

PROPIEDADES DE LOS ELEMENTOS										
ELEMENTOS ESTRUCTURALES EN TUBERÍA ESTRUCTURAL										
COLUMNA										
ELEMENTO	DIMENSIÓN (mm)	UBICACIÓN	ÁREA (cm2)	ÁREA (m2)	ALTURA, h (m)	CANTIDAD TOTAL	VOLUMEN UNITARIO (m3)	VOLUMEN TOTAL (m3)	PESO ESPECIFICO KN/m3	PESO ELEMENTOS KN
COLUMNA	300x300x10	PISO 1	113.42	0.011342	2.8	18	0.0317576	0.572	76.44	43.696
PESO SUBTOTAL (KN)										43.696
VIGA										
ELEMENTO	DIMENSIÓN (mm)	UBICACIÓN	ÁREA (cm2)	ÁREA (m2)	LONGITUD (m)	CANTIDAD TOTAL	VOLUMEN UNITARIO (m3)	VOLUMEN TOTAL (m3)	PESO ESPECIFICO KN/m3	PESO ELEMENTOS KN
VIGA (1,2,3)	300x300x10	PISO 1	113.42	0.011342	10.45	3	0.1185239	0.356	76.44	27.180
VIGA (2´)	300x300x10	PISO 1	113.42	0.011342	1.75	1	0.0198485	0.020	76.44	1.517
VIGA (A,B,E)	300x300x10	PISO 1	113.42	0.011342	5.8	3	0.0657836	0.197	76.44	15.085
VIGA (C,D)	300x300x10	PISO 1	113.42	0.011342	6.1	2	0.0691862	0.138	76.44	10.577
PESO SUBTOTAL (KN)										54.360
LOSA TANQUE										
ELEMENTO	DIMENSIÓN	UBICACIÓN	ANCHO, a (m)	LONGITUD (m)	ALTURA, h (m)	CANTIDAD TOTAL	VOLUMEN UNITARIO (m3)	VOLUMEN TOTAL (m3)	PESO ESPECIFICO KN/m2	PESO ELEMENTOS KN
METALDECK	2,35x2,05	PISO 1	2.35	2.05	0.1	1	0.48175	0.482	7.57	36.468
PESO SUBTOTAL (KN)										36.468
CUBIERTA										
ELEMENTO	DIMENSIÓN (mm)		ÁREA (cm2)	ÁREA (m2)	LONGITUD (m)	CANTIDAD TOTAL	VOLUMEN UNITARIO (m3)	VOLUMEN TOTAL (m3)	PESO ESPECIFICO KN/m3	PESO ELEMENTOS KN
PUNTAL (columneta)	300x300x10		113.42	0.011342	1	6	0.011342	0.068	76.44	5.202
ALFARDAS	120x60x3		10.2	0.00102	10.8	8	0.011016	0.088	76.44	6.737
APOYO CUMBRERA	120x60x3		10.2	0.00102	7	1	0.00714	0.007	76.44	0.546
CORREAS	120x60x3		10.2	0.00102	7	16	0.00714	0.114	76.44	8.733
PESO SUBTOTAL (KN)										21.217
ELEMENTOS NO ESTRUCTURALES										
MUROS										
ELEMENTO	DIMENSIÓN	UBICACIÓN	ANCHO, a (m)	LONGITUD (m)	ALTURA, h (m)	CANTIDAD TOTAL	VOLUMEN UNITARIO (m3)	VOLUMEN TOTAL (m3)	PESO ESPECIFICO KN/m3	PESO ELEMENTOS KN
DURAPANEL	0,125x2,5	PISO 1	0.125	61.12	2.5	1	19.1	19.1	0.1176	2.246
	0,125x1	CUBIERTA	0.125	19.8	1	1	2.475	2.475	0.1176	0.291
PESO SUBTOTAL (KN)										2.537
PISOS Y CIELO RASO										
ELEMENTO		UBICACIÓN	BASE, b (m)	ANCHO, a (m)	ALTURA, h (m)	CANTIDAD TOTAL	VOLUMEN UNITARIO (m3)	VOLUMEN TOTAL (m3)	CARGA KN/m2	PESO ELEMENTOS KN
BALDOSA CERÁMICA		PISO 1	7	11.95	0.02	1	1.673	1.673	0.8	66.920
ACABADO DE PISO		PISO 1	7	11.95	0.02	1	1.673	1.673	0.4	33.460
CIELO RASO		CUBIERTA	7	9.9	0.08	1	5.544	5.544	0.25	17.325
PESO SUBTOTAL (KN)										117.705
BARANDA										
ELEMENTO	DIAMETRO (pulg)		ESPESOR DE PARED (mm)	ALTURA (m)	PERIMETRO (m)	AREA (m2)	CANTIDAD TOTAL	VOLUMEN TOTAL (m3)	PESO ESPECIFICO KN/m3	PESO ELEMENTOS KN
PERFIL CIRCULAR	1 1/2		3	1	-	0.000427	40	0.0171	76.44	1.306
PERFIL CIRCULAR	1 1/2		3	-	42.9	0.000427	5	0.0183	76.44	1.400
PESO SUBTOTAL (KN)										2.706
TEJAS DE POLIPROPILENO										
ELEMENTO	ÁREA UTIL - UNIDAD (m2)			ÁREA TOTAL DE CUBIERTA (m2)	CANTIDAD TOTAL DE TEJAS		PESO KN			PESO ELEMENTOS KN
TEJA N° 7 (0,76 x 2,13)	1.35			69.3	52		2.68			139.360
PESO SUBTOTAL (KN)										139.360
PESO TOTAL DE LA ESTRUCTURA (KN)										418.049

