

PREDIMENSIONAMIENTO DE COLUMNAS

Disposiciones geometricas en columnas (Norma E-060) :

Relacion b_{menor} / b_{mayor} : $b_{min.} / b_{may.} > 0.4$
 Ancho minimo: $b > 25cm.$
 ρ minimo: 0.01

ESTIMACION DE PESOS Y DIMENSIONES:

COLUMNA ESQUINA(C-1)-NIVEL 5

APORTANTE	L(m)	B(m)	H(m)	N° VECES	W(Kgs)	PESO(Kgs)
LOSA	2.35	3.35		1	300	2362
VIGAS-X	2.35	0.25	0.50	1	2400	705
VIGAS-Y	3.05	0.30	0.60	1	2400	1318
ACABADOS	2.50	3.50		1	60	525
TABIQUER	2.50	3.50		1	60	525
SOBREC	2.50	3.50		1	250	2188
COLUMNA	3.50	0.30	0.50	1	2400	1260

8882

$$bxd = \frac{1.5x PG}{0.2 X f_c} = \frac{13323}{56} \quad 238 \text{ cm}^2 \quad (30X50)$$

COLUMNA ESQUINA(C-1)-NIVEL 4

APORTANTE	L(m)	B(m)	H(m)	N° VECES	W(Kgs)	PESO(Kgs)
LOSA	2.35	3.35		1	300	2362
VIGAS-X	2.35	0.25	0.50	1	2400	705
VIGAS-Y	3.05	0.30	0.60	1	2400	1318
ACABADOS	2.50	3.50		1	120	1050
TABIQUER	2.50	3.50		1	120	1050
SOBREC	2.50	3.50		1	250	2188
COLUMNA	3.50	0.30	0.50	1	2400	1260

9932

$$bxd = \frac{1.5x PG}{0.2 X f_c} = \frac{28221}{56} \quad 504 \text{ cm}^2 \quad (30X50)$$

COLUMNA ESQUINA(C-1)-NIVEL 3

APORTANTE	L(m)	B(m)	H(m)	N° VECES	W(Kgs)	PESO(Kgs)
LOSA	2.35	3.35		1	300	2362
VIGAS-X	2.35	0.25	0.50	1	2400	705
VIGAS-Y	3.05	0.30	0.60	1	2400	1318
ACABADOS	2.50	3.50		1	120	1050
TABIQUER	2.50	3.50		1	120	1050
SOBREC	2.50	3.50		1	250	2188
COLUMNA	3.50	0.30	0.50	1	2400	1260

9932

$$bxd = \frac{1.5x PG}{0.2 X f_c} = \frac{43118}{56} \quad 770 \text{ cm}^2 \quad (30X50)$$

COLUMNA ESQUINA(C-1)-NIVEL 2

APORTANTE	L(m)	B(m)	H(m)	N° VECES	W(Kgs)	PESO(Kgs)
LOSA	2.35	3.35		1	300	2362
VIGAS-X	2.35	0.25	0.50	1	2400	705
VIGAS-Y	3.05	0.30	0.60	1	2400	1318
ACABADOS	2.50	3.50		1	120	1050
TABIQUER	2.50	3.50		1	120	1050
SOBREC	2.50	3.50		1	250	2188
COLUMNA	3.50	0.30	0.50	1	2400	1260

9932

$$bxd = \frac{1.5x PG}{0.2 X f_c} = \frac{58016}{56} \quad 1036 \text{ cm}^2 \quad (30X50)$$

COLUMNA ESQUINA(C-1)-NIVEL 1

APORTANTE	L(m)	B(m)	H(m)	N° VECES	W(Kgs)	PESO(Kgs)
LOSA	2.35	3.35		1	300	2362
VIGAS-X	2.35	0.25	0.50	1	2400	705
VIGAS-Y	3.05	0.30	0.60	1	2400	1318
ACABADOS	2.50	3.50		1	120	1050
TABIQUER	2.50	3.50		1	120	1050
SOBREC	2.50	3.50		1	250	2188
COLUMNA	4.50	0.30	0.50	1	2400	1620

10292

$$bxd = \frac{1.5x PG}{0.2 X f_c} = \frac{73454}{56} \quad 1312 \text{ cm}^2 \quad (30X50)$$

PREDIMENSIONAMIENTO DE COLUMNAS

Disposiciones geometricas en columnas (Norma E-060) :

Relacion b_{menor} / b_{mayor} : $b_{min.} / b_{may.} > 0.4$
 Ancho minimo: $b > 25cm.$
 ρ minimo: 0.01

ESTIMACION DE PESOS Y DIMENSIONES:

COLUMNA LATERAL(C-2)-NIVEL 5

APORTANTE	L(m)	B(m)	H(m)	N° VECES	W(Kgs)	PESO(Kgs)
LOSA	4.70	3.35		1	300	4724
VIGAS-X	2.35	0.25	0.50	2	2400	1410
VIGAS-Y	3.35	0.30	0.60	1	2400	1447
ACABADOS	5.00	3.50		1	60	1050
TABIQUER.	5.00	3.50		1	60	1050
SOBREC.	5.00	3.50		1	250	4375
COLUMNA	3.500	0.30	0.60	1	2400	1512

TOTAL **15568**

$$bxd = \frac{1.25x PG}{0.25 X f_c} = \frac{19460}{70} \quad 278 \text{ cm}^2 \quad (30X55)$$

COLUMNA LATERAL(C-2)-NIVEL 4

APORTANTE	L(m)	B(m)	H(m)	N° VECES	W(Kgs)	PESO(Kgs)
LOSA	4.70	3.35		1	300	4724
VIGAS-X	2.35	0.25	0.50	2	2400	1410
VIGAS-Y	3.35	0.30	0.60	1	2400	1447
ACABADOS	5.00	3.50		1	120	2100
TABIQUER.	5.00	3.50		1	120	2100
SOBREC.	5.00	3.50		1	250	4375
COLUMNA	3.500	0.30	0.60	1	2400	1512

TOTAL **17668**

$$bxd = \frac{1.25x PG}{0.25 X f_c} = \frac{41544}{70} \quad 593 \text{ cm}^2 \quad (30X55)$$

COLUMNA LATERAL(C-2)-NIVEL 3

APORTANTE	L(m)	B(m)	H(m)	N° VECES	W(Kgs)	PESO(Kgs)
LOSA	4.70	3.35		1	300	4724
VIGAS-X	2.35	0.25	0.50	2	2400	1410
VIGAS-Y	3.35	0.30	0.60	1	2400	1447
ACABADOS	5.00	3.50		1	120	2100
TABIQUER.	5.00	3.50		1	120	2100
SOBREC.	5.00	3.50		1	250	4375
COLUMNA	3.500	0.30	0.60	1	2400	1512

TOTAL **17668**

$$bxd = \frac{1.25x PG}{0.25 X f_c} = \frac{63629}{70} \quad 909 \text{ cm}^2 \quad (30X55)$$

COLUMNA LATERAL(C-2)-NIVEL 2

APORTANTE	L(m)	B(m)	H(m)	N° VECES	W(Kgs)	PESO(Kgs)
LOSA	4.70	3.35		1	300	4724
VIGAS-X	2.35	0.25	0.50	2	2400	1410
VIGAS-Y	3.35	0.30	0.60	1	2400	1447
ACABADOS	5.00	3.50		1	120	2100
TABIQUER.	5.00	3.50		1	120	2100
SOBREC.	5.00	3.50		1	250	4375
COLUMNA	3.500	0.30	0.60	1	2400	1512

TOTAL **17668**

$$bxd = \frac{1.25x PG}{0.25 X f_c} = \frac{85714}{70} \quad 1224 \text{ cm}^2 \quad (30X55)$$

COLUMNA LATERAL(C-2)-NIVEL 1

APORTANTE	L(m)	B(m)	H(m)	N° VECE	W(Kgs)	PESO(Kgs)
LOSA	4.70	3.35		1	300	4724
VIGAS-X	2.35	0.25	0.50	2	2400	1410
VIGAS-Y	3.35	0.30	0.60	1	2400	1447
ACABADOS	5.00	3.50		1	120	2100
TABIQUER.	5.00	3.50		1	120	2100
SOBREC.	5.00	3.50		1	250	4375
COLUMNA	4.500	0.30	0.60	1	2400	1944

TOTAL **18100**

$$bxd = \frac{1.25x PG}{0.25 X f_c} = \frac{108338}{70} \quad 1548 \text{ cm}^2 \quad (30X55)$$

PREDIMENSIONAMIENTO DE COLUMNAS

Disposiciones geometricas en columnas (Norma E-060) :

Relacion $b_{\text{menor}} / b_{\text{mayor}}$: $b_{\text{min}} / b_{\text{may}} > 0.4$
 Ancho minimo: $b > 25\text{cm}$.
 ρ minimo: 0.01

ESTIMACION DE PESOS Y DIMENSIONES:

COLUMNA CENTRAL(C-3)-NIVEL 5

APORTANTE	L(m)	B(m)	H(m)	N° VECES	W(Kgs)	PESO(Kgs)
LOSA	4.7	6.75		1	300	9518
VIGAS-X	2.350	0.25	0.50	2	2400	1410
VIGAS-Y	3.000	0.30	0.60	2	2400	2592
ACABADOS	5.000	7.00		1	60	2100
TABIQUER	5.000	7.00		1	60	2100
SOBREC	5.000	7.00		1	250	8750
COLUMNA	3.500	0.30	0.70	1	2400	1764

28234

$$\text{bx}d = \frac{1.10x \text{ PG}}{0.30 \times f_c} = \frac{31057}{84.00} \quad 370 \text{ cm}^2 \quad (30X75)$$

COLUMNA CENTRAL(C-3)-NIVEL 4

APORTANTE	L(m)	B(m)	H(m)	N° VECES	W(Kgs)	PESO(Kgs)
LOSA	4.7	6.75		1	300	9518
VIGAS-X	2.350	0.25	0.50	2	2400	1410
VIGAS-Y	3.000	0.30	0.60	2	2400	2592
ACABADOS	5.000	7.00		1	120	4200
TABIQUER	5.000	7.00		1	120	4200
SOBREC	5.000	7.00		1	250	8750
COLUMNA	3.500	0.30	0.70	1	2400	1764

32434

$$\text{bx}d = \frac{1.10x \text{ PG}}{0.30 \times f_c} = \frac{66734}{84.00} \quad 794 \text{ cm}^2 \quad (30X75)$$

COLUMNA CENTRAL(C-3)-NIVEL 3

APORTANTE	L(m)	B(m)	H(m)	N° VECES	W(Kgs)	PESO(Kgs)
LOSA	4.7	6.75		1	300	9518
VIGAS-X	2.350	0.25	0.50	2	2400	1410
VIGAS-Y	3.000	0.30	0.60	2	2400	2592
ACABADOS	5.000	7.00		1	120	4200
TABIQUER	5.000	7.00		1	120	4200
SOBREC	5.000	7.00		1	250	8750
COLUMNA	3.500	0.30	0.70	1	2400	1764

32434

$$\text{bx}d = \frac{1.10x \text{ PG}}{0.30 \times f_c} = \frac{102411}{84.00} \quad 1219 \text{ cm}^2 \quad (30X75)$$

COLUMNA CENTRAL(C-3)-NIVEL 2

APORTANTE	L(m)	B(m)	H(m)	N° VECES	W(Kgs)	PESO(Kgs)
LOSA	4.7	6.75		1	300	9518
VIGAS-X	2.350	0.25	0.50	2	2400	1410
VIGAS-Y	3.000	0.30	0.60	2	2400	2592
ACABADOS	5.000	7.00		1	120	4200
TABIQUE	5.000	7.00		1	120	4200
SOBREC	5.000	7.00		1	250	8750
COLUMNA	3.500	0.30	0.70	1	2400	1764

32434

$$\text{bx}d = \frac{1.10x \text{ PG}}{0.30 \times f_c} = \frac{138087}{84.00} \quad 1644 \text{ cm}^2 \quad (30X75)$$

COLUMNA CENTRAL(C-3)-NIVEL 1

APORTANTE	L(m)	B(m)	H(m)	N° VECES	W(Kgs)	PESO(Kgs)
LOSA	4.7	6.75		1	300	9518
VIGAS-X	2.350	0.25	0.50	2	2400	1410
VIGAS-Y	3.000	0.30	0.60	2	2400	2592
ACABADOS	5.000	7.00		1	120	4200
TABIQUER	5.000	7.00		1	120	4200
SOBREC	5.000	7.00		1	250	8750
COLUMNA	4.500	0.30	0.70	1	2400	2268

32938

$$\text{bx}d = \frac{1.10x \text{ PG}}{0.30 \times f_c} = \frac{174319}{84.00} \quad 2075 \text{ cm}^2 \quad (30X75)$$

PREDIMENSIONAMIENTO DE VIGAS

Disposiciones geometricas en vigas (Norma E-060) :

Relacion Ancho/Peralte: $b/h > 0.3$
 Peralte efectivo: $d < (Luz\ libre)/4$
 Ancho minimo: $b > 25cm.$
 Ancho maximo: $b < Ancho\ columna + (Peralte\ de\ viga) * 3/4$

Ejes Princ.	Viga	Luz Libre(m)	h (m.)	Usar h(m)	Ancho trib.	b(m.)	Usar b(m.)
1 - 5	V-501	4.60	0.42	0.50	2.50	0.13	0.25
	V-401	4.60	0.55	0.50	2.50	0.13	0.25
	V-301	4.60	0.42	0.50	2.50	0.13	0.25
	V-201	4.60	0.42	0.50	2.50	0.13	0.25
	V-101	4.60	0.42	0.50	2.50	0.13	0.25

2 - 4	V-502	6.10	0.55	0.60	5.00	0.25	0.30
	V-402	6.10	0.55	0.60	5.00	0.25	0.30
	V-302	6.10	0.55	0.60	5.00	0.25	0.30
	V-202	6.10	0.55	0.60	5.00	0.25	0.30
	V-102	6.10	0.55	0.60	5.00	0.25	0.30

3	V-502	6.10	0.55	0.60	5.00	0.25	0.30
	V-402	6.10	0.55	0.60	5.00	0.25	0.30
	V-302	6.10	0.55	0.60	5.00	0.25	0.30
	V-202	6.10	0.55	0.60	5.00	0.25	0.30
	V-102	6.10	0.55	0.60	5.00	0.25	0.30

Ejes Sec.	Viga	Luz Libre(m)	h(m.)	Usar h(m)	Ancho trib.	b(m.)	Usar b(m.)
A - C	V-503	4.70	0.43	0.50	1.00	0.05	0.25
	V-403	4.70	0.43	0.50	1.00	0.05	0.25
	V-303	4.70	0.43	0.50	1.00	0.05	0.25
	V-203	4.70	0.43	0.50	1.00	0.05	0.25
	V-103	4.70	0.43	0.50	1.00	0.05	0.25

B	V-504	4.70	0.43	0.50	1.00	0.05	0.25
	V-404	4.70	0.43	0.50	1.00	0.05	0.25
	V-304	4.70	0.43	0.50	1.00	0.05	0.25
	V-204	4.70	0.43	0.50	1.00	0.05	0.25
	V-104	4.70	0.43	0.50	1.00	0.05	0.25

PARA VIGAS PRINCIPALES: EJES 1, 2, 3, 4, 5
 Vigas Principales : SECCION 30x60

PARA VIGAS SECUNDARIAS: EJES A, B y C
 Vigas Secundarias : SECCION 25x40

Modelo 1

PESO DE LA EDIFICACIÓN P: (Sin considerar Peso de vigas, columnas y placas)

Categoría de la edificación: C

PISOS TÍPICOS	PESO	ÁREA	LONGITUD	KG.
PESO DE LOSA TÍPICOS	300	249.600		74880
PESO DE ACABADOS	120	284.200		34104
PESO DE TABIQUERIA	120	284.200		34104
25% SOBRECARGA	62.5	284.200		17763

SUB-TOTAL= 160851
 Masa Nivel 16.40 Tm-s2

ULTIMO NIVEL	PESO	ÁREA	LONGITUD	KG.
PESO DE LOSA 5° NIVEL	300	249.600		74880
PESO DE ACABADOS	60	284.200		17052
PESO DE TABIQUERIA	60	284.200		17052
25% SOBRECARGA	62.5	284.200		17763

SUB-TOTAL= 126747
 Masa Nivel 12.92 Tm-s2

# PISOS :	5	SECTION	WEIGHT
SUBTOTAL=	770.15 T	V25X50	111.1203
PESO VIGAS:	252.39 T	C30X55	30.096
PESO COL. Y PLACAS:	307.80 T	307.8 V30X70	141.2729
		P25X475X	108.3
TOTAL PISO TIPICO	272.89 T	P25X455Y	103.74
TOTAL AZOTEA	218.27 T	C40X70	38.304
PESO EDIFICACIÓN =	1309.82 T	C40X60	27.36
		TOTAL	560.1932

PROPIEDADES DE INERCIA EN PLANTA (Sin considerar masas de vigas, columnas y placas)

Long. Planta 20.3
 Anch. Planta 14

	ix	ly	Area	Masa	Jm
Pisos Tipicos	9759.7	4641.9	284.2	16.40	831
Ultimo Nivel	9759.7	4641.9	284.2	12.92	655

Para el peso de la edificación, se ha considerado un porcentaje de la carga viva, que para el caso de edificios de oficina corresponde a 25% en todos los niveles incluido la azotea.

UNI-FIC INFORME DE SUFICIENCIA
Proyecto : TRABAJO DE ESTRUCTURAS

DIMENSIONAMIENTO ZAPATAS

Unidades: Tn-m

ZAPATA TIPO Z-2 ZAPATA DE COLUMNA C1

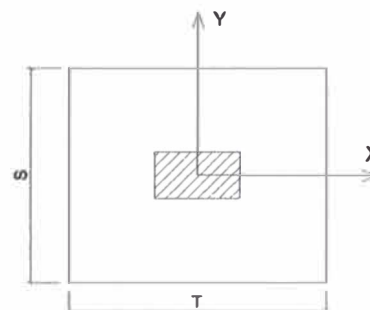
1.00000367

σ_t (t/m ²)	40.00	Angulo de Friccion ϕ	32.00
Factor Para Analisis Sismico	1.33	Kpasivo	3.255
σ_t En Analisis Sismico (t/m ²)	53.20	Espesor de Zapata h	0.60
γ_m (t/m ³)	1.900	Area Seccion de Columna (m ²)	0.16
s/c (kg/m ²)	250	H total de columna	19
Profundidad de Cimentacion h(m)	1.50		

Empuje Pasivo 4.45 Tn
Momento debido al Empuje Pasivo 9.84 Tn-m Si es caso 3 restar este valor a Ms

Pd + Pl = 47.57
PS = 87.9
X-X
Md + MI = 0
Ms = 5.04
Mt = 5.04

Y-Y
Md + MI = 0
Ms = 8.06
Mt = 8.06



Incluir Peso de columnas? NO
Pd + Pl + pp = 47.57
PTX 135.47
PTY 135.47
e = 0.00 Ver Caso 1
esx = 0.06 Ver Caso 1
esy = 0.04 Ver Caso 1

Excentricidad debido a Myy (En la direccion X-X)
Excentricidad debido a Mxx (En la direccion Y-Y)

ESFUERZOS PERMISIBLES

σ_n Para condicion de Servicio	38.04 t/m ²		
σ_n Para condicion Sismica	51.24 t/m ²	Caso 1	e < T/6
		Caso 2	e = T/6
		Caso 3	e > T/6
1° Tanteo	T/6 = 0.32		
T =	1.90		

Caso 1	$\sigma_1 = P/T + 6Pe/T^2$	S =	1.70	Caso 3	$\sigma_1 = 2P/(3S(T/2 - e))$	S =	1.70
a) Solo Cargas de Servicio				a) Solo Cargas de Servicio			
$\sigma_1 S =$	25.04	Az =	3.23	$\sigma_1 S =$	33.38	Az1 =	3.23
S =	0.63		CONSIDERAR	S =	0.88		CONSIDERAR
Az1 =	1.19	$\sigma_1 =$	14.73	$\sigma_1 =$	19.64		OK!
		$\sigma_2 =$	14.73				OK!
b) Incluyendo Sismo en X-X				b) Incluyendo Sismo en X-X			
$\sigma_1 SsY =$	84.70	Az =	3.23	$\sigma_1 SsY =$	101.42	Az1 =	3.23
S =	1.65		CONSIDERAR	S =	1.98		CONSIDERAR
Az1 =	3.14	$\sigma_1 =$	49.82	$\sigma_1 sY =$	59.66		OK!
		$\sigma_2 =$	34.06				OK!
c) Incluyendo Sismo en Y-Y				c) Incluyendo Sismo en Y-Y			
$\sigma_1 SsX =$	79.68	S =	1.90	$\sigma_1 SsX =$	111.11	Az1 =	3.23
S =	1.55		CONSIDERAR	S =	2.17		CONSIDERAR
Az1 =	2.64	$\sigma_1 =$	47.45	$\sigma_1 sX =$	65.36		OK!
		$\sigma_2 =$	36.43				OK!

ZAPATA TIPO Z-2 : USAR Z: 1.9 x 1.7

Espesor de Zapata : hz = 0.6m.

Profundidad de Cimentacion: H = 1.5m.

UNI-FIC INFORME DE SUFICIENCIA
Proyecto : TRABAJO DE ESTRUCTURAS

DIMENSIONAMIENTO ZAPATAS

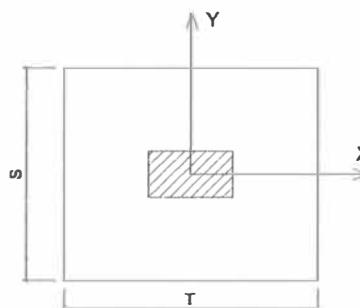
Unidades: Tn-m

ZAPATA TIPO **Z-3** ZAPATA DE COLUMNA C3 1.00000367

σ_1 (t / m ²)	40.00	Angulo de Friccion ϕ	32.00
Factor Para Analisis Sismico	1.33	Kpasivo	3.255
σ_1 En Analisis Sismico (t / m ²)	53.20	Espesor de Zapata h	0.60
γ_m (t/m ³)	1.900	Area Seccion de Columna (m ²)	0.16
s/c (kg/m ²)	250	H total de columna	19
Profundidad de Cimentacion h(m)	1.50		

Empuje Pasivo **4.45 Tn**
Momento debido al Empuje Pasivo **12.73 Tn-m** Si es caso 3 restar este valor a Ms

Pd + Pl =	182.98		
PS =	0		
X-X		Y-Y	
Md + Mi =	0	Md + Mi =	0
Ms =	13.99	Ms =	23.57
Mt =	13.99	Mt =	23.57



Incluir Peso de columnas?	NO		
Pd + Pl + pp =	182.98		
PTX	182.98		
PTY	182.98		
e =	0.00 Ver Caso 1		
esx =	0.13 Ver Caso 1	Excentricidad debido a Myy (En la direccion X-X)	
esy =	0.08 Ver Caso 1	Excentricidad debido a Mxx (En la direccion Y-Y)	

ESFUERZOS PERMISIBLES

σ_n Para condicion de Servicio	38.04 t/m ²		
σ_n Para condicion Sismica	51.24 t/m ²	Caso 1	e < T/6
		Caso 2	e = T/6
		Caso 3	e > T/6
1° Tanteo	T/6 =	0.37	
T =	2.20		

Caso 1	$\sigma_1 = P/T + 6Pe/T^2$	S =	2.20	Caso 3	$\sigma_1 = 2P/(3S(T/2-e))$	S =	2.20
a) Solo Cargas de Servicio				a) Solo Cargas de Servicio			
$\sigma_1 S =$	83.17	Az =	4.84	$\sigma_1 S =$	110.90	emx =	0.44
S =	2.08		CONSIDERAR	S =	2.92	Az1 =	4.84
Az1 =	4.57	$\sigma_1 =$	37.81	$\sigma_1 =$	50.41		CONSIDERAR
		$\sigma_2 =$	37.81			Ancho en Compresion:	3.3
			OK !				
			OK !				
b) Incluyendo Sismo en X-X				b) Incluyendo Sismo en X-X			
$\sigma_1 SsY =$	112.39	Az =	4.84	$\sigma_1 SsY =$	125.61		CONSIDERAR
S =	2.19		CONSIDERAR	S =	2.45	Az1 =	4.84
Az1 =	4.83	$\sigma_1 =$	51.09	$\sigma_1 SsY =$	57.09		CONSIDERAR
		$\sigma_2 =$	24.52			Ancho en Compresion:	2.9
			OK !				
			OK !				
c) Incluyendo Sismo en Y-Y				c) Incluyendo Sismo en Y-Y			
$\sigma_1 SsX =$	100.52	S =	2.20	$\sigma_1 SsX =$	119.18		CONSIDERAR
S =	1.96	Az =	4.84	S =	2.33	Az1 =	4.84
Az1 =	4.32	$\sigma_1 =$	45.69	$\sigma_1 SsX =$	54.17		CONSIDERAR
		$\sigma_2 =$	29.92			Ancho en Compresion:	3.1
			OK !				
			OK !				

ZAPATA TIPO Z-3 : USAR Z: 2.2 x 2.2
Espesor de Zapata : hz = 0.6m.
Profundidad de Cimentacion: H = 1.5m.

UNI-FIC INFORME DE SUFICIENCIA
Proyecto : TRABAJO DE ESTRUCTURAS

DIMENSIONAMIENTO ZAPATAS

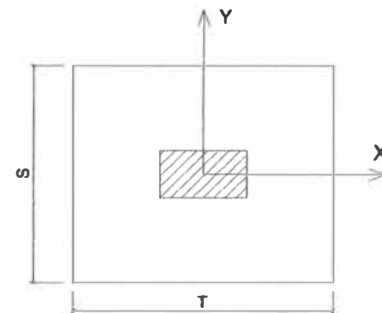
Unidades: Tn-m

ZAPATA TIPO Z-2 ZAPATA DE COLUMNA C2

σ_t (t / m ²)	40.00	Angulo de Friccion ϕ	30.00
Factor Para Analisis Sismico	1.33	Kpasivo	3.000
σ_t En Analisis Sismico (t / m ²)	53.20	Espesor de Zapata h	0.60
γ_m (t/m ³)	1.900	Area Seccion de Columna (m ²)	0.16
s/c (kg/m ²)	250	H total de columna	19
Profundidad de Cimentacion h(m)	1.50		

Empuje Pasivo 4.10 Tn
Momento debido al Empuje Pasivo 11.74 Tn-m Si es caso 3 restar este valor a Ms

Pd + PI =	96.28		
PS =	114.74		
X-X		Y-Y	
Md + MI =	0	Md + MI =	0
Ms =	12.41	Ms =	16.19
Mt =	12.41	Mt =	16.19



Incluir Peso de columnas? NO
Pd + PI + pp = 96.28
PTX 211.02
PTY 211.02
e = 0.00 Ver Caso 1
esx = 0.08 Ver Caso 1 Excentricidad debido a M_{yy} (En la direccion X-X)
esy = 0.06 Ver Caso 1 Excentricidad debido a M_{xx} (En la direccion Y-Y)

ESFUERZOS PERMISIBLES

σ_n Para condicion de Servicio	38.04 t/m ²		
σ_n Para condicion Sismica	51.24 t/m ²	Caso 1	e < T/6
		Caso 2	e = T/6
		Caso 3	e > T/6
1° Tanteo T/6 =	0.40		
T =	2.40		

Caso 1	$\sigma_1 = P/T + 6Pe/T^2$	S =	2.20	Caso 3	$\sigma_1 = 2P/(3S(T/2-e))$	S =	2.20
a) Solo Cargas de Servicio				a) Solo Cargas de Servicio emx = 0.46			
$\sigma_1 S =$	40.12	Az =	5.28	$\sigma_1 S =$	53.49	Az1 =	5.28
S =	1.00		CONSIDERAR	S =	1.41		CONSIDERAR
Az1 =	2.41	$\sigma_1 =$	18.23	$\sigma_1 =$	24.31		
		$\sigma_2 =$	18.23				
			OK!	Ancho en Compresion: 3.6			
b) Incluyendo Sismo en X-X				b) Incluyendo Sismo en X-X			
$\sigma_1 S s Y =$	104.79	Az =	5.28	$\sigma_1 S s Y =$	125.24	Az1 =	5.28
S =	2.05		CONSIDERAR	S =	2.44		CONSIDERAR
Az1 =	4.91	$\sigma_1 =$	47.63	$\sigma_{1sY} =$	56.93		
		$\sigma_2 =$	32.30				
			OK!	Ancho en Compresion: 3.4			
c) Incluyendo Sismo en Y-Y T = 2.2				c) Incluyendo Sismo en Y-Y T = 2.2			
$\sigma_1 S s X =$	100.85	S =	2.40	$\sigma_1 S s X =$	135.11	Az1 =	5.28
S =	1.97	Az =	5.28	S =	2.64		CONSIDERAR
Az1 =	4.33	$\sigma_1 =$	46.38	$\sigma_{1sX} =$	61.42		
		$\sigma_2 =$	33.56				
			OK!	Ancho en Compresion: 3.4			

ZAPATA TIPO Z-2 : USAR Z: 2.4 x 2.2
Espesor de Zapata : hz = 0.6m.
Profundidad de Cimentacion: H = 1.5m.

UNI-FIC INFORME DE SUFICIENCIA
Proyecto : TRABAJO DE ESTRUCTURAS

DIMENSIONAMIENTO ZAPATA DE PLACA PL-1

Unidades: Tn-m

ZAPATA TIPO	Z-4	ZAPATA DE PLACA	
σ_t (t / m2)	40.00	Angulo de Friccion ϕ	32.00
Factor Para Analisis Sismico	1.30	Kpasivo	3.246
σ_t En Analisis Sismico (t / m2)	52.00	Espesor de Zapata h	0.60
γ_m (t/m3)	1.900	Area Seccion de Columna (m ²)	0
s/c (kg/m2)	250	H total de columna	19
Profundidad de Cimentacion h(m)	1.50	lw =	4.75
		d =	7
Pd + Pl =	162.48	Incluir Peso de Muro?	N
PS =	15.3	Pd + Pl + pp =	162.48
Md + MI =	2	PT d+I =	222.23
Ms =	958.26	e =	5.40
Mt =	1200.325		

ESFUERZOS PERMISIBLES

σ_n Para condicion de Servicio:	38.04 t/m2
σ_n Para condicion Sismica:	50.04 t/m2

1° DIMENSIONES:

L =	5.00
S (Ancho) =	2.00
T/6 =	0.83

SISMO DE IZQUIERDA A DERECHA

R1 =	116.5 Tn	FUERZAS DE LEVANTAMIENTO - TRACCION EN ZAPATA
R2 =	-80.5 Tn	FUERZAS DE APLASTAMIENTO - COMPRESION EN ZAPATA
R1 + P - R2 =	258.1 Tn	
$\sigma =$	51.63 tn/m2 OK!!	

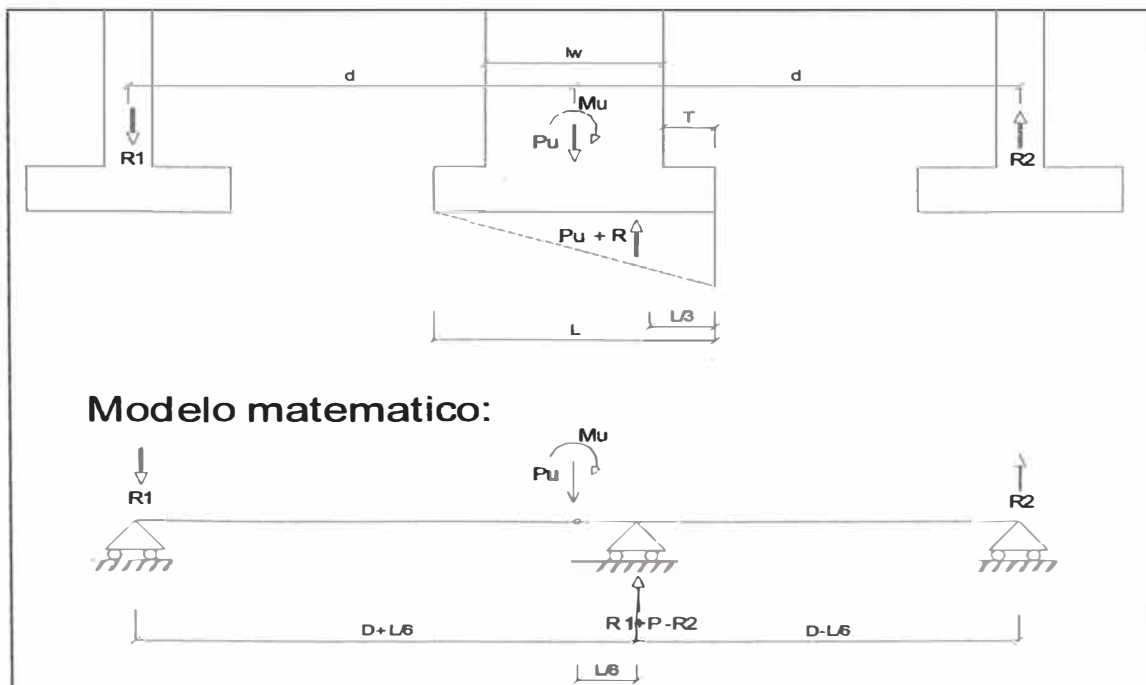
SISMO DE DERECHA A IZQUIERDA

R1 =	-80.5 Tn	FUERZAS DE APLASTAMIENTO - COMPRESION EN ZAPATA
R2 =	116.5 Tn	FUERZAS DE LEVANTAMIENTO - TRACCION EN ZAPATA
R2 + P - R1 =	258.2 Tn	
$\sigma =$	51.65 tn/m2 OK!!	

ZAPATA TIPO Z-4 : USAR Z: 5 x 2

Espesor de Zapata : $h_z = 0.6m$.

Profundidad de Cimentacion: $H = 1.5m$.



