

3. Evaluación Estructural.

Somos conscientes que un estudio patológico debe ser efectuado por un equipo interdisciplinar en donde debe actuar cada uno de los profesiones en su campo específico tanto de su formación como de su experiencia, por lo que la evaluación estructural y el proyecto de reforzamiento fue contratado con la firma **DISEÑO - INTERVENTORIA Y CONSTRUCCION LRFL¹³ LTDA**, empresa experta en el área de las estructuras, así:

□ **Objetivo.**

En primera instancia el presente estudio pretende chequear la estructura en concreto reforzado a partir de lo expuesto en Norma Sismo Resistente de 2010 (concretos reforzados) y refuncionalizar la edificación para la implementación del SALON BICENTENARIO CENTRO CIVICO Y COMERCIAL PLAZA REAL - Tunja.

□ **Descripción del Proyecto.**

La actual construcción está hecha en concreto reforzado y la estructura consta de una placa aligerada en concreto reforzado con vigas y viguetas en una dirección. Para las fuerzas verticales y horizontales la estructura está conformada por pórticos de concreto reforzado en dos direcciones. La cimentación consta de zapatas aisladas con vigas de amarre.

La evaluación técnica que se realiza no solo compromete a la estructura actual, sino que también incluye el proyecto de ampliación del volumen en dos plantas.

□ **Estudio Estructural.**

Para la realización de éste proyecto se utiliza concreto de 210 kgf/cm² y acero de refuerzo de 4200 kgf/cm². Se siguen las recomendaciones de la NSR 10

□ **Definición de Cargas para Cálculo Estructural**

DEAD	DEAD	1.000000	
CMP	SUPER DEAD	0.000000	
CVP	LIVE	0.000000	
CMC	SUPER DEAD	0.000000	
CVC	ROOF LIVE	0.000000	
SISMOFHE	QUAKE	0.000000	USER COEFF

□ **Parámetros Sísmicos**

Aa = 0.20

Av = 0.20

Fa = 1.4

Fv = 2.0

Grupo de uso = 1

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□ **Espectro de Diseño.**

Con la información anterior se realiza el espectro de diseño, el cual es cargado al programa SAP 2000.

□ **Evaluación de Cargas.**

✓ PLACA.

CARGA MUERTA

	kgf/m ²		
Placa superior 0.04	96		
Placa inferior 0.03	72		
Cerámica sobre mortero de 25 mm	110		
Acabados inferiores	25		
Divisiones en mampostería	250		
Total carga muerta	553		
CARGA VIVA	300		
Separación viguetas metros	1	1.05	1.06
Carga muerta distribuida kgf/m	553	581	586
Carga viva distribuida kgf/m	300	315	318

✓ CUBIERTA

CARGA MUERTA

Peso teja termo acústica	15
Alumbrado	15
Acabados cielo raso	25
Total carga muerta	55
CARGA VIVA	35
Separación entre cerchas	1.5
Carga muerta distribuida kgf/m	36.67
Carga viva distribuida kgf/m	23.33

□ **Combinaciones de Carga**

ComboName	ComboType	AutoDesign	CaseType	CaseName	ScaleFactor	SteelDesign
1.4 D	Linear Add	No	Linear Static	CMC	1.400000	Yes
1.4 D			Linear Static	CMP	1.400000	
1.4 D			Linear Static	DEAD	1.400000	
1.2D + 1.6 L + .5 Lr	Linear Add	No	Linear Static	CMC	1.200000	Yes
1.2D + 1.6 L + .5 Lr			Linear Static	CMP	1.200000	
1.2D + 1.6 L + .5 Lr			Linear Static	DEAD	1.200000	
1.2D + 1.6 L + .5 Lr			Linear Static	CVC	0.500000	
1.2D + 1.6 L + .5 Lr			Linear Static	CVP	1.600000	
SISMOXD	Linear Add	No	Response Spectrum	SISMOX	0.250000	No
SISMOYD	Linear Add	No	Response Spectrum	SISMOY	0.250000	No
1.2D + 1.6 Lr +1.0L	Linear Add	No	Linear Static	CMC	1.200000	Yes
1.2D + 1.6 Lr +1.0L			Linear Static	CMP	1.200000	
1.2D + 1.6 Lr +1.0L			Linear Static	CVC	1.600000	
1.2D + 1.6 Lr +1.0L			Linear Static	DEAD	1.200000	
1.2D + 1.6 Lr +1.0L			Linear Static	CVP	1.000000	
1.2D + 1.0EX +1.0L	Linear Add	No	Linear Static	CMC	1.200000	Yes
1.2D + 1.0EX +1.0L			Linear Static	CMP	1.200000	
1.2D + 1.0EX +1.0L			Linear Static	DEAD	1.200000	
1.2D + 1.0EX +1.0L			Response Combo	SISMOXD	1.000000	
1.2D + 1.0EX +1.0L			Linear Static	CVP	1.000000	
1.2D + 1.0EY +1.0L	Linear Add	No	Linear Static	CMC	1.200000	Yes
1.2D + 1.0EY +1.0L			Linear Static	CMP	1.200000	
1.2D + 1.0EY +1.0L			Linear Static	DEAD	1.200000	
1.2D + 1.0EY +1.0L			Response Combo	SISMOYD	1.000000	
1.2D + 1.0EY +1.0L			Linear Static	CVP	1.000000	
0.9D + 1.0 EX	Linear Add	No	Linear Static	CMC	0.900000	Yes
0.9D + 1.0 EX			Linear Static	CMP	0.900000	
0.9D + 1.0 EX			Linear Static	DEAD	0.900000	
0.9D + 1.0 EX			Response Combo	SISMOXD	1.000000	
.09D + 1.0 EY	Linear Add	No	Linear Static	CMC	0.900000	Yes
.09D + 1.0 EY			Linear Static	CMP	0.900000	
.09D + 1.0 EY			Linear Static	DEAD	0.900000	
.09D + 1.0 EY			Response Combo	SISMOYD	1.000000	
FLEXION	Linear Add	No	Linear Static	CMC	1.000000	No
FLEXION			Linear Static	CMP	1.000000	
FLEXION			Linear Static	CVC	1.000000	
FLEXION			Linear Static	CVP	1.000000	
FLEXION			Linear Static	DEAD	1.000000	

