

Ā G O R A

MEMORIA DE CÁLCULO ESTRUCTURAL  
PROYECTO ARQUITECTÓNICO Y EJECUTIVO PARA  
LA REHABILITACIÓN DE PARQUE DE LOS ANDES

Calle de los Andes S/N, Fracc. Urbivillas del Prado II  
Tijuana, B.C.  
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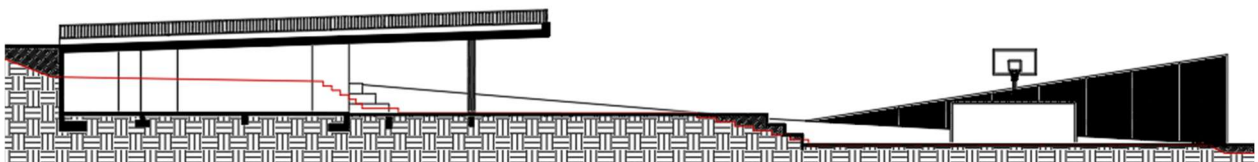
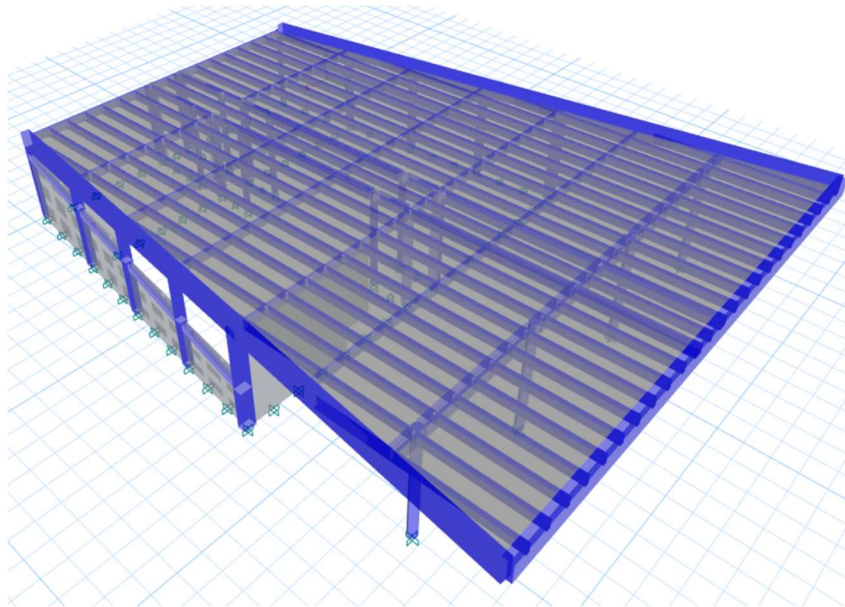
## 1. DESCRIPCIÓN DEL PROYECTO

**Arq. Sergio Soto**

Presente.

En atención al Arq. Sergio Soto, que nos solicitó el proyecto estructural Parque Los Andes, procedemos a presentar la siguiente Memoria Descriptiva de Cálculo Estructural.

La presente estructura será de concreto reforzado de un nivel y encontrará trabajando como estructura de contención en 3 de sus caras debido a que se encuentra en un terreno inclinado.



**Modelo Matemático de Centro Recreativo Ejido Puebla**



## 1.1 UBICACIÓN DEL PROYECTO

El proyecto de estudio se ubicará en calle de los Andes S/N, UrbiVilla Del Prado II, 22170 Tijuana, B.C.



Croquis de localización de Parque los Andes (imagen tomada de Google Maps).





## 1.2 CRITERIO ESTRUCTURAL

Procedimientos de diseño denominados por desempeño o por comportamiento.

Dentro de las denominadas nuevas tendencias en las filosofías de diseño de estructuras para edificación existe la de “diseño por desempeño”; gran parte de este procedimiento contempla básicamente el comportamiento global de la estructura, asumiendo que se conformará un mecanismo de falla del tipo viga débil – columna fuerte.

Como principio básico del diseño antisísmico de estructuras en la actualidad, se plantea la formación de un mecanismo de falla o mecanismo de fluencia, como el formado por la aparición de articulaciones plásticas en vigas, o el mecanismo denominado de columna fuerte – viga débil. El mecanismo de articulaciones plásticas en vigas se plantea con el objeto de incrementar la capacidad de disipación de energía en la estructura, así como lograr una distribución uniforme de dicha disipación en todo el cuerpo de la estructura.

Para la configuración estructural, para sistemas a base de marcos resistentes a momento, se deberá contemplar que la conformación del mecanismo de fluencia y la ubicación de las articulaciones plásticas, se proyecta para que las articulaciones plásticas se formen en los extremos de las vigas de todos los niveles y en la parte inferior de las columnas de primer nivel, formando un “mecanismo de fluencia por viga”.

La estructura de estudio está resuelta a base de marcos rígidos en ambos sentidos, conformados por columnas y trabes de concreto armado con muros de concreto. Como sistema de entrepiso se opta por una losa nervada en 1 sentido.



## 2. ANÁLISIS DE CARGAS GRAVITACIONALES

### 2.1 ANÁLISIS DE CARGAS

Consideración de Cargas y Acciones para el Análisis y Diseño Estructural.

#### 2.1.1 CARGAS PERMANENTES.

Las cargas permanentes son las que tienen una variación despreciable durante la vida de la estructura y son:

- CARGAS MUERTAS
- CARGAS POR EMPUJES DE TIERRAS

Son aquellas que engloban el peso propio de la estructura y sobrecargas que pueden ser acabados, mobiliario fijo representativo, instalaciones.

El peso propio de la estructura es automáticamente calculado por el programa.

Para realizar el presente modelo estructural se consideraron las siguientes sobrecargas permanentes para las distintas áreas:

SCP	
losa 10 cm	240 kg/m <sup>2</sup>
Acabados	78 kg/m <sup>2</sup>
Instalaciones	5 kg/m <sup>2</sup>
	<b>323 kg/m<sup>2</sup></b>

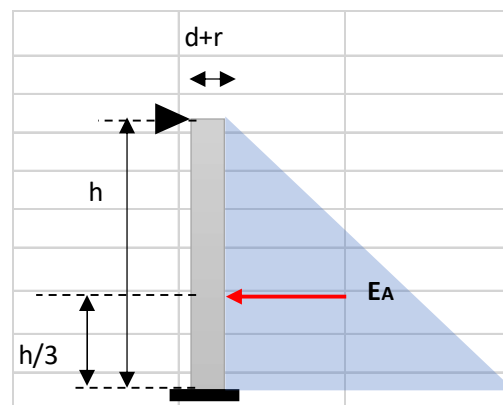
#### Cálculo de empujes

##### Muros contención

Método LRFD

##### MURO 2.762 METROS VERTICAL

$\gamma_{\text{suelo}} =$	2000	kg/m <sup>3</sup>
$h =$	2.762	m
$d =$	10	cm
$r =$	5	cm
$b =$	100	cm
$\phi =$	28	°
$f'_c =$	350	kg/cm <sup>2</sup>
$f_y =$	4200	kg/cm <sup>2</sup>





var# 5  
@ 20 cm  
No.  
Varillas= 5  
As= 9.89663045 cm<sup>2</sup>/m

### Sentido vertical paño exterior

fact. Sis 1

$$E_A = [(\gamma \cdot h^2)/2] * [(1 - \sin\phi)/(1 + \sin\phi)]$$

E<sub>A</sub>= 2,754.20 kg

### MURO 3.35 METROS VERTICAL

$\gamma_{\text{suelo}}$ = 2000 kg/m<sup>3</sup>  
h= 3.35 m  
d= 10 cm  
r= 5 cm  
b= 100 cm  
 $\phi$ = 28 °  
f'c= 350 kg/cm<sup>2</sup>  
fy= 4200 kg/cm<sup>2</sup>

var# 5  
@ 20 cm  
No. Varillas= 5  
As= 9.89663045 cm<sup>2</sup>/m

### Sentido vertical paño exterior

fact. Sis 1

$$E_A = [(\gamma \cdot h^2)/2] * [(1 - \sin\phi)/(1 + \sin\phi)]$$

E<sub>A</sub>= 4,051.70 kg



### 2.1.2 CARGAS VARIABLES.

Las cargas variables son las que tienen una variación importante durante la vida de la estructura, con una alta frecuencia de ocurrencia y son:

- CARGA VIVA
- IMPACTO

Para realizar el presente modelo estructural se consideraron las siguientes cargas vivas según la NTC en Materia de Acciones y Diseño Estructural:

CV		
Wm	350	kg/m <sup>2</sup>
Wa	250	kg/m <sup>2</sup>
W	40	kg/m <sup>2</sup>

Debido a que las cargas se aplicarán directamente sobre las nervaduras se multiplicó por su ancho tributáneo para darnos la carga en kg/m.

#### Cargas sobre polín techo/cubierta

Snervadura= 0.72 m

Wm 252 kg/m

Wa 180 kg/m

W 28.8 kg/m

SCP 93.6 kg/m

De acuerdo con la tabla No. 2 TABLA DE CARGAS VIVAS UNITARIAS, en kg/m<sup>2</sup>.

#### Destino de cubierta: "e"

W

Carga viva para calcular asentamientos inmediatos en suelos.

Wa

Carga viva para el diseño sísmico y por viento.

Wm

Carga viva para el diseño estructural por fuerzas gravitacionales.



**2.2 TABLA DE CARGAS VIVAS UNITARIAS, EN KG/M<sup>2</sup>**

DESTINO DE PISO O CUBIERTA	W	Wa	Wm	
Observaciones				
a) Habitación, casa-habitación, Departamentos, viviendas, Dormitorios, cuartos de hotel, Internados de escuelas, cuarteles, Cárceles,	70	90	<b>170</b>	(1)
b) Oficinas, despachos, laboratorios y Hospitales.	100	180	250	(2)
c) Comunicación para peatones, Pasillos, escaleras, rampas, vestíbulos y pasajes de acceso libre al	40	150	350	(3), (4)
d) Estadios y lugares de reunión sin Asientos individuales.	40	350	450	(5)
e) Otros lugares de reunión, templos, Cines, teatros, gimnasios, salones de Baile, restaurantes, bibliotecas, aulas, Salas de juego y similares.	40	250	350	(5)
f) Comercios, fábricas y bodegas.	0.8Wm	0.9Wm	Wm	(6)
g) Cubiertas y azoteas con pendiente No mayor de 5%.	15	70	<b>100</b>	(4), (7)
h) Cubiertas y azoteas con pendiente mayor del 5% y menor del 20%	5	20	60	(4), (7), (8)
i) Cubiertas y azoteas con pendiente mayor de 20%.	5	20	40	(4), (7), (8)
j) Volados en vía pública, marquesinas balcones y similares.	15	70	300	
k) Garages y estacionamientos para automóviles exclusivamente.	40	100	250	(9)
l) Andamios y cimbras para concreto.	15	70	100	(10)



### **2.1.2 CARGAS EVENTUALES**

Las cargas eventuales son las producidas por acciones que ocurren ocasionalmente durante la vida de la estructura, como:

- **VIENTO.**
- **SISMO.**
- **VARIACIÓN DE TEMPERATURA.**
- **CONTRACCIÓN POR FRAGUADO.**



## 2.3 ANÁLISIS DE SISMO

La estructura se analizará bajo la acción del sismo actuando en dos direcciones ortogonales no simultáneos del movimiento del terreno, las deformaciones y fuerzas internas que resulten combinadas entre sí, con los efectos de fuerzas gravitacionales y de otras acciones que correspondan.

### ESPECTRO DE RESPUESTA

Proyecto: Parque los Andes  
Reglamento: NTC-BC-DS 2017  
Clasificación de la estructura según su uso: A  
H= 4.05 m  
b= 21 m  
L= 18 m

#### Inciso 3

#### Espectro de respuesta

a= Ordenada del espectro, expresada como fracción de la aceleración de gravedad.

T= periodo natural de vibración de la estructura

T<sub>a</sub>, T<sub>b</sub>= periodos característicos de los espectros de diseño

c= coeficiente sísmico

$$a = a_0 + (c - a_0) \frac{T}{T_a}; \quad \text{si } T < T_a$$

$$\begin{aligned} a &= c; & \text{si } T_a \leq T \leq T_b \\ a &= qc; & \text{si } T > T_b \end{aligned} \quad (3.1)$$

Donde

$$q = (T_b/T)^r \quad (3.2)$$

Tabla 3.1

Valores de los parámetros para calcular los espectros de aceleraciones

#### GRUPO B.

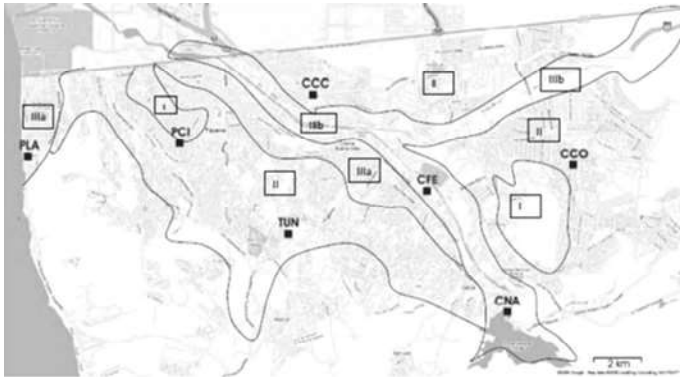
Zona	a <sub>0</sub>	SUELO	c	T <sub>a</sub> <sup>1</sup>	T <sub>b</sub> <sup>1</sup>	r
B	0.08	I	0.17	0.09	0.6	2/3
	0.08	II	0.21	0.09	0.6	2/3
	0.08	III	0.25	0.09	0.6	2/3
C	0.12	I	0.25	0.11	0.65	1
	0.12	II	0.32	0.11	0.65	1
	0.12	III	0.38	0.11	0.65	1
D	0.25	I	0.29	0.13	0.7	4/3
	0.25	II	0.36	0.13	0.7	4/3
	0.25	III	0.44	0.13	0.7	4/3

<sup>1</sup> Periodos en segundos

En la zona C los valores para Tijuana se pueden determinar por el Apéndice B en la Tabla B3.2

Para tijuana

Para cualquier otro municipio buscar en Tabla 3.1



Zonificación de la Cd. de Tijuana para fines de diseño por sismo.

**TABLA B 3.2**  
 Valores de los parámetros para calcular  
 los espectros de aceleraciones zona C  
 para la Ciudad de Tijuana.

**GRUPO B**

Zona	$a_0$	Suelo	C	$T_a^1$	$T_b^1$	R
C	0.06	I	0.24	0.10	0.60	2/3
	0.08	II	0.30	0.14	1.00	1
	0.12	IIIa	0.36	0.20	1.00	4/3
	0.16	IIIb	0.38	0.20	1.20	4/3

<sup>1</sup> Periodos en segundos

**Inciso 4.1**

**Factor de refucción de fuerzas sísmicas Q'**

$$Q' = Q; \quad \text{si se desconoce } T, \text{ o si } T \geq T_a$$

$$Q' = 1 + \frac{T}{T_a}(Q-1); \quad \text{si } T < T_a \quad (4.1)$$

$T$  se tomará igual al periodo fundamental de vibración de la estructura cuando se utilice el método estático, e igual al periodo natural de vibración del modo que se considere cuando se utilice el análisis dinámico modal;  $T_a$  es un periodo característico del espectro de diseño que se define en el Capítulo 3.  $Q$  es el factor de comportamiento sísmico que se define en el Capítulo 5.

**Inciso 5**

**Factor de comportamiento sísmico Q.**



Q=

2

### Inciso 6

#### Condiciones de regularidad

Cumple

1. simetría XY		no
2. $H/b \leq 2.5$	0.19	si
3. $L/b \leq 2.5$	0.86	si
4. Entrantes y salientes $< 20\%$		no
5. Piso, techo rígidos, todos los niveles		no
6. aberturas piso $< 20\%$		si
7. Diferencia peso por N inmediato $< 110\%$ , $< 70\%$ cualquier N, excp. último N		si
8. Diferencia área por N inmediato $< 110\%$ , $< 70\%$ cualquier N, excp. último N		si
9. Todas Col. Diafragma rígidos a.s.		no
10. Diferencia rigidez difiere por N inmediato $< 50\%$ , excp. último N		si
11. Excentricidad estática de entrepiso $< 10\%$ .		no

Estructura

Irregular

0.8 Q'

Q=	2
Q'=	2
Q'=	1.6
Tipo de suelo=	II
$a_0=$	0.08
c=	0.3
$c_A=$	0.45
$c/Q'=$	0.28125
$c/Q' > a_0$	CUMPLE
$T_a=$	0.14
$T_b=$	1
R=	1.00

$$a = a_0 + (c - a_0) \frac{T}{T_a}; \quad \text{si } T < T_a$$

$$a = c; \quad \text{si } T_a \leq T \leq T_b$$

$$a = qc; \quad \text{si } T > T_b \quad (3.1)$$





## 2.4 ANÁLISIS DE VIENTO

### CERCA PARQUE LOS ANDES

Tabla 3.1 Velocidades regionales,  $V_R$ , según la importancia de la construcción y la zonificación eólica, km/h

Periodo de retorno, años	Importancia de la construcción			
	AA	A	B	C Temporal
	200	200	50	10
Mexicali	131	116	101	83
San Felipe y Costa Sur del Golfo	150	130	110	90
Tecate	140	120	110	90
Tijuana	140	130	119	100
Playas de Rosarito	140	130	119	100
Ensenada	135	120	105	86
San Quintín y Costa Sur del Pacífico	150	140	120	100

Tabla 3.2 Rugosidad del terreno,  $\alpha$  y  $\delta$

Tipos de terreno (fig. 3.1)	$\alpha$	$\delta$ , m
R1 Escasas o nulas obstrucciones al flujo de viento, como en campo abierto	0.099	245
R2 Terreno plano u ondulado con pocas obstrucciones	0.128	315
R3 Zona típica urbana y suburbana. El sitio está rodeado predominantemente por construcciones de mediana y baja altura o por áreas arboladas y no se cumplen las condiciones del Tipo R4	0.156	390
R4 Zona de gran densidad de edificios altos. Por lo menos la mitad de las edificaciones que se encuentran en un radio de 500 m alrededor de la estructura en estudio tiene altura superior a 20 m	0.170	455

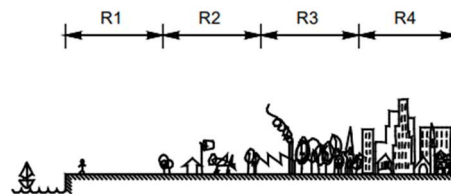


Figura 3.1 Rugosidad de terreno

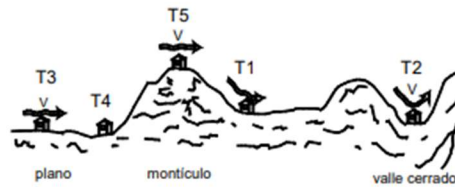




**Tabla 3.3 Factor  $F_{TR}$**   
**(Factor de topografía y rugosidad del terreno)**

Tipos de topografía (fig. 3.2)	Rugosidad de terrenos en alrededores		
	Terreno tipo R2	Terreno tipo R3	Terreno tipo R4
T1 Base protegida de promontorios y faldas de serranías del lado de sotavento	0.80	0.70	0.66
T2 Valles cerrados	0.90	0.79	0.74
T3 Terreno prácticamente plano, campo abierto, ausencia de cambios topográficos importantes, con pendientes menores de 5 % (normal)	1.00	0.88	0.82
T4 Terrenos inclinados con pendientes entre 5 y 10 %	1.10	0.97	0.90
T5 Cimas de promontorios, colinas o montañas, terrenos con pendientes mayores de 10 %, cañadas o valles cerrados	1.20	1.06	0.98

En terreno de tipo R1, según se define en la tabla 3.2, el factor de topografía y rugosidad,  $F_{TR}$ , se tomará en todos los casos igual a 1.0.



**Figura 3.2 Formas topográficas locales**

Dicha velocidad de diseño se obtendrá de acuerdo con la ecuación 3.1.

$$V_D = F_{TR} F_\alpha V_R \quad (3.1)$$

donde

$F_{TR}$  factor correctivo que toma en cuenta las condiciones locales relativas a la topografía y a la rugosidad del terreno en los alrededores del sitio de desplante;

$F_\alpha$  factor que toma en cuenta la variación de la velocidad con la altura; y

$V_R$  velocidad regional según la zona que le corresponde al sitio en donde se construirá la estructura.

$$F_\alpha = 1.0; \quad \text{si } z \leq 10 \text{ m}$$

$$F_\alpha = (z/10)^\alpha; \quad \text{si } 10 \text{ m} < z < \delta$$

$$F_\alpha = (\delta/10)^\alpha; \quad \text{si } z \geq \delta \quad (3.2)$$

donde

$\delta$  altura gradiente, medida a partir del nivel del terreno de desplante, por encima de la cual la variación de la velocidad del viento no es importante y se puede suponer constante;  $\delta$  y  $z$  están dadas en metros; y

$\alpha$  exponente que determina la forma de la variación de la velocidad del viento con la altura.

Los coeficientes  $\alpha$  y  $\delta$  están en función de la rugosidad del terreno (figura 3.1) y se definen en la tabla 3.2.



Z=	4m
$\delta$ =	315m
$\alpha$ =	0.128
$z \geq \delta$ ?	NO
$F\alpha$ =	1
$F\alpha$ =	1
$F_{TR}$ =	1.1 porque es R2, T4
$V_R$ =	130km/h
$V_D$ =	143km/h
$V_D$ =	39.72 m/s
( $p_z = 0.0048 C_p V_D^2$ )	kg/m <sup>2</sup>

donde

$C_p$  coeficiente local de presión, que depende de la forma de la estructura; y

$V_D$  velocidad de diseño a la altura  $z$ , definida en la sección 3.1.

$p_z$ =	98.16	$C_p$	
45% $p_z$ =	44.17	$C_p$	Restando 55% de averturas

### 3.3.2 Caso II. Paredes aisladas y anuncios

La fuerza total sobre la pared o anuncio, suma de los empujes de barlovento y succiones de sotavento, se calculará a partir de la ecuación 3.3; se utilizará un factor de presión obtenido de las tablas 3.6, 3.7 y 3.8, según el caso (figuras 3.4 y 3.5).

**Tabla 3.6 Viento normal al anuncio o muro**

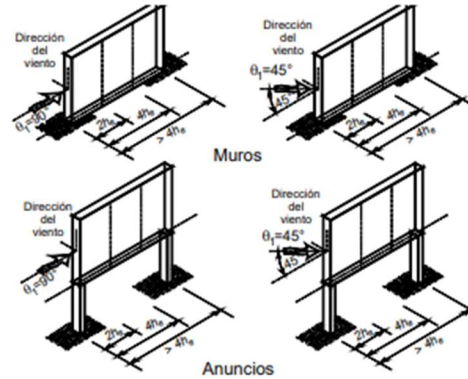
Coeficiente de presión neta ( $C_p$ )		
Anuncios		Muros
$0 < h_e/H < 0.2$	$0.2 \leq h_e/H \leq 0.7$	
$1.2 + 0.02 (d/h_e - 5)$	1.5	1.2

La tabla 3.6 se aplica para anuncios con  $1 \leq d/h_e \leq 20$  y muros con  $1 \leq d/H \leq 20$ . Si  $d/h_e$  o  $d/H$  es mayor que 20, el coeficiente de presión será igual a 2.0.



**Tabla 3.8 Viento paralelo al plano del anuncio o muro**

Coeficiente de presión neta ( $C_p$ ) en zonas de anuncios o muros					
Distancia horizontal medida a partir del borde libre de barlovento del anuncio o muro					
Anuncios			Muros		
0 a $2h_e$	$2h_e$ a $4h_e$	$> 4h_e$	0 a $2H$	$2H$ a $4H$	$> 4H$
$\pm 1.2$	$\pm 0.6$	$\pm 0.3$	$\pm 1.0$	$\pm 0.5$	$\pm 0.25$



**Figura 3.5 Acción sobre paredes aisladas o anuncios**

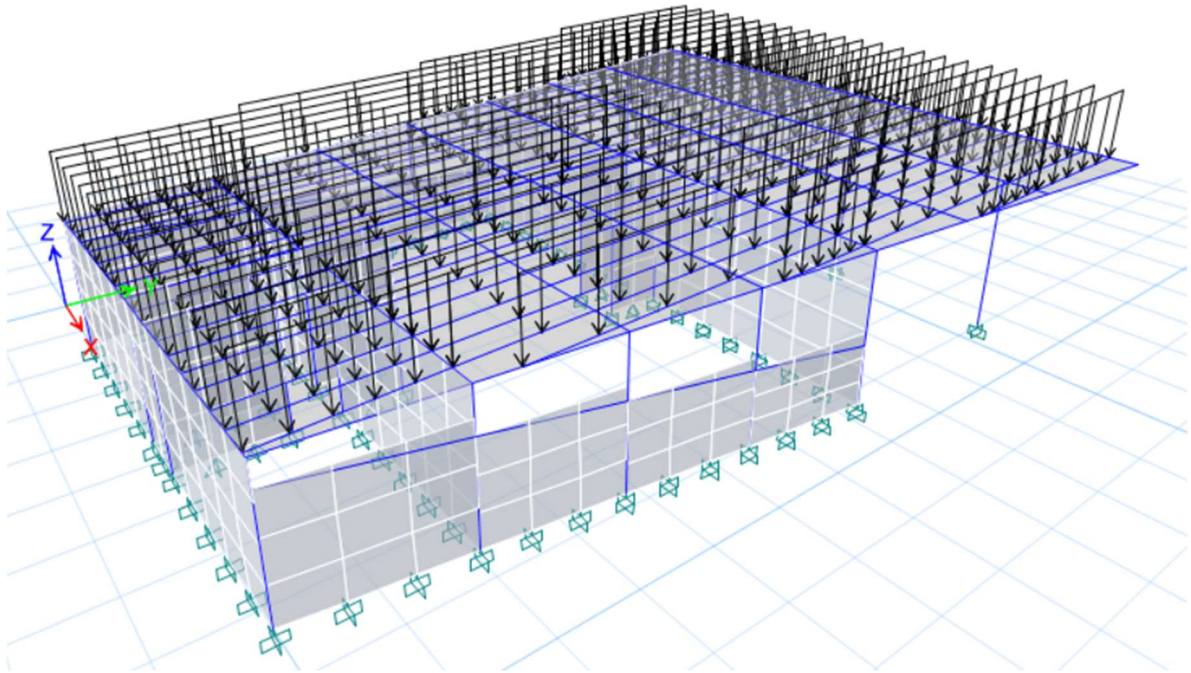
Perpendicular	53.00 kg/m <sup>2</sup>
Paralela	22.08 kg/m <sup>2</sup>



### 3. ANÁLISIS ESTRUCTURAL

Según los requerimientos del proyecto arquitectónico y las solicitudes del cliente, se tomaron las siguientes consideraciones para el análisis y diseño.

Las cargas se aplicaron directamente a las nervaduras mediante el método de área tributarias debido a que se utilizan losas de inclinación importante que puede generar errores de distribución de cargas en el modelo. La capa a compresión se modeló para considerar su rigidez en el análisis, sin embargo, el peso de la losa en el modelo es 0 ya que su peso se aplicó directamente sobre las vigas como carga distribuida no uniforme.





### 3.1 DATOS DE SUPERESTRUCTURA

#### 3.1.1 DATOS DE NIVEL

Tower	Name	Height m	Master Story	Similar To	Splice Story	Color
T1	N1	4.05	No	None	No	Green

#### 3.1.2 EJES ESTRUCTURALES

Name	Grid Line Type	ID	Ordinate m	X1 m	Y1 m	X2 m	Y2 m	Bubble Location	Visible
G1	X (Cartesian)	1	0					End	Yes
G1	X (Cartesian)		1.59					End	Yes
G1	X (Cartesian)	2	2.74					End	Yes
G1	X (Cartesian)	3	6.15					End	Yes
G1	X (Cartesian)	4	7.97					End	Yes
G1	X (Cartesian)	5	9.32					End	Yes
G1	X (Cartesian)	7	11.14					End	Yes
G1	X (Cartesian)	8	14.55					End	Yes
G1	X (Cartesian)		15.7					End	Yes
G1	X (Cartesian)	9	17.29					End	Yes
G1	Y (Cartesian)	A	0					Start	Yes
G1	Y (Cartesian)	B	3.65					Start	Yes
G1	Y (Cartesian)	C	6.717					Start	Yes
G1	Y (Cartesian)	D	9.784					Start	Yes
G1	Y (Cartesian)	E	12.851					Start	Yes
G1	Y (Cartesian)	F	18.426					Start	Yes
G1	Y (Cartesian)	G	21.926					Start	Yes
G1	General (Cartesian)	L1		2.74	0	0	21.926	End	Yes
G1	General (Cartesian)	L2		14.55	0	17.29	21.926	End	Yes

#### 3.1.3 ORIGEN DE MASAS

Name	Is Default	Include Lateral Mass?	Include Vertical Mass?	Lump Mass?	Source Self Mass?	Source Added Mass?	Source Load Patterns?	Move Mass Centroid?	Load Pattern	Multiplier
MsSrc1	Yes	Yes	No	Yes	No	No	Yes	No	Dead	1
MsSrc1									SCP	1
MsSrc1									Wa	1

#### 3.1.4 RESUMEN DE MASAS POR NIVEL

Story	UX kgf-s2/cm	UY kgf-s2/cm	UZ kgf-s2/cm
N1	141.2176	141.2176	0
Base	123.3759	123.3759	0



### 3.1.5 PROPIEDADES DE MATERIALES

Material	Type	SymType	Grade	Color	Notes
A615Gr60	Rebar	Uniaxial	Grade 60	Blue	
F'C 250	Concrete	Isotropic	f'c 250	Red	
f'c 250 kg/m2	Concrete	Isotropic	f'c 250	Red	
F'C 300	Concrete	Isotropic	f'c 300	Red	

### 3.1.6 SECCIONES UTILIZADAS

Name	Material	Shape	Color	Area cm2	J cm4	I33 cm4	I22 cm4	As2 cm2	As3 cm2	S33Pos cm3
CL-01 30X40	F'C 300	Concrete Rectangular	Cyan	1200	194385.1	160000	90000	1000	1000	8000
CL-02 D=30	F'C 250	Concrete Circle	Gray8Dark	706.9	79521.6	39760.8	39760.8	636.2	636.2	2650.7
CL-03	F'C 300	Concrete Rectangular	Cyan	625	55013	32552.1	32552.1	520.8	520.8	2604.2
K-01 200	F'C 200	Concrete Rectangular	Red	300	12149.1	5625	10000	250	250	750
K-01 300	F'C 300	Concrete Rectangular	Cyan	300	12149.1	5625	10000	250	250	750
KL-01	F'C 250	Concrete L	Blue	225	38304.9	46406.3	46406.3	527.6	527.7	3712.5
KT-01	F'C 300	Concrete Tee	Yellow	225	59185.5	54843.8	118125	646.7	804	4875
TA-01 30X40	F'C 250	Concrete Rectangular	Yellow	1200	194385.1	160000	90000	1000	1000	8000
TA-02 30X30	F'C 250	Concrete Rectangular	Orange	900	114075	67500	67500	750	750	4500
TC-01	F'C 250	Concrete Rectangular	Gray8Dark	450	23174.1	33750	8437.5	375	375	2250
TN-01 12X30	F'C 250	Concrete Rectangular	16711808	360	12934.7	27000	4320	300	300	1800
TR-01 30X60	F'C 250	Concrete Rectangular	Cyan	1800	370785.9	540000	135000	1500	1500	18000

Name	Type	Element Type	Material	Total Thickness cm	Deck Material	Deck Depth cm
Capa compresion 5 cm	Slab	Shell-Thin	f'c 250 kg/m2	5		
MC-02 15 CM	Wall	Shell-Thin	F'C 300	15		





## 3.2 ASIGNACIONES A LA SUPERESTRUCTURA

### 3.2.1 PATRONES DE CARGA

Name	Is Auto Load	Type	Self Weight Multiplier	Auto Load
~LLRF	Yes	Other	0	
Dead	No	Dead	1	
EA	No	Super Dead	0	
SCP	No	Super Dead	0	
SX	No	Seismic	0	None
SY	No	Seismic	0	None
W	No	Roof Live	0	
Wa	No	Reducible Live	0	
Wm	No	Live	0	

### 3.2.1 CASOS DE CARGA

Name	Type
Dead	Linear Static
Wm	Linear Static
Modal	Modal - Eigen
SCP	Linear Static
Wa	Linear Static
W	Linear Static
SX	Response Spectrum
SY	Response Spectrum
EA	Linear Static

### 3.2.1 COMBINACIONES DE CARGA

Name	Type	Is Auto	Load Name	SF	Notes
0.9CM+1.1SX	Linear Add	No	Dead	0.9	Carga última de diseño por acciones sísmicas en X cuando la carga viva resulta favorable para la estabilidad de la estructura.
0.9CM+1.1SX			SCP	0.9	
0.9CM+1.1SX			SY	1.1	
0.9CM+1.1SY	Linear Add	No	Dead	0.9	Carga última de diseño por acciones sísmicas en Y cuando la carga viva resulta favorable para la estabilidad de la estructura.
0.9CM+1.1SY			SCP	0.9	
0.9CM+1.1SY			SY	1.1	
1.1CM+1.1Wa+1.1SX	Linear Add	No	Dead	1.1	Carga última de diseño por acciones sísmicas en X.
1.1CM+1.1Wa+1.1SX			SCP	1.1	
1.1CM+1.1Wa+1.1SX			Wa	1.1	
1.1CM+1.1Wa+1.1SX			SX	1.1	
1.1CM+1.1Wa+1.1SY	Linear Add	No	Dead	1.1	Carga última de diseño por acciones sísmicas en Y.
1.1CM+1.1Wa+1.1SY			SCP	1.1	
1.1CM+1.1Wa+1.1SY			Wa	1.1	
1.1CM+1.1Wa+1.1SY			SY	1.1	
1.4CM+1.4Wm	Linear Add	No	Dead	1.4	Carga última de diseño.



Name	Type	Is Auto	Load Name	SF	Notes
1.4CM+1.4Wm			SCP	1.4	
1.4CM+1.4Wm			Wm	1.4	
CM+SX	Linear Add	No	Dead	1	Para cálculo de desplazamientos por sismo en X.
CM+SX			SCP	1	
CM+SX			SX	1	
CM+SY	Linear Add	No	Dead	1	Para cálculo de desplazamientos por sismo en Y.
CM+SY			SCP	1	
CM+SY			SY	1	
CM+Wa+SX	Linear Add	No	Dead	1	Para cálculo de desplazamientos por sismo en X.
CM+Wa+SX			SCP	1	
CM+Wa+SX			Wa	1	
CM+Wa+SX			SX	1	
CM+Wa+SY	Linear Add	No	Dead	1	Para cálculo de desplazamientos por sismo en Y.
CM+Wa+SY			SCP	1	
CM+Wa+SY			Wa	1	
CM+Wa+SY			SY	1	
CM+Wm	Linear Add	No	Dead	1	Cargas sin factorizar para cálculo de desplazamientos y deflexiones.
CM+Wm			SCP	1	
CM+Wm			Wm	1	



### 3.3 RESULTADOS DE ANÁLISIS SUPERESTRUCTURA

#### 3.3.1 REACCIONES BASE

Output Case	Case Type	Step Type	FX kgf	FY kgf	FZ kgf	MX kgf-cm	MY kgf-cm	MZ kgf-cm
Dead	LinStatic		0	0	179856.41	167368182.65	-155481666	-0.01
Wm	LinStatic		0	0	111471.25	129595444.24	-96354742.32	0.003908
SCP	LinStatic		0	0	0	0	0	0
Wa	LinStatic		0	0	79622.32	92568174.46	-68824815.94	0.002791
W	LinStatic		0	0	12739.57	14810907.91	-11011970.55	0.0004466
SX	LinRespSpec	Max	10776.92	6291.18	0	2382402.93	4272973.42	24284485.52
SY	LinRespSpec	Max	3235.77	20965.97	0	7940335.56	1282844	19473651.13
EA	LinStatic		0	-120164.48	0	16887802.35	-0.004358	-103882192
1.4CM+1.4Wm	Combination		0	0	407858.72	415749077.65	-352570972	-0.003255
CM+Wm	Combination		0	0	291327.66	296963626.89	-251836409	-0.002325
1.1CM+1.1Wa+1.1SX	Combination	Max	11854.61	6920.29	285426.6	288550636.04	-242036860	26712934.07
1.1CM+1.1Wa+1.1SX	Combination	Min	-11854.61	-6920.29	285426.6	283309349.6	-251437401	-26712934.08
1.1CM+1.1Wa+1.1SY	Combination	Max	3559.35	23062.57	285426.6	294664361.93	-245326002	21421016.24
1.1CM+1.1Wa+1.1SY	Combination	Min	-3559.35	-23062.57	285426.6	277195623.71	-248148259	-21421016.24
0.9CM+1.1SY	Combination	Max	3559.35	23062.57	161870.76	159365733.49	-138522371	21421016.23
0.9CM+1.1SY	Combination	Min	-3559.35	-23062.57	161870.76	141896995.27	-141344628	-21421016.25
0.9CM+1.1SX	Combination	Max	3559.35	23062.57	161870.76	159365733.49	-138522371	21421016.23
0.9CM+1.1SX	Combination	Min	-3559.35	-23062.57	161870.76	141896995.27	-141344628	-21421016.25
CM+Wa+SX	Combination	Max	10776.92	6291.18	259478.73	262318760.03	-220033509	24284485.52
CM+Wa+SX	Combination	Min	-10776.92	-6291.18	259478.73	257553954.18	-228579456	-24284485.52
CM+Wa+SY	Combination	Max	3235.77	20965.97	259478.73	267876692.66	-223023638	19473651.12
CM+Wa+SY	Combination	Min	-3235.77	-20965.97	259478.73	251996021.55	-225589326	-19473651.13
CM+SY	Combination	Max	3235.77	20965.97	179856.41	175308518.2	-154198822	19473651.12
CM+SY	Combination	Min	-3235.77	-20965.97	179856.41	159427847.09	-156764510	-19473651.13
CM+SX	Combination	Max	10776.92	6291.18	179856.41	169750585.57	-151208693	24284485.51
CM+SX	Combination	Min	-10776.92	-6291.18	179856.41	164985779.72	-159754640	-24284485.53

#### 3.3.2 FUERZAS EN PISOS (1/2)

Story	Output Case	Case Type	Step Type	Location	P kgf	VX kgf	VY kgf	T kgf-cm
N1	Dead	LinStatic		Top	7477.9	0	0	-0.02
N1	Dead	LinStatic		Bottom	179856.41	0	0	-0.01
N1	Wm	LinStatic		Top	0	0	0	-0.001603
N1	Wm	LinStatic		Bottom	111471.25	0	0	0.003908
N1	SCP	LinStatic		Top	0	0	0	0
N1	SCP	LinStatic		Bottom	0	0	0	0
N1	Wa	LinStatic		Top	0	0	0	-0.002608
N1	Wa	LinStatic		Bottom	79622.32	0	0	0.002791
N1	W	LinStatic		Top	0	0	0	-0.0008409
N1	W	LinStatic		Bottom	12739.57	0	0	0.0004466
N1	SX	LinRespSpec	Max	Top	0	4098.61	1018.86	9930439.69
N1	SX	LinRespSpec	Max	Bottom	0	10776.92	6291.18	24284485.52
N1	SY	LinRespSpec	Max	Top	0	1230.52	3306.81	4023858.31
N1	SY	LinRespSpec	Max	Bottom	0	3235.77	20965.97	19473651.13
N1	EA	LinStatic		Top	0	0	0	0.002668
N1	EA	LinStatic		Bottom	0	0	-99052.39	-85630792.8
N1	1.4CM+1.4Wm	Combination		Top	10469.06	0	0	-0.04



Story	Output Case	Case Type	Step Type	Location	P kgf	VX kgf	VY kgf	T kgf-cm
N1	1.4CM+1.4Wm	Combination		Bottom	407858.72	0	0	-0.003255
N1	CM+Wm	Combination		Top	7477.9	0	0	-0.03
N1	CM+Wm	Combination		Bottom	291327.66	0	0	-0.002325
N1	1.1CM+1.1Wa+1.1SX	Combination	Max	Top	8225.69	4508.47	1120.75	10923483.63
N1	1.1CM+1.1Wa+1.1SX	Combination	Max	Bottom	285426.6	11854.61	6920.29	26712934.07
N1	1.1CM+1.1Wa+1.1SX	Combination	Min	Top	8225.69	-4508.47	-1120.75	-10923483.69
N1	1.1CM+1.1Wa+1.1SX	Combination	Min	Bottom	285426.6	-11854.61	-6920.29	-26712934.08
N1	1.1CM+1.1Wa+1.1SY	Combination	Max	Top	8225.69	1353.58	3637.49	4426244.12
N1	1.1CM+1.1Wa+1.1SY	Combination	Max	Bottom	285426.6	3559.35	23062.57	21421016.24
N1	1.1CM+1.1Wa+1.1SY	Combination	Min	Top	8225.69	-1353.58	-3637.49	-4426244.18
N1	1.1CM+1.1Wa+1.1SY	Combination	Min	Bottom	285426.6	-3559.35	-23062.57	-21421016.24
N1	0.9CM+1.1SY	Combination	Max	Top	6730.11	1353.58	3637.49	4426244.12
N1	0.9CM+1.1SY	Combination	Max	Bottom	161870.76	3559.35	23062.57	21421016.23
N1	0.9CM+1.1SY	Combination	Min	Top	6730.11	-1353.58	-3637.49	-4426244.17
N1	0.9CM+1.1SY	Combination	Min	Bottom	161870.76	-3559.35	-23062.57	-21421016.25
N1	0.9CM+1.1SX	Combination	Max	Top	6730.11	1353.58	3637.49	4426244.12
N1	0.9CM+1.1SX	Combination	Max	Bottom	161870.76	3559.35	23062.57	21421016.23
N1	0.9CM+1.1SX	Combination	Min	Top	6730.11	-1353.58	-3637.49	-4426244.17
N1	0.9CM+1.1SX	Combination	Min	Bottom	161870.76	-3559.35	-23062.57	-21421016.25
N1	CM+Wa+SX	Combination	Max	Top	7477.9	4098.61	1018.86	9930439.67
N1	CM+Wa+SX	Combination	Max	Bottom	259478.73	10776.92	6291.18	24284485.52
N1	CM+Wa+SX	Combination	Min	Top	7477.9	-4098.61	-1018.86	-9930439.72
N1	CM+Wa+SX	Combination	Min	Bottom	259478.73	-10776.92	-6291.18	-24284485.52
N1	CM+Wa+SY	Combination	Max	Top	7477.9	1230.52	3306.81	4023858.29
N1	CM+Wa+SY	Combination	Max	Bottom	259478.73	3235.77	20965.97	19473651.12
N1	CM+Wa+SY	Combination	Min	Top	7477.9	-1230.52	-3306.81	-4023858.34
N1	CM+Wa+SY	Combination	Min	Bottom	259478.73	-3235.77	-20965.97	-19473651.13
N1	CM+SY	Combination	Max	Top	7477.9	1230.52	3306.81	4023858.29
N1	CM+SY	Combination	Max	Bottom	179856.41	3235.77	20965.97	19473651.12
N1	CM+SY	Combination	Min	Top	7477.9	-1230.52	-3306.81	-4023858.34
N1	CM+SY	Combination	Min	Bottom	179856.41	-3235.77	-20965.97	-19473651.13
N1	CM+SX	Combination	Max	Top	7477.9	4098.61	1018.86	9930439.67
N1	CM+SX	Combination	Max	Bottom	179856.41	10776.92	6291.18	24284485.51
N1	CM+SX	Combination	Min	Top	7477.9	-4098.61	-1018.86	-9930439.72
N1	CM+SX	Combination	Min	Bottom	179856.41	-10776.92	-6291.18	-24284485.53

### 3.3.3 FUERZAS EN PISOS (2/2)

MX kgf-cm	MY kgf-cm
16396043	-6464644.34
167368182.65	-155481666
0.0003104	-0.0002089
129595444.24	-96354742.32
0	0
0	0
0.0002606	-0.0001798
92568174.46	-68824815.94
0	0
14810907.91	-11011970.55
0.001382	0.001098
2382402.93	4272973.42



<b>MX kgf-cm</b>	<b>MY kgf-cm</b>
0.000415	0.0003304
7940335.56	1282844
0	0
16887802.35	-0.004358
22954460.2	-9050502.07
415749077.65	-352570972
16396043	-6464644.34
296963626.89	-251836409
18035647.3	-7111108.77
288550636.04	-242036860
18035647.29	-7111108.77
283309349.6	-251437401
18035647.3	-7111108.77
294664361.93	-245326002
18035647.3	-7111108.77
277195623.71	-248148259
14756438.7	-5818179.9
159365733.49	-138522371
14756438.7	-5818179.9
141896995.27	-141344628
14756438.7	-5818179.9
159365733.49	-138522371
14756438.7	-5818179.9
141896995.27	-141344628
16396043	-6464644.33
262318760.03	-220033509
16396043	-6464644.34
257553954.18	-228579456
16396043	-6464644.34
267876692.66	-223023638
16396043	-6464644.34
251996021.55	-225589326
16396043	-6464644.34
175308518.2	-154198822
16396043	-6464644.34
159427847.09	-156764510
16396043	-6464644.33
169750585.57	-151208693
16396043	-6464644.34
164985779.72	-159754640



### 3.3.4 DESPLAZAMIENTOS

Normatividad: NTC CADE BC 2017

**Máxima distorsión permisible**

**Contra colapso por combinaciones accidentales**

Sistema estructural	Distorsión
Marcos dúctiles de concreto reforzado (Q= 3 ó 4)	0.030
Marcos dúctiles de acero (Q= 3 ó 4)	0.030
Marcos de acero o concreto con ductilidad limitada (Q= 1 ó 2)	0.015
Losas planas sin muros o contravientos	0.015
Marcos de acero con contravientos excéntricos	0.020
Marcos de acero o concreto con contravientos concéntricos	0.015
Muros combinados con marcos dúctiles de concreto (Q= 3)	0.015
Muros combinados con marcos de concreto con ductilidad limitada (Q= 1 ó 2)	0.010
Muros diafragma	0.006
Muros de carga de mampostería confinada de piezas macizas con refuerzo horizontal o malla	0.005
Muros de carga de mampostería confinada de piezas macizas; mampostería de piezas huecas confinada y reforzada horizontalmente; o mampostería de piezas huecas confinada y reforzada con malla	0.004
Muros de carga de mampostería de piezas huecas con refuerzo interior	0.002
Muros de carga de mampostería que no cumplan las especificaciones para mampostería confinada ni para mampostería reforzada interiormente	0.0015

#### Condiciones de servicio por combinaciones accidentales

Cuando no existen elementos incapaces de soportar deformaciones apreciables. 0.012

Cuando si existen elementos incapaces de soportar deformaciones apreciables. 0.006

#### Condiciones de servicio por cargas gravitacionales

Cuando no existen elementos no estructurales susceptibles al daño con desplazamiento pequeños.

$$H_{\text{entrepiso}}/250$$

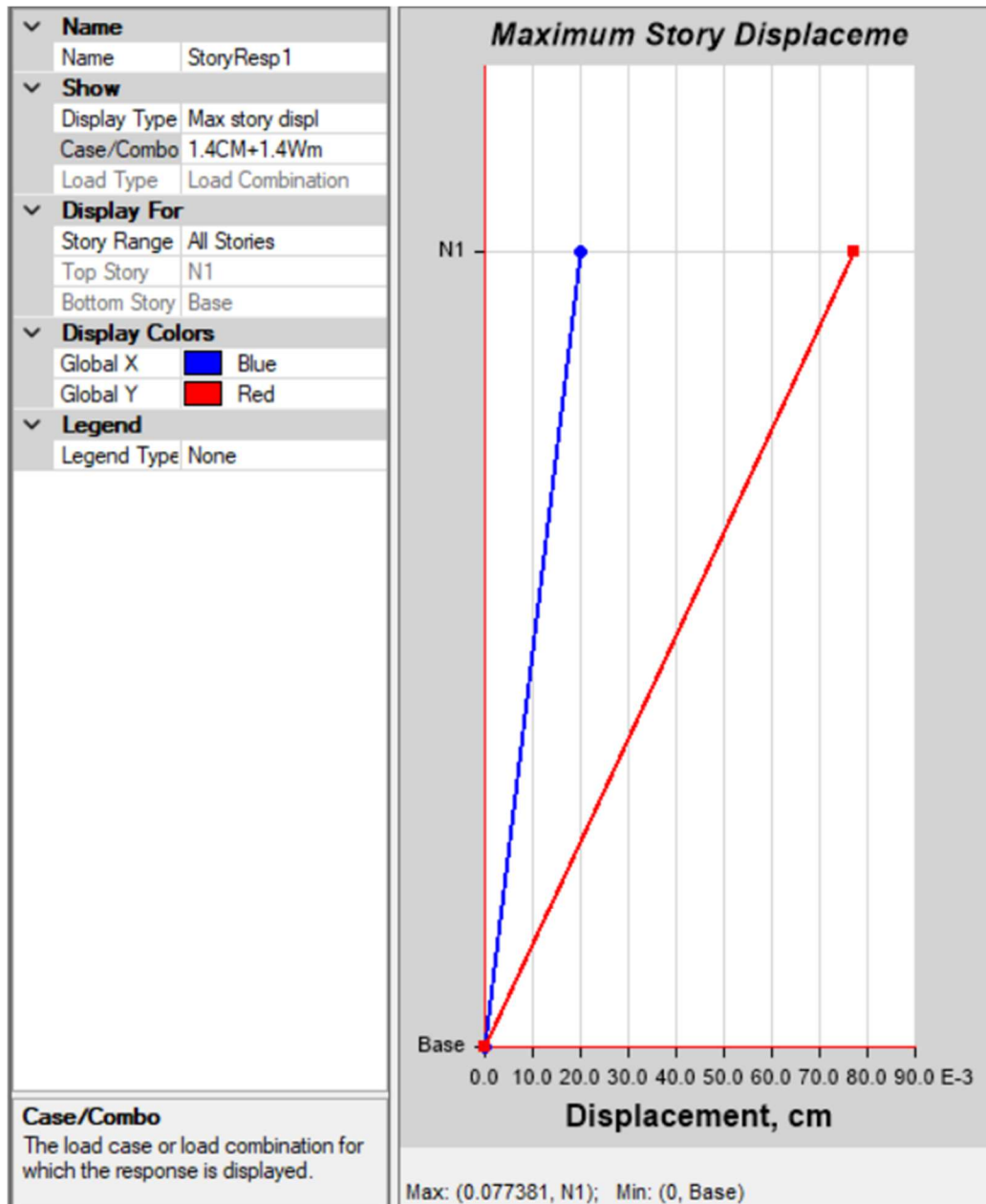
Cuando si existen elementos no estructurales susceptibles al daño con desplazamiento pequeños.

