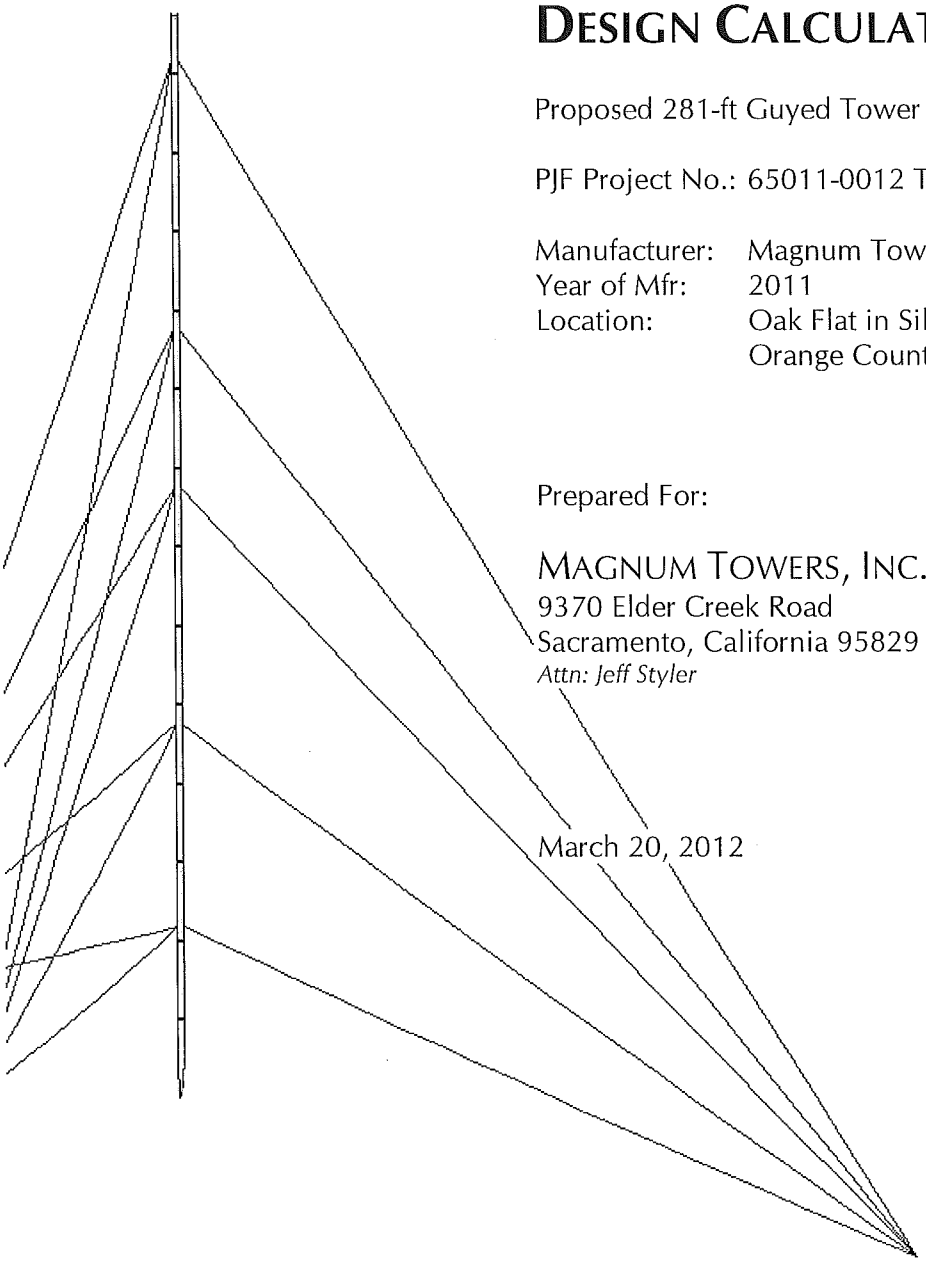
PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street · Suite 1500 · Columbus, Ohio 43215



DESIGN CALCULATIONS

Proposed 281-ft Guyed Tower AM Array

PJF Project No.: 65011-0012 Tower #2

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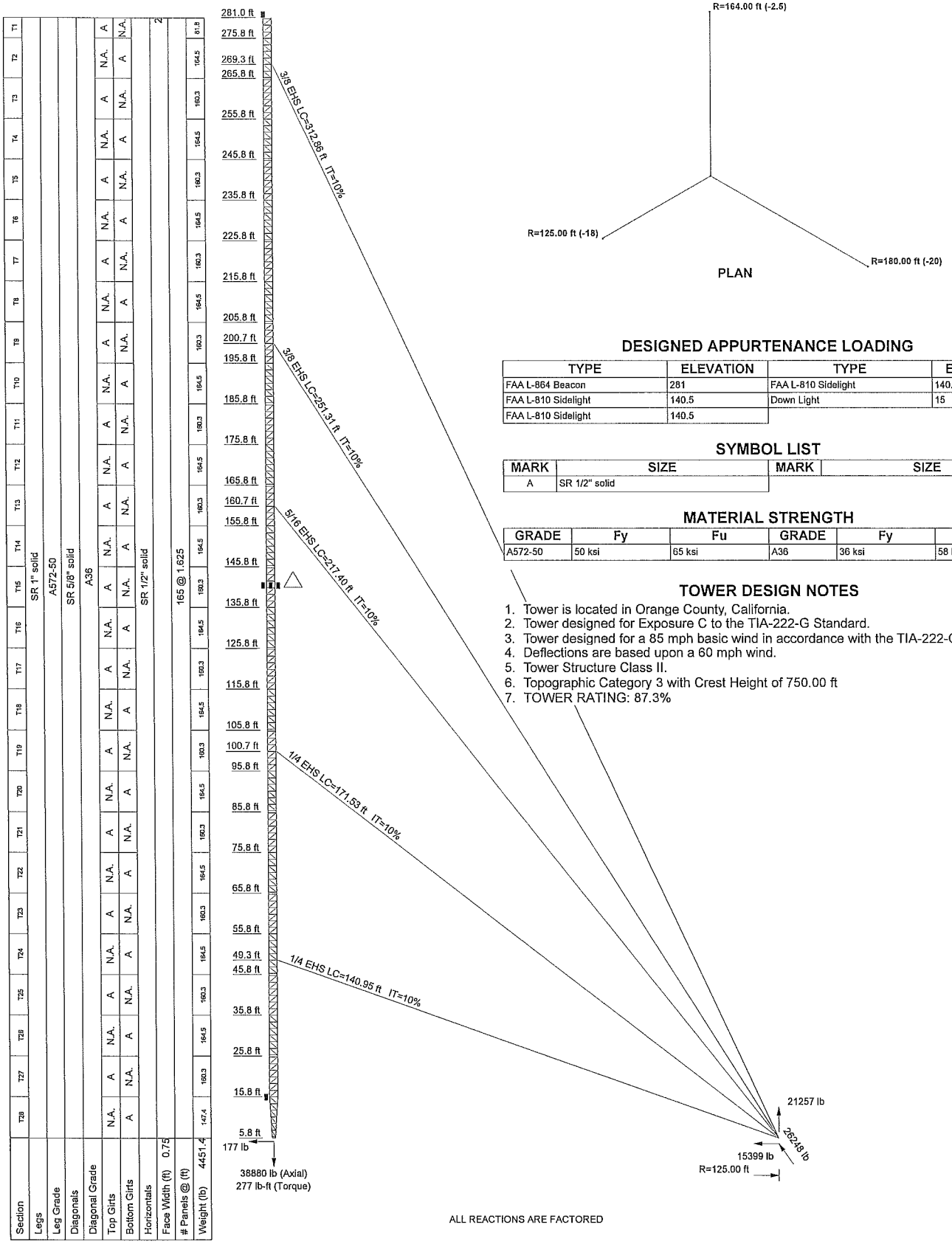
Reviewed by:
David Hawkins, P.E.
Department Manager
dhawkins@pjfweb.com



PLAN

Section	T28	T27	T26	T25	T24	T23	T22	T21	T20	T19	T18	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	SR 1" solid																											
Leg Grade	A572-50																											
Diagonals	SR 5/8" solid																											
Diagonal Grade	A36																											
Top Girts	N.A.	A	N.A.	A	N.A.	A	N.A.	A	N.A.	A	N.A.	A	N.A.	A	N.A.	A	N.A.	A	N.A.	A	N.A.	A	N.A.	A	N.A.	A	N.A.	A
Bottom Girts	A	N.A.	A	N.A.	A	N.A.	A	N.A.	A	N.A.	A	N.A.	A	N.A.	A	N.A.	A	N.A.	A	N.A.	A	N.A.	A	N.A.	A	N.A.	A	N.A.
Horizontals	SR 1/2" solid																											
Face Width (ft)	2																											
# Panels @ (ft)	0.75								165 @ 1.625																			
Weight (lb)	4451.4	147.4	180.3	164.5	180.3	164.5	180.3	164.5	180.3	164.5	180.3	164.5	180.3	164.5	180.3	164.5	180.3	164.5	180.3	164.5	180.3	164.5	180.3	164.5	180.3	164.5	180.3	81.8

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
FAA L-864 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

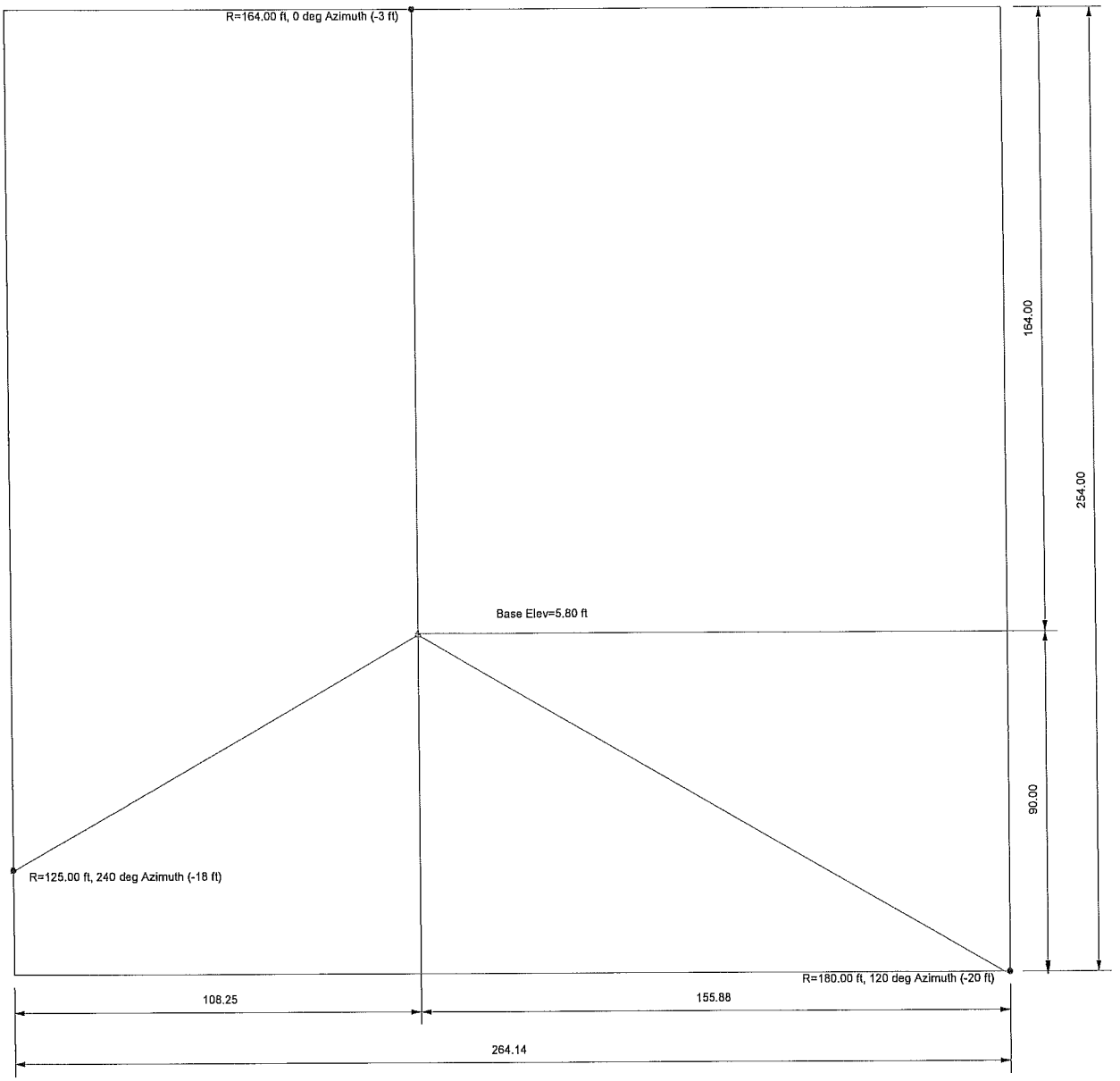
1. Tower is located in Orange County, California.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 85 mph basic wind in accordance with the TIA-222-G Standard.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 3 with Crest Height of 750.00 ft
7. TOWER RATING: 87.3%

