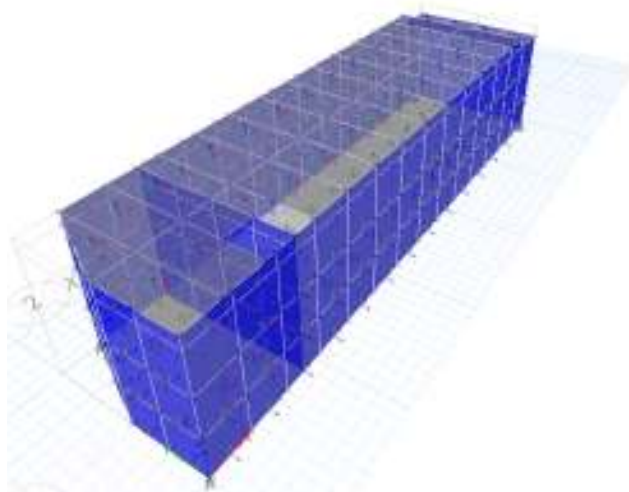


**MEMORIAS DE DISEÑO Y CALCULO ESTRUCTURAL
TANQUE ALMACENAMIENTO**

Proyecto:

**JARDIN SANTA TERESITA
AV. CARRERA 15A ESTE CALLE 62 SUR
LOCALIDAD DE SAN CRISTOBAL, BOGOTÁ D.C.**



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Bogotá, D.C., julio 08 de 2018

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2.1. NORMAS DE DISEÑO

1. Reglamento colombiano de Construcción Sismo Resistente NSR-10.
2. Code Requirements for Environmental Engineering. Concrete Structures and Commentary (ACI 350-06) – 2006.

2.2. MODELO DE ANALISIS

Se realizó un modelo de análisis que incluye las condiciones de cargas más críticas para la estructura. Para la elaboración de este se utilizó la herramienta computacional con licencia ETABS, cual permite representar y analizar muros y losas mediante elementos finitos tipo Shell. Del mismo modo, el software permite la modelación de todos los elementos que componen el tanque en concreto reforzado y la aplicación de las cargas laterales variables en profundidad en los muros. En la figura 2 se muestra el modelo estructural en 3D realizado para el análisis y diseño de la edificación.

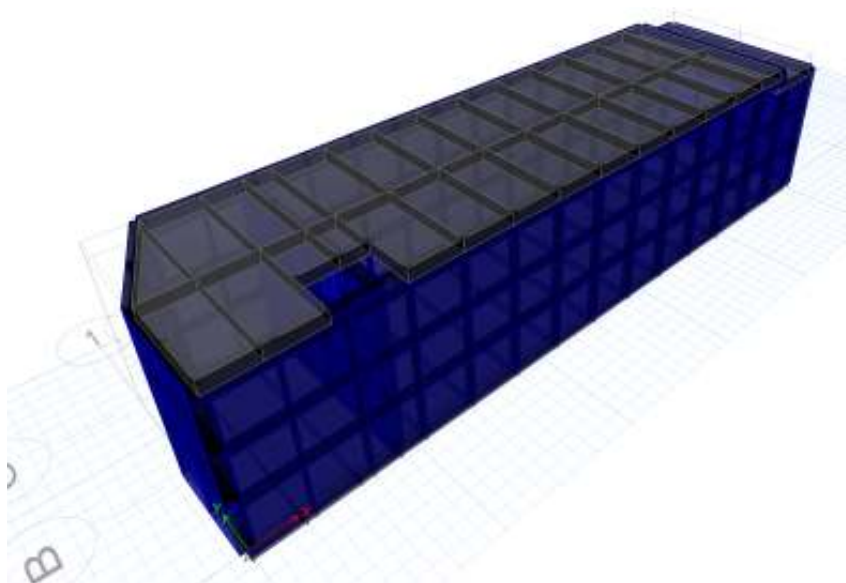


Figura 2. Modelo en 3D del tanque de almacenamiento.

2.3. ESPECIFICACIÓN DE LOS MATERIALES:

Concretos:

- Placas y muros: $f'_c = 280 \text{ kg/cm}^2$ (28 MPa)

Acero de Refuerzo:

- Acero corrugado 3/8" y mayores: $f_y = 4200 \text{ kg/cm}^2$ (420MPa) \emptyset NTC-2289

2.4. CARACTERÍSTICAS DEL SUELO:

De acuerdo con el informe del estudio de suelos realizado por la firma INGERCIVIL S.A.S. los diagramas de empujes horizontales para los muros perimetrales se deben calcular a partir de los siguientes parámetros:

- Peso unitario húmedo $\gamma=2.02 \text{ Ton/m}^3$
- Angulo de fricción interna: 28°
- Presión en reposo de tierras $K_0 = 0.53$
- Presión activa de tierras $K_a = 0.36$
- Nivel Freático: Durante la excavación no se reportó.
- Módulo de reacción vertical $K_s=4547 \text{ kN/m}$

3. AVALÚO DE CARGAS

3.1.CARGAS VERTICALES

CARGA MUERTA

Se obtiene mediante el uso de la opción SELFWEIGHT (peso propio) en el programa. La carga muerta corresponde al peso de todos los elementos que componen la estructura, teniendo en cuenta que serán construidos en concreto reforzado, cuya densidad es igual a 2.40 Ton/m^3 .

La carga muerta sobre impuesta en la tapa de la cubierta es:

- Acabados: 150 kg/m^2
- Instalaciones: 15 kg/m^2
- Antepechos: 30 kg/m^2

CARGA VIVA

Debido a que en la tapa del tanque va a funcionar una plazoleta para el colegio, se define la carga viva como:

- Terrazas transitables: 500 kg/m^2

3.2.CARGAS HORIZONTALES

PRESIONES LATERALES DE TIERRAS

Teniendo en cuenta que sobre las superficies que están en contacto con el suelo que rodea la estructura (los muros del tanque), actúan cargas laterales debidas al empuje de este, dichas cargas se consideran dentro del modelo de análisis y son aplicadas en las caras externas (Bottom) de los elementos tipo Shell.

$$PLT = \gamma_{\text{suelo}} (\text{Ton/m}^3) * K_a * h(m)$$

$$PLT = 2.05 \text{ Ton/m}^3 * 0.36 * 3.55m = 2.58 \text{ Ton/m}^2$$

Se considera el efecto de las cargas adicionales aplicadas sobre el material de relleno que pudiesen sobrecargar el tanque mediante la siguiente expresión:

$$SCV = Ka * q$$

$$SCV = 0.36 * 1.50 \text{ Ton/m}^3 = 0.54 \text{ Ton/m}^2$$

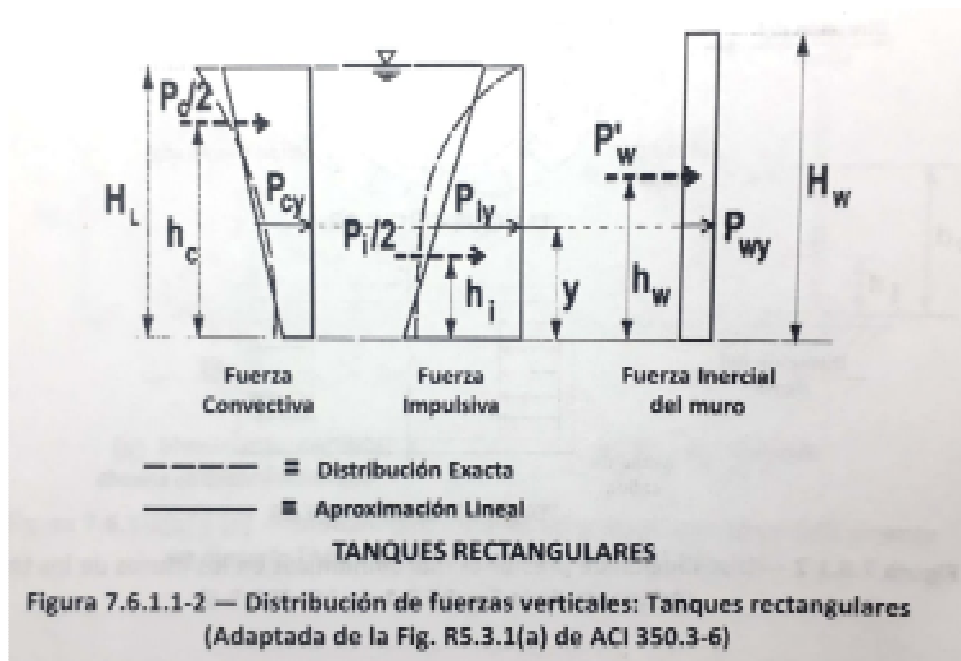
EMPUJE ESTATICO EJERCIDO POR EL AGUA

De acuerdo con el diseño hidráulico, se considera una altura máxima de la lámina de agua dentro de los dos compartimentos de 3.00m. La presión hidrostática varía de forma triangular desde 3.00 Ton/m² en la base de estos hasta 0 Ton/m en la superficie.

PRESIONES HIDRODINAMICAS

El análisis sísmico generado por las cargas sísmicas debido a la dinámica del agua contenida supone la generación de fuerzas debidas a masas impulsivas, convectivas en las paredes del tanque, así como las fueras inerciales debidas a la masa propia de las paredes del tanque.

Las fuerzas sísmicas de diseño se calcularon de acuerdo a recomendaciones de AIS 180-13 y Seismic Design of Liquid-Containing Concrete Structures (ACI 350.3-01), los calculos se resumen a continuación.



ANALISIS SISIMICO TANQUE DE ALMACENAMIENTO										
(ACI 350 Code requirements for environmental engineering concrete structures/AIS 180-13)										
JARDIN INFANTIL ARBOLEDA SANTA TERESITA										
DATOS DE ENTRADA			PESO MUROS			MASA IMPULSIVA			MASA CONVECTIVA	
L	15	m	CONCRETO REFORZADO			mi/ml	0.223		mc/ml	0.744
B	4	m	f'c	21	MPa	mi	31.68	Ton	mc	105.74 Ton
t _m	0.25	m	ρ _c	2.4	Ton/m ³	hi/HL	0.375		hc/HL	0.515
t _{if}	0.25	m	E _c	21538	MPa	hi*/HL	2.118		hc*/HL	3.07
h _m	3.5	m	LOCALIZACION			hi*	5.93	m	hc*	8.59
g	9.81	m/s ²	A _a	0.15	g	hi*	1.05	m	hc	1.442
ρ _c	2.40	Ton/m ³	A _v	0.2	g	PERIODOS			PERIODOS	
ρ _w	1.0	Ton/m ³	F _a	1.95		m _m	7.35	Ton	Tco	5.094
			F _v	1.7		h	1.27	m	Vim	142.017 kN
PESO DEL SISTEMA			T _c	0.56					Sa im	0.914
PESO MUROS			T _i	3		q	23.21	kN/m ²	Sa co	0.143
M _m	762	kN	I	1.25		P	65.00	kN	Vco	99.189 kN
M _m	77.70	Ton	Sa	0.914		Im	0.00130		Vs	241.207 kN
PESO LOSA DE FUNDACIÓN			Ro	2		d	0.00159	m	MOMENTOS	
M _{LF}	353	kN				d	1.59	mm	Mi	2,736.632 kN.m
M _{LF}	36.00	Ton				Ti	0.08	seg	Mc	214.529 kN.m
PESO AGUA						qi	40.58	kN/m ²	Mt	279.819 Ton.m
H _L	2.80	m				ai	25.36	kN/m/m	qc	21.25 kN/m ²
V _w	142	m ³				bi	3.62	kN/m/m	ac	6.91 kN/m/m
M _w	1,394	kN							bc	8.27 kN/m/m
M _w	142	Ton								

Ecuaciones respecto a la base del tanque			
Fim(z)=	2.54	-	0.78 Z tonf/m/m
Fcom(z)=	0.69	+	0.05 Z tonf/m/m

Del análisis se define una distribución aproximada lineal variable en la altura descrita mediante las ecuaciones, la altura z está definida con el origen en la base del tanque:

$$F_{impulsiva} = 2.54 - 0.78z \left[\frac{tonf}{m/m} \right]$$

$$F_{conectiva} = 0.69 + 0.05z \left[\frac{tonf}{m/m} \right]$$

Shell Load Assignment - Non-uniform

Load Pattern Name

F IMPULSIVA

Direction

Local-3

Non-uniform Load

Load at Point(x,y,z) = Ax + By + Cz + D

x, y and z are in the Global coordinate system

A

0

tonf/m³

B

0

tonf/m³

C

-0.78

tonf/m³

D

2.54

tonf/m²

Restrictions

☒ Use All Values
 ☐ Zero Negative Values
 ☐ Zero Positive Values

Options

☐ Add to Existing Loads
 ☒ Replace Existing Loads
 ☐ Delete Existing Loads

OK

Close

Apply

Shell Load Assignment - Non-uniform

Load Pattern Name

F CONVECTIVA

Direction

Local-3

Non-uniform Load

Load at Point(x,y,z) = Ax + By + Cz + D

x, y and z are in the Global coordinate system

A

0

tonf/m³

B

0

tonf/m³

C

0.05

tonf/m³

D

0.69

tonf/m²

Restrictions

☒ Use All Values
 ☐ Zero Negative Values
 ☐ Zero Positive Values

Options

☐ Add to Existing Loads
 ☒ Replace Existing Loads
 ☐ Delete Existing Loads

OK

Close

Apply

4. RESTRICCIONES EN LOS APOYOS

La estructura se modela apoyada sobre resortes distribuidos en las placas inferiores, cuya constante K_s depende de las características del estrato de cimentación. Se considera un valor de $K_s = 450 \text{ Ton/m}^3$ según el informe geotécnico.

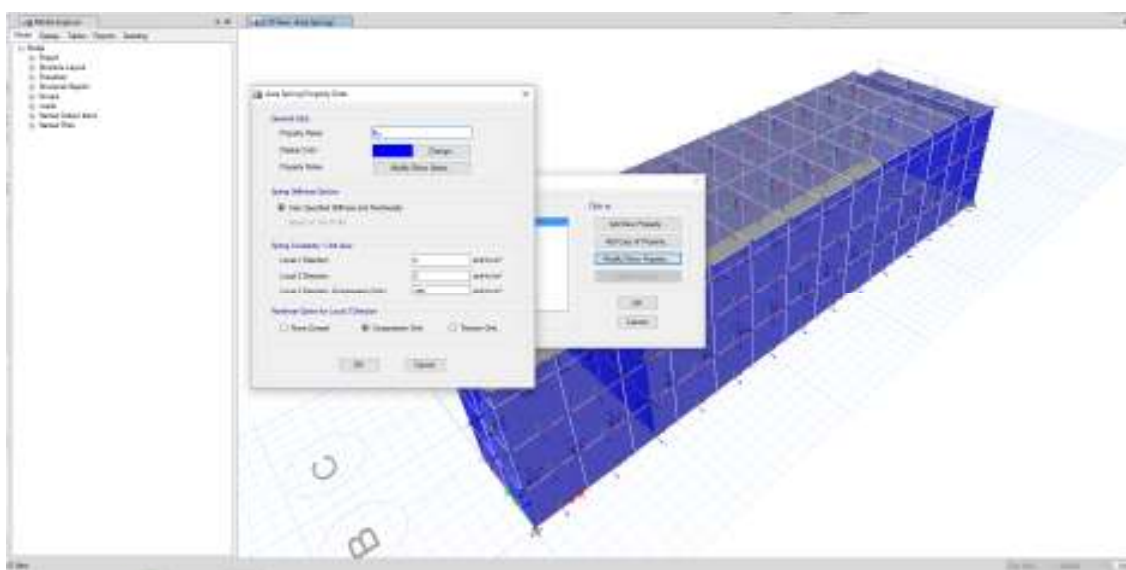


Figura 20. La estructura apoyada sobre resortes en las placas inferiores.

5. ANALISIS Y DISEÑO

A continuación, se presentan los casos y las combinaciones de carga a considerar para el modelo, las cuales se definen con base en las condiciones propias de la estructura y en los factores de carga definidos por el ACI-350-06.

Caso de Carga	Factor
DEAD – Peso propio	1.2
Presión Hidrostática del agua	1.6
PLT – Presión lateral de tierras	1.6
NF – Nivel freático	1.6
SCV – Sobrecarga viva	1.6

5.1.CASOS DE CARGA:

- DEAD(D): Carga Muerta.
- LIVE (L): Carga viva debido al uso (plazoleta).
- Empuje del suelo (H): PLT+SCV.
- Empuje del Agua (F): Presión hidrostática.

A continuación, se muestran las Combinaciones de carga última definidas por el Código ACI-350-06:

- $U = 1.4(D + F)$ (9-1)
- $U = 1.2(D+F+T) + 1.6(L+H) + 0.5(L_r \text{ ó } S \text{ ó } R)$
- $U = 1.2(D+F+T) + 1.0 (L+H) + 1.0 E$
- $U = 0.9(D+F+T) + 1.0 E$

5.2.REFUERZO MÍNIMO

La cuantía mínima por retracción y temperatura, de acuerdo con 7.12.2.1 de la norma del ACI-350-06, se determina con base en el espaciamiento entre juntas de contracción totales y juntas de expansión. Para esta estructura se tiene una longitud entre juntas aproximadamente de 11.50m, para la cual corresponde una cuantía por retracción y temperatura de 0.005.