$$H_{\text{entrepiso}}/500$$





### Desplazamiento máximo por Carga 1 .4CM + 1.4Wm

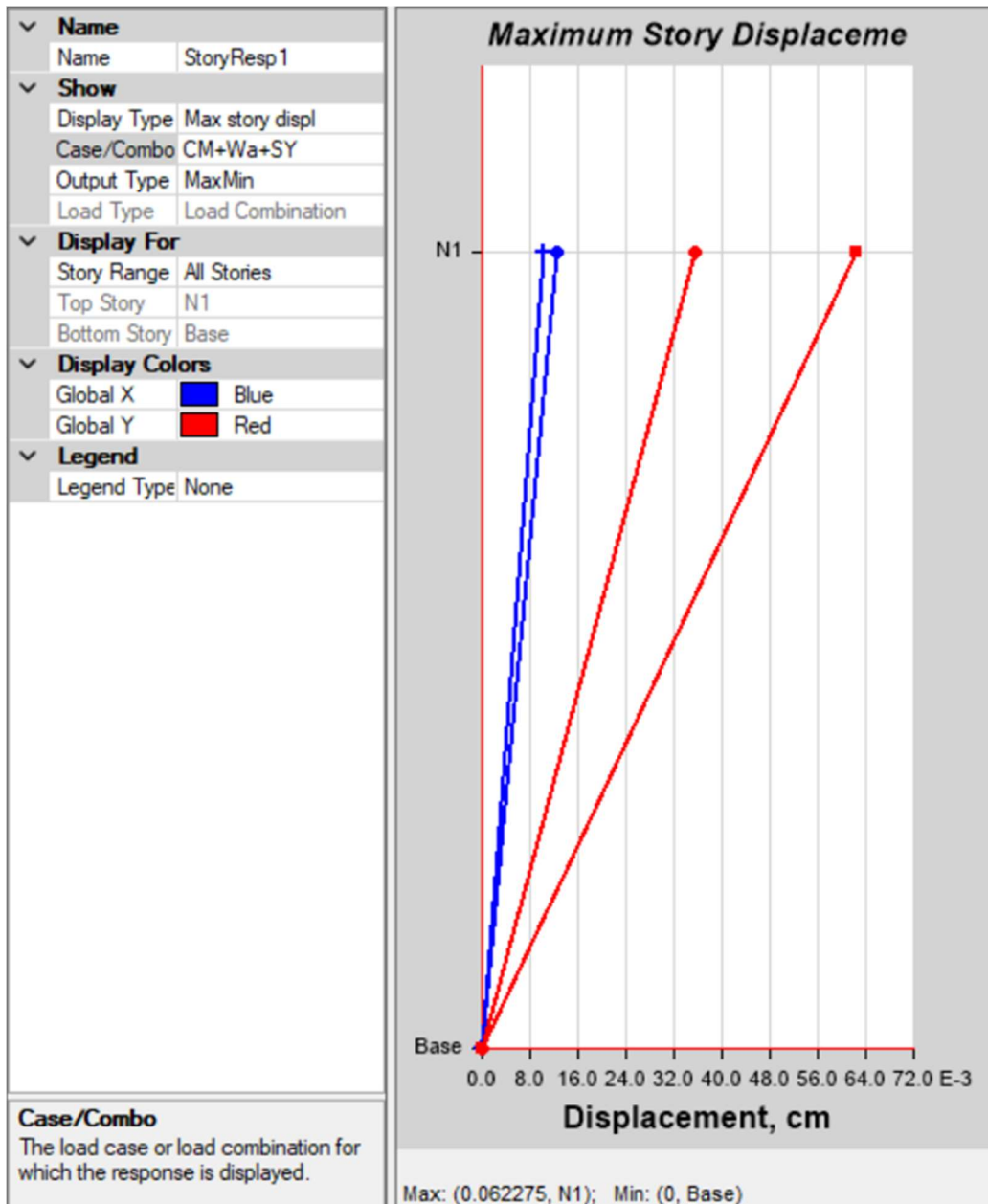


### Comprobación de desplazamiento según NTC BC 2017

Distorsión máxima permisible  $405/250 = 1.62 \text{ cm} > 0.0773$  (Base-Entrepiso) ✓



### Desplazamiento máximo por CM+Wa+SY



Q=2

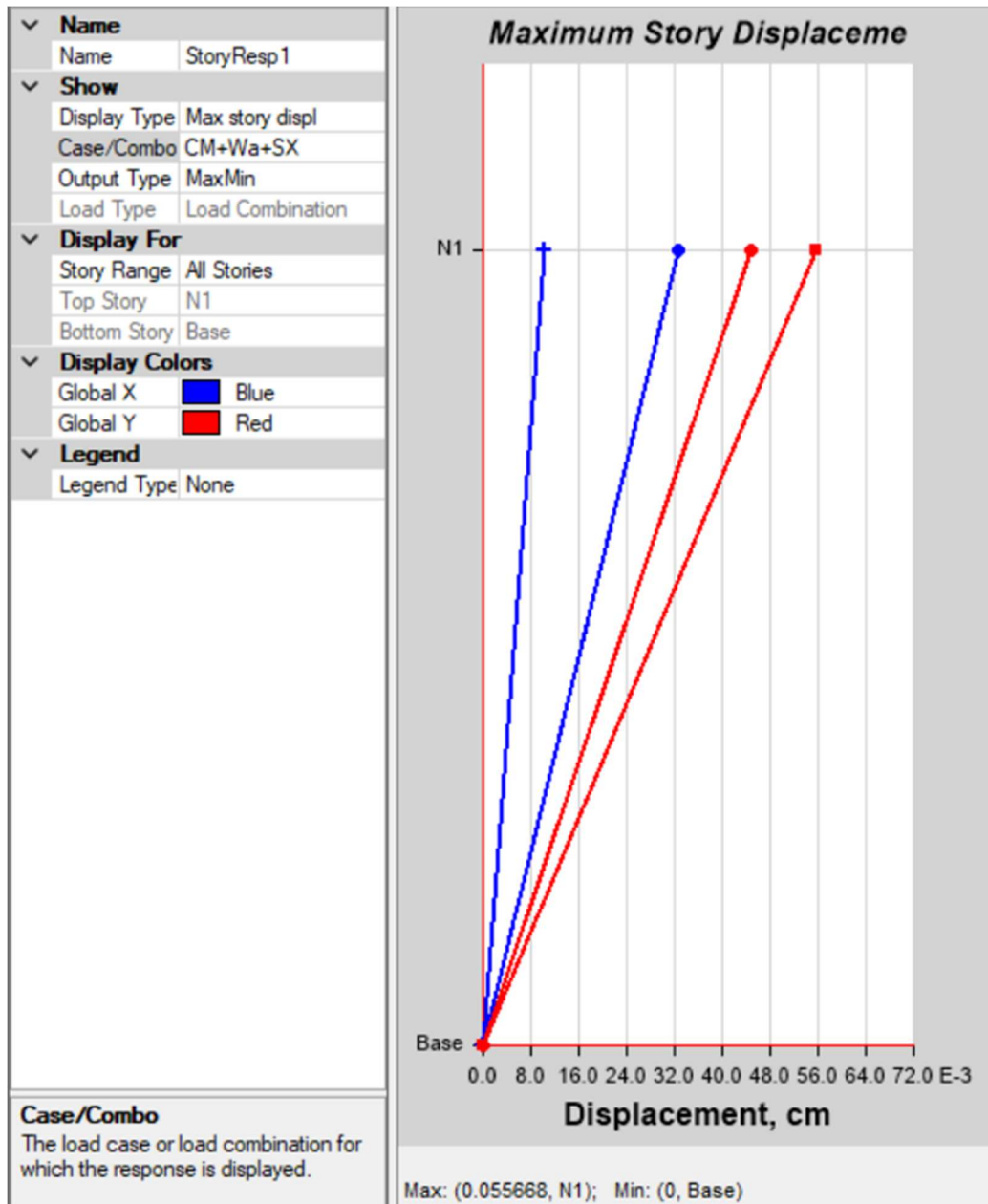
Desplazamiento =  $2 \times 0.062275 = 0.12455$

### Comprobación de desplazamiento según NTC BC 2017

Distorsión máxima permisible  $405 \times 0.010 = 4.05 \text{ cm} > 0.12455$  (Base-Entrepiso) ✓



### Desplazamiento máximo por CM+Wa+SX



Q=2

Desplazamiento =  $2 \times 0.055668 = 0.111336$

#### Comprobación de desplazamiento según NTC BC 2017

Distorsión máxima permisible  $455 \times 0.010 = 4.05 \text{ cm} > 0.111336$  (Base-cumbrera) ✓

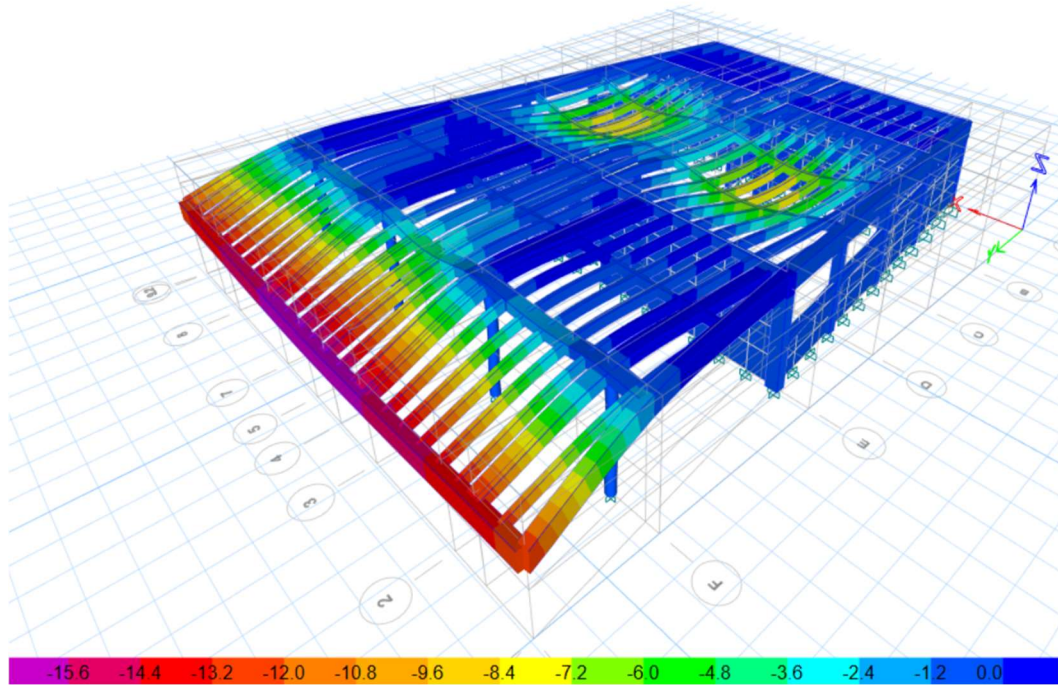


Fig. A - Deformación por CM+Wm en mm.

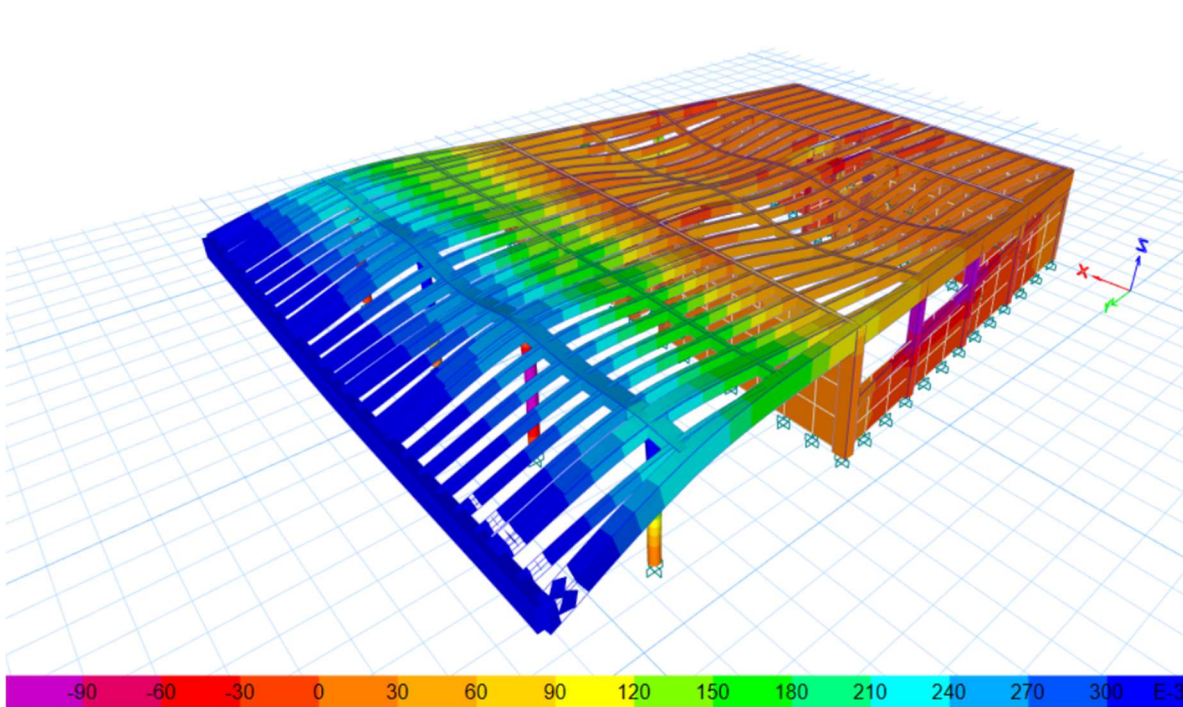


Fig. B - Deformación por CM+Wa+SX en mm.



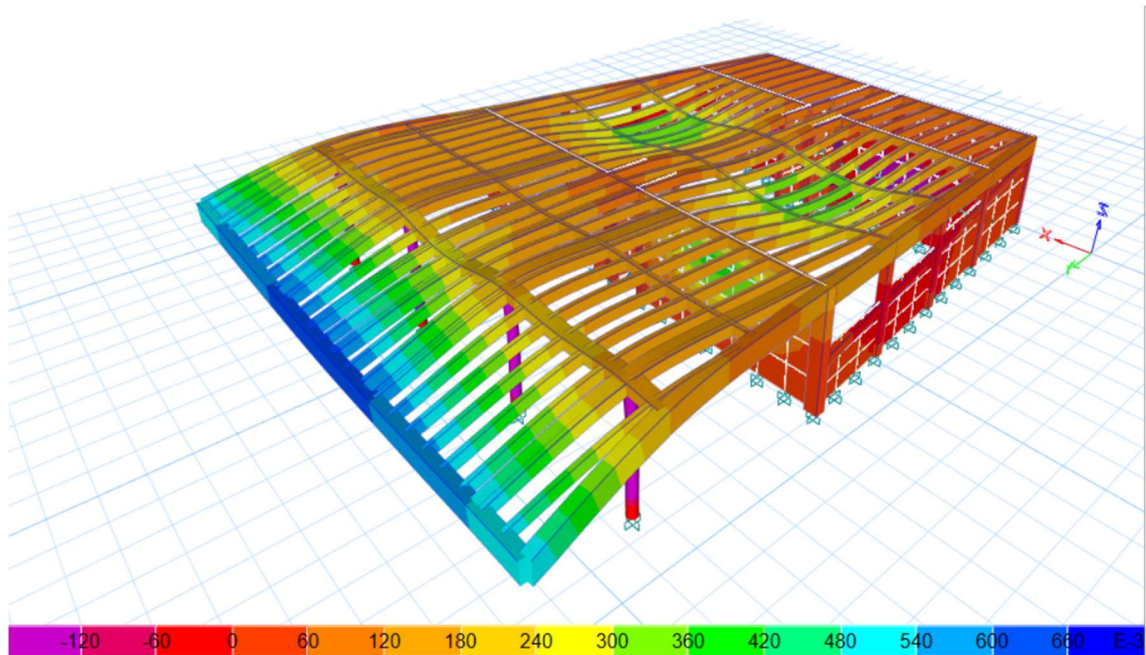


Fig. C - Deformación por CM+Wa+SY en mm.

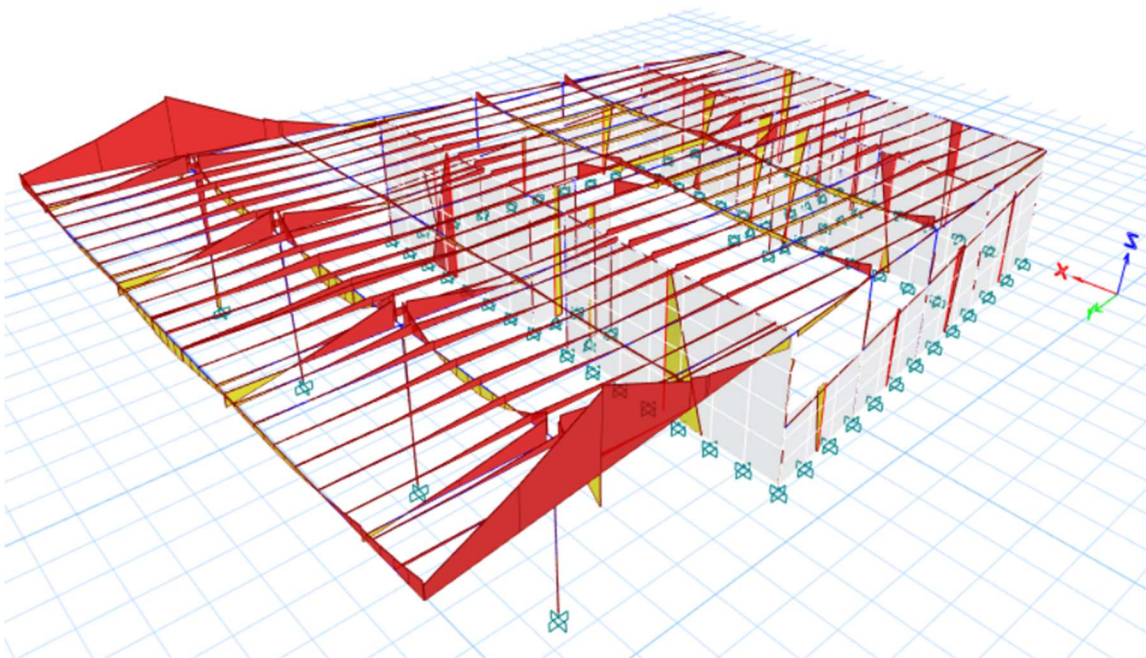


Fig. D - Diagrama de momento por 1.4CM+1.4Wm

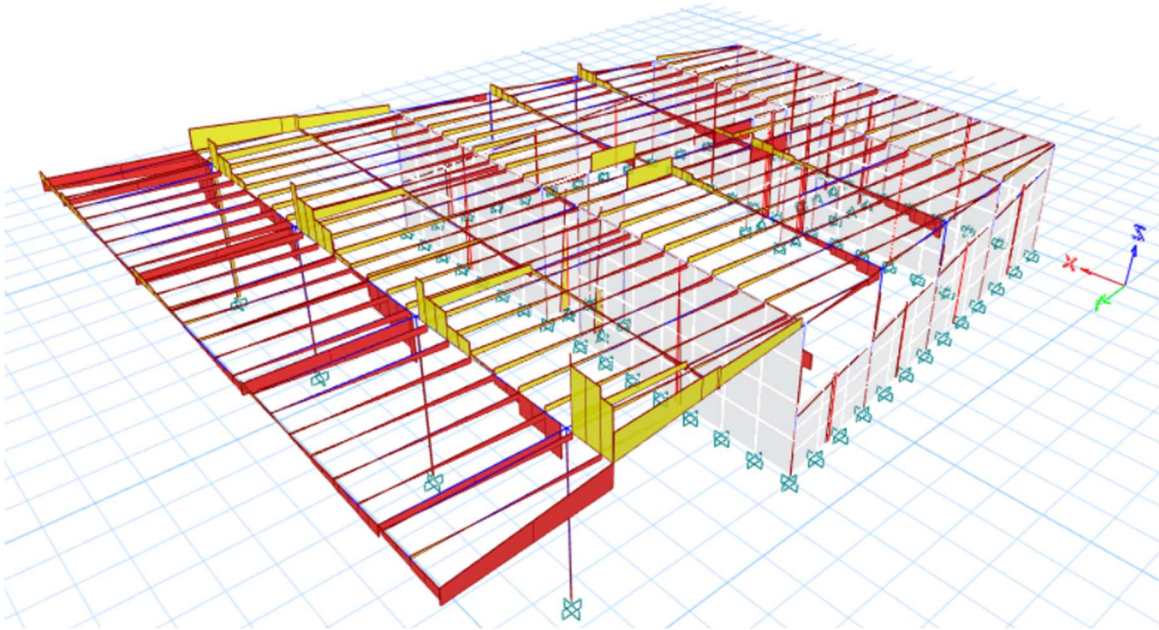


Fig. E – Diagrama de cortante por  $1.4CM+1.4Wm$

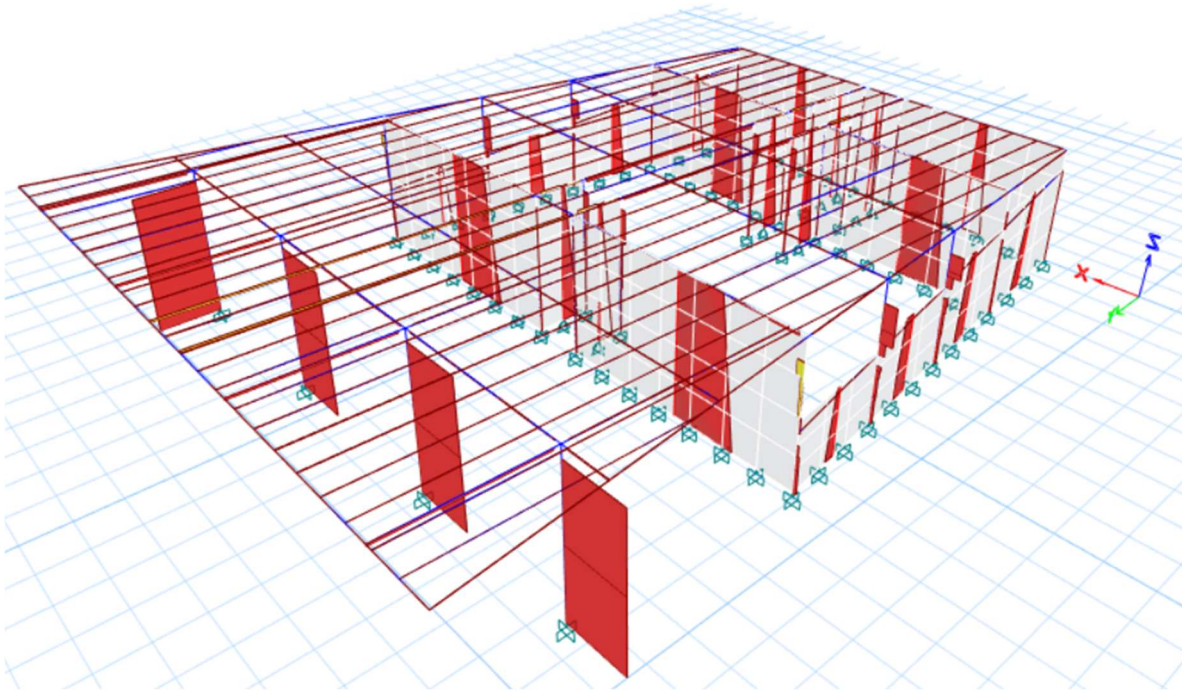


Fig. E – Diagrama de fuerza axial por  $1.4CM+1.4Wm$





## 4. DISEÑO ESTRUCTURAL

### 4.1 SUPERESTRUCTURA

#### 4.1.1 FLEXOCOMPRESIÓN EN COLUMNAS

Story	Label	UniqueName	Section	Location	P kgf	M Major kgf-cm	M Minor kgf-cm	PMM Combo	PMM Ratio or Rebar %
N1	C29	31	CL-03	Top	712.01	-1625.98	3340.32	1.1CM+1.1Wa+1.1SY	1 %
N1	C29	31	CL-03	Bottom	985.35	-2253.92	-238.09	1.4CM+1.4Wm	1 %
N1	C30	32	CL-03	Top	632.42	4228.31	24860.26	1.1CM+1.1Wa+1.1SY	1 %
N1	C30	32	CL-03	Bottom	430.01	-3492.38	10036.99	1.1CM+1.1Wa+1.1SY	1 %
N1	C35	37	CL-01 30X40	Top	-1464.54	3989.41	11138.54	1.1CM+1.1Wa+1.1SX	1 %
N1	C35	37	CL-01 30X40	Bottom	-910.13	4895.32	211.53	1.1CM+1.1Wa+1.1SX	1 %
N1	C36	38	CL-01 30X40	Top	-4696.27	89816.34	-58131.72	1.4CM+1.4Wm	1 %
N1	C36	38	CL-01 30X40	Bottom	-3278.19	-15559.35	43766.82	1.1CM+1.1Wa+1.1SX	1 %
N1	C38	40	CL-03	Top	2590.48	-5985.56	1274.12	1.4CM+1.4Wm	1 %
N1	C38	40	CL-03	Bottom	1884.96	-7763.82	-4298.61	1.4CM+1.4Wm	1 %
N1	C39	41	CL-03	Top	6976.75	49779.41	15981.88	1.4CM+1.4Wm	1 %
N1	C39	41	CL-03	Bottom	7180.77	13048.43	-16452.77	1.4CM+1.4Wm	1 %
N1	C41	43	CL-03	Top	2443.91	3528.67	5586.51	1.4CM+1.4Wm	1 %
N1	C41	43	CL-03	Bottom	1740.73	-5625	-3973.13	1.4CM+1.4Wm	1 %
N1	C42	44	CL-03	Top	6903.66	43972.36	15752.54	1.4CM+1.4Wm	1 %
N1	C42	44	CL-03	Bottom	7023.77	22840.56	16027.56	1.4CM+1.4Wm	1 %
N1	C47	60	CL-03	Top	712.81	1627.81	3361.94	1.1CM+1.1Wa+1.1SY	1 %
N1	C47	60	CL-03	Bottom	985.24	2253.67	-237.79	1.4CM+1.4Wm	1 %
N1	C48	61	CL-03	Top	631.77	-4244.51	25062.89	1.1CM+1.1Wa+1.1SY	1 %
N1	C48	61	CL-03	Bottom	427.68	3497.69	10104.14	1.1CM+1.1Wa+1.1SY	1 %
N1	C50	63	CL-01 30X40	Top	-1457.3	-3969.69	11142.49	1.1CM+1.1Wa+1.1SX	1 %
N1	C50	63	CL-01 30X40	Bottom	-904.36	-4910.19	211.83	1.1CM+1.1Wa+1.1SX	1 %
N1	C51	64	CL-01 30X40	Top	-4698.74	-89996.17	-57908.93	1.4CM+1.4Wm	1 %
N1	C51	64	CL-01 30X40	Bottom	-3268.55	15557.41	43787.56	1.1CM+1.1Wa+1.1SX	1 %
N1	C53	66	CL-03	Top	2591.71	5988.45	1276.33	1.4CM+1.4Wm	1 %
N1	C53	66	CL-03	Bottom	1885.79	7734.47	-4300.51	1.4CM+1.4Wm	1 %
N1	C54	67	CL-03	Top	6980.32	-49578.9	15990.11	1.4CM+1.4Wm	1 %
N1	C54	67	CL-03	Bottom	7184.33	-13017.7	-16461.01	1.4CM+1.4Wm	1 %
N1	C56	69	CL-03	Top	2441.55	-3531.06	5581.09	1.4CM+1.4Wm	1 %
N1	C56	69	CL-03	Bottom	1739.26	5636.09	-3969.77	1.4CM+1.4Wm	1 %
N1	C57	70	CL-03	Top	6895.96	-44083.05	15734.89	1.4CM+1.4Wm	1 %
N1	C57	70	CL-03	Bottom	7016.07	-22879.3	16009.91	1.4CM+1.4Wm	1 %
N1	C65	99	K-01 200	Top	77.77	-154.07	-595.17	1.1CM+1.1Wa+1.1SY	1 %
N1	C65	99	K-01 200	Bottom	730.82	1491.65	628.9	1.1CM+1.1Wa+1.1SY	1 %
N1	C67	101	K-01 200	Top	3998.46	-13374.17	11886.58	1.4CM+1.4Wm	1 %
N1	C67	101	K-01 200	Bottom	1974.06	4299.23	-826.64	1.4CM+1.4Wm	1 %
N1	C69	103	K-01 200	Top	3316.99	-9038.91	-8451.87	1.4CM+1.4Wm	1 %
N1	C69	103	K-01 200	Bottom	1533.96	3298.69	886.71	1.4CM+1.4Wm	1 %
N1	C77	117	K-01 200	Top	77.8	154.13	-594.94	1.1CM+1.1Wa+1.1SY	1 %
N1	C77	117	K-01 200	Bottom	731.67	1493.44	630.37	1.1CM+1.1Wa+1.1SY	1 %
N1	C79	119	K-01 200	Top	4003.66	13328.29	11894.94	1.4CM+1.4Wm	1 %
N1	C79	119	K-01 200	Bottom	1975.78	-4303.37	-829.42	1.4CM+1.4Wm	1 %
N1	C81	121	K-01 200	Top	3325.16	9012.13	-8467.6	1.4CM+1.4Wm	1 %
N1	C81	121	K-01 200	Bottom	1537.08	-3306.02	889	1.4CM+1.4Wm	1 %



Story	Label	UniqueName	Section	Location	P kgf	M Major kgf-cm	M Minor kgf-cm	PMM Combo	PMM Ratio or Rebar %
N1	C83	34	K-01 300	Top	506.57	-1014.87	2513.07	1.1CM+1.1Wa+1.1SY	1 %
N1	C83	34	K-01 300	Bottom	453.35	906.83	264.52	1.1CM+1.1Wa+1.1SY	1 %
N1	C84	57	K-01 300	Top	507.98	-1017.72	2540.83	1.1CM+1.1Wa+1.1SY	1 %
N1	C84	57	K-01 300	Bottom	454.17	908.49	266.27	1.1CM+1.1Wa+1.1SY	1 %
N1	C85	137	CL-02 D=30	Top	29044.79	-70404.56	193870.88	1.4CM+1.4Wm	1 %
N1	C85	137	CL-02 D=30	Bottom	29886.11	72443.93	-111953.04	1.4CM+1.4Wm	1 %
N1	C89	141	CL-02 D=30	Top	27951.14	-71031.51	217004.05	1.4CM+1.4Wm	1 %
N1	C89	141	CL-02 D=30	Bottom	28792.46	69792.93	-125311.68	1.4CM+1.4Wm	1 %
N1	C91	143	CL-02 D=30	Top	27950.42	71079.27	217121.54	1.4CM+1.4Wm	1 %
N1	C91	143	CL-02 D=30	Bottom	28791.75	-69791.19	-125381.19	1.4CM+1.4Wm	1 %
N1	C2	98	CL-02 D=30	Top	29013.03	-193667.58	70327.59	1.4CM+1.4Wm	1 %
N1	C2	98	CL-02 D=30	Bottom	29854.35	111835.68	-72366.95	1.4CM+1.4Wm	1 %

#### 4.1.2 CORTANTE EN EN COLUMNAS

Story	Label	UniqueName	Section	Location	V Major kgf	V Major Combo	At Major cm2/cm	V Minor kgf	V Minor Combo	At Minor cm2/cm
N1	C29	31	CL-03	Top	3.29		0	59.22		0
N1	C29	31	CL-03	Bottom	14.26		0	19.16		0
N1	C30	32	CL-03	Top	72.25		0	2078.71	0.9CM+1.1SX	0.0208
N1	C30	32	CL-03	Bottom	12.83		0	22.64		0
N1	C35	37	CL-01 30X40	Top	29.7		0	92.59		0
N1	C35	37	CL-01 30X40	Bottom	64.57		0	50.06		0
N1	C36	38	CL-01 30X40	Top	2464.35	1.1CM+1.1Wa+1.1S X	0.025	529.93		0
N1	C36	38	CL-01 30X40	Bottom	62.86		0	529.93		0
N1	C38	40	CL-03	Top	15.81		0	34.66		0
N1	C38	40	CL-03	Bottom	15.19		0	10.19		0
N1	C39	41	CL-03	Top	84.74		0	243.05		0
N1	C39	41	CL-03	Bottom	84.74		0	243.05		0
N1	C41	43	CL-03	Top	23.75		0	43.74		0
N1	C41	43	CL-03	Bottom	12.28		0	11.21		0
N1	C42	44	CL-03	Top	106.85		0	424.85		0
N1	C42	44	CL-03	Bottom	106.85		0	424.85		0
N1	C47	60	CL-03	Top	3.31		0	59.71		0
N1	C47	60	CL-03	Bottom	14.32		0	19.34		0
N1	C48	61	CL-03	Top	72.13		0	2097.69	0.9CM+1.1SX	0.0208
N1	C48	61	CL-03	Bottom	12.83		0	22.84		0
N1	C50	63	CL-01 30X40	Top	29.71		0	92.43		0
N1	C50	63	CL-01 30X40	Bottom	64.59		0	50		0
N1	C51	64	CL-01 30X40	Top	2464.08	1.1CM+1.1Wa+1.1S X	0.025	529.52		0
N1	C51	64	CL-01 30X40	Bottom	62.72		0	529.52		0
N1	C53	66	CL-03	Top	15.8		0	34.81		0
N1	C53	66	CL-03	Bottom	15.14		0	10.25		0
N1	C54	67	CL-03	Top	84.54		0	244.15		0
N1	C54	67	CL-03	Bottom	84.54		0	244.15		0
N1	C56	69	CL-03	Top	23.81		0	43.97		0
N1	C56	69	CL-03	Bottom	12.32		0	11.32		0



Story	Label	UniqueName	Section	Location	V Major kgf	V Major Combo	At Major cm2/cm	V Minor kgf	V Minor Combo	At Minor cm2/cm
N1	C57	70	CL-03	Top	107.37		0	427.96		0
N1	C57	70	CL-03	Bottom	107.37		0	427.96		0
N1	C65	99	K-01 200	Top	0.64		0	12.51		0
N1	C65	99	K-01 200	Bottom	0.75		0	16.48		0
N1	C67	101	K-01 200	Top	25.42		0	52.65		0
N1	C67	101	K-01 200	Bottom	3.07		0	12.23		0
N1	C69	103	K-01 200	Top	16.34		0	34.73		0
N1	C69	103	K-01 200	Bottom	1.8		0	11.67		0
N1	C77	117	K-01 200	Top	0.64		0	12.53		0
N1	C77	117	K-01 200	Bottom	0.72		0	16.52		0
N1	C79	119	K-01 200	Top	25.26		0	52.66		0
N1	C79	119	K-01 200	Bottom	3.01		0	12.26		0
N1	C81	121	K-01 200	Top	16.24		0	34.78		0
N1	C81	121	K-01 200	Bottom	1.77		0	11.67		0
N1	C83	34	K-01 300	Top	11.84		0	21.17		0
N1	C83	34	K-01 300	Bottom	2.54		0	10.02		0
N1	C84	57	K-01 300	Top	11.9		0	21.42		0
N1	C84	57	K-01 300	Bottom	2.56		0	10.11		0
N1	C85	137	CL-02 D=30	Top	143.72		0	372.99		0
N1	C85	137	CL-02 D=30	Bottom	143.72		0	372.99		0
N1	C89	141	CL-02 D=30	Top	156.08		0	403.98		0
N1	C89	141	CL-02 D=30	Bottom	156.08		0	403.98		0
N1	C91	143	CL-02 D=30	Top	156.18		0	404.34		0
N1	C91	143	CL-02 D=30	Bottom	156.18		0	404.34		0
N1	C2	98	CL-02 D=30	Top	372.89		0	143.42		0
N1	C2	98	CL-02 D=30	Bottom	372.89		0	143.42		0

**4.1.3 FLEXIÓN EN VIGAS (1/2)**

Story	Label	UniqueName	Section	Location	(-) Moment kgf-cm	(-) Combo	As Top cm2	(+) Moment kgf-cm
N1	B9	52	TC-01	End-I	-283.34	0.9CM+1.1SX	0.02	1555.06
N1	B9	52	TC-01	Middle	-2805.08	1.4CM+1.4Wm	0.08	0
N1	B9	52	TC-01	End-J	-416.88	0.9CM+1.1SX	0.02	4960.08
N1	B11	54	TC-01	End-I	-3159.45	0.9CM+1.1SX	0.08	2272.76
N1	B11	54	TC-01	Middle	-4629.5	1.1CM+1.1Wa+1.1SY	0.22	87.62
N1	B11	54	TC-01	End-J	-7857.83	0.9CM+1.1SX	0.28	8665.58
N1	B20	78	TC-01	End-I	-288.35	0.9CM+1.1SX	0.02	1468.38
N1	B20	78	TC-01	Middle	-2803.79	1.4CM+1.4Wm	0.08	0
N1	B20	78	TC-01	End-J	-430.45	0.9CM+1.1SX	0.02	4971.67
N1	B22	80	TC-01	End-I	-3181.09	0.9CM+1.1SX	0.08	2294.91
N1	B22	80	TC-01	Middle	-4651	1.1CM+1.1Wa+1.1SY	0.22	108.88
N1	B22	80	TC-01	End-J	-7932.15	0.9CM+1.1SX	0.29	8747.63
N1	B35	105	TC-01	End-I	0	0.9CM+1.1SX	0.2	9649.69
N1	B35	105	TC-01	Middle	-4145.14	1.1CM+1.1Wa+1.1SY	0.27	451.74
N1	B35	105	TC-01	End-J	-785.98	1.1CM+1.1Wa+1.1SY	0.07	606.35
N1	B36	106	TC-01	End-I	-8547.35	1.1CM+1.1Wa+1.1SY	0.34	15300.33
N1	B36	106	TC-01	Middle	-875.78	1.4CM+1.4Wm	0.21	0
N1	B36	106	TC-01	End-J	-18488	1.1CM+1.1Wa+1.1SY	0.48	4853.54
N1	B37	107	TC-01	End-I	0	1.4CM+1.4Wm	0.13	3234.24
N1	B37	107	TC-01	Middle	-15046.71	1.4CM+1.4Wm	0.39	2432.64
N1	B37	107	TC-01	End-J	-43216.61	1.4CM+1.4Wm	0.81	0
N1	B38	108	TA-02 30X30	End-I	-581305.33	1.4CM+1.4Wm	7.07	524687.15
N1	B38	108	TA-02 30X30	Middle	0	0.9CM+1.1SX	0.07	445446.05
N1	B38	108	TA-02 30X30	End-J	-558445.08	1.4CM+1.4Wm	6.76	473492.17
N1	B39	109	TA-02 30X30	End-I	-56631.92	1.4CM+1.4Wm	0.97	0
N1	B39	109	TA-02 30X30	Middle	-24922.45	1.4CM+1.4Wm	0.62	0
N1	B39	109	TA-02 30X30	End-J	-3615.99	1.1CM+1.1Wa+1.1SY	0.36	0
N1	B41	123	TC-01	End-I	0	0.9CM+1.1SX	0.2	9683
N1	B41	123	TC-01	Middle	-4152.62	1.1CM+1.1Wa+1.1SY	0.27	454.28
N1	B41	123	TC-01	End-J	-789.48	1.1CM+1.1Wa+1.1SY	0.06	605.94
N1	B42	124	TC-01	End-I	-8605.72	1.1CM+1.1Wa+1.1SY	0.34	15302.22
N1	B42	124	TC-01	Middle	-870.52	1.4CM+1.4Wm	0.21	0
N1	B42	124	TC-01	End-J	-18482.42	1.1CM+1.1Wa+1.1SY	0.48	4917.43
N1	B43	125	TC-01	End-I	0	1.4CM+1.4Wm	0.13	3225.11
N1	B43	125	TC-01	Middle	-15066.04	1.4CM+1.4Wm	0.39	2419.63
N1	B43	125	TC-01	End-J	-43226.92	1.4CM+1.4Wm	0.81	0
N1	B44	126	TA-02 30X30	End-I	-581323.05	1.4CM+1.4Wm	7.07	527103.58
N1	B44	126	TA-02 30X30	Middle	0	0.9CM+1.1SX	0.07	444416.65
N1	B44	126	TA-02 30X30	End-J	-558881.16	1.4CM+1.4Wm	6.76	476436.23
N1	B45	127	TA-02 30X30	End-I	-56684.31	1.4CM+1.4Wm	0.97	0
N1	B45	127	TA-02 30X30	Middle	-24957.57	1.4CM+1.4Wm	0.62	0
N1	B45	127	TA-02 30X30	End-J	-3658.61	1.1CM+1.1Wa+1.1SY	0.37	0
N1	B61	153	TA-02 30X30	End-I	-96179.97	1.4CM+1.4Wm	1.57	0
N1	B61	153	TA-02 30X30	Middle	-18455.62	0.9CM+1.1SX	0.57	57109.43
N1	B61	153	TA-02 30X30	End-J	-310835.71	1.4CM+1.4Wm	3.69	0
N1	B62	154	TA-02 30X30	End-I	-96254.05	1.4CM+1.4Wm	1.57	0
N1	B62	154	TA-02 30X30	Middle	-18455.86	0.9CM+1.1SX	0.57	57230.24
N1	B62	154	TA-02 30X30	End-J	-310864.89	1.4CM+1.4Wm	3.69	0
N1	B64	156	TA-02 30X30	End-I	-297842.19	1.4CM+1.4Wm	3.56	0
N1	B64	156	TA-02 30X30	Middle	-108525.29	1.4CM+1.4Wm	1.79	0
N1	B64	156	TA-02 30X30	End-J	-26312.07	0.9CM+1.1SX	0.6	0



Story	Label	UniqueName	Section	Location	(-) Moment kgf-cm	(-) Combo	As Top cm2	(+) Moment kgf-cm
N1	B65	157	TA-02 30X30	End-I	-297816.62	1.4CM+1.4Wm	3.56	0
N1	B65	157	TA-02 30X30	Middle	-108507.62	1.4CM+1.4Wm	1.79	0
N1	B65	157	TA-02 30X30	End-J	-26322.93	0.9CM+1.1SX	0.6	0
N1	B25	8	TC-01	End-I	-3571.37	1.1CM+1.1Wa+1.1SX	0.11	93.06
N1	B25	8	TC-01	Middle	-2151.55	1.1CM+1.1Wa+1.1SX	0.09	467.11
N1	B25	8	TC-01	End-J	-2514.57	1.4CM+1.4Wm	0.1	0
N1	B26	9	TC-01	End-I	0	0.9CM+1.1SX	0	848.72
N1	B26	9	TC-01	Middle	0	0.9CM+1.1SX	0	3172.35
N1	B26	9	TC-01	End-J	0	0.9CM+1.1SX	0	4559.66
N1	B27	10	TC-01	End-I	-832.26	0.9CM+1.1SX	0.04	1913.61
N1	B27	10	TC-01	Middle	-2354.62	1.1CM+1.1Wa+1.1SY	0.09	0
N1	B27	10	TC-01	End-J	-3817.52	1.1CM+1.1Wa+1.1SY	0.13	0
N1	B28	11	TC-01	End-I	-3333.84	1.1CM+1.1Wa+1.1SY	0.12	0
N1	B28	11	TC-01	Middle	-634.41	0.9CM+1.1SX	0.07	2215.55
N1	B28	11	TC-01	End-J	-2901.17	0.9CM+1.1SX	0.12	5467.14
N1	B40	16	TC-01	End-I	-3580.79	1.1CM+1.1Wa+1.1SX	0.11	112.86
N1	B40	16	TC-01	Middle	-2154.83	1.1CM+1.1Wa+1.1SX	0.09	520.46
N1	B40	16	TC-01	End-J	-2517.37	1.4CM+1.4Wm	0.1	0
N1	B52	17	TC-01	End-I	0	0.9CM+1.1SX	0	1687.22
N1	B52	17	TC-01	Middle	0	0.9CM+1.1SX	0	3461.8
N1	B52	17	TC-01	End-J	0	0.9CM+1.1SX	0	4562.68
N1	B55	18	TC-01	End-I	-841.63	0.9CM+1.1SX	0.04	1919.65
N1	B55	18	TC-01	Middle	-2358.19	1.1CM+1.1Wa+1.1SY	0.09	0
N1	B55	18	TC-01	End-J	-3830.68	1.1CM+1.1Wa+1.1SY	0.13	0
N1	B66	19	TC-01	End-I	-2149.23	1.1CM+1.1Wa+1.1SY	0.1	0
N1	B66	19	TC-01	Middle	-778.57	0.9CM+1.1SX	0.07	2622.95
N1	B66	19	TC-01	End-J	-2938.54	0.9CM+1.1SX	0.12	5500.36
N1	B190	202	TN-01 12X30	End-I	-37738.03	1.4CM+1.4Wm	0.57	0
N1	B190	202	TN-01 12X30	Middle	0	1.1CM+1.1Wa+1.1SY	0.07	50114.38
N1	B190	202	TN-01 12X30	End-J	-73455.47	1.4CM+1.4Wm	0.96	0
N1	B191	203	TN-01 12X30	End-I	-84497.36	1.4CM+1.4Wm	0.96	0
N1	B191	203	TN-01 12X30	Middle	-25986.75	1.4CM+1.4Wm	0.38	106271.17
N1	B191	203	TN-01 12X30	End-J	-120398.74	1.4CM+1.4Wm	1.39	0
N1	B192	204	TN-01 12X30	End-I	-88803.55	1.4CM+1.4Wm	1.01	0
N1	B192	204	TN-01 12X30	Middle	-2575.23	0.9CM+1.1SX	0.05	64236.7
N1	B192	204	TN-01 12X30	End-J	-191733	1.4CM+1.4Wm	2.29	0
N1	B193	205	TN-01 12X30	End-I	-194951.93	1.4CM+1.4Wm	2.34	0
N1	B193	205	TN-01 12X30	Middle	-31504.08	1.4CM+1.4Wm	0.49	11189.17
N1	B193	205	TN-01 12X30	End-J	-13261.92	1.4CM+1.4Wm	0.22	15472
N1	B194	206	TN-01 12X30	End-I	-26810.97	1.4CM+1.4Wm	0.42	0
N1	B194	206	TN-01 12X30	Middle	0	1.1CM+1.1Wa+1.1SY	0.11	48343.94
N1	B194	206	TN-01 12X30	End-J	-95545.24	1.4CM+1.4Wm	1.11	0
N1	B195	207	TN-01 12X30	End-I	-146834.55	1.4CM+1.4Wm	1.71	0
N1	B195	207	TN-01 12X30	Middle	0	0.9CM+1.1SX	0.06	162311.54
N1	B195	207	TN-01 12X30	End-J	-170682.91	1.4CM+1.4Wm	2.01	0
N1	B196	208	TN-01 12X30	End-I	-109616.89	1.4CM+1.4Wm	1.26	0
N1	B196	208	TN-01 12X30	Middle	-5772.23	0.9CM+1.1SX	0.1	67223.85
N1	B196	208	TN-01 12X30	End-J	-187153.56	1.4CM+1.4Wm	2.24	0
N1	B197	209	TN-01 12X30	End-I	-187608.56	1.4CM+1.4Wm	2.26	0
N1	B197	209	TN-01 12X30	Middle	-29568.78	1.4CM+1.4Wm	0.49	12294.3
N1	B197	209	TN-01 12X30	End-J	-16734.7	1.4CM+1.4Wm	0.31	12885.71
N1	B198	210	TN-01 12X30	End-I	-11887.48	1.1CM+1.1Wa+1.1SY	0.32	1201.38



