PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA (CAE) – EL REDENTOR, BLOQUE B. TRANSV. 30 # 57-50 SUR/ DIAG. 58 SUR # 28-19, BOGOTÁ (CUNDINAMARCA)

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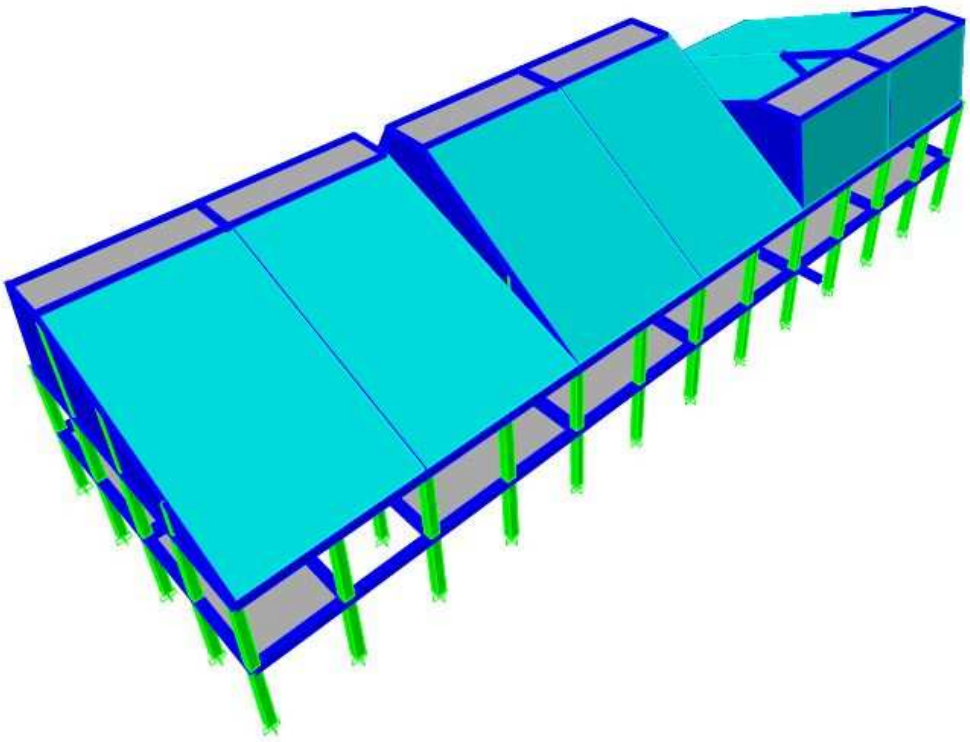


MEMORIAS DE ANÁLISIS Y DISEÑO ESTRUCTURAL

Bogotá D.C. SEPTIEMBRE DE 2014

1. DESCRIPCIÓN DEL PROYECTO

1.1. INTRODUCCIÓN

El presente documento contiene las memorias de análisis y diseño estructural correspondiente al proyecto **CENTRO DE ATENCIÓN ESPECIALIZADA (CAE) – EL REDENTOR, BLOQUE B**, ubicado en la **TRANSV. 30 # 57-50 SUR/ DIAG. 58 SUR # 28-19, BOGOTÁ (CUNDINAMARCA).**

1.2. DESCRIPCIÓN ARQUITECTÓNICA

El proyecto se encuentra ubicado en un lote de 21330m² de área aproximadamente, en el cual se contempla la construcción de diferentes bloques que funcionarán como un Centro de Atención Especializada (CAE).

1.3. PARÁMETROS UTILIZADOS PARA EL REFORZAMIENTO ESTRUCTURAL

El proyecto se soluciona mediante el diseño de una estructura aporticada, utilizando para el entrepiso del nivel N:+4.45 m placa aligerada en dos direcciones, con una torta superior de e=0.05 cm, torta inferior de e=0.03m y una altura total de e=0.50m. La cubierta liviana se apoya sobre correas metálicas tipo ACESCO y éstas a su vez sobre una estructura metálica en tubería estructural situada en las vigas de cubierta del nivel N:+8.90 m, tal como se indica en los planos estructurales. Se manejan luces que varían entre 4.40 m y 4.50 m en los dos sentidos de la estructura.

Para el análisis se empleó el programa de computador ***ETABS v.9.7.4***, el cual tiene en cuenta los efectos de segundo orden. Las consideraciones sísmicas empleadas en el análisis estructural del proyecto son las siguientes:

- ✓ Método de análisis: ***Análisis Modal***
- ✓ Zona de amenaza sísmica: ***Intermedia***
- ✓ Zona de microzonificación sísmica: ***Aluvial-100***
- ✓ Capacidad de disipación de energía: ***Moderada***
- ✓ Coeficiente de disipación de energía: $R_0 = 5.00$

El coeficiente de disipación de energía se afecta por las irregularidades presentes en la geometría de cada estructura, las cuales se describen a continuación:

- ✓ Uniones soldadas: ϕ_a = 0.90
- ✓ Redundancia de la estructura: NO CUMPLE ϕ_r = 0.75

El valor final del coeficiente R es igual a **3.38**

Las cargas horizontales fueron distribuidas entre los diferentes pórticos en proporción a su rigidez y teniendo en cuenta los efectos de torsión.
El dimensionamiento dado a todos los elementos que intervienen en las estructuras satisfacen los requerimientos de solicitación ocasionados por las derivas presentes. Las cargas vivas de diseño son: **5.00 kN/m²** para entrepiso de auditorio, **2.00 KN/m^2** para entrepiso de oficinas, **5.00 KN/m^2** para escaleras y **0.50 KN/m^2** en cubierta liviana.

Para la cimentación se siguieron las recomendaciones descritas en el respectivo estudio de suelos, que recomienda apoyar la estructura a -1.20 m del nivel actual del terreno mediante zapatas aisladas según lo indicado en los planos estructurales. La capacidad portante de seguridad admisible del suelo es **0.22 MPa** y el tipo de suelo es **F**.

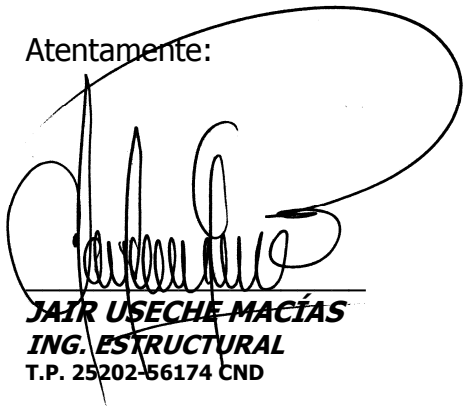
El diseño de todas las estructuras se realizó basado en la Norma Colombiana de Diseño y Construcción Sismo Resistente Ley 400 de 1997 (Modificada Ley 1229 de 2008) y Decreto 926 de Marzo de 2010, en el Decreto 523 de 2010 (Microzonificación Sísmica de Bogotá) y en el Reglamento para Concreto Estructural ACI 318S-08.

1.4. MATERIALES

Los materiales utilizados son:

Concreto	21.1 MPa para cimentación, vigas, columnas y placas.
Concreto	14 MPa (para concreto de limpieza).
Acero	para refuerzo fy = 420 MPa en todos los diámetros.
Acero	HSLAS GRADO 50 en perfiles metálicos tipo PHR.
Acero	A500 en vigas y columnas metálicas.

Atentamente:



JAIR USECHE MACÍAS
ING. ESTRUCTURAL
T.P. 25202-56174 CND

MEMORIAL DE RESPONSABILIDAD

Bogotá D.C. Septiembre de 2014

Señores
CURADURÍA URBANA
La Ciudad

Yo, **JAIR USECHE MACÍAS,** ingeniero civil con Matrícula Profesional Nº **25202-56174** de **CUNDINAMARCA,** debidamente registrado en el consejo profesional de Ingeniería y Arquitectura de Cundinamarca, presento los Cálculos y Diseños Estructurales elaborados de acuerdo a los requerimientos de la ***NORMA COLOMBIANA DE DISEÑO Y CONSTRUCCIÓN SISMO RESISTENTE LEY 400 DE 1997 (MODIFICADA LEY 1229 DE 2008) Y DECRETO 926 DE MARZO DE 2010***, para el proyecto **CENTRO DE ATENCIÓN ESPECIALIZADA (CAE) – EL REDENTOR, BLOQUE B.** ubicado en la **TRANSV. 30 # 57-50 SUR/ DIAG. 58 SUR # 28-19, BOGOTÁ (CUNDINAMARCA)*,*** declaro que asumo la responsabilidad por los perjuicios que causa de ellos puedan deducirse, exonerando a esta **CURADURIA URBANA** de cualquier responsabilidad.

Acepto y reconozco que la revisión efectuada por esta **CURADURÍA URBANA** no constituye una aprobación al Diseño Estructural, sino una verificación del cumplimiento de la **NORMA COLOMBIANA DE DISEÑO Y CONSTRUCCIÓN SISMO RESISTENTE**.
Atentamente,

JAIR USECHE MACÍAS
ING. ESTRUCTURAL
T.P. 25202-56174 CND

REPUBLICA DE COLOMBIA

Consejo Profesional Nacional de Ingeniería y Arquitectura

MATRICULA No. 2520256174CND

INGENIERO CIVIL

DE FECHA 27/07/95

APELLIDOS

USECHE MACIAS

NOMBRES

JAIR

C.C 19,420,425

UNIV. NACIONAL - BOGOTA

Presidente del Consejo

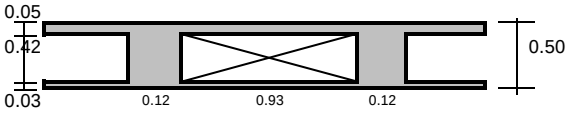
2. AVALÚO DE CARGAS

AVALÚO DE CARGAS

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

AVALÚO DE CARGAS

PLACA ALIGERADA



ALTURA DE PLACA	50 cm
TORTA SUPERIOR	5 cm
TORTA INFERIOR	3 cm

1. PLACA ALIGERADA SALA DE PROFESORES Y CONSULTORIOS

Tortas	0.08x24		1.92 kN/m²
Viguetas	2X0.12x0.42x24/0.93		2.60 kN/m²
Casetón			0.35 kN/m²
Acabados	22x0.05		1.10 kN/m²
Muros divisorios			0.50 kN/m²
		CM	6.47 kN/m²
		CV	2.00 kN/m²
		CR	8.47 kN/m²

CU = 1.2x6.47+1.6x2 = 11.0 kN/m²

Espesor de placa equivalente:

e=CM/24 0.270 m

MUROS PERIMETRALES	0.15x4.0x13	7.80 kN/m

2. PLACA ALIGERADA AUDITORIO GENERAL

Tortas	0.08x24		1.92 kN/m²
Viguetas	2X0.12x0.42x24/0.93		2.60 kN/m²
Casetón			0.35 kN/m²
Acabados	22x0.05		1.10 kN/m²
		CM	5.97 kN/m²
		CV	5.00 kN/m²
		CR	10.97 kN/m²

CU = 1.2x5.97+1.6x5 = 15.2 kN/m²

Espesor de placa equivalente:

e=CM/24 0.249 m

MUROS PERIMETRALES	0.15x4.0x13	7.80 kN/m

3. CUBIERTA LIVIANA

Eterboard		0.15 kN/m²
Estructura Metálica		0.10 kN/m²
Iluminación		0.05 kN/m²
	CM	0.30 kN/m²
	CV	0.50 kN/m²
	CR	0.80 kN/m²

CU = 1.2x0.3+1.6x0.5 = ***1.16 kN/m²***

Espesor de placa equivalente:

e=CM/24 0.013 m

Pendiente de Cubierta α (º) = **21.0** → Equivale a 38.4%

Según la tabla B.4.2.1-2 - En cubiertas inclinadas con más de 15° de pendiente en estructura metálica o de madera la carga viva asumida puede ser 0.35 kN/m2.
Según B.4.8.3.2 - Para cubiertas con inclinación mayor a 15% el valor de la carga viva para granizo puede reducirse a 0.50 kN/m^2.

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
AVALÚO DE CARGAS DE VIENTO
MÉTODO ANALÍTICO

B.6.5.1 - Un edifico cuyas cargas de viento de diseño sean determinadas de acuerdo con esta sección deberá cumplir las siguientes condiciones:
(a) El edificio o estructura es de forma regular, como se define en la sección B.6.2. de NSR-10
(b) El edificio o estructura no tiene características de respuesta que den lugar a cargas transversales de viento, generación de vórtices, inestabilidad debida a golpeteo o aleteo y que por su ubicación, tampoco deben merecer consideración especial los efectos de canalización o sacudimiento por la estela producida por las obstrucciones a barlovento.

B.6.5.3 - PROCEDIMIENTO DE DISEÑO

(a) Determinar Velocidad básica del viento V y factor de dirección Kd:

Zona de amenaza eólica (figura B.6.4-1):

Ciudad: Bogotá
Región: 2
Velocidad del viento: 28 m/s

Región	Velocidad del viento			
	Combinaciones de carga de			
	B.2.3		B.2.4	
	m/s	km/h	m/s	km/h
1	17	60	22	75
2	22	80	28	100
3	28	100	35	125
4	33	120	42	150
5	36	130	46	165

Factor de direccionalinalidad del viento k_d:

Tipo de estructura: Edificios
K_d = 0.85

Factor de importancia I :

Categoria: III
I = 1.15

Coeficientes de exposición:

Rugosidad del terreno: C — Terreno abierto con pocas obstrucciones y con alturas inferiores a 9.0 m. Esta categoria incluye campos planos abiertos, praderas y todas las superficies acuáticas en zonas propensas a huracanes.

Categoría de exposición: C — La categoría de exposición C aplicará para todos los casos donde no apliquen las categorías B y D.

h edificación = 17.05 m
K_h = 1.117
K_{zt} = 1.00

Factor de rafaga:

$T_{adoptado}$ = 0.66 seg
Frecuencia f = 1.52 Hz — Estructura rígida
G = 0.85

Coeficiente de presión interna GCpi y coeficiente de presión externa Cp

GCpi = 0.18 para edificios cerrados
Cp = 0.01
1.41

Presión por viento a la altura media de la cubierta qh:

$$q_h = 0.613 k_h k_{zt} k_d V^2 I \quad N/m^2$$

q_h = 524.74 N/m^2
0.52 kN/m^2

Por lo tanto la carga de viento a emplear es: **0.52** kN/m^2

$L_{fachada}$ = 58.90 m
$h_{fachada}$ = 8.10 m
$A_{fachada}$ = 477.09 m^2
F_{viento} = 25.03 ton
F_{sismo} = 73.13 ton — **Prevalece la fuerza sísmica**

3. ANÁLISIS SÍSMICO

ANÁLISIS SÍSMICO

COMPROBACIÓN DE DERIVAS

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B , BOGOTÁ (CUNDINAMARCA)
ANÁLISIS SÍSMICO (ESPECTRO DE DISEÑO - CURVA DE DISEÑO)
MICROZONIFICACIÓN SÍSMICA DE BOGOTÁ D.C.

ZONA DE AMENAZA SÍSMICA
INTERMEDIA

ZONA DE MICROZONIFICACIÓN
ALUVIAL-100

EFECTOS LOCALES

Perfil de Suelo	**F**
Coeficiente Av	**0.20**

COEFICIENTE DE IMPORTANCIA

Grupo de Uso	**III**
Coeficiente de importancia I	**1.25**

VARIACIÓN COEFICIENTE DE CAPACIDAD DE DISIPACIÓN DE ENERGÍA

Ro: Coeficiente de capacidad de disipación de energía básico.
R: Coeficiente de capacidad de disipación de energía, para ser empleado en el diseño.
ϕ_a: Coeficiente de reducción de R causado por irregularidades en altura de la edificación.
ϕ_p: Coeficiente de reducción de R causado por irregularidades en planta de la edificación.
ϕ_r: Coeficiente de reducción de R causado por ausencia de redundancia en el sistema estructural de resistencia sísmica.

Ro	**5.00**
ϕ_p	**1.00**
ϕ_a	**1.00**
ϕ_r	**0.75**
ϕ	**0.90**
R	**3.38**

TIPO	DESCRIPCIÓN	VALOR
3P		ϕ_P: 1.00
3A		ϕ_a: 1.00
	REDUNDANCIA	ϕ_r: 0.75
	UNIONES SOLDADAS	ϕ: 0.90

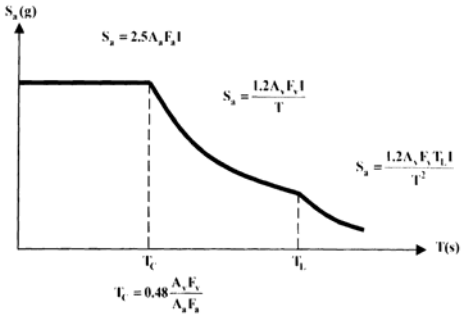
Para edificaciones clasificadas como irregulares el valor de **Ro** debe multiplicarse por ϕ_a, ϕ_p y por ϕ_r para obtener $\mathbf{R=\phi_a x \phi_p x \phi_r x Ro}$

ESPECTRO DE DISEÑO

Fa: Coeficiente de ampliación que afecta la aceleración en la zona de periodos cortos.
Fv: Coeficiente de ampliación que afecta la aceleración en la zona de periodos intermedios.
Sa: Aceleración espectral (g).
Aa: Aceleración horizontal pico efectiva de diseño. Aa=0.15g.
Ao: Aceleración horizontal pico efectiva del terreno en superficie (g).
Av: Aceleración que representa la velocidad horizontal pico efectiva de diseño. Av=0.20g.
T: Periodo de vibración del sistema elástico, en segundos.
Tc: Periodo corto, en segundos.
TL: Periodo largo, en segundos.

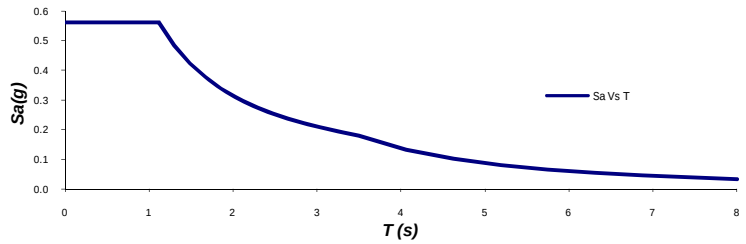
ALUVIAL-100		
T_C:	1.12	Seg
T_L:	3.50	Seg
Ao:	0.18	g
Aa:	0.15	g
Fa:	1.20	
Fv:	2.10	

Curva de diseño para un coeficiente de amortiguamiento de 5% del crítico

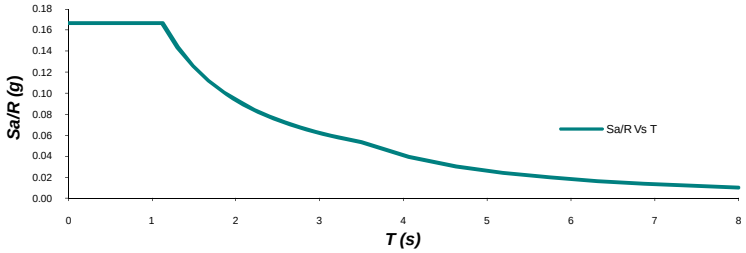


T	Sa	Sa/$R_{adoptado}$
(Seg)	**(%g)**	**(%g)**
0.00	0.563	0.167
0.16	0.563	0.167
0.32	0.563	0.167
0.48	0.563	0.167
0.64	0.563	0.167
0.80	0.563	0.167
0.96	0.563	0.167
1.12	0.563	0.167
1.30	0.483	0.143
1.49	0.424	0.126
1.67	0.377	0.112
1.85	0.340	0.101
2.04	0.310	0.092
2.22	0.284	0.084
2.40	0.262	0.078
2.58	0.244	0.072
2.77	0.228	0.067
2.95	0.214	0.063
3.13	0.201	0.060
3.32	0.190	0.056
3.50	0.180	0.053
4.06	0.134	0.040
4.63	0.103	0.031
5.19	0.082	0.024
5.75	0.067	0.020
6.31	0.055	0.016
6.88	0.047	0.014
7.44	0.040	0.012
8.00	0.034	0.010

Espectro Elástico de Diseño



Espectro Elástico de Diseño/R_{adop}



Sistema de resistencia Sísmica: Pórticos resistentes a momentos con Capacidad Moderada de Disipación de Energía (DMO).

Nota: El sistema de pórtico es un sistema estructural compuesto por un pórtico espacial, resistente a momentos, esencialmente completo, sin diagonales, que resiste todas las cargas verticales y las fuerzas horizontales.

MODELO MATEMÁTICO

Modelo Tridimensional con Diafragma Rígido: En este modelo los entrepisos se consideran diafragmas infinitamente rigidos en su propio plano. La masa de cada diafragma se considera concentrada en su centro de masa. Los efectos torsionales accidentales son incluidos haciendo ajustes en la localización de los centros de masa de los diafragmas.
Los efectos direccionales son tomados en cuenta a través de las componentes de los desplazamientos de los grados de libertad horizontales ortogonales del diafragma.

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B , BOGOTÁ (CUNDINAMARCA)
ANÁLISIS SÍSMICO (ESPECTRO DE DISEÑO - CURVA DE UMBRAL DE DAÑO)
MICROZONIFICACIÓN SÍSMICA DE BOGOTÁ D.C.

ZONA DE AMENAZA SÍSMICA
INTERMEDIA

ZONA DE MICROZONIFICACIÓN
ALUVIAL-100

EFECTOS LOCALES

Perfil de Suelo	**F**
Coeficiente Ad	**0.06**

COEFICIENTE DE IMPORTANCIA

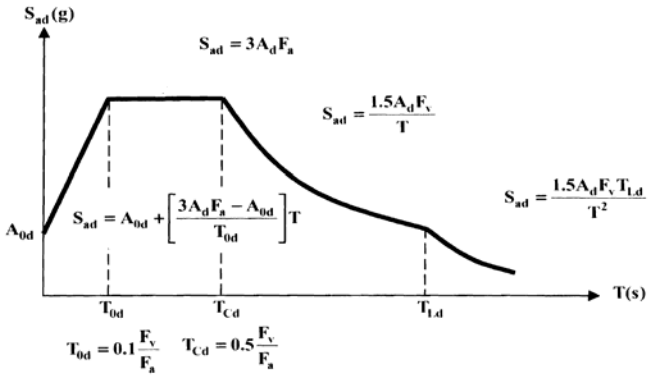
Grupo de Uso	**III**
Coeficiente de importancia I	**1.25**

ESPECTRO DE UMBRAL DE DAÑO

Fa: Coeficiente de ampliación que afecta la aceleración en la zona de periodos cortos.
Fv: Coeficiente de ampliación que afecta la aceleración en la zona de periodos intermedios.
Sad: Aceleración espectral de umbral de daño (g).
Ad: Aceleración horizontal pico efectiva de umbral de daño. Ad=0.06g.
Aod: Aceleración horizontal pico efectiva del terreno para umbral de daño en superficie (g).
T: Periodo de vibración del sistema elástico, en segundos.
T_{0d}: Periodo inicial de umbral de daño, en segundos.
T_{Cd}: Periodo corto de umbral de daño, en segundos.
T_{Ld}: Periodo largo de umbral de daño, en segundos.

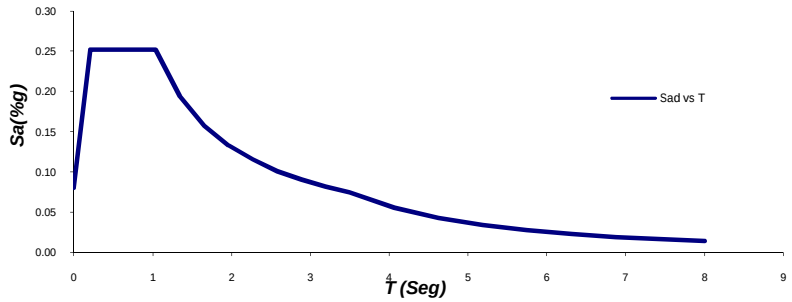
ALUVIAL-100		
T_{Cd}:	1.04	Seg
T_{Ld}:	3.50	Seg
T_{0d}:	0.21	Seg
Aod:	0.08	g
Fa:	1.40	
Fv:	2.90	

Curva de umbral de daño para un coeficiente de amortiguamiento de 2% del crítico.



T (Seg)	Sad (%g)
0.00	0.080
0.21	0.252
0.28	0.252
0.35	0.252
0.42	0.252
0.49	0.252
0.56	0.252
0.63	0.252
0.69	0.252
0.76	0.252
0.83	0.252
0.90	0.252
0.97	0.252
1.04	0.252
1.35	0.194
1.66	0.158
1.96	0.133
2.27	0.115
2.58	0.101
2.89	0.090
3.19	0.082
3.50	0.075
4.06	0.055
4.63	0.043
5.19	0.034
5.75	0.028
6.31	0.023
6.88	0.019
7.44	0.017
8.00	0.014

Espectro De Umbral De Daño



Sistema de resistencia Sísmica: Pórticos resistentes a momentos con Capacidad Moderada de Disipación de Energía (DMO).

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Los efectos direccionales son tomados en cuenta a través de las componentes de los desplazamientos de los grados de libertad horizontales ortogonales del diafragma.

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B BOGOTÁ (CUNDINAMARCA)
CALCULO DEL CORTANTE BASAL DE LA ESTRUCTURA (ESPECTRO DE DISEÑO)
MICROZONIFICACIÓN SÍSMICA DE BOGOTÁ D.C.

CALCULO DEL CORTANTE BASAL DE LA ESTRUCTURA

$H_{edificio}$=	**17.05**	m	
Tipo de Perfil:	**F**		
Aa =	0.15		
Av =	0.20		
Fa =	1.20		
Fv =	2.10		
T_c =	1.12	Seg	
C_t =	**0.047**		
α =	**0.90**		
T_a =	**0.60**	Seg	
C_u =	1.25		
$C_u T_a$ =	0.75	Seg	
$T_{modelación\ estructural}$ =	**0.66**	Seg	
ΔT =	9.37	%	**Ok!**
$T_{adoptado}$ =	**0.66**	Seg	
S_a =	**0.563**		S_a obtenido del espectro de diseño
g =	9.81	m/s^2	
M =	**1330.80**	Ton	Masa obtenida del modelo
V_s =	**7350.05**	kN	
90% Vs =	**6615.04**	kN	Cortante basal para comparación de acuerdo a A.5.4.5 NSR-10

MODELO INICIAL
Response Espectrum Base Reactions

PORCENTAJE PARA REVISIÓN DE CORTANTE BASAL DE ACUERDO A A.5.4.5 NSR-10: 90.0 %

	F1	F2	Total	Factor		g corregido
$V_{s(x)}$=	3956.88	605.09	4002.88	1.653	**16.212**	Se aplica en SISMO X
$V_{s(y)}$=	605.09	4925.79	4962.82	1.333	**13.076**	Se aplica en SISMO Y

MODELO CORREGIDO
Response Espectrum Base Reactions

	F1	F2	Total	90% Vs
$V_{s(x)}$=	6539.14	999.97	**6615.16**	**6615.0**
$V_{s(y)}$=	806.54	6565.71	**6615.06**	**6615.0**

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B BOGOTÁ (CUNDINAMARCA)
CALCULO DEL CORTANTE BASAL DE LA ESTRUCTURA (ESPECTRO DE UMBRAL DE DAÑO)
MICROZONIFICACIÓN SÍSMICA DE BOGOTÁ D.C.

CALCULO DEL CORTANTE BASAL DE LA ESTRUCTURA

$H_{edificio}$=	**17.05**	m	
Tipo de Perfil:	**F**		
Ad =	**0.06**		
Fv =	**2.10**		
C_t =	**0.047**		
α =	**0.90**		
T_a =	0.60	Seg	
C_u =	1.25		
$C_u T_a$ =	0.75	Seg	
$T_{modelación\ estructural}$ =	**0.66**	Seg	
ΔT =	9.37	%	Ok!
$T_{adoptado}$ =	**0.66**	Seg	
S_a =	**0.252**		S_a obtenido del espectro de diseño
g =	9.81	m/s^2	
M =	**1330.80**	Ton	Masa obtenida del modelo
V_s =	**3289.90**	kN	
100% Vs =	**3289.90**	kN	Cortante basal para comparación de acuerdo a A.5.4.5 NSR-10

MODELO INICIAL
Response Espectrum Base Reactions

PORCENTAJE PARA REVISIÓN DE CORTANTE BASAL DE ACUERDO A A.5.4.5 NSR-10: 100.0 %

	F1	F2	Total	Factor		g corregido
$V_{s(x)}$=	1772.17	271.03	1792.78	1.835	**18.002**	Se aplica en SISMO X
$V_{s(y)}$=	271.03	2206.06	2222.65	1.480	**14.520**	Se aplica en SISMO Y

MODELO CORREGIDO
Response Espectrum Base Reactions

	F1	F2	Total	100% Vs
$V_{s(x)}$=	3252.06	497.37	**3289.87**	**3289.9**
$V_{s(y)}$=	401.16	3265.24	**3289.79**	**3289.9**

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

CÁLCULO DE DERIVAS MÁXIMAS

ALTURA DE N+8.90 **4.45** **m**
ALTURA DE N+4.45 **4.50** **m**
ALTURA DE BASE **0.00** **m**

Deriva Máxima Permitida **1.00** **%**

Nivel	Punto	COMBINACIÓN DE CARGA	DESPLAZAMIENTOS FUERZA SÍSMICA		Deriva Δ	Deriva Δ	Observación
			Desplazamiento X	Desplazamiento Y	*m*	*%*	
N+8.90	1	COMDER1 MAX	0.01888	0.02079	0.01070	0.24	OK
N+8.90	1	COMDER1 MIN	-0.01888	-0.02079	0.01070	0.24	OK
N+8.90	1	COMDER2 MAX	0.01049	0.01980	0.00836	0.19	OK
N+8.90	1	COMDER2 MIN	-0.01049	-0.01980	0.00836	0.19	OK
N+4.45	1	COMDER1 MAX	0.01214	0.01247	0.01741	0.39	OK
N+4.45	1	COMDER1 MIN	-0.01214	-0.01247	0.01741	0.39	OK
N+4.45	1	COMDER2 MAX	0.00700	0.01221	0.01407	0.31	OK
N+4.45	1	COMDER2 MIN	-0.00700	-0.01221	0.01407	0.31	OK
BASE	1	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	1	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	1	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	1	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	2	COMDER1 MAX	0.01881	0.02963	0.01952	0.44	OK
N+8.90	2	COMDER1 MIN	-0.01881	-0.02963	0.01952	0.44	OK
N+8.90	2	COMDER2 MAX	0.01049	0.03056	0.01861	0.42	OK
N+8.90	2	COMDER2 MIN	-0.01049	-0.03056	0.01861	0.42	OK
N+4.45	2	COMDER1 MAX	0.01214	0.01129	0.01658	0.37	OK
N+4.45	2	COMDER1 MIN	-0.01214	-0.01129	0.01658	0.37	OK
N+4.45	2	COMDER2 MAX	0.00700	0.01228	0.01413	0.31	OK
N+4.45	2	COMDER2 MIN	-0.00700	-0.01228	0.01413	0.31	OK
BASE	2	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	2	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	2	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	2	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	3	COMDER1 MAX	0.01881	0.03874	0.02947	0.66	OK
N+8.90	3	COMDER1 MIN	-0.01881	-0.03874	0.02947	0.66	OK
N+8.90	3	COMDER2 MAX	0.01049	0.04217	0.02991	0.67	OK
N+8.90	3	COMDER2 MIN	-0.01049	-0.04217	0.02991	0.67	OK
N+4.45	3	COMDER1 MAX	0.01214	0.01003	0.01575	0.35	OK
N+4.45	3	COMDER1 MIN	-0.01214	-0.01003	0.01575	0.35	OK
N+4.45	3	COMDER2 MAX	0.00700	0.01247	0.01430	0.32	OK
N+4.45	3	COMDER2 MIN	-0.00700	-0.01247	0.01430	0.32	OK
BASE	3	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	3	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	3	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	3	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	4	COMDER1 MAX	0.01881	0.02917	0.02139	0.48	OK
N+8.90	4	COMDER1 MIN	-0.01881	-0.02917	0.02139	0.48	OK
N+8.90	4	COMDER2 MAX	0.01043	0.03597	0.02342	0.53	OK
N+8.90	4	COMDER2 MIN	-0.01043	-0.03597	0.02342	0.53	OK
N+4.45	4	COMDER1 MAX	0.01214	0.00884	0.01502	0.33	OK
N+4.45	4	COMDER1 MIN	-0.01214	-0.00884	0.01502	0.33	OK
N+4.45	4	COMDER2 MAX	0.00700	0.01280	0.01459	0.32	OK
N+4.45	4	COMDER2 MIN	-0.00700	-0.01280	0.01459	0.32	OK
BASE	4	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	4	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	4	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	4	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	5	COMDER1 MAX	0.01881	0.01591	0.01056	0.24	OK
N+8.90	5	COMDER1 MIN	-0.01881	-0.01591	0.01056	0.24	OK
N+8.90	5	COMDER2 MAX	0.01043	0.02521	0.01256	0.28	OK
N+8.90	5	COMDER2 MIN	-0.01043	-0.02521	0.01256	0.28	OK
N+4.45	5	COMDER1 MAX	0.01214	0.00772	0.01439	0.32	OK
N+4.45	5	COMDER1 MIN	-0.01214	-0.00772	0.01439	0.32	OK
N+4.45	5	COMDER2 MAX	0.00700	0.01313	0.01488	0.33	OK
N+4.45	5	COMDER2 MIN	-0.00700	-0.01313	0.01488	0.33	OK
BASE	5	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	5	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	5	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	5	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	6	COMDER1 MAX	0.01874	0.01927	0.01429	0.32	OK
N+8.90	6	COMDER1 MIN	-0.01874	-0.01927	0.01429	0.32	OK
N+8.90	6	COMDER2 MAX	0.01043	0.03960	0.02623	0.59	OK
N+8.90	6	COMDER2 MIN	-0.01043	-0.03960	0.02623	0.59	OK
N+4.45	6	COMDER1 MAX	0.01214	0.00660	0.01382	0.31	OK
N+4.45	6	COMDER1 MIN	-0.01214	-0.00660	0.01382	0.31	OK

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

CÁLCULO DE DERIVAS MÁXIMAS

ALTURA DE N+8.90	4.45	m
ALTURA DE N+4.45	4.50	m
ALTURA DE BASE	0.00	m

Deriva Máxima Permitida 1.00 %

Nivel	Punto	COMBINACIÓN DE CARGA	DESPLAZAMIENTOS FUERZA SÍSMICA		Deriva Δ	Deriva Δ	Observación
			Desplazamiento X	Desplazamiento Y	*m*	*%*	
N+4.45	6	COMDER2 MAX	0.00700	0.01360	0.01529	0.34	OK
N+4.45	6	COMDER2 MIN	-0.00700	-0.01360	0.01529	0.34	OK
BASE	6	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	6	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	6	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	6	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	7	COMDER1 MAX	0.01874	0.02132	0.01710	0.38	OK
N+8.90	7	COMDER1 MIN	-0.01874	-0.02132	0.01710	0.38	OK
N+8.90	7	COMDER2 MAX	0.01043	0.05023	0.03613	0.81	OK
N+8.90	7	COMDER2 MIN	-0.01043	-0.05023	0.03613	0.81	OK
N+4.45	7	COMDER1 MAX	0.01214	0.00554	0.01335	0.30	OK
N+4.45	7	COMDER1 MIN	-0.01214	-0.00554	0.01335	0.30	OK
N+4.45	7	COMDER2 MAX	0.00700	0.01426	0.01588	0.35	OK
N+4.45	7	COMDER2 MIN	-0.00700	-0.01426	0.01588	0.35	OK
BASE	7	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	7	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	7	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	7	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	8	COMDER1 MAX	0.01868	0.01584	0.01264	0.28	OK
N+8.90	8	COMDER1 MIN	-0.01868	-0.01584	0.01264	0.28	OK
N+8.90	8	COMDER2 MAX	0.01036	0.04283	0.02773	0.62	OK
N+8.90	8	COMDER2 MIN	-0.01036	-0.04283	0.02773	0.62	OK
N+4.45	8	COMDER1 MAX	0.01214	0.00502	0.01314	0.29	OK
N+4.45	8	COMDER1 MIN	-0.01214	-0.00502	0.01314	0.29	OK
N+4.45	8	COMDER2 MAX	0.00700	0.01531	0.01683	0.37	OK
N+4.45	8	COMDER2 MIN	-0.00700	-0.01531	0.01683	0.37	OK
BASE	8	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	8	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	8	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	8	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	9	COMDER1 MAX	0.01868	0.01208	0.00861	0.19	OK
N+8.90	9	COMDER1 MIN	-0.01868	-0.01208	0.00861	0.19	OK
N+8.90	9	COMDER2 MAX	0.01036	0.03115	0.01446	0.32	OK
N+8.90	9	COMDER2 MIN	-0.01036	-0.03115	0.01446	0.32	OK
N+4.45	9	COMDER1 MAX	0.01214	0.00647	0.01376	0.31	OK
N+4.45	9	COMDER1 MIN	-0.01214	-0.00647	0.01376	0.31	OK
N+4.45	9	COMDER2 MAX	0.00700	0.01709	0.01847	0.41	OK
N+4.45	9	COMDER2 MIN	-0.00700	-0.01709	0.01847	0.41	OK
BASE	9	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	9	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	9	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	9	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	10	COMDER1 MAX	0.01861	0.02270	0.01577	0.35	OK
N+8.90	10	COMDER1 MIN	-0.01861	-0.02270	0.01577	0.35	OK
N+8.90	10	COMDER2 MAX	0.01036	0.04726	0.02851	0.64	OK
N+8.90	10	COMDER2 MIN	-0.01036	-0.04726	0.02851	0.64	OK
N+4.45	10	COMDER1 MAX	0.01214	0.00832	0.01472	0.33	OK
N+4.45	10	COMDER1 MIN	-0.01214	-0.00832	0.01472	0.33	OK
N+4.45	10	COMDER2 MAX	0.00700	0.01894	0.02019	0.45	OK
N+4.45	10	COMDER2 MIN	-0.00700	-0.01894	0.02019	0.45	OK
BASE	10	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	10	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	10	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	10	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	11	COMDER1 MAX	0.01861	0.02831	0.01927	0.43	OK
N+8.90	11	COMDER1 MIN	-0.01861	-0.02831	0.01927	0.43	OK
N+8.90	11	COMDER2 MAX	0.01036	0.05432	0.03363	0.76	OK
N+8.90	11	COMDER2 MIN	-0.01036	-0.05432	0.03363	0.76	OK
N+4.45	11	COMDER1 MAX	0.01214	0.01016	0.01584	0.35	OK
N+4.45	11	COMDER1 MIN	-0.01214	-0.01016	0.01584	0.35	OK
N+4.45	11	COMDER2 MAX	0.00700	0.02086	0.02200	0.49	OK
N+4.45	11	COMDER2 MIN	-0.00700	-0.02086	0.02200	0.49	OK
BASE	11	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	11	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	11	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	11	COMDER2 MIN	0.00000	0.00000	--	--	--

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

CÁLCULO DE DERIVAS MÁXIMAS

ALTURA DE N+8.90	4.45	m
ALTURA DE N+4.45	4.50	m
ALTURA DE BASE	0.00	m

Deriva Máxima Permitida 1.00 %

Nivel	Punto	COMBINACIÓN DE CARGA	DESPLAZAMIENTOS FUERZA SÍSMICA		Deriva Δ	Deriva Δ	Observación
			Desplazamiento X	Desplazamiento Y	*m*	*%*	
N+8.90	12	COMDER1 MAX	0.01861	0.02944	0.01859	0.42	OK
N+8.90	12	COMDER1 MIN	-0.01861	-0.02944	0.01859	0.42	OK
N+8.90	12	COMDER2 MAX	0.01036	0.05458	0.03199	0.72	OK
N+8.90	12	COMDER2 MIN	-0.01036	-0.05458	0.03199	0.72	OK
N+4.45	12	COMDER1 MAX	0.01214	0.01201	0.01708	0.38	OK
N+4.45	12	COMDER1 MIN	-0.01214	-0.01201	0.01708	0.38	OK
N+4.45	12	COMDER2 MAX	0.00700	0.02277	0.02382	0.53	OK
N+4.45	12	COMDER2 MIN	-0.00700	-0.02277	0.02382	0.53	OK
BASE	12	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	12	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	12	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	12	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	13	COMDER1 MAX	0.01868	0.02198	0.01047	0.24	OK
N+8.90	13	COMDER1 MIN	-0.01868	-0.02198	0.01047	0.24	OK
N+8.90	13	COMDER2 MAX	0.01036	0.03841	0.01420	0.32	OK
N+8.90	13	COMDER2 MIN	-0.01036	-0.03841	0.01420	0.32	OK
N+4.45	13	COMDER1 MAX	0.01214	0.01379	0.01838	0.41	OK
N+4.45	13	COMDER1 MIN	-0.01214	-0.01379	0.01838	0.41	OK
N+4.45	13	COMDER2 MAX	0.00700	0.02462	0.02559	0.57	OK
N+4.45	13	COMDER2 MIN	-0.00700	-0.02462	0.02559	0.57	OK
BASE	13	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	13	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	13	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	13	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	20	COMDER1 MAX	0.02864	0.02072	0.01857	0.42	OK
N+8.90	20	COMDER1 MIN	-0.02864	-0.02072	0.01857	0.42	OK
N+8.90	20	COMDER2 MAX	0.01353	0.01980	0.01087	0.24	OK
N+8.90	20	COMDER2 MIN	-0.01353	-0.01980	0.01087	0.24	OK
N+4.45	20	COMDER1 MAX	0.01201	0.01247	0.01732	0.38	OK
N+4.45	20	COMDER1 MIN	-0.01201	-0.01247	0.01732	0.38	OK
N+4.45	20	COMDER2 MAX	0.00574	0.01221	0.01349	0.30	OK
N+4.45	20	COMDER2 MIN	-0.00574	-0.01221	0.01349	0.30	OK
BASE	20	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	20	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	20	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	20	COMDER2 MIN	0.00000	0.00000	--	--	--
N+4.45	22	COMDER1 MAX	0.01201	0.01129	0.01648	0.37	OK
N+4.45	22	COMDER1 MIN	-0.01201	-0.01129	0.01648	0.37	OK
N+4.45	22	COMDER2 MAX	0.00574	0.01228	0.01355	0.30	OK
N+4.45	22	COMDER2 MIN	-0.00574	-0.01228	0.01355	0.30	OK
BASE	22	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	22	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	22	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	22	COMDER2 MIN	0.00000	0.00000	--	--	--
N+4.45	23	COMDER1 MAX	0.01201	0.01003	0.01565	0.35	OK
N+4.45	23	COMDER1 MIN	-0.01201	-0.01003	0.01565	0.35	OK
N+4.45	23	COMDER2 MAX	0.00574	0.01247	0.01373	0.31	OK
N+4.45	23	COMDER2 MIN	-0.00574	-0.01247	0.01373	0.31	OK
BASE	23	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	23	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	23	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	23	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	25	COMDER1 MAX	0.02706	0.01584	0.01710	0.38	OK
N+8.90	25	COMDER1 MIN	-0.02706	-0.01584	0.01710	0.38	OK
N+8.90	25	COMDER2 MAX	0.01234	0.02515	0.01371	0.31	OK
N+8.90	25	COMDER2 MIN	-0.01234	-0.02515	0.01371	0.31	OK
N+4.45	25	COMDER1 MAX	0.01201	0.00772	0.01428	0.32	OK
N+4.45	25	COMDER1 MIN	-0.01201	-0.00772	0.01428	0.32	OK
N+4.45	25	COMDER2 MAX	0.00574	0.01313	0.01433	0.32	OK
N+4.45	25	COMDER2 MIN	-0.00574	-0.01313	0.01433	0.32	OK
BASE	25	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	25	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	25	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	25	COMDER2 MIN	0.00000	0.00000	--	--	--
N+4.45	26	COMDER1 MAX	0.01201	0.00554	0.01323	0.29	OK
N+4.45	26	COMDER1 MIN	-0.01201	-0.00554	0.01323	0.29	OK

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

CÁLCULO DE DERIVAS MÁXIMAS

ALTURA DE N+8.90	4.45	m
ALTURA DE N+4.45	4.50	m
ALTURA DE BASE	0.00	m

Deriva Máxima Permitida 1.00 %

Nivel	Punto	COMBINACIÓN DE CARGA	DESPLAZAMIENTOS FUERZA SÍSMICA		Deriva Δ	Deriva Δ	Observación
			Desplazamiento X	Desplazamiento Y	*m*	*%*	
N+4.45	26	COMDER2 MAX	0.00574	0.01426	0.01537	0.34	OK
N+4.45	26	COMDER2 MIN	-0.00574	-0.01426	0.01537	0.34	OK
BASE	26	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	26	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	26	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	26	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	27	COMDER1 MAX	0.02620	0.01201	0.01523	0.34	OK
N+8.90	27	COMDER1 MIN	-0.02620	-0.01201	0.01523	0.34	OK
N+8.90	27	COMDER2 MAX	0.01228	0.03109	0.01544	0.35	OK
N+8.90	27	COMDER2 MIN	-0.01228	-0.03109	0.01544	0.35	OK
N+4.45	27	COMDER1 MAX	0.01201	0.00647	0.01364	0.30	OK
N+4.45	27	COMDER1 MIN	-0.01201	-0.00647	0.01364	0.30	OK
N+4.45	27	COMDER2 MAX	0.00574	0.01709	0.01803	0.40	OK
N+4.45	27	COMDER2 MIN	-0.00574	-0.01709	0.01803	0.40	OK
BASE	27	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	27	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	27	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	27	COMDER2 MIN	0.00000	0.00000	--	--	--
N+4.45	28	COMDER1 MAX	0.01201	0.01016	0.01574	0.35	OK
N+4.45	28	COMDER1 MIN	-0.01201	-0.01016	0.01574	0.35	OK
N+4.45	28	COMDER2 MAX	0.00574	0.02086	0.02163	0.48	OK
N+4.45	28	COMDER2 MIN	-0.00574	-0.02086	0.02163	0.48	OK
BASE	28	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	28	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	28	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	28	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	29	COMDER1 MAX	0.03557	0.02198	0.02494	0.56	OK
N+8.90	29	COMDER1 MIN	-0.03557	-0.02198	0.02494	0.56	OK
N+8.90	29	COMDER2 MAX	0.02317	0.03835	0.02218	0.50	OK
N+8.90	29	COMDER2 MIN	-0.02317	-0.03835	0.02218	0.50	OK
N+4.45	29	COMDER1 MAX	0.01201	0.01379	0.01829	0.41	OK
N+4.45	29	COMDER1 MIN	-0.01201	-0.01379	0.01829	0.41	OK
N+4.45	29	COMDER2 MAX	0.00574	0.02462	0.02528	0.56	OK
N+4.45	29	COMDER2 MIN	-0.00574	-0.02462	0.02528	0.56	OK
BASE	29	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	29	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	29	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	29	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	35	COMDER1 MAX	0.02878	0.02072	0.01857	0.42	OK
N+8.90	35	COMDER1 MIN	-0.02878	-0.02072	0.01857	0.42	OK
N+8.90	35	COMDER2 MAX	0.01201	0.01973	0.01041	0.23	OK
N+8.90	35	COMDER2 MIN	-0.01201	-0.01973	0.01041	0.23	OK
N+4.45	35	COMDER1 MAX	0.01214	0.01247	0.01741	0.39	OK
N+4.45	35	COMDER1 MIN	-0.01214	-0.01247	0.01741	0.39	OK
N+4.45	35	COMDER2 MAX	0.00482	0.01221	0.01313	0.29	OK
N+4.45	35	COMDER2 MIN	-0.00482	-0.01221	0.01313	0.29	OK
BASE	35	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	35	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	35	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	35	COMDER2 MIN	0.00000	0.00000	--	--	--
N+4.45	36	COMDER1 MAX	0.01214	0.01129	0.01658	0.37	OK
N+4.45	36	COMDER1 MIN	-0.01214	-0.01129	0.01658	0.37	OK
N+4.45	36	COMDER2 MAX	0.00482	0.01228	0.01319	0.29	OK
N+4.45	36	COMDER2 MIN	-0.00482	-0.01228	0.01319	0.29	OK
BASE	36	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	36	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	36	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	36	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	37	COMDER1 MAX	0.02871	0.02878	0.02502	0.56	OK
N+8.90	37	COMDER1 MIN	-0.02871	-0.02878	0.02502	0.56	OK
N+8.90	37	COMDER2 MAX	0.01201	0.03181	0.02063	0.46	OK
N+8.90	37	COMDER2 MIN	-0.01201	-0.03181	0.02063	0.46	OK
N+4.45	37	COMDER1 MAX	0.01214	0.01003	0.01575	0.35	OK
N+4.45	37	COMDER1 MIN	-0.01214	-0.01003	0.01575	0.35	OK
N+4.45	37	COMDER2 MAX	0.00482	0.01247	0.01337	0.30	OK
N+4.45	37	COMDER2 MIN	-0.00482	-0.01247	0.01337	0.30	OK

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

CÁLCULO DE DERIVAS MÁXIMAS

ALTURA DE N+8.90	4.45	m
ALTURA DE N+4.45	4.50	m
ALTURA DE BASE	0.00	m

Deriva Máxima Permitida 1.00 %

Nivel	Punto	COMBINACIÓN DE CARGA	DESPLAZAMIENTOS FUERZA SÍSMICA		Deriva Δ	Deriva Δ	Observación
			Desplazamiento X	Desplazamiento Y	*m*	*%*	
BASE	37	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	37	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	37	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	37	COMDER2 MIN	0.00000	0.00000	--	--	--
N+4.45	38	COMDER1 MAX	0.01214	0.00884	0.01502	0.33	OK
N+4.45	38	COMDER1 MIN	-0.01214	-0.00884	0.01502	0.33	OK
N+4.45	38	COMDER2 MAX	0.00482	0.01280	0.01368	0.30	OK
N+4.45	38	COMDER2 MIN	-0.00482	-0.01280	0.01368	0.30	OK
BASE	38	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	38	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	38	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	38	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	39	COMDER1 MAX	0.02878	0.01584	0.01851	0.42	OK
N+8.90	39	COMDER1 MIN	-0.02878	-0.01584	0.01851	0.42	OK
N+8.90	39	COMDER2 MAX	0.01201	0.02508	0.01394	0.31	OK
N+8.90	39	COMDER2 MIN	-0.01201	-0.02508	0.01394	0.31	OK
N+4.45	39	COMDER1 MAX	0.01214	0.00772	0.01439	0.32	OK
N+4.45	39	COMDER1 MIN	-0.01214	-0.00772	0.01439	0.32	OK
N+4.45	39	COMDER2 MAX	0.00482	0.01313	0.01399	0.31	OK
N+4.45	39	COMDER2 MIN	-0.00482	-0.01313	0.01399	0.31	OK
BASE	39	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	39	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	39	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	39	COMDER2 MIN	0.00000	0.00000	--	--	--
N+4.45	40	COMDER1 MAX	0.01214	0.00660	0.01382	0.31	OK
N+4.45	40	COMDER1 MIN	-0.01214	-0.00660	0.01382	0.31	OK
N+4.45	40	COMDER2 MAX	0.00482	0.01360	0.01442	0.32	OK
N+4.45	40	COMDER2 MIN	-0.00482	-0.01360	0.01442	0.32	OK
BASE	40	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	40	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	40	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	40	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	41	COMDER1 MAX	0.02878	0.01439	0.01884	0.42	OK
N+8.90	41	COMDER1 MIN	-0.02878	-0.01439	0.01884	0.42	OK
N+8.90	41	COMDER2 MAX	0.01201	0.03439	0.02138	0.48	OK
N+8.90	41	COMDER2 MIN	-0.01201	-0.03439	0.02138	0.48	OK
N+4.45	41	COMDER1 MAX	0.01214	0.00554	0.01335	0.30	OK
N+4.45	41	COMDER1 MIN	-0.01214	-0.00554	0.01335	0.30	OK
N+4.45	41	COMDER2 MAX	0.00482	0.01426	0.01505	0.33	OK
N+4.45	41	COMDER2 MIN	-0.00482	-0.01426	0.01505	0.33	OK
BASE	41	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	41	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	41	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	41	COMDER2 MIN	0.00000	0.00000	--	--	--
N+4.45	42	COMDER1 MAX	0.01214	0.00502	0.01314	0.29	OK
N+4.45	42	COMDER1 MIN	-0.01214	-0.00502	0.01314	0.29	OK
N+4.45	42	COMDER2 MAX	0.00482	0.01531	0.01605	0.36	OK
N+4.45	42	COMDER2 MIN	-0.00482	-0.01531	0.01605	0.36	OK
BASE	42	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	42	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	42	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	42	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	43	COMDER1 MAX	0.02878	0.01201	0.01753	0.39	OK
N+8.90	43	COMDER1 MIN	-0.02878	-0.01201	0.01753	0.39	OK
N+8.90	43	COMDER2 MAX	0.01201	0.03109	0.01573	0.35	OK
N+8.90	43	COMDER2 MIN	-0.01201	-0.03109	0.01573	0.35	OK
N+4.45	43	COMDER1 MAX	0.01214	0.00647	0.01376	0.31	OK
N+4.45	43	COMDER1 MIN	-0.01214	-0.00647	0.01376	0.31	OK
N+4.45	43	COMDER2 MAX	0.00482	0.01709	0.01776	0.39	OK
N+4.45	43	COMDER2 MIN	-0.00482	-0.01709	0.01776	0.39	OK
BASE	43	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	43	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	43	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	43	COMDER2 MIN	0.00000	0.00000	--	--	--
N+4.45	44	COMDER1 MAX	0.01214	0.00832	0.01472	0.33	OK
N+4.45	44	COMDER1 MIN	-0.01214	-0.00832	0.01472	0.33	OK

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

CÁLCULO DE DERIVAS MÁXIMAS

ALTURA DE N+8.90	4.45	m
ALTURA DE N+4.45	4.50	m
ALTURA DE BASE	0.00	m

Deriva Máxima Permitida 1.00 %

Nivel	Punto	COMBINACIÓN DE CARGA	DESPLAZAMIENTOS FUERZA SÍSMICA		Deriva Δ	Deriva Δ	Observación
			Desplazamiento X	Desplazamiento Y	*m*	*%*	
N+4.45	44	COMDER2 MAX	0.00482	0.01894	0.01955	0.43	OK
N+4.45	44	COMDER2 MIN	-0.00482	-0.01894	0.01955	0.43	OK
BASE	44	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	44	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	44	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	44	COMDER2 MIN	0.00000	0.00000	--	--	--
N+4.45	45	COMDER1 MAX	0.01214	0.01016	0.01584	0.35	OK
N+4.45	45	COMDER1 MIN	-0.01214	-0.01016	0.01584	0.35	OK
N+4.45	45	COMDER2 MAX	0.00482	0.02086	0.02141	0.48	OK
N+4.45	45	COMDER2 MIN	-0.00482	-0.02086	0.02141	0.48	OK
BASE	45	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	45	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	45	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	45	COMDER2 MIN	0.00000	0.00000	--	--	--
N+4.45	46	COMDER1 MAX	0.01214	0.01201	0.01708	0.38	OK
N+4.45	46	COMDER1 MIN	-0.01214	-0.01201	0.01708	0.38	OK
N+4.45	46	COMDER2 MAX	0.00482	0.02277	0.02327	0.52	OK
N+4.45	46	COMDER2 MIN	-0.00482	-0.02277	0.02327	0.52	OK
BASE	46	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	46	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	46	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	46	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	47	COMDER1 MAX	0.04165	0.02198	0.03062	0.69	OK
N+8.90	47	COMDER1 MIN	-0.04165	-0.02198	0.03062	0.69	OK
N+8.90	47	COMDER2 MAX	0.02812	0.03835	0.02704	0.61	OK
N+8.90	47	COMDER2 MIN	-0.02812	-0.03835	0.02704	0.61	OK
N+4.45	47	COMDER1 MAX	0.01214	0.01379	0.01838	0.41	OK
N+4.45	47	COMDER1 MIN	-0.01214	-0.01379	0.01838	0.41	OK
N+4.45	47	COMDER2 MAX	0.00482	0.02462	0.02509	0.56	OK
N+4.45	47	COMDER2 MIN	-0.00482	-0.02462	0.02509	0.56	OK
BASE	47	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	47	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	47	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	47	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	59	COMDER1 MAX	0.03023	0.02072	0.01904	0.43	OK
N+8.90	59	COMDER1 MIN	-0.03023	-0.02072	0.01904	0.43	OK
N+8.90	59	COMDER2 MAX	0.01366	0.01973	0.01102	0.25	OK
N+8.90	59	COMDER2 MIN	-0.01366	-0.01973	0.01102	0.25	OK
N+4.45	59	COMDER1 MAX	0.01307	0.01247	0.01807	0.40	OK
N+4.45	59	COMDER1 MIN	-0.01307	-0.01247	0.01807	0.40	OK
N+4.45	59	COMDER2 MAX	0.00561	0.01221	0.01344	0.30	OK
N+4.45	59	COMDER2 MIN	-0.00561	-0.01221	0.01344	0.30	OK
BASE	59	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	59	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	59	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	59	COMDER2 MIN	0.00000	0.00000	--	--	--
N+4.45	61	COMDER1 MAX	0.01307	0.01129	0.01727	0.38	OK
N+4.45	61	COMDER1 MIN	-0.01307	-0.01129	0.01727	0.38	OK
N+4.45	61	COMDER2 MAX	0.00561	0.01228	0.01350	0.30	OK
N+4.45	61	COMDER2 MIN	-0.00561	-0.01228	0.01350	0.30	OK
BASE	61	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	61	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	61	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	61	COMDER2 MIN	0.00000	0.00000	--	--	--
N+4.45	62	COMDER1 MAX	0.01307	0.01003	0.01647	0.37	OK
N+4.45	62	COMDER1 MIN	-0.01307	-0.01003	0.01647	0.37	OK
N+4.45	62	COMDER2 MAX	0.00561	0.01247	0.01368	0.30	OK
N+4.45	62	COMDER2 MIN	-0.00561	-0.01247	0.01368	0.30	OK
BASE	62	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	62	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	62	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	62	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	64	COMDER1 MAX	0.02680	0.01584	0.01595	0.36	OK
N+8.90	64	COMDER1 MIN	-0.02680	-0.01584	0.01595	0.36	OK
N+8.90	64	COMDER2 MAX	0.01168	0.02508	0.01340	0.30	OK
N+8.90	64	COMDER2 MIN	-0.01168	-0.02508	0.01340	0.30	OK

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

CÁLCULO DE DERIVAS MÁXIMAS

ALTURA DE N+8.90	4.45	m
ALTURA DE N+4.45	4.50	m
ALTURA DE BASE	0.00	m

Deriva Máxima Permitida 1.00 %

Nivel	Punto	COMBINACIÓN DE CARGA	DESPLAZAMIENTOS FUERZA SÍSMICA		Deriva Δ	Deriva Δ	Observación
			Desplazamiento X	Desplazamiento Y	*m*	*%*	
N+4.45	64	COMDER1 MAX	0.01307	0.00772	0.01518	0.34	OK
N+4.45	64	COMDER1 MIN	-0.01307	-0.00772	0.01518	0.34	OK
N+4.45	64	COMDER2 MAX	0.00561	0.01313	0.01428	0.32	OK
N+4.45	64	COMDER2 MIN	-0.00561	-0.01313	0.01428	0.32	OK
BASE	64	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	64	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	64	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	64	COMDER2 MIN	0.00000	0.00000	--	--	--
N+4.45	65	COMDER1 MAX	0.01307	0.00554	0.01420	0.32	OK
N+4.45	65	COMDER1 MIN	-0.01307	-0.00554	0.01420	0.32	OK
N+4.45	65	COMDER2 MAX	0.00561	0.01426	0.01532	0.34	OK
N+4.45	65	COMDER2 MIN	-0.00561	-0.01426	0.01532	0.34	OK
BASE	65	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	65	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	65	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	65	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	66	COMDER1 MAX	0.02970	0.01208	0.01755	0.39	OK
N+8.90	66	COMDER1 MIN	-0.02970	-0.01208	0.01755	0.39	OK
N+8.90	66	COMDER2 MAX	0.01307	0.03109	0.01586	0.36	OK
N+8.90	66	COMDER2 MIN	-0.01307	-0.03109	0.01586	0.36	OK
N+4.45	66	COMDER1 MAX	0.01307	0.00647	0.01458	0.32	OK
N+4.45	66	COMDER1 MIN	-0.01307	-0.00647	0.01458	0.32	OK
N+4.45	66	COMDER2 MAX	0.00561	0.01709	0.01799	0.40	OK
N+4.45	66	COMDER2 MIN	-0.00561	-0.01709	0.01799	0.40	OK
BASE	66	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	66	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	66	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	66	COMDER2 MIN	0.00000	0.00000	--	--	--
N+4.45	67	COMDER1 MAX	0.01307	0.01016	0.01656	0.37	OK
N+4.45	67	COMDER1 MIN	-0.01307	-0.01016	0.01656	0.37	OK
N+4.45	67	COMDER2 MAX	0.00561	0.02086	0.02160	0.48	OK
N+4.45	67	COMDER2 MIN	-0.00561	-0.02086	0.02160	0.48	OK
BASE	67	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	67	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	67	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	67	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	68	COMDER1 MAX	0.03874	0.02198	0.02695	0.61	OK
N+8.90	68	COMDER1 MIN	-0.03874	-0.02198	0.02695	0.61	OK
N+8.90	68	COMDER2 MAX	0.02363	0.03841	0.02269	0.51	OK
N+8.90	68	COMDER2 MIN	-0.02363	-0.03841	0.02269	0.51	OK
N+4.45	68	COMDER1 MAX	0.01307	0.01379	0.01900	0.42	OK
N+4.45	68	COMDER1 MIN	-0.01307	-0.01379	0.01900	0.42	OK
N+4.45	68	COMDER2 MAX	0.00561	0.02462	0.02525	0.56	OK
N+4.45	68	COMDER2 MIN	-0.00561	-0.02462	0.02525	0.56	OK
BASE	68	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	68	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	68	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	68	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	78	COMDER1 MAX	0.02112	0.02072	0.01073	0.24	OK
N+8.90	78	COMDER1 MIN	-0.02112	-0.02072	0.01073	0.24	OK
N+8.90	78	COMDER2 MAX	0.01043	0.01973	0.00822	0.18	OK
N+8.90	78	COMDER2 MIN	-0.01043	-0.01973	0.00822	0.18	OK
N+4.45	78	COMDER1 MAX	0.01426	0.01247	0.01894	0.42	OK
N+4.45	78	COMDER1 MIN	-0.01426	-0.01247	0.01894	0.42	OK
N+4.45	78	COMDER2 MAX	0.00713	0.01221	0.01414	0.31	OK
N+4.45	78	COMDER2 MIN	-0.00713	-0.01221	0.01414	0.31	OK
BASE	78	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	78	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	78	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	78	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	79	COMDER1 MAX	0.02105	0.02607	0.01627	0.37	OK
N+8.90	79	COMDER1 MIN	-0.02105	-0.02607	0.01627	0.37	OK
N+8.90	79	COMDER2 MAX	0.01043	0.02660	0.01470	0.33	OK
N+8.90	79	COMDER2 MIN	-0.01043	-0.02660	0.01470	0.33	OK
N+4.45	79	COMDER1 MAX	0.01426	0.01129	0.01818	0.40	OK
N+4.45	79	COMDER1 MIN	-0.01426	-0.01129	0.01818	0.40	OK

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

CÁLCULO DE DERIVAS MÁXIMAS

ALTURA DE N+8.90	4.45	m
ALTURA DE N+4.45	4.50	m
ALTURA DE BASE	0.00	m

Deriva Máxima Permitida 1.00 %

Nivel	Punto	COMBINACIÓN DE CARGA	DESPLAZAMIENTOS FUERZA SÍSMICA		Deriva Δ	Deriva Δ	Observación
			Desplazamiento X	Desplazamiento Y	*m*	*%*	
N+4.45	79	COMDER2 MAX	0.00713	0.01228	0.01420	0.32	OK
N+4.45	79	COMDER2 MIN	-0.00713	-0.01228	0.01420	0.32	OK
BASE	79	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	79	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	79	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	79	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	80	COMDER1 MAX	0.02105	0.02726	0.01852	0.42	OK
N+8.90	80	COMDER1 MIN	-0.02105	-0.02726	0.01852	0.42	OK
N+8.90	80	COMDER2 MAX	0.01036	0.03102	0.01883	0.42	OK
N+8.90	80	COMDER2 MIN	-0.01036	-0.03102	0.01883	0.42	OK
N+4.45	80	COMDER1 MAX	0.01426	0.01003	0.01743	0.39	OK
N+4.45	80	COMDER1 MIN	-0.01426	-0.01003	0.01743	0.39	OK
N+4.45	80	COMDER2 MAX	0.00713	0.01247	0.01437	0.32	OK
N+4.45	80	COMDER2 MIN	-0.00713	-0.01247	0.01437	0.32	OK
BASE	80	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	80	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	80	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	80	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	81	COMDER1 MAX	0.02112	0.02389	0.01654	0.37	OK
N+8.90	81	COMDER1 MIN	-0.02112	-0.02389	0.01654	0.37	OK
N+8.90	81	COMDER2 MAX	0.01043	0.03168	0.01916	0.43	OK
N+8.90	81	COMDER2 MIN	-0.01043	-0.03168	0.01916	0.43	OK
N+4.45	81	COMDER1 MAX	0.01426	0.00884	0.01678	0.37	OK
N+4.45	81	COMDER1 MIN	-0.01426	-0.00884	0.01678	0.37	OK
N+4.45	81	COMDER2 MAX	0.00713	0.01280	0.01465	0.33	OK
N+4.45	81	COMDER2 MIN	-0.00713	-0.01280	0.01465	0.33	OK
BASE	81	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	81	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	81	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	81	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	82	COMDER1 MAX	0.02112	0.01584	0.01063	0.24	OK
N+8.90	82	COMDER1 MIN	-0.02112	-0.01584	0.01063	0.24	OK
N+8.90	82	COMDER2 MAX	0.01043	0.02508	0.01239	0.28	OK
N+8.90	82	COMDER2 MIN	-0.01043	-0.02508	0.01239	0.28	OK
N+4.45	82	COMDER1 MAX	0.01426	0.00772	0.01621	0.36	OK
N+4.45	82	COMDER1 MIN	-0.01426	-0.00772	0.01621	0.36	OK
N+4.45	82	COMDER2 MAX	0.00713	0.01313	0.01494	0.33	OK
N+4.45	82	COMDER2 MIN	-0.00713	-0.01313	0.01494	0.33	OK
BASE	82	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	82	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	82	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	82	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	83	COMDER1 MAX	0.02119	0.01802	0.01336	0.30	OK
N+8.90	83	COMDER1 MIN	-0.02119	-0.01802	0.01336	0.30	OK
N+8.90	83	COMDER2 MAX	0.01043	0.03478	0.02144	0.48	OK
N+8.90	83	COMDER2 MIN	-0.01043	-0.03478	0.02144	0.48	OK
N+4.45	83	COMDER1 MAX	0.01426	0.00660	0.01571	0.35	OK
N+4.45	83	COMDER1 MIN	-0.01426	-0.00660	0.01571	0.35	OK
N+4.45	83	COMDER2 MAX	0.00713	0.01360	0.01535	0.34	OK
N+4.45	83	COMDER2 MIN	-0.00713	-0.01360	0.01535	0.34	OK
BASE	83	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	83	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	83	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	83	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	84	COMDER1 MAX	0.02125	0.01617	0.01272	0.29	OK
N+8.90	84	COMDER1 MIN	-0.02125	-0.01617	0.01272	0.29	OK
N+8.90	84	COMDER2 MAX	0.01043	0.03854	0.02451	0.55	OK
N+8.90	84	COMDER2 MIN	-0.01043	-0.03854	0.02451	0.55	OK
N+4.45	84	COMDER1 MAX	0.01426	0.00554	0.01530	0.34	OK
N+4.45	84	COMDER1 MIN	-0.01426	-0.00554	0.01530	0.34	OK
N+4.45	84	COMDER2 MAX	0.00713	0.01426	0.01594	0.35	OK
N+4.45	84	COMDER2 MIN	-0.00713	-0.01426	0.01594	0.35	OK
BASE	84	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	84	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	84	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	84	COMDER2 MIN	0.00000	0.00000	--	--	--

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

CÁLCULO DE DERIVAS MÁXIMAS

ALTURA DE N+8.90	4.45	m
ALTURA DE N+4.45	4.50	m
ALTURA DE BASE	0.00	m

Deriva Máxima Permitida 1.00 %

Nivel	Punto	COMBINACIÓN DE CARGA	DESPLAZAMIENTOS FUERZA SÍSMICA		Deriva Δ	Deriva Δ	Observación
			Desplazamiento X	Desplazamiento Y	*m*	*%*	
N+8.90	85	COMDER1 MAX	0.02132	0.01412	0.01153	0.26	OK
N+8.90	85	COMDER1 MIN	-0.02132	-0.01412	0.01153	0.26	OK
N+8.90	85	COMDER2 MAX	0.01043	0.03795	0.02288	0.51	OK
N+8.90	85	COMDER2 MIN	-0.01043	-0.03795	0.02288	0.51	OK
N+4.45	85	COMDER1 MAX	0.01426	0.00502	0.01511	0.34	OK
N+4.45	85	COMDER1 MIN	-0.01426	-0.00502	0.01511	0.34	OK
N+4.45	85	COMDER2 MAX	0.00713	0.01531	0.01689	0.38	OK
N+4.45	85	COMDER2 MIN	-0.00713	-0.01531	0.01689	0.38	OK
BASE	85	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	85	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	85	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	85	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	86	COMDER1 MAX	0.02138	0.01208	0.00907	0.20	OK
N+8.90	86	COMDER1 MIN	-0.02138	-0.01208	0.00907	0.20	OK
N+8.90	86	COMDER2 MAX	0.01043	0.03122	0.01450	0.33	OK
N+8.90	86	COMDER2 MIN	-0.01043	-0.03122	0.01450	0.33	OK
N+4.45	86	COMDER1 MAX	0.01426	0.00647	0.01565	0.35	OK
N+4.45	86	COMDER1 MIN	-0.01426	-0.00647	0.01565	0.35	OK
N+4.45	86	COMDER2 MAX	0.00713	0.01709	0.01852	0.41	OK
N+4.45	86	COMDER2 MIN	-0.00713	-0.01709	0.01852	0.41	OK
BASE	86	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	86	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	86	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	86	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	87	COMDER1 MAX	0.02138	0.02416	0.01737	0.39	OK
N+8.90	87	COMDER1 MIN	-0.02138	-0.02416	0.01737	0.39	OK
N+8.90	87	COMDER2 MAX	0.01043	0.05135	0.03257	0.73	OK
N+8.90	87	COMDER2 MIN	-0.01043	-0.05135	0.03257	0.73	OK
N+4.45	87	COMDER1 MAX	0.01426	0.00832	0.01650	0.37	OK
N+4.45	87	COMDER1 MIN	-0.01426	-0.00832	0.01650	0.37	OK
N+4.45	87	COMDER2 MAX	0.00713	0.01894	0.02024	0.45	OK
N+4.45	87	COMDER2 MIN	-0.00713	-0.01894	0.02024	0.45	OK
BASE	87	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	87	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	87	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	87	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	88	COMDER1 MAX	0.02145	0.03439	0.02527	0.57	OK
N+8.90	88	COMDER1 MIN	-0.02145	-0.03439	0.02527	0.57	OK
N+8.90	88	COMDER2 MAX	0.01049	0.06468	0.04395	0.99	OK
N+8.90	88	COMDER2 MIN	-0.01049	-0.06468	0.04395	0.99	OK
N+4.45	88	COMDER1 MAX	0.01426	0.01016	0.01751	0.39	OK
N+4.45	88	COMDER1 MIN	-0.01426	-0.01016	0.01751	0.39	OK
N+4.45	88	COMDER2 MAX	0.00713	0.02086	0.02204	0.49	OK
N+4.45	88	COMDER2 MIN	-0.00713	-0.02086	0.02204	0.49	OK
BASE	88	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	88	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	88	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	88	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	89	COMDER1 MAX	0.02145	0.03353	0.02269	0.51	OK
N+8.90	89	COMDER1 MIN	-0.02145	-0.03353	0.02269	0.51	OK
N+8.90	89	COMDER2 MAX	0.01049	0.05940	0.03678	0.83	OK
N+8.90	89	COMDER2 MIN	-0.01049	-0.05940	0.03678	0.83	OK
N+4.45	89	COMDER1 MAX	0.01426	0.01201	0.01864	0.41	OK
N+4.45	89	COMDER1 MIN	-0.01426	-0.01201	0.01864	0.41	OK
N+4.45	89	COMDER2 MAX	0.00713	0.02277	0.02386	0.53	OK
N+4.45	89	COMDER2 MIN	-0.00713	-0.02277	0.02386	0.53	OK
BASE	89	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	89	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	89	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	89	COMDER2 MIN	0.00000	0.00000	--	--	--
N+8.90	90	COMDER1 MAX	0.02152	0.02204	0.01099	0.25	OK
N+8.90	90	COMDER1 MIN	-0.02152	-0.02204	0.01099	0.25	OK
N+8.90	90	COMDER2 MAX	0.01049	0.03848	0.01426	0.32	OK
N+8.90	90	COMDER2 MIN	-0.01049	-0.03848	0.01426	0.32	OK
N+4.45	90	COMDER1 MAX	0.01426	0.01379	0.01984	0.44	OK
N+4.45	90	COMDER1 MIN	-0.01426	-0.01379	0.01984	0.44	OK

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

CÁLCULO DE DERIVAS MÁXIMAS

ALTURA DE N+8.90	4.45	m
ALTURA DE N+4.45	4.50	m
ALTURA DE BASE	0.00	m

Deriva Máxima Permitida **1.00** **%**

Nivel	Punto	COMBINACIÓN DE CARGA	DESPLAZAMIENTOS FUERZA SÍSMICA		Deriva Δ	Deriva Δ	Observación
			Desplazamiento X	Desplazamiento Y	*m*	*%*	
N+4.45	90	COMDER2 MAX	0.00713	0.02462	0.02563	0.57	OK
N+4.45	90	COMDER2 MIN	-0.00713	-0.02462	0.02563	0.57	OK
BASE	90	COMDER1 MAX	0.00000	0.00000	--	--	--
BASE	90	COMDER1 MIN	0.00000	0.00000	--	--	--
BASE	90	COMDER2 MAX	0.00000	0.00000	--	--	--
BASE	90	COMDER2 MIN	0.00000	0.00000	--	--	--

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

CÁLCULO DE DERIVAS MÁXIMAS (ESPECTRO DE UMBRAL DE DAÑO)

ALTURA DE N+8.90	4.45	m
ALTURA DE N+4.45	4.50	m
ALTURA DE BASE	0.00	m

Deriva Máxima Permitida 0.40 %

Nivel	Punto	COMBINACIÓN DE CARGA	DESPLAZAMIENTOS FUERZA SÍSMICA		Deriva Δ	Deriva Δ	Observación
			Desplazamiento X	Desplazamiento Y	*m*	*%*	
N+8.90	1	COMDERUMX MAX	0.00753	0.00832	0.00430	0.10	OK
N+8.90	1	COMDERUMX MIN	-0.00753	-0.00832	0.00430	0.10	OK
N+8.90	1	COMDERUMY MAX	0.00419	0.00790	0.00332	0.07	OK
N+8.90	1	COMDERUMY MIN	-0.00419	-0.00790	0.00332	0.07	OK
N+4.45	1	COMDERUMX MAX	0.00482	0.00498	0.00693	0.15	OK
N+4.45	1	COMDERUMX MIN	-0.00482	-0.00498	0.00693	0.15	OK
N+4.45	1	COMDERUMY MAX	0.00281	0.00488	0.00563	0.13	OK
N+4.45	1	COMDERUMY MIN	-0.00281	-0.00488	0.00563	0.13	OK
BASE	1	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	1	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	1	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	1	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	2	COMDERUMX MAX	0.00753	0.01182	0.00780	0.18	OK
N+8.90	2	COMDERUMX MIN	-0.00753	-0.01182	0.00780	0.18	OK
N+8.90	2	COMDERUMY MAX	0.00419	0.01219	0.00739	0.17	OK
N+8.90	2	COMDERUMY MIN	-0.00419	-0.01219	0.00739	0.17	OK
N+4.45	2	COMDERUMX MAX	0.00482	0.00451	0.00660	0.15	OK
N+4.45	2	COMDERUMX MIN	-0.00482	-0.00451	0.00660	0.15	OK
N+4.45	2	COMDERUMY MAX	0.00281	0.00493	0.00567	0.13	OK
N+4.45	2	COMDERUMY MIN	-0.00281	-0.00493	0.00567	0.13	OK
BASE	2	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	2	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	2	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	2	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	3	COMDERUMX MAX	0.00753	0.01548	0.01176	0.26	OK
N+8.90	3	COMDERUMX MIN	-0.00753	-0.01548	0.01176	0.26	OK
N+8.90	3	COMDERUMY MAX	0.00419	0.01685	0.01195	0.27	OK
N+8.90	3	COMDERUMY MIN	-0.00419	-0.01685	0.01195	0.27	OK
N+4.45	3	COMDERUMX MAX	0.00482	0.00403	0.00628	0.14	OK
N+4.45	3	COMDERUMX MIN	-0.00482	-0.00403	0.00628	0.14	OK
N+4.45	3	COMDERUMY MAX	0.00281	0.00498	0.00572	0.13	OK
N+4.45	3	COMDERUMY MIN	-0.00281	-0.00498	0.00572	0.13	OK
BASE	3	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	3	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	3	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	3	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	4	COMDERUMX MAX	0.00753	0.01166	0.00855	0.19	OK
N+8.90	4	COMDERUMX MIN	-0.00753	-0.01166	0.00855	0.19	OK
N+8.90	4	COMDERUMY MAX	0.00419	0.01436	0.00938	0.21	OK
N+8.90	4	COMDERUMY MIN	-0.00419	-0.01436	0.00938	0.21	OK
N+4.45	4	COMDERUMX MAX	0.00482	0.00355	0.00599	0.13	OK
N+4.45	4	COMDERUMX MIN	-0.00482	-0.00355	0.00599	0.13	OK
N+4.45	4	COMDERUMY MAX	0.00281	0.00509	0.00581	0.13	OK
N+4.45	4	COMDERUMY MIN	-0.00281	-0.00509	0.00581	0.13	OK
BASE	4	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	4	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	4	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	4	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	5	COMDERUMX MAX	0.00753	0.00636	0.00425	0.10	OK
N+8.90	5	COMDERUMX MIN	-0.00753	-0.00636	0.00425	0.10	OK
N+8.90	5	COMDERUMY MAX	0.00419	0.01007	0.00502	0.11	OK
N+8.90	5	COMDERUMY MIN	-0.00419	-0.01007	0.00502	0.11	OK
N+4.45	5	COMDERUMX MAX	0.00482	0.00307	0.00572	0.13	OK
N+4.45	5	COMDERUMX MIN	-0.00482	-0.00307	0.00572	0.13	OK
N+4.45	5	COMDERUMY MAX	0.00281	0.00525	0.00595	0.13	OK
N+4.45	5	COMDERUMY MIN	-0.00281	-0.00525	0.00595	0.13	OK
BASE	5	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	5	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	5	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	5	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	6	COMDERUMX MAX	0.00747	0.00769	0.00569	0.13	OK
N+8.90	6	COMDERUMX MIN	-0.00747	-0.00769	0.00569	0.13	OK
N+8.90	6	COMDERUMY MAX	0.00419	0.01579	0.01048	0.24	OK
N+8.90	6	COMDERUMY MIN	-0.00419	-0.01579	0.01048	0.24	OK
N+4.45	6	COMDERUMX MAX	0.00482	0.00265	0.00550	0.12	OK
N+4.45	6	COMDERUMX MIN	-0.00482	-0.00265	0.00550	0.12	OK

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

CÁLCULO DE DERIVAS MÁXIMAS (ESPECTRO DE UMBRAL DE DAÑO)

ALTURA DE N+8.90	4.45	m		Deriva Máxima Permitida	0.40	%	
ALTURA DE N+4.45	4.50	m					
ALTURA DE BASE	0.00	m					

N+4.45	6	COMDERUMY MAX	0.00281	0.00541	0.00609	0.14	OK
N+4.45	6	COMDERUMY MIN	-0.00281	-0.00541	0.00609	0.14	OK
BASE	6	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	6	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	6	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	6	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	7	COMDERUMX MAX	0.00747	0.00853	0.00684	0.15	OK
N+8.90	7	COMDERUMX MIN	-0.00747	-0.00853	0.00684	0.15	OK
N+8.90	7	COMDERUMY MAX	0.00413	0.02003	0.01442	0.32	OK
N+8.90	7	COMDERUMY MIN	-0.00413	-0.02003	0.01442	0.32	OK
N+4.45	7	COMDERUMX MAX	0.00482	0.00223	0.00531	0.12	OK
N+4.45	7	COMDERUMX MIN	-0.00482	-0.00223	0.00531	0.12	OK
N+4.45	7	COMDERUMY MAX	0.00281	0.00567	0.00633	0.14	OK
N+4.45	7	COMDERUMY MIN	-0.00281	-0.00567	0.00633	0.14	OK
BASE	7	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	7	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	7	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	7	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	8	COMDERUMX MAX	0.00747	0.00631	0.00505	0.11	OK
N+8.90	8	COMDERUMX MIN	-0.00747	-0.00631	0.00505	0.11	OK
N+8.90	8	COMDERUMY MAX	0.00413	0.01712	0.01105	0.25	OK
N+8.90	8	COMDERUMY MIN	-0.00413	-0.01712	0.01105	0.25	OK
N+4.45	8	COMDERUMX MAX	0.00482	0.00201	0.00523	0.12	OK
N+4.45	8	COMDERUMX MIN	-0.00482	-0.00201	0.00523	0.12	OK
N+4.45	8	COMDERUMY MAX	0.00281	0.00615	0.00676	0.15	OK
N+4.45	8	COMDERUMY MIN	-0.00281	-0.00615	0.00676	0.15	OK
BASE	8	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	8	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	8	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	8	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	9	COMDERUMX MAX	0.00747	0.00482	0.00346	0.08	OK
N+8.90	9	COMDERUMX MIN	-0.00747	-0.00482	0.00346	0.08	OK
N+8.90	9	COMDERUMY MAX	0.00413	0.01246	0.00577	0.13	OK
N+8.90	9	COMDERUMY MIN	-0.00413	-0.01246	0.00577	0.13	OK
N+4.45	9	COMDERUMX MAX	0.00482	0.00260	0.00548	0.12	OK
N+4.45	9	COMDERUMX MIN	-0.00482	-0.00260	0.00548	0.12	OK
N+4.45	9	COMDERUMY MAX	0.00281	0.00684	0.00739	0.16	OK
N+4.45	9	COMDERUMY MIN	-0.00281	-0.00684	0.00739	0.16	OK
BASE	9	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	9	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	9	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	9	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	10	COMDERUMX MAX	0.00742	0.00906	0.00629	0.14	OK
N+8.90	10	COMDERUMX MIN	-0.00742	-0.00906	0.00629	0.14	OK
N+8.90	10	COMDERUMY MAX	0.00413	0.01887	0.01137	0.26	OK
N+8.90	10	COMDERUMY MIN	-0.00413	-0.01887	0.01137	0.26	OK
N+4.45	10	COMDERUMX MAX	0.00482	0.00334	0.00587	0.13	OK
N+4.45	10	COMDERUMX MIN	-0.00482	-0.00334	0.00587	0.13	OK
N+4.45	10	COMDERUMY MAX	0.00281	0.00758	0.00808	0.18	OK
N+4.45	10	COMDERUMY MIN	-0.00281	-0.00758	0.00808	0.18	OK
BASE	10	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	10	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	10	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	10	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	11	COMDERUMX MAX	0.00742	0.01129	0.00771	0.17	OK
N+8.90	11	COMDERUMX MIN	-0.00742	-0.01129	0.00771	0.17	OK
N+8.90	11	COMDERUMY MAX	0.00413	0.02168	0.01342	0.30	OK
N+8.90	11	COMDERUMY MIN	-0.00413	-0.02168	0.01342	0.30	OK
N+4.45	11	COMDERUMX MAX	0.00482	0.00403	0.00628	0.14	OK
N+4.45	11	COMDERUMX MIN	-0.00482	-0.00403	0.00628	0.14	OK
N+4.45	11	COMDERUMY MAX	0.00281	0.00832	0.00878	0.20	OK
N+4.45	11	COMDERUMY MIN	-0.00281	-0.00832	0.00878	0.20	OK
BASE	11	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	11	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	11	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	11	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	12	COMDERUMX MAX	0.00742	0.01171	0.00741	0.17	OK
N+8.90	12	COMDERUMX MIN	-0.00742	-0.01171	0.00741	0.17	OK
N+8.90	12	COMDERUMY MAX	0.00413	0.02178	0.01279	0.29	OK

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

CÁLCULO DE DERIVAS MÁXIMAS (ESPECTRO DE UMBRAL DE DAÑO)

ALTURA DE N+8.90	4.45	m			Deriva Máxima Permitida	0.40	%
ALTURA DE N+4.45	4.50	m					
ALTURA DE BASE	0.00	m					

N+8.90	12	COMDERUMY MIN	-0.00413	-0.02178	0.01279	0.29	OK
N+4.45	12	COMDERUMX MAX	0.00482	0.00477	0.00678	0.15	OK
N+4.45	12	COMDERUMX MIN	-0.00482	-0.00477	0.00678	0.15	OK
N+4.45	12	COMDERUMY MAX	0.00281	0.00906	0.00949	0.21	OK
N+4.45	12	COMDERUMY MIN	-0.00281	-0.00906	0.00949	0.21	OK
BASE	12	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	12	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	12	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	12	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	13	COMDERUMX MAX	0.00742	0.00880	0.00419	0.09	OK
N+8.90	13	COMDERUMX MIN	-0.00742	-0.00880	0.00419	0.09	OK
N+8.90	13	COMDERUMY MAX	0.00413	0.01532	0.00567	0.13	OK
N+8.90	13	COMDERUMY MIN	-0.00413	-0.01532	0.00567	0.13	OK
N+4.45	13	COMDERUMX MAX	0.00482	0.00551	0.00732	0.16	OK
N+4.45	13	COMDERUMX MIN	-0.00482	-0.00551	0.00732	0.16	OK
N+4.45	13	COMDERUMY MAX	0.00281	0.00981	0.01020	0.23	OK
N+4.45	13	COMDERUMY MIN	-0.00281	-0.00981	0.01020	0.23	OK
BASE	13	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	13	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	13	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	13	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	20	COMDERUMX MAX	0.01145	0.00827	0.00740	0.17	OK
N+8.90	20	COMDERUMX MIN	-0.01145	-0.00827	0.00740	0.17	OK
N+8.90	20	COMDERUMY MAX	0.00535	0.00790	0.00431	0.10	OK
N+8.90	20	COMDERUMY MIN	-0.00535	-0.00790	0.00431	0.10	OK
N+4.45	20	COMDERUMX MAX	0.00482	0.00498	0.00693	0.15	OK
N+4.45	20	COMDERUMX MIN	-0.00482	-0.00498	0.00693	0.15	OK
N+4.45	20	COMDERUMY MAX	0.00228	0.00488	0.00538	0.12	OK
N+4.45	20	COMDERUMY MIN	-0.00228	-0.00488	0.00538	0.12	OK
BASE	20	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	20	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	20	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	20	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+4.45	22	COMDERUMX MAX	0.00482	0.00451	0.00660	0.15	OK
N+4.45	22	COMDERUMX MIN	-0.00482	-0.00451	0.00660	0.15	OK
N+4.45	22	COMDERUMY MAX	0.00228	0.00493	0.00543	0.12	OK
N+4.45	22	COMDERUMY MIN	-0.00228	-0.00493	0.00543	0.12	OK
BASE	22	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	22	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	22	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	22	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+4.45	23	COMDERUMX MAX	0.00482	0.00403	0.00628	0.14	OK
N+4.45	23	COMDERUMX MIN	-0.00482	-0.00403	0.00628	0.14	OK
N+4.45	23	COMDERUMY MAX	0.00228	0.00498	0.00548	0.12	OK
N+4.45	23	COMDERUMY MIN	-0.00228	-0.00498	0.00548	0.12	OK
BASE	23	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	23	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	23	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	23	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	25	COMDERUMX MAX	0.01081	0.00631	0.00681	0.15	OK
N+8.90	25	COMDERUMX MIN	-0.01081	-0.00631	0.00681	0.15	OK
N+8.90	25	COMDERUMY MAX	0.00493	0.01002	0.00546	0.12	OK
N+8.90	25	COMDERUMY MIN	-0.00493	-0.01002	0.00546	0.12	OK
N+4.45	25	COMDERUMX MAX	0.00482	0.00307	0.00572	0.13	OK
N+4.45	25	COMDERUMX MIN	-0.00482	-0.00307	0.00572	0.13	OK
N+4.45	25	COMDERUMY MAX	0.00228	0.00525	0.00572	0.13	OK
N+4.45	25	COMDERUMY MIN	-0.00228	-0.00525	0.00572	0.13	OK
BASE	25	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	25	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	25	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	25	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+4.45	26	COMDERUMX MAX	0.00482	0.00223	0.00531	0.12	OK
N+4.45	26	COMDERUMX MIN	-0.00482	-0.00223	0.00531	0.12	OK
N+4.45	26	COMDERUMY MAX	0.00228	0.00567	0.00611	0.14	OK
N+4.45	26	COMDERUMY MIN	-0.00228	-0.00567	0.00611	0.14	OK
BASE	26	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	26	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	26	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	26	COMDERUMY MIN	0.00000	0.00000	--	--	--