UNI-FIC INFORME DE SUFICIENCIA
Proyecto : TRABAJO DE ESTRUCTURAS

VERIFICACION POR PUNZONAMIENTO DE ZAPATAS

ZAPATA CENTRADA

C-3
 $f_c = 210$
 Dimensiones columna:
 $B_c = 0.40 \text{ m}$
 $D_c = 0.70 \text{ m}$
 $\beta_c = 1.75$
 Dimensiones zapata
 $B_z = 2.1 \text{ m}$
 $H_z = 2.4 \text{ m}$
 $\text{Area} = 5.04$

$P_u = 297.5 \text{ Tn}$
 $w_u = 59.02 \text{ Tn/m}^2$

Peralte $d = 0.580 \text{ m}$
 Longitud de cortante:
 $b_o = 4.52$
 $V_u / \phi = 385.2 \text{ Tn}$
 $V_c = 439.6 \text{ Tn}$
 $V_c = 402.7 \text{ Tn}$
 $V_c \text{ Usar} = 402.7 \text{ Tn Cumples}$

ZAPATA CENTRADA

C-2
 $f_c = 210$
 Dimensiones columna:
 $B_c = 0.40 \text{ m}$
 $D_c = 0.70 \text{ m}$
 $\beta_c = 1.75$
 Dimensiones zapata
 $B_z = 2.1 \text{ m}$
 $H_z = 2.4 \text{ m}$
 $\text{Area} = 5.04$

$P_u = 297.5 \text{ Tn}$
 $w_u = 59.02 \text{ Tn/m}^2$

Peralte $d = 0.580 \text{ m}$
 Longitud de cortante:
 $b_o = 4.52$
 $V_u / \phi = 385.2 \text{ Tn}$
 $V_c = 439.6 \text{ Tn}$
 $V_c = 402.7 \text{ Tn}$
 $V_c \text{ Usar} = 402.7 \text{ Tn Cumples}$

$$V_c = 0.27 * \left(2 + \frac{4}{\beta}\right) * \sqrt{f'c} * b_o * d \leq 1.06 * \sqrt{f'c} * b_o * d$$

METRADO DE CARGAS PARA ANALISIS ESTRUCTURAL

Proyecto : EDIFICIO DE OFICINAS

CONSIDERACIONES INICIALES

Tabiqueria Fija: 0 Kg/m3
 Tabiqueria : 120 Kg/m2
 Acabados : 120 Kg/m2

SOBRECARGAS

Pisos Tipicos (T) : 250 Kg/m2
 Azotea (A) : 150 Kg/m2

PROPIEDADES DE LOS ELEMENTOS

$f_y = 4200 \text{ Kg/cm}^2$ $\beta_1 = 0.85$
 $f_c = 210 \text{ Kg/cm}^2$ $\rho_b = 0.02142$
 $E = 2.174E+05 \text{ Kg/cm}^2$ $0.75 \cdot \rho_b = 0.01606$
 $G = 8.695E+04 \text{ Kg/cm}^2$ $0.50 \cdot \rho_b = 0.01071$

ESPESOR DE LOSA

ALIGERADO O MACIZA: a h = 0.20 m
 Peso Losa: 300 Kg/m2

CARGAS SIN CONSIDERAR PESO DE ELEMENTOS

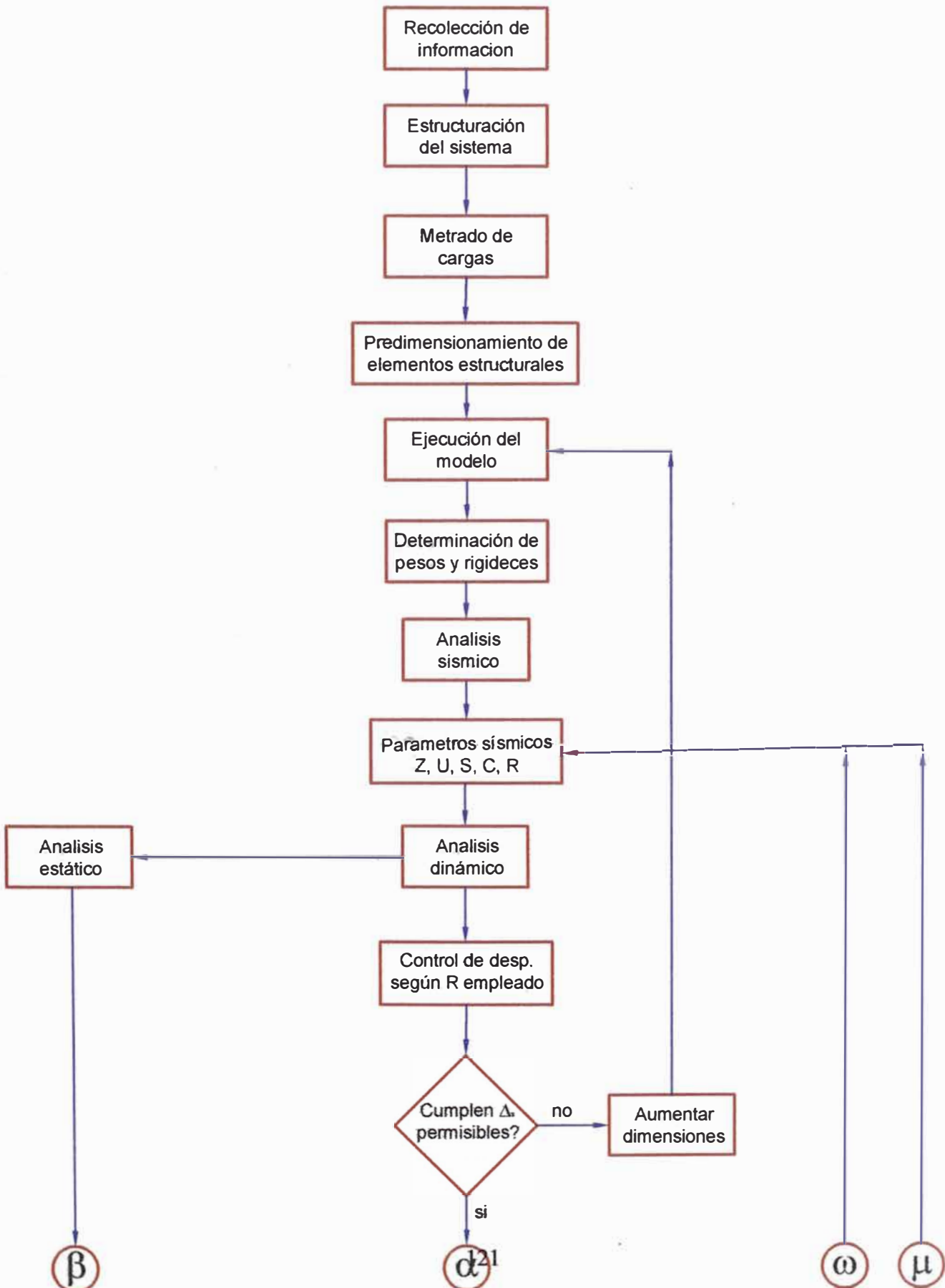
Pisos típicos			Azotea		
Aportante	TIPO DE CARGA	Pisos Típicos kg/m2	Aportante	TIPO DE CARGA	Azotea kg/m2
Losa	D	300 Kg/m2	Losa	D	300 Kg/m2
Tabiqueria	D	120 Kg/m2	Tabiqueria	D	60 Kg/m2
Acabados	D	120 Kg/m2	Acabados	D	60 Kg/m2
	S/C	250 Kg/m2		S/C	150 Kg/m2
	WD	540 Kg/m2		WD	420 Kg/m2
	WL	250 Kg/m2		WL	150 Kg/m2
	Wserv.	790 Kg/m2		Wserv.	570 Kg/m2
	WU(1.5D)	1250 Kg/m2		WU(1.5D+1.8)	900 Kg/m2

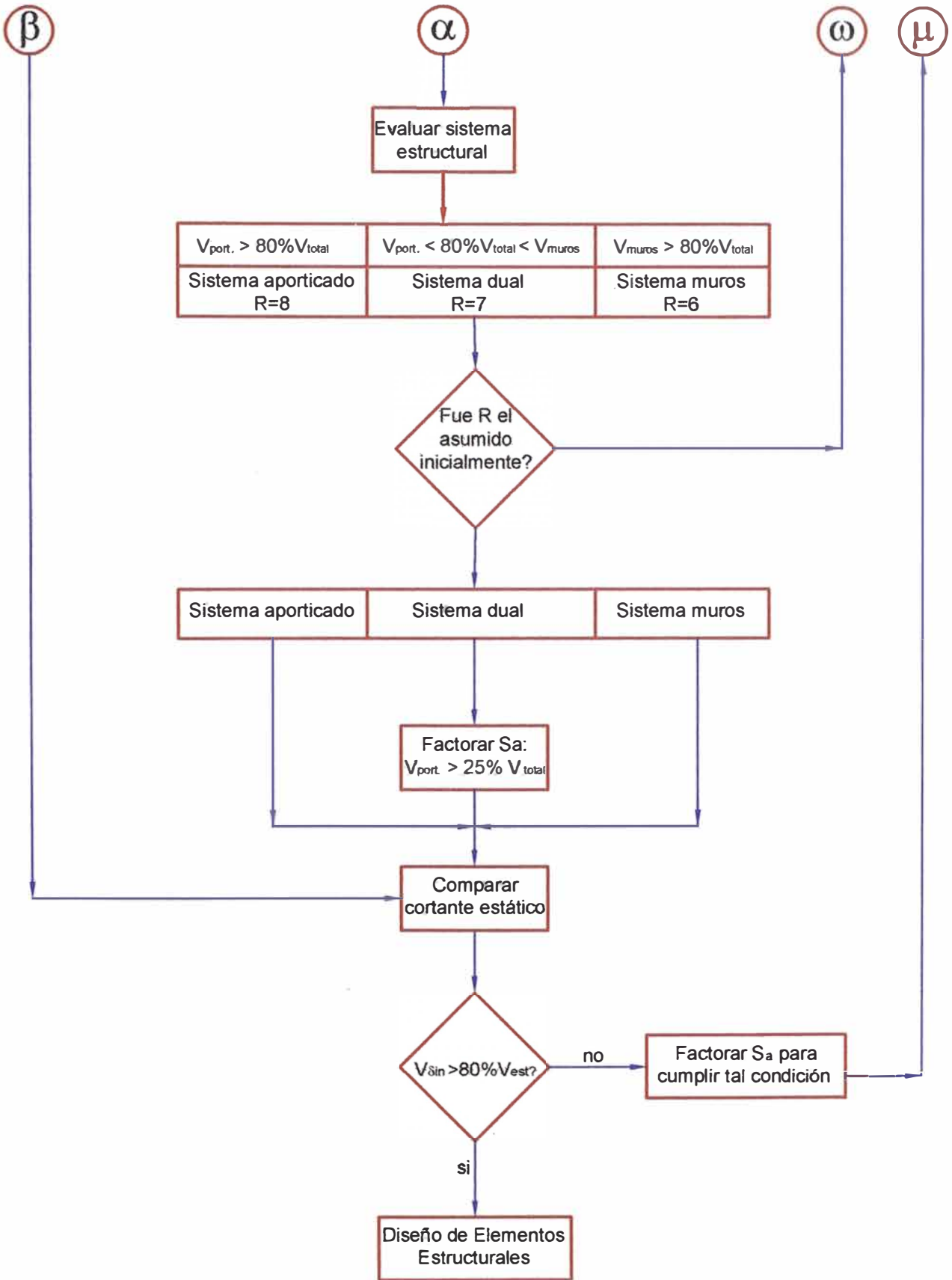
PESO DE ELEMENTOS SEGUN SECCION				
SECCION	TIPO	b (m.)	h (m.)	Pv (Kg/m)
0.3 x 0.6	I	0.3	0.60	432.0
0.25 x 0.5	II	0.25	0.50	300.0
0.25 x 0.5	III	0.25	0.50	300.0

NIVEL	Eje	Viga	TIPO	Ambiente	Anchos Tributarios			Tabiqueria Fija		W _{pp} Vigas Kg/m	Sobrecargas		Total SIN PP	
					Losa	Acabados	Tabiqueria	Espesor	Altura		S/C	Ancho Trib.	WD	WL
Techo	1 - 5	V-101	I	T	2.65	2.65	2.65			432	250.00	2.65	1431.00	662.50
Pisos	2 - 3 - 4	V-102	I	T	5.00	5.00	5.00			432	250.00	5.00	2700.00	1250.00
Típicos	A - C	V-103	III	T	0.50	0.50	0.50			300	250.00	1.00	270.00	250.00
	B	V-103	II	T	1.00	1.00	1.00			300	250.00	1.00	540.00	250.00

NIVEL	Eje	Viga	TIPO	Ambiente	Anchos Tributarios			Tabiqueria Fija		W _{pp} Vigas Kg/m	Sobrecargas		Total SIN PP	
					Losa	Acabados	Tabiqueria	Espesor	Altura		S/C	Ancho Trib.	WD	WL
Techo Azotea	1 - 5	V-101	I	A	2.65	2.65	0.00			432	150.00	2.65	1113.00	397.50
	2 - 3 - 4	V-102	I	A	5.00	5.00	0.00			432	150.00	5.00	2100.00	750.00
	A - C	V-103	III	A	0.50	0.50	0.50			300	150.00	1.00	270.00	150.00
	B	V-103	II	A	1.00	1.00	1.00			300	150.00	1.00	540.00	150.00

PROCEDIMIENTO PARA EL DIMENSIONAMIENTO DE LOS ELEMENTOS ESTRUCTURALES SEGUN E-030/2003 PARA EDIFICACIONES REGULARES DE CONCRETO ARMADO





Procedimiento para obtener el modelo de diseño (Continuación)

Modelo 1

CALCULO DE LAS FUERZAS HORIZONTALES

Determinación de Cargas Laterales
 Cargas Estáticas Equivalentes - NTE E.030

Cortante en la base :
$$V = \frac{Z.U.S.C}{R} * P$$

Donde :

- Z = Factor de zona
- U = Factor de uso e importancia
- S = Factor de Suelo
- C = Coeficiente de Amplificación sísmica
- R = Coeficiente de reducción de sollicitación sísmica
- P = Peso total de la Edificación

- hn = 19.00 : Altura del Edificio
- CT = 60 : Muros de Concreto
- Ts = 0.6 : Suelo Intermedio
- T = $\frac{hn}{CT} = 0.3167$

$$C = 2.5 * \left(\frac{T_s}{T}\right)^{1.25} \leq 2.5$$

C = 5.557
 C <= 2.5 \Rightarrow C = 2.50

Datos :

- Z = 0.4 Zona 3
- U = 1 Edificación COMUN Oficinas (C)
- S = 1.2 Suelo INTERMEDIO (S2)
- R = 7.5 Muros de Concreto Armado

Peso de la Edificación P :
 Peso total = 1309.82 toneladas

Excentricidad Para efectos de Torsión:

- ex = 1.4
- ey = 2.03

Cortante en la base V = 209.57 toneladas

DISTRIBUCION DE FUERZAS LATERALES POR NIVEL

Nivel	Pi	Hi	Pi*Hi	Pi*Hi/tot	Vi	Tx	Ty
1	272.89	5	1364.45	0.089	18.65	26.10	37.85
2	272.89	8.5	2319.56	0.151	31.70	44.38	64.35
3	272.89	12	3274.67	0.214	44.75	62.65	90.84
4	272.89	15.5	4229.78	0.276	57.80	80.92	117.34
5	218.27	19	4147.04	0.270	56.67	79.34	115.05
	1309.82		15335.49		209.57		

Modelo 2

CALCULO DE LAS FUERZAS HORIZONTALES

Determinación de Cargas Laterales

Cargas Estáticas Equivalentes - NTE E-030 2003

Cortante en la base :
$$V = \frac{Z.U.S.C}{R} * P$$

Donde :

Z =Factor de zona

U = Factor de uso e importancia

S = Factor de Suelo

C =Coeficiente de Amplificación sísmica

R =Coeficiente de reducción de sollicitación sísmica

P = Peso total de la Edificación

hn = 19.00 : Altura del Edificio
 CT = 60 : Muros de Concreto
 Ts = 0.6 : Suelo Intermedio

$$T = \frac{hn}{CT} = 0.3167$$

$$C = 2.5 * \left(\frac{Ts}{T} \right) \leq 2.5$$

C = 4.737
 C <= 2.5 \Rightarrow C = 2.50

Datos :

Z = 0.4 Zona 3
 U = 1 Edificación **COMUN** Oficinas (C)
 S = 1.2 Suelo **INTERMEDIO** (S2)
 R = 6 Muros de Concreto Armado

Peso de la Edificación P :

Peso total = 1309.82 toneladas

Excentricidad Para efectos de Torsión:

ex = 0.7
 ey = 1.015

Cortante en la base V = 261.96 toneladas

DISTRIBUCION DE FUERZAS LATERALES POR NIVEL

Nivel	Pi	Hi	Pi*Hi	Pi*Hi/tot	Vi	Tx	Ty
1	272.89	5	1364.45	0.089	23.31	16.32	23.66
2	272.89	8.5	2319.56	0.151	39.62	27.74	40.22
3	272.89	12	3274.67	0.214	55.94	39.16	56.78
4	272.89	15.5	4229.78	0.276	72.25	50.58	73.34
5	218.27	19	4147.04	0.270	70.84	49.59	71.90
	1309.82		15335.49		261.96		

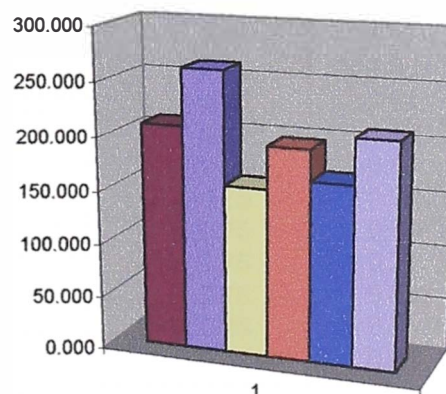
RESUMEN DE PARAMETROS COMPARATIVOS PARA EL DISEÑO SISMICO

Ubicación : Ciudad de Lima
Características del Suelo : Grava arenosa medianamente densa
 Tp = 0.6
Uso de la estructura: Oficinas y/o departamentos
Sistema Estructural : Sistema de Muros de Concreto
 Coeficiente para estimar el periodo predominante del edificio C_T : 60 Unidades: Tn-m-Seg.

PARAMETROS	EDIFICIO 1	
	E-030/97	E-030/2003
# NIVELES	5	5
ALTURA x NIVEL	3.5	3.5
ALTURA TOTAL	19	19
FACTOR DE ZONA Z	0.4	0.4
FACTOR DE USO U	1	1
FACTOR SUELO S	1.2	1.2
FACTO AMP. SISMICA C	5.56	4.74
C a Usar	2.50	2.50
Rx	7.5	6
Ry	7.5	6
Periodo fundamental para Análisis Estático	0.317	0.317
Periodo fundamental obtenido análisis dinámico	0.495	0.585
Peso de la edificación	1309.82 T	1309.82 T
Cortante Estático X.	209.571	261.964
Cortante Estático Y	209.571	261.964
80% del Cortante Estatico	167.657	209.571
Cortante Dinamico X	157.22	196.33
Cortante Dinamico Y	156.46	194.65
Factor en X	1.07	1.07
Factor en Y	1.07	1.08
Masa	133.52	133.52
C dinamico	3.18	2.56
C Usar	2.5	2.5

CORTANTES EN LA BASE SEGUN MODELO DE ANALISIS

- CORTANTE ESTATICO EN X E-030 1997
- CORTANTE ESTÁTICO EN X E-030 2003
- CORTANTE DINAMICO X E-030 1997
- CORTANTE DINAMICO X 2003
- 80%CORTE ESTATICO 1997
- 80% CORTANTE ESTATICO 2003



EDIFICIO PARA OFICINAS

Proyecto : MI PROYECTO

Analisis Dinamico

Determinación de Aceleracion Espectral - Norma E-030 1997

Aceleracion Espectral :
$$S_a = \frac{ZUSC}{R} * g$$

Donde :

Z =Factor de zona

U = Factor de uso e importancia

S = Factor de Suelo

C =Coeficiente de Amplificación sísmica

R =Coeficiente de reducción de sollicitación sísmica

P = Peso total de la Edificacion

Parametros	1997	2003	
Z	0.4	0.4	ZONA 3
U	1	1	EDIFICACION COMÚN
S	1.2	1.2	SUELO INTERMEDIO
R	7.5	6	SISTEMA DE MUROS ESTRUCTURALES

$$C = 2.5 * \left(\frac{T_s}{T}\right)^{1.25} \leq 2.5 \quad C = 2.5 * \left(\frac{T_s}{T}\right) \leq 2.5 \quad C/R \geq 0.1$$

Ts = 0.6 SUELO INTERMEDIO

T (Seg.)	1997		2003	1997	2003
	Sa	Sa Factorado	Sa	C	C
0	0.16	0.20	0.20	2.50	2.50
0.1	0.16	0.20	0.20	2.50	2.50
0.2	0.16	0.20	0.20	2.50	2.50
0.3	0.16	0.20	0.20	2.50	2.50
0.4	0.16	0.20	0.20	2.50	2.50
0.5	0.16	0.20	0.20	2.50	2.50
0.6	0.16	0.20	0.20	2.50	2.50
0.7	0.13	0.16	0.17	2.06	2.14
0.8	0.11	0.14	0.15	1.74	1.88
0.9	0.10	0.12	0.13	1.51	1.67
1	0.08	0.11	0.12	1.32	1.50
1.1	0.08	0.09	0.11	1.17	1.36
1.2	0.07	0.08	0.10	1.05	1.25
1.3	0.06	0.08	0.09	0.95	1.15
1.4	0.06	0.07	0.09	0.87	1.07
1.5	0.05	0.06	0.08	0.80	1.00
1.6	0.05	0.06	0.08	0.75	0.94
1.7	0.05	0.06	0.07	0.75	0.88
1.8	0.05	0.06	0.07	0.75	0.83
1.9	0.05	0.06	0.06	0.75	0.79
2	0.05	0.06	0.06	0.75	0.75
2.1	0.05	0.06	0.06	0.75	0.71
2.2	0.05	0.06	0.05	0.75	0.68
2.3	0.05	0.06	0.05	0.75	0.65
2.4	0.05	0.06	0.05	0.75	0.63
2.5	0.05	0.06	0.05	0.75	0.60
2.6	0.05	0.06	0.05	0.75	0.60
2.7	0.05	0.06	0.05	0.75	0.60
2.8	0.05	0.06	0.05	0.75	0.60

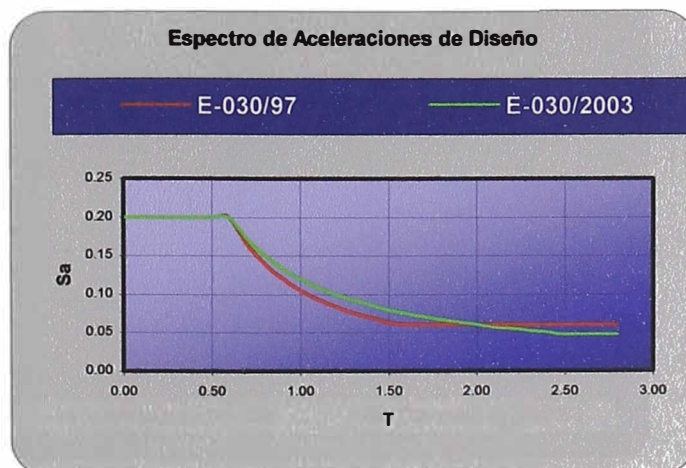
COMPARACIÓN DE ESPECTROS DE DISEÑO

ESPECTRO E-030/97

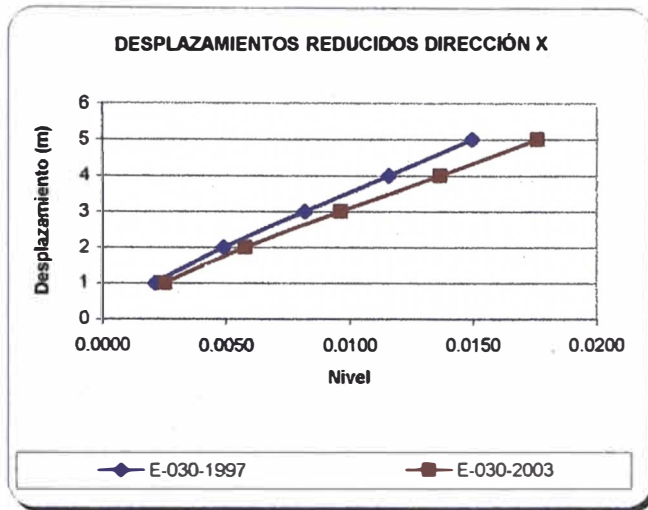
T	Sa	C
0	0.16	2.50
0.1	0.16	2.50
0.2	0.16	2.50
0.3	0.16	2.50
0.4	0.16	2.50
0.5	0.16	2.50
0.6	0.16	2.50
0.7	0.13	2.06
0.8	0.11	1.74
0.9	0.10	1.51
1	0.08	1.32
1.1	0.08	1.17
1.2	0.07	1.05
1.3	0.06	0.95
1.4	0.06	0.87
1.5	0.05	0.80
1.6	0.05	0.75
1.7	0.05	0.75
1.8	0.05	0.75
1.9	0.05	0.75
2	0.05	0.75
2.1	0.05	0.75
2.2	0.05	0.75
2.3	0.05	0.75
2.4	0.05	0.75
2.5	0.05	0.75
2.6	0.05	0.75
2.7	0.05	0.75
2.8	0.05	0.75

ESPECTRO E-030/2003

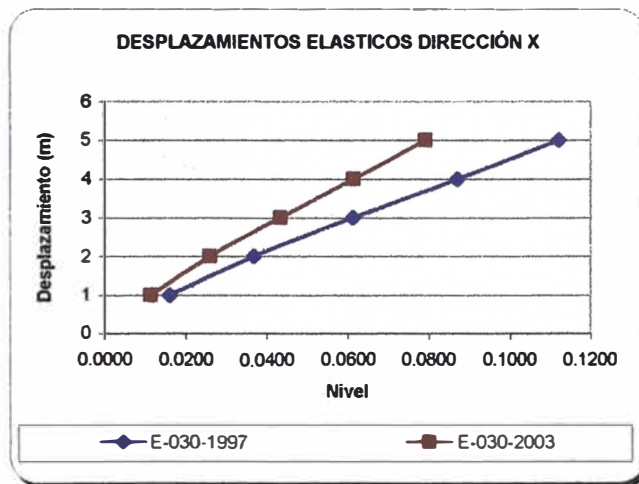
T	Sa	C
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0.1	0.20	2.50
0.2	0.20	2.50
0.3	0.20	2.50
0.4	0.20	2.50
0.5	0.20	2.50
0.6	0.20	2.50
0.7	0.17	2.14
0.8	0.15	1.88
0.9	0.13	1.67
1	0.12	1.50
1.1	0.11	1.36
1.2	0.10	1.25
1.3	0.09	1.15
1.4	0.09	1.07
1.5	0.08	1.00
1.6	0.08	0.94
1.7	0.07	0.88
1.8	0.07	0.83
1.9	0.06	0.79
2	0.06	0.75
2.1	0.06	0.71
2.2	0.05	0.68
2.3	0.05	0.65
2.4	0.05	0.63
2.5	0.05	0.60
2.6	0.05	0.60
2.7	0.05	0.60
2.8	0.05	0.60



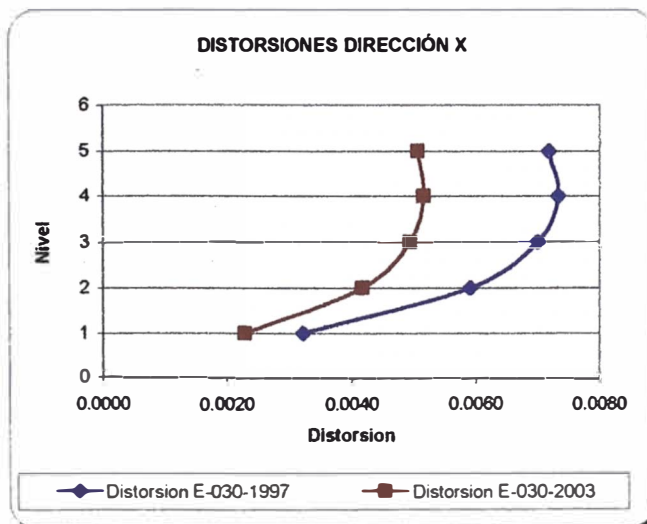
COMPARACION DE DESPLAZAMIENTOS Y DISTORSIONES DE MODELOS UTILIZADOS
 SEGÚN E-030/97 Y E-030/2003 DIRECCION X



Desplazamientos: E-030-97 R= 7.6 E-030-2003 R=6

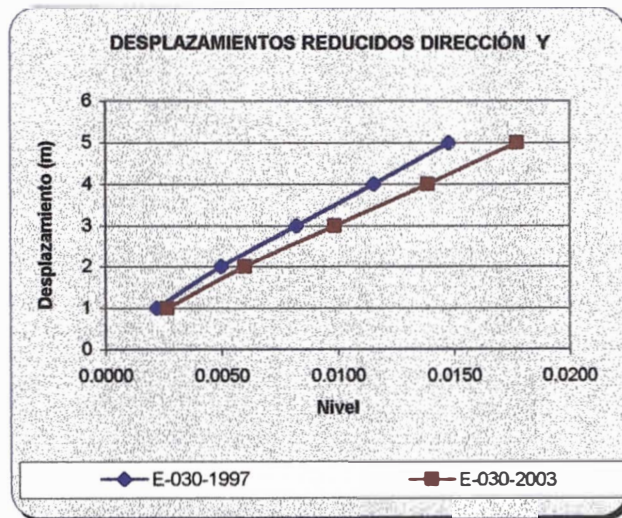


Desplazamientos reales: E-030-97: x R E-030-2003: x 3/4R

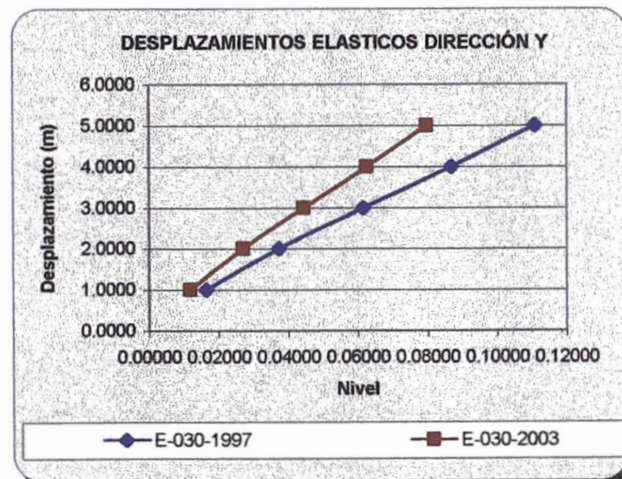


Comparación de distorsiones

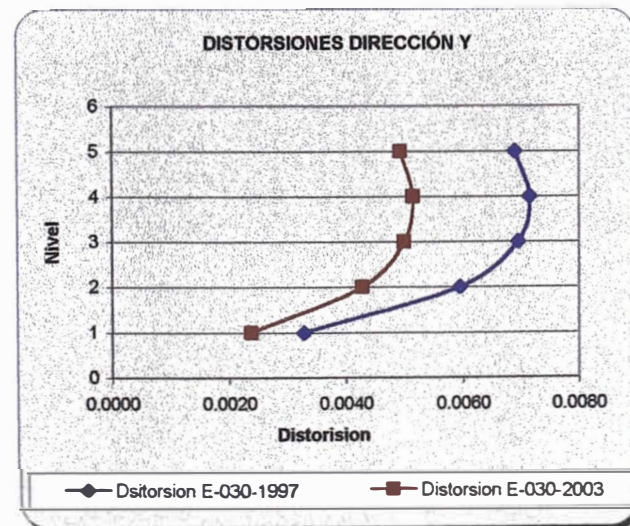
COMPARACION DE DESPLAZAMIENTOS Y DISTORSIONES DE MODELOS UTILIZADOS
 SEGÚN E-030/97 Y E-030/2003 DIRECCION Y



Desplazamientos: E-030-97 R= 7.5 E-030-2003 R=6



Desplazamientos reales: E-030-97: x R E-030-2003: x 3/4R



Comparación de distorsiones

**CONTROL DE DESPLAZAMIENTOS SEGÚN E-030 1997Y LA MODIFICACION E-030
 2003**

**SEGÚN E-030 1997
 PARAMETROS SISMICOS**

Z: 0.4 ZONA 1
 U: 1 USO OFICINAS
 S: 1.2 SUELO INTERMEDIO
 C: 2.5
 R: 7.5 ESTRUCTURA RIGIDA

DIRECCIÓN X

NIVEL	DESPLAZAMIENTO ANALISIS	DESPLAZAMIENTO ELASTICO	ALTURA	DISTORSION	MAX. PERMISIBLE
5	0.01495	0.11213	3.5	0.0072	0.007
4	0.01160	0.08700	3.5	0.0073	0.007
3	0.00818	0.06135	3.5	0.0070	0.007
2	0.00491	0.03683	3.5	0.0059	0.007
1	0.00215	0.01613	5	0.0032	0.007

DIRECCIÓN Y

NIVEL	DESPLAZAMIENTO ANALISIS	DESPLAZAMIENTO ELASTICO	ALTURA	DISTORSION	MAX. PERMISIBLE
5	0.01478	0.11085	3.5	0.0069	0.007
4	0.01156	0.08670	3.5	0.0072	0.007
3	0.00822	0.06165	3.5	0.0070	0.007
2	0.00497	0.03728	3.5	0.0060	0.007
1	0.00219	0.01643	5	0.0033	0.007

**SEGÚN E-030 2003
 PARAMETROS SISMICOS**

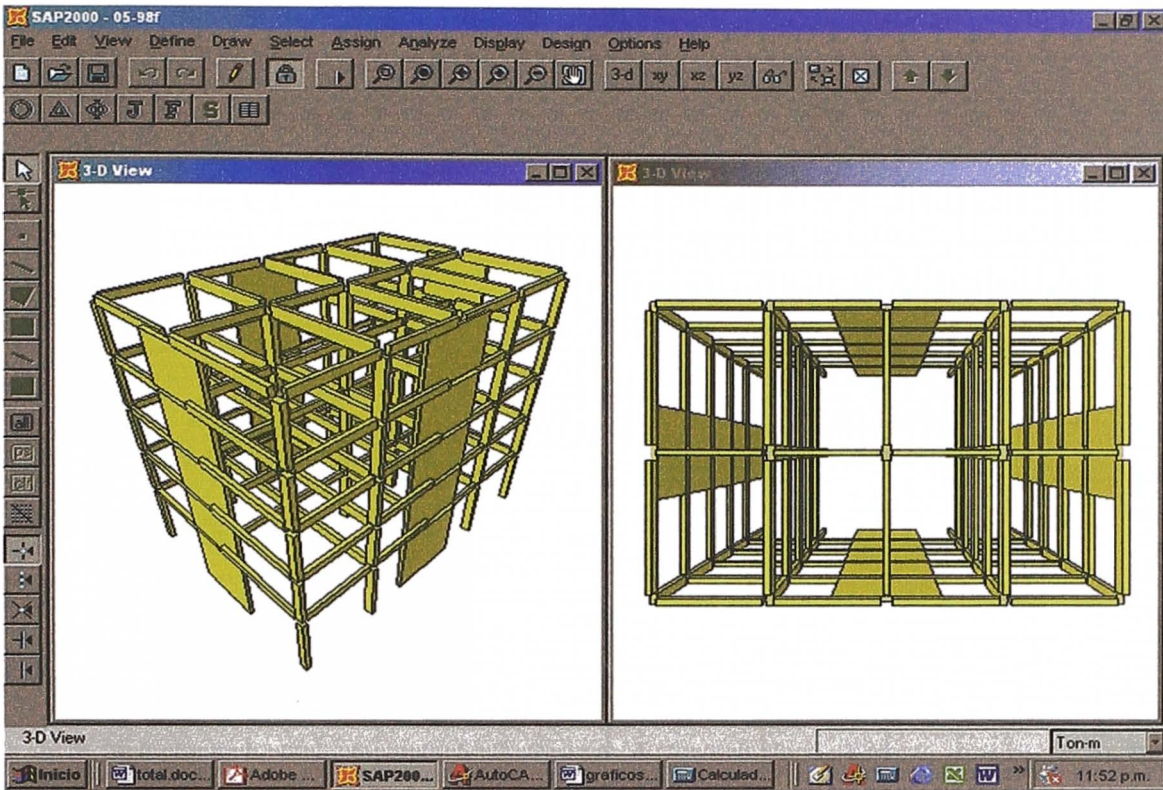
Z: 0.4 ZONA 1
 U: 1 USO OFICINAS
 S: 1 SUELO INTERMEDIO
 C: 2.5
 R: 6 ESTRUCTURA RIGIDA

