HOSPITAL CHAPARRAL

PROYECTO No. 515

MEMORIAS DE CÁLCULO

TOMO UNICO



DISEÑO:
ING. DIEGO ORLANDO RUBIO

BOGOTA, FEBRERO DE 2021


REPUBLICA DE COLOMBIA
CONSEJO PROFESIONAL NACIONAL DE INGENIERIA
COPNIA
MATRICULA No. 2520211420 CND
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DE FECHA 16/12/2004
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UNIVERSIDAD DE SANTANDER
PRESIDENTE DEL CONSEJO

HOSPITAL CHAPARRAL

BLOQUE 1

ANÁLISIS SÍSMICO

DESCRIPCION GENERAL DEL PROYECTO ESTRUCTURAL

DATOS GENERALES:

NOMBRE DEL PROYECTO:	**HOSPITAL SAN JUAN BAUTISTA (BLOQUE 1)**
CIUDAD:	**CHAPARRAL**
CALCULO:	**D.O.R**
REVISO:	**D.O.R**
FECHA:	**25/11/2020**
OBSERVACIONES:	
LOCALIZACION:	**CHAPARRAL TOLIMA**
SISTEMA ESTRUCTURAL:	**Pórticos de concreto**
CAPACIDAD DE DISIPACION:	**DES**
NUMERO DE PISOS	**3**

DESCRIPCION DEL PROYECTO:

El proyecto arquitectónico consta de 3 niveles, el cual estara destinado para uso del Hospital San Juan Bautista del municipio de Chaparral Tolima.

El sistema estructural utilizado para resistir cargas verticales y laterales (sísmicas), es el de pórticos de concreto reforzado, con placa de entrepiso de 50 cm de espesor aligerada y armada en una dirección, cuyo uso esta definido en las Normas Colombianas de construcciones sismoresistentes- NSR-10.

La cimentación consiste en zapatas aisladas, según recomendación del estudio de suelos de la firma Laboratorio de suelos y pavimentos GAIA

DESCRIPCION DEL PROGRAMA DE COMPUTADOR:

El programa utilizado para el procesamiento del edificio es ETABS Versión 9.2 desarrollado por la compañía Computers and structures inc con amplio recorrido de más de 40 años en el desarrollo de software de análisis estructural. Este programa utiliza el método matricial para la solución de la estructura y el modelo utilizado es tridimensional con diafragma rígido. El análisis sísmico desarrollado es el método modal elástico. Los muros fueron modelados mediante los elementos tipo Shell y las placas mediante los elementos tipo membrane para que estas no tomen rigidez a las cargas horizontales. Las vigas y columnas fueron modelados mediante el elemento tipo frame.

PARAMETROS SISMICOS:

Metodo de Analisis sísmico			
Método utilizado:	**2**	ANALISIS MODAL DINAMICO	
Ubicación de la estructura		=	**CHAPARRAL**
Grupo de uso		=	IV
PARAMETROS DE LA NSR-10			
Zona de Amenaza Sísmica		=	Alta
Coef. de aceleracion pico efectiva, Aa		=	**0.25**
Coef. de velocidad pico efectiva, Av		=	**0.20**
Perfil del Suelo		=	**D**
Coeficiente Fa		=	1.30
Coeficiente Fv		=	2.00
Grupo de uso		=	**IV**
Coeficiente de importancia		=	1.5
UMBRAL DE DAÑO			
Coeficiente de aceleración pico (Ad)		=	**0.06**
Coeficiente de sitio para umbral de daño		=	2.5

ESPECIFICACIONES :

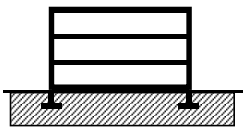
Concreto f'c	**280 kgf/cm2**	→	4000 psi	**VIGAS**
	280 kgf/cm2	→	4000 psi	**COLUMNAS**
	210 kgf/cm2	→	3000 psi	**CIMENTACION**
Acero fy	**4200 kgf/cm2**	→	60000 psi	ϕ >= 3/8"
	2400 kgf/cm2	→	34286 psi	ϕ < 3/8"

NORMAS :

Se siguieron las recomendaciones dadas por el reglamento Colombianos de Construcción Sismo Resistente NSR-10 (Ley 400 de 1997 (Modificada Ley 1229 de 2008). Decreto 926 de 2010) y sus decretos complementarios.

CALCULO DE ALTURAS Y NIVELES DE LA ESTRUCTURA

NIVEL		H libre	h Placa	Alt. Total piso	NIVEL
PISO	CUB	3.80	0.40	4.20	4.43
PISO	2	3.90	0.50	4.40	0.23
PISO	1	3.80	0.50	4.30	-4.18
NIVEL DE ARRANQUE		-8.48			



CALCULO DE DENSIDADES

MATERIALES

Vigas

γ Concreto=	2.4	TN/m^3

Columnas

γ Concreto=	2.4	TN/m^3

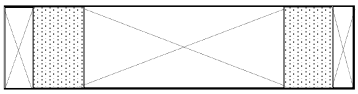
NIVEL		Vol. Vigas m³	Vol. Columnas m³	Area Placa m²	*r Vigas* TN/m²	*r Columnas* TN/m²
PISO	CUB	259.12	118.15	2892.0	0.215	0.089
PISO	2	291.80	240.39	2828.7	0.248	0.181
PISO	1	103.76	128.49	1027.4	0.242	0.265

CALCULO DE PESO DE MUROS DIVISORIOS

PISO	Area de Muros m2	γ Mamposteria Tn/m3	Altura libre m	Peso muros Tn	Area placa m2	Densidad muros Tn/m2	Densidad muros adoptada
PISO2	151.0	1.60	3.9	930	2828.7	0.329	0.330
PISO1	70.0	1.60	3.7	409	1027.4	0.398	0.410

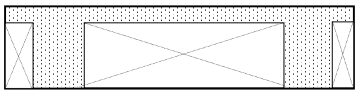
AVALUO DE CARGA DE PLACA

CORTE TIPICO DE CUBIERTA



Entramado de vigas y cubierta liviana

CORTE TIPICO DE PLACA



Placa Aligerada con Torta Superior

DATOS GENERALES		
γ Concreto	2.4	Tn/m3
γ Mortero acabados	2.0	Tn/m3
Pendiente Cubierta	6.9	°
Pendiente Cubierta	12.1	
CV cub inclinada	0.050	Tn/m2
Cgranizo		Tn/m2

CONVENCIONES	
CM:	Carga Muerta
CV:	Carga Viva
CT:	Carga Real Total aplicada a la placa (CM+CV)
CU:	Carga Ultima para diseño de Viguetas (1.2CM+1.6CV)
CR:	Carga real a cimentacion (CT+ρ_{Vigas}+$\rho_{Columnas}$)
CS:	Carga de sismo (CM+ρ_{Vigas}+$\rho_{Columnas}$)

Cargas especiales			
Cv placas cubierta=	0.18	Tn/m2	Zonas sin acceso solo a mantenimiento
Wacabados cubierta=	0.040	Tn/m2	Paneles solares
Wacabados cubierta=	0.060	Tn/m2	Intalaciones (electricas, hidraulicas, mecanicas)
Wacabados cubierta=	0.050	Tn/m2	Cielo raso

NIVEL		h(m)	Torta Sup.	Torta Inf.	e Viguetas (m)	Sep Viguetas (m)	W_{placa} Tn/m2	$W_{viguetas}$ Tn/m2	$W_{caseton}$ Tn/m2	$W_{viguetas\ metalica}$ Tn/m2	$e_{Acabados}$ (m)	$W_{acabados}$ Tn/m2	W_{muros} Tn/m2	$W_{cubierta}$ Tn/m2	$W_{estr.\ metalica}$ Tn/m2	W_{otros} Tn/m2	CM Tn/m2	CV Tn/m2	ρ_{Vigas} (tn/m2)	$\rho_{Columnas}$ (tn/m2)	$\rho_{Vigas+Columnas}$ (tn/m2)	CU Tn/m2	CR Tn/m2	Piso Restringido?	CS Tn/m2
PISO	CUB	0.40	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00		0.150	0.100	0.015	0.030	0.000	0.295	0.050	0.215	0.089	0.304	0.00	0.649	No	0.60
PISO	2	0.50	0.12	0.00	0.20	2.10	0.288	0.08	0.00	0.00	0.06	0.120	0.330	0.000	0.000	0.000	0.817	0.500	0.248	0.181	0.428	4.10	1.746	No	1.25
PISO	1	0.50	0.12	0.00	0.20	2.10	0.288	0.08	0.00	0.00	0.06	0.120	0.410	0.000	0.000	0.000	0.897	0.500	0.242	0.265	0.508	4.32	1.905	No	1.40

MASAS AFERENTES EN CUBIERTA POR COLUMNA

CM=	0.295 Tn/m2
CV=	0.05 Tn/m2

COLUMNA	AREA (m2)	MASA	NIVEL
A-12	4.4	0.15	PISO2
B-12	7.3	0.25	PISO2
C-12	7.2	0.25	PISO2
D-12	7.3	0.25	PISO2
E-12	3.9	0.14	PISO2
A-13	25.2	0.89	PISO2
B-13	40.5	1.42	PISO2
C-13	39.0	1.37	PISO2
D-13	39.0	1.37	PISO2
E-13	21.1	0.74	PISO2
A-14	28.4	1.00	PISO2
B-14	41.2	1.45	PISO2
C-14	33.4	1.17	PISO2
D-14	33.4	1.17	PISO2
E-14	18.0	0.63	PISO2
A-15	20.1	0.71	PISO2
B-15	33.2	1.17	PISO2
C-15	33.2	1.17	PISO2
D-15	33.2	1.17	PISO2
E-15	17.9	0.63	PISO2
A-4	32.7	1.15	CUB
B-4	34.1	1.20	CUB
C-4	34.1	1.20	CUB
D-4	34.1	1.20	CUB
E-4	34.1	1.20	CUB
F-4	34.1	1.20	CUB
G-4	20.7	0.73	CUB
A-5	48.9	1.72	CUB
B-5	43.1	1.52	CUB
C-5	39.0	1.37	CUB
D-5	39.0	1.37	CUB
E-5	39.0	1.37	CUB
F-5	47.3	1.66	CUB
G-5	30.9	1.09	CUB
A-6	48.9	1.72	CUB
B-6	43.1	1.52	CUB
C-6	39.0	1.37	CUB
D-6	39.0	1.37	CUB
E-6	39.0	1.37	CUB
F-6	47.3	1.66	CUB
G-6	30.9	1.09	CUB
A-7	32.8	1.15	CUB
B-7	34.2	1.20	CUB
C-7	34.2	1.20	CUB
D-7	34.2	1.20	CUB
E-7	34.2	1.20	CUB
F-7	34.2	1.20	CUB
G-7	20.7	0.73	CUB
A-8	20.7	0.73	CUB
B-8	34.1	1.20	CUB

C-8	34.1	1.20	CUB
D-8	34.1	1.20	CUB
E-8	34.1	1.20	CUB
F-8	34.1	1.20	CUB
G-8	20.7	0.73	CUB
A-9	30.9	1.09	CUB
B-9	49.7	1.75	CUB
C-9	44.6	1.57	CUB
D-9	44.6	1.57	CUB
E-9	44.6	1.57	CUB
F-9	49.5	1.74	CUB
G-9	30.9	1.09	CUB
A-10	30.9	1.09	CUB
B-10	49.8	1.75	CUB
C-10	44.8	1.58	CUB
D-10	44.8	1.58	CUB
E-10	44.8	1.58	CUB
F-10	49.8	1.75	CUB
G-10	31.0	1.09	CUB
A-11	20.6	0.72	CUB
B-11	33.9	1.19	CUB
C-11	33.9	1.19	CUB
D-11	33.9	1.19	CUB
E-11	33.9	1.19	CUB
F-11	33.9	1.19	CUB
G-11	20.6	0.72	CUB
E-12	17.1	0.60	CUB
F-12	31.6	1.11	CUB
G-12	19.2	0.67	CUB
E-13	20.5	0.72	CUB
F-13	40.1	1.41	CUB
G-13	25.2	0.89	CUB
E-14	18.6	0.65	CUB
F-14	41.6	1.46	CUB
G-14	28.4	1.00	CUB
E-15	17.8	0.63	CUB
F-15	33.0	1.16	CUB
G-15	20.0	0.70	CUB

CARGAS EN VIGAS DE CUBIERTA

VIGA	L. AFERETE	CM (Tn/m2)	CV (Tn/m2)
B845, B1896, B1905, B1906, B1907, B1908	7.7	2.26	0.38
B822, B1886, B821, B1889, B1890, B1903, B818, B1894, B1893, B1892, B117	7.5	2.21	0.38
B801, B128, B127, B126, B125, B156, B157, B158, B136, B137, B138	4.1	1.19	0.20
B829, B2	6.3	1.84	0.31
B831, B6, B1899	5.5	1.64	0.28
B798, B833, B203, B1901	3.2	0.94	0.16
B1206, B1205, B1204, B1201, B1203, B1200, B1199, B1198, B1186, B1188, B1189, B1190, B1192, B1194, B1193, B1195, B1178, B1180, B1179, B1181, B1183, B1185, B1184, B1158, B1175, B1174, B1173, B1172, B1170, B1169, B1168, B1157, B1163, B1165, B1164, B1167, B1166, B1155	7.5	2.21	0.38
B1085, B1100, B1101, B1089, B1090, B1102, B1103, B1092, B1922, B1923, B1917, B1930, B1931, B1927	9.1	2.68	0.46
B1319, B1320, B1321, B1283, B1290, B1325, B1326, B1327, B1288, B1328, B1329, B1330, B1324, B1323, B1322, B1285	9.1	2.68	0.46
B1385, B1382, B1383, B1381, B1380, B1399, B1372, B1373, B1374, B1375, B1377, B1378, B1379, B1397, B1363, B1364, B1365, B1366, B1368, B1370, B1369, B1394, B1361, B1358, B1359, B1357, B1355, B1354, B1353, B1393, B1348, B1349, B1350, B1351, B1352, B1390	7.5	2.21	0.38
B1455, B1345, B1346, B1453, B1339, B1340, B1343, B1344, B1448, B1341, B1342, B1450	6.8	2.01	0.34
B1522, B2029, B2006, B1528, B2030, B2007, B2028, B1984, B2031, B1982	9.0	2.64	0.45
B1610, B1506, B1505, B1507, B1509, B1510, B2004, B141	7.5	2.21	0.38
B2035, B2032	5.5	1.63	0.28
B2034, B2033	6.3	1.84	0.31
OTRAS	1.0	0.30	0.05

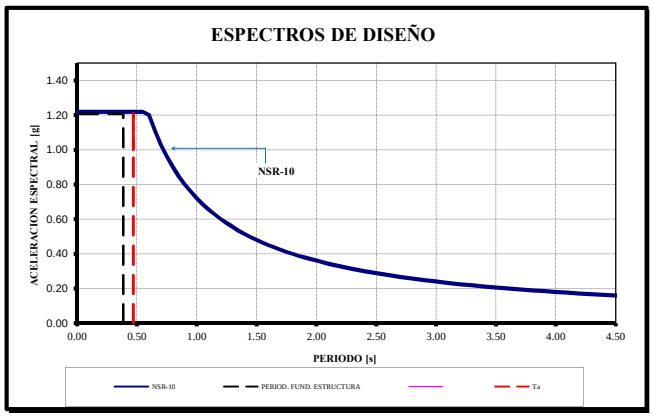
ANALISIS SISMICO DE LA ESTRUCTURA

El Análisis Sísmico del edificio se realizará por el método de ANALISIS MODAL DINAMICO

El programa de análisis estructural ETABS realiza directamente el análisis utilizando el Espectro Elástico de Diseño, el cual se elabora según parámetros del Reglamento de construccion Sismo Resistente Colombiano NSR-10 .

Los Parametros sísmicos que se tuvieron en cuenta para el analisis del edificio son los siguientes:

Parámetros del Espectro de la Norma Sismo Resistente NSR-10		
Zona de Amenaza Sísmica	=	Alta
Coef. de aceleracion pico efectiva, Aa	=	0.25
Coef. de velocidad pico efectiva, Av	=	0.20
Perfil del Suelo	=	D
Grupo de uso	=	IV
Coeficiente Fa	=	1.30
Coeficiente Fv	=	2.00
Coef. de Importancia, I	=	1.50
Coef. de amort. Crítico β	=	5.00%
Período inicial, To	=	0.12 s
Período corto, Tc	=	0.59 s
Período largo, T_L	=	4.80 s
Máx. acel. en el espectro	=	1.22 g



Para el analisis se determinó la masa que participa en el sismo proveniente del peso muerto del edificio.

CALCULO DE LA MASA DEL EDIFICIO			
PISO	Area [m²]	Carga Sismo [T/m²]	Masa [T s²/m]
PISOCUB	2,891.98	0.60	176.51
PISO2	2,828.71	1.25	359.19
PISO1	1,027.36	1.40	147.13

Se determinó el centro de gravedad de cada piso y el centro de rigidez del mismo para determinar la torsión de diseño de acuerdo al numeral A.3.6.7, la cual corresponde a la suma de la torsión directa más la torsión accidental. La torsión directa es tenida en cuenta por el propio programa de analisis y la torsion accidental depende del metodo de analisis.

CALCULO DEL CENTROIDE DE MASAS Y TORSION EN EL PISO													
PISO	POSICION DE LA MASA RESPECTO AL CENTRO DE RIGIDEZ	CENTRO DE MASA		MAYOR LONGITUD		ex [m]	ey [m]	CENTRO DE RIGIDEZ		CENTROIDE DEFINITIVO		CENTROIDE MODIFICADO INCLUYENDO Ax	
		X [m]	Y [m]	LX [m]	LY [m]			X_R [m]	Y_R [m]	X [m]	Y [m]	X [m]	Y [m]
PISOCUB	C.M. ■ ■ C.R.	0.00	0.00	50.75	84.83	0.00	0.00	0.00	0.00	0.00	0.00	-	-
PISO2	■ C.R. C.M. ■	23.64	43.36	50.25	82.80	0.00	0.00	1.12	74.10	23.64	43.36	-	-
PISO1	■ C.R. C.M. ■	21.75	11.66	48.25	27.12	0.00	0.00	6.04	22.69	21.75	11.66	-	-

Nota: Debido a que el metodo de analisis corresponde al dinamico elastico no se tuvo en cuenta la torsion accidental segun NSR-10 A 3.6.7

CALCULO DEL PESO DEL EDIFICIO Y DETERMINACION DEL CORTANTE BASAL ESTATICO POR FUERZA HORIZONTAL EQUIVALENTE

Para el calculo de los factores de ajuste se utilizó el método de la Fuerza Horizontal Equivalente para ajustar el valor del cortante dinámico en la base (Según A.5.4.5 -- NSR - 10)

CALCULO DEL PESO DEL EDIFICIO

PISO	W (T)	ALTURA PISO (m)	h (acumulado) (m)
PISOCUB	1,731.59	4.20	12.90
PISO2	3,523.62	4.40	8.70
PISO1	1,443.39	4.30	4.30
PESO TOTAL	**6,698.60 T**		

CALCULO CORTANTE ESTATICO EN LA BASE

Ct	=	0.047
α=	=	0.900
hn	=	12.90 m
Ta	=	Ct hn^{α}
Ta	=	0.47 s
T	=	0.39 s
Sa	=	1.22 g
Vs	=	**8,163.92 Tn**

Cortante sísmico en la base (Vs = Sa×Westructura)

CALCULO CORTANTE DINAMICO EN LA BASE

Del programa se obtuvieron los siguientes valores del cortante basal dinamico

TABLA DE CORTANTES DINAMICOS

Spec	Mode	Dir	F1	F2	F3	M1	M2	M3
SISMOX	1	U1	3764.2	2364.9	0.0	-4032.8	7525.6	-66530.0
SISMOX	2	U1	643.9	-1245.8	0.0	4503.3	2613.9	-55773.3
SISMOX	3	U1	414.7	131.0	0.0	-916.3	2114.5	-39134.2
SISMOX	4	U1	0.8	-7.0	0.0	28.3	4.2	-122.4
SISMOX	5	U1	228.9	19.3	0.0	701.2	-180.4	-8292.8
SISMOX	6	U1	484.1	281.8	0.0	1647.9	-1598.5	-9431.6
SISMOX	7	U1	35.7	33.1	0.0	97.8	-115.1	-572.5
SISMOX	8	U1	203.9	327.4	0.0	932.7	-1043.0	-196.6
SISMOX	9	U1	20.0	52.8	0.0	139.4	-158.6	680.7
SISMOX	10	U1	2.0	2.1	0.0	13.3	-5.4	-39.2
SISMOX	11	U1	8.1	-6.5	0.0	-55.3	2.6	-586.3
SISMOX	12	U1	9.0	-5.5	0.0	-56.9	-15.5	-533.7
SISMOX	13	U1	334.3	-586.2	0.0	-1881.0	5.2	-28823.4
SISMOX	14	U1	195.1	-295.8	0.0	-860.2	-108.9	-15106.2
SISMOX	15	U1	4.5	-6.2	0.0	14.4	3.3	-307.7
SISMOX	16	U1	779.7	-1118.6	0.0	333.2	-1164.3	-45758.9
SISMOX	17	U1	21.1	-37.3	0.0	124.4	-28.2	-1120.0
SISMOX	18	U1	9.6	-2.3	0.0	-81.9	-39.1	-381.8
SISMOX	19	U1	9.9	-5.2	0.0	-60.4	-49.1	-260.9
SISMOX	20	U1	10.1	-3.5	0.0	-39.5	-60.4	-70.6
SISMOX	21	U1	2.5	-3.0	0.0	-21.6	-22.5	44.4
SISMOX	22	U1	0.3	1.2	0.0	12.3	6.3	-68.0
SISMOX	23	U1	10.7	-17.3	0.0	-89.4	-191.6	1375.6
SISMOX	24	U1	8.6	-17.4	0.0	-92.9	-209.0	1770.0
SISMOX	25	U1	0.2	-0.5	0.0	-3.8	-5.8	54.0
SISMOX	26	U1	1.5	1.0	0.0	1.4	-0.7	-99.9
SISMOX	27	U1	115.2	-15.0	0.0	-82.2	-334.4	-5300.9
SISMOX	28	U1	612.4	-118.9	0.0	-595.9	-2298.5	-21934.7
SISMOX	All	All	4314.8	3164.3	0.0	6613.1	9724.4	144514.5
SISMOY	1	U2	2364.9	1485.8	0.0	-2533.7	4728.1	-41798.5
SISMOY	2	U2	-1245.8	2410.6	0.0	-8713.7	-5057.7	107918.1
SISMOY	3	U2	131.0	41.4	0.0	-289.4	667.7	-12358.0
SISMOY	4	U2	-7.0	66.0	0.0	-266.6	-39.6	1151.4
SISMOY	5	U2	19.3	1.6	0.0	59.0	-15.2	-697.7
SISMOY	6	U2	281.8	164.0	0.0	959.2	-930.4	-5489.9
SISMOY	7	U2	33.1	30.7	0.0	90.7	-106.7	-530.8
SISMOY	8	U2	327.4	525.9	0.0	1498.0	-1675.2	-315.7
SISMOY	9	U2	52.8	139.1	0.0	367.3	-418.1	1794.0
SISMOY	10	U2	2.1	2.1	0.0	13.4	-5.4	-39.6
SISMOY	11	U2	-6.5	5.1	0.0	43.9	-2.0	465.3
SISMOY	12	U2	-5.5	3.3	0.0	34.5	9.4	323.7
SISMOY	13	U2	-586.2	1027.7	0.0	3297.9	-9.1	50535.7
SISMOY	14	U2	-295.8	448.7	0.0	1304.8	165.1	22912.3
SISMOY	15	U2	-6.2	8.5	0.0	-19.8	-4.5	422.2
SISMOY	16	U2	-1118.6	1604.7	0.0	-478.0	1670.3	65643.8
SISMOY	17	U2	-37.3	65.9	0.0	-219.5	49.9	1977.1
SISMOY	18	U2	-2.3	0.5	0.0	19.4	9.3	90.6
SISMOY	19	U2	-5.2	2.7	0.0	31.7	25.8	137.1
SISMOY	20	U2	-3.5	1.2	0.0	13.7	21.0	24.5
SISMOY	21	U2	-3.0	3.8	0.0	26.8	27.9	-55.0
SISMOY	22	U2	1.2	6.2	0.0	62.2	31.5	-343.0
SISMOY	23	U2	-17.3	28.0	0.0	144.6	310.0	-2225.4
SISMOY	24	U2	-17.4	35.2	0.0	187.9	422.7	-3579.2
SISMOY	25	U2	-0.5	1.3	0.0	9.6	14.8	-137.3
SISMOY	26	U2	1.0	0.7	0.0	0.9	-0.5	-67.4
SISMOY	27	U2	-15.0	2.0	0.0	10.7	43.6	690.3
SISMOY	28	U2	-118.9	23.1	0.0	115.7	446.2	4258.3
SISMOY	All	All	3164.3	4174.4	0.0	10637.5	7234.0	162657.6

TABLA DE PERIODOS REALES DE LA ESTRUCTURA

Spec	Mode	Period	DampRatio	pecFacto	U1	U2	U3
SISMOX	1	0.39	0.05	1.00	11.96	0.00	0.00
SISMOX	2	0.26	0.05	1.00	11.96	0.00	0.00
SISMOX	3	0.25	0.05	1.00	11.96	0.00	0.00
SISMOX	4	0.22	0.05	1.00	11.96	0.00	0.00
SISMOX	5	0.19	0.05	1.00	11.96	0.00	0.00
SISMOX	6	0.17	0.05	1.00	11.96	0.00	0.00
SISMOX	7	0.16	0.05	1.00	11.96	0.00	0.00
SISMOX	8	0.14	0.05	1.00	11.96	0.00	0.00
SISMOX	9	0.13	0.05	1.00	11.96	0.00	0.00
SISMOX	10	0.12	0.05	1.00	11.96	0.00	0.00
SISMOX	11	0.11	0.05	1.00	11.96	0.00	0.00
SISMOX	12	0.11	0.05	1.00	11.96	0.00	0.00
SISMOX	13	0.10	0.05	1.00	11.96	0.00	0.00
SISMOX	14	0.10	0.05	1.00	11.96	0.00	0.00
SISMOX	15	0.09	0.05	1.00	11.96	0.00	0.00
SISMOX	16	0.09	0.05	1.00	11.96	0.00	0.00
SISMOX	17	0.09	0.05	1.00	11.96	0.00	0.00
SISMOX	18	0.09	0.05	1.00	11.96	0.00	0.00
SISMOX	19	0.08	0.05	1.00	11.96	0.00	0.00
SISMOX	20	0.08	0.05	1.00	11.96	0.00	0.00
SISMOX	21	0.07	0.05	1.00	11.96	0.00	0.00
SISMOX	22	0.07	0.05	1.00	11.96	0.00	0.00
SISMOX	23	0.07	0.05	1.00	11.96	0.00	0.00
SISMOX	24	0.07	0.05	1.00	11.96	0.00	0.00
SISMOX	25	0.07	0.05	1.00	11.96	0.00	0.00
SISMOX	26	0.07	0.05	1.00	11.96	0.00	0.00
SISMOX	27	0.07	0.05	1.00	11.96	0.00	0.00
SISMOX	28	0.07	0.05	1.00	11.96	0.00	0.00
SISMOY	1	0.39	0.05	1.00	0.00	11.96	0.00
SISMOY	2	0.26	0.05	1.00	0.00	11.96	0.00
SISMOY	3	0.25	0.05	1.00	0.00	11.96	0.00
SISMOY	4	0.22	0.05	1.00	0.00	11.96	0.00
SISMOY	5	0.19	0.05	1.00	0.00	11.96	0.00
SISMOY	6	0.17	0.05	1.00	0.00	11.96	0.00
SISMOY	7	0.16	0.05	1.00	0.00	11.96	0.00
SISMOY	8	0.14	0.05	1.00	0.00	11.96	0.00
SISMOY	9	0.13	0.05	1.00	0.00	11.96	0.00
SISMOY	10	0.12	0.05	1.00	0.00	11.96	0.00
SISMOY	11	0.11	0.05	1.00	0.00	11.96	0.00
SISMOY	12	0.11	0.05	1.00	0.00	11.96	0.00
SISMOY	13	0.10	0.05	1.00	0.00	11.96	0.00
SISMOY	14	0.10	0.05	1.00	0.00	11.96	0.00
SISMOY	15	0.09	0.05	1.00	0.00	11.96	0.00
SISMOY	16	0.09	0.05	1.00	0.00	11.96	0.00
SISMOY	17	0.09	0.05	1.00	0.00	11.96	0.00
SISMOY	18	0.09	0.05	1.00	0.00	11.96	0.00
SISMOY	19	0.08	0.05	1.00	0.00	11.96	0.00
SISMOY	20	0.08	0.05	1.00	0.00	11.96	0.00
SISMOY	21	0.07	0.05	1.00	0.00	11.96	0.00
SISMOY	22	0.07	0.05	1.00	0.00	11.96	0.00
SISMOY	23	0.07	0.05	1.00	0.00	11.96	0.00
SISMOY	24	0.07	0.05	1.00	0.00	11.96	0.00
SISMOY	25	0.07	0.05	1.00	0.00	11.96	0.00
SISMOY	26	0.07	0.05	1.00	0.00	11.96	0.00
SISMOY	27	0.07	0.05	1.00	0.00	11.96	0.00
SISMOY	28	0.07	0.05	1.00	0.00	11.96	0.00

CORTANTE DINAMICO EN LA BASE

Cortante basal en sentido X		
F1	=	4,314.8 Tn
F2	=	3,164.3 Tn
Vsd_x	**=**	**4,314.8 Tn**

Cortante basal en sentido Y		
F1	=	3,164.3 Tn
F2	=	4,174.4 Tn
Vsd_y	**=**	**4,174.4 Tn**

AJUSTE DE LOS RESULTADOS

Utilizando la metodologia de analisis de modos y frecuencias por medio del programa se determino el periodo fundamental del edificio con el cual se realiza el ajuste del valor del cortante basal Estatico y el valor del periodo máximo (Cu*Ta) según A.5.4.5 (a)

Se comparan los cortantes en la base del análisis modal con el estático para determinar si se deben modificar las fuerzas de sismo conforme a lo establecido en A.5.4.5 (b)

Si la estructura es regular, el cortante dinámico en la base no puede ser menor que el 80 % del cortante calculado por Fuerza Horizontal Equivalente (Vs) ni menor del 90% para estructuras irregulares- (según A.5.4.5 b - NSR-10)

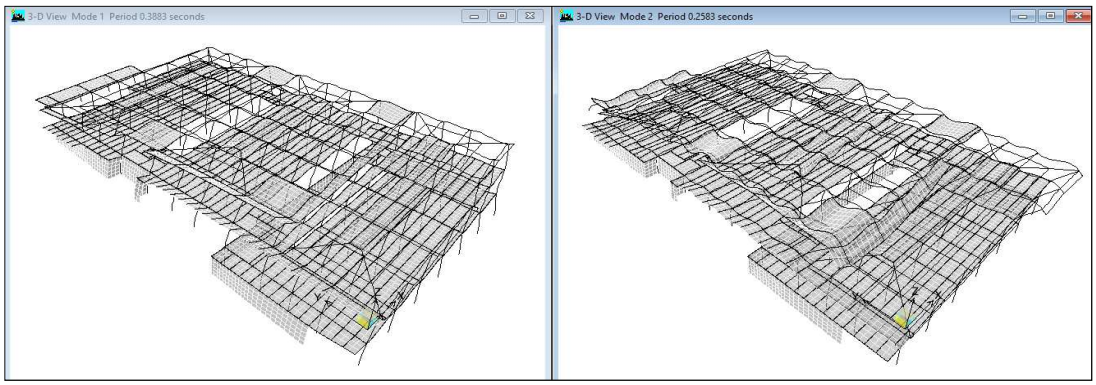
Item	Sentido X	Sentido Y
Periodo T (s)	0.39	0.26
Ta (s)	0.47	0.47
Cu	1.27	1.27
Periodo maximo Cu*Ta (s)	0.60	0.60
Periodo definitivo	0.39	0.26
Sa	1.22	1.22
Cortante Basal Vs (Tn)	8,163.9	8,163.9
0.90 Vs	7,347.5	7,347.5
0.80 Vs	6,531.1	6,531.1
Irregular	Si	Si
Cortante Estatico Vs (Tn)	7347.5	7347.5
Cortante Dinamico Vsd(Tn)	4314.8	4174.4
Factor de Ajuste	1.70	1.76

PORCENTAJE DE MASA PARTICIPATIVA

Finalmente se verifica que el número de modos utilizado sea el requerido para que la masa participativa sea mayor al 90% conforme a lo estipulado en A.5.4.2

TABLA DE MASA PARTICIPATIVA

Mode	Period	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
1	0.39	44.03	17.38	0.00	44.03	17.38	0.00	20.70	24.47	5.38	20.70	24.47	5.38
2	0.26	7.53	28.20	0.00	51.56	45.58	0.00	47.43	1.93	0.80	68.13	26.40	6.17
3	0.25	4.85	0.48	0.00	56.41	46.06	0.00	1.33	0.72	36.83	69.46	27.12	43.00
4	0.22	0.01	0.77	0.00	56.42	46.83	0.00	1.39	0.00	0.09	70.86	27.12	43.09
5	0.19	2.68	0.02	0.00	59.10	46.85	0.00	0.17	3.06	0.10	71.03	30.18	43.19
6	0.17	5.66	1.92	0.00	64.76	48.77	0.00	0.15	10.47	1.51	71.18	40.65	44.70
7	0.16	0.42	0.36	0.00	65.18	49.13	0.00	0.12	0.76	0.05	71.30	41.41	44.74
8	0.14	2.38	6.15	0.00	67.56	55.28	0.00	2.22	5.88	0.34	73.52	47.29	45.08
9	0.13	0.23	1.63	0.00	67.80	56.91	0.00	0.63	0.84	0.23	74.16	48.13	45.31
10	0.12	0.02	0.02	0.00	67.82	56.93	0.00	0.00	0.04	0.00	74.16	48.17	45.31
11	0.11	0.10	0.06	0.00	67.92	56.99	0.00	0.00	0.08	0.04	74.16	48.26	45.35
12	0.11	0.11	0.04	0.00	68.02	57.03	0.00	0.00	0.15	0.01	74.16	48.40	45.36
13	0.10	3.91	12.02	0.00	71.93	69.05	0.00	3.80	3.72	0.78	77.96	52.12	46.14
14	0.10	2.28	5.25	0.00	74.21	74.30	0.00	1.86	2.48	0.19	79.81	54.60	46.33
15	0.09	0.05	0.10	0.00	74.27	74.40	0.00	0.13	0.04	0.00	79.95	54.64	46.33
16	0.09	9.12	18.77	0.00	83.39	93.17	0.00	16.58	12.07	1.37	96.52	66.71	47.70
17	0.09	0.25	0.77	0.00	83.64	93.94	0.00	1.24	0.32	0.19	97.76	67.03	47.89
18	0.09	0.11	0.01	0.00	83.75	93.95	0.00	0.06	0.24	0.00	97.82	67.26	47.89
19	0.08	0.12	0.03	0.00	83.86	93.98	0.00	0.00	0.28	0.10	97.82	67.54	47.99
20	0.08	0.12	0.01	0.00	83.98	93.99	0.00	0.00	0.33	0.30	97.82	67.87	48.29
21	0.07	0.03	0.04	0.00	84.01	94.04	0.00	0.00	0.12	0.35	97.82	67.99	48.64
22	0.07	0.00	0.07	0.00	84.01	94.11	0.00	0.00	0.01	0.69	97.82	68.00	49.33
23	0.07	0.13	0.33	0.00	84.14	94.44	0.00	0.04	1.17	8.92	97.86	69.17	58.25
24	0.07	0.10	0.41	0.00	84.24	94.85	0.00	0.05	1.45	14.66	97.91	70.62	72.91
25	0.07	0.00	0.01	0.00	84.24	94.86	0.00	0.00	0.04	0.54	97.91	70.66	73.45
26	0.07	0.02	0.01	0.00	84.26	94.87	0.00	0.00	0.02	0.07	97.91	70.68	73.52
27	0.07	1.35	0.02	0.00	85.61	94.89	0.00	0.00	2.33	0.08	97.92	73.01	73.60
28	0.07	7.16	0.27	0.00	92.77	95.16	0.00	0.04	14.29	0.42	97.95	87.29	74.02

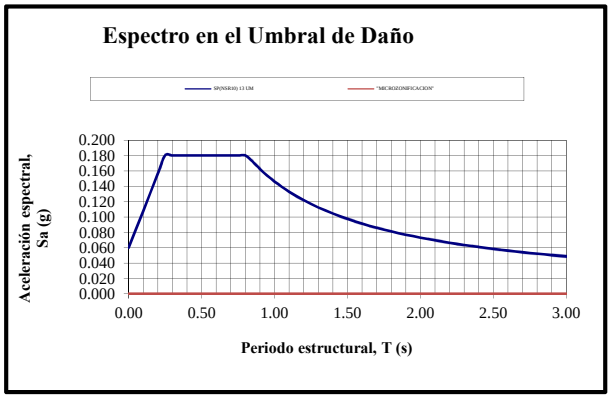


ANALISIS SIMICO PARA EL UMBRAL DE DANO (GRUPO DE USO III o IV)

Parámetros del Espectro de la Norma Sismo Resistente NSR-10		
Zona de Amenaza Sísmica	=	Alta
Coef. de acel. pico efectiva, Ad	=	0.06
Coeficiente de sitio para el umbral	=	2.5
Grupo de uso	=	IV
Coef. de Importancia, I	=	1.5
Coef. de amort. crítico	=	2.00%

CALCULO DE ACELERACION ESPECTRAL		
Ad	=	0.06
S	=	2.50
I	=	1.50
Ct	=	**0.05**
T	=	0.39 S
Tod	=	0.25 S
TCd	=	1.25 S
TLd	=	6.00 S
Sad	=	0.25
Sad	=	0.18
Sad	=	0.58
Sad	=	**0.18**
Vsd	=	**1205.7 Tn**

Definitivo



CALCULO CORTANTE DINAMICO EN LA BASE

TABLA DE CORTANTES DINAMICOS								
Spec	Mode	Dir	F1	F2	F3	M1	M2	M3
SISMOX	1	U1	555.8	349.2	0.0	-595.5	1111.2	-9824.0
SISMOX	2	U1	95.1	-184.0	0.0	665.0	386.0	-8235.6
SISMOX	3	U1	60.7	19.2	0.0	-134.0	309.3	-5724.3
SISMOX	4	U1	0.1	-1.0	0.0	3.9	0.6	-16.8
SISMOX	5	U1	28.0	2.4	0.0	85.8	-22.1	-1014.1
SISMOX	6	U1	55.9	32.5	0.0	190.1	-184.4	-1088.1
SISMOX	7	U1	4.1	3.8	0.0	11.1	-13.1	-65.0
SISMOX	8	U1	21.2	34.0	0.0	96.8	-108.2	-20.4
SISMOX	9	U1	2.0	5.3	0.0	14.1	-16.0	68.7
SISMOX	10	U1	0.2	0.2	0.0	1.3	-0.5	-3.8
SISMOX	11	U1	0.8	-0.6	0.0	-5.2	0.2	-54.9
SISMOX	12	U1	0.8	-0.5	0.0	-5.2	-1.4	-49.1
SISMOX	13	U1	29.7	-52.0	0.0	-166.8	0.5	-2555.9
SISMOX	14	U1	17.1	-25.9	0.0	-75.3	-9.5	-1322.8
SISMOX	15	U1	0.4	-0.5	0.0	1.2	0.3	-26.4
SISMOX	16	U1	66.1	-94.8	0.0	28.2	-98.6	-3876.6
SISMOX	17	U1	1.8	-3.1	0.0	10.5	-2.4	-94.4
SISMOX	18	U1	0.8	-0.2	0.0	-6.8	-3.2	-31.7
SISMOX	19	U1	0.8	-0.4	0.0	-4.9	-4.0	-21.1
SISMOX	20	U1	0.8	-0.3	0.0	-3.2	-4.8	-5.6
SISMOX	21	U1	0.2	-0.2	0.0	-1.7	-1.8	3.5
SISMOX	22	U1	0.0	0.1	0.0	1.0	0.5	-5.3
SISMOX	23	U1	0.8	-1.3	0.0	-6.9	-14.8	106.0
SISMOX	24	U1	0.7	-1.3	0.0	-7.1	-16.1	136.0
SISMOX	25	U1	0.0	0.0	0.0	-0.3	-0.4	4.1
SISMOX	26	U1	0.1	0.1	0.0	0.1	-0.1	-7.6
SISMOX	27	U1	8.7	-1.1	0.0	-6.2	-25.1	-398.0
SISMOX	28	U1	45.9	-8.9	0.0	-44.7	-172.3	-1644.1
SISMOX	**All**	**All**	**585.8**	**415.8**	0.0	937.8	1288.1	16300.1

SISMOY	1	U2	349.2	219.4	0.0	-374.1	698.2	-6172.1
SISMOY	2	U2	-184.0	356.0	0.0	-1286.7	-746.8	15935.4
SISMOY	3	U2	19.2	6.1	0.0	-42.3	97.7	-1807.6
SISMOY	4	U2	-1.0	9.1	0.0	-36.5	-5.4	157.8
SISMOY	5	U2	2.4	0.2	0.0	7.2	-1.9	-85.3
SISMOY	6	U2	32.5	18.9	0.0	110.7	-107.3	-633.4
SISMOY	7	U2	3.8	3.5	0.0	10.3	-12.1	-60.3
SISMOY	8	U2	34.0	54.6	0.0	155.5	-173.8	-32.8
SISMOY	9	U2	5.3	14.0	0.0	37.1	-42.2	181.1
SISMOY	10	U2	0.2	0.2	0.0	1.3	-0.5	-3.8
SISMOY	11	U2	-0.6	0.5	0.0	4.1	-0.2	43.6
SISMOY	12	U2	-0.5	0.3	0.0	3.2	0.9	29.8
SISMOY	13	U2	-52.0	91.1	0.0	292.4	-0.8	4481.3
SISMOY	14	U2	-25.9	39.3	0.0	114.3	14.5	2006.4
SISMOY	15	U2	-0.5	0.7	0.0	-1.7	-0.4	36.3
SISMOY	16	U2	-94.8	135.9	0.0	-40.5	141.5	5561.2
SISMOY	17	U2	-3.1	5.6	0.0	-18.5	4.2	166.6
SISMOY	18	U2	-0.2	0.0	0.0	1.6	0.8	7.5
SISMOY	19	U2	-0.4	0.2	0.0	2.6	2.1	11.1
SISMOY	20	U2	-0.3	0.1	0.0	1.1	1.7	2.0
SISMOY	21	U2	-0.2	0.3	0.0	2.1	2.2	-4.3
SISMOY	22	U2	0.1	0.5	0.0	4.8	2.4	-26.6
SISMOY	23	U2	-1.3	2.2	0.0	11.1	23.9	-171.5
SISMOY	24	U2	-1.3	2.7	0.0	14.4	32.5	-275.1
SISMOY	25	U2	0.0	0.1	0.0	0.7	1.1	-10.5
SISMOY	26	U2	0.1	0.1	0.0	0.1	0.0	-5.1
SISMOY	27	U2	-1.1	0.2	0.0	0.8	3.3	51.8
SISMOY	28	U2	-8.9	1.7	0.0	8.7	33.4	319.2
SISMOY	All	All	415.8	473.3	0.0	1423.4	1044.0	18980.5

CORTANTE DINAMICO EN LA BASE

Cortante basal en sentido X			
F1	=	585.8	Tn
F2	=	415.8	Tn
Vtx	=	585.8	Tn

Cortante basal en sentido Y			
F1	=	415.8	Tn
F2	=	473.3	Tn
Vty	=	473.3	Tn

PERIODO REAL DE LA ESTRUCTURA

Tx	=	0.39	s
Ty	=	0.26	s
Cu * Ta	=	0.60	s

AJUSTE DE LOS RESULTADOS

Irregularidad de la estructura	=	**Irregular**

Si la estructura es regular, el cortante dinámico en la base no puede ser menor que el 80 % del cortante calculado por Fuerza Horizontal Equivalente (Vs) ni del 90% si es irregular - (según A.5.4.5 b - NSR-10)

RECALCULO Sa	
Ad=	0.06 g
S=	2.50
I=	1.50
Ct=	**0.05**
T=	0.39 s
Tod	0.25 s
TCd	1.25 s
TLd	6.00 s
Sad=	0.25 s
Sad=	0.18 s
Sad	0.58 s
Sad=	0.18
0.90V=	1085.2 Tn
0.8V=	964.6 Tn
Vdef=	1085.2Tn

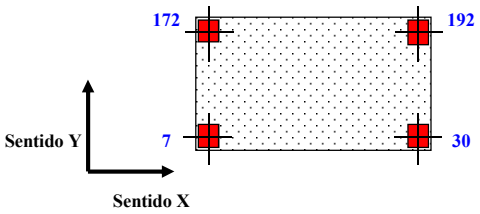
FACTORES DE AJUSTE DEFINITIVOS		
Fx=	**1.85**	**Definitivo**
Fy=	**2.29**	**Definitivo**

CHEQUEO DE LA DERIVA CON COMBINACIONES DE CARGA Y FACTORES DE AJUSTE

Se efectúa el análisis de la deriva máxima utilizando la inercia de las vigas y las columnas completa conforme a lo establecido en el capitulo A.6

CONVENCIONES	
h =	Altura Piso
δ (x,y) =	Desplazamiento por piso
Δa=	Deriva de análisis
Δp=	Deriva permitida
I_f =	Indice de flexibilidad
Δa=	$((\delta x_1-\delta x_2)^2+(\delta y_1-\delta y_2)^2)^{0.50}$
Δp =	**0.01** h
I_f =	Δa/Δp

EJES DE COLUMNAS ANALIZADAS



El metodo de combinacion modal utilizado corresponde al de la Combinacion cuadratica completa (CQC)

SISMO EN X

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
172	PISOCUB	4.20	1.97	4.20	OK	0.47	OK
	PISO2	4.40	0.25	4.40	OK	0.06	OK
	PISO1	4.30	0.00	4.30	OK	0.00	OK
192	PISOCUB	4.20	3.04	4.20	OK	0.72	OK
	PISO2	4.40	2.48	4.40	OK	0.56	OK
	PISO1	4.30	0.00	4.30	OK	0.00	OK
7	PISOCUB	4.20	4.04	4.20	OK	0.96	OK
	PISO2	4.40	2.72	4.40	OK	0.62	OK
	PISO1	4.30	0.54	4.30	OK	0.13	OK
30	PISOCUB	4.20	3.76	4.20	OK	0.90	OK
	PISO2	4.40	3.13	4.40	OK	0.71	OK
	PISO1	4.30	2.00	4.30	OK	0.46	OK

SISMO EN Y

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
172	PISOCUB	4.20	2.83	4.20	OK	0.67	OK
	PISO2	4.40	0.35	4.40	OK	0.08	OK
	PISO1	4.30	0.00	4.30	OK	0.00	OK
192	PISOCUB	4.20	2.19	4.20	OK	0.52	OK
	PISO2	4.40	1.68	4.40	OK	0.38	OK
	PISO1	4.30	0.00	4.30	OK	0.00	OK
7	PISOCUB	4.20	3.76	4.20	OK	0.90	OK
	PISO2	4.40	1.77	4.40	OK	0.40	OK
	PISO1	4.30	0.38	4.30	OK	0.09	OK
30	PISOCUB	4.20	2.76	4.20	OK	0.66	OK
	PISO2	4.40	2.01	4.40	OK	0.46	OK
	PISO1	4.30	1.39	4.30	OK	0.32	OK

REVISION DE LA IRREGULARIDAD TORSIONAL

Irregularidad Tipo 1 P:

Tipo 1aP — Irregularidad torsional

$\phi_p = 0.9$

$$1.4\left(\frac{\Delta_1+\Delta_2}{2}\right) \geq \Delta_1 > 1.2\left(\frac{\Delta_1+\Delta_2}{2}\right)$$

Tipo 1bP — Irregularidad torsional extrema

$\phi_p = 0.8$

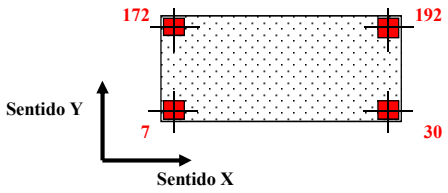
$$\Delta_1 > 1.4\left(\frac{\Delta_1+\Delta_2}{2}\right)$$

SISMO EN X

EJE DE COLUMNA		PISO	Δ1 (cm)	Δ2 (cm)	1.2*(Δ1 + Δ2)/2	1.4*(Δ1 + Δ2)/2		Ax
7	172	PISOCUB	4.04	1.97	3.61	4.21	IRREGULAR	1.26
		PISO2	2.72	0.25	1.78	2.08	IRREGULAR EXT	2.33
		PISO1	0.54	0.00	0.32	0.38	IRREGULAR EXT	2.78
30	192	PISOCUB	3.76	3.04	4.08	4.76	REGULAR	
		PISO2	3.13	2.48	3.36	3.92	REGULAR	
		PISO1	2.00	0.00	1.20	1.40	IRREGULAR EXT	2.78

SISMO EN Y

EJE DE COLUMNA		PISO	Δ1 (cm)	Δ2 (cm)	1.2*(Δ1 + Δ2)/2	1.4*(Δ1 + Δ2)/2		Ax
7	30	PISOCUB	3.76	2.76	3.91	4.56	REGULAR	
		PISO2	1.77	2.01	2.27	2.65	REGULAR	
		PISO1	0.38	1.39	1.06	1.24	IRREGULAR EXT	1.72
172	192	PISOCUB	2.83	2.19	3.01	3.51	REGULAR	
		PISO2	0.35	1.68	1.22	1.42	IRREGULAR EXT	1.91
		PISO1	0.00	0.00	0.00	0.00	REGULAR	



CHEQUEO DE LA DERIVAS PARA EL UMBRAL DE DAÑO (GRUPO USO III o IV)

CONVENCIONES	
h =	Altura Piso
δ (x,y) =	Desplazamiento por piso
Δa=	Deriva de análisis
Δp=	Deriva permitida
I_f =	Indice de flexibilidad
Δa=	$((\delta x_1-\delta x_2)^2+(\delta y_1-\delta y_2)^2)^{0.50}$
Δp =	**0.004** h
I_f =	Δa/Δp

SISMO EN X

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
172	PISOCUB	4.20	0.63	1.68	OK	0.38	OK
	PISO2	4.40	0.06	1.76	OK	0.03	OK
	PISO1	4.30	0.00	1.72	OK	0.00	OK
192	PISOCUB	4.20	0.79	1.68	OK	0.47	OK
	PISO2	4.40	0.63	1.76	OK	0.36	OK
	PISO1	4.30	0.00	1.72	OK	0.00	OK
7	PISOCUB	4.20	1.09	1.68	OK	0.65	OK
	PISO2	4.40	0.69	1.76	OK	0.39	OK
	PISO1	4.30	0.13	1.72	OK	0.08	OK
30	PISOCUB	4.20	0.90	1.68	OK	0.54	OK
	PISO2	4.40	0.79	1.76	OK	0.45	OK
	PISO1	4.30	0.51	1.72	OK	0.30	OK

SISMO EN Y

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
172	PISOCUB	4.20	0.92	1.68	OK	0.55	OK
	PISO2	4.40	0.09	1.76	OK	0.05	OK
	PISO1	4.30	0.00	1.72	OK	0.00	OK
192	PISOCUB	4.20	0.72	1.68	OK	0.43	OK
	PISO2	4.40	0.51	1.76	OK	0.29	OK
	PISO1	4.30	0.00	1.72	OK	0.00	OK
7	PISOCUB	4.20	1.16	1.68	OK	0.69	OK
	PISO2	4.40	0.54	1.76	OK	0.31	OK
	PISO1	4.30	0.11	1.72	OK	0.07	OK
30	PISOCUB	4.20	0.77	1.68	OK	0.46	OK
	PISO2	4.40	0.61	1.76	OK	0.35	OK
	PISO1	4.30	0.42	1.72	OK	0.25	OK

REVISION INDICE DE ESTABILIDAD DE PISO EFECTOS DE SEGUNDO ORDEN

PISO	P(Tn)	Pu(Tn)	Δox(cm)	Δoy(cm)	Vus (Tn)	lc (m)	Qx	Qy	
PISOCUB	1876.2	2814.3	3.20	2.88	3080.5	4.20	0.0070	0.0063	Arriostrado
PISO2	4938.0	7407.0	2.14	1.45	7308.0	4.40	0.0068	0.0046	Arriostrado
PISO1	1957.1	2935.6	0.63	0.44	8163.9	4.30	0.0024	0.0017	Arriostrado

EFECTOS DE ESBELTEZ EN ELEMENTOS A COMPRESION

Piso	bmin	r	kl/r	Comentarios
PISOCUB	**0.60**	0.18	21.1	No se tienen efectos de esbeltez según C.10.10.1
PISO2	**0.60**	0.18	21.7	No se tienen efectos de esbeltez según C.10.10.1
PISO1	**0.60**	0.18	21.1	No se tienen efectos de esbeltez según C.10.10.1

Nota: bmin corresponde al ancho minimo de las columnas en el piso en estudio

CALCULO DE FACTOR ϕr POR AUSENCIA DE REDUNDANCIA

Story	FloorArea	Rmax	Rho	CaseType	Case	Direction	ObjectType	Object	Object2	%Vs	Chequeo
CUB	775.34	0.06	-1.52	Resp Spec	SISMOY	X	MF Columns	C6	C15	0.37	Ok
PISO2	2784.73	0.04	-0.98	Resp Spec	SISMOY	X	MF Columns	C5	C6	0.87	Ok
PISO1	1025.03	0.17	0.86	Resp Spec	SISMOX	Y	MF Columns	C6	C5	1.00	Ok

CHEQUEO DE IRREGULARIDADES DE LA ESTRUCTURA

1. IRREGULARIDADES EN PLANTA

TIPO DE IREGULARIDAD		ϕ_p	ϕ_{Px}	ϕ_{Py}
Irregularidad Torsional	**1aP**	0.9	0.9	0.9
Irregularidad Torsional extrema	**1bP**	0.8	0.8	0.8
Retrocesos en las Esquinas	**2P**	0.9	0.9	0.9
Irregularidad del Diafragma	**3P**	0.9	0.9	0.9
Desplazamiento de los Planos de Acción	**4P**	0.8	1.0	1.0
Sistemas no Paralelos	**5P**	0.9	1.0	1.0
ϕp Definitivo=			**0.8**	**0.8**

2. IRREGULARIDADES EN ALTURA

TIPO DE IREGULARIDAD		ϕ_a	ϕ_{ax}	ϕ_{ay}
Piso Flexible (Irregularidad en Rigidez)	**1aA**	0.9	1.0	1.0
Piso Flexible extremo(Irregularidad en Rigidez)	**1bA**	0.8	1.0	1.0
Distribución de Masa	**2A**	0.9	1.0	1.0
Irregularidad Geométrica	**3A**	0.9	1.0	1.0
Desplazamiento del Plano de Acción	**4A**	0.8	1.0	1.0
Piso Débil - Discontinuidad en la Resistencia	**5aA**	0.9	1.0	1.0
Piso Débil extremo - Discontinuidad en la Resist.	**5bA**	0.8	0.8	0.8
ϕa Definitivo =			**0.8**	**0.8**

Notas:

3. COEFICIENTE DE CAPACIDAD DE DISIPACION DE ENERGIA EN EL RANGO INELASTICO

$$R = \phi p * \phi a * \phi r * R_0$$ (NSR-10 A.3.3.3)

	Sentido X	Sentido Y	
ϕ_p =	0.80	0.80	Coeficiente por irregularidad en planta
ϕ_a =	0.80	0.80	Coeficiente por irregularidad en altura
ϕ_r =	**1.00**	**1.00**	Coeficiente por ausencia de redundancia
R'o =	**7.00**	**7.00**	Pórticos de concreto DES
R =	**4.48**	**4.48**	
Ωo=	**3.00**		Coeficiente de sobreresistencia
0.5AaFa=	**0.16**		Componente vertical de sismo Segun A.3.3.9

COMBINACIONES DE CARGA

1. FACTORES DE AJUSTE

Fx	=	**1.70**
Fy	=	**1.76**

2. CHEQUEO DE DERIVAS

No. DE COMBINACION							Fx			Fy			Combinacion en el programa
1	1.20	CM	+	1.00	CV	+	1.70	SX					COMBO 2
2	1.20	CM	+	1.00	CV	-	1.70	SX					
3	1.20	CM	+	1.00	CV				+	1.76	SY		COMBO 3
4	1.20	CM	+	1.00	CV				-	1.76	SY		
5	0.90	CM				+	1.70	SX					COMBO 4
6	0.90	CM				-	1.70	SX					
7	0.90	CM							+	1.76	SY		COMBO 5
8	0.90	CM							-	1.76	SY		

Nota: Para las cargas mayores a 0.48Tn/m2 se utilizo un factor de carga de 1.0 segun B.2.4.2.2. (Ver datos de entrada)

3. DISEÑO DE ELEMENTOS DEL SISTEMA DE RESISTENCIA SISMICA

No. DE COMBINACION							Fx/R 0.3*Fx/R			0.3*Fy/R Fy/R			
1	1.40	CM											
2	1.20	CM	+	1.60	CV	+	0.50	G					COMBO 1
3	1.20	CM	+	1.00	CV	+	0.38	SX	+	0.12	SY		COMBO 6
4	1.20	CM	+	1.00	CV	+	0.38	SX	-	0.12	SY		COMBO 7
5	1.20	CM	+	1.00	CV	-	0.38	SX	+	0.12	SY		
6	1.20	CM	+	1.00	CV	-	0.38	SX	-	0.12	SY		
7	1.20	CM	+	1.00	CV	+	0.11	SX	+	0.39	SY		COMBO 8
8	1.20	CM	+	1.00	CV	+	0.11	SX	-	0.39	SY		COMBO 9
9	1.20	CM	+	1.00	CV	-	0.11	SX	+	0.39	SY		
10	1.20	CM	+	1.00	CV	-	0.11	SX	-	0.39	SY		
11	0.90	CM				+	0.38	SX	+	0.12	SY		COMBO 10
12	0.90	CM				+	0.38	SX	-	0.12	SY		COMBO 11
13	0.90	CM				-	0.38	SX	+	0.12	SY		
14	0.90	CM				-	0.38	SX	-	0.12	SY		
15	0.90	CM				+	0.11	SX	+	0.39	SY		COMBO 12
16	0.90	CM				+	0.11	SX	-	0.39	SY		COMBO 13
17	0.90	CM				-	0.11	SX	+	0.39	SY		
18	0.90	CM				-	0.11	SX	-	0.39	SY		

Nota: Para las cargas mayores a 0.48Tn/m2 se utilizo un factor de carga de 1.0 segun B.2.4.2.2. (Ver datos de entrada)

Las siguientes combinaciones fueron incluidas para que en el programa DCCAD 2010 puedan realizarse los chequeos de cortante segun C.21.3.3.1 y C.21.3.3.2

4. DISENO DE CORTANTE SISMICO EN VIGAS (Ex2)

No. DE COMBINACION							E*2 / 0.3*E*2			0.3*E*2 / E*2		
19	1.20	CM	+	1.00	CV	+	0.76	SX	+	0.24	SY	COMBO 14
20	1.20	CM	+	1.00	CV	+	0.76	SX	-	0.24	SY	COMBO 15
21	1.20	CM	+	1.00	CV	-	0.76	SX	+	0.24	SY	
22	1.20	CM	+	1.00	CV	-	0.76	SX	-	0.24	SY	
23	1.20	CM	+	1.00	CV	+	0.23	SX	+	0.79	SY	COMBO 16
24	1.20	CM	+	1.00	CV	+	0.23	SX	-	0.79	SY	COMBO 17
25	1.20	CM	+	1.00	CV	-	0.23	SX	+	0.79	SY	
26	1.20	CM	+	1.00	CV	-	0.23	SX	-	0.79	SY	
27	0.90	CM				+	0.76	SX	+	0.24	SY	COMBO 18
28	0.90	CM				+	0.76	SX	-	0.24	SY	COMBO 19
29	0.90	CM				-	0.76	SX	+	0.24	SY	
30	0.90	CM				-	0.76	SX	-	0.24	SY	
31	0.90	CM				+	0.23	SX	+	0.79	SY	COMBO 20
32	0.90	CM				+	0.23	SX	-	0.79	SY	COMBO 21
33	0.90	CM				-	0.23	SX	+	0.79	SY	
34	0.90	CM				-	0.23	SX	-	0.79	SY	

5. DISENO DE CORTANTE SISMICO EN COLUMNAS (ExΩ)

No. DE COMBINACION							E*Ω / 0.3*E*Ω			0.3*E*Ω / E*Ω		
35	1.36	CM	+	1.00	CV	+	1.14	SX	+	0.35	SY	COMBO 22
36	1.36	CM	+	1.00	CV	+	1.14	SX	-	0.35	SY	COMBO 23
37	1.36	CM	+	1.00	CV	-	1.14	SX	+	0.35	SY	
38	1.36	CM	+	1.00	CV	-	1.14	SX	-	0.35	SY	
39	1.36	CM	+	1.00	CV	+	0.34	SX	+	1.18	SY	COMBO 24
40	1.36	CM	+	1.00	CV	+	0.34	SX	-	1.18	SY	COMBO 25
41	1.36	CM	+	1.00	CV	-	0.34	SX	+	1.18	SY	
42	1.36	CM	+	1.00	CV	-	0.34	SX	-	1.18	SY	
43	0.74	CM				+	1.14	SX	+	0.35	SY	COMBO 26
44	0.74	CM				+	1.14	SX	-	0.35	SY	COMBO 27
45	0.74	CM				-	1.14	SX	+	0.35	SY	
46	0.74	CM				-	1.14	SX	-	0.35	SY	
47	0.74	CM				+	0.34	SX	+	1.18	SY	COMBO 28
48	0.74	CM				+	0.34	SX	-	1.18	SY	COMBO 29
49	0.74	CM				-	0.34	SX	+	1.18	SY	
50	0.74	CM				-	0.34	SX	-	1.18	SY	

DISEÑO DE ELEMENTOS NO ESTRUCTURALES Y ESCALERAS

CALCULO DE ELEMENTOS NO ESTRUCTURALES

PARAMETROS DE DISEÑO

Grado de desempeño=	Superior
Rp=	3.0
Ap=	1.0
f_y=	4200 kg/cm2

$$F_p = \frac{a_x a_p}{R_p} gM_p \geq \frac{A_a I}{2} gM_p$$

*Factor= f_y*π/16/L*
*Limite Fp=Aa*I*P/2*
S: Separacion entre columnetas
L: Longitud de la dilatacion superior

NIVEL	Fx	W	ax	Altura	e_{muro}	Vol.	$\gamma_{mamp.}$	P	Fp	Fp_{min}	Fp def.	Mmax	S	Vmax	L	Factor	$\phi_{varilla}$	Vn	Vn>Vu
	Tn	Tn		m	m	m3	Tn/m3	Tn	Tn	Tn	Tn	Tn*m	m	Tn	Cm		/8"	Tn	Cumple?
PISOCUB	3080	1732	1.78	3.80	0.12	0.46	1.60	0.73	0.43	0.073	0.43	0.411	0.80	0.173	10	0.082	5	0.330	SI
PISO2	4228	3524	1.20	3.90	0.12	0.47	1.60	0.75	0.30	0.075	0.30	0.292	1.20	0.180	10	0.082	5	0.330	SI
PISO1	856	1443	0.59	3.80	0.12	0.46	1.60	0.73	0.14	0.073	0.14	0.137	1.20	0.087	10	0.082	5	0.330	SI

CALCULO DE ELEMENTOS NO ESTRUCTURALES

DATOS DE ENTRADA

f'c=	**175**	Kg/Cm2
fy=	**4200**	Kg/Cm2
$d_{columneta}$=	**6**	Cm
$b_{columneta}$=	**15**	Cm
Recubrimiento=	**6**	Cm
t muro=	12	Cm
ρmin=	0.0033	

NIVEL	Fp Tn	Mu Tn*m	ρ	ρdiseño	As Cm^2/m	As*fy Kg	0.85 f'c b Kg/cm	a cm	kud cm	εc	εt		ϕ	As Cm^2	Varilla /8"	Cant.	Refuerzo
PISOCUB	0.43	0.33	0.0203	0.0203	1.83	7687	2231.25	3.45	4.05	0.003	0.0014	Compr	0.65	2.82	**5**	2	**2#5**
PISO2	0.30	0.35	0.0228	0.0228	2.05	8605	2231.25	3.86	4.54	0.003	0.0010	Compr	0.65	3.15	**5**	2	**2#5**
PISO1	0.14	0.16	0.0082	0.0082	0.74	3099	2231.25	1.39	1.63	0.003	0.0080	Traccion	0.90	0.82	**5**	1	**1#5**

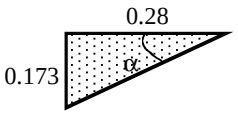
DISEÑO DE ESCALERA

ESCALERA TIPO 1-2-3-4

Materiales		
Concreto:	210	k/cm^2
Acero:	4200	k/cm^2

Geometria de la escalera		
Altura	4.15	m
Numero de pasos	24	m
H Contrahuella	0.173	m
Huella	0.28	m
Requisito titulo K	0.63	Cumple

Datos de entrada			
Luz de calculo:	5.00	m	
Espesor recomendado:	0.21	m	
Espesor adoptado:	0.20	m	
Angulo (α):	0.55	31.7	grados
Huella de:		0.28	m
Contrahuella de:		0.17	m



Avaluo de Cargas:

Peso propio de placa	0.20	x	2.4	/	0.85	=	0.56	tn/m^2
Peso de peldaños	0.17	x	2.4	/	2	=	0.21	tn/m^2
Acabado superior	.03 x 2.0 x (		0.28	+	0.17)/ 0.28	=	0.10	tn/m^2
Acabado Inferior	.02 x 2.0 /	cos	(	31.70)		=	0.05	tn/m^2

CM	**0.92**	tn/m^2
CV	**0.50**	tn/m^2
CR	**1.42**	tn/m^2
CU	**1.90**	tn/m^2

CU = 1.2 CM + 1.6 CV

Diseño a flexión		
M =	5.93	tn*m
b=	100	cm
d=	17	cm
ρ=	0.0052	
ρmin=	0.0018	
ρdis=	0.0052	
As=	8.85	Cm^2/m
As*fy=	37184	kg
0.85f'c*b=	17850	kg/cm
a=	2.08	cm
kud=	2.45	cm
ε_c=	0.0030	
ε_f=	0.0178	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0058	
As=	9.84	Cm^2/m
ϕvarilla=	4	/8"
As varilla=	1.3	Cm^2
Separación=	10	

Chequeo a cortante		
Vu=	4.7	Tn
ϕVc=	9793	Kg
ϕVc=	9.8	Tn
ϕVs=	-	Tn

Diseño de tensores		
Tiene tensores?	SI	
Vu =	14.24	t / m
Fy=	4200	k/cm2
As=	3.77	Cm2
#Tensores	2	
Varilla=	5 /8"	

DISEÑO PLACA DE ENTREPISO

CALCULO DE PLACA DE ENTREPISO PISO 1 Y PISO 2

ELEMENTO: Placa maciza e=0.12

DATOS DE ENTRADA

f'c=	**280**	Kg/Cm2
fy=	**4200**	Kg/Cm2
d=	**8**	Cm
b=	**100**	Cm
Recubrimiento=	**4**	Cm
h=	12	Cm
Tipo elemento=	**Viga=**	
	Placa=	**X**
ρmin=	0.0018	

CALCULOS ADICIONALES

CU=	1.90	Tn/m2
Luz=	2.30	m
Mu-=	0.84	Tn*m
Vu=	2.19	Tn
Mu+=	0.42	Tn*m

DISENO A FLEXION

Mu=	**0.8**	Tn*m
ρ=	0.0032	
ρdiseño=	0.0032	
As=	1.44	Cm^2/m
As*fy=	6048	kg
0.85f'c*b=	23800	kg/cm
a=	0.25	cm
kud=	0.30	cm
ε_c=	0.0030	
ε_f=	0.0773	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0036	
As=	2.85	Cm^2/m
Malla =	**7.5 mm c/.15**	

DISENO A CORTANTE

Vu=	**2.2**	Tn
ϕVc=	5321.2	Kg
ϕVc=	5.3	Tn
ϕVs=	-	Tn

DISENO A FLEXION

Mu=	**0.4**	Tn*m
ρ=	0.0016	
ρdiseño=	0.0018	
As=	1.44	Cm^2/m
As*fy=	6048	kg
0.85f'c*b=	23800	kg/cm
a=	0.25	cm
kud=	0.30	cm
ε_c=	0.0030	
ε_f=	0.0773	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0020	
As=	1.60	Cm^2/m
Malla =	**6.0 mm c/.15**	

CHEQUEO A PUNZONAMIENTO

b=	**20**	cm
h=	**20**	cm
Apoyo=	Circular	
	Rectangular	**X**
P=	**2.5**	Tn
Pu=	3.8	Tn
β=	1.00	
ϕ=	**0.75**	
λ=	**1.00**	
αs=	**40**	
bo=	**112**	cm
C.11-31=	1.68	cm
C.11-32=	3.29	cm
C.11-33=	2.67	cm

Punto de aplicacion de una carga puntual

OK

CALCULO DE DEFLEXIONES MAXIMAS A LARGO PLAZO (Luz Maxima)

CONDICIONES GEOMETRICAS			Para placas		
B	0.50 m	Base de la viga	lna=	0 m	Luz corta
H	0.50 m	Altura de la viga	lnb=	0 m	Luz larga
L=	8.22 m	Luz maxima **Llenar Lmax**	m=	0.0	
CM=	0.89 Tn/m2		Direcciones=	1	
CV=	0.5 Tn/m2		Caso apoyo=	2	Continuo en ambas direcciones
Aferencia=	3.8 m		Ca cm=	0	Ma cm= 0.00
W=	5.29 Tn/m	Carga de servicio	Ca cv=	0	Ma cv= 0.00

SOLICITACIONES		CONDICION DE APOYO	APLICA
Ma=	14.9 Tn*m	Doblemente empotrado	X

Momento de agrietamiento e Inercia efectiva		
Ig=	0.00521 m4	
Icr=	0.00267 m4	
yt=	0.25 m	
fr=	3.28 Mpa	
Mcr=	6.8 Tn*m	Momento de agrietamiento
Ie=	0.00291 m4	Doblemente empotrado

MATERIALES	
f'c=	280 Kg/cm2
E=	209165 Kg/cm2
E=	2091650 Tn/m2

DEFLEXIONES MAXIMAS SEGUN LA CONDICION DE APOYO CON CARGA UNIFORME

$$\lambda = \frac{\xi}{1+50\rho'}$$

5 años o más ..... ξ = 2.0
12 meses ..... ξ = 1.4
6 meses ..... ξ = 1.2
3 meses ..... ξ = 1.0

ρ'= **0.0043** **ξ =** **2.0**

CONDICION DE APOYO	CALCULADAS	A LARGO PLAZO
Doblemente empotrado	1.03 cm	1.70 cm

DEFLEXIONES MAXIMAS CALCULADAS PERMISIBLES

Tipo de elemento	deflexión que se considera	deflexión límite
Cubiertas planas que no soportan o no están unidas a elementos no estructurales que puedan ser dañados por deflexiones grandes	Deflexión instantánea debida a la carga viva	$\frac{\ell}{180}$ Nota (1)
Losas que no soportan o no están unidos a elementos no estructurales que puedan ser dañados por deflexiones grandes	Deflexión instantánea debida a la carga viva	$\frac{\ell}{360}$
Cubiertas o losas que soportan o están unidos a elementos no estructurales susceptibles de daño debido a deflexiones grandes	La parte de la deflexión total que se presenta después de la unión a elementos no estructurales, o sea la suma de las deflexiones a largo plazo debida a cargas permanentes, más la instantánea debida a cualquier carga viva adicional - Véase la Nota (3)	$\frac{\ell}{480}$ Nota (2)
Cubiertas o losas que soporten o estén unidos a elementos no estructurales que no puedan ser dañados por deflexiones grandes		$\frac{\ell}{240}$ Nota (4)

Notas:
(1) La intención de este límite no es salvaguardar la eventualidad de acumulación de agua por efecto de la misma deflexión. Esta debe verificarse por medio de cálculos adecuados, incluyendo las deflexiones adicionales debidas al agua acumulada y además considerando los efectos a largo plazo de todas las cargas permanentes, contraflechas, tolerancias de construcción y confiabilidad de los sistemas de drenaje.
(2) Este límite puede ser excedido si se toman medidas adecuadas para evitar el daño de los elementos soportados.
(3) Las deflexiones a largo plazo deben determinarse de acuerdo con C.9.5.2.4 o C.9.5.4.2, pero pueden reducirse en la deflexión que se calcule que ocurre antes de instalar los elementos no estructurales. Esta última deflexión debe determinarse con base en datos apropiados acerca de las características de deflexiones a largo plazo de elementos similares a los considerados.
(4) No debe ser mayor que la tolerancia de los elementos no estructurales. El límite puede ser excedido si se provee una contraflecha tal que la deflexión total menos la contraflecha no exceda el límite.

DEFLEXIONES PERMISIBLES			Aplica
L/480=	1.71 cm	Cumple	X

CALCULO DE DEFLEXIONES MAXIMAS A LARGO PLAZO (Luz tipica)

CONDICIONES GEOMETRICAS			Para placas			
B	0.50 m	Base de la viga	lna=	0 m	Luz corta	
H	0.50 m	Altura de la viga	lnb=	0 m	Luz larga	
L=	6.9 m	Luz maxima Llenar Lmax	m=	0.0		
CM=	0.82 Tn/m2		Direcciones=	1		
CV=	0.5 Tn/m2		Caso apoyo=	2	Continuo en ambas direcciones	
Aferencia=	7.5 m		Ca cm=	0	Ma cm=	0.00
W=	9.50 Tn/m	Carga de servicio	Ca cv=	0	Ma cv=	0.00

SOLICITACIONES		CONDICION DE APOYO	APLICA
Ma=	18.9 Tn*m	Doblemente empotrado	X

Momento de agrietamiento e Inercia efectiva		
Ig=	0.00521 m4	
Icr=	0.00267 m4	
yt=	0.25 m	
fr=	3.28 Mpa	
Mcr=	6.8 Tn*m	Momento de agrietamiento
Ie=	0.00279 m4	Doblemente empotrado

MATERIALES	
f'c=	280 Kg/cm2
E=	209165 Kg/cm2
E=	2091650 Tn/m2

DEFLEXIONES MAXIMAS SEGUN LA CONDICION DE APOYO CON CARGA UNIFORME

$$\lambda = \frac{\xi}{1+50\rho'}$$

5 años o más ..... ξ = 2.0
12 meses ..... ξ = 1.4
6 meses ..... ξ = 1.2
3 meses ..... ξ = 1.0

ρ'= **0.0074** **ξ =** **2.0**

CONDICION DE APOYO	CALCULADAS	A LARGO PLAZO
Doblemente empotrado	0.96 cm	1.40 cm

DEFLEXIONES MAXIMAS CALCULADAS PERMISIBLES

Tipo de elemento	deflexión que se considera	deflexión límite
Cubiertas planas que no soportan o no están unidas a elementos no estructurales que puedan ser dañados por deflexiones grandes	Deflexión instantánea debida a la carga viva	$\frac{\ell}{180}$ Nota (1)
Losas que no soportan o no están unidos a elementos no estructurales que puedan ser dañados por deflexiones grandes	Deflexión instantánea debida a la carga viva	$\frac{\ell}{360}$
Cubiertas o losas que soportan o están unidos a elementos no estructurales susceptibles de daño debido a deflexiones grandes	La parte de la deflexión total que se presenta después de la unión a elementos no estructurales, o sea la suma de las deflexiones a largo plazo debida a cargas permanentes, más la instantánea debida a cualquier carga viva adicional - Véase la Nota (3)	$\frac{\ell}{480}$ Nota (2)
Cubiertas o losas que soporten o estén unidos a elementos no estructurales que no puedan ser dañados por deflexiones grandes		$\frac{\ell}{240}$ Nota (4)

Notas:
(1) La intención de este límite no es salvaguardar la eventualidad de acumulación de agua por efecto de la misma deflexión. Esta debe verificarse por medio de cálculos adecuados, incluyendo las deflexiones adicionales debidas al agua acumulada y además considerando los efectos a largo plazo de todas las cargas permanentes, contraflechas, tolerancias de construcción y confiabilidad de los sistemas de drenaje.
(2) Este límite puede ser excedido si se toman medidas adecuadas para evitar el daño de los elementos soportados.
(3) Las deflexiones a largo plazo deben determinarse de acuerdo con C.9.5.2.4 o C.9.5.4.2, pero pueden reducirse en la deflexión que se calcule que ocurre antes de instalar los elementos no estructurales. Esta última deflexión debe determinarse con base en datos apropiados acerca de las características de deflexiones a largo plazo de elementos similares a los considerados.
(4) No debe ser mayor que la tolerancia de los elementos no estructurales. El límite puede ser excedido si se provee una contraflecha tal que la deflexión total menos la contraflecha no exceda el límite.

DEFLEXIONES PERMISIBLES			Aplica
L/480=	1.44 cm	Cumple	X

CALCULO DE DEFLEXIONES MAXIMAS A LARGO PLAZO (Vigueta)

CONDICIONES GEOMETRICAS			Para placas			
B	0.20 m	Base de la viga	lna=	0 m	Luz corta	
H	0.50 m	Altura de la viga	lnb=	0 m	Luz larga	
L=	7.05 m	Luz maxima **Llenar Lmax**	m=	0.0		
CM=	0.89 Tn/m2		Direcciones=	1		
CV=	0.5 Tn/m2		Caso apoyo=	2	Continuo en ambas direcciones	
Aferencia=	2.2 m		Ca cm=	0	Ma cm=	0.00
W=	3.06 Tn/m	Carga de servicio	Ca cv=	0	Ma cv=	0.00

SOLICITACIONES		CONDICION DE APOYO	APLICA
Ma=	6.3 Tn*m	Doblemente empotrado	X

Momento de agrietamiento e Inercia efectiva		
Ig=	0.00208 m4	
Icr=	0.00107 m4	
yt=	0.25 m	
fr=	3.28 Mpa	
Mcr=	2.7 Tn*m	Momento de agrietamiento
Ie=	0.00115 m4	Doblemente empotrado

MATERIALES	
f'c=	280 Kg/cm2
E=	209165 Kg/cm2
E=	2091650 Tn/m2

DEFLEXIONES MAXIMAS SEGUN LA CONDICION DE APOYO CON CARGA UNIFORME

$$\lambda = \frac{\xi}{1+50\rho'}$$

5 años o más ..... ξ = 2.0
12 meses ..... ξ = 1.4
6 meses ..... ξ = 1.2
3 meses ..... ξ = 1.0

ρ'= **0.0028** **ξ =** **2.0**

CONDICION DE APOYO	CALCULADAS	A LARGO PLAZO
Doblemente empotrado	0.82 cm	1.44 cm

DEFLEXIONES MAXIMAS CALCULADAS PERMISIBLES

Tipo de elemento	deflexión que se considera	deflexión límite
Cubiertas planas que no soportan o no están unidas a elementos no estructurales que puedan ser dañados por deflexiones grandes	Deflexión instantánea debida a la carga viva	$\frac{\ell}{180}$ Nota (1)
Losas que no soportan o no están unidos a elementos no estructurales que puedan ser dañados por deflexiones grandes	Deflexión instantánea debida a la carga viva	$\frac{\ell}{360}$
Cubiertas o losas que soportan o están unidos a elementos no estructurales susceptibles de daño debido a deflexiones grandes	La parte de la deflexión total que se presenta después de la unión a elementos no estructurales, o sea la suma de las deflexiones a largo plazo debida a cargas permanentes, más la instantánea debida a cualquier carga viva adicional - Véase la Nota (3)	$\frac{\ell}{480}$ Nota (2)
Cubiertas o losas que soporten o estén unidos a elementos no estructurales que no puedan ser dañados por deflexiones grandes		$\frac{\ell}{240}$ Nota (4)

Notas:
(1) La intención de este límite no es salvaguardar la eventualidad de acumulación de agua por efecto de la misma deflexión. Esta debe verificarse por medio de cálculos adecuados, incluyendo las deflexiones adicionales debidas al agua acumulada y además considerando los efectos a largo plazo de todas las cargas permanentes, contraflechas, tolerancias de construcción y confiabilidad de los sistemas de drenaje.
(2) Este límite puede ser excedido si se toman medidas adecuadas para evitar el daño de los elementos soportados.
(3) Las deflexiones a largo plazo deben determinarse de acuerdo con C.9.5.2.4 o C.9.5.4.2, pero pueden reducirse en la deflexión que se calcule que ocurre antes de instalar los elementos no estructurales. Esta última deflexión debe determinarse con base en datos apropiados acerca de las características de deflexiones a largo plazo de elementos similares a los considerados.
(4) No debe ser mayor que la tolerancia de los elementos no estructurales. El límite puede ser excedido si se provee una contraflecha tal que la deflexión total menos la contraflecha no exceda el límite.

DEFLEXIONES PERMISIBLES			Aplica
L/480=	1.47 cm	Cumple	X

CALCULO DE DEFLEXIONES MAXIMAS A LARGO PLAZO (Placa cubierta)

CONDICIONES GEOMETRICAS		
B	1.00 m	Base de la placa
H	0.15 m	Altura de la placa
L=	0 m	Luz maxima
CM=	0.51 Tn/m2	
CV=	0.18 Tn/m2	
Aferencia=	1.0 m	
W=	0.69 Tn/m	Carga de servicio

Para placas			
lna=	5.6 m		Luz corta
lnb=	7.1 m		Luz larga
m=	0.8		
Direcciones=	2		
Caso apoyo=	1	Simple en las cuatro caras	
Ca cm=	0.056	Ma cm=	0.90
Ca cv=	0.056	Ma cv=	0.32

SOLICITACIONES		CONDICION DE APOYO	APLICA	
Ma=	1.2 Tn*m	Caso 1 Simple en las cuatro caras	X	Solo aplican casos 1, 6 y 7

Momento de agrietamiento e Inercia efectiva		
Ig=	0.00028 m4	
Icr=	0.00014 m4	
yt=	0.08 m	
fr=	3.28 Mpa	
Mcr=	1.2 Tn*m	Momento de agrietamiento
Ie=	0.00028 m4	Caso 1 Simple en las cuatro caras

MATERIALES	
f'c=	280 Kg/cm2
E=	209165 Kg/cm2
E=	2091650 Tn/m2

DEFLEXIONES MAXIMAS SEGUN LA CONDICION DE APOYO CON CARGA UNIFORME

$$\lambda = \frac{\xi}{1+50\rho'}$$

5 años o más ..... ξ = 2.0
12 meses ..... ξ = 1.4
6 meses ..... ξ = 1.2
3 meses ..... ξ = 1.0

ρ'= 0.0000 **ξ =** 2.0

CONDICION DE APOYO	CALCULADAS	A LARGO PLAZO
Caso 1 Simple en las cuatro caras	1.50 cm	3.00 cm

DEFLEXIONES MAXIMAS CALCULADAS PERMISIBLES

Tipo de elemento	deflexión que se considera	deflexión límite
Cubiertas planas que no soportan o no están unidas a elementos no estructurales que puedan ser dañados por deflexiones grandes	Deflexión instantánea debida a la carga viva	$\frac{\ell}{180}$ Nota (1)
Losas que no soportan o no están unidos a elementos no estructurales que puedan ser dañados por deflexiones grandes	Deflexión instantánea debida a la carga viva	$\frac{\ell}{360}$
Cubiertas o losas que soportan o están unidos a elementos no estructurales susceptibles de daño debido a deflexiones grandes	La parte de la deflexión total que se presenta después de la unión a elementos no estructurales, o sea la suma de las deflexiones a largo plazo debida a cargas permanentes, más la instantánea debida a cualquier carga viva adicional - Véase la Nota (3)	$\frac{\ell}{480}$ Nota (2)
Cubiertas o losas que soporten o estén unidos a elementos no estructurales que no puedan ser dañados por deflexiones grandes		$\frac{\ell}{240}$ Nota (4)

Notas:
(1) La intención de este límite no es salvaguardar la eventualidad de acumulación de agua por efecto de la misma deflexión. Esta debe verificarse por medio de cálculos adecuados, incluyendo las deflexiones adicionales debidas al agua acumulada y además considerando los efectos a largo plazo de todas las cargas permanentes, contraflechas, tolerancias de construcción y confiabilidad de los sistemas de drenaje.
(2) Este límite puede ser excedido si se toman medidas adecuadas para evitar el daño de los elementos soportados.
(3) Las deflexiones a largo plazo deben determinarse de acuerdo con C.9.5.2.4 o C.9.5.4.2, pero pueden reducirse en la deflexión que se calcule que ocurre antes de instalar los elementos no estructurales. Esta última deflexión debe determinarse con base en datos apropiados acerca de las características de deflexiones a largo plazo de elementos similares a los considerados.
(4) No debe ser mayor que la tolerancia de los elementos no estructurales. El límite puede ser excedido si se provee una contraflecha tal que la deflexión total menos la contraflecha no exceda el límite.

DEFLEXIONES PERMISIBLES			Aplica
L/180=	3.94 cm	Cumple	X

DISEÑO DE PLACA MACIZA

PROYECTO : HOSPITAL CHAPARRAL-PLACA DE CUBIERTA / ANALISIS 1

AVALUO DE CARGAS

CM=	0.10 Tn/m2
CV=	0.30 Tn/m2
Wdiseño=	1.0 Tn/m2

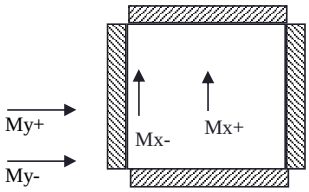
LX=	5.45 m
LY=	7.1 m



TRABAJO DE LA PLACA

Ly/Lx= 0.8 **DOS DIRECCIONES**

CONDICION DE APOYO



My+=	3.8 t*m
Mx+=	2.1 t*m
My-	0.0 t*m
Mx-=	0.0 t*m

SENTIDO X

SENTIDO Y

MATERIALES

f'c=	280	**Kg/cm^2**
fy=	4200	**Kg/cm^2**

DISEÑO DEL REFUERZO

d=	10	Cm
b=	100	Cm
t=	15	Cm

My+=	3.8	Tn*m
ρ=	0.0111	
ρmin=	0.0018	
ρdiseño=	0.0111	
As=	11.14	Cm^2/m
Varilla=	4 /8"	
Seperación=	10 cm	

SENTIDO X

Mx+=	2.1	Tn*m
ρ=	0.0058	
ρmin=	0.0018	
ρdiseño=	0.0058	
As=	5.80	Cm^2/m
Varilla=	3 /8"	
Seperación=	10 cm	

SENTIDO Y

DISEÑO DE PLACA MACIZA

PROYECTO : **HOSPITAL CHAPARRAL-PLACA DE CUBIERTA / ANALISIS 2**

AVALUO DE CARGAS

CM=	**0.10** Tn/m2
CV=	**0.30** Tn/m2
Wdiseño=	**1.0 Tn/m2**

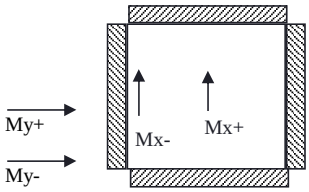
LX=	**4.15** m
LY=	**7.1** m



TRABAJO DE LA PLACA

Ly/Lx= **0.6** **DOS DIRECCIONES**

CONDICION DE APOYO



My+=	**5.2** t*m
Mx+=	**1.7** t*m
My-	**0.0** t*m
Mx-=	**0.0** t*m

SENTIDO X

SENTIDO Y

MATERIALES

f'c=	**280**	**Kg/cm^2**
fy=	**4200**	**Kg/cm^2**

DISEÑO DEL REFUERZO

d=	**12**	Cm
b=	**100**	Cm
t=	**15**	Cm

My+=	5.2	Tn*m
ρ=	0.0104	
ρmin=	0.0018	
ρdiseño=	0.0104	
As=	12.50	Cm^2/m
Varilla=	**4 /8"**	
Seperación=	**10 cm**	

SENTIDO X

Mx+=	1.7	Tn*m
ρ=	0.0031	
ρmin=	0.0018	
ρdiseño=	0.0031	
As=	3.77	Cm^2/m
Varilla=	**3 /8"**	
Seperación=	**15 cm**	

SENTIDO Y

DISEÑO DE PLACA MACIZA

PROYECTO : **HOSPITAL CHAPARRAL-PLACA DE CUBIERTA / ANALISIS 3**

AVALUO DE CARGAS

CM=	**0.10** Tn/m2
CV=	**0.30** Tn/m2
Wdiseño=	**1.0 Tn/m2**

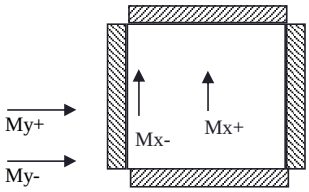
LX=	**5.6** m
LY=	**7.1** m



TRABAJO DE LA PLACA

Ly/Lx= **0.8** **DOS DIRECCIONES**

CONDICION DE APOYO



My+=	**3.8** t*m
Mx+=	**2.1** t*m
My-	**0.0** t*m
Mx-=	**0.0** t*m

SENTIDO X

SENTIDO Y

MATERIALES

f'c=	**280**	**Kg/cm^2**
fy=	**4200**	**Kg/cm^2**

DISEÑO DEL REFUERZO

d=	**12**	Cm
b=	**100**	Cm
t=	**15**	Cm

My+=	3.8	Tn*m
ρ=	0.0075	
ρmin=	0.0018	
ρdiseño=	0.0075	
As=	8.96	Cm^2/m
Varilla=	**4 /8"**	
Seperación=	**10 cm**	

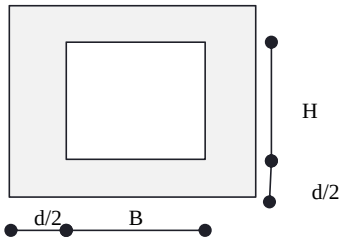
SENTIDO X

Mx+=	2.1	Tn*m
ρ=	0.0040	
ρmin=	0.0018	
ρdiseño=	0.0040	
As=	4.75	Cm^2/m
Varilla=	**3 /8"**	
Seperación=	**10 cm**	

SENTIDO Y

CHEQUEO DE PLACA A CARGA PUNTUAL

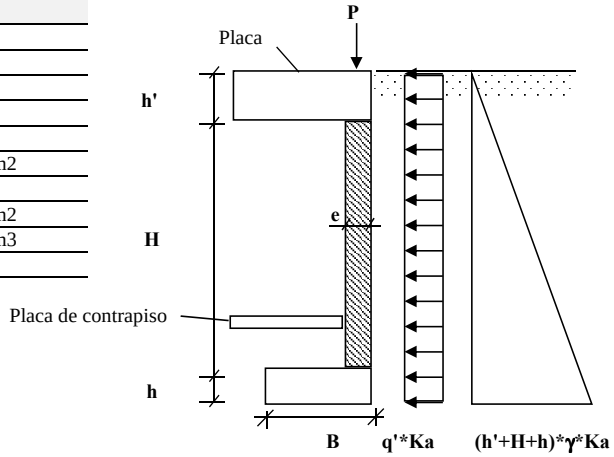
Pu=	**1** Tn	
B=	**10** cm	
H=	**10** cm	
d=	**10** cm	
d'=	**5** cm	
t=	15 cm	
bo=	40 cm	
β=	1	
αs=	**20**	
λ=	**1.0**	
f'c=	**210** kg/cm2	
Vc=	9.2 Tn	(C.11-31)
Vc=	11.0 Tn	(C.11-32)
Vc=	5.8 Tn	(C.11-33)
ϕVc=	3.48 Tn	**Cumple**



DISEÑO MUROS DE CONTENCIÓN

DISEÑO DE MUROS DE CONTENCION TIPO 1 y 4

DATOS DE ENTRADA		
e=	0.25	m
h'=	0.50	m
H=	3.80	m
h=	0.80	m
P=	8	Tn
q'=	1.00	Tn/m2
Ko=	0.5	
σ=	17.6	Tn/m2
γ=	1.90	Tn/m3
L sin apoyo=	5.0	m



1. DISENO DE MURO

Flexion

M_1=	1.63 Tn*m	Por sobrecarga
M_2=	3.17 Tn*m	Por empuje lateral

Cortante

V=	4.505 Tn

M_u=	7.67	Tn*m	
f'c=	210	Kg/Cm2	
fy=	4200	Kg/Cm2	
d=	20	Cm	
b=	100	Cm	
t=	25	Cm	
Mu=	7.7	Tn*m	
ρ=	0.0048		
ρmin=	0.002		
ρdiseño=	0.0048		
As=	9.69	Cm^2/m	
As*fy=	40685	kg	
0.85f'c*b=	17850	kg/cm	
a=	2.28	cm	
kud=	2.68	cm	
ε_c=	0.0030		
ε_f=	0.0194	Traccion	
ϕ=	0.90		
ρ /ϕ=	0.0054		
As=	10.76	Cm^2/m	
Varilla=	4 /8"		
Separación=	10 cm		

Vu=	7.2	Tn
ϕVc=	11521	Kg
ϕVc=	11.5	Tn
ϕVs=	0.00	Tn

2. DISENO DE ZARPA

Dimensionamiento

Breq=	**46 Cm**
Basumido=	**80 Cm**

Flexion como viga

M=	**14.1 Tn*m**

M_u=	22.5	Tn*m	
f'c=	**210**	Kg/Cm2	
fy=	**4200**	Kg/Cm2	
d=	**75**	Cm	
h=	**60**	Cm	Altura de la zarpa
B=	80	Cm	Ancho de la zarpa
Mu=	22.5	Tn*m	
ρ=	0.0016		
ρmin=	0.0033		
ρdiseño=	0.0033		
As=	15.84	Cm^2/m	
As*fy=	66528	kg	
0.85f'c*b=	14280	kg/cm	
a=	4.66	cm	
kud=	5.48	cm	
ε_c=	0.0030		
ε_f=	0.0381	Traccion	
ϕ=	0.90		
ρ /ϕ=	0.0037		
As=	16.50	Cm^2/m	
Varilla=	**6 /8"**		
#Varillas=	**6**		

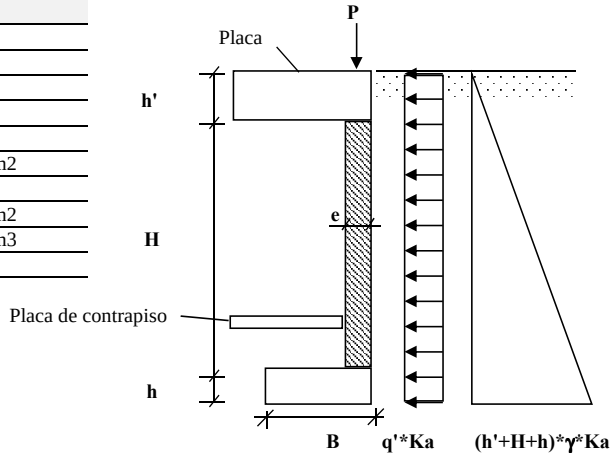
Flexion como voladizo

M=	**0.4 Tn*m**

M_u=	0.6	Tn*m
f'c=	210	Kg/Cm2
fy=	4200	Kg/Cm2
d=	53	Cm
B=	100	Cm
t=	60	Cm
Mu=	0.6	Tn*m
ρ=	0.0001	
ρmin=	0.002	
ρdiseño=	0.0020	
As=	10.60	Cm^2/m
As*fy=	44520	kg
0.85f'c*b=	17850	kg/cm
a=	2.49	cm
kud=	2.93	cm
ε_c=	0.0030	
ε_f=	0.0512	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0022	
As=	11.78	Cm^2/m
Varilla=	**4 /8"**	
Seperación=	**10 cm**	

DISEÑO DE MUROS DE CONTENCION TIPO 2

DATOS DE ENTRADA		
e=	0.25	m
h'=	0.50	m
H=	3.90	m
h=	0.80	m
P=	8	Tn
q'=	1.00	Tn/m2
Ko=	0.5	
σ=	17.6	Tn/m2
γ=	1.90	Tn/m3
L sin apoyo=	5.0	m



1. DISENO DE MURO

Flexion

M_1=	1.69 Tn*m	Por sobrecarga
M_2=	3.30 Tn*m	Por empuje lateral

Cortante

V=	4.593 Tn

M_u=	7.98	Tn*m	
f'c=	210	Kg/Cm2	
fy=	4200	Kg/Cm2	
d=	20	Cm	
b=	100	Cm	
t=	25	Cm	
Mu=	8.0	Tn*m	
ρ=	0.0050		
ρmin=	0.002		
ρdiseño=	0.0050		
As=	10.10	Cm^2/m	
As*fy=	42405	kg	
0.85f'c*b=	17850	kg/cm	
a=	2.38	cm	
kud=	2.79	cm	
ε_c=	0.0030		
ε_f=	0.0185	Traccion	
ϕ=	0.90		
ρ /ϕ=	0.0056		
As=	11.22	Cm^2/m	
Varilla=	4 /8"		
Separación=	10 cm		

Vu=	7.3	Tn
ϕVc=	11521	Kg
ϕVc=	11.5	Tn
ϕVs=	0.00	Tn

2. DISENO DE ZARPA

Dimensionamiento

Breq=	**46 Cm**
Basumido=	**80 Cm**

Flexion como viga

M=	**14.4 Tn*m**

M_u=	23.0	Tn*m	
f'c=	**210**	Kg/Cm2	
fy=	**4200**	Kg/Cm2	
d=	**75**	Cm	
h=	**60**	Cm	Altura de la zarpa
B=	80	Cm	Ancho de la zarpa
Mu=	23.0	Tn*m	
ρ=	0.0017		
ρmin=	0.0033		
ρdiseño=	0.0033		
As=	15.84	Cm^2/m	
As*fy=	66528	kg	
0.85f'c*b=	14280	kg/cm	
a=	4.66	cm	
kud=	5.48	cm	
ε_c=	0.0030		
ε_f=	0.0381	Traccion	
ϕ=	0.90		
ρ /ϕ=	0.0037		
As=	16.50	Cm^2/m	
Varilla=	**6 /8"**		
#Varillas=	**6**		

Flexion como voladizo

M=	**0.4 Tn*m**

M_u=	0.6	Tn*m
f'c=	210	Kg/Cm2
fy=	4200	Kg/Cm2
d=	53	Cm
B=	100	Cm
t=	60	Cm
Mu=	0.6	Tn*m
ρ=	0.0001	
ρmin=	0.002	
ρdiseño=	0.0020	
As=	10.60	Cm^2/m
As*fy=	44520	kg
0.85f'c*b=	17850	kg/cm
a=	2.49	cm
kud=	2.93	cm
ε_c=	0.0030	
ε_f=	0.0512	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0022	
As=	11.78	Cm^2/m
Varilla=	**4 /8"**	
Seperación=	**10 cm**	

DISEÑO DE CIMENTACIÓN

DISEÑO DE ZAPATAS CONCENTRICAS (1)

DATOS DE ENTRADA

σ suelo=	17.6	Tn/m^2
fy=	4200	Kg/Cm^2
f'c=	210	Kg/Cm^2
ϕ Cortante=	0.75	
ϕ Flexion=	0.90	
<Dimension	1.00	m

(C.11-31)	$V_c = 0.17\left(1+\frac{2}{\beta}\right)\lambda\sqrt{f'_c}b_o d$
(C.11-32)	$V_c = 0.083\left(\frac{\alpha_s d}{b_o}+2\right)\lambda\sqrt{f'_c}b_o d$
(C.11-33)	$V_c = 0.33\lambda\sqrt{f'_c}b_o d$

(C.11-31)	$V_c = 0.53\left(1+\frac{2}{\beta}\right)\lambda\sqrt{f'_c}b_o d$
(C.11-32)	$V_c = 0.27\left(\frac{\alpha_s d}{b_o}+2\right)\lambda\sqrt{f'_c}b_o d$
(C.11-33)	$V_c = \lambda\sqrt{f'_c}b_o d$

*Condicion 1(C.11-31)
*Condicion 2(C.11-32)
*Condicion 3(C.11-33)

ZAPATA TIPO	COL	Pu (Tn)	Mu (Tn*m)	Preal (tn)	Mr (Tn*m)	e (m)	A (m)	B (m)	1.1P (Tn)	A (m2)	L (m)	H (m)	σmeto (Tn/m2)	σu (Tn/m2)	DIMENSIONAMIENTO d (Cm)	h (Cm)	bo (Cm)	REVISION POR PUNZONAMIENTO αs	βc	Vu (Tn)	C.11-31	C.11-32	C.11-33	CORTE COMO VIGA Sentido corto Vu(Tn)	Sentido largo Vu(Tn)	d req (Cm)	
29A	1	126.51	144.9	84.3	77.8	0.92	0.60	0.60	92.8	5.27	3.65	3.65	17.53	23.90	OK	38	45	392	40	1	103.56	15.29	15.32	24.31	OK	99.88	99.88	35.63	OK
3A	2	105.35	16.1	70.2	8.6	0.12	0.60	0.60	77.3	4.39	2.40	2.40	17.53	23.91	OK	28	35	352	40	1	86.83	14.28	16.22	22.70	OK	35.58	35.58	19.30	OK
13A	3	156.89	16.9	104.6	9.1	0.09	0.60	0.60	115.1	6.54	2.80	2.80	17.40	23.73	OK	38	45	392	40	1	134.10	19.80	19.83	31.48	OK	47.83	47.83	22.24	OK
29A	4	95.46	152.3	63.6	81.8	1.29	0.60	0.60	70.0	3.98	3.65	3.65	16.35	22.30	OK	38	45	392	40	1	74.04	10.93	10.95	17.38	OK	93.21	93.21	33.25	OK
1A	5	43.37	9.0	28.9	4.8	0.17	0.60	0.60	31.8	1.81	1.70	1.70	17.49	23.85	OK	18	25	312	40	1	28.86	5.35	7.32	8.51	OK	15.00	15.00	11.49	OK
4A	6	121.16	10.5	80.8	5.6	0.07	0.60	0.60	88.9	5.05	2.45	2.45	17.33	23.64	OK	28	35	352	40	1	102.86	16.91	19.22	26.89	OK	37.35	37.35	19.85	OK
2A	7	94.44	8.8	63.0	4.7	0.08	0.60	0.60	69.3	3.94	2.20	2.20	17.25	23.53	OK	23	30	332	40	1	78.23	13.64	16.83	21.68	OK	29.50	29.50	17.46	OK
22A	8	202.76	9.5	135.2	5.1	0.04	0.60	0.60	148.7	8.45	3.10	3.10	16.61	22.64	OK	43	50	412	40	1	178.74	25.10	23.94	39.92	OK	57.56	57.56	24.18	OK
27A	11	92.55	152.0	61.7	81.6	1.32	0.60	0.60	67.9	3.86	3.55	3.55	17.43	23.76	OK	38	45	392	40	1	69.73	10.29	10.31	16.37	OK	92.37	92.37	33.88	OK
5A	12	114.62	16.4	76.4	8.8	0.12	0.60	0.60	84.1	4.78	2.50	2.50	17.17	23.41	OK	28	35	352	40	1	96.49	15.86	18.03	25.22	OK	39.21	39.21	20.42	OK
9A	13	136.37	14.5	90.9	7.8	0.09	0.60	0.60	100.0	5.68	2.65	2.65	17.00	23.18	OK	33	40	372	40	1	116.32	18.09	19.20	28.77	OK	42.70	42.70	20.98	OK
6A	14	107.67	22.6	71.8	12.1	0.17	0.60	0.60	79.0	4.49	2.55	2.55	16.96	23.13	OK	28	35	352	40	1	89.76	14.76	16.77	23.46	OK	41.00	41.00	20.93	OK
7A	15	115.08	22.2	76.7	11.9	0.16	0.60	0.60	84.4	4.80	2.60	2.60	16.95	23.12	OK	28	35	352	40	1	97.18	15.98	18.16	25.40	OK	43.27	43.27	21.67	OK
11A	16	135.83	22.5	90.6	12.1	0.13	0.60	0.60	99.6	5.66	2.75	2.75	17.00	23.19	OK	33	40	372	40	1	115.78	18.01	19.11	28.64	OK	47.51	47.51	22.49	OK
9A	17	133.89	15.7	89.3	8.4	0.09	0.60	0.60	98.2	5.58	2.65	2.65	16.96	23.13	OK	33	40	372	40	1	113.88	17.72	18.80	28.17	OK	42.61	42.61	20.93	OK
27A	20	93.73	148.0	62.5	79.5	1.27	0.60	0.60	68.7	3.91	3.55	3.55	17.18	23.43	OK	38	45	392	40	1	71.23	10.52	10.54	16.72	OK	91.07	91.07	33.40	OK
21A	21	170.11	29.7	113.4	16.0	0.14	0.60	0.60	124.7	7.09	3.10	3.10	16.52	22.53	OK	38	45	392	40	1	148.47	21.92	21.96	34.85	OK	60.76	60.76	25.52	OK
31A	22	151.19	144.9	100.8	77.8	0.77	0.60	0.60	110.9	6.30	3.80	3.80	17.04	23.24	OK	38	45	392	40	1	128.87	19.02	19.06	30.25	OK	107.73	107.73	36.91	OK
31A	23	163.14	142.8	108.8	76.7	0.70	0.60	0.60	119.6	6.80	3.80	3.80	17.51	23.87	OK	38	45	392	40	1	140.21	20.70	20.74	32.91	OK	110.68	110.68	37.92	OK
30A	24	273.32	37.0	182.2	19.9	0.11	0.60	0.60	200.4	####	3.70	3.70	17.23	23.50	OK	53	60	452	40	1	243.31	31.15	27.42	49.53	OK	88.69	88.69	31.21	OK
21A	25	167.75	31.3	111.8	16.8	0.15	0.60	0.60	123.0	6.99	3.10	3.10	16.52	22.53	OK	38	45	392	40	1	146.11	21.57	21.61	34.29	OK	60.77	60.77	25.52	OK
28A	26	248.41	39.1	165.6	21.0	0.13	0.60	0.60	182.2	####	3.55	3.55	17.55	23.94	OK	48	55	432	40	1	220.49	29.54	26.99	46.96	OK	84.55	84.55	31.01	OK
14A	27	145.11	29.4	96.7	15.8	0.16	0.60	0.60	106.4	6.05	2.85	2.85	17.60	24.00	OK	33	40	372	40	1	124.35	19.34	20.53	30.76	OK	54.37	54.37	24.84	OK
26A	28	225.79	38.2	150.5	20.5	0.14	0.60	0.60	165.6	9.41	3.45	3.45	17.21	23.47	OK	48	55	432	40	1	198.41	26.58	24.29	42.26	OK	76.52	76.52	28.88	OK
23A	134	154.99	50.8	103.3	27.3	0.26	0.60	0.60	113.7	6.46	3.15	3.15	17.22	23.48	OK	38	45	392	40	1	132.44	19.55	19.59	31.09	OK	66.20	66.20	27.36	OK
25A	135	181.32	54.7	120.9	29.4	0.24	0.60	0.60	133.0	7.56	3.35	3.35	17.00	23.19	OK	38	45	392	40	1	159.05	23.48	23.52	37.33	OK	77.29	77.29	30.04	OK
23A	136	157.51	51.8	105.0	27.8	0.27	0.60	0.60	115.5	6.56	3.15	3.15	17.52	23.89	OK	38	45	392	40	1	134.56	19.86	19.90	31.58	OK	67.36	67.36	27.84	OK
24A	137	180.39	46.8	120.3	25.1	0.21	0.60	0.60	132.3	7.52	3.30	3.30	16.76	22.85	OK	38	45	392	40	1	158.44	23.39	23.43	37.19	OK	73.16	73.16	28.86	OK
21A	138	153.82	43.2	102.5	23.2	0.23	0.60	0.60	112.8	6.41	3.10	3.10	16.88	23.02	OK	38	45	392	40	1	131.71	19.44	19.48	30.91	OK	62.09	62.09	26.08	OK
23A	140	155.44	52.0	103.6	27.9	0.27	0.60	0.60	114.0	6.48	3.15	3.15	17.39	23.71	OK	38	45	392	40	1	132.67	19.58	19.62	31.14	OK	66.84	66.84	27.63	OK
21A	141	156.19	44.3	104.1	23.8	0.23	0.60	0.60	114.5	6.51	3.10	3.10	17.19	23.44	OK	38	45	392	40	1	133.67	19.73	19.77	31.38	OK	63.23	63.23	26.56	OK
17A	142	145.73	37.6	97.2	20.2	0.21	0.60	0.60	106.9	6.07	2.95	2.95	17.47	23.82	OK	33	40	372	40	1	125.13	19.46	20.66	30.95	OK	59.38	59.38	26.21	OK

		DIMENSIONAMIENTO													REVISION POR PUNZONAMIENTO									CORTE COMO VIGA				
ZAPATA TIPO	COL	Pu (Tn)	Mu (Tn*m)	Preal (tn)	Mr (Tn*m)	e (m)	A (m)	B (m)	L1P (Tn)	A (m2)	L (m)	H (m)	σneto (Tn/m2)	σu (Tn/m2)	d (Cm)	h (Cm)	bo (Cm)	αs	βc	Vu (Tn)	C.11-31	C.11-32	C.11-33	Sentido corto Vu(Tn)	Sentido largo Vu(Tn)	d req (Cm)	
23A	145	156.82	52.7	104.5	28.3	0.27	0.60	0.60	115.0	6.53	3.15	3.15	17.57	23.96	OK	38	45	392	40	1	133.81	19.75	19.79	31.41	OK	67.54	67.54	27.92	OK
21A	146	155.36	44.7	103.6	24.0	0.23	0.60	0.60	113.9	6.47	3.10	3.10	17.17	23.41	OK	38	45	392	40	1	132.88	19.62	19.65	31.19	OK	63.14	63.14	26.52	OK
8A	147	99.04	35.9	66.0	19.3	0.29	0.60	0.60	72.6	4.13	2.65	2.65	17.19	23.44	OK	28	35	352	40	1	80.89	13.30	15.11	21.14	OK	46.28	46.28	22.74	OK
15A	148	151.81	29.1	101.2	15.6	0.15	0.60	0.60	111.3	6.33	2.90	2.90	17.47	23.82	OK	33	40	372	40	1	131.21	20.41	21.66	32.45	OK	56.64	56.64	25.43	OK
24A	151	183.61	51.8	122.4	27.8	0.23	0.60	0.60	134.6	7.65	3.30	3.30	17.47	23.82	OK	38	45	392	40	1	160.73	23.73	23.77	37.73	OK	76.25	76.25	30.09	OK
21A	152	156.26	45.7	104.2	24.6	0.24	0.60	0.60	114.6	6.51	3.10	3.10	17.37	23.68	OK	38	45	392	40	1	133.52	19.71	19.75	31.34	OK	63.87	63.87	26.83	OK
8A	153	99.68	37.7	66.5	20.2	0.30	0.60	0.60	73.1	4.15	2.65	2.65	17.59	23.98	OK	28	35	352	40	1	81.11	13.33	15.15	21.20	OK	47.34	47.34	23.26	OK
7A	154	98.54	30.8	65.7	16.5	0.25	0.60	0.60	72.3	4.11	2.60	2.60	16.89	23.03	OK	28	35	352	40	1	80.70	13.27	15.08	21.09	OK	43.12	43.12	21.59	OK
18A	155	176.72	16.9	117.8	9.0	0.08	0.60	0.60	129.6	7.36	2.95	2.95	17.22	23.48	OK	38	45	392	40	1	154.17	22.76	22.80	36.19	OK	55.06	55.06	24.30	OK
12A	156	147.35	22.9	98.2	12.3	0.13	0.60	0.60	108.1	6.14	2.80	2.80	17.48	23.84	OK	33	40	372	40	1	126.73	19.71	20.92	31.34	OK	51.40	51.40	23.90	OK
25A	159	182.59	53.8	121.7	28.9	0.24	0.60	0.60	133.9	7.61	3.35	3.35	17.00	23.19	OK	38	45	392	40	1	160.32	23.67	23.71	37.63	OK	77.28	77.28	30.04	OK
11A	160	99.04	45.8	66.0	24.6	0.37	0.60	0.60	72.6	4.13	2.75	2.75	17.41	23.74	OK	33	40	372	40	1	78.50	12.21	12.96	19.42	OK	48.65	48.65	23.03	OK
10A	161	99.03	40.0	66.0	21.5	0.33	0.60	0.60	72.6	4.13	2.70	2.70	17.17	23.41	OK	28	35	352	40	1	80.90	13.30	15.11	21.15	OK	48.67	48.67	23.47	OK
16A	162	153.95	24.6	102.6	13.2	0.13	0.60	0.60	112.9	6.41	2.90	2.90	17.00	23.19	OK	38	45	392	40	1	131.68	19.44	19.48	30.91	OK	51.78	51.78	23.25	OK
18A	163	178.09	15.1	118.7	8.1	0.07	0.60	0.60	130.6	7.42	2.95	2.95	17.10	23.31	OK	38	45	392	40	1	155.70	22.98	23.03	36.55	OK	54.68	54.68	24.13	OK
12A	164	152.89	18.0	101.9	9.7	0.09	0.60	0.60	112.1	6.37	2.80	2.80	17.21	23.47	OK	33	40	372	40	1	132.59	20.63	21.89	32.79	OK	50.60	50.60	23.53	OK
20A	167	147.62	49.2	98.4	26.4	0.27	0.60	0.60	108.3	6.15	3.10	3.10	17.12	23.35	OK	33	40	372	40	1	127.43	19.82	21.04	31.52	OK	66.59	66.59	27.97	OK
12A	168	98.47	49.0	65.6	26.3	0.40	0.60	0.60	72.2	4.10	2.80	2.80	17.12	23.34	OK	33	40	372	40	1	78.28	12.18	12.92	19.36	OK	50.32	50.32	23.40	OK
19A	169	158.72	33.5	105.8	18.0	0.17	0.60	0.60	116.4	6.61	3.00	3.00	17.33	23.63	OK	38	45	392	40	1	136.02	20.08	20.12	31.93	OK	58.14	58.14	25.23	OK
14A	170	148.49	26.1	99.0	14.0	0.14	0.60	0.60	108.9	6.19	2.85	2.85	17.41	23.74	OK	33	40	372	40	1	127.96	19.90	21.13	31.65	OK	53.79	53.79	24.57	OK
23A	176	154.23	52.5	102.8	28.2	0.27	0.60	0.60	113.1	6.43	3.15	3.15	17.36	23.67	OK	38	45	392	40	1	131.50	19.41	19.45	30.87	OK	66.72	66.72	27.58	OK
20A	177	152.47	41.3	101.6	22.2	0.22	0.60	0.60	111.8	6.35	3.10	3.10	16.55	22.57	OK	33	40	372	40	1	132.95	20.68	21.95	32.88	OK	64.38	64.38	27.04	OK
19A	178	157.62	35.8	105.1	19.2	0.18	0.60	0.60	115.6	6.57	3.00	3.00	17.54	23.92	OK	38	45	392	40	1	134.65	19.88	19.92	31.60	OK	58.83	58.83	25.53	OK
24A	181	177.49	48.8	118.3	26.2	0.22	0.60	0.60	130.2	7.40	3.30	3.30	16.76	22.86	OK	38	45	392	40	1	155.54	22.96	23.00	36.51	OK	73.17	73.17	28.87	OK
20A	182	151.84	44.0	101.2	23.7	0.23	0.60	0.60	111.3	6.33	3.10	3.10	16.83	22.95	OK	33	40	372	40	1	131.99	20.53	21.79	32.65	OK	65.44	65.44	27.49	OK
15A	183	137.68	36.5	91.8	19.6	0.21	0.60	0.60	101.0	5.74	2.90	2.90	17.31	23.61	OK	33	40	372	40	1	117.26	18.24	19.36	29.00	OK	56.14	56.14	25.20	OK
24A	185	178.34	52.3	118.9	28.1	0.24	0.60	0.60	130.8	7.43	3.30	3.30	17.17	23.41	OK	38	45	392	40	1	155.86	23.01	23.05	36.58	OK	74.94	74.94	29.57	OK
17A	186	128.31	46.7	85.5	25.1	0.29	0.60	0.60	94.1	5.35	2.95	2.95	17.27	23.54	OK	33	40	372	40	1	107.95	16.79	17.82	26.70	OK	58.69	58.69	25.90	OK
20A	189	132.01	56.2	88.0	30.2	0.34	0.60	0.60	96.8	5.50	3.10	3.10	16.76	22.86	OK	33	40	372	40	1	112.24	17.46	18.53	27.76	OK	65.20	65.20	27.38	OK

DISEÑO DE ZAPATAS CONCENTRICAS (2)

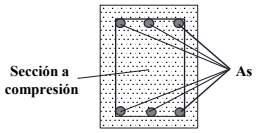
C.10.14 — Resistencia al aplastamiento

C.10.14.1 — La resistencia de diseño al aplastamiento del concreto no debe exceder $\phi(0.85f'_c A_1)$ excepto cuando la superficie de soporte sea más ancha en todos los lados que el área cargada, en cuyo caso, se permite que la resistencia de diseño al aplastamiento en el área cargada sea multiplicada por $\sqrt{(A_2/A_1)}$, pero no más que 2.

	DISEÑO A FLEXION																								PRESION DE CONTACTO
	REF. SENTIDO A								REF. SENTIDO B																
ZAPATA TIPO	Lv (m)	Mu (Tn*m)	ρ	ρ min	ρ diseño	Seccion en	As (Cm2)	Refuerzo sentido A			Lv (m)	Mu (Tn*m)	ρ	ρ min	ρ diseño	Seccion en	As (Cm2)	Refuerzo sentido B			Pu (Tn)	ϕ*0.85*f'c*A_1 (Tn)	
29A	1.53	30.57	0.0060	0.0018	0.0060	Traccion	22.91	37 # 6 42	c/.	10	1.53	30.57	0.0060	0.0018	0.0060	Traccion	22.91	37 # 6 42	c/.	10	126.51	417.7	Cumple
3A	0.9	10.65	0.0038	0.0018	0.0038	Traccion	10.53	24 # 4 27	c/.	10	0.90	10.65	0.0038	0.0018	0.0038	Traccion	10.53	24 # 4 27	c/.	10	105.35	417.7	Cumple
13A	1.10	15.79	0.0030	0.0018	0.0030	Traccion	11.39	28 # 4 31	c/.	10	1.10	15.79	0.0030	0.0018	0.0030	Traccion	11.39	28 # 4 31	c/.	10	156.89	417.7	Cumple
29A	1.525	28.53	0.0056	0.0018	0.0056	Traccion	21.26	37 # 6 42	c/.	10	1.53	28.53	0.0056	0.0018	0.0056	Traccion	21.26	37 # 6 42	c/.	10	95.46	417.7	Cumple
1A	0.55	3.97	0.0034	0.0018	0.0034	Traccion	6.07	9 # 4 20	c/.	20	0.55	3.97	0.0034	0.0018	0.0034	Traccion	6.07	9 # 4 20	c/.	20	43.37	417.7	Cumple
4A	0.925	11.12	0.0039	0.0018	0.0039	Traccion	11.02	25 # 4 28	c/.	10	0.93	11.12	0.0039	0.0018	0.0039	Traccion	11.02	25 # 4 28	c/.	10	121.16	417.7	Cumple
2A	0.80	8.28	0.0044	0.0018	0.0044	Traccion	10.04	22 # 4 25	c/.	10	0.80	8.28	0.0044	0.0018	0.0044	Traccion	10.04	22 # 4 25	c/.	10	94.44	417.7	Cumple
22A	1.25	19.46	0.0029	0.0018	0.0029	Traccion	12.39	31 # 4 34	c/.	10	1.25	19.46	0.0029	0.0018	0.0029	Traccion	12.39	31 # 4 34	c/.	10	202.76	417.7	Cumple
27A	1.48	28.43	0.0056	0.0018	0.0056	Traccion	21.19	36 # 6 41	c/.	10	1.48	28.43	0.0056	0.0018	0.0056	Traccion	21.19	36 # 6 41	c/.	10	92.55	417.7	Cumple
5A	0.95	11.62	0.0041	0.0018	0.0041	Traccion	11.54	25 # 4 28	c/.	10	0.95	11.62	0.0041	0.0018	0.0041	Traccion	11.54	25 # 4 28	c/.	10	114.62	417.7	Cumple
9A	1.03	13.40	0.0034	0.0018	0.0034	Traccion	11.18	27 # 4 30	c/.	10	1.03	13.40	0.0034	0.0018	0.0034	Traccion	11.18	27 # 4 30	c/.	10	136.37	417.7	Cumple
6A	0.98	12.10	0.0043	0.0018	0.0043	Traccion	12.04	26 # 4 29	c/.	10	0.98	12.10	0.0043	0.0018	0.0043	Traccion	12.04	26 # 4 29	c/.	10	107.67	417.7	Cumple
7A	1.00	12.71	0.0045	0.0018	0.0045	Traccion	12.69	26 # 4 29	c/.	10	1.00	12.71	0.0045	0.0018	0.0045	Traccion	12.69	26 # 4 29	c/.	10	115.08	417.7	Cumple
11A	1.08	14.74	0.0037	0.0018	0.0037	Traccion	12.36	28 # 4 31	c/.	10	1.08	14.74	0.0037	0.0018	0.0037	Traccion	12.36	28 # 4 31	c/.	10	135.83	417.7	Cumple
9A	1.03	13.37	0.0034	0.0018	0.0034	Traccion	11.16	27 # 4 30	c/.	10	1.03	13.37	0.0034	0.0018	0.0034	Traccion	11.16	27 # 4 30	c/.	10	133.89	417.7	Cumple
27A	1.48	28.03	0.0055	0.0018	0.0055	Traccion	20.86	36 # 6 41	c/.	10	1.48	28.03	0.0055	0.0018	0.0055	Traccion	20.86	36 # 6 41	c/.	10	93.73	417.7	Cumple
21A	1.25	19.36	0.0037	0.0018	0.0037	Traccion	14.09	31 # 5 35	c/.	10	1.25	19.36	0.0037	0.0018	0.0037	Traccion	14.09	31 # 5 35	c/.	10	170.11	417.7	Cumple
31A	1.60	32.72	0.0065	0.0018	0.0065	Traccion	24.66	38 # 6 43	c/.	10	1.60	32.72	0.0065	0.0018	0.0065	Traccion	24.66	38 # 6 43	c/.	10	151.19	417.7	Cumple
31A	1.60	33.61	0.0067	0.0018	0.0067	Traccion	25.40	38 # 6 43	c/.	10	1.60	33.61	0.0067	0.0018	0.0067	Traccion	25.40	38 # 6 43	c/.	10	163.14	417.7	Cumple
30A	1.55	31.05	0.0030	0.0018	0.0030	Traccion	16.07	37 # 5 41	c/.	10	1.55	31.05	0.0030	0.0018	0.0030	Traccion	16.07	37 # 5 41	c/.	10	273.32	417.7	Cumple
21A	1.25	19.36	0.0037	0.0018	0.0037	Traccion	14.10	31 # 5 35	c/.	10	1.25	19.36	0.0037	0.0018	0.0037	Traccion	14.10	31 # 5 35	c/.	10	167.75	417.7	Cumple
28A	1.48	28.64	0.0034	0.0018	0.0034	Traccion	16.45	36 # 5 40	c/.	10	1.48	28.64	0.0034	0.0018	0.0034	Traccion	16.45	36 # 5 40	c/.	10	248.41	417.7	Cumple
14A	1.13	16.71	0.0043	0.0018	0.0043	Traccion	14.10	29 # 5 33	c/.	10	1.13	16.71	0.0043	0.0018	0.0043	Traccion	14.10	29 # 5 33	c/.	10	145.11	417.7	Cumple
26A	1.43	26.21	0.0031	0.0018	0.0031	Traccion	15.00	35 # 5 39	c/.	10	1.43	26.21	0.0031	0.0018	0.0031	Traccion	15.00	35 # 5 39	c/.	10	225.79	417.7	Cumple
23A	1.28	20.99	0.0040	0.0018	0.0040	Traccion	15.34	32 # 5 36	c/.	10	1.28	20.99	0.0040	0.0018	0.0040	Traccion	15.34	32 # 5 36	c/.	10	154.99	417.7	Cumple
25A	1.38	24.11	0.0047	0.0018	0.0047	Traccion	17.76	34 # 5 38	c/.	10	1.38	24.11	0.0047	0.0018	0.0047	Traccion	17.76	34 # 5 38	c/.	10	181.32	417.7	Cumple
23A	1.28	21.36	0.0041	0.0018	0.0041	Traccion	15.63	32 # 5 36	c/.	10	1.28	21.36	0.0041	0.0018	0.0041	Traccion	15.63	32 # 5 36	c/.	10	157.51	417.7	Cumple
24A	1.35	22.91	0.0044	0.0018	0.0044	Traccion	16.82	33 # 5 37	c/.	10	1.35	22.91	0.0044	0.0018	0.0044	Traccion	16.82	33 # 5 37	c/.	10	180.39	417.7	Cumple
21A	1.25	19.78	0.0038	0.0018	0.0038	Traccion	14.42	31 # 5 35	c/.	10	1.25	19.78	0.0038	0.0018	0.0038	Traccion	14.42	31 # 5 35	c/.	10	153.82	417.7	Cumple
23A	1.28	21.20	0.0041	0.0018	0.0041	Traccion	15.50	32 # 5 36	c/.	10	1.28	21.20	0.0041	0.0018	0.0041	Traccion	15.50	32 # 5 36	c/.	10	155.44	417.7	Cumple
21A	1.25	20.15	0.0039	0.0018	0.0039	Traccion	14.69	31 # 5 35	c/.	10	1.25	20.15	0.0039	0.0018	0.0039	Traccion	14.69	31 # 5 35	c/.	10	156.19	417.7	Cumple
17A	1.18	18.09	0.0046	0.0018	0.0046	Traccion	15.34	30 # 5 34	c/.	10	1.18	18.09	0.0046	0.0018	0.0046	Traccion	15.34	30 # 5 34	c/.	10	145.73	417.7	Cumple

	DISEÑO A FLEXION																					PRESIÓN DE CONTACTO	
	REF. SENTIDO A									REF. SENTIDO B													
ZAPATA TIPO	Lv (m)	Mu (Tn*m)	ρ	ρ min	ρ diseño	Seccion en	As (Cm2)	Refuerzo sentido A			Lv (m)	Mu (Tn*m)	ρ	ρ min	ρ diseño	Seccion en	As (Cm2)	Refuerzo sentido B			Pu (Tn)	ϕ*0,85*f'c*A_1 (Tn)	
23A	1.28	21.42	0.0041	0.0018	0.0041	Traccion	15.67	32 # 5	36	c/. 10	1.28	21.42	0.0041	0.0018	0.0041	Traccion	15.67	32 # 5	36	c/. 10	156.82	417.7	Cumple
21A	1.25	20.12	0.0039	0.0018	0.0039	Traccion	14.67	31 # 5	35	c/. 10	1.25	20.12	0.0039	0.0018	0.0039	Traccion	14.67	31 # 5	35	c/. 10	155.36	417.7	Cumple
8A	1.03	13.54	0.0048	0.0018	0.0048	Traccion	13.57	27 # 5	31	c/. 10	1.03	13.54	0.0048	0.0018	0.0048	Traccion	13.57	27 # 5	31	c/. 10	99.04	417.7	Cumple
15A	1.15	17.32	0.0044	0.0018	0.0044	Traccion	14.65	29 # 5	33	c/. 10	1.15	17.32	0.0044	0.0018	0.0044	Traccion	14.65	29 # 5	33	c/. 10	151.81	417.7	Cumple
24A	1.35	23.88	0.0046	0.0018	0.0046	Traccion	17.58	33 # 5	37	c/. 10	1.35	23.88	0.0046	0.0018	0.0046	Traccion	17.58	33 # 5	37	c/. 10	183.61	417.7	Cumple
21A	1.25	20.35	0.0039	0.0018	0.0039	Traccion	14.85	31 # 5	35	c/. 10	1.25	20.35	0.0039	0.0018	0.0039	Traccion	14.85	31 # 5	35	c/. 10	156.26	417.7	Cumple
8A	1.03	13.86	0.0050	0.0018	0.0050	Traccion	13.90	27 # 5	31	c/. 10	1.03	13.86	0.0050	0.0018	0.0050	Traccion	13.90	27 # 5	31	c/. 10	99.68	417.7	Cumple
7A	1.00	12.67	0.0045	0.0018	0.0045	Traccion	12.64	26 # 4	29	c/. 10	1.00	12.67	0.0045	0.0018	0.0045	Traccion	12.64	26 # 4	29	c/. 10	98.54	417.7	Cumple
18A	1.18	17.83	0.0034	0.0018	0.0034	Traccion	12.93	20 # 5	34	c/. 15	1.18	17.83	0.0034	0.0018	0.0034	Traccion	12.93	20 # 5	34	c/. 15	176.72	417.7	Cumple
12A	1.10	15.87	0.0040	0.0018	0.0040	Traccion	13.36	28 # 5	32	c/. 10	1.10	15.87	0.0040	0.0018	0.0040	Traccion	13.36	28 # 5	32	c/. 10	147.35	417.7	Cumple
25A	1.38	24.11	0.0047	0.0018	0.0047	Traccion	17.76	34 # 5	38	c/. 10	1.38	24.11	0.0047	0.0018	0.0047	Traccion	17.76	34 # 5	38	c/. 10	182.59	417.7	Cumple
11A	1.08	15.09	0.0038	0.0018	0.0038	Traccion	12.67	28 # 4	31	c/. 10	1.08	15.09	0.0038	0.0018	0.0038	Traccion	12.67	28 # 4	31	c/. 10	99.04	417.7	Cumple
10A	1.05	14.20	0.0051	0.0018	0.0051	Traccion	14.27	27 # 5	31	c/. 10	1.05	14.20	0.0051	0.0018	0.0051	Traccion	14.27	27 # 5	31	c/. 10	99.03	417.7	Cumple
16A	1.15	16.87	0.0032	0.0018	0.0032	Traccion	12.20	29 # 4	32	c/. 10	1.15	16.87	0.0032	0.0018	0.0032	Traccion	12.20	29 # 4	32	c/. 10	153.95	417.7	Cumple
18A	1.18	17.70	0.0034	0.0018	0.0034	Traccion	12.83	20 # 5	34	c/. 15	1.18	17.70	0.0034	0.0018	0.0034	Traccion	12.83	20 # 5	34	c/. 15	178.09	417.7	Cumple
12A	1.10	15.62	0.0040	0.0018	0.0040	Traccion	13.14	19 # 5	32	c/. 15	1.10	15.62	0.0040	0.0018	0.0040	Traccion	13.14	19 # 5	32	c/. 15	152.89	417.7	Cumple
20A	1.25	20.06	0.0052	0.0018	0.0052	Traccion	17.13	31 # 5	35	c/. 10	1.25	20.06	0.0052	0.0018	0.0052	Traccion	17.13	31 # 5	35	c/. 10	147.62	417.7	Cumple
12A	1.10	15.53	0.0040	0.0018	0.0040	Traccion	13.06	19 # 5	32	c/. 15	1.10	15.53	0.0040	0.0018	0.0040	Traccion	13.06	19 # 5	32	c/. 15	98.47	417.7	Cumple
19A	1.20	18.72	0.0036	0.0018	0.0036	Traccion	13.60	30 # 5	34	c/. 10	1.20	18.72	0.0036	0.0018	0.0036	Traccion	13.60	30 # 5	34	c/. 10	158.72	417.7	Cumple
14A	1.13	16.53	0.0042	0.0018	0.0042	Traccion	13.94	29 # 5	33	c/. 10	1.13	16.53	0.0042	0.0018	0.0042	Traccion	13.94	29 # 5	33	c/. 10	148.49	417.7	Cumple
23A	1.28	21.16	0.0041	0.0018	0.0041	Traccion	15.47	32 # 5	36	c/. 10	1.28	21.16	0.0041	0.0018	0.0041	Traccion	15.47	32 # 5	36	c/. 10	154.23	417.7	Cumple
20A	1.25	19.40	0.0050	0.0018	0.0050	Traccion	16.53	31 # 5	35	c/. 10	1.25	19.40	0.0050	0.0018	0.0050	Traccion	16.53	31 # 5	35	c/. 10	152.47	417.7	Cumple
19A	1.20	18.94	0.0036	0.0018	0.0036	Traccion	13.77	30 # 5	34	c/. 10	1.20	18.94	0.0036	0.0018	0.0036	Traccion	13.77	30 # 5	34	c/. 10	157.62	417.7	Cumple
24A	1.35	22.91	0.0044	0.0018	0.0044	Traccion	16.83	33 # 5	37	c/. 10	1.35	22.91	0.0044	0.0018	0.0044	Traccion	16.83	33 # 5	37	c/. 10	177.49	417.7	Cumple
20A	1.25	19.72	0.0051	0.0018	0.0051	Traccion	16.82	31 # 5	35	c/. 10	1.25	19.72	0.0051	0.0018	0.0051	Traccion	16.82	31 # 5	35	c/. 10	151.84	417.7	Cumple
15A	1.15	17.17	0.0044	0.0018	0.0044	Traccion	14.52	29 # 5	33	c/. 10	1.15	17.17	0.0044	0.0018	0.0044	Traccion	14.52	29 # 5	33	c/. 10	137.68	417.7	Cumple
24A	1.35	23.47	0.0045	0.0018	0.0045	Traccion	17.26	33 # 5	37	c/. 10	1.35	23.47	0.0045	0.0018	0.0045	Traccion	17.26	33 # 5	37	c/. 10	178.34	417.7	Cumple
17A	1.18	17.88	0.0046	0.0018	0.0046	Traccion	15.15	30 # 5	34	c/. 10	1.18	17.88	0.0046	0.0018	0.0046	Traccion	15.15	30 # 5	34	c/. 10	128.31	417.7	Cumple
20A	1.25	19.65	0.0051	0.0018	0.0051	Traccion	16.75	31 # 5	35	c/. 10	1.25	19.65	0.0051	0.0018	0.0051	Traccion	16.75	31 # 5	35	c/. 10	132.01	417.7	Cumple

DISEÑO DE ZAPATAS CONCENTRICAS (3)



	DISEÑO DE VIGA DE CIMENTACION																	
ZAPATA TIPO	% DE CARGA	P (Tn)	As (Cm2)	Seccion a compresión (Cm2)	B (Cm)	H (Cm)	- C	+ T	As	Refuerzo								
29A	10%	12.7	2.11	60.2	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
3A	10%	10.5	1.76	50.2	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
13A	10%	15.7	2.61	74.7	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
29A	10%	9.5	1.59	45.5	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
1A	10%	4.3	0.72	20.7	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
4A	10%	12.1	2.02	57.7	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
2A	10%	9.4	1.57	45.0	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
22A	10%	20.3	3.38	96.6	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
27A	10%	9.3	1.54	44.1	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
5A	10%	11.5	1.91	54.6	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
9A	10%	13.6	2.27	64.9	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
6A	10%	10.8	1.79	51.3	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
7A	10%	11.5	1.92	54.8	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
11A	10%	13.6	2.26	64.7	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
9A	10%	13.4	2.23	63.8	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
27A	10%	9.4	1.56	44.6	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
21A	10%	17.0	2.84	81.0	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
31A	10%	15.1	2.52	72.0	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
31A	10%	16.3	2.72	77.7	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
30A	10%	27.3	4.56	130.2	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
21A	10%	16.8	2.80	79.9	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
28A	10%	24.8	4.14	118.3	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
14A	10%	14.5	2.42	69.1	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
26A	10%	22.6	3.76	107.5	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
23A	10%	15.5	2.58	73.8	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
25A	10%	18.1	3.02	86.3	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
23A	10%	15.8	2.63	75.0	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
24A	10%	18.0	3.01	85.9	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
21A	10%	15.4	2.56	73.2	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
23A	10%	15.5	2.59	74.0	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
21A	10%	15.6	2.60	74.4	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		
17A	10%	14.6	2.43	69.4	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35		

DISEÑO DE VIGA DE CIMENTACION

ZAPATA TIPO	% DE CARGA	P (Tn)	As (Cm2)	Seccion a compresión (Cm2)	B (Cm)	H (Cm)	- C	+ T	As	Refuerzo							
23A	10%	15.7	2.61	74.7	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
21A	10%	15.5	2.59	74.0	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
8A	10%	9.9	1.65	47.2	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
15A	10%	15.2	2.53	72.3	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
24A	10%	18.4	3.06	87.4	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
21A	10%	15.6	2.60	74.4	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
8A	10%	10.0	1.66	47.5	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
7A	10%	9.9	1.64	46.9	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
18A	10%	17.7	2.95	84.2	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
12A	10%	14.7	2.46	70.2	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
25A	10%	18.3	3.04	86.9	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
11A	10%	9.9	1.65	47.2	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
10A	10%	9.9	1.65	47.2	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
16A	10%	15.4	2.57	73.3	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
18A	10%	17.8	2.97	84.8	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
12A	10%	15.3	2.55	72.8	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
20A	10%	14.8	2.46	70.3	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
12A	10%	9.8	1.64	46.9	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
19A	10%	15.9	2.65	75.6	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
14A	10%	14.8	2.47	70.7	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
23A	10%	15.4	2.57	73.4	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
20A	10%	15.2	2.54	72.6	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
19A	10%	15.8	2.63	75.1	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
24A	10%	17.7	2.96	84.5	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
20A	10%	15.2	2.53	72.3	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
15A	10%	13.8	2.29	65.6	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
24A	10%	17.8	2.97	84.9	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
17A	10%	12.8	2.14	61.1	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
20A	10%	13.2	2.20	62.9	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35

DISEÑO DE ZAPATAS EXCENTRICAS (1)

DATOS DE ENTRADA

σ suelo=	17.6	Tn/m^2
fy=	4200	Kg/Cm^2
f'c=	210	Kg/Cm^2
f Cortante=	0.75	
f Flexion=	0.90	
<Dimension	1.00	m

(C.11-31)	$V_c = 0.17\left(1+\frac{2}{\beta}\right)\lambda\sqrt{f'_c}b_o d$
(C.11-32)	$V_c = 0.083\left(\frac{\alpha_s d}{b_o}+2\right)\lambda\sqrt{f'_c}b_o d$
(C.11-33)	$V_c = 0.33\lambda\sqrt{f'_c}b_o d$

(C.11-31)	$V_c = 0.53\left(1+\frac{2}{\beta}\right)\lambda\sqrt{f'_c}b_o d$
(C.11-32)	$V_c = 0.27\left(\frac{\alpha_s d}{b_o}+2\right)\lambda\sqrt{f'_c}b_o d$
(C.11-33)	$V_c = \lambda\sqrt{f'_c}b_o d$

*Condicion 1(C.11-31)
*Condicion 2(C.11-32)
*Condicion 3(C.11-33)

ZAPATA TIPO	COL	Pu (Tn)	Mu (Tn*m)	Preal (m)	Mr (Tn*m)	e (m)	A (m)	B (m)	Le (m)	1.1P (Tn)	A (m2)	L (m)	H (m)	e (m)	ΔR (Tn)	σneto (Tn/m2)	σultimo (Tn/m2)	d (Cm)	h (Cm)	bo (Cm)	αs	βc	Vu (Tn)	DIMENSIONAMIENTO	REVISION POR PUNZONAMIENTO C.11-31	C.11-32	C.11-33	CORTE COMO VIGA Sentido corto Vu(Tn)	Sentido largo Vu(Tn)	d requerido (Cm)	
46A	9	246.6	12.7	164.4	6.8	0.04	0.60	0.60	7.63	180.8	#####	3.05	4.00	1.23	31.45	17.40	23.72	OK	68	75	384	30	1	207.68	61.43	25.20	49.76	OK	73.81	51.72	73.81	31.51	OK
45A	10	233.1	12.7	155.4	6.8	0.04	0.60	0.60	7.63	170.9	9.71	2.95	3.85	1.18	28.30	17.54	23.92	OK	63	70	369	30	1	196.92	60.62	25.53	49.10	OK	70.22	50.20	70.22	30.99	OK
43A	18	151.0	18.7	100.7	10.0	0.10	0.60	0.60	7.63	110.7	6.29	2.35	3.10	0.88	13.04	16.99	23.17	OK	48	55	324	30	1	123.98	43.47	20.23	35.21	OK	41.93	28.37	41.93	23.23	OK
42A	19	147.8	15.3	98.5	8.2	0.08	0.60	0.60	7.63	108.4	6.16	2.30	3.00	0.85	12.36	17.50	23.86	OK	48	55	324	30	1	119.98	42.06	19.58	34.07	OK	39.52	26.49	39.52	22.37	OK
43A	29	150.2	25.0	100.1	13.4	0.13	0.60	0.60	7.63	110.2	6.26	2.35	3.10	0.88	12.98	16.90	23.05	OK	48	55	324	30	1	123.33	43.24	20.13	35.02	OK	41.71	28.22	41.71	23.11	OK
40A	30	123.4	133.1	82.2	71.5	0.87	0.60	0.60	6.90	90.5	5.14	2.10	2.75	0.75	10.03	17.40	23.73	OK	43	50	309	30	1	98.19	36.09	17.54	29.24	OK	32.14	20.88	32.14	19.93	OK
41A	31	131.4	44.2	87.6	23.7	0.27	0.60	0.60	6.90	96.3	5.47	2.20	2.90	0.80	11.48	16.90	23.04	OK	43	50	309	30	1	106.90	39.30	19.09	31.83	OK	36.50	24.72	36.50	21.60	OK
41A	32	136.1	52.1	90.7	28.0	0.31	0.60	0.60	6.90	99.8	5.67	2.20	2.90	0.80	11.90	17.51	23.87	OK	43	50	309	30	1	110.75	40.71	19.78	32.98	OK	37.81	25.61	37.81	22.38	OK
44A	33	178.2	55.5	118.8	29.8	0.25	0.60	0.60	6.90	130.7	7.42	2.55	3.35	0.98	19.55	17.58	23.98	OK	53	60	339	30	1	147.55	49.44	22.17	40.05	OK	51.66	35.74	51.66	26.38	OK
45A	34	232.8	38.4	155.2	20.6	0.13	0.60	0.60	7.63	170.7	9.70	2.95	3.85	1.18	28.26	17.52	23.89	OK	63	70	369	30	1	196.64	60.53	25.50	49.03	OK	70.12	50.12	70.12	30.95	OK
47A	35	200.3	47.6	133.5	25.6	0.19	0.60	0.60	8.22	146.9	8.34	3.15	3.15	1.28	24.51	17.27	23.55	OK	73	80	266	20	1	158.60	67.73	27.13	54.86	OK	40.43	25.98	40.43	16.71	OK
42A	143	143.2	39.9	95.5	21.4	0.22	0.60	0.60	6.90	105.0	5.97	2.30	3.00	0.85	13.41	17.16	23.41	OK	48	55	324	30	1	115.91	40.64	18.92	32.91	OK	38.76	25.98	38.76	21.94	OK
43A	149	148.7	31.9	99.2	17.1	0.17	0.60	0.60	6.90	109.1	6.20	2.35	3.10	0.88	14.40	16.95	23.11	OK	48	55	324	30	1	121.79	42.70	19.88	34.58	OK	41.82	28.30	41.82	23.17	OK
36A	158	86.5	58.3	57.7	31.3	0.54	0.60	0.60	6.90	63.4	3.60	1.75	2.30	0.58	5.24	17.06	23.26	OK	33	40	279	30	1	66.36	27.02	14.61	21.88	OK	21.17	13.11	21.17	15.75	OK
37A	166	94.5	63.3	63.0	34.0	0.54	0.60	0.60	6.90	69.3	3.94	1.85	2.45	0.63	6.28	16.68	22.74	OK	33	40	279	30	1	74.85	30.47	16.48	24.68	OK	25.03	16.44	25.03	17.62	OK
41A	171	132.9	25.5	88.6	13.7	0.15	0.60	0.60	6.90	97.5	5.54	2.20	2.90	0.80	11.62	17.10	23.32	OK	43	50	309	30	1	108.19	39.77	19.32	32.21	OK	36.94	25.02	36.94	21.86	OK
43A	172	153.9	21.1	102.6	11.3	0.11	0.60	0.60	6.90	112.8	6.41	2.35	3.10	0.88	14.90	17.53	23.91	OK	48	55	324	30	1	125.98	44.17	20.56	35.78	OK	43.27	29.28	43.27	23.97	OK
37A	175	94.6	56.9	63.0	30.6	0.49	0.60	0.60	6.90	69.4	3.94	1.85	2.45	0.63	6.28	16.69	22.75	OK	33	40	279	30	1	74.89	30.49	16.49	24.70	OK	25.05	16.45	25.05	17.63	OK
41A	179	131.8	33.1	87.9	17.8	0.20	0.60	0.60	6.90	96.7	5.49	2.20	2.90	0.80	11.52	16.96	23.12	OK	43	50	309	30	1	107.27	39.43	19.16	31.94	OK	36.62	24.81	36.62	21.68	OK
39A	180	111.7	60.2	74.4	32.3	0.43	0.60	0.60	6.90	81.9	4.65	2.00	2.60	0.70	8.40	17.36	23.67	OK	38	45	294	30	1	88.91	34.35	17.53	27.83	OK	29.36	19.70	29.36	19.11	OK
36A	184	86.7	62.6	57.8	33.6	0.58	0.60	0.60	6.90	63.6	3.61	1.75	2.30	0.58	5.26	17.10	23.32	OK	33	40	279	30	1	66.54	27.09	14.65	21.94	OK	21.22	13.14	21.22	15.79	OK
36A	188	88.2	68.0	58.8	36.5	0.62	0.60	0.60	6.90	64.7	3.68	1.75	2.30	0.58	5.35	17.40	23.73	OK	33	40	279	30	1	67.70	27.56	14.90	22.32	OK	21.59	13.37	21.59	16.07	OK
32A	190	32.7	43.5	21.8	23.4	1.07	0.60	0.60	3.35	24.0	1.36	1.05	1.40	0.23	1.57	17.39	23.72	OK	13	20	219	30	1	20.08	10.42	8.27	8.44	OK	6.72	3.15	6.72	8.34	OK
38A	192	77.2	57.0	51.5	30.6	0.59	0.60	0.60	6.90	56.6	3.22	1.90	1.90	0.65	5.35	17.17	23.42	OK	38	45	196	20	1	54.74	31.73	16.19	25.70	OK	12.01	12.01	12.01	8.23	OK
34A	193	35.9	52.7	23.9	28.3	1.18	0.60	0.60	3.35	26.3	1.49	1.15	1.50	0.28	2.14	16.48	22.48	OK	18	25	234	30	1	22.18	10.77	7.50	8.72	OK	6.98	3.20	6.98	7.90	OK
33A	433	23.3	62.7	15.5	33.7	2.17	0.60	0.60	1.45	17.1	0.97	1.10	1.10	0.25	3.23	16.78	22.88	OK	13	20	146	20	1	11.09	8.62	6.84	6.99	OK	3.02	3.02	3.02	3.58	OK
34A	434	37.9	63.4	25.2	34.1	1.35	0.60	0.60	5.40	27.8	1.58	1.15	1.50	0.28	1.35	16.88	23.02	OK	18	25	234	30	1	23.86	11.58	8.06	9.38	OK	7.15	3.28	7.15	8.09	OK
34A	435	36.8	63.2	24.5	34.0	1.38	0.60	0.60	5.40	27.0	1.53	1.15	1.50	0.28	1.32	16.40	22.37	OK	18	25	234	30	1	23.18	11.25	7.84	9.11	OK	6.95	3.19	6.95	7.86	OK
35A	436	39.5	67.1	26.3	36.0	1.37	0.60	0.60	5.40	29.0	1.65	1.20	1.60	0.30	1.55	15.89	21.67	OK	18	25	234	30	1	26.31	12.77	8.89	10.34	OK	8.32	4.16	8.32	9.03	OK

DISEÑO DE ZAPATAS EXCENTRICAS (2)

C.10.14 — Resistencia al aplastamiento

C.10.14.1 — La resistencia de diseño al aplastamiento del concreto no debe exceder $\phi(0.85f'_c A_1)$ excepto cuando la superficie de soporte sea más ancha en todos los lados que el área cargada, en cuyo caso, se permite que la resistencia de diseño al aplastamiento en el área cargada sea multiplicada por $\sqrt{(A_2/A_1)}$, pero no más que 2.

| | | | DISEÑO A FLEXION | | |

DISEÑO DE ZAPATAS EXCENTRICAS (3)

ESQUEMA DE VIGA DE CIMENTACION

DIAGRAMA DE CORTANTE DEBAJO DE LA ZAPATA

DISEÑO DE VIGA DE CIMENTACION

ZAPATA TIPO	Mu (Tn*m)	B (Cm)	H (Cm)	ρ	ρ min	ρ diseño	Seccion en	As (Cm2)	W (Tn/m)	V1 (Tn)	V2 (Tn)	V3 (Tn)	Vu (TN)	ΦVc (Tn)	ΦVs (Tn)	Refuerzo principal				1/3(f'c)^0.5	2/3(f'c)^0.5	Refuerzo secundario				Transversal			
46A	359.82			0.0099	0.0033	0.0099	Traccion	130.9	69.6	20.9	######	31.5	148.0	80.4	67.6				OK	59.5	119.0	OK				ft #		c/.		Ramas
45A	323.78	130	95	0.0096	0.0033	0.0096	Traccion	117.2	67.5	20.3	######	28.3	136.9	74.7	62.2	24	#	8	OK	55.3	110.5	OK	13	#	7	ft #	4	c/.	13	4	Ramas
43A	149.26	80	80	0.0106	0.0033	0.0106	Traccion	66.86	52.7	15.8	-94.9	13.0	84.7	38.1	46.6	14	#	8	OK	28.2	56.4	OK	8	#	6	ft #	4	c/.	18	5	Ramas
42A	141.40	80	80	0.0099	0.0033	0.0099	Traccion	62.79	52.5	15.8	-92.6	12.4	81.5	38.1	43.4	13	#	8	OK	28.2	56.4	OK	8	#	6	ft #	4	c/.	15	4	Ramas
43A	148.47	80	80	0.0105	0.0033	0.0105	Traccion	66.45	52.4	15.7	-94.4	13.0	84.3	38.1	46.2	14	#	8	OK	28.2	56.4	OK	8	#	6	ft #	4	c/.	18	5	Ramas
40A	103.80	60	80	0.0097	0.0033	0.0097	Traccion	45.95	47.9	14.4	-76.1	10.0	61.8	28.6	33.2	10	#	8	OK	21.2	42.3	OK	6	#	6	ft #	4	c/.	13	3	Ramas
41A	118.86	70	80	0.0095	0.0033	0.0095	Traccion	52.47	49.0	14.7	-81.6	11.5	68.8	33.4	35.4	11	#	8	OK	24.7	49.4	OK	7	#	6	ft #	4	c/.	18	4	Ramas
41A	123.14	70	80	0.0099	0.0033	0.0099	Traccion	54.65	50.8	15.2	-84.6	11.9	71.3	33.4	37.9	11	#	8	OK	24.7	49.4	OK	7	#	6	ft #	4	c/.	15	4	Ramas
44A	202.20	90	95	0.0085	0.0033	0.0085	Traccion	72.22	58.9	17.7	######	19.5	91.7	51.7	40.0	15	#	8	OK	38.3	76.5	OK	9	#	7	ft #	4	c/.	18	4	Ramas
45A	323.32	130	95	0.0096	0.0033	0.0096	Traccion	117	67.4	20.2	######	28.3	136.7	74.7	62.0	24	#	8	OK	55.3	110.5	OK	13	#	7	ft #	4	c/.	13	4	Ramas
47A	302.20	120	95	0.0097	0.0033	0.0097	Traccion	109.6	54.4	16.3	######	24.5	124.0	68.9	55.1	22	#	8	OK	51.0	102.0	OK	12	#	7	ft #	4	c/.	18	5	Ramas
42A	138.83	80	80	0.0097	0.0033	0.0097	Traccion	61.48	51.5	15.4	-89.6	13.4	78.0	38.1	39.8	13	#	8	OK	28.2	56.4	OK	8	#	6	ft #	4	c/.	15	4	Ramas
43A	149.05	80	80	0.0106	0.0033	0.0106	Traccion	66.75	52.5	15.8	-93.3	14.4	82.4	38.1	44.3	14	#	8	OK	28.2	56.4	OK	8	#	6	ft #	4	c/.	18	5	Ramas
36A	54.25	60	80	0.0048	0.0033	0.0048	Traccion	22.54	39.2	11.8	-51.6	5.2	34.5	28.6	5.9	6	#	7	OK	21.2	42.3	OK	6	#	6	ft #	3	c/.	18	5	Ramas
37A	64.96	60	80	0.0058	0.0033	0.0058	Traccion	27.33	40.9	12.3	-57.1	6.3	40.8	28.6	12.2	6	#	8	OK	21.2	42.3	OK	6	#	6	ft #	3	c/.	35	3	Ramas
41A	120.29	70	80	0.0096	0.0033	0.0096	Traccion	53.19	49.6	14.9	-82.6	11.6	69.6	33.4	36.2	11	#	8	OK	24.7	49.4	OK	7	#	6	ft #	4	c/.	18	4	Ramas
43A	154.19	80	80	0.0110	0.0033	0.0110	Traccion	69.45	54.4	16.3	-96.5	14.9	85.3	38.1	47.2	14	#	8	OK	28.2	56.4	OK	8	#	6	ft #	4	c/.	18	5	Ramas
37A	64.99	60	80	0.0058	0.0033	0.0058	Traccion	27.35	40.9	12.3	-57.1	6.3	40.9	28.6	12.3	6	#	8	OK	21.2	42.3	OK	6	#	6	ft #	3	c/.	35	3	Ramas
41A	119.27	70	80	0.0095	0.0033	0.0095	Traccion	52.68	49.2	14.8	-81.9	11.5	69.0	33.4	35.7	11	#	8	OK	24.7	49.4	OK	7	#	6	ft #	4	c/.	18	4	Ramas
39A	86.98	60	80	0.0079	0.0033	0.0079	Traccion	37.63	45.1	13.5	-68.3	8.4	53.1	28.6	24.5	8	#	8	OK	21.2	42.3	OK	6	#	6	ft #	3	c/.	15	4	Ramas
36A	54.39	60	80	0.0048	0.0033	0.0048	Traccion	22.6	39.3	11.8	-51.8	5.3	34.6	28.6	6.0	6	#	7	OK	21.2	42.3	OK	6	#	6	ft #	3	c/.	35	3	Ramas
36A	55.34	60	80	0.0049	0.0033	0.0049	Traccion	23.02	40.0	12.0	-52.7	5.3	35.2	28.6	6.6	6	#	7	OK	21.2	42.3	OK	6	#	6	ft #	3	c/.	35	3	Ramas
32A	7.89	60	80	0.0007	0.0033	0.0033	Traccion	15.64	24.3	7.3	-16.7	1.6	-1.6	28.6	30.2	6	#	6	OK	21.2	42.3	OK	6	#	6	ft #	3	c/.	35	3	Ramas
38A	55.42	60	80	0.0049	0.0033	0.0049	Traccion	23.05	32.6	9.8	-46.8	5.4	34.5	28.6	6.0	6	#	7	OK	21.2	42.3	OK	6	#	6	ft #	3	c/.	35	3	Ramas
34A	10.74	60	80	0.0009	0.0033	0.0033	Traccion	15.64	24.7	7.4	-18.9	2.1	1.2	28.6	-27.4	6	#	6	OK	21.2	42.3	OK	6	#	6	ft #	3	c/.	35	3	Ramas
33A	7.03	60	80	0.0006	0.0033	0.0033	Traccion	15.64	18.5	5.5	-11.5	3.2	-2.9	28.6	31.5	6	#	6	OK	21.2	42.3	OK	6	#	6	ft #	3	c/.	35	3	Ramas
34A	10.97	60	80	0.0009	0.0033	0.0033	Traccion	15.64	25.3	7.6	-20.2	1.4	2.5	28.6	-26.1	6	#	6	OK	21.2	42.3	OK	6	#	6	ft #	3	c/.	35	3	Ramas
34A	10.66	60	80	0.0009	0.0033	0.0033	Traccion	15.64	24.6	7.4	-19.6	1.3	2.5	28.6	-26.1	6	#	6	OK	21.2	42.3	OK	6	#	6	ft #	3	c/.	35	3	Ramas
35A	12.54	60	80	0.0011	0.0033	0.0033	Traccion	15.64	25.4	7.6	-21.3	1.5	4.2	28.6	-24.4	6	#	6	OK	21.2	42.3	OK	6	#	6	ft #	3	c/.	35	3	Ramas

CHEQUEO DE CORTANTE EN NUDOS

RELACION DE CAPACIDAD DE CORTE EN LOS NUDOS (C.21.7.4)

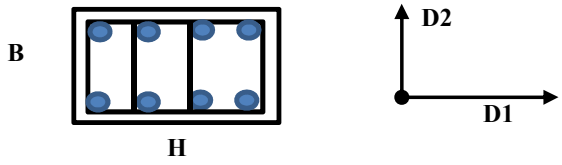
Materiales		
f'c=	28	Mpa
fy=	420	Mpa

Nudo	Col. bc m	Viga bv m	Cara 1 Cond.	Cara 1 Col. b m	Cara 1 Viga b m	Cara 2 Cond.	Cara 2 Col. b m	Cara 2 Viga b m	Cara 3 Cond.	Cara 3 Col. b m	Cara 3 Viga b m	Cara 4 Cond.	Cara 4 Col. b m	Cara 4 Viga b m	Caras confin.	Direccion 1 $b_{efectivo}$ m	Direccion 1 Aj m2	Direccion 2 $b_{efectivo}$ m	Direccion 2 Aj m2	Limite Vn Dir. 1 Mpa	Limite Vn Dir. 2 Mpa	Direccion 1 Vc Mpa	Direccion 1 Dia. /8"	Direccion 1 #R	Direccion 1 Av m2	Direccion 1 sep m	Direccion 1 Vs Mpa	Direccion 1 Vn Mpa	Direccion 2 Vc Mpa	Direccion 2 Dia. /8"	Direccion 2 #R	Direccion 2 Av m2	Direccion 2 sep m	Direccion 2 Vs Mpa	Direccion 2 Vn Mpa	Relacion de capacidad a cortante Dir.1	Dir.2	Cap
T1	0.60	0.50	Confin.	0.60	0.50	Confin.	0.60		No confin.	0.60		No confin.	0.60		2	0.60	0.36	0.60	0.36	1.90	1.90	0.32	4	3	3.8E-04	0.10	0.88	1.20	0.32	4	3	3.8E-04	0.10	0.88	1.20	0.63	0.63	Cumple
T2	0.60	0.50	Confin.	0.60	0.50	Confin.	0.60	0.50	Confin.	0.60	0.50	No confin.	0.60		3	0.60	0.36	0.60	0.36	2.29	2.29	0.32	4	3	3.8E-04	0.10	0.88	1.20	0.32	4	3	3.8E-04	0.10	0.88	1.20	0.53	0.53	Cumple
T3	0.60	0.50	Confin.	0.60	0.50	Confin.	0.60	0.50	Confin.	0.60	0.50	Confin.	0.60	0.5	4	0.60	0.36	0.60	0.36	3.24	3.24	0.32	4	3	3.8E-04	0.10	0.88	1.20	0.32	4	3	3.8E-04	0.10	0.88	1.20	0.37	0.37	Cumple
T4	0.60	0.50	Confin.	1.20	0.50	No confin.	0.60		No confin.	1.20		No confin.	1.20		1	0.60	0.72	1.1	0.66	3.81	3.49	0.65	4	3	3.8E-04	0.10	1.84	2.48	0.59	4	6	7.6E-04	0.10	1.76	2.35	0.65	0.67	Cumple
T5	0.60	0.50	Confin.	1.20	0.50	No confin.	0.60	0.50	Confin.	1.20		No confin.	1.20		2	0.60	0.72	1.1	0.66	3.81	3.49	0.65	4	3	3.8E-04	0.10	1.84	2.48	0.59	4	6	7.6E-04	0.10	1.76	2.35	0.65	0.67	Cumple

CALCULO DE Ash DE CONFINAMIENTO DES

DATOS DE ENTRADA

B=	0.6	m
H=	0.6	m
Recubrimiento=	4	Cm



$$A_{sh} = 0.3\frac{sb_c f'_c}{f_{yt}}\left[\left(\frac{A_g}{A_{ch}}\right)-1\right] \qquad A_{sh} = 0.09\frac{sb_c f'_c}{f_{yt}}$$

Direccion 1		
#Ramas=	3	
ϕ =	4	/8"
As=	1.27	Cm2
Ash=	380.0	mm2
bc=	520	mm
f'c=	28	Mpa
fyt=	420	Mpa
Ag=	360000	mm2
Ach=	270400	mm2

s=	110.3 mm	
s=	11 cm	*C.21-7*

s=	121.8 mm	
s=	12 cm	*C.21-8*

Direccion 2		
#Ramas=	3	
ϕ =	4	/8"
As=	1.27	Cm2
Ash=	380.0	mm2
bc=	520	mm
f'c=	28	Mpa
fyt=	420	Mpa
Ag=	360000	mm2
Ach=	270400	mm2

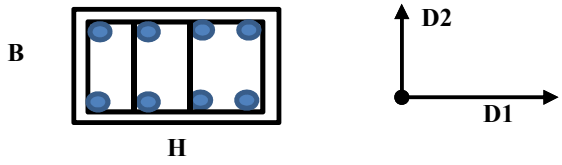
s=	110.3 mm	
s=	11 cm	*C.21-7*

s=	121.8 mm	
s=	12 cm	*C.21-8*

CALCULO DE Ash DE CONFINAMIENTO DES

DATOS DE ENTRADA

B=	0.6	m
H=	1.2	m
Recubrimiento=	4	Cm



$$A_{sh} = 0.3\frac{sb_c f'_c}{f_{yt}}\left[\left(\frac{A_g}{A_{ch}}\right)-1\right] \qquad A_{sh} = 0.09\frac{sb_c f'_c}{f_{yt}}$$

Direccion 1		
#Ramas=	3	
ϕ =	4	/8"
As=	1.27	Cm2
Ash=	380.0	mm2
bc=	520	mm
f'c=	28	Mpa
fyt=	420	Mpa
Ag=	720000	mm2
Ach=	582400	mm2

s=	154.7 mm	
s=	15 cm	*C.21-7*

s=	121.8 mm	
s=	12 cm	*C.21-8*

Direccion 2		
#Ramas=	6	
ϕ =	4	/8"
As=	1.27	Cm2
Ash=	760.1	mm2
bc=	1120.0	mm
f'c=	28	Mpa
fyt=	420	Mpa
Ag=	720000	mm2
Ach=	582400	mm2

s=	143.6 mm	
s=	14 cm	*C.21-7*

s=	113.1 mm	
s=	11 cm	*C.21-8*

DISEÑO DE COLUMNAS, VIGAS Y VIGUETAS

Columna A-15

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO2					-33.22	2.94				16/#8 (1.1%)	0.17	1.83	1.66
	3.90	.50	.60	1.20			-66.77	96.71	15.31				
					101.43	0.07				16/#8 (1.1%)	0.57		
PISO1					70.32	22.25				16/#8 (1.1%)	0.49	5.36	3.51
	3.80	.50	.60	1.20			-52.29	72.91	23.92				
PISO1		.80			135.41	0.95				16/#8 (1.1%)	0.72		

Columna A-14

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO2					-22.26	-7.17				16/#8 (2.3%)	0.30	1.26	3.00
	3.90	.50	.60	.60			-50.45	37.39	13.10				
					35.05	23.29				16/#6 (1.3%)	0.81		
PISO1					-13.52	-23.68				16/#6 (1.3%)	0.47	1.51	1.28
	3.80	.50	.60	.60			-102.97	9.82	17.29				
PISO1		.80			15.76	16.07				16/#6 (1.3%)	0.41		

Columna B-14

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO2					-33.57	-13.40				28/#7 (3.0%)	0.39	1.19	3.37
	3.90	.50	.60	.60			-65.71	53.45	14.61				
					39.42	17.27				28/#5 (1.5%)	0.69		
PISO1					-4.62	-8.64				28/#5 (1.5%)	0.15	2.72	1.42
	3.80	.50	.60	.60			-145.21	11.71	9.66				
PISO1		.80			14.36	8.46				28/#5 (1.5%)	0.26		