Para el espesor de 0.25m se tiene $A_s = 0.005 \cdot 100 \cdot 25 = 12.5 \text{ cm}^2$, es decir que para cada cara se tiene un área de refuerzo de 6.25 cm^2 , equivalente a $1/2''$ cada 0.20 m.

TABLA 7.12.2.1 – REFUERZO MÍNIMO POR RETRACCIÓN Y TEMPERATURA.

Longitud entre juntas de movimiento (pies)	Grado 40	Grado 60
Menos de 20 pies	0.0030	0.0030
De 20 a menos de 30 pies	0.0040	0.0030
De 30 a menos de 40 pies	0.0050	0.0040
40 pies y mayores.	0.0060	0.0050

5.3.MATERIALES DE CONSTRUCCIÓN

Las especificaciones de los materiales de construcción para la estructura son:

Concretos:

- ✓ Muros y placa de tanque $f'_c = 280 \text{ kg/cm}^2$ (28 MPa)

Refuerzo:

- ✓ $1/4''$ y mayores $f_y = 4200 \text{ kg/cm}^2$ (420 MPa)

6. RESULTADOS PARA EL DISEÑO ESTRUCTURAL

A continuación, se consignan los diagramas de máximos momentos y cortantes obtenidos en el análisis estructural.

El diseño se realiza por medio del método del estado límite de resistencia y teniendo en cuenta las recomendaciones del código ACI350-06. Una vez obtenidos los esfuerzos y el refuerzo para los diferentes elementos estructurales, se evalúa el factor de durabilidad sanitaria definida en el código en mención.

Se adjuntan anexos de resultados de flexión del modelo donde se tienen todas las solicitaciones, primero para muros y finalmente para placas de fondo y cubierta.

Se adjunta a este documento un análisis simplificado, pero más conservador que el modelo tridimensional, se determinan los momentos máximos de diseño afectados por el factor de durabilidad ambiental, y se verifican que estén por encima de los obtenidos en dicho modelo.

Como se puede apreciar los momentos obtenidos del análisis generan cuantías menores que las cuantías mínimas requeridas por C.21.3 de NSR 10, los momentos calculados en el análisis de Excel superan en todos los casos el análisis del modelo tridimensional.

Ver anexos de solicitaciones por flexión y cortante de los muros y placas de fondo y cubierta.

7. ESFUERZOS ACTUANTES EN EL SUELO

A continuación, se muestra un chequeo para verificar que los esfuerzos producidos por la estructura y el contenido de esta no exceden la capacidad admisible del suelo de cimentación, para ello se tienen los siguientes esfuerzos verticales:

Carga Muerta	150.2	Ton
Carga Agua	160.5	Ton
Total Carga de Servicio	310.7	Ton
Área de Contacto de la Estructura	57.96	m ²

Entonces, se tiene un esfuerzo de contacto en el suelo de:

$$\sigma = \frac{310.7 \text{ Ton}}{57.96 \text{ m}^2} = 5.36 \text{ Ton/m}^2$$

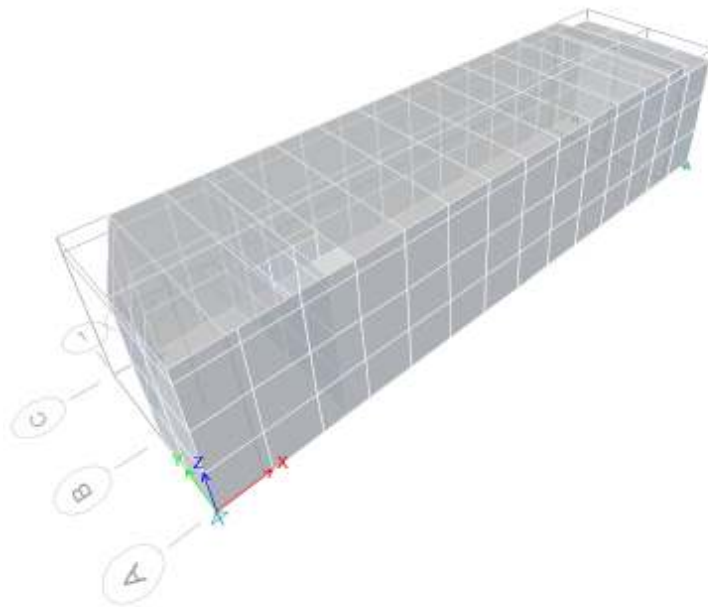
De acuerdo con los parámetros geotécnicos básicos suministrados para el diseño estructural la capacidad admisible del suelo en la zona es de 12.90Ton/m², por tanto, la estructura cumple la condición de estabilidad en donde:

$$\sigma_{contacto} < \sigma_{adm-suelo}$$

El presente estudio, se realiza de acuerdo con las Normas contenidas en el Decreto 523 de 2010, Ley 400 de 1997 o Reglamento Colombiano de Construcciones Sismo resistentes NSR-10 y sus decretos complementarios. Cualquier modificación en las dimensiones y/o especificaciones de los elementos deberá consultarse para estudiar su incidencia en el diseño.



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MAT. 68202-180753 STD



DATOS DE ENTRADA

Model File: EDIFICIO UNO 52_CRRA 72 152-17, Revision 1
8/10/2018

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1 Structure Data

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

1.1 Story Data

Table 1.1 - Story Data

Name	Height m	Elevation m	Master Story	Similar To	Splice Story
N+3.30	0.3	3.3	No	None	No
N+3.0m	3	3	No	None	No
Base	0	0	No	None	No

1.2 Grid Data

Table 1.2 - Grid Systems

Name	Type	Story Range	X Origin m	Y Origin m	Rotation deg	Bubble Size m	Color
G1	Cartesian	Default	0	0	0	0.8	ffa0a0a0

Table 1.3 - Grid Lines

Grid System	Grid Direction	Grid ID	Visible	Bubble Location	Ordinate m	X1 m	Y1 m	X2 m	Y2 m
G1	X	1	Yes	End	0				
G1	X	2	Yes	End	0.85				
G1	X	3	Yes	End	2.55				
G1	X	3'	Yes	End	13				
G1	X	4	Yes	End	14.3				
G1	Y	A	Yes	Start	0				
G1	Y	B	Yes	Start	1.85				
G1	Y	C	Yes	Start	3.8				
G1	General	X	Yes	End		0	1.85	0.85	3.8

1.3 Point Coordinates

Table 1.4 - Joint Coordinates Data

Label	X m	Y m	ΔZ Below m
1	0	0	0
2	0.85	0	0
3	0.85	1.85	0
4	0	1.85	0
5	2.55	0	0
6	2.55	1.85	0
7	14.3	0	0
8	14.3	1.85	0
9	14.3	3.8	0
10	2.55	3.8	0
11	0.85	3.8	0
12	13	0	0
13	13	1.85	0
14	13	3.8	0

Table 1.4 - Joint Coordinates Data (continued)

Label	X m	Y m	ΔZ Below m
26	1.02143	0	0
27	1.02143	0	2
28	0	0	2
29	1.02143	0	1
30	0	0	1
31	2.04286	0	0
32	2.04286	0	2
33	2.04286	0	1
34	3.06429	0	0
35	3.06429	0	2
36	3.06429	0	1
37	4.08571	0	0
38	4.08571	0	2
39	4.08571	0	1
40	5.10714	0	0
41	5.10714	0	2
42	5.10714	0	1
43	6.12857	0	0
44	6.12857	0	2
45	6.12857	0	1
46	7.15	0	0
47	7.15	0	2
48	7.15	0	1
49	8.17143	0	0
50	8.17143	0	2
51	8.17143	0	1
52	9.19286	0	0
53	9.19286	0	2
54	9.19286	0	1
55	10.21429	0	0
56	10.21429	0	2
57	10.21429	0	1
58	11.23571	0	0
59	11.23571	0	2
60	11.23571	0	1
61	12.25714	0	0
62	12.25714	0	2
63	12.25714	0	1
64	13.27857	0	0
65	13.27857	0	2
66	13.27857	0	1
67	14.3	0	2
68	14.3	0	1
82	1.81071	3.8	0
83	1.81071	3.8	2
84	0.85	3.8	2
96	1.81071	3.8	1
97	0.85	3.8	1

Table 1.4 - Joint Coordinates Data (continued)

Label	X m	Y m	ΔZ Below m
98	2.77143	3.8	0
99	2.77143	3.8	2
100	2.77143	3.8	1
101	3.73214	3.8	0
102	3.73214	3.8	2
103	3.73214	3.8	1
104	4.69286	3.8	0
105	4.69286	3.8	2
106	4.69286	3.8	1
107	5.65357	3.8	0
108	5.65357	3.8	2
109	5.65357	3.8	1
110	6.61429	3.8	0
325	6.61429	3.8	2
326	6.61429	3.8	1
327	7.575	3.8	0
328	7.575	3.8	2
329	7.575	3.8	1
330	8.53571	3.8	0
331	8.53571	3.8	2
332	8.53571	3.8	1
333	9.49643	3.8	0
334	9.49643	3.8	2
335	9.49643	3.8	1
336	10.45714	3.8	0
337	10.45714	3.8	2
338	10.45714	3.8	1
339	11.41786	3.8	0
340	11.41786	3.8	2
341	11.41786	3.8	1
342	12.37857	3.8	0
343	12.37857	3.8	2
344	12.37857	3.8	1
345	13.33929	3.8	0
346	13.33929	3.8	2
347	13.33929	3.8	1
348	14.3	3.8	2
349	14.3	3.8	1
350	0	0.925	0
351	0	0.925	2
352	0	0.925	1
353	0	1.85	2
354	0	1.85	1
355	0.425	2.825	0
356	0.425	2.825	2
357	0.425	2.825	1
358	14.3	2.825	0
359	14.3	2.825	2

Table 1.4 - Joint Coordinates Data (continued)

Label	X m	Y m	ΔZ Below m
360	14.3	1.85	2
361	14.3	2.825	1
362	14.3	1.85	1
363	14.3	0.925	0
364	14.3	0.925	2
365	14.3	0.925	1
370	2.55	0.925	0
371	3.06429	1.85	0
373	4.08571	1.85	0
375	5.10714	1.85	0
377	6.12857	1.85	0
379	7.15	1.85	0
381	8.17143	1.85	0
383	9.19286	1.85	0
385	10.21429	1.85	0
387	11.23571	1.85	0
389	12.25714	1.85	0
391	13.27857	1.85	0
394	2.55	2.825	0
417	1.81071	1.85	0
418	3.06429	3.8	0
419	4.08571	3.8	0
420	5.10714	3.8	0
421	6.12857	3.8	0
422	7.15	3.8	0
423	8.17143	3.8	0
424	9.19286	3.8	0
425	10.21429	3.8	0
426	11.23571	3.8	0
427	12.25714	3.8	0
428	13.27857	3.8	0
429	1.81071	0	0
430	13	0.925	0
431	13	2.825	0
433	2.55	0.925	2
434	2.55	0	2
435	2.55	0.925	1
436	2.55	0	1
437	2.55	1.85	2
438	2.55	1.85	1
439	2.55	2.825	2
440	2.55	2.825	1
441	2.55	3.8	2
442	2.55	3.8	1
19	3.06429	0.925	0
20	1.81071	0.925	0

1.4 Area Connectivity

Table 1.5 - Floor Connectivity Data

Floor	Number of Edges	Edge Number	Point 1	Point 2	Curve Type
F1	4	1	1	2	None
		2	2	3	None
		3	3	4	None
		4	4	1	None
F6	3	1	4	3	None
		2	3	11	None
		3	11	4	None
F261	4	1	3	417	None
		2	417	82	None
		3	82	11	None
		4	11	3	None
F262	4	1	417	6	None
		2	6	10	None
		3	10	82	None
		4	82	417	None
F263	4	1	5	34	None
		2	34	371	None
		3	371	6	None
		4	6	5	None
F264	4	1	34	37	None
		2	37	373	None
		3	373	371	None
		4	371	34	None
F265	4	1	37	40	None
		2	40	375	None
		3	375	373	None
		4	373	37	None
F266	4	1	40	43	None
		2	43	377	None
		3	377	375	None
		4	375	40	None
F267	4	1	43	46	None
		2	46	379	None
		3	379	377	None
		4	377	43	None
F268	4	1	46	49	None
		2	49	381	None
		3	381	379	None
		4	379	46	None
F269	4	1	49	52	None
		2	52	383	None
		3	383	381	None
		4	381	49	None
F270	4	1	52	55	None
		2	55	385	None
		3	385	383	None
		4	383	52	None

Table 1.5 - Floor Connectivity Data (continued)

Floor	Number of Edges	Edge Number	Point 1	Point 2	Curve Type
F271	4	1	55	58	None
		2	58	387	None
		3	387	385	None
		4	385	55	None
F272	4	1	58	61	None
		2	61	389	None
		3	389	387	None
		4	387	58	None
F273	4	1	61	64	None
		2	64	391	None
		3	391	389	None
		4	389	61	None
F274	4	1	64	7	None
		2	7	8	None
		3	8	391	None
		4	391	64	None
F275	4	1	6	371	None
		2	371	418	None
		3	418	10	None
		4	10	6	None
F276	4	1	371	373	None
		2	373	419	None
		3	419	418	None
		4	418	371	None
F277	4	1	373	375	None
		2	375	420	None
		3	420	419	None
		4	419	373	None
F278	4	1	375	377	None
		2	377	421	None
		3	421	420	None
		4	420	375	None
F279	4	1	377	379	None
		2	379	422	None
		3	422	421	None
		4	421	377	None
F280	4	1	379	381	None
		2	381	423	None
		3	423	422	None
		4	422	379	None
F281	4	1	381	383	None
		2	383	424	None
		3	424	423	None
		4	423	381	None
F282	4	1	383	385	None
		2	385	425	None
		3	425	424	None
		4	424	383	None

Table 1.5 - Floor Connectivity Data (continued)

Floor	Number of Edges	Edge Number	Point 1	Point 2	Curve Type
F283	4	1	385	387	None
		2	387	426	None
		3	426	425	None
		4	425	385	None
F284	4	1	387	389	None
		2	389	427	None
		3	427	426	None
		4	426	387	None
F285	4	1	389	391	None
		2	391	428	None
		3	428	427	None
		4	427	389	None
F286	4	1	391	8	None
		2	8	9	None
		3	9	428	None
		4	428	391	None
F287	4	1	2	429	None
		2	429	417	None
		3	417	3	None
		4	3	2	None
F288	4	1	429	5	None
		2	5	6	None
		3	6	417	None
		4	417	429	None
F289	4	1	12	7	None
		2	7	363	None
		3	363	430	None
		4	430	12	None
F290	4	1	430	363	None
		2	363	8	None
		3	8	13	None
		4	13	430	None
F291	4	1	13	8	None
		2	8	358	None
		3	358	431	None
		4	431	13	None
F292	4	1	431	358	None
		2	358	9	None
		3	9	14	None
		4	14	431	None
F294	4	1	61	12	None
		2	12	13	None
		3	13	389	None
		4	389	61	None
F295	4	1	389	13	None
		2	13	14	None
		3	14	427	None
		4	427	389	None

Table 1.5 - Floor Connectivity Data (continued)

Floor	Number of Edges	Edge Number	Point 1	Point 2	Curve Type
F8	4	1	370	19	None
		2	19	371	None
		3	371	6	None
F10	4	4	6	370	None
		1	20	370	None
		2	370	6	None
		3	6	417	None
		4	417	20	None

Table 1.6 - Wall Connectivity Data

Label	Number of Edges	Edge Number	Point 1	Point 2	Curve Type	Point 1 Story	Point 2 Story
W12	4	1	12	13	None	Below	Below
		2	13	13	None	Below	Same
		3	13	12	None	Same	Same
W13	4	4	12	12	None	Same	Below
		1	13	14	None	Below	Below
		2	14	14	None	Below	Same
W15	4	3	14	13	None	Same	Same
		4	13	13	None	Same	Below
		1	1	26	None	Below	Below
W16	4	2	26	27	None	Below	Same
		3	27	28	None	Same	Same
		4	28	1	None	Same	Below
W17	4	1	28	27	None	Same	Same
		2	27	29	None	Same	Same
		3	29	30	None	Same	Same
W18	4	4	30	28	None	Same	Same
		1	30	29	None	Same	Same
		2	29	26	None	Same	Same
W19	4	3	26	1	None	Same	Same
		4	1	30	None	Same	Same
		1	26	31	None	Below	Below
W20	4	2	31	32	None	Below	Same
		3	32	27	None	Same	Same
		4	27	26	None	Same	Below
W21	4	1	27	32	None	Same	Same
		2	32	33	None	Same	Same
		3	33	29	None	Same	Same
W22	4	4	29	27	None	Same	Same
		1	29	33	None	Same	Same
		2	33	31	None	Same	Same
W23	4	3	31	26	None	Same	Same
		4	26	29	None	Same	Same
		1	31	34	None	Below	Below
W24	4	2	34	35	None	Below	Same
		3	35	32	None	Same	Same
		4	32	31	None	Same	Below