Story	Label	UniqueName	Section	Location	(-) Moment kgf-cm	(-) Combo	As Top cm2	(+) Moment kgf-cm
N1	B198	210	TN-01 12X30	Middle	0	1.1CM+1.1Wa+1.1SY	0.12	46710.7
N1	B198	210	TN-01 12X30	End-J	-116605.43	1.4CM+1.4Wm	1.37	0
N1	B199	211	TN-01 12X30	End-I	-191102.79	1.4CM+1.4Wm	2.28	0
N1	B199	211	TN-01 12X30	Middle	0	0.9CM+1.1SX	0.05	201474.75
N1	B199	211	TN-01 12X30	End-J	-202745.82	1.4CM+1.4Wm	2.43	0
N1	B200	212	TN-01 12X30	End-I	-119455.43	1.4CM+1.4Wm	1.39	0
N1	B200	212	TN-01 12X30	Middle	-5799.06	0.9CM+1.1SX	0.11	71934.36
N1	B200	212	TN-01 12X30	End-J	-193407.06	1.4CM+1.4Wm	2.33	0
N1	B201	213	TN-01 12X30	End-I	-200830.44	1.4CM+1.4Wm	2.44	0
N1	B201	213	TN-01 12X30	Middle	-27797.5	1.4CM+1.4Wm	0.48	12945.74
N1	B201	213	TN-01 12X30	End-J	0	1.1CM+1.1Wa+1.1SY	0.07	18833.36
N1	B202	214	TN-01 12X30	End-I	-8283.2	1.1CM+1.1Wa+1.1SY	0.27	2238.13
N1	B202	214	TN-01 12X30	Middle	0	1.1CM+1.1Wa+1.1SY	0.13	45767.39
N1	B202	214	TN-01 12X30	End-J	-127817.22	1.4CM+1.4Wm	1.52	0
N1	B203	215	TN-01 12X30	End-I	-210579.34	1.4CM+1.4Wm	2.53	0
N1	B203	215	TN-01 12X30	Middle	0	0.9CM+1.1SX	0.05	214934.37
N1	B203	215	TN-01 12X30	End-J	-205793.63	1.4CM+1.4Wm	2.47	0
N1	B204	216	TN-01 12X30	End-I	-125656.59	1.4CM+1.4Wm	1.49	0
N1	B204	216	TN-01 12X30	Middle	-2002.3	0.9CM+1.1SX	0.08	83488.36
N1	B204	216	TN-01 12X30	End-J	-211196.69	1.4CM+1.4Wm	2.58	0
N1	B205	217	TN-01 12X30	End-I	-232540.44	1.4CM+1.4Wm	2.85	0
N1	B205	217	TN-01 12X30	Middle	-26697.49	1.4CM+1.4Wm	0.43	0
N1	B205	217	TN-01 12X30	End-J	0	1.1CM+1.1Wa+1.1SY	0.05	33939.76
N1	B206	218	TN-01 12X30	End-I	-9912.55	1.1CM+1.1Wa+1.1SY	0.32	1886.55
N1	B206	218	TN-01 12X30	Middle	0	1.1CM+1.1Wa+1.1SY	0.14	46076.16
N1	B206	218	TN-01 12X30	End-J	-122609.83	1.4CM+1.4Wm	1.47	0
N1	B207	219	TN-01 12X30	End-I	-208011.69	1.4CM+1.4Wm	2.5	0
N1	B207	219	TN-01 12X30	Middle	0	1.1CM+1.1Wa+1.1SY	0.07	216559.49
N1	B207	219	TN-01 12X30	End-J	-226027.68	1.4CM+1.4Wm	2.75	0
N1	B208	220	TN-01 12X30	End-I	-81278.72	1.4CM+1.4Wm	0.96	0
N1	B208	220	TN-01 12X30	Middle	0	1.1CM+1.1Wa+1.1SX	0.02	70080.46
N1	B208	220	TN-01 12X30	End-J	-221974.79	1.4CM+1.4Wm	2.7	0
N1	B209	221	TN-01 12X30	End-I	-266826.47	1.4CM+1.4Wm	3.3	0
N1	B209	221	TN-01 12X30	Middle	-27326.41	1.4CM+1.4Wm	0.4	0
N1	B209	221	TN-01 12X30	End-J	0	0.9CM+1.1SX	0.01	66967.96
N1	B210	222	TN-01 12X30	End-I	-13747.44	1.1CM+1.1Wa+1.1SY	0.38	0
N1	B210	222	TN-01 12X30	Middle	0	1.1CM+1.1Wa+1.1SY	0.14	46964.44
N1	B210	222	TN-01 12X30	End-J	-110077.76	1.4CM+1.4Wm	1.32	0
N1	B211	223	TN-01 12X30	End-I	-180340.02	1.4CM+1.4Wm	2.14	0
N1	B211	223	TN-01 12X30	Middle	0	1.1CM+1.1Wa+1.1SY	0.07	185375.84
N1	B211	223	TN-01 12X30	End-J	-192324.55	1.4CM+1.4Wm	2.3	0
N1	B212	224	TN-01 12X30	End-I	-76657.17	1.4CM+1.4Wm	0.96	0
N1	B212	224	TN-01 12X30	Middle	0	1.4CM+1.4Wm	0.03	65106.63
N1	B212	224	TN-01 12X30	End-J	-215446.1	1.4CM+1.4Wm	2.62	0
N1	B213	225	TN-01 12X30	End-I	-260132.85	1.4CM+1.4Wm	3.21	0
N1	B213	225	TN-01 12X30	Middle	-27167.07	1.4CM+1.4Wm	0.4	0
N1	B213	225	TN-01 12X30	End-J	0	0.9CM+1.1SX	0.003202	60593.02
N1	B214	226	TN-01 12X30	End-I	-29647.83	1.4CM+1.4Wm	0.47	0
N1	B214	226	TN-01 12X30	Middle	0	1.1CM+1.1Wa+1.1SY	0.09	48451.43
N1	B214	226	TN-01 12X30	End-J	-90002.99	1.4CM+1.4Wm	1.06	0
N1	B215	227	TN-01 12X30	End-I	-139883.94	1.4CM+1.4Wm	1.63	0
N1	B215	227	TN-01 12X30	Middle	0	0.9CM+1.1SX	0.05	140789.2





Story	Label	UniqueName	Section	Location	(-) Moment kgf-cm	(-) Combo	As Top cm2	(+) Moment kgf-cm
N1	B215	227	TN-01 12X30	End-J	-136349.17	1.4CM+1.4Wm	1.58	0
N1	B216	228	TN-01 12X30	End-I	-86421.22	1.4CM+1.4Wm	1.01	0
N1	B216	228	TN-01 12X30	Middle	-6509.13	1.4CM+1.4Wm	0.15	52644.6
N1	B216	228	TN-01 12X30	End-J	-185136.6	1.4CM+1.4Wm	2.24	0
N1	B217	229	TN-01 12X30	End-I	-205393.16	1.4CM+1.4Wm	2.48	0
N1	B217	229	TN-01 12X30	Middle	-25382.75	1.4CM+1.4Wm	0.41	12325.92
N1	B217	229	TN-01 12X30	End-J	0	1.1CM+1.1Wa+1.1SY	0.03	10627.6
N1	B218	230	TN-01 12X30	End-I	-18478.12	1.4CM+1.4Wm	0.27	0
N1	B218	230	TN-01 12X30	Middle	-47067.73	1.4CM+1.4Wm	0.7	53562.02
N1	B218	230	TN-01 12X30	End-J	-70529.53	1.4CM+1.4Wm	0.96	0
N1	B219	231	TN-01 12X30	End-I	-51662.57	1.4CM+1.4Wm	0.77	0
N1	B219	231	TN-01 12X30	Middle	-2564.8	1.1CM+1.1Wa+1.1SX	0.07	48842.02
N1	B219	231	TN-01 12X30	End-J	-193657.3	1.4CM+1.4Wm	2.32	0
N1	B220	232	TN-01 12X30	End-I	-212779.82	1.4CM+1.4Wm	2.56	0
N1	B220	232	TN-01 12X30	Middle	-33704.03	1.4CM+1.4Wm	0.5	9597.49
N1	B220	232	TN-01 12X30	End-J	0	1.1CM+1.1Wa+1.1SX	0.01	21084.29
N1	B221	233	TN-01 12X30	End-I	-16716.01	1.4CM+1.4Wm	0.25	0
N1	B221	233	TN-01 12X30	Middle	0	1.1CM+1.1Wa+1.1SX	0.07	26721.84
N1	B221	233	TN-01 12X30	End-J	-16974.87	1.4CM+1.4Wm	0.26	608.73
N1	B222	234	TN-01 12X30	End-I	-33634.56	1.4CM+1.4Wm	0.52	0
N1	B222	234	TN-01 12X30	Middle	-19894.62	1.4CM+1.4Wm	0.32	26706.3
N1	B222	234	TN-01 12X30	End-J	-176097.06	1.4CM+1.4Wm	2.1	0
N1	B223	235	TN-01 12X30	End-I	-210640.05	1.4CM+1.4Wm	2.53	0
N1	B223	235	TN-01 12X30	Middle	-35327.28	1.4CM+1.4Wm	0.52	8363.72
N1	B223	235	TN-01 12X30	End-J	-5220.21	1.4CM+1.4Wm	0.08	15058.64
N1	B224	236	TN-01 12X30	End-I	-33554.1	1.4CM+1.4Wm	0.5	0
N1	B224	236	TN-01 12X30	Middle	-57180.93	1.4CM+1.4Wm	0.86	0
N1	B224	236	TN-01 12X30	End-J	-141435.33	1.4CM+1.4Wm	1.65	0
N1	B225	237	TN-01 12X30	End-I	-160509.09	1.4CM+1.4Wm	1.88	0
N1	B225	237	TN-01 12X30	Middle	-32185.94	1.4CM+1.4Wm	0.48	10259.38
N1	B225	237	TN-01 12X30	End-J	-49068.47	1.4CM+1.4Wm	0.73	0
N1	B226	238	TN-01 12X30	End-I	-45547.66	1.4CM+1.4Wm	0.72	0
N1	B226	238	TN-01 12X30	Middle	0	1.1CM+1.1Wa+1.1SY	0.06	50901.12
N1	B226	238	TN-01 12X30	End-J	-59476.48	1.4CM+1.4Wm	0.94	0
N1	B227	239	TN-01 12X30	End-I	-100536.27	1.4CM+1.4Wm	1.15	0
N1	B227	239	TN-01 12X30	Middle	-48113.93	1.4CM+1.4Wm	0.72	121868.04
N1	B227	239	TN-01 12X30	End-J	-94511.14	1.4CM+1.4Wm	1.08	0
N1	B228	240	TN-01 12X30	End-I	-67690.3	1.4CM+1.4Wm	0.96	0
N1	B228	240	TN-01 12X30	Middle	-23880.24	1.4CM+1.4Wm	0.41	25719.86
N1	B228	240	TN-01 12X30	End-J	-148982.46	1.4CM+1.4Wm	1.78	0
N1	B229	241	TN-01 12X30	End-I	-157376.63	1.4CM+1.4Wm	1.89	0
N1	B229	241	TN-01 12X30	Middle	-25321.05	1.4CM+1.4Wm	0.44	12508.18
N1	B229	241	TN-01 12X30	End-J	-38471.16	1.4CM+1.4Wm	0.65	0
N1	B230	242	TN-01 12X30	End-I	-201009.53	1.4CM+1.4Wm	2.41	0
N1	B230	242	TN-01 12X30	Middle	-150491.31	1.4CM+1.4Wm	1.76	24919.47
N1	B230	242	TN-01 12X30	End-J	-92742.36	1.4CM+1.4Wm	1.06	89215.54
N1	B231	243	TN-01 12X30	End-I	-83170.74	1.4CM+1.4Wm	0.97	0
N1	B231	243	TN-01 12X30	Middle	-25581.55	1.4CM+1.4Wm	0.42	29243.72
N1	B231	243	TN-01 12X30	End-J	-139222.12	1.4CM+1.4Wm	1.65	0
N1	B232	244	TN-01 12X30	End-I	-139573.07	1.4CM+1.4Wm	1.67	0
N1	B232	244	TN-01 12X30	Middle	-25186.29	1.4CM+1.4Wm	0.45	12424.48
N1	B232	244	TN-01 12X30	End-J	-56005.21	1.4CM+1.4Wm	0.92	0



Story	Label	UniqueName	Section	Location	(-) Moment kgf-cm	(-) Combo	As Top cm2	(+) Moment kgf-cm
N1	B233	245	TN-01 12X30	End-I	-45767.92	1.4CM+1.4Wm	0.72	0
N1	B233	245	TN-01 12X30	Middle	0	1.1CM+1.1Wa+1.1SY	0.06	50937.71
N1	B233	245	TN-01 12X30	End-J	-59039.34	1.4CM+1.4Wm	0.94	0
N1	B234	246	TN-01 12X30	End-I	-98909.01	1.4CM+1.4Wm	1.13	0
N1	B234	246	TN-01 12X30	Middle	-51177.54	1.4CM+1.4Wm	0.76	122222.75
N1	B234	246	TN-01 12X30	End-J	-92953.81	1.4CM+1.4Wm	1.06	0
N1	B235	247	TN-01 12X30	End-I	-67387.6	1.4CM+1.4Wm	0.96	0
N1	B235	247	TN-01 12X30	Middle	-24023.46	1.4CM+1.4Wm	0.41	25388.79
N1	B235	247	TN-01 12X30	End-J	-148616.12	1.4CM+1.4Wm	1.78	0
N1	B236	248	TN-01 12X30	End-I	-156910.94	1.4CM+1.4Wm	1.88	0
N1	B236	248	TN-01 12X30	Middle	-25327.02	1.4CM+1.4Wm	0.45	12510.33
N1	B236	248	TN-01 12X30	End-J	-38948.8	1.4CM+1.4Wm	0.65	0
N1	B237	249	TN-01 12X30	End-I	-29941.3	1.4CM+1.4Wm	0.48	0
N1	B237	249	TN-01 12X30	Middle	0	1.1CM+1.1Wa+1.1SY	0.08	48497.61
N1	B237	249	TN-01 12X30	End-J	-89444.49	1.4CM+1.4Wm	1.05	0
N1	B238	250	TN-01 12X30	End-I	-139238.06	1.4CM+1.4Wm	1.62	0
N1	B238	250	TN-01 12X30	Middle	0	0.9CM+1.1SX	0.05	140287.2
N1	B238	250	TN-01 12X30	End-J	-135740.63	1.4CM+1.4Wm	1.58	0
N1	B239	251	TN-01 12X30	End-I	-86100.93	1.4CM+1.4Wm	1.01	0
N1	B239	251	TN-01 12X30	Middle	-6791.17	1.4CM+1.4Wm	0.15	52245.68
N1	B239	251	TN-01 12X30	End-J	-184559.93	1.4CM+1.4Wm	2.23	0
N1	B240	252	TN-01 12X30	End-I	-204582.95	1.4CM+1.4Wm	2.47	0
N1	B240	252	TN-01 12X30	Middle	-25368.01	1.4CM+1.4Wm	0.41	12331.04
N1	B240	252	TN-01 12X30	End-J	0	1.1CM+1.1Wa+1.1SY	0.03	10204.5
N1	B241	253	TN-01 12X30	End-I	-13873.97	1.1CM+1.1Wa+1.1SY	0.38	0
N1	B241	253	TN-01 12X30	Middle	0	1.1CM+1.1Wa+1.1SY	0.15	46990.22
N1	B241	253	TN-01 12X30	End-J	-109730.94	1.4CM+1.4Wm	1.32	0
N1	B242	254	TN-01 12X30	End-I	-179766.57	1.4CM+1.4Wm	2.13	0
N1	B242	254	TN-01 12X30	Middle	0	1.1CM+1.1Wa+1.1SY	0.07	184686.44
N1	B242	254	TN-01 12X30	End-J	-191428.27	1.4CM+1.4Wm	2.29	0
N1	B243	255	TN-01 12X30	End-I	-76867.64	1.4CM+1.4Wm	0.96	0
N1	B243	255	TN-01 12X30	Middle	0	1.4CM+1.4Wm	0.03	65079.17
N1	B243	255	TN-01 12X30	End-J	-215205.78	1.4CM+1.4Wm	2.62	0
N1	B244	256	TN-01 12X30	End-I	-259483.95	1.4CM+1.4Wm	3.2	0
N1	B244	256	TN-01 12X30	Middle	-27115.51	1.4CM+1.4Wm	0.4	0
N1	B244	256	TN-01 12X30	End-J	0	0.9CM+1.1SX	0.01	60047.25
N1	B245	257	TN-01 12X30	End-I	-9981.28	1.1CM+1.1Wa+1.1SY	0.33	1896.3
N1	B245	257	TN-01 12X30	Middle	0	1.1CM+1.1Wa+1.1SY	0.15	46083.78
N1	B245	257	TN-01 12X30	End-J	-122486.05	1.4CM+1.4Wm	1.47	0
N1	B246	258	TN-01 12X30	End-I	-207648.88	1.4CM+1.4Wm	2.49	0
N1	B246	258	TN-01 12X30	Middle	0	0.9CM+1.1SX	0.07	216286.42
N1	B246	258	TN-01 12X30	End-J	-225990.85	1.4CM+1.4Wm	2.75	0
N1	B247	259	TN-01 12X30	End-I	-80751.16	1.4CM+1.4Wm	0.96	0
N1	B247	259	TN-01 12X30	Middle	0	1.1CM+1.1Wa+1.1SX	0.03	69895.1
N1	B247	259	TN-01 12X30	End-J	-221950.79	1.4CM+1.4Wm	2.7	0
N1	B248	260	TN-01 12X30	End-I	-267152.96	1.4CM+1.4Wm	3.31	0
N1	B248	260	TN-01 12X30	Middle	-27341.62	1.4CM+1.4Wm	0.4	0
N1	B248	260	TN-01 12X30	End-J	0	0.9CM+1.1SX	0.02	67264.03
N1	B249	261	TN-01 12X30	End-I	-8258.12	1.1CM+1.1Wa+1.1SY	0.29	2297.82
N1	B249	261	TN-01 12X30	Middle	0	1.1CM+1.1Wa+1.1SY	0.14	45746.75
N1	B249	261	TN-01 12X30	End-J	-128056.96	1.4CM+1.4Wm	1.52	0
N1	B250	262	TN-01 12X30	End-I	-210404.57	1.4CM+1.4Wm	2.53	0



Story	Label	UniqueName	Section	Location	(-) Moment kgf-cm	(-) Combo	As Top cm2	(+) Moment kgf-cm
N1	B250	262	TN-01 12X30	Middle	0	0.9CM+1.1SX	0.06	214901.73
N1	B250	262	TN-01 12X30	End-J	-205868.92	1.4CM+1.4Wm	2.47	0
N1	B251	263	TN-01 12X30	End-I	-125427.64	1.4CM+1.4Wm	1.48	0
N1	B251	263	TN-01 12X30	Middle	-2095.03	0.9CM+1.1SX	0.05	83474.42
N1	B251	263	TN-01 12X30	End-J	-211392.45	1.4CM+1.4Wm	2.58	0
N1	B252	264	TN-01 12X30	End-I	-232997.87	1.4CM+1.4Wm	2.85	0
N1	B252	264	TN-01 12X30	Middle	-26677.98	1.4CM+1.4Wm	0.43	0
N1	B252	264	TN-01 12X30	End-J	0	1.1CM+1.1Wa+1.1SY	0.07	34436.22
N1	B253	265	TN-01 12X30	End-I	-11922.99	1.1CM+1.1Wa+1.1SY	0.33	1232.68
N1	B253	265	TN-01 12X30	Middle	0	1.1CM+1.1Wa+1.1SY	0.13	46705.77
N1	B253	265	TN-01 12X30	End-J	-116634.37	1.4CM+1.4Wm	1.37	0
N1	B254	266	TN-01 12X30	End-I	-191730.96	1.4CM+1.4Wm	2.28	0
N1	B254	266	TN-01 12X30	Middle	0	0.9CM+1.1SX	0.06	201893.98
N1	B254	266	TN-01 12X30	End-J	-203004.9	1.4CM+1.4Wm	2.43	0
N1	B255	267	TN-01 12X30	End-I	-119549.51	1.4CM+1.4Wm	1.39	0
N1	B255	267	TN-01 12X30	Middle	-5774.27	0.9CM+1.1SX	0.1	72034.73
N1	B255	267	TN-01 12X30	End-J	-193499.61	1.4CM+1.4Wm	2.33	0
N1	B256	268	TN-01 12X30	End-I	-201083.79	1.4CM+1.4Wm	2.45	0
N1	B256	268	TN-01 12X30	Middle	-27763.99	1.4CM+1.4Wm	0.47	12950.27
N1	B256	268	TN-01 12X30	End-J	0	1.1CM+1.1Wa+1.1SY	0.08	18963
N1	B257	269	TN-01 12X30	End-I	-18955.82	1.1CM+1.1Wa+1.1SY	0.42	0
N1	B257	269	TN-01 12X30	Middle	0	1.1CM+1.1Wa+1.1SY	0.11	48319.55
N1	B257	269	TN-01 12X30	End-J	-95834.35	1.4CM+1.4Wm	1.12	0
N1	B258	270	TN-01 12X30	End-I	-147634.18	1.4CM+1.4Wm	1.72	0
N1	B258	270	TN-01 12X30	Middle	0	0.9CM+1.1SX	0.06	162995.18
N1	B258	270	TN-01 12X30	End-J	-171238.37	1.4CM+1.4Wm	2.02	0
N1	B259	271	TN-01 12X30	End-I	-109908.8	1.4CM+1.4Wm	1.27	0
N1	B259	271	TN-01 12X30	Middle	-5780.62	0.9CM+1.1SX	0.1	67301.33
N1	B259	271	TN-01 12X30	End-J	-187040.4	1.4CM+1.4Wm	2.24	0
N1	B260	272	TN-01 12X30	End-I	-187534.06	1.4CM+1.4Wm	2.26	0
N1	B260	272	TN-01 12X30	Middle	-29532.42	1.4CM+1.4Wm	0.49	12304.92
N1	B260	272	TN-01 12X30	End-J	-16736.47	1.4CM+1.4Wm	0.31	12882.68
N1	B261	273	TN-01 12X30	End-I	-37610.42	1.4CM+1.4Wm	0.57	0
N1	B261	273	TN-01 12X30	Middle	0	1.1CM+1.1Wa+1.1SY	0.08	50084.7
N1	B261	273	TN-01 12X30	End-J	-73779.28	1.4CM+1.4Wm	0.96	0
N1	B262	274	TN-01 12X30	End-I	-85355.17	1.4CM+1.4Wm	0.97	0
N1	B262	274	TN-01 12X30	Middle	-25340.03	1.4CM+1.4Wm	0.37	107053.05
N1	B262	274	TN-01 12X30	End-J	-121079.9	1.4CM+1.4Wm	1.4	0
N1	B264	276	TN-01 12X30	End-I	-89354.09	1.4CM+1.4Wm	1.02	0
N1	B264	276	TN-01 12X30	Middle	-2702.05	0.9CM+1.1SX	0.05	64444.17
N1	B264	276	TN-01 12X30	End-J	-191520.33	1.4CM+1.4Wm	2.29	0
N1	B265	277	TN-01 12X30	End-I	-194609.02	1.4CM+1.4Wm	2.33	0
N1	B265	277	TN-01 12X30	Middle	-31468.19	1.4CM+1.4Wm	0.49	11203.45
N1	B265	277	TN-01 12X30	End-J	-13533.04	1.4CM+1.4Wm	0.23	15364.94
N1	B266	278	TN-01 12X30	End-I	-20081.11	1.4CM+1.4Wm	0.3	0
N1	B266	278	TN-01 12X30	Middle	-47126.41	1.4CM+1.4Wm	0.7	54704.05
N1	B266	278	TN-01 12X30	End-J	-71236.96	1.4CM+1.4Wm	0.96	0
N1	B267	279	TN-01 12X30	End-I	-52256.23	1.4CM+1.4Wm	0.78	0
N1	B267	279	TN-01 12X30	Middle	-2409.02	1.1CM+1.1Wa+1.1SX	0.07	49189.14
N1	B267	279	TN-01 12X30	End-J	-193623.7	1.4CM+1.4Wm	2.32	0
N1	B268	280	TN-01 12X30	End-I	-212403.94	1.4CM+1.4Wm	2.56	0
N1	B268	280	TN-01 12X30	Middle	-33661.15	1.4CM+1.4Wm	0.5	9618.65



Story	Label	UniqueName	Section	Location	(-) Moment kgf-cm	(-) Combo	As Top cm2	(+) Moment kgf-cm
N1	B268	280	TN-01 12X30	End-J	0	1.1CM+1.1Wa+1.1SX	0.01	21002.01
N1	B269	281	TN-01 12X30	End-I	-18847.88	1.4CM+1.4Wm	0.28	0
N1	B269	281	TN-01 12X30	Middle	0	1.1CM+1.1Wa+1.1SX	0.07	28101.83
N1	B269	281	TN-01 12X30	End-J	-18473.21	1.4CM+1.4Wm	0.28	410.74
N1	B270	282	TN-01 12X30	End-I	-33990.13	1.4CM+1.4Wm	0.52	0
N1	B270	282	TN-01 12X30	Middle	-19399.5	1.4CM+1.4Wm	0.31	27206.82
N1	B270	282	TN-01 12X30	End-J	-176296.52	1.4CM+1.4Wm	2.1	0
N1	B271	283	TN-01 12X30	End-I	-211186.57	1.4CM+1.4Wm	2.54	0
N1	B271	283	TN-01 12X30	Middle	-35380.74	1.4CM+1.4Wm	0.52	8325.08
N1	B271	283	TN-01 12X30	End-J	-4780.6	1.4CM+1.4Wm	0.07	15399.7
N1	B272	284	TN-01 12X30	End-I	-33265.14	1.4CM+1.4Wm	0.49	0
N1	B272	284	TN-01 12X30	Middle	-55289.34	1.4CM+1.4Wm	0.83	0
N1	B272	284	TN-01 12X30	End-J	-142307.42	1.4CM+1.4Wm	1.66	0
N1	B273	285	TN-01 12X30	End-I	-161053.26	1.4CM+1.4Wm	1.89	0
N1	B273	285	TN-01 12X30	Middle	-32221.82	1.4CM+1.4Wm	0.48	10230.69
N1	B273	285	TN-01 12X30	End-J	-48596.08	1.4CM+1.4Wm	0.72	0
N1	B2	96	TA-01 30X40	End-I	0	1.1CM+1.1Wa+1.1SX	0.38	864757.58
N1	B2	96	TA-01 30X40	Middle	-3789.94	1.1CM+1.1Wa+1.1SX	0.43	523296.94
N1	B2	96	TA-01 30X40	End-J	-548456.35	1.4CM+1.4Wm	6.45	0
N1	B57	2	TA-01 30X40	End-I	-738055.58	1.4CM+1.4Wm	8.92	234041.92
N1	B57	2	TA-01 30X40	Middle	0	1.1CM+1.1Wa+1.1SX	0.31	419210.25
N1	B57	2	TA-01 30X40	End-J	-562411.22	1.4CM+1.4Wm	6.63	40805.11
N1	B59	135	TA-01 30X40	End-I	-548426.39	1.4CM+1.4Wm	6.45	0
N1	B59	135	TA-01 30X40	Middle	-8809.81	1.1CM+1.1Wa+1.1SX	0.53	509283.64
N1	B59	135	TA-01 30X40	End-J	0	1.1CM+1.1Wa+1.1SX	0.38	863352.58
N1	B15	58	TC-01	End-I	-114.69	0.9CM+1.1SX	0.02	2004.51
N1	B15	58	TC-01	Middle	-509.24	0.9CM+1.1SX	0.04	412.78
N1	B15	58	TC-01	End-J	-1266.01	0.9CM+1.1SX	0.07	18630.64
N1	B30	77	TC-01	End-I	-1263.63	0.9CM+1.1SX	0.07	18588.6
N1	B30	77	TC-01	Middle	-522.15	0.9CM+1.1SX	0.04	415.43
N1	B30	77	TC-01	End-J	-115.26	0.9CM+1.1SX	0.02	2064.67
N1	B120	33	TC-01	End-I	-12753.57	1.1CM+1.1Wa+1.1SY	0.32	16280.25
N1	B120	33	TC-01	Middle	0	0.9CM+1.1SX	0.11	36902.02
N1	B120	33	TC-01	End-J	-12646.17	1.1CM+1.1Wa+1.1SY	0.31	0
N1	B129	181	TC-01	End-I	-3367.71	1.4CM+1.4Wm	0.06	587.05
N1	B129	181	TC-01	Middle	-761.79	1.1CM+1.1Wa+1.1SY	0.02	378.77
N1	B129	181	TC-01	End-J	-1676.41	1.1CM+1.1Wa+1.1SY	0.04	1704.96
N1	B138	192	TC-01	End-I	-1685.55	1.1CM+1.1Wa+1.1SY	0.04	1688.05
N1	B138	192	TC-01	Middle	-767.84	1.1CM+1.1Wa+1.1SY	0.02	528.54
N1	B138	192	TC-01	End-J	-3420.27	1.4CM+1.4Wm	0.06	622.57
N1	B139	190	TC-01	End-I	-1173.09	1.1CM+1.1Wa+1.1SY	0.03	274.48
N1	B139	190	TC-01	Middle	-363.65	0.9CM+1.1SX	0.02	2555.68
N1	B139	190	TC-01	End-J	-1190.41	1.1CM+1.1Wa+1.1SY	0.03	278.09
N1	B7	7	TN-01 12X30	End-I	-332722.29	1.4CM+1.4Wm	4.28	0
N1	B7	7	TN-01 12X30	Middle	0			0
N1	B7	7	TN-01 12X30	End-J	-332022.77	1.4CM+1.4Wm	4.27	0
N1	B10	13	TN-01 12X30	End-I	-332022.77	1.4CM+1.4Wm	4.27	0
N1	B10	13	TN-01 12X30	Middle	-151469.21	1.4CM+1.4Wm	1.77	0
N1	B10	13	TN-01 12X30	End-J	-17667.51	1.4CM+1.4Wm	0.26	0
N1	B12	21	TN-01 12X30	End-I	-17667.51	1.4CM+1.4Wm	0.26	51852.37
N1	B12	21	TN-01 12X30	Middle	0	0.9CM+1.1SX	0.02	160358.96
N1	B12	21	TN-01 12X30	End-J	0	0.9CM+1.1SX	0.02	147655.47



Story	Label	UniqueName	Section	Location	(-) Moment kgf-cm	(-) Combo	As Top cm2	(+) Moment kgf-cm
N1	B13	22	TN-01 12X30	End-I	0	0.9CM+1.1SX	0.02	105380.02
N1	B13	22	TN-01 12X30	Middle	-34327.81	1.4CM+1.4Wm	0.51	26558.38
N1	B13	22	TN-01 12X30	End-J	-232795.39	1.4CM+1.4Wm	2.83	0
N1	B17	23	TN-01 12X30	End-I	-157561.25	1.4CM+1.4Wm	1.85	0
N1	B17	23	TN-01 12X30	Middle	-140830.21	1.4CM+1.4Wm	1.64	0
N1	B17	23	TN-01 12X30	End-J	-157511.29	1.4CM+1.4Wm	1.85	0
N1	B18	24	TN-01 12X30	End-I	-232515.05	1.4CM+1.4Wm	2.83	0
N1	B18	24	TN-01 12X30	Middle	-36518.49	1.4CM+1.4Wm	0.54	24883.65
N1	B18	24	TN-01 12X30	End-J	0	0.9CM+1.1SX	0.02	105415.63
N1	B19	25	TN-01 12X30	End-I	0	0.9CM+1.1SX	0.02	147348.9
N1	B19	25	TN-01 12X30	Middle	0	0.9CM+1.1SX	0.02	160362
N1	B19	25	TN-01 12X30	End-J	-18127.1	1.4CM+1.4Wm	0.27	53162.24
N1	B21	26	TN-01 12X30	End-I	-83039.51	1.4CM+1.4Wm	0.96	0
N1	B21	26	TN-01 12X30	Middle	-231507.27	1.4CM+1.4Wm	2.81	0
N1	B21	26	TN-01 12X30	End-J	-331911.68	1.4CM+1.4Wm	4.27	0
N1	B23	27	TN-01 12X30	End-I	-331911.68	1.4CM+1.4Wm	4.27	0
N1	B23	27	TN-01 12X30	Middle	0			0
N1	B23	27	TN-01 12X30	End-J	-332607.66	1.4CM+1.4Wm	4.28	0
N1	B24	28	TN-01 12X30	End-I	-377136.9	1.4CM+1.4Wm	4.96	0
N1	B24	28	TN-01 12X30	Middle	-202291.03	1.4CM+1.4Wm	2.42	0
N1	B24	28	TN-01 12X30	End-J	-92831.49	1.4CM+1.4Wm	1.06	0
N1	B29	29	TN-01 12X30	End-I	-92831.49	1.4CM+1.4Wm	1.06	23491.46
N1	B29	29	TN-01 12X30	Middle	0	0.9CM+1.1SX	0.01	174949.24
N1	B29	29	TN-01 12X30	End-J	0	0.9CM+1.1SX	0.01	160177.38
N1	B31	30	TN-01 12X30	End-I	0	0.9CM+1.1SX	0.01	114420.87
N1	B31	30	TN-01 12X30	Middle	-34475.86	1.4CM+1.4Wm	0.51	29483.42
N1	B31	30	TN-01 12X30	End-J	-233834.26	1.4CM+1.4Wm	2.85	0
N1	B46	35	TN-01 12X30	End-I	-180706.29	1.4CM+1.4Wm	2.14	0
N1	B46	35	TN-01 12X30	Middle	-135347.66	1.4CM+1.4Wm	1.57	22761.1
N1	B46	35	TN-01 12X30	End-J	-180886.62	1.4CM+1.4Wm	2.14	0
N1	B47	39	TN-01 12X30	End-I	-233795.73	1.4CM+1.4Wm	2.84	0
N1	B47	39	TN-01 12X30	Middle	-36763.08	1.4CM+1.4Wm	0.55	27709.05
N1	B47	39	TN-01 12X30	End-J	0	0.9CM+1.1SX	0.01	114456.75
N1	B48	42	TN-01 12X30	End-I	0	0.9CM+1.1SX	0.01	159878.04
N1	B48	42	TN-01 12X30	Middle	0	0.9CM+1.1SX	0.01	174856.59
N1	B48	42	TN-01 12X30	End-J	-93349.4	1.4CM+1.4Wm	1.06	25572.92
N1	B50	45	TN-01 12X30	End-I	-93349.4	1.4CM+1.4Wm	1.06	0
N1	B50	45	TN-01 12X30	Middle	-200227.88	1.4CM+1.4Wm	2.4	0
N1	B50	45	TN-01 12X30	End-J	-377562.15	1.4CM+1.4Wm	4.96	0
N1	B51	47	TN-01 12X30	End-I	-1904.98	1.4CM+1.4Wm	0.03	15638.6
N1	B51	47	TN-01 12X30	Middle	0	0.9CM+1.1SX	0.02	18562.14
N1	B51	47	TN-01 12X30	End-J	0	0.9CM+1.1SX	0.02	37733.25
N1	B53	49	TN-01 12X30	End-I	-44311.57	1.4CM+1.4Wm	0.66	0
N1	B53	49	TN-01 12X30	Middle	-1890.01	0.9CM+1.1SX	0.05	19960.24
N1	B53	49	TN-01 12X30	End-J	-319.13	0.9CM+1.1SX	0.02	31142.57
N1	B54	50	TN-01 12X30	End-I	-569.87	0.9CM+1.1SX	0.03	39756.17
N1	B54	50	TN-01 12X30	Middle	-17272.25	1.4CM+1.4Wm	0.25	42165.46
N1	B54	50	TN-01 12X30	End-J	-102797.62	1.4CM+1.4Wm	1.18	0
N1	B56	51	TN-01 12X30	End-I	-108660.35	1.4CM+1.4Wm	1.25	0
N1	B56	51	TN-01 12X30	Middle	-25212.68	1.4CM+1.4Wm	0.37	13439.85
N1	B56	51	TN-01 12X30	End-J	0	0.9CM+1.1SX	0.02	54226.98
N1	B60	53	TN-01 12X30	End-I	0	0.9CM+1.1SX	0.02	72742.84





Story	Label	UniqueName	Section	Location	(-) Moment kgf-cm	(-) Combo	As Top cm2	(+) Moment kgf-cm
N1	B60	53	TN-01 12X30	Middle	0	0.9CM+1.1SX	0.02	85136.22
N1	B60	53	TN-01 12X30	End-J	0	0.9CM+1.1SX	0.02	59383.34
N1	B63	55	TN-01 12X30	End-I	0	0.9CM+1.1SX	0.02	54430.4
N1	B63	55	TN-01 12X30	Middle	-24144.7	1.4CM+1.4Wm	0.36	14353.21
N1	B63	55	TN-01 12X30	End-J	-108700.11	1.4CM+1.4Wm	1.25	0
N1	B67	56	TN-01 12X30	End-I	-102859.25	1.4CM+1.4Wm	1.18	0
N1	B67	56	TN-01 12X30	Middle	-17923.42	1.4CM+1.4Wm	0.26	42047.93
N1	B67	56	TN-01 12X30	End-J	-540.09	0.9CM+1.1SX	0.03	39819.11
N1	B68	59	TN-01 12X30	End-I	-273.05	0.9CM+1.1SX	0.02	31088.57
N1	B68	59	TN-01 12X30	Middle	-16846.83	1.4CM+1.4Wm	0.25	9303.28
N1	B68	59	TN-01 12X30	End-J	-44015.39	1.4CM+1.4Wm	0.66	0
N1	B69	62	TN-01 12X30	End-I	0	0.9CM+1.1SX	0.02	37711.25
N1	B69	62	TN-01 12X30	Middle	0	0.9CM+1.1SX	0.02	18880.72
N1	B69	62	TN-01 12X30	End-J	0	0.9CM+1.1SX	0.02	15742.15
N1	B3	102	TA-01 30X40	End-I	-563428.9	1.4CM+1.4Wm	6.64	152590.37
N1	B3	102	TA-01 30X40	Middle	0	1.1CM+1.1Wa+1.1SX	0.31	456538.07
N1	B3	102	TA-01 30X40	End-J	-738468.2	1.4CM+1.4Wm	8.93	203770.14
N1	B4	138	TA-01 30X40	End-I	-822532.77	1.4CM+1.4Wm	10.08	386401.26
N1	B4	138	TA-01 30X40	Middle	0	0.9CM+1.1SX	0.03	789433.35
N1	B4	138	TA-01 30X40	End-J	-823344.94	1.4CM+1.4Wm	10.09	334957.5
N1	B1	1	TR-01 30X60	End-I	-160582.24	0.9CM+1.1SX	5.4	0
N1	B1	1	TR-01 30X60	Middle	-123764.22	0.9CM+1.1SX	5.4	0
N1	B1	1	TR-01 30X60	End-J	-108694.32	0.9CM+1.1SX	5.4	0
N1	B5	3	TR-01 30X60	End-I	-112579.65	0.9CM+1.1SX	5.4	0
N1	B5	3	TR-01 30X60	Middle	-76318.27	0.9CM+1.1SX	5.4	0
N1	B5	3	TR-01 30X60	End-J	-58472.63	0.9CM+1.1SX	5.4	0
N1	B6	4	TR-01 30X60	End-I	-38693.33	0.9CM+1.1SX	5.4	0
N1	B6	4	TR-01 30X60	Middle	-994.32	0.9CM+1.1SX	5.4	1537.76
N1	B6	4	TR-01 30X60	End-J	0	0.9CM+1.1SX	5.4	3648.13
N1	B8	5	TR-01 30X60	End-I	0	0.9CM+1.1SX	5.4	32318.51
N1	B8	5	TR-01 30X60	Middle	0	0.9CM+1.1SX	5.4	79947.64
N1	B8	5	TR-01 30X60	End-J	0	0.9CM+1.1SX	5.4	116133.62
N1	B14	6	TR-01 30X60	End-I	0	0.9CM+1.1SX	5.4	138291.52
N1	B14	6	TR-01 30X60	Middle	0	0.9CM+1.1SX	5.4	138365.82
N1	B14	6	TR-01 30X60	End-J	0	0.9CM+1.1SX	5.4	131161.47
N1	B16	12	TR-01 30X60	End-I	0	0.9CM+1.1SX	5.4	100141.42
N1	B16	12	TR-01 30X60	Middle	0	0.9CM+1.1SX	5.4	59231.13
N1	B16	12	TR-01 30X60	End-J	0	0.9CM+1.1SX	5.4	12004.16
N1	B32	14	TR-01 30X60	End-I	0	0.9CM+1.1SX	5.4	5990.6
N1	B32	14	TR-01 30X60	Middle	-22631.77	0.9CM+1.1SX	5.4	0
N1	B32	14	TR-01 30X60	End-J	-62858.99	0.9CM+1.1SX	5.4	0
N1	B33	15	TR-01 30X60	End-I	-75942.25	0.9CM+1.1SX	5.4	0
N1	B33	15	TR-01 30X60	Middle	-112162.01	0.9CM+1.1SX	5.4	0
N1	B33	15	TR-01 30X60	End-J	-135656.73	0.9CM+1.1SX	5.4	0
N1	B34	46	TR-01 30X60	End-I	-108802.55	0.9CM+1.1SX	5.4	0
N1	B34	46	TR-01 30X60	Middle	-137707.56	0.9CM+1.1SX	5.4	0
N1	B34	46	TR-01 30X60	End-J	-188020.09	0.9CM+1.1SX	5.4	0
N1	B49	48	TR-01 30X60	End-I	-43019.49	0.9CM+1.1SX	5.4	32712.26
N1	B49	48	TR-01 30X60	Middle	0	0.9CM+1.1SX	5.4	36032.85
N1	B49	48	TR-01 30X60	End-J	-76828.12	0.9CM+1.1SX	5.4	0
N1	B70	65	TR-01 30X60	End-I	-64642.67	0.9CM+1.1SX	5.4	0
N1	B70	65	TR-01 30X60	Middle	0	0.9CM+1.1SX	5.4	18813.07





Story	Label	UniqueName	Section	Location	(-) Moment kgf-cm	(-) Combo	As Top cm2	(+) Moment kgf-cm
N1	B70	65	TR-01 30X60	End-J	-29501.19	0.9CM+1.1SX	5.4	1212.93
N1	B71	68	TR-01 30X60	End-I	-31507.03	0.9CM+1.1SX	5.4	0
N1	B71	68	TR-01 30X60	Middle	0	0.9CM+1.1SX	5.4	15121.28
N1	B71	68	TR-01 30X60	End-J	-10161.59	0.9CM+1.1SX	5.4	0
N1	B72	71	TR-01 30X60	End-I	-13615.14	0.9CM+1.1SX	5.4	0
N1	B72	71	TR-01 30X60	Middle	-24576.39	0.9CM+1.1SX	5.4	0
N1	B72	71	TR-01 30X60	End-J	-37615.93	0.9CM+1.1SX	5.4	0
N1	B73	72	TR-01 30X60	End-I	-8915.93	0.9CM+1.1SX	5.4	2181.08
N1	B73	72	TR-01 30X60	Middle	0	0.9CM+1.1SX	5.4	52489.07
N1	B73	72	TR-01 30X60	End-J	0	0.9CM+1.1SX	5.4	74089.78
N1	B74	73	TR-01 30X60	End-I	0	0.9CM+1.1SX	5.4	111242.96
N1	B74	73	TR-01 30X60	Middle	-299969.84	0.9CM+1.1SX	5.4	0
N1	B74	73	TR-01 30X60	End-J	-2085157.57	1.4CM+1.4Wm	10.9	0
N1	B75	75	TR-01 30X60	End-I	-1968193.81	1.4CM+1.4Wm	10.24	0
N1	B75	75	TR-01 30X60	Middle	-438554.91	0.9CM+1.1SX	5.4	0
N1	B75	75	TR-01 30X60	End-J	-167528.93	0.9CM+1.1SX	5.4	0
N1	B76	76	TR-01 30X60	End-I	-42590.65	0.9CM+1.1SX	5.4	32362.69
N1	B76	76	TR-01 30X60	Middle	0	0.9CM+1.1SX	5.4	36016.34
N1	B76	76	TR-01 30X60	End-J	-76511.62	0.9CM+1.1SX	5.4	0
N1	B79	79	TR-01 30X60	End-I	-64390.72	0.9CM+1.1SX	5.4	0
N1	B79	79	TR-01 30X60	Middle	0	0.9CM+1.1SX	5.4	18662.8
N1	B79	79	TR-01 30X60	End-J	-29368.04	0.9CM+1.1SX	5.4	1120.02
N1	B80	81	TR-01 30X60	End-I	-31355.04	0.9CM+1.1SX	5.4	0
N1	B80	81	TR-01 30X60	Middle	0	0.9CM+1.1SX	5.4	15133.23
N1	B80	81	TR-01 30X60	End-J	-10136.23	0.9CM+1.1SX	5.4	0
N1	B81	82	TR-01 30X60	End-I	-13587	0.9CM+1.1SX	5.4	0
N1	B81	82	TR-01 30X60	Middle	-24545.35	0.9CM+1.1SX	5.4	0
N1	B81	82	TR-01 30X60	End-J	-37582	0.9CM+1.1SX	5.4	0
N1	B82	83	TR-01 30X60	End-I	-2447.96	0.9CM+1.1SX	5.4	7158.1
N1	B82	83	TR-01 30X60	Middle	0	0.9CM+1.1SX	5.4	52544.63
N1	B82	83	TR-01 30X60	End-J	0	0.9CM+1.1SX	5.4	74171.46
N1	B83	84	TR-01 30X60	End-I	0	0.9CM+1.1SX	5.4	111452.06
N1	B83	84	TR-01 30X60	Middle	-316219.57	0.9CM+1.1SX	5.4	0
N1	B83	84	TR-01 30X60	End-J	-2085856.22	1.4CM+1.4Wm	10.9	0
N1	B84	85	TR-01 30X60	End-I	-1968348.01	1.4CM+1.4Wm	10.24	0
N1	B84	85	TR-01 30X60	Middle	-438430.94	0.9CM+1.1SX	5.4	0
N1	B84	85	TR-01 30X60	End-J	-167639.37	0.9CM+1.1SX	5.4	0
N1	B77	74	TC-01	End-I	0	0.9CM+1.1SX	1.2	9458.39
N1	B77	74	TC-01	Middle	0	0.9CM+1.1SX	1.2	6379.32
N1	B77	74	TC-01	End-J	0	0.9CM+1.1SX	1.2	6235.47
N1	B78	86	TC-01	End-I	0	0.9CM+1.1SX	1.2	1307.68
N1	B78	86	TC-01	Middle	-432.25	0.9CM+1.1SX	1.2	536.88
N1	B78	86	TC-01	End-J	-701.15	0.9CM+1.1SX	1.2	0
N1	B85	87	TC-01	End-I	-182.83	0.9CM+1.1SX	1.2	288.31
N1	B85	87	TC-01	Middle	-607.42	0.9CM+1.1SX	1.2	0
N1	B85	87	TC-01	End-J	0	0.9CM+1.1SX	1.2	933.05
N1	B86	88	TC-01	End-I	0	0.9CM+1.1SX	1.2	563.54
N1	B86	88	TC-01	Middle	-809.85	0.9CM+1.1SX	1.2	0
N1	B86	88	TC-01	End-J	-1503.23	0.9CM+1.1SX	1.2	0
N1	B87	89	TC-01	End-I	-553.57	0.9CM+1.1SX	1.2	0
N1	B87	89	TC-01	Middle	0	0.9CM+1.1SX	1.2	668.78
N1	B87	89	TC-01	End-J	0	0.9CM+1.1SX	1.2	1150.22



