



**PAUL J. FORD AND COMPANY**  
**STRUCTURAL ENGINEERS**  
250 East Broad Street · Suite 1500 · Columbus, Ohio 43215

## DESIGN CALCULATIONS

Proposed 281-ft Guyed Tower AM Array

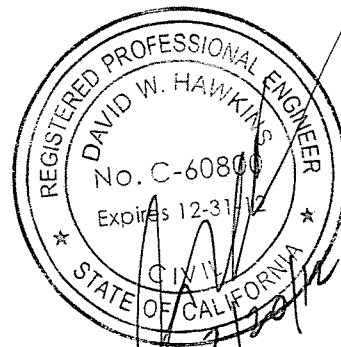
PJF Project No.: 65011-0012 Tower #3

Manufacturer: Magnum Towers, Inc.  
Year of Mfr: 2011  
Location: Oak Flat in Silverado Canyon  
Orange County, California

Prepared For:

**MAGNUM TOWERS, INC.**  
9370 Elder Creek Road  
Sacramento, California 95829  
Attn: Jeff Styler

March 20, 2012



Designed by:  
Larry A. Paxton, E.I.  
Designer  
lpaxton@pjfweb.com

Reviewed by:  
David Hawkins, P.E.  
Department Manager  
dhawkins@pjfweb.com

**COLUMBUS, OHIO**  
(614) 221-6679

**ORLANDO, FLORIDA**  
(407) 898-9039

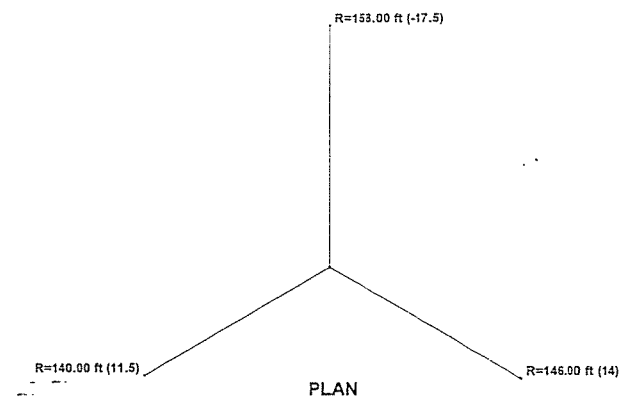
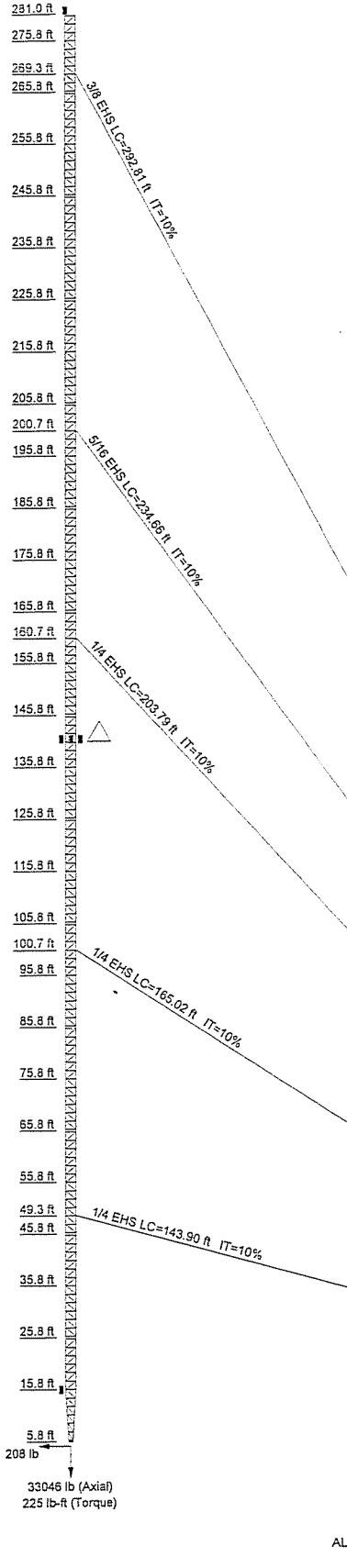
**ATLANTA, GEORGIA**  
(404) 266-2407

Founded in 1965

www.pjfweb.com

Employee owned since 1994

Section	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300										
Log Grade	SR 1" solid																																																																																																																																																																																																																																																																																																											
Diagonal Grade	A572-50																																																																																																																																																																																																																																																																																																											
Top Glfts	A36																																																																																																																																																																																																																																																																																																											
Bottom Glfts	A																																																																																																																																																																																																																																																																																																											
Horizontal	SR 1/2" solid																																																																																																																																																																																																																																																																																																											
Fu	165 @ 1.625																																																																																																																																																																																																																																																																																																											
Weight (lb)	4451.4																																																																																																																																																																																																																																																																																																											



**DESIGNED APPURTENANCE LOADING**

TYPE	ELEVATION	TYPE	ELEVATION
FAA L-854 Beacon	281	FAA L-810 Sidelight	140.5
FAA L-810 Sidelight	140.5	Down Light	15
FAA L-810 Sidelight	140.5		

**SYMBOL LIST**

MARK	SIZE	MARK	SIZE
A	SR 1/2" solid		

**MATERIAL STRENGTH**

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

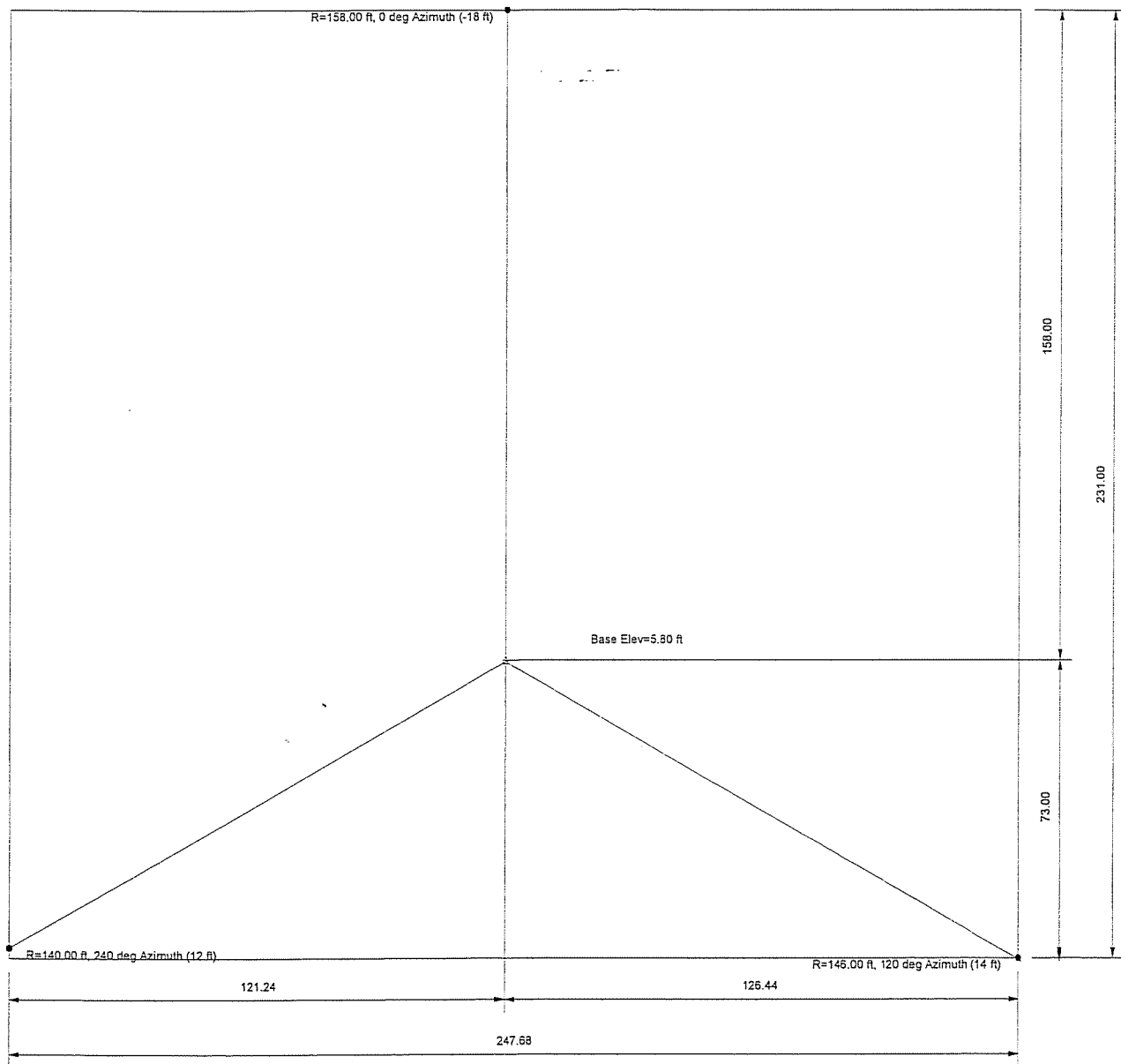
**TOWER DESIGN NOTES**


1. Tower is located in Orange County, California.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 85 mph basic wind in accordance with the TIA-222-G Standard.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 3 with Crest Height of 750.00 ft
7. TOWER RATING: 86.1%

ALL REACTIONS ARE FACTORED

<p><b>Paul J. Ford and Company</b> 250 E. Broad Street Suite 1500 Columbus, OH 43215 Phone: 614.221.6679 FAX: 614.448.4105</p>	Job: <b>281-ft Guyed Tower; Orange County, CA</b>
	Project: <b>Oak Flat in Silverado Canyon Twr#3 (PJF# 65011-0012)</b>
	Client: <b>Magnum Towers, Inc.</b> Drawn by: <b>Larry A. Paxton</b> App'd:
	Code: <b>TIA-222-G</b> Date: <b>12/02/11</b> Scale: <b>NTS</b>
Path: <b>P:\650_Magnum Towers\2011\65011-0012 Orange Co. CA\65011-0012 Tower 3.rvt</b>	Dwg No. <b>E-1</b>

# Plot Plan



	<b>Paul J. Ford and Company</b>			Job: <b>281-ft Guyed Tower; Orange County, CA</b>
	250 E. Broad Street Suite 1500			Project: <b>Oak Flat in Silverado Canyon Twr#3 (PJF# 65011-0012)</b>
	Columbus, OH 43215			Client: <b>Magnum Towers, Inc.</b> Drawn by: <b>Larry A. Paxton</b> App'd:
	Phone: 614.221.6679			Code: <b>TIA-222-G</b> Date: <b>12/02/11</b> Scale: <b>NTS</b>
	FAX: 614.448.4105			Path: <b>T:\650 Magnum Towers\2011\65011-0012 Orange Co. CA\65011-0012 Tower 3.mxd</b> Dwg No. <b>E-2</b>

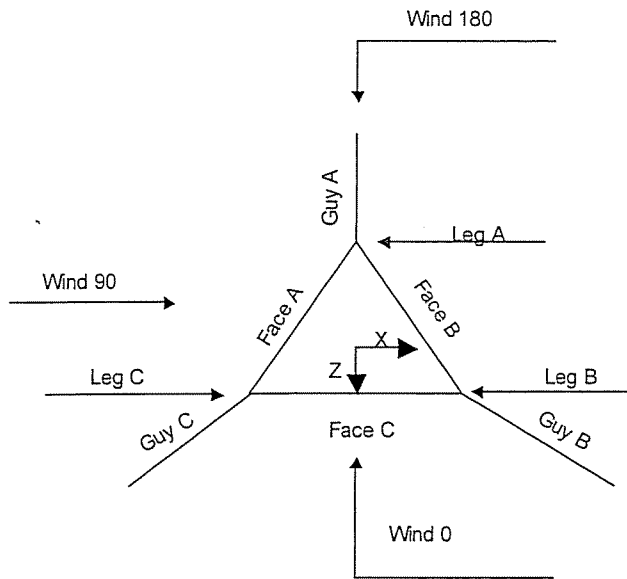
<b>RISATower</b>  <b>Paul J. Ford and Company</b> 250 E. Broad Street Suite 1500 Columbus, OH 43215 Phone: 614.221.6679 FAX: 614.448.4105	<b>Job</b> 281-ft Guyed Tower; Orange County, CA	<b>Page</b> 1 of 28
	<b>Project</b> Oak Flat in Silverado Canyon Twr#3 (PJF# 65011-0012)	<b>Date</b> 12:24:52 12/02/11
	<b>Client</b> Magnum Towers, Inc.	<b>Designed by</b> Larry A. Paxton

## Tower Input Data

The main tower is a 3x guyed tower with an overall height of 281.00 ft above the ground line.  
 The base of the tower is set at an elevation of 5.80 ft above the ground line.  
 The face width of the tower is 2.00 ft at the top and 0.75 ft at the base.  
 This tower is designed using the TIA-222-G standard.

The following design criteria apply:

- Tower is located in Orange County, California.
- Basic wind speed of 85 mph.
- Structure Class II.
- Exposure Category C.
- Topographic Category 3.
- Crest Height 750.00 ft.
- Deflections calculated using a wind speed of 60 mph.
- Pressures are calculated at each section.
- Safety factor used in guy design is 1.
- Stress ratio used in tower member design is 1.



Corner & Starmount Guyed Tower

## Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	281.00-275.80			2.00	1	5.20
T2	275.80-265.80			2.00	1	10.00
T3	265.80-255.80			2.00	1	10.00
T4	255.80-245.80			2.00	1	10.00

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Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T5	245.80-235.80			2.00	1	10.00
T6	235.80-225.80			2.00	1	10.00
T7	225.80-215.80			2.00	1	10.00
T8	215.80-205.80			2.00	1	10.00
T9	205.80-195.80			2.00	1	10.00
T10	195.80-185.80			2.00	1	10.00
T11	185.80-175.80			2.00	1	10.00
T12	175.80-165.80			2.00	1	10.00
T13	165.80-155.80			2.00	1	10.00
T14	155.80-145.80			2.00	1	10.00
T15	145.80-135.80			2.00	1	10.00
T16	135.80-125.80			2.00	1	10.00
T17	125.80-115.80			2.00	1	10.00
T18	115.80-105.80			2.00	1	10.00
T19	105.80-95.80			2.00	1	10.00
T20	95.80-85.80			2.00	1	10.00
T21	85.80-75.80			2.00	1	10.00
T22	75.80-65.80			2.00	1	10.00
T23	65.80-55.80			2.00	1	10.00
T24	55.80-45.80			2.00	1	10.00
T25	45.80-35.80			2.00	1	10.00
T26	35.80-25.80			2.00	1	10.00
T27	25.80-15.80			2.00	1	10.00
T28	15.80-5.80			2.00	1	10.00

### Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	281.00-275.80	1.63	Diag Up	No	Yes	3.900	0.000
T2	275.80-265.80	1.63	Diag Down	No	Yes	0.000	3.000
T3	265.80-255.80	1.63	Diag Up	No	Yes	3.000	0.000
T4	255.80-245.80	1.63	Diag Down	No	Yes	0.000	3.000
T5	245.80-235.80	1.63	Diag Up	No	Yes	3.000	0.000
T6	235.80-225.80	1.63	Diag Down	No	Yes	0.000	3.000
T7	225.80-215.80	1.63	Diag Up	No	Yes	3.000	0.000
T8	215.80-205.80	1.63	Diag Down	No	Yes	0.000	3.000
T9	205.80-195.80	1.63	Diag Up	No	Yes	3.000	0.000
T10	195.80-185.80	1.63	Diag Down	No	Yes	0.000	3.000
T11	185.80-175.80	1.63	Diag Up	No	Yes	3.000	0.000
T12	175.80-165.80	1.63	Diag Down	No	Yes	0.000	3.000
T13	165.80-155.80	1.63	Diag Up	No	Yes	3.000	0.000
T14	155.80-145.80	1.63	Diag Down	No	Yes	0.000	3.000
T15	145.80-135.80	1.63	Diag Up	No	Yes	3.000	0.000
T16	135.80-125.80	1.63	Diag Down	No	Yes	0.000	3.000
T17	125.80-115.80	1.63	Diag Up	No	Yes	3.000	0.000
T18	115.80-105.80	1.63	Diag Down	No	Yes	0.000	3.000
T19	105.80-95.80	1.63	Diag Up	No	Yes	3.000	0.000
T20	95.80-85.80	1.63	Diag Down	No	Yes	0.000	3.000
T21	85.80-75.80	1.63	Diag Up	No	Yes	3.000	0.000
T22	75.80-65.80	1.63	Diag Down	No	Yes	0.000	3.000
T23	65.80-55.80	1.63	Diag Up	No	Yes	3.000	0.000
T24	55.80-45.80	1.63	Diag Down	No	Yes	0.000	3.000
T25	45.80-35.80	1.63	Diag Up	No	Yes	3.000	0.000
T26	35.80-25.80	1.63	Diag Down	No	Yes	0.000	3.000
T27	25.80-15.80	1.63	Diag Up	No	Yes	3.000	0.000

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	281-ft Guyed Tower; Orange County, CA	3 of 28
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Oak Flat in Silverado Canyon Twr#3 (PJF# 65011-0012)	12:24:52 12/02/11	
Client	Magnum Towers, Inc.	Designed by
		Larry A. Paxton

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T28	15.80-5.80	1.63	Diag Down	No	Yes	0.000	3.000

### Tower Section Geometry (cont'd)

Tower Elevation	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
ft						
T1 281.00-275.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T2 275.80-265.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T3 265.80-255.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T4 255.80-245.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T5 245.80-235.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T6 235.80-225.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T7 225.80-215.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T8 215.80-205.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T9 205.80-195.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T10 195.80-185.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T11 185.80-175.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T12 175.80-165.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T13 165.80-155.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T14 155.80-145.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T15 145.80-135.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T16 135.80-125.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T17 125.80-115.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T18 115.80-105.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T19 105.80-95.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T20 95.80-85.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T21 85.80-75.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T22 75.80-65.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T23 65.80-55.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T24 55.80-45.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T25 45.80-35.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)
T26 35.80-25.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)

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Oak Flat in Silverado Canyon Twr#3 (PJF# 65011-0012)	12:24:52 12/02/11	
Client	Magnum Towers, Inc.	Designed by
		Larry A. Paxton

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T27 25.80-15.80	Solid Round	1" solid	(50 ksi) A572-50	Solid Round	5/8" solid	(36 ksi) A36
T28 15.80-5.80	Solid Round	1" solid	(50 ksi) A572-50	Solid Round	5/8" solid	(36 ksi) A36