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

CÁLCULO DE DERIVAS MÁXIMAS (ESPECTRO DE UMBRAL DE DAÑO)

ALTURA DE N+8.90	4.45	m
ALTURA DE N+4.45	4.50	m
ALTURA DE BASE	0.00	m

Deriva Máxima Permitida 0.40 %

N+8.90	27	COMDERUMX MAX	0.01044	0.00482	0.00604	0.14	OK
N+8.90	27	COMDERUMX MIN	-0.01044	-0.00482	0.00604	0.14	OK
N+8.90	27	COMDERUMY MAX	0.00482	0.01240	0.00612	0.14	OK
N+8.90	27	COMDERUMY MIN	-0.00482	-0.01240	0.00612	0.14	OK
N+4.45	27	COMDERUMX MAX	0.00482	0.00260	0.00548	0.12	OK
N+4.45	27	COMDERUMX MIN	-0.00482	-0.00260	0.00548	0.12	OK
N+4.45	27	COMDERUMY MAX	0.00228	0.00684	0.00721	0.16	OK
N+4.45	27	COMDERUMY MIN	-0.00228	-0.00684	0.00721	0.16	OK
BASE	27	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	27	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	27	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	27	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+4.45	28	COMDERUMX MAX	0.00482	0.00403	0.00628	0.14	OK
N+4.45	28	COMDERUMX MIN	-0.00482	-0.00403	0.00628	0.14	OK
N+4.45	28	COMDERUMY MAX	0.00228	0.00832	0.00863	0.19	OK
N+4.45	28	COMDERUMY MIN	-0.00228	-0.00832	0.00863	0.19	OK
BASE	28	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	28	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	28	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	28	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	29	COMDERUMX MAX	0.01420	0.00875	0.00992	0.22	OK
N+8.90	29	COMDERUMX MIN	-0.01420	-0.00875	0.00992	0.22	OK
N+8.90	29	COMDERUMY MAX	0.00922	0.01532	0.00886	0.20	OK
N+8.90	29	COMDERUMY MIN	-0.00922	-0.01532	0.00886	0.20	OK
N+4.45	29	COMDERUMX MAX	0.00482	0.00551	0.00732	0.16	OK
N+4.45	29	COMDERUMX MIN	-0.00482	-0.00551	0.00732	0.16	OK
N+4.45	29	COMDERUMY MAX	0.00228	0.00981	0.01007	0.22	OK
N+4.45	29	COMDERUMY MIN	-0.00228	-0.00981	0.01007	0.22	OK
BASE	29	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	29	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	29	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	29	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	35	COMDERUMX MAX	0.01150	0.00827	0.00740	0.17	OK
N+8.90	35	COMDERUMX MIN	-0.01150	-0.00827	0.00740	0.17	OK
N+8.90	35	COMDERUMY MAX	0.00477	0.00790	0.00416	0.09	OK
N+8.90	35	COMDERUMY MIN	-0.00477	-0.00790	0.00416	0.09	OK
N+4.45	35	COMDERUMX MAX	0.00488	0.00498	0.00697	0.15	OK
N+4.45	35	COMDERUMX MIN	-0.00488	-0.00498	0.00697	0.15	OK
N+4.45	35	COMDERUMY MAX	0.00191	0.00488	0.00524	0.12	OK
N+4.45	35	COMDERUMY MIN	-0.00191	-0.00488	0.00524	0.12	OK
BASE	35	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	35	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	35	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	35	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+4.45	36	COMDERUMX MAX	0.00488	0.00451	0.00664	0.15	OK
N+4.45	36	COMDERUMX MIN	-0.00488	-0.00451	0.00664	0.15	OK
N+4.45	36	COMDERUMY MAX	0.00191	0.00493	0.00529	0.12	OK
N+4.45	36	COMDERUMY MIN	-0.00191	-0.00493	0.00529	0.12	OK
BASE	36	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	36	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	36	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	36	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	37	COMDERUMX MAX	0.01145	0.01150	0.00995	0.22	OK
N+8.90	37	COMDERUMX MIN	-0.01145	-0.01150	0.00995	0.22	OK
N+8.90	37	COMDERUMY MAX	0.00477	0.01272	0.00825	0.19	OK
N+8.90	37	COMDERUMY MIN	-0.00477	-0.01272	0.00825	0.19	OK
N+4.45	37	COMDERUMX MAX	0.00488	0.00403	0.00632	0.14	OK
N+4.45	37	COMDERUMX MIN	-0.00488	-0.00403	0.00632	0.14	OK
N+4.45	37	COMDERUMY MAX	0.00191	0.00498	0.00533	0.12	OK
N+4.45	37	COMDERUMY MIN	-0.00191	-0.00498	0.00533	0.12	OK
BASE	37	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	37	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	37	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	37	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+4.45	38	COMDERUMX MAX	0.00488	0.00355	0.00603	0.13	OK
N+4.45	38	COMDERUMX MIN	-0.00488	-0.00355	0.00603	0.13	OK
N+4.45	38	COMDERUMY MAX	0.00191	0.00509	0.00543	0.12	OK
N+4.45	38	COMDERUMY MIN	-0.00191	-0.00509	0.00543	0.12	OK
BASE	38	COMDERUMX MAX	0.00000	0.00000	--	--	--

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

CÁLCULO DE DERIVAS MÁXIMAS (ESPECTRO DE UMBRAL DE DAÑO)

ALTURA DE N+8.90	4.45	m
ALTURA DE N+4.45	4.50	m
ALTURA DE BASE	0.00	m

Deriva Máxima Permitida 0.40 %

BASE	38	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	38	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	38	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	39	COMDERUMX MAX	0.01150	0.00631	0.00737	0.17	OK
N+8.90	39	COMDERUMX MIN	-0.01150	-0.00631	0.00737	0.17	OK
N+8.90	39	COMDERUMY MAX	0.00477	0.01002	0.00556	0.13	OK
N+8.90	39	COMDERUMY MIN	-0.00477	-0.01002	0.00556	0.13	OK
N+4.45	39	COMDERUMX MAX	0.00488	0.00307	0.00576	0.13	OK
N+4.45	39	COMDERUMX MIN	-0.00488	-0.00307	0.00576	0.13	OK
N+4.45	39	COMDERUMY MAX	0.00191	0.00525	0.00558	0.12	OK
N+4.45	39	COMDERUMY MIN	-0.00191	-0.00525	0.00558	0.12	OK
BASE	39	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	39	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	39	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	39	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+4.45	40	COMDERUMX MAX	0.00488	0.00265	0.00555	0.12	OK
N+4.45	40	COMDERUMX MIN	-0.00488	-0.00265	0.00555	0.12	OK
N+4.45	40	COMDERUMY MAX	0.00191	0.00541	0.00573	0.13	OK
N+4.45	40	COMDERUMY MIN	-0.00191	-0.00541	0.00573	0.13	OK
BASE	40	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	40	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	40	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	40	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	41	COMDERUMX MAX	0.01150	0.00572	0.00749	0.17	OK
N+8.90	41	COMDERUMX MIN	-0.01150	-0.00572	0.00749	0.17	OK
N+8.90	41	COMDERUMY MAX	0.00477	0.01373	0.00855	0.19	OK
N+8.90	41	COMDERUMY MIN	-0.00477	-0.01373	0.00855	0.19	OK
N+4.45	41	COMDERUMX MAX	0.00488	0.00223	0.00536	0.12	OK
N+4.45	41	COMDERUMX MIN	-0.00488	-0.00223	0.00536	0.12	OK
N+4.45	41	COMDERUMY MAX	0.00191	0.00567	0.00598	0.13	OK
N+4.45	41	COMDERUMY MIN	-0.00191	-0.00567	0.00598	0.13	OK
BASE	41	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	41	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	41	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	41	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+4.45	42	COMDERUMX MAX	0.00488	0.00201	0.00528	0.12	OK
N+4.45	42	COMDERUMX MIN	-0.00488	-0.00201	0.00528	0.12	OK
N+4.45	42	COMDERUMY MAX	0.00191	0.00615	0.00644	0.14	OK
N+4.45	42	COMDERUMY MIN	-0.00191	-0.00615	0.00644	0.14	OK
BASE	42	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	42	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	42	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	42	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	43	COMDERUMX MAX	0.01150	0.00482	0.00699	0.16	OK
N+8.90	43	COMDERUMX MIN	-0.01150	-0.00482	0.00699	0.16	OK
N+8.90	43	COMDERUMY MAX	0.00477	0.01240	0.00626	0.14	OK
N+8.90	43	COMDERUMY MIN	-0.00477	-0.01240	0.00626	0.14	OK
N+4.45	43	COMDERUMX MAX	0.00488	0.00260	0.00552	0.12	OK
N+4.45	43	COMDERUMX MIN	-0.00488	-0.00260	0.00552	0.12	OK
N+4.45	43	COMDERUMY MAX	0.00191	0.00684	0.00710	0.16	OK
N+4.45	43	COMDERUMY MIN	-0.00191	-0.00684	0.00710	0.16	OK
BASE	43	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	43	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	43	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	43	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+4.45	44	COMDERUMX MAX	0.00488	0.00334	0.00591	0.13	OK
N+4.45	44	COMDERUMX MIN	-0.00488	-0.00334	0.00591	0.13	OK
N+4.45	44	COMDERUMY MAX	0.00191	0.00758	0.00782	0.17	OK
N+4.45	44	COMDERUMY MIN	-0.00191	-0.00758	0.00782	0.17	OK
BASE	44	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	44	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	44	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	44	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+4.45	45	COMDERUMX MAX	0.00488	0.00403	0.00632	0.14	OK
N+4.45	45	COMDERUMX MIN	-0.00488	-0.00403	0.00632	0.14	OK
N+4.45	45	COMDERUMY MAX	0.00191	0.00832	0.00854	0.19	OK
N+4.45	45	COMDERUMY MIN	-0.00191	-0.00832	0.00854	0.19	OK
BASE	45	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	45	COMDERUMX MIN	0.00000	0.00000	--	--	--

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

CÁLCULO DE DERIVAS MÁXIMAS (ESPECTRO DE UMBRAL DE DAÑO)

ALTURA DE N+8.90	4.45	m			Deriva Máxima Permitida	0.40	%
ALTURA DE N+4.45	4.50	m					
ALTURA DE BASE	0.00	m					

BASE	45	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	45	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+4.45	46	COMDERUMX MAX	0.00488	0.00477	0.00682	0.15	OK
N+4.45	46	COMDERUMX MIN	-0.00488	-0.00477	0.00682	0.15	OK
N+4.45	46	COMDERUMY MAX	0.00191	0.00906	0.00926	0.21	OK
N+4.45	46	COMDERUMY MIN	-0.00191	-0.00906	0.00926	0.21	OK
BASE	46	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	46	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	46	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	46	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	47	COMDERUMX MAX	0.01664	0.00875	0.01220	0.27	OK
N+8.90	47	COMDERUMX MIN	-0.01664	-0.00875	0.01220	0.27	OK
N+8.90	47	COMDERUMY MAX	0.01124	0.01532	0.01083	0.24	OK
N+8.90	47	COMDERUMY MIN	-0.01124	-0.01532	0.01083	0.24	OK
N+4.45	47	COMDERUMX MAX	0.00488	0.00551	0.00736	0.16	OK
N+4.45	47	COMDERUMX MIN	-0.00488	-0.00551	0.00736	0.16	OK
N+4.45	47	COMDERUMY MAX	0.00191	0.00981	0.00999	0.22	OK
N+4.45	47	COMDERUMY MIN	-0.00191	-0.00981	0.00999	0.22	OK
BASE	47	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	47	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	47	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	47	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	59	COMDERUMX MAX	0.01203	0.00827	0.00759	0.17	OK
N+8.90	59	COMDERUMX MIN	-0.01203	-0.00827	0.00759	0.17	OK
N+8.90	59	COMDERUMY MAX	0.00535	0.00784	0.00431	0.10	OK
N+8.90	59	COMDERUMY MIN	-0.00535	-0.00784	0.00431	0.10	OK
N+4.45	59	COMDERUMX MAX	0.00519	0.00498	0.00720	0.16	OK
N+4.45	59	COMDERUMX MIN	-0.00519	-0.00498	0.00720	0.16	OK
N+4.45	59	COMDERUMY MAX	0.00223	0.00488	0.00536	0.12	OK
N+4.45	59	COMDERUMY MIN	-0.00223	-0.00488	0.00536	0.12	OK
BASE	59	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	59	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	59	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	59	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+4.45	61	COMDERUMX MAX	0.00519	0.00451	0.00688	0.15	OK
N+4.45	61	COMDERUMX MIN	-0.00519	-0.00451	0.00688	0.15	OK
N+4.45	61	COMDERUMY MAX	0.00223	0.00493	0.00541	0.12	OK
N+4.45	61	COMDERUMY MIN	-0.00223	-0.00493	0.00541	0.12	OK
BASE	61	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	61	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	61	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	61	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+4.45	62	COMDERUMX MAX	0.00519	0.00403	0.00657	0.15	OK
N+4.45	62	COMDERUMX MIN	-0.00519	-0.00403	0.00657	0.15	OK
N+4.45	62	COMDERUMY MAX	0.00223	0.00498	0.00546	0.12	OK
N+4.45	62	COMDERUMY MIN	-0.00223	-0.00498	0.00546	0.12	OK
BASE	62	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	62	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	62	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	62	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	64	COMDERUMX MAX	0.01071	0.00631	0.00639	0.14	OK
N+8.90	64	COMDERUMX MIN	-0.01071	-0.00631	0.00639	0.14	OK
N+8.90	64	COMDERUMY MAX	0.00466	0.01002	0.00536	0.12	OK
N+8.90	64	COMDERUMY MIN	-0.00466	-0.01002	0.00536	0.12	OK
N+4.45	64	COMDERUMX MAX	0.00519	0.00307	0.00604	0.13	OK
N+4.45	64	COMDERUMX MIN	-0.00519	-0.00307	0.00604	0.13	OK
N+4.45	64	COMDERUMY MAX	0.00223	0.00525	0.00570	0.13	OK
N+4.45	64	COMDERUMY MIN	-0.00223	-0.00525	0.00570	0.13	OK
BASE	64	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	64	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	64	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	64	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+4.45	65	COMDERUMX MAX	0.00519	0.00223	0.00565	0.13	OK
N+4.45	65	COMDERUMX MIN	-0.00519	-0.00223	0.00565	0.13	OK
N+4.45	65	COMDERUMY MAX	0.00223	0.00567	0.00609	0.14	OK
N+4.45	65	COMDERUMY MIN	-0.00223	-0.00567	0.00609	0.14	OK
BASE	65	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	65	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	65	COMDERUMY MAX	0.00000	0.00000	--	--	--

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

CÁLCULO DE DERIVAS MÁXIMAS (ESPECTRO DE UMBRAL DE DAÑO)

ALTURA DE N+8.90	4.45	m			Deriva Máxima Permitida	0.40	%
ALTURA DE N+4.45	4.50	m					
ALTURA DE BASE	0.00	m					

BASE	65	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	66	COMDERUMX MAX	0.01182	0.00482	0.00699	0.16	OK
N+8.90	66	COMDERUMX MIN	-0.01182	-0.00482	0.00699	0.16	OK
N+8.90	66	COMDERUMY MAX	0.00509	0.01240	0.00626	0.14	OK
N+8.90	66	COMDERUMY MIN	-0.00509	-0.01240	0.00626	0.14	OK
N+4.45	66	COMDERUMX MAX	0.00519	0.00260	0.00581	0.13	OK
N+4.45	66	COMDERUMX MIN	-0.00519	-0.00260	0.00581	0.13	OK
N+4.45	66	COMDERUMY MAX	0.00223	0.00684	0.00719	0.16	OK
N+4.45	66	COMDERUMY MIN	-0.00223	-0.00684	0.00719	0.16	OK
BASE	66	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	66	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	66	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	66	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+4.45	67	COMDERUMX MAX	0.00519	0.00403	0.00657	0.15	OK
N+4.45	67	COMDERUMX MIN	-0.00519	-0.00403	0.00657	0.15	OK
N+4.45	67	COMDERUMY MAX	0.00223	0.00832	0.00861	0.19	OK
N+4.45	67	COMDERUMY MIN	-0.00223	-0.00832	0.00861	0.19	OK
BASE	67	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	67	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	67	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	67	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	68	COMDERUMX MAX	0.01548	0.00880	0.01079	0.24	OK
N+8.90	68	COMDERUMX MIN	-0.01548	-0.00880	0.01079	0.24	OK
N+8.90	68	COMDERUMY MAX	0.00943	0.01532	0.00907	0.20	OK
N+8.90	68	COMDERUMY MIN	-0.00943	-0.01532	0.00907	0.20	OK
N+4.45	68	COMDERUMX MAX	0.00519	0.00551	0.00757	0.17	OK
N+4.45	68	COMDERUMX MIN	-0.00519	-0.00551	0.00757	0.17	OK
N+4.45	68	COMDERUMY MAX	0.00223	0.00981	0.01005	0.22	OK
N+4.45	68	COMDERUMY MIN	-0.00223	-0.00981	0.01005	0.22	OK
BASE	68	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	68	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	68	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	68	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	78	COMDERUMX MAX	0.00843	0.00827	0.00429	0.10	OK
N+8.90	78	COMDERUMX MIN	-0.00843	-0.00827	0.00429	0.10	OK
N+8.90	78	COMDERUMY MAX	0.00413	0.00790	0.00328	0.07	OK
N+8.90	78	COMDERUMY MIN	-0.00413	-0.00790	0.00328	0.07	OK
N+4.45	78	COMDERUMX MAX	0.00567	0.00498	0.00755	0.17	OK
N+4.45	78	COMDERUMX MIN	-0.00567	-0.00498	0.00755	0.17	OK
N+4.45	78	COMDERUMY MAX	0.00286	0.00488	0.00565	0.13	OK
N+4.45	78	COMDERUMY MIN	-0.00286	-0.00488	0.00565	0.13	OK
BASE	78	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	78	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	78	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	78	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	79	COMDERUMX MAX	0.00843	0.01039	0.00650	0.15	OK
N+8.90	79	COMDERUMX MIN	-0.00843	-0.01039	0.00650	0.15	OK
N+8.90	79	COMDERUMY MAX	0.00413	0.01060	0.00581	0.13	OK
N+8.90	79	COMDERUMY MIN	-0.00413	-0.01060	0.00581	0.13	OK
N+4.45	79	COMDERUMX MAX	0.00567	0.00451	0.00724	0.16	OK
N+4.45	79	COMDERUMX MIN	-0.00567	-0.00451	0.00724	0.16	OK
N+4.45	79	COMDERUMY MAX	0.00286	0.00493	0.00570	0.13	OK
N+4.45	79	COMDERUMY MIN	-0.00286	-0.00493	0.00570	0.13	OK
BASE	79	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	79	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	79	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	79	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	80	COMDERUMX MAX	0.00843	0.01092	0.00742	0.17	OK
N+8.90	80	COMDERUMX MIN	-0.00843	-0.01092	0.00742	0.17	OK
N+8.90	80	COMDERUMY MAX	0.00413	0.01240	0.00753	0.17	OK
N+8.90	80	COMDERUMY MIN	-0.00413	-0.01240	0.00753	0.17	OK
N+4.45	80	COMDERUMX MAX	0.00567	0.00403	0.00696	0.15	OK
N+4.45	80	COMDERUMX MIN	-0.00567	-0.00403	0.00696	0.15	OK
N+4.45	80	COMDERUMY MAX	0.00286	0.00498	0.00575	0.13	OK
N+4.45	80	COMDERUMY MIN	-0.00286	-0.00498	0.00575	0.13	OK
BASE	80	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	80	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	80	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	80	COMDERUMY MIN	0.00000	0.00000	--	--	--

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

CÁLCULO DE DERIVAS MÁXIMAS (ESPECTRO DE UMBRAL DE DAÑO)

ALTURA DE N+8.90	4.45	m
ALTURA DE N+4.45	4.50	m
ALTURA DE BASE	0.00	m

Deriva Máxima Permitida 0.40 %

N+8.90	81	COMDERUMX MAX	0.00843	0.00954	0.00659	0.15	OK
N+8.90	81	COMDERUMX MIN	-0.00843	-0.00954	0.00659	0.15	OK
N+8.90	81	COMDERUMY MAX	0.00413	0.01267	0.00769	0.17	OK
N+8.90	81	COMDERUMY MIN	-0.00413	-0.01267	0.00769	0.17	OK
N+4.45	81	COMDERUMX MAX	0.00567	0.00355	0.00669	0.15	OK
N+4.45	81	COMDERUMX MIN	-0.00567	-0.00355	0.00669	0.15	OK
N+4.45	81	COMDERUMY MAX	0.00286	0.00509	0.00584	0.13	OK
N+4.45	81	COMDERUMY MIN	-0.00286	-0.00509	0.00584	0.13	OK
BASE	81	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	81	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	81	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	81	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	82	COMDERUMX MAX	0.00843	0.00631	0.00425	0.10	OK
N+8.90	82	COMDERUMX MIN	-0.00843	-0.00631	0.00425	0.10	OK
N+8.90	82	COMDERUMY MAX	0.00413	0.01002	0.00494	0.11	OK
N+8.90	82	COMDERUMY MIN	-0.00413	-0.01002	0.00494	0.11	OK
N+4.45	82	COMDERUMX MAX	0.00567	0.00307	0.00645	0.14	OK
N+4.45	82	COMDERUMX MIN	-0.00567	-0.00307	0.00645	0.14	OK
N+4.45	82	COMDERUMY MAX	0.00286	0.00525	0.00598	0.13	OK
N+4.45	82	COMDERUMY MIN	-0.00286	-0.00525	0.00598	0.13	OK
BASE	82	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	82	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	82	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	82	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	83	COMDERUMX MAX	0.00848	0.00716	0.00531	0.12	OK
N+8.90	83	COMDERUMX MIN	-0.00848	-0.00716	0.00531	0.12	OK
N+8.90	83	COMDERUMY MAX	0.00413	0.01389	0.00857	0.19	OK
N+8.90	83	COMDERUMY MIN	-0.00413	-0.01389	0.00857	0.19	OK
N+4.45	83	COMDERUMX MAX	0.00567	0.00265	0.00626	0.14	OK
N+4.45	83	COMDERUMX MIN	-0.00567	-0.00265	0.00626	0.14	OK
N+4.45	83	COMDERUMY MAX	0.00286	0.00541	0.00612	0.14	OK
N+4.45	83	COMDERUMY MIN	-0.00286	-0.00541	0.00612	0.14	OK
BASE	83	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	83	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	83	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	83	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	84	COMDERUMX MAX	0.00848	0.00647	0.00509	0.11	OK
N+8.90	84	COMDERUMX MIN	-0.00848	-0.00647	0.00509	0.11	OK
N+8.90	84	COMDERUMY MAX	0.00419	0.01537	0.00979	0.22	OK
N+8.90	84	COMDERUMY MIN	-0.00419	-0.01537	0.00979	0.22	OK
N+4.45	84	COMDERUMX MAX	0.00567	0.00223	0.00609	0.14	OK
N+4.45	84	COMDERUMX MIN	-0.00567	-0.00223	0.00609	0.14	OK
N+4.45	84	COMDERUMY MAX	0.00286	0.00567	0.00635	0.14	OK
N+4.45	84	COMDERUMY MIN	-0.00286	-0.00567	0.00635	0.14	OK
BASE	84	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	84	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	84	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	84	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	85	COMDERUMX MAX	0.00848	0.00562	0.00457	0.10	OK
N+8.90	85	COMDERUMX MIN	-0.00848	-0.00562	0.00457	0.10	OK
N+8.90	85	COMDERUMY MAX	0.00419	0.01511	0.00905	0.20	OK
N+8.90	85	COMDERUMY MIN	-0.00419	-0.01511	0.00905	0.20	OK
N+4.45	85	COMDERUMX MAX	0.00567	0.00201	0.00602	0.13	OK
N+4.45	85	COMDERUMX MIN	-0.00567	-0.00201	0.00602	0.13	OK
N+4.45	85	COMDERUMY MAX	0.00286	0.00615	0.00678	0.15	OK
N+4.45	85	COMDERUMY MIN	-0.00286	-0.00615	0.00678	0.15	OK
BASE	85	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	85	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	85	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	85	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	86	COMDERUMX MAX	0.00853	0.00482	0.00363	0.08	OK
N+8.90	86	COMDERUMX MIN	-0.00853	-0.00482	0.00363	0.08	OK
N+8.90	86	COMDERUMY MAX	0.00419	0.01246	0.00577	0.13	OK
N+8.90	86	COMDERUMY MIN	-0.00419	-0.01246	0.00577	0.13	OK
N+4.45	86	COMDERUMX MAX	0.00567	0.00260	0.00624	0.14	OK
N+4.45	86	COMDERUMX MIN	-0.00567	-0.00260	0.00624	0.14	OK
N+4.45	86	COMDERUMY MAX	0.00286	0.00684	0.00741	0.16	OK
N+4.45	86	COMDERUMY MIN	-0.00286	-0.00684	0.00741	0.16	OK
BASE	86	COMDERUMX MAX	0.00000	0.00000	--	--	--

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

CÁLCULO DE DERIVAS MÁXIMAS (ESPECTRO DE UMBRAL DE DAÑO)

ALTURA DE N+8.90	4.45	m
ALTURA DE N+4.45	4.50	m
ALTURA DE BASE	0.00	m

Deriva Máxima Permitida **0.40** **%**

BASE	86	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	86	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	86	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	87	COMDERUMX MAX	0.00853	0.00959	0.00688	0.15	OK
N+8.90	87	COMDERUMX MIN	-0.00853	-0.00959	0.00688	0.15	OK
N+8.90	87	COMDERUMY MAX	0.00419	0.02051	0.01300	0.29	OK
N+8.90	87	COMDERUMY MIN	-0.00419	-0.02051	0.01300	0.29	OK
N+4.45	87	COMDERUMX MAX	0.00567	0.00334	0.00658	0.15	OK
N+4.45	87	COMDERUMX MIN	-0.00567	-0.00334	0.00658	0.15	OK
N+4.45	87	COMDERUMY MAX	0.00286	0.00758	0.00810	0.18	OK
N+4.45	87	COMDERUMY MIN	-0.00286	-0.00758	0.00810	0.18	OK
BASE	87	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	87	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	87	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	87	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	88	COMDERUMX MAX	0.00853	0.01373	0.01011	0.23	OK
N+8.90	88	COMDERUMX MIN	-0.00853	-0.01373	0.01011	0.23	OK
N+8.90	88	COMDERUMY MAX	0.00419	0.02586	0.01759	0.40	OK
N+8.90	88	COMDERUMY MIN	-0.00419	-0.02586	0.01759	0.40	OK
N+4.45	88	COMDERUMX MAX	0.00567	0.00403	0.00696	0.15	OK
N+4.45	88	COMDERUMX MIN	-0.00567	-0.00403	0.00696	0.15	OK
N+4.45	88	COMDERUMY MAX	0.00286	0.00832	0.00880	0.20	OK
N+4.45	88	COMDERUMY MIN	-0.00286	-0.00832	0.00880	0.20	OK
BASE	88	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	88	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	88	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	88	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	89	COMDERUMX MAX	0.00859	0.01341	0.00912	0.20	OK
N+8.90	89	COMDERUMX MIN	-0.00859	-0.01341	0.00912	0.20	OK
N+8.90	89	COMDERUMY MAX	0.00419	0.02369	0.01469	0.33	OK
N+8.90	89	COMDERUMY MIN	-0.00419	-0.02369	0.01469	0.33	OK
N+4.45	89	COMDERUMX MAX	0.00567	0.00477	0.00741	0.16	OK
N+4.45	89	COMDERUMX MIN	-0.00567	-0.00477	0.00741	0.16	OK
N+4.45	89	COMDERUMY MAX	0.00286	0.00906	0.00950	0.21	OK
N+4.45	89	COMDERUMY MIN	-0.00286	-0.00906	0.00950	0.21	OK
BASE	89	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	89	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	89	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	89	COMDERUMY MIN	0.00000	0.00000	--	--	--
N+8.90	90	COMDERUMX MAX	0.00859	0.00880	0.00439	0.10	OK
N+8.90	90	COMDERUMX MIN	-0.00859	-0.00880	0.00439	0.10	OK
N+8.90	90	COMDERUMY MAX	0.00419	0.01537	0.00572	0.13	OK
N+8.90	90	COMDERUMY MIN	-0.00419	-0.01537	0.00572	0.13	OK
N+4.45	90	COMDERUMX MAX	0.00567	0.00551	0.00791	0.18	OK
N+4.45	90	COMDERUMX MIN	-0.00567	-0.00551	0.00791	0.18	OK
N+4.45	90	COMDERUMY MAX	0.00286	0.00981	0.01021	0.23	OK
N+4.45	90	COMDERUMY MIN	-0.00286	-0.00981	0.01021	0.23	OK
BASE	90	COMDERUMX MAX	0.00000	0.00000	--	--	--
BASE	90	COMDERUMX MIN	0.00000	0.00000	--	--	--
BASE	90	COMDERUMY MAX	0.00000	0.00000	--	--	--
BASE	90	COMDERUMY MIN	0.00000	0.00000	--	--	--

4. DISEÑO DE CIMENTACIÓN

DISEÑO DE CIMENTACIÓN

CARGAS A CIMENTACIÓN

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

Story	Point	Load	FX	FY	FZ	MX	MY	MZ
BASE	1	CIMEN	5.58	5.09	166.98	-7.486	8.374	0.001
BASE	2	CIMEN	-3.27	5.75	195.65	-8.415	-4.633	0.002
BASE	3	CIMEN	3.61	3.29	217.32	-4.788	5.502	0.002
BASE	4	CIMEN	-0.06	0.9	232	-1.27	0.099	0.002
BASE	5	CIMEN	0.65	5.31	267.12	-7.822	1.082	0.001
BASE	6	CIMEN	0.04	0.65	267.62	-0.936	0.178	0.001
BASE	7	CIMEN	0.2	6.38	299.52	-9.36	0.474	0.002
BASE	8	CIMEN	0.19	0.47	268.17	-0.667	0.404	0.001
BASE	9	CIMEN	0.94	2.83	367.87	-4.162	1.509	0.001
BASE	10	CIMEN	-0.13	-3.36	323.18	4.972	0.001	0.002
BASE	11	CIMEN	0.08	-0.16	379.82	0.258	0.297	0.002
BASE	12	CIMEN	0.63	-3.09	322.33	4.574	1.11	0.002
BASE	13	CIMEN	-6.97	6.87	204.47	-10.15	-10.178	0.001
BASE	20	CIMEN	1.16	0.22	225.28	-0.283	1.84	0.001
BASE	22	CIMEN	-1.01	-2.35	105.69	3.514	-1.371	0.001
BASE	23	CIMEN	0.85	-0.82	162.74	1.25	1.383	0.001
BASE	25	CIMEN	0.81	5.97	498.94	-8.793	1.323	0.001
BASE	26	CIMEN	0.14	0.24	338.03	-0.33	0.323	0.001
BASE	27	CIMEN	0.73	0.27	443.15	-0.381	1.203	0.001
BASE	28	CIMEN	0.04	1.04	414.3	-1.521	0.181	0.001
BASE	29	CIMEN	-2.4	-0.38	321.66	0.566	-3.435	0.001
BASE	35	CIMEN	4.38	-0.05	258.92	0.114	6.586	0.001
BASE	36	CIMEN	-6.56	-0.27	118.34	0.443	-9.586	0.001
BASE	37	CIMEN	4.53	-0.26	257.13	0.42	6.82	0.001
BASE	38	CIMEN	-0.67	-0.03	136.88	0.078	-0.876	0.001
BASE	39	CIMEN	3.51	0.12	504.15	-0.153	5.305	0.001
BASE	40	CIMEN	-0.72	0.06	345.52	-0.065	-0.953	0.001
BASE	41	CIMEN	0.54	0.29	434.46	-0.399	0.913	0.001
BASE	42	CIMEN	-0.38	0.04	338.5	-0.037	-0.44	0.001
BASE	43	CIMEN	2.73	-0.02	449.61	0.052	4.148	0.001
BASE	44	CIMEN	-0.44	-0.01	426.98	0.028	-0.529	0.001
BASE	45	CIMEN	0.04	-0.01	403.25	0.027	0.178	0.001
BASE	46	CIMEN	1.19	-0.01	428.61	0.021	1.881	0.001
BASE	47	CIMEN	-11.12	-0.03	294.37	0.046	-16.322	0.001
BASE	59	CIMEN	0.9	-0.22	227.12	0.369	1.441	0.001
BASE	61	CIMEN	-0.86	3.87	116.06	-5.685	-1.155	0.001
BASE	62	CIMEN	0.7	2.51	171.58	-3.67	1.145	0.001
BASE	64	CIMEN	0.82	-5.95	486.9	8.829	1.329	0.001
BASE	65	CIMEN	0.13	-0.46	338.4	0.699	0.311	0.001
BASE	66	CIMEN	0.94	-0.37	442.19	0.567	1.506	0.001
BASE	67	CIMEN	0.04	-1.08	414.36	1.613	0.169	0.001
BASE	68	CIMEN	-2.71	0.28	319.39	-0.406	-3.896	0.001
BASE	78	CIMEN	5.41	-5.28	178.39	7.843	8.103	0.001
BASE	79	CIMEN	-1.37	-8.05	233.38	11.915	-1.848	0.002
BASE	80	CIMEN	1.66	-5.03	279.75	7.467	2.617	0.002
BASE	81	CIMEN	0.09	0.11	232.28	-0.118	0.304	0.002
BASE	82	CIMEN	0.6	-5.18	292.54	7.694	1.004	0.001
BASE	83	CIMEN	0.01	-0.14	268.49	0.235	0.131	0.001
BASE	84	CIMEN	0.17	-5.83	312.75	8.622	0.425	0.002
BASE	85	CIMEN	0.17	-0.12	268.05	0.196	0.361	0.001
BASE	86	CIMEN	0.9	-2.77	362.8	4.109	1.44	0.001
BASE	87	CIMEN	-0.16	3.1	322.76	-4.538	-0.067	0.002
BASE	88	CIMEN	0.05	-0.29	347.22	0.452	0.246	0.002
BASE	89	CIMEN	0.61	2.83	321.77	-4.156	1.061	0.002
BASE	90	CIMEN	-6.97	-6.87	192.34	10.167	-10.195	0.001

DISEÑO VIGAS DE AMARRE

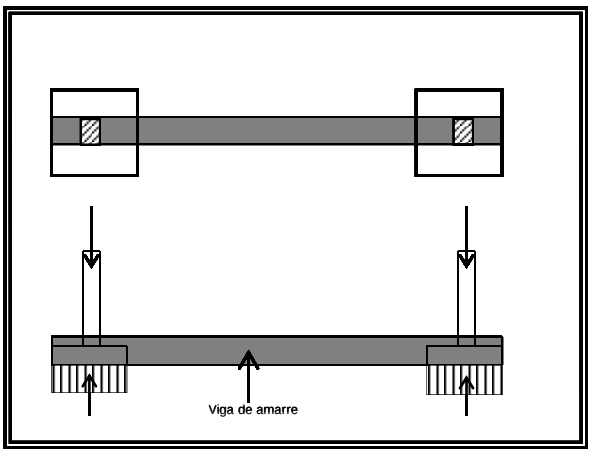
PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

VIGA DE AMARRE TIPO

f'c = **21.1** MPa
fy = **420** MPa

b = **0.30** m
h = **0.40** m

Pmáx = 504.15 kN



De acuerdo a el numeral A.3.6.4.2
de la NSR-10 tenemos:

Aa = ***0.15***
Paxial = 0.25*Aa*Pmáx
Paxial = *18.9* kN

DISEÑO A TENSIÓN

As = 1.7*18.905625/(0.90*420)
As = **0.85** cm^2

DISEÑO A COMPRESIÓN

P com = 1.7*18.905625
P com = *32.1* kN

Para esta carga la sección requiere cuantía mínima:

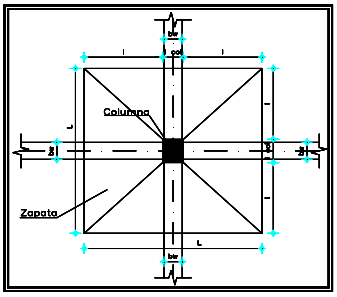
As = 0.00333*0.3*0.35
As = **3.50** cm^2

Se suministra un refuerzo constituido por 3#4 arriba y abajo (como refuerzo mínimo).

DISEÑO DE ZAPATAS CONCENTRICAS
PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
ZAPATA TIPO 1 (7 Und)

Columna **b =** 45 cm **f'c =** 21.1 MPa **σ =** 0.220 MPa
t = 45 cm **fy =** 420 MPa

PREDIMENSIONAMIENTO



L = 1.000 m
lcol = 0.450 m
l = 0.275 m

Cargas

Mu=	0	kN*m
Pu =	195.65	kN
Pp (10%) =	20	kN
Σ P =	215	kN

Area necesaria = $\frac{\Sigma P}{\sigma} = \frac{215.22}{0.220} =$ 0.98 m²

e = 0.00 m
L = 0.989 m *Aproximamos =* **1.00** m

Carga de diseño = $\frac{Pu}{A\ real} = \frac{195.65}{1.000} =$ 0.196 MPa

Esfuerzos

σmáx=	0.215	MPa	OK
σmin=	0.215	MPa	OK

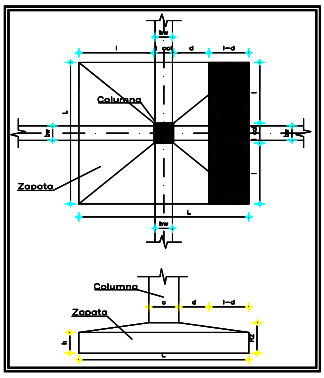
DISEÑO DE ZAPATA CONCENTRICA

FLEXIÓN

M borde de la columna = 8.14 kN*m
Mu = 1,7 * M borde de la columna = 13.83 kN*m

Con el criterio de calcular el refuerzo por metro lineal utilizamos una altura efectiva igual a: **d=** 0.23 m
Cuantia = 0.002
As = 4.60 cm²/m
Armadura: **6#413c./0.18**
en ambos sentidos

CORTANTE



a. En una dirección (d)

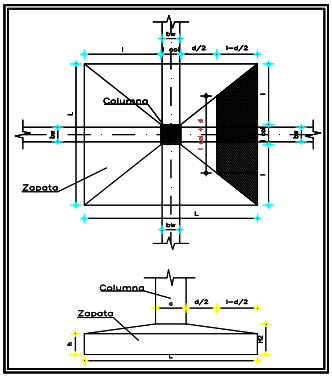
L = 1.00 m
l = 0.28 m
l - d = 0.05 m

H = **0.30** m
h = **0.30** m
H-h = 0.00 m

V (d) = 9.68 kN
Vu (d)= 1.7*V(d)
Vu (d) = 16.46 kN
h´ = 0.23 m

$\upsilon v = \frac{Vu}{L * h'} =$ 0.072 MPa

ϕvc = 0.57 MPa **OK**



b. En dos direcciones (d/2)

ZAPATA TIPO 1 (7 Und)

L = 1.000 m
d/2 = 0.115 m
l - d/2 = 0.160 m

H = 0.30 m
h = 0.30 m
H-h = 0.00 m

V (d/2) = 28.9 kN
Vu (d/2) = 1.5*V(d)
Vu (d/2) = 43.4 kN
d_1 = 0.23 m

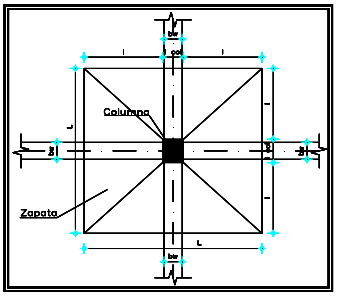
$\upsilon u = \frac{Vu}{bo \times d_1} =$ 0.277 MPa

ϕvc= 1.15 MPa **OK**

DISEÑO DE ZAPATAS CONCENTRICAS
PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
ZAPATA TIPO 2 (11 Und)

Columna	**b =**	45	cm	**f'c =**	21.1	MPa	**σ =**	0.220	MPa
	t =	45	cm	**fy =**	420	MPa			

PREDIMENSIONAMIENTO



L = 1.200 m
lcol = 0.450 m
l = 0.375 m

Cargas

Mu=	0	kN*m
Pu =	279.75	kN
Pp (10%) =	28	kN
Σ P =	308	kN

Area necesaria = $\frac{\Sigma P}{\sigma} = \frac{307.73}{0.220} =$ 1.40 m²

e = 0.00 m
L = 1.183 m *Aproximamos =* **1.20** m

Carga de diseño = $\frac{Pu}{A\ real} = \frac{279.75}{1.440} =$ 0.194 MPa

Esfuerzos

σmáx=	0.214	MPa	OK
σmin=	0.214	MPa	OK

DISEÑO DE ZAPATA CONCENTRICA

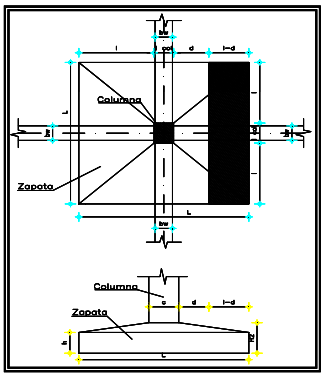
FLEXIÓN

M borde de la columna = 15.03 kN*m
Mu = 1,7 * M borde de la columna = 25.54 kN*m

Con el criterio de calcular el refuerzo por metro lineal utilizamos una altura efectiva igual a: **d=** 0.23 m

Cuantia = 0.002
As = 4.60 cm²/m
Armadura: **7#415c./0.18 en ambos sentidos**

CORTANTE



a. En una dirección (d)

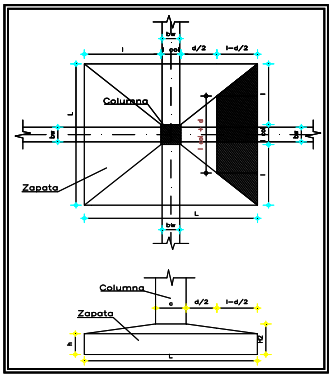
L = 1.20 m
l = 0.38 m
l - d = 0.15 m

H = **0.30** m
h = **0.30** m
H-h = 0.00 m

V (d) = 37.18 kN
Vu (d)= 1.7*V(d)
Vu (d) = 63.21 kN
h´ = 0.23 m

$\upsilon v = \frac{Vu}{L * h'} =$ 0.229 MPa

ϕvc = 0.57 MPa **OK**



b. En dos direcciones (d/2)

ZAPATA TIPO 2 (11 Und)

L = 1.200 m
d/2 = 0.115 m
l - d/2 = 0.260 m

H = 0.30 m
h = 0.30 m
H-h = 0.00 m

V (d/2) = 52.2 kN
Vu (d/2) = 1.5*V(d)
Vu (d/2) = 78.3 kN
d_1 = 0.23 m

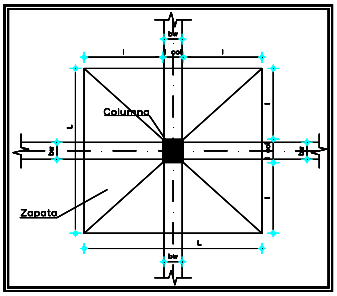
$\upsilon u = \frac{Vu}{bo \times d_1} =$ 0.501 MPa

ϕvc= 1.15 MPa **OK**

DISEÑO DE ZAPATAS CONCENTRICAS
PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
ZAPATA TIPO 3 (7 Und)

Columna	**b =**	45	cm	**f'c =**	21.1	MPa	**σ =**	0.220	MPa
	t =	45	cm	**fy =**	420	MPa			

PREDIMENSIONAMIENTO



L = 1.300 m
lcol = 0.450 m
l = 0.425 m

Cargas

Mu=	0	kN*m
Pu =	323.18	kN
Pp (10%) =	32	kN
Σ P =	355	kN

Area necesaria = $\frac{\Sigma P}{\sigma} = \frac{355.50}{0.220} =$ 1.62 m²

e = 0.00 m
L = 1.271 m *Aproximamos =* **1.30** m

Carga de diseño = $\frac{Pu}{A\ real} = \frac{323.18}{1.690} =$ 0.191 MPa

Esfuerzos

σmáx=	0.210	MPa	OK
σmin=	0.210	MPa	OK

DISEÑO DE ZAPATA CONCENTRICA

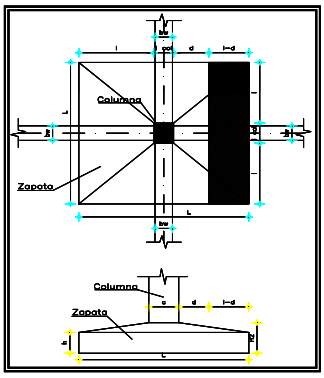
FLEXIÓN

M borde de la columna = 19.00 kN*m
Mu = 1,7 * M borde de la columna = 32.30 kN*m

Con el criterio de calcular el refuerzo por metro lineal utilizamos una altura efectiva igual a: **d=** 0.23 m

Cuantia = 0.002
As = 4.60 cm²/m
Armadura: **7#416c./0.2**
en ambos sentidos

CORTANTE



a. En una dirección (d)

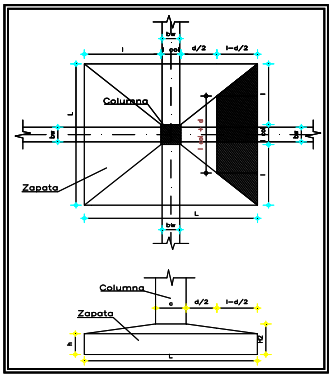
L =	1.30	m
l =	0.43	m
l - d =	0.20	m

H =	**0.30**	m
h =	**0.30**	m
H-h =	0.00	m

V (d) = 53.32 kN
Vu (d)= 1.7*V(d)
Vu (d) = 90.65 kN
h´ = 0.23 m

$\upsilon v = \frac{Vu}{L * h´} =$ 0.303 MPa

ϕvc = 0.57 MPa **OK**



b. En dos direcciones (d/2)

ZAPATA TIPO 3 (7 Und)

L =	1.300	m
d/2 =	0.115	m
l - d/2 =	0.310	m

H =	0.30	m
h =	0.30	m
H-h =	0.00	m

V (d/2) = 64.6 kN
Vu (d/2) = 1.5*V(d)
Vu (d/2) = 96.8 kN
d_1 = 0.23 m

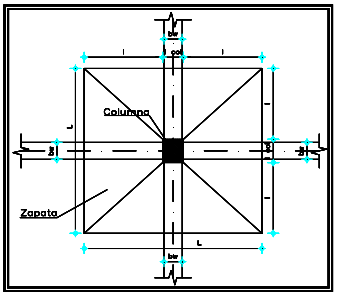
$\upsilon u = \frac{Vu}{bo \times d_1} =$ 0.619 MPa

ϕvc= 1.15 MPa **OK**

DISEÑO DE ZAPATAS CONCENTRICAS
PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
ZAPATA TIPO 4 (8 Und)

Columna **b =** 45 cm **f'c =** 21.1 MPa **σ =** 0.220 MPa
t = 45 cm **fy =** 420 MPa

PREDIMENSIONAMIENTO



L = 1.400 m
lcol = 0.450 m
l = 0.475 m

Cargas

Mu=	0	kN*m
Pu =	379.82	kN
Pp (10%) =	38	kN
Σ P =	418	kN

Area necesaria = $\frac{\Sigma P}{\sigma} = \frac{417.80}{0.220} =$ 1.90 m²

e = 0.00 m
L = 1.378 m *Aproximamos =* **1.40** m

Carga de diseño = $\frac{Pu}{A\ real} = \frac{379.82}{1.960} =$ 0.194 MPa

Esfuerzos

σmáx=	0.213	MPa	OK
σmin=	0.213	MPa	OK

DISEÑO DE ZAPATA CONCENTRICA

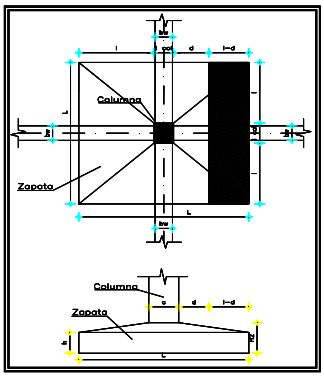
FLEXIÓN

M borde de la columna = 24.05 kN*m
Mu = 1,7 * M borde de la columna = 40.88 kN*m

Con el criterio de calcular el refuerzo por metro lineal utilizamos una altura efectiva igual a: **d=** 0.23 m

Cuantia = 0.002
As = 4.60 cm²/m
Armadura: **8#417c./0.18**
en ambos sentidos

CORTANTE



a. En una dirección (d)

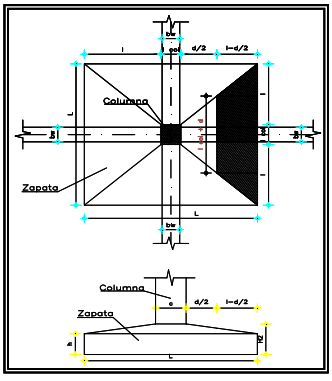
L = 1.40 m
l = 0.48 m
l - d = 0.25 m

H = **0.30** m
h = **0.30** m
H-h = 0.00 m

V (d) = 73.12 kN
Vu (d)= 1.7*V(d)
Vu (d) = 124.30 kN
h´ = 0.23 m

$\upsilon v = \frac{Vu}{L * h'} =$ 0.386 MPa

ϕvc = 0.57 MPa **OK**



b. En dos direcciones (d/2)

ZAPATA TIPO 4 (8 Und)

L = 1.400 m
d/2 = 0.115 m
l - d/2 = 0.360 m

H = 0.30 m
h = 0.30 m
H-h = 0.00 m

V (d/2) = 79.8 kN
Vu (d/2) = 1.5*V(d)
Vu (d/2) = 119.7 kN
d_1 = 0.23 m

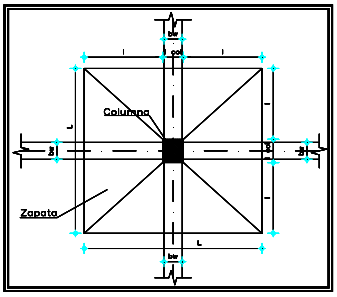
$\upsilon u = \frac{Vu}{bo \times d_1} =$ 0.765 MPa

ϕvc= 1.15 MPa **OK**

DISEÑO DE ZAPATAS CONCENTRICAS
PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
ZAPATA TIPO 5 (8 Und)

Columna **b =** 45 cm **f'c =** 21.1 MPa **σ =** 0.220 MPa
t = 45 cm **fy =** 420 MPa

PREDIMENSIONAMIENTO



L = 1.500 m
lcol = 0.450 m
l = 0.525 m

Cargas

Mu=	0	kN*m
Pu =	443.15	kN
Pp (10%) =	44	kN
Σ P =	487	kN

Area necesaria = $\frac{\Sigma P}{\sigma} = \frac{487.47}{0.220} =$ 2.22 m²

e = 0.00 m
L = 1.489 m *Aproximamos =* **1.50** m

Carga de diseño = $\frac{Pu}{A\ real} = \frac{443.15}{2.250} =$ 0.197 MPa

Esfuerzos

σmáx=	0.217	MPa	OK
σmin=	0.217	MPa	OK

DISEÑO DE ZAPATA CONCENTRICA

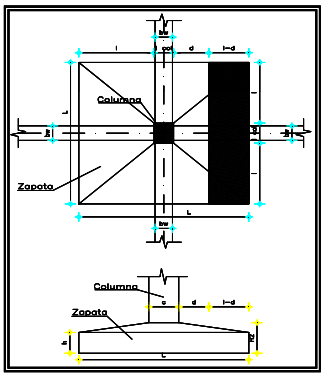
FLEXIÓN

M borde de la columna = 29.86 kN*m
Mu = 1,7 * M borde de la columna = 50.76 kN*m

Con el criterio de calcular el refuerzo por metro lineal utilizamos una altura efectiva igual a: **d=** 0.23 m

Cuantia = 0.00234933
As = 5.40 cm²/m
Armadura: **8#418c./0.2**
en ambos sentidos

CORTANTE



a. En una dirección (d)

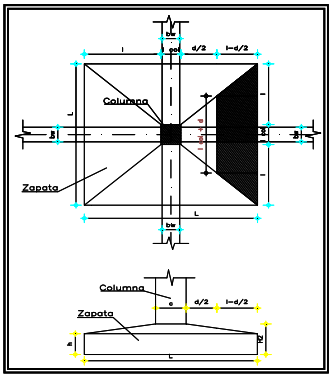
L = 1.50 m
l = 0.53 m
l - d = 0.30 m

H = **0.30** m
h = **0.30** m
H-h = 0.00 m

V (d) = 95.87 kN
Vu (d)= 1.7*V(d)
Vu (d) = 162.98 kN
h´ = 0.23 m

$\upsilon v = \frac{Vu}{L * h'} =$ 0.472 MPa

ϕvc = 0.57 MPa **OK**



b. En dos direcciones (d/2)

ZAPATA TIPO 5 (8 Und)

L = 1.500 m
d/2 = 0.115 m
l - d/2 = 0.410 m

H = 0.30 m
h = 0.30 m
H-h = 0.00 m

V (d/2) = 96.8 kN
Vu (d/2) = 1.5*V(d)
Vu (d/2) = 145.2 kN
d_1 = 0.23 m

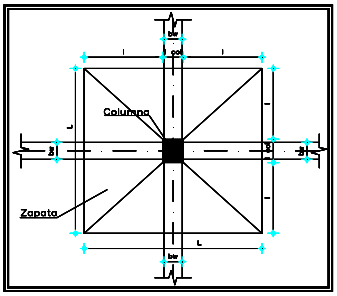
$\upsilon u = \frac{Vu}{bo \times d_1} =$ 0.929 MPa

ϕvc= 1.15 MPa **OK**

DISEÑO DE ZAPATAS CONCENTRICAS
PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
ZAPATA TIPO 6 (4 Und)

Columna	**b =**	45	cm	**f'c =**	21.1	MPa	**σ =**	0.220	MPa
	t =	45	cm	**fy =**	420	MPa			

PREDIMENSIONAMIENTO



L =	1.600	m				
lcol =	0.450	m				
l =	0.575	m				

Cargas

Mu=	0	kN*m
Pu =	504.15	kN
Pp (10%) =	50	kN
Σ P =	555	kN

Area necesaria = $\frac{\Sigma P}{\sigma} = \frac{554.57}{0.220} =$ 2.52 m²

e =	0.00	m			
L =	1.588	m	*Aproximamos =*	**1.60**	m

Carga de diseño = $\frac{Pu}{A\ real} = \frac{504.15}{2.560} =$ 0.197 MPa

Esfuerzos

σmáx=	0.217	MPa	OK
σmin=	0.217	MPa	OK

DISEÑO DE ZAPATA CONCENTRICA

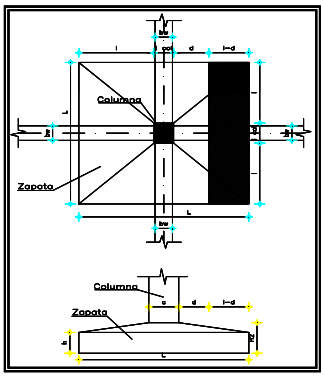
FLEXIÓN

	M borde de la columna =	35.81	kN*m
Mu =	1,7 * M borde de la columna =	60.88	kN*m

Con el criterio de calcular el refuerzo por metro lineal utilizamos una altura efectiva igual a: **d=** 0.23 m

Cuantia = 0.00283442
As = 6.52 cm²/m
Armadura: **9#419c./0.19**
en ambos sentidos

CORTANTE

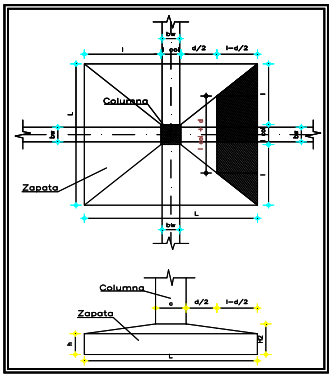


a. En una dirección (d)

L =	1.60	m	**H =**	**0.30**	m
l =	0.58	m	**h =**	**0.30**	m
l - d =	0.35	m	**H-h =**	0.00	m

V (d) =	119.58	kN				
Vu (d)=	1.7*V(d)		**υv** =	$\frac{Vu}{L * h'}$ =	0.552	MPa
Vu (d) =	203.28	kN				
h´ =	0.23	m				

ϕvc = 0.57 MPa **OK**



b. En dos direcciones (d/2)

ZAPATA TIPO 6 (4 Und)

L =	1.600	m	**H =**	0.30	m
d/2 =	0.115	m	**h =**	0.30	m
l - d/2 =	0.460	m	**H-h =**	0.00	m

V (d/2) =	113.6	kN				
Vu (d/2) =	1.5*V(d)		**υu** =	$\frac{Vu}{bo \times d_1}$ =	1.090	MPa
Vu (d/2) =	170.4	kN				
d_1 =	0.23	m				

ϕvc= 1.15 MPa **OK**

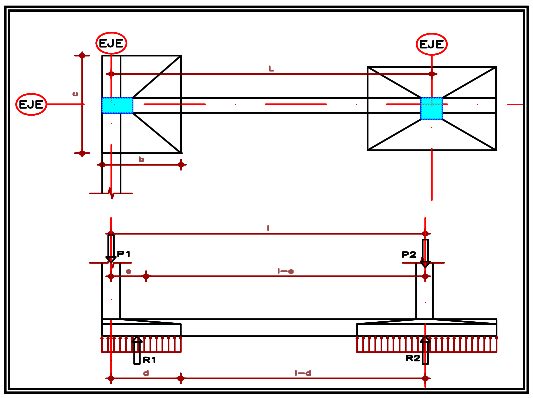
DISEÑO DE ZAPATA EXCENTRICA

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

ZAPATA TIPO 7 (10 Und).

Columna b_c = 45 cm. | t = 45 cm. | f'c = 21.1 MPa | fy = 420 MPa | σ = 0.220 MPa

PREDIMENSIONAMIENTO



c =	2.00	m	
b =	1.00	m	
l-e =	4.58	m	
d =	0.78	m	
e =	0.28	m	
L =	4.85	m	

Cargas

Pu =	321.66	kN
Pp (10%) =	32.17	kN
Σ P_1 =	353.83	kN

Area necesaria = $\frac{\Sigma P1}{\sigma} = \frac{353.83}{0.22} = 1.61$ m²

c » 2b 1.61 = c x b b = 0.50xc

c =	1.793	m	***Asumimos***	c=	2.00	m
b =	0.90	m		b=	1.00	m

VALOR DE Δ R

ΔR*(L-e) = P1*e = ΔR * 4.58 = 97.30 kN-m

c = (P1 + ΔR)/(σ*b) = 1.70 m

σ_{neto} = (Pu+ΔR)/(b*c) = 0.171 MPa ***OK***

Entonces

ΔR = 21.27 kN
c= 2.00 m
σ_{neto}= 0.171 Mpa

DISEÑO DE VIGA DE CONTRAPESO :

Flexión Donde el cortante es cero (0), el momento es máximo

Md = ΔR(l-d) = 86.668 kN-m
Mu = 1.5 * Md = 130.00 kN-m

h = 0.40 m
bv = 0.30 m
d = 0.33 m

Cuantia = 0.01085932
As = 10.75 cm²
Armadura= 3#7 Arriba
3#4 Abajo

Carga long. Bajo la zapata exterior = 342.93 kN/m

Ai = 77.16 kN
Ad= 244.50 kN
V(d) = -21.27 kN

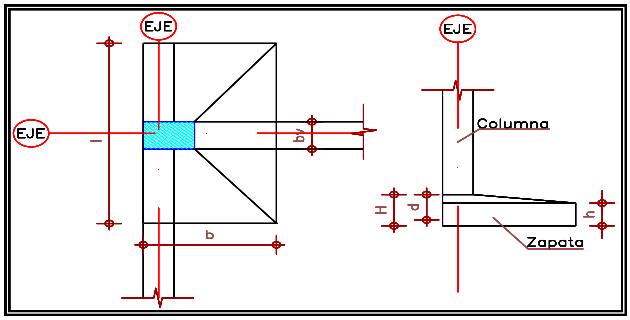
V borde de columna = 167.34 kN

Estribos #3 c/0.08m en la zona de confinamiento.

DISEÑO DE ZAPATA EXCENTRICA

ZAPATA TIPO 7 (10 Und).

Flexión Se considera como voladizos en el sentido más largo, soportados en la viga de contrapeso:



σ = 0.171 MPa
M=(σ*b*(c-bv)/2*(c-bv)/2)/2= 61.94 kN-m
Mu = 1,7*M = 105.30 kN-m

H = 0.50 m
d = 0.43 m
b = 1.00 m
h= 0.30 m

Cuantia = 0.0020
As = 8.60 cm²
Armadura= *11#413c./0.19* *Transversales*
6#523c./0.18 *Longitudinales*

Chequeo por cortante

$\nu u = \frac{Vu}{b * d}$

Vu borde viga = σneto*b*(c-bv)/2 = 145.74 kN

Vu = 1.5* V borde = 218.62 kN

νu = 0.508 MPa
ϕνc= 0.574 MPa **OK**

5. DISEÑO DE VIGAS, VIGUETAS Y COLUMNAS

DISEÑO DE VIGAS, VIGUETAS Y COLUMNAS

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND.)

VT-2B /

B=0.12 H=0.50 L=0.70			B=0.12 H=0.50 L=0.76			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=6.31			Mu=12.25			Mu=15.81	
	As=1.10			As=1.10			As=1.10	
Vu=11.86	Vu=10.03	Vu=8.19	Vu=8.19	Vu=6.20	Vu=4.20	Vu=4.20	Vu=1.47	Vu=-1.26

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=0.98		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10
	Mu=14.50			Mu=7.77	
	As=1.10			As=1.10	
Vu=-1.26	Vu=-3.99	Vu=-6.72	Vu=-6.72	Vu=-9.29	Vu=-11.86

VT-1B /

B=0.12 H=0.50 L=1.01			B=0.12 H=0.50 L=1.00			B=0.12 H=0.50 L=1.00		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=4.21			Mu=7.17			Mu=4.86	
	As=1.10			As=1.10			As=1.10	
Vu=8.24	Vu=5.59	Vu=2.94	Vu=2.94	Vu=0.31	Vu=-2.31	Vu=-2.31	Vu=-4.94	Vu=-7.56

VT-3B /

B=0.12 H=0.50 L=0.70			B=0.12 H=0.50 L=0.70		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10
	Mu=1.64			Mu=1.42	
	As=1.10			As=1.10	
Vu=3.37	Vu=1.53	Vu=-0.31	Vu=-0.31	Vu=-2.15	Vu=-3.98

VT-7B /

B=0.12 H=0.50 L=1.05			B=0.12 H=0.50 L=1.05			B=0.12 H=0.50 L=1.05		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=13.34			Mu=27.56			Mu=36.00	
	As=1.10			As=1.71			As=2.20	
Vu=19.06	Vu=16.30	Vu=13.55	Vu=13.55	Vu=10.79	Vu=8.04	Vu=8.04	Vu=5.28	Vu=2.52

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND.)

B=0.12 H=0.50 L=1.05			B=0.12 H=0.50 L=1.05			B=0.12 H=0.50 L=1.05		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=38.65			Mu=35.51			Mu=26.59	
	As=2.34			As=2.17			As=1.65	
Vu=2.52	Vu=-0.23	Vu=-2.99	Vu=-2.99	Vu=-5.75	Vu=-8.50	Vu=-8.50	Vu=-11.26	Vu=-14.01

B=0.12 H=0.50 L=1.05			B=0.12 H=0.50 L=1.05			B=0.12 H=0.50 L=1.05		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-21.29	Mu=-21.29		Mu=-50.48
As=1.10		As=1.10	As=1.10		As=1.26	As=1.42		As=3.11
	Mu=11.87			Mu=0.00			Mu=0.00	
	As=1.10			As=1.10			As=1.10	
Vu=-14.01	Vu=-16.77	Vu=-19.53	Vu=-19.53	Vu=-22.28	Vu=-25.04	Vu=-25.04	Vu=-27.80	Vu=-30.55

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-51.51		Mu=-26.88	Mu=-26.88		Mu=-7.93	Mu=-7.93		Mu=-0.00
As=3.18		As=1.74	As=1.60		As=1.10	As=1.10		As=1.10
	Mu=0.00			Mu=0.00			Mu=0.00	
	As=1.10			As=1.10			As=1.10	
Vu=26.41	Vu=23.68	Vu=20.95	Vu=20.95	Vu=18.22	Vu=15.49	Vu=15.49	Vu=12.76	Vu=10.03

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=10.09			Mu=14.85			Mu=13.93	
	As=1.10			As=1.10			As=1.10	
Vu=10.03	Vu=7.30	Vu=4.57	Vu=4.57	Vu=1.84	Vu=-0.89	Vu=-0.89	Vu=-3.62	Vu=-6.35

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-13.45	Mu=-13.45		Mu=-34.25
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=2.06
	Mu=7.33			Mu=0.00			Mu=0.00	
	As=1.10			As=1.10			As=1.10	
Vu=-6.35	Vu=-9.08	Vu=-11.81	Vu=-11.81	Vu=-14.54	Vu=-17.27	Vu=-17.27	Vu=-20.00	Vu=-22.73

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND.)

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-34.00		Mu=-12.17	Mu=-12.17		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=2.04		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=0.00			Mu=0.00			Mu=10.18	
	As=1.10			As=1.10			As=1.10	
Vu=23.73	Vu=21.00	Vu=18.27	Vu=18.27	Vu=15.54	Vu=12.81	Vu=12.81	Vu=10.08	Vu=7.35

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=17.82			Mu=19.78			Mu=16.06	
	As=1.10			As=1.17			As=1.10	
Vu=7.35	Vu=4.62	Vu=1.89	Vu=1.89	Vu=-0.84	Vu=-3.57	Vu=-3.57	Vu=-6.30	Vu=-9.03

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-0.40	Mu=-0.40		Mu=-18.31	Mu=-18.31		Mu=-41.91
As=1.10		As=1.10	As=1.10		As=1.10	As=1.20		As=2.55
	Mu=6.66			Mu=0.00			Mu=0.00	
	As=1.10			As=1.10			As=1.10	
Vu=-9.03	Vu=-11.76	Vu=-14.49	Vu=-14.49	Vu=-17.22	Vu=-19.95	Vu=-19.95	Vu=-22.68	Vu=-25.41

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-40.82		Mu=-13.67	Mu=-13.67		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=2.48		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=0.00			Mu=0.00			Mu=13.18	
	As=1.10			As=1.10			As=1.10	
Vu=29.75	Vu=26.11	Vu=22.47	Vu=22.47	Vu=18.83	Vu=15.19	Vu=15.19	Vu=11.55	Vu=7.91

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=21.40			Mu=22.06			Mu=15.14	
	As=1.29			As=1.32			As=1.10	
Vu=7.91	Vu=4.27	Vu=0.63	Vu=0.63	Vu=-3.01	Vu=-6.65	Vu=-6.65	Vu=-10.29	Vu=-13.93

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND.)

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-9.75	Mu=-9.75		Mu=-35.60	Mu=-35.60		Mu=-69.01
As=1.10		As=1.10	As=1.10		As=2.15	As=2.33		As=4.38
	Mu=0.65			Mu=0.00			Mu=0.00	
	As=1.10			As=1.10			As=1.10	
Vu=-13.93	Vu=-17.57	Vu=-21.21	Vu=-21.21	Vu=-24.85	Vu=-28.49	Vu=-28.49	Vu=-32.13	Vu=-35.77

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-67.82		Mu=-29.45	Mu=-29.45		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=4.29		As=1.98	As=1.76		As=1.10	As=1.10		As=1.10
	Mu=0.00			Mu=0.00			Mu=14.24	
	As=1.10			As=1.10			As=1.10	
Vu=40.54	Vu=36.90	Vu=33.26	Vu=33.26	Vu=29.62	Vu=25.98	Vu=25.98	Vu=22.34	Vu=18.70

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=33.68			Mu=45.56			Mu=49.87	
	As=2.12			As=2.83			As=3.07	
Vu=18.70	Vu=15.06	Vu=11.42	Vu=11.42	Vu=7.78	Vu=4.14	Vu=4.14	Vu=0.50	Vu=-3.14

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=46.60			Mu=35.76			Mu=17.35	
	As=2.90			As=2.24			As=1.15	
Vu=-3.14	Vu=-6.78	Vu=-10.42	Vu=-10.42	Vu=-14.06	Vu=-17.70	Vu=-17.70	Vu=-21.34	Vu=-24.98

VT-5B/

B=0.12 H=0.50 L=1.05			B=0.12 H=0.50 L=1.05			B=0.12 H=0.50 L=1.05		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=5.30			Mu=7.85			Mu=4.58	
	As=1.10			As=1.10			As=1.10	
Vu=7.96	Vu=5.19	Vu=2.43	Vu=2.43	Vu=-0.34	Vu=-3.10	Vu=-3.10	Vu=-5.87	Vu=-8.63

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND.)

VT-6B/

B=0.12 H=0.50 L=1.03			B=0.12 H=0.50 L=1.03			B=0.12 H=0.50 L=1.03		
Mu=-0.00 As=1.10		Mu=-0.00 As=1.10	Mu=-0.00 As=1.10		Mu=-0.00 As=1.10	Mu=-0.00 As=1.10		Mu=-0.00 As=1.10
	Mu=5.69 As=1.10			Mu=11.15 As=1.10			Mu=11.05 As=1.10	
Vu=10.71	Vu=8.01	Vu=5.30	Vu=5.30	Vu=2.60	Vu=-0.11	Vu=-0.11	Vu=-2.81	Vu=-5.51

B=0.12 H=0.50 L=1.03			B=0.12 H=0.50 L=1.03			B=0.12 H=0.50 L=1.03		
Mu=-0.00 As=1.10		Mu=-0.00 As=1.10	Mu=-0.00 As=1.10		Mu=-13.83 As=1.10	Mu=-13.83 As=1.10		Mu=-33.43 As=2.01
	Mu=5.37 As=1.10			Mu=0.00 As=1.10			Mu=0.00 As=1.10	
Vu=-5.51	Vu=-8.22	Vu=-10.92	Vu=-10.92	Vu=-13.62	Vu=-16.33	Vu=-16.33	Vu=-19.03	Vu=-21.74

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-32.89 As=1.97		Mu=-10.94 As=1.10	Mu=-10.94 As=1.10		Mu=-0.00 As=1.10	Mu=-0.00 As=1.10		Mu=-0.00 As=1.10
	Mu=0.00 As=1.10			Mu=0.00 As=1.10			Mu=11.64 As=1.10	
Vu=23.88	Vu=21.15	Vu=18.43	Vu=18.43	Vu=15.70	Vu=12.97	Vu=12.97	Vu=10.25	Vu=7.52

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00 As=1.10		Mu=-0.00 As=1.10	Mu=-0.00 As=1.10		Mu=-0.00 As=1.10	Mu=-0.00 As=1.10		Mu=-0.00 As=1.10
	Mu=19.45 As=1.17			Mu=21.59 As=1.28			Mu=18.07 As=1.10	
Vu=7.52	Vu=4.79	Vu=2.06	Vu=2.06	Vu=-0.66	Vu=-3.39	Vu=-3.39	Vu=-6.12	Vu=-8.85

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00 As=1.10		Mu=-0.00 As=1.10	Mu=-0.00 As=1.10		Mu=-15.77 As=1.10	Mu=-15.77 As=1.10		Mu=-39.13 As=2.37
	Mu=8.88 As=1.10			Mu=0.00 As=1.10			Mu=0.00 As=1.10	
Vu=-8.85	Vu=-11.57	Vu=-14.30	Vu=-14.30	Vu=-17.03	Vu=-19.76	Vu=-19.76	Vu=-22.48	Vu=-25.21

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND.)

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-39.33		Mu=-16.80	Mu=-16.80		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=2.38		As=1.11	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=0.00			Mu=0.00			Mu=6.64	
	As=1.10			As=1.10			As=1.10	
Vu=24.43	Vu=21.71	Vu=18.98	Vu=18.98	Vu=16.26	Vu=13.53	Vu=13.53	Vu=10.80	Vu=8.07

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=15.03			Mu=17.75			Mu=14.81	
	As=1.10			As=1.10			As=1.10	
Vu=8.07	Vu=5.35	Vu=2.62	Vu=2.62	Vu=-0.11	Vu=-2.84	Vu=-2.84	Vu=-5.56	Vu=-8.29

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-0.48	Mu=-0.48		Mu=-17.60	Mu=-17.60		Mu=-40.38
As=1.10		As=1.10	As=1.10		As=1.10	As=1.16		As=2.45
	Mu=6.19			Mu=0.00			Mu=0.00	
	As=1.10			As=1.10			As=1.10	
Vu=-8.29	Vu=-11.02	Vu=-13.75	Vu=-13.75	Vu=-16.47	Vu=-19.20	Vu=-19.20	Vu=-21.93	Vu=-24.66

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-39.17		Mu=-12.31	Mu=-12.31		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=2.37		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=0.00			Mu=0.00			Mu=14.17	
	As=1.10			As=1.10			As=1.10	
Vu=29.51	Vu=25.87	Vu=22.24	Vu=22.24	Vu=18.61	Vu=14.97	Vu=14.97	Vu=11.33	Vu=7.70

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=22.16			Mu=22.60			Mu=15.48	
	As=1.33			As=1.35			As=1.10	
Vu=7.70	Vu=4.06	Vu=0.42	Vu=0.42	Vu=-3.21	Vu=-6.85	Vu=-6.85	Vu=-10.49	Vu=-14.12

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND.)

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-9.68	Mu=-9.68		Mu=-35.69	Mu=-35.69		Mu=-69.25
As=1.10		As=1.10	As=1.10		As=2.15	As=2.34		As=4.39
	Mu=0.81			Mu=0.00			Mu=0.00	
	As=1.10			As=1.10			As=1.10	
Vu=-14.12	Vu=-17.76	Vu=-21.40	Vu=-21.40	Vu=-25.03	Vu=-28.67	Vu=-28.67	Vu=-32.31	Vu=-35.94

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-68.10		Mu=-29.80	Mu=-29.80		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=4.31		As=2.00	As=1.78		As=1.10	As=1.10		As=1.10
	Mu=0.00			Mu=0.00			Mu=13.88	
	As=1.10			As=1.10			As=1.10	
Vu=40.54	Vu=36.91	Vu=33.28	Vu=33.28	Vu=29.64	Vu=26.00	Vu=26.00	Vu=22.37	Vu=18.73

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=33.34			Mu=45.24			Mu=49.59	
	As=2.10			As=2.81			As=3.05	
Vu=18.73	Vu=15.09	Vu=11.46	Vu=11.46	Vu=7.82	Vu=4.18	Vu=4.18	Vu=0.55	Vu=-3.09

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=46.38			Mu=35.62			Mu=17.29	
	As=2.88			As=2.23			As=1.15	
Vu=-3.09	Vu=-6.73	Vu=-10.36	Vu=-10.36	Vu=-14.00	Vu=-17.64	Vu=-17.64	Vu=-21.27	Vu=-24.91

VT-4B/

B=0.12 H=0.50 L=0.89			B=0.12 H=0.50 L=0.89			B=0.12 H=0.50 L=0.89		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=7.19			Mu=13.43			Mu=15.50	
	As=1.10			As=1.10			As=1.10	
Vu=11.68	Vu=9.34	Vu=7.01	Vu=7.01	Vu=4.67	Vu=2.34	Vu=2.34	Vu=0.00	Vu=-2.34

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND.)

B=0.12 H=0.50 L=0.89			B=0.12 H=0.50 L=0.89		
Mu=-0.00 As=1.10		Mu=-0.00 As=1.10	Mu=-0.00 As=1.10		Mu=-0.00 As=1.10
	Mu=13.43 As=1.10			Mu=7.19 As=1.10	
Vu=-2.34	Vu=-4.67	Vu=-7.01	Vu=-7.01	Vu=-9.34	Vu=-11.68

VT-8B/

B=0.12 H=0.50 L=0.66			B=0.12 H=0.50 L=0.92		
Mu=-0.27 As=1.10		Mu=-2.96 As=1.10	Mu=-2.96 As=1.10		Mu=-0.00 As=1.10
	Mu=0.00 As=1.10			Mu=0.00 As=1.10	
Vu=-1.78	Vu=-4.09	Vu=-6.40	Vu=6.44	Vu=3.22	Vu=0.00

VT-9B/

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00 As=1.10		Mu=-0.00 As=1.10	Mu=-0.00 As=1.10		Mu=-0.00 As=1.10	Mu=-0.00 As=1.10		Mu=-0.00 As=1.10
	Mu=12.29 As=1.10			Mu=25.07 As=1.55			Mu=32.18 As=1.95	
Vu=17.75	Vu=15.03	Vu=12.30	Vu=12.30	Vu=9.58	Vu=6.85	Vu=6.85	Vu=4.12	Vu=1.39

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00 As=1.10		Mu=-0.00 As=1.10	Mu=-0.00 As=1.10		Mu=-0.00 As=1.10	Mu=-0.00 As=1.10		Mu=-0.00 As=1.10
	Mu=33.63 As=2.03			Mu=29.41 As=1.80			Mu=19.53 As=1.23	
Vu=1.39	Vu=-1.33	Vu=-4.06	Vu=-4.06	Vu=-6.79	Vu=-9.52	Vu=-9.52	Vu=-12.24	Vu=-14.97

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00 As=1.10		Mu=-6.16 As=1.10	Mu=-6.16 As=1.10		Mu=-30.22 As=1.81	Mu=-30.22 As=1.98		Mu=-59.94 As=3.75
	Mu=3.97 As=1.10			Mu=0.00 As=1.10			Mu=0.00 As=1.10	
Vu=-14.97	Vu=-17.70	Vu=-20.42	Vu=-20.42	Vu=-23.15	Vu=-25.88	Vu=-25.88	Vu=-28.61	Vu=-31.33

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND.)

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-59.94		Mu=-30.25	Mu=-30.25		Mu=-6.19	Mu=-6.19		Mu=-0.00
As=3.75		As=1.98	As=1.81		As=1.10	As=1.10		As=1.10
	Mu=0.00			Mu=0.00			Mu=3.95	
	As=1.10			As=1.10			As=1.10	
Vu=31.33	Vu=28.61	Vu=25.89	Vu=25.89	Vu=23.16	Vu=20.43	Vu=20.43	Vu=17.70	Vu=14.98

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=19.51			Mu=29.41			Mu=33.63	
	As=1.22			As=1.80			As=2.03	
Vu=14.98	Vu=12.25	Vu=9.52	Vu=9.52	Vu=6.79	Vu=4.07	Vu=4.07	Vu=1.34	Vu=-1.39

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=32.19			Mu=25.08			Mu=12.30	
	As=1.95			As=1.55			As=1.10	
Vu=-1.39	Vu=-4.12	Vu=-6.84	Vu=-6.84	Vu=-9.57	Vu=-12.30	Vu=-12.30	Vu=-15.03	Vu=-17.75

VT-11B/

B=0.12 H=0.50 L=0.90			B=0.12 H=0.50 L=0.90			B=0.12 H=0.50 L=0.90		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=4.47			Mu=8.72			Mu=8.72	
	As=1.10			As=1.10			As=1.10	
Vu=9.45	Vu=7.09	Vu=4.72	Vu=4.72	Vu=2.36	Vu=0.00	Vu=0.00	Vu=-2.36	Vu=-4.72

B=0.12 H=0.50 L=0.90		
Mu=-0.00		Mu=-0.00
As=1.10		As=1.10
	Mu=4.47	
	As=1.10	
Vu=-4.72	Vu=-7.09	Vu=-9.45

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND.)

VT-12B/

B=0.12 H=0.50 L=0.56			B=0.12 H=0.50 L=0.99			B=0.12 H=0.50 L=0.99		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-1.66	Mu=-1.66		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=0.84			Mu=0.51			Mu=0.51	
	As=1.10			As=1.10			As=1.10	
Vu=2.88	Vu=1.41	Vu=-0.06	Vu=-0.06	Vu=-2.66	Vu=-5.25	Vu=5.25	Vu=2.66	Vu=0.06

B=0.12 H=0.50 L=0.56		
Mu=-0.00		Mu=-0.00
As=1.10		As=1.10
	Mu=0.84	
	As=1.10	
Vu=0.06	Vu=-1.41	Vu=-2.88

VT-13B/

B=0.12 H=0.50 L=0.96			B=0.12 H=0.50 L=0.96			B=0.12 H=0.50 L=0.96		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=6.40			Mu=13.66			Mu=16.08	
	As=1.10			As=1.10			As=1.10	
Vu=12.60	Vu=10.08	Vu=7.56	Vu=7.56	Vu=5.04	Vu=2.52	Vu=2.52	Vu=0.00	Vu=-2.52

B=0.12 H=0.50 L=0.96			B=0.12 H=0.50 L=0.96		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10
	Mu=13.66			Mu=6.40	
	As=1.10			As=1.10	
Vu=-2.52	Vu=-5.04	Vu=-7.56	Vu=-7.56	Vu=-10.08	Vu=-12.60

VT-14B/

B=0.12 H=0.50 L=0.90			B=0.12 H=0.50 L=0.90			B=0.12 H=0.50 L=0.93		
Mu=-0.00		Mu=-2.84	Mu=-2.84		Mu=-11.34	Mu=-8.12		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=0.00			Mu=0.00			Mu=3.22	
	As=1.10			As=1.10			As=1.10	
Vu=0.00	Vu=-3.15	Vu=-6.30	Vu=-6.30	Vu=-9.45	Vu=-12.60	Vu=25.47	Vu=22.22	Vu=18.96

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND.)

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=21.76			Mu=33.90			Mu=38.49	
	As=1.38			As=2.09			As=2.33	
Vu=18.96	Vu=15.32	Vu=11.69	Vu=11.69	Vu=8.05	Vu=4.41	Vu=4.41	Vu=0.78	Vu=-2.86

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-5.28
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=35.52			Mu=24.99			Mu=6.91	
	As=2.18			As=1.57			As=1.10	
Vu=-2.86	Vu=-6.50	Vu=-10.13	Vu=-10.13	Vu=-13.77	Vu=-17.40	Vu=-17.40	Vu=-21.04	Vu=-24.68

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-5.28		Mu=-34.70	Mu=-34.70		Mu=-71.68	Mu=-71.68		Mu=-34.74
As=1.10		As=2.09	As=2.30		As=4.57	As=4.57		As=2.30
	Mu=0.00			Mu=0.00			Mu=0.00	
	As=1.10			As=1.10			As=1.10	
Vu=-24.68	Vu=-28.31	Vu=-31.95	Vu=-31.95	Vu=-35.59	Vu=-39.22	Vu=39.22	Vu=35.59	Vu=31.96

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-34.74		Mu=-5.32	Mu=-5.32		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=2.09		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=0.00			Mu=6.87			Mu=24.96	
	As=1.10			As=1.10			As=1.57	
Vu=31.96	Vu=28.32	Vu=24.68	Vu=24.68	Vu=21.05	Vu=17.41	Vu=17.41	Vu=13.77	Vu=10.14

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=35.50			Mu=38.47			Mu=33.89	
	As=2.18			As=2.33			As=2.09	
Vu=10.14	Vu=6.50	Vu=2.86	Vu=2.86	Vu=-0.77	Vu=-4.41	Vu=-4.41	Vu=-8.05	Vu=-11.68

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND.)

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=0.93			B=0.12 H=0.50 L=0.90		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-8.12	Mu=-11.34		Mu=-2.84
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=21.75			Mu=3.21			Mu=0.00	
	As=1.38			As=1.10			As=1.10	
Vu=-11.68	Vu=-15.32	Vu=-18.96	Vu=-18.96	Vu=-22.21	Vu=-25.47	Vu=12.60	Vu=9.45	Vu=6.30

B=0.12 H=0.50 L=0.90		
Mu=-2.84		Mu=-0.00
As=1.10		As=1.10
	Mu=0.00	
	As=1.10	
Vu=6.30	Vu=3.15	Vu=0.00

VT-15B/

B=0.12 H=0.50 L=0.65			B=0.12 H=0.50 L=0.65			B=0.12 H=0.50 L=0.65		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=0.00			Mu=0.00			Mu=0.00	
	As=1.10			As=1.10			As=1.10	
Vu=0.00	Vu=0.00	Vu=0.00	Vu=0.00	Vu=0.00	Vu=0.00	Vu=0.00	Vu=0.00	Vu=0.00

VT-10B/

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=16.39			Mu=33.42			Mu=42.91	
	As=1.10			As=2.09			As=2.65	
Vu=23.67	Vu=20.04	Vu=16.41	Vu=16.41	Vu=12.77	Vu=9.13	Vu=9.13	Vu=5.50	Vu=1.86

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=44.84			Mu=39.22			Mu=26.04	
	As=2.75			As=2.43			As=1.65	
Vu=1.86	Vu=-1.78	Vu=-5.41	Vu=-5.41	Vu=-9.05	Vu=-12.69	Vu=-12.69	Vu=-16.32	Vu=-19.96

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND.)