ALL REACTIONS ARE FACTORED

Paul J. Ford and Company
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*		
Project: *Oak Flat in Silverado Canyon Twr#2 (PJF# 65011-0012*		
Client: Magnum Towers, Inc.	Drawn by: Larry A. Paxton	App'd:
Code: TIA-222-G	Date: 12/02/11	Scale: NTS
Path: T:\650 Magnum Towers\2011\65011-0012 Orange Co., CA\65011-0012 Tower 2.eri		Dwg No. E-1

Plot Plan



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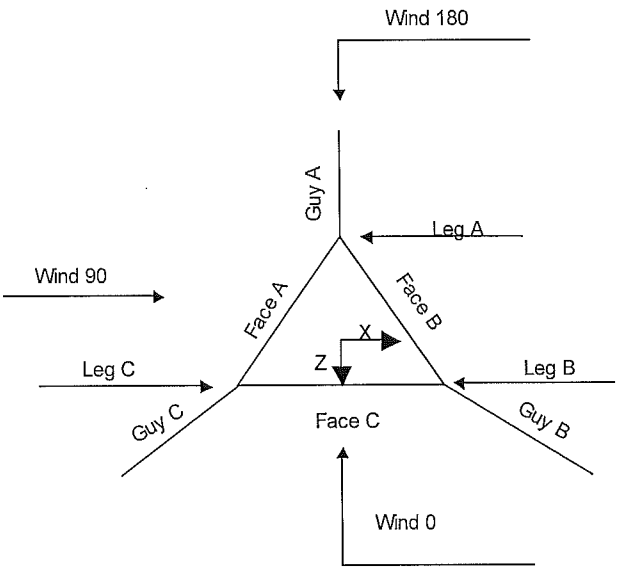
Project: *Oak Flat in Silverado Canyon Twr#2 (PJF# 65011-0012*			
Client: Magnum Towers, Inc.	Drawn by: Larry A. Paxton	App'd:	
Code: TIA-222-G	Date: 12/02/11	Scale: NTS	
Path: T:\650 Magnum Towers\2011\65011-0012 Orange Co., CA\65011-0012 Tower 2.ecf		Dwg No. E-2	

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*
	ft			*ft*		*ft*
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

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

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
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	Solid Round	5/8" solid	A36

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 (50 ksi)	Solid Round	5/8" solid	(36 ksi) A36 (36 ksi)
T28 15.80-5.80	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	5/8" solid	A36 (36 ksi)

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)

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)

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) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 281.00-275.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T2 275.80-265.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T3 265.80-255.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T4 255.80-245.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T5 245.80-235.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T6 235.80-225.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T7 225.80-215.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T8 215.80-205.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T9 205.80-195.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T10 195.80-185.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T11 185.80-175.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T12 175.80-165.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T13 165.80-155.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T14 155.80-145.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T15 145.80-135.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T16 135.80-125.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T17 125.80-115.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T18 115.80-105.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T19 105.80-95.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T20 95.80-85.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T21 85.80-75.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T22 75.80-65.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T23 65.80-55.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T24 55.80-45.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T25 45.80-35.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T26 35.80-25.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T27 25.80-15.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000
T28 15.80-5.80	0.00	0.000	A36 (36 ksi)	1	1	1.05	0.000	0.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 281.00-275.80	No	No	1	1 1	0.7 0.7	0.7 0.7	0.7 0.7	0.7 0.7	1 1	1 1
T2 275.80-265.80	No	No	1	1 1	0.7 0.7	0.7 0.7	0.7 0.7	0.7 0.7	1 1	1 1
T3 265.80-255.80	No	No	1	1 1	0.7 0.7	0.7 0.7	0.7 0.7	0.7 0.7	1 1	1 1
T4 255.80-245.80	No	No	1	1 1	0.7 0.7	0.7 0.7	0.7 0.7	0.7 0.7	1 1	1 1
T5 245.80-235.80	No	No	1	1 1	0.7 0.7	0.7 0.7	0.7 0.7	0.7 0.7	1 1	1 1
T6 235.80-225.80	No	No	1	1 1	0.7 0.7	0.7 0.7	0.7 0.7	0.7 0.7	1 1	1 1
T7 225.80-215.80	No	No	1	1 1	0.7 0.7	0.7 0.7	0.7 0.7	0.7 0.7	1 1	1 1
T8 215.80-205.80	No	No	1	1 1	0.7 0.7	0.7 0.7	0.7 0.7	0.7 0.7	1 1	1 1
T9 205.80-195.80	No	No	1	1 1	0.7 0.7	0.7 0.7	0.7 0.7	0.7 0.7	1 1	1 1
T10 195.80-185.80	No	No	1	1 1	0.7 0.7	0.7 0.7	0.7 0.7	0.7 0.7	1 1	1 1
T11 185.80-175.80	No	No	1	1 1	0.7 0.7	0.7 0.7	0.7 0.7	0.7 0.7	1 1	1 1
T12 175.80-165.80	No	No	1	1 1	0.7 0.7	0.7 0.7	0.7 0.7	0.7 0.7	1 1	1 1
T13 165.80-155.80	No	No	1	1 1	0.7 0.7	0.7 0.7	0.7 0.7	0.7 0.7	1 1	1 1
T14 155.80-145.80	No	No	1	1 1	0.7 0.7	0.7 0.7	0.7 0.7	0.7 0.7	1 1	1 1
T15 145.80-135.80	No	No	1	1 1	0.7 0.7	0.7 0.7	0.7 0.7	0.7 0.7	1 1	1 1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T16	No	No	1	1	0.7	0.7	0.7	0.7	1	1
135.80-125.80				1	0.7	0.7	0.7	0.7	1	1
T17	No	No	1	1	0.7	0.7	0.7	0.7	1	1
125.80-115.80				1	0.7	0.7	0.7	0.7	1	1
T18	No	No	1	1	0.7	0.7	0.7	0.7	1	1
115.80-105.80				1	0.7	0.7	0.7	0.7	1	1
T19	No	No	1	1	0.7	0.7	0.7	0.7	1	1
105.80-95.80				1	0.7	0.7	0.7	0.7	1	1
T20	No	No	1	1	0.7	0.7	0.7	0.7	1	1
95.80-85.80				1	0.7	0.7	0.7	0.7	1	1
T21	No	No	1	1	0.7	0.7	0.7	0.7	1	1
85.80-75.80				1	0.7	0.7	0.7	0.7	1	1
T22	No	No	1	1	0.7	0.7	0.7	0.7	1	1
75.80-65.80				1	0.7	0.7	0.7	0.7	1	1
T23	No	No	1	1	0.7	0.7	0.7	0.7	1	1
65.80-55.80				1	0.7	0.7	0.7	0.7	1	1
T24	No	No	1	1	0.7	0.7	0.7	0.7	1	1
55.80-45.80				1	0.7	0.7	0.7	0.7	1	1
T25	No	No	1	1	0.7	0.7	0.7	0.7	1	1
45.80-35.80				1	0.7	0.7	0.7	0.7	1	1
T26	No	No	1	1	0.7	0.7	0.7	0.7	1	1
35.80-25.80				1	0.7	0.7	0.7	0.7	1	1
T27	No	No	1	1	0.7	0.7	0.7	0.7	1	1
25.80-15.80				1	0.7	0.7	0.7	0.7	1	1
T28	No	No	1	1	0.7	0.7	0.7	0.7	1	1
15.80-5.80				1	0.7	0.7	0.7	0.7	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
281.00-275.80														
T2	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
275.80-265.80														
T3	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
265.80-255.80														
T4	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
255.80-245.80														
T5	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
245.80-235.80														
T6	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
235.80-225.80														
T7	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
225.80-215.80														
T8	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
215.80-205.80														
T9	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
205.80-195.80														

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T10	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
195.80-185.80														
T11	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
185.80-175.80														
T12	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
175.80-165.80														
T13	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
165.80-155.80														
T14	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
155.80-145.80														
T15	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
145.80-135.80														
T16	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
135.80-125.80														
T17	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
125.80-115.80														
T18	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
115.80-105.80														
T19	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
105.80-95.80														
T20	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
95.80-85.80														
T21	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
85.80-75.80														
T22	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
75.80-65.80														
T23	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
65.80-55.80														
T24	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
55.80-45.80														
T25	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
45.80-35.80														
T26	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
35.80-25.80														
T27	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
25.80-15.80														
T28 15.80-5.80	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75

Tower Section Geometry *(cont'd)*

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.
T1	Flange	0.000	0	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
281.00-275.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T2	Flange	0.625	2	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
275.80-265.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T3	Flange	0.000	0	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
265.80-255.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T4	Flange	0.625	2	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
255.80-245.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T5	Flange	0.000	0	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
245.80-235.80		A325N		A325N		A325N		A325N		A325N		A325N		A325N	

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 15.80-5.80	Flange	0.625	0	0.000	0	0.000	0	0.000	0	0.625	0	0.000	0	0.625	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
269.3	EHS	A	3/8	1540	10%	21000	0.27	316.56	164.00	0.000	-3	100%
		B	3/8	1540	10%	21000	0.27	339.81	180.00	0.000	-20	100%
		C	3/8	1540	10%	21000	0.27	312.57	125.00	0.000	-18	100%

200.675	EHS	A	3/8	1540	10%	21000	0.27	260.15	164.00	0.000	-3	100%
		B	3/8	1540	10%	21000	0.27	283.79	180.00	0.000	-20	100%
		C	3/8	1540	10%	21000	0.27	251.08	125.00	0.000	-18	100%
160.675	EHS	A	5/16	1120	10%	21000	0.20	230.33	164.00	0.000	-3	100%
		B	5/16	1120	10%	21000	0.20	254.00	180.00	0.000	-20	100%
		C	5/16	1120	10%	21000	0.20	217.21	125.00	0.000	-18	100%
100.675	EHS	A	1/4	665	10%	21000	0.12	192.61	164.00	0.000	-3	100%
		B	1/4	665	10%	21000	0.12	215.57	180.00	0.000	-20	100%
		C	1/4	665	10%	21000	0.12	171.38	125.00	0.000	-18	100%
49.3	EHS	A	1/4	665	10%	21000	0.12	170.74	164.00	0.000	-3	100%
		B	1/4	665	10%	21000	0.12	191.64	180.00	0.000	-20	100%
		C	1/4	665	10%	21000	0.12	140.83	125.00	0.000	-18	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	1	A	0.28	0.389	
					B	0.28	0.388	
					C	0.28	0.390	
200.675	3	6.000	4.000	1	A	0.28	0.388	
					B	0.28	0.387	
					C	0.28	0.389	
160.675	3	6.000	4.000	1	A	0.22	0.328	
					B	0.22	0.326	
					C	0.22	0.329	
100.675	3	6.000	4.000	1	A	0.14	0.269	
					B	0.13	0.267	
					C	0.14	0.271	
49.3	3	6.000	4.000	1	A	0.14	0.271	
					B	0.14	0.269	
					C	0.14	0.276	

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
269.3	A	133	39.76		
	B	125	39.70		
	C	126	39.71		
200.675	A	99	39.31		
	B	90	39.08		
	C	91	39.11		
160.675	A	79	38.69		

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
	B	70	38.28		
	C	71	38.33		
100.675	A	49	36.76		
	B	40	35.80		
	C	41	35.93		
49.3	A	23	32.88		
	B	15	30.46		
	C	16	30.64		

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	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 ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	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

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 @ 125 ft Elev -18 ft Azimuth 240 deg	Max. Vert	22	-3794	-1952	1127
	Max. H_x	10	-4106	-1404	811
	Max. H_z	4	-21257	-13343	7687
	Min. Vert	4	-21257	-13343	7687
	Min. H_x	4	-21257	-13343	7687
	Min. H_z	10	-4106	-1404	811
Guy B @ 180 ft Elev -20 ft Azimuth 120 deg	Max. Vert	18	-2281	1737	1005
	Max. H_x	12	-14468	12868	7450
	Max. H_z	12	-14468	12868	7450
	Min. Vert	12	-14468	12868	7450
	Min. H_x	6	-2666	1265	736
	Min. H_z	6	-2666	1265	736
Guy A @ 164 ft Elev -2.5 ft Azimuth 0 deg	Max. Vert	14	-2262	-2	-1992
	Max. H_x	11	-8881	1093	-8427
	Max. H_z	2	-2461	-5	-1301
	Min. Vert	8	-14768	-30	-15159
	Min. H_x	5	-8654	-1125	-8279
	Min. H_z	8	-14768	-30	-15159
Mast	Max. Vert	5	38880	-95	-64
	Max. H_x	12	34057	100	86
	Max. H_z	3	38364	25	175
	Max. M_x	1	0	3	-1
	Max. M_z	1	0	3	-1
	Max. Torsion	21	-21	54	-81
	Min. Vert	1	17731	3	-1
	Min. H_x	5	38880	-95	-64
	Min. H_z	8	34970	-6	-148
	Min. M_x	1	0	3	-1
	Min. M_z	1	0	3	-1
	Min. Torsion	3	-277	25	175