DIRECCIÓN X

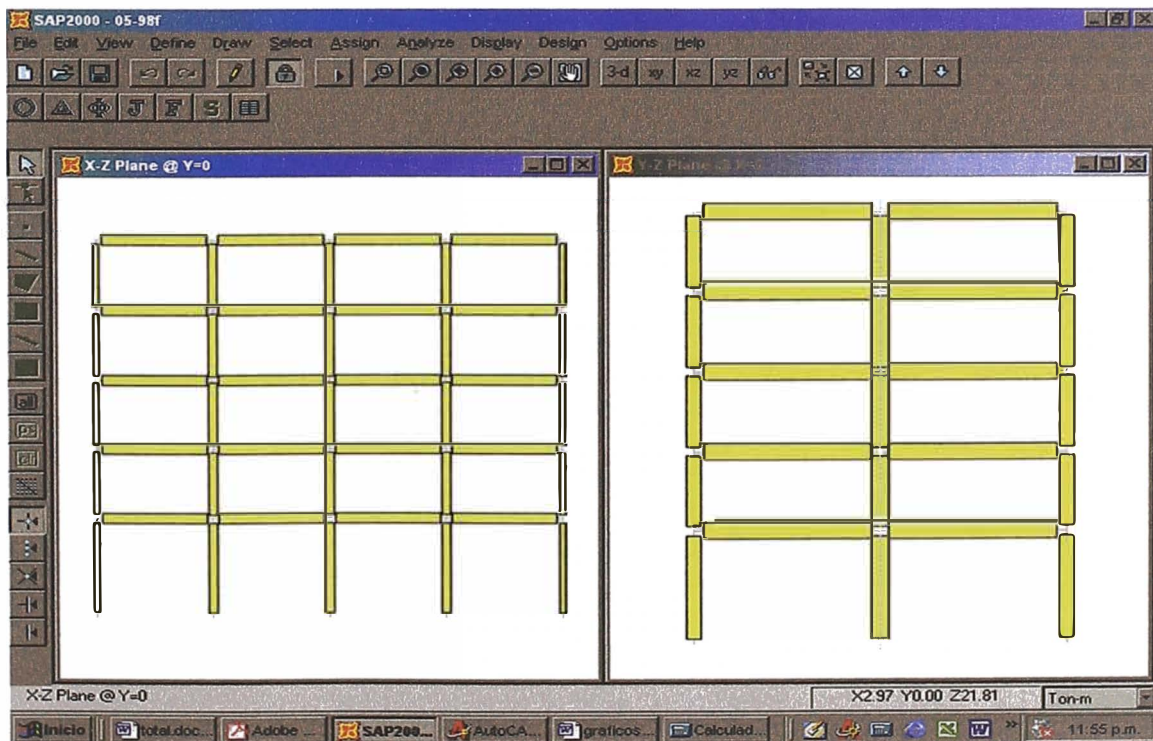
NIVEL	DESPLAZAMIENTO ANALISIS	DESPLAZAMIENTO ELASTICO	ALTURA	DISTORSION	MAX. PERMISIBLE
5	0.01760	0.07920	3.5	0.0051	0.007
4	0.01366	0.06147	3.5	0.0052	0.007
3	0.00964	0.04338	3.5	0.0050	0.007
2	0.00579	0.02606	3.5	0.0042	0.007
1	0.00254	0.01143	5	0.0023	0.007

DIRECCIÓN Y

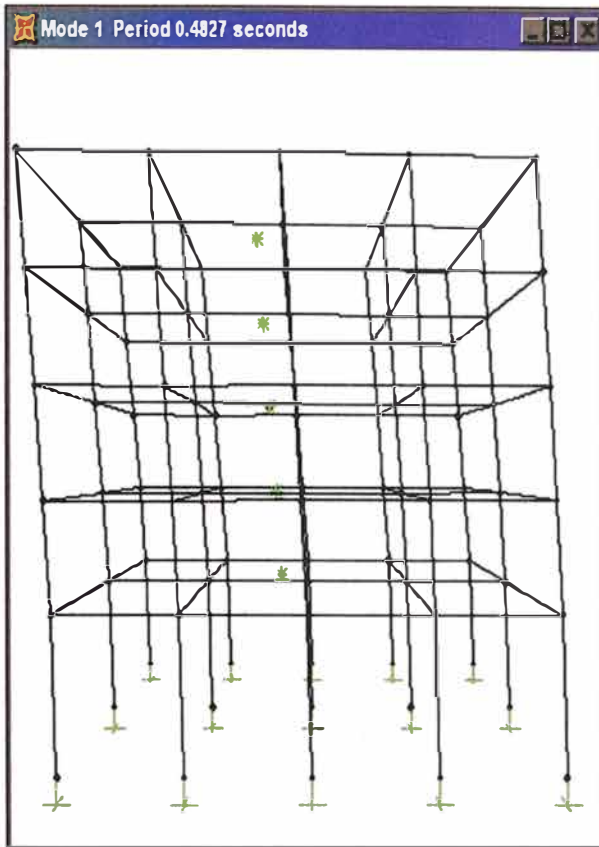
NIVEL	DESPLAZAMIENTO ANALISIS	DESPLAZAMIENTO ELASTICO	ALTURA	DISTORSION	MAX. PERMISIBLE
5	0.01772	0.07974	3.5	0.0049	0.007
4	0.01388	0.06246	3.5	0.0052	0.007
3	0.00987	0.04442	3.5	0.0050	0.007
2	0.00598	0.02691	3.5	0.0043	0.007
1	0.00264	0.01188	5	0.0024	0.007



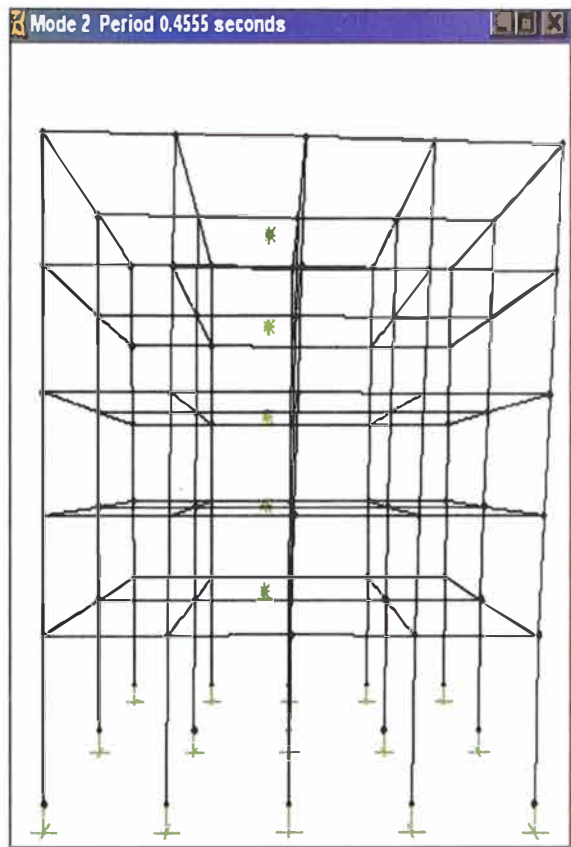
Elevación Principal Estructura



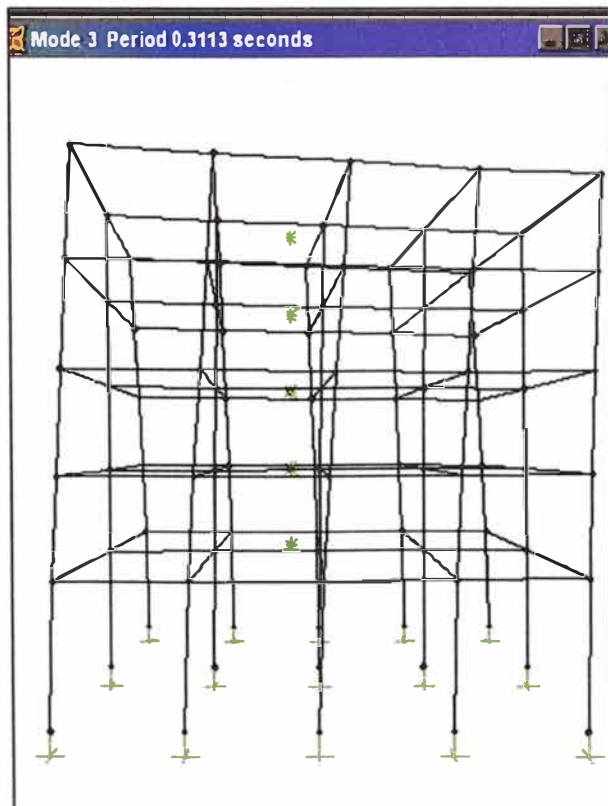
Elevación Pórticos Eje B y Eje 2



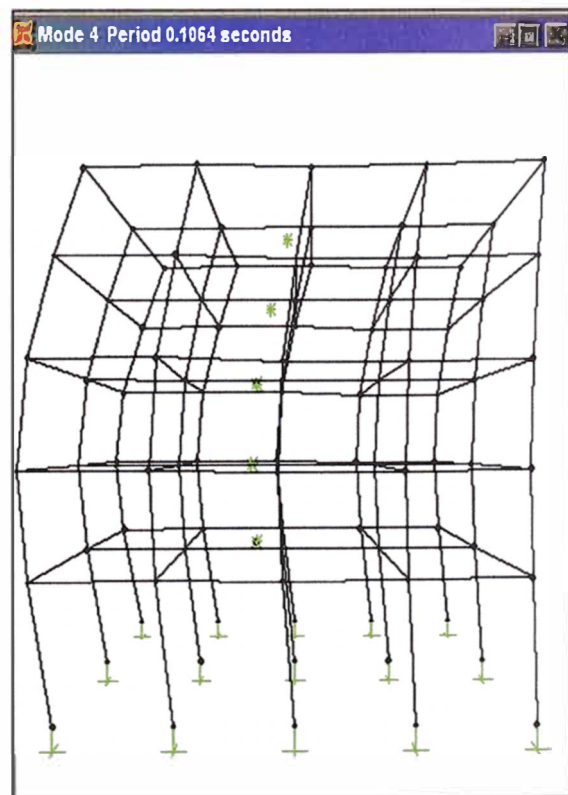
Forma de Modo 1



Forma de Modo 2



Forma de Modo 3



Forma de Modo 4

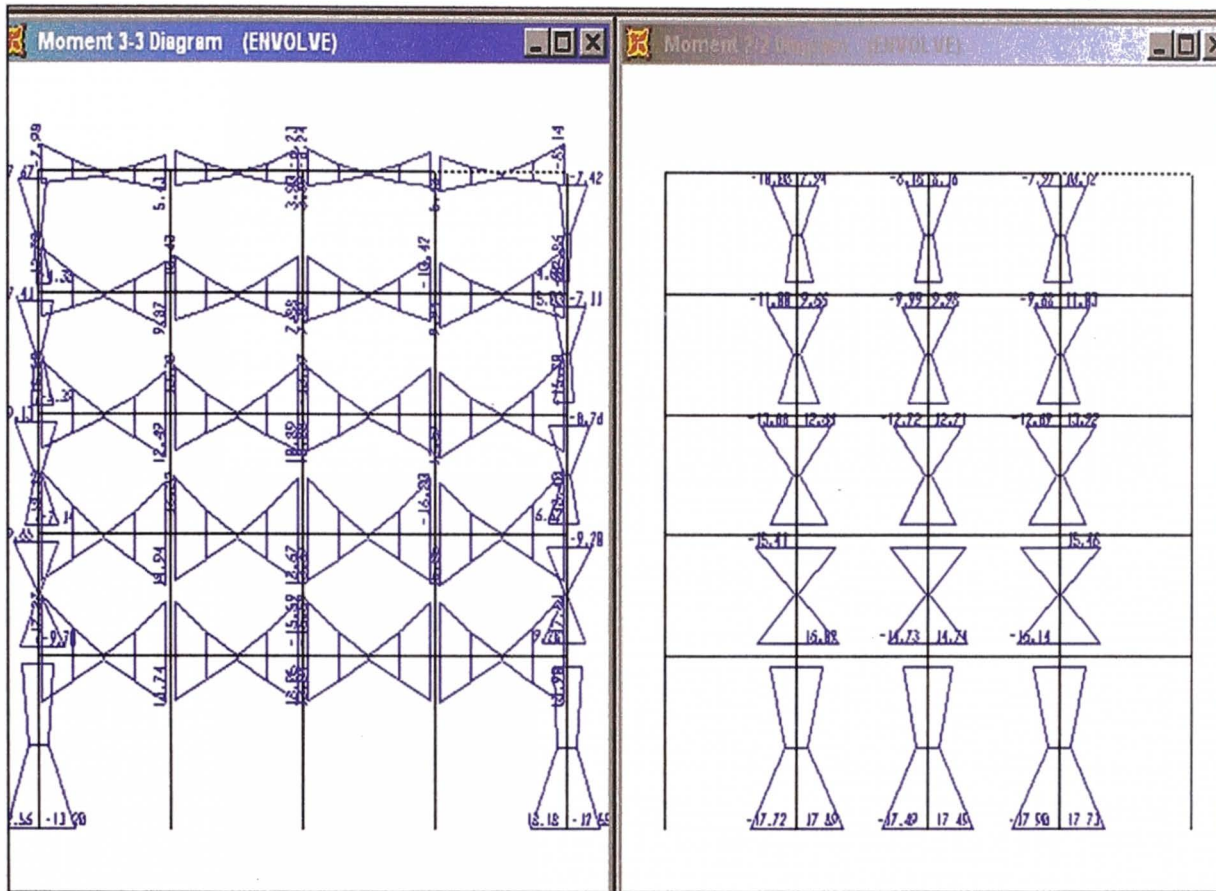


Diagrama de Momentos Pórtico eje B

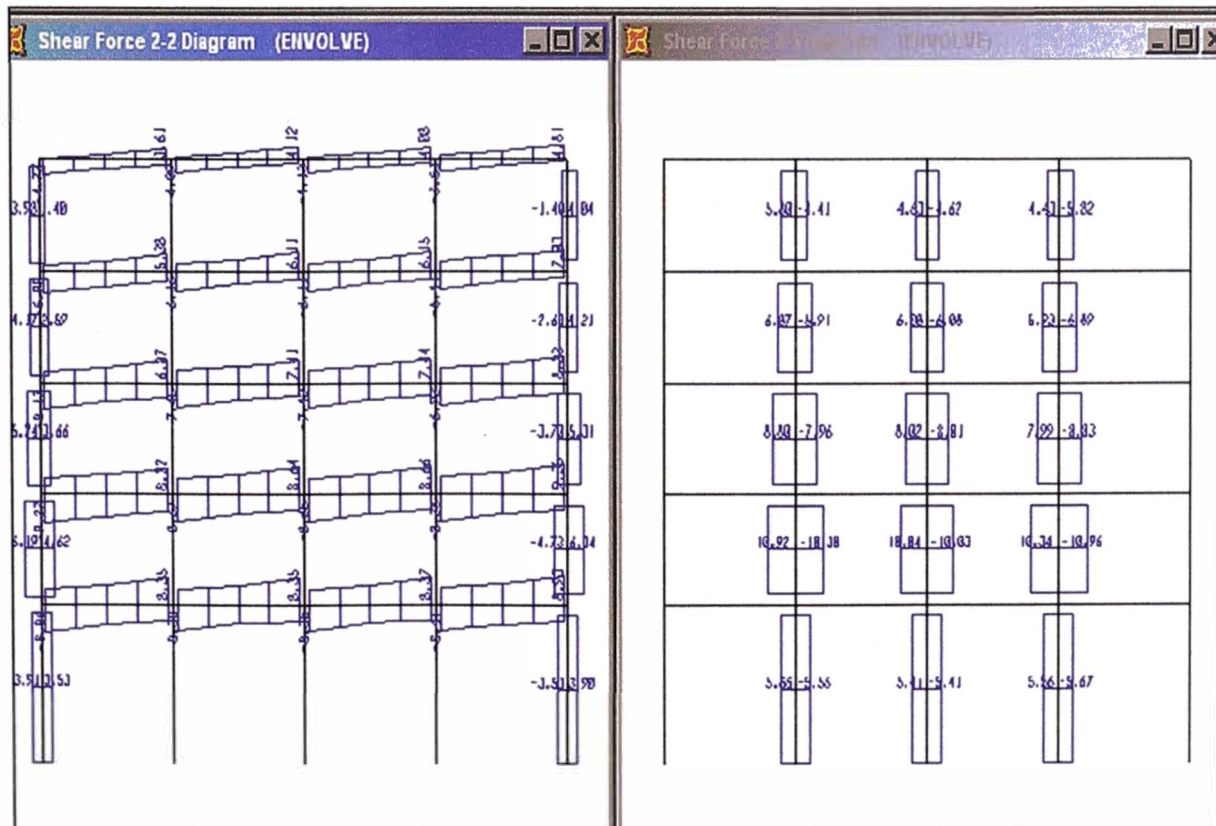


Diagrama de Fuerzas Cortantes Pórtico eje B

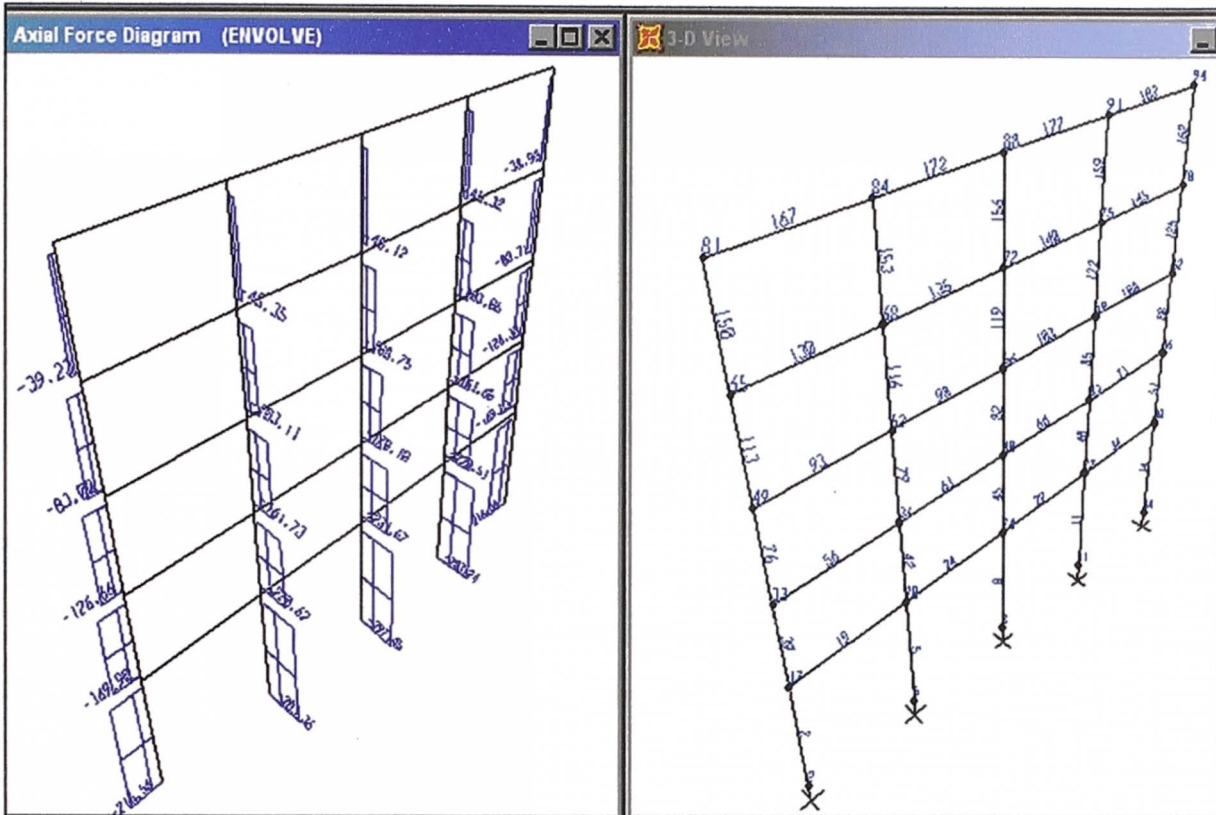
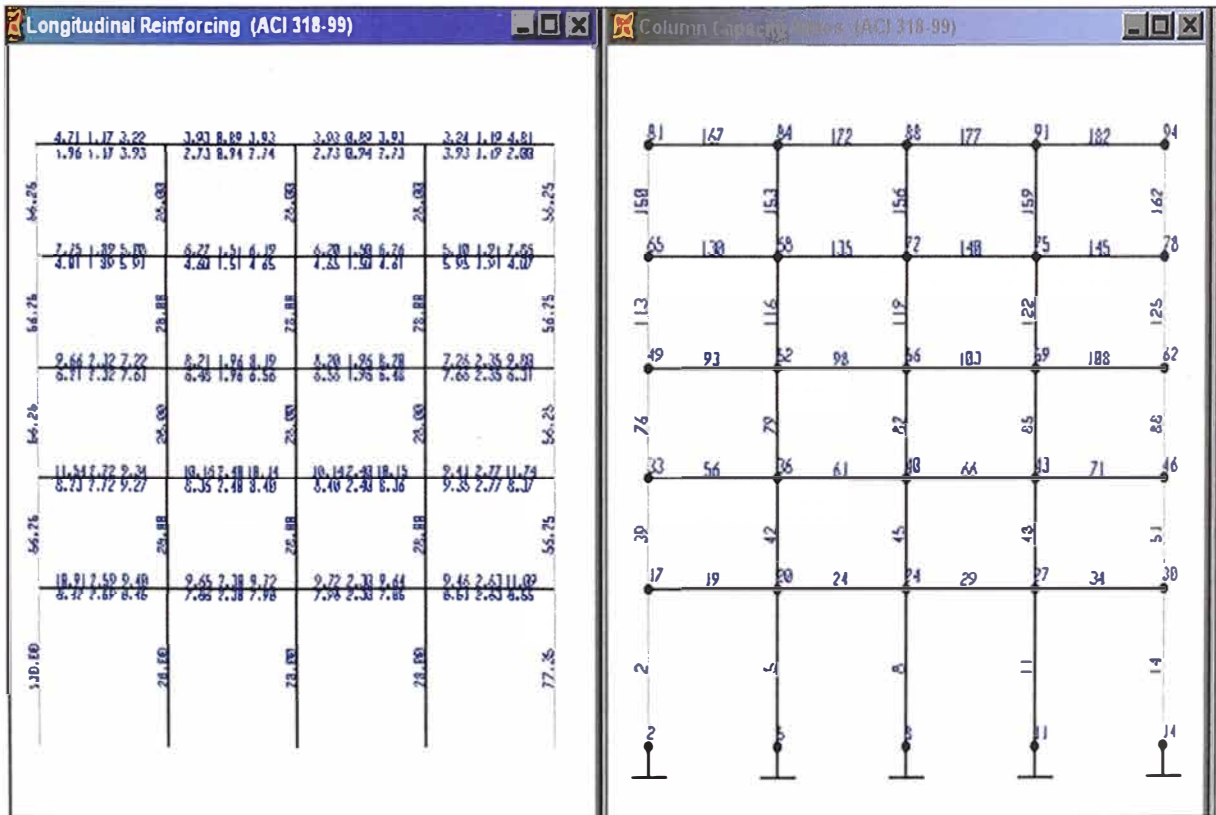


Diagrama de Fuerzas Axiales en Columnas Pórtico eje B



Diseño de Elementos Estructurales Pórtico eje B

METRADO DE CARGAS PARA DISEÑO DE LOSAS ALIGERADAS

APORTANTE	TIPOS DE CARGA	PISO TIPICO Kg/m ²	AZOTEA Kg/m ²
LOSA	D	300	300
TABIQUERIA	D	120	0
ACABADOS	D	120	120
S/C	L	250	150
W _D (Kg/m ²)	D	540	420
W _L (Kg/m ²)	L	250	150

LOSA TIPO :	W _D Kg/m ²	W _L Kg/m ²	Ancho de analisis (m)	# viguetas x ancho	w _d Kg/m	w _l Kg/m
LOSA PISOS TIPICOS	540	250	1	2.5	216	100
LOSA AZOTEA	420	150	1	2.5	168	60

Análisis de Vigas y Pórticos Simples

Edificio de Oficinas
Losa aligerada 4 Tramos $L=5.0$ m Típicos



PF versión 3 - HSF 1999

Luces y Alturas (m)										
Tramo	1	2	3	4	5	6	7	8	9	10
Altura arriba	[Diagram showing beam profile above supports]									
Luz	5.00	5.00	5.00	5.00						
Altura abajo	[Diagram showing beam profile below supports]									

Sección Transversal										
Tramo	1	2	3	4	5	6	7	8	9	10
Columna arriba	[Diagram showing column profile above beams]									
Viga	a20	a20	a20	a20						
Columna abajo	[Diagram showing column profile below beams]									

Condiciones Especiales											
Nudo	1	2	3	4	5	6	7	8	9	10	11
Código	0.30	0.30	0.30	0.30	0.30						

Indicar F o valor numérico (ancho) para apoyo fijo, R para rótula, E para empotramiento y A para la combinación de F y R

Análisis de Vigas y Pórticos Simples

PF versión 3 - HSF 1999

Edificio de Oficinas Losa aligerada 4 Tramos L=5.0 m Tipicos

TRAMO 1 (0.10 x 0.20)

Refuerzo de Flexión												
x	0.150	0.620	1.090	1.560	2.030	2.500	2.970	3.440	3.910	4.380	4.850	
M_U mín									-0.026	-0.333	-0.778	-1.525
M_U máx	0.172	0.626	0.951	1.148	1.217	1.156	0.968	0.650	0.204			
A_s sup									0.05	0.57	1.33	2.77
A_s inf	0.36	0.99	1.52	1.85	1.96	1.86	1.55	1.03	0.43			1.12
ρ												

Refuerzo de Corte												
x	0.150	0.620	1.090	1.560	2.030	2.500	2.970	3.440	3.910	4.380	4.850	
V_U mín					-0.110	-0.358	-0.632	-0.905	-1.179	-1.452	-1.726	
V_U máx	1.103	0.829	0.556	0.282	0.009							
s □ #3									8.5	8.5	8.5	

TRAMO 2

Refuerzo de Flexión											
x	0.150	0.620	1.090	1.560	2.030	2.500	2.970	3.440	3.910	4.380	4.850
M_U mín	-1.545	-0.873	-0.514	-0.286	-0.130	-0.047	-0.037	-0.100	-0.241	-0.526	-1.118
M_U máx			0.023	0.391	0.630	0.740	0.722	0.576	0.306		
A_s sup	2.81	1.52	0.85	0.57	0.27	0.10	0.08	0.21	0.51	0.87	2.00
A_s inf	1.17		0.05	0.61	1.00	1.18	1.15	0.91	0.57		0.22
ρ											

Refuerzo de Corte											
x	0.150	0.620	1.090	1.560	2.030	2.500	2.970	3.440	3.910	4.380	4.850
V_U mín						-0.029	-0.303	-0.576	-0.850	-1.123	-1.397
V_U máx	1.587	1.313	1.039	0.766	0.492	0.226	0.071				
s □ #3	8.5	8.5								8.5	8.5

Análisis de Vigas y Pórticos Simples

PF versión 3 - HSF 1999

Edificio de Oficinas Losa aligerada 4 Tramos L=5.0 m Tipicos

TRAMO 3

Refuerzo de Flexión											
x	0.150	0.620	1.090	1.560	2.030	2.500	2.970	3.440	3.910	4.380	4.850
M_U mín	-1.118	-0.526	-0.241	-0.100	-0.037	-0.047	-0.130	-0.286	-0.514	-0.873	-1.545
M_U máx			0.306	0.576	0.722	0.740	0.630	0.391	0.023		
A_s sup	2.00	0.87	0.51	0.21	0.08	0.10	0.27	0.57	0.85	1.52	2.81
A_s inf	0.22		0.57	0.91	1.15	1.18	1.00	0.61	0.05		1.17
ρ											

Refuerzo de Corte											
x	0.150	0.620	1.090	1.560	2.030	2.500	2.970	3.440	3.910	4.380	4.850
V_U mín					-0.071	-0.226	-0.492	-0.766	-1.039	-1.313	-1.587
V_U máx	1.397	1.123	0.850	0.576	0.303	0.029					
$s \square$ #3	8.5	8.5								8.5	8.5

TRAMO 4

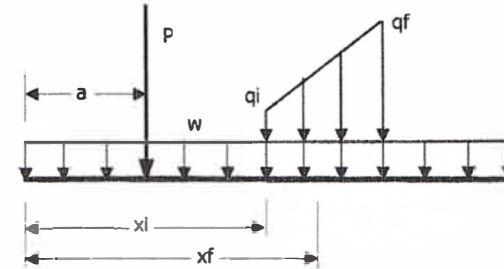
Refuerzo de Flexión											
x	0.150	0.620	1.090	1.560	2.030	2.500	2.970	3.440	3.910	4.380	4.850
M_U mín	-1.525	-0.778	-0.333	-0.026							
M_U máx			0.204	0.650	0.968	1.156	1.217	1.148	0.951	0.626	0.172
A_s sup	2.77	1.33	0.57	0.05							
A_s inf	1.12		0.43	1.03	1.55	1.86	1.96	1.85	1.52	0.99	0.36
ρ											

Refuerzo de Corte											
x	0.150	0.620	1.090	1.560	2.030	2.500	2.970	3.440	3.910	4.380	4.850
V_U mín							-0.009	-0.282	-0.556	-0.829	-1.103
V_U máx	1.726	1.452	1.179	0.905	0.632	0.358	0.110				
$s \square$ #3	8.5	8.5	8.5								

Análisis de Vigas y Pórticos Simples

Edificio de Oficinas Losa aligerada 4 Tramos L=5.0 m Tipicos

PF versión 3 - HSF 1999



Cargas Uniformemente Distribuidas

tramo	1	2	3	4	5	6	7	8	9	10
w_D (Vm)	0.220	0.220	0.220	0.220						
w_L (Vm)	0.140	0.140	0.140	0.140						

Los subíndices D y L denotan cargas permanentes y cargas eventuales, respectivamente.

Fuerzas Concentradas

tramo	1	2	3	4	5	6	7	8	9	10
a_1 (m)										
P_{1D} (t)										
P_{1L} (t)										
a_2 (m)										
P_{2D} (t)										
P_{2L} (t)										

Las posiciones de las cargas concentradas se refieren al eje a la izquierda del tramo. Los índices D y L denotan cargas permanentes y eventuales, respectivamente

Cargas Distribuidas Trapezoidales

tramo	1	2	3	4	5	6	7	8	9	10
x inicial (m)										
x final (m)										
q_D inicial (Vm)										
q_D final (Vm)										
q_L inicial (Vm)										
q_L final (Vm)										

Las abscisas inicial y final se refieren al eje a la izquierda del tramo. Los índices D y L denotan cargas permanentes y cargas eventuales, respectivamente

Análisis de Vigas y Pórticos Simples

Edificio de Oficinas
Losa aligerada 4 Tramos L= 5.0m Azotea



PF versión 3 - HSF 1999

Luces y Alturas (m)

	1	2	3	4	5	6	7	8	9	10
Tramo										
Altura arriba	[Diagrama de línea con marcas de altura]									
Luz	5.00	5.00	5.00	5.00						
Altura abajo	[Diagrama de línea con marcas de altura]									

Sección Transversal

	1	2	3	4	5	6	7	8	9	10
Tramo										
Columna arriba	[Diagrama de línea con marcas de columna]									
Viga	a25	a25	a25	a25						
Columna abajo	[Diagrama de línea con marcas de columna]									

Condiciones Especiales

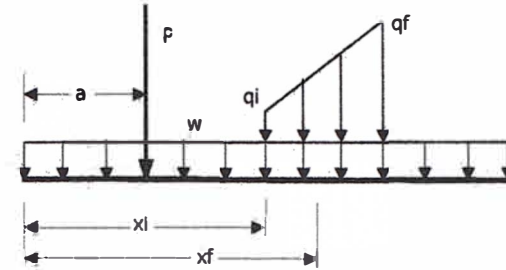
Nudo	1	2	3	4	5	6	7	8	9	10	11
Código	0.30	0.30	0.30	0.30	0.30						

Indicar F o valor numérico (ancho) para apoyo fijo, R para rótula, E para empotramiento y A para la combinación de F y R

Análisis de Vigas y Pórticos Simples

Edificio de Oficinas Losas aligerada 4 Tramos $L = 5.0m$ Azotea

PF versión 3 - HSF 1999



Cargas Uniformemente Distribuidas

tramo	1	2	3	4	5	6	7	8	9	10
w_D (t/m)	0.190	0.190	0.190	0.190						
w_L (t/m)	0.060	0.060	0.060	0.060						

Los subíndices D y L denotan cargas permanentes y cargas eventuales, respectivamente.

Fuerzas Concentradas

tramo	1	2	3	4	5	6	7	8	9	10
a_1 (m)										
P_{1D} (t)										
P_{1L} (t)										
a_2 (m)										
P_{2D} (t)										
P_{2L} (t)										

Las posiciones de las cargas concentradas se refieren al eje a la izquierda del tramo. Los índices D y L denotan cargas permanentes y eventuales, respectivamente

Cargas Distribuidas Trapezoidales

tramo	1	2	3	4	5	6	7	8	9	10
x inicial (m)										
final (m)										
q_D inicial (t/m)										
final (t/m)										
q_L inicial (t/m)										
final (t/m)										

Las abscisas inicial y final se refieren al eje a la izquierda del tramo. Los índices D y L denotan cargas permanentes y cargas eventuales, respectivamente

Análisis de Vigas y Pórticos Simples

PF versión 3 - HSF 1999

Edificio de Oficinas Losa aligerada 4 Tramos L= 5.0m Azotea

TRAMO 1 (0.10 x 0.25)

Refuerzo de Flexión												
x	0.150	0.620	1.090	1.560	2.030	2.500	2.970	3.440	3.910	4.380	4.850	
M _U mín										-0.162	-0.503	-1.005
M _U máx	0.113	0.412	0.623	0.748	0.785	0.736	0.600	0.378	0.068			
A _S sup										0.26	0.73	1.30
A _S inf	0.18	0.66	0.76	0.91	0.96	0.90	0.73	0.61	0.11			
ρ												

Refuerzo de Corte												
x	0.150	0.620	1.090	1.560	2.030	2.500	2.970	3.440	3.910	4.380	4.850	
V _U mín					-0.063	-0.237	-0.421	-0.606	-0.791	-0.975	-1.160	
V _U máx	0.727	0.542	0.357	0.173								
s □ #3												

TRAMO 2

Refuerzo de Flexión												
x	0.150	0.620	1.090	1.560	2.030	2.500	2.970	3.440	3.910	4.380	4.850	
M _U mín	-1.021	-0.576	-0.297	-0.106						-0.094	-0.312	-0.694
M _U máx				0.184	0.349	0.426	0.417	0.321	0.141			
A _S sup	1.32	0.73	0.49	0.17						0.15	0.51	0.88
A _S inf				0.30	0.56	0.69	0.67	0.52	0.23			
ρ												

Refuerzo de Corte												
x	0.150	0.620	1.090	1.560	2.030	2.500	2.970	3.440	3.910	4.380	4.850	
V _U mín							-0.166	-0.351	-0.536	-0.721	-0.905	
V _U máx	1.048	0.863	0.678	0.494	0.309	0.127						
s □ #3												

Análisis de Vigas y Pórticos Simples

PF versión 3 - HSF 1999

Edificio de Oficinas Losas aligerada 4 Tramos L= 5.0m Azotea

TRAMO 3

Refuerzo de Flexión												
x	0.150	0.620	1.090	1.560	2.030	2.500	2.970	3.440	3.910	4.380	4.850	
M _U min	-0.694	-0.312	-0.094						-0.106	-0.297	-0.576	-1.021
M _U máx			0.141	0.321	0.417	0.426	0.349	0.184				
A _s sup	0.88	0.51	0.15						0.17	0.49	0.73	1.32
A _s inf			0.23	0.52	0.67	0.69	0.56	0.30				
p												

Refuerzo de Corte											
x	0.150	0.620	1.090	1.560	2.030	2.500	2.970	3.440	3.910	4.380	4.850
V _U min						-0.127	-0.309	-0.494	-0.678	-0.863	-1.048
V _U máx	0.905	0.721	0.536	0.351	0.166						
s □ #3											

TRAMO 4

Refuerzo de Flexión											
x	0.150	0.620	1.090	1.560	2.030	2.500	2.970	3.440	3.910	4.380	4.850
M _U min	-1.005	-0.503	-0.162								
M _U máx			0.068	0.378	0.600	0.736	0.785	0.748	0.623	0.412	0.113
A _s sup	1.30	0.73	0.26								
A _s inf			0.11	0.61	0.73	0.90	0.96	0.91	0.76	0.66	0.18
p											

Refuerzo de Corte											
x	0.150	0.620	1.090	1.560	2.030	2.500	2.970	3.440	3.910	4.380	4.850
V _U min								-0.173	-0.357	-0.542	-0.727
V _U máx	1.160	0.975	0.791	0.606	0.421	0.237	0.063				
s □ #3											

DISEÑO DE VIGAS DE CONCRETO ARMADO A FLEXION.

