

Date: **November 01, 2016**

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**JACOBS**  
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**Subject:** **Structural Analysis Report**

**Carrier Designation:** **AT&T Mobility Co-Locate**  
**Carrier Site Number:** CTL02153  
**Carrier Site Name:** Westport FD

**Crown Castle Designation:** **Crown Castle BU Number:** 876354  
**Crown Castle Site Name:** WESTPORT FIRE DEPARTMENT  
**Crown Castle JDE Job Number:** 400337  
**Crown Castle Work Order Number:** 1319229  
**Crown Castle Application Number:** 364349 Rev. 0

**Engineering Firm Designation:** **Jacobs Engineering Group, Inc. Project Number:** 1319229

**Site Data:** **515 POST ROAD EAST, WESTPORT, Fairfield County, CT**  
**Latitude 41° 8' 24.26", Longitude -73° 20' 51.61"**  
**148 Foot - Monopole Tower**

Dear Charles McGuirt,

Jacobs Engineering Group, Inc. is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 964796, in accordance with application 364349, revision 0.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

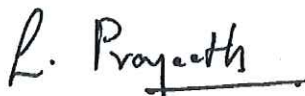
LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**  
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 120 mph converted to a nominal 3- second gust wind speed of 93 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure category B and Type B Risk Category III were used in this analysis.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at Jacobs Engineering Group, Inc. appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by:



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Structural Engineer

Reviewed by:



Matthew E. Watkins, P.E.  
Engineering Project Manager

11/01/16

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## 1) INTRODUCTION

This tower is a 148 ft. Monopole tower designed by Paul J. Ford & Company and manufactured by Summit Manufacturing, Inc. in February of 1997. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F. The tower has been modified multiple times in the past to accommodate additional loading.

## 2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Antenna Supporting Structures and Antennas using a 3-second gust wind speed of 93 mph with no ice, 50 mph with 0.75 inch ice thickness and 60 mph under service loads, exposure category B with topographic category 1 and crest height of 0 feet.

**Table 1 - Proposed Antenna and Cable Information**

Mounting Level (ft.)	Center Line Elevation (ft.)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
120.0	120.0	6	cci antennas	TPX-070821	2 1	3/4 3/8	-
		3	ericsson	RRUS 32			
		3	ericsson	RRUS 32 B2			
		6	powerwave technologies	7020.00			
		3	quintel technology	QS66512-3			
		1	raycap	DC6-48-60-18-8F			

**Table 2 - Existing and Reserved Antenna and Cable Information**

Mounting Level (ft.)	Center Line Elevation (ft.)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
148.0	160.0	1	decibel	DB420	6 2 3	5/16 1/2 1-1/4	1
	152.0	2	andrew	VHLP800-11			
	151.0	3	argus technologies	LLPX310R w/ Mount Pipe			
		3	alcatel lucent	800 EXTERNAL NOTCH FILTER			
		3	alcatel lucent	800MHZ RRH			
		9	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
		3	samsung telecom	FDD_R6_RRH			
		1	cci tower mounts	Platform Mount [LP 1201-1]			
		9	rfs celwave	ACU-A20-N			
		3	rfs celwave	APXVSP18-C-A20 w/ Mount Pipe			
144.0	144.0	1	andrew	VHLP2.5-10W	1	EW90	2
		1	cci tower mounts	Pipe Mount [PM 601-1]			

Mounting Level (ft.)	Center Line Elevation (ft.)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
120.0	120.0	3	powerwave technologies	7770.00	-	-	3
		3	ericsson	RRUS-11			
		6	powerwave technologies	LGP2140X			
		6	powerwave technologies	LGP13519			
		3	ericsson	RRUS-11	12 1 2	1-5/8 3/8 5/8	1
		6	powerwave technologies	LGP2140X			
		3	powerwave technologies	7770.00			
		3	powerwave technologies	P65-16-XLH-RR			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts (crown)	Platform Mount [LP 302-1]			
96.0	110.0	1	rfs celwave	PD220	5 8	1/2 7/8	1
	108.0	1	decibel	DB205-A			
	107.0	1	decibel	DB224			
		1	decibel	DB420-B			
	105.0	1	andrew	DB806E-XT			
		2	rfs celwave	PD1110			
		2	rfs celwave	PD201-1			
	96.0	1	cci tower mounts	Platform Mount [LP 1201-1]			
90.0	3	rfs celwave	PD83-1				
82.0	82.0	3	andrew	ETW190VS12UB	18 6	7/8 1-1/4	1
		3	andrew	LNx-6515DS-VTM w/ Mount Pipe			
		1	cci tower mounts	Platform Mount [LP 1201-1]			
		3	commscope	ATSBT-BOTTOM-FM-4G			
		6	rfs celwave	APXV18-206516S-C-A20 w/ Mount Pipe			
		3	rfs celwave	ATMAA1412D-1A20			
72.0	72.0	1	cci tower mounts	Side Arm Mount [SO 102-3]	6	1-5/8	1
		3	kathrein	800 10504 w/ Mount Pipe			
53.0	56.0	1	radiall larsen	BSA150B	2	1/2	1
	53.0	1	cci tower mounts	Side Arm Mount [SO 702-1]			
	50.0	1	radiall larsen	BSA150B			
50.0	50.0	1	trimble	BULLET III	1	1/2	1

- Notes:  
 1) Existing Equipment  
 2) Reserved Equipment

3) Equipment To Be Removed; Not Considered In This Analysis

**Table 3 - Design Antenna and Cable Information**

Mounting Level (ft.)	Center Line Elevation (ft.)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
148	148	12	generic	08980 H90		
140	140	2	generic	084200		
120	120	12	allgon	ALP9212N		
100	100	1	generic	08230		
		1	generic	P01100		
		1	generic	P01109		
		4	generic	P01142		
		1	generic	P0220		
50	50	2	generic	CHANNELMASTERS		
15	15	1	generic	GPS		

### 3) ANALYSIS PROCEDURE

**Table 4 - Documents Provided**

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Tower Engineering Professionals	1531886	CCISITES
4-POST-MODIFICATION INSPECTION	Paul J. Ford and Company	2485808	CCISITES
4-POST-MODIFICATION INSPECTION	Tower Engineering Professionals	2971197	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Paul J. Ford and Company	1448194	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Paul J. Ford and Company	1446984	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Paul J. Ford and Company	2848812	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Tower Engineering Professionals	2971196	CCISITES

#### 3.1) Analysis Method

tnxTower (version 7.0.7.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

#### 3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Jacobs Engineering Group, Inc. should be notified to determine the effect on the structural integrity of the tower.