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-8.22	Mu=-8.22		Mu=-40.29	Mu=-40.29		Mu=-79.92
As=1.10		As=1.10	As=1.10		As=2.44	As=2.68		As=5.17
	Mu=5.30			Mu=0.00			Mu=0.00	
	As=1.10			As=1.10			As=1.10	
Vu=-19.96	Vu=-23.60	Vu=-27.23	Vu=-27.23	Vu=-30.87	Vu=-34.51	Vu=-34.51	Vu=-38.14	Vu=-41.78

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-79.92		Mu=-40.33	Mu=-40.33		Mu=-8.25	Mu=-8.25		Mu=-0.00
As=5.17		As=2.68	As=2.45		As=1.10	As=1.10		As=1.10
	Mu=0.00			Mu=0.00			Mu=5.27	
	As=1.10			As=1.10			As=1.10	
Vu=41.78	Vu=38.15	Vu=34.51	Vu=34.51	Vu=30.88	Vu=27.24	Vu=27.24	Vu=23.60	Vu=19.97

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=26.02			Mu=39.21			Mu=44.84	
	As=1.65			As=2.43			As=2.75	
Vu=19.97	Vu=16.33	Vu=12.70	Vu=12.70	Vu=9.06	Vu=5.42	Vu=5.42	Vu=1.79	Vu=-1.85

B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04			B=0.12 H=0.50 L=1.04		
Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00	Mu=-0.00		Mu=-0.00
As=1.10		As=1.10	As=1.10		As=1.10	As=1.10		As=1.10
	Mu=42.92			Mu=33.44			Mu=16.40	
	As=2.65			As=2.09			As=1.10	
Vu=-1.85	Vu=-5.49	Vu=-9.12	Vu=-9.12	Vu=-12.76	Vu=-16.40	Vu=-16.40	Vu=-20.03	Vu=-23.67

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND)

V-102B/N+4.45

B=0.50 H=0.50 L=4.40		
Mu=-152.17 As=9.50		Mu=-122.82 As=7.59
	Mu=51.61 As=7.36	
Vu=-98.46	Vu=-44.67	Vu=94.67

V-103B/N+4.45

B=0.50 H=0.50 L=4.47			B=0.50 H=0.50 L=4.48			B=0.50 H=0.50 L=4.48		
Mu=-133.92 As=8.31		Mu=-121.54 As=7.51	Mu=-105.04 As=7.36		Mu=-129.48 As=8.02	Mu=-153.26 As=9.57		Mu=-190.25 As=12.05
	Mu=57.18 As=7.36			Mu=37.70 As=7.36			Mu=76.85 As=7.36	
Vu=-81.61	Vu=40.59	Vu=103.81	Vu=-89.04	Vu=-25.81	Vu=78.34	Vu=-109.66	Vu=-32.65	Vu=215.59

B=0.50 H=0.50 L=4.48			B=0.50 H=0.50 L=4.48			B=0.50 H=0.50 L=4.48		
Mu=-187.54 As=11.87		Mu=-168.78 As=10.60	Mu=-168.47 As=10.58		Mu=-183.63 As=11.60	Mu=-180.31 As=11.38		Mu=-175.29 As=11.04
	Mu=69.68 As=7.36			Mu=72.08 As=7.36			Mu=66.64 As=7.36	
Vu=-211.61	Vu=36.34	Vu=113.35	Vu=-114.37	Vu=-37.36	Vu=211.02	Vu=-207.42	Vu=38.62	Vu=115.63

B=0.50 H=0.50 L=4.48			B=0.50 H=0.50 L=4.48			B=0.50 H=0.50 L=4.48		
Mu=-179.30 As=11.31		Mu=-217.11 As=13.90	Mu=-205.33 As=13.08		Mu=-166.58 As=10.46	Mu=-163.25 As=10.24		Mu=-200.12 As=12.72
	Mu=87.81 As=7.36			Mu=82.08 As=7.36			Mu=81.15 As=7.36	
Vu=-130.30	Vu=-38.77	Vu=278.82	Vu=-275.70	Vu=34.48	Vu=127.71	Vu=-127.35	Vu=-32.04	Vu=276.02

B=0.50 H=0.50 L=4.40		
Mu=-235.11 As=15.16		Mu=-180.84 As=11.41
	Mu=106.74 As=7.36	
Vu=-280.35	Vu=40.45	Vu=128.66

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND)

V-105B/N+4.45

B=0.40 H=0.50 L=4.40			B=0.40 H=0.50 L=4.48			B=0.40 H=0.50 L=4.48		
Mu=-124.70 As=7.80		Mu=-140.76 As=8.87	Mu=-131.41 As=8.24		Mu=-128.49 As=8.05	Mu=-127.30 As=7.97		Mu=-130.94 As=8.21
	Mu=46.92 As=5.89			Mu=43.80 As=5.89			Mu=43.65 As=5.89	
Vu=-91.92	Vu=39.29	Vu=104.12	Vu=-106.63	Vu=-27.49	Vu=95.34	Vu=-94.81	Vu=27.25	Vu=106.40

B=0.40 H=0.50 L=4.40		
Mu=-141.14 As=8.89		Mu=-124.51 As=7.79
	Mu=47.05 As=5.89	
Vu=-104.28	Vu=-39.45	Vu=91.99

V-106B/N+4.45

B=0.40 H=0.50 L=4.34			B=0.40 H=0.50 L=4.48			B=0.40 H=0.50 L=4.48		
Mu=-131.38 As=8.24		Mu=-104.18 As=6.45	Mu=-67.55 As=5.89		Mu=-67.63 As=5.89	Mu=-67.79 As=5.89		Mu=-74.25 As=5.89
	Mu=48.78 As=5.89			Mu=22.52 As=5.89			Mu=24.75 As=5.89	
Vu=-74.73	Vu=37.57	Vu=79.84	Vu=-40.67	Vu=-26.47	Vu=47.30	Vu=-46.52	Vu=28.26	Vu=42.46

B=0.40 H=0.50 L=4.34		
Mu=-111.40 As=6.92		Mu=-139.71 As=8.80
	Mu=60.92 As=5.89	
Vu=-87.88	Vu=-45.61	Vu=93.89

V-107B/N+4.45

B=0.40 H=0.50 L=4.34			B=0.40 H=0.50 L=4.48			B=0.40 H=0.50 L=4.48		
Mu=-161.45 As=10.27		Mu=-110.60 As=6.87	Mu=-78.97 As=5.89		Mu=-109.52 As=6.80	Mu=-109.01 As=6.77		Mu=-87.35 As=5.89
	Mu=56.56 As=5.89			Mu=36.62 As=5.89			Mu=30.99 As=5.89	
Vu=-81.51	Vu=43.13	Vu=85.40	Vu=-53.57	Vu=-39.37	Vu=69.56	Vu=-68.79	Vu=40.69	Vu=54.89

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND)

B=0.40 H=0.50 L=4.34		
Mu=-111.68 As=6.94		Mu=-153.15 As=9.71
	Mu=61.67 As=5.89	
Vu=-88.26	Vu=-45.99	Vu=96.28

V-108B/N+4.45

B=0.50 H=0.50 L=4.40			B=0.50 H=0.50 L=4.48			B=0.50 H=0.50 L=4.48		
Mu=-156.65 As=9.80		Mu=-220.11 As=14.11	Mu=-246.93 As=16.00		Mu=-249.56 As=16.19	Mu=-249.65 As=16.19		Mu=-249.12 As=16.15
	Mu=73.37 As=7.36			Mu=116.16 As=7.36			Mu=116.48 As=7.36	
Vu=-107.00	Vu=49.72	Vu=180.63	Vu=-279.76	Vu=49.06	Vu=178.73	Vu=-180.62	Vu=-48.45	Vu=280.66

B=0.50 H=0.50 L=4.40		
Mu=-219.78 As=14.08		Mu=-155.42 As=9.72
	Mu=73.26 As=7.36	
Vu=-180.29	Vu=-49.38	Vu=106.58

V-109B/N+4.45

B=0.50 H=0.50 L=4.34			B=0.50 H=0.50 L=4.48			B=0.50 H=0.50 L=4.48		
Mu=-241.70 As=15.62		Mu=-217.08 As=13.89	Mu=-175.61 As=11.06		Mu=-173.54 As=10.92	Mu=-174.08 As=10.96		Mu=-182.32 As=11.51
	Mu=101.13 As=7.36			Mu=75.44 As=7.36			Mu=74.89 As=7.36	
Vu=-133.71	Vu=-59.58	Vu=235.22	Vu=-209.44	Vu=36.92	Vu=114.07	Vu=-115.26	Vu=-38.11	Vu=212.07

B=0.50 H=0.50 L=4.34		
Mu=-206.89 As=13.19		Mu=-211.40 As=13.50
	Mu=89.46 As=7.36	
Vu=-226.22	Vu=51.18	Vu=125.31

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND)

V-111B/N+4.45

B=0.50 H=0.50 L=4.34			B=0.50 H=0.50 L=4.48			B=0.50 H=0.50 L=4.48		
Mu=-320.40		Mu=-267.95	Mu=-215.88		Mu=-207.45	Mu=-205.50		Mu=-211.87
As=21.43		As=17.51	As=13.81		As=13.23	As=13.09		As=13.53
	Mu=108.35			Mu=84.71			Mu=85.97	
	As=7.84			As=7.36			As=7.36	
Vu=-171.29	Vu=-83.25	Vu=282.55	Vu=-273.58	Vu=47.99	Vu=139.69	Vu=-138.48	Vu=-46.78	Vu=273.58

B=0.50 H=0.50 L=4.34		
Mu=-275.58		Mu=-344.51
As=18.07		As=23.30
	Mu=117.20	
	As=8.62	
Vu=-289.32	Vu=89.89	Vu=177.93

V-112B/N+4.45

B=0.40 H=0.50 L=4.40			B=0.40 H=0.50 L=4.48			B=0.40 H=0.50 L=4.48		
Mu=-200.50		Mu=-228.84	Mu=-209.93		Mu=-192.68	Mu=-192.91		Mu=-209.59
As=13.01		As=15.07	As=13.69		As=12.45	As=12.47		As=13.66
	Mu=63.03			Mu=52.80			Mu=52.85	
	As=5.89			As=5.89			As=5.89	
Vu=-128.78	Vu=-56.99	Vu=198.24	Vu=-185.27	Vu=51.79	Vu=126.04	Vu=-126.16	Vu=-51.91	Vu=185.14

B=0.40 H=0.50 L=4.40		
Mu=-229.29		Mu=-201.40
As=15.10		As=13.07
	Mu=63.11	
	As=5.89	
Vu=-198.45	Vu=57.25	Vu=129.04

V-201B/N+8.90

B=0.30 H=0.50 L=4.37			B=0.30 H=0.50 L=4.43			B=0.30 H=0.50 L=4.43		
Mu=-37.92		Mu=-33.13	Mu=-33.17		Mu=-44.94	Mu=-45.26		Mu=-34.93
As=4.42		As=4.42	As=4.42		As=4.42	As=4.42		As=4.42
	Mu=9.42			Mu=14.84			Mu=13.99	
	As=4.42			As=4.42			As=4.42	
Vu=-20.90	Vu=11.03	Vu=21.45	Vu=-23.22	Vu=-12.59	Vu=22.50	Vu=-22.26	Vu=12.78	Vu=23.42

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND)

B=0.30 H=0.50 L=4.45			B=0.30 H=0.50 L=4.48			B=0.30 H=0.50 L=4.45		
Mu=-32.57		Mu=-32.78	Mu=-31.66		Mu=-29.13	Mu=-30.06		Mu=-34.79
As=4.42		As=4.42	As=4.42		As=4.42	As=4.42		As=4.42
	Mu=10.49			Mu=10.67			Mu=9.47	
	As=4.42			As=4.42			As=4.42	
Vu=-20.89	Vu=-10.26	Vu=19.20	Vu=-18.54	Vu=9.45	Vu=20.09	Vu=-20.36	Vu=-9.72	Vu=19.78

B=0.30 H=0.50 L=4.45			B=0.30 H=0.50 L=4.47			B=0.30 H=0.50 L=4.45		
Mu=-34.58		Mu=-29.75	Mu=-30.58		Mu=-29.18	Mu=-30.50		Mu=-33.36
As=4.42		As=4.42	As=4.42		As=4.42	As=4.42		As=4.42
	Mu=9.19			Mu=7.36			Mu=6.67	
	As=4.42			As=4.42			As=4.42	
Vu=-19.63	Vu=9.67	Vu=20.30	Vu=-20.17	Vu=-9.53	Vu=18.36	Vu=-19.18	Vu=10.27	Vu=20.91

B=0.30 H=0.50 L=4.43			B=0.30 H=0.50 L=4.42			B=0.30 H=0.50 L=4.38		
Mu=-33.20		Mu=-30.34	Mu=-30.38		Mu=-30.27	Mu=-34.01		Mu=-38.26
As=4.42		As=4.42	As=4.42		As=4.42	As=4.42		As=4.42
	Mu=6.64			Mu=6.08			Mu=7.65	
	As=4.42			As=4.42			As=4.42	
Vu=-20.57	Vu=-9.93	Vu=19.31	Vu=-19.49	Vu=9.07	Vu=19.57	Vu=-21.62	Vu=-11.54	Vu=21.87

V-202B/N+8.90

B=0.40 H=0.50 L=9.30			B=0.40 H=0.50 L=9.40			B=0.40 H=0.50 L=9.40		
Mu=-89.84		Mu=-101.67	Mu=-92.72		Mu=-90.43	Mu=-94.60		Mu=-103.99
As=5.89		As=6.29	As=5.89		As=5.89	As=5.89		As=6.44
	Mu=33.89			Mu=30.91			Mu=32.44	
	As=5.89			As=5.89			As=5.89	
Vu=-37.07	Vu=13.25	Vu=41.33	Vu=-37.83	Vu=-9.46	Vu=36.93	Vu=-38.27	Vu=11.17	Vu=39.54

B=0.40 H=0.50 L=9.40		
Mu=-111.15		Mu=-100.39
As=6.91		As=6.21
	Mu=37.05	
	As=5.89	
Vu=-42.78	Vu=-14.41	Vu=39.62

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND)

V-203B/N+8.90

B=0.30 H=0.50 L=4.37			B=0.30 H=0.50 L=4.43			B=0.30 H=0.50 L=4.43		
Mu=-32.23		Mu=-33.03	Mu=-28.55		Mu=-28.53	Mu=-30.28		Mu=-29.75
As=4.42		As=4.42	As=4.42		As=4.42	As=4.42		As=4.42
	Mu=6.61			Mu=6.02			Mu=6.06	
	As=4.42			As=4.42			As=4.42	
Vu=-19.45	Vu=10.47	Vu=20.89	Vu=-19.13	Vu=-8.50	Vu=19.02	Vu=-19.11	Vu=-8.47	Vu=18.92

B=0.30 H=0.50 L=4.45			B=0.30 H=0.50 L=4.48			B=0.30 H=0.50 L=4.45		
Mu=-31.16		Mu=-29.25	Mu=-27.85		Mu=-27.06	Mu=-27.60		Mu=-30.59
As=4.42		As=4.42	As=4.42		As=4.42	As=4.42		As=4.42
	Mu=6.23			Mu=6.03			Mu=6.72	
	As=4.42			As=4.42			As=4.42	
Vu=-19.93	Vu=-9.29	Vu=18.92	Vu=-17.98	Vu=7.91	Vu=18.55	Vu=-18.95	Vu=-8.33	Vu=18.81

B=0.30 H=0.50 L=4.45			B=0.30 H=0.50 L=4.47			B=0.30 H=0.50 L=4.45		
Mu=-30.05		Mu=-28.05	Mu=-28.77		Mu=-25.00	Mu=-27.94		Mu=-31.03
As=4.42		As=4.42	As=4.42		As=4.42	As=4.42		As=4.42
	Mu=6.48			Mu=7.61			Mu=7.01	
	As=4.42			As=4.42			As=4.42	
Vu=-18.50	Vu=8.36	Vu=19.00	Vu=-19.43	Vu=-8.79	Vu=16.97	Vu=-18.14	Vu=8.90	Vu=19.54

B=0.30 H=0.50 L=4.43			B=0.30 H=0.50 L=4.42			B=0.30 H=0.50 L=4.38		
Mu=-32.28		Mu=-33.75	Mu=-34.36		Mu=-30.00	Mu=-31.17		Mu=-35.80
As=4.42		As=4.42	As=4.42		As=4.42	As=4.42		As=4.42
	Mu=10.80			Mu=11.18			Mu=7.16	
	As=4.42			As=4.42			As=4.42	
Vu=-21.17	Vu=-10.53	Vu=19.28	Vu=-19.67	Vu=9.86	Vu=20.44	Vu=-20.17	Vu=10.21	Vu=20.63

V-204B/N+8.90

B=0.30 H=0.50 L=4.40			B=0.30 H=0.50 L=4.48			B=0.30 H=0.50 L=4.48		
Mu=-41.22		Mu=-36.60	Mu=-34.54		Mu=-35.85	Mu=-34.67		Mu=-34.02
As=4.42		As=4.42	As=4.42		As=4.42	As=4.42		As=4.42
	Mu=8.24			Mu=7.17			Mu=6.93	
	As=4.42			As=4.42			As=4.42	
Vu=-22.88	Vu=13.34	Vu=23.74	Vu=-21.63	Vu=-10.98	Vu=21.18	Vu=-20.77	Vu=10.80	Vu=21.45

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND)

B=0.30 H=0.50 L=4.40		
Mu=-36.15 As=4.42		Mu=-42.72 As=4.42
	Mu=8.54 As=4.42	
Vu=-23.13	Vu=13.01	Vu=23.42

V-205B/N+8.90

B=0.40 H=0.50 L=4.40			B=0.40 H=0.50 L=4.48			B=0.40 H=0.50 L=4.48		
Mu=-64.83 As=5.89		Mu=-50.83 As=5.89	Mu=-51.53 As=5.89		Mu=-50.23 As=5.89	Mu=-48.93 As=5.89		Mu=-53.44 As=5.89
	Mu=15.10 As=5.89			Mu=10.31 As=5.89			Mu=10.69 As=5.89	
Vu=-34.67	Vu=20.92	Vu=34.27	Vu=-30.91	Vu=-16.71	Vu=28.84	Vu=-28.34	Vu=17.45	Vu=31.65

B=0.40 H=0.50 L=4.40		
Mu=-49.47 As=5.89		Mu=-65.37 As=5.89
	Mu=13.46 As=5.89	
Vu=-33.05	Vu=20.89	Vu=34.77

V-206B/N+8.90

B=0.40 H=0.50 L=4.40			B=0.40 H=0.50 L=4.48			B=0.40 H=0.50 L=4.48		
Mu=-70.50 As=5.89		Mu=-61.43 As=5.89	Mu=-53.27 As=5.89		Mu=-53.43 As=5.89	Mu=-53.62 As=5.89		Mu=-54.37 As=5.89
	Mu=14.10 As=5.89			Mu=10.69 As=5.89			Mu=10.87 As=5.89	
Vu=-36.28	Vu=24.26	Vu=38.13	Vu=-31.42	Vu=-17.26	Vu=30.74	Vu=-30.77	Vu=17.64	Vu=31.84

B=0.40 H=0.50 L=4.40		
Mu=-62.22 As=5.89		Mu=-67.51 As=5.89
	Mu=15.09 As=5.89	
Vu=-39.00	Vu=-25.12	Vu=35.39

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND)

V-207B/N+8.90

B=0.30 H=0.50 L=4.40			B=0.30 H=0.50 L=4.48			B=0.30 H=0.50 L=4.48		
Mu=-59.57		Mu=-47.08	Mu=-42.15		Mu=-44.18	Mu=-44.50		Mu=-41.96
As=4.42		As=4.42	As=4.42		As=4.42	As=4.42		As=4.42
	Mu=11.91			Mu=8.84			Mu=8.90	
	As=4.42			As=4.42			As=4.42	
Vu=-29.86	Vu=-19.45	Vu=27.74	Vu=-24.30	Vu=14.50	Vu=25.15	Vu=-25.24	Vu=-14.59	Vu=24.20

B=0.30 H=0.50 L=4.40		
Mu=-48.19		Mu=-58.54
As=4.42		As=4.42
	Mu=11.71	
	As=4.42	
Vu=-28.60	Vu=19.13	Vu=29.54

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND)

V-101B/N+4.45

B=0.40 H=0.50 L=4.37			B=0.40 H=0.50 L=4.43			B=0.40 H=0.50 L=4.43		
Mu=-126.21		Mu=-145.29	Mu=-130.38		Mu=-130.16	Mu=-139.29		Mu=-153.81
As=7.90		As=9.17	As=8.17		As=8.16	As=12.70		As=13.68
	Mu=48.43			Mu=43.46			Mu=50.10	
	As=5.89			As=5.89			As=6.96	
Vu=-94.66	Vu=40.16	Vu=105.08	Vu=-89.89	Vu=-32.09	Vu=88.96	Vu=-99.81	Vu=-32.95	Vu=125.63

B=0.40 H=0.50 L=4.45			B=0.40 H=0.50 L=4.48			B=0.40 H=0.50 L=4.45		
Mu=-147.84		Mu=-132.18	Mu=-129.57		Mu=-148.97	Mu=-153.83		Mu=-144.56
As=12.87		As=11.82	As=11.55		As=12.85	As=13.74		As=13.11
	Mu=42.42			Mu=46.69			Mu=48.13	
	As=6.43			As=6.36			As=7.05	
Vu=-121.46	Vu=30.56	Vu=97.42	Vu=-96.83	Vu=-29.95	Vu=145.43	Vu=-148.42	Vu=34.43	Vu=101.31

B=0.40 H=0.50 L=4.45			B=0.40 H=0.50 L=4.47			B=0.50 H=0.50 L=4.45		
Mu=-144.86		Mu=-153.22	Mu=-147.51		Mu=-137.41	Mu=-157.79		Mu=-181.71
As=12.91		As=13.47	As=12.89		As=12.21	As=15.67		As=17.27
	Mu=48.77			Mu=42.82			Mu=57.58	
	As=6.84			As=6.41			As=9.50	
Vu=-101.59	Vu=-34.71	Vu=148.25	Vu=-143.64	Vu=32.12	Vu=98.99	Vu=-169.33	Vu=-31.87	Vu=172.89

B=0.40 H=0.50 L=4.43			B=0.40 H=0.50 L=4.42			B=0.40 H=0.50 L=4.38		
Mu=-184.01		Mu=-157.46	Mu=-156.06		Mu=-180.02	Mu=-189.67		Mu=-138.12
As=11.84		As=10.00	As=13.62		As=15.27	As=14.74		As=11.19
	Mu=59.05			Mu=57.92			Mu=63.22	
	As=5.89			As=7.23			As=6.52	
Vu=-173.39	Vu=38.84	Vu=112.97	Vu=-112.24	Vu=-38.11	Vu=171.99	Vu=-178.21	Vu=-36.27	Vu=106.85

V-104B/N+4.45

B=0.40 H=0.50 L=4.37			B=0.40 H=0.50 L=4.43			B=0.40 H=0.50 L=4.43		
Mu=-116.31		Mu=-131.28	Mu=-103.29		Mu=-102.65	Mu=-124.62		Mu=-144.46
As=7.25		As=8.23	As=6.40		As=6.36	As=7.79		As=9.12
	Mu=46.51			Mu=20.66			Mu=47.38	
	As=5.89			As=5.89			As=5.89	
Vu=-91.46	Vu=34.65	Vu=99.58	Vu=-65.06	Vu=-27.82	Vu=64.56	Vu=-94.68	Vu=-27.82	Vu=122.14

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND)

B=0.40 H=0.50 L=4.45			B=0.40 H=0.50 L=4.48			B=0.40 H=0.50 L=4.45		
Mu=-139.24		Mu=-124.28	Mu=-121.61		Mu=-140.69	Mu=-145.51		Mu=-135.15
As=12.14		As=11.14	As=10.85		As=12.12	As=9.19		As=8.49
	Mu=40.39			Mu=44.55			Mu=48.00	
	As=6.17			As=6.12			As=5.89	
Vu=-117.89	Vu=27.32	Vu=94.18	Vu=-93.76	Vu=-26.89	Vu=141.92	Vu=-144.72	Vu=30.95	Vu=97.83

B=0.40 H=0.50 L=4.45			B=0.40 H=0.50 L=4.47			B=0.50 H=0.50 L=4.45		
Mu=-134.82		Mu=-143.94	Mu=-139.64		Mu=-129.28	Mu=-148.61		Mu=-171.82
As=12.36		As=12.97	As=12.16		As=11.47	As=14.93		As=16.47
	Mu=47.98			Mu=41.13			Mu=57.60	
	As=6.79			As=6.12			As=9.21	
Vu=-97.78	Vu=-30.90	Vu=144.21	Vu=-140.41	Vu=28.84	Vu=95.72	Vu=-165.38	Vu=-27.92	Vu=171.06

B=0.40 H=0.50 L=4.43			B=0.40 H=0.50 L=4.42			B=0.40 H=0.50 L=4.38		
Mu=-173.43		Mu=-146.12	Mu=-145.64		Mu=-170.37	Mu=-177.89		Mu=-125.32
As=15.09		As=13.22	As=12.86		As=14.55	As=14.08		As=10.51
	Mu=52.50			Mu=52.67			Mu=59.30	
	As=7.35			As=6.99			As=6.54	
Vu=-169.22	Vu=34.11	Vu=108.24	Vu=-107.89	Vu=-33.75	Vu=168.19	Vu=-173.28	Vu=-31.30	Vu=101.61

V-110B/N+4.45

B=0.50 H=0.50 L=4.40			B=0.50 H=0.50 L=4.48			B=0.50 H=0.50 L=4.48		
Mu=-218.19		Mu=-250.37	Mu=-236.52		Mu=-205.16	Mu=-205.61		Mu=-236.71
As=18.42		As=20.69	As=20.01		As=17.82	As=17.66		As=19.83
	Mu=75.92			Mu=76.44			Mu=76.76	
	As=9.91			As=9.40			As=9.23	
Vu=-140.35	Vu=-59.26	Vu=250.29	Vu=-243.23	Vu=53.16	Vu=137.58	Vu=-137.81	Vu=-53.38	Vu=243.33

B=0.50 H=0.50 L=4.40		
Mu=-250.01		Mu=-218.60
As=20.56		As=18.34
	Mu=75.72	
	As=9.79	
Vu=-250.06	Vu=59.33	Vu=140.42

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND)

V-113B/N+4.45

B=0.30 H=0.50 L=2.30		
Mu=-69.14 As=4.42		Mu=-0.00 As=4.42
	Mu=0.00 As=4.42	
Vu=-76.82	Vu=-38.41	Vu=0.00

V-114B/N+4.45

B=0.30 H=0.50 L=2.30		
Mu=-0.00 As=4.42		Mu=-69.14 As=4.42
	Mu=0.00 As=4.42	
Vu=0.00	Vu=38.41	Vu=76.82

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND.)

Columnas F-1, F-5, F-6, F-8, F-9, D'-1, D'-5, D'-9, C'-1, C'-3, C'-5, C'-7, C'-9, B'-1, B'-5, B'-9, A-1, A-5, A-6, A-8, A-9

Nivel	H Libre	Losa	B	H	M1	M2	P	V1	V2	Cuantia	m/mr	Rap	Ras
N+8.90					26.77	39.06				12/#5 (1.2%)	0.28		
	3.95	.50	.45	.45			-31.23	11.78	16.92			0	0
					-23.26	-39.82				12/#5 (1.2%)	0.27		
N+4.45					83.58	88.31				12/#5 (1.2%)	0.70		
	4.00	.50	.45	.45			-129.31	40.40	43.88			0	0
		1.20			-98.23	-109.17				12/#5 (1.2%)	0.81		

Columnas F-13, D'-13, C'-13, B'-13

Nivel	H Libre	Losa	B	H	M1	M2	P	V1	V2	Cuantia	m/mr	Rap	Ras
N+8.90					2.16	48.46				12/#5 #6 (1.3%)	0.26		
	3.95	.50	.45	.45			-49.45	12.76	19.24			0	0
					17.17	-41.85				12/#5 #6 (1.3%)	0.23		
N+4.45					14.18	150.95				12/#5 #6 (1.3%)	0.74		
	4.00	.50	.45	.45			-165.66	41.63	76.07			0	0
		1.20			58.57	173.51				12/#5 #6 (1.3%)	0.95		

Columnas D'-2, D'-3, D'-7, C'-2, C'-4, C'-6, C'-8, C'-10, C'-11, C'-12, B'-2, B'-3, B'-7

Nivel	H Libre	Losa	B	H	M1	M2	P	V1	V2	Cuantia	m/mr	Rap	Ras
N+4.45					-19.73	-104.71				12/#5 (1.2%)	0.61		
	4.00	.50	.45	.45			-101.80	19.54	48.88			0	0
		1.20			66.26	110.68				12/#5 (1.2%)	0.77		

Columnas D'-11, B'-11

Nivel	H Libre	Losa	B	H	M1	M2	P	V1	V2	Cuantia	m/mr	Rap	Ras
N+4.45					12.03	182.02				12/#5 #6 (1.3%)	0.87		
	4.00	.50	.45	.45			-183.28	20.83	82.55			0	0
		1.20			33.30	185.34				12/#5 #6 (1.3%)	0.91		

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND.)

Columna A-13

Nivel	H Libre	Losa	B	H	M1	M2	P	V1	V2	Cuantia	m/mr	Rap	Ras
N+8.90					-20.22	-49.48				12/#6 #5 (1.5%)	0.26		
	3.95	.50	.45	.45			-77.12	13.52	19.50			0	0
					29.48	42.04				12/#6 #5 (1.5%)	0.26		
N+4.45					-63.97	-150.29				12/#6 #5 (1.5%)	0.77		
	4.00	.50	.45	.45			-298.48	48.77	75.86			0	0
		1.20			65.22	191.11				12/#6 #5 (1.5%)	0.96		

PROYECTO: CAE - EL REDENTOR, BLOQUE B, BOGOTÁ (CUND.)

Columnas F-2, F-3, F-4, F-7, F-10, F-12, A-2, A-3, A-4, A-7, A-10, A-12

Nivel	H Libre	Losa	B	H	M1	M2	P	V1	V2	Cuantia	m/mr	Rap	Ras
N+8.90					-45.93	-4.92				16/#5 #4 (1.0%)	0.22		
	3.95	.50	.50	.50			-55.36	18.54	16.61			0	0
					-14.43	-67.80				16/#5 #4 (1.0%)	0.33		
N+4.45					101.59	63.11				16/#5 #4 (1.0%)	0.53		
	4.00	.50	.50	.50			-130.59	59.13	45.70			0	0
		1.20			143.40	108.14				16/#5 #4 (1.0%)	0.80		

Columna F-11

Nivel	H Libre	Losa	B	H	M1	M2	P	V1	V2	Cuantia	m/mr	Rap	Ras
N+8.90					27.84	164.77				16/#5 #4 (1.0%)	0.75		
	3.95	.50	.50	.50			-123.83	17.62	90.96			0	0
					-12.91	-240.68				16/#5 (1.3%)	0.91		
N+4.45					-63.06	-98.10				16/#5 (1.3%)	0.43		
	4.00	.50	.50	.50			-366.89	54.21	65.01			0	0
		1.20			81.28	196.75				16/#4 #5 (1.0%)	0.92		

Columna A-11

Nivel	H Libre	Losa	B	H	M1	M2	P	V1	V2	Cuantia	m/mr	Rap	Ras
N+8.90					-19.71	-173.53				16/#6 #5 (1.5%)	0.58		
	3.95	.50	.50	.50			-126.29	15.32	106.42			0	0
					11.19	300.14				16/#6 (1.8%)	0.88		
N+4.45					128.94	44.16				16/#6 (1.8%)	0.40		
	4.00	.50	.50	.50			-198.58	65.70	57.25			0	0
		1.20			-83.71	-183.91				16/#5 #6 (1.5%)	0.66		

6. DISEÑO DE ELEMENTOS METÁLICOS

DISEÑO DE ELEMENTOS METÁLICOS

DISEÑO DE ELEMENTOS METÁLICOS
AISC360-10
BLOQUE B

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

Steel Design Code	: AISC360-10
Time History Type	: Step-by-Step
Frame Type	: IMF
Seismic Design Category	: D
Importance Factor	: 1.
System Rho	: 1.
System Sds	: 0.5
System R	: 8.
System Omega0	: 3.
System Cd	: 5.5
Design Provision	: LRFD
Design Analysis Method	: Direct Analysis
Second Order Analysis Method	: General 2nd Order
Stiffness Reduction Method	: Tau-b Fixed
Phi(Bending)	: 0.9
Phi(Compression)	: 0.9
Phi(Tension-Yielding)	: 0.9
Phi(Tension-Fracture)	: 0.75
Phi(Shear)	: 0.9
Phi(Shear Rolled I)	: 1.
Phi(Shear-Torsion)	: 0.9
Ignore Seismic Code?	: No
Ignore Special Seismic Load?	: No
Is Doubler Plate Plug Welded?	: Yes
HSS Welding Type	: ERW
Reduce HSS Thickness?	: No
Consider Deflection?	: Yes
Deflection Check Type	: Both
DL Limit, L /	: 120
Super DL+LL Limit, L /	: 120
Live Load Limit, L /	: 360
Total Load Limit, L /	: 240
Total--Camber Limit, L/	: 240
DL Limit, abs	: 0.0254
Super DL+LL Limit, abs	: 0.0254
Live Load Limit, abs	: 0.0254
Total Load Limit, abs	: 0.0254
Total--Camber Limit, abs	: 0.0254
Pattern Live Load Factor	: 0.75
Stress Ratio Limit	: 0.95
Maximum Auto Iteration	: 1

C O L U M N S T E E L S T R E S S C H E C K O U T P U T (AISC360-10)

STORY LEVEL	COLUMN LINE	SECTION ID	MOMENT INTERACTION CHECK COMBO	RATIO	= AXL +	B33 +	B22	SHEAR22 COMBO	SHEAR22 RATIO	SHEAR33 COMBO	SHEAR33 RATIO
N+17.00	C14-1	TEC1-150X150						COMDIS3	0.003	COMDIS11	0.001
			COMDIS3(C)	0.064	= 0.009	+ 0.044	+ 0.011				
N+17.00	C16-1	TEC1-150X150						COMDIS3	0.008	COMDIS4	0.003
			COMDIS3(C)	0.183	= 0.019	+ 0.152	+ 0.013				
N+17.00	C18-1	TEC1-150X150						COMDIS3	0.016	COMDIS8	0.007
			COMDIS3(C)	0.279	= 0.040	+ 0.231	+ 0.008				
N+17.00	C20-1	TEC1-150X150						COMDIS3	0.013	COMDIS4	0.001
			COMDIS9(C)	0.499	= 0.398	+ 0.095	+ 0.006				
N+17.00	C21-1	TEC1-150X150						COMDIS3	0.009	COMDIS5	0.001
			COMDIS8(C)	0.259	= 0.240	+ 0.017	+ 0.002				
N+17.00	C23-1	TER3-200X400						COMDIS3	0.023	COMDIS10	0.008
			COMDIS3(C)	0.319	= 0.033	+ 0.237	+ 0.048				
N+17.00	C25-1	TER4-150X250						COMDIS3	0.018	COMDIS8	0.003
			COMDIS8(C)	0.909	= 0.888	+ 0.016	+ 0.006				
N+17.00	C27-1	TER3-200X400						COMDIS3	0.024	COMDIS10	0.009
			COMDIS8(C)	0.437	= 0.338	+ 0.001	+ 0.098				
			COMDIS11(T)	0.089	= 0.000	+ 0.000	+ 0.089				
N+17.00	C29-1	TER4-150X250						COMDIS3	0.015	COMDIS8	0.004
			COMDIS8(C)	0.864	= 0.843	+ 0.019	+ 0.002				
			COMDIS11(T)	0.030	= 0.000	+ 0.026	+ 0.004				
N+17.00	C33-1	TEC1-150X150						COMDIS3	0.007	COMDIS4	0.001
			COMDIS3(C)	0.182	= 0.027	+ 0.147	+ 0.008				

N+17.00	C34-1	TEC1-150X150				COMDIS3	0.018	COMDIS3	0.001
			COMDIS8(C)	0.479	= 0.391 + 0.077 + 0.010				
N+17.00	C36-1	TEC1-150X150				COMDIS3	0.084	COMDIS8	0.010
			COMDIS3(C)	0.714	= 0.013 + 0.674 + 0.028				
			COMDIS10(T)	0.090	= 0.004 + 0.053 + 0.034				
N+17.00	C38-1	TEC1-150X150				COMDIS3	0.013	COMDIS11	0.003
			COMDIS9(C)	0.905	= 0.833 + 0.067 + 0.005				
			COMDIS10(T)	0.089	= 0.005 + 0.040 + 0.044				
N+17.00	C40-1	TEC1-150X150				COMDIS3	0.003	COMDIS6	0.001
			COMDIS3(C)	0.066	= 0.009 + 0.045 + 0.012				

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C O L U M N S P E C I A L S E I S M I C R E Q U I R E M E N T S (AISC360-10)

STORY LEVEL	COLUMN LINE	SECTION ID	SECTION CLASS	/--CONTN. PLATE--//-DOUBLER PLATE--//---B/C RATIOS---/ COMBO	AREA	COMBO	THICK	MAJOR	MINOR
N+17.00	C14-1	TEC1-150X150	Compact						
N+17.00	C16-1	TEC1-150X150	Compact						
N+17.00	C18-1	TEC1-150X150	Compact						
N+17.00	C20-1	TEC1-150X150	Compact						
N+17.00	C21-1	TEC1-150X150	Compact						
N+17.00	C23-1	TER3-200X400	Slender						
N+17.00	C25-1	TER4-150X250	Slender						
N+17.00	C27-1	TER3-200X400	Slender						
N+17.00	C29-1	TER4-150X250	Slender						
N+17.00	C33-1	TEC1-150X150	Compact						
N+17.00	C34-1	TEC1-150X150	Compact						
N+17.00	C36-1	TEC1-150X150	Compact						
N+17.00	C38-1	TEC1-150X150	Compact						
N+17.00	C40-1	TEC1-150X150	Compact						

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B E A M S T E E L S T R E S S C H E C K O U T P U T (AISC360-10)

STORY LEVEL	BEAM BAY	SECTION ID	/----------MOMENT INTERACTION CHECK---------//----SHEAR22---//----SHEAR33---/ COMBO	RATIO	= AXL +	B33 +	B22	COMBO	RATIO	COMBO	RATIO
N+17.00	B13	TER1-150X250						COMDIS8	0.025	COMDIS5	0.003
			COMDIS3(C)	0.325	= 0.011 + 0.246 + 0.069						
N+17.00	B14	TER1-150X250						COMDIS8	0.025	COMDIS3	0.004
			COMDIS3(C)	0.329	= 0.008 + 0.245 + 0.077						
N+17.00	B22	TER1-150X250						COMDIS8	0.024	COMDIS3	0.014
			COMDIS3(C)	0.176	= 0.003 + 0.019 + 0.155						
			COMDIS11(T)	0.031	= 0.002 + 0.027 + 0.002						
N+17.00	B23	TER2-200X400						COMDIS9	0.046	COMDIS3	0.011
			COMDIS9(C)	0.204	= 0.001 + 0.203 + 0.001						
			COMDIS11(T)	0.166	= 0.002 + 0.164 + 0.000						
N+17.00	B24	TER1-150X250						COMDIS8	0.024	COMDIS3	0.014
			COMDIS3(C)	0.159	= 0.003 + 0.017 + 0.138						
			COMDIS11(T)	0.031	= 0.002 + 0.028 + 0.001						
N+17.00	B25	TER1-150X250						COMDIS8	0.023	COMDIS3	0.003
			COMDIS3(C)	0.255	= 0.019 + 0.153 + 0.083						
N+17.00	B26	TER1-150X250						COMDIS8	0.023	COMDIS3	0.003
			COMDIS3(C)	0.231	= 0.010 + 0.166 + 0.055						
N+17.00	B50	TER1-150X250						COMDIS8	0.026	COMDIS3	0.007
			COMDIS3(C)	0.472	= 0.017 + 0.307 + 0.148						
			COMDIS11(T)	0.171	= 0.000 + 0.137 + 0.033						
N+17.00	B51	TER1-150X250						COMDIS8	0.026	COMDIS3	0.007
			COMDIS3(C)	0.453	= 0.009 + 0.294 + 0.150						
			COMDIS11(T)	0.166	= 0.000 + 0.134 + 0.032						
N+17.00	B59	TER1-150X250						COMDIS9	0.029	COMDIS3	0.020
			COMDIS3(C)	0.270	= 0.006 + 0.026 + 0.238						
N+17.00	B60	TER2-200X400						COMDIS9	0.019	COMDIS3	0.043
			COMDIS3(C)	0.250	= 0.004 + 0.035 + 0.210						
N+17.00	B61	TER1-150X250						COMDIS9	0.037	COMDIS3	0.042
			COMDIS3(C)	0.382	= 0.005 + 0.036 + 0.342						
N+17.00	B63	TER1-150X250						COMDIS3	0.024	COMDIS5	0.011
			COMDIS3(C)	0.862	= 0.222 + 0.414 + 0.227						
			COMDIS10(T)	0.158	= 0.000 + 0.133 + 0.025						
N+17.00	B64	TER1-150X250						COMDIS8	0.025	COMDIS3	0.009
			COMDIS3(C)	0.514	= 0.031 + 0.281 + 0.203						
			COMDIS10(T)	0.163	= 0.000 + 0.137 + 0.026						
N+17.00	B65	TER1-150X250						COMDIS9	0.024	COMDIS3	0.006
			COMDIS3(C)	0.429	= 0.036 + 0.270 + 0.123						
N+17.00	B66	TER1-150X250						COMDIS9	0.024	COMDIS3	0.008
			COMDIS3(C)	0.670	= 0.255 + 0.252 + 0.163						
N+17.00	B67	TER1-150X250						COMDIS9	0.012	COMDIS3	0.119
			COMDIS3(C)	0.270	= 0.007 + 0.028 + 0.235						
			COMDIS10(T)	0.045	= 0.003 + 0.014 + 0.029						
N+17.00	B68	TER1-150X250						COMDIS9	0.023	COMDIS3	0.022
			COMDIS3(C)	0.199	= 0.003 + 0.022 + 0.173						
			COMDIS10(T)	0.056	= 0.002 + 0.024 + 0.030						
N+17.00	B69	TER2-200X400						COMDIS8	0.043	COMDIS3	0.030
			COMDIS3(C)	0.246	= 0.004 + 0.074 + 0.169						

N+17.00	B70	TER1-150X250						COMDIS9	0.031	COMDIS3	0.013
			COMDIS3(C)	0.176	= 0.004 + 0.025 + 0.148						
			COMDIS10(T)	0.054	= 0.002 + 0.041 + 0.012						
N+17.00	B78	TER1-150X250						COMDIS8	0.025	COMDIS3	0.006
			COMDIS3(C)	0.516	= 0.010 + 0.384 + 0.122						
N+17.00	B79	TER1-150X250						COMDIS8	0.025	COMDIS3	0.005
			COMDIS3(C)	0.512	= 0.011 + 0.379 + 0.121						

B E A M S P E C I A L S E I S M I C R E Q U I R E M E N T S (AISC360-10)

STORY LEVEL	BEAM BAY	SECTION ID	SECTION CLASS	/----------CONNECTION SHEAR---------/ COMBO	END-I	COMBO	END-J
N+17.00	B13	TER1-150X250	Non-Compact	COMDI	-12.89		
N+17.00	B14	TER1-150X250	Non-Compact				
N+17.00	B22	TER1-150X250	Non-Compact	COMDI	-8.18	COMDI	11.62
N+17.00	B23	TER2-200X400	Compact				
N+17.00	B24	TER1-150X250	Non-Compact	COMDI	-8.92		
N+17.00	B25	TER1-150X250	Non-Compact	COMDI	-11.00		
N+17.00	B26	TER1-150X250	Non-Compact			COMDI	10.70
N+17.00	B50	TER1-150X250	Non-Compact	COMDI	-17.06		
N+17.00	B51	TER1-150X250	Non-Compact			COMDI	15.18
N+17.00	B59	TER1-150X250	Non-Compact			COMDI	8.20
N+17.00	B60	TER2-200X400	Compact				
N+17.00	B61	TER1-150X250	Non-Compact			COMDI	6.02
N+17.00	B63	TER1-150X250	Non-Compact				
N+17.00	B64	TER1-150X250	Non-Compact				
N+17.00	B65	TER1-150X250	Non-Compact	COMDI	-15.56		
N+17.00	B66	TER1-150X250	Non-Compact			COMDI	16.76
N+17.00	B67	TER1-150X250	Non-Compact	COMDI	13.35	COMDI	14.62
N+17.00	B68	TER1-150X250	Non-Compact			COMDI	9.51
N+17.00	B69	TER2-200X400	Compact				
N+17.00	B70	TER1-150X250	Non-Compact			COMDI	7.27
N+17.00	B78	TER1-150X250	Non-Compact				
N+17.00	B79	TER1-150X250	Non-Compact				

B R A C E S T E E L S T R E S S C H E C K O U T P U T (AISC360-10)

STORY LEVEL	BRACE BAY	SECTION ID	/----------MOMENT INTERACTION CHECK---------//----SHEAR22---//----SHEAR33---/ COMBO	RATIO	= AXL +	B33 +	B22	COMBO	RATIO	COMBO	RATIO
N+17.00	D1	TER1-150X250						COMDIS10	0.021	COMDIS3	0.019
			COMDIS3(C)	0.295	= 0.022 + 0.014 + 0.260						
N+17.00	D2	TER2-200X400						COMDIS10	0.017	COMDIS5	0.024
			COMDIS3(C)	0.384	= 0.015 + 0.137 + 0.232						
N+17.00	D3	TER1-150X250						COMDIS10	0.021	COMDIS3	0.019
			COMDIS3(C)	0.302	= 0.021 + 0.020 + 0.260						
N+17.00	D4	TER1-150X250						COMDIS8	0.038	COMDIS3	0.003
			COMDIS9(C)	0.393	= 0.302 + 0.088 + 0.003						
			COMDIS8(T)	0.165	= 0.004 + 0.161 + 0.000						
N+17.00	D5	TER1-150X250						COMDIS8	0.040	COMDIS3	0.002
			COMDIS9(C)	0.463	= 0.364 + 0.097 + 0.002						
			COMDIS10(T)	0.169	= 0.003 + 0.164 + 0.002						
N+17.00	D6	TER1-150X250						COMDIS8	0.039	COMDIS3	0.002
			COMDIS11(C)	0.629	= 0.601 + 0.026 + 0.001						
			COMDIS8(T)	0.168	= 0.002 + 0.162 + 0.004						
N+17.00	D7	TER1-150X250						COMDIS8	0.039	COMDIS3	0.006
			COMDIS9(C)	0.635	= 0.497 + 0.105 + 0.033						
			COMDIS10(T)	0.153	= 0.002 + 0.140 + 0.011						
N+17.00	D8	TER1-150X250						COMDIS9	0.043	COMDIS3	0.034
			COMDIS8(C)	0.360	= 0.226 + 0.079 + 0.055						
N+17.00	D9	TER1-150X250						COMDIS9	0.046	COMDIS3	0.023
			COMDIS8(C)	0.370	= 0.224 + 0.086 + 0.060						
N+17.00	D10	TER2-200X400						COMDIS8	0.057	COMDIS3	0.004
			COMDIS3(C)	0.297	= 0.064 + 0.212 + 0.022						
			COMDIS8(T)	0.345	= 0.001 + 0.343 + 0.001						
N+17.00	D11	TER2-200X400						COMDIS8	0.056	COMDIS3	0.004
			COMDIS9(C)	0.481	= 0.233 + 0.248 + 0.001						
			COMDIS8(T)	0.328	= 0.001 + 0.327 + 0.001						
N+17.00	D12	TER1-150X250						COMDIS9	0.026	COMDIS3	0.021
			COMDIS3(C)	0.198	= 0.040 + 0.036 + 0.122						
			COMDIS9(T)	0.117	= 0.001 + 0.093 + 0.022						
N+17.00	D13	TER1-150X250						COMDIS8	0.027	COMDIS3	0.004
			COMDIS9(C)	0.552	= 0.449 + 0.060 + 0.043						
N+17.00	D14	TER1-150X250						COMDIS8	0.039	COMDIS3	0.002
			COMDIS9(C)	0.366	= 0.275 + 0.090 + 0.001						
			COMDIS8(T)	0.180	= 0.003 + 0.165 + 0.012						
N+17.00	D15	TER1-150X250						COMDIS8	0.040	COMDIS3	0.004
			COMDIS8(C)	0.456	= 0.281 + 0.172 + 0.003						
N+17.00	D16	TER1-150X250						COMDIS8	0.039	COMDIS3	0.005
			COMDIS9(C)	0.589	= 0.492 + 0.091 + 0.006						
			COMDIS8(T)	0.172	= 0.001 + 0.166 + 0.005						
N+17.00	D17	TER1-150X250						COMDIS9	0.039	COMDIS3	0.007

			COMDIS8(C)	0.342	= 0.242 + 0.093 + 0.007					
			COMDIS9(T)	0.179	= 0.002 + 0.151 + 0.026					
N+17.00	D18	TER1-150X250				COMDIS9	0.029	COMDIS3	0.005	
			COMDIS8(C)	0.522	= 0.440 + 0.066 + 0.016					
N+17.00	D19	TER1-150X250				COMDIS8	0.027	COMDIS3	0.015	
			COMDIS9(C)	0.227	= 0.212 + 0.002 + 0.012					
			COMDIS10(T)	0.092	= 0.001 + 0.087 + 0.004					
N+17.00	D20	TER1-150X250				COMDIS8	0.030	COMDIS3	0.022	
			COMDIS8(C)	0.426	= 0.281 + 0.118 + 0.027					
N+17.00	D21	TER2-200X400				COMDIS8	0.036	COMDIS3	0.027	
			COMDIS3(C)	0.310	= 0.036 + 0.035 + 0.239					
N+17.00	D22	TER1-150X250				COMDIS8	0.032	COMDIS3	0.029	
			COMDIS3(C)	0.468	= 0.057 + 0.036 + 0.375					
N+17.00	D24	TER1-150X250				COMDIS8	0.040	COMDIS3	0.009	
			COMDIS9(C)	0.348	= 0.245 + 0.093 + 0.010					
			COMDIS8(T)	0.169	= 0.002 + 0.145 + 0.023					
N+17.00	D25	TER1-150X250				COMDIS8	0.039	COMDIS3	0.013	
			COMDIS9(C)	0.581	= 0.474 + 0.088 + 0.019					
			COMDIS10(T)	0.146	= 0.004 + 0.134 + 0.009					
N+17.00	D26	TER1-150X250				COMDIS9	0.039	COMDIS3	0.004	
			COMDIS8(C)	0.555	= 0.452 + 0.093 + 0.009					
			COMDIS11(T)	0.132	= 0.002 + 0.125 + 0.005					
N+17.00	D27	TER1-150X250				COMDIS9	0.039	COMDIS3	0.001	
			COMDIS8(C)	0.364	= 0.273 + 0.089 + 0.002					
			COMDIS9(T)	0.179	= 0.003 + 0.165 + 0.011					
N+17.00	D28	TER2-200X400				COMDIS8	0.055	COMDIS3	0.020	
			COMDIS8(C)	0.365	= 0.061 + 0.302 + 0.002					
N+17.00	D29	TER1-150X250				COMDIS8	0.043	COMDIS3	0.030	
			COMDIS3(C)	0.385	= 0.085 + 0.022 + 0.278					
N+17.00	D30	TER1-150X250				COMDIS10	0.028	COMDIS3	0.136	
			COMDIS3(C)	0.611	= 0.235 + 0.024 + 0.352					
			COMDIS10(T)	0.107	= 0.001 + 0.083 + 0.024					
N+17.00	D31	TER1-150X250				COMDIS4	0.015	COMDIS3	0.216	
			COMDIS3(C)	0.947	= 0.043 + 0.049 + 0.856					
N+17.00	D32	TER2-200X400				COMDIS9	0.038	COMDIS5	0.015	
			COMDIS3(C)	0.337	= 0.028 + 0.095 + 0.214					
N+17.00	D33	TER1-150X250				COMDIS9	0.045	COMDIS3	0.022	
			COMDIS9(C)	0.466	= 0.089 + 0.343 + 0.034					
			COMDIS9(T)	0.323	= 0.002 + 0.260 + 0.061					
N+17.00	D34	TER1-150X250				COMDIS9	0.040	COMDIS3	0.002	
			COMDIS8(C)	0.570	= 0.474 + 0.089 + 0.007					
			COMDIS11(T)	0.155	= 0.005 + 0.149 + 0.000					
N+17.00	D35	TER1-150X250				COMDIS9	0.038	COMDIS3	0.004	
			COMDIS8(C)	0.393	= 0.300 + 0.090 + 0.003					
			COMDIS9(T)	0.164	= 0.004 + 0.159 + 0.001					
N+17.00	D36	TER1-150X250				COMDIS9	0.034	COMDIS3	0.027	
			COMDIS3(C)	0.572	= 0.059 + 0.045 + 0.469					
N+17.00	D37	TER1-150X250				COMDIS11	0.022	COMDIS3	0.032	
			COMDIS3(C)	0.508	= 0.024 + 0.026 + 0.459					
N+17.00	D38	TER2-200X400				COMDIS11	0.015	COMDIS3	0.045	
			COMDIS3(C)	0.487	= 0.017 + 0.042 + 0.428					
N+17.00	D39	TER1-150X250				COMDIS11	0.021	COMDIS3	0.033	
			COMDIS3(C)	0.510	= 0.024 + 0.026 + 0.460					
N+17.00	D61	TER2-200X400				COMDIS9	0.053	COMDIS5	0.006	
			COMDIS9(C)	0.273	= 0.033 + 0.239 + 0.000					
			COMDIS11(T)	0.217	= 0.000 + 0.217 + 0.000					
N+17.00	D62	TER2-200X400				COMDIS9	0.019	COMDIS5	0.006	
			COMDIS9(C)	0.403	= 0.078 + 0.325 + 0.001					
N+17.00	D63	TER2-200X400				COMDIS9	0.072	COMDIS5	0.004	
			COMDIS9(C)	0.981	= 0.452 + 0.529 + 0.000					

B R A C E S P E C I A L S E I S M I C R E Q U I R E M E N T S (AISC360-10)

STORY LEVEL	BRACE BAY	SECTION ID	SECTION CLASS	/----------CONNECTION FORCE---------/ COMBO	END-I	COMBO	END-J
N+17.00	D1	TER1-150X250	Non-Compact	COMDI	-59.18	COMDI	-22.14
N+17.00	D2	TER2-200X400	Compact	COMDI	-161.73	COMDI	-86.22
N+17.00	D3	TER1-150X250	Non-Compact	COMDI	-58.59	COMDI	-21.55
N+17.00	D4	TER1-150X250	Non-Compact	COMDI	-30.67	COMDI	-24.18
N+17.00	D5	TER1-150X250	Non-Compact	COMDI	-41.26	COMDI	-24.92
N+17.00	D6	TER1-150X250	Non-Compact	COMDI	-50.52	COMDI	-44.04
N+17.00	D7	TER1-150X250	Non-Compact	COMDI	-56.31	COMDI	-35.89
N+17.00	D8	TER1-150X250	Non-Compact	COMDI	-18.60	COMDI	-16.77
N+17.00	D9	TER1-150X250	Non-Compact	COMDI	-18.53	COMDI	-17.89
N+17.00	D10	TER2-200X400	Compact	COMDI	-67.90	COMDI	-34.20
N+17.00	D11	TER2-200X400	Compact	COMDI	-127.57	COMDI	-61.23
N+17.00	D12	TER1-150X250	Non-Compact	COMDI	-14.81	COMDI	-12.92
N+17.00	D13	TER1-150X250	Non-Compact	COMDI	-50.85	COMDI	-41.40
N+17.00	D14	TER1-150X250	Non-Compact	COMDI	-25.77	COMDI	-19.14
N+17.00	D15	TER1-150X250	Non-Compact	COMDI	-36.13	COMDI	-15.25
N+17.00	D16	TER1-150X250	Non-Compact	COMDI	-46.19	COMDI	-39.56
N+17.00	D17	TER1-150X250	Non-Compact	COMDI	-19.99	COMDI	-15.83
N+17.00	D18	TER1-150X250	Non-Compact	COMDI	-36.26	COMDI	-29.78
N+17.00	D19	TER1-150X250	Non-Compact	COMDI	-24.04	COMDI	-13.43

N+17.00	D20	TER1-150X250	Non-Compact	COMDI	-31.83	COMDI	-23.95
N+17.00	D21	TER2-200X400	Compact	COMDI	-91.99	COMDI	-75.93
N+17.00	D22	TER1-150X250	Non-Compact	COMDI	-27.00	COMDI	-19.12
N+17.00	D24	TER1-150X250	Non-Compact	COMDI	-20.55	COMDI	-13.67
N+17.00	D25	TER1-150X250	Non-Compact	COMDI	-40.80	COMDI	-34.17
N+17.00	D26	TER1-150X250	Non-Compact	COMDI	-37.25	COMDI	-25.77
N+17.00	D27	TER1-150X250	Non-Compact	COMDI	-25.09	COMDI	-18.54
N+17.00	D28	TER2-200X400	Compact	COMDI	-63.22	COMDI	-42.33
N+17.00	D29	TER1-150X250	Non-Compact	COMDI	-18.51	COMDI	-17.10
N+17.00	D30	TER1-150X250	Non-Compact	COMDI	-37.88	COMDI	-36.47
N+17.00	D31	TER1-150X250	Non-Compact	COMDI	-36.75	COMDI	-29.61
N+17.00	D32	TER2-200X400	Compact	COMDI	-160.17	COMDI	-59.91
N+17.00	D33	TER1-150X250	Non-Compact	COMDI	-64.67	COMDI	-30.21
N+17.00	D34	TER1-150X250	Non-Compact	COMDI	-39.05	COMDI	-31.58
N+17.00	D35	TER1-150X250	Non-Compact	COMDI	-30.01	COMDI	-23.60
N+17.00	D36	TER1-150X250	Non-Compact	COMDI	-82.31	COMDI	-45.28
N+17.00	D37	TER1-150X250	Non-Compact	COMDI	-58.64	COMDI	-21.61
N+17.00	D38	TER2-200X400	Compact	COMDI	-161.59	COMDI	-86.08
N+17.00	D39	TER1-150X250	Non-Compact	COMDI	-62.65	COMDI	-25.62
N+17.00	D61	TER2-200X400	Compact	COMDI	-61.23	COMDI	-52.07
N+17.00	D62	TER2-200X400	Compact	COMDI	-168.66	COMDI	-164.73
N+17.00	D63	TER2-200X400	Compact	COMDI	-180.14	COMDI	-129.80

::

7. DISEÑO DE ELEMENTOS COMPLEMENTARIOS

DISEÑO DE ELEMENTOS COMPLEMENTARIOS

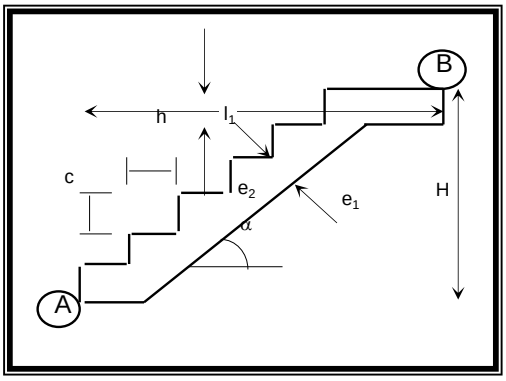
DISEÑO DE ESCALERA

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

ESCALERA TIPO 1

Diseño Tramos Inclinados

El diseño se realiza para el tramo inclinado de la escalera mas largo.



Geometría de la losa

l_1 =	**3.40**	m	fy =	**420**	MPa
H =	**1.56**	m	f'c =	**21.1**	MPa
c =	**17.3**	cm	h =	**29**	cm

Espesor escogido: **15** **cm**
Pendiente α = h/l1 : 30.818 °

Cargas

Peso propio de la losa	0.15x100x24/cos29.97°	4.19	kN/m²
Peso propio de peldaños	1/2x(0.18x0.30)/0.30x24	0.00	kN/m²
Acabado peldaños	0.04x(0.18+0.30)/0.30x22	1.40	kN/m²
Afinado Inferior	0.02x22/cos29.97°	0.51	kN/m²
Sobrecarga		5.00	kN/m²
		15.33	**kN/m²**

CU = ***15.33*** **kN/m²**

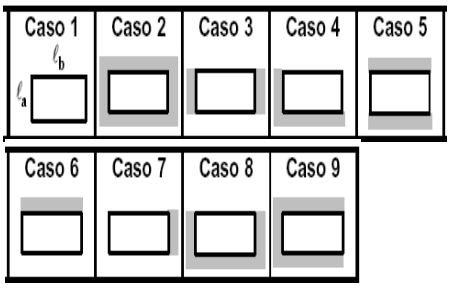
Diseño Tramo Inclinado

Momentos en tramo A-B. M= **17.72** kN-m

Cuantía: 0.0030 Asmín = 2.4 cm²/m
As 4.56 cm²/m *Colocar 1#4 c/.20 longitudinalmente*
Colocar 1#3 c/.20 transversalmente

DISEÑO DE TORTA PLACA ALIGERADA
PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
ZONA AUDITORIO

El diseño de la placa maciza se realiza de acuerdo con lo establecido en C.13.9 de las NSR - 10



Geometría de la losa

la =	**0.93**	m	fy =	**420**	MPa
lb =	**0.93**	m	f'c =	**21.1**	MPa
Relación m =	**1.00**				

h = l/36 = 26 mm

Espesor escogido: **0.05** **m**

Cargas

Peso propio de la losa	0.05x24	1.20	kN/m²
Acabados	0.05x22	1.10	kN/m²
Carga Muerta adicional	0.50	0.50	kN/m²
Carga Muerta Total		2.80	kN/m²
Carga Viva	5.00	5.00	kN/m²
Carga Última		11.36	kN/m²

Tipo de soporte CASO Nº 2

DISEÑO A MOMENTO FLECTOR

Coeficientes para momento positivo por carga muerta y viva:

C_{aD} =	0.018
C_{bD} =	0.018
C_{aV} =	0.027
C_{bV} =	0.027

Mu_a =	**0.16**	kN.m	*Cuantía:*	0.0020	*As =*	1.00 cm²/m
Mu_b =	**0.16**	kN.m	*Cuantía:*	0.0020	*As =*	1.00 cm²/m

Coeficientes para momento negativo por carga última:

C_a =	0.045	Mu_a =	**0.44**	kN.m	*Cuantía:*	0.0027	*As =*	1.36 cm²/m
C_b =	0.045	Mu_b =	**0.44**	kN.m	*Cuantía:*	0.0027	*As =*	1.36 cm²/m

Distribución de refuerzo:

Colocar 1malla Φ5.50mm c/.15 Transversal y longitudinalmente.

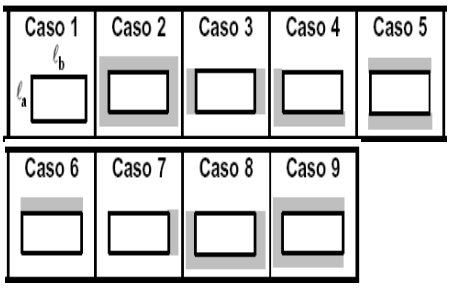
REVISIÓN A CORTANTE

Coeficientes de relación de carga en las dos direcciones para cortante:

W_a =	0.50		
W_b =	0.50		
$\phi v c$ =	**0.574**	**MPa**	
$\phi v u_a$ =	**0.053**	**MPa**	**OK**
$\phi v u_b$ =	**0.053**	**MPa**	**OK**

DISEÑO DE TORTA PLACA ALIGERADA
PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
ZONA OFICINAS

El diseño de la placa maciza se realiza de acuerdo con lo establecido en C.13.9 de las NSR - 10



Geometría de la losa

la =	**0.93**	m	fy =	**420**	MPa
lb =	**0.93**	m	f'c =	**21.1**	MPa
Relación m =	**1.00**				

h = l/36 = 26 mm

Espesor escogido: **0.05** **m**

Cargas

Peso propio de la losa	0.05x24	1.20	kN/m²
Acabados	0.05x22	1.10	kN/m²
Carga Muerta adicional	0.50	0.50	kN/m²
Carga Muerta Total		2.80	kN/m²
Carga Viva	5.00	2.00	kN/m²
Carga Última		6.56	kN/m²

Tipo de soporte CASO Nº 2

DISEÑO A MOMENTO FLECTOR

Coeficientes para momento positivo por carga muerta y viva:

C_{aD} =	0.018
C_{bD} =	0.018
C_{aV} =	0.027
C_{bV} =	0.027

Mu_a =	**0.09**	kN.m	*Cuantía:*	0.0020	*As =*	1.00 cm²/m
Mu_b =	**0.09**	kN.m	*Cuantía:*	0.0020	*As =*	1.00 cm²/m

Coeficientes para momento negativo por carga última:

C_a =	0.045	Mu_a =	**0.26**	kN.m	*Cuantía:*	0.0020	*As =*	1.00 cm²/m
C_b =	0.045	Mu_b =	**0.26**	kN.m	*Cuantía:*	0.0020	*As =*	1.00 cm²/m

Distribución de refuerzo:

Colocar 1malla Φ4.50mm c/.15 Transversal y longitudinalmente.

REVISIÓN A CORTANTE

Coeficientes de relación de carga en las dos direcciones para cortante:

W_a =	0.50		
W_b =	0.50		
$\phi v c$ =	**0.574**	**MPa**	
$\phi v u_a$ =	**0.031**	**MPa**	**OK**
$\phi v u_b$ =	**0.031**	**MPa**	**OK**

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
DISEÑO DE UNIONES DE ELEMENTOS METÁLICOS-CONCRETO

CARGAS

M=	**47.65**	**kN.m**
P=	**147.15**	**kN**

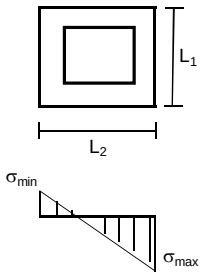
MATERIALES

f'c=	**21000**	**kN/m^2**	
fy=	**253000**	**kN/m^2**	**platina**
fy=	**253000**	**kN/m^2**	**pernos**
ex=	**0.324**	**m**	

DATOS DEL PERFIL

H=	**0.40**	m.
B=	**0.20**	m.

1. DIMENSIONAMIENTO EN PLANTA DE LA PLATINA



f'c >= Esfuerzo sobre la platina σ_h

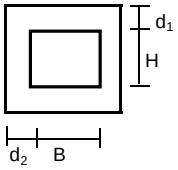
σ_h = P / L^2 =

L_1(asumido)= 0.45 m.
L_2(asumido)= 0.45 m.

σ_{min} = -1084.8519 kN/m **OK.**
σ_{max} = 1738.8519 kN/m **OK.**

σ_{med} = 358.374486

2. ESPESOR DE LA PLATINA

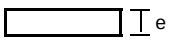


Datos del perfil:

H=	**0.4000**	**m**
B=	**0.2000**	**m**
d_1 =	0.025	m
d_2 =	0.145	m

M_1=	0.40 kN.m	V=	41.510 kN
M_2=	3.44 kN.m	V=	47.415 kN

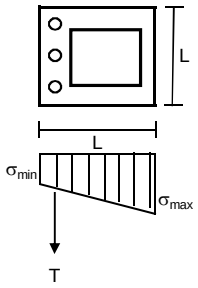
$M_{diseño}$ = 3.44 kN.m



$e_{requerido}$ = 0.90 cm
$e_{colocado}$ = 1.30 cm

Colocar una platina de 450x450x1/2" A36

3. DISEÑO DE PERNOS



Calculando momentos respecto al ala derecha del perfil:

T= -32.34 kN

Area req. = **2.273 cm^2**

Colocar 3 pernos diametro 1/2" en cada lado

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
DISEÑO DE UNIONES DE ELEMENTOS METÁLICOS-CONCRETO

CARGAS

M=	**1.146 kN.m**	
P=	**81.9 kN**	

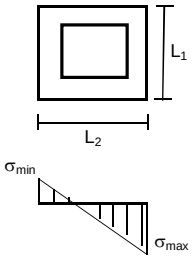
MATERIALES

f'c=	**21000 kN/m^2**	
fy=	**253000 kN/m^2**	**platina**
fy=	**253000 kN/m^2**	**pernos**
ex=	**0.014 m**	

DATOS DEL PERFIL

H=	**0.15** m.
B=	**0.15** m.

1. DIMENSIONAMIENTO EN PLANTA DE LA PLATINA



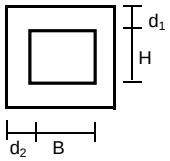
f'c >= Esfuerzo sobre la platina σ_h

$\sigma_h = P / L^2 =$

L_1(asumido)= 0.30 m.
L_2(asumido)= 0.30 m.

σ_{min} =	196.6 kN/m	**OK.**	σ_{med} =	275.865
σ_{max} =	349.4 kN/m	**OK.**		

2. ESPESOR DE LA PLATINA

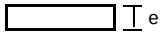


Datos del perfil:

H=	**0.1500 m**
B=	**0.1500 m**
d_1 =	0.075 m
d_2 =	0.090 m

M_1=	0.91 kN.m	V=	24.773 kN
M_2=	1.11 kN.m	V=	24.57 kN

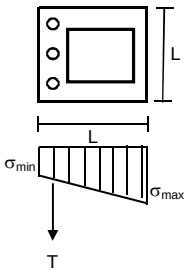
$M_{diseño}$ = 1.11 kN.m



$e_{requerido}$ =	**0.51 cm**
$e_{colocado}$ =	**1.30 cm**

Colocar una platina de 300x300x1/2" A36

3. DISEÑO DE PERNOS



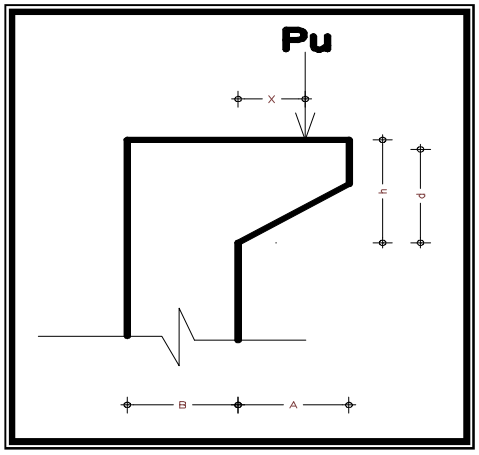
Calculando momentos respecto al ala derecha del perfil:

T= 34.84 kN

Area req. = **2.448 cm^2**

Colocar 2 pernos diametro 1/2" en cada lado

DISEÑO DE MÉNSULA TIPO M1
PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

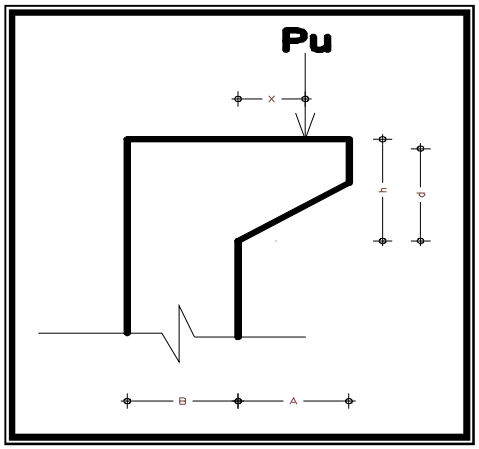


Geometría de la ménsula

B =	**0.50**	m	fy =	**420**	MPa
A =	**0.30**	m	f'c =	**21.1**	MPa
Ancho:	**0.50**	m	h =	**0.5**	m
d =	**0.45**	m			
x =	**0.15**	m			

Pu :	**180.20**	kN			
Nu :	**36.04**	kN			
Avf:	**3.61**	cm²			
Mu:	**28.83**	kN-m			
Cuantía:	0.0020				
Af	**4.50**	cm²			
An	**1.01**	cm²	***Asmin***	*4.52*	cm²
As	**5.51**	cm²	**>** ***As***	*3.41*	cm²
As escojido	**5.51**	cm²	*3#5 Arriba*		
Ah	**2.25**	cm²	**>** ***Ah***	1.20	cm²
Ah escojido	**2.25**	cm²	*2 Flejes #3 c/.20 repartidos en 2/3 de la altura efectiva*		

DISEÑO DE MÉNSULA TIPO M2
PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

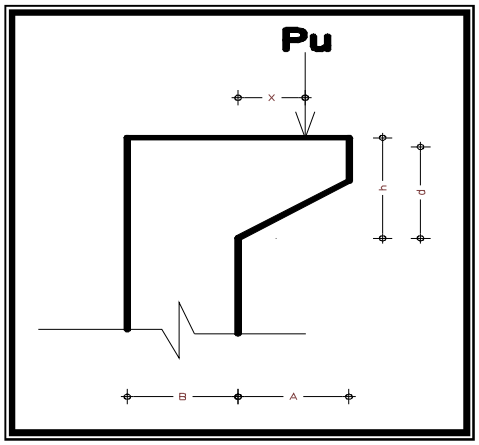


Geometría de la ménsula

B =	**0.50**	m	fy =	**420**	MPa
A =	**0.75**	m	f'c =	**21.1**	MPa
Ancho:	**0.50**	m	h =	**0.5**	m
d =	**0.45**	m			
x =	**0.50**	m			

Pu :	**180.20**	kN	
Nu :	**36.04**	kN	
Avf:	**3.61**	cm²	
Mu:	**91.90**	kN-m	
Cuantía:	0.0022		
Af	**4.99**	cm²	
An	**1.01**	cm²	***Asmin*** *4.52* cm²
As	**6.00**	cm²	**>** ***As*** *3.41* cm²
As escojido	**6.00**	cm²	*3#6 Arriba*
Ah	**2.50**	cm²	**>** ***Ah*** 1.20 cm²
Ah escojido	**2.50**	cm²	*2 Flejes #3 c/.20 repartidos en 2/3 de la altura efectiva*

DISEÑO DE MÉNSULA TIPO M2
PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)



Geometría de la ménsula

B =	**0.50**	m	fy =	**420**	MPa
A =	**0.75**	m	f'c =	**21.1**	MPa
Ancho:	**0.50**	m	h =	**0.5**	m
d =	**0.45**	m			
x =	**0.50**	m			

Pu :	**330.45**	kN		
Nu :	**66.09**	kN		
Avf:	**6.61**	cm²		
Mu:	**168.53**	kN-m		
Cuantía:	0.0042			
Af	**9.38**	cm²		
An	**1.85**	cm²	***Asmin***	*4.52* cm²
As	**11.23**	cm²	**>** ***As***	*6.26* cm²
As escojido	**11.23**	cm²	*4#6 Arriba*	
Ah	**4.69**	cm²	**>** ***Ah***	2.20 cm²
Ah escojido	**4.69**	cm²	*5 Flejes #3 c/.08 repartidos en 2/3 de la altura efectiva*	

Memorias de Cálculo

PROGRAMA DE DISEÑO Y CALCULO ESTRUCTURAL
ARQUIMET 2.0

Proyecto: _____ **Fecha:** _____

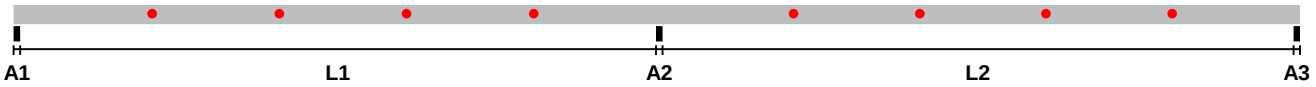
Ingeniero: _____ **Firma:** _____

Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO

REPORTE DE CORREAS

PHR C con atiesador 220 x 80 x 20 (3.00 mm)
con Fy = 35.15 Kgf/mm² cada 1.32 m con arriostramiento cada L/5.

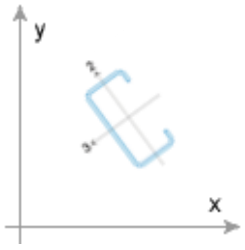
SECCION LONGITUDINAL

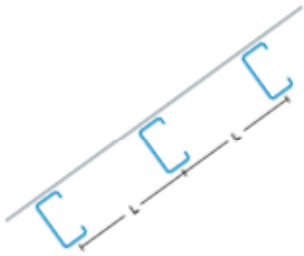


L1	9.75 m
L2	9.68 m
A1	0.10 m
A2	0.10 m
A3	0.10 m

CONFIGURACION	
TIPO DE CARGA	DISTRIBUIDA
Carga muerta	0.30 KN/m²
Peso propio correa	0.09 KN/m
Carga viva	0.35 KN/m²
Carga granizo	0.50 KN/m²
Viento compresión (Perpendicular)	0.52 KN/m²
Viento succión (Perpendicular)	0.52 KN/m²
Pendiente sección transversal	36° = 72.6540%

SECCION TRANSVERSAL





L = 1.32 m

Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO

REPORTES DE DISEÑO

REPORTE FLEXION				
	Apoyos		Interiores	
Ejes locales	3	2	3	2
Resistente (KN.m)	24.5450	5.0300	21.9499	4.9058
Calculado (KN.m)	20.0644	0.3099	20.0644	0.3948

REPORTE CORTANTE		
Ejes locales	2	3
Resistente (KN)	99.2653	73.0982
Calculado (KN)	10.1897	0.9379

REPORTE DEFLEXION		
Deflexiones máximas	Instantanea	Permanente
Admisible (m)	0.0365	0.0547
Calculado (m)	0.0109	0.0225

REPORTE ARRUGAMIENTO	
No. de Apoyo	0
Resistencia máxima (Kgf)	6.1730
Arrugamiento (Kgf)	20.1057

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

REACCIONES - EJES GLOBALES (KN-m)

Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO

APOYO 1		
Combinacion	Rx	Ry
Muerta	0.0000	1.3145
Viva de Cub.	0.0000	1.2390
Granizo	0.0000	1.7700
Viento Comp.	-1.4884	2.0486
Viento Succion	1.4884	-2.0486
Comb. 1	-0.9512	1.8402
Comb. 2	-1.1355	2.1969
Comb. 3	-1.2728	2.4624
Comb. 4	-2.5842	4.5841
Comb. 5	-3.0233	5.4337
Comb. 6	-2.5842	4.5841
Comb. 7	-3.0233	5.4337
Comb. 8	-2.6239	4.2454
Comb. 9	-2.7611	4.5109
Comb. 10	-2.6239	4.2454
Comb. 11	-2.7611	4.5109
Comb. 12	-2.0998	3.2316
Comb. 13	-2.0998	3.2316

APOYO 2		
Combinacion	Rx	Ry
Muerta	0.0000	4.2514
Viva de Cub.	0.0000	4.0074
Granizo	0.0000	5.7249
Viento Comp.	-4.9299	6.7855
Viento Succion	4.9299	-6.7855
Comb. 1	-3.3483	5.9519
Comb. 2	-3.9972	7.1054
Comb. 3	-4.4803	7.9641
Comb. 4	-8.9420	14.9063
Comb. 5	-10.4879	17.6542
Comb. 6	-8.9420	14.9063
Comb. 7	-10.4879	17.6542
Comb. 8	-8.9271	13.8909
Comb. 9	-9.4102	14.7496
Comb. 10	-8.9271	13.8909
Comb. 11	-9.4102	14.7496
Comb. 12	-7.0824	10.6117
Comb. 13	-7.0824	10.6117

APOYO 3		
Combinacion	Rx	Ry
Muerta	0.0000	1.2985
Viva de Cub.	0.0000	1.2240
Granizo	0.0000	1.7485
Viento Comp.	-1.4695	2.0226
Viento Succion	1.4695	-2.0226
Comb. 1	-0.9379	1.8179
Comb. 2	-1.1196	2.1702
Comb. 3	-1.2550	2.4324
Comb. 4	-2.5490	4.5278
Comb. 5	-2.9820	5.3671
Comb. 6	-2.5490	4.5278
Comb. 7	-2.9820	5.3671
Comb. 8	-2.5892	4.1928
Comb. 9	-2.7245	4.4551
Comb. 10	-2.5892	4.1928
Comb. 11	-2.7245	4.4551
Comb. 12	-2.0724	3.1913
Comb. 13	-2.0724	3.1913

FUERZAS INTERNAS - EJES LOCALES (KN-m)

Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO

APOYO 1				
Combinacion	R2	R3	M2	M3
Muerta	0.2230	1.4628	-9.5768E-09	1.3599E-06
Viva de Cub.	0.2102	1.3788	0.0000	2.4612E-06
Granizo	0.3002	1.9698	-9.5768E-09	-1.4748E-06
Viento Comp.	0.0000	2.5321	0.0000	1.0151E-06
Viento Succion	0.0000	2.5321	0.0000	1.0151E-06
Comb. 1	0.3121	2.0479	-1.3408E-08	1.9039E-06
Comb. 2	0.3726	2.4447	-1.1492E-08	2.8625E-06
Comb. 3	0.4177	2.7402	-1.6281E-08	8.9447E-07
Comb. 4	0.6038	5.2275	-1.1492E-08	6.0774E-06
Comb. 5	0.7479	6.1730	-2.6815E-08	-2.2027E-07
Comb. 6	0.6038	5.2275	-1.1492E-08	6.0774E-06
Comb. 7	0.7479	6.1730	-2.6815E-08	-2.2027E-07
Comb. 8	0.3726	4.9769	-1.1492E-08	3.8776E-06
Comb. 9	0.4177	5.2724	-1.6281E-08	1.9096E-06
Comb. 10	0.3726	4.9769	-1.1492E-08	3.8776E-06
Comb. 11	0.4177	5.2724	-1.6281E-08	1.9096E-06
Comb. 12	0.2007	3.8486	-8.6191E-09	2.2391E-06
Comb. 13	0.2007	3.8486	-8.6191E-09	2.2391E-06

APOYO 2				
Combinacion	R2	R3	M2	M3
Muerta	0.5640	4.8452	0.0924	-4.7545
Viva de Cub.	0.5317	4.5672	0.0871	-4.4817
Granizo	0.7595	6.5245	0.1244	-6.4024
Viento Comp.	0.0000	8.3873	0.0000	-8.2303
Viento Succion	0.0000	8.3873	0.0000	-8.2303
Comb. 1	0.7896	6.7833	0.1293	-6.6563
Comb. 2	0.9426	8.0978	0.1544	-7.9463
Comb. 3	1.0566	9.0765	0.1730	-8.9066
Comb. 4	1.5275	17.3154	0.2502	-16.9913
Comb. 5	1.8920	20.4472	0.3099	-20.0644
Comb. 6	1.5275	17.3154	0.2502	-16.9913
Comb. 7	1.8920	20.4472	0.3099	-20.0644
Comb. 8	0.9426	16.4852	0.1544	-16.1766
Comb. 9	1.0566	17.4639	0.1730	-17.1370
Comb. 10	0.9426	16.4852	0.1544	-16.1766
Comb. 11	1.0566	17.4639	0.1730	-17.1370
Comb. 12	0.5076	12.7480	0.0831	-12.5094
Comb. 13	0.5076	12.7480	0.0831	-12.5094

APOYO 3				
Combinacion	R2	R3	M2	M3
Muerta	0.2213	1.4443	0.0000	-4.5969E-07
Viva de Cub.	0.2086	1.3614	2.8730E-08	-2.9113E-06
Granizo	0.2979	1.9448	5.7461E-08	2.4517E-06
Viento Comp.	0.0000	2.5001	0.0000	-4.2904E-06
Viento Succion	0.0000	2.5001	0.0000	-4.2904E-06
Comb. 1	0.3098	2.0220	0.0000	-6.4356E-07
Comb. 2	0.3698	2.4138	1.4365E-08	-2.0073E-06
Comb. 3	0.4145	2.7055	2.8730E-08	6.7421E-07
Comb. 4	0.5992	5.1614	4.5969E-08	-7.3550E-06
Comb. 5	0.7422	6.0949	9.1937E-08	1.2258E-06
Comb. 6	0.5992	5.1614	4.5969E-08	-7.3550E-06
Comb. 7	0.7422	6.0949	9.1937E-08	1.2258E-06
Comb. 8	0.3698	4.9139	1.4365E-08	-6.2977E-06
Comb. 9	0.4145	5.2056	2.8730E-08	-3.6162E-06
Comb. 10	0.3698	4.9139	1.4365E-08	-6.2977E-06
Comb. 11	0.4145	5.2056	2.8730E-08	-3.6162E-06
Comb. 12	0.1991	3.7999	0.0000	-4.7041E-06
Comb. 13	0.1991	3.7999	0.0000	-4.7041E-06

Memorias de Cálculo

PROGRAMA DE DISEÑO Y CALCULO ESTRUCTURAL
ARQUIMET 2.0

Proyecto: _____ **Fecha:** _____

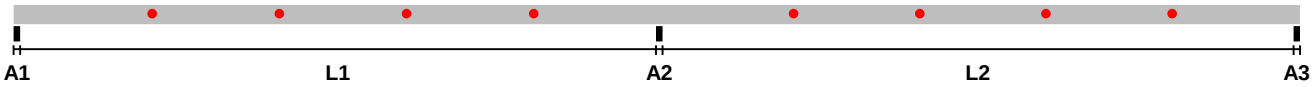
Ingeniero: _____ **Firma:** _____

Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO

REPORTE DE CORREAS

PHR C con atiesador 220 x 80 x 20 (2.50 mm)
con Fy = 35.15 Kgf/mm² cada 1.44 m con arriostramiento cada L/5.