ELEMENTO: 21

RESULTADOS DE ANALISIS

	b	h	Mi (izq)	Mij	Mj (-der)
(30x60)	0.30	0.70	42.26	5.36	44.45

$f_y = 4200$ $\rho_b = 0.02125$
 $f'_c = 210$ $\rho_{max} = 0.01594$
 $\beta_1 = 0.85$ $\rho_{min} = 0.00336$

(30x60)	Rec.	Estribo	M(izq)	capas	d	Ru	w	P	Pflexion	As(min)	As(max)	As	Ascomp	As _{flx}
Mi (izq)	0.04	3/8	42.260	1	0.64	343.9128	0.2074	0.0104	0.0104	6.45	30.60	19.97	no requiere	no requiere
	p'	p'max	d'	As1=0.9* ρ_{max} *b*d	a1	Mn1	Mn2	As2	f's	A's	As=As1+As2			
	---	---	--	--	--	--	--	--	--	--	19.97		----	

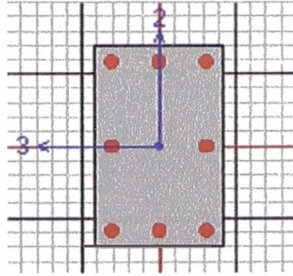
(30x60)	Rec.	Estribo	M(izq)	capas	d	Ru	w	P	Pflexion	As(min)	As(max)	As	Ascomp	As _{flx}
Mij	0.04	3/8	5.360	1	0.64	43.6198	0.0234	0.0012	0.00336	6.45	30.60	6.45	no requiere	no requiere
	p'	p'max	d'	As1=0.9* ρ_{max} *b*d	a1	Mn1	Mn2	As2	f's	A's	As=As1+As2			
	---	---	--	--	--	--	--	--	--	--	6.45		----	

(30x60)	Rec.	Estribo	M(der)	capas	d	Ru	w	P	Pflexion	As(min)	As(max)	As	Ascomp	As _{flx}
Mj (-der)	0.04	3/8	44.450	1	0.64	361.7350	0.2200	0.0110	0.011	6.45	30.60	21.12	no requiere	no requiere
	p'	p'max	d'	As1=0.9* ρ_{max} *b*d	a1	Mn1	Mn2	As2	f's	A's	As=As1+As2			
	---	---	--	--	--	--	--	--	--	--	21.12		----	

Curva de Interaccion columna C1

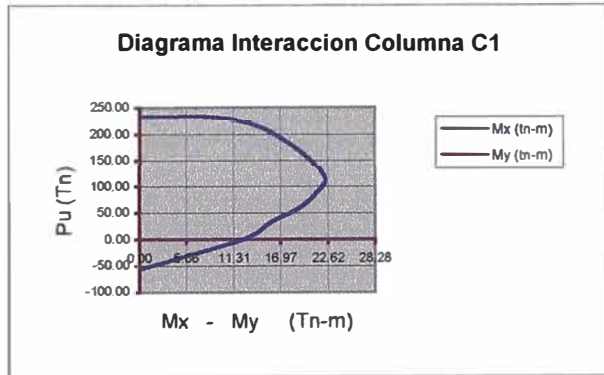
SAP2000 v7.40 File: 05-98F25RE Ton-m Units
 02/12/2003 10:00:00 p.m.

SECTION	C30X50
MATERIAL	C280
DEPTH	0.5
WIDTH	0.3
PATTERN	RR-3-3
COVER	4.00E-02
REBAR %	1



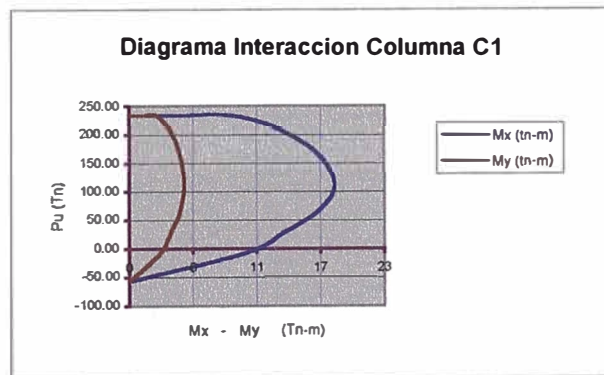
CURVE 1

Punto	P	MX	MY
1	233.20	0.00	0.00
2	233.20	8.83	0.00
3	217.80	13.98	0.00
4	186.76	17.69	0.00
5	152.85	20.45	0.00
6	115.64	22.29	0.00
7	89.41	21.33	0.00
8	60.11	19.29	0.00
9	33.10	15.92	0.00
10	1.40	12.60	0.00
11	-56.70	0.00	0.00



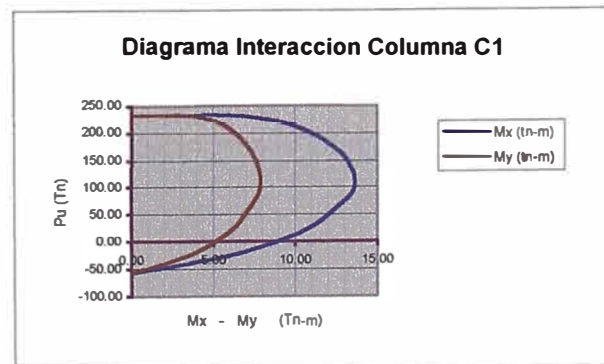
CURVE 2

Punto	P	MX	MY
1	233.20	0.00	0.00
2	233.20	4.36	1.17
3	233.20	9.12	2.44
4	208.55	13.48	3.61
5	162.07	16.97	4.55
6	108.77	18.20	4.88
7	64.83	16.69	4.47
8	30.06	13.83	3.71
9	-1.11	11.32	3.03
10	-23.92	7.14	1.91
11	-56.70	0.00	0.00



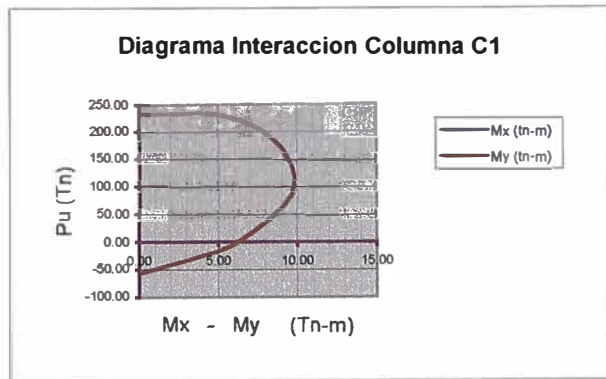
CURVE 3

Punto	P	MX	MY
1	233.20	0.00	0.00
2	233.20	2.77	1.60
3	233.20	6.14	3.55
4	215.21	9.85	5.69
5	165.80	12.73	7.35
6	102.53	13.63	7.87
7	55.46	12.21	7.05
8	18.31	10.41	6.01
9	-18.79	6.94	4.01
10	-44.92	2.48	1.43
11	-56.70	0.00	0.00



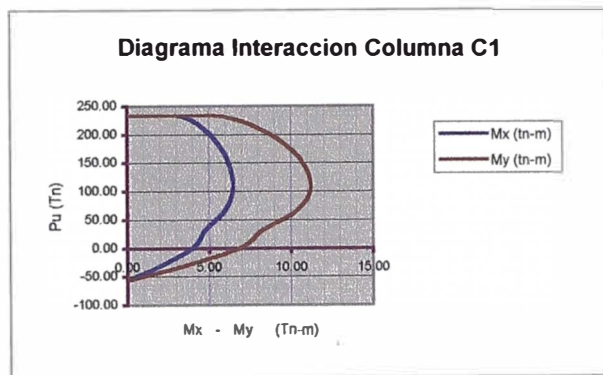
CURVE 4

Punto	P	MX	MY
1	233.20	0.00	0.00
2	233.20	2.21	2.21
3	233.20	4.82	4.82
4	209.58	7.36	7.36
5	161.68	9.24	9.24
6	104.39	9.82	9.82
7	59.02	8.89	8.89
8	23.41	7.44	7.44
9	-10.28	5.55	5.55
10	-38.25	2.41	2.41
11	-56.70	0.00	0.00



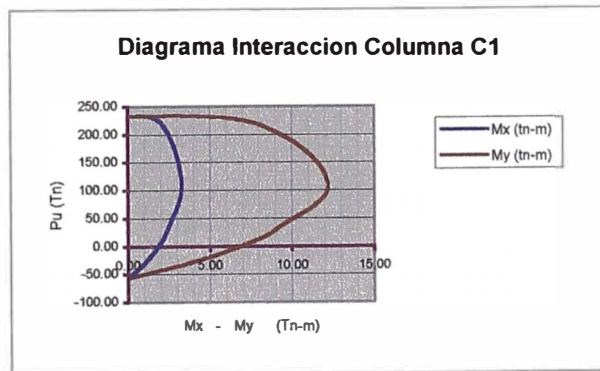
CURVE 5

Punto	P	MX	MY
1	233.20	0.00	0.00
2	233.20	1.86	3.21
3	230.77	3.52	6.09
4	201.49	5.02	8.70
5	157.36	6.11	10.58
6	106.22	6.47	11.21
7	65.54	5.96	10.32
8	31.38	4.74	8.21
9	1.48	4.04	6.99
10	-31.03	2.00	3.46
11	-56.70	0.00	0.00



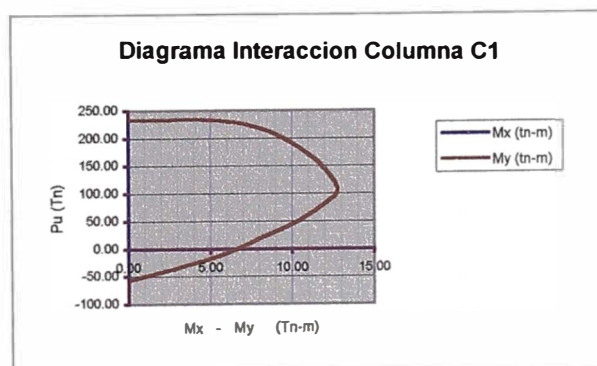
CURVE 6

Punto	P	MX	MY
1	233.20	0.00	0.00
2	233.20	1.14	4.26
3	223.42	1.98	7.37
4	192.69	2.61	9.76
5	152.70	3.07	11.45
6	107.41	3.26	12.18
7	73.57	3.05	11.39
8	41.54	2.58	9.64
9	13.21	2.15	8.01
10	-23.81	1.19	4.42
11	-56.70	0.00	0.00



CURVE 7

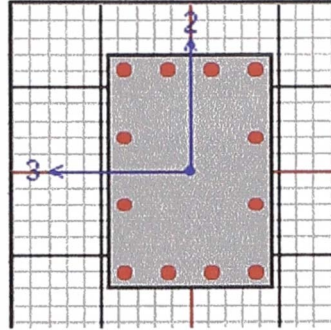
Punto	P	MX	MY
1	233.20	0.00	0.00
2	233.20	0.00	5.12
3	216.07	0.00	8.23
4	183.46	0.00	10.40
5	147.70	0.00	11.90
6	108.02	0.00	12.76
7	82.64	0.00	12.03
8	51.70	0.00	10.47
9	24.95	0.00	8.50
10	-16.58	0.00	5.17
11	-56.70	0.00	0.00



Curva de Interaccion columna C2

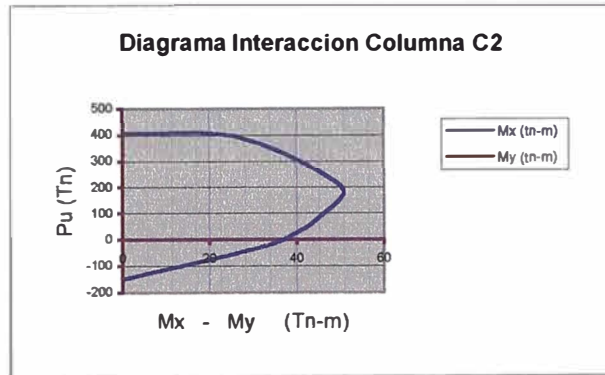
SAP2000 v7.40 File: 05-98F25RE Ton-m Units
 02/12/2003 10:00:00 p.m.

SECTION	C40X60
MATERIAL	C280
DEPTH	0.60
WIDTH	0.40
PATTERN	RR-3-4
COVER	0.04
REBAR %	1.64



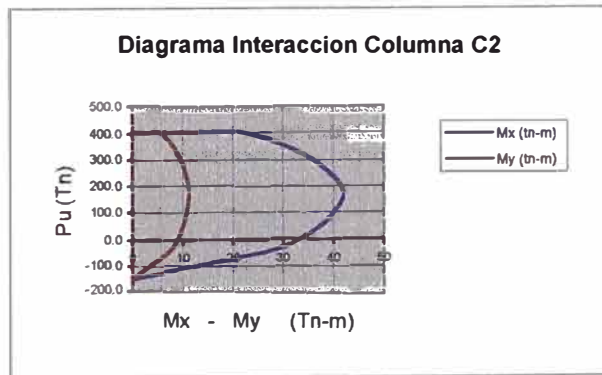
CURVE 1

Punto	P	MX	MY
1	407.38	0.00	0.00
2	407.38	20.43	0.00
3	374.97	30.37	0.00
4	319.11	38.75	0.00
5	258.27	45.32	0.00
6	190.21	50.59	0.00
7	139.88	49.18	0.00
8	89.33	45.33	0.00
9	38.72	41.15	0.00
10	-25.09	32.69	0.00
11	-149.09	0.00	0.00



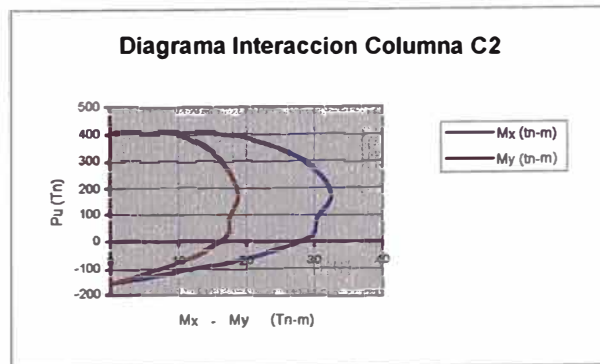
CURVE 2

Punto	P	MX	MY
1	407.38	0.00	0.00
2	407.38	11.30	3.03
3	404.20	21.15	5.67
4	354.80	30.28	8.11
5	278.67	37.61	10.08
6	186.54	41.82	11.21
7	104.42	40.23	10.78
8	38.15	36.29	9.72
9	-24.57	30.58	8.19
10	-75.04	19.59	5.25
11	-149.09	0.00	0.00



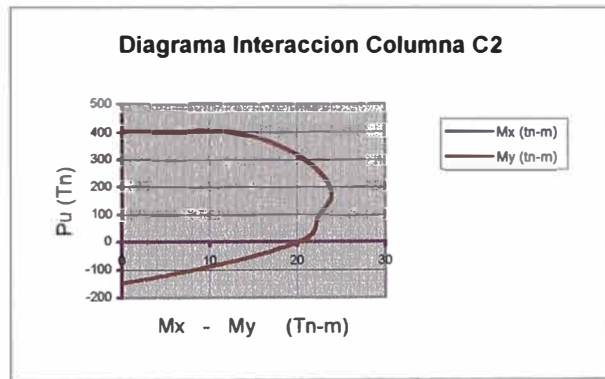
CURVE 3

Punto	P	MX	MY
1	407.38	0.00	0.00
2	407.38	7.52	4.34
3	407.38	14.66	8.46
4	368.06	22.69	13.10
5	285.83	29.30	16.92
6	179.17	32.43	18.72
7	89.93	30.34	17.52
8	15.06	29.17	16.84
9	-62.96	19.43	11.22
10	-119.84	7.72	4.46
11	-149.09	0.00	0.00



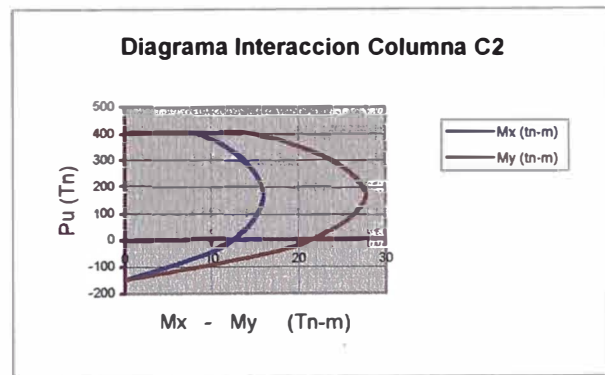
CURVE 4

Punto	P	MX	MY
1	407.38	0.00	0.00
2	407.38	5.75	5.75
3	407.24	11.25	11.25
4	363.89	16.85	16.85
5	281.48	21.67	21.67
6	180.47	23.92	23.92
7	92.01	22.36	22.36
8	19.51	21.30	21.30
9	-51.62	15.07	15.07
10	-109.05	6.83	6.83
11	-149.09	0.00	0.00



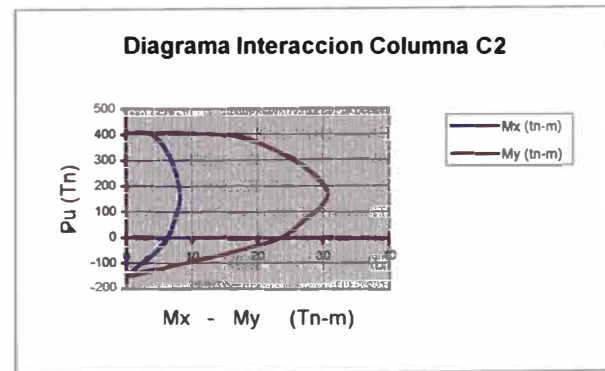
CURVE 5

Punto	P	MX	MY
1	407.38	0.00	0.00
2	407.38	4.53	7.84
3	405.73	8.23	14.26
4	350.01	11.80	20.43
5	274.09	14.52	25.15
6	182.59	16.00	27.71
7	103.15	15.32	26.54
8	37.08	13.76	23.84
9	-27.52	11.23	19.45
10	-89.71	6.00	10.40
11	-149.09	0.00	0.00



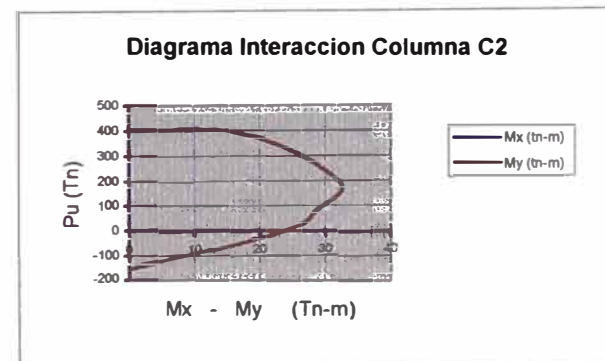
CURVE 6

Punto	P	MX	MY
1	407.38	0.00	0.00
2	407.38	2.86	10.69
3	388.56	4.73	17.66
4	334.11	6.22	23.20
5	264.90	7.41	27.65
6	183.14	8.19	30.55
7	116.54	7.90	29.50
8	59.27	7.14	26.65
9	-1.23	6.28	23.43
10	-70.37	3.72	13.87
11	-149.09	0.00	0.00



CURVE 7

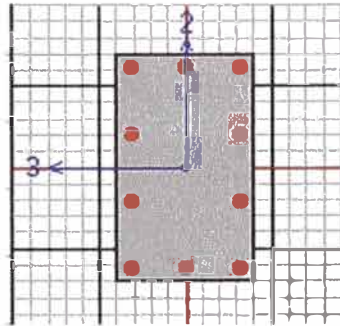
Punto	P	MX	MY
1	407.38	0.00	0.00
2	407.38	0.00	13.08
3	371.39	0.00	20.09
4	315.94	0.00	25.21
5	252.89	0.00	29.35
6	181.61	0.00	32.53
7	132.15	0.00	31.39
8	83.21	0.00	28.67
9	25.05	0.00	26.06
10	-51.02	0.00	16.71
11	-149.09	0.00	0.00



Curva de Interaccion columna C3

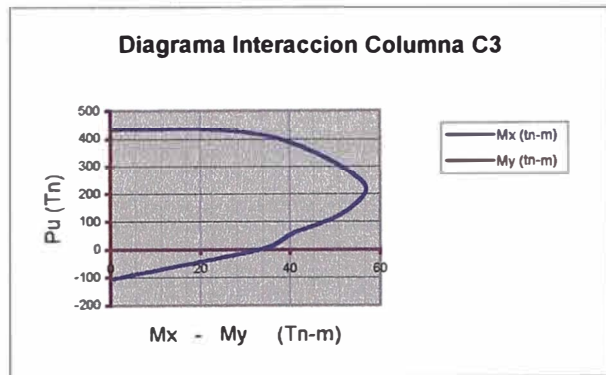
SAP2000 v7.40 File: 05-98F25RE Ton-m Units
02/12/2003 10:00:00 p.m.

SECTION C40X70
MATERIAL C280
DEPTH 0.7
WIDTH 0.4
PATTERN RR-3-4
COVER 4.00E-02
REBAR % 1



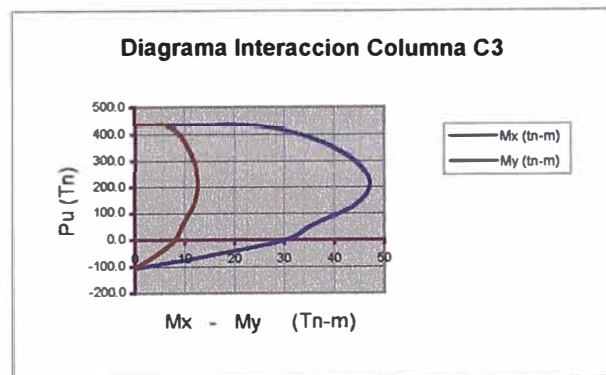
CURVE 1

Punto	P	MX	MY
1	435.31	0.00	0.00
2	435.31	22.52	0.00
3	411.62	35.25	0.00
4	353.11	45.25	0.00
5	291.15	52.32	0.00
6	224.38	56.81	0.00
7	169.33	54.89	0.00
8	113.92	49.73	0.00
9	56.99	40.29	0.00
10	3.67	33.94	0.00
11	-105.84	0.00	0.00



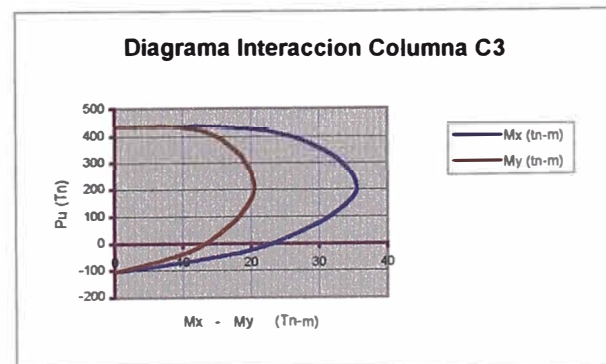
CURVE 2

Punto	P	MX	MY
1	435.31	0.00	0.00
2	435.31	11.28	3.02
3	435.31	22.98	6.16
4	393.99	34.23	9.17
5	311.54	43.34	11.61
6	215.58	47.17	12.64
7	131.44	44.07	11.81
8	59.20	35.79	9.59
9	3.30	30.51	8.17
10	-45.52	18.88	5.06
11	-105.84	0.00	0.00



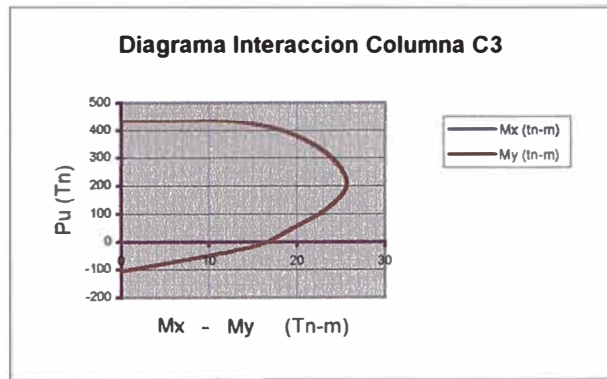
CURVE 3

Punto	P	MX	MY
1	435.31	0.00	0.00
2	435.31	7.11	4.10
3	435.31	15.43	8.91
4	407.71	24.88	14.36
5	320.24	32.48	18.75
6	206.54	35.48	20.48
7	114.15	32.31	18.65
8	40.99	27.05	15.62
9	-27.60	19.63	11.33
10	-80.25	7.50	4.33
11	-105.84	0.00	0.00



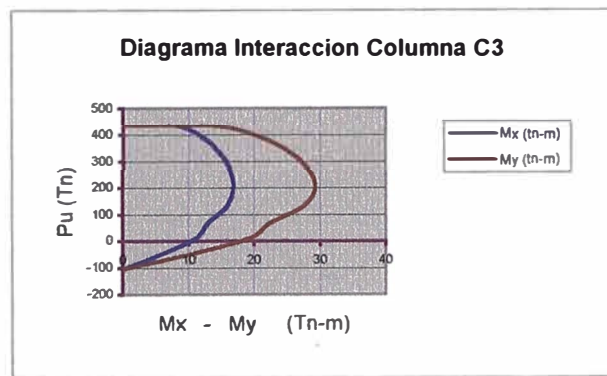
CURVE 4

Punto	P	MX	MY
1	435.31	0.00	0.00
2	435.31	5.68	5.68
3	435.31	12.16	12.16
4	397.46	18.57	18.57
5	312.41	23.59	23.59
6	209.16	25.66	25.66
7	120.51	23.53	23.53
8	50.96	19.59	19.59
9	-9.79	15.63	15.63
10	-61.62	7.75	7.75
11	-105.84	0.00	0.00



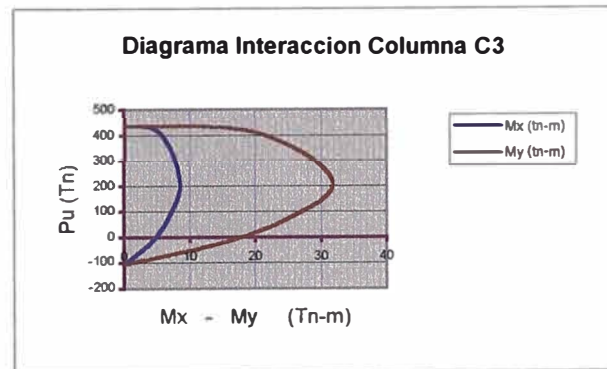
CURVE 5

Punto	P	MX	MY
1	435.31	0.00	0.00
2	435.31	4.72	8.17
3	430.83	8.95	15.49
4	382.18	12.70	22.00
5	303.26	15.64	27.08
6	211.36	16.93	29.32
7	132.74	15.88	27.51
8	68.39	12.95	22.44
9	13.04	11.20	19.40
10	-43.62	6.47	11.21
11	-105.84	0.00	0.00



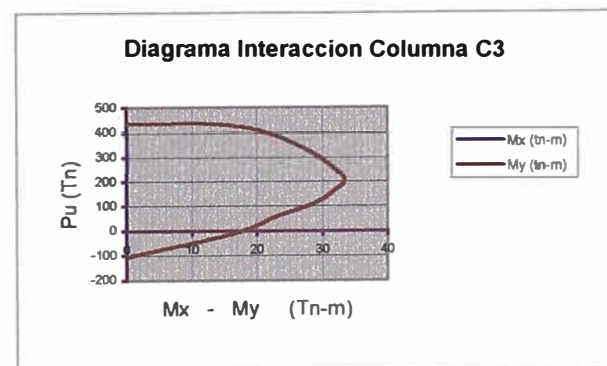
CURVE 6

Punto	P	MX	MY
1	435.31	0.00	0.00
2	435.31	2.94	10.96
3	417.78	5.04	18.80
4	364.66	6.64	24.80
5	292.88	7.88	29.40
6	211.81	8.53	31.84
7	146.97	8.09	30.19
8	89.88	7.04	26.29
9	35.95	5.86	21.88
10	-25.62	3.86	14.42
11	-105.84	0.00	0.00



CURVE 7

Punto	P	MX	MY
1	435.31	0.00	0.00
2	435.31	0.00	13.27
3	404.73	0.00	21.04
4	345.86	0.00	26.59
5	281.34	0.00	30.68
6	210.29	0.00	33.36
7	163.29	0.00	31.81
8	111.61	0.00	28.72
9	58.86	0.00	22.90
10	-7.62	0.00	16.91
11	-105.84	0.00	0.00



**DISEÑO DE MUROS DE CONCRETO ARMADO
PL-1 25 x 475**

$L_w =$	4.75 m	$f'_c =$	280 kg/cm ²
$t =$	0.25 m	$f'_y =$	4200 kg/cm ²
$I =$	2.233 m ⁴	$0.2 * f'_c =$	56 kg/cm ²
$P_U =$	265.35 tn		
$M_U =$	1160.97 tn-m		
$V_u =$	111.61 tn		

VERIFICACION DE ELEMENTOS DE CONFINAMIENTO

$A_g =$ 1.19 m²
 $f'_c =$ 1458 tn/m² = 146 kg/cm² $> 0.2 * f'_c$, Necesita confinamiento en extremos

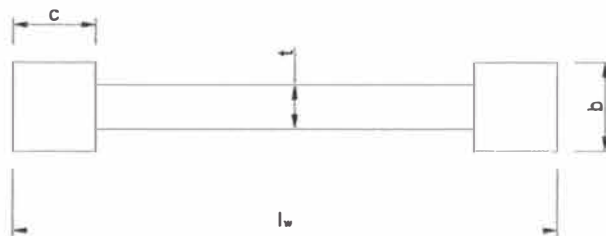
Dimensiones columna de confinamiento

$c =$ 1.00 m
 $b =$ 0.25 m
 $A_g =$ 2500 cm²

Fuerzas en columna de confinamiento

$P_{umax} =$ 377.09 tn
 Varilla #: 8
 #: 5
 $A_s =$ 25.3 cm²
 $r_t =$ 0.0101 > 0.01
 < 0.06

$P_n max =$ 389.38 tn $> P_{umax}$, Cumple la Compresión!
 $A conf. =$ 1564 cm²



$$P_{n_{req}} = 0.80 * (0.85 f'_c (A_g - A_s) + A_s * f_y)$$

$$P_{u_{req}} = \phi * P_{n_{req}} = 0.7 * P_{n_{req}}$$

Estribos:

DIRECCIÓN DE c	
Varilla #:	3
s (@):	10 cm
hc =	91.0 cm
Ash1 =	10.9 cm ² ***
Ash2 =	5.5 cm ²
#: :	3
Ash secc.=	2.14 cm ²

DIRECCIÓN DE b	
Varilla #:	3
s (@):	10 cm
hc =	16.0 cm
Ash1 =	1.9 cm ² ***
Ash2 =	1.0 cm ²
#: :	5
Ash secc.=	3.56 cm ²

*** No considerar si se asegura la resistencia de diseño requerida para la seccion

REQUERIMIENTOS POR CORTE EN PLACA

$$V_{TBX} = 2.6 \sqrt{f'_c} * l * t$$

$$V_c = 0.85 \sqrt{f'_c} * l * d + \frac{N_u d}{4 * l}$$

$$V_s = \frac{V_u}{\phi} - V_c$$

$$V_{c2} = \left[0.15 \sqrt{f'_c} + \frac{l_w (0.3 \sqrt{f'_c} + \frac{0.2 N_u}{l_w t})}{\frac{M_u}{V_u} - \frac{l_w}{2}} \right] t d$$

$V_{max} =$ 413.31 tn
 $V_{c1} =$ 188.19 tn
 $V_{c2} =$ 77.19 tn
 $V_c =$ 77.19 tn
 $V_s =$ 82.25 tn

$V_{c1} tracc =$ 115.83 tn

Necesita Vs....!!

Ref Hor. #: 3
 1 ó 2 Capas? 2
 s = 28 cm

\emptyset #3 @ 0.28 en 2 capas
 $r =$ 0.00206 < 0.0025 , Usar Min...

05/02/03 PCACOL(tm)V2.30 Proprietary Software of PORTLAND CEMENT ASSN. Page2
 12:48:46 Licensed to: EDINCO - LIMA, PERU

General Information:

=====

File Name: D:\MISDOC~1\ALEX\TITU\475X25X.COL
 Project: TITULACION Code: ACI 318-89
 Column: PLACA X Units: SI Metric
 Engineer: RICARDO Date: 07/12/00 Time: 12:50:37
 Run Option: Investigation Short (nonslender) column
 Run Axis: Biaxial Column Type: User-defined

Material Properties:

=====

f'c = 28 MPa fy = 420 MPa
 Ec = 26752.5 MPa Es = 200000 MPa
 fc = 23.8 MPa erup = 0 mm/mm
 eu = 0.003 mm/mm
 Stress Profile: Block Beta1 = 0.846954

Geometry:

=====

Rectangular: Width = 4750 mm Depth = 250 mm

Gross section area, Ag = 1.1875e+006 mm²
 Ix = 6.1849e+009 mm⁴ Xo = 0 mm
 Iy = 2.23275e+012 mm⁴ Yo = 0 mm

Reinforcement:

=====

Rebar Database: User-defined

Size	Diam	Area	Size	Diam	Area	Size	Diam	Area
3	10	71	4	13	127	5	16	198
6	19	285	8	25	510			

Confinement: Tied; phi(c) = 0.7, phi(b) = 0.9, a = 0.8
 N-3 ties with N-5 bars, N-3 with larger bars.

Pattern: Irregular

Total steel area, As = 11970 mm² at 1.01%

Area (mm ²)	X-Loc (mm)	Y-Loc (mm)	Area (mm ²)	X-Loc (mm)	Y-Loc (mm)	Area (mm ²)	X-Loc (mm)	Y-Loc (mm)
285	2235	85	285	2335	85	285	2335	0
285	-2335	0	285	-2335	85	285	-2335	-85
285	2335	-85	285	-2235	85	285	-2235	-85
285	2235	-85	285	2135	85	285	-2135	85
285	-2135	-85	285	2135	-85	285	2035	85
285	-2035	85	285	-2035	-85	285	2035	-85
285	1935	85	285	-1935	85	285	-1935	-85
285	1935	-85	285	1835	85	285	-1835	85
285	-1835	-85	285	1835	-85	285	1735	85
285	-1735	85	285	-1735	-85	285	1735	-85
285	1635	85	285	-1635	85	285	-1635	-85
285	1635	-85	285	1535	85	285	-1535	85
285	-1535	-85	285	1535	-85	285	1435	85
285	-1435	85	285	-1435	-85	285	1435	-85

05/02/03 PCACOL(tm)V2.30 Proprietary Software of PORTLAND CEMENT ASSN. Page3
 12:48:46 Licensed to: EDINCO - LIMA, PERU

Pt.	Applied Loads			Computed Strength			Computed/ Applied Ray length
	P (kN)	Mx (kN-m)	My (kN-m)	P (kN)	Mx (kN-m)	My (kN-m)	
1	1898	0	11607	1959	-0	12076	1.040
2	2654	0	0	18483	-0	0	6.965

Program completed as requested!