#### 4) ANALYSIS RESULTS

**Table 5 - Section Capacity (Summary)**

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	148 - 143	Pole	TP23.0151x22x0.25	1	-4.35	1243.39	5.7%	Pass
L2	143 - 138	Pole	TP24.0301x23.0151x0.25	2	-4.75	1280.70	9.6%	Pass
L3	138 - 133	Pole	TP25.0452x24.0301x0.25	3	-5.17	1316.46	13.3%	Pass
L4	133 - 128	Pole	TP26.0602x25.0452x0.25	4	-5.62	1350.67	16.7%	Pass
L5	128 - 123	Pole	TP27.0753x26.0602x0.25	5	-6.08	1383.33	20.1%	Pass
L6	123 - 118	Pole	TP28.0903x27.0753x0.25	6	-9.99	1414.45	24.5%	Pass
L7	118 - 113	Pole	TP29.1054x28.0903x0.25	7	-10.57	1444.01	29.7%	Pass
L8	113 - 108	Pole	TP30.1204x29.1054x0.25	8	-11.18	1472.03	34.6%	Pass
L9	108 - 104.5	Pole	TP31.643x30.1204x0.25	9	-11.62	1490.72	37.9%	Pass
L10	104.5 - 99.5	Pole	TP31.346x30.331x0.375	10	-12.89	2544.52	25.9%	Pass
L11	99.5 - 94.5	Pole	TP32.361x31.346x0.375	11	-16.75	2627.92	28.6%	Pass
L12	94.5 - 89.5	Pole	TP33.3761x32.361x0.375	12	-17.70	2711.31	31.1%	Pass
L13	89.5 - 84.5	Pole	TP34.3911x33.3761x0.375	13	-18.69	2790.22	33.4%	Pass
L14	84.5 - 79.5	Pole	TP35.4061x34.3911x0.375	14	-22.86	2846.76	36.2%	Pass
L15	79.5 - 74.5	Pole	TP36.4211x35.4061x0.375	15	-23.97	2901.76	39.0%	Pass
L16	74.5 - 70.67	Pole	TP37.1993x36.4211x0.375	16	-25.12	2942.88	41.1%	Pass
L17	70.67 - 70.42	Pole	TP37.25x37.1993x0.375	17	-25.19	2945.53	41.3%	Pass
L18	70.42 - 65.42	Pole	TP38.2651x37.25x0.375	18	-26.39	2997.71	43.9%	Pass
L19	65.42 - 63.25	Pole	TP39.72x38.2651x0.375	19	-26.92	3019.85	44.7%	Pass
L20	63.25 - 57.25	Pole	TP39.1731x37.955x0.4375	20	-29.50	3712.86	44.9%	Pass
L21	57.25 - 53.23	Pole	TP39.9894x39.1731x0.4375	21	-30.64	3788.98	45.0%	Pass
L22	53.23 - 52.98	Pole + Reinf.	TP40.0401x39.9894x0.7125	22	-30.81	6139.08	40.6%	Pass
L23	52.98 - 47.98	Pole + Reinf.	TP41.0552x40.0401x0.7125	23	-32.86	6297.53	41.8%	Pass
L24	47.98 - 42.98	Pole + Reinf.	TP42.0703x41.0552x0.7	24	-34.95	6344.64	41.9%	Pass
L25	42.98 - 37.98	Pole + Reinf.	TP43.0854x42.0703x0.6875	25	-37.07	6386.12	43.7%	Pass
L26	37.98 - 36.67	Pole + Reinf.	TP43.3517x43.0854x0.6875	26	-37.64	6426.24	45.4%	Pass
L27	36.67 - 36.42	Pole	TP43.4025x43.3517x0.4375	27	-37.72	4005.79	47.0%	Pass
L28	36.42 - 35.13	Pole	TP43.6648x43.4025x0.4375	28	-38.11	4021.72	47.8%	Pass
L29	35.13 - 34.88	Pole + Reinf.	TP43.7155x43.6648x0.6375	29	-38.22	6016.67	45.5%	Pass
L30	34.88 - 34.5	Pole + Reinf.	TP44.959x43.7155x0.6375	30	-38.37	6027.30	45.6%	Pass
L31	34.5 - 27.75	Pole	TP44.2869x42.9167x0.5	31	-42.66	4796.61	43.9%	Pass
L32	27.75 - 25.88	Pole	TP44.6675x44.2869x0.5	32	-43.31	4838.30	44.2%	Pass
L33	25.88 - 25.75	Pole	TP44.6929x44.6675x0.5	33	-43.37	4841.08	47.3%	Pass
L34	25.75 - 25.63	Pole + Reinf.	TP44.7182x44.6929x0.75	34	-43.43	7224.71	42.8%	Pass
L35	25.63 - 25.5	Pole + Reinf.	TP44.7436x44.7182x0.75	35	-43.49	7228.88	42.8%	Pass
L36	25.5 - 20.5	Pole + Reinf.	TP45.7586x44.7436x0.75	36	-45.89	7395.66	43.8%	Pass
L37	20.5 - 15.5	Pole + Reinf.	TP46.7736x45.7586x0.7375	37	-48.33	7438.42	44.8%	Pass
L38	15.5 - 10.5	Pole + Reinf.	TP47.7885x46.7736x0.7375	38	-50.81	7602.41	45.8%	Pass
L39	10.5 - 5.5	Pole + Reinf.	TP48.8035x47.7885x0.725	39	-53.20	7636.76	46.6%	Pass
L40	5.5 - 0.5	Pole + Reinf.	TP49.8185x48.8035x0.725	40	-55.52	7797.98	47.5%	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L41	0.5 - 0	Pole + Reinf.	TP49.92x49.8185x0.725	41	-55.75	7814.10	47.5%	Pass
							Summary	
						Pole (L28)	47.8%	Pass
						Rating =	47.5%	Pass
						Overall	47.8%	Pass

**Table 6 - Tower Component Stresses vs. Capacity – LC7**

Notes	Component	Elevation (ft.)	% Capacity	Pass / Fail
1	Anchor Rods	0	42.5	Pass
1	Base Plate	0	25.7	Pass
1	Base Foundation Structural	0	29.5	Pass
1	Base Foundation Soil Interaction	0	28.3	Pass

<b>Structure Rating (max from all components) =</b>	<b>47.8%</b>
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Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

#### 4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the existing, reserved, and proposed loads. No modifications are required at this time.

**APPENDIX A**  
**TNXTOWER OUTPUT**



**DESIGNED APPURTENANCE LOADING**

TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount [LP 1201-1]	148	(2) TPX-070821	120
APXVSP18-C-A20 w/ Mount Pipe	148	DC6-48-60-18-8F	120
APXVSP18-C-A20 w/ Mount Pipe	148	DC6-48-60-18-8F	120
APXVSP18-C-A20 w/ Mount Pipe	148	7770.00	120
LLPX310R w/ Mount Pipe	148	Platform Mount [LP 302-1]	120
LLPX310R w/ Mount Pipe	148	7770.00	120
LLPX310R w/ Mount Pipe	148	PD1110	96
DB420	148	PD1110	96
(6) PCS 1900MHz 4x45W-65MHz	148	PD201-1	96
(3) PCS 1900MHz 4x45W-65MHz	148	PD83-1	96
(6) ACU-A20-N	148	DB205-A	96
(3) ACU-A20-N	148	PD201-1	96
(2) 800MHZ RRH	148	PD83-1	96
800MHZ RRH	148	DB806E-XT	96
(2) 800 EXTERNAL NOTCH FILTER	148	PD220	96
800 EXTERNAL NOTCH FILTER	148	DB224	96
FDD_R6_RRH	148	(4) 6' x 2" Mount Pipe	96
FDD_R6_RRH	148	(2) 6' x 2" Mount Pipe	96
FDD_R6_RRH	148	(3) 6' x 2" Mount Pipe	96
6' x 2" Mount Pipe	148	Platform Mount [LP 1201-1]	96
6' x 2" Mount Pipe	148	DB420-B	96
6' x 2" Mount Pipe	148	PD83-1	96
6' x 2" Mount Pipe	148	APXV18-206516S-C-A20 w/ Mount Pipe	82
6' x 2" Mount Pipe	148	APXV18-206516S-C-A20 w/ Mount Pipe	82
6' x 2" Mount Pipe	148	APXV18-206516S-C-A20 w/ Mount Pipe	82
VHLP800-11	148	APXV18-206516S-C-A20 w/ Mount Pipe	82
VHLP800-11	148	LNK-6515DS-VTM w/ Mount Pipe	82
Pipe Mount [PM 601-1]	144	LNK-6515DS-VTM w/ Mount Pipe	82
VHLP2.5-10W	144	LNK-6515DS-VTM w/ Mount Pipe	82
7770.00	120	ETW190VS12UB	82
P65-16-XLH-RR	120	ETW190VS12UB	82
P65-16-XLH-RR	120	ETW190VS12UB	82
P65-16-XLH-RR	120	ATMAA1412D-1A20	82
QS66512-3	120	ATMAA1412D-1A20	82
QS66512-3	120	ATMAA1412D-1A20	82
QS66512-3	120	ATSBT-BOTTOM-FM-4G	82
RRUS-11	120	ATSBT-BOTTOM-FM-4G	82
RRUS-11	120	ATSBT-BOTTOM-FM-4G	82
RRUS-11	120	6' x 2" Mount Pipe	82
(2) LGP2140X	120	6' x 2" Mount Pipe	82
(2) LGP2140X	120	6' x 2" Mount Pipe	82
(2) LGP2140X	120	Platform Mount [LP 1201-1]	82
RRUS 32	120	APXV18-206516S-C-A20 w/ Mount Pipe	82
RRUS 32	120	APXV18-206516S-C-A20 w/ Mount Pipe	82
RRUS 32	120	800 10504 w/ Mount Pipe	72
RRUS 32 B2	120	Side Arm Mount [SO 102-3]	72
RRUS 32 B2	120	800 10504 w/ Mount Pipe	72
RRUS 32 B2	120	800 10504 w/ Mount Pipe	72
(2) 7020.00	120	BSA150B	53
(2) 7020.00	120	Side Arm Mount [SO 702-1]	53
(2) 7020.00	120	8'x2" Antenna Mount Pipe	53
(2) TPX-070821	120	BSA150B	53
(2) TPX-070821	120	BULLET III	50

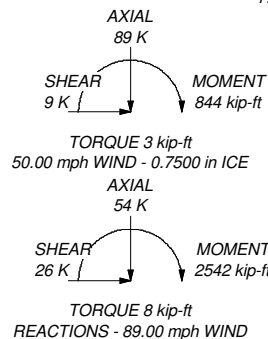
**MATERIAL STRENGTH**

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-60	60 ksi	75 ksi			

**TOWER DESIGN NOTES**

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 89.00 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50.00 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.00 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.0000 ft