□ **Verificación de Derivas.**

X = 0	DERIVA X		DERIVA R	DERIVA MAX	DERIVA Y		DERIVA R	DERIVA MAX
	X	Y			X	Y		
126	0.911	-0.595	1.09	3.00	0.338	1.950	1.98	3.00
50	0.002	0.001	0.00	3.00	0.001	0.002	0.00	3.00
49								
1	1.191	0.594	1.33	4.31	0.388	1.946	1.98	4.31
74	0.681	0.001	0.68	3.00	0.208	0.001	0.21	3.00
73								
2	1.146	0.594	1.29	4.37	0.360	1.947	1.98	4.37
78	0.927	0.001	0.93	3.00	0.279	0.001	0.28	3.00
77								
127	0.938	0.595	1.11	3.00	0.329	1.952	1.98	3.00
54	0.001	0.001	0.00	3.00	0.001	0.001	0.00	3.00
53								
X 420								
21	0.915	0.664	1.13	3.00	0.335	2.190	2.22	3.00
62	0.001	0.158	0.16	3.00	0.000	0.525	0.52	3.00
61								
23	2.440	0.852	2.58	4.21	0.779	2.835	2.94	4.21
66	0.695	0.162	0.71	3.00	0.212	0.537	0.58	3.00
65								
30	2.733	0.823	2.85	4.37	0.848	2.731	2.86	4.37
70	0.947	0.162	0.96	3.00	0.285	0.538	0.61	3.00
69								
31	0.943	0.637	1.14	3.00	0.328	2.117	2.14	3.00
58	0.001	0.158	0.16	3.00	0.000	0.525	0.52	3.00
57								
X 920								
	DERIVA X		DERIVA	DERIVA	DERIVA Y		DERIVA	DERIVA

□ **Participación de Masas**

OutputCase	ItemType	Item	Static Percent
MODAL	Acceleration	UX	97.4139
MODAL	Acceleration	UY	95.2875
MODAL	Acceleration	UZ	22.0999