Table 1.6 - Wall Connectivity Data (continued)

Label	Number of Edges	Edge Number	Point 1	Point 2	Curve Type	Point 1 Story	Point 2 Story
W22	4	4	32	31	None	Same	Below
		1	32	35	None	Same	Same
		2	35	36	None	Same	Same
W23	4	3	36	33	None	Same	Same
		4	33	32	None	Same	Same
		1	33	36	None	Same	Same
W24	4	2	36	34	None	Same	Same
		3	34	31	None	Same	Same
		4	31	33	None	Same	Same
W25	4	1	34	37	None	Below	Below
		2	37	38	None	Below	Same
		3	38	35	None	Same	Same
W26	4	4	35	34	None	Same	Below
		1	35	38	None	Same	Same
		2	38	39	None	Same	Same
W27	4	3	39	36	None	Same	Same
		4	36	35	None	Same	Same
		1	36	39	None	Same	Same
W28	4	2	39	37	None	Same	Same
		3	37	34	None	Same	Same
		4	34	36	None	Same	Same
W29	4	1	37	40	None	Below	Below
		2	40	41	None	Below	Same
		3	41	38	None	Same	Same
W30	4	4	38	37	None	Same	Below
		1	38	41	None	Same	Same
		2	41	42	None	Same	Same
W31	4	3	42	39	None	Same	Same
		4	39	38	None	Same	Same
		1	39	42	None	Same	Same
W32	4	2	42	40	None	Same	Same
		3	40	37	None	Same	Same
		4	37	39	None	Same	Same
W33	4	1	40	43	None	Below	Below
		2	43	44	None	Below	Same
		3	44	41	None	Same	Same
W34	4	4	41	40	None	Same	Below
		1	41	44	None	Same	Same
		2	44	45	None	Same	Same
W35	4	3	45	42	None	Same	Same
		4	42	41	None	Same	Same
		1	42	45	None	Same	Same
W36	4	2	45	43	None	Same	Same
		3	43	40	None	Same	Same
		4	40	42	None	Same	Same
W37	4	1	43	46	None	Below	Below
		2	46	47	None	Below	Same
		3	47	44	None	Same	Same

Table 1.6 - Wall Connectivity Data (continued)

Label	Number of Edges	Edge Number	Point 1	Point 2	Curve Type	Point 1 Story	Point 2 Story
		4	44	43	None	Same	Below
W34	4	1	44	47	None	Same	Same
		2	47	48	None	Same	Same
		3	48	45	None	Same	Same
		4	45	44	None	Same	Same
W35	4	1	45	48	None	Same	Same
		2	48	46	None	Same	Same
		3	46	43	None	Same	Same
		4	43	45	None	Same	Same
W36	4	1	46	49	None	Below	Below
		2	49	50	None	Below	Same
		3	50	47	None	Same	Same
		4	47	46	None	Same	Below
W37	4	1	47	50	None	Same	Same
		2	50	51	None	Same	Same
		3	51	48	None	Same	Same
		4	48	47	None	Same	Same
W38	4	1	48	51	None	Same	Same
		2	51	49	None	Same	Same
		3	49	46	None	Same	Same
		4	46	48	None	Same	Same
W39	4	1	49	52	None	Below	Below
		2	52	53	None	Below	Same
		3	53	50	None	Same	Same
		4	50	49	None	Same	Below
W40	4	1	50	53	None	Same	Same
		2	53	54	None	Same	Same
		3	54	51	None	Same	Same
		4	51	50	None	Same	Same
W41	4	1	51	54	None	Same	Same
		2	54	52	None	Same	Same
		3	52	49	None	Same	Same
		4	49	51	None	Same	Same
W42	4	1	52	55	None	Below	Below
		2	55	56	None	Below	Same
		3	56	53	None	Same	Same
		4	53	52	None	Same	Below
W43	4	1	53	56	None	Same	Same
		2	56	57	None	Same	Same
		3	57	54	None	Same	Same
		4	54	53	None	Same	Same
W44	4	1	54	57	None	Same	Same
		2	57	55	None	Same	Same
		3	55	52	None	Same	Same
		4	52	54	None	Same	Same
W45	4	1	55	58	None	Below	Below
		2	58	59	None	Below	Same
		3	59	56	None	Same	Same

Table 1.6 - Wall Connectivity Data (continued)

Label	Number of Edges	Edge Number	Point 1	Point 2	Curve Type	Point 1 Story	Point 2 Story
		4	56	55	None	Same	Below
W46	4	1	56	59	None	Same	Same
		2	59	60	None	Same	Same
		3	60	57	None	Same	Same
		4	57	56	None	Same	Same
W47	4	1	57	60	None	Same	Same
		2	60	58	None	Same	Same
		3	58	55	None	Same	Same
		4	55	57	None	Same	Same
W48	4	1	58	61	None	Below	Below
		2	61	62	None	Below	Same
		3	62	59	None	Same	Same
		4	59	58	None	Same	Below
W49	4	1	59	62	None	Same	Same
		2	62	63	None	Same	Same
		3	63	60	None	Same	Same
		4	60	59	None	Same	Same
W50	4	1	60	63	None	Same	Same
		2	63	61	None	Same	Same
		3	61	58	None	Same	Same
		4	58	60	None	Same	Same
W51	4	1	61	64	None	Below	Below
		2	64	65	None	Below	Same
		3	65	62	None	Same	Same
		4	62	61	None	Same	Below
W52	4	1	62	65	None	Same	Same
		2	65	66	None	Same	Same
		3	66	63	None	Same	Same
		4	63	62	None	Same	Same
W53	4	1	63	66	None	Same	Same
		2	66	64	None	Same	Same
		3	64	61	None	Same	Same
		4	61	63	None	Same	Same
W54	4	1	64	7	None	Below	Below
		2	7	67	None	Below	Same
		3	67	65	None	Same	Same
		4	65	64	None	Same	Below
W55	4	1	65	67	None	Same	Same
		2	67	68	None	Same	Same
		3	68	66	None	Same	Same
		4	66	65	None	Same	Same
W56	4	1	66	68	None	Same	Same
		2	68	7	None	Same	Same
		3	7	64	None	Same	Same
		4	64	66	None	Same	Same
W71	4	1	1	26	None	Below	Below
		2	26	26	None	Below	Same
		3	26	1	None	Same	Same

Table 1.6 - Wall Connectivity Data (continued)

Label	Number of Edges	Edge Number	Point 1	Point 2	Curve Type	Point 1 Story	Point 2 Story
W72	4	4	1	1	None	Same	Below
		1	26	31	None	Below	Below
		2	31	31	None	Below	Same
W73	4	3	31	26	None	Same	Same
		4	26	26	None	Same	Below
		1	31	34	None	Below	Below
W74	4	2	34	34	None	Below	Same
		3	34	31	None	Same	Same
		4	31	31	None	Same	Below
W75	4	1	34	37	None	Below	Below
		2	37	37	None	Below	Same
		3	37	34	None	Same	Same
W76	4	4	34	34	None	Same	Below
		1	37	40	None	Below	Below
		2	40	40	None	Below	Same
W77	4	3	40	37	None	Same	Same
		4	37	37	None	Same	Below
		1	40	43	None	Below	Below
W78	4	2	43	43	None	Below	Same
		3	43	40	None	Same	Same
		4	40	40	None	Same	Below
W79	4	1	43	46	None	Below	Below
		2	46	46	None	Below	Same
		3	46	43	None	Same	Same
W80	4	4	43	43	None	Same	Below
		1	46	49	None	Below	Below
		2	49	49	None	Below	Same
W81	4	3	49	46	None	Same	Same
		4	46	46	None	Same	Below
		1	49	52	None	Below	Below
W82	4	2	52	52	None	Below	Same
		3	52	49	None	Same	Same
		4	49	49	None	Same	Below
W83	4	1	52	55	None	Below	Below
		2	55	55	None	Below	Same
		3	55	52	None	Same	Same
W84	4	4	52	52	None	Same	Below
		1	55	58	None	Below	Below
		2	58	58	None	Below	Same
W85	4	3	58	55	None	Same	Same
		4	55	55	None	Same	Below
		1	58	61	None	Below	Below
W86	4	2	61	61	None	Below	Same
		3	61	58	None	Same	Same
		4	58	58	None	Same	Below
W87	4	1	61	12	None	Below	Below
		2	12	12	None	Below	Same
		3	12	61	None	Same	Same

Table 1.6 - Wall Connectivity Data (continued)

Label	Number of Edges	Edge Number	Point 1	Point 2	Curve Type	Point 1 Story	Point 2 Story
W84	4	4	61	61	None	Same	Below
		1	11	82	None	Below	Below
		2	82	83	None	Below	Same
W85	4	3	83	84	None	Same	Same
		4	84	11	None	Same	Below
		1	84	83	None	Same	Same
W86	4	2	83	96	None	Same	Same
		3	96	97	None	Same	Same
		4	97	84	None	Same	Same
W87	4	1	97	96	None	Same	Same
		2	96	82	None	Same	Same
		3	82	11	None	Same	Same
W88	4	4	11	97	None	Same	Same
		1	82	98	None	Below	Below
		2	98	99	None	Below	Same
W89	4	3	99	83	None	Same	Same
		4	83	82	None	Same	Below
		1	83	99	None	Same	Same
W90	4	2	99	100	None	Same	Same
		3	100	96	None	Same	Same
		4	96	83	None	Same	Same
W91	4	1	96	100	None	Same	Same
		2	100	98	None	Same	Same
		3	98	82	None	Same	Same
W92	4	4	82	96	None	Same	Same
		1	98	101	None	Below	Below
		2	101	102	None	Below	Same
W93	4	3	102	99	None	Same	Same
		4	99	98	None	Same	Below
		1	99	102	None	Same	Same
W94	4	2	102	103	None	Same	Same
		3	103	100	None	Same	Same
		4	100	99	None	Same	Same
W95	4	1	100	103	None	Same	Same
		2	103	101	None	Same	Same
		3	101	104	None	Below	Below
W96	4	4	104	105	None	Below	Same
		1	105	102	None	Same	Same
		2	102	101	None	Same	Below
W97	4	3	101	106	None	Same	Same
		4	106	103	None	Same	Same
		1	103	106	None	Same	Same
W98	4	2	106	104	None	Same	Same
		3	104	101	None	Same	Same

Table 1.6 - Wall Connectivity Data (continued)

Label	Number of Edges	Edge Number	Point 1	Point 2	Curve Type	Point 1 Story	Point 2 Story
W96	4	4	101	103	None	Same	Same
		1	104	107	None	Below	Below
		2	107	108	None	Below	Same
		3	108	105	None	Same	Same
W97	4	4	105	104	None	Same	Below
		1	105	108	None	Same	Same
		2	108	109	None	Same	Same
		3	109	106	None	Same	Same
W98	4	4	106	105	None	Same	Same
		1	106	109	None	Same	Same
		2	109	107	None	Same	Same
		3	107	104	None	Same	Same
W99	4	4	104	106	None	Same	Same
		1	107	110	None	Below	Below
		2	110	325	None	Below	Same
		3	325	108	None	Same	Same
W100	4	4	108	107	None	Same	Below
		1	108	325	None	Same	Same
		2	325	326	None	Same	Same
		3	326	109	None	Same	Same
W101	4	4	109	108	None	Same	Same
		1	109	326	None	Same	Same
		2	326	110	None	Same	Same
		3	110	107	None	Same	Same
W102	4	4	107	109	None	Same	Same
		1	110	327	None	Below	Below
		2	327	328	None	Below	Same
		3	328	325	None	Same	Same
W103	4	4	325	110	None	Same	Below
		1	325	328	None	Same	Same
		2	328	329	None	Same	Same
		3	329	326	None	Same	Same
W104	4	4	326	325	None	Same	Same
		1	326	329	None	Same	Same
		2	329	327	None	Same	Same
		3	327	110	None	Same	Same
W105	4	4	110	326	None	Same	Same
		1	327	330	None	Below	Below
		2	330	331	None	Below	Same
		3	331	328	None	Same	Same
W106	4	4	328	327	None	Same	Below
		1	328	331	None	Same	Same
		2	331	332	None	Same	Same
		3	332	329	None	Same	Same
W107	4	4	329	328	None	Same	Same
		1	329	332	None	Same	Same
		2	332	330	None	Same	Same
		3	330	327	None	Same	Same

Table 1.6 - Wall Connectivity Data (continued)

Label	Number of Edges	Edge Number	Point 1	Point 2	Curve Type	Point 1 Story	Point 2 Story
W108	4	4	327	329	None	Same	Same
		1	330	333	None	Below	Below
		2	333	334	None	Below	Same
		3	334	331	None	Same	Same
W109	4	4	331	330	None	Same	Below
		1	331	334	None	Same	Same
		2	334	335	None	Same	Same
		3	335	332	None	Same	Same
W110	4	4	332	331	None	Same	Same
		1	332	335	None	Same	Same
		2	335	333	None	Same	Same
		3	333	330	None	Same	Same
W111	4	4	330	332	None	Same	Same
		1	333	336	None	Below	Below
		2	336	337	None	Below	Same
		3	337	334	None	Same	Same
W112	4	4	334	333	None	Same	Below
		1	334	337	None	Same	Same
		2	337	338	None	Same	Same
		3	338	335	None	Same	Same
W113	4	4	335	334	None	Same	Same
		1	335	338	None	Same	Same
		2	338	336	None	Same	Same
		3	336	333	None	Same	Same
W114	4	4	333	335	None	Same	Same
		1	336	339	None	Below	Below
		2	339	340	None	Below	Same
		3	340	337	None	Same	Same
W115	4	4	337	336	None	Same	Below
		1	337	340	None	Same	Same
		2	340	341	None	Same	Same
		3	341	338	None	Same	Same
W116	4	4	338	337	None	Same	Same
		1	338	341	None	Same	Same
		2	341	339	None	Same	Same
		3	339	336	None	Same	Same
W117	4	4	336	338	None	Same	Same
		1	339	342	None	Below	Below
		2	342	343	None	Below	Same
		3	343	340	None	Same	Same
W118	4	4	340	339	None	Same	Below
		1	340	343	None	Same	Same
		2	343	344	None	Same	Same
		3	344	341	None	Same	Same
W119	4	4	341	340	None	Same	Same
		1	341	344	None	Same	Same
		2	344	342	None	Same	Same
		3	342	339	None	Same	Same

Table 1.6 - Wall Connectivity Data (continued)

Label	Number of Edges	Edge Number	Point 1	Point 2	Curve Type	Point 1 Story	Point 2 Story
W120	4	4	339	341	None	Same	Same
		1	342	345	None	Below	Below
		2	345	346	None	Below	Same
		3	346	343	None	Same	Same
W121	4	4	343	342	None	Same	Below
		1	343	346	None	Same	Same
		2	346	347	None	Same	Same
		3	347	344	None	Same	Same
W122	4	4	344	343	None	Same	Same
		1	344	347	None	Same	Same
		2	347	345	None	Same	Same
		3	345	342	None	Same	Same
W123	4	4	342	344	None	Same	Same
		1	345	9	None	Below	Below
		2	9	348	None	Below	Same
		3	348	346	None	Same	Same
W124	4	4	346	345	None	Same	Below
		1	346	348	None	Same	Same
		2	348	349	None	Same	Same
		3	349	347	None	Same	Same
W125	4	4	347	346	None	Same	Same
		1	347	349	None	Same	Same
		2	349	9	None	Same	Same
		3	9	345	None	Same	Same
W126	4	4	345	347	None	Same	Same
		1	1	350	None	Below	Below
		2	350	351	None	Below	Same
		3	351	28	None	Same	Same
W127	4	4	28	1	None	Same	Below
		1	28	351	None	Same	Same
		2	351	352	None	Same	Same
		3	352	30	None	Same	Same
W128	4	4	30	28	None	Same	Same
		1	30	352	None	Same	Same
		2	352	350	None	Same	Same
		3	350	1	None	Same	Same
W129	4	4	1	30	None	Same	Same
		1	350	4	None	Below	Below
		2	4	353	None	Below	Same
		3	353	351	None	Same	Same
W130	4	4	351	350	None	Same	Below
		1	351	353	None	Same	Same
		2	353	354	None	Same	Same
		3	354	352	None	Same	Same
W131	4	4	352	351	None	Same	Same
		1	352	354	None	Same	Same
		2	354	4	None	Same	Same
		3	4	350	None	Same	Same

Table 1.6 - Wall Connectivity Data (continued)