Story	Label	UniqueName	Section	Location	(-) Moment kgf-cm	(-) Combo	As Top cm2	(+) Moment kgf-cm
N1	B88	90	TC-01	End-I	-59.66	0.9CM+1.1SX	1.2	123.85
N1	B88	90	TC-01	Middle	-327.51	0.9CM+1.1SX	1.2	0
N1	B88	90	TC-01	End-J	-356.98	0.9CM+1.1SX	1.2	0
N1	B89	91	TC-01	End-I	-425.91	0.9CM+1.1SX	1.2	517.98
N1	B89	91	TC-01	Middle	-1296.25	0.9CM+1.1SX	1.2	0
N1	B89	91	TC-01	End-J	0	0.9CM+1.1SX	1.2	3018.11
N1	B90	92	TC-01	End-I	0	0.9CM+1.1SX	1.2	6182.36
N1	B90	92	TC-01	Middle	0	0.9CM+1.1SX	1.2	8886.15
N1	B90	92	TC-01	End-J	0	0.9CM+1.1SX	1.2	9400.46
N1	B91	94	TA-01 30X40	End-I	-17094.46	0.9CM+1.1SX	3.2	0
N1	B91	94	TA-01 30X40	Middle	-3435.52	0.9CM+1.1SX	3.2	0
N1	B91	94	TA-01 30X40	End-J	-477250.52	1.4CM+1.4Wm	5.62	0
N1	B92	100	TA-01 30X40	End-I	-573496.3	1.4CM+1.4Wm	6.77	0
N1	B92	100	TA-01 30X40	Middle	-64761.06	0.9CM+1.1SX	3.2	0
N1	B92	100	TA-01 30X40	End-J	0	0.9CM+1.1SX	0	43263.08
N1	B93	104	TA-01 30X40	End-I	-33438.57	0.9CM+1.1SX	3.2	0
N1	B93	104	TA-01 30X40	Middle	0	0.9CM+1.1SX	3.2	3710.56
N1	B93	104	TA-01 30X40	End-J	-592033.37	1.4CM+1.4Wm	7.06	0
N1	B94	110	TA-01 30X40	End-I	-743884.67	1.4CM+1.4Wm	9	0
N1	B94	110	TA-01 30X40	Middle	-57044.77	0.9CM+1.1SX	3.2	0
N1	B94	110	TA-01 30X40	End-J	0	0.9CM+1.1SX	3.2	359093.72
N1	B95	112	TA-01 30X40	End-I	-33318.84	0.9CM+1.1SX	3.2	0
N1	B95	112	TA-01 30X40	Middle	0	0.9CM+1.1SX	3.2	3791.51
N1	B95	112	TA-01 30X40	End-J	-591947.34	1.4CM+1.4Wm	7.06	0
N1	B96	114	TA-01 30X40	End-I	-743793.76	1.4CM+1.4Wm	9	0
N1	B96	114	TA-01 30X40	Middle	-57048.98	0.9CM+1.1SX	3.2	0
N1	B96	114	TA-01 30X40	End-J	0	0.9CM+1.1SX	3.2	359059.18
N1	B97	116	TA-01 30X40	End-I	-17174.8	0.9CM+1.1SX	3.2	0
N1	B97	116	TA-01 30X40	Middle	-3316.85	0.9CM+1.1SX	3.2	0
N1	B97	116	TA-01 30X40	End-J	-477084.37	1.4CM+1.4Wm	5.61	0
N1	B98	118	TA-01 30X40	End-I	-572958.56	1.4CM+1.4Wm	6.76	0
N1	B98	118	TA-01 30X40	Middle	-64764.01	0.9CM+1.1SX	3.2	0
N1	B98	118	TA-01 30X40	End-J	0	0.9CM+1.1SX	0	43195.1
N1	C59	93	KL-01	End-I	-1565.5	1.1CM+1.1Wa+1.1SX	0.02	5181.22
N1	C59	93	KL-01	Middle	-2810.19	1.1CM+1.1Wa+1.1SX	0.04	1096.31
N1	C59	93	KL-01	End-J	-2602.59	1.1CM+1.1Wa+1.1SY	0.04	2080.32
N1	C61	95	KL-01	End-I	0	0.9CM+1.1SX	0	2974.46
N1	C61	95	KL-01	Middle	-1413.63	1.1CM+1.1Wa+1.1SY	0.07	746.99
N1	C61	95	KL-01	End-J	-3892.11	1.4CM+1.4Wm	0.11	0
N1	C63	97	KT-01	End-I	-7743.2	1.1CM+1.1Wa+1.1SY	0.15	6336.74
N1	C63	97	KT-01	Middle	-8618.09	1.1CM+1.1Wa+1.1SY	0.14	8068.47
N1	C63	97	KT-01	End-J	-14618.89	1.4CM+1.4Wm	0.24	7142.23
N1	C71	111	KL-01	End-I	-5213.52	1.1CM+1.1Wa+1.1SX	0.08	1598.38
N1	C71	111	KL-01	Middle	-1109.47	0.9CM+1.1SX	0.03	2820.99
N1	C71	111	KL-01	End-J	-2098.58	1.1CM+1.1Wa+1.1SX	0.03	2613.06
N1	C73	113	KL-01	End-I	-2971.58	1.4CM+1.4Wm	0.04	0
N1	C73	113	KL-01	Middle	-741.47	1.1CM+1.1Wa+1.1SY	0.05	1414.56
N1	C73	113	KL-01	End-J	0	1.4CM+1.4Wm	0.04	3790.06
N1	C75	115	KT-01	End-I	-7753.13	1.1CM+1.1Wa+1.1SY	0.15	6352.13
N1	C75	115	KT-01	Middle	-8627.33	1.1CM+1.1Wa+1.1SY	0.14	8079.75
N1	C75	115	KT-01	End-J	-14680.11	1.4CM+1.4Wm	0.24	7151.73



#### 4.1.1 FLEXIÓN EN VIGAS (1/2)

(+) Combo	As Bot cm <sup>2</sup>
1.1CM+1.1Wa+1.1SY	0.04
1.4CM+1.4Wm	0.03
1.1CM+1.1Wa+1.1SY	0.07
0.9CM+1.1SX	0.07
0.9CM+1.1SX	0.13
1.1CM+1.1Wa+1.1SY	0.29
1.1CM+1.1Wa+1.1SX	0.04
1.4CM+1.4Wm	0.03
1.1CM+1.1Wa+1.1SY	0.08
0.9CM+1.1SX	0.07
0.9CM+1.1SX	0.14
1.1CM+1.1Wa+1.1SY	0.29
1.1CM+1.1Wa+1.1SY	0.37
0.9CM+1.1SX	0.21
1.1CM+1.1Wa+1.1SY	0.06
1.1CM+1.1Wa+1.1SY	0.44
1.4CM+1.4Wm	0.19
1.1CM+1.1Wa+1.1SY	0.26
1.4CM+1.4Wm	0.19
1.4CM+1.4Wm	0.18
1.1CM+1.1Wa+1.1SY	0.14
1.4CM+1.4Wm	6.31
1.4CM+1.4Wm	5.27
1.4CM+1.4Wm	5.63
1.1CM+1.1Wa+1.1SY	0.16
1.1CM+1.1Wa+1.1SY	0.29
1.1CM+1.1Wa+1.1SY	0.29
1.1CM+1.1Wa+1.1SY	0.37
0.9CM+1.1SX	0.21
1.1CM+1.1Wa+1.1SY	0.06
1.1CM+1.1Wa+1.1SY	0.43
1.4CM+1.4Wm	0.19
1.1CM+1.1Wa+1.1SY	0.27
1.4CM+1.4Wm	0.2
1.4CM+1.4Wm	0.18
1.4CM+1.4Wm	0.14
1.4CM+1.4Wm	6.34
1.4CM+1.4Wm	5.26
1.4CM+1.4Wm	5.67
1.1CM+1.1Wa+1.1SY	0.16
1.1CM+1.1Wa+1.1SY	0.29
1.1CM+1.1Wa+1.1SY	0.29
1.1CM+1.1Wa+1.1SY	0.3
1.4CM+1.4Wm	1
1.1CM+1.1Wa+1.1SY	0.29
1.1CM+1.1Wa+1.1SY	0.3
1.4CM+1.4Wm	1
1.1CM+1.1Wa+1.1SY	0.29
1.1CM+1.1Wa+1.1SY	0.22
1.1CM+1.1Wa+1.1SY	0.23
1.1CM+1.1Wa+1.1SY	0.23
1.1CM+1.1Wa+1.1SY	0.23



(+) Combo	As Bot cm <sup>2</sup>
1.1CM+1.1Wa+1.1SY	0.23
1.1CM+1.1Wa+1.1SY	0.23
1.1CM+1.1Wa+1.1SX	0.05
1.1CM+1.1Wa+1.1SX	0.06
1.1CM+1.1Wa+1.1SX	0.05
1.1CM+1.1Wa+1.1SY	0.01
1.4CM+1.4Wm	0.05
1.4CM+1.4Wm	0.07
1.1CM+1.1Wa+1.1SY	0.05
1.1CM+1.1Wa+1.1SY	0.04
1.1CM+1.1Wa+1.1SY	0.06
1.1CM+1.1Wa+1.1SY	0.06
1.1CM+1.1Wa+1.1SY	0.1
1.1CM+1.1Wa+1.1SY	0.16
1.1CM+1.1Wa+1.1SX	0.05
1.1CM+1.1Wa+1.1SX	0.06
1.1CM+1.1Wa+1.1SX	0.05
1.4CM+1.4Wm	0.02
1.4CM+1.4Wm	0.05
1.4CM+1.4Wm	0.07
1.1CM+1.1Wa+1.1SY	0.05
1.1CM+1.1Wa+1.1SY	0.04
1.1CM+1.1Wa+1.1SY	0.06
1.1CM+1.1Wa+1.1SY	0.06
1.1CM+1.1Wa+1.1SY	0.11
1.1CM+1.1Wa+1.1SY	0.16
1.1CM+1.1Wa+1.1SY	0.07
1.4CM+1.4Wm	0.76
1.1CM+1.1Wa+1.1SY	0.08
0.9CM+1.1SX	0.07
1.4CM+1.4Wm	1.22
0.9CM+1.1SX	0.06
1.1CM+1.1Wa+1.1SX	0.02
1.4CM+1.4Wm	0.96
1.1CM+1.1Wa+1.1SX	0.03
1.1CM+1.1Wa+1.1SY	0.04
1.4CM+1.4Wm	0.19
1.4CM+1.4Wm	0.26
1.1CM+1.1Wa+1.1SY	0.11
1.4CM+1.4Wm	0.75
1.1CM+1.1Wa+1.1SY	0.11
0.9CM+1.1SX	0.06
1.4CM+1.4Wm	1.91
0.9CM+1.1SX	0.06
1.1CM+1.1Wa+1.1SX	0.02
1.4CM+1.4Wm	0.96
1.1CM+1.1Wa+1.1SX	0.03
1.1CM+1.1Wa+1.1SY	0.07
1.4CM+1.4Wm	0.24
1.4CM+1.4Wm	0.25
0.9CM+1.1SX	0.13
1.4CM+1.4Wm	0.73
1.1CM+1.1Wa+1.1SY	0.12



(+) Combo	As Bot cm <sup>2</sup>
0.9CM+1.1SX	0.05
1.4CM+1.4Wm	2.41
0.9CM+1.1SX	0.06
1.1CM+1.1Wa+1.1SX	0.02
1.4CM+1.4Wm	0.96
1.4CM+1.4Wm	0.03
1.1CM+1.1Wa+1.1SY	0.07
1.4CM+1.4Wm	0.26
1.4CM+1.4Wm	0.35
0.9CM+1.1SX	0.15
1.4CM+1.4Wm	0.73
1.1CM+1.1Wa+1.1SY	0.13
0.9CM+1.1SX	0.05
1.4CM+1.4Wm	2.59
0.9CM+1.1SX	0.04
1.1CM+1.1Wa+1.1SY	0.05
1.4CM+1.4Wm	0.99
1.1CM+1.1Wa+1.1SY	0.05
1.1CM+1.1Wa+1.1SY	0.05
1.1CM+1.1Wa+1.1SY	0.05
1.4CM+1.4Wm	0.55
0.9CM+1.1SX	0.16
1.4CM+1.4Wm	0.75
1.1CM+1.1Wa+1.1SY	0.15
0.9CM+1.1SX	0.07
1.4CM+1.4Wm	2.61
1.1CM+1.1Wa+1.1SY	0.07
1.1CM+1.1Wa+1.1SX	0.01
1.4CM+1.4Wm	0.96
1.1CM+1.1Wa+1.1SX	0.03
0.9CM+1.1SX	0.01
0.9CM+1.1SX	0.01
1.4CM+1.4Wm	0.96
1.1CM+1.1Wa+1.1SY	0.14
1.4CM+1.4Wm	0.77
1.1CM+1.1Wa+1.1SY	0.15
0.9CM+1.1SX	0.07
1.4CM+1.4Wm	2.2
1.1CM+1.1Wa+1.1SY	0.07
1.4CM+1.4Wm	0.02
1.4CM+1.4Wm	0.96
1.4CM+1.4Wm	0.03
0.9CM+1.1SX	0.001674
0.9CM+1.1SX	0.002438
1.4CM+1.4Wm	0.91
1.1CM+1.1Wa+1.1SY	0.08
1.4CM+1.4Wm	0.76
1.1CM+1.1Wa+1.1SY	0.09
0.9CM+1.1SX	0.04
1.4CM+1.4Wm	1.64
0.9CM+1.1SX	0.06
1.1CM+1.1Wa+1.1SY	0.05
1.4CM+1.4Wm	0.84



(+) Combo	As Bot cm <sup>2</sup>
1.1CM+1.1Wa+1.1SY	0.06
1.1CM+1.1Wa+1.1SY	0.03
1.4CM+1.4Wm	0.21
1.4CM+1.4Wm	0.2
0.9CM+1.1SX	0.06
1.4CM+1.4Wm	0.81
1.1CM+1.1Wa+1.1SY	0.08
1.1CM+1.1Wa+1.1SX	0.02
1.4CM+1.4Wm	0.73
1.1CM+1.1Wa+1.1SX	0.03
0.9CM+1.1SX	0.002705
1.4CM+1.4Wm	0.14
1.4CM+1.4Wm	0.31
1.1CM+1.1Wa+1.1SX	0.07
1.4CM+1.4Wm	0.4
0.9CM+1.1SX	0.08
1.1CM+1.1Wa+1.1SX	0.06
1.4CM+1.4Wm	0.41
1.1CM+1.1Wa+1.1SX	0.05
0.9CM+1.1SX	0
1.4CM+1.4Wm	0.12
1.4CM+1.4Wm	0.22
1.1CM+1.1Wa+1.1SX	0.05
1.1CM+1.1Wa+1.1SX	0.05
1.1CM+1.1Wa+1.1SX	0.06
1.1CM+1.1Wa+1.1SX	0.04
1.4CM+1.4Wm	0.15
1.1CM+1.1Wa+1.1SX	0.04
1.1CM+1.1Wa+1.1SY	0.06
1.4CM+1.4Wm	0.8
1.1CM+1.1Wa+1.1SY	0.06
1.1CM+1.1Wa+1.1SY	0.04
1.4CM+1.4Wm	1.41
0.9CM+1.1SX	0.05
1.1CM+1.1Wa+1.1SY	0.11
1.4CM+1.4Wm	0.43
1.1CM+1.1Wa+1.1SY	0.12
1.1CM+1.1Wa+1.1SY	0.09
1.4CM+1.4Wm	0.26
1.1CM+1.1Wa+1.1SY	0.09
0.9CM+1.1SX	0.02
1.4CM+1.4Wm	0.37
1.4CM+1.4Wm	1.01
1.1CM+1.1Wa+1.1SY	0.06
1.4CM+1.4Wm	0.48
1.1CM+1.1Wa+1.1SY	0.08
1.1CM+1.1Wa+1.1SY	0.09
1.4CM+1.4Wm	0.26
1.1CM+1.1Wa+1.1SY	0.1
1.1CM+1.1Wa+1.1SY	0.06
1.4CM+1.4Wm	0.81
1.1CM+1.1Wa+1.1SY	0.07
1.1CM+1.1Wa+1.1SY	0.04





(+) Combo	As Bot cm <sup>2</sup>
1.4CM+1.4Wm	1.41
0.9CM+1.1SX	0.05
1.1CM+1.1Wa+1.1SY	0.11
1.4CM+1.4Wm	0.42
1.1CM+1.1Wa+1.1SY	0.12
1.1CM+1.1Wa+1.1SY	0.09
1.4CM+1.4Wm	0.26
1.1CM+1.1Wa+1.1SY	0.09
1.1CM+1.1Wa+1.1SY	0.08
1.4CM+1.4Wm	0.76
1.1CM+1.1Wa+1.1SY	0.09
0.9CM+1.1SX	0.04
1.4CM+1.4Wm	1.63
0.9CM+1.1SX	0.06
1.1CM+1.1Wa+1.1SY	0.05
1.4CM+1.4Wm	0.83
1.1CM+1.1Wa+1.1SY	0.06
1.1CM+1.1Wa+1.1SY	0.03
1.4CM+1.4Wm	0.22
1.4CM+1.4Wm	0.19
1.1CM+1.1Wa+1.1SY	0.14
1.4CM+1.4Wm	0.77
1.1CM+1.1Wa+1.1SY	0.15
0.9CM+1.1SX	0.07
1.4CM+1.4Wm	2.19
1.1CM+1.1Wa+1.1SY	0.07
1.1CM+1.1Wa+1.1SX	0.02
1.4CM+1.4Wm	0.96
1.4CM+1.4Wm	0.03
0.9CM+1.1SX	0.003843
0.9CM+1.1SX	0.004606
1.4CM+1.4Wm	0.9
0.9CM+1.1SX	0.16
1.4CM+1.4Wm	0.75
1.1CM+1.1Wa+1.1SY	0.15
0.9CM+1.1SX	0.07
1.4CM+1.4Wm	2.61
1.1CM+1.1Wa+1.1SY	0.08
1.1CM+1.1Wa+1.1SX	0.02
1.4CM+1.4Wm	0.96
1.1CM+1.1Wa+1.1SX	0.03
0.9CM+1.1SX	0.02
0.9CM+1.1SX	0.02
1.4CM+1.4Wm	0.96
0.9CM+1.1SX	0.16
1.4CM+1.4Wm	0.73
1.1CM+1.1Wa+1.1SY	0.14
0.9CM+1.1SX	0.06
1.4CM+1.4Wm	2.59
0.9CM+1.1SX	0.06
1.4CM+1.4Wm	0.04
1.4CM+1.4Wm	0.99
1.4CM+1.4Wm	0.05



(+) Combo	As Bot cm <sup>2</sup>
1.1CM+1.1Wa+1.1SY	0.06
1.1CM+1.1Wa+1.1SY	0.06
1.4CM+1.4Wm	0.55
0.9CM+1.1SX	0.14
1.4CM+1.4Wm	0.73
1.1CM+1.1Wa+1.1SY	0.13
0.9CM+1.1SX	0.06
1.4CM+1.4Wm	2.42
0.9CM+1.1SX	0.06
1.1CM+1.1Wa+1.1SX	0.02
1.4CM+1.4Wm	0.96
1.4CM+1.4Wm	0.03
1.1CM+1.1Wa+1.1SY	0.08
1.4CM+1.4Wm	0.25
1.4CM+1.4Wm	0.35
1.1CM+1.1Wa+1.1SY	0.11
1.4CM+1.4Wm	0.75
1.1CM+1.1Wa+1.1SY	0.12
0.9CM+1.1SX	0.06
1.4CM+1.4Wm	1.92
0.9CM+1.1SX	0.06
1.1CM+1.1Wa+1.1SX	0.02
1.4CM+1.4Wm	0.96
1.1CM+1.1Wa+1.1SX	0.03
1.1CM+1.1Wa+1.1SY	0.07
1.4CM+1.4Wm	0.24
1.4CM+1.4Wm	0.25
1.1CM+1.1Wa+1.1SY	0.07
1.4CM+1.4Wm	0.76
1.1CM+1.1Wa+1.1SY	0.08
0.9CM+1.1SX	0.07
1.4CM+1.4Wm	1.23
0.9CM+1.1SX	0.06
1.1CM+1.1Wa+1.1SX	0.02
1.4CM+1.4Wm	0.96
1.1CM+1.1Wa+1.1SX	0.03
1.1CM+1.1Wa+1.1SY	0.05
1.4CM+1.4Wm	0.19
1.4CM+1.4Wm	0.26
0.9CM+1.1SX	0.06
1.4CM+1.4Wm	0.82
1.1CM+1.1Wa+1.1SY	0.08
1.1CM+1.1Wa+1.1SX	0.02
1.4CM+1.4Wm	0.73
1.1CM+1.1Wa+1.1SX	0.03
0.9CM+1.1SX	0.003194
1.4CM+1.4Wm	0.14
1.4CM+1.4Wm	0.31
1.1CM+1.1Wa+1.1SX	0.07
1.4CM+1.4Wm	0.42
0.9CM+1.1SX	0.08
1.1CM+1.1Wa+1.1SX	0.06
1.4CM+1.4Wm	0.42



(+) Combo	As Bot cm <sup>2</sup>
1.1CM+1.1Wa+1.1SX	0.05
0.9CM+1.1SX	0
1.4CM+1.4Wm	0.12
1.4CM+1.4Wm	0.23
1.1CM+1.1Wa+1.1SX	0.05
1.1CM+1.1Wa+1.1SX	0.05
1.1CM+1.1Wa+1.1SX	0.06
1.1CM+1.1Wa+1.1SX	0.04
1.4CM+1.4Wm	0.15
1.1CM+1.1Wa+1.1SX	0.04
1.4CM+1.4Wm	10.67
1.4CM+1.4Wm	6.13
1.1CM+1.1Wa+1.1SX	0.36
1.4CM+1.4Wm	3.2
1.4CM+1.4Wm	4.84
1.4CM+1.4Wm	0.6
1.1CM+1.1Wa+1.1SX	0.35
1.4CM+1.4Wm	5.96
1.4CM+1.4Wm	10.65
1.4CM+1.4Wm	0.03
0.9CM+1.1SX	0.04
1.4CM+1.4Wm	0.27
1.4CM+1.4Wm	0.27
0.9CM+1.1SX	0.04
1.4CM+1.4Wm	0.03
1.4CM+1.4Wm	0.24
1.4CM+1.4Wm	0.55
0.9CM+1.1SX	0.11
1.1CM+1.1Wa+1.1SY	0.02
1.1CM+1.1Wa+1.1SY	0.02
1.1CM+1.1Wa+1.1SY	0.05
1.1CM+1.1Wa+1.1SY	0.05
1.1CM+1.1Wa+1.1SY	0.01
1.1CM+1.1Wa+1.1SY	0.03
0.9CM+1.1SX	0.02
1.1CM+1.1Wa+1.1SY	0.05
0.9CM+1.1SX	0.02
0.9CM+1.1SX	0.02
0.9CM+1.1SX	0.02
0.9CM+1.1SX	0.02
1.4CM+1.4Wm	0.77
1.4CM+1.4Wm	1.88
1.4CM+1.4Wm	1.72
1.4CM+1.4Wm	1.21
1.4CM+1.4Wm	0.39
0.9CM+1.1SX	0.02
0.9CM+1.1SX	0.02
0.9CM+1.1SX	0.02
0.9CM+1.1SX	0.02
0.9CM+1.1SX	0.02



(+) Combo	As Bot cm <sup>2</sup>
1.4CM+1.4Wm	0.37
1.4CM+1.4Wm	1.21
1.4CM+1.4Wm	1.72
1.4CM+1.4Wm	1.88
1.4CM+1.4Wm	0.79
0.9CM+1.1SX	0.02
0.9CM+1.1SX	0.02
0.9CM+1.1SX	0.02
0.9CM+1.1SX	0.02
0.9CM+1.1SX	0.02
0.9CM+1.1SX	0.02
0.9CM+1.1SX	0.01
0.9CM+1.1SX	0.01
1.4CM+1.4Wm	0.35
1.4CM+1.4Wm	2.07
1.4CM+1.4Wm	1.88
1.4CM+1.4Wm	1.32
1.4CM+1.4Wm	0.44
0.9CM+1.1SX	0.01
0.9CM+1.1SX	0.02
1.4CM+1.4Wm	0.34
0.9CM+1.1SX	0.02
0.9CM+1.1SX	0.02
1.4CM+1.4Wm	0.41
1.4CM+1.4Wm	1.32
1.4CM+1.4Wm	1.88
1.4CM+1.4Wm	2.07
1.4CM+1.4Wm	0.38
0.9CM+1.1SX	0.01
0.9CM+1.1SX	0.01
1.4CM+1.4Wm	0.97
0.9CM+1.1SX	0.26
1.4CM+1.4Wm	0.27
1.4CM+1.4Wm	0.56
0.9CM+1.1SX	0.02
1.4CM+1.4Wm	0.29
1.4CM+1.4Wm	0.46
1.4CM+1.4Wm	0.59
1.4CM+1.4Wm	0.63
0.9CM+1.1SX	0.02
0.9CM+1.1SX	0.02
1.4CM+1.4Wm	0.2
1.4CM+1.4Wm	0.81
1.4CM+1.4Wm	0.96
1.4CM+1.4Wm	0.97
1.4CM+1.4Wm	0.89
1.4CM+1.4Wm	0.81
1.4CM+1.4Wm	0.21
0.9CM+1.1SX	0.02
0.9CM+1.1SX	0.02
1.4CM+1.4Wm	0.63
1.4CM+1.4Wm	0.59

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(+) Combo	As Bot cm2
0.9CM+1.1SX	3.2
0.9CM+1.1SX	3.2
1.4CM+1.4Wm	3.26
0.9CM+1.1SX	3.2
0.9CM+1.1SX	3.2
0.9CM+1.1SX	3.2
0.9CM+1.1SX	3.2
1.4CM+1.4Wm	3.42
1.4CM+1.4Wm	4.27
0.9CM+1.1SX	3.2
1.4CM+1.4Wm	4.12
0.9CM+1.1SX	3.2
0.9CM+1.1SX	3.2
1.4CM+1.4Wm	3.42
1.4CM+1.4Wm	4.27
0.9CM+1.1SX	3.2
1.4CM+1.4Wm	4.12
0.9CM+1.1SX	3.2
0.9CM+1.1SX	3.2
0.9CM+1.1SX	3.2
1.4CM+1.4Wm	3.25
0.9CM+1.1SX	3.2
0.9CM+1.1SX	3.2
1.1CM+1.1Wa+1.1SX	0.08
0.9CM+1.1SX	0.03
1.1CM+1.1Wa+1.1SX	0.03
1.4CM+1.4Wm	0.04
1.1CM+1.1Wa+1.1SY	0.05
1.4CM+1.4Wm	0.04
0.9CM+1.1SX	0.14
0.9CM+1.1SX	0.13
0.9CM+1.1SX	0.12
1.1CM+1.1Wa+1.1SX	0.02
1.1CM+1.1Wa+1.1SX	0.04
1.1CM+1.1Wa+1.1SY	0.04
0.9CM+1.1SX	0
1.1CM+1.1Wa+1.1SY	0.07
1.4CM+1.4Wm	0.11
0.9CM+1.1SX	0.14
0.9CM+1.1SX	0.13
0.9CM+1.1SX	0.12

**4.1.2 CORTANTE EN VIGAS (1/2)**

Story	Label	UniqueName	Section	Location	V kgf	V Combo	At cm2/cm	T for At kgf-cm
N1	B9	52	TC-01	End-I	27.55	0.9CM+1.1SX	0	48.63
N1	B9	52	TC-01	Middle	107.86	0.9CM+1.1SX	0	146.08
N1	B9	52	TC-01	End-J	34.19	0.9CM+1.1SX	0	146.08
N1	B11	54	TC-01	End-I	73.44	0.9CM+1.1SX	0	19.14
N1	B11	54	TC-01	Middle	153.98	0.9CM+1.1SX	0	94.5
N1	B11	54	TC-01	End-J	124.15	0.9CM+1.1SX	0	94.5
N1	B20	78	TC-01	End-I	27.6	0.9CM+1.1SX	0	48.89
N1	B20	78	TC-01	Middle	108.07	0.9CM+1.1SX	0	88.25
N1	B20	78	TC-01	End-J	34.41	0.9CM+1.1SX	0	88.25
N1	B22	80	TC-01	End-I	73.67	0.9CM+1.1SX	0	35.18
N1	B22	80	TC-01	Middle	154.78	0.9CM+1.1SX	0	26.39
N1	B22	80	TC-01	End-J	124.93	0.9CM+1.1SX	0	26.39
N1	B35	105	TC-01	End-I	79.99	0.9CM+1.1SX	0	0.22
N1	B35	105	TC-01	Middle	46.32	0.9CM+1.1SX	0	62.72
N1	B35	105	TC-01	End-J	31.79	0.9CM+1.1SX	0	62.72
N1	B36	106	TC-01	End-I	258.85	0.9CM+1.1SX	0	141.29
N1	B36	106	TC-01	Middle	303.89	0.9CM+1.1SX	0	141.29
N1	B36	106	TC-01	End-J	348.93	0.9CM+1.1SX	0	141.29
N1	B37	107	TC-01	End-I	54.7	0.9CM+1.1SX	0	803.71
N1	B37	107	TC-01	Middle	120.55	0.9CM+1.1SX	0	2790.57
N1	B37	107	TC-01	End-J	180.19	0.9CM+1.1SX	0	2790.57
N1	B38	108	TA-02 30X30	End-I	6189.26	1.4CM+1.4Wm	0.0219	10002.59
N1	B38	108	TA-02 30X30	Middle	29.89	0.9CM+1.1SX	0	745.93
N1	B38	108	TA-02 30X30	End-J	5675.65	1.4CM+1.4Wm	0.0151	13148.68
N1	B39	109	TA-02 30X30	End-I	237.97	0.9CM+1.1SX	0	7664.35
N1	B39	109	TA-02 30X30	Middle	155.92	0.9CM+1.1SX	0	7664.35
N1	B39	109	TA-02 30X30	End-J	41.5	0.9CM+1.1SX	0	4723.81
N1	B41	123	TC-01	End-I	80.3	0.9CM+1.1SX	0	22.72
N1	B41	123	TC-01	Middle	46.34	0.9CM+1.1SX	0	32.26
N1	B41	123	TC-01	End-J	31.83	0.9CM+1.1SX	0	32.26
N1	B42	124	TC-01	End-I	259.31	0.9CM+1.1SX	0	132.18
N1	B42	124	TC-01	Middle	304.35	0.9CM+1.1SX	0	132.18
N1	B42	124	TC-01	End-J	349.39	0.9CM+1.1SX	0	132.18
N1	B43	125	TC-01	End-I	54.67	0.9CM+1.1SX	0	523.89
N1	B43	125	TC-01	Middle	120.53	0.9CM+1.1SX	0	2753.57
N1	B43	125	TC-01	End-J	180.16	0.9CM+1.1SX	0	2753.57
N1	B44	126	TA-02 30X30	End-I	6207.99	1.4CM+1.4Wm	0.0221	9574.47
N1	B44	126	TA-02 30X30	Middle	29.85	0.9CM+1.1SX	0	369.7
N1	B44	126	TA-02 30X30	End-J	5700.56	1.4CM+1.4Wm	0.0154	13587.97
N1	B45	127	TA-02 30X30	End-I	238.03	0.9CM+1.1SX	0	7880.01
N1	B45	127	TA-02 30X30	Middle	155.84	0.9CM+1.1SX	0	7880.01
N1	B45	127	TA-02 30X30	End-J	41.43	0.9CM+1.1SX	0	5289.57
N1	B61	153	TA-02 30X30	End-I	305.08	0.9CM+1.1SX	0	10798.51
N1	B61	153	TA-02 30X30	Middle	131.58	0.9CM+1.1SX	0	12518.01
N1	B61	153	TA-02 30X30	End-J	659.54	0.9CM+1.1SX	0	12518.01
N1	B62	154	TA-02 30X30	End-I	305.23	0.9CM+1.1SX	0	11157.13
N1	B62	154	TA-02 30X30	Middle	131.58	0.9CM+1.1SX	0	12716.18
N1	B62	154	TA-02 30X30	End-J	659.54	0.9CM+1.1SX	0	12716.18
N1	B64	156	TA-02 30X30	End-I	622.44	0.9CM+1.1SX	0	16821.57
N1	B64	156	TA-02 30X30	Middle	281.85	0.9CM+1.1SX	0	16821.57
N1	B64	156	TA-02 30X30	End-J	67.04	0.9CM+1.1SX	0	16821.57
N1	B65	157	TA-02 30X30	End-I	622.41	0.9CM+1.1SX	0	16274.33



Story	Label	UniqueName	Section	Location	V kgf	V Combo	At cm2/cm	T for At kgf-cm
N1	B65	157	TA-02 30X30	Middle	281.82	0.9CM+1.1SX	0	16274.33
N1	B65	157	TA-02 30X30	End-J	67.1	0.9CM+1.1SX	0	16274.33
N1	B25	8	TC-01	End-I	61.29	0.9CM+1.1SX	0	53.8
N1	B25	8	TC-01	Middle	23.72	0.9CM+1.1SX	0	201.57
N1	B25	8	TC-01	End-J	59.76	0.9CM+1.1SX	0	203.16
N1	B26	9	TC-01	End-I	59.78	0.9CM+1.1SX	0	203.16
N1	B26	9	TC-01	Middle	35.37	0.9CM+1.1SX	0	203.16
N1	B26	9	TC-01	End-J	20.01	0.9CM+1.1SX	0	203.16
N1	B27	10	TC-01	End-I	35.89	0.9CM+1.1SX	0	129.57
N1	B27	10	TC-01	Middle	51.29	0.9CM+1.1SX	0	244.54
N1	B27	10	TC-01	End-J	125.42	0.9CM+1.1SX	0	145.38
N1	B28	11	TC-01	End-I	125.53	0.9CM+1.1SX	0	145.38
N1	B28	11	TC-01	Middle	82.86	0.9CM+1.1SX	0	145.38
N1	B28	11	TC-01	End-J	72.79	0.9CM+1.1SX	0	145.38
N1	B40	16	TC-01	End-I	61.2	0.9CM+1.1SX	0	129.62
N1	B40	16	TC-01	Middle	19.83	0.9CM+1.1SX	0	236.24
N1	B40	16	TC-01	End-J	52.07	0.9CM+1.1SX	0	263.6
N1	B52	17	TC-01	End-I	52.09	0.9CM+1.1SX	0	263.6
N1	B52	17	TC-01	Middle	31.61	0.9CM+1.1SX	0	263.6
N1	B52	17	TC-01	End-J	20.16	0.9CM+1.1SX	0	263.6
N1	B55	18	TC-01	End-I	36	0.9CM+1.1SX	0	2.24
N1	B55	18	TC-01	Middle	47.42	0.9CM+1.1SX	0	130.57
N1	B55	18	TC-01	End-J	118.13	0.9CM+1.1SX	0	87.72
N1	B66	19	TC-01	End-I	118.25	0.9CM+1.1SX	0	87.72
N1	B66	19	TC-01	Middle	79.5	0.9CM+1.1SX	0	87.72
N1	B66	19	TC-01	End-J	73.37	0.9CM+1.1SX	0	87.72
N1	B190	202	TN-01 12X30	End-I	137.6	0.9CM+1.1SX	0	0
N1	B190	202	TN-01 12X30	Middle	37.33	0.9CM+1.1SX	0	0
N1	B190	202	TN-01 12X30	End-J	962.67	1.4CM+1.4Wm	0.01	0
N1	B191	203	TN-01 12X30	End-I	917.4	1.4CM+1.4Wm	0.01	0
N1	B191	203	TN-01 12X30	Middle	919.18	1.4CM+1.4Wm	0.01	0
N1	B191	203	TN-01 12X30	End-J	1221.91	1.4CM+1.4Wm	0.01	0
N1	B192	204	TN-01 12X30	End-I	998.92	1.4CM+1.4Wm	0.01	0
N1	B192	204	TN-01 12X30	Middle	126.64	0.9CM+1.1SX	0	0
N1	B192	204	TN-01 12X30	End-J	1362.44	1.4CM+1.4Wm	0.01	0
N1	B193	205	TN-01 12X30	End-I	1348.17	1.4CM+1.4Wm	0.01	0
N1	B193	205	TN-01 12X30	Middle	234.86	0.9CM+1.1SX	0	0
N1	B193	205	TN-01 12X30	End-J	98.62	0.9CM+1.1SX	0	0
N1	B194	206	TN-01 12X30	End-I	119.85	0.9CM+1.1SX	0	0
N1	B194	206	TN-01 12X30	Middle	55.97	0.9CM+1.1SX	0	0
N1	B194	206	TN-01 12X30	End-J	1053.08	1.4CM+1.4Wm	0.01	0
N1	B195	207	TN-01 12X30	End-I	1268.02	1.4CM+1.4Wm	0.01	0
N1	B195	207	TN-01 12X30	Middle	18.88	0.9CM+1.1SX	0	0
N1	B195	207	TN-01 12X30	End-J	922.87	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B196	208	TN-01 12X30	End-I	1074.77	1.4CM+1.4Wm	0.01	0
N1	B196	208	TN-01 12X30	Middle	105.05	0.9CM+1.1SX	0	0
N1	B196	208	TN-01 12X30	End-J	1340.74	1.4CM+1.4Wm	0.01	0
N1	B197	209	TN-01 12X30	End-I	1317.29	1.4CM+1.4Wm	0.01	0
N1	B197	209	TN-01 12X30	Middle	221.42	0.9CM+1.1SX	0	0
N1	B197	209	TN-01 12X30	End-J	85.18	0.9CM+1.1SX	0	0
N1	B198	210	TN-01 12X30	End-I	97.86	0.9CM+1.1SX	0	0
N1	B198	210	TN-01 12X30	Middle	67.66	0.9CM+1.1SX	0	0
N1	B198	210	TN-01 12X30	End-J	1139.08	1.4CM+1.4Wm	0.01	0



Story	Label	UniqueName	Section	Location	V kgf	V Combo	At cm2/cm	T for At kgf-cm
N1	B199	211	TN-01 12X30	End-I	953.83	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B199	211	TN-01 12X30	Middle	49.13	0.9CM+1.1SX	0	0
N1	B199	211	TN-01 12X30	End-J	1020.62	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B200	212	TN-01 12X30	End-I	1110.86	1.4CM+1.4Wm	0.01	0
N1	B200	212	TN-01 12X30	Middle	109.82	0.9CM+1.1SX	0	0
N1	B200	212	TN-01 12X30	End-J	1365.88	1.4CM+1.4Wm	0.01	0
N1	B201	213	TN-01 12X30	End-I	921.02	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B201	213	TN-01 12X30	Middle	241.36	0.9CM+1.1SX	0	0
N1	B201	213	TN-01 12X30	End-J	105.12	0.9CM+1.1SX	0	0
N1	B202	214	TN-01 12X30	End-I	87.17	0.9CM+1.1SX	0	0
N1	B202	214	TN-01 12X30	Middle	76.3	0.9CM+1.1SX	0	0
N1	B202	214	TN-01 12X30	End-J	1184.8	1.4CM+1.4Wm	0.01	0
N1	B203	215	TN-01 12X30	End-I	1029.97	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B203	215	TN-01 12X30	Middle	52.29	0.9CM+1.1SX	0	0
N1	B203	215	TN-01 12X30	End-J	1026.51	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B204	216	TN-01 12X30	End-I	1152.44	1.4CM+1.4Wm	0.01	0
N1	B204	216	TN-01 12X30	Middle	143.84	0.9CM+1.1SX	0	0
N1	B204	216	TN-01 12X30	End-J	943.69	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B205	217	TN-01 12X30	End-I	1044.11	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B205	217	TN-01 12X30	Middle	291.29	0.9CM+1.1SX	0	0
N1	B205	217	TN-01 12X30	End-J	155.05	0.9CM+1.1SX	0	0
N1	B206	218	TN-01 12X30	End-I	90.85	0.9CM+1.1SX	0	0
N1	B206	218	TN-01 12X30	Middle	73.43	0.9CM+1.1SX	0	0
N1	B206	218	TN-01 12X30	End-J	1163.5	1.4CM+1.4Wm	0.01	0
N1	B207	219	TN-01 12X30	End-I	1023.09	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B207	219	TN-01 12X30	Middle	71.42	0.9CM+1.1SX	0	0
N1	B207	219	TN-01 12X30	End-J	1068.67	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B208	220	TN-01 12X30	End-I	963.69	1.4CM+1.4Wm	0.01	0
N1	B208	220	TN-01 12X30	Middle	169.54	0.9CM+1.1SX	0	0
N1	B208	220	TN-01 12X30	End-J	970.73	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B209	221	TN-01 12X30	End-I	1170.28	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B209	221	TN-01 12X30	Middle	953.21	1.4CM+1.4Wm	0.01	0
N1	B209	221	TN-01 12X30	End-J	206.77	0.9CM+1.1SX	0	0
N1	B210	222	TN-01 12X30	End-I	100.49	0.9CM+1.1SX	0	0
N1	B210	222	TN-01 12X30	Middle	65.38	0.9CM+1.1SX	0	0
N1	B210	222	TN-01 12X30	End-J	1112.73	1.4CM+1.4Wm	0.01	0
N1	B211	223	TN-01 12X30	End-I	930.91	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B211	223	TN-01 12X30	Middle	41.34	0.9CM+1.1SX	0	0
N1	B211	223	TN-01 12X30	End-J	952.83	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B212	224	TN-01 12X30	End-I	941.34	1.4CM+1.4Wm	0.01	0
N1	B212	224	TN-01 12X30	Middle	161.54	0.9CM+1.1SX	0	0
N1	B212	224	TN-01 12X30	End-J	949.72	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B213	225	TN-01 12X30	End-I	1141.7	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B213	225	TN-01 12X30	Middle	915.89	1.4CM+1.4Wm	0.01	0
N1	B213	225	TN-01 12X30	End-J	185.51	0.9CM+1.1SX	0	0
N1	B214	226	TN-01 12X30	End-I	116.96	0.9CM+1.1SX	0	0
N1	B214	226	TN-01 12X30	Middle	49.78	0.9CM+1.1SX	0	0
N1	B214	226	TN-01 12X30	End-J	1030.14	1.4CM+1.4Wm	0.01	0
N1	B215	227	TN-01 12X30	End-I	1254.13	1.4CM+1.4Wm	0.01	0
N1	B215	227	TN-01 12X30	Middle	13.35	0.9CM+1.1SX	0	0
N1	B215	227	TN-01 12X30	End-J	1216.38	1.4CM+1.4Wm	0.01	0
N1	B216	228	TN-01 12X30	End-I	951.95	1.4CM+1.4Wm	0.01	0
N1	B216	228	TN-01 12X30	Middle	107.48	0.9CM+1.1SX	0	0



Story	Label	UniqueName	Section	Location	V kgf	V Combo	At cm2/cm	T for At kgf-cm
N1	B216	228	TN-01 12X30	End-J	1300.99	1.4CM+1.4Wm	0.01	0
N1	B217	229	TN-01 12X30	End-I	933.56	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B217	229	TN-01 12X30	Middle	213.4	0.9CM+1.1SX	0	0
N1	B217	229	TN-01 12X30	End-J	77.17	0.9CM+1.1SX	0	0
N1	B218	230	TN-01 12X30	End-I	62.48	0.9CM+1.1SX	0	0
N1	B218	230	TN-01 12X30	Middle	91.72	0.9CM+1.1SX	0	0
N1	B218	230	TN-01 12X30	End-J	938.88	1.4CM+1.4Wm	0.01	0
N1	B219	231	TN-01 12X30	End-I	123.39	0.9CM+1.1SX	0	0
N1	B219	231	TN-01 12X30	Middle	145.94	0.9CM+1.1SX	0	0
N1	B219	231	TN-01 12X30	End-J	1352.75	1.4CM+1.4Wm	0.01	0
N1	B220	232	TN-01 12X30	End-I	946.88	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B220	232	TN-01 12X30	Middle	261.23	0.9CM+1.1SX	0	0
N1	B220	232	TN-01 12X30	End-J	124.99	0.9CM+1.1SX	0	0
N1	B221	233	TN-01 12X30	End-I	108.22	0.9CM+1.1SX	0	0
N1	B221	233	TN-01 12X30	Middle	12.93	0.9CM+1.1SX	0	0
N1	B221	233	TN-01 12X30	End-J	98.02	0.9CM+1.1SX	0	0
N1	B222	234	TN-01 12X30	End-I	114.74	0.9CM+1.1SX	0	0
N1	B222	234	TN-01 12X30	Middle	120.8	0.9CM+1.1SX	0	0
N1	B222	234	TN-01 12X30	End-J	1235.63	1.4CM+1.4Wm	0.01	0
N1	B223	235	TN-01 12X30	End-I	928.14	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B223	235	TN-01 12X30	Middle	243.1	0.9CM+1.1SX	0	0
N1	B223	235	TN-01 12X30	End-J	106.86	0.9CM+1.1SX	0	0
N1	B224	236	TN-01 12X30	End-I	109.3	0.9CM+1.1SX	0	0
N1	B224	236	TN-01 12X30	Middle	197.33	0.9CM+1.1SX	0	0
N1	B224	236	TN-01 12X30	End-J	1012.65	1.4CM+1.4Wm	0.01	0
N1	B225	237	TN-01 12X30	End-I	1147.56	1.4CM+1.4Wm	0.01	0
N1	B225	237	TN-01 12X30	Middle	130.77	0.9CM+1.1SX	0	0
N1	B225	237	TN-01 12X30	End-J	7.64	0.9CM+1.1SX	0	0
N1	B226	238	TN-01 12X30	End-I	143.97	0.9CM+1.1SX	0	0
N1	B226	238	TN-01 12X30	Middle	21.15	0.9CM+1.1SX	0	0
N1	B226	238	TN-01 12X30	End-J	163.22	0.9CM+1.1SX	0	0
N1	B227	239	TN-01 12X30	End-I	929.43	1.4CM+1.4Wm	0.01	0
N1	B227	239	TN-01 12X30	Middle	87.93	0.9CM+1.1SX	0	0
N1	B227	239	TN-01 12X30	End-J	158.96	0.9CM+1.1SX	0	0
N1	B228	240	TN-01 12X30	End-I	136.07	0.9CM+1.1SX	0	0
N1	B228	240	TN-01 12X30	Middle	49.03	0.9CM+1.1SX	0	0
N1	B228	240	TN-01 12X30	End-J	1109.07	1.4CM+1.4Wm	0.01	0
N1	B229	241	TN-01 12X30	End-I	1168.88	1.4CM+1.4Wm	0.01	0
N1	B229	241	TN-01 12X30	Middle	117.11	0.9CM+1.1SX	0	0
N1	B229	241	TN-01 12X30	End-J	22.53	0.9CM+1.1SX	0	0
N1	B230	242	TN-01 12X30	End-I	1030.99	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B230	242	TN-01 12X30	Middle	1055.48	1.4CM+1.4Wm	0.01	0
N1	B230	242	TN-01 12X30	End-J	988.56	1.4CM+1.4Wm	0.01	0
N1	B231	243	TN-01 12X30	End-I	152.98	0.9CM+1.1SX	0	0
N1	B231	243	TN-01 12X30	Middle	33.65	0.9CM+1.1SX	0	0
N1	B231	243	TN-01 12X30	End-J	1067.97	1.4CM+1.4Wm	0.01	0
N1	B232	244	TN-01 12X30	End-I	1067.97	1.4CM+1.4Wm	0.01	0
N1	B232	244	TN-01 12X30	Middle	82.11	0.9CM+1.1SX	0	0
N1	B232	244	TN-01 12X30	End-J	56.66	0.9CM+1.1SX	0	0
N1	B233	245	TN-01 12X30	End-I	144.38	0.9CM+1.1SX	0	0
N1	B233	245	TN-01 12X30	Middle	20.78	0.9CM+1.1SX	0	0
N1	B233	245	TN-01 12X30	End-J	162.85	0.9CM+1.1SX	0	0
N1	B234	246	TN-01 12X30	End-I	913.74	1.4CM+1.4Wm	0.01	0