### Tower Section Geometry (cont'd)

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 281.00-275.80	Solid Round	1/2" solid	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T2 275.80-265.80	Solid Round		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T3 265.80-255.80	Solid Round	1/2" solid	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T4 255.80-245.80	Solid Round		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T5 245.80-235.80	Solid Round	1/2" solid	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T6 235.80-225.80	Solid Round		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T7 225.80-215.80	Solid Round	1/2" solid	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T8 215.80-205.80	Solid Round		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T9 205.80-195.80	Solid Round	1/2" solid	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T10 195.80-185.80	Solid Round		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T11 185.80-175.80	Solid Round	1/2" solid	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T12 175.80-165.80	Solid Round		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T13 165.80-155.80	Solid Round	1/2" solid	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T14 155.80-145.80	Solid Round		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T15 145.80-135.80	Solid Round	1/2" solid	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T16 135.80-125.80	Solid Round		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T17 125.80-115.80	Solid Round	1/2" solid	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T18 115.80-105.80	Solid Round		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T19 105.80-95.80	Solid Round	1/2" solid	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T20 95.80-85.80	Solid Round		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T21 85.80-75.80	Solid Round	1/2" solid	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T22 75.80-65.80	Solid Round		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T23 65.80-55.80	Solid Round	1/2" solid	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T24 55.80-45.80	Solid Round		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)

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		Larry A. Paxton

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T25 45.80-35.80	Solid Round	1/2" solid	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T26 35.80-25.80	Solid Round		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T27 25.80-15.80	Solid Round	1/2" solid	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T28 15.80-5.80	Solid Round		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)

**Tower Section Geometry (cont'd)**

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 281.00-275.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T2 275.80-265.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T3 265.80-255.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T4 255.80-245.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T5 245.80-235.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T6 235.80-225.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T7 225.80-215.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T8 215.80-205.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T9 205.80-195.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T10 195.80-185.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T11 185.80-175.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T12 175.80-165.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T13 165.80-155.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T14 155.80-145.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T15 145.80-135.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T16 135.80-125.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T17 125.80-115.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T18 115.80-105.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T19 105.80-95.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T20 95.80-85.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T21 85.80-75.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T22 75.80-65.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)



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Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T23 65.80-55.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T24 55.80-45.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T25 45.80-35.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T26 35.80-25.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T27 25.80-15.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)
T28 15.80-5.80	None	Flat Bar		A36 (36 ksi)	Solid Round	1/2" solid	A36 (36 ksi)

### Tower Section Geometry (cont'd)

Tower Elevation ft	Gusset Area (per face) ft <sup>2</sup>	Gusset Thickness in	Gusset Grade	Adjust. Factor A <sub>f</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1	0.00	0.000	A36	1	1	1.05	0.000	0.000
281.00-275.80			(36 ksi)					
T2	0.00	0.000	A36	1	1	1.05	0.000	0.000
275.80-265.80			(36 ksi)					
T3	0.00	0.000	A36	1	1	1.05	0.000	0.000
265.80-255.80			(36 ksi)					
T4	0.00	0.000	A36	1	1	1.05	0.000	0.000
255.80-245.80			(36 ksi)					
T5	0.00	0.000	A36	1	1	1.05	0.000	0.000
245.80-235.80			(36 ksi)					
T6	0.00	0.000	A36	1	1	1.05	0.000	0.000
235.80-225.80			(36 ksi)					
T7	0.00	0.000	A36	1	1	1.05	0.000	0.000
225.80-215.80			(36 ksi)					
T8	0.00	0.000	A36	1	1	1.05	0.000	0.000
215.80-205.80			(36 ksi)					
T9	0.00	0.000	A36	1	1	1.05	0.000	0.000
205.80-195.80			(36 ksi)					
T10	0.00	0.000	A36	1	1	1.05	0.000	0.000
195.80-185.80			(36 ksi)					
T11	0.00	0.000	A36	1	1	1.05	0.000	0.000
185.80-175.80			(36 ksi)					
T12	0.00	0.000	A36	1	1	1.05	0.000	0.000
175.80-165.80			(36 ksi)					
T13	0.00	0.000	A36	1	1	1.05	0.000	0.000
165.80-155.80			(36 ksi)					
T14	0.00	0.000	A36	1	1	1.05	0.000	0.000
155.80-145.80			(36 ksi)					
T15	0.00	0.000	A36	1	1	1.05	0.000	0.000
145.80-135.80			(36 ksi)					
T16	0.00	0.000	A36	1	1	1.05	0.000	0.000
135.80-125.80			(36 ksi)					
T17	0.00	0.000	A36	1	1	1.05	0.000	0.000
125.80-115.80			(36 ksi)					
T18	0.00	0.000	A36	1	1	1.05	0.000	0.000
115.80-105.80			(36 ksi)					
T19	0.00	0.000	A36	1	1	1.05	0.000	0.000
105.80-95.80			(36 ksi)					







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Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T6	Flange	0.625	2	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
235.80-225.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T7	Flange	0.000	0	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
225.80-215.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T8	Flange	0.625	2	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
215.80-205.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T9	Flange	0.000	0	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
205.80-195.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T10	Flange	0.625	2	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
195.80-185.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T11	Flange	0.000	0	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
185.80-175.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T12	Flange	0.625	2	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
175.80-165.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T13	Flange	0.000	0	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
165.80-155.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T14	Flange	0.625	2	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
155.80-145.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T15	Flange	0.000	0	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
145.80-135.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T16	Flange	0.625	2	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
135.80-125.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T17	Flange	0.000	0	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
125.80-115.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T18	Flange	0.625	2	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
115.80-105.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T19	Flange	0.000	0	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
105.80-95.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T20	Flange	0.625	2	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
95.80-85.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T21	Flange	0.000	0	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
85.80-75.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T22	Flange	0.625	2	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
75.80-65.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T23	Flange	0.000	0	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
65.80-55.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T24	Flange	0.625	2	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
55.80-45.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T25	Flange	0.000	0	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
45.80-35.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T26	Flange	0.625	2	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
35.80-25.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T27	Flange	0.000	0	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
25.80-15.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T28	Flange	0.625	0	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
15.80-5.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	

### Guy Data

Guy Elevation	Guy Grade	Guy Size	Initial Tension	%	Guy Modulus	Guy Weight	$L_u$	Anchor Radius	Anchor Azimuth Adj.	Anchor Elevation	End Fitting Efficiency
ft			lb		ksi	plf	ft	ft	°	ft	%
269.3	EHS	A 3/8	1540	10%	21000	0.27	326.59	158.00	0.000	-18	100%
		B 3/8	1540	10%	21000	0.27	293.26	146.00	0.000	14	100%
		C 3/8	1540	10%	21000	0.27	292.54	140.00	0.000	12	100%

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200.675	EHS	A	5/16	1120	10%	21000	0.20	268.47	158.00	0.000	-18	100%
		B	5/16	1120	10%	21000	0.20	236.07	146.00	0.000	14	100%
		C	5/16	1120	10%	21000	0.20	234.45	140.00	0.000	12	100%
160.675	EHS	A	1/4	665	10%	21000	0.12	237.17	158.00	0.000	-18	100%
		B	1/4	665	10%	21000	0.12	205.96	146.00	0.000	14	100%
		C	1/4	665	10%	21000	0.12	203.62	140.00	0.000	12	100%
100.675	EHS	A	1/4	665	10%	21000	0.12	196.21	158.00	0.000	-18	100%
		B	1/4	665	10%	21000	0.12	168.65	146.00	0.000	14	100%
		C	1/4	665	10%	21000	0.12	164.87	140.00	0.000	12	100%
49.3	EHS	A	1/4	665	10%	21000	0.12	170.33	158.00	0.000	-18	100%
		B	1/4	665	10%	21000	0.12	148.96	146.00	0.000	14	100%
		C	1/4	665	10%	21000	0.12	143.78	140.00	0.000	12	100%

### Guy Data(cont'd)

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
269.3	Corner						
200.675	Corner						
160.675	Corner						
100.675	Corner						
49.3	Corner						

### Guy Insulator Data

Guy Elevation ft	#	Length in	Diameter in	Weight lb	Equivalent Unit Weight plf	Equivalent Diameter in	Equivalent Diameter w/Ice in
269.3	4	6.000	4.000	3	A 0.31 B 0.31 C 0.31	0.389 0.391 0.391	
200.675	3	6.000	4.000	3	A 0.24 B 0.24 C 0.24	0.326 0.327 0.328	
160.675	3	6.000	4.000	3	A 0.16 B 0.16 C 0.16	0.265 0.268 0.268	
100.675	3	6.000	4.000	3	A 0.17 B 0.17 C 0.17	0.268 0.271 0.272	
49.3	3	6.000	4.000	3	A 0.17 B 0.18 C 0.18	0.271 0.274 0.275	

### Guy Pressures

Guy Elevation ft	Guy Location	z ft	q <sub>z</sub> psf	q <sub>z</sub> Ice psf	Ice Thickness in
269.3	A	126	39.71		
	B	142	39.79		
	C	140	39.79		
200.675	A	92	39.12		
	B	107	39.48		
	C	106	39.45		
160.675	A	72	38.34		

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Guy Elevation ft	Guy Location	z ft	qz psf	qz Ice psf	Ice Thickness in
100.675	B	87	38.99		
	C	86	38.95		
	A	42	35.96		
49.3	B	57	37.46		
	C	56	37.37		
	A	16	30.72		
	B	32	34.54		
	C	30	34.32		

**Feed Line/Linear Appurtenances - Entered As Round Or Flat**

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	# Per Row	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
3/4" lighting conduit	B	No	Ar (CaAa)	281.00 - 5.80	1.000	0	1	1	0.750	0.750		1.00
3/8 CABLE	B	No	Ar (CaAa)	15.00 - 5.80	1.000	0	1	1	0.375	0.375		1.00

**Discrete Tower Loads**

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	CAAs Front ft <sup>2</sup>	CAAs Side ft <sup>2</sup>	Weight lb
FAA L-864 Beacon	C	From Leg	0.00 0 0	0.000	281.00	No Ice 1.20	1.20	46
FAA L-810 Sidelight	A	From Leg	1.00 0 0	0.000	140.50	No Ice 0.20	0.20	3
FAA L-810 Sidelight	B	From Leg	1.00 0 0	0.000	140.50	No Ice 0.20	0.20	3
FAA L-810 Sidelight	C	From Leg	1.00 0 0	0.000	140.50	No Ice 0.20	0.20	3
Down Light	C	From Leg	1.00 0 0	0.000	15.00	No Ice 1.50	1.50	50

**Load Combinations**

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy
3	1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy
4	1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy
5	1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy
6	1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy
7	1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy
8	1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy
9	1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy

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Comb. No.	Description
10	1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy
11	1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy
12	1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy
13	1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy
14	Dead+Wind 0 deg - Service+Guy
15	Dead+Wind 30 deg - Service+Guy
16	Dead+Wind 60 deg - Service+Guy
17	Dead+Wind 90 deg - Service+Guy
18	Dead+Wind 120 deg - Service+Guy
19	Dead+Wind 150 deg - Service+Guy
20	Dead+Wind 180 deg - Service+Guy
21	Dead+Wind 210 deg - Service+Guy
22	Dead+Wind 240 deg - Service+Guy
23	Dead+Wind 270 deg - Service+Guy
24	Dead+Wind 300 deg - Service+Guy
25	Dead+Wind 330 deg - Service+Guy

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb	
Guy C @ 140 ft Elev 11.5 ft Azimuth 240 deg	Max. Vert	22	-2036	-1442	832	
	Max. H <sub>x</sub>	10	-2304	-935	539	
	Max. H <sub>z</sub>	3	-14338	-11527	7162	
	Min. Vert	4	-14756	-12229	7074	
	Min. H <sub>x</sub>	4	-14756	-12229	7074	
	Min. H <sub>z</sub>	10	-2304	-935	539	
Guy B @ 146 ft Elev 14 ft Azimuth 120 deg	Max. Vert	18	-1867	1418	819	
	Max. H <sub>x</sub>	12	-13901	12192	7054	
	Max. H <sub>z</sub>	13	-13490	11490	7138	
	Min. Vert	12	-13901	12192	7054	
	Min. H <sub>x</sub>	6	-2127	919	530	
	Min. H <sub>z</sub>	6	-2127	919	530	
Guy A @ 158 ft Elev -17.5 ft Azimuth 0 deg	Max. Vert	14	-2256	0	-1761	
	Max. H <sub>x</sub>	11	-8907	1025	-7561	
	Max. H <sub>z</sub>	2	-2771	-1	-1303	
	Min. Vert	8	-14978	-3	-13777	
	Min. H <sub>x</sub>	5	-8843	-1029	-7520	
	Min. H <sub>z</sub>	8	-14978	-3	-13777	
	Mast	Max. Vert	2	33046	2	132
		Max. H <sub>x</sub>	11	31657	177	32
		Max. H <sub>z</sub>	2	33046	2	132
		Max. M <sub>x</sub>	1	0	-1	0
		Max. M <sub>z</sub>	1	0	-1	0
		Max. Torsion	17	-6	-108	-7
		Min. Vert	1	15310	-1	0
		Min. H <sub>x</sub>	5	32152	-176	31
Min. H <sub>z</sub>		8	30779	-33	-146	
Min. M <sub>x</sub>		1	0	-1	0	
Min. M <sub>z</sub>	1	0	-1	0		
Min. Torsion	7	-225	-55	-88		



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### Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear <sub>x</sub> lb	Shear <sub>y</sub> lb	Overturing Moment, M <sub>x</sub> lb-ft	Overturing Moment, M <sub>y</sub> lb-ft	Torque lb-ft
Dead Only	15310	1	0	0	0	38
1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy	33046	-2	-132	0	0	91
1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy	32646	100	-130	0	0	181
1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy	31530	168	-112	0	0	107
1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy	32152	176	-31	0	0	10
1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy	32939	126	21	0	0	116
1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy	32092	55	88	0	0	225
1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy	30779	33	146	0	0	158
1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy	31908	-55	91	0	0	60
1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy	32604	-124	23	0	0	153
1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy	31657	-177	-32	0	0	223
1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy	31027	-166	-125	0	0	89
1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy	32331	-109	-130	0	0	10
Dead+Wind 0 deg - Service+Guy	17758	0	-113	0	0	43
Dead+Wind 30 deg - Service+Guy	18159	51	-87	0	0	71
Dead+Wind 60 deg - Service+Guy	18460	87	-46	0	0	40
Dead+Wind 90 deg - Service+Guy	18102	108	7	0	0	6
Dead+Wind 120 deg - Service+Guy	17614	105	60	0	0	38
Dead+Wind 150 deg - Service+Guy	17849	58	85	0	0	79
Dead+Wind 180 deg - Service+Guy	18120	2	92	0	0	55
Dead+Wind 210 deg - Service+Guy	17866	-55	85	0	0	27
Dead+Wind 240 deg - Service+Guy	17613	-102	59	0	0	60
Dead+Wind 270 deg - Service+Guy	18031	-106	6	0	0	93
Dead+Wind 300 deg - Service+Guy	18346	-87	-46	0	0	57
Dead+Wind 330 deg - Service+Guy	18073	-51	-87	0	0	19

### Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	281 - 275.8	30.52	2	0.148	0.726

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T2	275.8 - 265.8	30.49	2	0.150	0.736
T3	265.8 - 255.8	30.48	2	0.149	0.742
T4	255.8 - 245.8	30.38	2	0.122	0.882
T5	245.8 - 235.8	30.08	6	0.279	0.760
T6	235.8 - 225.8	29.54	6	0.457	0.903
T7	225.8 - 215.8	28.61	6	0.616	0.772
T8	215.8 - 205.8	27.36	6	0.717	0.916
T9	205.8 - 195.8	25.96	6	0.722	0.778
T10	195.8 - 185.8	24.66	6	0.644	0.933
T11	185.8 - 175.8	23.49	6	0.616	0.707
T12	175.8 - 165.8	22.31	6	0.612	0.950
T13	165.8 - 155.8	21.10	6	0.596	0.715
T14	155.8 - 145.8	19.95	6	0.565	0.960
T15	145.8 - 135.8	18.79	6	0.609	0.670
T16	135.8 - 125.8	17.45	6	0.700	0.971
T17	125.8 - 115.8	15.87	6	0.800	0.673
T18	115.8 - 105.8	14.10	6	0.859	0.975
T19	105.8 - 95.8	12.33	7	0.837	0.670
T20	95.8 - 85.8	10.82	7	0.736	0.964
T21	85.8 - 75.8	9.50	7	0.683	0.620
T22	75.8 - 65.8	8.22	7	0.664	0.962
T23	65.8 - 55.8	6.94	8	0.645	0.610
T24	55.8 - 45.8	5.82	8	0.601	0.954
T25	45.8 - 35.8	4.74	8	0.523	0.612
T26	35.8 - 25.8	3.72	8	0.511	0.969
T27	25.8 - 15.8	2.61	8	0.563	0.587
T28	15.8 - 5.8	1.36	8	0.620	0.943

### Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load Allowable	Allowable Ratio	Criteria
T2	275.8	Leg	A325N	0.625	2	1040	20709	0.050 ✓	1	Bolt Tension
T4	255.8	Leg	A325N	0.625	2	2190	20709	0.106 ✓	1	Bolt Tension
T6	235.8	Leg	A325N	0.625	2	1516	20709	0.073 ✓	1	Bolt Tension
T8	215.8	Leg	A325N	0.625	2	1134	20709	0.055 ✓	1	Bolt Tension
T10	195.8	Leg	A325N	0.625	2	1339	20709	0.065 ✓	1	Bolt Tension
T12	175.8	Leg	A325N	0.625	2	1466	20709	0.071 ✓	1	Bolt Tension
T14	155.8	Leg	A325N	0.625	2	1939	20709	0.094 ✓	1	Bolt Tension
T16	135.8	Leg	A325N	0.625	2	2015	20709	0.097 ✓	1	Bolt Tension
T18	115.8	Leg	A325N	0.625	2	2096	20709	0.101 ✓	1	Bolt Tension
T20	95.8	Leg	A325N	0.625	2	2002	20709	0.097 ✓	1	Bolt Tension
T22	75.8	Leg	A325N	0.625	2	2054	20709	0.099 ✓	1	Bolt Tension
T24	55.8	Leg	A325N	0.625	2	2571	20709	0.124 ✓	1	Bolt Tension
T26	35.8	Leg	A325N	0.625	2	2159	20709	0.104 ✓	1	Bolt Tension

