N+3.30	C19	3	Concrete Rectangular	N.A.	COL30X30
N+3.30	C20	5	Concrete Rectangular	N.A.	COL30X30
N+3.30	C21	7	Concrete Rectangular	N.A.	COL30X30
N+3.30	C22	9	Concrete Rectangular	N.A.	COL30X30
N+3.30	C23	11	Concrete Rectangular	N.A.	COL30X30
N+3.30	C24	13	Concrete Rectangular	N.A.	COL30X30
N+3.30	C25	15	Concrete Rectangular	N.A.	COL30X30
N+3.30	C26	17	Concrete Rectangular	N.A.	COL30X30
N+3.30	C27	19	Concrete Rectangular	N.A.	COL30X30
N+3.30	C28	21	Concrete Rectangular	N.A.	COL30X30
N+3.30	C29	23	Concrete Rectangular	N.A.	COL30X30
N+3.30	C30	25	Concrete Rectangular	N.A.	COL30X30
N+3.30	C31	27	Concrete Rectangular	N.A.	COL30X30
N+3.30	C32	29	Concrete Rectangular	N.A.	COL30X30
N+3.30	C33	31	Concrete Rectangular	N.A.	COL30X30
N+3.30	C34	33	Concrete Rectangular	N.A.	COL30X30
N+3.30	C35	35	Concrete Rectangular	N.A.	COL30X30
N+3.30	C36	37	Concrete Rectangular	N.A.	COL30X30
N+3.30	C37	39	Concrete Rectangular	N.A.	COL30X30

3.2 Shell Assignments

Table 3.3 - Area Assignments - Summary

Story	Label	UniqueName	Section Property	Property Type	Axis Angle deg	Added Mass tonf-s2/m3
N+6.30	F13	35	CUBIERTA	Deck		0.0051

N+6.30	F14	36	CUBIERTA	Deck		0.0051
N+6.30	F18	32	CUBIERTA	Deck		0.0051
N+6.30	F21	22	PLACA CANAL	Slab		
N+6.30	F22	23	PLACA CANAL	Slab		
N+6.30	F23	24	PLACA CANAL	Slab		
N+6.30	F24	25	PLACA CANAL	Slab		
N+6.30	F25	26	PLACA CANAL	Slab		
N+6.30	F26	27	PLACA CANAL	Slab		
N+6.30	F27	29	CUBIERTA	Deck	90	0.0051
N+6.30	F28	30	CUBIERTA	Deck	90	0.0051
N+6.30	F29	31	CUBIERTA	Deck	90	0.0051
N+6.30	F30	33	CUBIERTA	Deck		0.0051
N+6.30	F31	34	CUBIERTA	Deck		0.0051
N+3.30	F9	3	ENTREPISO	Slab		
N+3.30	F10	2	ENTREPISO	Slab		
N+3.30	F13	4	ENTREPISO	Slab		
N+3.30	F14	5	ENTREPISO	Slab		
N+3.30	F15	6	ENTREPISO	Slab		
N+3.30	F16	7	ENTREPISO	Slab		
N+3.30	F17	8	ENTREPISO	Slab		

N+3.30	F18	9	ENTREPISO	Slab
N+3.30	F19	10	ENTREPISO	Slab
N+3.30	F20	11	ENTREPISO	Slab

Table 3.4 - Area Assignments - Additional Mass

Story	Label	UniqueName	Added Mass tonf-s2/m3
N+6.30	F13	35	0.0051
N+6.30	F14	36	0.0051
N+6.30	F18	32	0.0051
N+6.30	F27	29	0.0051
N+6.30	F28	30	0.0051
N+6.30	F29	31	0.0051
N+6.30	F30	33	0.0051
N+6.30	F31	34	0.0051

4 Loads

This chapter provides loading information as applied to the model.