Tower Mast Reaction Summary

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Dead Only	17731	-3	1	0	0	47
1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy	37564	-5	-133	0	0	153
1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy	38364	-25	-175	0	0	277
1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy	38516	74	58	0	0	121
1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy	38880	95	64	0	0	68
1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy	38062	82	78	0	0	155
1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy	36585	34	121	0	0	237
1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy	34970	6	148	0	0	159
1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy	34934	-8	100	0	0	63
1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy	35381	11	-1	0	0	114
1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy	34594	-58	-54	0	0	165
1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy	34057	-100	-86	0	0	85
1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy	35762	-59	-103	0	0	34
Dead+Wind 0 deg - Service+Guy	20414	-11	-115	0	0	68
Dead+Wind 30 deg - Service+Guy	21254	28	-88	0	0	104
Dead+Wind 60 deg - Service+Guy	21757	62	-40	0	0	73
Dead+Wind 90 deg - Service+Guy	21192	87	12	0	0	35
Dead+Wind 120 deg - Service+Guy	20403	92	62	0	0	56
Dead+Wind 150 deg - Service+Guy	20632	48	87	0	0	86
Dead+Wind 180 deg - Service+Guy	21054	-6	93	0	0	54
Dead+Wind 210 deg - Service+Guy	20889	-54	81	0	0	21
Dead+Wind 240 deg - Service+Guy	20540	-90	51	0	0	50
Dead+Wind 270 deg - Service+Guy	20649	-98	3	0	0	85
Dead+Wind 300 deg - Service+Guy	20750	-83	-46	0	0	60
Dead+Wind 330 deg - Service+Guy	20437	-51	-89	0	0	31

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	281 - 275.8	43.42	5	0.908	0.583
T2	275.8 - 265.8	42.45	5	0.907	0.592
T3	265.8 - 255.8	40.62	5	0.913	0.602
T4	255.8 - 245.8	38.68	5	1.006	0.748
T5	245.8 - 235.8	36.46	5	1.138	0.629
T6	235.8 - 225.8	33.92	5	1.275	0.777
T7	225.8 - 215.8	31.11	5	1.374	0.652
T8	215.8 - 205.8	28.16	5	1.393	0.801
T9	205.8 - 195.8	25.25	5	1.299	0.668
T10	195.8 - 185.8	22.70	5	1.114	0.830
T11	185.8 - 175.8	20.53	5	0.967	0.597
T12	175.8 - 165.8	18.65	5	0.819	0.862
T13	165.8 - 155.8	17.10	5	0.646	0.621
T14	155.8 - 145.8	15.95	5	0.462	0.889
T15	145.8 - 135.8	15.13	5	0.386	0.578
T16	135.8 - 125.8	14.36	5	0.388	0.920
T17	125.8 - 115.8	13.51	5	0.431	0.601
T18	115.8 - 105.8	12.62	2	0.475	0.945
T19	105.8 - 95.8	11.72	13	0.481	0.618
T20	95.8 - 85.8	11.08	13	0.453	0.954
T21	85.8 - 75.8	10.42	13	0.481	0.588
T22	75.8 - 65.8	9.57	13	0.540	0.971
T23	65.8 - 55.8	8.49	13	0.597	0.597
T24	55.8 - 45.8	7.22	13	0.618	0.982
T25	45.8 - 35.8	5.93	13	0.610	0.618
T26	35.8 - 25.8	4.66	13	0.640	1.041
T27	25.8 - 15.8	3.26	13	0.707	0.609
T28	15.8 - 5.8	1.70	13	0.775	1.068

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	1246	20709	0.060 ✓	1	Bolt Tension
T4	255.8	Leg	A325N	0.625	2	1827	20709	0.088 ✓	1	Bolt Tension
T6	235.8	Leg	A325N	0.625	2	1280	20709	0.062 ✓	1	Bolt Tension
T8	215.8	Leg	A325N	0.625	2	1945	20709	0.094 ✓	1	Bolt Tension
T10	195.8	Leg	A325N	0.625	2	2415	20709	0.117 ✓	1	Bolt Tension
T12	175.8	Leg	A325N	0.625	2	2826	20709	0.136 ✓	1	Bolt Tension
T14	155.8	Leg	A325N	0.625	2	1959	20709	0.095 ✓	1	Bolt Tension
T16	135.8	Leg	A325N	0.625	2	2224	20709	0.107 ✓	1	Bolt Tension
T18	115.8	Leg	A325N	0.625	2	1915	20709	0.092 ✓	1	Bolt Tension
T20	95.8	Leg	A325N	0.625	2	2416	20709	0.117 ✓	1	Bolt Tension
T22	75.8	Leg	A325N	0.625	2	2459	20709	0.119 ✓	1	Bolt Tension
T24	55.8	Leg	A325N	0.625	2	2431	20709	0.117 ✓	1	Bolt Tension
T26	35.8	Leg	A325N	0.625	2	2554	20709	0.123 ✓	1	Bolt Tension

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T_u lb	Allowable ϕT_n lb	Required S.F.	Actual S.F.
T2	269.30 (A) (1119)	3/8 EHS	1540	15400	6371	9240	1.000	1.450 ✓
	269.30 (B) (1118)	3/8 EHS	1540	15400	6118	9240	1.000	1.510 ✓
	269.30 (C) (1117)	3/8 EHS	1540	15400	8068	9240	1.000	1.145 ✓
T9	200.68 (A) (1122)	3/8 EHS	1540	15400	5853	9240	1.000	1.579 ✓
	200.68 (B) (1121)	3/8 EHS	1540	15400	5668	9240	1.000	1.630 ✓
	200.68 (C) (1120)	3/8 EHS	1540	15400	7439	9240	1.000	1.242 ✓
T13	160.68 (A) (1125)	5/16 EHS	1120	11200	4243	6720	1.000	1.584 ✓
	160.68 (B) (1124)	5/16 EHS	1120	11200	4182	6720	1.000	1.607 ✓
	160.68 (C) (1123)	5/16 EHS	1120	11200	5266	6720	1.000	1.276 ✓
T19	100.68 (A) (1128)	1/4 EHS	665	6650	2986	3990	1.000	1.336 ✓
	100.68 (B) (1127)	1/4 EHS	665	6650	2970	3990	1.000	1.343 ✓
	100.68 (C) (1126)	1/4 EHS	665	6650	3427	3990	1.000	1.164 ✓
T24	49.30 (A) (1131)	1/4 EHS	665	6650	2398	3990	1.000	1.664 ✓
	49.30 (B) (1130)	1/4 EHS	665	6650	2403	3990	1.000	1.660 ✓
	49.30 (C) (1129)	1/4 EHS	665	6650	2739	3990	1.000	1.457 ✓

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	Mast Stability Index	P_u lb	ϕP_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	-391	22652	0.017 [1] ✓
T2	275.8 - 265.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-7476	22652	0.330 [1] ✓
T3	265.8 - 255.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	0.98	-9966	22149	0.450 [1] ✓
T4	255.8 - 245.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	0.98	-10964	22201	0.494 [1] ✓
T5	245.8 - 235.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	0.98	-10965	22201	0.494 [1] ✓
T6	235.8 - 225.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	0.98	-9877	22161	0.446 [1] ✓
T7	225.8 - 215.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	0.97	-7679	22025	0.349 [1] ✓

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	Mast Stability Index	P_u lb	ϕP_n 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	0.98	-11669	22187	0.526 [1] ✓
T9	205.8 - 195.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	0.98	-15852	22100	0.717 [1] ✓
T10	195.8 - 185.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-15003	22652	0.662 [1] ✓
T11	185.8 - 175.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-15022	22652	0.663 [1] ✓
T12	175.8 - 165.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-16954	22652	0.748 [1] ✓
T13	165.8 - 155.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-18352	22652	0.810 [1] ✓
T14	155.8 - 145.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-15655	22652	0.691 [1] ✓
T15	145.8 - 135.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-12273	22652	0.542 [1] ✓
T16	135.8 - 125.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-13343	22652	0.589 [1] ✓
T17	125.8 - 115.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-13372	22652	0.590 [1] ✓
T18	115.8 - 105.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-12362	22652	0.546 [1] ✓
T19	105.8 - 95.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-13109	22652	0.579 [1] ✓
T20	95.8 - 85.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-14495	22652	0.640 [1] ✓
T21	85.8 - 75.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-15602	22652	0.689 [1] ✓
T22	75.8 - 65.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-15508	22652	0.685 [1] ✓
T23	65.8 - 55.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-14754	22652	0.651 [1] ✓
T24	55.8 - 45.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-15587	22652	0.688 [1] ✓
T25	45.8 - 35.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-14586	22652	0.644 [1] ✓
T26	35.8 - 25.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-15321	22652	0.676 [1] ✓
T27	25.8 - 15.8	1" solid	10.00	1.63	78.0 K=1.00	0.785	1.00	-15469	22652	0.683 [1] ✓
T28	15.8 - 5.8	1" solid	10.03	1.63	78.2 K=1.00	0.785	1.00	-14960	22600	0.662 [1] ✓

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n 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	-184	3930	0.047 [1] ✓

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_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	-770	3930	0.196 [1] ✓
T3	265.8 - 255.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-692	3930	0.176 [1] ✓
T4	255.8 - 245.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-345	3930	0.088 [1] ✓
T5	245.8 - 235.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-259	3930	0.066 [1] ✓
T6	235.8 - 225.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-672	3930	0.171 [1] ✓
T7	225.8 - 215.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-762	3930	0.194 [1] ✓
T8	215.8 - 205.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-1237	3930	0.315 [1] ✓
T9	205.8 - 195.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-1217	3930	0.310 [1] ✓
T10	195.8 - 185.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-300	3930	0.076 [1] ✓
T11	185.8 - 175.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-143	3930	0.036 [1] ✓
T12	175.8 - 165.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-495	3930	0.126 [1] ✓
T13	165.8 - 155.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-818	3930	0.208 [1] ✓
T14	155.8 - 145.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-848	3930	0.216 [1] ✓
T15	145.8 - 135.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-628	3930	0.160 [1] ✓
T16	135.8 - 125.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-337	3930	0.086 [1] ✓
T17	125.8 - 115.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-209	3930	0.053 [1] ✓
T18	115.8 - 105.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-700	3930	0.178 [1] ✓
T19	105.8 - 95.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-609	3930	0.155 [1] ✓
T20	95.8 - 85.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-626	3930	0.159 [1] ✓
T21	85.8 - 75.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-275	3930	0.070 [1] ✓
T22	75.8 - 65.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-486	3930	0.124 [1] ✓
T23	65.8 - 55.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-474	3930	0.121 [1] ✓
T24	55.8 - 45.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-921	3930	0.234 [1] ✓
T25	45.8 - 35.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-598	3930	0.152 [1] ✓
T26	35.8 - 25.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-508	3930	0.129 [1] ✓
T27	25.8 - 15.8	5/8" solid	2.58	2.47	132.8 K=0.70	0.307	-211	3930	0.054 [1] ✓

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n 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	-1026	6483	0.158 [1] ✓

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n 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	-130	2656	0.049 [1] ✓
T2	275.8 - 265.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-523	2656	0.197 [1] ✓
T3	265.8 - 255.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-478	2656	0.180 [1] ✓
T4	255.8 - 245.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-226	2656	0.085 [1] ✓
T5	245.8 - 235.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-209	2656	0.079 [1] ✓
T6	235.8 - 225.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-409	2656	0.154 [1] ✓
T7	225.8 - 215.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-598	2656	0.225 [1] ✓
T8	215.8 - 205.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-806	2656	0.303 [1] ✓
T9	205.8 - 195.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-904	2656	0.340 [1] ✓
T10	195.8 - 185.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-275	2656	0.103 [1] ✓
T11	185.8 - 175.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-260	2656	0.098 [1] ✓
T12	175.8 - 165.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-294	2656	0.111 [1] ✓
T13	165.8 - 155.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-720	2656	0.271 [1] ✓
T14	155.8 - 145.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-566	2656	0.213 [1] ✓
T15	145.8 - 135.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-506	2656	0.190 [1] ✓
T16	135.8 - 125.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-231	2656	0.087 [1] ✓
T17	125.8 - 115.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-232	2656	0.087 [1] ✓
T18	115.8 - 105.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-376	2656	0.142 [1] ✓
T19	105.8 - 95.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-567	2656	0.213 [1] ✓
T20	95.8 - 85.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-366	2656	0.138 [1] ✓
T21	85.8 - 75.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-293	2656	0.110 [1] ✓

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T22	75.8 - 65.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-270	2656	0.102 [1] ✓
T23	65.8 - 55.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-486	2656	0.183 [1] ✓
T24	55.8 - 45.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-474	2656	0.178 [1] ✓
T25	45.8 - 35.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-610	2656	0.230 [1] ✓
T26	35.8 - 25.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-265	2656	0.100 [1] ✓
T27	25.8 - 15.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-289	2656	0.109 [1] ✓
T28	15.8 - 5.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-268	2656	0.101 [1] ✓