□ **Asignación de Cargas por Elementos.**

Frame	LoadPat	RelDistB	AbsDistA m	AbsDistB m	OverLA Kgf/m	FOverLB Kgf/m
109	CMP	1.0000	0.00000	4.36000	586.00	586.00
109	CVP	1.0000	0.00000	4.36000	318.00	318.00
110	CMP	1.0000	0.00000	5.01000	586.00	586.00
110	CVP	1.0000	0.00000	5.01000	318.00	318.00
111	CMP	1.0000	0.00000	4.90000	586.00	586.00
111	CVP	1.0000	0.00000	4.90000	318.00	318.00
112	CMP	1.0000	0.00000	4.36000	586.00	586.00
112	CVP	1.0000	0.00000	4.36000	318.00	318.00
113	CMP	1.0000	0.00000	5.01000	586.00	586.00
113	CVP	1.0000	0.00000	5.01000	318.00	318.00
114	CMP	1.0000	0.00000	4.90000	586.00	586.00
114	CVP	1.0000	0.00000	4.90000	318.00	318.00
115	CMP	1.0000	0.00000	4.36000	586.00	586.00
115	CVP	1.0000	0.00000	4.36000	318.00	318.00
116	CMP	1.0000	0.00000	5.01000	586.00	586.00
116	CVP	1.0000	0.00000	5.01000	318.00	318.00
117	CMP	1.0000	0.00000	4.90000	586.00	586.00
117	CVP	1.0000	0.00000	4.90000	318.00	318.00
118	CMP	1.0000	0.00000	4.36000	586.00	586.00
118	CVP	1.0000	0.00000	4.36000	318.00	318.00
119	CMP	1.0000	0.00000	5.01000	586.00	586.00
119	CVP	1.0000	0.00000	5.01000	318.00	318.00
120	CMP	1.0000	0.00000	4.90000	586.00	586.00
120	CVP	1.0000	0.00000	4.90000	318.00	318.00
121	CMP	1.0000	0.00000	4.36000	586.00	586.00
121	CVP	1.0000	0.00000	4.36000	318.00	318.00
122	CMP	1.0000	0.00000	4.36000	586.00	586.00
122	CVP	1.0000	0.00000	4.36000	318.00	318.00
123	CMP	1.0000	0.00000	4.36000	586.00	586.00
123	CVP	1.0000	0.00000	4.36000	318.00	318.00
124	CMP	1.0000	0.00000	5.01000	586.00	586.00
124	CVP	1.0000	0.00000	5.01000	318.00	318.00
125	CMP	1.0000	0.00000	5.01000	586.00	586.00
125	CVP	1.0000	0.00000	5.01000	318.00	318.00
126	CMP	1.0000	0.00000	5.01000	586.00	586.00
126	CVP	1.0000	0.00000	5.01000	318.00	318.00
127	CMP	1.0000	0.00000	4.90000	586.00	586.00
127	CVP	1.0000	0.00000	4.90000	318.00	318.00
128	CMP	1.0000	0.00000	4.90000	586.00	586.00
128	CVP	1.0000	0.00000	4.90000	318.00	318.00
129	CMP	1.0000	0.00000	4.90000	586.00	586.00
129	CVP	1.0000	0.00000	4.90000	318.00	318.00
130	CMP	1.0000	0.00000	4.36000	586.00	586.00
130	CVP	1.0000	0.00000	4.36000	318.00	318.00
131	CMP	1.0000	0.00000	4.36000	586.00	586.00

Frame	LoadPat	RelDistB	AbsDistA m	AbsDistB m	OverLA Kgf/m	FOverLB Kgf/m
131	CVP	1.0000	0.00000	4.36000	318.00	318.00
132	CMP	1.0000	0.00000	4.36000	586.00	586.00
132	CVP	1.0000	0.00000	4.36000	318.00	318.00
133	CMP	1.0000	0.00000	4.36000	586.00	586.00
133	CVP	1.0000	0.00000	4.36000	318.00	318.00
134	CMP	1.0000	0.00000	5.01000	586.00	586.00
134	CVP	1.0000	0.00000	5.01000	318.00	318.00
135	CMP	1.0000	0.00000	5.01000	586.00	586.00
135	CVP	1.0000	0.00000	5.01000	318.00	318.00
136	CMP	1.0000	0.00000	5.01000	586.00	586.00
136	CVP	1.0000	0.00000	5.01000	318.00	318.00
137	CMP	1.0000	0.00000	5.01000	586.00	586.00
137	CVP	1.0000	0.00000	5.01000	318.00	318.00
138	CMP	1.0000	0.00000	4.90000	586.00	586.00
138	CVP	1.0000	0.00000	4.90000	318.00	318.00
139	CMP	1.0000	0.00000	4.90000	586.00	586.00
139	CVP	1.0000	0.00000	4.90000	318.00	318.00
140	CMP	1.0000	0.00000	4.90000	586.00	586.00
140	CVP	1.0000	0.00000	4.90000	318.00	318.00
141	CMP	1.0000	0.00000	4.90000	586.00	586.00
141	CVP	1.0000	0.00000	4.90000	318.00	318.00
142	CMP	1.0000	0.00000	4.36000	586.00	586.00
142	CVP	1.0000	0.00000	4.36000	318.00	318.00
143	CMP	1.0000	0.00000	4.36000	586.00	586.00
143	CVP	1.0000	0.00000	4.36000	318.00	318.00
144	CMP	1.0000	0.00000	4.36000	586.00	586.00
144	CVP	1.0000	0.00000	4.36000	318.00	318.00
145	CMP	1.0000	0.00000	5.01000	586.00	586.00
145	CVP	1.0000	0.00000	5.01000	318.00	318.00
146	CMP	1.0000	0.00000	5.01000	586.00	586.00
146	CVP	1.0000	0.00000	5.01000	318.00	318.00
147	CMP	1.0000	0.00000	5.01000	586.00	586.00
147	CVP	1.0000	0.00000	5.01000	318.00	318.00
148	CMP	1.0000	0.00000	4.90000	586.00	586.00
148	CVP	1.0000	0.00000	4.90000	318.00	318.00
149	CMP	1.0000	0.00000	4.90000	586.00	586.00
149	CVP	1.0000	0.00000	4.90000	318.00	318.00
150	CMP	1.0000	0.00000	4.90000	586.00	586.00
150	CVP	1.0000	0.00000	4.90000	318.00	318.00
175	CMC	1.0000	0.00000	4.20000	36.67	36.67
175	CVC	1.0000	0.00000	4.20000	23.33	23.33
178	CMC	1.0000	0.00000	4.20000	36.67	36.67
178	CVC	1.0000	0.00000	4.20000	23.33	23.33
6	CMC	1.0000	0.00000	4.36000	28.75	28.75
6	CVC	1.0000	0.00000	4.36000	28.75	28.75
7	CMC	1.0000	0.00000	5.01000	28.75	28.75
7	CVC	1.0000	0.00000	5.01000	28.75	28.75
8	CMC	1.0000	0.00000	4.90000	28.75	28.75
8	CVC	1.0000	0.00000	4.90000	28.75	28.75
9	CMC	1.0000	0.00000	3.05000	36.67	36.67
9	CVC	1.0000	0.00000	3.05000	23.33	23.33
13	CMC	1.0000	0.00000	3.05000	36.67	36.67
13	CVC	1.0000	0.00000	3.05000	23.33	23.33
18	CMC	1.0000	0.00000	3.05000	36.67	36.67

