Combination | Min | 0,9424 | -1,1054 | 16,6939 | 112,5601 |
| Story1 | Bottom | DES 1.0D+0.75L+0.75SX | Combination | Min | 14,28 | -1,0883 | -0,001 | -6,7492 |
| Story1 | Top | DES 1.0D+0.75L+0.75SY | Combination | Max | 1,2577 | 0,0011 | 18,4832 | 133,1782 |
| Story1 | Bottom | DES 1.0D+0.75L+0.75SY | Combination | Max | 14,28 | 0,0011 | 1,2999 | 9,3618 |
| Story1 | Top | DES 1.0D+0.75L+0.75SY | Combination | Min | 0,6276 | -0,001 | 14,9074 | 107,4271 |
| Story1 | Bottom | DES 1.0D+0.75L+0.75SY | Combination | Min | 14,28 | -0,0011 | -1,2999 | -9,3618 |
| Story1 | Top | DES 0.6D+1.0SX | Combination | Max | 1,5195 | 1,474 | 5,746 | 51,7178 |
| Story1 | Bottom | DES 0.6D+1.0SX | Combination | Max | 7,0117 | 1,451 | 0,0014 | 8,9989 |
| Story1 | Top | DES 0.6D+1.0SX | Combination | Min | 1,5189 | -1,4739 | 5,7423 | 31,0711 |
| Story1 | Bottom | DES 0.6D+1.0SX | Combination | Min | 7,0117 | -1,451 | -0,0014 | -8,9989 |
| Story1 | Top | DES 0.6D+1.0SY | Combination | Max | 1,9392 | 0,0014 | 8,128 | 58,5619 |
| Story1 | Bottom | DES 0.6D+1.0SY | Combination | Max | 7,0117 | 0,0014 | 1,7332 | 12,4825 |
| Story1 | Top | DES 0.6D+1.0SY | Combination | Min | 1,0991 | -0,0013 | 3,3603 | 24,2271 |
| Story1 | Bottom | DES 0.6D+1.0SY | Combination | Min | 7,0117 | -0,0014 | -1,7332 | -12,4825 |
| Story1 | Top | ELS 1.0D+1.0W1 | Combination | | -4,1009 | 0,0001 | 18,7734 | 135,2752 |
| Story1 | Bottom | ELS 1.0D+1.0W1 | Combination | | 10,3172 | 0 | 0 | 0 |
| Story1 | Top | ELS 1.0D+1.0W2 | Combination | | 11,2839 | -3,837E-05 | -9,1219 | -65,7094 |
| Story1 | Bottom | ELS 1.0D+1.0W2 | Combination | | 9,5967 | 0 | 0 | 0 |
| Story1 | Top | ELS 1.0D+0.75W1+0.75L | Combination | | -4,032 | 0,0001 | 23,5952 | 170,0159 |
| Story1 | Bottom | ELS 1.0D+0.75W1+0.75L | Combination | | 13,2533 | 0 | 0 | 0 |
| Story1 | Top | ELS 1.0D+0.75W2+0.75L | Combination | | 7,5066 | 6,035E-06 | 2,6737 | 19,2775 |
| Story1 | Bottom | ELS 1.0D+0.75W2+0.75L | Combination | | 12,7129 | 0 | 0 | 0 |
| Story1 | Top | ELS 0.6D+1.0W1 | Combination | | -5,1137 | 4,933E-05 | 14,944 | 107,6789 |
| Story1 | Bottom | ELS 0.6D+1.0W1 | Combination | | 5,6428 | 0 | 0 | 0 |
| Story1 | Top | ELS 0.6D+1.0W2 | Combination | | 10,2711 | -0,0001 | -12,9513 | -93,3058 |
| Story1 | Bottom | ELS 0.6D+1.0W2 | Combination | | 4,9223 | 0 | 0 | 0 |
| Story1 | Top | ELU 1.2D+0.8W1 | Combination | | -2,2679 | 0,0001 | 18,8481 | 135,8164 |
| Story1 | Bottom | ELU 1.2D+0.8W1 | Combination | | 12,9283 | 0 | 0 | 0 |
| Story1 | Top | ELU 1.2D+0.8W2 | Combination | | 10,0399 | -1,882E-05 | -3,4681 | -24,9713 |

| Story | Location | Output Case | Case Type | Step Type | P tonf | VX tonf | VY tonf | T tonf-m |
|---|---|---|---|---|---|---|---|---|
| Story1 | Bottom | ELU 1.2D+0.8W2 | Combination | | 12,3519 | 0 | 0 | 0 |
| Story1 | Top | ELU 0.9D+1.6W1 | Combination | | -8,3338 | 0,0001 | 23,3359 | 168,1467 |
| Story1 | Bottom | ELU 0.9D+1.6W1 | Combination | | 8,3273 | 0 | 0 | 0 |
| Story1 | Top | ELU 0.9D+1.6W2 | Combination | | 16,2819 | -0,0001 | -21,2965 | -153,4287 |
| Story1 | Bottom | ELU 0.9D+1.6W2 | Combination | | 7,1745 | 0 | 0 | 0 |
| Story1 | Top | ELU 1.2D+1.6W1+1.0L | Combination | | -9,6933 | 0,0001 | 35,7036 | 257,2598 |
| Story1 | Bottom | ELU 1.2D+1.6W1+1.0L | Combination | | 15,2915 | 0 | 0 | 0 |
| Story1 | Top | ELU 1.2D+1.6W2+1.0L | Combination | | 14,9224 | -3,674E-05 | -8,9288 | -64,3156 |
| Story1 | Bottom | ELU 1.2D+1.6W2+1.0L | Combination | | 14,1387 | 0 | 0 | 0 |
| Story1 | Top | DStlD1 | Combination | | 2,532 | 2,968E-05 | 9,5736 | 68,9908 |
| Story1 | Bottom | DStlD1 | Combination | | 11,6862 | 0 | 0 | 0 |
| Story1 | Top | DStlD2 | Combination | | 0,4129 | 0,0001 | 19,0692 | 137,4066 |
| Story1 | Bottom | DStlD2 | Combination | | 15,1446 | 0 | 0 | 0 |

Table 3.4 - Story Forces (Part 2 of 2)

| Story | Location | MX tonf-m | MY tonf-m |
|---|---|---|---|
| Story3 | Top | 0 | -0,4908 |
| Story3 | Bottom | -4,198 | 6,3045 |
| Story3 | Top | 0 | -2,5956 |
| Story3 | Bottom | -10,575 | 15,8738 |
| Story3 | Top | 0 | 0 |
| Story3 | Bottom | 0,0013 | 0,8963 |
| Story3 | Top | 0 | 0 |
| Story3 | Bottom | 1,7715 | 2,6572 |
| Story3 | Top | 0 | 0 |
| Story3 | Bottom | 1,116E-05 | -0,0678 |
| Story3 | Top | 0 | 0 |
| Story3 | Bottom | -0,028 | 0,0418 |
| Story3 | Top | 0 | -1,5574 |
| Story3 | Bottom | -6,345 | 9,5243 |
| Story3 | Top | 0 | -5,1912 |
| Story3 | Bottom | -27,1881 | 40,8108 |
| Story3 | Top | 0 | 7,7868 |
| Story3 | Bottom | 37,7631 | -56,6846 |
| Story3 | Top | 0 | -2,0482 |
| Story3 | Bottom | -10,543 | 15,8288 |
| Story3 | Top | 0 | -4,6438 |
| Story3 | Bottom | -21,118 | 31,7026 |
| Story3 | Top | 0 | -3,9949 |
| Story3 | Bottom | -18,4743 | 27,7342 |
| Story3 | Top | 0 | -2,0482 |
| Story3 | Bottom | -10,5421 | 16,4562 |
| Story3 | Top | 0 | -2,0482 |
| Story3 | Bottom | -10,544 | 15,2014 |
| Story3 | Top | 0 | -2,0482 |
| Story3 | Bottom | -9,303 | 17,6889 |
| Story3 | Top | 0 | -2,0482 |
| Story3 | Bottom | -11,7831 | 13,9688 |
| Story3 | Top | 0 | -3,9949 |
| Story3 | Bottom | -18,4736 | 28,2047 |
| Story3 | Top | 0 | -3,9949 |
| Story3 | Bottom | -18,475 | 27,2636 |
| Story3 | Top | 0 | -3,9949 |
| Story3 | Bottom | -17,5442 | 29,1292 |





| Story | Location | MX tonf-m | MY tonf-m |
|---|---|---|---|
| Story3 | Top | 0 | -3,9949 |
| Story3 | Bottom | -19,4043 | 26,3391 |
| Story3 | Top | 0 | -1,2289 |
| Story3 | Bottom | -6,3249 | 10,1247 |
| Story3 | Top | 0 | -1,2289 |
| Story3 | Bottom | -6,3267 | 8,8699 |
| Story3 | Top | 0 | -1,2289 |
| Story3 | Bottom | -5,0858 | 11,3573 |
| Story3 | Top | 0 | -1,2289 |
| Story3 | Bottom | -7,5659 | 7,6372 |
| Story3 | Top | 0 | -2,8675 |
| Story3 | Bottom | -14,7602 | 22,1603 |
| Story3 | Top | 0 | -6,6108 |
| Story3 | Bottom | -29,5716 | 44,3926 |
| Story3 | Top | 0 | -5,0534 |
| Story3 | Bottom | -22,6939 | 36,5618 |
| Story3 | Top | 0 | -5,0534 |
| Story3 | Bottom | -23,7594 | 33,1749 |
| Story3 | Top | 0 | -5,0534 |
| Story3 | Bottom | -21,4548 | 37,7945 |
| Story3 | Top | 0 | -5,0534 |
| Story3 | Bottom | -24,9985 | 31,9423 |
| Story3 | Top | 0 | -5,0534 |
| Story3 | Bottom | -22,6939 | 36,5618 |
| Story3 | Top | 0 | -5,0534 |
| Story3 | Bottom | -23,7594 | 33,1749 |
| Story3 | Top | 0 | -5,0534 |
| Story3 | Bottom | -21,4548 | 37,7945 |
| Story3 | Top | 0 | -5,0534 |
| Story3 | Bottom | -24,9985 | 31,9423 |
| Story3 | Top | 0 | -5,0534 |
| Story3 | Bottom | -22,6939 | 36,5618 |
| Story3 | Top | 0 | -5,0534 |
| Story3 | Bottom | -23,7594 | 33,1749 |
| Story3 | Top | 0 | -5,0534 |
| Story3 | Bottom | -21,4548 | 37,7945 |
| Story3 | Top | 0 | -5,0534 |
| Story3 | Bottom | -24,9985 | 31,9423 |
| Story3 | Top | 0 | -5,0534 |
| Story3 | Bottom | -22,6939 | 36,5618 |
| Story3 | Top | 0 | -5,0534 |
| Story3 | Bottom | -23,7594 | 33,1749 |
| Story3 | Top | 0 | -5,0534 |
| Story3 | Bottom | -21,4548 | 37,7945 |
| Story3 | Top | 0 | -5,0534 |
| Story3 | Bottom | -24,9985 | 31,9423 |
| Story3 | Top | 0 | -1,8434 |
| Story3 | Bottom | -9,4887 | 14,2459 |
| Story3 | Top | 0 | -1,8434 |
| Story3 | Bottom | -8,956 | 15,9394 |
| Story3 | Top | 0 | -1,8434 |
| Story3 | Bottom | -10,0215 | 12,5525 |
| Story3 | Top | 0 | -1,8434 |
| Story3 | Bottom | -7,7168 | 17,172 |
| Story3 | Top | 0 | -1,8434 |





| Story | Location | MX tonf-m | MY tonf-m |
|---|---|---|---|
| Story3 | Bottom | -11,2606 | 11,3198 |
| Story3 | Top | 0 | -1,8434 |
| Story3 | Bottom | -8,956 | 15,9394 |
| Story3 | Top | 0 | -1,8434 |
| Story3 | Bottom | -10,0215 | 12,5525 |
| Story3 | Top | 0 | -1,8434 |
| Story3 | Bottom | -7,7168 | 17,172 |
| Story3 | Top | 0 | -1,8434 |
| Story3 | Bottom | -11,2606 | 11,3198 |
| Story3 | Top | 0 | -1,8434 |
| Story3 | Bottom | -8,956 | 15,9394 |
| Story3 | Top | 0 | -1,8434 |
| Story3 | Bottom | -10,0215 | 12,5525 |
| Story3 | Top | 0 | -1,8434 |
| Story3 | Bottom | -7,7168 | 17,172 |
| Story3 | Top | 0 | -1,8434 |
| Story3 | Bottom | -11,2606 | 11,3198 |
| Story3 | Top | 0 | -1,8434 |
| Story3 | Bottom | -8,956 | 15,9394 |
| Story3 | Top | 0 | -1,8434 |
| Story3 | Bottom | -10,0215 | 12,5525 |
| Story3 | Top | 0 | -1,8434 |
| Story3 | Bottom | -7,7168 | 17,172 |
| Story3 | Top | 0 | -1,8434 |
| Story3 | Bottom | -11,2606 | 11,3198 |
| Story3 | Top | 0 | -2,0482 |
| Story3 | Bottom | -10,543 | 15,8288 |
| Story3 | Top | 0 | -4,6438 |
| Story3 | Bottom | -21,118 | 31,7026 |
| Story3 | Top | 0 | -1,2289 |
| Story3 | Bottom | -6,3258 | 9,4973 |
| Story3 | Top | 0 | -1,2289 |
| Story3 | Bottom | -6,3249 | 10,1247 |
| Story3 | Top | 0 | -1,2289 |
| Story3 | Bottom | -6,3267 | 8,8699 |
| Story3 | Top | 0 | -1,2289 |
| Story3 | Bottom | -5,0858 | 11,3573 |
| Story3 | Top | 0 | -1,2289 |
| Story3 | Bottom | -7,5659 | 7,6372 |
| Story3 | Top | 0 | -2,0482 |
| Story3 | Bottom | -10,5421 | 16,4562 |
| Story3 | Top | 0 | -2,0482 |
| Story3 | Bottom | -10,544 | 15,2014 |
| Story3 | Top | 0 | -2,0482 |
| Story3 | Bottom | -9,303 | 17,6889 |
| Story3 | Top | 0 | -2,0482 |
| Story3 | Bottom | -11,7831 | 13,9688 |
| Story3 | Top | 0 | -3,9949 |
| Story3 | Bottom | -18,4736 | 28,1823 |
| Story3 | Top | 0 | -3,9949 |
| Story3 | Bottom | -18,4749 | 27,286 |
| Story3 | Top | 0 | -3,9949 |
| Story3 | Bottom | -17,5885 | 29,0628 |
| Story3 | Top | 0 | -3,9949 |
| Story3 | Bottom | -19,36 | 26,4055 |





| Story | Location | MX tonf-m | MY tonf-m |
|---|---|---|---|
| Story3 | Top | 0 | -2,0482 |
| Story3 | Bottom | -10,5417 | 16,7251 |
| Story3 | Top | 0 | -2,0482 |
| Story3 | Bottom | -10,5444 | 14,9325 |
| Story3 | Top | 0 | -2,0482 |
| Story3 | Bottom | -8,7715 | 18,486 |
| Story3 | Top | 0 | -2,0482 |
| Story3 | Bottom | -12,3145 | 13,1716 |
| Story3 | Top | 0 | -3,9949 |
| Story3 | Bottom | -18,4733 | 28,4064 |
| Story3 | Top | 0 | -3,9949 |
| Story3 | Bottom | -18,4753 | 27,0619 |
| Story3 | Top | 0 | -3,9949 |
| Story3 | Bottom | -17,1457 | 29,7271 |
| Story3 | Top | 0 | -3,9949 |
| Story3 | Bottom | -19,8029 | 25,7412 |
| Story3 | Top | 0 | -1,2289 |
| Story3 | Bottom | -6,3245 | 10,3936 |
| Story3 | Top | 0 | -1,2289 |
| Story3 | Bottom | -6,3271 | 8,601 |
| Story3 | Top | 0 | -1,2289 |
| Story3 | Bottom | -4,5543 | 12,1545 |
| Story3 | Top | 0 | -1,2289 |
| Story3 | Bottom | -8,0973 | 6,8401 |
| Story3 | Top | 0 | -7,2394 |
| Story3 | Bottom | -37,7311 | 56,6396 |
| Story3 | Top | 0 | 5,7386 |
| Story3 | Bottom | 27,2201 | -40,8557 |
| Story3 | Top | 0 | -7,8883 |
| Story3 | Bottom | -38,8654 | 58,3422 |
| Story3 | Top | 0 | 1,8452 |
| Story3 | Bottom | 9,848 | -14,7793 |
| Story3 | Top | 0 | -6,4201 |
| Story3 | Bottom | -33,5139 | 50,3081 |
| Story3 | Top | 0 | 6,5579 |
| Story3 | Bottom | 31,4373 | -47,1873 |
| Story3 | Top | 0 | -6,6108 |
| Story3 | Bottom | -34,4021 | 51,6432 |
| Story3 | Top | 0 | 3,7716 |
| Story3 | Bottom | 17,5588 | -26,3531 |
| Story3 | Top | 0 | -10,1493 |
| Story3 | Bottom | -52,9897 | 79,5432 |
| Story3 | Top | 0 | 10,6155 |
| Story3 | Bottom | 50,9322 | -76,4494 |
| Story3 | Top | 0 | -13,3594 |
| Story3 | Bottom | -66,7276 | 100,1656 |
| Story3 | Top | 0 | 7,4054 |
| Story3 | Bottom | 37,1943 | -55,8269 |
| Story3 | Top | 0 | -2,0482 |
| Story3 | Bottom | -10,543 | 15,8288 |
| Story3 | Top | 0 | -4,6438 |
| Story3 | Bottom | -21,118 | 31,7026 |
| Story2 | Top | -4,198 | 6,3045 |
| Story2 | Bottom | -3,3365 | 1,5651 |
| Story2 | Top | -10,575 | 15,8738 |

| Story | Location | MX tonf-m | MY tonf-m |
|---|---|---|---|
| Story2 | Bottom | -15,7804 | 15,2683 |
| Story2 | Top | 0,0013 | 0,8963 |
| Story2 | Bottom | 0,0022 | 1,158 |
| Story2 | Top | 1,7715 | 2,6572 |
| Story2 | Bottom | 2,9602 | 3,0241 |
| Story2 | Top | 1,116E-05 | -0,0678 |
| Story2 | Bottom | 0 | -1,7877 |
| Story2 | Top | -0,028 | 0,0418 |
| Story2 | Bottom | 1,7917 | -0,4621 |
| Story2 | Top | -6,345 | 9,5243 |
| Story2 | Bottom | -9,4683 | 9,161 |
| Story2 | Top | -27,1881 | 40,8108 |
| Story2 | Bottom | -36,8651 | 47,79 |
| Story2 | Top | 37,7631 | -56,6846 |
| Story2 | Bottom | 52,6456 | -63,0583 |
| Story2 | Top | -10,543 | 15,8288 |
| Story2 | Bottom | -12,8047 | 10,726 |
| Story2 | Top | -21,118 | 31,7026 |
| Story2 | Bottom | -28,5851 | 25,9943 |
| Story2 | Top | -18,4743 | 27,7342 |
| Story2 | Bottom | -24,64 | 22,1772 |
| Story2 | Top | -10,5421 | 16,4562 |
| Story2 | Bottom | -12,8031 | 11,5366 |
| Story2 | Top | -10,544 | 15,2014 |
| Story2 | Bottom | -12,8063 | 9,9154 |
| Story2 | Top | -9,303 | 17,6889 |
| Story2 | Bottom | -10,7326 | 12,8429 |
| Story2 | Top | -11,7831 | 13,9688 |
| Story2 | Bottom | -14,8768 | 8,6092 |
| Story2 | Top | -18,4736 | 28,2047 |
| Story2 | Bottom | -24,6389 | 22,7852 |
| Story2 | Top | -18,475 | 27,2636 |
| Story2 | Bottom | -24,6412 | 21,5693 |
| Story2 | Top | -17,5442 | 29,1292 |
| Story2 | Bottom | -23,0859 | 23,7649 |
| Story2 | Top | -19,4043 | 26,3391 |
| Story2 | Bottom | -26,1941 | 20,5896 |
| Story2 | Top | -6,3249 | 10,1247 |
| Story2 | Bottom | -7,6813 | 7,2462 |
| Story2 | Top | -6,3267 | 8,8699 |
| Story2 | Bottom | -7,6844 | 5,625 |
| Story2 | Top | -5,0858 | 11,3573 |
| Story2 | Bottom | -5,6107 | 8,5525 |
| Story2 | Top | -7,5659 | 7,6372 |
| Story2 | Bottom | -9,7549 | 4,3187 |
| Story2 | Top | -14,7602 | 22,1603 |
| Story2 | Bottom | -17,9266 | 15,0164 |
| Story2 | Top | -29,5716 | 44,3926 |
| Story2 | Bottom | -40,6143 | 37,3004 |
| Story2 | Top | -22,6939 | 36,5618 |
| Story2 | Bottom | -30,2558 | 30,2047 |
| Story2 | Top | -23,7594 | 33,1749 |
| Story2 | Bottom | -32,0364 | 26,0742 |
| Story2 | Top | -21,4548 | 37,7945 |
| Story2 | Bottom | -28,1852 | 31,511 |





| Story | Location | MX tonf-m | MY tonf-m |
|---|---|---|---|
| Story2 | Top | -24,9985 | 31,9423 |
| Story2 | Bottom | -34,1069 | 24,768 |
| Story2 | Top | -22,6939 | 36,5618 |
| Story2 | Bottom | -30,2558 | 30,2047 |
| Story2 | Top | -23,7594 | 33,1749 |
| Story2 | Bottom | -32,0364 | 26,0742 |
| Story2 | Top | -21,4548 | 37,7945 |
| Story2 | Bottom | -28,1852 | 31,511 |
| Story2 | Top | -24,9985 | 31,9423 |
| Story2 | Bottom | -34,1069 | 24,768 |
| Story2 | Top | -22,6939 | 36,5618 |
| Story2 | Bottom | -30,2558 | 30,2047 |
| Story2 | Top | -23,7594 | 33,1749 |
| Story2 | Bottom | -32,0364 | 26,0742 |
| Story2 | Top | -21,4548 | 37,7945 |
| Story2 | Bottom | -28,1852 | 31,511 |
| Story2 | Top | -24,9985 | 31,9423 |
| Story2 | Bottom | -34,1069 | 24,768 |
| Story2 | Top | -22,6939 | 36,5618 |
| Story2 | Bottom | -30,2558 | 30,2047 |
| Story2 | Top | -23,7594 | 33,1749 |
| Story2 | Bottom | -32,0364 | 26,0742 |
| Story2 | Top | -21,4548 | 37,7945 |
| Story2 | Bottom | -28,1852 | 31,511 |
| Story2 | Top | -24,9985 | 31,9423 |
| Story2 | Bottom | -34,1069 | 24,768 |
| Story2 | Top | -9,4887 | 14,2459 |
| Story2 | Bottom | -11,5242 | 9,6534 |
| Story2 | Top | -8,956 | 15,9394 |
| Story2 | Bottom | -10,634 | 11,7187 |
| Story2 | Top | -10,0215 | 12,5525 |
| Story2 | Bottom | -12,4145 | 7,5882 |
| Story2 | Top | -7,7168 | 17,172 |
| Story2 | Bottom | -8,5634 | 13,0249 |
| Story2 | Top | -11,2606 | 11,3198 |
| Story2 | Bottom | -14,4851 | 6,2819 |
| Story2 | Top | -8,956 | 15,9394 |
| Story2 | Bottom | -10,634 | 11,7187 |
| Story2 | Top | -10,0215 | 12,5525 |
| Story2 | Bottom | -12,4145 | 7,5882 |
| Story2 | Top | -7,7168 | 17,172 |
| Story2 | Bottom | -8,5634 | 13,0249 |
| Story2 | Top | -11,2606 | 11,3198 |
| Story2 | Bottom | -14,4851 | 6,2819 |
| Story2 | Top | -8,956 | 15,9394 |
| Story2 | Bottom | -10,634 | 11,7187 |
| Story2 | Top | -10,0215 | 12,5525 |
| Story2 | Bottom | -12,4145 | 7,5882 |
| Story2 | Top | -7,7168 | 17,172 |
| Story2 | Bottom | -8,5634 | 13,0249 |
| Story2 | Top | -11,2606 | 11,3198 |
| Story2 | Bottom | -14,4851 | 6,2819 |
| Story2 | Top | -8,956 | 15,9394 |
| Story2 | Bottom | -10,634 | 11,7187 |
| Story2 | Top | -10,0215 | 12,5525 |