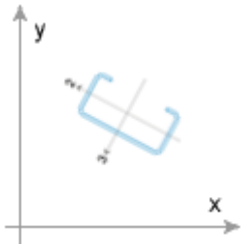
SECCION LONGITUDINAL



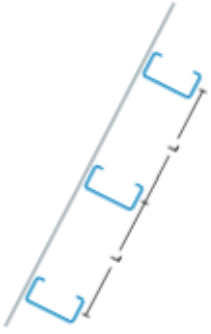
L1	9.75 m
L2	9.68 m
A1	0.10 m
A2	0.10 m
A3	0.10 m

CONFIGURACION	
TIPO DE CARGA	DISTRIBUIDA
Carga muerta	0.30 KN/m²
Peso propio correa	0.08 KN/m
Carga viva	0.35 KN/m²
Carga granizo	0.50 KN/m²
Viento compresión (Perpendicular)	0.52 KN/m²
Viento succión (Perpendicular)	0.52 KN/m²
Pendiente sección transversal	62.4° = 191.2820%

SECCION TRANSVERSAL



L = 1.44 m



Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO

REPORTES DE DISEÑO

REPORTE FLEXION				
	Apoyos		Interiores	
Ejes locales	3	2	3	2
Resistente (KN.m)	20.0439	4.2921	17.2088	4.1011
Calculado (KN.m)	14.4338	0.5032	14.4338	0.6411

REPORTE CORTANTE		
Ejes locales	2	3
Resistente (KN)	68.9342	61.8977
Calculado (KN)	7.3302	1.5231

REPORTE DEFLEXION		
Deflexiones máximas	Instantanea	Permanente
Admisible (m)	0.0365	0.0547
Calculado (m)	0.0081	0.0163

REPORTE ARRUGAMIENTO	
No. de Apoyo	0
Resistencia máxima (Kgf)	4.4407
Arrugamiento (Kgf)	14.2243

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

REACCIONES - EJES GLOBALES (KN-m)

Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO

APOYO 1		
Combinacion	Rx	Ry
Muerta	0.0000	0.7167
Viva de Cub.	0.0000	0.7081
Granizo	0.0000	1.0116
Viento Comp.	-2.4573	1.2846
Viento Succion	2.4573	-1.2846
Comb. 1	-0.8581	1.0034
Comb. 2	-1.0382	1.2141
Comb. 3	-1.1680	1.3658
Comb. 4	-2.9330	2.6353
Comb. 5	-3.3482	3.1209
Comb. 6	-2.9330	2.6353
Comb. 7	-3.3482	3.1209
Comb. 8	-3.4955	2.4988
Comb. 9	-3.6253	2.6505
Comb. 10	-3.4955	2.4988
Comb. 11	-3.6253	2.6505
Comb. 12	-3.0089	1.9297
Comb. 13	-3.0089	1.9297

APOYO 2		
Combinacion	Rx	Ry
Muerta	0.0000	2.1304
Viva de Cub.	0.0000	2.1048
Granizo	0.0000	3.0068
Viento Comp.	-8.1394	4.2552
Viento Succion	8.1394	-4.2552
Comb. 1	-3.0204	2.9826
Comb. 2	-3.6547	3.6089
Comb. 3	-4.1114	4.0599
Comb. 4	-10.0690	8.0518
Comb. 5	-11.5306	9.4951
Comb. 6	-10.0690	8.0518
Comb. 7	-11.5306	9.4951
Comb. 8	-11.7941	7.8641
Comb. 9	-12.2508	8.3151
Comb. 10	-11.7941	7.8641
Comb. 11	-12.2508	8.3151
Comb. 12	-10.0811	6.1726
Comb. 13	-10.0811	6.1726

APOYO 3		
Combinacion	Rx	Ry
Muerta	0.0000	0.7092
Viva de Cub.	0.0000	0.7007
Granizo	0.0000	1.0010
Viento Comp.	-2.4262	1.2684
Viento Succion	2.4262	-1.2684
Comb. 1	-0.8460	0.9929
Comb. 2	-1.0237	1.2014
Comb. 3	-1.1516	1.3515
Comb. 4	-2.8936	2.6063
Comb. 5	-3.3029	3.0868
Comb. 6	-2.8936	2.6063
Comb. 7	-3.3029	3.0868
Comb. 8	-3.4499	2.4698
Comb. 9	-3.5778	2.6199
Comb. 10	-3.4499	2.4698
Comb. 11	-3.5778	2.6199
Comb. 12	-2.9701	1.9067
Comb. 13	-2.9701	1.9067

FUERZAS INTERNAS - EJES LOCALES (KN-m)

Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO

APOYO 1				
Combinacion	R2	R3	M2	M3
Muerta	0.3512	0.8752	0.0000	-3.2082E-07
Viva de Cub.	0.3470	0.8647	-9.5768E-09	9.1459E-07
Granizo	0.4957	1.2352	0.0000	-2.2122E-06
Viento Comp.	0.0000	2.7728	0.0000	1.5323E-06
Viento Succion	0.0000	2.7728	0.0000	1.5323E-06
Comb. 1	0.4917	1.2253	0.0000	-4.4915E-07
Comb. 2	0.5949	1.4826	-4.7884E-09	7.2305E-08
Comb. 3	0.6693	1.6679	0.0000	-1.4911E-06
Comb. 4	0.9766	3.8201	-1.5323E-08	1.8445E-06
Comb. 5	1.2145	4.4130	0.0000	-3.1584E-06
Comb. 6	0.9766	3.8201	-1.5323E-08	1.8445E-06
Comb. 7	1.2145	4.4130	0.0000	-3.1584E-06
Comb. 8	0.5949	4.2554	-4.7884E-09	1.6046E-06
Comb. 9	0.6693	4.4407	0.0000	4.1180E-08
Comb. 10	0.5949	4.2554	-4.7884E-09	1.6046E-06
Comb. 11	0.6693	4.4407	0.0000	4.1180E-08
Comb. 12	0.3161	3.5605	0.0000	1.2435E-06
Comb. 13	0.3161	3.5605	0.0000	1.2435E-06

APOYO 2				
Combinacion	R2	R3	M2	M3
Muerta	0.8885	2.8990	0.1455	-2.8447
Viva de Cub.	0.8778	2.8641	0.1438	-2.8105
Granizo	1.2540	4.0915	0.2054	-4.0149
Viento Comp.	0.0000	9.1846	0.0000	-9.0127
Viento Succion	0.0000	9.1846	0.0000	-9.0127
Comb. 1	1.2438	4.0585	0.2037	-3.9826
Comb. 2	1.5050	4.9108	0.2465	-4.8189
Comb. 3	1.6931	5.5245	0.2773	-5.4211
Comb. 4	2.4706	12.6536	0.4046	-12.4167
Comb. 5	3.0725	14.6175	0.5032	-14.3439
Comb. 6	2.4706	12.6536	0.4046	-12.4167
Comb. 7	3.0725	14.6175	0.5032	-14.3439
Comb. 8	1.5050	14.0954	0.2465	-13.8315
Comb. 9	1.6931	14.7091	0.2773	-14.4338
Comb. 10	1.5050	14.0954	0.2465	-13.8315
Comb. 11	1.6931	14.7091	0.2773	-14.4338
Comb. 12	0.7996	11.7937	0.1310	-11.5729
Comb. 13	0.7996	11.7937	0.1310	-11.5729

APOYO 3				
Combinacion	R2	R3	M2	M3
Muerta	0.3485	0.8641	-1.9154E-08	8.4276E-07
Viva de Cub.	0.3443	0.8537	-5.7461E-08	-6.1292E-07
Granizo	0.4919	1.2196	1.1492E-07	2.4517E-06
Viento Comp.	0.0000	2.7377	0.0000	3.6775E-06
Viento Succion	0.0000	2.7377	0.0000	3.6775E-06
Comb. 1	0.4879	1.2098	-2.6815E-08	1.1799E-06
Comb. 2	0.5904	1.4638	-5.1715E-08	7.0485E-07
Comb. 3	0.6642	1.6467	3.4477E-08	2.2371E-06
Comb. 4	0.9692	3.7718	-1.1492E-07	1.8694E-06
Comb. 5	1.2053	4.3572	1.6089E-07	6.7727E-06
Comb. 6	0.9692	3.7718	-1.1492E-07	1.8694E-06
Comb. 7	1.2053	4.3572	1.6089E-07	6.7727E-06
Comb. 8	0.5904	4.2015	-5.1715E-08	4.3823E-06
Comb. 9	0.6642	4.3845	3.4477E-08	5.9146E-06
Comb. 10	0.5904	4.2015	-5.1715E-08	4.3823E-06
Comb. 11	0.6642	4.3845	3.4477E-08	5.9146E-06
Comb. 12	0.3137	3.5155	-1.7238E-08	4.4360E-06
Comb. 13	0.3137	3.5155	-1.7238E-08	4.4360E-06

Memorias de Cálculo

PROGRAMA DE DISEÑO Y CALCULO ESTRUCTURAL
ARQUIMET 2.0

Proyecto: _____ **Fecha:** _____

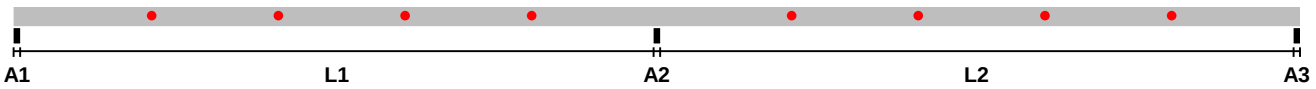
Ingeniero: _____ **Firma:** _____

Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO

REPORTE DE CORREAS

PHR C con atiesador 220 x 80 x 20 (2.00 mm)
con Fy = 35.15 Kgf/mm² cada 1.40 m con arriostramiento cada L/5.

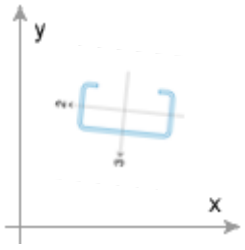
SECCION LONGITUDINAL



L1	9.68 m
L2	9.68 m
A1	0.10 m
A2	0.10 m
A3	0.10 m

CONFIGURACION	
TIPO DE CARGA	DISTRIBUIDA
Carga muerta	0.30 KN/m²
Peso propio correa	0.06 KN/m
Carga viva	0.35 KN/m²
Carga granizo	0.50 KN/m²
Viento compresión (Perpendicular)	0.52 KN/m²
Viento succión (Perpendicular)	0.52 KN/m²
Pendiente sección transversal	84° = 951.4360%

SECCION TRANSVERSAL



L = 1.40 m

Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO

REPORTES DE DISEÑO

REPORTE FLEXION				
	Apoyos		Interiores	
Ejes locales	3	2	3	2
Resistente (KN.m)	15.1981	3.5152	12.6938	3.2623
Calculado (KN.m)	9.8550	0.5397	9.8550	0.6824

REPORTE CORTANTE		
Ejes locales	2	3
Resistente (KN)	36.5782	50.3041
Calculado (KN)	5.0357	1.6434

REPORTE DEFLEXION		
Deflexiones máximas	Instantanea	Permanente
Admisible (m)	0.0362	0.0543
Calculado (m)	0.0021	0.0042

REPORTE ARRUGAMIENTO	
No. de Apoyo	0
Resistencia máxima (Kgf)	3.0246
Arrugamiento (Kgf)	9.2691

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

REACCIONES - EJES GLOBALES (KN-m)

Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO

APOYO 1		
Combinacion	Rx	Ry
Muerta	0.0000	0.3872
Viva de Cub.	0.0000	0.3933
Granizo	0.0000	0.5618
Viento Comp.	-2.6540	0.2789
Viento Succion	2.6540	-0.2789
Comb. 1	-0.2033	0.5421
Comb. 2	-0.2480	0.6613
Comb. 3	-0.2796	0.7456
Comb. 4	-1.7371	1.2334
Comb. 5	-1.8383	1.5030
Comb. 6	-1.7371	1.2334
Comb. 7	-1.8383	1.5030
Comb. 8	-2.9019	0.9403
Comb. 9	-2.9335	1.0245
Comb. 10	-2.9019	0.9403
Comb. 11	-2.9335	1.0245
Comb. 12	-2.7846	0.6275
Comb. 13	-2.7846	0.6275

APOYO 2		
Combinacion	Rx	Ry
Muerta	0.0000	0.9987
Viva de Cub.	0.0000	1.0142
Granizo	0.0000	1.4489
Viento Comp.	-8.8465	0.9298
Viento Succion	8.8465	-0.9298
Comb. 1	-0.7206	1.3982
Comb. 2	-0.8790	1.7056
Comb. 3	-0.9910	1.9229
Comb. 4	-5.8772	3.2861
Comb. 5	-6.2356	3.9816
Comb. 6	-5.8772	3.2861
Comb. 7	-6.2356	3.9816
Comb. 8	-9.7255	2.6354
Comb. 9	-9.8375	2.8527
Comb. 10	-9.7255	2.6354
Comb. 11	-9.8375	2.8527
Comb. 12	-9.3098	1.8287
Comb. 13	-9.3098	1.8287

APOYO 3		
Combinacion	Rx	Ry
Muerta	0.0000	0.3872
Viva de Cub.	0.0000	0.3933
Granizo	0.0000	0.5618
Viento Comp.	-2.6540	0.2789
Viento Succion	2.6540	-0.2789
Comb. 1	-0.2033	0.5421
Comb. 2	-0.2480	0.6613
Comb. 3	-0.2796	0.7456
Comb. 4	-1.7371	1.2334
Comb. 5	-1.8382	1.5030
Comb. 6	-1.7371	1.2334
Comb. 7	-1.8382	1.5030
Comb. 8	-2.9019	0.9403
Comb. 9	-2.9335	1.0245
Comb. 10	-2.9019	0.9403
Comb. 11	-2.9335	1.0245
Comb. 12	-2.7846	0.6275
Comb. 13	-2.7846	0.6275

FUERZAS INTERNAS - EJES LOCALES (KN-m)

Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO

APOYO 1				
Combinacion	R2	R3	M2	M3
Muerta	0.3699	0.1849	9.5768E-09	-6.9073E-07
Viva de Cub.	0.3757	0.1877	9.5768E-09	-2.0590E-07
Granizo	0.5367	0.2682	3.8307E-08	-3.1364E-07
Viento Comp.	0.0000	2.6686	0.0000	-9.3853E-06
Viento Succion	0.0000	2.6686	0.0000	-9.3853E-06
Comb. 1	0.5179	0.2588	1.3408E-08	-9.6702E-07
Comb. 2	0.6318	0.3157	1.6281E-08	-9.3182E-07
Comb. 3	0.7123	0.3560	3.0646E-08	-9.8569E-07
Comb. 4	1.0450	1.8566	2.6815E-08	-5.8510E-06
Comb. 5	1.3026	1.9853	7.2784E-08	-6.0233E-06
Comb. 6	1.0450	1.8566	2.6815E-08	-5.8510E-06
Comb. 7	1.3026	1.9853	7.2784E-08	-6.0233E-06
Comb. 8	0.6318	2.9843	1.6281E-08	-1.0317E-05
Comb. 9	0.7123	3.0246	3.0646E-08	-1.0371E-05
Comb. 10	0.6318	2.9843	1.6281E-08	-1.0317E-05
Comb. 11	0.7123	3.0246	3.0646E-08	-1.0371E-05
Comb. 12	0.3330	2.8350	8.6191E-09	-1.0007E-05
Comb. 13	0.3330	2.8350	8.6191E-09	-1.0007E-05

APOYO 2				
Combinacion	R2	R3	M2	M3
Muerta	0.9394	0.6163	0.1533	-0.6024
Viva de Cub.	0.9540	0.6258	0.1556	-0.6118
Granizo	1.3629	0.8940	0.2223	-0.8739
Viento Comp.	0.0000	8.8953	0.0000	-8.6951
Viento Succion	0.0000	8.8953	0.0000	-8.6951
Comb. 1	1.3152	0.8628	0.2146	-0.8434
Comb. 2	1.6043	1.0524	0.2617	-1.0288
Comb. 3	1.8088	1.1866	0.2951	-1.1599
Comb. 4	2.6538	6.1885	0.4329	-6.0492
Comb. 5	3.3080	6.6176	0.5397	-6.4687
Comb. 6	2.6538	6.1885	0.4329	-6.0492
Comb. 7	3.3080	6.6176	0.5397	-6.4687
Comb. 8	1.6043	9.9477	0.2617	-9.7239
Comb. 9	1.8088	10.0818	0.2951	-9.8550
Comb. 10	1.6043	9.9477	0.2617	-9.7239
Comb. 11	1.8088	10.0818	0.2951	-9.8550
Comb. 12	0.8455	9.4499	0.1379	-9.2373
Comb. 13	0.8455	9.4499	0.1379	-9.2373

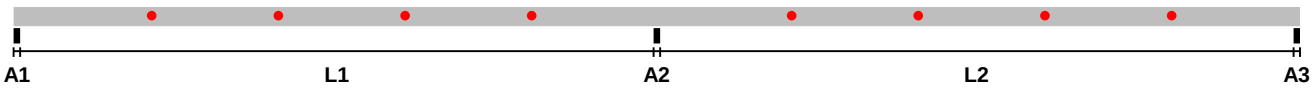
APOYO 3				
Combinacion	R2	R3	M2	M3
Muerta	0.3699	0.1849	0.0000	-1.3408E-07
Viva de Cub.	0.3757	0.1877	5.7461E-08	4.0223E-07
Granizo	0.5367	0.2682	-1.9154E-08	-1.1492E-07
Viento Comp.	0.0000	2.6686	0.0000	-1.8387E-06
Viento Succion	0.0000	2.6686	0.0000	-1.8387E-06
Comb. 1	0.5179	0.2588	0.0000	-1.8771E-07
Comb. 2	0.6318	0.3157	2.8730E-08	4.0223E-08
Comb. 3	0.7123	0.3560	-9.5768E-09	-2.1835E-07
Comb. 4	1.0450	1.8565	9.1937E-08	-4.3670E-07
Comb. 5	1.3026	1.9853	-3.0646E-08	-1.2641E-06
Comb. 6	1.0450	1.8565	9.1937E-08	-4.3670E-07
Comb. 7	1.3026	1.9853	-3.0646E-08	-1.2641E-06
Comb. 8	0.6318	2.9843	2.8730E-08	-1.7985E-06
Comb. 9	0.7123	3.0245	-9.5768E-09	-2.0571E-06
Comb. 10	0.6318	2.9843	2.8730E-08	-1.7985E-06
Comb. 11	0.7123	3.0245	-9.5768E-09	-2.0571E-06
Comb. 12	0.3330	2.8350	0.0000	-1.9594E-06
Comb. 13	0.3330	2.8350	0.0000	-1.9594E-06

Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO

REPORTE DE CORREAS

PHR C con atiesador 254 x 67 x 18 (3.00 mm)
con Fy = 35.15 Kgf/mm² cada 1.27 m con arriostramiento cada L/5.

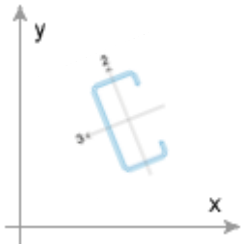
SECCION LONGITUDINAL



L1	9.68 m
L2	9.68 m
A1	0.10 m
A2	0.10 m
A3	0.10 m

CONFIGURACION	
TIPO DE CARGA	DISTRIBUIDA
Carga muerta	0.30 KN/m²
Peso propio correa	0.09 KN/m
Carga viva	0.35 KN/m²
Carga granizo	0.50 KN/m²
Viento compresión (Perpendicular)	0.52 KN/m²
Viento succión (Perpendicular)	0.52 KN/m²
Pendiente sección transversal	22.23° = 40.8700%

SECCION TRANSVERSAL



L = 1.27 m

Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO

REPORTES DE DISEÑO

REPORTE FLEXION				
	Apoyos		Interiores	
Ejes locales	3	2	3	2
Resistente (KN.m)	27.2658	3.3929	24.0261	3.5330
Calculado (KN.m)	21.4758	0.1916	21.4758	0.2423

REPORTE CORTANTE		
Ejes locales	2	3
Resistente (KN)	99.2653	57.7712
Calculado (KN)	10.9738	0.5835

REPORTE DEFLEXION		
Deflexiones máximas	Instantanea	Permanente
Admisible (m)	0.0362	0.0543
Calculado (m)	0.0093	0.0193

REPORTE ARRUGAMIENTO	
No. de Apoyo	0
Resistencia máxima (Kgf)	6.5910
Arrugamiento (Kgf)	19.7864

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

REACCIONES - EJES GLOBALES (KN-m)

Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO

APOYO 1		
Combinacion	Rx	Ry
Muerta	0.0000	1.5436
Viva de Cub.	0.0000	1.4452
Granizo	0.0000	2.0646
Viento Comp.	-0.9158	2.2408
Viento Succion	0.9158	-2.2408
Comb. 1	-0.6738	2.1611
Comb. 2	-0.8029	2.5750
Comb. 3	-0.8994	2.8846
Comb. 4	-1.7564	5.2851
Comb. 5	-2.0654	6.2761
Comb. 6	-1.7564	5.2851
Comb. 7	-2.0654	6.2761
Comb. 8	-1.7187	4.8158
Comb. 9	-1.8153	5.1255
Comb. 10	-1.7187	4.8158
Comb. 11	-1.8153	5.1255
Comb. 12	-1.3490	3.6301
Comb. 13	-1.3490	3.6301

APOYO 2		
Combinacion	Rx	Ry
Muerta	0.0000	5.1038
Viva de Cub.	0.0000	4.7784
Granizo	0.0000	6.8263
Viento Comp.	-3.0528	7.4695
Viento Succion	3.0528	-7.4695
Comb. 1	-2.3885	7.1454
Comb. 2	-2.8459	8.5138
Comb. 3	-3.1882	9.5377
Comb. 4	-6.1294	17.5048
Comb. 5	-7.2247	20.7814
Comb. 6	-6.1294	17.5048
Comb. 7	-7.2247	20.7814
Comb. 8	-5.8988	15.9833
Comb. 9	-6.2410	17.0072
Comb. 10	-5.8988	15.9833
Comb. 11	-6.2410	17.0072
Comb. 12	-4.5883	12.0629
Comb. 13	-4.5883	12.0629

APOYO 3		
Combinacion	Rx	Ry
Muerta	0.0000	1.5436
Viva de Cub.	0.0000	1.4452
Granizo	0.0000	2.0646
Viento Comp.	-0.9158	2.2409
Viento Succion	0.9158	-2.2409
Comb. 1	-0.6738	2.1611
Comb. 2	-0.8029	2.5750
Comb. 3	-0.8994	2.8846
Comb. 4	-1.7564	5.2851
Comb. 5	-2.0654	6.2761
Comb. 6	-1.7564	5.2851
Comb. 7	-2.0654	6.2761
Comb. 8	-1.7187	4.8158
Comb. 9	-1.8153	5.1255
Comb. 10	-1.7187	4.8158
Comb. 11	-1.8153	5.1255
Comb. 12	-1.3490	3.6301
Comb. 13	-1.3490	3.6301

FUERZAS INTERNAS - EJES LOCALES (KN-m)

Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO

APOYO 1				
Combinacion	R2	R3	M2	M3
Muerta	0.1385	1.6110	4.7884E-09	-1.1396E-06
Viva de Cub.	0.1296	1.5083	4.7884E-09	-2.1452E-06
Granizo	0.1852	2.1547	9.5768E-09	-3.8690E-06
Viento Comp.	0.0000	2.4208	0.0000	-2.1452E-06
Viento Succion	0.0000	2.4208	0.0000	-2.1452E-06
Comb. 1	0.1939	2.2554	6.7038E-09	-1.5955E-06
Comb. 2	0.2310	2.6873	8.1403E-09	-2.4402E-06
Comb. 3	0.2588	3.0105	1.0534E-08	-3.3021E-06
Comb. 4	0.3736	5.5568	1.3408E-08	-5.8725E-06
Comb. 5	0.4625	6.5910	2.1069E-08	-8.6306E-06
Comb. 6	0.3736	5.5568	1.3408E-08	-5.8725E-06
Comb. 7	0.4625	6.5910	2.1069E-08	-8.6306E-06
Comb. 8	0.2310	5.1081	8.1403E-09	-4.5854E-06
Comb. 9	0.2588	5.4313	1.0534E-08	-5.4473E-06
Comb. 10	0.2310	5.1081	8.1403E-09	-4.5854E-06
Comb. 11	0.2588	5.4313	1.0534E-08	-5.4473E-06
Comb. 12	0.1246	3.8707	4.3096E-09	-3.1709E-06
Comb. 13	0.1246	3.8707	4.3096E-09	-3.1709E-06

APOYO 2				
Combinacion	R2	R3	M2	M3
Muerta	0.3516	5.3699	0.0574	-5.2491
Viva de Cub.	0.3292	5.0275	0.0537	-4.9144
Granizo	0.4703	7.1822	0.0767	-7.0206
Viento Comp.	0.0000	8.0693	0.0000	-7.8877
Viento Succion	0.0000	8.0693	0.0000	-7.8877
Comb. 1	0.4923	7.5179	0.0803	-7.3488
Comb. 2	0.5866	8.9577	0.0957	-8.7561
Comb. 3	0.6571	10.0350	0.1072	-9.8092
Comb. 4	0.9487	18.5226	0.1548	-18.1059
Comb. 5	1.1745	21.9701	0.1916	-21.4758
Comb. 6	0.9487	18.5226	0.1548	-18.1059
Comb. 7	1.1745	21.9701	0.1916	-21.4758
Comb. 8	0.5866	17.0269	0.0957	-16.6438
Comb. 9	0.6571	18.1043	0.1072	-17.6969
Comb. 10	0.5866	17.0269	0.0957	-16.6438
Comb. 11	0.6571	18.1043	0.1072	-17.6969
Comb. 12	0.3165	12.9022	0.0516	-12.6119
Comb. 13	0.3165	12.9022	0.0516	-12.6119

APOYO 3				
Combinacion	R2	R3	M2	M3
Muerta	0.1385	1.6110	2.3942E-08	3.6775E-06
Viva de Cub.	0.1296	1.5083	3.8307E-08	3.8307E-06
Granizo	0.1852	2.1547	1.9154E-08	9.1937E-07
Viento Comp.	0.0000	2.4208	0.0000	-1.8387E-06
Viento Succion	0.0000	2.4208	0.0000	-1.8387E-06
Comb. 1	0.1939	2.2554	3.3519E-08	5.1485E-06
Comb. 2	0.2310	2.6873	4.7884E-08	6.3284E-06
Comb. 3	0.2588	3.0105	3.8307E-08	4.8727E-06
Comb. 4	0.3736	5.5568	9.0022E-08	9.6228E-06
Comb. 5	0.4625	6.5910	5.9376E-08	4.9646E-06
Comb. 6	0.3736	5.5568	9.0022E-08	9.6228E-06
Comb. 7	0.4625	6.5910	5.9376E-08	4.9646E-06
Comb. 8	0.2310	5.1081	4.7884E-08	4.4896E-06
Comb. 9	0.2588	5.4313	3.8307E-08	3.0339E-06
Comb. 10	0.2310	5.1081	4.7884E-08	4.4896E-06
Comb. 11	0.2588	5.4313	3.8307E-08	3.0339E-06
Comb. 12	0.1246	3.8707	2.1548E-08	1.4710E-06
Comb. 13	0.1246	3.8707	2.1548E-08	1.4710E-06

8. DISEÑO DE ELEMENTOS NO ESTRUCTURALES

DISEÑO DE ELEMENTOS NO ESTRUCTURALES

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
DISEÑO DE ELEMENTOS NO ESTRUCTURALES

Units: kN*m

STORY DATA

Story	Height	Elevation	SimilarTo
N+17.00	8.10	17.00	None
N+8.90	4.45	8.90	None
N+4.45	4.50	4.45	None
BASE	0.00	-0.05	None

CENTER MASS RIGIDITY

Story	Diaphragm	MassX	MassY	XCM	YCM	CumMassX	CumMassY
N+4.45	D1	910.7921	910.7921	31.067	9.817	910.7921	910.7921

XCCM	YCCM	XCR	YCR
31.067	9.817	27.841	9.749

STORY SHEARS

Story	Load	Loc	P	VX	VY	T	MX	MY
N+4.45	SISDISX	Top	0	1937.03	300.05	27644.915	837.558	2405.229
N+4.45	SISDISX	Bottom	0	1937.03	300.05	27644.915	2177.134	10687.32
N+4.45	SISDISY	Top	0	242.01	1949.96	73911.115	3789.973	254.843
N+4.45	SISDISY	Bottom	0	242.01	1949.96	73911.115	12449.177	1336.117

$$F_p = \frac{a_x a_p}{R_p} gM_p \geq \frac{A_a I}{2} gM_p \qquad a_x = \frac{C_{vx} V_s}{m_x g} \leq 2 S_a \qquad C_{vx} = \frac{m_x h_x^k}{\sum_{i=1}^{n} (m_i h_i^k)}$$

g: 9.81 m/s^2
Sa: 0.563 s

$$V_s = S_a g M$$

Grupo de uso: III
Grado de desempeño: SUPERIOR

Grupo de Uso	Grado de desempeño
IV	SUPERIOR
III	SUPERIOR
II	BUENO
I	BAJO

Grado de desempeño de los elementos no estructurales: SUPERIOR

ANALISIS DE CARGAS PARA MUROS

Espesor de muros:	0.15	m
Espesor de pañete en una cara:	0	m
Densidad de mamposteria:	13	kN/m3
Densidad mortero de pañete:	21	kN/m3
Altura Fachada:	4.00	m
Carga	7.8	kN/m
Descripción:	mamposteria reforzada, separada lateralmente de la estructura, apoyada arriba y abajo	
ap:	1.0	
Rp:	6	

ANALISIS DE CARGAS PARA ANTEPECHOS

Espesor de muros:	0.15	m
Espesor de pañete en una cara:	0	m
Densidad de mamposteria:	13	kN/m3
Densidad mortero de pañete:	21	kN/m3
Altura Antepecho:	1	m
Carga	1.95	kN/m
Descripción:	mamposteria reforzada, separada lateralmente de la estructura, apoyada solo abajo	
ap:	2.5	
Rp:	6	

Sección de vigas verticales:	0.15x0.25	m
f'c =	21	MPa
fy =	420	MPa

DISEÑO PARA MUROS

Story	*Fx*	*Wx*	*ax*	*ap*	*Rp*	*Fp*	*M*	*V*
N+4.45	1937.03	910.79	1.126	1.0	6	1.464	2.928	2.928

	Sección Vigas V.			*As. (cm2)*		*Separación column.*		*Fl. 1/4"*
Story	*b*	*d*	*ρ*	*neces.*	*ubicado*	*S max*	$S_{escogida}$	$S_{estribos}$
N+4.45	0.15	0.21	0.00107	0.34	0.71	2.11	2.10	0.188

DISEÑO PARA ANTEPECHOS

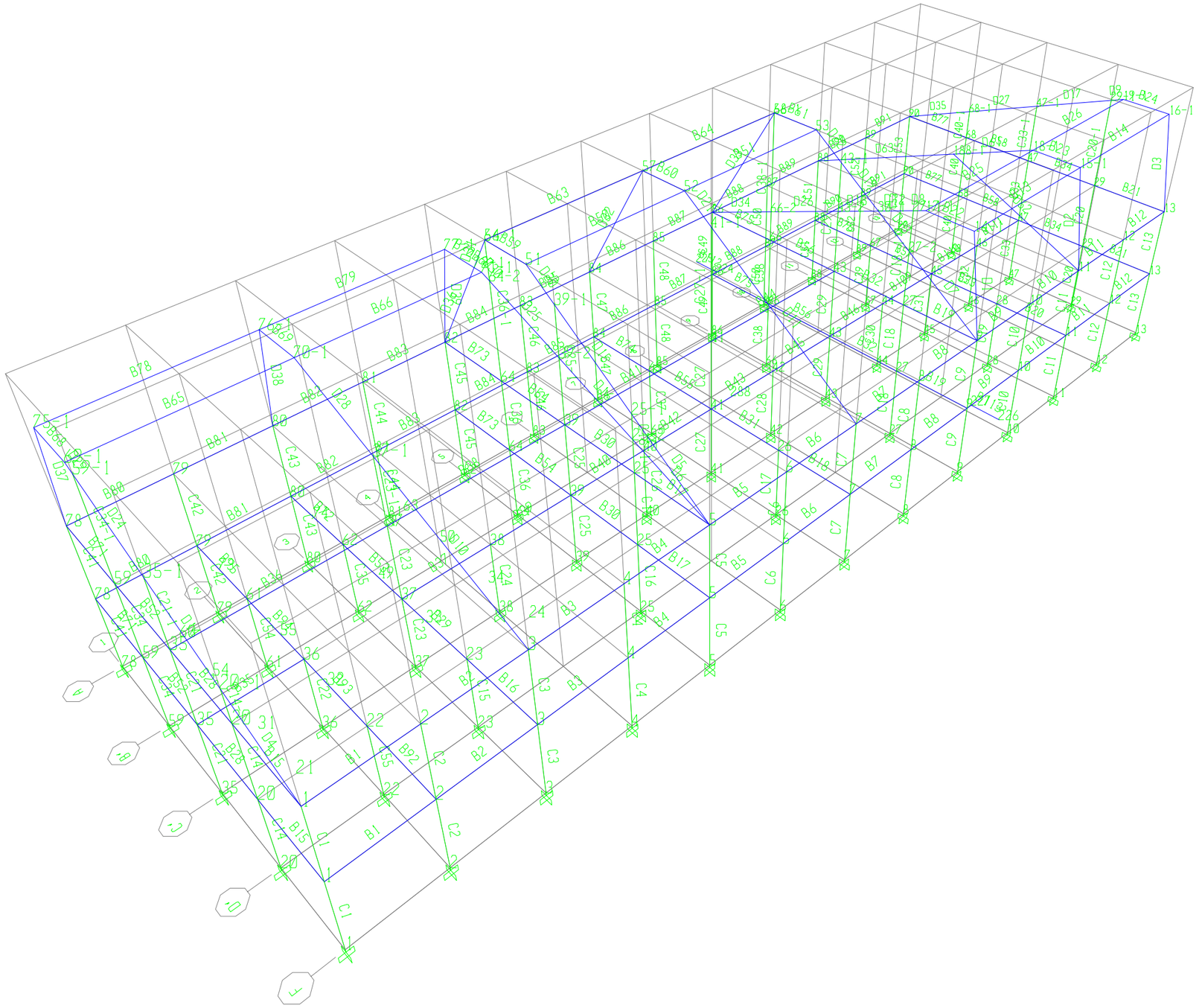
Story	*Fx*	*Wx*	*ax*	*ap*	*Rp*	*Fp*	*M*	*V*
N+4.45	1937.03	910.79	1.126	2.5	6	3.660	7.319	7.319

	Sección columneta			*As. (cm2)*		*Separación column.*		*Fl. 1/4"*
Story	*b*	*d*	*ρ*	*neces.*	*ubicado*	*S max*	$S_{escogida}$	$S_{estribos}$
N+4.45	0.15	0.21	0.00272	0.86	1.29	1.50	1.50	0.188

9. ANEXOS DE COMPUTADOR

ANEXOS DE COMPUTADOR

ETABS



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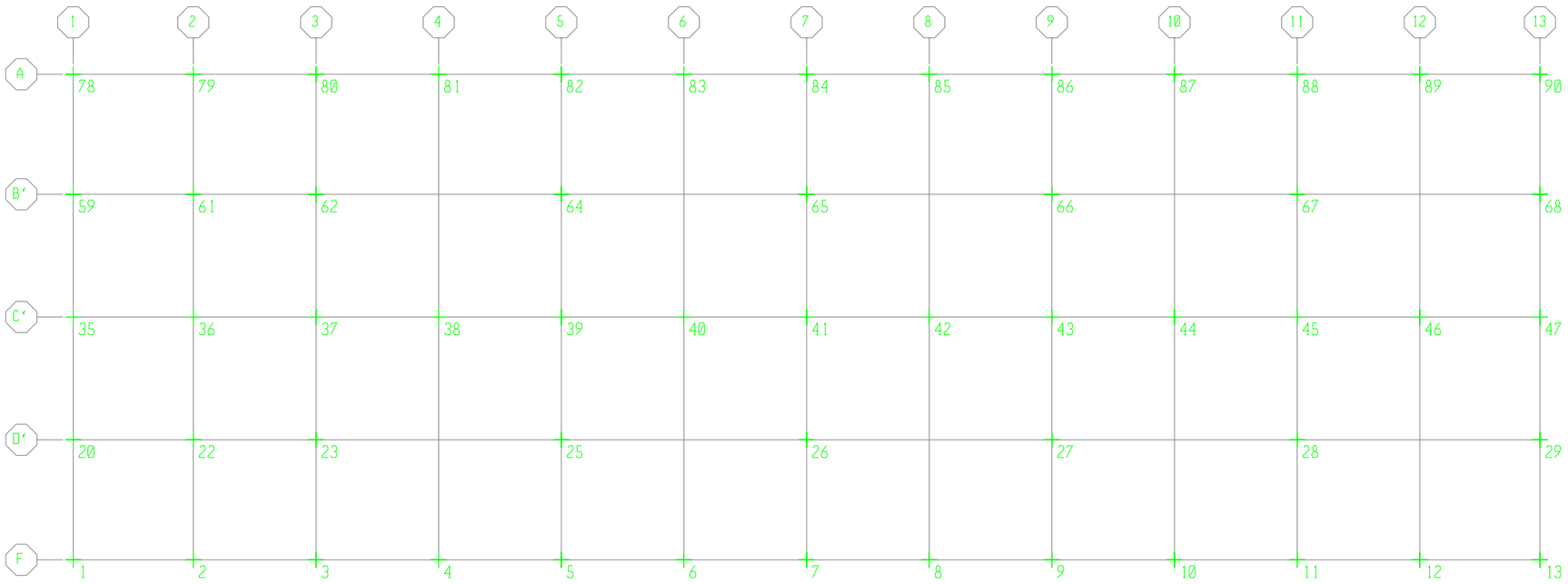
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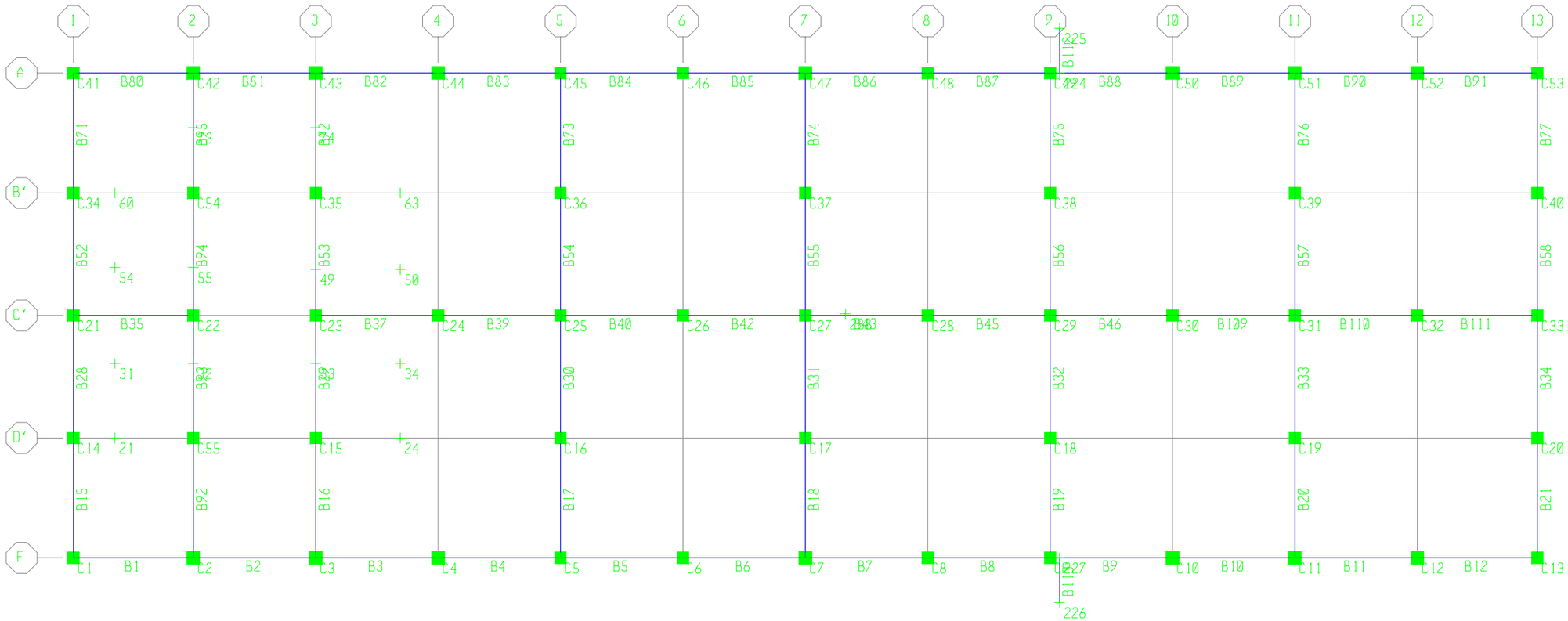
ETABS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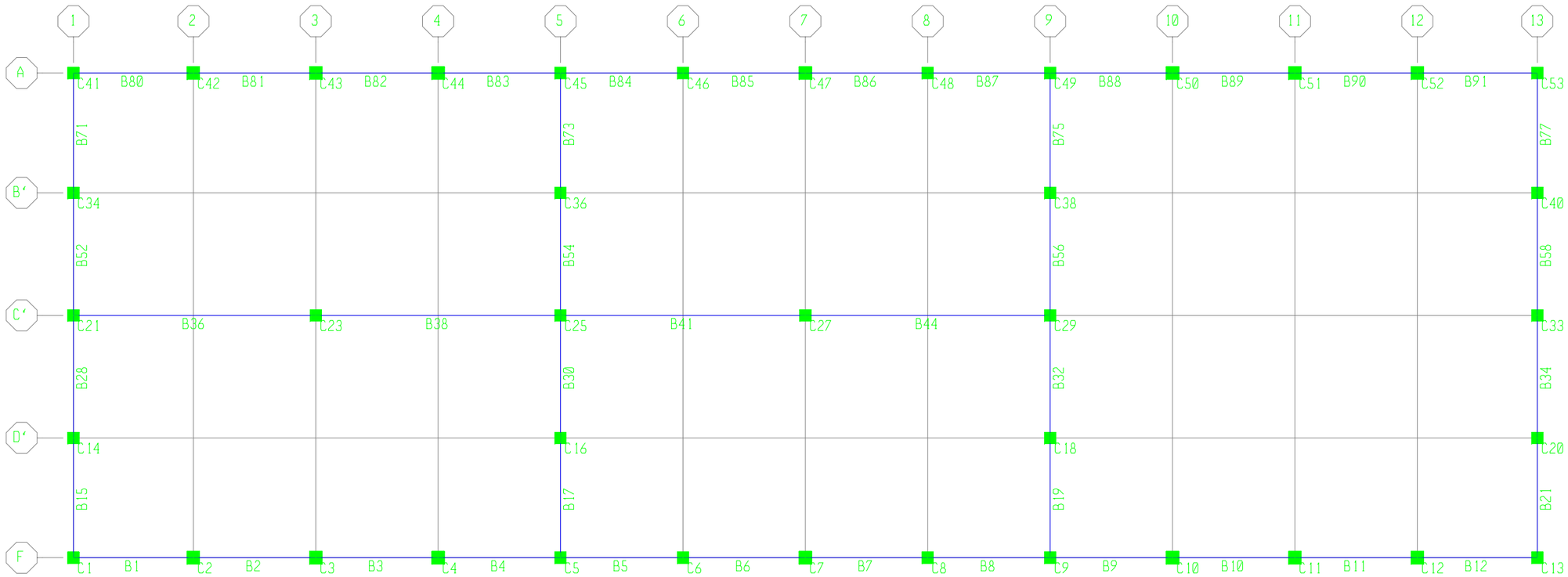
C41 B80 C42 B81 C43 B82 C44 B83 C45 B84 C46 B85 C47 B86 C48 B87 C49 B88 C50 B89 C51 B90 C52 B91 C53
B71 B72 B73 B74 B75 B76 B77
C34 60 C54 C35 63 C36 C37 C38 C39 C40
B52 B94 B53 B54 B55 B56 B57 B58
54 55 49 50
C21 B35 C22 C23 B37 C24 B39 C25 B40 C26 B42 C27 B43 C28 B45 C29 B46 C30 B109 C31 B110 C32 B111 C33
B28 B29 B30 B31 B32 B33 B34
31 34
C14 21 C55 C15 24 C16 C17 C18 C19 C20
B15 B92 B16 B17 B18 B19 B20 B21
C1 B1 C2 B2 C3 B3 C4 B4 C5 B5 C6 B6 C7 B7 C8 B8 C9 B9 C10 B10 C11 B11 C12 B12 C13
B112 225
B113 226

ETABS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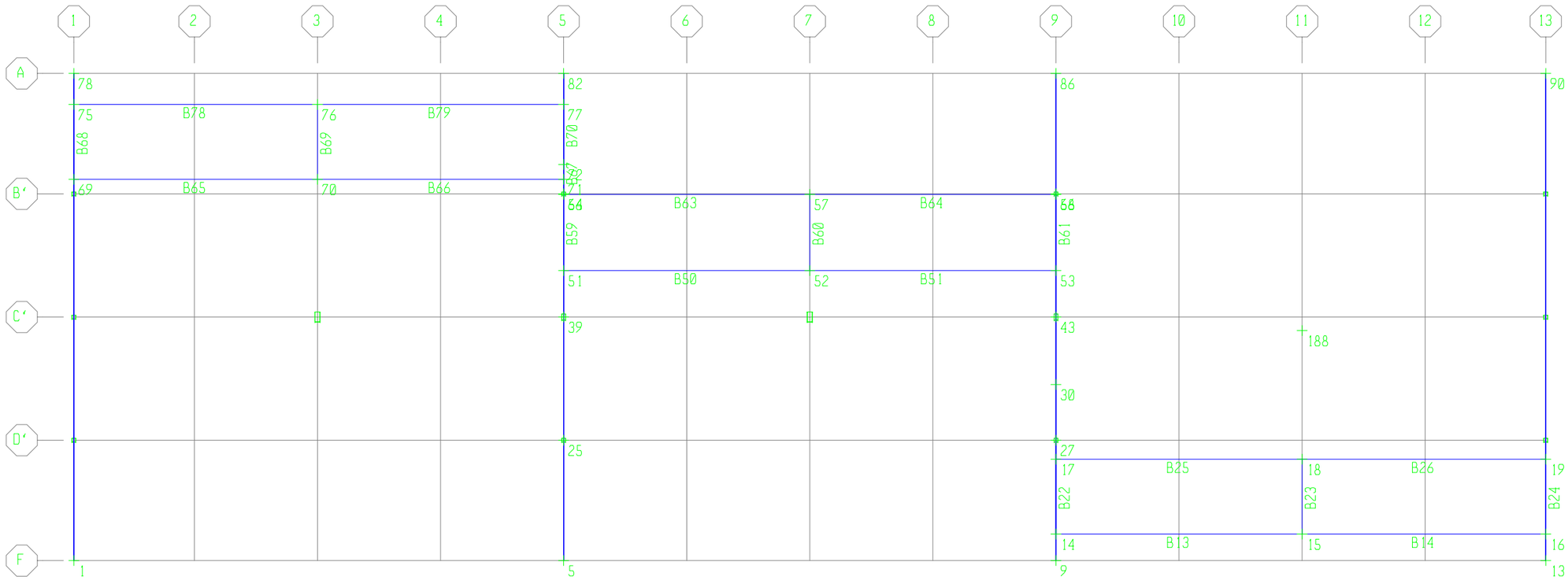
ETABS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B25
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ETABS v9.7.4 File:BLOQUE B CAE EL REDENTOR Units:KN-m agosto 13, 2014 14:19 PAGE 1

S T O R Y D A T A

STORY	SIMILAR TO	HEIGHT	ELEVATION
N+17.00	None	8.100	17.000
N+8.90	None	4.450	8.900
N+4.45	None	4.500	4.450
BASE	None		-0.050

ETABS v9.7.4 File:BLOQUE B CAE EL REDENTOR Units:KN-m agosto 13, 2014 14:19 PAGE 2

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

POINT	X	Y	DZ-BELOW
1	0.000	0.000	0.000
2	4.825	0.000	0.000
3	9.750	0.000	0.000
4	14.675	0.000	0.000
5	19.600	0.000	0.000
6	24.525	0.000	0.000
7	29.450	0.000	0.000
8	34.375	0.000	0.000
9	39.300	0.000	0.000
10	44.225	0.000	0.000
11	49.150	0.000	0.000
12	54.075	0.000	0.000
13	58.900	0.000	0.000
14	39.300	1.060	0.000
14-1	39.300	1.060	2.000
15	49.150	1.060	0.000
15-1	49.150	1.060	2.000
16	58.900	1.060	0.000
16-1	58.900	1.060	2.000
17	39.300	4.060	0.000
17-1	39.300	4.060	2.000
18	49.150	4.060	0.000
18-1	49.150	4.060	2.000
19	58.900	4.060	0.000
19-1	58.900	4.060	2.000
20	0.000	4.820	0.000
20-1	0.000	4.820	6.173
21	1.665	4.820	0.000
22	4.825	4.820	0.000
23	9.750	4.820	0.000
24	13.150	4.820	0.000
25	19.600	4.820	0.000
25-1	19.600	4.820	4.737
25-2	19.600	4.820	6.173
26	29.450	4.820	0.000
27	39.300	4.820	0.000
27-1	39.300	4.820	2.300
27-2	39.300	4.820	4.737
28	49.150	4.820	0.000
29	58.900	4.820	0.000
29-1	58.900	4.820	2.300
30	39.300	7.050	0.000
30-1	39.300	7.050	3.181
31	1.665	7.820	0.000
32	4.825	7.820	0.000
33	9.750	7.820	0.000
34	13.150	7.820	0.000
35	0.000	9.750	0.000
35-1	0.000	9.750	4.203
36	4.825	9.750	0.000
37	9.750	9.750	0.000
37-1	9.750	9.750	4.203
38	14.675	9.750	0.000
39	19.600	9.750	0.000
39-1	19.600	9.750	1.298
39-2	19.600	9.750	4.203
40	24.525	9.750	0.000
41	29.450	9.750	0.000
41-1	29.450	9.750	1.298
42	34.375	9.750	0.000
43	39.300	9.750	0.000
43-1	39.300	9.750	1.298
43-2	39.300	9.750	4.248

44	44.225	9.750	0.000
45	49.150	9.750	0.000
46	54.075	9.750	0.000
47	58.900	9.750	0.000
47-1	58.900	9.750	4.248
49	9.750	11.600	0.000
50	13.150	11.600	0.000
51	19.600	11.610	0.000
52	29.450	11.610	0.000
53	39.300	11.610	0.000
54	1.665	11.680	0.000
55	4.825	11.680	0.000
56	19.600	14.660	0.000
57	29.450	14.660	0.000
58	39.300	14.660	0.000
59	0.000	14.680	0.000
59-1	0.000	14.680	2.232
60	1.665	14.680	0.000
61	4.825	14.680	0.000
62	9.750	14.680	0.000
63	13.150	14.680	0.000
64	19.600	14.680	0.000
64-1	19.600	14.680	0.033
64-2	19.600	14.680	2.232
65	29.450	14.680	0.000
66	39.300	14.680	0.000
66-1	39.300	14.680	0.033
66-2	39.300	14.680	6.196
67	49.150	14.680	0.000
68	58.900	14.680	0.000
68-1	58.900	14.680	6.196
69	0.000	15.260	0.000
69-1	0.000	15.260	2.000
70	9.750	15.260	0.000
70-1	9.750	15.260	2.000
71	19.600	15.260	0.000
71-1	19.600	15.260	2.000
72	19.600	15.855	0.000
72-1	19.600	15.855	2.000
73	4.825	17.300	0.000
74	9.750	17.300	0.000
75	0.000	18.260	0.000
75-1	0.000	18.260	2.000
76	9.750	18.260	0.000
76-1	9.750	18.260	2.000
77	19.600	18.260	0.000
77-1	19.600	18.260	2.000
78	0.000	19.500	0.000
79	4.825	19.500	0.000
80	9.750	19.500	0.000
81	14.675	19.500	0.000
82	19.600	19.500	0.000
83	24.525	19.500	0.000
84	29.450	19.500	0.000
85	34.375	19.500	0.000
86	39.300	19.500	0.000
87	44.225	19.500	0.000
88	49.150	19.500	0.000
89	54.075	19.500	0.000
90	58.900	19.500	0.000
188	49.150	9.207	0.000
188-1	49.150	9.207	4.033
224	39.680	19.500	0.000
225	39.680	21.300	0.000
226	39.680	-1.800	0.000
227	39.680	0.000	0.000

C O L U M N C O N N E C T I V I T Y D A T A

COLUMN	I END PT	J END PT	I END STORY
C1	1	1	Below
C2	2	2	Below
C3	3	3	Below
C4	4	4	Below
C5	5	5	Below
C6	6	6	Below
C7	7	7	Below
C8	8	8	Below

C9	9	9	Below
C10	10	10	Below
C11	11	11	Below
C12	12	12	Below
C13	13	13	Below
C14	20	20	Below
C14-1	20	20-1	Below
C15	23	23	Below
C16	25	25	Below
C16-1	25	25-1	Below
C17	26	26	Below
C18	27	27	Below
C18-1	27	27-1	Below
C19	28	28	Below
C20	29	29	Below
C20-1	29	29-1	Below
C21	35	35	Below
C21-1	35	35-1	Below
C22	36	36	Below
C23	37	37	Below
C23-1	37	37-1	Below
C24	38	38	Below
C25	39	39	Below
C25-1	39	39-1	Below
C26	40	40	Below
C27	41	41	Below
C27-1	41	41-1	Below
C28	42	42	Below
C29	43	43	Below
C29-1	43	43-1	Below
C30	44	44	Below
C31	45	45	Below
C32	46	46	Below
C33	47	47	Below
C33-1	47	47-1	Below
C34	59	59	Below
C34-1	59	59-1	Below
C35	62	62	Below
C36	64	64	Below
C36-1	64	64-1	Below
C37	65	65	Below
C38	66	66	Below
C38-1	66	66-1	Below
C39	67	67	Below
C40	68	68	Below
C40-1	68	68-1	Below
C41	78	78	Below
C42	79	79	Below
C43	80	80	Below
C44	81	81	Below
C45	82	82	Below
C46	83	83	Below
C47	84	84	Below
C48	85	85	Below
C49	86	86	Below
C50	87	87	Below
C51	88	88	Below
C52	89	89	Below
C53	90	90	Below
C54	61	61	Below
C55	22	22	Below

B E A M C O N N E C T I V I T Y D A T A

BEAM	I END PT	J END PT
B1	1	2
B2	2	3
B3	3	4
B4	4	5
B5	5	6
B6	6	7
B7	7	8
B8	8	9
B9	9	10
B10	10	11
B11	11	12
B12	12	13
B13	14-1	15-1

B14	15-1	16-1
B15	1	20
B16	3	23
B17	5	25
B18	7	26
B19	9	27
B20	11	28
B21	13	29
B22	17-1	14-1
B23	18-1	15-1
B24	19-1	16-1
B25	17-1	18-1
B26	18-1	19-1
B28	20	35
B29	23	37
B30	25	39
B31	26	41
B32	27	43
B33	28	45
B34	29	47
B35	35	36
B36	35	37
B37	37	38
B38	37	39
B39	38	39
B40	39	40
B41	39	41
B42	40	41
B43	41	42
B44	41	43
B45	42	43
B46	43	44
B50	51	52
B51	52	53
B52	35	59
B53	37	62
B54	39	64
B55	41	65
B56	43	66
B57	45	67
B58	47	68
B59	56	51
B60	57	52
B61	58	53
B63	56	57
B64	57	58
B65	69-1	70-1
B66	70-1	71-1
B67	72-1	71-1
B68	75-1	69-1
B69	76-1	70-1
B70	77-1	72-1
B71	59	78
B72	62	80
B73	64	82
B74	65	84
B75	66	86
B76	67	88
B77	68	90
B78	75-1	76-1
B79	76-1	77-1
B80	78	79
B81	79	80
B82	80	81
B83	81	82
B84	82	83
B85	83	84
B86	84	85
B87	85	86
B88	86	87
B89	87	88
B90	88	89
B91	89	90
B92	2	22
B93	22	36
B94	36	61
B95	61	79
B109	44	45
B110	45	46
B111	46	47
B112	224	225

B113 226 227

ETABS v9.7.4 File:BLOQUE B CAE EL REDENTOR Units:KN-m agosto 13, 2014 14:19 PAGE 5

B R A C E C O N N E C T I V I T Y D A T A

BRACE	I END PT	J END PT	I END STORY
D1	9	14-1	Below
D2	11	15-1	Below
D3	13	16-1	Below
D4	1	20-1	Below
D5	5	25-1	Below
D6	5	25-2	Below
D7	9	27-2	Below
D8	27-1	17-1	Same
D9	29-1	19-1	Same
D10	3	37-1	Below
D11	7	41-1	Below
D12	30-1	27-1	Same
D13	27-2	30-1	Same
D14	20-1	35-1	Same
D15	25-1	39-1	Same
D16	25-2	39-2	Same
D17	47-1	29-1	Same
D18	43-2	30-1	Same
D19	30-1	43-1	Same
D20	39-1	51	Same
D21	41-1	52	Same
D22	43-1	53	Same
D24	35-1	59-1	Same
D25	39-2	64-2	Same
D26	66-2	43-2	Same
D27	68-1	47-1	Same
D28	37-1	70-1	Same
D29	59-1	69-1	Same
D30	64-2	71-1	Same
D31	72-1	56	Same
D32	84	57	Below
D33	86	58	Below
D34	86	66-2	Below
D35	90	68-1	Below
D36	82	72-1	Below
D37	78	75-1	Below
D38	80	76-1	Below
D39	82	77-1	Below
D61	188-1	18-1	Same
D62	11	188-1	Below
D63	88	188-1	Below

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W A L L C O N N E C T I V I T Y D A T A

WALL	POINT 1	POINT 2	POINT 3	POINT 4	PT1 STORY	PT2 STORY	PT3 STORY	PT4 STORY
W1	13	16-1	19-1	29-1	Below	Same	Same	Same
W2	5	25-2	25-1		Below	Same	Same	
W3	5	25-2	25		Below	Same	Below	
W4	9	27-2	14-1		Below	Same	Same	
W5	13	29-1	29		Below	Same	Below	
W6	20	20-1	1		Below	Same	Below	
W7	25-2	25-1	39-1	39-2	Same	Same	Same	Same
W8	27-2	27-1	17-1	14-1	Same	Same	Same	Same
W9	27	27-2	9		Below	Same	Below	
W10	29	29-1	47-1	47	Below	Same	Same	Below
W11	27-2	30-1	27-1		Same	Same	Same	
W12	43	27	43-2		Below	Below	Same	
W13	27	43-2	30-1	27-2	Below	Same	Same	Same
W14	35	35-1	20-1	20	Below	Same	Same	Below
W15	39	39-2	25-2	25	Below	Same	Same	Below
W16	43-2	43-1	30-1		Same	Same	Same	
W17	47	47-1	68-1	68	Below	Same	Same	Below
W18	35	59	59-1	35-1	Below	Below	Same	Same
W19	39-2	64-2	39-1		Same	Same	Same	
W20	66-2	43-1	43-2		Same	Same	Same	
W21	64-2	56	51	39-1	Same	Same	Same	Same
W22	64	64-2	39-2	39	Below	Same	Same	Below
W23	66-2	66-1	53	43-1	Same	Same	Same	Same
W24	66	66-2	43-2	43	Below	Same	Same	Below
W25	68	68-1	90		Below	Same	Below	

W26	64-2	71-1	64-1		Same	Same	Same	
W27	72-1	64-1	71-1		Same	Same	Same	
W28	78	59-1	59		Below	Same	Below	
W29	82	64-2	64		Below	Same	Below	
W30	86	66-2	66-1		Below	Same	Same	
W31	86	66-2	66		Below	Same	Below	
W32	82	72-1	71-1	64-2	Below	Same	Same	Same
W33	78	75-1	69-1	59-1	Below	Same	Same	Same
W34	82	77-1	72-1		Below	Same	Same	

F L O O R C O N N E C T I V I T Y D A T A

FLOOR	POINT	POINT	POINT	POINT
F1	17-1	14-1	15-1	18-1
F2	18-1	19-1	16-1	15-1
F3	5	7	41	39
F4	7	9	43	41
F5	9	11	45	43
F6	11	13	47	45
F7	32	36	35	1
	2	22	21	31
F8	37	39	5	3
	23	24	34	33
F9	52	53	58	57
F11	62	80	82	39
	37	49	50	63
F12	79	61	60	54
	55	36	35	78
F13	39	41	84	82
F14	41	43	86	84
F15	43	45	88	86
F16	45	47	90	88
F17	75-1	76-1	70-1	69-1
F18	76-1	77-1	71-1	70-1
F19	73	74	80	79
F20	51	52	57	56

R A M P C O N N E C T I V I T Y D A T A

RAMP	POINT 1	POINT 2	POINT 3	POINT 4	PT1 STORY	PT2 STORY	PT3 STORY	PT4 STORY
R1	11	9	14-1	15-1	Below	Below	Same	Same
R2	13	11	15-1	16-1	Below	Below	Same	Same
R3	7	5	51	52	Below	Below	Same	Same
R4	9	7	52	53	Below	Below	Same	Same
R5	3	1	69-1	70-1	Below	Below	Same	Same
R6	5	3	70-1	71-1	Below	Below	Same	Same
R7	86	88	18-1	17-1	Below	Below	Same	Same
R8	88	90	19-1	18-1	Below	Below	Same	Same
R9	82	84	57	56	Below	Below	Same	Same
R10	84	86	66-1	57	Below	Below	Same	Same
R11	78	80	76-1	75-1	Below	Below	Same	Same
R12	80	82	77-1	76-1	Below	Below	Same	Same

R I G I D D I A P H R A G M P O I N T C O N N E C T I V I T Y D A T A

STORY	DIAPHRAGM	POINT	POINT	POINT	POINT	POINT
N+4.45	D1	78	79	80	81	82
		83	84	85	86	87
		88	89	90	1	2
		3	4	5	6	7
		8	9	10	11	12
		13	59	35	20	68
		47	29	37	64	39
		25	41	66	43	27
		45	36	62	23	38
		40	65	42	44	67
		28	46	26	61	55
		60	54	22	32	21
		31	24	63	49	33
		50	34	73	74	

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M A S S S O U R C E D A T A

MASS FROM	LATERAL MASS ONLY	LUMP MASS AT STORIES
Masses	Yes	Yes

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D I A P H R A G M M A S S D A T A

STORY	DIAPHRAGM	MASS-X	MASS-Y	MMI	X-M	Y-M
N+4.45	D1	9.108E+02	9.108E+02	3.113E+05	31.067	9.817

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A S S E M B L E D P O I N T M A S S E S

STORY	POINT	UX	UY	UZ	RX	RY	RZ
N+17.00	14-1	1.179E+00	1.179E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+17.00	15-1	2.081E+00	2.081E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+17.00	16-1	1.098E+00	1.098E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+17.00	17-1	1.743E+00	1.743E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+17.00	18-1	3.646E+00	3.646E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+17.00	19-1	1.763E+00	1.763E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+17.00	30-1	3.197E-01	3.197E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+17.00	51	1.603E+00	1.603E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+17.00	52	3.163E+00	3.163E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+17.00	53	1.653E+00	1.653E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+17.00	56	1.248E+00	1.248E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+17.00	57	2.730E+00	2.730E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+17.00	58	5.752E-01	5.752E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+17.00	69-1	1.743E+00	1.743E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+17.00	70-1	3.637E+00	3.637E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+17.00	71-1	1.696E+00	1.696E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+17.00	72-1	3.028E-01	3.028E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+17.00	75-1	1.098E+00	1.098E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+17.00	76-1	2.088E+00	2.088E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+17.00	77-1	1.067E+00	1.067E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+17.00	188-1	1.093E+00	1.093E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	1	4.195E+00	4.195E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	2	3.090E+00	3.090E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	3	6.051E+00	6.051E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	4	3.108E+00	3.108E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	5	6.615E+00	6.615E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	6	2.854E+00	2.854E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	7	5.771E+00	5.771E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	8	2.854E+00	2.854E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	9	5.977E+00	5.977E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	10	3.108E+00	3.108E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	11	4.721E+00	4.721E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	12	3.090E+00	3.090E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	13	3.651E+00	3.651E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	20	3.344E+00	3.344E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	25	4.369E+00	4.369E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	27	4.481E+00	4.481E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	29	3.851E+00	3.851E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	35	6.063E+00	6.063E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	37	6.779E+00	6.779E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	39	9.666E+00	9.666E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	41	6.948E+00	6.948E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	43	7.138E+00	7.138E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	47	3.715E+00	3.715E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	59	3.852E+00	3.852E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	64	4.619E+00	4.619E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	66	5.506E+00	5.506E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	68	3.340E+00	3.340E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	78	3.650E+00	3.650E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	79	3.090E+00	3.090E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	80	4.315E+00	4.315E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	81	3.108E+00	3.108E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	82	5.683E+00	5.683E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	83	2.854E+00	2.854E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	84	4.944E+00	4.944E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	85	2.854E+00	2.854E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	86	6.435E+00	6.435E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	87	3.108E+00	3.108E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

N+8.90	88	6.100E+00	6.100E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	89	3.090E+00	3.090E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	90	4.207E+00	4.207E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+4.45	224	3.240E-01	3.240E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+4.45	225	3.240E-01	3.240E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+4.45	226	3.240E-01	3.240E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+4.45	227	3.240E-01	3.240E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+4.45	278	9.108E+02	9.108E+02	0.000E+00	0.000E+00	0.000E+00	3.113E+05
N+4.45	(211)	2.318E+00	2.318E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+4.45	(212)	2.318E+00	2.318E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+4.45	(213)	6.170E+00	6.170E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+4.45	(214)	6.214E+00	6.214E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	1	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	2	1.350E+00	1.350E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	3	1.350E+00	1.350E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	4	1.350E+00	1.350E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	5	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	6	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	7	1.350E+00	1.350E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	8	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	9	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	10	1.350E+00	1.350E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	11	1.350E+00	1.350E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	12	1.350E+00	1.350E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	13	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	20	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	22	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	23	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	25	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	26	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	27	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	28	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	29	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	35	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	36	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	37	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	38	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	39	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	40	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	41	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	42	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	43	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	44	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	45	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	46	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	47	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	59	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	61	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	62	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	64	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	65	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	66	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	67	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	68	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	78	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	79	1.350E+00	1.350E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	80	1.350E+00	1.350E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	81	1.350E+00	1.350E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	82	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	83	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	84	1.350E+00	1.350E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	85	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	86	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	87	1.350E+00	1.350E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	88	1.350E+00	1.350E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	89	1.350E+00	1.350E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
BASE	90	1.094E+00	1.094E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+17.00	All	3.553E+01	3.553E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+8.90	All	1.822E+02	1.822E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
N+4.45	All	9.291E+02	9.291E+02	0.000E+00	0.000E+00	0.000E+00	3.113E+05
BASE	All	6.373E+01	6.373E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Totals	All	1.211E+03	1.211E+03	0.000E+00	0.000E+00	0.000E+00	3.113E+05

G R O U P M A S S D A T A

GROUP NAME	SELF MASS	SELF WEIGHT	TOTAL MASS-X	TOTAL MASS-Y	TOTAL MASS-Z
ALL	1210.5626	11515.396	1210.5626	1210.5626	0.0000

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M A T E R I A L L I S T B Y E L E M E N T T Y P E

ELEMENT TYPE	MATERIAL	TOTAL MASS tons	NUMBER PIECES	NUMBER STUDS
Column	A500	2.61	14	
Column	CONC21	225.44	95	
Beam	A500	4.89	22	0
Beam	CONC21	273.79	113	0
Brace	A500	10.71	41	
Floor	CONC21	656.80		

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M A T E R I A L L I S T B Y S E C T I O N

SECTION	ELEMENT TYPE	NUMBER PIECES	TOTAL LENGTH meters	TOTAL MASS tons	NUMBER STUDS
COL50X50	Column	28	125.300	76.66	
VIGA40X50	Beam	52	274.100	134.16	0
VIGA50X50	Beam	27	131.975	80.75	0
COL45X45	Column	67	300.200	148.77	
TER1-150X25	Beam	19	135.900	4.15	0
TER1-150X25	Brace	31	138.087	4.22	
TER2-200X40	Beam	3	9.050	0.74	0
TER2-200X40	Brace	10	79.109	6.49	
VIGA30X50	Beam	34	160.400	58.88	0
TEC1-150X15	Column	10	48.544	1.31	
TER3-200X40	Column	2	10.700	0.88	
TER4-150X25	Column	2	13.605	0.42	
PLACALCONS	Floor			423.90	
PLACALAUDI	Floor			232.91	

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M A T E R I A L L I S T B Y S T O R Y

STORY	ELEMENT TYPE	MATERIAL	TOTAL WEIGHT tons	FLOOR AREA m2	UNIT WEIGHT kg/m2	NUMBER PIECES	NUMBER STUDS
N+17.00	Column	A500	2.61	177.685	14.6769	14	
N+17.00	Beam	A500	4.89	177.685	27.5457	22	0
N+17.00	Brace	A500	10.71	177.685	60.2779	41	
N+8.90	Column	CONC21	95.46	0.000	40		
N+8.90	Beam	CONC21	95.89	0.000	44	0	
N+4.45	Column	CONC21	129.98	1023.716	126.9690	55	
N+4.45	Beam	CONC21	177.90	1023.716	173.7834	69	0
N+4.45	Floor	CONC21	656.80	1023.716	641.5885		
SUM	Column	A500	2.61	1201.401	2.1707	14	
SUM	Column	CONC21	225.44	1201.401	187.6443	95	
SUM	Beam	A500	4.89	1201.401	4.0740	22	0
SUM	Beam	CONC21	273.79	1201.401	227.8930	113	0
SUM	Brace	A500	10.71	1201.401	8.9150	41	
SUM	Floor	CONC21	656.80	1201.401	546.6987		
TOTAL	All	All	1174.24	1201.401	977.3956	285	0

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

MATERIAL NAME	MATERIAL TYPE	DESIGN TYPE	MATERIAL DIR/PLANE	MODULUS OF ELASTICITY	POISSON'S RATIO	THERMAL COEFF	SHEAR MODULUS
A36	Iso	Steel	All	199900000.00	0.3000	1.1700E-05	76884615.38
A500	Iso	Steel	All	199900000.00	0.3000	1.1700E-05	76884615.38
CONC21	Iso	Concrete	All	21538110.000	0.2000	9.9000E-06	8974212.500
MAT1	Iso	Concrete	All	0.001	0.2000	9.9000E-06	0.000

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

MATERIAL NAME	MASS PER UNIT VOL	WEIGHT PER UNIT VOL
A36	7.8271E+00	7.6820E+01
A500	7.8271E+00	7.6820E+01
CONC21	2.4000E+00	2.4000E+01
MAT1	2.4000E+00	0.0000E+00

M A T E R I A L D E S I G N D A T A F O R S T E E L M A T E R I A L S

MATERIAL NAME	STEEL FY	STEEL FU	STEEL COST ($)
A36	252000.000	400000.000	5000.00
A500	352000.000	400000.000	5000.00

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

MATERIAL NAME	LIGHTWEIGHT CONCRETE	CONCRETE FC	REBAR FY	REBAR FYS	LIGHTWT REDUC FACT
CONC21	No	21000.000	420000.000	420000.000	N/A
MAT1	No	0.001	420000.000	420000.000	N/A

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

FRAME SECTION NAME	MATERIAL NAME	SECTION SHAPE NAME OR NAME IN SECTION DATABASE FILE	CONC COL	CONC BEAM
COL50X50	CONC21	Rectangular	Yes	
VIGA40X50	CONC21	Rectangular		Yes
VIGA50X50	CONC21	Rectangular		Yes
COL45X45	CONC21	Rectangular	Yes	
TER1-150X250	A500	Box/Tube		
TER2-200X400	A500	Box/Tube		
VIGA30X50	CONC21	Rectangular		Yes
VIGA25X50	CONC21	Rectangular		Yes
TEC1-150X150	A500	Box/Tube		
TER3-200X400	A500	Box/Tube		
TER4-150X250	A500	Box/Tube		
TEC2-200X200	A500	Box/Tube		
COL45X45CHECK	CONC21	SD Section		
COL50X50CHECK	CONC21	SD Section		

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

FRAME SECTION NAME	SECTION DEPTH	FLANGE WIDTH TOP	FLANGE THICK TOP	WEB THICK	FLANGE WIDTH BOT	FLANGE THICK BOT
COL50X50	0.5000	0.5000	0.0000	0.0000	0.0000	0.0000
VIGA40X50	0.5000	0.4000	0.0000	0.0000	0.0000	0.0000
VIGA50X50	0.5000	0.5000	0.0000	0.0000	0.0000	0.0000
COL45X45	0.4500	0.4500	0.0000	0.0000	0.0000	0.0000
TER1-150X250	0.2500	0.1500	0.0050	0.0050	0.0000	0.0000
TER2-200X400	0.4000	0.2000	0.0090	0.0090	0.0000	0.0000
VIGA30X50	0.5000	0.3000	0.0000	0.0000	0.0000	0.0000
VIGA25X50	0.5000	0.2500	0.0000	0.0000	0.0000	0.0000
TEC1-150X150	0.1500	0.1500	0.0060	0.0060	0.0000	0.0000
TER3-200X400	0.2000	0.4000	0.0090	0.0090	0.0000	0.0000
TER4-150X250	0.1500	0.2500	0.0050	0.0050	0.0000	0.0000
TEC2-200X200	0.2000	0.2000	0.0050	0.0050	0.0000	0.0000
COL45X45CHECK	0.4500	0.4500	0.0000	0.0000	0.0000	0.0000
COL50X50CHECK	0.5000	0.5000	0.0000	0.0000	0.0000	0.0000

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

FRAME SECTION NAME	SECTION AREA	TORSIONAL CONSTANT	MOMENTS OF INERTIA I33	MOMENTS OF INERTIA I22	SHEAR AREAS A2	SHEAR AREAS A3
COL50X50	0.2500	0.0088	0.0052	0.0052	0.2083	0.2083
VIGA40X50	0.2000	0.0055	0.0042	0.0027	0.1667	0.1667
VIGA50X50	0.2500	0.0088	0.0052	0.0052	0.2083	0.2083
COL45X45	0.2025	0.0058	0.0034	0.0034	0.1688	0.1688
TER1-150X250	0.0039	0.0000	0.0000	0.0000	0.0025	0.0015

TER2-200X400	0.0105	0.0002	0.0002	0.0001	0.0072	0.0036
VIGA30X50	0.1500	0.0028	0.0031	0.0011	0.1250	0.1250
VIGA25X50	0.1250	0.0018	0.0026	0.0007	0.1042	0.1042
TEC1-150X150	0.0035	0.0000	0.0000	0.0000	0.0018	0.0018
TER3-200X400	0.0105	0.0002	0.0001	0.0002	0.0036	0.0072
TER4-150X250	0.0039	0.0000	0.0000	0.0000	0.0015	0.0025
TEC2-200X200	0.0039	0.0000	0.0000	0.0000	0.0020	0.0020
COL45X45CHECK	0.2025	0.0058	0.0034	0.0034	0.1688	0.1688
COL50X50CHECK	0.2500	0.0089	0.0052	0.0052	0.2083	0.2083

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

	SECTION MODULI		PLASTIC MODULI		RADIUS OF GYRATION	
FRAME SECTION NAME	S33	S22	Z33	Z22	R33	R22
COL50X50	0.0208	0.0208	0.0313	0.0313	0.1443	0.1443
VIGA40X50	0.0167	0.0133	0.0250	0.0200	0.1443	0.1155
VIGA50X50	0.0208	0.0208	0.0313	0.0313	0.1443	0.1443
COL45X45	0.0152	0.0152	0.0228	0.0228	0.1299	0.1299
TER1-150X250	0.0003	0.0002	0.0003	0.0002	0.0934	0.0629
TER2-200X400	0.0011	0.0007	0.0014	0.0008	0.1453	0.0845
VIGA30X50	0.0125	0.0075	0.0188	0.0113	0.1443	0.0866
VIGA25X50	0.0104	0.0052	0.0156	0.0078	0.1443	0.0722
TEC1-150X150	0.0002	0.0002	0.0002	0.0002	0.0588	0.0588
TER3-200X400	0.0007	0.0011	0.0008	0.0014	0.0845	0.1453
TER4-150X250	0.0002	0.0003	0.0002	0.0003	0.0629	0.0934
TEC2-200X200	0.0002	0.0002	0.0003	0.0003	0.0796	0.0796
COL45X45CHECK	0.0152	0.0152	0.0228	0.0228	0.1299	0.1299
COL50X50CHECK	0.0208	0.0208	0.0313	0.0313	0.1443	0.1443

F R A M E S E C T I O N W E I G H T S A N D M A S S E S

FRAME SECTION NAME	TOTAL WEIGHT	TOTAL MASS
COL50X50	751.8000	75.1800
VIGA40X50	1315.6800	131.5680
VIGA50X50	791.8500	79.1850
COL45X45	1458.9720	145.8972
TER1-150X250	82.0856	8.3637
TER2-200X400	70.9466	7.2287
VIGA30X50	577.4400	57.7440
VIGA25X50	0.0000	0.0000
TEC1-150X150	12.8878	1.3131
TER3-200X400	8.6108	0.8773
TER4-150X250	4.0759	0.4153
TEC2-200X200	0.0000	0.0000
COL45X45CHECK	0.0000	0.0000
COL50X50CHECK	0.0000	0.0000

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

	REINF CONFIGURATION		REINF	NUM BARS	NUM BARS	BAR
FRAME SECTION NAME	LONGIT	LATERAL	SIZE/TYPE	3DIR/2DIR	CIRCULAR	COVER
COL50X50	Rectangular	Ties	#8/Design	5/5	N/A	0.0500
COL45X45	Rectangular	Ties	#8/Design	4/4	N/A	0.0500

C O N C R E T E B E A M D A T A

FRAME SECTION NAME	TOP COVER	BOT COVER	TOP LEFT AREA	TOP RIGHT AREA	BOT LEFT AREA	BOT RIGHT AREA
VIGA40X50	0.0500	0.0500	0.000	0.000	0.000	0.000
VIGA50X50	0.0500	0.0500	0.000	0.000	0.000	0.000
VIGA30X50	0.0500	0.0500	0.000	0.000	0.000	0.000
VIGA25X50	0.0500	0.0500	0.000	0.000	0.000	0.000

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

SHELL SECTION	MATERIAL NAME	SHELL TYPE	LOAD DIST ONE WAY	MEMBRANE THICK	BENDING THICK	TOTAL WEIGHT	TOTAL MASS

CUB	MAT1	Membrane	Yes	0.0130	0.0130	0.0000	58.6855	
PLACALCONS	CONC21	Membrane	No	0.2700	0.2700	4157.0204	415.7020	
PLACALAUDI	CONC21	Membrane	No	0.2490	0.2490	2284.0272	228.4027	

L I N K P R O P E R T Y D A T A

LINK: NLPR1
TYPE: Damper

MASS	WEIGHT	INERTIA 1	INERTIA 2	INERTIA 3	P-D M2I	P-D M2J	P-D M3I	P-D M3J
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DOF	KE	CE	DJ	K	C	C EXP
U1	0.0000	0.0000	N/A	---	---	---

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

****
SECTION NAME: COL45X45CHECK
****

BASIC SECTION DATA

SECTION TYPE	DESIGN TYPE	DESIGN OR CHECK	BASE MATERIAL	NUMBER SHAPES
Frame	Concrete	Check	CONC21	1

RECTANGULAR SHAPE DATA

SHAPE ID	MATERIAL	REINF	X CENTER	Y CENTER	ROTATION	DEPTH	WIDTH
Shape 1	CONC21	Yes	0.0000	0.0000	0.0000	0.4500	0.4500

SHAPE ID	CORNER/EDGE	CORNER BAR	EDGE BAR	EDGE SPACING	EDGE COVER
Shape 1	1, typical	#5	#5	0.1160	0.0500

****
SECTION NAME: COL50X50CHECK
****

BASIC SECTION DATA

SECTION TYPE	DESIGN TYPE	DESIGN OR CHECK	BASE MATERIAL	NUMBER SHAPES
Frame	Concrete	Check	CONC21	1

RECTANGULAR SHAPE DATA

SHAPE ID	MATERIAL	REINF	X CENTER	Y CENTER	ROTATION	DEPTH	WIDTH
Shape 1	CONC21	Yes	0.0000	0.0000	0.0000	0.5000	0.5000

SHAPE ID	CORNER/EDGE	CORNER BAR	EDGE BAR	EDGE SPACING	EDGE COVER
Shape 1	1, typical	#4	#5	0.1000	0.0500
Shape 1	2	#5	#4	0.1000	0.0500
Shape 1	4	#5	#4	0.1000	0.0500

S T A T I C L O A D C A S E S

STATIC CASE	CASE TYPE	AUTO LAT LOAD	SELF WT MULTIPLIER	NOTIONAL FACTOR	NOTIONAL DIRECTION

DEAD	DEAD	N/A	1.0000
LIVE	LIVE	N/A	0.0000
VIENTO	WIND	None	0.0000
VIVACUB	SNOW	N/A	0.0000

R E S P O N S E S P E C T R U M C A S E S

RESP SPEC CASE: SISDERX

BASIC RESPONSE SPECTRUM DATA

MODAL COMBO	DIRECTION COMBO	MODAL DAMPING	SPECTRUM ANGLE	TYPICAL ECCEN
SRSS	SRSS	0.0500	0.0000	0.0500

RESPONSE SPECTRUM FUNCTION ASSIGNMENT DATA

DIRECTION	FUNCTION	SCALE FACT
U1	DERIVAS	16.2120
U2	----	N/A
UZ	----	N/A

RESP SPEC CASE: SISDERY

BASIC RESPONSE SPECTRUM DATA

MODAL COMBO	DIRECTION COMBO	MODAL DAMPING	SPECTRUM ANGLE	TYPICAL ECCEN
SRSS	SRSS	0.0500	0.0000	0.0500

RESPONSE SPECTRUM FUNCTION ASSIGNMENT DATA

DIRECTION	FUNCTION	SCALE FACT
U1	----	N/A
U2	DERIVAS	13.0760
UZ	----	N/A

RESP SPEC CASE: SISDISX

BASIC RESPONSE SPECTRUM DATA

MODAL COMBO	DIRECTION COMBO	MODAL DAMPING	SPECTRUM ANGLE	TYPICAL ECCEN
SRSS	SRSS	0.0500	0.0000	0.0500

RESPONSE SPECTRUM FUNCTION ASSIGNMENT DATA

DIRECTION	FUNCTION	SCALE FACT
U1	DISENO	16.2120
U2	----	N/A
UZ	----	N/A

RESP SPEC CASE: SISDISY

BASIC RESPONSE SPECTRUM DATA

MODAL COMBO	DIRECTION COMBO	MODAL DAMPING	SPECTRUM ANGLE	TYPICAL ECCEN
SRSS	SRSS	0.0500	0.0000	0.0500

RESPONSE SPECTRUM FUNCTION ASSIGNMENT DATA

DIRECTION	FUNCTION	SCALE FACT

U1	----	N/A
U2	DISENO	13.0760
UZ	----	N/A

RESP SPEC CASE: SISUMBX

BASIC RESPONSE SPECTRUM DATA

MODAL COMBO	DIRECTION COMBO	MODAL DAMPING	SPECTRUM ANGLE	TYPICAL ECCEN
SRSS	SRSS	0.0200	0.0000	0.0500

RESPONSE SPECTRUM FUNCTION ASSIGNMENT DATA

DIRECTION	FUNCTION	SCALE FACT
U1	UMBRAL	18.0020
U2	----	N/A
UZ	----	N/A

RESP SPEC CASE: SISUMBY

BASIC RESPONSE SPECTRUM DATA

MODAL COMBO	DIRECTION COMBO	MODAL DAMPING	SPECTRUM ANGLE	TYPICAL ECCEN
SRSS	SRSS	0.0200	0.0000	0.0500

RESPONSE SPECTRUM FUNCTION ASSIGNMENT DATA

DIRECTION	FUNCTION	SCALE FACT
U1	----	N/A
U2	UMBRAL	14.5200
UZ	----	N/A

L O A D I N G C O M B I N A T I O N S

COMBO	COMBO TYPE	CASE	CASE TYPE	SCALE FACTOR
COMDIS1	ADD	DEAD	Static	1.4000
COMDIS2	ADD	DEAD	Static	1.2000
		LIVE	Static	1.6000
COMDIS3	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISDISX	Spectra	1.0000
		SISDISY	Spectra	0.3000
COMDIS4	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISDISX	Spectra	0.3000
		SISDISY	Spectra	1.0000
COMDIS5	ADD	DEAD	Static	0.9000
		SISDISX	Spectra	1.0000
		SISDISY	Spectra	0.3000
COMDIS6	ADD	DEAD	Static	0.9000
		SISDISX	Spectra	0.3000
		SISDISY	Spectra	1.0000
COMDIS7	ADD	DEAD	Static	1.2000
		VIVACUB	Static	0.5000
COMDIS8	ADD	DEAD	Static	1.2000
		VIVACUB	Static	1.6000
		VIENTO	Static	0.5000
COMDIS9	ADD	DEAD	Static	1.2000
		VIVACUB	Static	1.6000
		VIENTO	Static	-0.5000
ENVOLVENTE	ENVE	COMDIS1	Combo	1.0000
		COMDIS2	Combo	1.0000
		COMDIS3	Combo	1.0000
		COMDIS4	Combo	1.0000
		COMDIS5	Combo	1.0000
		COMDIS6	Combo	1.0000
		COMDIS7	Combo	1.0000

		COMDIS8	Combo	1.0000
		COMDIS9	Combo	1.0000
COMDER1	ADD	SISDERX	Spectra	1.0000
		SISDERY	Spectra	0.3000
COMDER2	ADD	SISDERX	Spectra	0.3000
		SISDERY	Spectra	1.0000
CIMEN	ADD	DEAD	Static	1.0000
		LIVE	Static	1.0000
DEFLEX1	ADD	DEAD	Static	1.0000
DEFLEX2	ADD	DEAD	Static	1.0000
		LIVE	Static	1.0000
COMDERUMX	ADD	SISUMBX	Spectra	1.0000
		SISUMBY	Spectra	0.3000
COMDERUMY	ADD	SISUMBX	Spectra	0.3000
		SISUMBY	Spectra	1.0000
COMDIS10	ADD	DEAD	Static	1.2000
		VIVACUB	Static	0.5000
		VIENTO	Static	1.0000
COMDIS11	ADD	DEAD	Static	1.2000
		VIVACUB	Static	0.5000
		VIENTO	Static	-1.0000

R E S P O N S E S P E C T R U M F U N C T I O N - F R O M F I L E

FUNCTION NAME: DERIVAS

FILE NAME: c:\users\jair useche\desktop\proyectos abby\dye14-20xx - cae el redentor\bloque c\modelo\derivas.txt
DATA TYPE: Period vs Acceleration
NUMBER OF HEADER LINES = 0

PERIOD	ACCEL
0.0000	0.5625
0.1600	0.5625
0.3200	0.5625
0.4800	0.5625
0.6400	0.5625
0.8000	0.5625
0.9600	0.5625
1.1200	0.5625
1.3031	0.4835
1.4862	0.4239
1.6692	0.3774
1.8523	0.3401
2.0354	0.3095
2.2185	0.2840
2.4015	0.2623
2.5846	0.2438
2.7677	0.2276
2.9508	0.2135
3.1338	0.2010
3.3169	0.1899
3.5000	0.1800
4.0625	0.1336
4.6250	0.1031
5.1875	0.0819
5.7500	0.0667
6.3125	0.0553
6.8750	0.0467
7.4375	0.0399
8.0000	0.0345

FUNCTION NAME: DISENO

FILE NAME: c:\users\jair useche\desktop\proyectos abby\dye14-20xx - cae el redentor\bloque c\modelo\diseño.txt
DATA TYPE: Period vs Acceleration
NUMBER OF HEADER LINES = 0

PERIOD	ACCEL
0.0000	0.1670
0.1600	0.1670
0.3200	0.1670
0.4800	0.1670
0.6400	0.1670
0.8000	0.1670

0.9600	0.1670
1.1200	0.1670
1.3000	0.1430
1.4900	0.1260
1.6700	0.1120
1.8500	0.1010
2.0400	0.0920
2.2200	0.0840
2.4000	0.0780
2.5800	0.0720
2.7700	0.0670
2.9500	0.0630
3.1300	0.0600
3.3200	0.0560
3.5000	0.0530
4.0600	0.0400
4.6300	0.0310
5.1900	0.0240
5.7500	0.0200
6.3100	0.0160
6.8800	0.0140
7.4400	0.0120
8.0000	0.0100

FUNCTION NAME: UMBRAL

FILE NAME: c:\users\jair useche\desktop\proyectos abby\dye14-20xx - cae el redentor\bloque c\modelo\umbral.txt
DATA TYPE: Period vs Acceleration
NUMBER OF HEADER LINES = 0

PERIOD	ACCEL
0.0000	0.0800
0.2100	0.2520
0.2792	0.2520
0.3483	0.2520
0.4175	0.2520
0.4867	0.2520
0.5558	0.2520
0.6250	0.2520
0.6942	0.2520
0.7633	0.2520
0.8325	0.2520
0.9017	0.2520
0.9708	0.2520
1.0400	0.2520
1.3475	0.1937
1.6550	0.1577
1.9625	0.1330
2.2700	0.1150
2.5775	0.1013
2.8850	0.0905
3.1925	0.0818
3.5000	0.0746
4.0625	0.0554
4.6250	0.0427
5.1875	0.0339
5.7500	0.0276
6.3125	0.0229
6.8750	0.0193
7.4375	0.0165
8.0000	0.0143

F R A M E S E C T I O N A S S I G N M E N T S T O L I N E O B J E C T S

STORY LEVEL	LINE ID	LINE TYPE	SECTION TYPE	AUTO SELECT SECTION	ANALYSIS SECTION	DESIGN PROCEDURE	DESIGN SECTION
N+17.00	C14-1	Column	Box/Tube	None	TEC1-150X15	Steel Frame	TEC1-150X15
N+17.00	C16-1	Column	Box/Tube	None	TEC1-150X15	Steel Frame	TEC1-150X15
N+17.00	C18-1	Column	Box/Tube	None	TEC1-150X15	Steel Frame	TEC1-150X15
N+17.00	C20-1	Column	Box/Tube	None	TEC1-150X15	Steel Frame	TEC1-150X15
N+17.00	C21-1	Column	Box/Tube	None	TEC1-150X15	Steel Frame	TEC1-150X15
N+17.00	C23-1	Column	Box/Tube	None	TER3-200X40	Steel Frame	TER3-200X40
N+17.00	C25-1	Column	Box/Tube	None	TER4-150X25	Steel Frame	TER4-150X25
N+17.00	C27-1	Column	Box/Tube	None	TER3-200X40	Steel Frame	TER3-200X40
N+17.00	C29-1	Column	Box/Tube	None	TER4-150X25	Steel Frame	TER4-150X25