Columna B-15

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO2					56.14	13.01				16/#8 (1.1%)	0.33	2.68	2.15
	3.90	.50	.60	1.20			-34.90	131.12	17.75				
					-118.53	-20.48				16/#8 (1.1%)	0.70		
PISO1					-65.84	7.97				16/#8 (1.1%)	0.48	6.31	3.83
	3.80	.50	.60	1.20			-62.61	83.60	24.34				
PISO1		.80			-148.07	-18.34				16/#8 (1.1%)	0.79		

Columna A-13

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO2					-23.45	-1.42				16/#8 (2.3%)	0.29	1.25	2.98
	3.90	.50	.60	.60			-49.63	39.38	9.52				
					35.32	3.67				16/#6 (1.3%)	0.69		
PISO1					-11.52	-9.78				16/#6 (1.3%)	0.29	1.69	3.49
	3.80	.50	.60	.60			-43.37	5.24	13.82				
PISO1		.80			8.77	8.00				16/#6 (1.3%)	0.24		

Columna B-13

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO2					35.67	10.65				16/#8 (2.3%)	0.48	1.28	3.06
	3.90	.50	.60	.60			-36.76	56.22	13.23				
					-42.59	-8.94				16/#6 (1.3%)	0.88		
PISO1					-9.05	-1.50				16/#6 (1.3%)	0.14	2.18	1.66
	3.80	.50	.60	.60			-112.26	6.08	8.44				
PISO1		.80			-10.23	-6.32				16/#6 (1.3%)	0.22		

Columna A-12

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					11.69	22.20				20/#8 (2.8%)	0.30	1.52	1.40
	3.80	.40	.60	.60			-49.08	40.35	44.79				
					-28.77	-52.17				20/#7 (2.2%)	0.81		
PISO2					10.94	21.28				20/#7 (2.2%)	0.32	1.37	1.62
	3.90	.50	.60	.60			-125.63	27.97	17.18				
					-33.35	-11.77				20/#7 (2.2%)	0.45		
PISO1					13.40	11.05				20/#7 (2.2%)	0.24	1.85	5.73
	3.80	.50	.60	.60			-76.35	7.13	14.18				
PISO1		.80			-7.64	-8.84				20/#7 (2.2%)	0.16		

Columna B-12

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-38.39	0.14				12/#8 (1.7%)	0.57	1.24	1.28
	3.80	.40	.60	.60			-48.36	68.84	39.55				
					45.44	32.77				12/#8 (1.7%)	0.93		
PISO2					-22.16	-10.16				12/#8 (1.7%)	0.36	1.42	2.39
	3.90	.50	.60	.60			-113.54	43.84	12.78				
					46.14	3.22				12/#8 (1.7%)	0.61		
PISO1					-14.79	-2.04				12/#8 (1.7%)	0.19	2.08	2.83
	3.80	.50	.60	.60			-184.00	7.02	7.98				
PISO1		.80			9.52	4.72				12/#8 (1.7%)	0.16		

Columna A-11

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-21.73	-30.95				20/#8 (2.8%)	0.46	1.66	1.25
	3.80	.40	.60	.60			-78.17	39.15	53.34				
					28.69	45.78				20/#7 (2.2%)	0.75		
PISO2					-14.80	-13.63				20/#7 (2.2%)	0.29	1.51	1.51
	3.90	.50	.60	.60			-181.48	34.55	14.70				
					42.54	3.76				20/#7 (2.2%)	0.48		

Columna A-11

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO1					-28.20	-0.07				20/#7 (2.2%)	0.31	4.59	9.18
	3.80	.50	.60	.60			-156.04	21.59	9.76				
PISO1		.80			12.66	2.33				20/#7 (2.2%)	0.17		

Columna B-11

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-39.30	-8.68				16/#8 (2.3%)	0.50	1.63	1.20
	3.80	.40	.60	.60			-51.16	66.25	53.32				
					-35.46	-45.99				16/#7 (1.7%)	0.94		
PISO2					-16.72	-11.17				16/#7 (1.7%)	0.31	1.58	1.30
	3.90	.50	.60	.60			-78.94	36.89	13.81				
					32.19	7.82				16/#7 (1.7%)	0.47		
PISO1					-25.70	-16.23				16/#7 (1.7%)	0.46	5.41	7.36
	3.80	.50	.60	.60			-150.16	29.80	13.07				
PISO1		.80			10.51	12.24				16/#7 (1.7%)	0.25		

Columna C-15

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO2					56.88	12.89				16/#8 (1.1%)	0.33	2.47	2.14
	3.90	.50	.60	1.20			-34.03	128.83	17.97				
					-114.22	-21.60				16/#8 (1.1%)	0.67		
PISO1					-59.67	4.71				16/#8 (1.1%)	0.47	5.73	4.02
	3.80	.50	.60	1.20			-63.87	82.48	30.89				
PISO1		.80			-147.72	-28.87				16/#8 (1.1%)	0.80		

Columna C-14

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO2					-27.79	-9.41				12/#7 (1.3%)	0.59	1.20	1.51
	3.90	.50	.60	.60			-22.86	51.49	14.52				
					37.46	12.88				12/#7 (1.3%)	0.80		
PISO1					-5.17	-11.92				12/#7 (1.3%)	0.21	2.28	1.25
	3.80	.50	.60	.60			-109.01	11.03	17.14				
PISO1		.80			14.96	14.27				12/#7 (1.3%)	0.37		

Columna C-13

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO2					-40.60	0.96				16/#8 (2.3%)	0.48	1.26	1.69
	3.90	.50	.60	.60			-62.47	56.88	16.27				
					42.44	3.71				16/#6 (1.3%)	0.82		
PISO1					9.52	8.78				16/#6 (1.3%)	0.23	2.32	1.75
	3.80	.50	.60	.60			-126.55	6.70	16.20				
PISO1		.80			-12.29	-14.49				16/#6 (1.3%)	0.33		

Columna D-13

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO2					32.98	12.88				12/#8 (1.7%)	0.57	1.22	1.58
	3.90	.50	.60	.60			-30.87	55.79	15.73				
					-41.88	-10.70				12/#7 (1.3%)	0.87		
PISO1					7.42	13.44				12/#7 (1.3%)	0.26	2.23	1.50
	3.80	.50	.60	.60			-99.10	5.44	25.48				
PISO1		.80			-10.03	-21.48				12/#7 (1.3%)	0.42		

Columna D-14

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO2					31.43	3.81				12/#8 (1.7%)	0.52	1.36	1.59
	3.90	.50	.60	.60			-21.16	54.59	16.03				
					38.74	13.80				12/#7 (1.3%)	0.84		
PISO1					-5.60	-15.90				12/#7 (1.3%)	0.27	2.24	1.26
	3.80	.50	.60	.60			-111.10	10.14	26.02				
PISO1		.80			14.38	21.51				12/#7 (1.3%)	0.46		

Columna D-12

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-30.80	-11.64				12/#8 (1.7%)	0.54	1.24	2.03
	3.80	.40	.60	.60			-26.00	63.71	33.27				
					46.89	33.14				12/#8 (1.7%)	0.94		
PISO2					-15.70	-15.77				12/#8 (1.7%)	0.35	1.73	2.36
	3.90	.50	.60	.60			-84.78	38.83	14.96				
					35.16	16.47				12/#8 (1.7%)	0.58		
PISO1					-7.47	-16.41				12/#8 (1.7%)	0.26	3.57	2.75
	3.80	.50	.60	.60			-127.63	4.18	26.69				
PISO1		.80			5.44	21.86				12/#8 (1.7%)	0.32		

Columna C-12

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					32.84	1.52				12/#8 (1.7%)	0.54	1.22	2.02
	3.80	.40	.60	.60			-21.80	65.58	37.62				
					36.44	43.32				12/#8 (1.7%)	0.93		
PISO2					-13.13	-21.02				12/#8 (1.7%)	0.38	1.72	
	3.90	.50	.60	.60			-87.92	39.40	17.28				
					33.72	18.89				12/#8 (1.7%)	0.59		
PISO1					-7.50	-12.97				12/#8 (1.7%)	0.23	3.54	5.37
	3.80	.50	.60	.60			-126.78	4.14	16.78				
PISO1		.80			5.23	15.66				12/#8 (1.7%)	0.23		

Columna D-11

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					31.72	25.71				28/#6 (2.2%)	0.57	1.91	1.28
	3.80	.40	.60	.60			-31.56	60.22	48.02				
					-47.89	-50.02				28/#6 (2.2%)	0.97		
PISO2					14.79	23.81				28/#6 (2.2%)	0.38	2.37	1.53
	3.90	.50	.60	.60			-87.91	40.50	16.98				
					-37.71	-11.90				28/#6 (2.2%)	0.48		
PISO1					-31.42	-12.19				28/#6 (2.2%)	0.43	6.21	10.26
	3.80	.50	.60	.60			-96.87	36.79	21.60				
PISO1		.80			16.31	18.67				28/#6 (2.2%)	0.34		

Columna C-11

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					26.91	29.83				28/#7 (3.0%)	0.48	2.43	1.66
	3.80	.40	.60	.60			-31.34	60.77	52.22				
					-42.40	-58.93				28/#7 (3.0%)	0.85		
PISO2					14.40	21.45				28/#7 (3.0%)	0.30	3.04	
	3.90	.50	.60	.60			-87.25	39.27	10.80				
					-36.12	-4.45				28/#7 (3.0%)	0.36		
PISO1					-30.16	-3.52				28/#7 (3.0%)	0.30	7.88	
	3.80	.50	.60	.60			-58.89	35.41	10.85				
PISO1		.80			-14.42	-11.91				28/#7 (3.0%)	0.22		

Columna D-15

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO2					61.69	13.61				16/#8 (1.1%)	0.36	2.24	2.12
	3.90	.50	.60	1.20			-32.64	142.36	19.69				
					-127.15	-24.60				16/#8 (1.1%)	0.75		
PISO1					-68.22	0.60				16/#8 (1.1%)	0.49	5.34	3.74
	3.80	.50	.60	1.20			-66.04	75.03	44.88				
PISO1		.80			-143.68	-42.12				16/#8 (1.1%)	0.80		

Columna E-14

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					26.62	16.55				12/#8 (1.7%)	0.53	1.20	1.93
	3.80	.40	.60	.60			-14.40	43.59	44.91				
					-42.33	-25.94				12/#7 (1.3%)	0.98		
PISO2					21.53	2.86				12/#7 (1.3%)	0.41	1.32	1.20
	3.90	.50	.60	.60			-39.55	44.13	15.49				
					34.83	12.64				12/#7 (1.3%)	0.70		
PISO1					-4.30	-20.70				12/#7 (1.3%)	0.31	2.21	1.20
	3.80	.50	.60	.60			-167.26	11.50	36.25				
PISO1		.80			15.26	29.41				12/#7 (1.3%)	0.56		

Columna E-15

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					20.18	11.52				16/#8 (1.1%)	0.21	3.31	1.25
	3.80	.40	.60	1.20			-15.28	83.31	41.47				
					-94.37	-48.43				16/#8 (1.1%)	0.61		
PISO2					65.67	37.93				16/#8 (1.1%)	0.41	3.66	3.84
	3.90	.50	.60	1.20			-68.76	129.34	41.62				
					-135.75	-36.15				16/#8 (1.1%)	0.74		
PISO1					73.82	32.10				16/#8 (1.1%)	0.48	5.19	3.36
	3.80	.50	.60	1.20			-71.30	70.37	63.87				
PISO1		.80			-140.74	-57.60				16/#8 (1.1%)	0.75		

Columna F-15

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					43.90	18.34				16/#8 (1.1%)	0.28	3.53	1.52
	3.80	.40	.60	1.20			-30.01	100.25	48.76				
					-93.83	-61.17				16/#8 (1.1%)	0.67		
PISO2					62.95	47.15				16/#8 (1.1%)	0.43	3.88	2.99
	3.90	.50	.60	1.20			-83.46	137.62	52.39				
					-148.54	-46.49				16/#8 (1.1%)	0.83		

Columna F-15

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO1					86.88	46.94				16/#8 (1.1%)	0.52	5.48	3.42
	3.80	.50	.60	1.20			-81.33	71.34	89.46				
PISO1		.80			-137.99	-75.78				16/#8 (1.1%)	0.80		

Columna F-14

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-27.76	-29.80				12/#8 (1.7%)	0.64	1.33	1.41
	3.80	.40	.60	.60			-80.93	54.04	51.36				
					38.54	46.75				12/#8 (1.7%)	0.96		
PISO2					-18.72	-12.81				12/#8 (1.7%)	0.35	1.98	1.36
	3.90	.50	.60	.60			-168.34	42.81	17.25				
					33.69	18.33				12/#8 (1.7%)	0.58		
PISO1					-2.61	-25.03				12/#8 (1.7%)	0.36	2.81	1.34
	3.80	.50	.60	.60			-251.74	12.47	45.67				
PISO1		.80			-17.75	-34.45				12/#8 (1.7%)	0.62		

Columna E-13

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					30.12	31.14				28/#6 (2.2%)	0.61	1.22	1.42
	3.80	.40	.60	.60			-26.11	52.65	48.25				
					-51.01	-39.09				28/#6 (2.2%)	0.89		
PISO2					19.61	7.47				28/#6 (2.2%)	0.27	2.09	2.08
	3.90	.50	.60	.60			-80.94	40.56	12.47				
					-36.45	-8.60				28/#6 (2.2%)	0.47		
PISO1					5.15	19.14				28/#6 (2.2%)	0.24	3.50	2.34
	3.80	.50	.60	.60			-148.38	6.44	36.36				
PISO1		.80			-11.73	-31.30				28/#6 (2.2%)	0.43		

Columna F-13

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					34.91	35.72				28/#6 (2.2%)	0.69	1.33	1.35
	3.80	.40	.60	.60			-74.31	65.92	53.59				
					-50.36	-41.97				28/#6 (2.2%)	0.91		
PISO2					16.62	6.62				28/#6 (2.2%)	0.23	2.15	1.96
	3.90	.50	.60	.60			-148.56	39.22	13.13				
					-37.43	-9.40				28/#6 (2.2%)	0.46		
PISO1					6.71	23.31				28/#6 (2.2%)	0.31	3.40	2.41
	3.80	.50	.60	.60			-220.02	7.26	45.66				
PISO1		.80			-12.73	-39.11				28/#6 (2.2%)	0.54		

Columna E-12

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					47.92	22.34				16/#8 (2.3%)	0.69	1.62	1.20
	3.80	.40	.60	.60			-45.79	69.96	38.85				
					-52.96	-27.19				16/#7 (1.7%)	0.95		
PISO2					-18.16	-16.60				16/#7 (1.7%)	0.38	1.76	2.21
	3.90	.50	.60	.60			-95.80	38.92	17.45				
					35.93	18.84				16/#7 (1.7%)	0.61		
PISO1					-7.70	-20.06				16/#7 (1.7%)	0.30	3.52	2.71
	3.80	.50	.60	.60			-140.09	3.94	35.62				
PISO1		.80			5.59	29.08				16/#7 (1.7%)	0.42		

Columna F-12

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					43.98	22.22				28/#6 (2.2%)	0.65	1.30	1.30
	3.80	.40	.60	.60			-50.69	72.21	43.01				
					-63.82	-32.41				28/#6 (2.2%)	0.95		
PISO2					25.74	4.29				28/#6 (2.2%)	0.30	1.67	2.53
	3.90	.50	.60	.60			-121.30	46.74	13.08				
					-51.91	-5.87				28/#6 (2.2%)	0.57		

Columna F-12

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO1					16.22	21.81				28/#6 (2.2%)	0.39	2.34	2.86
	3.80	.50	.60	.60			-197.88	7.98	45.22				
PISO1		.80			-11.95	-38.24				28/#6 (2.2%)	0.52		

Columna E-11

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					31.63	25.55				28/#6 (2.2%)	0.57	1.90	1.46
	3.80	.40	.60	.60			-31.44	60.37	45.87				
					-47.72	-52.60				28/#6 (2.2%)	0.99		
PISO2					16.06	22.20				28/#6 (2.2%)	0.38	2.36	1.52
	3.90	.50	.60	.60			-86.93	39.16	19.36				
					-36.54	-15.07				28/#6 (2.2%)	0.50		
PISO1					-30.50	-15.28				28/#6 (2.2%)	0.45	6.19	10.00
	3.80	.50	.60	.60			-96.67	35.35	29.19				
PISO1		.80			15.28	24.98				28/#6 (2.2%)	0.39		

Columna G-15

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-21.02	-3.76				16/#8 (1.1%)	0.20	6.53	1.57
	3.80	.40	.60	1.20			-28.30	75.34	44.02				
					84.16	36.56				16/#8 (1.1%)	0.55		
PISO2					58.88	30.14				16/#8 (1.1%)	0.39	6.61	4.29
	3.90	.50	.60	1.20			-30.79	113.55	50.19				
					132.74	32.70				16/#8 (1.1%)	0.79		
PISO1					94.99	47.85				16/#8 (1.1%)	0.61	9.38	3.83
	3.80	.50	.60	1.20			-46.27	62.61	101.85				
PISO1		.80			-129.93	-86.81				16/#8 (1.1%)	0.83		

Columna G-14

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-26.09	-26.69				12/#8 (1.7%)	0.63	1.92	1.65
	3.80	.40	.60	.60			-24.17	37.00	50.34				
					33.85	43.84				12/#8 (1.7%)	0.94		
PISO2					-17.73	-11.30				12/#8 (1.7%)	0.33	2.53	1.59
	3.90	.50	.60	.60			-76.01	31.34	16.33				
					34.14	15.12				12/#8 (1.7%)	0.57		
PISO1					-13.83	-26.96				12/#8 (1.7%)	0.45	3.90	1.50
	3.80	.50	.60	.60			-127.77	9.28	54.16				
PISO1		.80			14.73	43.31				12/#8 (1.7%)	0.69		

Columna G-13

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					6.02	34.11				16/#8 (2.3%)	0.46	2.49	1.26
	3.80	.40	.60	.60			-23.82	43.58	54.92				
					38.07	37.13				16/#7 (1.7%)	0.88		
PISO2					-20.55	-10.29				16/#7 (1.7%)	0.34	2.55	1.84
	3.90	.50	.60	.60			-85.47	32.65	18.59				
					35.96	11.91				16/#7 (1.7%)	0.57		
PISO1					7.23	35.94				16/#7 (1.7%)	0.56	3.64	1.62
	3.80	.50	.60	.60			-47.08	9.46	66.70				
PISO1		.80			9.98	46.19				16/#7 (1.7%)	0.72		

Columna G-12

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-51.71	5.90				16/#8 (2.3%)	0.64	2.21	1.26
	3.80	.40	.60	.60			-50.41	55.57	55.80				
					52.74	23.18				16/#7 (1.7%)	0.91		
PISO2					-25.06	-5.18				16/#7 (1.7%)	0.34	2.30	1.85
	3.90	.50	.60	.60			-111.13	39.13	23.11				
					45.37	5.14				16/#7 (1.7%)	0.64		

Columna G-12

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO1					5.24	39.08				16/#7 (1.7%)	0.57	3.70	1.67
	3.80	.50	.60	.60			-64.30	17.04	68.56				
PISO1		.80			4.72	-55.55				16/#7 (1.7%)	0.70		

Columna F-11

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					46.57	19.53				28/#7 (3.0%)	0.55	1.97	1.53
	3.80	.40	.60	.60			-51.59	72.02	44.34				
					-66.16	-44.13				28/#7 (3.0%)	0.92		
PISO2					21.88	13.65				28/#7 (3.0%)	0.30	2.29	2.00
	3.90	.50	.60	.60			-133.09	37.69	17.42				
					27.64	20.33				28/#7 (3.0%)	0.41		
PISO1					-29.14	-28.58				28/#7 (3.0%)	0.50	8.12	11.05
	3.80	.50	.60	.60			-149.48	30.56	44.18				
PISO1		.80			12.43	38.43				28/#7 (3.0%)	0.43		

Columna G-11

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-36.60	-32.01				28/#6 (2.2%)	0.68	2.23	1.22
	3.80	.40	.60	.60			-52.96	49.21	51.47				
					48.86	45.67				28/#6 (2.2%)	0.93		
PISO2					-20.05	-11.76				28/#6 (2.2%)	0.31	3.32	2.20
	3.90	.50	.60	.60			-115.05	32.31	23.74				
					34.49	30.55				28/#6 (2.2%)	0.64		
PISO1					-25.81	-36.43				28/#6 (2.2%)	0.62	11.62	3.33
	3.80	.50	.60	.60			-145.30	26.66	55.11				
PISO1		.80			10.62	47.60				28/#6 (2.2%)	0.58		

Columna A-10

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-13.48	-24.59				16/#8 (2.3%)	0.37	1.20	1.65
	3.80	.40	.60	.60			-58.69	36.58	54.81				
					33.34	48.38				16/#8 (2.3%)	0.81		
PISO2					-23.31	-19.13				16/#8 (2.3%)	0.42	1.94	1.50
	3.90	.50	.60	.60			-148.38	46.27	17.25				
PISO1		.95			50.83	8.69				16/#8 (2.3%)	0.59		

Columna B-10

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-39.52	-36.86				20/#8 (2.8%)	0.67	1.64	1.24
	3.80	.40	.60	.60			-74.10	63.51	61.01				
					39.36	54.68				20/#7 (2.2%)	0.94		
PISO2					-12.97	-18.52				20/#7 (2.2%)	0.32	2.23	1.46
	3.90	.50	.60	.60			-166.04	54.00	19.55				
PISO1		.95			-54.69	-10.00				20/#7 (2.2%)	0.66		

Columna C-10

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					27.39	21.74				16/#8 (2.3%)	0.48	2.06	1.20
	3.80	.40	.60	.60			-45.25	58.63	47.08				
					33.90	39.86				16/#7 (1.7%)	0.86		
PISO2					-17.96	-19.12				16/#7 (1.7%)	0.41	1.93	1.46
	3.90	.50	.60	.60			-141.95	50.94	26.99				
PISO1		.95			50.03	22.81				16/#7 (1.7%)	0.82		

Columna B-9

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-42.22	-1.43				20/#8 (2.8%)	0.42	1.20	1.48
	3.80	.40	.60	.60			-72.81	60.10	60.93				
					-34.93	-54.86				20/#7 (2.2%)	0.90		
PISO2					16.15	18.17				20/#7 (2.2%)	0.35	2.58	1.46
	3.90	.50	.60	.60			-157.45	45.56	19.55				
PISO1		.95			-46.76	-15.42				20/#7 (2.2%)	0.63		

Columna A-9

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					10.94	24.79				16/#8 (2.3%)	0.36	1.22	2.15
	3.80	.40	.60	.60			-30.99	36.42	55.73				
					-22.63	-46.56				16/#7 (1.7%)	0.81		
PISO2					-20.05	-8.69				16/#7 (1.7%)	0.32	1.68	1.59
	3.90	.50	.60	.60			-147.98	39.25	16.82				
PISO1		.95			41.44	3.98				16/#7 (1.7%)	0.60		

Columna D-10

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					31.24	15.79				16/#8 (2.3%)	0.46	1.96	1.20
	3.80	.40	.60	.60			-45.45	57.83	40.92				
					31.32	38.50				16/#7 (1.7%)	0.79		
PISO2					-16.54	-20.78				16/#7 (1.7%)	0.41		
	3.90	.50	.60	.60			-142.18	50.61	35.30			1.93	1.20
PISO1		.95			49.31	31.15				16/#7 (1.7%)	0.90		

Columna C-9

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					28.88	13.49				12/#8 (1.7%)	0.52	1.63	1.20
	3.80	.40	.60	.60			-30.88	55.81	46.69				
					-39.56	-43.03				12/#8 (1.7%)	0.94		
PISO2					13.60	19.99				12/#8 (1.7%)	0.37	1.91	1.45
	3.90	.50	.60	.60			-135.43	43.78	28.05				
PISO1		.95			-44.32	-26.57				12/#8 (1.7%)	0.79		

Columna B-8

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-25.57	-22.40				16/#8 (2.3%)	0.47	2.23	1.34
	3.80	.40	.60	.60			-52.04	52.83	50.10				
					37.57	47.51				16/#7 (1.7%)	0.96		
PISO2					-17.39	-20.97				16/#7 (1.7%)	0.42	2.12	1.54
	3.90	.50	.60	.60			-132.56	38.28	20.33				
PISO1		.95			37.59	15.67				16/#7 (1.7%)	0.58		

Columna A-8

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-15.62	-19.32				16/#8 (2.3%)	0.34	1.20	2.08
	3.80	.40	.60	.60			-62.72	34.03	51.40				
					21.54	45.29				16/#6 (1.3%)	0.98		
PISO2					-3.44	-37.30				16/#6 (1.3%)	0.58	1.54	1.45
	3.90	.50	.60	.60			-110.51	37.04	30.73				
PISO1		.95			-36.97	-2.91				16/#6 (1.3%)	0.64		

Columna E-10

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					29.89	18.71				28/#6 (2.2%)	0.48	2.08	1.22
	3.75	.40	.60	.60			-45.52	58.23	38.43				
					38.74	33.40				28/#6 (2.2%)	0.71		
PISO2					-17.82	-23.79				28/#6 (2.2%)	0.41	2.34	1.45
	3.90	.50	.60	.60			-143.65	52.16	44.74				
PISO1		.95			49.43	41.39				28/#6 (2.2%)	0.89		

Columna D-9

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					28.19	15.22				12/#8 (1.7%)	0.52	1.77	1.23
	3.80	.40	.60	.60			-30.62	55.51	40.57				
					-39.41	-37.26				12/#8 (1.7%)	0.87		
PISO2					14.19	23.02				12/#8 (1.7%)	0.41	1.92	1.45
	3.90	.50	.60	.60			-134.19	43.70	37.43				
PISO1		.95			-44.65	-35.97				12/#8 (1.7%)	0.90		

Columna C-8

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-16.65	-25.58				12/#8 (1.7%)	0.50	1.88	1.29
	3.80	.40	.60	.60			-33.95	50.11	47.83				
					27.29	54.12				12/#8 (1.7%)	0.98		
PISO2					-12.29	-29.36				12/#8 (1.7%)	0.47	2.36	1.58
	3.90	.50	.60	.60			-91.57	35.32	30.15				
PISO1		.95			34.43	29.49				12/#8 (1.7%)	0.71		

Columna B-7

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					15.60	21.02				16/#8 (2.3%)	0.36	2.55	1.41
	3.80	.40	.60	.60			-34.11	46.85	49.08				
					-27.88	-42.45				16/#6 (1.3%)	0.99		
PISO2					-14.19	-11.44				16/#6 (1.3%)	0.32	1.70	1.20
	3.90	.50	.60	.60			-83.36	29.68	20.39				
PISO1		.95			27.47	10.73				16/#6 (1.3%)	0.51		

Columna A-7

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-17.47	-23.55				16/#8 (2.3%)	0.40	1.20	1.93
	3.80	.40	.60	.60			-66.64	30.39	51.78				
					-33.58	-51.61				16/#7 (1.7%)	0.95		
PISO2					25.70	37.47				16/#7 (1.7%)	0.70	2.18	1.83
	3.90	.50	.60	.60			-105.09	29.51	30.78				
PISO1		.95			-31.90	-16.42				16/#7 (1.7%)	0.53		

Columna F-10

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					51.36	6.43				20/#8 (2.8%)	0.53	1.47	1.24
	3.80	.40	.60	.60			-71.04	68.68	46.36				
					32.61	40.19				20/#7 (2.2%)	0.73		
PISO2					-21.65	-24.60				20/#7 (2.2%)	0.47	2.21	1.41
	3.90	.50	.60	.60			-170.92	53.21	53.63				
PISO1		.95			51.65	48.50				20/#7 (2.2%)	1.01		

Columna E-9

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-25.51	-19.81				28/#6 (2.2%)	0.45	2.08	1.57
	3.80	.40	.60	.60			-48.36	55.16	37.80				
					-45.03	-31.00				28/#6 (2.2%)	0.75		
PISO2					14.71	27.24				28/#6 (2.2%)	0.41	2.35	1.68
	3.90	.50	.60	.60			-134.35	43.93	47.76				
PISO1		.95			-44.95	-45.75				28/#6 (2.2%)	0.90		

Columna D-8

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-20.99	-22.40				12/#8 (1.7%)	0.50	1.88	1.38
	3.80	.40	.60	.60			-33.96	49.64	43.01				
					27.62	50.03				12/#8 (1.7%)	0.93		
PISO2					-13.72	-29.55				12/#8 (1.7%)	0.48	2.37	1.56
	3.90	.50	.60	.60			-92.00	35.49	38.36				
PISO1		.95			34.57	37.68				12/#8 (1.7%)	0.81		

Columna C-7

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					18.96	28.43				28/#6 (2.2%)	0.47	2.54	1.61
	3.80	.40	.60	.60			-31.74	45.00	48.42				
					-33.62	-55.14				28/#6 (2.2%)	0.88		
PISO2					8.60	29.08				28/#6 (2.2%)	0.37	3.71	1.92
	3.90	.50	.60	.60			-87.08	25.48	30.49				
PISO1		.95			-25.31	-30.75				28/#6 (2.2%)	0.55		

Columna B-6

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-25.39	-37.07				20/#8 (2.8%)	0.55	1.95	1.21
	3.80	.40	.60	.60			-68.04	42.99	58.52				
					25.45	51.72				20/#6 (1.6%)	0.92		
PISO2					-8.69	-17.10				20/#6 (1.6%)	0.29	2.72	1.44
	3.90	.50	.60	.60			-160.95	17.56	18.43				
PISO1		.95			16.19	14.36				20/#6 (1.6%)	0.35		

Columna A-6

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-29.09	-18.36				16/#8 (2.3%)	0.47	1.20	1.78
	3.80	.40	.60	.60			-66.40	37.60	55.05				
					23.33	44.78				16/#6 (1.3%)	0.97		
PISO2					-3.82	-16.22				16/#6 (1.3%)	0.28	2.41	1.54
	3.90	.50	.60	.60			-83.54	23.19	17.14				
PISO1		.95			-20.80	-3.68				16/#6 (1.3%)	0.35		

Columna G-10

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-37.20	-23.59				28/#7 (3.0%)	0.51	2.86	2.78
	3.80	.40	.60	.60			-32.99	44.14	41.12				
					39.24	34.40				28/#7 (3.0%)	0.62		
PISO2					-15.55	-27.74				28/#7 (3.0%)	0.36	4.25	2.11
	3.90	.50	.60	.60			-86.48	42.92	63.90				
PISO1		.95			-45.92	-58.33				28/#7 (3.0%)	0.88		

Columna F-9

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					48.78	32.35				20/#8 (2.8%)	0.71	1.52	1.20
	3.80	.40	.60	.60			-71.38	65.12	45.62				
					-53.40	-37.14				20/#7 (2.2%)	0.91		
PISO2					11.44	28.74				20/#7 (2.2%)	0.40	2.37	1.56
	3.90	.50	.60	.60			-159.37	45.46	57.37				
PISO1		.95			-43.07	-53.79				20/#7 (2.2%)	0.99		

Columna E-8

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-21.36	-24.62				12/#8 (1.7%)	0.53	1.88	1.36
	3.80	.40	.60	.60			-33.77	49.16	41.33				
					33.08	45.33				12/#8 (1.7%)	0.92		
PISO2					-13.80	-31.82				12/#8 (1.7%)	0.51	2.55	1.38
	3.90	.50	.60	.60			-91.83	35.47	47.10				
PISO1		.95			34.61	45.81				12/#8 (1.7%)	0.90		

Columna D-7

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					22.25	24.85				12/#8 (1.7%)	0.55	2.19	1.38
	3.80	.40	.60	.60			-31.76	44.51	43.79				
					-32.86	-50.53				12/#8 (1.7%)	0.98		
PISO2					9.56	30.43				12/#8 (1.7%)	0.45	3.00	1.43
	3.90	.50	.60	.60			-87.59	25.76	39.31				
PISO1		.95			-25.26	-40.02				12/#8 (1.7%)	0.73		

Columna C-6

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					17.74	17.87				16/#7 (1.7%)	0.40	2.37	1.42
	3.80	.40	.60	.60			-43.21	41.29	44.86				
					19.31	40.94				16/#6 (1.3%)	0.86		
PISO2					-11.57	-18.53				16/#6 (1.3%)	0.37	2.26	1.20
	3.90	.50	.60	.60			-138.69	18.49	27.08				
PISO1		.95			17.38	24.64				16/#6 (1.3%)	0.52		

Columna B-5

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					9.67	39.63				16/#8 (2.3%)	0.50	1.34	1.20
	3.80	.40	.60	.60			-64.43	36.15	59.09				
					-24.90	-54.73				16/#7 (1.7%)	0.91		
PISO2					4.44	16.59				16/#7 (1.7%)	0.23	3.16	1.50
	3.90	.50	.60	.60			-154.90	13.39	18.44				
PISO1		.95			-9.01	-15.13				16/#7 (1.7%)	0.27		

Columna A-5

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-53.16	-22.19				24/#8 (3.4%)	0.59	1.23	2.90
	3.80	.40	.60	.60			-75.60	44.46	55.98				
					-16.75	-47.53				24/#6 (1.9%)	0.72		
PISO2					17.27	17.58				24/#6 (1.9%)	0.37	3.73	2.02
	3.90	.50	.60	.60			-132.71	17.89	16.46				
PISO1		.95			-18.02	-8.34				24/#6 (1.9%)	0.28		

Columna G-9

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-35.82	-21.48				28/#6 (2.2%)	0.57	2.23	2.30
	3.80	.40	.60	.60			-34.48	42.77	41.06				
					38.58	26.72				28/#6 (2.2%)	0.65		
PISO2					9.56	30.14				28/#6 (2.2%)	0.42	3.60	1.87
	3.90	.50	.60	.60			-30.39	36.33	68.05				
PISO1		.95			-38.72	-63.27				28/#6 (2.2%)	1.00		

Columna F-8

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					35.47	12.50				12/#8 (1.7%)	0.58	1.54	1.22
	3.80	.40	.60	.60			-51.02	56.81	37.80				
					-52.27	-14.13				12/#8 (1.7%)	0.82		
PISO2					-9.64	-26.13				12/#8 (1.7%)	0.40	1.89	1.31
	3.90	.50	.60	.60			-133.34	38.61	53.71				
PISO1		.95			-39.28	-45.99				12/#8 (1.7%)	0.95		

Columna E-7

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					21.96	27.19				12/#8 (1.7%)	0.58	2.19	1.29
	3.80	.40	.60	.60			-31.71	44.11	42.14				
					-37.40	-44.98				12/#8 (1.7%)	0.96		
PISO2					9.24	33.23				12/#8 (1.7%)	0.49	2.99	1.40
	3.90	.50	.60	.60			-86.63	25.83	48.27				
PISO1		.95			-25.08	-48.97				12/#8 (1.7%)	0.83		

Columna D-6

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					20.11	17.31				16/#8 (2.3%)	0.37	3.33	1.62
	3.80	.40	.60	.60			-48.14	40.75	39.45				
					21.73	33.01				16/#6 (1.3%)	0.78		
PISO2					-11.22	-21.79				16/#6 (1.3%)	0.41	2.28	1.20
	3.90	.50	.60	.60			-143.50	18.32	36.46				
PISO1		.95			17.06	31.73				16/#6 (1.3%)	0.63		

Columna C-5

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					14.94	22.16				12/#8 (1.7%)	0.43	2.51	1.27
	3.80	.40	.60	.60			-38.20	37.99	45.57				
					-27.65	-43.11				12/#8 (1.7%)	0.81		
PISO2					6.49	18.82				12/#8 (1.7%)	0.28	3.00	1.43
	3.90	.50	.60	.60			-128.48	13.31	27.96				
PISO1		.95			-9.13	-26.15				12/#8 (1.7%)	0.39		

Columna B-4

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					15.58	22.20				16/#8 (2.3%)	0.37	3.21	1.25
	3.80	.40	.60	.60			-55.29	32.59	53.73				
					8.01	52.79				16/#6 (1.3%)	0.98		
PISO2					-18.81	-43.85				16/#6 (1.3%)	0.79	3.96	2.01
	3.90	.50	.60	.60			-98.49	23.76	33.09				
PISO1		.95			12.10	25.48				16/#6 (1.3%)	0.47		

Columna A-4

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-40.64	32.25				24/#8 (3.4%)	0.58	1.23	1.79
	3.80	.40	.60	.60			-76.00	38.32	56.00				
					24.79	50.93				24/#6 (1.9%)	0.81		
PISO2					-2.01	-41.49				24/#6 (1.9%)	0.52	5.47	3.48
	3.90	.50	.60	.60			-111.28	23.29	32.82				
PISO1		.95			0.52	21.06				24/#6 (1.9%)	0.26		

Columna G-8

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-23.21	-16.89				28/#6 (2.2%)	0.40	3.18	1.30
	3.80	.40	.60	.60			-42.58	37.10	35.92				
					38.06	30.49				28/#6 (2.2%)	0.68		
PISO2					-20.19	-26.11				28/#6 (2.2%)	0.45	3.56	1.88
	3.90	.50	.60	.60			-94.57	32.79	61.39				
PISO1		.95			36.27	55.85				28/#6 (2.2%)	0.91		

Columna F-7

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					29.81	18.83				12/#8 (1.7%)	0.55	1.54	1.20
	3.80	.40	.60	.60			-52.91	50.93	36.90				
					-49.66	-30.65				12/#8 (1.7%)	0.91		
PISO2					16.23	26.91				12/#8 (1.7%)	0.48	2.22	1.28
	3.90	.50	.60	.60			-134.08	28.65	54.32				
PISO1		.95			-29.39	-52.53				12/#8 (1.7%)	0.91		

Columna E-6

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-16.32	-20.26				16/#8 (2.3%)	0.36	3.15	1.65
	3.80	.40	.60	.60			-31.11	40.14	40.80				
					25.60	34.58				16/#7 (1.7%)	0.68		
PISO2					-10.61	-23.69				16/#7 (1.7%)	0.38	2.82	1.35
	3.90	.50	.60	.60			-138.83	18.03	45.20				
PISO1		.95			16.84	40.01				16/#7 (1.7%)	0.64		

Columna D-5

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					17.27	13.89				16/#8 (2.3%)	0.31	3.54	1.72
	3.80	.40	.60	.60			-31.70	37.94	38.92				
					-27.51	-36.40				16/#6 (1.3%)	0.85		
PISO2					6.83	22.54				16/#6 (1.3%)	0.36	2.44	1.20
	3.90	.50	.60	.60			-135.79	13.13	37.33				
PISO1		.95			-9.61	-33.01				16/#6 (1.3%)	0.58		

Columna C-4

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					11.89	25.45				16/#8 (2.3%)	0.37	3.37	1.24
	3.80	.40	.60	.60			-52.97	30.56	44.90				
					9.39	45.09				16/#6 (1.3%)	0.85		
PISO2					-23.58	-37.33				16/#6 (1.3%)	0.77	3.52	2.05
	3.90	.50	.60	.60			-96.35	22.98	33.43				
PISO1		.95			11.34	33.15				16/#6 (1.3%)	0.58		

Columna G-7

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-22.49	-28.02				12/#8 (1.7%)	0.57	1.73	1.47
	3.80	.40	.60	.60			-49.27	36.44	40.56				
					40.13	31.45				12/#8 (1.7%)	0.82		
PISO2					-22.60	-21.37				12/#8 (1.7%)	0.49	3.13	1.22
	3.90	.50	.60	.60			-108.29	27.37	63.48				
PISO1		.95			26.44	54.88				12/#8 (1.7%)	0.94		

Columna F-6

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					38.84	6.24				16/#8 (2.3%)	0.47	1.20	1.21
	3.80	.40	.60	.60			-66.23	49.35	49.00				
					-39.34	-21.43				16/#7 (1.7%)	0.69		
PISO2					-14.37	-25.21				16/#7 (1.7%)	0.44	2.76	1.36
	3.90	.50	.60	.60			-163.54	19.79	54.55				
PISO1		.95			18.94	48.78				16/#7 (1.7%)	0.75		

Columna E-5

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					16.91	22.28				16/#8 (2.3%)	0.39	3.51	1.59
	3.80	.40	.60	.60			-42.27	37.30	41.39				
					-34.56	-34.10				16/#7 (1.7%)	0.77		
PISO2					7.31	24.43				16/#7 (1.7%)	0.35	3.05	1.37
	3.90	.50	.60	.60			-129.96	12.93	45.60				
PISO1		.95			-9.64	-44.04				16/#7 (1.7%)	0.60		

Columna D-4

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-12.15	-19.84				16/#8 (2.3%)	0.32	3.30	1.28
	3.80	.40	.60	.60			-34.18	33.32	44.35				
					9.62	42.68				16/#7 (1.7%)	0.68		
PISO2					-8.10	-26.85				16/#7 (1.7%)	0.39	3.26	1.21
	3.90	.50	.60	.60			-132.76	9.82	39.40				
PISO1		.95			4.19	33.54				16/#7 (1.7%)	0.49		

Columna G-6

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-30.49	-24.04				16/#7 (1.7%)	0.63	1.97	1.83
	3.80	.40	.60	.60			-32.07	36.34	42.02				
					34.45	33.27				16/#7 (1.7%)	0.79		
PISO2					-18.76	-37.81				16/#7 (1.7%)	0.63	4.56	1.59
	3.90	.50	.60	.60			-83.90	20.51	74.91				
PISO1		.95			16.76	61.99				16/#7 (1.7%)	1.00		

Columna F-5

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					36.77	38.47				16/#8 (2.3%)	0.74	1.23	1.22
	3.80	.40	.60	.60			-67.39	46.01	50.71				
					-41.62	-41.99				16/#7 (1.7%)	0.93		
PISO2					-12.58	-19.50				16/#7 (1.7%)	0.35	3.16	1.33
	3.90	.50	.60	.60			-100.29	14.95	55.23				
PISO1		.95			-8.53	-49.99				16/#7 (1.7%)	0.68		

Columna E-4

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-9.91	-22.33				16/#7 (1.7%)	0.39	2.71	1.33
	3.80	.40	.60	.60			-34.36	33.87	38.41				
					20.13	43.35				16/#7 (1.7%)	0.77		
PISO2					-11.00	-32.48				16/#7 (1.7%)	0.48	2.98	1.42
	3.90	.50	.60	.60			-124.63	10.33	53.49				
PISO1		.95			5.17	44.32				16/#7 (1.7%)	0.66		

Columna G-5

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-29.10	-21.94				12/#8 (1.7%)	0.60	1.74	1.79
	3.80	.40	.60	.60			-32.34	34.66	42.60				
					33.04	25.73				12/#8 (1.7%)	0.70		
PISO2					10.42	39.03				12/#8 (1.7%)	0.64	5.10	1.50
	3.90	.50	.60	.60			-38.28	17.73	78.00				
PISO1		.95			-8.67	-65.35				12/#8 (1.7%)	0.98		

Columna F-4

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-9.88	-29.65				16/#8 (2.3%)	0.40	3.27	1.36
	3.80	.40	.60	.60			-39.41	34.89	43.76				
					19.50	48.90				16/#7 (1.7%)	0.84		
PISO2					-10.23	-37.56				16/#7 (1.7%)	0.53	2.85	1.34
	3.90	.50	.60	.60			-131.30	9.99	65.65				
PISO1		.95			4.99	54.18				16/#7 (1.7%)	0.81		

Columna G-4

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-10.77	-16.70				12/#8 (1.7%)	0.32	5.77	1.33
	3.80	.40	.60	.60			-35.03	24.65	29.77				
					26.03	33.19				12/#8 (1.7%)	0.70		
PISO2					-20.77	-28.48				12/#8 (1.7%)	0.55	5.30	2.49
	3.90	.50	.60	.60			-77.23	16.03	59.34				
PISO1		.95			8.01	55.45				12/#8 (1.7%)	0.89		

Columna D-2

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-16.24	-21.68				28/#6 (2.2%)	0.38	4.13	1.51
	3.80	.40	.60	.60			-23.28	35.92	63.06				
PISO2		.95			33.81	62.06				28/#6 (2.2%)	0.98		

Columna C-2

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-4.76	-28.77				28/#6 (2.2%)	0.38	1.90	1.36
	3.80	.40	.60	.60			-37.86	47.78	63.67				
PISO2		.95			-49.45	-43.22				28/#6 (2.2%)	0.92		

Columna B-2

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-5.27	-28.89				28/#6 (2.2%)	0.38	2.05	1.36
	3.80	.40	.60	.60			-36.79	47.81	63.74				
PISO2		.95			18.29	61.10				28/#6 (2.2%)	0.88		

Columna A-2

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-7.31	-30.74				28/#6 (2.2%)	0.41	1.77	1.37
	3.80	.40	.60	.60			-39.49	34.96	67.35				
PISO2		.95			16.14	67.07				28/#6 (2.2%)	0.93		

Columna E-2'

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO2					-1.30	-27.06				12/#8 (1.7%)	0.43	1.78	1.23
	3.90	.50	.60	.60			-32.72	2.81	50.96				
PISO1		.95			3.35	42.82				12/#8 (1.7%)	0.79		

Columna F-2'

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO2					-1.22	-31.87				16/#8 (2.3%)	0.40	2.36	1.40
	3.90	.50	.60	.60			-35.86	2.77	62.05				
PISO1		.95			3.33	52.29				16/#8 (2.3%)	0.75		

A-101/PISO1

B=0.50 H=0.50 L=2.50			*B=0.50 H=0.50 L=6.90*			*B=0.50 H=0.50 L=6.90*		
Mu=-0.00	Mu=-2.39	Mu=-9.06	Mu=-1.67	Mu=-1.67	Mu=-1.67	Mu=-1.00	Mu=-0.45	Mu=-0.45
As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43
Mu=0.01	Mu=0.00	Mu=1.81	Mu=1.67	Mu=2.72	Mu=1.67	Mu=0.91	Mu=0.45	Mu=0.45
As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43
Vu=0.11		Vu=1.98	Vu=63.80		Vu=0.51	Vu=-0.99		Vu=0.17

B=0.50 H=0.50 L=6.90			*B=0.50 H=0.50 L=6.90*			*B=0.50 H=0.50 L=6.90*		
Mu=-0.34	Mu=-0.31	Mu=-0.15	Mu=-0.16	Mu=-0.33	Mu=-0.32	Mu=-0.46	Mu=-0.46	Mu=-0.94
As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43
Mu=0.29	Mu=0.32	Mu=0.15	Mu=0.16	Mu=0.30	Mu=0.30	Mu=0.46	Mu=0.46	Mu=0.96
As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43
Vu=-0.42		Vu=0.26	Vu=-0.25		Vu=0.43	Vu=-0.17		Vu=1.01

B=0.50 H=0.50 L=6.90		
Mu=-1.05	Mu=-1.35	Mu=-1.05
As=7.43	As=7.43	As=7.43
Mu=1.05	Mu=1.47	Mu=1.05
As=7.43	As=7.43	As=7.43
Vu=0.35		Vu=0.55

A-102/PISO1

B=0.30 H=0.50 L=5.47		
Mu=-2.87	Mu=-2.87	Mu=-8.83
As=4.46	As=4.46	As=5.45
Mu=2.87	Mu=11.49	Mu=4.41
As=4.46	As=7.21	As=4.46
Vu=-9.55		Vu=11.32

A-103/PISO1

B=0.30 H=0.50 L=5.47		
Mu=-3.68	Mu=-3.68	Mu=-12.46
As=4.46	As=4.46	As=7.86
Mu=3.68	Mu=14.71	Mu=6.23
As=4.46	As=9.42	As=5.05
Vu=-10.72		Vu=14.20

A-104/PISO1

B=0.50 H=0.50 L=2.50			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-0.00	Mu=-4.10	Mu=-15.91	Mu=-48.06	Mu=-12.02	Mu=-40.36	Mu=-24.16	Mu=-6.04	Mu=-19.80
As=7.43	As=7.43	As=9.86	As=34.47	As=9.79	As=27.76	As=15.45	As=7.43	As=12.45
Mu=0.01	Mu=0.00	Mu=3.18	Mu=24.03	Mu=30.06	Mu=20.18	Mu=12.08	Mu=6.04	Mu=9.90
As=7.43	As=7.43	As=7.43	As=15.36	As=19.70	As=12.71	As=9.84	As=7.43	As=8.01
Vu=0.35		Vu=10.96	Vu=-38.46		Vu=34.02	Vu=-19.71		Vu=18.33

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-21.62	Mu=-5.41	Mu=-20.98	Mu=-21.66	Mu=-5.41	Mu=-20.72	Mu=-20.16	Mu=-5.96	Mu=-23.82
As=13.69	As=7.43	As=13.25	As=13.71	As=7.43	As=13.07	As=12.69	As=7.43	As=15.21
Mu=10.81	Mu=5.41	Mu=10.49	Mu=10.83	Mu=5.41	Mu=10.36	Mu=10.08	Mu=5.96	Mu=11.91
As=8.77	As=7.43	As=8.51	As=8.79	As=7.43	As=8.40	As=8.16	As=7.43	As=9.70
Vu=-19.16		Vu=18.95	Vu=-19.13		Vu=18.84	Vu=-18.27		Vu=19.46

B=0.50 H=0.50 L=6.90		
Mu=-46.26	Mu=-11.56	Mu=-30.99
As=32.83	As=9.41	As=20.39
Mu=23.13	Mu=15.06	Mu=15.50
As=14.73	As=9.69	As=9.59
Vu=-50.40		Vu=27.03

A-105/PISO1

B=0.50 H=0.50 L=2.50			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-0.00	Mu=-3.65	Mu=-14.64	Mu=-32.96	Mu=-8.24	Mu=-27.90	Mu=-28.41	Mu=-7.10	Mu=-27.27
As=7.43	As=7.43	As=9.03	As=21.88	As=7.43	As=18.12	As=18.49	As=7.43	As=17.66
Mu=0.00	Mu=0.00	Mu=2.93	Mu=16.48	Mu=8.32	Mu=13.95	Mu=14.21	Mu=7.10	Mu=13.63
As=7.43	As=7.43	As=7.43	As=10.23	As=7.89	As=8.80	As=8.75	As=7.43	As=8.38
Vu=0.00		Vu=10.27	Vu=-27.69		Vu=26.25	Vu=-24.67		Vu=24.33

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-27.11	Mu=-6.91	Mu=-27.63	Mu=-28.56	Mu=-7.14	Mu=-25.69	Mu=-27.15	Mu=-6.79	Mu=-25.64
As=17.55	As=7.43	As=17.93	As=18.60	As=7.43	As=16.53	As=17.57	As=7.43	As=16.50
Mu=13.56	Mu=6.91	Mu=13.82	Mu=14.28	Mu=7.14	Mu=12.85	Mu=13.57	Mu=6.79	Mu=12.82
As=8.33	As=7.43	As=8.50	As=8.80	As=7.43	As=7.88	As=8.34	As=7.43	As=7.86
Vu=-24.60		Vu=24.73	Vu=-24.58		Vu=23.82	Vu=-23.70		Vu=23.22

B=0.50 H=0.50 L=6.90		
Mu=-29.06	Mu=-7.26	Mu=-27.98
As=18.96	As=7.43	As=18.18
Mu=14.53	Mu=9.69	Mu=13.99
As=8.96	As=8.35	As=8.78
Vu=-26.09		Vu=25.58

A-106/PISO1

B=0.50 H=0.50 L=2.50			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-0.00	Mu=-3.54	Mu=-14.19	Mu=-35.10	Mu=-8.78	Mu=-28.93	Mu=-28.50	Mu=-7.13	Mu=-27.89
As=7.43	As=7.43	As=8.74	As=23.53	As=7.43	As=18.87	As=18.56	As=7.43	As=18.11
Mu=0.00	Mu=0.00	Mu=2.84	Mu=17.55	Mu=8.78	Mu=14.47	Mu=14.25	Mu=7.13	Mu=13.94
As=7.43	As=7.43	As=7.43	As=10.95	As=7.50	As=8.92	As=8.78	As=7.43	As=8.58
Vu=0.00		Vu=9.96	Vu=-28.72		Vu=26.98	Vu=-25.28		Vu=25.09

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-29.24	Mu=-7.31	Mu=-27.97	Mu=-29.64	Mu=-7.41	Mu=-27.09	Mu=-28.92	Mu=-7.23	Mu=-26.75
As=19.10	As=7.43	As=18.17	As=19.39	As=7.43	As=17.54	As=18.86	As=7.43	As=17.29
Mu=14.62	Mu=7.31	Mu=13.98	Mu=14.82	Mu=7.41	Mu=13.55	Mu=14.46	Mu=7.23	Mu=13.37
As=9.02	As=7.43	As=8.61	As=9.15	As=7.43	As=8.33	As=8.92	As=7.43	As=8.21
Vu=-25.71		Vu=25.25	Vu=-25.66		Vu=24.95	Vu=-25.04		Vu=24.36

B=0.50 H=0.50 L=6.90		
Mu=-31.08	Mu=-7.77	Mu=-29.67
As=20.46	As=7.43	As=19.41
Mu=15.54	Mu=8.89	Mu=14.83
As=9.62	As=9.62	As=9.16
Vu=-27.89		Vu=27.14

A-107/PISO1

B=0.50 H=0.50 L=2.50			***B=0.50 H=0.50 L=6.00***			***B=0.50 H=0.50 L=6.30***		
Mu=-0.00	Mu=-1.46	Mu=-5.89	Mu=-34.58	Mu=-8.65	Mu=-31.58	Mu=-34.50	Mu=-8.63	Mu=-32.29
As=7.43	As=7.43	As=7.43	As=23.13	As=7.43	As=20.84	As=23.06	As=7.43	As=21.37
Mu=0.00	Mu=0.00	Mu=1.18	Mu=21.04	Mu=8.65	Mu=22.41	Mu=21.24	Mu=8.63	Mu=23.00
As=7.43	As=7.43	As=7.43	As=13.29	As=7.43	As=14.23	As=13.43	As=7.43	As=14.64
Vu=0.00		Vu=5.21	Vu=-32.51		Vu=31.53	Vu=-32.80		Vu=31.91

B=0.50 H=0.50 L=6.30			***B=0.50 H=0.50 L=6.55***			***B=0.50 H=0.50 L=6.06***		
Mu=-35.58	Mu=-8.89	Mu=-33.32	Mu=-36.65	Mu=-9.16	Mu=-33.87	Mu=-36.38	Mu=-9.09	Mu=-33.41
As=23.90	As=7.43	As=22.16	As=24.75	As=7.43	As=22.58	As=24.53	As=7.43	As=22.22
Mu=22.35	Mu=8.89	Mu=24.00	Mu=23.08	Mu=9.16	Mu=24.92	Mu=23.08	Mu=9.09	Mu=24.15
As=14.19	As=7.43	As=15.34	As=14.70	As=7.43	As=15.98	As=14.70	As=7.43	As=15.44
Vu=-33.80		Vu=32.92	Vu=-34.65		Vu=33.62	Vu=-34.23		Vu=33.32

B=0.50 H=0.50 L=6.00		
Mu=-36.52 As=24.65	Mu=-9.13 As=7.43	Mu=-34.32 As=22.93
Mu=22.54 As=14.33	Mu=9.13 As=7.55	Mu=24.17 As=15.46
Vu=-34.76		Vu=33.90

A-108/PISO1

B=0.50 H=0.50 L=6.60			*B=0.50 H=0.50 L=4.69*			*B=0.50 H=0.50 L=5.20*		
Mu=-41.07 As=28.35	Mu=-10.27 As=8.32	Mu=-33.78 As=22.50	Mu=-0.95 As=7.43	Mu=-3.15 As=7.43	Mu=-0.95 As=7.43	Mu=-1.15 As=7.43	Mu=-3.84 As=7.43	Mu=-1.15 As=7.43
Mu=20.54 As=12.95	Mu=25.34 As=16.28	Mu=16.89 As=10.51	Mu=0.95 As=7.43	Mu=0.99 As=7.43	Mu=0.95 As=7.43	Mu=1.15 As=7.43	Mu=1.15 As=7.43	Mu=1.15 As=7.43
Vu=13.42		Vu=-12.79	Vu=31.64		Vu=-36.40	Vu=39.49		Vu=-47.88

B=0.50 H=0.50 L=7.62		
Mu=-1.41 As=7.43	Mu=-4.92 As=7.43	Mu=-1.41 As=7.43
Mu=1.41 As=7.43	Mu=1.41 As=7.43	Mu=1.41 As=7.43
Vu=58.76		Vu=-44.58

A-109/PISO1

B=0.30 H=0.50 L=7.77		
Mu=-25.29 As=17.56	Mu=-9.59 As=5.94	Mu=-38.35 As=25.05
Mu=12.65 As=7.99	Mu=27.68 As=19.63	Mu=19.17 As=17.15
Vu=-24.51		Vu=26.76

A-110/PISO1

B=0.50 H=0.50 L=6.60			***B=0.50 H=0.50 L=4.69***			***B=0.50 H=0.50 L=5.20***		
Mu=-42.54	Mu=-10.63	Mu=-41.57	Mu=-26.52	Mu=-6.63	Mu=-23.36	Mu=-28.53	Mu=-7.13	Mu=-28.14
As=29.58	As=8.63	As=28.77	As=17.12	As=7.43	As=14.89	As=18.58	As=7.43	As=18.29
Mu=21.27	Mu=26.12	Mu=20.79	Mu=13.26	Mu=9.77	Mu=11.68	Mu=14.27	Mu=13.40	Mu=14.07
As=13.45	As=16.84	As=13.12	As=8.14	As=7.90	As=9.51	As=8.79	As=8.66	As=8.66
Vu=36.87		Vu=-36.66	Vu=-29.02		Vu=27.53	Vu=-29.65		Vu=29.44

B=0.50 H=0.50 L=7.62		
Mu=-23.49	Mu=-5.87	Mu=-18.65
As=14.98	As=7.43	As=11.68
Mu=11.74	Mu=13.19	Mu=9.33
As=9.56	As=9.58	As=7.53
Vu=-17.35		Vu=15.93

A-111/PISO1

B=0.50 H=0.50 L=6.60			***B=0.50 H=0.50 L=4.69***			***B=0.50 H=0.50 L=5.20***		
Mu=-40.90	Mu=-10.23	Mu=-40.65	Mu=-28.13	Mu=-7.03	Mu=-22.81	Mu=-29.74	Mu=-7.43	Mu=-24.27
As=28.21	As=8.28	As=27.99	As=18.28	As=7.43	As=14.51	As=19.46	As=7.43	As=15.53
Mu=20.45	Mu=24.49	Mu=20.32	Mu=14.06	Mu=8.36	Mu=11.40	Mu=14.87	Mu=12.96	Mu=14.03
As=12.89	As=15.68	As=12.81	As=8.66	As=7.64	As=9.27	As=9.18	As=8.64	As=8.64
Vu=37.22		Vu=-37.36	Vu=-30.56		Vu=28.04	Vu=-31.64		Vu=29.18

A-112/PISO1

B=0.50 H=0.50 L=6.60			***B=0.50 H=0.50 L=4.69***			***B=0.50 H=0.50 L=5.20***		
Mu=-43.61	Mu=-10.90	Mu=-42.63	Mu=-30.42	Mu=-7.61	Mu=-25.98	Mu=-31.42	Mu=-7.85	Mu=-26.36
As=30.50	As=8.85	As=29.66	As=19.97	As=7.43	As=16.73	As=20.71	As=7.43	As=17.01
Mu=21.81	Mu=24.49	Mu=21.31	Mu=15.21	Mu=8.90	Mu=12.99	Mu=15.71	Mu=12.76	Mu=14.12
As=13.82	As=15.68	As=13.48	As=9.40	As=8.11	As=8.55	As=9.73	As=8.44	As=8.70
Vu=39.43		Vu=-39.44	Vu=-33.70		Vu=31.61	Vu=-33.43		Vu=31.33

B=0.50 H=0.50 L=7.62		
Mu=-12.40	Mu=-3.10	Mu=-7.86
As=7.59	As=7.43	As=7.43
Mu=6.20	Mu=3.10	Mu=5.99
As=7.43	As=7.43	As=7.43
Vu=-8.89		Vu=7.22

A-113/PISO1

B=0.50 H=0.50 L=6.60			***B=0.50 H=0.50 L=4.69***			***B=0.50 H=0.50 L=5.20***		
Mu=-45.71	Mu=-11.43	Mu=-43.35	Mu=-31.92	Mu=-7.98	Mu=-27.25	Mu=-32.24	Mu=-8.06	Mu=-28.92
As=32.34	As=9.29	As=30.28	As=21.09	As=7.43	As=17.65	As=21.33	As=7.43	As=18.86
Mu=22.85	Mu=24.35	Mu=21.67	Mu=15.96	Mu=9.40	Mu=13.63	Mu=16.12	Mu=13.14	Mu=14.60
As=14.54	As=15.58	As=13.73	As=9.90	As=8.46	As=9.00	As=10.00	As=8.70	As=9.01
Vu=40.77		Vu=-40.36	Vu=-35.50		Vu=33.31	Vu=-35.04		Vu=33.54

B=0.50 H=0.50 L=7.62		
Mu=-14.26	Mu=-3.57	Mu=-10.14
As=8.79	As=7.43	As=8.21
Mu=7.13	Mu=3.57	Mu=8.27
As=7.43	As=7.43	As=7.43
Vu=-10.54		Vu=8.89

A-114/PISO1

B=0.50 H=0.50 L=6.60			***B=0.50 H=0.50 L=4.69***			***B=0.50 H=0.50 L=5.20***		
Mu=-54.92	Mu=-13.73	Mu=-48.70	Mu=-36.22	Mu=-9.06	Mu=-31.66	Mu=-35.39	Mu=-9.07	Mu=-36.29
As=36.71	As=8.45	As=35.06	As=24.41	As=7.43	As=20.89	As=23.75	As=7.43	As=24.46
Mu=27.46	Mu=27.81	Mu=24.35	Mu=18.11	Mu=11.17	Mu=15.83	Mu=17.69	Mu=14.69	Mu=18.15
As=18.54	As=18.06	As=15.59	As=11.32	As=9.85	As=9.81	As=11.04	As=9.06	As=11.34
Vu=47.28		Vu=-45.87	Vu=-40.62		Vu=38.47	Vu=-38.69		Vu=39.12

B=0.50 H=0.50 L=7.62		
Mu=-21.92	Mu=-5.48	Mu=-18.62
As=13.90	As=7.43	As=11.66
Mu=10.96	Mu=7.83	Mu=10.06
As=8.90	As=7.80	As=8.15
Vu=-17.36		Vu=15.65

A-115/PISO1

B=0.30 H=0.50 L=7.77		
Mu=-27.92	Mu=-9.52	Mu=-38.10
As=19.85	As=5.90	As=24.90
Mu=13.96	Mu=28.63	Mu=19.05
As=8.90	As=20.49	As=16.86
Vu=-29.92		Vu=30.45

A-116/PISO1

B=0.50 H=0.50 L=6.60			***B=0.50 H=0.50 L=4.69***			***B=0.50 H=0.50 L=5.20***		
Mu=-40.32	Mu=-10.08	Mu=-35.01	Mu=-30.54	Mu=-7.63	Mu=-27.30	Mu=-30.89	Mu=-8.33	Mu=-33.30
As=27.72	As=8.16	As=23.46	As=20.05	As=7.43	As=17.69	As=20.32	As=7.43	As=22.14
Mu=20.16	Mu=16.62	Mu=17.50	Mu=15.27	Mu=7.63	Mu=13.65	Mu=15.44	Mu=8.33	Mu=16.65
As=12.69	As=10.33	As=10.91	As=9.44	As=9.44	As=8.39	As=9.86	As=8.94	As=10.35
Vu=34.24		Vu=-33.36	Vu=-35.87		Vu=33.78	Vu=-34.32		Vu=35.26

B=0.50 H=0.50 L=7.62		
Mu=-42.62	Mu=-10.66	Mu=-40.35
As=29.65	As=8.64	As=27.75
Mu=21.31	Mu=19.55	Mu=20.18
As=13.48	As=12.28	As=12.71
Vu=-33.09		Vu=33.20

A-201/PISO2

B=0.50 H=0.50 L=4.55			***B=0.50 H=0.50 L=6.95***			***B=0.50 H=0.50 L=6.90***		
Mu=-3.37	Mu=-1.49	Mu=-1.17	Mu=-0.95	Mu=-0.95	Mu=-0.45	Mu=-0.44	Mu=-1.12	Mu=-0.45
As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43
Mu=3.21	Mu=1.42	Mu=1.66	Mu=1.48	Mu=0.47	Mu=1.06	Mu=0.49	Mu=1.22	Mu=0.48
As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43
Vu=-21.53		Vu=-8.86	Vu=4.83		Vu=1.77	Vu=-1.39		Vu=1.38

B=0.50 H=0.50 L=5.45		
Mu=-0.39	Mu=-1.19	Mu=-0.34
As=7.43	As=7.43	As=7.43
Mu=0.46	Mu=1.05	Mu=0.82
As=7.43	As=7.43	As=7.43
Vu=-1.15		Vu=-1.26

A-202/PISO2

B=0.50 H=0.50 L=1.85			***B=0.50 H=0.50 L=2.15***			***B=0.50 H=0.50 L=6.90***		
Mu=-0.00	Mu=-1.22	Mu=-4.75	Mu=-3.22	Mu=-0.81	Mu=-0.81	Mu=-0.44	Mu=-1.09	Mu=-0.43
As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43
Mu=0.00	Mu=0.00	Mu=0.95	Mu=1.61	Mu=0.81	Mu=0.81	Mu=0.46	Mu=1.17	Mu=0.48
As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43
Vu=0.02		Vu=4.11	Vu=-6.20		Vu=0.00	Vu=-1.34		Vu=1.36

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=1.90***			***B=0.50 H=0.50 L=4.50***		
Mu=-0.44	Mu=-1.08	Mu=-0.42	Mu=-1.98	Mu=-2.31	Mu=-7.92	Mu=-12.01	Mu=-3.41	Mu=-13.63
As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=9.79	As=7.43	As=8.38
Mu=0.46	Mu=1.17	Mu=0.48	Mu=1.98	Mu=1.98	Mu=3.96	Mu=6.01	Mu=5.59	Mu=6.81
As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43
Vu=-1.34		Vu=1.36	Vu=0.00		Vu=31.30	Vu=-15.86		Vu=16.60

B=0.50 H=0.50 L=6.90		
Mu=-21.77	Mu=-5.44	Mu=-20.55
As=13.79	As=7.43	As=12.96
Mu=10.88	Mu=8.58	Mu=10.27
As=8.84	As=7.43	As=8.32
Vu=-19.38		Vu=18.99

B=0.50 H=0.50 L=6.90		
Mu=-22.90	Mu=-5.72	Mu=-20.00
As=14.57	As=7.43	As=12.58
Mu=11.45	Mu=8.15	Mu=10.00
As=9.31	As=7.43	As=8.09
Vu=-19.58		Vu=18.64

B=0.50 H=0.50 L=5.45		
Mu=-24.86	Mu=-6.22	Mu=-6.89
As=15.95	As=7.43	As=7.43
Mu=12.43	Mu=10.11	Mu=6.22
As=7.61	As=8.18	As=7.43
Vu=-21.17		Vu=15.10

B=0.50 H=0.50 L=0.95		
Mu=-6.41	Mu=-13.23	Mu=-21.10
As=7.43	As=9.57	As=13.34
Mu=6.76	Mu=5.28	Mu=10.55
As=7.43	As=7.43	As=8.56
Vu=30.16		Vu=31.89

A-203/PISO2

B=0.50 H=0.50 L=1.85		
Mu=-0.00	Mu=-2.17	Mu=-8.27
As=7.43	As=7.43	As=7.43
Mu=0.02	Mu=0.00	Mu=1.65
As=7.43	As=7.43	As=7.43
Vu=0.39		Vu=6.87

B=0.50 H=0.50 L=2.15		
Mu=-13.41	Mu=-7.45	Mu=-17.93
As=8.45	As=7.43	As=11.20
Mu=6.71	Mu=4.48	Mu=10.29
As=7.43	As=7.43	As=8.34
Vu=-25.69		Vu=23.60

B=0.50 H=0.50 L=6.90		
Mu=-19.45	Mu=-6.18	Mu=-24.71
As=12.22	As=7.43	As=15.84
Mu=9.88	Mu=9.88	Mu=12.35
As=7.99	As=7.99	As=7.56
Vu=-20.00		Vu=21.47

B=0.50 H=0.50 L=6.90		
Mu=-25.95	Mu=-6.49	Mu=-22.70
As=16.71	As=7.43	As=14.43
Mu=12.97	Mu=8.34	Mu=11.35
As=7.96	As=7.43	As=9.23
Vu=-22.02		Vu=21.01

B=0.50 H=0.50 L=6.90		
Mu=-25.93	Mu=-6.48	Mu=-22.43
As=16.70	As=7.43	As=14.25
Mu=12.96	Mu=8.28	Mu=11.21
As=7.95	As=7.43	As=9.11
Vu=-21.98		Vu=20.85

B=0.50 H=0.50 L=6.90		
Mu=-25.60	Mu=-6.40	Mu=-22.84
As=16.47	As=7.43	As=14.53
Mu=12.80	Mu=8.31	Mu=11.42
As=7.85	As=7.43	As=9.29
Vu=-21.83		Vu=20.95

B=0.50 H=0.50 L=6.90		
Mu=-26.41	Mu=-6.60	Mu=-21.24
As=17.05	As=7.43	As=13.43
Mu=13.21	Mu=8.73	Mu=10.62
As=8.11	As=7.43	As=8.62
Vu=-22.23		Vu=20.56

B=0.50 H=0.50 L=6.90		
Mu=-26.93	Mu=-6.73	Mu=-22.30
As=17.42	As=7.43	As=14.15
Mu=13.47	Mu=8.26	Mu=11.15
As=8.27	As=7.43	As=9.06
Vu=-22.42		Vu=20.87

A-204/PISO2

B=0.50 H=0.50 L=2.15			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-10.29	Mu=-5.25	Mu=-21.01	Mu=-23.44	Mu=-6.75	Mu=-26.99	Mu=-28.02	Mu=-7.01	Mu=-25.66
As=8.34	As=7.43	As=13.27	As=14.95	As=7.43	As=17.46	As=18.21	As=7.43	As=16.51
Mu=7.03	Mu=5.25	Mu=15.37	Mu=11.72	Mu=9.30	Mu=13.49	Mu=14.01	Mu=8.88	Mu=12.83
As=7.43	As=7.43	As=9.51	As=9.54	As=7.69	As=8.29	As=8.63	As=7.43	As=7.87
Vu=-31.64		Vu=33.45	Vu=-22.48		Vu=23.36	Vu=-24.19		Vu=23.48

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-28.57	Mu=-7.14	Mu=-25.09	Mu=-28.24	Mu=-7.06	Mu=-25.46	Mu=-29.01	Mu=-7.25	Mu=-23.94
As=18.61	As=7.43	As=16.11	As=18.36	As=7.43	As=16.37	As=18.93	As=7.43	As=15.30
Mu=14.29	Mu=8.45	Mu=12.55	Mu=14.12	Mu=8.50	Mu=12.73	Mu=14.51	Mu=8.72	Mu=11.97
As=8.80	As=7.43	As=7.68	As=8.70	As=7.43	As=7.80	As=8.95	As=7.84	As=9.75
Vu=-24.22		Vu=23.10	Vu=-24.10		Vu=23.21	Vu=-24.50		Vu=22.86

B=0.50 H=0.50 L=6.90		
Mu=-29.88	Mu=-7.47	Mu=-25.52
As=19.57	As=7.43	As=16.41
Mu=14.94	Mu=8.29	Mu=12.76
As=9.23	As=7.77	As=8.26
Vu=-25.11		Vu=23.56

A-205/PISO2

B=0.50 H=0.50 L=2.15			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-4.26	Mu=-3.26	Mu=-1.06	Mu=-38.35	Mu=-9.59	Mu=-35.47	Mu=-27.91	Mu=-6.98	Mu=-22.17
As=7.43	As=7.43	As=7.43	As=26.11	As=7.75	As=23.82	As=18.12	As=7.43	As=14.07
Mu=3.92	Mu=3.58	Mu=1.06	Mu=19.18	Mu=19.21	Mu=17.73	Mu=13.95	Mu=6.98	Mu=12.59
As=7.43	As=7.43	As=7.43	As=12.03	As=12.05	As=11.07	As=8.59	As=8.59	As=7.71
Vu=-22.58		Vu=0.00	Vu=-32.81		Vu=31.82	Vu=-22.54		Vu=20.66

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-26.00	Mu=-6.50	Mu=-23.20	Mu=-26.08	Mu=-6.52	Mu=-23.02	Mu=-24.99	Mu=-6.26	Mu=-25.05
As=16.75	As=7.43	As=14.78	As=16.81	As=7.43	As=14.66	As=16.03	As=7.43	As=16.08
Mu=13.00	Mu=6.50	Mu=12.24	Mu=13.04	Mu=6.52	Mu=12.27	Mu=12.49	Mu=6.26	Mu=12.53
As=7.98	As=8.20	As=7.49	As=8.00	As=8.10	As=7.51	As=7.65	As=8.28	As=7.67
Vu=-22.23		Vu=21.34	Vu=-22.23		Vu=21.25	Vu=-21.53		Vu=21.58

B=0.50 H=0.50 L=6.90		
Mu=-38.72 As=26.41	Mu=-9.68 As=7.83	Mu=-37.22 As=25.21
Mu=19.36 As=12.15	Mu=20.76 As=13.10	Mu=18.61 As=11.65
Vu=-32.29		Vu=34.14

A-206/PISO2

B=0.40 H=0.50 L=2.90			*B=0.40 H=0.50 L=3.75*		
Mu=-25.12 As=16.56	Mu=-6.28 As=5.94	Mu=-6.28 As=5.94	Mu=-4.15 As=5.94	Mu=-4.15 As=5.94	Mu=-12.04 As=7.44
Mu=12.56 As=7.78	Mu=6.28 As=6.15	Mu=18.54 As=11.81	Mu=16.61 As=10.48	Mu=11.20 As=8.34	Mu=6.02 As=5.94
Vu=-18.27		Vu=-13.13	Vu=3.56		Vu=15.13

A-207/PISO2

B=0.40 H=0.50 L=3.75			*B=0.40 H=0.50 L=2.90*		
Mu=-13.40 As=8.33	Mu=-4.18 As=5.94	Mu=-4.18 As=5.94	Mu=-4.43 As=5.94	Mu=-4.43 As=5.94	Mu=-13.50 As=8.40
Mu=6.70 As=5.94	Mu=10.34 As=7.80	Mu=16.72 As=10.56	Mu=17.74 As=11.26	Mu=7.59 As=7.84	Mu=6.75 As=5.94
Vu=-14.70		Vu=-3.14	Vu=8.52		Vu=13.56

A-210/PISO2

B=0.50 H=0.50 L=2.50			*B=0.75 H=0.50 L=2.90*			*B=0.50 H=0.50 L=3.70*		
Mu=-4.01 As=7.43	Mu=-3.91 As=7.43	Mu=-1.16 As=7.43	Mu=-42.15 As=27.39	Mu=-13.22 As=11.39	Mu=-10.54 As=11.14	Mu=-9.83 As=7.95	Mu=-9.83 As=8.87	Mu=-39.32 As=26.90
Mu=4.62 As=7.43	Mu=4.25 As=7.43	Mu=1.16 As=7.43	Mu=21.07 As=12.98	Mu=13.08 As=11.35	Mu=17.03 As=13.85	Mu=17.98 As=11.23	Mu=14.13 As=8.97	Mu=19.66 As=12.36
Vu=-22.40		Vu=0.00	Vu=-34.59		Vu=-27.80	Vu=21.92		Vu=35.49

B=0.50 H=0.50 L=6.90			*B=0.50 H=0.50 L=6.90*			*B=0.50 H=0.50 L=6.90*		
Mu=-31.89 As=21.07	Mu=-7.97 As=7.43	Mu=-26.87 As=17.37	Mu=-30.60 As=20.10	Mu=-7.65 As=7.43	Mu=-27.58 As=17.88	Mu=-30.61 As=20.11	Mu=-7.65 As=7.43	Mu=-27.50 As=17.83
Mu=15.95 As=9.89	Mu=7.97 As=7.43	Mu=16.98 As=10.56	Mu=15.30 As=9.55	Mu=7.65 As=7.43	Mu=16.76 As=10.42	Mu=15.30 As=9.51	Mu=7.65 As=7.43	Mu=16.76 As=10.42
Vu=-26.33		Vu=24.69	Vu=-26.14		Vu=25.18	Vu=-26.12		Vu=25.13

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=3.70***			***B=0.75 H=0.50 L=2.90***		
Mu=-29.77	Mu=-7.44	Mu=-28.70	Mu=-43.65	Mu=-10.91	Mu=-10.91	Mu=-9.67	Mu=-11.90	Mu=-38.67
As=19.49	As=7.43	As=18.70	As=30.53	As=9.81	As=8.86	As=11.14	As=13.12	As=24.89
Mu=15.02	Mu=7.44	Mu=15.60	Mu=21.82	Mu=12.69	Mu=19.97	Mu=19.29	Mu=14.98	Mu=19.34
As=9.28	As=9.52	As=9.66	As=13.83	As=8.29	As=12.56	As=11.83	As=13.17	As=11.86
Vu=-25.51		Vu=25.22	Vu=-37.88		Vu=-24.31	Vu=26.03		Vu=32.82

A-211/PISO2

B=0.50 H=0.50 L=2.50			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-0.00	Mu=-3.74	Mu=-14.49	Mu=-46.11	Mu=-11.53	Mu=-38.01	Mu=-39.07	Mu=-9.77	Mu=-37.84
As=7.43	As=7.43	As=8.94	As=32.70	As=9.38	As=25.83	As=26.69	As=7.90	As=25.70
Mu=0.01	Mu=0.00	Mu=2.90	Mu=23.05	Mu=11.53	Mu=19.45	Mu=19.53	Mu=9.77	Mu=18.92
As=7.43	As=7.43	As=7.43	As=14.68	As=9.38	As=12.21	As=12.27	As=9.58	As=11.86
Vu=0.32		Vu=9.97	Vu=-36.97		Vu=34.86	Vu=-34.28		Vu=33.87

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-40.81	Mu=-10.20	Mu=-37.10	Mu=-40.49	Mu=-10.12	Mu=-37.43	Mu=-41.19	Mu=-10.30	Mu=-35.74
As=28.13	As=8.26	As=25.11	As=27.86	As=8.20	As=25.37	As=28.45	As=8.34	As=24.03
Mu=20.40	Mu=10.20	Mu=18.55	Mu=20.24	Mu=10.12	Mu=18.72	Mu=20.60	Mu=10.30	Mu=18.82
As=12.86	As=9.41	As=11.61	As=12.75	As=9.37	As=11.72	As=12.99	As=9.86	As=11.79
Vu=-34.73		Vu=33.54	Vu=-34.63		Vu=33.65	Vu=-34.93		Vu=33.20

B=0.50 H=0.50 L=6.90		
Mu=-43.21	Mu=-10.80	Mu=-39.07
As=30.16	As=8.77	As=26.69
Mu=21.60	Mu=10.80	Mu=21.45
As=13.68	As=7.98	As=13.58
Vu=-36.96		Vu=35.14

A-212/PISO2

B=0.50 H=0.50 L=2.50			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-0.00	Mu=-3.74	Mu=-14.50	Mu=-50.47	Mu=-12.62	Mu=-40.51	Mu=-41.90	Mu=-10.48	Mu=-40.98
As=7.43	As=7.43	As=8.94	As=36.15	As=7.73	As=27.88	As=29.04	As=8.49	As=28.27
Mu=0.01	Mu=0.00	Mu=2.90	Mu=25.24	Mu=12.62	Mu=22.75	Mu=20.95	Mu=10.48	Mu=20.53
As=7.43	As=7.43	As=7.43	As=16.21	As=7.73	As=14.47	As=13.23	As=7.61	As=12.94
Vu=0.32		Vu=9.97	Vu=-39.97		Vu=37.37	Vu=-36.83		Vu=36.47

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-42.87	Mu=-10.72	Mu=-39.74	Mu=-43.66	Mu=-10.91	Mu=-40.54	Mu=-44.05	Mu=-11.01	Mu=-38.44
As=29.86	As=8.69	As=27.24	As=30.54	As=8.86	As=27.90	As=30.88	As=8.94	As=26.19
Mu=21.43	Mu=10.72	Mu=19.87	Mu=21.83	Mu=10.91	Mu=20.90	Mu=22.02	Mu=11.01	Mu=21.65
As=13.56	As=7.54	As=12.50	As=13.83	As=9.82	As=13.20	As=13.97	As=7.76	As=13.71
Vu=-35.29		Vu=33.34	Vu=-37.37		Vu=36.47	Vu=-37.36		Vu=35.57

B=0.50 H=0.50 L=6.90		
Mu=-46.25	Mu=-11.56	Mu=-42.16
As=32.82	As=9.41	As=29.27
Mu=23.12	Mu=11.56	Mu=24.63
As=14.73	As=8.44	As=15.78
Vu=-39.63		Vu=37.78

A-213/PISO2

B=0.50 H=0.50 L=2.50			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-0.00	Mu=-3.76	Mu=-14.58	Mu=-66.12	Mu=-16.53	Mu=-52.90	Mu=-38.87	Mu=-9.72	Mu=-33.72
As=7.43	As=7.43	As=8.99	As=42.98	As=10.27	As=36.15	As=26.54	As=7.86	As=22.47
Mu=0.01	Mu=0.00	Mu=2.92	Mu=33.06	Mu=28.70	Mu=26.45	Mu=20.54	Mu=9.72	Mu=23.78
As=7.43	As=7.43	As=7.43	As=31.06	As=18.70	As=17.07	As=12.95	As=7.86	As=15.19
Vu=0.33		Vu=10.02	Vu=-52.02		Vu=45.88	Vu=-32.25		Vu=30.51

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-37.88	Mu=-9.47	Mu=-34.61	Mu=-37.97	Mu=-9.49	Mu=-34.50	Mu=-36.80	Mu=-9.20	Mu=-36.11
As=25.73	As=7.65	As=23.15	As=25.81	As=7.67	As=23.07	As=24.87	As=7.43	As=24.32
Mu=22.00	Mu=9.47	Mu=23.99	Mu=22.03	Mu=9.49	Mu=24.00	Mu=21.95	Mu=9.20	Mu=22.21
As=13.95	As=7.78	As=15.33	As=13.97	As=7.79	As=15.34	As=13.92	As=7.43	As=14.09
Vu=-32.38		Vu=31.32	Vu=-32.41		Vu=31.31	Vu=-31.44		Vu=31.31

B=0.50 H=0.50 L=6.90		
Mu=-59.05	Mu=-14.76	Mu=-44.60
As=39.02	As=9.11	As=31.36
Mu=29.52	Mu=14.76	Mu=22.30
As=23.13	As=11.08	As=14.16
Vu=-57.81		Vu=38.92

A-214/PISO2

B=0.30 H=0.50 L=5.47		
Mu=-0.00 As=4.46	Mu=-0.00 As=4.46	Mu=-14.31 As=9.14
Mu=2.32 As=5.28	Mu=12.37 As=7.80	Mu=3.93 As=4.46
Vu=-9.69		Vu=13.61

A-215/PISO2

B=0.30 H=0.50 L=5.47		
Mu=-0.51 As=4.46	Mu=-0.00 As=4.46	Mu=-17.24 As=11.24
Mu=0.73 As=5.08	Mu=14.58 As=9.33	Mu=3.88 As=4.46
Vu=-12.01		Vu=16.30

A-216/PISO2

B=0.50 H=0.50 L=2.50			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-0.00 As=7.43	Mu=-3.80 As=7.43	Mu=-14.75 As=9.10	Mu=-67.62 As=43.82	Mu=-16.91 As=10.52	Mu=-55.03 As=36.77	Mu=-39.56 As=27.10	Mu=-9.89 As=8.00	Mu=-35.46 As=23.81
Mu=0.01 As=7.43	Mu=0.00 As=7.43	Mu=2.95 As=7.43	Mu=33.81 As=32.76	Mu=28.64 As=18.66	Mu=28.64 As=19.48	Mu=22.01 As=13.96	Mu=9.89 As=8.00	Mu=24.19 As=15.48
Vu=0.33		Vu=10.14	Vu=-52.81		Vu=47.46	Vu=-33.07		Vu=31.77

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-41.74 As=28.91	Mu=-10.43 As=8.46	Mu=-40.20 As=27.63	Mu=-39.73 As=27.23	Mu=-9.93 As=8.04	Mu=-34.15 As=22.79	Mu=-39.11 As=26.73	Mu=-9.78 As=7.91	Mu=-36.51 As=24.64
Mu=20.87 As=13.18	Mu=11.48 As=7.95	Mu=21.43 As=13.56	Mu=21.80 As=13.81	Mu=9.93 As=8.24	Mu=25.38 As=16.31	Mu=22.33 As=14.18	Mu=9.78 As=7.91	Mu=23.84 As=15.23
Vu=-35.21		Vu=36.10	Vu=-33.43		Vu=31.61	Vu=-32.89		Vu=32.11

B=0.50 H=0.50 L=6.90		
Mu=-60.73 As=39.96	Mu=-15.18 As=9.39	Mu=-48.38 As=34.76
Mu=30.37 As=25.01	Mu=15.18 As=11.05	Mu=24.19 As=15.47
Vu=-61.49		Vu=40.56

A-217/PISO2

B=0.50 H=0.50 L=2.50			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-0.00	Mu=-5.17	Mu=-19.43	Mu=-36.71	Mu=-9.18	Mu=-30.54	Mu=-36.20	Mu=-9.51	Mu=-38.03
As=7.43	As=7.43	As=12.20	As=24.80	As=7.43	As=20.06	As=24.39	As=7.68	As=25.85
Mu=0.10	Mu=0.00	Mu=3.89	Mu=18.36	Mu=9.18	Mu=15.27	Mu=18.10	Mu=18.10	Mu=19.02
As=7.43	As=7.43	As=7.43	As=11.48	As=7.43	As=9.47	As=11.31	As=11.31	As=11.92
Vu=1.19		Vu=17.40	Vu=-29.92		Vu=28.74	Vu=-30.88		Vu=38.66

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-25.90	Mu=-6.47	Mu=-17.53	Mu=-23.98	Mu=-6.69	Mu=-26.77	Mu=-43.21	Mu=-10.80	Mu=-40.47
As=16.68	As=7.43	As=10.93	As=15.32	As=7.43	As=17.30	As=30.16	As=8.77	As=27.85
Mu=12.95	Mu=6.47	Mu=16.86	Mu=18.19	Mu=6.69	Mu=22.55	Mu=21.60	Mu=10.80	Mu=22.09
As=7.94	As=7.43	As=10.49	As=11.37	As=7.43	As=14.33	As=13.68	As=7.59	As=14.01
Vu=-19.06		Vu=16.36	Vu=-22.39		Vu=22.11	Vu=-37.54		Vu=36.61

B=0.50 H=0.50 L=6.90		
Mu=-44.70	Mu=-11.29	Mu=-45.16
As=31.45	As=9.18	As=31.85
Mu=22.89	Mu=11.29	Mu=25.24
As=14.56	As=8.39	As=16.21
Vu=-39.90		Vu=39.47

A-218/PISO2

B=0.50 H=0.50 L=2.50			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-0.00	Mu=-5.75	Mu=-24.92	Mu=-38.58	Mu=-9.64	Mu=-27.05	Mu=-22.28	Mu=-5.57	Mu=-18.68
As=7.43	As=7.43	As=15.99	As=26.29	As=7.80	As=17.50	As=14.14	As=7.43	As=11.70
Mu=0.13	Mu=0.00	Mu=4.98	Mu=19.29	Mu=9.64	Mu=13.52	Mu=13.09	Mu=5.57	Mu=16.08
As=7.43	As=7.43	As=7.43	As=12.11	As=7.98	As=8.31	As=9.01	As=7.43	As=9.98
Vu=1.61		Vu=22.63	Vu=-31.33		Vu=28.34	Vu=-18.26		Vu=16.98

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-21.04	Mu=-5.26	Mu=-19.39	Mu=-23.87	Mu=-6.46	Mu=-25.83	Mu=-41.08	Mu=-10.27	Mu=-38.47
As=13.30	As=7.43	As=12.17	As=15.25	As=7.43	As=16.63	As=28.35	As=8.32	As=26.21
Mu=14.88	Mu=5.26	Mu=15.40	Mu=17.56	Mu=6.46	Mu=21.51	Mu=20.54	Mu=10.27	Mu=20.58
As=9.19	As=7.43	As=9.53	As=10.95	As=7.43	As=13.61	As=12.95	As=9.69	As=12.98
Vu=-18.03		Vu=17.58	Vu=-21.81		Vu=21.45	Vu=-35.73		Vu=34.84

B=0.50 H=0.50 L=6.90		
Mu=-41.83 As=28.99	Mu=-10.69 As=8.67	Mu=-42.76 As=29.77
Mu=21.36 As=13.51	Mu=10.69 As=7.89	Mu=22.89 As=14.57
Vu=-37.55		Vu=37.37

A-219/PISO2

B=0.50 H=0.50 L=2.50			***B=0.50 H=0.50 L=6.00***			***B=0.50 H=0.50 L=6.30***		
Mu=-0.00 As=7.43	Mu=-3.26 As=7.43	Mu=-17.61 As=10.98	Mu=-36.68 As=24.78	Mu=-9.17 As=7.43	Mu=-32.49 As=21.52	Mu=-34.43 As=23.01	Mu=-8.61 As=7.43	Mu=-32.24 As=21.33
Mu=0.07 As=7.43	Mu=0.00 As=7.43	Mu=3.52 As=7.43	Mu=29.60 As=19.36	Mu=9.17 As=7.43	Mu=30.68 As=20.17	Mu=28.36 As=18.45	Mu=8.61 As=7.43	Mu=29.93 As=19.60
Vu=0.88		Vu=15.85	Vu=-33.49		Vu=32.31	Vu=-32.32		Vu=31.48

B=0.50 H=0.50 L=6.30			***B=0.50 H=0.50 L=6.55***			***B=0.50 H=0.50 L=6.06***		
Mu=-35.46 As=23.81	Mu=-8.86 As=7.43	Mu=-33.72 As=22.46	Mu=-39.80 As=27.29	Mu=-9.95 As=8.05	Mu=-39.29 As=26.87	Mu=-49.23 As=35.55	Mu=-12.31 As=7.53	Mu=-47.09 As=33.58
Mu=29.50 As=19.29	Mu=8.86 As=7.43	Mu=31.29 As=20.62	Mu=33.33 As=22.16	Mu=9.95 As=8.05	Mu=37.34 As=25.30	Mu=36.67 As=24.76	Mu=12.31 As=7.53	Mu=38.10 As=25.91
Vu=-33.49		Vu=32.70	Vu=-38.26		Vu=37.27	Vu=-46.68		Vu=45.89

B=0.50 H=0.50 L=6.00		
Mu=-49.85 As=36.13	Mu=-12.46 As=7.63	Mu=-48.28 As=34.67
Mu=37.49 As=25.42	Mu=12.46 As=7.63	Mu=39.13 As=26.75
Vu=-47.51		Vu=46.79

A-220/PISO2

B=0.50 H=0.50 L=7.05			***B=0.50 H=0.50 L=5.60***			***B=0.50 H=0.50 L=7.05***		
Mu=-2.63	Mu=-1.06	Mu=-1.26	Mu=-1.76	Mu=-0.57	Mu=-1.12	Mu=-1.42	Mu=-1.27	Mu=-1.32
As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43
Mu=3.36	Mu=1.05	Mu=1.62	Mu=1.52	Mu=0.44	Mu=1.56	Mu=2.07	Mu=1.25	Mu=1.84
As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43
Vu=16.09		Vu=-7.35	Vu=-9.54		Vu=-8.60	Vu=9.18		Vu=-4.72

A-221/PISO2

B=0.50 H=0.50 L=0.89			***B=0.50 H=0.50 L=6.60***			***B=0.50 H=0.50 L=4.69***		
Mu=-0.89	Mu=-1.85	Mu=-2.87	Mu=-7.04	Mu=-1.76	Mu=-6.83	Mu=-1.62	Mu=-1.62	Mu=-6.49
As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43
Mu=0.00	Mu=0.00	Mu=0.57	Mu=3.52	Mu=2.06	Mu=3.41	Mu=3.11	Mu=1.62	Mu=3.25
As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43
Vu=3.95		Vu=4.43	Vu=6.41		Vu=-6.59	Vu=-3.41		Vu=6.33

B=0.50 H=0.50 L=5.20			***B=0.50 H=0.50 L=7.62***			***B=0.50 H=0.50 L=6.90***		
Mu=-12.16	Mu=-7.43	Mu=-29.74	Mu=-44.50	Mu=-11.94	Mu=-47.78	Mu=-53.88	Mu=-13.47	Mu=-51.21
As=7.44	As=7.43	As=19.46	As=31.27	As=9.73	As=34.21	As=36.15	As=8.28	As=36.15
Mu=7.43	Mu=9.11	Mu=14.87	Mu=22.25	Mu=24.57	Mu=23.89	Mu=26.94	Mu=28.73	Mu=25.60
As=7.43	As=9.06	As=9.18	As=14.12	As=15.74	As=15.26	As=17.43	As=18.72	As=16.47
Vu=-15.11		Vu=29.46	Vu=-35.91		Vu=36.63	Vu=-44.73		Vu=-43.98

B=0.50 H=0.50 L=5.50			***B=0.50 H=0.50 L=6.90***			***B=0.60 H=0.50 L=8.19***		
Mu=-41.79	Mu=-10.45	Mu=-40.67	Mu=-50.20	Mu=-12.55	Mu=-42.07	Mu=-0.69	Mu=-1.45	Mu=-0.69
As=28.95	As=8.47	As=28.02	As=36.15	As=7.69	As=29.19	As=8.91	As=8.91	As=8.91
Mu=20.90	Mu=14.25	Mu=20.34	Mu=25.10	Mu=27.84	Mu=21.03	Mu=0.69	Mu=1.72	Mu=0.69
As=13.20	As=8.78	As=12.81	As=16.11	As=18.07	As=13.29	As=8.91	As=8.91	As=8.91
Vu=41.69		Vu=-41.23	Vu=43.40		Vu=-39.33	Vu=2.98		Vu=-1.36

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=5.50***			***B=0.50 H=0.50 L=6.90***		
Mu=-41.48	Mu=-10.87	Mu=-43.48	Mu=-36.53	Mu=-9.13	Mu=-35.15	Mu=-44.68	Mu=-11.17	Mu=-40.36
As=28.69	As=8.82	As=30.39	As=24.65	As=7.43	As=23.56	As=31.43	As=9.08	As=27.76
Mu=20.74	Mu=23.77	Mu=21.74	Mu=18.26	Mu=11.75	Mu=17.57	Mu=22.34	Mu=23.90	Mu=20.18
As=13.09	As=15.18	As=13.77	As=11.42	As=9.57	As=10.96	As=14.19	As=15.27	As=12.71
Vu=37.41		Vu=-38.09	Vu=-36.90		Vu=36.36	Vu=38.59		Vu=-37.12

A-222/PISO2

B=0.30 H=0.50 L=5.20			***B=0.30 H=0.50 L=2.86***		
Mu=-13.18	Mu=-3.29	Mu=-3.29	Mu=-3.01	Mu=-3.01	Mu=-12.05
As=8.35	As=4.46	As=4.46	As=4.46	As=4.46	As=7.59
Mu=6.59	Mu=9.91	Mu=3.29	Mu=3.39	Mu=6.03	Mu=6.03
As=5.35	As=6.86	As=4.96	As=4.46	As=5.36	As=4.88
Vu=12.13		Vu=-7.30	Vu=4.95		Vu=-13.14

A-223/PISO2

B=0.30 H=0.50 L=7.72		
Mu=-26.31	Mu=-7.44	Mu=-26.86
As=18.42	As=4.56	As=18.91
Mu=13.15	Mu=29.77	Mu=13.43
As=8.34	As=21.54	As=8.53
Vu=-24.85		Vu=23.98

A-225/PISO2

B=0.50 H=0.50 L=0.89			***B=0.50 H=0.50 L=6.60***			***B=0.50 H=0.50 L=4.69***		
Mu=-0.02	Mu=-1.29	Mu=-2.81	Mu=-18.66	Mu=-4.67	Mu=-13.68	Mu=-5.30	Mu=-1.41	Mu=-5.62
As=7.43	As=7.43	As=7.43	As=11.69	As=7.43	As=8.41	As=7.43	As=7.43	As=7.43
Mu=0.00	Mu=0.00	Mu=0.56	Mu=9.33	Mu=8.23	Mu=8.23	Mu=2.65	Mu=1.41	Mu=2.81
As=7.43	As=7.43	As=7.43	As=7.54	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43
Vu=-4.91		Vu=-7.01	Vu=17.78		Vu=-16.35	Vu=-5.15		Vu=5.40

B=0.50 H=0.50 L=5.20			***B=0.50 H=0.50 L=7.62***			***B=0.50 H=0.50 L=6.90***		
Mu=-13.14	Mu=-6.81	Mu=-27.23	Mu=-26.23	Mu=-8.04	Mu=-32.17	Mu=-55.07	Mu=-14.68	Mu=-58.71
As=8.06	As=7.43	As=17.63	As=16.91	As=7.43	As=21.28	As=36.79	As=9.06	As=38.83
Mu=6.81	Mu=10.32	Mu=13.61	Mu=13.11	Mu=10.94	Mu=16.09	Mu=27.53	Mu=33.06	Mu=29.36
As=7.43	As=8.37	As=8.37	As=8.89	As=8.89	As=9.98	As=18.70	As=21.96	As=22.75
Vu=-15.84		Vu=29.70	Vu=-21.53		Vu=23.15	Vu=-47.90		Vu=-49.12

B=0.50 H=0.50 L=5.50			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=8.41***		
Mu=-45.44	Mu=-11.36	Mu=-44.45	Mu=-57.94	Mu=-14.49	Mu=-56.39	Mu=-38.12	Mu=-10.20	Mu=-40.78
As=32.10	As=9.24	As=31.23	As=38.40	As=8.93	As=37.53	As=25.92	As=8.26	As=28.11
Mu=22.72	Mu=16.13	Mu=22.23	Mu=28.97	Mu=32.78	Mu=28.20	Mu=19.06	Mu=15.64	Mu=20.39
As=14.45	As=10.01	As=14.11	As=21.90	As=21.74	As=20.17	As=11.95	As=10.41	As=12.85
Vu=-45.36		Vu=44.97	Vu=-48.92		Vu=48.39	Vu=25.22		Vu=-28.83

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=5.50***			***B=0.50 H=0.50 L=6.90***		
Mu=-56.96	Mu=-14.24	Mu=-56.96	Mu=-44.64	Mu=-11.16	Mu=-43.48	Mu=-59.20	Mu=-14.80	Mu=-52.72
As=37.85	As=8.77	As=37.85	As=31.40	As=9.07	As=30.39	As=39.10	As=9.14	As=36.15
Mu=28.48	Mu=32.63	Mu=28.48	Mu=22.32	Mu=16.07	Mu=21.74	Mu=29.60	Mu=33.60	Mu=26.36
As=20.81	As=21.63	As=20.81	As=14.17	As=9.97	As=13.77	As=23.29	As=22.37	As=17.01
Vu=-48.35		Vu=48.40	Vu=-44.58		Vu=44.17	Vu=49.36		Vu=-47.19

A-226/PISO2

B=0.50 H=0.50 L=0.89			***B=0.50 H=0.50 L=6.60***			***B=0.50 H=0.50 L=4.69***		
Mu=-0.00	Mu=-1.27	Mu=-2.79	Mu=-18.06	Mu=-4.52	Mu=-15.93	Mu=-10.02	Mu=-3.28	Mu=-13.11
As=7.43	As=7.43	As=7.43	As=11.28	As=7.43	As=9.87	As=8.11	As=7.43	As=8.05
Mu=0.01	Mu=0.00	Mu=0.56	Mu=9.03	Mu=7.76	Mu=7.96	Mu=5.01	Mu=3.28	Mu=6.56
As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43
Vu=4.91		Vu=7.01	Vu=17.65		Vu=-17.18	Vu=-13.08		Vu=14.70

B=0.50 H=0.50 L=5.20		
Mu=-23.50	Mu=-0.00	Mu=-0.00
As=14.99	As=7.43	As=7.43
Mu=4.70	Mu=9.77	Mu=18.40
As=7.43	As=8.16	As=11.51
Vu=-31.47		Vu=-12.24

A-227/PISO2

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=5.50***			***B=0.50 H=0.50 L=6.90***		
Mu=-14.76	Mu=-14.76	Mu=-59.04	Mu=-46.29	Mu=-11.57	Mu=-45.30	Mu=-58.61	Mu=-14.65	Mu=-53.34
As=9.11	As=9.11	As=39.01	As=32.86	As=9.42	As=31.98	As=38.77	As=9.04	As=36.15
Mu=18.28	Mu=29.52	Mu=29.52	Mu=23.15	Mu=15.35	Mu=22.65	Mu=29.31	Mu=34.29	Mu=26.67
As=14.46	As=23.16	As=23.11	As=14.74	As=9.49	As=14.40	As=22.64	As=22.90	As=17.23
Vu=23.66		Vu=-49.67	Vu=-45.41		Vu=45.02	Vu=-49.60		Vu=47.87

B=0.50 H=0.50 L=8.41			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=5.50***		
Mu=-17.43	Mu=-4.36	Mu=-16.48	Mu=-53.91	Mu=-14.42	Mu=-57.69	Mu=-45.50	Mu=-11.37	Mu=-44.07
As=10.87	As=7.43	As=10.24	As=36.15	As=8.89	As=38.26	As=32.15	As=9.25	As=30.90
Mu=8.72	Mu=4.36	Mu=8.24	Mu=26.96	Mu=34.15	Mu=28.84	Mu=22.75	Mu=15.28	Mu=22.03
As=7.43	As=7.43	As=7.43	As=17.44	As=22.80	As=21.61	As=14.47	As=9.45	As=13.97
Vu=10.83		Vu=-10.60	Vu=-47.83		Vu=49.10	Vu=-44.64		Vu=44.11

B=0.50 H=0.50 L=6.90		
Mu=-58.98	Mu=-14.75	Mu=-53.67
As=38.98	As=9.10	As=36.15
Mu=29.49	Mu=34.00	Mu=26.84
As=23.05	As=22.68	As=17.35
Vu=49.84		Vu=-47.91

A-228/PISO2

B=0.50 H=0.50 L=3.45		
Mu=-6.99 As=7.43	Mu=-3.38 As=7.43	Mu=-4.96 As=7.43
Mu=4.58 As=7.43	Mu=4.00 As=7.43	Mu=5.45 As=7.43
Vu=22.15		Vu=19.27

A-229/PISO2

B=0.50 H=0.50 L=0.89			***B=0.50 H=0.50 L=6.60***			***B=0.50 H=0.50 L=4.69***		
Mu=-0.03 As=7.43	Mu=-1.26 As=7.43	Mu=-2.79 As=7.43	Mu=-18.72 As=11.72	Mu=-4.68 As=7.43	Mu=-16.79 As=10.44	Mu=-11.13 As=9.04	Mu=-3.16 As=7.43	Mu=-12.65 As=7.75
Mu=0.04 As=7.43	Mu=0.00 As=7.43	Mu=0.56 As=7.43	Mu=9.36 As=7.56	Mu=7.74 As=7.43	Mu=8.40 As=7.43	Mu=5.56 As=7.43	Mu=3.37 As=7.43	Mu=6.32 As=7.43
Vu=-4.91		Vu=-7.01	Vu=18.25		Vu=-17.86	Vu=-14.65		Vu=15.53

B=0.50 H=0.50 L=5.20			***B=0.50 H=0.50 L=7.62***			***B=0.50 H=0.50 L=6.90***		
Mu=-19.11 As=11.99	Mu=-6.29 As=7.43	Mu=-25.16 As=16.16	Mu=-11.16 As=9.07	Mu=-4.54 As=7.43	Mu=-18.17 As=11.35	Mu=-52.03 As=36.15	Mu=-14.72 As=9.08	Mu=-58.86 As=38.91
Mu=9.55 As=7.72	Mu=11.53 As=9.38	Mu=12.58 As=7.71	Mu=7.13 As=7.43	Mu=4.54 As=7.43	Mu=9.08 As=7.43	Mu=26.01 As=16.76	Mu=34.41 As=22.99	Mu=29.43 As=22.92
Vu=-23.60		Vu=31.79	Vu=-9.47		Vu=11.41	Vu=-47.24		Vu=49.20

B=0.50 H=0.50 L=5.50			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=8.41***		
Mu=-47.96 As=34.38	Mu=-11.99 As=9.77	Mu=-47.00 As=33.50	Mu=-60.03 As=39.57	Mu=-15.01 As=9.27	Mu=-54.74 As=36.61	Mu=-18.77 As=11.76	Mu=-4.69 As=7.43	Mu=-17.93 As=11.20
Mu=23.98 As=15.33	Mu=16.12 As=10.00	Mu=23.50 As=14.99	Mu=30.02 As=24.22	Mu=34.31 As=22.92	Mu=27.37 As=18.34	Mu=9.39 As=7.58	Mu=4.69 As=7.43	Mu=8.97 As=7.43
Vu=-46.93		Vu=46.62	Vu=50.64		Vu=-48.87	Vu=-11.65		Vu=11.43

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=5.50***			***B=0.50 H=0.50 L=6.90***		
Mu=-55.63 As=37.10	Mu=-14.76 As=9.11	Mu=-59.03 As=39.01	Mu=-47.68 As=34.12	Mu=-11.92 As=9.71	Mu=-46.31 As=32.88	Mu=-58.82 As=38.89	Mu=-14.71 As=9.08	Mu=-55.19 As=36.86
Mu=27.81 As=19.32	Mu=34.27 As=22.89	Mu=29.52 As=23.11	Mu=23.84 As=15.23	Mu=15.80 As=9.79	Mu=23.16 As=14.75	Mu=29.41 As=22.88	Mu=33.67 As=22.42	Mu=27.59 As=18.84
Vu=49.09		Vu=-50.26	Vu=-46.56		Vu=46.02	Vu=49.51		Vu=-48.41

B=0.50 H=0.50 L=3.45		
Mu=-37.13 As=25.13	Mu=-9.28 As=7.49	Mu=-16.07 As=9.97
Mu=18.56 As=11.62	Mu=10.44 As=8.46	Mu=12.14 As=7.43
Vu=-44.53		Vu=32.80

A-230/PISO2

B=0.50 H=0.50 L=6.60			*B=0.50 H=0.50 L=4.69*			*B=0.50 H=0.50 L=5.20*		
Mu=-40.46 As=27.84	Mu=-10.12 As=8.19	Mu=-39.10 As=26.72	Mu=-30.10 As=19.73	Mu=-7.52 As=7.43	Mu=-28.43 As=18.51	Mu=-33.75 As=22.48	Mu=-8.44 As=7.43	Mu=-31.55 As=20.82
Mu=20.23 As=12.74	Mu=19.34 As=12.14	Mu=19.55 As=12.28	Mu=15.05 As=9.30	Mu=7.52 As=7.93	Mu=14.22 As=8.76	Mu=16.87 As=10.50	Mu=13.03 As=9.71	Mu=16.58 As=10.30
Vu=36.60		Vu=-36.51	Vu=-36.09		Vu=35.38	Vu=-36.95		Vu=38.58

B=0.50 H=0.50 L=7.62			*B=0.50 H=0.50 L=6.90*			*B=0.50 H=0.50 L=5.50*		
Mu=-12.37 As=7.57	Mu=-4.57 As=7.43	Mu=-18.30 As=11.44	Mu=-53.02 As=36.15	Mu=-15.35 As=9.49	Mu=-61.38 As=40.33	Mu=-51.92 As=36.15	Mu=-12.98 As=7.96	Mu=-51.04 As=36.15
Mu=7.41 As=7.43	Mu=4.57 As=7.43	Mu=9.15 As=7.43	Mu=26.51 As=17.12	Mu=34.45 As=23.03	Mu=30.69 As=25.74	Mu=25.96 As=16.72	Mu=17.63 As=11.00	Mu=25.52 As=16.41
Vu=-9.77		Vu=11.48	Vu=-48.59		Vu=50.64	Vu=51.23		Vu=-50.97

B=0.50 H=0.50 L=6.90			*B=0.50 H=0.50 L=8.41*			*B=0.50 H=0.50 L=6.90*		
Mu=-63.10 As=41.28	Mu=-15.77 As=9.77	Mu=-58.23 As=38.56	Mu=-21.63 As=13.70	Mu=-5.41 As=7.43	Mu=-20.80 As=13.13	Mu=-59.06 As=39.03	Mu=-15.72 As=9.74	Mu=-62.89 As=41.17
Mu=31.55 As=27.66	Mu=34.29 As=22.90	Mu=29.11 As=22.22	Mu=10.82 As=8.78	Mu=5.41 As=7.43	Mu=10.40 As=8.43	Mu=29.53 As=23.14	Mu=34.13 As=22.77	Mu=31.45 As=27.43
Vu=53.44		Vu=-51.76	Vu=13.73		Vu=-13.50	Vu=-52.07		Vu=53.41

B=0.50 H=0.50 L=5.50			*B=0.50 H=0.50 L=6.90*			*B=0.50 H=0.50 L=3.35*		
Mu=-52.04 As=36.15	Mu=-13.01 As=7.98	Mu=-50.75 As=36.15	Mu=-61.64 As=40.47	Mu=-15.41 As=9.53	Mu=-57.26 As=38.01	Mu=-47.89 As=34.31	Mu=-11.97 As=9.76	Mu=-36.14 As=24.34
Mu=26.02 As=16.77	Mu=17.66 As=11.01	Mu=25.38 As=16.31	Mu=30.82 As=26.02	Mu=33.37 As=22.19	Mu=28.63 As=21.13	Mu=23.95 As=15.30	Mu=11.97 As=9.76	Mu=29.84 As=19.54
Vu=51.65		Vu=-51.07	Vu=51.37		Vu=-50.38	Vu=73.88		Vu=-64.32

A-231/PISO2

B=0.50 H=0.50 L=6.61			***B=0.50 H=0.50 L=4.69***			***B=0.50 H=0.50 L=5.20***		
Mu=-55.22	Mu=-13.81	Mu=-53.30	Mu=-39.42	Mu=-9.85	Mu=-36.85	Mu=-40.35	Mu=-10.23	Mu=-40.93
As=36.88	As=8.49	As=36.15	As=26.98	As=7.97	As=24.91	As=27.74	As=8.29	As=28.23
Mu=27.61	Mu=30.45	Mu=26.65	Mu=19.71	Mu=14.72	Mu=18.42	Mu=20.17	Mu=16.68	Mu=20.47
As=18.88	As=19.99	As=17.22	As=12.39	As=9.09	As=11.53	As=12.70	As=10.37	As=12.90
Vu=48.80		Vu=-48.44	Vu=-45.71		Vu=44.59	Vu=-43.95		Vu=44.14

B=0.50 H=0.50 L=7.62			***B=0.50 H=0.50 L=6.91***			***B=0.50 H=0.50 L=5.50***		
Mu=-19.47	Mu=-6.14	Mu=-24.57	Mu=-56.22	Mu=-15.93	Mu=-63.70	Mu=-55.11	Mu=-13.78	Mu=-53.82
As=12.23	As=7.43	As=15.74	As=37.43	As=9.87	As=41.62	As=36.81	As=8.48	As=36.15
Mu=9.74	Mu=6.14	Mu=12.28	Mu=28.11	Mu=33.17	Mu=31.85	Mu=27.56	Mu=19.89	Mu=26.91
As=7.87	As=7.43	As=7.52	As=19.98	As=22.04	As=28.34	As=18.75	As=12.51	As=17.41
Vu=-15.47		Vu=17.03	Vu=-50.38		Vu=51.93	Vu=55.44		Vu=-55.05

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=5.20***			***B=0.50 H=0.50 L=2.91***		
Mu=-65.29	Mu=-16.32	Mu=-64.21	Mu=-45.95	Mu=-11.49	Mu=-11.49	Mu=-11.78	Mu=-16.70	Mu=-47.11
As=42.52	As=10.13	As=41.91	As=32.56	As=9.63	As=9.34	As=9.59	As=14.48	As=33.60
Mu=32.65	Mu=32.68	Mu=32.11	Mu=22.98	Mu=12.09	Mu=20.05	Mu=19.58	Mu=11.78	Mu=23.55
As=30.13	As=21.67	As=28.91	As=14.63	As=9.08	As=12.62	As=12.30	As=9.59	As=15.03
Vu=-55.28		Vu=54.82	Vu=30.91		Vu=-12.95	Vu=23.06		Vu=32.06

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=5.50***			***B=0.50 H=0.50 L=6.90***		
Mu=-65.79	Mu=-16.45	Mu=-64.86	Mu=-55.38	Mu=-13.84	Mu=-54.00	Mu=-65.25	Mu=-16.31	Mu=-59.56
As=42.79	As=10.21	As=42.27	As=36.96	As=8.52	As=36.19	As=42.49	As=10.13	As=39.30
Mu=32.89	Mu=32.50	Mu=32.43	Mu=27.69	Mu=19.79	Mu=27.00	Mu=32.63	Mu=32.91	Mu=29.78
As=30.69	As=21.53	As=29.64	As=19.04	As=12.44	As=17.52	As=30.08	As=21.84	As=23.69
Vu=55.48		Vu=-55.31	Vu=56.00		Vu=-55.36	Vu=53.83		Vu=-52.54

B=0.50 H=0.50 L=3.35		
Mu=-52.17	Mu=-13.04	Mu=-42.59
As=36.15	As=8.00	As=29.63
Mu=26.27	Mu=13.04	Mu=36.95
As=16.95	As=9.31	As=24.99
Vu=83.89		Vu=-74.92

A-232/PISO2

B=0.30 H=0.50 L=5.15			***B=0.30 H=0.50 L=2.86***		
Mu=-16.99 As=11.05	Mu=-4.25 As=4.46	Mu=-4.25 As=4.46	Mu=-3.89 As=4.46	Mu=-3.89 As=4.46	Mu=-15.56 As=10.02
Mu=8.50 As=5.23	Mu=11.26 As=8.18	Mu=6.83 As=5.81	Mu=8.19 As=5.35	Mu=9.00 As=5.68	Mu=7.78 As=4.77
Vu=-14.71		Vu=7.83	Vu=-3.16		Vu=14.88

A-234/PISO2

B=0.30 H=0.50 L=7.77		
Mu=-26.92 As=18.95	Mu=-7.16 As=5.83	Mu=-28.63 As=20.49
Mu=13.46 As=8.55	Mu=22.66 As=15.38	Mu=14.31 As=9.14
Vu=-27.00		Vu=24.33

A-235/PISO2

B=0.50 H=0.50 L=3.45		
Mu=-15.06 As=9.31	Mu=-3.77 As=7.43	Mu=-13.91 As=8.56
Mu=7.93 As=7.43	Mu=7.11 As=7.43	Mu=8.99 As=7.43
Vu=22.89		Vu=-22.08

A-237/PISO2

B=0.50 H=0.50 L=6.60			***B=0.50 H=0.50 L=4.69***			***B=0.50 H=0.50 L=5.20***		
Mu=-35.91 As=24.17	Mu=-9.05 As=7.43	Mu=-36.19 As=24.39	Mu=-29.70 As=19.44	Mu=-7.43 As=7.43	Mu=-27.96 As=18.16	Mu=-29.45 As=19.25	Mu=-7.60 As=7.43	Mu=-30.40 As=19.95
Mu=17.96 As=11.21	Mu=16.12 As=10.00	Mu=18.10 As=11.31	Mu=14.85 As=9.17	Mu=7.43 As=7.88	Mu=13.98 As=8.94	Mu=14.72 As=9.17	Mu=7.62 As=8.62	Mu=15.20 As=9.40
Vu=32.25		Vu=-32.69	Vu=-35.41		Vu=34.75	Vu=-32.63		Vu=32.81

B=0.50 H=0.50 L=7.62			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=5.50***		
Mu=-38.24	Mu=-10.61	Mu=-42.42	Mu=-39.21	Mu=-10.86	Mu=-43.44	Mu=-45.00	Mu=-11.25	Mu=-43.92
As=26.02	As=8.60	As=29.48	As=26.81	As=8.82	As=30.36	As=31.71	As=9.14	As=30.78
Mu=19.12	Mu=15.66	Mu=21.21	Mu=19.60	Mu=17.20	Mu=21.72	Mu=22.50	Mu=11.25	Mu=21.96
As=11.99	As=9.70	As=13.41	As=12.32	As=10.71	As=13.76	As=14.30	As=8.68	As=13.93
Vu=-29.50		Vu=33.24	Vu=-35.12		Vu=-35.42	Vu=46.26		Vu=-45.94

B=0.50 H=0.50 L=6.90			***B=0.60 H=0.50 L=8.41***			***B=0.50 H=0.50 L=6.90***		
Mu=-47.10	Mu=-11.78	Mu=-46.87	Mu=-33.04	Mu=-10.25	Mu=-40.99	Mu=-49.40	Mu=-12.35	Mu=-48.23
As=33.59	As=9.59	As=33.38	As=21.42	As=8.91	As=27.36	As=35.71	As=7.56	As=34.62
Mu=23.55	Mu=17.39	Mu=23.43	Mu=16.52	Mu=10.25	Mu=20.49	Mu=24.70	Mu=17.06	Mu=24.12
As=15.03	As=10.84	As=14.94	As=10.16	As=10.22	As=12.76	As=15.83	As=10.62	As=15.42
Vu=40.55		Vu=-40.27	Vu=-20.81		Vu=-31.55	Vu=42.02		Vu=-41.50

B=0.50 H=0.50 L=5.50			***B=0.50 H=0.50 L=6.90***		
Mu=-48.94	Mu=-12.24	Mu=-47.22	Mu=-51.75	Mu=-12.94	Mu=-46.97
As=35.28	As=7.49	As=33.69	As=36.15	As=7.93	As=33.47
Mu=24.47	Mu=12.24	Mu=23.94	Mu=25.87	Mu=17.91	Mu=23.48
As=15.67	As=9.66	As=15.30	As=16.66	As=11.45	As=14.98
Vu=50.57		Vu=-49.90	Vu=43.71		Vu=-42.05

A-242/PISO2

B=0.30 H=0.40 L=1.24			***B=0.30 H=0.40 L=9.40***			***B=0.30 H=0.40 L=6.43***		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-7.73	Mu=-7.73	Mu=-7.73	Mu=-4.55	Mu=-4.55	Mu=-4.55
As=3.47	As=3.47	As=3.47	As=6.28	As=10.21	As=6.28	As=3.58	As=3.58	As=3.58
Mu=0.00	Mu=0.17	Mu=0.00	Mu=7.73	Mu=30.92	Mu=7.73	Mu=4.55	Mu=18.18	Mu=4.55
As=3.47	As=3.47	As=3.47	As=14.72	As=24.53	As=14.72	As=10.12	As=16.87	As=10.12
Vu=-1.41		Vu=1.47	Vu=-18.69		Vu=18.69	Vu=-14.47		Vu=14.47

B=0.30 H=0.40 L=2.83			***B=0.30 H=0.40 L=3.95***		
Mu=-0.65	Mu=-0.65	Mu=-0.65	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47
Mu=0.65	Mu=2.58	Mu=0.65	Mu=0.96	Mu=2.67	Mu=1.32
As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47
Vu=-5.45		Vu=5.45	Vu=-5.55		Vu=7.23

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A-301/CUB

B=0.50 H=0.40 L=2.87			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-0.00	Mu=-4.78	Mu=-15.93	Mu=-24.52	Mu=-6.13	Mu=-17.86	Mu=-21.73	Mu=-5.43	Mu=-17.78
As=5.78	As=6.89	As=13.21	As=21.70	As=6.38	As=15.02	As=18.80	As=5.78	As=14.94
Mu=0.12	Mu=0.00	Mu=3.18	Mu=12.26	Mu=6.54	Mu=8.93	Mu=10.86	Mu=6.45	Mu=8.89
As=5.78	As=5.78	As=5.78	As=9.93	As=7.34	As=7.09	As=8.72	As=7.57	As=7.57
Vu=1.22		Vu=8.39	Vu=-18.88		Vu=16.97	Vu=-17.56		Vu=16.29

B=0.50 H=0.40 L=6.90		
Mu=-23.67	Mu=-5.92	Mu=-16.72
As=20.79	As=6.15	As=13.94
Mu=11.83	Mu=7.11	Mu=9.32
As=9.56	As=7.44	As=7.44
Vu=-19.07		Vu=16.61

A-302/CUB

B=0.60 H=0.50 L=4.87			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-0.50	Mu=-22.18	Mu=-70.70	Mu=-24.31	Mu=-6.08	Mu=-6.95	Mu=-12.56	Mu=-3.14	Mu=-9.95
As=8.91	As=17.45	As=46.73	As=21.48	As=6.33	As=7.27	As=10.19	As=5.78	As=7.95
Mu=0.00	Mu=0.00	Mu=14.14	Mu=12.16	Mu=6.08	Mu=10.87	Mu=6.28	Mu=3.14	Mu=5.87
As=8.91	As=8.91	As=15.98	As=9.84	As=6.33	As=8.73	As=6.54	As=5.78	As=6.10
Vu=3.49		Vu=26.94	Vu=-14.09		Vu=8.31	Vu=-10.72		Vu=9.88

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-13.84	Mu=-3.46	Mu=-9.16	Mu=-12.69	Mu=-3.17	Mu=-8.44	Mu=-11.98	Mu=-3.00	Mu=-8.55
As=11.32	As=5.78	As=7.28	As=10.30	As=5.78	As=6.68	As=9.69	As=5.78	As=6.77
Mu=6.92	Mu=3.46	Mu=6.82	Mu=6.34	Mu=3.17	Mu=7.74	Mu=5.99	Mu=3.00	Mu=7.37
As=7.23	As=5.78	As=7.13	As=6.61	As=6.61	As=6.10	As=6.23	As=6.23	As=5.80
Vu=-11.29		Vu=9.74	Vu=-9.90		Vu=8.48	Vu=-9.68		Vu=8.55

B=0.50 H=0.40 L=6.90		
Mu=-12.60	Mu=-3.15	Mu=-9.06
As=10.23	As=5.78	As=7.24
Mu=6.30	Mu=3.15	Mu=8.93
As=6.57	As=6.57	As=7.08
Vu=-10.44		Vu=9.07

A-303/CUB

B=0.60 H=0.50 L=4.88			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-0.77	Mu=-30.51	Mu=-85.96	Mu=-48.59	Mu=-12.15	Mu=-24.89	Mu=-14.04	Mu=-3.51	Mu=-9.44
As=8.91	As=24.10	As=55.28	As=38.82	As=9.83	As=22.09	As=11.50	As=5.78	As=7.51
Mu=0.00	Mu=0.00	Mu=17.19	Mu=24.29	Mu=19.05	Mu=19.05	Mu=7.02	Mu=3.51	Mu=8.98
As=8.91	As=8.91	As=26.46	As=35.73	As=16.15	As=16.15	As=7.34	As=5.78	As=7.13
Vu=5.33		Vu=31.08	Vu=-32.85		Vu=25.16	Vu=-10.88		Vu=9.29

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-13.33	Mu=-3.33	Mu=-9.78	Mu=-13.40	Mu=-3.35	Mu=-9.65	Mu=-11.76	Mu=-3.19	Mu=-12.77
As=10.87	As=5.78	As=7.80	As=10.94	As=5.78	As=7.69	As=9.49	As=5.78	As=10.38
Mu=6.67	Mu=3.33	Mu=8.80	Mu=6.70	Mu=3.35	Mu=8.97	Mu=7.24	Mu=3.19	Mu=6.39
As=6.96	As=5.78	As=6.98	As=7.00	As=5.78	As=7.12	As=7.58	As=5.78	As=6.66
Vu=-10.85		Vu=9.66	Vu=-10.87		Vu=9.59	Vu=-9.91		Vu=10.28

B=0.50 H=0.40 L=6.90		
Mu=-33.53	Mu=-8.38	Mu=-30.19
As=28.28	As=6.63	As=28.12
Mu=16.76	Mu=21.60	Mu=15.09
As=14.20	As=18.67	As=12.45
Vu=-29.17		Vu=27.98

A-304/CUB

B=0.50 H=0.40 L=2.87			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-3.04	Mu=-16.11	Mu=-36.17	Mu=-45.23	Mu=-11.31	Mu=-27.48	Mu=-16.55	Mu=-4.14	Mu=-10.15
As=5.78	As=16.05	As=30.13	As=36.47	As=9.10	As=24.95	As=13.79	As=5.78	As=8.12
Mu=0.00	Mu=0.00	Mu=7.23	Mu=22.62	Mu=20.16	Mu=20.16	Mu=8.27	Mu=4.14	Mu=10.71
As=5.78	As=5.78	As=10.26	As=30.84	As=17.24	As=17.24	As=6.54	As=5.78	As=8.59
Vu=6.91		Vu=16.15	Vu=-33.06		Vu=27.34	Vu=-12.17		Vu=9.93

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-14.14	Mu=-3.54	Mu=-11.01	Mu=-14.35	Mu=-3.59	Mu=-10.78	Mu=-12.72	Mu=-3.49	Mu=-13.97
As=11.59	As=5.78	As=8.84	As=11.78	As=5.78	As=8.65	As=10.33	As=5.78	As=11.44
Mu=7.66	Mu=3.54	Mu=9.63	Mu=7.43	Mu=3.59	Mu=9.91	Mu=8.37	Mu=3.49	Mu=7.22
As=7.02	As=5.78	As=7.67	As=6.82	As=5.78	As=7.91	As=7.50	As=5.78	As=7.56
Vu=-11.68		Vu=10.66	Vu=-11.74		Vu=10.54	Vu=-10.80		Vu=11.24

B=0.50 H=0.40 L=6.90		
Mu=-34.53	Mu=-8.63	Mu=-31.53
As=28.98	As=6.84	As=28.12
Mu=17.27	Mu=21.63	Mu=15.77
As=15.61	As=18.70	As=13.07
Vu=-30.14		Vu=29.16

A-305/CUB

B=0.50 H=0.40 L=2.87			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-0.00	Mu=-10.41	Mu=-27.58	Mu=-28.48	Mu=-7.12	Mu=-19.05	Mu=-17.58	Mu=-4.39	Mu=-14.25
As=5.78	As=12.00	As=25.08	As=26.11	As=7.46	As=16.15	As=14.75	As=5.78	As=11.69
Mu=1.50	Mu=0.00	Mu=5.52	Mu=14.24	Mu=7.12	Mu=9.52	Mu=8.79	Mu=4.39	Mu=10.03
As=5.78	As=5.78	As=5.78	As=11.68	As=7.58	As=7.59	As=7.64	As=5.78	As=8.01
Vu=6.40		Vu=13.70	Vu=-21.80		Vu=19.07	Vu=-14.64		Vu=13.57

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-17.17	Mu=-4.29	Mu=-14.24	Mu=-17.05	Mu=-4.26	Mu=-14.24	Mu=-16.85	Mu=-4.21	Mu=-14.77
As=14.37	As=5.78	As=11.68	As=14.25	As=5.78	As=11.68	As=14.07	As=5.78	As=12.16
Mu=8.59	Mu=4.29	Mu=9.86	Mu=8.52	Mu=4.26	Mu=9.80	Mu=8.43	Mu=4.21	Mu=9.36
As=6.80	As=5.78	As=7.87	As=6.75	As=5.78	As=7.82	As=6.67	As=6.70	As=7.45
Vu=-14.49		Vu=13.56	Vu=-14.43		Vu=13.53	Vu=-14.29		Vu=13.63

B=0.50 H=0.40 L=6.90		
Mu=-23.83	Mu=-5.96	Mu=-20.60
As=20.97	As=6.20	As=17.67
Mu=11.92	Mu=7.34	Mu=10.30
As=9.63	As=6.72	As=8.24
Vu=-20.82		Vu=19.48

A-306/CUB

B=0.50 H=0.40 L=2.50			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-0.00	Mu=-8.10	Mu=-18.81	Mu=-28.74	Mu=-7.18	Mu=-22.02	Mu=-18.36	Mu=-4.59	Mu=-14.30
As=5.78	As=7.95	As=15.92	As=26.41	As=7.52	As=19.09	As=15.49	As=5.78	As=11.74
Mu=2.46	Mu=0.00	Mu=3.76	Mu=14.37	Mu=8.65	Mu=11.01	Mu=10.48	Mu=4.59	Mu=13.18
As=5.78	As=5.78	As=5.78	As=11.80	As=6.89	As=8.85	As=8.39	As=5.78	As=10.74
Vu=7.32		Vu=12.40	Vu=-21.36		Vu=21.77	Vu=-14.77		Vu=13.44

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-17.30	Mu=-4.32	Mu=-14.58	Mu=-17.27	Mu=-4.32	Mu=-14.48	Mu=-16.76	Mu=-4.19	Mu=-15.66
As=14.49	As=5.78	As=11.98	As=14.46	As=5.78	As=11.90	As=13.99	As=5.78	As=12.97
Mu=11.14	Mu=4.32	Mu=12.75	Mu=11.04	Mu=4.32	Mu=12.75	Mu=11.36	Mu=4.19	Mu=11.89
As=8.96	As=5.78	As=10.36	As=8.88	As=5.78	As=10.36	As=9.15	As=5.78	As=9.61
Vu=-14.50		Vu=13.63	Vu=-14.47		Vu=13.57	Vu=-14.17		Vu=13.83

B=0.50 H=0.40 L=6.90		
Mu=-26.20 As=23.53	Mu=-6.55 As=6.84	Mu=-22.15 As=19.22
Mu=13.10 As=10.67	Mu=10.19 As=8.15	Mu=11.07 As=8.90
Vu=-23.28		Vu=19.39

A-307/CUB

B=0.50 H=0.40 L=2.50			*B=0.50 H=0.40 L=6.90*			*B=0.50 H=0.40 L=6.90*		
Mu=-0.00 As=5.78	Mu=-13.27 As=15.91	Mu=-33.02 As=28.12	Mu=-44.99 As=36.30	Mu=-11.25 As=9.05	Mu=-36.21 As=30.15	Mu=-22.30 As=19.38	Mu=-5.58 As=5.79	Mu=-15.33 As=12.66
Mu=0.05 As=5.78	Mu=0.00 As=5.78	Mu=6.60 As=6.89	Mu=22.49 As=30.49	Mu=22.49 As=21.26	Mu=18.10 As=18.30	Mu=11.15 As=8.97	Mu=5.58 As=5.79	Mu=16.04 As=13.31
Vu=9.40		Vu=17.70	Vu=-35.82		Vu=34.32	Vu=-16.79		Vu=14.35

B=0.50 H=0.40 L=6.90			*B=0.50 H=0.40 L=6.90*			*B=0.50 H=0.40 L=6.90*		
Mu=-19.02 As=16.12	Mu=-4.76 As=5.78	Mu=-16.49 As=13.73	Mu=-19.42 As=16.51	Mu=-4.85 As=5.78	Mu=-16.20 As=13.47	Mu=-17.71 As=14.88	Mu=-4.92 As=5.78	Mu=-19.70 As=16.78
Mu=13.10 As=10.67	Mu=4.76 As=5.78	Mu=14.59 As=11.99	Mu=12.84 As=10.43	Mu=4.85 As=5.78	Mu=14.99 As=12.36	Mu=13.92 As=11.40	Mu=4.92 As=5.78	Mu=12.28 As=9.94
Vu=-16.09		Vu=15.28	Vu=-16.23		Vu=15.16	Vu=-15.29		Vu=15.97

B=0.50 H=0.40 L=6.90		
Mu=-41.10 As=33.58	Mu=-10.28 As=8.22	Mu=-37.34 As=30.94
Mu=20.55 As=24.90	Mu=20.26 As=20.93	Mu=18.67 As=19.55
Vu=-36.33		Vu=33.64

A-308/CUB

B=0.50 H=0.40 L=2.50			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-0.00	Mu=-8.87	Mu=-28.63	Mu=-45.46	Mu=-11.37	Mu=-37.55	Mu=-23.50	Mu=-5.88	Mu=-16.41
As=5.78	As=11.82	As=26.29	As=36.63	As=9.15	As=31.09	As=20.62	As=6.11	As=13.66
Mu=4.46	Mu=0.00	Mu=5.73	Mu=22.73	Mu=22.73	Mu=18.77	Mu=11.75	Mu=5.88	Mu=17.20
As=5.78	As=5.78	As=5.95	As=31.18	As=21.72	As=19.85	As=9.49	As=6.11	As=14.39
Vu=9.40		Vu=17.70	Vu=-36.73		Vu=35.42	Vu=-17.78		Vu=15.29

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-20.14	Mu=-5.03	Mu=-17.51	Mu=-20.52	Mu=-5.13	Mu=-17.31	Mu=-18.78	Mu=-5.18	Mu=-20.70
As=17.21	As=5.78	As=14.69	As=17.59	As=5.78	As=14.49	As=15.89	As=5.78	As=17.77
Mu=14.18	Mu=5.03	Mu=15.67	Mu=13.89	Mu=5.13	Mu=16.10	Mu=15.00	Mu=5.18	Mu=13.28
As=11.63	As=5.78	As=12.98	As=11.37	As=5.78	As=13.37	As=12.37	As=5.78	As=10.82
Vu=-17.03		Vu=16.20	Vu=-17.18		Vu=16.10	Vu=-16.19		Vu=16.87

B=0.50 H=0.40 L=6.90		
Mu=-42.08	Mu=-10.52	Mu=-38.54
As=34.26	As=8.43	As=31.79
Mu=21.04	Mu=20.52	Mu=19.27
As=26.30	As=21.37	As=21.26
Vu=-37.23		Vu=34.81

A-309/CUB

B=0.50 H=0.40 L=2.50			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-0.00	Mu=-15.84	Mu=-37.71	Mu=-37.02	Mu=-9.25	Mu=-27.53	Mu=-23.85	Mu=-5.96	Mu=-19.43
As=5.78	As=19.26	As=31.21	As=30.72	As=7.36	As=25.01	As=20.99	As=6.20	As=16.52
Mu=0.03	Mu=0.00	Mu=7.54	Mu=18.51	Mu=9.25	Mu=13.76	Mu=12.89	Mu=5.96	Mu=15.58
As=5.78	As=5.78	As=10.06	As=19.10	As=8.46	As=11.26	As=10.48	As=6.20	As=12.90
Vu=11.39		Vu=17.97	Vu=-28.86		Vu=26.10	Vu=-19.50		Vu=18.09

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-22.41	Mu=-5.60	Mu=-19.79	Mu=-22.40	Mu=-5.60	Mu=-19.85	Mu=-21.89	Mu=-5.47	Mu=-21.53
As=19.49	As=5.82	As=16.87	As=19.49	As=5.81	As=16.93	As=18.96	As=5.78	As=18.60
Mu=13.64	Mu=5.60	Mu=15.18	Mu=13.63	Mu=5.60	Mu=15.21	Mu=14.16	Mu=5.47	Mu=14.25
As=11.14	As=5.82	As=12.53	As=11.13	As=5.81	As=12.56	As=11.61	As=5.78	As=11.69
Vu=-19.13		Vu=18.29	Vu=-19.13		Vu=18.31	Vu=-18.87		Vu=18.76

B=0.50 H=0.40 L=6.90		
Mu=-33.24	Mu=-8.31	Mu=-29.71
As=28.12	As=6.57	As=27.56
Mu=16.62	Mu=11.17	Mu=14.85
As=13.85	As=10.39	As=12.23
Vu=-28.73		Vu=27.27

A-310/CUB

B=0.50 H=0.40 L=2.50			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-0.11	Mu=-11.95	Mu=-28.44	Mu=-39.04	Mu=-9.76	Mu=-32.24	Mu=-30.75	Mu=-7.69	Mu=-27.33
As=5.78	As=12.24	As=26.06	As=32.14	As=7.78	As=28.12	As=28.12	As=6.06	As=24.79
Mu=0.00	Mu=0.00	Mu=5.69	Mu=19.52	Mu=9.76	Mu=16.12	Mu=15.38	Mu=7.69	Mu=13.67
As=5.78	As=5.78	As=5.91	As=21.97	As=9.35	As=13.39	As=12.71	As=6.69	As=11.17
Vu=8.18		Vu=14.09	Vu=-31.48		Vu=29.64	Vu=-25.83		Vu=24.72

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-30.01	Mu=-7.50	Mu=-27.47	Mu=-28.49	Mu=-7.63	Mu=-30.51	Mu=-27.63	Mu=-7.86	Mu=-31.44
As=27.92	As=5.90	As=24.95	As=26.13	As=6.01	As=28.12	As=25.13	As=6.20	As=28.12
Mu=15.00	Mu=7.50	Mu=13.74	Mu=14.25	Mu=7.63	Mu=15.26	Mu=13.81	Mu=7.86	Mu=15.72
As=12.37	As=6.81	As=11.23	As=11.69	As=6.20	As=12.60	As=11.30	As=7.75	As=13.02
Vu=-25.64		Vu=24.84	Vu=-24.93		Vu=25.59	Vu=-25.56		Vu=27.02

B=0.50 H=0.40 L=6.90		
Mu=-39.63	Mu=-9.91	Mu=-30.91
As=32.55	As=7.91	As=28.12
Mu=19.81	Mu=12.86	Mu=16.91
As=22.80	As=13.01	As=14.12
Vu=-33.47		Vu=30.53

A-311/CUB

B=0.50 H=0.40 L=0.85			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-32.24	Mu=-9.43	Mu=-37.72	Mu=-32.24	Mu=-9.43	Mu=-37.72	Mu=-38.43	Mu=-9.61	Mu=-29.47
As=28.12	As=7.51	As=31.21	As=28.12	As=7.51	As=31.21	As=31.71	As=7.66	As=27.28
Mu=12.96	Mu=13.18	Mu=18.86	Mu=16.12	Mu=16.12	Mu=18.86	Mu=19.21	Mu=14.74	Mu=14.74
As=12.72	As=12.72	As=20.09	As=13.39	As=13.39	As=20.09	As=21.10	As=12.66	As=12.66
Vu=-28.64		Vu=38.55	Vu=-28.64		Vu=38.55	Vu=-39.25		Vu=27.74

A-312/CUB

B=0.50 H=0.40 L=0.85			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-29.71	Mu=-7.86	Mu=-31.44	Mu=-29.71	Mu=-7.86	Mu=-31.44	Mu=-32.45	Mu=-8.11	Mu=-28.13
As=27.57	As=6.20	As=28.12	As=27.57	As=6.20	As=28.12	As=28.12	As=6.41	As=25.71
Mu=11.36	Mu=7.96	Mu=15.72	Mu=14.86	Mu=7.96	Mu=15.72	Mu=16.23	Mu=8.11	Mu=14.07
As=9.15	As=8.28	As=13.02	As=12.24	As=8.28	As=13.02	As=13.49	As=8.26	As=11.53
Vu=-26.97		Vu=44.98	Vu=-26.97		Vu=44.98	Vu=-44.72		Vu=26.18

A-313/CUB

B=0.50 H=0.40 L=0.80			***B=0.50 H=0.40 L=6.06***			***B=0.50 H=0.40 L=6.00***		
Mu=-25.71	Mu=-6.43	Mu=-24.49	Mu=-25.71	Mu=-6.43	Mu=-24.49	Mu=-25.24	Mu=-6.31	Mu=-24.39
As=22.98	As=6.70	As=21.66	As=22.98	As=6.70	As=21.66	As=22.47	As=6.58	As=21.56
Mu=21.83	Mu=6.43	Mu=21.86	Mu=21.83	Mu=6.43	Mu=21.86	Mu=21.07	Mu=6.31	Mu=22.07
As=18.90	As=6.70	As=18.93	As=18.90	As=6.70	As=18.93	As=18.14	As=6.58	As=19.14
Vu=-24.22		Vu=23.94	Vu=-24.22		Vu=23.94	Vu=-24.02		Vu=23.62

A-314/CUB

B=0.50 H=0.40 L=1.70			***B=0.50 H=0.40 L=7.62***			***B=0.50 H=0.40 L=6.90***		
Mu=-2.45	Mu=-7.72	Mu=-14.39	Mu=-35.12	Mu=-8.78	Mu=-32.79	Mu=-23.25	Mu=-5.81	Mu=-20.37
As=5.78	As=7.05	As=11.82	As=29.39	As=6.96	As=28.12	As=20.36	As=6.04	As=17.44
Mu=0.00	Mu=0.00	Mu=2.88	Mu=17.56	Mu=14.01	Mu=16.40	Mu=11.62	Mu=5.81	Mu=10.19
As=5.78	As=5.78	As=5.78	As=16.43	As=11.47	As=13.65	As=9.38	As=6.60	As=8.15
Vu=6.15		Vu=9.11	Vu=-27.09		Vu=26.65	Vu=-19.46		Vu=18.58

B=0.50 H=0.40 L=5.50			***B=0.50 H=0.40 L=6.90***			***B=0.60 H=0.40 L=5.15***		
Mu=-21.14	Mu=-5.28	Mu=-20.40	Mu=-21.09	Mu=-5.56	Mu=-22.23	Mu=-21.11	Mu=-5.28	Mu=-5.28
As=18.20	As=5.78	As=17.47	As=18.16	As=5.78	As=19.31	As=17.72	As=6.93	As=6.93
Mu=10.73	Mu=5.28	Mu=11.17	Mu=10.54	Mu=5.56	Mu=11.11	Mu=10.56	Mu=5.39	Mu=12.79
As=8.61	As=5.89	As=8.99	As=8.45	As=6.84	As=8.94	As=8.37	As=6.93	As=10.26
Vu=23.18		Vu=-22.89	Vu=-19.06		Vu=19.33	Vu=15.31		Vu=9.93

B=0.50 H=0.40 L=3.06			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=5.50***		
Mu=-6.45	Mu=-6.83	Mu=-25.82	Mu=-23.76	Mu=-5.94	Mu=-22.00	Mu=-29.10	Mu=-7.27	Mu=-23.91
As=6.73	As=7.72	As=23.10	As=20.90	As=6.18	As=19.07	As=26.83	As=7.62	As=21.05
Mu=13.90	Mu=6.45	Mu=12.91	Mu=11.88	Mu=5.94	Mu=11.00	Mu=14.55	Mu=7.27	Mu=11.95
As=11.38	As=6.21	As=10.50	As=9.60	As=6.57	As=8.84	As=11.96	As=7.20	As=9.66
Vu=14.71		Vu=-20.12	Vu=19.96		Vu=-19.47	Vu=-33.35		Vu=25.66

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=5.41***			***B=0.50 H=0.40 L=1.34***		
Mu=-21.34	Mu=-5.73	Mu=-22.90	Mu=-34.56	Mu=-8.64	Mu=-29.09	Mu=-34.56	Mu=-8.64	Mu=-29.09
As=18.41	As=5.95	As=20.00	As=29.00	As=6.85	As=26.83	As=29.00	As=6.85	As=26.83
Mu=10.67	Mu=5.73	Mu=11.45	Mu=17.28	Mu=8.64	Mu=14.85	Mu=17.28	Mu=8.64	Mu=14.85
As=8.56	As=6.82	As=9.23	As=15.65	As=10.43	As=12.23	As=15.65	As=10.43	As=12.23
Vu=18.83		Vu=-19.41	Vu=40.62		Vu=-32.52	Vu=40.62		Vu=-32.52

A-315/CUB

B=0.50 H=0.40 L=1.70			***B=0.50 H=0.40 L=7.62***			***B=0.50 H=0.40 L=6.90***		
Mu=-0.04	Mu=-7.03	Mu=-15.39	Mu=-28.10	Mu=-7.14	Mu=-28.56	Mu=-37.97	Mu=-9.49	Mu=-37.00
As=5.78	As=7.35	As=12.72	As=25.67	As=7.48	As=26.20	As=31.39	As=7.56	As=30.71
Mu=0.01	Mu=0.00	Mu=3.08	Mu=14.05	Mu=9.61	Mu=14.28	Mu=18.99	Mu=19.95	Mu=18.50
As=5.78	As=5.78	As=5.78	As=11.51	As=8.70	As=11.72	As=20.45	As=20.37	As=19.08
Vu=8.29		Vu=11.21	Vu=-22.43		Vu=23.57	Vu=-31.85		Vu=32.92

B=0.50 H=0.40 L=5.50			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=8.41***		
Mu=-27.94	Mu=-6.99	Mu=-27.60	Mu=-36.95	Mu=-9.54	Mu=-38.15	Mu=-30.91	Mu=-8.28	Mu=-33.12
As=25.49	As=7.31	As=25.10	As=30.67	As=7.60	As=31.51	As=28.12	As=6.55	As=28.12
Mu=13.97	Mu=10.31	Mu=13.80	Mu=18.47	Mu=19.81	Mu=19.08	Mu=15.45	Mu=12.35	Mu=16.56
As=11.44	As=8.29	As=11.29	As=19.01	As=20.26	As=20.71	As=12.78	As=13.32	As=13.79
Vu=-27.79		Vu=27.84	Vu=33.01		Vu=-31.93	Vu=24.16		Vu=-24.78

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=5.50***			***B=0.50 H=0.40 L=6.90***		
Mu=-39.49	Mu=-9.87	Mu=-33.78	Mu=-23.79	Mu=-7.33	Mu=-29.32	Mu=-32.79	Mu=-9.49	Mu=-37.96
As=32.45	As=7.88	As=28.45	As=20.93	As=7.68	As=27.09	As=28.12	As=7.56	As=31.38
Mu=19.75	Mu=22.02	Mu=16.89	Mu=11.90	Mu=7.33	Mu=14.66	Mu=16.40	Mu=22.15	Mu=18.98
As=22.61	As=19.09	As=14.55	As=9.61	As=6.36	As=12.06	As=13.65	As=19.22	As=20.43
Vu=32.75		Vu=-30.82	Vu=-20.26		Vu=28.79	Vu=29.63		Vu=-31.51

B=0.50 H=0.40 L=5.41			***B=0.50 H=0.40 L=1.34***		
Mu=-38.17	Mu=-9.54	Mu=-27.00	Mu=-38.17	Mu=-9.54	Mu=-27.00
As=31.53	As=7.60	As=24.42	As=31.53	As=7.60	As=24.42
Mu=19.09	Mu=9.54	Mu=14.29	Mu=19.09	Mu=9.54	Mu=14.29
As=20.74	As=10.31	As=11.72	As=20.74	As=10.31	As=11.72
Vu=50.66		Vu=-30.59	Vu=50.66		Vu=-30.59

A-316/CUB

B=0.50 H=0.40 L=1.70			***B=0.50 H=0.40 L=7.62***			***B=0.50 H=0.40 L=6.90***		
Mu=-0.00	Mu=-7.00	Mu=-15.38	Mu=-15.60	Mu=-3.90	Mu=-14.48	Mu=-27.46	Mu=-7.98	Mu=-31.92
As=5.78	As=7.32	As=12.71	As=12.91	As=5.78	As=11.90	As=24.94	As=6.30	As=28.12
Mu=0.03	Mu=0.00	Mu=3.08	Mu=8.96	Mu=3.90	Mu=7.82	Mu=13.73	Mu=11.44	Mu=15.96
As=5.78	As=5.78	As=5.78	As=7.12	As=6.73	As=6.17	As=11.23	As=10.26	As=13.24
Vu=8.31		Vu=11.23	Vu=-13.49		Vu=13.20	Vu=-25.08		Vu=27.84

B=0.50 H=0.40 L=5.50			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=8.41***		
Mu=-34.89	Mu=-8.72	Mu=-34.58	Mu=-31.61	Mu=-7.90	Mu=-27.85	Mu=-14.74	Mu=-3.69	Mu=-13.15
As=29.23	As=6.91	As=29.02	As=28.12	As=6.23	As=25.38	As=12.14	As=5.78	As=10.71
Mu=17.45	Mu=15.32	Mu=17.29	Mu=15.80	Mu=11.33	Mu=13.92	Mu=7.37	Mu=3.69	Mu=6.57
As=16.11	As=12.66	As=15.68	As=13.10	As=10.21	As=11.40	As=6.33	As=5.78	As=6.86
Vu=-37.80		Vu=37.69	Vu=-27.74		Vu=25.19	Vu=15.62		Vu=-10.90

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=5.50***			***B=0.50 H=0.40 L=6.90***		
Mu=-28.40	Mu=-7.49	Mu=-29.95	Mu=-29.66	Mu=-7.42	Mu=-26.60	Mu=-28.26	Mu=-7.33	Mu=-29.31
As=26.02	As=5.89	As=27.85	As=27.51	As=5.83	As=23.96	As=25.86	As=7.68	As=27.08
Mu=14.20	Mu=12.76	Mu=14.97	Mu=14.83	Mu=10.50	Mu=13.30	Mu=14.13	Mu=12.57	Mu=14.65
As=11.65	As=10.37	As=12.34	As=12.21	As=8.41	As=10.84	As=11.58	As=10.20	As=12.05
Vu=-25.50		Vu=26.71	Vu=-34.83		Vu=29.47	Vu=25.26		Vu=-25.14

B=0.50 H=0.40 L=5.41			***B=0.50 H=0.40 L=1.34***		
Mu=-35.70	Mu=-8.92	Mu=-27.17	Mu=-35.70	Mu=-8.92	Mu=-27.17
As=29.80	As=7.08	As=24.61	As=29.80	As=7.08	As=24.61
Mu=17.85	Mu=8.99	Mu=13.72	Mu=17.85	Mu=8.99	Mu=13.72
As=17.24	As=10.54	As=11.22	As=17.24	As=10.54	As=11.22
Vu=-49.42		Vu=30.14	Vu=-49.42		Vu=30.14

A-317/CUB

B=0.50 H=0.40 L=1.70			***B=0.50 H=0.40 L=7.62***			***B=0.50 H=0.40 L=6.90***		
Mu=-0.17	Mu=-7.17	Mu=-15.67	Mu=-14.29	Mu=-3.57	Mu=-13.56	Mu=-26.15	Mu=-7.71	Mu=-30.85
As=5.78	As=7.51	As=12.97	As=11.72	As=5.78	As=11.07	As=23.47	As=6.08	As=28.12
Mu=0.08	Mu=0.00	Mu=3.13	Mu=7.66	Mu=3.57	Mu=6.78	Mu=13.07	Mu=11.31	Mu=15.42
As=5.78	As=5.78	As=5.78	As=6.44	As=5.78	As=7.08	As=10.64	As=10.01	As=12.75
Vu=8.44		Vu=11.40	Vu=-12.53		Vu=12.28	Vu=-24.05		Vu=26.96

B=0.50 H=0.40 L=5.50			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=8.41***		
Mu=-31.57	Mu=-7.91	Mu=-31.65	Mu=-30.23	Mu=-7.56	Mu=-26.97	Mu=-13.79	Mu=-3.45	Mu=-12.45
As=28.12	As=6.24	As=28.12	As=28.12	As=5.95	As=24.38	As=11.28	As=5.78	As=10.09
Mu=15.79	Mu=13.55	Mu=15.83	Mu=15.12	Mu=11.24	Mu=13.48	Mu=6.89	Mu=3.45	Mu=6.22
As=13.08	As=11.09	As=13.12	As=12.47	As=10.04	As=11.01	As=7.21	As=5.78	As=6.48
Vu=-34.18		Vu=34.26	Vu=26.73		Vu=-24.30	Vu=-15.03		Vu=10.35

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=5.50***			***B=0.50 H=0.40 L=6.90***		
Mu=-27.11	Mu=-7.52	Mu=-30.07	Mu=-32.44	Mu=-8.11	Mu=-31.81	Mu=-29.45	Mu=-7.36	Mu=-26.52
As=24.54	As=5.92	As=28.00	As=28.12	As=6.41	As=28.12	As=27.25	As=5.79	As=23.88
Mu=13.56	Mu=12.43	Mu=15.03	Mu=16.22	Mu=11.51	Mu=15.90	Mu=14.72	Mu=12.34	Mu=13.26
As=11.07	As=10.11	As=12.40	As=13.48	As=9.28	As=13.19	As=12.12	As=10.08	As=10.81
Vu=24.60		Vu=-26.26	Vu=-37.65		Vu=37.40	Vu=25.31		Vu=-23.86

B=0.50 H=0.40 L=5.41			***B=0.50 H=0.40 L=1.34***		
Mu=-27.64	Mu=-6.91	Mu=-23.62	Mu=-27.64	Mu=-6.91	Mu=-23.62
As=25.14	As=7.23	As=20.74	As=25.14	As=7.23	As=20.74
Mu=13.82	Mu=6.91	Mu=16.47	Mu=13.82	Mu=6.91	Mu=16.47
As=11.31	As=8.54	As=13.71	As=11.31	As=8.54	As=13.71
Vu=-38.79		Vu=25.40	Vu=-38.79		Vu=25.40

A-318/CUB

B=0.50 H=0.40 L=0.87			***B=0.50 H=0.40 L=6.59***			***B=0.50 H=0.40 L=4.69***		
Mu=-0.01	Mu=-0.61	Mu=-1.28	Mu=-15.16	Mu=-3.79	Mu=-13.97	Mu=-12.65	Mu=-4.46	Mu=-17.84
As=5.78	As=5.78	As=5.78	As=12.51	As=5.78	As=11.44	As=10.27	As=5.78	As=14.99
Mu=0.01	Mu=0.00	Mu=0.26	Mu=9.46	Mu=3.79	Mu=7.93	Mu=12.74	Mu=4.46	Mu=8.92
As=5.78	As=5.78	As=5.78	As=7.53	As=5.78	As=7.43	As=10.35	As=5.78	As=7.08
Vu=-2.45		Vu=-3.01	Vu=13.67		Vu=-13.74	Vu=-17.18		Vu=19.82

B=0.50 H=0.40 L=5.20			***B=0.50 H=0.40 L=7.62***			***B=0.50 H=0.40 L=6.90***		
Mu=-24.01	Mu=-7.16	Mu=-24.66	Mu=-9.89	Mu=-3.55	Mu=-14.18	Mu=-25.98	Mu=-7.73	Mu=-30.91
As=21.16	As=7.50	As=21.84	As=7.89	As=5.78	As=11.63	As=23.28	As=6.09	As=28.12
Mu=12.01	Mu=19.18	Mu=12.33	Mu=7.75	Mu=7.09	Mu=7.09	Mu=12.99	Mu=11.20	Mu=15.45
As=15.79	As=21.10	As=15.79	As=6.15	As=7.42	As=7.42	As=10.57	As=9.87	As=12.78
Vu=-26.93		Vu=-15.08	Vu=-10.83		Vu=11.78	Vu=-23.88		Vu=26.87

B=0.50 H=0.40 L=5.50			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=8.41***		
Mu=-32.60	Mu=-8.31	Mu=-33.24	Mu=-30.06	Mu=-7.51	Mu=-26.93	Mu=-13.60	Mu=-3.40	Mu=-12.58
As=28.12	As=6.57	As=28.12	As=27.98	As=5.91	As=24.33	As=11.11	As=5.78	As=10.21
Mu=16.30	Mu=14.66	Mu=16.62	Mu=15.03	Mu=11.24	Mu=13.46	Mu=6.80	Mu=3.40	Mu=6.29
As=13.56	As=12.21	As=13.85	As=12.39	As=10.03	As=10.99	As=7.11	As=5.78	As=6.55
Vu=35.57		Vu=-35.80	Vu=26.56		Vu=-24.21	Vu=14.95		Vu=-10.36

B=0.50 H=0.40 L=6.90			*B=0.50 H=0.40 L=5.50*			*B=0.50 H=0.40 L=6.90*		
Mu=-27.47	Mu=-7.33	Mu=-29.33	Mu=-27.31	Mu=-6.83	Mu=-27.09	Mu=-30.73	Mu=-7.68	Mu=-28.13
As=24.94	As=7.69	As=27.11	As=24.76	As=7.14	As=24.52	As=28.12	As=6.05	As=25.71
Mu=13.73	Mu=12.82	Mu=14.66	Mu=13.65	Mu=6.83	Mu=13.55	Mu=15.36	Mu=12.72	Mu=14.07
As=11.23	As=10.42	As=12.06	As=11.16	As=6.19	As=11.06	As=12.70	As=10.33	As=11.53
Vu=24.86		Vu=-26.13	Vu=32.22		Vu=-32.22	Vu=27.50		Vu=-25.71

B=0.50 H=0.40 L=0.86		
Mu=-2.82	Mu=-1.32	Mu=-0.12
As=5.78	As=5.78	As=5.78
Mu=0.56	Mu=0.00	Mu=0.06
As=5.78	As=5.78	As=5.78
Vu=6.93		Vu=4.91

A-319/CUB

B=0.50 H=0.40 L=0.87			*B=0.50 H=0.40 L=6.59*			*B=0.50 H=0.40 L=4.69*		
Mu=-0.00	Mu=-1.27	Mu=-2.78	Mu=-26.61	Mu=-6.65	Mu=-23.01	Mu=-17.29	Mu=-6.95	Mu=-27.79
As=5.78	As=5.78	As=5.78	As=23.98	As=6.95	As=20.12	As=14.48	As=7.27	As=25.31
Mu=0.00	Mu=0.00	Mu=0.56	Mu=13.31	Mu=8.33	Mu=11.51	Mu=11.05	Mu=6.95	Mu=13.89
As=5.78	As=5.78	As=5.78	As=10.85	As=7.16	As=9.28	As=8.89	As=7.65	As=11.37
Vu=4.91		Vu=6.92	Vu=24.55		Vu=-23.84	Vu=-25.43		Vu=34.22

B=0.50 H=0.40 L=5.20			*B=0.50 H=0.40 L=7.62*			*B=0.50 H=0.40 L=6.90*		
Mu=-26.86	Mu=-8.07	Mu=-32.26	Mu=-24.75	Mu=-6.81	Mu=-27.25	Mu=-36.01	Mu=-9.00	Mu=-35.45
As=24.26	As=6.37	As=28.12	As=21.94	As=7.12	As=24.70	As=30.02	As=7.15	As=29.62
Mu=13.43	Mu=17.13	Mu=16.13	Mu=12.37	Mu=10.08	Mu=13.63	Mu=18.01	Mu=19.71	Mu=17.72
As=13.28	As=20.63	As=13.40	As=10.03	As=8.05	As=11.13	As=17.69	As=19.72	As=16.89
Vu=-32.69		Vu=26.37	Vu=-20.30		Vu=21.69	Vu=-30.03		Vu=31.21

B=0.50 H=0.40 L=5.50			*B=0.50 H=0.40 L=6.90*			*B=0.50 H=0.40 L=8.41*		
Mu=-24.19	Mu=-6.37	Mu=-25.49	Mu=-34.59	Mu=-9.11	Mu=-36.44	Mu=-29.18	Mu=-8.01	Mu=-32.04
As=21.35	As=6.64	As=22.74	As=29.02	As=7.24	As=30.31	As=26.93	As=6.32	As=28.12
Mu=12.10	Mu=9.60	Mu=12.74	Mu=17.29	Mu=19.84	Mu=18.22	Mu=14.59	Mu=12.44	Mu=16.02
As=9.79	As=7.65	As=10.35	As=15.68	As=19.88	As=18.28	As=12.00	As=13.00	As=13.30
Vu=24.03		Vu=-24.67	Vu=-30.89		Vu=30.10	Vu=-23.01		Vu=23.79

B=0.50 H=0.40 L=6.90		
Mu=-37.61	Mu=-9.40	Mu=-32.78
As=31.13	As=7.48	As=28.12
Mu=18.80	Mu=21.89	Mu=16.39
As=19.93	As=18.96	As=13.64
Vu=31.20		Vu=-29.62

B=0.50 H=0.40 L=5.50		
Mu=-22.23	Mu=-5.56	Mu=-22.02
As=19.31	As=5.78	As=19.10
Mu=11.12	Mu=5.56	Mu=11.01
As=8.94	As=5.78	As=8.85
Vu=23.76		Vu=-23.62

B=0.50 H=0.40 L=6.90		
Mu=-35.55	Mu=-9.10	Mu=-36.40
As=29.69	As=7.23	As=30.29
Mu=17.78	Mu=22.26	Mu=18.20
As=17.04	As=19.34	As=18.23
Vu=31.73		Vu=-31.76

B=0.50 H=0.40 L=0.86		
Mu=-2.83	Mu=-1.32	Mu=-0.08
As=5.78	As=5.78	As=5.78
Mu=0.57	Mu=0.00	Mu=0.00
As=5.78	As=5.78	As=5.78
Vu=6.92		Vu=4.91

A-320/CUB

B=0.50 H=0.40 L=0.87		
Mu=-0.01	Mu=-0.61	Mu=-1.28
As=5.78	As=5.78	As=5.78
Mu=0.01	Mu=0.00	Mu=0.26
As=5.78	As=5.78	As=5.78
Vu=-2.45		Vu=-3.01

B=0.50 H=0.40 L=6.59		
Mu=-15.85	Mu=-3.96	Mu=-15.10
As=13.14	As=5.78	As=12.46
Mu=10.08	Mu=3.96	Mu=8.16
As=8.06	As=5.78	As=6.48
Vu=13.90		Vu=-14.12

B=0.50 H=0.40 L=4.69		
Mu=-14.65	Mu=-5.13	Mu=-20.52
As=12.05	As=5.78	As=17.59
Mu=15.20	Mu=5.13	Mu=10.88
As=12.55	As=5.78	As=8.73
Vu=-19.80		Vu=22.79

B=0.50 H=0.40 L=5.20		
Mu=-24.65	Mu=-24.65	Mu=-23.33
As=21.84	As=24.76	As=21.22
Mu=12.32	Mu=19.72	Mu=25.05
As=15.92	As=26.53	As=22.27
Vu=-27.63		Vu=33.65

B=0.50 H=0.40 L=7.62		
Mu=-22.86	Mu=-6.95	Mu=-27.78
As=19.96	As=7.26	As=25.30
Mu=11.85	Mu=11.56	Mu=13.89
As=9.57	As=9.57	As=11.37
Vu=-19.77		Vu=21.22

B=0.50 H=0.40 L=6.90		
Mu=-16.65	Mu=-4.16	Mu=-14.95
As=13.88	As=5.78	As=12.32
Mu=8.33	Mu=4.16	Mu=8.22
As=6.59	As=6.50	As=6.49
Vu=13.77		Vu=-13.43

B=0.50 H=0.40 L=5.50		
Mu=-15.10	Mu=-4.10	Mu=-16.40
As=12.46	As=5.78	As=13.65
Mu=11.81	Mu=4.10	Mu=11.35
As=9.54	As=5.78	As=9.14
Vu=17.30		Vu=-17.74

B=0.50 H=0.40 L=6.90		
Mu=-14.62	Mu=-4.13	Mu=-16.53
As=12.02	As=5.78	As=13.77
Mu=8.88	Mu=4.13	Mu=8.36
As=7.04	As=6.91	As=6.61
Vu=13.52		Vu=-14.00

B=0.60 H=0.40 L=5.15		
Mu=-19.88	Mu=-4.97	Mu=-4.97
As=16.57	As=6.93	As=6.93
Mu=9.94	Mu=5.33	Mu=12.73
As=7.86	As=6.93	As=10.21
Vu=-12.99		Vu=-9.50

B=0.50 H=0.40 L=3.06			*B=0.50 H=0.40 L=6.90*			*B=0.50 H=0.40 L=5.50*		
Mu=-6.43	Mu=-6.80	Mu=-25.73	Mu=-17.44	Mu=-4.36	Mu=-14.87	Mu=-16.52	Mu=-4.14	Mu=-16.57
As=6.71	As=7.72	As=23.01	As=14.62	As=5.78	As=12.25	As=13.76	As=5.78	As=13.81
Mu=13.84	Mu=6.43	Mu=12.87	Mu=8.72	Mu=4.36	Mu=9.29	Mu=12.35	Mu=4.14	Mu=12.20
As=11.32	As=5.95	As=10.46	As=6.91	As=5.78	As=7.39	As=10.00	As=5.78	As=9.87
Vu=-14.46		Vu=19.48	Vu=14.41		Vu=-13.71	Vu=18.29		Vu=-18.34