RESUMEN DE CARGAS					
NIVEL	PESO TOTAL (KN)	AREA PLANTA (m2)	CARGA MUERTA (KN/m2)	CARGA VIVA (KN/m2)	CARGA TOTAL (KN/m2)
PLANTA 1	221.004	83.650	2.642	1.8	4.442
CUBIERTA	197.045	74.118	2.659	0.5	3.159
TOTAL	418.049	-	5.301	2.3	7.601

TABLE: Joint Reactions ETABS

Story	Joint Label	Unique Name	Load Case/Combo	FX	FY	FZ	MX	MY
				kN	kN	kN	kN-m	kN-m
Base	1	44	Peso Propio	0.789	-0.648	11.691	0.629	0.713
Base	1	44	Dead	0.637	-0.603	6.506	0.583	0.584
Base	2	43	Peso Propio	0.299	-0.124	3.874	0.175	0.282
Base	2	43	Dead	0.096	-0.041	-0.382	0.097	0.114
Base	3	59	Peso Propio	-0.082	-0.115	4.212	0.162	-0.043
Base	3	59	Dead	0.043	-0.030	-0.830	0.084	0.068
Base	4	58	Peso Propio	-0.363	-0.960	16.324	0.894	-0.282
Base	4	58	Dead	-0.263	-0.962	10.948	0.889	-0.194
Base	5	45	Peso Propio	1.099	0.099	16.182	-0.016	0.986
Base	5	45	Dead	1.015	0.088	11.313	-0.013	0.916
Base	6	54	Peso Propio	0.872	0.183	34.985	-0.094	0.790
Base	6	54	Dead	0.869	0.187	29.885	-0.103	0.790
Base	7	46	Peso Propio	1.113	-0.535	17.427	0.533	1.003
Base	7	46	Dead	1.029	-0.469	12.367	0.468	0.932
Base	8	53	Peso Propio	0.900	-0.737	37.210	0.702	0.820
Base	8	53	Dead	0.896	-0.704	32.028	0.666	0.818
Base	9	47	Peso Propio	0.870	1.114	10.774	-0.892	0.800
Base	9	47	Dead	0.721	0.934	6.493	-0.744	0.672
Base	10	48	Peso Propio	-0.373	1.719	15.804	-1.420	-0.274
Base	10	48	Dead	-0.282	1.625	11.356	-1.345	-0.195
Base	11	60	Peso Propio	0.328	-0.322	7.802	0.337	0.312
Base	11	60	Dead	0.290	-0.246	3.561	0.266	0.283
Base	12	57	Peso Propio	0.504	-0.054	13.957	0.106	0.466
Base	12	57	Dead	0.491	-0.108	10.169	0.146	0.458
Base	13	56	Peso Propio	-0.729	-0.468	13.616	0.462	-0.600
Base	13	56	Dead	-0.669	-0.416	8.980	0.411	-0.545
Base	14	61	Peso Propio	-0.388	-0.268	6.413	0.288	-0.307
Base	14	61	Dead	-0.290	-0.202	2.719	0.226	-0.218
Base	15	55	Peso Propio	-2.348	0.087	19.699	-0.018	-1.992
Base	15	55	Dead	-2.240	0.074	14.769	-0.012	-1.896
Base	16	52	Peso Propio	-2.362	-0.496	21.139	0.487	-1.999
Base	16	52	Dead	-2.256	-0.436	16.044	0.430	-1.906
Base	17	51	Peso Propio	-0.499	1.063	9.786	-0.859	-0.383
Base	17	51	Dead	-0.420	0.887	5.738	-0.714	-0.314
Base	18	49	Peso Propio	0.370	0.461	10.113	-0.332	0.369
Base	18	49	Dead	0.336	0.423	6.807	-0.306	0.339