| Story | Location | MX tonf-m | MY tonf-m |
|---|---|---|---|
| Story2 | Bottom | -12,4145 | 7,5882 |
| Story2 | Top | -7,7168 | 17,172 |
| Story2 | Bottom | -8,5634 | 13,0249 |
| Story2 | Top | -11,2606 | 11,3198 |
| Story2 | Bottom | -14,4851 | 6,2819 |
| Story2 | Top | -10,543 | 15,8288 |
| Story2 | Bottom | -12,8047 | 10,726 |
| Story2 | Top | -21,118 | 31,7026 |
| Story2 | Bottom | -28,5851 | 25,9943 |
| Story2 | Top | -6,3258 | 9,4973 |
| Story2 | Bottom | -7,6828 | 6,4356 |
| Story2 | Top | -6,3249 | 10,1247 |
| Story2 | Bottom | -7,6813 | 7,2462 |
| Story2 | Top | -6,3267 | 8,8699 |
| Story2 | Bottom | -7,6844 | 5,625 |
| Story2 | Top | -5,0858 | 11,3573 |
| Story2 | Bottom | -5,6107 | 8,5525 |
| Story2 | Top | -7,5659 | 7,6372 |
| Story2 | Bottom | -9,7549 | 4,3187 |
| Story2 | Top | -10,5421 | 16,4562 |
| Story2 | Bottom | -12,8031 | 11,5366 |
| Story2 | Top | -10,544 | 15,2014 |
| Story2 | Bottom | -12,8063 | 9,9154 |
| Story2 | Top | -9,303 | 17,6889 |
| Story2 | Bottom | -10,7326 | 12,8429 |
| Story2 | Top | -11,7831 | 13,9688 |
| Story2 | Bottom | -14,8768 | 8,6092 |
| Story2 | Top | -18,4736 | 28,1823 |
| Story2 | Bottom | -24,6389 | 22,7562 |
| Story2 | Top | -18,4749 | 27,286 |
| Story2 | Bottom | -24,6412 | 21,5982 |
| Story2 | Top | -17,5885 | 29,0628 |
| Story2 | Bottom | -23,1599 | 23,6893 |
| Story2 | Top | -19,36 | 26,4055 |
| Story2 | Bottom | -26,1201 | 20,6652 |
| Story2 | Top | -10,5417 | 16,7251 |
| Story2 | Bottom | -12,8025 | 11,884 |
| Story2 | Top | -10,5444 | 14,9325 |
| Story2 | Bottom | -12,807 | 9,568 |
| Story2 | Top | -8,7715 | 18,486 |
| Story2 | Bottom | -9,8446 | 13,7501 |
| Story2 | Top | -12,3145 | 13,1716 |
| Story2 | Bottom | -15,7649 | 7,7019 |
| Story2 | Top | -18,4733 | 28,4064 |
| Story2 | Bottom | -24,6384 | 23,0457 |
| Story2 | Top | -18,4753 | 27,0619 |
| Story2 | Bottom | -24,6417 | 21,3087 |
| Story2 | Top | -17,1457 | 29,7271 |
| Story2 | Bottom | -22,4199 | 24,4453 |
| Story2 | Top | -19,8029 | 25,7412 |
| Story2 | Bottom | -26,8602 | 19,9091 |
| Story2 | Top | -6,3245 | 10,3936 |
| Story2 | Bottom | -7,6806 | 7,5936 |
| Story2 | Top | -6,3271 | 8,601 |
| Story2 | Bottom | -7,6851 | 5,2776 |





| Story | Location | MX tonf-m | MY tonf-m |
|---|---|---|---|
| Story2 | Top | -4,5543 | 12,1545 |
| Story2 | Bottom | -4,7227 | 9,4597 |
| Story2 | Top | -8,0973 | 6,8401 |
| Story2 | Bottom | -10,643 | 3,4115 |
| Story2 | Top | -37,7311 | 56,6396 |
| Story2 | Bottom | -49,6699 | 58,516 |
| Story2 | Top | 27,2201 | -40,8557 |
| Story2 | Bottom | 39,8408 | -52,3323 |
| Story2 | Top | -38,8654 | 58,3422 |
| Story2 | Bottom | -52,2889 | 58,0197 |
| Story2 | Top | 9,848 | -14,7793 |
| Story2 | Bottom | 14,8441 | -25,1165 |
| Story2 | Top | -33,5139 | 50,3081 |
| Story2 | Bottom | -44,548 | 54,2256 |
| Story2 | Top | 31,4373 | -47,1873 |
| Story2 | Bottom | 44,9627 | -56,6227 |
| Story2 | Top | -34,4021 | 51,6432 |
| Story2 | Bottom | -44,8578 | 51,1032 |
| Story2 | Top | 17,5588 | -26,3531 |
| Story2 | Bottom | 26,7508 | -37,5754 |
| Story2 | Top | -52,9897 | 79,5432 |
| Story2 | Bottom | -70,5085 | 86,1175 |
| Story2 | Top | 50,9322 | -76,4494 |
| Story2 | Bottom | 72,7086 | -91,2398 |
| Story2 | Top | -66,7276 | 100,1656 |
| Story2 | Bottom | -90,1303 | 104,6035 |
| Story2 | Top | 37,1943 | -55,8269 |
| Story2 | Bottom | 53,0868 | -72,7538 |
| Story2 | Top | -10,543 | 15,8288 |
| Story2 | Bottom | -12,8047 | 10,726 |
| Story2 | Top | -21,118 | 31,7026 |
| Story2 | Bottom | -28,5851 | 25,9943 |
| Story1 | Top | 15,9628 | -27,4024 |
| Story1 | Bottom | 42,7256 | -69,2726 |
| Story1 | Top | -15,7804 | 15,2683 |
| Story1 | Bottom | 8,3182 | -24,9178 |
| Story1 | Top | 0,0022 | 1,158 |
| Story1 | Bottom | 0,0065 | 6,6605 |
| Story1 | Top | 2,9602 | 3,0241 |
| Story1 | Bottom | 8,2562 | 0,0074 |
| Story1 | Top | 0 | -1,7877 |
| Story1 | Bottom | 0 | -31,2044 |
| Story1 | Top | 1,7917 | -0,4621 |
| Story1 | Bottom | 31,2044 | 0 |
| Story1 | Top | -9,4683 | 9,161 |
| Story1 | Bottom | 4,9909 | -14,9507 |
| Story1 | Top | -36,8651 | 47,79 |
| Story1 | Bottom | -14,093 | 9,8633 |
| Story1 | Top | 52,6456 | -63,0583 |
| Story1 | Bottom | 5,7748 | 15,0545 |
| Story1 | Top | 6,4945 | -18,2415 |
| Story1 | Bottom | 47,7165 | -84,2233 |
| Story1 | Top | -9,2859 | -2,9732 |
| Story1 | Bottom | 56,0346 | -109,1411 |
| Story1 | Top | -5,3408 | -6,7903 |

| Story | Location | MX tonf-m | MY tonf-m |
|---|---|---|---|
| Story1 | Bottom | 53,9551 | -102,9116 |
| Story1 | Top | 6,4961 | -17,4308 |
| Story1 | Bottom | 47,721 | -79,5609 |
| Story1 | Top | 6,493 | -19,0521 |
| Story1 | Bottom | 47,7119 | -88,8856 |
| Story1 | Top | 8,5666 | -16,1246 |
| Story1 | Bottom | 53,4958 | -84,2181 |
| Story1 | Top | 4,4224 | -20,3583 |
| Story1 | Bottom | 41,9371 | -84,2284 |
| Story1 | Top | -5,3396 | -6,1823 |
| Story1 | Bottom | 53,9585 | -99,4148 |
| Story1 | Top | -5,342 | -7,3982 |
| Story1 | Bottom | 53,9517 | -106,4084 |
| Story1 | Top | -3,7867 | -5,2026 |
| Story1 | Bottom | 58,2896 | -102,9077 |
| Story1 | Top | -6,8949 | -8,3779 |
| Story1 | Bottom | 49,6206 | -102,9155 |
| Story1 | Top | 3,8983 | -10,1343 |
| Story1 | Bottom | 28,6344 | -45,8716 |
| Story1 | Top | 3,8951 | -11,7555 |
| Story1 | Bottom | 28,6253 | -55,1963 |
| Story1 | Top | 5,9688 | -8,828 |
| Story1 | Bottom | 34,4092 | -50,5288 |
| Story1 | Top | 1,8246 | -13,0617 |
| Story1 | Bottom | 22,8505 | -50,5391 |
| Story1 | Top | 9,0923 | -25,538 |
| Story1 | Bottom | 66,803 | -117,9126 |
| Story1 | Top | -17,4552 | 2,5395 |
| Story1 | Bottom | 70,5688 | -140,9364 |
| Story1 | Top | -7,0967 | -4,5562 |
| Story1 | Bottom | 68,0613 | -119,323 |
| Story1 | Top | -8,8773 | -8,6867 |
| Story1 | Bottom | 63,0945 | -132,6484 |
| Story1 | Top | -5,0262 | -3,25 |
| Story1 | Bottom | 73,8361 | -123,9802 |
| Story1 | Top | -10,9478 | -9,993 |
| Story1 | Bottom | 57,3197 | -127,9912 |
| Story1 | Top | -7,0967 | -4,5562 |
| Story1 | Bottom | 68,0613 | -119,323 |
| Story1 | Top | -8,8773 | -8,6867 |
| Story1 | Bottom | 63,0945 | -132,6484 |
| Story1 | Top | -5,0262 | -3,25 |
| Story1 | Bottom | 73,8361 | -123,9802 |
| Story1 | Top | -10,9478 | -9,993 |
| Story1 | Bottom | 57,3197 | -127,9912 |
| Story1 | Top | -7,0967 | -4,5562 |
| Story1 | Bottom | 68,0613 | -119,323 |
| Story1 | Top | -8,8773 | -8,6867 |
| Story1 | Bottom | 63,0945 | -132,6484 |
| Story1 | Top | -5,0262 | -3,25 |
| Story1 | Bottom | 73,8361 | -123,9802 |
| Story1 | Top | -10,9478 | -9,993 |
| Story1 | Bottom | 57,3197 | -127,9912 |
| Story1 | Top | -7,0967 | -4,5562 |
| Story1 | Bottom | 68,0613 | -119,323 |





| Story | Location | MX tonf-m | MY tonf-m |
|---|---|---|---|
| Story1 | Top | -8,8773 | -8,6867 |
| Story1 | Bottom | 63,0945 | -132,6484 |
| Story1 | Top | -5,0262 | -3,25 |
| Story1 | Bottom | 73,8361 | -123,9802 |
| Story1 | Top | -10,9478 | -9,993 |
| Story1 | Bottom | 57,3197 | -127,9912 |
| Story1 | Top | 5,8451 | -16,4173 |
| Story1 | Bottom | 42,9448 | -75,801 |
| Story1 | Top | 6,7354 | -14,3521 |
| Story1 | Bottom | 45,4282 | -69,1382 |
| Story1 | Top | 4,9548 | -18,4826 |
| Story1 | Bottom | 40,4614 | -82,4637 |
| Story1 | Top | 8,8059 | -13,0458 |
| Story1 | Bottom | 51,203 | -73,7954 |
| Story1 | Top | 2,8842 | -19,7888 |
| Story1 | Bottom | 34,6866 | -77,8065 |
| Story1 | Top | 6,7354 | -14,3521 |
| Story1 | Bottom | 45,4282 | -69,1382 |
| Story1 | Top | 4,9548 | -18,4826 |
| Story1 | Bottom | 40,4614 | -82,4637 |
| Story1 | Top | 8,8059 | -13,0458 |
| Story1 | Bottom | 51,203 | -73,7954 |
| Story1 | Top | 2,8842 | -19,7888 |
| Story1 | Bottom | 34,6866 | -77,8065 |
| Story1 | Top | 6,7354 | -14,3521 |
| Story1 | Bottom | 45,4282 | -69,1382 |
| Story1 | Top | 4,9548 | -18,4826 |
| Story1 | Bottom | 40,4614 | -82,4637 |
| Story1 | Top | 8,8059 | -13,0458 |
| Story1 | Bottom | 51,203 | -73,7954 |
| Story1 | Top | 2,8842 | -19,7888 |
| Story1 | Bottom | 34,6866 | -77,8065 |
| Story1 | Top | 6,7354 | -14,3521 |
| Story1 | Bottom | 45,4282 | -69,1382 |
| Story1 | Top | 4,9548 | -18,4826 |
| Story1 | Bottom | 40,4614 | -82,4637 |
| Story1 | Top | 8,8059 | -13,0458 |
| Story1 | Bottom | 51,203 | -73,7954 |
| Story1 | Top | 2,8842 | -19,7888 |
| Story1 | Bottom | 34,6866 | -77,8065 |
| Story1 | Top | 6,4945 | -18,2415 |
| Story1 | Bottom | 47,7165 | -84,2233 |
| Story1 | Top | -9,2859 | -2,9732 |
| Story1 | Bottom | 56,0346 | -109,1411 |
| Story1 | Top | 3,8967 | -10,9449 |
| Story1 | Bottom | 28,6299 | -50,534 |
| Story1 | Top | 3,8983 | -10,1343 |
| Story1 | Bottom | 28,6344 | -45,8716 |
| Story1 | Top | 3,8951 | -11,7555 |
| Story1 | Bottom | 28,6253 | -55,1963 |
| Story1 | Top | 5,9688 | -8,828 |
| Story1 | Bottom | 34,4092 | -50,5288 |
| Story1 | Top | 1,8246 | -13,0617 |
| Story1 | Bottom | 22,8505 | -50,5391 |
| Story1 | Top | 6,4961 | -17,4308 |





| Story | Location | MX tonf-m | MY tonf-m |
|---|---|---|---|
| Story1 | Bottom | 47,721 | -79,5609 |
| Story1 | Top | 6,493 | -19,0521 |
| Story1 | Bottom | 47,7119 | -88,8856 |
| Story1 | Top | 8,5666 | -16,1246 |
| Story1 | Bottom | 53,4958 | -84,2181 |
| Story1 | Top | 4,4224 | -20,3583 |
| Story1 | Bottom | 41,9371 | -84,2284 |
| Story1 | Top | -5,3397 | -6,2113 |
| Story1 | Bottom | 53,9583 | -99,5814 |
| Story1 | Top | -5,3419 | -7,3693 |
| Story1 | Bottom | 53,9518 | -106,2419 |
| Story1 | Top | -3,8607 | -5,2782 |
| Story1 | Bottom | 58,0832 | -102,9079 |
| Story1 | Top | -6,8209 | -8,3023 |
| Story1 | Bottom | 49,827 | -102,9153 |
| Story1 | Top | 6,4968 | -17,0834 |
| Story1 | Bottom | 47,723 | -77,5628 |
| Story1 | Top | 6,4923 | -19,3995 |
| Story1 | Bottom | 47,7099 | -90,8838 |
| Story1 | Top | 9,4547 | -15,2174 |
| Story1 | Bottom | 55,9727 | -84,2159 |
| Story1 | Top | 3,5344 | -21,2656 |
| Story1 | Bottom | 39,4602 | -84,2307 |
| Story1 | Top | -5,3391 | -5,9218 |
| Story1 | Bottom | 53,96 | -97,9162 |
| Story1 | Top | -5,3425 | -7,6588 |
| Story1 | Bottom | 53,9502 | -107,907 |
| Story1 | Top | -3,1207 | -4,5222 |
| Story1 | Bottom | 60,1473 | -102,9061 |
| Story1 | Top | -7,5609 | -9,0583 |
| Story1 | Bottom | 47,7629 | -102,9171 |
| Story1 | Top | 3,899 | -9,7869 |
| Story1 | Bottom | 28,6364 | -43,8735 |
| Story1 | Top | 3,8945 | -12,1029 |
| Story1 | Bottom | 28,6234 | -57,1945 |
| Story1 | Top | 6,8569 | -7,9208 |
| Story1 | Bottom | 36,8861 | -50,5266 |
| Story1 | Top | 0,9365 | -13,969 |
| Story1 | Bottom | 20,3736 | -50,5413 |
| Story1 | Top | -30,3706 | 29,5486 |
| Story1 | Bottom | 33,6235 | -74,36 |
| Story1 | Top | 59,1401 | -81,2997 |
| Story1 | Bottom | 53,4913 | -69,1688 |
| Story1 | Top | -32,9896 | 29,0522 |
| Story1 | Bottom | 43,3854 | -95,5141 |
| Story1 | Top | 34,1434 | -54,084 |
| Story1 | Bottom | 58,2862 | -91,6207 |
| Story1 | Top | -32,9684 | 36,8451 |
| Story1 | Bottom | 14,5369 | -40,6707 |
| Story1 | Top | 56,5423 | -74,0032 |
| Story1 | Bottom | 34,4047 | -35,4795 |
| Story1 | Top | -21,6987 | 16,3423 |
| Story1 | Bottom | 45,9854 | -93,1773 |
| Story1 | Top | 49,9099 | -72,3364 |
| Story1 | Bottom | 61,8796 | -89,0243 |





| Story | Location | MX tonf-m | MY tonf-m |
|---|---|---|---|
| Story1 | Top | -53,1391 | 60,0467 |
| Story1 | Bottom | 20,396 | -60,0197 |
| Story1 | Top | 90,078 | -117,3106 |
| Story1 | Bottom | 52,1845 | -51,7138 |
| Story1 | Top | -66,9712 | 69,8425 |
| Story1 | Bottom | 43,0292 | -110,2045 |
| Story1 | Top | 76,2459 | -107,5147 |
| Story1 | Bottom | 74,8176 | -101,8985 |
| Story1 | Top | 6,4945 | -18,2415 |
| Story1 | Bottom | 47,7165 | -84,2233 |
| Story1 | Top | -9,2859 | -2,9732 |
| Story1 | Bottom | 56,0346 | -109,1411 |

Table 3.5 - Story Stiffness

| Story | Output Case | Case Type | Step Type | Shear X tonf | Drift X mm | Stiff X tonf/m | Shear Y tonf | Drift Y mm | Stiff Y tonf/m |
|---|---|---|---|---|---|---|---|---|---|
| Story3 | SXEST | LinStatic | Step By Step | 0 | 0 | 0 | 0 | 0 | 0 |
| Story2 | SXEST | LinStatic | Step By Step | 2,4508 | 0,691907 | 3542,051 | 1,593E-06 | 0,008473 | 0 |
| Story1 | SXEST | LinStatic | Step By Step | 7,2265 | 12,260258 | 589,426 | 0 | 0,033402 | 0 |
| Story3 | SYEST | LinStatic | Step By Step | 0 | 0 | 0 | 0 | 0 | 0 |
| Story2 | SYEST | LinStatic | Step By Step | 0,0001 | 0,008362 | 0 | 2,1827 | 6,03118 | 361,905 |
| Story1 | SYEST | LinStatic | Step By Step | 0 | 0,000872 | 0 | 7,2265 | 22,964704 | 314,679 |

3.3 Modal Results

Table 3.6 - Modal Periods And Frequencies

| Case | Mode | Period sec | Frequency cyc/sec | CircFreq rad/sec | Eigenvalue rad2/sec2 |
|---|---|---|---|---|---|
| Modal | 1 | 0,439 | 2,277 | 14,3067 | 204,6812 |
| Modal | 2 | 0,374 | 2,671 | 16,784 | 281,702 |
| Modal | 3 | 0,266 | 3,763 | 23,6425 | 558,9664 |
| Modal | 4 | 0,099 | 10,15 | 63,7736 | 4067,0724 |
| Modal | 5 | 0,092 | 10,862 | 68,2471 | 4657,6706 |
| Modal | 6 | 0,074 | 13,523 | 84,9679 | 7219,5495 |
| Modal | 7 | 0,061 | 16,354 | 102,7582 | 10559,2537 |
| Modal | 8 | 0,057 | 17,505 | 109,9866 | 12097,0422 |
| Modal | 9 | 0,047 | 21,384 | 134,3595 | 18052,4728 |
| Modal | 10 | 0,047 | 21,461 | 134,8406 | 18181,9862 |
| Modal | 11 | 0,031 | 32,782 | 205,9774 | 42426,6762 |
| Modal | 12 | 0,026 | 38,846 | 244,0781 | 59574,1327 |
| Modal | 13 | 0,024 | 42,47 | 266,8497 | 71208,7774 |
| Modal | 14 | 0,023 | 44,191 | 277,6581 | 77094,0043 |
| Modal | 15 | 0,019 | 52,883 | 332,272 | 110404,6525 |
| Modal | 16 | 0,018 | 54,618 | 343,1761 | 117769,834 |
| Modal | 17 | 0,016 | 60,859 | 382,3869 | 146219,7189 |
| Modal | 18 | 0,016 | 62,238 | 391,0556 | 152924,5088 |
| Modal | 19 | 0,015 | 64,998 | 408,3937 | 166785,3765 |
| Modal | 20 | 0,013 | 78,205 | 491,3739 | 241448,298 |
| Modal | 21 | 0,013 | 78,307 | 492,0155 | 242079,2866 |
| Modal | 22 | 0,012 | 86,302 | 542,2493 | 294034,3482 |
| Modal | 23 | 0,007 | 142,114 | 892,9281 | 797320,533 |
| Modal | 24 | 0,006 | 167,858 | 1054,6852 | 1112360,9636 |

Table 3.7 - Modal Participating Mass Ratios (Part 1 of 2)

| Case | Mode | Period sec | UX | UY | UZ | SumUX | SumUY | SumUZ | RX | RY | RZ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Modal | 1 | 0,439 | 0 | 0,9514 | 0 | 0 | 0,9514 | 0 | 0,6865 | 6,675E-07 | 2,521E-06 |
| Modal | 2 | 0,374 | 0,2088 | 2,448E-06 | 0 | 0,2088 | 0,9514 | 0 | 1,698E-06 | 0,3298 | 0,78 |
| Modal | 3 | 0,266 | 0,7842 | 0 | 0 | 0,993 | 0,9514 | 0 | 0 | 0,2853 | 0,1828 |
| Modal | 4 | 0,099 | 0 | 0,0003 | 0 | 0,993 | 0,9517 | 0 | 0 | 0 | 0 |
| Modal | 5 | 0,092 | 0,006 | 0 | 0 | 0,9989 | 0,9517 | 0 | 0 | 0,2584 | 0,0003 |
| Modal | 6 | 0,074 | 0,0006 | 0 | 0 | 0,9996 | 0,9517 | 0 | 0 | 0,0521 | 0,0011 |
| Modal | 7 | 0,061 | 0 | 0,0337 | 0 | 0,9996 | 0,9854 | 0 | 0,2168 | 0 | 0 |
| Modal | 8 | 0,057 | 2,193E-06 | 1,512E-06 | 0 | 0,9996 | 0,9854 | 0 | 9,784E-06 | 0,0002 | 0,0103 |
| Modal | 9 | 0,047 | 0 | 0,0124 | 0 | 0,9996 | 0,9979 | 0 | 0,0813 | 3,813E-06 | 0,0013 |
| Modal | 10 | 0,047 | 0 | 0,0007 | 0 | 0,9996 | 0,9986 | 0 | 0,0045 | 0,0001 | 0,0231 |
| Modal | 11 | 0,031 | 0 | 1,075E-05 | 0 | 0,9996 | 0,9986 | 0 | 0,0001 | 0 | 0 |
| Modal | 12 | 0,026 | 0 | 0 | 0 | 0,9996 | 0,9986 | 0 | 0 | 0 | 0 |
| Modal | 13 | 0,024 | 1,488E-05 | 0 | 0 | 0,9996 | 0,9986 | 0 | 0 | 0,0029 | 5,191E-07 |
| Modal | 14 | 0,023 | 0 | 0 | 0 | 0,9996 | 0,9986 | 0 | 0 | 2,243E-06 | 0 |
| Modal | 15 | 0,019 | 0 | 0 | 0 | 0,9996 | 0,9986 | 0 | 0 | 0,0001 | 2,911E-06 |
| Modal | 16 | 0,018 | 0,0004 | 0 | 0 | 1 | 0,9986 | 0 | 0 | 0,0711 | 1,539E-05 |
| Modal | 17 | 0,016 | 0 | 7,865E-07 | 0 | 1 | 0,9986 | 0 | 5,939E-06 | 0 | 0 |
| Modal | 18 | 0,016 | 0 | 0,001 | 0 | 1 | 0,9996 | 0 | 0,0076 | 0 | 0 |
| Modal | 19 | 0,015 | 0 | 0 | 0 | 1 | 0,9996 | 0 | 6,345E-07 | 0 | 0,0003 |
| Modal | 20 | 0,013 | 0 | 0,0002 | 0 | 1 | 0,9998 | 0 | 0,0013 | 5,641E-07 | 0,0005 |
| Modal | 21 | 0,013 | 0 | 0,0002 | 0 | 1 | 1 | 0 | 0,0018 | 0 | 0,0004 |
| Modal | 22 | 0,012 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| Modal | 23 | 0,007 | 7,348E-07 | 0 | 0 | 1 | 1 | 0 | 0 | 6,313E-06 | 0 |
| Modal | 24 | 0,006 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |

Table 3.7 - Modal Participating Mass Ratios (Part 2 of 2)

| Case | Mode | SumRX | SumRY | SumRZ |
|---|---|---|---|---|
| Modal | 1 | 0,6865 | 6,675E-07 | 2,521E-06 |
| Modal | 2 | 0,6865 | 0,3299 | 0,78 |
| Modal | 3 | 0,6865 | 0,6152 | 0,9628 |
| Modal | 4 | 0,6865 | 0,6152 | 0,9628 |
| Modal | 5 | 0,6865 | 0,8735 | 0,9631 |
| Modal | 6 | 0,6865 | 0,9256 | 0,9642 |
| Modal | 7 | 0,9033 | 0,9256 | 0,9642 |
| Modal | 8 | 0,9033 | 0,9258 | 0,9745 |
| Modal | 9 | 0,9846 | 0,9258 | 0,9758 |
| Modal | 10 | 0,9892 | 0,9259 | 0,9989 |
| Modal | 11 | 0,9892 | 0,9259 | 0,9989 |
| Modal | 12 | 0,9892 | 0,9259 | 0,9989 |
| Modal | 13 | 0,9892 | 0,9288 | 0,9989 |
| Modal | 14 | 0,9892 | 0,9288 | 0,9989 |
| Modal | 15 | 0,9892 | 0,9289 | 0,9989 |
| Modal | 16 | 0,9892 | 1 | 0,9989 |
| Modal | 17 | 0,9893 | 1 | 0,9989 |
| Modal | 18 | 0,9969 | 1 | 0,9989 |
| Modal | 19 | 0,9969 | 1 | 0,9992 |
| Modal | 20 | 0,9982 | 1 | 0,9996 |
| Modal | 21 | 1 | 1 | 1 |
| Modal | 22 | 1 | 1 | 1 |
| Modal | 23 | 1 | 1 | 1 |
| Modal | 24 | 1 | 1 | 1 |