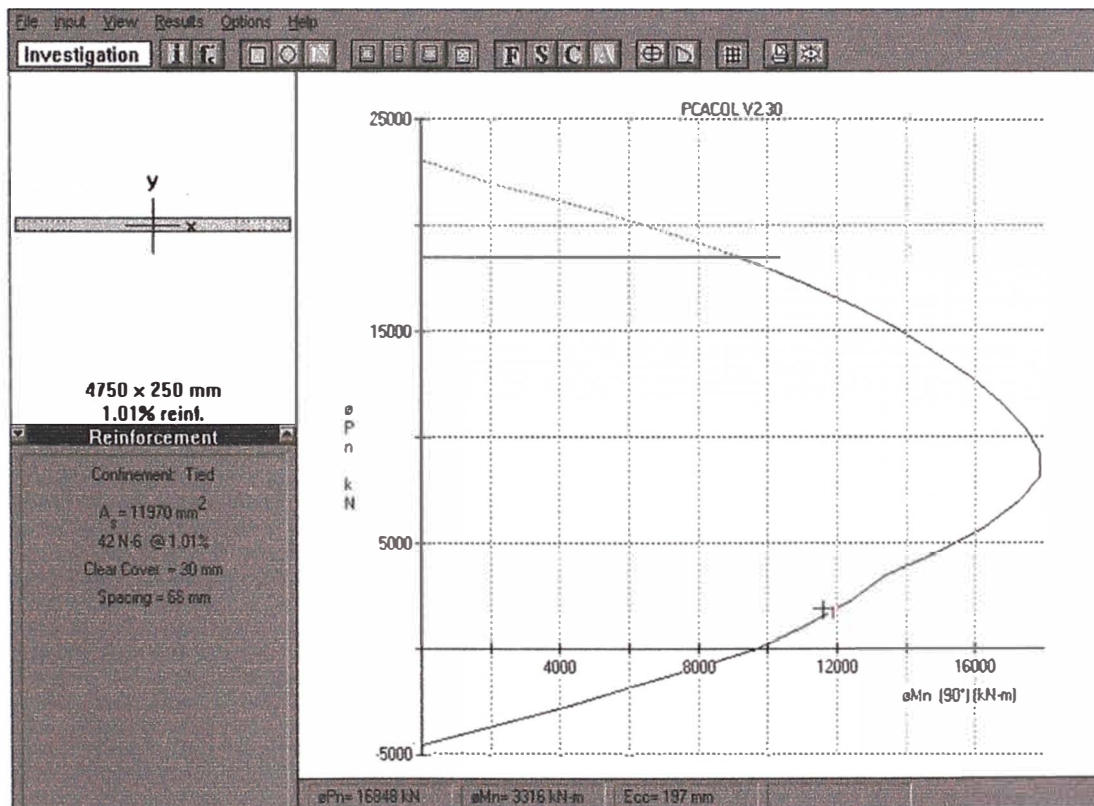


Diagrama de Interacción de Placa 25x475

05/02/03 PCACOL(tm)V2.30 Proprietary Software of PORTLAND CEMENT ASSN.
 12:53:03 Licensed to: EDINCO, LIMA, PERU

General Information:

=====

File Name: D:\MISDOC~1\ALEX\TITU\455X25Y.COL
 Project: TITULACION Code: ACI 318-89
 Column: PLACA Y Units: SI Metric
 Engineer: RICARDO Date: 07/12/00 Time: 12:50:37
 Run Option: Investigation Short (nonslender) column
 Run Axis: Biaxial Column Type: User-defined

Material Properties:

=====

f'c = 28 MPa fy = 420 MPa
 Ec = 26752.5 MPa Es = 200000 MPa
 fc = 22.6597 MPa erup = 0 mm/mm
 eu = 0.003 mm/mm
 Stress Profile: Block Beta1 = 0.846954

Geometry:

=====

Rectangular: Width = 4550 mm Depth = 250 mm
 Gross section area, Ag = 1.1375e+006 mm²
 Ix = 5.92448e+009 mm⁴ Xo = 0 mm
 Iy = 1.96242e+012 mm⁴ Yo = 0 mm

Reinforcement:

=====

Rebar Database: User-defined

Size	Diam	Area	Size	Diam	Area	Size	Diam	Area
3	10	71	4	13	127	5	16	198
6	19	285	8	25	510			

Confinement: Tied; phi(c) = 0.7, phi(b) = 0.9, a = 0.8
 N-3 ties with N-5 bars, N-3 with larger bars.

Pattern: Irregular

Total steel area, As = 10830 mm² at 0.95%

Area (mm ²)	X-Loc (mm)	Y-Loc (mm)	Area (mm ²)	X-Loc (mm)	Y-Loc (mm)	Area (mm ²)	X-Loc (mm)	Y-Loc (mm)
285	2235	85	285	2235	0	285	-2235	0
285	-2235	85	285	-2235	-85	285	2235	-85
285	2135	85	285	-2135	85	285	-2135	-85
285	2135	-85	285	2035	85	285	-2035	85
285	-2035	-85	285	2035	-85	285	1935	85
285	-1935	85	285	-1935	-85	285	1935	-85
285	1835	85	285	-1835	85	285	-1835	-85
285	1835	-85	285	1735	85	285	-1735	85
285	-1735	-85	285	1735	-85	285	1635	85
285	-1635	85	285	-1635	-85	285	1635	-85
285	1535	85	285	-1535	85	285	-1535	-85
285	1535	-85	285	1435	85	285	-1435	85
285	-1435	-85	285	1435	-85			

05/02/03 PCACOL(tm)V2.30 Proprietary Software of PORTLAND CEMENT ASSN.
 12:53:03 Licensed to: EDINCO, LIMA, PERU

Pt.	Applied Loads			Computed Strength			Computed/ Applied Ray length
	P (kN)	Mx (kN-m)	My (kN-m)	P (kN)	Mx (kN-m)	My (kN-m)	
1	2604	0	0	16844	0	-0	6.469
2	1905	0	10531	1928	0	10766	1.022

Program completed as requested!

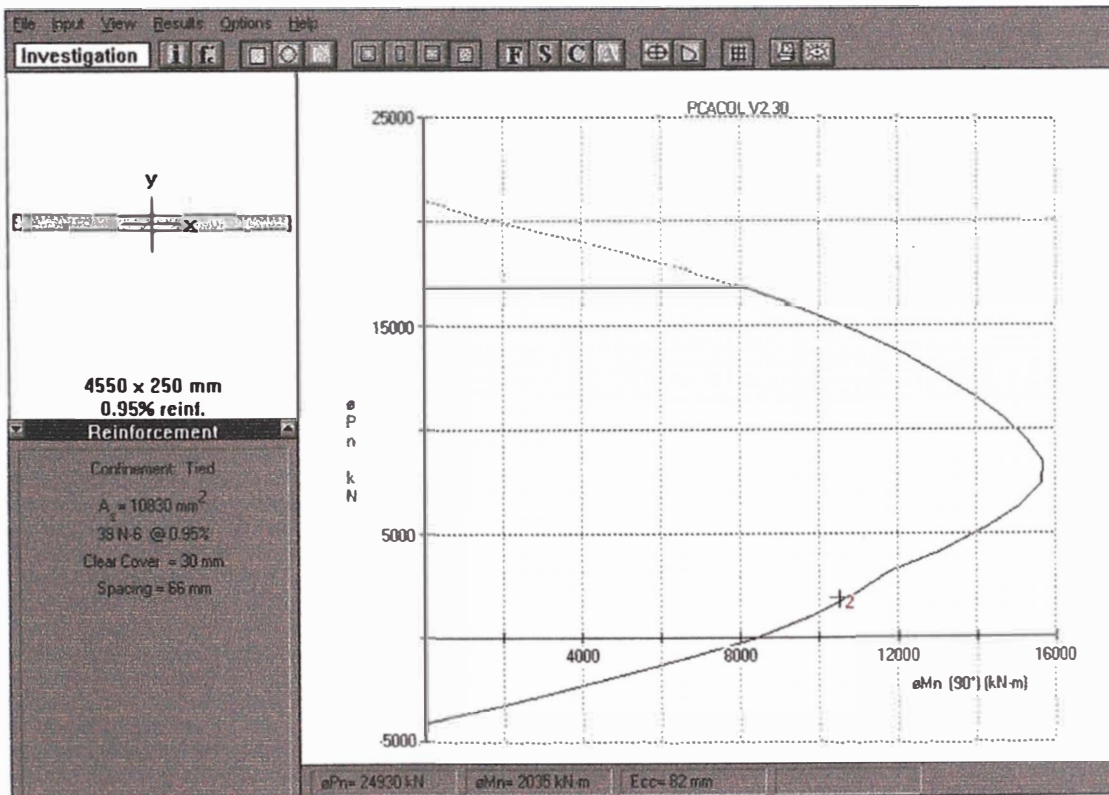


Diagrama de Interacción de Placa 25x455

ARCHIVO DE DATOS

; File D:\Mis documentos\Alex\titu\SAP\05-98f.\$2k saved 4/16/03 14:42:52 in Ton-m

SYSTEM

DOF=UX,UY,UZ,RX,RY,RZ LENGTH=m FORCE=Ton LINES=56

JOINT

1	X=-10	Y=-7	Z=0	68	X=-5	Y=0	Z=15.5	ADD=28
2	X=-10	Y=0	Z=0	69	X=-5	Y=7	Z=15.5	ADD=29
3	X=-10	Y=7	Z=0	70	X=-1.4	Y=2	Z=15.5	ADD=30
4	X=-5	Y=-7	Z=0	71	X=0	Y=-7	Z=15.5	ADD=31
5	X=-5	Y=0	Z=0	72	X=0	Y=0	Z=15.5	ADD=22
6	X=-5	Y=7	Z=0	73	X=0	Y=7	Z=15.5	NAME=DIAPH2 TYPE=DIAPH
7	X=0	Y=-7	Z=0	74	X=5	Y=-7	Z=15.5	AXIS=Z CSYS=0
8	X=0	Y=0	Z=0	75	X=5	Y=0	Z=15.5	ADD=32
9	X=0	Y=7	Z=0	76	X=5	Y=7	Z=15.5	ADD=33
10	X=5	Y=-7	Z=0	77	X=10	Y=-7	Z=15.5	ADD=34
11	X=5	Y=0	Z=0	78	X=10	Y=0	Z=15.5	ADD=35
12	X=5	Y=7	Z=0	79	X=10	Y=7	Z=15.5	ADD=36
13	X=10	Y=-7	Z=0	80	X=-10	Y=-7	Z=19	ADD=37
14	X=10	Y=0	Z=0	81	X=-10	Y=0	Z=19	ADD=39
15	X=10	Y=7	Z=0	82	X=-10	Y=7	Z=19	ADD=40
16	X=-10	Y=-7	Z=5	83	X=-5	Y=-7	Z=19	ADD=41
17	X=-10	Y=0	Z=5	84	X=-5	Y=0	Z=19	ADD=42
18	X=-10	Y=7	Z=5	85	X=-5	Y=7	Z=19	ADD=43
19	X=-5	Y=-7	Z=5	86	X=-1.4	Y=2	Z=19	ADD=44
20	X=-5	Y=0	Z=5	87	X=0	Y=-7	Z=19	ADD=45
21	X=-5	Y=7	Z=5	88	X=0	Y=0	Z=19	ADD=46
22	X=-1.4	Y=2	Z=5	89	X=0	Y=7	Z=19	ADD=47
23	X=0	Y=-7	Z=5	90	X=5	Y=-7	Z=19	ADD=38
24	X=0	Y=0	Z=5	91	X=5	Y=0	Z=19	
25	X=0	Y=7	Z=5	92	X=5	Y=7	Z=19	NAME=DIAPH3 TYPE=DIAPH
26	X=5	Y=-7	Z=5	93	X=10	Y=-7	Z=19	AXIS=Z CSYS=0
27	X=5	Y=0	Z=5	94	X=10	Y=0	Z=19	ADD=48
28	X=5	Y=7	Z=5	95	X=10	Y=7	Z=19	ADD=49
29	X=10	Y=-7	Z=5					ADD=50
30	X=10	Y=0	Z=5					ADD=51
31	X=10	Y=7	Z=5					ADD=52
32	X=-10	Y=-7	Z=8.5	RESTRAINT	ADD=1	DOF=U1,U2,U3,R1,R2,R3		ADD=53
33	X=-10	Y=0	Z=8.5		ADD=2	DOF=U1,U2,U3,R1,R2,R3		ADD=55
34	X=-10	Y=7	Z=8.5		ADD=3	DOF=U1,U2,U3,R1,R2,R3		ADD=56
35	X=-5	Y=-7	Z=8.5		ADD=4	DOF=U1,U2,U3,R1,R2,R3		ADD=57
36	X=-5	Y=0	Z=8.5		ADD=5	DOF=U1,U2,U3,R1,R2,R3		ADD=58
37	X=-5	Y=7	Z=8.5		ADD=6	DOF=U1,U2,U3,R1,R2,R3		ADD=59
38	X=-1.4	Y=2	Z=8.5		ADD=7	DOF=U1,U2,U3,R1,R2,R3		ADD=60
39	X=0	Y=-7	Z=8.5		ADD=8	DOF=U1,U2,U3,R1,R2,R3		ADD=61
40	X=0	Y=0	Z=8.5		ADD=9	DOF=U1,U2,U3,R1,R2,R3		ADD=62
41	X=0	Y=7	Z=8.5		ADD=10	DOF=U1,U2,U3,R1,R2,R3		ADD=63
42	X=5	Y=-7	Z=8.5		ADD=11	DOF=U1,U2,U3,R1,R2,R3		ADD=54
43	X=5	Y=0	Z=8.5		ADD=12	DOF=U1,U2,U3,R1,R2,R3		
44	X=5	Y=7	Z=8.5		ADD=13	DOF=U1,U2,U3,R1,R2,R3		NAME=DIAPH4 TYPE=DIAPH
45	X=10	Y=-7	Z=8.5		ADD=14	DOF=U1,U2,U3,R1,R2,R3		AXIS=Z CSYS=0
46	X=10	Y=0	Z=8.5		ADD=15	DOF=U1,U2,U3,R1,R2,R3		ADD=64
47	X=10	Y=7	Z=8.5		ADD=22	DOF=U3,R1,R2		ADD=65
48	X=-10	Y=-7	Z=12		ADD=38	DOF=U3,R1,R2		ADD=66
49	X=-10	Y=0	Z=12		ADD=54	DOF=U3,R1,R2		ADD=67
50	X=-10	Y=7	Z=12		ADD=70	DOF=U3,R1,R2		ADD=68
51	X=-5	Y=-7	Z=12		ADD=86	DOF=U3,R1,R2		ADD=69
52	X=-5	Y=0	Z=12					ADD=71
53	X=-5	Y=7	Z=12					ADD=72
54	X=-1.4	Y=2	Z=12	CONSTRAINT				ADD=73
55	X=0	Y=-7	Z=12		NAME=DIAPH1 TYPE=DIAPH			ADD=74
56	X=0	Y=0	Z=12		AXIS=Z CSYS=0			ADD=75
57	X=0	Y=7	Z=12		ADD=16			ADD=76
58	X=5	Y=-7	Z=12		ADD=17			ADD=77
59	X=5	Y=0	Z=12		ADD=18			ADD=78
60	X=5	Y=7	Z=12		ADD=19			ADD=79
61	X=10	Y=-7	Z=12		ADD=20			ADD=70
62	X=10	Y=0	Z=12		ADD=21			
63	X=10	Y=7	Z=12		ADD=23			NAME=DIAPH5 TYPE=DIAPH
64	X=-10	Y=-7	Z=15.5		ADD=24			AXIS=Z CSYS=0
65	X=-10	Y=0	Z=15.5		ADD=25			ADD=80
66	X=-10	Y=7	Z=15.5		ADD=26			ADD=81
67	X=-5	Y=-7	Z=15.5		ADD=27			ADD=82
								ADD=83

ADD=84
 ADD=85
 ADD=87
 ADD=88

ADD=89
 ADD=90
 ADD=91
 ADD=92

ADD=93
 ADD=94
 ADD=95
 ADD=86

PATTERN
 NAME=DEFAULT

MASS
 ADD=22 U1=16.4 U2=16.4 R3=831
 ADD=38 U1=16.4 U2=16.4 R3=831
 ADD=54 U1=16.4 U2=16.4 R3=831
 ADD=70 U1=16.4 U2=16.4 R3=831
 ADD=86 U1=12.92 U2=12.92 R3=655

MATERIAL
 NAME=STEEL IDES=S M=.798142 W=7.833413
 T=0 E=2.038902E+07 U=.3 A=.0000117 FY=25310.5
 NAME=CONC IDES=C M=.2448 W=2.4026
 T=0 E=2170000 U=.2 A=.0000099
 NAME=OTHER IDES=N M=.2448012 W=2.402616
 T=0 E=2531051 U=.2 A=.0000099
 NAME=C280 IDES=C M=.24 W=2.4
 T=0 E=2510000 U=.2 A=.0000117

FRAME SECTION
 NAME=V25X50 MAT=CONC SH=R T=.5,.25 A=.125 J=1.788127E-03
 I=2.604167E-03,6.510417E-04 AS=.1041667,.1041667
 NAME=C30X55 MAT=C280 SH=R T=.55,.3 A=.165 J=3.261548E-03
 I=4.159376E-03,.0012375 AS=.1375,.1375
 NAME=V30X70 MAT=CONC SH=R T=.7,.3 A=.21 J=4.603782E-03
 I=.008575,.001575 AS=.175,.175
 NAME=P25X455Y MAT=C280 SH=R T=.25,4.55 A=1.1375 J=2.287761E-02
 I=5.924479E-03,1.962425 AS=.9479167,.9479167
 NAME=P25X475X MAT=C280 SH=R T=4.75,.25 A=1.1875 J=2.391927E-02
 I=2.232747,6.184896E-03 AS=.9895833,.9895833
 NAME=C40X70 MAT=C280 SH=R T=.7,.4 A=.28 J=.0096051
 I=1.143333E-02,3.733333E-03 AS=.2333333,.2333333
 NAME=C30X50 MAT=C280 SH=R T=.5,.3 A=.15 J=2.817371E-03
 I=.003125,.001125 AS=.125,.125

FRAME
 1 J=1,16 SEC=C30X50 NSEG=2 ANG=90 JOFF=.25 RIGID=.6
 2 J=2,17 SEC=P25X455Y NSEG=2 ANG=0 JOFF=.25 RIGID=.6
 3 J=3,18 SEC=C30X50 NSEG=2 ANG=90 JOFF=.25 RIGID=.6
 4 J=4,19 SEC=C30X55 NSEG=2 ANG=90 JOFF=.35 RIGID=.6
 5 J=5,20 SEC=C40X70 NSEG=2 ANG=90 JOFF=.35 RIGID=.6
 6 J=6,21 SEC=C30X55 NSEG=2 ANG=90 JOFF=.35 RIGID=.6
 7 J=7,23 SEC=P25X475X NSEG=2 ANG=0 JOFF=.35 RIGID=.6
 8 J=8,24 SEC=C40X70 NSEG=2 ANG=90 JOFF=.35 RIGID=.6
 9 J=9,25 SEC=P25X475X NSEG=2 ANG=0 JOFF=.35 RIGID=.6
 10 J=10,26 SEC=C30X55 NSEG=2 ANG=90 JOFF=.35 RIGID=.6
 11 J=11,27 SEC=C40X70 NSEG=2 ANG=90 JOFF=.35 RIGID=.6
 12 J=12,28 SEC=C30X55 NSEG=2 ANG=90 JOFF=.35 RIGID=.6
 13 J=13,29 SEC=C30X50 NSEG=2 ANG=90 JOFF=.35 RIGID=.6
 14 J=14,30 SEC=P25X455Y NSEG=2 ANG=0 JOFF=.35 RIGID=.6
 15 J=15,31 SEC=C30X50 NSEG=2 ANG=90 JOFF=.35 RIGID=.6
 16 J=16,17 SEC=V25X50 NSEG=4 ANG=0 IOFF=.25 JOFF=2.275 RIGID=.6
 17 J=17,18 SEC=V25X50 NSEG=4 ANG=0 IOFF=2.275 JOFF=.25 RIGID=.6
 18 J=16,19 SEC=V25X50 NSEG=4 ANG=0 IOFF=.15 JOFF=.15 RIGID=.6
 19 J=17,20 SEC=V25X50 NSEG=4 ANG=0 IOFF=.125 JOFF=.2 RIGID=.6
 20 J=18,21 SEC=V25X50 NSEG=4 ANG=0 IOFF=.15 JOFF=.15 RIGID=.6
 21 J=19,20 SEC=V30X70 NSEG=4 ANG=0 IOFF=.275 JOFF=.35 RIGID=.6
 22 J=20,21 SEC=V30X70 NSEG=4 ANG=0 IOFF=.35 JOFF=.275 RIGID=.6
 23 J=19,23 SEC=V25X50 NSEG=4 ANG=0 IOFF=.15 JOFF=2.375 RIGID=.6
 24 J=20,24 SEC=V25X50 NSEG=4 ANG=0 IOFF=.2 JOFF=.2 RIGID=.6
 25 J=21,25 SEC=V25X50 NSEG=4 ANG=0 IOFF=.15 JOFF=2.375 RIGID=.6
 26 J=23,24 SEC=V30X70 NSEG=4 ANG=0 IOFF=.125 JOFF=.35 RIGID=.6

27	J=24,25	SEC=V30X70	NSEG=4	ANG=0	IOFF=.35	JOFF=.125	RIGID=.6
28	J=23,26	SEC=V25X50	NSEG=4	ANG=0	IOFF=2.375	JOFF=.15	RIGID=.6
29	J=24,27	SEC=V25X50	NSEG=4	ANG=0	IOFF=.2	JOFF=.2	RIGID=.6
30	J=25,28	SEC=V25X50	NSEG=4	ANG=0	IOFF=2.375	JOFF=.15	RIGID=.6
31	J=26,27	SEC=V30X70	NSEG=4	ANG=0	IOFF=.275	JOFF=.35	RIGID=.6
32	J=27,28	SEC=V30X70	NSEG=4	ANG=0	IOFF=.35	JOFF=.275	RIGID=.6
33	J=26,29	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=.15	RIGID=.6
34	J=27,30	SEC=V25X50	NSEG=4	ANG=0	IOFF=.2	JOFF=.125	RIGID=.6
35	J=28,31	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=.15	RIGID=.6
36	J=29,30	SEC=V30X70	NSEG=4	ANG=0	IOFF=.25	JOFF=2.275	RIGID=.6
37	J=30,31	SEC=V30X70	NSEG=4	ANG=0	IOFF=2.275	JOFF=.25	RIGID=.6
38	J=16,32	SEC=C30X50	NSEG=2	ANG=90	IOFF=.25	JOFF=.25	RIGID=.6
39	J=17,33	SEC=P25X455Y	NSEG=2	ANG=0	IOFF=.25	JOFF=.25	RIGID=.6
40	J=18,34	SEC=C30X50	NSEG=2	ANG=90	IOFF=.25	JOFF=.25	RIGID=.6
41	J=19,35	SEC=C30X55	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
42	J=20,36	SEC=C40X70	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
43	J=21,37	SEC=C30X55	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
44	J=23,39	SEC=P25X475X	NSEG=2	ANG=0	IOFF=.35	JOFF=.35	RIGID=.6
45	J=24,40	SEC=C40X70	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
46	J=25,41	SEC=P25X475X	NSEG=2	ANG=0	IOFF=.35	JOFF=.35	RIGID=.6
47	J=26,42	SEC=C30X55	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
48	J=27,43	SEC=C40X70	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
49	J=28,44	SEC=C30X55	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
50	J=29,45	SEC=C30X50	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
51	J=30,46	SEC=P25X455Y	NSEG=2	ANG=0	IOFF=.35	JOFF=.35	RIGID=.6
52	J=31,47	SEC=C30X50	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
53	J=32,33	SEC=V25X50	NSEG=4	ANG=0	IOFF=.25	JOFF=2.275	RIGID=.6
54	J=33,34	SEC=V25X50	NSEG=4	ANG=0	IOFF=2.275	JOFF=.25	RIGID=.6
55	J=32,35	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=.15	RIGID=.6
56	J=33,36	SEC=V25X50	NSEG=4	ANG=0	IOFF=.125	JOFF=.2	RIGID=.6
57	J=34,37	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=.15	RIGID=.6
58	J=35,36	SEC=V30X70	NSEG=4	ANG=0	IOFF=.275	JOFF=.35	RIGID=.6
59	J=36,37	SEC=V30X70	NSEG=4	ANG=0	IOFF=.35	JOFF=.275	RIGID=.6
60	J=35,39	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=2.375	RIGID=.6
61	J=36,40	SEC=V25X50	NSEG=4	ANG=0	IOFF=.2	JOFF=.2	RIGID=.6
62	J=37,41	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=2.375	RIGID=.6
63	J=39,40	SEC=V30X70	NSEG=4	ANG=0	IOFF=.125	JOFF=.35	RIGID=.6
64	J=40,41	SEC=V30X70	NSEG=4	ANG=0	IOFF=.35	JOFF=.125	RIGID=.6
65	J=39,42	SEC=V25X50	NSEG=4	ANG=0	IOFF=2.375	JOFF=.15	RIGID=.6
66	J=40,43	SEC=V25X50	NSEG=4	ANG=0	IOFF=.2	JOFF=.2	RIGID=.6
67	J=41,44	SEC=V25X50	NSEG=4	ANG=0	IOFF=2.375	JOFF=.15	RIGID=.6
68	J=42,43	SEC=V30X70	NSEG=4	ANG=0	IOFF=.275	JOFF=.35	RIGID=.6
69	J=43,44	SEC=V30X70	NSEG=4	ANG=0	IOFF=.35	JOFF=.275	RIGID=.6
70	J=42,45	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=.15	RIGID=.6
71	J=43,46	SEC=V25X50	NSEG=4	ANG=0	IOFF=.2	JOFF=.125	RIGID=.6
72	J=44,47	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=.15	RIGID=.6
73	J=45,46	SEC=V30X70	NSEG=4	ANG=0	IOFF=.25	JOFF=2.275	RIGID=.6
74	J=46,47	SEC=V30X70	NSEG=4	ANG=0	IOFF=2.275	JOFF=.25	RIGID=.6
75	J=32,48	SEC=C30X50	NSEG=2	ANG=90	IOFF=.25	JOFF=.25	RIGID=.6
76	J=33,49	SEC=P25X455Y	NSEG=2	ANG=0	IOFF=.25	JOFF=.25	RIGID=.6
77	J=34,50	SEC=C30X50	NSEG=2	ANG=90	IOFF=.25	JOFF=.25	RIGID=.6
78	J=35,51	SEC=C30X55	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
79	J=36,52	SEC=C40X70	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
80	J=37,53	SEC=C30X55	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
81	J=39,55	SEC=P25X475X	NSEG=2	ANG=0	IOFF=.35	JOFF=.35	RIGID=.6
82	J=40,56	SEC=C40X70	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
83	J=41,57	SEC=P25X475X	NSEG=2	ANG=0	IOFF=.35	JOFF=.35	RIGID=.6
84	J=42,58	SEC=C30X55	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
85	J=43,59	SEC=C40X70	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
86	J=44,60	SEC=C30X55	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
87	J=45,61	SEC=C30X50	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
88	J=46,62	SEC=P25X455Y	NSEG=2	ANG=0	IOFF=.35	JOFF=.35	RIGID=.6
89	J=47,63	SEC=C30X50	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
90	J=48,49	SEC=V25X50	NSEG=4	ANG=0	IOFF=.25	JOFF=2.275	RIGID=.6
91	J=49,50	SEC=V25X50	NSEG=4	ANG=0	IOFF=2.275	JOFF=.25	RIGID=.6
92	J=48,51	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=.15	RIGID=.6
93	J=49,52	SEC=V25X50	NSEG=4	ANG=0	IOFF=.125	JOFF=.2	RIGID=.6
94	J=50,53	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=.15	RIGID=.6
95	J=51,52	SEC=V30X70	NSEG=4	ANG=0	IOFF=.275	JOFF=.35	RIGID=.6
96	J=52,53	SEC=V30X70	NSEG=4	ANG=0	IOFF=.35	JOFF=.275	RIGID=.6
97	J=51,55	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=2.375	RIGID=.6
98	J=52,56	SEC=V25X50	NSEG=4	ANG=0	IOFF=.2	JOFF=.2	RIGID=.6
99	J=53,57	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=2.375	RIGID=.6
100	J=55,56	SEC=V30X70	NSEG=4	ANG=0	IOFF=.125	JOFF=.35	RIGID=.6
101	J=56,57	SEC=V30X70	NSEG=4	ANG=0	IOFF=.35	JOFF=.125	RIGID=.6
102	J=55,58	SEC=V25X50	NSEG=4	ANG=0	IOFF=2.375	JOFF=.15	RIGID=.6
103	J=56,59	SEC=V25X50	NSEG=4	ANG=0	IOFF=.2	JOFF=.2	RIGID=.6

104	J=57,60	SEC=V25X50	NSEG=4	ANG=0	IOFF=2.375	JOFF=.15	RIGID=.6
105	J=58,59	SEC=V30X70	NSEG=4	ANG=0	IOFF=.275	JOFF=.35	RIGID=.6
106	J=59,60	SEC=V30X70	NSEG=4	ANG=0	IOFF=.35	JOFF=.275	RIGID=.6
107	J=58,61	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=.15	RIGID=.6
108	J=59,62	SEC=V25X50	NSEG=4	ANG=0	IOFF=.2	JOFF=.125	RIGID=.6
109	J=60,63	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=.15	RIGID=.6
110	J=61,62	SEC=V30X70	NSEG=4	ANG=0	IOFF=.25	JOFF=2.275	RIGID=.6
111	J=62,63	SEC=V30X70	NSEG=4	ANG=0	IOFF=2.275	JOFF=.25	RIGID=.6
112	J=48,64	SEC=C30X50	NSEG=2	ANG=90	IOFF=.25	JOFF=.25	RIGID=.6
113	J=49,65	SEC=P25X455Y	NSEG=2	ANG=0	IOFF=.25	JOFF=.25	RIGID=.6
114	J=50,66	SEC=C30X50	NSEG=2	ANG=90	IOFF=.25	JOFF=.25	RIGID=.6
115	J=51,67	SEC=C30X55	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
116	J=52,68	SEC=C40X70	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
117	J=53,69	SEC=C30X55	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
118	J=55,71	SEC=P25X475X	NSEG=2	ANG=0	IOFF=.35	JOFF=.35	RIGID=.6
119	J=56,72	SEC=C40X70	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
120	J=57,73	SEC=P25X475X	NSEG=2	ANG=0	IOFF=.35	JOFF=.35	RIGID=.6
121	J=58,74	SEC=C30X55	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
122	J=59,75	SEC=C40X70	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
123	J=60,76	SEC=C30X55	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
124	J=61,77	SEC=C30X50	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
125	J=62,78	SEC=P25X455Y	NSEG=2	ANG=0	IOFF=.35	JOFF=.35	RIGID=.6
126	J=63,79	SEC=C30X50	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
127	J=64,65	SEC=V25X50	NSEG=4	ANG=0	IOFF=.25	JOFF=2.275	RIGID=.6
128	J=65,66	SEC=V25X50	NSEG=4	ANG=0	IOFF=2.275	JOFF=.25	RIGID=.6
129	J=64,67	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=.15	RIGID=.6
130	J=65,68	SEC=V25X50	NSEG=4	ANG=0	IOFF=.125	JOFF=.2	RIGID=.6
131	J=66,69	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=.15	RIGID=.6
132	J=67,68	SEC=V30X70	NSEG=4	ANG=0	IOFF=.275	JOFF=.35	RIGID=.6
133	J=68,69	SEC=V30X70	NSEG=4	ANG=0	IOFF=.35	JOFF=.275	RIGID=.6
134	J=67,71	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=2.375	RIGID=.6
135	J=68,72	SEC=V25X50	NSEG=4	ANG=0	IOFF=.2	JOFF=.2	RIGID=.6
136	J=69,73	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=2.375	RIGID=.6
137	J=71,72	SEC=V30X70	NSEG=4	ANG=0	IOFF=.125	JOFF=.35	RIGID=.6
138	J=72,73	SEC=V30X70	NSEG=4	ANG=0	IOFF=.35	JOFF=.125	RIGID=.6
139	J=71,74	SEC=V25X50	NSEG=4	ANG=0	IOFF=2.375	JOFF=.15	RIGID=.6
140	J=72,75	SEC=V25X50	NSEG=4	ANG=0	IOFF=.2	JOFF=.2	RIGID=.6
141	J=73,76	SEC=V25X50	NSEG=4	ANG=0	IOFF=2.375	JOFF=.15	RIGID=.6
142	J=74,75	SEC=V30X70	NSEG=4	ANG=0	IOFF=.275	JOFF=.35	RIGID=.6
143	J=75,76	SEC=V30X70	NSEG=4	ANG=0	IOFF=.35	JOFF=.275	RIGID=.6
144	J=74,77	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=.15	RIGID=.6
145	J=75,78	SEC=V25X50	NSEG=4	ANG=0	IOFF=.2	JOFF=.125	RIGID=.6
146	J=76,79	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=.15	RIGID=.6
147	J=77,78	SEC=V30X70	NSEG=4	ANG=0	IOFF=.25	JOFF=2.275	RIGID=.6
148	J=78,79	SEC=V30X70	NSEG=4	ANG=0	IOFF=2.275	JOFF=.25	RIGID=.6
149	J=64,80	SEC=C30X50	NSEG=2	ANG=90	IOFF=.25	JOFF=.25	RIGID=.6
150	J=65,81	SEC=P25X455Y	NSEG=2	ANG=0	IOFF=.25	JOFF=.25	RIGID=.6
151	J=66,82	SEC=C30X50	NSEG=2	ANG=90	IOFF=.25	JOFF=.25	RIGID=.6
152	J=67,83	SEC=C30X55	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
153	J=68,84	SEC=C40X70	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
154	J=69,85	SEC=C30X55	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
155	J=71,87	SEC=P25X475X	NSEG=2	ANG=0	IOFF=.35	JOFF=.35	RIGID=.6
156	J=72,88	SEC=C40X70	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
157	J=73,89	SEC=P25X475X	NSEG=2	ANG=0	IOFF=.35	JOFF=.35	RIGID=.6
158	J=74,90	SEC=C30X55	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
159	J=75,91	SEC=C40X70	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
160	J=76,92	SEC=C30X55	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
161	J=77,93	SEC=C30X50	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
162	J=78,94	SEC=P25X455Y	NSEG=2	ANG=0	IOFF=.35	JOFF=.35	RIGID=.6
163	J=79,95	SEC=C30X50	NSEG=2	ANG=90	IOFF=.35	JOFF=.35	RIGID=.6
164	J=80,81	SEC=V25X50	NSEG=4	ANG=0	IOFF=.25	JOFF=2.275	RIGID=.6
165	J=81,82	SEC=V25X50	NSEG=4	ANG=0	IOFF=2.275	JOFF=.25	RIGID=.6
166	J=80,83	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=.15	RIGID=.6
167	J=81,84	SEC=V25X50	NSEG=4	ANG=0	IOFF=.125	JOFF=.2	RIGID=.6
168	J=82,85	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=.15	RIGID=.6
169	J=83,84	SEC=V30X70	NSEG=4	ANG=0	IOFF=.275	JOFF=.35	RIGID=.6
170	J=84,85	SEC=V30X70	NSEG=4	ANG=0	IOFF=.35	JOFF=.275	RIGID=.6
171	J=83,87	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=2.375	RIGID=.6
172	J=84,88	SEC=V25X50	NSEG=4	ANG=0	IOFF=.2	JOFF=.2	RIGID=.6
173	J=85,89	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=2.375	RIGID=.6
174	J=87,88	SEC=V30X70	NSEG=4	ANG=0	IOFF=.125	JOFF=.35	RIGID=.6
175	J=88,89	SEC=V30X70	NSEG=4	ANG=0	IOFF=.35	JOFF=.125	RIGID=.6
176	J=87,90	SEC=V25X50	NSEG=4	ANG=0	IOFF=2.375	JOFF=.15	RIGID=.6
177	J=88,91	SEC=V25X50	NSEG=4	ANG=0	IOFF=.2	JOFF=.2	RIGID=.6
178	J=89,92	SEC=V25X50	NSEG=4	ANG=0	IOFF=2.375	JOFF=.15	RIGID=.6
179	J=90,91	SEC=V30X70	NSEG=4	ANG=0	IOFF=.275	JOFF=.35	RIGID=.6
180	J=91,92	SEC=V30X70	NSEG=4	ANG=0	IOFF=.35	JOFF=.275	RIGID=.6

181	J=90, 93	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=.15	RIGID=.6
182	J=91, 94	SEC=V25X50	NSEG=4	ANG=0	IOFF=.2	JOFF=.125	RIGID=.6
183	J=92, 95	SEC=V25X50	NSEG=4	ANG=0	IOFF=.15	JOFF=.15	RIGID=.6
184	J=93, 94	SEC=V30X70	NSEG=4	ANG=0	IOFF=.25	JOFF=2.275	RIGID=.6
185	J=94, 95	SEC=V30X70	NSEG=4	ANG=0	IOFF=2.275	JOFF=.25	RIGID=.6