Story	Beam	Unique Name	Load Case/Combo	Station (m)	V2 (KN)	T (kN-m)	M3 (kN-m)
Story1	B1	52	ENVOLVENTE Max	0.15	-1.287	-0.355	-1.368
Story1	B1	52	ENVOLVENTE Max	0.7333	-0.818	-0.355	-0.754
Story1	B1	52	ENVOLVENTE Max	1.3167	-0.350	-0.355	-0.257
Story1	B1	52	ENVOLVENTE Max	1.9	0.119	-0.355	0.029
Story1	B1	52	ENVOLVENTE Min	0.15	-2.276	-0.560	-2.334
Story1	B1	52	ENVOLVENTE Min	0.7333	-1.593	-0.560	-1.219
Story1	B1	52	ENVOLVENTE Min	1.3167	-0.968	-0.560	-0.589
Story1	B1	52	ENVOLVENTE Min	1.9	-0.343	-0.560	-0.440
Story1	B2	30	ENVOLVENTE Max	0.15	-0.906	0.003	0.020
Story1	B2	30	ENVOLVENTE Max	0.694	-0.469	0.003	0.504
Story1	B2	30	ENVOLVENTE Max	1.238	-0.032	0.003	0.760
Story1	B2	30	ENVOLVENTE Max	1.782	0.517	0.003	0.673
Story1	B2	30	ENVOLVENTE Max	2.326	1.181	0.003	0.236
Story1	B2	30	ENVOLVENTE Max	2.87	1.861	0.003	-0.298
Story1	B2	30	ENVOLVENTE Min	0.15	-1.540	-0.003	-0.273
Story1	B2	30	ENVOLVENTE Min	0.694	-0.860	-0.003	0.220
Story1	B2	30	ENVOLVENTE Min	1.238	-0.234	-0.003	0.447
Story1	B2	30	ENVOLVENTE Min	1.782	0.238	-0.003	0.428
Story1	B2	30	ENVOLVENTE Min	2.326	0.675	-0.003	0.089
Story1	B2	30	ENVOLVENTE Min	2.87	1.112	-0.003	-0.621
Story1	B3	53	ENVOLVENTE Max	0.15	-1.937	0.331	-2.362
Story1	B3	53	ENVOLVENTE Max	0.7333	-1.468	0.331	-1.369
Story1	B3	53	ENVOLVENTE Max	1.3167	-0.999	0.331	-0.493
Story1	B3	53	ENVOLVENTE Max	1.9	-0.531	0.331	0.177
Story1	B3	53	ENVOLVENTE Min	0.15	-3.309	0.211	-3.899
Story1	B3	53	ENVOLVENTE Min	0.7333	-2.580	0.211	-2.181
Story1	B3	53	ENVOLVENTE Min	1.3167	-1.921	0.211	-0.920
Story1	B3	53	ENVOLVENTE Min	1.9	-1.296	0.211	-0.207
Story1	B4	36	ENVOLVENTE Max	0.15	-5.845	0.259	-1.521
Story1	B4	36	ENVOLVENTE Max	0.694	-4.363	0.259	1.893
Story1	B4	36	ENVOLVENTE Max	1.238	-1.533	0.259	4.564
Story1	B4	36	ENVOLVENTE Max	1.782	3.439	0.259	4.319
Story1	B4	36	ENVOLVENTE Max	2.326	7.841	0.259	1.156
Story1	B4	36	ENVOLVENTE Max	2.87	10.147	0.259	-2.353
Story1	B4	36	ENVOLVENTE Min	0.15	-9.243	0.165	-2.603
Story1	B4	36	ENVOLVENTE Min	0.694	-6.937	0.165	1.117
Story1	B4	36	ENVOLVENTE Min	1.238	-2.535	0.165	2.887
Story1	B4	36	ENVOLVENTE Min	1.782	2.114	0.165	2.771
Story1	B4	36	ENVOLVENTE Min	2.326	4.944	0.165	0.685
Story1	B4	36	ENVOLVENTE Min	2.87	6.426	0.165	-3.832
Story1	B5	37	ENVOLVENTE Max	0.15	-7.116	-0.149	-3.209
Story1	B5	37	ENVOLVENTE Max	0.73	-5.488	-0.149	0.722
Story1	B5	37	ENVOLVENTE Max	1.31	-2.328	-0.149	4.410
Story1	B5	37	ENVOLVENTE Max	1.89	2.912	-0.149	4.648
Story1	B5	37	ENVOLVENTE Max	2.47	7.827	-0.149	1.418
Story1	B5	37	ENVOLVENTE Max	3.05	10.360	-0.149	-2.441
Story1	B5	37	ENVOLVENTE Min	0.15	-11.180	-0.237	-5.161
Story1	B5	37	ENVOLVENTE Min	0.73	-8.648	-0.237	0.377
Story1	B5	37	ENVOLVENTE Min	1.31	-3.733	-0.237	2.806
Story1	B5	37	ENVOLVENTE Min	1.89	1.791	-0.237	2.972
Story1	B5	37	ENVOLVENTE Min	2.47	4.951	-0.237	0.854
Story1	B5	37	ENVOLVENTE Min	3.05	6.579	-0.237	-3.971
Story1	B6	55	ENVOLVENTE Max	0.15	-12.913	-0.531	-5.917
Story1	B6	55	ENVOLVENTE Max	0.73	-10.123	-0.531	1.306
Story1	B6	55	ENVOLVENTE Max	1.31	-4.270	-0.531	8.100
Story1	B6	55	ENVOLVENTE Max	1.89	5.858	-0.531	8.363
Story1	B6	55	ENVOLVENTE Max	2.47	14.963	-0.531	2.094
Story1	B6	55	ENVOLVENTE Max	3.05	19.303	-0.531	-5.080
Story1	B6	55	ENVOLVENTE Min	0.15	-20.209	-0.831	-9.387
Story1	B6	55	ENVOLVENTE Min	0.73	-15.869	-0.831	0.767
Story1	B6	55	ENVOLVENTE Min	1.31	-6.764	-0.831	5.180
Story1	B6	55	ENVOLVENTE Min	1.89	3.687	-0.831	5.357