Frame	LoadPat	RelDistB	AbsDistA m	AbsDistB m	OverLA Kgf/m	FOverLB Kgf/m
18	CVC	1.0000	0.00000	3.05000	23.33	23.33
20	CMC	1.0000	0.00000	3.05000	36.67	36.67
20	CVC	1.0000	0.00000	3.05000	23.33	23.33
22	CMC	1.0000	0.00000	3.05000	36.67	36.67
22	CVC	1.0000	0.00000	3.05000	23.33	23.33
24	CMC	1.0000	0.00000	3.05000	36.67	36.67
24	CVC	1.0000	0.00000	3.05000	23.33	23.33
26	CMC	1.0000	0.00000	3.05000	36.67	36.67
26	CVC	1.0000	0.00000	3.05000	23.33	23.33
28	CMC	1.0000	0.00000	3.05000	36.67	36.67
28	CVC	1.0000	0.00000	3.05000	23.33	23.33
29	CMC	1.0000	0.00000	3.05000	36.67	36.67
29	CVC	1.0000	0.00000	3.05000	23.33	23.33
67	CMC	1.0000	0.00000	14.27000	28.75	28.75
67	CVC	1.0000	0.00000	14.27000	28.75	28.75
1	CMC	0.5000	0.00000	2.50000	36.67	36.67
1	CMC	1.0000	2.50000	5.00000	36.67	36.67
1	CVC	0.5000	0.00000	2.50000	23.33	23.33
1	CVC	1.0000	2.50000	5.00000	23.33	23.33
3	CMC	0.5000	0.00000	2.12500	36.67	36.67
3	CMC	1.0000	2.12500	4.25000	36.67	36.67
3	CVC	0.5000	0.00000	2.12500	23.33	23.33
3	CVC	1.0000	2.12500	4.25000	23.33	23.33
5	CMC	0.5000	0.00000	2.50000	36.67	36.67
5	CMC	1.0000	2.50000	5.00000	36.67	36.67
5	CVC	0.5000	0.00000	2.50000	23.33	23.33
5	CVC	1.0000	2.50000	5.00000	23.33	23.33
17	CMC	0.5000	0.00000	2.12500	36.67	36.67
17	CMC	1.0000	2.12500	4.25000	36.67	36.67
17	CVC	0.5000	0.00000	2.12500	23.33	23.33
17	CVC	1.0000	2.12500	4.25000	23.33	23.33
21	CMC	0.5000	0.00000	2.50000	36.67	36.67
21	CMC	1.0000	2.50000	5.00000	36.67	36.67
21	CVC	0.5000	0.00000	2.50000	23.33	23.33
21	CVC	1.0000	2.50000	5.00000	23.33	23.33
33	CMC	0.5000	0.00000	2.12500	36.67	36.67
33	CMC	1.0000	2.12500	4.25000	36.67	36.67
33	CVC	0.5000	0.00000	2.12500	23.33	23.33
33	CVC	1.0000	2.12500	4.25000	23.33	23.33
37	CMC	0.5000	0.00000	2.50000	36.67	36.67
37	CMC	1.0000	2.50000	5.00000	36.67	36.67
37	CVC	0.5000	0.00000	2.50000	23.33	23.33
37	CVC	1.0000	2.50000	5.00000	23.33	23.33
70	CMC	0.5000	0.00000	2.12500	36.67	36.67
70	CMC	1.0000	2.12500	4.25000	36.67	36.67
70	CVC	0.5000	0.00000	2.12500	23.33	23.33
70	CVC	1.0000	2.12500	4.25000	23.33	23.33
75	CMC	0.5000	0.00000	2.50000	36.67	36.67
75	CMC	1.0000	2.50000	5.00000	36.67	36.67
75	CVC	0.5000	0.00000	2.50000	23.33	23.33
75	CVC	1.0000	2.50000	5.00000	23.33	23.33
77	CMC	0.5000	0.00000	2.12500	36.67	36.67
77	CMC	1.0000	2.12500	4.25000	36.67	36.67
77	CVC	0.5000	0.00000	2.12500	23.33	23.33