Label	Number of Edges	Edge Number	Point 1	Point 2	Curve Type	Point 1 Story	Point 2 Story
W132	4	4	350	352	None	Same	Same
		1	4	355	None	Below	Below
		2	355	356	None	Below	Same
		3	356	353	None	Same	Same
W133	4	4	353	4	None	Same	Below
		1	353	356	None	Same	Same
		2	356	357	None	Same	Same
		3	357	354	None	Same	Same
W134	4	4	354	353	None	Same	Same
		1	354	357	None	Same	Same
		2	357	355	None	Same	Same
		3	355	4	None	Same	Same
W135	4	4	4	354	None	Same	Same
		1	355	11	None	Below	Below
		2	11	84	None	Below	Same
		3	84	356	None	Same	Same
W136	4	4	356	355	None	Same	Below
		1	356	84	None	Same	Same
		2	84	97	None	Same	Same
		3	97	357	None	Same	Same
W137	4	4	357	356	None	Same	Same
		1	357	97	None	Same	Same
		2	97	11	None	Same	Same
		3	11	355	None	Same	Same
W138	4	4	355	357	None	Same	Same
		1	1	350	None	Below	Below
		2	350	350	None	Below	Same
		3	350	1	None	Same	Same
W139	4	4	1	1	None	Same	Below
		1	350	4	None	Below	Below
		2	4	4	None	Below	Same
		3	4	350	None	Same	Same
W140	4	4	350	350	None	Same	Below
		1	4	355	None	Below	Below
		2	355	355	None	Below	Same
		3	355	4	None	Same	Same
W141	4	4	4	4	None	Same	Below
		1	355	11	None	Below	Below
		2	11	11	None	Below	Same
		3	11	355	None	Same	Same
W142	4	4	355	355	None	Same	Below
		1	8	358	None	Below	Below
		2	358	359	None	Below	Same
		3	359	360	None	Same	Same
W143	4	4	360	8	None	Same	Below
		1	360	359	None	Same	Same
		2	359	361	None	Same	Same
		3	361	362	None	Same	Same

Table 1.6 - Wall Connectivity Data (continued)

Label	Number of Edges	Edge Number	Point 1	Point 2	Curve Type	Point 1 Story	Point 2 Story
W144	4	4	362	360	None	Same	Same
		1	362	361	None	Same	Same
		2	361	358	None	Same	Same
		3	358	8	None	Same	Same
W145	4	4	8	362	None	Same	Same
		1	358	9	None	Below	Below
		2	9	348	None	Below	Same
		3	348	359	None	Same	Same
W146	4	4	359	358	None	Same	Below
		1	359	348	None	Same	Same
		2	348	349	None	Same	Same
		3	349	361	None	Same	Same
W147	4	4	361	359	None	Same	Same
		1	361	349	None	Same	Same
		2	349	9	None	Same	Same
		3	9	358	None	Same	Same
W148	4	4	358	361	None	Same	Same
		1	7	363	None	Below	Below
		2	363	364	None	Below	Same
		3	364	67	None	Same	Same
W149	4	4	67	7	None	Same	Below
		1	67	364	None	Same	Same
		2	364	365	None	Same	Same
		3	365	68	None	Same	Same
W150	4	4	68	67	None	Same	Same
		1	68	365	None	Same	Same
		2	365	363	None	Same	Same
		3	363	7	None	Same	Same
W151	4	4	7	68	None	Same	Same
		1	363	8	None	Below	Below
		2	8	360	None	Below	Same
		3	360	364	None	Same	Same
W152	4	4	364	363	None	Same	Below
		1	364	360	None	Same	Same
		2	360	362	None	Same	Same
		3	362	365	None	Same	Same
W153	4	4	365	364	None	Same	Same
		1	365	362	None	Same	Same
		2	362	8	None	Same	Same
		3	8	363	None	Same	Same
W154	4	4	363	365	None	Same	Same
		1	11	82	None	Below	Below
		2	82	82	None	Below	Same
		3	82	11	None	Same	Same
W155	4	4	11	11	None	Same	Below
		1	82	98	None	Below	Below
		2	98	98	None	Below	Same
		3	98	82	None	Same	Same

Table 1.6 - Wall Connectivity Data (continued)

Label	Number of Edges	Edge Number	Point 1	Point 2	Curve Type	Point 1 Story	Point 2 Story
W156	4	4	82	82	None	Same	Below
		1	98	101	None	Below	Below
		2	101	101	None	Below	Same
		3	101	98	None	Same	Same
W157	4	4	98	98	None	Same	Below
		1	101	104	None	Below	Below
		2	104	104	None	Below	Same
		3	104	101	None	Same	Same
W158	4	4	101	101	None	Same	Below
		1	104	107	None	Below	Below
		2	107	107	None	Below	Same
		3	107	104	None	Same	Same
W159	4	4	104	104	None	Same	Below
		1	107	110	None	Below	Below
		2	110	110	None	Below	Same
		3	110	107	None	Same	Same
W160	4	4	107	107	None	Same	Below
		1	110	327	None	Below	Below
		2	327	327	None	Below	Same
		3	327	110	None	Same	Same
W161	4	4	110	110	None	Same	Below
		1	327	330	None	Below	Below
		2	330	330	None	Below	Same
		3	330	327	None	Same	Same
W162	4	4	327	327	None	Same	Below
		1	330	333	None	Below	Below
		2	333	333	None	Below	Same
		3	333	330	None	Same	Same
W163	4	4	330	330	None	Same	Below
		1	333	336	None	Below	Below
		2	336	336	None	Below	Same
		3	336	333	None	Same	Same
W164	4	4	333	333	None	Same	Below
		1	336	339	None	Below	Below
		2	339	339	None	Below	Same
		3	339	336	None	Same	Same
W165	4	4	336	336	None	Same	Below
		1	339	14	None	Below	Below
		2	14	14	None	Below	Same
		3	14	339	None	Same	Same
W168	4	4	339	339	None	Same	Below
		1	5	370	None	Below	Below
		2	370	433	None	Below	Same
		3	433	434	None	Same	Same
W169	4	4	434	5	None	Same	Below
		1	434	433	None	Same	Same
		2	433	435	None	Same	Same
		3	435	436	None	Same	Same

Table 1.6 - Wall Connectivity Data (continued)

Label	Number of Edges	Edge Number	Point 1	Point 2	Curve Type	Point 1 Story	Point 2 Story
W170	4	4	436	434	None	Same	Same
		1	436	435	None	Same	Same
		2	435	370	None	Same	Same
W171	4	3	370	5	None	Same	Same
		4	5	436	None	Same	Same
		1	370	6	None	Below	Below
W172	4	2	6	437	None	Below	Same
		3	437	433	None	Same	Same
		4	433	370	None	Same	Below
W173	4	1	433	437	None	Same	Same
		2	437	438	None	Same	Same
		3	438	435	None	Same	Same
W174	4	4	435	433	None	Same	Same
		1	435	438	None	Same	Same
		2	438	6	None	Same	Same
W175	4	3	6	370	None	Same	Same
		4	370	435	None	Same	Same
		1	6	394	None	Below	Below
W176	4	2	394	439	None	Below	Same
		3	439	437	None	Same	Same
		4	437	6	None	Same	Below
W177	4	1	437	439	None	Same	Same
		2	439	440	None	Same	Same
		3	440	438	None	Same	Same
W178	4	4	438	437	None	Same	Same
		1	438	440	None	Same	Same
		2	440	394	None	Same	Same
W179	4	3	394	6	None	Same	Same
		4	6	438	None	Same	Same
		1	394	10	None	Below	Below
W180	4	2	10	441	None	Below	Same
		3	441	439	None	Same	Same
		4	439	394	None	Same	Below
W181	4	1	439	441	None	Same	Same
		2	441	442	None	Same	Same
		3	442	440	None	Same	Same
W182	4	4	440	439	None	Same	Same
		1	440	442	None	Same	Same
		2	442	10	None	Same	Same
W183	4	3	10	394	None	Same	Same
		4	394	440	None	Same	Same
		1	6	394	None	Below	Below
W184	4	2	394	394	None	Below	Same
		3	394	6	None	Same	Same
		4	6	6	None	Same	Below
W185	4	1	394	10	None	Below	Below
		2	10	10	None	Below	Same
		3	10	394	None	Same	Same

Table 1.6 - Wall Connectivity Data (continued)

Label	Number of Edges	Edge Number	Point 1	Point 2	Curve Type	Point 1 Story	Point 2 Story
W182	4	4	394	394	None	Same	Below
		1	5	370	None	Below	Below
		2	370	370	None	Below	Same
W183	4	3	370	5	None	Same	Same
		4	5	5	None	Same	Below
		1	370	6	None	Below	Below
W184	4	2	6	6	None	Below	Same
		3	6	370	None	Same	Same
		4	370	370	None	Same	Below

1.5 Mass

Table 1.7 - Mass Source

Name	Include Elements	Include Added Mass	Include Loads	Include Lateral	Include Vertical	Lump at Stories	IsDefault	Load Pattern	Multiplier
MsSrc1	Yes	No	Yes	Yes	No	Yes	Yes	D	1

Table 1.8 - Mass Summary by Story

Story	UX tonf-s ² /m	UY tonf-s ² /m	UZ tonf-s ² /m
N+3.30	7.41846	7.41846	0
N+3.0m	8.49708	8.49708	0
Base	13.76642	13.76642	0

1.6 Groups

Table 1.9 - Group Definitions

Name	Color
All	Yellow

2 Properties

This chapter provides property information for materials, frame sections, shell sections, and links.

2.1 Materials

Table 2.1 - Material Properties - Summary

Name	Type	E tonf/m ²	v	Unit Weight tonf/m ³	Design Strengths
28MPa	Concrete	2487006	0.2	2.4	Fc=2800 tonf/m ²
A416Gr270	Tendon	20037480	0	7.849	Fy=172322.4 tonf/m ² , Fu=189828.8 tonf/m ²
A615Gr60	Rebar	20389020	0	7.849	Fy=42184.18 tonf/m ² , Fu=63276.27 tonf/m ²

2.2 Shell Sections

Table 2.2 - Shell Sections - Summary

Name	Design Type	Element Type	Material	Total Thickness m
muro e=25cm	Wall	Shell-Thin	28MPa	0.25
PLACA e=25cm	Slab	Shell-Thin	28MPa	0.25

2.3 Reinforcement Sizes

Table 2.3 - Reinforcing Bar Sizes

Name	Diameter m	Area m ²
18	0.018	0.000255

2.4 Spring Properties

Table 2.4 - Spring Properties - Area

Name	U1 tonf/m/m ²	U2 tonf/m/m ²	U3 tonf/m/m ²	Nonlinear 3 Option
Ks	0	0	455	Compression Only

2.5 Tendon Sections

Table 2.5 - Tendon Section Properties

Name	Material	StrandArea m ²	Color
Tendon1	A416Gr270	9.9E-05	Yellow

3 Assignments

This chapter provides a listing of the assignments applied to the model.

3.1 Joint Assignments

Table 3.1 - Joint Assignments - Summary

Story	Label	Unique Name	Diaphragm	Restraints
N+3.30	1	27	From Area	
N+3.30	2	24	From Area	
N+3.30	3	25	From Area	
N+3.30	4	28	From Area	
N+3.30	5	18	From Area	
N+3.30	6	21	From Area	
N+3.30	10	23	From Area	
N+3.30	11	26	From Area	
N+3.30	12	19	From Area	
N+3.30	13	20	From Area	
N+3.30	14	22	From Area	
N+3.30	26	130	From Area	
N+3.30	31	131	From Area	
N+3.30	34	132	From Area	
N+3.30	37	133	From Area	
N+3.30	40	134	From Area	
N+3.30	43	135	From Area	
N+3.30	46	136	From Area	
N+3.30	49	137	From Area	
N+3.30	52	138	From Area	
N+3.30	55	139	From Area	
N+3.30	58	140	From Area	
N+3.30	61	141	From Area	
N+3.30	82	298	From Area	
N+3.30	98	299	From Area	
N+3.30	101	300	From Area	
N+3.30	104	301	From Area	
N+3.30	107	302	From Area	
N+3.30	110	303	From Area	
N+3.30	327	304	From Area	
N+3.30	330	305	From Area	
N+3.30	333	306	From Area	
N+3.30	336	307	From Area	
N+3.30	339	308	From Area	
N+3.30	350	208	From Area	
N+3.30	355	209	From Area	
N+3.30	370	350	From Area	
N+3.30	371	309	From Area	
N+3.30	373	310	From Area	
N+3.30	375	311	From Area	
N+3.30	377	312	From Area	
N+3.30	379	313	From Area	
N+3.30	381	314	From Area	
N+3.30	383	315	From Area	
N+3.30	385	316	From Area	

Table 3.1 - Joint Assignments - Summary (continued)

Story	Label	Unique Name	Diaphragm	Restraints
N+3.30	387	317	From Area	
N+3.30	389	318	From Area	
N+3.30	394	349	From Area	
N+3.30	417	329	From Area	
N+3.30	418	319	From Area	
N+3.30	419	320	From Area	
N+3.30	420	321	From Area	
N+3.30	421	322	From Area	
N+3.30	422	323	From Area	
N+3.30	423	324	From Area	
N+3.30	424	325	From Area	
N+3.30	425	326	From Area	
N+3.30	426	327	From Area	
N+3.30	427	328	From Area	
N+3.30	429	330	From Area	
N+3.30	19	33	From Area	
N+3.30	20	34	From Area	
N+3.0m	1	35	From Area	
N+3.0m	4	45	From Area	
N+3.0m	5	333	From Area	
N+3.0m	6	332	From Area	
N+3.0m	7	13	From Area	
N+3.0m	8	14	From Area	
N+3.0m	9	16	From Area	
N+3.0m	10	334	From Area	
N+3.0m	11	36	From Area	
N+3.0m	12	12	From Area	
N+3.0m	13	15	From Area	
N+3.0m	14	17	From Area	
N+3.0m	26	54	From Area	
N+3.0m	27	50	From Area	
N+3.0m	28	51	From Area	
N+3.0m	29	52	From Area	
N+3.0m	30	53	From Area	
N+3.0m	31	58	From Area	
N+3.0m	32	56	From Area	
N+3.0m	33	57	From Area	
N+3.0m	34	62	From Area	
N+3.0m	35	60	From Area	
N+3.0m	36	61	From Area	
N+3.0m	37	66	From Area	
N+3.0m	38	64	From Area	
N+3.0m	39	65	From Area	
N+3.0m	40	70	From Area	
N+3.0m	41	68	From Area	
N+3.0m	42	69	From Area	
N+3.0m	43	74	From Area	
N+3.0m	44	72	From Area	
N+3.0m	45	73	From Area	

Table 3.1 - Joint Assignments - Summary (continued)

Story	Label	Unique Name	Diaphragm	Restraints
N+3.0m	46	78	From Area	
N+3.0m	47	76	From Area	
N+3.0m	48	77	From Area	
N+3.0m	49	82	From Area	
N+3.0m	50	80	From Area	
N+3.0m	51	81	From Area	
N+3.0m	52	86	From Area	
N+3.0m	53	84	From Area	
N+3.0m	54	85	From Area	
N+3.0m	55	90	From Area	
N+3.0m	56	88	From Area	
N+3.0m	57	89	From Area	
N+3.0m	58	94	From Area	
N+3.0m	59	92	From Area	
N+3.0m	60	93	From Area	
N+3.0m	61	98	From Area	
N+3.0m	62	96	From Area	
N+3.0m	63	97	From Area	
N+3.0m	64	102	From Area	
N+3.0m	65	100	From Area	
N+3.0m	66	101	From Area	
N+3.0m	67	103	From Area	
N+3.0m	68	104	From Area	
N+3.0m	82	147	From Area	
N+3.0m	83	143	From Area	
N+3.0m	84	144	From Area	
N+3.0m	96	145	From Area	
N+3.0m	97	146	From Area	
N+3.0m	98	151	From Area	
N+3.0m	99	149	From Area	
N+3.0m	100	150	From Area	
N+3.0m	101	155	From Area	
N+3.0m	102	153	From Area	
N+3.0m	103	154	From Area	
N+3.0m	104	159	From Area	
N+3.0m	105	157	From Area	
N+3.0m	106	158	From Area	
N+3.0m	107	163	From Area	
N+3.0m	108	161	From Area	
N+3.0m	109	162	From Area	
N+3.0m	110	167	From Area	
N+3.0m	325	165	From Area	
N+3.0m	326	166	From Area	
N+3.0m	327	171	From Area	
N+3.0m	328	169	From Area	
N+3.0m	329	170	From Area	
N+3.0m	330	175	From Area	
N+3.0m	331	173	From Area	
N+3.0m	332	174	From Area	

Table 3.1 - Joint Assignments - Summary (continued)