4.1 Load Patterns

Table 4.1 - Load Pattern Definitions

Name	Is Auto Load	Type	Self Weight Multiplier	Auto Load
~LLRF	Yes	Other	0	
CV	No	Live	0	
CVC	No	Roof Live	0	
PP	No	Dead	1	
VIENTO	No	Wind	0	None

4.2 Applied Loads

4.2.1 Area Loads

Table 4.2 - Area Load Assignments - Uniform

Carrera 68D No 25-86 To A of 715
Bogotá-Colombia interproyint@gmail.com
Teléfono: (601) 7046932
Celular: 312- 449 1539

Story	Label	UniqueName	Load Pattern	Direction	Load tonf/m2
N+6.30	F13	35	PP	Gravity	0.051
N+6.30	F14	36	PP	Gravity	0.051
N+6.30	F18	32	PP	Gravity	0.051
N+6.30	F21	22	PP	Gravity	0.051
N+6.30	F22	23	PP	Gravity	0.051
N+6.30	F23	24	PP	Gravity	0.051
N+6.30	F24	25	PP	Gravity	0.051
N+6.30	F25	26	PP	Gravity	0.051
N+6.30	F26	27	PP	Gravity	0.051
N+6.30	F27	29	PP	Gravity	0.051
N+6.30	F28	30	PP	Gravity	0.051
N+6.30	F29	31	PP	Gravity	0.051
N+6.30	F30	33	PP	Gravity	0.051
N+6.30	F31	34	PP	Gravity	0.051
N+3.30	F9	3	PP	Gravity	0.469
N+3.30	F10	2	PP	Gravity	0.469
N+3.30	F13	4	PP	Gravity	0.469
N+3.30	F14	5	PP	Gravity	0.469

N+3.30	F15	6	PP	Gravity	0.469
N+3.30	F16	7	PP	Gravity	0.469
N+3.30	F17	8	PP	Gravity	0.469
N+3.30	F18	9	PP	Gravity	0.469
N+3.30	F19	10	PP	Gravity	0.469
N+3.30	F20	11	PP	Gravity	0.469
N+3.30	F9	3	CV	Gravity	0.184
N+3.30	F10	2	CV	Gravity	0.184
N+3.30	F13	4	CV	Gravity	0.184
N+3.30	F14	5	CV	Gravity	0.184
N+3.30	F15	6	CV	Gravity	0.184
N+3.30	F16	7	CV	Gravity	0.184
N+3.30	F17	8	CV	Gravity	0.184
N+3.30	F18	9	CV	Gravity	0.184
N+3.30	F19	10	CV	Gravity	0.184
N+3.30	F20	11	CV	Gravity	0.184
N+6.30	F13	35	CVC	Gravity	0.051
N+6.30	F14	36	CVC	Gravity	0.051
N+6.30	F18	32	CVC	Gravity	0.051
N+6.30	F21	22	CVC	Gravity	0.051
N+6.30	F22	23	CVC	Gravity	0.051
N+6.30	F23	24	CVC	Gravity	0.051
N+6.30	F24	25	CVC	Gravity	0.051
N+6.30	F25	26	CVC	Gravity	0.051
N+6.30	F26	27	CVC	Gravity	0.051
N+6.30	F27	29	CVC	Gravity	0.051
N+6.30	F28	30	CVC	Gravity	0.051
N+6.30	F29	31	CVC	Gravity	0.051
N+6.30	F30	33	CVC	Gravity	0.051
N+6.30	F31	34	CVC	Gravity	0.051
N+6.30	F13	35	VIENTO	Gravity	0.041
N+6.30	F14	36	VIENTO	Gravity	0.041
N+6.30	F18	32	VIENTO	Gravity	0.041
N+6.30	F21	22	VIENTO	Gravity	0.041
N+6.30	F22	23	VIENTO	Gravity	0.041
N+6.30	F23	24	VIENTO	Gravity	0.041
N+6.30	F24	25	VIENTO	Gravity	0.041
N+6.30	F25	26	VIENTO	Gravity	0.041
N+6.30	F26	27	VIENTO	Gravity	0.041
N+6.30	F27	29	VIENTO	Gravity	0.041
N+6.30	F28	30	VIENTO	Gravity	0.041
N+6.30	F29	31	VIENTO	Gravity	0.041
N+6.30	F30	33	VIENTO	Gravity	0.041
N+6.30	F31	34	VIENTO	Gravity	0.041