Frame	LoadPat	RelDistB	AbsDistA m	AbsDistB m	OverLA Kgf/m	FOverLB Kgf/m
77	CVC	1.0000	2.12500	4.25000	23.33	23.33
79	CMC	0.5000	0.00000	2.50000	36.67	36.67
79	CMC	1.0000	2.50000	5.00000	36.67	36.67
79	CVC	0.5000	0.00000	2.50000	23.33	23.33
79	CVC	1.0000	2.50000	5.00000	23.33	23.33
152	CMC	0.5000	0.00000	2.50000	36.67	36.67
152	CMC	1.0000	2.50000	5.00000	36.67	36.67
152	CVC	0.5000	0.00000	2.50000	23.33	23.33
152	CVC	1.0000	2.50000	5.00000	23.33	23.33
158	CMC	0.5000	0.00000	2.12500	36.67	36.67
158	CMC	1.0000	2.12500	4.25000	36.67	36.67
158	CVC	0.5000	0.00000	2.12500	23.33	23.33
158	CVC	1.0000	2.12500	4.25000	23.33	23.33
162	CMC	0.5000	0.00000	2.50000	36.67	36.67
162	CMC	1.0000	2.50000	5.00000	36.67	36.67
162	CVC	0.5000	0.00000	2.50000	23.33	23.33
162	CVC	1.0000	2.50000	5.00000	23.33	23.33
165	CMC	0.5000	0.00000	2.12500	36.67	36.67
165	CMC	1.0000	2.12500	4.25000	36.67	36.67
165	CVC	0.5000	0.00000	2.12500	23.33	23.33
165	CVC	1.0000	2.12500	4.25000	23.33	23.33
167	CMC	0.5000	0.00000	2.50000	36.67	36.67
167	CMC	1.0000	2.50000	5.00000	36.67	36.67
167	CVC	0.5000	0.00000	2.50000	23.33	23.33
167	CVC	1.0000	2.50000	5.00000	23.33	23.33
170	CMC	0.5000	0.00000	2.12500	36.67	36.67
170	CMC	1.0000	2.12500	4.25000	36.67	36.67
170	CVC	0.5000	0.00000	2.12500	23.33	23.33
170	CVC	1.0000	2.12500	4.25000	23.33	23.33
172	CMC	0.5000	0.00000	2.50000	36.67	36.67
172	CMC	1.0000	2.50000	5.00000	36.67	36.67
172	CVC	0.5000	0.00000	2.50000	23.33	23.33
172	CVC	1.0000	2.50000	5.00000	23.33	23.33
174	CMC	0.5000	0.00000	2.12500	36.67	36.67
174	CMC	1.0000	2.12500	4.25000	36.67	36.67
174	CVC	0.5000	0.00000	2.12500	23.33	23.33
174	CVC	1.0000	2.12500	4.25000	23.33	23.33
181	CMC	0.5000	0.00000	2.12500	36.67	36.67
181	CMC	1.0000	2.12500	4.25000	36.67	36.67
181	CVC	0.5000	0.00000	2.12500	23.33	23.33
181	CVC	1.0000	2.12500	4.25000	23.33	23.33
186	CMC	0.5000	0.00000	2.12500	36.67	36.67
186	CMC	1.0000	2.12500	4.25000	36.67	36.67
186	CVC	0.5000	0.00000	2.12500	23.33	23.33
186	CVC	1.0000	2.12500	4.25000	23.33	23.33
198	CMC	0.5000	0.00000	2.50000	36.67	36.67
198	CMC	1.0000	2.50000	5.00000	36.67	36.67
198	CVC	0.5000	0.00000	2.50000	23.33	23.33
198	CVC	1.0000	2.50000	5.00000	23.33	23.33

□ Relación de Esfuerzos – Elementos Metálicos.