Story	Label	Unique Name	Diaphragm	Restraints
N+3.0m	333	179	From Area	
N+3.0m	334	177	From Area	
N+3.0m	335	178	From Area	
N+3.0m	336	183	From Area	
N+3.0m	337	181	From Area	
N+3.0m	338	182	From Area	
N+3.0m	339	187	From Area	
N+3.0m	340	185	From Area	
N+3.0m	341	186	From Area	
N+3.0m	342	191	From Area	
N+3.0m	343	189	From Area	
N+3.0m	344	190	From Area	
N+3.0m	345	195	From Area	
N+3.0m	346	193	From Area	
N+3.0m	347	194	From Area	
N+3.0m	348	196	From Area	
N+3.0m	349	197	From Area	
N+3.0m	350	201	From Area	
N+3.0m	351	199	From Area	
N+3.0m	352	200	From Area	
N+3.0m	353	202	From Area	
N+3.0m	354	203	From Area	
N+3.0m	355	207	From Area	
N+3.0m	356	205	From Area	
N+3.0m	357	206	From Area	
N+3.0m	358	215	From Area	
N+3.0m	359	211	From Area	
N+3.0m	360	212	From Area	
N+3.0m	361	213	From Area	
N+3.0m	362	214	From Area	
N+3.0m	363	219	From Area	
N+3.0m	364	217	From Area	
N+3.0m	365	218	From Area	
N+3.0m	370	340	From Area	
N+3.0m	394	346	From Area	
N+3.0m	430	296	From Area	
N+3.0m	431	297	From Area	
N+3.0m	433	336	From Area	
N+3.0m	434	337	From Area	
N+3.0m	435	338	From Area	
N+3.0m	436	339	From Area	
N+3.0m	437	341	From Area	
N+3.0m	438	342	From Area	
N+3.0m	439	344	From Area	
N+3.0m	440	345	From Area	
N+3.0m	441	347	From Area	
N+3.0m	442	348	From Area	
Base	1	1	From Area	UX; UY; UZ
Base	2	2	From Area	

Table 3.1 - Joint Assignments - Summary (continued)

Story	Label	Unique Name	Diaphragm	Restraints
Base	3	3	From Area	
Base	4	4	From Area	
Base	5	5	From Area	
Base	6	6	From Area	
Base	7	7	From Area	UX; UY; UZ
Base	8	8	From Area	
Base	9	9	From Area	UX; UY; UZ
Base	10	10	From Area	
Base	11	11	From Area	UX; UY; UZ
Base	26	49	From Area	
Base	31	55	From Area	
Base	34	59	From Area	
Base	37	63	From Area	
Base	40	67	From Area	
Base	43	71	From Area	
Base	46	75	From Area	
Base	49	79	From Area	
Base	52	83	From Area	
Base	55	87	From Area	
Base	58	91	From Area	
Base	61	95	From Area	
Base	64	99	From Area	
Base	82	142	From Area	
Base	98	148	From Area	
Base	101	152	From Area	
Base	104	156	From Area	
Base	107	160	From Area	
Base	110	164	From Area	
Base	327	168	From Area	
Base	330	172	From Area	
Base	333	176	From Area	
Base	336	180	From Area	
Base	339	184	From Area	
Base	342	188	From Area	
Base	345	192	From Area	
Base	350	198	From Area	
Base	355	204	From Area	
Base	358	210	From Area	
Base	363	216	From Area	
Base	370	335	From Area	
Base	371	272	From Area	
Base	373	273	From Area	
Base	375	274	From Area	
Base	377	275	From Area	
Base	379	276	From Area	
Base	381	277	From Area	
Base	383	278	From Area	
Base	385	279	From Area	
Base	387	280	From Area	

Table 3.1 - Joint Assignments - Summary (continued)

Story	Label	Unique Name	Diaphragm	Restraints
Base	389	281	From Area	
Base	391	282	From Area	
Base	394	343	From Area	
Base	417	294	From Area	
Base	418	283	From Area	
Base	419	284	From Area	
Base	420	285	From Area	
Base	421	286	From Area	
Base	422	287	From Area	
Base	423	288	From Area	
Base	424	289	From Area	
Base	425	290	From Area	
Base	426	291	From Area	
Base	427	292	From Area	
Base	428	293	From Area	
Base	429	295	From Area	

3.2 Shell Assignments

Table 3.2 - Shell Assignments - Summary

Story	Label	Unique Name	Section	Spring
N+3.30	W12	32	muro e=25cm	
N+3.30	W13	33	muro e=25cm	
N+3.30	W71	92	muro e=25cm	
N+3.30	W72	93	muro e=25cm	
N+3.30	W73	94	muro e=25cm	
N+3.30	W74	95	muro e=25cm	
N+3.30	W75	96	muro e=25cm	
N+3.30	W76	97	muro e=25cm	
N+3.30	W77	98	muro e=25cm	
N+3.30	W78	99	muro e=25cm	
N+3.30	W79	100	muro e=25cm	
N+3.30	W80	101	muro e=25cm	
N+3.30	W81	102	muro e=25cm	
N+3.30	W82	103	muro e=25cm	
N+3.30	W83	104	muro e=25cm	
N+3.30	W138	159	muro e=25cm	
N+3.30	W139	160	muro e=25cm	
N+3.30	W140	161	muro e=25cm	
N+3.30	W141	162	muro e=25cm	
N+3.30	W154	264	muro e=25cm	
N+3.30	W155	265	muro e=25cm	
N+3.30	W156	266	muro e=25cm	
N+3.30	W157	267	muro e=25cm	
N+3.30	W158	268	muro e=25cm	
N+3.30	W159	269	muro e=25cm	
N+3.30	W160	270	muro e=25cm	
N+3.30	W161	271	muro e=25cm	
N+3.30	W162	272	muro e=25cm	

Table 3.2 - Shell Assignments - Summary (continued)

Story	Label	Unique Name	Section	Spring
N+3.30	W163	273	muro e=25cm	
N+3.30	W164	274	muro e=25cm	
N+3.30	W165	275	muro e=25cm	
N+3.30	W180	320	muro e=25cm	
N+3.30	W181	321	muro e=25cm	
N+3.30	W182	322	muro e=25cm	
N+3.30	W183	323	muro e=25cm	
N+3.0m	W15	36	muro e=25cm	
N+3.0m	W16	37	muro e=25cm	
N+3.0m	W17	38	muro e=25cm	
N+3.0m	W18	39	muro e=25cm	
N+3.0m	W19	40	muro e=25cm	
N+3.0m	W20	41	muro e=25cm	
N+3.0m	W21	42	muro e=25cm	
N+3.0m	W22	43	muro e=25cm	
N+3.0m	W23	44	muro e=25cm	
N+3.0m	W24	45	muro e=25cm	
N+3.0m	W25	46	muro e=25cm	
N+3.0m	W26	47	muro e=25cm	
N+3.0m	W27	48	muro e=25cm	
N+3.0m	W28	49	muro e=25cm	
N+3.0m	W29	50	muro e=25cm	
N+3.0m	W30	51	muro e=25cm	
N+3.0m	W31	52	muro e=25cm	
N+3.0m	W32	53	muro e=25cm	
N+3.0m	W33	54	muro e=25cm	
N+3.0m	W34	55	muro e=25cm	
N+3.0m	W35	56	muro e=25cm	
N+3.0m	W36	57	muro e=25cm	
N+3.0m	W37	58	muro e=25cm	
N+3.0m	W38	59	muro e=25cm	
N+3.0m	W39	60	muro e=25cm	
N+3.0m	W40	61	muro e=25cm	
N+3.0m	W41	62	muro e=25cm	
N+3.0m	W42	63	muro e=25cm	
N+3.0m	W43	64	muro e=25cm	
N+3.0m	W44	65	muro e=25cm	
N+3.0m	W45	66	muro e=25cm	
N+3.0m	W46	67	muro e=25cm	
N+3.0m	W47	68	muro e=25cm	
N+3.0m	W48	69	muro e=25cm	
N+3.0m	W49	70	muro e=25cm	
N+3.0m	W50	71	muro e=25cm	
N+3.0m	W51	72	muro e=25cm	
N+3.0m	W52	73	muro e=25cm	
N+3.0m	W53	74	muro e=25cm	
N+3.0m	W54	75	muro e=25cm	
N+3.0m	W55	76	muro e=25cm	
N+3.0m	W56	77	muro e=25cm	

Table 3.2 - Shell Assignments - Summary (continued)

Story	Label	Unique Name	Section	Spring
N+3.0m	W84	105	muro e=25cm	
N+3.0m	W85	106	muro e=25cm	
N+3.0m	W86	107	muro e=25cm	
N+3.0m	W87	108	muro e=25cm	
N+3.0m	W88	109	muro e=25cm	
N+3.0m	W89	110	muro e=25cm	
N+3.0m	W90	111	muro e=25cm	
N+3.0m	W91	112	muro e=25cm	
N+3.0m	W92	113	muro e=25cm	
N+3.0m	W93	114	muro e=25cm	
N+3.0m	W94	115	muro e=25cm	
N+3.0m	W95	116	muro e=25cm	
N+3.0m	W96	117	muro e=25cm	
N+3.0m	W97	118	muro e=25cm	
N+3.0m	W98	119	muro e=25cm	
N+3.0m	W99	120	muro e=25cm	
N+3.0m	W100	121	muro e=25cm	
N+3.0m	W101	122	muro e=25cm	
N+3.0m	W102	123	muro e=25cm	
N+3.0m	W103	124	muro e=25cm	
N+3.0m	W104	125	muro e=25cm	
N+3.0m	W105	126	muro e=25cm	
N+3.0m	W106	127	muro e=25cm	
N+3.0m	W107	128	muro e=25cm	
N+3.0m	W108	129	muro e=25cm	
N+3.0m	W109	130	muro e=25cm	
N+3.0m	W110	131	muro e=25cm	
N+3.0m	W111	132	muro e=25cm	
N+3.0m	W112	133	muro e=25cm	
N+3.0m	W113	134	muro e=25cm	
N+3.0m	W114	135	muro e=25cm	
N+3.0m	W115	136	muro e=25cm	
N+3.0m	W116	137	muro e=25cm	
N+3.0m	W117	138	muro e=25cm	
N+3.0m	W118	139	muro e=25cm	
N+3.0m	W119	140	muro e=25cm	
N+3.0m	W120	141	muro e=25cm	
N+3.0m	W121	142	muro e=25cm	
N+3.0m	W122	143	muro e=25cm	
N+3.0m	W123	144	muro e=25cm	
N+3.0m	W124	145	muro e=25cm	
N+3.0m	W125	146	muro e=25cm	
N+3.0m	W126	147	muro e=25cm	
N+3.0m	W127	148	muro e=25cm	
N+3.0m	W128	149	muro e=25cm	
N+3.0m	W129	150	muro e=25cm	
N+3.0m	W130	151	muro e=25cm	
N+3.0m	W131	152	muro e=25cm	
N+3.0m	W132	153	muro e=25cm	

Table 3.2 - Shell Assignments - Summary (continued)

Story	Label	Unique Name	Section	Spring
N+3.0m	W133	154	muro e=25cm	
N+3.0m	W134	155	muro e=25cm	
N+3.0m	W135	156	muro e=25cm	
N+3.0m	W136	157	muro e=25cm	
N+3.0m	W137	158	muro e=25cm	
N+3.0m	W142	163	muro e=25cm	
N+3.0m	W143	164	muro e=25cm	
N+3.0m	W144	165	muro e=25cm	
N+3.0m	W145	166	muro e=25cm	
N+3.0m	W146	167	muro e=25cm	
N+3.0m	W147	168	muro e=25cm	
N+3.0m	W148	169	muro e=25cm	
N+3.0m	W149	170	muro e=25cm	
N+3.0m	W150	171	muro e=25cm	
N+3.0m	W151	172	muro e=25cm	
N+3.0m	W152	173	muro e=25cm	
N+3.0m	W153	174	muro e=25cm	
N+3.0m	W168	308	muro e=25cm	
N+3.0m	W169	309	muro e=25cm	
N+3.0m	W170	310	muro e=25cm	
N+3.0m	W171	311	muro e=25cm	
N+3.0m	W172	312	muro e=25cm	
N+3.0m	W173	313	muro e=25cm	
N+3.0m	W174	314	muro e=25cm	
N+3.0m	W175	315	muro e=25cm	
N+3.0m	W176	316	muro e=25cm	
N+3.0m	W177	317	muro e=25cm	
N+3.0m	W178	318	muro e=25cm	
N+3.0m	W179	319	muro e=25cm	
N+3.30	F1	13	PLACA e=25cm	
N+3.30	F6	14	PLACA e=25cm	
N+3.30	F261	299	PLACA e=25cm	
N+3.30	F262	300	PLACA e=25cm	
N+3.30	F264	277	PLACA e=25cm	
N+3.30	F265	278	PLACA e=25cm	
N+3.30	F266	279	PLACA e=25cm	
N+3.30	F267	280	PLACA e=25cm	
N+3.30	F268	281	PLACA e=25cm	
N+3.30	F269	282	PLACA e=25cm	
N+3.30	F270	283	PLACA e=25cm	
N+3.30	F271	284	PLACA e=25cm	
N+3.30	F272	286	PLACA e=25cm	
N+3.30	F275	288	PLACA e=25cm	
N+3.30	F276	289	PLACA e=25cm	
N+3.30	F277	290	PLACA e=25cm	
N+3.30	F278	291	PLACA e=25cm	
N+3.30	F279	292	PLACA e=25cm	
N+3.30	F280	293	PLACA e=25cm	
N+3.30	F281	294	PLACA e=25cm	

Table 3.2 - Shell Assignments - Summary (continued)

Story	Label	Unique Name	Section	Spring
N+3.30	F282	295	PLACA e=25cm	
N+3.30	F283	296	PLACA e=25cm	
N+3.30	F284	297	PLACA e=25cm	
N+3.30	F287	301	PLACA e=25cm	
N+3.30	F294	287	PLACA e=25cm	
N+3.30	F295	298	PLACA e=25cm	
N+3.30	F8	8	PLACA e=25cm	
N+3.30	F10	10	PLACA e=25cm	
N+3.0m	F289	260	PLACA e=25cm	
N+3.0m	F290	261	PLACA e=25cm	
N+3.0m	F291	262	PLACA e=25cm	
N+3.0m	F292	263	PLACA e=25cm	
Base	F1	1	PLACA e=25cm	Ks
Base	F6	6	PLACA e=25cm	Ks
Base	F261	256	PLACA e=25cm	Ks
Base	F262	257	PLACA e=25cm	Ks
Base	F263	232	PLACA e=25cm	Ks
Base	F264	233	PLACA e=25cm	Ks
Base	F265	234	PLACA e=25cm	Ks
Base	F266	235	PLACA e=25cm	Ks
Base	F267	236	PLACA e=25cm	Ks
Base	F268	237	PLACA e=25cm	Ks
Base	F269	238	PLACA e=25cm	Ks
Base	F270	239	PLACA e=25cm	Ks
Base	F271	240	PLACA e=25cm	Ks
Base	F272	241	PLACA e=25cm	Ks
Base	F273	242	PLACA e=25cm	Ks
Base	F274	243	PLACA e=25cm	Ks
Base	F275	244	PLACA e=25cm	Ks
Base	F276	245	PLACA e=25cm	Ks
Base	F277	246	PLACA e=25cm	Ks
Base	F278	247	PLACA e=25cm	Ks
Base	F279	248	PLACA e=25cm	Ks
Base	F280	249	PLACA e=25cm	Ks
Base	F281	250	PLACA e=25cm	Ks
Base	F282	251	PLACA e=25cm	Ks
Base	F283	252	PLACA e=25cm	Ks
Base	F284	253	PLACA e=25cm	Ks
Base	F285	254	PLACA e=25cm	Ks
Base	F286	255	PLACA e=25cm	Ks
Base	F287	258	PLACA e=25cm	Ks
Base	F288	259	PLACA e=25cm	Ks

4 Loads

This chapter provides loading information as applied to the model.