[1] $P_u / \phi P_n$ controls

Top Girt Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T1	281 - 275.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-64	2656	0.024 [1] ✓
T3	265.8 - 255.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-303	2656	0.114 [1] ✓
T5	245.8 - 235.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-44	2656	0.017 [1] ✓
T7	225.8 - 215.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-282	2656	0.106 [1] ✓
T9	205.8 - 195.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-546	2656	0.205 [1] ✓
T11	185.8 - 175.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-49	2656	0.018 [1] ✓
T13	165.8 - 155.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-222	2656	0.083 [1] ✓
T15	145.8 - 135.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-298	2656	0.112 [1] ✓
T17	125.8 - 115.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-50	2656	0.019 [1] ✓
T19	105.8 - 95.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-305	2656	0.115 [1] ✓
T21	85.8 - 75.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-194	2656	0.073 [1] ✓
T23	65.8 - 55.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-239	2656	0.090 [1] ✓
T25	45.8 - 35.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-323	2656	0.122 [1] ✓
T27	25.8 - 15.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-124	2656	0.047 [1] ✓

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n 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	-285	2656	0.107 [1]
T4	255.8 - 245.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-42	2656	0.016 [1]
T6	235.8 - 225.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-257	2656	0.097 [1]
T8	215.8 - 205.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-471	2656	0.177 [1]
T10	195.8 - 185.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-25	2656	0.010 [1]
T12	175.8 - 165.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-152	2656	0.057 [1]
T14	155.8 - 145.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-297	2656	0.112 [1]
T16	135.8 - 125.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-10	2656	0.004 [1]
T18	115.8 - 105.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-262	2656	0.099 [1]
T20	95.8 - 85.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-106	2656	0.040 [1]
T22	75.8 - 65.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-115	2656	0.043 [1]
T24	55.8 - 45.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-264	2656	0.099 [1]
T26	35.8 - 25.8	1/2" solid	2.00	1.92	128.8 K=0.70	0.196	-39	2656	0.015 [1]
T28	15.8 - 5.8	1/2" solid	0.78	0.70	46.9 K=0.70	0.196	-105	5666	0.019 [1]

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	281 - 275.8	1" solid	5.20	1.63	78.0	0.785	306	35343	0.009 [1]
T2	275.8 - 265.8	1" solid	10.00	1.63	78.0	0.785	1257	35343	0.036 [1]
T3	265.8 - 255.8	1" solid	10.00	1.63	78.0	0.785	1301	35343	0.037 [1]
T4	255.8 - 245.8	1" solid	10.00	1.63	78.0	0.785	2322	35343	0.066 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T5	245.8 - 235.8	1" solid	10.00	1.63	78.0	0.785	2344	35343	0.066 [1]
T6	235.8 - 225.8	1" solid	10.00	1.63	78.0	0.785	1525	35343	0.043 [1]
T8	215.8 - 205.8	1" solid	10.00	1.63	78.0	0.785	3045	35343	0.086 [1]
T9	205.8 - 195.8	1" solid	10.00	1.63	78.0	0.785	6050	35343	0.171 [1]
T12	175.8 - 165.8	1" solid	10.00	1.63	78.0	0.785	586	35343	0.017 [1]
T13	165.8 - 155.8	1" solid	10.00	1.63	78.0	0.785	1689	35343	0.048 [1]

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	281 - 275.8	5/8" solid	2.58	2.47	189.7	0.307	184	9940	0.018 [1]
T2	275.8 - 265.8	5/8" solid	2.58	2.47	189.7	0.307	726	9940	0.073 [1]
T3	265.8 - 255.8	5/8" solid	2.58	2.47	189.7	0.307	712	9940	0.072 [1]
T4	255.8 - 245.8	5/8" solid	2.58	2.47	189.7	0.307	308	9940	0.031 [1]
T5	245.8 - 235.8	5/8" solid	2.58	2.47	189.7	0.307	285	9940	0.029 [1]
T6	235.8 - 225.8	5/8" solid	2.58	2.47	189.7	0.307	613	9940	0.062 [1]
T7	225.8 - 215.8	5/8" solid	2.58	2.47	189.7	0.307	785	9940	0.079 [1]
T8	215.8 - 205.8	5/8" solid	2.58	2.47	189.7	0.307	1175	9940	0.118 [1]
T9	205.8 - 195.8	5/8" solid	2.58	2.47	189.7	0.307	1270	9940	0.128 [1]
T10	195.8 - 185.8	5/8" solid	2.58	2.47	189.7	0.307	214	9940	0.021 [1]
T11	185.8 - 175.8	5/8" solid	2.58	2.47	189.7	0.307	210	9940	0.021 [1]
T12	175.8 - 165.8	5/8" solid	2.58	2.47	189.7	0.307	382	9940	0.038 [1]
T13	165.8 - 155.8	5/8" solid	2.58	2.47	189.7	0.307	934	9940	0.094 [1]
T14	155.8 - 145.8	5/8" solid	2.58	2.47	189.7	0.307	731	9940	0.074 [1]
T15	145.8 - 135.8	5/8" solid	2.58	2.47	189.7	0.307	747	9940	0.075 [1]
T16	135.8 - 125.8	5/8" solid	2.58	2.47	189.7	0.307	214	9940	0.022 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T17	125.8 - 115.8	5/8" solid	2.58	2.47	189.7	0.307	288	9940	0.029 [1]
T18	115.8 - 105.8	5/8" solid	2.58	2.47	189.7	0.307	564	9940	0.057 [1]
T19	105.8 - 95.8	5/8" solid	2.58	2.47	189.7	0.307	745	9940	0.075 [1]
T20	95.8 - 85.8	5/8" solid	2.58	2.47	189.7	0.307	475	9940	0.048 [1]
T21	85.8 - 75.8	5/8" solid	2.58	2.47	189.7	0.307	440	9940	0.044 [1]
T22	75.8 - 65.8	5/8" solid	2.58	2.47	189.7	0.307	266	9940	0.027 [1]
T23	65.8 - 55.8	5/8" solid	2.58	2.47	189.7	0.307	629	9940	0.063 [1]
T24	55.8 - 45.8	5/8" solid	2.58	2.47	189.7	0.307	640	9940	0.064 [1]
T25	45.8 - 35.8	5/8" solid	2.58	2.47	189.7	0.307	893	9940	0.090 [1]
T26	35.8 - 25.8	5/8" solid	2.58	2.47	189.7	0.307	256	9940	0.026 [1]
T27	25.8 - 15.8	5/8" solid	2.58	2.47	189.7	0.307	394	9940	0.040 [1]
T28	15.8 - 5.8	5/8" solid	1.85	1.68	128.7	0.307	235	9940	0.024 [1]

[1] $P_u / \phi P_n$ controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	281 - 275.8	1/2" solid	2.00	1.92	184.0	0.196	129	6362	0.020 [1]
T2	275.8 - 265.8	1/2" solid	2.00	1.92	184.0	0.196	1809	6362	0.284 [1]
T3	265.8 - 255.8	1/2" solid	2.00	1.92	184.0	0.196	462	6362	0.073 [1]
T4	255.8 - 245.8	1/2" solid	2.00	1.92	184.0	0.196	241	6362	0.038 [1]
T5	245.8 - 235.8	1/2" solid	2.00	1.92	184.0	0.196	190	6362	0.030 [1]
T6	235.8 - 225.8	1/2" solid	2.00	1.92	184.0	0.196	445	6362	0.070 [1]
T7	225.8 - 215.8	1/2" solid	2.00	1.92	184.0	0.196	568	6362	0.089 [1]
T8	215.8 - 205.8	1/2" solid	2.00	1.92	184.0	0.196	841	6362	0.132 [1]
T9	205.8 - 195.8	1/2" solid	2.00	1.92	184.0	0.196	1937	6362	0.304 [1]
T10	195.8 - 185.8	1/2" solid	2.00	1.92	184.0	0.196	275	6362	0.043 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T11	185.8 - 175.8	1/2" solid	2.00	1.92	184.0	0.196	260	6362	0.041 [1]
T12	175.8 - 165.8	1/2" solid	2.00	1.92	184.0	0.196	320	6362	0.050 [1]
T13	165.8 - 155.8	1/2" solid	2.00	1.92	184.0	0.196	1526	6362	0.240 [1]
T14	155.8 - 145.8	1/2" solid	2.00	1.92	184.0	0.196	630	6362	0.099 [1]
T15	145.8 - 135.8	1/2" solid	2.00	1.92	184.0	0.196	405	6362	0.064 [1]
T16	135.8 - 125.8	1/2" solid	2.00	1.92	184.0	0.196	231	6362	0.036 [1]
T17	125.8 - 115.8	1/2" solid	2.00	1.92	184.0	0.196	232	6362	0.036 [1]
T18	115.8 - 105.8	1/2" solid	2.00	1.92	184.0	0.196	456	6362	0.072 [1]
T19	105.8 - 95.8	1/2" solid	2.00	1.92	184.0	0.196	1149	6362	0.181 [1]
T20	95.8 - 85.8	1/2" solid	2.00	1.92	184.0	0.196	452	6362	0.071 [1]
T21	85.8 - 75.8	1/2" solid	2.00	1.92	184.0	0.196	270	6362	0.042 [1]
T22	75.8 - 65.8	1/2" solid	2.00	1.92	184.0	0.196	289	6362	0.045 [1]
T23	65.8 - 55.8	1/2" solid	2.00	1.92	184.0	0.196	334	6362	0.053 [1]
T24	55.8 - 45.8	1/2" solid	2.00	1.92	184.0	0.196	1181	6362	0.186 [1]
T25	45.8 - 35.8	1/2" solid	2.00	1.92	184.0	0.196	382	6362	0.060 [1]
T26	35.8 - 25.8	1/2" solid	2.00	1.92	184.0	0.196	360	6362	0.057 [1]
T27	25.8 - 15.8	1/2" solid	2.00	1.92	184.0	0.196	268	6362	0.042 [1]
T28	15.8 - 5.8	1/2" solid	2.00	1.92	184.0	0.196	643	6362	0.101 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	281 - 275.8	1/2" solid	2.00	1.92	184.0	0.196	63	6362	0.010 [1]
T3	265.8 - 255.8	1/2" solid	2.00	1.92	184.0	0.196	269	6362	0.042 [1]
T5	245.8 - 235.8	1/2" solid	2.00	1.92	184.0	0.196	38	6362	0.006 [1]
T7	225.8 - 215.8	1/2" solid	2.00	1.92	184.0	0.196	282	6362	0.044 [1]

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T9	205.8 - 195.8	1/2" solid	2.00	1.92	184.0	0.196	487	6362	0.077 [1]
T11	185.8 - 175.8	1/2" solid	2.00	1.92	184.0	0.196	14	6362	0.002 [1]
T13	165.8 - 155.8	1/2" solid	2.00	1.92	184.0	0.196	161	6362	0.025 [1]
T15	145.8 - 135.8	1/2" solid	2.00	1.92	184.0	0.196	279	6362	0.044 [1]
T17	125.8 - 115.8	1/2" solid	2.00	1.92	184.0	0.196	9	6362	0.001 [1]
T19	105.8 - 95.8	1/2" solid	2.00	1.92	184.0	0.196	283	6362	0.045 [1]
T21	85.8 - 75.8	1/2" solid	2.00	1.92	184.0	0.196	80	6362	0.013 [1]
T23	65.8 - 55.8	1/2" solid	2.00	1.92	184.0	0.196	141	6362	0.022 [1]
T25	45.8 - 35.8	1/2" solid	2.00	1.92	184.0	0.196	247	6362	0.039 [1]
T27	25.8 - 15.8	1/2" solid	2.00	1.92	184.0	0.196	15	6362	0.002 [1]

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T2	275.8 - 265.8	1/2" solid	2.00	1.92	184.0	0.196	327	6362	0.051 [1]
T4	255.8 - 245.8	1/2" solid	2.00	1.92	184.0	0.196	66	6362	0.010 [1]
T6	235.8 - 225.8	1/2" solid	2.00	1.92	184.0	0.196	264	6362	0.041 [1]
T8	215.8 - 205.8	1/2" solid	2.00	1.92	184.0	0.196	532	6362	0.084 [1]
T10	195.8 - 185.8	1/2" solid	2.00	1.92	184.0	0.196	63	6362	0.010 [1]
T12	175.8 - 165.8	1/2" solid	2.00	1.92	184.0	0.196	213	6362	0.033 [1]
T14	155.8 - 145.8	1/2" solid	2.00	1.92	184.0	0.196	321	6362	0.050 [1]
T16	135.8 - 125.8	1/2" solid	2.00	1.92	184.0	0.196	51	6362	0.008 [1]
T18	115.8 - 105.8	1/2" solid	2.00	1.92	184.0	0.196	284	6362	0.045 [1]
T20	95.8 - 85.8	1/2" solid	2.00	1.92	184.0	0.196	219	6362	0.034 [1]
T22	75.8 - 65.8	1/2" solid	2.00	1.92	184.0	0.196	211	6362	0.033 [1]
T24	55.8 - 45.8	1/2" solid	2.00	1.92	184.0	0.196	332	6362	0.052 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T26	35.8 - 25.8	1/2" solid	2.00	1.92	184.0	0.196	140	6362	0.022 [1] ✓
T28	15.8 - 5.8	1/2" solid	0.78	0.70	67.0	0.196	290	6362	0.046 [1] ✓