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### Guy Design Data

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual $T_u$ lb	Allowable $\phi T_n$ lb	Required S.F.	Actual S.F.
T2	269.30 (A) (1119)	3/8 EHS	1540	15400	6487	9240	1.000	1.424 ✓
	269.30 (B) (1118)	3/8 EHS	1540	15400	6508	9240	1.000	1.420 ✓
	269.30 (C) (1117)	3/8 EHS	1540	15400	6751	9240	1.000	1.369 ✓
T9	200.68 (A) (1122)	5/16 EHS	1120	11200	5461	6720	1.000	1.231 ✓
	200.68 (B) (1121)	5/16 EHS	1120	11200	5383	6720	1.000	1.248 ✓
	200.68 (C) (1120)	5/16 EHS	1120	11200	5581	6720	1.000	1.204 ✓
T13	160.68 (A) (1125)	1/4 EHS	665	6650	3431	3990	1.000	1.163 ✓
	160.68 (B) (1124)	1/4 EHS	665	6650	3328	3990	1.000	1.199 ✓
	160.68 (C) (1123)	1/4 EHS	665	6650	3435	3990	1.000	1.162 ✓
T19	100.68 (A) (1128)	1/4 EHS	665	6650	3254	3990	1.000	1.226 ✓
	100.68 (B) (1127)	1/4 EHS	665	6650	3130	3990	1.000	1.275 ✓
	100.68 (C) (1126)	1/4 EHS	665	6650	3195	3990	1.000	1.249 ✓
T24	49.30 (A) (1131)	1/4 EHS	665	6650	2334	3990	1.000	1.709 ✓
	49.30 (B) (1130)	1/4 EHS	665	6650	2232	3990	1.000	1.787 ✓
	49.30 (C) (1129)	1/4 EHS	665	6650	2263	3990	1.000	1.763 ✓

### Compression Checks

### Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	$L_u$ ft	$KL/r$	A in <sup>2</sup>	Mast Stability Index	$P_u$ lb	$\phi P_n$ lb	Ratio $\frac{P_u}{\phi P_n}$
T1	281 - 275.8	1" solid	5.20	1.63	78.0 K=1.00	0.785	1.00	-388	22652	0.017 <sup>1</sup> ✓
T2	275.8 - 265.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-6242	22652	0.276 <sup>1</sup> ✓
T3	265.8 - 255.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	0.98	-9359	22172	0.422 <sup>1</sup> ✓
T4	255.8 - 245.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	0.98	-11146	22236	0.501 <sup>1</sup> ✓
T5	245.8 - 235.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	0.98	-11296	22236	0.508 <sup>1</sup> ✓
T6	235.8 - 225.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	0.98	-10869	22215	0.489 <sup>1</sup> ✓
T7	225.8 - 215.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	0.98	-9096	22118	0.411 <sup>1</sup> ✓

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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	Mast Stability Index	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T8	215.8 - 205.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	0.97	-6804	21898	0.311 <sup>1</sup>
T9	205.8 - 195.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	0.97	-10499	21899	0.479 <sup>1</sup>
T10	195.8 - 185.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-9109	22652	0.402 <sup>1</sup>
T11	185.8 - 175.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-8090	22652	0.357 <sup>1</sup>
T12	175.8 - 165.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-8794	22652	0.388 <sup>1</sup>
T13	165.8 - 155.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-10121	22652	0.447 <sup>1</sup>
T14	155.8 - 145.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-11633	22652	0.514 <sup>1</sup>
T15	145.8 - 135.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-12735	22652	0.562 <sup>1</sup>
T16	135.8 - 125.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-12736	22652	0.562 <sup>1</sup>
T17	125.8 - 115.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-12094	22652	0.534 <sup>1</sup>
T18	115.8 - 105.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-12574	22652	0.555 <sup>1</sup>
T19	105.8 - 95.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-15369	22652	0.678 <sup>1</sup>
T20	95.8 - 85.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-13792	22652	0.609 <sup>1</sup>
T21	85.8 - 75.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-12012	22652	0.530 <sup>1</sup>
T22	75.8 - 65.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-12326	22652	0.544 <sup>1</sup>
T23	65.8 - 55.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-14481	22652	0.639 <sup>1</sup>
T24	55.8 - 45.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-16467	22652	0.727 <sup>1</sup>
T25	45.8 - 35.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-15424	22652	0.681 <sup>1</sup>
T26	35.8 - 25.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-12956	22652	0.572 <sup>1</sup>
T27	25.8 - 15.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-13103	22652	0.578 <sup>1</sup>
T28	15.8 - 5.8	1" solid	10.03	1.63	78.2 K=1.00	0.785	1.00	-12617	22600	0.558 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T1	281 - 275.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-182	3930	0.046 <sup>1</sup>

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		Larry A. Paxton

Section No.	Elevation ft	Size	L ft	$L_u$ ft	$KL/r$	A in <sup>2</sup>	$P_u$ lb	$\phi P_n$ lb	Ratio $\frac{P_u}{\phi P_n}$
T2	275.8 - 265.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-886	3930	0.225 <sup>1</sup>
T3	265.8 - 255.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-792	3930	0.202 <sup>1</sup>
T4	255.8 - 245.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-440	3930	0.112 <sup>1</sup>
T5	245.8 - 235.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-156	3930	0.040 <sup>1</sup>
T6	235.8 - 225.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-488	3930	0.124 <sup>1</sup>
T7	225.8 - 215.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-654	3930	0.166 <sup>1</sup>
T8	215.8 - 205.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-1085	3930	0.276 <sup>1</sup>
T9	205.8 - 195.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-1111	3930	0.283 <sup>1</sup>
T10	195.8 - 185.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-445	3930	0.113 <sup>1</sup>
T11	185.8 - 175.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-163	3930	0.041 <sup>1</sup>
T12	175.8 - 165.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-404	3930	0.103 <sup>1</sup>
T13	165.8 - 155.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-648	3930	0.165 <sup>1</sup>
T14	155.8 - 145.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-652	3930	0.166 <sup>1</sup>
T15	145.8 - 135.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-354	3930	0.090 <sup>1</sup>
T16	135.8 - 125.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-369	3930	0.094 <sup>1</sup>
T17	125.8 - 115.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-502	3930	0.128 <sup>1</sup>
T18	115.8 - 105.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-981	3930	0.250 <sup>1</sup>
T19	105.8 - 95.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-946	3930	0.241 <sup>1</sup>
T20	95.8 - 85.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-636	3930	0.162 <sup>1</sup>
T21	85.8 - 75.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-336	3930	0.086 <sup>1</sup>
T22	75.8 - 65.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-366	3930	0.093 <sup>1</sup>
T23	65.8 - 55.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-393	3930	0.100 <sup>1</sup>
T24	55.8 - 45.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-918	3930	0.234 <sup>1</sup>
T25	45.8 - 35.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-664	3930	0.169 <sup>1</sup>
T26	35.8 - 25.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-517	3930	0.132 <sup>1</sup>
T27	25.8 - 15.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-169	3930	0.043 <sup>1</sup>

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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T28	15.8 - 5.8	5/8" solid	1.85	1.68	90.1 K=0.70	0.307	-972	6483	0.150 <sup>1</sup> ✓

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T1	281 - 275.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-128	2656	0.048 <sup>1</sup> ✓
T2	275.8 - 265.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-588	2656	0.221 <sup>1</sup> ✓
T3	265.8 - 255.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-562	2656	0.212 <sup>1</sup> ✓
T4	255.8 - 245.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-290	2656	0.109 <sup>1</sup> ✓
T5	245.8 - 235.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-196	2656	0.074 <sup>1</sup> ✓
T6	235.8 - 225.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-313	2656	0.118 <sup>1</sup> ✓
T7	225.8 - 215.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-489	2656	0.184 <sup>1</sup> ✓
T8	215.8 - 205.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-726	2656	0.273 <sup>1</sup> ✓
T9	205.8 - 195.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-798	2656	0.301 <sup>1</sup> ✓
T10	195.8 - 185.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-270	2656	0.102 <sup>1</sup> ✓
T11	185.8 - 175.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-145	2656	0.055 <sup>1</sup> ✓
T12	175.8 - 165.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-218	2656	0.082 <sup>1</sup> ✓
T13	165.8 - 155.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-576	2656	0.217 <sup>1</sup> ✓
T14	155.8 - 145.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-408	2656	0.153 <sup>1</sup> ✓
T15	145.8 - 135.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-308	2656	0.116 <sup>1</sup> ✓
T16	135.8 - 125.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-221	2656	0.083 <sup>1</sup> ✓
T17	125.8 - 115.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-416	2656	0.156 <sup>1</sup> ✓
T18	115.8 - 105.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-615	2656	0.231 <sup>1</sup> ✓
T19	105.8 - 95.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-725	2656	0.273 <sup>1</sup> ✓
T20	95.8 - 85.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-371	2656	0.140 <sup>1</sup> ✓
T21	85.8 - 75.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-331	2656	0.125 <sup>1</sup> ✓

<b>RISATower</b>  <b>Paul J. Ford and Company</b> 250 E. Broad Street Suite 1500 Columbus, OH 43215 Phone: 614.221.6679 FAX: 614.448.4105	Job	281-ft Guyed Tower; Orange County, CA	Page	20 of 28
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	Client	Magnum Towers, Inc.	Designed by	Larry A. Paxton

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	KI/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio P <sub>u</sub> / φP <sub>n</sub>
T22	75.8 - 65.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-213	2656	0.080 <sup>1</sup>
T23	65.8 - 55.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-371	2656	0.140 <sup>1</sup>
T24	55.8 - 45.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-498	2656	0.187 <sup>1</sup>
T25	45.8 - 35.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-605	2656	0.228 <sup>1</sup>
T26	35.8 - 25.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-267	2656	0.101 <sup>1</sup>
T27	25.8 - 15.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-255	2656	0.096 <sup>1</sup>
T28	15.8 - 5.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-227	2656	0.085 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	KI/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio P <sub>u</sub> / φP <sub>n</sub>
T1	281 - 275.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-63	2656	0.024 <sup>1</sup>
T3	265.8 - 255.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-328	2656	0.123 <sup>1</sup>
T5	245.8 - 235.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-73	2656	0.027 <sup>1</sup>
T7	225.8 - 215.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-211	2656	0.079 <sup>1</sup>
T9	205.8 - 195.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-471	2656	0.177 <sup>1</sup>
T11	185.8 - 175.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-98	2656	0.037 <sup>1</sup>
T13	165.8 - 155.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-198	2656	0.075 <sup>1</sup>
T15	145.8 - 135.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-194	2656	0.073 <sup>1</sup>
T17	125.8 - 115.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-183	2656	0.069 <sup>1</sup>
T19	105.8 - 95.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-451	2656	0.170 <sup>1</sup>
T21	85.8 - 75.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-219	2656	0.083 <sup>1</sup>
T23	65.8 - 55.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-181	2656	0.068 <sup>1</sup>
T25	45.8 - 35.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-315	2656	0.119 <sup>1</sup>
T27	25.8 - 15.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-133	2656	0.050 <sup>1</sup>

<b>RISATower</b>  <b>Paul J. Ford and Company</b> 230 E. Broad Street Suite 1500 Columbus, OH 43215 Phone: 614.221.6679 FAX: 614.448.4105	Job	281-ft Guyed Tower; Orange County, CA	Page	21 of 28
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	Client	Magnum Towers, Inc.	Designed by	Larry A. Paxton

<sup>1</sup>  $P_u / \phi P_n$  controls

### Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	KL/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T2	275.8 - 265.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-348	2656	0.131 <sup>1</sup> ✓
T4	255.8 - 245.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-87	2656	0.033 <sup>1</sup> ✓
T6	235.8 - 225.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-210	2656	0.079 <sup>1</sup> ✓
T8	215.8 - 205.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-441	2656	0.166 <sup>1</sup> ✓
T10	195.8 - 185.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-79	2656	0.030 <sup>1</sup> ✓
T12	175.8 - 165.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-126	2656	0.048 <sup>1</sup> ✓
T14	155.8 - 145.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-155	2656	0.058 <sup>1</sup> ✓
T16	135.8 - 125.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-101	2656	0.038 <sup>1</sup> ✓
T18	115.8 - 105.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-358	2656	0.135 <sup>1</sup> ✓
T20	95.8 - 85.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-122	2656	0.046 <sup>1</sup> ✓
T22	75.8 - 65.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-70	2656	0.026 <sup>1</sup> ✓
T24	55.8 - 45.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-295	2656	0.111 <sup>1</sup> ✓
T26	35.8 - 25.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-85	2656	0.032 <sup>1</sup> ✓
T28	15.8 - 5.8	1/2" solid	0.78	0.70	46.9 K=0.70	0.196	-102	5666	0.018 <sup>1</sup> ✓

<sup>1</sup>  $P_u / \phi P_n$  controls

### Tension Checks

### Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	KL/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T1	281 - 275.8	1" solid	5.20	1.63	78.0	0.785	304	35343	0.009 <sup>1</sup> ✓
T2	275.8 - 265.8	1" solid	10.00	1.63	78.0	0.785	1251	35343	0.035 <sup>1</sup> ✓
T3	265.8 - 255.8	1" solid	10.00	1.63	78.0	0.785	2312	35343	0.065 <sup>1</sup> ✓
T4	255.8 - 245.8	1" solid	10.00	1.63	78.0	0.785	4381	35343	0.124 <sup>1</sup> ✓



<b>RISATower</b>  <b>Paul J. Ford and Company</b> 250 E. Broad Street Suite 1500 Columbus, OH 43215 Phone: 614.221.6679 FAX: 614.448.4105	Job	281-ft Guyed Tower; Orange County, CA	Page	22 of 28
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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T5	245.8 - 235.8	1" solid	10.00	1.63	78.0	0.785	4597	35343	0.130 <sup>1</sup>
T6	235.8 - 225.8	1" solid	10.00	1.63	78.0	0.785	4370	35343	0.124 <sup>1</sup>
T7	225.8 - 215.8	1" solid	10.00	1.63	78.0	0.785	2631	35343	0.074 <sup>1</sup>
T8	215.8 - 205.8	1" solid	10.00	1.63	78.0	0.785	40	35343	0.001 <sup>1</sup>
T9	205.8 - 195.8	1" solid	10.00	1.63	78.0	0.785	2806	35343	0.079 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T1	281 - 275.8	5/8" solid	2.58	2.47	189.7	0.307	181	9940	0.018 <sup>1</sup>
T2	275.8 - 265.8	5/8" solid	2.58	2.47	189.7	0.307	826	9940	0.083 <sup>1</sup>
T3	265.8 - 255.8	5/8" solid	2.58	2.47	189.7	0.307	827	9940	0.083 <sup>1</sup>
T4	255.8 - 245.8	5/8" solid	2.58	2.47	189.7	0.307	390	9940	0.039 <sup>1</sup>
T5	245.8 - 235.8	5/8" solid	2.58	2.47	189.7	0.307	195	9940	0.020 <sup>1</sup>
T6	235.8 - 225.8	5/8" solid	2.58	2.47	189.7	0.307	472	9940	0.048 <sup>1</sup>
T7	225.8 - 215.8	5/8" solid	2.58	2.47	189.7	0.307	647	9940	0.065 <sup>1</sup>
T8	215.8 - 205.8	5/8" solid	2.58	2.47	189.7	0.307	1063	9940	0.107 <sup>1</sup>
T9	205.8 - 195.8	5/8" solid	2.58	2.47	189.7	0.307	1119	9940	0.113 <sup>1</sup>
T10	195.8 - 185.8	5/8" solid	2.58	2.47	189.7	0.307	355	9940	0.036 <sup>1</sup>
T11	185.8 - 175.8	5/8" solid	2.58	2.47	189.7	0.307	228	9940	0.023 <sup>1</sup>
T12	175.8 - 165.8	5/8" solid	2.58	2.47	189.7	0.307	319	9940	0.032 <sup>1</sup>
T13	165.8 - 155.8	5/8" solid	2.58	2.47	189.7	0.307	758	9940	0.076 <sup>1</sup>
T14	155.8 - 145.8	5/8" solid	2.58	2.47	189.7	0.307	533	9940	0.054 <sup>1</sup>
T15	145.8 - 135.8	5/8" solid	2.58	2.47	189.7	0.307	465	9940	0.047 <sup>1</sup>
T16	135.8 - 125.8	5/8" solid	2.58	2.47	189.7	0.307	264	9940	0.027 <sup>1</sup>
T17	125.8 - 115.8	5/8" solid	2.58	2.47	189.7	0.307	543	9940	0.055 <sup>1</sup>

<b>RISATower</b>  <b>Paul J. Ford and Company</b> 250 E. Broad Street Suite 1500 Columbus, OH 43215 Phone: 614.221.6679 FAX: 614.448.4105	Job	281-ft Guyed Tower; Orange County, CA	Page	23 of 28
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	Client	Magnum Towers, Inc.	Designed by	Larry A. Paxton

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T18	115.8 - 105.8	5/8" solid	2.58	2.47	189.7	0.307	902	9940	0.091 <sup>1</sup>
T19	105.8 - 95.8	5/8" solid	2.58	2.47	189.7	0.307	1018	9940	0.102 <sup>1</sup>
T20	95.8 - 85.8	5/8" solid	2.58	2.47	189.7	0.307	480	9940	0.048 <sup>1</sup>
T21	85.8 - 75.8	5/8" solid	2.58	2.47	189.7	0.307	499	9940	0.050 <sup>1</sup>
T22	75.8 - 65.8	5/8" solid	2.58	2.47	189.7	0.307	218	9940	0.022 <sup>1</sup>
T23	65.8 - 55.8	5/8" solid	2.58	2.47	189.7	0.307	480	9940	0.048 <sup>1</sup>
T24	55.8 - 45.8	5/8" solid	2.58	2.47	189.7	0.307	700	9940	0.070 <sup>1</sup>
T25	45.8 - 35.8	5/8" solid	2.58	2.47	189.7	0.307	884	9940	0.089 <sup>1</sup>
T26	35.8 - 25.8	5/8" solid	2.58	2.47	189.7	0.307	329	9940	0.033 <sup>1</sup>
T27	25.8 - 15.8	5/8" solid	2.58	2.47	189.7	0.307	362	9940	0.036 <sup>1</sup>
T28	15.8 - 5.8	5/8" solid	1.85	1.68	128.7	0.307	248	9940	0.025 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T1	281 - 275.8	1/2" solid	2.00	1.92	184.0	0.196	128	6362	0.020 <sup>1</sup>
T2	275.8 - 265.8	1/2" solid	2.00	1.92	184.0	0.196	1706	6362	0.268 <sup>1</sup>
T3	265.8 - 255.8	1/2" solid	2.00	1.92	184.0	0.196	527	6362	0.083 <sup>1</sup>
T4	255.8 - 245.8	1/2" solid	2.00	1.92	184.0	0.196	314	6362	0.049 <sup>1</sup>
T5	245.8 - 235.8	1/2" solid	2.00	1.92	184.0	0.196	196	6362	0.031 <sup>1</sup>
T6	235.8 - 225.8	1/2" solid	2.00	1.92	184.0	0.196	315	6362	0.050 <sup>1</sup>
T7	225.8 - 215.8	1/2" solid	2.00	1.92	184.0	0.196	483	6362	0.076 <sup>1</sup>
T8	215.8 - 205.8	1/2" solid	2.00	1.92	184.0	0.196	736	6362	0.116 <sup>1</sup>
T9	205.8 - 195.8	1/2" solid	2.00	1.92	184.0	0.196	1700	6362	0.267 <sup>1</sup>
T10	195.8 - 185.8	1/2" solid	2.00	1.92	184.0	0.196	319	6362	0.050 <sup>1</sup>
T11	185.8 - 175.8	1/2" solid	2.00	1.92	184.0	0.196	140	6362	0.022 <sup>1</sup>