Table 3.8 - Modal Load Participation Ratios





| Case | ItemType | Item | Static % | Dynamic % |
|---|---|---|---|---|
| Modal | Acceleration | UX | 100 | 100 |
| Modal | Acceleration | UY | 100 | 100 |
| Modal | Acceleration | UZ | 0 | 0 |

Table 3.9 - Modal Direction Factors

| Case | Mode | Period sec | UX | UY | UZ | RZ |
|---|---|---|---|---|---|---|
| Modal | 1 | 0,439 | 0 | 1 | 0 | 0 |
| Modal | 2 | 0,374 | 0,43 | 0 | 0 | 0,57 |
| Modal | 3 | 0,266 | 0,841 | 0 | 0 | 0,159 |
| Modal | 4 | 0,099 | 0 | 0,973 | 0 | 0,027 |
| Modal | 5 | 0,092 | 0,656 | 0 | 0 | 0,344 |
| Modal | 6 | 0,074 | 0,069 | 0 | 0 | 0,931 |
| Modal | 7 | 0,061 | 0 | 1 | 0 | 0 |
| Modal | 8 | 0,057 | 0 | 0 | 0 | 1 |
| Modal | 9 | 0,047 | 0 | 0,742 | 0 | 0,258 |
| Modal | 10 | 0,047 | 0 | 0,009 | 0 | 0,991 |
| Modal | 11 | 0,031 | 0 | 0,789 | 0 | 0,211 |
| Modal | 12 | 0,026 | 0,034 | 0 | 0 | 0,966 |
| Modal | 13 | 0,024 | 0,032 | 0 | 0 | 0,968 |
| Modal | 14 | 0,023 | 0,306 | 0,024 | 0 | 0,67 |
| Modal | 15 | 0,019 | 0 | 0 | 0 | 1 |
| Modal | 16 | 0,018 | 0,224 | 0 | 0 | 0,776 |
| Modal | 17 | 0,016 | 0 | 0,225 | 0 | 0,775 |
| Modal | 18 | 0,016 | 0 | 1 | 0 | 0 |
| Modal | 19 | 0,015 | 0 | 0 | 0 | 1 |
| Modal | 20 | 0,013 | 0 | 0,222 | 0 | 0,778 |
| Modal | 21 | 0,013 | 0 | 0,346 | 0 | 0,654 |
| Modal | 22 | 0,012 | 0,179 | 0,003 | 0 | 0,819 |
| Modal | 23 | 0,007 | 0 | 0 | 0 | 1 |
| Modal | 24 | 0,006 | 0 | 0 | 0 | 1 |

| | |
|---|---|
| Nombre Principal | |
| Nombre Auxiliar | Dirección |
| Propietario | Diseño Arquitectónico |
| DC-CAD3 Licenciado a: NAILETH JIMENEZ CASTRO | Contenido Memorias de columnas |
| Norma NSR-10 DMO | Código Nimbus |

## Combinaciones usadas en el grupo de diseño #1

| Nº | Definición | Flexo-compresión | Cortante | Rel. Col/Vig |
|---|---|---|---|---|
| 1 | Dead | SI | SI | SI |
| 2 | ELS 1.0D | SI | SI | SI |
| 3 | ELS 1.0D+1.0L | SI | SI | SI |
| 4 | ELS 1.0D+0.75L | SI | SI | SI |
| 5 | ELS 1.0D+0.7SXMax | SI | SI | SI |
| 6 | ELS 1.0D+0.7SXMin | SI | SI | SI |
| 7 | ELS 1.0D+0.7SYMax | SI | SI | SI |
| 8 | ELS 1.0D+0.7SYMin | SI | SI | SI |
| 9 | ELS 1.0D+0.75L+0.525SXMax | SI | SI | SI |
| 10 | ELS 1.0D+0.75L+0.525SXMin | SI | SI | SI |
| 11 | ELS 1.0D+0.75L+0.525SYMax | SI | SI | SI |
| 12 | ELS 1.0D+0.75L+0.525SYMin | SI | SI | SI |
| 13 | ELS 0.6D+0.7SXMax | SI | SI | SI |
| 14 | ELS 0.6D+0.7SXMin | SI | SI | SI |
| 15 | ELS 0.6D+0.7SYMax | SI | SI | SI |
| 16 | ELS 0.6D+0.7SYMin | SI | SI | SI |
| 17 | ELU 1.4D | SI | SI | SI |
| 18 | ELU 1.2D+1.6L | SI | SI | SI |
| 19 | ELU 1.2D+1.0L+1.0SX+0.3SYMax | SI | SI | SI |
| 20 | ELU 1.2D+1.0L+1.0SX+0.3SYMin | SI | SI | SI |
| 21 | ELU 1.2D+1.0L+1.0SY+0.3SXMax | SI | SI | SI |
| 22 | ELU 1.2D+1.0L+1.0SY+0.3SXMin | SI | SI | SI |
| 23 | ELU 1.2D+1.0L+1.0SX-0.3SYMax | SI | SI | SI |
| 24 | ELU 1.2D+1.0L+1.0SX-0.3SYMin | SI | SI | SI |
| 25 | ELU 1.2D+1.0L+1.0SY-0.3SXMax | SI | SI | SI |
| 26 | ELU 1.2D+1.0L+1.0SY-0.3SXMin | SI | SI | SI |
| 27 | ELU 1.2D+1.0L-1.0SX+0.3SYMax | SI | SI | SI |
| 28 | ELU 1.2D+1.0L-1.0SX+0.3SYMin | SI | SI | SI |
| 29 | ELU 1.2D+1.0L-1.0SY+0.3SXMax | SI | SI | SI |
| 30 | ELU 1.2D+1.0L-1.0SY+0.3SXMin | SI | SI | SI |
| 31 | ELU 1.2D+1.0L-1.0SX-0.3SYMax | SI | SI | SI |
| 32 | ELU 1.2D+1.0L-1.0SX-0.3SYMin | SI | SI | SI |
| 33 | ELU 1.2D+1.0L-1.0SY-0.3SXMax | SI | SI | SI |
| 34 | ELU 1.2D+1.0L-1.0SY-0.3SXMin | SI | SI | SI |
| 35 | ELU 0.9D | SI | SI | SI |
| 36 | ELU 0.9D+1.0SX+0.3SYMax | SI | SI | SI |
| 37 | ELU 0.9D+1.0SX+0.3SYMin | SI | SI | SI |
| 38 | ELU 0.9D+1.0SY+0.3SXMax | SI | SI | SI |
| 39 | ELU 0.9D+1.0SY+0.3SXMin | SI | SI | SI |
| 40 | ELU 0.9D+1.0SX-0.3SYMax | SI | SI | SI |
| 41 | ELU 0.9D+1.0SX-0.3SYMin | SI | SI | SI |
| 42 | ELU 0.9D+1.0SY-0.3SXMax | SI | SI | SI |
| 43 | ELU 0.9D+1.0SY-0.3SXMin | SI | SI | SI |
| 44 | ELU 0.9D-1.0SX+0.3SYMax | SI | SI | SI |
| 45 | ELU 0.9D-1.0SX+0.3SYMin | SI | SI | SI |
| 46 | ELU 0.9D-1.0SY+0.3SXMax | SI | SI | SI |
| 47 | ELU 0.9D-1.0SY+0.3SXMin | SI | SI | SI |
| 48 | ELU 0.9D-1.0SX-0.3SYMax | SI | SI | SI |
| 49 | ELU 0.9D-1.0SX-0.3SYMin | SI | SI | SI |
| 50 | ELU 0.9D-1.0SY-0.3SXMax | SI | SI | SI |
| 51 | ELU 0.9D-1.0SY-0.3SXMin | SI | SI | SI |
| 52 | ELS 1.0D+1.0W1 | SI | SI | SI |
| 53 | ELS 1.0D+1.0W2 | SI | SI | SI |
| 54 | ELS 1.0D+0.75W1+0.75L | SI | SI | SI |

| | |
|---|---|
| Nombre Principal | |
| Nombre Auxiliar | Dirección |
| Propietario | Diseño Arquitectónico |
| DC-CAD3 Licenciado a: NAILETH JIMENEZ CASTRO | Contenido Memorias de columnas |
| Norma NSR-10 DMO | Código Nimbus |

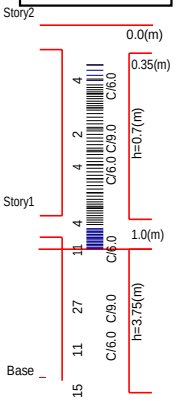
## Combinaciones usadas en el grupo de diseño #1

| Nº | Definición | Flexo-compresión | Cortante | Rel. Col/Vig |
|---|---|---|---|---|
| 55 | ELS 1.0D+0.75W2+0.75L | SI | SI | SI |
| 56 | ELS 0.6D+1.0W1 | SI | SI | SI |
| 57 | ELS 0.6D+1.0W2 | SI | SI | SI |
| 58 | ELU 1.2D+0.8W1 | SI | SI | SI |
| 59 | ELU 1.2D+0.8W2 | SI | SI | SI |
| 60 | ELU 0.9D+1.6W1 | SI | SI | SI |
| 61 | ELU 0.9D+1.6W2 | SI | SI | SI |
| 62 | ELU 1.2D+1.6W1+1.0L | SI | SI | SI |
| 63 | ELU 1.2D+1.6W2+1.0L | SI | SI | SI |

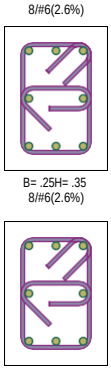
## C1

Norma: NSR-10 DMO
Volumen sin nudos= 0.4 m3 Peso del refuerzo= 206.4 Kg Cuantía= 530.0 kg/m3

### DISTRIBUCIÓN DE ESTRIBOS




### SECCIÓN INFERIOR

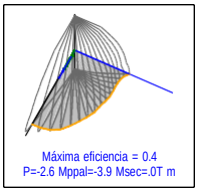


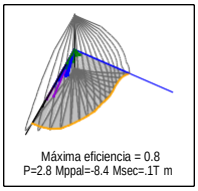

### DISEÑO CORTANTE

V. Max Ppal=6.8Ton (ELU 1.2D+1.6W1+1.0L)
Sec=
.2Ton (ELU 1.2D+1.0L+1.0SX+0.3SYMax)
V. plástico Ppal= Sec=2Ton
So abajo 60mm (P.Volum. (C.21.3.5.7))
S central 90mm (Por Solicitaciones)
So arriba 60mm (P.Volum. (C.21.3.5.7))

V. Max Ppal=.8Ton (ELU 1.2D+1.0L+1.0SY+0.3SXMin)
Sec=
.4Ton (ELU 1.2D+1.0L+1.0SX+0.3SYMax)
V. plástico Ppal=5 Sec=3Ton
So abajo 60mm (P.Volum. (C.21.3.5.7))
S central 90mm (Por Cortante Plástico)
So arriba 60mm (P.Volum. (C.21.3.5.7))

### SUP.INTERACCIÓN ZONA INFERIOR




### DISEÑO FLEXION

F'c = 28 Mpa
Cuantia zona superior =2.6
Eficiencia zona superior = 0.00
P=-2.1 Mppal=.0 Msec=.0T m

Cuantia zona inferior =2.6
Eficiencia zona inferior = 0.37
P=-2.6 Mppal=-3.9 Msec=.0T m

F'c = 28 Mpa
Cuantia zona superior =2.6
Eficiencia zona superior = 0.58
P=2.8 Mppal=-6.4 Msec=-.2T m

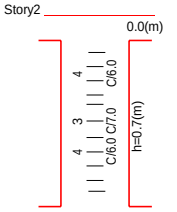
Cuantia zona inferior =2.6
Eficiencia zona inferior = 0.75
P=2.8 Mppal=-8.4 Msec=.1T m

Relación Mínima Col/Vig=3.3(Viga:1)

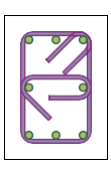
## C2

Norma: NSR-10 DMO
Volumen sin nudos= 0.4 m3 Peso del refuerzo= 207.2 Kg Cuantía= 532.1 kg/m3

### DISTRIBUCIÓN DE ESTRIBOS



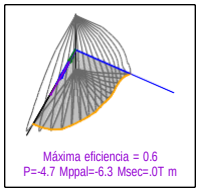

### SECCIÓN INFERIOR




### DISEÑO CORTANTE

V. Max Ppal=11.0Ton (ELU 1.2D+1.6W1+1.0L)
Sec=
.2Ton (ELU 1.2D+1.0L+1.0SX+0.3SYMin)
V. plástico Ppal= Sec=4Ton
So abajo 60mm (P.Volum. (C.21.3.5.7))
S central 70mm (Por Solicitaciones)
So arriba 60mm (P.Volum. (C.21.3.5.7))

### SUP.INTERACCIÓN ZONA INFERIOR

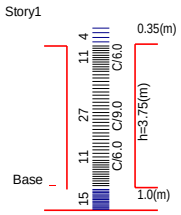


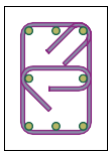

### DISEÑO FLEXION

F'c = 28 Mpa
Cuantia zona superior =2.6
Eficiencia zona superior = 0.00
P=-.3 Mppal=.0 Msec=.0T m

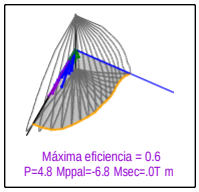
Cuantia zona inferior =2.6
Eficiencia zona inferior = 0.61
P=-4.7 Mppal=-6.3 Msec=.0T m

| | |
|---|---|
| Nombre Principal | |
| Nombre Auxiliar | Dirección |
| Propietario | Diseño Arquitectónico |
| DC-CAD3 Licenciado a: NAILETH JIMENEZ CASTRO | Contenido Memorias de columnas |
| Norma NSR-10 DMO | Código Nimbus |




V. Max Ppal=.8Ton (ELU 1.2D+1.0L+1.0SY+0.3SXMax)
Sec=
.4Ton (ELU 1.2D+1.0L+1.0SX+0.3SYMin)
V. plástico Ppal=5 Sec=4Ton
So abajo 60mm (P.Volum. (C.21.3.5.7))
S central 90mm (Por Cortante Plástico)
So arriba 60mm (P.Volum. (C.21.3.5.7))




F'c = 28 Mpa
Cuantia zona superior =2.6
Eficiencia zona superior = 0.78
P=4.8 Mppal=-8.8 Msec=.0T m

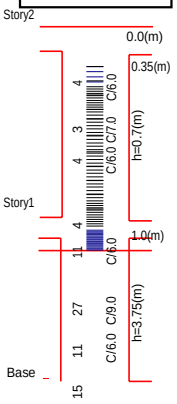
Cuantia zona inferior =2.6
Eficiencia zona inferior = 0.60
P=4.8 Mppal=-6.8 Msec=.0T m

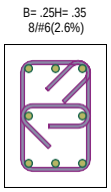
Relación Mínima Col/Vig=1.3(Viga:1)

## C3

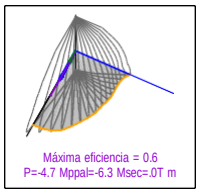
Norma: NSR-10 DMO
Volumen sin nudos= 0.4 m3 Peso del refuerzo= 207.2 Kg Cuantía= 532.1 kg/m3

| DISTRIBUCIÓN DE ESTRIBOS | SECCIÓN INFERIOR | DISEÑO CORTANTE | SUP.INTERACCIÓN ZONA INFERIOR | DISEÑO FLEXION |
|---|---|---|---|---|



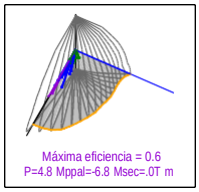

V. Max Ppal=11.0Ton (ELU 1.2D+1.6W1+1.0L)
Sec=
.2Ton (ELU 1.2D+1.0L+1.0SX+0.3SYMax)
V. plástico Ppal= Sec=3Ton
So abajo 60mm (P.Volum. (C.21.3.5.7))
S central 70mm (Por Solicitaciones)
So arriba 60mm (P.Volum. (C.21.3.5.7))




F'c = 28 Mpa
Cuantia zona superior =2.6
Eficiencia zona superior = 0.00
P=-1.1 Mppal=.0 Msec=.0T m

Cuantia zona inferior =2.6
Eficiencia zona inferior = 0.61
P=-4.7 Mppal=-6.3 Msec=.0T m

V. Max Ppal=.8Ton (ELU 1.2D+1.0L+1.0SY+0.3SXMax)
Sec=
.4Ton (ELU 1.2D+1.0L+1.0SX+0.3SYMax)
V. plástico Ppal=5 Sec=3Ton
So abajo 60mm (P.Volum. (C.21.3.5.7))
S central 90mm (Por Cortante Plástico)
So arriba 60mm (P.Volum. (C.21.3.5.7))




F'c = 28 Mpa
Cuantia zona superior =2.6
Eficiencia zona superior = 0.78
P=4.8 Mppal=-8.8 Msec=.0T m

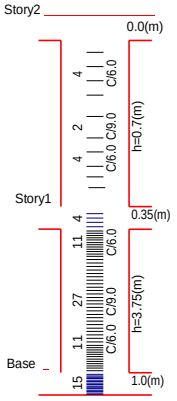
Cuantia zona inferior =2.6
Eficiencia zona inferior = 0.60
P=4.8 Mppal=-6.8 Msec=.0T m

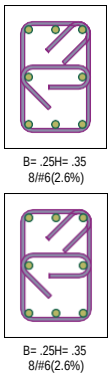
Relación Mínima Col/Vig=1.6(Viga:1)

## C4

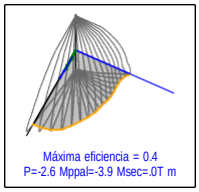
Norma: NSR-10 DMO
Volumen sin nudos= 0.4 m3 Peso del refuerzo= 206.4 Kg Cuantía= 530.0 kg/m3

| DISTRIBUCIÓN DE ESTRIBOS | SECCIÓN INFERIOR | DISEÑO CORTANTE | SUP.INTERACCIÓN ZONA INFERIOR | DISEÑO FLEXION |
|---|---|---|---|---|



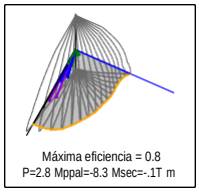

V. Max Ppal=6.8Ton (ELU 1.2D+1.6W1+1.0L)
Sec=
.2Ton (ELU 1.2D+1.0L+1.0SX+0.3SYMin)
V. plástico Ppal= Sec=2Ton
So abajo 60mm (P.Volum. (C.21.3.5.7))
S central 90mm (Por Solicitaciones)
So arriba 60mm (P.Volum. (C.21.3.5.7))




F'c = 28 Mpa
Cuantia zona superior =2.6
Eficiencia zona superior = 0.00
P=-2.1 Mppal=.0 Msec=.0T m

Cuantia zona inferior =2.6
Eficiencia zona inferior = 0.37
P=-2.6 Mppal=-3.9 Msec=.0T m

V. Max Ppal=.8Ton (ELU 1.2D+1.0L+1.0SY+0.3SXMin)
Sec=
.4Ton (ELU 1.2D+1.0L+1.0SX+0.3SYMin)
V. plástico Ppal=5 Sec=3Ton
So abajo 60mm (P.Volum. (C.21.3.5.7))
S central 90mm (Por Cortante Plástico)
So arriba 60mm (P.Volum. (C.21.3.5.7))



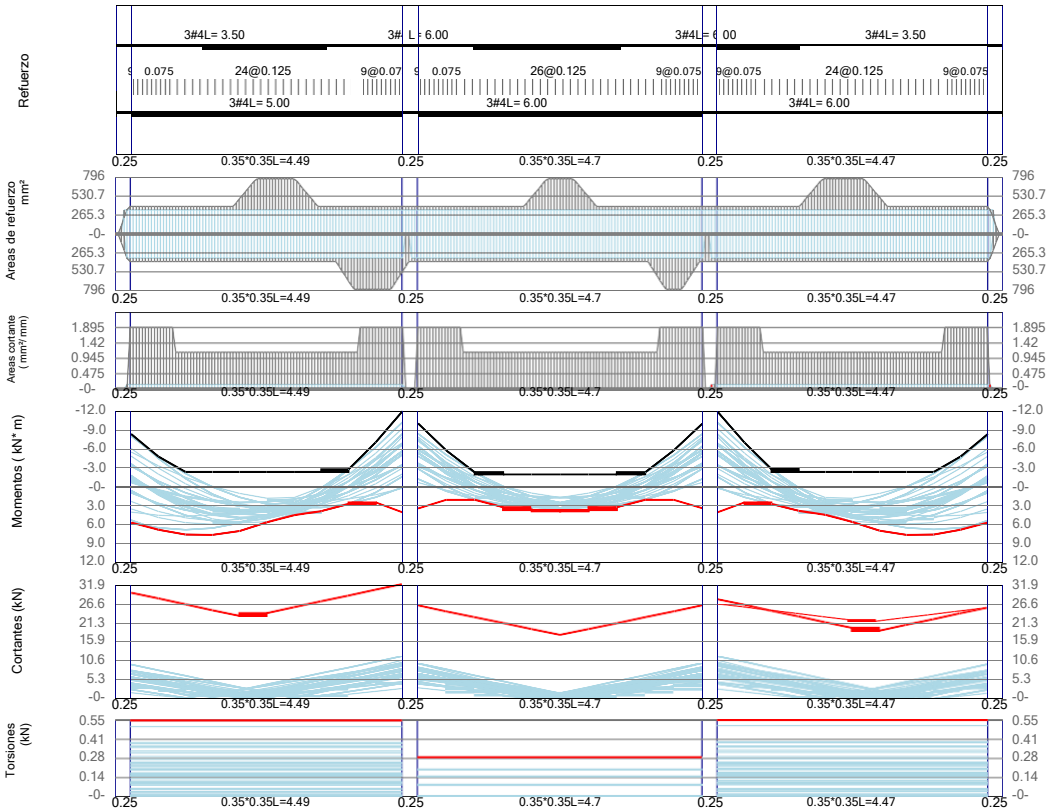

F'c = 28 Mpa
Cuantia zona superior =2.6
Eficiencia zona superior = 0.58
P=2.8 Mppal=-6.4 Msec=.2T m

Cuantia zona inferior =2.6
Eficiencia zona inferior = 0.75
P=2.8 Mppal=-8.3 Msec=-.1T m

Relación Mínima Col/Vig=3.3(Viga:1)

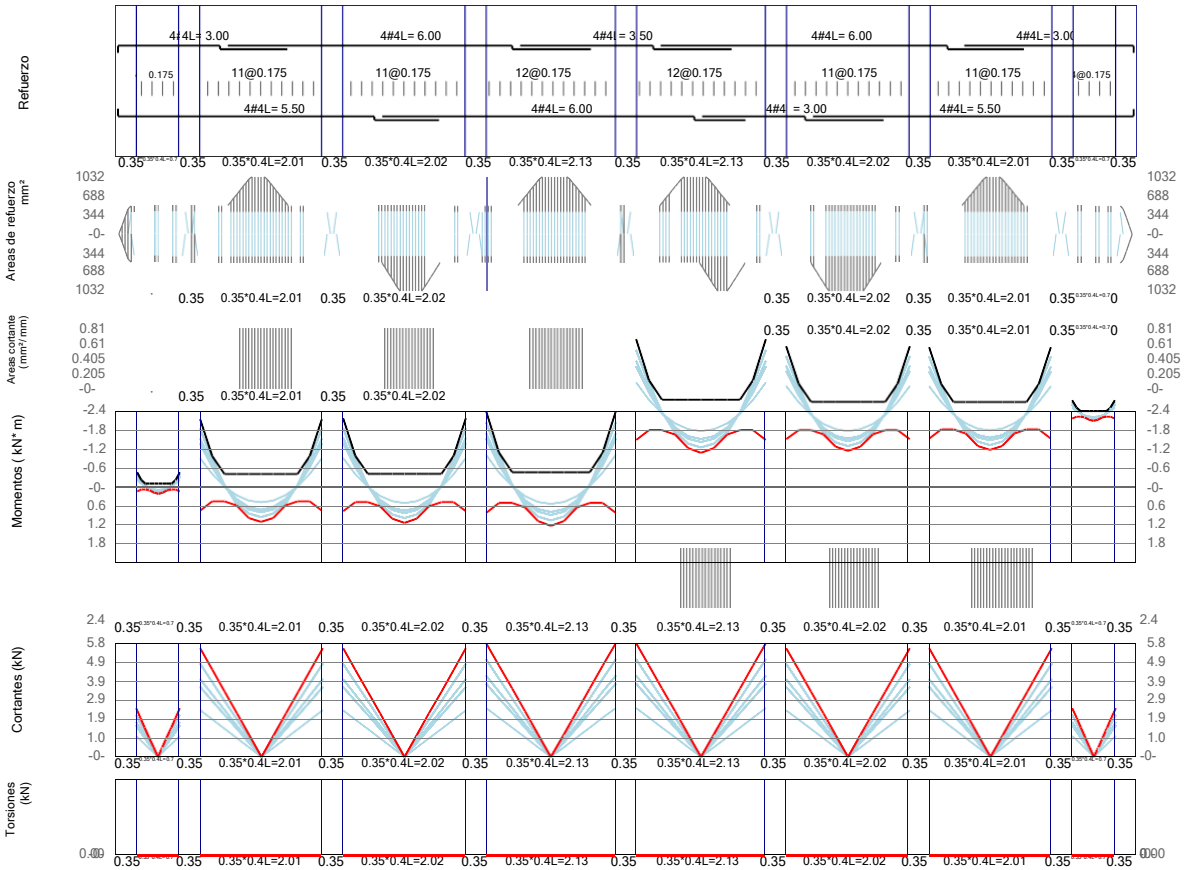
| | |
|---|---|
| Nombre Principal | |
| Nombre Auxiliar | Dirección |
| Propietario | Diseño Arquitectónico |
| DC-CAD3 Licenciado a: NAILETH JIMENEZ CASTRO | Contenido Memorias de Vigas |
| Norma NSR-10 DMO | Código Nimbus |