ALL REACTIONS ARE FACTORED



Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.0000	12	0.2500	4.0000	29.1054	30.1204	A607-60	0.3
2	5.0000	12	0.2500	4.0000	28.0903	29.1054	A607-60	0.3
3	5.0000	12	0.2500	4.0000	27.0753	28.0903	A607-60	0.3
4	5.0000	12	0.2500	4.0000	26.0602	27.0753	A607-60	0.3
5	5.0000	12	0.2500	4.0000	25.0452	26.0602	A607-60	0.3
6	5.0000	12	0.2500	4.0000	24.0301	25.0452	A607-60	0.3
7	5.0000	12	0.2500	4.0000	23.0151	24.0301	A607-60	0.3
8	5.0000	12	0.2500	4.0000	22.0000	23.0151	A607-60	0.3
9	5.0000	12	0.2500	4.0000	20.9850	22.0000	A607-60	0.3
10	5.0000	12	0.2500	4.0000	19.9700	20.9850	A607-60	0.3
11	5.0000	12	0.2500	4.0000	18.9550	19.9700	A607-60	0.3
12	5.0000	12	0.2500	4.0000	17.9400	18.9550	A607-60	0.3
13	5.0000	12	0.2500	4.0000	16.9250	17.9400	A607-60	0.3
14	5.0000	12	0.2500	4.0000	15.9100	16.9250	A607-60	0.3
15	5.0000	12	0.2500	4.0000	14.8950	15.9100	A607-60	0.3
16	5.0000	12	0.2500	4.0000	13.8800	14.8950	A607-60	0.3
17	5.0000	12	0.2500	4.0000	12.8650	13.8800	A607-60	0.3
18	5.0000	12	0.2500	4.0000	11.8500	12.8650	A607-60	0.3
19	5.0000	12	0.2500	4.0000	10.8350	11.8500	A607-60	0.3
20	5.0000	12	0.2500	4.0000	9.8200	10.8350	A607-60	0.3
21	5.0000	12	0.2500	4.0000	8.8050	9.8200	A607-60	0.3
22	5.0000	12	0.2500	4.0000	7.7900	8.8050	A607-60	0.3
23	5.0000	12	0.2500	4.0000	6.7750	7.7900	A607-60	0.3
24	5.0000	12	0.2500	4.0000	5.7600	6.7750	A607-60	0.3
25	5.0000	12	0.2500	4.0000	4.7450	5.7600	A607-60	0.3
26	5.0000	12	0.2500	4.0000	3.7300	4.7450	A607-60	0.3
27	5.0000	12	0.2500	4.0000	2.7150	3.7300	A607-60	0.3
28	5.0000	12	0.2500	4.0000	1.7000	2.7150	A607-60	0.3
29	5.0000	12	0.2500	4.0000	0.6850	1.7000	A607-60	0.3
30	5.0000	12	0.2500	4.0000	0.6700	0.6850	A607-60	0.3
31	5.0000	12	0.2500	4.0000	0.6550	0.6700	A607-60	0.3
32	5.0000	12	0.2500	4.0000	0.6400	0.6550	A607-60	0.3
33	5.0000	12	0.2500	4.0000	0.6250	0.6400	A607-60	0.3
34	5.0000	12	0.2500	4.0000	0.6100	0.6250	A607-60	0.3
35	5.0000	12	0.2500	4.0000	0.5950	0.6100	A607-60	0.3
36	5.0000	12	0.2500	4.0000	0.5800	0.5950	A607-60	0.3
37	5.0000	12	0.2500	4.0000	0.5650	0.5800	A607-60	0.3
38	5.0000	12	0.2500	4.0000	0.5500	0.5650	A607-60	0.3
39	5.0000	12	0.2500	4.0000	0.5350	0.5500	A607-60	0.3
40	5.0000	12	0.2500	4.0000	0.5200	0.5350	A607-60	0.3

**Jacobs Engineering Group, Inc.** Job: **WESTPORT FIRE DEPARTMENT**  
 5449 Bells Ferry Road Project: **BU876354\_WO1319229**  
 Acworth, GA 30102 Client: **Crown Castle** Drawn by: **lingirp** App'd:  
 Phone: 770-701-2500 Code: **TIA-222-G** Date: **11/01/16** Scale: **NTS**  
 FAX: 770-701-2501 Path: **T:\876354 Westport Fire Dept\WO\_1319229 Analysis Model\BU876354 Modr.dwg** Dwg No. **E-1**

## Tower Input Data

There is a pole section.  
 This tower is designed using the TIA-222-G standard.  
 The following design criteria apply:

- 1) Tower is located in Fairfield County, Connecticut.
- 2) Basic wind speed of 89.00 mph.
- 3) Structure Class II.
- 4) Exposure Category B.
- 5) Topographic Category 1.
- 6) Crest Height 0.0000 ft.
- 7) Nominal ice thickness of 0.7500 in.
- 8) Ice thickness is considered to increase with height.
- 9) Ice density of 56.00 pcf.
- 10) A wind speed of 50.00 mph is used in combination with ice.
- 11) Temperature drop of 50.00 °F.
- 12) Deflections calculated using a wind speed of 60.00 mph.
- 13) A non-linear (P-delta) analysis was used.
- 14) Pressures are calculated at each section.
- 15) Stress ratio used in pole design is 1.
- 16) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile  Include Bolts In Member Capacity  Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt.  Autocalc Torque Arm Areas  Add IBC .6D+W Combination ✓ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption  <div style="text-align: center; background-color: #e0e0e0; padding: 2px;"><b>Poles</b></div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
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## Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	148.0000- 143.0000	5.0000	0.00	12	22.0000	23.0151	0.2500	1.0000	A607-60 (60 ksi)
L2	143.0000- 138.0000	5.0000	0.00	12	23.0151	24.0301	0.2500	1.0000	A607-60 (60 ksi)
L3	138.0000- 133.0000	5.0000	0.00	12	24.0301	25.0452	0.2500	1.0000	A607-60 (60 ksi)
L4	133.0000- 128.0000	5.0000	0.00	12	25.0452	26.0602	0.2500	1.0000	A607-60 (60 ksi)
L5	128.0000- 123.0000	5.0000	0.00	12	26.0602	27.0753	0.2500	1.0000	A607-60 (60 ksi)
L6	123.0000-	5.0000	0.00	12	27.0753	28.0903	0.2500	1.0000	A607-60

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
	118.0000								(60 ksi)
L7	118.0000- 113.0000	5.0000	0.00	12	28.0903	29.1054	0.2500	1.0000	A607-60 (60 ksi)
L8	113.0000- 108.0000	5.0000	0.00	12	29.1054	30.1204	0.2500	1.0000	A607-60 (60 ksi)
L9	108.0000- 100.5000	7.5000	4.00	12	30.1204	31.6430	0.2500	1.0000	A607-60 (60 ksi)
L10	100.5000- 99.5000	5.0000	0.00	12	30.3310	31.3460	0.3750	1.5000	A607-60 (60 ksi)
L11	99.5000- 94.5000	5.0000	0.00	12	31.3460	32.3610	0.3750	1.5000	A607-60 (60 ksi)
L12	94.5000- 89.5000	5.0000	0.00	12	32.3610	33.3761	0.3750	1.5000	A607-60 (60 ksi)
L13	89.5000- 84.5000	5.0000	0.00	12	33.3761	34.3911	0.3750	1.5000	A607-60 (60 ksi)
L14	84.5000- 79.5000	5.0000	0.00	12	34.3911	35.4061	0.3750	1.5000	A607-60 (60 ksi)
L15	79.5000- 74.5000	5.0000	0.00	12	35.4061	36.4211	0.3750	1.5000	A607-60 (60 ksi)
L16	74.5000- 70.6670	3.8330	0.00	12	36.4211	37.1993	0.3750	1.5000	A607-60 (60 ksi)
L17	70.6670- 70.4170	0.2500	0.00	12	37.1993	37.2500	0.3750	1.5000	A607-60 (60 ksi)
L18	70.4170- 65.4170	5.0000	0.00	12	37.2500	38.2651	0.3750	1.5000	A607-60 (60 ksi)
L19	65.4170- 63.6670	1.7500	0.00	12	38.2651	38.6203	0.3750	1.5000	A607-60 (60 ksi)
L20	63.6670- 63.4170	0.2500	0.00	12	38.6203	38.6711	0.3750	1.5000	A607-60 (60 ksi)
L21	63.4170- 58.2500	5.1670	5.00	12	38.6711	39.7200	0.3750	1.5000	A607-60 (60 ksi)
L22	58.2500- 57.2500	6.0000	0.00	12	37.9550	39.1731	0.4375	1.7500	A607-60 (60 ksi)
L23	57.2500- 53.2290	4.0210	0.00	12	39.1731	39.9894	0.4375	1.7500	A607-60 (60 ksi)
L24	53.2290- 52.9790	0.2500	0.00	12	39.9894	40.0401	0.4375	1.7500	A607-60 (60 ksi)
L25	52.9790- 47.9790	5.0000	0.00	12	40.0401	41.0552	0.4375	1.7500	A607-60 (60 ksi)
L26	47.9790- 42.9790	5.0000	0.00	12	41.0552	42.0703	0.4375	1.7500	A607-60 (60 ksi)
L27	42.9790- 37.9790	5.0000	0.00	12	42.0703	43.0854	0.4375	1.7500	A607-60 (60 ksi)
L28	37.9790- 35.1250	2.8540	0.00	12	43.0854	43.6648	0.4375	1.7500	A607-60 (60 ksi)
L29	35.1250- 34.8750	0.2500	0.00	12	43.6648	43.7155	0.6375	2.5500	A607-60 (60 ksi)
L30	34.8750- 28.7500	6.1250	5.75	12	43.7155	44.9590	0.6375	2.5500	A607-60 (60 ksi)
L31	28.7500- 27.7500	6.7500	0.00	12	42.9167	44.2869	0.5000	2.0000	A607-60 (60 ksi)
L32	27.7500- 25.8750	1.8750	0.00	12	44.2869	44.6675	0.5000	2.0000	A607-60 (60 ksi)
L33	25.8750- 25.7500	0.1250	0.00	12	44.6675	44.6929	0.5000	2.0000	A607-60 (60 ksi)
L34	25.7500- 25.6250	0.1250	0.00	12	44.6929	44.7182	0.7500	3.0000	A607-60 (60 ksi)
L35	25.6250- 25.5000	0.1250	0.00	12	44.7182	44.7436	0.7500	3.0000	A607-60 (60 ksi)
L36	25.5000- 20.5000	5.0000	0.00	12	44.7436	45.7586	0.7500	3.0000	A607-60 (60 ksi)
L37	20.5000- 15.5000	5.0000	0.00	12	45.7586	46.7736	0.7375	2.9500	A607-60 (60 ksi)
L38	15.5000- 10.5000	5.0000	0.00	12	46.7736	47.7885	0.7375	2.9500	A607-60 (60 ksi)
L39	10.5000- 5.5000	5.0000	0.00	12	47.7885	48.8035	0.7250	2.9000	A607-60 (60 ksi)
L40	5.5000-0.5000	5.0000	0.00	12	48.8035	49.8185	0.7250	2.9000	A607-60 (60 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade (60 ksi)
L41	0.5000-0.0000	0.5000		12	49.8185	49.9200	0.7250	2.9000	A607-60 (60 ksi)