<b>RISATower</b>  <b>Paul J. Ford and Company</b> 250 E. Broad Street Suite 1500 Columbus, OH 43215 Phone: 614.221.6679 FAX: 614.448.4105	Job	281-ft Guyed Tower; Orange County, CA	Page	24 of 28
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	Client	Magnum Towers, Inc.	Designed by	Larry A. Paxton

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio P <sub>u</sub> / φP <sub>n</sub>
T12	175.8 - 165.8	1/2" solid	2.00	1.92	184.0	0.196	256	6362	0.040 <sup>1</sup>
T13	165.8 - 155.8	1/2" solid	2.00	1.92	184.0	0.196	1182	6362	0.186 <sup>1</sup>
T14	155.8 - 145.8	1/2" solid	2.00	1.92	184.0	0.196	477	6362	0.075 <sup>1</sup>
T15	145.8 - 135.8	1/2" solid	2.00	1.92	184.0	0.196	221	6362	0.035 <sup>1</sup>
T16	135.8 - 125.8	1/2" solid	2.00	1.92	184.0	0.196	221	6362	0.035 <sup>1</sup>
T17	125.8 - 115.8	1/2" solid	2.00	1.92	184.0	0.196	358	6362	0.056 <sup>1</sup>
T18	115.8 - 105.8	1/2" solid	2.00	1.92	184.0	0.196	651	6362	0.102 <sup>1</sup>
T19	105.8 - 95.8	1/2" solid	2.00	1.92	184.0	0.196	1196	6362	0.188 <sup>1</sup>
T20	95.8 - 85.8	1/2" solid	2.00	1.92	184.0	0.196	465	6362	0.073 <sup>1</sup>
T21	85.8 - 75.8	1/2" solid	2.00	1.92	184.0	0.196	210	6362	0.033 <sup>1</sup>
T22	75.8 - 65.8	1/2" solid	2.00	1.92	184.0	0.196	216	6362	0.034 <sup>1</sup>
T23	65.8 - 55.8	1/2" solid	2.00	1.92	184.0	0.196	276	6362	0.043 <sup>1</sup>
T24	55.8 - 45.8	1/2" solid	2.00	1.92	184.0	0.196	1080	6362	0.170 <sup>1</sup>
T25	45.8 - 35.8	1/2" solid	2.00	1.92	184.0	0.196	430	6362	0.068 <sup>1</sup>
T26	35.8 - 25.8	1/2" solid	2.00	1.92	184.0	0.196	372	6362	0.058 <sup>1</sup>
T27	25.8 - 15.8	1/2" solid	2.00	1.92	184.0	0.196	227	6362	0.036 <sup>1</sup>
T28	15.8 - 5.8	1/2" solid	2.00	1.92	184.0	0.196	545	6362	0.086 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio P <sub>u</sub> / φP <sub>n</sub>
T1	281 - 275.8	1/2" solid	2.00	1.92	184.0	0.196	63	6362	0.010 <sup>1</sup>
T3	265.8 - 255.8	1/2" solid	2.00	1.92	184.0	0.196	331	6362	0.052 <sup>1</sup>
T5	245.8 - 235.8	1/2" solid	2.00	1.92	184.0	0.196	62	6362	0.010 <sup>1</sup>
T7	225.8 - 215.8	1/2" solid	2.00	1.92	184.0	0.196	236	6362	0.037 <sup>1</sup>
T9	205.8 - 195.8	1/2" solid	2.00	1.92	184.0	0.196	461	6362	0.072 <sup>1</sup>

<b>RISATower</b>  <b>Paul J. Ford and Company</b> 250 E. Broad Street Suite 1500 Columbus, OH 43215 Phone: 614.221.6679 FAX: 614.448.4105	Job	Page
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	Magnum Towers, Inc.	Larry A. Paxton

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T11	185.8 - 175.8	1/2" solid	2.00	1.92	184.0	0.196	63	6362	0.010 <sup>1</sup>
T13	165.8 - 155.8	1/2" solid	2.00	1.92	184.0	0.196	147	6362	0.023 <sup>1</sup>
T15	145.8 - 135.8	1/2" solid	2.00	1.92	184.0	0.196	132	6362	0.021 <sup>1</sup>
T17	125.8 - 115.8	1/2" solid	2.00	1.92	184.0	0.196	129	6362	0.020 <sup>1</sup>
T19	105.8 - 95.8	1/2" solid	2.00	1.92	184.0	0.196	377	6362	0.059 <sup>1</sup>
T21	85.8 - 75.8	1/2" solid	2.00	1.92	184.0	0.196	107	6362	0.017 <sup>1</sup>
T23	65.8 - 55.8	1/2" solid	2.00	1.92	184.0	0.196	93	6362	0.015 <sup>1</sup>
T25	45.8 - 35.8	1/2" solid	2.00	1.92	184.0	0.196	283	6362	0.045 <sup>1</sup>
T27	25.8 - 15.8	1/2" solid	2.00	1.92	184.0	0.196	66	6362	0.010 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T2	275.8 - 265.8	1/2" solid	2.00	1.92	184.0	0.196	352	6362	0.055 <sup>1</sup>
T4	255.8 - 245.8	1/2" solid	2.00	1.92	184.0	0.196	93	6362	0.015 <sup>1</sup>
T6	235.8 - 225.8	1/2" solid	2.00	1.92	184.0	0.196	189	6362	0.030 <sup>1</sup>
T8	215.8 - 205.8	1/2" solid	2.00	1.92	184.0	0.196	456	6362	0.072 <sup>1</sup>
T10	195.8 - 185.8	1/2" solid	2.00	1.92	184.0	0.196	120	6362	0.019 <sup>1</sup>
T12	175.8 - 165.8	1/2" solid	2.00	1.92	184.0	0.196	182	6362	0.029 <sup>1</sup>
T14	155.8 - 145.8	1/2" solid	2.00	1.92	184.0	0.196	219	6362	0.034 <sup>1</sup>
T16	135.8 - 125.8	1/2" solid	2.00	1.92	184.0	0.196	157	6362	0.025 <sup>1</sup>
T18	115.8 - 105.8	1/2" solid	2.00	1.92	184.0	0.196	437	6362	0.069 <sup>1</sup>
T20	95.8 - 85.8	1/2" solid	2.00	1.92	184.0	0.196	240	6362	0.038 <sup>1</sup>
T22	75.8 - 65.8	1/2" solid	2.00	1.92	184.0	0.196	165	6362	0.026 <sup>1</sup>
T24	55.8 - 45.8	1/2" solid	2.00	1.92	184.0	0.196	334	6362	0.052 <sup>1</sup>
T26	35.8 - 25.8	1/2" solid	2.00	1.92	184.0	0.196	133	6362	0.021 <sup>1</sup>

<b>RISATower</b>  <b>Paul J. Ford and Company</b> 250 E. Broad Street Suite 1500 Columbus, OH 43215 Phone: 614.221.6679 FAX: 614.448.4105	Job	281-ft Guyed Tower; Orange County, CA	Page	26 of 28
	Project	Oak Flat in Silverado Canyon Twr#3 (PJF# 65011-0012)	Date	12:24:52 12/02/11
	Client	Magnum Towers, Inc.	Designed by	Larry A. Paxton

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T28	15.8 - 5.8	1/2" solid	0.78	0.70	67.0	0.196	238	6362	0.037 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	φP <sub>allow</sub> lb	% Capacity	Pass Fail
T1	281 - 275.8	Leg	1" solid	1	-388	22652	1.7	Pass
T2	275.8 - 265.8	Leg	1" solid	22	-6242	22652	27.6	Pass
T3	265.8 - 255.8	Leg	1" solid	64	-9359	22172	42.2	Pass
T4	255.8 - 245.8	Leg	1" solid	103	-11146	22236	50.1	Pass
T5	245.8 - 235.8	Leg	1" solid	145	-11296	22236	50.8	Pass
T6	235.8 - 225.8	Leg	1" solid	184	-10869	22215	48.9	Pass
T7	225.8 - 215.8	Leg	1" solid	228	-9096	22118	41.1	Pass
T8	215.8 - 205.8	Leg	1" solid	267	-6804	21898	31.1	Pass
T9	205.8 - 195.8	Leg	1" solid	309	-10499	21899	47.9	Pass
T10	195.8 - 185.8	Leg	1" solid	348	-9109	22652	40.2	Pass
T11	185.8 - 175.8	Leg	1" solid	390	-8090	22652	35.7	Pass
T12	175.8 - 165.8	Leg	1" solid	429	-8794	22652	38.8	Pass
T13	165.8 - 155.8	Leg	1" solid	471	-10121	22652	44.7	Pass
T14	155.8 - 145.8	Leg	1" solid	510	-11633	22652	51.4	Pass
T15	145.8 - 135.8	Leg	1" solid	552	-12735	22652	56.2	Pass
T16	135.8 - 125.8	Leg	1" solid	591	-12736	22652	56.2	Pass
T17	125.8 - 115.8	Leg	1" solid	633	-12094	22652	53.4	Pass
T18	115.8 - 105.8	Leg	1" solid	672	-12574	22652	55.5	Pass
T19	105.8 - 95.8	Leg	1" solid	714	-15369	22652	67.8	Pass
T20	95.8 - 85.8	Leg	1" solid	753	-13792	22652	60.9	Pass
T21	85.8 - 75.8	Leg	1" solid	795	-12012	22652	53.0	Pass
T22	75.8 - 65.8	Leg	1" solid	834	-12326	22652	54.4	Pass
T23	65.8 - 55.8	Leg	1" solid	876	-14481	22652	63.9	Pass
T24	55.8 - 45.8	Leg	1" solid	915	-16467	22652	72.7	Pass
T25	45.8 - 35.8	Leg	1" solid	957	-15424	22652	68.1	Pass
T26	35.8 - 25.8	Leg	1" solid	995	-12956	22652	57.2	Pass
T27	25.8 - 15.8	Leg	1" solid	1037	-13103	22652	57.8	Pass
T28	15.8 - 5.8	Leg	1" solid	1075	-12617	22600	55.8	Pass
T1	281 - 275.8	Diagonal	5/8" solid	9	-182	3930	4.6	Pass
T2	275.8 - 265.8	Diagonal	5/8" solid	32	-886	3930	22.5	Pass
T3	265.8 - 255.8	Diagonal	5/8" solid	101	-792	3930	20.2	Pass
T4	255.8 - 245.8	Diagonal	5/8" solid	143	-440	3930	11.2	Pass
T5	245.8 - 235.8	Diagonal	5/8" solid	182	-156	3930	4.0	Pass
T6	235.8 - 225.8	Diagonal	5/8" solid	195	-488	3930	12.4	Pass
T7	225.8 - 215.8	Diagonal	5/8" solid	234	-654	3930	16.6	Pass
T8	215.8 - 205.8	Diagonal	5/8" solid	276	-1085	3930	27.6	Pass
T9	205.8 - 195.8	Diagonal	5/8" solid	345	-1111	3930	28.3	Pass
T10	195.8 - 185.8	Diagonal	5/8" solid	386	-445	3930	11.3	Pass
T11	185.8 - 175.8	Diagonal	5/8" solid	425	-163	3930	4.1	Pass
T12	175.8 - 165.8	Diagonal	5/8" solid	438	-404	3930	10.3	Pass
T13	165.8 - 155.8	Diagonal	5/8" solid	487	-648	3930	16.5	Pass
T14	155.8 - 145.8	Diagonal	5/8" solid	547	-652	3930	16.6	Pass
T15	145.8 - 135.8	Diagonal	5/8" solid	586	-354	3930	9.0	Pass
T16	135.8 - 125.8	Diagonal	5/8" solid	600	-369	3930	9.4	Pass
T17	125.8 - 115.8	Diagonal	5/8" solid	638	-502	3930	12.8	Pass
T18	115.8 - 105.8	Diagonal	5/8" solid	680	-981	3930	25.0	Pass
T19	105.8 - 95.8	Diagonal	5/8" solid	749	-946	3930	24.1	Pass
T20	95.8 - 85.8	Diagonal	5/8" solid	790	-636	3930	16.2	Pass
T21	85.8 - 75.8	Diagonal	5/8" solid	829	-336	3930	8.6	Pass

<b>RISATower</b>  <b>Paul J. Ford and Company</b> 250 E. Broad Street Suite 1500 Columbus, OH 43215 Phone: 614.221.6679 FAX: 614.448.4105	Job	281-ft Guyed Tower; Orange County, CA	Page	27 of 28
	Project	Oak Flat in Silverado Canyon Twr#3 (PJF# 65011-0012)	Date	12:24:52 12/02/11
	Client	Magnum Towers, Inc.	Designed by	Larry A. Paxton

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$\phi P_{allow}$ lb	% Capacity	Pass Fail
T22	75.8 - 65.8	Diagonal	5/8" solid	842	-366	3930	9.3	Pass
T23	65.8 - 55.8	Diagonal	5/8" solid	881	-393	3930	10.0	Pass
T24	55.8 - 45.8	Diagonal	5/8" solid	922	-918	3930	23.4	Pass
T25	45.8 - 35.8	Diagonal	5/8" solid	991	-664	3930	16.9	Pass
T26	35.8 - 25.8	Diagonal	5/8" solid	1033	-517	3930	13.2	Pass
T27	25.8 - 15.8	Diagonal	5/8" solid	1044	-169	3930	4.3	Pass
T28	15.8 - 5.8	Diagonal	5/8" solid	1085	-972	6483	15.0	Pass
T1	281 - 275.8	Horizontal	1/2" solid	10	-128	2656	4.8	Pass
T2	275.8 - 265.8	Horizontal	1/2" solid	42	1706	6362	26.8	Pass
T3	265.8 - 255.8	Horizontal	1/2" solid	98	-562	2656	21.2	Pass
T4	255.8 - 245.8	Horizontal	1/2" solid	140	-290	2656	10.9	Pass
T5	245.8 - 235.8	Horizontal	1/2" solid	154	-196	2656	7.4	Pass
T6	235.8 - 225.8	Horizontal	1/2" solid	198	-313	2656	11.8	Pass
T7	225.8 - 215.8	Horizontal	1/2" solid	237	-489	2656	18.4	Pass
T8	215.8 - 205.8	Horizontal	1/2" solid	279	-726	2656	27.3	Pass
T9	205.8 - 195.8	Horizontal	1/2" solid	342	-798	2656	30.1	Pass
T10	195.8 - 185.8	Horizontal	1/2" solid	383	-270	2656	10.2	Pass
T11	185.8 - 175.8	Horizontal	1/2" solid	421	-145	2656	5.5	Pass
T12	175.8 - 165.8	Horizontal	1/2" solid	440	-218	2656	8.2	Pass
T13	165.8 - 155.8	Horizontal	1/2" solid	484	-376	2656	21.7	Pass
T14	155.8 - 145.8	Horizontal	1/2" solid	544	-408	2656	15.3	Pass
T15	145.8 - 135.8	Horizontal	1/2" solid	583	-308	2656	11.6	Pass
T16	135.8 - 125.8	Horizontal	1/2" solid	593	-221	2656	8.3	Pass
T17	125.8 - 115.8	Horizontal	1/2" solid	641	-416	2656	15.6	Pass
T18	115.8 - 105.8	Horizontal	1/2" solid	683	-615	2656	23.1	Pass
T19	105.8 - 95.8	Horizontal	1/2" solid	746	-725	2656	27.3	Pass
T20	95.8 - 85.8	Horizontal	1/2" solid	787	-371	2656	14.0	Pass
T21	85.8 - 75.8	Horizontal	1/2" solid	826	-331	2656	12.5	Pass
T22	75.8 - 65.8	Horizontal	1/2" solid	837	-213	2656	8.0	Pass
T23	65.8 - 55.8	Horizontal	1/2" solid	884	-371	2656	14.0	Pass
T24	55.8 - 45.8	Horizontal	1/2" solid	925	-498	2656	18.7	Pass
T25	45.8 - 35.8	Horizontal	1/2" solid	988	-605	2656	22.8	Pass
T26	35.8 - 25.8	Horizontal	1/2" solid	998	-267	2656	10.1	Pass
T27	25.8 - 15.8	Horizontal	1/2" solid	1071	-255	2656	9.6	Pass
T28	15.8 - 5.8	Horizontal	1/2" solid	1080	545	6362	8.6	Pass
T1	281 - 275.8	Top Girt	1/2" solid	4	-63	2656	2.4	Pass
T3	265.8 - 255.8	Top Girt	1/2" solid	68	-328	2656	12.3	Pass
T5	245.8 - 235.8	Top Girt	1/2" solid	149	-73	2656	2.7	Pass
T7	225.8 - 215.8	Top Girt	1/2" solid	229	-211	2656	7.9	Pass
T9	205.8 - 195.8	Top Girt	1/2" solid	310	-471	2656	17.7	Pass
T11	185.8 - 175.8	Top Girt	1/2" solid	392	-98	2656	3.7	Pass
T13	165.8 - 155.8	Top Girt	1/2" solid	474	-198	2656	7.5	Pass
T15	145.8 - 135.8	Top Girt	1/2" solid	553	-194	2656	7.3	Pass
T17	125.8 - 115.8	Top Girt	1/2" solid	636	-183	2656	6.9	Pass
T19	105.8 - 95.8	Top Girt	1/2" solid	717	-451	2656	17.0	Pass
T21	85.8 - 75.8	Top Girt	1/2" solid	796	-219	2656	8.3	Pass
T23	65.8 - 55.8	Top Girt	1/2" solid	878	-181	2656	6.8	Pass
T25	45.8 - 35.8	Top Girt	1/2" solid	958	-315	2656	11.9	Pass
T27	25.8 - 15.8	Top Girt	1/2" solid	1040	-133	2656	5.0	Pass
T2	275.8 - 265.8	Bottom Girt	1/2" solid	29	-348	2656	13.1	Pass
T4	255.8 - 245.8	Bottom Girt	1/2" solid	110	-87	2656	3.3	Pass
T6	235.8 - 225.8	Bottom Girt	1/2" solid	192	-210	2656	7.9	Pass
T8	215.8 - 205.8	Bottom Girt	1/2" solid	273	-441	2656	16.6	Pass
T10	195.8 - 185.8	Bottom Girt	1/2" solid	353	-79	2656	3.0	Pass
T12	175.8 - 165.8	Bottom Girt	1/2" solid	435	-126	2656	4.8	Pass
T14	155.8 - 145.8	Bottom Girt	1/2" solid	514	-155	2656	5.8	Pass
T16	135.8 - 125.8	Bottom Girt	1/2" solid	596	-101	2656	3.8	Pass
T18	115.8 - 105.8	Bottom Girt	1/2" solid	677	-358	2656	13.5	Pass
T20	95.8 - 85.8	Bottom Girt	1/2" solid	757	-122	2656	4.6	Pass
T22	75.8 - 65.8	Bottom Girt	1/2" solid	839	-70	2656	2.6	Pass
T24	55.8 - 45.8	Bottom Girt	1/2" solid	919	-295	2656	11.1	Pass