Story1	B6	55	ENVOLVENTE Min	2.47	9.540	-0.831	1.282
Story1	B6	55	ENVOLVENTE Min	3.05	12.330	-0.831	-8.073
Story1	B7	38	ENVOLVENTE Max	0.15	-9.070	-0.038	-2.108
Story1	B7	38	ENVOLVENTE Max	0.694	-6.542	-0.038	3.339
Story1	B7	38	ENVOLVENTE Max	1.238	-1.319	-0.038	6.951
Story1	B7	38	ENVOLVENTE Max	1.782	9.038	-0.038	5.099
Story1	B7	38	ENVOLVENTE Max	2.326	17.162	-0.038	-1.355
Story1	B7	38	ENVOLVENTE Max	2.87	21.094	-0.038	-8.104
Story1	B7	38	ENVOLVENTE Min	0.15	-14.285	-0.061	-3.553
Story1	B7	38	ENVOLVENTE Min	0.694	-10.353	-0.061	2.032
Story1	B7	38	ENVOLVENTE Min	1.238	-2.229	-0.061	4.416
Story1	B7	38	ENVOLVENTE Min	1.782	5.696	-0.061	3.269
Story1	B7	38	ENVOLVENTE Min	2.326	10.919	-0.061	-2.217
Story1	B7	38	ENVOLVENTE Min	2.87	13.447	-0.061	-12.813
Story1	B8	57	ENVOLVENTE Max	0.15	-6.268	0.002	-3.523
Story1	B8	57	ENVOLVENTE Max	0.69	-4.802	0.002	-0.474
Story1	B8	57	ENVOLVENTE Max	1.23	-2.008	0.002	2.184
Story1	B8	57	ENVOLVENTE Max	1.77	2.643	0.002	2.349
Story1	B8	57	ENVOLVENTE Max	2.31	6.990	0.002	-0.143
Story1	B8	57	ENVOLVENTE Max	2.85	9.271	0.002	-2.974
Story1	B8	57	ENVOLVENTE Min	0.15	-9.880	-0.006	-5.651
Story1	B8	57	ENVOLVENTE Min	0.69	-7.599	-0.006	-0.847
Story1	B8	57	ENVOLVENTE Min	1.23	-3.252	-0.006	1.382
Story1	B8	57	ENVOLVENTE Min	1.77	1.605	-0.006	1.485
Story1	B8	57	ENVOLVENTE Min	2.31	4.399	-0.006	-0.400
Story1	B8	57	ENVOLVENTE Min	2.85	5.866	-0.006	-4.829
Story1	B9	48	ENVOLVENTE Max	0.15	-9.051	0.171	-2.091
Story1	B9	48	ENVOLVENTE Max	0.694	-6.523	0.171	3.325
Story1	B9	48	ENVOLVENTE Max	1.238	-1.301	0.171	6.934
Story1	B9	48	ENVOLVENTE Max	1.782	9.043	0.171	5.079
Story1	B9	48	ENVOLVENTE Max	2.326	17.167	0.171	-1.360
Story1	B9	48	ENVOLVENTE Max	2.87	21.099	0.171	-8.103
Story1	B9	48	ENVOLVENTE Min	0.15	-14.280	0.108	-3.564
Story1	B9	48	ENVOLVENTE Min	0.694	-10.348	0.108	2.007
Story1	B9	48	ENVOLVENTE Min	1.238	-2.224	0.108	4.398
Story1	B9	48	ENVOLVENTE Min	1.782	5.685	0.108	3.255
Story1	B9	48	ENVOLVENTE Min	2.326	10.907	0.108	-2.240
Story1	B9	48	ENVOLVENTE Min	2.87	13.435	0.108	-12.839
Story1	B10	49	ENVOLVENTE Max	0.15	-7.194	0.185	-2.032
Story1	B10	49	ENVOLVENTE Max	0.6833	-5.754	0.185	2.124
Story1	B10	49	ENVOLVENTE Max	1.2167	-3.018	0.185	5.925
Story1	B10	49	ENVOLVENTE Max	1.75	1.234	0.185	6.936
Story1	B10	49	ENVOLVENTE Max	2.2833	7.300	0.185	4.609
Story1	B10	49	ENVOLVENTE Max	2.8167	11.555	0.185	-0.242
Story1	B10	49	ENVOLVENTE Max	3.35	13.795	0.185	-4.592
Story1	B10	49	ENVOLVENTE Min	0.15	-11.328	0.116	-3.410
Story1	B10	49	ENVOLVENTE Min	0.6833	-9.087	0.116	1.238
Story1	B10	49	ENVOLVENTE Min	1.2167	-4.832	0.116	3.735
Story1	B10	49	ENVOLVENTE Min	1.75	0.694	0.116	4.438
Story1	B10	49	ENVOLVENTE Min	2.2833	4.593	0.116	2.935
Story1	B10	49	ENVOLVENTE Min	2.8167	7.329	0.116	-0.554
Story1	B10	49	ENVOLVENTE Min	3.35	8.769	0.116	-7.358
Story1	B11	50	ENVOLVENTE Max	0.15	-5.802	-0.303	-1.371
Story1	B11	50	ENVOLVENTE Max	0.694	-4.320	-0.303	2.014
Story1	B11	50	ENVOLVENTE Max	1.238	-1.490	-0.303	4.689
Story1	B11	50	ENVOLVENTE Max	1.782	3.433	-0.303	4.446
Story1	B11	50	ENVOLVENTE Max	2.326	7.835	-0.303	1.287
Story1	B11	50	ENVOLVENTE Max	2.87	10.141	-0.303	-2.213
Story1	B11	50	ENVOLVENTE Min	0.15	-9.249	-0.478	-2.508
Story1	B11	50	ENVOLVENTE Min	0.694	-6.943	-0.478	1.147
Story1	B11	50	ENVOLVENTE Min	1.238	-2.541	-0.478	2.944
Story1	B11	50	ENVOLVENTE Min	1.782	2.063	-0.478	2.851
Story1	B11	50	ENVOLVENTE Min	2.326	4.893	-0.478	0.741