[1] $P_u / \phi P_n$ controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	281 - 275.8	Leg	1" solid	1	-391	22652	1.7	Pass
T2	275.8 - 265.8	Leg	1" solid	22	-7476	22652	33.0	Pass
T3	265.8 - 255.8	Leg	1" solid	64	-9966	22149	45.0	Pass
T4	255.8 - 245.8	Leg	1" solid	103	-10964	22201	49.4	Pass
T5	245.8 - 235.8	Leg	1" solid	145	-10965	22201	49.4	Pass
T6	235.8 - 225.8	Leg	1" solid	184	-9877	22161	44.6	Pass
T7	225.8 - 215.8	Leg	1" solid	228	-7679	22025	34.9	Pass
T8	215.8 - 205.8	Leg	1" solid	266	-11669	22187	52.6	Pass
T9	205.8 - 195.8	Leg	1" solid	308	-15852	22100	71.7	Pass
T10	195.8 - 185.8	Leg	1" solid	347	-15003	22652	66.2	Pass
T11	185.8 - 175.8	Leg	1" solid	389	-15022	22652	66.3	Pass
T12	175.8 - 165.8	Leg	1" solid	428	-16954	22652	74.8	Pass
T13	165.8 - 155.8	Leg	1" solid	470	-18352	22652	81.0	Pass
T14	155.8 - 145.8	Leg	1" solid	509	-15655	22652	69.1	Pass
T15	145.8 - 135.8	Leg	1" solid	551	-12273	22652	54.2	Pass
T16	135.8 - 125.8	Leg	1" solid	590	-13343	22652	58.9	Pass
T17	125.8 - 115.8	Leg	1" solid	632	-13372	22652	59.0	Pass
T18	115.8 - 105.8	Leg	1" solid	671	-12362	22652	54.6	Pass
T19	105.8 - 95.8	Leg	1" solid	714	-13109	22652	57.9	Pass
T20	95.8 - 85.8	Leg	1" solid	752	-14495	22652	64.0	Pass
T21	85.8 - 75.8	Leg	1" solid	794	-15602	22652	68.9	Pass
T22	75.8 - 65.8	Leg	1" solid	833	-15508	22652	68.5	Pass
T23	65.8 - 55.8	Leg	1" solid	875	-14754	22652	65.1	Pass
T24	55.8 - 45.8	Leg	1" solid	914	-15587	22652	68.8	Pass
T25	45.8 - 35.8	Leg	1" solid	956	-14586	22652	64.4	Pass
T26	35.8 - 25.8	Leg	1" solid	994	-15321	22652	67.6	Pass
T27	25.8 - 15.8	Leg	1" solid	1036	-15469	22652	68.3	Pass
T28	15.8 - 5.8	Leg	1" solid	1075	-14960	22600	66.2	Pass
T1	281 - 275.8	Diagonal	5/8" solid	9	-184	3930	4.7	Pass
T2	275.8 - 265.8	Diagonal	5/8" solid	32	-770	3930	19.6	Pass
T3	265.8 - 255.8	Diagonal	5/8" solid	101	-692	3930	17.6	Pass
T4	255.8 - 245.8	Diagonal	5/8" solid	143	-345	3930	8.8	Pass
T5	245.8 - 235.8	Diagonal	5/8" solid	153	-259	3930	6.6	Pass
T6	235.8 - 225.8	Diagonal	5/8" solid	193	-672	3930	17.1	Pass
T7	225.8 - 215.8	Diagonal	5/8" solid	234	-762	3930	19.4	Pass
T8	215.8 - 205.8	Diagonal	5/8" solid	274	-1237	3930	31.5	Pass
T9	205.8 - 195.8	Diagonal	5/8" solid	345	-1217	3930	31.0	Pass
T10	195.8 - 185.8	Diagonal	5/8" solid	386	-300	3930	7.6	Pass
T11	185.8 - 175.8	Diagonal	5/8" solid	396	-143	3930	3.6	Pass
T12	175.8 - 165.8	Diagonal	5/8" solid	436	-495	3930	12.6	Pass
T13	165.8 - 155.8	Diagonal	5/8" solid	488	-818	3930	20.8	Pass
T14	155.8 - 145.8	Diagonal	5/8" solid	547	-848	3930	21.6	Pass
T15	145.8 - 135.8	Diagonal	5/8" solid	587	-628	3930	16.0	Pass
T16	135.8 - 125.8	Diagonal	5/8" solid	630	-337	3930	8.6	Pass
T17	125.8 - 115.8	Diagonal	5/8" solid	638	-209	3930	5.3	Pass
T18	115.8 - 105.8	Diagonal	5/8" solid	680	-700	3930	17.8	Pass
T19	105.8 - 95.8	Diagonal	5/8" solid	749	-609	3930	15.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T20	95.8 - 85.8	Diagonal	5/8" solid	790	-626	3930	15.9	Pass
T21	85.8 - 75.8	Diagonal	5/8" solid	831	-275	3930	7.0	Pass
T22	75.8 - 65.8	Diagonal	5/8" solid	842	-486	3930	12.4	Pass
T23	65.8 - 55.8	Diagonal	5/8" solid	881	-474	3930	12.1	Pass
T24	55.8 - 45.8	Diagonal	5/8" solid	924	-921	3930	23.4	Pass
T25	45.8 - 35.8	Diagonal	5/8" solid	993	-598	3930	15.2	Pass
T26	35.8 - 25.8	Diagonal	5/8" solid	1035	-508	3930	12.9	Pass
T27	25.8 - 15.8	Diagonal	5/8" solid	1043	-211	3930	5.4	Pass
T28	15.8 - 5.8	Diagonal	5/8" solid	1084	-1026	6483	15.8	Pass
T1	281 - 275.8	Horizontal	1/2" solid	10	-130	2656	4.9	Pass
T2	275.8 - 265.8	Horizontal	1/2" solid	41	1809	6362	28.4	Pass
T3	265.8 - 255.8	Horizontal	1/2" solid	98	-478	2656	18.0	Pass
T4	255.8 - 245.8	Horizontal	1/2" solid	140	-226	2656	8.5	Pass
T5	245.8 - 235.8	Horizontal	1/2" solid	154	-209	2656	7.9	Pass
T6	235.8 - 225.8	Horizontal	1/2" solid	198	-409	2656	15.4	Pass
T7	225.8 - 215.8	Horizontal	1/2" solid	235	-598	2656	22.5	Pass
T8	215.8 - 205.8	Horizontal	1/2" solid	279	-806	2656	30.3	Pass
T9	205.8 - 195.8	Horizontal	1/2" solid	340	-904	2656	34.0	Pass
T10	195.8 - 185.8	Horizontal	1/2" solid	349	-275	2656	10.3	Pass
T11	185.8 - 175.8	Horizontal	1/2" solid	397	-260	2656	9.8	Pass
T12	175.8 - 165.8	Horizontal	1/2" solid	430	-294	2656	11.1	Pass
T13	165.8 - 155.8	Horizontal	1/2" solid	484	-720	2656	27.1	Pass
T14	155.8 - 145.8	Horizontal	1/2" solid	545	-566	2656	21.3	Pass
T15	145.8 - 135.8	Horizontal	1/2" solid	583	-506	2656	19.0	Pass
T16	135.8 - 125.8	Horizontal	1/2" solid	592	-231	2656	8.7	Pass
T17	125.8 - 115.8	Horizontal	1/2" solid	641	-232	2656	8.7	Pass
T18	115.8 - 105.8	Horizontal	1/2" solid	683	-376	2656	14.2	Pass
T19	105.8 - 95.8	Horizontal	1/2" solid	727	-567	2656	21.3	Pass
T20	95.8 - 85.8	Horizontal	1/2" solid	789	-366	2656	13.8	Pass
T21	85.8 - 75.8	Horizontal	1/2" solid	828	-293	2656	11.0	Pass
T22	75.8 - 65.8	Horizontal	1/2" solid	835	-270	2656	10.2	Pass
T23	65.8 - 55.8	Horizontal	1/2" solid	884	-486	2656	18.3	Pass
T24	55.8 - 45.8	Horizontal	1/2" solid	931	1181	6362	18.6	Pass
T25	45.8 - 35.8	Horizontal	1/2" solid	990	-610	2656	23.0	Pass
T26	35.8 - 25.8	Horizontal	1/2" solid	997	-265	2656	10.0	Pass
T27	25.8 - 15.8	Horizontal	1/2" solid	1046	-289	2656	10.9	Pass
T28	15.8 - 5.8	Horizontal	1/2" solid	1080	643	6362	10.1	Pass
T1	281 - 275.8	Top Girt	1/2" solid	4	-64	2656	2.4	Pass
T3	265.8 - 255.8	Top Girt	1/2" solid	68	-303	2656	11.4	Pass
T5	245.8 - 235.8	Top Girt	1/2" solid	149	-44	2656	1.7	Pass
T7	225.8 - 215.8	Top Girt	1/2" solid	229	-282	2656	10.6	Pass
T9	205.8 - 195.8	Top Girt	1/2" solid	310	-546	2656	20.5	Pass
T11	185.8 - 175.8	Top Girt	1/2" solid	392	-49	2656	1.8	Pass
T13	165.8 - 155.8	Top Girt	1/2" solid	472	-222	2656	8.3	Pass
T15	145.8 - 135.8	Top Girt	1/2" solid	553	-298	2656	11.2	Pass
T17	125.8 - 115.8	Top Girt	1/2" solid	634	-50	2656	1.9	Pass
T19	105.8 - 95.8	Top Girt	1/2" solid	716	-305	2656	11.5	Pass
T21	85.8 - 75.8	Top Girt	1/2" solid	796	-194	2656	7.3	Pass
T23	65.8 - 55.8	Top Girt	1/2" solid	878	-239	2656	9.0	Pass
T25	45.8 - 35.8	Top Girt	1/2" solid	960	-323	2656	12.2	Pass
T27	25.8 - 15.8	Top Girt	1/2" solid	1041	-124	2656	4.7	Pass
T2	275.8 - 265.8	Bottom Girt	1/2" solid	30	-285	2656	10.7	Pass
T4	255.8 - 245.8	Bottom Girt	1/2" solid	111	-42	2656	1.6	Pass
T6	235.8 - 225.8	Bottom Girt	1/2" solid	192	-257	2656	9.7	Pass
T8	215.8 - 205.8	Bottom Girt	1/2" solid	273	-471	2656	17.7	Pass
T10	195.8 - 185.8	Bottom Girt	1/2" solid	353	63	6362	1.0	Pass
T12	175.8 - 165.8	Bottom Girt	1/2" solid	435	-152	2656	5.7	Pass
T14	155.8 - 145.8	Bottom Girt	1/2" solid	516	-297	2656	11.2	Pass
T16	135.8 - 125.8	Bottom Girt	1/2" solid	595	51	6362	0.8	Pass
T18	115.8 - 105.8	Bottom Girt	1/2" solid	677	-262	2656	9.9	Pass
T20	95.8 - 85.8	Bottom Girt	1/2" solid	759	-106	2656	4.0	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T22	75.8 - 65.8	Bottom Girt	1/2" solid	839	-115	2656	4.3	Pass
T24	55.8 - 45.8	Bottom Girt	1/2" solid	919	-264	2656	9.9	Pass
T26	35.8 - 25.8	Bottom Girt	1/2" solid	1002	140	6362	2.2	Pass
T28	15.8 - 5.8	Bottom Girt	1/2" solid	1081	290	6362	4.6	Pass
T2	275.8 - 265.8	Guy A@269.3	3/8	1119	6371	9240	68.9	Pass
T9	205.8 - 195.8	Guy A@200.675	3/8	1122	5853	9240	63.3	Pass
T13	165.8 - 155.8	Guy A@160.675	5/16	1125	4243	6720	63.1	Pass
T19	105.8 - 95.8	Guy A@100.675	1/4	1128	2986	3990	74.8	Pass
T24	55.8 - 45.8	Guy A@49.3	1/4	1131	2398	3990	60.1	Pass
T2	275.8 - 265.8	Guy B@269.3	3/8	1118	6118	9240	66.2	Pass
T9	205.8 - 195.8	Guy B@200.675	3/8	1121	5668	9240	61.3	Pass
T13	165.8 - 155.8	Guy B@160.675	5/16	1124	4182	6720	62.2	Pass
T19	105.8 - 95.8	Guy B@100.675	1/4	1127	2970	3990	74.4	Pass
T24	55.8 - 45.8	Guy B@49.3	1/4	1130	2403	3990	60.2	Pass
T2	275.8 - 265.8	Guy C@269.3	3/8	1117	8068	9240	87.3	Pass
T9	205.8 - 195.8	Guy C@200.675	3/8	1120	7439	9240	80.5	Pass
T13	165.8 - 155.8	Guy C@160.675	5/16	1123	5266	6720	78.4	Pass
T19	105.8 - 95.8	Guy C@100.675	1/4	1126	3427	3990	85.9	Pass
T24	55.8 - 45.8	Guy C@49.3	1/4	1129	2739	3990	68.6	Pass
						Summary		
						Leg (T13)	81.0	Pass
						Diagonal (T8)	31.5	Pass
						Horizontal (T9)	34.0	Pass
						Top Girt (T9)	20.5	Pass
						Bottom Girt (T8)	17.7	Pass
						Guy A (T19)	74.8	Pass
						Guy B (T19)	74.4	Pass
						Guy C (T2)	87.3	Pass
						Bolt Checks	13.6	Pass
						RATING =	**87.3**	**Pass**