LOAD

NAME=D SW=1 CSYS=0

TYPE=DISTRIBUTED SPAN

ADD=22 RD=0,1 UZ=-2.7,-2.7
 ADD=27 RD=0,1 UZ=-2.7,-2.7
 ADD=32 RD=0,1 UZ=-2.7,-2.7
 ADD=58 RD=0,1 UZ=-2.7,-2.7
 ADD=63 RD=0,1 UZ=-2.7,-2.7
 ADD=68 RD=0,1 UZ=-2.7,-2.7
 ADD=96 RD=0,1 UZ=-2.7,-2.7
 ADD=101 RD=0,1 UZ=-2.7,-2.7
 ADD=106 RD=0,1 UZ=-2.7,-2.7
 ADD=132 RD=0,1 UZ=-2.7,-2.7
 ADD=137 RD=0,1 UZ=-2.7,-2.7
 ADD=142 RD=0,1 UZ=-2.7,-2.7
 ADD=21 RD=0,1 UZ=-2.7,-2.7
 ADD=26 RD=0,1 UZ=-2.7,-2.7
 ADD=31 RD=0,1 UZ=-2.7,-2.7
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 ADD=64 RD=0,1 UZ=-2.7,-2.7
 ADD=69 RD=0,1 UZ=-2.7,-2.7
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 ADD=133 RD=0,1 UZ=-2.7,-2.7
 ADD=138 RD=0,1 UZ=-2.7,-2.7
 ADD=143 RD=0,1 UZ=-2.7,-2.7
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 ADD=19 RD=0,1 UZ=-.27,-.27
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ADD=108 RD=0,1 UZ=-.27,-.27
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 ADD=16 RD=0,1 UZ=-1.431,-1.431
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 ADD=37 RD=0,1 UZ=-1.431,-1.431
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 ADD=74 RD=0,1 UZ=-1.431,-1.431
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 ADD=91 RD=0,1 UZ=-1.431,-1.431
 ADD=110 RD=0,1 UZ=-1.431,-1.431
 ADD=111 RD=0,1 UZ=-1.431,-1.431
 ADD=127 RD=0,1 UZ=-1.431,-1.431
 ADD=128 RD=0,1 UZ=-1.431,-1.431
 ADD=147 RD=0,1 UZ=-1.431,-1.431
 ADD=148 RD=0,1 UZ=-1.431,-1.431
 ADD=164 RD=0,1 UZ=-1.431,-1.431
 ADD=165 RD=0,1 UZ=-1.431,-1.431
 ADD=184 RD=0,1 UZ=-1.431,-1.431
 ADD=185 RD=0,1 UZ=-1.431,-1.431

NAME=L1 CSYS=0

TYPE=DISTRIBUTED SPAN

ADD=22 RD=0,1 UZ=-1.25,-1.25
 ADD=27 RD=0,1 UZ=-1.25,-1.25
 ADD=32 RD=0,1 UZ=-1.25,-1.25
 ADD=58 RD=0,1 UZ=-1.25,-1.25
 ADD=63 RD=0,1 UZ=-1.25,-1.25
 ADD=68 RD=0,1 UZ=-1.25,-1.25
 ADD=96 RD=0,1 UZ=-1.25,-1.25
 ADD=101 RD=0,1 UZ=-1.25,-1.25
 ADD=106 RD=0,1 UZ=-1.25,-1.25
 ADD=132 RD=0,1 UZ=-1.25,-1.25
 ADD=137 RD=0,1 UZ=-1.25,-1.25
 ADD=142 RD=0,1 UZ=-1.25,-1.25
 ADD=170 RD=0,1 UZ=-.75,-.75
 ADD=175 RD=0,1 UZ=-.75,-.75
 ADD=180 RD=0,1 UZ=-.75,-.75
 ADD=17 RD=0,1 UZ=-.664,-.664
 ADD=37 RD=0,1 UZ=-.664,-.664
 ADD=53 RD=0,1 UZ=-.664,-.664
 ADD=73 RD=0,1 UZ=-.664,-.664

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ADD=91 RD=0,1 UZ=-.664,-.664
ADD=111 RD=0,1 UZ=-.664,-.664
ADD=127 RD=0,1 UZ=-.664,-.664
ADD=147 RD=0,1 UZ=-.664,-.664
ADD=165 RD=0,1 UZ=-.397,-.397
ADD=185 RD=0,1 UZ=-.397,-.397
NAME=L2 CSYS=0
TYPE=DISTRIBUTED SPAN
ADD=21 RD=0,1 UZ=-1.25,-1.25
ADD=26 RD=0,1 UZ=-1.25,-1.25
ADD=31 RD=0,1 UZ=-1.25,-1.25
ADD=59 RD=0,1 UZ=-1.25,-1.25
ADD=64 RD=0,1 UZ=-1.25,-1.25
ADD=69 RD=0,1 UZ=-1.25,-1.25
ADD=95 RD=0,1 UZ=-1.25,-1.25
ADD=100 RD=0,1 UZ=-1.25,-1.25
ADD=105 RD=0,1 UZ=-1.25,-1.25
ADD=133 RD=0,1 UZ=-1.25,-1.25
ADD=138 RD=0,1 UZ=-1.25,-1.25
ADD=143 RD=0,1 UZ=-1.25,-1.25
ADD=169 RD=0,1 UZ=-.75,-.75
ADD=174 RD=0,1 UZ=-.75,-.75
ADD=179 RD=0,1 UZ=-.75,-.75
ADD=16 RD=0,1 UZ=-.664,-.664
ADD=36 RD=0,1 UZ=-.664,-.664
ADD=54 RD=0,1 UZ=-.664,-.664
ADD=74 RD=0,1 UZ=-.664,-.664
ADD=90 RD=0,1 UZ=-.664,-.664
ADD=110 RD=0,1 UZ=-.664,-.664
ADD=128 RD=0,1 UZ=-.664,-.664
ADD=148 RD=0,1 UZ=-.664,-.664
ADD=164 RD=0,1 UZ=-.397,-.397
ADD=184 RD=0,1 UZ=-.397,-.397

```

```

NAME=L3 CSYS=0
TYPE=DISTRIBUTED SPAN
ADD=18 RD=0,1 UZ=-.25,-.25
ADD=19 RD=0,1 UZ=-.25,-.25
ADD=20 RD=0,1 UZ=-.25,-.25
ADD=23 RD=0,1 UZ=-.25,-.25
ADD=24 RD=0,1 UZ=-.25,-.25
ADD=25 RD=0,1 UZ=-.25,-.25
ADD=28 RD=0,1 UZ=-.25,-.25
ADD=30 RD=0,1 UZ=-.25,-.25
ADD=29 RD=0,1 UZ=-.25,-.25
ADD=33 RD=0,1 UZ=-.25,-.25
ADD=34 RD=0,1 UZ=-.25,-.25
ADD=35 RD=0,1 UZ=-.25,-.25
ADD=55 RD=0,1 UZ=-.25,-.25
ADD=56 RD=0,1 UZ=-.25,-.25
ADD=57 RD=0,1 UZ=-.25,-.25
ADD=60 RD=0,1 UZ=-.25,-.25
ADD=61 RD=0,1 UZ=-.25,-.25
ADD=62 RD=0,1 UZ=-.25,-.25
ADD=65 RD=0,1 UZ=-.25,-.25
ADD=67 RD=0,1 UZ=-.25,-.25
ADD=66 RD=0,1 UZ=-.25,-.25
ADD=70 RD=0,1 UZ=-.25,-.25
ADD=71 RD=0,1 UZ=-.25,-.25
ADD=72 RD=0,1 UZ=-.25,-.25
ADD=92 RD=0,1 UZ=-.25,-.25
ADD=93 RD=0,1 UZ=-.25,-.25
ADD=94 RD=0,1 UZ=-.25,-.25
ADD=97 RD=0,1 UZ=-.25,-.25
ADD=98 RD=0,1 UZ=-.25,-.25
ADD=99 RD=0,1 UZ=-.25,-.25
ADD=102 RD=0,1 UZ=-.25,-.25
ADD=104 RD=0,1 UZ=-.25,-.25
ADD=103 RD=0,1 UZ=-.25,-.25
ADD=107 RD=0,1 UZ=-.25,-.25
ADD=108 RD=0,1 UZ=-.25,-.25
ADD=109 RD=0,1 UZ=-.25,-.25
ADD=129 RD=0,1 UZ=-.25,-.25
ADD=130 RD=0,1 UZ=-.25,-.25
ADD=131 RD=0,1 UZ=-.25,-.25
ADD=134 RD=0,1 UZ=-.25,-.25
ADD=135 RD=0,1 UZ=-.25,-.25
ADD=136 RD=0,1 UZ=-.25,-.25

```

```

ADD=139 RD=0,1 UZ=-.25,-.25
ADD=141 RD=0,1 UZ=-.25,-.25
ADD=140 RD=0,1 UZ=-.25,-.25
ADD=144 RD=0,1 UZ=-.25,-.25
ADD=145 RD=0,1 UZ=-.25,-.25
ADD=146 RD=0,1 UZ=-.25,-.25
ADD=166 RD=0,1 UZ=-.25,-.25
ADD=167 RD=0,1 UZ=-.25,-.25
ADD=168 RD=0,1 UZ=-.25,-.25
ADD=171 RD=0,1 UZ=-.25,-.25
ADD=172 RD=0,1 UZ=-.25,-.25
ADD=173 RD=0,1 UZ=-.25,-.25
ADD=176 RD=0,1 UZ=-.25,-.25
ADD=178 RD=0,1 UZ=-.25,-.25
ADD=177 RD=0,1 UZ=-.25,-.25
ADD=181 RD=0,1 UZ=-.25,-.25
ADD=182 RD=0,1 UZ=-.25,-.25
ADD=183 RD=0,1 UZ=-.25,-.25
ADD=166 RD=0,1 UZ=.1,.1
ADD=167 RD=0,1 UZ=.1,.1
ADD=168 RD=0,1 UZ=.1,.1
ADD=171 RD=0,1 UZ=.1,.1
ADD=172 RD=0,1 UZ=.1,.1
ADD=173 RD=0,1 UZ=.1,.1
ADD=176 RD=0,1 UZ=.1,.1
ADD=178 RD=0,1 UZ=.1,.1
ADD=177 RD=0,1 UZ=.1,.1
ADD=181 RD=0,1 UZ=.1,.1
ADD=182 RD=0,1 UZ=.1,.1
ADD=183 RD=0,1 UZ=.1,.1

```

```

PDELTA
ITMAX=1 TOLD=.001 TOLP=.001
LOAD=D SF=1

```

```

MODE
TYPE=RITZ N=15
ACC=UX
ACC=UY
NLLINK=*

```

```

FUNCTION
NAME=E030S1 NPL=1 PRINT=Y
0 0
.1 .16
.2 .16
.3 .16
.4 .16
.5 .16
.6 .16
.7 .13
.8 .11
.9 .1
1 .08
1.1 .08
1.2 .07
1.3 .06
1.4 .06
1.5 .05
1.6 .05
1.7 .04
1.8 .04

```

```

SPEC
NAME=SX MODC=CQC ANG=0 DAMP=.05
ACC=U1 FUNC=E030S1 SF=10.5
NAME=SY MODC=CQC ANG=0 DAMP=.05
ACC=U2 FUNC=E030S1 SF=10.5

```

```

COMBO
NAME=COMB1
LOAD=D SF=1.5
LOAD=L1 SF=1.8
NAME=COMB2
LOAD=D SF=1.5
LOAD=L2 SF=1.8
NAME=COMB3

```

```

LOAD=D SF=1.5
LOAD=L3 SF=1.8
NAME=COMB4
LOAD=D SF=1.5
LOAD=L1 SF=1.8
LOAD=L2 SF=1.8
LOAD=L3 SF=1.8
NAME=COMB5
LOAD=D SF=1.25
LOAD=L1 SF=1.25
SPEC=SX SF=1.25
NAME=COMB6
LOAD=D SF=1.25
LOAD=L1 SF=1.25
SPEC=SY SF=1.25
NAME=COMB7
LOAD=D SF=1.25
LOAD=L2 SF=1.25
SPEC=SX SF=1.25
NAME=COMB8
LOAD=D SF=1.25
LOAD=L2 SF=1.25
SPEC=SY SF=1.25
NAME=COMB9
LOAD=D SF=1.25
LOAD=L3 SF=1.25
SPEC=SX SF=1.25
NAME=COMB10
LOAD=D SF=1.25
LOAD=L3 SF=1.25
SPEC=SY SF=1.25
NAME=COMB11
LOAD=D SF=1.25
LOAD=L1 SF=1.25
LOAD=L2 SF=1.25
SPEC=SX SF=1.25
NAME=COMB12
LOAD=D SF=1.25
LOAD=L1 SF=1.25
LOAD=L2 SF=1.25
SPEC=SY SF=1.25
NAME=COMB13
    
```

```

LOAD=D SF=.9
SPEC=SX SF=1.25
NAME=COMB14
LOAD=D SF=.9
SPEC=SY SF=1.25
NAME=ENVOLVE TYPE=ENVE
COMB=COMB1 SF=1
COMB=COMB2 SF=1
COMB=COMB3 SF=1
COMB=COMB4 SF=1
COMB=COMB5 SF=1
COMB=COMB6 SF=1
COMB=COMB7 SF=1
COMB=COMB8 SF=1
COMB=COMB9 SF=1
COMB=COMB10 SF=1
COMB=COMB11 SF=1
COMB=COMB12 SF=1
COMB=COMB13 SF=1
COMB=COMB14 SF=1
NAME=SISMO TYPE=ENVE
SPEC=SX SF=1
SPEC=SY SF=1
NAME=SERVX
LOAD=D SF=1
LOAD=L1 SF=1
LOAD=L2 SF=1
SPEC=SX SF=1
NAME=SERVY
LOAD=D SF=1
LOAD=L1 SF=1
LOAD=L2 SF=1
SPEC=SY SF=1
NAME=VIVA
LOAD=L1 SF=1
LOAD=L2 SF=1
LOAD=L3 SF=1
    
```

```

OUTPUT
ELEM=FRAME TYPE=FORCE MODE=*
ELEM=FRAME TYPE=FORCE COMB=ENVOLVE
    
```

END

; The following data is used for graphics, design and pushover analysis.
 ; If changes are made to the analysis data above, then the following data
 ; should be checked for consistency.

SAP2000 V7.40 SUPPLEMENTAL DATA

```

GRID GLOBAL X "1" -10
GRID GLOBAL X "2" -5
GRID GLOBAL X "3" -1.4
GRID GLOBAL X "4" 0
GRID GLOBAL X "5" 5
GRID GLOBAL X "6" 10
GRID GLOBAL Y "7" -7
GRID GLOBAL Y "8" 0
GRID GLOBAL Y "9" 2
GRID GLOBAL Y "10" 7
GRID GLOBAL Z "11" 0
GRID GLOBAL Z "12" 5
GRID GLOBAL Z "13" 8.5
GRID GLOBAL Z "14" 12
GRID GLOBAL Z "15" 15.5
GRID GLOBAL Z "16" 19
    