N+17.00	C33-1	Column	Box/Tube	None	TEC1-150X15	Steel Frame	TEC1-150X15
N+17.00	C34-1	Column	Box/Tube	None	TEC1-150X15	Steel Frame	TEC1-150X15
N+17.00	C36-1	Column	Box/Tube	None	TEC1-150X15	Steel Frame	TEC1-150X15
N+17.00	C38-1	Column	Box/Tube	None	TEC1-150X15	Steel Frame	TEC1-150X15
N+17.00	C40-1	Column	Box/Tube	None	TEC1-150X15	Steel Frame	TEC1-150X15
N+8.90	C1	Column	Rectangular	None	COL45X45	Conc Frame	COL45X45
N+8.90	C2	Column	Rectangular	None	COL50X50	Conc Frame	COL50X50
N+8.90	C3	Column	Rectangular	None	COL50X50	Conc Frame	COL50X50
N+8.90	C4	Column	Rectangular	None	COL50X50	Conc Frame	COL50X50
N+8.90	C5	Column	Rectangular	None	COL45X45	Conc Frame	COL45X45
N+8.90	C6	Column	Rectangular	None	COL45X45	Conc Frame	COL45X45
N+8.90	C7	Column	Rectangular	None	COL50X50	Conc Frame	COL50X50
N+8.90	C8	Column	Rectangular	None	COL45X45	Conc Frame	COL45X45
N+8.90	C9	Column	Rectangular	None	COL45X45	Conc Frame	COL45X45
N+8.90	C10	Column	Rectangular	None	COL50X50	Conc Frame	COL50X50
N+8.90	C11	Column	Rectangular	None	COL50X50	Conc Frame	COL50X50
N+8.90	C12	Column	Rectangular	None	COL50X50	Conc Frame	COL50X50
N+8.90	C13	Column	Rectangular	None	COL45X45	Conc Frame	COL45X45
N+8.90	C14	Column	Rectangular	None	COL45X45	Conc Frame	COL45X45
N+8.90	C16	Column	Rectangular	None	COL45X45	Conc Frame	COL45X45
N+8.90	C18	Column	Rectangular	None	COL45X45	Conc Frame	COL45X45
N+8.90	C20	Column	Rectangular	None	COL45X45	Conc Frame	COL45X45
N+8.90	C21	Column	Rectangular	None	COL45X45	Conc Frame	COL45X45
N+8.90	C23	Column	Rectangular	None	COL45X45	Conc Frame	COL45X45
N+8.90	C25	Column	Rectangular	None	COL45X45	Conc Frame	COL45X45
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N+8.90	C33	Column	Rectangular	None	COL45X45	Conc Frame	COL45X45
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N+8.90	C36	Column	Rectangular	None	COL45X45	Conc Frame	COL45X45
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N+8.90	C42	Column	Rectangular	None	COL50X50	Conc Frame	COL50X50
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N+8.90	C44	Column	Rectangular	None	COL50X50	Conc Frame	COL50X50
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N+8.90	C51	Column	Rectangular	None	COL50X50	Conc Frame	COL50X50
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N+4.45	C4	Column	Rectangular	None	COL50X50	Conc Frame	COL50X50
N+4.45	C5	Column	Rectangular	None	COL45X45	Conc Frame	COL45X45
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N+4.45	C7	Column	Rectangular	None	COL50X50	Conc Frame	COL50X50
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N+4.45	C40	Column	Rectangular	None	COL45X45	Conc Frame	COL45X45
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N+8.90	B4	Beam	Rectangular	None	VIGA30X50	Conc Frame	VIGA30X50
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N+4.45	B113	Beam	Rectangular	None	VIGA30X50	Conc Frame	VIGA30X50
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N+17.00	D7	Brace	Box/Tube	None	TER1-150X25	Steel Frame	TER1-150X25
N+17.00	D8	Brace	Box/Tube	None	TER1-150X25	Steel Frame	TER1-150X25

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N+17.00	D21	Brace	Box/Tube	None	TER2-200X40 Steel Frame TER2-200X40
N+17.00	D22	Brace	Box/Tube	None	TER1-150X25 Steel Frame TER1-150X25
N+17.00	D24	Brace	Box/Tube	None	TER1-150X25 Steel Frame TER1-150X25
N+17.00	D25	Brace	Box/Tube	None	TER1-150X25 Steel Frame TER1-150X25
N+17.00	D26	Brace	Box/Tube	None	TER1-150X25 Steel Frame TER1-150X25
N+17.00	D27	Brace	Box/Tube	None	TER1-150X25 Steel Frame TER1-150X25
N+17.00	D28	Brace	Box/Tube	None	TER2-200X40 Steel Frame TER2-200X40
N+17.00	D29	Brace	Box/Tube	None	TER1-150X25 Steel Frame TER1-150X25
N+17.00	D30	Brace	Box/Tube	None	TER1-150X25 Steel Frame TER1-150X25
N+17.00	D31	Brace	Box/Tube	None	TER1-150X25 Steel Frame TER1-150X25
N+17.00	D32	Brace	Box/Tube	None	TER2-200X40 Steel Frame TER2-200X40
N+17.00	D33	Brace	Box/Tube	None	TER1-150X25 Steel Frame TER1-150X25
N+17.00	D34	Brace	Box/Tube	None	TER1-150X25 Steel Frame TER1-150X25
N+17.00	D35	Brace	Box/Tube	None	TER1-150X25 Steel Frame TER1-150X25
N+17.00	D36	Brace	Box/Tube	None	TER1-150X25 Steel Frame TER1-150X25
N+17.00	D37	Brace	Box/Tube	None	TER1-150X25 Steel Frame TER1-150X25
N+17.00	D38	Brace	Box/Tube	None	TER2-200X40 Steel Frame TER2-200X40
N+17.00	D39	Brace	Box/Tube	None	TER1-150X25 Steel Frame TER1-150X25
N+17.00	D61	Brace	Box/Tube	None	TER2-200X40 Steel Frame TER2-200X40
N+17.00	D62	Brace	Box/Tube	None	TER2-200X40 Steel Frame TER2-200X40
N+17.00	D63	Brace	Box/Tube	None	TER2-200X40 Steel Frame TER2-200X40

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)

FUERZAS EN VIGAS

BEAM FORCES
UNID: kN-m

Story	Beam	Load	Loc	P	V2	T	M3
N+8.90	B1	ENVOLVENTE MAX	0	7.99	2.5	9.641	19.595
N+8.90	B1	ENVOLVENTE MAX	4.825	7.99	20.92	9.641	14.158
N+8.90	B1	ENVOLVENTE MIN	0	-18.79	-19.41	-10.012	-32.137
N+8.90	B1	ENVOLVENTE MIN	4.825	-18.79	-1.36	-10.012	-33.099
N+4.45	B1	ENVOLVENTE MAX	0	0	-10.86	5.565	49.135
N+4.45	B1	ENVOLVENTE MAX	4.825	0	99.58	5.565	30.67
N+4.45	B1	ENVOLVENTE MIN	0	0	-91.46	-4.224	-116.312
N+4.45	B1	ENVOLVENTE MIN	4.825	0	16.61	-4.224	-131.28
N+8.90	B2	ENVOLVENTE MAX	0	5.63	0.41	4.469	14.595
N+8.90	B2	ENVOLVENTE MAX	4.925	5.63	19.05	4.469	15.067
N+8.90	B2	ENVOLVENTE MIN	0	-11.07	-19.1	-7.005	-28.464
N+8.90	B2	ENVOLVENTE MIN	4.925	-11.07	-0.5	-7.005	-28.6
N+4.45	B2	ENVOLVENTE MAX	0	0	-0.55	6.302	41.481
N+4.45	B2	ENVOLVENTE MAX	4.925	0	64.56	6.302	43.037
N+4.45	B2	ENVOLVENTE MIN	0	0	-65.06	-4.726	-103.293
N+4.45	B2	ENVOLVENTE MIN	4.925	0	0.16	-4.726	-102.652
N+8.90	B3	ENVOLVENTE MAX	0	8.84	0.42	6.709	13.786
N+8.90	B3	ENVOLVENTE MAX	4.925	8.84	18.95	6.709	13.574
N+8.90	B3	ENVOLVENTE MIN	0	-18.27	-19.07	-3.826	-30.196
N+8.90	B3	ENVOLVENTE MIN	4.925	-18.27	-0.37	-3.826	-29.827
N+4.45	B3	ENVOLVENTE MAX	0	0	-18.46	5.194	29.203
N+4.45	B3	ENVOLVENTE MAX	4.925	0	122.14	5.194	16.013
N+4.45	B3	ENVOLVENTE MIN	0	0	-94.68	-3.889	-124.619
N+4.45	B3	ENVOLVENTE MIN	4.925	0	34.96	-3.889	-144.465
N+8.90	B4	ENVOLVENTE MAX	0	9.84	0.44	9.743	14.045
N+8.90	B4	ENVOLVENTE MAX	4.925	9.84	18.95	9.743	16.418
N+8.90	B4	ENVOLVENTE MIN	0	-19.09	-19.9	-10.359	-31.075
N+8.90	B4	ENVOLVENTE MIN	4.925	-19.09	-1.17	-10.359	-29.312
N+4.45	B4	ENVOLVENTE MAX	0	0	-36.23	8.911	13.225
N+4.45	B4	ENVOLVENTE MAX	4.925	0	94.18	8.911	16.607
N+4.45	B4	ENVOLVENTE MIN	0	0	-117.89	-13.065	-139.239
N+4.45	B4	ENVOLVENTE MIN	4.925	0	21.95	-13.065	-124.282
N+8.90	B5	ENVOLVENTE MAX	0	17.29	-0.1	11.556	14.048
N+8.90	B5	ENVOLVENTE MAX	4.925	17.29	18.58	11.556	10.597
N+8.90	B5	ENVOLVENTE MIN	0	-27.5	-17.95	-10.501	-27.775
N+8.90	B5	ENVOLVENTE MIN	4.925	-27.5	0.61	-10.501	-27.124
N+4.45	B5	ENVOLVENTE MAX	0	0	-27.52	14.31	8.576
N+4.45	B5	ENVOLVENTE MAX	4.925	0	141.92	14.31	-6.658
N+4.45	B5	ENVOLVENTE MIN	0	0	-93.76	-10.123	-121.607
N+4.45	B5	ENVOLVENTE MIN	4.925	0	56.38	-10.123	-140.69
N+8.90	B6	ENVOLVENTE MAX	0	16.51	0.18	5.211	11.925
N+8.90	B6	ENVOLVENTE MAX	4.925	16.51	18.82	5.211	15.678
N+8.90	B6	ENVOLVENTE MIN	0	-26.26	-18.93	-8.329	-27.536
N+8.90	B6	ENVOLVENTE MIN	4.925	-26.26	-0.34	-8.329	-30.627
N+4.45	B6	ENVOLVENTE MAX	0	0	-52.55	2.299	-0.473
N+4.45	B6	ENVOLVENTE MAX	4.925	0	97.83	2.299	18.419
N+4.45	B6	ENVOLVENTE MIN	0	0	-144.72	-5.241	-145.512
N+4.45	B6	ENVOLVENTE MIN	4.925	0	24.49	-5.241	-135.15
N+8.90	B7	ENVOLVENTE MAX	0	20.34	0.36	8.386	15.506
N+8.90	B7	ENVOLVENTE MAX	4.925	20.34	19.09	8.386	11.179
N+8.90	B7	ENVOLVENTE MIN	0	-29.99	-18.4	-4.856	-29.874
N+8.90	B7	ENVOLVENTE MIN	4.925	-29.99	0.09	-4.856	-28.341
N+4.45	B7	ENVOLVENTE MAX	0	0	-24.84	7.537	17.684
N+4.45	B7	ENVOLVENTE MAX	4.925	0	144.21	7.537	-0.971
N+4.45	B7	ENVOLVENTE MIN	0	0	-97.78	-4.45	-134.817
N+4.45	B7	ENVOLVENTE MIN	4.925	0	52.76	-4.45	-143.944
N+8.90	B8	ENVOLVENTE MAX	0	21.22	-1.21	10.949	9.593
N+8.90	B8	ENVOLVENTE MAX	4.925	21.22	16.83	10.949	15.748
N+8.90	B8	ENVOLVENTE MIN	0	-31.5	-19.56	-11.478	-28.834
N+8.90	B8	ENVOLVENTE MIN	4.925	-31.5	-0.36	-11.478	-24.421
N+4.45	B8	ENVOLVENTE MAX	0	0	-55.69	10.71	-5.949
N+4.45	B8	ENVOLVENTE MAX	4.925	0	95.72	10.71	7.176
N+4.45	B8	ENVOLVENTE MIN	0	0	-140.41	-13.081	-139.639
N+4.45	B8	ENVOLVENTE MIN	4.925	0	27.77	-13.081	-129.284
N+8.90	B9	ENVOLVENTE MAX	0	19.78	0.74	13.295	14.99
N+8.90	B9	ENVOLVENTE MAX	4.925	19.78	19.41	13.295	12.067

N+8.90	B9	ENVOLVENTE MIN	0	-28.81	-18.26	-8.726	-28.513
N+8.90	B9	ENVOLVENTE MIN	4.925	-28.81	0.3	-8.726	-30.99
N+4.45	B9	ENVOLVENTE MAX	0	0.08	-51.84	70.56	8.243
N+4.45	B9	ENVOLVENTE MAX	0.38	0.08	-47.14	70.56	27.075
N+4.45	B9	ENVOLVENTE MAX	0.38	0.01	-16.52	14.805	27.075
N+4.45	B9	ENVOLVENTE MAX	4.925	0.01	171.06	14.805	3.969
N+4.45	B9	ENVOLVENTE MIN	0	-0.08	-165.38	13.007	-148.612
N+4.45	B9	ENVOLVENTE MIN	0.38	-0.08	-158.75	13.007	-86.974
N+4.45	B9	ENVOLVENTE MIN	0.38	-0.01	-95.43	-15.785	-86.973
N+4.45	B9	ENVOLVENTE MIN	4.925	-0.01	50.74	-15.785	-171.824
N+8.90	B10	ENVOLVENTE MAX	0	23.16	0.9	4.71	12.943
N+8.90	B10	ENVOLVENTE MAX	4.925	23.16	19.4	4.71	22.515
N+8.90	B10	ENVOLVENTE MIN	0	-31.73	-21.04	-2.562	-31.883
N+8.90	B10	ENVOLVENTE MIN	4.925	-31.73	-2.31	-2.562	-33.945
N+4.45	B10	ENVOLVENTE MAX	0	0	-46.56	6.235	10.5
N+4.45	B10	ENVOLVENTE MAX	4.925	0	108.24	6.235	26.276
N+4.45	B10	ENVOLVENTE MIN	0	0	-169.22	-6.437	-173.429
N+4.45	B10	ENVOLVENTE MIN	4.925	0	19.11	-6.437	-146.122
N+8.90	B11	ENVOLVENTE MAX	0	2.91	1.89	1.789	21.752
N+8.90	B11	ENVOLVENTE MAX	4.925	2.91	20.46	1.789	13.281
N+8.90	B11	ENVOLVENTE MIN	0	-12.04	-19.65	-4.72	-34.318
N+8.90	B11	ENVOLVENTE MIN	4.925	-12.04	-0.99	-4.72	-30.065
N+4.45	B11	ENVOLVENTE MAX	0	0	-19.92	9.965	24.71
N+4.45	B11	ENVOLVENTE MAX	4.925	0	168.19	9.965	8.574
N+4.45	B11	ENVOLVENTE MIN	0	0	-107.89	-9.62	-145.643
N+4.45	B11	ENVOLVENTE MIN	4.925	0	47.12	-9.62	-170.373
N+8.90	B12	ENVOLVENTE MAX	0	9.4	2.04	10.887	15.566
N+8.90	B12	ENVOLVENTE MAX	4.825	9.4	20.67	10.887	19.66
N+8.90	B12	ENVOLVENTE MIN	0	-18.74	-20.12	-14.852	-31.048
N+8.90	B12	ENVOLVENTE MIN	4.825	-18.74	-2.28	-14.852	-35.902
N+4.45	B12	ENVOLVENTE MAX	0	0	-45.36	12.489	10.99
N+4.45	B12	ENVOLVENTE MAX	4.825	0	101.61	12.489	48.228
N+4.45	B12	ENVOLVENTE MIN	0	0	-173.28	-20.614	-177.892
N+4.45	B12	ENVOLVENTE MIN	4.825	0	11.71	-20.614	-125.325
N+17.00	B13	ENVOLVENTE MAX	0	3.52	0.04	-0.361	10.766
N+17.00	B13	ENVOLVENTE MAX	9.85	3.52	11.93	-0.361	8.588
N+17.00	B13	ENVOLVENTE MIN	0	-4.92	-8.91	-1.672	-15.801
N+17.00	B13	ENVOLVENTE MIN	9.85	-4.92	0.92	-1.672	-24.688
N+17.00	B14	ENVOLVENTE MAX	0	2.37	-0.86	1.724	8.718
N+17.00	B14	ENVOLVENTE MAX	9.75	2.37	8.83	1.724	10.766
N+17.00	B14	ENVOLVENTE MIN	0	-3.64	-11.82	0.366	-24.595
N+17.00	B14	ENVOLVENTE MIN	9.75	-3.64	-0.1	0.366	-15.649
N+8.90	B15	ENVOLVENTE MAX	0	14.1	5.52	7.127	29.676
N+8.90	B15	ENVOLVENTE MAX	4.82	14.1	23.73	7.127	20.879
N+8.90	B15	ENVOLVENTE MIN	0	-22.25	-22.87	-6.303	-41.194
N+8.90	B15	ENVOLVENTE MIN	4.82	-22.25	-4.64	-6.303	-36.575
N+4.45	B15	ENVOLVENTE MAX	0	0	-7.09	7.189	60.705
N+4.45	B15	ENVOLVENTE MAX	4.82	0	104.02	7.189	27.724
N+4.45	B15	ENVOLVENTE MIN	0	0	-91.83	-11.359	-124.456
N+4.45	B15	ENVOLVENTE MIN	4.82	0	15.25	-11.359	-140.55
N+4.45	B16	ENVOLVENTE MAX	0	0	15.09	8.621	108.814
N+4.45	B16	ENVOLVENTE MAX	4.82	0	85.38	8.621	42.427
N+4.45	B16	ENVOLVENTE MIN	0	0	-81.48	-9.943	-161.374
N+4.45	B16	ENVOLVENTE MIN	4.82	0	-12.53	-9.943	-110.546
N+8.90	B17	ENVOLVENTE MAX	0	49.83	10.51	11.659	50.701
N+8.90	B17	ENVOLVENTE MAX	4.82	49.83	34.27	11.659	36.052
N+8.90	B17	ENVOLVENTE MIN	0	-24.74	-34.66	-11.288	-64.819
N+8.90	B17	ENVOLVENTE MIN	4.82	-24.74	-9.84	-11.288	-50.828
N+4.45	B17	ENVOLVENTE MAX	0	0	-0.31	15.579	82.198
N+4.45	B17	ENVOLVENTE MAX	4.82	0	180.62	15.579	6.743
N+4.45	B17	ENVOLVENTE MIN	0	0	-106.99	-15.335	-156.617
N+4.45	B17	ENVOLVENTE MIN	4.82	0	44.77	-15.335	-220.086
N+4.45	B18	ENVOLVENTE MAX	0	0	2.98	11.906	128.496
N+4.45	B18	ENVOLVENTE MAX	4.82	0	235.22	11.906	5.045
N+4.45	B18	ENVOLVENTE MIN	0	0	-133.71	-11.893	-241.674
N+4.45	B18	ENVOLVENTE MIN	4.82	0	57.4	-11.893	-217.078
N+8.90	B19	ENVOLVENTE MAX	0	44.67	13.81	11.07	57.8
N+8.90	B19	ENVOLVENTE MAX	4.82	44.67	38.05	11.07	39.925
N+8.90	B19	ENVOLVENTE MIN	0	-15.68	-36.35	-11.617	-70.774
N+8.90	B19	ENVOLVENTE MIN	4.82	-15.68	-12	-11.617	-61.338
N+4.45	B19	ENVOLVENTE MAX	0	0	0.95	14.629	91.763
N+4.45	B19	ENVOLVENTE MAX	4.82	0	250.29	14.629	30.667
N+4.45	B19	ENVOLVENTE MIN	0	0	-140.35	-16.033	-218.193
N+4.45	B19	ENVOLVENTE MIN	4.82	0	56.21	-16.033	-250.369
N+4.45	B20	ENVOLVENTE MAX	0	0	14.67	11.329	148.569
N+4.45	B20	ENVOLVENTE MAX	4.82	0	282.48	11.329	49.463
N+4.45	B20	ENVOLVENTE MIN	0	0	-171.3	-11.339	-320.457

N+4.45	B20	ENVOLVENTE MIN	4.82	0	29.34	-11.339	-267.834
N+8.90	B21	ENVOLVENTE MAX	0	12.3	10.19	10.976	40.586
N+8.90	B21	ENVOLVENTE MAX	4.82	12.3	27.74	10.976	35.066
N+8.90	B21	ENVOLVENTE MIN	0	-18.77	-29.86	-12.007	-59.559
N+8.90	B21	ENVOLVENTE MIN	4.82	-18.77	-10.96	-12.007	-47.076
N+4.45	B21	ENVOLVENTE MAX	0	0	13.91	14.095	119.256
N+4.45	B21	ENVOLVENTE MAX	4.82	0	198.2	14.095	66.233
N+4.45	B21	ENVOLVENTE MIN	0	0	-128.74	-10.067	-200.404
N+4.45	B21	ENVOLVENTE MIN	4.82	0	18.36	-10.067	-228.771
N+17.00	B22	ENVOLVENTE MAX	0	2.57	-1.34	1.446	2.31
N+17.00	B22	ENVOLVENTE MAX	3	2.57	11.62	1.446	-0.868
N+17.00	B22	ENVOLVENTE MIN	0	-11.32	-8.18	-0.087	-1.299
N+17.00	B22	ENVOLVENTE MIN	3	-11.32	2.42	-0.087	-6.932
N+17.00	B23	ENVOLVENTE MAX	0	17.56	26.04	10.034	87.431
N+17.00	B23	ENVOLVENTE MAX	3	17.56	63.17	10.034	-8.372
N+17.00	B23	ENVOLVENTE MIN	0	-28.34	0.65	-10.095	-1.678
N+17.00	B23	ENVOLVENTE MIN	3	-28.34	10.79	-10.095	-50.812
N+17.00	B24	ENVOLVENTE MAX	0	3.36	-1.25	0.128	2.25
N+17.00	B24	ENVOLVENTE MAX	3	3.36	11.18	0.128	-0.836
N+17.00	B24	ENVOLVENTE MIN	0	-11.01	-8.92	-1.623	-2.075
N+17.00	B24	ENVOLVENTE MIN	3	-11.01	2.04	-1.623	-6.47
N+17.00	B25	ENVOLVENTE MAX	0	7.46	-0.97	-0.234	7.962
N+17.00	B25	ENVOLVENTE MAX	9.85	7.46	11.12	-0.234	4.717
N+17.00	B25	ENVOLVENTE MIN	0	-9.12	-10.05	-1.633	-15.335
N+17.00	B25	ENVOLVENTE MIN	9.85	-9.12	1.39	-1.633	-17.071
N+17.00	B26	ENVOLVENTE MAX	0	2.96	-1.44	1.596	4.455
N+17.00	B26	ENVOLVENTE MAX	9.75	2.96	9.91	1.596	7.591
N+17.00	B26	ENVOLVENTE MIN	0	-4.67	-11.05	0.232	-16.65
N+17.00	B26	ENVOLVENTE MIN	9.75	-4.67	1	0.232	-14.676
N+8.90	B28	ENVOLVENTE MAX	0	5.31	2.58	4.325	18.317
N+8.90	B28	ENVOLVENTE MAX	4.93	5.31	21.17	4.325	21.61
N+8.90	B28	ENVOLVENTE MIN	0	-10.73	-21.62	-1.286	-34.514
N+8.90	B28	ENVOLVENTE MIN	4.93	-10.73	-2.94	-1.286	-35.826
N+4.45	B28	ENVOLVENTE MAX	0	0.42	-28.51	8.189	16.549
N+4.45	B28	ENVOLVENTE MAX	3	0.42	38.77	8.189	47.14
N+4.45	B28	ENVOLVENTE MAX	3	0.65	56.98	8.189	47.14
N+4.45	B28	ENVOLVENTE MAX	4.93	0.65	95.27	8.189	20.426
N+4.45	B28	ENVOLVENTE MIN	0	-0.42	-106.55	-5.446	-131.238
N+4.45	B28	ENVOLVENTE MIN	3	-0.42	-16.5	-5.446	7.366
N+4.45	B28	ENVOLVENTE MIN	3	-0.65	-5.64	-5.446	7.366
N+4.45	B28	ENVOLVENTE MIN	4.93	-0.65	21.68	-5.446	-128.316
N+4.45	B29	ENVOLVENTE MAX	0	0	0.59	7.324	15.251
N+4.45	B29	ENVOLVENTE MAX	3	0	13.55	7.324	56.287
N+4.45	B29	ENVOLVENTE MAX	3	0	49.32	7.324	56.287
N+4.45	B29	ENVOLVENTE MAX	4.93	0	69.54	7.324	41.219
N+4.45	B29	ENVOLVENTE MIN	0	0	-53.55	-4.066	-78.929
N+4.45	B29	ENVOLVENTE MIN	3	0	-36.27	-4.066	-6.452
N+4.45	B29	ENVOLVENTE MIN	3	0	-5.13	-4.066	-6.452
N+4.45	B29	ENVOLVENTE MIN	4.93	0	8.64	-4.066	-109.478
N+8.90	B30	ENVOLVENTE MAX	0	35.82	4.22	5.149	25.647
N+8.90	B30	ENVOLVENTE MAX	4.93	35.82	28.84	5.149	33.411
N+8.90	B30	ENVOLVENTE MIN	0	-6.33	-30.9	-5.39	-51.523
N+8.90	B30	ENVOLVENTE MIN	4.93	-6.33	-5.83	-5.39	-50.227
N+4.45	B30	ENVOLVENTE MAX	0	0.27	-118.61	13.006	-29.906
N+4.45	B30	ENVOLVENTE MAX	3	0.27	95.61	13.006	103.389
N+4.45	B30	ENVOLVENTE MAX	3	0.42	137.52	13.006	103.389
N+4.45	B30	ENVOLVENTE MAX	4.93	0.42	178.72	13.006	-18.757
N+4.45	B30	ENVOLVENTE MIN	0	-0.27	-279.75	-9.288	-246.908
N+4.45	B30	ENVOLVENTE MIN	3	-0.27	6.41	-9.288	29.249
N+4.45	B30	ENVOLVENTE MIN	3	-0.42	31.41	-9.287	29.248
N+4.45	B30	ENVOLVENTE MIN	4.93	-0.42	58.13	-9.287	-249.538
N+4.45	B31	ENVOLVENTE MAX	0	0	-87.52	11.011	-38.067
N+4.45	B31	ENVOLVENTE MAX	4.93	0	114.07	11.011	24.427
N+4.45	B31	ENVOLVENTE MIN	0	0	-209.44	-10.529	-175.609
N+4.45	B31	ENVOLVENTE MIN	4.93	0	30.35	-10.529	-173.536
N+8.90	B32	ENVOLVENTE MAX	0	33.53	5.87	1.132	30.989
N+8.90	B32	ENVOLVENTE MAX	4.93	33.53	30.77	1.132	34.621
N+8.90	B32	ENVOLVENTE MIN	0	3.48	-31.39	-6.461	-53.167
N+8.90	B32	ENVOLVENTE MIN	4.93	3.48	-6.6	-6.461	-53.476
N+4.45	B32	ENVOLVENTE MAX	0	0	-69.23	12.248	14.117
N+4.45	B32	ENVOLVENTE MAX	4.93	0	137.58	12.248	46.213
N+4.45	B32	ENVOLVENTE MIN	0	0	-243.23	-10.584	-236.524
N+4.45	B32	ENVOLVENTE MIN	4.93	0	14.92	-10.584	-205.158
N+4.45	B33	ENVOLVENTE MAX	0	0	-72.32	13.624	-9.392
N+4.45	B33	ENVOLVENTE MAX	4.93	0	139.68	13.624	35.98
N+4.45	B33	ENVOLVENTE MIN	0	0	-273.57	-13.66	-215.811
N+4.45	B33	ENVOLVENTE MIN	4.93	0	22.65	-13.66	-207.406

N+8.90	B34	ENVOLVENTE MAX	0	4.24	6.25	6.281	28.692
N+8.90	B34	ENVOLVENTE MAX	4.93	4.24	25.15	6.281	27.844
N+8.90	B34	ENVOLVENTE MIN	0	-7.81	-24.3	-6.992	-42.138
N+8.90	B34	ENVOLVENTE MIN	4.93	-7.81	-5.93	-6.992	-44.168
N+4.45	B34	ENVOLVENTE MAX	0	0	-29.4	4.031	50.096
N+4.45	B34	ENVOLVENTE MAX	4.93	0	126.01	4.031	68.83
N+4.45	B34	ENVOLVENTE MIN	0	0	-185.25	-10.764	-209.867
N+4.45	B34	ENVOLVENTE MIN	4.93	0	3	-10.764	-192.617
N+4.45	B35	ENVOLVENTE MAX	0	0	6.74	2.511	88.44
N+4.45	B35	ENVOLVENTE MAX	4.825	0	94.72	2.511	74.43
N+4.45	B35	ENVOLVENTE MIN	0	0	-98.41	-2.183	-152.041
N+4.45	B35	ENVOLVENTE MIN	4.825	0	-9.31	-2.183	-122.95
N+8.90	B36	ENVOLVENTE MAX	0	2.23	-8.39	9.102	35.425
N+8.90	B36	ENVOLVENTE MAX	9.75	2.23	41.33	9.102	11.343
N+8.90	B36	ENVOLVENTE MIN	0	-19.16	-37.06	-9.4	-89.799
N+8.90	B36	ENVOLVENTE MIN	9.75	-19.16	11.5	-9.4	-101.709
N+4.45	B37	ENVOLVENTE MAX	0	0	3.08	10.595	91.141
N+4.45	B37	ENVOLVENTE MAX	4.925	0	103.86	10.595	19.237
N+4.45	B37	ENVOLVENTE MIN	0	0	-81.57	-10.921	-133.801
N+4.45	B37	ENVOLVENTE MIN	4.925	0	11.05	-10.921	-121.623
N+8.90	B38	ENVOLVENTE MAX	0	4.29	-12.61	9.608	6.528
N+8.90	B38	ENVOLVENTE MAX	9.85	4.29	36.93	9.608	11.987
N+8.90	B38	ENVOLVENTE MIN	0	-22.39	-37.82	-9.31	-92.69
N+8.90	B38	ENVOLVENTE MIN	9.85	-22.39	11.93	-9.31	-90.47
N+4.45	B39	ENVOLVENTE MAX	0	0	-16.49	13.366	6.876
N+4.45	B39	ENVOLVENTE MAX	4.925	0	78.38	13.366	44.908
N+4.45	B39	ENVOLVENTE MIN	0	0	-89.01	-13.564	-104.984
N+4.45	B39	ENVOLVENTE MIN	4.925	0	9.51	-13.564	-129.576
N+4.45	B40	ENVOLVENTE MAX	0	0	-25.79	14.561	34.344
N+4.45	B40	ENVOLVENTE MAX	4.925	0	215.62	14.561	-35.876
N+4.45	B40	ENVOLVENTE MIN	0	0	-109.63	-14.48	-153.166
N+4.45	B40	ENVOLVENTE MIN	4.925	0	89.56	-14.48	-190.319
N+8.90	B41	ENVOLVENTE MAX	0	7.58	-10.36	8.441	17.069
N+8.90	B41	ENVOLVENTE MAX	9.85	7.58	39.55	8.441	16.384
N+8.90	B41	ENVOLVENTE MIN	0	-25.8	-38.26	-9.443	-94.559
N+8.90	B41	ENVOLVENTE MIN	9.85	-25.8	11.13	-9.443	-104.026
N+4.45	B42	ENVOLVENTE MAX	0	0	-87.43	11.29	-34.287
N+4.45	B42	ENVOLVENTE MAX	4.925	0	113.38	11.29	24.117
N+4.45	B42	ENVOLVENTE MIN	0	0	-211.58	-11.61	-187.472
N+4.45	B42	ENVOLVENTE MIN	4.925	0	28.21	-11.61	-168.884
N+4.45	B43	ENVOLVENTE MAX	0	0	-28.4	15.269	24.765
N+4.45	B43	ENVOLVENTE MAX	4.925	0	211.05	15.269	-31.227
N+4.45	B43	ENVOLVENTE MIN	0	0	-114.35	-14.899	-168.384
N+4.45	B43	ENVOLVENTE MIN	4.925	0	86.8	-14.899	-183.678
N+8.90	B44	ENVOLVENTE MAX	0	4.11	-9.62	9.535	23.281
N+8.90	B44	ENVOLVENTE MAX	9.85	4.11	39.62	9.535	39.66
N+8.90	B44	ENVOLVENTE MIN	0	-20.89	-42.77	-8.501	-111.116
N+8.90	B44	ENVOLVENTE MIN	9.85	-20.89	7.27	-8.501	-100.415
N+4.45	B45	ENVOLVENTE MAX	0	0	-87.18	15.401	-32.605
N+4.45	B45	ENVOLVENTE MAX	4.925	0	115.69	15.401	17.687
N+4.45	B45	ENVOLVENTE MIN	0	0	-207.37	-15.295	-180.217
N+4.45	B45	ENVOLVENTE MIN	4.925	0	30.36	-15.295	-175.465
N+4.45	B46	ENVOLVENTE MAX	0	0	-24.47	20.65	28.419
N+4.45	B46	ENVOLVENTE MAX	4.925	0	278.89	20.65	-23.18
N+4.45	B46	ENVOLVENTE MIN	0	0	-130.25	-20.667	-179.132
N+4.45	B46	ENVOLVENTE MIN	4.925	0	78.99	-20.667	-217.205
N+17.00	B50	ENVOLVENTE MAX	0	7.21	1.37	0.142	18.181
N+17.00	B50	ENVOLVENTE MAX	9.85	7.21	12.23	0.142	13.636
N+17.00	B50	ENVOLVENTE MIN	0	-7.99	-8.63	-0.193	-22.314
N+17.00	B50	ENVOLVENTE MIN	9.85	-7.99	-0.23	-0.193	-30.827
N+17.00	B51	ENVOLVENTE MAX	0	3.24	-0.27	0.339	12.3
N+17.00	B51	ENVOLVENTE MAX	9.85	3.24	8.64	0.339	14.431
N+17.00	B51	ENVOLVENTE MIN	0	-4.07	-12.27	-0.136	-29.489
N+17.00	B51	ENVOLVENTE MIN	9.85	-4.07	-0.88	-0.136	-18.427
N+8.90	B52	ENVOLVENTE MAX	0	4.13	2.74	2.421	21.157
N+8.90	B52	ENVOLVENTE MAX	4.93	4.13	21.44	2.421	17.478
N+8.90	B52	ENVOLVENTE MIN	0	-12.26	-20.76	-6.067	-34.649
N+8.90	B52	ENVOLVENTE MIN	4.93	-12.26	-2.19	-6.067	-33.995
N+4.45	B52	ENVOLVENTE MAX	0	0.68	-21.91	6.413	19.799
N+4.45	B52	ENVOLVENTE MAX	1.93	0.68	5.41	6.413	46.921
N+4.45	B52	ENVOLVENTE MAX	1.93	0.44	16.27	6.413	46.921
N+4.45	B52	ENVOLVENTE MAX	4.93	0.44	106.32	6.413	15.19
N+4.45	B52	ENVOLVENTE MIN	0	-0.68	-94.74	-9.398	-127.122
N+4.45	B52	ENVOLVENTE MIN	1.93	-0.68	-56.46	-9.398	7.584
N+4.45	B52	ENVOLVENTE MIN	1.93	-0.44	-38.25	-9.398	7.584
N+4.45	B52	ENVOLVENTE MIN	4.93	-0.44	29.04	-9.398	-130.762
N+4.45	B53	ENVOLVENTE MAX	0	0	-5.91	5.186	45.332

N+4.45	B53	ENVOLVENTE MAX	1.85	0	7.08	5.186	54.574
N+4.45	B53	ENVOLVENTE MAX	1.85	0	37.13	5.186	54.574
N+4.45	B53	ENVOLVENTE MAX	4.93	0	54.87	5.186	17.426
N+4.45	B53	ENVOLVENTE MIN	0	0	-68.77	-8.569	-108.967
N+4.45	B53	ENVOLVENTE MIN	1.85	0	-49.75	-8.569	-9.657
N+4.45	B53	ENVOLVENTE MIN	1.85	0	-15.38	-8.569	-9.657
N+4.45	B53	ENVOLVENTE MIN	4.93	0	-2.07	-8.569	-87.316
N+8.90	B54	ENVOLVENTE MAX	0	29.09	6.37	7.148	34.687
N+8.90	B54	ENVOLVENTE MAX	4.93	29.09	31.65	7.148	24.957
N+8.90	B54	ENVOLVENTE MIN	0	-8.03	-28.33	-6.635	-48.927
N+8.90	B54	ENVOLVENTE MIN	4.93	-8.03	-3.92	-6.635	-53.431
N+4.45	B54	ENVOLVENTE MAX	0	0.42	-59.15	10.196	-18.558
N+4.45	B54	ENVOLVENTE MAX	1.85	0.42	-34.19	10.196	101.171
N+4.45	B54	ENVOLVENTE MAX	1.85	0.26	-10.11	10.196	101.171
N+4.45	B54	ENVOLVENTE MAX	4.93	0.26	280.65	10.196	-31.33
N+4.45	B54	ENVOLVENTE MIN	0	-0.42	-180.61	-13.885	-249.625
N+4.45	B54	ENVOLVENTE MIN	1.85	-0.42	-142.19	-13.885	23.811
N+4.45	B54	ENVOLVENTE MIN	1.85	-0.26	-101.84	-13.885	23.811
N+4.45	B54	ENVOLVENTE MIN	4.93	-0.26	119.19	-13.885	-249.095
N+4.45	B55	ENVOLVENTE MAX	0	0	-27.94	12.555	29.641
N+4.45	B55	ENVOLVENTE MAX	4.93	0	212.07	12.555	-32.671
N+4.45	B55	ENVOLVENTE MIN	0	0	-115.25	-13.026	-174.069
N+4.45	B55	ENVOLVENTE MIN	4.93	0	86.11	-13.026	-182.321
N+8.90	B56	ENVOLVENTE MAX	0	38.96	6.94	7.855	35.414
N+8.90	B56	ENVOLVENTE MAX	4.93	38.96	31.8	7.855	31.118
N+8.90	B56	ENVOLVENTE MIN	0	-4.77	-30.8	-1.366	-53.667
N+8.90	B56	ENVOLVENTE MIN	4.93	-4.77	-5.96	-1.366	-54.273
N+4.45	B56	ENVOLVENTE MAX	0	0	-14.8	13.34	46.523
N+4.45	B56	ENVOLVENTE MAX	4.93	0	243.33	13.34	14.71
N+4.45	B56	ENVOLVENTE MIN	0	0	-137.81	-14.662	-205.608
N+4.45	B56	ENVOLVENTE MIN	4.93	0	69.02	-14.662	-236.714
N+4.45	B57	ENVOLVENTE MAX	0	0	-23.87	15.692	34.079
N+4.45	B57	ENVOLVENTE MAX	4.93	0	273.57	15.692	-13.319
N+4.45	B57	ENVOLVENTE MIN	0	0	-138.47	-15.645	-205.457
N+4.45	B57	ENVOLVENTE MIN	4.93	0	73.54	-15.645	-211.802
N+8.90	B58	ENVOLVENTE MAX	0	11.36	5.86	5.524	27.653
N+8.90	B58	ENVOLVENTE MAX	4.93	11.36	24.2	5.524	28.749
N+8.90	B58	ENVOLVENTE MIN	0	-18.17	-25.23	-5.562	-44.493
N+8.90	B58	ENVOLVENTE MIN	4.93	-18.17	-6.3	-5.562	-41.948
N+4.45	B58	ENVOLVENTE MAX	0	0	-3.1	12.273	68.609
N+4.45	B58	ENVOLVENTE MAX	4.93	0	185.12	12.273	50.364
N+4.45	B58	ENVOLVENTE MIN	0	0	-126.13	-5.83	-192.84
N+4.45	B58	ENVOLVENTE MIN	4.93	0	29.32	-5.83	-209.523
N+17.00	B59	ENVOLVENTE MAX	0	-3.41	-2.02	8.024	-0.474
N+17.00	B59	ENVOLVENTE MAX	3.05	-3.41	5.18	8.024	3.602
N+17.00	B59	ENVOLVENTE MIN	0	-19.59	-13.92	-8.8	-10.609
N+17.00	B59	ENVOLVENTE MIN	3.05	-19.59	0.12	-8.8	-1.885
N+17.00	B60	ENVOLVENTE MAX	0	-3.85	5.09	13.194	10.59
N+17.00	B60	ENVOLVENTE MAX	3.05	-3.85	25.83	13.194	11.211
N+17.00	B60	ENVOLVENTE MIN	0	-58.2	-15.16	-12.842	-17.259
N+17.00	B60	ENVOLVENTE MIN	3.05	-58.2	-3.18	-12.842	-29.195
N+17.00	B61	ENVOLVENTE MAX	0	-2.45	-3.21	1.878	-3.715
N+17.00	B61	ENVOLVENTE MAX	3.05	-2.45	3.07	1.878	5.462
N+17.00	B61	ENVOLVENTE MIN	0	-15.2	-17.45	-1.631	-22.315
N+17.00	B61	ENVOLVENTE MIN	3.05	-15.2	-0.59	-1.631	-1.582
N+17.00	B63	ENVOLVENTE MAX	0	50.9	3.77	0.117	39.216
N+17.00	B63	ENVOLVENTE MAX	9.85	50.9	11.64	0.117	18.971
N+17.00	B63	ENVOLVENTE MIN	0	-51.84	-10.75	-0.486	-46.779
N+17.00	B63	ENVOLVENTE MIN	9.85	-51.84	-3.11	-0.486	-34.158
N+17.00	B64	ENVOLVENTE MAX	0	13.38	0.05	0.144	12.506
N+17.00	B64	ENVOLVENTE MAX	9.85	13.38	9.23	0.144	15.82
N+17.00	B64	ENVOLVENTE MIN	0	-14.43	-11.79	-0.167	-28.196
N+17.00	B64	ENVOLVENTE MIN	9.85	-14.43	-0.9	-0.167	-21.622
N+17.00	B65	ENVOLVENTE MAX	0	15.28	0.81	0.477	15.015
N+17.00	B65	ENVOLVENTE MAX	9.75	15.28	11.54	0.477	12.541
N+17.00	B65	ENVOLVENTE MIN	0	-17.02	-9.19	-0.027	-20.641
N+17.00	B65	ENVOLVENTE MIN	9.75	-17.02	-0.03	-0.027	-27.08
N+17.00	B66	ENVOLVENTE MAX	0	57.67	0.45	-0.004	11.69
N+17.00	B66	ENVOLVENTE MAX	9.85	57.67	9.77	-0.004	19.729
N+17.00	B66	ENVOLVENTE MIN	0	-59.61	-11.2	-0.452	-26.004
N+17.00	B66	ENVOLVENTE MIN	9.85	-59.61	-0.96	-0.452	-28.198
N+17.00	B67	ENVOLVENTE MAX	0	-1.57	3.18	13.495	-0.119
N+17.00	B67	ENVOLVENTE MAX	0.595	-1.57	5.86	13.495	-0.172
N+17.00	B67	ENVOLVENTE MIN	0	-33.01	-3.1	-9.498	-3.093
N+17.00	B67	ENVOLVENTE MIN	0.595	-33.01	-2.04	-9.498	-5.507
N+17.00	B68	ENVOLVENTE MAX	0	1.76	-2.07	0.726	-0.95
N+17.00	B68	ENVOLVENTE MAX	3	1.76	9.51	0.726	1.107

N+17.00	B68	ENVOLVENTE MIN	0	-11.71	-10.82	-1.129	-6.846
N+17.00	B68	ENVOLVENTE MIN	3	-11.71	1.58	-1.129	-2.964
N+17.00	B69	ENVOLVENTE MAX	0	-0.02	-6.39	16.241	3.222
N+17.00	B69	ENVOLVENTE MAX	3	-0.02	3.75	16.241	69.104
N+17.00	B69	ENVOLVENTE MIN	0	-34.65	-59.39	-15.96	-53.374
N+17.00	B69	ENVOLVENTE MIN	3	-34.65	-22.26	-15.96	6.507
N+17.00	B70	ENVOLVENTE MAX	0	2.02	-2.38	8.737	-0.589
N+17.00	B70	ENVOLVENTE MAX	2.405	2.02	5.74	8.737	8.891
N+17.00	B70	ENVOLVENTE MIN	0	-12.98	-14.52	-10.09	-8.462
N+17.00	B70	ENVOLVENTE MIN	2.405	-12.98	0.08	-10.09	0.287
N+8.90	B71	ENVOLVENTE MAX	0	3.53	5.05	7.314	21.805
N+8.90	B71	ENVOLVENTE MAX	4.82	3.53	23.41	7.314	27.642
N+8.90	B71	ENVOLVENTE MIN	0	-9.68	-23.12	-7.628	-36.127
N+8.90	B71	ENVOLVENTE MIN	4.82	-9.68	-5.04	-7.628	-42.695
N+4.45	B71	ENVOLVENTE MAX	0	0	-15.11	11.607	28.367
N+4.45	B71	ENVOLVENTE MAX	4.82	0	91.9	11.607	60.848
N+4.45	B71	ENVOLVENTE MIN	0	0	-104.18	-7.327	-140.933
N+4.45	B71	ENVOLVENTE MIN	4.82	0	7	-7.327	-124.267
N+4.45	B72	ENVOLVENTE MAX	0	0	-0.76	9.567	28.097
N+4.45	B72	ENVOLVENTE MAX	2.62	0	30.31	9.567	70.65
N+4.45	B72	ENVOLVENTE MAX	2.62	0	48.1	9.567	70.65
N+4.45	B72	ENVOLVENTE MAX	4.82	0	96.26	9.567	69.952
N+4.45	B72	ENVOLVENTE MIN	0	0	-88.24	-9.238	-111.623
N+4.45	B72	ENVOLVENTE MIN	2.62	0	-40.02	-9.238	-2.331
N+4.45	B72	ENVOLVENTE MIN	2.62	0	-24.97	-9.238	-2.331
N+4.45	B72	ENVOLVENTE MIN	4.82	0	5.7	-9.238	-153.075
N+8.90	B73	ENVOLVENTE MAX	0	35.72	9.76	10.284	35.82
N+8.90	B73	ENVOLVENTE MAX	4.82	35.72	34.77	10.284	46.863
N+8.90	B73	ENVOLVENTE MIN	0	-6.33	-33.04	-10.747	-49.468
N+8.90	B73	ENVOLVENTE MIN	4.82	-6.33	-9.47	-10.747	-65.364
N+4.45	B73	ENVOLVENTE MAX	0	0	-45.14	14.851	6.083
N+4.45	B73	ENVOLVENTE MAX	4.82	0	106.57	14.851	80.811
N+4.45	B73	ENVOLVENTE MIN	0	0	-180.28	-15.167	-219.756
N+4.45	B73	ENVOLVENTE MIN	4.82	0	0.7	-15.167	-155.39
N+4.45	B74	ENVOLVENTE MAX	0	0	-65.84	12.238	-5.144
N+4.45	B74	ENVOLVENTE MAX	4.82	0	125.31	12.238	95.511
N+4.45	B74	ENVOLVENTE MIN	0	0	-226.22	-12.255	-206.888
N+4.45	B74	ENVOLVENTE MIN	4.82	0	5.98	-12.255	-211.375
N+8.90	B75	ENVOLVENTE MAX	0	48.41	11.34	13.66	38.885
N+8.90	B75	ENVOLVENTE MAX	4.82	48.41	35.46	13.66	60.4
N+8.90	B75	ENVOLVENTE MIN	0	-26.43	-38.92	-13.911	-62.123
N+8.90	B75	ENVOLVENTE MIN	4.82	-26.43	-14.45	-13.911	-67.79
N+4.45	B75	ENVOLVENTE MAX	0	0	-56.16	17.371	30.589
N+4.45	B75	ENVOLVENTE MAX	4.82	0	140.42	17.371	91.128
N+4.45	B75	ENVOLVENTE MIN	0	0	-250.06	-16.353	-250.005
N+4.45	B75	ENVOLVENTE MIN	4.82	0	-0.74	-16.353	-218.595
N+4.45	B76	ENVOLVENTE MAX	0	0	-22.66	11.949	57.442
N+4.45	B76	ENVOLVENTE MAX	4.82	0	177.95	11.949	173.451
N+4.45	B76	ENVOLVENTE MIN	0	0	-289.24	-11.945	-275.465
N+4.45	B76	ENVOLVENTE MIN	4.82	0	-21.4	-11.945	-344.582
N+8.90	B77	ENVOLVENTE MAX	0	28.74	10.81	13.066	34.774
N+8.90	B77	ENVOLVENTE MAX	4.82	28.74	29.53	13.066	43.036
N+8.90	B77	ENVOLVENTE MIN	0	-36.02	-28.6	-11.485	-48.186
N+8.90	B77	ENVOLVENTE MIN	4.82	-36.02	-10.88	-11.485	-58.531
N+4.45	B77	ENVOLVENTE MAX	0	0	-18.1	10.61	66.594
N+4.45	B77	ENVOLVENTE MAX	4.82	0	129	10.61	119.893
N+4.45	B77	ENVOLVENTE MIN	0	0	-198.42	-14.327	-229.212
N+4.45	B77	ENVOLVENTE MIN	4.82	0	-14.13	-14.327	-201.312
N+17.00	B78	ENVOLVENTE MAX	0	3.9	2.61	0.527	21.35
N+17.00	B78	ENVOLVENTE MAX	9.75	3.9	11.82	0.527	22.569
N+17.00	B78	ENVOLVENTE MIN	0	-4.82	-9.17	0.075	-26.34
N+17.00	B78	ENVOLVENTE MIN	9.75	-4.82	-1.66	0.075	-38.511
N+17.00	B79	ENVOLVENTE MAX	0	4.17	1.39	-0.062	21.591
N+17.00	B79	ENVOLVENTE MAX	9.85	4.17	8.99	-0.062	20.085
N+17.00	B79	ENVOLVENTE MIN	0	-5.16	-11.9	-0.521	-38.067
N+17.00	B79	ENVOLVENTE MIN	9.85	-5.16	-2.33	-0.521	-25.818
N+8.90	B80	ENVOLVENTE MAX	0	8.51	3.22	6.617	23.508
N+8.90	B80	ENVOLVENTE MAX	4.825	8.51	21.49	6.617	15.979
N+8.90	B80	ENVOLVENTE MIN	0	-16.77	-20.86	-7.226	-37.83
N+8.90	B80	ENVOLVENTE MIN	4.825	-16.77	-2.65	-7.226	-33.199
N+4.45	B80	ENVOLVENTE MAX	0	0	-5.8	3.363	61.236
N+4.45	B80	ENVOLVENTE MAX	4.825	0	105.08	3.363	37.867
N+4.45	B80	ENVOLVENTE MIN	0	0	-94.66	-3.602	-126.21
N+4.45	B80	ENVOLVENTE MIN	4.825	0	12.97	-3.602	-145.295
N+8.90	B81	ENVOLVENTE MAX	0	3.25	3.96	1.916	17.334
N+8.90	B81	ENVOLVENTE MAX	4.925	3.25	22.53	1.916	32.256
N+8.90	B81	ENVOLVENTE MIN	0	-9.24	-23.19	-5.651	-33.082

N+8.90	B81	ENVOLVENTE MIN	4.925	-9.24	-4.52	-5.651	-45.009
N+4.45	B81	ENVOLVENTE MAX	0	0	-8.92	1.878	40.063
N+4.45	B81	ENVOLVENTE MAX	4.925	0	88.96	1.878	43.833
N+4.45	B81	ENVOLVENTE MIN	0	0	-89.89	-3.819	-130.384
N+4.45	B81	ENVOLVENTE MIN	4.925	0	8.22	-3.819	-130.158
N+8.90	B82	ENVOLVENTE MAX	0	31.92	4.69	4.896	31.917
N+8.90	B82	ENVOLVENTE MAX	4.925	31.92	23.44	4.896	16.463
N+8.90	B82	ENVOLVENTE MIN	0	-38.92	-22.23	-1.848	-45.169
N+8.90	B82	ENVOLVENTE MIN	4.925	-38.92	-3.75	-1.848	-35.003
N+4.45	B82	ENVOLVENTE MAX	0	0	-14.6	4.21	38.578
N+4.45	B82	ENVOLVENTE MAX	4.925	0	125.63	4.21	26.274
N+4.45	B82	ENVOLVENTE MIN	0	0	-99.81	-7.07	-139.292
N+4.45	B82	ENVOLVENTE MIN	4.925	0	30.2	-7.07	-153.809
N+8.90	B83	ENVOLVENTE MAX	0	23.5	0.83	7.573	13.634
N+8.90	B83	ENVOLVENTE MAX	4.925	23.5	19.23	7.573	20.975
N+8.90	B83	ENVOLVENTE MIN	0	-30.34	-20.86	-5.794	-32.488
N+8.90	B83	ENVOLVENTE MIN	4.925	-30.34	-2.03	-5.794	-32.839
N+4.45	B83	ENVOLVENTE MAX	0	0	-32.96	11.411	21.316
N+4.45	B83	ENVOLVENTE MAX	4.925	0	97.42	11.411	25.482
N+4.45	B83	ENVOLVENTE MIN	0	0	-121.46	-6.665	-147.837
N+4.45	B83	ENVOLVENTE MIN	4.925	0	18.41	-6.665	-132.181
N+8.90	B84	ENVOLVENTE MAX	0	35.4	1.31	7.034	20.307
N+8.90	B84	ENVOLVENTE MAX	4.925	35.4	20.11	7.034	10.959
N+8.90	B84	ENVOLVENTE MIN	0	-45.05	-18.51	-8.698	-31.585
N+8.90	B84	ENVOLVENTE MIN	4.925	-45.05	-0.08	-8.698	-29.2
N+4.45	B84	ENVOLVENTE MAX	0	0	-24.07	7.926	17.466
N+4.45	B84	ENVOLVENTE MAX	4.925	0	145.43	7.926	0.63
N+4.45	B84	ENVOLVENTE MIN	0	0	-96.83	-12.485	-129.571
N+4.45	B84	ENVOLVENTE MIN	4.925	0	53.26	-12.485	-148.973
N+8.90	B85	ENVOLVENTE MAX	0	31.5	1.2	3.509	13.283
N+8.90	B85	ENVOLVENTE MAX	4.925	31.5	19.79	3.509	20.676
N+8.90	B85	ENVOLVENTE MIN	0	-40.47	-20.34	-3.849	-29.994
N+8.90	B85	ENVOLVENTE MIN	4.925	-40.47	-1.7	-3.849	-34.831
N+4.45	B85	ENVOLVENTE MAX	0	0	-49.04	6.492	7.351
N+4.45	B85	ENVOLVENTE MAX	4.925	0	101.31	6.492	28.282
N+4.45	B85	ENVOLVENTE MIN	0	0	-148.42	-3.403	-153.828
N+4.45	B85	ENVOLVENTE MIN	4.925	0	20.82	-3.403	-144.558
N+8.90	B86	ENVOLVENTE MAX	0	35.13	1.64	3.918	20.607
N+8.90	B86	ENVOLVENTE MAX	4.925	35.13	20.4	3.918	12.71
N+8.90	B86	ENVOLVENTE MIN	0	-44	-19.53	-3.269	-34.399
N+8.90	B86	ENVOLVENTE MIN	4.925	-44	-1.06	-3.269	-30.048
N+4.45	B86	ENVOLVENTE MAX	0	0	-20.82	5.805	28.255
N+4.45	B86	ENVOLVENTE MAX	4.925	0	148.25	5.805	7.813
N+4.45	B86	ENVOLVENTE MIN	0	0	-101.59	-8.862	-144.864
N+4.45	B86	ENVOLVENTE MIN	4.925	0	48.93	-8.862	-153.223
N+8.90	B87	ENVOLVENTE MAX	0	32.96	0.1	8.754	12.102
N+8.90	B87	ENVOLVENTE MAX	4.925	32.96	18.22	8.754	17.85
N+8.90	B87	ENVOLVENTE MIN	0	-42.16	-20.3	-6.973	-30.641
N+8.90	B87	ENVOLVENTE MIN	4.925	-42.16	-1.19	-6.973	-28.595
N+4.45	B87	ENVOLVENTE MAX	0	0	-52.42	10.95	2.06
N+4.45	B87	ENVOLVENTE MAX	4.925	0	98.99	10.95	15.225
N+4.45	B87	ENVOLVENTE MIN	0	0	-143.64	-8.284	-147.509
N+4.45	B87	ENVOLVENTE MIN	4.925	0	24.54	-8.284	-137.41
N+8.90	B88	ENVOLVENTE MAX	0	22.77	2.07	11.607	18.924
N+8.90	B88	ENVOLVENTE MAX	4.925	22.77	20.78	11.607	14.382
N+8.90	B88	ENVOLVENTE MIN	0	-34.64	-19.31	-16.318	-31.08
N+8.90	B88	ENVOLVENTE MIN	4.925	-34.64	-0.79	-16.318	-33.316
N+4.45	B88	ENVOLVENTE MAX	0	0.09	-48.03	-11.125	17.029
N+4.45	B88	ENVOLVENTE MAX	0.38	0.09	-43.34	-11.125	34.414
N+4.45	B88	ENVOLVENTE MAX	0.38	0.01	-12.72	17.709	34.414
N+4.45	B88	ENVOLVENTE MAX	4.925	0.01	172.89	17.709	14.185
N+4.45	B88	ENVOLVENTE MIN	0	-0.09	-169.33	-72.217	-157.789
N+4.45	B88	ENVOLVENTE MIN	0.38	-0.09	-162.7	-72.217	-94.649
N+4.45	B88	ENVOLVENTE MIN	0.38	-0.01	-99.38	-16.504	-94.648
N+4.45	B88	ENVOLVENTE MIN	4.925	-0.01	46.82	-16.504	-181.706
N+8.90	B89	ENVOLVENTE MAX	0	18.71	0.85	5.894	15.056
N+8.90	B89	ENVOLVENTE MAX	4.925	18.71	19.43	5.894	17.612
N+8.90	B89	ENVOLVENTE MIN	0	-29.71	-20.44	-7.227	-32.801
N+8.90	B89	ENVOLVENTE MIN	4.925	-29.71	-1.79	-7.227	-30.541
N+4.45	B89	ENVOLVENTE MAX	0	0	-41.89	6.118	22.283
N+4.45	B89	ENVOLVENTE MAX	4.925	0	112.97	6.118	36.386
N+4.45	B89	ENVOLVENTE MIN	0	0	-173.39	-6.05	-184.014
N+4.45	B89	ENVOLVENTE MIN	4.925	0	14.87	-6.05	-157.459
N+8.90	B90	ENVOLVENTE MAX	0	12.35	1.1	6.088	16.146
N+8.90	B90	ENVOLVENTE MAX	4.925	12.35	19.59	6.088	14.924
N+8.90	B90	ENVOLVENTE MIN	0	-23.89	-19.47	-4.865	-30.341
N+8.90	B90	ENVOLVENTE MIN	4.925	-23.89	-0.72	-4.865	-30.341

N+4.45	B90	ENVOLVENTE MAX	0	0	-16.04	8.927	33.954
N+4.45	B90	ENVOLVENTE MAX	4.925	0	171.99	8.927	19.393
N+4.45	B90	ENVOLVENTE MIN	0	0	-112.24	-9.385	-156.061
N+4.45	B90	ENVOLVENTE MIN	4.925	0	42.84	-9.385	-180.018
N+8.90	B91	ENVOLVENTE MAX	0	13.42	3.31	18.047	18.677
N+8.90	B91	ENVOLVENTE MAX	4.825	13.42	21.91	18.047	23.244
N+8.90	B91	ENVOLVENTE MIN	0	-25.56	-21.57	-14.009	-33.896
N+8.90	B91	ENVOLVENTE MIN	4.825	-25.56	-3.7	-14.009	-38.359
N+4.45	B91	ENVOLVENTE MAX	0	0	-40.15	22.437	23.411
N+4.45	B91	ENVOLVENTE MAX	4.825	0	106.85	22.437	60.333
N+4.45	B91	ENVOLVENTE MIN	0	0	-178.21	-14.465	-189.667
N+4.45	B91	ENVOLVENTE MIN	4.825	0	6.74	-14.465	-138.115
N+4.45	B92	ENVOLVENTE MAX	0	0	9.36	9.239	86.758
N+4.45	B92	ENVOLVENTE MAX	4.82	0	79.75	9.239	38.704
N+4.45	B92	ENVOLVENTE MIN	0	0	-74.64	-8.208	-131.126
N+4.45	B92	ENVOLVENTE MIN	4.82	0	-5.79	-8.208	-103.999
N+4.45	B93	ENVOLVENTE MAX	0	0	-0.75	6.942	15.505
N+4.45	B93	ENVOLVENTE MAX	3	0	12.21	6.942	28.843
N+4.45	B93	ENVOLVENTE MAX	3	0	27.06	6.942	28.843
N+4.45	B93	ENVOLVENTE MAX	4.93	0	47.28	6.942	27.09
N+4.45	B93	ENVOLVENTE MIN	0	0	-40.65	-11.961	-67.5
N+4.45	B93	ENVOLVENTE MIN	3	0	-23.37	-11.961	-1.98
N+4.45	B93	ENVOLVENTE MIN	3	0	-9.15	-11.961	-1.98
N+4.45	B93	ENVOLVENTE MIN	4.93	0	4.61	-11.961	-67.578
N+4.45	B94	ENVOLVENTE MAX	0	0	-3.37	13.403	29.01
N+4.45	B94	ENVOLVENTE MAX	1.93	0	10.4	13.403	27.495
N+4.45	B94	ENVOLVENTE MAX	1.93	0	25.12	13.403	27.495
N+4.45	B94	ENVOLVENTE MAX	4.93	0	42.4	13.403	13.891
N+4.45	B94	ENVOLVENTE MIN	0	0	-46.46	-8.243	-67.639
N+4.45	B94	ENVOLVENTE MIN	1.93	0	-26.24	-8.243	-2.757
N+4.45	B94	ENVOLVENTE MIN	1.93	0	-11.89	-8.243	-2.757
N+4.45	B94	ENVOLVENTE MIN	4.93	0	1.07	-8.243	-74.205
N+4.45	B95	ENVOLVENTE MAX	0	0	-3	9.266	29.308
N+4.45	B95	ENVOLVENTE MAX	2.62	0	28.07	9.266	69.797
N+4.45	B95	ENVOLVENTE MAX	2.62	0	45.64	9.266	69.797
N+4.45	B95	ENVOLVENTE MAX	4.82	0	93.8	9.266	66.609
N+4.45	B95	ENVOLVENTE MIN	0	0	-87.79	-9.313	-111.219
N+4.45	B95	ENVOLVENTE MIN	2.62	0	-39.58	-9.313	4.846
N+4.45	B95	ENVOLVENTE MIN	2.62	0	-24.31	-9.313	4.846
N+4.45	B95	ENVOLVENTE MIN	4.82	0	6.36	-9.313	-139.457
N+4.45	B109	ENVOLVENTE MAX	0	0	-84.79	19.557	-32.545
N+4.45	B109	ENVOLVENTE MAX	4.925	0	127.74	19.557	2.462
N+4.45	B109	ENVOLVENTE MIN	0	0	-275.67	-19.546	-205.284
N+4.45	B109	ENVOLVENTE MIN	4.925	0	31.93	-19.546	-166.656
N+4.45	B110	ENVOLVENTE MAX	0	0	-33.77	26.287	-0.74
N+4.45	B110	ENVOLVENTE MAX	4.925	0	276.05	26.287	-40.566
N+4.45	B110	ENVOLVENTE MIN	0	0	-127.32	-26.283	-163.175
N+4.45	B110	ENVOLVENTE MIN	4.925	0	87.14	-26.283	-200.181
N+4.45	B111	ENVOLVENTE MAX	0	0	-67.82	23.228	-11.587
N+4.45	B111	ENVOLVENTE MAX	4.825	0	128.7	23.228	94.783
N+4.45	B111	ENVOLVENTE MIN	0	0	-280.3	-23.192	-235.034
N+4.45	B111	ENVOLVENTE MIN	4.825	0	4.63	-23.192	-180.959
N+4.45	B112	ENVOLVENTE MAX	0	0.55	-30.62	0	-27.556
N+4.45	B112	ENVOLVENTE MAX	1.8	0.55	0	0	0
N+4.45	B112	ENVOLVENTE MIN	0	-0.55	-76.82	0	-69.142
N+4.45	B112	ENVOLVENTE MIN	1.8	-0.55	0	0	0
N+4.45	B113	ENVOLVENTE MAX	0	0.55	0	0	0
N+4.45	B113	ENVOLVENTE MAX	1.8	0.55	76.82	0	-27.556
N+4.45	B113	ENVOLVENTE MIN	0	-0.55	0	0	0
N+4.45	B113	ENVOLVENTE MIN	1.8	-0.55	30.62	0	-69.142

FUERZAS EN COLUMNAS

BEAM FORCES
UNID: kN-m

Story	Column	Load	Loc	P	V2	V3	T	M2	M3
N+8.90	C1	ENVOLVENTE MAX	0	-18.03	1.9	5.32	8.332	7.601	-2.926
N+8.90	C1	ENVOLVENTE MAX	4.45	1.43	1.9	5.32	8.332	39.058	26.768
N+8.90	C1	ENVOLVENTE MIN	0	-73.28	-11.78	-16.92	-7.624	-39.82	-27.479
N+8.90	C1	ENVOLVENTE MIN	4.45	-47.32	-11.78	-16.92	-7.624	-19.68	-13.192
N+4.45	C1	ENVOLVENTE MAX	0	-71.6	29.57	33.93	2.123	94.597	82.089
N+4.45	C1	ENVOLVENTE MAX	4.5	-51.91	29.57	33.93	2.123	88.311	83.585
N+4.45	C1	ENVOLVENTE MIN	0	-266.88	-40.4	-43.88	-2.126	-109.174	-98.234
N+4.45	C1	ENVOLVENTE MIN	4.5	-240.63	-40.4	-43.88	-2.126	-58.12	-50.983
N+8.90	C2	ENVOLVENTE MAX	0	-38.96	18.54	13.73	18.923	56.712	37.74
N+8.90	C2	ENVOLVENTE MAX	4.45	-14.93	18.54	13.73	18.923	6.795	40.857
N+8.90	C2	ENVOLVENTE MIN	0	-62.91	-13.18	-16.61	-18.375	-67.797	-18.932
N+8.90	C2	ENVOLVENTE MIN	4.45	-25.53	-13.18	-16.61	-18.375	-5.064	-45.929
N+4.45	C2	ENVOLVENTE MAX	0	-130.59	59.13	34.84	3.236	111.987	145.555
N+4.45	C2	ENVOLVENTE MAX	4.5	-106.29	59.13	34.84	3.236	79.108	101.587
N+4.45	C2	ENVOLVENTE MIN	0	-267.5	-52.93	-45.7	-3.241	-127.799	-136.621
N+4.45	C2	ENVOLVENTE MIN	4.5	-235.1	-52.93	-45.7	-3.241	-46.061	-120.547
N+8.90	C3	ENVOLVENTE MAX	0	-42.83	12.96	38.48	4.368	129.975	18.747
N+8.90	C3	ENVOLVENTE MAX	4.45	-18.8	12.96	38.48	4.368	96.228	43.049
N+8.90	C3	ENVOLVENTE MIN	0	-132.33	-16.94	-58.58	-5.577	-165.063	-33.642
N+8.90	C3	ENVOLVENTE MIN	4.45	-100.29	-16.94	-58.58	-5.577	-41.871	-40.251
N+4.45	C3	ENVOLVENTE MAX	0	-127.85	52.32	26.14	3.236	97.463	135.577
N+4.45	C3	ENVOLVENTE MAX	4.5	-103.55	52.32	26.14	3.236	59.434	119.445
N+4.45	C3	ENVOLVENTE MIN	0	-315.23	-58.85	-31.95	-3.241	-105.847	-145.405
N+4.45	C3	ENVOLVENTE MIN	4.5	-282.83	-58.85	-31.95	-3.241	-41.693	-99.861
N+8.90	C4	ENVOLVENTE MAX	0	-39.05	15.03	11.36	18.718	46.278	26.643
N+8.90	C4	ENVOLVENTE MAX	4.45	-15.02	15.03	11.36	18.718	8.489	42.322
N+8.90	C4	ENVOLVENTE MIN	0	-62.81	-14.84	-12.12	-18.856	-46.668	-25.043
N+8.90	C4	ENVOLVENTE MIN	4.45	-25.43	-14.84	-12.12	-18.856	-5.504	-41.545
N+4.45	C4	ENVOLVENTE MAX	0	-185.23	55.49	18.59	3.236	87.746	140.184
N+4.45	C4	ENVOLVENTE MAX	4.5	-160.93	55.49	18.59	3.236	41.411	108.68
N+4.45	C4	ENVOLVENTE MIN	0	-292.76	-55.27	-20.22	-3.241	-89.985	-140.072
N+4.45	C4	ENVOLVENTE MIN	4.5	-255.16	-55.27	-20.22	-3.241	-36.342	-109.518
N+8.90	C5	ENVOLVENTE MAX	0	-32.13	11.49	11.73	8.777	20.462	21.498
N+8.90	C5	ENVOLVENTE MAX	4.45	-12.67	11.49	11.73	8.777	60.452	30.999
N+8.90	C5	ENVOLVENTE MIN	0	-122.57	-12.28	-26.1	-9.146	-56.496	-23.853
N+8.90	C5	ENVOLVENTE MIN	4.45	-96.62	-12.28	-26.1	-9.146	-32.526	-29.816
N+4.45	C5	ENVOLVENTE MAX	0	-149.74	38.28	29.97	2.123	86.559	94.972
N+4.45	C5	ENVOLVENTE MAX	4.5	-130.06	38.28	29.97	2.123	78.41	80.53
N+4.45	C5	ENVOLVENTE MIN	0	-383.19	-39.39	-39.88	-2.126	-101.125	-96.754
N+4.45	C5	ENVOLVENTE MIN	4.5	-356.95	-39.39	-39.88	-2.126	-48.364	-77.284
N+8.90	C6	ENVOLVENTE MAX	0	-34.22	14.67	7.3	15.097	28.165	28.553
N+8.90	C6	ENVOLVENTE MAX	4.45	-14.75	14.67	7.3	15.097	7.874	35.884
N+8.90	C6	ENVOLVENTE MIN	0	-55.63	-14.2	-8.84	-15.998	-32.099	-27.397
N+8.90	C6	ENVOLVENTE MIN	4.45	-25.35	-14.2	-8.84	-15.998	-4.96	-36.8
N+4.45	C6	ENVOLVENTE MAX	0	-206.25	40	12.28	2.123	60.286	97.521
N+4.45	C6	ENVOLVENTE MAX	4.5	-186.56	40	12.28	2.123	21.592	82.309
N+4.45	C6	ENVOLVENTE MIN	0	-334.62	-39.98	-13.31	-2.126	-61.73	-97.613
N+4.45	C6	ENVOLVENTE MIN	4.5	-308.38	-39.98	-13.31	-2.126	-18.398	-82.517
N+8.90	C7	ENVOLVENTE MAX	0	-46.73	12.25	36.41	7.535	130.166	19.799
N+8.90	C7	ENVOLVENTE MAX	4.45	-22.7	12.25	36.41	7.535	121.887	36.236
N+8.90	C7	ENVOLVENTE MIN	0	-165.08	-12.1	-69.91	-7.67	-203.781	-19.536
N+8.90	C7	ENVOLVENTE MIN	4.45	-133.04	-12.1	-69.91	-7.67	-31.969	-36.654
N+4.45	C7	ENVOLVENTE MAX	0	-168.19	53.57	27.2	3.236	106.906	137.421
N+4.45	C7	ENVOLVENTE MAX	4.5	-143.89	53.57	27.2	3.236	62.671	104.335
N+4.45	C7	ENVOLVENTE MIN	0	-430.19	-53.86	-38.25	-3.241	-123.072	-138.047
N+4.45	C7	ENVOLVENTE MIN	4.5	-397.79	-53.86	-38.25	-3.241	-34.793	-103.657
N+8.90	C8	ENVOLVENTE MAX	0	-33.83	13.96	7.35	15.49	27.55	27.256
N+8.90	C8	ENVOLVENTE MAX	4.45	-14.36	13.96	7.35	15.49	8.564	37.095
N+8.90	C8	ENVOLVENTE MIN	0	-56.67	-14.6	-8.6	-14.504	-30.689	-27.998
N+8.90	C8	ENVOLVENTE MIN	4.45	-26.39	-14.6	-8.6	-14.504	-6.147	-35.016
N+4.45	C8	ENVOLVENTE MAX	0	-205.82	40.1	16.23	2.123	71.446	97.62
N+4.45	C8	ENVOLVENTE MAX	4.5	-186.14	40.1	16.23	2.123	20.596	82.751
N+4.45	C8	ENVOLVENTE MIN	0	-333.52	-40.12	-16.98	-2.126	-72.492	-97.779
N+4.45	C8	ENVOLVENTE MIN	4.5	-307.28	-40.12	-16.98	-2.126	-18.277	-82.821
N+8.90	C9	ENVOLVENTE MAX	0	-42.21	12.1	15.3	7.784	26.791	21.314
N+8.90	C9	ENVOLVENTE MAX	4.45	-22.74	12.1	15.3	7.784	60.062	33.804
N+8.90	C9	ENVOLVENTE MIN	0	-159.56	-13.97	-24.44	-8.682	-49.708	-28.837
N+8.90	C9	ENVOLVENTE MIN	4.45	-133.6	-13.97	-24.44	-8.682	-42.324	-33.008
N+4.45	C9	ENVOLVENTE MAX	0	-187.49	37.99	42.5	2.123	117.119	94.552

N+4.45	C9	ENVOLVENTE MAX	4.5	-167.81	37.99	42.5	2.123	91.788	85.76
N+4.45	C9	ENVOLVENTE MIN	0	-503.27	-41.13	-48.3	-2.126	-125.645	-99.314
N+4.45	C9	ENVOLVENTE MIN	4.5	-477.02	-41.13	-48.3	-2.126	-74.213	-76.424
N+8.90	C10	ENVOLVENTE MAX	0	-36.75	15	5.15	10.132	16.768	27.074
N+8.90	C10	ENVOLVENTE MAX	4.45	-12.72	15	5.15	10.132	11.412	40.851
N+8.90	C10	ENVOLVENTE MIN	0	-64.11	-14.55	-13.95	-31.109	-57.619	-25.024
N+8.90	C10	ENVOLVENTE MIN	4.45	-27.13	-14.55	-13.95	-31.109	-8.986	-40.834
N+4.45	C10	ENVOLVENTE MAX	0	-210.4	56.37	39.09	3.236	148.549	141.476
N+4.45	C10	ENVOLVENTE MAX	4.5	-186.1	56.37	39.09	3.236	13.852	109.345
N+4.45	C10	ENVOLVENTE MIN	0	-425.05	-55.48	-30.05	-3.241	-135.181	-140.371
N+4.45	C10	ENVOLVENTE MIN	4.5	-392.65	-55.48	-30.05	-3.241	-58.658	-112.221
N+8.90	C11	ENVOLVENTE MAX	0	-87.37	17.13	17.12	12.756	51.282	23.989
N+8.90	C11	ENVOLVENTE MAX	4.45	-63.34	17.13	17.12	12.756	254.066	55.887
N+8.90	C11	ENVOLVENTE MIN	0	-301.64	-17.62	-129.45	-12.682	-321.99	-25.005
N+8.90	C11	ENVOLVENTE MIN	4.45	-269.6	-17.62	-129.45	-12.682	-25.586	-54.683
N+4.45	C11	ENVOLVENTE MAX	0	-193.16	54.13	65.01	3.236	196.75	138.242
N+4.45	C11	ENVOLVENTE MAX	4.5	-168.86	54.13	65.01	3.236	79.371	105.408
N+4.45	C11	ENVOLVENTE MIN	0	-558.15	-54.21	-58.81	-3.241	-187.57	-138.567
N+4.45	C11	ENVOLVENTE MIN	4.5	-525.75	-54.21	-58.81	-3.241	-118.614	-105.345
N+8.90	C12	ENVOLVENTE MAX	0	-35.91	15.56	5.44	31.622	16.924	27.088
N+8.90	C12	ENVOLVENTE MAX	4.45	-11.88	15.56	5.44	31.622	14.152	42.155
N+8.90	C12	ENVOLVENTE MIN	0	-62.83	-15.76	-14.16	-9.29	-58.549	-29.301
N+8.90	C12	ENVOLVENTE MIN	4.45	-25.68	-15.76	-14.16	-9.29	-12.213	-43.457
N+4.45	C12	ENVOLVENTE MAX	0	-207.69	56.19	47.15	3.236	179.815	141.274
N+4.45	C12	ENVOLVENTE MAX	4.5	-183.39	56.19	47.15	3.236	20.785	114.511
N+4.45	C12	ENVOLVENTE MIN	0	-420.48	-57.21	-39.87	-3.241	-169.049	-142.976
N+4.45	C12	ENVOLVENTE MIN	4.5	-388.08	-57.21	-39.87	-3.241	-55.159	-111.621
N+8.90	C13	ENVOLVENTE MAX	0	-31.48	12.76	7.4	15.73	5.446	31.293
N+8.90	C13	ENVOLVENTE MAX	4.45	-12.02	12.76	7.4	15.73	48.464	14.188
N+8.90	C13	ENVOLVENTE MIN	0	-105.24	-1.53	-19.24	-13.241	-41.85	4.172
N+8.90	C13	ENVOLVENTE MIN	4.45	-79.29	-1.53	-19.24	-13.241	-32.169	-28.72
N+4.45	C13	ENVOLVENTE MAX	0	-81.52	41.63	63.96	2.123	173.513	99.882
N+4.45	C13	ENVOLVENTE MAX	4.5	-61.84	41.63	63.96	2.123	150.951	49.868
N+4.45	C13	ENVOLVENTE MIN	0	-312.29	-29.23	-76.07	-2.126	-191.417	-81.677
N+4.45	C13	ENVOLVENTE MIN	4.5	-286.05	-29.23	-76.07	-2.126	-114.332	-87.471
N+8.90	C14	ENVOLVENTE MAX	0	-41.66	5.68	21.94	7.081	44.151	18.79
N+8.90	C14	ENVOLVENTE MAX	4.45	-22.2	5.68	21.94	7.081	54.011	11.962
N+8.90	C14	ENVOLVENTE MIN	0	-89.67	-6.35	-22.22	-8.058	-44.904	-19.336
N+8.90	C14	ENVOLVENTE MIN	4.45	-63.72	-6.35	-22.22	-8.058	-53.516	-9.515
N+4.45	C14	ENVOLVENTE MAX	0	-173.29	16.06	45.37	2.123	111.521	60.963
N+4.45	C14	ENVOLVENTE MAX	4.5	-153.6	16.06	45.37	2.123	93.761	23.195
N+4.45	C14	ENVOLVENTE MIN	0	-286.03	-18.21	-45.69	-2.126	-111.868	-64.257
N+4.45	C14	ENVOLVENTE MIN	4.5	-255.41	-18.21	-45.69	-2.126	-92.652	-16.828
N+17.00	C14-1	ENVOLVENTE MAX	0	-8.04	0.86	0.2	0.374	0.657	2.595
N+17.00	C14-1	ENVOLVENTE MAX	1.927	-7.58	0.86	0.2	0.374	0.384	1.668
N+17.00	C14-1	ENVOLVENTE MIN	0	-39.93	-0.76	-0.3	-0.443	-0.663	-2.364
N+17.00	C14-1	ENVOLVENTE MIN	1.927	-39.32	-0.76	-0.3	-0.443	-0.229	-1.625
N+4.45	C15	ENVOLVENTE MAX	0	-102.3	16.38	50.52	2.123	115.2	62.21
N+4.45	C15	ENVOLVENTE MAX	4.5	-82.61	16.38	50.52	2.123	107.742	16.255
N+4.45	C15	ENVOLVENTE MIN	0	-209.36	-17.94	-49.02	-2.126	-112.861	-64.629
N+4.45	C15	ENVOLVENTE MIN	4.5	-183.12	-17.94	-49.02	-2.126	-112.184	-11.677
N+8.90	C16	ENVOLVENTE MAX	0	-54.1	7.94	31.27	7.23	62.844	22.152
N+8.90	C16	ENVOLVENTE MAX	4.45	-34.64	7.94	31.27	7.23	87.863	15.828
N+8.90	C16	ENVOLVENTE MIN	0	-147.22	-7.52	-40.66	-7.964	-93.109	-21.455
N+8.90	C16	ENVOLVENTE MIN	4.45	-121.27	-7.52	-40.66	-7.964	-76.341	-16.985
N+4.45	C16	ENVOLVENTE MAX	0	-353.51	19.35	39.97	2.123	101.368	65.978
N+4.45	C16	ENVOLVENTE MAX	4.5	-333.82	19.35	39.97	2.123	111.708	28.365
N+4.45	C16	ENVOLVENTE MIN	0	-634.19	-20.77	-50.93	-2.126	-117.479	-68.198
N+4.45	C16	ENVOLVENTE MIN	4.5	-607.94	-20.77	-50.93	-2.126	-78.504	-24.194
N+17.00	C16-1	ENVOLVENTE MAX	0	-17.35	2.42	0.47	0.844	0.979	8.423
N+17.00	C16-1	ENVOLVENTE MAX	1.927	-16.89	2.42	0.47	0.844	0.653	3.839
N+17.00	C16-1	ENVOLVENTE MAX	1.927	-9.86	1.57	0.76	1.388	0.519	3.087
N+17.00	C16-1	ENVOLVENTE MAX	3.363	-9.52	1.57	0.76	1.388	0.81	1.275
N+17.00	C16-1	ENVOLVENTE MIN	0	-87	-2.7	-0.47	-0.772	-0.556	-8.967
N+17.00	C16-1	ENVOLVENTE MIN	1.927	-86.39	-2.7	-0.47	-0.772	-0.377	-3.85
N+17.00	C16-1	ENVOLVENTE MIN	1.927	-47.14	-1.7	-0.97	-1.287	-0.586	-3.029
N+17.00	C16-1	ENVOLVENTE MIN	3.363	-46.69	-1.7	-0.97	-1.287	-0.579	-1.026
N+4.45	C17	ENVOLVENTE MAX	0	-214.69	19.77	57.33	2.123	130.022	67.22
N+4.45	C17	ENVOLVENTE MAX	4.5	-195.01	19.77	57.33	2.123	129.642	22.281
N+4.45	C17	ENVOLVENTE MIN	0	-432.68	-19.96	-57.86	-2.126	-130.722	-67.628
N+4.45	C17	ENVOLVENTE MIN	4.5	-406.44	-19.96	-57.86	-2.126	-127.999	-21.812
N+8.90	C18	ENVOLVENTE MAX	0	-55.36	8.29	38.8	7.402	82.083	22.603
N+8.90	C18	ENVOLVENTE MAX	4.45	-35.89	8.29	38.8	7.402	91.599	14.451
N+8.90	C18	ENVOLVENTE MIN	0	-127.44	-6.68	-39.42	-7.816	-83.825	-21.849
N+8.90	C18	ENVOLVENTE MIN	4.45	-101.49	-6.68	-39.42	-7.816	-90.582	-20.875
N+4.45	C18	ENVOLVENTE MAX	0	-279.36	20.36	57.28	2.123	138.986	67.466
N+4.45	C18	ENVOLVENTE MAX	4.5	-259.68	20.36	57.28	2.123	119.753	30.711

N+4.45	C18	ENVOLVENTE MIN	0	-578.51	-21.66	-57.58	-2.126	-139.384	-69.515
N+4.45	C18	ENVOLVENTE MIN	4.5	-552.27	-21.66	-57.58	-2.126	-118.79	-26.888
N+17.00	C18-1	ENVOLVENTE MAX	0	-15.29	3.54	0.52	1.138	0.891	12.021
N+17.00	C18-1	ENVOLVENTE MAX	3.363	-14.49	3.54	0.52	1.138	-0.059	1.802
N+17.00	C18-1	ENVOLVENTE MAX	3.363	-4.32	3.81	2.49	1.514	3.437	3.565
N+17.00	C18-1	ENVOLVENTE MAX	5.8	-3.74	3.81	2.49	1.514	-0.431	10.279
N+17.00	C18-1	ENVOLVENTE MIN	0	-67.5	-4.41	-0.17	-1.227	-0.639	-13.662
N+17.00	C18-1	ENVOLVENTE MIN	3.363	-66.43	-4.41	-0.17	-1.227	-1.263	-0.275
N+17.00	C18-1	ENVOLVENTE MIN	3.363	-36.46	-5.4	0.5	-1.627	0.529	-3.065
N+17.00	C18-1	ENVOLVENTE MIN	5.8	-35.69	-5.4	0.5	-1.627	-2.642	-5.919
N+4.45	C19	ENVOLVENTE MAX	0	-183.28	20.8	80.3	2.123	185.335	68.759
N+4.45	C19	ENVOLVENTE MAX	4.5	-163.6	20.8	80.3	2.123	182.855	24.81
N+4.45	C19	ENVOLVENTE MIN	0	-564.74	-20.83	-82.55	-2.126	-188.635	-68.925
N+4.45	C19	ENVOLVENTE MIN	4.5	-538.49	-20.83	-82.55	-2.126	-176.022	-24.836
N+8.90	C20	ENVOLVENTE MAX	0	-43.74	10.32	30.57	15.215	60.601	36.661
N+8.90	C20	ENVOLVENTE MAX	4.45	-24.27	10.32	30.57	15.215	76.934	17.568
N+8.90	C20	ENVOLVENTE MIN	0	-89.23	-11.33	-30.72	-12.82	-59.976	-38.222
N+8.90	C20	ENVOLVENTE MIN	4.45	-63.27	-11.33	-30.72	-12.82	-75.624	-14.641
N+4.45	C20	ENVOLVENTE MAX	0	-202.37	17.48	83.16	2.123	201.923	61.061
N+4.45	C20	ENVOLVENTE MAX	4.5	-182.69	17.48	83.16	2.123	170.187	23.321
N+4.45	C20	ENVOLVENTE MIN	0	-419.52	-13.45	-82.45	-2.126	-200.863	-55.212
N+4.45	C20	ENVOLVENTE MIN	4.5	-393.28	-13.45	-82.45	-2.126	-172.328	-35.642
N+17.00	C20-1	ENVOLVENTE MAX	0	-5.96	4.43	0.21	0.567	0.679	15.14
N+17.00	C20-1	ENVOLVENTE MAX	5.8	-4.57	4.43	0.21	0.567	0.666	6.275
N+17.00	C20-1	ENVOLVENTE MIN	0	-44.82	-3.23	-0.25	-0.45	-0.805	-12.532
N+17.00	C20-1	ENVOLVENTE MIN	5.8	-42.97	-3.23	-0.25	-0.45	-0.514	-10.6
N+8.90	C21	ENVOLVENTE MAX	0	-53.64	19.63	19.5	5.09	39.922	51.963
N+8.90	C21	ENVOLVENTE MAX	4.45	-34.18	19.63	19.5	5.09	46.618	82.04
N+8.90	C21	ENVOLVENTE MIN	0	-114.11	-37.66	-19.27	-4.667	-39.306	-85.868
N+8.90	C21	ENVOLVENTE MIN	4.45	-88.16	-37.66	-19.27	-4.667	-47.032	-35.738
N+4.45	C21	ENVOLVENTE MAX	0	-163.37	27.36	44.84	2.123	110.731	78.533
N+4.45	C21	ENVOLVENTE MAX	4.5	-143.68	27.36	44.84	2.123	90.759	69.664
N+4.45	C21	ENVOLVENTE MIN	0	-357.15	-35.33	-44.7	-2.126	-110.399	-90.424
N+4.45	C21	ENVOLVENTE MIN	4.5	-330.9	-35.33	-44.7	-2.126	-91.037	-45.696
N+17.00	C21-1	ENVOLVENTE MAX	0	-9.23	2.45	0.22	1.733	0.692	9.028
N+17.00	C21-1	ENVOLVENTE MAX	3.897	-8.29	2.45	0.22	1.733	0.219	1.395
N+17.00	C21-1	ENVOLVENTE MIN	0	-41.4	-3	-0.23	-1.58	-0.679	-10.413
N+17.00	C21-1	ENVOLVENTE MIN	3.897	-40.16	-3	-0.23	-1.58	-0.187	-0.667
N+4.45	C22	ENVOLVENTE MAX	0	-51.53	45.43	42.18	2.123	102.396	105.687
N+4.45	C22	ENVOLVENTE MAX	4.5	-31.85	45.43	42.18	2.123	85.885	60.461
N+4.45	C22	ENVOLVENTE MIN	0	-181.52	-32.78	-41.63	-2.126	-101.466	-87.091
N+4.45	C22	ENVOLVENTE MIN	4.5	-155.28	-32.78	-41.63	-2.126	-87.417	-98.802
N+8.90	C23	ENVOLVENTE MAX	0	-93.1	36.95	26.06	2.591	80.426	71.542
N+8.90	C23	ENVOLVENTE MAX	4.45	-73.63	36.95	26.06	2.591	36.276	90.73
N+8.90	C23	ENVOLVENTE MIN	0	-251.1	-38.25	-25.41	-2.639	-77.583	-82.075
N+8.90	C23	ENVOLVENTE MIN	4.45	-225.15	-38.25	-25.41	-2.639	-36.324	-95.473
N+4.45	C23	ENVOLVENTE MAX	0	-181.9	23.77	34.6	2.123	91.544	73.07
N+4.45	C23	ENVOLVENTE MAX	4.5	-162.21	23.77	34.6	2.123	63.006	61.088
N+4.45	C23	ENVOLVENTE MIN	0	-396.29	-32.24	-34.09	-2.126	-90.666	-85.703
N+4.45	C23	ENVOLVENTE MIN	4.5	-370.05	-32.24	-34.09	-2.126	-64.462	-35.602
N+17.00	C23-1	ENVOLVENTE MAX	0	-30.16	15.56	7.59	14.346	20.856	55.707
N+17.00	C23-1	ENVOLVENTE MAX	3.897	-27.33	15.56	7.59	14.346	30.682	5.246
N+17.00	C23-1	ENVOLVENTE MIN	0	-166.48	-15.69	-6.89	-14.283	-20.308	-56.246
N+17.00	C23-1	ENVOLVENTE MIN	3.897	-162.71	-15.69	-6.89	-14.283	-32.85	-5.256
N+4.45	C24	ENVOLVENTE MAX	0	-96.83	48.3	21.56	2.123	73.166	109.911
N+4.45	C24	ENVOLVENTE MAX	4.5	-77.15	48.3	21.56	2.123	23.757	103.173
N+4.45	C24	ENVOLVENTE MIN	0	-171.96	-46.92	-21.48	-2.126	-72.954	-107.981
N+4.45	C24	ENVOLVENTE MIN	4.5	-145.71	-46.92	-21.48	-2.126	-23.884	-107.451
N+8.90	C25	ENVOLVENTE MAX	0	-94.7	38.32	29.25	3.526	60.852	85.656
N+8.90	C25	ENVOLVENTE MAX	4.45	-75.23	38.32	29.25	3.526	68.017	84.467
N+8.90	C25	ENVOLVENTE MIN	0	-188.65	-39.79	-28.71	-3.428	-59.765	-93.397
N+8.90	C25	ENVOLVENTE MIN	4.45	-162.7	-39.79	-28.71	-3.428	-69.368	-85.664
N+4.45	C25	ENVOLVENTE MAX	0	-381.39	31.68	40.41	2.123	102.022	85.118
N+4.45	C25	ENVOLVENTE MAX	4.5	-361.71	31.68	40.41	2.123	80.539	76.967
N+4.45	C25	ENVOLVENTE MIN	0	-634.87	-38	-40.61	-2.126	-102.227	-94.581
N+4.45	C25	ENVOLVENTE MIN	4.5	-608.62	-38	-40.61	-2.126	-79.844	-57.962
N+17.00	C25-1	ENVOLVENTE MAX	0	-16.1	4.43	0.55	3.111	1.928	16.923
N+17.00	C25-1	ENVOLVENTE MAX	3.897	-15.05	4.43	0.55	3.111	0.8	6.047
N+17.00	C25-1	ENVOLVENTE MAX	3.897	-6	4.53	1.6	3.084	1.096	8.427
N+17.00	C25-1	ENVOLVENTE MAX	6.802	-5.22	4.53	1.6	3.084	0.344	7.863
N+17.00	C25-1	ENVOLVENTE MIN	0	-81.9	-4.73	-0.65	-3.172	-2.006	-17.88
N+17.00	C25-1	ENVOLVENTE MIN	3.897	-80.5	-4.73	-0.65	-3.172	-0.242	-5.858
N+17.00	C25-1	ENVOLVENTE MIN	3.897	-39.81	-5.15	-0.14	-2.704	-0.098	-8.24
N+17.00	C25-1	ENVOLVENTE MIN	6.802	-38.76	-5.15	-0.14	-2.704	-3.614	-5.867
N+4.45	C26	ENVOLVENTE MAX	0	-247.7	47.05	22.84	2.123	77.19	108.07
N+4.45	C26	ENVOLVENTE MAX	4.5	-228.02	47.05	22.84	2.123	26.01	99.225
N+4.45	C26	ENVOLVENTE MIN	0	-442.06	-45.61	-22.95	-2.126	-77.266	-106.064