B=0.50 H=0.40 L=6.90		
Mu=-16.25	Mu=-4.19	Mu=-16.77
As=13.51	As=5.78	As=13.99
Mu=9.27	Mu=4.19	Mu=10.74
As=7.38	As=5.78	As=8.62
Vu=14.88		Vu=-14.72

A-321/CUB

B=0.30 H=0.40 L=9.78			*B=0.30 H=0.40 L=1.44*		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.25	Mu=-0.25	Mu=-0.61
As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=20.93	Mu=2.07	Mu=0.25	Mu=1.00	Mu=0.32
As=8.06	As=17.93	As=3.72	As=3.47	As=3.47	As=3.47
Vu=-19.24		Vu=9.64	Vu=-5.12		Vu=5.50

A-322/CUB

B=0.30 H=0.40 L=1.46			*B=0.30 H=0.40 L=9.76*		
Mu=-0.13	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47	As=3.47	As=10.48	As=3.47
Mu=1.15	Mu=1.81	Mu=0.00	Mu=3.03	Mu=30.49	Mu=0.00
As=3.47	As=3.47	As=3.47	As=14.84	As=24.73	As=14.84
Vu=-4.61		Vu=5.58	Vu=-9.81		Vu=19.40

A-323/CUB

B=0.30 H=0.40 L=3.49			***B=0.30 H=0.40 L=3.31***			***B=0.30 H=0.40 L=6.95***		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-6.22	Mu=-6.22	Mu=-6.22	Mu=-1.11	Mu=-1.11	Mu=-1.11
As=4.56	As=3.47	As=3.47	As=4.98	As=4.98	As=4.98	As=3.47	As=3.47	As=3.47
Mu=24.86	Mu=13.35	Mu=0.00	Mu=24.86	Mu=13.35	Mu=6.22	Mu=1.11	Mu=4.42	Mu=1.11
As=20.29	As=14.20	As=12.17	As=20.29	As=14.20	As=4.98	As=3.47	As=4.44	As=3.47
Vu=8.25		Vu=11.16	Vu=8.25		Vu=11.16	Vu=-3.19		Vu=3.19

B=0.30 H=0.40 L=7.05			***B=0.30 H=0.40 L=6.90***			***B=0.30 H=0.40 L=7.00***		
Mu=-1.10	Mu=-1.10	Mu=-1.10	Mu=-1.11	Mu=-1.11	Mu=-1.11	Mu=-1.11	Mu=-1.11	Mu=-1.11
As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47
Mu=1.10	Mu=4.41	Mu=1.10	Mu=1.11	Mu=4.42	Mu=1.11	Mu=1.11	Mu=4.42	Mu=1.11
As=3.47	As=4.43	As=3.47	As=3.47	As=4.44	As=3.47	As=3.47	As=4.44	As=3.47
Vu=-3.18		Vu=3.18	Vu=-3.19		Vu=3.19	Vu=-3.19		Vu=3.19

B=0.30 H=0.40 L=3.31			***B=0.30 H=0.40 L=3.49***		
Mu=-6.18	Mu=-6.18	Mu=-6.18	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=4.95	As=4.95	As=4.95	As=3.47	As=3.47	As=4.44
Mu=6.18	Mu=13.29	Mu=24.74	Mu=0.00	Mu=13.29	Mu=24.74
As=4.95	As=14.12	As=20.20	As=3.47	As=14.12	As=20.20
Vu=-11.34		Vu=-8.43	Vu=-11.34		Vu=-8.43

A-324/CUB

B=0.30 H=0.40 L=1.03			***B=0.30 H=0.40 L=5.62***			***B=0.30 H=0.40 L=7.05***		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-14.36	Mu=-3.59	Mu=-3.59	Mu=-4.20	Mu=-4.20	Mu=-4.20
As=3.47	As=3.47	As=3.47	As=12.65	As=4.10	As=3.74	As=4.40	As=4.40	As=4.40
Mu=0.00	Mu=7.67	Mu=15.12	Mu=7.18	Mu=3.59	Mu=3.59	Mu=4.20	Mu=16.82	Mu=4.20
As=3.47	As=7.58	As=13.46	As=5.81	As=3.74	As=3.74	As=4.49	As=15.35	As=4.49
Vu=-12.76		Vu=-12.12	Vu=-5.14		Vu=0.00	Vu=-8.15		Vu=8.14

B=0.30 H=0.40 L=6.95			***B=0.30 H=0.40 L=5.67***			***B=0.30 H=0.40 L=1.03***		
Mu=-4.22	Mu=-4.22	Mu=-4.22	Mu=-2.16	Mu=-2.16	Mu=-2.16	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=4.41	As=4.41	As=4.41	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47
Mu=4.22	Mu=16.87	Mu=4.22	Mu=2.16	Mu=7.55	Mu=7.93	Mu=8.81	Mu=4.50	Mu=0.00
As=4.51	As=15.41	As=4.51	As=3.47	As=6.70	As=6.89	As=7.25	As=4.27	As=3.47
Vu=-8.16		Vu=8.16	Vu=-4.19		Vu=1.44	Vu=7.19		Vu=7.76

A-325/CUB

B=0.30 H=0.40 L=1.03			***B=0.30 H=0.40 L=5.62***			***B=0.30 H=0.40 L=7.05***		
Mu=-0.00	Mu=-0.07	Mu=-0.44	Mu=-5.03	Mu=-5.03	Mu=-5.03	Mu=-4.21	Mu=-4.21	Mu=-4.21
As=3.47	As=3.47	As=3.47	As=3.98	As=3.98	As=3.98	As=4.41	As=4.41	As=4.41
Mu=0.00	Mu=0.00	Mu=0.09	Mu=20.12	Mu=13.66	Mu=5.03	Mu=4.21	Mu=16.85	Mu=4.21
As=3.47	As=3.47	As=3.47	As=16.97	As=13.90	As=3.98	As=4.50	As=15.39	As=4.50
Vu=0.00		Vu=0.64	Vu=1.28		Vu=6.42	Vu=-8.15		Vu=8.15

B=0.30 H=0.40 L=6.95			***B=0.30 H=0.40 L=5.67***			***B=0.30 H=0.40 L=1.03***		
Mu=-4.22	Mu=-4.22	Mu=-4.22	Mu=-2.16	Mu=-2.16	Mu=-2.16	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=4.41	As=4.41	As=4.41	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47
Mu=4.22	Mu=16.87	Mu=4.22	Mu=2.16	Mu=7.55	Mu=8.01	Mu=8.83	Mu=4.51	Mu=0.00
As=4.51	As=15.41	As=4.51	As=3.47	As=6.70	As=6.93	As=7.27	As=4.28	As=3.47
Vu=-8.16		Vu=8.16	Vu=-4.23		Vu=1.47	Vu=7.22		Vu=7.79

A-326/CUB

B=0.30 H=0.40 L=9.76			***B=0.30 H=0.40 L=1.46***		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=6.53	As=3.47	As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=26.30	Mu=2.61	Mu=0.00	Mu=4.17	Mu=6.02
As=10.38	As=21.77	As=4.76	As=3.47	As=4.36	As=4.81
Vu=-19.25		Vu=9.67	Vu=-9.38		Vu=-1.48

A-327/CUB

B=0.30 H=0.40 L=1.46			***B=0.30 H=0.40 L=9.76***		
Mu=-0.12	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47	As=3.47	As=6.76	As=3.47
Mu=1.00	Mu=1.58	Mu=0.00	Mu=2.64	Mu=26.58	Mu=0.00
As=3.47	As=3.47	As=3.47	As=13.17	As=21.94	As=13.17
Vu=-4.65		Vu=5.60	Vu=-9.78		Vu=19.34

A-328/CUB

B=0.30 H=0.40 L=3.49			***B=0.30 H=0.40 L=3.31***			***B=0.30 H=0.40 L=6.95***		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-7.78	Mu=-7.78	Mu=-7.78	Mu=-1.38	Mu=-1.38	Mu=-1.38
As=10.39	As=3.47	As=3.47	As=10.39	As=6.33	As=6.33	As=3.47	As=3.47	As=3.47
Mu=31.11	Mu=16.71	Mu=0.00	Mu=31.11	Mu=16.71	Mu=7.78	Mu=1.38	Mu=5.53	Mu=1.38
As=24.66	As=16.87	As=14.80	As=24.66	As=16.87	As=6.33	As=3.47	As=4.39	As=3.47
Vu=8.49		Vu=11.40	Vu=8.49		Vu=11.40	Vu=-3.19		Vu=3.19

B=0.30 H=0.40 L=7.05			*B=0.30 H=0.40 L=6.90*			*B=0.30 H=0.40 L=7.00*		
Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38
As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47
Mu=1.38	Mu=5.53	Mu=1.38	Mu=1.38	Mu=5.53	Mu=1.38	Mu=1.38	Mu=5.53	Mu=1.38
As=3.47	As=4.39	As=3.47	As=3.47	As=4.39	As=3.47	As=3.47	As=4.39	As=3.47
Vu=-3.19		Vu=3.19	Vu=-3.19		Vu=3.19	Vu=-3.19		Vu=3.19

B=0.30 H=0.40 L=3.31			*B=0.30 H=0.40 L=3.49*		
Mu=-7.79	Mu=-7.79	Mu=-7.79	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=6.34	As=6.34	As=10.44	As=3.47	As=3.47	As=10.44
Mu=7.79	Mu=16.73	Mu=31.17	Mu=0.00	Mu=16.73	Mu=31.17
As=6.34	As=16.87	As=24.70	As=3.67	As=16.87	As=24.70
Vu=-11.38		Vu=-8.47	Vu=-11.38		Vu=-8.47

A-329/CUB

B=0.30 H=0.40 L=3.26			*B=0.30 H=0.40 L=5.60*			*B=0.30 H=0.40 L=3.26*		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.64	Mu=-0.64	Mu=-0.64	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47
Mu=22.07	Mu=11.84	Mu=0.00	Mu=0.64	Mu=2.56	Mu=0.64	Mu=0.00	Mu=12.04	Mu=22.48
As=18.33	As=12.28	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=12.54	As=18.62
Vu=8.64		Vu=11.55	Vu=-2.59		Vu=2.59	Vu=-11.54		Vu=-8.63

A-330/CUB

B=0.30 H=0.40 L=2.84		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=1.16	Mu=0.00
As=3.47	As=3.47	As=3.47
Vu=-1.48		Vu=1.48

A-331/CUB

B=0.30 H=0.40 L=2.84		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=1.16	Mu=0.00
As=3.47	As=3.47	As=3.47
Vu=1.48		Vu=-1.48

A-332/CUB

B=0.30 H=0.40 L=3.26			***B=0.30 H=0.40 L=5.60***			***B=0.30 H=0.40 L=3.26***		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.91	Mu=-0.91	Mu=-0.91	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=10.12	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=10.16
Mu=30.83	Mu=16.56	Mu=0.00	Mu=0.91	Mu=3.66	Mu=0.91	Mu=0.00	Mu=16.58	Mu=30.86
As=24.46	As=16.87	As=3.63	As=3.47	As=3.81	As=3.47	As=3.64	As=16.87	As=24.49
Vu=8.40		Vu=11.31	Vu=-2.59		Vu=2.59	Vu=-11.22		Vu=-8.31

A-333/CUB

B=0.30 H=0.40 L=9.76			***B=0.30 H=0.40 L=1.46***		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=5.83	As=3.47	As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=25.66	Mu=1.86	Mu=0.00	Mu=3.57	Mu=1.62
As=12.75	As=21.24	As=12.75	As=3.47	As=3.77	As=3.47
Vu=-19.01		Vu=10.46	Vu=-7.71		Vu=6.43

A-334/CUB

B=0.30 H=0.40 L=1.46			***B=0.30 H=0.40 L=9.76***		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47	As=3.47	As=5.93	As=3.47
Mu=1.59	Mu=3.56	Mu=0.00	Mu=1.87	Mu=25.78	Mu=0.00
As=3.47	As=3.75	As=3.47	As=12.79	As=21.32	As=12.79
Vu=-6.37		Vu=7.65	Vu=-10.43		Vu=19.06

A-335/CUB

B=0.30 H=0.40 L=3.49			***B=0.30 H=0.40 L=3.31***			***B=0.30 H=0.40 L=6.95***		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-7.61	Mu=-7.61	Mu=-7.61	Mu=-1.38	Mu=-1.38	Mu=-1.38
As=9.76	As=3.47	As=3.47	As=9.76	As=6.18	As=6.18	As=3.47	As=3.47	As=3.47
Mu=30.43	Mu=16.13	Mu=0.00	Mu=30.43	Mu=16.13	Mu=7.61	Mu=1.38	Mu=5.53	Mu=1.38
As=24.19	As=16.87	As=14.51	As=24.19	As=16.87	As=6.18	As=3.47	As=4.39	As=3.47
Vu=9.39		Vu=11.99	Vu=9.39		Vu=11.99	Vu=-3.19		Vu=3.19

B=0.30 H=0.40 L=7.05			***B=0.30 H=0.40 L=6.90***			***B=0.30 H=0.40 L=7.00***		
Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38
As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47
Mu=1.38	Mu=5.53	Mu=1.38	Mu=1.38	Mu=5.53	Mu=1.38	Mu=1.38	Mu=5.53	Mu=1.38
As=3.47	As=4.39	As=3.47	As=3.47	As=4.39	As=3.47	As=3.47	As=4.39	As=3.47
Vu=-3.19		Vu=3.19	Vu=-3.19		Vu=3.19	Vu=-3.19		Vu=3.19

B=0.30 H=0.40 L=3.31			*B=0.30 H=0.40 L=3.49*		
Mu=-7.63	Mu=-7.63	Mu=-7.63	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=6.20	As=6.20	As=9.84	As=3.47	As=3.47	As=9.84
Mu=7.63	Mu=16.18	Mu=30.52	Mu=0.00	Mu=16.18	Mu=30.52
As=6.20	As=16.87	As=24.25	As=3.51	As=16.87	As=24.25
Vu=-12.01		Vu=-9.41	Vu=-12.01		Vu=-9.41

A-336/CUB

B=0.30 H=0.40 L=1.03			*B=0.30 H=0.40 L=5.62*			*B=0.30 H=0.40 L=7.05*		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-4.32	Mu=-4.32	Mu=-4.32	Mu=-2.96	Mu=-2.96	Mu=-2.96
As=3.47	As=3.47	As=3.47	As=4.52	As=4.52	As=4.52	As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=8.74	Mu=17.06	Mu=16.92	Mu=14.35	Mu=4.32	Mu=2.96	Mu=11.84	Mu=2.96
As=3.47	As=8.75	As=15.64	As=15.87	As=14.21	As=4.52	As=4.36	As=10.09	As=4.36
Vu=-9.32		Vu=-8.46	Vu=-1.20		Vu=7.88	Vu=-6.18		Vu=6.18

B=0.30 H=0.40 L=6.90			*B=0.30 H=0.40 L=5.67*			*B=0.30 H=0.40 L=1.03*		
Mu=-2.96	Mu=-2.96	Mu=-2.96	Mu=-4.34	Mu=-4.34	Mu=-4.34	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47	As=4.54	As=4.54	As=4.54	As=3.47	As=3.47	As=3.47
Mu=2.96	Mu=11.84	Mu=2.96	Mu=4.34	Mu=14.39	Mu=17.01	Mu=17.02	Mu=8.72	Mu=0.00
As=4.36	As=10.09	As=4.36	As=4.54	As=14.27	As=15.97	As=15.58	As=8.72	As=3.47
Vu=-6.18		Vu=6.18	Vu=-7.85		Vu=1.14	Vu=8.46		Vu=9.32

A-337/CUB

B=0.30 H=0.40 L=1.03			*B=0.30 H=0.40 L=5.62*			*B=0.30 H=0.40 L=7.05*		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-4.34	Mu=-4.34	Mu=-4.34	Mu=-2.96	Mu=-2.96	Mu=-2.96
As=3.47	As=3.47	As=3.47	As=4.55	As=4.55	As=4.55	As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=8.81	Mu=17.21	Mu=17.03	Mu=14.38	Mu=4.34	Mu=2.96	Mu=11.84	Mu=2.96
As=3.47	As=8.83	As=15.81	As=15.99	As=14.26	As=4.55	As=4.36	As=10.09	As=4.36
Vu=-9.19		Vu=-8.33	Vu=-1.20		Vu=7.94	Vu=-6.18		Vu=6.18

B=0.30 H=0.40 L=6.90			*B=0.30 H=0.40 L=5.67*			*B=0.30 H=0.40 L=1.03*		
Mu=-2.96	Mu=-2.96	Mu=-2.96	Mu=-4.36	Mu=-4.36	Mu=-4.36	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47	As=4.56	As=4.56	As=4.56	As=3.47	As=3.47	As=3.47
Mu=2.96	Mu=11.84	Mu=2.96	Mu=4.36	Mu=14.41	Mu=17.10	Mu=17.13	Mu=8.77	Mu=0.00
As=4.36	As=10.09	As=4.36	As=4.56	As=14.30	As=16.06	As=15.71	As=8.79	As=3.47
Vu=-6.18		Vu=6.18	Vu=-7.99		Vu=1.22	Vu=8.20		Vu=9.07

A-338/CUB

B=0.30 H=0.40 L=9.76			***B=0.30 H=0.40 L=1.46***		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=5.84	As=3.47	As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=25.65	Mu=1.85	Mu=0.00	Mu=3.59	Mu=1.56
As=12.75	As=21.25	As=12.75	As=3.47	As=3.77	As=3.47
Vu=-18.99		Vu=10.41	Vu=-7.66		Vu=6.40

A-339/CUB

B=0.30 H=0.40 L=1.46			***B=0.30 H=0.40 L=9.77***		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47	As=3.47	As=5.93	As=3.47
Mu=1.51	Mu=3.61	Mu=0.00	Mu=1.85	Mu=25.77	Mu=0.00
As=3.47	As=3.76	As=3.47	As=12.79	As=21.32	As=12.79
Vu=-6.24		Vu=7.55	Vu=-10.37		Vu=18.99

A-340/CUB

B=0.30 H=0.40 L=3.49			***B=0.30 H=0.40 L=3.31***			***B=0.30 H=0.40 L=6.95***		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-7.63	Mu=-7.63	Mu=-7.63	Mu=-1.38	Mu=-1.38	Mu=-1.38
As=9.82	As=3.47	As=3.47	As=9.82	As=6.19	As=6.19	As=3.47	As=3.47	As=3.47
Mu=30.50	Mu=16.16	Mu=0.00	Mu=30.50	Mu=16.16	Mu=7.63	Mu=1.38	Mu=5.53	Mu=1.38
As=24.24	As=16.87	As=14.54	As=24.24	As=16.87	As=6.19	As=3.47	As=4.39	As=3.47
Vu=9.55		Vu=12.14	Vu=9.55		Vu=12.14	Vu=-3.19		Vu=3.19

B=0.30 H=0.40 L=7.05			***B=0.30 H=0.40 L=6.90***			***B=0.30 H=0.40 L=7.00***		
Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38
As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47
Mu=1.38	Mu=5.53	Mu=1.38	Mu=1.38	Mu=5.53	Mu=1.38	Mu=1.38	Mu=5.53	Mu=1.38
As=3.47	As=4.39	As=3.47	As=3.47	As=4.39	As=3.47	As=3.47	As=4.39	As=3.47
Vu=-3.19		Vu=3.19	Vu=-3.19		Vu=3.19	Vu=-3.19		Vu=3.19

B=0.30 H=0.40 L=3.31			***B=0.30 H=0.40 L=3.49***		
Mu=-7.66	Mu=-7.66	Mu=-7.66	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=6.23	As=6.23	As=9.97	As=3.47	As=3.47	As=9.97
Mu=7.66	Mu=16.24	Mu=30.66	Mu=0.00	Mu=16.24	Mu=30.66
As=6.23	As=16.87	As=24.35	As=3.52	As=16.87	As=24.35
Vu=-12.32		Vu=-9.73	Vu=-12.32		Vu=-9.73

A-341/CUB

B=0.30 H=0.40 L=3.26			*B=0.30 H=0.40 L=5.60*			*B=0.30 H=0.40 L=3.26*		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.91	Mu=-0.91	Mu=-0.91	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=9.88	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=9.94
Mu=30.57	Mu=16.20	Mu=0.00	Mu=0.91	Mu=3.66	Mu=0.91	Mu=0.00	Mu=16.23	Mu=30.62
As=24.28	As=16.87	As=3.51	As=3.47	As=3.81	As=3.47	As=3.52	As=16.87	As=24.32
Vu=-9.62		Vu=-12.21	Vu=2.59		Vu=-2.59	Vu=12.06		Vu=9.47

A-342/CUB

B=0.30 H=0.40 L=2.84		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=0.54	Mu=0.00
As=3.47	As=3.47	As=3.47
Vu=1.13		Vu=-1.12

A-343/CUB

B=0.30 H=0.40 L=2.84		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=0.54	Mu=0.00
As=3.47	As=3.47	As=3.47
Vu=-1.13		Vu=1.12

A-344/CUB

B=0.30 H=0.40 L=3.26			*B=0.30 H=0.40 L=5.60*			*B=0.30 H=0.40 L=3.26*		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.91	Mu=-0.91	Mu=-0.91	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=9.55	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=9.61
Mu=30.21	Mu=16.02	Mu=0.00	Mu=0.91	Mu=3.66	Mu=0.91	Mu=0.00	Mu=16.05	Mu=30.27
As=24.04	As=16.87	As=3.48	As=3.47	As=3.81	As=3.47	As=3.48	As=16.87	As=24.08
Vu=9.56		Vu=12.15	Vu=-2.59		Vu=2.59	Vu=-11.94		Vu=-9.35

A-345/CUB

B=0.30 H=0.40 L=5.04			*B=0.30 H=0.40 L=4.30*		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=2.31	Mu=0.00	Mu=0.00	Mu=8.91	Mu=4.34
As=3.47	As=3.47	As=3.47	As=16.30	As=16.30	As=16.30
Vu=-4.95		Vu=4.95	Vu=-9.73		Vu=24.43

A-346/CUB

B=0.30 H=0.40 L=4.31			***B=0.30 H=0.40 L=4.88***		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47
Mu=3.83 As=12.58	Mu=8.88 As=7.31	Mu=0.00 As=4.53	Mu=0.00 As=3.47	Mu=2.30 As=3.47	Mu=0.00 As=3.47
Vu=-23.98		Vu=9.72	Vu=-4.95		Vu=4.95

A-347/CUB

B=0.30 H=0.40 L=1.24			***B=0.30 H=0.40 L=9.72***		
Mu=-0.00 As=3.47	Mu=-0.00 As=7.55	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=7.55	Mu=-0.00 As=3.47
Mu=0.00 As=8.43	Mu=28.07 As=22.53	Mu=0.00 As=8.43	Mu=0.00 As=8.43	Mu=28.07 As=22.53	Mu=0.00 As=8.43
Vu=-17.28		Vu=17.28	Vu=-17.28		Vu=17.28

A-348/CUB

B=0.30 H=0.40 L=9.73		
Mu=-0.00 As=3.47	Mu=-0.00 As=7.55	Mu=-0.00 As=3.47
Mu=0.21 As=13.52	Mu=28.06 As=22.53	Mu=0.00 As=13.52
Vu=-1.49		Vu=17.28

A-209/PISO2

B=0.15 H=0.50 L=3.75			***B=0.15 H=0.50 L=2.90***		
Mu=-13.40 As=9.43	Mu=-4.18 As=2.57	Mu=-4.18 As=2.57	Mu=-13.40 As=9.43	Mu=-0.00 As=2.23	Mu=-0.00 As=2.23
Mu=6.70 As=4.26	Mu=10.34 As=8.73	Mu=16.72 As=11.15	Mu=2.68 As=2.23	Mu=10.34 As=8.73	Mu=16.72 As=11.15
Vu=-14.70		Vu=-3.14	Vu=-14.70		Vu=-3.14

A-117/PISO1

B=0.20 H=0.50 L=2.50		
Mu=-0.00 As=0.20	Mu=-3.37 As=3.86	Mu=-13.47 As=8.72
Mu=0.00 As=1.84	Mu=0.00 As=1.84	Mu=0.00 As=1.84
Vu=0.00		Vu=-10.77

A-118/PISO1

B=0.20 H=0.50 L=3.25		
Mu=-0.00 As=0.20	Mu=-0.00 As=0.00	Mu=-0.00 As=0.20
Mu=1.08 As=2.51	Mu=7.08 As=4.31	Mu=1.70 As=2.91
Vu=7.20		Vu=-6.81

A-119/PISO1

B=0.20 H=0.50 L=1.28			***B=0.20 H=0.50 L=5.47***		
Mu=-1.68 As=2.01	Mu=-6.85 As=4.97	Mu=-13.78 As=8.95	Mu=-13.42 As=8.68	Mu=-0.00 As=0.20	Mu=-0.00 As=0.20
Mu=0.00 As=1.84	Mu=0.00 As=1.84	Mu=0.00 As=1.84	Mu=0.00 As=1.84	Mu=10.53 As=7.26	Mu=2.23 As=3.92
Vu=-6.70		Vu=-12.22	Vu=14.65		Vu=-8.93

A-120/PISO1

B=0.20 H=0.50 L=2.50			***B=0.20 H=0.50 L=3.45***			***B=0.20 H=0.50 L=3.25***		
Mu=-0.00 As=0.20	Mu=-0.00 As=0.00	Mu=-2.86 As=2.24	Mu=-2.84 As=2.22	Mu=-0.00 As=0.00	Mu=-5.24 As=3.14	Mu=-5.12 As=3.06	Mu=-0.00 As=0.00	Mu=-0.00 As=0.20
Mu=0.31 As=1.84	Mu=2.09 As=1.84	Mu=0.00 As=1.84	Mu=0.00 As=1.84	Mu=2.37 As=1.85	Mu=0.00 As=1.84	Mu=0.00 As=1.84	Mu=3.76 As=3.30	Mu=1.26 As=2.09
Vu=4.12		Vu=-6.65	Vu=6.74		Vu=-8.13	Vu=8.97		Vu=-5.04

A-121/PISO1

B=0.20 H=0.50 L=1.28		
Mu=-0.00 As=0.20	Mu=-0.00 As=0.00	Mu=-0.00 As=0.20
Mu=0.65 As=1.84	Mu=1.43 As=1.84	Mu=0.44 As=1.84
Vu=2.59		Vu=-2.92

A-122/PISO1

B=0.20 H=0.50 L=2.50			*B=0.20 H=0.50 L=7.00*			*B=0.20 H=0.50 L=7.05*		
Mu=-0.00	Mu=-3.16	Mu=-13.07	Mu=-12.15	Mu=-0.00	Mu=-17.61	Mu=-17.72	Mu=-0.00	Mu=-15.96
As=0.20	As=3.66	As=8.42	As=7.76	As=0.20	As=11.96	As=12.04	As=0.20	As=10.62
Mu=0.01	Mu=0.00	Mu=0.00	Mu=0.00	Mu=11.52	Mu=0.00	Mu=0.00	Mu=9.94	Mu=0.00
As=1.84	As=1.84	As=1.84	As=1.84	As=7.31	As=1.84	As=1.84	As=6.21	As=1.84
Vu=0.15		Vu=-10.62	Vu=14.30		Vu=-15.87	Vu=15.44		Vu=-14.94

B=0.20 H=0.50 L=7.00			*B=0.20 H=0.50 L=7.00*			*B=0.20 H=0.50 L=7.00*		
Mu=-15.96	Mu=-0.00	Mu=-16.89	Mu=-16.84	Mu=-0.00	Mu=-14.49	Mu=-14.68	Mu=-0.00	Mu=-22.29
As=10.62	As=0.20	As=11.37	As=11.33	As=0.20	As=9.48	As=9.63	As=0.20	As=14.85
Mu=0.00	Mu=9.97	Mu=0.00	Mu=0.00	Mu=10.73	Mu=0.00	Mu=0.00	Mu=7.91	Mu=0.00
As=1.84	As=6.23	As=1.84	As=1.84	As=6.76	As=1.84	As=1.84	As=4.85	As=1.84
Vu=14.95		Vu=-15.22	Vu=15.42		Vu=-14.75	Vu=14.00		Vu=-16.17

B=0.20 H=0.50 L=7.05		
Mu=-21.67	Mu=-0.00	Mu=-0.00
As=14.78	As=0.20	As=0.20
Mu=0.00	Mu=17.41	Mu=2.93
As=1.84	As=12.96	As=6.32
Vu=18.68		Vu=-11.70

A-246/PISO2

B=0.20 H=0.50 L=4.55		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=0.20	As=0.00	As=0.20
Mu=2.33	Mu=12.91	Mu=2.33
As=3.70	As=8.31	As=3.70
Vu=9.30		Vu=-9.30

A-247/PISO2

B=0.20 H=0.50 L=1.85			*B=0.20 H=0.50 L=2.15*			*B=0.20 H=0.50 L=7.05*		
Mu=-0.00	Mu=-1.75	Mu=-7.00	Mu=-8.26	Mu=-7.93	Mu=-12.32	Mu=-10.52	Mu=-0.00	Mu=-17.00
As=0.20	As=1.97	As=4.26	As=5.08	As=5.19	As=7.88	As=6.61	As=0.20	As=11.46
Mu=0.00	Mu=0.00	Mu=0.00	Mu=0.00	Mu=0.00	Mu=0.00	Mu=0.00	Mu=11.65	Mu=0.00
As=1.84	As=1.84	As=1.84	As=1.84	As=1.84	As=1.84	As=1.84	As=7.40	As=1.84
Vu=0.00		Vu=-7.57	Vu=2.51		Vu=-6.28	Vu=13.50		Vu=-15.34

B=0.20 H=0.50 L=7.00			*B=0.20 H=0.50 L=7.00*			*B=0.20 H=0.50 L=6.95*		
Mu=-17.18	Mu=-0.00	Mu=-14.93	Mu=-14.88	Mu=-0.00	Mu=-15.91	Mu=-15.89	Mu=-0.00	Mu=-13.75
As=11.60	As=0.20	As=9.82	As=9.78	As=0.20	As=10.58	As=10.57	As=0.20	As=8.92
Mu=0.00	Mu=9.00	Mu=0.00	Mu=0.00	Mu=9.66	Mu=0.00	Mu=0.00	Mu=9.88	Mu=0.00
As=1.84	As=5.57	As=1.84	As=1.84	As=6.02	As=1.84	As=1.84	As=6.17	As=1.84
Vu=14.64		Vu=-13.99	Vu=14.17		Vu=-14.46	Vu=14.52		Vu=-13.90

DISEÑO DE VIGUETAS

B=0.20 H=0.50 L=7.05			*B=0.20 H=0.50 L=7.05*		
Mu=-13.88	Mu=-0.00	Mu=-21.31	Mu=-20.74	Mu=-0.00	Mu=-0.00
As=9.03	As=0.20	As=14.78	As=14.69	As=0.20	As=0.20
Mu=0.00	Mu=7.81	Mu=0.00	Mu=0.00	Mu=16.42	Mu=2.77
As=1.84	As=4.79	As=1.84	As=1.84	As=12.08	As=5.96
Vu=13.36		Vu=-15.47	Vu=17.75		Vu=-11.08

A-248/PISO2

B=0.20 H=0.50 L=2.15			*B=0.20 H=0.50 L=7.05*			*B=0.20 H=0.50 L=7.00*		
Mu=-0.35	Mu=-4.21	Mu=-12.80	Mu=-11.91	Mu=-0.00	Mu=-16.63	Mu=-16.76	Mu=-0.00	Mu=-15.04
As=0.57	As=3.34	As=8.23	As=7.59	As=0.20	As=11.15	As=11.26	As=0.20	As=9.90
Mu=0.00	Mu=0.00	Mu=0.00	Mu=0.00	Mu=11.14	Mu=0.00	Mu=0.00	Mu=9.15	Mu=0.00
As=1.84	As=1.84	As=1.84	As=1.84	As=7.04	As=1.84	As=1.84	As=5.68	As=1.84
Vu=-1.40		Vu=-10.19	Vu=13.75		Vu=-15.09	Vu=14.56		Vu=-14.07

B=0.20 H=0.50 L=7.00			*B=0.20 H=0.50 L=6.95*			*B=0.20 H=0.50 L=7.05*		
Mu=-15.01	Mu=-0.00	Mu=-15.87	Mu=-15.85	Mu=-0.00	Mu=-13.76	Mu=-13.89	Mu=-0.00	Mu=-21.31
As=9.88	As=0.20	As=10.55	As=10.54	As=0.20	As=8.93	As=9.03	As=0.20	As=14.78
Mu=0.00	Mu=9.61	Mu=0.00	Mu=0.00	Mu=9.89	Mu=0.00	Mu=0.00	Mu=7.81	Mu=0.00
As=1.84	As=5.99	As=1.84	As=1.84	As=6.17	As=1.84	As=1.84	As=4.78	As=1.84
Vu=14.19		Vu=-14.44	Vu=14.51		Vu=-13.91	Vu=13.37		Vu=-15.47

B=0.20 H=0.50 L=7.05		
Mu=-20.74	Mu=-0.00	Mu=-0.00
As=14.68	As=0.20	As=0.20
Mu=0.00	Mu=16.43	Mu=2.77
As=1.84	As=12.08	As=5.96
Vu=17.75		Vu=-11.08

A-249/PISO2

B=0.20 H=0.50 L=1.85		
Mu=-0.00	Mu=-1.75	Mu=-7.00
As=0.20	As=1.97	As=4.26
Mu=0.00	Mu=0.00	Mu=0.00
As=1.84	As=1.84	As=1.84
Vu=0.00		Vu=-7.57

A-250/PISO2

B=0.20 H=0.50 L=2.90			*B=0.20 H=0.50 L=3.75*		
Mu=-0.00	Mu=-0.00	Mu=-6.32	Mu=-6.14	Mu=-0.00	Mu=-0.00
As=0.20	As=0.00	As=3.82	As=3.71	As=0.00	As=0.20
Mu=1.02	Mu=1.65	Mu=0.00	Mu=0.00	Mu=4.83	Mu=1.41
As=1.84	As=1.84	As=1.84	As=1.84	As=3.58	As=2.55
Vu=3.40		Vu=-8.46	Vu=9.68		Vu=-5.65

DISEÑO DE VIGUETAS

A-251/PISO2

B=0.20 H=0.50 L=3.75			***B=0.20 H=0.50 L=2.90***		
Mu=-0.00	Mu=-0.00	Mu=-6.14	Mu=-6.32	Mu=-0.00	Mu=-0.00
As=0.20	As=0.00	As=3.71	As=3.82	As=0.00	As=0.20
Mu=1.41	Mu=4.83	Mu=0.00	Mu=0.00	Mu=1.65	Mu=1.02
As=2.55	As=3.58	As=1.84	As=1.84	As=1.84	As=1.84
Vu=5.65		Vu=-9.68	Vu=8.46		Vu=-3.40

A-252/PISO2

B=0.20 H=0.50 L=3.75		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=0.20	As=0.00	As=0.20
Mu=1.18	Mu=8.71	Mu=1.87
As=3.03	As=5.38	As=3.48
Vu=7.85		Vu=-7.48

A-253/PISO2

B=0.20 H=0.50 L=2.50			***B=0.20 H=0.50 L=7.05***			***B=0.20 H=0.50 L=7.00***		
Mu=-0.00	Mu=-3.20	Mu=-12.78	Mu=-11.90	Mu=-0.00	Mu=-16.63	Mu=-16.76	Mu=-0.00	Mu=-15.04
As=0.20	As=3.66	As=8.21	As=7.58	As=0.20	As=11.16	As=11.26	As=0.20	As=9.90
Mu=0.00	Mu=0.00	Mu=0.00	Mu=0.00	Mu=11.14	Mu=0.00	Mu=0.00	Mu=9.15	Mu=0.00
As=1.84	As=1.84	As=1.84	As=1.84	As=7.04	As=1.84	As=1.84	As=5.67	As=1.84
Vu=0.00		Vu=-10.23	Vu=13.75		Vu=-15.09	Vu=14.56		Vu=-14.07

B=0.20 H=0.50 L=7.00			***B=0.20 H=0.50 L=6.95***			***B=0.20 H=0.50 L=7.05***		
Mu=-15.01	Mu=-0.00	Mu=-15.87	Mu=-15.85	Mu=-0.00	Mu=-13.76	Mu=-13.89	Mu=-0.00	Mu=-21.31
As=9.88	As=0.20	As=10.55	As=10.54	As=0.20	As=8.93	As=9.03	As=0.20	As=14.78
Mu=0.00	Mu=9.61	Mu=0.00	Mu=0.00	Mu=9.89	Mu=0.00	Mu=0.00	Mu=7.81	Mu=0.00
As=1.84	As=5.99	As=1.84	As=1.84	As=6.17	As=1.84	As=1.84	As=4.78	As=1.84
Vu=14.19		Vu=-14.44	Vu=14.51		Vu=-13.91	Vu=13.37		Vu=-15.47

B=0.20 H=0.50 L=7.05		
Mu=-20.74	Mu=-0.00	Mu=-0.00
As=14.68	As=0.20	As=0.20
Mu=0.00	Mu=16.43	Mu=2.77
As=1.84	As=12.08	As=5.96
Vu=17.75		Vu=-11.08

A-254/PISO2

B=0.20 H=0.50 L=1.28			***B=0.20 H=0.50 L=5.47***		
Mu=-1.59	Mu=-6.50	Mu=-13.08	Mu=-12.73	Mu=-0.00	Mu=-0.00
As=1.90	As=4.70	As=8.43	As=8.18	As=0.20	As=0.20
Mu=0.00	Mu=0.00	Mu=0.00	Mu=0.00	Mu=9.99	Mu=2.12
As=1.84	As=1.84	As=1.84	As=1.84	As=6.85	As=3.71
Vu=-6.36		Vu=-11.59	Vu=13.90		Vu=-8.47

DISEÑO DE VIGUETAS

A-255/PISO2

B=0.20 H=0.50 L=2.50		
Mu=-0.00	Mu=-3.20	Mu=-12.78
As=0.20	As=3.66	As=8.21
Mu=0.00	Mu=0.00	Mu=0.00
As=1.84	As=1.84	As=1.84
Vu=0.00		Vu=-10.23

A-256/PISO2

B=0.20 H=0.50 L=3.25		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=0.20	As=0.00	As=0.20
Mu=1.02	Mu=6.72	Mu=1.62
As=2.38	As=4.08	As=2.76
Vu=6.83		Vu=-6.46

A-257/PISO2

B=0.20 H=0.50 L=1.28		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=0.20	As=0.00	As=0.20
Mu=0.62	Mu=1.35	Mu=0.42
As=1.84	As=1.84	As=1.84
Vu=2.46		Vu=-2.77

A-258/PISO2

B=0.20 H=0.50 L=2.50			***B=0.20 H=0.50 L=3.45***			***B=0.20 H=0.50 L=3.25***		
Mu=-0.00	Mu=-3.20	Mu=-12.78	Mu=-12.82	Mu=-1.51	Mu=-2.38	Mu=-1.83	Mu=-0.00	Mu=-0.00
As=0.20	As=3.66	As=8.21	As=8.24	As=2.19	As=1.85	As=1.43	As=0.00	As=0.20
Mu=0.00	Mu=0.00	Mu=0.00	Mu=0.00	Mu=0.00	Mu=0.00	Mu=0.00	Mu=5.19	Mu=1.41
As=1.84	As=1.84	As=1.84	As=1.84	As=1.84	As=1.84	As=1.84	As=3.69	As=2.38
Vu=0.00		Vu=-10.23	Vu=10.08		Vu=-4.03	Vu=7.64		Vu=-5.65

A-259/PISO2

B=0.20 H=0.50 L=2.50			***B=0.20 H=0.50 L=7.00***			***B=0.20 H=0.50 L=7.05***		
Mu=-0.00	Mu=-3.20	Mu=-12.78	Mu=-11.93	Mu=-0.00	Mu=-16.59	Mu=-16.68	Mu=-0.00	Mu=-15.24
As=0.20	As=3.66	As=8.21	As=7.60	As=0.20	As=11.12	As=11.19	As=0.20	As=10.06
Mu=0.00	Mu=0.00	Mu=0.00	Mu=0.00	Mu=10.79	Mu=0.00	Mu=0.00	Mu=9.45	Mu=0.00
As=1.84	As=1.84	As=1.84	As=1.84	As=6.80	As=1.84	As=1.84	As=5.88	As=1.84
Vu=0.00		Vu=-10.23	Vu=13.65		Vu=-14.98	Vu=14.62		Vu=-14.21

B=0.20 H=0.50 L=7.00			***B=0.20 H=0.50 L=6.95***			***B=0.20 H=0.50 L=7.05***		
Mu=-15.23	Mu=-0.00	Mu=-15.81	Mu=-15.79	Mu=-0.00	Mu=-13.78	Mu=-13.91	Mu=-0.00	Mu=-21.30
As=10.05	As=0.20	As=10.50	As=10.48	As=0.20	As=8.95	As=9.05	As=0.20	As=14.78
Mu=0.00	Mu=9.53	Mu=0.00	Mu=0.00	Mu=9.91	Mu=0.00	Mu=0.00	Mu=7.80	Mu=0.00
As=1.84	As=5.93	As=1.84	As=1.84	As=6.19	As=1.84	As=1.84	As=4.78	As=1.84
Vu=14.23		Vu=-14.40	Vu=14.50		Vu=-13.92	Vu=13.37		Vu=-15.47

B=0.20 H=0.50 L=7.05		
Mu=-20.73 As=14.68	Mu=-0.00 As=0.20	Mu=-0.00 As=0.20
Mu=0.00 As=1.84	Mu=16.43 As=12.08	Mu=2.77 As=5.96
Vu=17.75		Vu=-11.08

A-260/PISO2

B=0.20 H=0.50 L=7.05			*B=0.20 H=0.50 L=7.05*		
Mu=-0.00 As=0.20	Mu=-0.00 As=0.20	Mu=-25.32 As=16.54	Mu=-25.32 As=16.54	Mu=-0.00 As=0.20	Mu=-0.00 As=0.20
Mu=2.61 As=5.55	Mu=14.06 As=10.52	Mu=0.00 As=2.34	Mu=0.00 As=2.34	Mu=14.06 As=10.52	Mu=2.61 As=5.55
Vu=10.46		Vu=-18.38	Vu=18.38		Vu=-10.46

A-352/CUB

B=0.25 H=0.40 L=7.10		
Mu=-0.00 As=0.20	Mu=-0.00 As=7.38	Mu=-0.00 As=0.20
Mu=3.11 As=9.23	Mu=25.16 As=19.99	Mu=3.11 As=9.23
Vu=12.43		Vu=-12.42

A-354/CUB

B=0.25 H=0.40 L=7.10		
Mu=-0.00 As=0.20	Mu=-0.00 As=7.45	Mu=-0.00 As=0.20
Mu=3.12 As=9.26	Mu=25.23 As=20.04	Mu=3.12 As=9.26
Vu=12.46		Vu=-12.46

A-355/CUB

B=0.25 H=0.40 L=7.00		
Mu=-0.00 As=0.20	Mu=-0.00 As=7.05	Mu=-0.00 As=0.20
Mu=3.65 As=9.49	Mu=24.80 As=19.74	Mu=3.08 As=9.05
Vu=12.17		Vu=-12.33

DISEÑO DE VIGUETAS

A-353/CUB

B=0.25 H=0.40 L=7.10		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=0.20	As=7.38	As=0.20
Mu=3.11	Mu=25.16	Mu=3.11
As=9.23	As=19.99	As=9.23
Vu=12.43		Vu=-12.42

A-356/CUB

B=0.15 H=0.40 L=4.32			***B=0.15 H=0.40 L=6.85***			***B=0.15 H=0.40 L=0.23***		
Mu=-0.00	Mu=-0.00	Mu=-4.58	Mu=-4.30	Mu=-0.00	Mu=-0.00	Mu=-0.03	Mu=-0.01	Mu=-0.00
As=0.20	As=0.47	As=3.65	As=3.41	As=0.20	As=0.20	As=0.20	As=0.00	As=0.20
Mu=0.08	Mu=0.09	Mu=0.00	Mu=0.00	Mu=4.07	Mu=0.71	Mu=0.00	Mu=0.00	Mu=0.00
As=1.08	As=1.08	As=1.08	As=1.08	As=3.45	As=2.37	As=1.08	As=1.08	As=1.08
Vu=1.08		Vu=-3.24	Vu=4.16		Vu=-2.69	Vu=0.23		Vu=0.00

A-357/CUB

B=0.15 H=0.40 L=0.33			***B=0.15 H=0.40 L=7.00***			***B=0.15 H=0.40 L=5.59***		
Mu=-0.00	Mu=-0.02	Mu=-0.08	Mu=-3.51	Mu=-0.00	Mu=-5.03	Mu=-5.18	Mu=-0.00	Mu=-1.09
As=0.20	As=0.03	As=0.20	As=2.75	As=0.20	As=4.05	As=4.19	As=0.20	As=1.09
Mu=0.00	Mu=0.00	Mu=0.00	Mu=0.00	Mu=4.06	Mu=0.00	Mu=0.00	Mu=2.06	Mu=0.00
As=1.08	As=1.08	As=1.08	As=1.08	As=3.20	As=1.08	As=1.08	As=2.30	As=1.08
Vu=0.00		Vu=-0.47	Vu=4.64		Vu=-5.08	Vu=4.60		Vu=-3.09

B=0.15 H=0.40 L=6.85			***B=0.15 H=0.40 L=5.41***			***B=0.15 H=0.40 L=1.39***		
Mu=-3.51	Mu=-0.00	Mu=-5.03	Mu=-5.18	Mu=-0.00	Mu=-1.09	Mu=-1.37	Mu=-0.34	Mu=-0.00
As=2.75	As=0.20	As=4.05	As=4.19	As=0.20	As=1.09	As=1.37	As=0.49	As=0.20
Mu=0.00	Mu=4.06	Mu=0.00	Mu=0.00	Mu=2.06	Mu=0.00	Mu=0.00	Mu=0.00	Mu=0.00
As=1.08	As=3.20	As=1.08	As=1.08	As=2.30	As=1.08	As=1.08	As=1.08	As=1.08
Vu=4.64		Vu=-5.08	Vu=4.60		Vu=-3.09	Vu=1.97		Vu=0.00

A-358/CUB

B=0.15 H=0.40 L=1.85			***B=0.15 H=0.40 L=2.87***		
Mu=-0.00	Mu=-1.81	Mu=-4.83	Mu=-4.85	Mu=-0.92	Mu=-0.00
As=0.26	As=2.36	As=3.88	As=3.89	As=1.48	As=0.20
Mu=0.00	Mu=0.00	Mu=0.00	Mu=0.00	Mu=0.00	Mu=0.08
As=1.08	As=1.08	As=1.08	As=1.08	As=1.08	As=1.08
Vu=-1.30		Vu=-3.93	Vu=3.75		Vu=-0.32

A-359/CUB

B=0.15 H=0.40 L=1.70			***B=0.15 H=0.40 L=7.72***			***B=0.15 H=0.40 L=7.05***		
Mu=-0.00	Mu=-0.51	Mu=-2.05	Mu=-1.48	Mu=-0.00	Mu=-7.58	Mu=-7.80	Mu=-0.00	Mu=-3.93
As=0.20	As=0.73	As=2.08	As=1.49	As=0.20	As=6.49	As=6.71	As=0.20	As=3.09
Mu=0.00	Mu=0.00	Mu=0.00	Mu=0.00	Mu=6.05	Mu=0.00	Mu=0.00	Mu=2.96	Mu=0.00
As=1.08	As=1.08	As=1.08	As=1.73	As=5.16	As=1.08	As=1.08	As=2.32	As=1.08
Vu=0.00		Vu=-2.41	Vu=4.69		Vu=-6.27	Vu=5.55		Vu=-4.46

B=0.15 H=0.40 L=5.60			***B=0.15 H=0.40 L=7.00***			***B=0.15 H=0.40 L=8.50***		
Mu=-3.99	Mu=-0.00	Mu=-2.81	Mu=-2.77	Mu=-0.00	Mu=-10.26	Mu=-9.93	Mu=-0.00	Mu=-0.00
As=3.15	As=0.20	As=2.17	As=2.14	As=0.20	As=8.68	As=8.68	As=0.20	As=0.20
Mu=0.00	Mu=2.16	Mu=0.00	Mu=0.00	Mu=2.18	Mu=0.00	Mu=0.00	Mu=8.45	Mu=1.18
As=1.08	As=2.20	As=1.08	As=1.08	As=2.22	As=1.08	As=1.08	As=8.07	As=3.75
Vu=4.19		Vu=-3.76	Vu=3.90		Vu=-6.04	Vu=7.34		Vu=-4.73

DISEÑO DE CUBIERTA

CALCULO DE LA FUERZA DE VIENTO POR METODO SIMPLIFICADO

El calculo de la fuerza de viento por el metodo simplificado se puede realizar dado a que el sistema principal de resistencia de fuerzas de viento (SPRFV) cumple los requisitos exigidos en B.6.4.1.1

Parametros de la edificacion

Sistema estructural	1	Porticos de concreto		
H_{media}=	12.6 m	< 18m	Edificio bajo	Cumple
B=	45 m		Dimension menor del edificio	Cumple
T=	0.46 seg	< 1seg	Edificio rigido	Cumple
θ=	6.9 °	< 45°	Plana a dos o cuatro aguas	Cumple
Diafragma simple:	Si			Cumple
Edificio Cerrado:	Si			Cumple
Edificio forma regular:	Si		Simetrica*	Cumple
Factor de direccionalidad Kd:	0.85			

*Edificio sin probabilidad de generar vortices, golpeteo, aleteo o torsiones.

a) Velocidad de diseño (Figura B.6.4-1)

Ubicacion:	Chaparral
Region	3
V=	125 km/h
V=	35 m/s

b) Factor de importancia (Tabla B.6.5-1)

Categoria=	IV
I=	1.15

c) Categoria de exposicion (B.6.5.6)

Categoria de rugosidad de terreno

Rugosidad de Terreno B — Áreas urbanas y suburbanas, áreas boscosas u otros terrenos con numerosas obstrucciones del tamaño, iguales o mayores al de una vivienda unifamiliar y con poca separación entre ellas.

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

Rugosidad de Terreno D — Áreas planas y no obstruidas y superficies acuáticas por fuera de regiones propensas a huracanes. Esta categoría incluye pantanos, salinas y superficies de hielo.

X

Rugosidad:	B

Categoria de exposicion

Exposición B — La categoría de exposición B aplica cuando la rugosidad del terreno, como se define en Rugosidad de Terreno B, prevalece por una distancia de al menos 800 m o 20 veces la altura del edificio, la que sea mayor, en la dirección al viento.

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

Exposición D — La categoría de exposición D aplica cuando la rugosidad del terreno, como se define en Rugosidad de Terreno D, prevalece por una distancia mayor a 1500 m o 20 veces la altura del edificio, la que sea mayor, en la dirección de barlovento. La categoría de exposición D se extenderá hacia las áreas viento abajo de las Rugosidades de Terreno B o C por una distancia de 200 m o 20 veces la altura de la edificación, la que sea mayor.

Para una edificación que se ubique en una zona de transición entre categorías, se usará la categoría que produzca mayores fuerzas de diseño.

EXCEPCIÓN - Se permite usar una categoría de exposición intermedia entre las categorías anteriores en una zona de transición, siempre y cuando esta se determine con un proceso analítico definido en la literatura reconocida.

X

Exposicion:	B

d) Coeficiente de ajuste por altura y exposicion λ (Figura B.6.4-2)

λ= **1.1**

Factor de Ajuste por Altura del Edificio y Exposición, λ

Altura Media del Edificio (m)	Exposición		
	B	C	D
4,5	1.00	1.21	1.47
6,0	1.00	1.29	1.55
7,5	1.00	1.35	1.61
9,0	1.00	1.40	1.66
10,5	1.05	1.45	1.70
12,0	1.09	1.49	1.74
13,5	1.12	1.53	1.78
15,0	1.16	1.56	1.81
16,5	1.19	1.59	1.84
18,0	1.22	1.62	1.87

e) Factor topografico (Figura B.6.5-1)

Si no se cumplen las condiciones especificadas en B.6.5.7.1 entonces Kzt=1.0 **NO SE CUMPLEN**

K_{zt}=	1.00

g) Presion de diseno p_{net} para revestimiento y componentes

$$p_s = \lambda K_{zt} I P_{S10} \qquad \text{(B.6.4-1)}$$

donde;

λ = factor de ajuste por altura y exposición, de la fig. B.6.4-2 (continuación).
K_{zt} = factor topográfico como se define en la sección B.6.5.7 evaluado a la altura promedio de la cubierta, **h** ecuación B.6.5-1
I = factor de importancia como se define en la sección B.6.5.5
P_{S10} = presión de viento de diseño simplificada para la categoría de exposición **B** , con **h=10** m de la fig. B.6.4-2.

Pnet=	1.29 * P_{net10}
Pnet min=	0.40 kN/m2

Para muros de cerramiento

Area Efectiva	0.000 m2
V=	35 m/s
θ=	6.9 °

Zona	p_{net10}
4	
5	

	p_{net}
Presiones=	40.00 kg/m2
Succiones=	-40.00 kg/m2

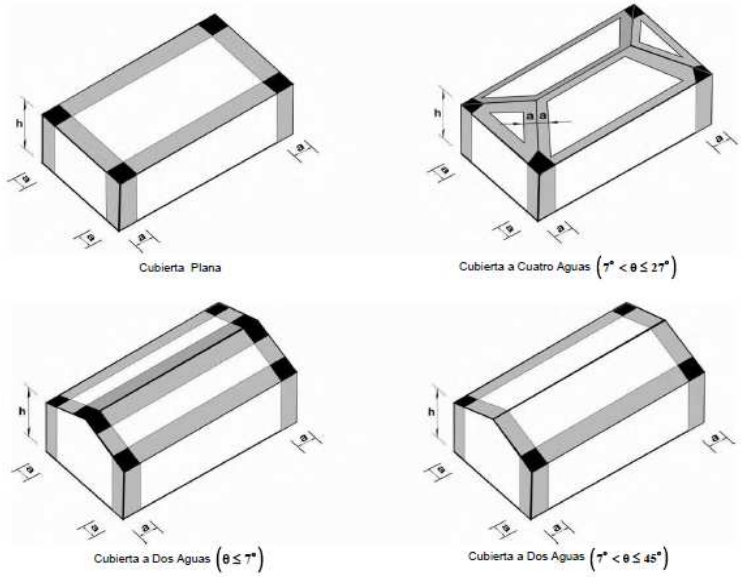
Para correas

Area Efectiva	12.75 m2
V=	35 m/s
θ=	6.9 °

Zona	p_{net10}	
1	0.15	-0.44
2	0.15	-0.52
3	0.15	-0.52

Para las correas

Presiones=	40.00 kg/m2
Succiones=	-66.98 kg/m2



AVALUO DE CARGAS SOBRE LAS CORREAS

CORREA	TIPO 1	
1. CARGAS DE VIENTO		
W presion=	**40.0**	**kg /m2**
W succion=	**-67.0**	**kg /m2**
Aferencia=	**1.5**	m
W presion=	**60**	**kg /m**
W succion=	**-100**	**kg /m**
2. CARGA MUERTA		
Tejas=	**15**	Kg/m2
Instalaciones=	**150**	Kg/m2
Correas=		Kg/m2
D=	165	Kg/m2
Aferencia=	1.5	m
D distribuida=	**247.5**	**kg /m**
3. CARGA VIVA		
Angulo=	6.9	
Pendiente=	12.1	
L=	50	Kg/m2
Aferencia=	1.5	m
L distribuida=	**75**	**kg /m**
4. GRANIZO		
Angulo=	6.9	
Altitud=	**854**	m.s.n.m
G=	0	Kg/m2
Aferencia=	1.5	m
G nudo=	**0**	**kg /m**

Es tenido en cuenta por el programa

COMBINACIONES DE CARGA

	D	L	G	W
B.2.4-2	1.2	1.6	0.5	
B.2.4-3a	1.2	0.5	1.6	
B.2.4-3b	1.2		1.6	0.5
B.2.4-4	1.2	0.5	0.5	1.0
B.2.4-5	0.9			-1.0

Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO

REPORTE DE CORREAS

PHR Cajón 220 x 80 x 20 (3.00 mm)
con Fy = 35.15 Kgf/mm² cada 1.50 m con arriostramiento cada L/3.

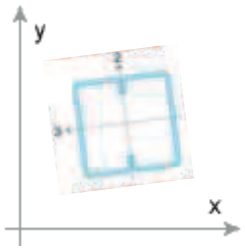
SECCION LONGITUDINAL

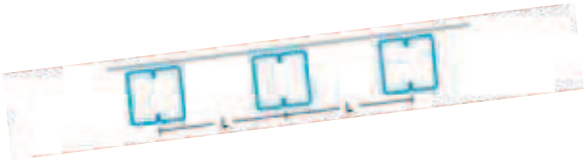


L1	7.50 m
A1	0.10 m
A2	0.10 m

CONFIGURACION	
TIPO DE CARGA	DISTRIBUIDA
Carga muerta	165.00 Kgf/m²
Peso propio correa	19.12 Kgf/m
Carga viva	50.00 Kgf/m²
Carga granizo	0.00 Kgf/m²
Viento compresión (Perpendicular)	40.00 Kgf/m²
Viento succión (Perpendicular)	67.00 Kgf/m²
Pendiente sección transversal	7° = 12.2780%

SECCION TRANSVERSAL





L = 1.50 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 (Kgf.m)	5005.7803	2805.6770	5005.7803	2805.6770
Calculado (Kgf.m)	0.0000	0.0000	3515.5522	34.4096

REPORTE CORTANTE		
Ejes locales	2	3
Resistente (Kgf)	20244.4766	14907.8877
Calculado (Kgf)	1770.4221	64.8532

REPORTE DEFLEXION		
Deflexiones máximas	Instantanea	Permanente
Admisible (m)	0.0281	0.0000
Calculado (m)	0.0090	0.0000

REPORTE ARRUGAMIENTO	
No. de Apoyo	0
Resistencia máxima (Kgf)	1850.2902
Arrugamiento (Kgf)	4100.4272

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

REACCIONES - EJES GLOBALES (Kgf-m)

Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO

APOYO 1		
Combinacion	Rx	Ry
Muerta	0.0000	1002.1318
Viva de Cub.	0.0000	281.8959
Granizo	0.0000	0.0000
Viento Comp.	-27.7862	226.3005
Viento Succion	46.5419	-379.0533
Comb. 1	-125.8217	1402.9844
Comb. 2	-120.4876	1343.5061
Comb. 3	-107.8472	1202.5582
Comb. 4	-162.1896	1766.7419
Comb. 5	-121.7402	1315.7084
Comb. 6	-171.5675	1843.1183
Comb. 7	-131.1181	1392.0848
Comb. 8	-167.0295	1722.5594
Comb. 9	-154.3891	1581.6115
Comb. 10	-148.2738	1569.8066
Comb. 11	-135.6334	1428.8586
Comb. 12	-127.4273	1280.9719
Comb. 13	-108.6716	1128.2191

APOYO 2		
Combinacion	Rx	Ry
Muerta	0.0000	1002.1328
Viva de Cub.	0.0000	281.8961
Granizo	0.0000	0.0000
Viento Comp.	-27.7862	226.3006
Viento Succion	46.5419	-379.0536
Comb. 1	-125.8218	1402.9857
Comb. 2	-120.4877	1343.5074
Comb. 3	-107.8473	1202.5593
Comb. 4	-162.1898	1766.7433
Comb. 5	-121.7404	1315.7096
Comb. 6	-171.5676	1843.1198
Comb. 7	-131.1183	1392.0861
Comb. 8	-167.0296	1722.5609
Comb. 9	-154.3892	1581.6128
Comb. 10	-148.2739	1569.8080
Comb. 11	-135.6335	1428.8600
Comb. 12	-127.4274	1280.9730
Comb. 13	-108.6717	1128.2201

FUERZAS INTERNAS - EJES LOCALES (Kgf-m) *Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO*

APOYO 1				
Combinacion	R2	R3	M2	M3
Muerta	32.9264	1005.6147	0.0000	0.0000
Viva de Cub.	9.2621	282.8757	0.0000	0.0000
Granizo	0.0000	0.0000	0.0000	0.0000
Viento Comp.	0.0000	228.0000	0.0000	0.0000
Viento Succion	0.0000	381.9000	0.0000	0.0000
Comb. 1	46.0970	1407.8606	0.0000	0.0000
Comb. 2	44.1427	1348.1755	0.0000	0.0000
Comb. 3	39.5117	1206.7378	0.0000	0.0000
Comb. 4	54.3310	1773.3389	0.0000	0.0000
Comb. 5	39.5117	1320.7377	0.0000	0.0000
Comb. 6	54.3310	1850.2888	0.0000	0.0000
Comb. 7	39.5117	1397.6877	0.0000	0.0000
Comb. 8	44.1427	1730.0756	0.0000	0.0000
Comb. 9	39.5117	1588.6377	0.0000	0.0000
Comb. 10	44.1427	1576.1755	0.0000	0.0000
Comb. 11	39.5117	1434.7377	0.0000	0.0000
Comb. 12	29.6338	1286.9532	0.0000	0.0000
Comb. 13	29.6338	1133.0532	0.0000	0.0000

APOYO 2				
Combinacion	R2	R3	M2	M3
Muerta	32.9264	1005.6157	0.0000	0.0000
Viva de Cub.	9.2621	282.8758	0.0000	0.0000
Granizo	0.0000	0.0000	0.0000	0.0000
Viento Comp.	0.0000	228.0000	0.0000	0.0000
Viento Succion	0.0000	381.9002	0.0000	0.0000
Comb. 1	46.0970	1407.8619	0.0000	0.0000
Comb. 2	44.1427	1348.1769	0.0000	0.0000
Comb. 3	39.5117	1206.7389	0.0000	0.0000
Comb. 4	54.3310	1773.3402	0.0000	0.0000
Comb. 5	39.5117	1320.7389	0.0000	0.0000
Comb. 6	54.3310	1850.2903	0.0000	0.0000
Comb. 7	39.5117	1397.6890	0.0000	0.0000
Comb. 8	44.1427	1730.0770	0.0000	0.0000
Comb. 9	39.5117	1588.6390	0.0000	0.0000
Comb. 10	44.1427	1576.1769	0.0000	0.0000
Comb. 11	39.5117	1434.7390	0.0000	0.0000
Comb. 12	29.6338	1286.9543	0.0000	0.0000
Comb. 13	29.6338	1133.0542	0.0000	0.0000

DISEÑO RAMPA PEATONAL

DISEÑO DE RAMPA PEATONAL

ELEMENTO: PLACA

DATOS DE ENTRADA

f'c=	**210**	Kg/Cm2
fy=	**4200**	Kg/Cm2
d=	**8**	Cm
b=	**100**	Cm
Recubrimiento=	**4**	Cm
h=	12	Cm
Tipo elemento=	**Viga=**	
	Placa=	**X**
ρmin=	0.0018	

CALCULOS ADICIONALES

P.P=	0.29	Tn/m2
Acabados=	0.10	Tn/m2
CM=	0.39	Tn/m2
CV=	0.50	Tn/m2
CU=	1.27	Tn/m2
Luz=	1.5	m
Mu=	0.36	Tn*m
Vu=	0.95	Tn

DISENO A FLEXION

Mu=	**0.4**	Tn*m
ρ=	0.0013	
ρdiseño=	0.0018	
As=	1.44	Cm^2/m
As*fy=	6048	kg
0.85f'c*b=	17850	kg/cm
a=	0.34	cm
kud=	0.40	cm
ε_c=	0.0030	
ε_f=	0.0572	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0020	
As=	1.60	Cm^2/m
Malla =	**6.0**	**mm c/.15**

DISENO A CORTANTE

Vu=	**0.9**	Tn
ϕVc=	4608.3	Kg
ϕVc=	4.6	Tn
ϕVs=	-	Tn

CHEQUEO A PUNZONAMIENTO

b=	**20**	cm
h=	**20**	cm
Apoyo=	Circular	
	Rectangular	**X**
P=	**2.0**	Tn
Pu=	3.0	Tn
β=	1.00	
ϕ=	**0.75**	
λ=	**1.00**	
αs=	**40**	
bo=	**112**	cm
C.11-31=	1.55	cm
C.11-32=	3.04	cm
C.11-33=	2.46	cm

Punto de aplicacion de una carga puntual

OK

DISEÑO DE RAMPA PEATONAL

ELEMENTO: **Muros T1-T2-T3**

DATOS DE ENTRADA

f'c=	**210**	Kg/Cm2
fy=	**4200**	Kg/Cm2
d=	**12**	Cm
b=	**100**	Cm
Recubrimiento=	**3**	Cm
h=	15	Cm
Tipo elemento=	**Viga=**	
	Muro=	**X**
ρmin=	0.0025	

CALCULOS ADICIONALES

CM=	0.39	Tn/m2
Aferencia=	1.65	m
CM=	1.00	Tn/m
Altura max1=	8.55	m
Altura max2=	4.15	m
Sa=	1.22	g
R=	2.00	
P1=	0.61	Tn
P2=	0.61	Tn
M1=	5.22	Tn*m
M2=	2.53	Tn*m
Mu=	7.75	Tn*m

DISENO A FLEXION

Mu=	**7.7**	Tn*m
ρ=	0.0157	
ρdiseño=	0.0157	
As=	18.86	Cm^2/m
As*fy=	79221	kg
0.85f'c*b=	17850	kg/cm
a=	4.44	cm
kud=	5.22	cm
ε_c=	0.0030	
ε_f=	0.0039	
ϕ=	0.81	
ρ /ϕ=	0.0195	
As=	23.35	Cm^2/m
Varilla=	**6 /8"**	
Seperación=	**10 cm**	

DISENO A CORTANTE

Vu=	**1.2**	Tn
ϕVc=	6912.4	Kg
ϕVc=	6.9	Tn
ϕVs=	-	Tn

DISEÑO DE RAMPA PEATONAL

ELEMENTO: Muros T4-T5

DATOS DE ENTRADA

f'c=	210	Kg/Cm2
fy=	4200	Kg/Cm2
d=	12	Cm
b=	100	Cm
Recubrimiento=	3	Cm
h=	15	Cm
Tipo elemento=	**Viga=**	
	Muro=	**X**
ρmin=	0.0025	

CALCULOS ADICIONALES

CM=	0.39	Tn/m2
Aferencia=	1.65	m
CM=	1.00	Tn/m
Altura max1=	6.35	m
Altura max2=	2.08	m
Sa=	1.22	g
R=	2.00	
P1=	0.61	Tn
P2=	0.61	Tn
M1=	3.87	Tn*m
M2=	1.27	Tn*m
Mu=	5.14	Tn*m

DISENO A FLEXION

Mu=	5.1	Tn*m
ρ=	0.0096	
ρdiseño=	0.0096	
As=	11.50	Cm^2/m
As*fy=	48309	kg
0.85f'c*b=	17850	kg/cm
a=	2.71	cm
kud=	3.18	cm
ε_c=	0.0030	
ε_f=	0.0083	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0107	
As=	12.78	Cm^2/m
Varilla=	5 /8"	
Seperación=	10 cm	

DISENO A CORTANTE

Vu=	1.2	Tn
ϕVc=	6912.4	Kg
ϕVc=	6.9	Tn
ϕVs=	-	Tn

DISEÑO DE RAMPA PEATONAL

ELEMENTO: **Muros T6-T7**

DATOS DE ENTRADA

f'c=	**210**	Kg/Cm2
fy=	**4200**	Kg/Cm2
d=	**12**	Cm
b=	**100**	Cm
Recubrimiento=	**3**	Cm
h=	15	Cm
Tipo elemento=	**Viga=**	
	Muro=	**X**
ρmin=	0.0025	

CALCULOS ADICIONALES

CM=	0.39	Tn/m2
Aferencia=	1.65	m
CM=	1.00	Tn/m
Altura max1=	5.25	m
Altura max2=	2.08	m
Sa=	1.22	g
R=	2.00	
P1=	0.61	Tn
P2=	0.61	Tn
M1=	3.20	Tn*m
M2=	1.27	Tn*m
Mu=	4.47	Tn*m

DISENO A FLEXION

Mu=	**4.5**	Tn*m
ρ=	0.0082	
ρdiseño=	0.0082	
As=	9.82	Cm^2/m
As*fy=	41238	kg
0.85f'c*b=	17850	kg/cm
a=	2.31	cm
kud=	2.72	cm
ε_c=	0.0030	
ε_f=	0.0102	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0091	
As=	10.91	Cm^2/m
Varilla=	**4 /8"**	
Seperación=	**10 cm**	

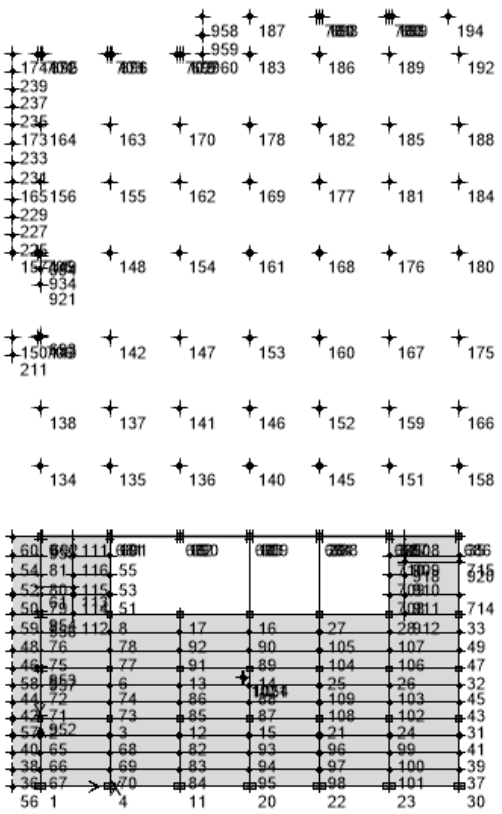
DISENO A CORTANTE

Vu=	**1.2**	Tn
ϕVc=	6912.4	Kg
ϕVc=	6.9	Tn
ϕVs=	-	Tn

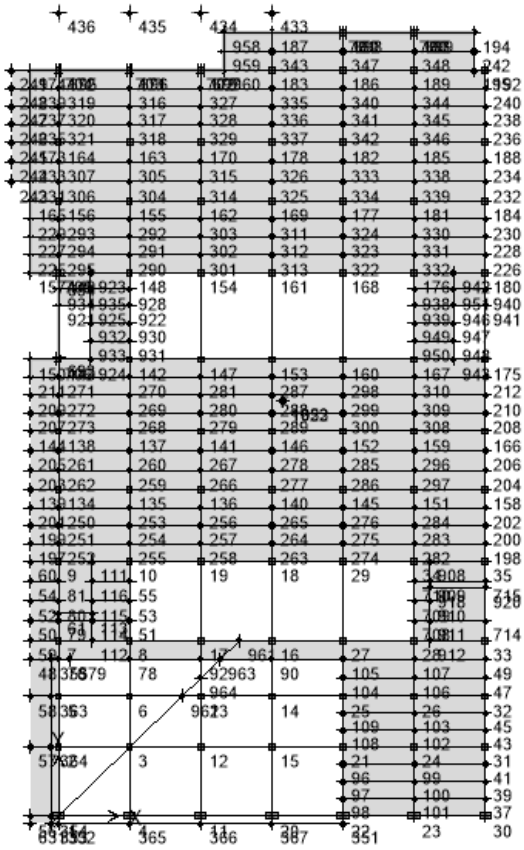
DATOS DE ENTRADA DEL MODELO MATEMÁTICO

NUMERACION DE NODOS

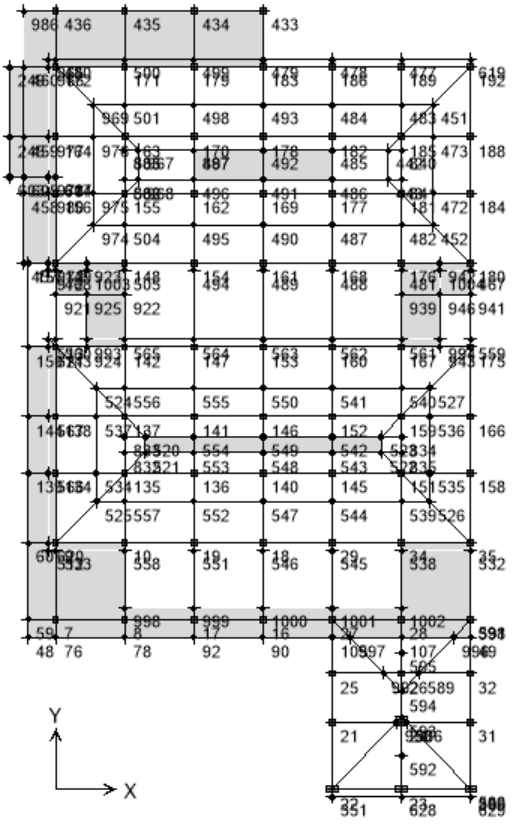
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PISO 2

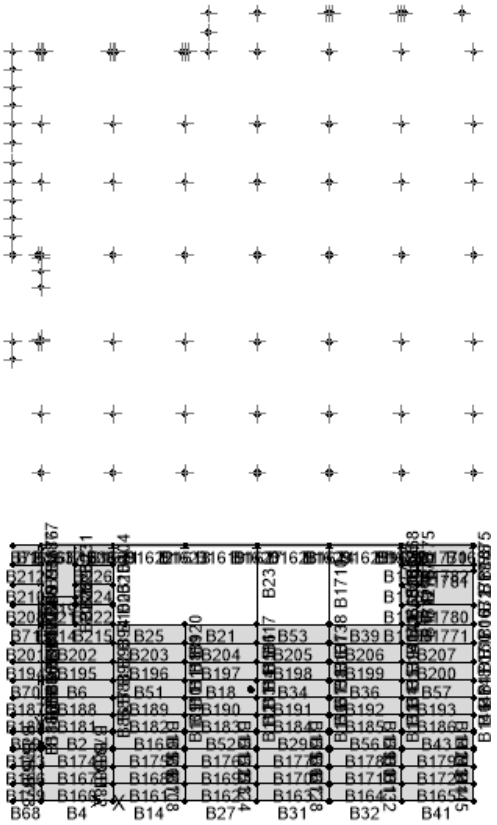


CUB

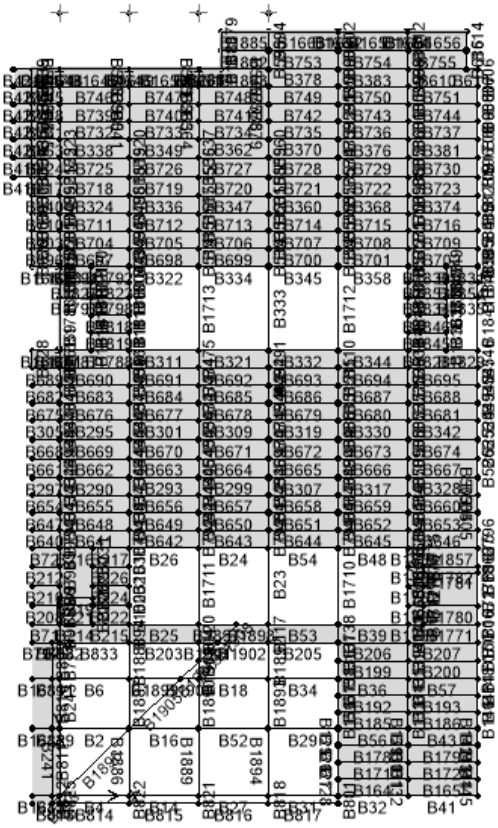


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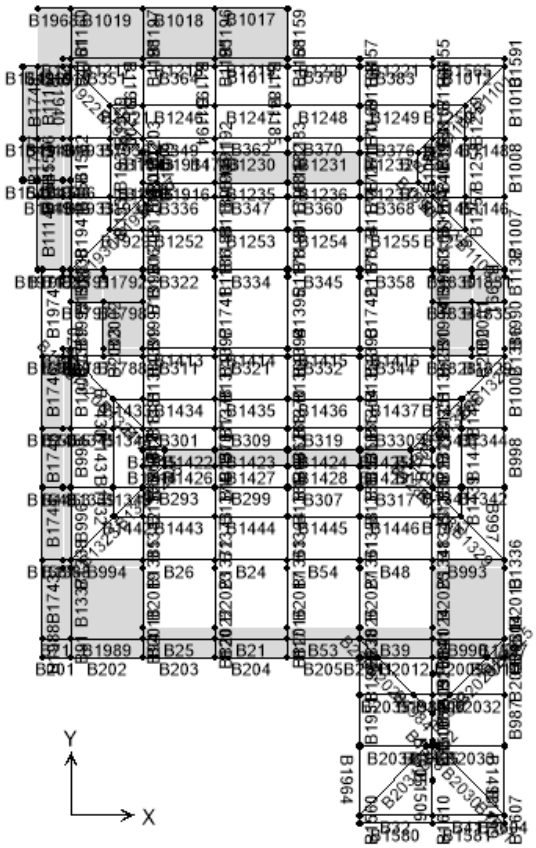
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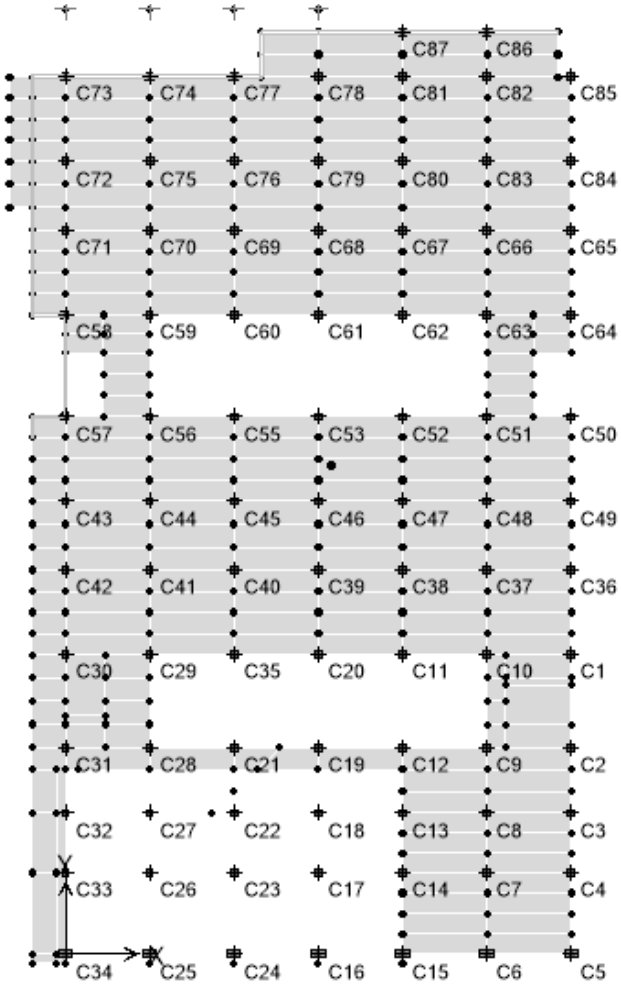
PISO 2



CUB



NUMERACION DE COLUMNAS



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S T O R Y D A T A

STORY	SIMILAR TO	HEIGHT	ELEVATION
CUB	None	4.200	4.420
PISO2	None	4.400	0.220
PISO1	None	4.300	-4.180
BASE	None		-8.480

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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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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	CONC4000	797.13	197	
Beam	CONC4000	1494.67	986	0
Beam	CONC3000	60.69	16	0
Wall	CONC3000	375.17		
Floor	CONC4000	297.70		

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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
V50X50	Beam	507	1499.185	823.04	0
C60X60	Column	180	774.600	669.98	
V30X50	Beam	53	135.421	48.26	0
V15X40	Beam	62	292.896	42.22	0
V50X40	Beam	265	1015.037	446.47	0
V30X40	Beam	99	475.807	134.68	0
C120X60	Column	17	73.500	127.15	
V60X50	Beam	16	95.900	60.69	0
MURO25	Wall			375.17	
PLACA15	Floor			297.70	

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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
CUB	Column	CONC4000	286.99	775.399	370.1138	76	
CUB	Beam	CONC4000	616.45	775.399	795.0143	417	0
CUB	Floor	CONC4000	279.45	775.399	360.3900		
PISO2	Column	CONC4000	353.93	2784.733	127.0972	86	
PISO2	Beam	CONC4000	689.89	2784.733	247.7391	427	0
PISO2	Wall	CONC3000	223.01	2784.733	80.0818		
PISO2	Floor	CONC4000	18.25	2784.733	6.5535		
PISO1	Column	CONC4000	156.21	1025.033	152.3925	35	
PISO1	Beam	CONC4000	188.33	1025.033	183.7299	142	0
PISO1	Beam	CONC3000	60.69	1025.033	59.2075	16	0
PISO1	Wall	CONC3000	152.16	1025.033	148.4437		
SUM	Column	CONC4000	797.13	4585.165	173.8487	197	
SUM	Beam	CONC4000	1494.67	4585.165	325.9795	986	0
SUM	Beam	CONC3000	60.69	4585.165	13.2361	16	0
SUM	Wall	CONC3000	375.17	4585.165	81.8217		
SUM	Floor	CONC4000	297.70	4585.165	64.9259		
TOTAL	All	All	3025.35	4585.165	659.8119	1423	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
STEEL	Iso	Steel	All	20389019.158	0.3000	1.1700E-05	7841930.445
CONC	Iso	Concrete	All	2531050.654	0.2000	9.9000E-06	1054604.439
OTHER	Iso	None	All	20389019.158	0.3000	1.1700E-05	7841930.445
CONC4000	Iso	Concrete	All	2487006.230	0.2000	9.9000E-06	1036252.596
CONC4000SM	Iso	Concrete	All	2487006.230	0.2000	9.9000E-06	1036252.596
CONC3000	Iso	Concrete	All	2153810.580	0.2000	9.9000E-06	897421.075

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
STEEL	7.9814E-01	7.8334E+00
CONC	2.4480E-01	2.4026E+00
OTHER	7.9814E-01	7.8334E+00
CONC4000	2.4480E-01	2.4026E+00
CONC4000SM	0.0000E+00	0.0000E+00
CONC3000	2.4480E-01	2.4026E+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 ($)
STEEL	35153.481	45699.526	27679.91

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	REBAR FC	REBAR FY	LIGHTWT FYS	REDUC FACT
CONC	No	2812.279	42184.178	42184.178	N/A
CONC4000	No	2812.279	42184.178	42184.178	N/A
CONC4000SM	No	2812.279	42184.178	42184.178	N/A
CONC3000	No	2812.279	42184.178	42184.178	N/A

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

FRAME SECTION NAME	MATERIAL NAME	SECTION SHAPE IN SECTION DATABASE FILE	NAME OR	CONC COL	CONC BEAM
ConcCol	CONC	Rectangular		Yes	
ConcBm	CONC	Rectangular			Yes
V50X50	CONC4000	Rectangular			Yes
C60X60	CONC4000	Rectangular		Yes	
V20X50	CONC4000SM	Rectangular			Yes
V30X50	CONC4000	Rectangular			Yes
V15X40	CONC4000	Rectangular			Yes
V50X40	CONC4000	Rectangular			Yes
V30X40	CONC4000	Rectangular			Yes
C120X60	CONC4000	Rectangular		Yes	
V60X50	CONC3000	Rectangular			Yes
V60X40	CONC3000	Rectangular			Yes

ConcCol	0.4572	0.4572	0.0000	0.0000	0.0000	0.0000
ConcBm	0.4572	0.3048	0.0000	0.0000	0.0000	0.0000
V50X50	0.5000	0.5000	0.0000	0.0000	0.0000	0.0000
C60X60	0.6000	0.6000	0.0000	0.0000	0.0000	0.0000
V20X50	0.5000	0.2000	0.0000	0.0000	0.0000	0.0000
V30X50	0.5000	0.3000	0.0000	0.0000	0.0000	0.0000
V15X40	0.4000	0.1500	0.0000	0.0000	0.0000	0.0000
V50X40	0.4000	0.5000	0.0000	0.0000	0.0000	0.0000
V30X40	0.4000	0.3000	0.0000	0.0000	0.0000	0.0000
C120X60	1.2000	0.6000	0.0000	0.0000	0.0000	0.0000
V60X50	0.5000	0.6000	0.0000	0.0000	0.0000	0.0000
V60X40	0.4000	0.6000	0.0000	0.0000	0.0000	0.0000

ConcCol	0.2090	0.0062	0.0036	0.0036	0.1742	0.1742
ConcBm	0.1394	0.0025	0.0024	0.0011	0.1161	0.1161
V50X50	0.2500	0.0088	0.0052	0.0052	0.2083	0.2083
C60X60	0.3600	0.0183	0.0108	0.0108	0.3000	0.3000
V20X50	0.1000	0.0010	0.0021	0.0003	0.0833	0.0833
V30X50	0.1500	0.0028	0.0031	0.0011	0.1250	0.1250
V15X40	0.0600	0.0003	0.0008	0.0001	0.0500	0.0500
V50X40	0.2000	0.0055	0.0027	0.0042	0.1667	0.1667
V30X40	0.1200	0.0019	0.0016	0.0009	0.1000	0.1000
C120X60	0.7200	0.0593	0.0864	0.0216	0.6000	0.6000
V60X50	0.3000	0.0124	0.0063	0.0090	0.2500	0.2500
V60X40	0.2400	0.0075	0.0032	0.0072	0.2000	0.2000

ConcCol	0.0159	0.0159	0.0239	0.0239	0.1320	0.1320
ConcBm	0.0106	0.0071	0.0159	0.0106	0.1320	0.0880
V50X50	0.0208	0.0208	0.0313	0.0313	0.1443	0.1443
C60X60	0.0360	0.0360	0.0540	0.0540	0.1732	0.1732
V20X50	0.0083	0.0033	0.0125	0.0050	0.1443	0.0577
V30X50	0.0125	0.0075	0.0188	0.0113	0.1443	0.0866
V15X40	0.0040	0.0015	0.0060	0.0023	0.1155	0.0433
V50X40	0.0133	0.0167	0.0200	0.0250	0.1155	0.1443
V30X40	0.0080	0.0060	0.0120	0.0090	0.1155	0.0866
C120X60	0.1440	0.0720	0.2160	0.1080	0.3464	0.1732
V60X50	0.0250	0.0300	0.0375	0.0450	0.1443	0.1732
V60X40	0.0160	0.0240	0.0240	0.0360	0.1155	0.1732

ConcCol	0.0000	0.0000
ConcBm	0.0000	0.0000
V50X50	823.0401	83.8592
C60X60	669.9794	68.2639
V20X50	0.0000	0.0000
V30X50	48.2617	4.9174
V15X40	42.2227	4.3021
V50X40	446.4691	45.4906
V30X40	134.6760	13.7221
C120X60	127.1456	12.9548
V60X50	60.6897	6.1836
V60X40	0.0000	0.0000

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

FRAME SECTION NAME	REINF CONFIGURATION LONGIT	LATERAL	REINF SIZE/TYPE	NUM BARS 3DIR	NUM BARS 2DIR	BAR CIRCULAR	COVER
ConcCol	Rectangular	Ties	#9/Design	3/3	N/A		0.0457
C60X60	Rectangular	Ties	#9/Design	3/3	N/A		0.0457
C120X60	Rectangular	Ties	#9/Design	3/3	N/A		0.0457

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
ConcBm	0.0457	0.0457	0.000	0.000	0.000	0.000
V50X50	0.0500	0.0500	0.000	0.000	0.000	0.000
V20X50	0.0500	0.0500	0.000	0.000	0.000	0.000
V30X50	0.0500	0.0500	0.000	0.000	0.000	0.000

V15X40	0.0500	0.0500	0.000	0.000	0.000	0.000
V50X40	0.0400	0.0400	0.000	0.000	0.000	0.000
V30X40	0.0400	0.0400	0.000	0.000	0.000	0.000
V60X50	0.0500	0.0500	0.000	0.000	0.000	0.000
V60X40	0.0400	0.0400	0.000	0.000	0.000	0.000

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

SHELL SECTION	MATERIAL NAME	SHELL TYPE	LOAD DIST ONE WAY	MEMBRANE THICK	BENDING THICK	TOTAL WEIGHT	TOTAL MASS
WALL1	CONC	Shell-Thin	No	0.2500	0.2500	0.0000	0.0000
SLAB1	CONC	Shell-Thin	No	0.2500	0.2500	0.0000	0.0000
DECK1	CONC	Membrane	No	0.0889	0.0889	0.0000	0.0000
PLANK1	CONC	Membrane	Yes	0.2500	0.2500	0.0000	0.0000
PLACA12	CONC4000SM	Membrane	No	0.1200	0.1200	0.0000	0.0000
MURO25	CONC3000	Shell-Thin	No	0.2500	0.2500	375.1660	38.2255
PLACA15	CONC4000	Membrane	No	0.1500	0.1500	297.6958	30.3321
MURO30	CONC4000	Shell-Thin	No	0.3000	0.3000	0.0000	0.0000

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

STATIC CASE	AUTO LAT TYPE	SELF WT LOAD	NOTIONAL MULTIPLIER	NOTIONAL FACTOR	DIRECTION
DEAD	DEAD	N/A	1.0000		
LIVE	LIVE	N/A	0.0000		

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

RESP SPEC CASE: SISMOX

BASIC RESPONSE SPECTRUM DATA

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

RESPONSE SPECTRUM FUNCTION ASSIGNMENT DATA

DIRECTION	FUNCTION	SCALE FACT
U1	ESPECTRO	9.8100
U2	----	N/A
UZ	----	N/A

RESP SPEC CASE: SISMOY

BASIC RESPONSE SPECTRUM DATA

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

RESPONSE SPECTRUM FUNCTION ASSIGNMENT DATA

DIRECTION	FUNCTION	SCALE FACT
U1	----	N/A
U2	ESPECTRO	9.8100
UZ	----	N/A

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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
COMB1	ADD	DEAD	Static	1.2000
		LIVE	Static	1.6000
COMB2	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	1.7000
COMB3	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOY	Spectra	1.7600
COMB4	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	1.7000
COMB5	ADD	DEAD	Static	0.9000
		SISMOY	Spectra	1.7600
COMB6	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.3800
		SISMOY	Spectra	0.1200
COMB7	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.3800
		SISMOY	Spectra	-0.1200
COMB8	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.1100
		SISMOY	Spectra	0.3900
COMB9	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.1100
		SISMOY	Spectra	-0.3900
COMB10	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.3800
		SISMOY	Spectra	0.1200
COMB11	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.3800
		SISMOY	Spectra	-0.1200
COMB12	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.1100
		SISMOY	Spectra	0.3900
COMB13	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.1100
		SISMOY	Spectra	-0.3900
COMB14	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.7600
		SISMOY	Spectra	0.2400
COMB15	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.7600
		SISMOY	Spectra	-0.2400
COMB16	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.2300
		SISMOY	Spectra	0.7900
COMB17	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.2300
		SISMOY	Spectra	-0.7900
COMB18	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.7600
		SISMOY	Spectra	0.2400
COMB19	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.7600
		SISMOY	Spectra	-0.2400
COMB20	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.2300
		SISMOY	Spectra	0.7900
COMB21	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.2300
		SISMOY	Spectra	-0.7900
COMB22	ADD	DEAD	Static	1.3600
		LIVE	Static	1.0000
		SISMOX	Spectra	1.1400
		SISMOY	Spectra	0.3500
COMB23	ADD	DEAD	Static	1.3600
		LIVE	Static	1.0000
		SISMOX	Spectra	1.1400
		SISMOY	Spectra	-0.3500
COMB24	ADD	DEAD	Static	1.3600
		LIVE	Static	1.0000
		SISMOX	Spectra	0.3400
		SISMOY	Spectra	1.1800
COMB25	ADD	DEAD	Static	1.3600
		LIVE	Static	1.0000
		SISMOX	Spectra	0.3400
		SISMOY	Spectra	-1.1800
COMB26	ADD	DEAD	Static	0.7400
		SISMOX	Spectra	1.1400
		SISMOY	Spectra	0.3500
COMB27	ADD	DEAD	Static	0.7400
		SISMOX	Spectra	1.1400
		SISMOY	Spectra	-0.3500
COMB28	ADD	DEAD	Static	0.7400
		SISMOX	Spectra	0.3400
		SISMOY	Spectra	1.1800
COMB29	ADD	DEAD	Static	0.7400
		SISMOX	Spectra	0.3400
		SISMOY	Spectra	-1.1800
ENVOLVENTE	ENVE	COMB1	Combo	1.0000
		COMB6	Combo	1.0000
		COMB7	Combo	1.0000
		COMB8	Combo	1.0000
		COMB9	Combo	1.0000
		COMB10	Combo	1.0000
		COMB11	Combo	1.0000
		COMB12	Combo	1.0000
		COMB13	Combo	1.0000

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

FUNCTION NAME: ESPECTRO

PERIOD	ACCEL
0.0000	1.2190
0.0500	1.2190
0.1000	1.2190
0.1500	1.2190
0.2000	1.2190
0.2500	1.2190
0.3000	1.2190
0.3500	1.2190
0.4000	1.2190
0.4500	1.2190
0.5000	1.2190
0.5500	1.2190
0.6000	1.2000
0.6500	1.1080
0.7000	1.0290
0.7500	0.9600
0.8000	0.9000
0.8500	0.8470
0.9000	0.8000
0.9500	0.7580
1.0000	0.7200
1.0500	0.6860
1.1000	0.6550
1.1500	0.6260
1.2000	0.6000
1.2500	0.5760
1.3000	0.5540
1.3500	0.5330
1.4000	0.5140
1.4500	0.4970
1.5000	0.4800
1.5500	0.4650
1.6000	0.4500
1.6500	0.4360
1.7000	0.4240
1.7500	0.4110

1.8000	0.4000
1.8500	0.3890
1.9000	0.3790
1.9500	0.3690
2.0000	0.3600
2.1000	0.3430
2.2000	0.3270
2.3000	0.3130
2.4000	0.3000
2.5000	0.2880
2.6000	0.2770
2.7000	0.2670
2.8000	0.2570
2.9000	0.2480
3.0000	0.2400
3.1000	0.2320
3.2000	0.2250
3.3000	0.2180
3.4000	0.2120
3.5000	0.2060
3.6000	0.2000
3.7000	0.1950
3.8000	0.1890
3.9000	0.1850
4.0000	0.1800
4.1000	0.1760
4.2000	0.1710
4.3000	0.1670
4.4000	0.1640
4.5000	0.1600
4.6000	0.1570
4.7000	0.1530
4.8000	0.1500
4.9000	0.1440
5.0000	0.1380
5.1000	0.1330
5.2000	0.1280
5.3000	0.1230
5.4000	0.1190
5.5000	0.1140
5.6000	0.1100
5.7000	0.1060
5.8000	0.1030
5.9000	0.0990
6.0000	0.0960
6.1000	0.0930
6.2000	0.0900
6.3000	0.0870
6.4000	0.0840
6.5000	0.0820
6.6000	0.0790
6.7000	0.0770
6.8000	0.0750
6.9000	0.0730
7.0000	0.0710
7.1000	0.0690
7.2000	0.0670
7.3000	0.0650
7.4000	0.0630
7.5000	0.0610
7.6000	0.0600

R I G I D D I A P H R A G M A S S I G N M E N T S T O P O I N T O B J E C T S

STORY	DIAPHRAGM	POINT	POINT	POINT	POINT	POINT
PISO2	D2	134	135	136	137	138
PISO2	D2	139	140	141	142	143
PISO2	D2	144	145	146	147	148
PISO2	D2	149	150	151	152	153
PISO2	D2	154	155	156	157	158
PISO2	D2	159	160	161	162	163
PISO2	D2	164	165	166	167	168
PISO2	D2	169	170	171	172	173
PISO2	D2	174	175	176	177	178
PISO2	D2	179	180	181	182	183
PISO2	D2	184	185	186	187	188
PISO2	D2	189	190	192	193	194
PISO2	D2	195	197	198	199	200
PISO2	D2	201	202	203	204	205
PISO2	D2	206	207	208	209	210
PISO2	D2	211	212	225	226	227
PISO2	D2	228	229	230	231	232
PISO2	D2	233	234	235	236	237
PISO2	D2	238	239	240	242	243
PISO2	D2	244	245	246	247	248
PISO2	D2	249	250	251	252	253
PISO2	D2	254	255	256	257	258
PISO2	D2	259	260	261	262	263
PISO2	D2	264	265	266	267	268
PISO2	D2	269	270	271	272	273
PISO2	D2	274	275	276	277	278
PISO2	D2	279	280	281	282	283
PISO2	D2	284	285	286	287	288
PISO2	D2	289	290	291	292	293
PISO2	D2	294	295	296	297	298
PISO2	D2	299	300	301	302	303
PISO2	D2	304	305	306	307	308
PISO2	D2	309	310	311	312	313
PISO2	D2	314	315	316	317	318
PISO2	D2	319	320	321	322	323
PISO2	D2	324	325	326	327	328
PISO2	D2	329	330	331	332	333
PISO2	D2	334	335	336	337	338
PISO2	D2	339	340	341	342	343
PISO2	D2	344	345	346	347	348
PISO2	D2	7	8	9	10	16
PISO2	D2	17	18	19	21	22
PISO2	D2	23	24	25	26	27
PISO2	D2	28	29	30	31	32
PISO2	D2	33	34	35	37	39
PISO2	D2	41	43	45	47	48
PISO2	D2	49	50	51	52	53
PISO2	D2	54	55	59	60	61
PISO2	D2	76	78	79	80	81
PISO2	D2	90	92	96	97	98
PISO2	D2	99	100	101	102	103
PISO2	D2	104	105	106	107	108
PISO2	D2	109	111	112	113	114
PISO2	D2	115	116	351	355	379
PISO2	D2	693	694	695	696	697
PISO2	D2	698	699	700	701	702
PISO2	D2	703	704	705	706	708
PISO2	D2	709	710	921	922	923
PISO2	D2	924	925	930	931	932
PISO2	D2	933	928	934	935	938
PISO2	D2	939	940	941	942	943
PISO2	D2	946	947	948	949	950
PISO2	D2	951	908	912	918	920
PISO2	D2	714	715	911	909	910
PISO2	D2	958	959	960	961	963
PISO2	D2	1022				
PISO2	Disconnect	1	2	3	4	5
PISO2	Disconnect	6	11	12	13	14
PISO2	Disconnect	15	20	353	363	364
PISO2	Disconnect	354	352	365	366	367
PISO2	Disconnect	58	57	56	631	
PISO1	D1	1	2	3	4	5
PISO1	D1	6	7	8	9	10
PISO1	D1	11	12	13	14	15
PISO1	D1	16	17	20	21	22
PISO1	D1	23	24	25	26	27
PISO1	D1	28	30	31	32	33
PISO1	D1	34	35	36	37	38
PISO1	D1	39	40	41	42	43
PISO1	D1	44	45	46	47	48
PISO1	D1	49	50	51	52	53
PISO1	D1	54	55	56	57	58
PISO1	D1	59	60	61	65	66
PISO1	D1	67	68	69	70	71
PISO1	D1	72	73	74	75	76
PISO1	D1	77	78	79	80	81
PISO1	D1	82	83	84	85	86
PISO1	D1	87	88	89	90	91
PISO1	D1	92	93	94	95	96
PISO1	D1	97	98	99	100	101
PISO1	D1	102	103	104	105	106
PISO1	D1	107	108	109	111	112
PISO1	D1	113	114	115	116	681
PISO1	D1	685	686	687	691	692
PISO1	D1	708	709	710	908	909
PISO1	D1	910	911	912	714	715
PISO1	D1	918	920	952	953	954
PISO1	D1	955	956	957	1021	

P O I N T M A S S A S S I G N M E N T S

STORY	POINT	MASSX	MASSY	MASSZ	MMIXX	MMIYY	MMIZZ
CUB	9	0.7200	0.7200	0.0000	0.0000	0.0000	0.0000
CUB	10	1.1900	1.1900	0.0000	0.0000	0.0000	0.0000
CUB	18	1.1900	1.1900	0.0000	0.0000	0.0000	0.0000
CUB	19	1.1900	1.1900	0.0000	0.0000	0.0000	0.0000
CUB	21	0.6500	0.6500	0.0000	0.0000	0.0000	0.0000
CUB	22	0.6300	0.6300	0.0000	0.0000	0.0000	0.0000
CUB	23	1.1600	1.1600	0.0000	0.0000	0.0000	0.0000
CUB	24	1.4600	1.4600	0.0000	0.0000	0.0000	0.0000
CUB	25	0.7200	0.7200	0.0000	0.0000	0.0000	0.0000
CUB	26	1.4100	1.4100	0.0000	0.0000	0.0000	0.0000
CUB	27	0.6000	0.6000	0.0000	0.0000	0.0000	0.0000
CUB	28	1.1100	1.1100	0.0000	0.0000	0.0000	0.0000
CUB	29	1.1900	1.1900	0.0000	0.0000	0.0000	0.0000
CUB	30	0.7000	0.7000	0.0000	0.0000	0.0000	0.0000
CUB	31	1.0000	1.0000	0.0000	0.0000	0.0000	0.0000
CUB	32	0.8900	0.8900	0.0000	0.0000	0.0000	0.0000
CUB	33	0.6700	0.6700	0.0000	0.0000	0.0000	0.0000
CUB	34	1.1900	1.1900	0.0000	0.0000	0.0000	0.0000
CUB	35	0.7200	0.7200	0.0000	0.0000	0.0000	0.0000
CUB	134	1.0900	1.0900	0.0000	0.0000	0.0000	0.0000
CUB	135	1.7500	1.7500	0.0000	0.0000	0.0000	0.0000
CUB	136	1.5800	1.5800	0.0000	0.0000	0.0000	0.0000
CUB	137	1.7500	1.7500	0.0000	0.0000	0.0000	0.0000
CUB	138	1.0900	1.0900	0.0000	0.0000	0.0000	0.0000
CUB	140	1.5800	1.5800	0.0000	0.0000	0.0000	0.0000
CUB	141	1.5700	1.5700	0.0000	0.0000	0.0000	0.0000
CUB	142	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	143	0.7300	0.7300	0.0000	0.0000	0.0000	0.0000
CUB	145	1.5800	1.5800	0.0000	0.0000	0.0000	0.0000
CUB	146	1.5700	1.5700	0.0000	0.0000	0.0000	0.0000
CUB	147	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	148	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	149	1.1500	1.1500	0.0000	0.0000	0.0000	0.0000
CUB	151	1.7500	1.7500	0.0000	0.0000	0.0000	0.0000
CUB	152	1.5700	1.5700	0.0000	0.0000	0.0000	0.0000
CUB	153	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	154	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	155	1.5200	1.5200	0.0000	0.0000	0.0000	0.0000
CUB	156	1.7200	1.7200	0.0000	0.0000	0.0000	0.0000
CUB	158	1.0900	1.0900	0.0000	0.0000	0.0000	0.0000
CUB	159	1.7500	1.7500	0.0000	0.0000	0.0000	0.0000
CUB	160	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	161	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	162	1.3700	1.3700	0.0000	0.0000	0.0000	0.0000
CUB	163	1.5200	1.5200	0.0000	0.0000	0.0000	0.0000
CUB	164	1.7200	1.7200	0.0000	0.0000	0.0000	0.0000
CUB	166	1.0900	1.0900	0.0000	0.0000	0.0000	0.0000
CUB	167	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	168	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	169	1.3700	1.3700	0.0000	0.0000	0.0000	0.0000
CUB	170	1.3700	1.3700	0.0000	0.0000	0.0000	0.0000
CUB	171	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	172	1.1500	1.1500	0.0000	0.0000	0.0000	0.0000
CUB	175	0.7300	0.7300	0.0000	0.0000	0.0000	0.0000
CUB	176	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	177	1.3700	1.3700	0.0000	0.0000	0.0000	0.0000
CUB	178	1.3700	1.3700	0.0000	0.0000	0.0000	0.0000

CUB	179	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	180	0.7300	0.7300	0.0000	0.0000	0.0000	0.0000
CUB	181	1.6600	1.6600	0.0000	0.0000	0.0000	0.0000
CUB	182	1.3700	1.3700	0.0000	0.0000	0.0000	0.0000
CUB	183	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	184	1.0900	1.0900	0.0000	0.0000	0.0000	0.0000
CUB	185	1.6600	1.6600	0.0000	0.0000	0.0000	0.0000
CUB	186	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	188	1.0900	1.0900	0.0000	0.0000	0.0000	0.0000
CUB	189	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	192	0.7300	0.7300	0.0000	0.0000	0.0000	0.0000
PISO2	1	0.7100	0.7100	0.0000	0.0000	0.0000	0.0000
PISO2	2	1.0000	1.0000	0.0000	0.0000	0.0000	0.0000
PISO2	3	1.4500	1.4500	0.0000	0.0000	0.0000	0.0000
PISO2	4	1.1700	1.1700	0.0000	0.0000	0.0000	0.0000
PISO2	5	0.8900	0.8900	0.0000	0.0000	0.0000	0.0000
PISO2	6	1.4200	1.4200	0.0000	0.0000	0.0000	0.0000
PISO2	7	0.1500	0.1500	0.0000	0.0000	0.0000	0.0000
PISO2	8	0.2500	0.2500	0.0000	0.0000	0.0000	0.0000
PISO2	11	1.1700	1.1700	0.0000	0.0000	0.0000	0.0000
PISO2	12	1.1700	1.1700	0.0000	0.0000	0.0000	0.0000
PISO2	13	1.3700	1.3700	0.0000	0.0000	0.0000	0.0000
PISO2	14	1.3700	1.3700	0.0000	0.0000	0.0000	0.0000
PISO2	15	1.1700	1.1700	0.0000	0.0000	0.0000	0.0000
PISO2	16	0.2500	0.2500	0.0000	0.0000	0.0000	0.0000
PISO2	17	0.2500	0.2500	0.0000	0.0000	0.0000	0.0000
PISO2	20	1.1700	1.1700	0.0000	0.0000	0.0000	0.0000
PISO2	21	0.6300	0.6300	0.0000	0.0000	0.0000	0.0000
PISO2	22	0.6300	0.6300	0.0000	0.0000	0.0000	0.0000
PISO2	25	0.7400	0.7400	0.0000	0.0000	0.0000	0.0000
PISO2	27	0.1400	0.1400	0.0000	0.0000	0.0000	0.0000
PISO2	1022	235.6700	235.6700	0.0000	0.0000	0.0000	0.0000
PISO1	1021	93.9700	93.9700	0.0000	0.0000	0.0000	0.0000

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
CUB	C1	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C2	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C3	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C4	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C5	Column	Rectangular	None	C120X60	Conc Frame	C120X60
CUB	C6	Column	Rectangular	None	C120X60	Conc Frame	C120X60
CUB	C7	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C8	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C9	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C10	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C11	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C12	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C13	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C14	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C15	Column	Rectangular	None	C120X60	Conc Frame	C120X60
CUB	C19	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C20	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C21	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C28	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C29	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C30	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C31	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C35	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C36	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C37	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C38	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C39	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C40	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C41	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C42	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C43	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C44	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C45	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C46	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C47	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C48	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C49	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C50	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C51	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C52	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C53	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C55	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C56	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C57	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C58	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C59	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C60	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C61	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C62	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C63	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C64	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C65	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C66	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C67	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C68	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C69	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C70	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C71	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C72	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C73	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C74	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C75	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C76	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C77	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C78	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C79	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C80	Column	Rectangular	None	C60X60	Conc Frame	C60X60
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PISO1	B1876	Beam	Rectangular	None	V50X50	Conc Frame	V50X50
PISO1	B1877	Beam	Rectangular	None	V50X50	Conc Frame	V50X50

RELEASE ASSIGNMENTS TO LINE OBJECTS

STORY LEVEL	LINE ID	LINE TYPE	P	V2	V3	T	M2	M3	
CUB	B201	Beam	None	None	None	None	None	J-end	
CUB	B202	Beam	None	None	None	None	None	Both ends	
CUB	B203	Beam	None	None	None	None	None	Both ends	
CUB	B204	Beam	None	None	None	None	None	Both ends	
CUB	B205	Beam	None	None	None	None	None	Both ends	
CUB	B1081	Beam	None	None	None	None	None	Both ends	
CUB	B1085	Beam	None	None	None	None	None	J-end	
CUB	B1090	Beam	None	None	None	None	None	J-end	
CUB	B1100	Beam	None	None	None	None	None	I-end	
CUB	B1101	Beam	None	None	None	None	None	J-end	
CUB	B1102	Beam	None	None	None	None	None	I-end	
CUB	B1103	Beam	None	None	None	None	None	J-end	
CUB	B1114	Beam	None	None	None	None	None	Both ends	
CUB	B1116	Beam	None	None	None	None	None	Both ends	
CUB	B1217	Beam	None	None	None	None	None	Both ends	
CUB	B1218	Beam	None	None	None	None	None	Both ends	
CUB	B1219	Beam	None	None	None	None	None	Both ends	
CUB	B1220	Beam	None	None	None	None	None	Both ends	
CUB	B1221	Beam	None	None	None	None	None	Both ends	
CUB	B1230	Beam	None	None	None	None	None	Both ends	
CUB	B1231	Beam	None	None	None	None	None	Both ends	
CUB	B1232	Beam	None	None	None	None	None	I-end	
CUB	B1235	Beam	None	None	None	None	None	Both ends	
CUB	B1236	Beam	None	None	None	None	None	Both ends	
CUB	B1237	Beam	None	None	None	None	None	I-end	
CUB	B1246	Beam	None	None	None	None	None	Both ends	
CUB	B1247	Beam	None	None	None	None	None	Both ends	
CUB	B1248	Beam	None	None	None	None	None	Both ends	
CUB	B1249	Beam	None	None	None	None	None	Both ends	
CUB	B1250	Beam	None	None	None	None	None	I-end	
CUB	B1252	Beam	None	None	None	None	None	Both ends	
CUB	B1253	Beam	None	None	None	None	None	Both ends	
CUB	B1254	Beam	None	None	None	None	None	Both ends	
CUB	B1255	Beam	None	None	None	None	None	Both ends	
CUB	B1256	Beam	None	None	None	None	None	I-end	
CUB	B1257	Beam	None	None	None	None	None	J-end	
CUB	B1258	Beam	None	None	None	None	None	Both ends	
CUB	B1259	Beam	None	None	None	None	None	I-end	
CUB	B1283	Beam	None	None	None	None	None	I-end	
CUB	B1285	Beam	None	None	None	None	None	I-end	
CUB	B1288	Beam	None	None	None	None	None	J-end	
CUB	B1290	Beam	None	None	None	None	None	J-end	
CUB	B1297	Beam	None	None	None	None	None	Both ends	
CUB	B1298	Beam	None	None	None	None	None	Both ends	
CUB	B1319	Beam	None	None	None	None	None	Both ends	
CUB	B1320	Beam	None	None	None	None	None	I-end	
CUB	B1321	Beam	None	None	None	None	None	J-end	
CUB	B1322	Beam	None	None	None	None	None	J-end	
CUB	B1323	Beam	None	None	None	None	None	I-end	
CUB	B1325	Beam	None	None	None	None	None	I-end	
CUB	B1326	Beam	None	None	None	None	None	J-end	
CUB	B1328	Beam	None	None	None	None	None	I-end	
CUB	B1329	Beam	None	None	None	None	None	J-end	
CUB	B1413	Beam	None	None	None	None	None	Both ends	
CUB	B1414	Beam	None	None	None	None	None	Both ends	
CUB	B1415	Beam	None	None	None	None	None	Both ends	
CUB	B1416	Beam	None	None	None	None	None	Both ends	
CUB	B1422	Beam	None	None	None	None	None	J-end	
CUB	B1423	Beam	None	None	None	None	None	Both ends	
CUB	B1424	Beam	None	None	None	None	None	Both ends	
CUB	B1425	Beam	None	None	None	None	None	I-end	
CUB	B1426	Beam	None	None	None	None	None	J-end	
CUB	B1427	Beam	None	None	None	None	None	Both ends	
CUB	B1428	Beam	None	None	None	None	None	Both ends	
CUB	B1429	Beam	None	None	None	None	None	I-end	
CUB	B1430	Beam	None	None	None	None	None	J-end	
CUB	B1431	Beam	None	None	None	None	None	Both ends	
CUB	B1432	Beam	None	None	None	None	None	I-end	
CUB	B1433	Beam	None	None	None	None	None	J-end	
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CUB	B1435	Beam	None	None	None	None	None	Both ends	
CUB	B1436	Beam	None	None	None	None	None	Both ends	
CUB	B1437	Beam	None	None	None	None	None	Both ends	
CUB	B1438	Beam	None	None	None	None	None	I-end	
CUB	B1439	Beam	None	None	None	None	None	J-end	
CUB	B1440	Beam	None	None	None	None	None	Both ends	
CUB	B1441	Beam	None	None	None	None	None	I-end	
CUB	B1442	Beam	None	None	None	None	None	J-end	
CUB	B1443	Beam	None	None	None	None	None	Both ends	
CUB	B1444	Beam	None	None	None	None	None	Both ends	
CUB	B1445	Beam	None	None	None	None	None	Both ends	
CUB	B1446	Beam	None	None	None	None	None	Both ends	
CUB	B1447	Beam	None	None	None	None	None	I-end	
CUB	B1522	Beam	None	None	None	None	None	Both ends	
CUB	B1528	Beam	None	None	None	None	None	Both ends	
CUB	B1545	Beam	None	None	None	None	None	Both ends	
CUB	B1546	Beam	None	None	None	None	None	Both ends	
CUB	B1565	Beam	None	None	None	None	None	Both ends	
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CUB	B1581	Beam	None	None	None	None	None	Both ends	
CUB	B1714	Beam	None	None	None	None	None	I-end	
CUB	B1715	Beam	None	None	None	None	None	I-end	
CUB	B1719	Beam	None	None	None	None	None	J-end	
CUB	B1720	Beam	None	None	None	None	None	J-end	
CUB	B1736	Beam	None	None	None	None	None	J-end	
CUB	B1737	Beam	None	None	None	None	None	J-end	
CUB	B1743	Beam	None	None	None	None	I-end	Both ends	Both ends
CUB	B1744	Beam	None	None	None	None	I-end	Both ends	Both ends
CUB	B1745	Beam	None	None	None	None	I-end	Both ends	Both ends
CUB	B1746	Beam	None	None	None	None	I-end	Both ends	Both ends
CUB	B1747	Beam	None	None	None	None	I-end	Both ends	Both ends
CUB	B1748	Beam	None	None	None	None	I-end	Both ends	Both ends
CUB	B1751	Beam	None	None	None	None	None	J-end	
CUB	B1753	Beam	None	None	None	None	None	J-end	
CUB	B1756	Beam	None	None	None	None	None	I-end	
CUB	B1797	Beam	None	None	None	None	None	I-end	
CUB	B1798	Beam	None	None	None	None	None	J-end	
CUB	B1834	Beam	None	None	None	None	None	I-end	
CUB	B1835	Beam	None	None	None	None	None	J-end	
CUB	B1912	Beam	None	None	None	None	None	J-end	
CUB	B1913	Beam	None	None	None	None	None	I-end	
CUB	B1914	Beam	None	None	None	None	None	J-end	
CUB	B1915	Beam	None	None	None	None	None	I-end	
CUB	B1916	Beam	None	None	None	None	None	J-end	
CUB	B1917	Beam	None	None	None	None	None	I-end	
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CUB	B1921	Beam	None	None	None	None	None	J-end	
CUB	B1922	Beam	None	None	None	None	None	I-end	
CUB	B1923	Beam	None	None	None	None	None	J-end	
CUB	B1927	Beam	None	None	None	None	None	I-end	
CUB	B1929	Beam	None	None	None	None	None	J-end	
CUB	B1930	Beam	None	None	None	None	None	I-end	
CUB	B1931	Beam	None	None	None	None	None	J-end	
CUB	B1937	Beam	None	None	None	None	None	J-end	
CUB	B1938	Beam	None	None	None	None	None	Both ends	
CUB	B1939	Beam	None	None	None	None	None	I-end	
CUB	B1982	Beam	None	None	None	None	None	Both ends	
CUB	B1984	Beam	None	None	None	None	None	Both ends	
CUB	B1988	Beam	None	None	None	None	None	I-end	
CUB	B2000	Beam	None	None	None	None	None	I-end	
CUB	B2001	Beam	None	None	None	None	None	J-end	
CUB	B2002	Beam	None	None	None	None	None	I-end	
CUB	B2003	Beam	None	None	None	None	None	J-end	
CUB	B2006	Beam	None	None	None	None	None	J-end	
CUB	B2007	Beam	None	None	None	None	None	I-end	
CUB	B2009	Beam	None	None	None	None	None	Both ends	
CUB	B2010	Beam	None	None	None	None	None	Both ends	
CUB	B2011	Beam	None	None	None	None	None	Both ends	

CUB	B2012	Beam	None	None	None	None	None	Both ends
CUB	B2028	Beam	None	None	None	None	None	Both ends
CUB	B2029	Beam	None	None	None	None	None	Both ends
CUB	B2030	Beam	None	None	None	None	None	Both ends
CUB	B2031	Beam	None	None	None	None	None	Both ends
PISO2	B164	Beam	None	None	None	None	None	Both ends
PISO2	B165	Beam	None	None	None	None	None	Both ends
PISO2	B171	Beam	None	None	None	None	None	Both ends
PISO2	B172	Beam	None	None	None	None	None	Both ends
PISO2	B178	Beam	None	None	None	None	None	Both ends
PISO2	B179	Beam	None	None	None	None	None	Both ends
PISO2	B185	Beam	None	None	None	None	None	Both ends
PISO2	B186	Beam	None	None	None	None	None	Both ends
PISO2	B192	Beam	None	None	None	None	None	Both ends
PISO2	B193	Beam	None	None	None	None	None	Both ends
PISO2	B199	Beam	None	None	None	None	None	Both ends
PISO2	B200	Beam	None	None	None	None	None	Both ends
PISO2	B203	Beam	None	None	None	None	None	Both ends
PISO2	B205	Beam	None	None	None	None	None	Both ends
PISO2	B206	Beam	None	None	None	None	None	Both ends
PISO2	B207	Beam	None	None	None	None	None	Both ends
PISO2	B219	Beam	None	None	None	None	None	Both ends
PISO2	B221	Beam	None	None	None	None	None	Both ends
PISO2	B222	Beam	None	None	None	None	None	Both ends
PISO2	B224	Beam	None	None	None	None	None	Both ends
PISO2	B226	Beam	None	None	None	None	None	Both ends
PISO2	B641	Beam	None	None	None	None	None	Both ends
PISO2	B642	Beam	None	None	None	None	None	Both ends
PISO2	B643	Beam	None	None	None	None	None	Both ends
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PISO2	B662	Beam	None	None	None	None	None	Both ends
PISO2	B663	Beam	None	None	None	None	None	Both ends
PISO2	B664	Beam	None	None	None	None	None	Both ends
PISO2	B665	Beam	None	None	None	None	None	Both ends
PISO2	B666	Beam	None	None	None	None	None	Both ends
PISO2	B667	Beam	None	None	None	None	None	Both ends
PISO2	B669	Beam	None	None	None	None	None	Both ends
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PISO2	B691	Beam	None	None	None	None	None	Both ends
PISO2	B692	Beam	None	None	None	None	None	Both ends
PISO2	B693	Beam	None	None	None	None	None	Both ends
PISO2	B694	Beam	None	None	None	None	None	Both ends
PISO2	B695	Beam	None	None	None	None	None	Both ends
PISO2	B696	Beam	None	None	None	None	None	Both ends
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PISO2	B707	Beam	None	None	None	None	None	Both ends
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PISO2	B719	Beam	None	None	None	None	None	Both ends
PISO2	B720	Beam	None	None	None	None	None	Both ends
PISO2	B721	Beam	None	None	None	None	None	Both ends
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PISO2	B723	Beam	None	None	None	None	None	Both ends
PISO2	B724	Beam	None	None	None	None	None	Both ends
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PISO2	B726	Beam	None	None	None	None	None	Both ends
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PISO2	B731	Beam	None	None	None	None	None	Both ends
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PISO2	B733	Beam	None	None	None	None	None	Both ends
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PISO2	B736	Beam	None	None	None	None	None	Both ends
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PISO2	B738	Beam	None	None	None	None	None	Both ends
PISO2	B739	Beam	None	None	None	None	None	Both ends
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PISO2	B741	Beam	None	None	None	None	None	Both ends
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PISO2	B810	Beam	None	None	None	None	None	Both ends
PISO2	B811	Beam	None	None	None	None	None	Both ends
PISO2	B812	Beam	None	None	None	None	None	I-end
PISO2	B813	Beam	None	None	None	None	None	J-end
PISO2	B814	Beam	None	None	None	None	None	Both ends
PISO2	B815	Beam	None	None	None	None	None	Both ends
PISO2	B816	Beam	None	None	None	None	None	Both ends
PISO2	B817	Beam	None	None	None	None	None	Both ends
PISO2	B832	Beam	None	None	None	None	None	I-end
PISO2	B833	Beam	None	None	None	None	None	J-end
PISO2	B845	Beam	None	None	None	None	None	Both ends
PISO2	B1641	Beam	None	J-end	None	None	None	J-end
PISO2	B1643	Beam	None	J-end	None	None	None	J-end
PISO2	B1644	Beam	None	I-end	None	None	None	I-end
PISO2	B1646	Beam	None	J-end	None	None	None	J-end
PISO2	B1648	Beam	None	J-end	None	None	None	J-end
PISO2	B1649	Beam	None	I-end	None	None	None	I-end
PISO2	B1651	Beam	None	J-end	None	None	None	J-end
PISO2	B1652	Beam	None	I-end	None	None	None	I-end
PISO2	B1654	Beam	None	J-end	None	None	None	J-end
PISO2	B1655	Beam	None	I-end	None	None	None	I-end
PISO2	B1657	Beam	None	I-end	None	None	None	I-end
PISO2	B1659	Beam	None	I-end	None	None	None	I-end
PISO2	B1661	Beam	None	I-end	None	None	None	I-end
PISO2	B1664	Beam	None	J-end	None	None	None	J-end
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PISO2	B1766	Beam	None	None	None	None	None	Both ends
PISO2	B1782	Beam	None	None	None	None	None	Both ends
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PISO2	B1854	Beam	None	None	None	None	None	Both ends
PISO2	B1882	Beam	None	None	None	None	None	Both ends
PISO2	B1896	Beam	None	None	None	None	None	Both ends
PISO2	B1901	Beam	None	None	None	None	None	I-end
PISO2	B1902	Beam	None	None	None	None	None	J-end
PISO2	B1905	Beam	None	None	None	None	None	Both ends
PISO2	B1906	Beam	None	None	None	None	None	Both ends
PISO2	B1907	Beam	None	None	None	None	None	Both ends
PISO2	B1908	Beam	None	None	None	None	None	Both ends
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PISO1	B162	Beam	None	None	None	None	None	Both ends
PISO1	B163	Beam	None	None	None	None	None	Both ends
PISO1	B164	Beam	None	None	None	None	None	Both ends
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PISO1	B167	Beam	None	None	None	None	None	Both ends
PISO1	B168	Beam	None	None	None	None	None	Both ends
PISO1	B169	Beam	None	None	None	None	None	Both ends
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PISO1	B182	Beam	None	None	None	None	None	Both ends
PISO1	B183	Beam	None	None	None	None	None	Both ends
PISO1	B184	Beam	None	None	None	None	None	Both ends
PISO1	B185	Beam	None	None	None	None	None	Both ends
PISO1	B186	Beam	None	None	None	None	None	Both ends
PISO1	B188	Beam	None	None	None	None	None	Both ends
PISO1	B189	Beam	None	None	None	None	None	Both ends
PISO1	B190	Beam	None	None	None	None	None	Both ends
PISO1	B191	Beam	None	None	None	None	None	Both ends
PISO1	B192	Beam	None	None	None	None	None	Both ends
PISO1	B193	Beam	None	None	None	None	None	Both ends
PISO1	B195	Beam	None	None	None	None	None	Both ends
PISO1	B196	Beam	None	None	None	None	None	Both ends
PISO1	B197	Beam	None	None	None	None	None	Both ends
PISO1	B198	Beam	None	None	None	None	None	Both ends
PISO1	B199	Beam	None	None	None	None	None	Both ends
PISO1	B200	Beam	None	None	None	None	None	Both ends
PISO1	B202	Beam	None	None	None	None	None	Both ends
PISO1	B203	Beam	None	None	None	None	None	Both ends
PISO1	B204	Beam	None	None	None	None	None	Both ends
PISO1	B205	Beam	None	None	None	None	None	Both ends
PISO1	B206	Beam	None	None	None	None	None	Both ends
PISO1	B207	Beam	None	None	None	None	None	Both ends
PISO1	B219	Beam	None	None	None	None	None	Both ends
PISO1	B221	Beam	None	None	None	None	None	Both ends
PISO1	B222	Beam	None	None	None	None	None	Both ends
PISO1	B224	Beam	None	None	None	None	None	Both ends
PISO1	B226	Beam	None	None	None	None	None	Both ends
PISO1	B1618	Beam	None	I-end	None	None	None	I-end
PISO1	B1620	Beam	None	J-end	None	None	None	J-end
PISO1	B1621	Beam	None	I-end	None	None	None	I-end
PISO1	B1623	Beam	None	J-end	None	None	None	J-end

PISO1	B1624	Beam	None	I-end	None	None	None	I-end
PISO1	B1626	Beam	None	J-end	None	None	None	J-end
PISO1	B1627	Beam	None	I-end	None	None	None	I-end
PISO1	B1629	Beam	None	J-end	None	None	None	J-end
PISO1	B1632	Beam	None	I-end	None	None	None	I-end
PISO1	B1635	Beam	None	J-end	None	None	None	J-end
PISO1	B1636	Beam	None	None	None	None	None	I-end
PISO1	B1639	Beam	None	J-end	None	None	None	J-end
PISO1	B1762	Beam	None	None	None	None	None	Both ends
PISO1	B1764	Beam	None	None	None	None	None	Both ends
PISO1	B1766	Beam	None	None	None	None	None	Both ends
PISO1	B1782	Beam	None	None	None	None	None	Both ends
PISO1	B1866	Beam	None	None	None	None	None	I-end
PISO1	B1869	Beam	None	None	None	None	None	J-end
PISO1	B1870	Beam	None	None	None	None	None	I-end
PISO1	B1873	Beam	None	None	None	None	None	J-end
PISO1	B1874	Beam	None	None	None	None	None	I-end
PISO1	B1877	Beam	None	None	None	None	None	J-end

WALL, SLAB, DECK & OPENING ASSIGNMENTS TO AREA OBJECTS

STORY LEVEL	AREA ID	AREA TYPE	SECTION TYPE	SECTION LABEL
PISO2	W24	Wall	Wall	MURO25
PISO2	W31	Wall	Wall	MURO25
PISO2	W32	Wall	Wall	MURO25
PISO2	W33	Wall	Wall	MURO25
PISO2	W34	Wall	Wall	MURO25
PISO2	W35	Wall	Wall	MURO25
PISO2	W36	Wall	Wall	MURO25
PISO2	W37	Wall	Wall	MURO25
PISO2	W38	Wall	Wall	MURO25
PISO2	W39	Wall	Wall	MURO25
PISO2	W40	Wall	Wall	MURO25
PISO2	W41	Wall	Wall	MURO25
PISO2	W63	Wall	Wall	MURO25
PISO2	W66	Wall	Wall	MURO25
PISO2	W67	Wall	Wall	MURO25
PISO2	W68	Wall	Wall	MURO25
PISO2	W69	Wall	Wall	MURO25
PISO2	W71	Wall	Wall	MURO25
PISO2	W72	Wall	Wall	MURO25
PISO2	W73	Wall	Wall	MURO25
PISO2	W90	Wall	Wall	MURO25
PISO2	W91	Wall	Wall	MURO25
PISO2	W92	Wall	Wall	MURO25
PISO2	W104	Wall	Wall	MURO25
PISO2	W105	Wall	Wall	MURO25
PISO2	W106	Wall	Wall	MURO25
PISO2	W107	Wall	Wall	MURO25
PISO1	W55	Wall	Wall	MURO25
PISO1	W56	Wall	Wall	MURO25
PISO1	W57	Wall	Wall	MURO25
PISO1	W58	Wall	Wall	MURO25
PISO1	W59	Wall	Wall	MURO25
PISO1	W60	Wall	Wall	MURO25
PISO1	W88	Wall	Wall	MURO25
PISO1	W89	Wall	Wall	MURO25
PISO1	W93	Wall	Wall	MURO25
PISO1	W94	Wall	Wall	MURO25
PISO1	W95	Wall	Wall	MURO25
PISO1	W96	Wall	Wall	MURO25
PISO1	W97	Wall	Wall	MURO25
PISO1	W98	Wall	Wall	MURO25
PISO1	W99	Wall	Wall	MURO25
PISO1	W100	Wall	Wall	MURO25
PISO1	W101	Wall	Wall	MURO25
PISO1	W102	Wall	Wall	MURO25
PISO1	W103	Wall	Wall	MURO25
CUB	F31	Floor	Slab	PLACA15
CUB	F41	Floor	Slab	PLACA15
CUB	F51	Floor	Slab	PLACA15
CUB	F285	Floor	Slab	PLACA15
CUB	F286	Floor	Slab	PLACA15
CUB	F288	Floor	Slab	PLACA15
CUB	F289	Floor	Slab	PLACA15
CUB	F290	Floor	Slab	PLACA15
CUB	F291	Floor	Slab	PLACA15
CUB	F294	Floor	Slab	PLACA15
CUB	F295	Floor	Slab	PLACA15
CUB	F303	Floor	Slab	PLACA15
CUB	F304	Floor	Slab	PLACA15
CUB	F305	Floor	Slab	PLACA15
CUB	F306	Floor	Slab	PLACA15
CUB	F307	Floor	Slab	PLACA15
CUB	F308	Floor	Slab	PLACA15
CUB	F309	Floor	Slab	PLACA15
CUB	F310	Floor	Slab	PLACA15
CUB	F311	Floor	Slab	PLACA15
CUB	F312	Floor	Slab	PLACA15
CUB	F315	Floor	Slab	PLACA15
CUB	F326	Floor	Slab	PLACA15
CUB	F329	Floor	Slab	PLACA15
CUB	F332	Floor	Slab	PLACA15
CUB	F333	Floor	Slab	PLACA15
CUB	F334	Floor	Slab	PLACA15
CUB	F335	Floor	Slab	PLACA15
CUB	F464	Floor	Slab	PLACA15
CUB	F466	Floor	Slab	PLACA15
CUB	F467	Floor	Slab	PLACA15
CUB	F468	Floor	Slab	PLACA15
CUB	F469	Floor	Slab	PLACA15
CUB	F470	Floor	Slab	PLACA15
CUB	F471	Floor	Slab	PLACA15
CUB	F472	Floor	Slab	PLACA15
CUB	F473	Floor	Slab	PLACA15
CUB	F475	Floor	Slab	PLACA15
CUB	F476	Floor	Slab	PLACA15
CUB	F477	Floor	Slab	PLACA15
CUB	F479	Floor	Slab	PLACA15
CUB	F480	Floor	Slab	PLACA15
CUB	F481	Floor	Slab	PLACA15
CUB	F482	Floor	Slab	PLACA15
CUB	F483	Floor	Slab	PLACA15
CUB	F486	Floor	Slab	PLACA15
CUB	F487	Floor	Slab	PLACA15
CUB	F489	Floor	Slab	PLACA15
CUB	F490	Floor	Slab	PLACA15
CUB	F491	Floor	Slab	PLACA15
CUB	F492	Floor	Slab	PLACA15
CUB	F493	Floor	Slab	PLACA15
CUB	F494	Floor	Slab	PLACA15
CUB	F495	Floor	Slab	PLACA15
CUB	F496	Floor	Slab	PLACA15
CUB	F497	Floor	Slab	PLACA15
CUB	F498	Floor	Slab	PLACA15
CUB	F499	Floor	Slab	PLACA15
CUB	F500	Floor	Slab	PLACA15
CUB	F501	Floor	Slab	PLACA15
CUB	F502	Floor	Slab	PLACA15
CUB	F503	Floor	Slab	PLACA15
CUB	F504	Floor	Slab	PLACA15
CUB	F505	Floor	Slab	PLACA15
CUB	F506	Floor	Slab	PLACA15
PISO2	F1	Floor	Slab	PLACA12
PISO2	F2	Floor	Slab	PLACA12
PISO2	F3	Floor	Slab	PLACA12
PISO2	F4	Floor	Slab	PLACA12
PISO2	F5	Floor	Slab	PLACA12
PISO2	F6	Floor	Slab	PLACA12
PISO2	F7	Floor	Slab	PLACA12
PISO2	F9	Floor	Slab	PLACA12
PISO2	F11	Floor	Slab	PLACA12
PISO2	F12	Floor	Slab	PLACA12
PISO2	F13	Floor	Slab	PLACA12
PISO2	F14	Floor	Slab	PLACA12
PISO2	F15	Floor	Slab	PLACA12
PISO2	F16	Floor	Slab	PLACA12
PISO2	F18	Floor	Slab	PLACA12
PISO2	F19	Floor	Slab	PLACA12
PISO2	F20	Floor	Slab	PLACA12
PISO2	F21	Floor	Slab	PLACA12
PISO2	F31	Floor	Slab	PLACA12
PISO2	F51	Floor	Slab	PLACA12
PISO2	F62	Floor	Slab	PLACA12
PISO2	F63	Floor	Slab	PLACA12
PISO2	F64	Floor	Slab	PLACA12
PISO2	F65	Floor	Slab	PLACA12
PISO2	F66	Floor	Slab	PLACA12
PISO2	F67	Floor	Slab	PLACA12
PISO2	F68	Floor	Slab	PLACA12
PISO2	F79	Floor	Slab	PLACA12
PISO2	F80	Floor	Slab	PLACA12
PISO2	F81	Floor	Slab	PLACA12
PISO2	F82	Floor	Slab	PLACA12
PISO2	F86	Floor	Slab	PLACA12
PISO2	F87	Floor	Slab	PLACA12
PISO2	F88	Floor	Slab	PLACA12
PISO2	F89	Floor	Slab	PLACA12
PISO2	F90	Floor	Slab	PLACA12
PISO2	F91	Floor	Slab	PLACA12
PISO2	F92	Floor	Slab	PLACA12
PISO2	F93	Floor	Slab	PLACA12
PISO2	F94	Floor	Slab	PLACA12
PISO2	F100	Floor	Slab	PLACA12
PISO2	F101	Floor	Slab	PLACA12
PISO2	F102	Floor	Slab	PLACA12
PISO2	F103	Floor	Slab	PLACA12
PISO2	F104	Floor	Slab	PLACA12
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PISO2	F124	Floor	Slab	PLACA12
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PISO2	F126	Floor	Slab	PLACA12
PISO2	F127	Floor	Slab	PLACA12
PISO2	F128	Floor	Slab	PLACA12
PISO2	F129	Floor	Slab	PLACA12
PISO2	F130	Floor	Slab	PLACA12
PISO2	F131	Floor	Slab	PLACA12
PISO2	F132	Floor	Slab	PLACA12
PISO2	F133	Floor	Slab	PLACA12
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PISO2	F141	Floor	Slab	PLACA12
PISO2	F142	Floor	Slab	PLACA12
PISO2	F143	Floor	Slab	PLACA12
PISO2	F144	Floor	Slab	PLACA12
PISO2	F145	Floor	Slab	PLACA12
PISO2	F146	Floor	Slab	PLACA12
PISO2	F147	Floor	Slab	PLACA12
PISO2	F148	Floor	Slab	PLACA12
PISO2	F149	Floor	Slab	PLACA12
PISO2	F150	Floor	Slab	PLACA12
PISO2	F151	Floor	Slab	PLACA12
PISO2	F152	Floor	Slab	PLACA12

PISO2	F153	Floor	Slab	PLACA12
PISO2	F155	Floor	Slab	PLACA12
PISO2	F156	Floor	Slab	PLACA12
PISO2	F157	Floor	Slab	PLACA12
PISO2	F158	Floor	Slab	PLACA12
PISO2	F159	Floor	Slab	PLACA12
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PISO2	F162	Floor	Slab	PLACA12
PISO2	F163	Floor	Slab	PLACA12
PISO2	F164	Floor	Slab	PLACA12
PISO2	F167	Floor	Slab	PLACA12
PISO2	F168	Floor	Slab	PLACA12
PISO2	F169	Floor	Slab	PLACA12
PISO2	F171	Floor	Slab	PLACA12
PISO2	F173	Floor	Slab	PLACA12
PISO2	F174	Floor	Slab	PLACA12
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PISO2	F177	Floor	Slab	PLACA12
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PISO2	F211	Floor	Slab	PLACA12
PISO2	F212	Floor	Slab	PLACA12
PISO2	F213	Floor	Slab	PLACA12
PISO2	F214	Floor	Slab	PLACA12
PISO2	F218	Floor	Slab	PLACA12
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PISO2	F226	Floor	Slab	PLACA12
PISO2	F227	Floor	Slab	PLACA12
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PISO2	F252	Floor	Slab	PLACA12
PISO2	F253	Floor	Slab	PLACA12
PISO2	F255	Floor	Slab	PLACA12
PISO2	F256	Floor	Slab	PLACA12
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PISO2	F265	Floor	Slab	PLACA12
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PISO2	F324	Floor	Slab	PLACA15
PISO2	F362	Floor	Slab	PLACA12
PISO2	F366	Floor	Slab	PLACA12
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PISO2	F428	Floor	Slab	PLACA12
PISO2	F429	Floor	Slab	PLACA12
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PISO2	F442	Floor	Slab	PLACA12
PISO2	F443	Floor	Slab	PLACA12
PISO2	F444	Floor	Slab	PLACA12
PISO2	F457	Floor	Slab	PLACA12
PISO2	F458	Floor	Slab	PLACA12
PISO2	F459	Floor	Slab	PLACA12
PISO2	F460	Floor	Slab	PLACA12
PISO2	F461	Floor	Slab	PLACA12
PISO1	F1	Floor	Slab	PLACA12
PISO1	F2	Floor	Slab	PLACA12
PISO1	F3	Floor	Slab	PLACA12
PISO1	F4	Floor	Slab	PLACA12
PISO1	F5	Floor	Slab	PLACA12
PISO1	F6	Floor	Slab	PLACA12
PISO1	F7	Floor	Slab	PLACA12
PISO1	F9	Floor	Slab	PLACA12
PISO1	F11	Floor	Slab	PLACA12
PISO1	F12	Floor	Slab	PLACA12
PISO1	F13	Floor	Slab	PLACA12
PISO1	F14	Floor	Slab	PLACA12
PISO1	F15	Floor	Slab	PLACA12
PISO1	F16	Floor	Slab	PLACA12
PISO1	F18	Floor	Slab	PLACA12
PISO1	F19	Floor	Slab	PLACA12
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PISO1	F25	Floor	Slab	PLACA12
PISO1	F26	Floor	Slab	PLACA12
PISO1	F27	Floor	Slab	PLACA12
PISO1	F28	Floor	Slab	PLACA12
PISO1	F29	Floor	Slab	PLACA12
PISO1	F30	Floor	Slab	PLACA12
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PISO1	F33	Floor	Slab	PLACA12
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PISO1	F45	Floor	Slab	PLACA12
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PISO1	F47	Floor	Slab	PLACA12
PISO1	F48	Floor	Slab	PLACA12
PISO1	F49	Floor	Slab	PLACA12
PISO1	F50	Floor	Slab	PLACA12
PISO1	F51	Floor	Slab	PLACA12
PISO1	F53	Floor	Slab	PLACA12
PISO1	F54	Floor	Slab	PLACA12
PISO1	F55	Floor	Slab	PLACA12
PISO1	F57	Floor	Slab	PLACA12
PISO1	F60	Floor	Slab	PLACA12
PISO1	F62	Floor	Slab	PLACA12
PISO1	F63	Floor	Slab	PLACA12
PISO1	F64	Floor	Slab	PLACA12
PISO1	F67	Floor	Slab	PLACA12
PISO1	F69	Floor	Slab	PLACA12
PISO1	F70	Floor	Slab	PLACA12
PISO1	F71	Floor	Slab	PLACA12
PISO1	F72	Floor	Slab	PLACA12
PISO1	F74	Floor	Slab	PLACA12
PISO1	F77	Floor	Slab	PLACA12
PISO1	F80	Floor	Slab	PLACA12
PISO1	F81	Floor	Slab	PLACA12
PISO1	F83	Floor	Slab	PLACA12
PISO1	F361	Floor	Slab	PLACA12
PISO1	F396	Floor	Slab	PLACA12
PISO1	F397	Floor	Slab	PLACA12
PISO1	F413	Floor	Slab	PLACA12
PISO1	F414	Floor	Slab	PLACA12
PISO1	F415	Floor	Slab	PLACA12
PISO1	F416	Floor	Slab	PLACA12
PISO1	F417	Floor	Slab	PLACA12
PISO1	F418	Floor	Slab	PLACA12
PISO1	F419	Floor	Slab	PLACA12
PISO1	F420	Floor	Slab	PLACA12
PISO1	F421	Floor	Slab	PLACA12
PISO1	F445	Floor	Slab	PLACA12
PISO1	F446	Floor	Slab	PLACA12
PISO1	F447	Floor	Slab	PLACA12
PISO1	F448	Floor	Slab	PLACA12
PISO1	F449	Floor	Slab	PLACA12
PISO1	F450	Floor	Slab	PLACA12
PISO1	F451	Floor	Slab	PLACA12
PISO1	F452	Floor	Slab	PLACA12
PISO1	F453	Floor	Slab	PLACA12
PISO1	F454	Floor	Slab	PLACA12

PISO1 F455 Floor Slab PLACA12
PISO1 F456 Floor Slab PLACA12

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

CASE	STORY	AREA	AREATYPE	DIRECTION	LOAD
DEAD	CUB	F31	Floor	Gravity	0.3300
DEAD	CUB	F41	Floor	Gravity	0.3000
DEAD	CUB	F51	Floor	Gravity	0.3000
DEAD	CUB	F285	Floor	Gravity	0.2950
DEAD	CUB	F286	Floor	Gravity	0.2950
DEAD	CUB	F288	Floor	Gravity	0.2950
DEAD	CUB	F289	Floor	Gravity	0.2950
DEAD	CUB	F290	Floor	Gravity	0.2950
DEAD	CUB	F291	Floor	Gravity	0.2950
DEAD	CUB	F294	Floor	Gravity	0.2950
DEAD	CUB	F295	Floor	Gravity	0.2950
DEAD	CUB	F303	Floor	Gravity	0.2950
DEAD	CUB	F304	Floor	Gravity	0.2950
DEAD	CUB	F305	Floor	Gravity	0.2950
DEAD	CUB	F306	Floor	Gravity	0.2950
DEAD	CUB	F307	Floor	Gravity	0.2950
DEAD	CUB	F308	Floor	Gravity	0.2950
DEAD	CUB	F309	Floor	Gravity	0.2950
DEAD	CUB	F310	Floor	Gravity	0.2950
DEAD	CUB	F311	Floor	Gravity	0.2950
DEAD	CUB	F312	Floor	Gravity	0.2950
DEAD	CUB	F315	Floor	Gravity	0.3300
DEAD	CUB	F326	Floor	Gravity	0.2950
DEAD	CUB	F329	Floor	Gravity	0.2950
DEAD	CUB	F332	Floor	Gravity	0.2950
DEAD	CUB	F333	Floor	Gravity	0.2950
DEAD	CUB	F334	Floor	Gravity	0.2950
DEAD	CUB	F335	Floor	Gravity	0.2950
DEAD	CUB	F464	Floor	Gravity	0.2950
DEAD	CUB	F466	Floor	Gravity	0.2950
DEAD	CUB	F467	Floor	Gravity	0.2950
DEAD	CUB	F468	Floor	Gravity	0.2950
DEAD	CUB	F469	Floor	Gravity	0.2950
DEAD	CUB	F470	Floor	Gravity	0.2950
DEAD	CUB	F471	Floor	Gravity	0.2950
DEAD	CUB	F472	Floor	Gravity	0.2950
DEAD	CUB	F473	Floor	Gravity	0.2950
DEAD	CUB	F475	Floor	Gravity	0.2950
DEAD	CUB	F476	Floor	Gravity	0.2950
DEAD	CUB	F477	Floor	Gravity	0.2950
DEAD	CUB	F479	Floor	Gravity	0.2950
DEAD	CUB	F480	Floor	Gravity	0.2950
DEAD	CUB	F481	Floor	Gravity	0.2950
DEAD	CUB	F482	Floor	Gravity	0.3080
DEAD	CUB	F483	Floor	Gravity	0.3080
DEAD	CUB	F486	Floor	Gravity	0.3180
DEAD	CUB	F487	Floor	Gravity	0.3180
DEAD	CUB	F489	Floor	Gravity	0.3300
DEAD	CUB	F490	Floor	Gravity	0.2950
DEAD	CUB	F491	Floor	Gravity	0.2950
DEAD	CUB	F492	Floor	Gravity	0.2950
DEAD	CUB	F493	Floor	Gravity	0.2950
DEAD	CUB	F494	Floor	Gravity	0.2950
DEAD	CUB	F495	Floor	Gravity	0.2950
DEAD	CUB	F496	Floor	Gravity	0.2950
DEAD	CUB	F497	Floor	Gravity	0.2950
DEAD	CUB	F498	Floor	Gravity	0.2950
DEAD	CUB	F499	Floor	Gravity	0.3080
DEAD	CUB	F500	Floor	Gravity	0.3080
DEAD	CUB	F501	Floor	Gravity	0.2950
DEAD	CUB	F502	Floor	Gravity	0.2950
DEAD	CUB	F503	Floor	Gravity	0.3180
DEAD	CUB	F504	Floor	Gravity	0.3180
DEAD	CUB	F505	Floor	Gravity	0.2950
DEAD	CUB	F506	Floor	Gravity	0.2950
DEAD	PISO2	F1	Floor	Gravity	0.8170
DEAD	PISO2	F2	Floor	Gravity	0.8170
DEAD	PISO2	F3	Floor	Gravity	0.8170
DEAD	PISO2	F4	Floor	Gravity	0.8170
DEAD	PISO2	F5	Floor	Gravity	0.8170
DEAD	PISO2	F6	Floor	Gravity	0.8170
DEAD	PISO2	F7	Floor	Gravity	0.8170
DEAD	PISO2	F9	Floor	Gravity	0.8170
DEAD	PISO2	F11	Floor	Gravity	0.8170
DEAD	PISO2	F12	Floor	Gravity	0.8170
DEAD	PISO2	F13	Floor	Gravity	0.8170
DEAD	PISO2	F14	Floor	Gravity	0.8170
DEAD	PISO2	F15	Floor	Gravity	0.8170
DEAD	PISO2	F16	Floor	Gravity	0.8170
DEAD	PISO2	F18	Floor	Gravity	0.8170
DEAD	PISO2	F19	Floor	Gravity	0.8170
DEAD	PISO2	F20	Floor	Gravity	0.8170
DEAD	PISO2	F21	Floor	Gravity	0.8170
DEAD	PISO2	F31	Floor	Gravity	0.8170
DEAD	PISO2	F51	Floor	Gravity	0.8170
DEAD	PISO2	F62	Floor	Gravity	0.8170
DEAD	PISO2	F63	Floor	Gravity	0.8170
DEAD	PISO2	F64	Floor	Gravity	0.8170
DEAD	PISO2	F65	Floor	Gravity	0.8170
DEAD	PISO2	F66	Floor	Gravity	0.8170
DEAD	PISO2	F67	Floor	Gravity	0.8170
DEAD	PISO2	F68	Floor	Gravity	0.8170
DEAD	PISO2	F79	Floor	Gravity	0.8170
DEAD	PISO2	F80	Floor	Gravity	0.8170
DEAD	PISO2	F81	Floor	Gravity	0.8170
DEAD	PISO2	F82	Floor	Gravity	0.8170
DEAD	PISO2	F86	Floor	Gravity	0.8170
DEAD	PISO2	F87	Floor	Gravity	0.8170
DEAD	PISO2	F88	Floor	Gravity	0.8170
DEAD	PISO2	F89	Floor	Gravity	0.8170
DEAD	PISO2	F90	Floor	Gravity	0.8170
DEAD	PISO2	F91	Floor	Gravity	0.8170
DEAD	PISO2	F92	Floor	Gravity	0.8170
DEAD	PISO2	F93	Floor	Gravity	0.8170
DEAD	PISO2	F94	Floor	Gravity	0.8170
DEAD	PISO2	F100	Floor	Gravity	0.8170
DEAD	PISO2	F101	Floor	Gravity	0.8170
DEAD	PISO2	F102	Floor	Gravity	0.8170
DEAD	PISO2	F103	Floor	Gravity	0.8170
DEAD	PISO2	F104	Floor	Gravity	0.8170
DEAD	PISO2	F105	Floor	Gravity	0.8170
DEAD	PISO2	F106	Floor	Gravity	0.8170
DEAD	PISO2	F107	Floor	Gravity	0.8170
DEAD	PISO2	F108	Floor	Gravity	0.8170
DEAD	PISO2	F109	Floor	Gravity	0.8170
DEAD	PISO2	F110	Floor	Gravity	0.8170
DEAD	PISO2	F111	Floor	Gravity	0.8170
DEAD	PISO2	F112	Floor	Gravity	0.8170
DEAD	PISO2	F113	Floor	Gravity	0.8170
DEAD	PISO2	F114	Floor	Gravity	0.8170
DEAD	PISO2	F115	Floor	Gravity	0.8170
DEAD	PISO2	F116	Floor	Gravity	0.8170
DEAD	PISO2	F117	Floor	Gravity	0.8170
DEAD	PISO2	F118	Floor	Gravity	0.8170
DEAD	PISO2	F119	Floor	Gravity	0.8170
DEAD	PISO2	F120	Floor	Gravity	0.8170
DEAD	PISO2	F121	Floor	Gravity	0.8170
DEAD	PISO2	F122	Floor	Gravity	0.8170
DEAD	PISO2	F123	Floor	Gravity	0.8170
DEAD	PISO2	F124	Floor	Gravity	0.8170
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DEAD	PISO2	F126	Floor	Gravity	0.8170
DEAD	PISO2	F127	Floor	Gravity	0.8170
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DEAD	PISO2	F130	Floor	Gravity	0.8170
DEAD	PISO2	F131	Floor	Gravity	0.8170
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DEAD	PISO2	F136	Floor	Gravity	0.8170
DEAD	PISO2	F137	Floor	Gravity	0.8170
DEAD	PISO2	F138	Floor	Gravity	0.8170
DEAD	PISO2	F139	Floor	Gravity	0.8170
DEAD	PISO2	F140	Floor	Gravity	0.8170
DEAD	PISO2	F141	Floor	Gravity	0.8170
DEAD	PISO2	F142	Floor	Gravity	0.8170
DEAD	PISO2	F143	Floor	Gravity	0.8170
DEAD	PISO2	F144	Floor	Gravity	0.8170
DEAD	PISO2	F145	Floor	Gravity	0.8170
DEAD	PISO2	F146	Floor	Gravity	0.8170
DEAD	PISO2	F147	Floor	Gravity	0.8170
DEAD	PISO2	F148	Floor	Gravity	0.8170
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DEAD	PISO2	F151	Floor	Gravity	0.8170
DEAD	PISO2	F152	Floor	Gravity	0.8170
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DEAD	PISO2	F162	Floor	Gravity	0.8170
DEAD	PISO2	F163	Floor	Gravity	0.8170
DEAD	PISO2	F164	Floor	Gravity	0.8170
DEAD	PISO2	F167	Floor	Gravity	0.8170
DEAD	PISO2	F168	Floor	Gravity	0.8170
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DEAD	PISO2	F171	Floor	Gravity	0.8170
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DEAD	PISO2	F175	Floor	Gravity	0.8170
DEAD	PISO2	F176	Floor	Gravity	0.8170
DEAD	PISO2	F177	Floor	Gravity	0.8170
DEAD	PISO2	F179	Floor	Gravity	0.8170
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DEAD	PISO2	F181	Floor	Gravity	0.8170
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DEAD	PISO2	F183	Floor	Gravity	0.8170
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DEAD	PISO2	F187	Floor	Gravity	0.8170
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DEAD	PISO2	F190	Floor	Gravity	0.8170
DEAD	PISO2	F192	Floor	Gravity	0.8170
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DEAD	PISO2	F202	Floor	Gravity	0.8170
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DEAD	PISO2	F209	Floor	Gravity	0.8170
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DEAD	PISO2	F218	Floor	Gravity	0.8170
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DEAD	PISO2	F226	Floor	Gravity	0.8170

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DEAD	PISO2	F316	Floor	Gravity	0.1950
DEAD	PISO2	F317	Floor	Gravity	0.1950
DEAD	PISO2	F318	Floor	Gravity	0.1950
DEAD	PISO2	F319	Floor	Gravity	0.1950
DEAD	PISO2	F320	Floor	Gravity	0.1950
DEAD	PISO2	F321	Floor	Gravity	0.1950
DEAD	PISO2	F322	Floor	Gravity	0.1950
DEAD	PISO2	F323	Floor	Gravity	0.1950
DEAD	PISO2	F324	Floor	Gravity	0.1950
DEAD	PISO2	F362	Floor	Gravity	0.8170
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DEAD	PISO2	F428	Floor	Gravity	0.8170
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DEAD	PISO2	F444	Floor	Gravity	0.8170
DEAD	PISO2	F457	Floor	Gravity	0.8170
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DEAD	PISO2	F459	Floor	Gravity	0.8170
DEAD	PISO2	F460	Floor	Gravity	0.8170
DEAD	PISO2	F461	Floor	Gravity	0.8170
DEAD	PISO1	F1	Floor	Gravity	0.8970
DEAD	PISO1	F2	Floor	Gravity	0.8970
DEAD	PISO1	F3	Floor	Gravity	0.8970
DEAD	PISO1	F4	Floor	Gravity	0.8970
DEAD	PISO1	F5	Floor	Gravity	0.8970
DEAD	PISO1	F6	Floor	Gravity	0.8970
DEAD	PISO1	F7	Floor	Gravity	0.8970
DEAD	PISO1	F9	Floor	Gravity	0.8970
DEAD	PISO1	F11	Floor	Gravity	0.8970
DEAD	PISO1	F12	Floor	Gravity	0.8970
DEAD	PISO1	F13	Floor	Gravity	0.8970
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DEAD	PISO1	F23	Floor	Gravity	0.8970
DEAD	PISO1	F24	Floor	Gravity	0.8970
DEAD	PISO1	F25	Floor	Gravity	0.8970
DEAD	PISO1	F26	Floor	Gravity	0.8970
DEAD	PISO1	F27	Floor	Gravity	0.8970
DEAD	PISO1	F28	Floor	Gravity	0.8970
DEAD	PISO1	F29	Floor	Gravity	0.8970
DEAD	PISO1	F30	Floor	Gravity	0.8970
DEAD	PISO1	F31	Floor	Gravity	0.8970
DEAD	PISO1	F32	Floor	Gravity	0.8970
DEAD	PISO1	F33	Floor	Gravity	0.8970
DEAD	PISO1	F34	Floor	Gravity	0.8970
DEAD	PISO1	F35	Floor	Gravity	0.8970
DEAD	PISO1	F36	Floor	Gravity	0.8970
DEAD	PISO1	F38	Floor	Gravity	0.8970
DEAD	PISO1	F39	Floor	Gravity	0.8970
DEAD	PISO1	F40	Floor	Gravity	0.8970
DEAD	PISO1	F41	Floor	Gravity	0.8970
DEAD	PISO1	F42	Floor	Gravity	0.8970
DEAD	PISO1	F43	Floor	Gravity	0.8970
DEAD	PISO1	F44	Floor	Gravity	0.8970
DEAD	PISO1	F45	Floor	Gravity	0.8970
DEAD	PISO1	F46	Floor	Gravity	0.8970
DEAD	PISO1	F47	Floor	Gravity	0.8970
DEAD	PISO1	F48	Floor	Gravity	0.8970
DEAD	PISO1	F49	Floor	Gravity	0.8970
DEAD	PISO1	F50	Floor	Gravity	0.8970
DEAD	PISO1	F51	Floor	Gravity	0.8970
DEAD	PISO1	F53	Floor	Gravity	0.8970
DEAD	PISO1	F54	Floor	Gravity	0.8970
DEAD	PISO1	F55	Floor	Gravity	0.8970
DEAD	PISO1	F57	Floor	Gravity	0.8970
DEAD	PISO1	F60	Floor	Gravity	0.8970
DEAD	PISO1	F62	Floor	Gravity	0.8970
DEAD	PISO1	F63	Floor	Gravity	0.8970
DEAD	PISO1	F64	Floor	Gravity	0.8970
DEAD	PISO1	F67	Floor	Gravity	0.8970
DEAD	PISO1	F69	Floor	Gravity	0.8970
DEAD	PISO1	F70	Floor	Gravity	0.8970
DEAD	PISO1	F71	Floor	Gravity	0.8970
DEAD	PISO1	F72	Floor	Gravity	0.8970
DEAD	PISO1	F74	Floor	Gravity	0.8970
DEAD	PISO1	F77	Floor	Gravity	0.8970
DEAD	PISO1	F80	Floor	Gravity	0.8970
DEAD	PISO1	F81	Floor	Gravity	0.8970
DEAD	PISO1	F83	Floor	Gravity	0.8970
DEAD	PISO1	F361	Floor	Gravity	0.8970
DEAD	PISO1	F396	Floor	Gravity	0.8970
DEAD	PISO1	F397	Floor	Gravity	0.8970
DEAD	PISO1	F413	Floor	Gravity	0.8970
DEAD	PISO1	F414	Floor	Gravity	0.8970
DEAD	PISO1	F415	Floor	Gravity	0.8970
DEAD	PISO1	F416	Floor	Gravity	0.8970
DEAD	PISO1	F417	Floor	Gravity	0.8970
DEAD	PISO1	F418	Floor	Gravity	0.8970
DEAD	PISO1	F419	Floor	Gravity	0.8970
DEAD	PISO1	F420	Floor	Gravity	0.8970
DEAD	PISO1	F421	Floor	Gravity	0.8970
DEAD	PISO1	F445	Floor	Gravity	0.8970
DEAD	PISO1	F446	Floor	Gravity	0.8970
DEAD	PISO1	F447	Floor	Gravity	0.8970
DEAD	PISO1	F448	Floor	Gravity	0.8970
DEAD	PISO1	F449	Floor	Gravity	0.8970
DEAD	PISO1	F450	Floor	Gravity	0.8970
DEAD	PISO1	F451	Floor	Gravity	0.8970
DEAD	PISO1	F452	Floor	Gravity	0.8970
DEAD	PISO1	F453	Floor	Gravity	0.8970
DEAD	PISO1	F454	Floor	Gravity	0.8970
DEAD	PISO1	F455	Floor	Gravity	0.8970
DEAD	PISO1	F456	Floor	Gravity	0.8970
LIVE	CUB	F31	Floor	Gravity	0.1800
LIVE	CUB	F41	Floor	Gravity	0.1800
LIVE	CUB	F51	Floor	Gravity	0.1800
LIVE	CUB	F285	Floor	Gravity	0.1800
LIVE	CUB	F286	Floor	Gravity	0.1800
LIVE	CUB	F288	Floor	Gravity	0.1800
LIVE	CUB	F289	Floor	Gravity	0.1800
LIVE	CUB	F290	Floor	Gravity	0.1800
LIVE	CUB	F291	Floor	Gravity	0.1800
LIVE	CUB	F294	Floor	Gravity	0.1800
LIVE	CUB	F295	Floor	Gravity	0.1800
LIVE	CUB	F303	Floor	Gravity	0.1800
LIVE	CUB	F304	Floor	Gravity	0.1800
LIVE	CUB	F305	Floor	Gravity	0.1800
LIVE	CUB	F306	Floor	Gravity	0.1800
LIVE	CUB	F307	Floor	Gravity	0.1800
LIVE	CUB	F308	Floor	Gravity	0.1800
LIVE	CUB	F309	Floor	Gravity	0.1800
LIVE	CUB	F310	Floor	Gravity	0.1800
LIVE	CUB	F311	Floor	Gravity	0.1800
LIVE	CUB	F312	Floor	Gravity	0.1800
LIVE	CUB	F315	Floor	Gravity	0.1800
LIVE	CUB	F326	Floor	Gravity	0.1800
LIVE	CUB	F329	Floor	Gravity	0.1800
LIVE	CUB	F332	Floor	Gravity	0.1800
LIVE	CUB	F333	Floor	Gravity	0.1800
LIVE	CUB	F334	Floor	Gravity	0.1800
LIVE	CUB	F335	Floor	Gravity	0.1800
LIVE	CUB	F464	Floor	Gravity	0.1800
LIVE	CUB	F466	Floor	Gravity	0.1800
LIVE	CUB	F467	Floor	Gravity	0.1800
LIVE	CUB	F468	Floor	Gravity	0.1800
LIVE	CUB	F469	Floor	Gravity	0.1800
LIVE	CUB	F470	Floor	Gravity	0.1800
LIVE	CUB	F471	Floor	Gravity	0.1800
LIVE	CUB	F472	Floor	Gravity	0.1800
LIVE	CUB	F473	Floor	Gravity	0.1800
LIVE	CUB	F475	Floor	Gravity	0.1800
LIVE	CUB	F476	Floor	Gravity	0.1800
LIVE	CUB	F477	Floor	Gravity	0.1800
LIVE	CUB	F479	Floor	Gravity	0.1800
LIVE	CUB	F480	Floor	Gravity	0.1800
LIVE	CUB	F481	Floor	Gravity	0.1800
LIVE	CUB	F482	Floor	Gravity	0.1800
LIVE	CUB	F483	Floor	Gravity	0.3000
LIVE	CUB	F486	Floor	Gravity	0.1800
LIVE	CUB	F487	Floor	Gravity	0.3000
LIVE	CUB	F489	Floor	Gravity	0.3000
LIVE	CUB	F490	Floor	Gravity	0.1800
LIVE	CUB	F491	Floor	Gravity	0.1800
LIVE	CUB	F492	Floor	Gravity	0.1800
LIVE	CUB	F493	Floor	Gravity	0.1800
LIVE	CUB	F494	Floor	Gravity	0.1800
LIVE	CUB	F495	Floor	Gravity	0.1800
LIVE	CUB	F496	Floor	Gravity	0.1800
LIVE	CUB	F497	Floor	Gravity	0.1800
LIVE	CUB	F498	Floor	Gravity	0.1800
LIVE	CUB	F499	Floor	Gravity	0.3000
LIVE	CUB	F500	Floor	Gravity	0.1800
LIVE	CUB	F501	Floor	Gravity	0.1800
LIVE	CUB	F502	Floor	Gravity	0.1800

LIVE	CUB	F503	Floor	Gravity	0.1800
LIVE	CUB	F504	Floor	Gravity	0.3000
LIVE	CUB	F505	Floor	Gravity	0.1800
LIVE	CUB	F506	Floor	Gravity	0.1800
LIVE	PISO2	F1	Floor	Gravity	0.5000
LIVE	PISO2	F2	Floor	Gravity	0.5000
LIVE	PISO2	F3	Floor	Gravity	0.5000
LIVE	PISO2	F4	Floor	Gravity	0.5000
LIVE	PISO2	F5	Floor	Gravity	0.5000
LIVE	PISO2	F6	Floor	Gravity	0.5000
LIVE	PISO2	F7	Floor	Gravity	0.5000
LIVE	PISO2	F9	Floor	Gravity	0.5000
LIVE	PISO2	F11	Floor	Gravity	0.5000
LIVE	PISO2	F12	Floor	Gravity	0.5000
LIVE	PISO2	F13	Floor	Gravity	0.5000
LIVE	PISO2	F14	Floor	Gravity	0.5000
LIVE	PISO2	F15	Floor	Gravity	0.5000
LIVE	PISO2	F16	Floor	Gravity	0.5000
LIVE	PISO2	F18	Floor	Gravity	0.5000
LIVE	PISO2	F19	Floor	Gravity	0.5000
LIVE	PISO2	F20	Floor	Gravity	0.5000
LIVE	PISO2	F21	Floor	Gravity	0.5000
LIVE	PISO2	F31	Floor	Gravity	0.5000
LIVE	PISO2	F51	Floor	Gravity	0.5000
LIVE	PISO2	F62	Floor	Gravity	0.5000
LIVE	PISO2	F63	Floor	Gravity	0.5000
LIVE	PISO2	F64	Floor	Gravity	0.5000
LIVE	PISO2	F65	Floor	Gravity	0.5000
LIVE	PISO2	F66	Floor	Gravity	0.5000
LIVE	PISO2	F67	Floor	Gravity	0.5000
LIVE	PISO2	F68	Floor	Gravity	0.5000
LIVE	PISO2	F79	Floor	Gravity	0.5000
LIVE	PISO2	F80	Floor	Gravity	0.5000
LIVE	PISO2	F81	Floor	Gravity	0.5000
LIVE	PISO2	F82	Floor	Gravity	0.5000
LIVE	PISO2	F86	Floor	Gravity	0.5000
LIVE	PISO2	F87	Floor	Gravity	0.5000
LIVE	PISO2	F88	Floor	Gravity	0.5000
LIVE	PISO2	F89	Floor	Gravity	0.5000
LIVE	PISO2	F90	Floor	Gravity	0.5000
LIVE	PISO2	F91	Floor	Gravity	0.5000
LIVE	PISO2	F92	Floor	Gravity	0.5000
LIVE	PISO2	F93	Floor	Gravity	0.5000
LIVE	PISO2	F94	Floor	Gravity	0.5000
LIVE	PISO2	F100	Floor	Gravity	0.5000
LIVE	PISO2	F101	Floor	Gravity	0.5000
LIVE	PISO2	F102	Floor	Gravity	0.5000
LIVE	PISO2	F103	Floor	Gravity	0.5000
LIVE	PISO2	F104	Floor	Gravity	0.5000
LIVE	PISO2	F105	Floor	Gravity	0.5000
LIVE	PISO2	F106	Floor	Gravity	0.5000
LIVE	PISO2	F107	Floor	Gravity	0.5000
LIVE	PISO2	F108	Floor	Gravity	0.5000
LIVE	PISO2	F109	Floor	Gravity	0.5000
LIVE	PISO2	F110	Floor	Gravity	0.5000
LIVE	PISO2	F111	Floor	Gravity	0.5000
LIVE	PISO2	F112	Floor	Gravity	0.5000
LIVE	PISO2	F113	Floor	Gravity	0.5000
LIVE	PISO2	F114	Floor	Gravity	0.5000
LIVE	PISO2	F115	Floor	Gravity	0.5000
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LIVE	PISO2	F118	Floor	Gravity	0.5000
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LIVE	PISO2	F146	Floor	Gravity	0.5000
LIVE	PISO2	F147	Floor	Gravity	0.5000
LIVE	PISO2	F148	Floor	Gravity	0.5000
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LIVE	PISO2	F181	Floor	Gravity	0.5000
LIVE	PISO2	F182	Floor	Gravity	0.5000
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LIVE	PISO2	F192	Floor	Gravity	0.5000
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LIVE	PISO2	F439	Floor	Gravity	0.5000

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LIVE	PISO2	F441	Floor	Gravity	0.5000
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LIVE	PISO2	F443	Floor	Gravity	0.5000
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LIVE	PISO2	F457	Floor	Gravity	0.5000
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LIVE	PISO2	F461	Floor	Gravity	0.5000
LIVE	PISO1	F1	Floor	Gravity	0.5000
LIVE	PISO1	F2	Floor	Gravity	0.5000
LIVE	PISO1	F3	Floor	Gravity	0.5000
LIVE	PISO1	F4	Floor	Gravity	0.5000
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LIVE	PISO1	F6	Floor	Gravity	0.5000
LIVE	PISO1	F7	Floor	Gravity	0.5000
LIVE	PISO1	F9	Floor	Gravity	0.5000
LIVE	PISO1	F11	Floor	Gravity	0.2000
LIVE	PISO1	F12	Floor	Gravity	0.2000
LIVE	PISO1	F13	Floor	Gravity	0.2000
LIVE	PISO1	F14	Floor	Gravity	0.2000
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LIVE	PISO1	F30	Floor	Gravity	0.2000
LIVE	PISO1	F31	Floor	Gravity	0.2000
LIVE	PISO1	F32	Floor	Gravity	0.2000
LIVE	PISO1	F33	Floor	Gravity	0.2000
LIVE	PISO1	F34	Floor	Gravity	0.2000
LIVE	PISO1	F35	Floor	Gravity	0.2000
LIVE	PISO1	F36	Floor	Gravity	0.2000
LIVE	PISO1	F38	Floor	Gravity	0.2000
LIVE	PISO1	F39	Floor	Gravity	0.2000
LIVE	PISO1	F40	Floor	Gravity	0.2000
LIVE	PISO1	F41	Floor	Gravity	0.2000
LIVE	PISO1	F42	Floor	Gravity	0.2000
LIVE	PISO1	F43	Floor	Gravity	0.2000
LIVE	PISO1	F44	Floor	Gravity	0.2000
LIVE	PISO1	F45	Floor	Gravity	0.2000
LIVE	PISO1	F46	Floor	Gravity	0.2000
LIVE	PISO1	F47	Floor	Gravity	0.2000
LIVE	PISO1	F48	Floor	Gravity	0.2000
LIVE	PISO1	F49	Floor	Gravity	0.2000
LIVE	PISO1	F50	Floor	Gravity	0.2000
LIVE	PISO1	F51	Floor	Gravity	0.2000
LIVE	PISO1	F53	Floor	Gravity	0.5000
LIVE	PISO1	F54	Floor	Gravity	0.2000
LIVE	PISO1	F55	Floor	Gravity	0.5000
LIVE	PISO1	F57	Floor	Gravity	0.5000
LIVE	PISO1	F60	Floor	Gravity	0.5000
LIVE	PISO1	F62	Floor	Gravity	0.5000
LIVE	PISO1	F63	Floor	Gravity	0.5000
LIVE	PISO1	F64	Floor	Gravity	0.5000
LIVE	PISO1	F67	Floor	Gravity	0.5000
LIVE	PISO1	F69	Floor	Gravity	0.2000
LIVE	PISO1	F70	Floor	Gravity	0.2000
LIVE	PISO1	F71	Floor	Gravity	0.2000
LIVE	PISO1	F72	Floor	Gravity	0.5000
LIVE	PISO1	F74	Floor	Gravity	0.5000
LIVE	PISO1	F77	Floor	Gravity	0.5000
LIVE	PISO1	F80	Floor	Gravity	0.5000
LIVE	PISO1	F81	Floor	Gravity	0.5000
LIVE	PISO1	F83	Floor	Gravity	0.2000
LIVE	PISO1	F361	Floor	Gravity	0.5000
LIVE	PISO1	F396	Floor	Gravity	0.2000
LIVE	PISO1	F397	Floor	Gravity	0.5000
LIVE	PISO1	F413	Floor	Gravity	0.5000
LIVE	PISO1	F414	Floor	Gravity	0.5000
LIVE	PISO1	F415	Floor	Gravity	0.5000
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LIVE	PISO1	F417	Floor	Gravity	0.5000
LIVE	PISO1	F418	Floor	Gravity	0.5000
LIVE	PISO1	F419	Floor	Gravity	0.5000
LIVE	PISO1	F420	Floor	Gravity	0.5000
LIVE	PISO1	F421	Floor	Gravity	0.5000
LIVE	PISO1	F445	Floor	Gravity	0.5000
LIVE	PISO1	F446	Floor	Gravity	0.5000
LIVE	PISO1	F447	Floor	Gravity	0.5000
LIVE	PISO1	F448	Floor	Gravity	0.5000
LIVE	PISO1	F449	Floor	Gravity	0.5000
LIVE	PISO1	F450	Floor	Gravity	0.5000
LIVE	PISO1	F451	Floor	Gravity	0.5000
LIVE	PISO1	F452	Floor	Gravity	0.5000
LIVE	PISO1	F453	Floor	Gravity	0.5000
LIVE	PISO1	F454	Floor	Gravity	0.5000
LIVE	PISO1	F455	Floor	Gravity	0.5000
LIVE	PISO1	F456	Floor	Gravity	0.5000

BLOQUE 2

ANÁLISIS SÍSMICO

DESCRIPCION GENERAL DEL PROYECTO ESTRUCTURAL

DATOS GENERALES:

NOMBRE DEL PROYECTO:	**HOSPITAL SAN JUAN BAUTISTA (BLOQUE 2)**
CIUDAD:	**CHAPARRAL**
CALCULO:	**D.O.R**
REVISO:	**D.O.R**
FECHA:	**25/11/2020**
OBSERVACIONES:	
LOCALIZACION:	**CHAPARRAL TOLIMA**
SISTEMA ESTRUCTURAL:	**Pórticos de concreto**
CAPACIDAD DE DISIPACION:	**DES**
NUMERO DE PISOS	**3**

DESCRIPCION DEL PROYECTO:

El proyecto arquitectónico consta de 3 niveles, el cual estara destinado para uso del Hospital San Juan Bautista del municipio de Chaparral Tolima.