4.1 Load Patterns

Table 4.1 - Load Patterns

Name	Type	Self Weight Multiplier
D	Dead	1
L	Live	0
Empuje Suelo	Other	0
Empuje Agua	Other	0
F IMPULSIVA	Other	0
F CONVECTIVA	Other	0

4.2 Applied Loads

4.2.1 Area Loads

Table 4.2 - Shell Loads - Uniform

Story	Label	Unique Name	Load Pattern	Direction	Load tonf/m ²
N+3.30	F1	13	D	Gravity	0.195
N+3.30	F6	14	D	Gravity	0.195
N+3.30	F261	299	D	Gravity	0.195
N+3.30	F262	300	D	Gravity	0.195
N+3.30	F264	277	D	Gravity	0.195
N+3.30	F265	278	D	Gravity	0.195
N+3.30	F266	279	D	Gravity	0.195
N+3.30	F267	280	D	Gravity	0.195
N+3.30	F268	281	D	Gravity	0.195
N+3.30	F269	282	D	Gravity	0.195
N+3.30	F270	283	D	Gravity	0.195
N+3.30	F271	284	D	Gravity	0.195
N+3.30	F272	286	D	Gravity	0.195
N+3.30	F275	288	D	Gravity	0.195
N+3.30	F276	289	D	Gravity	0.195
N+3.30	F277	290	D	Gravity	0.195
N+3.30	F278	291	D	Gravity	0.195
N+3.30	F279	292	D	Gravity	0.195
N+3.30	F280	293	D	Gravity	0.195
N+3.30	F281	294	D	Gravity	0.195
N+3.30	F282	295	D	Gravity	0.195
N+3.30	F283	296	D	Gravity	0.195
N+3.30	F284	297	D	Gravity	0.195
N+3.30	F287	301	D	Gravity	0.195
N+3.30	F294	287	D	Gravity	0.195
N+3.30	F295	298	D	Gravity	0.195
N+3.30	F8	8	D	Gravity	0.195
N+3.30	F10	10	D	Gravity	0.195
N+3.30	F1	13	L	Gravity	0.5
N+3.30	F6	14	L	Gravity	0.5
N+3.30	F261	299	L	Gravity	0.5

Table 4.2 - Shell Loads - Uniform (continued)

Story	Label	Unique Name	Load Pattern	Direction	Load tonf/m²
N+3.30	F262	300	L	Gravity	0.5
N+3.30	F264	277	L	Gravity	0.5
N+3.30	F265	278	L	Gravity	0.5
N+3.30	F266	279	L	Gravity	0.5
N+3.30	F267	280	L	Gravity	0.5
N+3.30	F268	281	L	Gravity	0.5
N+3.30	F269	282	L	Gravity	0.5
N+3.30	F270	283	L	Gravity	0.5
N+3.30	F271	284	L	Gravity	0.5
N+3.30	F272	286	L	Gravity	0.5
N+3.30	F275	288	L	Gravity	0.5
N+3.30	F276	289	L	Gravity	0.5
N+3.30	F277	290	L	Gravity	0.5
N+3.30	F278	291	L	Gravity	0.5
N+3.30	F279	292	L	Gravity	0.5
N+3.30	F280	293	L	Gravity	0.5
N+3.30	F281	294	L	Gravity	0.5
N+3.30	F282	295	L	Gravity	0.5
N+3.30	F283	296	L	Gravity	0.5
N+3.30	F284	297	L	Gravity	0.5
N+3.30	F287	301	L	Gravity	0.5
N+3.30	F294	287	L	Gravity	0.5
N+3.30	F295	298	L	Gravity	0.5
N+3.30	F8	8	L	Gravity	0.5
N+3.30	F10	10	L	Gravity	0.5
Base	F1	1	Empuje Agua	Gravity	3
Base	F6	6	Empuje Agua	Gravity	3
Base	F261	256	Empuje Agua	Gravity	3
Base	F262	257	Empuje Agua	Gravity	3
Base	F263	232	Empuje Agua	Gravity	3
Base	F264	233	Empuje Agua	Gravity	3
Base	F265	234	Empuje Agua	Gravity	3
Base	F266	235	Empuje Agua	Gravity	3
Base	F267	236	Empuje Agua	Gravity	3
Base	F268	237	Empuje Agua	Gravity	3
Base	F269	238	Empuje Agua	Gravity	3
Base	F270	239	Empuje Agua	Gravity	3
Base	F271	240	Empuje Agua	Gravity	3
Base	F272	241	Empuje Agua	Gravity	3
Base	F273	242	Empuje Agua	Gravity	3
Base	F274	243	Empuje Agua	Gravity	3
Base	F275	244	Empuje Agua	Gravity	3
Base	F276	245	Empuje Agua	Gravity	3
Base	F277	246	Empuje Agua	Gravity	3
Base	F278	247	Empuje Agua	Gravity	3
Base	F279	248	Empuje Agua	Gravity	3
Base	F280	249	Empuje Agua	Gravity	3
Base	F281	250	Empuje Agua	Gravity	3
Base	F282	251	Empuje Agua	Gravity	3

Table 4.2 - Shell Loads - Uniform (continued)

Story	Label	Unique Name	Load Pattern	Direction	Load tonf/m²
Base	F283	252	Empuje Agua	Gravity	3
Base	F284	253	Empuje Agua	Gravity	3
Base	F285	254	Empuje Agua	Gravity	3
Base	F286	255	Empuje Agua	Gravity	3
Base	F287	258	Empuje Agua	Gravity	3
Base	F288	259	Empuje Agua	Gravity	3

Table 4.3 - Shell Loads - Nonuniform

Story	Label	Unique Name	Load Pattern	Direction	A tonf/m²	B tonf/m²	C tonf/m²	D tonf/m²	Restriction
N+3.30	W12	32	D	Local-3	0	0	0	0	All
N+3.30	W13	33	D	Local-3	0	0	0	0	All
N+3.30	W71	92	D	Gravity	0	0	0	0	All
N+3.30	W72	93	D	Gravity	0	0	0	0	All
N+3.30	W73	94	D	Gravity	0	0	0	0	All
N+3.30	W74	95	D	Gravity	0	0	0	0	All
N+3.30	W75	96	D	Gravity	0	0	0	0	All
N+3.30	W76	97	D	Gravity	0	0	0	0	All
N+3.30	W77	98	D	Gravity	0	0	0	0	All
N+3.30	W78	99	D	Gravity	0	0	0	0	All
N+3.30	W79	100	D	Gravity	0	0	0	0	All
N+3.30	W80	101	D	Gravity	0	0	0	0	All
N+3.30	W81	102	D	Gravity	0	0	0	0	All
N+3.30	W82	103	D	Gravity	0	0	0	0	All
N+3.30	W83	104	D	Gravity	0	0	0	0	All
N+3.30	W138	159	D	Local-3	0	0	0	0	All
N+3.30	W139	160	D	Local-3	0	0	0	0	All
N+3.30	W140	161	D	Local-3	0	0	0	0	All
N+3.30	W141	162	D	Local-3	0	0	0	0	All
N+3.30	W154	264	D	Local-3	0	0	0	0	All
N+3.30	W155	265	D	Local-3	0	0	0	0	All
N+3.30	W156	266	D	Local-3	0	0	0	0	All
N+3.30	W157	267	D	Local-3	0	0	0	0	All
N+3.30	W158	268	D	Local-3	0	0	0	0	All
N+3.30	W159	269	D	Local-3	0	0	0	0	All
N+3.30	W160	270	D	Local-3	0	0	0	0	All
N+3.30	W161	271	D	Local-3	0	0	0	0	All
N+3.30	W162	272	D	Local-3	0	0	0	0	All
N+3.30	W163	273	D	Local-3	0	0	0	0	All
N+3.30	W164	274	D	Local-3	0	0	0	0	All
N+3.30	W165	275	D	Local-3	0	0	0	0	All
N+3.30	W180	320	D	Local-3	0	0	0	0	All
N+3.30	W181	321	D	Local-3	0	0	0	0	All
N+3.30	W182	322	D	Local-3	0	0	0	0	All
N+3.30	W183	323	D	Local-3	0	0	0	0	All
N+3.0m	W15	36	D	Gravity	0	0	0	0	All
N+3.0m	W16	37	D	Gravity	0	0	0	0	All
N+3.0m	W17	38	D	Gravity	0	0	0	0	All
N+3.0m	W18	39	D	Gravity	0	0	0	0	All

Table 4.3 - Shell Loads - Nonuniform (continued)

Story	Label	Unique Name	Load Pattern	Direction	A tonf/m ²	B tonf/m ²	C tonf/m ²	D tonf/m ²	Restriction
N+3.0m	W19	40	D	Gravity	0	0	0	0	All
N+3.0m	W20	41	D	Gravity	0	0	0	0	All
N+3.0m	W21	42	D	Gravity	0	0	0	0	All
N+3.0m	W22	43	D	Gravity	0	0	0	0	All
N+3.0m	W23	44	D	Gravity	0	0	0	0	All
N+3.0m	W24	45	D	Gravity	0	0	0	0	All
N+3.0m	W25	46	D	Gravity	0	0	0	0	All
N+3.0m	W26	47	D	Gravity	0	0	0	0	All
N+3.0m	W27	48	D	Gravity	0	0	0	0	All
N+3.0m	W28	49	D	Gravity	0	0	0	0	All
N+3.0m	W29	50	D	Gravity	0	0	0	0	All
N+3.0m	W30	51	D	Gravity	0	0	0	0	All
N+3.0m	W31	52	D	Gravity	0	0	0	0	All
N+3.0m	W32	53	D	Gravity	0	0	0	0	All
N+3.0m	W33	54	D	Gravity	0	0	0	0	All
N+3.0m	W34	55	D	Gravity	0	0	0	0	All
N+3.0m	W35	56	D	Gravity	0	0	0	0	All
N+3.0m	W36	57	D	Gravity	0	0	0	0	All
N+3.0m	W37	58	D	Gravity	0	0	0	0	All
N+3.0m	W38	59	D	Gravity	0	0	0	0	All
N+3.0m	W39	60	D	Gravity	0	0	0	0	All
N+3.0m	W40	61	D	Gravity	0	0	0	0	All
N+3.0m	W41	62	D	Gravity	0	0	0	0	All
N+3.0m	W42	63	D	Gravity	0	0	0	0	All
N+3.0m	W43	64	D	Gravity	0	0	0	0	All
N+3.0m	W44	65	D	Gravity	0	0	0	0	All
N+3.0m	W45	66	D	Gravity	0	0	0	0	All
N+3.0m	W46	67	D	Gravity	0	0	0	0	All
N+3.0m	W47	68	D	Gravity	0	0	0	0	All
N+3.0m	W48	69	D	Gravity	0	0	0	0	All
N+3.0m	W49	70	D	Gravity	0	0	0	0	All
N+3.0m	W50	71	D	Gravity	0	0	0	0	All
N+3.0m	W51	72	D	Gravity	0	0	0	0	All
N+3.0m	W52	73	D	Gravity	0	0	0	0	All
N+3.0m	W53	74	D	Gravity	0	0	0	0	All
N+3.0m	W54	75	D	Gravity	0	0	0	0	All
N+3.0m	W55	76	D	Gravity	0	0	0	0	All
N+3.0m	W56	77	D	Gravity	0	0	0	0	All
N+3.0m	W84	105	D	Local-3	0	0	0	0	All
N+3.0m	W85	106	D	Local-3	0	0	0	0	All
N+3.0m	W86	107	D	Local-3	0	0	0	0	All
N+3.0m	W87	108	D	Local-3	0	0	0	0	All
N+3.0m	W88	109	D	Local-3	0	0	0	0	All
N+3.0m	W89	110	D	Local-3	0	0	0	0	All
N+3.0m	W90	111	D	Local-3	0	0	0	0	All
N+3.0m	W91	112	D	Local-3	0	0	0	0	All
N+3.0m	W92	113	D	Local-3	0	0	0	0	All
N+3.0m	W93	114	D	Local-3	0	0	0	0	All
N+3.0m	W94	115	D	Local-3	0	0	0	0	All

Table 4.3 - Shell Loads - Nonuniform (continued)

Story	Label	Unique Name	Load Pattern	Direction	A tonf/m ²	B tonf/m ²	C tonf/m ²	D tonf/m ²	Restriction
N+3.0m	W95	116	D	Local-3	0	0	0	0	All
N+3.0m	W96	117	D	Local-3	0	0	0	0	All
N+3.0m	W97	118	D	Local-3	0	0	0	0	All
N+3.0m	W98	119	D	Local-3	0	0	0	0	All
N+3.0m	W99	120	D	Local-3	0	0	0	0	All
N+3.0m	W100	121	D	Local-3	0	0	0	0	All
N+3.0m	W101	122	D	Local-3	0	0	0	0	All
N+3.0m	W102	123	D	Local-3	0	0	0	0	All
N+3.0m	W103	124	D	Local-3	0	0	0	0	All
N+3.0m	W104	125	D	Local-3	0	0	0	0	All
N+3.0m	W105	126	D	Local-3	0	0	0	0	All
N+3.0m	W106	127	D	Local-3	0	0	0	0	All
N+3.0m	W107	128	D	Local-3	0	0	0	0	All
N+3.0m	W108	129	D	Local-3	0	0	0	0	All
N+3.0m	W109	130	D	Local-3	0	0	0	0	All
N+3.0m	W110	131	D	Local-3	0	0	0	0	All
N+3.0m	W111	132	D	Local-3	0	0	0	0	All
N+3.0m	W112	133	D	Local-3	0	0	0	0	All
N+3.0m	W113	134	D	Local-3	0	0	0	0	All
N+3.0m	W114	135	D	Local-3	0	0	0	0	All
N+3.0m	W115	136	D	Local-3	0	0	0	0	All
N+3.0m	W116	137	D	Local-3	0	0	0	0	All
N+3.0m	W117	138	D	Local-3	0	0	0	0	All
N+3.0m	W118	139	D	Local-3	0	0	0	0	All
N+3.0m	W119	140	D	Local-3	0	0	0	0	All
N+3.0m	W120	141	D	Local-3	0	0	0	0	All
N+3.0m	W121	142	D	Local-3	0	0	0	0	All
N+3.0m	W122	143	D	Local-3	0	0	0	0	All
N+3.0m	W123	144	D	Local-3	0	0	0	0	All
N+3.0m	W124	145	D	Local-3	0	0	0	0	All
N+3.0m	W125	146	D	Local-3	0	0	0	0	All
N+3.0m	W126	147	D	Local-3	0	0	0	0	All
N+3.0m	W127	148	D	Local-3	0	0	0	0	All
N+3.0m	W128	149	D	Local-3	0	0	0	0	All
N+3.0m	W129	150	D	Local-3	0	0	0	0	All
N+3.0m	W130	151	D	Local-3	0	0	0	0	All
N+3.0m	W131	152	D	Local-3	0	0	0	0	All
N+3.0m	W132	153	D	Local-3	0	0	0	0	All
N+3.0m	W133	154	D	Local-3	0	0	0	0	All
N+3.0m	W134	155	D	Local-3	0	0	0	0	All
N+3.0m	W135	156	D	Local-3	0	0	0	0	All
N+3.0m	W136	157	D	Local-3	0	0	0	0	All
N+3.0m	W137	158	D	Local-3	0	0	0	0	All
N+3.0m	W142	163	D	Local-3	0	0	0	0	All
N+3.0m	W143	164	D	Local-3	0	0	0	0	All
N+3.0m	W144	165	D	Local-3	0	0	0	0	All
N+3.0m	W145	166	D	Local-3	0	0	0	0	All
N+3.0m	W146	167	D	Local-3	0	0	0	0	All
N+3.0m	W147	168	D	Local-3	0	0	0	0	All

Table 4.3 - Shell Loads - Nonuniform (continued)

Story	Label	Unique Name	Load Pattern	Direction	A tonf/m³	B tonf/m³	C tonf/m³	D tonf/m²	Restriction
N+3.0m	W148	169	D	Local-3	0	0	0	0	All
N+3.0m	W149	170	D	Local-3	0	0	0	0	All
N+3.0m	W150	171	D	Local-3	0	0	0	0	All
N+3.0m	W151	172	D	Local-3	0	0	0	0	All
N+3.0m	W152	173	D	Local-3	0	0	0	0	All
N+3.0m	W153	174	D	Local-3	0	0	0	0	All
N+3.0m	W168	308	D	Local-3	0	0	0	0	All
N+3.0m	W169	309	D	Local-3	0	0	0	0	All
N+3.0m	W170	310	D	Local-3	0	0	0	0	All
N+3.0m	W171	311	D	Local-3	0	0	0	0	All
N+3.0m	W172	312	D	Local-3	0	0	0	0	All
N+3.0m	W173	313	D	Local-3	0	0	0	0	All
N+3.0m	W174	314	D	Local-3	0	0	0	0	All
N+3.0m	W175	315	D	Local-3	0	0	0	0	All
N+3.0m	W176	316	D	Local-3	0	0	0	0	All
N+3.0m	W177	317	D	Local-3	0	0	0	0	All
N+3.0m	W178	318	D	Local-3	0	0	0	0	All
N+3.0m	W179	319	D	Local-3	0	0	0	0	All
N+3.30	W138	159	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.30	W139	160	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.30	W140	161	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.30	W141	162	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.30	W154	264	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.30	W155	265	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.30	W156	266	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.30	W157	267	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.30	W158	268	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.30	W159	269	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.30	W160	270	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.30	W161	271	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.30	W162	272	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.30	W163	273	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.30	W164	274	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.30	W165	275	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W84	105	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W85	106	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W86	107	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W87	108	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W88	109	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W89	110	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W90	111	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W91	112	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W92	113	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W93	114	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W94	115	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W95	116	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W96	117	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W97	118	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W98	119	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All