N+4.45	C26	ENVOLVENTE MIN	4.5	-415.82	-45.61	-22.95	-2.126	-25.609	-103.661
N+8.90	C27	ENVOLVENTE MAX	0	-82.07	41.13	23.49	2.099	74.974	93.33
N+8.90	C27	ENVOLVENTE MAX	4.45	-62.6	41.13	23.49	2.099	28.809	90.328
N+8.90	C27	ENVOLVENTE MIN	0	-238.2	-39.92	-21.64	-2.061	-67.895	-88.863
N+8.90	C27	ENVOLVENTE MIN	4.45	-212.25	-39.92	-21.64	-2.061	-29.995	-91.265
N+4.45	C27	ENVOLVENTE MAX	0	-323.8	33.71	39.86	2.123	104.143	88.18
N+4.45	C27	ENVOLVENTE MAX	4.5	-304.12	33.71	39.86	2.123	77.021	66.282
N+4.45	C27	ENVOLVENTE MIN	0	-554.87	-34.52	-40.4	-2.126	-104.875	-89.501
N+4.45	C27	ENVOLVENTE MIN	4.5	-528.63	-34.52	-40.4	-2.126	-75.312	-63.917
N+17.00	C27-1	ENVOLVENTE MAX	0	-18.36	15.89	8.18	6.373	14.096	77.426
N+17.00	C27-1	ENVOLVENTE MAX	6.802	-13.44	15.89	8.18	6.373	15.26	31.057
N+17.00	C27-1	ENVOLVENTE MIN	0	-153.72	-16.11	-2.15	-6.376	-13.245	-78.556
N+17.00	C27-1	ENVOLVENTE MIN	6.802	-147.15	-16.11	-2.15	-6.376	-46.714	-30.681
N+4.45	C28	ENVOLVENTE MAX	0	-243.75	46.44	25.8	2.123	86.705	107.17
N+4.45	C28	ENVOLVENTE MAX	4.5	-224.07	46.44	25.8	2.123	29.678	99.727
N+4.45	C28	ENVOLVENTE MIN	0	-432.53	-45.78	-25.86	-2.126	-86.745	-106.314
N+4.45	C28	ENVOLVENTE MIN	4.5	-406.28	-45.78	-25.86	-2.126	-29.414	-101.81
N+8.90	C29	ENVOLVENTE MAX	0	-62.05	39.52	33.19	3.826	67.088	89.572
N+8.90	C29	ENVOLVENTE MAX	4.45	-42.59	39.52	33.19	3.826	81.069	39.406
N+8.90	C29	ENVOLVENTE MIN	0	-140.58	-24.29	-33.37	-4.548	-67.477	-69.073
N+8.90	C29	ENVOLVENTE MIN	4.45	-114.63	-24.29	-33.37	-4.548	-80.66	-86.703
N+4.45	C29	ENVOLVENTE MAX	0	-298.98	34.19	52.67	2.123	132.162	88.901
N+4.45	C29	ENVOLVENTE MAX	4.5	-279.3	34.19	52.67	2.123	104.721	75.771
N+4.45	C29	ENVOLVENTE MIN	0	-580.7	-37.68	-52.61	-2.126	-132.027	-94.176
N+4.45	C29	ENVOLVENTE MIN	4.5	-554.46	-37.68	-52.61	-2.126	-104.847	-65.324
N+17.00	C29-1	ENVOLVENTE MAX	0	-12.65	4.13	0.59	2.041	2.016	17.513
N+17.00	C29-1	ENVOLVENTE MAX	3.852	-11.62	4.13	0.59	2.041	0.946	2.354
N+17.00	C29-1	ENVOLVENTE MAX	3.852	-4.01	4.32	-0.03	3.128	-0.558	6.166
N+17.00	C29-1	ENVOLVENTE MAX	6.802	-3.22	4.32	-0.03	3.128	3.167	5.221
N+17.00	C29-1	ENVOLVENTE MIN	0	-61.46	-3.75	-0.69	-2.379	-2.038	-15.874
N+17.00	C29-1	ENVOLVENTE MIN	3.852	-60.08	-3.75	-0.69	-2.379	-0.612	-2.188
N+17.00	C29-1	ENVOLVENTE MIN	3.852	-36.5	-3.6	-2.11	-3.216	-3.8	-5.987
N+17.00	C29-1	ENVOLVENTE MIN	6.802	-35.44	-3.6	-2.11	-3.216	-0.546	-7.169
N+4.45	C30	ENVOLVENTE MAX	0	-221.85	45.49	33.31	2.123	109.682	105.79
N+4.45	C30	ENVOLVENTE MAX	4.5	-202.17	45.49	33.31	2.123	40.175	96.381
N+4.45	C30	ENVOLVENTE MIN	0	-580.8	-44.68	-33.29	-2.126	-109.61	-104.703
N+4.45	C30	ENVOLVENTE MIN	4.5	-554.56	-44.68	-33.29	-2.126	-40.203	-98.937
N+4.45	C31	ENVOLVENTE MAX	0	-228.44	39.37	67.15	2.123	165.898	96.792
N+4.45	C31	ENVOLVENTE MAX	4.5	-208.76	39.37	67.15	2.123	136.234	80.207
N+4.45	C31	ENVOLVENTE MIN	0	-542.44	-39.35	-67.13	-2.126	-165.835	-96.859
N+4.45	C31	ENVOLVENTE MIN	4.5	-516.2	-39.35	-67.13	-2.126	-136.276	-80.405
N+4.45	C32	ENVOLVENTE MAX	0	-209.26	46.16	40.49	2.123	132.708	106.808
N+4.45	C32	ENVOLVENTE MAX	4.5	-189.58	46.16	40.49	2.123	49.463	106.833
N+4.45	C32	ENVOLVENTE MIN	0	-582.6	-48.14	-40.47	-2.126	-132.665	-109.846
N+4.45	C32	ENVOLVENTE MIN	4.5	-556.35	-48.14	-40.47	-2.126	-49.494	-100.959
N+8.90	C33	ENVOLVENTE MAX	0	-44.59	26.37	26.37	5.637	48.137	102.66
N+8.90	C33	ENVOLVENTE MAX	4.45	-25.13	26.37	26.37	5.637	70.332	18.277
N+8.90	C33	ENVOLVENTE MIN	0	-88.93	-22.86	-26.62	-5.015	-48.759	-85.285
N+8.90	C33	ENVOLVENTE MIN	4.45	-62.97	-22.86	-26.62	-5.015	-69.842	-16.519
N+4.45	C33	ENVOLVENTE MAX	0	-165.85	38.27	78.49	2.123	195.007	94.079
N+4.45	C33	ENVOLVENTE MAX	4.5	-146.17	38.27	78.49	2.123	158.052	24.45
N+4.45	C33	ENVOLVENTE MIN	0	-380.39	-19.9	-78.44	-2.126	-194.925	-67.027
N+4.45	C33	ENVOLVENTE MIN	4.5	-354.15	-19.9	-78.44	-2.126	-158.194	-80.075
N+17.00	C33-1	ENVOLVENTE MAX	0	-9.06	2.41	0.22	1.238	0.714	8.672
N+17.00	C33-1	ENVOLVENTE MAX	3.852	-8.14	2.41	0.22	1.238	0.161	0.184
N+17.00	C33-1	ENVOLVENTE MIN	0	-41.14	-1.9	-0.23	-1.057	-0.74	-7.586
N+17.00	C33-1	ENVOLVENTE MIN	3.852	-39.91	-1.9	-0.23	-1.057	-0.152	-1.202
N+8.90	C34	ENVOLVENTE MAX	0	-42.7	6.59	22.31	7.307	45.06	24.421
N+8.90	C34	ENVOLVENTE MAX	4.45	-23.23	6.59	22.31	7.307	52.255	20.677
N+8.90	C34	ENVOLVENTE MIN	0	-89.46	-7.45	-21.43	-6.363	-43.16	-26.935
N+8.90	C34	ENVOLVENTE MIN	4.45	-63.51	-7.45	-21.43	-6.363	-54.271	-19.379
N+4.45	C34	ENVOLVENTE MAX	0	-178.26	19.36	45.71	2.123	112.009	69.058
N+4.45	C34	ENVOLVENTE MAX	4.5	-158.57	19.36	45.71	2.123	92.583	29.132
N+4.45	C34	ENVOLVENTE MIN	0	-288.55	-20.97	-45.3	-2.126	-111.272	-71.531
N+4.45	C34	ENVOLVENTE MIN	4.5	-257.93	-20.97	-45.3	-2.126	-93.69	-24.38
N+17.00	C34-1	ENVOLVENTE MAX	0	-5.52	5.19	0.2	1.124	0.58	18.599
N+17.00	C34-1	ENVOLVENTE MAX	5.868	-4.12	5.19	0.2	1.124	0.285	15.514
N+17.00	C34-1	ENVOLVENTE MIN	0	-43.09	-6.16	-0.12	-0.995	-0.401	-20.634
N+17.00	C34-1	ENVOLVENTE MIN	5.868	-41.22	-6.16	-0.12	-0.995	-0.658	-11.848
N+4.45	C35	ENVOLVENTE MAX	0	-116.86	18.25	46.62	2.123	109.453	68.622
N+4.45	C35	ENVOLVENTE MAX	4.5	-97.18	18.25	46.62	2.123	113.979	17.355
N+4.45	C35	ENVOLVENTE MIN	0	-217.77	-19.51	-51.1	-2.126	-115.96	-70.587
N+4.45	C35	ENVOLVENTE MIN	4.5	-191.52	-19.51	-51.1	-2.126	-100.341	-13.643
N+8.90	C36	ENVOLVENTE MAX	0	-43.71	7.74	41.29	8.409	94.603	24.573
N+8.90	C36	ENVOLVENTE MAX	4.45	-24.24	7.74	41.29	8.409	74.33	23.051
N+8.90	C36	ENVOLVENTE MIN	0	-97.37	-7.44	-30.39	-7.74	-60.916	-23.715
N+8.90	C36	ENVOLVENTE MIN	4.45	-71.42	-7.44	-30.39	-7.74	-89.136	-23.531

N+4.45	C36	ENVOLVENTE MAX	0	-344.28	23.13	50.92	2.123	117.546	75.195
N+4.45	C36	ENVOLVENTE MAX	4.5	-324.59	23.13	50.92	2.123	78.525	35.769
N+4.45	C36	ENVOLVENTE MIN	0	-619.12	-24.56	-39.94	-2.126	-101.233	-77.413
N+4.45	C36	ENVOLVENTE MIN	4.5	-592.88	-24.56	-39.94	-2.126	-111.589	-31.539
N+17.00	C36-1	ENVOLVENTE MAX	0	-6.24	8.29	0.14	2.153	0.431	23.729
N+17.00	C36-1	ENVOLVENTE MAX	5.868	-4.83	8.29	0.14	2.153	0.262	24.298
N+17.00	C36-1	ENVOLVENTE MAX	5.868	5.67	27.8	3.36	0.966	3.858	39.848
N+17.00	C36-1	ENVOLVENTE MAX	8.067	6.37	27.8	3.36	0.966	-0.295	27.124
N+17.00	C36-1	ENVOLVENTE MIN	0	-41.53	-7.96	-0.09	-2.246	-0.411	-23.233
N+17.00	C36-1	ENVOLVENTE MIN	5.868	-39.66	-7.96	-0.09	-2.246	-0.52	-25.723
N+17.00	C36-1	ENVOLVENTE MIN	5.868	-16.31	-28.81	0.38	-0.859	0.545	-37.689
N+17.00	C36-1	ENVOLVENTE MIN	8.067	-15.61	-28.81	0.38	-0.859	-3.532	-22.746
N+4.45	C37	ENVOLVENTE MAX	0	-225.68	21.78	56.8	2.123	129.231	73.846
N+4.45	C37	ENVOLVENTE MAX	4.5	-205.99	21.78	56.8	2.123	123.393	24.689
N+4.45	C37	ENVOLVENTE MIN	0	-433.17	-21.96	-55.79	-2.126	-127.678	-74.216
N+4.45	C37	ENVOLVENTE MIN	4.5	-406.93	-21.96	-55.79	-2.126	-126.354	-24.236
N+8.90	C38	ENVOLVENTE MAX	0	-46.25	10.35	39.3	7.95	83.711	29.499
N+8.90	C38	ENVOLVENTE MAX	4.45	-26.79	10.35	39.3	7.95	91.505	17.194
N+8.90	C38	ENVOLVENTE MIN	0	-145.95	-8.53	-39.15	-7.371	-82.708	-26.706
N+8.90	C38	ENVOLVENTE MIN	4.45	-120	-8.53	-39.15	-7.371	-91.211	-22.517
N+4.45	C38	ENVOLVENTE MAX	0	-270.5	22.04	57.69	2.123	139.586	73.338
N+4.45	C38	ENVOLVENTE MAX	4.5	-250.82	22.04	57.69	2.123	118.432	34.594
N+4.45	C38	ENVOLVENTE MIN	0	-577.08	-23.77	-57.15	-2.126	-138.737	-75.998
N+4.45	C38	ENVOLVENTE MIN	4.5	-550.84	-23.77	-57.15	-2.126	-120.017	-29.461
N+17.00	C38-1	ENVOLVENTE MAX	0	-9.46	4.35	0.64	0.744	0.958	14.684
N+17.00	C38-1	ENVOLVENTE MAX	1.904	-9.01	4.35	0.64	0.744	0.091	6.534
N+17.00	C38-1	ENVOLVENTE MAX	1.904	-1.49	3.65	0.08	1.133	0.283	9.061
N+17.00	C38-1	ENVOLVENTE MAX	8.067	-0.02	3.65	0.08	1.133	3.651	10.082
N+17.00	C38-1	ENVOLVENTE MIN	0	-83.39	-3.77	-0.16	-0.794	-0.746	-13.267
N+17.00	C38-1	ENVOLVENTE MIN	1.904	-82.79	-3.77	-0.16	-0.794	-0.755	-6.221
N+17.00	C38-1	ENVOLVENTE MIN	1.904	-42.16	-2.98	-0.88	-1.041	-1.768	-8.324
N+17.00	C38-1	ENVOLVENTE MIN	8.067	-40.2	-2.98	-0.88	-1.041	-0.192	-13.448
N+4.45	C39	ENVOLVENTE MAX	0	-174.86	22.87	83.69	2.123	190.34	75.478
N+4.45	C39	ENVOLVENTE MAX	4.5	-155.18	22.87	83.69	2.123	179.174	27.419
N+4.45	C39	ENVOLVENTE MIN	0	-564.81	-22.89	-81.33	-2.126	-186.824	-75.605
N+4.45	C39	ENVOLVENTE MIN	4.5	-538.56	-22.89	-81.33	-2.126	-186.272	-27.461
N+8.90	C40	ENVOLVENTE MAX	0	-38.02	9.63	30.62	12.093	59.93	34.062
N+8.90	C40	ENVOLVENTE MAX	4.45	-18.55	9.63	30.62	12.093	76.833	11.964
N+8.90	C40	ENVOLVENTE MIN	0	-88.07	-10.9	-31.09	-14.56	-61.824	-38.143
N+8.90	C40	ENVOLVENTE MIN	4.45	-62.12	-10.9	-31.09	-14.56	-76.661	-10.384
N+4.45	C40	ENVOLVENTE MAX	0	-194.01	18.17	82.51	2.123	200.949	66.228
N+4.45	C40	ENVOLVENTE MAX	4.5	-174.33	18.17	82.51	2.123	171.919	18.813
N+4.45	C40	ENVOLVENTE MIN	0	-416.8	-13.49	-83.02	-2.126	-201.702	-59.409
N+4.45	C40	ENVOLVENTE MIN	4.5	-390.56	-13.49	-83.02	-2.126	-170.354	-33.054
N+17.00	C40-1	ENVOLVENTE MAX	0	-7.57	0.81	0.4	0.468	1.053	2.631
N+17.00	C40-1	ENVOLVENTE MAX	1.904	-7.11	0.81	0.4	0.468	0.311	1.377
N+17.00	C40-1	ENVOLVENTE MIN	0	-39.76	-0.87	-0.4	-0.49	-1.093	-2.67
N+17.00	C40-1	ENVOLVENTE MIN	1.904	-39.16	-0.87	-0.4	-0.49	-0.397	-1.31
N+8.90	C41	ENVOLVENTE MAX	0	-32.18	2.43	16.85	8.593	39.602	-1.741
N+8.90	C41	ENVOLVENTE MAX	4.45	-12.71	2.43	16.85	8.593	22.021	31.46
N+8.90	C41	ENVOLVENTE MIN	0	-103.42	-11.66	-5.98	-9.924	-7.631	-27.333
N+8.90	C41	ENVOLVENTE MIN	4.45	-77.47	-11.66	-5.98	-9.924	-38.44	-19.474
N+4.45	C41	ENVOLVENTE MAX	0	-103.3	36.75	44.31	2.123	109.936	100.066
N+4.45	C41	ENVOLVENTE MAX	4.5	-83.61	36.75	44.31	2.123	58.299	96.964
N+4.45	C41	ENVOLVENTE MIN	0	-259.42	-47.25	-33.94	-2.126	-94.471	-115.67
N+4.45	C41	ENVOLVENTE MIN	4.5	-233.17	-47.25	-33.94	-2.126	-89.507	-65.344
N+8.90	C42	ENVOLVENTE MAX	0	-35.34	18.4	13.51	10.775	55.848	35.984
N+8.90	C42	ENVOLVENTE MAX	4.45	-11.31	18.4	13.51	10.775	7.515	46.251
N+8.90	C42	ENVOLVENTE MIN	0	-62.83	-16.13	-8.14	-7.315	-29.716	-27.318
N+8.90	C42	ENVOLVENTE MIN	4.45	-26.76	-16.13	-8.14	-7.315	-5.264	-47.723
N+4.45	C42	ENVOLVENTE MAX	0	-155.1	69.12	52	3.236	137.51	171.427
N+4.45	C42	ENVOLVENTE MAX	4.5	-130.8	69.12	52	3.236	51.852	131.281
N+4.45	C42	ENVOLVENTE MIN	0	-312.76	-66.39	-37.07	-3.241	-115.323	-167.543
N+4.45	C42	ENVOLVENTE MIN	4.5	-280.36	-66.39	-37.07	-3.241	-96.865	-139.676
N+8.90	C43	ENVOLVENTE MAX	0	-74.53	18.83	26.38	10.747	95.289	21.794
N+8.90	C43	ENVOLVENTE MAX	4.45	-50.5	18.83	26.38	10.747	15.763	66.576
N+8.90	C43	ENVOLVENTE MIN	0	-207.37	-19.99	-11.06	-8.749	-36.648	-27.129
N+8.90	C43	ENVOLVENTE MIN	4.45	-175.33	-19.99	-11.06	-8.749	-25.247	-66.734
N+4.45	C43	ENVOLVENTE MAX	0	-192.62	64.29	43.06	3.236	125.017	164.433
N+4.45	C43	ENVOLVENTE MAX	4.5	-168.32	64.29	43.06	3.236	43.431	133.616
N+4.45	C43	ENVOLVENTE MIN	0	-415.99	-67.22	-34.4	-3.241	-112.079	-168.884
N+4.45	C43	ENVOLVENTE MIN	4.5	-383.59	-67.22	-34.4	-3.241	-69.493	-124.89
N+8.90	C44	ENVOLVENTE MAX	0	-36.39	16.61	7.05	7.375	27.158	30.212
N+8.90	C44	ENVOLVENTE MAX	4.45	-12.36	16.61	7.05	7.375	6.978	45.753
N+8.90	C44	ENVOLVENTE MIN	0	-63.86	-16.45	-5.04	-11.102	-17.719	-29.213
N+8.90	C44	ENVOLVENTE MIN	4.45	-27.36	-16.45	-5.04	-11.102	-6.489	-45.439
N+4.45	C44	ENVOLVENTE MAX	0	-183.98	67.4	22.79	3.236	96.155	168.964

N+4.45	C44	ENVOLVENTE MAX	4.5	-159.68	67.4	22.79	3.236	17.417	134.389
N+4.45	C44	ENVOLVENTE MIN	0	-293.32	-67.44	-23.34	-3.241	-96.819	-169.159
N+4.45	C44	ENVOLVENTE MIN	4.5	-255.52	-67.44	-23.34	-3.241	-15.584	-134.404
N+8.90	C45	ENVOLVENTE MAX	0	-56.57	13.46	26.21	7.506	57.223	22.991
N+8.90	C45	ENVOLVENTE MAX	4.45	-37.1	13.46	26.21	7.506	34.982	40.854
N+8.90	C45	ENVOLVENTE MIN	0	-191.98	-14.59	-12.44	-7.032	-21.183	-25.747
N+8.90	C45	ENVOLVENTE MIN	4.45	-166.03	-14.59	-12.44	-7.032	-60.232	-38.584
N+4.45	C45	ENVOLVENTE MAX	0	-174.16	46.02	40.06	2.123	101.469	113.777
N+4.45	C45	ENVOLVENTE MAX	4.5	-154.48	46.02	40.06	2.123	49.626	96.296
N+4.45	C45	ENVOLVENTE MIN	0	-411.28	-47.03	-30.35	-2.126	-87.031	-115.361
N+4.45	C45	ENVOLVENTE MIN	4.5	-385.03	-47.03	-30.35	-2.126	-78.86	-93.331
N+8.90	C46	ENVOLVENTE MAX	0	-32.58	15.76	5.86	9.825	20.103	30.454
N+8.90	C46	ENVOLVENTE MAX	4.45	-13.12	15.76	5.86	9.825	5.337	38.262
N+8.90	C46	ENVOLVENTE MIN	0	-56.44	-15.08	-3.82	-7.466	-12.382	-28.954
N+8.90	C46	ENVOLVENTE MIN	4.45	-26.16	-15.08	-3.82	-7.466	-6.661	-39.792
N+4.45	C46	ENVOLVENTE MAX	0	-205	48.29	16.11	2.123	66.799	117.116
N+4.45	C46	ENVOLVENTE MAX	4.5	-185.32	48.29	16.11	2.123	12.91	99.863
N+4.45	C46	ENVOLVENTE MIN	0	-335.67	-48.2	-16.11	-2.126	-66.715	-117.071
N+4.45	C46	ENVOLVENTE MIN	4.5	-309.43	-48.2	-16.11	-2.126	-11.426	-100.229
N+8.90	C47	ENVOLVENTE MAX	0	-72.49	13.05	44.86	13.063	128.972	19.794
N+8.90	C47	ENVOLVENTE MAX	4.45	-48.46	13.05	44.86	13.063	6.085	43.116
N+8.90	C47	ENVOLVENTE MIN	0	-214.62	-12.96	-12.28	-13.29	-49.185	-19.607
N+8.90	C47	ENVOLVENTE MIN	4.45	-182.58	-12.96	-12.28	-13.29	-93.418	-43.353
N+4.45	C47	ENVOLVENTE MAX	0	-203.88	64.51	47.38	3.236	138.531	164.752
N+4.45	C47	ENVOLVENTE MAX	4.5	-179.58	64.51	47.38	3.236	45.934	126.108
N+4.45	C47	ENVOLVENTE MIN	0	-441.46	-64.73	-37.45	-3.241	-123.803	-165.216
N+4.45	C47	ENVOLVENTE MIN	4.5	-409.06	-64.73	-37.45	-3.241	-75.865	-125.57
N+8.90	C48	ENVOLVENTE MAX	0	-33.04	15.4	6.13	6.947	20.75	29.678
N+8.90	C48	ENVOLVENTE MAX	4.45	-13.57	15.4	6.13	6.947	6.614	40.344
N+8.90	C48	ENVOLVENTE MIN	0	-56.39	-15.73	-4.61	-9.783	-15.107	-29.931
N+8.90	C48	ENVOLVENTE MIN	4.45	-26.12	-15.73	-4.61	-9.783	-7.745	-39.144
N+4.45	C48	ENVOLVENTE MAX	0	-206.1	48.15	20.26	2.123	78.021	116.871
N+4.45	C48	ENVOLVENTE MAX	4.5	-186.42	48.15	20.26	2.123	17.014	99.619
N+4.45	C48	ENVOLVENTE MIN	0	-333.38	-48.11	-20.21	-2.126	-77.894	-116.9
N+4.45	C48	ENVOLVENTE MIN	4.5	-307.14	-48.11	-20.21	-2.126	-17.093	-99.832
N+8.90	C49	ENVOLVENTE MAX	0	-30.91	11.97	25.15	10.171	50.509	21.732
N+8.90	C49	ENVOLVENTE MAX	4.45	-11.45	11.97	25.15	10.171	40.007	35.248
N+8.90	C49	ENVOLVENTE MIN	0	-145.59	-14.56	-14.66	-8.608	-26.214	-30.205
N+8.90	C49	ENVOLVENTE MIN	4.45	-119.63	-14.56	-14.66	-8.608	-62.425	-32.177
N+4.45	C49	ENVOLVENTE MAX	0	-176.52	45.95	48.21	2.123	125.544	113.667
N+4.45	C49	ENVOLVENTE MAX	4.5	-156.84	45.95	48.21	2.123	74.289	102.205
N+4.45	C49	ENVOLVENTE MIN	0	-503.28	-48.99	-42.51	-2.126	-117.073	-118.245
N+4.45	C49	ENVOLVENTE MIN	4.5	-477.04	-48.99	-42.51	-2.126	-91.452	-93.12
N+8.90	C50	ENVOLVENTE MAX	0	-39	16.43	15.28	33.092	59.334	29.053
N+8.90	C50	ENVOLVENTE MAX	4.45	-14.97	16.43	15.28	33.092	7.278	44.74
N+8.90	C50	ENVOLVENTE MIN	0	-63.93	-15.56	-8.77	-19.495	-33.713	-26.364
N+8.90	C50	ENVOLVENTE MIN	4.45	-26.55	-15.56	-8.77	-19.495	-10.656	-45.929
N+4.45	C50	ENVOLVENTE MAX	0	-210.08	67.37	25.94	3.236	128.078	168.878
N+4.45	C50	ENVOLVENTE MAX	4.5	-185.78	67.37	25.94	3.236	48.694	131.207
N+4.45	C50	ENVOLVENTE MIN	0	-424.54	-66.39	-34.45	-3.241	-140.556	-167.571
N+4.45	C50	ENVOLVENTE MIN	4.5	-392.14	-66.39	-34.45	-3.241	-22.879	-134.309
N+8.90	C51	ENVOLVENTE MAX	0	-57.78	14.79	108.85	8.441	300.137	24.486
N+8.90	C51	ENVOLVENTE MAX	4.45	-33.75	14.79	108.85	8.441	28.3	45.026
N+8.90	C51	ENVOLVENTE MIN	0	-208.45	-15.32	-32.06	-8.532	-114.46	-25.596
N+8.90	C51	ENVOLVENTE MIN	4.45	-176.41	-15.32	-32.06	-8.532	-249.09	-43.776
N+4.45	C51	ENVOLVENTE MAX	0	-157.23	65.69	51.98	3.236	176.177	166.478
N+4.45	C51	ENVOLVENTE MAX	4.5	-132.93	65.69	51.98	3.236	100.349	129.053
N+4.45	C51	ENVOLVENTE MIN	0	-496.21	-65.7	-57.25	-3.241	-183.908	-166.641
N+4.45	C51	ENVOLVENTE MIN	4.5	-463.81	-65.7	-57.25	-3.241	-69.106	-129.135
N+8.90	C52	ENVOLVENTE MAX	0	-37.34	16.61	16.84	17.909	63.925	28.257
N+8.90	C52	ENVOLVENTE MAX	4.45	-13.31	16.61	16.84	17.909	11.216	47.151
N+8.90	C52	ENVOLVENTE MIN	0	-62.54	-17.21	-9.71	-31.281	-34.981	-31.141
N+8.90	C52	ENVOLVENTE MIN	4.45	-25.16	-17.21	-9.71	-31.281	-14.031	-47.348
N+4.45	C52	ENVOLVENTE MAX	0	-206.89	67.18	34.88	3.236	160.773	168.685
N+4.45	C52	ENVOLVENTE MAX	4.5	-182.59	67.18	34.88	3.236	47.588	136.421
N+4.45	C52	ENVOLVENTE MIN	0	-419.81	-68.14	-41.65	-3.241	-170.718	-170.225
N+4.45	C52	ENVOLVENTE MIN	4.5	-387.41	-68.14	-41.65	-3.241	-27.073	-133.674
N+8.90	C53	ENVOLVENTE MAX	0	-16.83	13.52	19.5	15.088	42.042	34.838
N+8.90	C53	ENVOLVENTE MAX	4.45	2.64	13.52	19.5	15.088	30.182	12.279
N+8.90	C53	ENVOLVENTE MIN	0	-77.12	-1.53	-6.88	-18.368	-5.188	1.599
N+8.90	C53	ENVOLVENTE MIN	4.45	-51.16	-1.53	-6.88	-18.368	-49.483	-29.183
N+4.45	C53	ENVOLVENTE MAX	0	-69.86	48.77	75.86	2.123	191.111	117.779
N+4.45	C53	ENVOLVENTE MAX	4.5	-50.17	48.77	75.86	2.123	113.696	64.085
N+4.45	C53	ENVOLVENTE MIN	0	-298.48	-36.35	-63.75	-2.126	-173.194	-99.501
N+4.45	C53	ENVOLVENTE MIN	4.5	-272.24	-36.35	-63.75	-2.126	-150.29	-101.714
N+4.45	C54	ENVOLVENTE MAX	0	-73.82	21.24	43.09	2.123	103.626	73.011
N+4.45	C54	ENVOLVENTE MAX	4.5	-54.14	21.24	43.09	2.123	111.882	17.362

N+4.45	C54	ENVOLVENTE MIN	0	-151.79	-19.55	-50.2	-2.126	-114.013	-70.612
N+4.45	C54	ENVOLVENTE MIN	4.5	-125.55	-19.55	-50.2	-2.126	-90.284	-22.569
N+4.45	**C55**	**ENVOLVENTE MAX**	**0**	**-63.51**	**19.54**	**48.88**	**2.123**	**112.179**	**66.86**
N+4.45	**C55**	**ENVOLVENTE MAX**	**4.5**	**-43.83**	**19.54**	**48.88**	**2.123**	**94.504**	**15.042**
N+4.45	C55	ENVOLVENTE MIN	0	-143.2	-17.58	-44.44	-2.126	-105.492	-64.079
N+4.45	C55	ENVOLVENTE MIN	4.5	-116.96	-17.58	-44.44	-2.126	-107.803	-21.092

10. VERIFICACIONES

VERIFICACIONES

VERIFICACIONES DE CORTANTE PARA VIGAS

C.21.3.3.1 (a)

C.21.3.3.1 (b)

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
RESISTENCIA A CORTANTE PARA VIGAS
CHEQUEO PARA LA CONDICIÓN DESCRITA EN C.21.3.3 (a)

f'c = 21.1 MPa
fy = 420 MPa
Φ Cortante = 0.75
Estribos Φ = 9.5 mm
Av = 71 mm²
R= 3.38

Mn = Momentos nominales de la viga en cada extremo restringido de la luz libre.
Vg = Cortante calculado para cargas gravitacionales mayoradas.
Vm = Cortante debido a flexion en curvatura inversa.
Vu = Vm + Vg

COMDIS3 = 1.2C.M.+1.0C.V.+1.0Ex+0.3Ey
COMDIS4 = 1.2C.M.+1.0C.V.+1.0(-Ex)+0.3Ey
COMDIS5 = 1.2C.M.+1.0C.V.+1.0Ex+0.3(-Ey)
COMDIS6 = 1.2C.M.+1.0C.V.+1.0(-Ex)+0.3(-Ey)
COMDIS7 = 1.2C.M.+1.0C.V.+0.3Ex+1.0Ey
COMDIS8 = 1.2C.M.+1.0C.V.+0.3(-Ex)+1.0Ey
COMDIS9 = 1.2C.M.+1.0C.V.+0.3Ex+1.0(-Ey)
COMDIS10 = 1.2C.M.+1.0C.V.+0.3(-Ex)+1.0(-Ey)
COMDIS11 = 0.9C.M.+1.0Ex+0.3Ey
COMDIS12 = 0.9C.M.+1.0(-Ex)+0.3Ey
COMDIS13 = 0.9C.M.+1.0Ex+0.3(-Ey)
COMDIS14 = 0.9C.M.+1.0(-Ex)+0.3(-Ey)
COMDIS15 = 0.9C.M.+0.3Ex+1.0Ey
COMDIS16 = 0.9C.M.+0.3(-Ex)+1.0Ey
COMDIS17 = 0.9C.M.+0.3Ex+1.0(-Ey)
COMDIS18 = 0.9C.M.+0.3(-Ex)+1.0(-Ey)

NIVEL	VIGA	LOC.	LONG.	PROPIEDADES DEL ELEMENTO			M3						Mn (kN.m)																	
	ELEMENTO			SECCION	b	d	C.M.	C.V.	SISMO X	SISMO Y	-SISMO X	-SISMO Y	Combinaciones para resistencias nominales a momento																	
	No.	(m)	(m)		(m)	(m)	(KN.m)	(KN.m)	(KN.m)	(KN.m)	(KN.m)	(KN.m)	COMDIS3	COMDIS4	COMDIS5	COMDIS6	COMDIS7	COMDIS8	COMDIS9	COMDIS10	COMDIS11	COMDIS12	COMDIS13	COMDIS14	COMDIS15	COMDIS16	COMDIS17	COMDIS18
N+8.90	B1	0.000	4.825	VIGA30X50	0.30	0.45	-5.851	0.253	78.123	18.725	-78.123	-18.725	17.501	28.726	14.177	32.049	5.200	8.668	5.880	19.748	19.509	26.717	16.185	30.041	7.208	6.660	3.872	17.740
	B1	4.825					-8.912	-0.227	69.524	17.258	-69.524	-17.258	11.180	29.959	8.116	33.022	0.355	11.986	9.857	22.198	14.080	27.058	11.017	30.122	3.256	9.086	6.956	19.297
N+4.45	B1	0.000	4.825	VIGA40X50	0.40	0.45	-29.974	-4.231	234.461	73.016	-234.461	-73.016	35.648	103.086	22.687	116.048	2.213	39.408	40.992	82.612	48.871	89.863	35.910	102.824	15.436	26.184	27.769	69.389
	B1	4.825					-45.370	-5.333	220.186	68.848	-220.186	-68.848	11.478	118.810	0.744	131.032	19.865	58.951	60.603	99.689	30.422	99.866	18.200	112.088	0.921	40.007	41.659	80.745
N+8.90	B2	0.000	4.925	VIGA30X50	0.30	0.45	-6.736	0.277	64.510	16.905	-64.510	-16.905	12.780	25.392	9.779	28.392	2.921	8.530	7.082	18.533	14.524	23.648	11.523	26.649	4.665	6.787	5.338	16.790
	B2	4.925					-6.489	0.095	65.298	17.079	-65.298	-17.079	13.143	25.495	10.111	28.527	3.157	8.435	6.949	18.540	14.995	23.643	11.963	26.675	5.009	6.583	5.097	16.689
N+4.45	B2	0.000	4.925	VIGA40X50	0.40	0.45	-29.024	-0.860	208.086	65.400	-208.086	-65.400	31.680	91.448	20.070	103.057	2.129	34.809	36.569	73.507	41.247	81.881	29.638	93.490	11.697	25.242	27.002	63.940
	B2	4.925					-27.956	-0.908	209.932	65.917	-209.932	-65.917	33.505	90.715	21.804	102.416	3.680	33.586	35.324	72.590	42.800	81.420	31.099	93.121	12.975	24.291	26.029	63.295
N+8.90	B3	0.000	4.925	VIGA30X50	0.30	0.45	-7.646	-0.354	64.734	16.262	-64.734	-16.262	11.066	27.238	8.179	30.125	1.028	10.464	8.595	20.086	13.714	24.590	10.827	27.477	3.675	7.816	5.947	17.438
	B3	4.925					-7.795	0.117	64.521	16.102	-64.521	-16.102	11.281	26.897	8.423	29.755	1.254	10.200	8.274	19.728	13.503	24.675	10.644	27.534	3.475	7.978	6.053	17.506
N+4.45	B3	0.000	4.925	VIGA40X50	0.40	0.45	-42.779	-5.580	208.516	65.098	-208.516	-65.098	10.554	112.828	1.002	124.384	19.148	56.162	57.667	94.682	28.968	94.414	17.412	105.970	0.734	37.749	39.254	76.268
	B3	4.925					-56.693	-9.396	206.305	64.979	-206.305	-64.979	10.623	132.697	22.158	144.232	39.892	76.514	78.341	114.963	15.781	106.293	4.246	117.828	13.488	50.110	51.937	88.559
N+8.90	B4	0.000	4.925	VIGA30X50	0.30	0.45	-8.136	0.056	66.603	17.894	-66.603	-17.894	11.586	27.824	8.410	31.000	1.498	10.325	9.090	20.913	13.971	25.439	10.794	28.616	3.883	7.940	6.705	18.528
	B4	4.925					-6.142	0.003	68.584	17.776	-68.584	-17.776	14.501	26.081	11.346	29.236	3.979	8.196	6.539	18.714	16.341	24.241	13.186	27.397	5.819	6.356	4.700	16.874
N+4.45	B4	0.000	4.925	VIGA40X50	0.40	0.45	-55.696	-9.052	194.433	63.176	-194.433	-63.176	12.755	127.804	23.970	139.019	39.939	74.453	77.321	111.836	13.005	102.044	1.791	113.258	14.178	48.693	51.560	86.075
	B4	4.925					-47.849	-7.193	183.465	58.409	-183.465	-58.409	5.148	113.707	15.516	124.076	31.047	63.615	65.609	98.176	16.400	92.159	6.031	102.528	9.499	42.067	44.061	76.629
N+8.90	B5	0.000	4.925	VIGA30X50	0.30	0.45	-6.509	0.058	62.931	13.724	-62.931	-13.724	11.968	25.269	9.532	27.706	1.777	9.394	6.344	17.515	13.979	23.259	11.542	25.695	3.788	7.383	4.333	15.504
	B5	4.925					-7.909	0.082	55.754	13.052	-55.754	-13.052	8.245	24.746	5.928	27.063	0.599	10.486	8.322	18.219	10.536	22.455	8.219	24.772	1.692	8.205	6.031	15.928
N+4.45	B5	0.000	4.925	VIGA40X50	0.40	0.45	-50.080	-7.863	165.994	49.023	-165.994	-49.023	14.497	112.718	23.200	121.421	38.722	68.188	67.730	97.196	8.390	89.831	0.313	98.534	15.835	45.301	44.943	74.309
	B5	4.925					-64.541	-11.812	158.851	47.915	-158.851	-47.915	38.011	132.006	46.517	140.511	60.986	89.184	89.338	117.536	6.837	100.831	15.342	109.337	29.812	58.010	58.164	86.362
N+8.90	B6	0.000	4.925	VIGA30X50	0.30	0.45	-7.510	0.161	57.916	16.725	-57.916	-16.725	9.768	24.501	6.799	27.470	1.238	9.043	8.659	18.940	11.860	22.409	8.891	25.378	3.330	6.951	6.567	16.848
	B6	4.925					-7.054	-0.134	68.821	17.907	-68.821	-17.907	13.352	27.371	10.173	30.549	2.808	9.409	7.788	20.005	15.602	25.120	12.423	28.299	5.058	7.159	5.538	17.755
N+4.45	B6	0.000	4.925	VIGA40X50	0.40	0.45	-63.946	-11.698	174.875	57.933	-174.875	-57.933	31.553	135.029	41.837	145.313	55.772	86.815	90.052	121.095	0.671	104.148	10.955	114.432	24.890	55.933	59.170	90.213
	B6	4.925					-51.645	-8.276	199.127	64.905	-199.127	-64.905	5.576	123.403	17.097	134.924	33.373	68.721	71.779	107.127	18.194	99.633	6.672	111.155	9.604	44.952	48.009	83.357
N+8.90	B7	0.000	4.925	VIGA30X50	0.30	0.45	-6.837	-0.009	68.869	13.626	-68.869	-13.626	13.371	27.379	10.953	29.798	1.931	10.295	6.132	18.357	15.432	25.319	13.013	27.738	3.991	8.235	4.072	16.297
	B7	4.925					-8.063	0.231	58.307	12.627	-58.307	-12.627	8.465	26.036	6.223	28.278	0.996	11.346	8.467	18.818	11.115	23.387	8.873	25.628	1.654	8.696	5.817	16.168
N+4.45	B7	0.000	4.925	VIGA40X50	0.40	0.45	-51.761	8.435	198.563	59.706	-198.563	-59.706	6.502	123.995	17.101	134.594	35.260	70.508	70.589	105.837	17.461	100.032	6.862	110.631	11.296	46.544	46.625	81.873
	B7	4.925					-63.671	-11.205	173.992	52.508	-173.992	-52.508	31.473	134.427	40.794	143.748	56.632	87.518	87.702	118.588	1.167	104.120	10.487	113.441	26.326	57.212	57.396	88.282
N+8.90	B8	0.000	4.925	VIGA30X50	0.30	0.45	-8.916	0.518	54.390	16.500	-54.390	-16.500	6.339	25.844	3.410	28.773	1.508	11.163	11.271	20.926	9.532	22.652	6.603	25.581	1.685	7.970	8.079	17.734
	B8	4.925					-4.620	1.030	62.216	16.114	-62.216	-16.114	15.323	21.491	12.463	24.351	5.776	5.269	3.759	14.804	15.679	21.135	12.819	23.995	6.132	4.913	3.403	14.448
N+4.45	B8	0.000	4.925	VIGA40X50	0.40	0.45	-64.255	-10.652	158.762	53.287	-158.762	-53.287	36.057	129.999	45.517	139.459	57.901	86.084	89.432	117.615	6.129	100.071	15.588	109.530	27.973	56.155	59.504	87.686
	B8	4.925					-52.336	-12.203	166.478	54.488	-166.478	-54.488	20.916	119.424	30.589	129.096	44.109	73.662	76.351	105.903	6.988	91.520	2.685	101.192	16.206	45.758	48.447	77.999
N+8.90	B9	0.000	4.925	VIGA30X50	0.30	0.45	-6.217	0.468	65.704	12.101	-65.704	-12.101	12.585	26.293	10.437	28.442	1.483	10.180	5.677	17.340	14.918	23.960	12.770	26.108	3.817	7.847	3.344	15.007
	B9	4.925					-9.063	0.109	64.121	13.330	-64.121	-13.330	9.387	28.554	7.021	30.920	1.132	12.514	9.019	20.402	11.997	25.944	9.631	28.311	1.478	9.904	6.409	17.792
N+4.45	B9	0.000	4.925	VIGA40X50	0.40	0.45	-56.213	-22.322	182.413	52.526	-182.413	-52.526	31.147	139.084	40.471	148.408	58.047	90.428	89.127	121.508	8.039	99.898	1.285	109.222	18.861	51.242	49.941	82.322
	B9	4.925					-64.592	-32.212	192.093	56.939	-192.093	-56.939	47.836	161.501	57.944	171.608	75.827	109.926	109.519	143.618	3.753	109.911	6.354	120.019	24.237	58.337	57.929	92.028
N+8.90	B10	0.000	4.925	VIGA30X50	0.30	0.45	-9.178	0.333	66.249	17.231	-66.249	-17.231	10.449	28.752	7.390	31.810	0.297	11.463	9.898	21.659	12.869	26.331	9.811	29.390	2.718	9.042	7.478	19.238
	B10	4.925					-5.328	0.243	87.709	14.255	-87.709	-14.255	20.578	31.321	18.048	33.851	5.366	10.204	3.069	18.639	22.419	29.479	19.889	32.010	7.207	8.363	1.228	16.797
N+4.45	B10	0.000	4.925	VIGA40X50	0.40	0.45	-63.184	-30.243	206.244	68.868	-206.244	-68.868	38.932	160.970	51.157	173.195	67.383	103.994	108.133	144.745	10.266	111.772	1.959	123.997	18.185	54.796	58.935	95.546
	B10	4.925					-47.565	-19.959	211.838	69.530	-211.838	-69.530	8.192	133.540	20.534	145.882	37.664	75.268	78.806	116.410	26.037	99.311	13.694	111.654	3.435	41.040	44.577	82.182
N+8.90	B11	0.000	4.925	VIGA30X50	0.30	0.45	-5.787	0.413	87.775	10.118	-87.775	-10.118	19.510	32.428	17.713	34.224	3.427	12.155	2.560	18.142	21.659	30.279	19.863	32.075	5.576	10.005	0.411	15.992
	B11	4.925					-8.257	0.555	66.067	12.319	-66.067	-12.319	11.286	27.806	9.100	29.993	0.155	11.573	7.134	18.862	13.209	25.884	11.022	28.071	2.077	9.651	5.212	16.940
N+4.45	B11	0.000	4.925	VIGA40X50	0.40	0.45	-47.956	-20.226	210.021	61.948	-210.021	-61.948	10.138	134.411	21.135	145.408	40.804	78.086	77.460	114.742	24.474	99.798	13.478	110.795	6.192	43.474	42.847	80.129
	B11	4.925					-62.918	-29.672	201.544	60.223	-201.544	-60.223	40.200	159.457	50.890	170.147	69.468	105.245	105.103	140.880	8.347	110.909	2.343	121.600	20.920	56.697	56.595	92.332
N+8.90	B12	0.000	4.825	VIGA30X50	0.30	0.45	-7.712	0.713	70.048	19.206	-70.048	-19.206	13.888	27.561	10.478	30.970	3.358	9.076	8.006	20.441	15.488	25.960	12.079	29.370	4.959	7.476	6.406	18.840
	B12	4.825					-7.086	-1.363	81.892	19.356	-81.892	-19.356	16.080	32.377	12.644	35.813	3.129	11.408	8.324	22.861	19.569	28.888	16.133	32.324	6.618	7.919	4.836	19.373
N+4.45	B12	0.000	4.825	VIGA40X50	0.40	0.45	-64.989	-30.425	212.856	70.572	-212.856	-70.572	39.173	165.123	51.700	177.651	68.640	106.425	110.399	148.184	10.749	115.201	1.779	127.729	18.718	56.503	60.477	98.262
	B12	4.825					-30.741	-12.539	233.032	75.348	-233.032	-75.348	26.204	111.685	12.828	125.060	6.453	47.819	51.037	92.404	47.965	89.924	34.590	103.299	15.309	26.058	29.276	70.643
N+8.90	B15	0.000	4.820	VIGA30X50	0.30	0.45	-5.261	0.471	94.056	72.826	-94.056	-72.826	27.507	28.148	14.579	41.075	23.110	6.414	19.982	36.679	29.556	26.098	16.628	39.026	25.159	8.463	17.933	34.629
	B15	4.820					-7.607	0.279	75.696	58.964	-75.696	-58.964	18.779	26.011	8.312	36.478	15.314	1.877	19.576	33.013	20.782	24.008	10.315	34.475	17.317	3.880	17.573	31.010
N+4.45	B15	0.000	4.820	VIGA40X50	0.40	0.45	-28.565	-3.765	235.375	185.626	-235.375	-185.626	48.070	91.205	15.119	124.156	37.767	4.015	72.071	113.853	60.405	78.870	27.453	111.822	50.102	8.319	59.736	101.519
	B15	4.820					-50.427	-6.930	199.299	156.498	-199.299	-156.498	5.412	112.516	22.369	140.297	3.452	38.830	96.054	131.433	27.470	90.458	0.310	118.239	18.606	16.772	73.996	109.375
N+4.45	B16	0.000	4.820	VIGA40X50	0.40	0.45	-22.884	-4.503	320.398	339.766	-320.398	-339.766	92.985	96.599	32.672	156.913	96.996	40.121	104.049	160.924	104.353	85.231	44.040	145.545	108.365	51.489	92.680	149.556
	B16	4.820					-29.745	-5.656	159.961	185.086	-159.961	-185.086	22.403	72.248	10.452	105.103	27.607	0.789	81.911	110.307	36.983	57.668	4.127	90.524	42.186	13.791	67.332	95.727
N+8.90	B17	0.000	4.820	VIGA40X50	0.40	0.45	-6.031	-1.453	94.573	160.686	-94.573	-160.686	33.552	22.408	5.028	50.932	47.244	30.456	47.836	64.624	36.814	19.146	8.290	47.670	50.506	33.718	44.574	61.362
	B17	4.820					-7.829	1.665	71.490	123.719	-71.490	-123.719	24.402	17.900	2.440	39.862	35.219	22.528	37.988	50.678	25.086	17.216	3.124	39.178	35.902	23.212	37.304	49.995
N+4.45	B17	0.000	4.820	VIGA50X50	0.50	0.45	-31.851	-7.532	153.769	327.286	-153.769	-327.286	28.790	62.198	29.308	120.296	64.725	37.429	128.935	156.232	45.877	45.111	12.221	103.209	81.812	54.516	111.848	139.144
	B17	4.820					-90.419	-23.463	122.941	259.929	-122.941	-259.929	72.522	145.268	118.663	191.409	44.152	65.976	197.956	219.780	21.933	94.680	68.075	140.821	6.437	15.387	147.367	169.191

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
RESISTENCIA A CORTANTE PARA VIGAS
CHEQUEO PARA LA CONDICIÓN DESCRITA EN C.21.3.3 (a)

f'c = 21.1 MPa
fy = 420 MPa
Φ Cortante = 0.75
Estribos Φ = 9.5 mm
Av = 71 mm^2
R= 3.38

Mn = Momentos nominales de la viga en cada extremo restringido de la luz libre.
Vg = Cortante calculado para cargas gravitacionales mayoradas.
Vm = Cortante debido a flexion en curvatura inversa.
Vu = Vm + Vg

V_o	$V_m = M_{ni} + M_{nr} / l_n$															
	COMBDIS3	COMBDIS4	COMBDIS5	COMBDIS6	COMBDIS7	COMBDIS8	COMBDIS9	COMBDIS10	COMBDIS11	COMBDIS12	COMBDIS13	COMBDIS14	COMBDIS15	COMBDIS16	COMBDIS17	COMBDIS18
(kN)	(kN)															
9.68	5.944	12.163	4.620	13.486	1.151	4.281	3.261	8.694	6.962	11.145	5.638	12.469	2.169	3.263	2.244	7.676
11.17																
64.22	9.767	45.989	4.856	51.208	4.576	20.385	21.056	37.783	16.434	39.322	11.214	44.541	3.390	13.718	14.389	31.116
72.62																
10.64	5.264	10.332	4.039	11.557	1.234	3.445	2.849	7.528	5.994	9.602	4.769	10.827	1.964	2.715	2.119	6.798
10.64																
37.47	13.236	36.987	8.502	41.720	1.180	13.887	14.598	29.664	17.065	33.157	12.332	37.891	5.009	10.057	10.768	25.835
36.99																
10.76	4.538	10.992	3.371	12.158	0.463	4.196	3.425	8.084	5.526	10.003	4.360	11.170	1.452	3.207	2.436	7.095
10.52																
71.06	4.300	49.853	4.702	54.541	11.988	26.939	27.616	42.568	9.086	40.753	4.398	45.441	2.888	17.839	18.516	33.468
101.81																
11.11	5.297	10.945	4.011	12.231	1.112	3.760	3.173	8.046	6.155	10.087	4.869	11.373	1.970	2.903	2.316	7.188
10.17																
99.69	3.635	49.038	8.018	53.420	14.413	28.034	29.021	42.642	5.971	39.432	1.588	43.814	4.808	18.428	19.415	33.036
73.18																
10.34	4.104	10.155	3.139	11.120	0.482	4.039	2.978	7.256	4.978	9.282	4.012	10.247	1.113	3.165	2.104	6.382
10.93																
76.80	10.662	49.690	14.156	53.184	20.245	31.954	31.892	43.601	3.092	38.713	3.179	42.207	9.268	20.977	20.915	32.624
130.77																
10.66	4.694	10.532	3.446	11.781	0.821	3.747	3.340	7.908	5.576	9.651	4.328	10.899	1.703	2.865	2.458	7.026
10.62																
130.07	7.539	52.473	11.966	56.901	18.101	31.581	32.859	46.339	3.830	41.377	3.579	45.804	7.004	20.484	21.762	35.243
77.50																
10.26	4.434	10.846	3.487	11.792	0.594	4.394	2.964	7.548	5.390	9.890	4.444	10.836	1.146	3.438	2.008	6.592
11.01																
77.80	7.711	52.471	11.755	56.516	18.658	32.086	32.140	45.568	3.782	41.452	3.523	45.497	7.639	21.067	21.121	34.549
129.76																
12.18	4.398	9.611	3.223	10.787	1.479	3.336	3.052	7.255	5.119	8.891	3.943	10.066	1.587	2.616	2.331	6.534
9.09																
128.36	11.568	50.644	15.453	54.529	20.713	32.436	33.661	45.384	2.663	38.902	3.710	42.786	8.970	20.693	21.919	33.642
79.20																
10.14	4.461	11.137	3.545	12.053	0.531	4.608	2.984	7.663	5.465	10.133	4.548	11.050	1.075	3.604	1.980	6.660
11.14																
164.21	16.037	61.032	19.983	64.978	27.182	40.681	40.334	53.833	2.394	42.601	1.551	46.546	8.751	22.249	21.903	35.401
171.05																
11.39	6.300	12.197	5.165	13.332	1.150	4.399	2.633	8.182	7.165	11.332	6.030	12.467	2.015	3.534	1.768	7.317
9.89																
167.03	9.568	59.799	14.557	64.787	21.329	36.398	37.957	53.026	7.371	42.860	3.178	47.848	4.390	19.459	21.018	36.087
91.40																
10.35	6.253	12.230	5.444	13.039	0.727	4.818	1.968	7.513	7.080	11.404	6.271	12.212	1.554	3.991	1.142	6.687
10.92																
91.86	10.221	59.669	14.624	64.072	22.390	37.225	37.069	51.903	6.664	42.783	3.212	47.187	5.505	20.339	20.183	35.018
166.57																
9.88	6.211	12.422	4.792	13.841	1.344	4.245	3.385	8.975	7.266	11.368	5.847	12.786	2.399	3.191	2.330	7.920
10.96																
168.66	13.550	57.370	13.374	62.738	15.563	31.968	33.458	49.863	12.169	42.513	7.538	47.881	7.052	17.111	18.602	35.006
80.89																
10.08	9.603	11.236	4.749	16.090	7.972	1.720	8.207	14.459	10.444	10.396	5.590	15.249	8.813	2.561	7.366	13.618
10.74																
61.82	11.096	42.266	7.777	54.866	8.552	8.889	34.881	50.889	18.231	35.130	5.760	47.730	14.255	5.206	27.745	43.754
74.80																
43.66	23.940	35.031	8.947	54.360	25.851	8.487	38.581	56.272	29.323	29.647	9.993	48.977	31.235	13.544	33.198	50.889
47.85																
14.47	12.024	8.363	1.549	18.837	17.108	10.993	17.806	23.922	12.842	7.544	2.368	18.018	17.927	11.811	16.987	23.103
13.29																
71.86	21.019	43.043	30.700	64.669	22.589	21.453	67.820	78.011	14.069	29.002	16.659	50.629	18.309	14.503	53.779	63.970
154.09																

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
RESISTENCIA A CORTANTE PARA VIGAS
CHEQUEO PARA LA CONDICIÓN DESCRITA EN C.21.3.3 (a)

f'c = 21.1 MPa
fy = 420 MPa
$\Phi_{Cortante}$ = 0.75
Estribos Φ = 9.5 mm
Av = 71 mm^2
R= 3.38

Mn = Momentos nominales de la viga en cada extremo restringido de la luz libre.
Vg = Cortante calculado para cargas gravitacionales mayoradas.
Vm = Cortante debido a flexion en curvatura inversa.
Vu = Vm + Vg

***Vu* = Vm + Vg**																	Vu_{max}	S	ΦVs	ΦVc	ΦVn	ΦVn > Vu_{max}
COMBDIS3	COMBDIS4	COMBDIS5	COMBDIS6	COMBDIS7	COMBDIS8	COMBDIS9	COMBDIS10	COMBDIS11	COMBDIS12	COMBDIS13	COMBDIS14	COMBDIS15	COMBDIS16	COMBDIS17	COMBDIS18						
(kN)																	(kN)	(m)	(kN)	(kN)	(kN)	
15.620	21.839	14.296	23.162	10.827	13.957	12.937	18.370	16.638	20.821	15.314	22.145	11.845	12.939	11.920	17.352		23.2	0.11	178.92	77.51	256.43	OK
11.168	11.168	11.168	11.168	11.168	11.168	11.168	11.168	11.168	11.168	11.168	11.168	11.168	11.168	11.168	11.168							
73.983	110.205	69.072	115.424	68.792	84.601	85.272	101.999	80.650	103.538	75.430	108.757	67.606	77.934	78.605	95.332		115.4	0.11	178.92	103.35	282.27	OK
72.620	72.620	72.620	72.620	72.620	72.620	72.620	72.620	72.620	72.620	72.620	72.620	72.620	72.620	72.620	72.620							
15.904	20.972	14.679	22.197	11.874	14.085	13.489	18.168	16.634	20.242	15.409	21.467	12.604	13.355	12.759	17.438		22.2	0.11	178.92	77.51	256.43	OK
10.636	10.636	10.636	10.636	10.636	10.636	10.636	10.636	10.636	10.636	10.636	10.636	10.636	10.636	10.636	10.636							
50.708	74.459	45.974	79.192	38.652	51.359	52.070	67.136	54.537	70.629	49.804	75.363	42.481	47.529	48.240	63.307		79.2	0.11	178.92	103.35	282.27	OK
36.988	36.988	36.988	36.988	36.988	36.988	36.988	36.988	36.988	36.988	36.988	36.988	36.988	36.988	36.988	36.988							
15.294	21.748	14.127	22.914	11.219	14.952	14.181	18.840	16.282	20.759	15.116	21.926	12.208	13.963	13.192	17.851		22.9	0.11	178.92	77.51	256.43	OK
10.520	10.520	10.520	10.520	10.520	10.520	10.520	10.520	10.520	10.520	10.520	10.520	10.520	10.520	10.520	10.520							
75.360	120.913	75.762	125.601	83.048	97.999	98.676	113.628	80.146	111.813	75.458	116.501	73.948	88.899	89.576	104.528		125.6	0.11	178.92	103.35	282.27	OK
101.808	101.808	101.808	101.808	101.808	101.808	101.808	101.808	101.808	101.808	101.808	101.808	101.808	101.808	101.808	101.808							
16.405	22.053	15.119	23.339	12.220	14.868	14.281	19.154	17.263	21.195	15.977	22.481	13.078	14.011	13.424	18.296		23.3	0.11	178.92	77.51	256.43	OK
10.168	10.168	10.168	10.168	10.168	10.168	10.168	10.168	10.168	10.168	10.168	10.168	10.168	10.168	10.168	10.168							
103.327	148.730	107.710	153.112	114.105	127.726	128.713	142.334	105.663	139.124	101.280	143.506	104.500	118.120	119.107	132.728		153.1	0.11	178.92	103.35	282.27	OK
73.176	73.176	73.176	73.176	73.176	73.176	73.176	73.176	73.176	73.176	73.176	73.176	73.176	73.176	73.176	73.176							
14.448	20.499	13.483	21.464	10.826	14.383	13.322	17.600	15.322	19.626	14.356	20.591	11.457	13.509	12.448	16.726		21.5	0.11	178.92	77.51	256.43	OK
10.932	10.932	10.932	10.932	10.932	10.932	10.932	10.932	10.932	10.932	10.932	10.932	10.932	10.932	10.932	10.932							
87.458	126.486	90.952	129.980	97.041	108.750	108.688	120.397	79.888	115.509	79.975	119.003	86.064	97.773	97.711	109.420		130.8	0.11	178.92	103.35	282.27	OK
130.772	130.772	130.772	130.772	130.772	130.772	130.772	130.772	130.772	130.772	130.772	130.772	130.772	130.772	130.772	130.772							
15.350	21.188	14.102	22.437	11.477	14.403	13.996	18.564	16.232	20.307	14.984	21.555	12.359	13.521	13.114	17.682		22.4	0.11	178.92	77.51	256.43	OK
10.620	10.620	10.620	10.620	10.620	10.620	10.620	10.620	10.620	10.620	10.620	10.620	10.620	10.620	10.620	10.620							
137.607	182.541	142.034	186.969	148.169	161.649	162.927	176.407	133.898	171.445	133.647	175.872	137.072	150.552	151.830	165.311		187.0	0.11	178.92	103.35	282.27	OK
77.500	77.500	77.500	77.500	77.500	77.500	77.500	77.500	77.500	77.500	77.500	77.500	77.500	77.500	77.500	77.500							
14.698	21.110	13.751	22.056	10.858	14.658	13.228	17.812	15.654	20.154	14.708	21.100	11.410	13.702	12.272	16.856		22.1	0.11	178.92	77.51	256.43	OK
11.012	11.012	11.012	11.012	11.012	11.012	11.012	11.012	11.012	11.012	11.012	11.012	11.012	11.012	11.012	11.012							
85.515	130.275	89.559	134.320	96.462	109.890	109.944	123.372	81.586	119.256	81.327	123.301	85.443	98.871	98.925	112.353		134.3	0.11	178.92	103.35	282.27	OK
129.764	129.764	129.764	129.764	129.764	129.764	129.764	129.764	129.764	129.764	129.764	129.764	129.764	129.764	129.764	129.764							
16.582	21.795	15.407	22.971	13.663	15.520	15.236	19.439	17.303	21.075	16.127	22.250	13.771	14.800	14.515	18.718		23.0	0.11	178.92	77.51	256.43	OK
9.092	9.092	9.092	9.092	9.092	9.092	9.092	9.092	9.092	9.092	9.092	9.092	9.092	9.092	9.092	9.092							
139.924	179.000	143.809	182.885	149.069	160.792	162.017	173.740	131.019	167.258	132.066	171.142	137.326	149.049	150.275	161.998		182.9	0.11	178.92	103.35	282.27	OK
79.200	79.200	79.200	79.200	79.200	79.200	79.200	79.200	79.200	79.200	79.200	79.200	79.200	79.200	79.200	79.200							
14.601	21.277	13.685	22.193	10.671	14.748	13.124	17.803	15.605	20.273	14.688	21.190	11.215	13.744	12.120	16.800		22.2	0.11	178.92	77.51	256.43	OK
11.136	11.136	11.136	11.136	11.136	11.136	11.136	11.136	11.136	11.136	11.136	11.136	11.136	11.136	11.136	11.136							
180.245	225.240	184.191	229.186	191.390	204.889	204.542	218.041	166.602	206.809	165.759	210.754	172.959	186.457	186.111	199.609		229.2	0.11	178.92	103.35	282.27	OK
171.048	171.048	171.048	171.048	171.048	171.048	171.048	171.048	171.048	171.048	171.048	171.048	171.048	171.048	171.048	171.048							
17.688	23.585	16.553	24.720	12.538	15.787	14.021	19.570	18.553	22.720	17.418	23.855	13.403	14.922	13.156	18.705		24.7	0.11	178.92	77.51	256.43	OK
9.888	9.888	9.888	9.888	9.888	9.888	9.888	9.888	9.888	9.888	9.888	9.888	9.888	9.888	9.888	9.888							
176.596	226.827	181.585	231.815	188.357	203.426	204.985	220.054	174.399	209.888	170.206	214.876	171.418	186.487	188.046	203.115		231.8	0.11	178.92	103.35	282.27	OK
91.404	91.404	91.404	91.404	91.404	91.404	91.404	91.404	91.404	91.404	91.404	91.404	91.404	91.404	91.404	91.404							
16.605	22.582	15.796	23.391	11.079	15.170	12.320	17.865	17.432	21.756	16.623	22.564	11.906	14.343	11.494	17.039		23.4	0.11	178.92	77.51	256.43	OK
10.924	10.924	10.924	10.924	10.924	10.924	10.924	10.924	10.924	10.924	10.924	10.924	10.924	10.924	10.924	10.924							
102.081	151.529	106.484	155.932	114.250	129.085	128.929	143.763	98.924	134.643	96.072	139.047	97.365	112.199	112.043	126.878		166.6	0.11	178.92	103.35	282.27	OK
166.572	166.572	166.572	166.572	166.572	166.572	166.572	166.572	166.572	166.572	166.572	166.572	166.572	166.572	166.572	166.572							
16.095	22.306	14.676	23.725	11.228	14.129	13.269	18.859	17.150	21.252	15.731	22.670	12.283	13.075	12.214	17.804		23.7	0.11	178.92	77.51	256.43	OK
10.960	10.960	10.960	10.960	10.960	10.960	10.960	10.960	10.960	10.960	10.960	10.960	10.960	10.960	10.960	10.960							
182.210	226.030	182.034	231.398	184.223	200.628	202.118	218.523	180.829	211.173	176.198	216.541	175.712	185.771	187.262	203.666		231.4	0.11	178.92	103.35	282.27	OK
80.892	80.892	80.892	80.892	80.892	80.892	80.892	80.892	80.892	80.892	80.892	80.892	80.892	80.892	80.892	80.892							
19.687	21.320	14.833	26.174	18.056	11.804	18.291	24.543	20.528	20.480	15.674	25.333	18.897	12.645	17.450	23.702		26.2	0.11	178.92	77.51	256.43	OK
10.736	10.736	10.736	10.736	10.736	10.736	10.736	10.736	10.736	10.736	10.736	10.736	10.736	10.736	10.736	10.736							
72.916	104.086	69.597	116.686	70.372	70.709	96.701	112.709	80.051	96.950	67.580	109.550	76.075	67.026	89.565	105.574		116.7	0.11	178.92	103.35	282.27	OK
74.800	74.800	74.800	74.800	74.800	74.800	74.800	74.800	74.800	74.800	74.800	74.800	74.800	74.800	74.800	74.800							
67.604	78.695	52.611	98.024	69.515	52.151	82.245	99.936	72.987	73.311	53.657	92.641	74.899	57.208	76.862	94.553		99.9	0.11	178.92	103.35	282.27	OK
47.852	47.852	47.852	47.852	47.852	47.852	47.852	47.852	47.852	47.852	47.852	47.852	47.852	47.852	47.852	47.852							
26.492	22.831	16.017	33.305	31.576	25.461	32.274	38.390	27.310	22.012	16.836	32.486	32.395	26.279	31.455	37.571		38.4	0.11	178.92	103.35	282.27	OK
13.288	13.288	13.288	13.288	13.288	13.288	13.288	13.288	13.288	13.288	13.288	13.288	13.288	13.288	13.288	13.288							
92.883	114.907	102.564	136.533	94.453	93.317	139.684	149.875	85.933	100.866	88.523	122.493	90.173	86.367	125.643	135.834		154.1	0.11	178.92	129.19	308.11	OK
154.092	154.092	154.092	154.092	154.092	154.092	154.092	154.092	154.092	154.092	154.092	154.092	154.092	154.092	154.092	154.092							

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
RESISTENCIA A CORTANTE PARA VIGAS
CHEQUEO PARA LA CONDICIÓN DESCRITA EN C.21.3.3 (a)

f'c = 21.1 MPa
fy = 420 MPa
$\Phi_{Cortante}$ = 0.75
Estribos Φ = 9.5 mm
Av = 71 mm^2
R= 3.38

Mn = Momentos nominales de la viga en cada extremo restringido de la luz libre.
Vg = Cortante calculado para cargas gravitacionales mayoradas.
Vm = Cortante debido a flexion en curvatura inversa.
Vu = Vm + Vg

COMDIS3 = 1.2C.M.+1.0C.V.+1.0Ex+0.3Ey
COMDIS4 = 1.2C.M.+1.0C.V.+1.0(-Ex)+0.3Ey
COMDIS5 = 1.2C.M.+1.0C.V.+1.0Ex+0.3(-Ey)
COMDIS6 = 1.2C.M.+1.0C.V.+1.0(-Ex)+0.3(-Ey)
COMDIS7 = 1.2C.M.+1.0C.V.+0.3Ex+1.0Ey
COMDIS8 = 1.2C.M.+1.0C.V.+0.3(-Ex)+1.0Ey
COMDIS9 = 1.2C.M.+1.0C.V.+0.3Ex+1.0(-Ey)
COMDIS10 = 1.2C.M.+1.0C.V.+0.3(-Ex)+1.0(-Ey)
COMDIS11 = 0.9C.M.+1.0Ex+0.3Ey
COMDIS12 = 0.9C.M.+1.0(-Ex)+0.3Ey
COMDIS13 = 0.9C.M.+1.0Ex+0.3(-Ey)
COMDIS14 = 0.9C.M.+1.0(-Ex)+0.3(-Ey)
COMDIS15 = 0.9C.M.+0.3Ex+1.0Ey
COMDIS16 = 0.9C.M.+0.3(-Ex)+1.0Ey
COMDIS17 = 0.9C.M.+0.3Ex+1.0(-Ey)
COMDIS18 = 0.9C.M.+0.3(-Ex)+1.0(-Ey)

NIVEL	VIGA	LOC.	LONG.	PROPIEDADES DEL ELEMENTO			M3						Mn (kN.m)															
	ELEMENTO			SECCION	b	d	C.M.	C.V.	SISMO X	SISMO Y	-SISMO X	-SISMO Y	Combinaciones para resistencias nominales a momento															
	No.	(m)	(m)		(m)	(m)	(KN.m)	(KN.m)	(KN.m)	(KN.m)	(KN.m)	(KN.m)	COMDIS3	COMDIS4	COMDIS5	COMDIS6	COMDIS7	COMDIS8	COMDIS9	COMDIS10	COMDIS11	COMDIS12	COMDIS13	COMDIS14	COMDIS15	COMDIS16	COMDIS17	COMDIS18
N+4.45	B18	0.000	4.820	VIGA50X50	0.50	0.45	-48.926	-10.434	85.851	555.368	-85.851	-555.368	5.548	45.252	93.039	143.838	102.785	87.545	225.835	241.075	30.659	20.140	67.927	118.726	127.897	112.657	200.724	215.963
	B18	4.820					-89.660	-23.747	38.542	277.229	-38.542	-277.229	95.330	118.136	144.542	167.348	45.898	52.739	209.939	216.780	44.685	67.491	93.897	116.703	4.747	2.094	159.294	166.135
N+8.90	B19	0.000	4.820	VIGA40X50	0.40	0.45	-5.738	-0.924	27.246	203.906	-27.246	-203.906	18.350	2.228	17.847	33.969	54.936	50.099	65.719	70.555	20.995	4.873	15.201	31.323	57.581	52.745	63.073	67.910
	B19	4.820					-10.578	0.800	21.990	159.947	-21.990	-159.947	8.809	4.203	19.584	32.596	37.380	33.476	57.263	61.167	11.182	1.830	17.211	30.223	39.753	35.850	54.890	58.794
N+4.45	B19	0.000	4.820	VIGA50X50	0.50	0.45	-48.795	-23.960	47.032	442.892	-47.032	-442.892	29.289	57.119	107.909	135.739	52.694	44.345	209.373	217.722	9.309	18.520	69.311	97.140	91.292	82.943	170.774	179.123
	B19	4.820					-85.604	-39.934	37.625	351.510	-37.625	-351.510	100.328	122.591	162.726	184.990	35.322	42.001	243.316	249.995	34.713	56.976	97.111	119.374	30.293	23.614	177.701	184.380
N+4.45	B20	0.000	4.820	VIGA50X50	0.50	0.45	-69.368	-26.216	188.082	654.278	-188.082	-654.278	4.260	107.031	111.884	223.175	100.809	67.422	286.337	319.725	51.286	60.005	64.858	176.149	147.836	114.449	239.311	272.698
	B20	4.820					-75.699	-59.403	99.363	366.274	-99.363	-366.274	88.335	147.130	153.354	212.149	33.058	50.696	249.788	267.426	6.222	65.017	71.241	130.036	49.055	31.417	167.675	185.313
N+8.90	B21	0.000	4.820	VIGA30X50	0.30	0.45	-8.242	-1.666	60.301	143.598	-60.301	-143.598	19.030	16.652	6.461	42.142	36.280	25.576	48.689	59.393	23.168	12.513	2.323	38.004	40.419	29.715	44.550	55.255
	B21	4.820					-6.176	0.960	50.672	121.634	-50.672	-121.634	19.336	10.647	2.255	32.239	34.033	25.038	37.940	46.935	20.229	9.754	1.363	31.346	34.926	25.930	37.047	46.042
N+4.45	B21	0.000	4.820	VIGA40X50	0.40	0.45	-32.507	-12.883	167.600	449.949	-167.600	-449.949	37.631	61.541	42.242	141.414	96.105	66.354	170.137	199.888	60.266	38.906	19.607	118.778	118.740	88.989	147.502	177.253
	B21	4.820					-63.136	-29.953	139.718	372.566	-139.718	-372.566	31.312	113.985	97.448	180.121	16.911	7.891	203.542	228.344	17.582	65.091	48.554	131.227	65.805	41.003	154.648	179.450
N+8.90	B28	0.000	4.930	VIGA30X50	0.30	0.45	-7.735	0.046	69.377	52.559	-69.377	-52.559	15.955	25.097	6.625	34.427	12.472	0.156	18.628	30.944	18.229	22.822	8.899	32.152	14.746	2.431	16.354	28.669
	B28	4.930					-6.758	-0.023	76.072	57.349	-76.072	-57.349	19.464	25.549	9.284	35.729	15.587	2.083	18.348	31.852	21.514	23.499	11.334	33.679	17.637	4.133	16.297	29.801
N+4.45	B28	0.000	4.930	VIGA40X50	0.40	0.45	-50.990	-7.610	170.681	132.109	-170.681	-132.109	6.575	107.570	30.026	131.021	14.563	44.862	92.734	123.033	16.332	84.663	7.119	108.114	8.344	21.955	69.827	100.126
	B28	4.930					-47.988	7.114	173.755	135.070	-173.755	-135.070	1.304	104.118	25.281	128.095	9.316	40.160	89.239	120.083	20.206	82.608	3.771	106.584	12.194	18.650	67.729	98.573
N+4.45	B29	0.000	4.930	VIGA40X50	0.40	0.45	-27.927	-5.030	84.237	110.760	-84.237	-110.760	3.789	53.634	23.451	73.295	1.703	13.250	63.835	78.788	9.619	40.226	10.043	59.887	15.112	0.158	50.427	65.380
	B29	4.930					-29.301	-6.726	159.662	179.764	-159.662	-179.764	21.305	73.169	10.605	105.080	25.469	2.874	80.901	109.243	36.822	57.653	4.911	89.564	40.985	12.643	65.384	93.727
N+8.90	B30	0.000	4.930	VIGA40X50	0.40	0.45	-12.329	0.016	60.654	105.567	-60.654	-105.567	12.536	23.354	6.204	42.094	21.838	11.071	40.628	51.395	16.219	19.671	2.521	38.411	25.520	14.753	36.945	47.712
	B30	4.930					-7.921	-0.181	68.230	116.082	-68.230	-116.082	20.803	19.569	0.157	40.176	30.714	18.602	37.974	50.086	23.361	17.012	2.754	37.618	33.271	21.159	35.417	47.529
N+4.45	B30	0.000	4.930	VIGA50X50	0.50	0.45	-116.662	-31.823	104.476	221.580	-104.476	-221.580	121.240	183.061	160.574	222.394	96.988	115.534	228.101	246.647	54.419	116.239	93.753	155.573	30.167	48.713	161.279	179.825
	B30	4.930					-112.763	-31.492	113.508	244.604	-113.508	-244.604	111.515	178.679	154.936	222.100	84.365	104.514	229.101	249.250	46.194	113.359	89.615	156.779	19.044	39.193	163.780	183.929
N+4.45	B31	0.000	4.930	VIGA50X50	0.50	0.45	-90.474	-23.680	15.922	141.272	-15.922	-141.272	114.999	124.421	140.077	149.498	89.039	91.866	172.632	175.458	64.177	73.598	89.255	98.676	38.217	41.043	121.810	124.636
	B31	4.930					-63.189	-16.413	36.993	262.732	-36.993	-262.732	57.976	79.865	104.615	126.504	11.225	17.792	166.688	173.255	22.606	44.495	69.245	91.134	24.145	17.578	131.318	137.885
N+8.90	B32	0.000	4.930	VIGA40X50	0.40	0.45	-10.783	0.466	17.632	131.778	-17.632	-131.778	4.439	5.994	18.953	29.386	28.079	24.949	49.896	53.026	7.208	3.225	16.184	26.618	30.848	27.718	47.127	50.257
	B32	4.930					-8.802	-0.371	17.017	138.190	-17.017	-138.190	6.367	3.703	18.164	28.233	31.462	28.441	50.308	53.328	9.378	0.691	15.153	25.222	34.473	31.452	47.296	50.317
N+4.45	B32	0.000	4.930	VIGA50X50	0.50	0.45	-86.463	-40.835	32.607	299.876	-32.607	-299.876	108.327	127.621	161.560	180.854	52.976	58.764	230.417	236.205	41.553	60.848	94.786	114.080	13.798	8.010	163.643	169.432
	B32	4.930					-61.987	-28.772	35.942	332.785	-35.942	-332.785	62.986	84.253	122.060	143.327	1.509	7.889	198.423	204.804	15.617	36.885	74.692	95.959	45.859	39.479	151.055	157.436
N+4.45	B33	0.000	4.930	VIGA50X50	0.50	0.45	-79.032	-59.236	44.593	194.569	-44.593	-194.569	123.612	149.998	158.151	184.537	92.552	100.468	207.681	215.597	40.666	67.053	75.205	101.591	9.606	17.522	124.736	132.652
	B33	4.930					-62.233	-40.737	71.772	288.314	-71.772	-288.314	68.592	111.061	119.772	162.241	23.746	36.487	194.346	207.087	9.185	51.654	60.365	102.834	35.661	22.920	134.939	147.680
N+8.90	B34	0.000	4.930	VIGA30X50	0.30	0.45	-6.697	0.619	44.517	103.591	-44.517	-103.591	14.948	11.394	3.441	29.783	27.182	19.280	34.114	42.017	16.338	10.004	2.051	28.392	28.572	20.670	32.724	40.627
	B34	4.930					-7.573	-0.420	44.875	103.282	-44.875	-103.282	12.936	13.617	5.398	31.951	25.032	17.066	36.081	44.047	15.628	10.925	2.706	29.259	27.724	19.758	33.390	41.355
N+4.45	B34	0.000	4.930	VIGA40X50	0.40	0.45	-61.941	-29.694	121.593	320.031	-121.593	-320.031	39.644	111.592	96.454	168.403	1.453	20.132	187.915	209.499	8.632	63.316	48.178	120.126	49.729	28.145	139.638	161.223
	B34	4.930					-49.254	-20.354	128.621	342.560	-128.621	-342.560	11.001	87.108	71.810	147.917	33.306	10.474	169.392	192.224	24.130	51.977	36.680	112.787	68.437	45.604	134.262	157.094
N+4.45	B35	0.000	4.825	VIGA50X50	0.50	0.45	-27.948	-4.911	368.672	46.466	-368.672	-46.466	74.750	143.399	66.502	151.647	8.021	57.424	19.474	84.918	88.046	130.104	79.797	138.352	21.317	44.128	6.178	71.623
	B35	4.825					-21.065	-4.282	303.171	37.963	-303.171	-37.963	63.505	115.886	56.766	122.625	8.580	45.237	13.883	67.700	74.107	105.285	67.368	112.024	19.182	34.636	3.281	57.099
N+8.90	B36	0.000	9.750	VIGA40X50	0.40	0.45	-26.044	0.318	191.014	24.189	-191.014	-24.189	27.725	85.301	23.431	89.595	6.824	40.732	21.137	55.045	35.220	77.806	30.926	82.100	0.671	33.237	13.642	47.550
	B36	9.750					-42.869	-0.342	162.442	19.060	-162.442	-19.060	2.033	98.153	5.417	101.536	31.728	60.564	43.006	71.842	11.169	84.950	7.786	88.334	18.525	47.361	29.803	58.639
N+4.45	B37	0.000	4.925	VIGA50X50	0.50	0.45	-18.425	-3.967	349.675	43.887	-349.675	-43.887	81.272	125.636	73.482	133.426	17.944	44.129	8.025	70.098	90.767	116.141	82.976	123.932	27.438	34.634	1.469	60.603
	B37	4.925					-44.655	-8.612	192.964	23.999	-192.964	-23.999	2.978	117.158	7.238	121.418	37.971	72.225	52.171	86.425	19.031	95.149	14.770	99.410	15.962	50.216	30.163	64.417
N+8.90	B38	0.000	9.850	VIGA40X50	0.40	0.45	-41.047	0.037	141.603	16.057	-141.603	-16.057	5.900	89.689	8.750	92.539	31.900	57.037	41.402	66.538	6.377	77.412	3.527	80.262	19.623	44.760	29.125	54.261
	B38	9.850					-37.360	-0.026	148.137	18.321	-148.137	-18.321	0.596	87.059	2.657	90.312	26.289	52.586	37.130	63.427	11.830	75.825	8.577	79.078	15.055	41.352	25.896	52.193
N+4.45	B39	0.000	4.925	VIGA50X50	0.50	0.45	-42.825	-8.175	147.424	18.531	-147.424	-18.531	14.304	101.537	17.593	104.826	40.997	67.167	51.963	78.133	6.719	80.514	3.429	83.804	19.975	46.145	30.940	57.110
	B39	4.925					-36.153	-8.746	251.357	31.670	-251.357	-31.670	25.047	123.685	19.425	129.307	20.450	65.070	39.190	83.809	44.639	104.093	39.017	109.715	0.858	45.478	19.598	64.217
N+4.45	B40	0.000	4.925	VIGA50X50	0.50	0.45	-50.453	-12.871	258.875	32.499	-258.875	-32.499	8.060	147.120	0.291	152.889	40.822	86.777	60.053	106.007	34.067	119.113	28.298	124.882	12.816	58.770	32.046	78.000
	B40	4.925					-95.953	-24.693	163.957	20.270	-163.957	-20.270	89.529	186.545	93.128	190.144	119.287	148.392	131.281	160.386	36.051	133.067	39.649	136.665	65.808	94.913	77.802	106.907
N+8.90	B41	0.000	9.850	VIGA40X50	0.40	0.45	-37.168	0.563	164.659	18.356	-164.659	-18.356	6.306	91.125	3.048	94.384	23.993	53.223	34.855	64.084	16.894	80.538	13.635	83.796	13.406	42.635	24.267	53.497
	B41	9.850					-41.396	-0.710	175.671	16.677	-175.671	-16.677	3.069	100.879	0.108	103.839	29.859	61.043	39.727	70.911	16.197	87.750	13.237	90.710	16.730	47.914	26.598	57.783
N+4.45	B42	0.000	4.925	VIGA50X50	0.50	0.45	-94.120	-24.107	163.555	20.927	-163.555	-20.927	86.805	183.583	90.519	187.297	116.343	145.376	128.726	157.759	34.462	131.240	38.176	134.954	64.000	93.033	76.383	105.416
	B42	4.925					-61.058	-16.545	256.282	33.479	-256.282	-33.479	11.020	162.666	16.963	168.609	57.163	102.656	76.973	122.467	23.842	127.804	17.899	133.747	22.300	67.794	42.110	87.604
N+4.45	B43	0.000	4.925	VIGA50X50	0.50	0.45	-60.703	-16.144	257.426	33.356	-257.426	-33.356	9.865	162.189	15.787	168.110	56.270	101.967	76.008	121.705	24.489	127.834	18.568	133.755	21.916	67.613	41.653	87.350
	B43	4.925					-91.512	-22.731	165.932	20.992	-165.932	-20.992	81.590	179.775	85.316	183.501	111.607	141.062	124.028	153.484	31.405	129.590	35.132	133.316	61.422	90.878	73.844	103.299
N+8.90	B44	0.000	9.850	VIGA40X50	0.40	0.45	-41.901	0.157	199.663	19.249	-199.663	-19.249	10.656	107.488	7.239	110.905	26.708	62.151	38.098	73.541	23.069	95.074	19.653	98.491	14.294	49.737	25.684	61.127
	B44	9.850					-29.024	0.195	214.511	23.528	-214.511	-23.528	30.919	96.010	26.743	100.187	8.633	46.712	22.555	60.634	39.431	87.498	35.255	91.675	0.121	38.200	14.043	52.122
N+4.45	B45	0.000	4.925	VIGA50X50	0.50	0.45	-90.874	-21.987	159.693	19.877	-159.693	-19.877	82.025	176.518	85.554	180.046	110.981	139.329	122.743	151.091	32.776	127.269	36.304	130.797	61.732	90.080	73.493	101.841
	B45	4.925					-64.369	-22.603	245.448	30.853	-245.448	-30.853	24.490	169.725	29.966	175.202	68.932	112.503	87.189	130.759	17.424	127.811	11.947	133.288	27.019	70.589	45.275	88.846
N+4.45	B46	0.000	4.925	VIGA50X50	0.50	0.45	-55.418	-34.336	254.108	32.036	-254.108	-32.036	22.814	173.174	28.501	178.861	68.806	113.913	87.762	132.870	28.147	122.213	22.460	127.900	17.844	62.952	36.800	81.908
	B46	4.925					-85.657	-60.505	174.997	21.971	-174.997	-21.971	109.569	213.118	113.469	217.018	141.261	172.325	154.261	185.326	23.367	126.915	27.267	130.816	55.059	86.123	68.059	99.124
N+8.90	B52	0.000	4.930	VIGA30X50	0.30	0.45	-6.407	-0.037	73.488	57.329	-73.488	-57.329	19.105	24.379	8.928	34.556	15.758	2.713	18.164	31.209	21.064	22.420	10.887	32.597	17.718	4.672	16.205	29.250
	B52	4.930					-7.904	0.082	67.055	52.591	-67.055	-52.591	15.104	24.574	5.768	33.909	12.108	0.205	19.011	30.914	17.393	22.285	8.057	31.620	14.397	2.494	16.721	28.625
N+4.45	B52	0.000	4.930	VIGA40X50	0.40	0.45	-47.653	-7.252	170.611	135.110	-170.611	-135.110	1.967	102.920	25.951	126.904	9.319	39.605	89.266	119.552	19.581	81.372	4.403	105.356	12.229	18.057	67.718	98.004
	B52	4.930					-51.464	-7.497	167.551	132.075	-167.551	-132.075	7.960	107.102	31.405	130.548	15.307	45.050	93.458	123.201	14.976	84.166	8.469	107.612	7.629	22.114	70.522	100.264
N+4.45	B53	0.000	4.930	VIGA40X50	0.40	0.45	-27.353	-6.193	165.564	185.939	-165.564	-185.939	26.470	71.497	6.537	104.503	30.690	1.300	79.333	108.723	40.869	57.098	7.862	90.105	45.089	15.699	64.934	94.324
	B53	4.930					-30.492	-5.857	98.028	121.722	-98.028	-121.722	2.641	60.646	24.249	82.253	2.266	15.136	69.759	87.161	12.363	45.641	9.244	67.249	17.270	0.131	54.755	72.156
N+8.90	B54	0.000	4.930	VIGA40X50	0.40	0.45	-6.766	0.032	68.409	116.823	-68.409	-116.823	22.457	18.022	1.719	38.759	32.484	20.340	36.642	48.786	24.519	15.960	3.781	36.698	34.545	22.402	34.581	46.724
	B54	4.930					-13.495	0.134	61.121	106.634	-61.121	-106.634	11.220	24.947	7.709	43.876	20.645	9.796	42.452	53.301	15.402	20.764	3.527	39.693	24.828	13.978	38.269	49.119
N+4.45	B54	0.000	4.930	VIGA50X50	0.50	0.45	-112.596	-31.732	113.404	244.799	-113.404	-244.799	111.568	178.671	155.023	222.126	84.356	104.487	229.207	249.338	46.057	113.160	89.513	156.616	18.845	38.976	163.697	183.828
	B54	4.930					-118.296	-32.003	104.415	221.755	-104.415	-221.755	123.384	185.168	162.749	224.533	99.083	117.618	230.299	248.834	55.892	117.676	95.257	157.041	31.591	50.126	162.807	181.342
N+8.90	B55	0.000	4.930	VIGA50X50	0.50	0.45	-61.076	-16.168	38.927	273.309	-38.927	-273.309	53.684	76.718	102.201	125.234	5.143	12.054	166.865	173.775	19.193	42.227	67.710	90.743	29.347	22.437	132.374	139.284
	B55	4.930					-91.071	-23.744	19.523	160.172	-19.523	-160.172	113.037	124.589	141.470	153.022	83.908	87.374	178.685	182.150	61.971	73.523	90.404	101.956	32.843	36.309	127.619	131.085
N+8.90	B56	0.000	4.930	VIGA40X50	0.40	0.45	-8.540	0.318	16.561	140.206	-16.561	-140.206	6.778	3.021	18.111	27.910	32.385	29.445	50.577	53.517	9.858	0.141	15.231	25.030	35.265	32.325	47.697	50.637
	B56	4.930					-11.225	0.418	17.156	133.694	-17.156	-133.694	3.890	6.261	19.843	29.994	28.025	24.980	51.084	54.129	6.840	3.312	16.893	27.045	30.975	27.929	48.134	51.180
N+4.45	B56	0.000	4.930	VIGA50X50	0.50	0.45	-62.050	-28.780	35.385	334.187	-35.385	-334.187	63.109	84.047	122.433	143.371	1.227	7.509	198.971	205.253	15.714	36.652	75.038	95.976	46.168	39.886	151.576	157.858
	B56	4.930					-86.271	-40.836	32.163	301.421	-32.163	-301.421	108.092	127.124	161.599	180.630	52.329	58.038	230.684	236.394	41.375	60.406	94.882	113.913	14.389	8.679	163.967	169.676
N+4.45	B57	0.000	4.930	VIGA50X50	0.50	0.45	-62.209	-40.740	69.131	282.628	-69.131	-282.628	69.853	110.758	120.023	160.929	25.637	37.909	192.873	205.144	10.450	51.356	60.620	101.526	33.766	21.494	133.470	145.742
	B57	4.930					-78.989	-59.246	39.087	182.859	-39.087	-182.859	126.239	149.367	158.699	181.827	96.463	103.402	204.664	211.602	43.296	66.424	75.756	98.884	13.521	20.459	121.721	128.660
N+8.90	B58	0.000	4.930	VIGA30X50	0.30	0.45	-7.805	0.449	43.371	103.793	-43.371	-103.793	12.229	13.434	6.196	31.859	24.742	17.043	36.673	44.372	15.020	10.644	3.405	29.069	27.533	19.834	33.883	41.582
	B58	4.930					-6.592	0.645	42.840	103.966	-42.840	-103.966	14.637	10.712	3.819	29.168	27.296	19.691	34.222	41.827	15.970	9.380	2.486	27.835	28.629	21.024	32.890	40.494
N+4.45	B58	0.000	4.930	VIGA40X50	0.40	0.45	-49.464	-20.356	126.620	343.054	-126.620	-343.054	11.803	86.726	72.700	147.623	33.021	10.544	169.970	192.447	23.393	51.531	37.505	112.428	68.216	45.739	134.774	157.251
	B58	4.930					-61.652	-29.690	119.646	320.640	-119.646	-320.640	39.815	110.611	96.733	167.530	1.811	19.428	187.917	209.156	8.371	62.426	48.548	119.344	49.997	28.758	139.731	160.970
N+8.90	B71	0.000	4.820	VIGA30X50	0.30	0.45	-6.926	0.222	76.877	58.541	-76.877	-58.541	19.851	25.638	9.460	36.030	16.054	2.407	18.586	32.232	21.707	23.782	11.315	34.174	17.910	4.263	16.730	30.377
	B71	4.820					-6.973	-0.410	92.873	71.236	-92.873	-71.236	25.022	29.932	12.377	42.578	20.541	4.055	21.610	38.097	27.524	27.430	14.879	40.076	23.043	6.557	19.108	35.595
N+4.45	B71	0.000	4.820	VIGA40X50	0.40	0.45	-50.230	-7.084	201.029	155.955	-201.029	-155.955	5.958	112.994	21.726	140.678	3.377	39.062	95.658	131.343	28.111	90.841	0.427	118.525	18.776	16.909	73.505	109.190
	B71	4.820					-28.516	-3.536	236.002	184.642	-236.002	-184.642	48.456	91.190	15.680	123.967	37.820	4.074	71.436	113.330	60.547	79.099	27.770	111.876	49.910	8.016	59.345	101.239
N+4.45	B72	0.000	4.820	VIGA40X50	0.40	0.45	-35.968	-7.995	132.067	164.051	-132.067	-164.051	2.477	75.669	26.644	104.790	9.101	14.343	87.970	111.414	21.263	56.884	7.859	86.005	27.887	4.443	69.185	92.629
	B72	4.820					-36.061	-7.394	236.570	273.962	-236.570	-273.962	43.640	96.342	4.992	144.974	51.384	9.389	110.724	152.718	61.852	78.130	13.220	126.762	69.596	27.602	92.511	134.506
N+8.90	B73	0.000	4.820	VIGA40X50	0.40	0.45	-7.306	1.693	70.066	121.776	-70.066	-121.776	24.464	16.995	2.847	38.612	35.173	22.735	36.884	49.321	24.963	16.496	3.346	38.114	35.672	23.234	36.385	48.823
	B73	4.820					-8.076	-1.541	90.503	155.180	-90.503	-155.180	29.317	24.235	1.770	51.782	42.712	26.646	49.111	65.176	33.281	20.271	5.734	47.818	46.676	30.610	45.147	61.212