El sistema estructural utilizado para resistir cargas verticales y laterales (sísmicas), es el de pórticos de concreto reforzado, con placa de entrepiso de 50 cm de espesor aligerada y armada en una dirección, cuyo uso esta definido en las Normas Colombianas de construcciones sismoresistentes- NSR-10.

La cimentación consiste en zapatas aisladas, según recomendación del estudio de suelos de la firma Laboratorio de suelos y pavimentos GAIA

DESCRIPCION DEL PROGRAMA DE COMPUTADOR:

El programa utilizado para el procesamiento del edificio es ETABS Versión 9.2 desarrollado por la compañía Computers and structures inc con amplio recorrido de más de 40 años en el desarrollo de software de análisis estructural. Este programa utiliza el método matricial para la solución de la estructura y el modelo utilizado es tridimensional con diafragma rígido. El análisis sísmico desarrollado es el método modal elástico. Los muros fueron modelados mediante los elementos tipo Shell y las placas mediante los elementos tipo membrane para que estas no tomen rigidez a las cargas horizontales. Las vigas y columnas fueron modelados mediante el elemento tipo frame.

PARAMETROS SISMICOS:

Metodo de Analisis sísmico			
Método utilizado:	**2**	ANALISIS MODAL DINAMICO	
Ubicación de la estructura		=	**CHAPARRAL**
Grupo de uso		=	IV
PARAMETROS DE LA NSR-10			
Zona de Amenaza Sísmica		=	Alta
Coef. de aceleracion pico efectiva, Aa		=	**0.25**
Coef. de velocidad pico efectiva, Av		=	**0.20**
Perfil del Suelo		=	**D**
Coeficiente Fa		=	1.30
Coeficiente Fv		=	2.00
Grupo de uso		=	**IV**
Coeficiente de importancia		=	1.5
UMBRAL DE DAÑO			
Coeficiente de aceleración pico (Ad)		=	**0.06**
Coeficiente de sitio para umbral de daño		=	2.5

ESPECIFICACIONES :

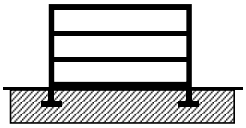
Concreto f'c	**280 kgf/cm2**	→	4000 psi	**VIGAS**
	280 kgf/cm2	→	4000 psi	**COLUMNAS**
	210 kgf/cm2	→	3000 psi	**CIMENTACION**
Acero fy	**4200 kgf/cm2**	→	60000 psi	ϕ >= 3/8"
	2400 kgf/cm2	→	34286 psi	ϕ < 3/8"

NORMAS :

Se siguieron las recomendaciones dadas por el reglamento Colombianos de Construcción Sismo Resistente NSR-10 (Ley 400 de 1997 (Modificada Ley 1229 de 2008). Decreto 926 de 2010) y sus decretos complementarios.

CALCULO DE ALTURAS Y NIVELES DE LA ESTRUCTURA

NIVEL		H libre	h Placa	Alt. Total piso	NIVEL
PISO	CUB	3.80	0.40	4.200	4.43
PISO	2	3.90	0.50	4.400	0.23
PISO	1	3.80	0.50	4.300	-4.18
NIVEL DE ARRANQUE		-8.48			



CALCULO DE DENSIDADES

MATERIALES

Vigas

γ Concreto=	2.4	TN/m^3

Columnas

γ Concreto=	2.4	TN/m^3

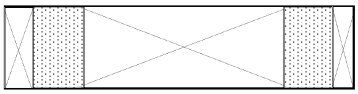
NIVEL		Vol. Vigas m³	Vol. Columnas m³	Area Placa m²	*r Vigas* TN/m²	*r Columnas* TN/m²
PISO	CUB	277.69	139.59	2569.3	0.259	0.118
PISO	2	263.30	180.18	2737.6	0.231	0.140
PISO	1	104.36	119.07	1022.0	0.245	0.247

CALCULO DE PESO DE MUROS DIVISORIOS

PISO	Area de Muros m2	γ Mamposteria Tn/m3	Altura libre m	Peso muros Tn	Area placa m2	Densidad muros Tn/m2	Densidad muros adoptada
PISO2	93.1	1.60	3.9	574	2737.6	0.210	0.210
PISO1	69.2	1.60	3.7	404	1022.0	0.395	0.400

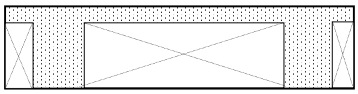
AVALUO DE CARGA DE PLACA

CORTE TIPICO DE CUBIERTA



Entramado de vigas y cubierta liviana

CORTE TIPICO DE PLACA



Placa Aligerada con Torta Superior

DATOS GENERALES		
γ Concreto	2.4	Tn/m3
γ Mortero acabados	2.0	Tn/m3
Pendiente Cubierta	6.9	°
Pendiente Cubierta	12.1	
CV cub inclinada	0.050	Tn/m2
Cgranizo		Tn/m2

CONVENCIONES	
CM:	Carga Muerta
CV:	Carga Viva
CT:	Carga Real Total aplicada a la placa (CM+CV)
CU:	Carga Ultima para diseño de Viguetas (1.2CM+1.6CV)
CR:	Carga real a cimentacion (CT+ρ_{Vigas}+$\rho_{Columnas}$)
CS:	Carga de sismo (CM+ρ_{Vigas}+$\rho_{Columnas}$)

Cargas especiales			
Cv placas cubierta=	0.18	Tn/m2	Zonas sin acceso solo a mantenimiento
Wacabados cubierta=	0.040	Tn/m2	Paneles solares
Wacabados cubierta=	0.060	Tn/m2	Intalaciones (electricas, hidraulicas, mecanicas)
Wacabados cubierta=	0.050	Tn/m2	Cielo raso

NIVEL		h(m)	Torta Sup.	Torta Inf.	e Viguetas (m)	Sep Viguetas (m)	W_{placa} Tn/m2	$W_{viguetas}$ Tn/m2	$W_{caseton}$ Tn/m2	$W_{viguetas\ metalica}$ Tn/m2	$e_{Acabados}$ (m)	$W_{acabados}$ Tn/m2	W_{muros} Tn/m2	$W_{cubierta}$ Tn/m2	$W_{estr.\ metalica}$ Tn/m2	W_{otros} Tn/m2	CM Tn/m2	CV Tn/m2	ρ_{Vigas} (tn/m2)	$\rho_{Columnas}$ (tn/m2)	$\rho_{Vigas+Columnas}$ (tn/m2)	CU Tn/m2	CR Tn/m2	Piso Restringido?	CS Tn/m2
PISO	CUB	0.40	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00		0.150	0.100	0.015	0.030	0.000	0.295	0.050	0.259	0.118	0.377	0.00	0.72	No	0.67
PISO	2	0.50	0.12	0.00	0.20	2.10	0.288	0.08	0.00	0.00	0.06	0.120	0.210	0.000	0.000	0.000	0.697	0.500	0.231	0.140	0.371	3.76	1.57	No	1.07
PISO	1	0.50	0.12	0.00	0.20	2.10	0.288	0.08	0.00	0.00	0.06	0.120	0.400	0.000	0.000	0.000	0.887	0.500	0.245	0.247	0.492	4.29	1.88	No	1.38

MASAS AFERENTES EN CUBIERTA POR COLUMNA

CM=	0.295 Tn/m2
CV=	0.05 Tn/m2

COLUMNA	AREA (m2)	MASA	NIVEL
J-3	6.9	0.24	PISO 2
K-3	13.7	0.48	PISO 2
L-3	14.1	0.50	PISO 2
M-3	7.6	0.27	PISO 2
J-4	7.4	0.26	PISO 2
K-4	14.8	0.52	PISO 2
L-4	15.2	0.54	PISO 2
M-4	8.2	0.29	PISO 2
I-4	20.7	0.73	CUB
J-4	34.1	1.20	CUB
K-4	34.1	1.20	CUB
L-4	34.1	1.20	CUB
M-4	20.7	0.73	CUB
I-5	20.7	0.73	CUB
J-5	34.1	1.20	CUB
K-5	34.1	1.20	CUB
L-5	34.1	1.20	CUB
M-5	20.7	0.73	CUB
I-6	20.7	0.73	CUB
J-6	34.1	1.20	CUB
K-6	34.1	1.20	CUB
L-6	20.7	0.73	CUB
I-7	20.7	0.73	CUB
J-7	34.2	1.20	CUB
K-7	34.2	1.20	CUB
L-7	20.7	0.73	CUB
I-8	20.7	0.73	CUB
J-8	34.1	1.20	CUB
K-8	34.1	1.20	CUB
L-8	34.1	1.20	CUB
M-8	34.1	1.20	CUB
N-8	34.1	1.20	CUB
O-8	20.7	0.73	CUB
I-9	20.7	0.73	CUB
J-9	34.1	1.20	CUB
K-9	34.1	1.20	CUB
L-9	34.1	1.20	CUB
M-9	34.1	1.20	CUB
N-9	34.1	1.20	CUB
O-9	20.7	0.73	CUB
I-10	20.7	0.73	CUB
J-10	34.1	1.20	CUB
K-10	34.1	1.20	CUB
L-10	34.1	1.20	CUB
M-10	34.1	1.20	CUB
N-10	34.1	1.20	CUB
O-10	20.7	0.73	CUB
I-11	20.7	0.73	CUB

J-11	34.1	1.20	CUB
K-11	34.1	1.20	CUB
L-11	34.1	1.20	CUB
M-11	34.1	1.20	CUB
N-11	34.1	1.20	CUB
O-11	20.7	0.73	CUB
J-12	16.8	0.59	CUB
K-12	27.8	0.98	CUB
L-12	27.8	0.98	CUB
M-12	27.8	0.98	CUB
N-12	27.8	0.98	CUB
O-12	16.8	0.59	CUB
J-13	16.8	0.59	CUB
K-13	27.8	0.98	CUB
L-13	27.8	0.98	CUB
M-13	27.8	0.98	CUB
N-13	27.8	0.98	CUB
O-13	16.8	0.59	CUB
I-14	20.2	0.71	CUB
J-14	33.2	1.17	CUB
K-14	33.2	1.17	CUB
L-14	33.2	1.17	CUB
M-14	33.2	1.17	CUB
N-14	33.2	1.17	CUB
O-14	20.2	0.71	CUB
I-15	20.2	0.71	CUB
J-15	33.2	1.17	CUB
K-15	33.2	1.17	CUB
L-15	33.2	1.17	CUB
M-15	33.2	1.17	CUB
N-15	33.2	1.17	CUB
O-15	20.2	0.71	CUB

CARGAS EN VIGAS DE CUBIERTA

VIGA	L. AFERETE	CM (Tn/m2)	CV (Tn/m2)
B587	3.7	1.08	0.18
B551	7.3	2.15	0.36
B553	7.5	2.21	0.38
B555	4.1	1.19	0.20
B882, B883, B886, B887, B888	4.6	1.35	0.23
B1676, B1563, B1667, B1666, B1662	4.2	1.22	0.21
B911, B913, B914, B939, B903, B906, B905, B943	5.6	1.66	0.28
B909, B908, B907, B941	7.5	2.21	0.38
B1566, B1663, B1664	4.6	1.34	0.23
B957, B956, B1818, B1819, B1820	4.6	1.34	0.23
B1576, B1572, B1816, B1827, B1826	4.2	1.22	0.21
B1171, B1172, B1173, B1193, B1132, B1131, B1130, B1191	5.6	1.66	0.28
B1574, B1575, B1811	4.6	1.34	0.23
B978, B980, B982, B983, B984	4.6	1.34	0.23
B1585, B1581, B1580, B1644, B1648, B1649	4.0	1.18	0.20
B1164, B1167, B1168, B1169, B1088, B1089, B1090, B1317	5.8	1.70	0.29
B1137, B1136, B1135, B1134, B1122, B1123, B1124, B1127, B1093, B1092, B1091, B1067	7.5	2.21	0.38
B1584, B1645, B1646	4.5	1.34	0.23
B995, B997, B991, B990, B992	4.6	1.34	0.23
B1594, B1590, B1589, B1635, B1639, B1640	4.0	1.18	0.20
B1161, B1162, B1163, B1166, B1083, B1084, B1085, B1086	5.8	1.70	0.29
B1144, B1140, B1141, B1139, B1117, B1118, B1119, B1120, B1100, B1096, B1097, B1095	7.5	2.21	0.38
B1592, B1593, B1636, B1637	4.5	1.34	0.23
B1838, B1837, B1016, B1017, B1018	3.7	1.09	0.19
B1847, B1846, B1625, B1626, B1627	4.6	1.35	0.23

B1149, B1146, B1145, B1142, B1078, B1079, B1080, B1081	5.6	1.66	0.28
B1112, B1114, B1113, B1115, B1105, B1101, B1102, B1098	7.5	2.21	0.38
B1844, B1630, B1631	3.7	1.09	0.19
B1012, B1013, B1020, B1019, B1021, B1022	4.4	1.30	0.22
B1613, B1612, B1608, B1616, B1617, B1621	4.3	1.26	0.21
B1348, B1153, B1152, B1154, B1340, B1075, B1074, B1076	5.6	1.66	0.28
B1345, B1151, B1150, B1147, B1343, B1109, B1108, B1110, B1341, B1107, B1106, B1103	7.5	2.21	0.38
B1611, B1618, B1619	4.4	1.31	0.22
OTRAS	1.0	0.30	0.05

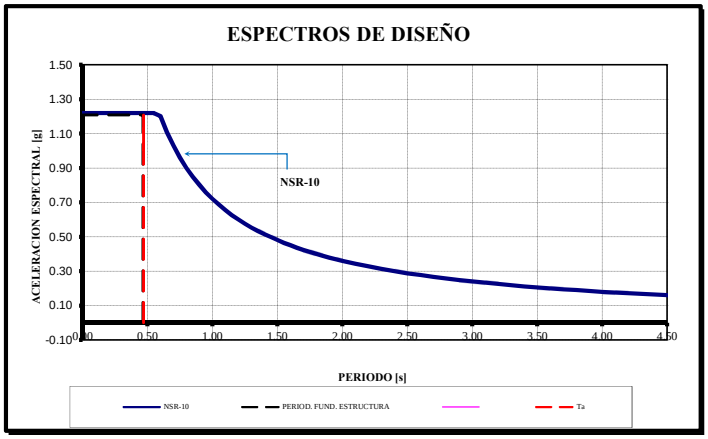
ANALISIS SISMICO DE LA ESTRUCTURA

El Análisis Sísmico del edificio se realizará por el método de ANALISIS MODAL DINAMICO

El programa de análisis estructural ETABS realiza directamente el análisis utilizando el Espectro Elástico de Diseño, el cual se elabora según parámetros del Reglamento de construccion Sismo Resistente Colombiano NSR-10 .

Los Parametros sísmicos que se tuvieron en cuenta para el analisis del edificio son los siguientes:

Parámetros del Espectro de la Norma Sismo Resistente NSR-10		
Zona de Amenaza Sísmica	=	Alta
Coef. de aceleracion pico efectiva, Aa	=	0.25
Coef. de velocidad pico efectiva, Av	=	0.20
Perfil del Suelo	=	D
Grupo de uso	=	IV
Coeficiente Fa	=	1.30
Coeficiente Fv	=	2.00
Coef. de Importancia, I	=	1.50
Coef. de amort. Crítico β	=	5.00%
Período inicial, To	=	0.12 s
Período corto, Tc	=	0.59 s
Período largo, T_L	=	4.80 s
Máx. acel. en el espectro	=	1.22 g



Para el analisis se determinó la masa que participa en el sismo proveniente del peso muerto del edificio.

CALCULO DE LA MASA DEL EDIFICIO			
PISO	Area [m²]	Carga Sismo [T/m²]	Masa [T s²/m]
PISOCUB	2,569.33	0.67	176.10
PISO2	2,737.59	1.07	298.08
PISO1	1,022.01	1.38	143.71

Se determinó el centro de gravedad de cada piso y el centro de rigidez del mismo para determinar la torsión de diseño de acuerdo al numeral A.3.6.7, la cual corresponde a la suma de la torsión directa más la torsión accidental. La torsión directa es tenida en cuenta por el propio programa de analisis y la torsion accidental depende del metodo de analisis.

CALCULO DEL CENTROIDE DE MASAS YTORSION EN EL PISO													
PISO	POSICION DE LA MASA RESPECTO AL CENTRO DE RIGIDEZ	CENTRO DE MASA		MAYOR LONGITUD		ex [m]	ey [m]	CENTRO DE RIGIDEZ		CENTROIDE DEFINITIVO		CENTROIDE MODIFICADO INCLUYENDO Ax	
		X [m]	Y [m]	LX [m]	LY [m]			X_R [m]	Y_R [m]	X [m]	Y [m]	X [m]	Y [m]
PISOCUB	C.M. ■ C.R. ■	0.00	0.00	50.66	79.34	0.00	0.00	0.00	0.00	0.00	0.00	-	-
PISO2	■ C.R. C.M. ■	22.34	35.53	50.16	81.65	0.00	0.00	19.90	43.05	22.34	35.53	-	-
PISO1	■ C.R. C.M. ■	24.18	11.19	50.16	27.12	0.00	0.00	22.99	22.55	24.18	11.19	-	-

Nota: Debido a que el metodo de analisis corresponde al dinamico elastico no se tuvo en cuenta la torsion accidental segun NSR-10 A 3.6.7

CALCULO DEL PESO DEL EDIFICIO Y DETERMINACION DEL CORTANTE BASAL ESTATICO POR FUERZA HORIZONTAL EQUIVALENTE

Para el calculo de los factores de ajuste se utilizó el método de la Fuerza Horizontal Equivalente para ajustar el valor del cortante dinámico en la base (Según A.5.4.5 -- NSR - 10)

CALCULO DEL PESO DEL EDIFICIO			
PISO	**W (T)**	**ALTURA PISO (m)**	**h (acumulado) (m)**
PISOCUB	1,727.52	4.20	12.90
PISO2	2,924.16	4.40	8.70
PISO1	1,409.83	4.30	4.30
PESO TOTAL	**6,061.51 T**		

CALCULO CORTANTE ESTATICO EN LA BASE

Ct	=	0.047
α=	=	0.900
hn	=	12.90 m
Ta	=	$Ct\ hn^{\alpha}$
Ta	=	0.47 s
T	=	0.47 s
Sa	=	1.22 g
Vs	=	**7,387.46 Tn**

Cortante sísmico en la base (Vs = Sa×Westructura)

CALCULO CORTANTE DINAMICO EN LA BASE

Del programa se obtuvieron los siguientes valores del cortante basal dinamico

TABLA DE CORTANTES DINAMICOS								
Spec	Mode	Dir	F1	F2	F3	M1	M2	M3
SISMOX	1	U1	5073.5	564.7	0.0	-1075.8	10468.6	-126153.4
SISMOX	2	U1	392.7	-1181.0	0.0	2595.5	1266.1	-54787.9
SISMOX	3	U1	195.3	630.5	0.0	-1450.5	807.5	-6617.5
SISMOX	4	U1	1.2	4.5	0.0	12.4	-4.0	24.6
SISMOX	5	U1	17.2	3.0	0.0	-7.2	-17.4	-556.1
SISMOX	6	U1	6.9	13.4	0.0	80.3	-33.2	96.1
SISMOX	7	U1	50.6	-131.4	0.0	-538.9	-241.3	-4499.7
SISMOX	8	U1	26.0	199.5	0.0	927.1	-143.6	3850.3
SISMOX	9	U1	749.3	-92.0	0.0	-475.9	-3457.7	-25320.9
SISMOX	10	U1	22.1	-6.8	0.0	-67.6	-90.5	-873.8
SISMOX	11	U1	274.7	-15.1	0.0	2.7	-1322.7	-7525.8
SISMOX	12	U1	29.0	7.1	0.0	205.8	-125.4	-356.3
SISMOX	13	U1	28.8	-0.6	0.0	-245.3	-151.2	-770.0
SISMOX	14	U1	20.3	-17.8	0.0	-79.6	-241.9	-104.2
SISMOX	15	U1	13.6	4.9	0.0	84.1	-126.0	215.7
SISMOX	16	U1	1.1	0.4	0.0	7.4	-15.4	39.3
SISMOX	17	U1	1.2	0.9	0.0	4.9	-4.7	-4.7
SISMOX	18	U1	4.1	-1.3	0.0	-8.4	-23.0	-84.8
SISMOX	19	U1	0.0	0.0	0.0	0.0	-0.1	0.3
SISMOX	20	U1	0.3	-0.2	0.0	-0.8	-1.4	-4.1
SISMOX	21	U1	0.0	0.1	0.0	0.2	0.0	1.9
SISMOX	22	U1	0.9	0.2	0.0	0.4	-4.5	8.1
SISMOX	23	U1	14.5	0.0	0.0	-1.8	-71.2	130.1
SISMOX	24	U1	11.5	0.2	0.0	-0.2	-58.7	52.6
SISMOX	**All**	**All**	**5307.3**	**1051.0**	0.0	2306.9	11860.3	153918.7
SISMOY	1	U2	564.7	62.9	0.0	-119.7	1165.2	-14041.1
SISMOY	2	U2	-1181.0	3551.4	0.0	-7804.9	-3807.3	164754.0
SISMOY	3	U2	630.5	2035.6	0.0	-4683.2	2607.1	-21366.2
SISMOY	4	U2	4.5	17.0	0.0	46.7	-15.0	92.3
SISMOY	5	U2	3.0	0.5	0.0	-1.3	-3.0	-96.8
SISMOY	6	U2	13.4	26.2	0.0	156.9	-64.8	187.9
SISMOY	7	U2	-131.4	341.2	0.0	1399.7	626.8	11687.6
SISMOY	8	U2	199.5	1528.4	0.0	7104.0	-1100.2	29503.2
SISMOY	9	U2	-92.0	11.3	0.0	58.4	424.7	3109.8
SISMOY	10	U2	-6.8	2.1	0.0	20.9	28.0	270.1
SISMOY	11	U2	-15.1	0.8	0.0	-0.1	72.8	414.0
SISMOY	12	U2	7.1	1.7	0.0	50.4	-30.7	-87.3
SISMOY	13	U2	-0.6	0.0	0.0	5.0	3.1	15.7
SISMOY	14	U2	-17.8	15.7	0.0	70.0	212.8	91.7
SISMOY	15	U2	4.9	1.8	0.0	30.3	-45.4	77.6
SISMOY	16	U2	0.4	0.2	0.0	2.8	-5.8	14.8
SISMOY	17	U2	0.9	0.6	0.0	3.5	-3.4	-3.4
SISMOY	18	U2	-1.3	0.4	0.0	2.7	7.4	27.2
SISMOY	19	U2	0.0	0.0	0.0	0.0	0.0	0.0
SISMOY	20	U2	-0.2	0.1	0.0	0.5	0.8	2.4
SISMOY	21	U2	0.1	0.5	0.0	2.2	-0.5	18.7
SISMOY	22	U2	0.2	0.0	0.0	0.1	-0.9	1.6
SISMOY	23	U2	0.0	0.0	0.0	0.0	-0.2	0.3
SISMOY	24	U2	0.2	0.0	0.0	0.0	-1.2	1.1
SISMOY	**All**	**All**	**1051.0**	**5335.5**	0.0	13960.7	3324.3	158285.8

TABLA DE PERIODOS REALES DE LA ESTRUCTURA

Spec	Mode	Period	DampRatio	pecFactc	U1	U2	U3
SISMOX	1	**0.47**	0.05	1.00	11.96	0.00	0.00
SISMOX	2	0.39	0.05	1.00	11.96	0.00	0.00
SISMOX	3	0.35	0.05	1.00	11.96	0.00	0.00
SISMOX	4	0.22	0.05	1.00	11.96	0.00	0.00
SISMOX	5	0.20	0.05	1.00	11.96	0.00	0.00
SISMOX	6	0.17	0.05	1.00	11.96	0.00	0.00
SISMOX	7	0.17	0.05	1.00	11.96	0.00	0.00
SISMOX	8	0.16	0.05	1.00	11.96	0.00	0.00
SISMOX	9	0.15	0.05	1.00	11.96	0.00	0.00
SISMOX	10	0.14	0.05	1.00	11.96	0.00	0.00
SISMOX	11	0.13	0.05	1.00	11.96	0.00	0.00
SISMOX	12	0.11	0.05	1.00	11.96	0.00	0.00
SISMOX	13	0.11	0.05	1.00	11.96	0.00	0.00
SISMOX	14	0.11	0.05	1.00	11.96	0.00	0.00
SISMOX	15	0.11	0.05	1.00	11.96	0.00	0.00
SISMOX	16	0.11	0.05	1.00	11.96	0.00	0.00
SISMOX	17	0.10	0.05	1.00	11.96	0.00	0.00
SISMOX	18	0.09	0.05	1.00	11.96	0.00	0.00
SISMOX	19	0.09	0.05	1.00	11.96	0.00	0.00
SISMOX	20	0.08	0.05	1.00	11.96	0.00	0.00
SISMOX	21	0.07	0.05	1.00	11.96	0.00	0.00
SISMOX	22	0.07	0.05	1.00	11.96	0.00	0.00
SISMOX	23	0.07	0.05	1.00	11.96	0.00	0.00
SISMOX	24	0.07	0.05	1.00	11.96	0.00	0.00
SISMOY	1	**0.47**	0.05	1.00	0.00	11.96	0.00
SISMOY	2	0.39	0.05	1.00	0.00	11.96	0.00
SISMOY	3	0.35	0.05	1.00	0.00	11.96	0.00
SISMOY	4	0.22	0.05	1.00	0.00	11.96	0.00
SISMOY	5	0.20	0.05	1.00	0.00	11.96	0.00
SISMOY	6	0.17	0.05	1.00	0.00	11.96	0.00
SISMOY	7	0.17	0.05	1.00	0.00	11.96	0.00
SISMOY	8	0.16	0.05	1.00	0.00	11.96	0.00
SISMOY	9	0.15	0.05	1.00	0.00	11.96	0.00
SISMOY	10	0.14	0.05	1.00	0.00	11.96	0.00
SISMOY	11	0.13	0.05	1.00	0.00	11.96	0.00
SISMOY	12	0.11	0.05	1.00	0.00	11.96	0.00
SISMOY	13	0.11	0.05	1.00	0.00	11.96	0.00
SISMOY	14	0.11	0.05	1.00	0.00	11.96	0.00
SISMOY	15	0.11	0.05	1.00	0.00	11.96	0.00
SISMOY	16	0.11	0.05	1.00	0.00	11.96	0.00
SISMOY	17	0.10	0.05	1.00	0.00	11.96	0.00
SISMOY	18	0.09	0.05	1.00	0.00	11.96	0.00
SISMOY	19	0.09	0.05	1.00	0.00	11.96	0.00
SISMOY	20	0.08	0.05	1.00	0.00	11.96	0.00
SISMOY	21	0.07	0.05	1.00	0.00	11.96	0.00
SISMOY	22	0.07	0.05	1.00	0.00	11.96	0.00
SISMOY	23	0.07	0.05	1.00	0.00	11.96	0.00
SISMOY	24	0.07	0.05	1.00	0.00	11.96	0.00

CORTANTE DINAMICO EN LA BASE

Cortante basal en sentido X		
F1	=	5,307.3 Tn
F2	=	1,051.0 Tn
Vsd_x	=	**5,307.3 Tn**

Cortante basal en sentido Y		
F1	=	1,051.0 Tn
F2	=	5,335.5 Tn
Vsd_y	=	**5,335.5 Tn**

AJUSTE DE LOS RESULTADOS

Utilizando la metodologia de analisis de modos y frecuencias por medio del programa se determino el periodo fundamental del edificio con el cual se realiza el ajuste del valor del cortante basal Estatico y el valor del periodo máximo (Cu*Ta) según A.5.4.5 (a)

Se comparan los cortantes en la base del análisis modal con el estático para determinar si se deben modificar las fuerzas de sismo conforme a lo establecido en A.5.4.5 (b)

Si la estructura es regular, el cortante dinámico en la base no puede ser menor que el 80 % del cortante calculado por Fuerza Horizontal Equivalente (Vs) ni menor del 90% para estructuras irregulares- (según A.5.4.5 b - NSR-10)

Item	Sentido X	Sentido Y
Periodo T (s)	0.47	0.39
Ta (s)	0.47	0.47
Cu	1.27	1.27
Periodo maximo Cu*Ta (s)	0.60	0.60
Periodo definitivo	0.47	0.39
Sa	1.22	1.22
Cortante Basal Vs (Tn)	7,387.5	7,387.5
0.90 Vs	6,648.7	6,648.7
0.80 Vs	5,910.0	5,910.0
Irregular	Si	Si
Cortante Estatico Vs (Tn)	6648.7	6648.7
Cortante Dinamico Vsd(Tn)	5307.3	5335.5
Factor de Ajuste	1.25	1.25

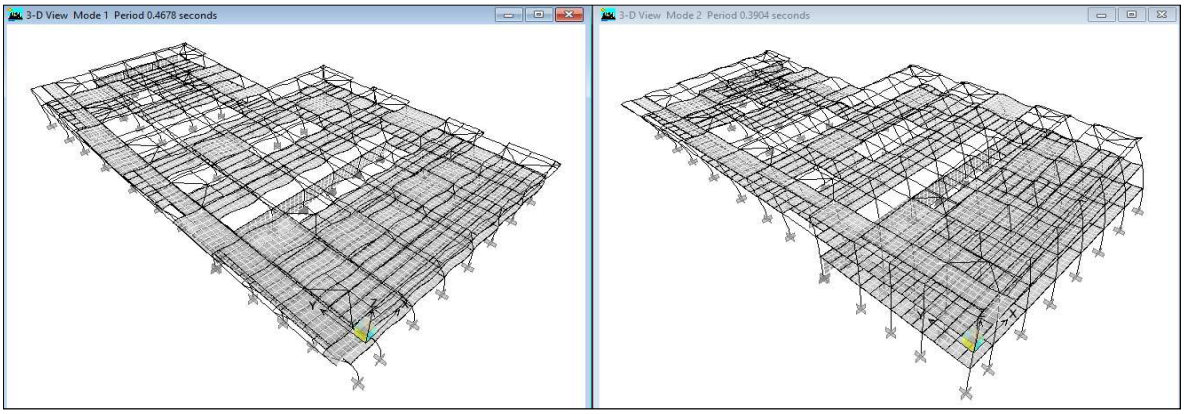
PORCENTAJE DE MASA PARTICIPATIVA

Finalmente se verifica que el número de modos utilizado sea el requerido para que la masa participativa sea mayor al 90% conforme a lo estipulado en A.5.4.2

TABLA DE MASA PARTICIPATIVA

Mode	Period	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
1	0.47	66.03	0.82	0.00	66.03	0.82	0.00	0.99	36.15	4.33	0.99	36.15	4.33
2	0.39	5.11	46.22	0.00	71.14	47.04	0.00	59.37	1.87	23.04	60.37	38.02	27.37
3	0.35	2.54	26.49	0.00	73.69	73.53	0.00	34.70	0.63	43.68	95.06	38.65	71.05
4	0.22	0.02	0.22	0.00	73.70	73.75	0.00	0.08	0.03	0.01	95.14	38.68	71.06
5	0.20	0.22	0.01	0.00	73.93	73.76	0.00	0.01	0.27	0.00	95.15	38.95	71.06
6	0.17	0.09	0.34	0.00	74.01	74.10	0.00	0.02	0.21	0.03	95.18	39.16	71.09
7	0.17	0.66	4.44	0.00	74.67	78.54	0.00	0.95	1.55	0.21	96.12	40.71	71.30
8	0.16	0.34	19.89	0.00	75.01	98.44	0.00	3.24	0.89	0.24	99.36	41.60	71.55
9	0.15	9.75	0.15	0.00	84.76	98.58	0.00	0.02	22.41	0.45	99.38	64.01	72.00
10	0.14	0.29	0.03	0.00	85.05	98.61	0.00	0.00	0.61	0.00	99.38	64.62	72.00
11	0.13	3.58	0.01	0.00	88.63	98.62	0.00	0.01	8.47	0.25	99.39	73.09	72.25
12	0.11	0.38	0.02	0.00	89.00	98.64	0.00	0.11	0.83	0.00	99.49	73.92	72.25
13	0.11	0.37	0.00	0.00	89.38	98.64	0.00	0.30	0.95	0.05	99.79	74.87	72.30
14	0.11	0.26	0.20	0.00	89.64	98.85	0.00	0.04	1.48	14.61	99.83	76.35	86.91
15	0.11	0.18	0.02	0.00	89.82	98.87	0.00	0.02	0.75	4.20	99.85	77.09	91.11
16	0.11	0.01	0.00	0.00	89.83	98.87	0.00	0.00	0.10	1.35	99.85	77.19	92.45
17	0.10	0.02	0.01	0.00	89.85	98.88	0.00	0.00	0.03	0.04	99.85	77.22	92.49
18	0.09	0.05	0.01	0.00	89.90	98.89	0.00	0.00	0.14	0.13	99.85	77.36	92.62
19	0.09	0.00	0.00	0.00	89.90	98.89	0.00	0.00	0.00	0.00	99.85	77.37	92.62
20	0.08	0.00	0.00	0.00	89.91	98.89	0.00	0.00	0.01	0.00	99.85	77.37	92.63
21	0.07	0.00	0.01	0.00	89.91	98.90	0.00	0.00	0.00	0.00	99.85	77.37	92.63
22	0.07	0.01	0.00	0.00	89.92	98.90	0.00	0.00	0.03	0.00	99.85	77.40	92.63
23	0.07	0.19	0.00	0.00	90.11	98.90	0.00	0.00	0.45	0.01	99.85	77.86	92.64
24	0.07	0.15	0.00	0.00	90.26	98.90	0.00	0.00	0.37	0.01	99.85	78.23	92.65

MODOS PRINCIPALES DE VIBRACION

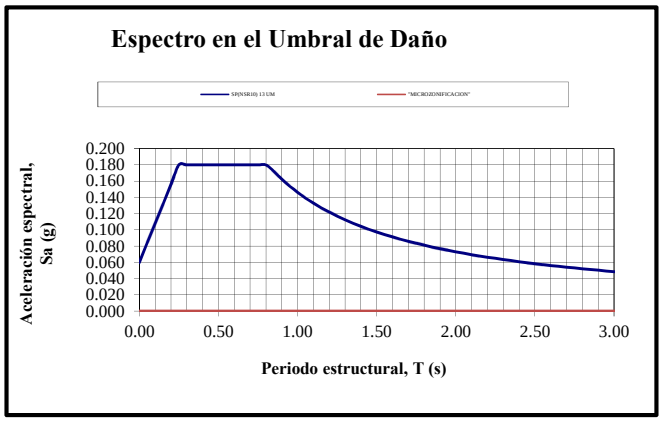


ANALISIS SIMICO PARA EL UMBRAL DE DANO (GRUPO DE USO III o IV)

Parámetros del Espectro de la Norma Sismo Resistente NSR-10		
Zona de Amenaza Sismica	=	Alta
Coef. de acel. pico efectiva, Ad	=	0.06
Coeficiente de sitio para el umbral	=	2.5
Grupo de uso	=	IV
Coef. de Importancia, I	=	1.5
Coef. de amort. crítico	=	2.00%

CALCULO DE ACELERACION ESPECTRAL		
Ad	=	0.06
S	=	2.50
I	=	1.50
Ct	=	**0.05**
T	=	0.47 S
Tod	=	0.25 S
TCd	=	1.25 S
TLd	=	6.00 S
Sad	=	0.28
Sad	=	0.18
Sad	=	0.48
Sad	=	**0.18**
Vsd	=	**1091.1 Tn**

Definitivo



CALCULO CORTANTE DINAMICO EN LA BASE

TABLA DE CORTANTES DINAMICOS								
Spec	Mode	Dir	F1	F2	F3	M1	M2	M3
SISMOX	1	U1	749.2	83.4	0.0	-158.9	1545.8	-18628.1
SISMOX	2	U1	58.0	-174.4	0.0	383.3	187.0	-8090.1
SISMOX	3	U1	28.8	93.1	0.0	-214.2	119.2	-977.2
SISMOX	4	U1	0.2	0.6	0.0	1.7	-0.5	3.3
SISMOX	5	U1	2.2	0.4	0.0	-0.9	-2.2	-70.9
SISMOX	6	U1	0.8	1.6	0.0	9.3	-3.9	11.2
SISMOX	7	U1	5.8	-15.0	0.0	-61.6	-27.6	-514.3
SISMOX	8	U1	3.0	22.7	0.0	105.6	-16.4	438.8
SISMOX	9	U1	80.8	-9.9	0.0	-51.3	-372.7	-2729.1
SISMOX	10	U1	2.3	-0.7	0.0	-7.0	-9.4	-90.4
SISMOX	11	U1	27.5	-1.5	0.0	0.3	-132.6	-754.2
SISMOX	12	U1	2.7	0.7	0.0	19.4	-11.8	-33.5
SISMOX	13	U1	2.7	-0.1	0.0	-23.0	-14.2	-72.3
SISMOX	14	U1	1.9	-1.6	0.0	-7.3	-22.2	-9.6
SISMOX	15	U1	1.3	0.5	0.0	7.7	-11.6	19.8
SISMOX	16	U1	0.1	0.0	0.0	0.7	-1.4	3.6
SISMOX	17	U1	0.1	0.1	0.0	0.4	-0.4	-0.4
SISMOX	18	U1	0.4	-0.1	0.0	-0.7	-2.0	-7.3
SISMOX	19	U1	0.0	0.0	0.0	0.0	0.0	0.0
SISMOX	20	U1	0.0	0.0	0.0	-0.1	-0.1	-0.3
SISMOX	21	U1	0.0	0.0	0.0	0.0	0.0	0.1
SISMOX	22	U1	0.1	0.0	0.0	0.0	-0.4	0.6
SISMOX	23	U1	1.1	0.0	0.0	-0.1	-5.4	9.9
SISMOX	24	U1	0.9	0.0	0.0	0.0	-4.4	4.0
SISMOX	All	All	761.0	200.5	0.0	439.7	1629.5	20954.5

SISMOY	1	U2	83.4	9.3	0.0	-17.7	172.1	-2073.3
SISMOY	2	U2	-174.4	524.4	0.0	-1152.5	-562.2	24327.9
SISMOY	3	U2	93.1	300.6	0.0	-691.5	385.0	-3155.0
SISMOY	4	U2	0.6	2.3	0.0	6.3	-2.0	12.4
SISMOY	5	U2	0.4	0.1	0.0	-0.2	-0.4	-12.4
SISMOY	6	U2	1.6	3.0	0.0	18.2	-7.5	21.8
SISMOY	7	U2	-15.0	39.0	0.0	160.0	71.6	1335.8
SISMOY	8	U2	22.7	174.2	0.0	809.5	-125.4	3362.0
SISMOY	9	U2	-9.9	1.2	0.0	6.3	45.8	335.2
SISMOY	10	U2	-0.7	0.2	0.0	2.2	2.9	27.9
SISMOY	11	U2	-1.5	0.1	0.0	0.0	7.3	41.5
SISMOY	12	U2	0.7	0.2	0.0	4.7	-2.9	-8.2
SISMOY	13	U2	-0.1	0.0	0.0	0.5	0.3	1.5
SISMOY	14	U2	-1.6	1.4	0.0	6.4	19.5	8.4
SISMOY	15	U2	0.5	0.2	0.0	2.8	-4.2	7.1
SISMOY	16	U2	0.0	0.0	0.0	0.3	-0.5	1.4
SISMOY	17	U2	0.1	0.1	0.0	0.3	-0.3	-0.3
SISMOY	18	U2	-0.1	0.0	0.0	0.2	0.6	2.3
SISMOY	19	U2	0.0	0.0	0.0	0.0	0.0	0.0
SISMOY	20	U2	0.0	0.0	0.0	0.0	0.1	0.2
SISMOY	21	U2	0.0	0.0	0.0	0.2	0.0	1.5
SISMOY	22	U2	0.0	0.0	0.0	0.0	-0.1	0.1
SISMOY	23	U2	0.0	0.0	0.0	0.0	0.0	0.0
SISMOY	24	U2	0.0	0.0	0.0	0.0	-0.1	0.1
SISMOY	All	All	200.5	679.1	0.0	1733.5	653.1	24518.8

CORTANTE DINAMICO EN LA BASE

Cortante basal en sentido X			
F1	=	761.0	Tn
F2	=	200.5	Tn
Vtx	=	761.0	Tn

Cortante basal en sentido Y			
F1	=	200.5	Tn
F2	=	679.1	Tn
Vty	=	679.1	Tn

PERIODO REAL DE LA ESTRUCTURA

Tx	=	0.47 s
Ty	=	0.39 s
Cu * Ta	=	0.60 s

AJUSTE DE LOS RESULTADOS

Irregularidad de la estructura	=	**Irregular**

Si la estructura es regular, el cortante dinámico en la base no puede ser menor que el 80 % del cortante calculado por Fuerza Horizontal Equivalente (Vs) ni del 90% si es irregular - (según A.5.4.5 b - NSR-10)

RECALCULO Sa	
Ad=	0.06 g
S=	2.50
I=	1.50
Ct=	**0.05**
T=	0.47 s
Tod	0.25 s
TCd	1.25 s
TLd	6.00 s
Sad=	0.28 s
Sad=	0.18 s
Sad	0.48 s
Sad=	0.18
0.90V=	982.0 Tn
0.8V=	872.9 Tn
Vdef=	982.0Tn

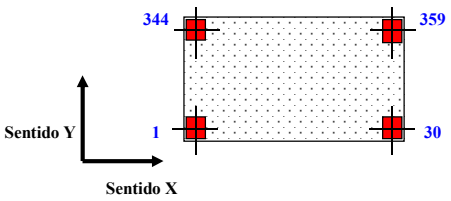
FACTORES DE AJUSTE DEFINITIVOS		
Fx=	**1.29**	**Definitivo**
Fy=	**1.45**	**Definitivo**

CHEQUEO DE LA DERIVA CON COMBINACIONES DE CARGA Y FACTORES DE AJUSTE

Se efectúa el análisis de la deriva máxima utilizando la inercia de las vigas y las columnas completa conforme a lo establecido en el capitulo A.6

CONVENCIONES	
h =	Altura Piso
δ (x,y) =	Desplazamiento por piso
Δa=	Deriva de análisis
Δp=	Deriva permitida
I_f =	Indice de flexibilidad
Δa=	$((\delta x_1-\delta x_2)^2+(\delta y_1-\delta y_2)^2)^{0.50}$
Δp =	**0.01** h
I_f =	Δa/Δp

EJES DE COLUMNAS ANALIZADAS



El metodo de combinacion modal utilizado corresponde al de la Combinacion cuadratica completa (CQC)

SISMO EN X

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
344	PISOCUB	4.20	2.02	4.20	OK	0.48	OK
	PISO2	4.40	1.80	4.40	OK	0.41	OK
	PISO1	4.30	0.00	4.30	OK	0.00	OK
359	PISOCUB	4.20	2.16	4.20	OK	0.51	OK
	PISO2	4.40	1.83	4.40	OK	0.42	OK
	PISO1	4.30	0.00	4.30	OK	0.00	OK
1	PISOCUB	4.20	3.71	4.20	OK	0.88	OK
	PISO2	4.40	3.78	4.40	OK	0.86	OK
	PISO1	4.30	1.99	4.30	OK	0.46	OK
30	PISOCUB	4.20	3.93	4.20	OK	0.94	OK
	PISO2	4.40	3.82	4.40	OK	0.87	OK
	PISO1	4.30	2.21	4.30	OK	0.51	OK

SISMO EN Y

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
344	PISOCUB	4.20	3.27	4.20	OK	0.78	OK
	PISO2	4.40	2.65	4.40	OK	0.60	OK
	PISO1	4.30	0.00	4.30	OK	0.00	OK
359	PISOCUB	4.20	3.70	4.20	OK	0.88	OK
	PISO2	4.40	2.90	4.40	OK	0.66	OK
	PISO1	4.30	0.00	4.30	OK	0.00	OK
1	PISOCUB	4.20	2.22	4.20	OK	0.53	OK
	PISO2	4.40	1.29	4.40	OK	0.29	OK
	PISO1	4.30	0.90	4.30	OK	0.21	OK
30	PISOCUB	4.20	2.89	4.20	OK	0.69	OK
	PISO2	4.40	1.70	4.40	OK	0.39	OK
	PISO1	4.30	1.08	4.30	OK	0.25	OK

REVISION DE LA IRREGULARIDAD TORSIONAL

Irregularidad Tipo 1 P:

Tipo 1aP — Irregularidad torsional $\phi_p = 0.9$

$$1.4\left(\frac{\Delta_1+\Delta_2}{2}\right) \geq \Delta_1 > 1.2\left(\frac{\Delta_1+\Delta_2}{2}\right)$$

Tipo 1bP — Irregularidad torsional extrema $\phi_p = 0.8$

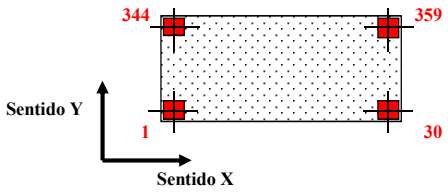
$$\Delta_1 > 1.4\left(\frac{\Delta_1+\Delta_2}{2}\right)$$

SISMO EN X

EJE DE COLUMNA		PISO	Δ1 (cm)	Δ2 (cm)	1.2*(Δ1 + Δ2)/2	1.4*(Δ1 + Δ2)/2		Ax
1	344	PISOCUB	3.71	2.02	3.44	4.01	IRREGULAR	1.17
		PISO2	3.78	1.80	3.35	3.91	IRREGULAR	1.28
		PISO1	1.99	0.00	1.19	1.39	IRREGULAR EXT	2.78
30	359	PISOCUB	3.93	2.16	3.65	4.26	IRREGULAR	1.16
		PISO2	3.82	1.83	3.39	3.96	IRREGULAR	1.27
		PISO1	2.21	0.00	1.33	1.55	IRREGULAR EXT	2.78

SISMO EN Y

EJE DE COLUMNA		PISO	Δ1 (cm)	Δ2 (cm)	1.2*(Δ1 + Δ2)/2	1.4*(Δ1 + Δ2)/2		Ax
1	30	PISOCUB	2.22	2.89	3.07	3.58	REGULAR	
		PISO2	1.29	1.70	1.80	2.10	REGULAR	
		PISO1	0.90	1.08	1.19	1.39	REGULAR	
344	359	PISOCUB	3.27	3.70	4.18	4.88	REGULAR	
		PISO2	2.65	2.90	3.33	3.88	REGULAR	
		PISO1	0.00	0.00	0.00	0.00	REGULAR	



CHEQUEO DE LA DERIVAS PARA EL UMBRAL DE DAÑO (GRUPO USO III o IV)

CONVENCIONES	
h =	Altura Piso
δ (x,y) =	Desplazamiento por piso
Δa=	Deriva de análisis
Δp=	Deriva permitida
I_f =	Indice de flexibilidad
Δa=	$((\delta x_1-\delta x_2)^2+(\delta y_1-\delta y_2)^2)^{0.50}$
Δp =	**0.004** h
I_f =	Δa/Δp

SISMO EN X

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
344	PISOCUB	4.20	0.40	1.68	OK	0.24	OK
	PISO2	4.40	0.38	1.76	OK	0.22	OK
	PISO1	4.30	0.00	1.72	OK	0.00	OK
359	PISOCUB	4.20	0.47	1.68	OK	0.28	OK
	PISO2	4.40	0.40	1.76	OK	0.23	OK
	PISO1	4.30	0.00	1.72	OK	0.00	OK
1	PISOCUB	4.20	0.85	1.68	OK	0.51	OK
	PISO2	4.40	0.87	1.76	OK	0.49	OK
	PISO1	4.30	0.47	1.72	OK	0.27	OK
30	PISOCUB	4.20	0.92	1.68	OK	0.55	OK
	PISO2	4.40	0.88	1.76	OK	0.50	OK
	PISO1	4.30	0.53	1.72	OK	0.31	OK

SISMO EN Y

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
344	PISOCUB	4.20	0.97	1.68	OK	0.58	OK
	PISO2	4.40	0.78	1.76	OK	0.44	OK
	PISO1	4.30	0.00	1.72	OK	0.00	OK
359	PISOCUB	4.20	1.09	1.68	OK	0.65	OK
	PISO2	4.40	0.84	1.76	OK	0.48	OK
	PISO1	4.30	0.00	1.72	OK	0.00	OK
1	PISOCUB	4.20	0.53	1.68	OK	0.32	OK
	PISO2	4.40	0.33	1.76	OK	0.19	OK
	PISO1	4.30	0.23	1.72	OK	0.14	OK
30	PISOCUB	4.20	0.76	1.68	OK	0.45	OK
	PISO2	4.40	0.47	1.76	OK	0.27	OK
	PISO1	4.30	0.29	1.72	OK	0.17	OK

REVISION INDICE DE ESTABILIDAD DE PISO EFECTOS DE SEGUNDO ORDEN

PISO	P(Tn)	Pu(Tn)	Δox(cm)	Δoy(cm)	Vus (Tn)	lc (m)	Qx	Qy	
PISOCUB	1856.0	2784.0	2.96	3.02	3060.7	4.20	0.0064	0.0065	Arriostrado
PISO2	4293.0	6439.4	2.81	2.14	6554.8	4.40	0.0090	0.0068	Arriostrado
PISO1	1920.8	2881.3	1.05	0.50	7387.5	4.30	0.0040	0.0019	Arriostrado

EFECTOS DE ESBELTEZ EN ELEMENTOS A COMPRESION

Piso	bmin	r	kl/r	Comentarios
PISOCUB	**0.60**	0.18	21.1	No se tienen efectos de esbeltez según C.10.10.1
PISO2	**0.60**	0.18	21.7	No se tienen efectos de esbeltez según C.10.10.1
PISO1	**0.60**	0.18	21.1	No se tienen efectos de esbeltez según C.10.10.1

Nota: bmin corresponde al ancho minimo de las columnas en el piso en estudio

CALCULO DE FACTOR ϕr POR AUSENCIA DE REDUNDANCIA

Story	FloorArea	Rmax	Rho	CaseType	Case	Direction	ObjectType	Object	Object2	%Vs	Chequeo
CUB	747.92	0.04	-4.23	Resp Spec	SISMOX	X	MF Columns	C33	C34	0.41	Ok
PISO2	2607.61	0.03	-1.79	Resp Spec	SISMOX	X	MF Columns	C31	C36	0.89	Ok
PISO1	1006.08	0.07	-0.64	Resp Spec	SISMOY	X	MF Columns	C31	C36	1.00	Ok

CHEQUEO DE IRREGULARIDADES DE LA ESTRUCTURA

1. IRREGULARIDADES EN PLANTA

TIPO DE IREGULARIDAD		ϕ_p	ϕ_{Px}	ϕ_{Py}
Irregularidad Torsional	**1aP**	0.9	0.9	1.0
Irregularidad Torsional extrema	**1bP**	0.8	0.8	1.0
Retrocesos en las Esquinas	**2P**	0.9	0.9	0.9
Irregularidad del Diafragma	**3P**	0.9	0.9	0.9
Desplazamiento de los Planos de Acción	**4P**	0.8	1.0	1.0
Sistemas no Paralelos	**5P**	0.9	1.0	1.0
ϕp Definitivo=			**0.8**	**0.9**

2. IRREGULARIDADES EN ALTURA

TIPO DE IREGULARIDAD		ϕ_a	ϕ_{ax}	ϕ_{ay}
Piso Flexible (Irregularidad en Rigidez)	**1aA**	0.9	1.0	1.0
Piso Flexible extremo(Irregularidad en Rigidez)	**1bA**	0.8	1.0	1.0
Distribución de Masa	**2A**	0.9	1.0	1.0
Irregularidad Geométrica	**3A**	0.9	1.0	1.0
Desplazamiento del Plano de Acción	**4A**	0.8	1.0	1.0
Piso Débil - Discontinuidad en la Resistencia	**5aA**	0.9	1.0	1.0
Piso Débil extremo - Discontinuidad en la Resist.	**5bA**	0.8	0.8	0.8
ϕa Definitivo =			**0.8**	**0.8**

Notas:

3. COEFICIENTE DE CAPACIDAD DE DISIPACION DE ENERGIA EN EL RANGO INELASTICO

$R = \phi p * \phi a * \phi r * R_0$ (NSR-10 A.3.3.3)

	Sentido X	Sentido Y	
ϕ_p =	0.80	0.90	Coeficiente por irregularidad en planta
ϕ_a =	0.80	0.80	Coeficiente por irregularidad en altura
ϕ_r =	**1.00**	**1.00**	Coeficiente por ausencia de redundancia
R'o =	**7.00**	**7.00**	Pórticos de concreto DES
R =	**4.48**	**5.04**	
Ωo=	**3.00**		Coeficiente de sobreresistencia
0.5AaFa=	**0.16**		Componente vertical de sismo Segun A.3.3.9

COMBINACIONES DE CARGA

1. FACTORES DE AJUSTE

Fx	=	**1.25**
Fy	=	**1.25**

2. CHEQUEO DE DERIVAS

No. DE COMBINACION							Fx			Fy			Combinacion en el programa
1	1.20	CM	+	1.00	CV	+	1.25	SX					COMBO 2
2	1.20	CM	+	1.00	CV	-	1.25	SX					
3	1.20	CM	+	1.00	CV				+	1.25	SY	COMBO 3	
4	1.20	CM	+	1.00	CV				-	1.25	SY		
5	0.90	CM				+	1.25	SX				COMBO 4	
6	0.90	CM				-	1.25	SX					
7	0.90	CM							+	1.25	SY	COMBO 5	
8	0.90	CM							-	1.25	SY		

Nota: Para las cargas mayores a 0.48Tn/m2 se utilizo un factor de carga de 1.0 segun B.2.4.2.2. (Ver datos de entrada)

3. DISEÑO DE ELEMENTOS DEL SISTEMA DE RESISTENCIA SISMICA

No. DE COMBINACION							Fx/R 0.3*Fx/R			0.3*Fy/R Fy/R			
1	1.40	CM											
2	1.20	CM	+	1.60	CV	+	0.50	G					COMBO 1
3	1.20	CM	+	1.00	CV	+	0.28	SX	+	0.07	SY	COMBO 6	
4	1.20	CM	+	1.00	CV	+	0.28	SX	-	0.07	SY	COMBO 7	
5	1.20	CM	+	1.00	CV	-	0.28	SX	+	0.07	SY		
6	1.20	CM	+	1.00	CV	-	0.28	SX	-	0.07	SY		
7	1.20	CM	+	1.00	CV	+	0.08	SX	+	0.25	SY	COMBO 8	
8	1.20	CM	+	1.00	CV	+	0.08	SX	-	0.25	SY	COMBO 9	
9	1.20	CM	+	1.00	CV	-	0.08	SX	+	0.25	SY		
10	1.20	CM	+	1.00	CV	-	0.08	SX	-	0.25	SY		
11	0.90	CM				+	0.28	SX	+	0.07	SY	COMBO 10	
12	0.90	CM				+	0.28	SX	-	0.07	SY	COMBO 11	
13	0.90	CM				-	0.28	SX	+	0.07	SY		
14	0.90	CM				-	0.28	SX	-	0.07	SY		
15	0.90	CM				+	0.08	SX	+	0.25	SY	COMBO 12	
16	0.90	CM				+	0.08	SX	-	0.25	SY	COMBO 13	
17	0.90	CM				-	0.08	SX	+	0.25	SY		
18	0.90	CM				-	0.08	SX	-	0.25	SY		

Nota: Para las cargas mayores a 0.48Tn/m2 se utilizo un factor de carga de 1.0 segun B.2.4.2.2. (Ver datos de entrada)

Las siguientes combinaciones fueron incluidas para que en el programa DCCAD 2010 puedan realizarse los chequeos de cortante segun C.21.3.3.1 y C.21.3.3.2

4. DISENO DE CORTANTE SISMICO EN VIGAS (Ex2)

No. DE COMBINACION						E*2 / 0.3*E*2			0.3*E*2 / E*2		
19	1.20	CM	+	1.00	CV	+	0.56	SX	+	0.15	SY	COMBO 14
20	1.20	CM	+	1.00	CV	+	0.56	SX	-	0.15	SY	COMBO 15
21	1.20	CM	+	1.00	CV	-	0.56	SX	+	0.15	SY	
22	1.20	CM	+	1.00	CV	-	0.56	SX	-	0.15	SY	
23	1.20	CM	+	1.00	CV	+	0.17	SX	+	0.49	SY	COMBO 16
24	1.20	CM	+	1.00	CV	+	0.17	SX	-	0.49	SY	COMBO 17
25	1.20	CM	+	1.00	CV	-	0.17	SX	+	0.49	SY	
26	1.20	CM	+	1.00	CV	-	0.17	SX	-	0.49	SY	
27	0.90	CM				+	0.56	SX	+	0.15	SY	COMBO 18
28	0.90	CM				+	0.56	SX	-	0.15	SY	COMBO 19
29	0.90	CM				-	0.56	SX	+	0.15	SY	
30	0.90	CM				-	0.56	SX	-	0.15	SY	
31	0.90	CM				+	0.17	SX	+	0.49	SY	COMBO 20
32	0.90	CM				+	0.17	SX	-	0.49	SY	COMBO 21
33	0.90	CM				-	0.17	SX	+	0.49	SY	
34	0.90	CM				-	0.17	SX	-	0.49	SY	

5. DISENO DE CORTANTE SISMICO EN COLUMNAS (ExΩ)

No. DE COMBINACION						E*Ω / 0.3*E*Ω			0.3*E*Ω / E*Ω		
35	1.36	CM	+	1.00	CV	+	0.84	SX	+	0.22	SY	COMBO 22
36	1.36	CM	+	1.00	CV	+	0.84	SX	-	0.22	SY	COMBO 23
37	1.36	CM	+	1.00	CV	-	0.84	SX	+	0.22	SY	
38	1.36	CM	+	1.00	CV	-	0.84	SX	-	0.22	SY	
39	1.36	CM	+	1.00	CV	+	0.25	SX	+	0.74	SY	COMBO 24
40	1.36	CM	+	1.00	CV	+	0.25	SX	-	0.74	SY	COMBO 25
41	1.36	CM	+	1.00	CV	-	0.25	SX	+	0.74	SY	
42	1.36	CM	+	1.00	CV	-	0.25	SX	-	0.74	SY	
43	0.74	CM				+	0.84	SX	+	0.22	SY	COMBO 26
44	0.74	CM				+	0.84	SX	-	0.22	SY	COMBO 27
45	0.74	CM				-	0.84	SX	+	0.22	SY	
46	0.74	CM				-	0.84	SX	-	0.22	SY	
47	0.74	CM				+	0.25	SX	+	0.74	SY	COMBO 28
48	0.74	CM				+	0.25	SX	-	0.74	SY	COMBO 29
49	0.74	CM				-	0.25	SX	+	0.74	SY	
50	0.74	CM				-	0.25	SX	-	0.74	SY	

DISEÑO DE ELEMENTOS NO ESTRUCTURALES Y ESCALERAS

CALCULO DE ELEMENTOS NO ESTRUCTURALES

PARAMETROS DE DISEÑO

Grado de desempeño=	Superior	
Rp=	3.0	
Ap=	1.0	
f_y=	4200	kg/cm2

$$F_p = \frac{a_x a_p}{R_p} gM_p \geq \frac{A_a I}{2} gM_p$$

*Factor= f_y*π/16/L*
*Limite Fp=Aa*I*P/2*
S: Separacion entre columnetas
L: Longitud de la dilatacion superior

NIVEL	Fx	W	ax	Altura	e_{muro}	Vol.	$\gamma_{mamp.}$	P	Fp	Fp_{min}	Fp def.	Mmax	S	Vmax	L	Factor	$\phi_{varilla}$	Vn	Vn>Vu
	Tn	Tn		m	m	m3	Tn/m3	Tn	Tn	Tn	Tn	Tn*m	m	Tn	Cm		/8"	Tn	Cumple?
PISOCUB	3060.7	1727.5	1.77	3.80	0.12	0.46	1.60	0.73	0.43	0.073	0.43	0.409	0.80	0.172	10	0.082	5	0.330	SI
PISO2	3494.1	2924.2	1.19	3.90	0.12	0.47	1.60	0.75	0.30	0.075	0.30	0.291	1.20	0.179	10	0.082	5	0.330	SI
PISO1	832.6	1409.8	0.59	3.80	0.12	0.46	1.60	0.73	0.14	0.073	0.14	0.136	1.20	0.086	10	0.082	5	0.330	SI

CALCULO DE ELEMENTOS NO ESTRUCTURALES

DATOS DE ENTRADA

f'c=	175	Kg/Cm2
fy=	4200	Kg/Cm2
$d_{columneta}$=	6	Cm
$b_{columneta}$=	15	Cm
Recubrimiento=	6	Cm
t muro=	12	Cm
ρmin=	0.0033	

NIVEL	Fp	Mu	ρ	ρdiseño	As	As*fy	0.85 f'c b	a	kud	εc	εt		ϕ	As	Varilla	Cant.	Refuerzo
	Tn	Tn*m			Cm^2/m	Kg	Kg/cm	cm	cm					Cm^2	/8"		
PISOCUB	0.43	0.33	0.0202	0.0202	1.82	7635	2231.25	3.42	4.03	0.003	0.0015	Compr	0.65	2.80	5	2	2#5
PISO2	0.30	0.35	0.0226	0.0226	2.03	8539	2231.25	3.83	4.50	0.003	0.0010	Compr	0.65	3.13	5	2	2#5
PISO1	0.14	0.16	0.0082	0.0082	0.73	3084	2231.25	1.38	1.63	0.003	0.0081	Traccion	0.90	0.82	5	1	1#5

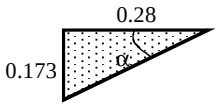
DISEÑO DE ESCALERA

ESCALERA TIPO 6

Materiales		
Concreto:	210	k/cm^2
Acero:	4200	k/cm^2

Geometria de la escalera		
Altura	4.15	m
Numero de pasos	24	m
H Contrahuella	0.173	m
Huella	0.28	m
Requisito titulo K	0.63	Cumple

Datos de entrada			
Luz de calculo:	5.00	m	
Espesor recomendado:	0.21	m	
Espesor adoptado:	0.20	m	
Angulo (α):	0.55	31.7	grados
Huella de:		0.28	m
Contrahuella de:		0.17	m



Avaluo de Cargas:

Peso propio de placa	0.20	x	2.4	/	0.85	=	0.56	tn/m^2
Peso de peldaños	0.17	x	2.4	/	2	=	0.21	tn/m^2
Acabado superior	.03 x 2.0 x (		0.28	+	0.17)/ 0.28	=	0.10	tn/m^2
Acabado Inferior	.02 x 2.0 /	cos	(31.70)			=	0.05	tn/m^2

CM	**0.92**	tn/m^2
CV	**0.50**	tn/m^2
CR	**1.42**	tn/m^2
CU	**1.90**	tn/m^2

CU = 1.2 CM + 1.6 CV

Diseño a flexión		
M =	5.93	tn*m
b=	100	cm
d=	17	cm
ρ=	0.0052	
ρmin=	0.0018	
ρdis=	0.0052	
As=	8.85	Cm^2/m
As*fy=	37184	kg
0.85f'c*b=	17850	kg/cm
a=	2.08	cm
kud=	2.45	cm
ε_c=	0.0030	
ε_f=	0.0178	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0058	
As=	9.84	Cm^2/m
ϕvarilla=	4	/8"
As varilla=	1.3	Cm^2
Separación=	10	

Chequeo a cortante		
Vu=	4.7	Tn
ϕVc=	9793	Kg
ϕVc=	9.8	Tn
ϕVs=	-	Tn

Diseño de tensores		
Tiene tensores?	SI	
Vu =	14.24	t / m
Fy=	4200	k/cm2
As=	3.77	Cm2
#Tensores	2	
Varilla=	5	/8"

DISEÑO PLACA DE ENTREPISO

CALCULO DE PLACA DE ENTREPISO PISO 1 Y PISO 2

ELEMENTO: Placa maciza e=0.12

DATOS DE ENTRADA

f'c=	**280**	Kg/Cm2
fy=	**4200**	Kg/Cm2
d=	**8**	Cm
b=	**100**	Cm
Recubrimiento=	**4**	Cm
h=	12	Cm
Tipo elemento=	**Viga=**	
	Placa=	**X**
ρmin=	0.0018	

CALCULOS ADICIONALES

CU=	1.90	Tn/m2
Luz=	2.30	m
Mu-=	0.84	Tn*m
Vu=	2.19	Tn
Mu+=	0.42	Tn*m

DISENO A FLEXION

Mu=	**0.8**	Tn*m
ρ=	0.0032	
ρdiseño=	0.0032	
As=	1.44	Cm^2/m
As*fy=	6048	kg
0.85f'c*b=	23800	kg/cm
a=	0.25	cm
kud=	0.30	cm
ε_c=	0.0030	
ε_t=	0.0773	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0036	
As=	2.85	Cm^2/m
Malla =	**7.5 mm c/.15**	

DISENO A CORTANTE

Vu=	**2.2**	Tn
ϕVc=	5321.2	Kg
ϕVc=	5.3	Tn
ϕVs=	-	Tn

DISENO A FLEXION

Mu=	**0.4**	Tn*m
ρ=	0.0016	
ρdiseño=	0.0018	
As=	1.44	Cm^2/m
As*fy=	6048	kg
0.85f'c*b=	23800	kg/cm
a=	0.25	cm
kud=	0.30	cm
ε_c=	0.0030	
ε_t=	0.0773	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0020	
As=	1.60	Cm^2/m
Malla =	**6.0 mm c/.15**	

CHEQUEO A PUNZONAMIENTO

b=	**20**	cm
h=	**20**	cm
Apoyo=	Circular	
	Rectangular	**X**
P=	**2.5**	Tn
Pu=	3.8	Tn
β=	1.00	
ϕ=	**0.75**	
λ=	**1.00**	
αs=	**40**	
bo=	**112**	cm
C.11-31=	1.68	cm
C.11-32=	3.29	cm
C.11-33=	2.67	cm

Punto de aplicacion de una carga puntual

OK

CALCULO DE DEFLEXIONES MAXIMAS A LARGO PLAZO (Luz Maxima)

CONDICIONES GEOMETRICAS			Para placas		
B	0.50 m	Base de la viga	lna=	0 m	Luz corta
H	0.50 m	Altura de la viga	lnb=	0 m	Luz larga
L=	8.22 m	Luz maxima **Llenar Lmax**	m=	0.0	
CM=	0.89 Tn/m2		Direcciones=	1	
CV=	0.5 Tn/m2		Caso apoyo=	2	Continuo en ambas direcciones
Aferencia=	3.8 m		Ca cm=	0	Ma cm= 0.00
W=	5.29 Tn/m	Carga de servicio	Ca cv=	0	Ma cv= 0.00

SOLICITACIONES		CONDICION DE APOYO	APLICA
Ma=	14.9 Tn*m	Doblemente empotrado	X

Momento de agrietamiento e Inercia efectiva		
Ig=	0.00521 m4	
Icr=	0.00267 m4	
yt=	0.25 m	
fr=	3.28 Mpa	
Mcr=	6.8 Tn*m	Momento de agrietamiento
Ie=	0.00291 m4	Doblemente empotrado

MATERIALES	
f'c=	280 Kg/cm2
E=	209165 Kg/cm2
E=	2091650 Tn/m2

DEFLEXIONES MAXIMAS SEGUN LA CONDICION DE APOYO CON CARGA UNIFORME

$$\lambda = \frac{\xi}{1+50\rho'}$$

5 años o más ..... ξ = 2.0
12 meses ..... ξ = 1.4
6 meses ..... ξ = 1.2
3 meses ..... ξ = 1.0

ρ'= **0.0043** **ξ =** **2.0**

CONDICION DE APOYO	CALCULADAS	A LARGO PLAZO
Doblemente empotrado	1.03 cm	1.70 cm

DEFLEXIONES MAXIMAS CALCULADAS PERMISIBLES

Tipo de elemento	deflexión que se considera	deflexión límite
Cubiertas planas que no soportan o no están unidas a elementos no estructurales que puedan ser dañados por deflexiones grandes	Deflexión instantánea debida a la carga viva	$\frac{\ell}{180}$ Nota (1)
Losas que no soportan o no están unidos a elementos no estructurales que puedan ser dañados por deflexiones grandes	Deflexión instantánea debida a la carga viva	$\frac{\ell}{360}$
Cubiertas o losas que soportan o están unidos a elementos no estructurales susceptibles de daño debido a deflexiones grandes	La parte de la deflexión total que se presenta después de la unión a elementos no estructurales, o sea la suma de las deflexiones a largo plazo debida a cargas permanentes, más la instantánea debida a cualquier carga viva adicional - Véase la Nota (3)	$\frac{\ell}{480}$ Nota (2)
Cubiertas o losas que soporten o estén unidos a elementos no estructurales que no puedan ser dañados por deflexiones grandes		$\frac{\ell}{240}$ Nota (4)

Notas:
(1) La intención de este límite no es salvaguardar la eventualidad de acumulación de agua por efecto de la misma deflexión. Esta debe verificarse por medio de cálculos adecuados, incluyendo las deflexiones adicionales debidas al agua acumulada y además considerando los efectos a largo plazo de todas las cargas permanentes, contraflechas, tolerancias de construcción y confiabilidad de los sistemas de drenaje.
(2) Este límite puede ser excedido si se toman medidas adecuadas para evitar el daño de los elementos soportados.
(3) Las deflexiones a largo plazo deben determinarse de acuerdo con C.9.5.2.4 o C.9.5.4.2, pero pueden reducirse en la deflexión que se calcule que ocurre antes de instalar los elementos no estructurales. Esta última deflexión debe determinarse con base en datos apropiados acerca de las características de deflexiones a largo plazo de elementos similares a los considerados.
(4) No debe ser mayor que la tolerancia de los elementos no estructurales. El límite puede ser excedido si se provee una contraflecha tal que la deflexión total menos la contraflecha no exceda el límite.

DEFLEXIONES PERMISIBLES			Aplica
L/480=	1.71 cm	Cumple	X

CALCULO DE DEFLEXIONES MAXIMAS A LARGO PLAZO (Luz tipica)

CONDICIONES GEOMETRICAS			Para placas			
B	0.50 m	Base de la viga	lna=	0 m	Luz corta	
H	0.50 m	Altura de la viga	lnb=	0 m	Luz larga	
L=	6.9 m	Luz maxima Llenar Lmax	m=	0.0		
CM=	0.82 Tn/m2		Direcciones=	1		
CV=	0.5 Tn/m2		Caso apoyo=	2	Continuo en ambas direcciones	
Aferencia=	7.5 m		Ca cm=	0	Ma cm=	0.00
W=	9.50 Tn/m	Carga de servicio	Ca cv=	0	Ma cv=	0.00

SOLICITACIONES		CONDICION DE APOYO	APLICA
Ma=	18.9 Tn*m	Doblemente empotrado	X

Momento de agrietamiento e Inercia efectiva		
Ig=	0.00521 m4	
Icr=	0.00267 m4	
yt=	0.25 m	
fr=	3.28 Mpa	
Mcr=	6.8 Tn*m	Momento de agrietamiento
Ie=	0.00279 m4	Doblemente empotrado

MATERIALES	
f'c=	280 Kg/cm2
E=	209165 Kg/cm2
E=	2091650 Tn/m2

DEFLEXIONES MAXIMAS SEGUN LA CONDICION DE APOYO CON CARGA UNIFORME

$$\lambda = \frac{\xi}{1+50\rho'}$$

5 años o más ..... ξ = 2.0
12 meses ..... ξ = 1.4
6 meses ..... ξ = 1.2
3 meses ..... ξ = 1.0

ρ'= **0.0074** **ξ =** **2.0**

CONDICION DE APOYO	CALCULADAS	A LARGO PLAZO
Doblemente empotrado	0.96 cm	1.40 cm

DEFLEXIONES MAXIMAS CALCULADAS PERMISIBLES

Tipo de elemento	deflexión que se considera	deflexión límite
Cubiertas planas que no soportan o no están unidas a elementos no estructurales que puedan ser dañados por deflexiones grandes	Deflexión instantánea debida a la carga viva	$\frac{\ell}{180}$ Nota (1)
Losas que no soportan o no están unidos a elementos no estructurales que puedan ser dañados por deflexiones grandes	Deflexión instantánea debida a la carga viva	$\frac{\ell}{360}$
Cubiertas o losas que soportan o están unidos a elementos no estructurales susceptibles de daño debido a deflexiones grandes	La parte de la deflexión total que se presenta después de la unión a elementos no estructurales, o sea la suma de las deflexiones a largo plazo debida a cargas permanentes, más la instantánea debida a cualquier carga viva adicional - Véase la Nota (3)	$\frac{\ell}{480}$ Nota (2)
Cubiertas o losas que soporten o estén unidos a elementos no estructurales que no puedan ser dañados por deflexiones grandes		$\frac{\ell}{240}$ Nota (4)

Notas:
(1) La intención de este límite no es salvaguardar la eventualidad de acumulación de agua por efecto de la misma deflexión. Esta debe verificarse por medio de cálculos adecuados, incluyendo las deflexiones adicionales debidas al agua acumulada y además considerando los efectos a largo plazo de todas las cargas permanentes, contraflechas, tolerancias de construcción y confiabilidad de los sistemas de drenaje.
(2) Este límite puede ser excedido si se toman medidas adecuadas para evitar el daño de los elementos soportados.
(3) Las deflexiones a largo plazo deben determinarse de acuerdo con C.9.5.2.4 o C.9.5.4.2, pero pueden reducirse en la deflexión que se calcule que ocurre antes de instalar los elementos no estructurales. Esta última deflexión debe determinarse con base en datos apropiados acerca de las características de deflexiones a largo plazo de elementos similares a los considerados.
(4) No debe ser mayor que la tolerancia de los elementos no estructurales. El límite puede ser excedido si se provee una contraflecha tal que la deflexión total menos la contraflecha no exceda el límite.

DEFLEXIONES PERMISIBLES			Aplica
L/480=	1.44 cm	Cumple	X

CALCULO DE DEFLEXIONES MAXIMAS A LARGO PLAZO (Vigueta)

CONDICIONES GEOMETRICAS			Para placas			
B	0.20 m	Base de la viga	lna=	0 m	Luz corta	
H	0.50 m	Altura de la viga	lnb=	0 m	Luz larga	
L=	7.05 m	Luz maxima Llenar Lmax	m=	0.0		
CM=	0.89 Tn/m2		Direcciones=	1		
CV=	0.5 Tn/m2		Caso apoyo=	2	Continuo en ambas direcciones	
Aferencia=	2.2 m		Ca cm=	0	Ma cm=	0.00
W=	3.06 Tn/m	Carga de servicio	Ca cv=	0	Ma cv=	0.00

SOLICITACIONES		CONDICION DE APOYO	APLICA
Ma=	6.3 Tn*m	Doblemente empotrado	X

Momento de agrietamiento e Inercia efectiva		
Ig=	0.00208 m4	
Icr=	0.00107 m4	
yt=	0.25 m	
fr=	3.28 Mpa	
Mcr=	2.7 Tn*m	Momento de agrietamiento
Ie=	0.00115 m4	Doblemente empotrado

MATERIALES	
f'c=	280 Kg/cm2
E=	209165 Kg/cm2
E=	2091650 Tn/m2

DEFLEXIONES MAXIMAS SEGUN LA CONDICION DE APOYO CON CARGA UNIFORME

$$\lambda = \frac{\xi}{1+50\rho'}$$

5 años o más ..... ξ = 2.0
12 meses ..... ξ = 1.4
6 meses ..... ξ = 1.2
3 meses ..... ξ = 1.0

ρ'= **0.0028** **ξ =** **2.0**

CONDICION DE APOYO	CALCULADAS	A LARGO PLAZO
Doblemente empotrado	0.82 cm	1.44 cm

DEFLEXIONES MAXIMAS CALCULADAS PERMISIBLES

Tipo de elemento	deflexión que se considera	deflexión límite
Cubiertas planas que no soportan o no están unidas a elementos no estructurales que puedan ser dañados por deflexiones grandes	Deflexión instantánea debida a la carga viva	$\frac{\ell}{180}$ Nota (1)
Losas que no soportan o no están unidos a elementos no estructurales que puedan ser dañados por deflexiones grandes	Deflexión instantánea debida a la carga viva	$\frac{\ell}{360}$
Cubiertas o losas que soportan o están unidos a elementos no estructurales susceptibles de daño debido a deflexiones grandes	La parte de la deflexión total que se presenta después de la unión a elementos no estructurales, o sea la suma de las deflexiones a largo plazo debida a cargas permanentes, más la instantánea debida a cualquier carga viva adicional - Véase la Nota (3)	$\frac{\ell}{480}$ Nota (2)
Cubiertas o losas que soporten o estén unidos a elementos no estructurales que no puedan ser dañados por deflexiones grandes		$\frac{\ell}{240}$ Nota (4)

Notas:
(1) La intención de este límite no es salvaguardar la eventualidad de acumulación de agua por efecto de la misma deflexión. Esta debe verificarse por medio de cálculos adecuados, incluyendo las deflexiones adicionales debidas al agua acumulada y además considerando los efectos a largo plazo de todas las cargas permanentes, contraflechas, tolerancias de construcción y confiabilidad de los sistemas de drenaje.
(2) Este límite puede ser excedido si se toman medidas adecuadas para evitar el daño de los elementos soportados.
(3) Las deflexiones a largo plazo deben determinarse de acuerdo con C.9.5.2.4 o C.9.5.4.2, pero pueden reducirse en la deflexión que se calcule que ocurre antes de instalar los elementos no estructurales. Esta última deflexión debe determinarse con base en datos apropiados acerca de las características de deflexiones a largo plazo de elementos similares a los considerados.
(4) No debe ser mayor que la tolerancia de los elementos no estructurales. El límite puede ser excedido si se provee una contraflecha tal que la deflexión total menos la contraflecha no exceda el límite.

DEFLEXIONES PERMISIBLES			Aplica
L/480=	1.47 cm	Cumple	X

CALCULO DE DEFLEXIONES MAXIMAS A LARGO PLAZO (Placa cubierta)

CONDICIONES GEOMETRICAS		
B	1.00 m	Base de la placa
H	0.15 m	Altura de la placa
L=	0 m	Luz maxima
CM=	0.51 Tn/m2	
CV=	0.18 Tn/m2	
Aferencia=	1.0 m	
W=	0.69 Tn/m	Carga de servicio

Para placas			
lna=	5.6 m		Luz corta
lnb=	7.1 m		Luz larga
m=	0.8		
Direcciones=	2		
Caso apoyo=	1	Simple en las cuatro caras	
Ca cm=	0.056	Ma cm=	0.90
Ca cv=	0.056	Ma cv=	0.32

SOLICITACIONES		CONDICION DE APOYO	APLICA	
Ma=	1.2 Tn*m	Caso 1 Simple en las cuatro caras	X	Solo aplican casos 1, 6 y 7

Momento de agrietamiento e Inercia efectiva		
Ig=	0.00028 m4	
Icr=	0.00014 m4	
yt=	0.08 m	
fr=	3.28 Mpa	
Mcr=	1.2 Tn*m	Momento de agrietamiento
Ie=	0.00028 m4	Caso 1 Simple en las cuatro caras

MATERIALES	
f'c=	280 Kg/cm2
E=	209165 Kg/cm2
E=	2091650 Tn/m2

DEFLEXIONES MAXIMAS SEGUN LA CONDICION DE APOYO CON CARGA UNIFORME

$$\lambda = \frac{\xi}{1+50\rho'}$$

5 años o más ..... ξ = 2.0
12 meses ..... ξ = 1.4
6 meses ..... ξ = 1.2
3 meses ..... ξ = 1.0

ρ'= 0.0000 **ξ =** 2.0

CONDICION DE APOYO	CALCULADAS	A LARGO PLAZO
Caso 1 Simple en las cuatro caras	1.50 cm	3.00 cm

DEFLEXIONES MAXIMAS CALCULADAS PERMISIBLES

Tipo de elemento	deflexión que se considera	deflexión límite
Cubiertas planas que no soportan o no están unidas a elementos no estructurales que puedan ser dañados por deflexiones grandes	Deflexión instantánea debida a la carga viva	$\frac{\ell}{180}$ Nota (1)
Losas que no soportan o no están unidos a elementos no estructurales que puedan ser dañados por deflexiones grandes	Deflexión instantánea debida a la carga viva	$\frac{\ell}{360}$
Cubiertas o losas que soportan o están unidos a elementos no estructurales susceptibles de daño debido a deflexiones grandes	La parte de la deflexión total que se presenta después de la unión a elementos no estructurales, o sea la suma de las deflexiones a largo plazo debida a cargas permanentes, más la instantánea debida a cualquier carga viva adicional - Véase la Nota (3)	$\frac{\ell}{480}$ Nota (2)
Cubiertas o losas que soporten o estén unidos a elementos no estructurales que no puedan ser dañados por deflexiones grandes		$\frac{\ell}{240}$ Nota (4)

Notas:
(1) La intención de este límite no es salvaguardar la eventualidad de acumulación de agua por efecto de la misma deflexión. Esta debe verificarse por medio de cálculos adecuados, incluyendo las deflexiones adicionales debidas al agua acumulada y además considerando los efectos a largo plazo de todas las cargas permanentes, contraflechas, tolerancias de construcción y confiabilidad de los sistemas de drenaje.
(2) Este límite puede ser excedido si se toman medidas adecuadas para evitar el daño de los elementos soportados.
(3) Las deflexiones a largo plazo deben determinarse de acuerdo con C.9.5.2.4 o C.9.5.4.2, pero pueden reducirse en la deflexión que se calcule que ocurre antes de instalar los elementos no estructurales. Esta última deflexión debe determinarse con base en datos apropiados acerca de las características de deflexiones a largo plazo de elementos similares a los considerados.
(4) No debe ser mayor que la tolerancia de los elementos no estructurales. El límite puede ser excedido si se provee una contraflecha tal que la deflexión total menos la contraflecha no exceda el límite.

DEFLEXIONES PERMISIBLES			Aplica
L/180=	3.94 cm	Cumple	X

DISEÑO DE PLACA MACIZA

PROYECTO : **HOSPITAL CHAPARRAL-PLACA DE CUBIERTA / ANALISIS 1**

AVALUO DE CARGAS

CM=	**0.10** Tn/m2
CV=	**0.30** Tn/m2
Wdiseño=	**1.0 Tn/m2**

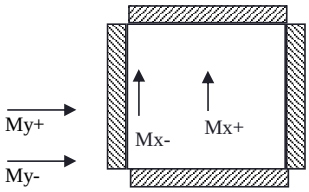
LX=	**5.45** m
LY=	**7.1** m



TRABAJO DE LA PLACA

Ly/Lx= **0.8** **DOS DIRECCIONES**

CONDICION DE APOYO



My+=	**3.8** t*m
Mx+=	**2.1** t*m
My-	**0.0** t*m
Mx-=	**0.0** t*m

SENTIDO X

SENTIDO Y

MATERIALES

f'c=	**280**	**Kg/cm^2**
fy=	**4200**	**Kg/cm^2**

DISEÑO DEL REFUERZO

d=	**10**	Cm
b=	**100**	Cm
t=	**15**	Cm

My+=	3.8	Tn*m
ρ=	0.0111	
ρmin=	0.0018	
ρdiseño=	0.0111	
As=	11.14	Cm^2/m
Varilla=	**4 /8"**	
Seperación=	**10 cm**	

SENTIDO X

Mx+=	2.1	Tn*m
ρ=	0.0058	
ρmin=	0.0018	
ρdiseño=	0.0058	
As=	5.80	Cm^2/m
Varilla=	**3 /8"**	
Seperación=	**10 cm**	

SENTIDO Y

DISEÑO DE PLACA MACIZA

PROYECTO : HOSPITAL CHAPARRAL-PLACA DE CUBIERTA / ANALISIS 2

AVALUO DE CARGAS

CM=	0.10 Tn/m2
CV=	0.30 Tn/m2
Wdiseño=	1.0 Tn/m2

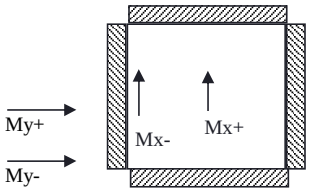
LX=	4.15 m
LY=	7.1 m



TRABAJO DE LA PLACA

Ly/Lx= 0.6 **DOS DIRECCIONES**

CONDICION DE APOYO



My+=	5.2 t*m
Mx+=	1.7 t*m
My-	0.0 t*m
Mx-=	0.0 t*m

SENTIDO X

SENTIDO Y

MATERIALES

f'c=	280	**Kg/cm^2**
fy=	4200	**Kg/cm^2**

DISEÑO DEL REFUERZO

d=	12	Cm
b=	100	Cm
t=	15	Cm

My+=	5.2	Tn*m
ρ=	0.0104	
ρmin=	0.0018	
ρdiseño=	0.0104	
As=	12.50	Cm^2/m
Varilla=	4 /8"	
Seperación=	10 cm	

SENTIDO X

Mx+=	1.7	Tn*m
ρ=	0.0031	
ρmin=	0.0018	
ρdiseño=	0.0031	
As=	3.77	Cm^2/m
Varilla=	3 /8"	
Seperación=	15 cm	

SENTIDO Y

DISEÑO DE PLACA MACIZA

PROYECTO : **HOSPITAL CHAPARRAL-PLACA DE CUBIERTA / ANALISIS 3**

AVALUO DE CARGAS

CM=	**0.10** Tn/m2
CV=	**0.30** Tn/m2
Wdiseño=	**1.0 Tn/m2**

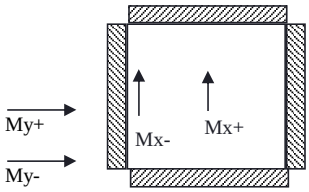
LX=	**5.6** m
LY=	**7.1** m



TRABAJO DE LA PLACA

Ly/Lx= **0.8** **DOS DIRECCIONES**

CONDICION DE APOYO



My+=	**3.8** t*m
Mx+=	**2.1** t*m
My-	**0.0** t*m
Mx-=	**0.0** t*m

SENTIDO X ↔ SENTIDO Y ↕

MATERIALES

f'c=	**280**	**Kg/cm^2**
fy=	**4200**	**Kg/cm^2**

DISEÑO DEL REFUERZO

d=	**12**	Cm
b=	**100**	Cm
t=	**15**	Cm

My+=	3.8	Tn*m
ρ=	0.0075	
ρmin=	0.0018	
ρdiseño=	0.0075	
As=	8.96	Cm^2/m
Varilla=	**4 /8"**	
Seperación=	**10 cm**	

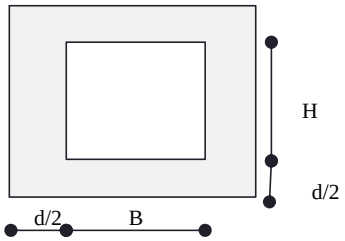
SENTIDO X

Mx+=	2.1	Tn*m
ρ=	0.0040	
ρmin=	0.0018	
ρdiseño=	0.0040	
As=	4.75	Cm^2/m
Varilla=	**3 /8"**	
Seperación=	**10 cm**	

SENTIDO Y

CHEQUEO DE PLACA A CARGA PUNTUAL

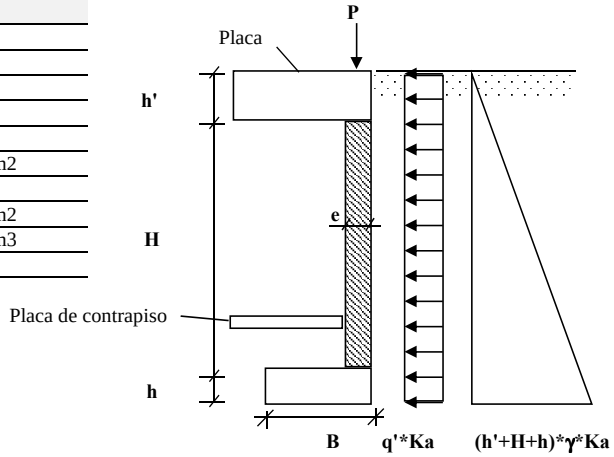
Pu=	**1** Tn	
B=	**10** cm	
H=	**10** cm	
d=	**10** cm	
d'=	**5** cm	
t=	15 cm	
bo=	40 cm	
β=	1	
αs=	**20**	
λ=	**1.0**	
f'c=	**210** kg/cm2	
Vc=	9.2 Tn	(C.11-31)
Vc=	11.0 Tn	(C.11-32)
Vc=	5.8 Tn	(C.11-33)
ϕVc=	3.48 Tn	**Cumple**



DISEÑO MUROS DE CONTENCIÓN

DISEÑO DE MUROS DE CONTENCION TIPO 1 y 4

DATOS DE ENTRADA		
e=	0.25	m
h'=	0.50	m
H=	3.80	m
h=	0.80	m
P=	8	Tn
q'=	1.00	Tn/m2
Ko=	0.5	
σ=	17.6	Tn/m2
γ=	1.90	Tn/m3
L sin apoyo=	5.0	m



1. DISENO DE MURO

Flexion

M_1=	1.63 Tn*m	Por sobrecarga
M_2=	3.17 Tn*m	Por empuje lateral

Cortante

V=	4.505 Tn

M_u=	7.67	Tn*m	
f'c=	210	Kg/Cm2	
fy=	4200	Kg/Cm2	
d=	20	Cm	
b=	100	Cm	
t=	25	Cm	
Mu=	7.7	Tn*m	
ρ=	0.0048		
ρmin=	0.002		
ρdiseño=	0.0048		
As=	9.69	Cm^2/m	
As*fy=	40685	kg	
0.85f'c*b=	17850	kg/cm	
a=	2.28	cm	
kud=	2.68	cm	
ε_c=	0.0030		
ε_f=	0.0194	Traccion	
ϕ=	0.90		
ρ /ϕ=	0.0054		
As=	10.76	Cm^2/m	
Varilla=	4 /8"		
Separación=	10 cm		

Vu=	7.2	Tn
ϕVc=	11521	Kg
ϕVc=	11.5	Tn
ϕVs=	0.00	Tn

2. DISENO DE ZARPA

Dimensionamiento

Breq=	**46 Cm**
Basumido=	**80 Cm**

Flexion como viga

M=	**14.1 Tn*m**

M_u=	22.5	Tn*m	
f'c=	**210**	Kg/Cm2	
fy=	**4200**	Kg/Cm2	
d=	**75**	Cm	
h=	**60**	Cm	Altura de la zarpa
B=	80	Cm	Ancho de la zarpa
Mu=	22.5	Tn*m	
ρ=	0.0016		
ρmin=	0.0033		
ρdiseño=	0.0033		
As=	15.84	Cm^2/m	
As*fy=	66528	kg	
0.85f'c*b=	14280	kg/cm	
a=	4.66	cm	
kud=	5.48	cm	
ε_c=	0.0030		
ε_f=	0.0381	Traccion	
ϕ=	0.90		
ρ /ϕ=	0.0037		
As=	16.50	Cm^2/m	
Varilla=	**6 /8"**		
#Varillas=	**6**		

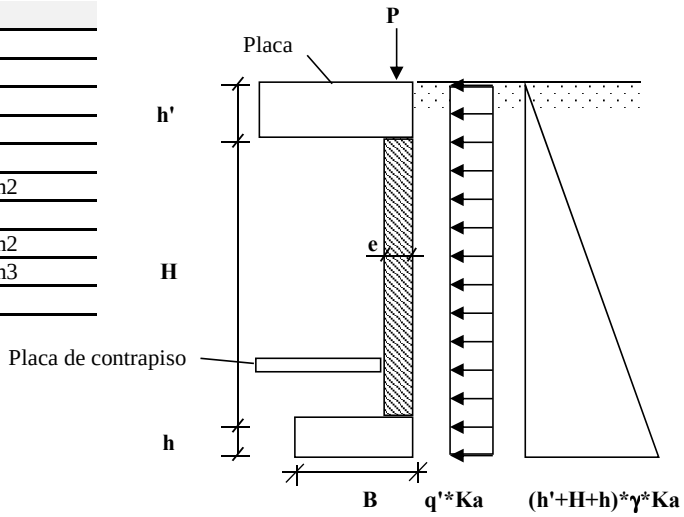
Flexion como voladizo

M=	**0.4 Tn*m**

M_u=	0.6	Tn*m
f'c=	210	Kg/Cm2
fy=	4200	Kg/Cm2
d=	53	Cm
B=	100	Cm
t=	60	Cm
Mu=	0.6	Tn*m
ρ=	0.0001	
ρmin=	0.002	
ρdiseño=	0.0020	
As=	10.60	Cm^2/m
As*fy=	44520	kg
0.85f'c*b=	17850	kg/cm
a=	2.49	cm
kud=	2.93	cm
ε_c=	0.0030	
ε_f=	0.0512	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0022	
As=	11.78	Cm^2/m
Varilla=	**4 /8"**	
Seperación=	**10 cm**	

DISEÑO DE MUROS DE CONTENCION TIPO 2

DATOS DE ENTRADA		
e=	0.25	m
h'=	0.50	m
H=	3.90	m
h=	0.80	m
P=	8	Tn
q'=	1.00	Tn/m2
Ko=	0.5	
σ=	17.6	Tn/m2
γ=	1.90	Tn/m3
L sin apoyo=	5.0	m



1. DISENO DE MURO

Flexion

M_1=	1.69 Tn*m	Por sobrecarga
M_2=	3.30 Tn*m	Por empuje lateral

Cortante

V=	4.593 Tn

M_u=	7.98	Tn*m	
f'c=	210	Kg/Cm2	
fy=	4200	Kg/Cm2	
d=	20	Cm	
b=	100	Cm	
t=	25	Cm	
Mu=	8.0	Tn*m	
ρ=	0.0050		
ρmin=	0.002		
ρdiseño=	0.0050		
As=	10.10	Cm^2/m	
As*fy=	42405	kg	
0.85f'c*b=	17850	kg/cm	
a=	2.38	cm	
kud=	2.79	cm	
ε_c=	0.0030		
ε_f=	0.0185	Traccion	
ϕ=	0.90		
ρ /ϕ=	0.0056		
As=	11.22	Cm^2/m	
Varilla=	4 /8"		
Separación=	10 cm		

Vu=	7.3	Tn
ϕVc=	11521	Kg
ϕVc=	11.5	Tn
ϕVs=	0.00	Tn

2. DISENO DE ZARPA

Dimensionamiento

Breq=	**46 Cm**
Basumido=	**80 Cm**

Flexion como viga

M=	**14.4 Tn*m**

M_u=	23.0 Tn*m	
f'c=	**210** Kg/Cm2	
fy=	**4200** Kg/Cm2	
d=	**75** Cm	
h=	**60** Cm	Altura de la zarpa
B=	80 Cm	Ancho de la zarpa
Mu=	23.0 Tn*m	
ρ=	0.0017	
ρmin=	0.0033	
ρdiseño=	0.0033	
As=	15.84 Cm^2/m	
As*fy=	66528 kg	
0.85f'c*b=	14280 kg/cm	
a=	4.66 cm	
kud=	5.48 cm	
ε_c=	0.0030	
ε_f=	0.0381 Traccion	
ϕ=	0.90	
ρ /ϕ=	0.0037	
As=	16.50 Cm^2/m	
Varilla=	**6 /8"**	
#Varillas=	**6**	

Flexion como voladizo

M=	0.4	Tn*m

M_u=	0.6	Tn*m
f'c=	210	Kg/Cm2
fy=	4200	Kg/Cm2
d=	53	Cm
B=	100	Cm
t=	60	Cm
Mu=	0.6	Tn*m
ρ=	0.0001	
ρmin=	0.002	
ρdiseño=	0.0020	
As=	10.60	Cm^2/m
As*fy=	44520	kg
0.85f'c*b=	17850	kg/cm
a=	2.49	cm
kud=	2.93	cm
ε_c=	0.0030	
ε_t=	0.0512	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0022	
As=	11.78	Cm^2/m
Varilla=	**4 /8"**	
Seperación=	**10 cm**	

DISEÑO DE CIMENTACIÓN

DISEÑO DE ZAPATAS CONCENTRICAS (1)

DATOS DE ENTRADA

σ suelo=	17.6	Tn/m^2
fy=	4200	Kg/Cm^2
f'c=	210	Kg/Cm^2
ϕ Cortante=	0.75	
ϕ Flexion=	0.90	
<Dimension	1.00	m

(C.11-31)	$V_c = 0.17\left(1+\frac{2}{\beta}\right)\lambda\sqrt{f'_c}b_o d$
(C.11-32)	$V_c = 0.083\left(\frac{\alpha_s d}{b_o}+2\right)\lambda\sqrt{f'_c}b_o d$
(C.11-33)	$V_c = 0.33\lambda\sqrt{f'_c}b_o d$

(C.11-31)	$V_c = 0.53\left(1+\frac{2}{\beta}\right)\lambda\sqrt{f'_c}b_o d$
(C.11-32)	$V_c = 0.27\left(\frac{\alpha_s d}{b_o}+2\right)\lambda\sqrt{f'_c}b_o d$
(C.11-33)	$V_c = \lambda\sqrt{f'_c}b_o d$

*Condicion 1(C.11-31)
*Condicion 2(C.11-32)
*Condicion 3(C.11-33)

ZAPATA TIPO	COL	Pu (Tn)	Mu (Tn*m)	Preal (tn)	Mr (Tn*m)	e (m)	A (m)	B (m)	1.1P (Tn)	A (m2)	L (m)	H (m)	σneto (Tn/m2)	σu (Tn/m2)	DIMENSIONAMIENTO d (Cm)	h (Cm)	bo (Cm)	αs	βc	Vu (Tn)	REVISION POR PUNZONAMIENTO C.11-31	C.11-32	C.11-33	CORTE COMO VIGA Sentido corto Vu(Tn)	Sentido largo Vu(Tn)	d req (Cm)	
16B	3	200.04	26.2	133.4	14.1	0.11	0.60	0.60	146.7	8.34	3.20	3.20	17.16	23.40	OK	43	50	412	40	1	175.22	24.61	23.47	39.13	OK	65.14	65.14	26.50	OK
24B	4	166.51	108.6	111.0	58.3	0.53	0.60	0.60	122.1	6.94	3.65	3.65	17.08	23.29	OK	38	45	392	40	1	144.14	21.28	21.32	33.83	OK	97.35	97.35	34.73	OK
12B	6	173.33	26.8	115.6	14.4	0.12	0.60	0.60	127.1	7.22	3.05	3.05	17.01	23.19	OK	38	45	392	40	1	151.06	22.30	22.34	35.46	OK	59.77	59.77	25.52	OK
21B	7	233.09	20.4	155.4	10.9	0.07	0.60	0.60	170.9	9.71	3.35	3.35	17.15	23.39	OK	48	55	432	40	1	205.81	27.57	25.19	43.83	OK	70.12	70.12	27.25	OK
23B	8	168.19	102.4	112.1	55.0	0.49	0.60	0.60	123.3	7.01	3.60	3.60	17.30	23.59	OK	38	45	392	40	1	145.53	21.48	21.53	34.16	OK	95.12	95.12	34.40	OK
10B	10	167.42	25.3	111.6	13.6	0.12	0.60	0.60	122.8	6.98	3.00	3.00	16.96	23.13	OK	38	45	392	40	1	145.20	21.44	21.48	34.08	OK	56.90	56.90	24.70	OK
18B	11	220.64	21.3	147.1	11.4	0.08	0.60	0.60	161.8	9.19	3.25	3.25	17.52	23.89	OK	48	55	432	40	1	192.78	25.82	23.60	41.06	OK	65.60	65.60	26.28	OK
20B	14	231.77	20.2	154.5	10.8	0.07	0.60	0.60	170.0	9.66	3.30	3.30	17.60	24.00	OK	48	55	432	40	1	203.78	27.30	24.94	43.40	OK	68.90	68.90	27.18	OK
20B	15	229.49	19.4	153.0	10.4	0.07	0.60	0.60	168.3	9.56	3.30	3.30	17.36	23.68	OK	48	55	432	40	1	201.87	27.04	24.71	43.00	OK	67.98	67.98	26.82	OK
16B	16	209.78	19.2	139.9	10.3	0.07	0.60	0.60	153.8	8.74	3.20	3.20	17.10	23.32	OK	43	50	412	40	1	185.04	25.99	24.79	41.32	OK	64.92	64.92	26.42	OK
7B	17	151.73	21.4	101.2	11.5	0.11	0.60	0.60	111.3	6.32	2.90	2.90	16.34	22.28	OK	33	40	372	40	1	132.46	20.61	21.87	32.76	OK	52.97	52.97	23.78	OK
22B	21	239.92	23.9	159.9	12.9	0.08	0.60	0.60	175.9	#####	3.40	3.40	17.38	23.70	OK	48	55	432	40	1	212.28	28.44	25.98	45.21	OK	74.13	74.13	28.39	OK
16B	22	208.59	20.6	139.1	11.1	0.08	0.60	0.60	153.0	8.69	3.20	3.20	17.17	23.41	OK	43	50	412	40	1	183.75	25.81	24.61	41.04	OK	65.18	65.18	26.52	OK
3B	23	137.81	19.3	91.9	10.4	0.11	0.60	0.60	101.1	5.74	2.70	2.70	17.34	23.64	OK	33	40	372	40	1	117.36	18.26	19.38	29.03	OK	45.96	45.96	22.16	OK
22B	26	223.64	31.7	149.1	17.0	0.11	0.60	0.60	164.0	9.32	3.40	3.40	17.05	23.24	OK	48	55	432	40	1	196.53	26.33	24.06	41.86	OK	72.71	72.71	27.84	OK
20B	27	220.63	27.0	147.1	14.5	0.10	0.60	0.60	161.8	9.19	3.30	3.30	17.52	23.90	OK	48	55	432	40	1	192.76	25.82	23.59	41.05	OK	68.61	68.61	27.07	OK
3B	28	136.55	20.5	91.0	11.0	0.12	0.60	0.60	100.1	5.69	2.70	2.70	17.42	23.76	OK	33	40	372	40	1	116.00	18.05	19.15	28.69	OK	46.18	46.18	22.27	OK
19B	32	202.28	35.6	134.9	19.1	0.14	0.60	0.60	148.3	8.43	3.30	3.30	17.13	23.36	OK	43	50	412	40	1	177.50	24.93	23.78	39.64	OK	70.93	70.93	27.98	OK
4B	33	134.41	22.8	89.6	12.3	0.14	0.60	0.60	98.6	5.60	2.75	2.75	16.93	23.08	OK	33	40	372	40	1	114.45	17.80	18.90	28.31	OK	47.29	47.29	22.39	OK
19B	36	208.60	32.8	139.1	17.6	0.13	0.60	0.60	153.0	8.69	3.30	3.30	17.29	23.57	OK	43	50	412	40	1	183.59	25.79	24.59	41.00	OK	71.57	71.57	28.24	OK
13B	311	115.95	69.7	77.3	37.4	0.48	0.60	0.60	85.0	4.83	3.10	3.10	17.14	23.37	OK	33	40	372	40	1	95.73	14.89	15.81	23.68	OK	66.66	66.66	28.00	OK
14B	312	132.23	67.7	88.2	36.4	0.41	0.60	0.60	97.0	5.51	3.15	3.15	17.46	23.80	OK	33	40	372	40	1	111.64	17.37	18.43	27.61	OK	70.86	70.86	29.29	OK
9B	313	112.87	63.5	75.2	34.1	0.45	0.60	0.60	82.8	4.70	3.00	3.00	17.53	23.91	OK	33	40	372	40	1	92.19	14.34	15.22	22.80	OK	62.40	62.40	27.08	OK
14B	315	127.07	67.4	84.7	36.2	0.43	0.60	0.60	93.2	5.29	3.15	3.15	17.04	23.23	OK	33	40	372	40	1	106.98	16.64	17.66	26.46	OK	69.16	69.16	28.59	OK
13B	316	130.58	61.4	87.1	33.0	0.38	0.60	0.60	95.8	5.44	3.10	3.10	17.27	23.56	OK	33	40	372	40	1	110.21	17.14	18.20	27.26	OK	67.18	67.18	28.22	OK
11B	317	125.08	56.5	83.4	30.3	0.36	0.60	0.60	91.7	5.21	3.05	3.05	16.92	23.07	OK	33	40	372	40	1	105.13	16.35	17.36	26.00	OK	62.98	62.98	26.88	OK
8B	319	95.44	67.2	63.6	36.1	0.57	0.60	0.60	70.0	3.98	2.95	2.95	17.31	23.61	OK	33	40	372	40	1	75.02	11.67	12.39	18.55	OK	58.85	58.85	25.98	OK
11B	320	126.13	61.1	84.1	32.8	0.39	0.60	0.60	92.5	5.26	3.05	3.05	17.58	23.97	OK	33	40	372	40	1	105.40	16.39	17.40	26.07	OK	65.44	65.44	27.94	OK
6B	321	102.66	54.4	68.4	29.2	0.43	0.60	0.60	75.3	4.28	2.90	2.90	16.85	22.98	OK	28	35	352	40	1	84.86	13.95	15.85	22.18	OK	57.99	57.99	26.03	OK
5B	322	101.53	49.5	67.7	26.6	0.39	0.60	0.60	74.5	4.23	2.80	2.80	17.49	23.85	OK	28	35	352	40	1	83.06	13.65	15.52	21.71	OK	54.76	54.76	25.46	OK
14B	324	126.83	67.2	84.6	36.1	0.43	0.60	0.60	93.0	5.28	3.15	3.15	16.99	23.17	OK	33	40	372	40	1	106.79	16.61	17.63	26.41	OK	68.98	68.98	28.51	OK
6B	325	93.27	60.7	62.2	32.6	0.52	0.60	0.60	68.4	3.89	2.90	2.90	16.96	23.13	OK	28	35	352	40	1	75.36	12.39	14.08	19.70	OK	58.35	58.35	26.20	OK

				DIMENSIONAMIENTO													REVISION POR PUNZONAMIENTO									CORTE COMO VIGA		
ZAPATA TIPO	COL	Pu (Tn)	Mu (Tn*m)	Preal (tn)	Mr (Tn*m)	e (m)	A (m)	B (m)	1.1P (Tn)	A (m2)	L (m)	H (m)	σneto (Tn/m2)	σu (Tn/m2)	d (Cm)	h (Cm)	bo (Cm)	αs	βc	Vu (Tn)	C.11-31	C.11-32	C.11-33	Sentido corto Vu(Tn)	Sentido largo Vu(Tn)	d req (Cm)
6B	326	96.65	54.0	64.4	29.0	0.45	0.60	0.60	70.9	4.03	2.90	2.90	16.27	22.19	OK	28	35	352	40	1	79.47	13.06	14.85	20.77	OK	55.98	55.98	25.13	OK
2B	327	76.63	48.3	51.1	25.9	0.51	0.60	0.60	56.2	3.19	2.65	2.65	17.19	23.45	OK	28	35	352	40	1	58.47	9.61	10.92	15.28	OK	46.29	46.29	22.74	OK
6B	328	116.65	43.8	77.8	23.5	0.30	0.60	0.60	85.5	4.86	2.90	2.90	16.54	22.56	OK	28	35	352	40	1	99.18	16.30	18.53	25.92	OK	56.92	56.92	25.55	OK
17B	330	144.53	68.8	96.4	36.9	0.38	0.60	0.60	106.0	6.02	3.25	3.25	17.14	23.37	OK	33	40	372	40	1	124.32	19.34	20.53	30.75	OK	75.57	75.57	30.27	OK
11B	331	125.23	60.7	83.5	32.6	0.39	0.60	0.60	91.8	5.22	3.05	3.05	17.45	23.80	OK	33	40	372	40	1	104.65	16.28	17.28	25.88	OK	64.96	64.96	27.73	OK
13B	332	142.99	55.2	95.3	29.6	0.31	0.60	0.60	104.9	5.96	3.10	3.10	17.48	23.84	OK	33	40	372	40	1	122.37	19.04	20.20	30.27	OK	67.98	67.98	28.55	OK
5B	333	99.61	46.9	66.4	25.2	0.38	0.60	0.60	73.0	4.15	2.80	2.80	16.88	23.02	OK	28	35	352	40	1	81.78	13.44	15.28	21.38	OK	52.86	52.86	24.58	OK
7B	334	128.26	43.4	85.5	23.3	0.27	0.60	0.60	94.1	5.34	2.90	2.90	17.49	23.85	OK	33	40	372	40	1	107.63	16.74	17.77	26.62	OK	56.71	56.71	25.46	OK
8B	335	141.30	38.8	94.2	20.8	0.22	0.60	0.60	103.6	5.89	2.95	2.95	17.26	23.54	OK	33	40	372	40	1	120.94	18.81	19.97	29.91	OK	58.68	58.68	25.90	OK
6B	337	86.95	66.3	58.0	35.6	0.61	0.60	0.60	63.8	3.62	2.90	2.90	17.22	23.48	OK	28	35	352	40	1	68.76	11.30	12.85	17.97	OK	59.25	59.25	26.60	OK
15B	338	143.70	62.3	95.8	33.5	0.35	0.60	0.60	105.4	5.99	3.20	3.20	17.03	23.23	OK	33	40	372	40	1	123.61	19.23	20.41	30.57	OK	72.09	72.09	29.33	OK
11B	339	135.17	55.4	90.1	29.8	0.33	0.60	0.60	99.1	5.63	3.05	3.05	17.58	23.98	OK	33	40	372	40	1	114.43	17.80	18.89	28.30	OK	65.45	65.45	27.94	OK
13B	340	150.87	48.6	100.6	26.1	0.26	0.60	0.60	110.6	6.29	3.10	3.10	17.29	23.58	OK	33	40	372	40	1	130.48	20.30	21.54	32.27	OK	67.25	67.25	28.25	OK
6B	341	122.37	41.3	81.6	22.2	0.27	0.60	0.60	89.7	5.10	2.90	2.90	16.67	22.73	OK	28	35	352	40	1	104.77	17.22	19.57	27.38	OK	57.35	57.35	25.75	OK
9B	342	152.42	38.3	101.6	20.6	0.20	0.60	0.60	111.8	6.35	3.00	3.00	17.45	23.80	OK	33	40	372	40	1	131.84	20.51	21.77	32.61	OK	62.11	62.11	26.96	OK
6B	345	85.34	60.0	56.9	32.2	0.57	0.60	0.60	62.6	3.56	2.90	2.90	16.17	22.05	OK	28	35	352	40	1	68.27	11.22	12.75	17.84	OK	55.62	55.62	24.97	OK
6B	346	96.37	54.7	64.2	29.4	0.46	0.60	0.60	70.7	4.02	2.90	2.90	16.35	22.30	OK	28	35	352	40	1	79.10	13.00	14.78	20.68	OK	56.25	56.25	25.26	OK
2B	347	80.11	46.4	53.4	24.9	0.47	0.60	0.60	58.7	3.34	2.65	2.65	17.21	23.47	OK	28	35	352	40	1	61.93	10.18	11.57	16.19	OK	46.34	46.34	22.77	OK
11B	348	151.70	41.3	101.1	22.2	0.22	0.60	0.60	111.2	6.32	3.05	3.05	17.12	23.35	OK	33	40	372	40	1	131.51	20.46	21.71	32.53	OK	63.73	63.73	27.21	OK
5B	349	116.75	38.6	77.8	20.7	0.27	0.60	0.60	85.6	4.86	2.80	2.80	17.15	23.39	OK	28	35	352	40	1	98.64	16.22	18.43	25.78	OK	53.70	53.70	24.97	OK
3B	351	77.32	52.6	51.5	28.3	0.55	0.60	0.60	56.7	3.22	2.70	2.70	17.26	23.53	OK	33	40	372	40	1	56.97	8.86	9.41	14.09	OK	45.74	45.74	22.06	OK
1B	352	79.83	41.5	53.2	22.3	0.42	0.60	0.60	58.5	3.33	2.60	2.60	17.03	23.23	OK	28	35	352	40	1	61.84	10.17	11.55	16.17	OK	43.48	43.48	21.77	OK
7B	353	136.89	38.9	91.3	20.9	0.23	0.60	0.60	100.4	5.70	2.90	2.90	17.60	23.99	OK	33	40	372	40	1	116.14	18.07	19.17	28.72	OK	57.06	57.06	25.62	OK
4B	354	104.84	41.1	69.9	22.1	0.32	0.60	0.60	76.9	4.37	2.75	2.75	17.17	23.42	OK	33	40	372	40	1	84.59	13.16	13.97	20.92	OK	47.97	47.97	22.71	OK
2B	355	87.06	42.9	58.0	23.0	0.40	0.60	0.60	63.8	3.63	2.65	2.65	17.26	23.54	OK	28	35	352	40	1	68.83	11.32	12.86	17.99	OK	46.47	46.47	22.83	OK
5B	356	110.67	44.3	73.8	23.8	0.32	0.60	0.60	81.2	4.61	2.80	2.80	17.50	23.86	OK	28	35	352	40	1	92.19	15.16	17.22	24.10	OK	54.79	54.79	25.48	OK

DISEÑO DE ZAPATAS CONCENTRICAS (2)

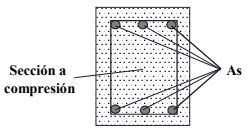
C.10.14 — Resistencia al aplastamiento

C.10.14.1 — La resistencia de diseño al aplastamiento del concreto no debe exceder $\phi(0.85f'_c A_1)$ excepto cuando la superficie de soporte sea más ancha en todos los lados que el área cargada, en cuyo caso, se permite que la resistencia de diseño al aplastamiento en el área cargada sea multiplicada por $\sqrt{(A_2/A_1)}$, pero no más que 2.

| | | DISEÑO A FLEXION | | |

	DISEÑO A FLEXION																						PRESION DE CONTACTO	
	REF. SENTIDO A									REF. SENTIDO B														
ZAPATA TIPO	Lv (m)	Mu (Tn*m)	ρ	ρ min	ρ diseño	Seccion en	As (Cm2)	Refuerzo sentido A		Lv (m)	Mu (Tn*m)	ρ	ρ min	ρ diseño	Seccion en	As (Cm2)	Refuerzo sentido B		Pu (Tn)	ϕ*0,85*f'c*A_1 (Tn)	
6B	1.15	16.14	0.0058	0.0018	0.0058	Traccion	16.37	29 # 5.33	c/. 10	1.15	16.14	0.0058	0.0018	0.0058	Traccion	16.37	29 # 5.33	c/. 10	96.65	417.7	Cumple
2B	1.03	13.55	0.0048	0.0018	0.0048	Traccion	13.58	27 # 5.31	c/. 10	1.03	13.55	0.0048	0.0018	0.0048	Traccion	13.58	27 # 5.31	c/. 10	76.63	417.7	Cumple
6B	1.15	16.41	0.0060	0.0018	0.0060	Traccion	16.67	29 # 5.33	c/. 10	1.15	16.41	0.0060	0.0018	0.0060	Traccion	16.67	29 # 5.33	c/. 10	116.65	417.7	Cumple
17B	1.33	22.56	0.0059	0.0018	0.0059	Traccion	19.44	33 # 5.37	c/. 10	1.33	22.56	0.0059	0.0018	0.0059	Traccion	19.44	33 # 5.37	c/. 10	144.53	417.7	Cumple
11B	1.23	19.64	0.0051	0.0018	0.0051	Traccion	16.74	31 # 5.35	c/. 10	1.23	19.64	0.0051	0.0018	0.0051	Traccion	16.74	31 # 5.35	c/. 10	125.23	417.7	Cumple
13B	1.25	20.48	0.0053	0.0018	0.0053	Traccion	17.52	31 # 5.35	c/. 10	1.25	20.48	0.0053	0.0018	0.0053	Traccion	17.52	31 # 5.35	c/. 10	142.99	417.7	Cumple
5B	1.10	15.32	0.0055	0.0018	0.0055	Traccion	15.48	28 # 5.32	c/. 10	1.10	15.32	0.0055	0.0018	0.0055	Traccion	15.48	28 # 5.32	c/. 10	99.61	417.7	Cumple
7B	1.15	17.35	0.0044	0.0018	0.0044	Traccion	14.67	29 # 5.33	c/. 10	1.15	17.35	0.0044	0.0018	0.0044	Traccion	14.67	29 # 5.33	c/. 10	128.26	417.7	Cumple
8B	1.18	17.87	0.0046	0.0018	0.0046	Traccion	15.15	30 # 5.34	c/. 10	1.18	17.87	0.0046	0.0018	0.0046	Traccion	15.15	30 # 5.34	c/. 10	141.30	417.7	Cumple
6B	1.15	17.08	0.0062	0.0018	0.0062	Traccion	17.41	29 # 5.33	c/. 10	1.15	17.08	0.0062	0.0018	0.0062	Traccion	17.41	29 # 5.33	c/. 10	86.95	417.7	Cumple
15B	1.30	21.59	0.0056	0.0018	0.0056	Traccion	18.53	32 # 5.36	c/. 10	1.30	21.59	0.0056	0.0018	0.0056	Traccion	18.53	32 # 5.36	c/. 10	143.70	417.7	Cumple
11B	1.23	19.79	0.0051	0.0018	0.0051	Traccion	16.88	31 # 5.35	c/. 10	1.23	19.79	0.0051	0.0018	0.0051	Traccion	16.88	31 # 5.35	c/. 10	135.17	417.7	Cumple
13B	1.25	20.26	0.0052	0.0018	0.0052	Traccion	17.31	31 # 5.35	c/. 10	1.25	20.26	0.0052	0.0018	0.0052	Traccion	17.31	31 # 5.35	c/. 10	150.87	417.7	Cumple
6B	1.15	16.53	0.0060	0.0018	0.0060	Traccion	16.81	29 # 5.33	c/. 10	1.15	16.53	0.0060	0.0018	0.0060	Traccion	16.81	29 # 5.33	c/. 10	122.37	417.7	Cumple
9B	1.20	18.85	0.0049	0.0018	0.0049	Traccion	16.03	30 # 5.34	c/. 10	1.20	18.85	0.0049	0.0018	0.0049	Traccion	16.03	30 # 5.34	c/. 10	152.42	417.7	Cumple
6B	1.15	16.04	0.0058	0.0018	0.0058	Traccion	16.26	29 # 5.33	c/. 10	1.15	16.04	0.0058	0.0018	0.0058	Traccion	16.26	29 # 5.33	c/. 10	85.34	417.7	Cumple
2B	1.03	13.56	0.0049	0.0018	0.0049	Traccion	13.59	27 # 5.31	c/. 10	1.03	13.56	0.0049	0.0018	0.0049	Traccion	13.59	27 # 5.31	c/. 10	80.11	417.7	Cumple
11B	1.23	19.27	0.0050	0.0018	0.0050	Traccion	16.41	31 # 5.35	c/. 10	1.23	19.27	0.0050	0.0018	0.0050	Traccion	16.41	31 # 5.35	c/. 10	151.70	417.7	Cumple
5B	1.10	15.57	0.0056	0.0018	0.0056	Traccion	15.75	28 # 5.32	c/. 10	1.10	15.57	0.0056	0.0018	0.0056	Traccion	15.75	28 # 5.32	c/. 10	116.75	417.7	Cumple
3B	1.05	14.27	0.0036	0.0018	0.0036	Traccion	11.95	27 # 4.30	c/. 10	1.05	14.27	0.0036	0.0018	0.0036	Traccion	11.95	27 # 4.30	c/. 10	77.32	417.7	Cumple
1B	1.00	12.77	0.0046	0.0018	0.0046	Traccion	12.75	18 # 5.30	c/. 15	1.00	12.77	0.0046	0.0018	0.0046	Traccion	12.75	18 # 5.30	c/. 15	79.83	417.7	Cumple
7B	1.15	17.45	0.0045	0.0018	0.0045	Traccion	14.77	29 # 5.33	c/. 10	1.15	17.45	0.0045	0.0018	0.0045	Traccion	14.77	29 # 5.33	c/. 10	136.89	417.7	Cumple
4B	1.08	14.88	0.0038	0.0018	0.0038	Traccion	12.49	28 # 4.31	c/. 10	1.08	14.88	0.0038	0.0018	0.0038	Traccion	12.49	28 # 4.31	c/. 10	104.84	417.7	Cumple
2B	1.03	13.60	0.0049	0.0018	0.0049	Traccion	13.63	27 # 5.31	c/. 10	1.03	13.60	0.0049	0.0018	0.0049	Traccion	13.63	27 # 5.31	c/. 10	87.06	417.7	Cumple
5B	1.10	15.88	0.0057	0.0018	0.0057	Traccion	16.09	28 # 5.32	c/. 10	1.10	15.88	0.0057	0.0018	0.0057	Traccion	16.09	28 # 5.32	c/. 10	110.67	417.7	Cumple

DISEÑO DE ZAPATAS CONCENTRICAS (3)



DISEÑO DE VIGA DE CIMENTACION																	
ZAPATA TIPO	% DE CARGA	P (Tn)	As (Cm2)	Seccion a compresión (Cm2)	B (Cm)	H (Cm)	- C	+ T	As	Refuerzo							
16B	10%	20.0	3.33	95.3	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
24B	10%	16.7	2.78	79.3	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
12B	10%	17.3	2.89	82.5	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
21B	10%	23.3	3.88	111.0	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
23B	10%	16.8	2.80	80.1	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
10B	10%	16.7	2.79	79.7	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
18B	10%	22.1	3.68	105.1	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
20B	10%	23.2	3.86	110.4	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
20B	10%	22.9	3.82	109.3	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
16B	10%	21.0	3.50	99.9	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
7B	10%	15.2	2.53	72.3	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
22B	10%	24.0	4.00	114.2	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
16B	10%	20.9	3.48	99.3	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
3B	10%	13.8	2.30	65.6	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
22B	10%	22.4	3.73	106.5	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
20B	10%	22.1	3.68	105.1	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
3B	10%	13.7	2.28	65.0	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
19B	10%	20.2	3.37	96.3	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
4B	10%	13.4	2.24	64.0	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
19B	10%	20.9	3.48	99.3	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
13B	10%	11.6	1.93	55.2	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
14B	10%	13.2	2.20	63.0	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
9B	10%	11.3	1.88	53.7	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
14B	10%	12.7	2.12	60.5	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
13B	10%	13.1	2.18	62.2	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
11B	10%	12.5	2.08	59.6	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
8B	10%	9.5	1.59	45.4	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
11B	10%	12.6	2.10	60.1	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
6B	10%	10.3	1.71	48.9	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
5B	10%	10.2	1.69	48.3	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
14B	10%	12.7	2.11	60.4	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35
6B	10%	9.3	1.55	44.4	60	80	OK	OK	14.45	6	#	6	fl #	3	c/.	35

DISEÑO DE VIGA DE CIMENTACION

ZAPATA TIPO	% DE CARGA	P (Tn)	As (Cm2)	Seccion a compresión (Cm2)	B (Cm)	H (Cm)	- C	+ T	As	Refuerzo
6B	10%	9.7	1.61	46.0	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
2B	10%	7.7	1.28	36.5	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
6B	10%	11.7	1.94	55.5	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
17B	10%	14.5	2.41	68.8	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
11B	10%	12.5	2.09	59.6	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
13B	10%	14.3	2.38	68.1	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
5B	10%	10.0	1.66	47.4	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
7B	10%	12.8	2.14	61.1	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
8B	10%	14.1	2.36	67.3	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
6B	10%	8.7	1.45	41.4	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
15B	10%	14.4	2.40	68.4	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
11B	10%	13.5	2.25	64.4	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
13B	10%	15.1	2.51	71.8	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
6B	10%	12.2	2.04	58.3	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
9B	10%	15.2	2.54	72.6	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
6B	10%	8.5	1.42	40.6	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
6B	10%	9.6	1.61	45.9	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
2B	10%	8.0	1.34	38.1	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
11B	10%	15.2	2.53	72.2	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
5B	10%	11.7	1.95	55.6	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
3B	10%	7.7	1.29	36.8	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
1B	10%	8.0	1.33	38.0	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
7B	10%	13.7	2.28	65.2	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
4B	10%	10.5	1.75	49.9	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
2B	10%	8.7	1.45	41.5	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35
5B	10%	11.1	1.84	52.7	60	80	OK	OK	14.45	6 # 6 fl # 3 c/. 35

DISEÑO DE ZAPATAS EXCENTRICAS (1)

DATOS DE ENTRADA

σ suelo=	17.6	Tn/m^2
fy=	4200	Kg/Cm^2
f'c=	210	Kg/Cm^2
f Cortante=	0.75	
f Flexion=	0.90	
◁Dimension	1.00	m

(C.11-31)	$V_c = 0.17\left(1+\frac{2}{\beta}\right)\lambda\sqrt{f'_c}b_o d$
(C.11-32)	$V_c = 0.083\left(\frac{\alpha_s d}{b_o}+2\right)\lambda\sqrt{f'_c}b_o d$
(C.11-33)	$V_c = 0.33\lambda\sqrt{f'_c}b_o d$

(C.11-31)	$V_c = 0.53\left(1+\frac{2}{\beta}\right)\lambda\sqrt{f'_c}b_o d$
(C.11-32)	$V_c = 0.27\left(\frac{\alpha_s d}{b_o}+2\right)\lambda\sqrt{f'_c}b_o d$
(C.11-33)	$V_c = \lambda\sqrt{f'_c}b_o d$

*Condicion 1(C.11-31)
*Condicion 2(C.11-32)
*Condicion 3(C.11-33)

ZAPATA TIPO	COL	DIMENSIONAMIENTO																			REVISION POR PUNZONAMIENTO										CORTE COMO VIGA			
		Pu (Tn)	Mu (Tn*m)	Preal (tn)	Mr (Tn*m)	e (m)	A (m)	B (m)	Le (m)	L.IP (Tn)	A (m2)	L (m)	H (m)	e (m)	ΔR (Tn)	σneto (Tn/m2)	σultimo (Tn/m2)		d (Cm)	h (Cm)	bo (Cm)	αs	βc	Vu (Tn)	C.11-31	C.11-32	C.11-33					Sentido corto Vu(Tn)	Sentido largo Vu(Tn)	d requerido (Cm)	
41B	1	114.47	101.34	76.3	54.4	0.71	0.60	0.60	3.96	83.9	4.77	2.50	3.25	0.95	24.09	13.30	18.13	OK	53	60	339	30	1	91.32	30.60	13.72	24.78	OK				36.04	24.75	36.04	18.77	OK
34B	2	117.00	29.68	78.0	15.9	0.20	0.60	0.60	3.96	85.8	4.88	2.15	2.80	0.78	18.98	17.41	23.73	OK	43	50	309	30	1	91.82	33.75	16.40	27.34	OK				34.19	22.93	34.19	20.70	OK
33B	5	107.90	31.44	71.9	16.9	0.23	0.60	0.60	3.96	79.1	4.50	2.05	2.70	0.73	16.12	17.21	23.47	OK	38	45	294	30	1	85.36	32.98	16.03	26.71	OK				32.23	21.86	32.23	20.47	OK
36B	9	127.16	32.97	84.8	17.7	0.21	0.60	0.60	3.96	93.3	5.30	2.25	2.95	0.83	22.31	17.41	23.74	OK	43	50	309	30	1	101.97	37.49	18.21	30.36	OK				39.80	27.66	39.80	23.03	OK
40B	12	163.88	103.37	109.3	55.5	0.51	0.60	0.60	6.61	120.2	6.83	2.45	3.20	0.93	17.78	17.60	23.99	OK	48	55	324	30	1	135.89	47.64	22.18	38.59	OK				48.21	34.17	48.21	25.62	OK
40B	13	161.83	104.64	107.9	56.2	0.52	0.60	0.60	6.61	118.7	6.74	2.45	3.20	0.93	17.55	17.38	23.69	OK	48	55	324	30	1	134.19	47.05	21.90	38.11	OK				47.60	33.74	47.60	25.30	OK
42B	18	193.31	29.17	128.9	15.7	0.12	0.60	0.60	7.63	141.8	8.05	2.70	3.55	1.05	20.56	16.93	23.09	OK	58	65	354	30	1	161.15	51.71	22.43	41.88	OK				55.80	38.53	55.80	26.91	OK
43B	19	136.72	34.39	91.1	18.5	0.20	0.60	0.60	3.96	100.3	5.70	2.80	2.80	1.10	35.06	17.26	23.54	OK	58	65	236	20	1	103.94	50.03	21.70	40.52	OK				34.27	34.27	34.27	15.93	OK
40B	20	162.73	102.36	108.5	55.0	0.51	0.60	0.60	6.61	119.3	6.78	2.45	3.20	0.93	17.65	17.47	23.83	OK	48	55	324	30	1	134.94	47.31	22.02	38.32	OK				47.87	33.93	47.87	25.44	OK
38B	24	152.44	18.93	101.6	10.2	0.10	0.60	0.60	7.63	111.8	6.35	2.35	3.10	0.88	13.16	17.15	23.39	OK	48	55	324	30	1	125.15	43.88	20.43	35.54	OK				42.32	28.64	42.32	23.45	OK
41B	25	166.54	102.72	111.0	55.2	0.50	0.60	0.60	6.61	122.1	6.94	2.50	3.25	0.95	18.64	17.32	23.62	OK	53	60	339	30	1	136.37	45.70	20.49	37.01	OK				46.95	32.25	46.95	24.45	OK
37B	29	146.36	20.31	97.6	10.9	0.11	0.60	0.60	7.63	107.3	6.10	2.30	3.00	0.85	12.23	17.33	23.63	OK	48	55	324	30	1	118.80	41.65	19.39	33.74	OK				39.13	26.23	39.13	22.15	OK
39B	30	119.02	99.19	79.3	53.3	0.67	0.60	0.60	6.66	87.3	4.96	2.40	2.40	0.90	12.40	17.31	23.60	OK	53	60	226	20	1	88.89	44.68	20.03	36.19	OK				20.96	20.96	20.96	11.37	OK
35B	31	132.96	37.77	88.6	20.3	0.23	0.60	0.60	6.90	97.5	5.54	2.20	2.90	0.80	11.62	17.10	23.32	OK	43	50	309	30	1	108.21	39.78	19.33	32.22	OK				36.95	25.03	36.95	21.87	OK
37B	34	147.26	20.29	98.2	10.9	0.11	0.60	0.60	7.63	108.0	6.14	2.30	3.00	0.85	12.31	17.43	23.77	OK	48	55	324	30	1	119.53	41.90	19.51	33.94	OK				39.37	26.39	39.37	22.29	OK
34B	35	125.28	39.68	83.5	21.3	0.26	0.60	0.60	6.90	91.9	5.22	2.15	2.80	0.78	10.57	17.02	23.20	OK	43	50	309	30	1	100.66	37.00	17.98	29.97	OK				33.43	22.42	33.43	20.24	OK
37B	37	146.41	18.77	97.6	10.1	0.10	0.60	0.60	7.63	107.4	6.10	2.30	3.00	0.85	12.24	17.33	23.64	OK	48	55	324	30	1	118.84	41.66	19.40	33.75	OK				39.14	26.24	39.14	22.16	OK
40B	38	164.12	43.48	109.4	23.4	0.21	0.60	0.60	6.90	120.4	6.84	2.45	3.20	0.93	16.94	17.51	23.88	OK	48	55	324	30	1	136.27	47.77	22.24	38.70	OK				47.97	34.00	47.97	25.50	OK
45B	39	238.51	35.08	159.0	18.8	0.12	0.60	0.60	7.63	174.9	9.94	3.00	3.90	1.20	29.67	17.49	23.84	OK	63	70	369	30	1	202.44	62.32	26.25	50.48	OK				72.96	53.01	72.96	31.67	OK
46B	40	192.90	44.20	126.6	23.7	0.18	0.60	0.60	6.90	141.5	8.04	3.15	3.15	1.28	29.15	17.19	23.45	OK	73	80	266	20	1	151.43	64.66	25.90	52.38	OK				40.25	40.25	40.25	16.64	OK
28B	310	66.67	66.70	44.4	35.8	0.81	0.60	0.60	3.96	48.9	2.78	1.55	2.05	0.48	6.06	17.29	23.58	OK	28	35	264	30	1	48.41	20.83	12.06	16.87	OK				16.27	9.43	16.27	13.66	OK
29B	314	76.56	59.41	51.0	31.9	0.63	0.60	0.60	3.96	56.1	3.19	1.70	2.25	0.55	8.23	16.83	22.95	OK	28	35	264	30	1	58.79	25.29	14.64	20.49	OK				21.26	13.94	21.26	16.29	OK
32B	318	88.73	52.49	59.2	28.2	0.48	0.60	0.60	3.96	65.1	3.70	1.85	2.45	0.63	11.09	16.80	22.91	OK	33	40	279	30	1	68.91	28.06	15.17	22.73	OK				25.22	16.56	25.22	17.75	OK
29B	323	76.14	46.38	50.8	24.9	0.49	0.60	0.60	3.96	55.8	3.17	1.70	2.25	0.55	8.19	16.74	22.82	OK	28	35	264	30	1	58.46	25.16	14.56	20.38	OK				21.15	13.87	21.15	16.20	OK
26B	329	57.31	42.08	38.2	22.6	0.59	0.60	0.60	3.96	42.0	2.39	1.45	1.90	0.43	4.59	16.92	23.08	OK	23	30	249	30	1	41.41	18.89	11.88	15.30	OK				14.05	8.55	14.05	12.62	OK
26B	336	58.41	38.31	38.9	20.6	0.53	0.60	0.60	3.96	42.8	2.43	1.45	1.90	0.43	4.68	17.25	23.52	OK	23	30	249	30	1	42.21	19.25	12.11	15.60	OK				14.32	8.71	14.32	12.86	OK
31B	343	90.19	38.92	60.1	20.9	0.35	0.60	0.60	6.90	66.1	3.76	1.80	2.35	0.60	5.73	16.99	23.17	OK	33	40	279	30	1	70.15	28.56	15.44	23.13	OK				22.73	14.70	22.73	16.44	OK
27B	344	45.92	37.31	30.6	20.0	0.65	0.60	0.60	3.96	33.7	1.91	1.50	1.50	0.45	3.92	16.71	22.79	OK	23	30	166	20	1	30.22	20.68	13.00	16.75	OK				7.52	7.52	7.52	6.53	OK
44B	350	209.31	38.53	139.5	20.7	0.15	0.60	0.60	6.90	153.5	8.72	2.85	3.75	1.13	27.18	16.91	23.05	OK	58	65	354	30	1	177.21	56.86	24.67	46.06	OK				65.37	47.11	65.37	29.87	OK
25B	357	15.70	5.83	10.5	3.1	0.30	0.40	0.60	3.02	11.5	0.65	1.00	1.30	0.30	1.15	9.74	13.29	OK	13	20	179	30	2	10.56	8.62	4.81	5.43	OK				2.92	2.94	2.94	2.94	OK
25B	358	16.98	6.42	11.3	3.4	0.30	0.40	0.60	3.02	12.5	0.71	1.00	1.30	0.30	1.25	10.54	14.37	OK	13	20	179	30	2	11.42	9.32	5.20	5.87	OK				3.16	3.18	3.18	3.18	OK
30B	359	73.85	41.93	49.2	22.5	0.46	0.40	0.60	3.02	54.2	3.08	1.75	2.30	0.68	14.17	16.98	23.15	OK	38	45	254	30	2	56.15	32.29	11.61	20.34	OK				19.04	15.71	19.04	14.17	OK
25B	360	2.70	3.67	1.8	2.0	1.10	0.60	0.60	6.90	2.0	0.11	1.00	1.00	0.20	0.05	2.03	2.77	OK	13	20	146	20	1	1.22	0.95	0.75	0.77	OK				0.19	0.19	0.19	0.25	OK

DISEÑO DE ZAPATAS EXCENTRICAS (2)

C.10.14 — Resistencia al aplastamiento

C.10.14.1 — La resistencia de diseño al aplastamiento del concreto no debe exceder $\phi(0.85f'_c A_1)$ excepto cuando la superficie de soporte sea más ancha en todos los lados que el área cargada, en cuyo caso, se permite que la resistencia de diseño al aplastamiento en el área cargada sea multiplicada por $\sqrt{(A_2/A_1)}$, pero no más que 2.