Story	Label	UniqueName	Section	Location	V kgf	V Combo	At cm2/cm	T for At kgf-cm
N1	B234	246	TN-01 12X30	Middle	91.89	0.9CM+1.1SX	0	0
N1	B234	246	TN-01 12X30	End-J	155.26	0.9CM+1.1SX	0	0
N1	B235	247	TN-01 12X30	End-I	135.67	0.9CM+1.1SX	0	0
N1	B235	247	TN-01 12X30	Middle	48.53	0.9CM+1.1SX	0	0
N1	B235	247	TN-01 12X30	End-J	1107.24	1.4CM+1.4Wm	0.01	0
N1	B236	248	TN-01 12X30	End-I	1166.19	1.4CM+1.4Wm	0.01	0
N1	B236	248	TN-01 12X30	Middle	116.19	0.9CM+1.1SX	0	0
N1	B236	248	TN-01 12X30	End-J	23.45	0.9CM+1.1SX	0	0
N1	B237	249	TN-01 12X30	End-I	117.51	0.9CM+1.1SX	0	0
N1	B237	249	TN-01 12X30	Middle	49.29	0.9CM+1.1SX	0	0
N1	B237	249	TN-01 12X30	End-J	1027.81	1.4CM+1.4Wm	0.01	0
N1	B238	250	TN-01 12X30	End-I	1249.47	1.4CM+1.4Wm	0.01	0
N1	B238	250	TN-01 12X30	Middle	14.19	0.9CM+1.1SX	0	0
N1	B238	250	TN-01 12X30	End-J	1212.02	1.4CM+1.4Wm	0.01	0
N1	B239	251	TN-01 12X30	End-I	949.95	1.4CM+1.4Wm	0.01	0
N1	B239	251	TN-01 12X30	Middle	106.51	0.9CM+1.1SX	0	0
N1	B239	251	TN-01 12X30	End-J	1297.91	1.4CM+1.4Wm	0.01	0
N1	B240	252	TN-01 12X30	End-I	930.45	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B240	252	TN-01 12X30	Middle	211.82	0.9CM+1.1SX	0	0
N1	B240	252	TN-01 12X30	End-J	75.59	0.9CM+1.1SX	0	0
N1	B241	253	TN-01 12X30	End-I	100.84	0.9CM+1.1SX	0	0
N1	B241	253	TN-01 12X30	Middle	65.17	0.9CM+1.1SX	0	0
N1	B241	253	TN-01 12X30	End-J	1111.28	1.4CM+1.4Wm	0.01	0
N1	B242	254	TN-01 12X30	End-I	928.9	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B242	254	TN-01 12X30	Middle	40.27	0.9CM+1.1SX	0	0
N1	B242	254	TN-01 12X30	End-J	949.68	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B243	255	TN-01 12X30	End-I	942.1	1.4CM+1.4Wm	0.01	0
N1	B243	255	TN-01 12X30	Middle	161.2	0.9CM+1.1SX	0	0
N1	B243	255	TN-01 12X30	End-J	949.08	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B244	256	TN-01 12X30	End-I	1139.36	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B244	256	TN-01 12X30	Middle	912.48	1.4CM+1.4Wm	0.01	0
N1	B244	256	TN-01 12X30	End-J	184.27	0.9CM+1.1SX	0	0
N1	B245	257	TN-01 12X30	End-I	91.09	0.9CM+1.1SX	0	0
N1	B245	257	TN-01 12X30	Middle	73.49	0.9CM+1.1SX	0	0
N1	B245	257	TN-01 12X30	End-J	1162.96	1.4CM+1.4Wm	0.01	0
N1	B246	258	TN-01 12X30	End-I	1021.94	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B246	258	TN-01 12X30	Middle	71.34	0.9CM+1.1SX	0	0
N1	B246	258	TN-01 12X30	End-J	1068.24	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B247	259	TN-01 12X30	End-I	961.51	1.4CM+1.4Wm	0.01	0
N1	B247	259	TN-01 12X30	Middle	169.71	0.9CM+1.1SX	0	0
N1	B247	259	TN-01 12X30	End-J	970.69	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B248	260	TN-01 12X30	End-I	1171.44	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B248	260	TN-01 12X30	Middle	954.99	1.4CM+1.4Wm	0.01	0
N1	B248	260	TN-01 12X30	End-J	207.24	0.9CM+1.1SX	0	0
N1	B249	261	TN-01 12X30	End-I	87.25	0.9CM+1.1SX	0	0
N1	B249	261	TN-01 12X30	Middle	76.77	0.9CM+1.1SX	0	0
N1	B249	261	TN-01 12X30	End-J	1185.72	1.4CM+1.4Wm	0.01	0
N1	B250	262	TN-01 12X30	End-I	1029.63	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B250	262	TN-01 12X30	Middle	53.35	0.9CM+1.1SX	0	0
N1	B250	262	TN-01 12X30	End-J	1027.57	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B251	263	TN-01 12X30	End-I	1151.72	1.4CM+1.4Wm	0.01	0
N1	B251	263	TN-01 12X30	Middle	144.18	0.9CM+1.1SX	0	0
N1	B251	263	TN-01 12X30	End-J	944.26	1.1CM+1.1Wa+1.1SY	0.01	0





Story	Label	UniqueName	Section	Location	V kgf	V Combo	At cm2/cm	T for At kgf-cm
N1	B252	264	TN-01 12X30	End-I	1045.89	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B252	264	TN-01 12X30	Middle	292.04	0.9CM+1.1SX	0	0
N1	B252	264	TN-01 12X30	End-J	155.81	0.9CM+1.1SX	0	0
N1	B253	265	TN-01 12X30	End-I	98.04	0.9CM+1.1SX	0	0
N1	B253	265	TN-01 12X30	Middle	67.88	0.9CM+1.1SX	0	0
N1	B253	265	TN-01 12X30	End-J	1139.13	1.4CM+1.4Wm	0.01	0
N1	B254	266	TN-01 12X30	End-I	956.09	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B254	266	TN-01 12X30	Middle	49.44	0.9CM+1.1SX	0	0
N1	B254	266	TN-01 12X30	End-J	1021.39	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B255	267	TN-01 12X30	End-I	1111.41	1.4CM+1.4Wm	0.01	0
N1	B255	267	TN-01 12X30	Middle	110.15	0.9CM+1.1SX	0	0
N1	B255	267	TN-01 12X30	End-J	1366.48	1.4CM+1.4Wm	0.01	0
N1	B256	268	TN-01 12X30	End-I	922.1	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B256	268	TN-01 12X30	Middle	241.82	0.9CM+1.1SX	0	0
N1	B256	268	TN-01 12X30	End-J	105.58	0.9CM+1.1SX	0	0
N1	B257	269	TN-01 12X30	End-I	119.7	0.9CM+1.1SX	0	0
N1	B257	269	TN-01 12X30	Middle	56.27	0.9CM+1.1SX	0	0
N1	B257	269	TN-01 12X30	End-J	1054.19	1.4CM+1.4Wm	0.01	0
N1	B258	270	TN-01 12X30	End-I	1272.65	1.4CM+1.4Wm	0.01	0
N1	B258	270	TN-01 12X30	Middle	19.13	0.9CM+1.1SX	0	0
N1	B258	270	TN-01 12X30	End-J	924.3	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B259	271	TN-01 12X30	End-I	1075.98	1.4CM+1.4Wm	0.01	0
N1	B259	271	TN-01 12X30	Middle	105.02	0.9CM+1.1SX	0	0
N1	B259	271	TN-01 12X30	End-J	1340.46	1.4CM+1.4Wm	0.01	0
N1	B260	272	TN-01 12X30	End-I	1317.07	1.4CM+1.4Wm	0.01	0
N1	B260	272	TN-01 12X30	Middle	221.38	0.9CM+1.1SX	0	0
N1	B260	272	TN-01 12X30	End-J	85.14	0.9CM+1.1SX	0	0
N1	B261	273	TN-01 12X30	End-I	137.56	0.9CM+1.1SX	0	0
N1	B261	273	TN-01 12X30	Middle	37.82	0.9CM+1.1SX	0	0
N1	B261	273	TN-01 12X30	End-J	963.91	1.4CM+1.4Wm	0.01	0
N1	B262	274	TN-01 12X30	End-I	922.31	1.4CM+1.4Wm	0.01	0
N1	B262	274	TN-01 12X30	Middle	918.42	1.4CM+1.4Wm	0.01	0
N1	B262	274	TN-01 12X30	End-J	1225.48	1.4CM+1.4Wm	0.01	0
N1	B264	276	TN-01 12X30	End-I	1001.36	1.4CM+1.4Wm	0.01	0
N1	B264	276	TN-01 12X30	Middle	126.37	0.9CM+1.1SX	0	0
N1	B264	276	TN-01 12X30	End-J	1361.95	1.4CM+1.4Wm	0.01	0
N1	B265	277	TN-01 12X30	End-I	1346.42	1.4CM+1.4Wm	0.01	0
N1	B265	277	TN-01 12X30	Middle	234.43	0.9CM+1.1SX	0	0
N1	B265	277	TN-01 12X30	End-J	98.2	0.9CM+1.1SX	0	0
N1	B266	278	TN-01 12X30	End-I	67.65	0.9CM+1.1SX	0	0
N1	B266	278	TN-01 12X30	Middle	90.97	0.9CM+1.1SX	0	0
N1	B266	278	TN-01 12X30	End-J	943.01	1.4CM+1.4Wm	0.01	0
N1	B267	279	TN-01 12X30	End-I	123.7	0.9CM+1.1SX	0	0
N1	B267	279	TN-01 12X30	Middle	145.99	0.9CM+1.1SX	0	0
N1	B267	279	TN-01 12X30	End-J	1353.45	1.4CM+1.4Wm	0.01	0
N1	B268	280	TN-01 12X30	End-I	945.71	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B268	280	TN-01 12X30	Middle	260.88	0.9CM+1.1SX	0	0
N1	B268	280	TN-01 12X30	End-J	124.64	0.9CM+1.1SX	0	0
N1	B269	281	TN-01 12X30	End-I	112.24	0.9CM+1.1SX	0	0
N1	B269	281	TN-01 12X30	Middle	13.83	0.9CM+1.1SX	0	0
N1	B269	281	TN-01 12X30	End-J	100.14	0.9CM+1.1SX	0	0
N1	B270	282	TN-01 12X30	End-I	115.47	0.9CM+1.1SX	0	0
N1	B270	282	TN-01 12X30	Middle	121.71	0.9CM+1.1SX	0	0



Story	Label	UniqueName	Section	Location	V kgf	V Combo	At cm <sup>2</sup> /cm	T for At kgf-cm
N1	B270	282	TN-01 12X30	End-J	1237.97	1.4CM+1.4Wm	0.01	0
N1	B271	283	TN-01 12X30	End-I	930.24	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B271	283	TN-01 12X30	Middle	244.52	0.9CM+1.1SX	0	0
N1	B271	283	TN-01 12X30	End-J	108.28	0.9CM+1.1SX	0	0
N1	B272	284	TN-01 12X30	End-I	101.64	0.9CM+1.1SX	0	0
N1	B272	284	TN-01 12X30	Middle	192.79	0.9CM+1.1SX	0	0
N1	B272	284	TN-01 12X30	End-J	1020.28	1.4CM+1.4Wm	0.01	0
N1	B273	285	TN-01 12X30	End-I	1150.47	1.4CM+1.4Wm	0.01	0
N1	B273	285	TN-01 12X30	Middle	132.04	0.9CM+1.1SX	0	0
N1	B273	285	TN-01 12X30	End-J	6.41	0.9CM+1.1SX	0	0
N1	B2	96	TA-01 30X40	End-I	12463.92	1.4CM+1.4Wm	0.0846	15481.21
N1	B2	96	TA-01 30X40	Middle	14885.46	1.4CM+1.4Wm	0.1165	16473.05
N1	B2	96	TA-01 30X40	End-J	17693.48	1.4CM+1.4Wm	0.1535	26777.15
N1	B57	2	TA-01 30X40	End-I	10630.86	1.4CM+1.4Wm	0.0605	23431.6
N1	B57	2	TA-01 30X40	Middle	3313.5	1.1CM+1.1Wa+1.1SY	0.0333	14420.19
N1	B57	2	TA-01 30X40	End-J	3541.86	1.1CM+1.1Wa+1.1SY	0.0333	21472.97
N1	B59	135	TA-01 30X40	End-I	15040.63	1.4CM+1.4Wm	0.1186	17666.02
N1	B59	135	TA-01 30X40	Middle	14897.32	1.4CM+1.4Wm	0.1167	17666.02
N1	B59	135	TA-01 30X40	End-J	12463.1	1.4CM+1.4Wm	0.0846	16072.82
N1	B15	58	TC-01	End-I	13.13	0.9CM+1.1SX	0	1460.6
N1	B15	58	TC-01	Middle	3.7	0.9CM+1.1SX	0	1460.6
N1	B15	58	TC-01	End-J	26.67	0.9CM+1.1SX	0	1244.81
N1	B30	77	TC-01	End-I	28.36	0.9CM+1.1SX	0	2790.02
N1	B30	77	TC-01	Middle	27.17	0.9CM+1.1SX	0	2811.94
N1	B30	77	TC-01	End-J	33.35	0.9CM+1.1SX	0	1250
N1	B120	33	TC-01	End-I	212.8	0.9CM+1.1SX	0	1076.64
N1	B120	33	TC-01	Middle	208.54	0.9CM+1.1SX	0	1586.38
N1	B120	33	TC-01	End-J	234.33	0.9CM+1.1SX	0	1586.38
N1	B129	181	TC-01	End-I	28.71	0.9CM+1.1SX	0	22.59
N1	B129	181	TC-01	Middle	21.64	0.9CM+1.1SX	0	44.71
N1	B129	181	TC-01	End-J	46.72	0.9CM+1.1SX	0	134.56
N1	B138	192	TC-01	End-I	22.77	0.9CM+1.1SX	0	0.16
N1	B138	192	TC-01	Middle	2.75	0.9CM+1.1SX	0	26.28
N1	B138	192	TC-01	End-J	5.33	0.9CM+1.1SX	0	16.96
N1	B139	190	TC-01	End-I	63.02	0.9CM+1.1SX	0	380.31
N1	B139	190	TC-01	Middle	36.14	0.9CM+1.1SX	0	288
N1	B139	190	TC-01	End-J	62.3	0.9CM+1.1SX	0	288
N1	B7	7	TN-01 12X30	End-I	3497.72	1.4CM+1.4Wm	0.0222	0
N1	B7	7	TN-01 12X30	Middle	0		-0.1	0
N1	B7	7	TN-01 12X30	End-J	3497.48	1.4CM+1.4Wm	0.0222	0
N1	B10	13	TN-01 12X30	End-I	3497.48	1.4CM+1.4Wm	0.0222	0
N1	B10	13	TN-01 12X30	Middle	3428.46	1.4CM+1.4Wm	0.0213	0
N1	B10	13	TN-01 12X30	End-J	1440.07	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B12	21	TN-01 12X30	End-I	914.65	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B12	21	TN-01 12X30	Middle	1401.48	1.4CM+1.4Wm	0.01	0
N1	B12	21	TN-01 12X30	End-J	922.91	1.4CM+1.4Wm	0.01	0
N1	B13	22	TN-01 12X30	End-I	1017.24	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B13	22	TN-01 12X30	Middle	2702.16	1.4CM+1.4Wm	0.0117	0
N1	B13	22	TN-01 12X30	End-J	4122.74	1.4CM+1.4Wm	0.0304	0
N1	B17	23	TN-01 12X30	End-I	89.07	0.9CM+1.1SX	0	0
N1	B17	23	TN-01 12X30	Middle	88.67	0.9CM+1.1SX	0	0
N1	B17	23	TN-01 12X30	End-J	115.13	0.9CM+1.1SX	0	0
N1	B18	24	TN-01 12X30	End-I	4155.43	1.4CM+1.4Wm	0.0309	0



Story	Label	UniqueName	Section	Location	V kgf	V Combo	At cm2/cm	T for At kgf-cm
N1	B18	24	TN-01 12X30	Middle	2720.61	1.4CM+1.4Wm	0.012	0
N1	B18	24	TN-01 12X30	End-J	930.96	1.4CM+1.4Wm	0.01	0
N1	B19	25	TN-01 12X30	End-I	930.96	1.4CM+1.4Wm	0.01	0
N1	B19	25	TN-01 12X30	Middle	1391.65	1.4CM+1.4Wm	0.01	0
N1	B19	25	TN-01 12X30	End-J	1432.94	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B21	26	TN-01 12X30	End-I	1460.06	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B21	26	TN-01 12X30	Middle	3444.66	1.4CM+1.4Wm	0.0215	0
N1	B21	26	TN-01 12X30	End-J	3479.78	1.4CM+1.4Wm	0.022	0
N1	B23	27	TN-01 12X30	End-I	3479.78	1.4CM+1.4Wm	0.022	0
N1	B23	27	TN-01 12X30	Middle	0		-0.1	0
N1	B23	27	TN-01 12X30	End-J	3480.02	1.4CM+1.4Wm	0.022	0
N1	B24	28	TN-01 12X30	End-I	5301.8	1.4CM+1.4Wm	0.046	0
N1	B24	28	TN-01 12X30	Middle	3792.03	1.4CM+1.4Wm	0.0261	0
N1	B24	28	TN-01 12X30	End-J	3756.91	1.4CM+1.4Wm	0.0256	0
N1	B29	29	TN-01 12X30	End-I	3756.91	1.4CM+1.4Wm	0.0256	0
N1	B29	29	TN-01 12X30	Middle	1062.9	1.4CM+1.4Wm	0.01	0
N1	B29	29	TN-01 12X30	End-J	984.68	1.4CM+1.4Wm	0.01	0
N1	B31	30	TN-01 12X30	End-I	1065.61	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B31	30	TN-01 12X30	Middle	2701.27	1.4CM+1.4Wm	0.0117	0
N1	B31	30	TN-01 12X30	End-J	4024.25	1.4CM+1.4Wm	0.0291	0
N1	B46	35	TN-01 12X30	End-I	1335.39	1.4CM+1.4Wm	0.01	0
N1	B46	35	TN-01 12X30	Middle	1318.79	1.4CM+1.4Wm	0.01	0
N1	B46	35	TN-01 12X30	End-J	1359.97	1.4CM+1.4Wm	0.01	0
N1	B47	39	TN-01 12X30	End-I	4057.3	1.4CM+1.4Wm	0.0296	0
N1	B47	39	TN-01 12X30	Middle	2720.43	1.4CM+1.4Wm	0.012	0
N1	B47	39	TN-01 12X30	End-J	994.72	1.4CM+1.4Wm	0.01	0
N1	B48	42	TN-01 12X30	End-I	948.7	1.4CM+1.4Wm	0.01	0
N1	B48	42	TN-01 12X30	Middle	1364.55	1.1CM+1.1Wa+1.1SY	0.01	0
N1	B48	42	TN-01 12X30	End-J	3732.87	1.4CM+1.4Wm	0.0253	0
N1	B50	45	TN-01 12X30	End-I	3732.87	1.4CM+1.4Wm	0.0253	0
N1	B50	45	TN-01 12X30	Middle	3767.38	1.4CM+1.4Wm	0.0258	0
N1	B50	45	TN-01 12X30	End-J	5288.97	1.4CM+1.4Wm	0.0458	0
N1	B51	47	TN-01 12X30	End-I	15.37	0.9CM+1.1SX	0	0
N1	B51	47	TN-01 12X30	Middle	15.98	0.9CM+1.1SX	0	0
N1	B51	47	TN-01 12X30	End-J	41.63	0.9CM+1.1SX	0	0
N1	B53	49	TN-01 12X30	End-I	929.39	1.4CM+1.4Wm	0.01	0
N1	B53	49	TN-01 12X30	Middle	14.31	0.9CM+1.1SX	0	0
N1	B53	49	TN-01 12X30	End-J	13.79	0.9CM+1.1SX	0	0
N1	B54	50	TN-01 12X30	End-I	15.93	0.9CM+1.1SX	0	0
N1	B54	50	TN-01 12X30	Middle	38.95	0.9CM+1.1SX	0	0
N1	B54	50	TN-01 12X30	End-J	951.94	1.4CM+1.4Wm	0.01	0
N1	B56	51	TN-01 12X30	End-I	1074.48	1.4CM+1.4Wm	0.01	0
N1	B56	51	TN-01 12X30	Middle	987.29	1.4CM+1.4Wm	0.01	0
N1	B56	51	TN-01 12X30	End-J	189.52	0.9CM+1.1SX	0	0
N1	B60	53	TN-01 12X30	End-I	48.06	0.9CM+1.1SX	0	0
N1	B60	53	TN-01 12X30	Middle	46.75	0.9CM+1.1SX	0	0
N1	B60	53	TN-01 12X30	End-J	73.22	0.9CM+1.1SX	0	0
N1	B63	55	TN-01 12X30	End-I	262.1	0.9CM+1.1SX	0	0
N1	B63	55	TN-01 12X30	Middle	1026.57	1.4CM+1.4Wm	0.01	0
N1	B63	55	TN-01 12X30	End-J	1362.65	1.4CM+1.4Wm	0.01	0
N1	B67	56	TN-01 12X30	End-I	909.71	1.4CM+1.4Wm	0.01	0
N1	B67	56	TN-01 12X30	Middle	44.41	0.9CM+1.1SX	0	0
N1	B67	56	TN-01 12X30	End-J	13.4	0.9CM+1.1SX	0	0



Story	Label	UniqueName	Section	Location	V kgf	V Combo	At cm <sup>2</sup> /cm	T for At kgf-cm
N1	B68	59	TN-01 12X30	End-I	14.24	0.9CM+1.1SX	0	0
N1	B68	59	TN-01 12X30	Middle	919.29	1.4CM+1.4Wm	0.01	0
N1	B68	59	TN-01 12X30	End-J	954.41	1.4CM+1.4Wm	0.01	0
N1	B69	62	TN-01 12X30	End-I	45	0.9CM+1.1SX	0	0
N1	B69	62	TN-01 12X30	Middle	19.14	0.9CM+1.1SX	0	0
N1	B69	62	TN-01 12X30	End-J	12.7	0.9CM+1.1SX	0	0
N1	B3	102	TA-01 30X40	End-I	3454.7	1.1CM+1.1Wa+1.1SY	0.0333	22656.87
N1	B3	102	TA-01 30X40	Middle	3732.88	1.4CM+1.4Wm	0.0333	1147.48
N1	B3	102	TA-01 30X40	End-J	10584.03	1.4CM+1.4Wm	0.0599	21776.05
N1	B4	138	TA-01 30X40	End-I	13119.4	1.4CM+1.4Wm	0.0933	19545.37
N1	B4	138	TA-01 30X40	Middle	4553.29	1.1CM+1.1Wa+1.1SY	0.0333	1543.89
N1	B4	138	TA-01 30X40	End-J	13072.57	1.4CM+1.4Wm	0.0927	17196.56
N1	B1	1	TR-01 30X60	End-I	20218.12	1.1CM+1.1Wa+1.1SY	0.1183	196.66
N1	B1	1	TR-01 30X60	Middle	19875.58	1.1CM+1.1Wa+1.1SY	0.1163	1507.57
N1	B1	1	TR-01 30X60	End-J	19406.65	1.1CM+1.1Wa+1.1SY	0.054	7631.91
N1	B5	3	TR-01 30X60	End-I	27399.24	1.1CM+1.1Wa+1.1SY	0.1604	1524.76
N1	B5	3	TR-01 30X60	Middle	27128.06	1.1CM+1.1Wa+1.1SY	0.1588	1135.89
N1	B5	3	TR-01 30X60	End-J	26818.14	1.1CM+1.1Wa+1.1SY	0.157	1135.89
N1	B6	4	TR-01 30X60	End-I	9874.3	1.1CM+1.1Wa+1.1SY	0.0578	456.02
N1	B6	4	TR-01 30X60	Middle	9371.14	1.1CM+1.1Wa+1.1SY	0.0549	3876.61
N1	B6	4	TR-01 30X60	End-J	8657.55	0.9CM+1.1SX	0.025	13479.32
N1	B8	5	TR-01 30X60	End-I	17517.56	1.1CM+1.1Wa+1.1SY	0.1025	16140.49
N1	B8	5	TR-01 30X60	Middle	17336.96	1.1CM+1.1Wa+1.1SY	0.1015	5088.91
N1	B8	5	TR-01 30X60	End-J	16936.91	1.1CM+1.1Wa+1.1SY	0.0395	9310.17
N1	B14	6	TR-01 30X60	End-I	22316.11	1.1CM+1.1Wa+1.1SY	0.1306	205.43
N1	B14	6	TR-01 30X60	Middle	22149.38	1.1CM+1.1Wa+1.1SY	0.1296	14.47
N1	B14	6	TR-01 30X60	End-J	22311.13	1.1CM+1.1Wa+1.1SY	0.071	14.47
N1	B16	12	TR-01 30X60	End-I	16929	1.1CM+1.1Wa+1.1SY	0.0991	5282.79
N1	B16	12	TR-01 30X60	Middle	17332.11	1.1CM+1.1Wa+1.1SY	0.1014	6239.68
N1	B16	12	TR-01 30X60	End-J	17519.74	1.1CM+1.1Wa+1.1SY	0.0429	16305.22
N1	B32	14	TR-01 30X60	End-I	9078.42	1.1CM+1.1Wa+1.1SY	0.0531	3752.58
N1	B32	14	TR-01 30X60	Middle	8840.64	0.9CM+1.1SX	0.0517	318.6
N1	B32	14	TR-01 30X60	End-J	9221.92	0.9CM+1.1SX	0.025	2512.41
N1	B33	15	TR-01 30X60	End-I	26953.16	1.1CM+1.1Wa+1.1SY	0.1578	1297.68
N1	B33	15	TR-01 30X60	Middle	27261.87	1.1CM+1.1Wa+1.1SY	0.1596	1615.96
N1	B33	15	TR-01 30X60	End-J	27399.84	1.1CM+1.1Wa+1.1SY	0.1604	1615.96
N1	B34	46	TR-01 30X60	End-I	19402.37	1.1CM+1.1Wa+1.1SY	0.1136	1390.75
N1	B34	46	TR-01 30X60	Middle	19872.22	1.1CM+1.1Wa+1.1SY	0.1163	332.86
N1	B34	46	TR-01 30X60	End-J	20219.51	1.1CM+1.1Wa+1.1SY	0.0587	332.86
N1	B49	48	TR-01 30X60	End-I	9084.85	0.9CM+1.1SX	0.0532	2570.51
N1	B49	48	TR-01 30X60	Middle	8647.54	0.9CM+1.1SX	0.025	2570.51
N1	B49	48	TR-01 30X60	End-J	9319.84	0.9CM+1.1SX	0.025	2570.51
N1	B70	65	TR-01 30X60	End-I	11399.1	1.1CM+1.1Wa+1.1SY	0.0667	7887.47
N1	B70	65	TR-01 30X60	Middle	11021.52	1.1CM+1.1Wa+1.1SY	0.0645	10193.41
N1	B70	65	TR-01 30X60	End-J	10843.59	0.9CM+1.1SX	0.025	10193.41
N1	B71	68	TR-01 30X60	End-I	11034.91	1.1CM+1.1Wa+1.1SY	0.0646	1158.7
N1	B71	68	TR-01 30X60	Middle	10468.73	1.1CM+1.1Wa+1.1SY	0.0613	1158.7
N1	B71	68	TR-01 30X60	End-J	10763.44	0.9CM+1.1SX	0.025	1158.7
N1	B72	71	TR-01 30X60	End-I	10811.91	1.1CM+1.1Wa+1.1SY	0.0633	13374.97
N1	B72	71	TR-01 30X60	Middle	10921.65	1.1CM+1.1Wa+1.1SY	0.0639	13374.97
N1	B72	71	TR-01 30X60	End-J	11031.38	1.1CM+1.1Wa+1.1SY	0.0646	13374.97
N1	B73	72	TR-01 30X60	End-I	12049.39	1.1CM+1.1Wa+1.1SY	0.0705	11595.94
N1	B73	72	TR-01 30X60	Middle	10801.9	0.9CM+1.1SX	0.025	5852.62



Story	Label	UniqueName	Section	Location	V kgf	V Combo	At cm <sup>2</sup> /cm	T for At kgf-cm
N1	B73	72	TR-01 30X60	End-J	10675.09	0.9CM+1.1SX	0.025	5852.62
N1	B74	73	TR-01 30X60	End-I	9612.65	1.1CM+1.1Wa+1.1SY	0.0563	10373.48
N1	B74	73	TR-01 30X60	Middle	5220.18	1.4CM+1.4Wm	0.025	10373.48
N1	B74	73	TR-01 30X60	End-J	6649.04	1.4CM+1.4Wm	0.025	16376.6
N1	B75	75	TR-01 30X60	End-I	15864.84	1.1CM+1.1Wa+1.1SY	0.0929	18260.47
N1	B75	75	TR-01 30X60	Middle	15025.81	1.1CM+1.1Wa+1.1SY	0.0283	18260.47
N1	B75	75	TR-01 30X60	End-J	12967.06	0.9CM+1.1SX	0.025	18260.47
N1	B76	76	TR-01 30X60	End-I	9084.86	0.9CM+1.1SX	0.0532	2455.78
N1	B76	76	TR-01 30X60	Middle	8647.54	0.9CM+1.1SX	0.025	2455.78
N1	B76	76	TR-01 30X60	End-J	9319.83	0.9CM+1.1SX	0.025	2455.78
N1	B79	79	TR-01 30X60	End-I	11382.77	1.1CM+1.1Wa+1.1SY	0.0666	6636.55
N1	B79	79	TR-01 30X60	Middle	10966.83	1.1CM+1.1Wa+1.1SY	0.0642	9989.38
N1	B79	79	TR-01 30X60	End-J	10842.53	0.9CM+1.1SX	0.025	9989.38
N1	B80	81	TR-01 30X60	End-I	11033.8	1.1CM+1.1Wa+1.1SY	0.0646	1480.79
N1	B80	81	TR-01 30X60	Middle	10467.62	1.1CM+1.1Wa+1.1SY	0.0613	1480.79
N1	B80	81	TR-01 30X60	End-J	10763.89	0.9CM+1.1SX	0.025	1480.79
N1	B81	82	TR-01 30X60	End-I	10813.01	1.1CM+1.1Wa+1.1SY	0.0633	13160.04
N1	B81	82	TR-01 30X60	Middle	10922.75	1.1CM+1.1Wa+1.1SY	0.0639	13160.04
N1	B81	82	TR-01 30X60	End-J	11032.48	1.1CM+1.1Wa+1.1SY	0.0646	13160.04
N1	B82	83	TR-01 30X60	End-I	12034.59	1.1CM+1.1Wa+1.1SY	0.0704	7568.52
N1	B82	83	TR-01 30X60	Middle	10802.49	0.9CM+1.1SX	0.025	7568.52
N1	B82	83	TR-01 30X60	End-J	10674.5	0.9CM+1.1SX	0.025	7568.52
N1	B83	84	TR-01 30X60	End-I	9619.72	1.1CM+1.1Wa+1.1SY	0.0563	9376.96
N1	B83	84	TR-01 30X60	Middle	5269.98	1.4CM+1.4Wm	0.025	9376.96
N1	B83	84	TR-01 30X60	End-J	6650.01	1.4CM+1.4Wm	0.025	17558.68
N1	B84	85	TR-01 30X60	End-I	15864.93	1.1CM+1.1Wa+1.1SY	0.0929	17760.43
N1	B84	85	TR-01 30X60	Middle	15025.9	1.1CM+1.1Wa+1.1SY	0.0283	17760.43
N1	B84	85	TR-01 30X60	End-J	12966.54	0.9CM+1.1SX	0.025	17760.43
N1	B77	74	TC-01	End-I	558.22	1.1CM+1.1Wa+1.1SY	0.0074	535.41
N1	B77	74	TC-01	Middle	570.82	1.1CM+1.1Wa+1.1SY	0.0075	561.77
N1	B77	74	TC-01	End-J	517.57	1.1CM+1.1Wa+1.1SY	0.0068	561.77
N1	B78	86	TC-01	End-I	679.65	1.1CM+1.1Wa+1.1SY	0.009	525.7
N1	B78	86	TC-01	Middle	710.61	1.1CM+1.1Wa+1.1SY	0.0094	2909.92
N1	B78	86	TC-01	End-J	480.23	0.9CM+1.1SX	0	2893.84
N1	B85	87	TC-01	End-I	491.03	1.1CM+1.1Wa+1.1SY	0.0065	2877.79
N1	B85	87	TC-01	Middle	481.25	0.9CM+1.1SX	0	3711.59
N1	B85	87	TC-01	End-J	455.36	0.9CM+1.1SX	0	3711.59
N1	B86	88	TC-01	End-I	471.61	0.9CM+1.1SX	0.0062	658.95
N1	B86	88	TC-01	Middle	466.8	1.1CM+1.1Wa+1.1SY	0.0061	3464.43
N1	B86	88	TC-01	End-J	483.7	0.9CM+1.1SX	0	3480.27
N1	B87	89	TC-01	End-I	499.84	1.1CM+1.1Wa+1.1SY	0.0066	3285.49
N1	B87	89	TC-01	Middle	456.88	0.9CM+1.1SX	0	3261.07
N1	B87	89	TC-01	End-J	458.87	0.9CM+1.1SX	0	102.91
N1	B88	90	TC-01	End-I	489.04	1.1CM+1.1Wa+1.1SY	0.0064	3621.03
N1	B88	90	TC-01	Middle	471.37	0.9CM+1.1SX	0	3621.03
N1	B88	90	TC-01	End-J	456.76	0.9CM+1.1SX	0	3038.02
N1	B89	91	TC-01	End-I	496.11	1.1CM+1.1Wa+1.1SY	0.0065	3048.52
N1	B89	91	TC-01	Middle	473.49	0.9CM+1.1SX	0.0062	3048.52
N1	B89	91	TC-01	End-J	494.99	0.9CM+1.1SX	0	107.97
N1	B90	92	TC-01	End-I	515.17	1.1CM+1.1Wa+1.1SY	0.0068	58.11
N1	B90	92	TC-01	Middle	577.3	1.1CM+1.1Wa+1.1SY	0.0076	88.82
N1	B90	92	TC-01	End-J	563.51	1.1CM+1.1Wa+1.1SY	0.0074	88.82
N1	B91	94	TA-01 30X40	End-I	2538.56	1.1CM+1.1Wa+1.1SY	0.0334	5383.8



Story	Label	UniqueName	Section	Location	V kgf	V Combo	At cm <sup>2</sup> /cm	T for At kgf-cm
N1	B91	94	TA-01 30X40	Middle	2328.77	0.9CM+1.1SX	0	19957.62
N1	B91	94	TA-01 30X40	End-J	3013.3	0.9CM+1.1SX	0	19957.62
N1	B92	100	TA-01 30X40	End-I	5492.83	1.1CM+1.1Wa+1.1SY	0.0723	22403.06
N1	B92	100	TA-01 30X40	Middle	4345.4	0.9CM+1.1SX	0.0333	22403.06
N1	B92	100	TA-01 30X40	End-J	3910.69	0.9CM+1.1SX	0.0333	22403.06
N1	B93	104	TA-01 30X40	End-I	3163.64	1.1CM+1.1Wa+1.1SY	0.0417	16440.7
N1	B93	104	TA-01 30X40	Middle	3531.97	1.1CM+1.1Wa+1.1SY	0.0333	9169.99
N1	B93	104	TA-01 30X40	End-J	3099.87	1.4CM+1.4Wm	0.0333	9169.99
N1	B94	110	TA-01 30X40	End-I	7253.45	1.1CM+1.1Wa+1.1SY	0.0955	12016.03
N1	B94	110	TA-01 30X40	Middle	3290.42	1.4CM+1.4Wm	0.0333	12016.03
N1	B94	110	TA-01 30X40	End-J	5188.18	0.9CM+1.1SX	0.0333	12016.03
N1	B95	112	TA-01 30X40	End-I	3163.99	1.1CM+1.1Wa+1.1SY	0.0417	16946.85
N1	B95	112	TA-01 30X40	Middle	3531.82	1.1CM+1.1Wa+1.1SY	0.0333	9567.82
N1	B95	112	TA-01 30X40	End-J	3099.92	1.4CM+1.4Wm	0.0333	9567.82
N1	B96	114	TA-01 30X40	End-I	7252.74	1.1CM+1.1Wa+1.1SY	0.0955	11369.26
N1	B96	114	TA-01 30X40	Middle	3290.05	1.4CM+1.4Wm	0.0333	11369.26
N1	B96	114	TA-01 30X40	End-J	5187.66	0.9CM+1.1SX	0.0333	11369.26
N1	B97	116	TA-01 30X40	End-I	2539.57	1.1CM+1.1Wa+1.1SY	0.0334	5313.21
N1	B97	116	TA-01 30X40	Middle	2328.98	0.9CM+1.1SX	0	19283.47
N1	B97	116	TA-01 30X40	End-J	3013.5	0.9CM+1.1SX	0	19283.47
N1	B98	118	TA-01 30X40	End-I	5488.91	1.1CM+1.1Wa+1.1SY	0.0723	22957.51
N1	B98	118	TA-01 30X40	Middle	4342.84	0.9CM+1.1SX	0.0333	22957.51
N1	B98	118	TA-01 30X40	End-J	3908.13	0.9CM+1.1SX	0.0333	22957.51
N1	C59	93	KL-01	End-I	29.27	0.9CM+1.1SX	0	414.71
N1	C59	93	KL-01	Middle	7.11	0.9CM+1.1SX	0	194.06
N1	C59	93	KL-01	End-J	54.64	0.9CM+1.1SX	0	101.59
N1	C61	95	KL-01	End-I	28.08	0.9CM+1.1SX	0	47.28
N1	C61	95	KL-01	Middle	6.87	0.9CM+1.1SX	0	173.85
N1	C61	95	KL-01	End-J	21.86	0.9CM+1.1SX	0	218.25
N1	C63	97	KT-01	End-I	85.08	0.9CM+1.1SX	0	54.44
N1	C63	97	KT-01	Middle	40.9	0.9CM+1.1SX	0	99.19
N1	C63	97	KT-01	End-J	186.42	0.9CM+1.1SX	0	115.1
N1	C71	111	KL-01	End-I	29.55	0.9CM+1.1SX	0	32.62
N1	C71	111	KL-01	Middle	7.2	0.9CM+1.1SX	0	48.1
N1	C71	111	KL-01	End-J	54.91	0.9CM+1.1SX	0	76
N1	C73	113	KL-01	End-I	28.01	0.9CM+1.1SX	0	544.14
N1	C73	113	KL-01	Middle	6.87	0.9CM+1.1SX	0	518.49
N1	C73	113	KL-01	End-J	21.51	0.9CM+1.1SX	0	488.13
N1	C75	115	KT-01	End-I	85.24	0.9CM+1.1SX	0	84.02
N1	C75	115	KT-01	Middle	40.97	0.9CM+1.1SX	0	79.22
N1	C75	115	KT-01	End-J	186.84	0.9CM+1.1SX	0	78.64

#### 4.1.3 TORSION EN VIGAS (2/2)

T for At Combo	At Torsion cm <sup>2</sup> /cm	T for As kgf-cm	T for As Combo	As Torsion cm <sup>2</sup>
0.9CM+1.1SX	0	48.63	0.9CM+1.1SX	0
0.9CM+1.1SX	0	146.08	0.9CM+1.1SX	0
0.9CM+1.1SX	0	146.08	0.9CM+1.1SX	0
0.9CM+1.1SX	0	19.14	0.9CM+1.1SX	0
0.9CM+1.1SX	0	94.5	0.9CM+1.1SX	0





T for At Combo	At Torsion cm <sup>2</sup> /cm	T for As kgf-cm	T for As Combo	As Torsion cm <sup>2</sup>
0.9CM+1.1SX	0	94.5	0.9CM+1.1SX	0
0.9CM+1.1SX	0	48.89	0.9CM+1.1SX	0
0.9CM+1.1SX	0	88.25	0.9CM+1.1SX	0
0.9CM+1.1SX	0	88.25	0.9CM+1.1SX	0
0.9CM+1.1SX	0	35.18	0.9CM+1.1SX	0
0.9CM+1.1SX	0	26.39	0.9CM+1.1SX	0
0.9CM+1.1SX	0	26.39	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0.22	0.9CM+1.1SX	0
0.9CM+1.1SX	0	62.72	0.9CM+1.1SX	0
0.9CM+1.1SX	0	62.72	0.9CM+1.1SX	0
0.9CM+1.1SX	0	141.29	0.9CM+1.1SX	0
0.9CM+1.1SX	0	141.29	0.9CM+1.1SX	0
0.9CM+1.1SX	0	141.29	0.9CM+1.1SX	0
0.9CM+1.1SX	0	803.71	0.9CM+1.1SX	0
1.1CM+1.1Wa+1.1SY	0.0402	2790.57	1.1CM+1.1Wa+1.1SY	2.19
1.1CM+1.1Wa+1.1SY	0.0402	2790.57	1.1CM+1.1Wa+1.1SY	2.19
1.1CM+1.1Wa+1.1SY	0.0379	10002.59	1.1CM+1.1Wa+1.1SY	3.2
0.9CM+1.1SX	0	745.93	0.9CM+1.1SX	0
1.1CM+1.1Wa+1.1SY	0.0372	13148.68	1.1CM+1.1Wa+1.1SY	3.14
1.1CM+1.1Wa+1.1SY	0.0355	7664.35	1.1CM+1.1Wa+1.1SY	3
1.1CM+1.1Wa+1.1SY	0.0355	7664.35	1.1CM+1.1Wa+1.1SY	3
1.4CM+1.4Wm	0.034	4723.81	1.4CM+1.4Wm	2.87
0.9CM+1.1SX	0	22.72	0.9CM+1.1SX	0
0.9CM+1.1SX	0	32.26	0.9CM+1.1SX	0
0.9CM+1.1SX	0	32.26	0.9CM+1.1SX	0
0.9CM+1.1SX	0	132.18	0.9CM+1.1SX	0
0.9CM+1.1SX	0	132.18	0.9CM+1.1SX	0
0.9CM+1.1SX	0	132.18	0.9CM+1.1SX	0
0.9CM+1.1SX	0	523.89	0.9CM+1.1SX	0
1.1CM+1.1Wa+1.1SY	0.0402	2753.57	1.1CM+1.1Wa+1.1SY	2.19
1.1CM+1.1Wa+1.1SY	0.0402	2753.57	1.1CM+1.1Wa+1.1SY	2.19
1.1CM+1.1Wa+1.1SY	0.0379	9574.47	1.1CM+1.1Wa+1.1SY	3.2
0.9CM+1.1SX	0	369.7	0.9CM+1.1SX	0
1.1CM+1.1Wa+1.1SY	0.0372	13587.97	1.1CM+1.1Wa+1.1SY	3.14
1.1CM+1.1Wa+1.1SY	0.0355	7880.01	1.1CM+1.1Wa+1.1SY	3
1.1CM+1.1Wa+1.1SY	0.0355	7880.01	1.1CM+1.1Wa+1.1SY	3
1.4CM+1.4Wm	0.034	5289.57	1.4CM+1.4Wm	2.87
1.4CM+1.4Wm	0.0346	10798.51	1.4CM+1.4Wm	2.92
1.1CM+1.1Wa+1.1SY	0.0363	12518.01	1.1CM+1.1Wa+1.1SY	3.07
1.1CM+1.1Wa+1.1SY	0.0363	12518.01	1.1CM+1.1Wa+1.1SY	3.07
1.1CM+1.1Wa+1.1SX	0.0354	11157.13	1.1CM+1.1Wa+1.1SX	2.99
1.1CM+1.1Wa+1.1SY	0.0363	12716.18	1.1CM+1.1Wa+1.1SY	3.07
1.1CM+1.1Wa+1.1SY	0.0363	12716.18	1.1CM+1.1Wa+1.1SY	3.07
1.1CM+1.1Wa+1.1SY	0.0357	16821.57	1.1CM+1.1Wa+1.1SY	3.01
1.1CM+1.1Wa+1.1SY	0.0357	16821.57	1.1CM+1.1Wa+1.1SY	3.01
1.1CM+1.1Wa+1.1SY	0.0357	16821.57	1.1CM+1.1Wa+1.1SY	3.01
1.1CM+1.1Wa+1.1SY	0.0357	16274.33	1.1CM+1.1Wa+1.1SY	3.01
1.1CM+1.1Wa+1.1SY	0.0357	16274.33	1.1CM+1.1Wa+1.1SY	3.01
1.1CM+1.1Wa+1.1SY	0.0357	16274.33	1.1CM+1.1Wa+1.1SY	3.01
0.9CM+1.1SX	0	53.8	0.9CM+1.1SX	0
0.9CM+1.1SX	0	201.57	0.9CM+1.1SX	0
0.9CM+1.1SX	0	203.16	0.9CM+1.1SX	0

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[illegible]





T for At Combo	At Torsion cm2/cm	T for As kgf-cm	T for As Combo	As Torsion cm2
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	15481.21	0.9CM+1.1SX	0
1.4CM+1.4Wm	0.0371	16473.05	1.4CM+1.4Wm	3.87
1.1CM+1.1Wa+1.1SX	0.0389	26777.15	1.1CM+1.1Wa+1.1SX	4.06
1.1CM+1.1Wa+1.1SX	0.0377	23431.6	1.1CM+1.1Wa+1.1SX	3.94
0.9CM+1.1SX	0	14420.19	0.9CM+1.1SX	0
1.1CM+1.1Wa+1.1SX	0.0388	21472.97	1.1CM+1.1Wa+1.1SX	4.05
1.4CM+1.4Wm	0.0371	17666.02	1.4CM+1.4Wm	3.87
1.4CM+1.4Wm	0.0371	17666.02	1.4CM+1.4Wm	3.87
0.9CM+1.1SX	0	16072.82	0.9CM+1.1SX	0
1.4CM+1.4Wm	0.0418	1460.6	1.4CM+1.4Wm	2.28
1.4CM+1.4Wm	0.0418	1460.6	1.4CM+1.4Wm	2.28
1.4CM+1.4Wm	0.0422	1244.81	1.4CM+1.4Wm	2.3
1.4CM+1.4Wm	0.0422	2790.02	1.4CM+1.4Wm	2.3
1.1CM+1.1Wa+1.1SY	0.0419	2811.94	1.1CM+1.1Wa+1.1SY	2.28
1.4CM+1.4Wm	0.0418	1250	1.4CM+1.4Wm	2.28
0.9CM+1.1SX	0	1076.64	0.9CM+1.1SX	0
0.9CM+1.1SX	0	1586.38	0.9CM+1.1SX	0
0.9CM+1.1SX	0	1586.38	0.9CM+1.1SX	0
0.9CM+1.1SX	0	22.59	0.9CM+1.1SX	0
0.9CM+1.1SX	0	44.71	0.9CM+1.1SX	0
0.9CM+1.1SX	0	134.56	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0.16	0.9CM+1.1SX	0
0.9CM+1.1SX	0	26.28	0.9CM+1.1SX	0
0.9CM+1.1SX	0	16.96	0.9CM+1.1SX	0
0.9CM+1.1SX	0	380.31	0.9CM+1.1SX	0
0.9CM+1.1SX	0	288	0.9CM+1.1SX	0
0.9CM+1.1SX	0	288	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
	-0.1	0		-0.01
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0

[illegible]



T for At Combo	At Torsion cm2/cm	T for As kgf-cm	T for As Combo	As Torsion cm2
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
0.9CM+1.1SX	0	0	0.9CM+1.1SX	0
1.1CM+1.1Wa+1.1SX	0.0388	22656.87	1.1CM+1.1Wa+1.1SX	4.05
0.9CM+1.1SX	0	1147.48	0.9CM+1.1SX	0
1.4CM+1.4Wm	0.037	21776.05	1.4CM+1.4Wm	3.87
1.1CM+1.1Wa+1.1SX	0.038	19545.37	1.1CM+1.1Wa+1.1SX	3.96
0.9CM+1.1SX	0	1543.89	0.9CM+1.1SX	0
1.1CM+1.1Wa+1.1SX	0.0379	17196.56	1.1CM+1.1Wa+1.1SX	3.96
0.9CM+1.1SX	0	196.66	0.9CM+1.1SX	0
0.9CM+1.1SX	0	1507.57	0.9CM+1.1SX	0
0.9CM+1.1SX	0	7631.91	0.9CM+1.1SX	0
0.9CM+1.1SX	0	1524.76	0.9CM+1.1SX	0
0.9CM+1.1SX	0	1135.89	0.9CM+1.1SX	0
0.9CM+1.1SX	0	1135.89	0.9CM+1.1SX	0
0.9CM+1.1SX	0	456.02	0.9CM+1.1SX	0
0.9CM+1.1SX	0	3876.61	0.9CM+1.1SX	0
0.9CM+1.1SX	0	13479.32	0.9CM+1.1SX	0
1.4CM+1.4Wm	0.0391	16140.49	1.4CM+1.4Wm	5.65
0.9CM+1.1SX	0	5088.91	0.9CM+1.1SX	0
0.9CM+1.1SX	0	9310.17	0.9CM+1.1SX	0
0.9CM+1.1SX	0	205.43	0.9CM+1.1SX	0
0.9CM+1.1SX	0	14.47	0.9CM+1.1SX	0
0.9CM+1.1SX	0	14.47	0.9CM+1.1SX	0
0.9CM+1.1SX	0	5282.79	0.9CM+1.1SX	0
0.9CM+1.1SX	0	6239.68	0.9CM+1.1SX	0
1.4CM+1.4Wm	0.0391	16305.22	1.4CM+1.4Wm	5.65
0.9CM+1.1SX	0	3752.58	0.9CM+1.1SX	0
0.9CM+1.1SX	0	318.6	0.9CM+1.1SX	0
0.9CM+1.1SX	0	2512.41	0.9CM+1.1SX	0
0.9CM+1.1SX	0	1297.68	0.9CM+1.1SX	0
0.9CM+1.1SX	0	1615.96	0.9CM+1.1SX	0
0.9CM+1.1SX	0	1615.96	0.9CM+1.1SX	0
0.9CM+1.1SX	0	1390.75	0.9CM+1.1SX	0
0.9CM+1.1SX	0	332.86	0.9CM+1.1SX	0
0.9CM+1.1SX	0	332.86	0.9CM+1.1SX	0
0.9CM+1.1SX	0	2570.51	0.9CM+1.1SX	0
0.9CM+1.1SX	0	2570.51	0.9CM+1.1SX	0
0.9CM+1.1SX	0	2570.51	0.9CM+1.1SX	0
0.9CM+1.1SX	0	7887.47	0.9CM+1.1SX	0
0.9CM+1.1SX	0	10193.41	0.9CM+1.1SX	0
0.9CM+1.1SX	0	10193.41	0.9CM+1.1SX	0
0.9CM+1.1SX	0	1158.7	0.9CM+1.1SX	0
0.9CM+1.1SX	0	1158.7	0.9CM+1.1SX	0
0.9CM+1.1SX	0	1158.7	0.9CM+1.1SX	0
1.4CM+1.4Wm	0.0392	13374.97	1.4CM+1.4Wm	5.66
1.4CM+1.4Wm	0.0392	13374.97	1.4CM+1.4Wm	5.66