```

MATERIAL CONC FYREBAR 42000
 FYSHEAR 28000 FC 2100 FCSHEAR 2100

MATERIAL C280 FYREBAR 42000
 FYSHEAR 28000 FC 2800 FCSHEAR 2800

CONCRETESECTION V25X50 BEAM
 COVERTOP .03 COVERBOTTOM .03

CONCRETESECTION C30X55 COLUMN
 COVER .04 REBAR RR-3-4

CONCRETESECTION V30X70 BEAM
 COVERTOP .04 COVERBOTTOM .04

CONCRETESECTION P25X455Y COLUMN
 COVER .04 REBAR RR-3-3

CONCRETESECTION P25X475X COLUMN
 COVER .04 REBAR RR-3-3

CONCRETESECTION C40X70 COLUMN
 COVER .04 REBAR RR-3-4

CONCRETESECTION C30X50 COLUMN
 COVER .04 REBAR RR-3-3

STATICLOAD D TYPE DEAD
 STATICLOAD L1 TYPE LIVE
 STATICLOAD L2 TYPE LIVE
 STATICLOAD L3 TYPE LIVE

CONCRETEFRAME 134 TYPE INTERMEDIATE
CONCRETEFRAME 135 TYPE INTERMEDIATE
CONCRETEFRAME 136 TYPE INTERMEDIATE
CONCRETEFRAME 137 TYPE INTERMEDIATE
CONCRETEFRAME 138 TYPE INTERMEDIATE
CONCRETEFRAME 139 TYPE INTERMEDIATE
CONCRETEFRAME 140 TYPE INTERMEDIATE
CONCRETEFRAME 141 TYPE INTERMEDIATE
CONCRETEFRAME 142 TYPE INTERMEDIATE
CONCRETEFRAME 143 TYPE INTERMEDIATE
CONCRETEFRAME 144 TYPE INTERMEDIATE
CONCRETEFRAME 145 TYPE INTERMEDIATE
CONCRETEFRAME 146 TYPE INTERMEDIATE
CONCRETEFRAME 147 TYPE INTERMEDIATE
CONCRETEFRAME 148 TYPE INTERMEDIATE
CONCRETEFRAME 149 TYPE INTERMEDIATE
CONCRETEFRAME 150 TYPE INTERMEDIATE
CONCRETEFRAME 151 TYPE INTERMEDIATE
CONCRETEFRAME 152 TYPE INTERMEDIATE
CONCRETEFRAME 153 TYPE INTERMEDIATE
CONCRETEFRAME 154 TYPE INTERMEDIATE
CONCRETEFRAME 155 TYPE INTERMEDIATE
CONCRETEFRAME 156 TYPE INTERMEDIATE
CONCRETEFRAME 157 TYPE INTERMEDIATE
CONCRETEFRAME 158 TYPE INTERMEDIATE
CONCRETEFRAME 159 TYPE INTERMEDIATE
CONCRETEFRAME 160 TYPE INTERMEDIATE
CONCRETEFRAME 161 TYPE INTERMEDIATE
CONCRETEFRAME 162 TYPE INTERMEDIATE
CONCRETEFRAME 163 TYPE INTERMEDIATE
CONCRETEFRAME 164 TYPE INTERMEDIATE
CONCRETEFRAME 165 TYPE INTERMEDIATE
CONCRETEFRAME 166 TYPE INTERMEDIATE
CONCRETEFRAME 167 TYPE INTERMEDIATE
CONCRETEFRAME 168 TYPE INTERMEDIATE
CONCRETEFRAME 169 TYPE INTERMEDIATE
CONCRETEFRAME 170 TYPE INTERMEDIATE
CONCRETEFRAME 171 TYPE INTERMEDIATE
CONCRETEFRAME 172 TYPE INTERMEDIATE
CONCRETEFRAME 173 TYPE INTERMEDIATE
CONCRETEFRAME 174 TYPE INTERMEDIATE
CONCRETEFRAME 175 TYPE INTERMEDIATE
CONCRETEFRAME 176 TYPE INTERMEDIATE
CONCRETEFRAME 177 TYPE INTERMEDIATE
CONCRETEFRAME 178 TYPE INTERMEDIATE
CONCRETEFRAME 179 TYPE INTERMEDIATE
CONCRETEFRAME 180 TYPE INTERMEDIATE
CONCRETEFRAME 181 TYPE INTERMEDIATE
CONCRETEFRAME 182 TYPE INTERMEDIATE
CONCRETEFRAME 183 TYPE INTERMEDIATE
CONCRETEFRAME 184 TYPE INTERMEDIATE
CONCRETEFRAME 185 TYPE INTERMEDIATE
END SUPPLEMENTAL DATA

DISEÑO DE ELEMENTOS ESTRUCTURALES

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

MAT LABEL	MODULUS OF ELASTICITY	POISSON'S RATIO	THERMAL COEFF	WEIGHT PER UNIT VOL	MASS PER UNIT VOL
CONC	217.000	0.200	9.900E-06	2.403E-06	2.448E-09
C280	251.000	0.200	1.170E-05	2.400E-06	2.400E-09

SAP2000 v7.40 File: 05-98F25RE Ton-cm Units PAGE 2
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M A T E R I A L D E S I G N D A T A

MAT LABEL	DESIGN CODE	STEEL FY	CONCRETE FC	REBAR FY	CONCRETE FCS	REBAR FYS
CONC	C		0.210	4.200	0.210	2.800
C280	C		0.280	4.200	0.280	2.800

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

SECTION LABEL	MAT LABEL	COLUMN DEPTH	COLUMN WIDTH	REBAR PATTERN	CONCRETE COVER	BAR AREA
C30X55	C280	55.000	30.000	RR-3-4	4.000	0.000
P25X455Y	C280	25.000	225.000	RR-3-3	4.000	0.000
P25X475X	C280	170.000	25.000	RR-3-3	4.000	0.000
C40X70	C280	70.000	40.000	RR-3-4	4.000	0.000
C30X50	C280	50.000	30.000	RR-3-3	4.000	0.000
C40X60	C280	60.000	40.000	RR-4-4	4.000	0.000
C40X65	C280	65.000	40.000	RR-4-4	4.000	0.000

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

SECTION LABEL	MAT LABEL	BEAM DEPTH	BEAM WIDTH	TOP COVER	BOTTOM COVER	REBAR AT-1	REBAR AT-2	REBAR AB-1	REBAR AB-2
V25X50	CONC	50.000	25.000	3.000	3.000	0.000	0.000	0.000	0.000
V30X70	CONC	70.000	30.000	4.000	4.000	0.000	0.000	0.000	0.000
V30X50	CONC	50.000	30.000	4.000	4.000	0.000	0.000	0.000	0.000
V25X60	CONC	60.000	25.000	4.000	4.000	0.000	0.000	0.000	0.000

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

COMBO	TYPE	CASE	FACTOR	TYPE	TITLE
COMB1	ADD	D	1.5000	STATIC (DEAD)	COMB1
		L1	1.8000	STATIC (LIVE)	
COMB2	ADD	D	1.5000	STATIC (DEAD)	COMB2
		L2	1.8000	STATIC (LIVE)	
COMB3	ADD	D	1.5000	STATIC (DEAD)	COMB3
		L3	1.8000	STATIC (LIVE)	
COMB4	ADD	D	1.5000	STATIC (DEAD)	COMB4
		L1	1.8000	STATIC (LIVE)	
		L2	1.8000	STATIC (LIVE)	
		L3	1.8000	STATIC (LIVE)	

COMB5	ADD	D	1.2500	STATIC (DEAD)	COMB5
		L1	1.2500	STATIC (LIVE)	
		SX	1.2500	SPECTRA	
COMB6	ADD	D	1.2500	STATIC (DEAD)	COMB6
		L1	1.2500	STATIC (LIVE)	
		SY	1.2500	SPECTRA	
COMB7	ADD	D	1.2500	STATIC (DEAD)	COMB7
		L2	1.2500	STATIC (LIVE)	
		SX	1.2500	SPECTRA	
COMB8	ADD	D	1.2500	STATIC (DEAD)	COMB8
		L2	1.2500	STATIC (LIVE)	
		SY	1.2500	SPECTRA	
COMB9	ADD	D	1.2500	STATIC (DEAD)	COMB9
		L3	1.2500	STATIC (LIVE)	
		SX	1.2500	SPECTRA	
COMB10	ADD	D	1.2500	STATIC (DEAD)	COMB10
		L3	1.2500	STATIC (LIVE)	
		SY	1.2500	SPECTRA	
COMB11	ADD	D	1.2500	STATIC (DEAD)	COMB11
		L1	1.2500	STATIC (LIVE)	
		L2	1.2500	STATIC (LIVE)	
		SX	1.2500	SPECTRA	
COMB12	ADD	D	1.2500	STATIC (DEAD)	COMB12
		L1	1.2500	STATIC (LIVE)	
		L2	1.2500	STATIC (LIVE)	
		SY	1.2500	SPECTRA	
COMB13	ADD	D	0.9000	STATIC (DEAD)	COMB13
		SX	1.2500	SPECTRA	
COMB14	ADD	D	0.9000	STATIC (DEAD)	COMB14
		SY	1.2500	SPECTRA	

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

Code: ACI 318-99

Phi_bending : 0.9
 Phi_tension : 0.9
 Phi_compression(Tied) : 0.7
 Phi_compression(Spiral) : 0.75
 Phi_shear : 0.85

SAP2000 v7.40 File: 05-98F25RE Ton-cm Units PAGE 7
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C O N C R E T E D E S I G N E L E M E N T I N F O R M A T I O N (ACI 318-99)

FRAME ID	SECTION ID	ELEMENT TYPE	FRAMING TYPE	LLRF FACTOR	L_ratio MAJOR	L_ratio MINOR	K MAJOR	K MINOR
1	C30X50	COLUMN	SWYINTR	1.000	0.950	0.950	1.000	1.000
2	P25X455Y	COLUMN	SWYINTR	1.000	0.950	0.950	1.000	1.000
3	C30X50	COLUMN	SWYINTR	1.000	0.950	0.950	1.000	1.000

4	C40X60	COLUMN	SWYINTR	1.000	0.930	0.930	1.000	1.000
5	C40X70	COLUMN	SWYINTR	1.000	0.930	0.930	1.000	1.000
6	C40X60	COLUMN	SWYINTR	1.000	0.930	0.930	1.000	1.000
7	P25X475X	COLUMN	SWYINTR	1.000	0.930	0.930	1.000	1.000
8	C40X70	COLUMN	SWYINTR	1.000	0.930	0.930	1.000	1.000
9	P25X475X	COLUMN	SWYINTR	1.000	0.930	0.930	1.000	1.000
10	C40X60	COLUMN	SWYINTR	1.000	0.930	0.930	1.000	1.000
11	C40X70	COLUMN	SWYINTR	1.000	0.930	0.930	1.000	1.000
12	C40X60	COLUMN	SWYINTR	1.000	0.930	0.930	1.000	1.000
13	C30X50	COLUMN	SWYINTR	1.000	0.930	0.930	1.000	1.000
14	P25X455Y	COLUMN	SWYINTR	1.000	0.930	0.930	1.000	1.000
15	C30X50	COLUMN	SWYINTR	1.000	0.930	0.930	1.000	1.000
16	V25X60	BEAM	SWYINTR	1.000	0.640	0.640		
17	V25X60	BEAM	SWYINTR	1.000	0.639	0.639		
18	V25X50	BEAM	SWYINTR	1.000	0.940	0.940		
19	V25X50	BEAM	SWYINTR	1.000	0.935	0.935		
20	V25X50	BEAM	SWYINTR	1.000	0.940	0.940		
21	V30X70	BEAM	SWYINTR	1.000	0.911	0.911		
22	V30X70	BEAM	SWYINTR	1.000	0.911	0.911		
23	V25X50	BEAM	SWYINTR	1.000	0.495	0.495		
24	V25X50	BEAM	SWYINTR	1.000	0.920	0.920		
25	V25X50	BEAM	SWYINTR	1.000	0.495	0.495		
26	V30X70	BEAM	SWYINTR	1.000	0.932	0.932		
27	V30X70	BEAM	SWYINTR	1.000	0.932	0.932		
28	V25X50	BEAM	SWYINTR	1.000	0.495	0.495		
29	V25X50	BEAM	SWYINTR	1.000	0.920	0.920		
30	V25X50	BEAM	SWYINTR	1.000	0.495	0.495		
31	V30X70	BEAM	SWYINTR	1.000	0.911	0.911		
32	V30X70	BEAM	SWYINTR	1.000	0.911	0.911		
33	V25X50	BEAM	SWYINTR	1.000	0.940	0.940		
34	V25X50	BEAM	SWYINTR	1.000	0.935	0.935		
35	V25X50	BEAM	SWYINTR	1.000	0.940	0.940		
36	V25X60	BEAM	SWYINTR	1.000	0.640	0.640		
37	V25X60	BEAM	SWYINTR	1.000	0.639	0.639		
38	C30X50	COLUMN	SWYINTR	1.000	0.857	0.857	1.000	1.000
39	P25X455Y	COLUMN	SWYINTR	1.000	0.857	0.857	1.000	1.000
40	C30X50	COLUMN	SWYINTR	1.000	0.857	0.857	1.000	1.000
41	C40X60	COLUMN	SWYINTR	1.000	0.800	0.800	1.000	1.000
42	C40X70	COLUMN	SWYINTR	1.000	0.800	0.800	1.000	1.000
43	C40X60	COLUMN	SWYINTR	1.000	0.800	0.800	1.000	1.000
44	P25X475X	COLUMN	SWYINTR	1.000	0.800	0.800	1.000	1.000
45	C40X70	COLUMN	SWYINTR	1.000	0.800	0.800	1.000	1.000
46	P25X475X	COLUMN	SWYINTR	1.000	0.800	0.800	1.000	1.000
47	C40X60	COLUMN	SWYINTR	1.000	0.800	0.800	1.000	1.000
48	C40X70	COLUMN	SWYINTR	1.000	0.800	0.800	1.000	1.000
49	C40X60	COLUMN	SWYINTR	1.000	0.800	0.800	1.000	1.000
50	C30X50	COLUMN	SWYINTR	1.000	0.800	0.800	1.000	1.000
51	P25X455Y	COLUMN	SWYINTR	1.000	0.800	0.800	1.000	1.000
52	C30X50	COLUMN	SWYINTR	1.000	0.800	0.800	1.000	1.000
53	V25X60	BEAM	SWYINTR	1.000	0.640	0.640		
54	V25X60	BEAM	SWYINTR	1.000	0.639	0.639		
55	V25X50	BEAM	SWYINTR	1.000	0.940	0.940		
56	V25X50	BEAM	SWYINTR	1.000	0.935	0.935		
57	V25X50	BEAM	SWYINTR	1.000	0.940	0.940		
58	V30X70	BEAM	SWYINTR	1.000	0.911	0.911		
59	V30X70	BEAM	SWYINTR	1.000	0.911	0.911		
60	V25X50	BEAM	SWYINTR	1.000	0.495	0.495		
61	V25X50	BEAM	SWYINTR	1.000	0.920	0.920		
62	V25X50	BEAM	SWYINTR	1.000	0.495	0.495		
63	V30X70	BEAM	SWYINTR	1.000	0.932	0.932		
64	V30X70	BEAM	SWYINTR	1.000	0.932	0.932		
65	V25X50	BEAM	SWYINTR	1.000	0.495	0.495		
66	V25X50	BEAM	SWYINTR	1.000	0.920	0.920		
67	V25X50	BEAM	SWYINTR	1.000	0.495	0.495		
68	V30X70	BEAM	SWYINTR	1.000	0.911	0.911		
69	V30X70	BEAM	SWYINTR	1.000	0.911	0.911		
70	V25X50	BEAM	SWYINTR	1.000	0.940	0.940		
71	V25X50	BEAM	SWYINTR	1.000	0.935	0.935		
72	V25X50	BEAM	SWYINTR	1.000	0.940	0.940		
73	V25X60	BEAM	SWYINTR	1.000	0.640	0.640		
74	V25X60	BEAM	SWYINTR	1.000	0.639	0.639		
75	C30X50	COLUMN	SWYINTR	1.000	0.857	0.857	1.000	1.000
76	P25X455Y	COLUMN	SWYINTR	1.000	0.857	0.857	1.000	1.000
77	C30X50	COLUMN	SWYINTR	1.000	0.857	0.857	1.000	1.000
78	C40X60	COLUMN	SWYINTR	1.000	0.800	0.800	1.000	1.000
79	C40X70	COLUMN	SWYINTR	1.000	0.800	0.800	1.000	1.000
80	C40X60	COLUMN	SWYINTR	1.000	0.800	0.800	1.000	1.000

81	P25X475X	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
82	C40X70	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
83	P25X475X	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
84	C40X60	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
85	C40X70	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
86	C40X60	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
87	C30X50	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
88	P25X455Y	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
89	C30X50	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
90	V25X60	BEAM SWYINTR	1.000	0.640	0.640		
91	V25X60	BEAM SWYINTR	1.000	0.639	0.639		
92	V25X50	BEAM SWYINTR	1.000	0.940	0.940		
93	V25X50	BEAM SWYINTR	1.000	0.935	0.935		
94	V25X50	BEAM SWYINTR	1.000	0.940	0.940		
95	V30X70	BEAM SWYINTR	1.000	0.911	0.911		
96	V30X70	BEAM SWYINTR	1.000	0.911	0.911		
97	V25X50	BEAM SWYINTR	1.000	0.495	0.495		
98	V25X50	BEAM SWYINTR	1.000	0.920	0.920		
99	V25X50	BEAM SWYINTR	1.000	0.495	0.495		
100	V30X70	BEAM SWYINTR	1.000	0.932	0.932		
101	V30X70	BEAM SWYINTR	1.000	0.932	0.932		
102	V25X50	BEAM SWYINTR	1.000	0.495	0.495		
103	V25X50	BEAM SWYINTR	1.000	0.920	0.920		
104	V25X50	BEAM SWYINTR	1.000	0.495	0.495		
105	V30X70	BEAM SWYINTR	1.000	0.911	0.911		
106	V30X70	BEAM SWYINTR	1.000	0.911	0.911		
107	V25X50	BEAM SWYINTR	1.000	0.940	0.940		
108	V25X50	BEAM SWYINTR	1.000	0.935	0.935		
109	V25X50	BEAM SWYINTR	1.000	0.940	0.940		
110	V25X60	BEAM SWYINTR	1.000	0.640	0.640		
111	V25X60	BEAM SWYINTR	1.000	0.639	0.639		
112	C30X50	COLUMN SWYINTR	1.000	0.857	0.857	1.000	1.000
113	P25X455Y	COLUMN SWYINTR	1.000	0.857	0.857	1.000	1.000
114	C30X50	COLUMN SWYINTR	1.000	0.857	0.857	1.000	1.000
115	C40X60	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
116	C40X70	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
117	C40X60	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
118	P25X475X	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
119	C40X70	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
120	P25X475X	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
121	C40X60	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
122	C40X70	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
123	C40X60	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
124	C30X50	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
125	P25X455Y	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
126	C30X50	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
127	V25X60	BEAM SWYINTR	1.000	0.640	0.640		
128	V25X60	BEAM SWYINTR	1.000	0.639	0.639		
129	V25X50	BEAM SWYINTR	1.000	0.940	0.940		
130	V25X50	BEAM SWYINTR	1.000	0.935	0.935		
131	V25X50	BEAM SWYINTR	1.000	0.940	0.940		
132	V30X70	BEAM SWYINTR	1.000	0.911	0.911		
133	V30X70	BEAM SWYINTR	1.000	0.911	0.911		
134	V25X50	BEAM SWYINTR	1.000	0.495	0.495		
135	V25X50	BEAM SWYINTR	1.000	0.920	0.920		
136	V25X50	BEAM SWYINTR	1.000	0.495	0.495		
137	V30X70	BEAM SWYINTR	1.000	0.932	0.932		
138	V30X70	BEAM SWYINTR	1.000	0.932	0.932		
139	V25X50	BEAM SWYINTR	1.000	0.495	0.495		
140	V25X50	BEAM SWYINTR	1.000	0.920	0.920		
141	V25X50	BEAM SWYINTR	1.000	0.495	0.495		
142	V30X70	BEAM SWYINTR	1.000	0.911	0.911		
143	V30X70	BEAM SWYINTR	1.000	0.911	0.911		
144	V25X50	BEAM SWYINTR	1.000	0.940	0.940		
145	V25X50	BEAM SWYINTR	1.000	0.935	0.935		
146	V25X50	BEAM SWYINTR	1.000	0.940	0.940		
147	V25X60	BEAM SWYINTR	1.000	0.640	0.640		
148	V25X60	BEAM SWYINTR	1.000	0.639	0.639		
149	C30X50	COLUMN SWYINTR	1.000	0.857	0.857	1.000	1.000
150	P25X455Y	COLUMN SWYINTR	1.000	0.857	0.857	1.000	1.000
151	C30X50	COLUMN SWYINTR	1.000	0.857	0.857	1.000	1.000
152	C40X60	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
153	C40X70	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
154	C40X60	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
155	P25X475X	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
156	C40X70	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
157	P25X475X	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000

158	C40X60	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
159	C40X70	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
160	C40X60	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
161	C30X50	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
162	P25X455Y	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
163	C30X50	COLUMN SWYINTR	1.000	0.800	0.800	1.000	1.000
164	V25X60	BEAM SWYINTR	1.000	0.640	0.640		
165	V25X60	BEAM SWYINTR	1.000	0.639	0.639		
166	V25X50	BEAM SWYINTR	1.000	0.940	0.940		
167	V25X50	BEAM SWYINTR	1.000	0.935	0.935		
168	V25X50	BEAM SWYINTR	1.000	0.940	0.940		
169	V30X70	BEAM SWYINTR	1.000	0.911	0.911		
170	V30X70	BEAM SWYINTR	1.000	0.911	0.911		
171	V25X50	BEAM SWYINTR	1.000	0.495	0.495		
172	V25X50	BEAM SWYINTR	1.000	0.920	0.920		
173	V25X50	BEAM SWYINTR	1.000	0.495	0.495		
174	V30X70	BEAM SWYINTR	1.000	0.932	0.932		
175	V30X70	BEAM SWYINTR	1.000	0.932	0.932		
176	V25X50	BEAM SWYINTR	1.000	0.495	0.495		
177	V25X50	BEAM SWYINTR	1.000	0.920	0.920		
178	V25X50	BEAM SWYINTR	1.000	0.495	0.495		
179	V30X70	BEAM SWYINTR	1.000	0.911	0.911		
180	V30X70	BEAM SWYINTR	1.000	0.911	0.911		
181	V25X50	BEAM SWYINTR	1.000	0.940	0.940		
182	V25X50	BEAM SWYINTR	1.000	0.935	0.935		
183	V25X50	BEAM SWYINTR	1.000	0.940	0.940		
184	V25X60	BEAM SWYINTR	1.000	0.640	0.640		
185	V25X60	BEAM SWYINTR	1.000	0.639	0.639		

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C O N C R E T E D E S I G N O U T P U T (ACI 318-99)

BIAXIAL P-M INTERACTION AND SHEAR DESIGN OF COLUMN-TYPE ELEMENTS

ELEM ID	SECTION ID	STATION ID	<-----REQUIRED REINFORCING----->					
			LONGITUDINAL	COMBO	SHEAR22	COMBO	SHEAR33	COMBO
1	C30X50	0.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
1	C30X50	237.500	15.000	COMB14	0.000	COMB14	0.000	COMB14
1	C30X50	475.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
2	P25X455Y	0.000	Shear stress exceeds maximum allowed					
2	P25X455Y	237.500	Shear stress exceeds maximum allowed					
2	P25X455Y	475.000	Shear stress exceeds maximum allowed					
3	C30X50	0.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
3	C30X50	237.500	15.000	COMB14	0.000	COMB14	0.000	COMB14
3	C30X50	475.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
4	C40X60	0.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
4	C40X60	232.500	24.000	COMB14	0.000	COMB14	0.000	COMB14
4	C40X60	465.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
5	C40X70	0.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
5	C40X70	232.500	28.000	COMB14	0.000	COMB14	0.000	COMB14
5	C40X70	465.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
6	C40X60	0.000	27.566	COMB13	0.000	COMB14	0.000	COMB14
6	C40X60	232.500	24.000	COMB14	0.000	COMB14	0.000	COMB14
6	C40X60	465.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
7	P25X475X	0.000	108.200	COMB7	0.093	COMB13	0.000	COMB14
7	P25X475X	232.500	42.500	COMB14	0.093	COMB13	0.000	COMB14
7	P25X475X	465.000	42.500	COMB14	0.093	COMB13	0.000	COMB14
8	C40X70	0.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
8	C40X70	232.500	28.000	COMB14	0.000	COMB14	0.000	COMB14
8	C40X70	465.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
9	P25X475X	0.000	Shear stress exceeds maximum allowed					
9	P25X475X	232.500	Shear stress exceeds maximum allowed					
9	P25X475X	465.000	Shear stress exceeds maximum allowed					

ELEM ID	SECTION ID	STATION ID	<-----REQUIRED REINFORCING----->					
			LONGITUDINAL	COMBO	SHEAR22	COMBO	SHEAR33	COMBO
10	C40X60	0.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
10	C40X60	232.500	24.000	COMB14	0.000	COMB14	0.000	COMB14
10	C40X60	465.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
11	C40X70	0.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
11	C40X70	232.500	28.000	COMB14	0.000	COMB14	0.000	COMB14
11	C40X70	465.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
12	C40X60	0.000	28.011	COMB13	0.000	COMB14	0.000	COMB14
12	C40X60	232.500	24.000	COMB14	0.000	COMB14	0.000	COMB14
12	C40X60	465.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
13	C30X50	0.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
13	C30X50	232.500	15.000	COMB14	0.000	COMB14	0.000	COMB14
13	C30X50	465.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
14	P25X455Y	0.000	77.349	COMB14	0.000	COMB14	0.147	COMB14
14	P25X455Y	232.500	56.250	COMB14	0.000	COMB14	0.147	COMB14
14	P25X455Y	465.000	56.250	COMB14	0.000	COMB14	0.148	COMB14
15	C30X50	0.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
15	C30X50	232.500	15.000	COMB14	0.000	COMB14	0.000	COMB14
15	C30X50	465.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
38	C30X50	25.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
38	C30X50	175.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
38	C30X50	325.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
39	P25X455Y	25.000	Shear stress exceeds maximum allowed					
39	P25X455Y	175.000	Shear stress exceeds maximum allowed					
39	P25X455Y	325.000	Shear stress exceeds maximum allowed					
40	C30X50	25.000	15.815	COMB13	0.000	COMB14	0.000	COMB14
40	C30X50	175.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
40	C30X50	325.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
41	C40X60	35.000	27.160	COMB13	0.000	COMB14	0.017	COMB7
41	C40X60	175.000	24.000	COMB14	0.000	COMB14	0.017	COMB5
41	C40X60	315.000	24.000	COMB14	0.000	COMB14	0.017	COMB5
42	C40X70	35.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
42	C40X70	175.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
42	C40X70	315.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
43	C40X60	35.000	39.443	COMB13	0.000	COMB14	0.072	COMB11
43	C40X60	175.000	24.000	COMB14	0.000	COMB14	0.072	COMB11
43	C40X60	315.000	34.897	COMB7	0.000	COMB14	0.072	COMB11
44	P25X475X	35.000	Shear stress exceeds maximum allowed					
44	P25X475X	175.000	Shear stress exceeds maximum allowed					
44	P25X475X	315.000	Shear stress exceeds maximum allowed					
45	C40X70	35.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
45	C40X70	175.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
45	C40X70	315.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
46	P25X475X	35.000	Shear stress exceeds maximum allowed					
46	P25X475X	175.000	Shear stress exceeds maximum allowed					
46	P25X475X	315.000	Shear stress exceeds maximum allowed					
47	C40X60	35.000	26.677	COMB13	0.000	COMB14	0.015	COMB5
47	C40X60	175.000	24.000	COMB14	0.000	COMB14	0.016	COMB11
47	C40X60	315.000	24.000	COMB14	0.000	COMB14	0.016	COMB11
48	C40X70	35.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
48	C40X70	175.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
48	C40X70	315.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
49	C40X60	35.000	39.435	COMB13	0.000	COMB14	0.072	COMB11
49	C40X60	175.000	24.000	COMB14	0.000	COMB14	0.072	COMB11
49	C40X60	315.000	34.901	COMB7	0.000	COMB14	0.072	COMB11

ELEM ID	SECTION ID	STATION ID	<-----REQUIRED REINFORCING----->					
			LONGITUDINAL	COMBO	SHEAR22	COMBO	SHEAR33	COMBO
50	C30X50	35.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
50	C30X50	175.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
50	C30X50	315.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
51	P25X455Y	35.000	Shear stress exceeds maximum allowed					
51	P25X455Y	175.000	Shear stress exceeds maximum allowed					
51	P25X455Y	315.000	Shear stress exceeds maximum allowed					
52	C30X50	35.000	15.194	COMB13	0.000	COMB14	0.000	COMB14
52	C30X50	175.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
52	C30X50	315.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
75	C30X50	25.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
75	C30X50	175.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
75	C30X50	325.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
76	P25X455Y	25.000	Shear stress exceeds maximum allowed					
76	P25X455Y	175.000	Shear stress exceeds maximum allowed					
76	P25X455Y	325.000	Shear stress exceeds maximum allowed					
77	C30X50	25.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
77	C30X50	175.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
77	C30X50	325.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
78	C40X60	35.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
78	C40X60	175.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
78	C40X60	315.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
79	C40X70	35.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
79	C40X70	175.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
79	C40X70	315.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
80	C40X60	35.000	24.000	COMB14	0.000	COMB14	0.014	COMB11
80	C40X60	175.000	24.000	COMB14	0.000	COMB14	0.013	COMB11
80	C40X60	315.000	28.948	COMB13	0.000	COMB14	0.013	COMB11
81	P25X475X	35.000	42.500	COMB14	0.000	COMB14	0.000	COMB14
81	P25X475X	175.000	42.500	COMB14	0.000	COMB14	0.000	COMB14
81	P25X475X	315.000	42.500	COMB14	0.000	COMB14	0.000	COMB14
82	C40X70	35.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
82	C40X70	175.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
82	C40X70	315.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
83	P25X475X	35.000	42.500	COMB14	0.017	COMB13	0.000	COMB14
83	P25X475X	175.000	42.500	COMB14	0.018	COMB13	0.000	COMB14
83	P25X475X	315.000	42.500	COMB14	0.018	COMB13	0.000	COMB14
84	C40X60	35.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
84	C40X60	175.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
84	C40X60	315.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
85	C40X70	35.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
85	C40X70	175.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
85	C40X70	315.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
86	C40X60	35.000	24.046	COMB13	0.000	COMB14	0.014	COMB11
86	C40X60	175.000	24.000	COMB14	0.000	COMB14	0.013	COMB11
86	C40X60	315.000	28.815	COMB5	0.000	COMB14	0.013	COMB11
87	C30X50	35.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
87	C30X50	175.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
87	C30X50	315.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
88	P25X455Y	35.000	Shear stress exceeds maximum allowed					
88	P25X455Y	175.000	Shear stress exceeds maximum allowed					
88	P25X455Y	315.000	Shear stress exceeds maximum allowed					
89	C30X50	35.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
89	C30X50	175.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
89	C30X50	315.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
112	C30X50	25.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
112	C30X50	175.000	15.000	COMB14	0.000	COMB14	0.000	COMB14

ELEM ID	SECTION ID	STATION ID	<-----REQUIRED REINFORCING----->					
			LONGITUDINAL	COMBO	SHEAR22	COMBO	SHEAR33	COMBO
112	C30X50	325.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
113	P25X455Y	25.000	Shear stress exceeds maximum allowed					
113	P25X455Y	175.000	Shear stress exceeds maximum allowed					
113	P25X455Y	325.000	Shear stress exceeds maximum allowed					
114	C30X50	25.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
114	C30X50	175.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
114	C30X50	325.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
115	C40X60	35.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
115	C40X60	175.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
115	C40X60	315.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
116	C40X70	35.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
116	C40X70	175.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
116	C40X70	315.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
117	C40X60	35.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
117	C40X60	175.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
117	C40X60	315.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
118	P25X475X	35.000	42.500	COMB14	0.000	COMB14	0.000	COMB14
118	P25X475X	175.000	42.500	COMB14	0.000	COMB14	0.000	COMB14
118	P25X475X	315.000	42.500	COMB14	0.000	COMB14	0.000	COMB14
119	C40X70	35.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
119	C40X70	175.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
119	C40X70	315.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
120	P25X475X	35.000	42.500	COMB14	0.000	COMB14	0.000	COMB14
120	P25X475X	175.000	42.500	COMB14	0.000	COMB14	0.000	COMB14
120	P25X475X	315.000	42.500	COMB14	0.000	COMB14	0.000	COMB14
121	C40X60	35.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
121	C40X60	175.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
121	C40X60	315.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
122	C40X70	35.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
122	C40X70	175.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
122	C40X70	315.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
123	C40X60	35.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
123	C40X60	175.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
123	C40X60	315.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
124	C30X50	35.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
124	C30X50	175.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
124	C30X50	315.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
125	P25X455Y	35.000	Shear stress exceeds maximum allowed					
125	P25X455Y	175.000	Shear stress exceeds maximum allowed					
125	P25X455Y	315.000	Shear stress exceeds maximum allowed					
126	C30X50	35.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
126	C30X50	175.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
126	C30X50	315.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
149	C30X50	25.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
149	C30X50	175.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
149	C30X50	325.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
150	P25X455Y	25.000	56.250	COMB14	0.000	COMB14	0.000	COMB14
150	P25X455Y	175.000	56.250	COMB14	0.000	COMB14	0.000	COMB14
150	P25X455Y	325.000	56.250	COMB14	0.000	COMB14	0.000	COMB14
151	C30X50	25.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
151	C30X50	175.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
151	C30X50	325.000	15.106	COMB12	0.000	COMB14	0.000	COMB14
152	C40X60	35.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
152	C40X60	175.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
152	C40X60	315.000	25.026	COMB12	0.000	COMB14	0.000	COMB14

ELEM ID	SECTION ID	STATION ID	<-----REQUIRED REINFORCING----->					
			LONGITUDINAL	COMBO	SHEAR22	COMBO	SHEAR33	COMBO
153	C40X70	35.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
153	C40X70	175.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
153	C40X70	315.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
154	C40X60	35.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
154	C40X60	175.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
154	C40X60	315.000	26.420	COMB11	0.000	COMB14	0.000	COMB14
155	P25X475X	35.000	42.500	COMB14	0.000	COMB14	0.000	COMB14
155	P25X475X	175.000	42.500	COMB14	0.000	COMB14	0.000	COMB14
155	P25X475X	315.000	42.500	COMB14	0.000	COMB14	0.000	COMB14
156	C40X70	35.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
156	C40X70	175.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
156	C40X70	315.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
157	P25X475X	35.000	42.500	COMB14	0.000	COMB14	0.000	COMB14
157	P25X475X	175.000	42.500	COMB14	0.000	COMB14	0.000	COMB14
157	P25X475X	315.000	42.500	COMB14	0.000	COMB14	0.000	COMB14
158	C40X60	35.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
158	C40X60	175.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
158	C40X60	315.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
159	C40X70	35.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
159	C40X70	175.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
159	C40X70	315.000	28.000	COMB14	0.000	COMB14	0.000	COMB14
160	C40X60	35.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
160	C40X60	175.000	24.000	COMB14	0.000	COMB14	0.000	COMB14
160	C40X60	315.000	26.055	COMB11	0.000	COMB14	0.000	COMB14
161	C30X50	35.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
161	C30X50	175.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
161	C30X50	315.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
162	P25X455Y	35.000	56.250	COMB14	0.000	COMB14	0.000	COMB14
162	P25X455Y	175.000	56.250	COMB14	0.000	COMB14	0.000	COMB14
162	P25X455Y	315.000	56.250	COMB14	0.000	COMB14	0.000	COMB14
163	C30X50	35.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
163	C30X50	175.000	15.000	COMB14	0.000	COMB14	0.000	COMB14
163	C30X50	315.000	15.000	COMB14	0.000	COMB14	0.000	COMB14

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C O N C R E T E D E S I G N O U T P U T (ACI 318-99)

FLEXURAL AND SHEAR DESIGN OF BEAM-TYPE ELEMENTS

ELEM ID	SECTION ID	STATION ID	<-----REQUIRED REINFORCING----->					
			TOP	COMBO	BOTTOM	COMBO	SHEAR	COMBO
16	V25X60	25.000	10.150	COMB12	5.896	COMB14	0.030	COMB12
16	V25X60	136.938	4.675	COMB6	4.687	COMB6	0.005	COMB12
16	V25X60	248.875	2.336	COMB6	3.341	COMB2	0.000	COMB14
16	V25X60	360.813	2.336	COMB6	4.403	COMB6	0.000	COMB14
16	V25X60	472.750	6.411	COMB12	4.992	COMB14	0.019	COMB8
17	V25X60	227.500	6.397	COMB12	4.986	COMB14	0.019	COMB6
17	V25X60	339.375	2.505	COMB6	4.687	COMB6	0.000	COMB14
17	V25X60	451.250	2.505	COMB6	3.338	COMB1	0.000	COMB14
17	V25X60	563.125	4.361	COMB6	4.687	COMB6	0.005	COMB12
17	V25X60	675.000	10.140	COMB12	5.889	COMB14	0.030	COMB12
18	V25X50	15.000	6.575	COMB9	5.346	COMB13	0.000	COMB14
18	V25X50	132.500	3.434	COMB5	3.934	COMB5	0.000	COMB14
18	V25X50	250.000	1.609	COMB5	1.677	COMB9	0.000	COMB14

ELEM ID	SECTION ID	STATION ID	←-----REQUIRED REINFORCING----->					
			TOP	COMBO	BOTTOM	COMBO	SHEAR	COMBO
18	V25X50	367.500	3.181	COMB5	3.746	COMB5	0.000	COMB14
18	V25X50	485.000	6.654	COMB9	4.936	COMB13	0.000	COMB14
19	V25X50	12.500	10.915	COMB9	8.420	COMB13	0.011	COMB9
19	V25X50	129.375	4.656	COMB11	4.634	COMB9	0.000	COMB14
19	V25X50	246.250	2.589	COMB5	2.589	COMB5	0.000	COMB14
19	V25X50	363.125	3.934	COMB5	4.419	COMB11	0.000	COMB14
19	V25X50	480.000	9.399	COMB9	8.447	COMB11	0.006	COMB9
20	V25X50	15.000	8.291	COMB9	7.013	COMB13	0.000	COMB14
20	V25X50	132.500	3.934	COMB5	4.095	COMB9	0.000	COMB14
20	V25X50	250.000	2.010	COMB5	2.010	COMB5	0.000	COMB14
20	V25X50	367.500	3.934	COMB5	3.934	COMB5	0.000	COMB14
20	V25X50	485.000	8.306	COMB9	6.523	COMB13	0.000	COMB14
21	V30X70	27.500	19.108	COMB12	7.961	COMB14	0.081	COMB8
21	V30X70	186.875	5.665	COMB6	7.989	COMB8	0.025	COMB8
21	V30X70	346.250	4.380	COMB6	6.629	COMB2	0.000	COMB14
21	V30X70	505.625	5.994	COMB6	7.025	COMB8	0.030	COMB12
21	V30X70	665.000	20.256	COMB12	6.771	COMB14	0.087	COMB12