### Tapered Pole Properties

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	It/Q in <sup>2</sup>	w in	w/t
L1	22.7761	17.5087	1057.2060	7.7865	11.3960	92.7699	2142.1860	8.6173	5.2260	20.904
	23.8269	18.3259	1212.2378	8.1499	11.9218	101.6825	2456.3225	9.0194	5.4980	21.992
L2	23.8269	18.3259	1212.2378	8.1499	11.9218	101.6825	2456.3225	9.0194	5.4980	21.992
	24.8778	19.1430	1381.7298	8.5133	12.4476	111.0038	2799.7592	9.4216	5.7701	23.08
L3	24.8778	19.1430	1381.7298	8.5133	12.4476	111.0038	2799.7592	9.4216	5.7701	23.08
	25.9287	19.9601	1566.3271	8.8767	12.9734	120.7338	3173.8034	9.8238	6.0421	24.168
L4	25.9287	19.9601	1566.3271	8.8767	12.9734	120.7338	3173.8034	9.8238	6.0421	24.168
	26.9795	20.7772	1766.6743	9.2401	13.4992	130.8726	3579.7611	10.2259	6.3141	25.257
L5	26.9795	20.7772	1766.6743	9.2401	13.4992	130.8726	3579.7611	10.2259	6.3141	25.257
	28.0304	21.5943	1983.4159	9.6034	14.0250	141.4202	4018.9384	10.6281	6.5862	26.345
L6	28.0304	21.5943	1983.4159	9.6034	14.0250	141.4202	4018.9384	10.6281	6.5862	26.345
	29.0812	22.4115	2217.1972	9.9668	14.5508	152.3765	4492.6425	11.0302	6.8582	27.433
L7	29.0812	22.4115	2217.1972	9.9668	14.5508	152.3765	4492.6425	11.0302	6.8582	27.433
	30.1321	23.2286	2468.6623	10.3302	15.0766	163.7415	5002.1791	11.4324	7.1302	28.521
L8	30.1321	23.2286	2468.6623	10.3302	15.0766	163.7415	5002.1791	11.4324	7.1302	28.521
	31.1830	24.0457	2738.4566	10.6936	15.6024	175.5153	5548.8555	11.8346	7.4023	29.609
L9	31.1830	24.0457	2738.4566	10.6936	15.6024	175.5153	5548.8555	11.8346	7.4023	29.609
	32.7592	25.2714	3178.9251	11.2387	16.3911	193.9425	6441.3640	12.4378	7.8103	31.241
L10	32.2416	36.1718	4143.0744	10.7242	15.7114	263.6980	8394.9919	17.8027	7.1237	18.997
	32.4518	37.3975	4578.6591	11.0876	16.2372	281.9854	9277.6047	18.4059	7.3957	19.722
L11	32.4518	37.3975	4578.6591	11.0876	16.2372	281.9854	9277.6047	18.4059	7.3957	19.722
	33.5026	38.6231	5043.7522	11.4510	16.7630	300.8859	10220.009	19.0091	7.6678	20.447
L12	33.5026	38.6231	5043.7522	11.4510	16.7630	300.8859	10220.009	19.0091	7.6678	20.447
	34.5534	39.8488	5539.3204	11.8144	17.2888	320.3994	11224.164	19.6124	7.9398	21.173
L13	34.5534	39.8488	5539.3204	11.8144	17.2888	320.3994	11224.164	19.6124	7.9398	21.173
	35.6043	41.0744	6066.3301	12.1778	17.8146	340.5261	12292.029	20.2156	8.2118	21.898
L14	35.6043	41.0744	6066.3301	12.1778	17.8146	340.5261	12292.029	20.2156	8.2118	21.898
	36.6551	42.3001	6625.7494	12.5411	18.3404	361.2659	13425.564	20.8188	8.4838	22.624
L15	36.6551	42.3001	6625.7494	12.5411	18.3404	361.2659	13425.564	20.8188	8.4838	22.624
	37.7059	43.5257	7218.5445	12.9045	18.8662	382.6188	14626.728	21.4220	8.7559	23.349
L16	37.7059	43.5257	7218.5445	12.9045	18.8662	382.6188	14626.728	21.4220	8.7559	23.349
	38.5115	44.4653	7696.1862	13.1831	19.2692	399.4030	15594.559	21.8845	8.9644	23.905
L17	38.5115	44.4653	7696.1862	13.1831	19.2692	399.4030	15594.559	21.8845	8.9644	23.905
	38.5641	44.5266	7728.0505	13.2013	19.2955	400.5103	15659.125	21.9146	8.9780	23.941
L18	38.5641	44.5266	7728.0505	13.2013	19.2955	400.5103	15659.125	21.9146	8.9780	23.941
	39.6149	45.7522	8383.9516	13.5646	19.8213	422.9769	16988.158	22.5179	9.2500	24.667
L19	39.6149	45.7522	8383.9516	13.5646	19.8213	422.9769	16988.158	22.5179	9.2500	24.667
	39.9827	46.1812	8621.9960	13.6918	20.0053	430.9851	17470.501	22.7290	9.3452	24.921
L20	39.9827	46.1812	8621.9960	13.6918	20.0053	430.9851	17470.501	22.7290	9.3452	24.921
	40.0352	46.2425	8656.3654	13.7100	20.0316	432.1352	17540.143	22.7592	9.3588	24.957