Story1	B11	50	ENVOLVENTE Min	2.87	6.376	-0.478	-3.698
Story1	B12	59	ENVOLVENTE Max	0.15	-13.899	0.801	-5.097
Story1	B12	59	ENVOLVENTE Max	0.6833	-11.447	0.801	2.562
Story1	B12	59	ENVOLVENTE Max	1.2167	-6.404	0.801	10.228
Story1	B12	59	ENVOLVENTE Max	1.75	1.553	0.801	12.653
Story1	B12	59	ENVOLVENTE Max	2.2833	13.222	0.801	8.572
Story1	B12	59	ENVOLVENTE Max	2.8167	21.066	0.801	-0.399
Story1	B12	59	ENVOLVENTE Max	3.35	24.880	0.801	-8.337
Story1	B12	59	ENVOLVENTE Min	0.15	-21.774	0.514	-8.213
Story1	B12	59	ENVOLVENTE Min	0.6833	-17.960	0.514	1.515
Story1	B12	59	ENVOLVENTE Min	1.2167	-10.116	0.514	6.497
Story1	B12	59	ENVOLVENTE Min	1.75	0.897	0.514	8.110
Story1	B12	59	ENVOLVENTE Min	2.2833	8.399	0.514	5.482
Story1	B12	59	ENVOLVENTE Min	2.8167	13.441	0.514	-0.778
Story1	B12	59	ENVOLVENTE Min	3.35	15.893	0.514	-13.182
Story1	B13	58	ENVOLVENTE Max	0.15	-11.530	-0.007	-6.478
Story1	B13	58	ENVOLVENTE Max	0.69	-9.031	-0.007	-0.806
Story1	B13	58	ENVOLVENTE Max	1.23	-3.877	-0.007	4.320
Story1	B13	58	ENVOLVENTE Max	1.77	4.949	-0.007	4.649
Story1	B13	58	ENVOLVENTE Max	2.31	12.967	-0.007	-0.164
Story1	B13	58	ENVOLVENTE Max	2.85	16.855	-0.007	-5.412
Story1	B13	58	ENVOLVENTE Min	0.15	-18.073	-0.014	-10.257
Story1	B13	58	ENVOLVENTE Min	0.69	-14.186	-0.014	-1.361
Story1	B13	58	ENVOLVENTE Min	1.23	-6.167	-0.014	2.757
Story1	B13	58	ENVOLVENTE Min	1.77	3.092	-0.014	2.962
Story1	B13	58	ENVOLVENTE Min	2.31	8.246	-0.014	-0.424
Story1	B13	58	ENVOLVENTE Min	2.85	10.746	-0.014	-8.611
Story1	B14	31	ENVOLVENTE Max	0.15	-0.197	0.361	-0.523
Story1	B14	31	ENVOLVENTE Max	0.69	0.282	0.361	-0.534
Story1	B14	31	ENVOLVENTE Max	1.23	0.860	0.361	-0.607
Story1	B14	31	ENVOLVENTE Min	0.15	-0.622	0.229	-0.952
Story1	B14	31	ENVOLVENTE Min	0.69	-0.088	0.229	-0.833
Story1	B14	31	ENVOLVENTE Min	1.23	0.346	0.229	-1.078
Story1	B15	54	ENVOLVENTE Max	0.15	-2.744	-0.130	-0.325
Story1	B15	54	ENVOLVENTE Max	0.7333	-1.102	-0.130	1.263
Story1	B15	54	ENVOLVENTE Max	1.3167	2.333	-0.130	1.194
Story1	B15	54	ENVOLVENTE Max	1.9	4.853	-0.130	-0.448
Story1	B15	54	ENVOLVENTE Min	0.15	-4.616	-0.204	-0.925
Story1	B15	54	ENVOLVENTE Min	0.7333	-2.110	-0.204	0.752
Story1	B15	54	ENVOLVENTE Min	1.3167	1.255	-0.204	0.697
Story1	B15	54	ENVOLVENTE Min	1.9	2.896	-0.204	-1.130
Story1	B16	35	ENVOLVENTE Max	0.15	-0.886	-0.904	-1.312
Story1	B16	35	ENVOLVENTE Max	0.69	0.755	-0.904	-1.169
Story1	B16	35	ENVOLVENTE Max	1.23	4.962	-0.904	-1.983
Story1	B16	35	ENVOLVENTE Min	0.15	-1.683	-1.428	-2.200
Story1	B16	35	ENVOLVENTE Min	0.69	0.211	-1.428	-1.823
Story1	B16	35	ENVOLVENTE Min	1.23	3.005	-1.428	-3.236
Story1	B17	34	ENVOLVENTE Max	0.15	-11.226	0.344	-2.485
Story1	B17	34	ENVOLVENTE Max	0.675	-6.004	0.344	3.190
Story1	B17	34	ENVOLVENTE Max	1.2	0.049	0.344	5.720
Story1	B17	34	ENVOLVENTE Max	1.725	7.390	0.344	3.665
Story1	B17	34	ENVOLVENTE Max	2.25	11.114	0.344	-0.713
Story1	B17	34	ENVOLVENTE Min	0.15	-17.668	0.213	-4.044
Story1	B17	34	ENVOLVENTE Min	0.675	-9.546	0.213	2.005
Story1	B17	34	ENVOLVENTE Min	1.2	-0.242	0.213	3.652
Story1	B17	34	ENVOLVENTE Min	1.725	4.618	0.213	2.262
Story1	B17	34	ENVOLVENTE Min	2.25	7.012	0.213	-1.422
Story1	B18	32	ENVOLVENTE Max	0.15	-4.170	-0.024	-0.884
Story1	B18	32	ENVOLVENTE Max	0.675	-2.762	-0.024	1.479
Story1	B18	32	ENVOLVENTE Max	1.2	-0.169	-0.024	2.834
Story1	B18	32	ENVOLVENTE Max	1.725	3.591	-0.024	1.944
Story1	B18	32	ENVOLVENTE Max	2.25	5.781	-0.024	-0.243
Story1	B18	32	ENVOLVENTE Min	0.15	-6.667	-0.042	-1.531