Story	Label	Unique Name	Load Pattern	Direction	A tonf/m³	B tonf/m³	C tonf/m³	D tonf/m²	Restriction
N+3.0m	W99	120	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W100	121	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W101	122	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W102	123	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W103	124	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W104	125	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W105	126	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W106	127	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W107	128	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W108	129	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W109	130	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W110	131	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W111	132	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W112	133	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W113	134	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W114	135	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W115	136	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W116	137	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W117	138	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W118	139	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W119	140	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W120	141	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W121	142	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W122	143	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W123	144	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W124	145	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W125	146	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W126	147	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W127	148	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W128	149	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W129	150	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W130	151	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W131	152	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W132	153	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W133	154	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W134	155	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W135	156	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W136	157	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.0m	W137	158	Empuje Suelo	Local-3	0	0	-0.7818	3.12	All
N+3.30	W71	92	Empuje Agua	Local-3	0	0	-1	3	All
N+3.30	W72	93	Empuje Agua	Local-3	0	0	-1	3	All
N+3.30	W73	94	Empuje Agua	Local-3	0	0	-1	3	All
N+3.30	W74	95	Empuje Agua	Local-3	0	0	-1	3	All
N+3.30	W75	96	Empuje Agua	Local-3	0	0	-1	3	All
N+3.30	W76	97	Empuje Agua	Local-3	0	0	-1	3	All
N+3.30	W77	98	Empuje Agua	Local-3	0	0	-1	3	All
N+3.30	W78	99	Empuje Agua	Local-3	0	0	-1	3	All
N+3.30	W79	100	Empuje Agua	Local-3	0	0	-1	3	All
N+3.30	W80	101	Empuje Agua	Local-3	0	0	-1	3	All

Table 4.3 - Shell Loads - Nonuniform (continued)

Story	Label	Unique Name	Load Pattern	Direction	A tonf/m ²	B tonf/m ²	C tonf/m ²	D tonf/m ²	Restriction
N+3.30	W81	102	Empuje Agua	Local-3	0	0	-1	3	All
N+3.30	W82	103	Empuje Agua	Local-3	0	0	-1	3	All
N+3.30	W83	104	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W15	36	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W16	37	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W17	38	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W18	39	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W19	40	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W20	41	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W21	42	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W22	43	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W23	44	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W24	45	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W25	46	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W26	47	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W27	48	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W28	49	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W29	50	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W30	51	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W31	52	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W32	53	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W33	54	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W34	55	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W35	56	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W36	57	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W37	58	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W38	59	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W39	60	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W40	61	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W41	62	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W42	63	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W43	64	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W44	65	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W45	66	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W46	67	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W47	68	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W48	69	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W49	70	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W50	71	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W51	72	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W52	73	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W53	74	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W54	75	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W55	76	Empuje Agua	Local-3	0	0	-1	3	All
N+3.0m	W56	77	Empuje Agua	Local-3	0	0	-1	3	All
N+3.30	W71	92	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.30	W72	93	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.30	W73	94	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.30	W74	95	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All

Table 4.3 - Shell Loads - Nonuniform (continued)

Story	Label	Unique Name	Load Pattern	Direction	A tonf/m ²	B tonf/m ²	C tonf/m ²	D tonf/m ²	Restriction
N+3.30	W75	96	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.30	W76	97	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.30	W77	98	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.30	W78	99	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.30	W79	100	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.30	W80	101	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.30	W81	102	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.30	W82	103	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.30	W83	104	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W15	36	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W16	37	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W17	38	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W18	39	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W19	40	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W20	41	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W21	42	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W22	43	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W23	44	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W24	45	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W25	46	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W26	47	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W27	48	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W28	49	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W29	50	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W30	51	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W31	52	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W32	53	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W33	54	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W34	55	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W35	56	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W36	57	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W37	58	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W38	59	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W39	60	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W40	61	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W41	62	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W42	63	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W43	64	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W44	65	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W45	66	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W46	67	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W47	68	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W48	69	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W49	70	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W50	71	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W51	72	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W52	73	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W53	74	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W54	75	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All

Table 4.3 - Shell Loads - Nonuniform (continued)

Story	Label	Unique Name	Load Pattern	Direction	A tonf/m ²	B tonf/m ²	C tonf/m ²	D tonf/m ²	Restriction
N+3.0m	W55	76	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W56	77	F IMPULSIVA	Local-3	0	0	-0.78	2.54	All
N+3.0m	W71	92	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W72	93	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W73	94	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W74	95	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W75	96	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W76	97	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W77	98	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W78	99	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W79	100	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W80	101	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W81	102	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W82	103	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W83	104	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W15	36	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W16	37	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W17	38	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W18	39	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W19	40	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W20	41	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W21	42	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W22	43	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W23	44	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W24	45	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W25	46	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W26	47	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W27	48	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W28	49	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W29	50	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W30	51	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W31	52	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W32	53	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W33	54	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W34	55	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W35	56	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W36	57	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W37	58	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W38	59	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W39	60	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W40	61	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W41	62	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W42	63	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W43	64	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W44	65	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W45	66	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W46	67	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W47	68	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W48	69	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All

Table 4.3 - Shell Loads - Nonuniform (continued)

Story	Label	Unique Name	Load Pattern	Direction	A tonf/m ²	B tonf/m ²	C tonf/m ²	D tonf/m ²	Restriction
N+3.0m	W49	70	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W50	71	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W51	72	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W52	73	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W53	74	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W54	75	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W55	76	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All
N+3.0m	W56	77	F CONVECTIVA	Local-3	0	0	-0.05	0.69	All

4.3 Load Cases

Table 4.4 - Load Cases - Summary

Name	Type
DL	Linear Static
Live	Linear Static
Empuje Suelo	Linear Static
Empuje Agua	Linear Static
F IMPULSIVA	Linear Static
F CONVECTIVA	Linear Static

Table 4.5 - Load Cases - Static - Linear

Name	Stiffness From	Mass Source	Load Type	Load Name	Scale Factor	Design Load Type
DL	Preset P-delta	MsSrc1	Load Pattern	D	1	Other
Live	Preset P-delta	MsSrc1	Load Pattern	L	0.5	Other
Empuje Suelo	Preset P-delta	MsSrc1	Load Pattern	Empuje Suelo	1	Program Determined
Empuje Agua	Preset P-delta	MsSrc1	Load Pattern	Empuje Agua	1	Program Determined
F IMPULSIVA	Preset P-delta	MsSrc1	Load Pattern	F IMPULSIVA	1	Program Determined
F CONVECTIVA	Preset P-delta	MsSrc1	Load Pattern	F CONVECTIVA	1	Program Determined

Table 4.6 - Load Cases - Modal - Eigen

Name	Stiffness From	Mass Source	Max Number Modes	Min Number Modes	Frequency Shift cyc/sec	Cutoff Frequency cyc/sec	Convergence Tolerance	Auto Shift?	Design Load Type
Modal	Preset P-delta	MsSrc1	21	1	0	0	0	Yes	Program Determined

Table 4.7 - P-delta Options

Automation Method
None

4.4 Load Combinations

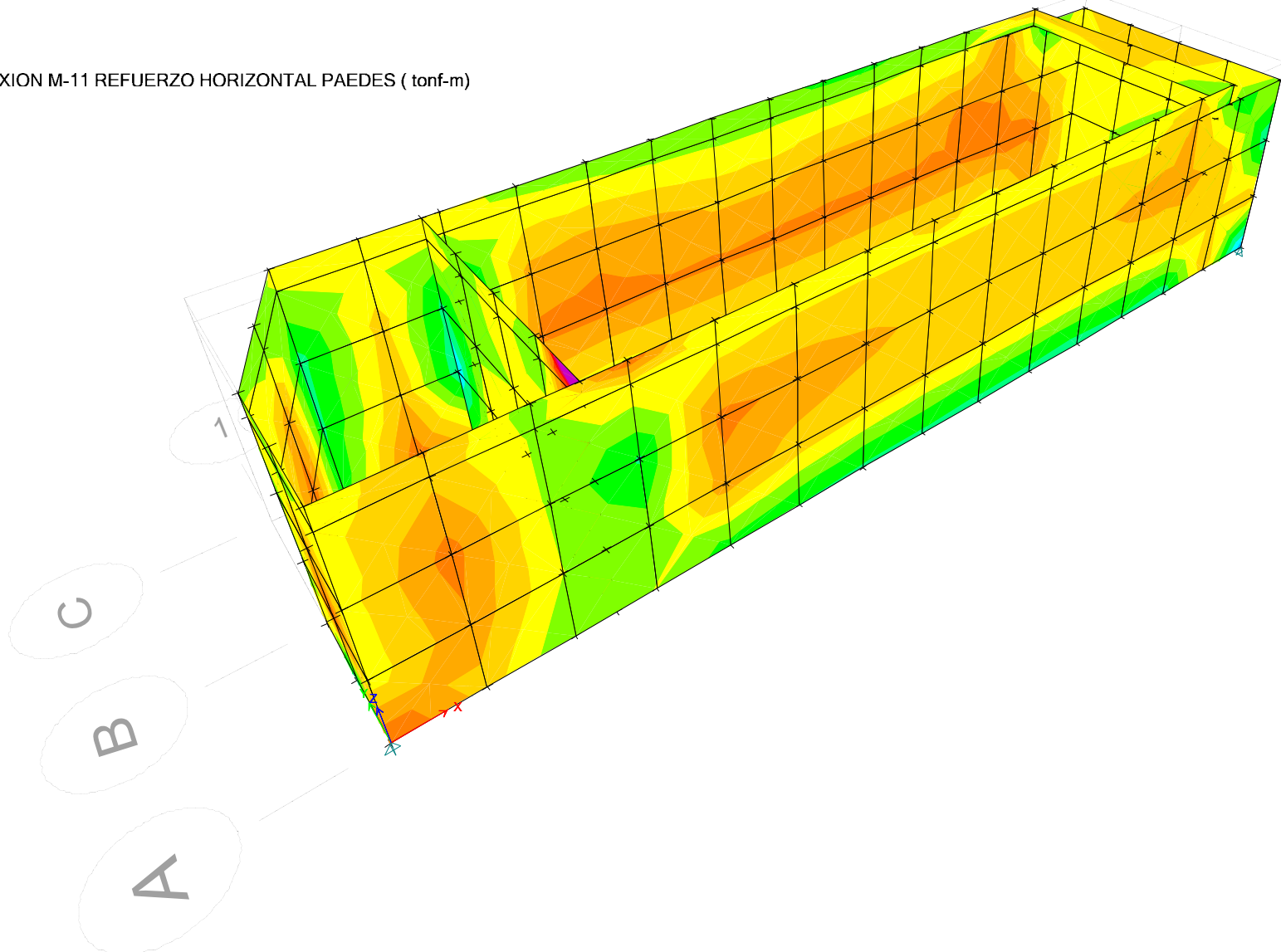
Table 4.8 - Load Combinations

Name	Load Case/Combo	Scale Factor	Type	Auto
1.4D+1.4H+1.4F	DL	1.4	Linear Add	No
1.4D+1.4H+1.4F	Empuje Suelo	1.4		No
1.4D+1.4H+1.4F	Empuje Agua	1.4		No

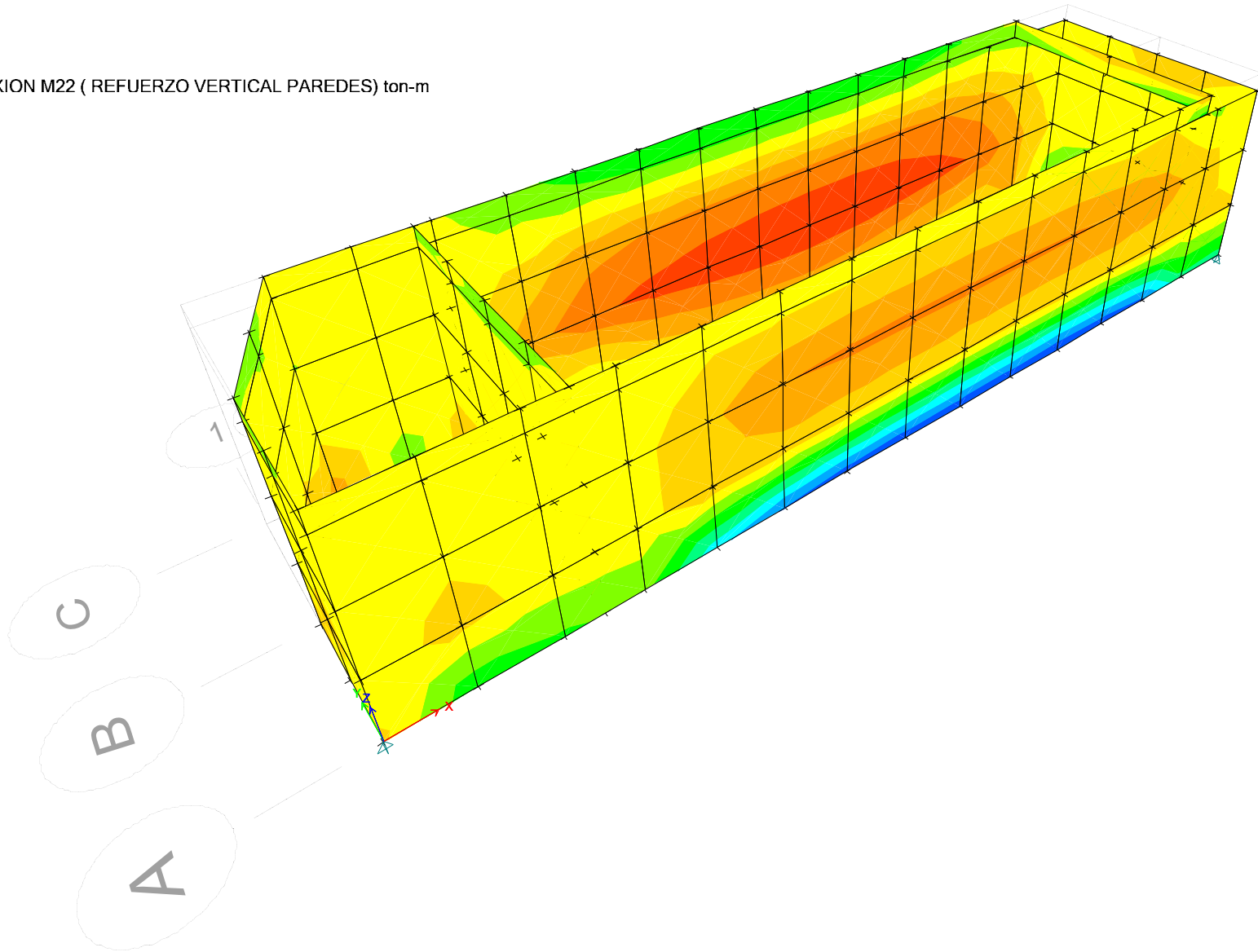
Table 4.8 - Load Combinations (continued)

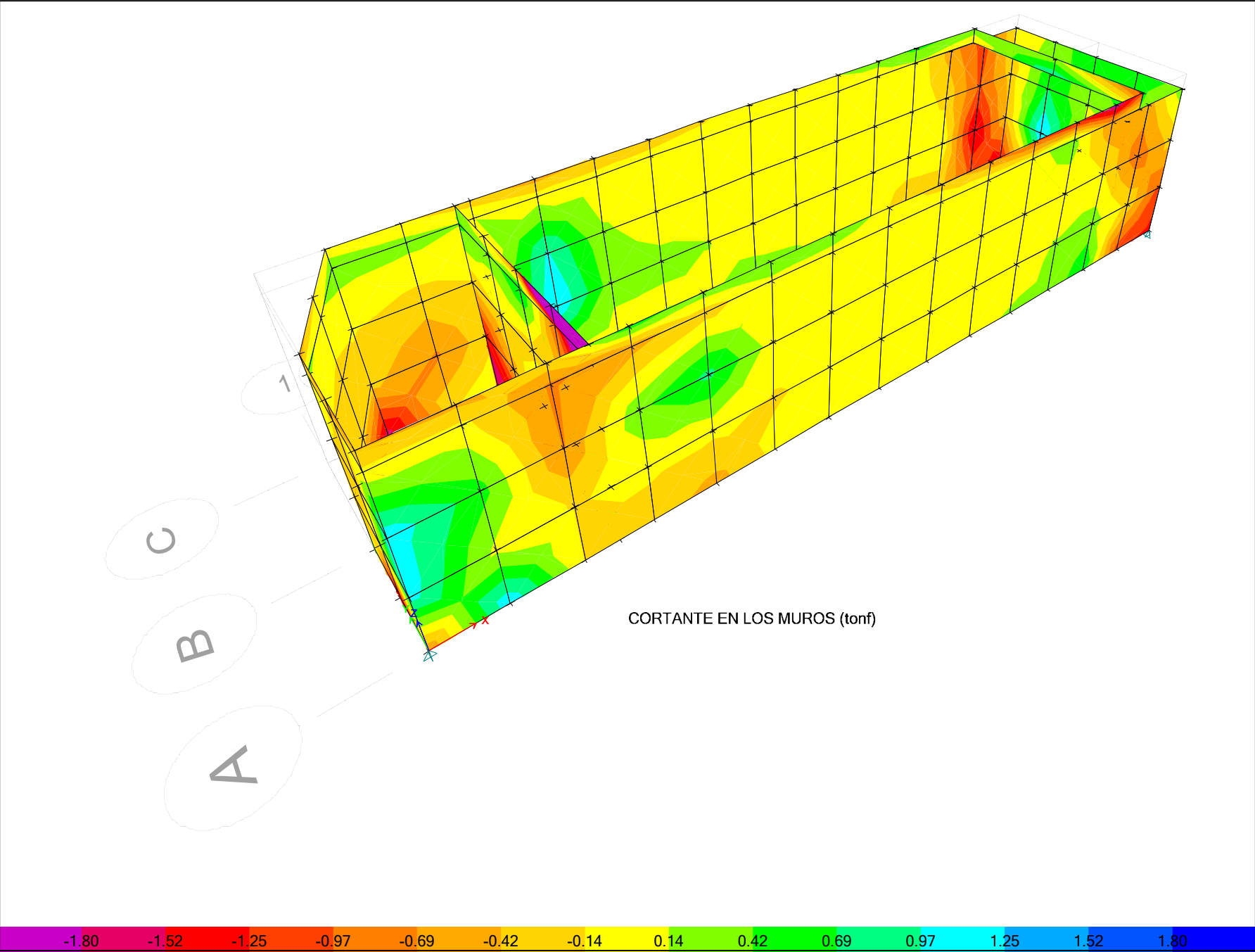
Name	Load Case/Combo	Scale Factor	Type	Auto
1.2D+1.2F+1.6H+1.6L	DL	1.2	Linear Add	No
1.2D+1.2F+1.6H+1.6L	Live	1.6		No
1.2D+1.2F+1.6H+1.6L	Empuje Agua	1.2		No
1.2D+1.2F+1.6H+1.6L	Empuje Suelo	1.6		No
D+L+H+F	DL	1	Linear Add	No
D+L+H+F	Live	1		No
D+L+H+F	Empuje Suelo	1		No
D+L+H+F	Empuje Agua	1		No
1.2D+1.2F++1.2H+1.0L+1.0E	DL	1.2	Linear Add	No
1.2D+1.2F++1.2H+1.0L+1.0E	Live	1		No
1.2D+1.2F++1.2H+1.0L+1.0E	F IMPULSIVA	1		No
1.2D+1.2F++1.2H+1.0L+1.0E	F CONVECTIVA	1		No
1.2D+1.2F++1.2H+1.0L+1.0E	Empuje Agua	1.2		No
1.2D+1.2F++1.2H+1.0L+1.0E	Empuje Suelo	1.2		No
ENVE DISEÑO	1.4D+1.4H+1.4F	1	Envelope	No
ENVE DISEÑO	1.2D+1.2F+1.6H+1.6L	1		No
ENVE DISEÑO	1.2D+1.2F++1.2H+1.0L+1.0E	1		No
ENVE DISEÑO	DL	1		No
0.9D+1.2F+1.6H+E	DL	0.9	Linear Add	No
0.9D+1.2F+1.6H+E	Empuje Suelo	1.6		No
0.9D+1.2F+1.6H+E	F IMPULSIVA	1		No
0.9D+1.2F+1.6H+E	F CONVECTIVA	1		No
0.9D+1.2F+1.6H+E	Empuje Agua	1.2		No