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	It/Q in <sup>2</sup>	w in	w/t
L21	40.0352	46.2425	8656.3654	13.7100	20.0316	432.1352	17540.143	22.7592	9.3588	24.957
	41.1212	47.5091	9387.3225	14.0855	20.5750	456.2499	19021.260	23.3825	9.6400	25.707
L22	40.3448	52.8527	9495.5569	13.4313	19.6607	482.9721	19240.572	26.0125	8.9994	20.57
	40.5549	54.5687	10450.797	13.8673	20.2916	515.0296	21176.148	26.8571	9.3259	21.316
L23	40.5549	54.5687	10450.797	13.8673	20.2916	515.0296	21176.148	26.8571	9.3259	21.316
	41.4001	55.7187	11125.549	14.1596	20.7145	537.0899	22543.379	27.4231	9.5447	21.816
L24	41.4001	55.7187	11125.549	14.1596	20.7145	537.0899	22543.379	27.4231	9.5447	21.816
	41.4526	55.7902	11168.434	14.1777	20.7408	538.4767	22630.275	27.4582	9.5583	21.847
L25	41.4526	55.7902	11168.434	14.1777	20.7408	538.4767	22630.275	27.4582	9.5583	21.847
	42.5035	57.2202	12049.427	14.5411	21.2666	566.5892	24415.406	28.1620	9.8303	22.469
L26	42.5035	57.2202	12049.427	14.5411	21.2666	566.5892	24415.406	28.1620	9.8303	22.469
	43.5544	58.6502	12975.573	14.9045	21.7924	595.4170	26292.029	28.8658	10.1023	23.091
L27	43.5544	58.6502	12975.573	14.9045	21.7924	595.4170	26292.029	28.8658	10.1023	23.091
	44.6053	60.0802	13948.000	15.2679	22.3182	624.9602	28262.430	29.5696	10.3744	23.713
L28	44.6053	60.0802	13948.000	15.2679	22.3182	624.9602	28262.430	29.5696	10.3744	23.713
	45.2051	60.8964	14524.243	15.4754	22.6184	642.1441	29430.054	29.9714	10.5297	24.068
L29	45.2051	88.3242	20871.496	15.4038	22.6184	922.7681	42291.311	43.4705	9.9937	15.676
	45.2576	88.4284	20945.442	15.4219	22.6446	924.9623	42441.145	43.5218	10.0073	15.698
L30	45.2576	88.4284	20945.442	15.4219	22.6446	924.9623	42441.145	43.5218	10.0073	15.698
	46.5450	90.9810	22812.105	15.8671	23.2888	979.5327	46223.509	44.7781	10.3405	16.22
L31	45.6390	68.2908	15682.715	15.1852	22.2308	705.4489	31777.433	33.6107	10.1617	20.323
	45.8492	70.4969	17252.174	15.6757	22.9406	752.0366	34957.581	34.6964	10.5289	21.058
L32	45.8492	70.4969	17252.174	15.6757	22.9406	752.0366	34957.581	34.6964	10.5289	21.058
	46.2432	71.1097	17705.987	15.8120	23.1378	765.2420	35877.131	34.9980	10.6309	21.262
L33	46.2432	71.1097	17705.987	15.8120	23.1378	765.2420	35877.131	34.9980	10.6309	21.262
	46.2695	71.1505	17736.521	15.8210	23.1509	766.1264	35939.000	35.0181	10.6377	21.275
L34	46.2695	106.1220	26155.820	15.7315	23.1509	1129.7968	52998.782	52.2300	9.9677	13.29
	46.2957	106.1833	26201.157	15.7406	23.1641	1131.1129	53090.648	52.2602	9.9745	13.299
L35	46.2957	106.1833	26201.157	15.7406	23.1641	1131.1129	53090.648	52.2602	9.9745	13.299
	46.3220	106.2446	26246.545	15.7497	23.1772	1132.4298	53182.617	52.2904	9.9813	13.308
L36	46.3220	106.2446	26246.545	15.7497	23.1772	1132.4298	53182.617	52.2904	9.9813	13.308
	47.3728	108.6958	28105.381	16.1131	23.7030	1185.7333	56949.122	53.4967	10.2533	13.671
L37	47.3728	106.9138	27659.991	16.1176	23.7030	1166.9428	56046.641	52.6197	10.2868	13.948
	48.4236	109.3242	29573.222	16.4809	24.2287	1220.5859	59923.367	53.8060	10.5588	14.317
L38	48.4236	109.3242	29573.222	16.4809	24.2287	1220.5859	59923.367	53.8060	10.5588	14.317

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	It/Q in <sup>2</sup>	w in	w/t
	49.4743	111.7345	31572.704 9	16.8443	24.7545	1275.4345	63974.858 3	54.9923	10.8308	14.686
L39	49.4743	109.8699	31062.317 0	16.8488	24.7545	1254.8166	62940.675 1	54.0746	10.8643	14.985
	50.5251	112.2393	33115.648 1	17.2121	25.2802	1309.9427	67101.281 9	55.2408	11.1363	15.36
L40	50.5251	112.2393	33115.648 3	17.2121	25.2802	1309.9427	67101.281 6	55.2408	11.1363	15.36
	51.5759	114.6088	35257.528 3	17.5755	25.8060	1366.2540	71441.311 6	56.4070	11.4084	15.736
L41	51.5759	114.6088	35257.528 6	17.5755	25.8060	1366.2540	71441.311 8	56.4070	11.4084	15.736
	51.6810	114.8457	35476.659 6	17.6118	25.8586	1371.9503	71885.330 8	56.5236	11.4356	15.773
			8				9			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A <sub>r</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft <sup>2</sup>	in							
L1 148.0000-143.0000				1	1	1			
L2 143.0000-138.0000				1	1	1			
L3 138.0000-133.0000				1	1	1			
L4 133.0000-128.0000				1	1	1			
L5 128.0000-123.0000				1	1	1			
L6 123.0000-118.0000				1	1	1			
L7 118.0000-113.0000				1	1	1			
L8 113.0000-108.0000				1	1	1			
L9 108.0000-100.5000				1	1	1			
L10 100.5000-99.5000				1	1	1			
L11 99.5000-94.5000				1	1	1			
L12 94.5000-89.5000				1	1	1			
L13 89.5000-84.5000				1	1	1			
L14 84.5000-79.5000				1	1	1			
L15 79.5000-74.5000				1	1	1			
L16 74.5000-70.6670				1	1	1			
L17 70.6670-70.4170				1	1	1			
L18 70.4170-65.4170				1	1	1			
L19 65.4170-63.6670				1	1	1			
L20 63.6670-63.4170				1	1	1			
L21 63.4170-58.2500				1	1	1			
L22 58.2500-57.2500				1	1	1			
L23 57.2500-53.2290				1	1	1			
L24 53.2290-				1	1	1			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor $A_r$	Adjust. Factor $A_r$	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft <sup>2</sup>	in							
L25 52.9790-47.9790				1	1	1			
L26 47.9790-42.9790				1	1	1			
L27 42.9790-37.9790				1	1	1			
L28 37.9790-35.1250				1	1	1			
L29 35.1250-34.8750				1	1	0.965503			
L30 34.8750-28.7500				1	1	0.96501			
L31 28.7500-27.7500				1	1	1			
L32 27.7500-25.8750				1	1	1			
L33 25.8750-25.7500				1	1	1			
L34 25.7500-25.6250				1	1	0.976971			
L35 25.6250-25.5000				1	1	0.976792			
L36 25.5000-20.5000				1	1	0.969798			
L37 20.5000-15.5000				1	1	0.979171			
L38 15.5000-10.5000				1	1	0.972673			
L39 10.5000-5.5000				1	1	0.982858			
L40 5.5000-0.5000				1	1	0.976796			
L41 0.5000-0.0000				1	1	0.976203			

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

Description	Sector	Component Type	Placement	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	C	Surface Ar (CaAa)	148.0000 - 6.0000	1	1	0.000 0.000	0.3750		0.22
FB-L98-002-XXX( 3/8)	C	Surface Ar (CaAa)	120.0000 - 8.0000	1	1	0.000 0.000	0.0000		0.06
WR-VG82ST-BRDA( 5/8")	C	Surface Ar (CaAa)	120.0000 - 8.0000	1	1	0.000 0.000	0.6450		0.31
WR-VG82ST-BRDA( 5/8")	C	Surface Ar (CaAa)	120.0000 - 8.0000	1	1	0.000 0.000	0.0000		0.31
FB-L98B-034-XXX(3/8")	C	Surface Ar (CaAa)	120.0000 - 8.0000	1	1	0.000 0.000	0.3937		0.06
WR-VG86ST-BRD(3/4")	C	Surface Ar (CaAa)	120.0000 - 8.0000	2	2	0.000 0.000	0.7950		0.58
***									
CCI-SFP-065125	A	Surface Af (CaAa)	35.1250 - 0.0000	1	1	0.000 0.000	6.5000	15.5000	0.00
CCI-SFP-065125	B	Surface Af (CaAa)	35.1250 - 0.0000	1	1	0.000 0.000	6.5000	15.5000	0.00
CCI-SFP-065125	C	Surface Af (CaAa)	28.5000 - 0.0000	2	1	0.000 0.000	6.5000	15.5000	0.00
CCI-SFP-065125	C	Surface Af (CaAa)	35.1250 - 23.1250	1	1	0.000 0.000	6.5000	15.5000	0.00

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
CCI-SFP-060100	A	Surface Af (CaAa)	55.2290 - 35.1250	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	B	Surface Af (CaAa)	55.2290 - 35.1250	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	C	Surface Af (CaAa)	55.2290 - 35.1250	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-045100	A	Surface Af (CaAa)	72.1670 - 62.1670	1	1	0.000 0.000	4.5000	11.0000	0.00
CCI-SFP-045100	B	Surface Af (CaAa)	72.1670 - 62.1670	1	1	0.000 0.000	4.5000	11.0000	0.00
CCI-SFP-045100	C	Surface Af (CaAa)	72.1670 - 62.1670	1	1	0.000 0.000	4.5000	11.0000	0.00
***									