tnxTower	Job: 281-ft Guyed Tower; Orange County, CA	Page: 1 of 4
Paul J. Ford and Company 250 E. Broad Street Suite 1500 Columbus, OH 43215 Phone: 614.221.6679 FAX: 614.448.4105	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_Z	q_z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
T1	278.40	1.57	38.71	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	38.80	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	38.92	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	39.04	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	39.16	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
T6	230.80	1.509	39.27	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
235.80-225.80					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T7	220.80	1.495	39.37	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
225.80-215.80					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T8	210.80	1.481	39.47	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
215.80-205.80					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T9	200.80	1.466	39.56	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
205.80-195.80					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T10	190.80	1.45	39.64	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
195.80-185.80					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T11	180.80	1.434	39.71	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
185.80-175.80					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T12	170.80	1.417	39.76	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
175.80-165.80					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T13	160.80	1.399	39.79	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
165.80-155.80					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T14	150.80	1.38	39.80	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
155.80-145.80					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T15	140.80	1.36	39.79	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
145.80-135.80					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T16	130.80	1.339	39.74	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
135.80-125.80					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T17	120.80	1.317	39.66	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
125.80-115.80					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T18	110.80	1.293	39.53	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000

tnxTower	Job: 281-ft Guyed Tower; Orange County, CA	Page: 2 of 4
Paul J. Ford and Company 250 E. Broad Street Suite 1500 Columbus, OH 43215 Phone: 614.221.6679 FAX: 614.448.4105	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

Section Elevation	z	K_Z	q_z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
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	10.80	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_Z	q_z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
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

tnxTower	Job: 281-ft Guyed Tower; Orange County, CA	Page: 3 of 4
Paul J. Ford and Company 250 E. Broad Street Suite 1500 Columbus, OH 43215 Phone: 614.221.6679 FAX: 614.448.4105	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

Section Elevation	z	K_Z	q_z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
T6	230.80	1.509	19.57	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
235.80-225.80					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T7	220.80	1.495	19.62	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
225.80-215.80					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T8	210.80	1.481	19.67	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
215.80-205.80					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T9	200.80	1.466	19.71	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
205.80-195.80					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T10	190.80	1.45	19.75	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
195.80-185.80					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T11	180.80	1.434	19.78	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
185.80-175.80					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T12	170.80	1.417	19.81	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
175.80-165.80					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T13	160.80	1.399	19.83	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
165.80-155.80					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T14	150.80	1.38	19.83	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
155.80-145.80					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T15	140.80	1.36	19.83	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
145.80-135.80					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T16	130.80	1.339	19.80	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
135.80-125.80					B	0.000	2.997		55.60	1.125	0.000
					C	0.000	2.997		55.60	0.000	0.000
T17	120.80	1.317	19.76	20.833	A	0.000	2.918	1.667	57.13	0.000	0.000
125.80-115.80					B	0.000	2.918		57.13	1.125	0.000
					C	0.000	2.918		57.13	0.000	0.000
T18	110.80	1.293	19.70	20.833	A	0.000	2.997	1.667	55.60	0.000	0.000
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	19.61	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	19.48	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	19.31	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	19.09	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	18.79	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	18.40	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	17.87	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

tnxTower	Job: 281-ft Guyed Tower; Orange County, CA	Page: 4 of 4
Paul J. Ford and Company 250 E. Broad Street Suite 1500 Columbus, OH 43215 Phone: 614.221.6679 FAX: 614.448.4105	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

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg % 	C_AA_A In Face ft²	C_AA_A Out Face ft²
T26	30.80	0.988	17.14	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	16.06	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	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

Paul J. Ford and Company
250 East Broad Street, Suite 1500
Columbus, Ohio 43215

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

PAUL J. FORD & COMPANY
STRUCTURAL ENGINEERS
250 E. BROAD ST. SUITE 1500
COLUMBUS, OH 43215

PAGE 1 OF 1
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) 7/8"Ø F1554-36 BOLTS

$\phi R_n = \phi F_{nt} A_b$ (AISC 13TH J3-2)

$= 0.75\left(1.3F_{nt} - \frac{F_{nt}}{\phi F_{nv}} f_v\right)(0.601)(4)$

$= 0.75\left(1.3\times0.75\times58 - \frac{0.75\times58}{0.75\times0.4\times58}\times15.4\right)(0.601)(4)$

$= 32.5$ KIPS

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

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COLUMBUS, OH 43215

ACI 318-08 APPENDIX D FOR GUY ANCHOR ROD

D.4.1

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

$\phi = 0.75$

$n = 4$

$A_{se,N} = 0.462\ IN^2$

$F_{uta} = 1.9 \times 36000 = 68400\ PSI$

$RATIO = \frac{21.3}{94.8} = 0.22$ ✓

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

$\phi = 0.65$

$n = 4$

$A_{se,V} = 0.462\ IN^2$

$F_{uta} = 68400\ PSI$

$RATIO = \frac{15.7}{49.3} = 0.32$ ✓

(c) D.5.2 $\phi N_{cb} = \phi \frac{A_{Nc}}{A_{Nco}} \psi_{ec,N}\, \psi_{ed,N}\, \psi_{c,N}\, \psi_{cp,N}\, N_b$

$= 0.75\left(\frac{398.2}{398.2}\right) 0.97 \times 0.75 \times 1.25 \times 1.0 \times 189736 \div 1000 = 129.4K$

$\phi = 0.75$

$A_{Nc} = 24.4 \times 20 = 488\ IN^2 > 398.2 \therefore = 398.2\ IN^2$

$A_{Nco} = 22 \times 18.1 = 398.2\ IN^2$

$\psi_{ec,N} = \frac{1}{\left(1 + \frac{2 \times 1}{3 \times 25}\right)} = 0.97$

$\psi_{ed,N} = 0.7 + 0.3\left(\frac{6.8}{1.5 \times 25}\right) = 0.75$

$\psi_{c,N} = 1.25$

$\psi_{cp,N} = 1.0$

$N_b = k_c\, \lambda \sqrt{f'_c}\, h_{ef}^{1.5} = 24 \times 1.0 \times \sqrt{4000} \times 25^{1.5} = 189736$

$RATIO = \frac{21.3}{129.4} = 0.16$ ✓

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(d) D.6.2 $\phi V_{cbg} = \phi \frac{A_{vc}}{A_{vco}} \psi_{ec,V} \psi_{ed,V} \psi_{c,V} \psi_{h,V} V_b$

$= 0.65 \times \left(\frac{323}{332.4}\right) \times 1 \times 0.985 \times 1.4 \times 0.88 \times 16601 \div 1000 = 12.72$

$\phi = 0.65$

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

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

$\psi_{ec,V} = 1.0$

$\psi_{ed,V} = 0.985$

$\psi_{c,V} = 1.4$

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

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

RATIO = $\frac{15.4 \div 2}{12.72} = 0.61$ ✓

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

$\phi = 0.75$

$\psi_{c,P} = 1.4$

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

RATIO = $\frac{21.3}{39.9} = 0.53$ ✓

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

$\phi = 0.75$

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

$A_{brg} = 1.19$

$\lambda = 1.0$

RATIO = $\frac{21.3}{80.3} = 0.27$ ✓

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

$\phi = 0.65$

$K_{cp} = 2.0$

$N_{cbg} = 45.5$

RATIO = $\frac{15.4}{59.15} = 0.26$ ✓

Paul J. Ford and Company
250 East Broad Street, Suite 1500
Columbus, Ohio 43215

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

M (k-in)
93.183
70.126
37.967
15.937
6.099
Total 223.3

Applied Moment: 223.3 k-in
Resultant Vertical Load: 223.3 / 5 = 44.66 kips
Moment on Plate: 44.66 x 5 x 7 / 12 = 130.3 k-in
Plate Capacity: 0.9 x 50 x 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
Dmin = 44.66 / (0.75 x 2.29 x 1 x 10) = 2.60 16ths of an inch
Ratio: 2.6 / 5 = 0.52

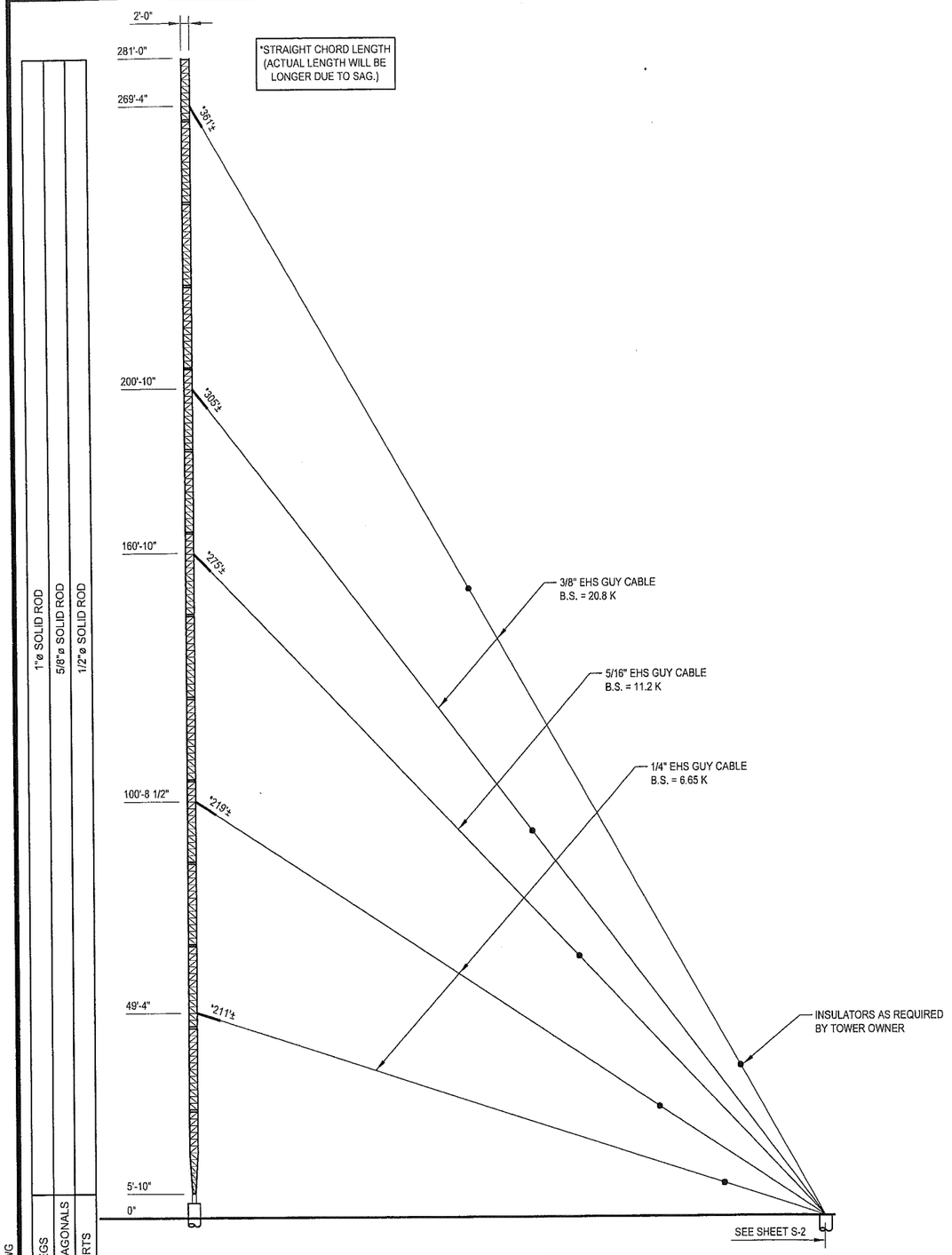
Paul J. Ford and Company
250 East Broad Street, Suite 1500
Columbus, Ohio 43215

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



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: 38.9 K
BASE SHEAR: 0.18 K

GUY ANCHOR VERTICAL: 21.3 K
GUY ANCHOR HORIZONTAL: 15.4 K

GENERAL NOTES:

1. 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
2. ERECTION TOLERANCES SHALL BE AS SPECIFIED BY THE TIA STANDARD.
3. BOLTS SHALL BE TORQUED TO THE SNUG-TIGHT CONDITION AS DEFINED BY AISC.
4. TOWER LIGHTING AND GROUNDING BY OTHERS.
5. 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.
6. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PROGRAMS AND PRECAUTIONS IN CONNECTION WITH THE WORK.
7. ALL LIGHTS NOT REQUIRED BY THE FAA SHALL BE DESIGNED AND LOCATED SO THAT THE DIRECT LIGHT RAYS ARE KEPT ON THE PROPERTY.
8. CONSTRUCTION ACTIVITIES SHALL OCCUR BETWEEN 7 AM AND 8 PM MONDAY THROUGH SATURDAY, EXCLUDING FEDERAL HOLIDAYS.
9. 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.
10. SPECIAL INSPECTIONS SHALL BE PERFORMED IN ACCORDANCE WITH SHEET S-6 OF THESE DRAWINGS.
11. 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.