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
RESISTENCIA A CORTANTE PARA VIGAS
CHEQUEO PARA LA CONDICIÓN DESCRITA EN C.21.3.3 (a)

f'c = 21.1 MPa
fy = 420 MPa
$\Phi_{Cortante}$ = 0.75
Estribos Φ = 9.5 mm
Av = 71 mm^2
R= 3.38

Mn = Momentos nominales de la viga en cada extremo restringido de la luz libre.
Vg = Cortante calculado para cargas gravitacionales mayoradas.
Vm = Cortante debido a flexion en curvatura inversa.
Vu = Vm + Vg

V_o	$V_m = M_{nI} + M_{nr} / l_n$															
	COMBDIS3	COMBDIS4	COMBDIS5	COMBDIS6	COMBDIS7	COMBDIS8	COMBDIS9	COMBDIS10	COMBDIS11	COMBDIS12	COMBDIS13	COMBDIS14	COMBDIS15	COMBDIS16	COMBDIS17	COMBDIS18
(kN)	(kN)															
87.80	20.929	33.898	49.291	64.561	30.847	29.105	90.410	94.991	15.632	18.181	33.573	48.844	27.519	23.807	74.692	79.274
201.92																
13.25	5.635	1.334	7.766	13.810	19.153	17.339	25.515	27.328	6.676	1.391	6.725	12.769	20.194	18.381	24.474	26.287
14.51																
104.12	26.892	37.284	56.148	66.541	18.261	17.914	93.919	97.037	9.133	15.663	34.527	44.920	25.225	22.107	72.298	75.416
234.30																
122.26	19.211	52.730	55.029	90.316	27.773	24.506	111.229	121.816	11.931	25.938	28.236	63.524	40.849	30.263	84.437	95.023
264.92																
11.78	7.960	5.664	1.808	15.432	14.588	10.501	17.973	22.060	9.004	4.620	0.765	14.388	15.632	11.545	16.929	21.016
9.04																
81.89	14.303	36.416	28.981	66.708	23.447	15.403	77.527	88.845	16.151	21.576	14.141	51.868	38.287	26.969	62.687	74.005
167.22																
10.87	7.184	10.273	3.227	14.230	5.691	0.454	7.500	12.737	8.062	9.396	4.104	13.353	6.569	1.331	6.623	11.860
10.43																
86.30	1.598	42.939	11.219	52.559	4.844	17.246	36.911	49.314	7.411	33.929	2.209	43.549	4.166	8.236	27.902	40.304
73.72																
33.74	5.090	25.721	6.908	36.182	5.512	3.271	29.358	38.140	9.420	19.854	3.033	30.315	11.379	2.597	23.491	32.273
51.94																
15.21	6.763	8.707	1.298	16.687	10.659	6.019	15.944	20.584	8.028	7.441	1.070	15.422	11.925	7.284	14.678	19.319
13.19																
275.88	47.212	73.375	63.998	90.161	36.786	44.635	92.739	100.588	20.408	46.572	37.194	63.357	9.982	17.831	65.935	73.784
162.62																
204.53	35.086	41.437	49.633	55.984	20.338	22.243	68.828	70.733	17.603	23.954	32.150	38.501	12.649	11.891	51.344	53.250
97.67																
14.40	2.192	1.967	7.529	11.688	12.077	10.830	20.325	21.573	3.364	0.794	6.356	10.515	13.250	12.002	19.153	20.400
13.99																
239.38	34.749	42.977	57.529	65.757	11.052	13.520	86.986	89.454	11.597	19.824	34.377	42.604	12.101	9.633	63.833	66.302
113.79																
273.57	38.987	52.953	56.374	70.340	23.590	27.780	81.547	85.737	10.112	24.078	27.499	41.466	9.182	8.203	52.672	56.862
130.58																
10.10	5.656	5.073	1.793	12.522	10.591	7.372	14.239	17.457	6.484	4.245	0.965	11.694	11.419	8.200	13.411	16.629
11.20																
166.26	10.273	40.304	34.131	64.162	7.051	6.208	72.476	81.485	6.645	23.386	17.212	47.244	23.969	14.959	55.558	64.567
92.60																
60.18	28.654	53.738	25.548	56.844	3.441	21.277	6.913	31.631	33.607	48.785	30.500	51.891	8.393	16.324	1.961	26.678
56.34																
25.89	3.052	18.816	2.959	19.603	3.954	10.389	6.579	13.014	4.758	16.693	3.971	17.480	1.969	8.266	4.456	10.891
30.27																
51.73	17.107	49.298	16.390	51.745	11.353	23.625	12.223	31.781	22.294	42.902	19.847	45.349	8.812	17.229	6.423	25.385
76.09																
28.80	0.659	17.944	1.158	18.564	5.908	11.129	7.973	13.194	1.848	15.557	1.229	16.177	3.521	8.742	5.586	10.807
27.94																
69.63	7.990	45.730	7.516	47.540	12.477	26.850	18.508	32.882	10.428	37.484	8.619	39.293	4.230	18.604	10.261	24.635
58.19																
91.55	19.409	67.749	18.968	69.651	32.510	47.750	38.850	54.090	14.237	51.204	13.796	53.106	15.964	31.205	22.304	37.545
210.12																
27.64	0.952	19.493	0.320	20.124	5.467	11.601	7.572	13.705	3.360	17.085	2.728	17.716	3.059	9.193	5.164	11.297
29.09																
205.70	19.863	70.304	21.824	72.265	35.230	50.362	41.766	56.899	11.838	52.598	11.386	54.559	17.523	32.655	24.059	39.192
95.96																
96.82	18.570	69.434	20.529	71.393	34.087	49.346	40.616	55.876	11.349	52.269	10.904	54.228	16.921	32.181	23.451	38.710
204.83																
29.94	4.221	20.660	3.450	21.431	3.588	11.052	6.158	13.622	6.345	18.535	5.574	19.306	1.464	8.928	4.033	11.497
26.80																
201.44	21.627	70.303	23.456	72.132	36.531	51.133	42.626	57.228	10.193	51.793	9.797	53.621	18.020	32.623	24.115	38.718
100.23																
124.52	26.880	78.435	28.826	80.381	42.653	58.120	49.142	64.608	10.460	50.584	10.097	52.531	14.803	30.269	21.291	36.758
278.88																
10.32	6.939	9.930	2.981	13.887	5.652	0.592	7.541	12.601	7.801	9.068	3.843	13.026	6.514	1.454	6.679	11.739
10.98																
73.60	2.014	42.601	11.634	52.221	4.995	17.171	37.064	49.240	7.010	33.578	2.611	43.198	4.028	8.148	28.041	40.217
86.42																
49.48	5.905	26.804	6.245	37.882	6.685	3.334	30.242	39.733	10.798	20.840	3.470	31.918	12.649	3.211	24.278	33.769
33.62																
12.53	6.831	8.716	1.913	16.762	10.777	6.113	16.043	20.707	8.098	7.449	1.482	15.495	12.043	7.379	14.777	19.441
15.87																
164.79	47.658	73.801	64.457	90.600	37.209	45.052	93.206	101.049	20.679	46.823	37.479	63.622	10.230	18.073	66.228	74.071
276.81																
96.91	33.818	40.833	49.426	56.441	18.063	20.168	70.091	72.196	16.463	23.479	32.072	39.087	12.615	11.916	52.737	54.842
205.28																
13.79	2.164	1.883	7.698	11.745	12.254	11.040	20.621	21.835	3.346	0.700	6.516	10.563	13.436	12.222	19.438	20.652
14.62																
113.85	34.727	42.834	57.613	65.720	10.863	13.296	87.151	89.583	11.580	19.687	34.466	42.574	12.283	9.851	64.005	66.437
239.32																
130.56	39.775	52.764	56.536	69.525	24.767	28.663	80.636	84.533	10.902	23.890	27.663	40.651	9.591	8.510	51.763	55.660
273.57																
11.30	5.449	4.898	2.031	12.379	10.556	7.451	14.380	17.485	6.286	4.062	1.195	11.542	11.392	8.288	13.544	16.648
10.00																
92.72	10.470	40.028	34.368	63.925	7.065	6.080	72.594	81.461	6.443	23.115	17.455	47.013	23.978	15.111	55.681	64.548
166.14																
10.20	9.310	11.529	4.530	16.309	7.592	1.341	8.339	14.591	10.214	10.625	5.434	15.404	8.496	2.245	7.435	13.687
10.64																
74.89	11.289	42.362	7.761	54.906	8.547	8.950	34.667	50.762	18.394	35.257	5.850	47.801	14.250	5.171	27.562	43.658
61.73																
59.51	9.568	35.687	6.564	51.818	12.549	4.924	41.223	54.799	17.244	28.011	4.373	44.143	20.225	6.648	33.547	47.123
68.39																
12.62	11.158	8.554	0.958	18.754	16.159	10.245	17.841	23.755	12.084	7.628	1.884	17.828	17.085	11.171	16.915	22.829
15.15																

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
RESISTENCIA A CORTANTE PARA VIGAS
CHEQUEO PARA LA CONDICIÓN DESCRITA EN C.21.3.3 (a)

f'c = 21.1 MPa
fy = 420 MPa
$\Phi_{Cortante}$ = 0.75
Estribos Φ = 9.5 mm
Av = 71 mm^2
R= 3.38

Mn = Momentos nominales de la viga en cada extremo restringido de la luz libre.
Vg = Cortante calculado para cargas gravitacionales mayoradas.
Vm = Cortante debido a flexion en curvatura inversa.
Vu = Vm + Vg

***Vu* = Vm + Vg**																	Vu_{max}	S	ΦVs	ΦVc	ΦVn	ΦVn > Vu_{max}
COMBDIS3	COMBDIS4	COMBDIS5	COMBDIS6	COMBDIS7	COMBDIS8	COMBDIS9	COMBDIS10	COMBDIS11	COMBDIS12	COMBDIS13	COMBDIS14	COMBDIS15	COMBDIS16	COMBDIS17	COMBDIS18							
(kN)																	(kN)	(m)	(kN)	(kN)	(kN)	
108.725	121.694	137.087	152.357	118.643	116.901	178.206	182.787	103.428	105.977	121.369	136.640	115.315	111.603	162.488	167.070		201.9	**0.11**	178.92	129.19	308.11	**OK**
201.920	201.920	201.920	201.920	201.920	201.920	201.920	201.920	201.920	201.920	201.920	201.920	201.920	201.920	201.920	201.920							
18.883	14.582	21.014	27.058	32.401	30.587	38.763	40.576	19.924	14.639	19.973	26.017	33.442	31.629	37.722	39.535		40.6	**0.11**	178.92	103.35	282.27	**OK**
14.508	14.508	14.508	14.508	14.508	14.508	14.508	14.508	14.508	14.508	14.508	14.508	14.508	14.508	14.508	14.508							
131.016	141.408	160.272	170.665	122.385	122.038	198.043	201.161	113.257	119.787	138.651	149.044	129.349	126.231	176.422	179.540		234.3	**0.11**	178.92	129.19	308.11	**OK**
234.304	234.304	234.304	234.304	234.304	234.304	234.304	234.304	234.304	234.304	234.304	234.304	234.304	234.304	234.304	234.304							
141.471	174.990	177.289	212.576	150.033	146.766	233.489	244.076	134.191	148.198	150.496	185.784	163.109	152.523	206.697	217.283		264.9	**0.11**	178.92	129.19	308.11	**OK**
264.924	264.924	264.924	264.924	264.924	264.924	264.924	264.924	264.924	264.924	264.924	264.924	264.924	264.924	264.924	264.924							
19.744	17.448	13.592	27.216	26.372	22.285	29.757	33.844	20.788	16.404	12.549	26.172	27.416	23.329	28.713	32.800		33.8	**0.11**	178.92	77.51	256.43	**OK**
9.036	9.036	9.036	9.036	9.036	9.036	9.036	9.036	9.036	9.036	9.036	9.036	9.036	9.036	9.036	9.036							
96.195	118.308	110.873	148.600	105.339	97.295	159.419	170.737	98.043	103.468	96.033	133.760	120.179	108.861	144.579	155.897		170.7	**0.11**	178.92	103.35	282.27	**OK**
167.216	167.216	167.216	167.216	167.216	167.216	167.216	167.216	167.216	167.216	167.216	167.216	167.216	167.216	167.216	167.216							
18.052	21.141	14.095	25.098	16.559	11.322	18.368	23.605	18.930	20.264	14.972	24.221	17.437	12.199	17.491	22.728		25.1	**0.11**	178.92	77.51	256.43	**OK**
10.432	10.432	10.432	10.432	10.432	10.432	10.432	10.432	10.432	10.432	10.432	10.432	10.432	10.432	10.432	10.432							
87.898	129.239	97.519	138.859	91.144	103.546	123.211	135.614	93.711	120.229	88.509	129.849	90.466	94.536	114.202	126.604		138.9	**0.11**	178.92	103.35	282.27	**OK**
73.720	73.720	73.720	73.720	73.720	73.720	73.720	73.720	73.720	73.720	73.720	73.720	73.720	73.720	73.720	73.720							
38.830	59.461	40.648	69.922	39.252	37.011	63.098	71.880	43.160	53.594	36.773	64.055	45.119	36.337	57.231	66.013		71.9	**0.11**	178.92	103.35	282.27	**OK**
51.940	51.940	51.940	51.940	51.940	51.940	51.940	51.940	51.940	51.940	51.940	51.940	51.940	51.940	51.940	51.940							
21.975	23.919	16.510	31.899	25.871	21.231	31.156	35.796	23.240	22.653	16.282	30.634	27.137	22.496	29.890	34.531		35.8	**0.11**	178.92	103.35	282.27	**OK**
13.192	13.192	13.192	13.192	13.192	13.192	13.192	13.192	13.192	13.192	13.192	13.192	13.192	13.192	13.192	13.192							
323.088	349.251	339.874	366.037	312.662	320.511	368.615	376.464	296.284	322.448	313.070	339.233	285.858	293.707	341.811	349.660		376.5	**0.11**	268.38	129.19	397.57	**OK**
162.624	162.624	162.624	162.624	162.624	162.624	162.624	162.624	162.624	162.624	162.624	162.624	162.624	162.624	162.624	162.624							
239.614	245.965	254.161	260.512	224.866	226.771	273.356	275.261	222.131	228.482	236.678	243.029	217.177	216.419	255.872	257.778		275.3	**0.11**	178.92	129.19	308.11	**OK**
97.668	97.668	97.668	97.668	97.668	97.668	97.668	97.668	97.668	97.668	97.668	97.668	97.668	97.668	97.668	97.668							
16.596	16.371	21.933	26.092	26.481	25.234	34.729	35.977	17.768	15.198	20.760	24.919	27.654	26.406	33.557	34.804		36.0	**0.11**	178.92	103.35	282.27	**OK**
13.988	13.988	13.988	13.988	13.988	13.988	13.988	13.988	13.988	13.988	13.988	13.988	13.988	13.988	13.988	13.988							
274.129	282.357	296.909	305.137	250.432	252.900	326.366	328.834	250.977	259.204	273.757	281.984	251.481	249.013	303.213	305.682		328.8	**0.11**	268.38	129.19	397.57	**OK**
113.792	113.792	113.792	113.792	113.792	113.792	113.792	113.792	113.792	113.792	113.792	113.792	113.792	113.792	113.792	113.792							
312.559	326.525	329.946	343.912	297.162	301.352	355.119	359.309	283.684	297.650	301.071	315.038	282.754	281.775	326.244	330.434		359.3	**0.11**	268.38	129.19	397.57	**OK**
130.576	130.576	130.576	130.576	130.576	130.576	130.576	130.576	130.576	130.576	130.576	130.576	130.576	130.576	130.576	130.576							
15.760	15.177	11.897	22.626	20.695	17.476	24.343	27.561	16.588	14.349	11.069	21.798	21.523	18.304	23.515	26.733		27.6	**0.11**	178.92	77.51	256.43	**OK**
11.196	11.196	11.196	11.196	11.196	11.196	11.196	11.196	11.196	11.196	11.196	11.196	11.196	11.196	11.196	11.196							
176.533	206.564	200.391	230.422	173.311	172.468	238.736	247.745	172.905	189.646	183.472	213.504	190.229	181.219	221.818	230.827		247.7	**0.11**	178.92	103.35	282.27	**OK**
92.604	92.604	92.604	92.604	92.604	92.604	92.604	92.604	92.604	92.604	92.604	92.604	92.604	92.604	92.604	92.604							
88.830	113.914	85.724	117.020	63.617	81.453	67.089	91.807	93.783	108.961	90.676	112.067	68.569	76.500	62.137	86.854		117.0	**0.11**	178.92	129.19	308.11	**OK**
56.340	56.340	56.340	56.340	56.340	56.340	56.340	56.340	56.340	56.340	56.340	56.340	56.340	56.340	56.340	56.340							
28.944	44.708	28.851	45.495	29.846	36.281	32.471	38.906	30.650	42.585	29.863	43.372	27.861	34.158	30.348	36.783		45.5	**0.11**	178.92	103.35	282.27	**OK**
30.268	30.268	30.268	30.268	30.268	30.268	30.268	30.268	30.268	30.268	30.268	30.268	30.268	30.268	30.268	30.268							
68.839	101.030	68.122	103.477	63.085	75.357	63.955	83.513	74.026	94.634	71.579	97.081	60.544	68.961	58.155	77.117		103.5	**0.11**	178.92	129.19	308.11	**OK**
76.092	76.092	76.092	76.092	76.092	76.092	76.092	76.092	76.092	76.092	76.092	76.092	76.092	76.092	76.092	76.092							
29.455	46.740	29.954	47.360	34.704	39.925	36.769	41.990	30.644	44.353	30.025	44.973	32.317	37.538	34.382	39.603		47.4	**0.11**	178.92	103.35	282.27	**OK**
27.940	27.940	27.940	27.940	27.940	27.940	27.940	27.940	27.940	27.940	27.940	27.940	27.940	27.940	27.940	27.940							
77.622	115.362	77.148	117.172	82.109	96.482	88.140	102.514	80.060	107.116	78.251	108.925	73.862	88.236	79.893	94.267		117.2	**0.11**	178.92	129.19	308.11	**OK**
58.192	58.192	58.192	58.192	58.192	58.192	58.192	58.192	58.192	58.192	58.192	58.192	58.192	58.192	58.192	58.192							
110.957	159.297	110.516	161.199	124.058	139.296	130.398	145.638	105.785	142.752	105.344	144.654	107.512	122.753	113.852	129.093		210.1	**0.11**	178.92	129.19	308.11	**OK**
210.120	210.120	210.120	210.120	210.120	210.120	210.120	210.120	210.120	210.120	210.120	210.120	210.120	210.120	210.120	210.120							
28.596	47.137	27.964	47.768	33.111	39.245	35.216	41.349	31.004	44.729	30.372	45.360	30.703	36.837	32.808	38.941		47.8	**0.11**	178.92	103.35	282.27	**OK**
29.092	29.092	29.092	29.092	29.092	29.092	29.092	29.092	29.092	29.092	29.092	29.092	29.092	29.092	29.092	29.092							
225.567	276.008	227.528	277.969	240.934	256.066	247.470	262.603	217.542	258.302	217.090	260.263	223.227	238.359	229.763	244.896		278.0	**0.11**	178.92	129.19	308.11	**OK**
95.964	95.964	95.964	95.964	95.964	95.964	95.964	95.964	95.964	95.964	95.964	95.964	95.964	95.964	95.964	95.964							
115.390	166.254	117.349	168.213	130.907	146.166	137.436	152.696	108.169	149.089	107.724	151.048	113.741	129.001	120.271	135.530		204.8	**0.11**	178.92	129.19	308.11	**OK**
204.832	204.832	204.832	204.832	204.832	204.832	204.832	204.832	204.832	204.832	204.832	204.832	204.832	204.832	204.832	204.832							
34.161	50.600	33.390	51.371	33.528	40.992	36.098	43.562	36.285	48.475	35.514	49.246	31.404	38.868	33.973	41.437		51.4	**0.11**	178.92	103.35	282.27	**OK**
26.796	26.796	26.796	26.796	26.796	26.796	26.796	26.796	26.796	26.796	26.796	26.796	26.796	26.796	26.796	26.796							
223.067	271.743	224.896	273.572	237.971	252.573	244.066	258.668	211.633	253.233	211.237	255.061	219.460	234.063	225.555	240.158		273.6	**0.11**	178.92	129.19	308.11	**OK**
100.228	100.228	100.228	100.228	100.228	100.228	100.228	100.228	100.228	100.228	100.228	100.228	100.228	100.228	100.228	100.228							
151.396	202.951	153.342	204.897	167.169	182.636	173.658	189.124	134.976	175.100	134.613	177.047	139.319	154.785	145.807	161.274		278.9	**0.11**	178.92	129.19	308.11	**OK**
278.876	278.876	278.876	278.876	278.876	278.876	278.876	278.876	278.876	278.876	278.876	278.876	278.876	278.876	278.876	278.876							
17.255	20.246	13.297	24.203	15.968	10.908	17.857	22.917	18.117	19.384	14.159	23.342	16.830	11.770	16.995	22.055		24.2	**0.11**	178.92	77.51	256.43	**OK**
10.984	10.984	10.984	10.984	10.984	10.984	10.984	10.984	10.984	10.984	10.984	10.984	10.984	10.984	10.984	10.984							
75.610	116.197	85.230	125.817	78.591	90.767	110.660	122.836	80.606	107.174	76.207	116.794	77.624	81.744	101.637	113.813		125.8	**0.11**	178.92	103.35	282.27	**OK**
86.424	86.424	86.424	86.424	86.424	86.424	86.424	86.424	86.424	86.424	86.424	86.424	86.424	86.424	86.424	86.424							
55.389	76.288	55.729	87.366	56.169	52.818	79.726	89.217	60.282	70.324	52.954	81.402	62.133	52.695	73.762	83.253		89.2	**0.11**	178.92	103.35	282.27	**OK**
33.620	33.620	33.620	33.620	33.620	33.620	33.620	33.620	33.620	33.620	33.620	33.620	33.620	33.620	33.620	33.620							
19.363	21.248	14.445	29.294	23.309	18.645	28.575	33.239	20.630	19.981	14.014	28.027	24.575	19.911	27.309	31.973		33.2	**0.11**	178.92	103.35	282.27	**OK**
15.872	15.872	15.872	15.872	15.872	15.872	15.872	15.872	15.872	15.872	15.872	15.872	15.872	15.872	15.872	15.872							
212.446	238.589	229.245	255.388	201.997	209.840	257.994	265.837	185.467	211.611	202.267	228.410	175.018	182.861	231.016	238.859		276.8	**0.11**	178.92	129.19	308.11	**OK**
276.808	276.808	276.808	276.808	276.808	276.808	276.808	276.808	276.808	276.808	276.808	276.808	276.808	276.808	276.808	276.808							
130.730	137.745	146.338	153.353	114.975	117.080	167.003	169.108	113.375	120.391	128.984	135.999	109.527	108.828	149.649	151.754		205.3	**0.11**	178.92	129.19	308.11	**OK**
205.284	205.284	205.284	205.284	205.284	205.284	205.284	205.284	205.284	205.284	205.284	205.284	205.284	205.284	205.284	205.284							
15.952	15.671	21.486	25.533	26.042	24.828	34.409	35.623	17.134	14.488	20.304	24.351	27.224	26.010	33.226	34.440		35.6	**0.11**	178.92	103.35	282.27	**OK**
14.616	14.616	14.616	14.616	14.616	14.616	14.616	14.616	14.616	14.616	14.616	14.616	14.616	14.616	14.616	14.616							
148.579	156.686	171.465	179.572	124.715	127.148	201.003	203.435	125.432	133.539	148.318	156.426	126.135	123.703	177.857	180.289		239.3	**0.11**	178.92	129.19	308.11	**OK**
239.320	239.320	239.320	239.320	239.320	239.320	239.320	239.320	239.320	239.320	239.320	239.320	239.320	239.320	239.320	239.320							
170.335	183.324	187.096	200.085	155.327	159.223	211.196	215.093	141.462	154.450	158.223	171.211	140.151	139.070	182.323	186.220		273.6	**0.11**	178.92	129.19	308.11	**OK**
273.572	273.572	273.572	273.572	273.572	273.572	273.572	273.572	273.572	273.572	273.572	273.572	273.572	273.572	273.572	273.572							
16.745	16.194	13.327	23.675	21.852	18.747	25.676	28.781	17.582	15.358	12.491	22.838	22.688	19.584	24.840	27.944		28.8	**0.11**	178.92	77.51	256.43	**OK**
10.004	10.004	10.004	10.004	10.004	10.004	10.004	10.004	10.004	10.004	10.004	10.004	10.004	10.004	10.004	10.004							
103.194	132.752	127.092	156.649	99.789	98.804	165.318	174.185	99.167	115.839	110.179	139.737	116.702	107.835	148.405	157.272		174.2	**0.11**	178.92	103.35	282.27	**OK**
166.140	166.140	166.140	166.140	166.140	166.140	166.140	166.140	166.140	166.140	166.140	166.140	166.140	166.140	166.140	166.140							
19.506	21.725	14.726	26.505	17.788	11.537	18.535	24.787	20.410	20.821	15.630	25.600	18.692	12.441	17.631	23.883		26.5	**0.11**	178.92	77.51	256.43	**OK**
10.636	10.636	10.636	10.636	10.636	10.636	10.636	10.636	10.636	10.636	10.636	10.636	10.636	10.636	10.636	10.636							
86.181	117.254	82.653	129.798	83.439	83.842	109.559	125.654	93.286	110.149	80.742	122.693	89.142	80.063	102.454	118.550		129.8	**0.11**	178.92	103.35	282.27	**OK**
61.728	61.728	61.728	61.728	61.728	61.728	61.728	61.728	61.728	61.728	61.728	61.728	61.728	61.728	61.728	61.728							
69.080	95.199	66.076	111.330	72.061	64.436	100.735	114.311	76.756	87.523	63.885	103.655	79.737	66.160	93.059	106.635		114.3	**0.11**	178.92	103.35	282.27	**OK**
68.388	68.388	68.388	68.388	68.388	68.388	68.388	68.388	68.388	68.388	68.388	68.388	68.388	68.388	68.388	68.388							
23.778	21.174	13.578	31.374	28.779	22.865	30.461	36.375	24.704	20.248	14.504	30.448	29.705	23.791	29.535	35.449		36.4	**0.11**	178.92	103.35	282.27	**OK**
15.148	15.148	15.148	15.148	15.148	15.148	15.148	15.148	15.148	15.148	15.148	15.148	15.148	15.148	15.148	15.148							

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
RESISTENCIA A CORTANTE PARA VIGAS
CHEQUEO PARA LA CONDICIÓN DESCRITA EN C.21.3.3 (a)

f'c = 21.1 MPa
fy = 420 MPa
$\Phi_{Cortante}$ = 0.75
Estribos Φ = 9.5 mm
Av = 71 mm^2
R= 3.38

Mn = Momentos nominales de la viga en cada extremo restringido de la luz libre.
Vg = Cortante calculado para cargas gravitacionales mayoradas.
Vm = Cortante debido a flexion en curvatura inversa.
Vu = Vm + Vg

COMDIS3 = 1.2C.M.+1.0C.V.+1.0Ex+0.3Ey
COMDIS4 = 1.2C.M.+1.0C.V.+1.0(-Ex)+0.3Ey
COMDIS5 = 1.2C.M.+1.0C.V.+1.0Ex+0.3(-Ey)
COMDIS6 = 1.2C.M.+1.0C.V.+1.0(-Ex)+0.3(-Ey)
COMDIS7 = 1.2C.M.+1.0C.V.+0.3Ex+1.0Ey
COMDIS8 = 1.2C.M.+1.0C.V.+0.3(-Ex)+1.0Ey

COMDIS9 = 1.2C.M.+1.0C.V.+0.3Ex+1.0(-Ey)
COMDIS10 = 1.2C.M.+1.0C.V.+0.3(-Ex)+1.0(-Ey)
COMDIS11 = 0.9C.M.+1.0Ex+0.3Ey
COMDIS12 = 0.9C.M.+1.0(-Ex)+0.3Ey
COMDIS13 = 0.9C.M.+1.0Ex+0.3(-Ey)
COMDIS14 = 0.9C.M.+1.0(-Ex)+0.3(-Ey)

COMDIS15 = 0.9C.M.+0.3Ex+1.0Ey
COMDIS16 = 0.9C.M.+0.3(-Ex)+1.0Ey
COMDIS17 = 0.9C.M.+0.3Ex+1.0(-Ey)
COMDIS18 = 0.9C.M.+0.3(-Ex)+1.0(-Ey)

NIVEL	VIGA	LOC.	LONG.	PROPIEDADES DEL ELEMENTO			M3						Mn (kN.m)															
	ELEMENTO			SECCION	b	d	C.M.	C.V.	SISMO X	SISMO Y	-SISMO X	-SISMO Y	Combinaciones para resistencias nominales a momento															
	No.	(m)	(m)		(m)	(m)	(KN.m)	(KN.m)	(KN.m)	(KN.m)	(KN.m)	(KN.m)	COMDIS3	COMDIS4	COMDIS5	COMDIS6	COMDIS7	COMDIS8	COMDIS9	COMDIS10	COMDIS11	COMDIS12	COMDIS13	COMDIS14	COMDIS15	COMDIS16	COMDIS17	COMDIS18
N+4.45	B73	0.000	4.820	VIGA50X50	0.50	0.45	-90.509	-23.605	121.778	258.328	-121.778	-258.328	73.258	145.316	119.115	191.173	44.979	66.596	197.836	219.453	22.501	94.559	68.358	140.416	5.779	15.838	147.078	168.695
	B73	4.820					-31.984	-7.412	151.198	323.792	-151.198	-323.792	27.679	61.787	29.799	119.265	63.424	36.584	128.169	155.009	44.686	44.780	12.791	102.258	80.431	53.591	111.162	138.002
N+4.45	B74	0.000	4.820	VIGA50X50	0.50	0.45	-89.609	-23.853	32.381	244.603	-32.381	-244.603	100.093	119.254	143.514	162.674	56.142	61.890	200.877	206.626	49.358	68.518	92.778	111.939	5.406	11.154	150.142	155.890
	B74	4.820					-50.258	-10.323	67.049	453.945	-67.049	-453.945	10.505	50.179	91.087	130.761	69.622	57.720	198.985	210.887	14.896	24.778	65.686	105.360	95.022	83.120	173.584	185.487
N+8.90	B75	0.000	4.820	VIGA40X50	0.40	0.45	-11.432	0.770	22.737	158.810	-22.737	-158.810	7.874	5.580	20.317	33.771	36.055	32.019	57.916	61.952	10.534	2.920	17.657	31.111	38.714	34.678	55.256	59.292
	B75	4.820					-3.096	-0.889	29.087	204.102	-29.087	-204.102	22.117	4.906	14.114	31.325	58.363	53.199	62.408	67.571	23.935	6.724	12.296	29.508	60.180	55.017	60.590	65.753
N+4.45	B75	0.000	4.820	VIGA50X50	0.50	0.45	-85.451	-39.968	37.994	350.673	-37.994	-350.673	100.144	122.625	162.393	184.875	35.388	42.132	242.886	249.631	34.540	57.022	96.790	119.272	30.216	23.471	177.283	184.028
	B75	4.820					-49.307	-23.923	47.797	442.074	-47.797	-442.074	29.713	57.995	108.188	136.470	51.942	43.457	209.640	218.125	9.002	19.280	69.473	97.755	90.657	82.172	170.925	179.410
N+4.45	B76	0.000	4.820	VIGA50X50	0.50	0.45	-75.518	-59.435	109.232	389.639	-109.232	-389.639	83.156	147.790	152.323	216.957	25.084	44.474	255.639	275.030	1.066	65.700	70.232	134.867	57.007	37.616	173.549	192.939
	B76	4.820					-69.050	-26.125	218.209	728.088	-218.209	-728.088	20.197	108.921	109.049	238.167	125.793	87.058	305.028	343.763	67.037	62.081	62.209	191.327	172.633	133.898	258.188	296.923
N+8.90	B77	0.000	4.820	VIGA30X50	0.30	0.45	-6.819	0.908	52.821	121.952	-52.821	-121.952	19.177	12.078	2.471	33.726	33.494	24.117	38.667	48.044	20.315	10.940	1.334	32.589	34.632	25.255	37.529	46.906
	B77	4.820					-6.625	-1.582	63.576	145.968	-63.576	-145.968	22.233	15.386	3.678	41.297	39.297	28.011	47.075	58.361	25.803	11.816	0.109	37.728	42.866	31.580	43.505	54.791
N+4.45	B77	0.000	4.820	VIGA40X50	0.40	0.45	-63.174	-29.953	142.214	373.150	-142.214	-373.150	30.567	114.717	96.806	180.957	17.260	7.985	203.539	228.784	18.338	65.812	47.901	132.052	66.165	40.920	154.633	179.879
	B77	4.820					-32.634	-12.889	170.463	451.618	-170.463	-451.618	38.467	62.398	41.701	142.567	96.695	66.435	170.535	200.794	61.147	39.719	19.022	119.888	119.374	89.114	147.856	178.115
N+8.90	B80	0.000	4.825	VIGA30X50	0.30	0.45	-6.661	0.334	94.245	17.094	-94.245	-17.094	21.073	34.693	18.039	37.728	5.095	11.635	5.020	21.750	23.405	32.361	20.371	35.395	7.427	9.302	2.687	19.417
	B80	4.825					-8.207	0.014	74.470	14.096	-74.470	-14.096	13.449	30.616	10.947	33.118	0.946	12.274	7.395	20.615	15.897	28.168	13.395	30.670	3.394	9.826	4.947	18.166
N+4.45	B80	0.000	4.825	VIGA40X50	0.40	0.45	-29.011	-4.052	276.048	60.517	-276.048	-60.517	48.177	115.165	37.434	125.908	3.541	45.462	32.268	81.271	60.932	102.410	50.190	113.152	16.296	32.707	19.513	68.516
	B80	4.825					-48.244	-6.115	256.608	57.291	-256.608	-57.291	16.997	134.842	6.827	145.012	24.282	69.834	58.182	103.734	37.585	114.254	27.415	124.424	3.694	49.245	37.594	83.145
N+8.90	B81	0.000	4.925	VIGA30X50	0.30	0.45	-7.591	0.192	76.542	16.181	-76.542	-16.181	15.165	30.127	12.292	32.999	2.664	10.924	6.911	20.498	17.250	28.041	14.377	30.914	4.749	8.838	4.826	18.413
	B81	4.925					-6.070	0.006	120.840	20.690	-120.840	-20.690	30.298	41.295	26.625	44.878	9.557	11.894	2.686	24.137	32.125	39.378	28.452	43.051	11.384	10.067	0.859	22.310
N+4.45	B81	0.000	4.925	VIGA40X50	0.40	0.45	-40.912	-4.406	242.527	54.788	-242.527	-54.788	23.116	120.391	13.390	130.117	15.765	58.817	48.184	91.236	39.796	103.712	30.070	113.437	0.915	42.137	31.504	74.556
	B81	4.925					-38.996	-4.432	249.390	54.894	-249.390	-54.894	27.429	120.139	17.685	129.883	12.851	57.122	45.333	89.603	43.560	104.008	33.815	113.753	3.280	40.991	29.202	73.472
N+8.90	B82	0.000	4.925	VIGA30X50	0.30	0.45	-6.270	-0.086	120.765	19.154	-120.765	-19.154	29.819	41.639	26.419	45.039	8.776	12.662	2.558	23.996	31.786	39.672	28.386	43.072	10.743	10.695	0.591	22.029
	B82	4.925					-8.817	-0.025	77.938	14.131	-77.938	-14.131	13.707	32.410	11.199	34.918	0.493	13.342	7.869	21.704	16.378	29.740	13.869	32.248	3.163	10.672	5.198	19.034
N+4.45	B82	0.000	4.925	VIGA40X50	0.40	0.45	-44.907	-6.408	250.071	53.343	-250.071	-53.343	18.424	129.547	8.955	139.016	22.319	66.710	53.883	98.274	38.304	109.667	28.835	119.136	2.439	46.830	34.003	78.394
	B82	4.925					-56.383	-9.130	243.353	53.559	-243.353	-53.559	0.038	144.034	9.545	153.541	39.344	82.543	71.036	114.235	26.007	117.989	16.499	127.496	13.299	56.498	44.991	88.190
N+8.90	B83	0.000	4.925	VIGA30X50	0.30	0.45	-8.966	-0.026	68.054	16.827	-68.054	-16.827	10.843	29.426	7.856	32.413	0.233	11.847	9.723	21.804	13.558	26.710	10.571	29.697	2.949	9.131	7.008	19.088
	B83	4.925					-5.671	0.047	82.111	19.104	-82.111	-19.104	19.231	29.356	15.839	32.747	6.182	8.394	5.122	19.698	20.885	27.701	17.494	31.093	7.836	6.740	3.468	18.044
N+4.45	B83	0.000	4.925	VIGA40X50	0.40	0.45	-55.960	-9.004	225.101	54.459	-225.101	-54.459	4.724	137.920	14.392	147.588	40.064	80.023	72.289	112.248	21.068	112.128	11.400	121.796	14.272	54.231	46.497	86.456
	B83	4.925					-47.385	-7.190	214.427	50.157	-214.427	-50.157	3.840	123.040	5.064	131.944	30.181	68.245	59.859	97.923	25.245	101.635	16.342	110.538	8.775	46.839	38.454	76.518
N+8.90	B84	0.000	4.925	VIGA30X50	0.30	0.45	-5.359	-0.023	80.517	13.762	-80.517	-13.762	18.589	29.054	16.146	31.497	4.764	9.529	3.379	17.672	20.220	27.423	17.777	29.866	6.395	7.898	1.748	16.041
	B84	4.925					-8.715	0.061	60.122	10.702	-60.122	-10.702	8.340	27.235	6.441	29.134	1.894	12.567	8.227	18.900	10.894	24.681	8.994	26.581	0.659	10.014	5.674	16.346
N+4.45	B84	0.000	4.925	VIGA40X50	0.40	0.45	-49.635	-7.872	197.605	38.969	-197.605	-38.969	5.512	122.438	12.430	129.356	38.366	73.444	61.424	96.502	17.250	99.676	10.333	106.593	15.603	50.681	38.662	73.740
	B84	4.925					-65.016	-11.809	187.658	38.517	-187.658	-38.517	30.889	141.930	37.727	148.767	61.777	95.089	84.568	117.880	0.424	110.616	6.413	117.453	30.463	63.775	53.254	86.566
N+8.90	B85	0.000	4.925	VIGA30X50	0.30	0.45	-8.032	0.156	64.906	13.942	-64.906	-13.942	10.958	27.448	8.483	29.923	0.403	11.118	7.846	19.368	13.212	25.194	10.737	27.669	2.657	8.865	5.593	17.115
	B85	4.925					-6.674	0.140	85.581	14.313	-85.581	-14.313	18.441	32.198	15.901	34.739	3.682	11.510	4.787	19.979	20.584	30.056	18.043	32.597	5.824	9.368	2.645	17.837
N+4.45	B85	0.000	4.925	VIGA40X50	0.40	0.45	-64.174	-11.712	204.498	49.340	-204.498	-49.340	23.839	144.844	32.598	153.602	55.972	92.274	85.168	121.469	7.125	113.880	1.634	122.638	25.008	61.310	54.204	90.505
	B85	4.925					-51.436	-8.261	234.675	55.039	-234.675	-55.039	4.331	134.530	5.439	144.300	32.871	74.530	65.439	107.097	28.023	110.838	18.253	120.608	9.180	50.838	41.747	83.405
N+8.90	B86	0.000	4.925	VIGA30X50	0.30	0.45	-6.565	-0.005	86.221	10.307	-86.221	-10.307	18.541	32.477	16.711	34.307	2.819	12.486	3.280	18.585	20.515	30.503	18.686	32.332	4.794	10.512	1.305	16.611
	B86	4.925					-8.145	0.233	64.680	9.407	-64.680	-9.407	9.964	28.308	8.294	29.978	1.483	12.965	7.049	18.531	12.641	25.632	10.971	27.302	1.193	10.288	4.373	15.854
N+4.45	B86	0.000	4.925	VIGA40X50	0.40	0.45	-51.503	-8.454	236.444	49.513	-236.444	-49.513	4.091	135.817	4.698	144.606	34.623	76.595	63.920	105.893	27.996	111.912	19.207	120.701	10.718	52.690	40.015	81.988
	B86	4.925					-63.914	-11.190	207.058	43.366	-207.058	-43.366	22.778	145.298	30.476	152.996	56.679	93.435	82.339	119.095	7.586	114.933	0.112	122.631	26.314	63.070	51.975	88.731
N+8.90	B87	0.000	4.925	VIGA30X50	0.30	0.45	-8.580	0.521	61.981	15.972	-61.981	-15.972	8.938	27.737	6.103	30.572	0.590	11.593	10.041	21.044	12.033	24.642	9.198	27.477	2.505	8.498	6.946	17.949
	B87	4.925					-5.607	1.030	72.192	16.427	-72.192	-16.427	17.118	25.599	14.202	28.515	5.569	7.246	4.151	16.966	17.770	24.947	14.854	27.863	6.221	6.594	3.499	16.314
N+4.45	B87	0.000	4.925	VIGA40X50	0.40	0.45	-64.181	-10.669	187.615	46.279	-187.615	-46.279	28.071	139.086	36.286	147.301	57.342	90.646	84.726	118.030	1.852	109.163	6.363	117.378	27.419	60.723	54.803	88.107
	B87	4.925					-52.381	-12.185	195.921	47.164	-195.921	-47.164	12.891	126.821	21.264	137.193	43.699	78.478	71.607	106.385	15.008	100.922	6.636	109.294	15.800	50.578	43.707	78.486
N+8.90	B88	0.000	4.925	VIGA30X50	0.30	0.45	-5.573	-0.452	77.826	9.363	-77.826	-9.363	16.717	29.334	15.055	30.996	2.538	11.277	3.002	16.817	18.841	27.210	17.179	28.872	4.662	9.153	0.878	14.693
	B88	4.925					-9.063	0.099	73.029	9.626	-73.029	-9.626	11.684	31.528	9.975	33.237	1.447	14.411	7.143	20.106	14.304	28.909	12.595	30.617	1.173	11.791	4.523	17.486

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
RESISTENCIA A CORTANTE PARA VIGAS
CHEQUEO PARA LA CONDICIÓN DESCRITA EN C.21.3.3 (a)

f'c = 21.1 MPa
fy = 420 MPa
$\Phi_{Cortante}$ = 0.75
Estribos Φ = 9.5 mm
Av = 71 mm^2
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Mn = Momentos nominales de la viga en cada extremo restringido de la luz libre.
Vg = Cortante calculado para cargas gravitacionales mayoradas.
Vm = Cortante debido a flexion en curvatura inversa.
Vu = Vm + Vg

V_u	$V_m = M_{ni} + M_{nr} / l_n$															
	COMBDIS3	COMBDIS4	COMBDIS5	COMBDIS6	COMBDIS7	COMBDIS8	COMBDIS9	COMBDIS10	COMBDIS11	COMBDIS12	COMBDIS13	COMBDIS14	COMBDIS15	COMBDIS16	COMBDIS17	COMBDIS18
(kN)	(kN)															
154.18	20.941	42.967	30.895	64.406	22.490	21.407	67.636	77.689	13.939	28.908	16.836	50.347	17.886	14.404	53.577	63.630
71.78																
201.64	22.946	35.152	48.672	60.879	26.092	24.815	82.959	86.621	13.331	19.356	32.876	45.083	20.836	19.559	67.163	70.825
88.06																
15.42	6.222	2.175	7.143	13.505	19.589	17.680	24.963	26.872	7.151	2.001	6.214	12.577	20.518	18.609	24.034	25.943
12.35																
234.17	26.941	37.473	56.137	66.669	18.118	17.757	93.885	97.045	9.034	15.830	34.494	45.026	25.077	21.918	72.242	75.402
104.28																
264.99	21.443	53.260	54.227	94.424	31.302	27.289	116.321	128.380	14.129	26.511	27.478	67.675	47.643	35.584	89.572	101.631
122.18																
9.63	8.591	5.698	1.276	15.565	15.102	10.815	17.789	22.076	9.568	4.721	0.299	14.588	16.078	11.792	16.812	21.099
11.20																
167.19	14.322	36.746	28.736	67.121	23.642	15.440	77.609	89.124	16.491	21.894	13.885	52.270	38.494	26.978	62.757	74.273
81.92																
10.14	7.155	13.536	6.007	14.683	1.252	4.955	2.573	8.780	8.146	12.545	6.998	13.692	2.243	3.964	1.582	7.789
10.70																
62.95	13.508	51.815	9.173	56.149	5.766	23.895	18.746	38.343	20.418	44.904	16.084	49.239	4.143	16.985	11.836	31.432
73.89																
10.94	9.231	14.484	7.902	15.813	2.481	4.633	1.949	9.063	10.025	13.689	8.696	15.018	3.276	3.839	1.154	8.269
10.34																
60.78	10.263	48.839	6.310	52.792	5.810	23.541	18.988	36.719	16.925	42.177	12.972	46.130	0.852	16.879	12.326	30.057
59.86																
10.04	8.838	15.035	7.638	16.235	1.882	5.280	2.117	9.279	9.779	14.094	8.580	15.293	2.823	4.338	1.176	8.338
11.24																
72.03	3.749	55.549	3.756	59.403	12.520	30.305	25.364	43.149	13.058	46.225	9.205	50.078	3.196	20.980	16.039	33.824
100.84																
11.45	6.106	11.935	4.811	13.230	1.303	4.110	3.014	8.427	6.994	11.048	5.698	12.343	2.190	3.223	2.127	7.539
9.82																
99.86	1.739	52.987	3.950	56.758	14.263	30.105	26.832	42.674	9.404	43.404	5.633	47.174	4.680	20.522	17.249	33.091
73.01																
9.85	5.468	11.429	4.586	12.311	1.352	4.486	2.357	7.426	6.318	10.580	5.436	11.461	1.432	3.637	1.507	6.576
11.43																
76.58	7.391	53.679	10.184	56.472	20.333	34.220	29.643	43.529	3.589	42.699	3.400	45.492	9.354	23.240	18.663	32.549
130.99																
10.87	5.969	12.111	4.951	13.129	0.829	4.595	2.565	7.989	6.862	11.218	5.844	12.237	1.722	3.702	1.673	7.097
10.40																
130.19	5.720	56.726	7.723	60.488	18.039	33.869	30.580	46.409	7.137	45.628	4.038	49.390	6.942	22.771	19.482	35.312
77.38																
10.17	5.788	12.342	5.077	13.053	0.874	5.168	2.097	7.536	6.732	11.398	6.022	12.108	1.216	4.223	1.153	6.592
11.11																
77.69	5.456	57.079	7.142	60.427	18.538	34.524	29.697	45.683	7.225	46.060	3.923	49.408	7.519	23.505	18.678	34.664
129.87																
11.86	5.291	10.830	4.123	11.997	1.251	3.825	2.882	7.718	6.051	10.069	4.884	11.237	1.772	3.064	2.121	6.957
9.42																
128.35	8.317	54.397	11.685	57.765	20.516	34.340	31.743	45.567	3.423	42.657	2.639	46.025	8.775	22.599	20.002	33.826
79.22																
9.97	5.767	12.358	5.082	13.042	0.809	5.216	2.060	7.497	6.730	11.395	6.045	12.079	1.185	4.253	1.097	6.534
11.31																

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
RESISTENCIA A CORTANTE PARA VIGAS
CHEQUEO PARA LA CONDICIÓN DESCRITA EN C.21.3.3 (a)

f'c = 21.1 MPa
fy = 420 MPa
$\Phi_{Cortante}$ = 0.75
Estribos Φ = 9.5 mm
Av = 71 mm^2
R= 3.38

Mn = Momentos nominales de la viga en cada extremo restringido de la luz libre.
Vg = Cortante calculado para cargas gravitacionales mayoradas.
Vm = Cortante debido a flexion en curvatura inversa.
Vu = Vm + Vg

***Vu* = Vm + Vg**																	Vu_{max}	S	ΦVs	ΦVc	ΦVn	ΦVn > Vu_{max}
COMBDIS3	COMBDIS4	COMBDIS5	COMBDIS6	COMBDIS7	COMBDIS8	COMBDIS9	COMBDIS10	COMBDIS11	COMBDIS12	COMBDIS13	COMBDIS14	COMBDIS15	COMBDIS16	COMBDIS17	COMBDIS18						
(kN)																	(kN)	(m)	(kN)	(kN)	(kN)	
175.117	197.143	185.071	218.582	176.666	175.583	221.812	231.865	168.115	183.084	171.012	204.523	172.062	168.580	207.753	217.806		231.9	0.11	178.92	129.19	308.11	OK
71.780	71.780	71.780	71.780	71.780	71.780	71.780	71.780	71.780	71.780	71.780	71.780	71.780	71.780	71.780	71.780							
224.582	236.788	250.308	262.515	227.728	226.451	284.595	288.257	214.967	220.992	234.512	246.719	222.472	221.195	268.799	272.461		288.3	0.11	178.92	129.19	308.11	OK
88.064	88.064	88.064	88.064	88.064	88.064	88.064	88.064	88.064	88.064	88.064	88.064	88.064	88.064	88.064	88.064							
21.638	17.591	22.559	28.921	35.005	33.096	40.379	42.288	22.567	17.417	21.630	27.993	35.934	34.025	39.450	41.359		42.3	0.11	178.92	103.35	282.27	OK
12.352	12.352	12.352	12.352	12.352	12.352	12.352	12.352	12.352	12.352	12.352	12.352	12.352	12.352	12.352	12.352							
261.109	271.641	290.305	300.837	252.286	251.925	328.053	331.213	243.202	249.998	268.662	279.194	259.245	256.086	306.410	309.570		331.2	0.11	268.38	129.19	397.57	OK
104.276	104.276	104.276	104.276	104.276	104.276	104.276	104.276	104.276	104.276	104.276	104.276	104.276	104.276	104.276	104.276							
286.435	318.252	319.219	359.416	296.294	292.281	381.313	393.372	279.121	291.503	292.470	332.667	312.635	300.576	354.564	366.623		393.4	0.11	268.38	129.19	397.57	OK
122.176	122.176	122.176	122.176	122.176	122.176	122.176	122.176	122.176	122.176	122.176	122.176	122.176	122.176	122.176	122.176							
18.223	15.330	10.908	25.197	24.734	20.447	27.421	31.708	19.200	14.353	9.931	24.220	25.710	21.424	26.444	30.731		31.7	0.11	178.92	77.51	256.43	OK
11.200	11.200	11.200	11.200	11.200	11.200	11.200	11.200	11.200	11.200	11.200	11.200	11.200	11.200	11.200	11.200							
181.514	203.938	195.928	234.313	190.834	182.632	244.801	256.316	183.683	189.086	181.077	219.462	205.686	194.170	229.949	241.465		256.3	0.11	178.92	103.35	282.27	OK
81.916	81.916	81.916	81.916	81.916	81.916	81.916	81.916	81.916	81.916	81.916	81.916	81.916	81.916	81.916	81.916							
17.299	23.680	16.151	24.827	11.396	15.099	12.717	18.924	18.290	22.689	17.142	23.836	12.387	14.108	11.726	17.933		24.8	0.11	178.92	77.51	256.43	OK
10.700	10.700	10.700	10.700	10.700	10.700	10.700	10.700	10.700	10.700	10.700	10.700	10.700	10.700	10.700	10.700							
76.456	114.763	72.121	119.097	68.714	86.843	81.694	101.291	83.366	107.852	79.032	112.187	67.091	79.933	74.784	94.380		119.1	0.11	178.92	103.35	282.27	OK
73.888	73.888	73.888	73.888	73.888	73.888	73.888	73.888	73.888	73.888	73.888	73.888	73.888	73.888	73.888	73.888							
20.171	25.424	18.842	26.753	13.421	15.573	12.889	20.003	20.965	24.629	19.636	25.958	14.216	14.779	12.094	19.209		26.8	0.11	178.92	77.51	256.43	OK
10.336	10.336	10.336	10.336	10.336	10.336	10.336	10.336	10.336	10.336	10.336	10.336	10.336	10.336	10.336	10.336							
71.043	109.619	67.090	113.572	66.590	84.321	79.768	97.499	77.705	102.957	73.752	106.910	61.632	77.659	73.106	90.837		113.6	0.11	178.92	103.35	282.27	OK
59.860	59.860	59.860	59.860	59.860	59.860	59.860	59.860	59.860	59.860	59.860	59.860	59.860	59.860	59.860	59.860							
18.874	25.071	17.674	26.271	11.918	15.316	12.153	19.315	19.815	24.130	18.616	25.329	12.859	14.374	11.212	18.374		26.3	0.11	178.92	77.51	256.43	OK
11.240	11.240	11.240	11.240	11.240	11.240	11.240	11.240	11.240	11.240	11.240	11.240	11.240	11.240	11.240	11.240							
75.777	127.577	75.784	131.431	84.548	102.333	97.392	115.177	85.086	118.253	81.233	122.106	75.224	93.008	88.067	105.852		131.4	0.11	178.92	103.35	282.27	OK
100.840	100.840	100.840	100.840	100.840	100.840	100.840	100.840	100.840	100.840	100.840	100.840	100.840	100.840	100.840	100.840							
17.558	23.387	16.263	24.682	12.755	15.562	14.466	19.879	18.446	22.500	17.150	23.795	13.642	14.675	13.579	18.991		24.7	0.11	178.92	77.51	256.43	OK
9.824	9.824	9.824	9.824	9.824	9.824	9.824	9.824	9.824	9.824	9.824	9.824	9.824	9.824	9.824	9.824							
101.595	152.843	103.806	156.614	114.119	129.961	126.688	142.530	109.260	143.260	105.489	147.030	104.536	120.378	117.105	132.947		156.6	0.11	178.92	103.35	282.27	OK
73.012	73.012	73.012	73.012	73.012	73.012	73.012	73.012	73.012	73.012	73.012	73.012	73.012	73.012	73.012	73.012							
15.316	21.277	14.434	22.159	11.200	14.334	12.205	17.274	16.166	20.428	15.284	21.309	11.280	13.485	11.355	16.424		22.2	0.11	178.92	77.51	256.43	OK
11.428	11.428	11.428	11.428	11.428	11.428	11.428	11.428	11.428	11.428	11.428	11.428	11.428	11.428	11.428	11.428							
83.975	130.263	86.768	133.056	96.917	110.804	106.227	120.113	80.173	119.283	79.984	122.076	85.938	99.824	95.247	109.133		133.1	0.11	178.92	103.35	282.27	OK
130.988	130.988	130.988	130.988	130.988	130.988	130.988	130.988	130.988	130.988	130.988	130.988	130.988	130.988	130.988	130.988							
16.841	22.983	15.823	24.001	11.701	15.467	13.437	18.861	17.734	22.090	16.716	23.109	12.594	14.574	12.545	17.969		24.0	0.11	178.92	77.51	256.43	OK
10.404	10.404	10.404	10.404	10.404	10.404	10.404	10.404	10.404	10.404	10.404	10.404	10.404	10.404	10.404	10.404							
135.912	186.918	137.915	190.680	148.231	164.061	160.772	176.601	137.329	175.820	134.230	179.582	137.134	152.963	149.674	165.504		190.7	0.11	178.92	103.35	282.27	OK
77.376	77.376	77.376	77.376	77.376	77.376	77.376	77.376	77.376	77.376	77.376	77.376	77.376	77.376	77.376	77.376							
15.956	22.510	15.245	23.221	11.042	15.336	12.265	17.704	16.900	21.566	16.190	22.276	11.384	14.391	11.321	16.760		23.2	0.11	178.92	77.51	256.43	OK
11.108	11.108	11.108	11.108	11.108	11.108	11.108	11.108	11.108	11.108	11.108	11.108	11.108	11.108	11.108	11.108							
83.144	134.767	84.830	138.115	96.226	112.212	107.385	123.371	84.913	123.748	81.611	127.096	85.207	101.193	96.366	112.352		138.1	0.11	178.92	103.35	282.27	OK
129.868	129.868	129.868	129.868	129.868	129.868	129.868	129.868	129.868	129.868	129.868	129.868	129.868	129.868	129.868	129.868							
17.151	22.690	15.983	23.857	13.111	15.685	14.742	19.578	17.911	21.929	16.744	23.097	13.632	14.924	13.981	18.817		23.9	0.11	178.92	77.51	256.43	OK
9.416	9.416	9.416	9.416	9.416	9.416	9.416	9.416	9.416	9.416	9.416	9.416	9.416	9.416	9.416	9.416							
136.665	182.745	140.033	186.113	148.864	162.688	160.091	173.915	131.771	171.005	130.987	174.373	137.123	150.947	148.350	162.174		186.1	0.11	178.92	103.35	282.27	OK
79.220	79.220	79.220	79.220	79.220	79.220	79.220	79.220	79.220	79.220	79.220	79.220	79.220	79.220	79.220	79.220							
15.735	22.326	15.050	23.010	10.777	15.184	12.028	17.465	16.698	21.363	16.013	22.047	11.153	14.221	11.065	16.502		23.0	0.11	178.92	77.51	256.43	OK
11.308	11.308	11.308	11.308	11.308	11.308	11.308	11.308	11.308	11.308	11.308	11.308	11.308	11.308	11.308	11.308							

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
RESISTENCIA A CORTANTE PARA VIGAS
CHEQUEO PARA LA CONDICIÓN DESCRITA EN C.21.3.3 (a)

f'c = 21.1 MPa
fy = 420 MPa
$\Phi_{Cortante}$ = 0.75
Estribos Φ = 9.5 mm
Av = 71 mm^2
R= 3.38

Mn = Momentos nominales de la viga en cada extremo restringido de la luz libre.
Vg = Cortante calculado para cargas gravitacionales mayoradas.
Vm = Cortante debido a flexion en curvatura inversa.
Vu = Vm + Vg

COMDIS3 = 1.2C.M.+1.0C.V.+1.0Ex+0.3Ey
COMDIS4 = 1.2C.M.+1.0C.V.+1.0(-Ex)+0.3Ey
COMDIS5 = 1.2C.M.+1.0C.V.+1.0Ex+0.3(-Ey)
COMDIS6 = 1.2C.M.+1.0C.V.+1.0(-Ex)+0.3(-Ey)
COMDIS7 = 1.2C.M.+1.0C.V.+0.3Ex+1.0Ey
COMDIS8 = 1.2C.M.+1.0C.V.+0.3(-Ex)+1.0Ey
COMDIS9 = 1.2C.M.+1.0C.V.+0.3Ex+1.0(-Ey)
COMDIS10 = 1.2C.M.+1.0C.V.+0.3(-Ex)+1.0(-Ey)
COMDIS11 = 0.9C.M.+1.0Ex+0.3Ey
COMDIS12 = 0.9C.M.+1.0(-Ex)+0.3Ey
COMDIS13 = 0.9C.M.+1.0Ex+0.3(-Ey)
COMDIS14 = 0.9C.M.+1.0(-Ex)+0.3(-Ey)
COMDIS15 = 0.9C.M.+0.3Ex+1.0Ey
COMDIS16 = 0.9C.M.+0.3(-Ex)+1.0Ey
COMDIS17 = 0.9C.M.+0.3Ex+1.0(-Ey)
COMDIS18 = 0.9C.M.+0.3(-Ex)+1.0(-Ey)

NIVEL	VIGA	LOC.	LONG.	PROPIEDADES DEL ELEMENTO			M3						Mn (kN.m)																	
	ELEMENTO			SECCION	b	d	C.M.	C.V.	SISMO X	SISMO Y	-SISMO X	-SISMO Y	Combinaciones para resistencias nominales a momento																	
	No.	(m)	(m)		(m)	(m)	(KN.m)	(KN.m)	(KN.m)	(KN.m)	(KN.m)	(KN.m)	COMDIS3	COMDIS4	COMDIS5	COMDIS6	COMDIS7	COMDIS8	COMDIS9	COMDIS10	COMDIS11	COMDIS12	COMDIS13	COMDIS14	COMDIS15	COMDIS16	COMDIS17	COMDIS18
N+4.45	B88	0.000	4.925	VIGA40X50	0.40	0.45	-56.395	-22.330	215.793	41.744	-215.793	-41.744	22.455	150.143	29.865	157.553	58.500	96.807	83.201	121.508	16.794	110.894	9.383	118.305	19.252	57.558	43.953	82.259
	B88	4.925					-64.437	-32.203	229.331	45.952	-229.331	-45.952	37.599	173.298	45.757	181.455	75.577	116.287	102.768	143.477	13.935	121.764	5.778	129.921	24.043	64.753	51.234	91.943
N+8.90	B89	0.000	4.925	VIGA30X50	0.30	0.45	-8.611	0.337	71.464	17.832	-71.464	-17.832	12.730	29.557	9.564	32.722	1.622	11.063	8.929	21.615	14.976	27.310	11.811	30.476	3.869	8.817	6.683	19.369
	B89	4.925					-6.034	0.257	72.285	17.760	-72.285	-17.760	15.465	27.308	12.312	30.460	4.172	8.659	6.336	19.168	17.532	25.240	14.379	28.393	6.240	6.592	4.269	17.101
N+4.45	B89	0.000	4.925	VIGA40X50	0.40	0.45	-62.604	-30.262	247.001	59.456	-247.001	-59.456	27.032	173.187	37.587	183.741	65.873	109.719	101.054	144.900	22.011	124.144	11.456	134.698	16.830	60.676	52.011	95.857
	B89	4.925					-48.160	-19.938	250.756	59.311	-250.756	-59.311	1.722	146.654	8.806	157.182	37.926	82.439	73.021	117.534	36.108	112.268	25.580	122.796	3.540	48.053	38.635	83.148
N+8.90	B90	0.000	4.925	VIGA30X50	0.30	0.45	-6.571	-0.395	71.104	10.666	-71.104	-10.666	13.703	28.370	11.810	30.264	1.186	11.436	5.125	17.747	16.069	26.004	14.176	27.897	3.553	9.069	2.759	15.381
	B90	4.925					-7.602	0.547	70.168	10.481	-70.168	-10.481	13.115	28.405	11.254	30.265	0.753	11.702	5.448	17.904	14.848	26.671	12.988	28.532	2.487	9.969	3.715	16.171
N+4.45	B90	0.000	4.925	VIGA40X50	0.40	0.45	-48.506	-20.245	246.471	49.787	-246.471	-49.787	1.113	146.954	9.951	155.792	41.846	85.598	71.306	115.058	33.684	112.157	24.846	120.995	7.049	50.802	36.509	80.261
	B90	4.925					-62.367	-29.655	239.672	49.036	-239.672	-49.036	29.234	171.052	37.939	179.757	68.715	111.260	97.730	140.276	19.131	122.687	10.426	131.391	20.350	62.895	49.365	91.911
N+8.90	B91	0.000	4.825	VIGA30X50	0.30	0.45	-7.586	0.712	80.358	18.494	-80.358	-18.494	17.025	30.524	13.742	33.807	4.213	10.052	6.730	20.995	18.589	28.960	15.306	32.243	5.777	8.488	5.167	19.431
	B91	4.825					-6.549	-1.361	91.924	20.738	-91.924	-20.738	19.817	34.576	16.136	38.257	5.075	11.243	7.196	23.514	23.143	31.250	19.462	34.931	8.400	7.918	3.871	20.189
N+4.45	B91	0.000	4.825	VIGA40X50	0.40	0.45	-64.673	-30.443	256.558	61.158	-256.558	-61.158	26.718	178.527	37.574	189.384	67.185	112.728	103.373	148.916	23.127	128.682	12.271	139.539	17.340	62.883	53.528	99.071
	B91	4.825					-31.078	-12.520	278.030	64.655	-278.030	-64.655	38.182	126.332	26.705	137.810	6.008	55.362	44.265	93.620	60.026	104.489	48.549	115.966	15.836	33.519	22.422	71.776
N+4.45	B92	0.000	4.820	VIGA40X50	0.40	0.45	-19.040	-4.385	273.472	254.898	-273.472	-254.898	76.300	85.518	31.052	130.766	72.453	23.908	78.374	126.919	86.397	75.421	41.149	120.669	82.550	34.005	68.277	116.822
	B92	4.820					-28.616	-5.201	168.430	162.278	-168.430	-162.278	24.695	74.968	4.112	103.775	23.420	6.478	72.602	102.501	38.480	61.182	9.674	89.989	37.206	7.307	58.816	88.715
N+4.45	B93	0.000	4.930	VIGA40X50	0.40	0.45	-22.944	-3.814	90.260	94.699	-90.260	-94.699	3.763	49.646	13.048	66.456	4.682	11.341	51.353	67.375	14.460	38.949	2.351	55.759	15.379	0.643	40.656	56.678
	B93	4.930					-18.005	-2.677	111.686	112.321	-111.686	-112.321	18.730	47.357	1.209	67.296	18.861	0.965	47.601	67.427	26.808	39.278	6.869	59.217	26.940	7.114	39.523	59.349
N+4.45	B94	0.000	4.930	VIGA40X50	0.40	0.45	-17.188	-2.534	115.689	113.763	-115.689	-113.763	21.165	47.290	0.971	67.484	20.766	0.230	46.549	67.086	28.856	39.599	8.661	59.794	28.457	7.920	38.859	59.395
	B94	4.930					-26.403	-4.868	96.052	98.012	-96.052	-98.012	0.565	56.270	16.833	73.669	0.971	16.079	57.024	74.075	13.354	43.461	4.044	60.880	13.760	3.290	44.235	61.286
N+4.45	B95	0.000	4.820	VIGA40X50	0.40	0.45	-35.363	-7.649	159.389	155.094	-159.389	-155.094	10.838	83.475	16.694	111.007	9.948	18.346	81.823	110.117	29.096	65.217	1.564	92.749	26.206	0.088	63.566	91.859
	B95	4.820					-31.216	-7.293	249.145	232.814	-249.145	-232.814	49.623	97.800	8.295	139.128	46.241	2.014	91.519	135.746	66.281	81.142	24.953	122.470	62.899	18.672	74.861	119.088
N+4.45	B109	0.000	4.925	VIGA50X50	0.50	0.45	-84.752	-59.850	141.960	17.795	-141.960	-17.795	117.973	201.973	121.132	205.132	143.688	188.888	154.217	179.417	32.697	116.697	35.856	119.856	58.412	83.612	68.942	94.142
	B109	4.925					-59.054	-40.180	180.537	22.582	-180.537	-22.582	55.627	162.454	59.636	166.462	88.340	120.388	101.702	133.750	2.269	104.558	1.740	108.566	30.444	62.492	43.806	75.854
N+4.45	B110	0.000	4.925	VIGA50X50	0.50	0.45	-58.910	-40.204	169.496	21.972	-169.496	-21.972	58.799	159.093	62.699	162.993	89.351	119.439	102.353	132.441	0.922	101.216	4.822	105.116	31.474	61.562	44.476	74.564
	B110	4.925					-86.019	-60.109	117.940	20.608	-117.940	-20.608	126.609	196.396	130.267	200.054	146.767	167.703	158.961	179.897	40.694	110.481	44.353	114.140	60.852	81.788	73.046	93.982
N+4.45	B111	0.000	4.825	VIGA50X50	0.50	0.45	-88.293	-61.206	218.009	35.396	-218.009	-35.396	99.516	228.516	105.800	234.799	137.335	176.035	158.280	196.980	11.822	140.822	18.106	147.105	49.642	88.341	70.586	109.286
	B111	4.825					-30.801	-21.495	386.483	87.132	-386.483	-87.132	63.621	165.067	48.154	180.534	1.626	66.981	49.932	118.538	94.357	134.331	78.890	149.799	32.361	36.245	19.196	87.803
N+4.45	B112	0.000	1.800	VIGA30X50	0.30	0.45	-30.618	-20.250	0.000	0.000	0.000	0.000	56.992	56.992	56.992	56.992	56.992	56.992	56.992	56.992	27.556	27.556	27.556	27.556	27.556	27.556	27.556	27.556
	B112	1.800					0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N+4.45	B113	0.000	1.800	VIGA30X50	0.30	0.45	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	B113	1.800					-30.618	-20.250	0.000	0.000	0.000	0.000	56.992	56.992	56.992	56.992	56.992	56.992	56.992	56.992	27.556	27.556	27.556	27.556	27.556	27.556	27.556	27.556

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
RESISTENCIA A CORTANTE PARA VIGAS
CHEQUEO PARA LA CONDICIÓN DESCRITA EN C.21.3.3 (a)

f'c = 21.1 MPa
fy = 420 MPa
$\Phi_{Cortante}$ = 0.75
Estribos Φ = 9.5 mm
Av = 71 mm^2
R= 3.38

Mn = Momentos nominales de la viga en cada extremo restringido de la luz libre.
Vg = Cortante calculado para cargas gravitacionales mayoradas.
Vm = Cortante debido a flexion en curvatura inversa.
Vu = Vm + Vg

V_u	$V_m = M_{nl} + M_{nr} / l_n$															
	COMBDIS3	COMBDIS4	COMBDIS5	COMBDIS6	COMBDIS7	COMBDIS8	COMBDIS9	COMBDIS10	COMBDIS11	COMBDIS12	COMBDIS13	COMBDIS14	COMBDIS15	COMBDIS16	COMBDIS17	COMBDIS18
(kN)	(kN)															
164.29	12.194	65.673	15.355	68.834	27.224	43.268	37.760	53.804	6.239	47.240	3.078	50.401	8.791	24.835	19.327	35.371
170.96																
11.08	5.725	11.546	4.442	12.829	1.177	4.005	3.100	8.281	6.601	10.670	5.318	11.953	2.052	3.129	2.224	7.405
10.20																
166.76	5.839	64.942	9.420	69.223	21.076	39.017	35.345	53.286	11.801	48.002	7.520	52.283	4.136	22.077	18.405	36.346
91.69																
10.70	5.445	11.528	4.683	12.290	0.394	4.698	2.147	7.239	6.278	10.695	5.515	11.458	1.226	3.866	1.314	6.406
10.58																
92.12	6.162	64.570	9.724	68.132	22.449	39.971	34.322	51.844	10.724	47.684	7.162	51.246	5.563	23.086	17.436	34.959
166.28																
9.99	7.636	13.492	6.192	14.936	1.925	4.414	2.886	9.225	8.649	12.479	7.206	13.922	2.938	3.400	1.873	8.211
10.85																
168.52	13.451	63.183	13.322	67.812	15.169	34.837	30.599	50.266	17.234	48.326	12.605	52.954	6.876	19.980	15.741	35.409
81.05																
43.10	20.953	33.296	7.295	48.660	19.891	6.304	31.323	47.598	25.908	28.341	10.544	43.705	24.846	8.571	26.368	42.643
48.41																
25.77	4.562	19.676	2.892	27.130	4.775	2.496	20.072	27.343	8.371	15.868	1.870	23.322	8.584	1.573	16.263	23.535
33.28																
31.86	4.408	21.006	3.611	28.631	4.409	3.308	21.009	28.633	8.562	16.852	2.577	24.477	8.563	2.274	16.855	24.479
27.21																
60.47	12.544	37.609	5.184	51.895	11.658	4.224	35.963	51.009	19.788	30.365	5.502	44.651	18.901	3.892	28.719	43.765
67.41																
275.66	35.249	73.995	36.704	75.451	47.112	58.736	51.963	63.587	7.100	44.925	7.634	46.380	18.042	29.666	22.893	34.517
127.73																
127.32	37.646	72.180	39.181	73.715	47.943	58.303	53.059	63.419	8.450	42.984	9.985	44.519	18.746	29.107	23.862	34.222
276.05																
280.30	33.811	81.571	31.908	86.079	28.800	50.366	43.153	65.392	22.006	57.027	20.103	61.534	16.995	25.821	18.608	40.847
107.63																
76.82	31.662	31.662	31.662	31.662	31.662	31.662	31.662	31.662	15.309	15.309	15.309	15.309	15.309	15.309	15.309	15.309
0.00																
0.00	31.662	31.662	31.662	31.662	31.662	31.662	31.662	31.662	15.309	15.309	15.309	15.309	15.309	15.309	15.309	15.309
76.82																

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
RESISTENCIA A CORTANTE PARA VIGAS
CHEQUEO PARA LA CONDICIÓN DESCRITA EN C.21.3.3 (a)

f'c = 21.1 MPa
fy = 420 MPa
$\Phi_{Cortante}$ = 0.75
Estribos Φ = 9.5 mm
Av = 71 mm^2
R= 3.38

Mn = Momentos nominales de la viga en cada extremo restringido de la luz libre.
Vg = Cortante calculado para cargas gravitacionales mayoradas.
Vm = Cortante debido a flexion en curvatura inversa.
Vu = Vm + Vg

***Vu* = Vm + Vg**																	Vu_{max}	S	ΦVs	ΦVc	ΦVn	ΦVn > Vu_{max}
COMBDIS3	COMBDIS4	COMBDIS5	COMBDIS6	COMBDIS7	COMBDIS8	COMBDIS9	COMBDIS10	COMBDIS11	COMBDIS12	COMBDIS13	COMBDIS14	COMBDIS15	COMBDIS16	COMBDIS17	COMBDIS18						
(kN)																	(kN)	(m)	(kN)	(kN)	(kN)	
176.486	229.965	179.647	233.126	191.516	207.560	202.052	218.096	170.531	211.532	167.370	214.693	173.083	189.127	183.619	199.663		233.1	0.11	178.92	103.35	282.27	OK
170.964	170.964	170.964	170.964	170.964	170.964	170.964	170.964	170.964	170.964	170.964	170.964	170.964	170.964	170.964	170.964							
16.801	22.622	15.518	23.905	12.253	15.081	14.176	19.357	17.677	21.746	16.394	23.029	13.128	14.205	13.300	18.481		23.9	0.11	178.92	77.51	256.43	OK
10.200	10.200	10.200	10.200	10.200	10.200	10.200	10.200	10.200	10.200	10.200	10.200	10.200	10.200	10.200	10.200							
172.595	231.698	176.176	235.979	187.832	205.773	202.101	220.042	178.557	214.758	174.276	219.039	170.892	188.833	185.161	203.102		236.0	0.11	178.92	103.35	282.27	OK
91.692	91.692	91.692	91.692	91.692	91.692	91.692	91.692	91.692	91.692	91.692	91.692	91.692	91.692	91.692	91.692							
16.141	22.224	15.379	22.986	11.090	15.394	12.843	17.935	16.974	21.391	16.211	22.154	11.922	14.562	12.010	17.102		23.0	0.11	178.92	77.51	256.43	OK
10.580	10.580	10.580	10.580	10.580	10.580	10.580	10.580	10.580	10.580	10.580	10.580	10.580	10.580	10.580	10.580							
98.286	156.694	101.848	160.256	114.573	132.095	126.446	143.968	102.848	139.808	99.286	143.370	97.687	115.210	109.560	127.083		166.3	0.11	178.92	103.35	282.27	OK
166.280	166.280	166.280	166.280	166.280	166.280	166.280	166.280	166.280	166.280	166.280	166.280	166.280	166.280	166.280	166.280							
17.628	23.484	16.184	24.928	11.917	14.406	12.878	19.217	18.641	22.471	17.198	23.914	12.930	13.392	11.865	18.203		24.9	0.11	178.92	77.51	256.43	OK
10.852	10.852	10.852	10.852	10.852	10.852	10.852	10.852	10.852	10.852	10.852	10.852	10.852	10.852	10.852	10.852							
181.971	231.703	181.842	236.332	183.689	203.357	199.119	218.786	185.754	216.846	181.125	221.474	175.396	188.500	184.261	203.929		236.3	0.11	178.92	103.35	282.27	OK
81.048	81.048	81.048	81.048	81.048	81.048	81.048	81.048	81.048	81.048	81.048	81.048	81.048	81.048	81.048	81.048							
64.057	76.400	50.399	91.764	62.995	49.408	74.427	90.702	69.012	71.445	53.648	86.809	67.950	51.675	69.472	85.747		91.8	0.11	178.92	103.35	282.27	OK
48.412	48.412	48.412	48.412	48.412	48.412	48.412	48.412	48.412	48.412	48.412	48.412	48.412	48.412	48.412	48.412							
30.330	45.444	28.660	52.898	30.543	28.264	45.840	53.111	34.139	41.636	27.638	49.090	34.352	27.341	42.031	49.303		53.1	0.11	178.92	103.35	282.27	OK
33.284	33.284	33.284	33.284	33.284	33.284	33.284	33.284	33.284	33.284	33.284	33.284	33.284	33.284	33.284	33.284							
36.264	52.862	35.467	60.487	36.265	35.164	52.865	60.489	40.418	48.708	34.433	56.333	40.419	34.130	48.711	56.335		60.5	0.11	178.92	103.35	282.27	OK
27.212	27.212	27.212	27.212	27.212	27.212	27.212	27.212	27.212	27.212	27.212	27.212	27.212	27.212	27.212	27.212							
73.016	98.081	65.656	112.367	72.130	64.696	96.435	111.481	80.260	90.837	65.974	105.123	79.373	64.364	89.191	104.237		112.4	0.11	178.92	103.35	282.27	OK
67.412	67.412	67.412	67.412	67.412	67.412	67.412	67.412	67.412	67.412	67.412	67.412	67.412	67.412	67.412	67.412							
310.909	349.655	312.364	351.111	322.772	334.396	327.623	339.247	282.760	320.585	283.294	322.040	293.702	305.326	298.553	310.177		351.1	0.11	268.38	129.19	397.57	OK
127.732	127.732	127.732	127.732	127.732	127.732	127.732	127.732	127.732	127.732	127.732	127.732	127.732	127.732	127.732	127.732							
164.962	199.496	166.497	201.031	175.259	185.619	180.375	190.735	135.766	170.300	137.301	171.835	146.062	156.423	151.178	161.538		276.0	0.11	178.92	129.19	308.11	OK
276.048	276.048	276.048	276.048	276.048	276.048	276.048	276.048	276.048	276.048	276.048	276.048	276.048	276.048	276.048	276.048							
314.107	361.867	312.204	366.375	309.096	330.662	323.449	345.688	302.302	337.323	300.399	341.830	297.291	306.117	298.904	321.143		366.4	0.11	268.38	129.19	397.57	OK
107.628	107.628	107.628	107.628	107.628	107.628	107.628	107.628	107.628	107.628	107.628	107.628	107.628	107.628	107.628	107.628							
108.486	108.486	108.486	108.486	108.486	108.486	108.486	108.486	92.133	92.133	92.133	92.133	92.133	92.133	92.133	92.133		108.5	0.11	178.92	77.51	256.43	OK
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000							
31.662	31.662	31.662	31.662	31.662	31.662	31.662	31.662	15.309	15.309	15.309	15.309	15.309	15.309	15.309	15.309		76.8	0.11	178.92	77.51	256.43	OK
76.824	76.824	76.824	76.824	76.824	76.824	76.824	76.824	76.824	76.824	76.824	76.824	76.824	76.824	76.824	76.824							

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
RESISTENCIA A CORTANTE PARA VIGAS
CHEQUEO PARA LA CONDICIÓN DESCRITA EN C.21.3.3 (b)

f'c = 21.0 MPa
fy = 420 MPa
Φ Cortante = 0.75
Estribos Φ = 9.5 mm
Av = 71 mm²
R= 3.38

2VE = Cortante maximo obtenido de las combinaciones de carga de diseño que incluyan E, considerando E, como el doble del prescrito por el reglamento general legalmente adoptado para diseño sismico vigente.