<b>RISATower</b>  <b>Paul J. Ford and Company</b> 250 E. Broad Street Suite 1300 Columbus, OH 43215 Phone: 614.221.6679 FAX: 614.448.4105	Job	281-ft Guyed Tower; Orange County, CA	Page	28 of 28
	Project	Oak Flat in Silverado Canyon Twr#3 (PJF# 65011-0012)	Date	12:24:52 12/02/11
	Client	Magnum Towers, Inc.	Designed by	Larry A. Paxton

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$\phi P_{allow}$ lb	% Capacity	Pass Fail	
T26	35.8 - 25.8	Bottom Girt	1/2" solid	1000	-85	2656	3.2	Pass	
T28	15.8 - 5.8	Bottom Girt	1/2" solid	1081	238	6362	3.7	Pass	
T2	275.8 - 265.8	Guy A@269.3	3/8	1119	6487	9240	70.2	Pass	
T9	205.8 - 195.8	Guy A@200.675	5/16	1122	5461	6720	81.3	Pass	
T13	165.8 - 155.8	Guy A@160.675	1/4	1125	3431	3990	86.0	Pass	
T19	105.8 - 95.8	Guy A@100.675	1/4	1128	3254	3990	81.5	Pass	
T24	55.8 - 45.8	Guy A@49.3	1/4	1131	2334	3990	58.5	Pass	
T2	275.8 - 265.8	Guy B@269.3	3/8	1118	6508	9240	70.4	Pass	
T9	205.8 - 195.8	Guy B@200.675	5/16	1121	5383	6720	80.1	Pass	
T13	165.8 - 155.8	Guy B@160.675	1/4	1124	3328	3990	83.4	Pass	
T19	105.8 - 95.8	Guy B@100.675	1/4	1127	3130	3990	78.4	Pass	
T24	55.8 - 45.8	Guy B@49.3	1/4	1130	2232	3990	55.9	Pass	
T2	275.8 - 265.8	Guy C@269.3	3/8	1117	6751	9240	73.1	Pass	
T9	205.8 - 195.8	Guy C@200.675	5/16	1120	5581	6720	83.0	Pass	
T13	165.8 - 155.8	Guy C@160.675	1/4	1123	3435	3990	86.1	Pass	
T19	105.8 - 95.8	Guy C@100.675	1/4	1126	3195	3990	80.1	Pass	
T24	55.8 - 45.8	Guy C@49.3	1/4	1129	2263	3990	56.7	Pass	
							Summary		
							Leg (T24)	72.7	Pass
							Diagonal (T9)	28.3	Pass
							Horizontal (T9)	30.1	Pass
							Top Girt (T9)	17.7	Pass
							Bottom Girt (T8)	16.6	Pass
							Guy A (T13)	86.0	Pass
							Guy B (T13)	83.4	Pass
							Guy C (T13)	86.1	Pass
							Bolt Checks	12.4	Pass
							RATING =	86.1	Pass

<b>tnxTower</b>  <b>Paul J. Ford and Company</b> 250 E. Broad Street Suite 1500 Columbus, OH 43215 Phone: 614.221.6679 FAX: 614.448.4105	Job	281-ft Guyed Tower; Orange County, CA	Page	1 of 4
	Project	Oak Flat in Silverado Canyon (PJF# 65011-0012)	Date	08:49:19 03/20/12
	Client	Magnum Towers, Inc.	Designed by	Larry A. Paxton

## Tower Pressures - No Ice

$G_H = 0.850$

Section Elevation	z	K <sub>z</sub>	q <sub>z</sub>	A <sub>G</sub>	F a c e	A <sub>F</sub>	A <sub>R</sub>	A <sub>leg</sub>	Leg %	C <sub>A</sub> A <sub>A</sub> In Face	C <sub>A</sub> A <sub>A</sub> Out Face
ft	ft		psf	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>
T1 281.00-275.80	278.40	1.57	38.71	10.833	A	0.000	1.492	0.867	58.08	0.000	0.000
					B	0.000	1.492		58.08	0.390	0.000
					C	0.000	1.492		58.08	0.000	0.000
T2 275.80-265.80	270.80	1.561	38.80	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
					B	0.000	2.997		55.60	1.095	0.000
					C	0.000	2.997		55.60	0.000	0.000
T3 265.80-255.80	260.80	1.549	38.92	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T4 255.80-245.80	250.80	1.536	39.04	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T5 245.80-235.80	240.80	1.523	39.16	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T6 235.80-225.80	230.80	1.509	39.27	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T7 225.80-215.80	220.80	1.495	39.37	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T8 215.80-205.80	210.80	1.481	39.47	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T9 205.80-195.80	200.80	1.466	39.56	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T10 195.80-185.80	190.80	1.45	39.64	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T11 185.80-175.80	180.80	1.434	39.71	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T12 175.80-165.80	170.80	1.417	39.76	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T13 165.80-155.80	160.80	1.399	39.79	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T14 155.80-145.80	150.80	1.38	39.80	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T15 145.80-135.80	140.80	1.36	39.79	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T16 135.80-125.80	130.80	1.339	39.74	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T17 125.80-115.80	120.80	1.317	39.66	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T18 115.80-105.80	110.80	1.293	39.53	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000



<b>tnxTower</b>  <b>Paul J. Ford and Company</b> 250 E. Broad Street Suite 1500 Columbus, OH 43215 Phone: 614.221.6679 FAX: 614.448.4105	Job	281-ft Guyed Tower; Orange County, CA	Page	2 of 4
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	Client	Magnum Towers, Inc.	Designed by	Larry A. Paxton

Section Elevation	z	K <sub>z</sub>	q <sub>z</sub>	A <sub>G</sub>	F a c e	A <sub>F</sub>	A <sub>R</sub>	A <sub>leg</sub>	Leg %	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>
ft	ft		psf	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>			
115.80-105.80					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T19	100.80	1.268	39.35	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
105.80-95.80					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T20	90.80	1.24	39.09	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
95.80-85.80					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T21	80.80	1.21	38.75	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
85.80-75.80					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T22	70.80	1.177	38.30	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
75.80-65.80					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T23	60.80	1.14	37.71	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
65.80-55.80					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T24	50.80	1.097	36.92	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
55.80-45.80					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T25	40.80	1.048	35.86	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
45.80-35.80					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T26	30.80	0.988	34.39	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
35.80-25.80					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T27	20.80	0.909	32.23	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
25.80-15.80					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T28	15.80-5.80	0.85	30.67	14.585	A	0.000	2.684	1.671	62.26	0.000	0.000
					B	0.000	2.684		62.26	1.470	0.000
					C	0.000	2.684		62.26	0.000	0.000

**Tower Pressure - Service**

$G_H = 0.850$

Section Elevation	z	K <sub>z</sub>	q <sub>z</sub>	A <sub>G</sub>	F a c e	A <sub>F</sub>	A <sub>R</sub>	A <sub>leg</sub>	Leg %	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>
ft	ft		psf	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>			
T1	278.40	1.57	19.29	10.833	A	0.000	1.492	0.867	58.08	0.000	0.000
281.00-275.80					B	0.000	1.492		58.08	0.390	0.000
					C	0.000	1.492		58.08	0.000	0.000
T2	270.80	1.561	19.33	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
275.80-265.80					B	0.000	2.997		55.60	1.095	0.000
					C	0.000	2.997		55.60	0.000	0.000
T3	260.80	1.549	19.39	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
265.80-255.80					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T4	250.80	1.536	19.45	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
255.80-245.80					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T5	240.80	1.523	19.51	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
245.80-235.80					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000

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	Client	Magnum Towers, Inc.	Designed by	Larry A. Paxton

Section Elevation	z	K <sub>z</sub>	q <sub>z</sub>	A <sub>G</sub>	F a c e	A <sub>F</sub>	A <sub>R</sub>	A <sub>leg</sub>	Leg %	C <sub>A</sub> A <sub>A</sub> In Face	C <sub>A</sub> A <sub>A</sub> Out Face
ft	ft		psf	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>
T6 235.80-225.80	230.80	1.509	19.57	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T7 225.80-215.80	220.80	1.495	19.62	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T8 215.80-205.80	210.80	1.481	19.67	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T9 205.80-195.80	200.80	1.466	19.71	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T10 195.80-185.80	190.80	1.45	19.75	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T11 185.80-175.80	180.80	1.434	19.78	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T12 175.80-165.80	170.80	1.417	19.81	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T13 165.80-155.80	160.80	1.399	19.83	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T14 155.80-145.80	150.80	1.38	19.83	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T15 145.80-135.80	140.80	1.36	19.83	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T16 135.80-125.80	130.80	1.339	19.80	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T17 125.80-115.80	120.80	1.317	19.76	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T18 115.80-105.80	110.80	1.293	19.70	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T19 105.80-95.80	100.80	1.268	19.61	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T20 95.80-85.80	90.80	1.24	19.48	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T21 85.80-75.80	80.80	1.21	19.31	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T22 75.80-65.80	70.80	1.177	19.09	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T23 65.80-55.80	60.80	1.14	18.79	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T24 55.80-45.80	50.80	1.097	18.40	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T25 45.80-35.80	40.80	1.048	17.87	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000

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Section Elevation	$z$	$K_z$	$q_z$	$A_G$	$F$ $a$ $c$ $e$	$A_{\bar{r}}$	$A_R$	$A_{leg}$	Leg %	$C_A A_A$ In Face $ft^2$	$C_A A_A$ Out Face $ft^2$
ft	ft		psf	$ft^2$		$ft^2$	$ft^2$	$ft^2$			
T26 35.80-25.80	30.80	0.988	17.14	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T27 25.80-15.80	20.80	0.909	16.06	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T28 15.80-5.80	10.80	0.85	15.28	14.585	A	0.000	2.684	1.671	62.26	0.000	0.000
					B	0.000	2.684		62.26	1.470	0.000
					C	0.000	2.684		62.26	0.000	0.000

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By LAP Date 12/2/11  
Project 281-ft Guyed Tower Oak Flat  
Project # 65011-0012

Seismic Analysis: Equivalent Lateral Force Procedure per TIA-G Sect. 2.7.7

Total Weight of Structure including appurtenances (W): 4.5 (kips)

Earthquake Spectral Response Acceleration at Short Periods ( $S_{DS}$ ): 1.2133 (per USGS or Geo Report)

Importance Factor (I): 1.0 (per Table 2-3 TIA-G)

Response Modification Coefficient (R): 2.5 (per Sect. 2.7.7.1 TIA-G)

Total Seismic Shear ( $V_s$ ):  $S_{DS} \times W \times I / R$  (per Sect. 2.7.7.1 TIA-G)  
 $1.2133 \times 4.5 \times 1 / 2.5 = 2.18$  (kips)

Total Wind Shear: 15 (kips) (per PJF Analysis)

Ratio:  $2.18 / 15 = 0.15$

Per section 2.7.3 of the TIA-G standard, since the seismic shear is less than 50% of the the wind shear, the effects of seismic loading can be ignored



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BY LAP DATE \_\_\_\_\_  
PROJECT OAK FLAT  
CLIENT MAGNUM TOWERS PROJ # G5011-0012

GUY ANCHOR BOLTS

MAX UPLIFT = 21.3 K

MAX SHEAR = 15.4 K

USE (4)  $\frac{7}{8}$ "  $\phi$  F1554-36 BOLTS

$$\begin{aligned}\phi R_n &= \phi F_n A_b && \text{(AISC 13TH J3.2)} \\ &= 0.75 \left( 1.3 F_n - \frac{F_n}{\phi F_v} f_v \right) (0.601)(4) \\ &= 0.75 \left( 1.3 \times 0.75 \times 58 - \frac{0.75 \times 58}{0.75 \times 0.4 \times 58} \times 15.4 \right) (0.601)(4) \\ &= 32.5 \text{ KIPS}\end{aligned}$$

$$\text{RATIO} = \frac{21.3}{32.5} = 0.655$$



ACI 318-08 APPENDIX D FOR GUY ANCHOR ROD

D.4.1

(a) D.5.1  $\phi N_{sa} = \phi n A_{se,N} F_{uta} = 0.75 \times 4 \times 0.462 \times 68400 \div 1000 = 94.8 \text{ K}$   
 $\phi = 0.75$   
 $n = 4$   
 $A_{se,N} = 0.462 \text{ IN}^2$   
 $F_{uta} = 1.9 \times 36000 = 68400 \text{ PSI}$

RATIO =  $\frac{21.3}{94.8} = 0.22 \checkmark$

(b) D.6.1  $\phi V_{sa} = \phi n 0.6 A_{se,V} F_{uta} = 0.65 \times 4 \times 0.6 \times 0.462 \times 68400 \div 1000 = 49.3 \text{ K}$   
 $\phi = 0.65$   
 $n = 4$   
 $A_{se,V} = 0.462 \text{ IN}^2$   
 $F_{uta} = 68400 \text{ PSI}$

RATIO =  $\frac{15.7}{49.3} = 0.32 \checkmark$

(c) D.5.2  $\phi N_{cb} = \phi \frac{A_{nc}}{A_{nc0}} \psi_{ec,N} \psi_{ed,N} \psi_{c,N} \psi_{cp,N} N_b$   
 $= 0.75 \left( \frac{398.2}{398.2} \right) 0.97 \times 0.75 \times 1.25 \times 1.0 \times 189736 \div 1000 = 129.4 \text{ K}$   
 $\phi = 0.75$   
 $A_{nc} = 24.4 \times 20 = 488 \text{ IN}^2 > 398.2 \therefore = 398.2 \text{ IN}^2$   
 $A_{nc0} = 22 \times 18.1 = 398.2 \text{ IN}^2$   
 $\psi_{ec,N} = \left( 1 + \frac{2 \times 1}{3 \times 25} \right) = 0.97$   
 $\psi_{ed,N} = 0.7 + 0.3 \left( \frac{6.8}{1.5 \times 25} \right) = 0.75$   
 $\psi_{c,N} = 1.25$   
 $\psi_{cp,N} = 1.0$   
 $N_b = K_c \lambda \sqrt{F_c} h_{ef}^{1.5} = 24 \times 1.0 \times \sqrt{4000} \times 25^{1.5} = 189736$

RATIO =  $\frac{21.3}{129.4} = 0.16 \checkmark$



$$(d) D.6.2 \quad \phi V_{cbg} = \phi \frac{A_{vc}}{A_{vco}} \psi_{ec,v} \psi_{ed,v} \psi_{c,v} \psi_{h,v} V_b$$
$$= 0.65 \times \left( \frac{323}{332.4} \right) \times 1 \times 0.985 \times 1.4 \times 0.88 \times 16601 \div 1000 = 12.72$$

$$\phi = 0.65$$

$$A_{vc} = 13.23 \times 24.41 = 323 \text{ IN}^2$$

$$A_{vco} = \frac{16.99 + 13.23}{2} \times 22 = 332.4 \text{ IN}^2$$

$$\psi_{ec,v} = 1.0$$

$$\psi_{ed,v} = 0.985$$

$$\psi_{c,v} = 1.4$$

$$\psi_{h,v} = \sqrt{\frac{1.5 \times 6.8}{13.23}} = 0.88$$

$$V_b = \left( 8 \left( \frac{26.5}{0.875} \right)^{0.2} \sqrt{0.875} \right) 1.0 \sqrt{4000} (6.8)^{1.5} = 16601$$

$$\text{RATIO} = \frac{15.4 \div 2}{12.72} = 0.61 \quad \checkmark$$

$$(e) D.5.3 \quad \phi N_{pn} = \phi \psi_{c,p} N_p = 0.75 \times 1.4 \times 38080 \div 1000 = 39.9 \text{ K}$$

$$\phi = 0.75$$

$$\psi_{c,p} = 1.4$$

$$N_p = 8 \times 1.19 \times 4000 = 38080$$

$$\text{RATIO} = \frac{21.3}{39.9} = 0.53 \quad \checkmark$$

$$(f) D.5.4 \quad \phi N_{sb} = \phi (160 C_{a1} \sqrt{A_{bg}}) \lambda \sqrt{F_c} = 0.75 \times (160 \times 9.7 \sqrt{1.19}) \times 1.0 \times \sqrt{4000} \div 1000 = 80.3 \text{ K}$$

$$\phi = 0.75$$

$$C_{a1} = 9.7 \text{ IN}$$

$$A_{bg} = 1.19$$

$$\lambda = 1.0$$

$$\text{RATIO} = \frac{21.3}{80.3} = 0.27 \quad \checkmark$$

$$(g) D.6.3 \quad \phi V_{cpj} = \phi K_{cp} N_{cbg} = 0.65 \times 2 \times 45.5 = 59.15 \text{ K}$$

$$\phi = 0.65$$

$$K_{cp} = 2.0$$

$$N_{cbg} = 45.5$$

$$\text{RATIO} = \frac{15.4}{59.15} = 0.26 \quad \checkmark$$



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 By LAP Date 2/28/2012  
 Project 80-ft S/S Tower Portland, OR  
 Project # 65012-0011

Guy Anchor Plate Calculations

Cable Number	Total Height (ft)	Dist. To Anchor (ft)	Chord Length (ft)
1	289.3	180	340.73
2	220.8	180	284.87
3	180.8	180	255.12
4	120.7	180	216.72
5	69.33	180	192.89

Cable Load (k)	Cable Vert (k)	Cable Horz (k)
8.07	6.852	4.263
7.44	5.767	4.701
5.37	3.806	3.789
3.43	1.91	2.849
2.74	0.985	2.557

Cable Number	Cable Vert (k)	M arm Vert (in)	M (k-in)
1	6.852	8	54.816
2	5.767	6.25	36.044
3	3.806	4.5	17.127
4	1.91	2.75	5.253
5	0.985	1	0.985

Cable Horz (k)	M arm Horz (in)	M (k-in)
4.263	9	38.367
4.701	7.25	34.082
3.789	5.5	20.84
2.849	3.75	10.684
2.557	2	5.114