Frame	DesignSect	DesignType	Status	Ratio	RatioType
161	P6	Column	No Messages	0.169599	PMM
164	P6	Column	No Messages	0.170515	PMM
32	P6	Column	No Messages	0.293749	PMM
35	P6	Column	No Messages	0.282624	PMM
36	TUBO 200X100X4	Brace	No Messages	0.332063	PMM
44	TUBO 200X100X4	Brace	No Messages	0.315195	PMM
46	P6	Column	No Messages	0.300975	PMM
49	P6	Column	No Messages	0.287051	PMM
50	TUBO 200X100X4	Brace	No Messages	0.359119	PMM
58	TUBO 200X100X4	Brace	No Messages	0.341701	PMM
60	P6	Column	No Messages	0.178200	PMM
63	P6	Column	No Messages	0.186800	PMM
64	TUBO 200X100X4	Brace	No Messages	0.213329	PMM
72	TUBO 200X100X4	Brace	No Messages	0.209247	PMM
175	TUBO 200X100X4	Beam	No Messages	0.302760	PMM
178	TUBO 200X100X4	Beam	No Messages	0.304538	PMM
6	TUBO 200X100X4	Beam	No Messages	0.206230	PMM
7	TUBO 200X100X4	Beam	No Messages	0.187945	PMM
8	TUBO 200X100X4	Beam	No Messages	0.212888	PMM
14	TUBO 200X100X4	Beam	See WarnMsg	0.120190	PMM
15	TUBO 200X100X4	Beam	See WarnMsg	0.074631	PMM
16	TUBO 200X100X4	Beam	See WarnMsg	0.112585	PMM
9	TUBO100X50X4	Beam	No Messages	0.361037	PMM
13	TUBO100X50X4	Beam	No Messages	0.241435	PMM
18	TUBO100X50X4	Beam	No Messages	0.187079	PMM
20	TUBO100X50X4	Beam	No Messages	0.126319	PMM
22	TUBO100X50X4	Beam	No Messages	0.194437	PMM
24	TUBO100X50X4	Beam	No Messages	0.197631	PMM
26	TUBO100X50X4	Beam	No Messages	0.230074	PMM
28	TUBO100X50X4	Beam	No Messages	0.385942	PMM
29	TUBO100X50X4	Beam	No Messages	0.169045	PMM
31	TUBO 200X100X4	Brace	No Messages	0.209321	PMM
39	TUBO 200X100X4	Brace	No Messages	0.211565	PMM
45	P6	Column	No Messages	0.176654	PMM
48	P6	Column	No Messages	0.177187	PMM
25	TUBO100X50X4	Brace	No Messages	0.133386	PMM
27	TUBO100X50X4	Brace	No Messages	0.711913	PMM
30	TUBO100X50X4	Brace	No Messages	0.704229	PMM
40	TUBO100X50X4	Brace	No Messages	0.127486	PMM
41	TUBO100X50X4	Brace	No Messages	0.094210	PMM
42	TUBO100X50X4	Brace	No Messages	0.108220	PMM
43	TUBO100X50X4	Brace	No Messages	0.348520	PMM
47	TUBO100X50X4	Brace	No Messages	0.346932	PMM
51	TUBO100X50X4	Brace	No Messages	0.110987	PMM
52	TUBO100X50X4	Brace	No Messages	0.085290	PMM
53	TUBO100X50X4	Brace	No Messages	0.160424	PMM
54	TUBO100X50X4	Brace	No Messages	0.103783	PMM
55	TUBO100X50X4	Brace	No Messages	0.082166	PMM
56	TUBO100X50X4	Brace	No Messages	0.113283	PMM
57	TUBO100X50X4	Brace	No Messages	0.094756	PMM
59	TUBO100X50X4	Brace	No Messages	0.102105	PMM
61	TUBO100X50X4	Brace	No Messages	0.336659	PMM
62	TUBO100X50X4	Brace	No Messages	0.328780	PMM