COMDIS3 = 1.2C.M.+1.0C.V.+(2*(1.0Ex))+(2*(0.3Ey))
COMDIS4 = 1.2C.M.+1.0C.V.+(2*(1.0(-Ex)))+(2*(0.3Ey)))
COMDIS5 = 1.2C.M.+1.0C.V.+(2*(1.0Ex))+(2*(0.3(-Ey)))
COMDIS6 = 1.2C.M.+1.0C.V.+(2*(1.0(-Ex)))+(2*(0.3(-Ey)))
COMDIS7 = 1.2C.M.+1.0C.V.+(2*(0.3Ex))+(2*(1.0Ey))
COMDIS8 = 1.2C.M.+1.0C.V.+(2*(0.3(-Ex)))+(2*(1.0Ey))

COMDIS9 = 1.2C.M.+1.0C.V.+(2*(0.3Ex))+(2*(1.0(-Ey)))
COMDIS10 = 1.2C.M.+1.0C.V.+(2*(0.3(-Ex)))+(2*(1.0(-Ey)))
COMDIS11 = 0.9C.M.+(2*(1.0Ex))+(2*(0.3Ey))
COMDIS12 = 0.9C.M.+(2*(1.0(-Ex)))+(2*(0.3Ey))
COMDIS13 = 0.9C.M.+(2*(1.0Ex))+(2*(0.3(-Ey)))
COMDIS14 = 0.9C.M.+(2*(1.0(-Ex)))+(2*(0.3(-Ey)))

COMDIS15 = 0.9C.M.+(2*(0.3Ex))+(2*(1.0Ey))
COMDIS16 = 0.9C.M.+(2*(0.3(-Ex)))+(2*(1.0Ey))
COMDIS17 = 0.9C.M.+(2*(0.3Ex))+(2*(1.0(-Ey)))
COMDIS17 = 0.9C.M.+(2*(0.3(-Ex)))+(2*(1.0(-Ey)))

NIVEL	VIGA	LOC.	LONG.	PROPIEDADES DEL ELEMENTO			V2						$2V_E$																	$2V_{Emax}$	S	ΦVs	ΦVc	ΦVn	ΦVn > $2V_{Emax}$
	ELEMENTO			SECCION	b	d	C.M.	C.V.	SISMO X	SISMO Y	-SISMO X	-SISMO Y	Combinaciones de carga de diseño para el doble del cortante donde se incluya E																					
	No.	(m)	(m)		(m)	(m)	(KN.m)	(KN.m)	(KN.m)	(KN.m)	(KN.m)	(KN.m)	COMDIS3	COMDIS4	COMDIS5	COMDIS6	COMDIS7	COMDIS8	COMDIS9	COMDIS10	COMDIS11	COMDIS12	COMDIS13	COMDIS14	COMDIS15	COMDIS16	COMDIS17	COMDIS18	(kN)	(m)	(kN)	(kN)	(kN)	
N+8.90	B1	0	4.825	VIGA30X50	0.30	0.45	-8.05	-0.01	61.18	14.92	-61.18	-14.92	9.755	26.446	7.106	29.095	0.174	10.686	8.654	19.514	12.180	24.021	9.531	26.670	2.599	8.261	6.229	17.089	24.5	**0.11**	178.92	77.33	256.25	OK
	B1	4.825					9.32	-0.01	61.18	14.92	-61.18	-14.92	30.599	5.602	27.950	8.251	21.018	10.158	12.190	1.330	27.813	8.388	25.164	11.037	18.232	7.372	9.404	1.456						
N+4.45	B1	0	4.825	VIGA40X50	0.40	0.45	-46.06	-5.59	188.46	58.8	-188.46	-58.8	0.114	111.400	10.324	121.838	26.738	60.193	61.531	94.986	19.522	91.992	9.084	102.430	7.330	40.785	42.123	75.578	104.0	**0.11**	178.92	103.11	282.03	OK
	B1	4.825					52.45	6.05	188.46	58.8	-188.46	-58.8	129.966	18.452	119.528	8.014	103.114	69.659	68.321	34.866	108.181	3.333	97.743	13.771	81.329	47.874	46.536	13.081						
N+8.90	B2	0	4.925	VIGA30X50	0.30	0.45	-8.92	0.04	52.7	13.8	-52.7	-13.8	6.153	25.031	3.703	27.481	1.904	11.259	10.069	19.424	8.789	22.395	6.339	24.845	0.732	8.623	7.433	16.788	22.0	**0.11**	178.92	77.33	256.25	OK
	B2	4.925					8.81	0.04	52.7	13.8	-52.7	-13.8	27.429	3.755	24.979	6.205	19.372	10.017	11.207	1.852	24.746	6.438	22.296	8.888	16.689	7.334	8.524	0.831						
N+4.45	B2	0	4.925	VIGA40X50	0.40	0.45	-31.24	0.01	169.76	53.32	-169.76	-53.32	17.479	82.970	8.014	92.435	6.635	36.770	38.186	68.321	26.841	73.608	17.376	83.073	2.727	27.408	28.824	58.959	73.9	**0.11**	178.92	103.11	282.03	OK
	B2	4.925					30.81	0.01	169.76	53.32	-169.76	-53.32	91.939	8.510	82.474	17.975	67.825	37.690	36.274	6.139	82.686	17.763	73.221	27.228	58.572	28.437	27.021	3.114						
N+8.90	B3	0	4.925	VIGA30X50	0.30	0.45	-8.83	-0.1	52.46	13.14	-52.46	-13.14	5.991	25.050	3.658	27.383	2.152	11.465	9.927	19.240	8.740	22.301	6.407	24.634	0.597	8.716	7.178	16.491	21.9	**0.11**	178.92	77.33	256.25	OK
	B3	4.925					8.9	-0.1	52.46	13.14	-52.46	-13.14	27.267	3.774	24.934	6.107	19.124	9.811	11.349	2.036	24.697	6.344	22.364	8.677	16.554	7.241	8.779	0.534						
N+4.45	B3	0	4.925	VIGA40X50	0.40	0.45	-50.91	-6.23	168.46	52.82	-168.46	-52.82	12.794	112.474	22.170	121.850	36.743	66.647	67.997	97.901	8.709	90.971	0.667	100.347	15.240	45.144	46.494	76.398	119.5	**0.11**	178.92	103.11	282.03	OK
	B3	4.925					69.24	11.7	168.46	52.82	-168.46	-52.82	149.316	49.636	139.940	40.260	125.367	95.463	94.113	64.209	116.844	17.164	107.468	7.788	92.895	62.991	61.641	31.737						
N+8.90	B4	0	4.925	VIGA30X50	0.30	0.45	-9.27	0.01	54.84	14.48	-54.84	-14.48	6.396	26.054	3.826	28.624	1.963	11.697	10.531	20.265	9.167	23.283	6.597	25.853	0.808	8.926	7.760	17.494	22.9	**0.11**	178.92	77.33	256.25	OK
	B4	4.925					8.46	0.01	54.84	14.48	-54.84	-14.48	27.672	4.778	25.102	7.348	19.313	9.579	10.745	1.011	25.124	7.326	22.554	9.896	16.765	7.031	8.197	1.537						
N+4.45	B4	0	4.925	VIGA40X50	0.40	0.45	-68.01	-11.3	153.46	49.38	-153.46	-49.38	43.127	133.932	51.892	142.697	64.682	91.923	93.901	121.142	11.424	102.229	20.189	110.994	32.979	60.220	62.198	89.439	114.2	**0.11**	178.92	103.11	282.03	OK
	B4	4.925					52.14	6.63	153.46	49.38	-153.46	-49.38	118.983	28.178	110.218	19.413	97.428	70.187	68.209	40.968	96.711	5.906	87.946	2.859	75.156	47.915	45.937	18.696						
N+8.90	B5	0	4.925	VIGA30X50	0.30	0.45	-8.58	-0.03	48.1	10.86	-48.1	-10.86	4.869	23.593	2.941	25.521	2.844	11.382	9.270	17.808	7.473	20.989	5.545	22.917	0.240	8.778	6.666	15.204	20.9	**0.11**	178.92	77.33	256.25	OK
	B5	4.925					9.15	-0.03	48.1	10.86	-48.1	-10.86	26.145	2.317	24.217	4.245	18.432	9.894	12.006	3.468	23.430	5.032	21.502	6.960	15.717	7.179	9.291	0.753						
N+4.45	B5	0	4.925	VIGA40X50	0.40	0.45	-54.29	-7.28	131.92	39.36	-131.92	-39.36	29.905	107.964	36.892	114.951	49.074	72.492	72.364	95.782	6.338	84.397	13.325	91.394	25.507	48.925	48.797	72.215	130.5	**0.11**	178.92	103.11	282.03	OK
	B5	4.925					86.35	16.97	131.92	39.36	-131.92	-39.36	163.113	85.054	156.126	78.067	143.944	120.526	120.654	97.236	120.238	42.179	113.251	35.192	101.069	77.651	77.779	54.361						
N+8.90	B6	0	4.925	VIGA30X50	0.30	0.45	-8.96	0.06	51.28	14.06	-51.28	-14.06	5.728	24.616	3.232	27.112	1.981	11.084	10.300	19.403	8.356	21.988	5.860	24.484	0.647	8.456	7.672	16.775	21.7	**0.11**	178.92	77.33	256.25	OK
	B6	4.925					8.77	0.06	51.28	14.06	-51.28	-14.06	27.004	3.340	24.508	5.836	19.295	10.192	10.976	1.873	24.313	6.031	21.817	8.527	16.604	7.501	8.285	0.818						
N+4.45	B6	0	4.925	VIGA40X50	0.40	0.45	-85.91	-16.86	151.88	49.88	-151.88	-49.88	70.590	160.460	79.444	169.314	91.714	118.675	121.229	148.190	27.957	117.827	36.811	126.681	49.081	76.042	78.596	105.557	135.5	**0.11**	178.92	103.11	282.03	OK
	B6	4.925					54.73	7.39	151.88	49.88	-151.88	-49.88	122.428	32.558	113.574	23.704	101.304	74.343	71.789	44.828	98.619	8.749	89.765	0.105	77.495	50.534	47.980	21.019						
N+8.90	B7	0	4.925	VIGA30X50	0.30	0.45	-8.62	0.05	51.44	10.64	-51.44	-10.64	5.869	24.569	3.981	26.457	2.580	11.712	8.876	18.008	8.405	22.033	6.517	23.921	0.044	9.176	6.340	15.472	21.7	**0.11**	178.92	77.33	256.25	OK
	B7	4.925					9.11	0.05	51.44	10.64	-51.44	-10.64	27.145	3.293	25.257	5.181	18.696	9.564	12.400	3.268	24.362	6.076	22.474	7.964	15.913	6.781	9.617	0.485						
N+4.45	B7	0	4.925	VIGA40X50	0.40	0.45	-54.81	-7.52	151.28	45.56	-151.28	-45.56	24.491	114.006	32.578	122.093	46.385	73.240	73.344	100.199	0.528	90.043	8.615	98.130	22.422	49.277	49.381	76.236	134.8	**0.11**	178.92	103.11	282.03	OK
	B7	4.925					85.83	16.73	151.28	45.56	-151.28	-45.56	168.527	79.012	160.440	70.925	146.633	119.778	119.674	92.819	126.048	36.533	117.961	28.446	104.154	77.299	77.195	50.340						
N+8.90	B8	0	4.925	VIGA30X50	0.30	0.45	-9.74	-0.31	46.94	13.22	-46.94	-13.22	3.063	24.712	0.716	27.059	3.920	12.253	11.743	20.076	6.295	21.480	3.948	23.827	0.688	9.021	8.511	16.844	21.6	**0.11**	178.92	77.33	256.25	OK
	B8	4.925					7.99	-0.31	46.94	13.22	-46.94	-13.22	24.339	3.436	21.992	5.783	17.356	9.023	9.533	1.200	22.252	5.523	19.905	7.870	15.269	6.936	7.446	0.887						
N+4.45	B8	0	4.925	VIGA40X50	0.40	0.45	-85.83	-15.85	132.06	43.76	-132.06	-43.76	75.891	154.033	83.659	161.801	94.178	117.621	120.071	143.514	34.292	112.434	42.060	120.202	52.579	76.022	78.472	101.915	129.4	**0.11**	178.92	103.11	282.03	OK
	B8	4.925					54.8	8.4	132.06	43.76	-132.06	-43.76	117.115	38.973	109.347	31.205	98.828	75.385	72.935	49.492	92.275	14.133	84.507	6.365	73.988	50.545	48.095	24.652						
N+8.90	B9	0	4.925	VIGA30X50	0.30	0.45	-8.29	-0.12	52.12	10.3	-52.12	-10.3	6.266	24.574	4.438	26.402	2.395	11.647	8.489	17.741	8.873	21.967	7.045	23.795	0.212	9.040	5.882	15.134	22.0	**0.11**	178.92	77.33	256.25	OK
	B9	4.925					9.44	-0.12	52.12	10.3	-52.12	-10.3	27.542	3.298	25.714	5.126	18.881	9.629	12.787	3.535	24.830	6.010	23.002	7.838	16.169	6.917	10.075	0.823						
N+4.45	B9	0	4.925	VIGA40X50	0.40	0.45	-84.88	-38.97	152.06	44.44	-152.06	-44.44	91.893	181.870	99.782	189.759	114.182	141.175	140.477	167.470	27.459	117.436	35.348	125.325	49.748	76.741	76.043	103.036	154.8	**0.11**	178.92	103.11	282.03	OK
	B9	4.925					83.66	44.16	152.06	44.46	-152.06	-44.46	193.486	103.510	185.594	95.618	171.202	144.209	144.895	117.902	124.228	34.252	116.336	26.360	101.944	74.951	75.637	48.644						
N+8.90	B10	0	4.925	VIGA30X50	0.30	0.45	-9.65	0.12	60.72	12.76	-60.72	-12.76	7.637	28.292	5.372	30.557	2.296	13.074	9.846	20.624	10.412	25.517	8.147	27.782	0.479	10.299	7.071	17.849	24.4	**0.11**	178.92	77.33	256.25	OK
	B10	4.925					8.08	0.12	60.72	12.76	-60.72	-12.76	28.913	7.016	26.648	9.281	18.980	8.202	11.430	0.652	26.369	9.560	24.104	11.825	16.436	5.658	8.886	1.892						
N+4.45	B10	0	4.925	VIGA40X50	0.40	0.45	-62.51	-42.51	169.74	56.2	-169.74	-56.2	86.315	186.753	96.291	196.729	109.829	139.960	143.084	173.215	19.052	119.490	29.028	129.466	42.566	72.697	75.821	105.952	157.4	**0.11**	178.92	103.11	282.03	OK
	B10	4.925					52.01	18.12	169.74	56.2	-169.74	-56.2	135.739	35.301	125.763	25.325	112.225	82.094	78.970	48.839	102.016	1.578	92.040	8.398	78.502	48.371	45.247	15.116						
N+8.90	B11	0	4.925	VIGA30X50	0.30	0.45	-8.36	-0.2	60.72	9.06	-60.72	-9.06	8.537	27.392	6.928	29.001	2.162	12.941	7.523	18.302	11.245	24.684	9.636	26.293	0.546	10.233	4.815	15.594	23.9	**0.11**	178.92	77.33	256.25	OK
	B11	4.925					9.37	-0.2	60.72	9.06	-60.72	-9.06	29.813	6.116	28.204	7.725	19.114	8.335	13.753	2.974	27.202	8.727	25.593	10.336	16.503	5.724	11.142	0.363						
N+4.45	B11	0	4.925	VIGA40X50	0.40	0.45	-52.15	-18.3	167.1	49.62	-167.1	-49.62	27.038	125.914	35.846	134.722	51.368	81.031	80.729	110.392	6.907	91.969	1.901	100.777	17.423	47.086	46.784	76.447	156.0	**0.11**	178.92	103.11	282.03	OK
	B11	4.925					82.37	42.33	167.1	49.62	-167.1	-49.62	195.016	96.140	186.208	87.332	170.686	141.023	141.325	111.662	127.975	29.099	119.167	20.291	103.645	73.982	74.284	44.621						
N+8.90	B12	0	4.825	VIGA30X50	0.30	0.45	-8.81	0.43	62.44	15.9	-62.44	-15.9	9.743	27.204	6.920	30.027	0.104	10.980	9.304	20.388	11.956	24.991	9.133	27.814	2.317	8.767	7.091	18.175	24.5	**0.11**	178.92	77.33	256.25	OK
	B12	4.825					8.56	0.43	62.44	15.9	-62.44	-15.9	30.587	6.360	27.764	9.183	20.948	9.864	11.540	0.456	27.589	9.358	24.766	12.181	17.950	6.866	8.542	2.542						
N+4.45	B12	0	4.825	VIGA40X50	0.40	0.45	-83.87	-42.51	184.8	60.48	-184.8	-60.48	83.111	192.461	93.847	203.197	108.858	141.663	144.645	177.450	15.440	124.790	26.176	135.526	41.187	73.992	76.974	109.779	162.6	**0.11**	178.92	103.11	282.03	OK
	B12	4.825					46.49	15.69	184.8	60.48	-184.8	-60.48	131.521	22.171	120.785	11.435	105.774	72.969	69.987	37.182	101.884	7.466	91.148	18.202	76.137	43.332	40.350	7.545						
N+8.90	B15	0	4.82	VIGA30X50	0.30	0.45	-8.19	-0.16	70.44	54.68	-70.44	-54.68	15.705	25.975	5.999	35.681	12.442	0.063	19.913	32.418	18.322	23.358	8.616	33.064	15.059	2.554	17.296	29.801	29.2	**0.11**	178.92	77.33	256.25	OK
	B15	4.82					9.16	-0.16	70.44	54.68	-70.44	-54.68	36.525	5.155	26.819	14.861	33.262	20.757	0.907	11.598	33.937	7.743	24.231	17.449	30.674	18.169	1.681	14.186						
N+4.45	B15	0	4.82	VIGA40X50	0.40	0.45	-44.65	-5.15	180.36	141.96	-180.36	-141.96	7.231	99.491	17.969	124.691	0.722	32.738	84.722	116.738	25.776	80.946	0.576	106.146	17.823	14.193	66.177	98.193	109.5	**0.11**	178.92	103.11	282.03	OK
	B15	4.82					53.72	6.46	180.36	141.96	-180.36	-141.96	136.885	30.163	111.685	4.963	128.932	96.916	44.932	12.916	114.309	7.587	89.109	17.613	106.356	74.340	22.356	9.660						
N+4.45	B16	0	4.82	VIGA40X50	0.40	0.45	-28.96	-5.57	199.3	217.48	-199.3	-217.48	37.945	79.984	0.660	118.589	41.711	6.332	86.976	122.355	52.203	65.726	13.598	104.331	55.969	20.590	72.718	108.097	101.0	**0.11**	178.92	103.11	282.03	OK
	B16	4.82					31.81	6.05	199.3	217.48	-199.3	-217.48	122.489	4.560	83.884	34.045	126.255	90.876	2.432	37.811	106.896	11.033	68.291	49.638	110.662	75.283	18.025	53.404						
N+8.90	B17	0	4.82	VIGA40X50	0.40	0.45	-11.19	-0.65	68.9	117.98	-68.9	-117.98	16.778	23.991	4.165	44.934	26.943	14.712	42.868	55.099	20.785	19.984	0.158	40.927	30.950	18.719	38.861	51.092	44.1	**0.11**	178.92	103.11	282.03	OK
	B17	4.82					11.94	-0.65	68.9	117.98	-68.9	-117.98	44.534	3.765	23.591	17.178	54.699	42.468	15.112	27.343	41.602	0.833	20.659	20.110	51.767	39.536	18.044	30.275						
N+4.45	B17	0	4.82	VIGA50X50	0.50	0.45	-46.22	-10.25	114.82	243.66	-114.82	-243.66	10.117	78.058	53.370	121.311	16.566	3.816	127.612	147.994	13.999	53.942	29.254	97.195	40.682	20.300	103.496	123.878	177.3	**0.11**	178.92	128.88	307.80	OK
	B17	4.82					95.61	24.6	114.82	243.66	-114.82	-243.66	194.929	126.988	151.676	83.735	221.612	201.230	77.434	57.052	141.646	73.705	98.393	30.452	168.329	147.947	24.151	3.769						
N+4.45	B18	0	4.82	VIGA50X50	0.50	0.45	-56.19	-12.73	51.6	345.26	-51.6	-345.26	34.247	64.780	95.536	126.069	26.570	17.410	177.726	186.886	4.660	35.193	65.949	96.482	56.157	46.997	148.139	157.299	230.7	**0.11**	178.92	128.88	307.80	OK
	B18	4.82					123.28	33.74	51.6	345.26	-51.6	-345.26	227.587	197.054	166.298	135.765	288.404	279.244	84.108	74.948	156.863	126.330	95.574	65.041	217.680	208.520	13.384	4.224						
N+8.90	B19	0	4.82	VIGA40X50	0.40	0.45	-10.56	-0.36	20.42	150.96	-20.42	-150.96	6.408	5.675	20.389	32.472	33.443	29.818	55.882	59.507	9.936	2.147	16.861	28.944	36.971	33.346	52.354	55.979	49.0	**0.11**	178.92	103.11	282.03	OK
	B19	4.82					12.57	-0.36	20.42	150.96	-20.42	-150.96	34.164	22.081	7.367	4.716	61.199	57.574	28.126	31.751	30.753	18.670	3.956	8.127	57.788	54.163	31.537	35.162						
N+4.45	B19	0	4.82	VIGA50X50	0.50	0.45	-55.05	-23.79	35.12	329.62	-35.12	-329.62	50.203	70.984	108.716	129.497	10.788	4.554	184.254	190.488	9.898	30.679	68.411	89.192	51.093	44.859	143.949	150.183	240.3	**0.11**	178.92	128.88	307.80	OK
	B19	4.82					118.56	57.52	35.12	329.62	-35.12	-329.62	239.439	218.658	180.926	160.145	300.430	294.196	105.388	99.154	146.351	125.570	87.838	67.057	207.342	201.108	12.300	6.066						
N+4.45	B20	0	4.82	VIGA50X50	0.50	0.45	-69.43	-31.84	119.26	423.34	-119.26	-423.34	30.297	100.865	105.447	176.015	32.678	11.507	217.819	238.990	19.372	51.196	55.778	126.346	82.347	61.176	168.150	189.321	280.1	**0.11**	178.92	128.88	307.80	OK
	B20	4.82					108.33	84.33	119.26	423.34	-119.26	-423.34	287.185	216.617	212.035	141.467	350.160	328.989	99.663	78.492	170.356	99.788	95.206	24.638	233.331	212.160	17.166	38.337						

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
RESISTENCIA A CORTANTE PARA VIGAS
CHEQUEO PARA LA CONDICIÓN DESCRITA EN C.21.3.3 (b)

f'c = 21.0 MPa
fy = 420 MPa
$\Phi_{Cortante}$ = 0.75
Estribos Φ = 9.5 mm
Av = 71 mm^2
R= 3.38

2VE = Cortante maximo obtenido de las combinaciones de carga de diseño que incluyan E, considerando E, como el doble del prescrito por el reglamento general legalmente adoptado para diseño sismico vigente.

COMDIS3 = 1.2C.M.+1.0C.V.+(2*(1.0Ex))+(2*(0.3Ey))
COMDIS4 = 1.2C.M.+1.0C.V.+(2*(1.0(-Ex)))+(2*(0.3Ey)))
COMDIS5 = 1.2C.M.+1.0C.V.+(2*(1.0Ex))+(2*(0.3(-Ey)))
COMDIS6 = 1.2C.M.+1.0C.V.+(2*(1.0(-Ex)))+(2*(0.3(-Ey)))
COMDIS7 = 1.2C.M.+1.0C.V.+(2*(0.3Ex))+(2*(1.0Ey))
COMDIS8 = 1.2C.M.+1.0C.V.+(2*(0.3(-Ex)))+(2*(1.0Ey))
COMDIS9 = 1.2C.M.+1.0C.V.+(2*(0.3Ex))+(2*(1.0(-Ey)))
COMDIS10 = 1.2C.M.+1.0C.V.+(2*(0.3(-Ex)))+(2*(1.0(-Ey)))
COMDIS11 = 0.9C.M.+(2*(1.0Ex))+(2*(0.3Ey))
COMDIS12 = 0.9C.M.+(2*(1.0(-Ex)))+(2*(0.3Ey))
COMDIS13 = 0.9C.M.+(2*(1.0Ex))+(2*(0.3(-Ey)))
COMDIS14 = 0.9C.M.+(2*(1.0(-Ex)))+(2*(0.3(-Ey)))
COMDIS15 = 0.9C.M.+(2*(0.3Ex))+(2*(1.0Ey))
COMDIS16 = 0.9C.M.+(2*(0.3(-Ex)))+(2*(1.0Ey))
COMDIS17 = 0.9C.M.+(2*(0.3Ex))+(2*(1.0(-Ey)))
COMDIS17 = 0.9C.M.+(2*(0.3(-Ex)))+(2*(1.0(-Ey)))

NIVEL	VIGA	LOC.	LONG.	PROPIEDADES DEL ELEMENTO			V2						$2V_E$ Combinaciones de carga de diseño para el doble del cortante donde se incluya E																$2V_{E max}$	S	ΦVs	ΦVc	ΦVn	ΦVn > $2V_{Emax}$
	ELEMENTO No.	(m)	(m)	SECCION	b (m)	d (m)	C.M. (KN.m)	C.V. (KN.m)	SISMO X (KN.m)	SISMO Y (KN.m)	-SISMO X (KN.m)	-SISMO Y (KN.m)	COMBDIS3	COMBDIS4	COMBDIS5	COMBDIS6	COMBDIS7	COMBDIS8	COMBDIS9	COMBDIS10	COMBDIS11	COMBDIS12	COMBDIS13	COMBDIS14	COMBDIS15	COMBDIS16	COMBDIS17	COMBDIS18	(kN)	(m)	(kN)	(kN)	(kN)	
N+8.90	B21	0	4.82	VIGA30X50	0.30	0.45	-9.1	-0.54	46.04	110.06	-46.04	-110.06	11.930	15.313	7.607	34.850	25.189	17.016	39.936	48.109	15.200	12.043	4.337	31.580	28.459	20.286	36.666	44.839	38.5	0.11	178.92	77.33	256.25	OK
	B21	4.82					8.25	-0.54	46.04	110.06	-46.04	-110.06	32.750	5.507	13.213	14.030	46.009	37.836	19.116	27.289	30.815	3.572	11.278	15.965	44.074	35.901	21.051	29.224						
N+4.45	B21	0	4.82	VIGA40X50	0.40	0.45	-47.15	-15.82	127.52	341.3	-127.52	-341.3	4.379	79.835	64.965	140.421	39.895	17.258	162.058	184.695	25.586	49.870	35.000	110.456	69.860	47.223	132.093	154.730	203.3	0.11	178.92	103.11	282.03	OK
	B21	4.82					83	42.26	127.52	341.3	-127.52	-341.3	209.881	134.425	149.295	73.839	254.155	231.518	52.202	29.565	142.721	67.265	82.135	6.679	186.995	164.358	14.958	37.595						
N+8.90	B28	0	4.93	VIGA30X50	0.30	0.45	-9.07	0.01	59	44.56	-59	-44.56	10.537	24.375	2.627	32.285	7.546	2.927	18.821	29.294	13.248	21.664	5.338	29.574	10.257	0.216	16.110	26.583	25.8	0.11	178.92	77.33	256.25	OK
	B28	4.93					8.68	0.01	59	44.56	-59	-44.56	31.837	3.075	23.927	10.985	28.846	18.373	2.479	7.994	29.223	5.689	21.313	13.599	26.232	15.759	0.135	10.608						
N+4.45	B28	0	4.93	VIGA40X50	0.40	0.45	-60.09	-8.87	139.74	108.38	-139.74	-108.38	30.015	112.702	49.254	131.941	36.510	61.316	100.640	125.446	3.118	85.805	22.357	105.044	9.613	34.419	73.743	98.549	105.6	0.11	178.92	103.11	282.03	OK
	B28	4.93					52.5	6.7	139.74	108.38	-139.74	-108.38	120.663	37.976	101.424	18.737	114.168	89.362	50.038	25.232	98.213	15.526	78.974	3.713	91.718	66.912	27.588	2.782						
N+4.45	B29	0	4.93	VIGA40X50	0.40	0.45	-23.61	-3.38	98.9	117.46	-98.9	-117.46	7.974	50.547	12.877	71.398	11.818	5.739	57.685	75.242	18.437	40.084	2.414	60.935	22.281	4.724	47.222	64.779	73.0	0.11	178.92	103.11	282.03	OK
	B29	4.93					33.87	7.06	98.9	117.46	-98.9	-117.46	87.390	28.869	66.539	8.018	91.234	73.677	21.731	4.174	70.169	11.648	49.318	9.203	74.013	56.456	4.510	13.047						
N+8.90	B30	0	4.93	VIGA40X50	0.40	0.45	-12.73	0.04	52.28	89.9	-52.28	-89.9	8.211	22.724	7.748	38.683	16.002	6.721	37.193	46.474	11.990	18.945	3.969	34.904	19.781	10.500	33.414	42.695	37.2	0.11	178.92	103.11	282.03	OK
	B30	4.93					10.94	0.04	52.28	89.9	-52.28	-89.9	36.615	5.680	20.656	10.279	44.406	35.125	8.789	18.070	33.293	2.358	17.334	13.601	41.084	31.803	12.111	21.392						
N+4.45	B30	0	4.93	VIGA50X50	0.50	0.45	-167.35	-46.91	88.44	189.12	-88.44	-189.12	204.779	257.110	238.350	290.681	183.928	199.627	295.833	311.532	107.664	159.995	141.235	193.566	86.813	102.512	198.718	214.417	249.2	0.11	178.92	128.88	307.80	OK
	B30	4.93					100.16	26.52	88.42	189.12	-88.42	-189.12	189.658	137.338	156.086	103.766	210.513	194.817	98.607	82.911	133.090	80.770	99.518	47.198	153.945	138.249	42.039	26.343						
N+4.45	B31	0	4.93	VIGA50X50	0.50	0.45	-125.28	-33.87	21.4	163.56	-21.4	-163.56	163.357	176.020	192.392	205.055	133.916	137.715	230.697	234.496	91.903	104.566	120.938	133.601	62.462	66.261	159.243	163.042	187.6	0.11	178.92	128.88	307.80	OK
	B31	4.93					61.75	14.73	21.4	163.56	-21.4	-163.56	109.679	97.016	80.644	67.981	139.120	135.321	42.339	38.540	76.424	63.761	47.389	34.726	105.865	102.066	9.084	5.285						
N+8.90	B32	0	4.93	VIGA40X50	0.40	0.45	-12.23	0.17	14.04	109.52	-14.04	-109.52	0.631	8.939	20.073	28.381	19.143	16.650	45.662	48.155	2.868	5.440	16.574	24.882	22.642	20.149	42.163	44.656	38.5	0.11	178.92	103.11	282.03	OK
	B32	4.93					11.43	0.17	14.04	109.52	-14.04	-109.52	27.761	19.453	8.319	0.011	47.535	45.042	17.270	19.763	24.162	15.854	4.720	3.588	43.936	41.443	20.869	23.362						
N+4.45	B32	0	4.93	VIGA50X50	0.50	0.45	-120.63	-59.14	27.8	256.66	-27.8	-256.66	172.891	189.340	218.452	234.901	125.494	130.429	277.363	282.298	77.562	94.011	123.123	139.572	30.165	35.100	182.034	186.969	225.8	0.11	178.92	128.88	307.80	OK
	B32	4.93					60.28	25.91	27.8	256.66	-27.8	-256.66	129.251	112.802	83.690	67.241	176.648	171.713	24.779	19.844	85.257	68.808	39.696	23.247	132.654	127.719	19.215	24.150						
N+4.45	B33	0	4.93	VIGA50X50	0.50	0.45	-114.99	-84.74	47.2	195.82	-47.2	-195.82	191.383	219.312	226.144	254.073	160.604	168.982	276.474	284.852	72.146	100.075	106.907	134.836	41.367	49.745	157.237	165.615	227.9	0.11	178.92	128.88	307.80	OK
	B33	4.93					59.8	36.76	47.2	195.82	-47.2	-195.82	139.865	111.936	105.104	77.175	170.644	162.266	54.774	46.396	85.165	57.236	50.404	22.475	115.944	107.566	0.074	8.304						
N+8.90	B34	0	4.93	VIGA30X50	0.30	0.45	-8.7	0.21	36.26	83.92	-36.26	-83.92	7.946	13.509	6.951	28.406	17.817	11.380	31.840	38.277	10.346	11.109	4.551	26.006	20.217	13.780	29.440	35.877	31.3	0.11	178.92	77.33	256.25	OK
	B34	4.93					9.05	0.21	36.26	83.92	-36.26	-83.92	29.246	7.791	14.349	7.106	39.117	32.680	10.540	16.977	26.321	4.866	11.424	10.031	36.192	29.755	13.465	19.902						
N+4.45	B34	0	4.93	VIGA40X50	0.40	0.45	-82.03	-42.39	101.5	268.8	-101.5	-268.8	86.938	146.998	134.654	194.714	52.290	70.308	211.344	229.362	19.939	79.999	67.655	127.715	14.709	3.309	144.345	162.363	183.5	0.11	178.92	103.11	282.03	OK
	B34	4.93					52.69	18.36	101.5	268.8	-101.5	-268.8	135.476	75.416	87.760	27.700	170.124	152.106	11.070	6.948	101.309	41.249	53.593	6.467	135.957	117.939	23.097	41.115						
N+4.45	B35	0	4.825	VIGA50X50	0.50	0.45	-40.04	-7.58	277.72	34.88	-277.72	-34.88	29.634	134.698	23.442	140.890	20.659	69.958	41.298	90.597	49.226	115.106	43.034	121.298	1.067	50.366	21.706	71.005	112.7	0.11	178.92	128.88	307.80	OK
	B35	4.825					37.19	7.32	277.72	34.88	-277.72	-34.88	137.210	27.122	131.018	33.314	86.917	37.618	66.278	16.979	118.733	45.599	112.541	51.791	68.440	19.141	47.801	1.498						
N+8.90	B36	0	9.75	VIGA40X50	0.40	0.45	-21.67	0.07	72.22	8.86	-72.22	-8.86	3.781	46.514	5.354	48.087	16.903	29.723	22.145	34.965	2.650	40.083	1.077	41.656	10.472	23.292	15.714	28.534	41.9	0.11	178.92	103.11	282.03	OK
	B36	9.75					25.13	0.07	72.22	8.86	-72.22	-8.86	52.379	9.646	50.806	8.073	39.257	26.437	34.015	21.195	44.770	2.037	43.197	0.464	31.648	18.828	26.406	13.586						
N+4.45	B37	0	4.925	VIGA50X50	0.50	0.45	-34.19	-6.69	219.8	27.48	-219.8	-27.48	19.751	110.309	14.873	115.187	20.079	59.097	36.339	75.357	36.698	93.362	31.820	98.240	3.132	42.150	19.392	58.410	110.0	0.11	178.92	128.88	307.80	OK
	B37	4.925					49.89	10.14	219.8	27.48	-219.8	-27.48	137.477	7.417	132.599	2.539	97.647	58.629	81.387	42.369	112.370	17.690	107.492	22.568	72.540	33.522	56.280	17.262						
N+8.90	B38	0	9.85	VIGA40X50	0.40	0.45	-24.01	0.01	58.6	6.96	-58.6	-6.96	10.847	45.522	12.082	46.757	21.542	31.944	25.660	36.062	3.654	38.329	4.889	39.564	14.349	24.751	18.467	28.869	37.4	0.11	178.92	103.11	282.03	OK
	B38	9.85					23.27	0.01	58.6	6.96	-58.6	-6.96	45.889	11.214	44.654	9.979	35.194	24.792	31.076	20.674	38.898	4.223	37.663	2.988	28.203	17.801	24.085	13.683						
N+4.45	B39	0	4.925	VIGA50X50	0.50	0.45	-45.92	-9.08	161.2	20.26	-161.2	-20.26	14.693	110.078	18.290	113.675	43.882	72.498	55.870	84.486	8.163	87.222	4.566	90.819	21.026	49.642	33.014	61.630	90.9	0.11	178.92	128.88	307.80	OK
	B39	4.925					38.16	7.75	161.2	20.26	-161.2	-20.26	103.033	7.648	99.436	4.051	73.844	45.228	61.856	33.240	83.835	11.550	80.238	15.147	54.646	26.030	42.658	14.042						
N+4.45	B40	0	4.925	VIGA50X50	0.50	0.45	-57.93	-13.77	171.08	21.34	-171.08	-21.34	30.777	132.007	34.565	135.795	61.788	92.157	74.415	104.784	0.372	100.858	3.416	104.646	30.639	61.008	43.266	73.635	193.4	0.11	178.92	128.88	307.80	OK
	B40	4.925					128.78	34.74	171.08	21.34	-171.08	-21.34	241.785	140.555	237.997	136.767	210.774	180.405	198.147	167.778	168.411	67.181	164.623	63.393	137.400	107.031	124.773	94.404						
N+8.90	B41	0	9.85	VIGA40X50	0.40	0.45	-23.21	0.13	68.84	7.06	-68.84	-7.06	6.729	47.462	7.982	48.715	19.523	31.743	23.701	35.921	0.104	40.629	1.149	41.882	12.690	24.910	16.868	29.088	40.0	0.11	178.92	103.11	282.03	OK
	B41	9.85					24.07	0.13	68.84	7.06	-68.84	-7.06	50.007	9.274	48.754	8.021	37.213	24.993	33.035	20.815	42.656	1.923	41.403	0.670	29.862	17.642	25.684	13.464						
N+4.45	B42	0	4.925	VIGA50X50	0.50	0.45	-126.26	-33.87	169.92	22	-169.92	-22	133.157	233.702	137.062	237.607	163.791	193.955	176.809	206.973	61.409	161.954	65.314	165.859	92.043	122.207	105.061	135.225	190.1	0.11	178.92	128.88	307.80	OK
	B42	4.925					60.45	14.64	169.92	22	-169.92	-22	139.405	38.860	135.500	34.955	108.771	78.607	95.753	65.589	106.630	6.085	102.725	2.180	75.996	45.832	62.978	32.814						
N+4.45	B43	0	4.925	VIGA50X50	0.50	0.45	-60.91	-14.83	171.38	21.98	-171.38	-21.98	35.267	136.675	39.169	140.577	66.208	96.630	79.214	109.636	2.164	103.572	6.066	107.474	33.105	63.527	46.111	76.533	189.8	0.11	178.92	128.88	307.80	OK
	B43	4.925					125.8	33.67	171.38	21.98	-171.38	-21.98	237.285	135.877	233.383	131.975	206.344	175.922	193.338	162.916	165.875	64.467	161.973	60.565	134.934	104.512	121.928	91.506						
N+8.90	B44	0	9.85	VIGA40X50	0.40	0.45	-24.95	0	83.84	8.64	-83.84	-8.64	4.368	53.978	5.902	55.512	19.942	34.825	25.055	39.938	3.117	46.493	1.583	48.027	12.457	27.340	17.570	32.453	44.4	0.11	178.92	103.11	282.03	OK
	B44	9.85					22.33	0	83.84	8.64	-83.84	-8.64	52.368	2.758	50.834	1.224	36.794	21.911	31.681	16.798	45.669	3.941	44.135	5.475	30.095	15.212	24.982	10.099						
N+4.45	B45	0	4.925	VIGA50X50	0.50	0.45	-124.92	-32.21	163.94	20.5	-163.94	-20.5	131.792	228.797	135.431	232.436	161.498	190.600	173.628	202.730	62.106	159.111	65.745	162.750	91.812	120.914	103.942	133.044	185.9	0.11	178.92	128.88	307.80	OK
	B45	4.925					61.79	16.3	163.94	20.5	-163.94	-20.5	140.770	43.765	137.131	40.126	111.064	81.962	98.934	69.832	105.933	8.928	102.294	5.289	76.227	47.125	64.097	34.995						
N+4.45	B46	0	4.925	VIGA50X50	0.50	0.45	-56.95	-35.11	173.92	21.88	-173.92	-21.88	50.052	152.964	53.936	156.848	81.540	112.413	94.487	125.360	2.143	100.769	1.741	104.653	29.345	60.218	42.292	73.165	224.5	0.11	178.92	128.88	307.80	OK
	B46	4.925					117.53	86.15	173.92	21.88	-173.92	-21.88	280.584	177.672	276.700	173.788	249.096	218.223	236.149	205.276	159.175	56.263	155.291	52.379	127.687	96.814	114.740	83.867						
N+8.90	B52	0	4.93	VIGA30X50	0.30	0.45	-8.57	-0.02	57.02	44.58	-57.02	-44.58	10.523	23.217	2.609	31.131	7.946	2.176	18.432	28.554	13.114	20.626	5.200	28.540	10.537	0.415	15.841	25.963	25.5	0.11	178.92	77.33	256.25	OK
	B52	4.93					9.18	-0.02	57.02	44.58	-57.02	-44.58	31.823	1.917	23.909	9.831	29.246	19.124	2.868	7.254	29.089	4.651	21.175	12.565	26.512	16.390	0.134	9.988						
N+4.45	B52	0	4.93	VIGA40X50	0.40	0.45	-52.33	-6.75	137.18	108.4	-137.18	-108.4	19.339	100.510	38.582	119.753	25.299	49.651	89.441	113.793	3.110	78.061	16.133	97.304	2.850	27.202	66.992	91.344	105.1	0.11	178.92	103.11	282.03	OK
	B52	4.93					60.26	8.82	137.18	108.4	-137.18	-108.4	131.339	50.168	112.096	30.925	125.379	101.027	61.237	36.885	104.441	23.270	85.198	4.027	98.481	74.129	34.339	9.987						
N+4.45	B53	0	4.93	VIGA40X50	0.40	0.45	-32.41	-6.62	106.9	124.64	-106.9	-124.64	2.822	66.076	24.948	88.202	0.852	18.124	72.900	91.876	13.521	49.733	8.605	71.859	17.195	1.781	56.557	75.533	73.5	0.11	178.92	103.11	282.03	OK
	B53	4.93					23.55	3.35	106.9	124.64	-106.9	-124.64	74.300	11.046	52.174	11.080	77.974	58.998	4.222	14.754	63.885	0.631	41.759	21.495	67.559	48.583	6.193	25.169						
N+8.90	B54	0	4.93	VIGA40X50	0.40	0.45	-10.47	0.02	52.54	90.64	-52.54	-90.64	11.045	20.043	5.045	36.133	18.936	9.609	34.697	44.024	14.166	16.922	1.924	33.012	22.057	12.730	31.576	40.903	37.9	0.11	178.92	103.11	282.03	OK
	B54	4.93					13.2	0.02	52.54	90.64	-52.54	-90.64	39.449	8.361	23.359	7.729	47.340	38.013	6.293	15.620	35.469	4.381	19.379	11.709	43.360	34.033	10.273	19.600						
N+4.45	B54	0	4.93	VIGA50X50	0.50	0.45	-101.31	-27.01	88.36	189.26	-88.36	-189.26	105.642	157.926	139.238	191.522	84.745	100.431	196.733	212.419	48.239	100.523	81.835	134.119	27.342	43.028	139.330	155.016	250.0	0.11	178.92	128.88	307.80	OK
	B54	4.93					168.02	46.99	88.36	189.26	-88.36	-189.26	291.554	239.270	257.958	205.674	312.451	296.765	200.463	184.777	194.158	141.874	160.562	108.278	215.055	199.369	103.067	87.381						
N+4.45	B55	0	4.93	VIGA50X50	0.50	0.45	-61.2	-14.67	23.68	175.74	-23.68	-175.74	65.506	79.518	96.702	110.714	34.014	38.218	138.002	142.206	32.476	46.488	63.672	77.684	0.984	5.188	104.972	109.176	191.2	0.11	178.92	128.88	307.80	OK
	B55	4.93					125.83	33.93	23.68	175.74	-23.68	-175.74	207.530	193.518	176.334	162.322	239.022	234.818	135.034	130.830	135.851	121.839	104.655	90.643	167.343	163.139	63.355	59.151						
N+8.90	B56	0	4.93	VIGA40X50	0.40	0.45	-11.29	-0.15	13.66	111.1	-13.66	-111.1	0.204	7.878	19.518	27.600	20.384	17.959	45.355	47.780	3.741	4.341	15.981	24.063	23.921	21.496	41.818	44.243	39.0	0.11	178.92	103.11	282.03	OK
	B56	4.93					12.38	-0.15	13.66	111.1	-13.66	-111.1	28.608	20.526	8.886	0.804	48.788	46.363	16.951	19.376	25.044	16.962	5.322	2.760	45.224	42.799	20.515	22.940						
N+4.45	B56	0	4.93	VIGA50X50	0.50	0.45	-60.33	-25.91	27.4	257.86	-27.4	-257.86	67.313	83.526	113.086	129.299	19.584	24.448	172.164	177.028	23.304	39.517	69.077	85.290	24.425	19.561	128.155	133.019	226.0	0.11	178.92	128.88	307.80	OK
	B56	4.93					120.58	59.14	27.4	257.86	-27.4	-257.86	234.829	218.616	189.056	172.843	282.558	277.694	129.978	125.114	139.515	123.302	93.742	77.529	187.244	182.380	34.664	29.800						
N+4.45	B57	0	4.93	VIGA50X50	0.50	0.45	-59.8	-36.75	43.88	188.62	-43.88	-188.62	78.786	104.751	112.269	138.234	48.811	56.600	160.420	168.209	24.096	50.061	57.579	83.544	5.879	1.910	105.730	113.519	225.9	0.11	178.92	128.88	307.80	OK
	B57	4.93					114.99	84.74	43.88	188.62	-43.88	-188.62	252.452	226.487	218.969	193.004	282.427	274.638	170.818	163.029	133.215	107.250	99.732	73.767	163.190	155.401	51.581	43.792						
N+8.90	B58	0	4.93	VIGA30X50	0.30	0.45	-9.12	-0.22	34.98	84.28	-34.98	-84.28	6.666	14.033	8.295	28.994	16.876	10.666	32.994	39.204	9.622	11.077	5.339	26.038	19.832	13.622	30.038	36.248	31.4	0.11	178.92	77.33	256.25	OK
	B58	4.93					8.63	-0.22	34.98	84.28	-34.98	-84.28	27.966	7.267	13.005	7.694	38.176	31.966	11.694	17.904	25.597	4.898	10.636	10.063	35.807	29.597	14.063	20.273						
N+4.45	B58	0	4.93	VIGA40X50	0.40	0.45	-52.79	-18.36	99.9	269.24	-99.9	-269.24	28.255	87.367	76.049	135.161	6.816	10.918	152.498	170.232	5.942	53.170	41.852	100.964	41.013	23.279	118.301	136.035	183.4	0.11	178.92	103.11	282.03	OK
	B58	4.93					81.93	42.39	99.9	269.24	-99.9	-269.24	194.159	135.047	146.365	87.253	229.230	211.496	69.916	52.182	127.190	68.078	79.396	20.284	162.261	144.527	2.947	14.787						
N+8.90	B71	0	4.82	VIGA30X50	0.30	0.45	-8.67	0.13	70.44	53.84	-70.44	-53.84	15.345	26.336	5.788	35.893	11.907	0.597	19.951	32.455	17.816	23.865	8.259	33.422	14.378	1.874	17.480	29.984	28.9	0.11	178.92	77.33	256.25	OK
	B71	4.82					8.69	0.13	70.44	53.84	-70.44	-53.84	36.177	5.504	26.620	15.061	32.739	20.235	0.881	11.623	33.440	8.241	23.883	17.798	30.002	17.498	1.856	14.360						
N+4.45	B71	0	4.82	VIGA40X50	0.40	0.45	-53.69	-6.54	181.34	141.32	-181.34	-141.32	4.774	112.076	29.860	137.162	13.062	45.253	96.683	128.874	17.873	89.429	7.213	114.515	9.585	22.606	74.036	106.227	109.7	0.11	178.92	103.11	282.03	OK
	B71	4.82					44.68	5.07	181.34	141.32	-181.34	-141.32	124.880	17.578	99.794	7.508	116.592	84.401	32.971	0.780	106.406	0.896	81.320	25.982	98.118	65.927	14.497	17.694						
N+4.45	B72	0	4.82	VIGA40X50	0.40	0.45	-38.38	-8.41	152.94	181.66	-152.94	-181.66	6.906	83.591	25.341	115.838	12.854	14.295	94.637	121.786	26.830	63.667	5.417	95.914	32.778	5.629	74.713	101.862	103.8	0.11	178.92	103.11	282.03	OK
	B72	4.82					43.87	9.84	152.94	181.66	-152.94	-181.66	123.856	33.359	91.609	1.112	129.804	102.655	22.313	4.836	100.855	10.358	68.608	21.889	106.803	79.654	0.688	27.837						
N+8.90	B73	0	4.82	VIGA40X50	0.40	0.45	-11.41	0.67	66.62	114.92	-66.62	-114.92	16.888	22.532	3.512	42.932	26.891	15.065	41.109	52.935	19.641	19.779	0.759	40.179	29.644	17.818	38.356	50.182	43.7	0.11	178.92	103.11	282.03	OK
	B73	4.82					11.73	0.67	66.62	114.92	-66.62	-114.92	44.656	5.236	24.256	15.164	54.659	42.833	13.341	25.167	40.467	1.047	20.067	19.353	50.470	38.644	17.530	29.356						
N+4.45	B73	0	4.82	VIGA50X50	0.50	0.45	-95.6	-24.66	113.26	241.54	-113.26	-241.54	84.433	151.450	127.310	194.327	57.866	77.971	200.789	220.894	31.093	98.110	73.970	140.987	4.526	24.631	147.449	167.554	176.7	0.11	178.92	128.88	307.80	OK
	B73	4.82					46.23	10.19	113.26	241.54	-113.26	-241.54	120.613	53.596	77.736	10.719	147.180	127.075	4.257	15.848	96.554	29.537	53.677	13.340	123.121	103.016	19.802	39.907						
N+4.45	B74	0	4.82	VIGA50X50	0.50	0.45	-122.99	-33.78	41.24	289.78	-41.24	-289.78	143.447	167.849	194.887	219.289	91.974	99.295	263.441	270.762	72.770	97.172	124.210	148.612	21.297	28.618	192.764	200.085	216.6	0.11	178.92	128.88	307.80	OK
	B74	4.82					56.48	12.68	41.24	289.78	-41.24	-289.78	118.377	93.975	66.937	42.535	169.850	162.529	1.617	8.938	88.753	64.351	37.313	12.911	140.226	132.905	31.241	38.562						
N+8.90	B75	0	4.82	VIGA40X50	0.40	0.45	-13.3	0.34	21.5	150.58	-21.5	-150.58	4.106	8.616	22.624	35.346	30.839	27.022	58.262	62.079	7.756	4.966	18.974	31.696	34.489	30.672	54.612	58.429	49.7	0.11	178.92	103.11	282.03	OK
	B75	4.82					9.84	0.34	21.5	150.58	-21.5	-150.58	31.874	19.152	5.144	7.578	58.607	54.790	30.494	34.311	28.582	15.860	1.852	10.870	55.315	51.498	33.786	37.603						
N+4.45	B75	0	4.82	VIGA50X50	0.50	0.45	-118.42	-57.54	35.6	328.94	-35.6	-328.94	159.916	180.981	218.307	239.372	99.165	105.484	293.804	300.123	66.850	87.915	125.241	146.306	6.099	12.418	200.738	207.057	240.1	0.11	178.92	128.88	307.80	OK
	B75	4.82					55.19	23.78	35.6	328.94	-35.6	-328.94	129.736	108.671	71.345	50.280	190.487	184.168	4.152	10.471	89.399	68.334	31.008	9.943	150.150	143.831	44.489	50.808						

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
RESISTENCIA A CORTANTE PARA VIGAS
CHEQUEO PARA LA CONDICIÓN DESCRITA EN C.21.3.3 (b)

f'c = 21.0 MPa
fy = 420 MPa
$\Phi_{Cortante}$ = 0.75
Estribos Φ = 9.5 mm
Av = 71 mm^2
R= 3.38

2VE = Cortante maximo obtenido de las combinaciones de carga de diseño que incluyan E, considerando E, como el doble del prescrito por el reglamento general legalmente adoptado para diseño sismico vigente.

COMDIS3 = 1.2C.M.+1.0C.V.+(2*(1.0Ex))+(2*(0.3Ey))
COMDIS4 = 1.2C.M.+1.0C.V.+(2*(1.0(-Ex)))+(2*(0.3Ey)))
COMDIS5 = 1.2C.M.+1.0C.V.+(2*(1.0Ex))+(2*(0.3(-Ey)))
COMDIS6 = 1.2C.M.+1.0C.V.+(2*(1.0(-Ex)))+(2*(0.3(-Ey)))
COMDIS7 = 1.2C.M.+1.0C.V.+(2*(0.3Ex))+(2*(1.0Ey))
COMDIS8 = 1.2C.M.+1.0C.V.+(2*(0.3(-Ex)))+(2*(1.0Ey))

COMDIS9 = 1.2C.M.+1.0C.V.+(2*(0.3Ex))+(2*(1.0(-Ey)))
COMDIS10 = 1.2C.M.+1.0C.V.+(2*(0.3(-Ex)))+(2*(1.0(-Ey)))
COMDIS11 = 0.9C.M.+(2*(1.0Ex))+(2*(0.3Ey))
COMDIS12 = 0.9C.M.+(2*(1.0(-Ex)))+(2*(0.3Ey))
COMDIS13 = 0.9C.M.+(2*(1.0Ex))+(2*(0.3(-Ey)))
COMDIS14 = 0.9C.M.+(2*(1.0(-Ex)))+(2*(0.3(-Ey)))

COMDIS15 = 0.9C.M.+(2*(0.3Ex))+(2*(1.0Ey))
COMDIS16 = 0.9C.M.+(2*(0.3(-Ex)))+(2*(1.0Ey))
COMDIS17 = 0.9C.M.+(2*(0.3Ex))+(2*(1.0(-Ey)))
COMDIS17 = 0.9C.M.+(2*(0.3(-Ex)))+(2*(1.0(-Ey)))

NIVEL	VIGA	LOC.	LONG.	PROPIEDADES DEL ELEMENTO			V2						$2V_E$															$2V_{Emax}$	S	ΦVs	ΦVc	ΦVn	ΦVn > $2V_{Emax}$
	ELEMENTO			SECCION	b	d	C.M.	C.V.	SISMO X	SISMO Y	-SISMO X	-SISMO Y	Combinaciones de carga de diseño para el doble del cortante donde se incluya E															(kN)	(m)	(kN)	(kN)	(kN)	
	No.	(m)	(m)		(m)	(m)	(KN.m)	(KN.m)	(KN.m)	(KN.m)	(KN.m)	(KN.m)	COMDIS3	COMDIS4	COMDIS5	COMDIS6	COMDIS7	COMDIS8	COMDIS9	COMDIS10	COMDIS11	COMDIS12	COMDIS13	COMDIS14	COMDIS15	COMDIS16	COMDIS17	COMDIS18						
N+4.45	B76	0	4.82	VIGA50X50	0.50	0.45	-108.36	-84.35	135.86	463.54	-135.86	-463.54	133.044	213.435	215.329	295.720	65.181	89.299	339.465	363.583	16.186	96.577	98.471	178.862	51.677	27.559	222.607	246.725	290.9	**0.11**	178.92	128.88	307.80	**OK**
	B76	4.82					59.4	31.81	135.86	463.54	-135.86	-463.54	184.428	104.037	102.143	21.752	252.291	228.173	21.993	46.111	134.798	54.407	52.513	27.878	202.661	178.543	71.623	95.741						
N+8.90	B77	0	4.82	VIGA30X50	0.30	0.45	-8.72	0.52	48.3	111.16	-48.3	-111.16	14.212	14.368	5.520	34.100	27.231	18.657	38.545	47.119	16.308	12.272	3.424	32.004	29.327	20.753	36.449	45.023	38.5	**0.11**	178.92	77.33	256.25	**OK**
	B77	4.82					8.64	0.52	48.3	111.16	-48.3	-111.16	35.044	6.464	15.312	13.268	48.063	39.489	17.713	26.287	31.932	3.352	12.200	16.380	44.951	36.377	20.825	29.399						
N+4.45	B77	0	4.82	VIGA40X50	0.40	0.45	-82.98	-42.26	129.74	342.22	-129.74	-342.22	73.077	149.846	133.826	210.595	29.072	52.103	231.569	254.600	5.923	82.692	66.672	143.441	38.082	15.051	164.415	187.446	203.7	**0.11**	178.92	103.11	282.03	**OK**
	B77	4.82					47.17	15.82	129.74	342.22	-129.74	-342.22	141.183	64.414	80.434	3.665	185.188	162.157	17.309	40.340	111.212	34.443	50.463	26.306	155.217	132.186	47.280	70.311						
N+8.90	B80	0	4.825	VIGA30X50	0.30	0.45	-8.36	-0.07	68.56	12.86	-68.56	-12.86	11.323	29.245	9.041	31.527	0.212	12.382	7.822	19.992	13.901	26.667	11.619	28.949	2.366	9.804	5.244	17.414	25.7	**0.11**	178.92	77.33	256.25	**OK**
	B80	4.825					9.01	-0.07	68.56	12.86	-68.56	-12.86	32.167	8.401	29.885	10.683	20.632	8.462	13.022	0.852	29.534	11.034	27.252	13.316	17.999	5.829	10.389	1.781						
N+4.45	B80	0	4.825	VIGA40X50	0.40	0.45	-45.27	-5.39	220.76	48.84	-220.76	-48.84	9.935	120.693	1.265	129.363	25.670	64.858	54.570	93.758	28.906	101.722	20.236	110.392	6.699	45.887	35.599	74.787	111.8	**0.11**	178.92	103.11	282.03	**OK**
	B80	4.825					53.24	6.25	220.76	48.84	-220.76	-48.84	139.787	9.159	131.117	0.489	104.182	64.994	75.282	36.094	117.565	13.063	108.895	21.733	81.960	42.772	53.060	13.872						
N+8.90	B81	0	4.925	VIGA30X50	0.30	0.45	-9.17	0.04	77.88	14.84	-77.88	-14.84	13.395	32.688	10.760	35.323	0.339	13.486	8.442	22.267	16.106	29.977	13.471	32.612	3.050	10.775	5.731	19.556	28.3	**0.11**	178.92	77.33	256.25	**OK**
	B81	4.925					8.56	0.04	77.88	14.84	-77.88	-14.84	34.671	11.412	32.036	14.047	21.615	7.790	12.834	0.991	32.063	14.020	29.428	16.655	19.007	5.182	10.226	3.599						
N+4.45	B81	0	4.925	VIGA40X50	0.40	0.45	-45.05	-4.2	199.68	44.54	-199.68	-44.54	4.770	113.384	3.136	121.290	27.359	62.806	53.714	89.161	22.485	95.669	14.579	103.575	9.644	45.091	35.999	71.446	97.0	**0.11**	178.92	103.11	282.03	**OK**
	B81	4.925					44.27	4.21	199.68	44.54	-199.68	-44.54	120.364	2.210	112.458	5.696	88.235	52.788	61.880	26.433	102.873	15.281	94.967	23.187	70.744	35.297	44.389	8.942						
N+8.90	B82	0	4.925	VIGA30X50	0.30	0.45	-8.35	-0.01	78.16	13.4	-78.16	-13.4	14.264	31.965	11.905	34.344	0.872	13.003	7.057	20.932	16.799	29.450	14.420	31.829	3.387	10.488	4.542	18.417	28.4	**0.11**	178.92	77.33	256.25	**OK**
	B82	4.925					9.38	-0.01	78.16	13.4	-78.16	-13.4	35.560	10.689	33.181	13.068	22.148	8.273	14.219	0.344	32.756	13.493	30.377	15.872	19.344	5.469	11.415	2.460						
N+4.45	B82	0	4.925	VIGA40X50	0.40	0.45	-51.41	-6.46	200.3	43.4	-200.3	-43.4	5.040	123.560	12.744	131.264	37.534	73.090	63.214	98.770	16.843	101.677	9.139	109.381	15.651	51.207	41.331	76.887	125.7	**0.11**	178.92	103.11	282.03	**OK**
	B82	4.925					68.74	11.47	200.3	43.4	-200.3	-43.4	157.070	38.550	149.366	30.846	124.576	89.020	98.896	63.340	124.978	6.458	117.274	1.246	92.484	56.928	66.904	31.248						
N+8.90	B83	0	4.925	VIGA30X50	0.30	0.45	-9.53	-0.01	59.02	14.52	-59.02	-14.52	7.304	27.619	4.727	30.196	1.912	12.389	10.503	20.980	10.173	24.750	7.596	27.327	0.957	9.520	7.634	18.111	24.2	**0.11**	178.92	77.33	256.25	**OK**
	B83	4.925					8.2	-0.01	59.02	14.52	-59.02	-14.52	28.580	6.343	26.003	8.920	19.364	8.887	10.773	0.296	26.130	8.793	23.553	11.370	16.914	6.437	8.323	2.154						
N+4.45	B83	0	4.925	VIGA40X50	0.40	0.45	-68.16	-11.29	178.46	42.48	-178.46	-42.48	36.513	142.110	44.054	149.651	64.674	96.354	89.810	121.490	4.775	110.372	12.316	117.913	32.936	64.616	58.072	89.752	119.7	**0.11**	178.92	103.11	282.03	**OK**
	B83	4.925					51.99	6.64	178.46	42.48	-178.46	-42.48	125.597	20.000	118.056	12.459	97.436	65.756	72.300	40.620	103.360	2.237	95.819	9.778	75.199	43.519	50.063	18.383						
N+8.90	B84	0	4.925	VIGA30X50	0.30	0.45	-8.18	-0.02	55.48	9.86	-55.48	-9.86	7.453	25.375	5.703	27.125	1.995	11.843	7.829	17.677	9.927	22.901	8.177	24.651	0.479	9.369	5.355	15.203	23.0	**0.11**	178.92	77.33	256.25	**OK**
	B84	4.925					9.55	-0.02	55.48	9.86	-55.48	-9.86	28.729	4.099	26.979	5.849	19.281	9.433	13.447	3.599	25.884	6.944	24.134	8.694	16.436	6.588	10.602	0.754						
N+4.45	B84	0	4.925	VIGA40X50	0.40	0.45	-54.1	-7.29	156.42	31.46	-156.42	-31.46	23.140	115.696	28.724	121.280	49.019	76.786	67.634	95.401	0.380	92.176	5.204	97.760	25.499	53.266	44.114	71.881	135.9	**0.11**	178.92	103.11	282.03	**OK**
	B84	4.925					86.53	16.97	156.42	31.46	-156.42	-31.46	169.876	77.320	164.292	71.736	143.997	116.230	125.382	97.615	126.947	34.391	121.363	28.807	101.068	73.301	82.453	54.686						
N+8.90	B85	0	4.925	VIGA30X50	0.30	0.45	-9.14	0.06	60.06	11.46	-60.06	-11.46	7.878	27.660	5.844	29.694	2.187	12.848	8.968	19.629	10.560	24.978	8.526	27.012	0.495	10.166	6.286	16.947	23.8	**0.11**	178.92	77.33	256.25	**OK**
	B85	4.925					8.59	0.06	60.06	11.46	-60.06	-11.46	29.154	6.384	27.120	8.418	19.089	8.428	12.308	1.647	26.517	9.021	24.483	11.055	16.452	5.791	9.671	0.990						
N+4.45	B85	0	4.925	VIGA40X50	0.40	0.45	-86	-16.87	178.32	42.38	-178.32	-42.38	63.551	169.066	71.074	176.589	91.704	123.359	116.781	148.436	20.881	126.396	28.404	133.919	49.034	80.689	74.111	105.766	141.3	**0.11**	178.92	103.11	282.03	**OK**
	B85	4.925					54.64	7.38	178.32	42.38	-178.32	-42.38	129.467	23.952	121.944	16.429	101.314	69.659	76.237	44.582	105.695	0.180	98.172	7.343	77.542	45.887	52.465	20.810						
N+8.90	B86	0	4.925	VIGA30X50	0.30	0.45	-8.54	0.05	60.44	7.98	-60.44	-7.98	8.392	27.371	6.975	28.788	2.473	13.202	7.194	17.923	10.904	24.859	9.487	26.276	0.039	10.690	4.682	15.411	23.7	**0.11**	178.92	77.33	256.25	**OK**
	B86	4.925					9.19	0.05	60.44	7.98	-60.44	-7.98	29.668	6.095	28.251	7.512	18.803	8.074	14.082	3.353	26.861	8.902	25.444	10.319	15.996	5.267	11.275	0.546						
N+4.45	B86	0	4.925	VIGA40X50	0.40	0.45	-54.7	-7.53	180.08	37.72	-180.08	-37.72	16.544	123.100	23.240	129.796	46.027	77.994	68.346	100.313	7.396	99.160	0.700	105.856	22.087	54.054	44.406	76.373	141.2	**0.11**	178.92	103.11	282.03	**OK**
	B86	4.925					85.93	16.72	180.08	37.72	-180.08	-37.72	176.462	69.906	169.766	63.210	146.979	115.012	124.660	92.693	133.963	27.407	127.267	20.711	104.480	72.513	82.161	50.194						
N+8.90	B87	0	4.925	VIGA30X50	0.30	0.45	-9.47	-0.31	54.14	13.14	-54.14	-13.14	5.510	26.525	3.177	28.858	2.981	12.592	10.756	20.367	8.661	23.374	6.328	25.707	0.170	9.441	7.605	17.216	23.1	**0.11**	178.92	77.33	256.25	**OK**
	B87	4.925					8.26	-0.31	54.14	13.14	-54.14	-13.14	26.786	5.249	24.453	7.582	18.295	8.684	10.520	0.909	24.618	7.417	22.285	9.750	16.127	6.516	8.352	1.259						
N+4.45	B87	0	4.925	VIGA40X50	0.40	0.45	-85.81	-15.86	155.74	37.94	-155.74	-37.94	69.388	161.541	76.123	168.276	93.784	121.430	116.234	143.880	27.785	119.938	34.520	126.673	52.181	79.827	74.631	102.277	134.6	**0.11**	178.92	103.11	282.03	**OK**
	B87	4.925					54.83	8.39	155.74	37.94	-155.74	-37.94	123.630	31.477	116.895	24.742	99.234	71.588	76.784	49.138	98.791	6.638	92.056	0.097	74.395	46.749	51.945	24.299						
N+8.90	B88	0	4.925	VIGA30X50	0.30	0.45	-8.16	-0.11	61.06	7.68	-61.06	-7.68	8.845	27.285	7.481	28.649	2.210	13.049	6.755	17.594	11.403	24.727	10.039	26.091	0.348	10.491	4.197	15.036	24.1	**0.11**	178.92	77.33	256.25	**OK**
	B88	4.925					9.57	-0.11	61.06	7.68	-61.06	-7.68	30.121	6.009	28.757	7.373	19.066	8.227	14.521	3.682	27.360	8.770	25.996	10.134	16.305	5.466	11.760	0.921						
N+4.45	B88	0	4.925	VIGA40X50	0.40	0.45	-84.95	-38.97	180.76	35.6	-180.76	-35.6	84.271	191.230	90.590	197.549	114.334	146.421	135.399	167.486	19.816	126.775	26.135	133.094	49.879	81.966	70.944	103.031	160.9	**0.11**	178.92	103.11	282.03	**OK**
	B88	4.925					83.59	44.16	180.76	35.6	-180.76	-35.6	201.107	94.148	194.788	87.829	171.044	138.957	149.979	117.892	131.870	24.911	125.551	18.592	101.807	69.720	80.742	48.655						
N+8.90	B89	0	4.925	VIGA30X50	0.30	0.45	-9.39	0.12	58.3	14.46	-58.3	-14.46	7.384	27.113	4.817	29.680	1.695	12.044	10.252	20.601	10.081	24.416	7.514	26.983	1.002	9.347	7.555	17.904	23.7	**0.11**	178.92	77.33	256.25	**OK**
	B89	4.925					8.34	0.12	58.3	14.46	-58.3	-14.46	28.660	5.837	26.093	8.404	19.581	9.232	11.024	0.675	26.038	8.459	23.471	11.026	16.959	6.610	8.402	1.947						
N+4.45	B89	0	4.925	VIGA40X50	0.40	0.45	-82.22	-42.52	202.14	48.22	-202.14	-48.22	77.159	196.769	85.719	205.329	109.036	144.919	137.569	173.452	9.958	129.568	18.518	138.128	41.835	77.718	70.368	106.251	164.3	**0.11**	178.92	103.11	282.03	**OK**
	B89	4.925					52.25	18.12	202.14	48.22	-202.14	-48.22	144.905	25.295	136.345	16.735	113.028	77.145	94.495	48.612	111.110	8.500	102.550	17.060	79.233	43.350	50.700	14.817						
N+8.90	B90	0	4.925	VIGA30X50	0.30	0.45	-8.66	-0.19	57.32	8.58	-57.32	-8.58	7.138	26.779	5.615	28.302	2.956	13.131	8.033	18.208	9.926	23.991	8.403	25.514	0.168	10.343	5.245	15.420	22.7	**0.11**	178.92	77.33	256.25	**OK**
	B90	4.925					9.07	-0.19	57.32	8.58	-57.32	-8.58	28.414	5.503	26.891	7.026	18.320	8.145	13.243	3.068	25.883	8.034	24.360	9.557	15.789	5.614	10.712	0.537						
N+4.45	B90	0	4.925	VIGA40X50	0.40	0.45	-52.37	-18.3	197.42	40.14	-197.42	-40.14	19.173	135.990	26.298	143.115	51.746	86.791	75.497	110.542	14.838	101.979	7.713	109.104	17.735	52.780	41.486	76.531	162.3	**0.11**	178.92	103.11	282.03	**OK**
	B90	4.925					82.14	42.32	197.42	40.14	-197.42	-40.14	202.859	86.042	195.734	78.917	170.286	135.241	146.535	111.490	135.897	19.080	128.772	11.955	103.324	68.279	79.573	44.528						
N+8.90	B91	0	4.825	VIGA30X50	0.30	0.45	-8.9	0.43	71.4	16.18	-71.4	-16.18	12.310	29.938	9.438	32.810	0.874	11.800	8.700	21.374	14.550	27.698	11.678	30.570	3.114	9.560	6.460	19.134	26.5	**0.11**	178.92	77.33	256.25	**OK**
	B91	4.825					8.47	0.43	71.4	16.18	-71.4	-16.18	33.154	9.094	30.282	11.966	21.718	9.044	12.144	0.530	30.183	12.065	27.311	14.937	18.747	6.073	9.173	3.501						
N+4.45	B91	0	4.825	VIGA40X50	0.40	0.45	-83.74	-42.52	221.58	52.14	-221.58	-52.14	72.824	203.936	82.080	213.192	107.915	147.249	138.767	178.101	5.182	136.294	14.438	145.550	40.273	79.607	71.125	110.459	170.6	**0.11**	178.92	103.11	282.03	**OK**
	B91	4.825					46.62	15.69	221.58	52.14	-221.58	-52.14	141.818	10.706	132.562	1.450	106.727	67.393	75.875	36.541	112.142	18.970	102.886	28.226	77.051	37.717	46.199	6.865						
N+4.45	B92	0	4.82	VIGA40X50	0.40	0.45	-28.4	-5.64	183.34	173.02	-183.34	-173.02	29.879	78.606	0.834	109.319	27.742	4.803	74.637	107.182	44.039	64.446	13.326	95.159	41.902	9.357	60.477	93.022	91.5	**0.11**	178.92	103.11	282.03	**OK**
	B92	4.82					32.37	5.98	183.34	173.02	-183.34	-173.02	114.423	5.938	83.710	24.775	112.286	79.741	9.907	22.638	98.732	9.753	68.019	40.466	96.595	64.050	5.784	38.329						
N+4.45	B93	0	4.93	VIGA40X50	0.40	0.45	-18.74	-2.05	81.92	83.96	-81.92	-83.96	7.151	41.323	7.753	56.227	7.573	6.969	42.107	56.649	14.823	33.651	0.081	48.555	15.245	0.703	34.435	48.977	50.6	**0.11**	178.92	103.11	282.03	**OK**
	B93	4.93					23.03	3.53	81.92	83.96	-81.92	-83.96	62.855	14.381	47.951	0.523	63.277	48.735	13.597	0.945	52.416	3.942	37.512	10.962	52.838	38.296	3.158	11.384						
N+4.45	B94	0	4.93	VIGA40X50	0.40	0.45	-22.16	-3.29	85.9	85.9	-85.9	-85.9	3.156	47.672	12.092	62.920	3.156	12.092	47.672	62.920	13.094	37.734	2.154	52.982	13.094	2.154	37.734	52.982	50.3	**0.11**	178.92	103.11	282.03	**OK**
	B94	4.93					19.61	2.3	85.9	85.9	-85.9	-85.9	58.870	8.042	43.622	7.206	58.870	43.622	8.042	7.206	50.687	0.141	35.439	15.389	50.687	35.439	0.141	15.389						
N+4.45	B95	0	4.82	VIGA40X50	0.40	0.45	-39.26	-8.35	169.5	160.92	-169.5	-160.92	8.969	91.327	19.597	119.893	7.192	22.897	88.027	118.116	29.097	71.199	0.531	99.765	27.320	2.769	67.899	97.988	100.7	**0.11**	178.92	103.11	282.03	**OK**
	B95	4.82					42.99	9.89	169.5	160.92	-169.5	-160.92	125.909	25.613	97.343	2.953	124.132	94.043	28.913	1.176	103.122	2.826	74.556	25.740	101.345	71.256	6.126	23.963						
N+4.45	B109	0	4.925	VIGA50X50	0.50	0.45	-116.61	-84.83	130.9	16.4	-130.9	-16.4	184.579	262.034	187.490	264.945	208.292	231.528	217.996	241.232	64.766	142.221	67.677	145.132	88.479	111.715	98.183	121.419	212.0	**0.11**	178.92	128.88	307.80	**OK**
	B109	4.925					57.87	36.43	130.9	16.4	-130.9	-16.4	146.057	68.602	143.146	65.691	122.344	99.108	112.640	89.404	92.266	14.811	89.355	11.900	68.553	45.317	58.849	35.613						
N+4.45	B110	0	4.925	VIGA50X50	0.50	0.45	-67.59	-36.38	116.62	16.74	-116.62	-16.74	69.499	138.505	72.471	141.477	90.184	110.886	100.090	120.792	15.842	84.848	18.814	87.820	36.527	57.229	46.433	67.135	208.9	**0.11**	178.92	128.88	307.80	**OK**
	B110	4.925					116.88	84.87	116.62	16.74	-116.62	-16.74	261.115	192.109	258.143	189.137	240.430	219.728	230.524	209.822	141.181	72.175	138.209	69.203	120.496	99.794	110.590	89.888						
N+4.45	B111	0	4.825	VIGA50X50	0.50	0.45	-119.14	-85.83	250.38	50.34	-250.38	-50.34	150.253	298.407	159.189	307.343	191.681	236.128	221.468	265.915	28.681	176.835	37.617	185.771	70.109	114.556	99.896	144.343	245.9	**0.11**	178.92	128.88	307.80	**OK**
	B111	4.825					48.93	30.57	250.38	50.34	-250.38	-50.34	167.831	19.677	158.895	10.741	126.403	81.956	96.616	52.169	122.582	25.572	113.646	34.508	81.154	36.707	51.367	6.920						
N+4.45	B112	0	1.8	VIGA30X50	0.30	0.45	-34.02	-22.5	0	0	0	0	63.324	63.324	63.324	63.324	63.324	63.324	63.324	63.324	30.618	30.618	30.618	30.618	30.618	30.618	30.618	30.618	50.7	**0.11**	178.92	77.33	256.25	**OK**
	B112	1.8					0	0	0	0	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000						
N+4.45	B113	0	1.8	VIGA30X50	0.30	0.45	0	0	0	0	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	50.7	**0.11**	178.92	77.33	256.25	**OK**
	B113	1.8					34.02	22.5	0	0	0	0	63.324	63.324	63.324	63.324	63.324	63.324	63.324	63.324	30.618	30.618	30.618	30.618	30.618	30.618	30.618	30.618						

VERIFICACIONES DE CORTANTE PARA COLUMNAS

C.21.3.3.2 (a)

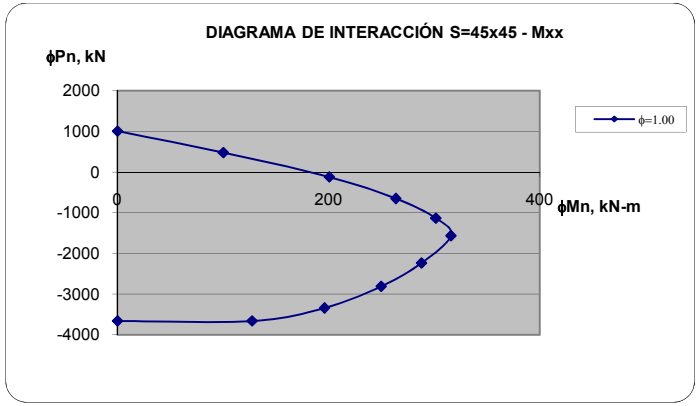
C.21.3.3.2 (b)

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
RESISTENCIA A CORTANTE PARA COLUMNAS
CHEQUEO PARA LA CONDICIÓN DESCRITA EN C.21.3.3 (a) - COLUMNAS S=45x45 - 6#5+6#5

f'c =	**21.1**	MPa	**Estribos Φ =**	**9.5**	mm
fy =	**420**	MPa	**Av =**	**71**	mm^2
Φ Cortante =	**0.75**		**Cantidad de ramas =**	**3**	
bx =	**0.45**	m	**S =**	**0.20**	m
by =	**0.45**	m	**Recub. =**	**0.05**	m
Lcol =	**4.00**	m			

C.21.3.3.2(a) El cortante ΦVn no debe ser menor que la suma del cortante debido a flexión en curvatura inversa asociado con el desarrollo de los momentos nominales de la columna en cada extremo restringido de la longitud libre.

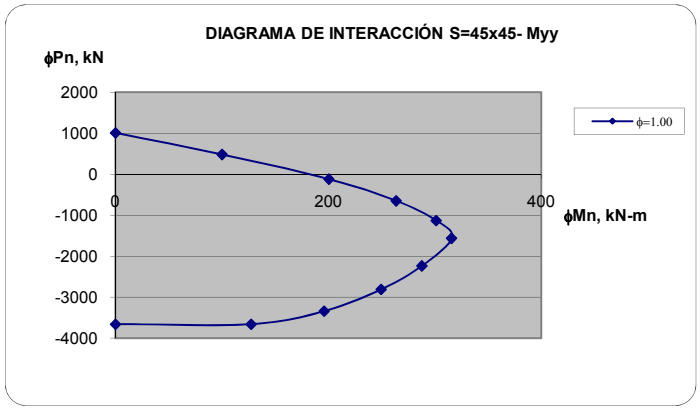
DATOS PARA LOS DIAGRAMAS DE ITERACCIÓN			
No.	**Curve 1**	**0. degrees**	
	P	**M3**	**M2**
1	-3664.00	0.00	0.00
2	-3664.00	127.50	0.00
3	-3343.00	196.05	0.00
4	-2812.00	249.75	0.00
5	-2237.00	287.97	0.00
6	-1565.00	315.88	0.00
7	-1133.00	301.45	0.00
8	-651.65	263.71	0.00
9	-121.96	200.57	0.00
10	480.07	100.27	0.00
11	1008.00	0.00	0.00



P_{ua} =	-595.15	**kN**
P_{ub} =	-568.91	**kN**
ΦM_{na} =	256.98	**kN-m**
ΦM_{nb} =	253.85	**kN-m**
$V_{umáx}$ =	127.71	**kN**
ΦV_s =	134.19	**kN**
ΦV_c =	103.35	**kN**
ΦV_n =	237.54	**kN**

$\Phi V_n > V_{umáx}$ = OK

DATOS PARA LOS DIAGRAMAS DE ITERACCIÓN			
No.	**Curve 7**	**90. degrees**	
	P	**M3**	**M2**
1	-3664.00	0.00	0.00
2	-3664.00	0.00	127.50
3	-3343.00	0.00	196.05
4	-2812.00	0.00	249.75
5	-2237.00	0.00	287.97
6	-1565.00	0.00	315.88
7	-1133.00	0.00	301.45
8	-651.65	0.00	263.71
9	-121.96	0.00	200.57
10	480.07	0.00	100.27
11	1008.00	0.00	0.00



P_{ua} =	-596.73	**kN**
P_{ub} =	-570.49	**kN**
ΦM_{na} =	257.17	**kN-m**
ΦM_{nb} =	254.04	**kN-m**
$V_{umáx}$ =	127.80	**kN**
ΦV_s =	134.19	**kN**
ΦV_c =	103.35	**kN**
ΦV_n =	237.54	**kN**

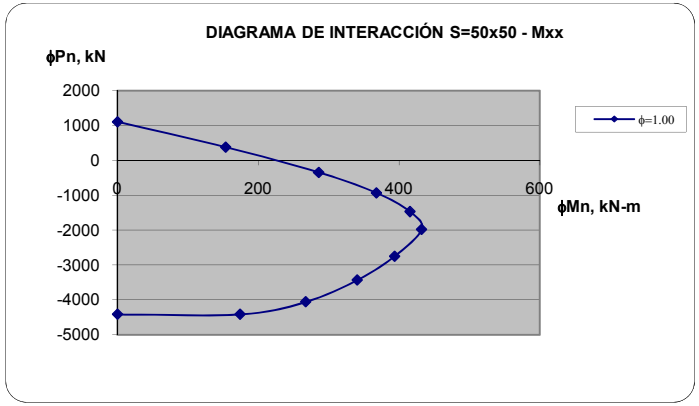
$\Phi V_n > V_{umáx}$ = OK

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
RESISTENCIA A CORTANTE PARA COLUMNAS
CHEQUEO PARA LA CONDICIÓN DESCRITA EN C.21.3.3 (a) - COLUMNAS S=50x50 - 8#5+8#4

f'c =	**21.1**	MPa	**Estribos Φ =**	**9.5**	mm
fy =	**420**	MPa	**Av =**	**71**	mm^2
$\Phi_{Cortante}$ =	**0.75**		**Cantidad de ramas =**	**3**	
bx =	**0.50**	m	**S =**	**0.20**	m
by =	**0.50**	m	**Recub. =**	**0.05**	m
Lcol =	**4.00**	m			

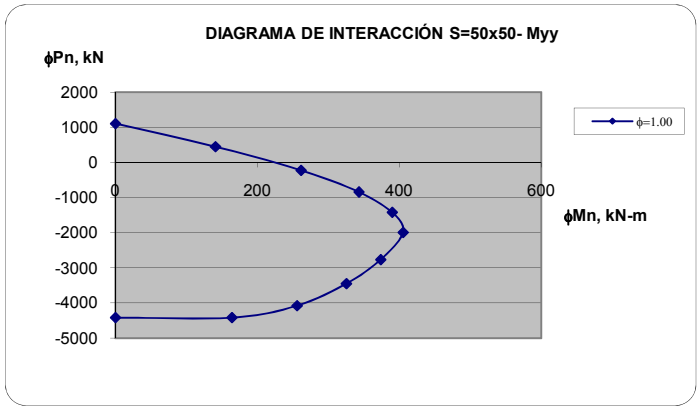
C.21.3.3.2(a) El cortante ΦVn no debe ser menor que la suma del cortante debido a flexión en curvatura inversa asociado con el desarrollo de los momentos nominales de la columna en cada extremo restringido de la longitud libre.

DATOS PARA LOS DIAGRAMAS DE ITERACCIÓN			
No.	**Curve 1**	**0. degrees**	
	P	**M3**	**M2**
1	-4417.00	0.00	0.00
2	-4417.00	174.28	4.10
3	-4058.00	267.64	4.74
4	-3434.00	340.63	5.96
5	-2751.00	393.80	7.67
6	-1981.00	432.25	10.23
7	-1471.00	415.63	10.30
8	-935.00	368.13	9.64
9	-344.44	285.99	8.21
10	378.47	153.88	4.13
11	1105.55	0.00	0.00



P_{ua} = -490.24 **kN**
P_{ub} = -457.84 **kN**
ΦM_{na} = 387.47 **kN-m**
ΦM_{nb} = 388.88 **kN-m**
$V_{umáx}$ = 194.09 **kN**
ΦV_s = 150.96 **kN**
ΦV_c = 129.19 **kN**
ΦV_n = 280.16 **kN**
$\Phi V_n > V_{umáx}$ = OK

DATOS PARA LOS DIAGRAMAS DE ITERACCIÓN			
No.	**Curve 7**	**90. degrees**	
	P	**M3**	**M2**
1	-4417.00	0.00	0.00
2	-4417.00	4.11	164.21
3	-4075.00	4.72	255.87
4	-3451.00	5.94	325.32
5	-2765.00	7.65	373.87
6	-1991.00	10.22	405.38
7	-1422.00	10.26	389.85
8	-841.33	9.61	343.08
9	-225.02	8.20	261.61
10	446.76	4.18	140.99
11	1105.55	0.00	0.00



P_{ua} = -528.78 **kN**
P_{ub} = -496.38 **kN**
ΦM_{na} = 301.76 **kN-m**
ΦM_{nb} = 297.48 **kN-m**
$V_{umáx}$ = 149.81 **kN**
ΦV_s = 150.96 **kN**
ΦV_c = 129.19 **kN**
ΦV_n = 280.16 **kN**
$\Phi V_n > V_{umáx}$ = OK

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
RESISTENCIA A CORTANTE PARA COLUMNAS
CHEQUEO PARA LA CONDICIÓN DESCRITA EN C.21.3.3 (b) - COLUMNA S=45x45

f'c =	**21.1**	MPa	**Estribos Φ =**	**9.5**	mm
fy =	**420**	MPa	**Av =**	**71**	mm^2
$\Phi_{Cortante}$ =	**0.75**		**Cantidad de ramas =**	**3**	
bx =	**0.45**	m	**S =**	**0.10**	m
by =	**0.45**	m	**Ω_o=**	**3.00**	
			Recub. =	**0.05**	m

C.21.3.3.2(b) El cortante ΦVn no debe ser menor que el cortante maximo obtenido de las combinaciones de carga de diseño que incluyan E, con E incrementado por medio de Ωo.

Para cortante V2

Ω_o*$V_{umáx}$ =	146.31	**kN**
ΦV_s =	268.38	**kN**
ΦV_c =	103.35	**kN**
ΦV_n =	371.73	**kN**
ΦV_n > Ω_o*$V_{umáx}$ =	OK	

Para cortante V3

Ω_o*$V_{umáx}$ =	251.07	**kN**
ΦV_s =	268.38	**kN**
ΦV_c =	103.35	**kN**
ΦV_n =	371.73	**kN**
ΦV_n > Ω_o*$V_{umáx}$ =	OK	

PROYECTO: CENTRO DE ATENCIÓN ESPECIALIZADA - EL REDENTOR, BLOQUE B, BOGOTÁ (CUNDINAMARCA)
RESISTENCIA A CORTANTE PARA COLUMNAS
CHEQUEO PARA LA CONDICIÓN DESCRITA EN C.21.3.3 (b) - COLUMNA S=50X50

f'c =	**21.1**	MPa	**Estribos Φ =**	**9.5**	mm
fy =	**420**	MPa	**Av =**	**71**	mm^2
$\Phi_{Cortante}$ =	**0.75**		**Cantidad de ramas =**	**3**	
bx =	**0.50**	m	**S =**	**0.10**	m
by =	**0.50**	m	**Ω_o=**	**3.00**	
			Recub. =	**0.05**	m

C.21.3.3.2(b) El cortante ΦVn no debe ser menor que el cortante maximo obtenido de las combinaciones de carga de diseño que incluyan E, con E incrementado por medio de Ωo.

Para cortante V2

Ω_o*$V_{umáx}$ =	207.36	**kN**
ΦV_s =	301.93	**kN**
ΦV_c =	129.19	**kN**
ΦV_n =	431.12	**kN**
ΦV_n > Ω_o*$V_{umáx}$ =	OK	

Para cortante V3

Ω_o*$V_{umáx}$ =	388.35	**kN**
ΦV_s =	301.93	**kN**
ΦV_c =	129.19	**kN**
ΦV_n =	431.12	**kN**
ΦV_n > Ω_o*$V_{umáx}$ =	OK	