22	V30X70	35.000	20.202	COMB12	6.728	COMB14	0.086	COMB12
22	V30X70	194.375	4.739	COMB6	7.003	COMB6	0.030	COMB12
22	V30X70	353.750	4.739	COMB6	6.629	COMB1	0.000	COMB14
22	V30X70	513.125	4.739	COMB6	7.970	COMB6	0.024	COMB6
22	V30X70	672.500	19.062	COMB12	7.920	COMB14	0.081	COMB6
23	V25X50	15.000	15.638	COMB9	14.989	COMB11	0.076	COMB9
23	V25X50	76.875	8.368	COMB9	8.594	COMB11	0.070	COMB9
23	V25X50	138.750	3.550	COMB5	3.849	COMB5	0.065	COMB9
23	V25X50	200.625	3.550	COMB5	3.607	COMB5	0.067	COMB11
23	V25X50	262.500	8.434	COMB11	8.256	COMB9	0.072	COMB9
24	V25X50	20.000	9.651	COMB9	7.860	COMB13	0.006	COMB9
24	V25X50	135.000	3.934	COMB5	4.187	COMB9	0.000	COMB14
24	V25X50	250.000	2.299	COMB5	2.299	COMB5	0.000	COMB14
24	V25X50	365.000	3.995	COMB13	4.296	COMB9	0.000	COMB14
24	V25X50	480.000	9.719	COMB9	7.981	COMB13	0.006	COMB9
25	V25X50	15.000	20.282	COMB9	19.802	COMB11	0.111	COMB9
25	V25X50	76.875	10.932	COMB9	11.173	COMB11	0.105	COMB9
25	V25X50	138.750	3.934	COMB5	3.934	COMB5	0.100	COMB9
25	V25X50	200.625	3.934	COMB5	3.934	COMB5	0.102	COMB11
25	V25X50	262.500	10.960	COMB11	10.771	COMB9	0.107	COMB9
26	V30X70	12.500	13.731	COMB12	5.136	COMB6	0.065	COMB8
26	V30X70	175.625	3.953	COMB6	6.885	COMB8	0.007	COMB8
26	V30X70	338.750	3.953	COMB6	7.206	COMB2	0.000	COMB14
26	V30X70	501.875	4.963	COMB6	6.629	COMB6	0.021	COMB12
26	V30X70	665.000	18.569	COMB12	6.629	COMB6	0.079	COMB12
27	V30X70	35.000	18.569	COMB12	6.629	COMB6	0.079	COMB12
27	V30X70	198.125	4.396	COMB6	6.629	COMB6	0.021	COMB12
27	V30X70	361.250	4.396	COMB6	7.206	COMB1	0.000	COMB14
27	V30X70	524.375	4.396	COMB6	6.885	COMB6	0.007	COMB6
27	V30X70	687.500	13.732	COMB12	5.688	COMB6	0.065	COMB6
28	V25X50	237.500	8.445	COMB11	8.258	COMB9	0.072	COMB9
28	V25X50	299.375	3.548	COMB5	3.613	COMB5	0.067	COMB11
28	V25X50	361.250	3.548	COMB5	3.846	COMB5	0.065	COMB9
28	V25X50	423.125	8.359	COMB9	8.597	COMB11	0.070	COMB9
28	V25X50	485.000	15.624	COMB9	14.998	COMB11	0.076	COMB9
29	V25X50	20.000	9.721	COMB9	7.975	COMB13	0.006	COMB9
29	V25X50	135.000	3.996	COMB13	4.294	COMB9	0.000	COMB14
29	V25X50	250.000	2.299	COMB5	2.299	COMB5	0.000	COMB14
29	V25X50	365.000	3.934	COMB5	4.185	COMB9	0.000	COMB14
29	V25X50	480.000	9.636	COMB9	7.855	COMB13	0.006	COMB9
30	V25X50	237.500	10.959	COMB11	10.761	COMB9	0.107	COMB9
30	V25X50	299.375	3.934	COMB5	3.934	COMB5	0.102	COMB11
30	V25X50	361.250	3.934	COMB5	3.934	COMB5	0.099	COMB9
30	V25X50	423.125	10.905	COMB9	11.158	COMB11	0.105	COMB9

ELEM ID	SECTION ID	STATION ID	←-----REQUIRED REINFORCING----->					
			TOP	COMBO	BOTTOM	COMBO	SHEAR	COMBO
30	V25X50	485.000	20.250	COMB9	19.785	COMB11	0.111	COMB9
31	V30X70	27.500	16.369	COMB12	5.961	COMB6	0.070	COMB8
31	V30X70	186.875	4.130	COMB6	6.782	COMB8	0.014	COMB8
31	V30X70	346.250	3.803	COMB6	6.629	COMB2	0.000	COMB14
31	V30X70	505.625	4.564	COMB6	6.528	COMB6	0.019	COMB12
31	V30X70	665.000	17.568	COMB12	6.414	COMB6	0.076	COMB12
32	V30X70	35.000	17.613	COMB12	6.629	COMB6	0.076	COMB12
32	V30X70	194.375	4.182	COMB6	6.629	COMB6	0.020	COMB12
32	V30X70	353.750	4.182	COMB6	6.629	COMB1	0.000	COMB14
32	V30X70	513.125	4.182	COMB6	6.799	COMB6	0.014	COMB6
32	V30X70	672.500	16.412	COMB12	6.629	COMB6	0.071	COMB6
33	V25X50	15.000	6.721	COMB9	5.011	COMB13	0.000	COMB14
33	V25X50	132.500	3.195	COMB5	3.758	COMB5	0.000	COMB14
33	V25X50	250.000	1.655	COMB5	1.655	COMB5	0.000	COMB14
33	V25X50	367.500	3.589	COMB5	3.934	COMB5	0.000	COMB14
33	V25X50	485.000	6.778	COMB9	5.508	COMB13	0.000	COMB14
34	V25X50	20.000	9.456	COMB9	8.513	COMB11	0.007	COMB9
34	V25X50	136.875	3.934	COMB5	4.427	COMB11	0.000	COMB14
34	V25X50	253.750	2.626	COMB5	2.626	COMB5	0.000	COMB14
34	V25X50	370.625	4.752	COMB11	4.707	COMB9	4.974E-04	COMB9
34	V25X50	487.500	11.089	COMB9	8.554	COMB13	0.011	COMB9
35	V25X50	15.000	8.400	COMB9	6.624	COMB13	4.141E-04	COMB9
35	V25X50	132.500	3.934	COMB5	3.934	COMB5	0.000	COMB14
35	V25X50	250.000	2.069	COMB5	2.069	COMB5	0.000	COMB14
35	V25X50	367.500	3.934	COMB5	4.219	COMB9	0.000	COMB14
35	V25X50	485.000	8.555	COMB9	7.232	COMB13	0.000	COMB14
36	V25X60	25.000	7.479	COMB12	3.747	COMB6	0.016	COMB12
36	V25X60	136.938	2.900	COMB6	4.058	COMB6	0.000	COMB14
36	V25X60	248.875	1.711	COMB6	3.316	COMB2	0.000	COMB14
36	V25X60	360.813	1.711	COMB6	3.329	COMB6	0.000	COMB14
36	V25X60	472.750	4.687	COMB6	3.843	COMB6	0.004	COMB8
37	V25X60	227.500	4.687	COMB6	3.584	COMB6	0.004	COMB6
37	V25X60	339.375	1.886	COMB6	3.937	COMB6	0.000	COMB14
37	V25X60	451.250	1.886	COMB6	3.313	COMB1	0.000	COMB14
37	V25X60	563.125	2.614	COMB6	4.367	COMB6	0.000	COMB14
37	V25X60	675.000	7.490	COMB12	4.503	COMB14	0.016	COMB12
53	V25X60	25.000	11.388	COMB12	6.653	COMB14	0.035	COMB12
53	V25X60	136.938	4.687	COMB6	5.082	COMB6	0.010	COMB12
53	V25X60	248.875	2.768	COMB6	3.220	COMB1	0.000	COMB14
53	V25X60	360.813	2.768	COMB6	4.687	COMB6	0.000	COMB14
53	V25X60	472.750	6.874	COMB6	5.490	COMB14	0.023	COMB6
54	V25X60	227.500	6.855	COMB8	5.478	COMB14	0.023	COMB8
54	V25X60	339.375	2.613	COMB6	4.554	COMB6	0.000	COMB14
54	V25X60	451.250	2.613	COMB6	3.218	COMB2	0.000	COMB14
54	V25X60	563.125	4.687	COMB6	5.074	COMB8	0.010	COMB12
54	V25X60	675.000	11.372	COMB12	6.640	COMB14	0.035	COMB12
55	V25X50	15.000	7.329	COMB9	5.749	COMB13	0.000	COMB14
55	V25X50	132.500	3.798	COMB5	3.934	COMB5	0.000	COMB14
55	V25X50	250.000	1.778	COMB5	1.778	COMB5	0.000	COMB14
55	V25X50	367.500	3.740	COMB5	3.934	COMB5	0.000	COMB14
55	V25X50	485.000	7.392	COMB9	5.815	COMB13	0.000	COMB14
56	V25X50	12.500	11.537	COMB9	8.230	COMB13	0.014	COMB9
56	V25X50	129.375	4.912	COMB11	4.404	COMB13	0.004	COMB9
56	V25X50	246.250	2.724	COMB5	2.724	COMB5	0.000	COMB14
56	V25X50	363.125	3.934	COMB5	4.832	COMB11	0.000	COMB14
56	V25X50	480.000	9.345	COMB9	9.270	COMB11	0.005	COMB9
57	V25X50	15.000	9.614	COMB9	7.948	COMB13	0.006	COMB9
57	V25X50	132.500	3.934	COMB5	4.371	COMB9	0.000	COMB14
57	V25X50	250.000	2.301	COMB5	2.301	COMB5	0.000	COMB14
57	V25X50	367.500	3.934	COMB5	4.371	COMB9	0.000	COMB14
57	V25X50	485.000	9.683	COMB9	8.021	COMB13	0.006	COMB9

ELEM ID	SECTION ID	STATION ID	←-----REQUIRED REINFORCING----->					
			TOP	COMBO	BOTTOM	COMBO	SHEAR	COMBO
58	V30X70	27.500	22.348	COMB12	9.045	COMB14	0.092	COMB6
58	V30X70	186.875	6.244	COMB6	8.295	COMB6	0.035	COMB6
58	V30X70	346.250	5.239	COMB6	6.629	COMB1	0.000	COMB14
58	V30X70	505.625	5.461	COMB6	8.096	COMB6	0.034	COMB12
58	V30X70	665.000	21.463	COMB12	8.811	COMB14	0.090	COMB12
59	V30X70	35.000	21.379	COMB12	8.743	COMB14	0.090	COMB12
59	V30X70	194.375	6.629	COMB6	8.061	COMB8	0.033	COMB12
59	V30X70	353.750	4.775	COMB6	6.629	COMB2	0.000	COMB14
59	V30X70	513.125	6.629	COMB6	8.264	COMB8	0.035	COMB8
59	V30X70	672.500	22.271	COMB12	8.979	COMB14	0.091	COMB8
60	V25X50	15.000	15.133	COMB9	15.230	COMB11	0.069	COMB9
60	V25X50	76.875	8.337	COMB13	8.915	COMB11	0.063	COMB9
60	V25X50	138.750	3.588	COMB5	3.934	COMB5	0.060	COMB11
60	V25X50	200.625	3.513	COMB5	3.513	COMB5	0.064	COMB11
60	V25X50	262.500	7.774	COMB11	7.375	COMB13	0.069	COMB9
61	V25X50	20.000	10.163	COMB9	8.357	COMB13	0.009	COMB9
61	V25X50	135.000	4.156	COMB13	4.443	COMB9	0.000	COMB14
61	V25X50	250.000	2.398	COMB5	2.398	COMB5	0.000	COMB14
61	V25X50	365.000	4.155	COMB13	4.475	COMB9	0.000	COMB14
61	V25X50	480.000	10.136	COMB9	8.403	COMB13	0.009	COMB9
62	V25X50	15.000	20.642	COMB9	20.714	COMB11	0.110	COMB9
62	V25X50	76.875	11.486	COMB13	12.111	COMB11	0.104	COMB9
62	V25X50	138.750	3.934	COMB5	4.316	COMB9	0.101	COMB11
62	V25X50	200.625	3.934	COMB5	3.934	COMB5	0.105	COMB11
62	V25X50	262.500	10.556	COMB11	10.129	COMB13	0.110	COMB9
63	V30X70	12.500	17.506	COMB12	6.629	COMB6	0.077	COMB12
63	V30X70	175.625	4.547	COMB6	7.078	COMB6	0.019	COMB12
63	V30X70	338.750	4.547	COMB6	6.943	COMB1	0.000	COMB14
63	V30X70	501.875	4.547	COMB6	7.344	COMB6	0.023	COMB6
63	V30X70	665.000	19.088	COMB12	6.629	COMB6	0.081	COMB6
64	V30X70	35.000	19.087	COMB12	6.629	COMB6	0.081	COMB8
64	V30X70	198.125	5.405	COMB6	7.344	COMB8	0.023	COMB8
64	V30X70	361.250	4.095	COMB6	6.943	COMB2	0.000	COMB14
64	V30X70	524.375	4.374	COMB6	7.078	COMB8	0.019	COMB12
64	V30X70	687.500	17.507	COMB12	6.516	COMB6	0.077	COMB12
65	V25X50	237.500	7.792	COMB11	7.383	COMB13	0.069	COMB9
65	V25X50	299.375	3.518	COMB5	3.518	COMB5	0.064	COMB11
65	V25X50	361.250	3.583	COMB5	3.934	COMB5	0.060	COMB11
65	V25X50	423.125	8.336	COMB13	8.926	COMB11	0.063	COMB9
65	V25X50	485.000	15.127	COMB9	15.255	COMB11	0.069	COMB9
66	V25X50	20.000	10.143	COMB9	8.398	COMB13	0.009	COMB9
66	V25X50	135.000	4.157	COMB13	4.472	COMB9	0.000	COMB14
66	V25X50	250.000	2.396	COMB5	2.396	COMB5	0.000	COMB14
66	V25X50	365.000	4.151	COMB13	4.444	COMB9	0.000	COMB14
66	V25X50	480.000	10.149	COMB9	8.357	COMB13	0.009	COMB9
67	V25X50	237.500	10.555	COMB11	10.118	COMB13	0.110	COMB9
67	V25X50	299.375	3.934	COMB5	3.934	COMB5	0.105	COMB11
67	V25X50	361.250	3.934	COMB5	4.309	COMB9	0.101	COMB11
67	V25X50	423.125	11.457	COMB13	12.096	COMB11	0.104	COMB9
67	V25X50	485.000	20.602	COMB9	20.698	COMB11	0.110	COMB9
68	V30X70	27.500	18.887	COMB12	6.629	COMB6	0.079	COMB6
68	V30X70	186.875	4.510	COMB6	6.839	COMB6	0.022	COMB6
68	V30X70	346.250	4.510	COMB6	6.629	COMB1	0.000	COMB14
68	V30X70	505.625	4.510	COMB6	6.725	COMB6	0.021	COMB12
68	V30X70	665.000	18.143	COMB12	6.629	COMB6	0.077	COMB12
69	V30X70	35.000	18.212	COMB12	6.629	COMB6	0.078	COMB12
69	V30X70	194.375	5.104	COMB6	6.756	COMB8	0.021	COMB12
69	V30X70	353.750	4.080	COMB6	6.629	COMB2	0.000	COMB14
69	V30X70	513.125	5.604	COMB6	6.866	COMB8	0.023	COMB8
69	V30X70	672.500	18.956	COMB12	6.629	COMB6	0.079	COMB8
70	V25X50	15.000	7.476	COMB9	5.909	COMB13	0.000	COMB14
70	V25X50	132.500	3.760	COMB5	3.934	COMB5	0.000	COMB14

ELEM ID	SECTION ID	STATION ID	←-----REQUIRED REINFORCING----->					
			TOP	COMBO	BOTTOM	COMBO	SHEAR	COMBO
70	V25X50	250.000	1.835	COMB5	1.835	COMB5	0.000	COMB14
70	V25X50	367.500	3.934	COMB5	3.934	COMB5	0.000	COMB14
70	V25X50	485.000	7.580	COMB9	5.946	COMB13	0.000	COMB14
71	V25X50	20.000	9.408	COMB9	9.348	COMB11	0.005	COMB9
71	V25X50	136.875	3.934	COMB5	4.842	COMB11	0.000	COMB14
71	V25X50	253.750	2.766	COMB5	2.766	COMB5	0.000	COMB14
71	V25X50	370.625	5.021	COMB11	4.488	COMB13	0.004	COMB9
71	V25X50	487.500	11.736	COMB9	8.374	COMB13	0.015	COMB9
72	V25X50	15.000	9.810	COMB9	8.155	COMB13	0.007	COMB9
72	V25X50	132.500	3.934	COMB5	4.390	COMB9	0.000	COMB14
72	V25X50	250.000	2.376	COMB5	2.376	COMB5	0.000	COMB14
72	V25X50	367.500	4.097	COMB13	4.528	COMB9	0.000	COMB14
72	V25X50	485.000	9.960	COMB9	8.232	COMB13	0.007	COMB9
73	V25X60	25.000	8.208	COMB12	4.687	COMB14	0.019	COMB12
73	V25X60	136.938	3.115	COMB6	4.557	COMB6	0.000	COMB14
73	V25X60	248.875	2.037	COMB6	3.192	COMB1	0.000	COMB14
73	V25X60	360.813	2.037	COMB6	3.956	COMB6	0.000	COMB14
73	V25X60	472.750	4.687	COMB6	3.862	COMB6	0.006	COMB6
74	V25X60	227.500	4.687	COMB6	4.215	COMB6	0.006	COMB8
74	V25X60	339.375	1.889	COMB6	3.376	COMB6	0.000	COMB14
74	V25X60	451.250	1.889	COMB6	3.190	COMB2	0.000	COMB14
74	V25X60	563.125	3.490	COMB6	4.202	COMB6	0.000	COMB14
74	V25X60	675.000	8.225	COMB12	4.013	COMB6	0.019	COMB12
90	V25X60	25.000	10.178	COMB12	5.757	COMB14	0.030	COMB12
90	V25X60	136.938	4.687	COMB6	4.687	COMB6	0.005	COMB12
90	V25X60	248.875	2.343	COMB6	3.273	COMB2	0.000	COMB14
90	V25X60	360.813	2.343	COMB6	4.236	COMB6	0.000	COMB14
90	V25X60	472.750	6.252	COMB12	4.819	COMB14	0.018	COMB8
91	V25X60	227.500	6.230	COMB12	4.805	COMB14	0.018	COMB6
91	V25X60	339.375	2.497	COMB6	4.687	COMB6	0.000	COMB14
91	V25X60	451.250	2.497	COMB6	3.271	COMB1	0.000	COMB14
91	V25X60	563.125	4.391	COMB6	4.687	COMB6	0.004	COMB12
91	V25X60	675.000	10.158	COMB12	5.740	COMB14	0.030	COMB12
92	V25X50	15.000	5.944	COMB9	4.404	COMB13	0.000	COMB14
92	V25X50	132.500	2.969	COMB5	3.473	COMB5	0.000	COMB14
92	V25X50	250.000	1.452	COMB5	1.197	COMB3	0.000	COMB14
92	V25X50	367.500	2.782	COMB5	3.532	COMB5	0.000	COMB14
92	V25X50	485.000	5.878	COMB9	4.442	COMB13	0.000	COMB14
93	V25X50	12.500	9.656	COMB9	6.209	COMB13	0.004	COMB9
93	V25X50	129.375	4.112	COMB11	3.934	COMB5	0.000	COMB14
93	V25X50	246.250	2.321	COMB5	2.321	COMB5	0.000	COMB14
93	V25X50	363.125	3.516	COMB5	4.089	COMB11	0.000	COMB14
93	V25X50	480.000	7.217	COMB9	7.611	COMB11	0.000	COMB14
94	V25X50	15.000	7.969	COMB9	6.358	COMB13	0.000	COMB14
94	V25X50	132.500	3.934	COMB5	3.934	COMB5	0.000	COMB14
94	V25X50	250.000	1.931	COMB5	1.931	COMB5	0.000	COMB14
94	V25X50	367.500	3.934	COMB5	3.934	COMB5	0.000	COMB14
94	V25X50	485.000	7.880	COMB9	6.379	COMB13	0.000	COMB14
95	V30X70	27.500	20.332	COMB12	7.436	COMB14	0.085	COMB8
95	V30X70	186.875	6.315	COMB6	7.514	COMB8	0.028	COMB8
95	V30X70	346.250	4.368	COMB6	6.629	COMB2	0.000	COMB14
95	V30X70	505.625	5.750	COMB6	7.406	COMB8	0.026	COMB12
95	V30X70	665.000	19.439	COMB12	7.274	COMB14	0.083	COMB12
96	V30X70	35.000	19.342	COMB12	7.195	COMB14	0.082	COMB12
96	V30X70	194.375	4.805	COMB6	7.366	COMB6	0.026	COMB12
96	V30X70	353.750	4.805	COMB6	6.629	COMB1	0.000	COMB14
96	V30X70	513.125	5.101	COMB6	7.477	COMB6	0.028	COMB6
96	V30X70	672.500	20.245	COMB12	7.361	COMB14	0.084	COMB6
97	V25X50	15.000	11.176	COMB9	11.552	COMB11	0.041	COMB9
97	V25X50	76.875	6.226	COMB13	6.912	COMB11	0.035	COMB9
97	V25X50	138.750	2.754	COMB5	3.383	COMB5	0.034	COMB11
97	V25X50	200.625	2.754	COMB5	2.754	COMB5	0.038	COMB11

ELEM ID	SECTION ID	STATION ID	←-----REQUIRED REINFORCING----->					
			TOP	COMBO	BOTTOM	COMBO	SHEAR	COMBO
97	V25X50	262.500	6.222	COMB11	5.703	COMB13	0.043	COMB9
98	V25X50	20.000	8.206	COMB9	6.480	COMB13	0.000	COMB14
98	V25X50	135.000	3.934	COMB5	3.934	COMB5	0.000	COMB14
98	V25X50	250.000	1.958	COMB5	1.958	COMB5	0.000	COMB14
98	V25X50	365.000	3.934	COMB5	3.934	COMB5	0.000	COMB14
98	V25X50	480.000	8.194	COMB9	6.559	COMB13	0.000	COMB14
99	V25X50	15.000	16.309	COMB9	16.743	COMB11	0.078	COMB9
99	V25X50	76.875	8.899	COMB13	9.631	COMB11	0.072	COMB9
99	V25X50	138.750	3.802	COMB5	3.934	COMB5	0.072	COMB11
99	V25X50	200.625	3.802	COMB5	3.802	COMB5	0.076	COMB11
99	V25X50	262.500	8.677	COMB11	8.128	COMB13	0.080	COMB9
100	V30X70	12.500	16.107	COMB12	5.976	COMB6	0.072	COMB12
100	V30X70	175.625	3.738	COMB6	6.629	COMB6	0.014	COMB12
100	V30X70	338.750	3.738	COMB6	7.054	COMB2	0.000	COMB14
100	V30X70	501.875	4.446	COMB6	6.854	COMB8	0.017	COMB8
100	V30X70	665.000	17.361	COMB12	6.304	COMB6	0.074	COMB8
101	V30X70	35.000	17.360	COMB12	6.629	COMB6	0.074	COMB6
101	V30X70	198.125	4.169	COMB6	6.854	COMB6	0.017	COMB6
101	V30X70	361.250	4.169	COMB6	7.054	COMB1	0.000	COMB14
101	V30X70	524.375	4.169	COMB6	6.629	COMB6	0.014	COMB12
101	V30X70	687.500	16.108	COMB12	6.489	COMB6	0.072	COMB12
102	V25X50	237.500	6.241	COMB11	5.714	COMB13	0.043	COMB9
102	V25X50	299.375	2.761	COMB5	2.761	COMB5	0.039	COMB11
102	V25X50	361.250	2.761	COMB5	3.389	COMB5	0.035	COMB11
102	V25X50	423.125	6.232	COMB13	6.929	COMB11	0.035	COMB9
102	V25X50	485.000	11.183	COMB9	11.585	COMB11	0.041	COMB9
103	V25X50	20.000	8.202	COMB9	6.556	COMB13	0.000	COMB14
103	V25X50	135.000	3.934	COMB5	3.934	COMB5	0.000	COMB14
103	V25X50	250.000	1.956	COMB5	1.956	COMB5	0.000	COMB14
103	V25X50	365.000	3.934	COMB5	3.934	COMB5	0.000	COMB14
103	V25X50	480.000	8.196	COMB9	6.482	COMB13	0.000	COMB14
104	V25X50	237.500	8.675	COMB11	8.117	COMB13	0.080	COMB9
104	V25X50	299.375	3.799	COMB5	3.799	COMB5	0.076	COMB11
104	V25X50	361.250	3.799	COMB5	3.934	COMB5	0.072	COMB11
104	V25X50	423.125	8.877	COMB13	9.620	COMB11	0.072	COMB9
104	V25X50	485.000	16.262	COMB9	16.726	COMB11	0.078	COMB9
105	V30X70	27.500	17.243	COMB12	6.246	COMB6	0.073	COMB8
105	V30X70	186.875	4.610	COMB6	6.629	COMB6	0.016	COMB8
105	V30X70	346.250	3.705	COMB6	6.629	COMB2	0.000	COMB14
105	V30X70	505.625	4.147	COMB6	6.629	COMB6	0.014	COMB12
105	V30X70	665.000	16.474	COMB12	6.057	COMB6	0.071	COMB12
106	V30X70	35.000	16.553	COMB12	6.629	COMB6	0.071	COMB12
106	V30X70	194.375	4.174	COMB6	6.629	COMB6	0.015	COMB12
106	V30X70	353.750	4.174	COMB6	6.629	COMB1	0.000	COMB14
106	V30X70	513.125	4.174	COMB6	6.629	COMB6	0.017	COMB6
106	V30X70	672.500	17.321	COMB12	6.629	COMB6	0.073	COMB6
107	V25X50	15.000	5.933	COMB9	4.503	COMB13	0.000	COMB14
107	V25X50	132.500	2.794	COMB5	3.539	COMB5	0.000	COMB14
107	V25X50	250.000	1.492	COMB5	1.183	COMB3	0.000	COMB14
107	V25X50	367.500	3.105	COMB5	3.579	COMB5	0.000	COMB14
107	V25X50	485.000	6.119	COMB9	4.538	COMB13	0.000	COMB14
108	V25X50	20.000	7.259	COMB9	7.665	COMB11	0.000	COMB14
108	V25X50	136.875	3.526	COMB5	4.095	COMB11	0.000	COMB14
108	V25X50	253.750	2.351	COMB5	2.351	COMB5	0.000	COMB14
108	V25X50	370.625	4.192	COMB11	3.934	COMB5	0.000	COMB14
108	V25X50	487.500	9.796	COMB9	6.305	COMB13	0.005	COMB9
109	V25X50	15.000	7.968	COMB9	6.471	COMB13	0.000	COMB14
109	V25X50	132.500	3.934	COMB5	3.934	COMB5	0.000	COMB14
109	V25X50	250.000	1.986	COMB5	1.986	COMB5	0.000	COMB14
109	V25X50	367.500	3.934	COMB5	3.934	COMB5	0.000	COMB14
109	V25X50	485.000	8.215	COMB9	6.558	COMB13	0.000	COMB14

ELEM ID	SECTION ID	STATION ID	<-----REQUIRED REINFORCING----->					
			TOP	COMBO	BOTTOM	COMBO	SHEAR	COMBO
110	V25X60	25.000	7.323	COMB12	3.275	COMB6	0.014	COMB12
110	V25X60	136.938	2.841	COMB6	3.783	COMB6	0.000	COMB14
110	V25X60	248.875	1.674	COMB6	3.250	COMB2	0.000	COMB14
110	V25X60	360.813	1.674	COMB6	3.729	COMB8	0.000	COMB14
110	V25X60	472.750	4.687	COMB6	3.514	COMB6	0.002	COMB8
111	V25X60	227.500	4.687	COMB6	3.237	COMB6	0.003	COMB6
111	V25X60	339.375	1.838	COMB6	3.736	COMB6	0.000	COMB14
111	V25X60	451.250	1.838	COMB6	3.248	COMB1	0.000	COMB14
111	V25X60	563.125	2.520	COMB6	4.138	COMB6	0.000	COMB14
111	V25X60	675.000	7.342	COMB12	4.121	COMB14	0.015	COMB12
127	V25X60	25.000	8.885	COMB12	4.687	COMB14	0.022	COMB12
127	V25X60	136.938	3.577	COMB6	4.687	COMB6	0.000	COMB14
127	V25X60	248.875	2.198	COMB6	3.206	COMB1	0.000	COMB14
127	V25X60	360.813	2.198	COMB6	4.206	COMB6	0.000	COMB14
127	V25X60	472.750	5.163	COMB6	4.472	COMB6	0.010	COMB6
128	V25X60	227.500	5.140	COMB8	4.687	COMB6	0.010	COMB8
128	V25X60	339.375	2.044	COMB6	3.607	COMB6	0.000	COMB14
128	V25X60	451.250	2.044	COMB6	3.204	COMB2	0.000	COMB14
128	V25X60	563.125	3.941	COMB6	4.687	COMB6	0.000	COMB14
128	V25X60	675.000	8.861	COMB12	4.687	COMB6	0.022	COMB12
129	V25X50	15.000	4.637	COMB9	3.663	COMB5	0.000	COMB14
129	V25X50	132.500	2.145	COMB5	2.499	COMB5	0.000	COMB14
129	V25X50	250.000	1.136	COMB5	1.158	COMB3	0.000	COMB14
129	V25X50	367.500	2.014	COMB5	2.769	COMB5	0.000	COMB14
129	V25X50	485.000	4.564	COMB9	3.934	COMB5	0.000	COMB14
130	V25X50	12.500	7.750	COMB11	4.012	COMB13	0.000	COMB14
130	V25X50	129.375	3.934	COMB5	2.896	COMB5	0.000	COMB14
130	V25X50	246.250	1.887	COMB5	1.887	COMB5	0.000	COMB14
130	V25X50	363.125	2.255	COMB5	3.934	COMB5	0.000	COMB14
130	V25X50	480.000	5.078	COMB9	5.906	COMB11	0.000	COMB14
131	V25X50	15.000	6.376	COMB9	4.679	COMB13	0.000	COMB14
131	V25X50	132.500	3.215	COMB5	3.568	COMB5	0.000	COMB14
131	V25X50	250.000	1.558	COMB5	1.558	COMB5	0.000	COMB14
131	V25X50	367.500	3.106	COMB5	3.883	COMB5	0.000	COMB14
131	V25X50	485.000	6.326	COMB9	4.929	COMB13	0.000	COMB14
132	V30X70	27.500	18.374	COMB12	6.629	COMB6	0.077	COMB6
132	V30X70	186.875	4.387	COMB6	6.629	COMB6	0.020	COMB6
132	V30X70	346.250	4.387	COMB6	6.629	COMB1	0.000	COMB14
132	V30X70	505.625	4.387	COMB6	6.629	COMB6	0.015	COMB12
132	V30X70	665.000	16.786	COMB12	6.629	COMB6	0.072	COMB12
133	V30X70	35.000	16.684	COMB12	6.137	COMB6	0.071	COMB12
133	V30X70	194.375	4.310	COMB6	6.629	COMB6	0.015	COMB12
133	V30X70	353.750	3.928	COMB6	6.629	COMB2	0.000	COMB14
133	V30X70	513.125	5.215	COMB6	6.629	COMB6	0.020	COMB8
133	V30X70	672.500	18.277	COMB12	6.628	COMB6	0.076	COMB8
134	V25X50	15.000	7.325	COMB9	7.994	COMB11	0.009	COMB9
134	V25X50	76.875	4.140	COMB13	4.968	COMB11	0.003	COMB9
134	V25X50	138.750	1.959	COMB5	2.591	COMB5	0.005	COMB11
134	V25X50	200.625	1.959	COMB5	1.959	COMB5	0.009	COMB11
134	V25X50	262.500	4.284	COMB11	3.934	COMB5	0.013	COMB9
135	V25X50	20.000	6.266	COMB9	4.600	COMB13	0.000	COMB14
135	V25X50	135.000	3.170	COMB5	3.512	COMB5	0.000	COMB14
135	V25X50	250.000	1.505	COMB5	1.505	COMB5	0.000	COMB14
135	V25X50	365.000	3.112	COMB5	3.568	COMB5	0.000	COMB14
135	V25X50	480.000	6.193	COMB9	4.651	COMB13	0.000	COMB14
136	V25X50	15.000	11.231	COMB9	11.968	COMB11	0.040	COMB9
136	V25X50	76.875	6.321	COMB13	7.191	COMB11	0.035	COMB9
136	V25X50	138.750	2.842	COMB5	3.608	COMB5	0.036	COMB11
136	V25X50	200.625	2.842	COMB5	2.842	COMB5	0.040	COMB11
136	V25X50	262.500	6.219	COMB11	5.606	COMB13	0.044	COMB9
137	V30X70	12.500	14.995	COMB12	6.041	COMB6	0.067	COMB12
137	V30X70	175.625	3.684	COMB6	6.629	COMB6	0.009	COMB12

ELEM ID	SECTION ID	STATION ID	←-----REQUIRED REINFORCING----->					
			TOP	COMBO	BOTTOM	COMBO	SHEAR	COMBO
137	V30X70	338.750	3.684	COMB6	6.979	COMB1	0.000	COMB14
137	V30X70	501.875	3.684	COMB6	6.629	COMB6	0.008	COMB6
137	V30X70	665.000	15.122	COMB12	6.211	COMB6	0.066	COMB6
138	V30X70	35.000	15.120	COMB12	5.458	COMB6	0.066	COMB8
138	V30X70	198.125	3.292	COMB6	6.629	COMB6	0.008	COMB8
138	V30X70	361.250	3.292	COMB6	6.979	COMB2	0.000	COMB14
138	V30X70	524.375	3.292	COMB6	5.619	COMB6	0.009	COMB12
138	V30X70	687.500	14.996	COMB12	5.544	COMB6	0.067	COMB12
139	V25X50	237.500	4.306	COMB11	3.934	COMB5	0.013	COMB9
139	V25X50	299.375	1.969	COMB5	1.969	COMB5	0.009	COMB11
139	V25X50	361.250	1.969	COMB5	2.601	COMB5	0.005	COMB11
139	V25X50	423.125	4.149	COMB13	4.991	COMB11	0.003	COMB9
139	V25X50	485.000	7.335	COMB9	8.035	COMB11	0.009	COMB9
140	V25X50	20.000	6.204	COMB9	4.648	COMB13	0.000	COMB14
140	V25X50	135.000	3.118	COMB5	3.565	COMB5	0.000	COMB14
140	V25X50	250.000	1.503	COMB5	1.503	COMB5	0.000	COMB14
140	V25X50	365.000	3.165	COMB5	3.517	COMB5	0.000	COMB14
140	V25X50	480.000	6.258	COMB9	4.605	COMB13	0.000	COMB14
141	V25X50	237.500	6.219	COMB11	5.594	COMB13	0.044	COMB9
141	V25X50	299.375	2.840	COMB5	2.840	COMB5	0.040	COMB11
141	V25X50	361.250	2.840	COMB5	3.603	COMB5	0.036	COMB11
141	V25X50	423.125	6.301	COMB13	7.185	COMB11	0.034	COMB9
141	V25X50	485.000	11.188	COMB9	11.959	COMB11	0.040	COMB9
142	V30X70	27.500	15.748	COMB12	6.423	COMB6	0.067	COMB6
142	V30X70	186.875	3.808	COMB6	6.629	COMB6	0.010	COMB6
142	V30X70	346.250	3.808	COMB6	6.629	COMB1	0.000	COMB14
142	V30X70	505.625	3.808	COMB6	6.629	COMB6	0.005	COMB12
142	V30X70	665.000	14.286	COMB12	5.853	COMB6	0.061	COMB12
143	V30X70	35.000	14.370	COMB12	5.253	COMB6	0.062	COMB12
143	V30X70	194.375	3.391	COMB6	5.918	COMB6	0.005	COMB12
143	V30X70	353.750	3.391	COMB6	6.629	COMB2	0.000	COMB14
143	V30X70	513.125	3.841	COMB6	5.638	COMB6	0.010	COMB8
143	V30X70	672.500	15.834	COMB12	5.712	COMB6	0.067	COMB8
144	V25X50	15.000	4.599	COMB9	3.934	COMB5	0.000	COMB14
144	V25X50	132.500	2.022	COMB5	2.771	COMB5	0.000	COMB14
144	V25X50	250.000	1.167	COMB5	1.140	COMB3	0.000	COMB14
144	V25X50	367.500	2.252	COMB5	2.568	COMB5	0.000	COMB14
144	V25X50	485.000	4.773	COMB9	3.772	COMB5	0.000	COMB14
145	V25X50	20.000	5.102	COMB9	5.947	COMB11	0.000	COMB14
145	V25X50	136.875	2.262	COMB5	3.934	COMB5	0.000	COMB14
145	V25X50	253.750	1.911	COMB5	1.911	COMB5	0.000	COMB14
145	V25X50	370.625	3.934	COMB5	2.936	COMB5	0.000	COMB14
145	V25X50	487.500	7.860	COMB11	4.069	COMB13	0.000	COMB14
146	V25X50	15.000	6.388	COMB9	4.999	COMB13	0.000	COMB14
146	V25X50	132.500	3.122	COMB5	3.892	COMB5	0.000	COMB14
146	V25X50	250.000	1.603	COMB5	1.603	COMB5	0.000	COMB14
146	V25X50	367.500	3.368	COMB5	3.681	COMB5	0.000	COMB14
146	V25X50	485.000	6.574	COMB9	4.825	COMB13	0.000	COMB14
147	V25X60	25.000	6.510	COMB12	2.740	COMB6	0.010	COMB12
147	V25X60	136.938	1.971	COMB6	3.391	COMB6	0.000	COMB14
147	V25X60	248.875	1.632	COMB6	3.180	COMB1	0.000	COMB14
147	V25X60	360.813	1.632	COMB6	3.294	COMB6	0.000	COMB14
147	V25X60	472.750	4.618	COMB6	2.300	COMB6	0.000	COMB14
148	V25X60	227.500	4.290	COMB6	2.653	COMB6	0.000	COMB14
148	V25X60	339.375	1.488	COMB6	3.301	COMB8	0.000	COMB14
148	V25X60	451.250	1.488	COMB6	3.177	COMB2	0.000	COMB14
148	V25X60	563.125	2.349	COMB6	3.038	COMB6	0.000	COMB14
148	V25X60	675.000	6.530	COMB12	2.495	COMB6	0.010	COMB12
164	V25X60	25.000	5.898	COMB12	3.141	COMB6	0.004	COMB12
164	V25X60	136.938	1.944	COMB6	3.637	COMB6	0.000	COMB14
164	V25X60	248.875	1.426	COMB6	3.116	COMB2	0.000	COMB14
164	V25X60	360.813	1.426	COMB6	3.319	COMB6	0.000	COMB14

ELEM ID	SECTION ID	STATION ID	←-----REQUIRED REINFORCING----->						SHEAR	COMBO
			TOP	COMBO	BOTTOM	COMBO				
164	V25X60	472.750	4.687	COMB6	3.343	COMB6		0.000	COMB14	
165	V25X60	227.500	4.687	COMB6	3.143	COMB6		0.000	COMB14	
165	V25X60	339.375	1.489	COMB6	3.699	COMB6		0.000	COMB14	
165	V25X60	451.250	1.489	COMB6	3.114	COMB1		0.000	COMB14	
165	V25X60	563.125	1.632	COMB6	3.934	COMB6		0.000	COMB14	
165	V25X60	675.000	5.880	COMB12	3.761	COMB14		0.004	COMB12	
166	V25X50	15.000	3.000	COMB5	1.579	COMB5		0.000	COMB14	
166	V25X50	132.500	0.727	COMB5	1.599	COMB5		0.000	COMB14	
166	V25X50	250.000	0.589	COMB5	0.975	COMB1		0.000	COMB14	
166	V25X50	367.500	0.599	COMB5	1.495	COMB5		0.000	COMB14	
166	V25X50	485.000	2.854	COMB5	1.487	COMB5		0.000	COMB14	
167	V25X50	12.500	4.715	COMB11	1.964	COMB5		0.000	COMB14	
167	V25X50	129.375	2.328	COMB5	1.694	COMB5		0.000	COMB14	
167	V25X50	246.250	1.171	COMB5	1.171	COMB5		0.000	COMB14	
167	V25X50	363.125	1.171	COMB5	2.606	COMB5		0.000	COMB14	
167	V25X50	480.000	3.224	COMB5	3.934	COMB5		0.000	COMB14	
168	V25X50	15.000	3.934	COMB5	2.747	COMB5		0.000	COMB14	
168	V25X50	132.500	1.327	COMB5	2.203	COMB5		0.000	COMB14	
168	V25X50	250.000	0.821	COMB5	0.980	COMB1		0.000	COMB14	
168	V25X50	367.500	1.107	COMB5	2.029	COMB5		0.000	COMB14	
168	V25X50	485.000	3.934	COMB5	2.597	COMB5		0.000	COMB14	
169	V30X70	27.500	11.002	COMB12	4.221	COMB6		0.029	COMB8	
169	V30X70	186.875	2.590	COMB6	5.302	COMB6		0.000	COMB14	
169	V30X70	346.250	2.590	COMB6	6.629	COMB2		0.000	COMB14	
169	V30X70	505.625	2.590	COMB6	4.558	COMB6		0.000	COMB14	
169	V30X70	665.000	11.142	COMB12	4.352	COMB6		0.031	COMB12	
170	V30X70	35.000	11.055	COMB12	4.558	COMB6		0.030	COMB12	
170	V30X70	194.375	2.713	COMB6	5.679	COMB6		0.000	COMB14	
170	V30X70	353.750	2.713	COMB6	6.629	COMB1		0.000	COMB14	
170	V30X70	513.125	2.713	COMB6	6.253	COMB6		0.000	COMB14	
170	V30X70	672.500	10.931	COMB12	4.559	COMB6		0.029	COMB6	
171	V25X50	15.000	3.934	COMB5	4.194	COMB11		0.000	COMB14	
171	V25X50	76.875	2.555	COMB5	3.377	COMB5		0.000	COMB14	
171	V25X50	138.750	1.051	COMB5	1.175	COMB5		0.000	COMB14	
171	V25X50	200.625	1.177	COMB5	1.317	COMB5		0.000	COMB14	
171	V25X50	262.500	3.811	COMB5	2.968	COMB5		0.000	COMB14	
172	V25X50	20.000	3.934	COMB5	2.726	COMB5		0.000	COMB14	
172	V25X50	135.000	1.499	COMB5	1.987	COMB5		0.000	COMB14	
172	V25X50	250.000	0.891	COMB5	0.941	COMB9		0.000	COMB14	
172	V25X50	365.000	1.610	COMB5	2.033	COMB5		0.000	COMB14	
172	V25X50	480.000	3.934	COMB5	2.739	COMB5		0.000	COMB14	
173	V25X50	15.000	6.130	COMB9	6.459	COMB11		0.001	COMB9	
173	V25X50	76.875	3.934	COMB5	3.934	COMB5		0.000	COMB14	
173	V25X50	138.750	1.607	COMB5	1.640	COMB5		0.000	COMB14	
173	V25X50	200.625	1.872	COMB5	2.005	COMB5	9.641E-04		COMB11	
173	V25X50	262.500	4.379	COMB11	3.934	COMB5	0.005		COMB11	
174	V30X70	12.500	8.002	COMB12	3.125	COMB6	0.023		COMB4	
174	V30X70	175.625	2.346	COMB6	4.500	COMB2	0.000		COMB14	
174	V30X70	338.750	2.346	COMB6	6.629	COMB2	0.000		COMB14	
174	V30X70	501.875	2.346	COMB6	5.640	COMB8	0.000		COMB14	
174	V30X70	665.000	10.216	COMB12	3.938	COMB6	0.031		COMB2	
175	V30X70	35.000	10.215	COMB12	4.235	COMB6	0.031		COMB1	
175	V30X70	198.125	2.522	COMB6	5.641	COMB6	0.000		COMB14	
175	V30X70	361.250	2.522	COMB6	6.629	COMB1	0.000		COMB14	
175	V30X70	524.375	2.522	COMB6	4.499	COMB1	0.000		COMB14	
175	V30X70	687.500	8.003	COMB12	3.303	COMB6	0.023		COMB4	
176	V25X50	237.500	3.839	COMB5	2.979	COMB5	0.000		COMB14	
176	V25X50	299.375	1.187	COMB5	1.323	COMB5	0.000		COMB14	
176	V25X50	361.250	1.059	COMB5	1.182	COMB5	0.000		COMB14	
176	V25X50	423.125	2.559	COMB5	3.401	COMB5	0.000		COMB14	
176	V25X50	485.000	3.934	COMB5	4.227	COMB11	0.000		COMB14	

ELEM ID	SECTION ID	STATION ID	-----REQUIRED REINFORCING----->					
			TOP	COMBO	BOTTOM	COMBO	SHEAR	COMBO
177	V25X50	20.000	3.934	COMB5	2.732	COMB5	0.000	COMB14
177	V25X50	135.000	1.615	COMB5	2.031	COMB5	0.000	COMB14
177	V25X50	250.000	0.893	COMB5	0.943	COMB9	0.000	COMB14
177	V25X50	365.000	1.490	COMB5	1.991	COMB5	0.000	COMB14
177	V25X50	480.000	3.934	COMB5	2.734	COMB5	0.000	COMB14
178	V25X50	237.500	4.379	COMB11	3.934	COMB5	0.005	COMB11
178	V25X50	299.375	1.874	COMB5	2.003	COMB5	9.268E-04	COMB11
178	V25X50	361.250	1.605	COMB5	1.636	COMB5	0.000	COMB14
178	V25X50	423.125	3.934	COMB5	3.934	COMB5	0.000	COMB14
178	V25X50	485.000	6.095	COMB9	6.453	COMB11	9.874E-04	COMB9
179	V30X70	27.500	9.452	COMB12	3.594	COMB6	0.024	COMB2
179	V30X70	186.875	2.233	COMB6	4.334	COMB6	0.000	COMB14
179	V30X70	346.250	2.233	COMB6	6.629	COMB2	0.000	COMB14
179	V30X70	505.625	2.233	COMB6	4.837	COMB8	0.000	COMB14
179	V30X70	665.000	9.646	COMB12	3.747	COMB6	0.025	COMB4
180	V30X70	35.000	9.720	COMB12	4.017	COMB6	0.025	COMB4
180	V30X70	194.375	2.393	COMB6	4.887	COMB6	0.000	COMB14
180	V30X70	353.750	2.393	COMB6	6.629	COMB1	0.000	COMB14
180	V30X70	513.125	2.393	COMB6	5.352	COMB6	0.000	COMB14
180	V30X70	672.500	9.516	COMB12	3.985	COMB6	0.024	COMB1
181	V25X50	15.000	2.870	COMB5	1.515	COMB5	0.000	COMB14
181	V25X50	132.500	0.610	COMB5	1.488	COMB5	0.000	COMB14
181	V25X50	250.000	0.610	COMB5	0.961	COMB1	0.000	COMB14
181	V25X50	367.500	0.801	COMB5	1.633	COMB5	0.000	COMB14
181	V25X50	485.000	3.111	COMB5	1.629	COMB5	0.000	COMB14
182	V25X50	20.000	3.238	COMB5	3.934	COMB5	0.000	COMB14
182	V25X50	136.875	1.195	COMB5	2.607	COMB5	0.000	COMB14
182	V25X50	253.750	1.195	COMB5	1.195	COMB5	0.000	COMB14
182	V25X50	370.625	2.407	COMB5	1.713	COMB5	0.000	COMB14
182	V25X50	487.500	4.813	COMB11	2.003	COMB5	0.000	COMB14
183	V25X50	15.000	3.934	COMB5	2.652	COMB5	0.000	COMB14
183	V25X50	132.500	1.114	COMB5	2.030	COMB5	0.000	COMB14
183	V25X50	250.000	0.852	COMB5	0.966	COMB1	0.000	COMB14
183	V25X50	367.500	1.432	COMB5	2.267	COMB5	0.000	COMB14
183	V25X50	485.000	3.934	COMB5	2.847	COMB5	0.000	COMB14
184	V25X60	25.000	4.687	COMB6	1.748	COMB6	0.000	COMB14
184	V25X60	136.938	1.044	COMB6	2.520	COMB6	0.000	COMB14
184	V25X60	248.875	1.044	COMB6	3.084	COMB2	0.000	COMB14
184	V25X60	360.813	1.044	COMB6	2.903	COMB8	0.000	COMB14
184	V25X60	472.750	3.676	COMB6	1.636	COMB6	0.000	COMB14
185	V25X60	227.500	3.872	COMB6	1.477	COMB6	0.000	COMB14
185	V25X60	339.375	1.117	COMB6	2.911	COMB6	0.000	COMB14
185	V25X60	451.250	1.117	COMB6	3.082	COMB1	0.000	COMB14
185	V25X60	563.125	1.117	COMB6	2.830	COMB6	0.000	COMB14
185	V25X60	675.000	4.687	COMB6	1.870	COMB6	0.000	COMB14

PREDIMENSIONAMIENTO DE COLUMNAS

Disposiciones geométricas en columnas (Norma E-060) :

Relacion b_{menor} / b_{mayor} : $b_{min.} / b_{may.} > 0.4$
 Ancho mínimo: $b > 25\text{cm.}$
 ρ mínimo: 0.01

ESTIMACION DE PESOS Y DIMENSIONES:

COLUMNA LATERAL(C-2)-NIVEL 5

APORTANTE	L(m)	B(m)	H(m)	N° VECES	W(Kgs)	PESO(Kgs)
LOSA	4.70	3.35		1	300	4724
VIGAS-X	2.35	0.25	0.50	2	2400	1410
VIGAS-Y	3.35	0.30	0.60	1	2400	1447
ACABADOS	5.00	3.50		1	60	1050
TABIQUER.	5.00	3.50		1	60	1050
SOBREC.	5.00	3.50		1	250	4375
COLUMNA	3.500	0.30	0.60	1	2400	1512

TOTAL 15568

$$bxd = \frac{1.25x PG = 19460}{0.25 X f_c 70} \quad 278 \text{ cm}^2 \quad (30X55)$$

COLUMNA LATERAL(C-2)-NIVEL 4

APORTANTE	L(m)	B(m)	H(m)	N° VECES	W(Kgs)	PESO(Kgs)
LOSA	4.70	3.35		1	300	4724
VIGAS-X	2.35	0.25	0.50	2	2400	1410
VIGAS-Y	3.35	0.30	0.60	1	2400	1447
ACABADOS	5.00	3.50		1	120	2100
TABIQUER.	5.00	3.50		1	120	2100
SOBREC.	5.00	3.50		1	250	4375
COLUMNA	3.500	0.30	0.60	1	2400	1512

TOTAL 17668

$$bxd = \frac{1.25x PG = 41544}{0.25 X f_c 70} \quad 593 \text{ cm}^2 \quad (30X55)$$

COLUMNA LATERAL(C-2)-NIVEL 3

APORTANTE	L(m)	B(m)	H(m)	N° VECES	W(Kgs)	PESO(Kgs)
LOSA	4.70	3.35		1	300	4724
VIGAS-X	2.35	0.25	0.50	2	2400	1410
VIGAS-Y	3.35	0.30	0.60	1	2400	1447
ACABADOS	5.00	3.50		1	120	2100
TABIQUER.	5.00	3.50		1	120	2100
SOBREC.	5.00	3.50		1	250	4375
COLUMNA	3.500	0.30	0.60	1	2400	1512

TOTAL 17668

$$bxd = \frac{1.25x PG = 63629}{0.25 X f_c 70} \quad 909 \text{ cm}^2 \quad (30X55)$$

COLUMNA LATERAL(C-2)-NIVEL 2

APORTANTE	L(m)	B(m)	H(m)	N° VECES	W(Kgs)	PESO(Kgs)
LOSA	4.70	3.35		1	300	4724
VIGAS-X	2.35	0.25	0.50	2	2400	1410
VIGAS-Y	3.35	0.30	0.60	1	2400	1447
ACABADOS	5.00	3.50		1	120	2100
TABIQUER.	5.00	3.50		1	120	2100
SOBREC.	5.00	3.50		1	250	4375
COLUMNA	3.500	0.30	0.60	1	2400	1512

TOTAL 17668

$$bxd = \frac{1.25x PG = 85714}{0.25 X f_c 70} \quad 1224 \text{ cm}^2 \quad (30X55)$$

COLUMNA LATERAL(C-2)-NIVEL 1

APORTANTE	L(m)	B(m)	H(m)	N° VECES	W(Kgs)	PESO(Kgs)
LOSA	4.70	3.35		1	300	4724
VIGAS-X	2.35	0.25	0.50	2	2400	1410
VIGAS-Y	3.35	0.30	0.60	1	2400	1447
ACABADOS	5.00	3.50		1	120	2100
TABIQUER.	5.00	3.50		1	120	2100
SOBREC.	5.00	3.50		1	250	4375
COLUMNA	4.500	0.30	0.60	1	2400	1944

TOTAL 18100

$$bxd = \frac{1.25x PG = 108338}{0.25 X f_c 70} \quad 1548 \text{ cm}^2 \quad (30X55)$$