ZAPATA TIPO	Lv (m)	Mu (Tn*m)	ρ	ρ min	ρ diseño	Seccion en	As (Cm2)	DISEÑO A FLEXION																PRESION DE CONTACTO	
								REF. SENTIDO B						REF. SENTIDO A											
								Refuerzo sentido B			ρ min	Seccion en	As (Cm2)	Refuerzo sentido A			ρ min	Seccion en	As (Cm2)	Pu (Tn)	$\phi^*0,85^*f'c^*A_1$ (Tn)		
41B	1.33	17.51	0.0017	0.0018	0.0018	Traccion	10.80	25 # 4	36	c/. 10	0.0018	Traccion	10.80	33 # 4	28	c/. 10	114.47	417.7	Cumple
34B	1.1	15.80	0.0023	0.0018	0.0023	Traccion	9.99	22 # 4	31	c/. 10	0.0018	Traccion	9.00	28 # 4	25	c/. 10	117.00	417.7	Cumple
33B	1.05	14.23	0.0027	0.0018	0.0027	Traccion	10.23	21 # 4	30	c/. 10	0.0018	Traccion	8.10	18 # 4	24	c/. 15	107.90	417.7	Cumple
36B	1.175	18.03	0.0027	0.0018	0.0027	Traccion	11.45	23 # 4	33	c/. 10	0.0018	Traccion	9.00	30 # 4	26	c/. 10	127.16	417.7	Cumple
40B	1.30	22.30	0.0026	0.0018	0.0026	Traccion	12.69	25 # 4	35	c/. 10	0.0018	Traccion	9.90	32 # 4	28	c/. 10	163.88	417.7	Cumple
40B	1.3	22.02	0.0026	0.0018	0.0026	Traccion	12.52	25 # 4	35	c/. 10	0.0018	Traccion	9.90	32 # 4	28	c/. 10	161.83	417.7	Cumple
42B	1.48	27.63	0.0022	0.0018	0.0022	Traccion	12.94	18 # 5	40	c/. 15	0.0018	Traccion	11.70	36 # 4	30	c/. 10	193.31	417.7	Cumple
43B	1.10	15.66	0.0013	0.0018	0.0018	Traccion	11.70	28 # 4	31	c/. 10	0.0018	Traccion	11.70	28 # 4	31	c/. 10	136.72	417.7	Cumple
40B	1.30	22.15	0.0026	0.0018	0.0026	Traccion	12.59	25 # 4	35	c/. 10	0.0018	Traccion	9.90	32 # 4	28	c/. 10	162.73	417.7	Cumple
38B	1.25	20.10	0.0024	0.0018	0.0024	Traccion	11.40	24 # 4	34	c/. 10	0.0018	Traccion	9.90	31 # 4	27	c/. 10	152.44	417.7	Cumple
41B	1.33	22.81	0.0022	0.0018	0.0022	Traccion	11.69	25 # 4	36	c/. 10	0.0018	Traccion	10.80	33 # 4	28	c/. 10	166.54	417.7	Cumple
37B	1.20	18.71	0.0022	0.0018	0.0022	Traccion	10.59	23 # 4	33	c/. 10	0.0018	Traccion	9.90	30 # 4	26	c/. 10	146.36	417.7	Cumple
39B	0.90	10.51	0.0010	0.0018	0.0018	Traccion	10.80	24 # 4	27	c/. 10	0.0018	Traccion	10.80	24 # 4	27	c/. 10	119.02	417.7	Cumple
35B	1.15	16.97	0.0025	0.0018	0.0025	Traccion	10.75	22 # 4	32	c/. 10	0.0018	Traccion	9.00	29 # 4	25	c/. 10	132.96	417.7	Cumple
37B	1.20	18.83	0.0022	0.0018	0.0022	Traccion	10.66	23 # 4	33	c/. 10	0.0018	Traccion	9.90	30 # 4	26	c/. 10	147.26	417.7	Cumple
34B	1.10	15.44	0.0023	0.0018	0.0023	Traccion	9.76	22 # 4	31	c/. 10	0.0018	Traccion	9.00	28 # 4	25	c/. 10	125.28	417.7	Cumple
37B	1.20	18.72	0.0022	0.0018	0.0022	Traccion	10.59	23 # 4	33	c/. 10	0.0018	Traccion	9.90	30 # 4	26	c/. 10	146.41	417.7	Cumple
40B	1.30	22.20	0.0026	0.0018	0.0026	Traccion	12.62	25 # 4	35	c/. 10	0.0018	Traccion	9.90	32 # 4	28	c/. 10	164.12	417.7	Cumple
45B	1.65	35.70	0.0025	0.0018	0.0025	Traccion	15.44	30 # 5	43	c/. 10	0.0018	Traccion	12.60	39 # 4	33	c/. 10	238.51	417.7	Cumple
46B	1.28	20.96	0.0011	0.0018	0.0018	Traccion	14.40	32 # 5	36	c/. 10	0.0018	Traccion	14.40	32 # 5	36	c/. 10	192.90	417.7	Cumple
28B	0.73	6.82	0.0024	0.0018	0.0024	Traccion	6.63	11 # 4	24	c/. 15	0.0018	Traccion	6.30	11 # 4	19	c/. 20	66.67	417.7	Cumple
29B	0.83	8.59	0.0030	0.0018	0.0030	Traccion	8.41	12 # 4	26	c/. 15	0.0018	Traccion	6.30	12 # 4	20	c/. 20	76.56	417.7	Cumple
32B	0.93	10.78	0.0027	0.0018	0.0027	Traccion	8.93	19 # 4	28	c/. 10	0.0018	Traccion	7.20	17 # 4	22	c/. 15	88.73	417.7	Cumple
29B	0.83	8.54	0.0030	0.0018	0.0030	Traccion	8.37	12 # 4	26	c/. 15	0.0018	Traccion	6.30	12 # 4	20	c/. 20	76.14	417.7	Cumple
26B	0.65	5.36	0.0028	0.0018	0.0028	Traccion	6.38	10 # 4	22	c/. 15	0.0018	Traccion	5.40	10 # 4	18	c/. 20	57.31	417.7	Cumple
26B	0.65	5.47	0.0028	0.0018	0.0028	Traccion	6.50	10 # 4	22	c/. 15	0.0018	Traccion	5.40	10 # 4	18	c/. 20	58.41	417.7	Cumple
31B	0.88	9.76	0.0024	0.0018	0.0024	Traccion	8.05	12 # 4	27	c/. 15	0.0018	Traccion	7.20	16 # 4	21	c/. 15	90.19	417.7	Cumple
27B	0.45	2.54	0.0013	0.0018	0.0018	Traccion	5.40	8 # 4	18	c/. 20	0.0018	Traccion	5.40	8 # 4	18	c/. 20	45.92	417.7	Cumple
44B	1.58	31.45	0.0025	0.0018	0.0025	Traccion	14.79	29 # 5	42	c/. 10	0.0018	Traccion	11.70	38 # 4	32	c/. 10	209.31	417.7	Cumple
25B	0.35	0.90	0.0014	0.0018	0.0018	Traccion	3.60	4 # 4	16	c/. 35	0.0018	Traccion	3.60	4 # 4	13	c/. 35	15.70	278.5	Cumple
25B	0.35	0.97	0.0015	0.0018	0.0018	Traccion	3.60	4 # 4	16	c/. 35	0.0018	Traccion	3.60	4 # 4	13	c/. 35	16.98	278.5	Cumple
30B	0.85	9.20	0.0017	0.0018	0.0018	Traccion	8.10	12 # 4	26	c/. 15	0.0018	Traccion	8.10	16 # 4	21	c/. 15	73.85	278.5	Cumple
25B	0.20	0.06	0.0001	0.0018	0.0018	Traccion	3.60	4 # 4	13	c/. 35	0.0018	Traccion	3.60	4 # 4	13	c/. 35	2.70	417.7	Cumple

DISEÑO DE ZAPATAS EXCENTRICAS (3)

ESQUEMA DE VIGA DE CIMENTACION

DIAGRAMA DE CORTANTE DEBAJO DE LA ZAPATA

DISEÑO DE VIGA DE CIMENTACION

ZAPATA TIPO	Mu (Tn*m)	B (Cm)	H (Cm)	ρ	ρ min	ρ diseño	Seccion en	As (Cm2)	W (Tn/m)	V1 (Tn)	V2 (Tn)	V3 (Tn)	Vu (TN)	ϕVc (Tn)	ϕVs (Tn)	Refuerzo principal			1/3(f´c)$^{0.5}$	2/3(f´c)$^{0.5}$	Refuerzo secundario				Transversal			
41B	143.07	80	80	0.0101	0.0033	0.0101	Traccion	63.65	43.2	13.0	-71.0	24.1	59.2	38.1	21.0	13	#	8	OK	28.2	56.4	OK	8	#	6	fi #	3	c/.	25	3	Ramas
34B	112.74	60	80	0.0107	0.0033	0.0107	Traccion	50.56	48.7	14.6	-71.2	19.0	53.4	28.6	24.8	10	#	8	OK	21.2	42.3	OK	6	#	6	fi #	4	c/.	18	4	Ramas
33B	95.76	60	80	0.0088	0.0033	0.0088	Traccion	41.92	46.5	13.9	-65.2	16.1	46.9	28.6	18.3	9	#	8	OK	21.2	42.3	OK	6	#	6	fi #	4	c/.	35	3	Ramas
36B	132.51	70	80	0.0108	0.0033	0.0108	Traccion	59.5	51.4	15.4	-77.8	22.3	60.5	33.4	27.2	12	#	8	OK	24.7	49.4	OK	7	#	6	fi #	4	c/.	18	3	Ramas
40B	176.25	80	95	0.0083	0.0033	0.0083	Traccion	62.76	56.3	16.9	######	17.8	80.6	46.0	34.6	13	#	8	OK	34.0	68.0	OK	8	#	7	fi #	4	c/.	15	3	Ramas
40B	174.05	80	95	0.0082	0.0033	0.0082	Traccion	61.88	55.6	16.7	######	17.6	79.6	46.0	33.6	13	#	8	OK	34.0	68.0	OK	8	#	7	fi #	4	c/.	35	3	Ramas
42B	235.36	100	95	0.0090	0.0033	0.0090	Traccion	84.52	60.1	18.0	######	20.6	106.2	57.4	48.8	17	#	8	OK	42.5	85.0	OK	10	#	7	fi #	4	c/.	15	4	Ramas
43B	208.23	85	95	0.0094	0.0033	0.0094	Traccion	75.19	48.3	14.5	-85.8	35.1	64.8	48.8	16.0	15	#	8	OK	36.1	72.3	OK	8.5	#	7	fi #	3	c/.	40	3	Ramas
40B	175.02	80	95	0.0083	0.0033	0.0083	Traccion	62.27	55.9	16.8	######	17.7	80.0	46.0	34.1	13	#	8	OK	34.0	68.0	OK	8	#	7	fi #	4	c/.	18	3	Ramas
38B	150.66	80	80	0.0107	0.0033	0.0107	Traccion	67.59	53.2	16.0	-95.8	13.2	85.5	38.1	47.4	14	#	8	OK	28.2	56.4	OK	8	#	6	fi #	4	c/.	15	5	Ramas
41B	184.77	80	95	0.0088	0.0033	0.0088	Traccion	66.19	56.3	16.9	######	18.6	83.5	46.0	37.6	14	#	8	OK	34.0	68.0	OK	8	#	7	fi #	4	c/.	15	3	Ramas
37B	140.00	75	80	0.0106	0.0033	0.0106	Traccion	62.72	52.0	15.6	-91.7	12.2	80.7	35.7	44.9	13	#	8	OK	26.4	52.9	OK	7.5	#	6	fi #	4	c/.	18	5	Ramas
39B	123.86	70	80	0.0099	0.0033	0.0099	Traccion	55.01	41.5	12.5	-74.8	12.4	66.8	33.4	33.4	11	#	8	OK	24.7	49.4	OK	7	#	6	fi #	4	c/.	18	4	Ramas
35B	120.32	70	80	0.0096	0.0033	0.0096	Traccion	53.21	49.6	14.9	-82.6	11.6	69.6	33.4	36.3	11	#	8	OK	24.7	49.4	OK	7	#	6	fi #	4	c/.	18	4	Ramas
37B	140.86	75	80	0.0107	0.0033	0.0107	Traccion	63.16	52.3	15.7	-92.3	12.3	81.2	35.7	45.4	13	#	8	OK	26.4	52.9	OK	7.5	#	6	fi #	4	c/.	18	5	Ramas
34B	109.38	60	80	0.0103	0.0033	0.0103	Traccion	48.81	47.6	14.3	-77.6	10.6	64.2	28.6	35.6	10	#	8	OK	21.2	42.3	OK	6	#	6	fi #	4	c/.	18	4	Ramas
37B	140.05	75	80	0.0106	0.0033	0.0106	Traccion	62.74	52.0	15.6	-91.8	12.2	80.7	35.7	45.0	13	#	8	OK	26.4	52.9	OK	7.5	#	6	fi #	4	c/.	18	5	Ramas
40B	175.31	80	95	0.0083	0.0033	0.0083	Traccion	62.39	56.0	16.8	######	16.9	81.3	46.0	35.4	13	#	8	OK	34.0	68.0	OK	8	#	7	fi #	4	c/.	15	3	Ramas
45B	339.63	135	95	0.0097	0.0033	0.0097	Traccion	123.1	68.2	20.5	######	29.7	141.7	77.6	64.1	25	#	8	OK	57.4	114.8	OK	14	#	7	fi #	4	c/.	15	5	Ramas
46B	301.70	120	95	0.0097	0.0033	0.0097	Traccion	109.4	54.2	16.2	######	29.1	116.3	68.9	47.4	22	#	8	OK	51.0	102.0	OK	12	#	7	fi #	4	c/.	25	3	Ramas
28B	35.98	60	80	0.0031	0.0033	0.0033	Traccion	15.64	35.5	10.6	-38.3	6.1	18.6	28.6	-10.0	6	#	6	OK	21.2	42.3	OK	6	#	6	fi #	3	c/.	35	3	Ramas
29B	48.90	60	80	0.0043	0.0033	0.0043	Traccion	20.19	37.9	11.4	-44.8	8.2	25.7	28.6	-2.9	8	#	6	OK	21.2	42.3	OK	6	#	6	fi #	3	c/.	35	3	Ramas
32B	65.85	60	80	0.0059	0.0033	0.0059	Traccion	27.73	41.2	12.3	-52.7	11.1	34.0	28.6	5.4	6	#	8	OK	21.2	42.3	OK	6	#	6	fi #	3	c/.	35	3	Ramas
29B	48.63	60	80	0.0042	0.0033	0.0042	Traccion	20.07	37.7	11.3	-44.5	8.2	25.6	28.6	-3.0	8	#	6	OK	21.2	42.3	OK	6	#	6	fi #	3	c/.	35	3	Ramas
26B	27.29	60	80	0.0023	0.0033	0.0033	Traccion	15.64	32.2	9.6	-32.4	4.6	13.4	28.6	-15.2	6	#	6	OK	21.2	42.3	OK	6	#	6	fi #	3	c/.	35	3	Ramas
26B	27.81	60	80	0.0024	0.0033	0.0033	Traccion	15.64	32.8	9.8	-33.0	4.7	13.6	28.6	-15.0	6	#	6	OK	21.2	42.3	OK	6	#	6	fi #	3	c/.	35	3	Ramas
31B	59.27	60	80	0.0052	0.0033	0.0052	Traccion	24.77	39.9	12.0	-54.2	5.7	37.5	28.6	8.9	7	#	7	OK	21.2	42.3	OK	6	#	6	fi #	3	c/.	35	3	Ramas
27B	23.31	60	80	0.0020	0.0033	0.0033	Traccion	15.64	25.1	7.5	-26.2	3.9	11.8	28.6	-16.8	6	#	6	OK	21.2	42.3	OK	6	#	6	fi #	3	c/.	35	3	Ramas
44B	281.35	115	95	0.0094	0.0033	0.0094	Traccion	101.6	63.4	19.0	######	27.2	118.0	66.1	52.0	21	#	8	OK	48.9	97.8	OK	12	#	7	fi #	4	c/.	15	4	Ramas
25B	5.23	60	80	0.0004	0.0033	0.0033	Traccion	15.64	12.7	2.5	-9.0	1.2	-0.4	28.6	-29.0	6	#	6	OK	21.2	42.3	OK	6	#	6	fi #	3	c/.	35	3	Ramas
25B	5.06	60	80	0.0005	0.0033	0.0033	Traccion	15.64	13.7	2.7	-9.7	1.2	-0.4	28.6	-29.0	6	#	6	OK	21.2	42.3	OK	6	#	6	fi #	3	c/.	35	3	Ramas
30B	64.20	60	80	0.0057	0.0033	0.0057	Traccion	26.98	39.0	7.8	-46.3	14.2	26.8	28.6	-1.8	6	#	8	OK	21.2	42.3	OK	6	#	6	fi #	3	c/.	35	3	Ramas
25B	0.56	60	80	0.0000	0.0033	0.0033	Traccion	15.64	2.0	0.6	-1.4	0.1	-0.2	28.6	-28.8	6	#	6	OK	21.2	42.3	OK	6	#	6	fi #	3	c/.	35	3	Ramas

CHEQUEO DE CORTANTE EN NUDOS

RELACION DE CAPACIDAD DE CORTE EN LOS NUDOS (C.21.7.4)

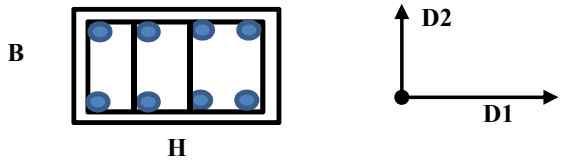
Materiales	
f'c=	28 Mpa
fy=	420 Mpa

Nudo	Col. bc m	Viga bv m	Cara 1 Cond.	Col. b m	Viga b m	Cara 2 Cond.	Col. b m	Viga b m	Cara 3 Cond.	Col. b m	Viga b m	Cara 4 Cond.	Caras confin.	Direccion 1 b_{defec} m	Aj m2	Direccion 2 b_{defec} m	Aj m2	Limite Vn Dir. 1 Mpa	Dir. 2 Mpa	Direccion 1 Vc Mpa	Dia. /8"	#R	Av m2	sep m	Vs Mpa	Vn Mpa	Direccion 2 Vc Mpa	Dia. /8"	#R	Av m2	sep m	Vs Mpa	Vn Mpa	Relacion de capacidad a cortante Dir.1	Dir.2	Cap
T1	0.60	0.50	Confin.	0.60	0.50	Confin.	0.60		No confin.	0.60		No confin.	2	0.60	0.36	0.60	0.36	1.90	1.90	0.32	4	3	3.8E-04	0.10	0.88	1.20	0.32	4	3	3.8E-04	0.10	0.88	1.20	0.63	0.63	Cumple
T2	0.60	0.50	Confin.	0.60	0.50	Confin.	0.60	0.50	Confin.	0.60		No confin.	3	0.60	0.36	0.60	0.36	2.29	2.29	0.32	4	3	3.8E-04	0.10	0.88	1.20	0.32	4	3	3.8E-04	0.10	0.88	1.20	0.53	0.53	Cumple
T3	0.60	0.50	Confin.	0.60	0.50	Confin.	0.60	0.50	Confin.	0.60	0.50	Confin.	4	0.60	0.36	0.60	0.36	3.24	3.24	0.32	4	3	3.8E-04	0.10	0.88	1.20	0.32	4	3	3.8E-04	0.10	0.88	1.20	0.37	0.37	Cumple
T4	0.60	0.50	Confin.	1.00	0.50	No confin.	0.60		No confin.	1.00	0.50	No confin.	1	0.60	0.6	1	0.6	3.17	3.17	0.54	4	3	3.8E-04	0.10	1.52	2.06	0.54	4	5	6.3E-04	0.10	1.46	2.00	0.65	0.63	Cumple
T5	0.60	0.50	Confin.	1.00	0.50	No confin.	0.60	0.50	Confin.	1.00		No confin.	2	0.60	0.6	1	0.6	3.17	3.17	0.54	4	3	3.8E-04	0.10	1.52	2.06	0.54	4	5	6.3E-04	0.10	1.46	2.00	0.65	0.63	Cumple

CALCULO DE Ash DE CONFINAMIENTO DES

DATOS DE ENTRADA

B=	0.6	m
H=	0.6	m
Recubrimiento=	4	Cm



$$A_{sh} = 0.3\frac{sb_c f'_c}{f_{yt}}\left[\left(\frac{A_g}{A_{ch}}\right)-1\right] \qquad A_{sh} = 0.09\frac{sb_c f'_c}{f_{yt}}$$

Direccion 1		
#Ramas=	3	
ϕ =	4	/8"
As=	1.27	Cm2
Ash=	380.0	mm2
bc=	520	mm
f'c=	28	Mpa
fyt=	420	Mpa
Ag=	360000	mm2
Ach=	270400	mm2

s=	110.3 mm	
s=	11 cm	*C.21-7*

s=	121.8 mm	
s=	12 cm	*C.21-8*

Direccion 2		
#Ramas=	3	
ϕ =	4	/8"
As=	1.27	Cm2
Ash=	380.0	mm2
bc=	520	mm
f'c=	28	Mpa
fyt=	420	Mpa
Ag=	360000	mm2
Ach=	270400	mm2

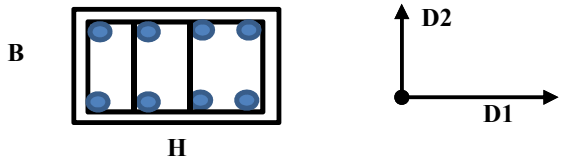
s=	110.3 mm	
s=	11 cm	*C.21-7*

s=	121.8 mm	
s=	12 cm	*C.21-8*

CALCULO DE Ash DE CONFINAMIENTO DES

DATOS DE ENTRADA

B=	0.6	m
H=	1	m
Recubrimiento=	4	Cm



$$A_{sh} = 0.3\frac{sb_c f'_c}{f_{yt}}\left[\left(\frac{A_g}{A_{ch}}\right)-1\right] \qquad A_{sh} = 0.09\frac{sb_c f'_c}{f_{yt}}$$

Direccion 1		
#Ramas=	3	
ϕ =	4	/8"
As=	1.27	Cm2
Ash=	380.0	mm2
bc=	520	mm
f'c=	28	Mpa
fyt=	420	Mpa
Ag=	600000	mm2
Ach=	478400	mm2

s=	143.8 mm	
s=	14 cm	*C.21-7*

s=	121.8 mm	
s=	12 cm	*C.21-8*

Direccion 2		
#Ramas=	5	
ϕ =	4	/8"
As=	1.27	Cm2
Ash=	633.4	mm2
bc=	920.0	mm
f'c=	28	Mpa
fyt=	420	Mpa
Ag=	600000	mm2
Ach=	478400	mm2

s=	135.4 mm	
s=	14 cm	*C.21-7*

s=	114.7 mm	
s=	11 cm	*C.21-8*

DISEÑO DE COLUMNAS, VIGAS Y VIGUETAS

Columna H-15

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					27.77	6.55				14/#8 (1.2%)	0.24	4.23	3.18
	3.80	.40	.60	1.00			-10.16	38.04	24.67				
					-27.84	-22.77				14/#8 (1.2%)	0.30		
PISO2					24.38	15.81				14/#8 (1.2%)	0.25	4.55	4.61
	3.90	.50	.60	1.00			-11.84	71.62	29.66				
					72.46	21.09				14/#8 (1.2%)	0.66		
PISO1					44.69	26.96				14/#8 (1.2%)	0.56	4.97	4.19
	3.80	.50	.60	1.00			2.32	49.13	57.70				
PISO1		.80			99.11	42.22				14/#8 (1.2%)	0.94		

Columna H-14

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					23.45	6.09				8/#8 (1.1%)	0.57	1.54	1.78
	3.80	.40	.60	.60			-9.62	32.05	31.60				
					5.69	25.71				8/#8 (1.1%)	0.61		
PISO2					16.19	3.35				8/#8 (1.1%)	0.40	1.57	1.25
	3.90	.50	.60	.60			-4.25	37.26	16.40				
					30.11	16.08				8/#8 (1.1%)	0.81		
PISO1					7.93	16.31				8/#8 (1.1%)	0.42	1.84	1.23
	3.80	.50	.60	.60			-12.88	10.63	37.65				
PISO1		.80			16.93	29.68				8/#8 (1.1%)	0.78		

Columna I-14

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					29.82	-3.17				12/#8 (1.7%)	0.47	1.31	1.25
	3.80	.40	.60	.60			-37.70	49.20	35.94				
					-35.86	-8.37				12/#8 (1.7%)	0.59		
PISO2					26.74	2.06				12/#8 (1.7%)	0.41	1.63	1.45
	3.90	.50	.60	.60			-46.01	52.60	17.17				
					37.60	16.79				12/#8 (1.7%)	0.64		

Columna I-14

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO1					-0.04	-19.23				12/#8 (1.7%)	0.24	2.49	1.47
	3.80	.50	.60	.60			-200.04	16.51	32.63				
PISO1		.80			-22.04	-22.42				12/#8 (1.7%)	0.51		

Columna I-15

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					39.19	16.96				12/#8 (1.0%)	0.38	1.98	1.29
	3.80	.40	.60	1.00			-38.62	60.12	31.03				
					-41.75	-32.73				12/#8 (1.0%)	0.47		
PISO2					35.83	23.13				12/#8 (1.0%)	0.36	2.51	2.89
	3.90	.50	.60	1.00			-68.25	95.85	31.95				
					89.66	11.37				12/#8 (1.0%)	0.79		
PISO1					33.64	27.60				12/#8 (1.0%)	0.51	2.94	2.74
	3.80	.50	.60	1.00			-54.71	64.02	52.22				
PISO1		.80			105.25	31.71				12/#8 (1.0%)	0.92		

Columna H-13

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					22.25	9.24				8/#8 (1.1%)	0.57	1.53	1.76
	3.80	.40	.60	.60			-7.46	30.58	31.65				
					-12.52	-24.10				8/#8 (1.1%)	0.61		
PISO2					16.92	5.03				8/#8 (1.1%)	0.43	1.55	1.91
	3.90	.50	.60	.60			-1.20	39.60	14.17				
					32.39	13.31				8/#8 (1.1%)	0.85		
PISO1					10.81	18.27				8/#8 (1.1%)	0.50	1.78	1.64
	3.80	.50	.60	.60			-7.52	4.67	38.31				
PISO1		.80			10.87	28.74				8/#8 (1.1%)	0.73		

Columna I-13

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					29.31	14.56				12/#7 (1.3%)	0.64	1.21	1.58
	3.80	.40	.60	.60			-28.44	47.46	33.97				
					-37.03	-18.27				12/#7 (1.3%)	0.78		
PISO2					27.42	4.62				12/#7 (1.3%)	0.53	1.26	1.50
	3.90	.50	.60	.60			-37.08	54.49	13.40				
					-45.87	-12.41				12/#7 (1.3%)	0.82		
PISO1					8.38	16.96				12/#7 (1.3%)	0.31	1.93	1.69
	3.80	.50	.60	.60			-130.41	8.98	32.21				
PISO1		.80			-15.67	-26.77				12/#7 (1.3%)	0.52		

Columna J-14

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-20.38	-12.69				12/#7 (1.3%)	0.47	1.20	1.26
	3.80	.40	.60	.60			-30.57	38.04	35.57				
					14.83	34.24				12/#7 (1.3%)	0.70		
PISO2					-21.49	-11.42				12/#7 (1.3%)	0.40	1.67	1.26
	3.90	.50	.60	.60			-119.32	43.04	15.80				
					36.91	20.11				12/#7 (1.3%)	0.70		
PISO1					-4.10	-14.43				12/#7 (1.3%)	0.23	2.52	1.29
	3.80	.50	.60	.60			-206.30	12.50	24.05				
PISO1		.80			18.61	17.71				12/#7 (1.3%)	0.46		

Columna J-15

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-34.69	9.79				12/#8 (1.0%)	0.31	2.90	1.20
	3.80	.40	.60	1.00			-40.02	47.10	31.14				
					-14.89	-40.25				12/#8 (1.0%)	0.47		
PISO2					29.63	25.86				12/#8 (1.0%)	0.33	3.58	2.59
	3.90	.50	.60	1.00			-87.92	88.64	29.85				
					-89.98	-30.92				12/#8 (1.0%)	0.79		

Columna J-15

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO1					41.57	31.45				12/#8 (1.0%)	0.49	3.45	2.51
	3.80	.50	.60	1.00			-83.80	52.74	47.72				
PISO1		.80			-102.26	-35.33				12/#8 (1.0%)	0.82		

Columna H-12

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					22.58	14.35				12/#8 (1.7%)	0.46	2.30	1.42
	3.80	.40	.60	.60			-13.47	29.22	31.40				
					-12.07	-27.00				12/#8 (1.7%)	0.48		
PISO2					18.37	7.37				12/#8 (1.7%)	0.32	2.50	1.99
	3.90	.50	.60	.60			-29.60	41.96	15.75				
					-39.15	-17.35				12/#8 (1.7%)	0.64		
PISO1					15.14	21.66				12/#8 (1.7%)	0.42	3.84	1.65
	3.80	.50	.60	.60			-55.65	8.36	39.36				
PISO1		.80			4.23	27.71				12/#8 (1.7%)	0.47		

Columna I-12

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					29.02	5.57				12/#7 (1.3%)	0.57	1.23	1.57
	3.80	.40	.60	.60			-37.03	44.07	27.67				
					-30.34	-12.23				12/#7 (1.3%)	0.64		
PISO2					25.24	4.08				12/#7 (1.3%)	0.49	1.29	2.00
	3.90	.50	.60	.60			-39.15	53.82	13.45				
					43.30	12.65				12/#7 (1.3%)	0.86		
PISO1					10.24	14.44				12/#7 (1.3%)	0.32	2.33	2.13
	3.80	.50	.60	.60			-65.43	4.30	30.95				
PISO1		.80			6.48	23.76				12/#7 (1.3%)	0.43		

Columna J-13

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					24.14	15.87				12/#7 (1.3%)	0.53	1.20	1.21
	3.80	.40	.60	.60			-49.14	36.68	35.56				
					-9.81	-29.70				12/#7 (1.3%)	0.57		
PISO2					-21.77	-3.63				12/#7 (1.3%)	0.38	1.70	1.55
	3.90	.50	.60	.60			-69.02	45.39	12.09				
					38.72	8.38				12/#7 (1.3%)	0.69		
PISO1					8.22	12.66				12/#7 (1.3%)	0.26	2.55	1.94
	3.80	.50	.60	.60			-192.84	5.51	23.72				
PISO1		.80			-13.10	-18.65				12/#7 (1.3%)	0.39		

Columna K-15

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					25.70	15.66				12/#8 (1.0%)	0.28	3.66	1.21
	3.80	.40	.60	1.00			-33.47	43.67	31.20				
					-17.09	-40.23				12/#8 (1.0%)	0.47		
PISO2					28.14	24.15				12/#8 (1.0%)	0.31	3.55	2.56
	3.90	.50	.60	1.00			-83.69	88.37	23.45				
					-90.16	-22.79				12/#8 (1.0%)	0.77		
PISO1					42.59	23.36				12/#8 (1.0%)	0.50	3.42	2.48
	3.80	.50	.60	1.00			-81.29	53.33	42.86				
PISO1		.80			-102.84	-22.18				12/#8 (1.0%)	0.79		

Columna L-15

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					26.14	16.29				12/#8 (1.0%)	0.29	3.42	1.27
	3.80	.40	.60	1.00			-33.23	44.55	32.89				
					-17.85	-41.37				12/#8 (1.0%)	0.49		
PISO2					27.06	23.66				12/#8 (1.0%)	0.30	3.53	2.55
	3.90	.50	.60	1.00			-83.08	83.57	21.81				
					-83.56	-19.70				12/#8 (1.0%)	0.71		

Columna L-15

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO1					35.69	15.91				12/#8 (1.0%)	0.48	3.41	2.74
	3.80	.50	.60	1.00			-81.92	57.69	36.76				
PISO1		.80			-104.36	-23.25				12/#8 (1.0%)	0.81		

Columna L-14

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					29.26	0.93				12/#8 (1.7%)	0.45	1.72	1.30
	3.80	.40	.60	.60			-40.16	41.38	38.93				
					12.96	36.83				12/#8 (1.7%)	0.62		
PISO2					-22.44	-9.66				12/#8 (1.7%)	0.36	2.04	1.41
	3.90	.50	.60	.60			-116.67	43.31	15.68				
					37.19	18.18				12/#8 (1.7%)	0.61		
PISO1					-1.01	-14.77				12/#8 (1.7%)	0.19	2.98	1.53
	3.80	.50	.60	.60			-207.90	12.85	22.83				
PISO1		.80			18.46	13.60				12/#8 (1.7%)	0.37		

Columna K-14

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-29.22	-14.72				12/#8 (1.7%)	0.52	1.69	1.31
	3.80	.40	.60	.60			-41.60	40.93	36.33				
					13.59	34.91				12/#8 (1.7%)	0.59		
PISO2					22.56	-5.50				12/#8 (1.7%)	0.32	2.04	1.41
	3.90	.50	.60	.60			-112.98	43.41	15.43				
					34.64	18.01				12/#8 (1.7%)	0.58		
PISO1					-2.63	-13.34				12/#8 (1.7%)	0.19	2.99	1.53
	3.80	.50	.60	.60			-205.30	12.66	21.19				
PISO1		.80			19.37	9.77				12/#8 (1.7%)	0.33		

Columna K-13

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-31.27	-4.25				12/#7 (1.3%)	0.60	1.32	1.23
	3.80	.40	.60	.60			-40.19	39.57	34.13				
					-9.58	-28.30				12/#7 (1.3%)	0.56		
PISO2					22.74	3.42				12/#7 (1.3%)	0.40	1.68	1.52
	3.90	.50	.60	.60			-62.64	46.01	11.91				
					-38.89	-7.98				12/#7 (1.3%)	0.70		
PISO1					6.81	7.60				12/#7 (1.3%)	0.18	2.52	1.92
	3.80	.50	.60	.60			-183.64	5.61	20.80				
PISO1		.80			-5.79	-19.21				12/#7 (1.3%)	0.31		

Columna J-12

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-25.69	-19.77				12/#7 (1.3%)	0.60	1.20	1.27
	3.80	.40	.60	.60			-44.03	35.93	35.57				
					12.07	34.90				12/#7 (1.3%)	0.69		
PISO2					-19.53	-11.38				12/#7 (1.3%)	0.39	1.89	1.91
	3.90	.50	.60	.60			-88.50	46.67	15.50				
					39.85	22.29				12/#7 (1.3%)	0.78		
PISO1					-11.50	-16.35				12/#7 (1.3%)	0.34	2.78	2.02
	3.80	.50	.60	.60			-138.14	5.58	24.49				
PISO1		.80			3.30	19.91				12/#7 (1.3%)	0.34		

Columna I-11

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					26.02	10.19				12/#8 (1.7%)	0.46	1.58	1.21
	3.80	.40	.60	.60			-27.64	43.07	30.82				
					-30.01	-24.16				12/#8 (1.7%)	0.61		
PISO2					23.73	5.99				12/#8 (1.7%)	0.38	1.66	1.48
	3.90	.50	.60	.60			-47.38	49.10	18.09				
					40.10	24.07				12/#8 (1.7%)	0.72		

Columna I-11

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO1					-33.85	-25.57				12/#8 (1.7%)	0.66	4.55	4.15
	3.80	.50	.60	.60			-138.55	37.49	34.53				
PISO1		.80			13.70	29.17				12/#8 (1.7%)	0.48		

Columna H-11

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					22.39	0.41				12/#7 (1.3%)	0.47	1.80	1.21
	3.80	.40	.60	.60			-14.57	28.67	30.52				
					0.01	27.11				12/#7 (1.3%)	0.56		
PISO2					18.03	3.02				12/#7 (1.3%)	0.39	1.94	1.36
	3.90	.50	.60	.60			-10.65	42.49	22.87				
					36.79	24.82				12/#7 (1.3%)	0.93		
PISO1					-32.28	-28.61				12/#7 (1.3%)	0.76	5.45	2.49
	3.80	.50	.60	.60			-98.14	35.13	41.76				
PISO1		.80			12.61	32.25				12/#7 (1.3%)	0.70		

Columna M-15

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					25.65	17.09				12/#8 (1.0%)	0.29	3.31	1.21
	3.80	.40	.60	1.00			-32.86	45.69	35.19				
					-18.52	-43.88				12/#8 (1.0%)	0.52		
PISO2					26.65	26.42				12/#8 (1.0%)	0.32	3.57	2.54
	3.90	.50	.60	1.00			-82.77	78.80	25.70				
					-78.81	-26.86				12/#8 (1.0%)	0.69		
PISO1					40.51	22.52				12/#8 (1.0%)	0.50	5.09	2.72
	3.80	.50	.60	1.00			-80.90	52.43	42.14				
PISO1		.80			-101.98	-36.56				12/#8 (1.0%)	0.83		

Columna M-14

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-23.04	-15.11				12/#8 (1.7%)	0.43	1.53	1.21
	3.80	.40	.60	.60			-51.53	39.26	40.58				
					11.57	37.96				12/#8 (1.7%)	0.61		
PISO2					20.97	-7.75				12/#8 (1.7%)	0.32	2.11	1.42
	3.90	.50	.60	.60			-121.01	42.63	17.77				
					35.10	21.55				12/#8 (1.7%)	0.63		
PISO1					-4.96	-17.53				12/#8 (1.7%)	0.26	2.99	1.41
	3.80	.50	.60	.60			-214.56	12.52	27.43				
PISO1		.80			19.18	22.91				12/#8 (1.7%)	0.49		

Columna L-13

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					29.44	10.68				12/#8 (1.7%)	0.50	1.73	1.31
	3.80	.40	.60	.60			-38.43	38.64	36.23				
					-11.92	-29.71				12/#8 (1.7%)	0.51		
PISO2					-22.84	-0.61				12/#8 (1.7%)	0.33	2.05	1.86
	3.90	.50	.60	.60			-63.25	47.09	11.95				
					40.11	4.48				12/#8 (1.7%)	0.59		
PISO1					7.83	8.26				12/#8 (1.7%)	0.18	2.77	2.28
	3.80	.50	.60	.60			-182.16	7.20	22.20				
PISO1		.80			-14.27	-13.99				12/#8 (1.7%)	0.32		

Columna K-12

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-21.35	-15.43				12/#7 (1.3%)	0.51	1.61	1.23
	3.80	.40	.60	.60			-31.51	34.31	34.54				
					10.31	33.99				12/#7 (1.3%)	0.70		
PISO2					-20.21	-11.32				12/#7 (1.3%)	0.40	1.84	1.86
	3.90	.50	.60	.60			-76.25	46.61	15.36				
					40.11	12.89				12/#7 (1.3%)	0.78		

Columna K-12

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO1					-11.28	-11.25				12/#7 (1.3%)	0.28	2.72	1.98
	3.80	.50	.60	.60			-125.78	5.45	21.91				
PISO1		.80			3.26	17.97				12/#7 (1.3%)	0.31		

Columna J-11

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-25.02	7.85				12/#8 (1.7%)	0.42	1.73	1.23
	3.80	.40	.60	.60			-36.76	33.46	36.62				
					-6.08	-43.23				12/#8 (1.7%)	0.69		
PISO2					23.53	15.20				12/#8 (1.7%)	0.43	2.39	1.27
	3.90	.50	.60	.60			-89.59	52.04	14.74				
					-44.87	-11.64				12/#8 (1.7%)	0.70		
PISO1					-37.52	-9.95				12/#8 (1.7%)	0.58	5.12	8.28
	3.80	.50	.60	.60			-61.34	44.49	19.58				
PISO1		.80			18.87	14.49				12/#8 (1.7%)	0.38		

Columna N-15

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					34.18	17.93				14/#8 (1.2%)	0.31	3.35	1.20
	3.80	.40	.60	1.00			-36.01	49.40	36.28				
					-20.92	-44.79				14/#8 (1.2%)	0.46		
PISO2					24.48	28.34				14/#8 (1.2%)	0.29	4.16	2.93
	3.90	.50	.60	1.00			-85.37	79.27	32.99				
					-77.98	-46.62				14/#8 (1.2%)	0.64		
PISO1					40.56	28.97				14/#8 (1.2%)	0.44	5.84	3.08
	3.80	.50	.60	1.00			-81.75	52.91	57.73				
PISO1		.80			-102.27	-50.07				14/#8 (1.2%)	0.78		

Columna N-14

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-21.92	-24.13				12/#8 (1.7%)	0.53	1.63	1.24
	3.80	.40	.60	.60			-41.41	40.04	45.22				
					27.91	34.05				12/#8 (1.7%)	0.71		
PISO2					-19.36	-12.64				12/#8 (1.7%)	0.36	2.02	1.27
	3.90	.50	.60	.60			-113.71	42.41	20.00				
					36.23	24.26				12/#8 (1.7%)	0.67		
PISO1					-4.10	-22.59				12/#8 (1.7%)	0.31	2.94	1.39
	3.80	.50	.60	.60			-203.30	12.71	38.04				
PISO1		.80			18.88	31.70				12/#8 (1.7%)	0.57		

Columna M-13

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-24.50	-12.62				12/#8 (1.7%)	0.43	1.61	1.33
	3.80	.40	.60	.60			-48.01	36.59	38.12				
					-11.94	-29.77				12/#8 (1.7%)	0.52		
PISO2					22.22	3.27				12/#8 (1.7%)	0.33	2.13	1.88
	3.90	.50	.60	.60			-66.33	47.46	14.36				
					-40.77	-9.55				12/#8 (1.7%)	0.61		
PISO1					6.95	19.53				12/#8 (1.7%)	0.30	2.79	1.76
	3.80	.50	.60	.60			-191.48	6.06	32.57				
PISO1		.80			-12.06	-25.90				12/#8 (1.7%)	0.43		

Columna L-12

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-18.92	-15.69				12/#7 (1.3%)	0.48	1.87	1.23
	3.80	.40	.60	.60			-30.65	33.97	36.56				
					9.61	35.66				12/#7 (1.3%)	0.73		
PISO2					-20.76	-10.15				12/#7 (1.3%)	0.40	1.83	1.71
	3.90	.50	.60	.60			-75.49	46.60	15.11				
					40.22	11.64				12/#7 (1.3%)	0.78		

Columna L-12

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO1					-11.02	-11.77				12/#7 (1.3%)	0.28	2.70	1.97
	3.80	.50	.60	.60			-125.19	5.44	22.85				
PISO1		.80			3.19	19.10				12/#7 (1.3%)	0.33		

Columna K-11

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					18.99	17.99				12/#8 (1.7%)	0.43	2.05	1.25
	3.80	.40	.60	.60			-32.31	31.04	36.80				
					-8.37	-43.48				12/#8 (1.7%)	0.71		
PISO2					23.25	14.59				12/#8 (1.7%)	0.42	2.37	1.26
	3.90	.50	.60	.60			-85.42	53.65	12.66				
					46.33	5.84				12/#8 (1.7%)	0.71		
PISO1					-38.52	-6.09				12/#8 (1.7%)	0.58	5.09	8.22
	3.80	.50	.60	.60			-58.05	46.56	17.53				
PISO1		.80			20.22	7.55				12/#8 (1.7%)	0.33		

Columna O-15

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-2.42	16.78				14/#8 (1.2%)	0.20	3.37	1.20
	3.80	.40	.60	1.00			-33.95	30.29	33.76				
					-7.70	-37.33				14/#8 (1.2%)	0.42		
PISO2					14.40	19.57				14/#8 (1.2%)	0.20	7.14	3.88
	3.90	.50	.60	1.00			-56.56	60.65	32.02				
					68.71	19.58				14/#8 (1.2%)	0.56		
PISO1					45.26	30.84				14/#8 (1.2%)	0.49	9.02	4.26
	3.80	.50	.60	1.00			-48.61	45.11	69.41				
PISO1		.80			98.76	51.99				14/#8 (1.2%)	0.86		

Columna O-14

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-15.00	-27.46				12/#8 (1.7%)	0.50	1.31	1.27
	3.80	.40	.60	.60			-33.48	27.88	44.43				
					18.06	38.32				12/#8 (1.7%)	0.69		
PISO2					-17.46	-8.78				12/#8 (1.7%)	0.30	2.93	1.63
	3.90	.50	.60	.60			-80.68	32.17	18.89				
					35.06	20.77				12/#8 (1.7%)	0.63		
PISO1					-13.75	-22.85				12/#8 (1.7%)	0.41	3.86	1.83
	3.80	.50	.60	.60			-132.96	9.01	46.33				
PISO1		.80			17.82	37.76				12/#8 (1.7%)	0.64		

Columna N-13

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					20.24	17.00				12/#7 (1.3%)	0.53	1.38	1.28
	3.80	.40	.60	.60			-24.70	37.53	43.03				
					-10.71	-36.12				12/#7 (1.3%)	0.72		
PISO2					20.52	4.26				12/#7 (1.3%)	0.37	1.66	1.48
	3.90	.50	.60	.60			-59.90	47.10	16.60				
					-40.83	-12.76				12/#7 (1.3%)	0.76		
PISO1					9.00	26.25				12/#7 (1.3%)	0.43	2.30	1.45
	3.80	.50	.60	.60			-177.27	6.25	45.35				
PISO1		.80			-13.54	-35.59				12/#7 (1.3%)	0.60		

Columna M-12

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-20.32	-17.17				12/#7 (1.3%)	0.52	1.71	1.22
	3.80	.40	.60	.60			-30.35	34.28	39.06				
					9.44	37.71				12/#7 (1.3%)	0.77		
PISO2					-19.90	-10.92				12/#7 (1.3%)	0.40	1.70	1.71
	3.90	.50	.60	.60			-75.90	46.37	16.09				
					40.05	12.92				12/#7 (1.3%)	0.79		

Columna M-12

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO1					-11.22	-15.74				12/#7 (1.3%)	0.33	2.67	1.95
	3.80	.50	.60	.60			-124.48	5.36	26.32				
PISO1		.80			3.29	21.86				12/#7 (1.3%)	0.38		

Columna L-11

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					19.12	19.22				12/#8 (1.7%)	0.45	2.40	1.22
	3.80	.40	.60	.60			-32.69	31.38	39.24				
					-8.53	-45.54				12/#8 (1.7%)	0.74		
PISO2					23.16	13.56				12/#8 (1.7%)	0.41	2.21	1.26
	3.90	.50	.60	.60			-85.69	53.51	12.31				
					46.28	3.94				12/#8 (1.7%)	0.70		
PISO1					-38.48	-5.48				12/#8 (1.7%)	0.58	5.09	8.23
	3.80	.50	.60	.60			-58.35	46.52	17.88				
PISO1		.80			20.20	10.01				12/#8 (1.7%)	0.35		

Columna O-13

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-20.27	-13.02				12/#8 (1.7%)	0.39	1.33	1.51
	3.80	.40	.60	.60			-34.84	25.02	43.85				
					12.45	31.15				12/#8 (1.7%)	0.56		
PISO2					-19.28	-2.61				12/#8 (1.7%)	0.28	2.89	1.85
	3.90	.50	.60	.60			-77.19	37.06	16.52				
					40.11	12.63				12/#8 (1.7%)	0.64		
PISO1					-15.82	-18.41				12/#8 (1.7%)	0.38	3.30	2.31
	3.80	.50	.60	.60			-125.28	5.77	46.86				
PISO1		.80			12.92	36.30				12/#8 (1.7%)	0.59		

Columna N-12

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					36.49	17.06				12/#8 (1.7%)	0.63	1.26	1.73
	3.80	.40	.60	.60			-45.45	42.60	38.29				
					-32.19	-22.95				12/#8 (1.7%)	0.63		
PISO2					-21.20	-2.83				12/#8 (1.7%)	0.31	2.17	1.91
	3.90	.50	.60	.60			-67.86	47.08	14.30				
					-41.34	-11.66				12/#8 (1.7%)	0.63		
PISO1					14.01	20.70				12/#8 (1.7%)	0.39	2.94	2.11
	3.80	.50	.60	.60			-180.22	6.57	37.95				
PISO1		.80			-7.78	-32.84				12/#8 (1.7%)	0.46		

Columna M-11

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					18.78	20.59				12/#8 (1.7%)	0.46	2.19	1.20
	3.80	.40	.60	.60			-32.02	31.95	41.61				
					-8.93	-47.34				12/#8 (1.7%)	0.77		
PISO2					22.59	14.21				12/#8 (1.7%)	0.41	2.21	1.26
	3.90	.50	.60	.60			-84.91	51.55	13.94				
					-44.60	-9.80				12/#8 (1.7%)	0.69		
PISO1					-37.30	-9.52				12/#8 (1.7%)	0.58	5.08	8.21
	3.80	.50	.60	.60			-58.32	44.31	20.92				
PISO1		.80			18.75	17.60				12/#8 (1.7%)	0.41		

Columna O-12

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-18.20	27.26				12/#8 (1.7%)	0.52	1.21	1.26
	3.80	.40	.60	.60			-40.62	29.15	42.08				
					6.35	-36.48				12/#8 (1.7%)	0.57		
PISO2					11.12	5.93				12/#8 (1.7%)	0.20	2.94	2.06
	3.90	.50	.60	.60			-41.85	36.10	17.88				
					35.73	8.11				12/#8 (1.7%)	0.57		

Columna O-12

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO1					11.00	24.81				12/#8 (1.7%)	0.41	4.43	1.82
	3.80	.50	.60	.60			-67.89	12.33	49.95				
PISO1		.80			-1.83	-40.62				12/#8 (1.7%)	0.54		

Columna N-11

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					37.88	9.95				12/#8 (1.7%)	0.60	1.30	1.21
	3.80	.40	.60	.60			-51.98	42.74	36.50				
					-32.90	-28.78				12/#8 (1.7%)	0.70		
PISO2					-21.02	-2.96				12/#8 (1.7%)	0.30	2.24	1.28
	3.90	.50	.60	.60			-75.93	45.41	17.08				
					38.99	26.04				12/#8 (1.7%)	0.72		
PISO1					-32.05	-30.01				12/#8 (1.7%)	0.70	5.36	3.32
	3.80	.50	.60	.60			-153.80	36.26	38.91				
PISO1		.80			12.69	35.08				12/#8 (1.7%)	0.53		

Columna O-11

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-33.79	-17.29				12/#8 (1.7%)	0.59	1.26	1.23
	3.80	.40	.60	.60			-50.92	28.06	37.84				
					24.51	25.09				12/#8 (1.7%)	0.56		
PISO2					-13.68	-7.47				12/#8 (1.7%)	0.23	3.06	1.58
	3.90	.50	.60	.60			-109.45	36.98	23.02				
					36.21	33.34				12/#8 (1.7%)	0.78		
PISO1					-30.01	-35.75				12/#8 (1.7%)	0.73	9.53	2.96
	3.80	.50	.60	.60			-137.94	33.12	50.87				
PISO1		.80			11.67	40.67				12/#8 (1.7%)	0.63		

Columna H-10

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					20.73	6.34				16/#8 (2.3%)	0.30	3.51	3.53
	3.80	.40	.60	.60			-7.63	24.67	24.91				
					-12.24	-16.36				16/#8 (2.3%)	0.28		
PISO2					24.15	14.27				16/#8 (2.3%)	0.38	3.03	2.59
	3.90	.50	.60	.60			-18.47	67.80	39.32				
PISO1		.95			64.50	30.32				16/#8 (2.3%)	1.00		

Columna I-10

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-20.68	-17.07				28/#6 (2.2%)	0.37	1.88	1.61
	3.80	.40	.60	.60			-50.82	39.24	30.31				
					23.00	22.67				28/#6 (2.2%)	0.45		
PISO2					-28.89	-18.33				28/#6 (2.2%)	0.46	2.08	1.85
	3.90	.50	.60	.60			-115.95	75.97	39.79				
PISO1		.95			69.68	26.91				28/#6 (2.2%)	0.97		

Columna J-10

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-15.47	-13.23				28/#6 (2.2%)	0.28	2.18	1.43
	3.80	.40	.60	.60			-49.51	30.74	31.26				
					5.65	33.62				28/#6 (2.2%)	0.43		
PISO2					-22.90	-16.78				28/#6 (2.2%)	0.39	2.70	1.59
	3.90	.50	.60	.60			-118.82	70.94	37.62				
PISO1		.95			66.20	22.87				28/#6 (2.2%)	0.87		

Columna I-9

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					25.80	18.56				28/#6 (2.2%)	0.44	1.79	1.79
	3.80	.40	.60	.60			-40.79	39.81	30.40				
					-27.16	-22.62				28/#6 (2.2%)	0.49		
PISO2					26.25	19.42				28/#6 (2.2%)	0.45		2.06
	3.90	.50	.60	.60			-83.71	68.52	40.56				
PISO1		.95			-63.49	-30.60				28/#6 (2.2%)	0.92		

Columna H-9

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					20.77	13.25				28/#6 (2.2%)	0.34	3.48	2.40
	3.80	.40	.60	.60			-11.93	25.18	26.16				
					-12.34	-20.45				28/#6 (2.2%)	0.33		
PISO2					19.33	15.02				28/#6 (2.2%)	0.34		2.44
	3.90	.50	.60	.60			-26.12	59.74	39.23				
PISO1		.95			58.65	30.05				28/#6 (2.2%)	0.92		

Columna K-10

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-28.47	-12.79				28/#6 (2.2%)	0.41	2.16	1.42
	3.80	.40	.60	.60			-44.56	33.71	31.53				
					14.93	33.84				28/#6 (2.2%)	0.49		
PISO2					-25.02	-15.83				28/#6 (2.2%)	0.40	2.52	1.58
	3.90	.50	.60	.60			-113.94	70.73	38.20				
PISO1		.95			67.43	21.36				28/#6 (2.2%)	0.87		

Columna J-9

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					20.57	13.27				12/#8 (1.7%)	0.39	1.75	1.37
	3.80	.40	.60	.60			-47.40	30.80	31.27				
					-13.39	-32.69				12/#8 (1.7%)	0.55		
PISO2					22.74	17.91				12/#8 (1.7%)	0.45		1.60
	3.90	.50	.60	.60			-114.33	63.55	38.82				
PISO1		.95			-60.97	-20.66				12/#8 (1.7%)	0.95		

Columna I-8

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					22.75	2.78				12/#8 (1.7%)	0.37	1.44	1.47
	3.80	.40	.60	.60			-30.83	37.93	22.17				
					23.80	14.74				12/#8 (1.7%)	0.44		
PISO2					-20.97	-14.59				12/#8 (1.7%)	0.40	1.80	1.66
	3.90	.50	.60	.60			-125.08	60.54	36.82				
PISO1		.95			55.72	25.66				12/#8 (1.7%)	0.95		

Columna H-8

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					22.23	10.34				28/#6 (2.2%)	0.34	3.54	1.55
	3.80	.40	.60	.60			-21.11	26.11	21.67				
					-15.35	-18.21				28/#6 (2.2%)	0.33		
PISO2					16.31	14.45				28/#6 (2.2%)	0.30	3.82	1.98
	3.90	.50	.60	.60			-42.85	52.36	37.65				
PISO1		.95			-52.49	-31.51				28/#6 (2.2%)	0.82		

Columna L-10

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-18.75	-20.28				28/#6 (2.2%)	0.39	3.15	1.40
	3.80	.40	.60	.60			-33.31	29.31	37.23				
					9.08	42.37				28/#6 (2.2%)	0.57		
PISO2					-24.54	-22.49				28/#6 (2.2%)	0.46	2.70	1.52
	3.90	.50	.60	.60			-87.65	70.45	43.17				
PISO1		.95			67.15	30.20				28/#6 (2.2%)	0.95		

Columna K-9

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-26.90	0.22				12/#8 (1.7%)	0.41	1.73	1.36
	3.80	.40	.60	.60			-43.98	33.81	31.52				
					-5.13	-32.96				12/#8 (1.7%)	0.51		
PISO2					20.63	16.70				12/#8 (1.7%)	0.42		1.59
	3.90	.50	.60	.60			-110.29	63.34	39.34				
PISO1		.95			-60.57	-18.94				12/#8 (1.7%)	0.94		

Columna J-8

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-23.88	-16.35				12/#8 (1.7%)	0.46	2.03	1.50
	3.80	.40	.60	.60			-39.11	31.67	30.85				
					15.82	36.66				12/#8 (1.7%)	0.63		
PISO2					-17.03	-19.80				12/#8 (1.7%)	0.41	2.58	1.55
	3.90	.50	.60	.60			-93.53	55.95	37.81				
PISO1		.95			53.35	20.29				12/#8 (1.7%)	0.87		

Columna I-7

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					21.77	8.73				12/#8 (1.7%)	0.38	1.50	1.71
	3.80	.40	.60	.60			-29.29	35.81	21.04				
					20.80	16.70				12/#8 (1.7%)	0.42		
PISO2					-20.49	-13.83				12/#8 (1.7%)	0.38	2.15	2.23
	3.90	.50	.60	.60			-101.53	52.49	36.67				
PISO1		.95			48.89	25.86				12/#8 (1.7%)	0.87		

Columna H-7

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					19.83	-0.95				12/#8 (1.7%)	0.33	2.84	1.82
	3.80	.40	.60	.60			-16.46	25.66	25.71				
					6.48	23.48				12/#8 (1.7%)	0.41		
PISO2					14.30	11.32				12/#8 (1.7%)	0.31	2.98	1.92
	3.90	.50	.60	.60			-15.57	45.60	39.08				
PISO1		.95			44.18	30.75				12/#8 (1.7%)	0.92		

Columna M-10

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					28.71	3.15				28/#7 (3.0%)	0.29	2.78	1.84
	3.80	.40	.60	.60			-43.62	34.12	34.72				
					3.50	35.54				28/#7 (3.0%)	0.36		
PISO2					-24.34	-22.04				28/#7 (3.0%)	0.39	3.43	2.02
	3.90	.50	.60	.60			-114.91	70.36	46.35				
PISO1		.95			67.03	36.57				28/#7 (3.0%)	0.87		

Columna L-9

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					18.51	20.21				28/#6 (2.2%)	0.38	3.14	1.67
	3.80	.40	.60	.60			-31.20	29.95	37.10				
					-10.74	-40.81				28/#6 (2.2%)	0.56		
PISO2					21.17	23.34				28/#6 (2.2%)	0.44		1.86
	3.90	.50	.60	.60			-82.03	62.99	44.24				
PISO1		.95			-60.53	-31.51				28/#6 (2.2%)	0.90		

Columna K-8

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-10.71	-22.23				12/#8 (1.7%)	0.40	2.63	1.48
	3.80	.40	.60	.60			-34.15	29.27	31.31				
					13.75	37.24				12/#8 (1.7%)	0.64		
PISO2					-18.43	-18.69				12/#8 (1.7%)	0.41	2.55	1.53
	3.90	.50	.60	.60			-87.77	55.61	38.23				
PISO1		.95			53.89	18.56				12/#8 (1.7%)	0.87		

Columna J-7

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					5.14	24.30				12/#7 (1.3%)	0.48	1.42	1.24
	3.80	.40	.60	.60			-36.31	29.74	29.19				
					-15.09	-29.05				12/#7 (1.3%)	0.62		
PISO2					18.82	12.41				12/#7 (1.3%)	0.40	2.23	1.92
	3.90	.50	.60	.60			-70.25	49.03	34.66				
PISO1		.95			-47.42	-18.72				12/#7 (1.3%)	0.94		

Columna I-6

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					30.87	3.70				12/#8 (1.7%)	0.47	1.24	1.59
	3.80	.40	.60	.60			-53.30	38.72	25.26				
					-25.81	-19.64				12/#8 (1.7%)	0.51		
PISO2					13.92	15.10				12/#8 (1.7%)	0.32	2.39	2.28
	3.90	.50	.60	.60			-92.27	46.08	38.86				
PISO1		.95			-31.85	-37.80				12/#8 (1.7%)	0.78		

Columna H-6

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					15.16	12.89				12/#8 (1.7%)	0.35	2.81	2.72
	3.80	.40	.60	.60			-8.63	24.47	25.52				
					-20.67	-16.47				12/#8 (1.7%)	0.45		
PISO2					15.51	13.16				12/#8 (1.7%)	0.34	2.90	2.71
	3.90	.50	.60	.60			-21.22	40.71	39.77				
PISO1		.95			38.11	30.33				12/#8 (1.7%)	0.85		

Columna N-10

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-22.32	-17.94				28/#7 (3.0%)	0.34	2.81	1.78
	3.80	.40	.60	.60			-49.61	30.90	34.24				
					7.86	31.49				28/#7 (3.0%)	0.33		
PISO2					-21.85	-22.61				28/#7 (3.0%)	0.38	3.20	1.98
	3.90	.50	.60	.60			-132.53	72.06	50.57				
PISO1		.95			65.60	43.92				28/#7 (3.0%)	0.93		

Columna M-9

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					26.80	15.82				28/#6 (2.2%)	0.42	2.15	1.81
	3.80	.40	.60	.60			-42.83	34.07	34.52				
					-15.74	-34.21				28/#6 (2.2%)	0.50		
PISO2					21.39	23.21				28/#6 (2.2%)	0.44		1.94
	3.90	.50	.60	.60			-108.71	62.90	47.65				
PISO1		.95			-60.65	-38.06				28/#6 (2.2%)	0.97		

Columna L-8

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					29.62	10.23				12/#8 (1.7%)	0.48	2.07	1.33
	3.80	.40	.60	.60			-49.91	37.00	23.98				
					-28.92	-3.33				12/#8 (1.7%)	0.44		
PISO2					-17.22	-13.77				12/#8 (1.7%)	0.34	2.46	1.52
	3.90	.50	.60	.60			-128.21	57.18	38.01				
PISO1		.95			53.93	23.24				12/#8 (1.7%)	0.88		

Columna K-7

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					14.09	28.97				12/#8 (1.7%)	0.52	2.48	1.25
	3.80	.40	.60	.60			-35.89	28.59	34.11				
					-16.11	-39.17				12/#8 (1.7%)	0.67		
PISO2					14.88	17.76				12/#8 (1.7%)	0.36	2.96	1.47
	3.90	.50	.60	.60			-88.93	47.90	37.86				
PISO1		.95			-29.02	-40.27				12/#8 (1.7%)	0.77		

Columna J-6

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-23.74	-16.74				12/#8 (1.7%)	0.46	1.32	1.53
	3.80	.40	.60	.60			-58.33	30.29	28.08				
					19.19	21.56				12/#8 (1.7%)	0.46		
PISO2					13.24	12.08				12/#8 (1.7%)	0.28	2.76	2.26
	3.90	.50	.60	.60			-111.07	43.47	34.61				
PISO1		.95			-34.13	-33.45				12/#8 (1.7%)	0.75		

Columna I-5

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					30.16	18.92				12/#8 (1.7%)	0.56	1.46	1.43
	3.80	.40	.60	.60			-53.48	38.54	28.66				
					-29.23	-24.85				12/#8 (1.7%)	0.61		
PISO2					11.67	17.63				12/#8 (1.7%)	0.33	2.45	1.78
	3.90	.50	.60	.60			-114.61	40.57	39.09				
PISO1		.95			-35.16	-37.99				12/#8 (1.7%)	0.82		

Columna H-5

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					16.00	15.97				12/#8 (1.7%)	0.39	2.81	2.84
	3.80	.40	.60	.60			-8.79	24.11	26.28				
					-21.43	-20.15				12/#8 (1.7%)	0.50		
PISO2					13.69	14.89				12/#8 (1.7%)	0.34	2.91	2.71
	3.90	.50	.60	.60			-22.15	36.50	40.29				
PISO1		.95			31.23	36.33				12/#8 (1.7%)	0.83		

Columna O-10

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-18.60	-19.51				28/#7 (3.0%)	0.32	2.27	2.13
	3.80	.40	.60	.60			-38.95	19.12	34.56				
					15.65	29.14				28/#7 (3.0%)	0.38		
PISO2					-23.34	-24.96				28/#7 (3.0%)	0.41	4.38	2.53
	3.90	.50	.60	.60			-86.95	63.19	57.46				
PISO1		.95			66.33	52.49				28/#7 (3.0%)	1.00		

Columna N-9

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					16.41	18.56				28/#7 (3.0%)	0.29	2.81	2.27
	3.80	.40	.60	.60			-47.28	31.12	35.34				
					-12.84	-32.15				28/#7 (3.0%)	0.38		
PISO2					24.28	24.45				28/#7 (3.0%)	0.41		2.34
	3.90	.50	.60	.60			-125.78	64.51	52.44				
PISO1		.95			-62.32	-45.81				28/#7 (3.0%)	0.92		

Columna M-8

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-29.66	-8.64				12/#8 (1.7%)	0.47	2.06	1.53
	3.80	.40	.60	.60			-48.07	37.02	27.44				
					22.73	26.76				12/#8 (1.7%)	0.56		
PISO2					-20.99	-18.08				12/#8 (1.7%)	0.43	2.45	1.51
	3.90	.50	.60	.60			-122.06	57.17	43.47				
PISO1		.95			55.44	34.26				12/#8 (1.7%)	0.99		

Columna L-7

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					22.42	22.28				12/#8 (1.7%)	0.50	1.49	1.27
	3.80	.40	.60	.60			-61.00	35.33	29.89				
					-25.32	-27.28				12/#8 (1.7%)	0.59		
PISO2					19.32	12.09				12/#8 (1.7%)	0.35	2.37	1.54
	3.90	.50	.60	.60			-132.56	49.83	37.98				
PISO1		.95			-48.57	-25.00				12/#8 (1.7%)	0.81		

Columna K-6

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-12.90	-30.06				12/#8 (1.7%)	0.52	2.48	1.24
	3.80	.40	.60	.60			-39.76	27.42	36.73				
					17.04	36.64				12/#8 (1.7%)	0.64		
PISO2					-8.25	-19.73				12/#8 (1.7%)	0.31	2.75	1.62
	3.90	.50	.60	.60			-111.75	41.98	37.47				
PISO1		.95			31.40	37.51				12/#8 (1.7%)	0.77		

Columna J-5

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-25.18	-11.33				12/#8 (1.7%)	0.42	1.32	1.53
	3.80	.40	.60	.60			-57.47	30.72	31.69				
					-14.58	-30.31				12/#8 (1.7%)	0.52		
PISO2					11.79	20.39				12/#8 (1.7%)	0.36	2.79	1.51
	3.90	.50	.60	.60			-131.31	38.13	38.34				
PISO1		.95			-35.20	-38.25				12/#8 (1.7%)	0.82		

Columna I-4

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					25.32	-9.51				12/#7 (1.3%)	0.53	1.20	2.01
	3.80	.40	.60	.60			-32.46	37.36	24.40				
					21.12	31.35				12/#7 (1.3%)	0.73		
PISO2					-12.88	-20.02				12/#7 (1.3%)	0.41	1.74	2.13
	3.90	.50	.60	.60			-90.19	40.01	35.36				
PISO1		.95			38.79	34.72				12/#7 (1.3%)	1.00		

Columna H-4

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					14.77	2.68				12/#8 (1.7%)	0.26	3.22	5.84
	3.80	.40	.60	.60			-3.44	23.60	15.47				
					11.79	15.13				12/#8 (1.7%)	0.34		
PISO2					9.72	7.60				12/#8 (1.7%)	0.23	3.21	5.29
	3.90	.50	.60	.60			2.28	34.87	33.59				
PISO1		.95			35.01	34.12				12/#8 (1.7%)	0.87		

Columna O-9

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-3.84	26.29				28/#7 (3.0%)	0.27	7.76	2.99
	3.80	.40	.60	.60			-30.04	20.72	35.60				
					6.13	-29.53				28/#7 (3.0%)	0.31		
PISO2					-20.26	-18.61				28/#7 (3.0%)	0.33		2.94
	3.90	.50	.60	.60			-85.34	56.23	59.52				
PISO1		.95			58.29	50.74				28/#7 (3.0%)	0.91		

Columna N-8

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					24.80	-7.38				28/#6 (2.2%)	0.34	2.33	1.79
	3.80	.40	.60	.60			-35.12	33.19	25.74				
					11.16	35.47				28/#6 (2.2%)	0.49		
PISO2					-19.68	-27.32				28/#6 (2.2%)	0.46	2.84	2.76
	3.90	.50	.60	.60			-91.94	56.24	47.02				
PISO1		.95			54.68	46.42				28/#6 (2.2%)	0.99		

Columna M-7

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-24.04	-4.16				12/#8 (1.7%)	0.39	2.89	1.33
	3.80	.40	.60	.60			-33.92	24.12	27.71				
					23.20	14.33				12/#8 (1.7%)	0.45		
PISO2					-15.72	-9.50				12/#8 (1.7%)	0.28	3.37	1.81
	3.90	.50	.60	.60			-80.11	43.36	41.93				
PISO1		.95			44.82	30.41				12/#8 (1.7%)	0.88		

Columna L-6

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-10.76	-37.47				16/#8 (2.3%)	0.49	2.68	1.24
	3.80	.40	.60	.60			-51.29	29.43	38.88				
					17.10	34.65				16/#8 (2.3%)	0.51		
PISO2					-13.68	-10.13				16/#8 (2.3%)	0.24	3.46	1.97
	3.90	.50	.60	.60			-135.24	42.01	37.83				
PISO1		.95			32.11	37.11				16/#8 (2.3%)	0.68		

Columna K-5

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					12.07	28.17				12/#8 (1.7%)	0.49	2.45	1.46
	3.80	.40	.60	.60			-32.22	26.95	36.30				
					-18.46	-36.42				12/#8 (1.7%)	0.66		
PISO2					10.40	20.23				12/#8 (1.7%)	0.34	2.90	1.44
	3.90	.50	.60	.60			-99.81	37.60	37.68				
PISO1		.95			-34.39	-38.59				12/#8 (1.7%)	0.81		

Columna J-4

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-23.02	-21.89				28/#6 (2.2%)	0.44	2.31	2.91
	3.80	.40	.60	.60			-37.90	35.60	26.70				
					33.21	35.36				28/#6 (2.2%)	0.68		
PISO2					-20.39	-22.49				28/#6 (2.2%)	0.44	2.14	2.13
	3.90	.50	.60	.60			-209.31	40.96	35.96				
PISO1		.95			37.88	34.52				28/#6 (2.2%)	0.99		

Columna O-8

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-18.03	-14.68				28/#7 (3.0%)	0.27	2.26	2.24
	3.80	.40	.60	.60			-39.13	19.39	21.61				
					16.01	24.07				28/#7 (3.0%)	0.34		
PISO2					-13.34	-24.22				28/#7 (3.0%)	0.31	5.52	4.64
	3.90	.50	.60	.60			-77.32	47.37	52.31				
PISO1		.95			50.77	51.84				28/#7 (3.0%)	0.86		

Columna M-6

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-16.17	-28.40				12/#7 (1.3%)	0.64	2.66	1.30
	3.80	.40	.60	.60			-27.46	20.04	34.93				
					19.47	28.52				12/#7 (1.3%)	0.70		
PISO2					-12.23	-12.60				12/#7 (1.3%)	0.31	3.01	1.51
	3.90	.50	.60	.60			-78.49	36.66	42.58				
PISO1		.95			30.25	41.03				12/#7 (1.3%)	0.99		

Columna L-5

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					20.81	30.38				12/#7 (1.3%)	0.71	1.56	1.23
	3.80	.40	.60	.60			-35.02	29.52	36.00				
					-21.43	-32.11				12/#7 (1.3%)	0.74		
PISO2					8.31	16.09				12/#7 (1.3%)	0.30	2.22	1.20
	3.90	.50	.60	.60			-116.68	37.89	38.65				
PISO1		.95			-33.43	-37.32				12/#7 (1.3%)	0.90		

Columna K-4

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-15.18	-20.06				12/#8 (1.7%)	0.41	2.86	1.34
	3.80	.40	.60	.60			-34.16	28.58	29.07				
					20.75	37.15				12/#8 (1.7%)	0.69		
PISO2					-11.55	-25.69				12/#8 (1.7%)	0.42	2.85	1.60
	3.90	.50	.60	.60			-100.32	38.30	41.58				
PISO1		.95			37.74	41.10				12/#8 (1.7%)	0.88		

Columna M-5

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-1.96	26.06				12/#8 (1.7%)	0.42	1.83	1.27
	3.80	.40	.60	.60			-29.25	20.47	34.79				
					-1.19	-28.44				12/#8 (1.7%)	0.45		
PISO2					2.75	15.38				12/#8 (1.7%)	0.24	4.17	1.93
	3.90	.50	.60	.60			-40.82	32.27	43.59				
PISO1		.95			31.85	40.79				12/#8 (1.7%)	0.83		

Columna L-4

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					22.38	-6.49				12/#8 (1.7%)	0.37	1.91	1.27
	3.80	.40	.60	.60			-34.46	32.08	30.20				
					19.00	37.82				12/#8 (1.7%)	0.68		
PISO2					-12.70	-26.44				12/#8 (1.7%)	0.44	2.92	1.64
	3.90	.50	.60	.60			-103.38	38.39	45.01				
PISO1		.95			38.61	44.26				12/#8 (1.7%)	0.92		

Columna M-4

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-17.07	-16.71				12/#8 (1.7%)	0.39	1.49	1.46
	3.80	.40	.60	.60			-38.26	20.52	21.51				
					18.39	24.74				12/#8 (1.7%)	0.51		
PISO2					-7.68	-17.45				12/#8 (1.7%)	0.29	4.42	1.91
	3.90	.50	.60	.60			-73.79	31.06	38.32				
PISO1		.95			35.55	41.93				12/#8 (1.7%)	0.87		

Columna K-2'

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO2					-2.88	-4.13				12/#8 (3.4%)	0.14	1.79	1.26
	3.90	.50	.30	.60			-14.51	3.37	7.43				
PISO1		.95			1.53	5.83				12/#8 (3.4%)	0.24		

Columna L-2'

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO2					-2.97	-4.55				12/#8 (3.4%)	0.16	1.77	1.66
	3.90	.50	.30	.60			-15.68	3.35	8.19				
PISO1		.95			1.45	6.42				12/#8 (3.4%)	0.27		

Columna M-2'

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
PISO2					0.00	-0.58				12/#8 (3.4%)	0.07	3.90	1.21
	3.90	.50	.30	.60			-2.67	0.92	2.48				
PISO1		.95			-1.11	-3.67				12/#8 (3.4%)	0.14		

B-101/PISO1

B=0.50 H=0.50 L=3.96			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-0.38	Mu=-1.07	Mu=-0.38	Mu=-1.11	Mu=-0.52	Mu=-0.52	Mu=-0.40	Mu=-0.33	Mu=-0.19
As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43
Mu=0.43	Mu=1.15	Mu=0.42	Mu=1.09	Mu=0.52	Mu=0.52	Mu=0.37	Mu=0.29	Mu=0.19
As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43
Vu=-0.90		Vu=0.90	Vu=-3.60		Vu=0.52	Vu=-1.53		Vu=0.77

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-0.20	Mu=-0.36	Mu=-0.20	Mu=-0.19	Mu=-0.33	Mu=-0.40	Mu=-0.51	Mu=-0.51	Mu=-1.12
As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43
Mu=0.17	Mu=0.41	Mu=0.17	Mu=0.19	Mu=0.29	Mu=0.37	Mu=0.51	Mu=0.51	Mu=1.08
As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43
Vu=-0.97		Vu=0.96	Vu=-0.77		Vu=1.52	Vu=-0.51		Vu=3.58

B=0.50 H=0.50 L=6.90		
Mu=-0.66	Mu=-1.66	Mu=-0.67
As=7.43	As=7.43	As=7.43
Mu=0.71	Mu=1.76	Mu=0.70
As=7.43	As=7.43	As=7.43
Vu=-1.80		Vu=1.80

B-102/PISO1

B=0.50 H=0.50 L=3.96			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-23.05	Mu=-5.76	Mu=-22.84	Mu=-20.20	Mu=-5.29	Mu=-21.16	Mu=-21.14	Mu=-5.28	Mu=-21.13
As=14.67	As=7.43	As=14.53	As=12.72	As=7.43	As=13.38	As=13.36	As=7.43	As=13.36
Mu=17.59	Mu=5.76	Mu=16.01	Mu=10.10	Mu=6.05	Mu=10.58	Mu=10.57	Mu=5.89	Mu=10.57
As=10.97	As=7.43	As=9.93	As=8.18	As=7.43	As=8.58	As=8.57	As=7.43	As=8.57
Vu=-35.96		Vu=36.43	Vu=-19.17		Vu=19.37	Vu=-19.54		Vu=19.54

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-21.10	Mu=-5.28	Mu=-21.14	Mu=-21.04	Mu=-5.27	Mu=-21.07	Mu=-21.02	Mu=-5.40	Mu=-21.62
As=13.33	As=7.43	As=13.36	As=13.29	As=7.43	As=13.32	As=13.28	As=7.43	As=13.69
Mu=10.55	Mu=5.89	Mu=10.57	Mu=10.52	Mu=5.93	Mu=10.54	Mu=10.51	Mu=5.59	Mu=10.81
As=8.55	As=7.43	As=8.57	As=8.53	As=7.43	As=8.54	As=8.52	As=7.43	As=8.77
Vu=-19.51		Vu=19.53	Vu=-19.49		Vu=19.50	Vu=-19.37		Vu=19.57

B=0.50 H=0.50 L=6.90		
Mu=-26.88	Mu=-6.72	Mu=-26.36
As=17.38	As=7.43	As=17.01
Mu=13.44	Mu=11.34	Mu=13.18
As=8.26	As=9.84	As=8.09
Vu=-25.69		Vu=25.31

B-103/PISO1

B=0.50 H=0.50 L=3.96			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-25.06	Mu=-6.27	Mu=-24.97	Mu=-26.14	Mu=-6.89	Mu=-27.58	Mu=-27.36	Mu=-6.84	Mu=-27.30
As=16.09	As=7.43	As=16.02	As=16.85	As=7.43	As=17.88	As=17.73	As=7.43	As=17.68
Mu=19.66	Mu=6.27	Mu=17.83	Mu=13.07	Mu=10.83	Mu=13.79	Mu=13.68	Mu=10.92	Mu=13.65
As=12.36	As=7.43	As=11.13	As=8.02	As=8.79	As=8.48	As=8.41	As=8.87	As=8.39
Vu=-38.76		Vu=39.37	Vu=-25.07		Vu=25.41	Vu=-25.60		Vu=25.58

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-27.36	Mu=-6.84	Mu=-27.35	Mu=-31.57	Mu=-7.89	Mu=-31.53	Mu=-26.52	Mu=-6.64	Mu=-26.56
As=17.73	As=7.43	As=17.72	As=20.83	As=7.43	As=20.79	As=17.13	As=7.43	As=17.15
Mu=13.68	Mu=10.35	Mu=13.67	Mu=15.78	Mu=8.49	Mu=15.76	Mu=13.26	Mu=10.24	Mu=13.28
As=8.41	As=8.41	As=8.41	As=9.78	As=8.18	As=9.77	As=8.14	As=8.30	As=8.15
Vu=-25.31		Vu=25.37	Vu=-28.19		Vu=28.23	Vu=-24.68		Vu=24.70

B=0.50 H=0.50 L=6.90		
Mu=-32.68	Mu=-8.17	Mu=-31.75
As=21.67	As=7.43	As=20.96
Mu=16.34	Mu=8.94	Mu=15.87
As=10.14	As=9.16	As=9.84
Vu=-29.43		Vu=28.82

B-104/PISO1

B=0.50 H=0.50 L=3.96			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-27.21	Mu=-6.80	Mu=-26.48	Mu=-26.95	Mu=-7.13	Mu=-28.52	Mu=-28.31	Mu=-7.08	Mu=-28.18
As=17.62	As=7.43	As=17.10	As=17.43	As=7.43	As=18.57	As=18.41	As=7.43	As=18.33
Mu=21.61	Mu=6.80	Mu=19.93	Mu=13.48	Mu=11.19	Mu=14.26	Mu=14.15	Mu=9.57	Mu=14.09
As=13.69	As=7.43	As=12.54	As=8.28	As=9.09	As=8.79	As=8.72	As=9.17	As=8.68
Vu=-41.68		Vu=42.02	Vu=-25.79		Vu=26.16	Vu=-26.36		Vu=26.32

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-28.46	Mu=-7.12	Mu=-28.47	Mu=-28.20	Mu=-7.06	Mu=-28.22	Mu=-28.33	Mu=-7.08	Mu=-28.32
As=18.53	As=7.43	As=18.53	As=18.33	As=7.43	As=18.35	As=18.43	As=7.43	As=18.42
Mu=14.23	Mu=9.31	Mu=14.23	Mu=14.10	Mu=9.59	Mu=14.11	Mu=14.16	Mu=9.40	Mu=14.16
As=8.77	As=8.95	As=8.77	As=8.68	As=9.17	As=8.69	As=8.72	As=8.99	As=8.72
Vu=-26.31		Vu=26.32	Vu=-26.31		Vu=26.32	Vu=-26.26		Vu=26.26

B=0.50 H=0.50 L=6.90		
Mu=-29.04 As=18.95	Mu=-7.26 As=7.43	Mu=-28.60 As=18.63
Mu=14.52 As=8.95	Mu=11.31 As=9.54	Mu=14.30 As=8.81
Vu=-27.34		Vu=26.93

B-105/PISO1

B=0.50 H=0.50 L=3.21			*B=0.50 H=0.50 L=6.40*			*B=0.50 H=0.50 L=6.40*		
Mu=-30.56 As=20.07	Mu=-7.64 As=7.43	Mu=-29.27 As=19.12	Mu=-36.94 As=24.98	Mu=-9.27 As=7.48	Mu=-37.06 As=25.07	Mu=-25.54 As=16.43	Mu=-6.39 As=7.43	Mu=-25.50 As=16.40
Mu=27.64 As=17.93	Mu=7.64 As=7.43	Mu=27.07 As=17.52	Mu=25.25 As=16.22	Mu=9.27 As=7.55	Mu=25.06 As=16.09	Mu=15.48 As=9.58	Mu=6.39 As=7.43	Mu=15.48 As=9.58
Vu=-52.02		Vu=51.72	Vu=-34.80		Vu=34.87	Vu=-25.27		Vu=25.26

B=0.50 H=0.50 L=6.40			*B=0.50 H=0.50 L=6.40*			*B=0.50 H=0.50 L=6.40*		
Mu=-37.13 As=25.13	Mu=-9.34 As=7.54	Mu=-37.36 As=25.31	Mu=-26.21 As=16.90	Mu=-6.59 As=7.43	Mu=-26.35 As=17.00	Mu=-26.50 As=17.11	Mu=-6.63 As=7.43	Mu=-26.50 As=17.11
Mu=25.18 As=16.17	Mu=9.34 As=7.59	Mu=25.41 As=16.33	Mu=16.16 As=10.02	Mu=6.59 As=7.43	Mu=16.36 As=10.16	Mu=16.50 As=10.25	Mu=6.63 As=7.43	Mu=16.46 As=10.22
Vu=-35.00		Vu=35.00	Vu=-25.98		Vu=25.97	Vu=-26.18		Vu=26.18

B=0.50 H=0.50 L=6.15		
Mu=-26.58 As=17.17	Mu=-6.71 As=7.43	Mu=-26.85 As=17.36
Mu=16.68 As=10.37	Mu=6.71 As=7.43	Mu=17.00 As=10.58
Vu=-26.47		Vu=26.46

B-106/PISO1

B=0.50 H=0.50 L=6.60			*B=0.50 H=0.50 L=4.69*			*B=0.50 H=0.50 L=5.20*		
Mu=-20.82	Mu=-5.21	Mu=-19.82	Mu=-15.36	Mu=-3.84	Mu=-13.80	Mu=-14.82	Mu=-4.11	Mu=-16.46
As=13.14	As=7.43	As=12.46	As=9.50	As=8.52	As=8.49	As=9.15	As=7.43	As=10.22
Mu=10.41	Mu=12.46	Mu=9.91	Mu=7.68	Mu=6.23	Mu=6.90	Mu=7.45	Mu=6.93	Mu=8.23
As=8.44	As=9.16	As=8.02	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43
Vu=19.97		Vu=-19.87	Vu=-19.24		Vu=18.53	Vu=17.98		Vu=-18.65

B=0.50 H=0.50 L=7.62		
Mu=-24.04	Mu=-6.96	Mu=-27.83
As=15.37	As=7.43	As=18.07
Mu=12.02	Mu=15.03	Mu=13.92
As=9.80	As=9.29	As=9.29
Vu=-21.39		Vu=22.09

B-107/PISO1

B=0.50 H=0.50 L=6.60			*B=0.50 H=0.50 L=4.69*			*B=0.50 H=0.50 L=5.20*		
Mu=-38.49	Mu=-9.62	Mu=-37.67	Mu=-25.14	Mu=-6.28	Mu=-22.47	Mu=-25.86	Mu=-6.51	Mu=-26.04
As=26.23	As=7.78	As=25.56	As=16.14	As=7.43	As=14.27	As=16.65	As=7.43	As=16.78
Mu=19.25	Mu=29.70	Mu=18.83	Mu=12.57	Mu=12.10	Mu=11.23	Mu=12.93	Mu=15.77	Mu=13.02
As=12.08	As=19.43	As=11.80	As=7.70	As=9.87	As=9.13	As=7.93	As=9.77	As=7.99
Vu=37.58		Vu=-37.52	Vu=-30.92		Vu=29.69	Vu=30.96		Vu=-31.02

B=0.50 H=0.50 L=7.62		
Mu=-25.12	Mu=-6.65	Mu=-26.61
As=16.12	As=7.43	As=17.19
Mu=12.56	Mu=14.75	Mu=13.31
As=7.69	As=9.10	As=8.17
Vu=-21.43		Vu=21.48

B-108/PISO1

B=0.50 H=0.50 L=6.60			*B=0.50 H=0.50 L=4.69*			*B=0.50 H=0.50 L=5.20*		
Mu=-55.78	Mu=-13.95	Mu=-42.04	Mu=-28.21	Mu=-7.05	Mu=-25.68	Mu=-30.45	Mu=-7.61	Mu=-27.80
As=37.19	As=8.58	As=29.17	As=18.34	As=7.43	As=16.53	As=19.99	As=7.43	As=18.04
Mu=27.89	Mu=34.00	Mu=21.02	Mu=14.10	Mu=14.66	Mu=12.84	Mu=15.22	Mu=20.26	Mu=13.90
As=19.50	As=22.68	As=13.61	As=8.69	As=9.05	As=7.87	As=9.41	As=12.77	As=8.55
Vu=46.79		Vu=-42.90	Vu=-34.67		Vu=33.48	Vu=35.98		Vu=-34.84

B=0.50 H=0.50 L=7.62		
Mu=-11.32	Mu=-2.83	Mu=-7.30
As=9.20	As=7.43	As=7.43
Mu=5.66	Mu=2.83	Mu=5.11
As=7.43	As=7.43	As=7.43
Vu=-8.21		Vu=6.81

B-109/PISO1

B=0.50 H=0.50 L=6.60			***B=0.50 H=0.50 L=4.69***			***B=0.50 H=0.50 L=5.20***		
Mu=-55.84	Mu=-13.96	Mu=-42.09	Mu=-28.22	Mu=-7.05	Mu=-25.69	Mu=-30.41	Mu=-7.60	Mu=-27.79
As=37.22	As=8.59	As=29.20	As=18.35	As=7.43	As=16.53	As=19.96	As=7.43	As=18.04
Mu=27.92	Mu=34.04	Mu=21.05	Mu=14.11	Mu=14.70	Mu=12.85	Mu=15.20	Mu=20.22	Mu=13.90
As=19.55	As=22.71	As=13.63	As=8.69	As=9.07	As=7.88	As=9.40	As=12.74	As=8.55
Vu=46.67		Vu=-42.78	Vu=-34.70		Vu=33.51	Vu=35.83		Vu=-34.74

B=0.50 H=0.50 L=7.62		
Mu=-13.26	Mu=-3.32	Mu=-8.27
As=8.14	As=7.43	As=7.43
Mu=6.63	Mu=3.32	Mu=6.19
As=7.43	As=7.43	As=7.43
Vu=-9.20		Vu=7.48

B-110/PISO1

B=0.50 H=0.50 L=6.60			***B=0.50 H=0.50 L=4.69***			***B=0.50 H=0.50 L=5.20***		
Mu=-46.21	Mu=-11.55	Mu=-45.98	Mu=-29.48	Mu=-7.37	Mu=-26.14	Mu=-31.11	Mu=-7.78	Mu=-28.49
As=32.78	As=9.40	As=32.59	As=19.27	As=7.43	As=16.85	As=20.48	As=7.43	As=18.55
Mu=23.10	Mu=36.87	Mu=22.99	Mu=14.74	Mu=14.47	Mu=13.07	Mu=15.55	Mu=20.24	Mu=14.25
As=14.95	As=24.92	As=14.95	As=9.10	As=8.92	As=8.02	As=9.63	As=12.75	As=8.78
Vu=44.51		Vu=-44.49	Vu=-35.76		Vu=34.23	Vu=36.71		Vu=-35.58

B=0.50 H=0.50 L=7.62		
Mu=-11.82	Mu=-2.96	Mu=-7.71
As=9.63	As=7.43	As=7.43
Mu=5.91	Mu=2.96	Mu=5.53
As=7.43	As=7.43	As=7.43
Vu=-8.59		Vu=7.16

B-111/PISO1

B=0.50 H=0.50 L=6.60			*B=0.50 H=0.50 L=4.69*			*B=0.50 H=0.50 L=5.20*		
Mu=-47.65	Mu=-11.91	Mu=-46.26	Mu=-29.23	Mu=-8.50	Mu=-34.01	Mu=-40.10	Mu=-10.03	Mu=-27.92
As=34.09	As=9.71	As=32.83	As=19.09	As=7.43	As=22.68	As=27.54	As=8.12	As=18.13
Mu=23.83	Mu=37.46	Mu=23.13	Mu=14.61	Mu=12.68	Mu=17.00	Mu=20.05	Mu=18.26	Mu=18.85
As=15.24	As=25.39	As=15.24	As=9.02	As=7.87	As=10.58	As=12.62	As=11.78	As=11.81
Vu=45.60		Vu=-44.95	Vu=-37.68		Vu=38.90	Vu=-41.07		Vu=36.42

B=0.50 H=0.50 L=7.62		
Mu=-12.15	Mu=-3.04	Mu=-8.64
As=7.43	As=7.43	As=7.43
Mu=6.07	Mu=6.07	Mu=6.06
As=7.43	As=7.43	As=7.43
Vu=-9.13		Vu=7.84

B-112/PISO1

B=0.50 H=0.50 L=6.60			*B=0.50 H=0.50 L=4.69*			*B=0.50 H=0.50 L=5.20*		
Mu=-48.53	Mu=-12.13	Mu=-47.01	Mu=-30.49	Mu=-8.81	Mu=-35.26	Mu=-40.07	Mu=-10.02	Mu=-32.36
As=34.90	As=9.89	As=33.50	As=20.02	As=7.43	As=23.65	As=27.51	As=8.11	As=21.43
Mu=24.27	Mu=37.34	Mu=23.50	Mu=15.24	Mu=13.08	Mu=17.63	Mu=20.03	Mu=16.66	Mu=17.01
As=15.53	As=25.30	As=15.18	As=9.43	As=8.23	As=11.00	As=12.61	As=10.39	As=10.59
Vu=46.47		Vu=-45.93	Vu=-39.49		Vu=40.63	Vu=-41.34		Vu=38.69

B=0.50 H=0.50 L=7.62		
Mu=-41.29	Mu=-10.32	Mu=-38.15
As=28.53	As=8.36	As=25.95
Mu=20.65	Mu=22.18	Mu=19.07
As=13.02	As=14.08	As=11.96
Vu=-32.01		Vu=30.81

B-113/PISO1

B=0.50 H=0.50 L=6.66			*B=0.50 H=0.50 L=4.64*			*B=0.50 H=0.50 L=5.20*		
Mu=-31.47	Mu=-7.87	Mu=-30.07	Mu=-22.62	Mu=-5.66	Mu=-20.11	Mu=-21.61	Mu=-6.25	Mu=-24.99
As=20.75	As=7.43	As=19.71	As=14.38	As=7.43	As=12.66	As=13.68	As=7.43	As=16.04
Mu=15.73	Mu=19.67	Mu=15.03	Mu=11.31	Mu=9.26	Mu=10.21	Mu=11.32	Mu=10.01	Mu=12.50
As=9.75	As=12.36	As=9.29	As=9.20	As=7.66	As=8.27	As=9.20	As=8.70	As=7.65
Vu=29.71		Vu=-29.44	Vu=-28.42		Vu=27.10	Vu=-25.92		Vu=27.38

B=0.50 H=0.50 L=7.62		
Mu=-41.88	Mu=-10.47	Mu=-40.97
As=29.02	As=8.49	As=28.26
Mu=20.94	Mu=22.50	Mu=20.48
As=13.22	As=14.29	As=12.91
Vu=-33.44		Vu=32.74

B-201/PISO2

B=0.50 H=0.50 L=6.35			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-1.30	Mu=-0.53	Mu=-0.33	Mu=-0.29	Mu=-0.13	Mu=-0.10	Mu=-0.11	Mu=-0.13	Mu=-0.14
As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43
Mu=1.25	Mu=0.60	Mu=0.33	Mu=0.24	Mu=0.14	Mu=0.10	Mu=0.05	Mu=0.16	Mu=0.09
As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43
Vu=-10.22		Vu=0.81	Vu=-0.87		Vu=0.55	Vu=-0.58		Vu=0.63

B-202/PISO2

B=0.60 H=0.50 L=0.99			***B=0.50 H=0.50 L=2.67***			***B=0.50 H=0.50 L=6.90***		
Mu=-28.66	Mu=-18.86	Mu=-10.96	Mu=-10.93	Mu=-6.68	Mu=-26.71	Mu=-22.46	Mu=-6.01	Mu=-24.03
As=18.31	As=12.96	As=11.48	As=8.87	As=7.43	As=17.26	As=14.27	As=7.43	As=15.36
Mu=22.26	Mu=18.68	Mu=16.72	Mu=16.81	Mu=7.33	Mu=21.14	Mu=11.52	Mu=6.41	Mu=12.88
As=13.93	As=12.04	As=10.55	As=10.45	As=8.18	As=13.36	As=9.37	As=9.37	As=7.90
Vu=-4.56		Vu=-4.48	Vu=-3.61		Vu=4.17	Vu=-2.12		Vu=2.12

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-30.60	Mu=-7.65	Mu=-25.26	Mu=-24.14	Mu=-6.03	Mu=-23.89	Mu=-25.57	Mu=-6.40	Mu=-25.60
As=20.10	As=7.43	As=16.23	As=15.43	As=7.43	As=15.26	As=16.45	As=7.43	As=16.47
Mu=16.99	Mu=8.37	Mu=12.63	Mu=12.07	Mu=6.46	Mu=11.94	Mu=12.78	Mu=6.45	Mu=13.00
As=10.57	As=8.62	As=9.55	As=9.84	As=7.43	As=9.73	As=7.84	As=8.78	As=7.98
Vu=46.55		Vu=2.50	Vu=-2.23		Vu=2.22	Vu=-2.38		Vu=2.34

B-203/PISO2

B=0.50 H=0.50 L=3.96			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-31.46	Mu=-7.87	Mu=-28.29	Mu=-26.29	Mu=-7.01	Mu=-28.06	Mu=-27.44	Mu=-6.86	Mu=-26.63
As=20.75	As=7.43	As=18.40	As=16.96	As=7.43	As=18.23	As=17.78	As=7.43	As=17.20
Mu=19.58	Mu=19.40	Mu=19.40	Mu=13.14	Mu=8.94	Mu=14.03	Mu=13.72	Mu=13.32	Mu=13.32
As=12.30	As=12.18	As=12.18	As=8.41	As=7.99	As=8.64	As=8.44	As=8.18	As=8.18
Vu=-52.48		Vu=44.71	Vu=-24.73		Vu=25.13	Vu=-27.29		Vu=22.89

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***		
Mu=-27.26	Mu=-6.81	Mu=-27.25	Mu=-28.80	Mu=-7.20	Mu=-28.12
As=17.65	As=7.43	As=17.65	As=18.77	As=7.43	As=18.28
Mu=13.63	Mu=9.41	Mu=13.62	Mu=14.40	Mu=9.49	Mu=14.06
As=8.38	As=8.94	As=8.38	As=8.88	As=9.15	As=8.66
Vu=-25.39		Vu=25.39	Vu=-26.74		Vu=26.21

B-204/PISO2

B=0.50 H=0.50 L=3.96			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-33.00	Mu=-8.25	Mu=-29.00	Mu=-23.07	Mu=-6.22	Mu=-24.87	Mu=-27.55	Mu=-6.92	Mu=-27.66
As=21.91	As=7.43	As=18.92	As=14.69	As=7.43	As=15.95	As=17.87	As=7.43	As=17.95
Mu=21.15	Mu=12.61	Mu=21.20	Mu=11.59	Mu=6.22	Mu=12.44	Mu=13.77	Mu=13.83	Mu=13.83
As=13.37	As=10.31	As=13.41	As=9.43	As=7.43	As=8.71	As=8.47	As=8.51	As=8.51
Vu=-54.57		Vu=46.67	Vu=-21.17		Vu=21.57	Vu=-27.21		Vu=24.00

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***		
Mu=-28.38	Mu=-7.10	Mu=-28.39	Mu=-29.58	Mu=-7.39	Mu=-29.38
As=18.46	As=7.43	As=18.47	As=19.35	As=7.43	As=19.20
Mu=14.19	Mu=9.31	Mu=14.19	Mu=14.79	Mu=9.58	Mu=14.69
As=8.74	As=9.21	As=8.74	As=9.13	As=9.38	As=9.07
Vu=-26.26		Vu=26.27	Vu=-27.62		Vu=27.23

B-205/PISO2

B=0.60 H=0.50 L=0.99			***B=0.50 H=0.50 L=2.67***			***B=0.50 H=0.50 L=6.90***		
Mu=-33.62	Mu=-21.89	Mu=-12.67	Mu=-12.65	Mu=-7.65	Mu=-30.61	Mu=-19.78	Mu=-5.38	Mu=-21.51
As=21.84	As=15.25	As=11.78	As=7.75	As=7.43	As=20.11	As=12.44	As=7.43	As=13.62
Mu=24.56	Mu=20.99	Mu=19.30	Mu=19.35	Mu=9.49	Mu=23.95	Mu=15.44	Mu=5.38	Mu=15.35
As=15.48	As=13.57	As=12.19	As=12.15	As=7.67	As=15.30	As=9.55	As=7.43	As=9.49
Vu=-52.78		Vu=-51.00	Vu=-43.30		Vu=49.53	Vu=-18.02		Vu=18.38

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.89***		
Mu=-24.43	Mu=-6.43	Mu=-25.71	Mu=-25.21	Mu=-6.49	Mu=-25.95	Mu=-34.21	Mu=-8.55	Mu=-33.74
As=15.64	As=7.43	As=16.54	As=16.19	As=7.43	As=16.72	As=22.84	As=7.43	As=22.48
Mu=14.80	Mu=6.43	Mu=14.08	Mu=14.12	Mu=6.49	Mu=13.68	Mu=17.11	Mu=16.49	Mu=16.87
As=9.13	As=9.22	As=8.67	As=8.70	As=8.75	As=8.41	As=10.65	As=10.24	As=10.49
Vu=-23.02		Vu=23.43	Vu=-22.93		Vu=23.20	Vu=-32.01		Vu=29.42

B-206/PISO2

B=0.30 H=0.50 L=6.94		
Mu=-12.31 As=7.76	Mu=-3.68 As=4.46	Mu=-13.25 As=8.41
Mu=6.16 As=4.99	Mu=14.71 As=9.42	Mu=6.63 As=5.38
Vu=-13.28		Vu=12.06

B-207/PISO2

B=0.50 H=0.50 L=3.96			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-35.04 As=23.48	Mu=-8.76 As=7.43	Mu=-33.20 As=22.06	Mu=-25.85 As=16.64	Mu=-7.00 As=7.43	Mu=-28.00 As=18.19	Mu=-27.24 As=17.64	Mu=-7.00 As=7.43	Mu=-27.99 As=18.19
Mu=29.33 As=19.16	Mu=8.76 As=7.84	Mu=27.49 As=17.82	Mu=15.80 As=9.79	Mu=7.00 As=7.43	Mu=15.60 As=9.66	Mu=16.89 As=10.51	Mu=7.00 As=7.43	Mu=16.35 As=10.15
Vu=-52.85		Vu=52.89	Vu=-24.25		Vu=24.72	Vu=-25.08		Vu=25.33

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-27.51 As=17.84	Mu=-6.98 As=7.43	Mu=-27.91 As=18.12	Mu=-32.23 As=21.32	Mu=-8.10 As=7.43	Mu=-32.38 As=21.44	Mu=-28.09 As=18.26	Mu=-7.02 As=7.43	Mu=-27.16 As=17.59
Mu=16.42 As=10.20	Mu=6.98 As=7.43	Mu=16.18 As=10.04	Mu=16.11 As=10.00	Mu=10.05 As=9.51	Mu=16.19 As=10.05	Mu=16.11 As=9.99	Mu=7.02 As=7.43	Mu=16.66 As=10.35
Vu=-24.96		Vu=25.12	Vu=-29.85		Vu=29.90	Vu=-25.21		Vu=24.89

B=0.50 H=0.50 L=6.90		
Mu=-29.28 As=19.12	Mu=-7.37 As=7.43	Mu=-29.47 As=19.27
Mu=17.27 As=10.76	Mu=7.37 As=7.67	Mu=19.28 As=12.10
Vu=-26.89		Vu=26.52

B-208/PISO2

B=0.50 H=0.50 L=3.96			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-0.00 As=7.43	Mu=-0.00 As=7.43	Mu=-0.00 As=7.43	Mu=-5.31 As=7.43	Mu=-5.31 As=7.43	Mu=-5.31 As=7.43	Mu=-5.31 As=7.43	Mu=-5.31 As=7.43	Mu=-5.31 As=7.43
Mu=0.00 As=7.43	Mu=7.67 As=7.43	Mu=0.00 As=7.43	Mu=5.31 As=8.05	Mu=21.23 As=13.42	Mu=5.31 As=8.05	Mu=5.31 As=8.05	Mu=21.23 As=13.42	Mu=5.31 As=8.05
Vu=-5.58		Vu=5.58	Vu=-10.06		Vu=10.06	Vu=-10.06		Vu=10.06

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-5.31 As=7.43	Mu=-5.31 As=7.43	Mu=-5.31 As=7.43	Mu=-5.31 As=7.43	Mu=-5.31 As=7.43	Mu=-5.31 As=7.43	Mu=-5.31 As=7.43	Mu=-5.31 As=7.43	Mu=-5.31 As=7.43
Mu=5.31 As=8.05	Mu=21.23 As=13.42	Mu=5.31 As=8.05	Mu=5.31 As=8.05	Mu=21.23 As=13.42	Mu=5.31 As=8.05	Mu=5.31 As=8.05	Mu=21.23 As=13.42	Mu=5.31 As=8.05
Vu=-10.06		Vu=10.06	Vu=-10.06		Vu=10.06	Vu=-10.06		Vu=10.06

B=0.50 H=0.50 L=6.90		
Mu=-0.00 As=7.43	Mu=-0.00 As=7.43	Mu=-0.00 As=7.43
Mu=0.00 As=8.05	Mu=21.23 As=13.42	Mu=0.00 As=8.05
Vu=-10.06		Vu=10.06

B-209/PISO2

B=0.60 H=0.50 L=0.98			*B=0.50 H=0.50 L=2.68*			*B=0.50 H=0.50 L=6.90*		
Mu=-42.38 As=28.44	Mu=-26.44 As=18.96	Mu=-13.47 As=9.85	Mu=-13.50 As=8.29	Mu=-9.81 As=7.91	Mu=-39.22 As=26.82	Mu=-29.50 As=19.29	Mu=-7.75 As=7.43	Mu=-31.01 As=20.41
Mu=33.39 As=21.67	Mu=26.27 As=17.64	Mu=21.24 As=13.95	Mu=21.30 As=13.47	Mu=12.22 As=9.97	Mu=31.45 As=20.74	Mu=18.66 As=11.68	Mu=7.75 As=7.43	Mu=19.14 As=12.01
Vu=-65.92		Vu=-63.90	Vu=-54.09		Vu=61.82	Vu=-27.15		Vu=27.37

B=0.50 H=0.50 L=6.90			*B=0.50 H=0.50 L=6.90*			*B=0.50 H=0.50 L=6.90*		
Mu=-35.36 As=23.74	Mu=-9.01 As=7.43	Mu=-36.05 As=24.27	Mu=-31.01 As=20.41	Mu=-7.81 As=7.43	Mu=-31.25 As=20.59	Mu=-31.26 As=20.59	Mu=-7.81 As=7.43	Mu=-31.07 As=20.45
Mu=18.01 As=11.25	Mu=9.41 As=9.82	Mu=18.02 As=11.26	Mu=20.05 As=12.62	Mu=7.81 As=7.43	Mu=19.80 As=12.45	Mu=19.86 As=12.49	Mu=7.81 As=7.43	Mu=20.13 As=12.67
Vu=-32.50		Vu=32.73	Vu=-28.06		Vu=28.14	Vu=-28.19		Vu=28.11

B=0.50 H=0.50 L=6.90			*B=0.50 H=0.50 L=6.90*		
Mu=-35.47 As=23.82	Mu=-9.19 As=7.43	Mu=-36.75 As=24.83	Mu=-40.30 As=27.71	Mu=-10.14 As=8.21	Mu=-40.54 As=27.91
Mu=17.89 As=11.17	Mu=9.19 As=9.52	Mu=18.37 As=11.49	Mu=20.15 As=12.69	Mu=13.03 As=10.18	Mu=20.27 As=12.77
Vu=-32.38		Vu=32.81	Vu=-37.27		Vu=36.85

B-210/PISO2

B=0.50 H=0.50 L=3.96			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-39.59	Mu=-9.90	Mu=-35.54	Mu=-27.83	Mu=-7.53	Mu=-30.12	Mu=-29.82	Mu=-7.63	Mu=-30.50
As=27.12	As=8.01	As=23.87	As=18.07	As=7.43	As=19.74	As=19.52	As=7.43	As=20.03
Mu=29.52	Mu=10.77	Mu=28.86	Mu=17.46	Mu=7.53	Mu=17.81	Mu=19.33	Mu=7.63	Mu=18.95
As=19.30	As=9.53	As=18.82	As=10.88	As=7.43	As=11.12	As=12.13	As=7.43	As=11.88
Vu=-59.85		Vu=57.04	Vu=-25.98		Vu=26.37	Vu=-27.27		Vu=27.48

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-30.40	Mu=-7.60	Mu=-30.36	Mu=-30.33	Mu=-7.61	Mu=-30.44	Mu=-30.65	Mu=-7.66	Mu=-28.59
As=19.96	As=7.43	As=19.92	As=19.90	As=7.43	As=19.99	As=20.14	As=7.43	As=18.62
Mu=19.14	Mu=7.60	Mu=19.20	Mu=19.20	Mu=7.61	Mu=19.05	Mu=18.32	Mu=7.66	Mu=19.04
As=12.01	As=7.43	As=12.05	As=12.04	As=7.43	As=11.95	As=11.45	As=7.43	As=11.94
Vu=-27.48		Vu=27.46	Vu=-27.42		Vu=27.47	Vu=-27.20		Vu=26.66

B=0.50 H=0.50 L=6.90		
Mu=-35.54	Mu=-9.10	Mu=-36.38
As=23.87	As=7.43	As=24.54
Mu=17.77	Mu=9.33	Mu=18.51
As=11.09	As=7.76	As=11.58
Vu=-32.78		Vu=32.57

B-211/PISO2

B=0.50 H=0.50 L=3.96			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-38.04	Mu=-9.51	Mu=-34.38	Mu=-28.41	Mu=-7.51	Mu=-30.05	Mu=-29.27	Mu=-7.57	Mu=-30.28
As=25.86	As=7.68	As=22.97	As=18.49	As=7.43	As=19.70	As=19.12	As=7.43	As=19.86
Mu=31.19	Mu=9.51	Mu=30.29	Mu=17.72	Mu=7.51	Mu=17.83	Mu=18.78	Mu=7.57	Mu=18.15
As=20.54	As=8.08	As=19.87	As=11.05	As=7.43	As=11.13	As=11.76	As=7.43	As=11.34
Vu=-56.52		Vu=55.56	Vu=-26.29		Vu=26.60	Vu=-26.84		Vu=27.17

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-29.73	Mu=-7.46	Mu=-29.84	Mu=-29.91	Mu=-7.52	Mu=-30.07	Mu=-30.65	Mu=-7.66	Mu=-28.90
As=19.46	As=7.43	As=19.54	As=19.59	As=7.43	As=19.71	As=20.14	As=7.43	As=18.84
Mu=18.53	Mu=7.46	Mu=18.47	Mu=18.51	Mu=7.52	Mu=18.46	Mu=18.16	Mu=7.66	Mu=19.25
As=11.60	As=7.43	As=11.56	As=11.58	As=7.43	As=11.55	As=11.35	As=7.43	As=12.08
Vu=-27.01		Vu=27.04	Vu=-27.06		Vu=27.10	Vu=-27.39		Vu=26.83

B=0.50 H=0.50 L=6.90		
Mu=-35.88	Mu=-9.27	Mu=-37.10
As=24.14	As=7.49	As=25.10
Mu=17.94	Mu=9.27	Mu=18.55
As=11.20	As=7.65	As=11.61
Vu=-33.06		Vu=33.03

B-212/PISO2

B=0.50 H=0.50 L=3.96			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-38.21	Mu=-9.55	Mu=-36.46	Mu=-36.41	Mu=-9.27	Mu=-37.07	Mu=-34.68	Mu=-8.93	Mu=-35.71
As=25.99	As=7.72	As=24.60	As=24.56	As=7.48	As=25.08	As=23.20	As=7.43	As=24.01
Mu=32.10	Mu=9.55	Mu=30.04	Mu=18.21	Mu=12.31	Mu=18.53	Mu=17.34	Mu=8.93	Mu=17.85
As=21.23	As=7.75	As=19.68	As=11.38	As=8.97	As=11.60	As=10.80	As=8.76	As=11.15
Vu=-56.86		Vu=56.96	Vu=-33.75		Vu=33.74	Vu=-31.37		Vu=31.71

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-37.12	Mu=-9.35	Mu=-37.40	Mu=-35.65	Mu=-8.91	Mu=-34.94	Mu=-36.94	Mu=-9.68	Mu=-38.73
As=25.12	As=7.55	As=25.35	As=23.96	As=7.43	As=23.40	As=24.98	As=7.83	As=26.42
Mu=18.56	Mu=12.41	Mu=18.70	Mu=17.82	Mu=8.91	Mu=17.47	Mu=18.47	Mu=12.03	Mu=19.37
As=11.62	As=8.91	As=11.71	As=11.12	As=8.76	As=10.89	As=11.55	As=8.60	As=12.16
Vu=-34.26		Vu=34.34	Vu=-31.76		Vu=31.52	Vu=-34.08		Vu=34.67

B=0.50 H=0.50 L=6.90		
Mu=-39.11	Mu=-9.80	Mu=-39.22
As=26.73	As=7.93	As=26.81
Mu=19.55	Mu=12.07	Mu=19.61
As=12.28	As=9.37	As=12.32
Vu=-35.86		Vu=35.49

B-213/PISO2

B=0.50 H=0.50 L=3.96			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-39.14	Mu=-9.78	Mu=-36.75	Mu=-36.37	Mu=-9.40	Mu=-37.60	Mu=-35.01	Mu=-8.96	Mu=-35.86
As=26.75	As=7.91	As=24.83	As=24.53	As=7.59	As=25.50	As=23.46	As=7.43	As=24.12
Mu=32.58	Mu=9.78	Mu=31.03	Mu=18.19	Mu=12.05	Mu=18.80	Mu=17.58	Mu=8.96	Mu=17.93
As=21.59	As=7.91	As=20.42	As=11.37	As=8.88	As=11.78	As=10.96	As=8.74	As=11.20
Vu=-57.94		Vu=57.65	Vu=-33.84		Vu=34.01	Vu=-31.65		Vu=31.93

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=6.90***		
Mu=-37.60	Mu=-9.44	Mu=-37.78	Mu=-35.95	Mu=-8.99	Mu=-35.18	Mu=-37.54	Mu=-9.74	Mu=-38.97
As=25.51	As=7.63	As=25.65	As=24.20	As=7.43	As=23.59	As=25.46	As=7.88	As=26.62
Mu=18.80	Mu=12.08	Mu=18.89	Mu=17.98	Mu=8.99	Mu=17.70	Mu=18.77	Mu=11.94	Mu=19.49
As=11.78	As=8.83	As=11.84	As=11.23	As=8.79	As=11.04	As=11.76	As=8.62	As=12.24
Vu=-34.56		Vu=34.61	Vu=-32.05		Vu=31.80	Vu=-34.47		Vu=34.95

B=0.50 H=0.50 L=6.90		
Mu=-39.48 As=27.03	Mu=-9.93 As=8.04	Mu=-39.73 As=27.24
Mu=19.74 As=12.41	Mu=11.89 As=9.36	Mu=19.86 As=12.49
Vu=-36.20		Vu=35.86

B-214/PISO2

B=0.50 H=0.50 L=3.21			*B=0.50 H=0.50 L=6.40*			*B=0.50 H=0.50 L=6.40*		
Mu=-40.27 As=27.68	Mu=-10.07 As=8.15	Mu=-38.68 As=26.38	Mu=-32.27 As=21.35	Mu=-8.27 As=7.43	Mu=-33.10 As=21.98	Mu=-32.56 As=21.57	Mu=-8.28 As=7.43	Mu=-33.11 As=22.00
Mu=37.13 As=25.13	Mu=10.07 As=8.15	Mu=37.27 As=25.24	Mu=23.79 As=15.19	Mu=8.27 As=7.73	Mu=23.67 As=15.11	Mu=24.13 As=15.43	Mu=8.28 As=7.79	Mu=23.77 As=15.18
Vu=-68.24		Vu=67.57	Vu=-31.64		Vu=31.84	Vu=-31.82		Vu=32.01

B=0.50 H=0.50 L=6.40			*B=0.50 H=0.50 L=6.40*			*B=0.50 H=0.50 L=6.40*		
Mu=-32.64 As=21.64	Mu=-8.22 As=7.43	Mu=-32.89 As=21.83	Mu=-32.60 As=21.61	Mu=-8.21 As=7.43	Mu=-32.82 As=21.77	Mu=-32.63 As=21.63	Mu=-8.16 As=7.43	Mu=-32.66 As=21.65
Mu=23.94 As=15.30	Mu=8.22 As=7.74	Mu=23.72 As=15.14	Mu=23.86 As=15.24	Mu=8.21 As=7.72	Mu=23.67 As=15.11	Mu=23.76 As=15.17	Mu=8.16 As=7.72	Mu=23.78 As=15.19
Vu=-31.78		Vu=31.88	Vu=-31.72		Vu=31.81	Vu=-31.74		Vu=31.75

B=0.50 H=0.50 L=6.15		
Mu=-32.74 As=21.71	Mu=-8.37 As=7.43	Mu=-33.48 As=22.28
Mu=24.05 As=15.37	Mu=8.37 As=7.89	Mu=24.26 As=15.52
Vu=-32.08		Vu=32.19

B-215/PISO2

B=0.50 H=0.50 L=6.60			***B=0.50 H=0.50 L=4.69***			***B=0.50 H=0.50 L=5.20***		
Mu=-22.89	Mu=-5.72	Mu=-22.35	Mu=-18.31	Mu=-4.58	Mu=-18.27	Mu=-18.29	Mu=-4.96	Mu=-19.82
As=14.57	As=7.43	As=14.19	As=11.45	As=7.43	As=11.42	As=11.44	As=7.43	As=12.47
Mu=11.45	Mu=11.11	Mu=11.17	Mu=9.15	Mu=4.79	Mu=9.13	Mu=9.15	Mu=5.80	Mu=9.91
As=9.31	As=9.02	As=9.08	As=7.43	As=7.43	As=7.43	As=7.43	As=7.43	As=8.02
Vu=21.64		Vu=-21.76	Vu=-23.57		Vu=23.60	Vu=22.03		Vu=-22.53

B=0.50 H=0.50 L=7.62			***B=0.60 H=0.50 L=6.90***			***B=0.50 H=0.50 L=5.52***		
Mu=-24.71	Mu=-6.36	Mu=-25.42	Mu=-12.45	Mu=-3.66	Mu=-14.65	Mu=-23.80	Mu=-6.08	Mu=-24.30
As=15.84	As=7.43	As=16.34	As=10.09	As=8.91	As=8.97	As=15.20	As=7.43	As=15.55
Mu=12.35	Mu=13.68	Mu=12.71	Mu=8.44	Mu=3.66	Mu=9.41	Mu=11.90	Mu=6.60	Mu=12.15
As=7.56	As=8.41	As=7.79	As=8.91	As=8.91	As=8.91	As=9.69	As=8.87	As=7.43
Vu=-20.84		Vu=21.09	Vu=-12.04		Vu=12.27	Vu=-26.70		Vu=26.83

B=0.50 H=0.50 L=6.88			***B=0.50 H=0.50 L=8.41***			***B=0.60 H=0.50 L=6.90***		
Mu=-26.69	Mu=-7.00	Mu=-27.98	Mu=-32.15	Mu=-8.04	Mu=-31.13	Mu=-17.17	Mu=-4.29	Mu=-14.53
As=17.24	As=7.43	As=18.18	As=21.27	As=7.43	As=20.50	As=10.58	As=8.91	As=11.84
Mu=13.34	Mu=11.31	Mu=13.99	Mu=16.08	Mu=16.57	Mu=15.57	Mu=10.63	Mu=4.29	Mu=11.25
As=8.20	As=9.20	As=8.61	As=9.97	As=10.29	As=9.64	As=8.91	As=8.91	As=9.09
Vu=-24.36		Vu=24.64	Vu=24.00		Vu=-23.78	Vu=14.39		Vu=-13.70

B=0.60 H=0.50 L=5.50			***B=0.60 H=0.50 L=6.90***		
Mu=-16.68	Mu=-4.17	Mu=-16.39	Mu=-15.97	Mu=-3.99	Mu=-15.79
As=10.27	As=10.12	As=10.08	As=9.81	As=8.91	As=9.69
Mu=13.37	Mu=4.17	Mu=13.47	Mu=11.05	Mu=3.99	Mu=12.80
As=10.86	As=8.91	As=10.95	As=8.92	As=8.91	As=10.38
Vu=18.27		Vu=-18.18	Vu=14.82		Vu=-14.43

B-216/PISO2

B=0.30 H=0.50 L=7.10		
Mu=-13.01	Mu=-3.50	Mu=-14.01
As=8.24	As=4.46	As=8.93
Mu=6.50	Mu=10.30	Mu=7.00
As=5.28	As=6.41	As=5.70
Vu=-11.98		Vu=12.07

B-217/PISO2

B=0.30 H=0.50 L=7.05			***B=0.30 H=0.50 L=5.60***			***B=0.30 H=0.50 L=7.05***		
Mu=-14.50	Mu=-3.97	Mu=-15.87	Mu=-12.32	Mu=-3.20	Mu=-12.82	Mu=-16.57	Mu=-4.14	Mu=-13.82
As=9.27	As=4.46	As=10.24	As=7.77	As=4.46	As=8.11	As=10.75	As=4.46	As=8.80
Mu=7.25	Mu=9.04	Mu=7.93	Mu=6.16	Mu=3.68	Mu=6.41	Mu=8.29	Mu=9.93	Mu=6.91
As=5.91	As=5.59	As=5.59	As=4.99	As=4.46	As=5.20	As=5.10	As=6.17	As=5.62
Vu=-12.26		Vu=-12.93	Vu=-10.79		Vu=10.99	Vu=-13.42		Vu=-12.27

B-218/PISO2

B=0.50 H=0.50 L=6.60			***B=0.50 H=0.50 L=4.69***			***B=0.50 H=0.50 L=5.20***		
Mu=-39.06	Mu=-9.77	Mu=-37.72	Mu=-21.67	Mu=-5.42	Mu=-21.23	Mu=-27.74	Mu=-7.19	Mu=-28.77
As=26.69	As=7.90	As=25.60	As=13.72	As=7.43	As=13.42	As=18.00	As=7.43	As=18.75
Mu=19.53	Mu=26.10	Mu=18.86	Mu=10.83	Mu=6.68	Mu=10.61	Mu=13.87	Mu=14.68	Mu=14.39
As=12.27	As=16.83	As=11.82	As=8.79	As=7.43	As=8.61	As=8.53	As=9.06	As=8.87
Vu=37.09		Vu=-36.93	Vu=-27.52		Vu=27.39	Vu=33.13		Vu=-33.44

B=0.50 H=0.50 L=7.62			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=5.50***		
Mu=-24.36	Mu=-6.86	Mu=-27.44	Mu=-36.26	Mu=-9.65	Mu=-38.61	Mu=-25.43	Mu=-6.36	Mu=-25.06
As=15.59	As=7.43	As=17.79	As=24.44	As=7.80	As=26.32	As=16.35	As=7.43	As=16.08
Mu=12.66	Mu=12.66	Mu=13.72	Mu=18.13	Mu=25.78	Mu=19.30	Mu=12.72	Mu=6.36	Mu=12.53
As=7.76	As=7.76	As=8.44	As=11.33	As=16.59	As=12.12	As=7.79	As=7.88	As=7.67
Vu=-20.50		Vu=21.40	Vu=-34.67		Vu=35.03	Vu=-26.39		Vu=26.25

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=8.41***			***B=0.50 H=0.50 L=6.90***		
Mu=-42.49	Mu=-10.99	Mu=-43.97	Mu=-33.49	Mu=-8.37	Mu=-30.13	Mu=-24.67	Mu=-6.17	Mu=-23.84
As=29.55	As=8.93	As=30.81	As=22.29	As=7.43	As=19.76	As=15.81	As=7.43	As=15.23
Mu=21.25	Mu=28.37	Mu=21.98	Mu=16.75	Mu=15.96	Mu=15.96	Mu=12.34	Mu=8.74	Mu=11.92
As=13.43	As=18.46	As=13.94	As=10.41	As=9.90	As=9.90	As=7.55	As=7.43	As=9.71
Vu=-39.61		Vu=39.99	Vu=-24.08		Vu=23.21	Vu=-21.45		Vu=21.25

B=0.50 H=0.50 L=5.50			***B=0.50 H=0.50 L=6.90***		
Mu=-30.71	Mu=-8.51	Mu=-34.06	Mu=-42.13	Mu=-10.53	Mu=-39.69
As=20.18	As=7.43	As=22.72	As=29.23	As=8.54	As=27.20
Mu=16.15	Mu=14.87	Mu=17.03	Mu=21.06	Mu=26.05	Mu=19.84
As=10.02	As=9.46	As=10.60	As=13.31	As=16.79	As=12.48
Vu=35.57		Vu=-36.91	Vu=38.49		Vu=-37.42

B-219/PISO2

B=0.50 H=0.50 L=6.60			***B=0.50 H=0.50 L=4.69***			***B=0.50 H=0.50 L=5.20***		
Mu=-45.54	Mu=-11.39	Mu=-44.09	Mu=-26.01	Mu=-6.50	Mu=-24.10	Mu=-31.71	Mu=-8.02	Mu=-32.07
As=32.19	As=9.26	As=30.92	As=16.76	As=7.43	As=15.41	As=20.93	As=7.43	As=21.20
Mu=22.77	Mu=32.46	Mu=22.05	Mu=13.01	Mu=10.62	Mu=12.05	Mu=15.85	Mu=17.69	Mu=16.03
As=14.48	As=21.50	As=13.98	As=7.98	As=8.62	As=9.82	As=9.82	As=11.04	As=9.94
Vu=43.16		Vu=-42.99	Vu=-32.08		Vu=31.25	Vu=37.79		Vu=-37.84

B=0.50 H=0.50 L=7.62			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=5.50***		
Mu=-11.35	Mu=-4.09	Mu=-16.34	Mu=-45.46	Mu=-12.33	Mu=-49.32	Mu=-30.31	Mu=-7.58	Mu=-29.96
As=9.23	As=7.43	As=10.15	As=32.12	As=7.55	As=35.63	As=19.89	As=7.43	As=19.63
Mu=7.30	Mu=4.09	Mu=8.17	Mu=22.73	Mu=36.26	Mu=24.66	Mu=15.15	Mu=7.58	Mu=14.98
As=7.43	As=7.43	As=7.43	As=14.66	As=24.44	As=15.80	As=9.37	As=7.98	As=9.25
Vu=-9.51		Vu=10.93	Vu=-43.77		Vu=44.66	Vu=30.80		Vu=-30.70

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=8.41***			***B=0.50 H=0.50 L=6.90***		
Mu=-49.87	Mu=-12.47	Mu=-48.68	Mu=-18.50	Mu=-4.62	Mu=-15.17	Mu=-32.49	Mu=-8.40	Mu=-33.61
As=36.15	As=7.63	As=35.04	As=11.58	As=7.43	As=9.38	As=21.52	As=7.43	As=22.38
Mu=24.94	Mu=36.08	Mu=24.34	Mu=9.25	Mu=4.62	Mu=8.79	Mu=16.25	Mu=18.44	Mu=16.81
As=16.00	As=24.30	As=15.58	As=7.47	As=7.43	As=7.43	As=10.08	As=11.54	As=10.45
Vu=-46.06		Vu=45.59	Vu=-11.99		Vu=11.13	Vu=29.66		Vu=30.12

B=0.50 H=0.50 L=5.50			***B=0.50 H=0.50 L=6.90***		
Mu=-30.28	Mu=-8.34	Mu=-33.36	Mu=-51.47	Mu=-12.87	Mu=-49.66
As=19.86	As=7.43	As=22.19	As=36.15	As=7.89	As=35.95
Mu=15.14	Mu=13.19	Mu=16.68	Mu=25.73	Mu=35.72	Mu=24.83
As=9.36	As=8.40	As=10.37	As=16.56	As=24.02	As=15.92
Vu=34.12		Vu=-35.36	Vu=-47.12		Vu=46.35

B-220/PISO2

B=0.50 H=0.50 L=2.82		
Mu=-10.93	Mu=-3.08	Mu=-2.73
As=8.87	As=7.43	As=7.43
Mu=6.06	Mu=2.73	Mu=2.73
As=7.43	As=7.43	As=7.43
Vu=37.96		Vu=-12.41

B-221/PISO2

B=0.30 H=0.50 L=5.60		
Mu=-8.44 As=5.20	Mu=-2.28 As=4.46	Mu=-9.11 As=5.63
Mu=4.22 As=4.46	Mu=5.47 As=4.46	Mu=4.56 As=4.46
Vu=-9.68		Vu=9.92

B-222/PISO2

B=0.50 H=0.50 L=6.60			***B=0.50 H=0.50 L=4.69***			***B=0.50 H=0.50 L=5.20***		
Mu=-46.09 As=32.68	Mu=-11.52 As=9.38	Mu=-44.58 As=31.34	Mu=-26.36 As=17.01	Mu=-6.59 As=7.43	Mu=-25.25 As=16.22	Mu=-31.99 As=21.14	Mu=-8.13 As=7.43	Mu=-32.51 As=21.54
Mu=23.05 As=14.68	Mu=32.54 As=21.56	Mu=22.29 As=14.15	Mu=13.18 As=8.09	Mu=10.84 As=8.80	Mu=12.62 As=7.73	Mu=15.99 As=9.92	Mu=18.08 As=11.30	Mu=16.25 As=10.09
Vu=43.63		Vu=-43.46	Vu=-32.64		Vu=32.19	Vu=38.44		Vu=-38.54

B=0.50 H=0.50 L=7.62			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=5.50***		
Mu=-12.14 As=9.89	Mu=-4.17 As=7.43	Mu=-16.69 As=10.38	Mu=-45.92 As=32.53	Mu=-12.43 As=7.61	Mu=-49.73 As=36.02	Mu=-30.75 As=20.21	Mu=-7.69 As=7.43	Mu=-30.38 As=19.94
Mu=7.58 As=7.43	Mu=4.17 As=7.43	Mu=8.35 As=7.43	Mu=22.96 As=14.74	Mu=36.41 As=24.56	Mu=24.87 As=15.95	Mu=15.37 As=9.51	Mu=7.69 As=8.01	Mu=15.19 As=9.39
Vu=-9.92		Vu=11.22	Vu=-44.16		Vu=45.05	Vu=-31.20		Vu=31.09

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=8.41***			***B=0.50 H=0.50 L=6.90***		
Mu=-50.21 As=36.15	Mu=-12.55 As=7.69	Mu=-48.98 As=35.32	Mu=-18.16 As=11.35	Mu=-4.54 As=7.43	Mu=-17.31 As=10.79	Mu=-49.26 As=35.58	Mu=-12.66 As=7.76	Mu=-50.63 As=36.15
Mu=25.11 As=16.12	Mu=36.21 As=24.40	Mu=24.49 As=15.68	Mu=9.08 As=7.43	Mu=4.54 As=7.43	Mu=8.66 As=7.43	Mu=24.63 As=15.78	Mu=35.67 As=23.98	Mu=25.32 As=16.27
Vu=-46.36		Vu=45.88	Vu=11.91		Vu=-11.69	Vu=-45.91		Vu=46.44

B=0.50 H=0.50 L=5.50			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=2.82***		
Mu=-30.04 As=19.69	Mu=-7.51 As=7.43	Mu=-29.99 As=19.65	Mu=-50.56 As=36.15	Mu=-12.64 As=7.74	Mu=-47.98 As=34.39	Mu=-25.68 As=16.52	Mu=-6.42 As=7.43	Mu=-12.05 As=9.82
Mu=15.02 As=9.28	Mu=7.72 As=9.28	Mu=14.99 As=9.26	Mu=25.28 As=16.24	Mu=35.76 As=24.05	Mu=23.99 As=15.33	Mu=13.15 As=9.48	Mu=6.42 As=7.43	Mu=11.83 As=9.64
Vu=31.18		Vu=31.14	Vu=45.81		Vu=-45.13	Vu=-37.82		Vu=31.79

B-223/PISO2

B=0.50 H=0.50 L=6.60			***B=0.50 H=0.50 L=4.69***			***B=0.50 H=0.50 L=5.20***		
Mu=-47.02	Mu=-11.76	Mu=-45.52	Mu=-27.14	Mu=-6.78	Mu=-26.51	Mu=-32.84	Mu=-8.37	Mu=-33.48
As=33.52	As=9.57	As=32.17	As=17.57	As=7.43	As=17.12	As=21.79	As=7.43	As=22.28
Mu=23.51	Mu=32.52	Mu=22.76	Mu=13.57	Mu=11.39	Mu=13.25	Mu=16.42	Mu=18.51	Mu=16.74
As=15.00	As=21.55	As=14.48	As=8.34	As=9.26	As=8.14	As=10.20	As=11.59	As=10.41
Vu=44.42		Vu=-44.30	Vu=-33.82		Vu=33.61	Vu=39.53		Vu=-39.68

B=0.50 H=0.50 L=7.62			***B=0.50 H=0.50 L=6.90***			***B=0.60 H=0.50 L=5.50***		
Mu=-12.86	Mu=-4.36	Mu=-17.45	Mu=-47.14	Mu=-12.45	Mu=-49.80	Mu=-22.21	Mu=-5.55	Mu=-21.77
As=7.89	As=7.43	As=10.88	As=33.62	As=7.62	As=36.09	As=13.90	As=8.91	As=13.60
Mu=8.28	Mu=4.36	Mu=8.73	Mu=23.57	Mu=36.86	Mu=24.90	Mu=14.61	Mu=5.55	Mu=14.67
As=7.43	As=7.43	As=7.43	As=15.04	As=24.91	As=15.97	As=8.94	As=9.64	As=8.98
Vu=-10.48		Vu=11.78	Vu=-45.25		Vu=45.73	Vu=-20.95		Vu=20.81

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=8.40***			***B=0.50 H=0.50 L=6.90***		
Mu=-49.49	Mu=-13.26	Mu=-53.05	Mu=-43.20	Mu=-10.80	Mu=-36.13	Mu=-52.19	Mu=-13.19	Mu=-52.76
As=35.79	As=8.14	As=36.15	As=30.15	As=8.76	As=24.34	As=36.15	As=8.10	As=36.15
Mu=24.75	Mu=35.75	Mu=26.53	Mu=21.60	Mu=17.92	Mu=18.06	Mu=26.10	Mu=34.13	Mu=26.38
As=15.86	As=24.04	As=17.13	As=13.68	As=11.75	As=11.29	As=16.82	As=22.78	As=17.03
Vu=-46.74		Vu=47.75	Vu=32.34		Vu=-25.20	Vu=-47.11		Vu=47.35

B=0.50 H=0.50 L=5.50			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=2.82***		
Mu=-40.87	Mu=-10.41	Mu=-41.66	Mu=-53.23	Mu=-13.31	Mu=-48.56	Mu=-27.18	Mu=-6.79	Mu=-13.40
As=28.18	As=8.44	As=28.84	As=36.15	As=8.17	As=34.93	As=17.60	As=7.43	As=8.23
Mu=20.44	Mu=19.80	Mu=20.83	Mu=26.61	Mu=35.10	Mu=24.28	Mu=15.06	Mu=6.79	Mu=13.02
As=12.88	As=12.45	As=13.15	As=17.19	As=23.53	As=15.54	As=9.31	As=7.43	As=8.55
Vu=44.74		Vu=-45.05	Vu=47.23		Vu=-45.91	Vu=-40.90		Vu=35.13

B-224/PISO2

B=0.30 H=0.50 L=5.00		
Mu=-0.00	Mu=-0.00	Mu=-13.06
As=4.46	As=4.46	As=8.28
Mu=2.84	Mu=8.28	Mu=2.61
As=5.13	As=5.63	As=4.46
Vu=-7.26		Vu=10.67

B-226/PISO2

B=0.50 H=0.50 L=6.65			***B=0.50 H=0.50 L=4.64***			***B=0.50 H=0.50 L=5.20***		
Mu=-48.71	Mu=-12.18	Mu=-46.60	Mu=-28.35	Mu=-7.09	Mu=-27.64	Mu=-33.47	Mu=-8.70	Mu=-34.80
As=35.06	As=7.45	As=33.14	As=18.45	As=7.43	As=17.93	As=22.27	As=7.43	As=23.29
Mu=24.35	Mu=33.01	Mu=23.30	Mu=14.18	Mu=8.35	Mu=13.82	Mu=16.73	Mu=19.11	Mu=17.40
As=15.59	As=21.92	As=14.85	As=8.73	As=9.30	As=8.50	As=10.40	As=11.98	As=10.84
Vu=45.56		Vu=-44.92	Vu=-35.63		Vu=35.21	Vu=-40.65		Vu=41.09

B=0.50 H=0.50 L=7.62			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=5.50***		
Mu=-13.79	Mu=-4.53	Mu=-18.11	Mu=-47.80	Mu=-13.04	Mu=-52.17	Mu=-34.04	Mu=-8.51	Mu=-33.57
As=8.48	As=7.43	As=11.32	As=34.23	As=8.00	As=36.15	As=22.71	As=7.43	As=22.35
Mu=9.01	Mu=4.53	Mu=9.06	Mu=23.90	Mu=36.39	Mu=26.08	Mu=17.02	Mu=8.51	Mu=16.78
As=7.43	As=7.43	As=7.43	As=15.27	As=24.54	As=16.81	As=10.59	As=8.89	As=10.44
Vu=-11.14		Vu=12.37	Vu=-46.04		Vu=46.96	Vu=-34.80		Vu=34.67

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=3.10***			***B=0.60 H=0.50 L=5.00***		
Mu=-52.32	Mu=-13.40	Mu=-53.60	Mu=-38.17	Mu=-9.54	Mu=-9.54	Mu=-6.57	Mu=-6.57	Mu=-26.30
As=36.15	As=8.23	As=36.15	As=25.97	As=9.28	As=7.71	As=8.91	As=8.91	As=16.67
Mu=26.16	Mu=35.52	Mu=26.80	Mu=19.09	Mu=11.90	Mu=15.81	Mu=15.65	Mu=7.93	Mu=13.15
As=16.87	As=23.85	As=17.32	As=11.97	As=9.69	As=9.80	As=10.29	As=8.91	As=10.68
Vu=-48.42		Vu=48.71	Vu=29.69		Vu=16.04	Vu=-13.03		Vu=-17.24

B=0.50 H=0.50 L=6.90			***B=0.50 H=0.50 L=5.50***			***B=0.50 H=0.50 L=6.90***		
Mu=-36.58	Mu=-9.15	Mu=-36.46	Mu=-31.73	Mu=-7.93	Mu=-31.70	Mu=-38.19	Mu=-9.55	Mu=-35.90
As=24.70	As=7.43	As=24.60	As=20.95	As=7.43	As=20.92	As=25.98	As=7.71	As=24.16
Mu=18.29	Mu=18.02	Mu=18.23	Mu=15.86	Mu=9.53	Mu=15.85	Mu=19.09	Mu=18.83	Mu=18.83
As=11.44	As=11.26	As=11.40	As=9.83	As=7.95	As=9.82	As=11.97	As=11.80	As=11.80
Vu=-32.65		Vu=32.67	Vu=34.69		Vu=-34.69	Vu=-34.26		Vu=33.16

B=0.50 H=0.50 L=2.82		
Mu=-1.35	Mu=-3.03	Mu=-1.35
As=7.43	As=7.43	As=7.43
Mu=1.35	Mu=2.80	Mu=1.35
As=7.43	As=7.43	As=7.43
Vu=-0.01		Vu=0.00

B-227/PISO2

B=0.50 H=0.50 L=6.65			***B=0.50 H=0.50 L=4.64***			***B=0.50 H=0.50 L=5.20***		
Mu=-49.28	Mu=-12.32	Mu=-47.56	Mu=-24.30	Mu=-6.07	Mu=-23.71	Mu=-34.44	Mu=-9.13	Mu=-36.51
As=35.60	As=7.54	As=34.01	As=15.55	As=7.43	As=15.14	As=23.02	As=7.43	As=24.64
Mu=24.64	Mu=32.92	Mu=23.78	Mu=12.15	Mu=6.07	Mu=11.85	Mu=17.22	Mu=18.41	Mu=18.25
As=15.79	As=21.85	As=15.19	As=8.99	As=7.43	As=9.66	As=10.72	As=11.51	As=11.41
Vu=46.20		Vu=-45.75	Vu=-30.47		Vu=30.27	Vu=-41.25		Vu=42.02

B=0.50 H=0.50 L=7.62			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=5.50***		
Mu=-39.95	Mu=-11.12	Mu=-44.50	Mu=-49.69	Mu=-13.45	Mu=-53.82	Mu=-39.53	Mu=-9.88	Mu=-39.03
As=27.42	As=9.04	As=31.27	As=35.98	As=8.27	As=36.15	As=27.07	As=8.00	As=26.66
Mu=19.98	Mu=17.56	Mu=22.25	Mu=24.85	Mu=35.10	Mu=26.91	Mu=19.76	Mu=11.79	Mu=19.52
As=12.57	As=10.95	As=14.12	As=15.93	As=23.53	As=17.40	As=12.43	As=9.19	As=12.26
Vu=-31.17		Vu=32.48	Vu=-46.88		Vu=47.61	Vu=41.86		Vu=41.75

B=0.50 H=0.50 L=6.90		
Mu=-56.50	Mu=-14.13	Mu=-53.67
As=37.59	As=8.70	As=36.15
Mu=28.25	Mu=35.91	Mu=26.83
As=20.29	As=24.17	As=17.35
Vu=-51.54		Vu=50.20

B-228/PISO2

B=0.50 H=0.50 L=6.65			***B=0.50 H=0.50 L=4.64***			***B=0.50 H=0.50 L=5.20***		
Mu=-33.98	Mu=-8.49	Mu=-32.87	Mu=-21.65	Mu=-5.46	Mu=-21.83	Mu=-26.42	Mu=-7.20	Mu=-28.80
As=22.66	As=7.43	As=21.81	As=13.71	As=7.43	As=13.84	As=17.05	As=7.43	As=18.78
Mu=16.99	Mu=17.46	Mu=16.43	Mu=14.86	Mu=5.46	Mu=14.43	Mu=13.21	Mu=8.87	Mu=14.40
As=10.57	As=10.88	As=10.21	As=9.17	As=7.43	As=8.90	As=8.11	As=9.63	As=8.88
Vu=31.47		Vu=-31.39	Vu=-27.82		Vu=27.97	Vu=-31.63		Vu=32.42

B=0.50 H=0.50 L=7.62			***B=0.50 H=0.50 L=6.90***			***B=0.50 H=0.50 L=5.50***		
Mu=-36.42	Mu=-9.67	Mu=-38.68	Mu=-34.74	Mu=-9.40	Mu=-37.58	Mu=-29.67	Mu=-7.42	Mu=-29.20
As=24.57	As=7.82	As=26.38	As=23.25	As=7.59	As=25.49	As=19.41	As=7.43	As=19.06
Mu=18.21	Mu=21.07	Mu=19.34	Mu=17.37	Mu=18.42	Mu=18.79	Mu=18.21	Mu=7.42	Mu=18.11
As=11.38	As=13.32	As=12.14	As=10.83	As=11.52	As=11.77	As=11.38	As=7.43	As=11.32
Vu=-30.20		Vu=30.86	Vu=-32.43		Vu=32.70	Vu=-31.78		Vu=31.69

B=0.50 H=0.50 L=6.90		
Mu=-40.45	Mu=-10.11	Mu=-39.45
As=27.83	As=8.19	As=27.00
Mu=20.23	Mu=19.11	Mu=19.72
As=12.74	As=11.99	As=12.40
Vu=-36.84		Vu=36.04

B-301/CUB

B=0.50 H=0.40 L=3.96			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-15.17	Mu=-4.24	Mu=-16.96	Mu=-18.80	Mu=-4.84	Mu=-19.34	Mu=-11.78	Mu=-2.94	Mu=-10.15
As=12.52	As=5.86	As=14.17	As=15.91	As=5.78	As=16.43	As=9.51	As=5.78	As=8.11
Mu=11.43	Mu=4.24	Mu=9.05	Mu=9.40	Mu=12.80	Mu=9.67	Mu=6.21	Mu=2.94	Mu=7.41
As=9.21	As=5.93	As=7.19	As=7.48	As=10.41	As=7.71	As=6.47	As=6.47	As=5.83
Vu=-23.17		Vu=24.85	Vu=-16.74		Vu=16.82	Vu=-9.96		Vu=9.42

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=0.85***		
Mu=-10.14	Mu=-2.98	Mu=-11.94	Mu=-18.75	Mu=-4.91	Mu=-19.65	Mu=-1.93	Mu=-0.94	Mu=-0.01
As=8.10	As=5.78	As=9.65	As=15.86	As=5.78	As=16.74	As=5.78	As=5.78	As=5.78
Mu=7.49	Mu=2.98	Mu=6.25	Mu=9.37	Mu=12.84	Mu=9.83	Mu=0.39	Mu=0.00	Mu=0.02
As=5.89	As=6.51	As=6.51	As=7.46	As=10.43	As=7.84	As=5.78	As=5.78	As=5.78
Vu=-9.45		Vu=10.05	Vu=-16.85		Vu=17.12	Vu=-4.66		Vu=-4.33

B-302/CUB

B=0.50 H=0.40 L=3.96			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-16.43	Mu=-5.00	Mu=-19.99	Mu=-26.29	Mu=-6.76	Mu=-27.05	Mu=-18.47	Mu=-4.62	Mu=-13.44
As=13.67	As=5.78	As=17.07	As=23.62	As=7.06	As=24.47	As=15.59	As=5.78	As=10.97
Mu=9.60	Mu=5.20	Mu=9.99	Mu=13.15	Mu=20.18	Mu=13.52	Mu=9.23	Mu=7.73	Mu=7.73
As=7.65	As=7.19	As=7.98	As=10.71	As=17.26	As=11.04	As=7.34	As=6.09	As=6.09
Vu=-25.32		Vu=28.29	Vu=-23.83		Vu=24.00	Vu=-17.02		Vu=12.14

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=0.85***		
Mu=-11.48	Mu=-3.17	Mu=-12.67	Mu=-19.06	Mu=-4.89	Mu=-19.57	Mu=-1.52	Mu=-0.73	Mu=-0.02
As=9.25	As=5.78	As=10.29	As=16.16	As=5.78	As=16.66	As=5.78	As=5.78	As=5.78
Mu=5.78	Mu=3.17	Mu=6.34	Mu=9.53	Mu=12.85	Mu=9.79	Mu=0.30	Mu=0.00	Mu=0.02
As=6.00	As=5.78	As=6.60	As=7.59	As=10.44	As=7.81	As=5.78	As=5.78	As=5.78
Vu=-10.79		Vu=11.18	Vu=-17.10		Vu=17.18	Vu=-3.93		Vu=-3.37

B-303/CUB

B=0.50 H=0.40 L=3.96			*B=0.50 H=0.40 L=6.90*			*B=0.50 H=0.40 L=6.90*		
Mu=-16.66	Mu=-5.16	Mu=-20.66	Mu=-26.53	Mu=-6.81	Mu=-27.23	Mu=-18.96	Mu=-4.74	Mu=-13.43
As=13.89	As=5.96	As=17.73	As=23.89	As=7.11	As=24.68	As=16.06	As=5.78	As=10.96
Mu=10.16	Mu=5.18	Mu=10.33	Mu=13.27	Mu=20.22	Mu=13.62	Mu=9.48	Mu=4.74	Mu=6.71
As=8.12	As=7.19	As=8.27	As=10.81	As=17.30	As=11.12	As=7.55	As=6.15	As=7.01
Vu=-25.73		Vu=29.05	Vu=-24.07		Vu=24.22	Vu=-17.29		Vu=11.46

B=0.50 H=0.40 L=6.90			*B=0.50 H=0.40 L=6.90*		
Mu=-13.99	Mu=-3.72	Mu=-14.88	Mu=-17.02	Mu=-4.26	Mu=-17.02
As=11.46	As=5.78	As=12.26	As=14.22	As=5.78	As=14.23
Mu=7.00	Mu=6.41	Mu=7.44	Mu=8.51	Mu=7.37	Mu=8.51
As=7.32	As=6.68	As=5.85	As=6.74	As=6.74	As=6.74
Vu=-12.81		Vu=13.20	Vu=-15.73		Vu=15.93

B-304/CUB

B=0.50 H=0.40 L=3.96			*B=0.50 H=0.40 L=6.90*			*B=0.50 H=0.40 L=6.90*		
Mu=-16.95	Mu=-4.81	Mu=-19.26	Mu=-19.68	Mu=-4.92	Mu=-19.29	Mu=-13.45	Mu=-3.36	Mu=-12.35
As=14.16	As=5.78	As=16.35	As=16.77	As=5.78	As=16.39	As=10.98	As=5.78	As=10.01
Mu=11.19	Mu=6.16	Mu=9.63	Mu=9.84	Mu=12.65	Mu=9.65	Mu=6.73	Mu=3.36	Mu=6.45
As=9.01	As=7.52	As=7.67	As=7.85	As=10.28	As=7.69	As=7.03	As=5.78	As=6.73
Vu=-27.24		Vu=29.49	Vu=-17.21		Vu=17.02	Vu=-11.81		Vu=11.46

B=0.50 H=0.40 L=6.90			*B=0.50 H=0.40 L=6.90*		
Mu=-14.54	Mu=-4.22	Mu=-16.89	Mu=-21.58	Mu=-5.40	Mu=-19.87
As=11.95	As=5.78	As=14.10	As=18.65	As=5.78	As=16.95
Mu=7.27	Mu=6.08	Mu=8.44	Mu=10.79	Mu=10.52	Mu=9.93
As=7.62	As=6.33	As=6.68	As=8.66	As=8.71	As=7.93
Vu=-13.52		Vu=14.42	Vu=-21.31		Vu=18.07

B-305/CUB

B=0.50 H=0.40 L=3.96			*B=0.50 H=0.40 L=6.90*			*B=0.50 H=0.40 L=6.90*		
Mu=-16.91	Mu=-4.69	Mu=-18.77	Mu=-20.12	Mu=-5.03	Mu=-19.23	Mu=-12.66	Mu=-3.17	Mu=-11.27
As=14.12	As=5.78	As=15.89	As=17.19	As=5.78	As=16.33	As=10.28	As=5.78	As=9.07
Mu=12.92	Mu=4.69	Mu=10.42	Mu=10.06	Mu=12.72	Mu=9.62	Mu=7.34	Mu=3.17	Mu=8.36
As=10.51	As=6.57	As=8.34	As=8.04	As=10.33	As=7.66	As=7.70	As=5.78	As=7.62
Vu=-28.07		Vu=29.72	Vu=-17.46		Vu=17.02	Vu=-10.88		Vu=10.41

B=0.50 H=0.40 L=6.90			*B=0.50 H=0.40 L=6.90*			*B=0.50 H=0.40 L=6.90*		
Mu=-11.09	Mu=-3.30	Mu=-13.19	Mu=-18.20	Mu=-4.59	Mu=-18.36	Mu=-12.65	Mu=-3.16	Mu=-12.31
As=8.91	As=5.78	As=10.75	As=15.34	As=5.78	As=15.49	As=10.27	As=5.78	As=9.97
Mu=8.48	Mu=3.30	Mu=7.04	Mu=9.10	Mu=8.54	Mu=9.18	Mu=7.46	Mu=3.16	Mu=7.72
As=6.72	As=5.78	As=7.37	As=7.23	As=6.78	As=7.30	As=5.87	As=6.75	As=6.08
Vu=-10.31		Vu=11.00	Vu=-17.81		Vu=17.86	Vu=-10.74		Vu=10.62

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=0.85***		
Mu=-19.88	Mu=-5.14	Mu=-20.56	Mu=-1.93	Mu=-0.95	Mu=-0.02
As=16.96	As=5.78	As=17.63	As=5.78	As=5.78	As=5.78
Mu=9.94	Mu=12.81	Mu=10.28	Mu=0.39	Mu=0.00	Mu=0.02
As=7.94	As=10.41	As=8.23	As=5.78	As=5.78	As=5.78
Vu=-17.98		Vu=18.14	Vu=-4.69		Vu=-4.37

B-306/CUB

B=0.50 H=0.40 L=3.96			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-18.09	Mu=-4.91	Mu=-19.66	Mu=-20.44	Mu=-5.46	Mu=-21.85	Mu=-22.14	Mu=-5.53	Mu=-20.84
As=15.24	As=6.38	As=16.75	As=17.52	As=5.78	As=18.93	As=19.21	As=5.78	As=17.91
Mu=13.36	Mu=5.76	Mu=10.95	Mu=10.22	Mu=12.29	Mu=10.93	Mu=11.07	Mu=9.61	Mu=10.42
As=10.90	As=6.03	As=8.80	As=8.18	As=9.96	As=8.78	As=8.90	As=7.89	As=8.34
Vu=-28.89		Vu=30.54	Vu=-18.01		Vu=18.37	Vu=-20.08		Vu=19.65

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-14.85	Mu=-3.71	Mu=-13.35	Mu=-13.24	Mu=-3.76	Mu=-15.05	Mu=-21.07	Mu=-5.51	Mu=-22.05
As=12.23	As=5.78	As=10.89	As=10.79	As=5.78	As=12.41	As=18.14	As=5.78	As=19.13
Mu=7.43	Mu=3.71	Mu=7.92	Mu=8.05	Mu=3.76	Mu=7.52	Mu=10.53	Mu=9.74	Mu=11.03
As=5.84	As=6.78	As=6.25	As=6.36	As=6.81	As=5.92	As=8.44	As=7.94	As=8.86
Vu=-12.96		Vu=12.47	Vu=-12.49		Vu=13.06	Vu=-19.83		Vu=20.15

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=0.85***		
Mu=-22.65	Mu=-5.66	Mu=-5.66	Mu=-5.30	Mu=-10.13	Mu=-5.30
As=19.74	As=5.81	As=5.88	As=10.97	As=11.21	As=10.97
Mu=11.33	Mu=6.34	Mu=12.12	Mu=12.10	Mu=6.62	Mu=5.30
As=9.12	As=6.60	As=9.81	As=9.79	As=6.91	As=5.78
Vu=-19.25		Vu=-15.42	Vu=14.87		Vu=-3.67

B-307/CUB

B=0.50 H=0.40 L=3.96			*B=0.50 H=0.40 L=6.90*			*B=0.50 H=0.40 L=6.90*		
Mu=-20.21	Mu=-5.25	Mu=-21.02	Mu=-19.88	Mu=-5.36	Mu=-21.43	Mu=-22.25	Mu=-5.56	Mu=-20.85
As=17.28	As=6.17	As=18.08	As=16.96	As=5.78	As=18.50	As=19.33	As=5.78	As=17.92
Mu=12.31	Mu=6.93	Mu=10.51	Mu=9.94	Mu=12.24	Mu=10.72	Mu=11.12	Mu=9.71	Mu=10.42
As=9.97	As=6.45	As=8.42	As=7.94	As=9.91	As=8.60	As=8.95	As=8.01	As=8.35
Vu=-30.83		Vu=32.24	Vu=-17.64		Vu=18.07	Vu=-20.22		Vu=19.75

B=0.50 H=0.40 L=6.90			*B=0.50 H=0.40 L=6.90*			*B=0.50 H=0.40 L=6.90*		
Mu=-13.80	Mu=-3.45	Mu=-11.88	Mu=-11.90	Mu=-3.48	Mu=-13.91	Mu=-21.11	Mu=-5.53	Mu=-22.13
As=11.29	As=5.78	As=9.60	As=9.62	As=5.78	As=11.39	As=18.17	As=5.78	As=19.21
Mu=7.93	Mu=3.45	Mu=9.18	Mu=9.23	Mu=3.48	Mu=7.99	Mu=10.55	Mu=9.86	Mu=11.06
As=7.22	As=5.78	As=7.30	As=7.33	As=5.78	As=7.28	As=8.46	As=8.06	As=8.90
Vu=-11.60		Vu=10.97	Vu=-11.02		Vu=11.66	Vu=-19.95		Vu=20.28

B=0.50 H=0.40 L=6.90			*B=0.50 H=0.40 L=0.85*		
Mu=-22.10	Mu=-5.52	Mu=-20.68	Mu=-2.64	Mu=-1.22	Mu=-0.06
As=19.17	As=5.78	As=17.75	As=5.78	As=5.78	As=5.78
Mu=11.05	Mu=12.19	Mu=10.34	Mu=0.53	Mu=0.00	Mu=0.15
As=8.88	As=9.87	As=8.28	As=5.78	As=5.78	As=5.78
Vu=-18.88		Vu=18.33	Vu=-9.73		Vu=-9.41

B-308/CUB

B=0.50 H=0.40 L=3.96			*B=0.50 H=0.40 L=6.90*			*B=0.50 H=0.40 L=6.90*		
Mu=-19.91	Mu=-5.20	Mu=-20.80	Mu=-21.40	Mu=-5.35	Mu=-21.12	Mu=-15.07	Mu=-3.77	Mu=-13.67
As=16.99	As=6.24	As=17.87	As=18.47	As=5.78	As=18.19	As=12.43	As=5.78	As=11.17
Mu=13.11	Mu=6.72	Mu=11.32	Mu=10.70	Mu=12.59	Mu=10.56	Mu=7.54	Mu=3.77	Mu=8.31
As=10.68	As=6.72	As=9.11	As=8.58	As=10.21	As=8.46	As=5.93	As=6.98	As=6.57
Vu=-30.76		Vu=32.64	Vu=-18.70		Vu=18.51	Vu=-13.24		Vu=12.78

B=0.50 H=0.40 L=6.90			*B=0.50 H=0.40 L=6.90*			*B=0.50 H=0.40 L=6.90*		
Mu=-14.16	Mu=-3.54	Mu=-14.15	Mu=-14.31	Mu=-3.58	Mu=-14.11	Mu=-13.57	Mu=-4.21	Mu=-16.83
As=11.61	As=5.78	As=11.60	As=11.74	As=5.78	As=11.56	As=11.09	As=5.78	As=14.05
Mu=8.05	Mu=3.54	Mu=8.09	Mu=8.08	Mu=3.58	Mu=8.27	Mu=8.81	Mu=4.21	Mu=8.42
As=6.36	As=6.83	As=6.39	As=6.38	As=6.84	As=6.54	As=6.99	As=6.66	As=6.66
Vu=-13.07		Vu=13.06	Vu=-13.18		Vu=13.10	Vu=-12.77		Vu=13.80

B=0.50 H=0.40 L=6.90			*B=0.50 H=0.40 L=0.85*		
Mu=-29.76	Mu=-7.44	Mu=-29.52	Mu=-1.56	Mu=-0.77	Mu=-0.06
As=27.63	As=5.85	As=27.34	As=5.78	As=5.78	As=5.78
Mu=14.88	Mu=20.88	Mu=14.76	Mu=0.31	Mu=0.00	Mu=0.00
As=12.26	As=17.95	As=12.15	As=5.78	As=5.78	As=5.78
Vu=-27.10		Vu=26.98	Vu=-3.94		Vu=-3.39

B-309/CUB

B=0.50 H=0.40 L=3.96			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-19.73	Mu=-5.26	Mu=-21.04	Mu=-23.35	Mu=-5.88	Mu=-23.52	Mu=-18.21	Mu=-4.55	Mu=-16.32
As=16.81	As=5.78	As=18.11	As=20.46	As=6.11	As=20.64	As=15.35	As=5.78	As=13.57
Mu=14.11	Mu=5.27	Mu=11.64	Mu=11.67	Mu=10.86	Mu=11.76	Mu=9.10	Mu=8.35	Mu=8.35
As=11.57	As=7.99	As=9.39	As=9.42	As=8.72	As=9.50	As=7.23	As=6.60	As=6.60
Vu=-32.58		Vu=31.91	Vu=-21.74		Vu=21.87	Vu=-15.85		Vu=14.97

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-14.80	Mu=-3.70	Mu=-14.46	Mu=-14.63	Mu=-3.66	Mu=-14.46	Mu=-14.11	Mu=-4.20	Mu=-16.81
As=12.18	As=5.78	As=11.88	As=12.03	As=5.78	As=11.88	As=11.57	As=5.78	As=14.03
Mu=8.21	Mu=3.70	Mu=8.50	Mu=8.49	Mu=3.66	Mu=8.66	Mu=9.03	Mu=4.20	Mu=8.41
As=6.49	As=6.84	As=6.73	As=6.72	As=7.14	As=6.86	As=7.17	As=7.05	As=6.65
Vu=-13.45		Vu=13.32	Vu=-13.50		Vu=13.44	Vu=-13.13		Vu=13.99

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=0.85***		
Mu=-27.98	Mu=-7.41	Mu=-29.64	Mu=-1.30	Mu=-0.64	Mu=-0.07
As=25.53	As=5.83	As=27.48	As=5.78	As=5.78	As=5.78
Mu=13.99	Mu=17.85	Mu=14.82	Mu=0.26	Mu=0.00	Mu=0.00
As=11.45	As=16.72	As=12.20	As=5.78	As=5.78	As=5.78
Vu=-25.31		Vu=28.41	Vu=-3.48		Vu=-2.92

B-310/CUB

B=0.50 H=0.40 L=3.96			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-21.80	Mu=-5.45	Mu=-21.28	Mu=-20.88	Mu=-5.66	Mu=-22.64	Mu=-25.42	Mu=-6.36	Mu=-23.61
As=18.87	As=5.78	As=18.35	As=17.95	As=5.88	As=19.73	As=22.67	As=6.62	As=20.74
Mu=13.91	Mu=5.80	Mu=12.77	Mu=10.44	Mu=8.83	Mu=11.32	Mu=12.71	Mu=12.66	Mu=11.80
As=11.38	As=8.97	As=10.38	As=8.36	As=7.11	As=9.11	As=10.32	As=11.26	As=9.53
Vu=-34.53		Vu=33.12	Vu=-19.19		Vu=19.76	Vu=-23.22		Vu=22.21

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-14.71	Mu=-3.68	Mu=-14.40	Mu=-21.49	Mu=-5.64	Mu=-22.55	Mu=-19.49	Mu=-5.56	Mu=-22.24
As=12.10	As=5.78	As=11.82	As=18.56	As=5.85	As=19.63	As=16.58	As=5.78	As=19.32
Mu=9.17	Mu=3.68	Mu=9.42	Mu=10.74	Mu=9.78	Mu=11.27	Mu=9.74	Mu=9.74	Mu=11.12
As=7.29	As=5.78	As=7.50	As=8.62	As=7.97	As=9.07	As=7.77	As=7.77	As=8.94
Vu=-12.31		Vu=12.21	Vu=-20.48		Vu=20.82	Vu=-16.03		Vu=21.95

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=0.85***		
Mu=-20.86	Mu=-5.49	Mu=-21.94	Mu=-2.46	Mu=-1.13	Mu=-0.08
As=17.93	As=5.78	As=19.02	As=5.78	As=5.78	As=5.78
Mu=10.43	Mu=11.79	Mu=10.97	Mu=0.49	Mu=0.00	Mu=0.17
As=8.35	As=12.26	As=8.81	As=5.78	As=5.78	As=5.78
Vu=-17.80		Vu=20.36	Vu=-10.00		Vu=-9.68

B-311/CUB

B=0.50 H=0.40 L=3.96			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-23.31	Mu=-5.83	Mu=-22.05	Mu=-22.64	Mu=-5.91	Mu=-23.65	Mu=-23.48	Mu=-5.87	Mu=-22.21
As=20.42	As=6.06	As=19.13	As=19.73	As=6.15	As=20.78	As=20.60	As=6.10	As=19.29
Mu=14.03	Mu=13.05	Mu=13.05	Mu=11.32	Mu=12.17	Mu=11.82	Mu=11.74	Mu=9.70	Mu=11.11
As=11.50	As=10.63	As=10.63	As=9.12	As=9.85	As=9.55	As=9.48	As=7.99	As=8.93
Vu=-37.08		Vu=34.50	Vu=-20.09		Vu=19.76	Vu=-21.44		Vu=21.02

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=6.90***		
Mu=-16.55	Mu=-4.16	Mu=-16.63	Mu=-22.34	Mu=-5.94	Mu=-23.75	Mu=-23.11	Mu=-5.78	Mu=-23.13
As=13.79	As=5.78	As=13.86	As=19.42	As=6.17	As=20.88	As=20.22	As=6.01	As=20.24
Mu=9.21	Mu=4.16	Mu=9.23	Mu=11.17	Mu=9.73	Mu=11.87	Mu=11.56	Mu=8.72	Mu=11.57
As=7.32	As=5.78	As=7.34	As=8.99	As=7.97	As=9.59	As=9.32	As=7.04	As=9.33
Vu=-14.51		Vu=14.52	Vu=-21.15		Vu=21.61	Vu=-20.82		Vu=20.78

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=0.85***		
Mu=-23.81	Mu=-5.96	Mu=-23.84	Mu=-1.50	Mu=-0.73	Mu=-0.04
As=20.94	As=6.20	As=20.98	As=5.78	As=5.78	As=5.78
Mu=11.90	Mu=12.74	Mu=11.92	Mu=0.30	Mu=0.00	Mu=0.01
As=9.62	As=10.35	As=9.63	As=5.78	As=5.78	As=5.78
Vu=-20.68		Vu=21.10	Vu=-3.94		Vu=-3.39

B-312/CUB

B=0.60 H=0.40 L=0.31			***B=0.50 H=0.40 L=2.60***			***B=0.50 H=0.40 L=6.40***		
Mu=-22.87	Mu=-15.78	Mu=-9.73	Mu=-8.92	Mu=-5.61	Mu=-22.46	Mu=-22.75	Mu=-5.69	Mu=-22.68
As=19.39	As=14.11	As=8.63	As=7.08	As=6.56	As=19.54	As=19.84	As=5.91	As=19.78
Mu=16.98	Mu=14.90	Mu=13.40	Mu=14.84	Mu=8.04	Mu=16.77	Mu=11.38	Mu=13.45	Mu=11.34
As=13.92	As=12.45	As=11.01	As=12.22	As=7.90	As=13.99	As=9.16	As=10.98	As=9.13
Vu=-41.09		Vu=-39.76	Vu=-34.22		Vu=39.93	Vu=-22.29		Vu=21.75

B=0.50 H=0.40 L=6.40			***B=0.50 H=0.40 L=6.40***			***B=0.50 H=0.40 L=6.40***		
Mu=-15.37	Mu=-3.84	Mu=-15.23	Mu=-15.13	Mu=-3.84	Mu=-15.36	Mu=-15.21	Mu=-3.85	Mu=-15.40
As=12.70	As=5.78	As=12.58	As=12.49	As=5.78	As=12.70	As=12.56	As=5.78	As=12.73
Mu=12.15	Mu=3.84	Mu=12.27	Mu=12.34	Mu=3.84	Mu=12.22	Mu=12.40	Mu=3.85	Mu=12.31
As=9.83	As=5.78	As=9.94	As=10.00	As=5.78	As=9.90	As=10.05	As=5.78	As=9.98
Vu=-14.68		Vu=14.62	Vu=-14.63		Vu=14.71	Vu=-14.70		Vu=14.76

B=0.50 H=0.40 L=6.40			***B=0.50 H=0.40 L=6.15***			***B=0.50 H=0.40 L=0.85***		
Mu=-15.18	Mu=-3.92	Mu=-15.68	Mu=-22.39	Mu=-5.80	Mu=-23.21	Mu=-1.08	Mu=-0.52	Mu=-0.01
As=12.53	As=5.78	As=12.99	As=19.48	As=6.03	As=20.32	As=5.78	As=5.78	As=5.78
Mu=12.49	Mu=3.92	Mu=12.17	Mu=11.20	Mu=13.26	Mu=11.60	Mu=0.22	Mu=0.00	Mu=0.05
As=10.13	As=5.78	As=9.85	As=9.01	As=10.81	As=9.36	As=5.78	As=5.78	As=5.78
Vu=-14.68		Vu=14.85	Vu=-21.80		Vu=22.60	Vu=-4.44		Vu=-4.25

B-313/CUB

B=0.50 H=0.40 L=1.35			***B=0.50 H=0.40 L=6.59***			***B=0.50 H=0.40 L=4.69***		
Mu=-0.00	Mu=-0.66	Mu=-3.02	Mu=-9.51	Mu=-2.38	Mu=-8.28	Mu=-8.78	Mu=-2.21	Mu=-8.82
As=5.78	As=5.78	As=5.78	As=7.58	As=5.78	As=6.55	As=6.96	As=5.78	As=7.00
Mu=0.02	Mu=0.00	Mu=0.60	Mu=6.01	Mu=2.38	Mu=5.48	Mu=7.02	Mu=2.21	Mu=7.02
As=5.78	As=5.78	As=5.78	As=6.25	As=5.78	As=5.78	As=7.35	As=5.78	As=7.35
Vu=-0.33		Vu=-2.66	Vu=8.61		Vu=-8.46	Vu=-11.39		Vu=11.42

B=0.50 H=0.40 L=5.20			***B=0.50 H=0.40 L=7.62***			***B=0.50 H=0.40 L=6.90***		
Mu=-8.07	Mu=-2.50	Mu=-10.01	Mu=-17.00	Mu=-4.46	Mu=-17.85	Mu=-9.50	Mu=-2.37	Mu=-8.07
As=6.38	As=5.78	As=7.99	As=14.20	As=5.78	As=15.01	As=7.56	As=5.78	As=6.37
Mu=6.92	Mu=2.50	Mu=6.15	Mu=8.50	Mu=8.73	Mu=8.93	Mu=4.75	Mu=2.37	Mu=4.99
As=7.24	As=5.78	As=6.40	As=6.73	As=7.09	As=7.09	As=5.78	As=5.78	As=5.78
Vu=10.03		Vu=-10.73	Vu=-14.61		Vu=14.16	Vu=-8.04		Vu=7.71

B=0.50 H=0.40 L=5.50			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=8.41***		
Mu=-8.37	Mu=-2.36	Mu=-9.43	Mu=-14.55	Mu=-4.14	Mu=-16.54	Mu=-20.35	Mu=-5.09	Mu=-19.66
As=6.62	As=5.78	As=7.51	As=11.96	As=5.78	As=13.78	As=17.42	As=5.78	As=16.75
Mu=6.32	Mu=2.36	Mu=5.83	Mu=7.27	Mu=7.01	Mu=8.27	Mu=10.17	Mu=10.52	Mu=9.83
As=6.59	As=5.78	As=6.06	As=7.62	As=7.35	As=6.54	As=8.13	As=8.43	As=7.85
Vu=-9.44		Vu=9.82	Vu=-14.01		Vu=14.59	Vu=14.60		Vu=-14.43

B=0.50 H=0.40 L=6.90			*B=0.50 H=0.40 L=5.50*			*B=0.50 H=0.40 L=6.90*		
Mu=-9.64	Mu=-2.41	Mu=-7.79	Mu=-8.84	Mu=-2.21	Mu=-8.65	Mu=-8.63	Mu=-2.16	Mu=-8.34
As=7.68	As=5.78	As=6.14	As=7.01	As=5.78	As=6.85	As=6.83	As=5.78	As=6.59
Mu=4.82	Mu=2.41	Mu=5.18	Mu=6.27	Mu=2.21	Mu=6.34	Mu=4.77	Mu=2.16	Mu=5.63
As=5.78	As=5.78	As=5.78	As=6.53	As=5.78	As=6.60	As=5.78	As=5.78	As=5.85
Vu=8.05		Vu=-7.51	Vu=9.78		Vu=-9.71	Vu=-8.06		Vu=7.85

B-314/CUB

B=0.30 H=0.40 L=7.00			*B=0.30 H=0.40 L=5.60*		
Mu=-8.27	Mu=-2.34	Mu=-9.37	Mu=-8.07	Mu=-2.02	Mu=-6.35
As=6.77	As=3.47	As=7.76	As=6.58	As=3.47	As=5.09
Mu=4.14	Mu=4.91	Mu=4.68	Mu=4.03	Mu=2.54	Mu=3.17
As=4.32	As=3.88	As=3.69	As=4.21	As=3.47	As=3.47
Vu=-7.35		Vu=7.84	Vu=-7.11		Vu=6.84

B-315/CUB

B=0.30 H=0.40 L=7.00			*B=0.30 H=0.40 L=5.60*			*B=0.30 H=0.40 L=7.05*		
Mu=-8.27	Mu=-2.31	Mu=-9.26	Mu=-7.35	Mu=-1.84	Mu=-7.22	Mu=-9.54	Mu=-2.39	Mu=-7.67
As=6.76	As=3.47	As=7.65	As=5.95	As=3.47	As=5.84	As=7.92	As=3.47	As=6.23
Mu=4.14	Mu=4.96	Mu=4.63	Mu=3.67	Mu=1.97	Mu=3.61	Mu=4.77	Mu=5.25	Mu=3.83
As=4.32	As=3.92	As=3.65	As=3.82	As=3.47	As=3.75	As=3.77	As=4.21	As=4.00
Vu=7.39		Vu=-7.80	Vu=6.37		Vu=-6.34	Vu=-8.04		Vu=7.33

B-316/CUB

B=0.50 H=0.40 L=1.35			*B=0.50 H=0.40 L=6.59*			*B=0.50 H=0.40 L=4.69*		
Mu=-0.00	Mu=-0.89	Mu=-4.37	Mu=-23.30	Mu=-5.82	Mu=-20.89	Mu=-12.41	Mu=-3.10	Mu=-12.34
As=5.78	As=5.78	As=5.78	As=20.41	As=6.05	As=17.96	As=10.06	As=5.78	As=10.00
Mu=0.02	Mu=0.00	Mu=0.87	Mu=11.65	Mu=15.64	Mu=10.45	Mu=6.20	Mu=3.10	Mu=6.17
As=5.78	As=5.78	As=5.78	As=9.40	As=12.95	As=8.37	As=6.46	As=5.78	As=6.42
Vu=-0.31		Vu=-6.26	Vu=21.04		Vu=-20.36	Vu=-14.98		Vu=15.19

B=0.50 H=0.40 L=5.20			*B=0.50 H=0.40 L=7.62*			*B=0.50 H=0.40 L=6.90*		
Mu=-14.44	Mu=-4.10	Mu=-16.42	Mu=-17.56	Mu=-4.62	Mu=-18.47	Mu=-21.89	Mu=-5.47	Mu=-21.47
As=11.86	As=5.78	As=13.67	As=14.73	As=5.78	As=15.60	As=18.96	As=5.78	As=18.54
Mu=7.36	Mu=7.16	Mu=8.21	Mu=8.78	Mu=8.14	Mu=9.24	Mu=10.94	Mu=15.82	Mu=10.73
As=5.78	As=7.65	As=6.49	As=6.96	As=7.34	As=7.34	As=8.79	As=13.11	As=8.61
Vu=18.65		Vu=-19.41	Vu=-14.89		Vu=14.08	Vu=-19.18		Vu=19.11

B=0.50 H=0.40 L=5.50			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=8.41***		
Mu=-12.44	Mu=-3.11	Mu=-12.46	Mu=-23.31	Mu=-6.23	Mu=-24.91	Mu=-20.99	Mu=-5.25	Mu=-20.83
As=10.09	As=5.78	As=10.10	As=20.42	As=6.49	As=22.12	As=18.05	As=5.78	As=17.90
Mu=6.22	Mu=3.11	Mu=6.23	Mu=11.66	Mu=18.10	Mu=12.46	Mu=10.49	Mu=10.01	Mu=10.41
As=6.48	As=5.78	As=6.49	As=9.40	As=15.24	As=10.10	As=8.41	As=7.99	As=8.34
Vu=15.63		Vu=-12.96	Vu=20.89		Vu=-21.38	Vu=17.28		Vu=-14.41

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=5.50***			***B=0.50 H=0.40 L=6.90***		
Mu=-22.02	Mu=-5.50	Mu=-21.68	Mu=-17.22	Mu=-4.30	Mu=-16.22	Mu=-22.85	Mu=-5.71	Mu=-21.19
As=19.09	As=5.78	As=18.75	As=14.41	As=5.78	As=13.48	As=19.95	As=5.93	As=18.26
Mu=11.01	Mu=16.28	Mu=10.84	Mu=8.61	Mu=6.93	Mu=8.11	Mu=11.43	Mu=16.51	Mu=10.60
As=8.85	As=13.54	As=8.70	As=6.82	As=7.42	As=6.41	As=9.21	As=13.75	As=8.49
Vu=19.32		Vu=-19.30	Vu=18.70		Vu=-18.31	Vu=20.01		Vu=-19.27

B-317/CUB

B=0.50 H=0.40 L=0.85			***B=0.50 H=0.40 L=6.59***			***B=0.50 H=0.40 L=4.69***		
Mu=-0.01	Mu=-1.35	Mu=-2.87	Mu=-24.76	Mu=-6.19	Mu=-23.03	Mu=-12.87	Mu=-3.55	Mu=-14.21
As=5.78	As=5.78	As=5.78	As=21.95	As=6.45	As=20.13	As=10.46	As=5.78	As=11.66
Mu=0.00	Mu=0.00	Mu=0.57	Mu=12.38	Mu=15.84	Mu=11.52	Mu=6.43	Mu=3.55	Mu=7.11
As=5.78	As=5.78	As=5.78	As=10.03	As=13.13	As=9.28	As=6.71	As=5.78	As=7.44
Vu=6.00		Vu=7.59	Vu=23.34		Vu=-22.91	Vu=-17.49		Vu=17.14

B=0.50 H=0.40 L=5.20			***B=0.50 H=0.40 L=7.62***			***B=0.50 H=0.40 L=6.90***		
Mu=-21.24	Mu=-5.50	Mu=-22.00	Mu=-10.07	Mu=-2.52	Mu=-10.09	Mu=-24.36	Mu=-6.48	Mu=-25.91
As=18.30	As=5.78	As=19.07	As=8.05	As=5.78	As=8.06	As=21.53	As=6.76	As=23.21
Mu=10.62	Mu=17.22	Mu=11.00	Mu=5.03	Mu=2.52	Mu=5.04	Mu=12.18	Mu=17.56	Mu=12.96
As=8.65	As=14.41	As=8.84	As=5.78	As=5.78	As=5.78	As=9.86	As=14.73	As=10.54
Vu=25.66		Vu=-25.86	Vu=-8.12		Vu=8.90	Vu=-22.88		Vu=23.44

B=0.50 H=0.40 L=5.50			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=8.40***		
Mu=-15.02	Mu=-3.75	Mu=-14.91	Mu=-25.11	Mu=-6.28	Mu=-24.97	Mu=-11.28	Mu=-2.82	Mu=-10.82
As=12.38	As=5.78	As=12.28	As=22.33	As=6.54	As=22.18	As=9.08	As=5.78	As=8.68
Mu=7.51	Mu=5.51	Mu=7.45	Mu=12.56	Mu=17.43	Mu=12.49	Mu=5.64	Mu=2.82	Mu=5.41
As=5.91	As=5.87	As=5.87	As=10.19	As=14.61	As=10.13	As=5.86	As=5.78	As=5.78
Vu=19.62		Vu=-17.22	Vu=-23.08		Vu=23.03	Vu=-13.44		Vu=8.55

B=0.50 H=0.40 L=6.90			*B=0.50 H=0.40 L=5.50*			*B=0.50 H=0.40 L=6.90*		
Mu=-24.30	Mu=-6.38	Mu=-25.54	Mu=-17.99	Mu=-4.50	Mu=-16.85	Mu=-26.72	Mu=-6.68	Mu=-25.16
As=21.46	As=6.66	As=22.80	As=15.14	As=5.78	As=14.06	As=24.10	As=6.98	As=22.39
Mu=12.15	Mu=18.03	Mu=12.77	Mu=8.99	Mu=7.71	Mu=8.42	Mu=13.36	Mu=17.89	Mu=12.58
As=9.83	As=15.17	As=10.38	As=7.14	As=6.08	As=6.67	As=10.90	As=15.04	As=10.21
Vu=22.75		Vu=23.28	Vu=21.04		Vu=-20.60	Vu=-24.20		Vu=23.45

B-318/CUB

B=0.30 H=0.40 L=5.60		
Mu=-6.80	Mu=-1.70	Mu=-6.11
As=5.47	As=3.47	As=4.89
Mu=3.40	Mu=4.50	Mu=3.06
As=3.53	As=4.53	As=3.47
Vu=8.73		Vu=-7.30

B-319/CUB

B=0.50 H=0.40 L=0.85			*B=0.50 H=0.40 L=6.59*			*B=0.50 H=0.40 L=4.69*		
Mu=-0.01	Mu=-1.27	Mu=-2.78	Mu=-24.64	Mu=-6.16	Mu=-23.23	Mu=-13.80	Mu=-3.60	Mu=-14.40
As=5.78	As=5.78	As=5.78	As=21.83	As=6.41	As=20.33	As=11.29	As=5.78	As=11.82
Mu=0.01	Mu=0.00	Mu=0.56	Mu=12.32	Mu=14.02	Mu=11.61	Mu=6.90	Mu=3.60	Mu=7.20
As=5.78	As=5.78	As=5.78	As=9.98	As=11.48	As=9.37	As=7.22	As=5.78	As=7.54
Vu=-4.91		Vu=-6.92	Vu=24.04		Vu=-23.85	Vu=-18.94		Vu=20.75

B=0.50 H=0.40 L=5.20			*B=0.50 H=0.40 L=7.62*			*B=0.50 H=0.40 L=6.90*		
Mu=-19.70	Mu=-5.09	Mu=-20.36	Mu=-9.88	Mu=-2.64	Mu=-10.56	Mu=-23.69	Mu=-6.29	Mu=-25.17
As=16.79	As=5.78	As=17.44	As=7.88	As=5.78	As=8.47	As=20.83	As=6.56	As=22.40
Mu=9.85	Mu=12.78	Mu=10.18	Mu=4.94	Mu=2.64	Mu=5.28	Mu=11.85	Mu=14.82	Mu=12.59
As=7.86	As=10.38	As=8.14	As=5.78	As=5.78	As=5.78	As=9.57	As=12.20	As=10.22
Vu=24.35		Vu=-24.53	Vu=-9.06		Vu=9.62	Vu=-23.11		Vu=23.69

B=0.50 H=0.40 L=5.50			*B=0.50 H=0.40 L=6.90*			*B=0.50 H=0.40 L=8.41*		
Mu=-15.15	Mu=-3.79	Mu=-15.09	Mu=-24.44	Mu=-6.11	Mu=-24.33	Mu=-11.33	Mu=-2.83	Mu=-11.26
As=12.51	As=5.78	As=12.44	As=21.61	As=6.36	As=21.50	As=9.13	As=5.78	As=9.06
Mu=7.58	Mu=5.69	Mu=7.54	Mu=12.22	Mu=14.74	Mu=12.17	Mu=5.67	Mu=2.83	Mu=5.63
As=5.97	As=5.94	As=5.94	As=9.89	As=12.13	As=9.85	As=5.88	As=5.78	As=5.84
Vu=19.91		Vu=-17.85	Vu=23.38		Vu=-23.28	Vu=13.50		Vu=-8.78

B=0.50 H=0.40 L=6.90			*B=0.50 H=0.40 L=5.50*			*B=0.50 H=0.40 L=6.90*		
Mu=-29.60	Mu=-7.40	Mu=-29.05	Mu=-12.94	Mu=-3.23	Mu=-10.90	Mu=-24.53	Mu=-6.28	Mu=-25.12
As=27.43	As=5.82	As=26.78	As=10.52	As=5.78	As=8.75	As=21.71	As=6.54	As=22.34
Mu=14.80	Mu=24.01	Mu=14.53	Mu=6.47	Mu=3.23	Mu=6.53	Mu=12.26	Mu=15.27	Mu=12.56
As=12.70	As=21.16	As=12.70	As=6.75	As=5.78	As=6.81	As=9.93	As=12.61	As=10.19
Vu=26.62		Vu=-26.48	Vu=16.67		Vu=-12.59	Vu=24.14		Vu=-24.08

B=0.50 H=0.40 L=0.86		
Mu=-2.77	Mu=-1.26	Mu=-0.01
As=5.78	As=5.78	As=5.78
Mu=0.55	Mu=0.00	Mu=0.02
As=5.78	As=5.78	As=5.78
Vu=-6.92		Vu=-4.91

B-320/CUB

B=0.50 H=0.40 L=0.85			*B=0.50 H=0.40 L=6.59*			*B=0.50 H=0.40 L=4.69*		
Mu=-0.01	Mu=-1.27	Mu=-2.78	Mu=-25.28	Mu=-6.32	Mu=-23.96	Mu=-14.60	Mu=-3.76	Mu=-15.03
As=5.78	As=5.78	As=5.78	As=22.52	As=6.59	As=21.11	As=12.00	As=5.78	As=12.39
Mu=0.01	Mu=0.00	Mu=0.56	Mu=12.64	Mu=14.02	Mu=11.98	Mu=7.30	Mu=3.76	Mu=7.51
As=5.78	As=5.78	As=5.78	As=10.26	As=11.49	As=9.69	As=7.65	As=5.78	As=7.25
Vu=-4.91		Vu=-6.92	Vu=24.63		Vu=-24.52	Vu=-19.99		Vu=22.10

B=0.50 H=0.40 L=5.20			*B=0.50 H=0.40 L=7.62*			*B=0.50 H=0.40 L=6.90*		
Mu=-19.14	Mu=-4.98	Mu=-19.93	Mu=-10.30	Mu=-2.82	Mu=-11.29	Mu=-24.46	Mu=-6.31	Mu=-25.24
As=16.24	As=5.78	As=17.01	As=8.24	As=5.78	As=9.09	As=21.63	As=6.57	As=22.47
Mu=9.57	Mu=9.95	Mu=9.97	Mu=5.29	Mu=2.82	Mu=5.65	Mu=12.23	Mu=15.01	Mu=12.62
As=7.63	As=7.95	As=7.96	As=5.78	As=5.78	As=5.86	As=9.90	As=12.38	As=10.24
Vu=24.43		Vu=-24.66	Vu=-9.89		Vu=10.14	Vu=-23.74		Vu=24.10