T for At Combo	At Torsion cm <sup>2</sup> /cm	T for As kgf-cm	T for As Combo	As Torsion cm <sup>2</sup>
1.4CM+1.4Wm	0.0392	13374.97	1.4CM+1.4Wm	5.66
1.4CM+1.4Wm	0.0393	11595.94	1.4CM+1.4Wm	5.67
0.9CM+1.1SX	0	5852.62	0.9CM+1.1SX	0
0.9CM+1.1SX	0	5852.62	0.9CM+1.1SX	0
1.4CM+1.4Wm	0.0391	10373.48	1.4CM+1.4Wm	5.65
1.4CM+1.4Wm	0.0391	10373.48	1.4CM+1.4Wm	5.64
0.9CM+1.1SX	0	16376.6	0.9CM+1.1SX	0
0.9CM+1.1SX	0	18260.47	0.9CM+1.1SX	0
0.9CM+1.1SX	0	18260.47	0.9CM+1.1SX	0
0.9CM+1.1SX	0	18260.47	0.9CM+1.1SX	0
0.9CM+1.1SX	0	2455.78	0.9CM+1.1SX	0
0.9CM+1.1SX	0	2455.78	0.9CM+1.1SX	0
0.9CM+1.1SX	0	2455.78	0.9CM+1.1SX	0
0.9CM+1.1SX	0	6636.55	0.9CM+1.1SX	0
0.9CM+1.1SX	0	9989.38	0.9CM+1.1SX	0
0.9CM+1.1SX	0	9989.38	0.9CM+1.1SX	0
0.9CM+1.1SX	0	1480.79	0.9CM+1.1SX	0
0.9CM+1.1SX	0	1480.79	0.9CM+1.1SX	0
0.9CM+1.1SX	0	1480.79	0.9CM+1.1SX	0
1.4CM+1.4Wm	0.0392	13160.04	1.4CM+1.4Wm	5.66
1.4CM+1.4Wm	0.0392	13160.04	1.4CM+1.4Wm	5.66
1.4CM+1.4Wm	0.0392	13160.04	1.4CM+1.4Wm	5.66
0.9CM+1.1SX	0	7568.52	0.9CM+1.1SX	0
0.9CM+1.1SX	0	7568.52	0.9CM+1.1SX	0
0.9CM+1.1SX	0	7568.52	0.9CM+1.1SX	0
1.4CM+1.4Wm	0.0391	9376.96	1.4CM+1.4Wm	5.65
1.4CM+1.4Wm	0.0391	9376.96	1.4CM+1.4Wm	5.64
0.9CM+1.1SX	0	17558.68	0.9CM+1.1SX	0
0.9CM+1.1SX	0	17760.43	0.9CM+1.1SX	0
0.9CM+1.1SX	0	17760.43	0.9CM+1.1SX	0
0.9CM+1.1SX	0	17760.43	0.9CM+1.1SX	0
0.9CM+1.1SX	0	535.41	0.9CM+1.1SX	0
0.9CM+1.1SX	0	561.77	0.9CM+1.1SX	0
0.9CM+1.1SX	0	561.77	0.9CM+1.1SX	0
0.9CM+1.1SX	0	525.7	0.9CM+1.1SX	0
1.4CM+1.4Wm	0.0427	2909.92	1.4CM+1.4Wm	2.32
1.4CM+1.4Wm	0.0427	2893.84	1.4CM+1.4Wm	2.32
1.4CM+1.4Wm	0.0427	2877.79	1.4CM+1.4Wm	2.32
1.1CM+1.1Wa+1.1SX	0.0418	3711.59	1.1CM+1.1Wa+1.1SX	2.28
1.1CM+1.1Wa+1.1SX	0.0418	3711.59	1.1CM+1.1Wa+1.1SX	2.28
0.9CM+1.1SX	0	658.95	0.9CM+1.1SX	0
1.1CM+1.1Wa+1.1SX	0.0416	3464.43	1.1CM+1.1Wa+1.1SX	2.27
1.1CM+1.1Wa+1.1SY	0.0416	3480.27	1.1CM+1.1Wa+1.1SY	2.26
1.1CM+1.1Wa+1.1SY	0.0416	3285.49	1.1CM+1.1Wa+1.1SY	2.26
1.1CM+1.1Wa+1.1SY	0.0416	3261.07	1.1CM+1.1Wa+1.1SY	2.26
0.9CM+1.1SX	0	102.91	0.9CM+1.1SX	0
1.1CM+1.1Wa+1.1SX	0.0418	3621.03	1.1CM+1.1Wa+1.1SX	2.28
1.1CM+1.1Wa+1.1SX	0.0418	3621.03	1.1CM+1.1Wa+1.1SX	2.28
1.4CM+1.4Wm	0.0427	3038.02	1.4CM+1.4Wm	2.32
1.4CM+1.4Wm	0.0427	3048.52	1.4CM+1.4Wm	2.32
1.4CM+1.4Wm	0.0427	3048.52	1.4CM+1.4Wm	2.32
0.9CM+1.1SX	0	107.97	0.9CM+1.1SX	0

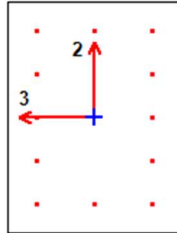


T for At Combo	At Torsion cm <sup>2</sup> /cm	T for As kgf-cm	T for As Combo	As Torsion cm <sup>2</sup>
0.9CM+1.1SX	0	58.11	0.9CM+1.1SX	0
0.9CM+1.1SX	0	88.82	0.9CM+1.1SX	0
0.9CM+1.1SX	0	88.82	0.9CM+1.1SX	0
0.9CM+1.1SX	0	5383.8	0.9CM+1.1SX	0
1.4CM+1.4Wm	0.0363	19957.62	1.4CM+1.4Wm	3.79
1.4CM+1.4Wm	0.0363	19957.62	1.4CM+1.4Wm	3.79
1.1CM+1.1Wa+1.1SX	0.0377	22403.06	1.1CM+1.1Wa+1.1SX	3.94
1.1CM+1.1Wa+1.1SX	0.0377	22403.06	1.1CM+1.1Wa+1.1SX	3.94
1.1CM+1.1Wa+1.1SX	0.0377	22403.06	1.1CM+1.1Wa+1.1SX	3.93
0.9CM+1.1SX	0	16440.7	0.9CM+1.1SX	0
0.9CM+1.1SX	0	9169.99	0.9CM+1.1SX	0
0.9CM+1.1SX	0	9169.99	0.9CM+1.1SX	0
0.9CM+1.1SX	0	12016.03	0.9CM+1.1SX	0
0.9CM+1.1SX	0	12016.03	0.9CM+1.1SX	0
0.9CM+1.1SX	0	12016.03	0.9CM+1.1SX	0
0.9CM+1.1SX	0	16946.85	0.9CM+1.1SX	0
0.9CM+1.1SX	0	9567.82	0.9CM+1.1SX	0
0.9CM+1.1SX	0	9567.82	0.9CM+1.1SX	0
0.9CM+1.1SX	0	11369.26	0.9CM+1.1SX	0
0.9CM+1.1SX	0	11369.26	0.9CM+1.1SX	0
0.9CM+1.1SX	0	11369.26	0.9CM+1.1SX	0
0.9CM+1.1SX	0	5313.21	0.9CM+1.1SX	0
1.4CM+1.4Wm	0.0363	19283.47	1.4CM+1.4Wm	3.79
1.4CM+1.4Wm	0.0363	19283.47	1.4CM+1.4Wm	3.79
1.1CM+1.1Wa+1.1SX	0.0377	22957.51	1.1CM+1.1Wa+1.1SX	3.94
1.1CM+1.1Wa+1.1SX	0.0377	22957.51	1.1CM+1.1Wa+1.1SX	3.94
1.1CM+1.1Wa+1.1SX	0.0377	22957.51	1.1CM+1.1Wa+1.1SX	3.94
0.9CM+1.1SX	0	414.71	0.9CM+1.1SX	0
0.9CM+1.1SX	0	194.06	0.9CM+1.1SX	0
0.9CM+1.1SX	0	101.59	0.9CM+1.1SX	0
0.9CM+1.1SX	0	47.28	0.9CM+1.1SX	0
0.9CM+1.1SX	0	173.85	0.9CM+1.1SX	0
0.9CM+1.1SX	0	218.25	0.9CM+1.1SX	0
0.9CM+1.1SX	0	54.44	0.9CM+1.1SX	0
0.9CM+1.1SX	0	99.19	0.9CM+1.1SX	0
0.9CM+1.1SX	0	115.1	0.9CM+1.1SX	0
0.9CM+1.1SX	0	32.62	0.9CM+1.1SX	0
0.9CM+1.1SX	0	48.1	0.9CM+1.1SX	0
0.9CM+1.1SX	0	76	0.9CM+1.1SX	0
0.9CM+1.1SX	0	544.14	0.9CM+1.1SX	0
0.9CM+1.1SX	0	518.49	0.9CM+1.1SX	0
0.9CM+1.1SX	0	488.13	0.9CM+1.1SX	0
0.9CM+1.1SX	0	84.02	0.9CM+1.1SX	0
0.9CM+1.1SX	0	79.22	0.9CM+1.1SX	0
0.9CM+1.1SX	0	78.64	0.9CM+1.1SX	0



#### 4.1.4 COLUMNNA CL-01 45X30

##### ACI 318-19 Column Section Design



**Column Element Details (Summary)**

Level	Element	Unique Name	Section ID	Combo ID	Station Loc	Length (cm)	LLRF	Type
N1	C36	38	CL-01 30X40	1.4CM+1.4Wm	196.028	226.028	1	Sway Ordinary

**Section Properties**

b (cm)	h (cm)	dc (cm)	Cover (Torsion) (cm)
30	40	4.961	2.73

**Material Properties**

$E_c$ (kgf/cm <sup>2</sup> )	$f'_c$ (kgf/cm <sup>2</sup> )	Lt.Wt Factor (Unitless)	$f_y$ (kgf/cm <sup>2</sup> )	$f_{ys}$ (kgf/cm <sup>2</sup> )
256343.52	300	1	4218.42	4218.42

**Design Code Parameters**

$\phi_T$	$\phi_{CTied}$	$\phi_{CSpiral}$	$\phi_{Vns}$	$\phi_{Vs}$	$\phi_{Vjoint}$	$\Omega_0$
0.9	0.65	0.75	0.75	0.6	0.85	2

**Axial Force and Biaxial Moment Design For  $P_u$ ,  $M_{u2}$ ,  $M_{u3}$**

Design $P_u$ kgf	Design $M_{u2}$ kgf-cm	Design $M_{u3}$ kgf-cm	Minimum M2 kgf-cm	Minimum M3 kgf-cm	Rebar Area cm <sup>2</sup>	Rebar % %
-4699.51	-76627.42	173434.23	11391.6	12801.46	12	1

**Axial Force and Biaxial Moment Factors**

	$C_m$ Factor Unitless	$\delta_{ns}$ Factor Unitless	$\delta_s$ Factor Unitless	K Factor Unitless	Effective Length cm
Major Bend(M3)	1	1	1	1	346.028
Minor Bend(M2)	1	1	1	1	196.028

**Shear Design for  $V_{u2}$ ,  $V_{u3}$**

	Shear $V_u$ kgf	Shear $\phi V_c$ kgf	Shear $\phi V_s$ kgf	Shear $\phi V_p$ kgf	Rebar $A_v$ /s cm <sup>2</sup> /cm
Major, $V_{u2}$	2889.56	6726.78	2771.4	0	0.025
Minor, $V_{u3}$	636.38	4522.07	0	0	0





**Joint Shear Check/Design**

	<b>Joint Shear Force kgf</b>	<b>Shear <math>V_{u,Top}</math> kgf</b>	<b>Shear <math>V_{u,Tot}</math> kgf</b>	<b>Shear <math>\phi V_c</math> kgf</b>	<b>Joint Area cm<sup>2</sup></b>	<b>Shear Ratio Unitless</b>
Major Shear, $V_{u2}$	N/A	N/A	N/A	N/A	N/A	N/A
Minor Shear, $V_{u3}$	N/A	N/A	N/A	N/A	N/A	N/A

**(6/5) Beam/Column Capacity Ratio**

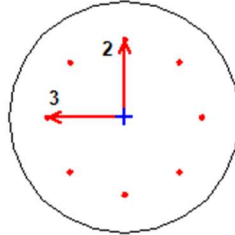
<b>Major Ratio</b>	<b>Minor Ratio</b>
N/A	N/A

Notes:

N/A: Not Applicable

N/C: Not Calculated

N/N: Not Needed

**4.1.5 COLUMNA CL-02 D= 30 cm****ACI 318-19 Column Section Design****Column Element Details (Summary)**

Level	Element	Unique Name	Section ID	Combo ID	Station Loc	Length (cm)	LLRF	Type
N1	C91	143	CL-02 D=30	1.4CM+1.4Wm	353.826	393.826	1	Sway Ordinary

**Section Properties**

d (cm)	h <sub>0</sub> (cm)	dc (cm)	Cover (Torsion) (cm)
30	25.039	4.961	2.73

**Material Properties**

E <sub>c</sub> (kgf/cm <sup>2</sup> )	f' <sub>c</sub> (kgf/cm <sup>2</sup> )	Lt.Wt Factor (Unitless)	f <sub>y</sub> (kgf/cm <sup>2</sup> )	f <sub>ys</sub> (kgf/cm <sup>2</sup> )
234008.55	250	1	4218.42	4218.42

**Design Code Parameters**

$\phi_T$	$\phi_{CTied}$	$\phi_{CSpiral}$	$\phi_{Vns}$	$\phi_{Vs}$	$\phi_{Vjoint}$	$\Omega_0$
0.9	0.65	0.75	0.75	0.6	0.85	2

**Axial Force and Biaxial Moment Design For P<sub>u</sub> , M<sub>u2</sub> , M<sub>u3</sub>**

Design P <sub>u</sub> kgf	Design M <sub>u2</sub> kgf-cm	Design M <sub>u3</sub> kgf-cm	Minimum M <sub>2</sub> kgf-cm	Minimum M <sub>3</sub> kgf-cm	Rebar Area cm <sup>2</sup>	Rebar % %
27949.81	217115.86	71083.01	67750.33	67750.33	7.07	1

**Axial Force and Biaxial Moment Factors**

	C <sub>m</sub> Factor Unitless	$\delta_{ns}$ Factor Unitless	$\delta_s$ Factor Unitless	K Factor Unitless	Effective Length cm
Major Bend(M3)	0.366949	1	1	1	353.826
Minor Bend(M2)	0.36901	1	1	1	353.826

**Shear Design for V<sub>u2</sub> , V<sub>u3</sub>**

	Shear V <sub>u</sub> kgf	Shear $\phi V_c$ kgf	Shear $\phi V_s$ kgf	Shear $\phi V_p$ kgf	Rebar A <sub>v</sub> /s cm <sup>2</sup> /cm
Major, V <sub>u2</sub>	317.95	6515.6	0	0	0



	Shear $V_u$ kgf	Shear $\phi V_c$ kgf	Shear $\phi V_s$ kgf	Shear $\phi V_p$ kgf	Rebar $A_v / s$ cm <sup>2</sup> /cm
Minor, $V_{u3}$	967.97	6515.6	0	0	0

**Joint Shear Check/Design**

	Joint Shear Force kgf	Shear $V_{u,Top}$ kgf	Shear $V_{u,Tot}$ kgf	Shear $\phi V_c$ kgf	Joint Area cm <sup>2</sup>	Shear Ratio Unitless
Major Shear, $V_{u2}$	N/A	N/A	N/A	N/A	N/A	N/A
Minor Shear, $V_{u3}$	N/A	N/A	N/A	N/A	N/A	N/A

**(6/5) Beam/Column Capacity Ratio**

Major Ratio	Minor Ratio
N/A	N/A

Notes:

N/A: Not Applicable

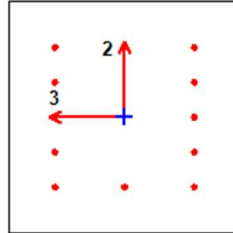
N/C: Not Calculated

N/N: Not Needed



#### 4.1.6 COLUMNA CL-03 25X25 CM

##### ACI 318-19 Column Section Design



Column Element Details (Summary)

Level	Element	Unique Name	Section ID	Combo ID	Station Loc	Length (cm)	LLRF	Type
N1	C39	41	CL-03	1.4CM+1.4Wm	156.117	186.117	1	Sway Ordinary

Section Properties

b (cm)	h (cm)	dc (cm)	Cover (Torsion) (cm)
25	25	4.961	2.73

Material Properties

$E_c$ (kgf/cm <sup>2</sup> )	$f'_c$ (kgf/cm <sup>2</sup> )	Lt.Wt Factor (Unitless)	$f_y$ (kgf/cm <sup>2</sup> )	$f_{ys}$ (kgf/cm <sup>2</sup> )
256343.52	300	1	4218.42	4218.42

Design Code Parameters

$\phi_T$	$\phi_{CTied}$	$\phi_{CSpiral}$	$\phi_{Vns}$	$\phi_{Vs}$	$\phi_{Vjoint}$	$\Omega_0$
0.9	0.65	0.75	0.75	0.6	0.85	2

Axial Force and Biaxial Moment Design For  $P_u$ ,  $M_{u2}$ ,  $M_{u3}$

Design $P_u$ kgf	Design $M_{u2}$ kgf-cm	Design $M_{u3}$ kgf-cm	Minimum M2 kgf-cm	Minimum M3 kgf-cm	Rebar Area cm <sup>2</sup>	Rebar % %
7064.04	16244.76	61310.83	16063.64	16063.64	6.25	1

Axial Force and Biaxial Moment Factors

	$C_m$ Factor Unitless	$\delta_{ns}$ Factor Unitless	$\delta_s$ Factor Unitless	K Factor Unitless	Effective Length cm
Major Bend(M3)	1	1.054538	1	1	336.236
Minor Bend(M2)	1	1.011275	1	1	156.117

Shear Design for  $V_{u2}$ ,  $V_{u3}$

	Shear $V_u$ kgf	Shear $\phi V_c$ kgf	Shear $\phi V_s$ kgf	Shear $\phi V_p$ kgf	Rebar $A_v$ /s cm <sup>2</sup> /cm
Major, $V_{u2}$	362.43	3248.94	0	0	0



	Shear $V_u$ kgf	Shear $\phi V_c$ kgf	Shear $\phi V_s$ kgf	Shear $\phi V_p$ kgf	Rebar $A_v$ /s cm <sup>2</sup> /cm
Minor, $V_{u3}$	73.87	3248.94	0	0	0

**Joint Shear Check/Design**

	Joint Shear Force kgf	Shear $V_{u,Top}$ kgf	Shear $V_{u,Tot}$ kgf	Shear $\phi V_c$ kgf	Joint Area cm <sup>2</sup>	Shear Ratio Unitless
Major Shear, $V_{u2}$	N/A	N/A	N/A	N/A	N/A	N/A
Minor Shear, $V_{u3}$	N/A	N/A	N/A	N/A	N/A	N/A

**(6/5) Beam/Column Capacity Ratio**

Major Ratio	Minor Ratio
N/A	N/A

Notes:

N/A: Not Applicable

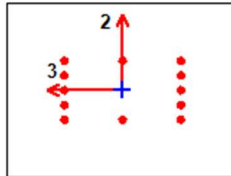
N/C: Not Calculated

N/N: Not Needed



#### 4.1.7 K-01 20X15

#### ACI 318-19 Column Section Design



#### Column Element Details (Summary)

Level	Element	Unique Name	Section ID	Combo ID	Station Loc	Length (cm)	LLRF	Type
N1	C65	99	K-01 200	0.9CM+1.1SX	114.301	342.902	1	Sway Ordinary

#### Section Properties

b (cm)	h (cm)	dc (cm)	Cover (Torsion) (cm)
20	15	4.961	2.73

#### Material Properties

$E_c$ (kgf/cm <sup>2</sup> )	$f'_c$ (kgf/cm <sup>2</sup> )	Lt.Wt Factor (Unitless)	$f_y$ (kgf/cm <sup>2</sup> )	$f_{ys}$ (kgf/cm <sup>2</sup> )
209303.61	200	1	4218.42	4218.42

#### Design Code Parameters

$\phi_T$	$\phi_{CTied}$	$\phi_{CSpiral}$	$\phi_{Vns}$	$\phi_{Vs}$	$\phi_{Vjoint}$	$\Omega_0$
0.9	0.65	0.75	0.75	0.6	0.85	2

#### Axial Force and Biaxial Moment Design For $P_u$ , $M_{u2}$ , $M_{u3}$

Design $P_u$ kgf	Design $M_{u2}$ kgf-cm	Design $M_{u3}$ kgf-cm	Minimum M2 kgf-cm	Minimum M3 kgf-cm	Rebar Area cm <sup>2</sup>	Rebar % %
-731.82	-670.05	1444.62	1554.39	1444.62	3	1

#### Axial Force and Biaxial Moment Factors

	$C_m$ Factor Unitless	$\delta_{ns}$ Factor Unitless	$\delta_s$ Factor Unitless	K Factor Unitless	Effective Length cm
Major Bend(M3)	1	1	1	1	312.963
Minor Bend(M2)	1	1	1	1	312.963

#### Shear Design for $V_{u2}$ , $V_{u3}$

	Shear $V_u$ kgf	Shear $\phi V_c$ kgf	Shear $\phi V_s$ kgf	Shear $\phi V_p$ kgf	Rebar $A_v$ /s cm <sup>2</sup> /cm
Major, $V_{u2}$	0.75	770.86	0	0	0





	Shear $V_u$ kgf	Shear $\phi V_c$ kgf	Shear $\phi V_s$ kgf	Shear $\phi V_p$ kgf	Rebar $A_v /s$ cm <sup>2</sup> /cm
Minor, $V_{u3}$	16.93	866.1	0	0	0

**Joint Shear Check/Design**

	Joint Shear Force kgf	Shear $V_{u,Top}$ kgf	Shear $V_{u,Tot}$ kgf	Shear $\phi V_c$ kgf	Joint Area cm <sup>2</sup>	Shear Ratio Unitless
Major Shear, $V_{u2}$	N/A	N/A	N/A	N/A	N/A	N/A
Minor Shear, $V_{u3}$	N/A	N/A	N/A	N/A	N/A	N/A

**(6/5) Beam/Column Capacity Ratio**

Major Ratio	Minor Ratio
N/A	N/A

Notes:

N/A: Not Applicable

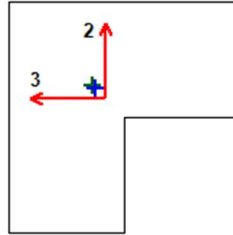
N/C: Not Calculated

N/N: Not Needed



#### 4.1.8 KL-01 30X30

##### ACI 318-19 Beam Section Design



**Beam Element Details (Summary)**

Level	Element	Unique Name	Section ID	Combo ID	Station Loc	Length (cm)	LLRF	Type
N1	C73	113	KL-01	1.4CM+1.4Wm	316.653	346.653	1	Sway Ordinary

**Section Properties**

b (cm)	h (cm)	b <sub>f</sub> (cm)	d <sub>s</sub> (cm)	d <sub>ct</sub> (cm)	d <sub>cb</sub> (cm)
15	30	30	15	6	6

**Material Properties**

E <sub>c</sub> (kgf/cm <sup>2</sup> )	f' <sub>c</sub> (kgf/cm <sup>2</sup> )	Lt.Wt Factor (Unitless)	f <sub>y</sub> (kgf/cm <sup>2</sup> )	f <sub>ys</sub> (kgf/cm <sup>2</sup> )
234008.55	250	1	4218.42	4218.42

**Design Code Parameters**

ϕ <sub>T</sub>	ϕ <sub>CTied</sub>	ϕ <sub>CSpiral</sub>	ϕ <sub>Vns</sub>	ϕ <sub>Vs</sub>	ϕ <sub>Vjoint</sub>
0.9	0.65	0.75	0.75	0.6	0.85

**Design Moment and Flexural Reinforcement for Moment, M<sub>u3</sub>**

	Design Moment kgf-cm	Design P <sub>u</sub> kgf	-Moment Rebar cm <sup>2</sup>	+Moment Rebar cm <sup>2</sup>	Minimum Rebar cm <sup>2</sup>	Required Rebar cm <sup>2</sup>
Top (+2 Axis)	0	-237.84	0.03	0	0.04	0.04
Bottom (-2 Axis)	3789.48	-237.84	0.03	0.08	0.11	0.11

**Shear Force and Reinforcement for Shear, V<sub>u2</sub>**

Shear V <sub>u2</sub> kgf	Shear ϕV <sub>c</sub> kgf	Shear ϕV <sub>s</sub> kgf	Shear V <sub>p</sub> kgf	Rebar A <sub>v</sub> /S cm <sup>2</sup> /cm
57.76	605.59	0	48.33	0

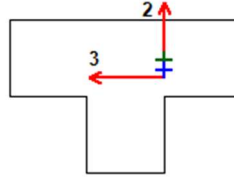
**Torsion Force and Torsion Reinforcement for Torsion, T<sub>u</sub>**

T <sub>u</sub> kgf-cm	ϕT <sub>th</sub> kgf-cm	ϕT <sub>cr</sub> kgf-cm	Area A <sub>o</sub> cm <sup>2</sup>	Perimeter, p <sub>h</sub> cm	Rebar A <sub>t</sub> /s cm <sup>2</sup> /cm	Rebar A <sub>t</sub> cm <sup>2</sup>
710.56	11812.6	47250.4	109.6	54.44	0	0



#### 4.1.9 KT-01 45X30

#### ACI 318-19 Beam Section Design



**Beam Element Details (Summary)**

Level	Element	Unique Name	Section ID	Combo ID	Station Loc	Length (cm)	LLRF	Type
N1	C63	97	KT-01	1.4CM+1.4Wm	305	335	1	Sway Ordinary

**Section Properties**

b (cm)	h (cm)	b <sub>f</sub> (cm)	d <sub>s</sub> (cm)	d <sub>ct</sub> (cm)	d <sub>cb</sub> (cm)
15	30	45	15	6	6

**Material Properties**

E <sub>c</sub> (kgf/cm <sup>2</sup> )	f' <sub>c</sub> (kgf/cm <sup>2</sup> )	Lt.Wt Factor (Unitless)	f <sub>y</sub> (kgf/cm <sup>2</sup> )	f <sub>ys</sub> (kgf/cm <sup>2</sup> )
256343.52	300	1	4218.42	4218.42

**Design Code Parameters**

φ <sub>T</sub>	φ <sub>CTied</sub>	φ <sub>CSpiral</sub>	φ <sub>Vns</sub>	φ <sub>Vs</sub>	φ <sub>VJoint</sub>
0.9	0.65	0.75	0.75	0.6	0.85

**Design Moment and Flexural Reinforcement for Moment, M<sub>u3</sub>**

	Design Moment kgf-cm	Design P <sub>u</sub> kgf	-Moment Rebar cm <sup>2</sup>	+Moment Rebar cm <sup>2</sup>	Minimum Rebar cm <sup>2</sup>	Required Rebar cm <sup>2</sup>
Top (+2 Axis)	-14495.8	-108.49	0.18	0.01	0.24	0.24
Bottom (-2 Axis)	0	-108.49	0	0.01	0.02	0.02

**Shear Force and Reinforcement for Shear, V<sub>u2</sub>**

Shear V <sub>u2</sub> kgf	Shear φV <sub>c</sub> kgf	Shear φV <sub>s</sub> kgf	Shear V <sub>p</sub> kgf	Rebar A <sub>v</sub> / S cm <sup>2</sup> /cm
207.47	862.5	0	122.7	0

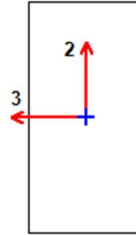
**Torsion Force and Torsion Reinforcement for Torsion, T<sub>u</sub>**

T <sub>u</sub> kgf-cm	φT <sub>th</sub> kgf-cm	φT <sub>cr</sub> kgf-cm	Area A <sub>o</sub> cm <sup>2</sup>	Perimeter, p <sub>h</sub> cm	Rebar A <sub>t</sub> / s cm <sup>2</sup> /cm	Rebar A <sub>t</sub> cm <sup>2</sup>
69.95	18538.96	74155.82	109.6	54.44	0	0



#### 4.1.10 TRABE TR-01 30X60

##### ACI 318-19 Beam Section Design



##### Beam Element Details (Summary)

Level	Element	Unique Name	Section ID	Combo ID	Station Loc	Length (cm)	LLRF	Type
N1	B83	84	TR-01 30X60	1.4CM+1.4Wm	562.118	562.118	1	Sway Special

##### Section Properties

b (cm)	h (cm)	b <sub>f</sub> (cm)	d <sub>s</sub> (cm)	d <sub>ct</sub> (cm)	d <sub>cb</sub> (cm)
30	60	30	0	6	6

##### Material Properties

E <sub>c</sub> (kgf/cm <sup>2</sup> )	f' <sub>c</sub> (kgf/cm <sup>2</sup> )	Lt.Wt Factor (Unitless)	f <sub>y</sub> (kgf/cm <sup>2</sup> )	f <sub>ys</sub> (kgf/cm <sup>2</sup> )
234008.55	250	1	4218.42	4218.42

##### Design Code Parameters

Φ <sub>T</sub>	Φ <sub>CTied</sub>	Φ <sub>CSpiral</sub>	Φ <sub>Vns</sub>	Φ <sub>Vs</sub>	Φ <sub>VJoint</sub>
0.9	0.65	0.75	0.75	0.6	0.85

##### Design Moment and Flexural Reinforcement for Moment, M<sub>u3</sub>

	Design Moment kgf-cm	Design P <sub>u</sub> kgf	-Moment Rebar cm <sup>2</sup>	+Moment Rebar cm <sup>2</sup>	Minimum Rebar cm <sup>2</sup>	Required Rebar cm <sup>2</sup>
Top (+2 Axis)	-2085856.22	0	10.9	0	5.4	10.9
Bottom (-2 Axis)	1042928.11	0	0	5.26	5.4	5.4

##### Shear Force and Reinforcement for Shear, V<sub>u2</sub>

Shear V <sub>u2</sub> kgf	Shear ΦV <sub>c</sub> kgf	Shear ΦV <sub>s</sub> kgf	Shear V <sub>p</sub> kgf	Rebar A <sub>v</sub> / S cm <sup>2</sup> /cm
6650.01	10187.68	4271.15	7895.13	0.025

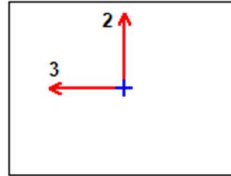
##### Torsion Force and Torsion Reinforcement for Torsion, T<sub>u</sub>

T <sub>u</sub> kgf-cm	ΦT <sub>th</sub> kgf-cm	ΦT <sub>cr</sub> kgf-cm	Area A <sub>o</sub> cm <sup>2</sup>	Perimeter, p <sub>h</sub> cm	Rebar A <sub>t</sub> / s cm <sup>2</sup> /cm	Rebar A <sub>t</sub> cm <sup>2</sup>
30798.21	56799.8	227199.19	917.1	144.44	0	0



#### 4.1.11 TRABE TA-01 40X30

##### ACI 318-19 Beam Section Design



##### Beam Element Details (Summary)

Level	Element	Unique Name	Section ID	Combo ID	Station Loc	Length (cm)	LLRF	Type
N1	B4	138	TA-01 30X40	1.4CM+1.4Wm	484	499	1	Sway Ordinary

##### Section Properties

b (cm)	h (cm)	b <sub>f</sub> (cm)	d <sub>s</sub> (cm)	d <sub>ct</sub> (cm)	d <sub>cb</sub> (cm)
40	30	40	0	6	6

##### Material Properties

E <sub>c</sub> (kgf/cm <sup>2</sup> )	f' <sub>c</sub> (kgf/cm <sup>2</sup> )	Lt.Wt Factor (Unitless)	f <sub>y</sub> (kgf/cm <sup>2</sup> )	f <sub>ys</sub> (kgf/cm <sup>2</sup> )
234008.55	250	1	4218.42	4218.42

##### Design Code Parameters

Φ <sub>T</sub>	Φ <sub>CTied</sub>	Φ <sub>CSpiral</sub>	Φ <sub>Vns</sub>	Φ <sub>Vs</sub>	Φ <sub>VJoint</sub>
0.9	0.65	0.75	0.75	0.6	0.85

##### Design Moment and Flexural Reinforcement for Moment, M<sub>u3</sub>

	Design Moment kgf-cm	Design P <sub>u</sub> kgf	-Moment Rebar cm <sup>2</sup>	+Moment Rebar cm <sup>2</sup>	Minimum Rebar cm <sup>2</sup>	Required Rebar cm <sup>2</sup>
Top (+2 Axis)	-823344.94	0	10.09	0	3.2	10.09
Bottom (-2 Axis)	0	0	0	0	0	0

##### Shear Force and Reinforcement for Shear, V<sub>u2</sub>

Shear V <sub>u2</sub> kgf	Shear ΦV <sub>c</sub> kgf	Shear ΦV <sub>s</sub> kgf	Shear V <sub>p</sub> kgf	Rebar A <sub>v</sub> / S cm <sup>2</sup> /cm
13072.57	6037.15	7035.43	1970.79	0.0927

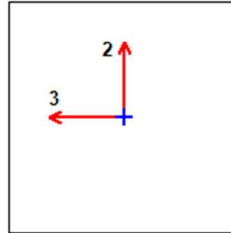
##### Torsion Force and Torsion Reinforcement for Torsion, T<sub>u</sub>

T <sub>u</sub> kgf-cm	ΦT <sub>th</sub> kgf-cm	ΦT <sub>cr</sub> kgf-cm	Area A <sub>o</sub> cm <sup>2</sup>	Perimeter, p <sub>h</sub> cm	Rebar A <sub>t</sub> / s cm <sup>2</sup> /cm	Rebar A <sub>t</sub> cm <sup>2</sup>
59747.48	32925.63	131702.53	558.2	104.44	0.0373	3.89



#### 4.1.12 TRABE TA-02 30X30

##### ACI 318-19 Beam Section Design



##### Beam Element Details (Summary)

Level	Element	Unique Name	Section ID	Combo ID	Station Loc	Length (cm)	LLRF	Type
N1	B44	126	TA-02 30X30	1.4CM+1.4Wm	9.98	625.418	1	Sway Ordinary

##### Section Properties

b (cm)	h (cm)	b <sub>f</sub> (cm)	d <sub>s</sub> (cm)	d <sub>ct</sub> (cm)	d <sub>cb</sub> (cm)
30	30	30	0	6	6

##### Material Properties

E <sub>c</sub> (kgf/cm <sup>2</sup> )	f' <sub>c</sub> (kgf/cm <sup>2</sup> )	Lt.Wt Factor (Unitless)	f <sub>y</sub> (kgf/cm <sup>2</sup> )	f <sub>ys</sub> (kgf/cm <sup>2</sup> )
234008.55	250	1	4218.42	4218.42

##### Design Code Parameters

Φ <sub>T</sub>	Φ <sub>CTied</sub>	Φ <sub>CSpiral</sub>	Φ <sub>Vns</sub>	Φ <sub>Vs</sub>	Φ <sub>VJoint</sub>
0.9	0.65	0.75	0.75	0.6	0.85

##### Design Moment and Flexural Reinforcement for Moment, M<sub>u3</sub>

	Design Moment kgf-cm	Design P <sub>u</sub> kgf	-Moment Rebar cm <sup>2</sup>	+Moment Rebar cm <sup>2</sup>	Minimum Rebar cm <sup>2</sup>	Required Rebar cm <sup>2</sup>
Top (+2 Axis)	-583273.48	0	7.1	0	2.4	7.1
Bottom (-2 Axis)	0	0	0	0	0	0

##### Shear Force and Reinforcement for Shear, V<sub>u2</sub>

Shear V <sub>u2</sub> kgf	Shear ΦV <sub>c</sub> kgf	Shear ΦV <sub>s</sub> kgf	Shear V <sub>p</sub> kgf	Rebar A <sub>v</sub> / S cm <sup>2</sup> /cm
6221.56	4527.86	1693.7	1075.47	0.0223

##### Torsion Force and Torsion Reinforcement for Torsion, T<sub>u</sub>

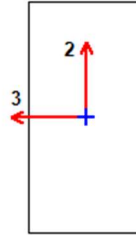
T <sub>u</sub> kgf-cm	ΦT <sub>th</sub> kgf-cm	ΦT <sub>cr</sub> kgf-cm	Area A <sub>o</sub> cm <sup>2</sup>	Perimeter, p <sub>h</sub> cm	Rebar A <sub>t</sub> / s cm <sup>2</sup> /cm	Rebar A <sub>t</sub> cm <sup>2</sup>
55076.07	22553.27	90213.08	378.8	84.44	0.0376	3.18





#### 4.1.13 TRABE TC-01 15X30

##### ACI 318-19 Beam Section Design



##### Beam Element Details (Summary)

Level	Element	Unique Name	Section ID	Combo ID	Station Loc	Length (cm)	LLRF	Type
N1	B119	36	TC-01	1.1CM+1.1Wa+1.1SX	663.594	683.594	1	Sway Ordinary

##### Section Properties

b (cm)	h (cm)	b <sub>f</sub> (cm)	d <sub>s</sub> (cm)	d <sub>ct</sub> (cm)	d <sub>cb</sub> (cm)
15	30	15	0	6	6

##### Material Properties

E <sub>c</sub> (kgf/cm <sup>2</sup> )	f' <sub>c</sub> (kgf/cm <sup>2</sup> )	Lt.Wt Factor (Unitless)	f <sub>y</sub> (kgf/cm <sup>2</sup> )	f <sub>ys</sub> (kgf/cm <sup>2</sup> )
234008.55	250	1	4218.42	4218.42

##### Design Code Parameters

φ <sub>T</sub>	φ <sub>CTied</sub>	φ <sub>CSpiral</sub>	φ <sub>Vns</sub>	φ <sub>Vs</sub>	φ <sub>VJoint</sub>
0.9	0.65	0.75	0.75	0.6	0.85

##### Design Moment and Flexural Reinforcement for Moment, M<sub>u3</sub>

	Design Moment kgf-cm	Design P <sub>u</sub> kgf	-Moment Rebar cm <sup>2</sup>	+Moment Rebar cm <sup>2</sup>	Minimum Rebar cm <sup>2</sup>	Required Rebar cm <sup>2</sup>
Top (+2 Axis)	0	-1721.67	0.23	0	0.3	0.3
Bottom (-2 Axis)	35352.76	-1721.67	0.23	0.67	0.9	0.9

##### Shear Force and Reinforcement for Shear, V<sub>u2</sub>

Shear V <sub>u2</sub> kgf	Shear φV <sub>c</sub> kgf	Shear φV <sub>s</sub> kgf	Shear V <sub>p</sub> kgf	Rebar A <sub>v</sub> / S cm <sup>2</sup> /cm
156.94	1227.68	0	144.37	0

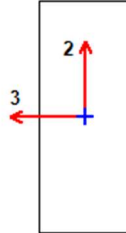
##### Torsion Force and Torsion Reinforcement for Torsion, T<sub>u</sub>

T <sub>u</sub> kgf-cm	φT <sub>th</sub> kgf-cm	φT <sub>cr</sub> kgf-cm	Area A <sub>o</sub> cm <sup>2</sup>	Perimeter, p <sub>h</sub> cm	Rebar A <sub>t</sub> / s cm <sup>2</sup> /cm	Rebar A <sub>t</sub> cm <sup>2</sup>
18.78	8669.04	34676.16	109.6	54.44	0	0



#### 4.1.14 TN-01 12X30

#### ACI 318-19 Beam Section Design



**Beam Element Details (Summary)**

Level	Element	Unique Name	Section ID	Combo ID	Station Loc	Length (cm)	LLRF	Type
N1	B259	271	TN-01 12X30	1.4CM+1.4Wm	557.784	557.784	1	Sway Ordinary

**Section Properties**

b (cm)	h (cm)	b <sub>r</sub> (cm)	d <sub>s</sub> (cm)	d <sub>ct</sub> (cm)	d <sub>cb</sub> (cm)
12	30	12	0	6	6

**Material Properties**

E <sub>c</sub> (kgf/cm <sup>2</sup> )	f' <sub>c</sub> (kgf/cm <sup>2</sup> )	Lt.Wt Factor (Unitless)	f <sub>y</sub> (kgf/cm <sup>2</sup> )	f <sub>ys</sub> (kgf/cm <sup>2</sup> )
234008.55	250	1	4218.42	4218.42

**Design Code Parameters**

Φ <sub>T</sub>	Φ <sub>CTied</sub>	Φ <sub>CSpiral</sub>	Φ <sub>Vns</sub>	Φ <sub>Vs</sub>	Φ <sub>Vjoint</sub>
0.9	0.65	0.75	0.75	0.6	0.85

**Design Moment and Flexural Reinforcement for Moment, M<sub>u3</sub>**

	Design Moment kgf-cm	Design P <sub>u</sub> kgf	-Moment Rebar cm <sup>2</sup>	+Moment Rebar cm <sup>2</sup>	Minimum Rebar cm <sup>2</sup>	Required Rebar cm <sup>2</sup>
Top (+2 Axis)	-187040.4	-111.36	2.24	0.01	0.96	2.24
Bottom (-2 Axis)	0	-111.36	0	0.01	0.02	0.02

**Shear Force and Reinforcement for Shear, V<sub>u2</sub>**

Shear V <sub>u2</sub> kgf	Shear φV <sub>c</sub> kgf	Shear φV <sub>s</sub> kgf	Shear V <sub>p</sub> kgf	Rebar A <sub>v</sub> /S cm <sup>2</sup> /cm
1340.46	1811.14	759.32	378.76	0.01



#### 4.1.15 MC-01 15 CM

##### ACI 318-19 Pier Design

###### Pier Details

Story ID	Pier ID	Centroid X (cm)	Centroid Y (cm)	Length (cm)	Thickness (cm)	LLRF
N1	B-m14	512.694	365	568.613	15	1

###### Material Properties

$E_c$ (kgf/cm <sup>2</sup> )	$f'_c$ (kgf/cm <sup>2</sup> )	Lt.Wt Factor (Unitless)	$f_y$ (kgf/cm <sup>2</sup> )	$f_{ys}$ (kgf/cm <sup>2</sup> )
256343.52	300	1	4218.42	4218.42

###### Design Code Parameters

$\Phi_T$	$\Phi_C$	$\Phi_V$	$\Phi_V$ (Seismic)	$IP_{MAX}$	$IP_{MIN}$	$P_{MAX}$
0.9	0.65	0.75	0.6	0.04	0.0025	0.8

###### Pier Leg Location, Length and Thickness

Station Location	ID	Left X <sub>1</sub> cm	Left Y <sub>1</sub> cm	Right X <sub>2</sub> cm	Right Y <sub>2</sub> cm	Length cm	Thickness cm
Top	Leg 1	228.387	365	797	365	568.613	15
Bottom	Leg 1	228.387	365	797	365	568.613	15

###### Flexural Design for $P_u$ , $M_{u2}$ and $M_{u3}$

Station Location	Required Rebar Area (cm <sup>2</sup> )	Required Reinf Ratio	Current Reinf Ratio	Flexural Combo	$P_u$ kgf	$M_{u2}$ kgf-cm	$M_{u3}$ kgf-cm	Pier $A_g$ cm <sup>2</sup>
Top	21.32	0.0025	0.0018	0.9CM+1.1SX	4398.67	34750.7	-311540.18	8529.19
Bottom	21.32	0.0025	0.0018	0.9CM+1.1SX	11286.4	-36292.6	-389756.82	8529.19

###### Shear Design

Station Location	ID	Rebar cm <sup>2</sup> /cm	Shear Combo	$P_u$ kgf	$M_u$ kgf-cm	$V_u$ kgf	$\Phi V_c$ kgf	$\Phi V_n$ kgf
Top	Leg 1	0.0375	1.1CM+1.1Wa+1.1SX	12807.95	-393045.24	1034.69	70508.26	124477.77
Bottom	Leg 1	0.0375	1.1CM+1.1Wa+1.1SY	17168.42	667713.17	1075.75	70508.26	124477.77

###### Boundary Element Check (ACI 18.10.6.3, 18.10.6.4)

Station Location	ID	Edge Length (cm)	Governing Combo	$P_u$ kgf	$M_u$ kgf-cm	Stress Comp kgf/cm <sup>2</sup>	Stress Limit kgf/cm <sup>2</sup>	C Depth cm	C Limit cm
Top-Left	Leg 1	Not Required	1.1CM+1.1Wa+1.1SY	12886.35	-359022.6	1.96	60		
Top-Right	Leg 1	Not Required	1.1CM+1.1Wa+1.1SY	12886.35	-359022.6	1.07	60		
Bottom-Left	Leg 1	Not Required	1.1CM+1.1Wa+1.1SY	19822.51	667713.17	1.5	60		
Bottom-Right	Leg 1	Not Required	1.1CM+1.1Wa+1.1SY	19822.51	667713.17	3.15	60		



#### 4.1.16 MC-02 15 CM

##### ACI 318-19 Pier Design

###### Pier Details

Story ID	Pier ID	Centroid X (cm)	Centroid Y (cm)	Length (cm)	Thickness (cm)	LLRF
N1	A-24	535.5	0	523	15	0.708

###### Material Properties

$E_c$ (kgf/cm <sup>2</sup> )	$f'_c$ (kgf/cm <sup>2</sup> )	Lt.Wt Factor (Unitless)	$f_y$ (kgf/cm <sup>2</sup> )	$f_{ys}$ (kgf/cm <sup>2</sup> )
256343.52	300	1	4218.42	4218.42

###### Design Code Parameters

$\Phi_T$	$\Phi_C$	$\Phi_v$	$\Phi_v$ (Seismic)	$IP_{MAX}$	$IP_{MIN}$	$P_{MAX}$
0.9	0.65	0.75	0.6	0.04	0.0025	0.8

###### Pier Leg Location, Length and Thickness

Station Location	ID	Left X <sub>1</sub> cm	Left Y <sub>1</sub> cm	Right X <sub>2</sub> cm	Right Y <sub>2</sub> cm	Length cm	Thickness cm
Top	Leg 1	274	0	797	0	523	15
Bottom	Leg 1	274	0	797	0	523	15

###### Flexural Design for $P_u$ , $M_{u2}$ and $M_{u3}$

Station Location	Required Rebar Area (cm <sup>2</sup> )	Required Reinf Ratio	Current Reinf Ratio	Flexural Combo	$P_u$ kgf	$M_{u2}$ kgf-cm	$M_{u3}$ kgf-cm	Pier A <sub>g</sub> cm <sup>2</sup>
Top	19.61	0.0025	0.0018	0.9CM+1.1SX	2246	-40459.07	-303418.35	7845
Bottom	19.61	0.0025	0.0018	0.9CM+1.1SX	11151.32	-12619.09	-324156.12	7845

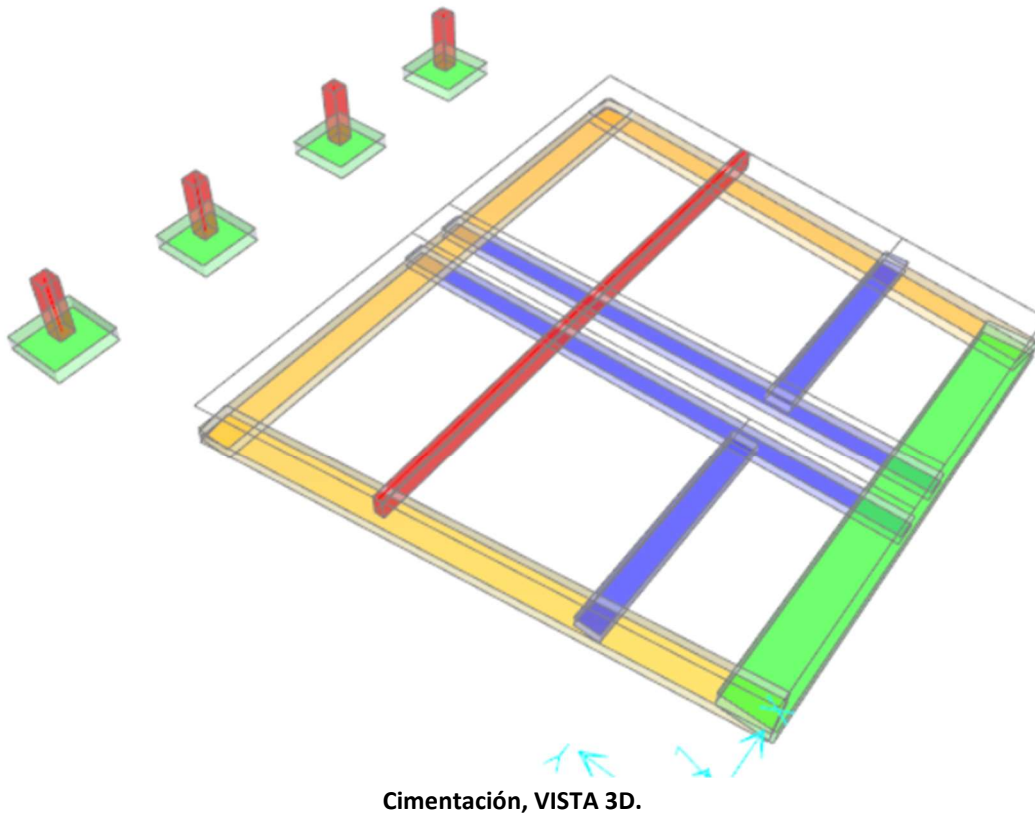
###### Shear Design

Station Location	ID	Rebar cm <sup>2</sup> /cm	Shear Combo	$P_u$ kgf	$M_u$ kgf-cm	$V_u$ kgf	$\Phi V_c$ kgf	$\Phi V_n$ kgf
Top	Leg 1	0.0375	1.1CM+1.1Wa+1.1SX	2262.23	-205484.31	2163.04	64852.28	114492.51
Bottom	Leg 1	0.0375	1.1CM+1.1Wa+1.1SX	7105.37	-40311.08	1558.91	64852.28	114492.51

###### Boundary Element Check (ACI 18.10.6.3, 18.10.6.4)

Station Location	ID	Edge Length (cm)	Governing Combo	$P_u$ kgf	$M_u$ kgf-cm	Stress Comp kgf/cm <sup>2</sup>	Stress Limit kgf/cm <sup>2</sup>	C Depth cm	C Limit cm
Top-Left	Leg 1	Not Required	1.1CM+1.1Wa+1.1SY	3595.76	-166695.21	0.7	60		
Top-Right	Leg 1	Not Required	1.1CM+1.1Wa+1.1SY	3595.76	-166695.21	0.21	60		
Bottom-Left	Leg 1	Not Required	1.1CM+1.1Wa+1.1SY	13324.31	118844.7	1.52	60		
Bottom-Right	Leg 1	Not Required	1.1CM+1.1Wa+1.1SY	13324.31	118844.7	1.87	60		

## 4.2 SUBESTRUCTURA



Cimentación, VISTA 3D.