## VI-1 / Story1

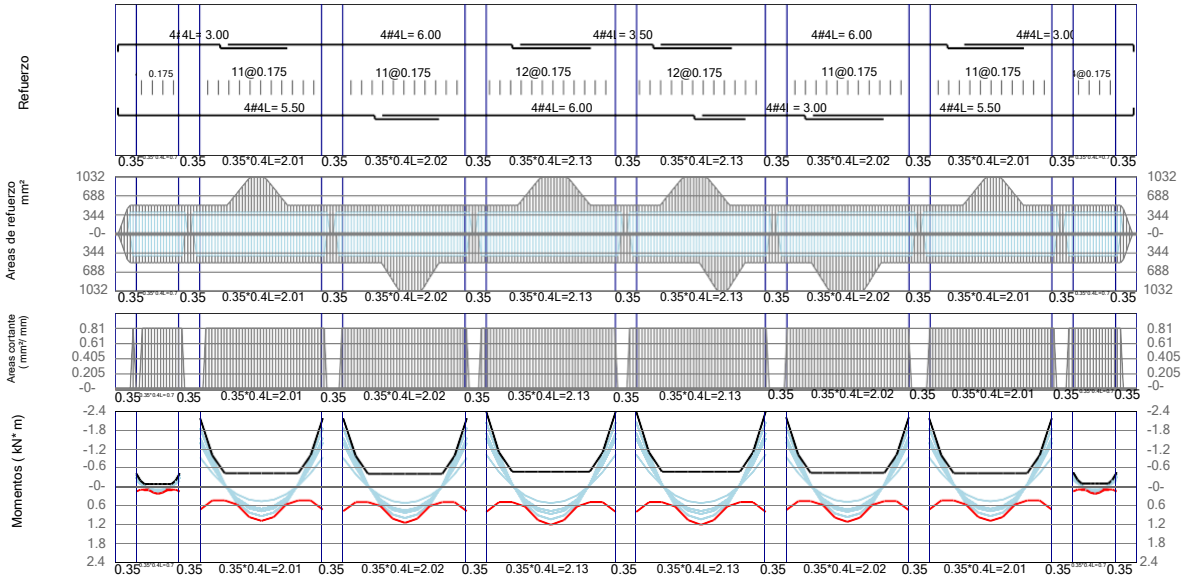


| | |
|---|---|
| Nombre Principal | |
| Nombre Auxiliar | Dirección |
| Propietario | Diseño Arquitectónico |
| DC-CAD3 Licenciado a: NAILETH JIMENEZ CASTRO | Contenido Memorias de Vigas |
| Norma NSR-10 DMO | Código Nimbus |

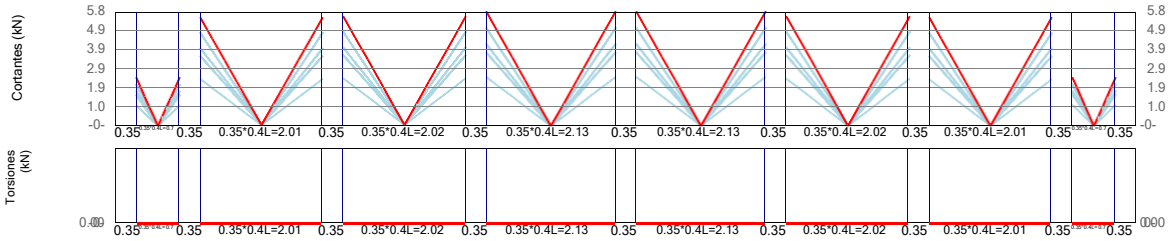
## VCG2-1 / Base



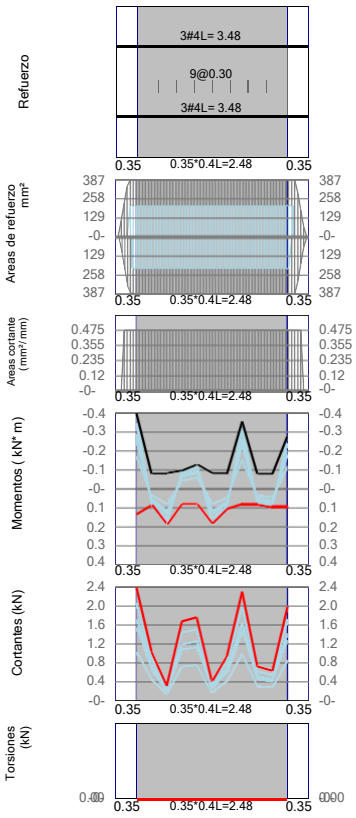

## VCG2-2 / Base



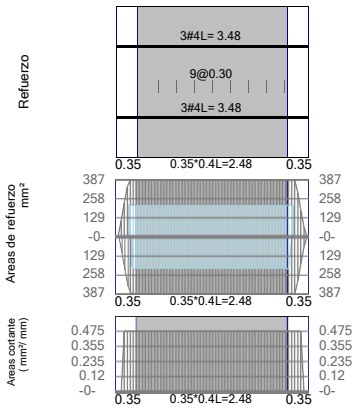
| | |
|---|---|
| Nombre Principal | |
| Nombre Auxiliar | Dirección |
| Propietario | Diseño Arquitectónico |
| DC-CAD3 Licenciado a: NAILETH JIMENEZ CASTRO | Contenido Memorias de Vigas |
| Norma NSR-10 DMO | Código Nimbus |



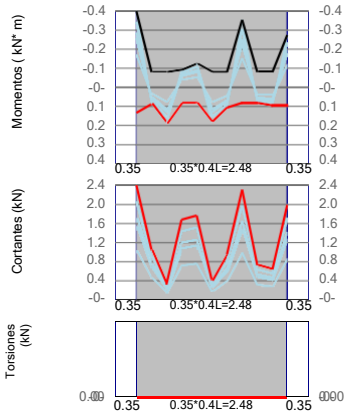

## VCG2-A / Base



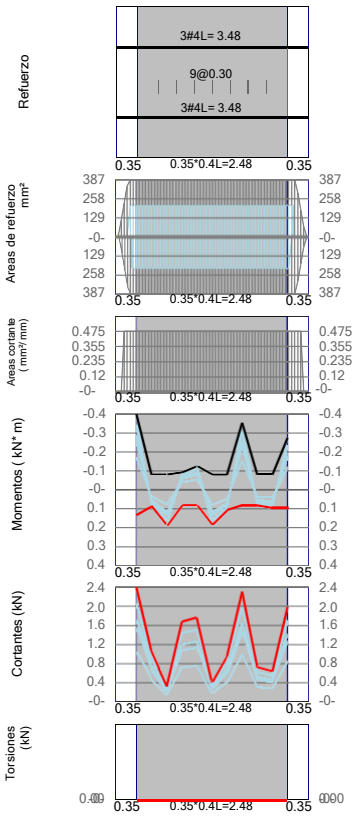

## VCG2-B / Base



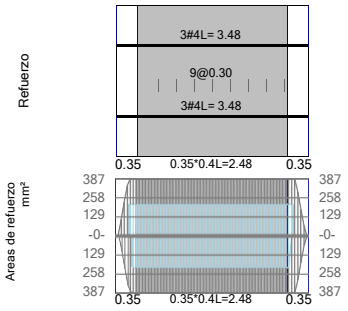
| | |
|---|---|
| Nombre Principal | |
| Nombre Auxiliar | Dirección |
| Propietario | Diseño Arquitectónico |
| DC-CAD3 Licenciado a: NAILETH JIMENEZ CASTRO | Contenido Memorias de Vigas |
| Norma NSR-10 DMO | Código Nimbus |



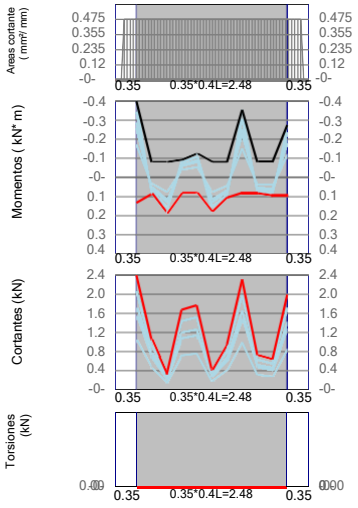

## VCG2-C / Base



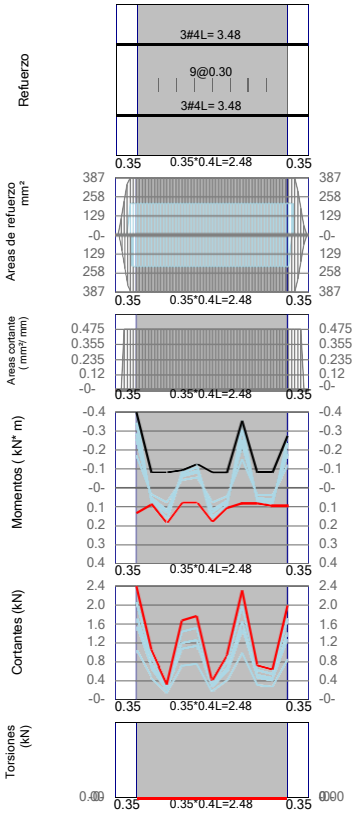

## VCG2-D / Base



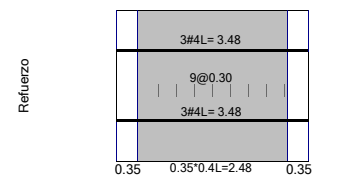
| | |
|---|---|
| Nombre Principal | |
| Nombre Auxiliar | Dirección |
| Propietario | Diseño Arquitectónico |
| DC-CAD3 Licenciado a: NAILETH JIMENEZ CASTRO | Contenido Memorias de Vigas |
| Norma NSR-10 DMO | Código Nimbus |



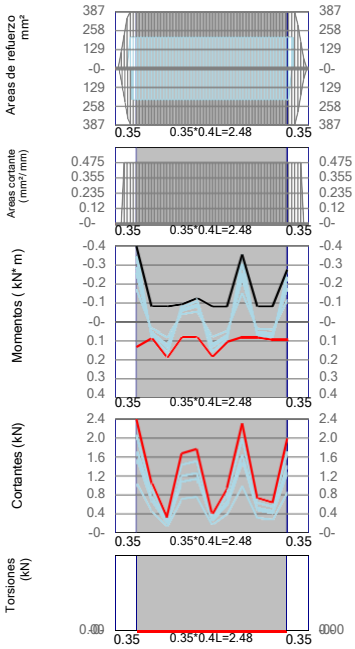

VCG2-E / Base



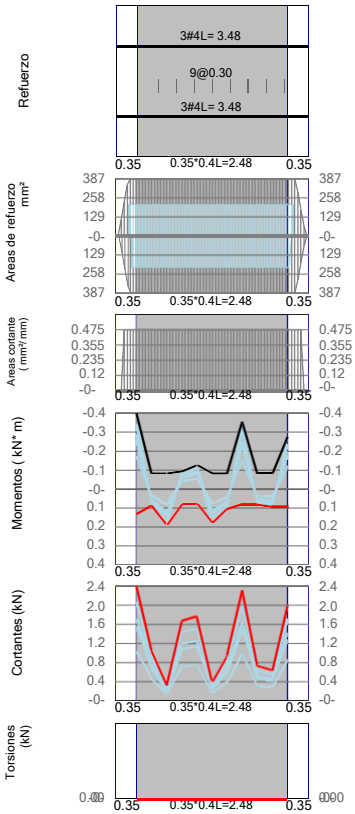

VCG2-F / Base



| | |
|---|---|
| Nombre Principal | |
| Nombre Auxiliar | Dirección |
| Propietario | Diseño Arquitectónico |
| DC-CAD3 Licenciado a: NAILETH JIMENEZ CASTRO | Contenido Memorias de Vigas |
| Norma NSR-10 DMO | Código Nimbus |



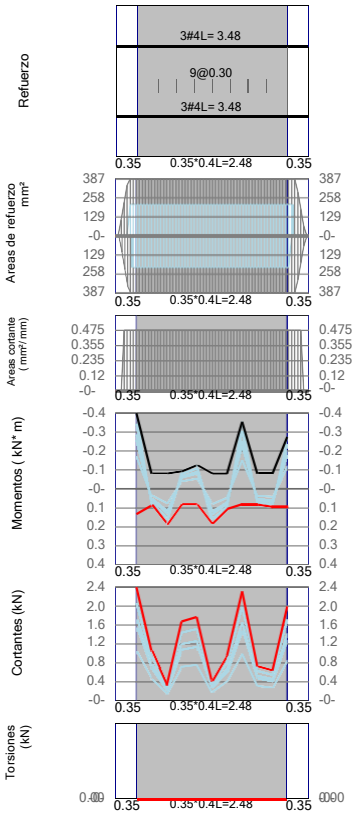

VCG2-G / Base



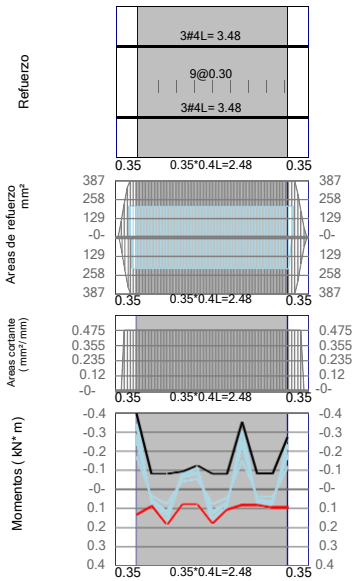

VCG2-H / Base

| | |
|---|---|
| Nombre Principal | |
| Nombre Auxiliar | Dirección |
| Propietario | Diseño Arquitectónico |
| DC-CAD3 Licenciado a: NAILETH JIMENEZ CASTRO | Contenido Memorias de Vigas |
| Norma NSR-10 DMO | Código Nimbus |

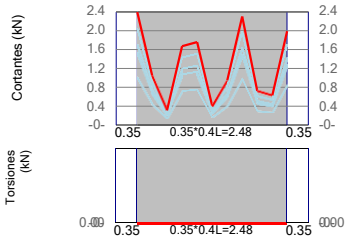
## VCG2-H / Base




## VCG2-I / Base



| | |
|---|---|
| Nombre Principal | |
| Nombre Auxiliar | Dirección |
| Propietario | Diseño Arquitectónico |
| DC-CAD3 Licenciado a: NAILETH JIMENEZ CASTRO | Contenido Memorias de Vigas |
| Norma NSR-10 DMO | Código Nimbus |



# 1. DATOS DE ENTRADA

**Unidades: Kgf, m**

| | |
|---|---|
| **Velocidad Viento (km/h)** | 165 |
| **Altura Cornisa (he)** | 4.8 |
| **Altura Cumbrera (hr)** | 5.8 |
| **Ancho Edificación (L)** | 4.8 |
| **Largo Edificación (B)** | 16.66 |
| **Factor Topografía (Kzt)** | 1 |
| **Factor Dirección (Kd)** | .85 |
| **Relación Amortiguamiento** | 0.05 |
| **Coeficiente Periodo (Ct)** | 0.072 |
| **Exponente Periodo** | 0.8 |
| **Dirección Viento (Cumbrera)** | Normal |
| **Tipo de Cubierta** | Un Agua |
| **Tipo Edificación** | Abierto |
| **Exposición** | C |
| **Ocupación** | II |

# 2. RESULTADOS

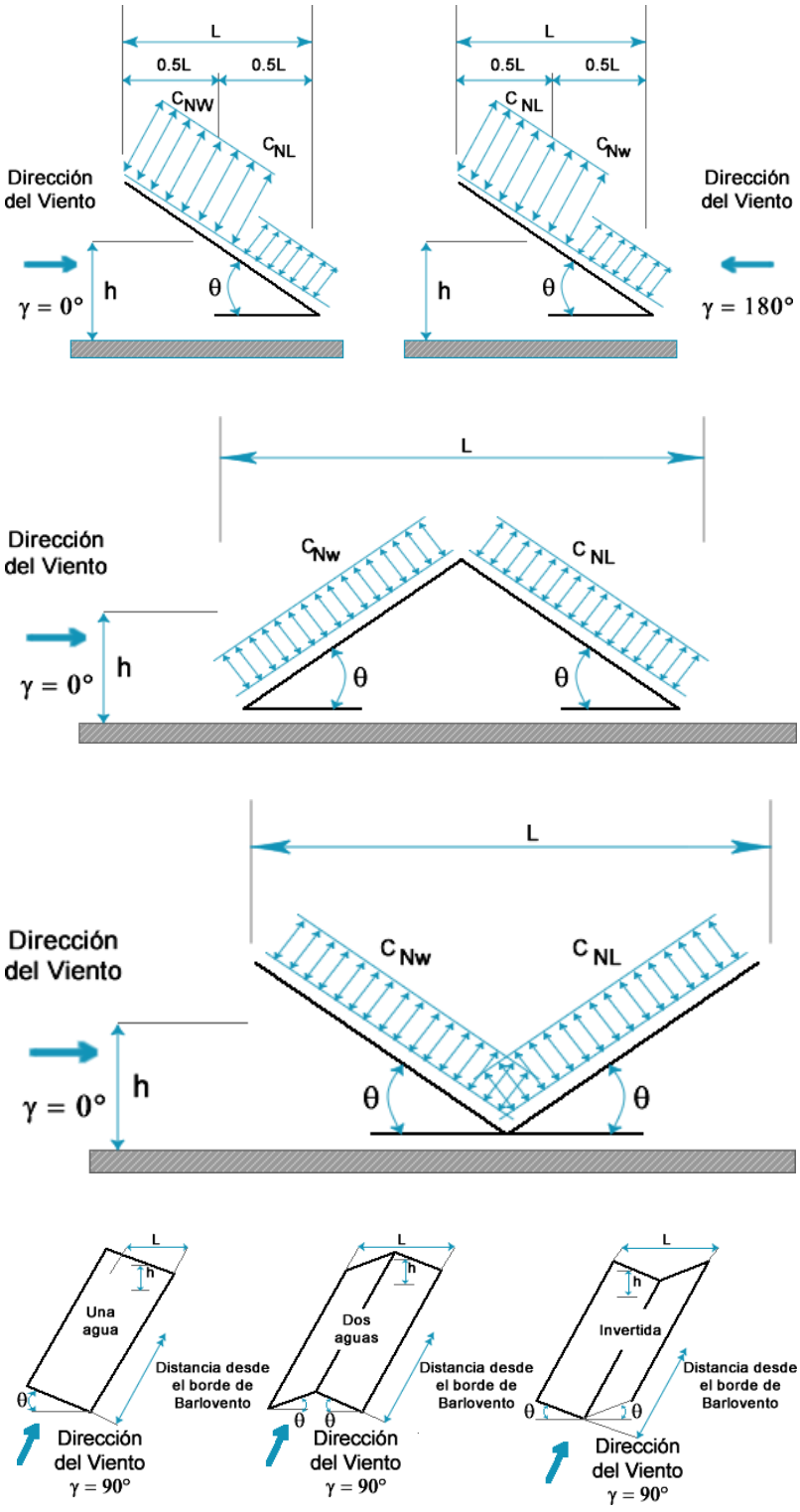
| | |
|---|---|
| **Angulo de Techo** | 11.77 |
| **Altura Media (h)** | 5.30 |
| **Coef. Muro Barlov. (Cp)** | 0.80 |
| **Coef. Muro Sotav. (Cp)** | -0.50 |
| **Coef. Muro Lat. (Cp)** | -0.70 |
| **Coef. Pres. Int. - (-GCpi)** | 0.00 |
| **Coef. Pres. Int. + (+GCpi)** | 0.00 |
| **Presión x Vel. (qh)** | 99.39 |
| **Factor de Ráfaga (G)** | 0.88 |
| **Peridodo (segs.) (T)** | 0.27 |

### Presión neta para cubiertas en edificaciones abiertas

| SUPERFICIE | COEFICIENTE PRESION (CN) | PRESION DISEÑO (PCN) |
|---|---|---|
| CNW CASO A VIENTO LIBRE 0 GRADOS | -0.77 | -67.32 |
| CNL CASO A VIENTO LIBRE 0 GRADOS | -1.17 | -102.26 |
| CNW CASO B VIENTO LIBRE 0 GRADOS | -1.68 | -147.14 |
| CNL CASO B VIENTO LIBRE 0 GRADOS | 0.00 | 0.00 |
| CNW CASO A VIENTO LIBRE 180 GRADOS | 1.13 | 98.50 |
| CNL CASO A VIENTO LIBRE 180 GRADOS | 1.56 | 135.99 |
| CNW CASO B VIENTO LIBRE 180 GRADOS | 1.71 | 149.70 |
| CNL CASO B VIENTO LIBRE 180 GRADOS | 0.47 | 41.12 |

| SUPERFICIE | COEFICIENTE PRESION (CN) | PRESION DISEÑO (PCN) |
|---|---|---|
| CNW CASO A VIENTO OBSTRUIDO 0 GRADOS | -1.06 | -92.32 |
| CNL CASO A VIENTO OBSTRUIDO 0 GRADOS | -1.50 | -131.02 |
| CNW CASO B VIENTO OBSTRUIDO 0 GRADOS | -1.93 | -168.37 |
| CNL CASO B VIENTO OBSTRUIDO 0 GRADOS | -0.69 | -59.94 |
| CNW CASO A VIENTO OBSTRUIDO 180 GRADOS | 0.14 | 12.36 |
| CNL CASO A VIENTO OBSTRUIDO 180 GRADOS | -1.14 | -99.85 |
| CNW CASO B VIENTO OBSTRUIDO 180 GRADOS | 1.03 | 89.76 |
| CNL CASO B VIENTO OBSTRUIDO 180 GRADOS | -0.30 | -26.20 |

## 3. ESQUEMA DE APLICACIÓN DE CARGAS



# Memorias de Cálculo

PROGRAMA DE DISENO Y CALCULO ESTRUCTURAL
ARQUIMET 2.0

Proyecto: _____ Fecha: _____

Ingeniero: _____ Firma: _____

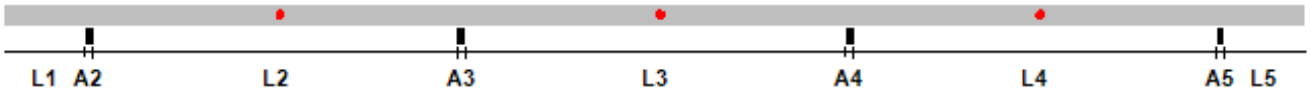
*Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO*

## REPORTE DE CORREAS

PHR C con atiesador 160 x 60 x 20 (2.00 mm)
con Fy = 35.15 Kgf/mm² cada 1.00 m con arriostramiento cada L/2.

### SECCION LONGITUDINAL

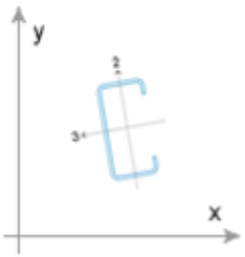
NOTA: El voladizo se debe arriostrar.