Story1	B18	32	ENVOLVENTE Min	0.675	-4.477	-0.042	0.912
Story1	B18	32	ENVOLVENTE Min	1.2	-0.522	-0.042	1.800
Story1	B18	32	ENVOLVENTE Min	1.725	2.192	-0.042	1.167
Story1	B18	32	ENVOLVENTE Min	2.25	3.600	-0.042	-0.691
Story1	B19	33	ENVOLVENTE Max	0.15	-3.690	0.401	-1.678
Story1	B19	33	ENVOLVENTE Max	0.7333	-2.048	0.401	0.081
Story1	B19	33	ENVOLVENTE Max	1.3167	0.989	0.401	0.840
Story1	B19	33	ENVOLVENTE Max	1.9	3.407	0.401	-0.134
Story1	B19	33	ENVOLVENTE Min	0.15	-6.062	0.254	-2.853
Story1	B19	33	ENVOLVENTE Min	0.7333	-3.509	0.254	0.000
Story1	B19	33	ENVOLVENTE Min	1.3167	0.341	0.254	0.448
Story1	B19	33	ENVOLVENTE Min	1.9	1.983	0.254	-0.693
Story1	B20	56	ENVOLVENTE Max	0.15	-6.921	1.138	-3.066
Story1	B20	56	ENVOLVENTE Max	0.73	-5.293	1.138	0.751
Story1	B20	56	ENVOLVENTE Max	1.31	-2.133	1.138	4.275
Story1	B20	56	ENVOLVENTE Max	1.89	3.253	1.138	4.331
Story1	B20	56	ENVOLVENTE Max	2.47	8.169	1.138	0.904
Story1	B20	56	ENVOLVENTE Max	3.05	10.701	1.138	-2.894
Story1	B20	56	ENVOLVENTE Min	0.15	-10.896	0.724	-4.967
Story1	B20	56	ENVOLVENTE Min	0.73	-8.364	0.724	0.394
Story1	B20	56	ENVOLVENTE Min	1.31	-3.449	0.724	2.719
Story1	B20	56	ENVOLVENTE Min	1.89	2.008	0.724	2.765
Story1	B20	56	ENVOLVENTE Min	2.47	5.167	0.724	0.513
Story1	B20	56	ENVOLVENTE Min	3.05	6.795	0.724	-4.684
Story1	B21	46	ENVOLVENTE Max	0.15	-6.283	0.021	-3.502
Story1	B21	46	ENVOLVENTE Max	0.69	-4.816	0.021	-0.445
Story1	B21	46	ENVOLVENTE Max	1.23	-2.022	0.021	2.237
Story1	B21	46	ENVOLVENTE Max	1.77	2.601	0.021	2.425
Story1	B21	46	ENVOLVENTE Max	2.31	6.948	0.021	-0.077
Story1	B21	46	ENVOLVENTE Max	2.85	9.229	0.021	-2.893
Story1	B21	46	ENVOLVENTE Min	0.15	-9.923	0.009	-5.644
Story1	B21	46	ENVOLVENTE Min	0.69	-7.641	0.009	-0.820
Story1	B21	46	ENVOLVENTE Min	1.23	-3.295	0.009	1.416
Story1	B21	46	ENVOLVENTE Min	1.77	1.576	0.009	1.529
Story1	B21	46	ENVOLVENTE Min	2.31	4.370	0.009	-0.311
Story1	B21	46	ENVOLVENTE Min	2.85	5.837	0.009	-4.707
Story1	B22	60	ENVOLVENTE Max	0.15	-7.457	-0.764	-2.394
Story1	B22	60	ENVOLVENTE Max	0.6833	-6.017	-0.764	1.743
Story1	B22	60	ENVOLVENTE Max	1.2167	-3.281	-0.764	5.776
Story1	B22	60	ENVOLVENTE Max	1.75	1.024	-0.764	7.004
Story1	B22	60	ENVOLVENTE Max	2.2833	7.272	-0.764	4.708
Story1	B22	60	ENVOLVENTE Max	2.8167	11.527	-0.764	-0.166
Story1	B22	60	ENVOLVENTE Max	3.35	13.768	-0.764	-4.503
Story1	B22	60	ENVOLVENTE Min	0.15	-11.764	-1.191	-4.024
Story1	B22	60	ENVOLVENTE Min	0.6833	-9.523	-1.191	0.984
Story1	B22	60	ENVOLVENTE Min	1.2167	-5.268	-1.191	3.633
Story1	B22	60	ENVOLVENTE Min	1.75	0.539	-1.191	4.478
Story1	B22	60	ENVOLVENTE Min	2.2833	4.569	-1.191	2.994
Story1	B22	60	ENVOLVENTE Min	2.8167	7.305	-1.191	-0.452
Story1	B22	60	ENVOLVENTE Min	3.35	8.745	-1.191	-7.230
Story1	B25	47	ENVOLVENTE Max	0.15	-18.426	-0.092	-10.868
Story1	B25	47	ENVOLVENTE Max	0.73	-15.636	-0.092	-0.842
Story1	B25	47	ENVOLVENTE Max	1.31	-9.783	-0.092	10.341
Story1	B25	47	ENVOLVENTE Max	1.89	-1.257	-0.092	15.531
Story1	B25	47	ENVOLVENTE Max	2.47	11.164	-0.092	12.774
Story1	B25	47	ENVOLVENTE Max	3.05	20.269	-0.092	3.428
Story1	B25	47	ENVOLVENTE Max	3.63	24.609	-0.092	-6.128
Story1	B25	47	ENVOLVENTE Min	0.15	-28.805	-0.145	-17.118
Story1	B25	47	ENVOLVENTE Min	0.73	-24.466	-0.145	-1.439
Story1	B25	47	ENVOLVENTE Min	1.31	-15.360	-0.145	6.618
Story1	B25	47	ENVOLVENTE Min	1.89	-2.098	-0.145	9.961
Story1	B25	47	ENVOLVENTE Min	2.47	7.085	-0.145	8.136
Story1	B25	47	ENVOLVENTE Min	3.05	12.939	-0.145	2.074