Para la elaboración del modelo de cimentación se importaron las cargas del software ETABS resultantes del análisis de la superestructura. Además, se tomaron en cuenta las propiedades del suelo que se presentan en el estudio de mecánica de suelos del sitio.

Se toma una capacidad de suelo de 16.959 ton/m<sup>2</sup> para zapatas aisladas siguiendo las recomendaciones de la mecánica de suelos partiendo de una capacidad base y aumentando según el ancho y profundidad como lo estipula. Para zapatas corridas se tiene una capacidad de carga de 14.475 kg/m<sup>2</sup>.

Además, para la determinación del comportamiento del suelo se toma un coeficiente de balasto de 1.364 kg/cm<sup>2</sup> a una profundidad de desplante de variable de -1.80 m, -0.80 m y -0.60 m.



## DATOS DEL MODELO

### PROPIEDADES DE LOS MATERIALES

Material	E	U	A	UnitWt	Fc	LtWtConc	UserModRup
	kgf/cm2		1/C	kgf/cm3	kgf/cm2		
Conc f'c 300 kg/cm2	256343.52	0.200000	9.9000E-06	2.4028E-03	300.00	No	No

### PROPIEDADES DEL ACERO DE REFUERZO

Material	E	UnitWt	Fy	Fu
	kgf/cm2	kgf/cm3	kgf/cm2	kgf/cm2
A615Gr60	2038901.92	7.8490E-03	4218.42	6327.63

### PROPIEDADES DE LAS LOSAS

Slab	Type	MatProp	Thickness cm	Ortho
ZA-01 40 cm	Footing	Conc f'c 300 kg/cm2	40.0000	No
ZCC-01 25 cm	Footing	Conc f'c 300 kg/cm2	25.0000	No
ZCL-01 30 cm	Footing	Conc f'c 300 kg/cm2	30.0000	No
ZCL-02 40 cm	Footing	Conc f'c 300 kg/cm2	40.0000	No

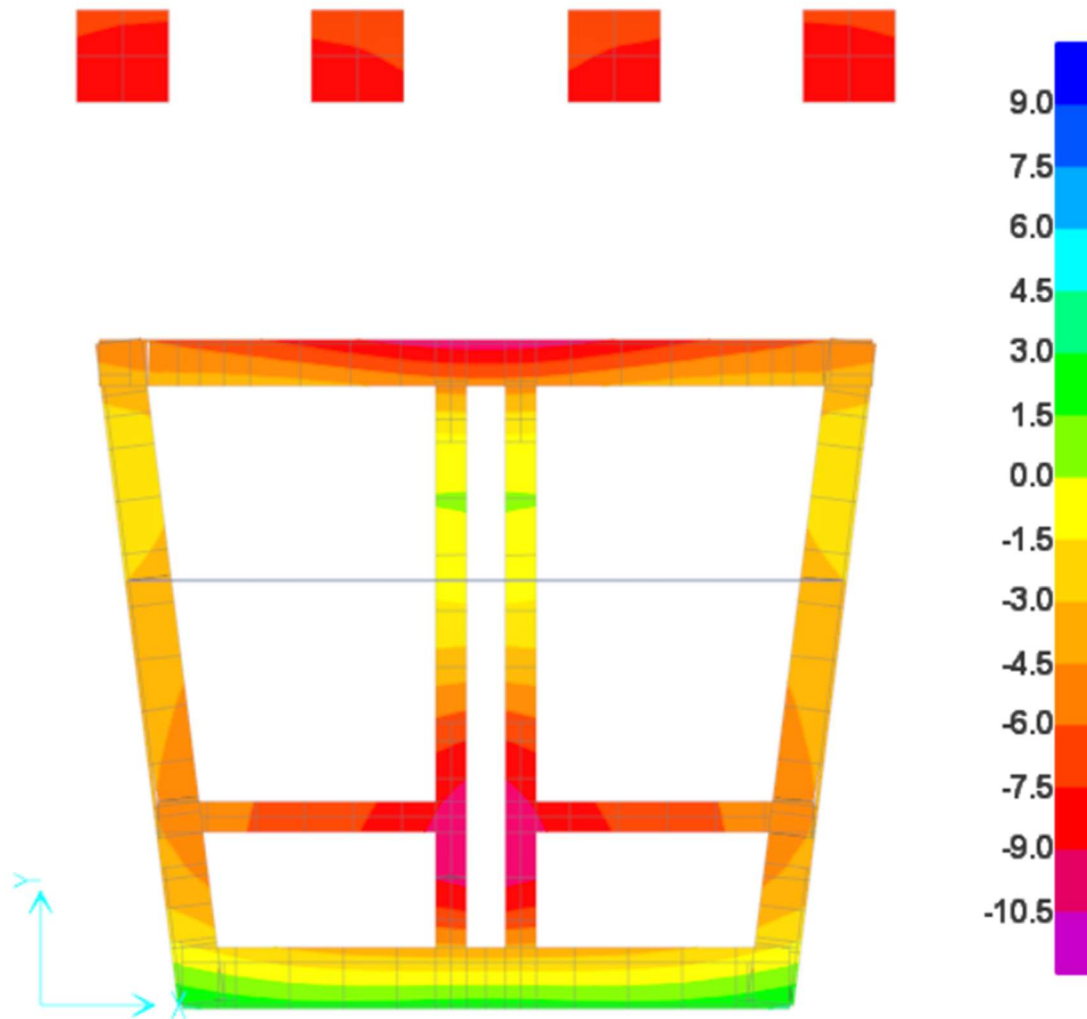
### PROPIEDADES DEL SUELO

Soil	Subgrade	NonlinOpt
	kgf/cm3	
Parque los Andes	1.3640E+00	Compression Only





#### 4.2.1 RESULTADOS



Presiones en el suelo por combinación crítica CM+Wm+Sh, presión máxima 9.46 ton/m<sup>2</sup>.



#### 4.2.2 ZAPATA ZAC-01 CRÍTICA

##### Geometric Properties

Combination = Overall Envelope

Strip Label = MSA3

Length = 180 cm

Distance to Top Rebar Center = 5.9525 cm

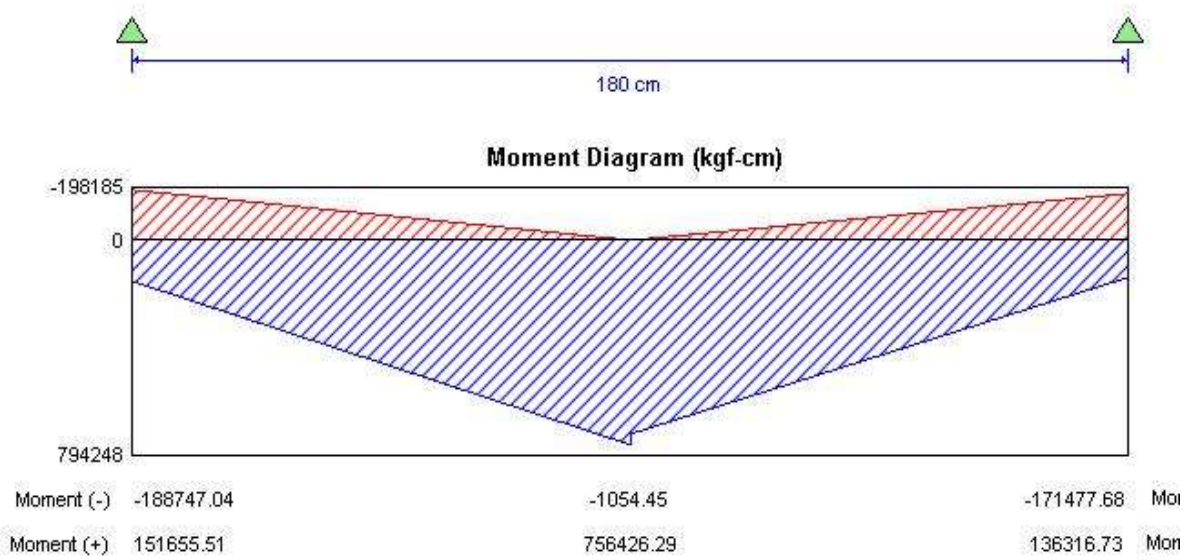
Distance to Bot Rebar Center = 8.4525 cm

##### Material Properties

Concrete Comp. Strength = 300 kgf/cm<sup>2</sup>

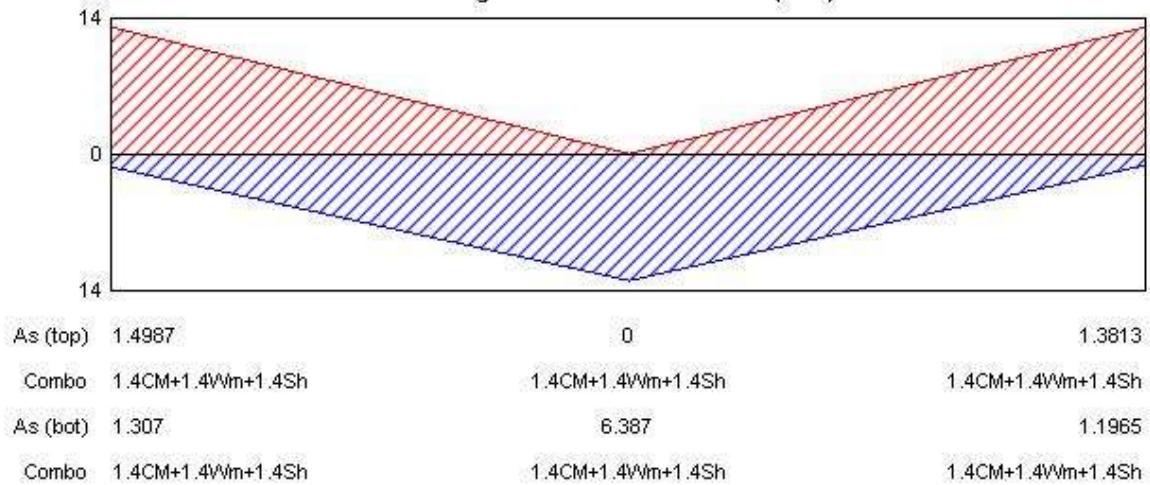
Concrete Modulus = 256343.52 kgf/cm<sup>2</sup>

Longitudinal Rebar Yield = 4218.42 kgf/cm<sup>2</sup>

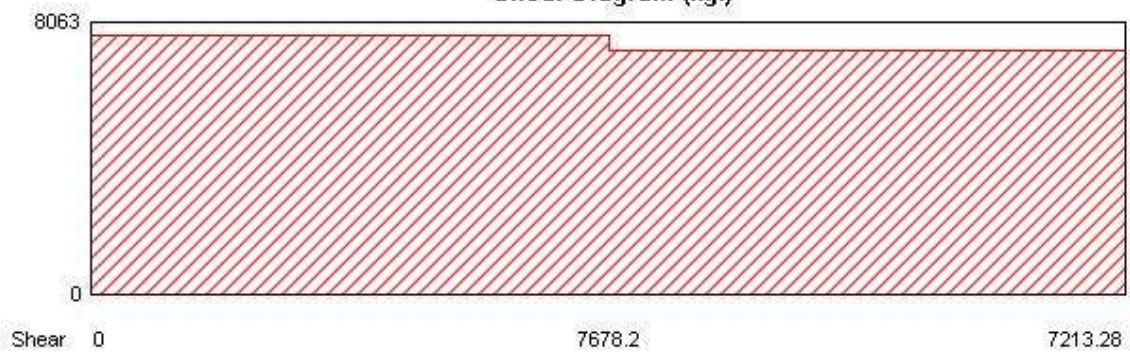




### Longitudinal Reinforcement (cm<sup>2</sup>)



### Shear Diagram (kgf)





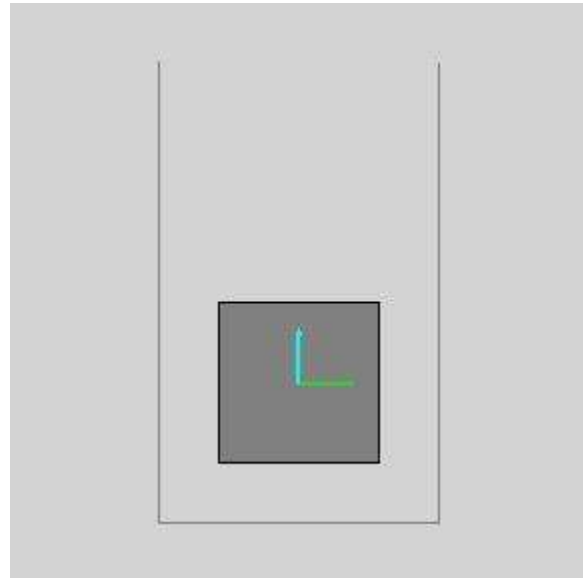
## REVISIÓN POR PUNZONAMIENTO ZA-01

### Geometric Properties

Combination = 1.4CM+1.4Wm+1.4Sh  
Point Label = 31  
Column Shape = Rectangular  
Column Location = Edge  
Global X-Coordinate = 159 cm  
Global Y-Coordinate = 1842.6 cm

### Column Punching Check

Avg. Eff. Slab Thickness = 33.095 cm  
Eff. Punching Perimeter = 336.24 cm  
Cover = 6.905 cm  
Conc. Comp. Strength = 300 kgf/cm<sup>2</sup>  
Reinforcement Ratio = 0.0000  
Section Inertia I<sub>22</sub> = 20904855.03 cm<sup>4</sup>  
Section Inertia I<sub>33</sub> = 14575508.29 cm<sup>4</sup>  
Section Inertia I<sub>23</sub> = 0 cm<sup>4</sup>  
Gamma\_v2 = 0.461516  
Gamma\_v3 = 0.341484  
Moment Mu<sub>2</sub> = 668550.01 kgf-cm  
Moment Mu<sub>3</sub> = 18919.43 kgf-cm  
Shear Force = -18093.01 kgf  
Unbalanced Moment Mu<sub>2</sub> = 308546.54 kgf-cm  
Unbalanced Moment Mu<sub>3</sub> = 6460.68 kgf-cm  
Max Design Shear Stress = 2.37 kgf/cm<sup>2</sup>  
Conc. Shear Stress Capacity = 13.78 kgf/cm<sup>2</sup>  
Punching Shear Ratio = 0.17





#### 4.2.3 ZAPATA ZCL-01 CRÍTICA

##### Geometric Properties

Combination = Overall Envelope

Strip Label = MSA15

Length = 107.5 cm

Distance to Top Rebar Center = 5.9525 cm

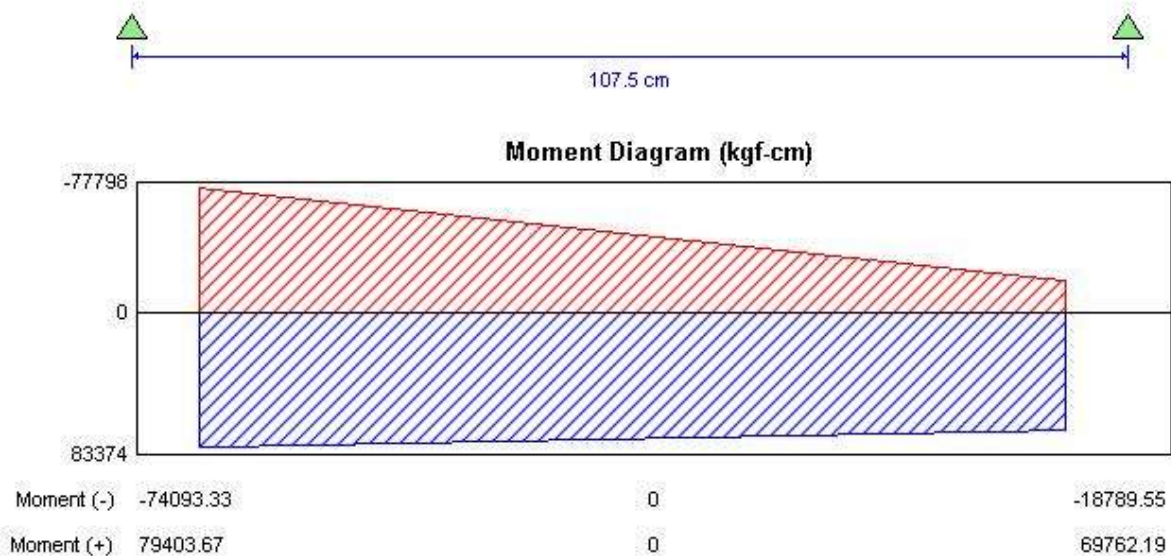
Distance to Bot Rebar Center = 8.4525 cm

##### Material Properties

Concrete Comp. Strength = 300 kgf/cm<sup>2</sup>

Concrete Modulus = 256343.52 kgf/cm<sup>2</sup>

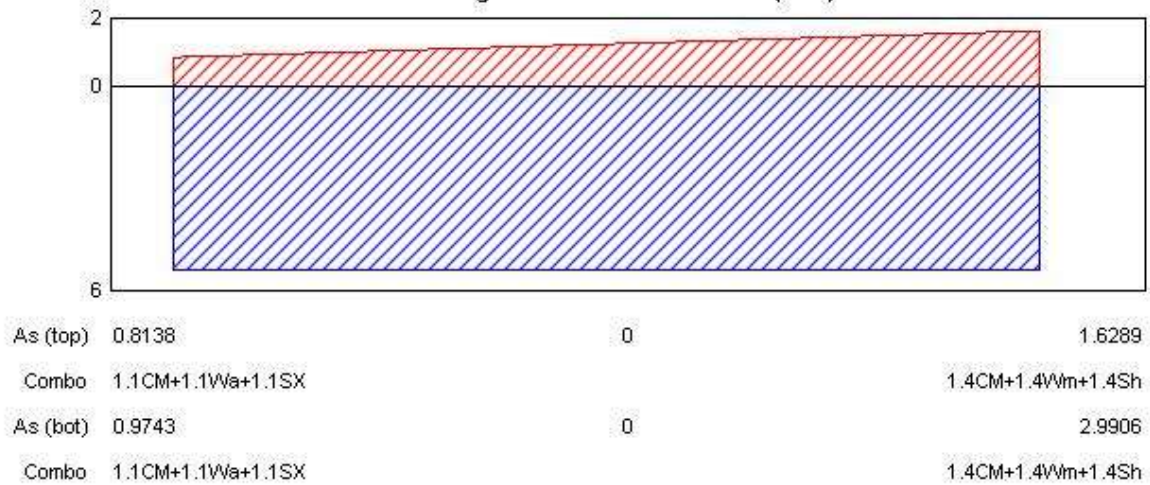
Longitudinal Rebar Yield = 4218.42 kgf/cm<sup>2</sup>



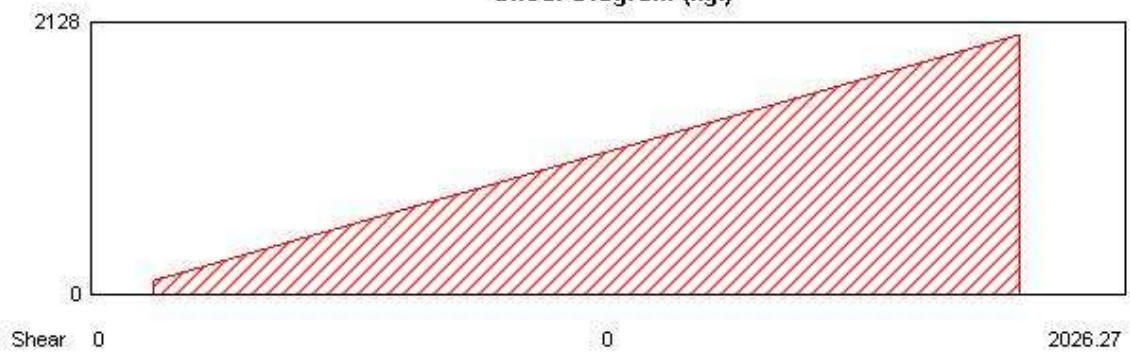




### Longitudinal Reinforcement (cm<sup>2</sup>)



### Shear Diagram (kgf)





#### 4.2.4 ZAPATA ZCL-02 CRÍTICA

##### Geometric Properties

Combination = Overall Envelope

Strip Label = MSA10

Length = 135 cm

Distance to Top Rebar Center = 5.9525 cm

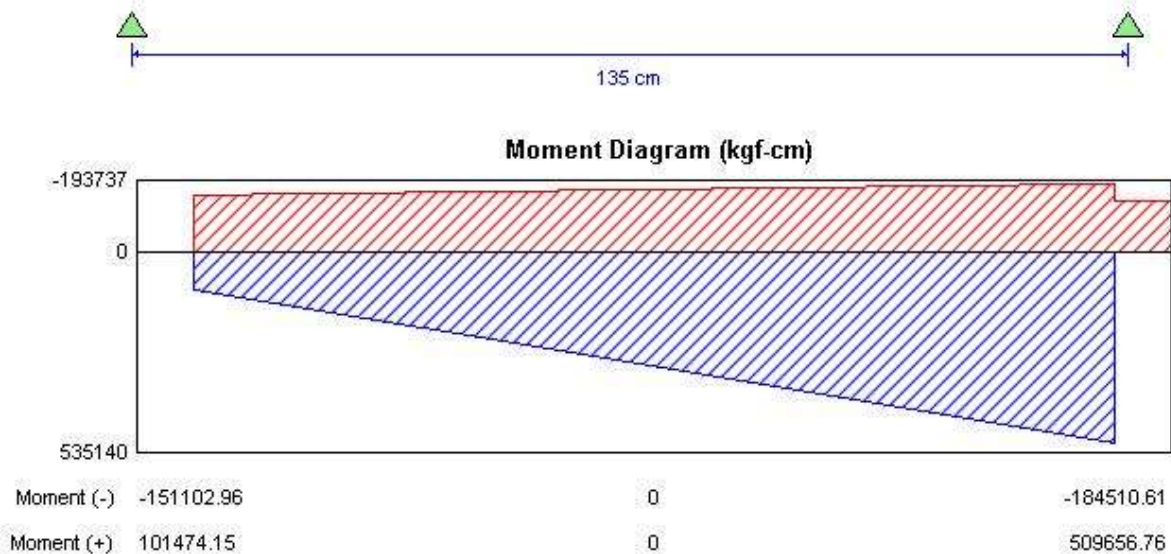
Distance to Bot Rebar Center = 8.4525 cm

##### Material Properties

Concrete Comp. Strength = 300 kgf/cm<sup>2</sup>

Concrete Modulus = 256343.52 kgf/cm<sup>2</sup>

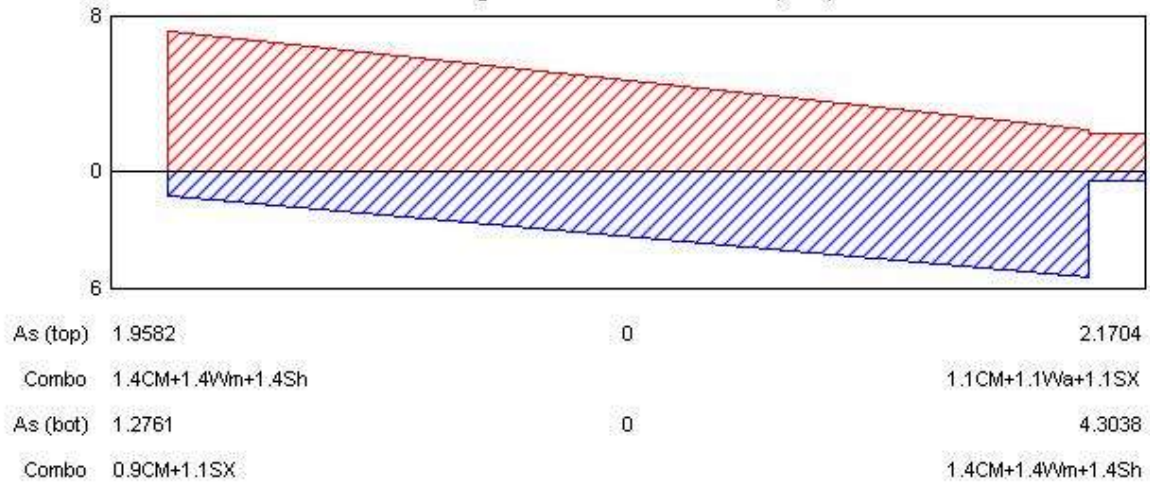
Longitudinal Rebar Yield = 4218.42 kgf/cm<sup>2</sup>



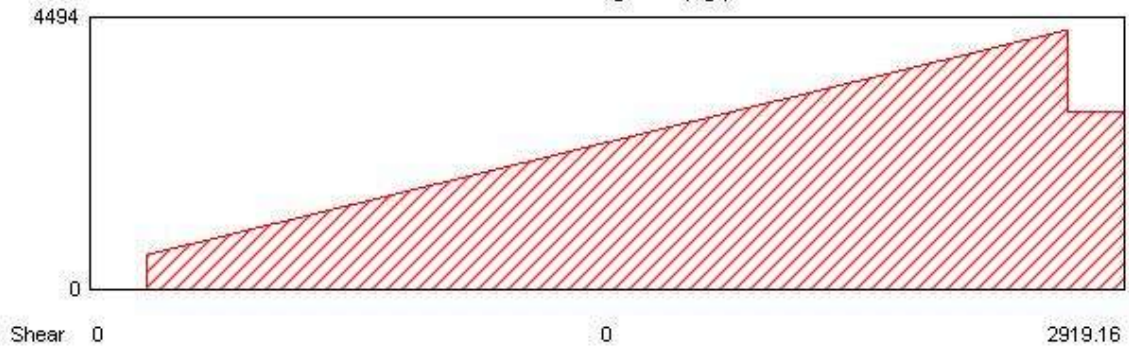




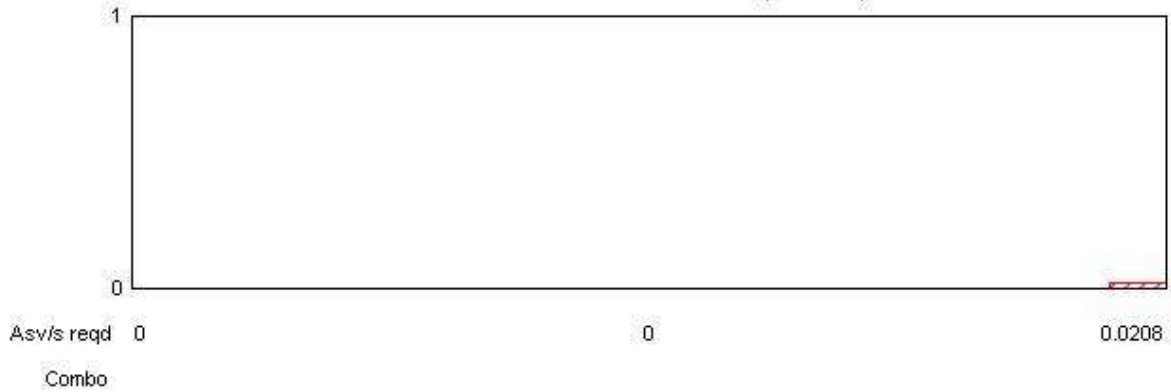
### Longitudinal Reinforcement (cm<sup>2</sup>)



### Shear Diagram (kgf)



### Transverse Reinforcement (cm<sup>2</sup>/cm)





#### 4.2.5 ZAPATA ZCC-01 CRÍTICA

##### Geometric Properties

Combination = Overall Envelope

Strip Label = MSA22

Length = 70 cm

Distance to Top Rebar Center = 5.9525 cm

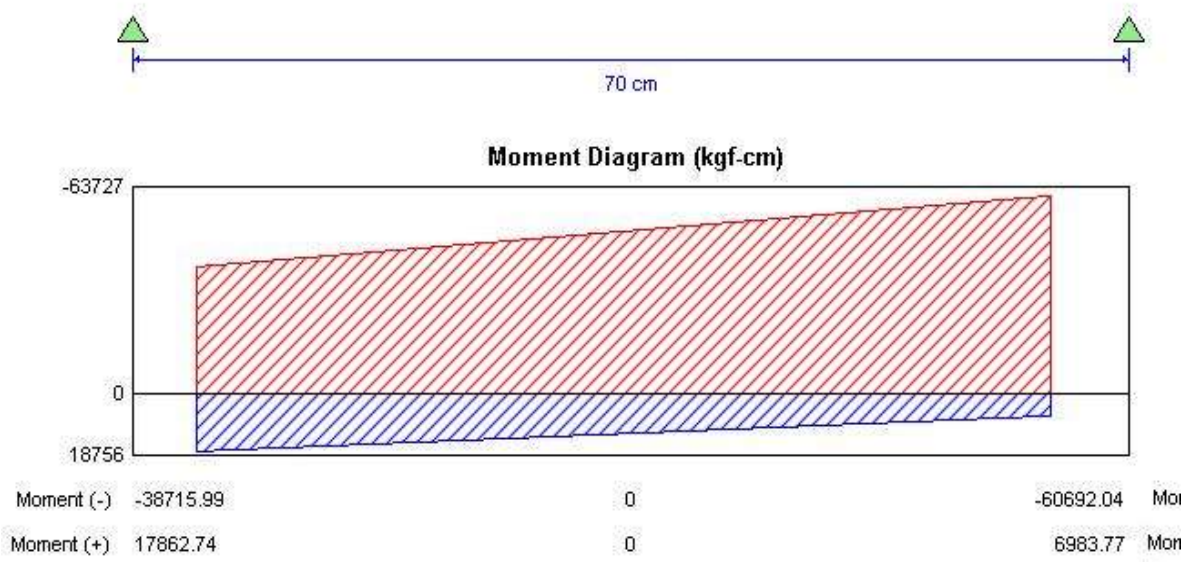
Distance to Bot Rebar Center = 8.4525 cm

##### Material Properties

Concrete Comp. Strength = 300 kgf/cm<sup>2</sup>

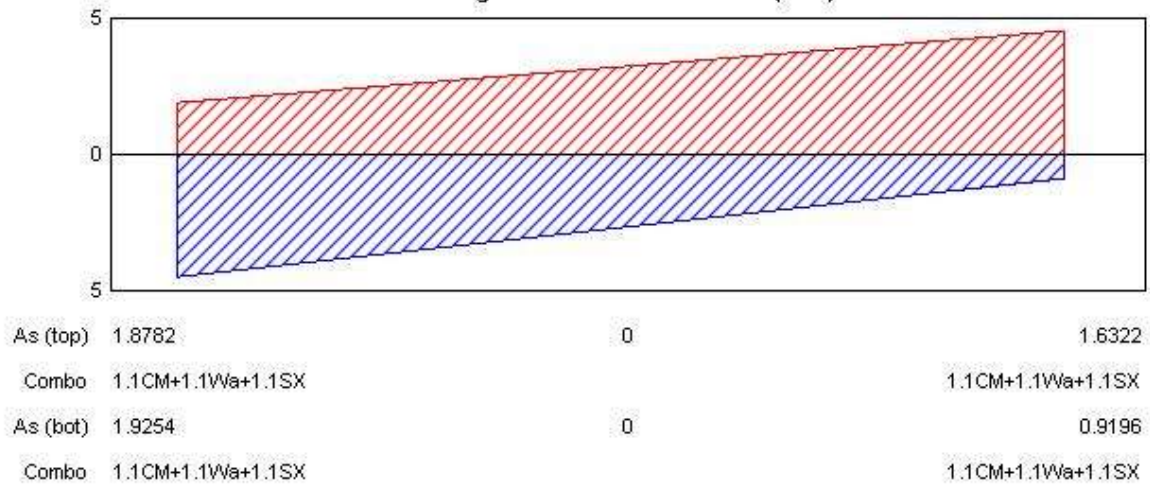
Concrete Modulus = 256343.52 kgf/cm<sup>2</sup>

Longitudinal Rebar Yield = 4218.42 kgf/cm<sup>2</sup>

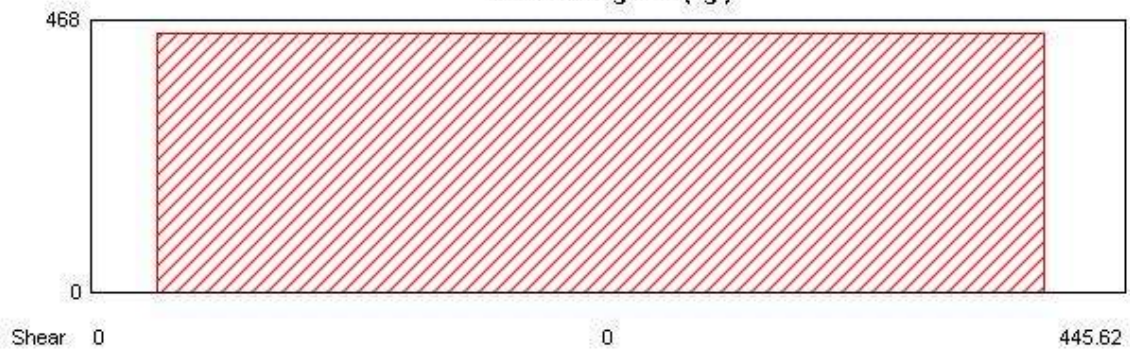




### Longitudinal Reinforcement (cm<sup>2</sup>)



### Shear Diagram (kgf)

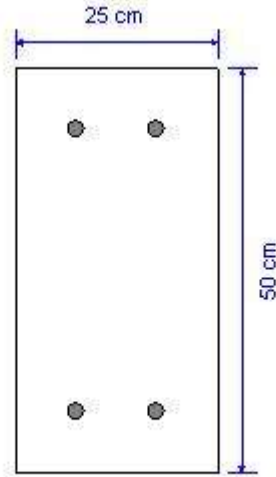




#### 4.2.6 TL-01

##### Geometric Properties

Combination = Overall Envelope  
Beam Label = 90  
Section Property = CT-01 25X50  
Length = 1387.206 cm  
Section Width = 25 cm  
Section Depth = 50 cm  
Distance to Top Rebar Center = 7.5 cm  
Distance to Bot Rebar Center = 7.5 cm

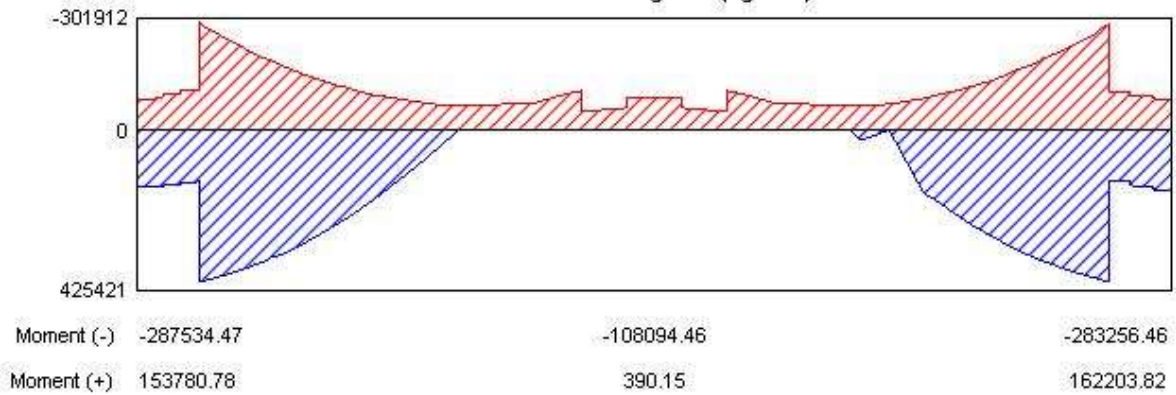


##### Material Properties

Concrete Comp. Strength = 300 kgf/cm<sup>2</sup>  
Concrete Modulus = 256343.52 kgf/cm<sup>2</sup>  
Longitudinal Rebar Yield = 4218.42 kgf/cm<sup>2</sup>  
Shear Rebar Yield = 4218.42 kgf/cm<sup>2</sup>



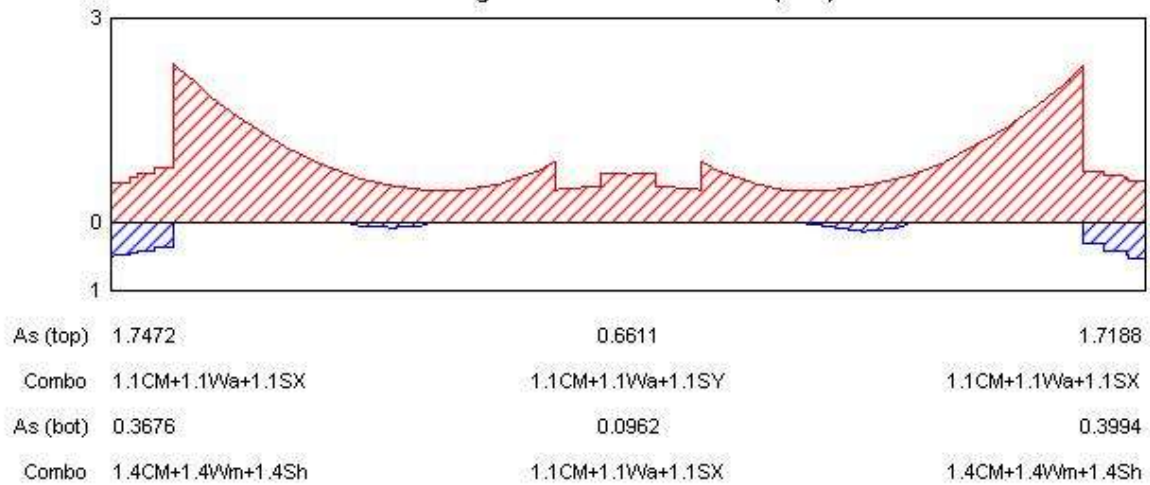
**Moment Diagram (kgf-cm)**



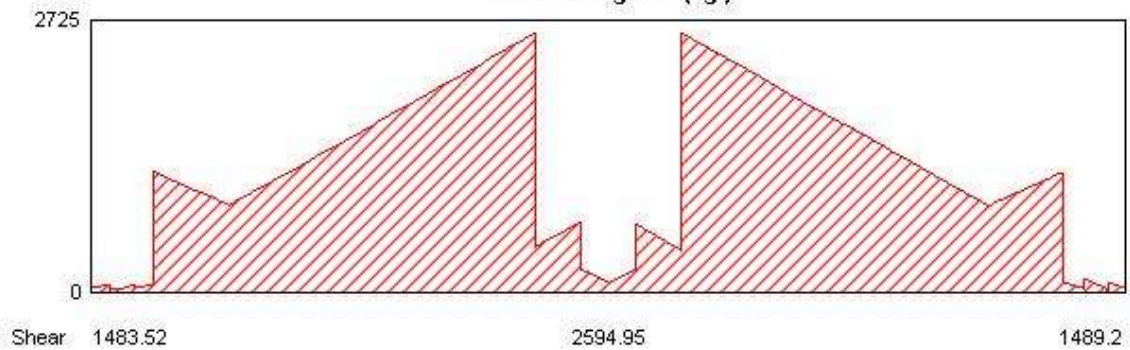




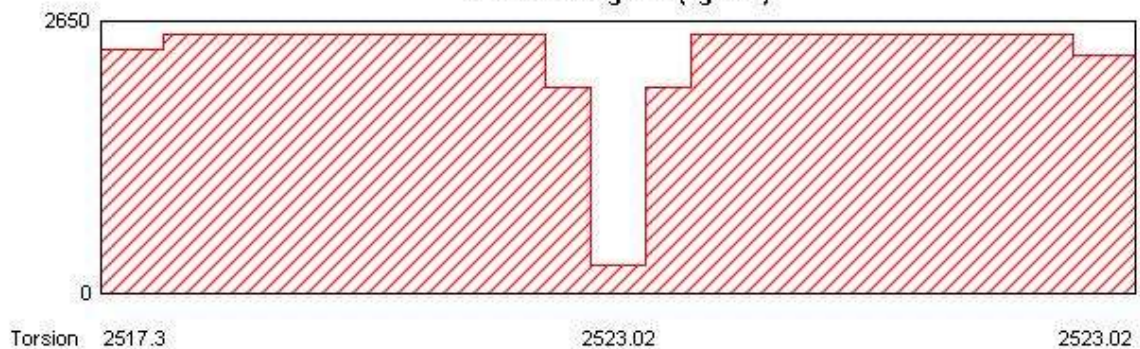
### Longitudinal Reinforcement (cm<sup>2</sup>)



### Shear Diagram (kgf)

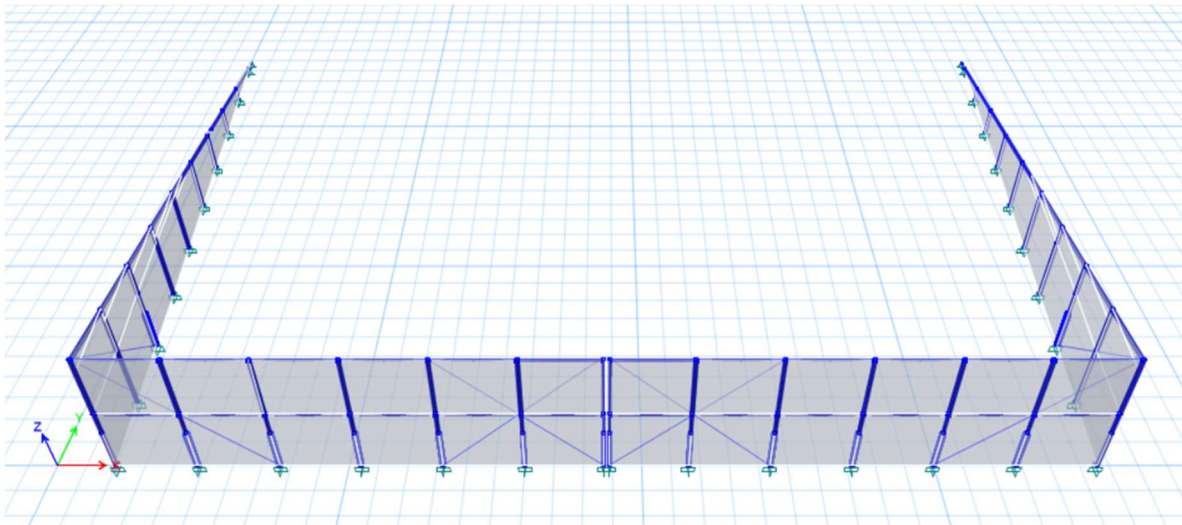


### Torsion Diagram (kgf-cm)





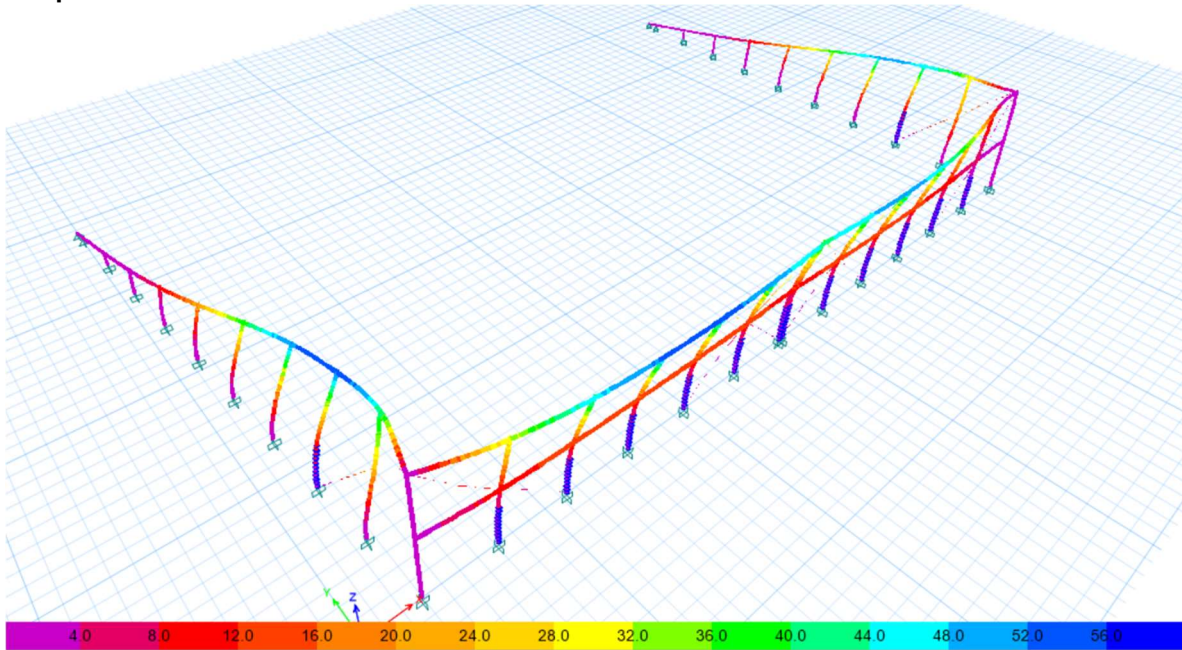
## 5. REVISIÓN DE CERCA DE MALLA CICLÓNICA





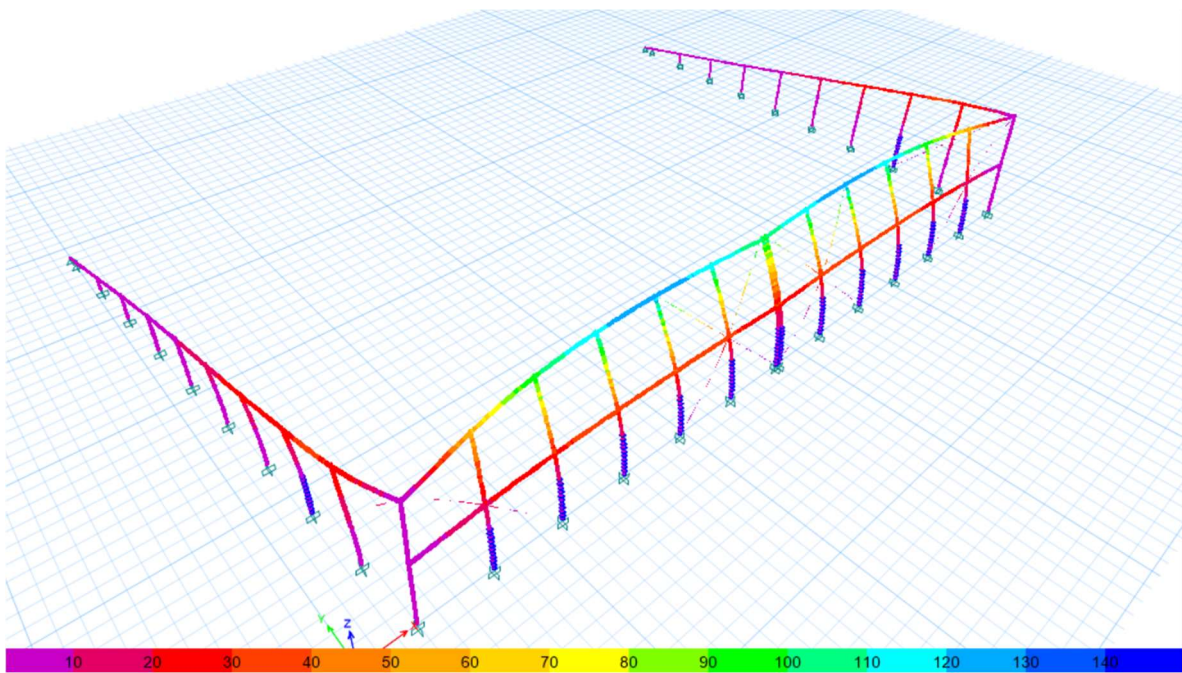
## 5.1 RESULTADOS DE ANÁLISIS

### Desplazamientos



Desplazamientos resultantes por 0.9CM+1.1VX en mm.