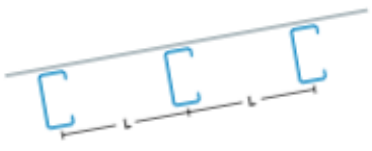



| | |
|---|---|
| L1 | 1.05 m |
| L2 | 4.74 m |
| L3 | 4.95 m |
| L4 | 4.72 m |
| L5 | 1.05 m |
| A1 | 0.00 m |
| A2 | 0.10 m |
| A3 | 0.10 m |
| A4 | 0.10 m |
| A5 | 0.10 m |
| A6 | 0.00 m |

| CONFIGURACION | |
|---|---|
| TIPO DE CARGA | DISTRIBUIDA |
| Carga muerta | 30.00 Kgf/m² |
| Peso propio correa | 4.77 Kgf/m |
| Carga viva | 50.00 Kgf/m² |
| Carga granizo | 0.00 Kgf/m² |
| Viento compresión (Perpendicular) | 99.85 Kgf/m² |
| Viento succión (Perpendicular) | 149.70 Kgf/m² |
| Pendiente sección transversal | 10° = 17.6330% |

### SECCION TRANSVERSAL




L = 1.00 m

## REPORTES DE DISEÑO

| REPORTE FLEXION | | | | |
|---|---|---|---|---|
| | Apoyos | | Interiores | |
| Ejes locales | 3 | 2 | 3 | 2 |
| Resistente (Kgf.m) | 951.0391 | 222.3248 | 839.6918 | 214.0945 |
| Calculado (Kgf.m) | 500.5605 | 10.5767 | 500.5605 | 11.5590 |

| REPORTE CORTANTE | | |
|---|---|---|
| Ejes locales | 2 | 3 |
| Resistente (Kgf) | 4498.7725 | 3526.5972 |
| Calculado (Kgf) | 468.1254 | 26.1653 |

| REPORTE DEFLEXION | | |
|---|---|---|
| Deflexiones máximas | Instantanea | Permanente |
| Admisible (m) | 0.0179 | 0.0269 |
| Calculado (m) | 0.0030 | 0.0050 |

| REPORTE ARRUGAMIENTO | |
|---|---|
| No. de Apoyo | -1 |
| Resistencia máxima (Kgf) | 0.0019 |
| Arrugamiento (Kgf) | 283.0091 |

| COMBINACIONES DE CARGA | | | | | |
|---|---|---|---|---|---|
| No | Muerta | Viva | Granizo | Viento compresión | Viento succión |
| 1 | 1.4000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 2 | 1.2000 | 0.5000 | 0.0000 | 0.0000 | 0.0000 |
| 3 | 1.2000 | 0.0000 | 0.5000 | 0.0000 | 0.0000 |
| 4 | 1.2000 | 1.6000 | 0.0000 | 0.5000 | 0.0000 |
| 5 | 1.2000 | 0.0000 | 1.6000 | 0.5000 | 0.0000 |
| 6 | 1.2000 | 1.6000 | 0.0000 | 0.0000 | 0.5000 |
| 7 | 1.2000 | 0.0000 | 1.6000 | 0.0000 | 0.5000 |
| 8 | 1.2000 | 0.5000 | 0.0000 | 0.0000 | 1.0000 |
| 9 | 1.2000 | 0.0000 | 0.5000 | 0.0000 | 1.0000 |
| 10 | 1.2000 | 0.5000 | 0.0000 | 1.0000 | 0.0000 |
| 11 | 1.2000 | 0.0000 | 0.5000 | 1.0000 | 0.0000 |
| 12 | 0.9000 | 0.0000 | 0.0000 | 0.0000 | 1.0000 |
| 13 | 0.9000 | 0.0000 | 0.0000 | 1.0000 | 0.0000 |

**REACCIONES - EJES GLOBALES (Kgf-m)**

*Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO*

| APOYO 1 | | |
|---|---|---|
| Combinacion | Rx | Ry |
| Muerta | 0.0000 | 108.6731 |
| Viva de Cub. | 0.0000 | 156.2605 |
| Granizo | 0.0000 | 0.0000 |
| Viento Comp. | -54.8754 | 311.2136 |
| Viento Succion | 82.2719 | -466.5869 |
| Comb. 1 | -10.9572 | 152.1423 |
| Comb. 2 | -15.0188 | 208.5379 |
| Comb. 3 | -9.3919 | 130.4077 |
| Comb. 4 | -54.8357 | 536.0312 |
| Comb. 5 | -36.8296 | 286.0145 |
| Comb. 6 | -68.5339 | 613.7178 |
| Comb. 7 | -50.5278 | 363.7011 |
| Comb. 8 | -97.2907 | 675.1248 |
| Comb. 9 | -91.6638 | 596.9946 |
| Comb. 10 | -69.8942 | 519.7515 |
| Comb. 11 | -64.2673 | 441.6213 |
| Comb. 12 | -89.3158 | 564.3926 |
| Comb. 13 | -61.9193 | 409.0194 |

| APOYO 2 | | |
|---|---|---|
| Combinacion | Rx | Ry |
| Muerta | 0.0000 | 181.4229 |
| Viva de Cub. | 0.0000 | 260.8674 |
| Granizo | 0.0000 | 0.0000 |
| Viento Comp. | -91.9546 | 521.5002 |
| Viento Succion | 137.8628 | -781.8586 |
| Comb. 1 | -23.7599 | 253.9920 |
| Comb. 2 | -32.5672 | 348.1412 |
| Comb. 3 | -20.3657 | 217.7075 |
| Comb. 4 | -105.3879 | 895.8455 |
| Comb. 5 | -66.3429 | 478.4576 |
| Comb. 6 | -128.3420 | 1026.0247 |
| Comb. 7 | -89.2971 | 608.6368 |
| Comb. 8 | -170.4300 | 1129.9998 |
| Comb. 9 | -158.2284 | 999.5661 |
| Comb. 10 | -124.5218 | 869.6414 |
| Comb. 11 | -112.3202 | 739.2076 |
| Comb. 12 | -153.1370 | 945.1392 |
| Comb. 13 | -107.2288 | 684.7808 |

| APOYO 3 | | |
|---|---|---|
| Combinacion | Rx | Ry |
| Muerta | 0.0000 | 180.7951 |
| Viva de Cub. | 0.0000 | 259.9647 |
| Granizo | 0.0000 | 0.0000 |
| Viento Comp. | -91.6322 | 519.6723 |
| Viento Succion | 137.3795 | -779.1180 |
| Comb. 1 | -23.6119 | 253.1131 |
| Comb. 2 | -32.3643 | 346.9365 |
| Comb. 3 | -20.2388 | 216.9541 |
| Comb. 4 | -104.8567 | 892.7339 |
| Comb. 5 | -66.0549 | 476.7903 |
| Comb. 6 | -127.7303 | 1022.4568 |
| Comb. 7 | -88.9286 | 606.5132 |
| Comb. 8 | -169.7439 | 1126.0546 |
| Comb. 9 | -157.6183 | 996.0722 |
| Comb. 10 | -123.9966 | 866.6088 |
| Comb. 11 | -111.8710 | 736.6265 |
| Comb. 12 | -152.5586 | 941.8336 |
| Comb. 13 | -106.8113 | 682.3879 |

| APOYO 4 | | |
|---|---|---|
| Combinacion | Rx | Ry |
| Muerta | 0.0000 | 108.8534 |
| Viva de Cub. | 0.0000 | 156.5196 |
| Granizo | 0.0000 | 0.0000 |
| Viento Comp. | -54.7365 | 310.4261 |
| Viento Succion | 82.0636 | -465.4060 |
| Comb. 1 | -7.3142 | 152.3947 |
| Comb. 2 | -10.0254 | 208.8839 |
| Comb. 3 | -6.2693 | 130.6241 |
| Comb. 4 | -45.6570 | 536.2684 |
| Comb. 5 | -33.6376 | 285.8371 |
| Comb. 6 | -59.3206 | 613.7584 |
| Comb. 7 | -47.3012 | 363.3271 |
| Comb. 8 | -92.0891 | 674.2899 |
| Comb. 9 | -88.3330 | 596.0301 |
| Comb. 10 | -64.7619 | 519.3099 |
| Comb. 11 | -61.0058 | 441.0501 |
| Comb. 12 | -86.7656 | 563.3741 |
| Comb. 13 | -59.4385 | 408.3941 |

## FUERZAS INTERNAS - EJES LOCALES (Kgf-m)

*Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO*

| APOYO 1 | | | | |
|---|---|---|---|---|
| Combinacion | R2 | R3 | M2 | M3 |
| Muerta | 11.1632 | 108.3811 | 2.3006 | -20.7181 |
| Viva de Cub. | 16.0515 | 155.8407 | 3.3081 | -29.7905 |
| Granizo | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Viento Comp. | 0.0000 | 316.0146 | 0.0000 | -60.4094 |
| Viento Succion | 0.0000 | 473.7847 | 0.0000 | -90.5688 |
| Comb. 1 | 15.6285 | 151.7336 | 3.2209 | -29.0054 |
| Comb. 2 | 21.4216 | 207.9777 | 4.4148 | -39.7570 |
| Comb. 3 | 13.3958 | 130.0574 | 2.7608 | -24.8618 |
| Comb. 4 | 39.0782 | 537.4098 | 8.0537 | -102.7313 |
| Comb. 5 | 13.3958 | 288.0647 | 2.7608 | -55.0665 |
| Comb. 6 | 39.0782 | 616.2949 | 8.0537 | -117.8110 |
| Comb. 7 | 13.3958 | 366.9497 | 2.7608 | -70.1462 |
| Comb. 8 | 21.4216 | 681.7625 | 4.4148 | -130.3258 |
| Comb. 9 | 13.3958 | 603.8421 | 2.7608 | -115.4306 |
| Comb. 10 | 21.4216 | 523.9923 | 4.4148 | -100.1664 |
| Comb. 11 | 13.3958 | 446.0720 | 2.7608 | -85.2712 |
| Comb. 12 | 10.0469 | 571.3278 | 2.0706 | -109.2151 |
| Comb. 13 | 10.0469 | 413.5576 | 2.0706 | -79.0557 |

| APOYO 2 | | | | |
|---|---|---|---|---|
| Combinacion | R2 | R3 | M2 | M3 |
| Muerta | 14.7902 | 181.6137 | 3.0214 | -79.5750 |
| Viva de Cub. | 21.2668 | 261.1418 | 4.3444 | -114.4207 |
| Granizo | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Viento Comp. | 0.0000 | 529.5452 | 0.0000 | -232.0230 |
| Viento Succion | 0.0000 | 793.9200 | 0.0000 | -347.8602 |
| Comb. 1 | 20.7063 | 254.2592 | 4.2299 | -111.4050 |
| Comb. 2 | 28.3816 | 348.5074 | 5.7978 | -152.7003 |
| Comb. 3 | 17.7482 | 217.9365 | 3.6256 | -95.4900 |
| Comb. 4 | 51.7751 | 900.5359 | 10.5767 | -394.5746 |
| Comb. 5 | 17.7482 | 482.7090 | 3.6256 | -211.5015 |
| Comb. 6 | 51.7751 | 1032.7234 | 10.5767 | -452.4932 |
| Comb. 7 | 17.7482 | 614.8965 | 3.6256 | -269.4201 |
| Comb. 8 | 28.3816 | 1142.4274 | 5.7978 | -500.5605 |
| Comb. 9 | 17.7482 | 1011.8565 | 3.6256 | -443.3502 |
| Comb. 10 | 28.3816 | 878.0526 | 5.7978 | -384.7234 |
| Comb. 11 | 17.7482 | 747.4816 | 3.6256 | -327.5130 |
| Comb. 12 | 13.3112 | 957.3724 | 2.7192 | -419.4777 |
| Comb. 13 | 13.3112 | 692.9975 | 2.7192 | -303.6405 |

| APOYO 3 | | | | |
|---|---|---|---|---|
| Combinacion | R2 | R3 | M2 | M3 |
| Muerta | 14.7853 | 180.9771 | 3.0196 | -79.0040 |
| Viva de Cub. | 21.2597 | 260.2264 | 4.3419 | -113.5997 |
| Granizo | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Viento Comp. | 0.0000 | 527.6891 | 0.0000 | -230.3583 |
| Viento Succion | 0.0000 | 791.1372 | 0.0000 | -345.3644 |
| Comb. 1 | 20.6994 | 253.3680 | 4.2275 | -110.6057 |
| Comb. 2 | 28.3722 | 347.2858 | 5.7945 | -151.6047 |
| Comb. 3 | 17.7424 | 217.1725 | 3.6236 | -94.8049 |
| Comb. 4 | 51.7579 | 897.3794 | 10.5706 | -391.7435 |
| Comb. 5 | 17.7424 | 481.0171 | 3.6236 | -209.9840 |
| Comb. 6 | 51.7579 | 1029.1035 | 10.5706 | -449.2466 |
| Comb. 7 | 17.7424 | 612.7411 | 3.6236 | -267.4871 |
| Comb. 8 | 28.3722 | 1138.4230 | 5.7945 | -496.9691 |
| Comb. 9 | 17.7424 | 1008.3098 | 3.6236 | -440.1693 |
| Comb. 10 | 28.3722 | 874.9749 | 5.7945 | -381.9630 |
| Comb. 11 | 17.7424 | 744.8616 | 3.6236 | -325.1631 |
| Comb. 12 | 13.3068 | 954.0166 | 2.7177 | -416.4680 |
| Comb. 13 | 13.3068 | 690.5685 | 2.7177 | -301.4619 |

| APOYO 4 | | | | |
|---|---|---|---|---|
| Combinacion | R2 | R3 | M2 | M3 |
| Muerta | 13.7571 | 108.1069 | 2.4151 | -20.7185 |
| Viva de Cub. | 19.7813 | 155.4462 | 3.4726 | -29.7909 |
| Granizo | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Viento Comp. | 0.0000 | 315.2149 | 0.0000 | -60.4102 |
| Viento Succion | 0.0000 | 472.5856 | 0.0000 | -90.5699 |
| Comb. 1 | 19.2600 | 151.3496 | 3.3811 | -29.0059 |
| Comb. 2 | 26.3992 | 207.4513 | 4.6344 | -39.7576 |
| Comb. 3 | 16.5085 | 129.7283 | 2.8981 | -24.8622 |
| Comb. 4 | 48.1586 | 536.0496 | 8.4542 | -102.7327 |
| Comb. 5 | 16.5085 | 287.3357 | 2.8981 | -55.0673 |
| Comb. 6 | 48.1586 | 614.7349 | 8.4542 | -117.8126 |
| Comb. 7 | 16.5085 | 366.0211 | 2.8981 | -70.1471 |
| Comb. 8 | 26.3992 | 680.0370 | 4.6344 | -130.3275 |
| Comb. 9 | 16.5085 | 602.3139 | 2.8981 | -115.4320 |
| Comb. 10 | 26.3992 | 522.6663 | 4.6344 | -100.1678 |
| Comb. 11 | 16.5085 | 444.9431 | 2.8981 | -85.2724 |
| Comb. 12 | 12.3814 | 569.8818 | 2.1736 | -109.2165 |
| Comb. 13 | 12.3814 | 412.5111 | 2.1736 | -79.0568 |

DISEÑO ESTRUCTURAL DE ZAPATAS CON VIGA DE ENLACE

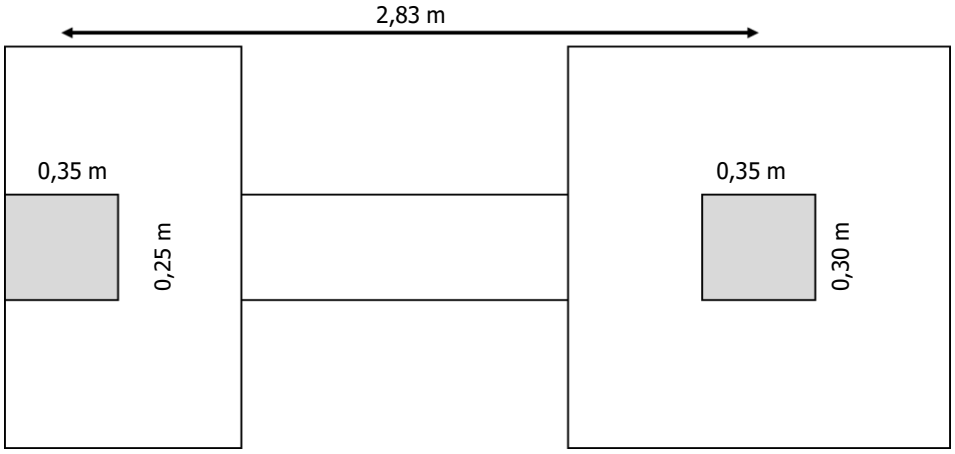
ZAPATA MEDIANERA

| DIMENSIONES DE COLUMNA | |
|---|---|
| Base | 0,35 m |
| Largo | 0,25 m |
| **CARGAS DE DISEÑO** | |
| C. Muerta CM: | 8,36 Ton |
| C. Viva CV: | 1,20 Ton |
| **PRESION ADMISIBLE DEL TERRENO** | |
| Capacidad Portante: | 28,00 Ton/m2 |
| **MATERIALES** | |
| Concreto: | 21,00 MPa |
| Acero de Refuerzo: | 420,00 MPa |

| | |
|---|---|
| Separación entre columnas: | 2,83 m |

ZAPATA CENTRAL

| DIMENSIONES DE COLUMNA | |
|---|---|
| Base | 0,35 m |
| Largo | 0,30 m |
| **CARGAS DE DISEÑO** | |
| C. Muerta CM: | 0,00 Ton |
| C. Viva CV: | 0,00 Ton |
| **PRESION ADMISIBLE DEL TERRENO** | |
| Capacidad Portante: | 28,00 Ton/m2 |
| **MATERIALES** | |
| Concreto: | 21,00 MPa |
| Acero de Refuerzo: | 420,00 MPa |




**REVISIÓN DE LA PRESIÓN DE CONTACTO**

| | |
|---|---|
| $Pu = 1.2CM + 1.6CV =$ | 11,95 Ton |
| $\emptyset * 0.85 * f'c * A1 =$ | 1015,22 Ton |
| $Pu \leq \emptyset 0.85 * f'c * A1$ | **¡CUMPLE!** |
| $Ps = Cm + Cv =$ | 9,56 Ton |

**DIMENSIONES ZAPATA MEDIANERA**

$AZ =$ 0,34 m2 **¡CUMPLE!**

| | |
|---|---|
| Lado H: | 1,50 m |
| Lado B: | 1,00 m |

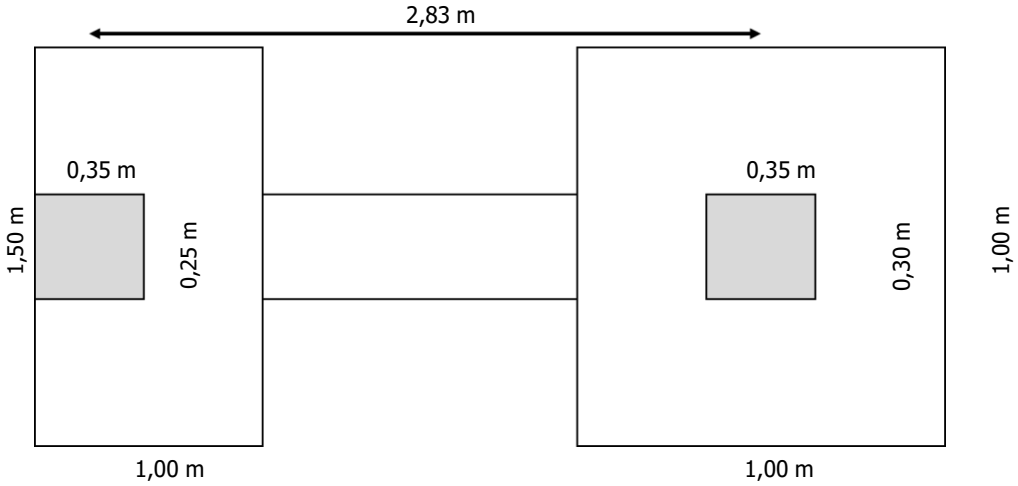
**REVISIÓN DE LA PRESIÓN DE CONTACTO**

| | |
|---|---|
| $Pu = 1.2CM + 1.6CV =$ | 0,00 Ton |
| $\emptyset * 0.85 * f'c * A1 =$ | 1218,26 Ton |
| $Pu \leq \emptyset 0.85 * f'c * A1$ | **¡CUMPLE!** |
| $Ps = Cm + Cv =$ | 0,00 Ton |

**DIMENSIONES ZAPATA CENTRAL**

$AZ =$ 0,00 m2 **¡CUMPLE!**

| | |
|---|---|
| Lado H: | 1,00 m |
| Lado B: | 1,00 m |




**REACCIONES DEL TERRENO**

Se calculan las reacciones debajo de cada una de las zapatas.

| | |
|---|---|
| $Rm + Rc =$ | 9,56 Ton |

$Rm =$ 13,49 Ton

$Rc =$ -3,93 Ton

Se calculan las nuevas dimensiones de las zapatas con las reacciones del terreno.

$AZ =$ 0,48 m2

**¡CUMPLE!**

| | |
|---|---|
| Lado H: | 1,50 m |
| Lado B: | 1,00 m |

$AZ =$ -0,14 m2

**¡CUMPLE!**

| | |
|---|---|
| Lado H: | 1,00 m |
| Lado B: | 1,00 m |

Como es normal, el área efectiva de la zapata central disminuye en tanto que la de la zapata medianera aumenta.

| | |
|---|---|
| $Rm + Rc =$ | 11,95 Ton |

$Rm =$ 16,87 Ton

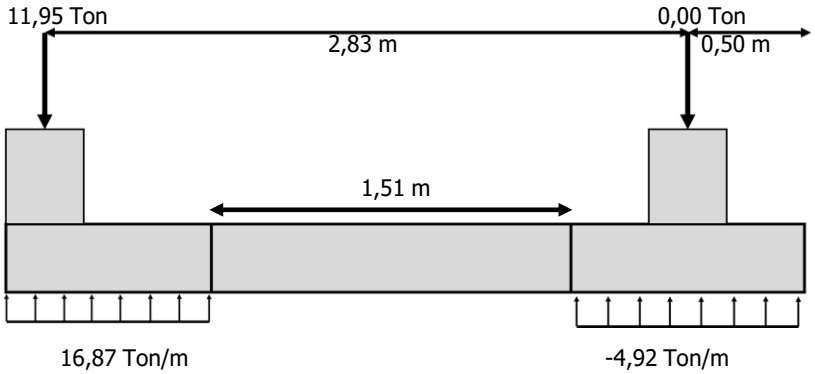
$Rc =$ -4,92 Ton

Cargas distribuidas zapata medianera

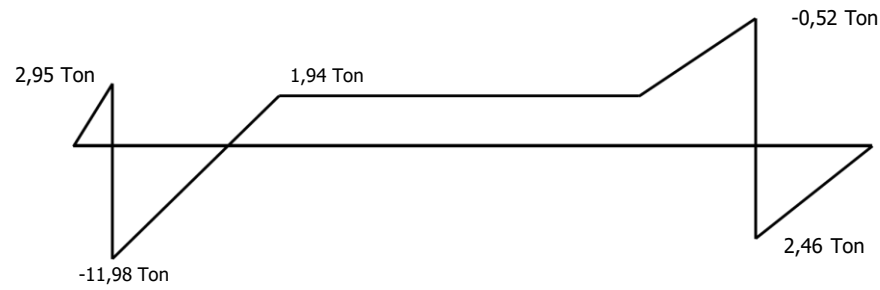
$Wu =$ 16,87 Ton/m

Cargas distribuidas zapata central

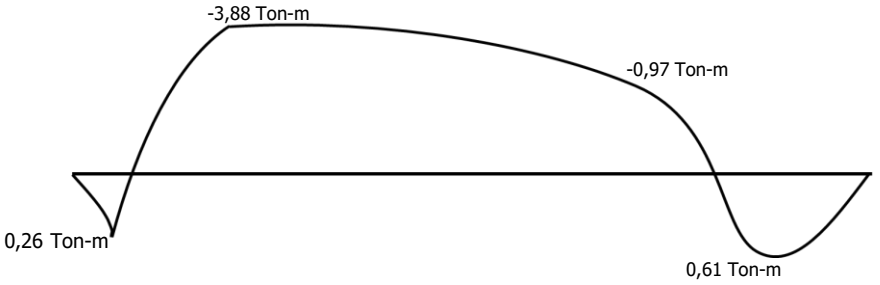
$Wu =$ -4,92 Ton/m



**según análisis estatico




CORTANTE




MOMENTO

**DISEÑO DE LA VIGA**

| | |
|---|---|
| Altura h' asumida para la Viga: | 0,40 m |
| Altura efectiva d: | 0,32 m |

| | |
|---|---|
| Ancho de viga b= | 0,35 m |

$$d1 = \frac{Vu}{0.75 * 0.17 * \lambda * \sqrt{f'c} * d} =$$ 10,36 cm

**¡CUMPLE!**

Refuerzo sobre la viga para la zapata medianera:

$Mu =$ 3,88 Ton-m

$$Rn = \frac{Mu}{0.9 * b * d^2} =$$ 1,20 N/mm2

$$\rho = \frac{0.85 * f'c}{fy} * \left(1 - \sqrt{1 - \frac{2 * Rn}{0.85 * f'c}}\right) =$$ 0,0033

$As = \rho * b * d =$ 3,70 cm2

| Ref. Barra | Área | N° de Barras |
|---|---|---|
| #4 | 1,29 cm2 | 3 |

Refuerzo sobre la viga para la zapata central:

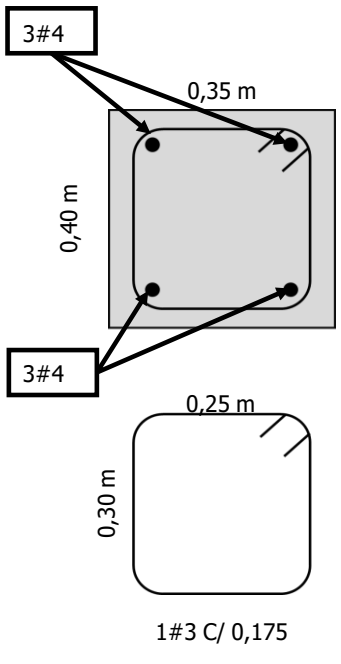
$Mu =$ 0,97 Ton-m

$$Rn = \frac{Mu}{0.9 * b * d^2} =$$ 0,30 N/mm2

$$\rho = \frac{0.85 * f'c}{fy} * \left(1 - \sqrt{1 - \frac{2 * Rn}{0.85 * f'c}}\right) =$$ 0,0033

$As = \rho * b * d =$ 3,70 cm2

SECCIÓN DE VIGA DE CIMENTACIÓN



| Ref. Barra | Área | N° de Barras |
|---|---|---|
| #5 | 1,99 cm2 | 2 |

Refuerzo inferior de la viga

$Mu =$ 0,61 Ton-m

$$Rn = \frac{Mu}{0.9 * b * d^2} =$$ 0,19 N/mm2

$$\rho = \frac{0.85 * f'c}{fy} * \left(1 - \sqrt{1 - \frac{2 * Rn}{0.85 * f'c}}\right) =$$ 0,0033

$$As = \rho * b * d =$$ 3,70 cm2

| Ref. Barra | Área | N° de Barras |
|---|---|---|
| #4 | 1,29 cm2 | 3 |

**DISEÑO DE ZAPATA CENTRAL**

Cortante en dos direcciones, punzonamiento.

$b_0 = 2(h + d) + 2(b + d) =$ 238,00 cm

$A_0 = (h + d) * (h + d) =$ 3534,00 cm2

| Altura para la Zapata: | 0,35 m |
|---|---|
| Altura efectiva d: | 0,27 m |

$\sigma_{ULT} =$ 42,00 Ton/m2

$Vu =$ -14,84 Ton

$$d1 = \frac{Vu}{0.75 * 0.17 * \left(1 + \frac{2}{\beta}\right) * \lambda * \sqrt{f'c} * b_0} =$$ -3,56 cm

$d > d1$ **¡CUMPLE!**

$$d2 = \frac{Vu}{0.75 * 0.083 * \left(\frac{\alpha_s * d_2}{b_0} + 2\right) * \lambda * \sqrt{f'c} * b_0} =$$ -3,79 cm

$d > d2$ **¡CUMPLE!**

$$d3 = \frac{Vu}{0.75 * 0.33 * \lambda * \sqrt{f'c} * b_0} =$$ -5,50 cm

$d > d3$ **¡CUMPLE!**

Cortante en una dirección.