1 3-20-2012: PLAN COMMENTS

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MAGNUM TOWERS, INC.

9370 ELDER CREEK ROAD SACRAMENTO, CA 95829
PH: (916) 381-5053 FAX: (916) 381-2144

OAK FLAT-SILVERADO CANYON
ORANGE CO., CALIFORNIA
281' GUYED AM TOWER #2

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

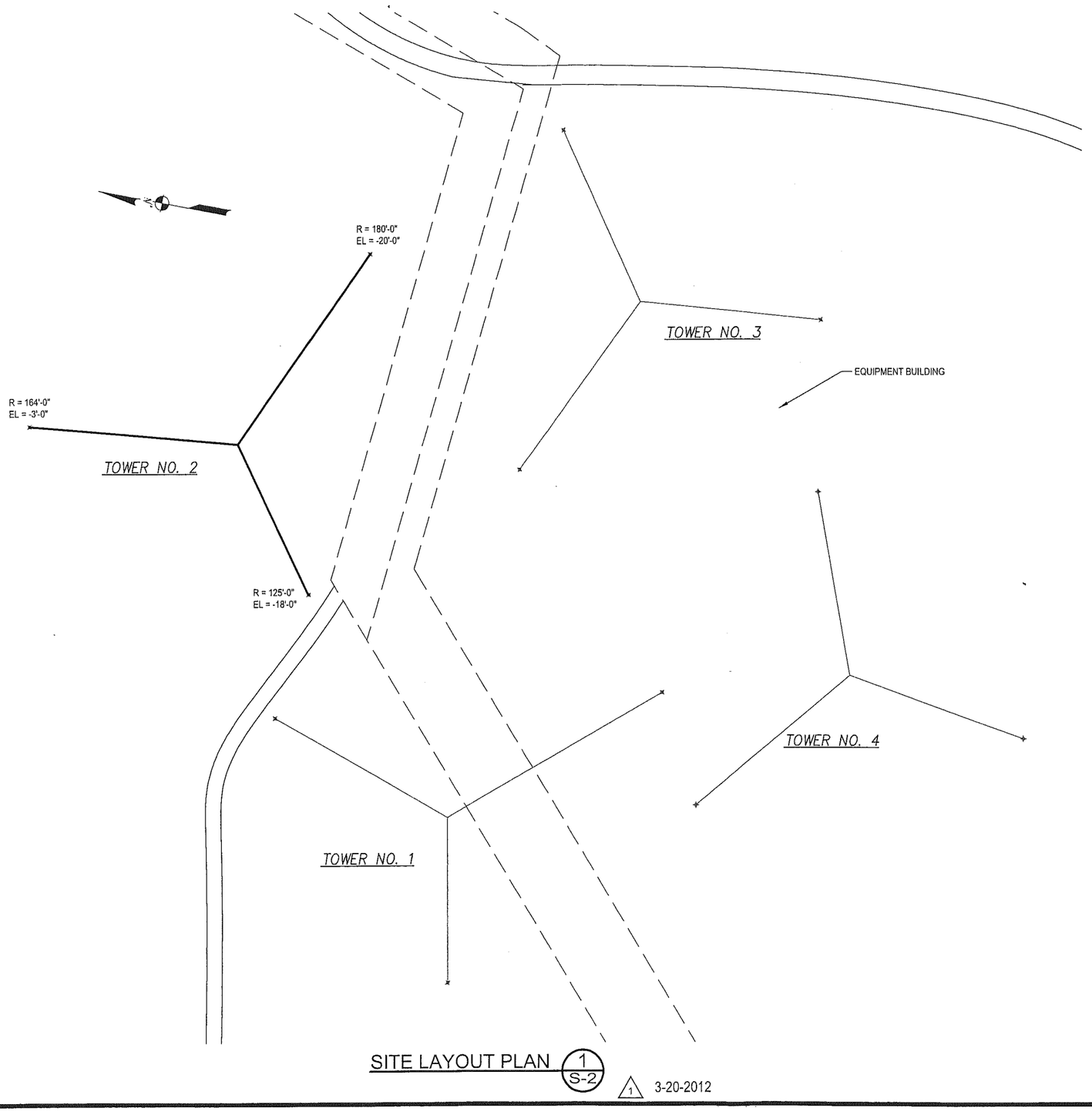
TOWER ELEVATION AND NOTES

S-1

SHEET 1 OF 6

REGISTERED PROFESSIONAL ENGINEER
DAVID W. HAWKINS
No. C-60800
Expires 12-31-12
CIVIL
STATE OF CALIFORNIA

65011-0012B R1.DWG



SITE LAYOUT PLAN 1 S-2

1 3-20-2012

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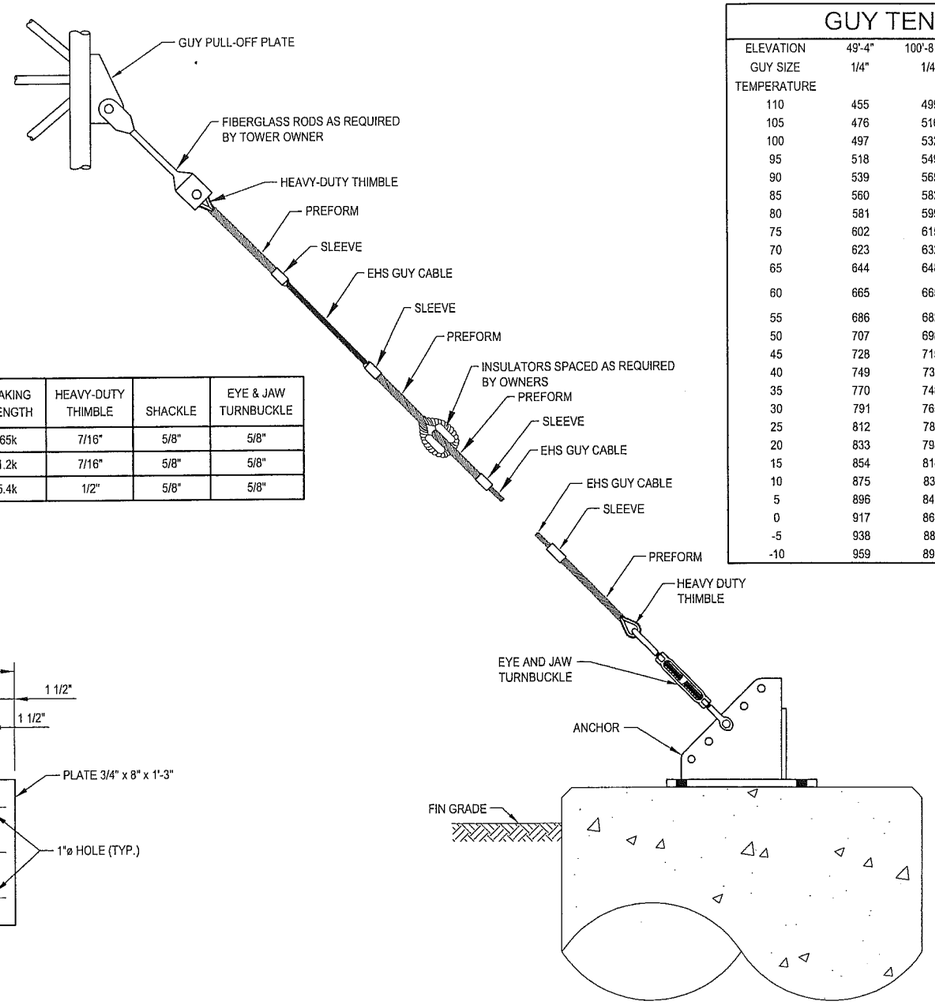
GUY TOWER
SITE PLAN

S-2

SHEET 2 OF 6'

65011-0012B R1.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"

GUY TENSION CHART

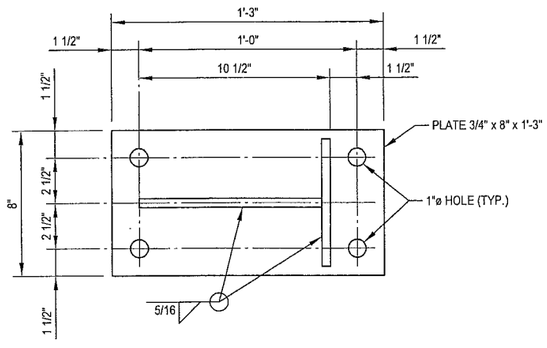
ELEVATION	49'-4"	100'-8 1/2"	160'-10"	200'-10"	269'4"
GUY SIZE	1/4"	1/4"	5/16	3/8	3/8"
TEMPERATURE					
110	455	499	923	1334	1401
105	476	516	943	1355	1415
100	497	532	962	1375	1429
95	518	549	982	1396	1443
90	539	565	1002	1416	1456
85	560	582	1021	1437	1470
80	581	599	1041	1458	1484
75	602	615	1061	1478	1498
70	623	632	1081	1499	1512
65	644	648	1100	1519	1526
60	665	665	1120	1540	1540
55	686	682	1140	1561	1554
50	707	698	1159	1581	1568
45	728	715	1179	1602	1582
40	749	731	1199	1622	1596
35	770	748	1219	1643	1610
30	791	765	1238	1664	1624
25	812	781	1258	1684	1637
20	833	798	1278	1705	1651
15	854	814	1297	1725	1665
10	875	831	1317	1746	1679
5	896	848	1337	1766	1693
0	917	864	1356	1787	1707
-5	938	881	1376	1808	1721
-10	959	898	1396	1828	1735

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.



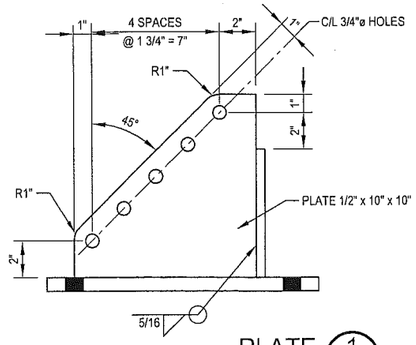
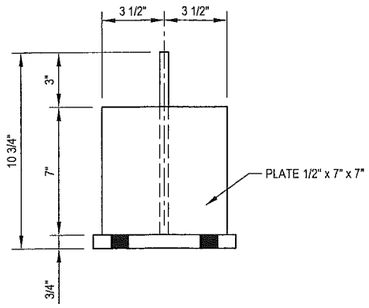


PLATE 1 / S-3



1 3-20-2012

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APPROVED BY:	K.P.B.
DATE:	12-2-2011

PLOT PLAN
GUY CABLE
TENSION CHART

S-3

SHEET 3 OF 6

REGISTERED PROFESSIONAL ENGINEER
DAVID W. HAWKINS
No. C-60800
Expires 12-31-12
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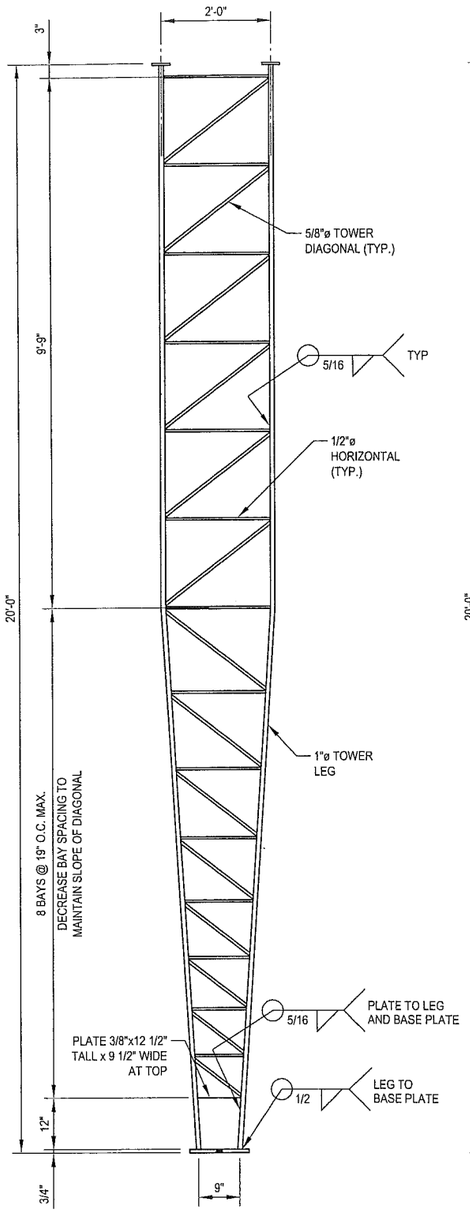
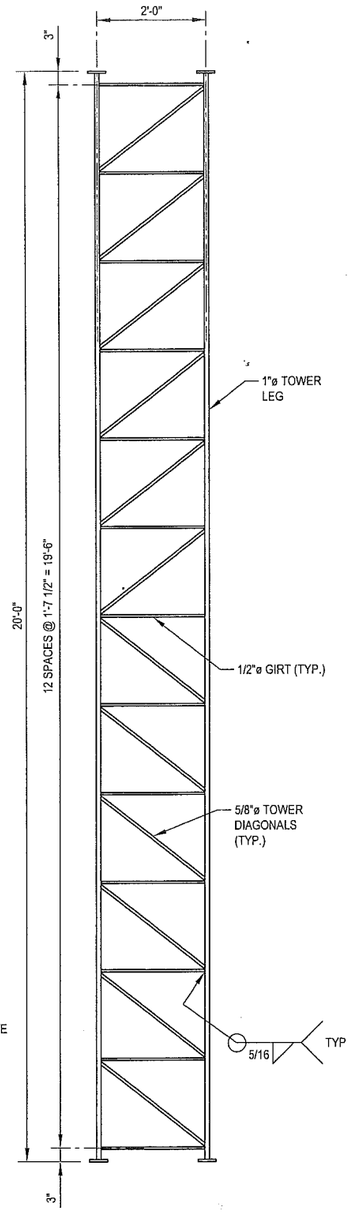
STATE OF CALIFORNIA