B=0.50 H=0.40 L=5.50			*B=0.50 H=0.40 L=6.90*			*B=0.50 H=0.40 L=8.41*		
Mu=-12.26	Mu=-3.06	Mu=-11.91	Mu=-23.73	Mu=-6.68	Mu=-26.72	Mu=-27.41	Mu=-6.85	Mu=-27.13
As=9.93	As=5.78	As=9.63	As=20.86	As=6.97	As=24.10	As=24.88	As=7.16	As=24.56
Mu=6.80	Mu=6.79	Mu=6.79	Mu=11.86	Mu=14.49	Mu=13.36	Mu=13.70	Mu=16.20	Mu=13.56
As=7.47	As=7.09	As=7.09	As=9.58	As=11.90	As=10.89	As=11.20	As=14.81	As=11.08
Vu=-17.69		Vu=13.53	Vu=-23.37		Vu=24.30	Vu=23.86		Vu=-18.61

B=0.50 H=0.40 L=6.90			*B=0.50 H=0.40 L=5.50*			*B=0.50 H=0.40 L=6.90*		
Mu=-36.37	Mu=-9.09	Mu=-33.06	Mu=-14.51	Mu=-3.63	Mu=-11.66	Mu=-25.28	Mu=-6.72	Mu=-26.88
As=30.26	As=7.22	As=28.12	As=11.92	As=5.78	As=9.41	As=22.52	As=7.02	As=24.28
Mu=18.18	Mu=32.40	Mu=16.53	Mu=7.25	Mu=3.63	Mu=7.17	Mu=12.64	Mu=18.15	Mu=13.44
As=18.18	As=28.12	As=16.87	As=7.60	As=5.78	As=7.51	As=10.26	As=15.29	As=10.97
Vu=-29.95		Vu=28.92	Vu=14.81		Vu=-12.76	Vu=24.26		Vu=-24.63

B=0.50 H=0.40 L=0.86		
Mu=-2.90	Mu=-1.36	Mu=-0.02
As=5.78	As=5.78	As=5.78
Mu=0.58	Mu=0.00	Mu=0.01
As=5.78	As=5.78	As=5.78
Vu=-7.40		Vu=-5.81

B-321/CUB

B=0.50 H=0.40 L=0.85			*B=0.50 H=0.40 L=6.65*			*B=0.50 H=0.40 L=4.64*		
Mu=-0.01	Mu=-1.27	Mu=-2.78	Mu=-26.09	Mu=-6.52	Mu=-25.31	Mu=-17.77	Mu=-4.76	Mu=-19.05
As=5.78	As=5.78	As=5.78	As=23.41	As=6.81	As=22.54	As=14.93	As=5.78	As=16.16
Mu=0.01	Mu=0.00	Mu=0.56	Mu=13.05	Mu=14.01	Mu=12.65	Mu=8.89	Mu=6.10	Mu=9.53
As=5.78	As=5.78	As=5.78	As=10.62	As=11.48	As=10.27	As=7.05	As=6.09	As=7.59
Vu=-4.91		Vu=-6.92	Vu=25.22		Vu=-25.28	Vu=-24.90		Vu=28.81

B=0.50 H=0.40 L=5.20			*B=0.50 H=0.40 L=7.62*			*B=0.50 H=0.40 L=6.90*		
Mu=-20.40	Mu=-5.16	Mu=-20.65	Mu=-10.87	Mu=-2.97	Mu=-11.89	Mu=-24.98	Mu=-6.58	Mu=-26.31
As=17.47	As=5.78	As=17.72	As=8.73	As=5.78	As=9.60	As=22.19	As=6.87	As=23.65
Mu=10.20	Mu=9.72	Mu=10.32	Mu=5.89	Mu=2.97	Mu=5.94	Mu=12.49	Mu=14.81	Mu=13.16
As=8.16	As=7.75	As=8.26	As=6.12	As=5.78	As=6.18	As=10.13	As=12.19	As=10.72
Vu=-25.45		Vu=25.44	Vu=-10.38		Vu=10.63	Vu=-24.17		Vu=24.74

B=0.50 H=0.40 L=5.50			*B=0.50 H=0.40 L=6.90*			*B=0.50 H=0.40 L=3.21*		
Mu=-16.41	Mu=-4.10	Mu=-16.37	Mu=-25.15	Mu=-6.62	Mu=-26.49	Mu=-22.82	Mu=-5.70	Mu=-5.70
As=13.66	As=5.78	As=13.62	As=22.37	As=6.91	As=23.85	As=19.91	As=6.38	As=5.92
Mu=8.21	Mu=4.90	Mu=8.18	Mu=12.57	Mu=14.40	Mu=13.24	Mu=11.41	Mu=5.70	Mu=13.60
As=6.49	As=6.47	As=6.47	As=10.20	As=11.83	As=10.79	As=9.19	As=7.61	As=11.11
Vu=21.31		Vu=-19.25	Vu=24.12		Vu=-24.50	Vu=-21.49		Vu=-11.61

B=0.60 H=0.40 L=5.00			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=5.50***		
Mu=-4.66	Mu=-4.66	Mu=-18.64	Mu=-23.11	Mu=-5.78	Mu=-21.02	Mu=-12.69	Mu=-3.17	Mu=-11.40
As=6.93	As=6.93	As=15.42	As=20.21	As=6.00	As=18.09	As=10.31	As=5.78	As=9.18
Mu=13.42	Mu=4.66	Mu=9.32	Mu=11.55	Mu=15.60	Mu=10.51	Mu=7.71	Mu=3.17	Mu=8.34
As=10.80	As=7.03	As=7.35	As=9.32	As=12.91	As=8.42	As=6.07	As=6.60	As=6.60
Vu=8.47		Vu=11.84	Vu=19.74		Vu=-19.12	Vu=12.55		Vu=-12.05

B=0.50 H=0.40 L=6.90			***B=0.50 H=0.40 L=0.86***		
Mu=-18.47	Mu=-4.93	Mu=-19.72	Mu=-1.92	Mu=-0.94	Mu=-0.01
As=15.59	As=5.78	As=16.80	As=5.78	As=5.78	As=5.78
Mu=9.23	Mu=13.09	Mu=9.86	Mu=0.38	Mu=0.00	Mu=0.02
As=7.34	As=10.66	As=7.87	As=5.78	As=5.78	As=5.78
Vu=-16.56		Vu=16.92	Vu=-4.65		Vu=-4.32

B-322/CUB

B=0.50 H=0.40 L=0.85			***B=0.50 H=0.40 L=6.65***			***B=0.50 H=0.40 L=4.64***		
Mu=-0.01	Mu=-1.34	Mu=-2.87	Mu=-26.89	Mu=-6.72	Mu=-24.42	Mu=-13.79	Mu=-3.59	Mu=-14.34
As=5.78	As=5.78	As=5.78	As=24.29	As=7.02	As=21.59	As=11.28	As=5.78	As=11.77
Mu=0.01	Mu=0.00	Mu=0.57	Mu=13.45	Mu=15.60	Mu=12.21	Mu=9.48	Mu=3.59	Mu=9.28
As=5.78	As=5.78	As=5.78	As=10.97	As=12.91	As=9.89	As=7.55	As=5.78	As=7.53
Vu=-6.03		Vu=-7.62	Vu=25.10		Vu=-24.47	Vu=-17.71		Vu=19.71

B=0.50 H=0.40 L=5.20			***B=0.50 H=0.40 L=7.62***			***B=0.50 H=0.40 L=6.90***		
Mu=-18.83	Mu=-5.64	Mu=-22.56	Mu=-22.04	Mu=-5.81	Mu=-23.24	Mu=-28.20	Mu=-7.05	Mu=-27.21
As=15.94	As=5.86	As=19.65	As=19.11	As=6.04	As=20.35	As=25.79	As=7.38	As=24.65
Mu=9.77	Mu=9.77	Mu=11.28	Mu=11.02	Mu=11.20	Mu=11.62	Mu=14.10	Mu=17.71	Mu=13.60
As=7.79	As=7.79	As=9.08	As=8.86	As=9.01	As=9.37	As=11.56	As=14.88	As=11.11
Vu=-24.20		Vu=25.78	Vu=-19.35		Vu=19.68	Vu=-25.25		Vu=24.89

B=0.50 H=0.40 L=5.50			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=0.86***		
Mu=-17.15	Mu=-4.29	Mu=-16.94	Mu=-27.02	Mu=-6.81	Mu=-27.24	Mu=-2.99	Mu=-1.45	Mu=-0.14
As=14.35	As=5.78	As=14.15	As=24.44	As=7.12	As=24.69	As=5.78	As=5.78	As=5.78
Mu=8.57	Mu=4.66	Mu=8.47	Mu=13.51	Mu=17.66	Mu=13.62	Mu=0.60	Mu=0.00	Mu=0.00
As=6.79	As=6.70	As=6.70	As=11.03	As=14.82	As=11.13	As=5.78	As=5.78	As=5.78
Vu=-21.78		Vu=19.34	Vu=-25.03		Vu=25.03	Vu=-7.48		Vu=-5.85

B-323/CUB

B=0.50 H=0.40 L=0.85			***B=0.50 H=0.40 L=6.65***			***B=0.50 H=0.40 L=4.64***		
Mu=-0.01	Mu=-0.93	Mu=-1.91	Mu=-20.94	Mu=-5.23	Mu=-19.00	Mu=-14.02	Mu=-3.51	Mu=-12.91
As=5.78	As=5.78	As=5.78	As=18.00	As=5.78	As=16.10	As=11.48	As=5.78	As=10.50
Mu=0.02	Mu=0.00	Mu=0.38	Mu=10.47	Mu=12.20	Mu=9.50	Mu=10.37	Mu=3.51	Mu=9.74
As=5.78	As=5.78	As=5.78	As=8.39	As=9.88	As=7.56	As=8.30	As=5.78	As=7.77
Vu=-4.55		Vu=-4.88	Vu=18.47		Vu=-18.03	Vu=-17.47		Vu=14.92

B=0.50 H=0.40 L=5.20			***B=0.50 H=0.40 L=7.62***			***B=0.50 H=0.40 L=6.90***		
Mu=-16.02	Mu=-4.78	Mu=-19.11	Mu=-21.98	Mu=-5.74	Mu=-22.94	Mu=-21.35	Mu=-5.34	Mu=-19.24
As=13.30	As=5.78	As=16.21	As=19.05	As=5.96	As=20.04	As=18.42	As=5.78	As=16.34
Mu=8.01	Mu=7.27	Mu=9.55	Mu=10.99	Mu=11.35	Mu=11.47	Mu=10.68	Mu=12.61	Mu=9.62
As=6.32	As=7.62	As=7.61	As=8.83	As=9.14	As=9.25	As=8.56	As=10.23	As=7.67
Vu=-19.65		Vu=20.92	Vu=-18.34		Vu=18.57	Vu=-17.59		Vu=16.92

B=0.50 H=0.40 L=5.50			***B=0.50 H=0.40 L=6.90***			***B=0.50 H=0.40 L=0.86***		
Mu=-12.04	Mu=-3.23	Mu=-12.90	Mu=-19.07	Mu=-5.07	Mu=-20.27	Mu=-1.92	Mu=-0.94	Mu=-0.01
As=9.74	As=5.78	As=10.49	As=16.18	As=5.78	As=17.34	As=5.78	As=5.78	As=5.78
Mu=8.30	Mu=3.23	Mu=8.53	Mu=9.54	Mu=12.96	Mu=10.14	Mu=0.38	Mu=0.00	Mu=0.01
As=6.56	As=6.75	As=6.75	As=7.60	As=10.54	As=8.10	As=5.78	As=5.78	As=5.78
Vu=-12.49		Vu=13.46	Vu=17.07		Vu=-17.38	Vu=4.71		Vu=4.38

B-324/CUB

B=0.30 H=0.40 L=4.67		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=7.30	Mu=0.00
As=3.55	As=5.91	As=3.55
Vu=-6.15		Vu=6.15

B-325/CUB

B=0.30 H=0.40 L=4.67			*B=0.30 H=0.40 L=1.21*		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47
Mu=0.00 As=3.55	Mu=7.30 As=5.91	Mu=0.00 As=3.55	Mu=0.00 As=3.47	Mu=0.20 As=3.47	Mu=0.00 As=3.47
Vu=-6.15		Vu=6.15	Vu=-1.02		Vu=1.02

B-326/CUB

B=0.30 H=0.40 L=3.40			*B=0.30 H=0.40 L=3.35*			*B=0.30 H=0.40 L=7.05*		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-4.92 As=3.89	Mu=-4.92 As=3.89	Mu=-4.92 As=3.89	Mu=-1.11 As=3.47	Mu=-1.11 As=3.47	Mu=-1.11 As=3.47
Mu=0.00 As=3.47	Mu=12.94 As=13.05	Mu=19.35 As=16.87	Mu=19.69 As=16.87	Mu=10.95 As=11.12	Mu=4.92 As=3.89	Mu=1.11 As=3.47	Mu=4.42 As=4.44	Mu=1.11 As=3.47
Vu=-11.42		Vu=-2.25	Vu=5.44		Vu=8.63	Vu=-3.19		Vu=3.19

B=0.30 H=0.40 L=6.95			*B=0.30 H=0.40 L=3.35*			*B=0.30 H=0.40 L=3.40*		
Mu=-1.11 As=3.47	Mu=-1.11 As=3.47	Mu=-1.11 As=3.47	Mu=-4.77 As=3.76	Mu=-4.77 As=3.76	Mu=-4.77 As=3.76	Mu=-4.77 As=3.76	Mu=-4.77 As=3.76	Mu=-4.77 As=3.76
Mu=1.11 As=3.47	Mu=4.42 As=4.44	Mu=1.11 As=3.47	Mu=4.77 As=3.76	Mu=10.64 As=10.75	Mu=19.07 As=16.87	Mu=19.07 As=16.87	Mu=12.80 As=12.87	Mu=4.77 As=3.76
Vu=-3.19		Vu=3.19	Vu=-8.42		Vu=-5.23	Vu=2.27		Vu=11.43

B=0.30 H=0.40 L=0.85		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47
Mu=0.00 As=3.47	Mu=0.15 As=3.47	Mu=0.00 As=3.47
Vu=-0.98		Vu=0.98

B-327/CUB

B=0.30 H=0.40 L=4.67		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47
Mu=0.00 As=3.55	Mu=7.30 As=5.91	Mu=0.00 As=3.55
Vu=-6.15		Vu=6.15

B-328/CUB

B=0.30 H=0.40 L=4.67			***B=0.30 H=0.40 L=1.20***		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47
Mu=0.00 As=3.55	Mu=7.30 As=5.91	Mu=0.00 As=3.55	Mu=0.00 As=3.55	Mu=7.30 As=5.91	Mu=0.00 As=3.55
Vu=-6.15		Vu=6.15	Vu=-6.15		Vu=6.15

B-329/CUB

B=0.30 H=0.40 L=3.35			***B=0.30 H=0.40 L=3.40***		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.57	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47
Mu=0.00 As=3.83	Mu=15.38 As=16.21	Mu=23.21 As=19.13	Mu=23.81 As=19.55	Mu=15.68 As=16.64	Mu=0.00 As=3.89
Vu=-10.85		Vu=-2.37	Vu=-2.59		Vu=-11.07

B-330/CUB

B=0.30 H=0.40 L=0.90			***B=0.30 H=0.40 L=3.35***			***B=0.30 H=0.40 L=3.40***		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.81	Mu=-6.01 As=4.81	Mu=-6.01 As=4.81	Mu=-6.01 As=4.81	Mu=-6.02 As=4.81	Mu=-6.02 As=4.81	Mu=-6.02 As=4.81
Mu=0.00 As=3.92	Mu=15.80 As=16.82	Mu=24.06 As=19.73	Mu=6.01 As=4.81	Mu=15.80 As=16.82	Mu=24.06 As=19.73	Mu=24.09 As=19.75	Mu=15.82 As=16.84	Mu=6.02 As=4.81
Vu=-11.11		Vu=-2.63	Vu=-11.11		Vu=-2.63	Vu=2.73		Vu=11.21

B=0.30 H=0.40 L=0.86		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47
Mu=0.00 As=3.47	Mu=0.17 As=3.47	Mu=0.00 As=3.47
Vu=-0.90		Vu=0.90

B-331/CUB

B=0.30 H=0.40 L=4.67		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47
Mu=0.00 As=3.53	Mu=7.27 As=5.88	Mu=0.00 As=3.53
Vu=-6.12		Vu=6.12

B-332/CUB

B=0.30 H=0.40 L=4.68			*B=0.30 H=0.40 L=1.20*		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47
Mu=0.00 As=3.53	Mu=7.27 As=5.88	Mu=0.00 As=3.53	Mu=0.00 As=3.47	Mu=0.20 As=3.47	Mu=0.00 As=3.47
Vu=-6.12		Vu=6.12	Vu=-1.02		Vu=1.02

B-333/CUB

B=0.30 H=0.40 L=3.40			*B=0.30 H=0.40 L=3.35*			*B=0.30 H=0.40 L=7.05*		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-4.29 As=4.50	Mu=-4.29 As=4.50	Mu=-4.29 As=4.50	Mu=-0.97 As=3.47	Mu=-0.97 As=3.47	Mu=-0.97 As=3.47
Mu=0.00 As=3.47	Mu=11.30 As=11.12	Mu=16.89 As=15.44	Mu=17.18 As=15.77	Mu=9.56 As=9.50	Mu=4.29 As=4.50	Mu=0.97 As=3.47	Mu=3.87 As=4.03	Mu=0.97 As=3.47
Vu=-11.40		Vu=-2.23	Vu=5.41		Vu=8.60	Vu=-3.19		Vu=3.19

B=0.30 H=0.40 L=3.30			*B=0.30 H=0.40 L=3.35*			*B=0.30 H=0.40 L=7.06*		
Mu=-8.24 As=6.74	Mu=-8.24 As=6.74	Mu=-8.24 As=12.12	Mu=-8.13 As=11.72	Mu=-8.13 As=6.64	Mu=-8.13 As=6.64	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47
Mu=8.24 As=6.74	Mu=17.45 As=17.38	Mu=32.96 As=25.96	Mu=32.54 As=25.66	Mu=18.77 As=18.23	Mu=8.13 As=6.64	Mu=0.00 As=5.07	Mu=19.63 As=16.87	Mu=0.00 As=5.07
Vu=-15.01		Vu=-11.83	Vu=9.01		Vu=17.50	Vu=-12.39		Vu=12.39

B-334/CUB

B=0.30 H=0.40 L=4.67		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47
Mu=0.00 As=3.53	Mu=7.27 As=5.88	Mu=0.00 As=3.53
Vu=-6.12		Vu=6.12

B-335/CUB

B=0.30 H=0.40 L=4.67		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47
Mu=0.00 As=3.53	Mu=7.27 As=5.88	Mu=0.00 As=3.53
Vu=-6.12		Vu=6.12

B-336/CUB

B=0.30 H=0.40 L=0.90			***B=0.30 H=0.40 L=3.35***			***B=0.30 H=0.40 L=3.35***		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-5.94	Mu=-5.94	Mu=-5.94	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.53	As=4.74	As=4.74	As=4.74	As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=15.66	Mu=23.77	Mu=5.94	Mu=15.66	Mu=23.77	Mu=23.16	Mu=15.35	Mu=0.00
As=3.89	As=16.61	As=19.52	As=4.74	As=16.61	As=19.52	As=19.10	As=16.17	As=3.82
Vu=11.03		Vu=2.55	Vu=11.03		Vu=2.55	Vu=-2.36		Vu=-10.84

B-337/CUB

B=0.30 H=0.40 L=0.90			***B=0.30 H=0.40 L=3.35***			***B=0.30 H=0.40 L=3.35***		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.94	Mu=-0.94	Mu=-0.94	Mu=-0.94	Mu=-0.94	Mu=-0.94
As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=3.77	Mu=0.00	Mu=0.94	Mu=3.77	Mu=0.94	Mu=0.94	Mu=3.77	Mu=0.94
As=3.47	As=3.93	As=3.47	As=3.47	As=3.93	As=3.47	As=3.47	As=3.93	As=3.47
Vu=-4.24		Vu=4.24	Vu=-4.24		Vu=4.24	Vu=4.24		Vu=-4.24

B=0.30 H=0.40 L=0.90		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=0.17	Mu=0.00
As=3.47	As=3.47	As=3.47
Vu=0.90		Vu=-0.90

B-338/CUB

B=0.30 H=0.40 L=4.67		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=7.27	Mu=0.00
As=3.53	As=5.88	As=3.53
Vu=-6.12		Vu=6.12

B-339/CUB

B=0.30 H=0.40 L=4.67			***B=0.30 H=0.40 L=1.22***		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=7.27	Mu=0.00	Mu=0.00	Mu=0.20	Mu=0.00
As=3.53	As=5.88	As=3.53	As=3.47	As=3.47	As=3.47
Vu=-6.12		Vu=6.12	Vu=-1.02		Vu=1.02

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B-340/CUB

B=0.30 H=0.40 L=3.40			*B=0.30 H=0.40 L=3.35*			*B=0.30 H=0.40 L=7.05*		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-4.61	Mu=-4.61	Mu=-4.61	Mu=-1.11	Mu=-1.11	Mu=-1.11
As=3.47	As=3.47	As=3.47	As=3.63	As=3.63	As=3.63	As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=12.30	Mu=18.06	Mu=18.45	Mu=10.33	Mu=4.61	Mu=1.11	Mu=4.42	Mu=1.11
As=3.47	As=12.24	As=16.82	As=16.87	As=10.37	As=3.63	As=3.47	As=4.44	As=3.47
Vu=-10.98		Vu=-1.81	Vu=5.01		Vu=8.20	Vu=-3.19		Vu=3.19

B=0.30 H=0.40 L=6.95			*B=0.30 H=0.40 L=7.05*			*B=0.30 H=0.40 L=6.95*		
Mu=-1.11	Mu=-1.11	Mu=-1.11	Mu=-1.11	Mu=-1.11	Mu=-1.11	Mu=-1.11	Mu=-1.11	Mu=-1.11
As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47
Mu=1.11	Mu=4.42	Mu=1.11	Mu=1.11	Mu=4.42	Mu=1.11	Mu=1.11	Mu=4.42	Mu=1.11
As=3.47	As=4.44	As=3.47	As=3.47	As=4.44	As=3.47	As=3.47	As=4.44	As=3.47
Vu=-3.19		Vu=3.19	Vu=-3.19		Vu=3.19	Vu=-3.19		Vu=3.19

B=0.30 H=0.40 L=3.35			*B=0.30 H=0.40 L=3.40*			*B=0.30 H=0.40 L=0.85*		
Mu=-4.70	Mu=-4.70	Mu=-4.70	Mu=-4.69	Mu=-4.69	Mu=-4.69	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.70	As=3.70	As=3.70	As=3.70	As=3.70	As=3.70	As=3.47	As=3.47	As=3.47
Mu=4.70	Mu=10.50	Mu=18.79	Mu=18.77	Mu=12.65	Mu=4.69	Mu=0.00	Mu=0.15	Mu=0.00
As=3.70	As=10.58	As=16.87	As=16.87	As=12.69	As=3.70	As=3.47	As=3.47	As=3.47
Vu=-8.29		Vu=-5.10	Vu=2.14		Vu=11.31	Vu=-0.98		Vu=0.98

B-341/CUB

B=0.30 H=0.40 L=4.68		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=7.26	Mu=0.00
As=3.53	As=5.88	As=3.53
Vu=-6.11		Vu=6.11

B-342/CUB

B=0.30 H=0.40 L=4.68			*B=0.30 H=0.40 L=1.20*		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=7.26	Mu=0.00	Mu=0.00	Mu=7.26	Mu=0.00
As=3.53	As=5.88	As=3.53	As=3.53	As=5.88	As=3.53
Vu=-6.11		Vu=6.11	Vu=-6.11		Vu=6.11

B-343/CUB

B=0.30 H=0.40 L=0.89			***B=0.30 H=0.40 L=3.36***			***B=0.30 H=0.40 L=3.39***		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-6.13	Mu=-6.13	Mu=-6.13	Mu=-6.13	Mu=-6.13	Mu=-6.13
As=3.47	As=3.47	As=4.24	As=4.90	As=4.90	As=4.90	As=4.90	As=4.90	As=4.90
Mu=0.00	Mu=15.92	Mu=24.52	Mu=6.13	Mu=15.92	Mu=24.52	Mu=24.52	Mu=15.92	Mu=6.13
As=3.93	As=16.87	As=20.05	As=4.90	As=16.87	As=20.05	As=20.05	As=16.87	As=4.90
Vu=11.08		Vu=2.85	Vu=11.08		Vu=2.85	Vu=-2.88		Vu=-11.12

B=0.30 H=0.40 L=0.86		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=0.17	Mu=0.00
As=3.47	As=3.47	As=3.47
Vu=0.88		Vu=-0.88

B-344/CUB

B=0.30 H=0.40 L=0.89			***B=0.30 H=0.40 L=3.36***			***B=0.30 H=0.40 L=3.39***		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-5.97	Mu=-5.97	Mu=-5.97	Mu=-5.96	Mu=-5.96	Mu=-5.96
As=3.47	As=3.47	As=3.63	As=4.77	As=4.77	As=4.77	As=4.76	As=4.76	As=4.76
Mu=0.00	Mu=15.59	Mu=23.87	Mu=5.97	Mu=15.59	Mu=23.87	Mu=23.85	Mu=15.58	Mu=5.96
As=3.86	As=16.55	As=19.60	As=4.77	As=16.55	As=19.60	As=19.58	As=16.53	As=4.76
Vu=-10.92		Vu=-2.69	Vu=-10.92		Vu=-2.69	Vu=2.75		Vu=10.98

B=0.30 H=0.40 L=0.86		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=0.17	Mu=0.00
As=3.47	As=3.47	As=3.47
Vu=-0.88		Vu=0.88

B-345/CUB

B=0.30 H=0.40 L=4.67		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=7.27	Mu=0.00
As=3.53	As=5.88	As=3.53
Vu=-6.12		Vu=6.12

B-346/CUB

B=0.30 H=0.40 L=4.67			***B=0.30 H=0.40 L=1.20***		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=7.27	Mu=0.00	Mu=0.00	Mu=0.20	Mu=0.00
As=3.53	As=5.88	As=3.53	As=3.47	As=3.47	As=3.47
Vu=-6.12		Vu=6.12	Vu=-1.02		Vu=1.02

B-347/CUB

B=0.30 H=0.40 L=3.40			***B=0.30 H=0.40 L=3.35***			***B=0.30 H=0.40 L=7.05***		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-5.81	Mu=-5.81	Mu=-5.81	Mu=-1.38	Mu=-1.38	Mu=-1.38
As=3.47	As=3.47	As=3.47	As=4.63	As=4.63	As=4.63	As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=15.55	Mu=22.94	Mu=23.25	Mu=13.01	Mu=5.81	Mu=1.38	Mu=5.53	Mu=1.38
As=3.92	As=16.37	As=18.94	As=19.16	As=13.63	As=4.63	As=3.47	As=4.39	As=3.47
Vu=-11.12		Vu=-1.95	Vu=5.03		Vu=8.22	Vu=-3.19		Vu=3.19

B=0.30 H=0.40 L=6.95			***B=0.30 H=0.40 L=7.05***			***B=0.30 H=0.40 L=6.95***		
Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38
As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47
Mu=1.38	Mu=5.53	Mu=1.38	Mu=1.38	Mu=5.53	Mu=1.38	Mu=1.38	Mu=5.53	Mu=1.38
As=3.47	As=4.39	As=3.47	As=3.47	As=4.39	As=3.47	As=3.47	As=4.39	As=3.47
Vu=-3.19		Vu=3.19	Vu=-3.19		Vu=3.19	Vu=-3.19		Vu=3.19

B=0.30 H=0.40 L=3.35			***B=0.30 H=0.40 L=3.40***			***B=0.30 H=0.40 L=0.85***		
Mu=-6.20	Mu=-6.20	Mu=-6.20	Mu=-6.15	Mu=-6.15	Mu=-6.15	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=4.96	As=4.96	As=4.96	As=4.92	As=4.92	As=4.92	As=3.47	As=3.47	As=3.47
Mu=6.20	Mu=13.77	Mu=24.78	Mu=24.59	Mu=16.37	Mu=6.15	Mu=0.00	Mu=0.19	Mu=0.00
As=4.96	As=14.64	As=20.23	As=20.10	As=16.87	As=4.92	As=3.47	As=3.47	As=3.47
Vu=-8.66		Vu=-5.47	Vu=2.51		Vu=11.68	Vu=-0.98		Vu=0.98

B-348/CUB

B=0.30 H=0.40 L=4.67		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=7.28	Mu=0.00
As=3.53	As=5.89	As=3.53
Vu=-6.12		Vu=6.12

B-349/CUB

B=0.30 H=0.40 L=4.67			*B=0.30 H=0.40 L=1.21*		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=7.28	Mu=0.00	Mu=0.00	Mu=7.28	Mu=0.00
As=3.53	As=5.89	As=3.53	As=3.53	As=5.89	As=3.53
Vu=-6.12		Vu=6.12	Vu=-6.12		Vu=6.12

B-350/CUB

B=0.30 H=0.40 L=0.91			*B=0.30 H=0.40 L=3.34*			*B=0.30 H=0.40 L=3.35*		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-6.06	Mu=-6.06	Mu=-6.06	Mu=-6.08	Mu=-6.08	Mu=-6.08
As=3.47	As=3.47	As=3.99	As=4.85	As=4.85	As=4.85	As=4.86	As=4.86	As=4.86
Mu=0.00	Mu=15.80	Mu=24.26	Mu=6.06	Mu=15.80	Mu=24.26	Mu=24.33	Mu=15.82	Mu=6.08
As=3.90	As=16.84	As=19.86	As=4.85	As=16.84	As=19.86	As=19.92	As=16.87	As=4.86
Vu=11.06		Vu=2.81	Vu=11.06		Vu=2.81	Vu=-2.78		Vu=-11.02

B=0.30 H=0.40 L=0.89		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=0.17	Mu=0.00
As=3.47	As=3.47	As=3.47
Vu=0.88		Vu=-0.88

B-351/CUB

B=0.30 H=0.40 L=3.34			*B=0.30 H=0.40 L=3.35*			*B=0.30 H=0.40 L=0.89*		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-5.77	Mu=-5.77	Mu=-5.77	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47	As=4.60	As=4.60	As=4.60	As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=14.83	Mu=22.32	Mu=23.09	Mu=15.20	Mu=5.77	Mu=0.00	Mu=0.17	Mu=0.00
As=3.69	As=15.47	As=18.51	As=19.05	As=15.99	As=4.60	As=3.47	As=3.47	As=3.47
Vu=-10.60		Vu=-2.35	Vu=2.54		Vu=10.78	Vu=-0.88		Vu=0.88

B-352/CUB

B=0.30 H=0.40 L=3.48		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=3.54	Mu=0.00
As=3.47	As=3.68	As=3.47
Vu=-3.92		Vu=3.92

B-353/CUB

B=0.30 H=0.40 L=3.47			*B=0.30 H=0.40 L=1.23*		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47
Mu=0.00 As=3.47	Mu=3.54 As=3.68	Mu=0.00 As=3.47	Mu=0.00 As=3.47	Mu=3.54 As=3.68	Mu=0.00 As=3.47
Vu=-3.92		Vu=3.92	Vu=-3.92		Vu=3.92

B-354/CUB

B=0.30 H=0.40 L=2.50			*B=0.30 H=0.40 L=4.25*			*B=0.30 H=0.40 L=6.95*		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=7.65	Mu=-5.88 As=4.69	Mu=-5.88 As=4.69	Mu=-5.88 As=4.69	Mu=-1.11 As=3.47	Mu=-1.11 As=3.47	Mu=-1.11 As=3.47
Mu=0.00 As=3.47	Mu=15.55 As=16.87	Mu=28.17 As=22.61	Mu=23.51 As=19.34	Mu=13.42 As=14.10	Mu=5.88 As=4.69	Mu=1.11 As=3.47	Mu=4.42 As=4.44	Mu=1.11 As=3.47
Vu=-15.76		Vu=-10.18	Vu=4.88		Vu=8.79	Vu=-3.19		Vu=3.19

B=0.30 H=0.40 L=7.05			*B=0.30 H=0.40 L=6.95*			*B=0.30 H=0.40 L=4.20*		
Mu=-1.11 As=3.47	Mu=-1.11 As=3.47	Mu=-1.11 As=3.47	Mu=-1.11 As=3.47	Mu=-1.11 As=3.47	Mu=-1.11 As=3.47	Mu=-2.60 As=3.47	Mu=-2.60 As=3.47	Mu=-2.60 As=3.47
Mu=1.11 As=3.47	Mu=4.42 As=4.44	Mu=1.11 As=3.47	Mu=1.11 As=3.47	Mu=4.42 As=4.44	Mu=1.11 As=3.47	Mu=2.60 As=3.47	Mu=6.86 As=6.38	Mu=10.40 As=8.71
Vu=-3.19		Vu=3.19	Vu=-3.19		Vu=3.19	Vu=-5.33		Vu=-1.42

B=0.30 H=0.40 L=2.55			*B=0.30 H=0.40 L=0.85*		
Mu=-2.94 As=3.47	Mu=-2.94 As=3.47	Mu=-2.94 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47
Mu=11.76 As=10.02	Mu=7.53 As=7.09	Mu=2.94 As=3.47	Mu=0.00 As=3.47	Mu=0.13 As=3.47	Mu=0.00 As=3.47
Vu=3.11		Vu=9.09	Vu=-0.83		Vu=0.83

B-355/CUB

B=0.30 H=0.40 L=3.47		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47
Mu=0.00 As=3.47	Mu=3.54 As=3.68	Mu=0.00 As=3.47
Vu=-3.92		Vu=3.92

B-356/CUB

B=0.30 H=0.40 L=3.46			*B=0.30 H=0.40 L=1.20*		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47
Mu=0.00 As=3.47	Mu=3.54 As=3.68	Mu=0.00 As=3.47	Mu=0.00 As=3.47	Mu=0.17 As=3.47	Mu=0.00 As=3.47
Vu=-3.92		Vu=3.92	Vu=-0.86		Vu=0.86

B-357/CUB

B=0.30 H=0.40 L=2.50			*B=0.30 H=0.40 L=2.50*			*B=0.30 H=0.40 L=0.90*		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.61 As=3.47	Mu=-0.61 As=3.47	Mu=-0.61 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47
Mu=0.00 As=3.47	Mu=2.45 As=3.47	Mu=0.00 As=3.47	Mu=0.61 As=3.47	Mu=2.45 As=3.47	Mu=0.61 As=3.47	Mu=0.00 As=3.47	Mu=2.45 As=3.47	Mu=0.00 As=3.47
Vu=3.56		Vu=-3.56	Vu=3.56		Vu=-3.56	Vu=3.56		Vu=-3.56

B-358/CUB

B=0.30 H=0.40 L=0.90			*B=0.30 H=0.40 L=2.50*			*B=0.30 H=0.40 L=2.50*		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-4.09 As=4.28	Mu=-4.09 As=4.28	Mu=-4.09 As=4.28	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47
Mu=0.00 As=3.47	Mu=0.19 As=3.47	Mu=0.00 As=3.47	Mu=4.09 As=4.28	Mu=10.64 As=10.43	Mu=16.38 As=14.85	Mu=15.41 As=13.77	Mu=10.16 As=9.86	Mu=0.00 As=3.47
Vu=-0.98		Vu=0.98	Vu=-10.14		Vu=-3.01	Vu=2.67		Vu=9.80

B-359/CUB

B=0.30 H=0.40 L=4.46		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47
Mu=0.00 As=3.47	Mu=6.49 As=5.21	Mu=0.00 As=3.47
Vu=-5.71		Vu=5.71

B-360/CUB

B=0.30 H=0.40 L=4.52			*B=0.30 H=0.40 L=1.20*		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47
Mu=0.00 As=3.47	Mu=6.49 As=5.21	Mu=0.00 As=3.47	Mu=0.00 As=3.47	Mu=6.49 As=5.21	Mu=0.00 As=3.47
Vu=-5.71		Vu=5.71	Vu=-5.71		Vu=5.71

B-361/CUB

B=0.30 H=0.40 L=3.25			***B=0.30 H=0.40 L=3.50***			***B=0.30 H=0.40 L=7.05***		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-5.20	Mu=-5.20	Mu=-5.20	Mu=-1.38	Mu=-1.38	Mu=-1.38
As=3.47	As=3.47	As=3.47	As=4.12	As=4.12	As=4.12	As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=14.22	Mu=21.07	Mu=20.81	Mu=11.90	Mu=5.20	Mu=1.38	Mu=5.53	Mu=1.38
As=3.57	As=14.62	As=17.63	As=17.45	As=12.18	As=4.12	As=3.47	As=4.39	As=3.47
Vu=-10.67		Vu=-2.04	Vu=4.12		Vu=7.43	Vu=-3.19		Vu=3.19

B=0.30 H=0.40 L=6.95			***B=0.30 H=0.40 L=7.05***			***B=0.30 H=0.40 L=6.95***		
Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38	Mu=-1.38
As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47
Mu=1.38	Mu=5.53	Mu=1.38	Mu=1.38	Mu=5.53	Mu=1.38	Mu=1.38	Mu=5.53	Mu=1.38
As=3.47	As=4.39	As=3.47	As=3.47	As=4.39	As=3.47	As=3.47	As=4.39	As=3.47
Vu=-3.19		Vu=3.19	Vu=-3.19		Vu=3.19	Vu=-3.19		Vu=3.19

B=0.30 H=0.40 L=3.50			***B=0.30 H=0.40 L=3.25***			***B=0.30 H=0.40 L=0.85***		
Mu=-5.30	Mu=-5.30	Mu=-5.30	Mu=-5.40	Mu=-5.40	Mu=-5.40	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=4.20	As=4.20	As=4.20	As=4.29	As=4.29	As=4.29	As=3.47	As=3.47	As=3.47
Mu=5.30	Mu=11.40	Mu=21.19	Mu=21.60	Mu=14.48	Mu=5.40	Mu=0.00	Mu=0.18	Mu=0.00
As=4.20	As=11.74	As=17.71	As=18.00	As=14.99	As=4.29	As=3.47	As=3.47	As=3.47
Vu=-6.78		Vu=-5.06	Vu=2.30		Vu=10.92	Vu=-0.96		Vu=0.96

B-362/CUB

B=0.30 H=0.40 L=1.20			***B=0.30 H=0.40 L=4.46***		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=6.22	Mu=0.00	Mu=0.00	Mu=6.22	Mu=0.00
As=3.47	As=4.98	As=3.47	As=3.47	As=4.98	As=3.47
Vu=-5.59		Vu=5.59	Vu=-5.59		Vu=5.59

B-363/CUB

B=0.30 H=0.40 L=4.44			***B=0.30 H=0.40 L=1.20***		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00
As=3.47	As=3.47	As=3.47	As=3.47	As=3.47	As=3.47
Mu=0.00	Mu=6.33	Mu=0.00	Mu=0.00	Mu=0.15	Mu=0.00
As=3.47	As=5.07	As=3.47	As=3.47	As=3.47	As=3.47
Vu=-5.64		Vu=5.64	Vu=-0.87		Vu=0.87

B-364/CUB

B=0.30 H=0.40 L=0.85			*B=0.30 H=0.40 L=3.25*			*B=0.30 H=0.40 L=3.25*		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-5.89 As=4.70	Mu=-5.89 As=4.70	Mu=-5.89 As=4.70	Mu=-5.88 As=4.69	Mu=-5.88 As=4.69	Mu=-5.88 As=4.69
Mu=0.00 As=3.47	Mu=0.18 As=3.47	Mu=0.00 As=3.47	Mu=5.89 As=4.70	Mu=15.34 As=16.21	Mu=23.55 As=19.37	Mu=23.51 As=19.34	Mu=15.32 As=16.18	Mu=5.88 As=4.69
Vu=0.93		Vu=-0.93	Vu=11.26		Vu=2.92	Vu=-2.82		Vu=-11.16

B=0.30 H=0.40 L=0.85		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47
Mu=23.51 As=19.34	Mu=15.32 As=16.18	Mu=0.00 As=3.78
Vu=-2.82		Vu=-11.16

B-365/CUB

B=0.30 H=0.40 L=0.85			*B=0.30 H=0.40 L=3.25*			*B=0.30 H=0.40 L=3.25*		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-5.53 As=4.39	Mu=-5.53 As=4.39	Mu=-5.53 As=4.39	Mu=-5.56 As=4.42	Mu=-5.56 As=4.42	Mu=-5.56 As=4.42
Mu=0.00 As=3.47	Mu=0.18 As=3.47	Mu=0.00 As=3.47	Mu=5.53 As=4.39	Mu=14.72 As=15.31	Mu=22.10 As=18.36	Mu=22.23 As=18.45	Mu=14.68 As=15.29	Mu=5.56 As=4.42
Vu=-0.93		Vu=0.93	Vu=-10.85		Vu=-2.39	Vu=2.56		Vu=10.90

B=0.30 H=0.40 L=0.85		
Mu=-0.00 As=3.47	Mu=-0.00 As=3.47	Mu=-0.00 As=3.47
Mu=22.23 As=18.45	Mu=14.68 As=15.29	Mu=0.00 As=3.64
Vu=2.56		Vu=10.90

B-368/CUB

B=0.50 H=0.40 L=6.65			*B=0.50 H=0.40 L=4.74*			*B=0.50 H=0.40 L=5.25*		
Mu=-9.36 As=7.45	Mu=-2.45 As=5.78	Mu=-9.79 As=7.81	Mu=-7.16 As=7.50	Mu=-1.79 As=5.78	Mu=-6.09 As=6.33	Mu=-7.03 As=7.36	Mu=-1.76 As=5.78	Mu=-7.05 As=7.38
Mu=4.68 As=5.78	Mu=5.54 As=5.78	Mu=4.90 As=5.78	Mu=3.58 As=5.78	Mu=1.79 As=5.78	Mu=3.04 As=5.78	Mu=3.52 As=5.78	Mu=3.29 As=5.78	Mu=3.53 As=5.78
Vu=8.37		Vu=-8.72	Vu=-6.69		Vu=6.43	Vu=7.55		Vu=-7.36

B-114/PISO1

B=0.20 H=0.50 L=4.11		
Mu=-0.00 As=0.20	Mu=-0.00 As=0.00	Mu=-0.00 As=0.20
Mu=2.20 As=3.27	Mu=11.24 As=7.11	Mu=2.20 As=3.27
Vu=8.80		Vu=-8.80

B-115/PISO1

B=0.20 H=0.50 L=7.05		
Mu=-0.00 As=0.20	Mu=-0.00 As=6.11	Mu=-0.00 As=0.20
Mu=3.77 As=8.63	Mu=30.36 As=19.37	Mu=3.77 As=8.63
Vu=15.09		Vu=-15.09

B-116/PISO1

B=0.20 H=0.50 L=4.11			***B=0.20 H=0.50 L=7.00***			***B=0.20 H=0.50 L=7.00***		
Mu=-0.00 As=0.20	Mu=-0.00 As=0.00	Mu=-13.49 As=8.73	Mu=-12.99 As=8.37	Mu=-0.00 As=0.20	Mu=-17.09 As=11.53	Mu=-17.18 As=11.60	Mu=-0.00 As=0.20	Mu=-15.77 As=10.47
Mu=1.30 As=2.41	Mu=2.94 As=3.21	Mu=0.00 As=1.84	Mu=0.00 As=1.84	Mu=11.18 As=7.07	Mu=0.00 As=1.84	Mu=0.00 As=1.84	Mu=9.74 As=6.07	Mu=0.00 As=1.84
Vu=5.20		Vu=-12.39	Vu=14.39		Vu=-15.57	Vu=15.18		Vu=-14.78

B=0.20 H=0.50 L=7.00			***B=0.20 H=0.50 L=7.00***			***B=0.20 H=0.50 L=7.00***		
Mu=-15.76 As=10.46	Mu=-0.00 As=0.20	Mu=-16.80 As=11.29	Mu=-16.75 As=11.25	Mu=-0.00 As=0.20	Mu=-14.38 As=9.40	Mu=-14.57 As=9.54	Mu=-0.00 As=0.20	Mu=-22.14 As=14.78
Mu=0.00 As=1.84	Mu=9.94 As=6.21	Mu=0.00 As=1.84	Mu=0.00 As=1.84	Mu=10.65 As=6.70	Mu=0.00 As=1.84	Mu=0.00 As=1.84	Mu=7.86 As=4.82	Mu=0.00 As=1.84
Vu=14.83		Vu=-15.13	Vu=15.32		Vu=-14.64	Vu=13.90		Vu=-16.06

B=0.20 H=0.50 L=7.05		
Mu=-21.52 As=14.78	Mu=-0.00 As=0.20	Mu=-0.00 As=0.20
Mu=0.00 As=1.84	Mu=17.28 As=12.84	Mu=2.91 As=6.28
Vu=18.55		Vu=-11.62

DISEÑO DE VIGUETAS

B-229/PISO2

B=0.20 H=0.50 L=2.72			*B=0.20 H=0.50 L=7.00*			*B=0.20 H=0.50 L=7.00*		
Mu=-0.00	Mu=-2.04	Mu=-11.18	Mu=-10.39	Mu=-0.00	Mu=-15.68	Mu=-15.75	Mu=-0.00	Mu=-12.36
As=0.20	As=2.60	As=7.07	As=6.52	As=0.20	As=10.40	As=10.45	As=0.20	As=7.91
Mu=0.14	Mu=0.00	Mu=0.00	Mu=0.00	Mu=9.99	Mu=0.00	Mu=0.00	Mu=8.98	Mu=0.00
As=1.84	As=1.84	As=1.84	As=1.84	As=6.25	As=1.84	As=1.84	As=5.56	As=1.84
Vu=0.95		Vu=-9.28	Vu=12.40		Vu=-13.92	Vu=13.64		Vu=-12.68

B=0.20 H=0.50 L=7.00			*B=0.20 H=0.50 L=7.05*		
Mu=-12.49	Mu=-0.00	Mu=-19.52	Mu=-18.99	Mu=-0.00	Mu=-0.00
As=8.00	As=0.20	As=13.59	As=13.12	As=0.20	As=0.20
Mu=0.00	Mu=7.02	Mu=0.00	Mu=0.00	Mu=15.14	Mu=2.55
As=1.84	As=4.27	As=1.84	As=1.84	As=10.94	As=5.44
Vu=12.16		Vu=-14.16	Vu=16.31		Vu=-10.20

B-230/PISO2

B=0.20 H=0.50 L=2.73			*B=0.20 H=0.50 L=7.00*			*B=0.20 H=0.50 L=2.05*		
Mu=-0.00	Mu=-2.70	Mu=-12.49	Mu=-11.66	Mu=-0.00	Mu=-12.31	Mu=-13.11	Mu=-4.76	Mu=-0.35
As=0.20	As=3.24	As=8.00	As=7.41	As=0.20	As=7.87	As=8.45	As=3.78	As=0.71
Mu=0.08	Mu=0.00	Mu=0.00	Mu=0.00	Mu=11.05	Mu=0.00	Mu=0.00	Mu=0.00	Mu=0.00
As=1.84	As=1.84	As=1.84	As=1.84	As=6.97	As=1.84	As=1.84	As=1.84	As=1.84
Vu=0.53		Vu=-9.74	Vu=13.07		Vu=-13.25	Vu=10.07		Vu=2.37

B-231/PISO2

B=0.20 H=0.50 L=7.00			*B=0.20 H=0.50 L=7.05*		
Mu=-0.00	Mu=-0.00	Mu=-23.12	Mu=-23.10	Mu=-0.00	Mu=-0.00
As=0.20	As=0.20	As=15.31	As=15.30	As=0.20	As=0.20
Mu=2.38	Mu=12.66	Mu=0.00	Mu=0.00	Mu=13.01	Mu=2.41
As=4.99	As=9.33	As=1.84	As=1.84	As=9.59	As=5.09
Vu=9.52		Vu=-16.80	Vu=16.87		Vu=-9.64

B-232/PISO2

B=0.20 H=0.50 L=2.72		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=0.20	As=0.00	As=0.20
Mu=0.79	Mu=4.49	Mu=1.24
As=1.84	As=3.57	As=1.91
Vu=5.28		Vu=-4.95

B-233/PISO2

B=0.20 H=0.50 L=7.00			*B=0.20 H=0.50 L=7.00*			*B=0.20 H=0.50 L=7.05*		
Mu=-0.00	Mu=-0.00	Mu=-17.23	Mu=-17.95	Mu=-0.00	Mu=-18.21	Mu=-17.48	Mu=-0.00	Mu=-0.00
As=0.20	As=0.20	As=11.64	As=12.24	As=0.20	As=12.45	As=11.85	As=0.20	As=0.20
Mu=2.58	Mu=15.71	Mu=0.00	Mu=0.00	Mu=4.95	Mu=0.00	Mu=0.00	Mu=15.92	Mu=2.60
As=5.50	As=11.27	As=1.84	As=1.84	As=3.95	As=1.84	As=1.84	As=11.45	As=5.58
Vu=10.33		Vu=-15.99	Vu=13.12		Vu=-13.20	Vu=16.10		Vu=-10.41

B-234/PISO2

B=0.20 H=0.50 L=4.11		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=0.20	As=0.00	As=0.20
Mu=1.93	Mu=9.87	Mu=1.93
As=3.81	As=6.16	As=3.81
Vu=7.73		Vu=-7.73

B-237/PISO2

B=0.20 H=0.50 L=4.11			*B=0.20 H=0.50 L=7.00*			*B=0.20 H=0.50 L=7.00*		
Mu=-0.00	Mu=-0.00	Mu=-11.85	Mu=-11.41	Mu=-0.00	Mu=-15.03	Mu=-15.11	Mu=-0.00	Mu=-13.80
As=0.20	As=0.00	As=7.54	As=7.23	As=0.20	As=9.90	As=9.96	As=0.20	As=8.96
Mu=1.14	Mu=2.59	Mu=0.00	Mu=0.00	Mu=9.81	Mu=0.00	Mu=0.00	Mu=8.58	Mu=0.00
As=2.11	As=2.81	As=1.84	As=1.84	As=6.12	As=1.84	As=1.84	As=5.29	As=1.84
Vu=4.57		Vu=-10.89	Vu=12.64		Vu=-13.68	Vu=13.35		Vu=-12.97

B=0.20 H=0.50 L=7.00			*B=0.20 H=0.50 L=7.05*			*B=0.20 H=0.50 L=6.95*		
Mu=-13.79	Mu=-0.00	Mu=-14.95	Mu=-14.89	Mu=-0.00	Mu=-12.62	Mu=-12.82	Mu=-0.00	Mu=-19.31
As=8.96	As=0.20	As=9.83	As=9.79	As=0.20	As=8.10	As=8.24	As=0.20	As=13.41
Mu=0.00	Mu=8.66	Mu=0.00	Mu=0.00	Mu=9.61	Mu=0.00	Mu=0.00	Mu=6.64	Mu=0.00
As=1.84	As=5.35	As=1.84	As=1.84	As=5.98	As=1.84	As=1.84	As=4.02	As=1.84
Vu=12.99		Vu=-13.33	Vu=13.58		Vu=-12.93	Vu=12.13		Vu=-14.00

B=0.20 H=0.50 L=7.05		
Mu=-18.75	Mu=-0.00	Mu=-0.00
As=12.91	As=0.20	As=0.20
Mu=0.00	Mu=15.27	Mu=2.56
As=1.84	As=11.02	As=5.46
Vu=16.28		Vu=-10.23

B-238/PISO2

B=0.20 H=0.50 L=4.11		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=0.20	As=0.00	As=0.20
Mu=1.94	Mu=9.97	Mu=2.11
As=3.83	As=6.23	As=3.95
Vu=7.77		Vu=-7.69

DISEÑO DE VIGUETAS

B-239/PISO2

B=0.20 H=0.50 L=7.00		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=0.20	As=3.09	As=0.20
Mu=3.29	Mu=26.32	Mu=3.29
As=7.35	As=17.10	As=7.35
Vu=13.16		Vu=-13.16

B-240/PISO2

B=0.20 H=0.50 L=6.95		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=0.20	As=3.07	As=0.20
Mu=3.89	Mu=26.29	Mu=3.29
As=7.65	As=17.09	As=7.31
Vu=12.98		Vu=-13.15

B-241/PISO2

B=0.20 H=0.50 L=2.73			***B=0.20 H=0.50 L=7.00***			***B=0.20 H=0.50 L=7.00***		
Mu=-0.00	Mu=-2.10	Mu=-11.34	Mu=-10.55	Mu=-0.00	Mu=-15.26	Mu=-15.37	Mu=-0.00	Mu=-13.73
As=0.20	As=2.66	As=7.18	As=6.63	As=0.20	As=10.07	As=10.16	As=0.20	As=8.91
Mu=0.14	Mu=0.00	Mu=0.00	Mu=0.00	Mu=10.13	Mu=0.00	Mu=0.00	Mu=8.48	Mu=0.00
As=1.84	As=1.84	As=1.84	As=1.84	As=6.34	As=1.84	As=1.84	As=5.23	As=1.84
Vu=0.93		Vu=-9.34	Vu=12.49		Vu=-13.83	Vu=13.39		Vu=-12.93

B=0.20 H=0.50 L=7.00			***B=0.20 H=0.50 L=7.05***			***B=0.20 H=0.50 L=6.95***		
Mu=-13.72	Mu=-0.00	Mu=-14.97	Mu=-14.91	Mu=-0.00	Mu=-12.61	Mu=-12.81	Mu=-0.00	Mu=-19.32
As=8.90	As=0.20	As=9.85	As=9.80	As=0.20	As=8.09	As=8.24	As=0.20	As=13.41
Mu=0.00	Mu=8.69	Mu=0.00	Mu=0.00	Mu=9.60	Mu=0.00	Mu=0.00	Mu=6.64	Mu=0.00
As=1.84	As=5.36	As=1.84	As=1.84	As=5.98	As=1.84	As=1.84	As=4.02	As=1.84
Vu=12.98		Vu=-13.34	Vu=13.58		Vu=-12.93	Vu=12.13		Vu=-14.00

B=0.20 H=0.50 L=7.05		
Mu=-18.75	Mu=-0.00	Mu=-0.00
As=12.91	As=0.20	As=0.20
Mu=0.00	Mu=15.27	Mu=2.56
As=1.84	As=11.02	As=5.46
Vu=16.28		Vu=-10.23

B-242/PISO2

B=0.20 H=0.50 L=4.11		
Mu=-0.00	Mu=-0.00	Mu=-0.00
As=0.20	As=0.00	As=0.20
Mu=1.93	Mu=9.87	Mu=1.93
As=3.81	As=6.16	As=3.81
Vu=7.73		Vu=-7.73

DISEÑO DE VIGUETAS

B-243/PISO2

B=0.20 H=0.50 L=7.05		
Mu=-0.00 As=0.20	Mu=-0.00 As=3.36	Mu=-0.00 As=0.20
Mu=3.31 As=7.45	Mu=26.67 As=17.30	Mu=3.31 As=7.45
Vu=13.25		Vu=-13.25

B-236/PISO2

B=0.20 H=0.50 L=7.05		
Mu=-0.00 As=0.20	Mu=-0.00 As=3.36	Mu=-0.00 As=0.20
Mu=3.31 As=7.45	Mu=26.67 As=17.30	Mu=3.31 As=7.45
Vu=13.25		Vu=-13.25

B-235/PISO2

B=0.20 H=0.50 L=3.29		
Mu=-0.00 As=0.20	Mu=-0.00 As=0.00	Mu=-0.00 As=0.20
Mu=1.50 As=2.58	Mu=6.32 As=3.82	Mu=0.95 As=2.22
Vu=6.02		Vu=-6.35

B-244/PISO2

B=0.20 H=0.50 L=4.11			***B=0.20 H=0.50 L=7.00***			***B=0.20 H=0.50 L=7.00***		
Mu=-0.00 As=0.20	Mu=-0.00 As=0.00	Mu=-11.85 As=7.54	Mu=-11.41 As=7.23	Mu=-0.00 As=0.20	Mu=-15.03 As=9.90	Mu=-15.11 As=9.96	Mu=-0.00 As=0.20	Mu=-13.80 As=8.96
Mu=1.14 As=2.11	Mu=2.59 As=2.81	Mu=0.00 As=1.84	Mu=0.00 As=1.84	Mu=9.81 As=6.12	Mu=0.00 As=1.84	Mu=0.00 As=1.84	Mu=8.58 As=5.29	Mu=0.00 As=1.84
Vu=4.57		Vu=-10.89	Vu=12.64		Vu=-13.68	Vu=13.35		Vu=-12.97

B=0.20 H=0.50 L=7.00			***B=0.20 H=0.50 L=7.05***			***B=0.20 H=0.50 L=6.95***		
Mu=-13.79 As=8.96	Mu=-0.00 As=0.20	Mu=-14.95 As=9.83	Mu=-14.89 As=9.79	Mu=-0.00 As=0.20	Mu=-12.62 As=8.10	Mu=-12.82 As=8.24	Mu=-0.00 As=0.20	Mu=-19.31 As=13.41
Mu=0.00 As=1.84	Mu=8.66 As=5.35	Mu=0.00 As=1.84	Mu=0.00 As=1.84	Mu=9.61 As=5.98	Mu=0.00 As=1.84	Mu=0.00 As=1.84	Mu=6.64 As=4.02	Mu=0.00 As=1.84
Vu=12.99		Vu=-13.33	Vu=13.58		Vu=-12.93	Vu=12.13		Vu=-14.00

B=0.20 H=0.50 L=7.05		
Mu=-18.75 As=12.91	Mu=-0.00 As=0.20	Mu=-0.00 As=0.20
Mu=0.00 As=1.84	Mu=15.27 As=11.02	Mu=2.56 As=5.46
Vu=16.28		Vu=-10.23

DISEÑO DE VIGUETAS

B-245/PISO2

B=0.20 H=0.50 L=4.11		
Mu=-0.00 As=0.20	Mu=-0.00 As=0.00	Mu=-0.00 As=0.20
Mu=1.93 As=3.81	Mu=9.87 As=6.16	Mu=1.93 As=3.81
Vu=7.73		Vu=-7.73

B-246/PISO2

B=0.20 H=0.50 L=7.00		
Mu=-0.00 As=0.20	Mu=-0.00 As=3.09	Mu=-0.00 As=0.20
Mu=3.29 As=7.35	Mu=26.32 As=17.10	Mu=3.29 As=7.35
Vu=13.16		Vu=-13.16

B-247/PISO2

B=0.20 H=0.50 L=7.05			***B=0.20 H=0.50 L=4.52***		
Mu=-0.00 As=0.20	Mu=-0.00 As=0.20	Mu=-17.50 As=11.86	Mu=-18.35 As=12.58	Mu=-0.00 As=1.19	Mu=-0.00 As=0.20
Mu=2.60 As=5.57	Mu=15.91 As=11.44	Mu=0.00 As=1.84	Mu=0.00 As=1.84	Mu=0.75 As=1.84	Mu=0.64 As=1.84
Vu=10.40		Vu=-16.11	Vu=12.70		Vu=-4.30

B-366/CUB

B=0.25 H=0.40 L=7.05		
Mu=-0.00 As=0.20	Mu=-0.00 As=7.07	Mu=-0.00 As=0.20
Mu=3.08 As=9.10	Mu=24.83 As=19.76	Mu=3.08 As=9.10
Vu=12.34		Vu=-12.34

B-367/CUB

B=0.25 H=0.40 L=6.95		
Mu=-0.00 As=0.20	Mu=-0.00 As=6.74	Mu=-0.00 As=0.20
Mu=3.06 As=8.92	Mu=24.48 As=19.51	Mu=3.62 As=9.36
Vu=12.24		Vu=-12.08

DISEÑO DE VIGUETAS

B-241A/PISO2

B=0.20 H=0.50 L=0.98			***B=0.20 H=0.50 L=2.73***			***B=0.20 H=0.50 L=7.00***		
Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-0.00	Mu=-1.19	Mu=-11.54	Mu=-10.94	Mu=-0.00	Mu=-15.16
As=0.20	As=0.00	As=0.20	As=0.20	As=2.11	As=7.32	As=6.90	As=0.20	As=9.99
Mu=0.94	Mu=2.03	Mu=2.21	Mu=2.14	Mu=0.00	Mu=0.00	Mu=0.00	Mu=9.98	Mu=0.00
As=1.84	As=1.84	As=1.84	As=1.84	As=1.84	As=1.84	As=1.84	As=6.24	As=1.84
Vu=3.14		Vu=-0.55	Vu=0.12		Vu=-10.14	Vu=12.56		Vu=-13.76

B=0.20 H=0.50 L=7.00			***B=0.20 H=0.50 L=7.00***			***B=0.20 H=0.50 L=7.05***		
Mu=-15.25	Mu=-0.00	Mu=-13.76	Mu=-13.75	Mu=-0.00	Mu=-14.96	Mu=-14.90	Mu=-0.00	Mu=-12.62
As=10.07	As=0.20	As=8.93	As=8.93	As=0.20	As=9.84	As=9.79	As=0.20	As=8.09
Mu=0.00	Mu=8.52	Mu=0.00	Mu=0.00	Mu=8.68	Mu=0.00	Mu=0.00	Mu=9.60	Mu=0.00
As=1.84	As=5.26	As=1.84	As=1.84	As=5.36	As=1.84	As=1.84	As=5.98	As=1.84
Vu=13.37		Vu=-12.95	Vu=12.99		Vu=-13.33	Vu=13.58		Vu=-12.93

B=0.20 H=0.50 L=6.95			***B=0.20 H=0.50 L=7.05***		
Mu=-12.82	Mu=-0.00	Mu=-19.31	Mu=-18.75	Mu=-0.00	Mu=-0.00
As=8.24	As=0.20	As=13.41	As=12.91	As=0.20	As=0.20
Mu=0.00	Mu=6.64	Mu=0.00	Mu=0.00	Mu=15.27	Mu=2.56
As=1.84	As=4.02	As=1.84	As=1.84	As=11.02	As=5.46
Vu=12.13		Vu=-14.00	Vu=16.28		Vu=-10.23

DISEÑO DE CUBIERTA

CALCULO DE LA FUERZA DE VIENTO POR METODO SIMPLIFICADO

El calculo de la fuerza de viento por el metodo simplificado se puede realizar dado a que el sistema principal de resistencia de fuerzas de viento (SPRFV) cumple los requisitos exigidos en B.6.4.1.1

Parametros de la edificacion

Sistema estructural	1	Porticos de concreto		
H_{media}=	12.6 m	< 18m	Edificio bajo	Cumple
B=	45 m		Dimension menor del edificio	Cumple
T=	0.46 seg	< 1seg	Edificio rigido	Cumple
θ=	25 °	< 45°	Plana a dos o cuatro aguas	Cumple
Diafragma simple:	Si			Cumple
Edificio Cerrado:	Si			Cumple
Edificio forma regular:	Si		Simetrica*	Cumple
Factor de direccionalidad Kd:	0.85			

*Edificio sin probabilidad de generar vortices, golpeteo, aleteo o torsiones.

a) Velocidad de diseño (Figura B.6.4-1)

Ubicacion:	Chaparral
Region	3
V=	125 km/h
V=	35 m/s

b) Factor de importancia (Tabla B.6.5-1)

Categoria=	IV
I=	1.15

c) Categoria de exposicion (B.6.5.6)

Categoria de rugosidad de terreno

Rugosidad de Terreno B — Áreas urbanas y suburbanas, áreas boscosas u otros terrenos con numerosas obstrucciones del tamaño, iguales o mayores al de una vivienda unifamiliar y con poca separación entre ellas.

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

Rugosidad de Terreno D — Áreas planas y no obstruidas y superficies acuáticas por fuera de regiones propensas a huracanes. Esta categoría incluye pantanos, salinas y superficies de hielo.

X

Rugosidad:	B

Categoria de exposicion

Exposición B — La categoría de exposición B aplica cuando la rugosidad del terreno, como se define en Rugosidad de Terreno B, prevalece por una distancia de al menos 800 m o 20 veces la altura del edificio, la que sea mayor, en la dirección al viento.

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

Exposición D — La categoría de exposición D aplica cuando la rugosidad del terreno, como se define en Rugosidad de Terreno D, prevalece por una distancia mayor a 1500 m o 20 veces la altura del edificio, la que sea mayor, en la dirección de barlovento. La categoría de exposición D se extenderá hacia las áreas viento abajo de las Rugosidades de Terreno B o C por una distancia de 200 m o 20 veces la altura de la edificación, la que sea mayor.

Para una edificación que se ubique en una zona de transición entre categorías, se usará la categoría que produzca mayores fuerzas de diseño.

EXCEPCIÓN - Se permite usar una categoría de exposición intermedia entre las categorías anteriores en una zona de transición, siempre y cuando esta se determine con un proceso analítico definido en la literatura reconocida.

X

Exposicion:	B

d) Coeficiente de ajuste por altura y exposicion λ (Figura B.6.4-2)

λ= **1.1**

Factor de Ajuste por Altura del Edificio y Exposición, λ

Altura Media del Edificio (m)	Exposición		
	B	C	D
4,5	1.00	1.21	1.47
6,0	1.00	1.29	1.55
7,5	1.00	1.35	1.61
9,0	1.00	1.40	1.66
10,5	1.05	1.45	1.70
12,0	1.09	1.49	1.74
13,5	1.12	1.53	1.78
15,0	1.16	1.56	1.81
16,5	1.19	1.59	1.84
18,0	1.22	1.62	1.87

e) Factor topografico (Figura B.6.5-1)

Si no se cumplen las condiciones especificadas en B.6.5.7.1 entonces Kzt=1.0 **NO SE CUMPLEN**

K_{zt}=	1.00

g) Presion de diseno p_{net} para revestimiento y componentes

$$p_s = \lambda K_{zt} I P_{S10} \qquad \text{(B.6.4-1)}$$

donde;

λ = factor de ajuste por altura y exposición, de la fig. B.6.4-2 (continuación).
K_{zt} = factor topográfico como se define en la sección B.6.5.7 evaluado a la altura promedio de la cubierta, **h** ecuación B.6.5-1
I = factor de importancia como se define en la sección B.6.5.5
P_{S10} = presión de viento de diseño simplificada para la categoría de exposición **B** , con **h=10** m de la fig. B.6.4-2.

Pnet=	1.29 * P_{net10}
Pnet min=	0.40 kN/m2

Para muros de cerramiento

Area Efectiva	0.000 m2
V=	35 m/s
θ=	25 °

Zona	p_{net10}
4	
5	

	p_{net}
Presiones=	40.00 kg/m2
Succiones=	-40.00 kg/m2

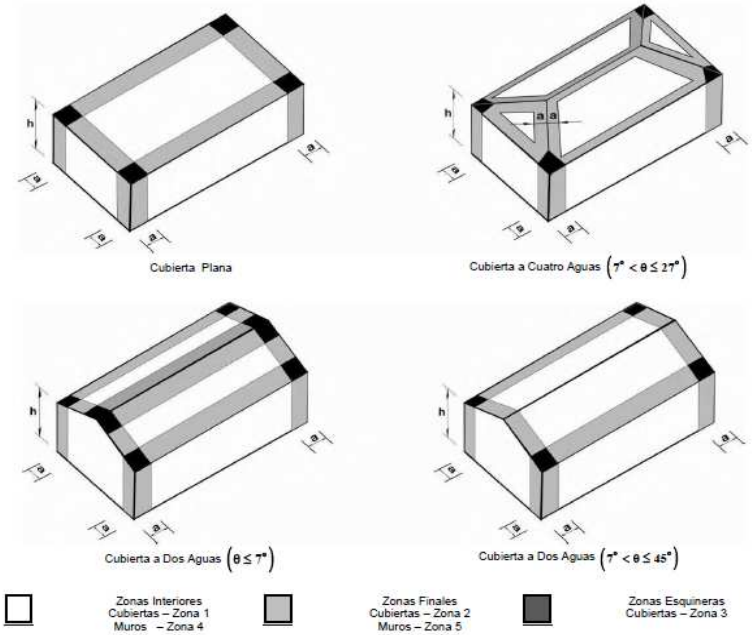
Para correas

Area Efectiva	12.75 m2
V=	35 m/s
θ=	25 °

Zona	p_{net10}	
1	0.20	-0.40
2	0.20	-0.56
3	0.20	-0.88

Para las correas

Presiones=	40.00 kg/m2
Succiones=	-113.34 kg/m2



AVALUO DE CARGAS SOBRE LAS CORREAS

CORREA	TIPO 1	
1. CARGAS DE VIENTO		
W presion=	**40.0**	**kg /m2**
W succion=	**-113.3**	**kg /m2**
Aferencia=	**1.5**	m
W presion=	**60**	**kg /m**
W succion=	**-170.016**	**kg /m**
2. CARGA MUERTA		
Tejas=	**10**	Kg/m2
Instalaciones=	**15**	Kg/m2
Correas=	**15**	Kg/m2
D=	40	Kg/m2
Aferencia=	1.5	m
D distribuida=	**60**	**kg /m**
3. CARGA VIVA		
Angulo=	25	
Pendiente=	46.6	
L=	35	Kg/m2
Aferencia=	1.5	m
L distribuida=	**52.5**	**kg /m**
4. GRANIZO		
Angulo=	25	
Altitud=	**854**	m.s.n.m
G=	0	Kg/m2
Aferencia=	1.5	m
G nudo=	**0**	**kg /m**

COMBINACIONES DE CARGA

	D	L	G	W
B.2.4-2	1.2	1.6	0.5	
B.2.4-3a	1.2	0.5	1.6	
B.2.4-3b	1.2		1.6	0.5
B.2.4-4	1.2	0.5	0.5	1.0
B.2.4-5	0.9			-1.0

Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO

REPORTE DE CORREAS

PHR Cajón 220 x 80 x 20 (3.00 mm)
con Fy = 35.15 Kgf/mm² cada 1.50 m con arriostramiento cada L/3.

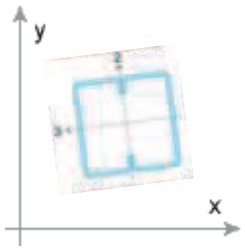
SECCION LONGITUDINAL

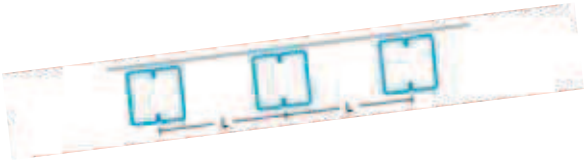


L1	7.50 m
A1	0.10 m
A2	0.10 m

CONFIGURACION	
TIPO DE CARGA	DISTRIBUIDA
Carga muerta	165.00 Kgf/m²
Peso propio correa	19.12 Kgf/m
Carga viva	50.00 Kgf/m²
Carga granizo	0.00 Kgf/m²
Viento compresión (Perpendicular)	40.00 Kgf/m²
Viento succión (Perpendicular)	67.00 Kgf/m²
Pendiente sección transversal	7° = 12.2780%

SECCION TRANSVERSAL





L = 1.50 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 (Kgf.m)	5005.7803	2805.6770	5005.7803	2805.6770
Calculado (Kgf.m)	0.0000	0.0000	3515.5522	34.4096

REPORTE CORTANTE		
Ejes locales	2	3
Resistente (Kgf)	20244.4766	14907.8877
Calculado (Kgf)	1770.4221	64.8532

REPORTE DEFLEXION		
Deflexiones máximas	Instantanea	Permanente
Admisible (m)	0.0281	0.0000
Calculado (m)	0.0090	0.0000

REPORTE ARRUGAMIENTO	
No. de Apoyo	0
Resistencia máxima (Kgf)	1850.2902
Arrugamiento (Kgf)	4100.4272

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

REACCIONES - EJES GLOBALES (Kgf-m)

Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO

APOYO 1		
Combinacion	Rx	Ry
Muerta	0.0000	1002.1318
Viva de Cub.	0.0000	281.8959
Granizo	0.0000	0.0000
Viento Comp.	-27.7862	226.3005
Viento Succion	46.5419	-379.0533
Comb. 1	-125.8217	1402.9844
Comb. 2	-120.4876	1343.5061
Comb. 3	-107.8472	1202.5582
Comb. 4	-162.1896	1766.7419
Comb. 5	-121.7402	1315.7084
Comb. 6	-171.5675	1843.1183
Comb. 7	-131.1181	1392.0848
Comb. 8	-167.0295	1722.5594
Comb. 9	-154.3891	1581.6115
Comb. 10	-148.2738	1569.8066
Comb. 11	-135.6334	1428.8586
Comb. 12	-127.4273	1280.9719
Comb. 13	-108.6716	1128.2191

APOYO 2		
Combinacion	Rx	Ry
Muerta	0.0000	1002.1328
Viva de Cub.	0.0000	281.8961
Granizo	0.0000	0.0000
Viento Comp.	-27.7862	226.3006
Viento Succion	46.5419	-379.0536
Comb. 1	-125.8218	1402.9857
Comb. 2	-120.4877	1343.5074
Comb. 3	-107.8473	1202.5593
Comb. 4	-162.1898	1766.7433
Comb. 5	-121.7404	1315.7096
Comb. 6	-171.5676	1843.1198
Comb. 7	-131.1183	1392.0861
Comb. 8	-167.0296	1722.5609
Comb. 9	-154.3892	1581.6128
Comb. 10	-148.2739	1569.8080
Comb. 11	-135.6335	1428.8600
Comb. 12	-127.4274	1280.9730
Comb. 13	-108.6717	1128.2201

FUERZAS INTERNAS - EJES LOCALES (Kgf-m) *Elementos calculados con el programa de diseño Arquimet 2.0 de ACESCO*

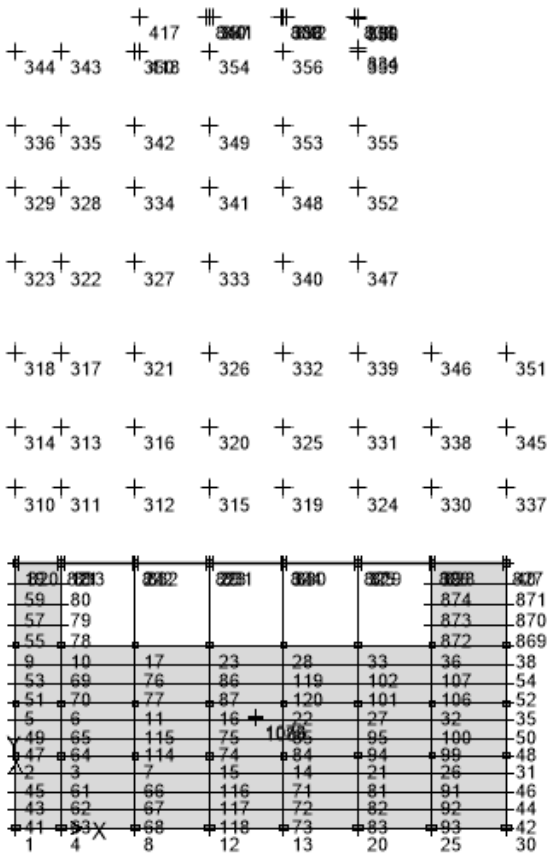
APOYO 1				
Combinacion	R2	R3	M2	M3
Muerta	32.9264	1005.6147	0.0000	0.0000
Viva de Cub.	9.2621	282.8757	0.0000	0.0000
Granizo	0.0000	0.0000	0.0000	0.0000
Viento Comp.	0.0000	228.0000	0.0000	0.0000
Viento Succion	0.0000	381.9000	0.0000	0.0000
Comb. 1	46.0970	1407.8606	0.0000	0.0000
Comb. 2	44.1427	1348.1755	0.0000	0.0000
Comb. 3	39.5117	1206.7378	0.0000	0.0000
Comb. 4	54.3310	1773.3389	0.0000	0.0000
Comb. 5	39.5117	1320.7377	0.0000	0.0000
Comb. 6	54.3310	1850.2888	0.0000	0.0000
Comb. 7	39.5117	1397.6877	0.0000	0.0000
Comb. 8	44.1427	1730.0756	0.0000	0.0000
Comb. 9	39.5117	1588.6377	0.0000	0.0000
Comb. 10	44.1427	1576.1755	0.0000	0.0000
Comb. 11	39.5117	1434.7377	0.0000	0.0000
Comb. 12	29.6338	1286.9532	0.0000	0.0000
Comb. 13	29.6338	1133.0532	0.0000	0.0000

APOYO 2				
Combinacion	R2	R3	M2	M3
Muerta	32.9264	1005.6157	0.0000	0.0000
Viva de Cub.	9.2621	282.8758	0.0000	0.0000
Granizo	0.0000	0.0000	0.0000	0.0000
Viento Comp.	0.0000	228.0000	0.0000	0.0000
Viento Succion	0.0000	381.9002	0.0000	0.0000
Comb. 1	46.0970	1407.8619	0.0000	0.0000
Comb. 2	44.1427	1348.1769	0.0000	0.0000
Comb. 3	39.5117	1206.7389	0.0000	0.0000
Comb. 4	54.3310	1773.3402	0.0000	0.0000
Comb. 5	39.5117	1320.7389	0.0000	0.0000
Comb. 6	54.3310	1850.2903	0.0000	0.0000
Comb. 7	39.5117	1397.6890	0.0000	0.0000
Comb. 8	44.1427	1730.0770	0.0000	0.0000
Comb. 9	39.5117	1588.6390	0.0000	0.0000
Comb. 10	44.1427	1576.1769	0.0000	0.0000
Comb. 11	39.5117	1434.7390	0.0000	0.0000
Comb. 12	29.6338	1286.9543	0.0000	0.0000
Comb. 13	29.6338	1133.0542	0.0000	0.0000

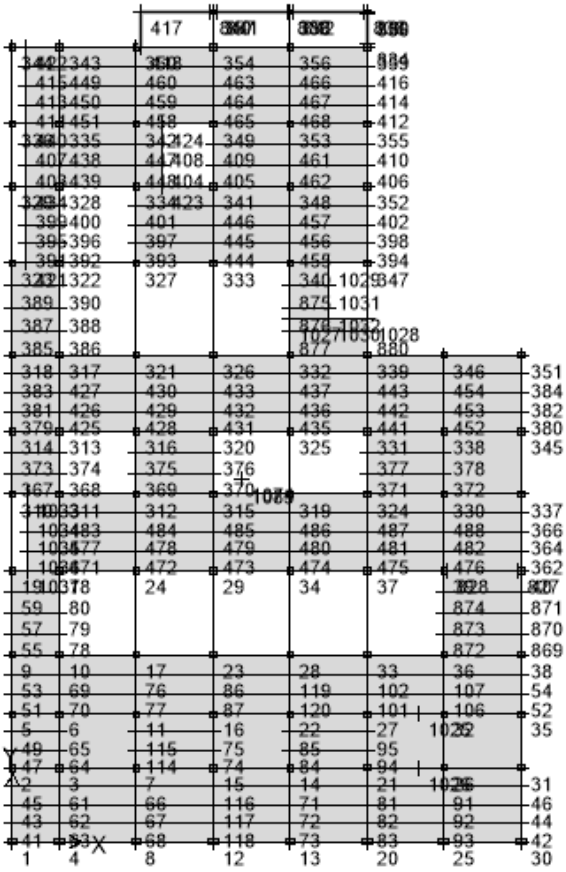
DATOS DE ENTRADA DEL MODELO MATEMÁTICO

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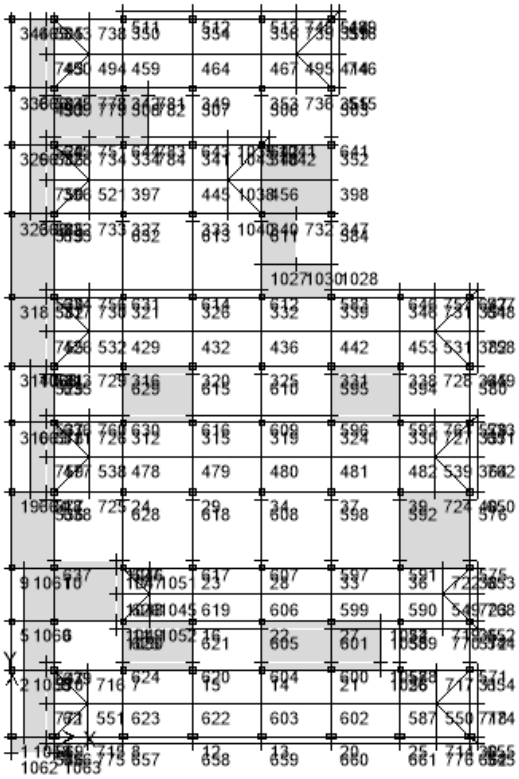
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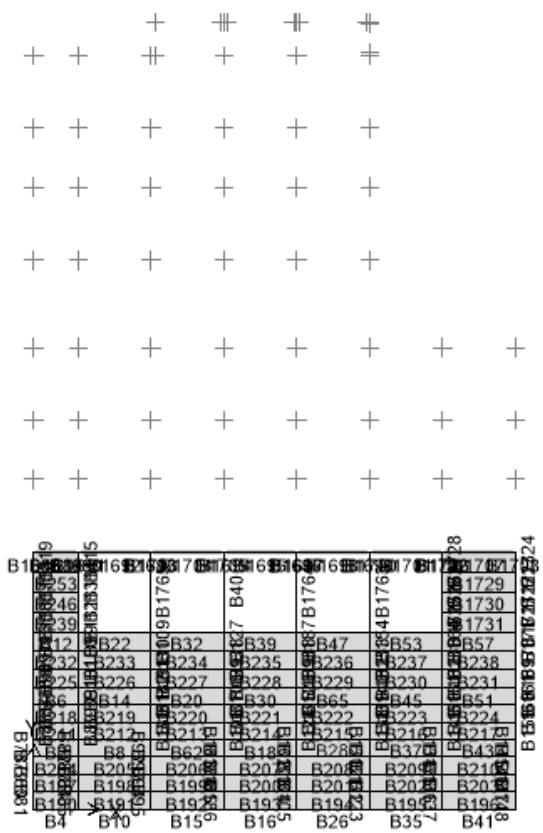


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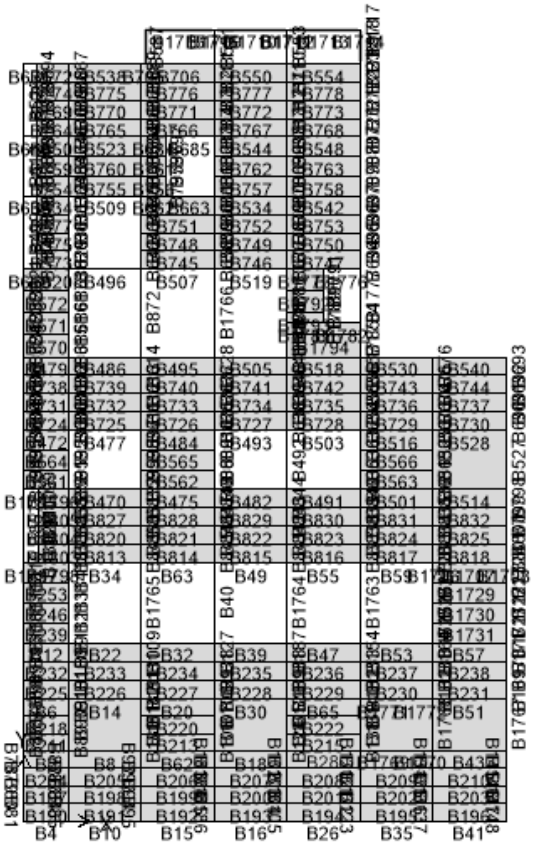


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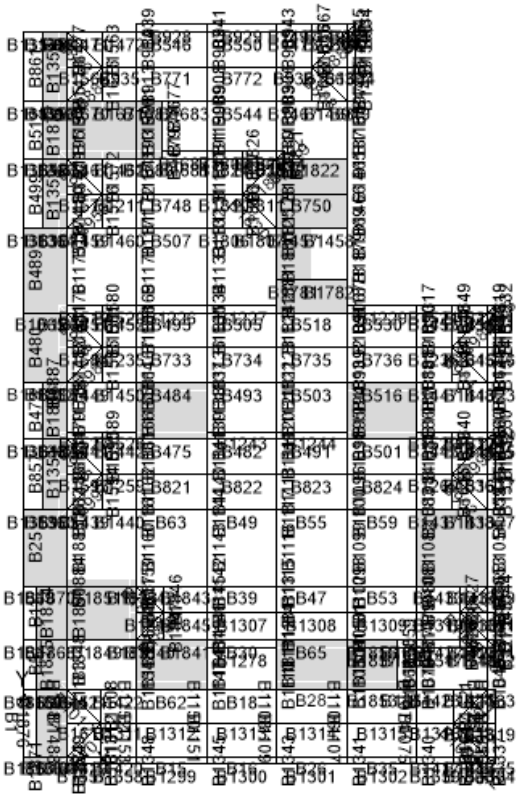
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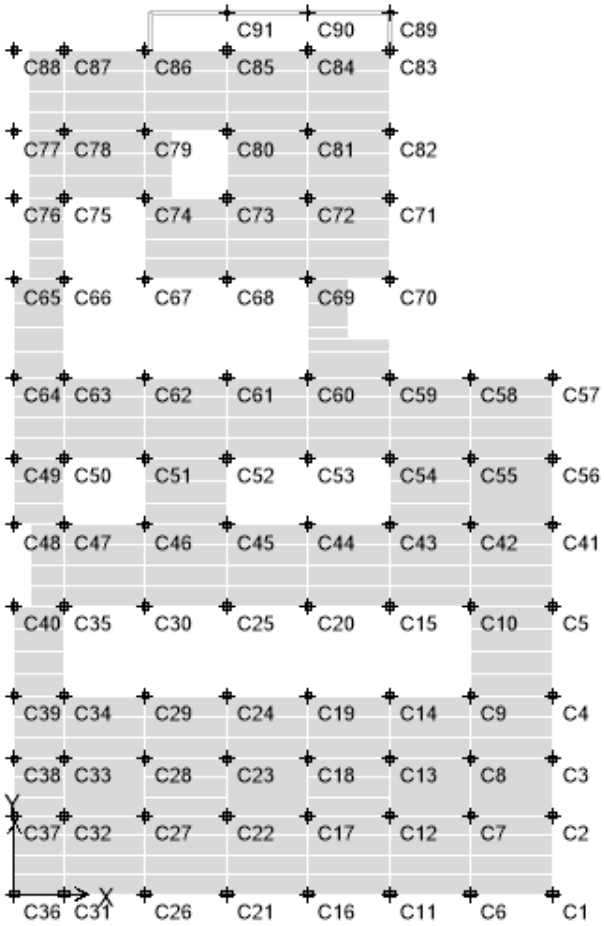
PISO 2



CUB



NUMERACION DE COLUMNAS



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S T O R Y D A T A

STORY	SIMILAR TO	HEIGHT	ELEVATION
CUB	None	4.200	4.420
PISO2	None	4.400	0.220
PISO1	None	4.300	-4.180
BASE	None		-8.480

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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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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	CONC4000	868.57	219	
Beam	CONC4000	1548.84	1046	0
Wall	CONC3000	188.68		
Floor	CONC4000	342.98		

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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
V50X50	Beam	497	1566.750	856.55	0
V30X50	Beam	32	73.205	25.85	0
V15X40	Beam	59	227.655	32.82	0
C60X60	Column	192	825.600	714.09	
C60X30	Column	3	13.200	5.71	
V50X40	Beam	334	1117.592	487.15	0
V30X40	Beam	124	517.377	146.49	0
C100X60	Column	24	103.200	148.77	
MURO25	Wall			188.68	
PLACA15	Floor			342.98	

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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
CUB	Column	CONC4000	339.05	747.917	453.3324	88	
CUB	Beam	CONC4000	666.45	747.917	891.0752	517	0
CUB	Floor	CONC4000	269.54	747.917	360.3900		
PISO2	Column	CONC4000	360.91	2607.607	138.4062	91	
PISO2	Beam	CONC4000	631.93	2607.607	242.3408	380	0
PISO2	Wall	CONC3000	71.53	2607.607	27.4301		
PISO2	Floor	CONC4000	73.44	2607.607	28.1623		
PISO1	Column	CONC4000	168.60	1006.082	167.5856	40	
PISO1	Beam	CONC4000	250.46	1006.082	248.9503	149	0
PISO1	Wall	CONC3000	117.16	1006.082	116.4473		
SUM	Column	CONC4000	868.57	4361.605	199.1397	219	
SUM	Beam	CONC4000	1548.84	4361.605	355.1087	1046	0
SUM	Wall	CONC3000	188.68	4361.605	43.2599		
SUM	Floor	CONC4000	342.98	4361.605	78.6357		
TOTAL	All	All	2949.07	4361.605	676.1440	1458	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
STEEL	Iso	Steel	All	20389019.200	0.3000	1.1700E-05	7841930.462
CONC	Iso	Concrete	All	2531050.654	0.2000	9.9000E-06	1054604.439
OTHER	Iso	None	All	20389019.200	0.3000	1.1700E-05	7841930.462
CONC3000	Iso	Concrete	All	2153810.577	0.2000	9.9000E-06	897421.074
CONC4000	Iso	Concrete	All	2487006.232	0.2000	9.9000E-06	1036252.597
CONC4000SM	Iso	Concrete	All	2487006.232	0.2000	9.9000E-06	1036252.597

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
STEEL	7.9810E-01	7.8334E+00
CONC	2.4480E-01	2.4026E+00
OTHER	7.9810E-01	7.8334E+00
CONC3000	2.4480E-01	2.4026E+00
CONC4000	2.4480E-01	2.4026E+00
CONC4000SM	0.0000E+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 ($)
STEEL	35153.481	45699.526	27679.91

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	REBAR FC	REBAR FY	REBAR FYS	LIGHTWT REDUC FACT
CONC	No	2812.279	42184.178	42184.178	N/A
CONC3000	No	2812.279	42184.178	42184.178	N/A
CONC4000	No	2812.279	42184.178	42184.178	N/A
CONC4000SM	No	2812.279	42184.178	42184.178	N/A

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

FRAME SECTION NAME	MATERIAL NAME	SECTION SHAPE	NAME OR IN SECTION DATABASE FILE	CONC COL	CONC BEAM
ConcCol	CONC	Rectangular		Yes	
ConcBm	CONC	Rectangular			Yes
V50X50	CONC4000	Rectangular			Yes
FSEC1	STEEL	Rectangular			
V20X50	CONC4000SM	Rectangular			Yes
V30X50	CONC4000	Rectangular			Yes
V15X40	CONC4000	Rectangular			Yes
C60X60	CONC4000	Rectangular		Yes	
C60X30	CONC4000	Rectangular		Yes	
V50X40	CONC4000	Rectangular			Yes
V30X40	CONC4000	Rectangular			Yes
C100X60	CONC4000	Rectangular		Yes	

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 THICK BOT	FLANGE WIDTH BOT
ConcCol	0.4572	0.4572	0.0000	0.0000	0.0000	0.0000
ConcBm	0.4572	0.3048	0.0000	0.0000	0.0000	0.0000
V50X50	0.5000	0.5000	0.0000	0.0000	0.0000	0.0000
FSEC1	0.4572	0.2540	0.0000	0.0000	0.0000	0.0000
V20X50	0.5000	0.2000	0.0000	0.0000	0.0000	0.0000
V30X50	0.5000	0.3000	0.0000	0.0000	0.0000	0.0000
V15X40	0.4000	0.1500	0.0000	0.0000	0.0000	0.0000
C60X60	0.6000	0.6000	0.0000	0.0000	0.0000	0.0000
C60X30	0.6000	0.3000	0.0000	0.0000	0.0000	0.0000
V50X40	0.4000	0.5000	0.0000	0.0000	0.0000	0.0000
V30X40	0.4000	0.3000	0.0000	0.0000	0.0000	0.0000
C100X60	1.0000	0.6000	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	TORSIONAL CONSTANT	MOMENTS OF INERTIA I33	MOMENTS OF INERTIA I22	SHEAR AREAS A2	SHEAR AREAS A3
ConcCol	0.2090	0.0062	0.0036	0.0036	0.1742	0.1742
ConcBm	0.1394	0.0025	0.0024	0.0011	0.1161	0.1161
V50X50	0.2500	0.0088	0.0052	0.0052	0.2083	0.2083
FSEC1	0.1161	0.0016	0.0020	0.0006	0.0968	0.0968
V20X50	0.1000	0.0010	0.0021	0.0003	0.0833	0.0833
V30X50	0.1500	0.0028	0.0031	0.0011	0.1250	0.1250
V15X40	0.0600	0.0003	0.0008	0.0001	0.0500	0.0500
C60X60	0.3600	0.0183	0.0108	0.0108	0.3000	0.3000
C60X30	0.1800	0.0037	0.0054	0.0014	0.1500	0.1500
V50X40	0.2000	0.0055	0.0027	0.0042	0.1667	0.1667
V30X40	0.1200	0.0019	0.0016	0.0009	0.1000	0.1000
C100X60	0.6000	0.0451	0.0500	0.0180	0.5000	0.5000

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 MODULI S33	SECTION MODULI S22	PLASTIC MODULI Z33	PLASTIC MODULI Z22	RADIUS OF GYRATION R33	RADIUS OF GYRATION R22
ConcCol	0.0159	0.0159	0.0239	0.0239	0.1320	0.1320
ConcBm	0.0106	0.0071	0.0159	0.0106	0.1320	0.0880
V50X50	0.0208	0.0208	0.0313	0.0313	0.1443	0.1443
FSEC1	0.0088	0.0049	0.0133	0.0074	0.1320	0.0733
V20X50	0.0083	0.0033	0.0125	0.0050	0.1443	0.0577
V30X50	0.0125	0.0075	0.0188	0.0113	0.1443	0.0866
V15X40	0.0040	0.0015	0.0060	0.0023	0.1155	0.0433
C60X60	0.0360	0.0360	0.0540	0.0540	0.1732	0.1732
C60X30	0.0180	0.0090	0.0270	0.0135	0.1732	0.0866
V50X40	0.0133	0.0167	0.0200	0.0250	0.1155	0.1443
V30X40	0.0080	0.0060	0.0120	0.0090	0.1155	0.0866
C100X60	0.1000	0.0600	0.1500	0.0900	0.2887	0.1732

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
ConcCol	0.0000	0.0000
ConcBm	0.0000	0.0000
V50X50	856.5486	87.2734
FSEC1	0.0000	0.0000
V20X50	0.0000	0.0000
V30X50	25.8452	2.6334
V15X40	32.8178	3.3438
C60X60	714.0912	72.7585
C60X30	5.7086	0.5816
V50X40	487.1471	49.6352
V30X40	146.4852	14.9253
C100X60	148.7690	15.1580

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

FRAME SECTION NAME	REINF CONFIGURATION LONGIT	REINF LATERAL	NUM BARS SIZE/TYPE	NUM BARS 3DIR/2DIR	BAR CIRCULAR COVER
ConcCol	Rectangular Ties	#9/Design	3/3	N/A	0.0457
C60X60	Rectangular Ties	#9/Check	3/3	N/A	0.0457
C60X30	Rectangular Ties	#9/Design	3/3	N/A	0.0457
C100X60	Rectangular Ties	#9/Design	3/3	N/A	0.0457

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
ConcBm	0.0457	0.0457	0.000	0.000	0.000	0.000
V50X50	0.0500	0.0500	0.000	0.000	0.000	0.000
V20X50	0.0500	0.0500	0.000	0.000	0.000	0.000
V30X50	0.0500	0.0500	0.000	0.000	0.000	0.000
V15X40	0.0500	0.0500	0.000	0.000	0.000	0.000
V50X40	0.0400	0.0400	0.000	0.000	0.000	0.000
V30X40	0.0400	0.0400	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
WALL1	CONC	Shell-Thin	No	0.2500	0.2500	0.0000	0.0000
SLAB1	CONC	Shell-Thin	No	0.2500	0.2500	0.0000	0.0000
DECK1	CONC	Membrane	No	0.0889	0.0889	0.0000	0.0000
PLANK1	CONC	Membrane	Yes	0.2500	0.2500	0.0000	0.0000
PLACA12	CONC4000SM	Membrane	No	0.1200	0.1200	0.0000	0.0000
MURO25	CONC3000	Shell-Thin	No	0.2500	0.2500	188.6825	19.2248
PLACA15	CONC4000	Membrane	No	0.1500	0.1500	342.9780	34.9459
MURO30	CONC4000	Shell-Thin	No	0.3000	0.3000	0.0000	0.0000

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		

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

RESP SPEC CASE: SISMOX

BASIC RESPONSE SPECTRUM DATA

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

RESPONSE SPECTRUM FUNCTION ASSIGNMENT DATA

DIRECTION	FUNCTION	SCALE FACT
U1	ESPECTRO	9.8100
U2	----	N/A
UZ	----	N/A

RESP SPEC CASE: SISMOY

BASIC RESPONSE SPECTRUM DATA

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

RESPONSE SPECTRUM FUNCTION ASSIGNMENT DATA

DIRECTION	FUNCTION	SCALE FACT
U1	----	N/A
U2	ESPECTRO	9.8100
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
COMB1	ADD	DEAD	Static	1.2000
		LIVE	Static	1.6000
COMB2	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	1.2500
COMB3	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOY	Spectra	1.2500
COMB4	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	1.2500
COMB5	ADD	DEAD	Static	0.9000
		SISMOY	Spectra	1.2500
COMB6	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.2800
		SISMOY	Spectra	0.0700
COMB7	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.2800
		SISMOY	Spectra	-0.0700
COMB8	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.0800
		SISMOY	Spectra	0.2500
COMB9	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.0800
		SISMOY	Spectra	-0.2500
COMB10	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.2800
		SISMOY	Spectra	0.0700
COMB11	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.2800
		SISMOY	Spectra	-0.0700
COMB12	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.0800
		SISMOY	Spectra	0.2500
COMB13	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.0800
		SISMOY	Spectra	-0.2500
COMB14	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.5600
		SISMOY	Spectra	0.1500
COMB15	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.5600
		SISMOY	Spectra	-0.1500
COMB16	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.1700
		SISMOY	Spectra	0.4900
COMB17	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.1700
		SISMOY	Spectra	-0.4900
COMB18	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.5600
		SISMOY	Spectra	0.1500
COMB19	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.5600
		SISMOY	Spectra	-0.1500
COMB20	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.1700
		SISMOY	Spectra	0.4900
COMB21	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.1700
		SISMOY	Spectra	-0.4900
COMB22	ADD	DEAD	Static	1.3600
		LIVE	Static	1.0000
		SISMOX	Spectra	0.8400
		SISMOY	Spectra	0.2200
COMB23	ADD	DEAD	Static	1.3600
		LIVE	Static	1.0000
		SISMOX	Spectra	0.8400
		SISMOY	Spectra	-0.2200
COMB24	ADD	DEAD	Static	1.3600
		LIVE	Static	1.0000
		SISMOX	Spectra	0.2500
		SISMOY	Spectra	0.7400
COMB25	ADD	DEAD	Static	1.3600
		LIVE	Static	1.0000
		SISMOX	Spectra	0.2500
		SISMOY	Spectra	-0.7400
COMB26	ADD	DEAD	Static	0.7400
		SISMOX	Spectra	0.8400
		SISMOY	Spectra	0.2200
COMB27	ADD	DEAD	Static	0.7400
		SISMOX	Spectra	0.8400
		SISMOY	Spectra	-0.2200
COMB28	ADD	DEAD	Static	0.7400
		SISMOX	Spectra	0.2500
		SISMOY	Spectra	0.7400
COMB29	ADD	DEAD	Static	0.7400
		SISMOX	Spectra	0.2500
		SISMOY	Spectra	-0.7400
ENVOLVENTE	ENVE	COMB1	Combo	1.0000
		COMB6	Combo	1.0000
		COMB7	Combo	1.0000
		COMB8	Combo	1.0000
		COMB9	Combo	1.0000
		COMB10	Combo	1.0000
		COMB11	Combo	1.0000
		COMB12	Combo	1.0000
		COMB13	Combo	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 - U S E R

FUNCTION NAME: ESPECTRO

PERIOD	ACCEL
0.0000	1.2190
0.0500	1.2190
0.1000	1.2190
0.1500	1.2190
0.2000	1.2190
0.2500	1.2190
0.3000	1.2190
0.3500	1.2190
0.4000	1.2190
0.4500	1.2190
0.5000	1.2190
0.5500	1.2190
0.6000	1.2000
0.6500	1.1080
0.7000	1.0290
0.7500	0.9600

0.8000	0.9000
0.8500	0.8470
0.9000	0.8000
0.9500	0.7580
1.0000	0.7200
1.0500	0.6860
1.1000	0.6550
1.1500	0.6260
1.2000	0.6000
1.2500	0.5760
1.3000	0.5540
1.3500	0.5330
1.4000	0.5140
1.4500	0.4970
1.5000	0.4800
1.5500	0.4650
1.6000	0.4500
1.6500	0.4360
1.7000	0.4240
1.7500	0.4110
1.8000	0.4000
1.8500	0.3890
1.9000	0.3790
1.9500	0.3690
2.0000	0.3600
2.1000	0.3430
2.2000	0.3270
2.3000	0.3130
2.4000	0.3000
2.5000	0.2880
2.6000	0.2770
2.7000	0.2670
2.8000	0.2570
2.9000	0.2480
3.0000	0.2400
3.1000	0.2320
3.2000	0.2250
3.3000	0.2180
3.4000	0.2120
3.5000	0.2060
3.6000	0.2000
3.7000	0.1950
3.8000	0.1890
3.9000	0.1850
4.0000	0.1800
4.1000	0.1760
4.2000	0.1710
4.3000	0.1670
4.4000	0.1640
4.5000	0.1600
4.6000	0.1570
4.7000	0.1530
4.8000	0.1500
4.9000	0.1440
5.0000	0.1380
5.1000	0.1330
5.2000	0.1280
5.3000	0.1230
5.4000	0.1190
5.5000	0.1140
5.6000	0.1100
5.7000	0.1060
5.8000	0.1030
5.9000	0.0990
6.0000	0.0960
6.1000	0.0930
6.2000	0.0900
6.3000	0.0870
6.4000	0.0840
6.5000	0.0820
6.6000	0.0790
6.7000	0.0770
6.8000	0.0750
6.9000	0.0730
7.0000	0.0710
7.1000	0.0690
7.2000	0.0670
7.3000	0.0650
7.4000	0.0630
7.5000	0.0610
7.6000	0.0600

R I G I D D I A P H R A G M A S S I G N M E N T S T O P O I N T O B J E C T S

STORY	DIAPHRAGM	POINT	POINT	POINT	POINT	POINT
PISO2	D2	310	311	312	313	314
PISO2	D2	315	316	317	318	319
PISO2	D2	320	321	322	323	324
PISO2	D2	325	326	327	328	330
PISO2	D2	331	332	333	334	335
PISO2	D2	337	338	339	340	341
PISO2	D2	342	343	345	346	347
PISO2	D2	348	349	350	351	352
PISO2	D2	353	354	355	356	359
PISO2	D2	362	364	366	367	368
PISO2	D2	369	370	371	372	373
PISO2	D2	374	375	376	377	378
PISO2	D2	379	380	381	382	383
PISO2	D2	384	385	386	387	388
PISO2	D2	389	390	391	392	393
PISO2	D2	394	395	396	397	398
PISO2	D2	399	400	401	402	403
PISO2	D2	404	405	406	407	408
PISO2	D2	409	410	411	412	413
PISO2	D2	414	415	416	418	421
PISO2	D2	422	423	424	1	2
PISO2	D2	3	4	5	6	7
PISO2	D2	8	9	10	11	12
PISO2	D2	13	14	15	16	17
PISO2	D2	18	19	20	21	22
PISO2	D2	23	24	25	26	27
PISO2	D2	28	29	30	31	32
PISO2	D2	33	34	35	36	37
PISO2	D2	38	39	40	41	42
PISO2	D2	43	44	45	46	47
PISO2	D2	49	51	52	53	54
PISO2	D2	55	57	59	61	62
PISO2	D2	63	64	65	66	67
PISO2	D2	68	69	70	71	72
PISO2	D2	73	74	75	76	77
PISO2	D2	78	79	80	81	82
PISO2	D2	83	84	85	86	87
PISO2	D2	91	92	93	94	95
PISO2	D2	101	102	106	107	114
PISO2	D2	115	116	117	118	119
PISO2	D2	120	425	426	427	428
PISO2	D2	429	430	431	432	433
PISO2	D2	434	435	436	437	438
PISO2	D2	439	440	441	442	443
PISO2	D2	444	445	446	447	448
PISO2	D2	449	450	451	452	453
PISO2	D2	454	455	456	457	458
PISO2	D2	459	460	461	462	463
PISO2	D2	464	465	466	467	468
PISO2	D2	471	472	473	474	475
PISO2	D2	476	477	478	479	480
PISO2	D2	481	482	483	484	485
PISO2	D2	486	487	488	872	873
PISO2	D2	874	871	870	869	828
PISO2	D2	827	1025	1026	1027	1028
PISO2	D2	1029	1030	877	876	875
PISO2	D2	880	1031	1032	1033	1034
PISO2	D2	1035	1036	1037	1074	
PISO1	D1	1	2	3	4	5
PISO1	D1	6	7	8	9	10
PISO1	D1	11	12	13	14	15
PISO1	D1	16	17	18	19	20
PISO1	D1	21	22	23	25	26
PISO1	D1	27	28	30	31	32
PISO1	D1	33	35	36	38	39
PISO1	D1	40	41	42	43	44
PISO1	D1	45	46	47	48	49
PISO1	D1	50	51	52	53	54
PISO1	D1	55	57	59	61	62
PISO1	D1	63	64	65	66	67
PISO1	D1	68	69	70	71	72
PISO1	D1	73	74	75	76	77
PISO1	D1	78	79	80	81	82
PISO1	D1	83	84	85	86	87
PISO1	D1	91	92	93	94	95
PISO1	D1	99	100	101	102	106
PISO1	D1	107	114	115	116	117
PISO1	D1	118	119	120	820	827
PISO1	D1	828	821	869	870	871
PISO1	D1	872	873	874	1073	

P O I N T M A S S A S S I G N M E N T S

STORY	POINT	MASSX	MASSY	MASSZ	MMIXX	MMIYY	MMIZZ
CUB	3	0.7100	0.7100	0.0000	0.0000	0.0000	0.0000
CUB	4	0.7100	0.7100	0.0000	0.0000	0.0000	0.0000
CUB	7	1.1700	1.1700	0.0000	0.0000	0.0000	0.0000
CUB	8	1.1700	1.1700	0.0000	0.0000	0.0000	0.0000
CUB	11	0.5900	0.5900	0.0000	0.0000	0.0000	0.0000
CUB	12	1.1700	1.1700	0.0000	0.0000	0.0000	0.0000
CUB	13	1.1700	1.1700	0.0000	0.0000	0.0000	0.0000
CUB	14	1.1700	1.1700	0.0000	0.0000	0.0000	0.0000
CUB	15	1.1700	1.1700	0.0000	0.0000	0.0000	0.0000
CUB	16	0.9800	0.9800	0.0000	0.0000	0.0000	0.0000
CUB	17	0.5900	0.5900	0.0000	0.0000	0.0000	0.0000
CUB	18	0.7300	0.7300	0.0000	0.0000	0.0000	0.0000
CUB	20	1.1700	1.1700	0.0000	0.0000	0.0000	0.0000
CUB	21	1.1700	1.1700	0.0000	0.0000	0.0000	0.0000
CUB	22	0.9800	0.9800	0.0000	0.0000	0.0000	0.0000
CUB	23	0.9800	0.9800	0.0000	0.0000	0.0000	0.0000
CUB	24	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	25	1.1700	1.1700	0.0000	0.0000	0.0000	0.0000
CUB	26	1.1700	1.1700	0.0000	0.0000	0.0000	0.0000
CUB	27	0.9800	0.9800	0.0000	0.0000	0.0000	0.0000
CUB	28	0.9800	0.9800	0.0000	0.0000	0.0000	0.0000
CUB	29	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	30	0.7100	0.7100	0.0000	0.0000	0.0000	0.0000
CUB	31	0.7100	0.7100	0.0000	0.0000	0.0000	0.0000
CUB	32	0.9800	0.9800	0.0000	0.0000	0.0000	0.0000
CUB	33	0.9800	0.9800	0.0000	0.0000	0.0000	0.0000
CUB	34	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	35	0.5900	0.5900	0.0000	0.0000	0.0000	0.0000
CUB	36	0.9800	0.9800	0.0000	0.0000	0.0000	0.0000
CUB	37	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	38	0.5900	0.5900	0.0000	0.0000	0.0000	0.0000
CUB	39	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	40	0.7300	0.7300	0.0000	0.0000	0.0000	0.0000
CUB	311	0.7300	0.7300	0.0000	0.0000	0.0000	0.0000
CUB	312	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	313	0.7300	0.7300	0.0000	0.0000	0.0000	0.0000
CUB	315	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	316	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	317	0.7300	0.7300	0.0000	0.0000	0.0000	0.0000
CUB	319	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	320	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	321	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	322	0.7300	0.7300	0.0000	0.0000	0.0000	0.0000
CUB	324	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	325	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	326	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	327	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	328	0.7300	0.7300	0.0000	0.0000	0.0000	0.0000
CUB	330	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	331	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	332	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	333	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	334	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	335	0.7300	0.7300	0.0000	0.0000	0.0000	0.0000
CUB	337	0.7300	0.7300	0.0000	0.0000	0.0000	0.0000

CUB	338	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	339	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	340	0.7300	0.7300	0.0000	0.0000	0.0000	0.0000
CUB	341	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	342	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	343	0.7300	0.7300	0.0000	0.0000	0.0000	0.0000
CUB	345	0.7300	0.7300	0.0000	0.0000	0.0000	0.0000
CUB	346	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	348	0.7300	0.7300	0.0000	0.0000	0.0000	0.0000
CUB	349	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	350	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	351	0.7300	0.7300	0.0000	0.0000	0.0000	0.0000
CUB	353	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	354	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	355	0.7300	0.7300	0.0000	0.0000	0.0000	0.0000
CUB	356	1.2000	1.2000	0.0000	0.0000	0.0000	0.0000
CUB	359	0.7300	0.7300	0.0000	0.0000	0.0000	0.0000
PISO2	354	0.5200	0.5200	0.0000	0.0000	0.0000	0.0000
PISO2	356	0.5400	0.5400	0.0000	0.0000	0.0000	0.0000
PISO2	357	0.4800	0.4800	0.0000	0.0000	0.0000	0.0000
PISO2	358	0.5000	0.5000	0.0000	0.0000	0.0000	0.0000
PISO2	359	0.2900	0.2900	0.0000	0.0000	0.0000	0.0000
PISO2	360	0.2700	0.2700	0.0000	0.0000	0.0000	0.0000
PISO2	417	0.2400	0.2400	0.0000	0.0000	0.0000	0.0000
PISO2	418	0.2600	0.2600	0.0000	0.0000	0.0000	0.0000
PISO2	1074	194.5900	194.5900	0.0000	0.0000	0.0000	0.0000
PISO1	1073	92.4400	92.4400	0.0000	0.0000	0.0000	0.0000

FRAME SECTION ASSIGNMENTS TO LINE OBJECTS

STORY LEVEL	LINE ID	LINE TYPE	SECTION TYPE	AUTO SELECT SECTION	ANALYSIS SECTION	DESIGN PROCEDURE	DESIGN SECTION
CUB	C1	Column	Rectangular	None	C100X60	Conc Frame	C100X60
CUB	C2	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C3	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C4	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C5	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C6	Column	Rectangular	None	C100X60	Conc Frame	C100X60
CUB	C7	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C8	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C9	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C10	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C11	Column	Rectangular	None	C100X60	Conc Frame	C100X60
CUB	C12	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C13	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C14	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C15	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C16	Column	Rectangular	None	C100X60	Conc Frame	C100X60
CUB	C17	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C18	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C19	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C20	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C21	Column	Rectangular	None	C100X60	Conc Frame	C100X60
CUB	C22	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C23	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C24	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C25	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C26	Column	Rectangular	None	C100X60	Conc Frame	C100X60
CUB	C27	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C28	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C29	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C30	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C31	Column	Rectangular	None	C100X60	Conc Frame	C100X60
CUB	C32	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C33	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C34	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C35	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C36	Column	Rectangular	None	C100X60	Conc Frame	C100X60
CUB	C37	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C38	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C39	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C40	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C41	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C42	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C43	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C44	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C45	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C46	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C47	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C48	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C49	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C50	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C51	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C52	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C53	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C54	Column	Rectangular	None	C60X60	Conc Frame	C60X60
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PISO1	B234	Beam	Rectangular	None	V20X50	Conc Frame V20X50
PISO1	B235	Beam	Rectangular	None	V20X50	Conc Frame V20X50
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PISO1	B239	Beam	Rectangular	None	V20X50	Conc Frame V20X50
PISO1	B246	Beam	Rectangular	None	V20X50	Conc Frame V20X50
PISO1	B253	Beam	Rectangular	None	V20X50	Conc Frame V20X50
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PISO1	B1689	Beam	Rectangular	None	V50X50	Conc Frame V50X50
PISO1	B1690	Beam	Rectangular	None	V50X50	Conc Frame V50X50
PISO1	B1691	Beam	Rectangular	None	V50X50	Conc Frame V50X50
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PISO1	B1693	Beam	Rectangular	None	V50X50	Conc Frame V50X50
PISO1	B1694	Beam	Rectangular	None	V50X50	Conc Frame V50X50
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PISO1	B1696	Beam	Rectangular	None	V50X50	Conc Frame V50X50
PISO1	B1697	Beam	Rectangular	None	V50X50	Conc Frame V50X50
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PISO1	B1699	Beam	Rectangular	None	V50X50	Conc Frame V50X50
PISO1	B1700	Beam	Rectangular	None	V50X50	Conc Frame V50X50
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PISO1	B1702	Beam	Rectangular	None	V50X50	Conc Frame V50X50
PISO1	B1703	Beam	Rectangular	None	V50X50	Conc Frame V50X50
PISO1	B1704	Beam	Rectangular	None	V50X50	Conc Frame V50X50
PISO1	B1705	Beam	Rectangular	None	V50X50	Conc Frame V50X50
PISO1	B1706	Beam	Rectangular	None	V50X50	Conc Frame V50X50
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PISO1	B1708	Beam	Rectangular	None	V50X50	Conc Frame V50X50
PISO1	B1721	Beam	Rectangular	None	V50X50	Conc Frame V50X50
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PISO1	B1728	Beam	Rectangular	None	V50X50	Conc Frame V50X50
PISO1	B1729	Beam	Rectangular	None	V20X50	Conc Frame V20X50
PISO1	B1730	Beam	Rectangular	None	V20X50	Conc Frame V20X50
PISO1	B1731	Beam	Rectangular	None	V20X50	Conc Frame V20X50
PISO1	B1763	Beam	Rectangular	None	V50X50	Conc Frame V50X50
PISO1	B1764	Beam	Rectangular	None	V50X50	Conc Frame V50X50
PISO1	B1765	Beam	Rectangular	None	V50X50	Conc Frame V50X50

RELEASE ASSIGNMENTS TO LINE OBJECTS

STORY LEVEL	LINE ID	LINE TYPE	P	V2	V3	T	M2	M3	
PISO2	C89	Column	None	None	None	None	None	None	J-end
CUB	B733	Beam	None	None	None	None	None	None	Both ends
CUB	B734	Beam	None	None	None	None	None	None	Both ends
CUB	B735	Beam	None	None	None	None	None	None	Both ends
CUB	B736	Beam	None	None	None	None	None	None	Both ends
CUB	B748	Beam	None	None	None	None	None	None	Both ends
CUB	B750	Beam	None	None	None	None	None	None	Both ends
CUB	B771	Beam	None	None	None	None	None	None	Both ends
CUB	B772	Beam	None	None	None	None	None	None	Both ends
CUB	B821	Beam	None	None	None	None	None	None	Both ends
CUB	B822	Beam	None	None	None	None	None	None	Both ends
CUB	B823	Beam	None	None	None	None	None	None	Both ends
CUB	B824	Beam	None	None	None	None	None	None	Both ends
CUB	B882	Beam	None	None	None	None	None	None	Both ends
CUB	B883	Beam	None	None	None	None	None	None	Both ends
CUB	B886	Beam	None	None	None	None	None	None	Both ends
CUB	B887	Beam	None	None	None	None	None	None	Both ends
CUB	B888	Beam	None	None	None	None	None	None	Both ends
CUB	B928	Beam	None	None	None	None	None	None	Both ends
CUB	B929	Beam	None	None	None	None	None	None	Both ends
CUB	B935	Beam	None	None	None	None	None	None	J-end
CUB	B936	Beam	None	None	None	None	None	None	I-end
CUB	B956	Beam	None	None	None	None	None	None	Both ends
CUB	B957	Beam	None	None	None	None	None	None	Both ends
CUB	B978	Beam	None	None	None	None	None	None	Both ends
CUB	B980	Beam	None	None	None	None	None	None	Both ends
CUB	B982	Beam	None	None	None	None	None	None	Both ends
CUB	B983	Beam	None	None	None	None	None	None	Both ends
CUB	B984	Beam	None	None	None	None	None	None	Both ends
CUB	B990	Beam	None	None	None	None	None	None	Both ends
CUB	B991	Beam	None	None	None	None	None	None	Both ends
CUB	B992	Beam	None	None	None	None	None	None	Both ends
CUB	B995	Beam	None	None	None	None	None	None	Both ends
CUB	B997	Beam	None	None	None	None	None	None	Both ends
CUB	B1012	Beam	None	None	None	None	None	None	Both ends
CUB	B1013	Beam	None	None	None	None	None	None	Both ends
CUB	B1016	Beam	None	None	None	None	None	None	Both ends
CUB	B1017	Beam	None	None	None	None	None	None	Both ends
CUB	B1018	Beam	None	None	None	None	None	None	Both ends
CUB	B1020	Beam	None	None	None	None	None	None	Both ends
CUB	B1021	Beam	None	None	None	None	None	None	Both ends
CUB	B1022	Beam	None	None	None	None	None	None	Both ends
CUB	B1211	Beam	None	None	None	None	None	None	J-end
CUB	B1226	Beam	None	None	None	None	None	None	Both ends
CUB	B1227	Beam	None	None	None	None	None	None	Both ends
CUB	B1229	Beam	None	None	None	None	None	None	Both ends
CUB	B1235	Beam	None	None	None	None	None	None	J-end
CUB	B1236	Beam	None	None	None	None	None	None	I-end
CUB	B1243	Beam	None	None	None	None	None	None	Both ends
CUB	B1244	Beam	None	None	None	None	None	None	Both ends
CUB	B1259	Beam	None	None	None	None	None	None	J-end
CUB	B1260	Beam	None	None	None	None	None	None	I-end
CUB	B1278	Beam	None	None	None	None	None	None	Both ends
CUB	B1299	Beam	None	None	None	None	None	None	Both ends
CUB	B1300	Beam	None	None	None	None	None	None	Both ends
CUB	B1301	Beam	None	None	None	None	None	None	Both ends
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CUB	B1307	Beam	None	None	None	None	None	None	Both ends
CUB	B1308	Beam	None	None	None	None	None	None	Both ends
CUB	B1309	Beam	None	None	None	None	None	None	Both ends
CUB	B1310	Beam	None	None	None	None	None	None	I-end
CUB	B1311	Beam	None	None	None	None	None	None	J-end
CUB	B1312	Beam	None	None	None	None	None	None	Both ends
CUB	B1313	Beam	None	None	None	None	None	None	Both ends
CUB	B1314	Beam	None	None	None	None	None	None	Both ends
CUB	B1315	Beam	None	None	None	None	None	None	Both ends
CUB	B1316	Beam	None	None	None	None	None	None	I-end
CUB	B1497	Beam	None	None	None	None	None	None	I-end
CUB	B1498	Beam	None	None	None	None	None	None	J-end
CUB	B1499	Beam	None	None	None	None	None	None	I-end
CUB	B1500	Beam	None	None	None	None	None	None	J-end
CUB	B1519	Beam	None	None	None	None	None	None	I-end
CUB	B1520	Beam	None	None	None	None	None	None	J-end
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CUB	B1522	Beam	None	None	None	None	None	None	J-end
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CUB	B1528	Beam	None	None	None	None	None	None	J-end
CUB	B1529	Beam	None	None	None	None	None	None	I-end
CUB	B1530	Beam	None	None	None	None	None	None	J-end
CUB	B1531	Beam	None	None	None	None	None	None	I-end
CUB	B1532	Beam	None	None	None	None	None	None	J-end
CUB	B1543	Beam	None	None	None	None	None	None	I-end
CUB	B1544	Beam	None	None	None	None	None	None	J-end
CUB	B1547	Beam	None	None	None	None	None	None	I-end
CUB	B1548	Beam	None	None	None	None	None	None	J-end
CUB	B1555	Beam	None	None	None	None	None	None	I-end
CUB	B1556	Beam	None	None	None	None	None	None	J-end
CUB	B1557	Beam	None	None	None	None	None	None	I-end
CUB	B1558	Beam	None	None	None	None	None	None	J-end
CUB	B1559	Beam	None	None	None	None	None	None	I-end
CUB	B1560	Beam	None	None	None	None	None	None	J-end
CUB	B1563	Beam	None	None	None	None	None	None	I-end
CUB	B1566	Beam	None	None	None	None	None	None	I-end
CUB	B1572	Beam	None	None	None	None	None	None	I-end
CUB	B1575	Beam	None	None	None	None	None	None	I-end
CUB	B1576	Beam	None	None	None	None	None	None	J-end
CUB	B1580	Beam	None	None	None	None	None	None	Both ends
CUB	B1581	Beam	None	None	None	None	None	None	I-end
CUB	B1584	Beam	None	None	None	None	None	None	I-end
CUB	B1585	Beam	None	None	None	None	None	None	J-end
CUB	B1589	Beam	None	None	None	None	None	None	Both ends
CUB	B1590	Beam	None	None	None	None	None	None	I-end
CUB	B1593	Beam	None	None	None	None	None	None	I-end
CUB	B1594	Beam	None	None	None	None	None	None	J-end
CUB	B1608	Beam	None	None	None	None	None	None	I-end
CUB	B1611	Beam	None	None	None	None	None	None	I-end
CUB	B1612	Beam	None	None	None	None	None	None	J-end

CUB	B1613	Beam	None	None	None	None	None	Both ends
CUB	B1616	Beam	None	None	None	None	None	Both ends
CUB	B1617	Beam	None	None	None	None	None	I-end
CUB	B1618	Beam	None	None	None	None	None	J-end
CUB	B1619	Beam	None	None	None	None	None	Both ends
CUB	B1621	Beam	None	None	None	None	None	J-end
CUB	B1625	Beam	None	None	None	None	None	Both ends
CUB	B1626	Beam	None	None	None	None	None	I-end
CUB	B1627	Beam	None	None	None	None	None	J-end
CUB	B1630	Beam	None	None	None	None	None	J-end
CUB	B1631	Beam	None	None	None	None	None	Both ends
CUB	B1635	Beam	None	None	None	None	None	I-end
CUB	B1636	Beam	None	None	None	None	None	J-end
CUB	B1637	Beam	None	None	None	None	None	Both ends
CUB	B1639	Beam	None	None	None	None	None	J-end
CUB	B1640	Beam	None	None	None	None	None	Both ends
CUB	B1644	Beam	None	None	None	None	None	I-end
CUB	B1645	Beam	None	None	None	None	None	J-end
CUB	B1646	Beam	None	None	None	None	None	Both ends
CUB	B1648	Beam	None	None	None	None	None	J-end
CUB	B1649	Beam	None	None	None	None	None	Both ends
CUB	B1662	Beam	None	None	None	None	None	I-end
CUB	B1663	Beam	None	None	None	None	None	J-end
CUB	B1664	Beam	None	None	None	None	None	Both ends
CUB	B1666	Beam	None	None	None	None	None	J-end
CUB	B1667	Beam	None	None	None	None	None	Both ends
CUB	B1676	Beam	None	None	None	None	None	I-end
CUB	B1687	Beam	None	None	None	None	None	Both ends
CUB	B1808	Beam	None	None	None	None	None	I-end
CUB	B1809	Beam	None	None	None	None	None	J-end
CUB	B1810	Beam	None	None	None	None	None	I-end
CUB	B1811	Beam	None	None	None	None	None	J-end
CUB	B1814	Beam	None	None	None	None	None	I-end
CUB	B1816	Beam	None	None	None	None	None	Both ends
CUB	B1818	Beam	None	None	None	None	None	Both ends
CUB	B1819	Beam	None	None	None	None	None	Both ends
CUB	B1820	Beam	None	None	None	None	None	Both ends
CUB	B1821	Beam	None	None	None	None	None	J-end
CUB	B1826	Beam	None	None	None	None	None	Both ends
CUB	B1827	Beam	None	None	None	None	None	Both ends
CUB	B1837	Beam	None	None	None	None	None	Both ends
CUB	B1838	Beam	None	None	None	None	None	Both ends
CUB	B1844	Beam	None	None	None	None	None	I-end
CUB	B1845	Beam	None	None	None	None	None	J-end
CUB	B1846	Beam	None	None	None	None	None	Both ends
CUB	B1847	Beam	None	None	None	None	None	Both ends
CUB	B1857	Beam	None	None	None	None	None	I-end
CUB	B1858	Beam	None	None	None	None	None	J-end
CUB	B1859	Beam	None	None	None	None	None	J-end
CUB	B1861	Beam	None	None	None	None	None	I-end
PISO2	B190	Beam	None	None	None	None	None	Both ends
PISO2	B191	Beam	None	None	None	None	None	Both ends
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PISO2	B213	Beam	None	None	None	None	None	Both ends
PISO2	B215	Beam	None	None	None	None	None	Both ends
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PISO2	B239	Beam	None	None	None	None	None	Both ends
PISO2	B246	Beam	None	None	None	None	None	Both ends
PISO2	B253	Beam	None	None	None	None	None	Both ends
PISO2	B561	Beam	None	None	None	None	None	Both ends
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PISO2	B577	Beam	None	None	None	None	None	Both ends
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PISO2	B731	Beam	None	None	None	None	None	Both ends
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PISO2	B735	Beam	None	None	None	None	None	Both ends
PISO2	B736	Beam	None	None	None	None	None	Both ends
PISO2	B737	Beam	None	None	None	None	None	Both ends
PISO2	B738	Beam	None	None	None	None	None	Both ends
PISO2	B739	Beam	None	None	None	None	None	Both ends
PISO2	B740	Beam	None	None	None	None	None	Both ends
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PISO2	B742	Beam	None	None	None	None	None	Both ends
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PISO2	B764	Beam	None	None	None	None	None	Both ends
PISO2	B765	Beam	None	None	None	None	None	Both ends
PISO2	B766	Beam	None	None	None	None	None	Both ends
PISO2	B767	Beam	None	None	None	None	None	Both ends
PISO2	B768	Beam	None	None	None	None	None	Both ends
PISO2	B769	Beam	None	None	None	None	None	Both ends
PISO2	B770	Beam	None	None	None	None	None	Both ends
PISO2	B771	Beam	None	None	None	None	None	Both ends
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PISO2	B773	Beam	None	None	None	None	None	Both ends
PISO2	B774	Beam	None	None	None	None	None	Both ends
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PISO2	B776	Beam	None	None	None	None	None	Both ends
PISO2	B777	Beam	None	None	None	None	None	Both ends
PISO2	B778	Beam	None	None	None	None	None	Both ends
PISO2	B813	Beam	None	None	None	None	None	Both ends
PISO2	B814	Beam	None	None	None	None	None	Both ends
PISO2	B815	Beam	None	None	None	None	None	Both ends
PISO2	B816	Beam	None	None	None	None	None	Both ends
PISO2	B817	Beam	None	None	None	None	None	Both ends
PISO2	B818	Beam	None	None	None	None	None	Both ends
PISO2	B820	Beam	None	None	None	None	None	Both ends
PISO2	B821	Beam	None	None	None	None	None	Both ends
PISO2	B822	Beam	None	None	None	None	None	Both ends
PISO2	B823	Beam	None	None	None	None	None	Both ends
PISO2	B824	Beam	None	None	None	None	None	Both ends
PISO2	B825	Beam	None	None	None	None	None	Both ends
PISO2	B827	Beam	None	None	None	None	None	Both ends
PISO2	B828	Beam	None	None	None	None	None	Both ends
PISO2	B829	Beam	None	None	None	None	None	Both ends
PISO2	B830	Beam	None	None	None	None	None	Both ends
PISO2	B831	Beam	None	None	None	None	None	Both ends
PISO2	B832	Beam	None	None	None	None	None	Both ends
PISO2	B1709	Beam	None	I-end	None	None	None	I-end
PISO2	B1711	Beam	None	J-end	None	None	None	J-end
PISO2	B1712	Beam	None	I-end	None	None	None	I-end
PISO2	B1714	Beam	None	J-end	None	None	None	J-end
PISO2	B1716	Beam	None	J-end	None	None	None	J-end
PISO2	B1717	Beam	None	I-end	None	None	None	I-end
PISO2	B1719	Beam	None	J-end	None	None	None	J-end
PISO2	B1729	Beam	None	None	None	None	None	Both ends
PISO2	B1730	Beam	None	None	None	None	None	Both ends
PISO2	B1731	Beam	None	None	None	None	None	Both ends
PISO2	B1792	Beam	None	None	None	None	None	Both ends
PISO2	B1793	Beam	None	None	None	None	None	Both ends
PISO2	B1794	Beam	None	None	None	None	None	Both ends
PISO2	B1803	Beam	None	None	None	None	None	Both ends
PISO2	B1804	Beam	None	None	None	None	None	Both ends
PISO2	B1805	Beam	None	None	None	None	None	Both ends
PISO1	B190	Beam	None	None	None	None	None	Both ends
PISO1	B191	Beam	None	None	None	None	None	Both ends
PISO1	B192	Beam	None	None	None	None	None	Both ends
PISO1	B193	Beam	None	None	None	None	None	Both ends
PISO1	B194	Beam	None	None	None	None	None	Both ends
PISO1	B195	Beam	None	None	None	None	None	Both ends
PISO1	B196	Beam	None	None	None	None	None	Both ends
PISO1	B197	Beam	None	None	None	None	None	Both ends
PISO1	B198	Beam	None	None	None	None	None	Both ends
PISO1	B199	Beam	None	None	None	None	None	Both ends
PISO1	B200	Beam	None	None	None	None	None	Both ends
PISO1	B201	Beam	None	None	None	None	None	Both ends
PISO1	B202	Beam	None	None	None	None	None	Both ends
PISO1	B203	Beam	None	None	None	None	None	Both ends
PISO1	B204	Beam	None	None	None	None	None	Both ends
PISO1	B205	Beam	None	None	None	None	None	Both ends
PISO1	B206	Beam	None	None	None	None	None	Both ends
PISO1	B207	Beam	None	None	None	None	None	Both ends
PISO1	B208	Beam	None	None	None	None	None	Both ends
PISO1	B209	Beam	None	None	None	None	None	Both ends
PISO1	B210	Beam	None	None	None	None	None	Both ends
PISO1	B211	Beam	None	None	None	None	None	Both ends
PISO1	B212	Beam	None	None	None	None	None	Both ends
PISO1	B213	Beam	None	None	None	None	None	Both ends
PISO1	B214	Beam	None	None	None	None	None	Both ends
PISO1	B215	Beam	None	None	None	None	None	Both ends
PISO1	B216	Beam	None	None	None	None	None	Both ends
PISO1	B217	Beam	None	None	None	None	None	Both ends
PISO1	B218	Beam	None	None	None	None	None	Both ends
PISO1	B219	Beam	None	None	None	None	None	Both ends
PISO1	B220	Beam	None	None	None	None	None	Both ends
PISO1	B221	Beam	None	None	None	None	None	Both ends
PISO1	B222	Beam	None	None	None	None	None	Both ends
PISO1	B223	Beam	None	None	None	None	None	Both ends
PISO1	B224	Beam	None	None	None	None	None	Both ends

PISO1	B225	Beam	None	None	None	None	None	Both ends
PISO1	B226	Beam	None	None	None	None	None	Both ends
PISO1	B227	Beam	None	None	None	None	None	Both ends
PISO1	B228	Beam	None	None	None	None	None	Both ends
PISO1	B229	Beam	None	None	None	None	None	Both ends
PISO1	B230	Beam	None	None	None	None	None	Both ends
PISO1	B231	Beam	None	None	None	None	None	Both ends
PISO1	B232	Beam	None	None	None	None	None	Both ends
PISO1	B233	Beam	None	None	None	None	None	Both ends
PISO1	B234	Beam	None	None	None	None	None	Both ends
PISO1	B235	Beam	None	None	None	None	None	Both ends
PISO1	B236	Beam	None	None	None	None	None	Both ends
PISO1	B237	Beam	None	None	None	None	None	Both ends
PISO1	B238	Beam	None	None	None	None	None	Both ends
PISO1	B239	Beam	None	None	None	None	None	Both ends
PISO1	B246	Beam	None	None	None	None	None	Both ends
PISO1	B253	Beam	None	None	None	None	None	Both ends
PISO1	B1688	Beam	None	I-end	None	None	None	I-end
PISO1	B1690	Beam	None	J-end	None	None	None	J-end
PISO1	B1691	Beam	None	I-end	None	None	None	I-end
PISO1	B1693	Beam	None	J-end	None	None	None	J-end
PISO1	B1694	Beam	None	I-end	None	None	None	I-end
PISO1	B1696	Beam	None	J-end	None	None	None	J-end
PISO1	B1697	Beam	None	I-end	None	None	None	I-end
PISO1	B1699	Beam	None	J-end	None	None	None	J-end
PISO1	B1700	Beam	None	I-end	None	None	None	I-end
PISO1	B1702	Beam	None	J-end	None	None	None	J-end
PISO1	B1703	Beam	None	I-end	None	None	None	I-end
PISO1	B1705	Beam	None	J-end	None	None	None	J-end
PISO1	B1706	Beam	None	I-end	None	None	None	I-end
PISO1	B1708	Beam	None	J-end	None	None	None	J-end
PISO1	B1729	Beam	None	None	None	None	None	Both ends
PISO1	B1730	Beam	None	None	None	None	None	Both ends
PISO1	B1731	Beam	None	None	None	None	None	Both ends

WALL, SLAB, DECK & OPENING ASSIGNMENTS TO AREA OBJECTS

STORY LEVEL	AREA ID	AREA TYPE	SECTION TYPE	SECTION LABEL
PISO2	W5	Wall	Wall	MURO25
PISO2	W20	Wall	Wall	MURO25
PISO2	W21	Wall	Wall	MURO25
PISO2	W22	Wall	Wall	MURO25
PISO2	W23	Wall	Wall	MURO25
PISO1	W13	Wall	Wall	MURO25
PISO1	W14	Wall	Wall	MURO25
PISO1	W15	Wall	Wall	MURO25
PISO1	W16	Wall	Wall	MURO25
PISO1	W17	Wall	Wall	MURO25
PISO1	W18	Wall	Wall	MURO25
PISO1	W19	Wall	Wall	MURO25
CUB	F206	Floor	Slab	PLACA15
CUB	F207	Floor	Slab	PLACA15
CUB	F208	Floor	Slab	PLACA15
CUB	F209	Floor	Slab	PLACA15
CUB	F210	Floor	Slab	PLACA15
CUB	F212	Floor	Slab	PLACA15
CUB	F213	Floor	Slab	PLACA15
CUB	F214	Floor	Slab	PLACA15
CUB	F215	Floor	Slab	PLACA15
CUB	F216	Floor	Slab	PLACA15
CUB	F219	Floor	Slab	PLACA15
CUB	F220	Floor	Slab	PLACA15
CUB	F221	Floor	Slab	PLACA15
CUB	F223	Floor	Slab	PLACA15
CUB	F224	Floor	Slab	PLACA15
CUB	F225	Floor	Slab	PLACA15
CUB	F226	Floor	Slab	PLACA15
CUB	F227	Floor	Slab	PLACA15
CUB	F228	Floor	Slab	PLACA15
CUB	F229	Floor	Slab	PLACA15
CUB	F232	Floor	Slab	PLACA15
CUB	F233	Floor	Slab	PLACA15
CUB	F242	Floor	Slab	PLACA15
CUB	F243	Floor	Slab	PLACA15
CUB	F246	Floor	Slab	PLACA15
CUB	F247	Floor	Slab	PLACA15
CUB	F248	Floor	Slab	PLACA15
CUB	F249	Floor	Slab	PLACA15
CUB	F250	Floor	Slab	PLACA15
CUB	F251	Floor	Slab	PLACA15
CUB	F256	Floor	Slab	PLACA15
CUB	F257	Floor	Slab	PLACA15
CUB	F261	Floor	Slab	PLACA15
CUB	F262	Floor	Slab	PLACA15
CUB	F263	Floor	Slab	PLACA15
CUB	F264	Floor	Slab	PLACA15
CUB	F265	Floor	Slab	PLACA15
CUB	F267	Floor	Slab	PLACA15
CUB	F268	Floor	Slab	PLACA15
CUB	F269	Floor	Slab	PLACA15
CUB	F270	Floor	Slab	PLACA15
CUB	F271	Floor	Slab	PLACA15
CUB	F272	Floor	Slab	PLACA15
CUB	F273	Floor	Slab	PLACA15
CUB	F274	Floor	Slab	PLACA15
CUB	F275	Floor	Slab	PLACA15
CUB	F276	Floor	Slab	PLACA15
CUB	F277	Floor	Slab	PLACA15
CUB	F278	Floor	Slab	PLACA15
CUB	F279	Floor	Slab	PLACA15
CUB	F280	Floor	Slab	PLACA15
CUB	F299	Floor	Slab	PLACA15
CUB	F320	Floor	Slab	PLACA15
CUB	F321	Floor	Slab	PLACA15
CUB	F324	Floor	Slab	PLACA15
CUB	F325	Floor	Slab	PLACA15
CUB	F326	Floor	Slab	PLACA15
CUB	F328	Floor	Slab	PLACA15
CUB	F329	Floor	Slab	PLACA15
CUB	F331	Floor	Slab	PLACA15
CUB	F332	Floor	Slab	PLACA15
CUB	F333	Floor	Slab	PLACA15
CUB	F334	Floor	Slab	PLACA15
CUB	F335	Floor	Slab	PLACA15
CUB	F336	Floor	Slab	PLACA15
CUB	F337	Floor	Slab	PLACA15
CUB	F338	Floor	Slab	PLACA15
CUB	F339	Floor	Slab	PLACA15
CUB	F340	Floor	Slab	PLACA15
CUB	F342	Floor	Slab	PLACA15
CUB	F343	Floor	Slab	PLACA15
CUB	F344	Floor	Slab	PLACA15
CUB	F345	Floor	Slab	PLACA15
PISO2	F1	Floor	Slab	PLACA12
PISO2	F2	Floor	Slab	PLACA12
PISO2	F3	Floor	Slab	PLACA12
PISO2	F4	Floor	Slab	PLACA12
PISO2	F8	Floor	Slab	PLACA12
PISO2	F9	Floor	Slab	PLACA12
PISO2	F10	Floor	Slab	PLACA12
PISO2	F11	Floor	Slab	PLACA12
PISO2	F12	Floor	Slab	PLACA12
PISO2	F13	Floor	Slab	PLACA12
PISO2	F19	Floor	Slab	PLACA12
PISO2	F20	Floor	Slab	PLACA12
PISO2	F21	Floor	Slab	PLACA12
PISO2	F22	Floor	Slab	PLACA12
PISO2	F23	Floor	Slab	PLACA12
PISO2	F24	Floor	Slab	PLACA12
PISO2	F25	Floor	Slab	PLACA12
PISO2	F26	Floor	Slab	PLACA12
PISO2	F27	Floor	Slab	PLACA12
PISO2	F28	Floor	Slab	PLACA12
PISO2	F29	Floor	Slab	PLACA12
PISO2	F30	Floor	Slab	PLACA12
PISO2	F31	Floor	Slab	PLACA12
PISO2	F32	Floor	Slab	PLACA12
PISO2	F33	Floor	Slab	PLACA12
PISO2	F34	Floor	Slab	PLACA12
PISO2	F38	Floor	Slab	PLACA12
PISO2	F39	Floor	Slab	PLACA12
PISO2	F40	Floor	Slab	PLACA12
PISO2	F41	Floor	Slab	PLACA12
PISO2	F42	Floor	Slab	PLACA12
PISO2	F43	Floor	Slab	PLACA12
PISO2	F44	Floor	Slab	PLACA12
PISO2	F45	Floor	Slab	PLACA12
PISO2	F46	Floor	Slab	PLACA12
PISO2	F47	Floor	Slab	PLACA12
PISO2	F48	Floor	Slab	PLACA12
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PISO2	F54	Floor	Slab	PLACA12
PISO2	F58	Floor	Slab	PLACA12
PISO2	F59	Floor	Slab	PLACA12
PISO2	F60	Floor	Slab	PLACA12
PISO2	F61	Floor	Slab	PLACA12
PISO2	F62	Floor	Slab	PLACA12
PISO2	F63	Floor	Slab	PLACA12
PISO2	F64	Floor	Slab	PLACA12
PISO2	F65	Floor	Slab	PLACA12
PISO2	F66	Floor	Slab	PLACA12
PISO2	F67	Floor	Slab	PLACA12
PISO2	F68	Floor	Slab	PLACA12
PISO2	F69	Floor	Slab	PLACA12
PISO2	F70	Floor	Slab	PLACA12
PISO2	F71	Floor	Slab	PLACA12
PISO2	F72	Floor	Slab	PLACA12
PISO2	F73	Floor	Slab	PLACA12
PISO2	F75	Floor	Slab	PLACA12
PISO2	F76	Floor	Slab	PLACA12
PISO2	F77	Floor	Slab	PLACA12
PISO2	F78	Floor	Slab	PLACA12
PISO2	F79	Floor	Slab	PLACA12
PISO2	F80	Floor	Slab	PLACA12
PISO2	F81	Floor	Slab	PLACA12
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PISO2	F91	Floor	Slab	PLACA12
PISO2	F92	Floor	Slab	PLACA12
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PISO2	F94	Floor	Slab	PLACA12
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PISO2	F98	Floor	Slab	PLACA12
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PISO2	F100	Floor	Slab	PLACA12
PISO2	F102	Floor	Slab	PLACA12
PISO2	F103	Floor	Slab	PLACA12
PISO2	F104	Floor	Slab	PLACA12
PISO2	F105	Floor	Slab	PLACA12
PISO2	F106	Floor	Slab	PLACA12
PISO2	F107	Floor	Slab	PLACA12
PISO2	F108	Floor	Slab	PLACA12
PISO2	F109	Floor	Slab	PLACA12
PISO2	F110	Floor	Slab	PLACA12
PISO2	F111	Floor	Slab	PLACA12
PISO2	F112	Floor	Slab	PLACA12
PISO2	F113	Floor	Slab	PLACA12
PISO2	F114	Floor	Slab	PLACA12
PISO2	F115	Floor	Slab	PLACA12
PISO2	F116	Floor	Slab	PLACA12
PISO2	F117	Floor	Slab	PLACA12
PISO2	F118	Floor	Slab	PLACA12
PISO2	F119	Floor	Slab	PLACA12

PISO2	F120	Floor	Slab	PLACA12
PISO2	F121	Floor	Slab	PLACA12
PISO2	F122	Floor	Slab	PLACA12
PISO2	F123	Floor	Slab	PLACA12
PISO2	F124	Floor	Slab	PLACA12
PISO2	F125	Floor	Slab	PLACA12
PISO2	F126	Floor	Slab	PLACA12
PISO2	F127	Floor	Slab	PLACA12
PISO2	F128	Floor	Slab	PLACA12
PISO2	F134	Floor	Slab	PLACA12
PISO2	F135	Floor	Slab	PLACA12
PISO2	F136	Floor	Slab	PLACA12
PISO2	F137	Floor	Slab	PLACA12
PISO2	F138	Floor	Slab	PLACA12
PISO2	F139	Floor	Slab	PLACA12
PISO2	F141	Floor	Slab	PLACA12
PISO2	F142	Floor	Slab	PLACA12
PISO2	F143	Floor	Slab	PLACA12
PISO2	F144	Floor	Slab	PLACA12
PISO2	F145	Floor	Slab	PLACA12
PISO2	F146	Floor	Slab	PLACA12
PISO2	F147	Floor	Slab	PLACA12
PISO2	F148	Floor	Slab	PLACA12
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PISO2	F153	Floor	Slab	PLACA12
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PISO2	F160	Floor	Slab	PLACA12
PISO2	F161	Floor	Slab	PLACA12
PISO2	F162	Floor	Slab	PLACA12
PISO2	F163	Floor	Slab	PLACA12
PISO2	F166	Floor	Slab	PLACA12
PISO2	F167	Floor	Slab	PLACA12
PISO2	F168	Floor	Slab	PLACA12
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PISO2	F172	Floor	Slab	PLACA12
PISO2	F173	Floor	Slab	PLACA12
PISO2	F174	Floor	Slab	PLACA12
PISO2	F175	Floor	Slab	PLACA12
PISO2	F176	Floor	Slab	PLACA12
PISO2	F179	Floor	Slab	PLACA12
PISO2	F180	Floor	Slab	PLACA12
PISO2	F181	Floor	Slab	PLACA12
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PISO2	F191	Floor	Slab	PLACA12
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PISO2	F200	Floor	Slab	PLACA12
PISO2	F282	Floor	Slab	PLACA12
PISO2	F283	Floor	Slab	PLACA12
PISO2	F284	Floor	Slab	PLACA12
PISO2	F285	Floor	Slab	PLACA12
PISO2	F300	Floor	Slab	PLACA15
PISO2	F301	Floor	Slab	PLACA15
PISO2	F302	Floor	Slab	PLACA15
PISO2	F303	Floor	Slab	PLACA15
PISO2	F304	Floor	Slab	PLACA12
PISO2	F305	Floor	Slab	PLACA12
PISO2	F306	Floor	Slab	PLACA15
PISO2	F307	Floor	Slab	PLACA12
PISO2	F308	Floor	Slab	PLACA12
PISO2	F309	Floor	Slab	PLACA12
PISO2	F310	Floor	Slab	PLACA12
PISO2	F311	Floor	Slab	PLACA12
PISO2	F312	Floor	Slab	PLACA12
PISO2	F313	Floor	Slab	PLACA12
PISO2	F314	Floor	Slab	PLACA12
PISO2	F315	Floor	Slab	PLACA12
PISO2	F316	Floor	Slab	PLACA12
PISO2	F317	Floor	Slab	PLACA12
PISO2	F318	Floor	Slab	PLACA12
PISO2	F319	Floor	Slab	PLACA12
PISO1	F1	Floor	Slab	PLACA12
PISO1	F2	Floor	Slab	PLACA12
PISO1	F3	Floor	Slab	PLACA12
PISO1	F4	Floor	Slab	PLACA12
PISO1	F5	Floor	Slab	PLACA12
PISO1	F6	Floor	Slab	PLACA12
PISO1	F7	Floor	Slab	PLACA12
PISO1	F8	Floor	Slab	PLACA12
PISO1	F9	Floor	Slab	PLACA12
PISO1	F10	Floor	Slab	PLACA12
PISO1	F11	Floor	Slab	PLACA12
PISO1	F12	Floor	Slab	PLACA12
PISO1	F13	Floor	Slab	PLACA12
PISO1	F14	Floor	Slab	PLACA12
PISO1	F15	Floor	Slab	PLACA12
PISO1	F16	Floor	Slab	PLACA12
PISO1	F17	Floor	Slab	PLACA12
PISO1	F18	Floor	Slab	PLACA12
PISO1	F19	Floor	Slab	PLACA12
PISO1	F20	Floor	Slab	PLACA12
PISO1	F21	Floor	Slab	PLACA12
PISO1	F22	Floor	Slab	PLACA12
PISO1	F23	Floor	Slab	PLACA12
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PISO1	F25	Floor	Slab	PLACA12
PISO1	F26	Floor	Slab	PLACA12
PISO1	F27	Floor	Slab	PLACA12
PISO1	F28	Floor	Slab	PLACA12
PISO1	F29	Floor	Slab	PLACA12
PISO1	F30	Floor	Slab	PLACA12
PISO1	F31	Floor	Slab	PLACA12
PISO1	F32	Floor	Slab	PLACA12
PISO1	F33	Floor	Slab	PLACA12
PISO1	F34	Floor	Slab	PLACA12
PISO1	F35	Floor	Slab	PLACA12
PISO1	F36	Floor	Slab	PLACA12
PISO1	F37	Floor	Slab	PLACA12
PISO1	F38	Floor	Slab	PLACA12
PISO1	F39	Floor	Slab	PLACA12
PISO1	F40	Floor	Slab	PLACA12
PISO1	F41	Floor	Slab	PLACA12
PISO1	F42	Floor	Slab	PLACA12
PISO1	F43	Floor	Slab	PLACA12
PISO1	F44	Floor	Slab	PLACA12
PISO1	F45	Floor	Slab	PLACA12
PISO1	F46	Floor	Slab	PLACA12
PISO1	F47	Floor	Slab	PLACA12
PISO1	F48	Floor	Slab	PLACA12
PISO1	F49	Floor	Slab	PLACA12
PISO1	F50	Floor	Slab	PLACA12
PISO1	F51	Floor	Slab	PLACA12
PISO1	F52	Floor	Slab	PLACA12
PISO1	F53	Floor	Slab	PLACA12
PISO1	F54	Floor	Slab	PLACA12
PISO1	F55	Floor	Slab	PLACA12
PISO1	F56	Floor	Slab	PLACA12
PISO1	F57	Floor	Slab	PLACA12
PISO1	F58	Floor	Slab	PLACA12
PISO1	F59	Floor	Slab	PLACA12
PISO1	F60	Floor	Slab	PLACA12
PISO1	F61	Floor	Slab	PLACA12
PISO1	F62	Floor	Slab	PLACA12
PISO1	F63	Floor	Slab	PLACA12
PISO1	F64	Floor	Slab	PLACA12
PISO1	F65	Floor	Slab	PLACA12
PISO1	F66	Floor	Slab	PLACA12
PISO1	F67	Floor	Slab	PLACA12
PISO1	F68	Floor	Slab	PLACA12
PISO1	F69	Floor	Slab	PLACA12
PISO1	F70	Floor	Slab	PLACA12
PISO1	F71	Floor	Slab	PLACA12
PISO1	F72	Floor	Slab	PLACA12
PISO1	F73	Floor	Slab	PLACA12
PISO1	F281	Floor	Slab	PLACA12
PISO1	F282	Floor	Slab	PLACA12
PISO1	F283	Floor	Slab	PLACA12
PISO1	F284	Floor	Slab	PLACA12
PISO1	F285	Floor	Slab	PLACA12

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

CASE	STORY	AREA	AREATYPE	DIRECTION	LOAD
DEAD	CUB	F206	Floor	Gravity	0.2950
DEAD	CUB	F207	Floor	Gravity	0.2950
DEAD	CUB	F208	Floor	Gravity	0.2950
DEAD	CUB	F209	Floor	Gravity	0.2950
DEAD	CUB	F210	Floor	Gravity	0.2950
DEAD	CUB	F212	Floor	Gravity	0.2950
DEAD	CUB	F213	Floor	Gravity	0.2950
DEAD	CUB	F214	Floor	Gravity	0.2950
DEAD	CUB	F215	Floor	Gravity	0.2950
DEAD	CUB	F216	Floor	Gravity	0.2950
DEAD	CUB	F219	Floor	Gravity	0.2950
DEAD	CUB	F220	Floor	Gravity	0.2950
DEAD	CUB	F221	Floor	Gravity	0.2950
DEAD	CUB	F223	Floor	Gravity	0.2950
DEAD	CUB	F224	Floor	Gravity	0.2950
DEAD	CUB	F225	Floor	Gravity	0.2950
DEAD	CUB	F226	Floor	Gravity	0.2950
DEAD	CUB	F227	Floor	Gravity	0.2950
DEAD	CUB	F228	Floor	Gravity	0.2950
DEAD	CUB	F229	Floor	Gravity	0.2950
DEAD	CUB	F232	Floor	Gravity	0.2950
DEAD	CUB	F233	Floor	Gravity	0.2950
DEAD	CUB	F242	Floor	Gravity	0.2950
DEAD	CUB	F243	Floor	Gravity	0.2950
DEAD	CUB	F246	Floor	Gravity	0.2950
DEAD	CUB	F247	Floor	Gravity	0.2950
DEAD	CUB	F248	Floor	Gravity	0.2950
DEAD	CUB	F249	Floor	Gravity	0.2950
DEAD	CUB	F250	Floor	Gravity	0.2950
DEAD	CUB	F251	Floor	Gravity	0.2950
DEAD	CUB	F256	Floor	Gravity	0.2950
DEAD	CUB	F257	Floor	Gravity	0.2950
DEAD	CUB	F261	Floor	Gravity	0.2950
DEAD	CUB	F262	Floor	Gravity	0.2950
DEAD	CUB	F263	Floor	Gravity	0.2950
DEAD	CUB	F264	Floor	Gravity	0.2950
DEAD	CUB	F265	Floor	Gravity	0.2950
DEAD	CUB	F267	Floor	Gravity	0.2950
DEAD	CUB	F268	Floor	Gravity	0.2950
DEAD	CUB	F269	Floor	Gravity	0.2950
DEAD	CUB	F270	Floor	Gravity	0.2950
DEAD	CUB	F271	Floor	Gravity	0.2950
DEAD	CUB	F272	Floor	Gravity	0.2950
DEAD	CUB	F273	Floor	Gravity	0.3350
DEAD	CUB	F274	Floor	Gravity	0.3350
DEAD	CUB	F275	Floor	Gravity	0.3350
DEAD	CUB	F276	Floor	Gravity	0.3350
DEAD	CUB	F277	Floor	Gravity	0.3350
DEAD	CUB	F278	Floor	Gravity	0.3350
DEAD	CUB	F279	Floor	Gravity	0.3350
DEAD	CUB	F280	Floor	Gravity	0.3350
DEAD	CUB	F299	Floor	Gravity	0.2950

DEAD	CUB	F320	Floor	Gravity	0.3120
DEAD	CUB	F321	Floor	Gravity	0.3120
DEAD	CUB	F324	Floor	Gravity	0.3210
DEAD	CUB	F325	Floor	Gravity	0.3210
DEAD	CUB	F326	Floor	Gravity	0.3210
DEAD	CUB	F328	Floor	Gravity	0.2950
DEAD	CUB	F329	Floor	Gravity	0.2950
DEAD	CUB	F331	Floor	Gravity	0.2950
DEAD	CUB	F332	Floor	Gravity	0.2950
DEAD	CUB	F333	Floor	Gravity	0.2950
DEAD	CUB	F334	Floor	Gravity	0.2950
DEAD	CUB	F335	Floor	Gravity	0.2950
DEAD	CUB	F336	Floor	Gravity	0.2950
DEAD	CUB	F337	Floor	Gravity	0.2950
DEAD	CUB	F338	Floor	Gravity	0.2950
DEAD	CUB	F339	Floor	Gravity	0.2950
DEAD	CUB	F340	Floor	Gravity	0.2950
DEAD	CUB	F342	Floor	Gravity	0.2950
DEAD	CUB	F343	Floor	Gravity	0.2950
DEAD	CUB	F344	Floor	Gravity	0.2950
DEAD	CUB	F345	Floor	Gravity	0.3300
DEAD	PISO2	F1	Floor	Gravity	0.6970
DEAD	PISO2	F2	Floor	Gravity	0.6970
DEAD	PISO2	F3	Floor	Gravity	0.6970
DEAD	PISO2	F4	Floor	Gravity	0.6970
DEAD	PISO2	F8	Floor	Gravity	0.6970
DEAD	PISO2	F9	Floor	Gravity	0.6970
DEAD	PISO2	F10	Floor	Gravity	0.6970
DEAD	PISO2	F11	Floor	Gravity	0.6970
DEAD	PISO2	F12	Floor	Gravity	0.6970
DEAD	PISO2	F13	Floor	Gravity	0.6970
DEAD	PISO2	F19	Floor	Gravity	0.6970
DEAD	PISO2	F20	Floor	Gravity	0.6970
DEAD	PISO2	F21	Floor	Gravity	0.6970
DEAD	PISO2	F22	Floor	Gravity	0.6970
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DEAD	PISO2	F26	Floor	Gravity	0.6970
DEAD	PISO2	F27	Floor	Gravity	0.6970
DEAD	PISO2	F28	Floor	Gravity	0.6970
DEAD	PISO2	F29	Floor	Gravity	0.6970
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DEAD	PISO2	F31	Floor	Gravity	0.6970
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DEAD	PISO2	F34	Floor	Gravity	0.6970
DEAD	PISO2	F38	Floor	Gravity	0.6970
DEAD	PISO2	F39	Floor	Gravity	0.6970
DEAD	PISO2	F40	Floor	Gravity	0.6970
DEAD	PISO2	F41	Floor	Gravity	0.6970
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DEAD	PISO2	F43	Floor	Gravity	0.6970
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DEAD	PISO2	F47	Floor	Gravity	0.6970
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DEAD	PISO2	F49	Floor	Gravity	0.6970
DEAD	PISO2	F50	Floor	Gravity	0.6970
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DEAD	PISO2	F60	Floor	Gravity	0.6970
DEAD	PISO2	F61	Floor	Gravity	0.6970
DEAD	PISO2	F62	Floor	Gravity	0.6970
DEAD	PISO2	F63	Floor	Gravity	0.6970
DEAD	PISO2	F64	Floor	Gravity	0.6970
DEAD	PISO2	F65	Floor	Gravity	0.6970
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DEAD	PISO2	F67	Floor	Gravity	0.6970
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DEAD	PISO2	F69	Floor	Gravity	0.6970
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DEAD	PISO2	F71	Floor	Gravity	0.6970
DEAD	PISO2	F72	Floor	Gravity	0.6970
DEAD	PISO2	F73	Floor	Gravity	0.6970
DEAD	PISO2	F75	Floor	Gravity	0.6970
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DEAD	PISO2	F78	Floor	Gravity	0.6970
DEAD	PISO2	F79	Floor	Gravity	0.6970
DEAD	PISO2	F80	Floor	Gravity	0.6970
DEAD	PISO2	F81	Floor	Gravity	0.6970
DEAD	PISO2	F82	Floor	Gravity	0.6970
DEAD	PISO2	F83	Floor	Gravity	0.6970
DEAD	PISO2	F84	Floor	Gravity	0.6970
DEAD	PISO2	F85	Floor	Gravity	0.6970
DEAD	PISO2	F86	Floor	Gravity	0.6970
DEAD	PISO2	F87	Floor	Gravity	0.6970
DEAD	PISO2	F88	Floor	Gravity	0.6970
DEAD	PISO2	F89	Floor	Gravity	0.6970
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DEAD	PISO2	F91	Floor	Gravity	0.6970
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DEAD	PISO2	F93	Floor	Gravity	0.6970
DEAD	PISO2	F94	Floor	Gravity	0.6970
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DEAD	PISO2	F96	Floor	Gravity	0.6970
DEAD	PISO2	F97	Floor	Gravity	0.6970
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DEAD	PISO2	F108	Floor	Gravity	0.6970
DEAD	PISO2	F109	Floor	Gravity	0.6970
DEAD	PISO2	F110	Floor	Gravity	0.6970
DEAD	PISO2	F111	Floor	Gravity	0.6970
DEAD	PISO2	F112	Floor	Gravity	0.6970
DEAD	PISO2	F113	Floor	Gravity	0.6970
DEAD	PISO2	F114	Floor	Gravity	0.6970
DEAD	PISO2	F115	Floor	Gravity	0.6970
DEAD	PISO2	F116	Floor	Gravity	0.6970
DEAD	PISO2	F117	Floor	Gravity	0.6970
DEAD	PISO2	F118	Floor	Gravity	0.6970
DEAD	PISO2	F119	Floor	Gravity	0.6970
DEAD	PISO2	F120	Floor	Gravity	0.6970
DEAD	PISO2	F121	Floor	Gravity	0.6970
DEAD	PISO2	F122	Floor	Gravity	0.6970
DEAD	PISO2	F123	Floor	Gravity	0.6970
DEAD	PISO2	F124	Floor	Gravity	0.6970
DEAD	PISO2	F125	Floor	Gravity	0.6970
DEAD	PISO2	F126	Floor	Gravity	0.6970
DEAD	PISO2	F127	Floor	Gravity	0.6970
DEAD	PISO2	F128	Floor	Gravity	0.6970
DEAD	PISO2	F134	Floor	Gravity	0.6970
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DEAD	PISO2	F137	Floor	Gravity	0.6970
DEAD	PISO2	F138	Floor	Gravity	0.6970
DEAD	PISO2	F139	Floor	Gravity	0.6970
DEAD	PISO2	F141	Floor	Gravity	0.6970
DEAD	PISO2	F142	Floor	Gravity	0.6970
DEAD	PISO2	F143	Floor	Gravity	0.6970
DEAD	PISO2	F144	Floor	Gravity	0.6970
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DEAD	PISO2	F162	Floor	Gravity	0.6970
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DEAD	PISO2	F166	Floor	Gravity	0.6970
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DEAD	PISO2	F182	Floor	Gravity	0.6970
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DEAD	PISO2	F306	Floor	Gravity	0.2950
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DEAD	PISO1	F8	Floor	Gravity	0.8870
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DEAD	PISO1	F10	Floor	Gravity	0.8870
DEAD	PISO1	F11	Floor	Gravity	0.8870
DEAD	PISO1	F12	Floor	Gravity	0.8870
DEAD	PISO1	F13	Floor	Gravity	0.8870

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DEAD	PISO1	F52	Floor	Gravity	0.8870
DEAD	PISO1	F53	Floor	Gravity	0.8870
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DEAD	PISO1	F55	Floor	Gravity	0.8870
DEAD	PISO1	F56	Floor	Gravity	0.8870
DEAD	PISO1	F57	Floor	Gravity	0.8870
DEAD	PISO1	F58	Floor	Gravity	0.8870
DEAD	PISO1	F59	Floor	Gravity	0.8870
DEAD	PISO1	F60	Floor	Gravity	0.8870
DEAD	PISO1	F61	Floor	Gravity	0.8870
DEAD	PISO1	F62	Floor	Gravity	0.8870
DEAD	PISO1	F63	Floor	Gravity	0.8870
DEAD	PISO1	F64	Floor	Gravity	0.8870
DEAD	PISO1	F65	Floor	Gravity	0.8870
DEAD	PISO1	F66	Floor	Gravity	0.8870
DEAD	PISO1	F67	Floor	Gravity	0.8870
DEAD	PISO1	F68	Floor	Gravity	0.8870
DEAD	PISO1	F69	Floor	Gravity	0.8870
DEAD	PISO1	F70	Floor	Gravity	0.8870
DEAD	PISO1	F71	Floor	Gravity	0.8870
DEAD	PISO1	F72	Floor	Gravity	0.8870
DEAD	PISO1	F73	Floor	Gravity	0.8870
DEAD	PISO1	F281	Floor	Gravity	0.8870
DEAD	PISO1	F282	Floor	Gravity	0.8870
DEAD	PISO1	F283	Floor	Gravity	0.8870
DEAD	PISO1	F284	Floor	Gravity	0.8870
DEAD	PISO1	F285	Floor	Gravity	0.8870
LIVE	CUB	F206	Floor	Gravity	0.1800
LIVE	CUB	F207	Floor	Gravity	0.1800
LIVE	CUB	F208	Floor	Gravity	0.1800
LIVE	CUB	F209	Floor	Gravity	0.1800
LIVE	CUB	F210	Floor	Gravity	0.1800
LIVE	CUB	F212	Floor	Gravity	0.1800
LIVE	CUB	F213	Floor	Gravity	0.1800
LIVE	CUB	F214	Floor	Gravity	0.1800
LIVE	CUB	F215	Floor	Gravity	0.1800
LIVE	CUB	F216	Floor	Gravity	0.1800
LIVE	CUB	F219	Floor	Gravity	0.1800
LIVE	CUB	F220	Floor	Gravity	0.1800
LIVE	CUB	F221	Floor	Gravity	0.1800
LIVE	CUB	F223	Floor	Gravity	0.1800
LIVE	CUB	F224	Floor	Gravity	0.1800
LIVE	CUB	F225	Floor	Gravity	0.1800
LIVE	CUB	F226	Floor	Gravity	0.1800
LIVE	CUB	F227	Floor	Gravity	0.1800
LIVE	CUB	F228	Floor	Gravity	0.1800
LIVE	CUB	F229	Floor	Gravity	0.1800
LIVE	CUB	F232	Floor	Gravity	0.1800
LIVE	CUB	F233	Floor	Gravity	0.1800
LIVE	CUB	F242	Floor	Gravity	0.1800
LIVE	CUB	F243	Floor	Gravity	0.1800
LIVE	CUB	F246	Floor	Gravity	0.1800
LIVE	CUB	F247	Floor	Gravity	0.1800
LIVE	CUB	F248	Floor	Gravity	0.1800
LIVE	CUB	F249	Floor	Gravity	0.1800
LIVE	CUB	F250	Floor	Gravity	0.1800
LIVE	CUB	F251	Floor	Gravity	0.1800
LIVE	CUB	F256	Floor	Gravity	0.1800
LIVE	CUB	F257	Floor	Gravity	0.1800
LIVE	CUB	F261	Floor	Gravity	0.1800
LIVE	CUB	F262	Floor	Gravity	0.1800
LIVE	CUB	F263	Floor	Gravity	0.1800
LIVE	CUB	F264	Floor	Gravity	0.1800
LIVE	CUB	F265	Floor	Gravity	0.1800
LIVE	CUB	F267	Floor	Gravity	0.1800
LIVE	CUB	F268	Floor	Gravity	0.1800
LIVE	CUB	F269	Floor	Gravity	0.1800
LIVE	CUB	F270	Floor	Gravity	0.1800
LIVE	CUB	F271	Floor	Gravity	0.1800
LIVE	CUB	F272	Floor	Gravity	0.1800
LIVE	CUB	F273	Floor	Gravity	0.1800
LIVE	CUB	F274	Floor	Gravity	0.1800
LIVE	CUB	F275	Floor	Gravity	0.3000
LIVE	CUB	F276	Floor	Gravity	0.1800
LIVE	CUB	F277	Floor	Gravity	0.1800
LIVE	CUB	F278	Floor	Gravity	0.1800
LIVE	CUB	F279	Floor	Gravity	0.3000
LIVE	CUB	F280	Floor	Gravity	0.1800
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LIVE	CUB	F329	Floor	Gravity	0.1800
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LIVE	CUB	F334	Floor	Gravity	0.1800
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LIVE	CUB	F336	Floor	Gravity	0.1800
LIVE	CUB	F337	Floor	Gravity	0.1800
LIVE	CUB	F338	Floor	Gravity	0.1800
LIVE	CUB	F339	Floor	Gravity	0.1800
LIVE	CUB	F340	Floor	Gravity	0.1800
LIVE	CUB	F342	Floor	Gravity	0.1800
LIVE	CUB	F343	Floor	Gravity	0.1800
LIVE	CUB	F344	Floor	Gravity	0.1800
LIVE	CUB	F345	Floor	Gravity	0.3000
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LIVE	PISO1	F11	Floor	Gravity	0.5000
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LIVE	PISO1	F13	Floor	Gravity	0.5000
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LIVE	PISO1	F29	Floor	Gravity	0.5000
LIVE	PISO1	F30	Floor	Gravity	0.5000
LIVE	PISO1	F31	Floor	Gravity	0.5000
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LIVE	PISO1	F33	Floor	Gravity	0.5000
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LIVE	PISO1	F37	Floor	Gravity	0.5000
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LIVE	PISO1	F39	Floor	Gravity	0.5000
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LIVE	PISO1	F45	Floor	Gravity	0.5000
LIVE	PISO1	F46	Floor	Gravity	0.5000
LIVE	PISO1	F47	Floor	Gravity	0.5000
LIVE	PISO1	F48	Floor	Gravity	0.5000
LIVE	PISO1	F49	Floor	Gravity	0.5000
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LIVE	PISO1	F53	Floor	Gravity	0.5000
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LIVE	PISO1	F66	Floor	Gravity	0.5000
LIVE	PISO1	F67	Floor	Gravity	0.5000
LIVE	PISO1	F68	Floor	Gravity	0.5000
LIVE	PISO1	F69	Floor	Gravity	0.5000
LIVE	PISO1	F70	Floor	Gravity	0.5000
LIVE	PISO1	F71	Floor	Gravity	0.5000
LIVE	PISO1	F72	Floor	Gravity	0.5000
LIVE	PISO1	F73	Floor	Gravity	0.5000
LIVE	PISO1	F281	Floor	Gravity	0.5000
LIVE	PISO1	F282	Floor	Gravity	0.5000
LIVE	PISO1	F283	Floor	Gravity	0.5000
LIVE	PISO1	F284	Floor	Gravity	0.5000
LIVE	PISO1	F285	Floor	Gravity	0.5000

BLOQUE 3

ANÁLISIS SÍSMICO

DESCRIPCION GENERAL DEL PROYECTO ESTRUCTURAL

DATOS GENERALES:

NOMBRE DEL PROYECTO:	**HOSPITAL SAN JUAN BAUTISTA (BLOQUE 3)**
CIUDAD:	**CHAPARRAL**
CALCULO:	**D.O.R**
REVISO:	**D.O.R**
FECHA:	**30/11/2020**
OBSERVACIONES:	
LOCALIZACION:	**CHAPARRAL TOLIMA**
SISTEMA ESTRUCTURAL:	**Pórticos de concreto**
CAPACIDAD DE DISIPACION:	**DES**
NUMERO DE PISOS	**2**

DESCRIPCION DEL PROYECTO:

El proyecto arquitectónico consta de 2 niveles, el cual estara destinado para uso del Hospital San Juan Bautista del municipio de Chaparral Tolima.