Carrera 68D No 25-86 To A of 715
Bogotá-Colombia interproyint@gmail.com
Teléfono: (601) 7046932
Celular: 312- 449 1539

4.3 Functions

4.3.1 Response Spectrum Functions

Table 4.3 - Functions - Response Spectrum - Columbia NSR-10

Name	Period sec	Value	Aa	Av	Ae	Ad	Group of Use	Fa	Fv	Damping Ratio
ESPECTRO	0	0.7	0.2	0.2	0.15	0.07	1	1.4	2	0.05
ESPECTRO	0.1	0.7								
ESPECTRO	0.2	0.7								
ESPECTRO	0.3	0.7								
ESPECTRO	0.4	0.7								
ESPECTRO	0.5	0.7								
ESPECTRO	0.6	0.7								
ESPECTRO	0.7	0.685714								
ESPECTRO	0.8	0.6								
ESPECTRO	0.9	0.533333								
ESPECTRO	1	0.48								
ESPECTRO	1.2	0.4								
ESPECTRO	1.5	0.32								
ESPECTRO	1.7	0.282353								
ESPECTRO	2	0.24								
ESPECTRO	2.5	0.192								
ESPECTRO	3	0.16								
ESPECTRO	3.5	0.137143								
ESPECTRO	4	0.12								
ESPECTR	5	0.09216								

Bogota-Colombia interproyint@gmail.com
Teléfono: (601) 7046932345
Celular: 312- 449 1539

O		
ESPECTR O	8	0.036
ESPECTR O	11	0.019041
ESPECTR O	15	0.01024

4.4 Load Cases

Table 4.4 - Load Case Definitions - Summary

Name	Type
Modal	Modal - Eigen
PP	Linear Static
CV	Linear Static
CVC	Linear Static
VIENTO	Linear Static
SHDER	Response Spectrum
SHDIS	Response Spectrum

4.5 Load Combinations

Table 4.5 - Load Combination Definitions

Name	Type	Is Auto	Load Name	SF	Notes
CIMEN	Linear Add	No	PP	1	
CIMEN			CV	1	
CIMEN			CVC	1	
Comb1	Linear Add	No	PP	1.4	Dead [Construction]
Comb2	Linear Add	No	PP	1.2	Dead + Construction Live [Construction]
Comb2			CV	1.6	
Comb2			CVC	0.5	
Comb3	Linear Add	No	PP	1.2	Dead [Deflections]
Comb3			CVC	1.6	
Comb3			CV	1	
Comb4	Linear Add	No	PP	1.2	Dead [Deflections]
Comb4			VIENTO	1.6	
Comb4			CV	1	
Comb4			CVC	0.5	
Comb5	Linear Add	No	PP	1.2	Dead [Deflections]
Comb5			SHDIS	1	
Comb5			CV	1	
Comb6	Linear Add	No	PP	0.9	Dead + Live [Deflections]
Comb6			VIENTO	1.6	
Comb7	Linear Add	No	PP	0.9	Dead + Live [Deflections]

Bogotá-Colombia interproyint@gmail.com
Teléfono: (601) 7046932
Celular: 312- 449 1539

Comb7			SHDIS	1	
CortanteC 1	Linear Add	No	PP	1.34	
CortanteC 1			CV	1	
CortanteC 1			SHDIS	3	
CortanteC 2	Linear Add	No	PP	1.06	
CortanteC 2			CV	1	
CortanteC 2			SHDIS	3	
CortanteC 3	Linear Add	No	PP	1.04	
CortanteC 3			CV	1	
CortanteC 3			SHDIS	3	
CortanteC 4	Linear Add	No	PP	0.76	
CortanteC 4			SHDIS	3	
CortanteV 1	Linear Add	No	PP	1.2	
CortanteV 1			CV	1	
CortanteV 1			SHDIS	2	
CortanteV 2	Linear Add	No	PP	0.9	
CortanteV 2			SHDIS	2	
DConS1	Linear Add	Yes	PP	1.4	Dead [Strength]
DConS2	Linear Add	Yes	PP	1.2	Dead + Live [Strength]
DConS2			CV	1.6	
DConS3	Linear Add	Yes	PP	1.2	Dead + Live + Roof Live [Strength]
DConS3			CV	1.6	
DConS3			CVC	0.5	
DConS4	Linear Add	Yes	PP	1.2	Dead + Live + Roof Live [Strength]
DConS4			CV	1	
DConS4			CVC	1.6	
DConS5	Linear Add	Yes	PP	1.2	Dead + Live + Wind + Snow [Strength]
DConS5			CV	1	
DConS5			VIENTO	1.6	
DConS6	Linear Add	Yes	PP	1.2	Dead + Live - Wind + Snow