FLEXION M-11 REFUERZO HORIZONTAL PAEDES (tonf-m)

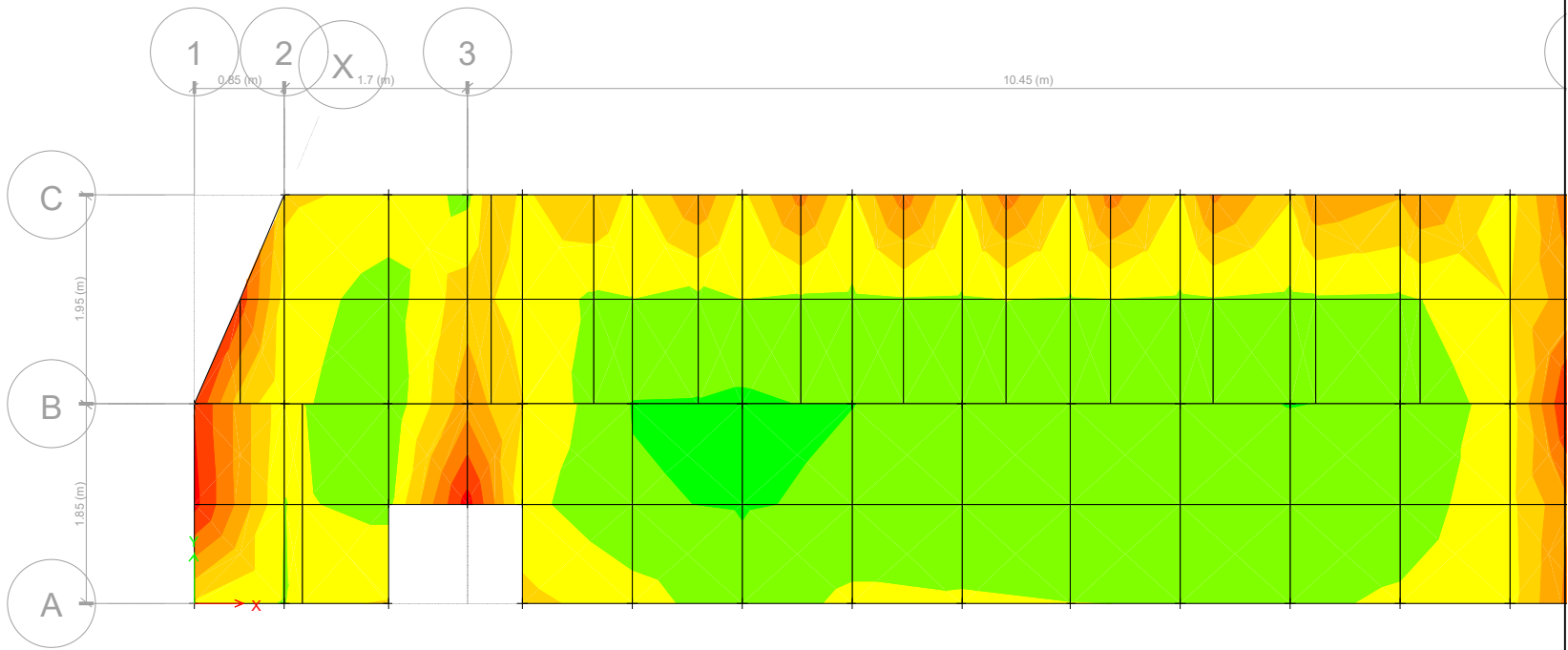


FLEXION M22 (REFUERZO VERTICAL PAREDES) ton-m

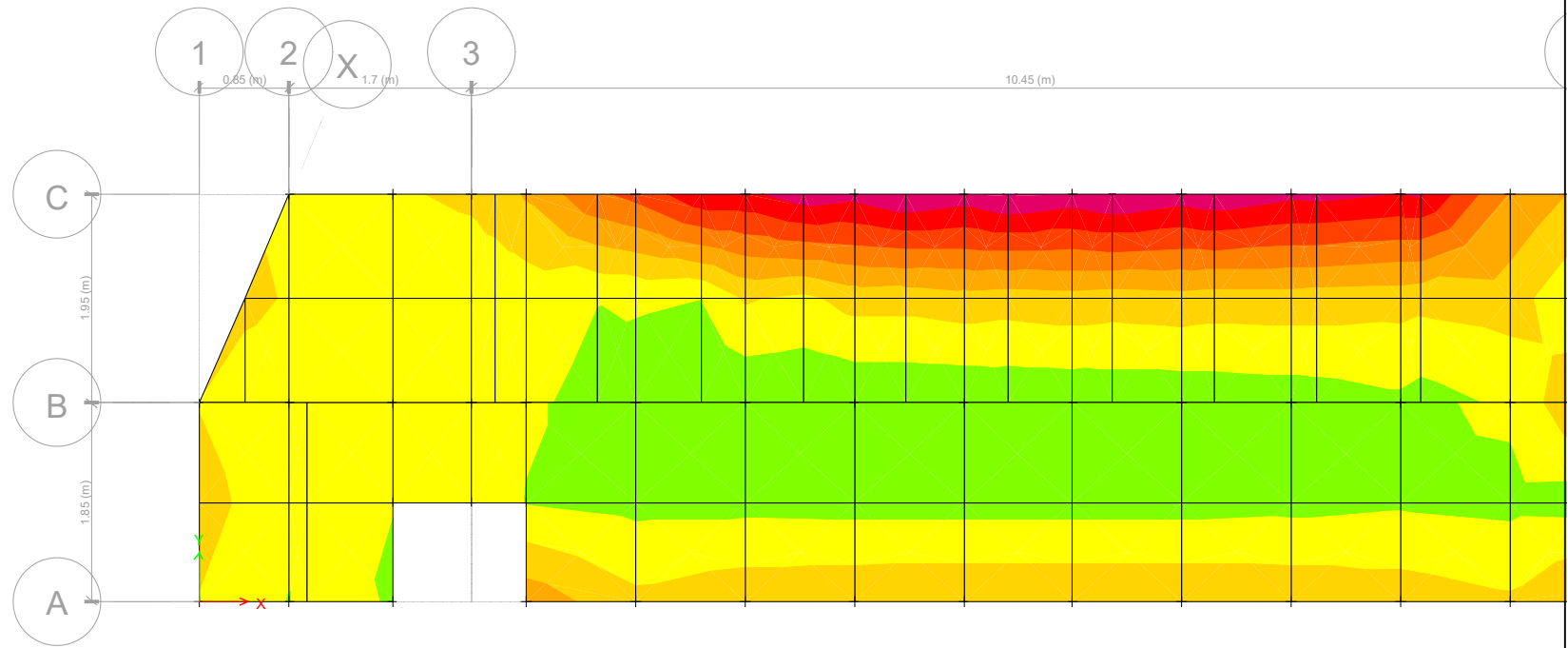




FLEXION M-11 TAPA DE TANQUE (tonf-m)

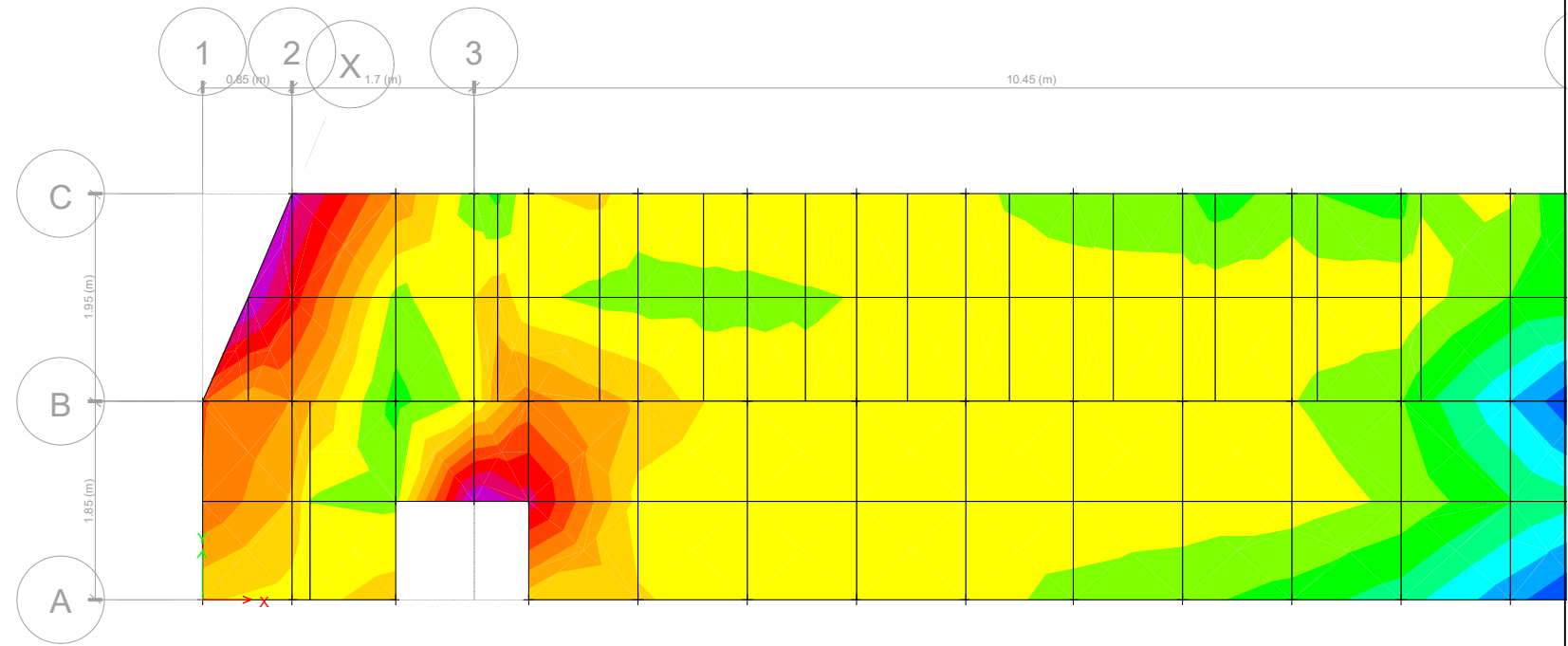


FLEXION M2-2 TAPA TANQUE (tonf-m)



JARDINST_TANQUE_sep05_18.rvt - Tank Deck - N+3.30 - Z = 3.3 (m) Resultant M22 Diagram (ENVE DISEÑO) [tonf-m/m]

CORTANTE EN LA PLACA (tonf)



DISEÑO DE TANQUE

Proyecto: JARDIN INFANTIL SANTA TERESITA

Dimensiones Tanque

B (m)	L (m)	H (m)
3.80	12.00	3.55

DISEÑO TAPA

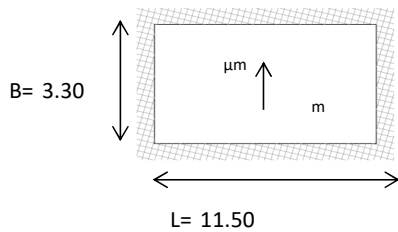
1. Evaluacion de Cargas

Espesor de la placa (m): 0.25

Acabados (t/m²): 0.2

CM (t/m ²)	CV (t/m ²)	CU (t/m ²)
0.8	0.5	1.76

2. Diseño sin continuidad en el perímetro



t(m)=	0.25
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DISEÑO DE LA LOSA

		Kg/m ²	Materiales	(kg/cm ²)		
C. MUERTA =	800.0	Kg/m ²	f'c =	280	b (cm) =	100
C. VIVA =	500.0	Kg/m ²	f _y =	4200	d (cm) =	18
C. ULTIMA =	1760.0	Kg/m ²				

Diseño a Flexión

	M _u (kg-m/m)	R (kg/cm ²)	k	ρ	A _s (cm ² /m)
M-	1916.64	0.066	0.07	0.0018	3.18
M+	2395.80	0.082	0.07	0.0022	3.99

Chequeo Cortante

v _u (kg/m)	φV _c (kg/m)	Check
2904.00	11972.60	Ok

ρ _{mín}	A _{s,mín} (cm ² /m)
0.005	6.25

c/cara

Ref #4@	0.2032
---------	--------

DISEÑO PLACA DE FONDO

1. Evaluacion de Cargas

Espesor de la placa (m): 0.25
Muros (t/m2): 1.228

CM (t/m2)	CV (t/m2)	FC	CU (t/m2)
2.428	0.25	1.3	3.48

Qufondo/Qu tapa 1.98

2. Cálculo del factor Sd

fs (MPa)	fs _{min} (MPa)	Sd	b (cm)	r (cm)	d (cm)
179	170	1.62	100	7	17.5

4. Momentos de diseño

m (T-m/m)	k (kg/cm2)	ρ	As(cm ² /m)		
6.16	22.341	0.00560	9.79	Ref #5@	0.204240

ρ _{min}	As _{min} (cm ² /m)		
0.005	6.25	c/cara	Ref #4@ 0.2032

DISEÑO MURO

Espesor muro (m)= 0.25

1. Prueba de Hermeticidad

γ_{H_2O} (T/m ³)	h (m)	P' (T/m ²)	FC	P'u (T/m ²)
1.00	3.05	3.05	1.4	6.78176471

Cálculo del factor Sd

b (cm)	r (cm)	d (cm)
100	5	19.5

fs (MPa)	fs _{min} (MPa)	Sd	Mu (T-m/m)	Vu (T)	φVc (T)
130	170	1.59	4.05	6.89	12.97

k (kg/cm ²)	ρ	As(cm ² /m)	
11.83	0.00289	5.63	Ref #5@ 0.354978

2. Estado de servicio (tanque vacío)

γ_s (T/m ³)	h (m)	Ka	P (T/m ²)	q (T/m ²)
2.02	3.30	0.36	2.40	1.5

FC	Pu (T/m ²)	qu (T/m ²)
1.6	6.48	1.46

Cálculo del factor Sd

fs (MPa)	fs _{min} (MPa)	Sd	Mu (T-m/m)	Vu (T)	φVc (T)
129.9	140	1.69	5.84	9.06	12.97

k (kg/cm ²)	ρ	As(cm ² /m)	
17.06	0.00422	8.23	Ref #5@ 0.243039

ρ _{min}	As _{min} (cm ² /m)	
0.005	6.25	c/cara
		Ref #5@ 0.320000