El sistema estructural utilizado para resistir cargas verticales y laterales (sísmicas), es el de pórticos de concreto reforzado, con placa de entrepiso de 50 cm de espesor aligerada y armada en una dirección, cuyo uso esta definido en las Normas Colombianas de construcciones sismoresistentes- NSR-10.

La cimentación consiste en zapatas aisladas, según recomendación del estudio de suelos de la firma Laboratorio de suelos y pavimentos GAIA

DESCRIPCION DEL PROGRAMA DE COMPUTADOR:

El programa utilizado para el procesamiento del edificio es ETABS Versión 9.2 desarrollado por la compañía Computers and structures inc con amplio recorrido de más de 40 años en el desarrollo de software de análisis estructural. Este programa utiliza el método matricial para la solución de la estructura y el modelo utilizado es tridimensional con diafragma rígido. El análisis sísmico desarrollado es el método modal elástico. Los muros fueron modelados mediante los elementos tipo Shell y las placas mediante los elementos tipo membrane para que estas no tomen rigidez a las cargas horizontales. Las vigas y columnas fueron modelados mediante el elemento tipo frame.

PARAMETROS SISMICOS:

Metodo de Analisis sísmico			
Método utilizado:	**2**	ANALISIS MODAL DINAMICO	
Ubicación de la estructura		=	**CHAPARRAL**
Grupo de uso		=	IV
PARAMETROS DE LA NSR-10			
Zona de Amenaza Sísmica		=	Alta
Coef. de aceleracion pico efectiva, Aa		=	**0.25**
Coef. de velocidad pico efectiva, Av		=	**0.20**
Perfil del Suelo		=	**D**
Coeficiente Fa		=	1.30
Coeficiente Fv		=	2.00
Grupo de uso		=	**IV**
Coeficiente de importancia		=	1.5
UMBRAL DE DAÑO			
Coeficiente de aceleración pico (Ad)		=	**0.06**
Coeficiente de sitio para umbral de daño		=	2.5

ESPECIFICACIONES :

Concreto f'c	**280 kgf/cm2**	→	4000 psi	**VIGAS**
	280 kgf/cm2	→	4000 psi	**COLUMNAS**
	280 kgf/cm2	→	4000 psi	**CIMENTACION**
Acero fy	**4200 kgf/cm2**	→	60000 psi	ϕ >= 3/8"
	2400 kgf/cm2	→	34286 psi	ϕ < 3/8"

NORMAS :

Se siguieron las recomendaciones dadas por el reglamento Colombianos de Construcción Sismo Resistente NSR-10 (Ley 400 de 1997 (Modificada Ley 1229 de 2008). Decreto 926 de 2010) y sus decretos complementarios.

CALCULO DE ALTURAS Y NIVELES DE LA ESTRUCTURA

NIVEL		H libre	h Placa	Alt. Total piso	NIVEL
PISO	CUB	3.80	0.40	4.20	4.43
PISO	2	4.05	0.50	4.55	0.23
NIVEL DE ARRANQUE		-4.33			



CALCULO DE DENSIDADES

MATERIALES

Vigas

γ Concreto=	2.4	TN/m^3

Columnas

γ Concreto=	2.4	TN/m^3

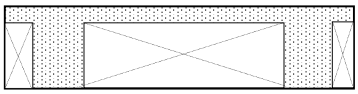
NIVEL		Vol. Vigas m³	Vol. Columnas m³	Area Placa m²	*r Vigas* TN/m²	*r Columnas* TN/m²
PISO	CUB	9.84	8.97	105.7	0.223	0.184
PISO	2	9.54	31.35	105.7	0.217	0.633

CALCULO DE PESO DE MUROS DIVISORIOS

PISO	Area de Muros m2	γ Mamposteria Tn/m3	Altura libre m	Peso muros Tn	Area placa m2	Densidad muros Tn/m2	Densidad muros adoptada
PISOCUB	0.8	1.60	3.8	5	105.7	0.043	0.050
PISO2	1.5	1.60	4.1	10	105.7	0.092	0.100

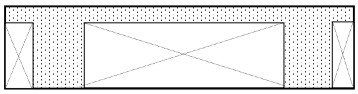
AVALUO DE CARGA DE PLACA

CORTE TIPICO DE CUBIERTA



Placa Aligerada con Torta Superior

CORTE TIPICO DE PLACA



Placa Aligerada con Torta Superior

DATOS GENERALES		
γ Concreto	2.4	Tn/m3
γ Mortero acabados	2.0	Tn/m3
Pendiente Cubierta	0.0	°
Pendiente Cubierta	0.00	
CV cub inclinada	0.050	Tn/m2
Cgranizo	0.100	Tn/m2

CONVENCIONES	
CM:	Carga Muerta
CV:	Carga Viva
CT:	Carga Real Total aplicada a la placa (CM+CV)
CU:	Carga Ultima para diseño de Viguetas (1.2CM+1.6CV)
CR:	Carga real a cimentacion ($CT+\rho_{Vigas}+\rho_{Columnas}$)
CS:	Carga de sismo ($CM+\rho_{Vigas}+\rho_{Columnas}$)

NIVEL		h(m)	Torta Sup.	Torta Inf.	e Viguetas (m)	Sep Viguetas (m)	W_{placa} Tn/m2	$W_{viguetas}$ Tn/m2	$W_{caseton}$ Tn/m2	$W_{viguetas\ metalica}$ Tn/m2	$e_{Acabados}$ (m)	$W_{acabados}$ Tn/m2	W_{muros} Tn/m2	$W_{cubierta}$ Tn/m2	$W_{estr.\ metalica}$ Tn/m2	W_{otros} Tn/m2	CM Tn/m2	CV Tn/m2	ρ_{Vigas} (tn/m2)	$\rho_{Columnas}$ (tn/m2)	$\rho_{Vigas+Columnas}$ (tn/m2)	CU Tn/m2	CR Tn/m2	Piso Restringido?	CS Tn/m2
PISO	CUB	0.40	0.15	0.00	0.00	0.00	0.36	0.00	0.00	0.00	0.05	0.100	0.050	0.000	0.000	0.000	0.510	0.180	0.223	0.184	0.408	0.000	1.098	No	0.918
PISO	2	0.50	0.12	0.00	0.20	2.10	0.288	0.08	0.00	0.00	0.05	0.100	0.100	0.000	0.000	0.000	0.567	0.500	0.217	0.633	0.850	3.406	1.917	No	1.417

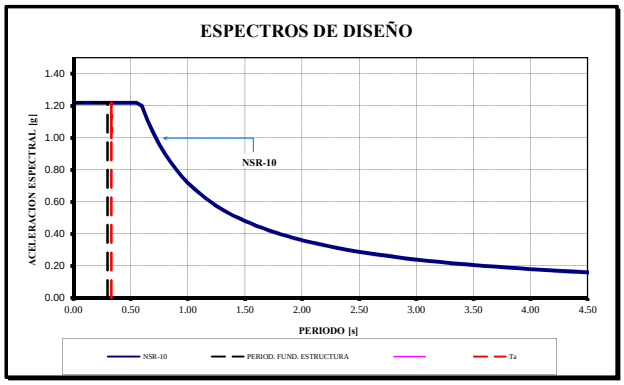
ANALISIS SISMICO DE LA ESTRUCTURA

El Análisis Sísmico del edificio se realizará por el método de ANALISIS MODAL DINAMICO

El programa de análisis estructural ETABS realiza directamente el análisis utilizando el Espectro Elástico de Diseño, el cual se elabora según parámetros del Reglamento de construccion Sismo Resistente Colombiano NSR-10 .

Los Parametros sísmicos que se tuvieron en cuenta para el analisis del edificio son los siguientes:

Parámetros del Espectro de la Norma Sismo Resistente NSR-10		
Zona de Amenaza Sísmica	=	Alta
Coef. de aceleracion pico efectiva, Aa	=	0.25
Coef. de velocidad pico efectiva, Av	=	0.20
Perfil del Suelo	=	D
Grupo de uso	=	IV
Coeficiente Fa	=	1.30
Coeficiente Fv	=	2.00
Coef. de Importancia, I	=	1.50
Coef. de amort. Crítico β	=	5.00%
Período inicial, To	=	0.12 s
Período corto, Tc	=	0.59 s
Período largo, T_L	=	4.80 s
Máx. acel. en el espectro	=	1.22 g



Para el analisis se determinó la masa que participa en el sismo proveniente del peso muerto del edificio.

CALCULO DE LA MASA DEL EDIFICIO			
PISO	Area [m²]	Carga Sismo [T/m²]	Masa [T s²/m]
PISOCUB	105.73	0.92	9.89
PISO2	105.73	1.42	15.28

Se determinó el centro de gravedad de cada piso y el centro de rigidez del mismo para determinar la torsión de diseño de acuerdo al numeral A.3.6.7, la cual corresponde a la suma de la torsión directa más la torsión accidental. La torsión directa es tenida en cuenta por el propio programa de analisis y la torsion accidental depende del metodo de analisis.

CALCULO DEL CENTROIDE DE MASAS Y TORSION EN EL PISO													
PISO	POSICION DE LA MASA RESPECTO AL CENTRO DE RIGIDEZ	CENTRO DE MASA		MAYOR LONGITUD		ex [m]	ey [m]	CENTRO DE RIGIDEZ		CENTROIDE DEFINITIVO		CENTROIDE MODIFICADO INCLUYENDO Ax	
		X [m]	Y [m]	LX [m]	LY [m]			X_R [m]	Y_R [m]	X [m]	Y [m]	X [m]	Y [m]
PISOCUB	C.R. ■ ■ C.M.	6.66	3.89	15.41	9.00	0.00	0.00	6.74	4.10	6.66	3.89	-	-
PISO2	C.R. ■ ■ C.M.	6.53	3.49	14.19	7.45	0.00	0.00	8.01	6.98	6.53	3.49	-	-

Nota: Debido a que el metodo de analisis corresponde al dinamico elastico no se tuvo en cuenta la torsion accidental segun NSR-10 A 3.6.7

CALCULO DEL PESO DEL EDIFICIO Y DETERMINACION DEL CORTANTE BASAL ESTATICO POR FUERZA HORIZONTAL EQUIVALENTE

Para el calculo de los factores de ajuste se utilizó el método de la Fuerza Horizontal Equivalente para ajustar el valor del cortante dinámico en la base (Según A.5.4.5 -- NSR - 10)

CALCULO DEL PESO DEL EDIFICIO

PISO	W (T)	ALTURA PISO (m)	h (acumulado) (m)
PISOCUB	97.02	4.20	8.75
PISO2	149.85	4.55	4.55
PESO TOTAL	**246.87 T**		

CALCULO CORTANTE ESTATICO EN LA BASE

Ct	=	0.047
α=	=	0.900
hn	=	8.75 m
Ta	=	$Ct\ hn^{\alpha}$
Ta	=	0.33 s
T	=	0.30 s
Sa	=	1.22 g
Vs	=	**300.88 Tn**

Cortante sísmico en la base (Vs = Sa×Westructura)

CALCULO CORTANTE DINAMICO EN LA BASE

Del programa se obtuvieron los siguientes valores del cortante basal dinamico

TABLA DE CORTANTES DINAMICOS

Spec	Mode	Dir	F1	F2	F3	M1	M2	M3
SISMOX	1	U1	2.5	-21.3	0.0	88.4	10.0	-151.7
SISMOX	2	U1	173.9	19.0	0.0	-84.9	744.9	-561.2
SISMOX	3	U1	0.3	-0.1	0.0	-0.2	-0.5	10.8
SISMOX	4	U1	8.4	-32.9	0.0	-12.9	-3.1	-242.0
SISMOX	5	U1	85.9	42.4	0.0	16.1	-19.5	21.4
SISMOX	6	U1	16.4	-3.6	0.0	-15.9	-15.9	-157.2
SISMOX	7	U1	0.0	0.0	0.0	0.3	-0.3	0.5
SISMOX	8	U1	2.0	0.5	0.0	5.6	-7.4	-5.1
SISMOX	9	U1	0.3	0.7	0.0	3.7	0.8	-1.0
SISMOX	10	U1	2.3	-0.1	0.0	-0.3	0.6	-21.5
SISMOX	11	U1	2.7	-0.3	0.0	0.0	0.4	-22.6
SISMOX	12	U1	18.5	-1.7	0.0	0.0	-1.1	-108.5
SISMOX	13	U1	23.3	-2.5	0.0	-0.1	1.9	-120.0
SISMOX	All	All	203.3	51.4	0.0	73.5	752.2	776.7
SISMOY	1	U2	-21.3	184.2	0.0	-765.7	-86.9	1314.8
SISMOY	2	U2	19.0	2.1	0.0	-9.3	81.4	-61.3
SISMOY	3	U2	-0.1	0.1	0.0	0.1	0.2	-4.5
SISMOY	4	U2	-32.9	128.9	0.0	50.5	12.0	946.8
SISMOY	5	U2	42.4	20.9	0.0	7.9	-9.6	10.6
SISMOY	6	U2	-3.6	0.8	0.0	3.5	3.5	34.9
SISMOY	7	U2	0.0	0.1	0.0	0.6	-0.7	1.3
SISMOY	8	U2	0.5	0.1	0.0	1.3	-1.6	-1.1
SISMOY	9	U2	0.7	1.8	0.0	10.1	2.1	-2.6
SISMOY	10	U2	-0.1	0.0	0.0	0.0	0.0	0.8
SISMOY	11	U2	-0.3	0.0	0.0	0.0	0.0	2.7
SISMOY	12	U2	-1.7	0.2	0.0	0.0	0.1	10.2
SISMOY	13	U2	-2.5	0.3	0.0	0.0	-0.2	12.7
SISMOY	All	All	51.4	229.5	0.0	773.7	70.1	1591.9

TABLA DE PERIODOS REALES DE LA ESTRUCTURA

Spec	Mode	Period	DampRatio	SpecFactc	U1	U2	U3
SISMOX	1	0.30	0.05	1.00	11.96	0.00	0.00
SISMOX	2	0.28	0.05	1.00	11.96	0.00	0.00
SISMOX	3	0.18	0.05	1.00	11.96	0.00	0.00
SISMOX	4	0.06	0.05	1.00	11.96	0.00	0.00
SISMOX	5	0.05	0.05	1.00	11.96	0.00	0.00
SISMOX	6	0.03	0.05	1.00	11.96	0.00	0.00
SISMOX	7	0.03	0.05	1.00	11.96	0.00	0.00
SISMOX	8	0.03	0.05	1.00	11.96	0.00	0.00
SISMOX	9	0.03	0.05	1.00	11.96	0.00	0.00
SISMOX	10	0.03	0.05	1.00	11.96	0.00	0.00
SISMOX	11	0.03	0.05	1.00	11.96	0.00	0.00
SISMOX	12	0.02	0.05	1.00	11.96	0.00	0.00
SISMOX	13	0.02	0.05	1.00	11.96	0.00	0.00
SISMOY	1	0.30	0.05	1.00	0.00	11.96	0.00
SISMOY	2	0.28	0.05	1.00	0.00	11.96	0.00
SISMOY	3	0.18	0.05	1.00	0.00	11.96	0.00
SISMOY	4	0.06	0.05	1.00	0.00	11.96	0.00
SISMOY	5	0.05	0.05	1.00	0.00	11.96	0.00
SISMOY	6	0.03	0.05	1.00	0.00	11.96	0.00
SISMOY	7	0.03	0.05	1.00	0.00	11.96	0.00
SISMOY	8	0.03	0.05	1.00	0.00	11.96	0.00
SISMOY	9	0.03	0.05	1.00	0.00	11.96	0.00
SISMOY	10	0.03	0.05	1.00	0.00	11.96	0.00
SISMOY	11	0.03	0.05	1.00	0.00	11.96	0.00
SISMOY	12	0.02	0.05	1.00	0.00	11.96	0.00
SISMOY	13	0.02	0.05	1.00	0.00	11.96	0.00

CORTANTE DINAMICO EN LA BASE

Cortante basal en sentido X		
F1	=	203.3 Tn
F2	=	51.4 Tn
Vsd_x	=	**203.3 Tn**

Cortante basal en sentido Y		
F1	=	51.4 Tn
F2	=	229.5 Tn
Vsd_y	=	**229.5 Tn**

AJUSTE DE LOS RESULTADOS

Utilizando la metodologia de analisis de modos y frecuencias por medio del programa se determino el periodo fundamental del edificio con el cual se realiza el ajuste del valor del cortante basal Estatico y el valor del periodo máximo (Cu*Ta) según A.5.4.5 (a)

Se comparan los cortantes en la base del análisis modal con el estático para determinar si se deben modificar las fuerzas de sismo conforme a lo establecido en A.5.4.5 (b)

Si la estructura es regular, el cortante dinámico en la base no puede ser menor que el 80 % del cortante calculado por Fuerza Horizontal Equivalente (Vs) ni menor del 90% para estructuras irregulares- (según A.5.4.5 b - NSR-10)

Item	Sentido X	Sentido Y
Periodo T (s)	0.28	0.30
Ta (s)	0.33	0.33
Cu	1.27	1.27
Periodo maximo Cu*Ta (s)	0.42	0.42
Periodo definitivo	0.28	0.30
Sa	1.22	1.22
Cortante Basal Vs (Tn)	300.9	300.9
0.90 Vs	270.8	270.8
0.80 Vs	240.7	240.7
Irregular	Si	Si
Cortante Estatico Vs (Tn)	270.8	270.8
Cortante Dinamico Vsd(Tn)	203.3	229.5
Factor de Ajuste	1.33	1.18

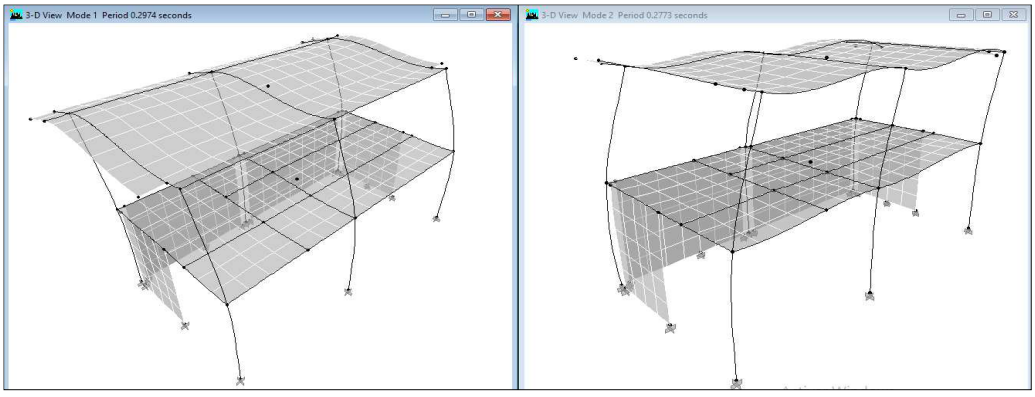
PORCENTAJE DE MASA PARTICIPATIVA

Finalmente se verifica que el número de modos utilizado sea el requerido para que la masa participativa sea mayor al 90% conforme a lo estipulado en A.5.4.2

TABLA DE MASA PARTICIPATIVA

Mode	Period	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
1	0.30	0.70	52.40	0.00	0.70	52.40	0.00	84.09	0.00	0.02	84.09	0.00	0.02
2	0.28	49.46	0.59	0.00	50.15	52.99	0.00	1.02	0.01	0.26	85.11	0.01	0.28
3	0.18	0.07	0.01	0.00	50.23	53.00	0.00	0.00	0.23	50.39	85.11	0.24	50.67
4	0.06	2.40	36.66	0.00	52.62	89.67	0.00	12.67	4.20	2.37	97.78	4.44	53.04
5	0.05	24.44	5.95	0.00	77.07	95.62	0.00	2.07	40.38	11.83	99.85	44.82	64.87
6	0.03	4.66	0.23	0.00	81.73	95.85	0.00	0.00	10.42	6.02	99.85	55.24	70.90
7	0.03	0.00	0.03	0.00	81.73	95.87	0.00	0.00	0.18	0.00	99.86	55.42	70.90
8	0.03	0.57	0.03	0.00	82.30	95.90	0.00	0.04	2.91	0.58	99.90	58.33	71.48
9	0.03	0.07	0.52	0.00	82.37	96.42	0.00	0.02	0.01	0.81	99.91	58.34	72.29
10	0.03	0.65	0.00	0.00	83.02	96.42	0.00	0.00	0.86	1.55	99.91	59.20	73.85
11	0.03	0.76	0.01	0.00	83.78	96.43	0.00	0.00	1.06	1.64	99.92	60.26	75.49
12	0.02	5.25	0.05	0.00	89.03	96.48	0.00	0.02	8.05	8.11	99.94	68.31	83.60
13	0.02	6.62	0.07	0.00	95.65	96.55	0.00	0.03	9.51	9.55	99.97	77.82	93.15

MODOS PRINCIPALES DE VIBRACION

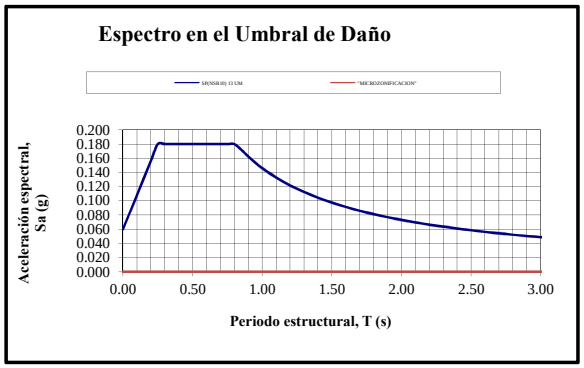


ANALISIS SIMICO PARA EL UMBRAL DE DANO (GRUPO DE USO III o IV)

Parámetros del Espectro de la Norma Sismo Resistente NSR-10		
Zona de Amenaza Sísmica	=	Alta
Coef. de acel. pico efectiva, Ad	=	0.06
Coeficiente de sitio para el umbral	=	2.5
Grupo de uso	=	IV
Coef. de Importancia, I	=	1.5
Coef. de amort. crítico	=	2.00%

CALCULO DE ACELERACION ESPECTRAL		
Ad	=	0.06
S	=	2.50
I	=	1.50
Cr	=	**0.05**
T	=	0.30 S
Tod	=	0.25 S
TCd	=	1.25 S
TLd	=	6.00 S
Sad	=	0.20
Sad	=	0.18
Sad	=	0.76
Sad	=	**0.18**
Vsd	=	**44.4 Tn**

Definitivo



CALCULO CORTANTE DINAMICO EN LA BASE

TABLA DE CORTANTES DINAMICOS

Spec	Mode	Dir	F1	F2	F3	M1	M2	M3
SISMOX	1	U1	0.36	-3.13	0.00	13.01	1.48	-22.31
SISMOX	2	U1	25.64	2.80	0.00	-12.50	109.91	-82.75
SISMOX	3	U1	0.03	-0.01	0.00	-0.03	-0.06	1.25
SISMOX	4	U1	0.60	-2.33	0.00	-0.79	-0.19	-17.14
SISMOX	5	U1	5.66	2.83	0.00	0.93	-1.01	1.67
SISMOX	6	U1	1.02	-0.22	0.00	-0.96	-0.93	-9.80
SISMOX	7	U1	0.00	0.00	0.00	0.02	-0.02	0.03
SISMOX	8	U1	0.12	0.03	0.00	0.34	-0.44	-0.31
SISMOX	9	U1	0.01	0.04	0.00	0.22	0.05	-0.06
SISMOX	10	U1	0.14	-0.01	0.00	-0.02	0.04	-1.29
SISMOX	11	U1	0.16	-0.02	0.00	0.00	0.03	-1.35
SISMOX	12	U1	1.10	-0.10	0.00	0.01	-0.01	-6.43
SISMOX	13	U1	1.29	-0.14	0.00	0.00	0.18	-6.62
SISMOX	All	All	26.48	5.13	0.00	15.76	110.29	93.76
SISMOY	1	U2	-3.13	27.14	0.00	-112.96	-12.81	193.68
SISMOY	2	U2	2.80	0.31	0.00	-1.37	12.01	-9.04
SISMOY	3	U2	-0.01	0.01	0.00	0.01	0.02	-0.53
SISMOY	4	U2	-2.33	9.06	0.00	3.08	0.73	66.56
SISMOY	5	U2	2.83	1.41	0.00	0.46	-0.50	0.83
SISMOY	6	U2	-0.22	0.05	0.00	0.21	0.20	2.15
SISMOY	7	U2	0.00	0.01	0.00	0.04	-0.04	0.08
SISMOY	8	U2	0.03	0.01	0.00	0.08	-0.10	-0.07
SISMOY	9	U2	0.04	0.11	0.00	0.60	0.13	-0.16
SISMOY	10	U2	-0.01	0.00	0.00	0.00	0.00	0.05
SISMOY	11	U2	-0.02	0.00	0.00	0.00	0.00	0.16
SISMOY	12	U2	-0.10	0.01	0.00	0.00	0.00	0.60
SISMOY	13	U2	-0.14	0.01	0.00	0.00	-0.02	0.70
SISMOY	All	All	5.13	28.74	0.00	113.34	15.30	202.94

CORTANTE DINAMICO EN LA BASE

Cortante basal en sentido X			
F1	=	26.5	Tn
F2	=	5.1	Tn
Vtx	=	26.5	Tn

Cortante basal en sentido Y			
F1	=	5.1	Tn
F2	=	28.7	Tn
Vty	=	28.7	Tn

PERIODO REAL DE LA ESTRUCTURA

Tx	=	0.28	s
Ty	=	0.30	s
Cu * Ta	=	0.42	s

AJUSTE DE LOS RESULTADOS

Irregularidad de la estructura	=	**Regular**

Si la estructura es regular, el cortante dinámico en la base no puede ser menor que el 80 % del cortante calculado por Fuerza Horizontal Equivalente (Vs) ni del 90% si es irregular - (según A.5.4.5 b - NSR-10)

RECALCULO Sa	
Ad=	0.06 g
S=	2.50
I=	1.50
Ct=	**0.05**
T=	0.30 s
Tod	0.25 s
TCd	1.25 s
TLd	6.00 s
Sad=	0.20 s
Sad=	0.18 s
Sad	0.76 s
Sad=	0.18
0.90V=	40.0 Tn
0.8V=	35.5 Tn
Vdef=	35.5Tn

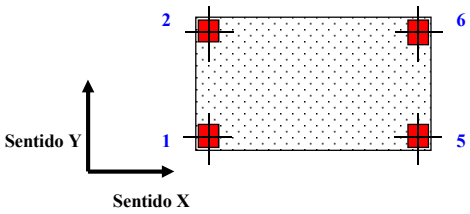
FACTORES DE AJUSTE DEFINITIVOS		
Fx=	**1.34**	**Definitivo**
Fy=	**1.24**	**Definitivo**

CHEQUEO DE LA DERIVA CON COMBINACIONES DE CARGA Y FACTORES DE AJUSTE

Se efectúa el análisis de la deriva máxima utilizando la inercia de las vigas y las columnas completa conforme a lo establecido en el capitulo A.6

CONVENCIONES	
h =	Altura Piso
δ (x,y) =	Desplazamiento por piso
Δa=	Deriva de análisis
Δp=	Deriva permitida
I_f =	Indice de flexibilidad
Δa=	$((\delta x_1-\delta x_2)^2+(\delta y_1-\delta y_2)^2)^{0.50}$
Δp =	**0.01** h
I_f =	Δa/Δp

EJES DE COLUMNAS ANALIZADAS



El metodo de combinacion modal utilizado corresponde al de la Combinacion cuadratica completa (CQC)

SISMO EN X

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
2	PISOCUB	4.20	3.01	4.20	OK	0.72	OK
	PISO2	4.55	0.19	4.55	OK	0.04	OK
6	PISOCUB	4.20	3.02	4.20	OK	0.72	OK
	PISO2	4.55	0.16	4.55	OK	0.04	OK
1	PISOCUB	4.20	2.93	4.20	OK	0.70	OK
	PISO2	4.55	0.28	4.55	OK	0.06	OK
5	PISOCUB	4.20	2.94	4.20	OK	0.70	OK
	PISO2	4.55	0.27	4.55	OK	0.06	OK

SISMO EN Y

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
2	PISOCUB	4.20	3.09	4.20	OK	0.74	OK
	PISO2	4.55	0.32	4.55	OK	0.07	OK
6	PISOCUB	4.20	3.15	4.20	OK	0.75	OK
	PISO2	4.55	0.19	4.55	OK	0.04	OK
1	PISOCUB	4.20	3.09	4.20	OK	0.73	OK
	PISO2	4.55	0.33	4.55	OK	0.07	OK
5	PISOCUB	4.20	3.15	4.20	OK	0.75	OK
	PISO2	4.55	0.21	4.55	OK	0.05	OK

CHEQUEO DE LA DERIVAS PARA EL UMBRAL DE DAÑO (GRUPO USO III o IV)

CONVENCIONES	
h =	Altura Piso
δ (x,y) =	Desplazamiento por piso
Δa=	Deriva de análisis
Δp=	Deriva permitida
I_f =	Indice de flexibilidad
Δa=	$((\delta x_1-\delta x_2)^2+(\delta y_1-\delta y_2)^2)^{0.50}$
Δp =	**0.004** h
I_f =	Δa/Δp

SISMO EN X

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
2	PISOCUB	4.20	0.45	1.68	OK	0.27	OK
	PISO2	4.55	0.02	1.82	OK	0.01	OK
6	PISOCUB	4.20	0.45	1.68	OK	0.27	OK
	PISO2	4.55	0.02	1.82	OK	0.01	OK
1	PISOCUB	4.20	0.45	1.68	OK	0.27	OK
	PISO2	4.55	0.04	1.82	OK	0.02	OK
5	PISOCUB	4.20	0.45	1.68	OK	0.27	OK
	PISO2	4.55	0.04	1.82	OK	0.02	OK

SISMO EN Y

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
2	PISOCUB	4.20	0.56	1.68	OK	0.33	OK
	PISO2	4.55	0.05	1.82	OK	0.03	OK
6	PISOCUB	4.20	0.57	1.68	OK	0.34	OK
	PISO2	4.55	0.03	1.82	OK	0.02	OK
1	PISOCUB	4.20	0.56	1.68	OK	0.33	OK
	PISO2	4.55	0.05	1.82	OK	0.03	OK
5	PISOCUB	4.20	0.57	1.68	OK	0.34	OK
	PISO2	4.55	0.03	1.82	OK	0.02	OK

REVISION DE LA IRREGULARIDAD TORSIONAL

Irregularidad Tipo 1 P:

Tipo 1aP — Irregularidad torsional $\phi_p = 0.9$

$$1.4\left(\frac{\Delta_1+\Delta_2}{2}\right) \geq \Delta_1 > 1.2\left(\frac{\Delta_1+\Delta_2}{2}\right)$$

Tipo 1bP — Irregularidad torsional extrema $\phi_p = 0.8$

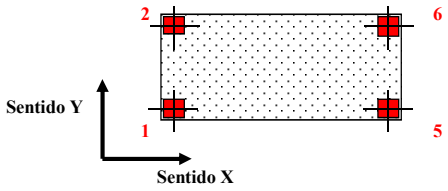
$$\Delta_1 > 1.4\left(\frac{\Delta_1+\Delta_2}{2}\right)$$

SISMO EN X

EJE DE COLUMNA		PISO	Δ1 (cm)	Δ2 (cm)	1.2*(Δ1 + Δ2)/2	1.4*(Δ1 + Δ2)/2		Ax
1	2	PISOCUB	2.93	3.01	3.56	4.16	REGULAR	
		PISO2	0.28	0.19	0.28	0.33	REGULAR	
5	6	PISOCUB	2.94	3.02	3.57	4.17	REGULAR	
		PISO2	0.27	0.16	0.26	0.30	IRREGULAR	1.08

SISMO EN Y

EJE DE COLUMNA		PISO	Δ1 (cm)	Δ2 (cm)	1.2*(Δ1 + Δ2)/2	1.4*(Δ1 + Δ2)/2		Ax
1	5	PISOCUB	3.09	3.15	3.74	4.36	REGULAR	
		PISO2	0.33	0.21	0.33	0.38	IRREGULAR	1.04
2	6	PISOCUB	3.09	3.15	3.74	4.37	REGULAR	
		PISO2	0.32	0.19	0.31	0.36	IRREGULAR	1.09



REVISION INDICE DE ESTABILIDAD DE PISO EFECTOS DE SEGUNDO ORDEN

PISO	P(Tn)	Pu(Tn)	Δox(cm)	Δoy(cm)	Vus (Tn)	lc (m)	Qx	Qy	
PISOCUB	116.1	174.1	2.97	3.12	166.9	4.20	0.0074	0.0077	Arriostrado
PISO2	202.7	304.1	0.23	0.26	300.9	4.55	0.0008	0.0009	Arriostrado

EFECTOS DE ESBELTEZ EN ELEMENTOS A COMPRESION

Piso	bmin	r	kl/r	Comentarios
PISOCUB	**0.60**	0.18	21.1	No se tienen efectos de esbeltez según C.10.10.1
PISO2	**0.60**	0.18	22.5	No se tienen efectos de esbeltez según C.10.10.1

Nota: bmin corresponde al ancho minimo de las columnas en el piso en estudio

CALCULO DE FACTOR ϕr POR AUSENCIA DE REDUNDANCIA

Story	FloorArea	Rmax	Rho	CaseType	Case	Direction	ObjectType	Object	Object2	%Vs	Chequeo
CUB	93.11	0.30	-0.10	Resp Spec	SISMOY	Y	MF Columns	C2	C3	0.55	Ok
PISO2	93.11	0.14	-2.48	Resp Spec	SISMOX	X	MF Columns	C4	C5	1.00	Ok

CHEQUEO DE IRREGULARIDADES DE LA ESTRUCTURA

1. IRREGULARIDADES EN PLANTA

TIPO DE IREGULARIDAD		ϕ_P	ϕ_{Px}	ϕ_{Py}
Irregularidad Torsional	**1aP**	0.9	0.9	0.9
Irregularidad Torsional extrema	**1bP**	0.8	1.0	1.0
Retrocesos en las Esquinas	**2P**	0.9	1.0	1.0
Irregularidad del Diafragma	**3P**	0.9	1.0	1.0
Desplazamiento de los Planos de Acción	**4P**	0.8	1.0	1.0
Sistemas no Paralelos	**5P**	0.9	1.0	1.0
ϕp Definitivo=			**0.9**	**0.9**

2. IRREGULARIDADES EN ALTURA

TIPO DE IREGULARIDAD		ϕ_a	ϕ_{ax}	ϕ_{ay}	
Piso Flexible (Irregularidad en Rigidez)	**1aA**	0.9	1.0	1.0	Ver Nota
Piso Flexible extremo(Irregularidad en Rigidez)	**1bA**	0.8	1.0	1.0	Ver Nota
Distribución de Masa	**2A**	0.9	0.9	0.9	Ver Nota
Irregularidad Geométrica	**3A**	0.9	1.0	1.0	
Desplazamiento del Plano de Acción	**4A**	0.8	1.0	1.0	
Piso Débil - Discontinuidad en la Resistencia	**5aA**	0.9	1.0	1.0	
Piso Débil extremo - Discontinuidad en la Resist.	**5bA**	0.8	1.0	1.0	
ϕa Definitivo =			**0.9**	**0.9**	

Notas:

1. No existe irregularidad 1A,2A o 3A segun NSR-10 A 3.3.5.1

3. COEFICIENTE DE CAPACIDAD DE DISIPACION DE ENERGIA EN EL RANGO INELASTICO

$R = \phi p * \phi a * \phi r * R_0$ (NSR-10 A.3.3.3)

	Sentido X	Sentido Y	
ϕ_p =	0.90	0.90	Coeficiente por irregularidad en planta
ϕ_a =	0.90	0.90	Coeficiente por irregularidad en altura
ϕ_r =	**1.00**	**0.75**	Coeficiente por ausencia de redundancia
R'o =	**7.00**	**7.00**	Pórticos de concreto DES
R =	**5.67**	**4.25**	
Ωo=	**3.00**		Coeficiente de sobreresistencia
0.5AaFa=	**0.16**		Componente vertical de sismo Segun A.3.3.9

COMBINACIONES DE CARGA

1. FACTORES DE AJUSTE

Fx	=	**1.33**
Fy	=	**1.18**

2. CHEQUEO DE DERIVAS

No. DE COMBINACION							Fx			Fy			Combinacion en el programa
1	1.20	CM	+	1.00	CV	+	1.33	SX					COMBO 2
2	1.20	CM	+	1.00	CV	-	1.33	SX					
3	1.20	CM	+	1.00	CV				+	1.18	SY		COMBO 3
4	1.20	CM	+	1.00	CV				-	1.18	SY		
5	0.90	CM				+	1.33	SX					COMBO 4
6	0.90	CM				-	1.33	SX					
7	0.90	CM							+	1.18	SY		COMBO 5
8	0.90	CM							-	1.18	SY		

Nota: Para las cargas mayores a 0.48Tn/m2 se utilizo un factor de carga de 1.0 segun B.2.4.2.2. (Ver datos de entrada)

3. DISEÑO DE ELEMENTOS DEL SISTEMA DE RESISTENCIA SISMICA

No. DE COMBINACION							Fx/R 0.3*Fx/R			0.3*Fy/R Fy/R			
1	1.40	CM											
2	1.20	CM	+	1.60	CV	+	0.50	G					COMBO 1
3	1.20	CM	+	1.00	CV	+	0.23	SX	+	0.08	SY		COMBO 6
4	1.20	CM	+	1.00	CV	+	0.23	SX	-	0.08	SY		COMBO 7
5	1.20	CM	+	1.00	CV	-	0.23	SX	+	0.08	SY		
6	1.20	CM	+	1.00	CV	-	0.23	SX	-	0.08	SY		
7	1.20	CM	+	1.00	CV	+	0.07	SX	+	0.28	SY		COMBO 8
8	1.20	CM	+	1.00	CV	+	0.07	SX	-	0.28	SY		COMBO 9
9	1.20	CM	+	1.00	CV	-	0.07	SX	+	0.28	SY		
10	1.20	CM	+	1.00	CV	-	0.07	SX	-	0.28	SY		
11	0.90	CM				+	0.23	SX	+	0.08	SY		COMBO 10
12	0.90	CM				+	0.23	SX	-	0.08	SY		COMBO 11
13	0.90	CM				-	0.23	SX	+	0.08	SY		
14	0.90	CM				-	0.23	SX	-	0.08	SY		
15	0.90	CM				+	0.07	SX	+	0.28	SY		COMBO 12
16	0.90	CM				+	0.07	SX	-	0.28	SY		COMBO 13
17	0.90	CM				-	0.07	SX	+	0.28	SY		
18	0.90	CM				-	0.07	SX	-	0.28	SY		

Nota: Para las cargas mayores a 0.48Tn/m2 se utilizo un factor de carga de 1.0 segun B.2.4.2.2. (Ver datos de entrada)

Las siguientes combinaciones fueron incluidas para que en el programa DCCAD 2010 puedan realizarse los chequeos de cortante segun C.21.3.3.1 y C.21.3.3.2

4. DISENO DE CORTANTE SISMICO EN VIGAS (Ex2)

No. DE COMBINACION						E*2 / 0.3*E*2			0.3*E*2 / E*2		
19	1.20	CM	+	1.00	CV	+	0.47	SX	+	0.17	SY	COMBO 14
20	1.20	CM	+	1.00	CV	+	0.47	SX	-	0.17	SY	COMBO 15
21	1.20	CM	+	1.00	CV	-	0.47	SX	+	0.17	SY	
22	1.20	CM	+	1.00	CV	-	0.47	SX	-	0.17	SY	
23	1.20	CM	+	1.00	CV	+	0.14	SX	+	0.55	SY	COMBO 16
24	1.20	CM	+	1.00	CV	+	0.14	SX	-	0.55	SY	COMBO 17
25	1.20	CM	+	1.00	CV	-	0.14	SX	+	0.55	SY	
26	1.20	CM	+	1.00	CV	-	0.14	SX	-	0.55	SY	
27	0.90	CM				+	0.47	SX	+	0.17	SY	COMBO 18
28	0.90	CM				+	0.47	SX	-	0.17	SY	COMBO 19
29	0.90	CM				-	0.47	SX	+	0.17	SY	
30	0.90	CM				-	0.47	SX	-	0.17	SY	
31	0.90	CM				+	0.14	SX	+	0.55	SY	COMBO 20
32	0.90	CM				+	0.14	SX	-	0.55	SY	COMBO 21
33	0.90	CM				-	0.14	SX	+	0.55	SY	
34	0.90	CM				-	0.14	SX	-	0.55	SY	

5. DISENO DE CORTANTE SISMICO EN COLUMNAS (ExΩ)

No. DE COMBINACION						E*Ω / 0.3*E*Ω			0.3*E*Ω / E*Ω		
35	1.36	CM	+	1.00	CV	+	0.70	SX	+	0.25	SY	COMBO 22
36	1.36	CM	+	1.00	CV	+	0.70	SX	-	0.25	SY	COMBO 23
37	1.36	CM	+	1.00	CV	-	0.70	SX	+	0.25	SY	
38	1.36	CM	+	1.00	CV	-	0.70	SX	-	0.25	SY	
39	1.36	CM	+	1.00	CV	+	0.21	SX	+	0.83	SY	COMBO 24
40	1.36	CM	+	1.00	CV	+	0.21	SX	-	0.83	SY	COMBO 25
41	1.36	CM	+	1.00	CV	-	0.21	SX	+	0.83	SY	
42	1.36	CM	+	1.00	CV	-	0.21	SX	-	0.83	SY	
43	0.74	CM				+	0.70	SX	+	0.25	SY	COMBO 26
44	0.74	CM				+	0.70	SX	-	0.25	SY	COMBO 27
45	0.74	CM				-	0.70	SX	+	0.25	SY	
46	0.74	CM				-	0.70	SX	-	0.25	SY	
47	0.74	CM				+	0.21	SX	+	0.83	SY	COMBO 28
48	0.74	CM				+	0.21	SX	-	0.83	SY	COMBO 29
49	0.74	CM				-	0.21	SX	+	0.83	SY	
50	0.74	CM				-	0.21	SX	-	0.83	SY	

DISEÑO DE ELEMENTOS NO ESTRUCTURALES Y ESCALERAS

CALCULO DE ELEMENTOS NO ESTRUCTURALES

PARAMETROS DE DISEÑO

Grado de desempeño=	Superior
Rp=	3
Ap=	1.0
f_y=	4200 kg/cm2

$$F_p = \frac{a_x a_p}{R_p} gM_p \geq \frac{A_a I}{2} gM_p$$

*Factor= f_y *π/16/L*
*Limite Fp=Aa*I*P/2*
S: Separacion entre columnetas
L: Longitud de la dilatacion superior

NIVEL	Fx	W	ax	Altura	e_{muro}	Vol.	$\gamma_{mamp.}$	P	Fp	Fp_{min}	Fp def.	Mmax	S	Vmax	L	Factor	$\phi_{varilla}$	Vn	Vn>Vu
	Tn	Tn		m	m	m3	Tn/m3	Tn	Tn	Tn	Tn	Tn*m	m	Tn	Cm		/8"	Tn	Cumple?
PISOCUB	166.86	97.02	1.72	3.80	0.12	0.46	1.40	0.64	0.37	0.064	0.37	0.348	0.80	0.146	10	0.082	5	0.330	SI
PISO2	134.02	149.85	0.89	4.05	0.12	0.49	1.40	0.68	0.20	0.068	0.20	0.205	1.20	0.122	10	0.082	5	0.330	SI

CALCULO DE ELEMENTOS NO ESTRUCTURALES

DATOS DE ENTRADA

f'c=	**175**	Kg/Cm2
fy=	**4200**	Kg/Cm2
$d_{columneta}$=	**6**	Cm
$b_{columneta}$=	**15**	Cm
Recubrimiento=	**6**	Cm
t muro=	12	Cm
ρmin=	0.0033	

NIVEL	Fp Tn	Mu Tn*m	ρ	ρdiseño	As Cm^2/m	As*fy Kg	0.85 f'c b Kg/cm	a cm	kud cm	εc	εt		ϕ	As Cm^2	Varilla /8"	Cant.	Refuerzo
PISOCUB	0.37	0.28	0.0158	0.0158	1.42	5964	2231.25	2.67	3.14	0.003	0.0027	Trans	0.71	2.00	**5**	2	**2#5**
PISO2	0.20	0.25	0.0134	0.0134	1.21	5066	2231.25	2.27	2.67	0.003	0.0037	Trans	0.79	1.52	**5**	1	**1#5**

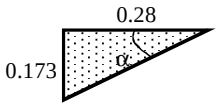
DISEÑO DE ESCALERA

ESCALERA TIPO 5

Materiales		
Concreto:	210	k/cm^2
Acero:	4200	k/cm^2

Geometria de la escalera		
Altura	4.15	m
Numero de pasos	24	m
H Contrahuella	0.173	m
Huella	0.28	m
Requisito titulo K	0.63	Cumple

Datos de entrada			
Luz de calculo:	5.00	m	
Espesor recomendado:	0.21	m	
Espesor adoptado:	0.20	m	
Angulo (α):	0.55	31.7	grados
Huella de:		0.28	m
Contrahuella de:		0.17	m



Avaluo de Cargas:

Peso propio de placa	0.20	x	2.4	/	0.85	=	0.56	tn/m^2
Peso de peldaños	0.17	x	2.4	/	2	=	0.21	tn/m^2
Acabado superior	.03 x 2.0 x (		0.28	+	0.17)/ 0.28	=	0.10	tn/m^2
Acabado Inferior	.02 x 2.0 /	cos	(31.70)			=	0.05	tn/m^2

CM	**0.92**	tn/m^2
CV	**0.50**	tn/m^2
CR	**1.42**	tn/m^2
CU	**1.90**	tn/m^2

CU = 1.2 CM + 1.6 CV

Diseño a flexión		
M =	5.93	tn*m
b=	100	cm
d=	17	cm
ρ=	0.0052	
ρmin=	0.0018	
ρdis=	0.0052	
As=	8.85	Cm^2/m
As*fy=	37184	kg
0.85f'c*b=	17850	kg/cm
a=	2.08	cm
kud=	2.45	cm
ε_c=	0.0030	
ε_f=	0.0178	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0058	
As=	9.84	Cm^2/m
ϕvarilla=	4	/8"
As varilla=	1.3	Cm^2
Separación=	10	

Chequeo a cortante		
Vu=	4.7	Tn
ϕVc=	9793	Kg
ϕVc=	9.8	Tn
ϕVs=	-	Tn

Diseño de tensores		
Tiene tensores?	SI	
Vu =	14.24	t / m
Fy=	4200	k/cm2
As=	3.77	Cm2
#Tensores	2	
Varilla=	5	/8"

DISEÑO PLACA DE ENTREPISO

CALCULO DE PLACA DE ENTREPISO PISO 1 Y PISO 2

ELEMENTO: Placa maciza e=0.12

DATOS DE ENTRADA

f'c=	**280**	Kg/Cm2
fy=	**4200**	Kg/Cm2
d=	**8**	Cm
b=	**100**	Cm
Recubrimiento=	**4**	Cm
h=	12	Cm
Tipo elemento=	**Viga=**	
	Placa=	**X**
ρmin=	0.0018	

CALCULOS ADICIONALES

CU=	1.90	Tn/m2
Luz=	2.30	m
Mu-=	0.84	Tn*m
Vu=	2.19	Tn
Mu+=	0.42	Tn*m

DISENO A FLEXION

Mu=	**0.8**	Tn*m
ρ=	0.0032	
ρdiseño=	0.0032	
As=	1.44	Cm^2/m
As*fy=	6048	kg
0.85f'c*b=	23800	kg/cm
a=	0.25	cm
kud=	0.30	cm
ε_c=	0.0030	
ε_f=	0.0773	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0036	
As=	2.85	Cm^2/m
Malla =	**7.5**	**mm c/.15**

DISENO A CORTANTE

Vu=	**2.2**	Tn
ϕVc=	5321.2	Kg
ϕVc=	5.3	Tn
ϕVs=	-	Tn

DISENO A FLEXION

Mu=	**0.4**	Tn*m
ρ=	0.0016	
ρdiseño=	0.0018	
As=	1.44	Cm^2/m
As*fy=	6048	kg
0.85f'c*b=	23800	kg/cm
a=	0.25	cm
kud=	0.30	cm
ε_c=	0.0030	
ε_f=	0.0773	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0020	
As=	1.60	Cm^2/m
Malla =	**6.0**	**mm c/.15**

CHEQUEO A PUNZONAMIENTO

b=	**20**	cm
h=	**20**	cm
Apoyo=	Circular	
	Rectangular	**X**
P=	**2.5**	Tn
Pu=	3.8	Tn
β=	1.00	
ϕ=	**0.75**	
λ=	**1.00**	
αs=	**40**	
bo=	**112**	cm
C.11-31=	1.68	cm
C.11-32=	3.29	cm
C.11-33=	2.67	cm

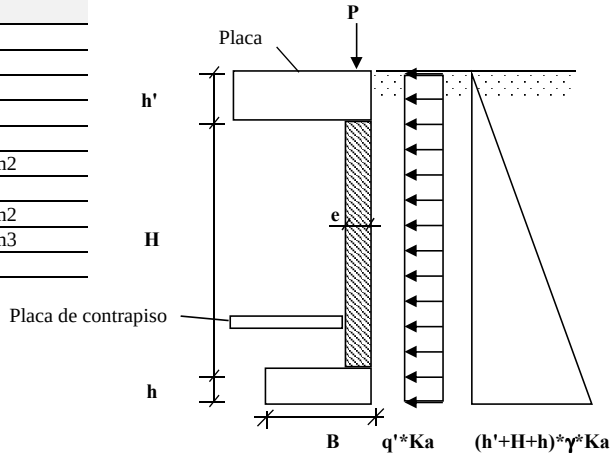
Punto de aplicacion de una carga puntual

OK

DISEÑO MUROS DE CONTENCIÓN

DISEÑO DE MUROS DE CONTENCION TIPO 1 y 4

DATOS DE ENTRADA		
e=	0.25	m
h'=	0.50	m
H=	3.80	m
h=	0.80	m
P=	8	Tn
q'=	1.00	Tn/m2
Ko=	0.5	
σ=	17.6	Tn/m2
γ=	1.90	Tn/m3
L sin apoyo=	5.0	m



1. DISENO DE MURO

Flexion

M_1=	1.63 Tn*m	Por sobrecarga
M_2=	3.17 Tn*m	Por empuje lateral

Cortante

V=	4.505 Tn

M_u=	7.67	Tn*m	
f'c=	210	Kg/Cm2	
fy=	4200	Kg/Cm2	
d=	20	Cm	
b=	100	Cm	
t=	25	Cm	
Mu=	7.7	Tn*m	
ρ=	0.0048		
ρmin=	0.002		
ρdiseño=	0.0048		
As=	9.69	Cm^2/m	
As*fy=	40685	kg	
0.85f'c*b=	17850	kg/cm	
a=	2.28	cm	
kud=	2.68	cm	
ε_c=	0.0030		
ε_f=	0.0194	Traccion	
ϕ=	0.90		
ρ /ϕ=	0.0054		
As=	10.76	Cm^2/m	
Varilla=	4 /8"		
Separación=	10 cm		

Vu=	7.2	Tn
ϕVc=	11521	Kg
ϕVc=	11.5	Tn
ϕVs=	0.00	Tn

2. DISENO DE ZARPA

Dimensionamiento

Breq=	**46 Cm**
Basumido=	**80 Cm**

Flexion como viga

M=	**14.1 Tn*m**

M_u=	22.5	Tn*m	
f'c=	**210**	Kg/Cm2	
fy=	**4200**	Kg/Cm2	
d=	**75**	Cm	
h=	**60**	Cm	Altura de la zarpa
B=	80	Cm	Ancho de la zarpa
Mu=	22.5	Tn*m	
ρ=	0.0016		
ρmin=	0.0033		
ρdiseño=	0.0033		
As=	15.84	Cm^2/m	
As*fy=	66528	kg	
0.85f'c*b=	14280	kg/cm	
a=	4.66	cm	
kud=	5.48	cm	
ε_c=	0.0030		
ε_f=	0.0381	Traccion	
ϕ=	0.90		
ρ /ϕ=	0.0037		
As=	16.50	Cm^2/m	
Varilla=	**6 /8"**		
#Varillas=	**6**		

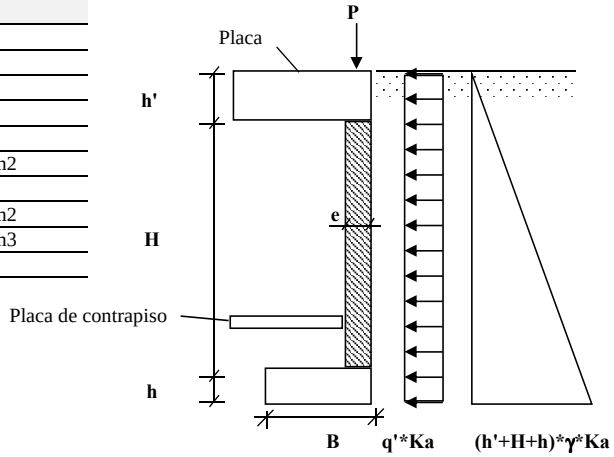
Flexion como voladizo

M=	**0.4 Tn*m**

M_u=	0.6	Tn*m
f'c=	210	Kg/Cm2
fy=	4200	Kg/Cm2
d=	53	Cm
B=	100	Cm
t=	60	Cm
Mu=	0.6	Tn*m
ρ=	0.0001	
ρmin=	0.002	
ρdiseño=	0.0020	
As=	10.60	Cm^2/m
As*fy=	44520	kg
0.85f'c*b=	17850	kg/cm
a=	2.49	cm
kud=	2.93	cm
ε_c=	0.0030	
ε_f=	0.0512	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0022	
As=	11.78	Cm^2/m
Varilla=	**4 /8"**	
Seperación=	**10 cm**	

DISEÑO DE MUROS DE CONTENCION TIPO 2

DATOS DE ENTRADA		
e=	0.25	m
h'=	0.50	m
H=	3.90	m
h=	0.80	m
P=	8	Tn
q'=	1.00	Tn/m2
Ko=	0.5	
σ=	17.6	Tn/m2
γ=	1.90	Tn/m3
L sin apoyo=	5.0	m



1. DISENO DE MURO

Flexion

M_1=	1.69 Tn*m	Por sobrecarga
M_2=	3.30 Tn*m	Por empuje lateral

Cortante

V=	4.593 Tn

M_u=	7.98	Tn*m	
f'c=	210	Kg/Cm2	
fy=	4200	Kg/Cm2	
d=	20	Cm	
b=	100	Cm	
t=	25	Cm	
Mu=	8.0	Tn*m	
ρ=	0.0050		
ρmin=	0.002		
ρdiseño=	0.0050		
As=	10.10	Cm^2/m	
As*fy=	42405	kg	
0.85f'c*b=	17850	kg/cm	
a=	2.38	cm	
kud=	2.79	cm	
ε_c=	0.0030		
ε_f=	0.0185	Traccion	
ϕ=	0.90		
ρ /ϕ=	0.0056		
As=	11.22	Cm^2/m	
Varilla=	4 /8"		
Separación=	10 cm		

Vu=	7.3	Tn
ϕVc=	11521	Kg
ϕVc=	11.5	Tn
ϕVs=	0.00	Tn

2. DISENO DE ZARPA

Dimensionamiento

Breq=	**46 Cm**
Basumido=	**80 Cm**

Flexion como viga

M=	**14.4 Tn*m**

M_u=	23.0	Tn*m	
f'c=	**210**	Kg/Cm2	
fy=	**4200**	Kg/Cm2	
d=	**75**	Cm	
h=	**60**	Cm	Altura de la zarpa
B=	80	Cm	Ancho de la zarpa
Mu=	23.0	Tn*m	
ρ=	0.0017		
ρmin=	0.0033		
ρdiseño=	0.0033		
As=	15.84	Cm^2/m	
As*fy=	66528	kg	
0.85f'c*b=	14280	kg/cm	
a=	4.66	cm	
kud=	5.48	cm	
ε_c=	0.0030		
ε_f=	0.0381	Traccion	
ϕ=	0.90		
ρ /ϕ=	0.0037		
As=	16.50	Cm^2/m	
Varilla=	**6 /8"**		
#Varillas=	**6**		

Flexion como voladizo

M=	**0.4 Tn*m**

M_u=	0.6	Tn*m
f'c=	210	Kg/Cm2
fy=	4200	Kg/Cm2
d=	53	Cm
B=	100	Cm
t=	60	Cm
Mu=	0.6	Tn*m
ρ=	0.0001	
ρmin=	0.002	
ρdiseño=	0.0020	
As=	10.60	Cm^2/m
As*fy=	44520	kg
0.85f'c*b=	17850	kg/cm
a=	2.49	cm
kud=	2.93	cm
ε_c=	0.0030	
ε_f=	0.0512	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0022	
As=	11.78	Cm^2/m
Varilla=	**4 /8"**	
Seperación=	**10 cm**	

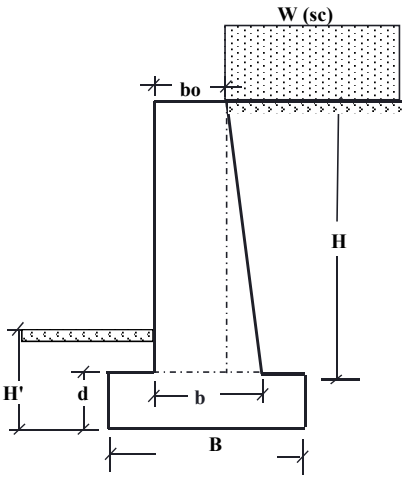
DISEÑO MURO DE CONTENCION EN CONCRETO REFORZADO

PROYECTO: HOSPITAL CHAPARRAL

DESCRIPCION:

El muro consiste en un muro de concreto reforzado requerido para la estabilizacion de un talud entre el nivel de acceso y el de parqueaderos.

PARAMETROS INICIALES		
σ suelo=	17.6	Tn/m^3
F'c=	210	Kg/cm^2
Material=	1	
γ material =	2.4	Tn/m^3
H=	2.8	m
Sobrecarga=	1	Tn/m^2
γ suelo =	1.9	Tn/m^3
ϕ=	30	
μ=	0.4	
Ko=	0.50	
Ka=	0.33	



1. PREDIMENSIONAMIENTO

A. BASE (B)

B = 0.70H

B= 1.96 m

Badoptado=	2.20 m

B. ANCHO DE VASTAGO EN LA BASE

H/10 < b < H/8

H/10= 0.28 m

H/8= 0.35 m

b adoptado=	0.35 m

C. ANCHO DEL VASTAGO EN LA CORONA

bo adoptado=	0.25 m

D. PIE

P = B/3

B/3= 0.73 m

Padoptado=	0.8 m

E. TALON

T= B - P - b

T adoptado=	1.05 m

F. ESPESOR DEL CIMIENTO

d recomend= 0.35 m

d adoptado=	**0.35 m**

G. ALTURA DEL RELLENO EN ZONA PASIVA

H'=	**1.2 m**

H diseno=	**2.8 m**

2. CALCULO DE EMPUJE DEBIDO A SISMO

$$Kae = \frac{Cos^2(\varphi - \theta - \beta)}{\Psi Cos\theta Cos^2\beta Cos(\delta + \beta + \theta)}$$

$$\Psi = \left[1 + \sqrt{\frac{Sen(\varphi + \delta)Sen(\varphi - \theta - i)}{Cos(\delta + \beta + \theta)Cos(1 - \beta)}}\right]$$

$$\theta = Tan^{-1}\left(\frac{k_h}{1 - k_v}\right)$$

i= Angulo de inclinación talud

δ= Angulo de fricción suelo estructura

$$\frac{\varphi}{2} < \delta < \frac{2\varphi}{3}$$

β= Angulo de falla suelo estructura, si es vertical es 0

φ= Angulo de fricción suelo(ϕ)

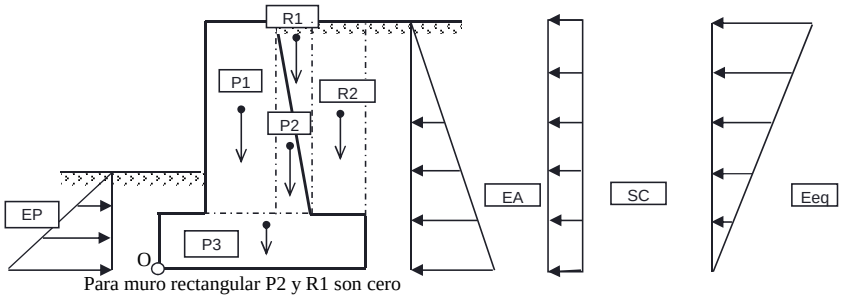
i =	**0 °**
i =	0.000 rad
δ=	15 °
δ=	0.262 rad
β=	2.05 °
β=	0.036 rad
A=	**0.25**
kv=	0.13
θ=	0.13 °
θ=	0.129 rad
ϕ=	30 °
ϕ=	0.524 rad
Ψ=	2.39
Kae=	**0.41**
Kea=	0.07
Eeq=	0.39 Tn/m2
Eeq=	0.54 Tn/m

3. CALCULO DE FUERZA INERCIAL

A=	**0.25**
I=	**1.50**
W=	9.72 TN
R=	**2.00**
Vs=	**1.82 TN**

4. ANALISIS DE ESTABILIDAD DEL MURO

CASO 1: **PESO PROPIO + RELLENO** **ESTATICO**
CASO 2: **PESO PROPIO + RELLENO+CV** **ESTATICO**
CASO 3: **PESO PROPIO + RELLENO+SISMO** **DINAMICO**



Para muro rectangular P2 y R1 son cero

FUERZA (TN)		V (Tn)	H (Tn)	X (mt)	Y(mt)	Mv(tn*m)	Mh(tn*mt)
PESO1 (P1)	1.68	1.68		0.93		1.55	
PESO2 (P2)	0.34	0.34		1.08		0.36	
PESO3 (P3)	1.85	1.85		1.10		2.03	
RELLENO1 (R1)	0.27	0.27		1.12		0.30	
RELLENO2 (R2)	5.59	5.59		1.68		9.36	
EMPUJE PASIVO (EP)	4.10		-4.10		0.40		-1.64
SOBRECARGA CV (SC)	0.93	1.15	0.93	1.625	1.58	1.87	1.47
EMPUJE ACTIVO(EA)	3.14		3.14		1.05		3.30
EMPUJE SISMICO (Eeq)	0.54		0.54		2.10		1.14
FUERZAS INERCIALES (Fx)							
P1	0.30		0.30		1.75		0.53
P2	0.06		0.06		1.28		0.08
P3	0.33		0.33		0.18		0.06
R1	0.05		0.05		2.22		0.11
R2	1.00		1.00		1.75		1.75
SUMA PARA CASO 1		**9.72**	**3.14**			**13.60**	**1.66**
SUMA PARA CASO 2		**10.87**	**4.08**			**15.47**	**3.13**
SUMA PARA CASO 3		**9.72**	**6.35**			**13.60**	**6.78**

5. FACTORES DE SEGURIDAD

CASO 1

A. AL VOLCAMIENTO

FSV= $\frac{13.60}{1.66}$ = **8.21** **>3**

CUMPLE

B. AL DESLIZAMIENTO

FSD= $\frac{7.99}{3.14}$ = **2.54** **>1.6**

CUMPLE

CASO 2

A. AL VOLCAMIENTO

$$FSV = \frac{15.47}{3.13} = 4.95 > 3$$ **CUMPLE**

B. AL DESLIZAMIENTO

$$FSD = \frac{8.45}{4.08} = 2.07 > 1.6$$ **CUMPLE**

CASO 3

A. AL VOLCAMIENTO

$$FSV = \frac{13.60}{6.78} = 2.01 > 2$$ **CUMPLE**

B. AL DESLIZAMIENTO

$$FSD = \frac{7.99}{6.35} = 1.26 > 1.05$$ **CUMPLE**

6. ANALISIS DE PRESION DEL SUELO

A. PUNTO DE APLICACION DE LA RESULTANTE

$$X = \frac{15.47 - 3.13}{10.87} = 1.14 \text{ m}$$

B. EXCENTRICIDAD

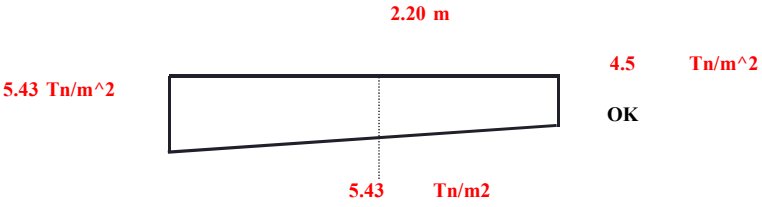
$$e = \frac{2.20}{2} - 1.14 = -0.04 \text{ m}$$

e<B/6 **CUMPLE**

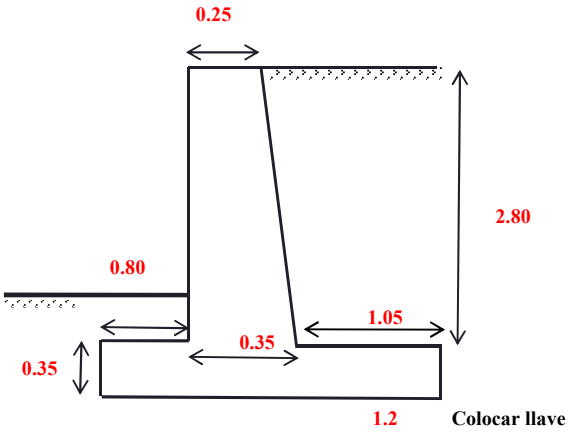
C. ESFUERZO

σ1= 4.45 Tn/m^2 **CUMPLE**
σ2= 5.43 Tn/m^2

DIAGRAMA DE ESFUERZOS EN LA BASE



DIMENSIONAMIENTO FINAL



7. DISEÑO DEL MURO EN CONCRETO REFORZADO

COMBINACION DE DISENO

1.3	*CM*	+	*1.6*	*E*	+	*1.6*	*CV*			
1.0	*CM*	+	*1.0*	*E*	+	*1.0*	*EQ*	+	*1.0*	*Inercial*

A. VASTAGO

M_E=	3.30 Tn*m		
M_{CV}=	1.47 Tn*m	$M_{u\,(1)}$=	7.6 Tn*m
M_{EQ}=	1.14 Tn*m	$M_{u\,(2)}$=	7.9 Tn*m
M_I=	3.43 Tn*m		

DISEÑO DE REFUERZO VERTICAL

Mu=	7.88 Tn*m	
V=	6.93 Tn	
d=	10.61 Cm	**OK**
f'c=	210 Kg/Cm2	
fy=	**4200** Kg/Cm2	
d=	30 Cm	
b=	**100** Cm	
t=	35 Cm	
ρ=	0.0021	
ρmin=	0.0018	
ρdiseño=	0.0021	
As=	6.41 Cm^2/m	
As*fy=	26929 kg	
0.85f'c*b=	17850 kg/cm	
a=	1.51 cm	
kud=	1.77 cm	
ε_c=	0.0030	
ε_t=	0.0477 Traccion	
ϕ=	0.90	
ρ /ϕ=	0.0024	
As=	7.12 Cm^2/m	
Varilla=	**4 /8"**	
Separación=	**15 cm**	

DISEÑO DE REFUERZO HORIZONTAL

ρmin=	0.002
ρdiseño=	0.002
As=	3.50 Cm^2/m
Varilla=	**3 /8"**
Separación=	**20 cm**

B. PIE

DISEÑO DE REFUERZO HORIZONTAL

Longitud del pie=	0.80 m	
V=	0.04 Tn	
ϕVc=	18.3 Tn	**OK**
σ=	5.43 Tn/m2	
Mu=	2.78 Tn*m	
d=	0.11 Cm	**OK**
f'c=	210 Kg/Cm2	
fy=	4200 Kg/Cm2	
d=	28 Cm	
b=	**100** Cm	
t=	35 Cm	
ρ=	0.0009	
ρmin=	0.0033	
ρdiseño=	0.0033	
As=	11.55 Cm^2/m	
As*fy=	48510 kg	
0.85f'c*b=	17850 kg/cm	
a=	2.72 cm	
kud=	3.20 cm	
ε_c=	0.0030	
ε_f=	0.0233 Traccion	
ϕ=	0.90	
ρ /ϕ=	0.0037	
As=	10.27 Cm^2/m	
Varilla=	**4 /8"**	
Separación=	**10 cm**	

DISEÑO DE REFUERZO DE PUNTA

ρmin=	0.0018
ρdiseño=	0.0018
As=	3.15 Cm^2/m
Varilla=	**3 /8"**
Separación=	**20 cm**

C. TALON

DISEÑO DE REFUERZO HORIZONTAL

Longitud del talon=	1.05	m	
V=	-5.53	Tn	
ϕVc=	18.3	Tn	**OK**
σ=	1.76	Tn/m2	
Mu=	3.27	Tn*m	
d=	2.18	Cm	**OK**
f'c=	210	Kg/Cm2	
fy=	4200	Kg/Cm2	
d=	28	Cm	
b=	**100**	Cm	
t=	35	Cm	
ρ=	0.0011		
ρmin=	0.0033		
ρdiseño=	0.0033		
As=	11.55	Cm^2/m	
As*fy=	48510	kg	
0.85f'c*b=	17850	kg/cm	
a=	2.72	cm	
kud=	3.20	cm	
ε_c=	0.0030		
ε_f=	0.0233	Traccion	
ϕ=	0.90		
ρ /ϕ=	0.0037		
As=	10.27	Cm^2/m	
Varilla=	**4 /8"**		
Separación=	**10 cm**		

DISEÑO DE CIMENTACIÓN

DISEÑO DE ZAPATAS EXCENTRICAS (1)

DATOS DE ENTRADA

σ suelo=	17.6	Tn/m^2
fy=	4200	Kg/Cm^2
f'c=	210	Kg/Cm^2
f Cortante=	0.75	
f Flexion=	0.90	
<Dimension	1.00	m

(C.11-31)	$V_c = 0.17\left(1+\frac{2}{\beta}\right)\lambda\sqrt{f'_c}b_o d$
(C.11-32)	$V_c = 0.083\left(\frac{\alpha_s d}{b_o}+2\right)\lambda\sqrt{f'_c}b_o d$
(C.11-33)	$V_c = 0.33\lambda\sqrt{f'_c}b_o d$

(C.11-31)	$V_c = 0.53\left(1+\frac{2}{\beta}\right)\lambda\sqrt{f'_c}b_o d$
(C.11-32)	$V_c = 0.27\left(\frac{\alpha_s d}{b_o}+2\right)\lambda\sqrt{f'_c}b_o d$
(C.11-33)	$V_c = \lambda\sqrt{f'_c}b_o d$

*Condicion 1(C.11-31)
*Condicion 2(C.11-32)
*Condicion 3(C.11-33)

ZAPATA TIPO	COL.	Pu (Tn)	Mu (Tn*m)	Preal (m)	Mr (Tn*m)	e (m)	DIMENSIONAMIENTO A (m)	B (m)	Le (m)	1.1P (Tn)	A (m2)	L (m)	H (m)	e (m)	ΔR (Tn)	σneto (Tn/m2)	σultimo (Tn/m2)	REVISION POR PUNZONAMIENTO d (Cm)	h (Cm)	bo (Cm)	αs	βc	Vu (Tn)	C.11-31	C.11-32	C.11-33	CORTE COMO VIGA Sentido corto Vu(Tn)	Sentido largo Vu(Tn)	d requerido (Cm)	
1C	1	45.35	6.39	30.2	3.4	0.11	0.50	0.50	5.50	33.26	1.89	1.45	1.45	0.48	2.86	17.18	23.42	OK 28	35	156	20	1	31.10	22.64	12.15	18.34	OK 6.62	6.62	6.62	5.95	OK
2C	2	100.72	8.73	67.1	4.7	0.07	0.50	0.30	5.50	73.86	4.20	2.25	2.25	0.88	12.70	17.10	23.32	OK 63	70	206	20	2	76.22	57.31	15.53	34.04	OK 18.10	12.85	18.10	10.47	OK
3C	3	103.95	9.99	69.3	5.4	0.08	0.50	0.30	6.25	76.23	4.33	1.95	2.55	0.73	9.09	17.16	23.40	OK 53	60	289	30	2	83.95	44.99	13.19	26.73	OK 27.15	11.64	27.15	18.13	OK
4C	4	84.64	10.38	56.4	5.6	0.10	0.50	0.30	6.25	62.07	3.53	1.75	2.30	0.63	6.27	16.98	23.15	OK 43	50	259	30	2	68.92	41.22	12.99	24.48	OK 23.09	10.38	23.09	17.18	OK
5C	5	47.57	6.78	31.7	3.6	0.11	0.50	0.30	6.25	34.88	1.98	1.50	1.50	0.50	2.76	16.73	22.81	OK 38	45	156	20	2	33.92	33.68	10.78	20.01	OK 7.53	4.11	7.53	6.53	OK
2C	6	102.31	10.50	68.2	5.6	0.08	0.50	0.30	6.25	75.03	4.26	2.25	2.25	0.88	11.10	17.01	23.20	OK 63	70	206	20	2	77.93	58.60	15.88	34.81	OK 18.01	12.79	18.01	10.42	OK

DISEÑO DE ZAPATAS EXCENTRICAS (2)

C.10.14 — Resistencia al aplastamiento

C.10.14.1 — La resistencia de diseño al aplastamiento del concreto no debe exceder $\phi(0.85f'_c A_1)$ excepto cuando la superficie de soporte sea más ancha en todos los lados que el área cargada, en cuyo caso, se permite que la resistencia de diseño al aplastamiento en el área cargada sea multiplicada por $\sqrt{(A_2/A_1)}$, pero no más que 2.

ZAPATA TIPO	Lv (m)	Mu (Tn*m)	ρ	ρ min	ρ diseño	Seccion en	As (Cm2)	DISEÑO A FLEXION								PRESION DE CONTACTO	
								REF. SENTIDO B				REF. SENTIDO A					
								Refuerzo sentido B	ρ min	Seccion en	As (Cm2)	Refuerzo sentido A		Pu (Tn)	ϕ*0,85*f'c*A_1 (Tn)	
1C	0.48	2.91	0.0010	0.0018	0.0018	Traccion	6.30	8 # 4 18 c/. 20	0.0018	Traccion	6.30	8 # 4 18 c/. 20		45.35	290.1	Cumple
2C	0.975	12.19	0.0008	0.0018	0.0018	Traccion	12.60	23 # 4 26 c/. 10	0.0018	Traccion	12.60	23 # 4 26 c/. 10		100.72	174.0	Cumple
3C	1.13	16.29	0.0016	0.0018	0.0018	Traccion	10.80	20 # 4 29 c/. 10	0.0018	Traccion	10.80	26 # 4 23 c/. 10		103.95	174.0	Cumple
4C	1	12.73	0.0019	0.0018	0.0019	Traccion	8.01	12 # 4 26 c/. 15	0.0018	Traccion	9.00	23 # 4 21 c/. 10		84.64	174.0	Cumple
5C	0.60	4.52	0.0008	0.0018	0.0018	Traccion	8.10	10 # 4 18 c/. 15	0.0018	Traccion	8.10	10 # 4 18 c/. 15		47.57	174.0	Cumple
2C	0.975	12.13	0.0008	0.0018	0.0018	Traccion	12.60	23 # 4 26 c/. 10	0.0018	Traccion	12.60	23 # 4 26 c/. 10		102.31	174.0	Cumple

DISEÑO DE ZAPATAS EXCENTRICAS (3)

ESQUEMA DE VIGA DE CIMENTACION

DIAGRAMA DE CORTANTE DEBAJO DE LA ZAPATA

DISEÑO DE VIGA DE CIMENTACION

ZAPATA TIPO	Mu (Tn*m)	B (Cm)	H (Cm)	ρ	ρ min	ρ diseño	Seccion en	As (Cm2)	W (Tn/m)	V1 (Tn)	V2 (Tn)	V3 (Tn)	Vu (TN)	ΦVc (Tn)	ΦVs (Tn)	Refuerzo principal				$1/3(f'c)^{0.5}$	$2/3(f'c)^{0.5}$	Refuerzo secundario				Transversal			
1C	23.58	60	80	0.0020	0.0033	0.0033	Traccion	15.64	24.91	6.23	#####	2.86	13.27	28.59	-15.3	6	#	6	OK	21.2	42.3	OK	6	#	6	fi #	3	c/.	35	2	Ramas
2C	104.80	60	80	0.0098	0.0033	0.0098	Traccion	46.46	38.47	9.62	#####	12.70	54.24	28.59	25.6				OK	21.2	42.3	OK	6	#	6	fi #		c/.			Ramas
3C	85.25	60	80	0.0078	0.0033	0.0078	Traccion	36.8	43.76	10.94	#####	9.09	50.02	28.59	21.4	8	#	8	OK	21.2	42.3	OK	6	#	6	fi #	4	c/.	18	3	Ramas
4C	58.78	60	80	0.0052	0.0033	0.0052	Traccion	24.55	39.05	9.76	#####	6.27	35.7	28.59	7.1	5	#	8	OK	21.2	42.3	OK	6	#	6	fi #	4	c/.	35	3	Ramas
5C	25.85	60	80	0.0022	0.0033	0.0033	Traccion	15.64	25.09	6.27	#####	2.76	15.44	28.59	-13.2	6	#	6	OK	21.2	42.3	OK	6	#	6	fi #	3	c/.	35	2	Ramas
2C	104.09	60	80	0.0097	0.0033	0.0097	Traccion	46.1	38.28	9.57	#####	11.10	56.27	28.59	27.7				OK	21.2	42.3	OK	6	#	6	fi #		c/.			Ramas

CHEQUEO DE CORTANTE EN NUDOS

RELACION DE CAPACIDAD DE CORTE EN LOS NUDOS (C.21.7.4)

Materiales

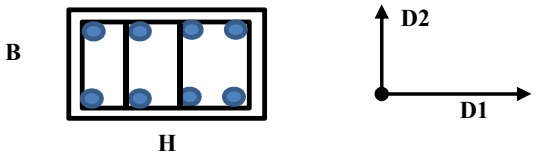
f'c=	28	Mpa
fy=	420	Mpa

Nudo	Col. bc m	Viga bv m	Cara 1 Cond.	Cara 2 Col. b m	Cara 2 Viga b m	Cara 2 Cond.	Cara 3 Col. b m	Cara 3 Viga b m	Cara 3 Cond.	Cara 4 Col. b m	Cara 4 Viga b m	Cara 4 Cond.	Caras confin.	Direccion 1 $b_{efectivo}$ m	Direccion 1 Aj m2	Direccion 2 $b_{efectivo}$ m	Direccion 2 Aj m2	Limite Vn Dir. 1 Mpa	Limite Vn Dir. 2 Mpa	Direccion 1 Vc Mpa	Direccion 1 Dia. /8"	Direccion 1 #R	Direccion 1 Av m2	Direccion 1 sep m	Direccion 1 Vs Mpa	Direccion 1 Vn Mpa	Direccion 2 Vc Mpa	Direccion 2 Dia. /8"	Direccion 2 #R	Direccion 2 Av m2	Direccion 2 sep m	Direccion 2 Vs Mpa	Direccion 2 Vn Mpa	Relacion de capacidad a cortante Dir.1	Dir.2	Cap max
T1	0.60	0.50	Confin.	0.60	0.50	Confin.	0.60		No confin.	0.60		No confin.	2	0.60	0.36	0.6	0.36	1.90	1.90	0.32	4	3	3.8E-04	0.10	0.88	1.20	0.32	4	3	3.8E-04	0.10	0.88	1.20	0.63	0.63	Cumple
T2	0.60	0.50	Confin.	0.60	0.50	Confin.	0.60	0.50	Confin.	0.60		No confin.	3	0.60	0.36	0.6	0.36	2.29	2.29	0.32	4	3	3.8E-04	0.10	0.88	1.20	0.32	4	3	3.8E-04	0.10	0.88	1.20	0.53	0.53	Cumple
T3	0.60	0.50	Confin.	0.60	0.50	Confin.	0.60	0.50	Confin.	0.60	0.5	Confin.	4	0.60	0.36	0.6	0.36	3.24	3.24	0.32	4	3	3.8E-04	0.10	0.88	1.20	0.32	4	3	3.8E-04	0.10	0.88	1.20	0.37	0.37	Cumple

CALCULO DE Ash DE CONFINAMIENTO DES

DATOS DE ENTRADA

B=	0.6	m
H=	0.6	m
Recubrimiento=	4	Cm



$$A_{sh} = 0.3\frac{sb_c f'_c}{f_{yt}}\left[\left(\frac{A_g}{A_{ch}}\right)-1\right] \qquad A_{sh} = 0.09\frac{sb_c f'_c}{f_{yt}}$$

Direccion 1		
#Ramas=	3	
ϕ =	4	/8"
As=	1.27	Cm2
Ash=	380.0	mm2
bc=	520	mm
f'c=	28	Mpa
fyt=	420	Mpa
Ag=	360000	mm2
Ach=	270400	mm2

s=	110.3 mm	
s=	11 cm	*C.21-7*

s=	121.8 mm	
s=	12 cm	*C.21-8*

Direccion 2		
#Ramas=	3	
ϕ =	4	/8"
As=	1.27	Cm2
Ash=	380.0	mm2
bc=	520	mm
f'c=	28	Mpa
fyt=	420	Mpa
Ag=	360000	mm2
Ach=	270400	mm2

s=	110.3 mm	
s=	11 cm	*C.21-7*

s=	121.8 mm	
s=	12 cm	*C.21-8*

DISEÑO DE COLUMNAS, VIGAS Y VIGUETAS

Columna H'-3

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					12.10	21.24				8/#8 (1.1%)	0.54	3.03	1.96
	3.80	.40	.60	.60			-18.91	23.03	28.81				
					-15.17	-26.25				8/#8 (1.1%)	0.66		
PISO2					6.41	14.74				8/#8 (1.1%)	0.34	4.87	4.83
	4.05	.50	.60	.60			-31.47	11.79	14.07				
CIM		.80			-5.78	-4.66				8/#8 (1.1%)	0.15		

Columna H'-1

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					19.34	-8.60				8/#8 (1.1%)	0.45	2.34	1.77
	3.80	.40	.60	.60			-30.83	24.71	32.23				
					2.85	34.13				8/#8 (1.1%)	0.74		
PISO2					1.78	18.47				8/#8 (1.1%)	0.49	4.47	3.59
	4.05	.50	.60	.60			7.05	9.98	15.60				
CIM		.80			0.00	-8.73				8/#8 (1.1%)	0.16		

Columna I-1

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					18.72	-14.57				16/#7 (1.7%)	0.37	1.25	2.14
	3.80	.40	.60	.60			-55.37	31.92	36.79				
					6.25	45.50				16/#7 (1.7%)	0.68		
PISO2					-6.82	-22.06				16/#7 (1.7%)	0.36	4.74	4.03
	4.05	.50	.60	.60			-40.82	12.69	18.02				
CIM		.80			3.67	9.99				16/#7 (1.7%)	0.17		

Columna I-3

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					9.59	29.85				8/#8 (1.1%)	0.66	1.29	1.75
	3.80	.40	.60	.60			-35.59	25.54	34.40				
					-8.43	-37.28				8/#8 (1.1%)	0.78		
PISO2					0.96	22.25				8/#8 (1.1%)	0.41	2.96	3.81
	4.05	.50	.60	.60			-70.37	12.16	17.72				
CIM		.80			-0.63	-10.38				8/#8 (1.1%)	0.18		

Columna J-3

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-14.56	23.60				8/#8 (1.1%)	0.61	2.32	1.96
	3.80	.40	.60	.60			-22.42	23.49	30.22				
					1.94	-26.57				8/#8 (1.1%)	0.58		
PISO2					4.61	13.36				8/#8 (1.1%)	0.32	6.04	6.04
	4.05	.50	.60	.60			-18.27	11.04	15.02				
CIM		.80			2.22	6.78				8/#8 (1.1%)	0.16		

Columna J-1

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-27.37	-15.22				8/#8 (1.1%)	0.64	1.80	1.61
	3.80	.40	.60	.60			-42.10	28.53	33.37				
					15.70	34.81				8/#8 (1.1%)	0.80		
PISO2					12.17	21.46				8/#8 (1.1%)	0.59	5.01	5.01
	4.05	.50	.60	.60			-4.30	17.00	18.24				
CIM		.80			-10.31	-7.80				8/#8 (1.1%)	0.25		

C-101/PISO2

B=0.50 H=0.50 L=5.51			***B=0.50 H=0.50 L=6.90***		
Mu=-0.62 As=7.43	Mu=-1.21 As=7.43	Mu=-0.62 As=7.43	Mu=-0.37 As=7.43	Mu=-0.88 As=7.43	Mu=-0.37 As=7.43
Mu=0.62 As=7.43	Mu=0.72 As=7.43	Mu=0.62 As=7.43	Mu=0.48 As=7.43	Mu=0.46 As=7.43	Mu=0.37 As=7.43
Vu=30.91		Vu=-45.32	Vu=44.58		Vu=-30.36

C-102/PISO2

B=0.50 H=0.50 L=5.51			***B=0.50 H=0.50 L=6.90***		
Mu=-12.25 As=7.49	Mu=-3.22 As=7.43	Mu=-12.89 As=7.91	Mu=-10.21 As=8.27	Mu=-2.55 As=7.43	Mu=-9.67 As=7.82
Mu=6.12 As=7.43	Mu=10.28 As=9.49	Mu=6.45 As=7.43	Mu=5.11 As=7.43	Mu=5.10 As=7.43	Mu=5.10 As=7.43
Vu=-12.90		Vu=14.74	Vu=-9.33		Vu=9.16

C-103/PISO2

B=0.60 H=0.50 L=6.25		
Mu=-7.01 As=8.91	Mu=-6.77 As=8.91	Mu=-1.75 As=8.91
Mu=5.76 As=8.91	Mu=2.77 As=8.91	Mu=1.75 As=8.91
Vu=-6.08		Vu=-51.76

C-104/PISO2

B=0.50 H=0.50 L=6.25		
Mu=-19.77 As=12.43	Mu=-6.72 As=7.43	Mu=-26.87 As=17.38
Mu=9.88 As=8.00	Mu=14.09 As=8.68	Mu=13.44 As=8.25
Vu=21.29		Vu=-23.49

C-105/PISO2

B=0.50 H=0.50 L=6.25		
Mu=-7.71 As=7.43	Mu=-1.93 As=7.43	Mu=-1.93 As=7.43
Mu=6.03 As=7.43	Mu=1.93 As=7.43	Mu=1.93 As=7.43
Vu=-12.88		Vu=-66.79

C-201/CUB

B=0.50 H=0.40 L=5.51			***B=0.50 H=0.40 L=6.90***		
Mu=-15.83 As=13.12	Mu=-5.22 As=5.78	Mu=-20.87 As=17.94	Mu=-27.21 As=24.65	Mu=-6.80 As=7.11	Mu=-23.50 As=20.62
Mu=10.19 As=8.15	Mu=9.43 As=8.15	Mu=10.44 As=8.36	Mu=13.60 As=11.11	Mu=17.21 As=14.40	Mu=11.75 As=9.48
Vu=-20.22		Vu=22.43	Vu=-24.75		Vu=23.39

C-202/CUB

B=0.50 H=0.40 L=5.51			***B=0.50 H=0.40 L=6.90***		
Mu=-12.61 As=10.24	Mu=-3.81 As=5.78	Mu=-15.25 As=12.59	Mu=-19.01 As=16.11	Mu=-4.75 As=5.78	Mu=-17.07 As=14.27
Mu=6.84 As=7.15	Mu=5.74 As=7.15	Mu=7.62 As=6.00	Mu=9.50 As=7.57	Mu=11.20 As=9.01	Mu=8.53 As=6.76
Vu=-15.26		Vu=16.53	Vu=-17.39		Vu=16.60

C-203/CUB

B=0.50 H=0.40 L=6.25		
Mu=-18.71 As=15.83	Mu=-5.75 As=5.97	Mu=-23.00 As=20.10
Mu=9.35 As=7.44	Mu=11.30 As=9.10	Mu=11.50 As=9.27
Vu=-21.34		Vu=22.97

C-204/CUB

B=0.50 H=0.40 L=6.25		
Mu=-23.18 As=20.29	Mu=-7.13 As=7.46	Mu=-28.51 As=26.15
Mu=11.59 As=9.35	Mu=15.69 As=13.01	Mu=14.26 As=11.69
Vu=26.09		Vu=-27.93

C-205/CUB

B=0.50 H=0.40 L=6.25		
Mu=-18.89 As=16.00	Mu=-5.87 As=6.10	Mu=-23.48 As=20.60
Mu=9.45 As=7.52	Mu=11.74 As=9.62	Mu=11.74 As=9.48
Vu=-21.77		Vu=23.51

C-106/PISO1

B=0.20 H=0.50 L=2.06			***B=0.20 H=0.50 L=7.05***		
Mu=-0.00	Mu=-1.78	Mu=-7.11	Mu=-5.59	Mu=-0.00	Mu=-0.00
As=0.20	As=2.00	As=4.33	As=3.36	As=0.20	As=0.20
Mu=0.00	Mu=0.00	Mu=0.00	Mu=0.00	Mu=19.35	Mu=2.66
As=1.84	As=1.84	As=1.84	As=2.14	As=13.44	As=5.79
Vu=0.00		Vu=-6.90	Vu=12.98		Vu=-10.64

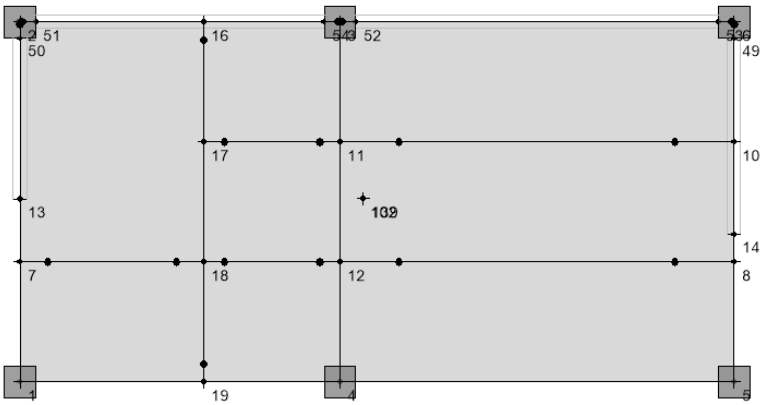
C-107/PISO1

B=0.20 H=0.40 L=5.56			***B=0.20 H=0.40 L=7.05***		
Mu=-0.00	Mu=-0.00	Mu=-17.58	Mu=-17.14	Mu=-0.00	Mu=-0.00
As=0.20	As=0.20	As=14.21	As=13.90	As=0.63	As=0.20
Mu=1.75	Mu=5.03	Mu=0.00	Mu=0.00	Mu=13.37	Mu=2.26
As=3.49	As=5.17	As=3.53	As=3.11	As=12.04	As=6.42
Vu=5.84		Vu=-12.79	Vu=14.56		Vu=-9.06

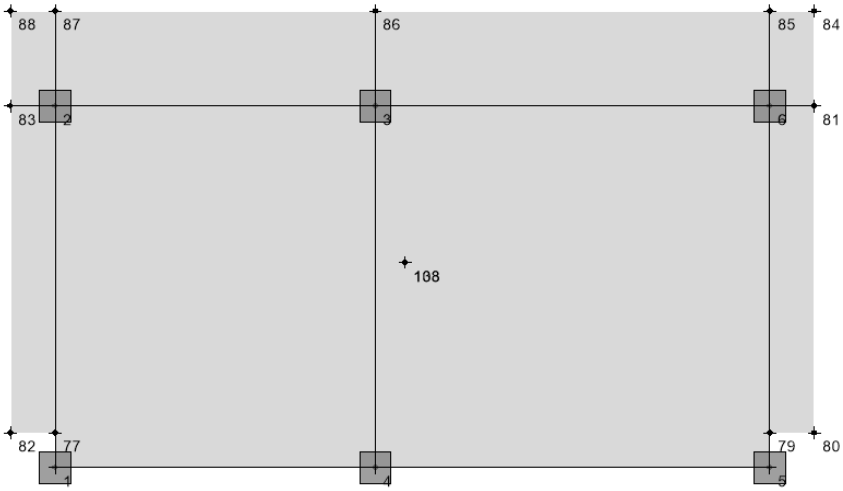
DATOS DE ENTRADA DEL MODELO MATEMÁTICO

NUMERACION DE NODOS

PISO 1

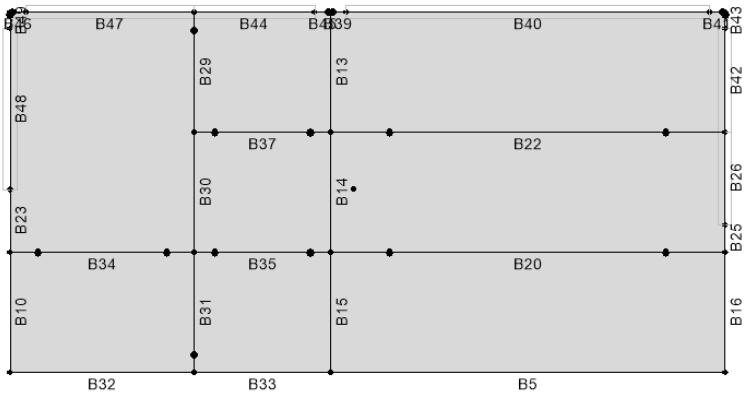


CUB

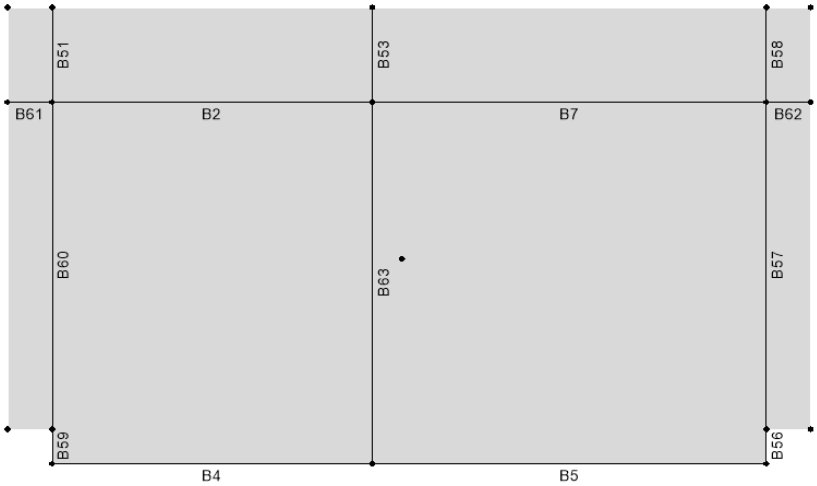


NUMERACION DE VIGAS

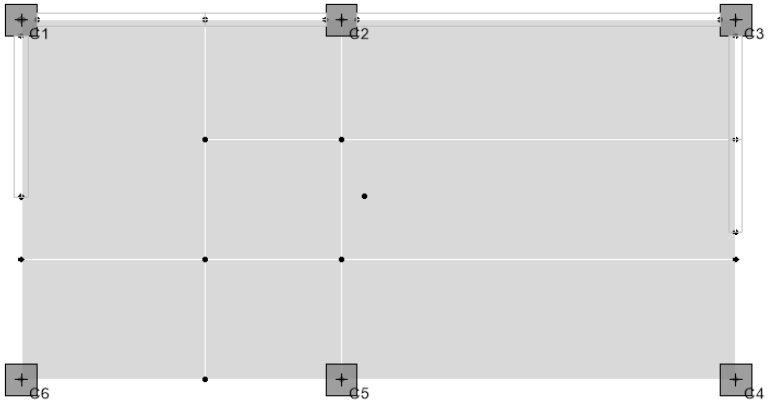
PISO 1



CUB



NUMERACION DE COLUMNAS



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S T O R Y D A T A

STORY	SIMILAR TO	HEIGHT	ELEVATION
CUB	None	4.200	4.420
PISO2	None	4.550	0.220
BASE	None		-4.330

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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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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	CONC4000	45.41	12	
Beam	CONC4000	49.77	36	0
Wall	CONC3000	52.46		
Floor	CONC3000	47.27		

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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
C60X60	Column	12	52.500	45.41	
V50X40	Beam	14	54.835	23.61	0
V50X50	Beam	22	47.735	26.16	0
MURO25	Wall			52.46	
PLACA15	Floor			47.27	

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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
CUB	Column	CONC4000	21.80	131.159	166.1831	6	
CUB	Beam	CONC4000	23.61	131.159	180.0140	14	0
CUB	Floor	CONC3000	47.27	131.159	360.3900		
PISO2	Column	CONC4000	23.61	93.109	253.6028	6	
PISO2	Beam	CONC4000	26.16	93.109	280.9240	22	0
PISO2	Wall	CONC3000	52.46	93.109	563.4146		
SUM	Column	CONC4000	45.41	224.268	202.4771	12	
SUM	Beam	CONC4000	49.77	224.268	221.9087	36	0
SUM	Wall	CONC3000	52.46	224.268	233.9124		
SUM	Floor	CONC3000	47.27	224.268	210.7672		
TOTAL	All	All	194.90	224.268	869.0654	56	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	DIR/PLANE	ELASTICITY	MATERIAL RATIO	MODULUS OF COEFF	POISSON'S MODULUS	THERMAL SHEAR
STEEL	Iso	Steel	All	20389019.158	0.3000	1.1700E-05	7841930.445	
CONC	Iso	Concrete	All	2531050.654	0.2000	9.9000E-06	1054604.439	
OTHER	Iso	None	All	20389019.158	0.3000	1.1700E-05	7841930.445	
CONC3000	Iso	Concrete	All	2153810.580	0.2000	9.9000E-06	897421.075	
CONC4000SM	Iso	Concrete	All	2487006.230	0.2000	9.9000E-06	1036252.596	
CONC4000	Iso	Concrete	All	2487006.230	0.2000	9.9000E-06	1036252.596	

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
STEEL	7.9814E-01	7.8334E+00
CONC	2.4480E-01	2.4026E+00
OTHER	7.9814E-01	7.8334E+00
CONC3000	2.4480E-01	2.4026E+00
CONC4000SM	0.0000E+00	0.0000E+00
CONC4000	2.4480E-01	2.4026E+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 ($)
STEEL	35153.481	45699.526	27679.91

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	FC	REBAR FY	REBAR FYS	LIGHTWT REDUC FACT
CONC	No	2812.279	42184.178	42184.178	N/A
CONC3000	No	2812.279	42184.178	42184.178	N/A
CONC4000SM	No	2812.279	42184.178	42184.178	N/A
CONC4000	No	2812.279	42184.178	42184.178	N/A

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

FRAME SECTION NAME	MATERIAL NAME	SECTION SHAPE NAME OR IN SECTION DATABASE FILE	CONC COL	CONC BEAM
ConcCol	CONC	Rectangular	Yes	
ConcBm	CONC	Rectangular		Yes
C60X60	CONC4000	Rectangular	Yes	
V50X40	CONC4000	Rectangular		Yes
V20X40	CONC4000SM	Rectangular		Yes
V30X40	CONC4000	Rectangular		Yes
V50X50	CONC4000	Rectangular		Yes
V20X50	CONC4000SM	Rectangular		Yes

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 THICK BOT	FLANGE WIDTH BOT
ConcCol	0.4572	0.4572	0.0000	0.0000	0.0000	0.0000
ConcBm	0.4572	0.3048	0.0000	0.0000	0.0000	0.0000
C60X60	0.6000	0.6000	0.0000	0.0000	0.0000	0.0000
V50X40	0.4000	0.5000	0.0000	0.0000	0.0000	0.0000
V20X40	0.4000	0.2000	0.0000	0.0000	0.0000	0.0000
V30X40	0.4000	0.3000	0.0000	0.0000	0.0000	0.0000
V50X50	0.5000	0.5000	0.0000	0.0000	0.0000	0.0000
V20X50	0.5000	0.2000	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
ConcCol	0.2090	0.0062	0.0036	0.0036	0.1742	0.1742
ConcBm	0.1394	0.0025	0.0024	0.0011	0.1161	0.1161
C60X60	0.3600	0.0183	0.0108	0.0108	0.3000	0.3000
V50X40	0.2000	0.0055	0.0027	0.0042	0.1667	0.1667
V20X40	0.0800	0.0007	0.0011	0.0003	0.0667	0.0667
V30X40	0.1200	0.0019	0.0016	0.0009	0.1000	0.1000
V50X50	0.2500	0.0088	0.0052	0.0052	0.2083	0.2083
V20X50	0.1000	0.0010	0.0021	0.0003	0.0833	0.0833

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 MODULI S33	SECTION MODULI S22	PLASTIC MODULI Z33	PLASTIC MODULI Z22	RADIUS OF GYRATION R33	RADIUS OF GYRATION R22
ConcCol	0.0159	0.0159	0.0239	0.0239	0.1320	0.1320
ConcBm	0.0106	0.0071	0.0159	0.0106	0.1320	0.0880
C60X60	0.0360	0.0360	0.0540	0.0540	0.1732	0.1732
V50X40	0.0133	0.0167	0.0200	0.0250	0.1155	0.1443
V20X40	0.0053	0.0027	0.0080	0.0040	0.1155	0.0577
V30X40	0.0080	0.0060	0.0120	0.0090	0.1155	0.0866
V50X50	0.0208	0.0208	0.0313	0.0313	0.1443	0.1443
V20X50	0.0083	0.0033	0.0125	0.0050	0.1443	0.0577

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
ConcCol	0.0000	0.0000
ConcBm	0.0000	0.0000
C60X60	45.4091	4.6267
V50X40	23.6104	2.4057
V20X40	0.0000	0.0000
V30X40	0.0000	0.0000
V50X50	26.1566	2.6651
V20X50	0.0000	0.0000

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
ConcBm	0.0457	0.0457	0.000	0.000	0.000	0.000
V50X40	0.0500	0.0500	0.000	0.000	0.000	0.000
V20X40	0.0500	0.0500	0.000	0.000	0.000	0.000
V30X40	0.0500	0.0500	0.000	0.000	0.000	0.000
V50X50	0.0500	0.0500	0.000	0.000	0.000	0.000
V20X50	0.0500	0.0500	0.000	0.000	0.000	0.000

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

SHELL SECTION	MATERIAL NAME	SHELL TYPE	LOAD DIST ONE WAY	MEMBRANE THICK	BENDING THICK	TOTAL WEIGHT	TOTAL MASS
WALL1	CONC	Shell-Thin	No	0.2500	0.2500	0.0000	0.0000
SLAB1	CONC	Shell-Thin	No	0.2500	0.2500	0.0000	0.0000
DECK1	CONC	Membrane	No	0.0889	0.0889	0.0000	0.0000
PLANK1	CONC	Membrane	Yes	0.2500	0.2500	0.0000	0.0000
PLACA12	CONC4000SM	Membrane	No	0.1200	0.1200	0.0000	0.0000
MURO25	CONC3000	Shell-Thin	No	0.2500	0.2500	52.4591	5.3450
PLACA15	CONC3000	Membrane	No	0.1500	0.1500	47.2683	4.8162

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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		

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

RESP SPEC CASE: SISMOX

BASIC RESPONSE SPECTRUM DATA

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

RESPONSE SPECTRUM FUNCTION ASSIGNMENT DATA

DIRECTION	FUNCTION	SCALE FACT
U1	ESPECTRO	9.8100
U2	----	N/A
UZ	----	N/A

RESP SPEC CASE: SISMOY

BASIC RESPONSE SPECTRUM DATA

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

RESPONSE SPECTRUM FUNCTION ASSIGNMENT DATA

DIRECTION	FUNCTION	SCALE FACT
U1	----	N/A
U2	ESPECTRO	9.8100
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
COMB1	ADD	DEAD	Static	1.2000
		LIVE	Static	1.6000
COMB2	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	1.3300
COMB3	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOY	Spectra	1.1800
COMB4	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	1.3300
COMB5	ADD	DEAD	Static	0.9000
		SISMOY	Spectra	1.1800
COMB6	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.2300
		SISMOY	Spectra	0.0800
COMB7	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.2300
		SISMOY	Spectra	-0.0800
COMB8	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.0700
		SISMOY	Spectra	0.2800
COMB9	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.0700
		SISMOY	Spectra	-0.2800
COMB10	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.2300
		SISMOY	Spectra	0.0800
COMB11	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.2300
		SISMOY	Spectra	-0.0800
COMB12	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.0700
		SISMOY	Spectra	0.2800
COMB13	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.0700
		SISMOY	Spectra	-0.2800
COMB14	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.4700
		SISMOY	Spectra	0.1700
COMB15	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.4700
		SISMOY	Spectra	-0.1700
COMB16	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.1400
		SISMOY	Spectra	0.5500
COMB17	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.1400
		SISMOY	Spectra	-0.5500
COMB18	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.4700
		SISMOY	Spectra	0.1700
COMB19	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.4700
		SISMOY	Spectra	-0.1700
COMB20	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.1400
		SISMOY	Spectra	0.5500
COMB21	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.1400
		SISMOY	Spectra	-0.5500
COMB22	ADD	DEAD	Static	1.3600
		LIVE	Static	1.0000
		SISMOX	Spectra	0.7000
		SISMOY	Spectra	0.2500
COMB23	ADD	DEAD	Static	1.3600
		LIVE	Static	1.0000
		SISMOX	Spectra	0.7000
		SISMOY	Spectra	-0.2500
COMB24	ADD	DEAD	Static	1.3600
		LIVE	Static	1.0000
		SISMOX	Spectra	0.2100
		SISMOY	Spectra	0.8300
COMB25	ADD	DEAD	Static	1.3600
		LIVE	Static	1.0000
		SISMOX	Spectra	0.2100
		SISMOY	Spectra	-0.8300
COMB26	ADD	DEAD	Static	0.7400
		SISMOX	Spectra	0.7000
		SISMOY	Spectra	0.2500
COMB27	ADD	DEAD	Static	0.7400
		SISMOX	Spectra	0.7000
		SISMOY	Spectra	-0.2500
COMB28	ADD	DEAD	Static	0.7400
		SISMOX	Spectra	0.2100
		SISMOY	Spectra	0.8300
COMB29	ADD	DEAD	Static	0.7400
		SISMOX	Spectra	0.2100
		SISMOY	Spectra	-0.8300
ENVOLVENTE	ENVE	COMB1	Combo	1.0000
		COMB6	Combo	1.0000
		COMB7	Combo	1.0000
		COMB8	Combo	1.0000
		COMB9	Combo	1.0000
		COMB10	Combo	1.0000
		COMB11	Combo	1.0000
		COMB12	Combo	1.0000
		COMB13	Combo	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 - U S E R

FUNCTION NAME: ESPECTRO

PERIOD	ACCEL
0.0000	1.2190
0.0500	1.2190
0.1000	1.2190
0.1500	1.2190
0.2000	1.2190
0.2500	1.2190
0.3000	1.2190
0.3500	1.2190
0.4000	1.2190
0.4500	1.2190
0.5000	1.2190
0.5500	1.2190
0.6000	1.2000
0.6500	1.1080
0.7000	1.0290
0.7500	0.9600
0.8000	0.9000
0.8500	0.8470
0.9000	0.8000
0.9500	0.7580
1.0000	0.7200
1.0500	0.6860
1.1000	0.6550
1.1500	0.6260
1.2000	0.6000
1.2500	0.5760
1.3000	0.5540
1.3500	0.5330
1.4000	0.5140
1.4500	0.4970
1.5000	0.4800
1.5500	0.4650
1.6000	0.4500
1.6500	0.4360
1.7000	0.4240
1.7500	0.4110
1.8000	0.4000
1.8500	0.3890
1.9000	0.3790
1.9500	0.3690
2.0000	0.3600
2.1000	0.3430
2.2000	0.3270
2.3000	0.3130
2.4000	0.3000
2.5000	0.2880
2.6000	0.2770
2.7000	0.2670
2.8000	0.2570
2.9000	0.2480
3.0000	0.2400
3.1000	0.2320
3.2000	0.2250
3.3000	0.2180
3.4000	0.2120
3.5000	0.2060
3.6000	0.2000
3.7000	0.1950
3.8000	0.1890
3.9000	0.1850
4.0000	0.1800
4.1000	0.1760
4.2000	0.1710
4.3000	0.1670
4.4000	0.1640
4.5000	0.1600
4.6000	0.1570
4.7000	0.1530
4.8000	0.1500
4.9000	0.1440
5.0000	0.1380
5.1000	0.1330

5.2000	0.1280
5.3000	0.1230
5.4000	0.1190
5.5000	0.1140
5.6000	0.1100
5.7000	0.1060
5.8000	0.1030
5.9000	0.0990
6.0000	0.0960
6.1000	0.0930
6.2000	0.0900
6.3000	0.0870
6.4000	0.0840
6.5000	0.0820
6.6000	0.0790
6.7000	0.0770
6.8000	0.0750
6.9000	0.0730
7.0000	0.0710
7.1000	0.0690
7.2000	0.0670
7.3000	0.0650
7.4000	0.0630
7.5000	0.0610
7.6000	0.0600

RIGID DIAPHRAGM ASSIGNMENTS TO POINT OBJECTS

STORY	DIAPHRAGM	POINT	POINT	POINT	POINT	POINT
CUB	D2	1	2	3	4	5
CUB	D2	6	77	79	80	81
CUB	D2	82	83	84	85	86
CUB	D2	87	88	103		
PISO2	D1	1	2	3	4	5
PISO2	D1	6	7	8	10	11
PISO2	D1	12	13	14	16	17
PISO2	D1	18	19	49	50	51
PISO2	D1	52	53	54	102	

POINT MASS ASSIGNMENTS

STORY	POINT	MASSX	MASSY	MASSZ	MMIXX	MMIYY	MMIZZ
CUB	103	5.5000	5.5000	0.0000	0.0000	0.0000	0.0000
PISO2	102	6.1100	6.1100	0.0000	0.0000	0.0000	0.0000

FRAME SECTION ASSIGNMENTS TO LINE OBJECTS

STORY LEVEL	LINE ID	LINE TYPE	SECTION TYPE	AUTO SELECT SECTION	ANALYSIS SECTION	DESIGN PROCEDURE	DESIGN SECTION
CUB	C1	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C2	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C3	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C4	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C5	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	C6	Column	Rectangular	None	C60X60	Conc Frame	C60X60
PISO2	C1	Column	Rectangular	None	C60X60	Conc Frame	C60X60
PISO2	C2	Column	Rectangular	None	C60X60	Conc Frame	C60X60
PISO2	C3	Column	Rectangular	None	C60X60	Conc Frame	C60X60
PISO2	C4	Column	Rectangular	None	C60X60	Conc Frame	C60X60
PISO2	C5	Column	Rectangular	None	C60X60	Conc Frame	C60X60
PISO2	C6	Column	Rectangular	None	C60X60	Conc Frame	C60X60
CUB	B2	Beam	Rectangular	None	V50X40	Conc Frame	V50X40
CUB	B4	Beam	Rectangular	None	V50X40	Conc Frame	V50X40
CUB	B5	Beam	Rectangular	None	V50X40	Conc Frame	V50X40
CUB	B7	Beam	Rectangular	None	V50X40	Conc Frame	V50X40
CUB	B51	Beam	Rectangular	None	V50X40	Conc Frame	V50X40
CUB	B53	Beam	Rectangular	None	V50X40	Conc Frame	V50X40
CUB	B56	Beam	Rectangular	None	V50X40	Conc Frame	V50X40
CUB	B57	Beam	Rectangular	None	V50X40	Conc Frame	V50X40
CUB	B58	Beam	Rectangular	None	V50X40	Conc Frame	V50X40
CUB	B59	Beam	Rectangular	None	V50X40	Conc Frame	V50X40
CUB	B60	Beam	Rectangular	None	V50X40	Conc Frame	V50X40
CUB	B61	Beam	Rectangular	None	V50X40	Conc Frame	V50X40
CUB	B62	Beam	Rectangular	None	V50X40	Conc Frame	V50X40
CUB	B63	Beam	Rectangular	None	V50X40	Conc Frame	V50X40
PISO2	B5	Beam	Rectangular	None	V50X50	Conc Frame	V50X50
PISO2	B10	Beam	Rectangular	None	V50X50	Conc Frame	V50X50
PISO2	B13	Beam	Rectangular	None	V50X50	Conc Frame	V50X50
PISO2	B14	Beam	Rectangular	None	V50X50	Conc Frame	V50X50
PISO2	B15	Beam	Rectangular	None	V50X50	Conc Frame	V50X50
PISO2	B16	Beam	Rectangular	None	V50X50	Conc Frame	V50X50
PISO2	B20	Beam	Rectangular	None	V20X50	Conc Frame	V20X50
PISO2	B22	Beam	Rectangular	None	V20X50	Conc Frame	V20X50
PISO2	B23	Beam	Rectangular	None	V50X50	Conc Frame	V50X50
PISO2	B25	Beam	Rectangular	None	V50X50	Conc Frame	V50X50
PISO2	B26	Beam	Rectangular	None	V50X50	Conc Frame	V50X50
PISO2	B29	Beam	Rectangular	None	V20X40	Conc Frame	V20X40
PISO2	B30	Beam	Rectangular	None	V20X40	Conc Frame	V20X40
PISO2	B31	Beam	Rectangular	None	V20X40	Conc Frame	V20X40
PISO2	B32	Beam	Rectangular	None	V50X50	Conc Frame	V50X50
PISO2	B33	Beam	Rectangular	None	V50X50	Conc Frame	V50X50
PISO2	B34	Beam	Rectangular	None	V20X50	Conc Frame	V20X50
PISO2	B35	Beam	Rectangular	None	V20X50	Conc Frame	V20X50
PISO2	B37	Beam	Rectangular	None	V20X50	Conc Frame	V20X50
PISO2	B39	Beam	Rectangular	None	V50X50	Conc Frame	V50X50
PISO2	B40	Beam	Rectangular	None	V50X50	Conc Frame	V50X50
PISO2	B41	Beam	Rectangular	None	V50X50	Conc Frame	V50X50
PISO2	B42	Beam	Rectangular	None	V50X50	Conc Frame	V50X50
PISO2	B43	Beam	Rectangular	None	V50X50	Conc Frame	V50X50
PISO2	B44	Beam	Rectangular	None	V50X50	Conc Frame	V50X50
PISO2	B45	Beam	Rectangular	None	V50X50	Conc Frame	V50X50
PISO2	B46	Beam	Rectangular	None	V50X50	Conc Frame	V50X50
PISO2	B47	Beam	Rectangular	None	V50X50	Conc Frame	V50X50
PISO2	B48	Beam	Rectangular	None	V50X50	Conc Frame	V50X50
PISO2	B49	Beam	Rectangular	None	V50X50	Conc Frame	V50X50

RELEASE ASSIGNMENTS TO LINE OBJECTS

STORY LEVEL	LINE ID	LINE TYPE	P	V2	V3	T	M2	M3
PISO2	C1	Column	None	None	None	None	None	I-end
PISO2	B20	Beam	None	None	None	None	None	Both ends
PISO2	B22	Beam	None	None	None	None	None	Both ends
PISO2	B29	Beam	None	None	None	None	None	I-end
PISO2	B31	Beam	None	None	None	None	None	J-end
PISO2	B34	Beam	None	None	None	None	None	Both ends
PISO2	B35	Beam	None	None	None	None	None	Both ends
PISO2	B37	Beam	None	None	None	None	None	Both ends
PISO2	B39	Beam	None	None	None	None	None	I-end
PISO2	B41	Beam	None	None	None	None	None	J-end
PISO2	B43	Beam	None	None	None	None	None	J-end
PISO2	B45	Beam	None	None	None	None	None	J-end
PISO2	B46	Beam	None	None	None	None	None	I-end
PISO2	B49	Beam	None	None	None	None	None	J-end

WALL, SLAB, DECK & OPENING ASSIGNMENTS TO AREA OBJECTS

STORY LEVEL	AREA ID	AREA TYPE	SECTION TYPE	SECTION LABEL
PISO2	W1	Wall	Wall	MURO25
PISO2	W10	Wall	Wall	MURO25
PISO2	W11	Wall	Wall	MURO25
PISO2	W12	Wall	Wall	MURO25
PISO2	W13	Wall	Wall	MURO25
PISO2	W14	Wall	Wall	MURO25
CUB	F20	Floor	Slab	PLACA15
CUB	F21	Floor	Slab	PLACA15
CUB	F22	Floor	Slab	PLACA15
CUB	F23	Floor	Slab	PLACA15
CUB	F24	Floor	Slab	PLACA15
CUB	F25	Floor	Slab	PLACA15
CUB	F26	Floor	Slab	PLACA15
CUB	F27	Floor	Slab	PLACA15
PISO2	F4	Floor	Slab	PLACA12
PISO2	F10	Floor	Slab	PLACA12
PISO2	F11	Floor	Slab	PLACA12
PISO2	F12	Floor	Slab	PLACA12
PISO2	F15	Floor	Slab	PLACA12
PISO2	F17	Floor	Slab	PLACA12
PISO2	F18	Floor	Slab	PLACA12
PISO2	F19	Floor	Slab	PLACA12

UNIFORM LOAD ASSIGNMENTS TO AREA OBJECTS

CASE	STORY	AREA	AREATYPE	DIRECTION	LOAD
DEAD	CUB	F20	Floor	Gravity	0.5100
DEAD	CUB	F21	Floor	Gravity	0.5100
DEAD	CUB	F22	Floor	Gravity	0.5100
DEAD	CUB	F23	Floor	Gravity	0.5100
DEAD	CUB	F24	Floor	Gravity	0.5100
DEAD	CUB	F25	Floor	Gravity	0.5100
DEAD	CUB	F26	Floor	Gravity	0.5100
DEAD	CUB	F27	Floor	Gravity	0.5100
DEAD	PISO2	F4	Floor	Gravity	0.5670
DEAD	PISO2	F10	Floor	Gravity	0.5670
DEAD	PISO2	F11	Floor	Gravity	0.5670
DEAD	PISO2	F12	Floor	Gravity	0.5670
DEAD	PISO2	F15	Floor	Gravity	0.5670
DEAD	PISO2	F17	Floor	Gravity	0.5670
DEAD	PISO2	F18	Floor	Gravity	0.5670
DEAD	PISO2	F19	Floor	Gravity	0.5670
LIVE	CUB	F20	Floor	Gravity	0.1800
LIVE	CUB	F21	Floor	Gravity	0.1800
LIVE	CUB	F22	Floor	Gravity	0.1800
LIVE	CUB	F23	Floor	Gravity	0.1800
LIVE	CUB	F24	Floor	Gravity	0.1800
LIVE	CUB	F25	Floor	Gravity	0.1800
LIVE	CUB	F26	Floor	Gravity	0.1800
LIVE	CUB	F27	Floor	Gravity	0.1800
LIVE	PISO2	F4	Floor	Gravity	0.5000
LIVE	PISO2	F10	Floor	Gravity	0.5000
LIVE	PISO2	F11	Floor	Gravity	0.5000
LIVE	PISO2	F12	Floor	Gravity	0.5000
LIVE	PISO2	F15	Floor	Gravity	0.5000
LIVE	PISO2	F17	Floor	Gravity	0.5000
LIVE	PISO2	F18	Floor	Gravity	0.5000
LIVE	PISO2	F19	Floor	Gravity	0.5000

BLOQUE 4

ANÁLISIS SÍSMICO

DESCRIPCION GENERAL DEL PROYECTO ESTRUCTURAL

DATOS GENERALES:

NOMBRE DEL PROYECTO:	**HOSPITAL SAN JUAN BAUTISTA (BLOQUE 4)**
CIUDAD:	**CHAPARRAL**
CALCULO:	**D.O.R**
REVISO:	**D.O.R**
FECHA:	**30/11/2020**
OBSERVACIONES:	
LOCALIZACION:	**CHAPARRAL TOLIMA**
SISTEMA ESTRUCTURAL:	**Pórticos de concreto**
CAPACIDAD DE DISIPACION:	**DES**
NUMERO DE PISOS	**1**

DESCRIPCION DEL PROYECTO:

El proyecto arquitectónico consta de 1 niveles, el cual estara destinado para uso del Hospital San Juan Bautista del municipio de Chaparral Tolima.

El sistema estructural utilizado para resistir cargas verticales y laterales (sísmicas), es el de pórticos de concreto reforzado, con placa de entrepiso de 50 cm de espesor aligerada y armada en una dirección, cuyo uso esta definido en las Normas Colombianas de construcciones sismoresistentes- NSR-10.

La cimentación consiste en zapatas aisladas, según recomendación del estudio de suelos de la firma Laboratorio de suelos y pavimentos GAIA

DESCRIPCION DEL PROGRAMA DE COMPUTADOR:

El programa utilizado para el procesamiento del edificio es ETABS Versión 9.2 desarrollado por la compañía Computers and structures inc con amplio recorrido de más de 40 años en el desarrollo de software de análisis estructural. Este programa utiliza el método matricial para la solución de la estructura y el modelo utilizado es tridimensional con diafragma rígido. El análisis sísmico desarrollado es el método modal elástico. Los muros fueron modelados mediante los elementos tipo Shell y las placas mediante los elementos tipo membrane para que estas no tomen rigidez a las cargas horizontales. Las vigas y columnas fueron modelados mediante el elemento tipo frame.

PARAMETROS SISMICOS:

Metodo de Analisis sísmico			
Método utilizado:	**2**	ANALISIS MODAL DINAMICO	
Ubicación de la estructura		=	**CHAPARRAL**
Grupo de uso		=	IV
PARAMETROS DE LA NSR-10			
Zona de Amenaza Sísmica		=	Alta
Coef. de aceleracion pico efectiva, Aa		=	**0.25**
Coef. de velocidad pico efectiva, Av		=	**0.20**
Perfil del Suelo		=	**D**
Coeficiente Fa		=	1.30
Coeficiente Fv		=	2.00
Grupo de uso		=	**IV**
Coeficiente de importancia		=	1.5
UMBRAL DE DAÑO			
Coeficiente de aceleración pico (Ad)		=	**0.06**
Coeficiente de sitio para umbral de daño		=	2.5

ESPECIFICACIONES :

Concreto f'c	**280 kgf/cm2**	→	4000 psi	**VIGAS**
	280 kgf/cm2	→	4000 psi	**COLUMNAS**
	210 kgf/cm2	→	3000 psi	**CIMENTACION**
Acero fy	**4200 kgf/cm2**	→	60000 psi	ϕ >= 3/8"
	2400 kgf/cm2	→	34286 psi	ϕ < 3/8"

NORMAS :

Se siguieron las recomendaciones dadas por el reglamento Colombianos de Construcción Sismo Resistente NSR-10 (Ley 400 de 1997 (Modificada Ley 1229 de 2008). Decreto 926 de 2010) y sus decretos complementarios.

CALCULO DE ALTURAS Y NIVELES DE LA ESTRUCTURA

NIVEL		H libre	h Placa	Alt. Total piso	NIVEL
PISO	CUB	3.90	0.40	4.30	-4.18
NIVEL DE ARRANQUE		-8.48			



CALCULO DE DENSIDADES

MATERIALES

Vigas

γ Concreto=	2.4	TN/m^3

Columnas

γ Concreto=	2.4	TN/m^3

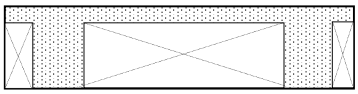
NIVEL		Vol. Vigas m³	Vol. Columnas m³	Area Placa m²	*r Vigas* TN/m²	*r Columnas* TN/m²
PISO	CUB	6.36	6.20	85.2	0.179	0.158

CALCULO DE PESO DE MUROS DIVISORIOS

PISO	Area de Muros m2	γ Mamposteria Tn/m3	Altura libre m	Peso muros Tn	Area placa m2	Densidad muros Tn/m2	Densidad muros adoptada
PISOCUB	1.7	1.60	2.0	5	85.2	0.062	0.100

AVALUO DE CARGA DE PLACA

CORTE TIPICO DE CUBIERTA



Placa Aligerada con Torta Superior

DATOS GENERALES		
γ Concreto	2.4	Tn/m3
γ Mortero acabados	2.0	Tn/m3
Pendiente Cubierta	0.0	°
Pendiente Cubierta	0.00	
CV cub inclinada	0.050	Tn/m2
Cgranizo	0.100	Tn/m2

CONVENCIONES	
CM:	Carga Muerta
CV:	Carga Viva
CT:	Carga Real Total aplicada a la placa (CM+CV)
CU:	Carga Ultima para diseño de Viguetas (1.2CM+1.6CV)
CR:	Carga real a cimentacion ($CT+\rho_{Vigas}+\rho_{Columnas}$)
CS:	Carga de sismo ($CM+\rho_{Vigas}+\rho_{Columnas}$)

NIVEL	h(m)	Torta Sup.	Torta Inf.	e Viguetas (m)	Sep Viguetas (m)	W_{placa} Tn/m2	$W_{viguetas}$ Tn/m2	$W_{caseton}$ Tn/m2	$W_{viguetas\ metalica}$ Tn/m2	$e_{Acabados}$ (m)	$W_{acabados}$ Tn/m2	W_{muros} Tn/m2	$W_{cubierta}$ Tn/m2	$W_{estr.\ metalica}$ Tn/m2	W_{otros} Tn/m2	CM Tn/m2	CV Tn/m2	ρ_{Vigas} (tn/m2)	$\rho_{Columnas}$ (tn/m2)	$\rho_{Vigas+Columnas}$ (tn/m2)	CU Tn/m2	CR Tn/m2	Piso Restringido?	CS Tn/m2
PISO CUB	0.40	0.12	0.00	0.20	2.10	0.288	0.06	0.00	0.00	0.05	0.100	0.100	0.000	0.000	0.000	0.546	0.200	0.179	0.158	0.338	2.244	1.084	No	0.884

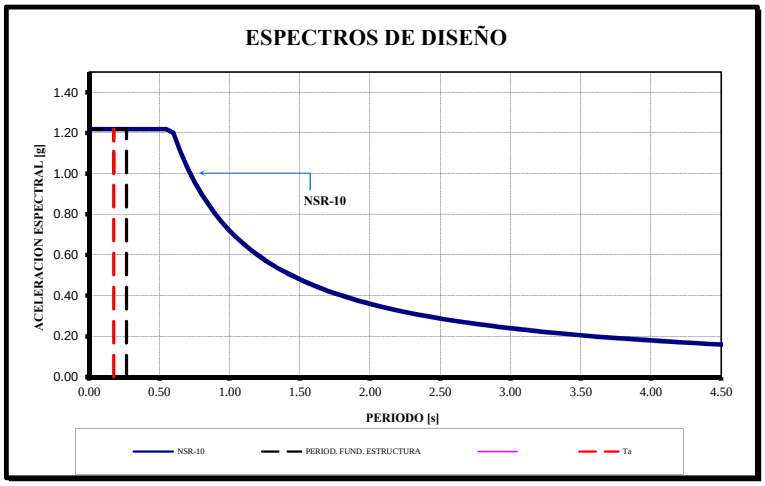
ANALISIS SISMICO DE LA ESTRUCTURA

El Análisis Sísmico del edificio se realizará por el método de ANALISIS MODAL DINAMICO

El programa de análisis estructural ETABS realiza directamente el análisis utilizando el Espectro Elástico de Diseño, el cual se elabora según parámetros del Reglamento de construccion Sismo Resistente Colombiano NSR-10 .

Los Parametros sísmicos que se tuvieron en cuenta para el analisis del edificio son los siguientes:

Parámetros del Espectro de la Norma Sismo Resistente NSR-10		
Zona de Amenaza Sísmica	=	Alta
Coef. de aceleracion pico efectiva, Aa	=	0.25
Coef. de velocidad pico efectiva, Av	=	0.20
Perfil del Suelo	=	D
Grupo de uso	=	IV
Coeficiente Fa	=	1.30
Coeficiente Fv	=	2.00
Coef. de Importancia, I	=	1.50
Coef. de amort. Crítico β	=	5.00%
Período inicial, To	=	0.12 s
Período corto, Tc	=	0.59 s
Período largo, T_L	=	4.80 s
Máx. acel. en el espectro	=	1.22 g



Para el analisis se determinó la masa que participa en el sismo proveniente del peso muerto del edificio.

CALCULO DE LA MASA DEL EDIFICIO			
PISO	Area [m²]	Carga Sísmo [T/m²]	Masa [T s²/m]
PISOCUB	85.15	0.88	7.67

Se determinó el centro de gravedad de cada piso y el centro de rigidez del mismo para determinar la torsión de diseño de acuerdo al numeral A.3.6.7, la cual corresponde a la suma de la torsión directa más la torsión accidental. La torsión directa es tenida en cuenta por el propio programa de analisis y la torsion accidental depende del metodo de analisis.

CALCULO DEL CENTROIDE DE MASAS YTORSION EN EL PISO												
PISO	POSICION DE LA MASA RESPECTO AL CENTRO DE RIGIDEZ	CENTRO DE MASA		MAYOR LONGITUD		ex [m]	ey [m]	CENTRO DE RIGIDEZ		CENTROIDE DEFINITIVO		CENTROIDE MODIFICADO INCLUYENDO Ax
		X [m]	Y [m]	LX [m]	LY [m]			X_R [m]	Y_R [m]	X [m]	Y [m]	X [m]	Y [m]
PISOCUB	C.R. ■ C.M. ■	3.05	6.44	6.50	13.10	0.00	0.00	3.05	6.59	3.05	6.44	-	-

Nota: Debido a que el metodo de analisis corresponde al dinamico elastico no se tuvo en cuenta la torsion accidental segun NSR-10 A 3.6.7

CALCULO DEL PESO DEL EDIFICIO Y DETERMINACION DEL CORTANTE BASAL ESTATICO POR FUERZA HORIZONTAL EQUIVALENTE

Para el calculo de los factores de ajuste se utilizó el método de la Fuerza Horizontal Equivalente para ajustar el valor del cortante dinámico en la base (Según A.5.4.5 -- NSR - 10)

CALCULO DEL PESO DEL EDIFICIO			
PISO	**W (T)**	**ALTURA PISO (m)**	**h (acumulado) (m)**
PISOCUB	75.28	4.30	4.30
PESO TOTAL	**75.28 T**		

CALCULO CORTANTE ESTATICO EN LA BASE

Ct	=	0.047
α=	=	0.900
hn	=	4.30 m
Ta	=	$Ct\ hn^{\alpha}$
Ta	=	0.17 s
T	=	0.27 s
Sa	=	1.22 g
Vs	=	**91.75 Tn**

Cortante sísmico en la base (Vs = Sa×Westructura)

CALCULO CORTANTE DINAMICO EN LA BASE

Del programa se obtuvieron los siguientes valores del cortante basal dinamico

TABLA DE CORTANTES DINAMICOS								
Spec	Mode	Dir	F1	F2	F3	M1	M2	M3
SISMOX	1	U1	84.3	0.0	0.0	0.0	-348.3	-543.0
SISMOX	2	U1	0.0	0.0	0.0	0.0	0.0	0.0
SISMOX	3	U1	0.0	0.0	0.0	0.0	-0.1	-0.1
SISMOX	**All**	**All**	**84.3**	**0.0**	0.0	0.0	348.3	543.0
SISMOY	1	U2	0.0	0.0	0.0	0.0	0.0	0.0
SISMOY	2	U2	0.0	84.3	0.0	348.3	0.0	257.2
SISMOY	3	U2	0.0	0.0	0.0	0.0	0.0	0.0
SISMOY	**All**	**All**	**0.0**	**84.3**	0.0	348.3	0.0	257.2

TABLA DE PERIODOS REALES DE LA ESTRUCTURA							
Spec	Mode	Period	DampRatio	pecFacto	U1	U2	U3
SISMOX	1	**0.27**	0.05	1.00	11.96	0.00	0.00
SISMOX	2	0.20	0.05	1.00	11.96	0.00	0.00
SISMOX	3	0.12	0.05	1.00	11.96	0.00	0.00
SISMOY	1	**0.27**	0.05	1.00	0.00	11.96	0.00
SISMOY	2	0.20	0.05	1.00	0.00	11.96	0.00
SISMOY	3	0.12	0.05	1.00	0.00	11.96	0.00

CORTANTE DINAMICO EN LA BASE

Cortante basal en sentido X		
F1	=	84.3 Tn
F2	=	0.0 Tn
Vsd_x	=	**84.3 Tn**

Cortante basal en sentido Y		
F1	=	0.0 Tn
F2	=	84.3 Tn
Vsd_y	=	**84.3 Tn**

AJUSTE DE LOS RESULTADOS

Utilizando la metodologia de analisis de modos y frecuencias por medio del programa se determino el periodo fundamental del edificio con el cual se realiza el ajuste del valor del cortante basal Estatico y el valor del periodo máximo (Cu*Ta) según A.5.4.5 (a)

Se comparan los cortantes en la base del análisis modal con el estático para determinar si se deben modificar las fuerzas de sismo conforme a lo establecido en A.5.4.5 (b)

Si la estructura es regular, el cortante dinámico en la base no puede ser menor que el 80 % del cortante calculado por Fuerza Horizontal Equivalente (Vs) ni menor del 90% para estructuras irregulares- (según A.5.4.5 b - NSR-10)

Item	Sentido X	Sentido Y
Periodo T (s)	0.27	0.20
Ta (s)	0.17	0.17
Cu	1.27	1.27
Periodo maximo Cu*Ta (s)	0.22	0.22
Periodo definitivo	0.22	0.20
Sa	1.22	1.22
Cortante Basal Vs (Tn)	91.8	91.8
0.90 Vs	82.6	82.6
0.80 Vs	73.4	73.4
Irregular	Si	No
Cortante Estatico Vs (Tn)	82.6	73.4
Cortante Dinamico Vsd(Tn)	84.3	84.3
Factor de Ajuste	1.00	1.00

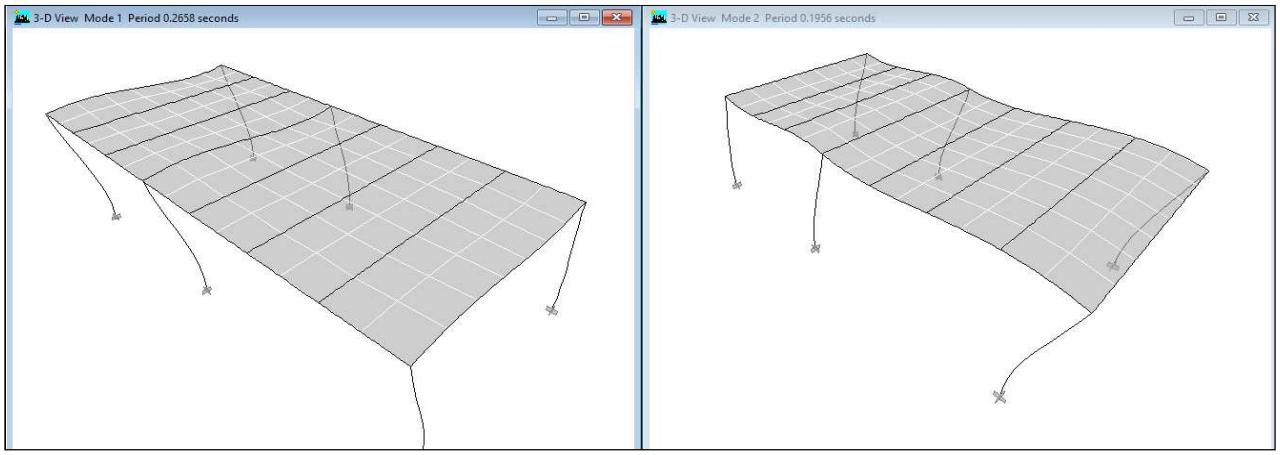
PORCENTAJE DE MASA PARTICIPATIVA

Finalmente se verifica que el número de modos utilizado sea el requerido para que la masa participativa sea mayor al 90% conforme a lo estipulado en A.5.4.2

TABLA DE MASA PARTICIPATIVA

Mode	Period	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
1	0.27	99.98	0.00	0.00	99.98	0.00	0.00	0.00	99.98	0.03	0.00	99.98	0.03
2	0.20	0.00	100.00	0.00	99.98	100.00	0.00	100.00	0.00	0.00	100.00	99.98	0.03
3	0.12	0.02	0.00	0.00	100.00	100.00	0.00	0.00	0.02	99.97	100.00	100.00	100.00

MODOS PRINCIPALES DE VIBRACION

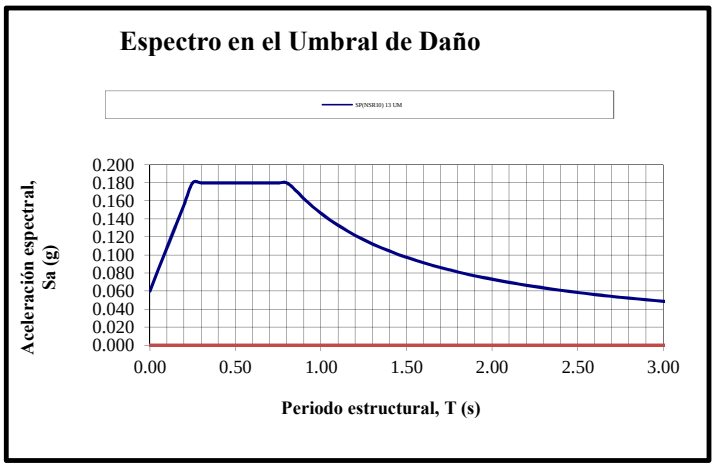


ANALISIS SIMICO PARA EL UMBRAL DE DANO (GRUPO DE USO III o IV)

Parámetros del Espectro de la Norma Sismo Resistente NSR-10		
Zona de Amenaza Sísmica	=	Alta
Coef. de acel. pico efectiva, Ad	=	0.06
Coeficiente de sitio para el umbral	=	2.5
Grupo de uso	=	IV
Coef. de Importancia, I	=	1.5
Coef. de amort. crítico	=	2.00%

CALCULO DE ACELERACION ESPECTRAL		
Ad	=	0.06
S	=	2.50
I	=	1.50
Ct	=	**0.05**
T	=	0.27 S
Tod	=	0.25 S
TCd	=	1.25 S
TLd	=	6.00 S
Sad	=	0.19
Sad	=	0.18
Sad	=	0.85
Sad	=	**0.18**
Vsd	=	**13.6 Tn**

Definitivo



CALCULO CORTANTE DINAMICO EN LA BASE

TABLA DE CORTANTES DINAMICOS								
Spec	Mode	Dir	F1	F2	F3	M1	M2	M3
SISMOX	1	U1	12.5	0.0	0.0	0.0	-51.4	-80.2
SISMOX	2	U1	0.0	0.0	0.0	0.0	0.0	0.0
SISMOX	3	U1	0.0	0.0	0.0	0.0	0.0	0.0
SISMOX	All	All	12.5	0.0	0.0	0.0	51.4	80.2
SISMOY	1	U2	0.0	0.0	0.0	0.0	0.0	0.0
SISMOY	2	U2	0.0	10.7	0.0	44.0	0.0	32.5
SISMOY	3	U2	0.0	0.0	0.0	0.0	0.0	0.0
SISMOY	All	All	0.0	10.7	0.0	44.0	0.0	32.5

CORTANTE DINAMICO EN LA BASE

Cortante basal en sentido X			
F1	=	12.5	Tn
F2	=	0.0	Tn
Vtx	=	12.5	Tn

Cortante basal en sentido Y			
F1	=	0.0	Tn
F2	=	10.7	Tn
Vty	=	10.7	Tn

PERIODO REAL DE LA ESTRUCTURA

Tx	=	0.27	s
Ty	=	0.20	s
Cu * Ta	=	0.22	s

Recalcular Sa

AJUSTE DE LOS RESULTADOS

Irregularidad de la estructura	=	**Regular**

Si la estructura es regular, el cortante dinámico en la base no puede ser menor que el 80 % del cortante calculado por Fuerza Horizontal Equivalente (Vs) ni del 90% si es irregular - (según A.5.4.5 b - NSR-10)

RECALCULO Sa	
Ad=	0.06 g
$\bar{S}$=	2.50
I=	1.50
Ct=	**0.05**
T=	0.22 s
Tod	0.25 s
TCd	1.25 s
TLd	6.00 s
Sad=	0.19 s
Sad=	0.18 s
Sad	0.85 s
Sad=	0.18
0.90V=	12.2 Tn
0.8V=	10.8 Tn
Vdef=	10.8Tn

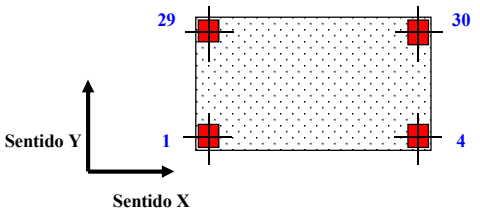
FACTORES DE AJUSTE DEFINITIVOS		
Fx=	**1.00**	**Definitivo**
Fy=	**1.02**	**Definitivo**

CHEQUEO DE LA DERIVA CON COMBINACIONES DE CARGA Y FACTORES DE AJUSTE

Se efectúa el análisis de la deriva máxima utilizando la inercia de las vigas y las columnas completa conforme a lo establecido en el capitulo A.6

CONVENCIONES	
h =	Altura Piso
δ (x,y) =	Desplazamiento por piso
Δa=	Deriva de análisis
Δp=	Deriva permitida
I_f =	Indice de flexibilidad
Δa=	$((\delta x_1-\delta x_2)^2+(\delta y_1-\delta y_2)^2)^{0.50}$
Δp =	**0.01** h
I_f =	Δa/Δp

EJES DE COLUMNAS ANALIZADAS



El metodo de combinacion modal utilizado corresponde al de la Combinacion cuadratica completa (CQC)

SISMO EN X

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
29	PISOCUB	4.30	2.30	4.30	OK	0.53	OK
30	PISOCUB	4.30	2.30	4.30	OK	0.53	OK
1	PISOCUB	4.30	2.41	4.30	OK	0.56	OK
4	PISOCUB	4.30	2.41	4.30	OK	0.56	OK

SISMO EN Y

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
29	PISOCUB	4.30	1.17	4.30	OK	0.27	OK
30	PISOCUB	4.30	1.17	4.30	OK	0.27	OK
1	PISOCUB	4.30	1.17	4.30	OK	0.27	OK
4	PISOCUB	4.30	1.17	4.30	OK	0.27	OK

CHEQUEO DE LA DERIVAS PARA EL UMBRAL DE DAÑO (GRUPO USO III o IV)

CONVENCIONES	
h =	Altura Piso
δ (x,y) =	Desplazamiento por piso
Δa=	Deriva de análisis
Δp=	Deriva permitida
I_f =	Indice de flexibilidad
Δa=	$((\delta x_1-\delta x_2)^2+(\delta y_1-\delta y_2)^2)^{0.50}$
Δp =	**0.004** h
I_f =	Δa/Δp

SISMO EN X

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
29	PISOCUB	4.30	0.31	1.72	OK	0.18	OK
30	PISOCUB	4.30	0.31	1.72	OK	0.18	OK
1	PISOCUB	4.30	0.32	1.72	OK	0.19	OK
4	PISOCUB	4.30	0.32	1.72	OK	0.19	OK

SISMO EN Y

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
29	PISOCUB	4.30	0.16	1.72	OK	0.09	OK
30	PISOCUB	4.30	0.16	1.72	OK	0.09	OK
1	PISOCUB	4.30	0.16	1.72	OK	0.09	OK
4	PISOCUB	4.30	0.16	1.72	OK	0.09	OK

REVISION DE LA IRREGULARIDAD TORSIONAL

Irregularidad Tipo 1 P:

Tipo 1aP — Irregularidad torsional $\phi_p = 0.9$

$$1.4\left(\frac{\Delta_1+\Delta_2}{2}\right) \geq \Delta_1 > 1.2\left(\frac{\Delta_1+\Delta_2}{2}\right)$$

Tipo 1bP — Irregularidad torsional extrema $\phi_p = 0.8$

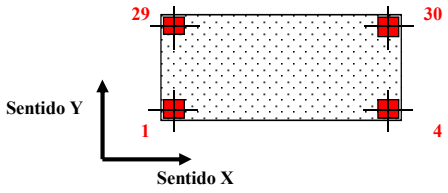
$$\Delta_1 > 1.4\left(\frac{\Delta_1+\Delta_2}{2}\right)$$

SISMO EN X

EJE DE COLUMNA		PISO	Δ1 (cm)	Δ2 (cm)	1.2*(Δ1 + Δ2)/2	1.4*(Δ1 + Δ2)/2	Ax
1	29	PISOCUB	2.41	2.30	2.83	3.30	REGULAR
4	30	PISOCUB	2.41	2.30	2.83	3.30	REGULAR

SISMO EN Y

EJE DE COLUMNA		PISO	Δ1 (cm)	Δ2 (cm)	1.2*(Δ1 + Δ2)/2	1.4*(Δ1 + Δ2)/2	Ax
1	4	PISOCUB	1.17	1.17	1.40	1.64	REGULAR
29	30	PISOCUB	1.17	1.17	1.40	1.64	REGULAR



REVISION INDICE DE ESTABILIDAD DE PISO EFECTOS DE SEGUNDO ORDEN

PISO	P(Tn)	Pu(Tn)	Δox(cm)	Δoy(cm)	Vus (Tn)	lc (m)	Qx	Qy	
PISOCUB	92.3	138.5	2.36	1.17	91.8	4.30	0.0083	0.0041	Arriostrado

EFECTOS DE ESBELTEZ EN ELEMENTOS A COMPRESION

Piso	bmin	r	kl/r	Comentarios
PISOCUB	**0.40**	0.12	32.5	No se tienen efectos de esbeltez según C.10.10.1

Nota: bmin corresponde al ancho minimo de las columnas en el piso en estudio

CALCULO DE FACTOR ϕr POR AUSENCIA DE REDUNDANCIA

Story	FloorArea	Rmax	Rho	CaseType	Case	Direction	ObjectType	Object	Object2	%Vs	Chequeo
CUB	111.63	0.30	0.06	Resp Spec	SISMOY	Y	MF Columns	C6	C3	1.00	Ok

CHEQUEO DE IRREGULARIDADES DE LA ESTRUCTURA

1. IRREGULARIDADES EN PLANTA

TIPO DE IREGULARIDAD		ϕ_p	ϕ_{Px}	ϕ_{Py}
Irregularidad Torsional	**1aP**	0.9	1.0	1.0
Irregularidad Torsional extrema	**1bP**	0.8	1.0	1.0
Retrocesos en las Esquinas	**2P**	0.9	1.0	1.0
Irregularidad del Diafragma	**3P**	0.9	1.0	1.0
Desplazamiento de los Planos de Acción	**4P**	0.8	1.0	1.0
Sistemas no Paralelos	**5P**	0.9	1.0	1.0
ϕp Definitivo=			**1.0**	**1.0**

2. IRREGULARIDADES EN ALTURA

TIPO DE IREGULARIDAD		ϕ_a	ϕ_{ax}	ϕ_{ay}	
Piso Flexible (Irregularidad en Rigidez)	**1aA**	0.9	1.0	1.0	Ver Nota
Piso Flexible extremo(Irregularidad en Rigidez)	**1bA**	0.8	1.0	1.0	Ver Nota
Distribución de Masa	**2A**	0.9	1.0	1.0	Ver Nota
Irregularidad Geométrica	**3A**	0.9	1.0	1.0	
Desplazamiento del Plano de Acción	**4A**	0.8	1.0	1.0	
Piso Débil - Discontinuidad en la Resistencia	**5aA**	0.9	1.0	1.0	
Piso Débil extremo - Discontinuidad en la Resist.	**5bA**	0.8	1.0	1.0	
ϕa Definitivo =			**1.0**	**1.0**	

Notas:

1. No existe irregularidad 1A,2A o 3A segun NSR-10 A 3.3.5.1

3. COEFICIENTE DE CAPACIDAD DE DISIPACION DE ENERGIA EN EL RANGO INELASTICO

$$R = \phi p * \phi a * \phi r * R_0$$ (NSR-10 A.3.3.3)

	Sentido X	Sentido Y	
ϕ_p =	1.00	1.00	Coeficiente por irregularidad en planta
ϕ_a =	1.00	1.00	Coeficiente por irregularidad en altura
ϕ_r =	**0.75**	**1.00**	Coeficiente por ausencia de redundancia
R'o =	**7.00**	**7.00**	Pórticos de concreto DES
R =	**5.25**	**7.00**	
Ωo=	**3.00**		Coeficiente de sobreresistencia
0.5AaFa=	**0.16**		Componente vertical de sismo Segun A.3.3.9

COMBINACIONES DE CARGA

1. FACTORES DE AJUSTE

Fx	=	**1.00**
Fy	=	**1.00**

2. CHEQUEO DE DERIVAS

No. DE COMBINACION							Fx			Fy		Combinacion en el programa
1	1.20	CM	+	0.50	CV	+	1.00	SX				COMBO 2
2	1.20	CM	+	0.50	CV	-	1.00	SX				
3	1.20	CM	+	0.50	CV				+	1.00	SY	COMBO 3
4	1.20	CM	+	0.50	CV				-	1.00	SY	
5	0.90	CM				+	1.00	SX				COMBO 4
6	0.90	CM				-	1.00	SX				
7	0.90	CM							+	1.00	SY	COMBO 5
8	0.90	CM							-	1.00	SY	

3. DISEÑO DE ELEMENTOS DEL SISTEMA DE RESISTENCIA SISMICA

No. DE COMBINACION							Fx/R 0.3*Fx/R			0.3*Fy/R Fy/R		
1	1.40	CM										
2	1.20	CM	+	1.60	CV	+	0.50	G				COMBO 1
3	1.20	CM	+	0.50	CV	+	0.19	SX	+	0.04	SY	COMBO 6
4	1.20	CM	+	0.50	CV	+	0.19	SX	-	0.04	SY	COMBO 7
5	1.20	CM	+	0.50	CV	-	0.19	SX	+	0.04	SY	
6	1.20	CM	+	0.50	CV	-	0.19	SX	-	0.04	SY	
7	1.20	CM	+	0.50	CV	+	0.06	SX	+	0.14	SY	COMBO 8
8	1.20	CM	+	0.50	CV	+	0.06	SX	-	0.14	SY	COMBO 9
9	1.20	CM	+	0.50	CV	-	0.06	SX	+	0.14	SY	
10	1.20	CM	+	0.50	CV	-	0.06	SX	-	0.14	SY	
11	0.90	CM				+	0.19	SX	+	0.04	SY	COMBO 10
12	0.90	CM				+	0.19	SX	-	0.04	SY	COMBO 11
13	0.90	CM				-	0.19	SX	+	0.04	SY	
14	0.90	CM				-	0.19	SX	-	0.04	SY	
15	0.90	CM				+	0.06	SX	+	0.14	SY	COMBO 12
16	0.90	CM				+	0.06	SX	-	0.14	SY	COMBO 13
17	0.90	CM				-	0.06	SX	+	0.14	SY	
18	0.90	CM				-	0.06	SX	-	0.14	SY	

Las siguientes combinaciones fueron incluidas para que en el programa DCCAD 2010 puedan realizarse los chequeos de cortante segun C.21.3.3.1 y C.21.3.3.2

4. DISENO DE CORTANTE SISMICO EN VIGAS (Ex2)

No. DE COMBINACION						E*2 / 0.3*E*2			0.3*E*2 / E*2		
19	1.20	CM	+	1.00	CV	+	0.38	SX	+	0.09	SY	COMBO 14
20	1.20	CM	+	1.00	CV	+	0.38	SX	-	0.09	SY	COMBO 15
21	1.20	CM	+	1.00	CV	-	0.38	SX	+	0.09	SY	
22	1.20	CM	+	1.00	CV	-	0.38	SX	-	0.09	SY	
23	1.20	CM	+	1.00	CV	+	0.11	SX	+	0.29	SY	COMBO 16
24	1.20	CM	+	1.00	CV	+	0.11	SX	-	0.29	SY	COMBO 17
25	1.20	CM	+	1.00	CV	-	0.11	SX	+	0.29	SY	
26	1.20	CM	+	1.00	CV	-	0.11	SX	-	0.29	SY	
27	0.90	CM				+	0.38	SX	+	0.09	SY	COMBO 18
28	0.90	CM				+	0.38	SX	-	0.09	SY	COMBO 19
29	0.90	CM				-	0.38	SX	+	0.09	SY	
30	0.90	CM				-	0.38	SX	-	0.09	SY	
31	0.90	CM				+	0.11	SX	+	0.29	SY	COMBO 20
32	0.90	CM				+	0.11	SX	-	0.29	SY	COMBO 21
33	0.90	CM				-	0.11	SX	+	0.29	SY	
34	0.90	CM				-	0.11	SX	-	0.29	SY	

5. DISENO DE CORTANTE SISMICO EN COLUMNAS (ExΩ)

No. DE COMBINACION						E*Ω / 0.3*E*Ω			0.3*E*Ω / E*Ω		
35	1.36	CM	+	1.00	CV	+	0.57	SX	+	0.13	SY	COMBO 22
36	1.36	CM	+	1.00	CV	+	0.57	SX	-	0.13	SY	COMBO 23
37	1.36	CM	+	1.00	CV	-	0.57	SX	+	0.13	SY	
38	1.36	CM	+	1.00	CV	-	0.57	SX	-	0.13	SY	
39	1.36	CM	+	1.00	CV	+	0.17	SX	+	0.43	SY	COMBO 24
40	1.36	CM	+	1.00	CV	+	0.17	SX	-	0.43	SY	COMBO 25
41	1.36	CM	+	1.00	CV	-	0.17	SX	+	0.43	SY	
42	1.36	CM	+	1.00	CV	-	0.17	SX	-	0.43	SY	
43	0.74	CM				+	0.57	SX	+	0.13	SY	COMBO 26
44	0.74	CM				+	0.57	SX	-	0.13	SY	COMBO 27
45	0.74	CM				-	0.57	SX	+	0.13	SY	
46	0.74	CM				-	0.57	SX	-	0.13	SY	
47	0.74	CM				+	0.17	SX	+	0.43	SY	COMBO 28
48	0.74	CM				+	0.17	SX	-	0.43	SY	COMBO 29
49	0.74	CM				-	0.17	SX	+	0.43	SY	
50	0.74	CM				-	0.17	SX	-	0.43	SY	

DISEÑO DE ELEMENTOS NO ESTRUCTURALES

CALCULO DE ELEMENTOS NO ESTRUCTURALES

PARAMETROS DE DISEÑO

Grado de desempeño=	Superior
Rp=	3
Ap=	1.0
f_y=	4200 kg/cm2

$$F_p = \frac{a_x a_p}{R_p} gM_p \geq \frac{A_a I}{2} gM_p$$

*Factor= f_y*π/16/L*
*Limite Fp=Aa*I*P/2*
S: Separacion entre columnetas
L: Longitud de la dilatacion superior

NIVEL	Fx	W	ax	Altura	e_{muro}	Vol.	$\gamma_{mamp.}$	P	Fp	Fp_{min}	Fp def.	Mmax	S	Vmax	L	Factor	$\phi_{varilla}$	Vn	Vn>Vu
	Tn	Tn		m	m	m3	Tn/m3	Tn	Tn	Tn	Tn	Tn*m	m	Tn	Cm		/8"	Tn	Cumple?
PISOCUB	91.75	75.28	1.22	3.90	0.12	0.47	1.40	0.66	0.27	0.066	0.27	0.260	1.20	0.160	10	0.082	5	0.330	SI

CALCULO DE ELEMENTOS NO ESTRUCTURALES

DATOS DE ENTRADA

f'c=	175	Kg/Cm2
fy=	4200	Kg/Cm2
$d_{columneta}$=	6	Cm
$b_{columneta}$=	15	Cm
Recubrimiento=	6	Cm
t muro=	12	Cm
ρmin=	0.0033	

NIVEL	Fp	Mu	ρ	ρdiseño	As	As*fy	0.85 f'c b	a	kud	εc	εt		ϕ	As	Varilla	Cant.	Refuerzo
	Tn	Tn*m			Cm^2/m	Kg	Kg/cm	cm	cm					Cm^2	/8"		
PISOCUB	0.27	0.31	0.0186	0.0186	1.68	7043	2231.25	3.16	3.71	0.003	0.0018	Compr	0.65	2.58	5	2	2#5

DISEÑO PLACA DE ENTREPISO

CALCULO DE PLACA DE ENTREPISO PISO 1 Y PISO 2

ELEMENTO: Placa maciza e=0.12

DATOS DE ENTRADA

f'c=	**280**	Kg/Cm2
fy=	**4200**	Kg/Cm2
d=	**8**	Cm
b=	**100**	Cm
Recubrimiento=	**4**	Cm
h=	12	Cm
Tipo elemento=	**Viga=**	
	Placa=	**X**
ρmin=	0.0018	

CALCULOS ADICIONALES

CU=	1.90	Tn/m2
Luz=	2.30	m
Mu-=	0.84	Tn*m
Vu=	2.19	Tn
Mu+=	0.42	Tn*m

DISENO A FLEXION

Mu=	**0.8**	Tn*m
ρ=	0.0032	
ρdiseño=	0.0032	
As=	1.44	Cm^2/m
As*fy=	6048	kg
0.85f'c*b=	23800	kg/cm
a=	0.25	cm
kud=	0.30	cm
ε_c=	0.0030	
ε_t=	0.0773	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0036	
As=	2.85	Cm^2/m
Malla =	**7.5 mm c/.15**	

DISENO A CORTANTE

Vu=	**2.2**	Tn
ϕVc=	5321.2	Kg
ϕVc=	5.3	Tn
ϕVs=	-	Tn

DISENO A FLEXION

Mu=	**0.4**	Tn*m
ρ=	0.0016	
ρdiseño=	0.0018	
As=	1.44	Cm^2/m
As*fy=	6048	kg
0.85f'c*b=	23800	kg/cm
a=	0.25	cm
kud=	0.30	cm
ε_c=	0.0030	
ε_t=	0.0773	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0020	
As=	1.60	Cm^2/m
Malla =	**6.0 mm c/.15**	

CHEQUEO A PUNZONAMIENTO

b=	**20**	cm
h=	**20**	cm
Apoyo=	Circular	
	Rectangular	**X**
P=	**2.5**	Tn
Pu=	3.8	Tn
β=	1.00	
ϕ=	**0.75**	
λ=	**1.00**	
αs=	**40**	
bo=	**112**	cm
C.11-31=	1.68	cm
C.11-32=	3.29	cm
C.11-33=	2.67	cm

Punto de aplicacion de una carga puntual

OK

DISEÑO DE CIMENTACIÓN

DISEÑO DE ZAPATAS EXCENTRICAS (1)

DATOS DE ENTRADA

σ suelo=	17.6	Tn/m^2
fy=	4200	Kg/Cm^2
f'c=	210	Kg/Cm^2
f Cortante=	0.75	
f Flexion=	0.90	
<Dimension	1.00	m

(C.11-31)	$V_c = 0.17\left(1+\frac{2}{\beta}\right)\lambda\sqrt{f'_c}b_o d$ $V_c = 0.083\left(\frac{\alpha_s d}{b_o}+2\right)\lambda\sqrt{f'_c}b_o d$ $V_c = 0.33\lambda\sqrt{f'_c}b_o d$
(C.11-32)	$V_c = 0.53\left(1+\frac{2}{\beta}\right)\lambda\sqrt{f'_c}b_o d$ $V_c = 0.27\left(\frac{\alpha_s d}{b_o}+2\right)\lambda\sqrt{f'_c}b_o d$ $V_c = \lambda\sqrt{f'_c}b_o d$
(C.11-33)	

*Condicion 1(C.11-31)
*Condicion 2(C.11-32)
*Condicion 3(C.11-33)

ZAPATA TIPO	COL.	Pu (Tn)	Mu (Tn*m)	Preal (m)	Mr (Tn*m)	e (m)	DIMENSIONAMIENTO A (m)	B (m)	Le (m)	1.1P (Tn)	A (m2)	L (m)	H (m)	e (m)	ΔR (Tn)	σneto (Tn/m2)	σultimo (Tn/m2)		d (Cm)	h (Cm)	bo (Cm)	αs	βc	REVISION POR PUNZONAMIENTO Vu (Tn)	C.11-31	C.11-32	C.11-33	CORTE COMO VIGA Sentido corto Vu(Tn)		Sentido largo Vu(Tn)		d requerido (Cm)	
1D	1	16.54	9.95	11.0	5.3	0.48	0.40	0.60	5.70	12.13	0.69	1.10	1.10	0.35	0.72	10.62	14.48	OK	13	20	126	20	2	10.94	12.68	7.28	7.99	OK	1.91	3.50	3.50	4.15	OK
2D	2	26.79	9.35	17.9	5.0	0.28	0.40	0.60	5.70	19.65	1.12	1.10	1.45	0.35	1.17	13.05	17.80	OK	23	30	209	30	2	17.48	12.22	5.38	7.70	OK	3.82	3.10	3.82	4.52	OK
2D	3	26.79	9.35	17.9	5.0	0.28	0.40	0.60	5.70	19.65	1.12	1.10	1.45	0.35	1.17	13.05	17.80	OK	23	30	209	30	2	17.48	12.22	5.38	7.70	OK	3.82	3.10	3.82	4.52	OK
1D	4	16.54	9.95	11.0	5.3	0.48	0.40	0.60	5.70	12.13	0.69	1.10	1.10	0.35	0.72	10.62	14.48	OK	13	20	126	20	2	10.94	12.68	7.28	7.99	OK	1.91	3.50	3.50	4.15	OK
1D	29	12.75	8.53	8.5	4.6	0.54	0.40	0.60	5.70	9.35	0.53	1.10	1.10	0.35	0.56	8.19	11.16	OK	13	20	126	20	2	8.43	9.77	5.61	6.16	OK	1.47	2.70	2.70	3.20	OK
1D	30	12.75	8.53	8.5	4.6	0.54	0.40	0.60	5.70	9.35	0.53	1.10	1.10	0.35	0.56	8.19	11.16	OK	13	20	126	20	2	8.43	9.77	5.61	6.16	OK	1.47	2.70	2.70	3.20	OK

DISEÑO DE ZAPATAS EXCENTRICAS (2)

C.10.14 — Resistencia al aplastamiento

C.10.14.1 — La resistencia de diseño al aplastamiento del concreto no debe exceder $\phi(0.85f'_c A_1)$ excepto cuando la superficie de soporte sea más ancha en todos los lados que el área cargada, en cuyo caso, se permite que la resistencia de diseño al aplastamiento en el área cargada sea multiplicada por $\sqrt{(A_2/A_1)}$, pero no más que 2.