Total **223.3**

Applied Moment: 223.3 k-in  
 Resultant Vertical Load:  $223.3 / 5 = 44.66$  kips  
 Moment on Plate:  $44.66 \times 5 \times 7 / 12 = 130.3$  k-in  
 Plate Capacity:  $0.9 \times 50 \times 3.4 = 153$  k-in  
 Ratio:  $130.3 / 153 = 0.852$

Assume Centroid of Fan Plate is 5" above base plate  
 Applied Moment: 223.3 k-in  
 Resultant Horizontal Load:  $223.3 / 5 = 44.66$  kips  
 Per Table 8-4  
 $a = 5 / 10 = 0.5$   
 $D_{min} = 44.66 / (0.75 \times 2.29 \times 1 \times 10) = 2.60$  16ths of an inch  
 Ratio:  $2.6 / 5 = 0.52$





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250 East Broad Street, Suite 1500  
Columbus, Ohio 43215

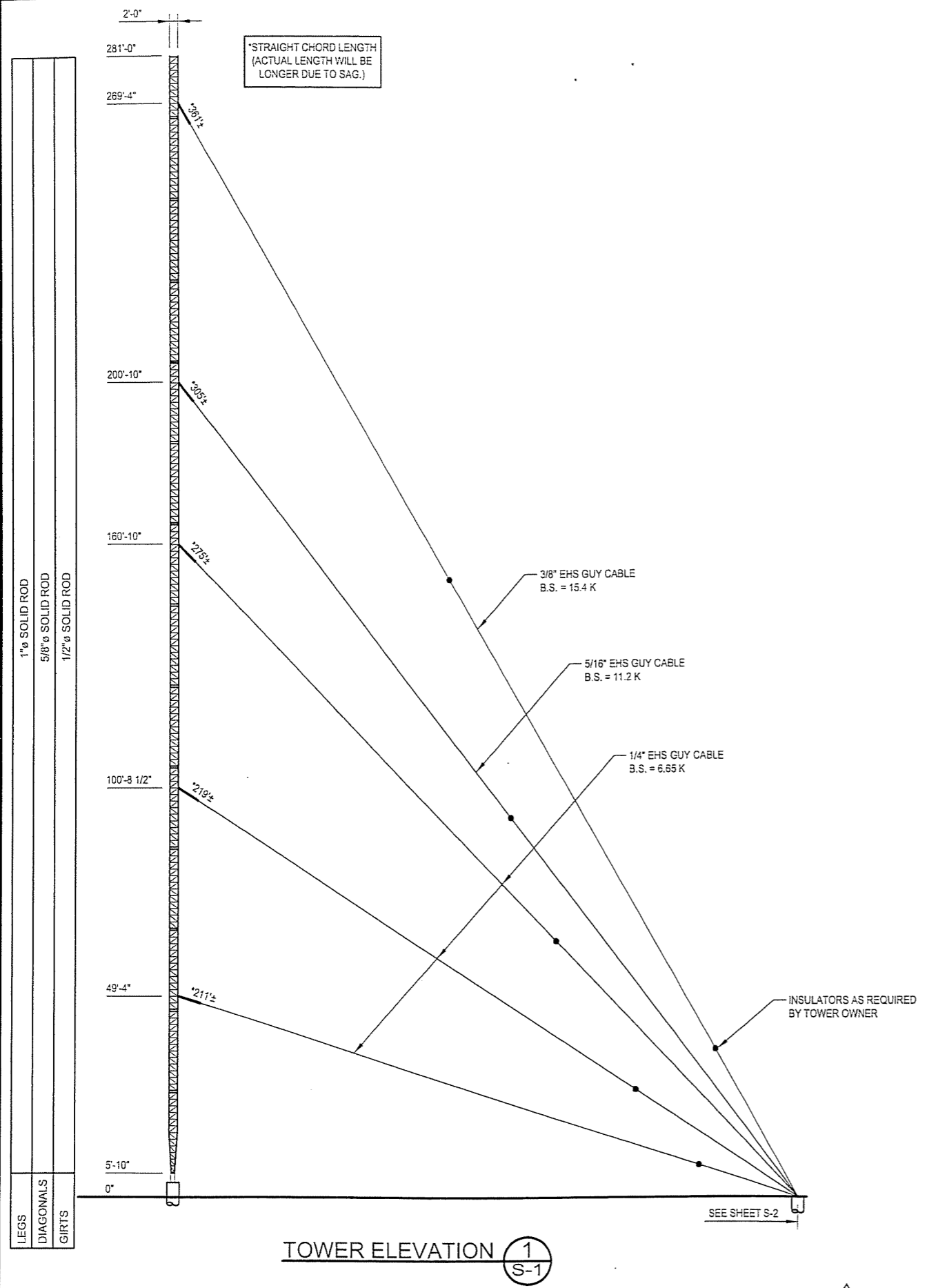
Page 1 of 1  
By LAP Date 11/14/2011  
Project # 65011-0012

Fan Plate Calculations

Plate Yield Strength (ksi): 50  
Plate Ultimate Strength (ksi): 65  
Plate Thickness (in): 1/2

Guy Cable $\phi$ (in):	<u>1/4</u>	<u>5/16</u>	<u>3/8</u>	<u>7/16</u>
Breaking Strength (k):	<u>6.65</u>	<u>11.2</u>	<u>15.4</u>	<u>20.8</u>
Turnbuckle Size:	<u>1/2</u>	<u>5/8</u>	<u>5/8</u>	<u>3/4</u>
Turnbuckle Cap (k):	<u>11</u> <input checked="" type="checkbox"/>	<u>17.5</u> <input checked="" type="checkbox"/>	<u>17.5</u> <input checked="" type="checkbox"/>	<u>26</u> <input checked="" type="checkbox"/>
Pin Diameter (in):	<u>3/8</u>	<u>1/2</u>	<u>1/2</u>	<u>5/8</u>
Jaw Width (in):	<u>0.64</u> <input checked="" type="checkbox"/>	<u>0.79</u> <input checked="" type="checkbox"/>	<u>0.79</u> <input checked="" type="checkbox"/>	<u>0.97</u> <input checked="" type="checkbox"/>
Jaw Depth (in):	<u>1.07</u>	<u>1.32</u>	<u>1.32</u>	<u>1.52</u>
Min Edge Dist (in):	<u>3/4</u>	<u>3/4</u>	<u>3/4</u>	<u>7/8</u>
Max Edge Dist (in):	<u>1.26</u>	<u>1.57</u>	<u>1.57</u>	<u>1.83</u>
Actual Edge Dist (in):	<u>0.75</u> <input checked="" type="checkbox"/>	<u>1</u> <input checked="" type="checkbox"/>	<u>1</u> <input checked="" type="checkbox"/>	<u>1</u> <input checked="" type="checkbox"/>
Min Hole $\phi$ (in):	<u>1/2</u>	<u>5/8</u>	<u>5/8</u>	<u>3/4</u>
Actual Hole $\phi$ (in):	<u>1/2</u> <input checked="" type="checkbox"/>	<u>3/4</u> <input checked="" type="checkbox"/>	<u>3/4</u> <input checked="" type="checkbox"/>	<u>3/4</u> <input checked="" type="checkbox"/>
Clear Distance (in):	<u>0.5</u> <input checked="" type="checkbox"/>	<u>0.625</u> <input checked="" type="checkbox"/>	<u>0.625</u> <input checked="" type="checkbox"/>	<u>0.625</u> <input checked="" type="checkbox"/>
Pin to Pin Spacing (in):	<u>2 1/2</u>	<u>2 1/2</u>	<u>2 1/2</u>	<u>2 1/2</u>
Plate Bearing (k):	<u>18.53</u> <input checked="" type="checkbox"/>	<u>23.40</u> <input checked="" type="checkbox"/>	<u>23.40</u> <input checked="" type="checkbox"/>	<u>24.38</u> <input checked="" type="checkbox"/>
Plate Bearing (k):	<u>12.66</u> <input checked="" type="checkbox"/>	<u>16.88</u> <input checked="" type="checkbox"/>	<u>16.88</u> <input checked="" type="checkbox"/>	<u>21.09</u> <input checked="" type="checkbox"/>
Tensile Yielding (k):	<u>56.25</u> <input checked="" type="checkbox"/>	<u>56.25</u> <input checked="" type="checkbox"/>	<u>56.25</u> <input checked="" type="checkbox"/>	<u>56.25</u> <input checked="" type="checkbox"/>
Tensile Rupture (k):	<u>48.75</u> <input checked="" type="checkbox"/>	<u>42.66</u> <input checked="" type="checkbox"/>	<u>42.66</u> <input checked="" type="checkbox"/>	<u>42.66</u> <input checked="" type="checkbox"/>
Shear Yielding (k):	<u>40.50</u> <input checked="" type="checkbox"/>	<u>54.00</u> <input checked="" type="checkbox"/>	<u>54.00</u> <input checked="" type="checkbox"/>	<u>54.00</u> <input checked="" type="checkbox"/>
Shear Rupture (k):	<u>29.25</u> <input checked="" type="checkbox"/>	<u>36.56</u> <input checked="" type="checkbox"/>	<u>36.56</u> <input checked="" type="checkbox"/>	<u>36.56</u> <input checked="" type="checkbox"/>
Block Shear (k):	<u>20.63</u> <input checked="" type="checkbox"/>	<u>26.48</u> <input checked="" type="checkbox"/>	<u>26.48</u> <input checked="" type="checkbox"/>	<u>26.48</u> <input checked="" type="checkbox"/>

65011-0012C R1.DWG



TOWER ELEVATION 1  
S-1

ANTENNA LIST			
ELEVATION		EQUIPMENT	FEEDLINE
281'	(1)	BEACON	(1) 3/4"
140'-6"	(3)	OBSTRUCTION LIGHT	
15'	(1)	DOWN LIGHT	(1) 3/8"

**FOUNDATION REACTIONS**  
 BASE AXIAL: 33.0 K  
 BASE SHEAR: 0.21 K  
 GUY ANCHOR VERTICAL: 14.8 K  
 GUY ANCHOR HORIZONTAL: 14.2 K

- GENERAL NOTES:**
- THIS TOWER WAS DESIGNED IN ACCORDANCE WITH THE TELECOMMUNICATIONS INDUSTRY ASSOCIATION STANDARD "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES" ANSI/TIA-222-G.2 FOR THE FOLLOWING DESIGN CRITERIA:  
 90 MPH 3-SECOND WIND GUST  
 WIND EXPOSURE CATEGORY 'C'  
 STRUCTURE CLASS II (IMPORTANCE FACTOR = 1.0)  
 TOPOGRAPHIC CATEGORY 3 WITH A CREST HEIGHT OF 750 FT
  - ERECTION TOLERANCES SHALL BE AS SPECIFIED BY THE TIA STANDARD.
  - BOLTS SHALL BE TORQUED TO THE SNUG-TIGHT CONDITION AS DEFINED BY AISC.
  - TOWER LIGHTING AND GROUNDING BY OTHERS.
  - THIS DRAWING DOES NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES AND PROCEDURES.
  - THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PROGRAMS AND PRECAUTIONS IN CONNECTION WITH THE WORK.
  - ALL LIGHTS NOT REQUIRED BY THE FAA SHALL BE DESIGNED AND LOCATED SO THAT THE DIRECT LIGHT RAYS ARE KEPT ON THE PROPERTY.
  - CONSTRUCTION ACTIVITIES SHALL OCCUR BETWEEN 7 AM AND 6 PM MONDAY THROUGH SATURDAY, EXCLUDING FEDERAL HOLIDAYS.
  - TRUCKS, BUSES, MOTOR HOMES AND OTHER LARGE VEHICLES SHALL TAKE SITE ACCESS FROM SKYLINE DRIVE. SITE ACCESS FROM BLACK STAR CANYON ROAD SHALL BE LIMITED TO PASSENGER VEHICLES, INCLUDING PICK UP TRUCKS, ONLY.
  - SPECIAL INSPECTIONS SHALL BE PERFORMED IN ACCORDANCE WITH SHEET S-6 OF THESE DRAWINGS.
  - SPECIAL INSPECTIONS ARE NOT REQUIRED FOR WORK PERFORMED ON THE PREMISES OF A FABRICATOR APPROVED IN ACCORDANCE WITH SECTION 1704.2.2 OF THE CBC.



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 EIT-0002648

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 PH: (916) 381-5053 FAX: (916) 381-2144

OAK FLAT-SILVERADO CANYON  
 ORANGE CO., CALIFORNIA  
 281' GUYED AM TOWER #3

PROJECT No:	65011-0012
DRAWN BY:	T.A.N.
CHECKED BY:	L.A.P.
APPROVED BY:	K.P.B.
DATE:	12-2-2011

TOWER  
 ELEVATION  
 AND NOTES

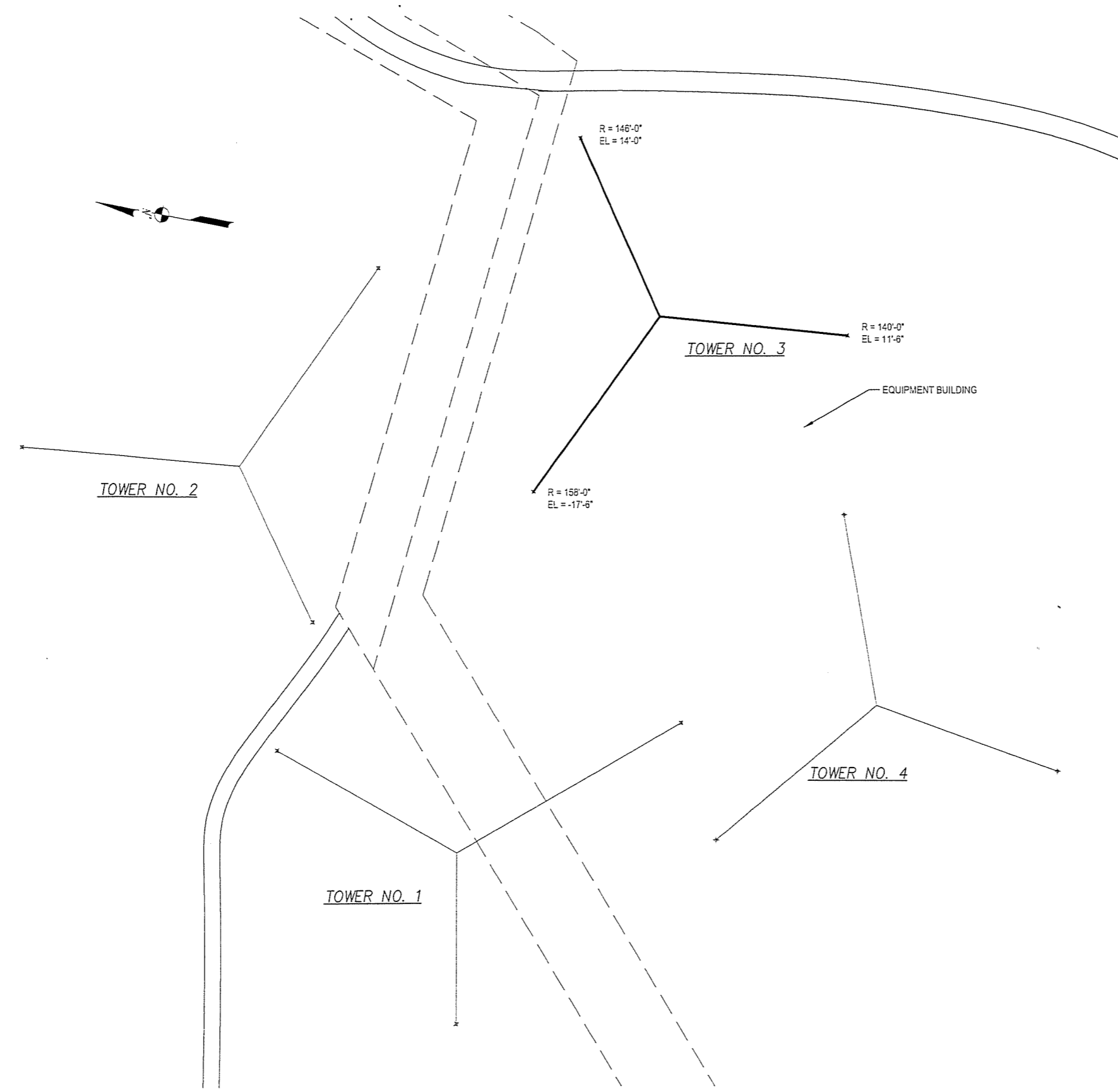
S-1  
 SHEET 1 OF 6

1 3-20-2012: PLAN COMMENTS

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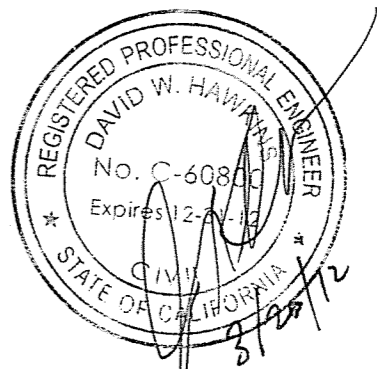
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OAK FLAT-SILVERADO CANYON  
 ORANGE CO., CALIFORNIA  
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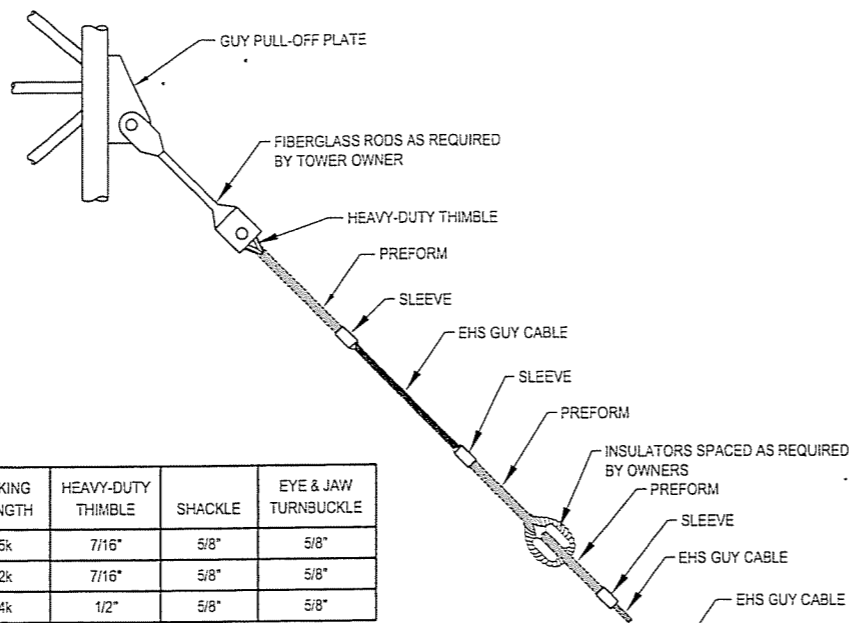