Carrera 68D No 25-86 To A of 715
Bogotá Colombia
Teléfono: (601) 7046932
Celular: 312- 449 1539

					[Strength]
DConS6			CV	1	
DConS6			VIENTO	-1.6	
DConS7	Linear Add	Yes	PP	1.2	Dead + Live + Roof Live + Wind [Strength]
DConS7			CV	1	
DConS7			CVC	0.5	
DConS7			VIENTO	1.6	
DConS8	Linear Add	Yes	PP	1.2	Dead + Live + Roof Live - Wind [Strength]
DConS8			CV	1	
DConS8			CVC	0.5	
DConS8			VIENTO	-1.6	
DConS9	Linear Add	Yes	PP	1.2	Dead + Roof Live + Wind [Strength]
DConS9			CVC	1.6	
DConS9			VIENTO	0.8	
DConS10	Linear Add	Yes	PP	1.2	Dead + Roof Live - Wind [Strength]
DConS10			CVC	1.6	
DConS10			VIENTO	-0.8	
DConS11	Linear Add	Yes	PP	1.2	Dead + Wind [Strength]
DConS11			VIENTO	0.8	
DConS12	Linear Add	Yes	PP	1.2	Dead - Wind [Strength]
DConS12			VIENTO	-0.8	
DConS13	Linear Add	Yes	PP	0.9	Dead (min) + Wind [Strength]
DConS13			VIENTO	1.6	
DConS14	Linear Add	Yes	PP	0.9	Dead (min) - Wind [Strength]
DConS14			VIENTO	-1.6	
DConS15	Linear Add	Yes	PP	1.4	Dead + Live + Response Spectrum [Strength]

Carrera 68D No 25-86 To A of 715
Bogotá-Colombia interproyint@gmail.com
Teléfono: (601) 7046932348
Celular: 312- 449 1539

DConS15			CV	1	
DConS15			SHDER	1.3	
DConS16	Linear Add	Yes	PP	1.4	Dead + Live + Response Spectrum [Strength]
DConS16			CV	1	
DConS16			SHDIS	1.3	
DConS17	Linear Add	Yes	PP	1.4	Dead + Response Spectrum [Strength]
DConS17			SHDER	1.3	
DConS18	Linear Add	Yes	PP	1.4	Dead + Response Spectrum [Strength]
DConS18			SHDIS	1.3	
DConS19	Linear Add	Yes	PP	0.7	Dead (min) + Response Spectrum [Strength]
DConS19			SHDER	1.3	
DConS20	Linear Add	Yes	PP	0.7	Dead (min) + Response Spectrum [Strength]
DConS20			SHDIS	1.3	

5 Analysis Results

This chapter provides analysis results.

5.1 Modal Results

Table 5.1 - Modal Periods And Frequencies

Case	Mode	Period sec	Frequency cyc/sec	CircFreq rad/sec	Eigenvalue rad2/sec2
Modal	1	0.215	4.662	29.291	857.9639
Modal	2	0.198	5.058	31.7784	1009.8666
Modal	3	0.18	5.567	34.9777	1223.44
Modal	4	0.092	10.872	68.3088	4666.0887
Modal	5	0.082	12.176	76.5038	5852.8302
Modal	6	0.076	13.182	82.8226	6859.5855
Modal	7	0.008	127.308	799.9003	639840.4686
Modal	8	0.008	130.244	818.3464	669690.8878
Modal	9	0.007	144.034	904.9898	819006.5855
Modal	10	0.007	151.033	948.9699	900543.8384
Modal	11	0.006	158.266	994.4129	988857.0383
Modal	12	0.006	163.152	1025.1165	1050863.81