Frame	DesignSect	DesignType	Status	Ratio	RatioType
65	TUBO100X50X4	Brace	No Messages	0.100068	PMM
66	TUBO100X50X4	Brace	No Messages	0.161164	PMM
67	TUBO 200X100X4	Beam	No Messages	0.116851	PMM
68	TUBO 60 X40 X 3	Column	No Messages	0.412951	PMM
69	TUBO 60 X40 X 3	Column	No Messages	0.481979	PMM
71	TUBO 60 X40 X 3	Column	No Messages	0.490307	PMM
73	TUBO 60 X40 X 3	Column	No Messages	0.474611	PMM
80	TUBO100X50X4	Beam	No Messages	0.315333	PMM
153	TUBO100X50X4	Beam	No Messages	0.294875	PMM
156	TUBO100X50X4	Beam	No Messages	0.278257	PMM
159	TUBO100X50X4	Beam	No Messages	0.327666	PMM
1	TUBO100X50X4	Beam	No Messages	0.547989	PMM
3	TUBO100X50X4	Beam	No Messages	0.196136	PMM
5	TUBO100X50X4	Beam	No Messages	0.207163	PMM
17	TUBO100X50X4	Beam	No Messages	0.255936	PMM
21	TUBO100X50X4	Beam	No Messages	0.184661	PMM
33	TUBO100X50X4	Beam	No Messages	0.336103	PMM
37	TUBO100X50X4	Beam	No Messages	0.099108	PMM
70	TUBO100X50X4	Beam	No Messages	0.150078	PMM
75	TUBO100X50X4	Beam	No Messages	0.145603	PMM
77	TUBO100X50X4	Beam	No Messages	0.225896	PMM
79	TUBO100X50X4	Beam	No Messages	0.190663	PMM
152	TUBO100X50X4	Beam	No Messages	0.208527	PMM
158	TUBO100X50X4	Beam	No Messages	0.254406	PMM
162	TUBO100X50X4	Beam	No Messages	0.582522	PMM
165	TUBO100X50X4	Beam	No Messages	0.202381	PMM
167	TUBO 200X100X4	Beam	No Messages	0.123928	PMM
170	TUBO 200X100X4	Beam	No Messages	0.128674	PMM
172	TUBO 200X100X4	Beam	No Messages	0.129972	PMM
174	TUBO 200X100X4	Beam	No Messages	0.129272	PMM
177	TUBO 60 X40 X 3	Brace	No Messages	0.141931	PMM
179	TUBO 60 X40 X 3	Brace	No Messages	0.150080	PMM
180	TUBO 60 X40 X 3	Brace	No Messages	0.188247	PMM
181	TUBO100X50X4	Beam	No Messages	0.335173	PMM
183	TUBO 60 X40 X 3	Brace	No Messages	0.228214	PMM
184	TUBO 60 X40 X 3	Brace	No Messages	0.211965	PMM
185	TUBO 60 X40 X 3	Brace	No Messages	0.188262	PMM
186	TUBO100X50X4	Beam	No Messages	0.211512	PMM
188	TUBO 60 X40 X 3	Brace	No Messages	0.176753	PMM
189	TUBO 60 X40 X 3	Brace	No Messages	0.215893	PMM
190	TUBO 60 X40 X 3	Brace	No Messages	0.216225	PMM
191	TUBO 60 X40 X 3	Brace	No Messages	0.189278	PMM
192	TUBO 60 X40 X 3	Brace	No Messages	0.139621	PMM
193	TUBO 60 X40 X 3	Brace	No Messages	0.126538	PMM
194	TUBO 60 X40 X 3	Brace	No Messages	0.169125	PMM
195	TUBO 60 X40 X 3	Brace	No Messages	0.189633	PMM
196	TUBO 60 X40 X 3	Brace	No Messages	0.200222	PMM
197	TUBO 60 X40 X 3	Brace	No Messages	0.212834	PMM
198	TUBO100X50X4	Beam	No Messages	0.125932	PMM
200	TUBO 60 X40 X 3	Brace	No Messages	0.197570	PMM
202	TUBO 60 X40 X 3	Brace	No Messages	0.178575	PMM
203	TUBO 60 X40 X 3	Brace	No Messages	0.199656	PMM
204	TUBO 60 X40 X 3	Brace	No Messages	0.194110	PMM
205	TUBO 60 X40 X 3	Brace	No Messages	0.225693	PMM

Frame	DesignSect	DesignType	Status	Ratio	RatioType
206	TUBO 60 X40 X 3	Brace	No Messages	0.203657	PMM
207	TUBO 60 X40 X 3	Brace	No Messages	0.218785	PMM
208	TUBO 60 X40 X 3	Brace	No Messages	0.216639	PMM
209	P6	Column	See WarnMsg	0.204085	PMM
210	P6	Column	See WarnMsg	0.127826	PMM
211	P6	Column	See WarnMsg	0.233834	PMM
212	P6	Column	See WarnMsg	0.135435	PMM

□ Relación de Esfuerzos Elementos en Concreto.