**Desplazamientos resultantes por 0.9CM+1.1VY en mm.**



### 5.1.1 Distorsiones

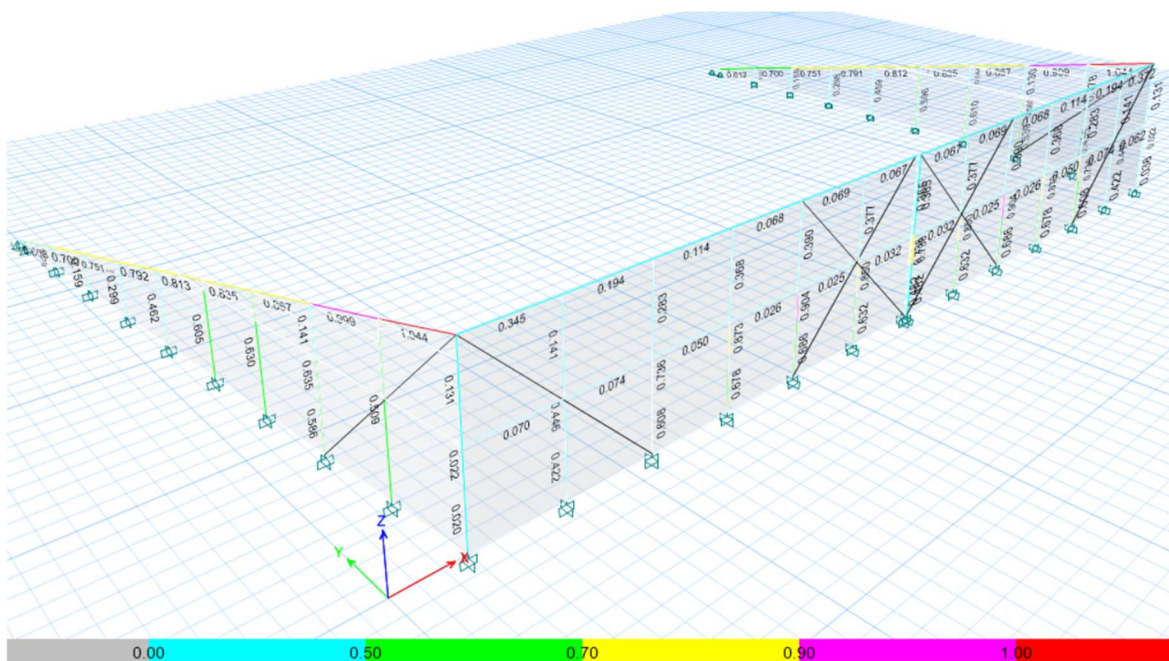
Story	Output Case	Case Type	Direction	Drift	Label	X m	Y m	Z m
N2	Dead	LinStatic	Y	4E-06	1	1.5	0	4
N2	SX	LinStatic	X	2.3E-05	44	13.95	0	4
N2	SX	LinStatic	Y	0.000218	9	18.3	0	4
N2	SY	LinStatic	Y	0.000718	9	18.3	0	4
N2	VX	LinStatic	Y	0.017973	5	9.9	0	4
N2	VY	LinStatic	Y	0.041732	5	9.9	0	4
N2	1.4CM+1.4Wm	Combination	Y	6E-06	1	1.5	0	4
N2	CM+Wm	Combination	Y	4E-06	1	1.5	0	4
N2	1.1CM+1.1Wa+1.1SX	Combination	X	2.5E-05	44	13.95	0	4
N2	1.1CM+1.1Wa+1.1SX	Combination	Y	0.000241	9	18.3	0	4
N2	1.1CM+1.1Wa+1.1SY	Combination	Y	0.000791	9	18.3	0	4
N2	0.9CM+1.1SY	Combination	Y	0.000791	9	18.3	0	4
N2	0.9CM+1.1SX	Combination	Y	0.000791	9	18.3	0	4
N2	CM+Wa+SX	Combination	X	2.2E-05	44	13.95	0	4
N2	CM+Wa+SX	Combination	Y	0.000219	9	18.3	0	4
N2	CM+Wa+SY	Combination	Y	0.000719	9	18.3	0	4
N2	CM+SY	Combination	Y	0.000719	9	18.3	0	4
N2	CM+SX	Combination	X	2.2E-05	44	13.95	0	4
N2	CM+SX	Combination	Y	0.000219	9	18.3	0	4
N2	0.9CM-1.1SX	Combination	Y	0.000789	9	18.3	0	4
N2	0.9CM-1.1SY	Combination	Y	0.000789	9	18.3	0	4
N2	1.1CM+1.1Wa-1.1SX	Combination	X	2.6E-05	44	13.95	0	4
N2	1.1CM+1.1Wa-1.1SX	Combination	Y	0.000239	9	18.3	0	4
N2	1.1CM+1.1Wa-1.1SY	Combination	Y	0.000789	9	18.3	0	4
N2	CM-SX	Combination	X	2.3E-05	44	13.95	0	4
N2	CM-SX	Combination	Y	0.000217	9	18.3	0	4
N2	CM-SY	Combination	Y	0.000717	9	18.3	0	4
N2	CM+Wa-SX	Combination	X	2.3E-05	44	13.95	0	4
N2	CM+Wa-SX	Combination	Y	0.000217	9	18.3	0	4
N2	CM+Wa-SY	Combination	Y	0.000717	9	18.3	0	4
N2	1.1CM+1.1VX	Combination	Y	0.019769	5	9.9	0	4
N2	0.9CM+1.1VX	Combination	Y	0.019769	5	9.9	0	4
N2	0.9CM+1.1VY	Combination	Y	0.045906	5	9.9	0	4
N2	1.1CM+1.1VY	Combination	Y	0.045906	5	9.9	0	4
N1	Dead	LinStatic	Y	5E-06	13	26.7	0	2.05
N1	SX	LinStatic	X	0.0001	28	27.186	6.27	2.05
N1	SX	LinStatic	Y	6.7E-05	9	18.3	0	2.05
N1	SY	LinStatic	X	5.8E-05	26	26.862	2.09	2.05
N1	SY	LinStatic	Y	0.000222	9	18.3	0	2.05
N1	VX	LinStatic	X	0.01559	17	1.014	6.27	2.05
N1	VX	LinStatic	Y	0.006345	4	7.8	0	2.05
N1	VY	LinStatic	Y	0.014862	5	9.9	0	2.05
N1	1.4CM+1.4Wm	Combination	Y	7E-06	13	26.7	0	2.05
N1	CM+Wm	Combination	Y	5E-06	13	26.7	0	2.05
N1	1.1CM+1.1Wa+1.1SX	Combination	X	0.000109	28	27.186	6.27	2.05
N1	1.1CM+1.1Wa+1.1SX	Combination	Y	7.4E-05	9	18.3	0	2.05
N1	1.1CM+1.1Wa+1.1SY	Combination	X	6.6E-05	26	26.862	2.09	2.05
N1	1.1CM+1.1Wa+1.1SY	Combination	Y	0.000244	9	18.3	0	2.05
N1	0.9CM+1.1SY	Combination	X	6.5E-05	26	26.862	2.09	2.05
N1	0.9CM+1.1SY	Combination	Y	0.000244	9	18.3	0	2.05
N1	0.9CM+1.1SX	Combination	X	6.5E-05	26	26.862	2.09	2.05



Story	Output Case	Case Type	Direction	Drift	Label	X m	Y m	Z m
N1	0.9CM+1.1SX	Combination	Y	0.000244	9	18.3	0	2.05
N1	CM+Wa+SX	Combination	X	9.9E-05	28	27.186	6.27	2.05
N1	CM+Wa+SX	Combination	Y	6.7E-05	9	18.3	0	2.05
N1	CM+Wa+SY	Combination	X	6E-05	26	26.862	2.09	2.05
N1	CM+Wa+SY	Combination	Y	0.000222	9	18.3	0	2.05
N1	CM+SY	Combination	X	6E-05	26	26.862	2.09	2.05
N1	CM+SY	Combination	Y	0.000222	9	18.3	0	2.05
N1	CM+SX	Combination	X	9.9E-05	28	27.186	6.27	2.05
N1	CM+SX	Combination	Y	6.7E-05	9	18.3	0	2.05
N1	0.9CM-1.1SX	Combination	X	6.2E-05	26	26.862	2.09	2.05
N1	0.9CM-1.1SX	Combination	Y	0.000244	9	18.3	0	2.05
N1	0.9CM-1.1SY	Combination	X	6.2E-05	26	26.862	2.09	2.05
N1	0.9CM-1.1SY	Combination	Y	0.000244	9	18.3	0	2.05
N1	1.1CM+1.1Wa-1.1SX	Combination	X	0.00011	28	27.186	6.27	2.05
N1	1.1CM+1.1Wa-1.1SX	Combination	Y	7.4E-05	9	18.3	0	2.05
N1	1.1CM+1.1Wa-1.1SY	Combination	X	6.1E-05	26	26.862	2.09	2.05
N1	1.1CM+1.1Wa-1.1SY	Combination	Y	0.000244	9	18.3	0	2.05
N1	CM-SX	Combination	X	0.0001	28	27.186	6.27	2.05
N1	CM-SX	Combination	Y	6.7E-05	9	18.3	0	2.05
N1	CM-SY	Combination	X	5.6E-05	26	26.862	2.09	2.05
N1	CM-SY	Combination	Y	0.000222	9	18.3	0	2.05
N1	CM+Wa-SX	Combination	X	0.0001	28	27.186	6.27	2.05
N1	CM+Wa-SX	Combination	Y	6.7E-05	9	18.3	0	2.05
N1	CM+Wa-SY	Combination	X	5.6E-05	26	26.862	2.09	2.05
N1	CM+Wa-SY	Combination	Y	0.000222	9	18.3	0	2.05
N1	1.1CM+1.1VX	Combination	X	0.01715	17	1.014	6.27	2.05
N1	1.1CM+1.1VX	Combination	Y	0.006979	4	7.8	0	2.05
N1	0.9CM+1.1VX	Combination	X	0.017149	17	1.014	6.27	2.05
N1	0.9CM+1.1VX	Combination	Y	0.006979	4	7.8	0	2.05
N1	0.9CM+1.1VY	Combination	Y	0.016348	5	9.9	0	2.05
N1	1.1CM+1.1VY	Combination	Y	0.016348	5	9.9	0	2.05



## 5.2 DISEÑO





### 5.2.1 Preferencias de diseño

Item	Value
Multi-Response Design	Step-by-Step - All
Frame Type	OMF
Seismic Design Category	D
Importance Factor	1
Design System Rho	1
Design System Sds	0.5
Design System R	8
Design System Omega0	3
Design System Cd	5.5
Design Provision	LRFD
Analysis Method	Direct Analysis
Second Order Method	General 2nd Order
Stiffness Reduction Method	Tau-b Fixed
Add Notional Load Case	No
Beta Factor	1.3
Beta Omega Factor	1.6
Phi (Bending)	0.9
Phi (Compression)	0.9
Phi (Tension-Yielding)	0.9
Phi (Tension-Fracture)	0.75
Phi (Shear)	0.9
Phi (Shear-Short Webbed Rolled I)	1
Phi (Torsion)	0.9
Ignore Seismic Code?	No
Ignore Special Seismic Load?	No
Doubler Plate Plug-Welded?	Yes
HSS Welding Type	ERW
Reduced HSS Thickness	No
Consider Deflection?	Yes
DL Ratio	120
SDL+LL Ratio	120
LL Ratio	360
Total Ratio	240
Total Camber Limit	240
Pattern Live Load Factor	0.75
D/C Ratio Limit	1
Maximum Iterations	1





## 5.2.2 Diseño de columnas

Story	Label	UniqueName	Section	Moment Interaction Check	PMM Combo	V22 Ratio	V33 Ratio
N2	C2	6	Tubular d=4" cal 14	$0.141 = 0.001 + 0.002 + 0.093$	1.1CM+1.1VY	0.001	0.007
N2	C3	8	Tubular d=4" cal 14	$0.283 = 0.001 + 4.844E-04 + 0.282$	1.1CM+1.1VY	0.001	0.019
N2	C4	10	Tubular d=4" cal 14	$0.368 = 0.001 + 0.001 + 0.368$	1.1CM+1.1VY	0.001	0.023
N2	C5	12	Tubular d=4" cal 14	$0.39 = 0.001 + 0.001 + 0.389$	1.1CM+1.1VY	0.001	0.023
N2	C6	14	Tubular d=4" cal 14	$0.377 = 0.001 + 0.001 + 0.376$	1.1CM+1.1VY	0.001	0.021
N2	C8	18	Tubular d=4" cal 14	$0.377 = 0.001 + 0.001 + 0.376$	1.1CM+1.1VY	0.001	0.021
N2	C9	20	Tubular d=4" cal 14	$0.39 = 0.001 + 0.001 + 0.389$	1.1CM+1.1VY	0.001	0.023
N2	C10	22	Tubular d=4" cal 14	$0.368 = 0.001 + 0.001 + 0.368$	1.1CM+1.1VY	0.001	0.023
N2	C11	24	Tubular d=4" cal 14	$0.283 = 0.001 + 4.967E-04 + 0.282$	1.1CM+1.1VY	0.001	0.019
N2	C12	26	Tubular d=4" cal 14	$0.141 = 0.001 + 0.002 + 0.093$	1.1CM+1.1VY	0.001	0.006
N2	C13	28	Tubular d=4" cal 14	$0.131 = 0.001 + 0.007 + 0.13$	0.9CM+1.1VY	0.002	0.02
N2	C15	29	Tubular d=4" cal 14	$0.178 = 0.001 + 0.176 + 0.015$	1.1CM+1.1VX	0.021	0.002
N2	C29	31	Tubular d=4" cal 14	$0.13 = 3.329E-04 + 0.129 + 0.013$	1.1CM+1.1VX	0.026	0.002
N2	C38	33	Tubular d=4" cal 14	$0.044 = 3.573E-04 + 0.043 + 0.004$	1.1CM+1.1VX	0.002	0.001
N2	C40	35	Tubular d=4" cal 14	$0.036 = 2.741E-04 + 0.036 + 0.005$	1.1CM+1.1VX	0.004	0.001
N2	C20	77	Tubular d=4" cal 14	$0.605 = 0.001 + 0.602 + 0.045$	1.1CM+1.1VX	0.033	0.002
N2	C19	69	Tubular d=4" cal 14	$0.509 = 0.001 + 0.506 + 0.037$	1.1CM+1.1VX	0.033	0.003
N2	C22	75	Tubular d=4" cal 14	$0.63 = 0.001 + 0.627 + 0.047$	1.1CM+1.1VX	0.033	0.002
N2	C1	3	Tubular d=4" cal 14	$0.365 = 3.583E-04 + 0.001 + 0.364$	1.1CM+1.1VY	0.001	0.018
N2	C14	15	Tubular d=4" cal 14	$0.365 = 3.568E-04 + 0.001 + 0.364$	1.1CM+1.1VY	0.001	0.018
N2	C17	32	Tubular d=4" cal 14	$0.131 = 0.001 + 0.007 + 0.13$	0.9CM+1.1VY	0.002	0.02
N2	C68	88	Tubular d=4" cal 14	$0.141 = 0.001 + 0.14 + 0.011$	1.1CM+1.1VX	0.031	0.002
N1	C26	93	Tubular d=4" cal 14	$0.435 = 0.002 + 0.432 + 0.039$	1.1CM+1.1VX	0.031	0.003
N1	C28	97	Tubular d=4" cal 14	$0.61 = 0.001 + 0.607 + 0.051$	1.1CM+1.1VX	0.033	0.003
N1	C30	107	Tubular d=4" cal 14	$0.596 = 0.001 + 0.593 + 0.05$	1.1CM+1.1VX	0.033	0.003
N1	C42	37	Tubular d=4" cal 14	$0.459 = 0.001 + 0.456 + 0.04$	1.1CM+1.1VX	0.026	0.003
N1	C44	39	Tubular d=4" cal 14	$0.298 = 0.001 + 0.296 + 0.029$	1.1CM+1.1VX	0.02	0.002
N1	C46	41	Tubular d=4" cal 14	$0.159 = 4.353E-04 + 0.157 + 0.02$	1.1CM+1.1VX	0.013	0.002
N1	C48	43	Tubular d=4" cal 14	$0.071 = 2.909E-04 + 0.068 + 0.016$	1.1CM+1.1VX	0.008	0.004
N1	C50	45	Tubular d=4" cal 14	$0.002 = 4.51E-04 + 0 + 0.001$	1.1CM+1.1VY	0.001	0.01
N1	C41	44	Tubular d=4" cal 14	$0.462 = 0.001 + 0.46 + 0.034$	1.1CM+1.1VX	0.026	0.002
N1	C53	57	Tubular d=4" cal 14	$0.299 = 0.001 + 0.298 + 0.021$	1.1CM+1.1VX	0.02	0.001
N1	C55	59	Tubular d=4" cal 14	$0.159 = 4.78E-04 + 0.158 + 0.01$	1.1CM+1.1VX	0.013	0.002
N1	C57	61	Tubular d=4" cal 14	$0.07 = 3.72E-04 + 0.07 + 0.001$	1.1CM+1.1VX	0.008	0.004
N1	C59	63	Tubular d=4" cal 14	$0.002 = 4.62E-04 + 0 + 0.002$	1.1CM+1.1VY	0.002	0.01
N1	C7	16	Tubular d=4" cal 14	$0.02 = 0.004 + 0.005 + 0.016$	DSIS12	0.001	0.001
N1	C16	30	Tubular d=4" cal 14	$0.022 = 0.002 + 0.01 + 0.018$	DSIS10	0.001	0.001
N1	C23	34	Tubular reforzado	$0.422 = 0.001 + 0.005 + 0.417$	1.1CM+1.1VY	0.002	0.017
N1	C24	36	Tubular d=4" cal 14	$0.446 = 0.001 + 1.704E-04 + 0.445$	1.1CM+1.1VY	0.002	0.055
N1	C25	38	Tubular reforzado	$0.608 = 0.001 + 0.005 + 0.602$	1.1CM+1.1VY	0.002	0.022
N1	C31	40	Tubular d=4" cal 14	$0.736 = 0.001 + 4.418E-04 + 0.735$	1.1CM+1.1VY	0.002	0.072
N1	C32	42	Tubular reforzado	$0.678 = 0.001 + 0.005 + 0.672$	1.1CM+1.1VY	0.001	0.023
N1	C33	46	Tubular d=4" cal 14	$0.873 = 0.001 + 2.994E-04 + 0.872$	1.1CM+1.1VY	0.002	0.077
N1	C34	58	Tubular reforzado	$0.686 = 0.001 + 0.005 + 0.681$	1.1CM+1.1VY	0.001	0.023
N1	C35	60	Tubular d=4" cal 14	$0.904 = 0.001 + 2.971E-04 + 0.902$	1.1CM+1.1VY	0.002	0.076
N1	C36	62	Tubular reforzado	$0.632 = 0.001 + 0.004 + 0.626$	1.1CM+1.1VY	0.001	0.021
N1	C37	64	Tubular d=4" cal 14	$0.85 = 0.001 + 2.473E-04 + 0.848$	1.1CM+1.1VY	0.002	0.069
N1	C39	65	Tubular reforzado	$0.632 = 0.001 + 0.004 + 0.626$	1.1CM+1.1VY	0.002	0.021
N1	C43	66	Tubular d=4" cal 14	$0.85 = 0.001 + 2.269E-04 + 0.848$	1.1CM+1.1VY	0.002	0.069
N1	C45	68	Tubular reforzado	$0.686 = 0.001 + 0.005 + 0.681$	1.1CM+1.1VY	0.002	0.023
N1	C47	70	Tubular d=4" cal 14	$0.904 = 0.001 + 2.983E-04 + 0.902$	1.1CM+1.1VY	0.002	0.076



Story	Label	UniqueName	Section	Moment Interaction Check	PMM Combo	V22 Ratio	V33 Ratio
N1	C49	71	Tubular reforzado	$0.678 = 0.001 + 0.005 + 0.672$	1.1CM+1.1VY	0.002	0.023
N1	C51	72	Tubular d=4" cal 14	$0.873 = 0.001 + 2.976E-04 + 0.872$	1.1CM+1.1VY	0.002	0.077
N1	C52	74	Tubular reforzado	$0.608 = 0.001 + 0.005 + 0.602$	1.1CM+1.1VY	0.002	0.022
N1	C54	76	Tubular d=4" cal 14	$0.736 = 0.001 + 4.406E-04 + 0.735$	1.1CM+1.1VY	0.002	0.072
N1	C56	78	Tubular reforzado	$0.422 = 0.001 + 0.004 + 0.417$	1.1CM+1.1VY	0.002	0.017
N1	C58	79	Tubular d=4" cal 14	$0.446 = 0.001 + 1.713E-04 + 0.445$	1.1CM+1.1VY	0.002	0.055
N1	C60	80	Tubular d=4" cal 14	$0.038 = 0.005 + 0.017 + 0.028$	1.1CM+1.1VX	0.001	0.002
N1	C61	81	Tubular d=4" cal 14	$0.022 = 0.005 + 0.008 + 0.015$	1.1CM+1.1VX	0.001	0.002
N1	C62	82	Tubular reforzado	$0.482 = 4.701E-04 + 0.004 + 0.478$	1.1CM+1.1VY	0.001	0.014
N1	C63	83	Tubular d=4" cal 14	$0.738 = 0.001 + 0.001 + 0.737$	1.1CM+1.1VY	0.002	0.045
N1	C64	84	Tubular reforzado	$0.482 = 4.697E-04 + 0.004 + 0.478$	1.1CM+1.1VY	0.001	0.014
N1	C65	85	Tubular d=4" cal 14	$0.738 = 0.001 + 0.001 + 0.737$	1.1CM+1.1VY	0.002	0.045
N1	C66	86	Tubular reforzado	$0.586 = 0.001 + 0.545 + 0.041$	1.1CM+1.1VX	0.021	0.002
N1	C67	87	Tubular d=4" cal 14	$0.635 = 0.001 + 0.632 + 0.049$	1.1CM+1.1VX	0.068	0.005
N1	C69	89	Tubular reforzado	$0.539 = 0.001 + 0.496 + 0.043$	1.1CM+1.1VX	0.019	0.002
N1	C70	90	Tubular d=4" cal 14	$0.56 = 0.001 + 0.557 + 0.044$	1.1CM+1.1VX	0.063	0.005





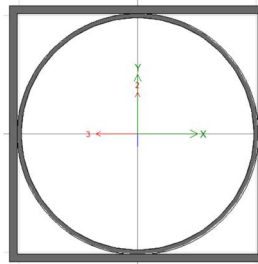
### 5.2.3 Diseño de trabes

Story	Label	UniqueName	Section	Moment Interaction Check	PMM Combo	V22 Ratio	V33 Ratio
N2	B1	141	Tubular d=4" cal 14	$0.345 = 0.001 + 0.027 + 0.282$	1.1CM+1.1VY	0.003	0.027
N2	B2	144	Tubular d=4" cal 14	$0.194 = 4.769E-04 + 0.004 + 0.193$	1.1CM+1.1VY	0.002	0.008
N2	B3	146	Tubular d=4" cal 14	$0.114 = 4.336E-04 + 0.003 + 0.114$	1.1CM+1.1VY	0.002	0.002
N2	B4	148	Tubular d=4" cal 14	$0.068 = 3.8E-04 + 0.003 + 0.068$	1.1CM+1.1VY	0.002	0.0001543
N2	B5	150	Tubular d=4" cal 14	$0.069 = 1.912E-04 + 0.004 + 0.069$	1.1CM+1.1VY	0.002	0.002
N2	B8	156	Tubular d=4" cal 14	$0.069 = 1.869E-04 + 0.004 + 0.069$	1.1CM+1.1VY	0.002	0.002
N2	B9	158	Tubular d=4" cal 14	$0.068 = 3.774E-04 + 0.003 + 0.068$	1.1CM+1.1VY	0.002	0.0003106
N2	B10	160	Tubular d=4" cal 14	$0.114 = 4.315E-04 + 0.003 + 0.114$	1.1CM+1.1VY	0.002	0.002
N2	B11	162	Tubular d=4" cal 14	$0.194 = 4.753E-04 + 0.004 + 0.193$	1.1CM+1.1VY	0.002	0.008
N2	B12	164	Tubular d=4" cal 14	$0.372 = 0.005 + 0.003 + 0.367$	0.9CM+1.1VX	0.003	0.027
N2	B40	52	Tubular d=4" cal 14	$0.812 = 0.79 + 0.005 + 0.022$	1.1CM+1.1VY	0.001	0.005
N2	B41	53	Tubular d=4" cal 14	$0.835 = 0.811 + 4.76E-04 + 0.024$	0.9CM+1.1VY	0.001	0.004
N2	B42	54	Tubular d=4" cal 14	$0.867 = 0.844 + 0.006 + 0.022$	1.1CM+1.1VY	0.002	0.006
N2	B43	55	Tubular d=4" cal 14	$0.999 = 0.854 + 0.007 + 0.145$	0.9CM+1.1VY	0.001	0.008
N2	B44	56	Tubular d=4" cal 14	$1.044 = 0.856 + 0.021 + 0.187$	1.1CM+1.1VY	0.005	0.032
N2	B13	152	Tubular d=4" cal 14	$0.067 = 1.363E-04 + 0.004 + 0.066$	1.1CM+1.1VY	0.002	0.006
N2	B14	154	Tubular d=4" cal 14	$0.067 = 1.312E-04 + 0.004 + 0.066$	1.1CM+1.1VY	0.002	0.006
N2	B30	92	Tubular d=4" cal 14	$0.835 = 0.811 + 4.318E-04 + 0.024$	0.9CM+1.1VY	0.001	0.004
N2	B31	94	Tubular d=4" cal 14	$0.867 = 0.844 + 0.006 + 0.022$	1.1CM+1.1VY	0.002	0.006
N2	B32	95	Tubular d=4" cal 14	$0.999 = 0.854 + 0.007 + 0.145$	0.9CM+1.1VY	0.001	0.008
N2	B33	96	Tubular d=4" cal 14	$1.044 = 0.856 + 0.021 + 0.187$	1.1CM+1.1VY	0.005	0.024
N2	B34	73	Tubular d=4" cal 14	$0.813 = 0.79 + 0.005 + 0.022$	1.1CM+1.1VY	0.001	0.005
N1	B1	140	Tubular d=4" cal 14	$0.07 = 0.004 + 0.01 + 0.065$	0.9CM+1.1VX	0.002	0.002
N1	B2	143	Tubular d=4" cal 14	$0.074 = 0.001 + 0.006 + 0.073$	1.1CM+1.1VY	0.002	0.003
N1	B3	145	Tubular d=4" cal 14	$0.05 = 0.001 + 0.005 + 0.049$	1.1CM+1.1VY	0.002	0.002
N1	B4	147	Tubular d=4" cal 14	$0.026 = 0.001 + 0.005 + 0.025$	1.1CM+1.1VY	0.002	0.001
N1	B5	149	Tubular d=4" cal 14	$0.025 = 0.001 + 0.001 + 0.025$	0.9CM+1.1VY	0.002	0.0004679
N1	B8	155	Tubular d=4" cal 14	$0.025 = 0.001 + 0.001 + 0.025$	0.9CM+1.1VY	0.002	0.0004737
N1	B9	157	Tubular d=4" cal 14	$0.026 = 0.001 + 0.005 + 0.025$	1.1CM+1.1VY	0.002	0.001
N1	B10	159	Tubular d=4" cal 14	$0.05 = 0.001 + 0.005 + 0.049$	1.1CM+1.1VY	0.002	0.002
N1	B11	161	Tubular d=4" cal 14	$0.074 = 0.001 + 0.006 + 0.073$	1.1CM+1.1VY	0.002	0.003
N1	B12	163	Tubular d=4" cal 14	$0.062 = 0.004 + 0.021 + 0.054$	1.1CM+1.1VX	0.003	0.002
N1	B35	47	Tubular d=4" cal 14	$0.446 = 0.442 + 0.003 + 0.002$	0.9CM+1.1VY	0.002	0.001
N1	B36	48	Tubular d=4" cal 14	$0.612 = 0.606 + 0.005 + 0.002$	1.1CM+1.1VY	0.002	0.001
N1	B37	49	Tubular d=4" cal 14	$0.7 = 0.691 + 0.007 + 0.006$	1.1CM+1.1VY	0.002	0.0001477
N1	B38	50	Tubular d=4" cal 14	$0.751 = 0.736 + 0.006 + 0.014$	1.1CM+1.1VY	0.002	0.001
N1	B39	51	Tubular d=4" cal 14	$0.791 = 0.768 + 0.006 + 0.023$	1.1CM+1.1VY	0.001	0.003
N1	B13	151	Tubular d=4" cal 14	$0.032 = 1.195E-04 + 0.005 + 0.032$	1.1CM+1.1VY	0.002	0.003
N1	B14	153	Tubular d=4" cal 14	$0.032 = 1.228E-04 + 0.006 + 0.032$	1.1CM+1.1VY	0.003	0.003
N1	B22	17	Tubular d=4" cal 14	$0.449 = 0.445 + 0.003 + 0.002$	0.9CM+1.1VY	0.002	0.001
N1	B23	19	Tubular d=4" cal 14	$0.608 = 0.602 + 0.005 + 0.002$	1.1CM+1.1VY	0.002	0.001
N1	B24	21	Tubular d=4" cal 14	$0.7 = 0.692 + 0.007 + 0.006$	1.1CM+1.1VY	0.002	0.0001263
N1	B25	23	Tubular d=4" cal 14	$0.751 = 0.736 + 0.006 + 0.014$	1.1CM+1.1VY	0.001	0.001
N1	B26	25	Tubular d=4" cal 14	$0.74 = 0.731 + 0.002 + 0.009$	0.9CM+1.1VY	0.001	0.001
N1	B27	27	Tubular d=4" cal 14	$0.792 = 0.768 + 0.006 + 0.023$	1.1CM+1.1VY	0.001	0.003



## REFUERZO DE COLUMNA TUBULAR $\phi=4"$ Cal. 14 + 4 placas 1/8"

### AISC 360-16 Steel Section Check (Strength Summary)



#### Element Details

Level	Element	Unique Name	Location (cm)	Combo	Element Type	Section	Classification
N1	C45	68	0	1.1CM+1.1VY	Ordinary Moment Frame	Tubular reforzado	Non-Compact

#### LLRF and Demand/Capacity Ratio

L (cm)	LLRF	Stress Ratio Limit
130.000	1	1

#### Analysis and Design Parameters

Provision	Analysis	2nd Order	Reduction
LRFD	Direct Analysis	General 2nd Order	Tau-b Fixed

#### Stiffness Reduction Factors

$\alpha P_r / P_y$	$\alpha P_r / P_e$	$\tau_b$	EA factor	EI factor
0.001	3.584E-04	1	0.8	0.8

#### Design Code Parameters

$\Phi_b$	$\Phi_c$	$\Phi_{TY}$	$\Phi_{TF}$	$\Phi_V$	$\Phi_{V-RI}$	$\Phi_{VT}$
0.9	0.9	0.9	0.75	0.9	1	1

#### Section Properties

A (cm <sup>2</sup> )	J (cm <sup>4</sup> )	I <sub>33</sub> (cm <sup>4</sup> )	I <sub>22</sub> (cm <sup>4</sup> )	A <sub>v3</sub> (cm <sup>2</sup> )	A <sub>v2</sub> (cm <sup>2</sup> )
19.3	516.8	317.7	317.7	11.4	11.4

#### Design Properties

S <sub>33</sub> (cm <sup>3</sup> )	S <sub>22</sub> (cm <sup>3</sup> )	Z <sub>33</sub> (cm <sup>3</sup> )	Z <sub>22</sub> (cm <sup>3</sup> )	r <sub>33</sub> (cm)	r <sub>22</sub> (cm)	C <sub>w</sub> (cm <sup>6</sup> )
58.9	58.9	76.2	76.2	4.061	4.061	

#### Material Properties

E (kgf/cm <sup>2</sup> )	f <sub>y</sub> (kgf/cm <sup>2</sup> )	R <sub>y</sub>	C <sub>pr</sub>	$\alpha$
2038901.92	2531.05	1.5	1.4	NA

#### Stress Check forces and Moments



Location (cm)	P <sub>u</sub> (kgf)	M <sub>u33</sub> (kgf-cm)	M <sub>u22</sub> (kgf-cm)	V <sub>u2</sub> (kgf)	V <sub>u3</sub> (kgf)	T <sub>u</sub> (kgf-cm)
0	-60.35	609	91306.88	4.83	361.02	305.1

#### Axial Force & Biaxial Moment Design Factors (H1-1b)

	L Factor	K <sub>1</sub>	K <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	C <sub>m</sub>
Major Bending	1.499	1	1	1	1	1
Minor Bending	1	1	1	1	1	0.794

#### Parameters for Lateral Torsion Buckling

L <sub>ltb</sub>	K <sub>ltb</sub>	C <sub>b</sub>
1	1	1.703

#### Demand/Capacity (D/C) Ratio Eqn.(H1-1b)

D/C Ratio =	$(P_r / 2P_c) + (M_{r33} / M_{c33}) + (M_{r22} / M_{c22})$
0.686 =	0.001 + 0.005 + 0.681

#### Axial Force and Capacities

P <sub>u</sub> Force (kgf)	φP <sub>nc</sub> Capacity (kgf)	φP <sub>nt</sub> Capacity (kgf)
60.35	38862.02	43867.64

#### Moments and Capacities

	M <sub>u</sub> Moment (kgf-cm)	φM <sub>n</sub> (kgf-cm)	φM <sub>n</sub> No LTB (kgf-cm)	φM <sub>n</sub> C <sub>b</sub> =1 (kgf-cm)
Major Bending	609	134061.18	134061.18	134061.18
Minor Bending	91306.88	134061.18		

#### Shear Design

	V <sub>u</sub> Force (kgf)	φV <sub>n</sub> Capacity (kgf)	Stress Ratio
Major Shear	4.83	15581.5	3.102E-04
Minor Shear	361.02	15589.03	0.023

**COLUMNAR TUBULAR  $\phi=4"$  Cal. 14****AISC 360-16 Steel Section Check (Strength Summary)****Element Details**

Level	Element	Unique Name	Location (cm)	Combo	Element Type	Section	Classification
N1	C47	70	0	1.1CM+1.1VY	Ordinary Moment Frame	Tubular d=4" cal 14	Non-Compact

**LLRF and Demand/Capacity Ratio**

L (cm)	LLRF	Stress Ratio Limit
75.000	1	1

**Analysis and Design Parameters**

Provision	Analysis	2nd Order	Reduction
LRFD	Direct Analysis	General 2nd Order	Tau-b Fixed

**Stiffness Reduction Factors**

$\alpha P_r / P_y$	$\alpha P_r / P_e$	$\tau_b$	EA factor	EI factor
0.002	0.001	1	0.8	0.8

**Design Code Parameters**

$\Phi_b$	$\Phi_c$	$\Phi_{TY}$	$\Phi_{TF}$	$\Phi_v$	$\Phi_{V-RI}$	$\Phi_{VT}$
0.9	0.9	0.9	0.75	0.9	1	1

**Section Properties**

A (cm <sup>2</sup> )	J (cm <sup>4</sup> )	I <sub>33</sub> (cm <sup>4</sup> )	I <sub>22</sub> (cm <sup>4</sup> )	A <sub>v3</sub> (cm <sup>2</sup> )	A <sub>v2</sub> (cm <sup>2</sup> )
6	147.9	74	74	3	3

**Design Properties**

S <sub>33</sub> (cm <sup>3</sup> )	S <sub>22</sub> (cm <sup>3</sup> )	Z <sub>33</sub> (cm <sup>3</sup> )	Z <sub>22</sub> (cm <sup>3</sup> )	r <sub>33</sub> (cm)	r <sub>22</sub> (cm)	C <sub>w</sub> (cm <sup>6</sup> )
14.6	14.6	18.9	18.9	3.526	3.526	

**Material Properties**

E (kgf/cm <sup>2</sup> )	f <sub>y</sub> (kgf/cm <sup>2</sup> )	R <sub>y</sub>	C <sub>pr</sub>	$\alpha$
2038901.92	2952.89	1.1	1.4	NA

**HSS Section Parameters**

HSS Welding	Reduce HSS Thickness?
ERW	No

**Stress Check forces and Moments**

Location (cm)	P <sub>u</sub> (kgf)	M <sub>u33</sub> (kgf-cm)	M <sub>u22</sub> (kgf-cm)	V <sub>u2</sub> (kgf)	V <sub>u3</sub> (kgf)	T <sub>u</sub> (kgf-cm)
0	-38.31	-14.67	44374.55	1.55	361.02	305.1



#### Axial Force & Biaxial Moment Design Factors (H1-1b)

	L Factor	K <sub>1</sub>	K <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	C <sub>m</sub>
Major Bending	2.598	1	1	1	1	1
Minor Bending	0.865	1	1	1	1	0.789

#### Parameters for Lateral Torsion Buckling

L <sub>ltb</sub>	K <sub>ltb</sub>	C <sub>b</sub>
0.865	1	1.536

#### Demand/Capacity (D/C) Ratio Eqn.(H1-1b)

D/C Ratio =	$(P_r / 2P_c) + \text{Sqrt}[(M_{r33} / M_{c33})^2 + (M_{r22} / M_{c22})^2]$
0.904 =	$0.001 + \text{Sqrt}[(2.983\text{E-}04)^2 + (0.902)^2]$

#### Axial Force and Capacities

P <sub>u</sub> Force (kgf)	φP <sub>nc</sub> Capacity (kgf)	φP <sub>nt</sub> Capacity (kgf)
38.31	13110.58	15815.71

#### Moments and Capacities

	M <sub>u</sub> Moment (kgf-cm)	φM <sub>n</sub> (kgf-cm)	φM <sub>n</sub> No LTB (kgf-cm)	φM <sub>n</sub> Cb=1 (kgf-cm)
Major Bending	14.67	49190.79	49190.79	50198.02
Minor Bending	44374.55	49190.79		

#### Torsion Moment and Capacities

T <sub>u</sub> Moment (kgf-cm)	T <sub>n</sub> Capacity (kgf-cm)	φT <sub>n</sub> Capacity (kgf-cm)
305.1	52560.89	47304.8

#### Shear Design

	V <sub>u</sub> Force (kgf)	φV <sub>n</sub> Capacity (kgf)	Stress Ratio
Major Shear	1.55	4744.71	3.266E-04
Minor Shear	361.02	4744.71	0.076



## TRABE TUBULAR $\phi=4"$ Cal. 14

### AISC 360-16 Steel Section Check (Strength Summary)

#### Element Details

Level	Element	Unique Name	Location (cm)	Combo	Element Type	Section	Classification
N2	B33	96	4.674	1.1CM+1.1VY	Ordinary Moment Frame	Tubular d=4" cal 14	Non-Compact

#### LLRF and Demand/Capacity Ratio

L (cm)	LLRF	Stress Ratio Limit
214.038	1	1

#### Analysis and Design Parameters

Provision	Analysis	2nd Order	Reduction
LRFD	Direct Analysis	General 2nd Order	Tau-b Fixed

#### Stiffness Reduction Factors

$\alpha P_r / P_y$	$\alpha P_r / P_e$	$\tau_b$	EA factor	EI factor
0.015	0.676	1	0.8	0.8

#### Design Code Parameters

$\Phi_b$	$\Phi_c$	$\Phi_{TY}$	$\Phi_{TF}$	$\Phi_v$	$\Phi_{V-RI}$	$\Phi_{VT}$
0.9	0.9	0.9	0.75	0.9	1	1

#### Section Properties

A (cm <sup>2</sup> )	J (cm <sup>4</sup> )	I <sub>33</sub> (cm <sup>4</sup> )	I <sub>22</sub> (cm <sup>4</sup> )	A <sub>v3</sub> (cm <sup>2</sup> )	A <sub>v2</sub> (cm <sup>2</sup> )
6	147.9	74	74	3	3

#### Design Properties

S <sub>33</sub> (cm <sup>3</sup> )	S <sub>22</sub> (cm <sup>3</sup> )	Z <sub>33</sub> (cm <sup>3</sup> )	Z <sub>22</sub> (cm <sup>3</sup> )	r <sub>33</sub> (cm)	r <sub>22</sub> (cm)	C <sub>w</sub> (cm <sup>6</sup> )
14.6	14.6	18.9	18.9	3.526	3.526	

#### Material Properties

E (kgf/cm <sup>2</sup> )	f <sub>y</sub> (kgf/cm <sup>2</sup> )	R <sub>y</sub>	C <sub>pr</sub>	$\alpha$
2038901.92	2952.89	1.1	1.4	NA

#### HSS Section Parameters

HSS Welding	Reduce HSS Thickness?
ERW	No

Stress Check Message -  $kl/r > 200$

Stress Check forces and Moments



Location (cm)	P <sub>u</sub> (kgf)	M <sub>u33</sub> (kgf-cm)	M <sub>u22</sub> (kgf-cm)	V <sub>u2</sub> (kgf)	V <sub>u3</sub> (kgf)	T <sub>u</sub> (kgf-cm)
4.674	-257.58	-1137.34	-10350.99	-22.6	-11.57	-2400.32

#### Axial Force & Biaxial Moment Design Factors (H1-1a)

	L Factor	K <sub>1</sub>	K <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	C <sub>m</sub>
Major Bending	0.956	1	1	1	1	1
Minor Bending	9.232	1	1	1	1	1

#### Parameters for Lateral Torsion Buckling

L <sub>ltb</sub>	K <sub>ltb</sub>	C <sub>b</sub>
9.232	1	1.984

#### Demand/Capacity (D/C) Ratio Eqn.(H1-1a)

D/C Ratio =	$(P_r / P_c) + \text{Sqrt}[(8/9)(M_{r33} / M_{c33})^2 + ((8/9)(M_{r22} / M_{c22}))^2]$
1.044 =	0.856 + Sqrt[ (0.021) <sup>2</sup> + (0.187) <sup>2</sup> ]

#### Axial Force and Capacities

P <sub>u</sub> Force (kgf)	φP <sub>nc</sub> Capacity (kgf)	φP <sub>nt</sub> Capacity (kgf)
257.58	300.92	15815.71

#### Moments and Capacities

	M <sub>u</sub> Moment (kgf-cm)	φM <sub>n</sub> (kgf-cm)	φM <sub>n</sub> No LTB (kgf-cm)	φM <sub>n</sub> C <sub>b</sub> =1 (kgf-cm)
Major Bending	1137.34	49190.79	49190.79	50198.02
Minor Bending	10350.99	49190.79		

#### Torsion Moment and Capacities

T <sub>u</sub> Moment (kgf-cm)	T <sub>n</sub> Capacity (kgf-cm)	φT <sub>n</sub> Capacity (kgf-cm)
-2400.32	52560.89	47304.8

#### Shear Design

	V <sub>u</sub> Force (kgf)	φV <sub>n</sub> Capacity (kgf)	Stress Ratio
Major Shear	22.6	4744.71	0.005
Minor Shear	11.57	4744.71	0.002

#### End Reaction Major Shear Forces

Left End Reaction (kgf)	Load Combo	Right End Reaction (kgf)	Load Combo
22.6	DStIS28	20.52	DStIS28





## 6. ESPECIFICACIONES DE CONSTRUCCIÓN

Los rellenos de las capas deberán ser compactados con equipo mecánico (no usar pisón de mano), se usarán materiales compactables con la cantidad de agua necesaria.

### CONCRETO

1. El concreto que será utilizado, será con las siguientes especificaciones:

#### **Esfuerzo a la compresión ( $f'_c$ ) a los 28 días:**

a) Columnas	250 kg/cm <sup>2</sup>
b) Trabes	250 kg/cm <sup>2</sup>
c) Losas	250 kg/cm <sup>2</sup>
d) Muros de concreto	300 kg/cm <sup>2</sup>
e) Cimentación	300 kg/cm <sup>2</sup>
f) Firmes de concreto	150 kg/cm <sup>2</sup>

2. En cada colado se deberá utilizar vibrador mecánico para dar una buena confinación del concreto, se tomarán muestras del concreto en cada uno de los colados por un laboratorio el cual verificará que la calidad y resistencia del concreto sea óptima.
3. El agregado máximo será de 3/4" para castillos y 3/8" para columnas encamisadas, deberá de ser limpio y libre de contaminantes.
4. El cemento será del tipo Puzolana.

### ACERO DE REFUERZO

1. El acero de refuerzo será de las siguientes características:

Tipo de Acero	Esf. De fluencia
	Fy (kg/cm <sup>2</sup> )
Malla electrosoldada	5,400
Varillas #3-#8	4,200

Varillas de acero para refuerzo de concreto: ASTM A 615M, grado 60.

Malla de alambre electrosoldada para refuerzo de concreto: ASTM A185.



2. La protección de las varillas con el exterior se hará con el recubrimiento, el cual será el señalado en los planos o como mínimo:

Trabes..... 3cm  
Columnas..... 3 cm  
Dados..... 5 cm  
Trabes de liga ..... 5 cm  
Zapatas, costados y superior..... 5 cm  
Zapatas, inferior..... 7.5 cm

3. No se permite usar acero oxidado, con aceite o con cualquier otro material que disminuya su adherencia.

4. Todas las barras deberán ser dobladas en frío.

5. La varilla corrugada deberá contar con los grabados de marca y grado a fin de asegurar la calidad del acero.

6. Traslapes y anclajes:

Los diámetros mínimos de doblado especificados por el ACI 318 (318M) para varillas de acero de refuerzo medidos en la parte inferior de la varilla son los siguientes:

DETALLES DE REFUERZO						
DIAMETRO	a	b	d	e	f	
3C	7	18	9	55	8	
4C	9	24	11	75	8	
5C	12	30	12	90	9.5	
6C	14	35	14	110	11.4	
8C	18	47	17	155	20.3	
10C	29	64	24	240	25.4	
12C	38	76	30	266	30.5	

No se traslapará más del 50% de las varillas de cada lecho dentro de una zona igual a una longitud de traslape. Secciones 12.4 12.15 12.16, ACI 318-02.



Longitud de traslape para varilla individual en lecho inferior de losas:

No. 2.5	40 cm	No. 5	60 cm	No. 10	180 cm
No. 3	40 cm	No. 6	80 cm		
No. 4	50 cm	No. 8	115 cm		

Longitud de traslape para varilla individual en lecho superior de losas:

No. 2.5	50 cm	No. 5	75 cm
No. 3	50 cm	No. 6	90 cm
No. 4	60 cm	No. 8	150 cm

Las longitudes de traslape deberán multiplicarse por 1.20 en paquetes de 3 varillas, y por 1.33 en paquetes de 4 varillas.

La soldadura de barras de refuerzo debe realizarse de acuerdo con: "Structural Welding Code-Reinforcing Steel, ANSI/AWS D1.4" de la American Welding Society.

1. El acero de refuerzo deberá tener un  $F_y=4200 \text{ kg/cm}^2$
2. Todos los dobleces se harán en frío.
3. Los traslapes de las varillas de refuerzo serán de 36 veces el diámetro de la varilla en las estructuras de concreto y de 40 veces en traslapes de albañilería.
4. El traslape de la malla electrosoldada será de 15 cm o de una cuadrícula.

Ganchos Estándar:

- a. El doblez de  $90^\circ$  más una extensión de 12 veces el diámetro de la varilla en el extremo libre de la misma.
- b. El doblez de  $180^\circ$  más una extensión de 4 veces el diámetro de la varilla, pero no menor de 65 cm en el extremo libre de la varilla.
- c. El diámetro del doblez medido en la cara interior de la varilla, excepto para estribos y anillos en tamaños de varillas del número 3 al 5 no deberán ser menor que los valores siguientes:

**Del No. 3 al 8 6db**

**Del No. 9 al 11 8db**

**Del No. 14 al 18 10db**



d. Para estribos y ganchos de amarre, en varillas del número 5 y menores, el doblez de 90° deberá tener una extensión de 6 diámetros (6db) en el extremo libre de la varilla.

e. Para estribos y ganchos de amarre, en varillas del número 6 al 8 y menores, el doblez de 90° deberá tener una extensión de 12 diámetros (12db) en el extremo libre de la varilla.

f. Para estribos y ganchos de amarre, en varillas del número 8 y menores, el doblez de 135° deberá tener una extensión de 6 diámetros (6db) en el extremo libre de la varilla.

### **6.1 INSPECCIONES**

Los siguientes puntos de la construcción deberán de inspeccionarse continuamente por medio de un laboratorio de materiales especializado.

1. Resistencia del concreto a utilizarse en cimentaciones, trabes, columnas, losas y muros de contención.
2. Colocación y fijación de todo el acero de refuerzo, antes de colar el concreto.
3. Excavaciones para la cimentación y compactación del suelo.



## 7. COMENTARIOS Y CONCLUSIONES

Las propiedades mecánicas de cada elemento existente aparecen en los planos estructurales correspondientes.

Se deberá seguir al pie de la letra, las indicaciones en los planos, para garantizar que el sistema estructural, trabaje en forma óptima.

No se deberá de realizar perforaciones en los elementos de la estructura, que no estén considerados en el proyecto ejecutivo, se deberá consultar previamente a los peritos correspondientes.

Cualquier cambio o modificación al Proyecto Ejecutivo, será revisado y analizado previamente por el Ingeniero Estructuralista, antes de que se realice físicamente en la obra.

***Por último, se recomienda que la obra se construya en forma metódica y ordenada, libre de obstáculos innecesarios, para prevenir cualquier accidente en el personal obrero y técnico, durante el proceso de ejecución de la misma.***

A t e n t a m e n t e

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