Carrera 68D No 25-86 To A of 715
Bogotá Colombia proyint@gmail.com
Teléfono: (601) 7046932
Celular: 312- 449 1539

					9
Modal	13	0.006	163.386	1026.5821	1053870.8238
Modal	14	0.006	165.721	1041.2548	1084211.4887
Modal	15	0.006	169.83	1067.0759	1138650.9987
Modal	16	0.006	172.009	1080.7675	1168058.328
Modal	17	0.006	172.618	1084.5889	1176333.1226
Modal	18	0.006	173.543	1090.4001	1188972.3091
Modal	19	0.006	180.875	1136.4694	1291562.627
Modal	20	0.005	185.585	1166.0646	1359706.5927
Modal	21	0.005	189.765	1192.3257	1421640.5613
Modal	22	0.005	192.003	1206.3876	1455371.0628
Modal	23	0.005	194.208	1220.2423	1488991.2473
Modal	24	0.005	199.36	1252.6177	1569051.0942

Table 5.2 - Modal Participating Mass Ratios (Part 1 of 2)

Case	Mode	Period sec	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ
Modal	1	0.215	0.891	0.0073	0	0.891	0.0073	0	0.0015	0.135	0.039
Modal	2	0.198	0.0208	0.8005	0	0.9118	0.8078	0	0.1219	0.0031	0.1105
Modal	3	0.18	0.0173	0.1287	0	0.9291	0.9364	0	0.0105	0.0036	0.7508
Modal	4	0.092	0.0583	0.0002	0	0.9875	0.9366	0	0.0051	0.6243	0.0351
Modal	5	0.082	0.0122	0.0057	0	0.9997	0.9423	0	0.085	0.2251	0.0569
Modal	6	0.076	0.0003	0.0577	0	1	1	0	0.776	0.0088	0.0076

Modal	7	0.008	5.618E-07	0	0	1	1	0	0	1.521E-06	1.278E-06
Modal	8	0.008	0	0	0	1	1	0	6.114E-07	0	0
Modal	9	0.007	0	0	0	1	1	0	0	0	0
Modal	10	0.007	0	0	0	1	1	0	2.263E-06	0	0
Modal	11	0.006	0	0	0	1	1	0	0	0	0
Modal	12	0.006	0	0	0	1	1	0	0	0	0
Modal	13	0.006	0	0	0	1	1	0	0	0	0
Modal	14	0.006	0	0	0	1	1	0	0	0	0
Modal	15	0.006	0	0	0	1	1	0	0	0	0
Modal	16	0.006	0	0	0	1	1	0	0	0	0
Modal	17	0.006	0	0	0	1	1	0	0	0	0
Modal	18	0.006	0	0	0	1	1	0	0	0	0
Modal	19	0.006	0	0	0	1	1	0	0	0	0
Modal	20	0.005	0	0	0	1	1	0	0	0	0
Modal	21	0.005	0	0	0	1	1	0	0	0	0
Modal	22	0.005	0	0	0	1	1	0	8.489E-07	0	0
Modal	23	0.005	0	0	0	1	1	0	0	1.193E-06	0
Modal	24	0.005	0	0	0	1	1	0	0	6.755E-07	0

Table 5.2 - Modal Participating Mass Ratios (Part 2 of 2)

SumRX	SumRY	SumRZ
0.0015	0.135	0.039
0.1234	0.1381	0.1495
0.1339	0.1417	0.9003
0.139	0.7661	0.9355
0.224	0.9912	0.9924
1	1	1
1	1	1
1	1	1
1	1	1
1	1	1
1	1	1
1	1	1
1	1	1
1	1	1
1	1	1
1	1	1

Carrera 68D No 25-86 To A of 715
Bogotá-Colombia interproyint@gmail.com
Teléfono: (601) 7046932
Celular: 312- 449 1539