Story1	B25	47	ENVOLVENTE Min	3.63	15.729	-0.145	-9.817
Story1	B26	39	ENVOLVENTE Max	0.15	-18.295	0.070	-10.806
Story1	B26	39	ENVOLVENTE Max	0.73	-15.505	0.070	-0.855
Story1	B26	39	ENVOLVENTE Max	1.31	-9.652	0.070	10.208
Story1	B26	39	ENVOLVENTE Max	1.89	-1.273	0.070	15.295
Story1	B26	39	ENVOLVENTE Max	2.47	10.928	0.070	12.650
Story1	B26	39	ENVOLVENTE Max	3.05	20.033	0.070	3.441
Story1	B26	39	ENVOLVENTE Max	3.63	24.373	0.070	-6.053
Story1	B26	39	ENVOLVENTE Min	0.15	-28.585	0.043	-16.995
Story1	B26	39	ENVOLVENTE Min	0.73	-24.245	0.043	-1.444
Story1	B26	39	ENVOLVENTE Min	1.31	-15.140	0.043	6.536
Story1	B26	39	ENVOLVENTE Min	1.89	-2.106	0.043	9.812
Story1	B26	39	ENVOLVENTE Min	2.47	6.944	0.043	8.065
Story1	B26	39	ENVOLVENTE Min	3.05	12.798	0.043	2.097
Story1	B26	39	ENVOLVENTE Min	3.63	15.588	0.043	-9.667
Story1	B31	51	ENVOLVENTE Max	0.15	-1.241	2.017	-1.264
Story1	B31	51	ENVOLVENTE Max	0.69	0.226	2.017	-0.930
Story1	B31	51	ENVOLVENTE Max	1.23	4.275	2.017	-1.460
Story1	B31	51	ENVOLVENTE Max	0.15	-2.407	1.259	-2.201
Story1	B31	51	ENVOLVENTE Max	0.69	-0.338	1.259	-1.453
Story1	B31	51	ENVOLVENTE Max	1.23	2.476	1.259	-2.495
Story1	B31	51	ENVOLVENTE Max	0.15	-8.188	-0.295	-1.688
Story1	B31	51	ENVOLVENTE Max	0.675	-3.695	-0.295	2.153
Story1	B31	51	ENVOLVENTE Max	1.2	0.246	-0.295	3.646
Story1	B31	51	ENVOLVENTE Min	1.725	4.184	-0.295	2.451
Story1	B31	51	ENVOLVENTE Min	2.25	6.374	-0.295	-0.019
Story1	B31	51	ENVOLVENTE Min	0.15	-13.043	-0.491	-2.891
Story1	B31	51	ENVOLVENTE Min	0.675	-6.053	-0.491	1.317
Story1	B31	51	ENVOLVENTE Min	1.2	-0.170	-0.491	2.308
Story1	B31	51	ENVOLVENTE Min	1.725	2.493	-0.491	1.437
Story1	B31	51	ENVOLVENTE Min	2.25	3.901	-0.491	-0.612