GUY TOWER  
 SITE PLAN

**S-2**  
 SHEET 2 OF 6

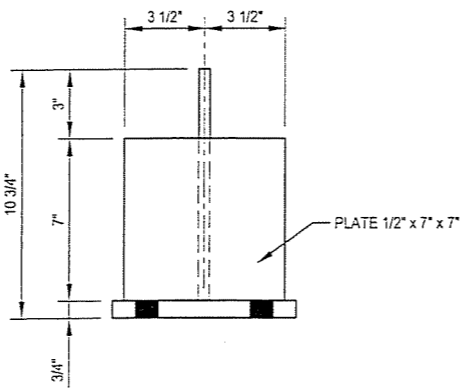
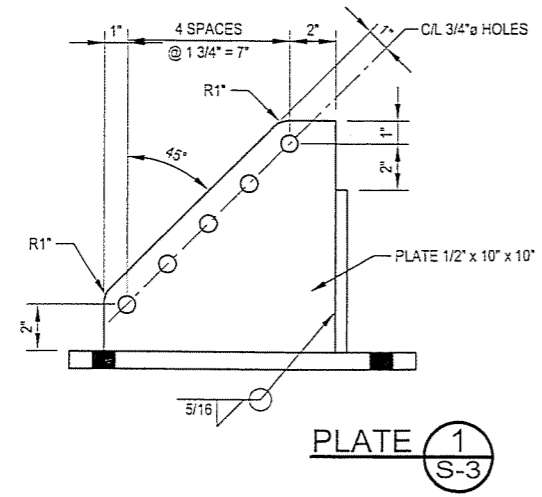
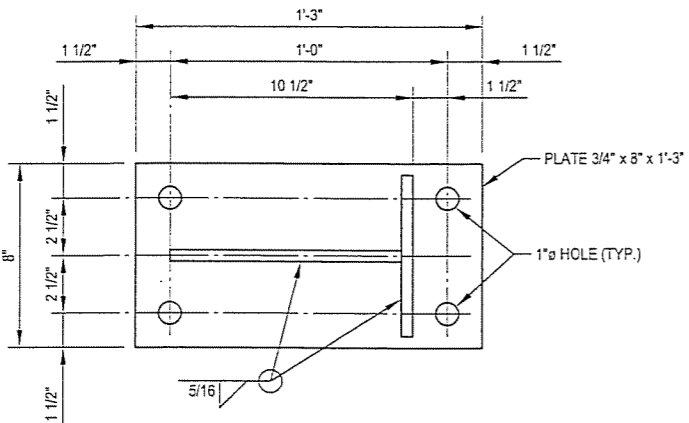
SITE LAYOUT PLAN 1  
S-2 1 3-20-2012

65011-0012C RT.DWG



GUY CABLE	BREAKING STRENGTH	HEAVY-DUTY THIMBLE	SHACKLE	EYE & JAW TURNBUCKLE
1/4"	6.65k	7/16"	5/8"	5/8"
5/16"	11.2k	7/16"	5/8"	5/8"
3/8"	15.4k	1/2"	5/8"	5/8"

ELEVATION	49'-4"	100'-8 1/2"	160'-10"	200'-10"	269'-4"
GUY SIZE	1/4"	1/4"	1/4"	5/16"	3/8"
TEMPERATURE					
110	462	514	566	994	1431
105	482	529	576	1006	1441
100	502	544	586	1019	1452
95	523	559	596	1032	1463
90	543	575	606	1044	1474
85	563	590	616	1057	1485
80	584	605	626	1069	1496
75	604	620	635	1082	1507
70	624	635	645	1095	1518
65	645	650	655	1107	1529
60	665	665	665	1120	1540
55	685	680	675	1133	1551
50	705	695	685	1145	1562
45	725	710	695	1158	1573
40	745	725	704	1171	1584
35	767	740	714	1183	1595
30	787	755	724	1196	1606
25	807	771	734	1208	1617
20	828	786	744	1221	1628
15	848	801	754	1234	1639
10	868	816	764	1246	1649
5	889	831	773	1259	1660
0	909	846	783	1272	1671
-5	930	861	793	1284	1682
-10	950	876	803	1297	1693



**GUY CABLE NOTES:**

1. GALVANIZED STEEL GUY CABLES SHALL BE EXTRA-HIGH STRENGTH (EHS) WIRE ROPE CONFORMING TO THE REQUIREMENTS OF THE ASTM A475. THE DEAD END GRIPPING STRENGTH SHALL EQUAL OR EXCEED THE LOAD RATING OF THE CABLE TO WHICH IT IS ATTACHED.
2. ALL TENSIONS SHOWN IN THE CHART BELOW ARE IN POUNDS.
3. FIELD TOLERANCE IS PLUS 10% AND MINUS 5% OF THE INITIAL TENSIONS SHOWN BELOW.
4. INITIAL TENSIONS SHOULD BE ESTABLISHED IN ONE DIRECTION ONLY (THE DIRECTION THAT IS MOST LEVEL) AND ALL OTHER GUY TENSIONS SHOULD BE AS REQUIRED TO PLUMB THE TOWER.
5. INITIAL TENSIONS SHOULD BE READ ON CALM DAYS WITH WIND VELOCITIES OF 10 MPH OR LESS

**STEEL NOTES:**

1. ALL STEEL SHALL CONFORM TO ASTM A572-50 (50 KSI YIELD POINT MATERIAL)
2. WELDED CONNECTIONS SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY AWS D1.1 USING E70XX ELECTRODES.
3. ALL NEW STEEL SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123.

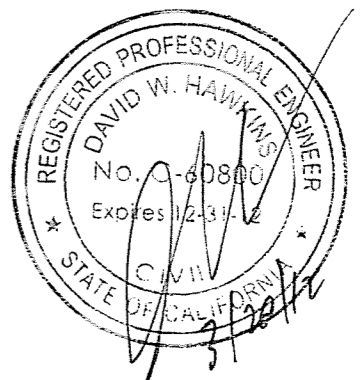
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OAK FLAT-SILVERADO CANYON  
 ORANGE CO., CALIFORNIA  
 281' GUYED AM TOWER #3

PROJECT No:	65011-0012
DRAWN BY:	T.A.N.
CHECKED BY:	L.A.P.
APPROVED BY:	K.P.B.
DATE:	12-2-2011



PLOT PLAN  
 GUY CABLE  
 TENSION CHART

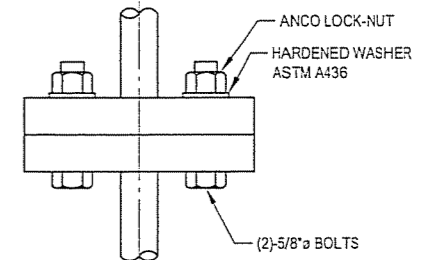
**S-3**  
 SHEET 3 OF 6

65011-0012C R1.DWG

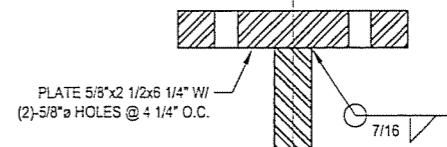
3-20-2012

**STEEL NOTES:**

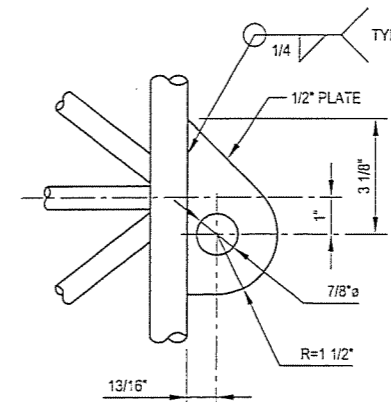
1. ALL STEEL SHALL CONFORM TO THE FOLLOWING:
  - a. SOLID ROD LEGS: ASTM A572 GR 50 (50 KSI YIELD POINT MATERIAL)
  - b. FLANGE PLATES: ASTM A572 GR 50 (50 KSI YIELD POINT MATERIAL)
  - c. STRUCTURAL BOLTS: ASTM A325
  - d. ANCHOR RODS: ASTM A36
  - e. ALL OTHER STEEL SHAPES: ASTM A36 (36 KSI YIELD POINT MATERIAL)
2. ALL BOLTS SHALL BE PROVIDED WITH LOCKING HARDWARE.
3. BOLTS SHALL BE GALVANIZED ACCORDING TO ASTM A153.
4. WELDED CONNECTIONS SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY AWS D1.1 USING E70XX ELECTRODES.
5. ALL NEW STEEL SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123.



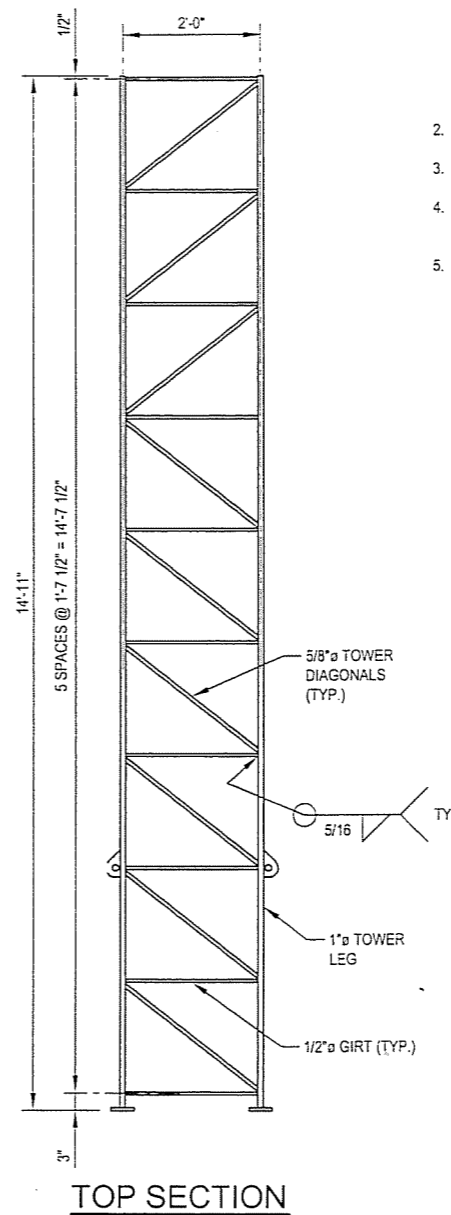
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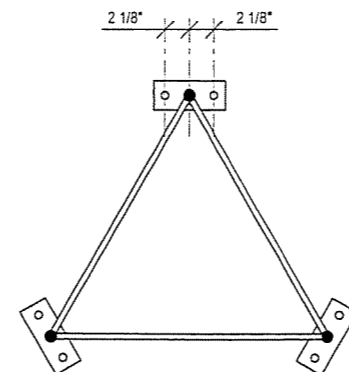
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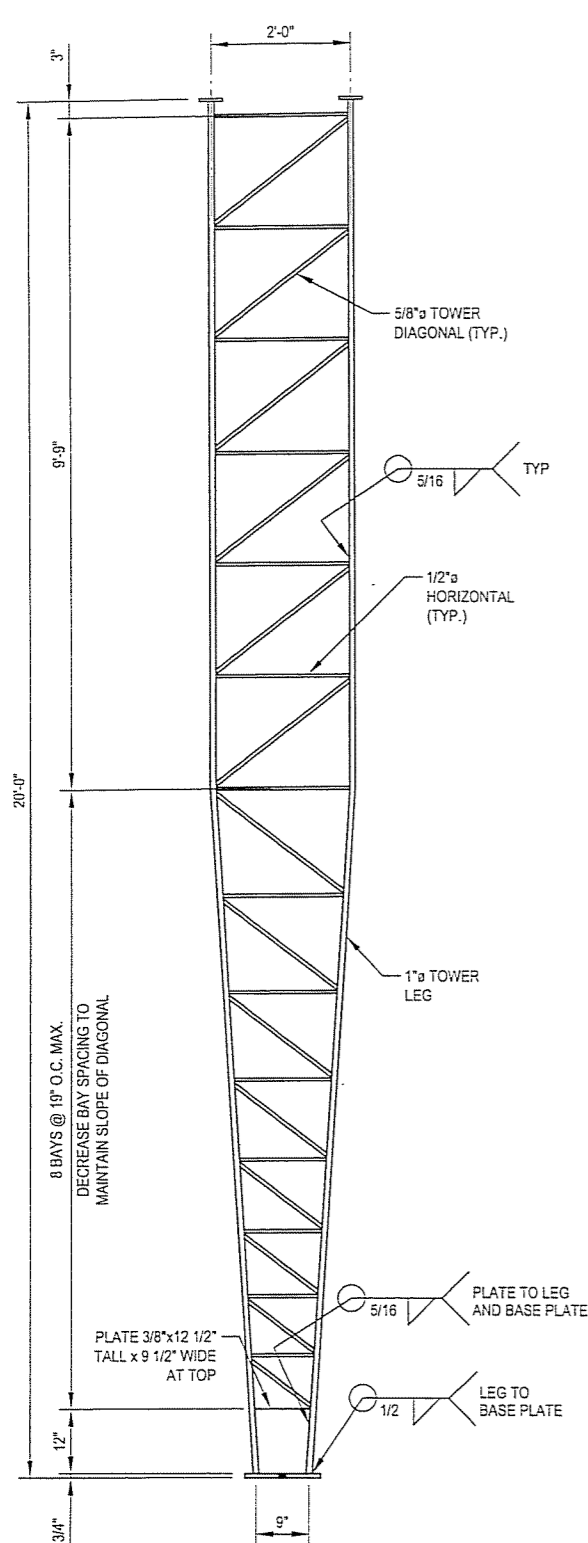
**GUY PULLOFF DETAIL**



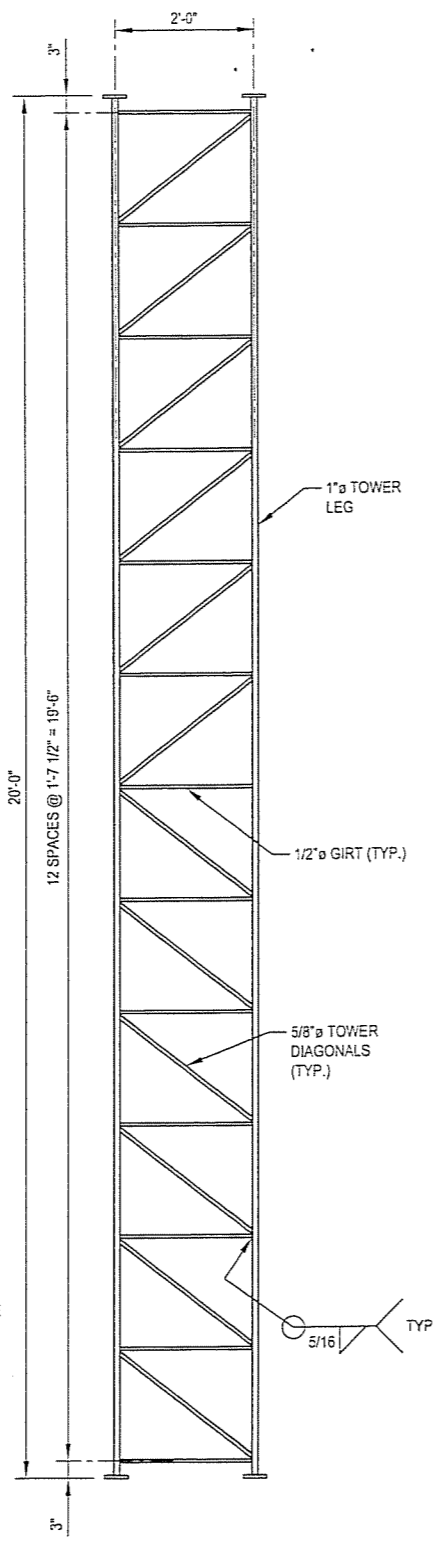
**TOP SECTION**



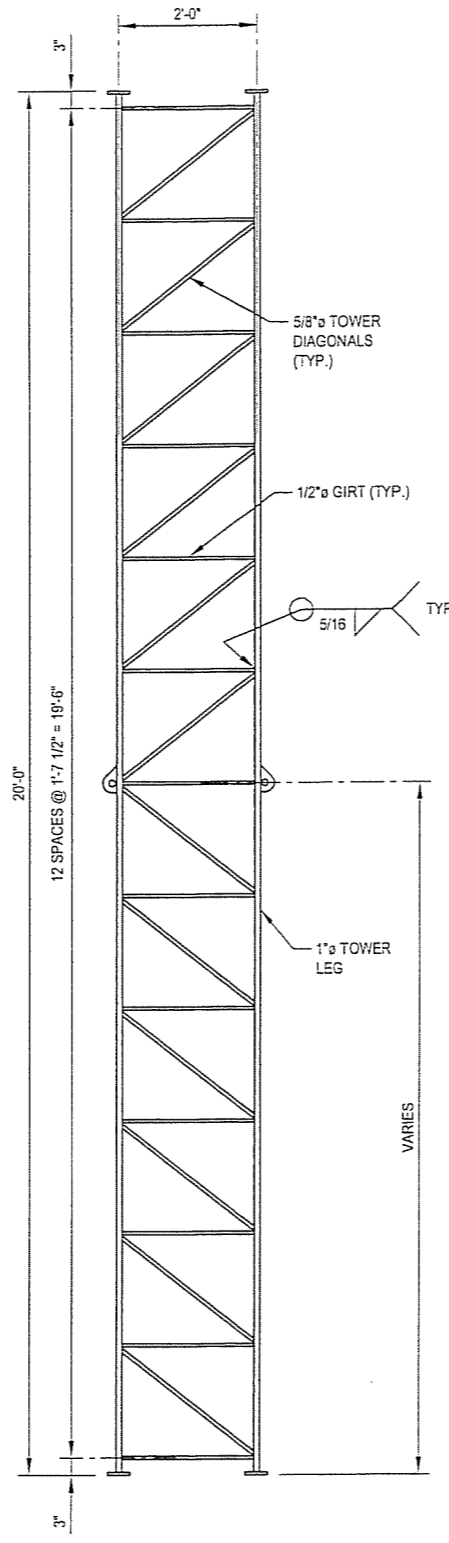
**SPLICE**



**BASE SECTION**



**TYPICAL SECTION**



**TYPICAL SECTION  
(AT GUY PULLOFF)**

3-20-2012

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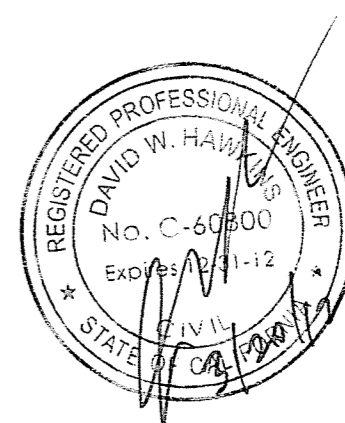
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ORANGE CO., CALIFORNIA  
281' GUYED AM TOWER #3