$Vu =$ 2,31 Ton

$$d \geq \frac{Vu}{0.75 * 0.17 * \lambda * \sqrt{f'c} * B} =$$ 3,95 cm

**¡CUMPLE!**

Diseño a flexión

$Mu =$ 2,57 Ton-m

$$Rn = \frac{Mu}{0.9 * b * d^2} =$$ 0,39 N/mm2

$$\rho = \frac{0.85 * f'c}{fy} * \left(1 - \sqrt{1 - \frac{2 * Rn}{0.85 * f'c}}\right) =$$ 0,0009

$As = \rho * b * d =$ 4,86 cm2

$\rho min =$ 0,0018

| Ref. Barra | Área | N° de Barras | Separación |
|---|---|---|---|
| #4 | 1,29 cm2 | 4 | 0,25 m |

**DISEÑO DE ZAPATA MEDIANERA**

Cortante en dos direcciones, punzonamiento

$b_0 = 2\left(h + \frac{d}{2}\right) + 2(b + d) =$ 139,00 cm

$A_0 = (b + d) * \left(h + \frac{d}{2}\right) =$ 2387,00 cm2

| | |
|---|---|
| Altura para la Zapata: | 0,35 m |
| Altura efectiva d: | 0,27 m |

$\sigma_{ULT} =$ 42,00 Ton/m2

$Vu =$ 1,93 Ton

$$d1 = \frac{Vu}{0.75 * 0.17 * \left(1 + \frac{2}{\beta}\right) * \lambda * \sqrt{f'c} * b_0} =$$ 0,79 cm

$d > d1$ **¡CUMPLE!**

$$d2 = \frac{Vu}{0.75 * 0.083 * \left(\frac{\alpha_s * d_2}{b_0} + 2\right) * \lambda * \sqrt{f'c} * b_0} =$$ 0,84 cm

$d > d2$ **¡CUMPLE!**

$$d3 = \frac{Vu}{0.75 * 0.33 * \lambda * \sqrt{f'c} * b_0} =$$ 1,22 cm

$d > d3$ **¡CUMPLE!**

Cortante en una dirección.

$Vu =$ 14,91 Ton

$$d \geq \frac{Vu}{0.75 * 0.17 * \lambda * \sqrt{f'c} * B} =$$ 25,52 cm

**¡CUMPLE!**

Diseño a flexión

$Mu =$ 8,20 Ton-m

$$Rn = \frac{Mu}{0.9 * b * d^2} =$$ 0,83 N/mm2

$$\rho = \frac{0.85 * f'c}{fy} * \left(1 - \sqrt{1 - \frac{2 * Rn}{0.85 * f'c}}\right) =$$ 0,0020

| | |
|---|---|
| $As = \rho * b * d =$ | 5,49 cm2 |

| | |
|---|---|
| $\rho min =$ | 0,0018 |

| Ref. Barra | Área | N° de Barras | Separación |
|---|---|---|---|
| #4 | 1,29 cm2 | 5 | 0,20 m |

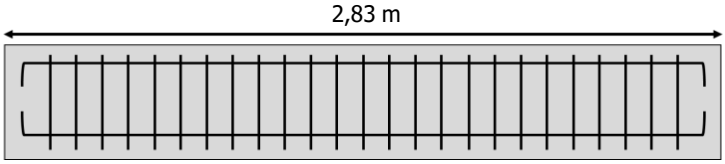
Refuerzo mínimo en la otra dirección

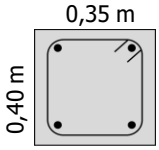
| | |
|---|---|
| $As = \rho * b * d =$ | 7,29 cm2 |

| | |
|---|---|
| $\rho min =$ | 0,0018 |

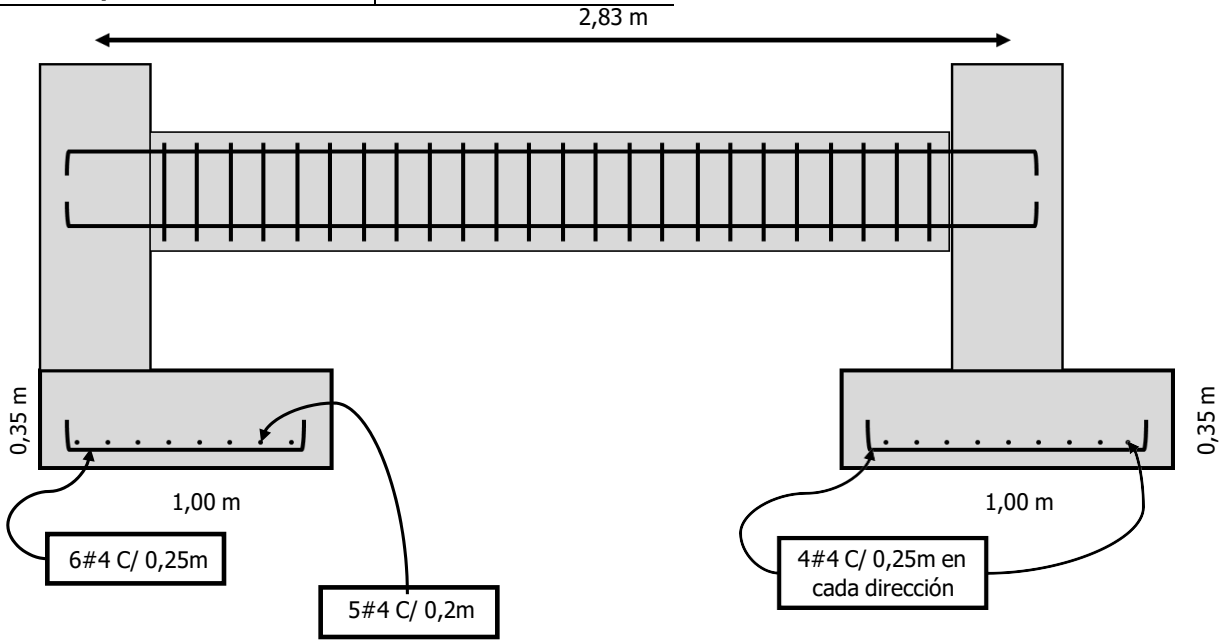
| Ref. Barra | Área | N° de Barras | Separación |
|---|---|---|---|
| #4 | 1,29 cm2 | 6 | 0,25 m |

| Acero Viga De Cimentación | |
|---|---|
| Acero Superior | 3#4 |
| Estribos | 1#3 C/ 0,175 |
| Acero Inferior | 3#4 |




| Acero Zapatas de Cimentación | |
|---|---|



**Proyecto:**
**Proyecto nº:**
**Autor:**

## Datos del proyecto

| | |
|---|---|
| Nombre del proyecto | |
| Número del Proyecto | |
| Autor | |
| Descripción | |
| Fecha | 15/05/2024 |
| Normativa de cálculo | AISC 360-16 |

## Material

| | |
|---|---|
| Acero | A36, A992 |
| Hormigón | 4000 psi, 3000 psi |

**Proyecto:**
**Proyecto nº:**
**Autor:**

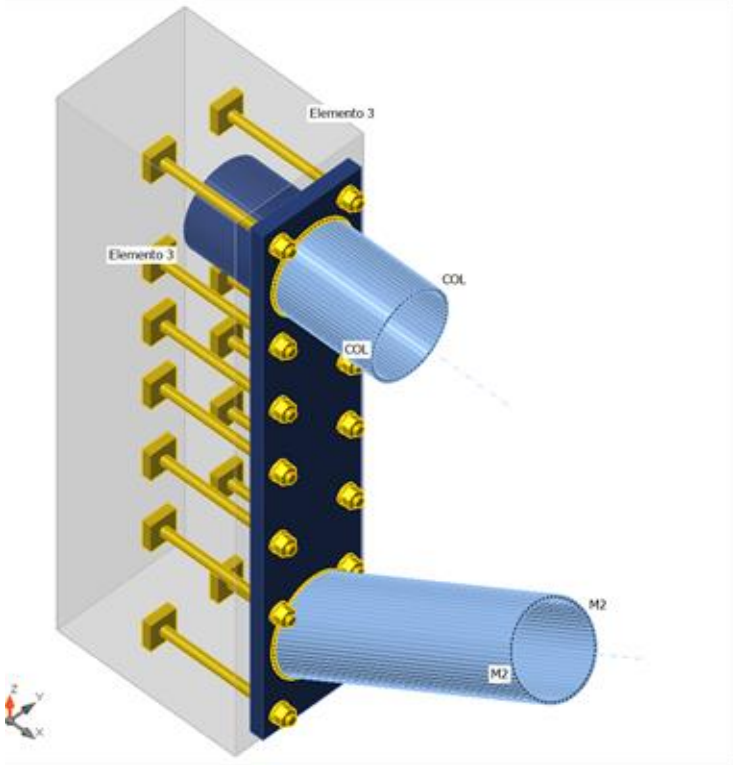
# Ítem del proyecto CON2

## Diseño

| | |
|---|---|
| Nombre | CON2 |
| Descripción | PLACA BASE CERCHA |
| Análisis | Tensión, deformación/ Carga simplificada |
| Normativa de cálculo | AISC - LRFD 2016 |

### Elementos estructurales

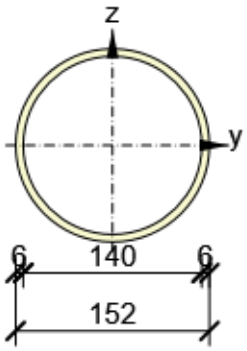
| Nombre | Sección transversal | β – Dirección [°] | γ - Inclinación [°] | α - Rotación [°] | Desplazamiento ex [mm] | Desplazamiento ey [mm] | Desplazamiento ez [mm] | Fuerzas en |
|---|---|---|---|---|---|---|---|---|
| COL | 11 - CHS152,4,6 | 0,0 | 0,0 | 0,0 | 0 | 0 | 0 | Nodo |
| M2 | 11 - CHS152,4,6 | 0,0 | -31,0 | 0,0 | 0 | 0 | -600 | Nodo |




### Secciones

| Nombre | Material |
|---|---|
| 11 - CHS152,4,6 | A992 |

## Secciones

| Nombre | Material | Dibujo |
|---|---|---|
| 11 - CHS152,4,6 | A992 |  |



## Anclajes

| Nombre | Conjunto de tornillo | Diámetro [mm] | fu [MPa] | Área bruta [mm$^2$] |
|---|---|---|---|---|
| 5/8 A325 | 5/8 A325 | 16 | 827,4 | 198 |

## Cargas (No se requiere el equilibro)

| Nombre | Elemento | N [kN] | Vy [kN] | Vz [kN] | Mx [kNm] | My [kNm] | Mz [kNm] |
|---|---|---|---|---|---|---|---|
| LE1 | COL | 85,5 | 0,0 | -4,2 | 0,0 | 0,8 | 0,0 |
| | M2 | -131,5 | 0,0 | -1,9 | 0,0 | -4,0 | 0,0 |

## Bloque de la cimentación

| Ítem | Valor | Unidad |
|---|---|---|
| **CB 1** | | |
| Dimensiones | 250 x 1043 | mm |
| Profundidad | 350 | mm |
| Anclaje | 5/8 A325 | |
| Longitud del anclaje | 200 | mm |
| Transferencia de la fuerza cortante | Viga a cortante | |
| Sección para la viga a cortante | CHS152,4,6 | |
| Longitud de la viga a cortante | 150 | mm |

# Verificación

## Resumen

| Nombre | Valor | Estado de la verificación |
|---|---|---|
| Análisis | 100,0% | OK |
| Placas | 0,0 < 5,0% | OK |
| Anclajes | 95,8 < 100% | OK |
| Soldaduras | 75,8 < 100% | OK |
| Bloque de hormigón | 7,4 < 100% | OK |
| Cortante | 91,3 < 100% | OK |
| Pandeo | No calculado | |

## Placas

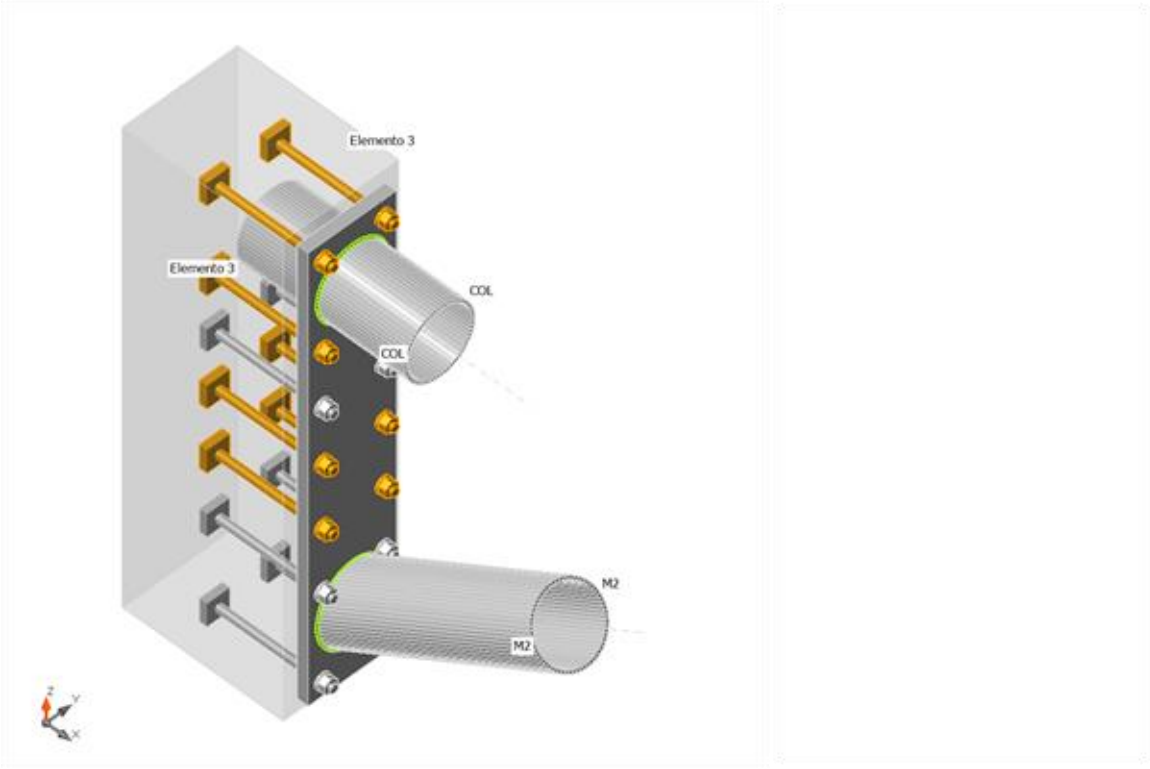
| Nombre | Material | $f_y$ [MPa] | Espesor [mm] | Cargas | $\sigma_{Ed}$ [MPa] | $\varepsilon_{Pl}$ [%] | $\sigma c_{Ed}$ [MPa] | Estado de la verificación |
|---|---|---|---|---|---|---|---|---|
| COL | A992 | 344,7 | 6,0 | LE1 | 75,2 | 0,0 | 0,0 | OK |
| M2 | A992 | 344,7 | 6,0 | LE1 | 115,4 | 0,0 | 0,0 | OK |
| Elemento 3 | A992 | 344,7 | 6,0 | LE1 | 128,8 | 0,0 | 0,0 | OK |
| BP1 | A36 | 248,2 | 25,0 | LE1 | 74,5 | 0,0 | 0,0 | OK |

### Datos de diseño

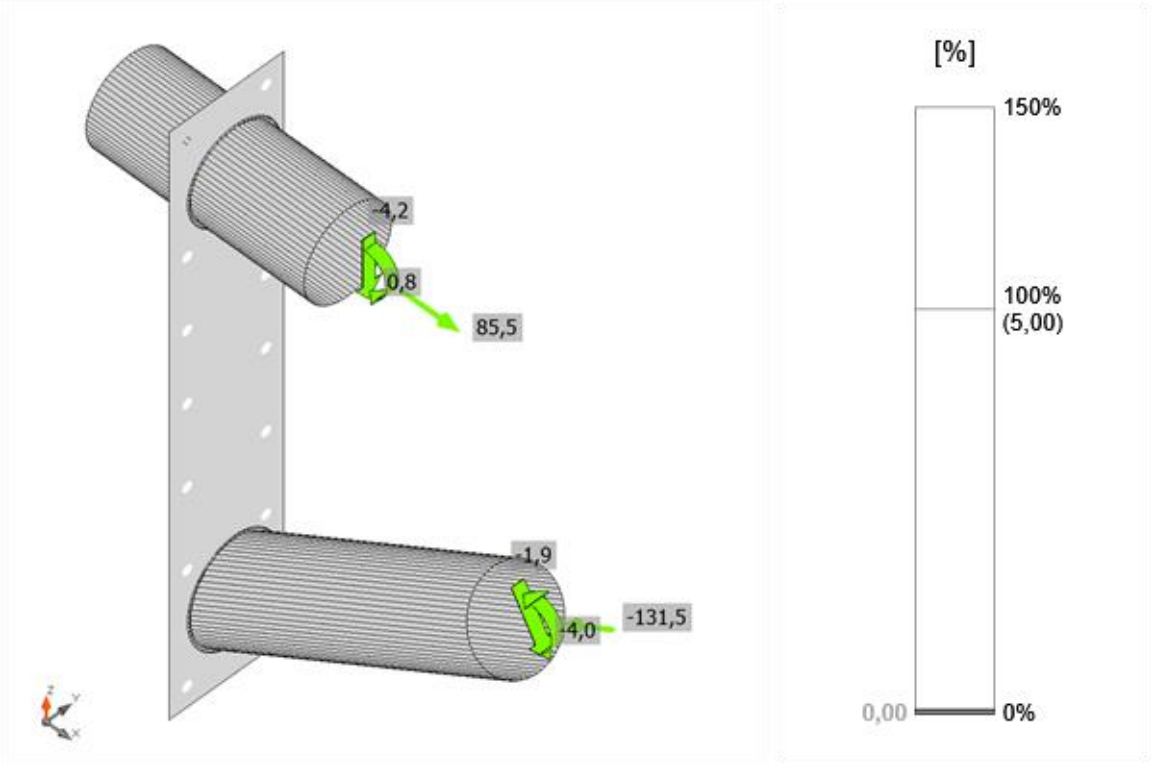
| Material | $f_y$ [MPa] | $\varepsilon_{lim}$ [%] |
|---|---|---|
| A992 | 344,7 | 5,0 |
| A36 | 248,2 | 5,0 |

### Explicación del símbolo

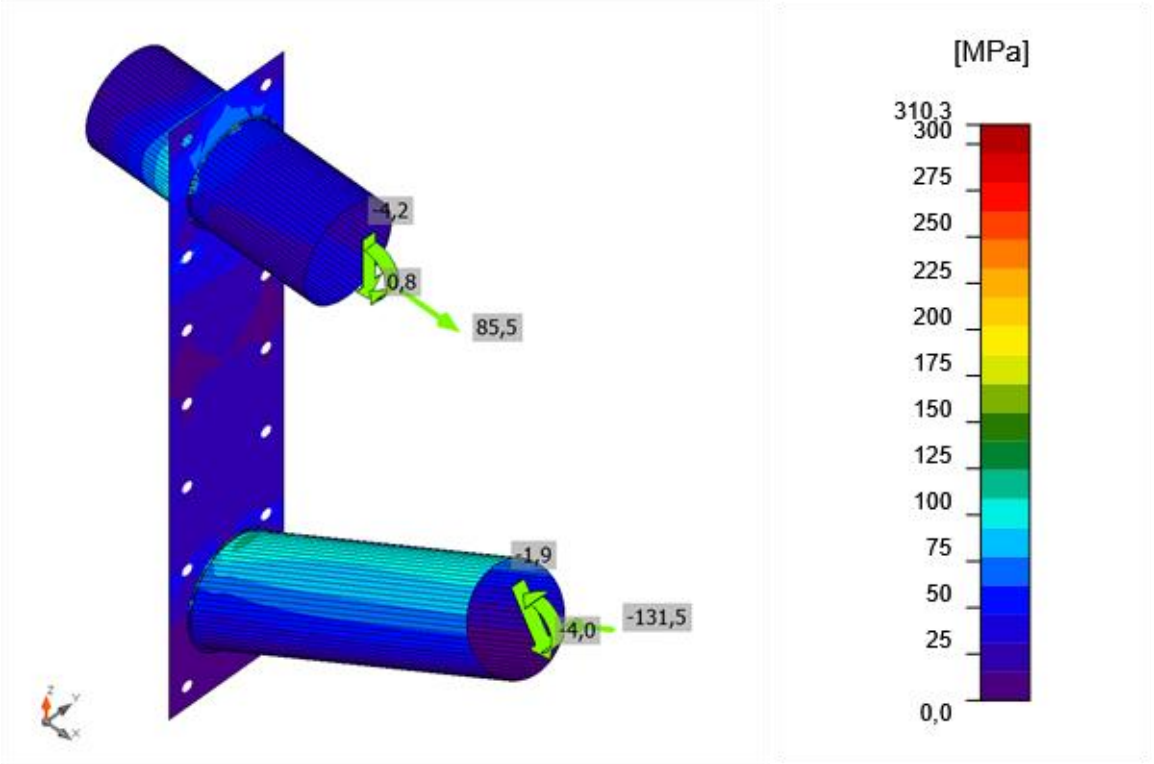
| | |
|---|---|
| $\varepsilon_{Pl}$ | Deformación plástica |
| $\sigma c_{Ed}$ | Tensiones de Contacto |
| $\sigma_{Ed}$ | Ec. tensión |
| $f_y$ | Límite elástico |
| $\varepsilon_{lim}$ | Límite de la deformación plástica |




*Verificación general, LE1*

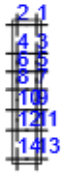



*Verificación de deformación, LE1*




*Tensión equivalente, LE1*

## Anclajes

| Forma | Ítem | Cargas | $N_f$ [kN] | $\phi N_{cbg}$ [kN] | $\phi N_p$ [kN] | $\phi N_{sb}$ [kN] | $\phi V_{cp}$ [kN] | $Ut_t$ [%] | $Ut_s$ [%] | $Ut_{ts}$ [%] | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  | A1 | LE1 | 39,3 | 98,1 | 355,5 | 72,1 | 140,6 | 95,8 | 0,4 | 93,1 | OK |
| | A2 | LE1 | 39,3 | 98,1 | 355,5 | 72,1 | 140,6 | 95,8 | 0,4 | 93,1 | OK |
| | A3 | LE1 | 6,7 | 98,1 | 355,5 | 72,1 | 140,6 | 95,8 | 0,4 | 93,1 | OK |
| | A4 | LE1 | 6,7 | 98,1 | 355,5 | 72,1 | 140,6 | 95,8 | 0,4 | 93,1 | OK |
| | A5 | LE1 | 0,0 | - | 355,5 | - | 140,6 | 0,0 | 0,4 | 0,0 | OK |
| | A6 | LE1 | 0,0 | - | 355,5 | - | 140,6 | 0,0 | 0,4 | 0,0 | OK |
| | A7 | LE1 | 0,7 | 98,1 | 355,5 | 72,1 | 140,6 | 95,8 | 0,4 | 93,1 | OK |
| | A8 | LE1 | 0,7 | 98,1 | 355,5 | 72,1 | 140,6 | 95,8 | 0,4 | 93,1 | OK |
| | A9 | LE1 | 0,4 | 98,1 | 355,5 | 72,1 | 140,6 | 95,8 | 0,4 | 93,1 | OK |
| | A10 | LE1 | 0,3 | 98,1 | 355,5 | 72,1 | 140,6 | 95,8 | 0,4 | 93,1 | OK |
| | A11 | LE1 | 0,0 | - | 355,5 | - | 140,6 | 0,0 | 0,4 | 0,0 | OK |
| | A12 | LE1 | 0,0 | - | 355,5 | - | 140,6 | 0,0 | 0,4 | 0,0 | OK |
| | A13 | LE1 | 0,0 | - | 355,5 | - | 140,6 | 0,0 | 0,4 | 0,0 | OK |
| | A14 | LE1 | 0,0 | - | 355,5 | - | 140,6 | 0,0 | 0,4 | 0,0 | OK |

**Datos de diseño**

| Calidad | $\phi N_{sa}$ [kN] | $\phi V_{sa}$ [kN] |
|---|---|---|
| 5/8 A325 - 1 | 84,4 | 47,0 |

**Explicación del símbolo**

| | |
|---|---|
| $N_f$ | Fuerza de tracción |
| $\phi N_{cbg}$ | Resistencia al arrancamiento del cono de hormigón a tracción de acuerdo con – ACI 318-14 – 17.4.2 |
| $\phi N_p$ | Resistencia al deslizamiento – ACI 318-14 – 17.4.3 |
| $\phi N_{sb}$ | Resistencia al arrancamiento lateral del cono de hormigón a tracción de acuerdo con – ACI 318-14 – 17.4.4 |
| $\phi V_{cp}$ | Resistencia al desprendimiento del hormigón por cabeceo del anclaje a cortante de acuerdo con – ACI 318-14 – 17.5.3 |
| $Ut_t$ | Utilización a tracción |
| $Ut_s$ | Utilización a cortante |
| $Ut_{ts}$ | Utilización a tensión y cortante |
| $\phi N_{sa}$ | Resistencia del anclaje en tracción - ACI 318-14 – 17.4.1 |
| $\phi V_{sa}$ | Resistencia del anclaje a cortante - ACI 318-14 – 17.5.1 |

**Resultado detallado para A1**

**Resistencia a tracción del anclaje** (ACI 318-14 – 17.4.1)

$$\phi N_{sa} = \phi \cdot A_{se,N} \cdot f_{uta} = \quad 84,4 \quad \text{kN} \quad \geq \quad N_f = \quad 39,3 \quad \text{kN}$$