Diseño por Aplastamiento - Conexión entre Estructura Habitable y Flotante

Platina de 550 X 550 X 13 (1/2")

Ag (m2)	0.00715
t (mm)	13
Fy (MPa)	345
Fu (MPa)	428

Resistencia de diseño de la platina 550 X 550 X 13

Φ	0.9
ΦPn (KN)	2220.075

Para transmitir 2220.075 KN con pernos de 1/2" A490-N en doble corte, los cuales resisten 347.348 KN cada uno, se requieren:

$n = \frac{\Phi P_n}{\Phi V_n}$	Número de pernos
	6.3915012 7

Para transmitir 2220.075 KN con pernos de 1/2" A490-N en tensión, los cuales resisten 296.424 KN cada uno, se requieren:

$n = \frac{\Phi P_n}{\Phi T_n}$	Número de pernos
	7.4895283 8

Espaciamiento entre perforaciones (F.2.10.3.3 y F.2.10.3.5.a)

Smín (mm)	Smáx (mm)	Smáx (mm)	S (mm)
76.2	156	150	150

Distancia al borde (F.2.10.3.5 y TABLA F.2.10.3-4)

lmín (mm)	lmáx (mm)	lmáx (mm)	l (mm)
31.8	156	150	50

Diseño por Aplastamiento y Desgarramiento

$$R_n = 1.2L_c t F_u \leq 2.4dt F_u$$

Lc (mm)	36.5
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Resistencia al aplastamiento de 1 perno

Rn (KN)	243.7032	≤	339.18144
ΦRn (KN)	182.7774		

Resistencia al aplastamiento del sistema

ΦRn (KN)	1462.2192
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DATOS PERNO	
d (in)	1
d (mm)	25.4
d' (mm)	27
Ab (mm2)	506.707
Fnt (MPa)	780
Fnv (MPa)	457
Φ	0.75
ΦTn (KN)	296.424
ΦVn (KN)	347.348

TABLA F.2.10.3-2

Diseño por Aplastamiento - Anclaje Paralelo

Cargas de cada par	
PD (KN)	120
PL (KN)	20
PU (KN)	176

DATOS CONCRETO	
f'c (MPa)	21
Φc	0.65

DATOS PLACA BASE A36	
Fy (MPa)	345

Dimensión del par	
d (in)	8
d (m)	0.2032

A1	área de la placa
A2	área del pedestal

$$\sqrt{\frac{A2}{A1}} = 1$$

Cálculo del área de la placa

A1mín (m2)	0.0324293
A1cal (m2)	0.0151691

Dimensiones mínimas de la placa

Δ	0.01524
Nmín (m)	0.1953213
Bmín (m)	0.1660304

Selección de las dimensiones de la placa

N (m)	0.4
B (m)	0.4

Revisión de la resistencia al contacto del concreto

ΦcPp (KN)	>	Pu (KN)
1856.4	>	176

Cálculo del espesor requerido de la placa base

m (m)	0.10348	treq (m)	0.0099932
n (m)	0.11872	temp (m)	0.013
n' (m)	0.0508	temp (in)	1/2
l (m)	0.11872		

DIMENSIÓN DE LA PLACA BASE

PL 400 X 400 X 13 (1/2")

DIMENSIÓN DEL PEDESTAL

N (m)	0.4
B (m)	0.4

DISEÑO POR APLASTAMIENTO

DATOS - PLACA	
Ag (m2)	0.0052
t (mm)	13
Fy (MPa)	345
Fu (MPa)	428

DATOS PERNO	
d (in)	7/8
d (mm)	22.2
d' (mm)	23.8
Ab (mm2)	387.076
Fnt (MPa)	780
Env (MPa)	457
Φ	0.75
ΦTn (KN)	226.439
ΦVn (KN)	265.340

Resistencia de diseño de la placa base 400 X 400 X 13

Φ	0.9
ΦPn (KN)	1614.6

Para transmitir 1614,6 KN con pernos de 7/8" A490-N en doble corte, los cuales resisten 265,34 KN cada uno, se requieren:

$n = \frac{\Phi Pn}{\Phi Vn}$	Número de pernos	
	6.0850151	7

Para transmitir 1614.6 KN con pernos de 7/8" A490-N en tensión, los cuales resisten 226,44 KN cada uno, se requieren:

$n = \frac{\Phi Pn}{\Phi Vn}$	Número de pernos
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$\mu - \overline{\phi T n}$	7.1303895	8
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Espaciamiento entre perforaciones (F.2.10.3.3 y F.2.10.3.5)

Smín (mm)	Smáx (mm)	Smáx (mm)	S (mm)
66.6	98.4	150	90

Distancia al borde (F.2.10.3.5 y TABLA F.2.10.3-4)

lmín (mm)	lmáx (mm)	lmáx (mm)	l (mm)
25.4	98.4	150	65

Diseño por Aplastamiento y Desgarramiento

$$R_n = 1.2L_c tF_u \leq 2.4dtF_u$$

Lc (mm)	53.1
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Resistencia al aplastamiento de 1 perno			
Rn (KN)	354.53808	≤	296.44992
ΦRn (KN)	222.33744		

Resistencia al aplastamiento del sistema

ΦRn (KN)	1778.6995
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