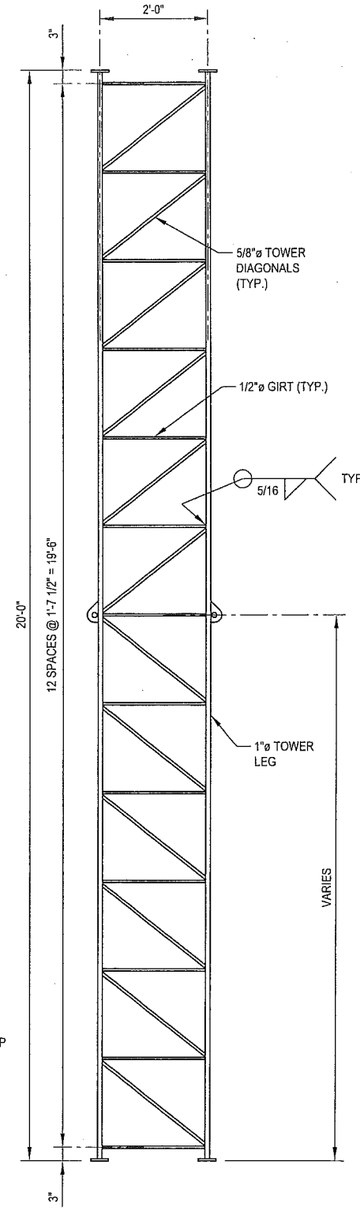
65011-0012B R1.DWG



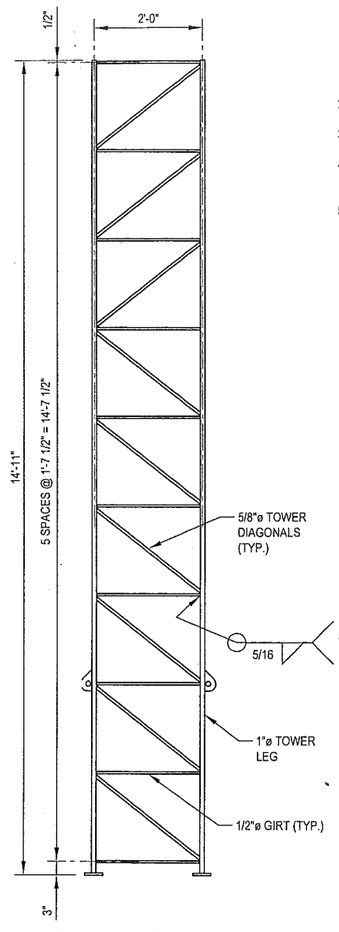
BASE SECTION



TYPICAL SECTION



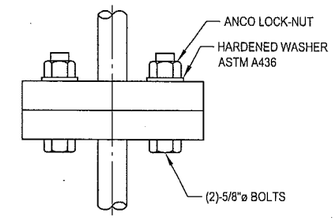
TYPICAL SECTION
(AT GUY PULLOFF)



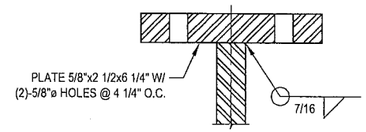
TOP SECTION

STEEL NOTES:

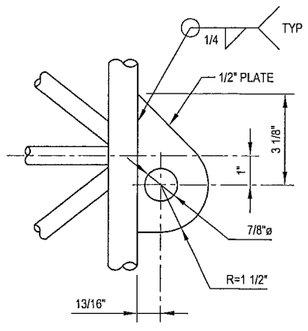
1. ALL STEEL SHALL CONFORM TO THE FOLLOWING:
   a. SOLID ROD LEGS: ASTM A572 GR 50 (50 KSI YIELD POINT MATERIAL)
   b. FLANGE PLATES: ASTM A572 GR 50 (50 KSI YIELD POINT MATERIAL)
   c. STRUCTURAL BOLTS: ASTM A325
   d. ANCHOR RODS: ASTM A36
   e. ALL OTHER STEEL SHAPES: ASTM A36 (36 KSI YIELD POINT 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.



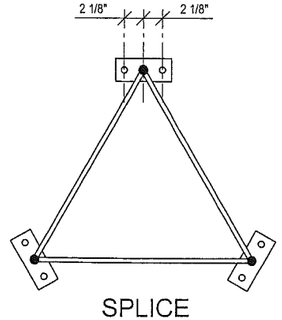
CONNECTION DETAIL



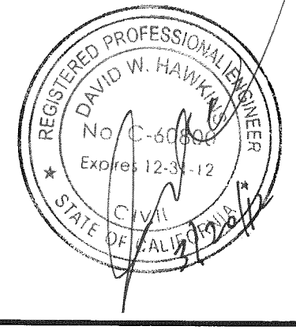
SECTION



GUY PULLOFF DETAIL



SPLICE



1 3-20-2012

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CHECKED BY:	L.A.P.
APPROVED BY:	K.P.B.
DATE:	12-2-2011

TOWER SECTION DETAILS

S-4
SHEET 4 OF 6

65011-0012B R1.DWG

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OAK FLAT-SILVERADO CANYON
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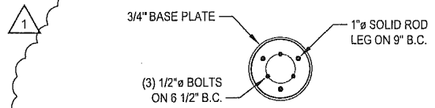
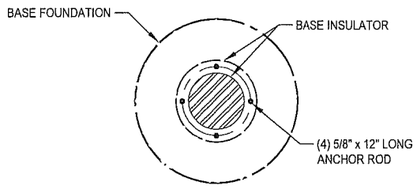
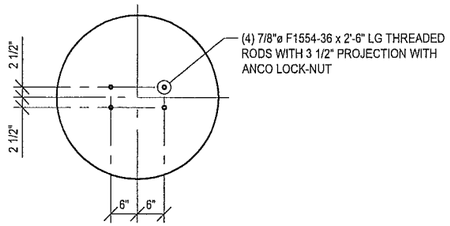
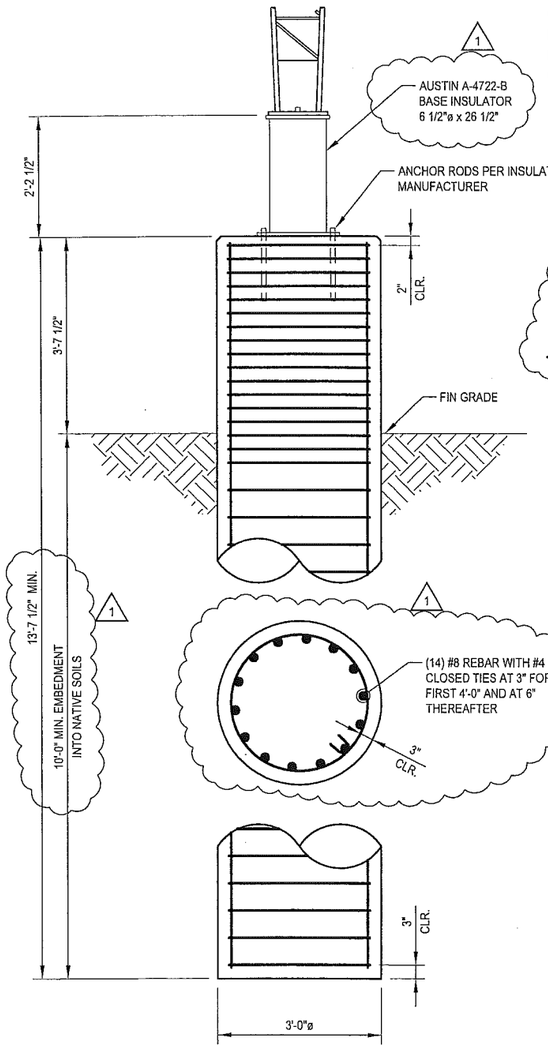
TOWER TO INSULATOR CONNECTION



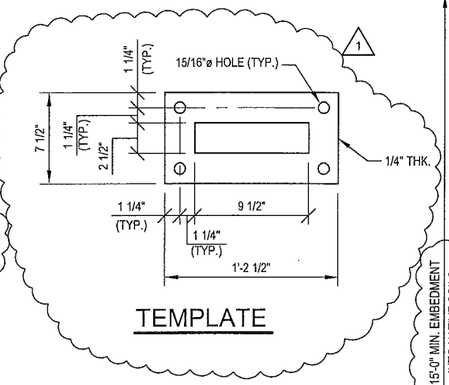
INSUALTOR TO FOUNDATION CONNECTION



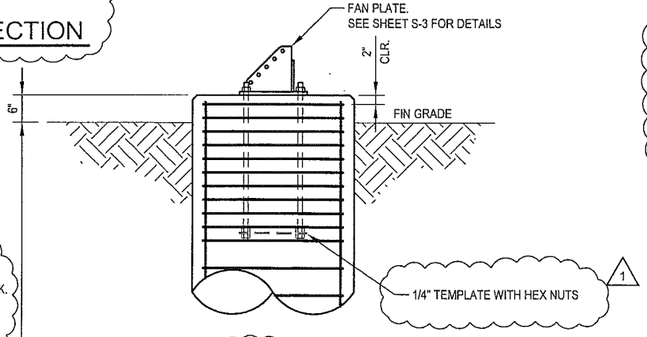


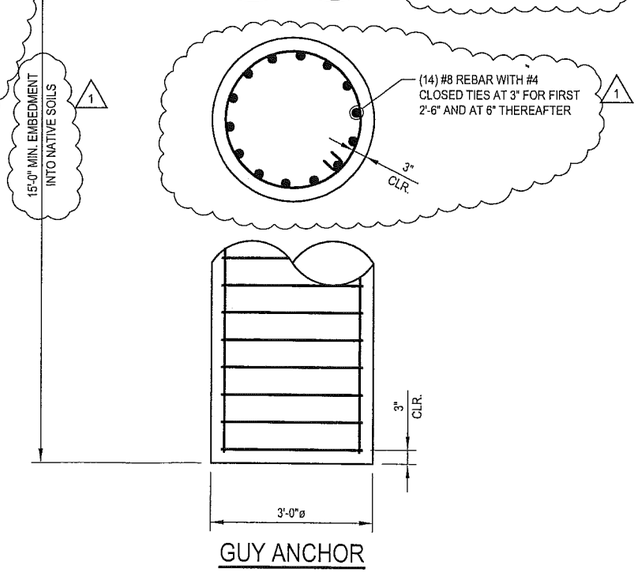


BASE FOUNDATION



TEMPLATE





GUY ANCHOR

FOUNDATION NOTES:

1. THIS FOUNDATION DESIGN WAS BASED ON CAPACITIES FOR 36"ø 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.

1 3-20-2012: PLAN COMMENTS

REGISTERED PROFESSIONAL ENGINEER
DAVID W. HAWKINS
No. C-60800
Expires 12-31-12
CIVIL
STATE OF CALIFORNIA
3/20/12

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

65011-0012B R1.DWG

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 A706	-	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: 3.8.6, 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 CONCRTE 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: 18.18.4	-
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.	-	-

REGISTERED PROFESSIONAL ENGINEER
DAVID W. HAWKINS
No. C-60800
Expires 12-31-12
STATE OF CALIFORNIA
3/29/12

1 3-20-2012: ADDED SHEET

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OAK FLAT-SILVERADO CANYON
ORANGE CO., CALIFORNIA
281' GUYED AM TOWER #2

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

SPECIAL INSPECTION

S-6

SHEET 6 OF 6