*Donde:*

$\phi$ = 0,70 – factor de resistencia

$A_{se,N}$ = 146 mm$^2$ – Área a tracción

$f_{uta}$ = 827,4 MPa – resistencia última espeficifica para el acero del tornillo

- $f_{uta} = \min(860\ \text{MPa}, 1,9 \cdot f_{ya}, f_u)$ , donde:
  - $f_{ya}$ = 634,3 MPa – límite elástico esfecificado del acero del anclaje
  - $f_u$ = 827,4 MPa – resistencia última espeficifica para el acero del anclaje

**Resistencia a arrancamiento del hormigón del anclaje en tracción** (ACI 318-14 – 17.4.2)

*The check is performed for group of anchors that form common tension breakout cone: A1, A2, A3, A4, A7, A8, A9, A10*

$$\phi N_{cbg} = \phi \cdot \frac{A_{Nc}}{A_{Nc0}} \cdot \Psi_{ed,N} \cdot \Psi_{ec,N} \cdot \Psi_{c,N} \cdot N_b = \quad 98{,}1 \quad \text{kN} \quad \geq \quad N_{fg} = \quad 94{,}0 \quad \text{kN}$$

*Donde:*

$N_{fg}$ = 94,0 kN – suma de las fuerzas de tracción en los anclajes con un área común del cono de arrancamiento de hormigón

$\phi$ = 0,70 – factor de resistencia

$A_{Nc}$ = 165000 mm$^2$ – Cono de arrancamiento del hormigón para el grupo de anclajes

$A_{Nc0}$ = 17530 mm$^2$ – Cono de arrancamiento del hormigón de un solo anclaje no influenciado por los bordes

$\Psi_{ed,N}$ = 0,97 – factor modificador por la distancia al borde

- $\Psi_{ed,N} = \min(0{,}7 + \frac{0{,}3 \cdot c_{a,min}}{1{,}5 \cdot h_{ef}}, 1)$ , donde:
  - $c_{a,min}$ = 59 mm – distancia mínima desde el anclaje hasta el borde
  - $h_{ef} = \min(h_{emb}, \max(\frac{c_{a,max}}{1{,}5}, \frac{s}{3})) =$ 44 mm – profundidad del embebimiento, donde:
    - $h_{emb}$ = 200 mm – longitud del anclaje
    - $c_{a,max}$ = 64 mm – máxima distancia del anclaje a uno de los tres bordes más cercanos
    - $s$ = 132 mm – máximo espaciado entre anclajes

$\Psi_{ec,N}$ = 1,00 – factor modificador para grupos de anclajes cargados excéntricamente

- $\Psi_{ec,N} = \Psi_{ecx,N} \cdot \Psi_{ecy,N}$ , donde:
  - $\Psi_{ecx,N} = \frac{1}{1 + \frac{2 \cdot e_{x,N}}{3 \cdot h_{ef}}} =$ 1,00 – factor modificador que depende de la excentricidad en la dirección x
  - $e_{x,N}$ = 0 mm – excentricidad de la carga de tracción en la dirección x
  - $\Psi_{ecy,N} = \frac{1}{1 + \frac{2 \cdot e_{y,N}}{3 \cdot h_{ef}}} =$ 1,00 – factor modificador que depende de la excentricidad en la dirección y
  - $e_{y,N}$ = 0 mm – excentricidad de la carga de tracción en la dirección y
  - $h_{ef}$ = 44 mm – profundidad del embebimiento

$\Psi_{c,N}$ = 1,00 – factor modificador para las condiciones del hormigón

$N_b$ = 15,4 kN – resistencia básica a arrancamiento del hormigón de un solo anclaje a tracción

- $N_b = k_c \cdot \lambda_a \cdot \sqrt{f_c} \cdot h_{ef}^{1,5}$ , donde:
  - $k_c$ = 10,0 – coeficiente para anclajes hormigonados in situ
  - $\lambda_a$ = 1,00 – factor de modificación para hormigones ligeros
  - $f_c$ = 27,6 MPa – resistencia a compresión del hormigón
  - $h_{ef}$ = 44 mm – profundidad del embebimiento

**Resistencia al arrancamiento de barra del hormigón** (ACI 318-14 – 17.4.3)

$\phi N_{pn} = \phi \cdot \Psi_{c,P} \cdot N_p =$ 355,5 kN ≥ $N_f =$ 39,3 kN

*Donde:*

$\phi$ = 0,70 – factor de resistencia

$\Psi_{c,P}$ = 1,00 – factor modificador para la condición del hormigón

$N_p$ = 507,9 kN – resistencia básica del hormigón a arrancamiento del anclaje por falta de adherencia:

- $N_{pr} = 8 \cdot A_{brg} \cdot f'_c$ , donde:
  - $A_{brg}$ = 2302 mm$^2$ – área portante de la cabeza del perno o anclaje
  - $f'_c$ = 27,6 MPa – resistencia a compresión del hormigón

**Resistencia a arrancamiento lateral del hormigón** (ACI 318-14 – 17.4.4)

$\phi N_{sb} = r_c \cdot N_{sbg} =$ 72,1 kN ≥ $N_f =$ 39,3 kN

*Donde:*

$r_c$ = 0,52 – factor reductor para el anclaje cercano a un borde libre o múltiples anclajes con espaciado pequeño:

- $r_c = \min(\frac{1+\frac{c_{a2}}{c_{a1}}}{4}, 1 + \frac{s}{6 \cdot c_{a1}}),\ 0,5 \le r_c \le 1$ , donde:
  - $c_{a1}$ = 59 mm – distancia más corta desde un anclaje hasta un borde
  - $c_{a2}$ = 64 mm – distancia al borde más larga en la dirección de la carga
  - $s$ = 132 mm – espaciado entre anclajes

$N_{sbg}$ = 138,3 kN – resistencia a arrancamiento lateral del hormigón de un anclaje con cabeza en tracción

- $N_{sb} = \phi \cdot 13,0 \cdot c_{a1} \cdot \sqrt{A_{brg}} \cdot \sqrt{f'_c}$ , donde:
  - $A_{brg}$ = 2302 mm$^2$ – área portante de la cabeza del perno o anclaje
  - $f'_c$ = 27,6 MPa – resistencia a compresión del hormigón
  - $\phi$ = 0,70 – factor de resistencia

**Resistencia a cortante** (ACI 318-14 – 17.5.1)

$\phi V_{sa} = \phi \cdot 0,6 \cdot A_{se,V} \cdot f_{uta} =$ 47,0 kN ≥ $V =$ 0,0 kN

*Donde:*

$\phi$ = 0,65 – factor de resistencia

$A_{se,V}$ = 146 mm$^2$ – Área a tracción

$f_{uta}$ = 827,4 MPa – resistencia última espeficifica para el acero del tornillo

- $f_{uta} = \min(860\ \text{MPa}, 1,9 \cdot f_{ya}, f_u)$ , donde:
  - $f_{ya}$ = 634,3 MPa – límite elástico esfecificado del acero del anclaje
  - $f_u$ = 827,4 MPa – resistencia última espeficifica para el acero del anclaje

**Resistencia al arrancamiento en cuña del hormigón (pryout)** (ACI 318-14 – 17.5.3)

*The check is performed for group of anchors on common base plate*

$\phi V_{cp} = \phi \cdot k_{cp} \cdot N_{cp} =$ 140,6 kN ≥ $V_g =$ 0,6 kN

*Donde:*

$\phi$ = 0,65 – factor de resistencia

$k_{cp}$ = 1,00 – factor de arrancamiento por cortante en cuña del hormigón (pry-out)

$N_{cp}$ = 216,2 kN – resistencia a arrancamiento del cono de hormigón en caso de todos los anclajes en tracción

$V_g$ = 0,6 kN – suma de los cortantes de los anclajes sobre una misma placa base

**Interacción tracción-cortante** (ACI 318-14 – R17.6)

$U_{tt}^{5/3} + U_{ts}^{5/3} =$ 0,93 ≤ 1,0

*Donde:*

$U_{tt}$ = 0,96 – máxima ratio entre fuerza de tracción factorizada y resistencia a tracción determinada a partir de todos los modos de fallo relevantes

$U_{ts}$ = 0,00 – máxima ratio entre esfuerzo cortante factorizado y resistencia a cortante determinada a partir de todos los modos de fallo relevantes

## Weld sections

| Ítem | Borde | Xu | $T_h$ [mm] | $L_s$ [mm] | L [mm] | $L_c$ [mm] | Cargas | $F_n$ [kN] | $\phi R_n$ [kN] | Ut [%] | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BP1 | COL | E70xx | ◢2,8 | ◢4,0 | 460 | 7 | LE1 | 3,5 | 4,7 | 75,4 | OK |
| BP1 | Elemento 3 | E70xx | ◢2,8 | ◢4,0 | 460 | 7 | LE1 | 3,4 | 4,5 | 75,8 | OK |
| BP1 | M2 | E70xx | ◢2,8 | ◢4,0 | 499 | 7 | LE1 | 4,8 | 6,6 | 72,5 | OK |

**Explicación del símbolo**

| | |
|---|---|
| $T_h$ | Espesor de garganta de soldadura |
| $L_s$ | Tamaño de la soldadura |
| L | Longitud de la soldadura |
| $L_c$ | Longitud del elemento crítico de la soldadura |
| $F_n$ | Fuerza en el elemento crítico de la soldadura |
| $\phi R_n$ | Resistencia de la soldadura, AISC 360-10 J2.4 |
| Ut | Utilización |

**Resultado detallado para BP1 / Elemento 3**

**Comprobación de la resistencia de la soldadura** (AISC 360-16: J2-4)

$\phi R_n = \phi \cdot F_{nw} \cdot A_{we} =$ 4,5 kN ≥ $F_n =$ 3,4 kN

*Donde:*

$F_{nw}$ = 297,4 MPa – resistencia nominal del material de aportación:

- $F_{nw} = 0,6 \cdot F_{EXX} \cdot (1 + 0,5 \cdot sin^{1,5}\theta)$ , donde:
  - $F_{EXX}$ = 482,6 MPa – número de clasificación del electrodo, p.e. mínima resistencia a tracción especificada
  - $\theta$ = 8,2° – ángulo de actuación de la carga medido desde el eje de la soldadura

$A_{we}$ = 20 mm$^2$ – área eficaz del elemento de soldadura crítico

$\phi$ = 0,75 – factor de resistencia para conexiones soldadas

## Bloque de hormigón

| Ítem | Cargas | $A_1$ [mm2] | $A_2$ [mm2] | σ [MPa] | Ut [%] | Estado |
|---|---|---|---|---|---|---|
| CB 1 | LE1 | 107057 | 106874 | 1,1 | 7,4 | OK |

**Explicación del símbolo**

| | |
|---|---|
| $A_1$ | Área cargada |
| $A_2$ | Área de soporte |
| σ | Tensión media en el hormigón |
| Ut | Utilización |

**Resultado detallado para CB 1**

**Comprobación de la resistencia a compresión del bloque de hormigón** (AISC 360-16 Section J8)

$\phi_c f_{p,max} =$ 15,2 MPa ≥ $\sigma =$ 1,1 MPa

*Donde:*

$f_{p,max}$ = 23,4 MPa – resistencia de cálculo a aplastamiento del bloque de hormigón:

- $f_{p,max} = 0,85 \cdot f'_c \cdot \sqrt{\frac{A_2}{A_1}} \leq 1,7 \cdot f'_c$ , donde:
  - $f'_c$ = 27,6 MPa – resistencia a compresión del hormigón
  - $A_1$ = 107057 mm$^2$ – Área de la placa base en contacto con la superficie de hormigón
  - $A_2$ = 106874 mm$^2$ – Superfície de apoyo del hormigón

$\phi_c$ = 0,65 – factor de resistencia para el hormigón

## Cortante en el plano de contacto

| Ítem | Cargas | V [kN] | $P_{br}$ [kN] | $V_{cb}$ [kN] | Ut [%] | Estado |
|---|---|---|---|---|---|---|
| BP1 | LE1 | 73,0 | 2054,4 | 79,9 | 91,3 | OK |

**Explicación del símbolo**

| | |
|---|---|
| V | Esfuerzo cortante |
| $P_{br}$ | Resistencia del bloque de hormigón |
| $V_{cb}$ | Resistencia de rotura del cono de hormigón |
| Ut | Utilización |

**Resultado detallado para BP1**

**Verificación de la resistencia a aplastamiento** (ACI 349-01–B.4.5, ACI 349-01 RB11)

$\phi_c P_{br} = \phi \cdot 1,3 \cdot f'_c \cdot A_1 + \phi \cdot K_c \cdot (N_y - P_a) =$ 2054,4 kN ≥ $V =$ 73,0 kN

*Donde:*

$\phi$ = 0,7 – factor de resistencia para el aplastamiento de los tornillos

$f'_c$ = 27,6 MPa – resistencia a compresión del hormigón

$A_1$ = 22860 mm² – Área proyectada de la llave de cortante embebida en la dirección de la fuerza excluyendo la porción de la llave en contacto con el mortero sobre el elemento de hormigón

$K_c$ = 1,60 – coeficiente de confinamiento

$N_y$ = 1294,9 kN – fuerza de plastificación de los anclajes traccionados

- $N_y = n \cdot A_{se} \cdot F_y$ , donde:
  - $n$ = 14,0 – número de anclajes en tracción
  - $A_{se}$ = 146 mm² – área a tracción de un anclaje
  - $F_y$ = 634,3 MPa – resistencia de plastificación en el anclaje

$P_a$ = -27,2 kN – carga axial externa

**Resistencia a arrancamiento del hormigón** (ACI 349 – B11)

$\phi V_{cb} = \phi \cdot \Psi_{\alpha,v} \cdot A_{vc} \cdot 0,33 \cdot \sqrt{f'_c} =$ 79,9 kN ≥ $V =$ 73,0 kN

*Donde:*

$\phi$ = 0,85 – factor de resistencia de material de acero embebido para la armadura

$\Psi_{\alpha,V}$ = 2,0 – factor modificador para llave de cortante cargada bajo un ángulo con el borde del hormgión

- $\Psi_{\alpha,V} = \sqrt{\frac{1}{(\cos \alpha_V)^2 + (0,5 \cdot \sin \alpha_V)^2}}$ , donde:
  - $\alpha_V$ = 90,0 ° – ángulo entre la dirección del cortante y la dirección perpendicular al borde del hormigón

$A_{vc}$ = 26970 mm² – área eficaz definida proyectando un plano a 45° desde los extremos de la llave de cortate hasta la superficie libre en la dirección del cortante. El área resistente de la llave de cortante se excluye del área proyectada

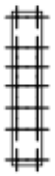
$f'_c$ = 27,6 MPa – resistencia a compresión del hormigón

## Pandeo

**El análisis de pandeo no se ha calculado.**

# Listado de material

## Operaciones

| Nombre | Placas [mm] | Forma | Nº | Soldaduras [mm] | Longitud [mm] | Tornillos | Nº |
|---|---|---|---|---|---|---|---|
| BP1 | P25,0x192,4-985,4 (A36) |  | 1 | tendón de soldadura simple: a = 2,8 | 919,5 | 5/8 A325 | 14 |
| CUT1 | | | | tendón de soldadura simple: a = 2,8 | 498,8 | | |

## Soldaduras

| Tipo | Material | Espesor de garganta [mm] | Tamaño de pierna [mm] | Longitud [mm] |
|---|---|---|---|---|
| tendón de soldadura simple | E70xx | 2,8 | 4,0 | 1418,3 |

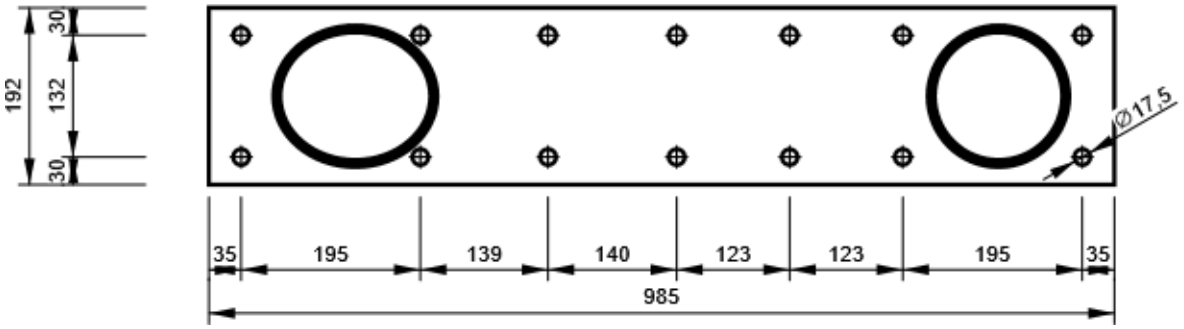
## Anclajes

| Nombre | Longitud [mm] | Longitud del taladro [mm] | Cuenta |
|---|---|---|---|
| 5/8 A325 | 225 | 200 | 14 |

## Dibujo

### BP1

**P25,0x985-192 (A36)**




# Configuración de la norma

| Ítem | Valor | Unidad | Referencia |
|---|---|---|---|
| Coeficiente de fricción - hormigón | 0,40 | - | ACI 349 – B.6.1.4 |
| Coeficiente de fricción en la resistencia a deslizamiento | 0,30 | - | AISC 360-16 J3.8 |
| Deformación plástica límite | 0,05 | - | |
| Evaluación de la tensión de la soldadura | Redistribución plástica | | |
| Detallado | No | | |
| Distancia entre tornillos [d] | 2,66 | - | AISC 360-16 – J3.3 |
| Distancia entre tornillos y el borde [d] | 1,25 | - | AISC 360-16 – J.3.4 |
| Resistencia al arrancamiento del cono de hormigón | Ambos | | |

| Ítem | Valor | Unidad | Referencia |
|---|---|---|---|
| Resistencia del metal base en la cara de fusión de la soldadura | No | | AISC 360-16: J2-2 |
| Hormigón fisurado | Sí | | ACI 318-14 – Chapter 17 |
| Comprobación de la deformación local | No | | |
| Deformación límite local | 0,03 | - | CIDECT DG 1, 3 - 1.1 |
| No linealidad geométrica (GMNA) | Sí | | Grandes deformaciones para secciones huecas |

**Proyecto:**
**Proyecto nº:**
**Autor:**

## Datos del proyecto

| | |
|---|---|
| Nombre del proyecto | |
| Número del Proyecto | |
| Autor | |
| Descripción | |
| Fecha | 15/05/2024 |
| Normativa de cálculo | AISC 360-16 |

## Material

| | |
|---|---|
| Acero | A36, A992 |
| Hormigón | 4000 psi, 3000 psi |

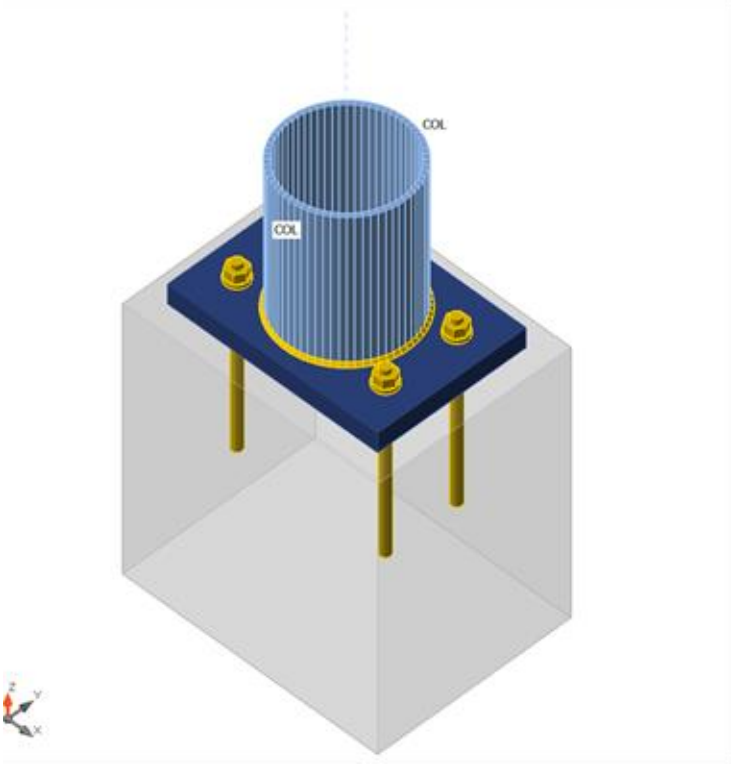
# Ítem del proyecto CON7

## Diseño

| | |
|---|---|
| Nombre | CON7 |
| Descripción | PLACA BASE CERCHA |
| Análisis | Tensión, deformación/ Carga simplificada |
| Normativa de cálculo | AISC - LRFD 2016 |

### Elementos estructurales

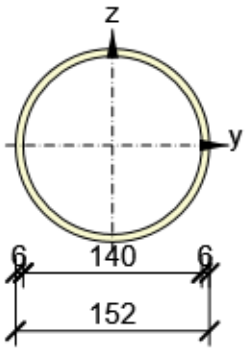
| Nombre | Sección transversal | β – Dirección [°] | γ - Inclinación [°] | α - Rotación [°] | Desplazamiento ex [mm] | Desplazamiento ey [mm] | Desplazamiento ez [mm] | Fuerzas en |
|---|---|---|---|---|---|---|---|---|
| COL | 11 - CHS152,4,6 | 0,0 | -90,0 | 0,0 | 0 | 0 | 0 | Nodo |




### Secciones

| Nombre | Material |
|---|---|
| 11 - CHS152,4,6 | A992 |

## Secciones

| Nombre | Material | Dibujo |
|---|---|---|
| 11 - CHS152,4,6 | A992 |  |



## Anclajes

| Nombre | Conjunto de tornillo | Diámetro [mm] | fu [MPa] | Área bruta [mm$^2$] |
|---|---|---|---|---|
| 1/2 A325 | 1/2 A325 | 13 | 827,4 | 127 |

## Cargas (No se requiere el equilibro)

| Nombre | Elemento | N [kN] | Vy [kN] | Vz [kN] | Mx [kNm] | My [kNm] | Mz [kNm] |
|---|---|---|---|---|---|---|---|
| LE1 | COL | 31,2 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |

## Bloque de la cimentación

| Ítem | Valor | Unidad |
|---|---|---|
| **CB 1** | | |
| Dimensiones | 250 x 330 | mm |
| Profundidad | 350 | mm |
| Anclaje | 1/2 A325 | |
| Longitud del anclaje | 200 | mm |
| Transferencia de la fuerza cortante | Anclajes | |

# Verificación

## Resumen

| Nombre | Valor | Estado de la verificación |
|---|---|---|
| Análisis | 100,0% | OK |
| Placas | 0,0 < 5,0% | OK |
| Anclajes | 93,6 < 100% | OK |
| Soldaduras | 15,6 < 100% | OK |
| Bloque de hormigón | No calculado | |
| Pandeo | No calculado | |

## Placas

| Nombre | Material | $f_y$ [MPa] | Espesor [mm] | Cargas | $\sigma_{Ed}$ [MPa] | $\varepsilon_{Pl}$ [%] | $\sigma c_{Ed}$ [MPa] | Estado de la verificación |
|---|---|---|---|---|---|---|---|---|
| COL | A992 | 344,7 | 6,0 | LE1 | 27,1 | 0,0 | 0,0 | OK |
| BP1 | A36 | 248,2 | 25,0 | LE1 | 21,1 | 0,0 | 0,0 | OK |