PROJECT No:	65011-0012
DRAWN BY:	T.A.N.
CHECKED BY:	L.A.P.
APPROVED BY:	K.P.B.
DATE:	12-2-2011



TOWER SECTION  
DETAILS

S-4

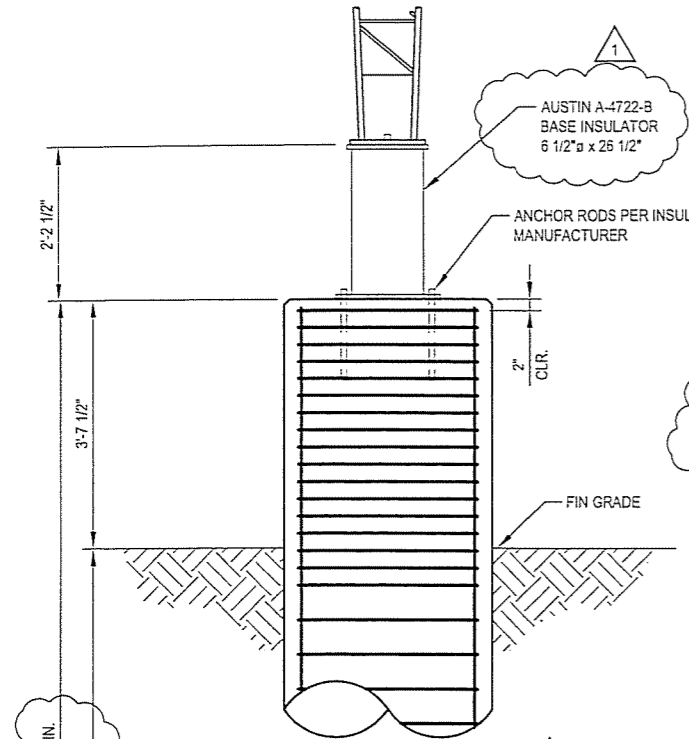
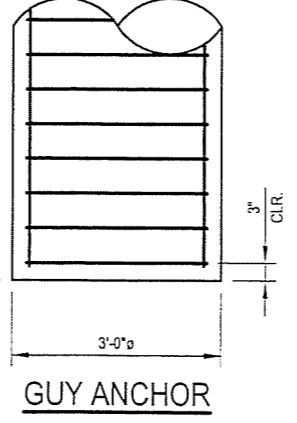
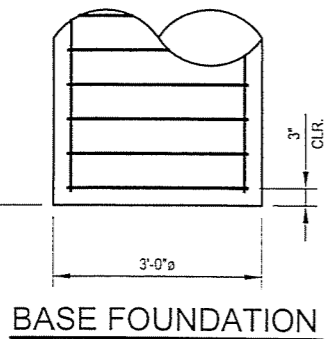
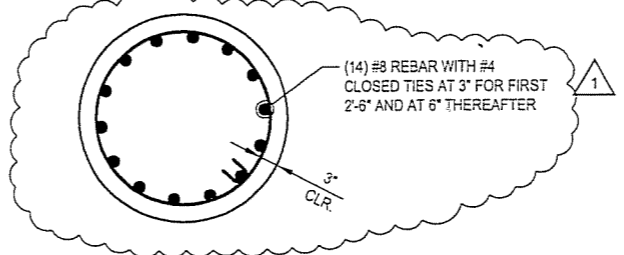
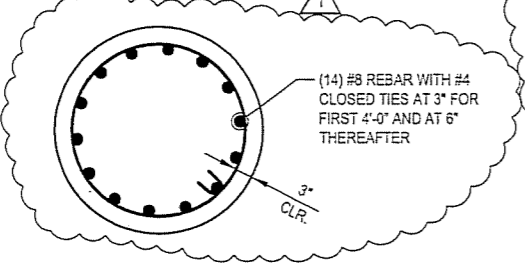
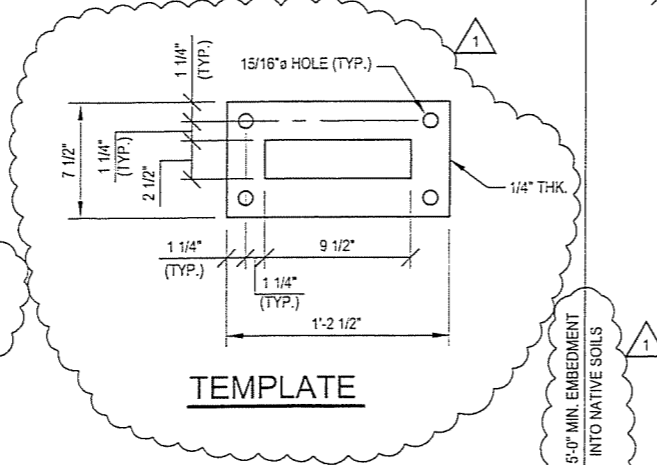
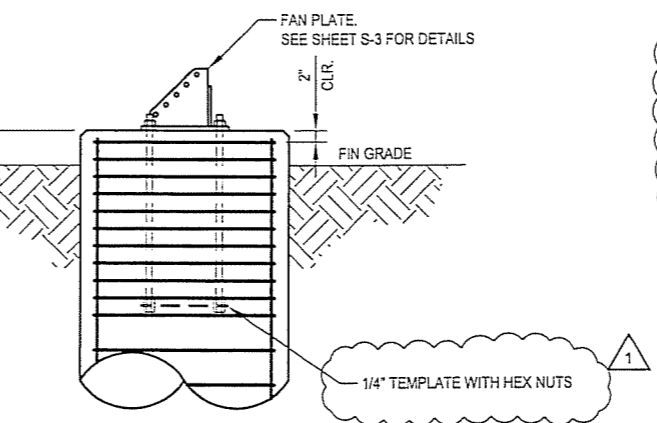
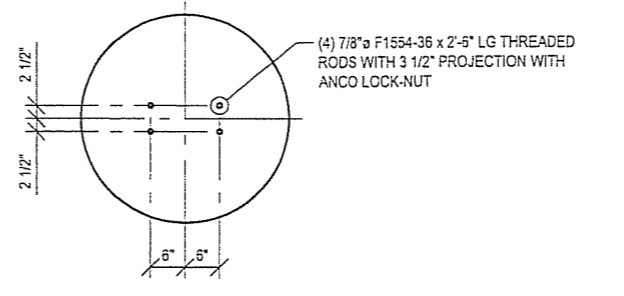
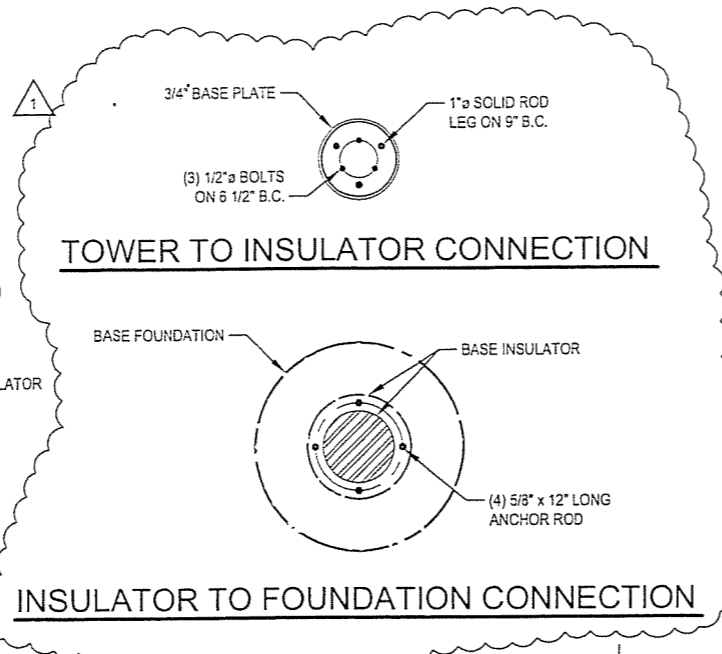
SHEET 4 OF 6

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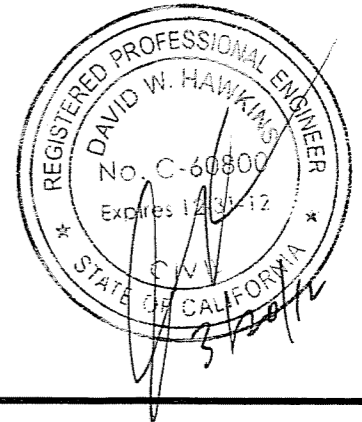
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- FOUNDATION NOTES:**
1. THIS FOUNDATION DESIGN WAS BASED ON CAPACITIES FOR 36" DRILLED PIERS PROVIDED BY ALBUS-KEEFE & ASSOCIATES, INC. IN A LETTER DATED MARCH 20, 2012.
  2. THE FOUNDATION DESIGN HAS BEEN DEVELOPED IN ACCORDANCE WITH GENERALLY ACCEPTED PROFESSIONAL ENGINEERING PRINCIPLES AND PRACTICES.
  3. IF THE CONTRACTOR DISCOVERS ANY SUBSURFACE CONDITIONS THAT ARE NOT AS REPRESENTED, THE GEOTECHNICAL ENGINEER SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE SIGNIFICANCE OF THE DEVIATION.
  4. TOTAL CONCRETE = 15.8 CUBIC YARDS
  5. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF AT LEAST 4,000 PSI AT 28 DAYS.
  6. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A 615 GRADE 60.
  7. WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES AND SAFETY REGULATIONS. THE FOUNDATION CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE LOCAL BUILDING OFFICIALS FOR ANY INSPECTIONS THAT MAY BE REQUIRED.
  8. CONCRETE SHALL HAVE AIR ENTRAINMENT BETWEEN 4 AND 8 PERCENT.
  9. CONCRETE SHALL BE PROPORTIONED AND PRODUCED TO HAVE A SLUMP OF NOT MORE THAN 6" PLUS OR MINUS 1/2" FOR ALL CONCRETE.
  10. WATER CEMENT RATIO = 0.52 MAXIMUM.
  11. FLY ASH CONTENT SHALL NOT EXCEED A MAXIMUM OF 25% OF THE CEMENT WEIGHT.
  12. THE TOP OF THE CONCRETE SHALL BE SLOPED (APPROXIMATELY 1/8" PER FOOT) TO DRAIN. THE EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4 INCH BY 3/4 INCH MINIMUM.



3-20-2012: PLAN COMMENTS



PROJECT No:	65011-0012
DRAWN BY:	T.A.N.
CHECKED BY:	L.A.P.
APPROVED BY:	K.P.B.
DATE:	12-2-2011

TOWER FOUNDATIONS

S-5  
 SHEET 5 OF 6

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TABLE 1704.3 REQUIRED VERIFICATION AND INSPECTION OF STEEL CONSTRUCTION				
VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REFERENCED STANDARD	IBC REFERENCE
1. MATERIAL VERIFICATION OF HIGH-STRENGTH BOLT, NUTS AND WASHERS:				
a. IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS.	-	X	AISC 360, SECTION A3.3 AND APPLICABLE ASTM MATERIAL STANDARDS	-
b. MANUFACTURER'S CERTIFICATE OF COMPLIANCE REQUIRED	-	X	-	-
2. INSPECTION OF HIGH-STRENGTH BOLTING:				
a. SNUG-TIGHT JOINTS	-	X	AISC 360, SECTION M2.5	1704.3.3
b. PRETENSIONED AND SLIP-CRITICAL JOINTS USING TURN-OF-NUT WITH MATCHMARKING, TWIST-OFF BOLT OR DIRECT TENSION INDICATOR METHODS OF INSTALLATION	-	-		
c. PRETENSIONED AND SLIP-CRITICAL JOINTS USING TURN-OF-NUT WITHOUT MATCHMARKING OR CALIBRATED WRENCH METHODS OF INSTALLATION	-	-		
3. MATERIAL VERIFICATION OF STRUCTURAL STEEL AND COLD-FORMED STEEL DECK:				
a. FOR STRUCTURAL STEEL, IDENTIFICATION MARKINGS TO CONFORM TO AISC 360	-	X	AISC 360, SECTION M5.5	
b. FOR OTHER STEEL, IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS	-	X	APPLICABLE ASTM MATERIAL STANDARDS	
c. MANUFACTURER'S CERTIFIED TEST REPORTS	-	X		
4. MATERIAL VERIFICATION OF WELD FILLER MATERIALS:				
a. IDENTIFICATION MARKINGS TO CONFORM TO AWS SPECIFICATION IN THE APPROVED CONSTRUCTION DOCUMENTS	-	X	AISC 360, SECTION A3.5 AND APPLICABLE AWS A5 DOCUMENTS	-
b. MANUFACTURER'S CERTIFICATE OF COMPLIANCE REQUIRED	-	X	-	-
5. INSPECTION OF WELDING:				
a. STRUCTURAL STEEL AND COLD-FORMED STEEL DECK:				
1. COMPLETE AND PARTIAL JOINT PENETRATION GROOVE WELDS	-	-	AWS D1.1	1704.3.1
2. MULTIPASS FILLET WELDS	X	-		
3. SINGLE-PASS FILLET WELDS > 5/16"	X	-		
4. PLUG AND SLOT WELDS	-	-		
5. SINGLE-PASS FILLET WELDS ≤ 5/16"	-	X		
6. FLOOR AND ROOF DECK WELDS	-	-	AWS D1.3	
b. REINFORCING STEEL:				
1. VERIFICATION OF WELDABILITY OF REINFORCING STEEL OTHER THAN ASTM A705	-	X	AWS D1.4 ACI 318: SECTION 3.5.2	
2. REINFORCING STEEL RESISTING FLEXURAL AND AXIAL FORCES IN INTERMEDIATE AND SPECIAL MOMENT FRAMES, AND BOUNDARY ELEMENTS OF SPECIAL STRUCTURAL WALLS OF CONCRETE AND SHEAR REINFORCEMENT	-	-		
3. SHEAR REINFORCEMENT	X	-		
4. OTHER REINFORCING STEEL	-	X		
6. INSPECTION OF STEEL FRAME JOINT DETAILS FOR COMPLIANCE:				
a. DETAILS SUCH AS BRACING AND STIFFENING	-	-		1704.3.2
b. MEMBER LOCATIONS	-	-		
c. APPLICATION OF JOINT DETAILS AT EACH CONNECTION	-	-		

TABLE 1704.4 REQUIRED VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION				
VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REFERENCED STANDARD	IBC REFERENCE
1. INSPECTION OF REINFORCING STEEL, INCLUDING PRESTRESSING TENDONS, AND PLACEMENT	-	X	ACI 318: 3.5, 7.1 - 7.7	1913.4
2. INSPECTION OF REINFORCING STEEL WELDING IN ACCORDANCE WITH TABLE 1704.3, ITEM 5B	-	-	AWS D1.4 ACI 318: 3.5.2	-
3. INSPECTION OF BOLTS TO BE INSTALLED IN CONCRETE PRIOR TO AND DURING PLACEMENT OF CONCRETE WHERE ALLOWABLE LOADS HAVE BEEN INCREASED OR WHERE STRENGTH DESIGN IS USED	X	-	ACI 318: 8.1.3, 21.2.8	1911.5, 1912.1
4. INSPECTION OF ANCHORS INSTALLED IN HARDENED CONCRETE	-	-	ACI 318: 3.3.6, 8.1.3, 21.2.8	1912.1
5. VERIFYING USE OF REQUIRED DESIGN MIX	-	X	ACI 318: CH. 4, 5.2 - 5.4	1904.3, 1913.2, 1913.3
6. AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE	X	-	ASTM C172 ASTM C31 ACI 318: 5.6, 5.8	1913.10
7. INSPECTION OF CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	X	-	ACI 318: 5.9, 5.10	1913.6, 1913.7, 1913.8
8. INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	-	X	ACI 318: 5.11 - 5.13	1913.9
9. INSPECTION OF PRESTRESSED CONCRETE: a. APPLICATION OF PRESTRESSING FORCES b. GROUTING OF BONDED PRESTRESSING TENDONS IN THE SEISMIC-FORCE-RESISTING SYSTEM	-	-	ACI 318: 18.20 ACI 318: 18.15.4	-
10. ERECTION OF PRECAST CONCRETE MEMBERS	-	-	ACI 318: CH. 16	-
11. VERIFICATION OF IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST-TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS	-	-	ACI 318: 6.2	-
12. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED	-	X	ACI 318: 6.1.1	-

TABLE 1704.7 REQUIRED VERIFICATION AND INSPECTION OF SOILS		
VERIFICATION AND INSPECTION TASK	CONTINUOUS DURING TASK LISTED	PERIODICALLY DURING TASK LISTED
1. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY	-	-
2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL	-	X
3. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS	-	-
4. VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL	-	-
5. PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY	-	-

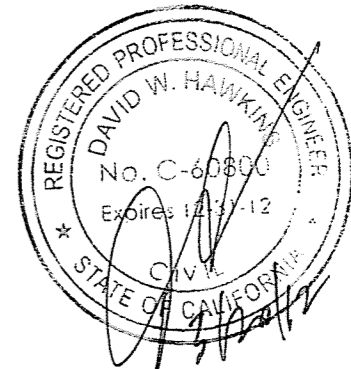
TABLE 1704.9 REQUIRED VERIFICATION AND INSPECTION OF PIER FOUNDATION		
VERIFICATION AND INSPECTION TASK	CONTINUOUS DURING TASK LISTED	PERIODICALLY DURING TASK LISTED
1. OBSERVE DRILLING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH PIER.	X	-
2. VERIFY PLACEMENT LOCATIONS AND PLUMBNESS, CONFIRM PIER DIAMETERS, BELL DIAMETERS (IF APPLICABLE), LENGTHS, EMBEDMENT INTO ROCK (IF APPLICABLE) AND ADEQUATE END BEARING STRATA CAPACITY. RECORD CONCRETE OR GROUT VOLUMES.	X	-
3. FOR CONCRETE PIERS, PERFORM ADDITIONAL INSPECTIONS IN ACCORDANCE WITH SECTION 1704.4.	-	-

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 281' GUYED AM TOWER #3



PROJECT No: 55011-0012  
 DRAWN BY: T.A.N.  
 CHECKED BY: L.A.P.  
 APPROVED BY: K.P.B.  
 DATE: 12-2-2011

SPECIAL  
 INSPECTION

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