Frame	DesignSect	DesignType	DesignOpt	Status	Location m	PMMCombo
81	COL 25 X25 T 1	Column	Check	No Messages	0.00000	1.4 D
81	COL 25 X25 T 1	Column	Check	No Messages	1.50000	1.2D + 1.0EY + 1.0L
81	COL 25 X25 T 1	Column	Check	No Messages	3.00000	1.2D + 1.0EX + 1.0L
82	COL 25 X25 T 1	Column	Check	No Messages	0.00000	1.2D + 1.0EY + 1.0L
82	COL 25 X25 T 1	Column	Check	No Messages	1.50000	1.2D + 1.6 L + .5 Lr
82	COL 25 X25 T 1	Column	Check	No Messages	3.00000	1.2D + 1.0EY + 1.0L
83	COL 25 X25 T 1	Column	Check	No Messages	0.00000	1.4 D
83	COL 25 X25 T 1	Column	Check	No Messages	1.50000	1.2D + 1.0EX + 1.0L
83	COL 25 X25 T 1	Column	Check	No Messages	3.00000	1.2D + 1.0EX + 1.0L
84	COL 25 X25 T 1	Column	Check	No Messages	0.00000	1.2D + 1.0EY + 1.0L
84	COL 25 X25 T 1	Column	Check	No Messages	1.50000	1.2D + 1.6 L + .5 Lr
84	COL 25 X25 T 1	Column	Check	No Messages	3.00000	1.2D + 1.0EY + 1.0L
85	COL 25X25 T2	Column	Check	No Messages	0.00000	1.2D + 1.0EY + 1.0L
85	COL 25X25 T2	Column	Check	No Messages	1.50000	1.2D + 1.0EY + 1.0L
85	COL 25X25 T2	Column	Check	No Messages	3.00000	1.2D + 1.0EY + 1.0L
86	COL 25X25 T2	Column	Check	No Messages	0.00000	.09D + 1.0 EY
86	COL 25X25 T2	Column	Check	No Messages	1.50000	1.2D + 1.0EY + 1.0L
86	COL 25X25 T2	Column	Check	No Messages	3.00000	1.2D + 1.0EY + 1.0L
87	COL 25X25 T2	Column	Check	No Messages	0.00000	1.2D + 1.0EY + 1.0L
87	COL 25X25 T2	Column	Check	No Messages	1.50000	1.2D + 1.0EY + 1.0L
87	COL 25X25 T2	Column	Check	No Messages	3.00000	1.2D + 1.0EY + 1.0L
88	COL 25X25 T2	Column	Check	No Messages	0.00000	.09D + 1.0 EY
88	COL 25X25 T2	Column	Check	No Messages	1.50000	1.2D + 1.0EY + 1.0L
88	COL 25X25 T2	Column	Check	No Messages	3.00000	1.2D + 1.0EY + 1.0L
89	COL 25X25 T2	Column	Check	No Messages	0.00000	1.2D + 1.0EX + 1.0L
89	COL 25X25 T2	Column	Check	No Messages	1.50000	1.2D + 1.6 L + .5 Lr
89	COL 25X25 T2	Column	Check	No Messages	3.00000	1.2D + 1.0EX + 1.0L
90	COL 25X25 T2	Column	Check	No Messages	0.00000	1.2D + 1.0EY + 1.0L
90	COL 25X25 T2	Column	Check	No Messages	1.50000	1.2D + 1.6 L + .5 Lr
90	COL 25X25 T2	Column	Check	No Messages	3.00000	1.2D + 1.0EY + 1.0L
91	COL 25X25 T2	Column	Check	No Messages	0.00000	1.2D + 1.0EX + 1.0L
91	COL 25X25 T2	Column	Check	No Messages	1.50000	1.2D + 1.6 L + .5 Lr
91	COL 25X25 T2	Column	Check	No Messages	3.00000	1.2D + 1.0EX + 1.0L
92	COL 25X25 T2	Column	Check	No Messages	0.00000	1.2D + 1.0EY + 1.0L
92	COL 25X25 T2	Column	Check	No Messages	1.50000	1.2D + 1.6 L + .5 Lr
92	COL 25X25 T2	Column	Check	No Messages	3.00000	1.2D + 1.0EX + 1.0L
93	COL 25X25 T3	Column	Check	No Messages	0.00000	1.2D + 1.0EX + 1.0L
93	COL 25X25 T3	Column	Check	No Messages	1.50000	1.2D + 1.0EX + 1.0L

Frame	DesignSect	DesignType	DesignOpt	Status	Location m	PMMCombo
93	COL 25X25 T3	Column	Check	No Messages	3.00000	1.2D + 1.0EX +1.0L
94	COL 45X45	Column	Design	No Messages	0.00000	.09D + 1.0 EY
94	COL 45X45	Column	Design	No Messages	1.50000	.09D + 1.0 EY
94	COL 45X45	Column	Design	No Messages	3.00000	.09D + 1.0 EY
95	COL 25X25 T3	Column	Check	No Messages	0.00000	1.2D + 1.0EX +1.0L
95	COL 25X25 T3	Column	Check	No Messages	1.50000	1.2D + 1.0EX +1.0L
95	COL 25X25 T3	Column	Check	No Messages	3.00000	1.2D + 1.0EX +1.0L
96	COL 45X45	Column	Design	No Messages	0.00000	.09D + 1.0 EY
96	COL 45X45	Column	Design	No Messages	1.50000	.09D + 1.0 EY
96	COL 45X45	Column	Design	No Messages	3.00000	.09D + 1.0 EY