**Proyecto:**

**Proyecto nº:**

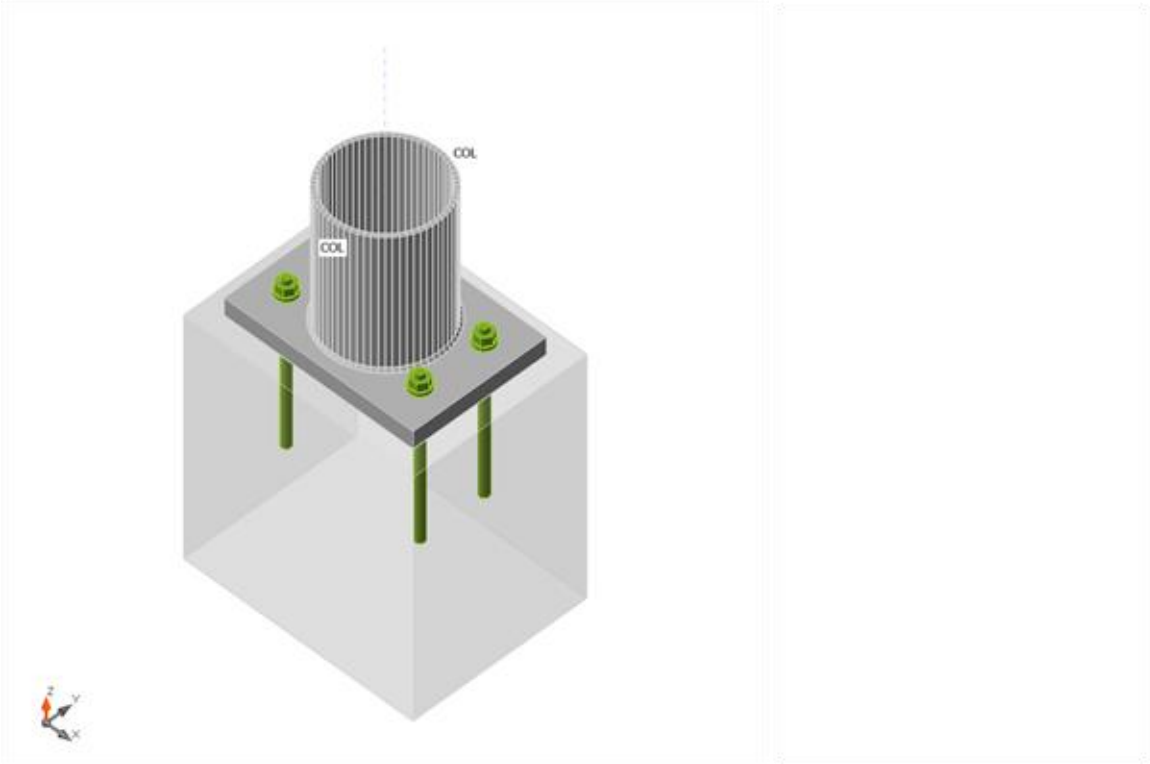
**Autor:**

### Datos de diseño

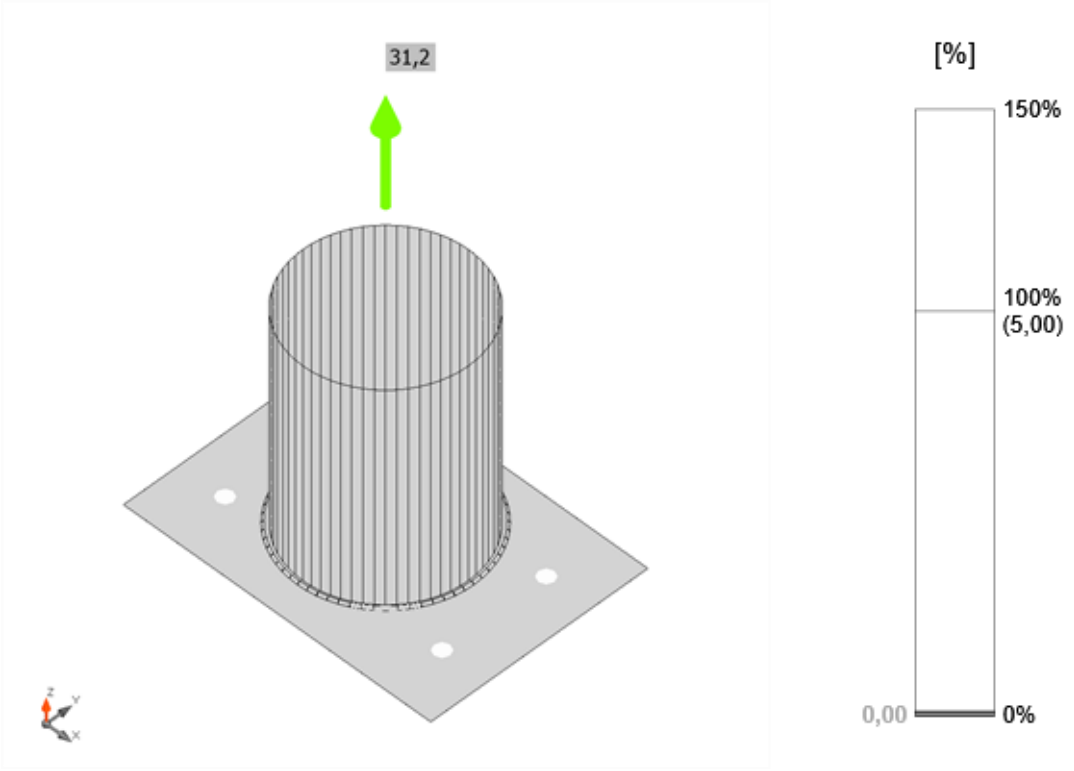
| Material | $f_y$ [MPa] | $\varepsilon_{lim}$ [%] |
|---|---|---|
| A992 | 344,7 | 5,0 |
| A36 | 248,2 | 5,0 |

### Explicación del símbolo

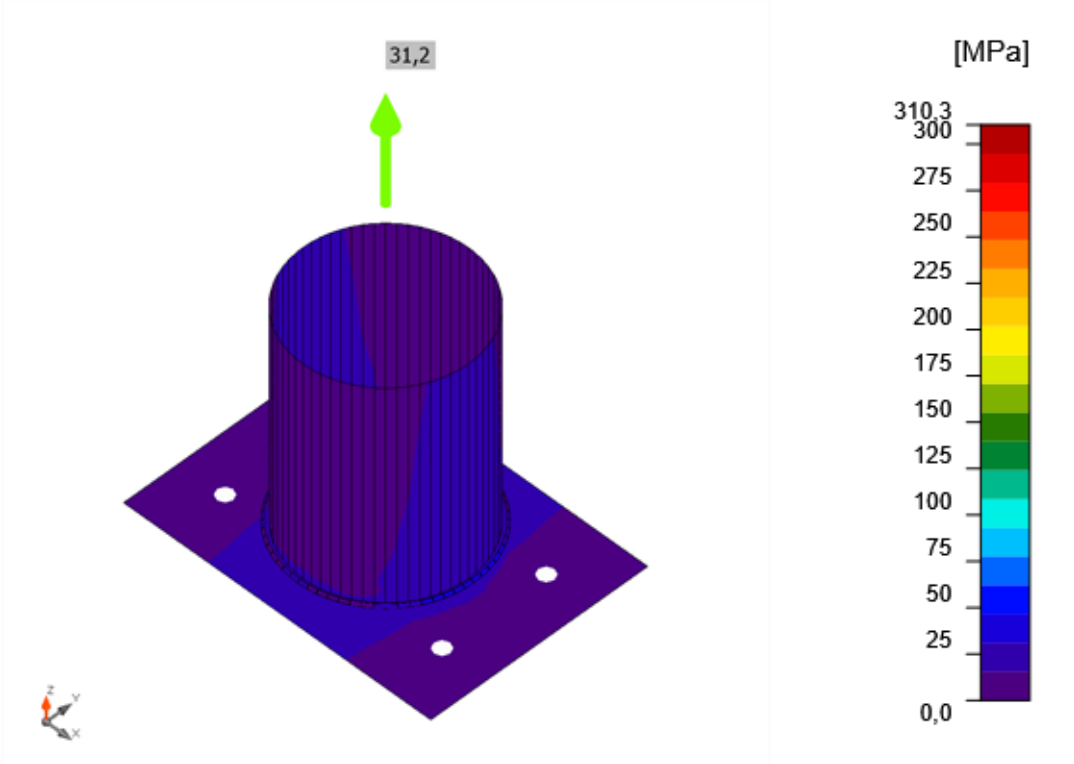
| | |
|---|---|
| $\varepsilon_{Pl}$ | Deformación plástica |
| $\sigma c_{Ed}$ | Tensiones de Contacto |
| $\sigma_{Ed}$ | Ec. tensión |
| $f_y$ | Límite elástico |
| $\varepsilon_{lim}$ | Límite de la deformación plástica |




*Verificación general, LE1*

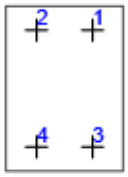



*Verificación de deformación, LE1*




*Tensión equivalente, LE1*

## Anclajes

| Forma | Ítem | Cargas | $N_f$ [kN] | V [kN] | $\phi N_{cbg}$ [kN] | $\phi N_p$ [kN] | $\phi N_{sb}$ [kN] | $\phi V_{cbg}$ [kN] | $\phi V_{cp}$ [kN] | $Ut_t$ [%] | $Ut_s$ [%] | $Ut_{ts}$ [%] | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | A1 | LE1 | 7,8 | 0,0 | 33,3 | -14,7 | - | - | 61,9 | 93,6 | 0,1 | 89,5 | OK |
| | A2 | LE1 | 7,8 | 0,0 | 33,3 | -14,7 | - | - | 61,9 | 93,6 | 0,1 | 89,5 | OK |
| | A3 | LE1 | 7,8 | 0,0 | 33,3 | -14,7 | - | - | 61,9 | 93,6 | 0,1 | 89,5 | OK |
| | A4 | LE1 | 7,8 | 0,0 | 33,3 | -14,7 | - | - | 61,9 | 93,6 | 0,1 | 89,5 | OK |



**Datos de diseño**

| Calidad | $\phi N_{sa}$ [kN] | $\phi V_{sa}$ [kN] |
|---|---|---|
| 1/2 A325 - 1 | 53,1 | 29,6 |

**Explicación del símbolo**

| | |
|---|---|
| $N_f$ | Fuerza de tracción |
| V | Resultante de las fuerzas cortantes Vy, Vz en el tornillo. |
| $\phi N_{cbg}$ | Resistencia al arrancamiento del cono de hormigón a tracción de acuerdo con – ACI 318-14 – 17.4.2 |
| $\phi N_p$ | Resistencia al deslizamiento – ACI 318-14 – 17.4.3 |
| $\phi N_{sb}$ | Resistencia al arrancamiento lateral del cono de hormigón a tracción de acuerdo con – ACI 318-14 – 17.4.4 |
| $\phi V_{cbg}$ | Resistencia al arrancamiento del cono de hormigón a cortante de acuerdo con – ACI 318-14 – 17.5.2 |
| $\phi V_{cp}$ | Resistencia al desprendimiento del hormigón por cabeceo del anclaje a cortante de acuerdo con – ACI 318-14 – 17.5.3 |
| $Ut_t$ | Utilización a tracción |
| $Ut_s$ | Utilización a cortante |
| $Ut_{ts}$ | Utilización a tensión y cortante |
| $\phi N_{sa}$ | Resistencia del anclaje en tracción - ACI 318-14 – 17.4.1 |
| $\phi V_{sa}$ | Resistencia del anclaje a cortante - ACI 318-14 – 17.5.1 |

**Resultado detallado para A1**

**Resistencia a tracción del anclaje** (ACI 318-14 – 17.4.1)

$$\phi N_{sa} = \phi \cdot A_{se,N} \cdot f_{uta} = 53{,}1 \text{ kN} \geq N_f = 7{,}8 \text{ kN}$$

*Donde:*

$\phi = 0{,}70$ – factor de resistencia

$A_{se,N} = 92 \text{ mm}^2$ – Área a tracción

$f_{uta} = 827{,}4 \text{ MPa}$ – resistencia última especificifica para el acero del tornillo

- $f_{uta} = \min(860 \text{ MPa}, 1{,}9 \cdot f_{ya}, f_u)$ , donde:
  - $f_{ya} = 634{,}3 \text{ MPa}$ – límite elástico esfecificado del acero del anclaje
  - $f_u = 827{,}4 \text{ MPa}$ – resistencia última especificifica para el acero del anclaje

**Resistencia a arrancamiento del hormigón del anclaje en tracción** (ACI 318-14 – 17.4.2)

*The check is performed for group of anchors that form common tension breakout cone: A1, A2, A3, A4*

$$\phi N_{cbg} = \phi \cdot \frac{A_{Nc}}{A_{Nc0}} \cdot \Psi_{ed,N} \cdot \Psi_{ec,N} \cdot \Psi_{c,N} \cdot N_b = \quad 33{,}3 \quad \text{kN} \quad \geq \quad N_{fg} = \quad 31{,}2 \quad \text{kN}$$

*Donde:*

$N_{fg}$ = 31,2 kN – suma de las fuerzas de tracción en los anclajes con un área común del cono de arrancamiento de hormigón

$\phi$ = 0,70 – factor de resistencia

$A_{Nc}$ = 82500 mm$^2$ – Cono de arrancamiento del hormigón para el grupo de anclajes

$A_{Nc0}$ = 37018 mm$^2$ – Cono de arrancamiento del hormigón de un solo anclaje no influenciado por los bordes

$\Psi_{ed,N}$ = 0,92 – factor modificador por la distancia al borde

- $\Psi_{ed,N} = \min(0,7 + \frac{0,3 \cdot c_{a,min}}{1,5 \cdot h_{ef}}, 1)$ , donde:
  - $c_{a,min}$ = 69 mm – distancia mínima desde el anclaje hasta el borde
  - $h_{ef} = \min(h_{emb}, \max(\frac{c_{a,max}}{1,5}, \frac{s}{3}))$ = 64 mm – profundidad del embebimiento, donde:
    - $h_{emb}$ = 200 mm – longitud del anclaje
    - $c_{a,max}$ = 79 mm – máxima distancia del anclaje a uno de los tres bordes más cercanos
    - $s$ = 192 mm – máximo espaciado entre anclajes

$\Psi_{ec,N}$ = 1,00 – factor modificador para grupos de anclajes cargados excéntricamente

- $\Psi_{ec,N} = \Psi_{ecx,N} \cdot \Psi_{ecy,N}$ , donde:
  - $\Psi_{ecx,N} = \frac{1}{1 + \frac{2 \cdot e_{x,N}}{3 \cdot h_{ef}}}$ = 1,00 – factor modificador que depende de la excentricidad en la dirección x
  - $e_{x,N}$ = 0 mm – excentricidad de la carga de tracción en la dirección x
  - $\Psi_{ecy,N} = \frac{1}{1 + \frac{2 \cdot e_{y,N}}{3 \cdot h_{ef}}}$ = 1,00 – factor modificador que depende de la excentricidad en la dirección y
  - $e_{y,N}$ = 0 mm – excentricidad de la carga de tracción en la dirección y
  - $h_{ef}$ = 64 mm – profundidad del embebimiento

$\Psi_{c,N}$ = 1,00 – factor modificador para las condiciones del hormigón

$N_b$ = 23,4 kN – resistencia básica a arrancamiento del hormigón de un solo anclaje a tracción

- $N_b = k_c \cdot \lambda_a \cdot \sqrt{f_c} \cdot h_{ef}^{1,5}$ , donde:
  - $k_c$ = 10,0 – coeficiente para anclajes hormigonados in situ
  - $\lambda_a$ = 1,00 – factor de modificación para hormigones ligeros
  - $f_c$ = 20,7 MPa – resistencia a compresión del hormigón
  - $h_{ef}$ = 64 mm – profundidad del embebimiento

**Resistencia al arrancamiento de barra del hormigón** (ACI 318-14 – 17.4.3)

$\phi N_{pn} = \phi \cdot \Psi_{c,P} \cdot N_p =$ -14,7 kN ≥ $N_f =$ 7,8 kN

*Donde:*

$\phi$ = 0,70 – factor de resistencia

$\Psi_{c,P}$ = 1,00 – factor modificador para la condición del hormigón

$N_p$ = -21,0 kN – resistencia básica del hormigón a arrancamiento del anclaje por falta de adherencia:

- $N_{pr} = 8 \cdot A_{brg} \cdot f'_c$ , donde:
  - $A_{brg}$ = -127 mm$^2$ – área portante de la cabeza del perno o anclaje
  - $f'_c$ = 20,7 MPa – resistencia a compresión del hormigón

**Resistencia a arrancamiento lateral del hormigón** (ACI 318-14 – 17.4.4)

$\phi N_{sb} = r_c \cdot N_{sbg} =$ 0,0 kN ≥ $N_f =$ 7,8 kN

*Donde:*

$r_c$ = 0,54 – factor reductor para el anclaje cercano a un borde libre o múltiples anclajes con espaciado pequeño:

- $r_c = \min(\frac{1+\frac{c_{a2}}{c_{a1}}}{4}, 1 + \frac{s}{6 \cdot c_{a1}}), 0,5 \le r_c \le 1$ , donde:
  - $c_{a1}$ = 69 mm – distancia más corta desde un anclaje hasta un borde
  - $c_{a2}$ = 79 mm – distancia al borde más larga en la dirección de la carga
  - $s$ = 92 mm – espaciado entre anclajes

$N_{sbg}$ = 0,0 kN – resistencia a arrancamiento lateral del hormigón de un anclaje con cabeza en tracción

- $N_{sb} = \phi \cdot 13,0 \cdot c_{a1} \cdot \sqrt{A_{brg}} \cdot \sqrt{f'_c}$ , donde:
  - $A_{brg}$ = -127 mm$^2$ – área portante de la cabeza del perno o anclaje
  - $f'_c$ = 20,7 MPa – resistencia a compresión del hormigón
  - $\phi$ = 0,70 – factor de resistencia

**Resistencia a cortante** (ACI 318-14 – 17.5.1)

$\phi V_{sa} = \phi \cdot 0,6 \cdot A_{se,V} \cdot f_{uta} =$ 29,6 kN ≥ $V =$ 0,0 kN

*Donde:*

$\phi$ = 0,65 – factor de resistencia

$A_{se,V}$ = 92 mm$^2$ – Área a tracción

$f_{uta}$ = 827,4 MPa – resistencia última espeficifica para el acero del tornillo

- $f_{uta} = \min(860 \text{ MPa}, 1,9 \cdot f_{ya}, f_u)$ , donde:
  - $f_{ya}$ = 634,3 MPa – límite elástico esfecificado del acero del anclaje
  - $f_u$ = 827,4 MPa – resistencia última espeficifica para el acero del anclaje

**Resistencia al arrancamiento en cuña del hormigón (pryout)** (ACI 318-14 – 17.5.3)

*The check is performed for group of anchors on common base plate*

$\phi V_{cp} = \phi \cdot k_{cp} \cdot N_{cp} =$ 61,9 kN ≥ $V_g =$ 0,0 kN

*Donde:*

$\phi$ = 0,65 – factor de resistencia

$k_{cp}$ = 2,00 – factor de arrancamiento por cortante en cuña del hormigón (pry-out)

$N_{cp}$ = 47,6 kN – resistencia a arrancamiento del cono de hormigón en caso de todos los anclajes en tracción

$V_g$ = 0,0 kN – suma de los cortantes de los anclajes sobre una misma placa base

**Interacción tracción-cortante** (ACI 318-14 – R17.6)

$U_{tt}^{5/3} + U_{ts}^{5/3} =$ 0,89 ≤ 1,0

*Donde:*

$U_{tt}$ = 0,94 – máxima ratio entre fuerza de tracción factorizada y resistencia a tracción determinada a partir de todos los modos de fallo relevantes

$U_{ts}$ = 0,00 – máxima ratio entre esfuerzo cortante factorizado y resistencia a cortante determinada a partir de todos los modos de fallo relevantes

## Weld sections

| Ítem | Borde | Xu | $T_h$ [mm] | $L_s$ [mm] | L [mm] | $L_c$ [mm] | Cargas | $F_n$ [kN] | $\phi R_n$ [kN] | Ut [%] | Estado |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BP1 | COL | E70xx | ◢2,8 | ◢4,0 | 460 | 7 | LE1 | 1,0 | 6,6 | 15,6 | OK |

**Explicación del símbolo**

| | |
|---|---|
| $T_h$ | Espesor de garganta de soldadura |
| $L_s$ | Tamaño de la soldadura |
| L | Longitud de la soldadura |
| $L_c$ | Longitud del elemento crítico de la soldadura |
| $F_n$ | Fuerza en el elemento crítico de la soldadura |
| $\phi R_n$ | Resistencia de la soldadura, AISC 360-10 J2.4 |
| Ut | Utilización |

**Resultado detallado para BP1 / COL**

**Comprobación de la resistencia de la soldadura** (AISC 360-16: J2-4)

$\phi R_n = \phi \cdot F_{nw} \cdot A_{we} =$ 6,6 kN ≥ $F_n =$ 1,0 kN

*Donde:*

$F_{nw}$ = 430,6 MPa – resistencia nominal del material de aportación:

- $F_{nw} = 0,6 \cdot F_{EXX} \cdot (1 + 0,5 \cdot sin^{1,5}\theta)$ , donde:
  - $F_{EXX}$ = 482,6 MPa – número de clasificación del electrodo, p.e. mínima resistencia a tracción especificada
  - $\theta$ = 79,3° – ángulo de actuación de la carga medido desde el eje de la soldadura

$A_{we}$ = 20 mm² – área eficaz del elemento de soldadura crítico

$\phi$ = 0,75 – factor de resistencia para conexiones soldadas

## Bloque de hormigón

| Ítem | Cargas | $A_1$ [mm2] | $A_2$ [mm2] | σ [MPa] | Ut [%] | Estado |
|---|---|---|---|---|---|---|
| CB 1 | LE1 | NaN | NaN | - | - | OK |

**Explicación del símbolo**

| | |
|---|---|
| $A_1$ | Área cargada |
| $A_2$ | Área de soporte |
| σ | Tensión media en el hormigón |
| Ut | Utilización |

**Resultado detallado para CB 1**

**Comprobación de la resistencia a compresión del bloque de hormigón** (AISC 360-16 Section J8)

$\phi_c f_{p,max}$ = - MPa < $\sigma$ = - MPa

*Donde:*

$f_{p,max}$ = - MPa – resistencia de cálculo a aplastamiento del bloque de hormigón:

- $f_{p,max} = 0,85 \cdot f'_c \cdot \sqrt{\frac{A_2}{A_1}} \leq 1,7 \cdot f'_c$ , donde:
  - $f'_c$ = 20,7 MPa – resistencia a compresión del hormigón
  - $A_1$ = 0 mm$^2$ – Área de la placa base en contacto con la superficie de hormigón
  - $A_2$ = 0 mm$^2$ – Superfície de apoyo del hormigón

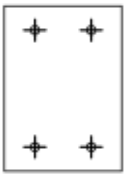
$\phi_c$ = 0,65 – factor de resistencia para el hormigón

## Pandeo

**El análisis de pandeo no se ha calculado.**

# Listado de material

## Operaciones

| Nombre | Placas [mm] | Forma | Nº | Soldaduras [mm] | Longitud [mm] | Tornillos | Nº |
|---|---|---|---|---|---|---|---|
| BP1 | P25,0x192,4-272,4 (A36) |  | 1 | tendón de soldadura simple: a = 2,8 | 459,7 | 1/2 A325 | 4 |

## Soldaduras

| Tipo | Material | Espesor de garganta [mm] | Tamaño de pierna [mm] | Longitud [mm] |
|---|---|---|---|---|
| tendón de soldadura simple | E70xx | 2,8 | 4,0 | 459,7 |

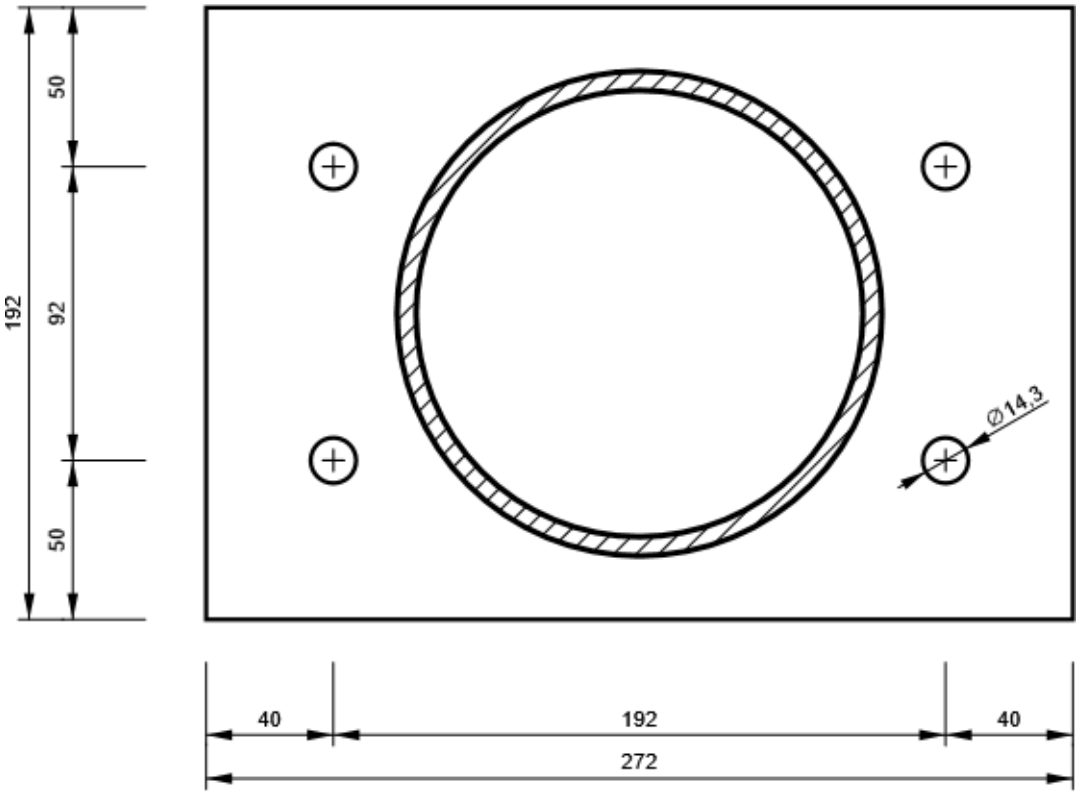
## Anclajes

| Nombre | Longitud [mm] | Longitud del taladro [mm] | Cuenta |
|---|---|---|---|
| 1/2 A325 | 225 | 200 | 4 |

### Dibujo

### BP1

**P25,0x272-192 (A36)**




## Configuración de la norma

| Ítem | Valor | Unidad | Referencia |
|---|---|---|---|
| Coeficiente de fricción - hormigón | 0,40 | - | ACI 349 – B.6.1.4 |
| Coeficiente de fricción en la resistencia a deslizamiento | 0,30 | - | AISC 360-16 J3.8 |
| Deformación plástica límite | 0,05 | - | |
| Evaluación de la tensión de la soldadura | Redistribución plástica | | |
| Detallado | No | | |
| Distancia entre tornillos [d] | 2,66 | - | AISC 360-16 – J3.3 |
| Distancia entre tornillos y el borde [d] | 1,25 | - | AISC 360-16 – J.3.4 |
| Resistencia al arrancamiento del cono de hormigón | Ambos | | |
| Resistencia del metal base en la cara de fusión de la soldadura | No | | AISC 360-16: J2-2 |
| Hormigón fisurado | Sí | | ACI 318-14 – Chapter 17 |
| Comprobación de la deformación local | No | | |
| Deformación límite local | 0,03 | - | CIDECT DG 1, 3 - 1.1 |
| No linealidad geométrica (GMNA) | Sí | | Grandes deformaciones para secciones huecas |