ZAPATA TIPO	Lv (m)	Mu (Tn*m)	ρ	ρ min	ρ diseño	DISEÑO A FLEXION								PRESION DE CONTACTO	
						REF. SENTIDO B				REF. SENTIDO A				Pu (Tn)	ϕ*0,85*f'c*A_1 (Tn)
						Refuerzo sentido B	ρ min	Seccion en	As (Cm2)	Refuerzo sentido A					
1D	0.25	0.50	0.0008	0.0018	0.0018	4 # 4 14 c/. 35	0.0018	Traccion	3.60	4 # 4 14	c/.	35	16.54	278.5	Cumple
2D	0.425	1.77	0.0009	0.0018	0.0018	6 # 4 18 c/. 20	0.0018	Traccion	5.40	8 # 4 14	c/.	20	26.79	278.5	Cumple
2D	0.43	1.77	0.0009	0.0018	0.0018	6 # 4 18 c/. 20	0.0018	Traccion	5.40	8 # 4 14	c/.	20	26.79	278.5	Cumple
1D	0.25	0.50	0.0008	0.0018	0.0018	4 # 4 14 c/. 35	0.0018	Traccion	3.60	4 # 4 14	c/.	35	16.54	278.5	Cumple
1D	0.25	0.38	0.0006	0.0018	0.0018	4 # 4 14 c/. 35	0.0018	Traccion	3.60	4 # 4 14	c/.	35	12.75	278.5	Cumple
1D	0.25	0.38	0.0006	0.0018	0.0018	4 # 4 14 c/. 35	0.0018	Traccion	3.60	4 # 4 14	c/.	35	12.75	278.5	Cumple

DISEÑO DE ZAPATAS EXCENTRICAS (3)

ESQUEMA DE VIGA DE CIMENTACION

DIAGRAMA DE CORTANTE DEBAJO DE LA ZAPATA

DISEÑO DE VIGA DE CIMENTACION

ZAPATA TIPO	Mu (Tn*m)	B (Cm)	H (Cm)	ρ	ρ min	ρ diseño	Seccion en	As (Cm2)	W (Tn/m)	V1 (Tn)	V2 (Tn)	V3 (Tn)	Vu (TN)	ΦVc (Tn)	ΦVs (Tn)	Refuerzo principal				$1/3(f'c)^{0.5}$	$2/3(f'c)^{0.5}$	Refuerzo secundario				Transversal				
1D	6.17	40	80	0.0008	0.0033	0.0033	Traccion	10.43	11.68	2.34	-9.79	0.72	1.897	19.06	-17.2	4	#	6	OK	14.1	28.2	OK	4	#	6	fi #	3	c/.	35	2 Ramas
2D	9.99	40	80	0.0013	0.0033	0.0033	Traccion	10.43	18.92	3.78	#####	1.17	3.073	19.06	-16.0	4	#	6	OK	14.1	28.2	OK	4	#	6	fi #	3	c/.	35	2 Ramas
2D	9.99	40	80	0.0013	0.0033	0.0033	Traccion	10.43	18.92	3.78	#####	1.17	3.073	19.06	-16.0	4	#	6	OK	14.1	28.2	OK	4	#	6	fi #	3	c/.	35	2 Ramas
1D	6.17	40	80	0.0008	0.0033	0.0033	Traccion	10.43	11.68	2.34	-9.79	0.72	1.897	19.06	-17.2	4	#	6	OK	14.1	28.2	OK	4	#	6	fi #	3	c/.	35	2 Ramas
1D	4.75	40	80	0.0006	0.0033	0.0033	Traccion	10.43	9.01	1.80	-7.55	0.56	1.462	19.06	-17.6	4	#	6	OK	14.1	28.2	OK	4	#	6	fi #	3	c/.	35	2 Ramas
1D	4.75	40	80	0.0006	0.0033	0.0033	Traccion	10.43	9.01	1.80	-7.55	0.56	1.462	19.06	-17.6	4	#	6	OK	14.1	28.2	OK	4	#	6	fi #	3	c/.	35	2 Ramas

CHEQUEO DE CORTANTE EN NUDOS

RELACION DE CAPACIDAD DE CORTE EN LOS NUDOS (C.21.7.4)

Materiales		
f'c=	28	Mpa
fy=	420	Mpa

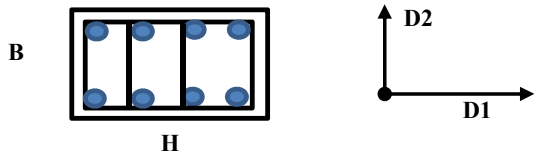
Nudo	Col. bc m	Viga bv m	Cara 1 Cond.	Cara 2 Col. b m	Cara 2 Viga b m	Cara 2 Cond.	Cara 3 Col. b m	Cara 3 Viga b m	Cara 3 Cond.	Cara 4 Col. b m	Cara 4 Viga b m	Cara 4 Cond.	Caras confin.	Direccion 1 $b_{efectivo}$ m	Direccion 1 Aj m2	Direccion 2 $b_{efectivo}$ m	Direccion 2 Aj m2	Limite Vn Dir. 1 Mpa	Limite Vn Dir. 2 Mpa	Direccion 1 Vc Mpa	Direccion 1 Dia. /8"	Direccion 1 #R	Direccion 1 Av m2	Direccion 1 sep m	Direccion 1 Vs Mpa	Direccion 1 Vn Mpa	Direccion 2 Vc Mpa	Direccion 2 Dia. /8"	Direccion 2 #R	Direccion 2 Av m2	Direccion 2 sep m	Direccion 2 Vs Mpa	Direccion 2 Vn Mpa	Relacion de capacidad a cortante Dir.1	Dir.2	Cap
T1	0.60	0.50	Confin.	0.40	0.50	Confin.	0.60		No confin.	0.4		No confin.	2	0.60	0.24	0.4	0.24	1.27	1.27	0.22	4	3	3.8E-04	0.10	0.56	0.77	0.22	4	3	3.8E-04	0.10	0.88	1.09	0.61	0.86	Cumple
T2	0.60	0.50	Confin.	0.40	0.50	Confin.	0.60	0.50	Confin.	0.4		No confin.	3	0.60	0.24	0.4	0.24	1.52	1.52	0.22	4	3	3.8E-04	0.10	0.56	0.77	0.22	4	3	3.8E-04	0.10	0.88	1.09	0.51	0.72	Cumple
T3	0.60	0.50	Confin.	0.40	0.50	Confin.	0.60	0.50	Confin.	0.4	0.5	Confin.	4	0.60	0.24	0.4	0.24	2.16	2.16	0.22	4	3	3.8E-04	0.10	0.56	0.77	0.22	4	3	3.8E-04	0.10	0.88	1.09	0.36	0.51	Cumple

Cap max

CALCULO DE Ash DE CONFINAMIENTO DES

DATOS DE ENTRADA

B=	0.4	m
H=	0.6	m
Recubrimiento=	4	Cm



$$A_{sh} = 0.3\frac{sb_c f'_c}{f_{yt}}\left[\left(\frac{A_g}{A_{ch}}\right)-1\right] \qquad A_{sh} = 0.09\frac{sb_c f'_c}{f_{yt}}$$

Direccion 1		
#Ramas=	3	
ϕ =	4	/8"
As=	1.27	Cm2
Ash=	380.0	mm2
bc=	320	mm
f'c=	28	Mpa
fyt=	420	Mpa
Ag=	240000	mm2
Ach=	166400	mm2

s=	134.2 mm	
s=	13 cm	*C.21-7*

s=	197.9 mm	
s=	20 cm	*C.21-8*

Direccion 2		
#Ramas=	3	
ϕ =	4	/8"
As=	1.27	Cm2
Ash=	437.0	mm2
bc=	520	mm
f'c=	28	Mpa
fyt=	420	Mpa
Ag=	240000	mm2
Ach=	166400	mm2

s=	95.0 mm	
s=	10 cm	*C.21-7*

s=	140.1 mm	
s=	14 cm	*C.21-8*

DISEÑO DE COLUMNAS, VIGAS Y VIGUETAS

Columna P-15

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					12.75	11.83				12/#6 (1.4%)	0.58	2.80	3.36
	3.90	.40	.60	.40			-12.33	9.46	9.37				
CUB		.80			20.73	0.22				12/#6 (1.4%)	0.93		

Columna P-14

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					13.91	-2.07				8/#7 (1.3%)	0.61	2.65	1.31
	3.90	.40	.60	.40			-22.66	9.81	9.40				
CUB		.80			19.29	9.82				8/#7 (1.3%)	0.77		

Columna Q-14

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-6.81	-4.87				8/#7 (1.3%)	0.28	2.65	1.44
	3.90	.40	.60	.40			-23.90	9.81	9.40				
CUB		.80			24.35	9.82				8/#7 (1.3%)	0.97		

Columna Q-15

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					6.75	11.83				8/#8 (1.7%)	0.36	3.22	3.96
	3.90	.40	.60	.40			-12.33	9.46	9.37				
CUB		.80			24.15	0.22				8/#8 (1.7%)	0.96		

Columna P-13

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					12.23	-3.14				8/#7 (1.3%)	0.55	2.53	3.06
	3.90	.40	.60	.40			-8.32	9.05	7.83				
CUB		.80			19.68	9.05				8/#7 (1.3%)	0.84		

Columna Q-13

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					6.30	-3.14				8/#7 (1.3%)	0.27	2.53	3.06
	3.90	.40	.60	.40			-8.32	9.05	7.83				
CUB		.80			23.06	9.05				8/#7 (1.3%)	0.99		

D-101/CUB

B=0.40 H=0.40 L=5.70		
Mu=-5.99 As=4.71	Mu=-1.50 As=4.62	Mu=-5.99 As=4.71
Mu=2.99 As=4.62	Mu=3.24 As=4.62	Mu=2.99 As=4.62
Vu=-7.70		Vu=7.70

D-102/CUB

B=0.40 H=0.40 L=5.70		
Mu=-7.44 As=5.92	Mu=-1.86 As=4.62	Mu=-7.44 As=5.92
Mu=3.72 As=4.62	Mu=4.64 As=4.83	Mu=3.72 As=4.62
Vu=-10.00		Vu=10.00

D-103/CUB

B=0.40 H=0.40 L=5.70		
Mu=-6.23 As=4.91	Mu=-1.56 As=4.62	Mu=-6.23 As=4.91
Mu=3.11 As=4.62	Mu=3.35 As=4.62	Mu=3.11 As=4.62
Vu=-7.98		Vu=7.98

D-104/CUB

B=0.40 H=0.40 L=6.66			***B=0.40 H=0.40 L=4.64***		
Mu=-9.53 As=7.70	Mu=-2.90 As=4.62	Mu=-11.60 As=9.53	Mu=-7.28 As=5.78	Mu=-1.82 As=4.62	Mu=-5.11 As=5.33
Mu=4.76 As=4.96	Mu=9.05 As=7.28	Mu=5.80 As=6.08	Mu=3.64 As=4.62	Mu=3.71 As=4.62	Mu=2.55 As=4.62
Vu=-11.02		Vu=11.64	Vu=9.78		Vu=-8.53

D-105/CUB

B=0.40 H=0.40 L=6.66			***B=0.40 H=0.40 L=4.64***		
Mu=-9.53 As=7.70	Mu=-2.90 As=4.62	Mu=-11.60 As=9.53	Mu=-7.28 As=5.78	Mu=-1.82 As=4.62	Mu=-5.11 As=5.33
Mu=4.76 As=4.96	Mu=9.05 As=7.28	Mu=5.80 As=6.08	Mu=3.64 As=4.62	Mu=3.71 As=4.62	Mu=2.55 As=4.62
Vu=-11.02		Vu=11.64	Vu=9.78		Vu=-8.53

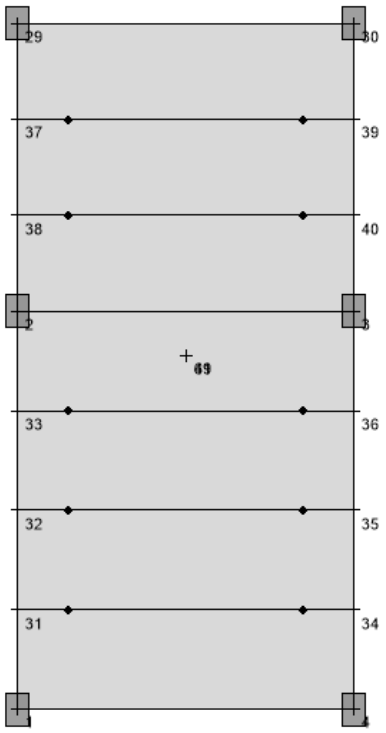
D-106/CUB

B=0.20 H=0.40 L=5.70		
Mu=-0.00 As=0.20	Mu=-0.00 As=0.20	Mu=-0.00 As=0.20
Mu=1.28 As=3.55	Mu=10.37 As=8.93	Mu=1.28 As=3.55
Vu=6.38		Vu=-6.38

DATOS DE ENTRADA DEL MODELO MATEMÁTICO

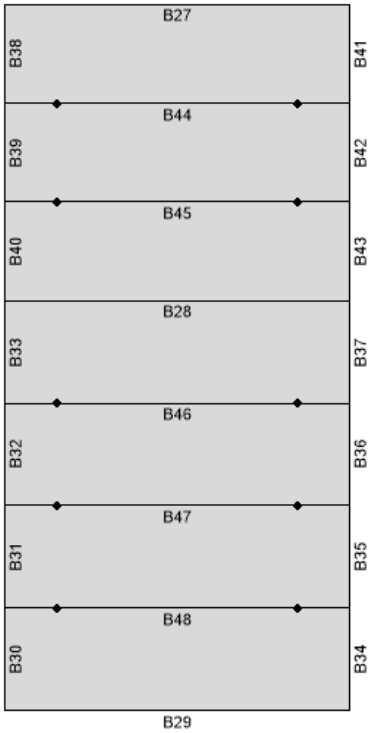
NUMERACION DE NODOS

PISO 1

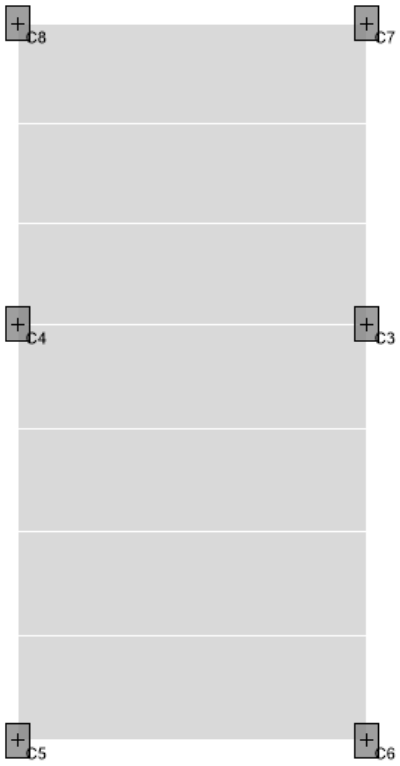


NUMERACION DE VIGAS

PISO 1



NUMERACION DE COLUMNAS



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S T O R Y D A T A

STORY	SIMILAR TO	HEIGHT	ELEVATION
CUB	None	4.300	-4.180
BASE	None		-8.480

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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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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	CONC4000	14.88	6	
Beam	CONC4000	15.26	17	0

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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
V40X40	Beam	17	43.300	15.26	0
C40X60	Column	6	25.800	14.88	

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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
CUB	Column	CONC4000	14.88	76.249	195.1091	6	
CUB	Beam	CONC4000	15.26	76.249	200.1492	17	0
SUM	Column	CONC4000	14.88	76.249	195.1091	6	
SUM	Beam	CONC4000	15.26	76.249	200.1492	17	0
TOTAL	All	All	30.14	76.249	395.2584	28	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	DIR/PLANE	MATERIAL ELASTICITY	MODULUS OF RATIO	POISSON'S COEFF	THERMAL MODULUS
STEEL	Iso	Steel	All	20389019.158	0.3000	1.1700E-05	7841930.445
CONC	Iso	Concrete	All	2531050.654	0.2000	9.9000E-06	1054604.439
OTHER	Iso	None	All	20389019.158	0.3000	1.1700E-05	7841930.445
CONC3000	Iso	Concrete	All	2153810.577	0.2000	9.9000E-06	897421.074
CONC4000	Iso	Concrete	All	2487006.232	0.2000	9.9000E-06	1036252.597
CONC4000SM	Iso	Concrete	All	2487006.230	0.2000	9.9000E-06	1036252.596

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
STEEL	7.9814E-01	7.8334E+00
CONC	2.4480E-01	2.4026E+00
OTHER	7.9814E-01	7.8334E+00
CONC3000	2.4480E-01	2.4026E+00
CONC4000	2.4480E-01	2.4026E+00
CONC4000SM	0.0000E+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 ($)
STEEL	35153.481	45699.526	27679.91

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
CONC	No	2812.279	42184.178	42184.178	N/A
CONC3000	No	2812.279	42184.178	42184.178	N/A
CONC4000	No	2812.279	42184.178	42184.178	N/A
CONC4000SM	No	2812.279	42184.178	42184.178	N/A

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

FRAME SECTION NAME	MATERIAL NAME	SECTION SHAPE IN SECTION DATABASE FILE	NAME OR NAME	CONC COL	CONC BEAM
ConcCol	CONC	Rectangular		Yes	
ConcBm	CONC	Rectangular			Yes
V40X40	CONC4000	Rectangular			Yes
C40X60	CONC4000	Rectangular		Yes	
V20X40	CONC4000SM	Rectangular			Yes

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
ConcCol	0.4572	0.4572	0.0000	0.0000	0.0000	0.0000
ConcBm	0.4572	0.3048	0.0000	0.0000	0.0000	0.0000
V40X40	0.4000	0.4000	0.0000	0.0000	0.0000	0.0000
C40X60	0.4000	0.6000	0.0000	0.0000	0.0000	0.0000
V20X40	0.4000	0.2000	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
ConcCol	0.2090	0.0062	0.0036	0.0036	0.1742	0.1742
ConcBm	0.1394	0.0025	0.0024	0.0011	0.1161	0.1161
V40X40	0.1600	0.0036	0.0021	0.0021	0.1333	0.1333
C40X60	0.2400	0.0075	0.0032	0.0072	0.2000	0.2000
V20X40	0.0800	0.0007	0.0011	0.0003	0.0667	0.0667

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 MODULI S33	SECTION MODULI S22	PLASTIC MODULI Z33	PLASTIC MODULI Z22	RADIUS OF GYRATION R33	RADIUS OF GYRATION R22
ConcCol	0.0159	0.0159	0.0239	0.0239	0.1320	0.1320
ConcBm	0.0106	0.0071	0.0159	0.0106	0.1320	0.0880
V40X40	0.0107	0.0107	0.0160	0.0160	0.1155	0.1155
C40X60	0.0160	0.0240	0.0240	0.0360	0.1155	0.1732
V20X40	0.0053	0.0027	0.0080	0.0040	0.1155	0.0577

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
ConcCol	0.0000	0.0000
ConcBm	0.0000	0.0000
V40X40	15.2612	1.5550
C40X60	14.8769	1.5158
V20X40	0.0000	0.0000

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
ConcBm	0.0457	0.0457	0.000	0.000	0.000	0.000
V40X40	0.0500	0.0500	0.000	0.000	0.000	0.000
V20X40	0.0500	0.0500	0.000	0.000	0.000	0.000

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

SHELL SECTION NAME	MATERIAL TYPE	SHELL LOAD ONE WAY	LOAD DIST MULTIPLIER	MEMBRANE THICK	BENDING THICK	TOTAL WEIGHT	TOTAL MASS
WALL1	CONC	Shell-Thin	No	0.2500	0.2500	0.0000	0.0000
SLAB1	CONC	Shell-Thin	No	0.2500	0.2500	0.0000	0.0000
DECK1	CONC	Membrane	No	0.0889	0.0889	0.0000	0.0000
PLANK1	CONC	Membrane	Yes	0.2500	0.2500	0.0000	0.0000
PLACA12	CONC4000SM	Membrane	No	0.1200	0.1200	0.0000	0.0000

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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		

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

RESP SPEC CASE: SISMOX

BASIC RESPONSE SPECTRUM DATA

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

RESPONSE SPECTRUM FUNCTION ASSIGNMENT DATA

DIRECTION	FUNCTION	SCALE FACT
U1	ESPECTRO	9.8100
U2	----	N/A
UZ	----	N/A

RESP SPEC CASE: SISMOY

BASIC RESPONSE SPECTRUM DATA

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

RESPONSE SPECTRUM FUNCTION ASSIGNMENT DATA

DIRECTION	FUNCTION	SCALE FACT
U1	----	N/A
U2	ESPECTRO	9.8100
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
COMB1	ADD	DEAD	Static	1.2000
		LIVE	Static	1.6000
COMB2	ADD	DEAD	Static	1.2000
		LIVE	Static	0.5000
		SISMOX	Spectra	1.0000
COMB3	ADD	DEAD	Static	1.2000
		LIVE	Static	0.5000
		SISMOY	Spectra	1.0000
COMB4	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	1.0000
COMB5	ADD	DEAD	Static	0.9000
		SISMOY	Spectra	1.0000
COMB6	ADD	DEAD	Static	1.2000
		LIVE	Static	0.5000
		SISMOX	Spectra	0.1900
		SISMOY	Spectra	0.0400
COMB7	ADD	DEAD	Static	1.2000
		LIVE	Static	0.5000
		SISMOX	Spectra	0.1900
		SISMOY	Spectra	-0.0400
COMB8	ADD	DEAD	Static	1.2000
		LIVE	Static	0.5000
		SISMOX	Spectra	0.0600
		SISMOY	Spectra	0.1400
COMB9	ADD	DEAD	Static	1.2000
		LIVE	Static	0.5000
		SISMOX	Spectra	0.0600
		SISMOY	Spectra	-0.1400
COMB10	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.1900
		SISMOY	Spectra	0.0400
COMB11	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.1900
		SISMOY	Spectra	-0.0400
COMB12	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.0600
		SISMOY	Spectra	0.1400
COMB13	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.0600
		SISMOY	Spectra	-0.1400
COMB14	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.3800
		SISMOY	Spectra	0.0900
COMB15	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.3800
		SISMOY	Spectra	-0.0900
COMB16	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.1100
		SISMOY	Spectra	0.2900
COMB17	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.1100
		SISMOY	Spectra	-0.2900
COMB18	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.3800
		SISMOY	Spectra	0.0900
COMB19	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.3800
		SISMOY	Spectra	-0.0900
COMB20	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.1100
		SISMOY	Spectra	0.2900
COMB21	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.1100
		SISMOY	Spectra	-0.2900
COMB22	ADD	DEAD	Static	1.3600
		LIVE	Static	1.0000
		SISMOX	Spectra	0.5700
		SISMOY	Spectra	0.1300
COMB23	ADD	DEAD	Static	1.3600
		LIVE	Static	1.0000
		SISMOX	Spectra	0.5700
		SISMOY	Spectra	-0.1300
COMB24	ADD	DEAD	Static	1.3600
		LIVE	Static	1.0000
		SISMOX	Spectra	0.1700
		SISMOY	Spectra	0.4300
COMB25	ADD	DEAD	Static	1.3600
		LIVE	Static	1.0000
		SISMOX	Spectra	0.1700
		SISMOY	Spectra	-0.4300
COMB26	ADD	DEAD	Static	0.7400
		SISMOX	Spectra	0.5700
		SISMOY	Spectra	0.1300
COMB27	ADD	DEAD	Static	0.7400
		SISMOX	Spectra	0.5700
		SISMOY	Spectra	-0.1300
COMB28	ADD	DEAD	Static	0.7400
		SISMOX	Spectra	0.1700
		SISMOY	Spectra	0.4300
COMB29	ADD	DEAD	Static	0.7400
		SISMOX	Spectra	0.1700
		SISMOY	Spectra	-0.4300
ENVOLVENTE	ENVE	COMB1	Combo	1.0000
		COMB6	Combo	1.0000
		COMB7	Combo	1.0000
		COMB8	Combo	1.0000
		COMB9	Combo	1.0000
		COMB10	Combo	1.0000
		COMB11	Combo	1.0000
		COMB12	Combo	1.0000
		COMB13	Combo	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 - U S E R

FUNCTION NAME: ESPECTRO

PERIOD	ACCEL
0.0000	1.2190
0.0500	1.2190
0.1000	1.2190
0.1500	1.2190
0.2000	1.2190
0.2500	1.2190
0.3000	1.2190
0.3500	1.2190
0.4000	1.2190
0.4500	1.2190
0.5000	1.2190
0.5500	1.2190
0.6000	1.2000
0.6500	1.1080
0.7000	1.0290
0.7500	0.9600
0.8000	0.9000
0.8500	0.8470
0.9000	0.8000
0.9500	0.7580
1.0000	0.7200
1.0500	0.6860
1.1000	0.6550
1.1500	0.6260
1.2000	0.6000
1.2500	0.5760
1.3000	0.5540
1.3500	0.5330
1.4000	0.5140
1.4500	0.4970
1.5000	0.4800
1.5500	0.4650
1.6000	0.4500
1.6500	0.4360
1.7000	0.4240
1.7500	0.4110
1.8000	0.4000
1.8500	0.3890
1.9000	0.3790
1.9500	0.3690
2.0000	0.3600
2.1000	0.3430
2.2000	0.3270
2.3000	0.3130
2.4000	0.3000
2.5000	0.2880
2.6000	0.2770
2.7000	0.2670
2.8000	0.2570
2.9000	0.2480
3.0000	0.2400
3.1000	0.2320
3.2000	0.2250
3.3000	0.2180
3.4000	0.2120
3.5000	0.2060
3.6000	0.2000
3.7000	0.1950
3.8000	0.1890
3.9000	0.1850
4.0000	0.1800
4.1000	0.1760
4.2000	0.1710
4.3000	0.1670
4.4000	0.1640
4.5000	0.1600
4.6000	0.1570
4.7000	0.1530
4.8000	0.1500
4.9000	0.1440
5.0000	0.1380
5.1000	0.1330
5.2000	0.1280
5.3000	0.1230
5.4000	0.1190
5.5000	0.1140
5.6000	0.1100
5.7000	0.1060
5.8000	0.1030
5.9000	0.0990
6.0000	0.0960
6.1000	0.0930
6.2000	0.0900
6.3000	0.0870
6.4000	0.0840
6.5000	0.0820
6.6000	0.0790
6.7000	0.0770
6.8000	0.0750
6.9000	0.0730
7.0000	0.0710
7.1000	0.0690
7.2000	0.0670
7.3000	0.0650
7.4000	0.0630
7.5000	0.0610
7.6000	0.0600

R I G I D D I A P H R A G M A S S I G N M E N T S T O P O I N T O B J E C T S

STORY	DIAPHRAGM	POINT	POINT	POINT	POINT	POINT

CUB D1 1 2 3 4 29
CUB D1 30 31 32 33 34
CUB D1 35 36 37 38 39
CUB D1 40 49

POINT MASS ASSIGNMENTS

STORY	POINT	MASSX	MASSY	MASSZ	MMIXX	MMIYY	MMIZZ
CUB	49	4.7400	4.7400	0.0000	0.0000	0.0000	0.0000

FRAME SECTION ASSIGNMENTS TO LINE OBJECTS

STORY LEVEL	LINE ID	LINE TYPE	SECTION TYPE	AUTO SELECT SECTION	ANALYSIS SECTION	DESIGN PROCEDURE	DESIGN SECTION
CUB	C3	Column	Rectangular	None	C40X60	Conc Frame	C40X60
CUB	C4	Column	Rectangular	None	C40X60	Conc Frame	C40X60
CUB	C5	Column	Rectangular	None	C40X60	Conc Frame	C40X60
CUB	C6	Column	Rectangular	None	C40X60	Conc Frame	C40X60
CUB	C7	Column	Rectangular	None	C40X60	Conc Frame	C40X60
CUB	C8	Column	Rectangular	None	C40X60	Conc Frame	C40X60
CUB	B27	Beam	Rectangular	None	V40X40	Conc Frame	V40X40
CUB	B28	Beam	Rectangular	None	V40X40	Conc Frame	V40X40
CUB	B29	Beam	Rectangular	None	V40X40	Conc Frame	V40X40
CUB	B30	Beam	Rectangular	None	V40X40	Conc Frame	V40X40
CUB	B31	Beam	Rectangular	None	V40X40	Conc Frame	V40X40
CUB	B32	Beam	Rectangular	None	V40X40	Conc Frame	V40X40
CUB	B33	Beam	Rectangular	None	V40X40	Conc Frame	V40X40
CUB	B34	Beam	Rectangular	None	V40X40	Conc Frame	V40X40
CUB	B35	Beam	Rectangular	None	V40X40	Conc Frame	V40X40
CUB	B36	Beam	Rectangular	None	V40X40	Conc Frame	V40X40
CUB	B37	Beam	Rectangular	None	V40X40	Conc Frame	V40X40
CUB	B38	Beam	Rectangular	None	V40X40	Conc Frame	V40X40
CUB	B39	Beam	Rectangular	None	V40X40	Conc Frame	V40X40
CUB	B40	Beam	Rectangular	None	V40X40	Conc Frame	V40X40
CUB	B41	Beam	Rectangular	None	V40X40	Conc Frame	V40X40
CUB	B42	Beam	Rectangular	None	V40X40	Conc Frame	V40X40
CUB	B43	Beam	Rectangular	None	V40X40	Conc Frame	V40X40
CUB	B44	Beam	Rectangular	None	V20X40	Conc Frame	V20X40
CUB	B45	Beam	Rectangular	None	V20X40	Conc Frame	V20X40
CUB	B46	Beam	Rectangular	None	V20X40	Conc Frame	V20X40
CUB	B47	Beam	Rectangular	None	V20X40	Conc Frame	V20X40
CUB	B48	Beam	Rectangular	None	V20X40	Conc Frame	V20X40

RELEASE ASSIGNMENTS TO LINE OBJECTS

STORY LEVEL	LINE ID	LINE TYPE	P	V2	V3	T	M2	M3
CUB	B44	Beam	None	None	None	None	None	Both ends
CUB	B45	Beam	None	None	None	None	None	Both ends
CUB	B46	Beam	None	None	None	None	None	Both ends
CUB	B47	Beam	None	None	None	None	None	Both ends
CUB	B48	Beam	None	None	None	None	None	Both ends

WALL, SLAB, DECK & OPENING ASSIGNMENTS TO AREA OBJECTS

STORY LEVEL	AREA ID	AREA TYPE	SECTION TYPE	SECTION LABEL
CUB	F7	Floor	Slab	PLACA12
CUB	F8	Floor	Slab	PLACA12
CUB	F9	Floor	Slab	PLACA12
CUB	F10	Floor	Slab	PLACA12
CUB	F11	Floor	Slab	PLACA12
CUB	F12	Floor	Slab	PLACA12
CUB	F13	Floor	Slab	PLACA12

UNIFORM LOAD ASSIGNMENTS TO AREA OBJECTS

CASE	STORY	AREA	AREATYPE	DIRECTION	LOAD
DEAD	CUB	F7	Floor	Gravity	0.5460
DEAD	CUB	F8	Floor	Gravity	0.5460
DEAD	CUB	F9	Floor	Gravity	0.5460
DEAD	CUB	F10	Floor	Gravity	0.5460
DEAD	CUB	F11	Floor	Gravity	0.5460
DEAD	CUB	F12	Floor	Gravity	0.5460
DEAD	CUB	F13	Floor	Gravity	0.5460
LIVE	CUB	F7	Floor	Gravity	0.2000
LIVE	CUB	F8	Floor	Gravity	0.2000
LIVE	CUB	F9	Floor	Gravity	0.2000
LIVE	CUB	F10	Floor	Gravity	0.2000
LIVE	CUB	F11	Floor	Gravity	0.2000
LIVE	CUB	F12	Floor	Gravity	0.2000
LIVE	CUB	F13	Floor	Gravity	0.2000

BLOQUE 5

ANÁLISIS SÍSMICO

DESCRIPCION GENERAL DEL PROYECTO ESTRUCTURAL

DATOS GENERALES:

NOMBRE DEL PROYECTO:	**HOSPITAL SAN JUAN BAUTISTA (BLOQUE 5)**
CIUDAD:	**CHAPARRAL**
CALCULO:	**D.O.R**
REVISO:	**D.O.R**
FECHA:	**18/05/2021**
OBSERVACIONES:	
LOCALIZACION:	**CHAPARRAL TOLIMA**
SISTEMA ESTRUCTURAL:	**Pórticos de concreto**
CAPACIDAD DE DISIPACION:	**DES**
NUMERO DE PISOS	**1**

DESCRIPCION DEL PROYECTO:

El proyecto arquitectónico consta de 1 niveles, el cual estara destinado para uso del Hospital San Juan Bautista del municipio de Chaparral Tolima.

El sistema estructural utilizado para resistir cargas verticales y laterales (sísmicas), es el de pórticos de concreto reforzado, con placa de entrepiso de 40 cm de espesor aligerada y armada en una dirección, cuyo uso esta definido en las Normas Colombianas de construcciones sismoresistentes- NSR-10.

La cimentación consiste en zapatas aisladas, según recomendación del estudio de suelos de la firma Laboratorio de suelos y pavimentos GAIA

DESCRIPCION DEL PROGRAMA DE COMPUTADOR:

El programa utilizado para el procesamiento del edificio es ETABS Versión 9.2 desarrollado por la compañía Computers and structures inc con amplio recorrido de más de 40 años en el desarrollo de software de análisis estructural. Este programa utiliza el método matricial para la solución de la estructura y el modelo utilizado es tridimensional con diafragma rígido. El análisis sísmico desarrollado es el método modal elástico. Los muros fueron modelados mediante los elementos tipo Shell y las placas mediante los elementos tipo membrane para que estas no tomen rigidez a las cargas horizontales. Las vigas y columnas fueron modelados mediante el elemento tipo frame.

PARAMETROS SISMICOS:

Metodo de Analisis sísmico			
Método utilizado:	**2**	ANALISIS MODAL DINAMICO	
Ubicación de la estructura		=	**CHAPARRAL**
Grupo de uso		=	IV
PARAMETROS DE LA NSR-10			
Zona de Amenaza Sísmica		=	Alta
Coef. de aceleracion pico efectiva, Aa		=	**0.25**
Coef. de velocidad pico efectiva, Av		=	**0.20**
Perfil del Suelo		=	**D**
Coeficiente Fa		=	1.30
Coeficiente Fv		=	2.00
Grupo de uso		=	**IV**
Coeficiente de importancia		=	1.5
UMBRAL DE DAÑO			
Coeficiente de aceleración pico (Ad)		=	**0.06**
Coeficiente de sitio para umbral de daño		=	2.5

ESPECIFICACIONES :

Concreto f'c	**280 kgf/cm2**	→	4000 psi	**VIGAS**
	280 kgf/cm2	→	4000 psi	**COLUMNAS**
	210 kgf/cm2	→	3000 psi	**CIMENTACION**
Acero fy	**4200 kgf/cm2**	→	60000 psi	ϕ >= 3/8"
	2400 kgf/cm2	→	34286 psi	ϕ < 3/8"

NORMAS :

Se siguieron las recomendaciones dadas por el reglamento Colombianos de Construcción Sismo Resistente NSR-10 (Ley 400 de 1997 (Modificada Ley 1229 de 2008). Decreto 926 de 2010) y sus decretos complementarios.

CALCULO DE ALTURAS Y NIVELES DE LA ESTRUCTURA

NIVEL		H libre	h Placa	Alt. Total piso	NIVEL
PISO	CUB	3.90	0.40	4.30	-4.18
NIVEL DE ARRANQUE		-8.48			



CALCULO DE DENSIDADES

MATERIALES

Vigas

γ Concreto=	2.4	TN/m^3

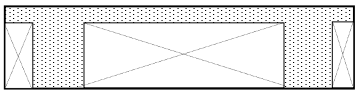
Columnas

γ Concreto=	2.4	TN/m^3

NIVEL		Vol. Vigas m³	Vol. Columnas m³	Area Placa m²	*r Vigas* TN/m²	*r Columnas* TN/m²
PISO	CUB	12.49	12.40	144.8	0.207	0.186

AVALUO DE CARGA DE PLACA

CORTE TIPICO DE CUBIERTA



Placa Aligerada con Torta Superior

DATOS GENERALES		
γ Concreto	2.4	Tn/m3
γ Mortero acabados	2.0	Tn/m3
Pendiente Cubierta	0.0	°
Pendiente Cubierta	0.00	
CV cub inclinada	0.050	Tn/m2
Cgranizo	0.100	Tn/m2

CONVENCIONES	
CM:	Carga Muerta
CV:	Carga Viva
CT:	Carga Real Total aplicada a la placa (CM+CV)
CU:	Carga Ultima para diseño de Viguetas (1.2CM+1.6CV)
CR:	Carga real a cimentacion ($CT+\rho_{Vigas}+\rho_{Columnas}$)
CS:	Carga de sismo ($CM+\rho_{Vigas}+\rho_{Columnas}$)

NIVEL		h(m)	Torta Sup.	Torta Inf.	e Viguetas (m)	Sep Viguetas (m)	W_{placa} Tn/m2	$W_{viguetas}$ Tn/m2	$W_{caseton}$ Tn/m2	$W_{viguetas\ metalica}$ Tn/m2	$e_{Acabados}$ (m)	$W_{acabados}$ Tn/m2	W_{muros} Tn/m2	$W_{cubierta}$ Tn/m2	$W_{estr.\ metalica}$ Tn/m2	W_{otros} Tn/m2	CM Tn/m2	CV Tn/m2	ρ_{Vigas} (tn/m2)	$\rho_{Columnas}$ (tn/m2)	$\rho_{Vigas+Columnas}$ (tn/m2)	CU Tn/m2	CR Tn/m2	Piso Restringido?	CS Tn/m2
PISO	CUB	0.40	0.12	0.00	0.20	2.10	0.288	0.06	0.00	0.00	0.05	0.100	0.050	0.000	0.000	0.000	0.496	0.200	0.207	0.186	0.393	2.106	1.090	No	0.890

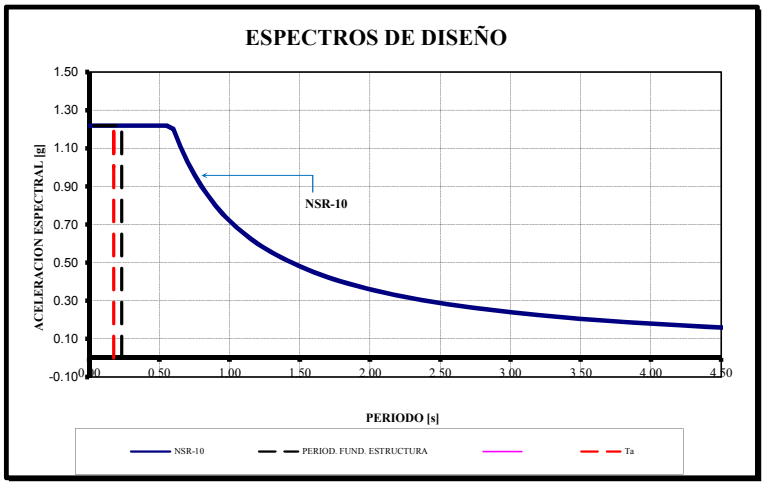
ANALISIS SISMICO DE LA ESTRUCTURA

El Análisis Sísmico del edificio se realizará por el método de ANALISIS MODAL DINAMICO

El programa de análisis estructural ETABS realiza directamente el análisis utilizando el Espectro Elástico de Diseño, el cual se elabora según parámetros del Reglamento de construccion Sismo Resistente Colombiano NSR-10 .

Los Parametros sísmicos que se tuvieron en cuenta para el analisis del edificio son los siguientes:

Parámetros del Espectro de la Norma Sismo Resistente NSR-10		
Zona de Amenaza Sísmica	=	Alta
Coef. de aceleracion pico efectiva, Aa	=	0.25
Coef. de velocidad pico efectiva, Av	=	0.20
Perfil del Suelo	=	D
Grupo de uso	=	IV
Coeficiente Fa	=	1.30
Coeficiente Fv	=	2.00
Coef. de Importancia, I	=	1.50
Coef. de amort. Crítico β	=	5.00%
Período inicial, To	=	0.12 s
Período corto, Tc	=	0.59 s
Período largo, T_L	=	4.80 s
Máx. acel. en el espectro	=	1.22 g



Para el analisis se determinó la masa que participa en el sismo proveniente del peso muerto del edificio.

CALCULO DE LA MASA DEL EDIFICIO			
PISO	Area [m²]	Carga Sísmo [T/m²]	Masa [T s²/m]
PISOCUB	144.83	0.89	13.14

Se determinó el centro de gravedad de cada piso y el centro de rigidez del mismo para determinar la torsión de diseño de acuerdo al numeral A.3.6.7, la cual corresponde a la suma de la torsión directa más la torsión accidental. La torsión directa es tenida en cuenta por el propio programa de analisis y la torsion accidental depende del metodo de analisis.

CALCULO DEL CENTROIDE DE MASAS YTORSION EN EL PISO												
PISO	POSICION DE LA MASA RESPECTO AL CENTRO DE RIGIDEZ	CENTRO DE MASA		MAYOR LONGITUD		ex [m]	ey [m]	CENTRO DE RIGIDEZ		CENTROIDE DEFINITIVO		CENTROIDE MODIFICADO INCLUYENDO Ax
		X [m]	Y [m]	LX [m]	LY [m]			X_R [m]	Y_R [m]	X [m]	Y [m]	X [m]	Y [m]
PISOCUB	C.M. ■ C.R. ■	11.20	2.14	30.95	4.68	0.00	0.00	11.23	2.14	11.20	2.14	-	-

Nota: Debido a que el metodo de analisis corresponde al dinamico elastico no se tuvo en cuenta la torsion accidental segun NSR-10 A 3.6.7

CALCULO DEL PESO DEL EDIFICIO Y DETERMINACION DEL CORTANTE BASAL ESTATICO POR FUERZA HORIZONTAL EQUIVALENTE

Para el calculo de los factores de ajuste se utilizó el método de la Fuerza Horizontal Equivalente para ajustar el valor del cortante dinámico en la base (Según A.5.4.5 -- NSR - 10)

CALCULO DEL PESO DEL EDIFICIO			
PISO	**W (T)**	**ALTURA PISO (m)**	**h (acumulado) (m)**
PISOCUB	128.86	4.30	4.30
PESO TOTAL	**128.86 T**		

CALCULO CORTANTE ESTATICO EN LA BASE

Ct	=	0.047
α=	=	0.900
hn	=	4.30 m
Ta	=	Ct hn^{α}
Ta	=	0.17 s
T	=	0.23 s
Sa	=	1.22 g
Vs	=	**157.05 Tn**

Cortante sísmico en la base (Vs = Sa×Westructura)

CALCULO CORTANTE DINAMICO EN LA BASE

Del programa se obtuvieron los siguientes valores del cortante basal dinamico

TABLA DE CORTANTES DINAMICOS								
Spec	Mode	Dir	F1	F2	F3	M1	M2	M3
SISMOX	1	U1	0.0	0.0	0.0	0.0	0.0	0.0
SISMOX	2	U1	142.3	0.0	0.0	0.0	-587.7	-304.5
SISMOX	3	U1	0.0	0.0	0.0	0.0	0.0	0.0
SISMOX	**All**	**All**	**142.3**	**0.0**	0.0	0.0	587.7	304.5
SISMOY	1	U2	0.0	142.3	0.0	587.7	0.0	1593.7
SISMOY	2	U2	0.0	0.0	0.0	0.0	0.0	0.0
SISMOY	3	U2	0.0	0.0	0.0	0.0	0.0	0.0
SISMOY	**All**	**All**	**0.0**	**142.3**	0.0	587.7	0.0	1593.7

TABLA DE PERIODOS REALES DE LA ESTRUCTURA							
Spec	Mode	Period	DampRatio	SpecFactc	U1	U2	U3
SISMOX	1	**0.23**	0.05	1.00	11.96	0.00	0.00
SISMOX	2	0.17	0.05	1.00	11.96	0.00	0.00
SISMOX	3	0.13	0.05	1.00	11.96	0.00	0.00
SISMOY	1	**0.23**	0.05	1.00	0.00	11.96	0.00
SISMOY	2	0.17	0.05	1.00	0.00	11.96	0.00
SISMOY	3	0.13	0.05	1.00	0.00	11.96	0.00

CORTANTE DINAMICO EN LA BASE

Cortante basal en sentido X		
F1	=	142.3 Tn
F2	=	0.0 Tn
Vsd_x	=	**142.3 Tn**

Cortante basal en sentido Y		
F1	=	0.0 Tn
F2	=	142.3 Tn
Vsd_y	=	**142.3 Tn**

AJUSTE DE LOS RESULTADOS

Utilizando la metodologia de analisis de modos y frecuencias por medio del programa se determino el periodo fundamental del edificio con el cual se realiza el ajuste del valor del cortante basal Estatico y el valor del periodo máximo (Cu*Ta) según A.5.4.5 (a)

Se comparan los cortantes en la base del análisis modal con el estático para determinar si se deben modificar las fuerzas de sismo conforme a lo establecido en A.5.4.5 (b)

Si la estructura es regular, el cortante dinámico en la base no puede ser menor que el 80 % del cortante calculado por Fuerza Horizontal Equivalente (Vs) ni menor del 90% para estructuras irregulares- (según A.5.4.5 b - NSR-10)

Item	Sentido X	Sentido Y
Periodo T (s)	0.17	0.23
Ta (s)	0.17	0.17
Cu	1.27	1.27
Periodo maximo Cu*Ta (s)	0.22	0.22
Periodo definitivo	0.17	0.22
Sa	1.22	1.22
Cortante Basal Vs (Tn)	157.0	157.0
0.90 Vs	141.3	141.3
0.80 Vs	125.6	125.6
Irregular	No	Si
Cortante Estatico Vs (Tn)	125.6	141.3
Cortante Dinamico Vsd(Tn)	142.3	142.3
Factor de Ajuste	1.00	1.00

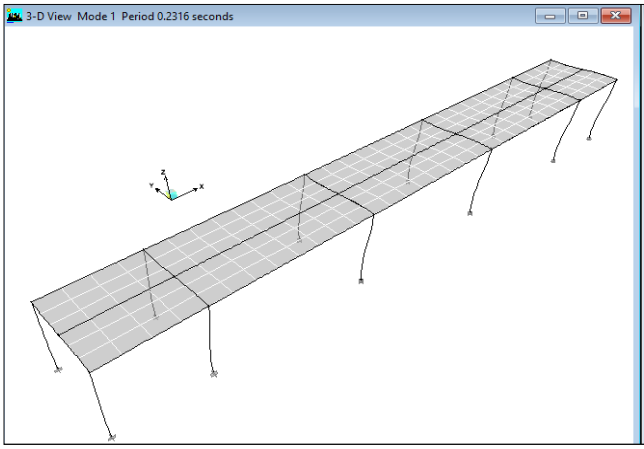
PORCENTAJE DE MASA PARTICIPATIVA

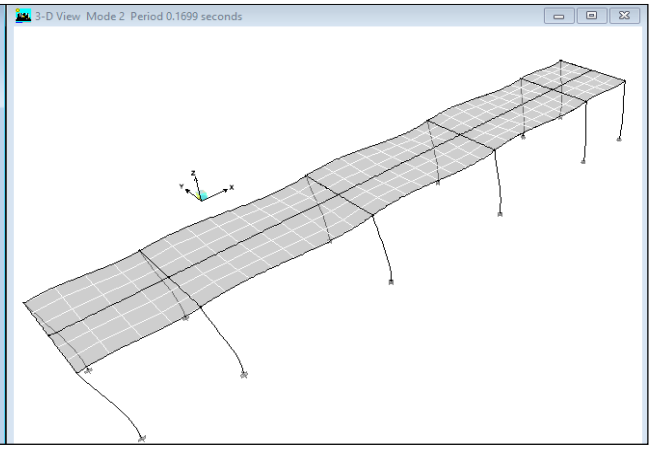
Finalmente se verifica que el número de modos utilizado sea el requerido para que la masa participativa sea mayor al 90% conforme a lo estipulado en A.5.4.2

TABLA DE MASA PARTICIPATIVA

Mode	Period	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
1	0.23	0.00	100.00	0.00	0.00	100.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00
2	0.17	100.00	0.00	0.00	100.00	100.00	0.00	0.00	100.00	0.00	100.00	100.00	0.00
3	0.13	0.00	0.00	0.00	100.00	100.00	0.00	0.00	0.00	100.00	100.00	100.00	100.00

MODOS PRINCIPALES DE VIBRACION



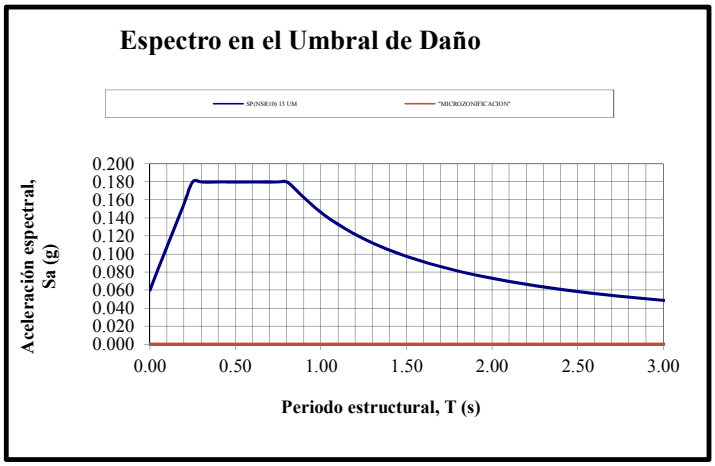


ANALISIS SIMICO PARA EL UMBRAL DE DANO (GRUPO DE USO III o IV)

Parámetros del Espectro de la Norma Sismo Resistente NSR-10		
Zona de Amenaza Sísmica	=	Alta
Coef. de acel. pico efectiva, Ad	=	0.06
Coeficiente de sitio para el umbral	=	2.5
Grupo de uso	=	IV
Coef. de Importancia, I	=	1.5
Coef. de amort. crítico	=	2.00%

CALCULO DE ACELERACION ESPECTRAL		
Ad	=	0.06
$\overline{S}$	=	2.50
I	=	1.50
Ct	=	**0.05**
T	=	0.23 S
Tod	=	0.25 S
TCd	=	1.25 S
TLd	=	6.00 S
Sad	=	0.17
Sad	=	0.18
Sad	=	0.97
Sad	=	**0.17**
Vsd	=	**22.1 Tn**

Definitivo



CALCULO CORTANTE DINAMICO EN LA BASE

TABLA DE CORTANTES DINAMICOS								
Spec	Mode	Dir	F1	F2	F3	M1	M2	M3
SISMOX	1	U1	0.0	0.0	0.0	0.0	0.0	0.0
SISMOX	2	U1	16.5	0.0	0.0	0.0	-68.2	-35.4
SISMOX	3	U1	0.0	0.0	0.0	0.0	0.0	0.0
SISMOX	**All**	**All**	**16.5**	**0.0**	0.0	0.0	68.2	35.4
SISMOY	1	U2	0.0	20.0	0.0	82.5	0.0	223.8
SISMOY	2	U2	0.0	0.0	0.0	0.0	0.0	0.0
SISMOY	3	U2	0.0	0.0	0.0	0.0	0.0	0.0
SISMOY	**All**	**All**	**0.0**	**20.0**	0.0	82.5	0.0	223.8

CORTANTE DINAMICO EN LA BASE

Cortante basal en sentido X			
F1	=	16.5	Tn
F2	=	0.0	Tn
Vtx	=	16.5	Tn

Cortante basal en sentido Y			
F1	=	0.0	Tn
F2	=	20.0	Tn
Vty	=	20.0	Tn

PERIODO REAL DE LA ESTRUCTURA

Tx	=	0.17	s
Ty	=	0.23	s
Cu * Ta	=	0.22	s

Recalcular Sa

AJUSTE DE LOS RESULTADOS

Irregularidad de la estructura	=	**Regular**

Si la estructura es regular, el cortante dinámico en la base no puede ser menor que el 80 % del cortante calculado por Fuerza Horizontal Equivalente (Vs) ni del 90% si es irregular - (según A.5.4.5 b - NSR-10)

RECALCULO Sa	
Ad=	0.06 g
$\bar{S}$=	2.50
I=	1.50
Ct=	**0.05**
T=	0.22 s
Tod	0.25 s
TCd	1.25 s
TLd	6.00 s
Sad=	0.17 s
Sad=	0.18 s
Sad	0.97 s
Sad=	0.17
0.90V=	19.8 Tn
0.8V=	17.6 Tn
Vdef=	17.6Tn

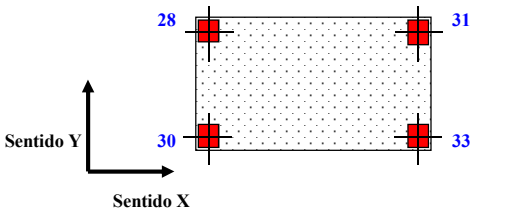
FACTORES DE AJUSTE DEFINITIVOS		
Fx=	**1.07**	**Definitivo**
Fy=	**1.00**	**Definitivo**

CHEQUEO DE LA DERIVA CON COMBINACIONES DE CARGA Y FACTORES DE AJUSTE

Se efectúa el análisis de la deriva máxima utilizando la inercia de las vigas y las columnas completa conforme a lo establecido en el capitulo A.6

CONVENCIONES	
h =	Altura Piso
δ (x,y) =	Desplazamiento por piso
Δa=	Deriva de análisis
Δp=	Deriva permitida
I_f =	Indice de flexibilidad
Δa=	$((\delta x_1-\delta x_2)^2+(\delta y_1-\delta y_2)^2)^{0.50}$
Δp =	**0.01** h
I_f =	Δa/Δp

EJES DE COLUMNAS ANALIZADAS



El metodo de combinacion modal utilizado corresponde al de la Combinacion cuadratica completa (CQC)

SISMO EN X

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
28	PISOCUB	4.30	0.87	4.30	OK	0.20	OK
31	PISOCUB	4.30	0.87	4.30	OK	0.20	OK
30	PISOCUB	4.30	0.87	4.30	OK	0.20	OK
33	PISOCUB	4.30	0.87	4.30	OK	0.20	OK

SISMO EN Y

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
28	PISOCUB	4.30	1.63	4.30	OK	0.38	OK
31	PISOCUB	4.30	1.62	4.30	OK	0.38	OK
30	PISOCUB	4.30	1.63	4.30	OK	0.38	OK
33	PISOCUB	4.30	1.62	4.30	OK	0.38	OK

CHEQUEO DE LA DERIVAS PARA EL UMBRAL DE DAÑO (GRUPO USO III o IV)

CONVENCIONES	
h =	Altura Piso
δ (x,y) =	Desplazamiento por piso
Δa=	Deriva de análisis
Δp=	Deriva permitida
I_f =	Indice de flexibilidad
Δa=	$((\delta x_1-\delta x_2)^2+(\delta y_1-\delta y_2)^2)^{0.50}$
Δp =	**0.004** h
I_f =	Δa/Δp

SISMO EN X

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
28	PISOCUB	4.30	0.11	1.72	OK	0.06	OK
31	PISOCUB	4.30	0.11	1.72	OK	0.06	OK
30	PISOCUB	4.30	0.11	1.72	OK	0.06	OK
33	PISOCUB	4.30	0.11	1.72	OK	0.06	OK

SISMO EN Y

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
28	PISOCUB	4.30	0.23	1.72	OK	0.13	OK
31	PISOCUB	4.30	0.23	1.72	OK	0.13	OK
30	PISOCUB	4.30	0.23	1.72	OK	0.13	OK
33	PISOCUB	4.30	0.23	1.72	OK	0.13	OK

REVISION DE LA IRREGULARIDAD TORSIONAL

Irregularidad Tipo 1 P:

Tipo 1aP — Irregularidad torsional $\phi_p = 0.9$

$$1.4\left(\frac{\Delta_1+\Delta_2}{2}\right) \geq \Delta_1 > 1.2\left(\frac{\Delta_1+\Delta_2}{2}\right)$$

Tipo 1bP — Irregularidad torsional extrema $\phi_p = 0.8$

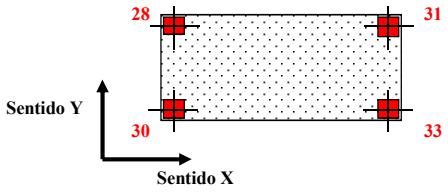
$$\Delta_1 > 1.4\left(\frac{\Delta_1+\Delta_2}{2}\right)$$

SISMO EN X

EJE DE COLUMNA		PISO	Δ1 (cm)	Δ2 (cm)	1.2*(Δ1 + Δ2)/2	1.4*(Δ1 + Δ2)/2	Ax
30	28	PISOCUB	0.87	0.87	1.04	1.22	REGULAR
33	31	PISOCUB	0.87	0.87	1.04	1.22	REGULAR

SISMO EN Y

EJE DE COLUMNA		PISO	Δ1 (cm)	Δ2 (cm)	1.2*(Δ1 + Δ2)/2	1.4*(Δ1 + Δ2)/2	Ax
30	33	PISOCUB	1.63	1.62	1.95	2.28	REGULAR
28	31	PISOCUB	1.63	1.62	1.95	2.28	REGULAR



REVISION INDICE DE ESTABILIDAD DE PISO EFECTOS DE SEGUNDO ORDEN

PISO	P(Tn)	Pu(Tn)	Δox(cm)	Δoy(cm)	Vus (Tn)	lc (m)	Qx	Qy	
PISOCUB	157.8	236.7	0.87	1.63	157.0	4.30	0.0030	0.0057	Arriostrado

EFECTOS DE ESBELTEZ EN ELEMENTOS A COMPRESION

Piso	bmin	r	kl/r	Comentarios
PISOCUB	**0.40**	0.12	32.5	No se tienen efectos de esbeltez según C.10.10.1

Nota: bmin corresponde al ancho minimo de las columnas en el piso en estudio

CALCULO DE FACTOR ϕr POR AUSENCIA DE REDUNDANCIA

Story	FloorArea	Rmax	Rho	CaseType	Case	Direction	ObjectType	Object	Object2	%Vs	Chequeo
CUB	129.9	0.14	-1.76	Resp Spec	SISMOY	Y	MF Columns	C12	C8	1.00	Ok

CHEQUEO DE IRREGULARIDADES DE LA ESTRUCTURA

1. IRREGULARIDADES EN PLANTA

TIPO DE IREGULARIDAD		ϕ_P	ϕ_{Px}	ϕ_{Py}
Irregularidad Torsional	**1aP**	0.9	1.0	1.0
Irregularidad Torsional extrema	**1bP**	0.8	1.0	1.0
Retrocesos en las Esquinas	**2P**	0.9	1.0	1.0
Irregularidad del Diafragma	**3P**	0.9	1.0	1.0
Desplazamiento de los Planos de Acción	**4P**	0.8	1.0	1.0
Sistemas no Paralelos	**5P**	0.9	1.0	1.0
ϕp Definitivo=			**1.0**	**1.0**

2. IRREGULARIDADES EN ALTURA

TIPO DE IREGULARIDAD		ϕ_a	ϕ_{ax}	ϕ_{ay}	
Piso Flexible (Irregularidad en Rigidez)	**1aA**	0.9	1.0	1.0	Ver Nota
Piso Flexible extremo(Irregularidad en Rigidez)	**1bA**	0.8	1.0	1.0	Ver Nota
Distribución de Masa	**2A**	0.9	1.0	1.0	Ver Nota
Irregularidad Geométrica	**3A**	0.9	1.0	1.0	
Desplazamiento del Plano de Acción	**4A**	0.8	1.0	1.0	
Piso Débil - Discontinuidad en la Resistencia	**5aA**	0.9	1.0	1.0	
Piso Débil extremo - Discontinuidad en la Resist.	**5bA**	0.8	1.0	1.0	
ϕa Definitivo =			**1.0**	**1.0**	

Notas:

1. No existe irregularidad 1A,2A o 3A segun NSR-10 A 3.3.5.1

3. COEFICIENTE DE CAPACIDAD DE DISIPACION DE ENERGIA EN EL RANGO INELASTICO

$R = \phi p * \phi a * \phi r * R_0$ (NSR-10 A.3.3.3)

	Sentido X	Sentido Y	
ϕ_p =	1.00	1.00	Coeficiente por irregularidad en planta
ϕ_a =	1.00	1.00	Coeficiente por irregularidad en altura
ϕ_r =	**1.00**	**0.75**	Coeficiente por ausencia de redundancia
R'o =	**7.00**	**7.00**	Pórticos de concreto DES
R =	**7.00**	**5.25**	
Ωo=	**3.00**		Coeficiente de sobreresistencia
0.5AaFa=	**0.16**		Componente vertical de sismo Segun A.3.3.9

COMBINACIONES DE CARGA

1. FACTORES DE AJUSTE

Fx	=	**1.00**
Fy	=	**1.00**

2. CHEQUEO DE DERIVAS

No. DE COMBINACION						Fx		Fy		Combinacion en el programa
1	1.20	CM	+	0.50	CV	+	1.00	SX		COMBO 2
2	1.20	CM	+	0.50	CV	-	1.00	SX		
3	1.20	CM	+	0.50	CV			+	1.00 SY	COMBO 3
4	1.20	CM	+	0.50	CV			-	1.00 SY	
5	0.90	CM				+	1.00	SX		COMBO 4
6	0.90	CM				-	1.00	SX		
7	0.90	CM						+	1.00 SY	COMBO 5
8	0.90	CM						-	1.00 SY	

3. DISEÑO DE ELEMENTOS DEL SISTEMA DE RESISTENCIA SISMICA

No. DE COMBINACION						Fx/R 0.3*Fx/R		0.3*Fy/R Fy/R		
1	1.40	CM								
2	1.20	CM	+	1.60	CV	+	0.50	G		COMBO 1
3	1.20	CM	+	0.50	CV	+	0.14	SX	+ 0.06 SY	COMBO 6
4	1.20	CM	+	0.50	CV	+	0.14	SX	- 0.06 SY	COMBO 7
5	1.20	CM	+	0.50	CV	-	0.14	SX	+ 0.06 SY	
6	1.20	CM	+	0.50	CV	-	0.14	SX	- 0.06 SY	
7	1.20	CM	+	0.50	CV	+	0.04	SX	+ 0.19 SY	COMBO 8
8	1.20	CM	+	0.50	CV	+	0.04	SX	- 0.19 SY	COMBO 9
9	1.20	CM	+	0.50	CV	-	0.04	SX	+ 0.19 SY	
10	1.20	CM	+	0.50	CV	-	0.04	SX	- 0.19 SY	
11	0.90	CM				+	0.14	SX	+ 0.06 SY	COMBO 10
12	0.90	CM				+	0.14	SX	- 0.06 SY	COMBO 11
13	0.90	CM				-	0.14	SX	+ 0.06 SY	
14	0.90	CM				-	0.14	SX	- 0.06 SY	
15	0.90	CM				+	0.04	SX	+ 0.19 SY	COMBO 12
16	0.90	CM				+	0.04	SX	- 0.19 SY	COMBO 13
17	0.90	CM				-	0.04	SX	+ 0.19 SY	
18	0.90	CM				-	0.04	SX	- 0.19 SY	

Las siguientes combinaciones fueron incluidas para que en el programa DCCAD 2010 puedan realizarse los chequeos de cortante segun C.21.3.3.1 y C.21.3.3.2

4. DISENO DE CORTANTE SISMICO EN VIGAS (Ex2)

No. DE COMBINACION						E*2 / 0.3*E*2			0.3*E*2 / E*2		
19	1.20	CM	+	1.00	CV	+	0.29	SX	+	0.11	SY	COMBO 14
20	1.20	CM	+	1.00	CV	+	0.29	SX	-	0.11	SY	COMBO 15
21	1.20	CM	+	1.00	CV	-	0.29	SX	+	0.11	SY	
22	1.20	CM	+	1.00	CV	-	0.29	SX	-	0.11	SY	
23	1.20	CM	+	1.00	CV	+	0.09	SX	+	0.38	SY	COMBO 16
24	1.20	CM	+	1.00	CV	+	0.09	SX	-	0.38	SY	COMBO 17
25	1.20	CM	+	1.00	CV	-	0.09	SX	+	0.38	SY	
26	1.20	CM	+	1.00	CV	-	0.09	SX	-	0.38	SY	
27	0.90	CM				+	0.29	SX	+	0.11	SY	COMBO 18
28	0.90	CM				+	0.29	SX	-	0.11	SY	COMBO 19
29	0.90	CM				-	0.29	SX	+	0.11	SY	
30	0.90	CM				-	0.29	SX	-	0.11	SY	
31	0.90	CM				+	0.09	SX	+	0.38	SY	COMBO 20
32	0.90	CM				+	0.09	SX	-	0.38	SY	COMBO 21
33	0.90	CM				-	0.09	SX	+	0.38	SY	
34	0.90	CM				-	0.09	SX	-	0.38	SY	

5. DISENO DE CORTANTE SISMICO EN COLUMNAS (ExΩ)

No. DE COMBINACION						E*Ω / 0.3*E*Ω			0.3*E*Ω / E*Ω		
35	1.36	CM	+	1.00	CV	+	0.43	SX	+	0.17	SY	COMBO 22
36	1.36	CM	+	1.00	CV	+	0.43	SX	-	0.17	SY	COMBO 23
37	1.36	CM	+	1.00	CV	-	0.43	SX	+	0.17	SY	
38	1.36	CM	+	1.00	CV	-	0.43	SX	-	0.17	SY	
39	1.36	CM	+	1.00	CV	+	0.13	SX	+	0.57	SY	COMBO 24
40	1.36	CM	+	1.00	CV	+	0.13	SX	-	0.57	SY	COMBO 25
41	1.36	CM	+	1.00	CV	-	0.13	SX	+	0.57	SY	
42	1.36	CM	+	1.00	CV	-	0.13	SX	-	0.57	SY	
43	0.74	CM				+	0.43	SX	+	0.17	SY	COMBO 26
44	0.74	CM				+	0.43	SX	-	0.17	SY	COMBO 27
45	0.74	CM				-	0.43	SX	+	0.17	SY	
46	0.74	CM				-	0.43	SX	-	0.17	SY	
47	0.74	CM				+	0.13	SX	+	0.57	SY	COMBO 28
48	0.74	CM				+	0.13	SX	-	0.57	SY	COMBO 29
49	0.74	CM				-	0.13	SX	+	0.57	SY	
50	0.74	CM				-	0.13	SX	-	0.57	SY	

DISEÑO DE ELEMENTOS NO ESTRUCTURALES

CALCULO DE ELEMENTOS NO ESTRUCTURALES

PARAMETROS DE DISEÑO

Grado de desempeño=	Superior
Rp=	3
Ap=	1.0
f_y=	4200 kg/cm2

$$F_p = \frac{a_x a_p}{R_p} gM_p \geq \frac{A_a I}{2} gM_p$$

*Factor= f_y*π/16/L*
*Limite Fp=Aa*I*P/2*
S: Separacion entre columnetas
L: Longitud de la dilatacion superior

NIVEL	Fx	W	ax	Altura	e_{muro}	Vol.	$\gamma_{mamp.}$	P	Fp	Fp_{min}	Fp def.	Mmax	S	Vmax	L	Factor	$\phi_{varilla}$	Vn	Vn>Vu
	Tn	Tn		m	m	m3	Tn/m3	Tn	Tn	Tn	Tn	Tn*m	m	Tn	Cm		/8"	Tn	Cumple?
PISOCUB	157.05	128.86	1.22	3.90	0.12	0.47	1.40	0.66	0.27	0.066	0.27	0.260	1.20	0.160	10	0.082	5	0.330	SI

CALCULO DE ELEMENTOS NO ESTRUCTURALES

DATOS DE ENTRADA

f'c=	**175**	Kg/Cm2
fy=	**4200**	Kg/Cm2
$d_{columneta}$=	**6**	Cm
$b_{columneta}$=	**15**	Cm
Recubrimiento=	**6**	Cm
t muro=	12	Cm
ρmin=	0.0033	

NIVEL	Fp	Mu	ρ	ρdiseño	As	As*fy	0.85 f'c b	a	kud	εc	εt		ϕ	As	Varilla	Cant.	Refuerzo
	Tn	Tn*m			Cm^2/m	Kg	Kg/cm	cm	cm					Cm^2	/8"		
PISOCUB	0.27	0.31	0.0186	0.0186	1.68	7043	2231.25	3.16	3.71	0.003	0.0018	Compr	0.65	2.58	**5**	2	**2#5**

DISEÑO PLACA DE ENTREPISO

CALCULO DE PLACA DE ENTREPISO PISO 1 Y PISO 2

ELEMENTO: Placa maciza e=0.12

DATOS DE ENTRADA

f'c=	**280**	Kg/Cm2
fy=	**4200**	Kg/Cm2
d=	**8**	Cm
b=	**100**	Cm
Recubrimiento=	**4**	Cm
h=	12	Cm
Tipo elemento=	**Viga=**	
	Placa=	**X**
ρmin=	0.0018	

CALCULOS ADICIONALES

CU=	1.90	Tn/m2
Luz=	2.30	m
Mu-=	0.84	Tn*m
Vu=	2.19	Tn
Mu+=	0.42	Tn*m

DISENO A FLEXION

Mu=	**0.8**	Tn*m
ρ=	0.0032	
ρdiseño=	0.0032	
As=	1.44	Cm^2/m
As*fy=	6048	kg
0.85f'c*b=	23800	kg/cm
a=	0.25	cm
kud=	0.30	cm
ε_c=	0.0030	
ε_f=	0.0773	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0036	
As=	2.85	Cm^2/m
Malla =	**7.5**	**mm c/.15**

DISENO A CORTANTE

Vu=	**2.2**	Tn
ϕVc=	5321.2	Kg
ϕVc=	5.3	Tn
ϕVs=	-	Tn

DISENO A FLEXION

Mu=	**0.4**	Tn*m
ρ=	0.0016	
ρdiseño=	0.0018	
As=	1.44	Cm^2/m
As*fy=	6048	kg
0.85f'c*b=	23800	kg/cm
a=	0.25	cm
kud=	0.30	cm
ε_c=	0.0030	
ε_f=	0.0773	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0020	
As=	1.60	Cm^2/m
Malla =	**6.0**	**mm c/.15**

CHEQUEO A PUNZONAMIENTO

b=	**20**	cm
h=	**20**	cm
Apoyo=	Circular	
	Rectangular	**X**
P=	**2.5**	Tn
Pu=	3.8	Tn
β=	1.00	
ϕ=	**0.75**	
λ=	**1.00**	
αs=	**40**	
bo=	**112**	cm
C.11-31=	1.68	cm
C.11-32=	3.29	cm
C.11-33=	2.67	cm

Punto de aplicacion de una carga puntual

OK

DISEÑO DE CIMENTACIÓN

DISEÑO DE ZAPATAS EXCENTRICAS (1)

DATOS DE ENTRADA

σ suelo=	17.6	Tn/m^2
fy=	4200	Kg/Cm^2
f'c=	210	Kg/Cm^2
f Cortante=	0.75	
f Flexion=	0.90	
<Dimension	1.00	m

(C.11-31)	$V_c = 0.17\left(1+\frac{2}{\beta}\right)\lambda\sqrt{f'_c}b_o d$
(C.11-32)	$V_c = 0.083\left(\frac{\alpha_s d}{b_o}+2\right)\lambda\sqrt{f'_c}b_o d$
(C.11-33)	$V_c = 0.33\lambda\sqrt{f'_c}b_o d$

*Condicion 1(C.11-31)
*Condicion 2(C.11-32)
*Condicion 3(C.11-33)

					DIMENSIONAMIENTO																REVISION POR PUNZONAMIENTO						CORTE COMO VIGA			
ZAPATA TIPO	COL.	Pu (Tn)	Mu (Tn*m)	Preal (tn)	Mr (Tn*m)	e (m)	A (m)	B (m)	Le (m)	1.1P (Tn)	A (m2)	L (m)	H (m)	e (m)	ΔR (Tn)	σneto (Tn/m2)	σultimo (Tn/m2)		d (Cm)	h (Cm)	bo (Cm)	αs	βc	Vu (Tn)	C.11-31	C.11-32	C.11-33	Sentido corto Vu(Tn)		Sentido largo Vu(Tn)		d requerido (Cm)	
2E	1	18.22	8.06	12.1	4.3	0.36	0.40	0.60	3.88	13.36	0.76	1.10	1.45	0.35	1.20	9.13	12.45	OK	13	20	179	30	2	13.40	10.93	6.11	6.89	OK	4.04	3.97		4.04	4.78	OK
3E	3	22.21	8.67	14.8	4.7	0.31	0.40	0.60	3.88	16.29	0.93	1.10	1.45	0.35	1.47	11.13	15.18	OK	18	25	194	30	2	15.34	11.55	5.63	7.28	OK	4.09	3.74		4.09	4.84	OK
1E	28	9.58	7.0	6.4	3.7	0.58	0.50	0.30	3.88	7.03	0.40	1.00	1.00	0.25	0.44	7.47	10.18	OK	13	20	106	20	2	6.82	9.97	4.93	5.92	OK	2.24	1.22		2.24	2.92	OK

DISEÑO DE ZAPATAS EXCENTRICAS (2)

C.10.14 — Resistencia al aplastamiento

C.10.14.1 — La resistencia de diseño al aplastamiento del concreto no debe exceder $\phi(0.85f'_c A_1)$ excepto cuando la superficie de soporte sea más ancha en todos los lados que el área cargada, en cuyo caso, se permite que la resistencia de diseño al aplastamiento en el área cargada sea multiplicada por $\sqrt{(A_2/A_1)}$, pero no más que 2.

ZAPATA TIPO	Lv (m)	Mu (Tn*m)	ρ	ρ min	ρ diseño	Seccion en	As (Cm2)	REF. SENTIDO B Refuerzo sentido B	ρ min	Seccion en	As (Cm2)	REF. SENTIDO A Refuerzo sentido A	Pu (Tn)	PRESION DE CONTACTO ϕ*0,85*f'c* A_1 (Tn)	
2E	0.43	1.24	0.0020	0.0018	0.0020	Traccion	2.58	3 # 4 18 c/. 45	0.0018	Traccion	3.60	5 # 4 14 c/. 35	18.22	278.5	Cumple
3E	0.43	1.51	0.0012	0.0018	0.0018	Traccion	4.50	5 # 4 18 c/. 25	0.0018	Traccion	4.50	6 # 4 14 c/. 25	22.21	278.5	Cumple
1E	0.35	0.69	0.0011	0.0018	0.0018	Traccion	3.60	4 # 4 13 c/. 35	0.0018	Traccion	3.60	4 # 4 13 c/. 35	9.58	174.0	Cumple

DISEÑO A FLEXION

DISEÑO DE ZAPATAS EXCENTRICAS (3)

ESQUEMA DE VIGA DE CIMENTACION

DIAGRAMA DE CORTANTE DEBAJO DE LA ZAPATA

DISEÑO DE VIGA DE CIMENTACION

ZAPATA TIPO	Mu (Tn*m)	B (Cm)	H (Cm)	ρ	ρ min	ρ diseño	Seccion en	As (Cm2)	W (Tn/m)	V1 (Tn)	V2 (Tn)	V3 (Tn)	Vu (TN)	ϕVc (Tn)	ϕVs (Tn)	Refuerzo principal			$1/3(f'c)^{0.5}$	$2/3(f'c)^{0.5}$	Refuerzo secundario			Transversal		
2E	7.01	40	80	0.0009	0.0033	0.0033	Traccion	10.43	13.24	2.65	#####	1.20	1.57	19.06	-17.5	4	#	6	14.1	28.2	4	#	6	fi #	3	c/. 35	2 Ramas
3E	8.54	40	80	0.0011	0.0033	0.0033	Traccion	10.43	16.14	3.23	#####	1.47	1.914	19.06	-17.1	4	#	6	14.1	28.2	4	#	6	fi #	3	c/. 35	2 Ramas
1E	2.56	40	80	0.0003	0.0033	0.0033	Traccion	10.43	7.47	1.87	-5.16	0.44	-0.44	19.06	-19.5	4	#	6	14.1	28.2	4	#	6	fi #	3	c/. 35	2 Ramas

CHEQUEO DE CORTANTE EN NUDOS

RELACION DE CAPACIDAD DE CORTE EN LOS NUDOS (C.21.7.4)

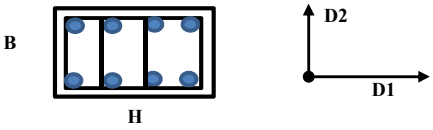
Materiales		
f'c=	28	Mpa
fy=	420	Mpa

Nudo	Col. bc m	Viga bv m	Cara 1 Cond.	Col. b m	Viga b m	Cara 2 Cond.	Col. b m	Viga b m	Cara 3 Cond.	Col. b m	Viga b m	Cara 4 Cond.	Caras confin.	Direccion 1 $b_{efectivo}$ m	Aj m2	Direccion 2 $b_{efectivo}$ m	Aj m2	Limite Vn Dir. 1 Mpa	Dir. 2 Mpa	Direccion 1 Vc Mpa	Dia. /8"	#R	Av m2	sep m	Vs Mpa	Vn Mpa	Direccion 2 Vc Mpa	Dia. /8"	#R	Av m2	sep m	Vs Mpa	Vn Mpa	Relacion de capacidad a cortante Dir.1	Dir.2	Cap max
T1	0.60	0.50	Confin.	0.40	0.50	Confin.	0.60		No confin.	0.4		No confin.	2	0.60	0.24	0.4	0.24	1.27	1.27	0.22	4	3	3.8E-04	0.10	0.56	0.77	0.22	4	3	3.8E-04	0.10	0.88	1.09	0.61	0.86	Cumple
T2	0.60	0.50	Confin.	0.40	0.50	Confin.	0.60	0.50	Confin.	0.4		No confin.	3	0.60	0.24	0.4	0.24	1.52	1.52	0.22	4	3	3.8E-04	0.10	0.56	0.77	0.22	4	3	3.8E-04	0.10	0.88	1.09	0.51	0.72	Cumple
T3	0.60	0.50	Confin.	0.40	0.50	Confin.	0.60	0.50	Confin.	0.4	0.5	Confin.	4	0.60	0.24	0.4	0.24	2.16	2.16	0.22	4	3	3.8E-04	0.10	0.56	0.77	0.22	4	3	3.8E-04	0.10	0.88	1.09	0.36	0.51	Cumple

CALCULO DE Ash DE CONFINAMIENTO DES

DATOS DE ENTRADA

B=	0.4	m
H=	0.6	m
Recubrimiento=	4	Cm



$$A_{sh} = 0.3\frac{sb_c f'_c}{f_{yt}}\left[\left(\frac{A_g}{A_{ch}}\right)-1\right] \qquad A_{sh} = 0.09\frac{sb_c f'_c}{f_{yt}}$$

Direccion 1		
#Ramas=	3	
ϕ =	4	/8"
As=	1.27	Cm2
Ash=	380.0	mm2
bc=	320	mm
f'c=	28	Mpa
fyt=	420	Mpa
Ag=	240000	mm2
Ach=	166400	mm2

s=	134.2	mm
s=	13	cm C.21-7

s=	197.9	mm
s=	20	cm C.21-8

Direccion 2		
#Ramas=	3	
ϕ =	4	/8"
As=	1.27	Cm2
Ash=	437.0	mm2
bc=	520	mm
f'c=	28	Mpa
fyt=	420	Mpa
Ag=	240000	mm2
Ach=	166400	mm2

s=	95.0	mm
s=	10	cm C.21-7

s=	140.1	mm
s=	14	cm C.21-8

DISEÑO DE COLUMNAS, VIGAS Y VIGUETAS

Columna K-17

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					2.97	6.80				8/#7 (1.3%)	0.28	2.02	1.94
	3.90	.40	.40	.60			-13.44	6.78	8.72				
CUB		.80			-2.71	-8.06				8/#7 (1.3%)	0.33		

Columna K-16

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					1.68	-6.80				8/#7 (1.3%)	0.29	2.02	1.94
	3.90	.40	.40	.60			-17.47	6.78	8.72				
CUB		.80			0.13	8.06				8/#7 (1.3%)	0.39		

Columna L-16

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-0.63	-7.89				8/#7 (1.3%)	0.36	2.06	1.61
	3.90	.40	.40	.60			-20.48	5.00	9.26				
CUB		.80			1.41	8.67				8/#7 (1.3%)	0.39		

Columna L-17

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					0.32	7.89				8/#7 (1.3%)	0.37	2.06	1.61
	3.90	.40	.40	.60			-16.85	5.00	9.26				
CUB		.80			-1.23	-8.67				8/#7 (1.3%)	0.38		

Columna M-16

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-0.32	-7.88				8/#7 (1.3%)	0.36	2.06	1.61
	3.90	.40	.40	.60			-20.48	4.99	9.25				
CUB		.80			1.24	8.66				8/#7 (1.3%)	0.39		

Columna M-17

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					0.63	7.88				8/#7 (1.3%)	0.37	2.06	1.61
	3.90	.40	.40	.60			-16.86	4.99	9.25				
CUB		.80			-1.40	-8.66				8/#7 (1.3%)	0.38		

Columna N-16

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-3.04	-6.73				8/#7 (1.3%)	0.27	2.02	1.94
	3.90	.40	.40	.60			-17.35	6.85	8.65				
CUB		.80			2.75	7.99				8/#7 (1.3%)	0.34		

Columna N-17

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-1.73	6.73				8/#7 (1.3%)	0.29	2.02	1.94
	3.90	.40	.40	.60			-13.31	6.85	8.65				
CUB		.80			-0.09	-7.99				8/#7 (1.3%)	0.38		

Columna K'-17

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					1.15	4.86				8/#7 (1.3%)	0.22	3.89	2.46
	3.90	.40	.40	.60			-5.39	5.05	7.74				
CUB		.80			-1.69	-6.95				8/#7 (1.3%)	0.31		

Columna K'-16

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					0.31	-4.86				8/#7 (1.3%)	0.24	3.89	2.46
	3.90	.40	.40	.60			-9.58	5.05	7.74				
CUB		.80			0.89	6.95				8/#7 (1.3%)	0.34		

Columna N'-17

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-0.21	4.79				8/#7 (1.3%)	0.24	3.89	2.46
	3.90	.40	.40	.60			-5.22	5.07	7.66				
CUB		.80			-0.94	-6.88				8/#7 (1.3%)	0.32		

Columna N'-16

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-1.08	-4.79				8/#7 (1.3%)	0.22	3.89	2.46
	3.90	.40	.40	.60			-9.43	5.07	7.66				
CUB		.80			1.67	6.88				8/#7 (1.3%)	0.31		

E-101/CUB

B=0.40 H=0.40 L=3.40			***B=0.40 H=0.40 L=6.90***			***B=0.40 H=0.40 L=6.90***		
Mu=-2.16	Mu=-0.82	Mu=-3.29	Mu=-4.81	Mu=-1.37	Mu=-5.46	Mu=-5.36	Mu=-1.34	Mu=-5.36
As=4.62	As=4.62	As=4.62	As=5.01	As=4.62	As=5.71	As=5.60	As=4.62	As=5.60
Mu=1.52	Mu=0.82	Mu=1.64	Mu=2.41	Mu=3.53	Mu=2.73	Mu=2.68	Mu=3.36	Mu=2.68
As=4.62	As=4.62	As=4.62	As=4.62	As=4.62	As=4.62	As=4.62	As=4.62	As=4.62
Vu=-4.70		Vu=5.61	Vu=-5.45		Vu=5.65	Vu=-5.62		Vu=5.62

B=0.40 H=0.40 L=6.90			***B=0.40 H=0.40 L=3.25***		
Mu=-5.46	Mu=-1.37	Mu=-4.80	Mu=-3.25	Mu=-0.81	Mu=-2.13
As=5.71	As=4.62	As=4.99	As=4.62	As=4.62	As=4.62
Mu=2.73	Mu=3.53	Mu=2.40	Mu=1.63	Mu=0.81	Mu=1.60
As=4.62	As=4.62	As=4.62	As=4.62	As=4.62	As=4.62
Vu=-5.65		Vu=5.44	Vu=-5.74		Vu=4.79

E-102/CUB

B=0.40 H=0.40 L=3.40			***B=0.40 H=0.40 L=6.90***			***B=0.40 H=0.40 L=6.90***		
Mu=-2.16	Mu=-0.82	Mu=-3.29	Mu=-4.81	Mu=-1.37	Mu=-5.46	Mu=-5.36	Mu=-1.34	Mu=-5.36
As=4.62	As=4.62	As=4.62	As=5.01	As=4.62	As=5.71	As=5.60	As=4.62	As=5.60
Mu=1.52	Mu=0.82	Mu=1.64	Mu=2.41	Mu=3.53	Mu=2.73	Mu=2.68	Mu=3.36	Mu=2.68
As=4.62	As=4.62	As=4.62	As=4.62	As=4.62	As=4.62	As=4.62	As=4.62	As=4.62
Vu=-4.70		Vu=5.61	Vu=-5.45		Vu=5.65	Vu=-5.62		Vu=5.62

B=0.40 H=0.40 L=6.90			***B=0.40 H=0.40 L=3.25***		
Mu=-5.46	Mu=-1.37	Mu=-4.80	Mu=-3.25	Mu=-0.81	Mu=-2.13
As=5.71	As=4.62	As=4.99	As=4.62	As=4.62	As=4.62
Mu=2.73	Mu=3.53	Mu=2.40	Mu=1.63	Mu=0.81	Mu=1.60
As=4.62	As=4.62	As=4.62	As=4.62	As=4.62	As=4.62
Vu=-5.65		Vu=5.44	Vu=-5.74		Vu=4.79

E-103/CUB

B=0.40 H=0.40 L=3.88		
Mu=-4.72	Mu=-1.18	Mu=-4.72
As=4.90	As=4.62	As=4.90
Mu=2.73	Mu=3.06	Mu=2.73
As=4.62	As=4.62	As=4.62
Vu=-8.95		Vu=8.95

E-104/CUB

B=0.40 H=0.40 L=3.88		
Mu=-6.49 As=5.13	Mu=-1.93 As=4.62	Mu=-6.49 As=5.13
Mu=3.25 As=4.62	Mu=7.71 As=6.15	Mu=3.25 As=4.62
Vu=-13.05		Vu=13.05

E-105/CUB

B=0.40 H=0.40 L=3.88		
Mu=-7.18 As=5.70	Mu=-2.53 As=4.62	Mu=-7.18 As=5.70
Mu=3.59 As=4.94	Mu=10.14 As=8.23	Mu=3.59 As=4.94
Vu=-14.64		Vu=14.64

E-106/CUB

B=0.40 H=0.40 L=3.88		
Mu=-7.17 As=5.69	Mu=-2.53 As=4.62	Mu=-7.17 As=5.69
Mu=3.59 As=4.94	Mu=10.13 As=8.23	Mu=3.59 As=4.94
Vu=14.63		Vu=-14.63

E-107/CUB

B=0.40 H=0.40 L=3.88		
Mu=-6.44 As=5.09	Mu=-1.90 As=4.62	Mu=-6.44 As=5.09
Mu=3.22 As=4.62	Mu=7.62 As=6.07	Mu=3.22 As=4.62
Vu=12.92		Vu=-12.92

E-108/CUB

B=0.40 H=0.40 L=3.88		
Mu=-4.65 As=4.83	Mu=-1.16 As=4.62	Mu=-4.65 As=4.83
Mu=2.72 As=4.62	Mu=2.97 As=4.62	Mu=2.72 As=4.62
Vu=8.82		Vu=-8.82

E-107/CUB

B=0.20 H=0.40 L=3.40			***B=0.20 H=0.40 L=6.90***			***B=0.20 H=0.40 L=6.90***		
Mu=-0.00	Mu=-0.00	Mu=-10.33	Mu=-9.63	Mu=-0.00	Mu=-13.16	Mu=-13.31	Mu=-0.00	Mu=-13.35
As=0.20	As=1.01	As=8.88	As=8.17	As=0.20	As=11.57	As=11.57	As=0.20	As=11.57
Mu=0.80	Mu=0.29	Mu=0.00	Mu=0.00	Mu=9.44	Mu=0.00	Mu=0.00	Mu=7.50	Mu=0.00
As=1.51	As=1.44	As=1.44	As=1.44	As=7.97	As=1.44	As=1.44	As=6.12	As=1.44
Vu=2.68		Vu=-9.22	Vu=11.56		Vu=-12.59	Vu=12.07		Vu=-12.08

B=0.20 H=0.40 L=6.90			***B=0.20 H=0.40 L=3.25***		
Mu=-13.19	Mu=-0.00	Mu=-9.54	Mu=-10.29	Mu=-0.18	Mu=-0.00
As=11.57	As=0.20	As=8.08	As=8.83	As=1.45	As=0.20
Mu=0.00	Mu=9.46	Mu=0.00	Mu=0.00	Mu=0.00	Mu=0.69
As=1.44	As=8.00	As=1.44	As=1.44	As=1.44	As=1.44
Vu=12.60		Vu=-11.55	Vu=9.07		Vu=-2.31

BLOQUE 6

ANÁLISIS SÍSMICO

DESCRIPCION GENERAL DEL PROYECTO ESTRUCTURAL

DATOS GENERALES:

NOMBRE DEL PROYECTO:	**HOSPITAL SAN JUAN BAUTISTA (BLOQUE 6)**
CIUDAD:	**CHAPARRAL**
CALCULO:	**D.O.R**
REVISO:	**D.O.R**
FECHA:	**18/05/2021**
OBSERVACIONES:	
LOCALIZACION:	**CHAPARRAL TOLIMA**
SISTEMA ESTRUCTURAL:	**Pórticos de concreto**
CAPACIDAD DE DISIPACION:	**DES**
NUMERO DE PISOS	**1**

DESCRIPCION DEL PROYECTO:

El proyecto arquitectónico consta de 1 niveles, el cual estara destinado para uso del Hospital San Juan Bautista del municipio de Chaparral Tolima.

El sistema estructural utilizado para resistir cargas verticales y laterales (sísmicas), es el de pórticos de concreto reforzado, con placa de entrepiso de 40 cm de espesor aligerada y armada en una dirección, cuyo uso esta definido en las Normas Colombianas de construcciones sismoresistentes- NSR-10.

La cimentación consiste en zapatas aisladas, según recomendación del estudio de suelos de la firma Laboratorio de suelos y pavimentos GAIA

DESCRIPCION DEL PROGRAMA DE COMPUTADOR:

El programa utilizado para el procesamiento del edificio es ETABS Versión 9.2 desarrollado por la compañía Computers and structures inc con amplio recorrido de más de 40 años en el desarrollo de software de análisis estructural. Este programa utiliza el método matricial para la solución de la estructura y el modelo utilizado es tridimensional con diafragma rígido. El análisis sísmico desarrollado es el método modal elástico. Los muros fueron modelados mediante los elementos tipo Shell y las placas mediante los elementos tipo membrane para que estas no tomen rigidez a las cargas horizontales. Las vigas y columnas fueron modelados mediante el elemento tipo frame.

PARAMETROS SISMICOS:

Metodo de Analisis sísmico			
Método utilizado:	**2**	ANALISIS MODAL DINAMICO	
Ubicación de la estructura		=	**CHAPARRAL**
Grupo de uso		=	IV
PARAMETROS DE LA NSR-10			
Zona de Amenaza Sísmica		=	Alta
Coef. de aceleracion pico efectiva, Aa		=	**0.25**
Coef. de velocidad pico efectiva, Av		=	**0.20**
Perfil del Suelo		=	**D**
Coeficiente Fa		=	1.30
Coeficiente Fv		=	2.00
Grupo de uso		=	**IV**
Coeficiente de importancia		=	1.5
UMBRAL DE DAÑO			
Coeficiente de aceleración pico (Ad)		=	**0.06**
Coeficiente de sitio para umbral de daño		=	2.5

ESPECIFICACIONES :

Concreto f'c	**280 kgf/cm2**	→	4000 psi	**VIGAS**
	280 kgf/cm2	→	4000 psi	**COLUMNAS**
	210 kgf/cm2	→	3000 psi	**CIMENTACION**
Acero fy	**4200 kgf/cm2**	→	60000 psi	ϕ >= 3/8"
	2400 kgf/cm2	→	34286 psi	ϕ < 3/8"

NORMAS :

Se siguieron las recomendaciones dadas por el reglamento Colombianos de Construcción Sismo Resistente NSR-10 (Ley 400 de 1997 (Modificada Ley 1229 de 2008). Decreto 926 de 2010) y sus decretos complementarios.

CALCULO DE ALTURAS Y NIVELES DE LA ESTRUCTURA

NIVEL		H libre	h Placa	Alt. Total piso	NIVEL
PISO	CUB	3.90	0.40	4.30	-4.18
NIVEL DE ARRANQUE		-8.48			



CALCULO DE DENSIDADES

MATERIALES

Vigas

γ Concreto=	2.4	TN/m^3

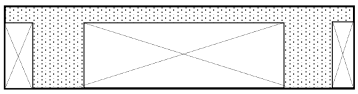
Columnas

γ Concreto=	2.4	TN/m^3

NIVEL		Vol. Vigas m³	Vol. Columnas m³	Area Placa m²	*r Vigas* TN/m²	*r Columnas* TN/m²
PISO	CUB	3.27	4.13	35.2	0.223	0.255

AVALUO DE CARGA DE PLACA

CORTE TIPICO DE CUBIERTA



Placa Aligerada con Torta Superior

DATOS GENERALES		
γ Concreto	2.4	Tn/m3
γ Mortero acabados	2.0	Tn/m3
Pendiente Cubierta	0.0	°
Pendiente Cubierta	0.00	
CV cub inclinada	0.050	Tn/m2
Cgranizo	0.100	Tn/m2

CONVENCIONES	
CM:	Carga Muerta
CV:	Carga Viva
CT:	Carga Real Total aplicada a la placa (CM+CV)
CU:	Carga Ultima para diseño de Viguetas (1.2CM+1.6CV)
CR:	Carga real a cimentacion ($CT+\rho_{Vigas}+\rho_{Columnas}$)
CS:	Carga de sismo ($CM+\rho_{Vigas}+\rho_{Columnas}$)

NIVEL		h(m)	Torta Sup.	Torta Inf.	e Viguetas (m)	Sep Viguetas (m)	W_{placa} Tn/m2	$W_{viguetas}$ Tn/m2	$W_{caseton}$ Tn/m2	$W_{viguetas\ metalica}$ Tn/m2	$e_{Acabados}$ (m)	$W_{acabados}$ Tn/m2	W_{muros} Tn/m2	$W_{cubierta}$ Tn/m2	$W_{estr.\ metalica}$ Tn/m2	W_{otros} Tn/m2	CM Tn/m2	CV Tn/m2	ρ_{Vigas} (tn/m2)	$\rho_{Columnas}$ (tn/m2)	$\rho_{Vigas+Columnas}$ (tn/m2)	CU Tn/m2	CR Tn/m2	Piso Restringido?	CS Tn/m2
PISO	CUB	0.40	0.12	0.00	0.20	2.10	0.288	0.06	0.00	0.00	0.05	0.100	0.050	0.000	0.000	0.000	0.496	0.200	0.223	0.255	0.478	2.106	1.174	No	0.974

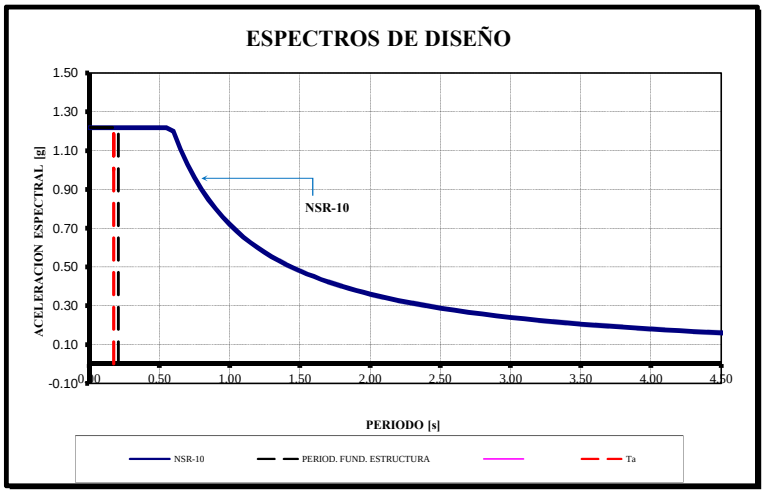
ANALISIS SISMICO DE LA ESTRUCTURA

El Análisis Sísmico del edificio se realizará por el método de ANALISIS MODAL DINAMICO

El programa de análisis estructural ETABS realiza directamente el análisis utilizando el Espectro Elástico de Diseño, el cual se elabora según parámetros del Reglamento de construccion Sismo Resistente Colombiano NSR-10 .

Los Parametros sísmicos que se tuvieron en cuenta para el analisis del edificio son los siguientes:

Parámetros del Espectro de la Norma Sismo Resistente NSR-10		
Zona de Amenaza Sísmica	=	Alta
Coef. de aceleracion pico efectiva, Aa	=	0.25
Coef. de velocidad pico efectiva, Av	=	0.20
Perfil del Suelo	=	D
Grupo de uso	=	IV
Coeficiente Fa	=	1.30
Coeficiente Fv	=	2.00
Coef. de Importancia, I	=	1.50
Coef. de amort. Crítico β	=	5.00%
Período inicial, To	=	0.12 s
Período corto, Tc	=	0.59 s
Período largo, T_L	=	4.80 s
Máx. acel. en el espectro	=	1.22 g



Para el analisis se determinó la masa que participa en el sismo proveniente del peso muerto del edificio.

CALCULO DE LA MASA DEL EDIFICIO			
PISO	Area [m²]	Carga Sísmo [T/m²]	Masa [T s²/m]
PISOCUB	35.24	0.97	3.50

Se determinó el centro de gravedad de cada piso y el centro de rigidez del mismo para determinar la torsión de diseño de acuerdo al numeral A.3.6.7, la cual corresponde a la suma de la torsión directa más la torsión accidental. La torsión directa es tenida en cuenta por el propio programa de analisis y la torsion accidental depende del metodo de analisis.

CALCULO DEL CENTROIDE DE MASAS YTORSION EN EL PISO													
PISO	POSICION DE LA MASA RESPECTO AL CENTRO DE RIGIDEZ	CENTRO DE MASA		MAYOR LONGITUD		ex [m]	ey [m]	CENTRO DE RIGIDEZ		CENTROIDE DEFINITIVO		CENTROIDE MODIFICADO INCLUYENDO Ax	
		X [m]	Y [m]	LX [m]	LY [m]			X_R [m]	Y_R [m]	X [m]	Y [m]	X [m]	Y [m]
PISOCUB	C.M. ■ C.R. ■	3.47	2.14	7.53	4.68	0.00	0.00	3.47	2.14	3.47	2.14	-	-

Nota: Debido a que el metodo de analisis corresponde al dinamico elastico no se tuvo en cuenta la torsion accidental segun NSR-10 A 3.6.7

CALCULO DEL PESO DEL EDIFICIO Y DETERMINACION DEL CORTANTE BASAL ESTATICO POR FUERZA HORIZONTAL EQUIVALENTE

Para el calculo de los factores de ajuste se utilizó el método de la Fuerza Horizontal Equivalente para ajustar el valor del cortante dinámico en la base (Según A.5.4.5 -- NSR - 10)

CALCULO DEL PESO DEL EDIFICIO			
PISO	**W (T)**	**ALTURA PISO (m)**	**h (acumulado) (m)**
PISOCUB	34.34	4.30	4.30
PESO TOTAL	**34.34 T**		

CALCULO CORTANTE ESTATICO EN LA BASE

Ct	=	0.047
α=	=	0.900
hn	=	4.30 m
Ta	=	$Ct\ hn^{\alpha}$
Ta	=	0.17 s
T	=	0.21 s
Sa	=	1.22 g
Vs	**=**	**41.85 Tn**

Cortante sísmico en la base (Vs = Sa×Westructura)

CALCULO CORTANTE DINAMICO EN LA BASE

Del programa se obtuvieron los siguientes valores del cortante basal dinamico

TABLA DE CORTANTES DINAMICOS								
Spec	Mode	Dir	F1	F2	F3	M1	M2	M3
SISMOX	1	U1	0.0	0.0	0.0	0.0	0.0	0.0
SISMOX	2	U1	36.9	0.0	0.0	0.0	-152.4	-79.0
SISMOX	3	U1	0.0	0.0	0.0	0.0	0.0	0.0
SISMOX	All	All	36.9	0.0	0.0	0.0	152.4	79.0
SISMOY	1	U2	0.0	36.9	0.0	152.4	0.0	127.9
SISMOY	2	U2	0.0	0.0	0.0	0.0	0.0	0.0
SISMOY	3	U2	0.0	0.0	0.0	0.0	0.0	0.0
SISMOY	All	All	0.0	36.9	0.0	152.4	0.0	127.9

TABLA DE PERIODOS REALES DE LA ESTRUCTURA							
Spec	Mode	Period	DampRatio	pecFactc	U1	U2	U3
SISMOX	1	0.21	0.05	1.00	11.96	0.00	0.00
SISMOX	2	0.17	0.05	1.00	11.96	0.00	0.00
SISMOX	3	0.11	0.05	1.00	11.96	0.00	0.00
SISMOY	1	0.21	0.05	1.00	0.00	11.96	0.00
SISMOY	2	0.17	0.05	1.00	0.00	11.96	0.00
SISMOY	3	0.11	0.05	1.00	0.00	11.96	0.00

CORTANTE DINAMICO EN LA BASE

Cortante basal en sentido X		
F1	=	36.9 Tn
F2	=	0.0 Tn
Vsd_x	**=**	**36.9 Tn**

Cortante basal en sentido Y		
F1	=	0.0 Tn
F2	=	36.9 Tn
Vsd_y	**=**	**36.9 Tn**

AJUSTE DE LOS RESULTADOS

Utilizando la metodologia de analisis de modos y frecuencias por medio del programa se determino el periodo fundamental del edificio con el cual se realiza el ajuste del valor del cortante basal Estatico y el valor del periodo máximo (Cu*Ta) según A.5.4.5 (a)

Se comparan los cortantes en la base del análisis modal con el estático para determinar si se deben modificar las fuerzas de sismo conforme a lo establecido en A.5.4.5 (b)

Si la estructura es regular, el cortante dinámico en la base no puede ser menor que el 80 % del cortante calculado por Fuerza Horizontal Equivalente (Vs) ni menor del 90% para estructuras irregulares- (según A.5.4.5 b - NSR-10)

Item	Sentido X	Sentido Y
Periodo T (s)	0.17	0.21
Ta (s)	0.17	0.17
Cu	1.27	1.27
Periodo maximo Cu*Ta (s)	0.22	0.22
Periodo definitivo	0.17	0.21
Sa	1.22	1.22
Cortante Basal Vs (Tn)	41.9	41.9
0.90 Vs	37.7	37.7
0.80 Vs	33.5	33.5
Irregular	Si	Si
Cortante Estatico Vs (Tn)	37.7	37.7
Cortante Dinamico Vsd(Tn)	36.9	36.9
Factor de Ajuste	1.02	1.02

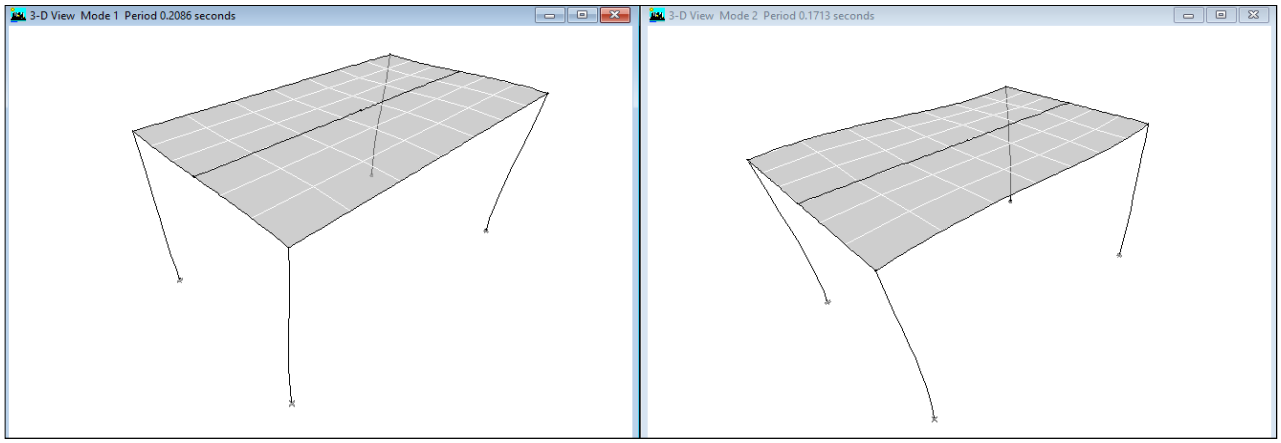
PORCENTAJE DE MASA PARTICIPATIVA

Finalmente se verifica que el número de modos utilizado sea el requerido para que la masa participativa sea mayor al 90% conforme a lo estipulado en A.5.4.2

TABLA DE MASA PARTICIPATIVA

Mode	Period	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
1	0.21	0.00	100.00	0.00	0.00	100.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00
2	0.17	100.00	0.00	0.00	100.00	100.00	0.00	0.00	100.00	0.00	100.00	100.00	0.00
3	0.11	0.00	0.00	0.00	100.00	100.00	0.00	0.00	0.00	100.00	100.00	100.00	100.00

MODOS PRINCIPALES DE VIBRACION

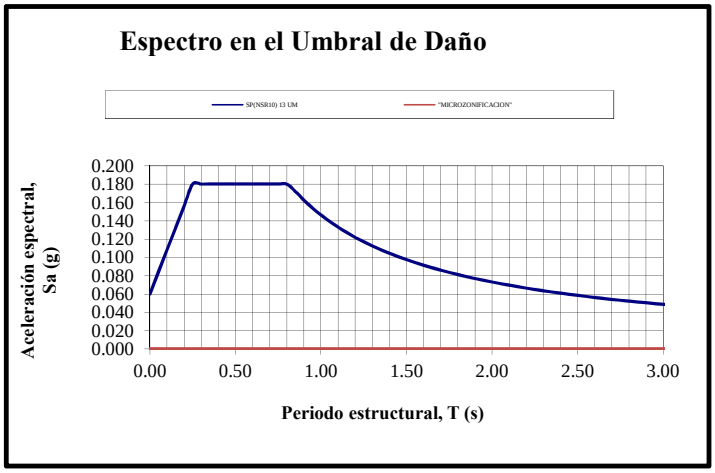


ANALISIS SIMICO PARA EL UMBRAL DE DANO (GRUPO DE USO III o IV)

Parámetros del Espectro de la Norma Sismo Resistente NSR-10		
Zona de Amenaza Sísmica	=	Alta
Coef. de acel. pico efectiva, Ad	=	0.06
Coeficiente de sitio para el umbral	=	2.5
Grupo de uso	=	IV
Coef. de Importancia, I	=	1.5
Coef. de amort. crítico	=	2.00%

CALCULO DE ACELERACION ESPECTRAL		
Ad	=	0.06
S	=	2.50
I	=	1.50
Ct	=	**0.05**
T	=	0.21 S
Tod	=	0.25 S
TCd	=	1.25 S
TLd	=	6.00 S
Sad	=	0.16
Sad	=	0.18
Sad	=	1.08
Sad	=	**0.16**
Vsd	=	**5.5 Tn**

Definitivo



CALCULO CORTANTE DINAMICO EN LA BASE

TABLA DE CORTANTES DINAMICOS								
Spec	Mode	Dir	F1	F2	F3	M1	M2	M3
SISMOX	1	U1	0.0	0.0	0.0	0.0	0.0	0.0
SISMOX	2	U1	4.3	0.0	0.0	0.0	-17.8	-9.2
SISMOX	3	U1	0.0	0.0	0.0	0.0	0.0	0.0
SISMOX	**All**	**All**	**4.3**	**0.0**	0.0	0.0	17.8	9.2
SISMOY	1	U2	0.0	4.8	0.0	20.0	0.0	16.8
SISMOY	2	U2	0.0	0.0	0.0	0.0	0.0	0.0
SISMOY	3	U2	0.0	0.0	0.0	0.0	0.0	0.0
SISMOY	**All**	**All**	**0.0**	**4.8**	0.0	20.0	0.0	16.8

CORTANTE DINAMICO EN LA BASE

Cortante basal en sentido X			
F1	=	4.3	Tn
F2	=	0.0	Tn
Vtx	=	4.3	Tn

Cortante basal en sentido Y			
F1	=	0.0	Tn
F2	=	4.8	Tn
Vty	=	4.8	Tn

PERIODO REAL DE LA ESTRUCTURA

Tx	=	0.17 s
Ty	=	0.21 s
Cu * Ta	=	0.22 s

AJUSTE DE LOS RESULTADOS

Irregularidad de la estructura	=	**Regular**

Si la estructura es regular, el cortante dinámico en la base no puede ser menor que el 80 % del cortante calculado por Fuerza Horizontal Equivalente (Vs) ni del 90% si es irregular - (según A.5.4.5 b - NSR-10)

RECALCULO Sa	
Ad=	0.06 g
$\overline{S}$=	2.50
I=	1.50
Ct=	**0.05**
T=	0.21 s
Tod	0.25 s
TCd	1.25 s
TLd	6.00 s
Sad=	0.16 s
Sad=	0.18 s
Sad	1.08 s
Sad=	0.16
0.90V=	4.9 Tn
0.8V=	4.4 Tn
Vdef=	4.4Tn

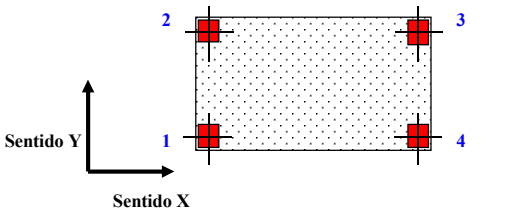
FACTORES DE AJUSTE DEFINITIVOS		
Fx=	**1.02**	**Definitivo**
Fy=	**1.00**	**Definitivo**

CHEQUEO DE LA DERIVA CON COMBINACIONES DE CARGA Y FACTORES DE AJUSTE

Se efectúa el análisis de la deriva máxima utilizando la inercia de las vigas y las columnas completa conforme a lo establecido en el capitulo A.6

CONVENCIONES	
h =	Altura Piso
δ (x,y) =	Desplazamiento por piso
Δa=	Deriva de análisis
Δp=	Deriva permitida
I_f =	Indice de flexibilidad
Δa=	$((\delta x_1-\delta x_2)^2+(\delta y_1-\delta y_2)^2)^{0.50}$
Δp =	**0.01** h
I_f =	Δa/Δp

EJES DE COLUMNAS ANALIZADAS



El metodo de combinacion modal utilizado corresponde al de la Combinacion cuadratica completa (CQC)

SISMO EN X

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
2	PISOCUB	4.30	0.90	4.30	OK	0.21	OK
3	PISOCUB	4.30	0.90	4.30	OK	0.21	OK
1	PISOCUB	4.30	0.90	4.30	OK	0.21	OK
4	PISOCUB	4.30	0.90	4.30	OK	0.21	OK

SISMO EN Y

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
2	PISOCUB	4.30	1.34	4.30	OK	0.31	OK
3	PISOCUB	4.30	1.34	4.30	OK	0.31	OK
1	PISOCUB	4.30	1.34	4.30	OK	0.31	OK
4	PISOCUB	4.30	1.34	4.30	OK	0.31	OK

CHEQUEO DE LA DERIVAS PARA EL UMBRAL DE DAÑO (GRUPO USO III o IV)

CONVENCIONES	
h =	Altura Piso
δ (x,y) =	Desplazamiento por piso
Δa=	Deriva de análisis
Δp=	Deriva permitida
I_f =	Indice de flexibilidad
Δa=	$((\delta x_1-\delta x_2)^2+(\delta y_1-\delta y_2)^2)^{0.50}$
Δp =	**0.004** h
I_f =	Δa/Δp

SISMO EN X

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
2	PISOCUB	4.30	0.11	1.72	OK	0.06	OK
3	PISOCUB	4.30	0.11	1.72	OK	0.06	OK
1	PISOCUB	4.30	0.11	1.72	OK	0.06	OK
4	PISOCUB	4.30	0.11	1.72	OK	0.06	OK

SISMO EN Y

COL	PISO	h (m)	Δa (cm)	Δp (cm)	Chequeo	I_f	
2	PISOCUB	4.30	0.17	1.72	OK	0.10	OK
3	PISOCUB	4.30	0.17	1.72	OK	0.10	OK
1	PISOCUB	4.30	0.17	1.72	OK	0.10	OK
4	PISOCUB	4.30	0.17	1.72	OK	0.10	OK

REVISION DE LA IRREGULARIDAD TORSIONAL

Irregularidad Tipo 1 P:

Tipo 1aP — Irregularidad torsional $\phi_p = 0.9$

$$1.4\left(\frac{\Delta_1+\Delta_2}{2}\right) \geq \Delta_1 > 1.2\left(\frac{\Delta_1+\Delta_2}{2}\right)$$

Tipo 1bP — Irregularidad torsional extrema $\phi_p = 0.8$

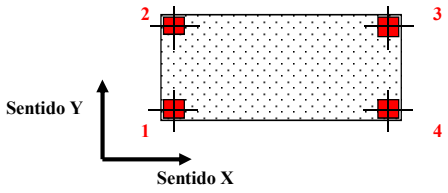
$$\Delta_1 > 1.4\left(\frac{\Delta_1+\Delta_2}{2}\right)$$

SISMO EN X

EJE DE COLUMNA		PISO	Δ1 (cm)	Δ2 (cm)	1.2*(Δ1 + Δ2)/2	1.4*(Δ1 + Δ2)/2	Ax
1	2	PISOCUB	0.90	0.90	1.08	1.26	REGULAR
4	3	PISOCUB	0.90	0.90	1.08	1.26	REGULAR

SISMO EN Y

EJE DE COLUMNA		PISO	Δ1 (cm)	Δ2 (cm)	1.2*(Δ1 + Δ2)/2	1.4*(Δ1 + Δ2)/2	Ax
1	4	PISOCUB	1.34	1.34	1.61	1.88	REGULAR
2	3	PISOCUB	1.34	1.34	1.61	1.88	REGULAR



REVISION INDICE DE ESTABILIDAD DE PISO EFECTOS DE SEGUNDO ORDEN

PISO	P(Tn)	Pu(Tn)	Δox(cm)	Δoy(cm)	Vus (Tn)	lc (m)	Qx	Qy	
PISOCUB	41.4	62.1	0.90	1.34	41.9	4.30	0.0031	0.0046	Arriostrado

EFECTOS DE ESBELTEZ EN ELEMENTOS A COMPRESION

Piso	bmin	r	kl/r	Comentarios
PISOCUE	**0.40**	0.12	32.5	No se tienen efectos de esbeltez según C.10.10.1

Nota: bmin corresponde al ancho minimo de las columnas en el piso en estudio

CALCULO DE FACTOR ϕr POR AUSENCIA DE REDUNDANCIA

Story	FloorArea	Rmax	Rho	CaseType	Case	Direction	ObjectType	Object	Object2	%Vs	Chequeo
CUB	29.66	0.50	-0.24	Resp Spec	SISMOY	Y	MF Columns	C3	C4	1.00	Irregular en Y

CHEQUEO DE IRREGULARIDADES DE LA ESTRUCTURA

1. IRREGULARIDADES EN PLANTA

TIPO DE IREGULARIDAD		ϕ_p	ϕ_{Px}	ϕ_{Py}
Irregularidad Torsional	**1aP**	0.9	1.0	1.0
Irregularidad Torsional extrema	**1bP**	0.8	1.0	1.0
Retrocesos en las Esquinas	**2P**	0.9	1.0	1.0
Irregularidad del Diafragma	**3P**	0.9	1.0	1.0
Desplazamiento de los Planos de Acción	**4P**	0.8	1.0	1.0
Sistemas no Paralelos	**5P**	0.9	1.0	1.0
ϕp Definitivo=			**1.0**	**1.0**

2. IRREGULARIDADES EN ALTURA

TIPO DE IREGULARIDAD		ϕ_a	ϕ_{ax}	ϕ_{ay}	
Piso Flexible (Irregularidad en Rigidez)	**1aA**	0.9	1.0	1.0	Ver Nota
Piso Flexible extremo(Irregularidad en Rigidez)	**1bA**	0.8	1.0	1.0	Ver Nota
Distribución de Masa	**2A**	0.9	1.0	1.0	Ver Nota
Irregularidad Geométrica	**3A**	0.9	1.0	1.0	
Desplazamiento del Plano de Acción	**4A**	0.8	1.0	1.0	
Piso Débil - Discontinuidad en la Resistencia	**5aA**	0.9	1.0	1.0	
Piso Débil extremo - Discontinuidad en la Resist.	**5bA**	0.8	1.0	1.0	
ϕa Definitivo =			**1.0**	**1.0**	

Notas:

1. No existe irregularidad 1A,2A o 3A segun NSR-10 A 3.3.5.1

3. COEFICIENTE DE CAPACIDAD DE DISIPACION DE ENERGIA EN EL RANGO INELASTICO

$$R = \phi p * \phi a * \phi r * R_0$$ (NSR-10 A.3.3.3)

	Sentido X	Sentido Y	
ϕ_p =	1.00	1.00	Coeficiente por irregularidad en planta
ϕ_a =	1.00	1.00	Coeficiente por irregularidad en altura
ϕ_r =	**0.75**	**0.75**	Coeficiente por ausencia de redundancia
R'o =	**7.00**	**7.00**	Pórticos de concreto DES
R =	**5.25**	**5.25**	
Ωo=	**3.00**		Coeficiente de sobreresistencia
0.5AaFa=	**0.16**		Componente vertical de sismo Segun A.3.3.9

COMBINACIONES DE CARGA

1. FACTORES DE AJUSTE

Fx	=	**1.02**
Fy	=	**1.02**

2. CHEQUEO DE DERIVAS

No. DE COMBINACION							Fx			Fy		Combinacion en el programa
1	1.20	CM	+	0.50	CV	+	1.02	SX				COMBO 2
2	1.20	CM	+	0.50	CV	-	1.02	SX				
3	1.20	CM	+	0.50	CV				+	1.02	SY	COMBO 3
4	1.20	CM	+	0.50	CV				-	1.02	SY	
5	0.90	CM				+	1.02	SX				COMBO 4
6	0.90	CM				-	1.02	SX				
7	0.90	CM							+	1.02	SY	COMBO 5
8	0.90	CM							-	1.02	SY	

3. DISEÑO DE ELEMENTOS DEL SISTEMA DE RESISTENCIA SISMICA

No. DE COMBINACION							Fx/R 0.3*Fx/R			0.3*Fy/R Fy/R		
1	1.40	CM										
2	1.20	CM	+	1.60	CV	+	0.50	G				COMBO 1
3	1.20	CM	+	0.50	CV	+	0.19	SX	+	0.06	SY	COMBO 6
4	1.20	CM	+	0.50	CV	+	0.19	SX	-	0.06	SY	COMBO 7
5	1.20	CM	+	0.50	CV	-	0.19	SX	+	0.06	SY	
6	1.20	CM	+	0.50	CV	-	0.19	SX	-	0.06	SY	
7	1.20	CM	+	0.50	CV	+	0.06	SX	+	0.19	SY	COMBO 8
8	1.20	CM	+	0.50	CV	+	0.06	SX	-	0.19	SY	COMBO 9
9	1.20	CM	+	0.50	CV	-	0.06	SX	+	0.19	SY	
10	1.20	CM	+	0.50	CV	-	0.06	SX	-	0.19	SY	
11	0.90	CM				+	0.19	SX	+	0.06	SY	COMBO 10
12	0.90	CM				+	0.19	SX	-	0.06	SY	COMBO 11
13	0.90	CM				-	0.19	SX	+	0.06	SY	
14	0.90	CM				-	0.19	SX	-	0.06	SY	
15	0.90	CM				+	0.06	SX	+	0.19	SY	COMBO 12
16	0.90	CM				+	0.06	SX	-	0.19	SY	COMBO 13
17	0.90	CM				-	0.06	SX	+	0.19	SY	
18	0.90	CM				-	0.06	SX	-	0.19	SY	

Las siguientes combinaciones fueron incluidas para que en el programa DCCAD 2010 puedan realizarse los chequeos de cortante segun C.21.3.3.1 y C.21.3.3.2

4. DISENO DE CORTANTE SISMICO EN VIGAS (Ex2)

No. DE COMBINACION						E*2 / 0.3*E*2			0.3*E*2 / E*2		
19	1.20	CM	+	1.00	CV	+	0.39	SX	+	0.12	SY	COMBO 14
20	1.20	CM	+	1.00	CV	+	0.39	SX	-	0.12	SY	COMBO 15
21	1.20	CM	+	1.00	CV	-	0.39	SX	+	0.12	SY	
22	1.20	CM	+	1.00	CV	-	0.39	SX	-	0.12	SY	
23	1.20	CM	+	1.00	CV	+	0.12	SX	+	0.39	SY	COMBO 16
24	1.20	CM	+	1.00	CV	+	0.12	SX	-	0.39	SY	COMBO 17
25	1.20	CM	+	1.00	CV	-	0.12	SX	+	0.39	SY	
26	1.20	CM	+	1.00	CV	-	0.12	SX	-	0.39	SY	
27	0.90	CM				+	0.39	SX	+	0.12	SY	COMBO 18
28	0.90	CM				+	0.39	SX	-	0.12	SY	COMBO 19
29	0.90	CM				-	0.39	SX	+	0.12	SY	
30	0.90	CM				-	0.39	SX	-	0.12	SY	
31	0.90	CM				+	0.12	SX	+	0.39	SY	COMBO 20
32	0.90	CM				+	0.12	SX	-	0.39	SY	COMBO 21
33	0.90	CM				-	0.12	SX	+	0.39	SY	
34	0.90	CM				-	0.12	SX	-	0.39	SY	

5. DISENO DE CORTANTE SISMICO EN COLUMNAS (ExΩ)

No. DE COMBINACION						E*Ω / 0.3*E*Ω			0.3*E*Ω / E*Ω		
35	1.36	CM	+	1.00	CV	+	0.58	SX	+	0.18	SY	COMBO 22
36	1.36	CM	+	1.00	CV	+	0.58	SX	-	0.18	SY	COMBO 23
37	1.36	CM	+	1.00	CV	-	0.58	SX	+	0.18	SY	
38	1.36	CM	+	1.00	CV	-	0.58	SX	-	0.18	SY	
39	1.36	CM	+	1.00	CV	+	0.18	SX	+	0.58	SY	COMBO 24
40	1.36	CM	+	1.00	CV	+	0.18	SX	-	0.58	SY	COMBO 25
41	1.36	CM	+	1.00	CV	-	0.18	SX	+	0.58	SY	
42	1.36	CM	+	1.00	CV	-	0.18	SX	-	0.58	SY	
43	0.74	CM				+	0.58	SX	+	0.18	SY	COMBO 26
44	0.74	CM				+	0.58	SX	-	0.18	SY	COMBO 27
45	0.74	CM				-	0.58	SX	+	0.18	SY	
46	0.74	CM				-	0.58	SX	-	0.18	SY	
47	0.74	CM				+	0.18	SX	+	0.58	SY	COMBO 28
48	0.74	CM				+	0.18	SX	-	0.58	SY	COMBO 29
49	0.74	CM				-	0.18	SX	+	0.58	SY	
50	0.74	CM				-	0.18	SX	-	0.58	SY	

DISEÑO DE ELEMENTOS NO ESTRUCTURALES

CALCULO DE ELEMENTOS NO ESTRUCTURALES

PARAMETROS DE DISEÑO

Grado de desempeño=	Superior
Rp=	3
Ap=	1.0
f_y=	4200 kg/cm2

$$F_p = \frac{a_x a_p}{R_p} gM_p \geq \frac{A_a I}{2} gM_p$$

*Factor= f_y*π/16/L*
*Limite Fp=Aa*I*P/2*
S: Separacion entre columnetas
L: Longitud de la dilatacion superior

NIVEL	Fx	W	ax	Altura	e_{muro}	Vol.	$\gamma_{mamp.}$	P	Fp	Fp_{min}	Fp def.	Mmax	S	Vmax	L	Factor	$\phi_{varilla}$	Vn	Vn>Vu
	Tn	Tn		m	m	m3	Tn/m3	Tn	Tn	Tn	Tn	Tn*m	m	Tn	Cm		/8"	Tn	Cumple?
PISOCUB	41.85	34.34	1.22	3.90	0.12	0.47	1.40	0.66	0.27	0.066	0.27	0.260	1.20	0.160	10	0.082	5	0.330	SI

CALCULO DE ELEMENTOS NO ESTRUCTURALES

DATOS DE ENTRADA

f'c=	**175**	Kg/Cm2
fy=	**4200**	Kg/Cm2
$d_{columneta}$=	**6**	Cm
$b_{columneta}$=	**15**	Cm
Recubrimiento=	**6**	Cm
t muro=	12	Cm
ρmin=	0.0033	

NIVEL	Fp	Mu	ρ	ρdiseño	As	As*fy	0.85 f'c b	a	kud	εc	εt		ϕ	As	Varilla	Cant.	Refuerzo
	Tn	Tn*m			Cm^2/m	Kg	Kg/cm	cm	cm					Cm^2	/8"		
PISOCUB	0.27	0.31	0.0186	0.0186	1.68	7043	2231.25	3.16	3.71	0.003	0.0018	Compr	0.65	2.58	**5**	2	**2#5**

DISEÑO PLACA DE ENTREPISO

CALCULO DE PLACA DE ENTREPISO PISO 1 Y PISO 2

ELEMENTO: Placa maciza e=0.12

DATOS DE ENTRADA

f'c=	**280**	Kg/Cm2
fy=	**4200**	Kg/Cm2
d=	**8**	Cm
b=	**100**	Cm
Recubrimiento=	**4**	Cm
h=	12	Cm
Tipo elemento=	**Viga=**	
	Placa=	**X**
ρmin=	0.0018	

CALCULOS ADICIONALES

CU=	1.90	Tn/m2
Luz=	2.30	m
Mu-=	0.84	Tn*m
Vu=	2.19	Tn
Mu+=	0.42	Tn*m

DISENO A FLEXION

Mu=	**0.8**	Tn*m
ρ=	0.0032	
ρdiseño=	0.0032	
As=	1.44	Cm^2/m
As*fy=	6048	kg
0.85f'c*b=	23800	kg/cm
a=	0.25	cm
kud=	0.30	cm
ε_c=	0.0030	
ε_t=	0.0773	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0036	
As=	2.85	Cm^2/m
Malla =	**7.5 mm c/.15**	

DISENO A CORTANTE

Vu=	**2.2**	Tn
ϕVc=	5321.2	Kg
ϕVc=	5.3	Tn
ϕVs=	-	Tn

DISENO A FLEXION

Mu=	**0.4**	Tn*m
ρ=	0.0016	
ρdiseño=	0.0018	
As=	1.44	Cm^2/m
As*fy=	6048	kg
0.85f'c*b=	23800	kg/cm
a=	0.25	cm
kud=	0.30	cm
ε_c=	0.0030	
ε_t=	0.0773	Traccion
ϕ=	0.90	
ρ /ϕ=	0.0020	
As=	1.60	Cm^2/m
Malla =	**6.0 mm c/.15**	

CHEQUEO A PUNZONAMIENTO

b=	**20**	cm
h=	**20**	cm
Apoyo=	Circular	
	Rectangular	**X**
P=	**2.5**	Tn
Pu=	3.8	Tn
β=	1.00	
ϕ=	**0.75**	
λ=	**1.00**	
αs=	**40**	
bo=	**112**	cm
C.11-31=	1.68	cm
C.11-32=	3.29	cm
C.11-33=	2.67	cm

Punto de aplicacion de una carga puntual

OK

DISEÑO DE CIMENTACIÓN

DISEÑO DE ZAPATAS EXCENTRICAS (1)

DATOS DE ENTRADA

σ suelo=	17.6	Tn/m^2
fy=	4200	Kg/Cm^2
f´c=	210	Kg/Cm^2
f Cortante=	0.75	
f Flexion=	0.90	
<Dimension	1.00	m

(C.11-31)	$V_c = 0.17\left(1+\frac{2}{\beta}\right)\lambda\sqrt{f'_c}b_o d$ $V_c = 0.53\left(1+\frac{2}{\beta}\right)\lambda\sqrt{f'_c}b_o d$
(C.11-32)	$V_c = 0.083\left(\frac{\alpha_s d}{b_o}+2\right)\lambda\sqrt{f'_c}b_o d$ $V_c = 0.27\left(\frac{\alpha_s d}{b_o}+2\right)\lambda\sqrt{f'_c}b_o d$
(C.11-33)	$V_c = 0.33\lambda\sqrt{f'_c}b_o d$ $V_c = \lambda\sqrt{f'_c}b_o d$

*Condicion 1(C.11-31)
*Condicion 2(C.11-32)
*Condicion 3(C.11-33)

ZAPATA TIPO	COL	Pu (Tn)	Mu (Tn*m)	Preal (tn)	Mr (Tn*m)	e (m)	DIMENSIONAMIENTO A (m)	B (m)	Le (m)	1.1P (Tn)	A (m2)	L (m)	H (m)	e (m)	ΔR (Tn)	σneto (Tn/m2)	σultimo (Tn/m2)		REVISION POR PUNZONAMIENTO d (Cm)	h (Cm)	bo (Cm)	αs	βc	Vu (Tn)	C.11-31	C.11-32	C.11-33	CORTE COMO VIGA Sentido corto Vu(Tn)	Sentido largo Vu(Tn)	d requerido (Cm)	
1F	1	12.58	7.79	8.4	4.2	0.50	0.40	0.60	3.88	9.23	0.52	1.00	1.00	0.30	0.70	9.93	13.54	OK	13	20	126	20	2	7.34	8.51	4.89	5.36	OK	0.95	2.30	3.00	OK
1F	2	12.58	7.79	8.4	4.2	0.50	0.40	0.60	3.88	9.23	0.52	1.00	1.00	0.30	0.70	9.93	13.54	OK	13	20	126	20	2	7.34	8.51	4.89	5.36	OK	0.95	2.30	3.00	OK
1F	3	12.58	7.79	8.4	4.2	0.50	0.40	0.60	3.88	9.23	0.52	1.00	1.00	0.30	0.70	9.93	13.54	OK	13	20	126	20	2	7.34	8.51	4.89	5.36	OK	0.95	2.30	3.00	OK
1F	4	12.58	7.79	8.4	4.2	0.50	0.40	0.60	3.88	9.23	0.52	1.00	1.00	0.30	0.70	9.93	13.54	OK	13	20	126	20	2	7.34	8.51	4.89	5.36	OK	0.95	2.30	3.00	OK

DISEÑO DE ZAPATAS EXCENTRICAS (2)

C.10.14 — Resistencia al aplastamiento

C.10.14.1 — La resistencia de diseño al aplastamiento del concreto no debe exceder $\phi(0.85f'_c A_1)$ excepto cuando la superficie de soporte sea más ancha en todos los lados que el área cargada, en cuyo caso, se permite que la resistencia de diseño al aplastamiento en el área cargada sea multiplicada por $\sqrt{(A_2/A_1)}$, pero no más que 2.

ZAPATA TIPO	Lv (m)	Mu (Tn*m)	ρ	ρ min	ρ diseño	DISEÑO A FLEXION REF. SENTIDO B Seccion en	As (Cm2)	Refuerzo sentido B	ρ min	DISEÑO A FLEXION REF. SENTIDO A Seccion en	As (Cm2)	Refuerzo sentido A	Pu (Tn)	PRESION DE CONTACTO ϕ*0,85*f'c*A_1 (Tn)	
1F	0.20	0.30	0.0005	0.0018	0.0018	Traccion	3.60	4 # 4 13 c/. 35	0.0018	Traccion	3.60	4 # 4 13 c/. 35	12.58	278.5	Cumple
1F	0.2	0.30	0.0005	0.0018	0.0018	Traccion	3.60	4 # 4 13 c/. 35	0.0018	Traccion	3.60	4 # 4 13 c/. 35	12.58	278.5	Cumple
1F	0.20	0.30	0.0005	0.0018	0.0018	Traccion	3.60	4 # 4 13 c/. 35	0.0018	Traccion	3.60	4 # 4 13 c/. 35	12.58	278.5	Cumple
1F	0.2	0.30	0.0005	0.0018	0.0018	Traccion	3.60	4 # 4 13 c/. 35	0.0018	Traccion	3.60	4 # 4 13 c/. 35	12.58	278.5	Cumple

DISEÑO DE ZAPATAS EXCENTRICAS (3)

ESQUEMA DE VIGA DE CIMENTACION

DIAGRAMA DE CORTANTE DEBAJO DE LA ZAPATA

DISEÑO DE VIGA DE CIMENTACION

ZAPATA TIPO	Mu (Tn*m)	B (Cm)	H (Cm)	ρ	ρ min	ρ diseño	Seccion en	As (Cm2)	W (Tn/m)	V1 (Tn)	V2 (Tn)	V3 (Tn)	Vu (TN)	ϕVc (Tn)	ϕVs (Tn)	Refuerzo principal				$1/3(f'c)^{0.5}$	$2/3(f'c)^{0.5}$	Refuerzo secundario				Transversal			
1F	4.09	40	80	0.0005	0.0033	0.0033	Traccion	10.43	9.93	1.99	-7.24	0.70	-0.01	19.06	-19.1	4	#	6	OK	14.1	28.2	OK	4	#	6	fi #	3	c/.	35	2	Ramas
1F	4.09	40	80	0.0005	0.0033	0.0033	Traccion	10.43	9.93	1.99	-7.24	0.70	-0.01	19.06	-19.1	4	#	6	OK	14.1	28.2	OK	4	#	6	fi #	3	c/.	35	2	Ramas
1F	4.09	40	80	0.0005	0.0033	0.0033	Traccion	10.43	9.93	1.99	-7.24	0.70	-0.01	19.06	-19.1	4	#	6	OK	14.1	28.2	OK	4	#	6	fi #	3	c/.	35	2	Ramas
1F	4.09	40	80	0.0005	0.0033	0.0033	Traccion	10.43	9.93	1.99	-7.24	0.70	-0.01	19.06	-19.1	4	#	6	OK	14.1	28.2	OK	4	#	6	fi #	3	c/.	35	2	Ramas

CHEQUEO DE CORTANTE EN NUDOS

RELACION DE CAPACIDAD DE CORTE EN LOS NUDOS (C.21.7.4)

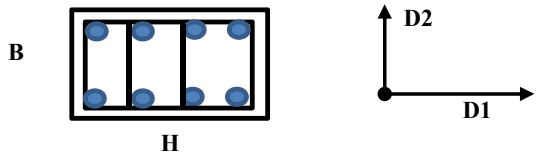
Materiales		
f'c=	28	Mpa
fy=	420	Mpa

Nudo	Col. bc	Viga bv	Cara 1 Cond.	Cara 2 Col. b	Cara 2 Viga b	Cara 2 Cond.	Cara 3 Col. b	Cara 3 Viga b	Cara 3 Cond.	Cara 4 Col. b	Cara 4 Viga b	Cara 4 Cond.	Caras confin.	Direccion 1 $b_{efectivo}$	Direccion 1 Aj	Direccion 2 $b_{efectivo}$	Direccion 2 Aj	Limite Vn Dir.1	Limite Vn Dir.2	Direccion 1 Vc	Direccion 1 Dia. /8"	Direccion 1 #R	Direccion 1 Av	Direccion 1 sep	Direccion 1 Vs	Direccion 1 Vn	Direccion 2 Vc	Direccion 2 Dia. /8"	Direccion 2 #R	Direccion 2 Av	Direccion 2 sep	Direccion 2 Vs	Direccion 2 Vn	Relacion de capacidad a cortante Dir.1	Relacion de capacidad a cortante Dir.2	Cap max
	m	m		m	m		m	m		b	m			m	m2	m	m2	Mpa	Mpa	Mpa			m2	m	Mpa	Mpa	Mpa			m2	m	Mpa	Mpa			
T1	0.60	0.50	Confin.	0.40	0.50	Confin.	0.60	0.50	No confin.	0.4	0.50	No confin.	2	0.60	0.24	0.4	0.24	1.27	1.27	0.22	4	3	3.8E-04	0.10	0.56	0.77	0.22	4	3	3.8E-04	0.10	0.88	1.09	0.61	0.86	Cumple
T2	0.60	0.50	Confin.	0.40	0.50	Confin.	0.60	0.50	Confin.	0.4	0.50	No confin.	3	0.60	0.24	0.4	0.24	1.52	1.52	0.22	4	3	3.8E-04	0.10	0.56	0.77	0.22	4	3	3.8E-04	0.10	0.88	1.09	0.51	0.72	Cumple
T3	0.60	0.50	Confin.	0.40	0.50	Confin.	0.60	0.50	Confin.	0.4	0.5	Confin.	4	0.60	0.24	0.4	0.24	2.16	2.16	0.22	4	3	3.8E-04	0.10	0.56	0.77	0.22	4	3	3.8E-04	0.10	0.88	1.09	0.36	0.51	Cumple

CALCULO DE Ash DE CONFINAMIENTO DES

DATOS DE ENTRADA

B=	0.4	m
H=	0.6	m
Recubrimiento=	4	Cm



$$A_{sh} = 0.3\frac{sb_c f'_c}{f_{yt}}\left[\left(\frac{A_g}{A_{ch}}\right)-1\right] \qquad A_{sh} = 0.09\frac{sb_c f'_c}{f_{yt}}$$

Direccion 1		
#Ramas=	3	
ϕ =	4	/8"
As=	1.27	Cm2
Ash=	380.0	mm2
bc=	320	mm
f'c=	28	Mpa
fyt=	420	Mpa
Ag=	240000	mm2
Ach=	166400	mm2

s=	134.2 mm	
s=	13 cm	*C.21-7*

s=	197.9 mm	
s=	20 cm	*C.21-8*

Direccion 2		
#Ramas=	3	
ϕ =	4	/8"
As=	1.27	Cm2
Ash=	437.0	mm2
bc=	520	mm
f'c=	28	Mpa
fyt=	420	Mpa
Ag=	240000	mm2
Ach=	166400	mm2

s=	95.0 mm	
s=	10 cm	*C.21-7*

s=	140.1 mm	
s=	14 cm	*C.21-8*

DISEÑO DE COLUMNAS, VIGAS Y VIGUETAS

Columna O-17

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					4.09	4.89				8/#7 (1.3%)	0.23	4.00	2.52
	3.90	.40	.40	.60			-9.26	7.17	6.70				
CUB		.80			-7.79	-2.99				8/#7 (1.3%)	0.26		

Columna O-16

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					3.37	-4.89				8/#7 (1.3%)	0.21	4.00	2.52
	3.90	.40	.40	.60			-12.32	7.17	6.70				
CUB		.80			-0.26	6.17				8/#7 (1.3%)	0.30		

Columna Q-16

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-4.09	-4.89				8/#7 (1.3%)	0.22	4.00	2.52
	3.90	.40	.40	.60			-12.32	7.17	6.71				
CUB		.80			7.79	2.99				8/#7 (1.3%)	0.27		

Columna Q-17

Nivel	*Hlibre*	*Losa*	*B*	*H*	*M1*	*M2*	*P*	*V1*	*V2*	*Cuantía*	*m/mr*	*Col/Vig Eje ppal*	*Col/vig Eje sec*
CUB					-3.37	4.89				8/#7 (1.3%)	0.21	4.00	2.52
	3.90	.40	.40	.60			-9.26	7.17	6.71				
CUB		.80			0.26	-6.17				8/#7 (1.3%)	0.30		

F-101/CUB

B=0.40 H=0.40 L=6.33		
Mu=-4.88 As=5.08	Mu=-1.22 As=4.62	Mu=-4.88 As=5.08
Mu=2.44 As=4.62	Mu=3.35 As=4.62	Mu=2.44 As=4.62
Vu=-5.89		Vu=5.89

F-102/CUB

B=0.40 H=0.40 L=6.33		
Mu=-4.88 As=5.08	Mu=-1.22 As=4.62	Mu=-4.88 As=5.08
Mu=2.44 As=4.62	Mu=3.35 As=4.62	Mu=2.44 As=4.62
Vu=-5.89		Vu=5.89

F-103/CUB

B=0.40 H=0.40 L=3.88		
Mu=-4.65 As=4.83	Mu=-1.24 As=4.62	Mu=-4.65 As=4.83
Mu=2.32 As=4.62	Mu=4.97 As=5.17	Mu=2.32 As=4.62
Vu=-9.12		Vu=9.12

F-104/CUB

B=0.40 H=0.40 L=3.88		
Mu=-4.65 As=4.83	Mu=-1.24 As=4.62	Mu=-4.65 As=4.83
Mu=2.32 As=4.62	Mu=4.97 As=5.17	Mu=2.32 As=4.62
Vu=9.12		Vu=-9.12

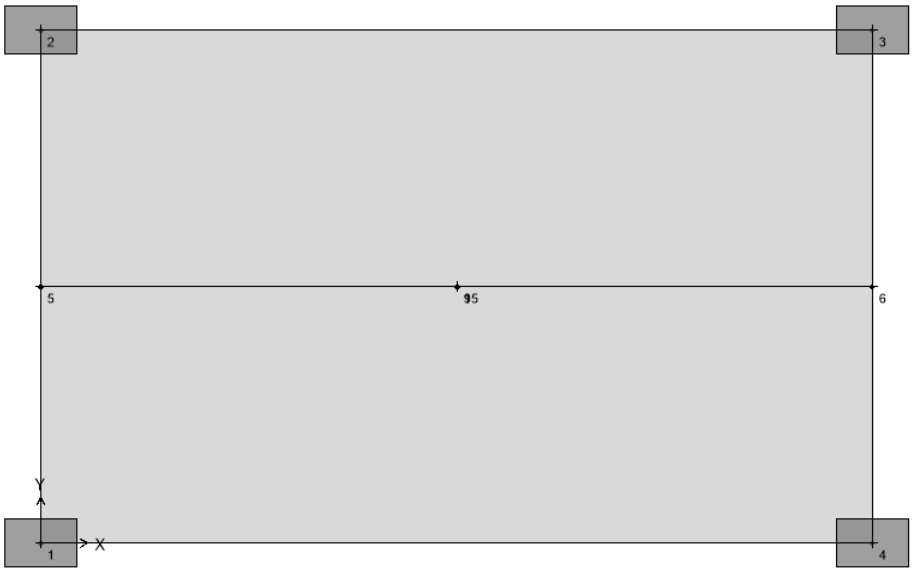
F-105/CUB

B=0.20 H=0.40 L=6.73		
Mu=-0.00 As=2.18	Mu=-0.00 As=7.80	Mu=-0.00 As=2.18
Mu=2.20 As=9.87	Mu=20.71 As=16.46	Mu=2.20 As=9.87
Vu=11.00		Vu=-11.00

DATOS DE ENTRADA DEL MODELO MATEMÁTICO

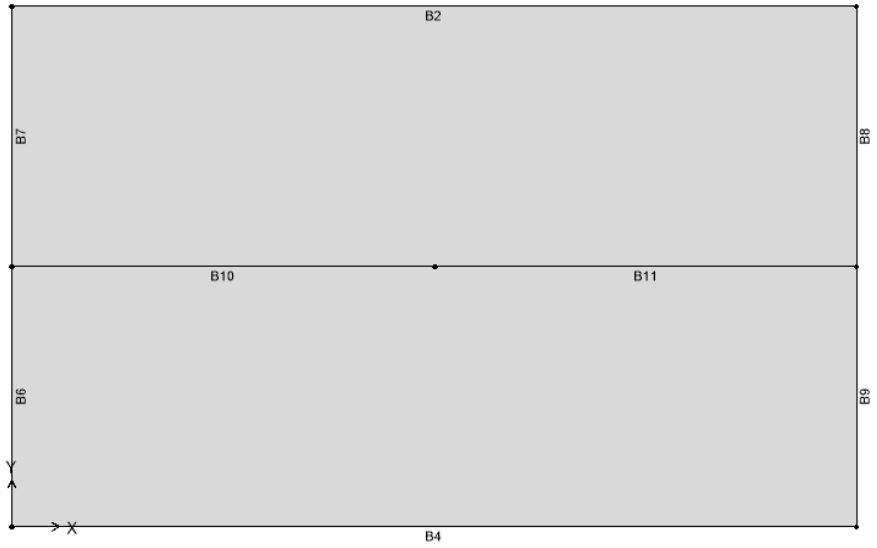
NUMERACION DE NODOS

PISO 1

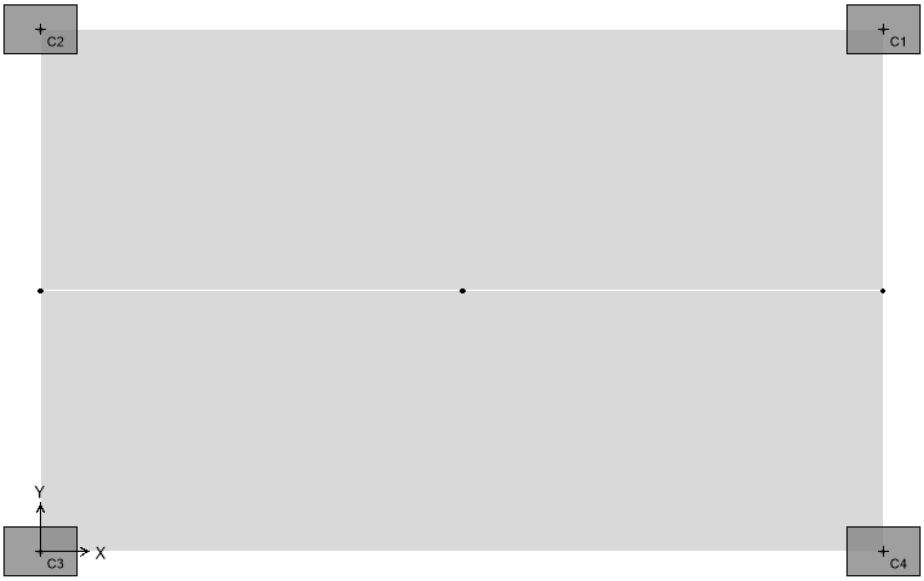


NUMERACION DE VIGAS

PISO 1



NUMERACION DE COLUMNAS



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S T O R Y D A T A

STORY	SIMILAR TO	HEIGHT	ELEVATION
CUB	None	4.300	-4.180
BASE	None		-8.480

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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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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	CONC4000	9.92	4	
Beam	CONC3000	7.85	6	0

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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
V40X40	Beam	6	22.420	7.85	0
C60X40	Column	4	17.200	9.92	

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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
CUB	Column	CONC4000	9.92	29.660	334.3830	4	
CUB	Beam	CONC3000	7.85	29.660	264.6551	6	0
SUM	Column	CONC4000	9.92	29.660	334.3830	4	
SUM	Beam	CONC3000	7.85	29.660	264.6551	6	0
TOTAL	All	All	17.77	29.660	599.0380	12	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
STEEL	Iso	Steel	All	20389019.158	0.3000	1.1700E-05	7841930.445
CONC	Iso	Concrete	All	2531050.654	0.2000	9.9000E-06	1054604.439
OTHER	Iso	None	All	20389019.158	0.3000	1.1700E-05	7841930.445
CONC3000	Iso	Concrete	All	2153810.577	0.2000	9.9000E-06	897421.074
CONC4000	Iso	Concrete	All	2487006.232	0.2000	9.9000E-06	1036252.597
CONC3000SM	Iso	Concrete	All	2153810.577	0.2000	9.9000E-06	897421.074

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
STEEL	7.9814E-01	7.8334E+00
CONC	2.4480E-01	2.4026E+00
OTHER	7.9814E-01	7.8334E+00
CONC3000	2.4480E-01	2.4026E+00
CONC4000	2.4480E-01	2.4026E+00
CONC3000SM	0.0000E+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 ($)
STEEL	35153.481	45699.526	27679.91

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
CONC	No	2812.279	42184.178	42184.178	N/A
CONC3000	No	2812.279	42184.178	42184.178	N/A
CONC4000	No	2812.279	42184.178	42184.178	N/A
CONC3000SM	No	2812.279	42184.178	42184.178	N/A

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

FRAME SECTION NAME	MATERIAL NAME	SECTION SHAPE NAME OR IN SECTION DATABASE FILE	CONC COL	CONC BEAM
ConcCol	CONC	Rectangular	Yes	
ConcBm	CONC	Rectangular		Yes
V40X40	CONC3000	Rectangular		Yes
C60X40	CONC4000	Rectangular	Yes	
V20X40	CONC3000SM	Rectangular		Yes

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 THICK BOT	FLANGE WIDTH BOT
ConcCol	0.4572	0.4572	0.0000	0.0000	0.0000	0.0000
ConcBm	0.4572	0.3048	0.0000	0.0000	0.0000	0.0000
V40X40	0.4000	0.4000	0.0000	0.0000	0.0000	0.0000
C60X40	0.6000	0.4000	0.0000	0.0000	0.0000	0.0000
V20X40	0.4000	0.2000	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
ConcCol	0.2090	0.0062	0.0036	0.0036	0.1742	0.1742
ConcBm	0.1394	0.0025	0.0024	0.0011	0.1161	0.1161
V40X40	0.1600	0.0036	0.0021	0.0021	0.1333	0.1333
C60X40	0.2400	0.0075	0.0072	0.0032	0.2000	0.2000
V20X40	0.0800	0.0007	0.0011	0.0003	0.0667	0.0667

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 MODULI S33	SECTION MODULI S22	PLASTIC MODULI Z33	PLASTIC MODULI Z22	RADIUS OF GYRATION R33	RADIUS OF GYRATION R22
ConcCol	0.0159	0.0159	0.0239	0.0239	0.1320	0.1320
ConcBm	0.0106	0.0071	0.0159	0.0106	0.1320	0.0880
V40X40	0.0107	0.0107	0.0160	0.0160	0.1155	0.1155
C60X40	0.0240	0.0160	0.0360	0.0240	0.1732	0.1155
V20X40	0.0053	0.0027	0.0080	0.0040	0.1155	0.0577

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
ConcCol	0.0000	0.0000
ConcBm	0.0000	0.0000
V40X40	7.8498	0.7998
C60X40	9.9179	1.0105
V20X40	0.0000	0.0000

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

FRAME SECTION NAME	REINF CONFIGURATION LONGIT	REINF LATERAL	NUM BARS SIZE/TYPE	NUM BARS 3DIR/2DIR	BAR CIRCULAR	COVER
ConcCol	Rectangular	Ties	#9/Design	3/3	N/A	0.0457
C60X40	Rectangular	Ties	#9/Design	3/3	N/A	0.0457

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
ConcBm	0.0457	0.0457	0.000	0.000	0.000	0.000
V40X40	0.0400	0.0400	0.000	0.000	0.000	0.000
V20X40	0.0400	0.0400	0.000	0.000	0.000	0.000

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

SHELL SECTION	NAME	MATERIAL TYPE	SHELL ONE WAY	LOAD DIST THICK	MEMBRANE THICK	BENDING WEIGHT	TOTAL MASS
WALL1	CONC	Shell-Thin	No	0.2500	0.2500	0.0000	0.0000
SLAB1	CONC	Shell-Thin	No	0.2500	0.2500	0.0000	0.0000
DECK1	CONC	Membrane	No	0.0889	0.0889	0.0000	0.0000
PLANK1	CONC	Membrane	Yes	0.2500	0.2500	0.0000	0.0000
PLACA12	CONC3000SM	Membrane	No	0.1200	0.1200	0.0000	0.0000

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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		

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

RESP SPEC CASE: SISMOX

BASIC RESPONSE SPECTRUM DATA

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

RESPONSE SPECTRUM FUNCTION ASSIGNMENT DATA

DIRECTION	FUNCTION	SCALE FACT

U1	ESPECTRO	9.8100
U2	----	N/A
UZ	----	N/A

RESP SPEC CASE: SISMOY

BASIC RESPONSE SPECTRUM DATA

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

RESPONSE SPECTRUM FUNCTION ASSIGNMENT DATA

DIRECTION	FUNCTION	SCALE FACT
U1	----	N/A
U2	ESPECTRO	9.8100
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
COMB1	ADD	DEAD	Static	1.2000
		LIVE	Static	1.6000
COMB2	ADD	DEAD	Static	1.2000
		LIVE	Static	0.5000
		SISMOX	Spectra	1.0200
COMB3	ADD	DEAD	Static	1.2000
		LIVE	Static	0.5000
		SISMOY	Spectra	1.0200
COMB4	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	1.0200
COMB5	ADD	DEAD	Static	0.9000
		SISMOY	Spectra	1.0200
COMB6	ADD	DEAD	Static	1.2000
		LIVE	Static	0.5000
		SISMOX	Spectra	0.1900
		SISMOY	Spectra	0.0600
COMB7	ADD	DEAD	Static	1.2000
		LIVE	Static	0.5000
		SISMOX	Spectra	0.1900
		SISMOY	Spectra	-0.0600
COMB8	ADD	DEAD	Static	1.2000
		LIVE	Static	0.5000
		SISMOX	Spectra	0.0600
		SISMOY	Spectra	0.1900
COMB9	ADD	DEAD	Static	1.2000
		LIVE	Static	0.5000
		SISMOX	Spectra	0.0600
		SISMOY	Spectra	-0.1900
COMB10	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.1900
		SISMOY	Spectra	0.0600
COMB11	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.1900
		SISMOY	Spectra	-0.0600
COMB12	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.0600
		SISMOY	Spectra	0.1900
COMB13	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.0600
		SISMOY	Spectra	-0.1900
COMB14	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.3900
		SISMOY	Spectra	0.1200
COMB15	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.3900
		SISMOY	Spectra	-0.1200
COMB16	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.1200
		SISMOY	Spectra	0.3900
COMB17	ADD	DEAD	Static	1.2000
		LIVE	Static	1.0000
		SISMOX	Spectra	0.1200
		SISMOY	Spectra	-0.3900
COMB18	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.3900
		SISMOY	Spectra	0.1200
COMB19	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.3900
		SISMOY	Spectra	-0.1200
COMB20	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.1200
		SISMOY	Spectra	0.3900
COMB21	ADD	DEAD	Static	0.9000
		SISMOX	Spectra	0.1200
		SISMOY	Spectra	-0.3900
COMB22	ADD	DEAD	Static	1.3600
		LIVE	Static	1.0000
		SISMOX	Spectra	0.5800
		SISMOY	Spectra	0.1800
COMB23	ADD	DEAD	Static	1.3600
		LIVE	Static	1.0000
		SISMOX	Spectra	0.5800
		SISMOY	Spectra	-0.1800
COMB24	ADD	DEAD	Static	1.3600
		LIVE	Static	1.0000
		SISMOX	Spectra	0.1800
		SISMOY	Spectra	0.5800
COMB25	ADD	DEAD	Static	1.3600
		LIVE	Static	1.0000
		SISMOX	Spectra	0.1800
		SISMOY	Spectra	-0.5800
COMB26	ADD	DEAD	Static	0.7400
		SISMOX	Spectra	0.5800
		SISMOY	Spectra	0.1800
COMB27	ADD	DEAD	Static	0.7400
		SISMOX	Spectra	0.5800
		SISMOY	Spectra	-0.1800
COMB28	ADD	DEAD	Static	0.7400
		SISMOX	Spectra	0.1800
		SISMOY	Spectra	0.5800
COMB29	ADD	DEAD	Static	0.7400
		SISMOX	Spectra	0.1800
		SISMOY	Spectra	-0.5800
ENVOLVENTE	ENVE	COMB1	Combo	1.0000
		COMB6	Combo	1.0000
		COMB7	Combo	1.0000
		COMB8	Combo	1.0000
		COMB9	Combo	1.0000
		COMB10	Combo	1.0000
		COMB11	Combo	1.0000
		COMB12	Combo	1.0000
		COMB13	Combo	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 - U S E R

FUNCTION NAME: ESPECTRO

PERIOD	ACCEL
0.0000	1.2190
0.0500	1.2190
0.1000	1.2190
0.1500	1.2190
0.2000	1.2190
0.2500	1.2190
0.3000	1.2190
0.3500	1.2190
0.4000	1.2190
0.4500	1.2190
0.5000	1.2190
0.5500	1.2190
0.6000	1.2000
0.6500	1.1080
0.7000	1.0290
0.7500	0.9600
0.8000	0.9000
0.8500	0.8470
0.9000	0.8000
0.9500	0.7580
1.0000	0.7200
1.0500	0.6860
1.1000	0.6550
1.1500	0.6260
1.2000	0.6000
1.2500	0.5760
1.3000	0.5540
1.3500	0.5330
1.4000	0.5140
1.4500	0.4970
1.5000	0.4800
1.5500	0.4650
1.6000	0.4500
1.6500	0.4360
1.7000	0.4240
1.7500	0.4110
1.8000	0.4000
1.8500	0.3890
1.9000	0.3790
1.9500	0.3690
2.0000	0.3600
2.1000	0.3430
2.2000	0.3270
2.3000	0.3130
2.4000	0.3000
2.5000	0.2880
2.6000	0.2770
2.7000	0.2670
2.8000	0.2570
2.9000	0.2480
3.0000	0.2400
3.1000	0.2320
3.2000	0.2250
3.3000	0.2180
3.4000	0.2120
3.5000	0.2060
3.6000	0.2000
3.7000	0.1950
3.8000	0.1890
3.9000	0.1850
4.0000	0.1800
4.1000	0.1760
4.2000	0.1710
4.3000	0.1670
4.4000	0.1640
4.5000	0.1600
4.6000	0.1570
4.7000	0.1530
4.8000	0.1500
4.9000	0.1440
5.0000	0.1380
5.1000	0.1330
5.2000	0.1280
5.3000	0.1230
5.4000	0.1190
5.5000	0.1140
5.6000	0.1100
5.7000	0.1060
5.8000	0.1030
5.9000	0.0990
6.0000	0.0960
6.1000	0.0930
6.2000	0.0900
6.3000	0.0870
6.4000	0.0840

6.5000	0.0820
6.6000	0.0790
6.7000	0.0770
6.8000	0.0750
6.9000	0.0730
7.0000	0.0710
7.1000	0.0690
7.2000	0.0670
7.3000	0.0650
7.4000	0.0630
7.5000	0.0610
7.6000	0.0600

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R I G I D D I A P H R A G M A S S I G N M E N T S T O P O I N T O B J E C T S

STORY	DIAPHRAGM	POINT	POINT	POINT	POINT	POINT
CUB	D1	1	2	3	4	5
CUB	D1	6	9			

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P O I N T M A S S A S S I G N M E N T S

STORY	POINT	MASSX	MASSY	MASSZ	MMIXX	MMIYY	MMIZZ
CUB	9	1.7800	1.7800	0.0000	0.0000	0.0000	0.0000

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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
CUB	C1	Column	Rectangular	None	C60X40	Conc Frame	C60X40
CUB	C2	Column	Rectangular	None	C60X40	Conc Frame	C60X40
CUB	C3	Column	Rectangular	None	C60X40	Conc Frame	C60X40
CUB	C4	Column	Rectangular	None	C60X40	Conc Frame	C60X40
CUB	B2	Beam	Rectangular	None	V40X40	Conc Frame	V40X40
CUB	B4	Beam	Rectangular	None	V40X40	Conc Frame	V40X40
CUB	B6	Beam	Rectangular	None	V40X40	Conc Frame	V40X40
CUB	B7	Beam	Rectangular	None	V40X40	Conc Frame	V40X40
CUB	B8	Beam	Rectangular	None	V40X40	Conc Frame	V40X40
CUB	B9	Beam	Rectangular	None	V40X40	Conc Frame	V40X40
CUB	B10	Beam	Rectangular	None	V20X40	Conc Frame	V20X40
CUB	B11	Beam	Rectangular	None	V20X40	Conc Frame	V20X40

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R E L E A S E 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	P	V2	V3	T	M2	M3
CUB	B10	Beam	None	None	None	None	None	I-end
CUB	B11	Beam	None	None	None	None	None	J-end

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W A L L , S L A B , D E C K & O P E N I N G A S S I G N M E N T S T O A R E A O B J E C T S

STORY LEVEL	AREA ID	AREA TYPE	SECTION TYPE	SECTION LABEL
CUB	F1	Floor	Slab	PLACA12
CUB	F2	Floor	Slab	PLACA12

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

CASE	STORY	AREA	AREATYPE	DIRECTION	LOAD
DEAD	CUB	F1	Floor	Gravity	0.4960
DEAD	CUB	F2	Floor	Gravity	0.4960
LIVE	CUB	F1	Floor	Gravity	0.2200
LIVE	CUB	F2	Floor	Gravity	0.2200