**Feed Line/Linear Appurtenances - Entered As Area**

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	CAAA ft <sup>2</sup> /ft	Weight plf
***							
7983A(1/2")	C	No	Inside Pole	148.0000 - 8.0000	2	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000
9207(5/16")	C	No	Inside Pole	148.0000 - 8.0000	6	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000
MLE Hybrid 3Power/6Fiber RL 2(1 1/4")	C	No	Inside Pole	148.0000 - 8.0000	3	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000
2" innerduct conduit	C	No	Inside Pole	148.0000 - 8.0000	2	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000
***							
EW90(ELLIPTICAL)	B	No	Inside Pole	144.0000 - 8.0000	1	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000
***							
LDF7-50A(1-5/8")	C	No	Inside Pole	120.0000 - 8.0000	12	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000
***							
LDF4-50A(1/2")	B	No	Inside Pole	96.0000 - 8.0000	5	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000
LDF5-50A(7/8)	B	No	Inside Pole	96.0000 - 8.0000	8	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000
***							
LDF5-50A(7/8)	C	No	Inside Pole	82.0000 - 8.0000	18	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000
LCF114-50J(1-1/4")	C	No	Inside Pole	82.0000 - 8.0000	6	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000
***							
HJ7-50A(1-5/8")	C	No	Inside Pole	72.0000 - 8.0000	6	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000
LDF4-50A(1/2")	B	No	Inside Pole	53.0000 - 8.0000	2	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000
LDF4-50A(1/2")	B	No	Inside Pole	50.0000 - 8.0000	1	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000
***							



### Feed Line/Linear Appurtenances Section Areas

Tower Sectio n	Tower Elevation ft	Face	$A_R$ ft <sup>2</sup>	$A_F$ ft <sup>2</sup>	$C_{AA}$ In Face ft <sup>2</sup>	$C_{AA}$ Out Face ft <sup>2</sup>	Weight K
L1	148.0000- 143.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.03
L2	143.0000- 138.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.03
L3	138.0000- 133.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.03
L4	133.0000- 128.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.03
L5	128.0000- 123.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.03
L6	123.0000- 118.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.713	0.000	0.06
L7	118.0000- 113.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.502	0.000	0.09
L8	113.0000- 108.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.502	0.000	0.09
L9	108.0000- 100.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.253	0.000	0.14
L10	100.5000- 99.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.300	0.000	0.02
L11	99.5000-94.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.01
		C	0.000	0.000	1.502	0.000	0.09
L12	94.5000-89.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.02
		C	0.000	0.000	1.502	0.000	0.09
L13	89.5000-84.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.02
		C	0.000	0.000	1.502	0.000	0.09
L14	84.5000-79.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.02
		C	0.000	0.000	1.502	0.000	0.12
L15	79.5000-74.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.02
		C	0.000	0.000	1.502	0.000	0.14
L16	74.5000-70.6670	A	0.000	0.000	1.125	0.000	0.00
		B	0.000	0.000	1.125	0.000	0.01
		C	0.000	0.000	2.276	0.000	0.12
L17	70.6670-70.4170	A	0.000	0.000	0.188	0.000	0.00
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.263	0.000	0.01
L18	70.4170-65.4170	A	0.000	0.000	3.750	0.000	0.00
		B	0.000	0.000	3.750	0.000	0.02
		C	0.000	0.000	5.252	0.000	0.17
L19	65.4170-63.6670	A	0.000	0.000	1.313	0.000	0.00
		B	0.000	0.000	1.313	0.000	0.01
		C	0.000	0.000	1.838	0.000	0.06
L20	63.6670-63.4170	A	0.000	0.000	0.188	0.000	0.00
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.263	0.000	0.01
L21	63.4170-58.2500	A	0.000	0.000	0.938	0.000	0.00
		B	0.000	0.000	0.938	0.000	0.02
		C	0.000	0.000	2.490	0.000	0.18
L22	58.2500-57.2500	A	0.000	0.000	0.000	0.000	0.00

Tower Sectio n	Tower Elevation ft	Face	$A_R$ ft <sup>2</sup>	$A_F$ ft <sup>2</sup>	$C_{AA}$ In Face ft <sup>2</sup>	$C_{AA}$ Out Face ft <sup>2</sup>	Weight K
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.300	0.000	0.03
L23	57.2500-53.2290	A	0.000	0.000	2.000	0.000	0.00
		B	0.000	0.000	2.000	0.000	0.01
		C	0.000	0.000	3.208	0.000	0.14
L24	53.2290-52.9790	A	0.000	0.000	0.250	0.000	0.00
		B	0.000	0.000	0.250	0.000	0.00
		C	0.000	0.000	0.325	0.000	0.01
L25	52.9790-47.9790	A	0.000	0.000	5.000	0.000	0.00
		B	0.000	0.000	5.000	0.000	0.02
		C	0.000	0.000	6.502	0.000	0.17
L26	47.9790-42.9790	A	0.000	0.000	5.000	0.000	0.00
		B	0.000	0.000	5.000	0.000	0.02
		C	0.000	0.000	6.502	0.000	0.17
L27	42.9790-37.9790	A	0.000	0.000	5.000	0.000	0.00
		B	0.000	0.000	5.000	0.000	0.02
		C	0.000	0.000	6.502	0.000	0.17
L28	37.9790-35.1250	A	0.000	0.000	2.854	0.000	0.00
		B	0.000	0.000	2.854	0.000	0.01
		C	0.000	0.000	3.711	0.000	0.10
L29	35.1250-34.8750	A	0.000	0.000	0.271	0.000	0.00
		B	0.000	0.000	0.271	0.000	0.00
		C	0.000	0.000	0.346	0.000	0.01
L30	34.8750-28.7500	A	0.000	0.000	6.635	0.000	0.00
		B	0.000	0.000	6.635	0.000	0.03
		C	0.000	0.000	8.475	0.000	0.21
L31	28.7500-27.7500	A	0.000	0.000	1.083	0.000	0.00
		B	0.000	0.000	1.083	0.000	0.00
		C	0.000	0.000	2.196	0.000	0.03
L32	27.7500-25.8750	A	0.000	0.000	2.031	0.000	0.00
		B	0.000	0.000	2.031	0.000	0.01
		C	0.000	0.000	4.626	0.000	0.06
L33	25.8750-25.7500	A	0.000	0.000	0.135	0.000	0.00
		B	0.000	0.000	0.135	0.000	0.00
		C	0.000	0.000	0.308	0.000	0.00
L34	25.7500-25.6250	A	0.000	0.000	0.135	0.000	0.00
		B	0.000	0.000	0.135	0.000	0.00
		C	0.000	0.000	0.308	0.000	0.00
L35	25.6250-25.5000	A	0.000	0.000	0.135	0.000	0.00
		B	0.000	0.000	0.135	0.000	0.00
		C	0.000	0.000	0.308	0.000	0.00
L36	25.5000-20.5000	A	0.000	0.000	5.417	0.000	0.00
		B	0.000	0.000	5.417	0.000	0.02
		C	0.000	0.000	9.491	0.000	0.17
L37	20.5000-15.5000	A	0.000	0.000	5.417	0.000	0.00
		B	0.000	0.000	5.417	0.000	0.02
		C	0.000	0.000	6.919	0.000	0.17
L38	15.5000-10.5000	A	0.000	0.000	5.417	0.000	0.00
		B	0.000	0.000	5.417	0.000	0.02
		C	0.000	0.000	6.919	0.000	0.17
L39	10.5000-5.5000	A	0.000	0.000	5.417	0.000	0.00
		B	0.000	0.000	5.417	0.000	0.01
		C	0.000	0.000	6.243	0.000	0.09
L40	5.5000-0.5000	A	0.000	0.000	5.417	0.000	0.00
		B	0.000	0.000	5.417	0.000	0.00
		C	0.000	0.000	5.417	0.000	0.00
L41	0.5000-0.0000	A	0.000	0.000	0.542	0.000	0.00
		B	0.000	0.000	0.542	0.000	0.00
		C	0.000	0.000	0.542	0.000	0.00

### Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Sectio n	Tower Elevation ft	Face or Leg	Ice Thickness in	$A_R$ ft <sup>2</sup>	$A_F$ ft <sup>2</sup>	$C_{AA}$ In Face ft <sup>2</sup>	$C_{AA}$ Out Face ft <sup>2</sup>	Weight K
L1	148.0000-	A	1.740	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> <sub>A</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
	143.0000	B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.927	0.000	0.05
L2	143.0000-138.0000	A	1.734	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.921	0.000	0.05
L3	138.0000-133.0000	A	1.728	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.915	0.000	0.05
L4	133.0000-128.0000	A	1.721	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.909	0.000	0.05
L5	128.0000-123.0000	A	1.714	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.902	0.000	0.05
L6	123.0000-118.0000	A	1.707	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	6.086	0.000	0.12
L7	118.0000-113.0000	A	1.700	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	12.327	0.000	0.23
L8	113.0000-108.0000	A	1.693	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	12.280	0.000	0.22
L9	108.0000-100.5000	A	1.683	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	18.327	0.000	0.33
L10	100.5000-99.5000	A	1.676	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	2.444	0.000	0.04
L11	99.5000-94.5000	A	1.671	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.01
		C		0.000	0.000	12.143	0.000	0.22
L12	94.5000-89.5000	A	1.662	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.02
		C		0.000	0.000	12.088	0.000	0.22
L13	89.5000-84.5000	A	1.653	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.02
		C		0.000	0.000	12.030	0.000	0.22
L14	84.5000-79.5000	A	1.643	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.02
		C		0.000	0.000	11.969	0.000	0.24
L15	79.5000-74.5000	A	1.633	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.02
		C		0.000	0.000	11.904	0.000	0.27
L16	74.5000-70.6670	A	1.623	0.000	0.000	1.405	0.000	0.02
		B		0.000	0.000	1.405	0.000	0.03
		C		0.000	0.000	10.485	0.000	0.23
L17	70.6670-70.4170	A	1.618	0.000	0.000	0.234	0.000	0.00
		B		0.000	0.000	0.234	0.000	0.00
		C		0.000	0.000	0.825	0.000	0.02
L18	70.4170-65.4170	A	1.612	0.000	0.000	4.678	0.000	0.05
		B		0.000	0.000	4.678	0.000	0.07
		C		0.000	0.000	16.455	0.000	0.35
L19	65.4170-63.6670	A	1.604	0.000	0.000	1.636	0.000	0.02
		B		0.000	0.000	1.636	0.000	0.03
		C		0.000	0.000	5.740	0.000	0.12
L20	63.6670-63.4170	A	1.602	0.000	0.000	0.234	0.000	0.00
		B		0.000	0.000	0.234	0.000	0.00
		C		0.000	0.000	0.819	0.000	0.02
L21	63.4170-58.2500	A	1.595	0.000	0.000	1.167	0.000	0.01
		B		0.000	0.000	1.167	0.000	0.03
		C		0.000	0.000	13.224	0.000	0.32
L22	58.2500-57.2500	A	1.586	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	2.333	0.000	0.06
L23	57.2500-53.2290	A	1.579	0.000	0.000	2.632	0.000	0.02
		B		0.000	0.000	2.632	0.000	0.04
		C		0.000	0.000	11.937	0.000	0.26
L24	53.2290-52.9790	A	1.573	0.000	0.000	0.329	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	$A_R$ ft <sup>2</sup>	$A_F$ ft <sup>2</sup>	$C_{AA}$ In Face ft <sup>2</sup>	$C_{AA}$ Out Face ft <sup>2</sup>	Weight K
		B		0.000	0.000	0.329	0.000	0.00
		C		0.000	0.000	0.905	0.000	0.02
L25	52.9790-47.9790	A	1.565	0.000	0.000	6.565	0.000	0.06
		B		0.000	0.000	6.565	0.000	0.08
		C		0.000	0.000	18.048	0.000	0.35
L26	47.9790-42.9790	A	1.549	0.000	0.000	6.549	0.000	0.06
		B		0.000	0.000	6.549	0.000	0.08
		C		0.000	0.000	17.930	0.000	0.35
L27	42.9790-37.9790	A	1.531	0.000	0.000	6.531	0.000	0.06
		B		0.000	0.000	6.531	0.000	0.08
		C		0.000	0.000	17.800	0.000	0.34
L28	37.9790-35.1250	A	1.515	0.000	0.000	3.719	0.000	0.03
		B		0.000	0.000	3.719	0.000	0.05
		C		0.000	0.000	10.096	0.000	0.19
L29	35.1250-34.8750	A	1.509	0.000	0.000	0.346	0.000	0.00
		B		0.000	0.000	0.346	0.000	0.00
		C		0.000	0.000	0.854	0.000	0.02
L30	34.8750-28.7500	A	1.494	0.000	0.000	8.466	0.000	0.08
		B		0.000	0.000	8.466	0.000	0.10
		C		0.000	0.000	20.805	0.000	0.42
L31	28.7500-27.7500	A	1.477	0.000	0.000	1.382	0.000	0.01
		B		0.000	0.000	1.382	0.000	0.02
		C		0.000	0.000	4.426	0.000	0.09
L32	27.7500-25.8750	A	1.469	0.000	0.000	2.582	0.000	0.02
		B		0.000	0.000	2.582	0.000	0.03
		C		0.000	0.000	8.858	0.000	0.17
L33	25.8750-25.7500	A	1.464	0.000	0.000	0.172	0.000	0.00
		B		0.000	0.000	0.172	0.000	0.00
		C		0.000	0.000	0.589	0.000	0.01
L34	25.7500-25.6250	A	1.463	0.000	0.000	0.172	0.000	0.00
		B		0.000	0.000	0.172	0.000	0.00
		C		0.000	0.000	0.589	0.000	0.01
L35	25.6250-25.5000	A	1.462	0.000	0.000	0.172	0.000	0.00
		B		0.000	0.000	0.172	0.000	0.00
		C		0.000	0.000	0.589	0.000	0.01
L36	25.5000-20.5000	A	1.447	0.000	0.000	6.863	0.000	0.06
		B		0.000	0.000	6.863	0.000	0.08
		C		0.000	0.000	20.324	0.000	0.42
L37	20.5000-15.5000	A	1.412	0.000	0.000	6.828	0.000	0.06
		B		0.000	0.000	6.828	0.000	0.08
		C		0.000	0.000	17.234	0.000	0.38
L38	15.5000-10.5000	A	1.366	0.000	0.000	6.783	0.000	0.05
		B		0.000	0.000	6.783	0.000	0.08
		C		0.000	0.000	16.874	0.000	0.37
L39	10.5000-5.5000	A	1.302	0.000	0.000	6.718	0.000	0.05
		B		0.000	0.000	6.718	0.000	0.06
		C		0.000	0.000	12.036	0.000	0.24
L40	5.5000-0.5000	A	1.180	0.000	0.000	6.597	0.000	0.05
		B		0.000	0.000	6.597	0.000	0.05
		C		0.000	0.000	6.316	0.000	0.09
L41	0.5000-0.0000	A	0.920	0.000	0.000	0.634	0.000	0.00
		B		0.000	0.000	0.634	0.000	0.00
		C		0.000	0.000	0.588	0.000	0.01

### Feed Line Center of Pressure

Section	Elevation ft	$CP_x$ in	$CP_z$ in	$CP_x$ Ice in	$CP_z$ Ice in
L1	148.0000-143.0000	0.0000	0.0542	0.0000	0.4213
L2	143.0000-138.0000	0.0000	0.0542	0.0000	0.4247
L3	138.0000-133.0000	0.0000	0.0542	0.0000	0.4278

Section	Elevation	CP <sub>x</sub>	CP <sub>z</sub>	CP <sub>x</sub> Ice	CP <sub>z</sub> Ice
	ft	in	in	in	in
L4	133.0000-128.0000	0.0000	0.0542	0.0000	0.4306
L5	128.0000-123.0000	0.0000	0.0542	0.0000	0.4330
L6	123.0000-118.0000	0.0000	0.2009	0.0000	1.0488
L7	118.0000-113.0000	0.0000	0.3969	0.0000	1.5581
L8	113.0000-108.0000	0.0000	0.3981	0.0000	1.5857
L9	108.0000-100.5000	0.0000	0.3994	0.0000	1.6185
L10	100.5000-99.5000	0.0000	0.3998	0.0000	1.6286
L11	99.5000-94.5000	0.0000	0.4004	0.0000	1.6408
L12	94.5000-89.5000	0.0000	0.4014	0.0000	1.6644
L13	89.5000-84.5000	0.0000	0.4023	0.0000	1.6868
L14	84.5000-79.5000	0.0000	0.4032	0.0000	1.7080
L15	79.5000-74.5000	0.0000	0.4040	0.0000	1.7280
L16	74.5000-70.6670	0.0000	0.3229	0.0000	1.4860
L17	70.6670-70.4170	0.0000	0.2469	0.0000	1.2146
L18	70.4170-65.4170	0.0000	0.2483	0.0000	1.2233
L19	65.4170-63.6670	0.0000	0.2502	0.0000	1.2340
L20	63.6670-63.4170	0.0000	0.2508	0.0000	1.2371
L21	63.4170-58.2500	0.0000	0.3541	0.0000	1.6149
L22	58.2500-57.2500	0.0000	0.4063	0.0000	1.7812
L23	57.2500-53.2290	0.0000	0.2901	0.0000	1.3697
L24	53.2290-52.9790	0.0000	0.2262	0.0000	1.1150
L25	52.9790-47.9790	0.0000	0.2276	0.0000	1.1218
L26	47.9790-42.9790	0.0000	0.2302	0.0000	1.1340
L27	42.9790-37.9790	0.0000	0.2328	0.0000	1.1449
L28	37.9790-35.1250	0.0000	0.2348	0.0000	1.1524
L29	35.1250-34.8750	0.0000	0.2275	0.0000	1.0466
L30	34.8750-28.7500	0.0000	0.2291	0.0000	1.0509
L31	28.7500-27.7500	0.0000	0.7863	0.0000	1.4689
L32	27.7500-25.8750	0.0000	0.9510	0.0000	1.5898
L33	25.8750-25.7500	0.0000	0.9532	0.0000	1.5925
L34	25.7500-25.6250	0.0000	0.9535	0.0000	1.5928
L35	25.6250-25.5000	0.0000	0.9538	0.0000	1.5931
L36	25.5000-20.5000	0.0000	0.6107	0.0000	1.3683
L37	20.5000-15.5000	0.0000	0.2560	0.0000	1.1380
L38	15.5000-10.5000	0.0000	0.2581	0.0000	1.1297
L39	10.5000-5.5000	0.0000	0.1550	0.0000	0.6862
L40	5.5000-0.5000	0.0000	0.0226	0.0000	-0.0189
L41	0.5000-0.0000	0.0000	0.0224	0.0000	-0.0495

### Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L1	1	Safety Line 3/8	143.00 - 148.00	1.0000	1.0000
L2	1	Safety Line 3/8	138.00 - 143.00	1.0000	1.0000
L3	1	Safety Line 3/8	133.00 - 138.00	1.0000	1.0000
L4	1	Safety Line 3/8	128.00 - 133.00	1.0000	1.0000
L5	1	Safety Line 3/8	123.00 - 128.00	1.0000	1.0000
L6	1	Safety Line 3/8	118.00 - 123.00	1.0000	1.0000
L6	11	FB-L98-002-XXX( 3/8)	118.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
			120.00		
L6	12	WR-VG82ST-BRDA( 5/8")	118.00 - 120.00	1.0000	1.0000
L6	13	WR-VG82ST-BRDA( 5/8")	118.00 - 120.00	1.0000	1.0000
L6	14	FB-L98B-034-XXX(3/8")	118.00 - 120.00	1.0000	1.0000
L6	15	WR-VG86ST-BRD(3/4")	118.00 - 120.00	1.0000	1.0000
L7	1	Safety Line 3/8	113.00 - 118.00	1.0000	1.0000
L7	11	FB-L98-002-XXX( 3/8)	113.00 - 118.00	1.0000	1.0000
L7	12	WR-VG82ST-BRDA( 5/8")	113.00 - 118.00	1.0000	1.0000
L7	13	WR-VG82ST-BRDA( 5/8")	113.00 - 118.00	1.0000	1.0000
L7	14	FB-L98B-034-XXX(3/8")	113.00 - 118.00	1.0000	1.0000
L7	15	WR-VG86ST-BRD(3/4")	113.00 - 118.00	1.0000	1.0000
L8	1	Safety Line 3/8	108.00 - 113.00	1.0000	1.0000
L8	11	FB-L98-002-XXX( 3/8)	108.00 - 113.00	1.0000	1.0000
L8	12	WR-VG82ST-BRDA( 5/8")	108.00 - 113.00	1.0000	1.0000
L8	13	WR-VG82ST-BRDA( 5/8")	108.00 - 113.00	1.0000	1.0000
L8	14	FB-L98B-034-XXX(3/8")	108.00 - 113.00	1.0000	1.0000
L8	15	WR-VG86ST-BRD(3/4")	108.00 - 113.00	1.0000	1.0000
L9	1	Safety Line 3/8	100.50 - 108.00	1.0000	1.0000
L9	11	FB-L98-002-XXX( 3/8)	100.50 - 108.00	1.0000	1.0000
L9	12	WR-VG82ST-BRDA( 5/8")	100.50 - 108.00	1.0000	1.0000
L9	13	WR-VG82ST-BRDA( 5/8")	100.50 - 108.00	1.0000	1.0000
L9	14	FB-L98B-034-XXX(3/8")	100.50 - 108.00	1.0000	1.0000
L9	15	WR-VG86ST-BRD(3/4")	100.50 - 108.00	1.0000	1.0000
L11	1	Safety Line 3/8	94.50 - 99.50	1.0000	1.0000
L11	11	FB-L98-002-XXX( 3/8)	94.50 - 99.50	1.0000	1.0000
L11	12	WR-VG82ST-BRDA( 5/8")	94.50 - 99.50	1.0000	1.0000
L11	13	WR-VG82ST-BRDA( 5/8")	94.50 - 99.50	1.0000	1.0000
L11	14	FB-L98B-034-XXX(3/8")	94.50 - 99.50	1.0000	1.0000
L11	15	WR-VG86ST-BRD(3/4")	94.50 - 99.50	1.0000	1.0000
L12	1	Safety Line 3/8	89.50 - 94.50	1.0000	1.0000
L12	11	FB-L98-002-XXX( 3/8)	89.50 - 94.50	1.0000	1.0000
L12	12	WR-VG82ST-BRDA( 5/8")	89.50 - 94.50	1.0000	1.0000
L12	13	WR-VG82ST-BRDA( 5/8")	89.50 - 94.50	1.0000	1.0000
L12	14	FB-L98B-034-XXX(3/8")	89.50 - 94.50	1.0000	1.0000
L12	15	WR-VG86ST-BRD(3/4")	89.50 - 94.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L13	1	Safety Line 3/8	84.50 - 89.50	1.0000	1.0000
L13	11	FB-L98-002-XXX( 3/8)	84.50 - 89.50	1.0000	1.0000
L13	12	WR-VG82ST-BRDA( 5/8")	84.50 - 89.50	1.0000	1.0000
L13	13	WR-VG82ST-BRDA( 5/8")	84.50 - 89.50	1.0000	1.0000
L13	14	FB-L98B-034-XXX(3/8")	84.50 - 89.50	1.0000	1.0000
L13	15	WR-VG86ST-BRD(3/4")	84.50 - 89.50	1.0000	1.0000
L14	1	Safety Line 3/8	79.50 - 84.50	1.0000	1.0000
L14	11	FB-L98-002-XXX( 3/8)	79.50 - 84.50	1.0000	1.0000
L14	12	WR-VG82ST-BRDA( 5/8")	79.50 - 84.50	1.0000	1.0000
L14	13	WR-VG82ST-BRDA( 5/8")	79.50 - 84.50	1.0000	1.0000
L14	14	FB-L98B-034-XXX(3/8")	79.50 - 84.50	1.0000	1.0000
L14	15	WR-VG86ST-BRD(3/4")	79.50 - 84.50	1.0000	1.0000
L15	1	Safety Line 3/8	74.50 - 79.50	1.0000	1.0000
L15	11	FB-L98-002-XXX( 3/8)	74.50 - 79.50	1.0000	1.0000
L15	12	WR-VG82ST-BRDA( 5/8")	74.50 - 79.50	1.0000	1.0000
L15	13	WR-VG82ST-BRDA( 5/8")	74.50 - 79.50	1.0000	1.0000
L15	14	FB-L98B-034-XXX(3/8")	74.50 - 79.50	1.0000	1.0000
L15	15	WR-VG86ST-BRD(3/4")	74.50 - 79.50	1.0000	1.0000
L16	1	Safety Line 3/8	70.67 - 74.50	1.0000	1.0000
L16	11	FB-L98-002-XXX( 3/8)	70.67 - 74.50	1.0000	1.0000
L16	12	WR-VG82ST-BRDA( 5/8")	70.67 - 74.50	1.0000	1.0000
L16	13	WR-VG82ST-BRDA( 5/8")	70.67 - 74.50	1.0000	1.0000
L16	14	FB-L98B-034-XXX(3/8")	70.67 - 74.50	1.0000	1.0000
L16	15	WR-VG86ST-BRD(3/4")	70.67 - 74.50	1.0000	1.0000
L16	34	CCI-SFP-045100	70.67 - 72.17	1.0000	1.0000
L16	35	CCI-SFP-045100	70.67 - 72.17	1.0000	1.0000
L16	36	CCI-SFP-045100	70.67 - 72.17	1.0000	1.0000
L17	1	Safety Line 3/8	70.42 - 70.67	1.0000	1.0000
L17	11	FB-L98-002-XXX( 3/8)	70.42 - 70.67	1.0000	1.0000
L17	12	WR-VG82ST-BRDA( 5/8")	70.42 - 70.67	1.0000	1.0000
L17	13	WR-VG82ST-BRDA( 5/8")	70.42 - 70.67	1.0000	1.0000
L17	14	FB-L98B-034-XXX(3/8")	70.42 - 70.67	1.0000	1.0000
L17	15	WR-VG86ST-BRD(3/4")	70.42 - 70.67	1.0000	1.0000
L17	34	CCI-SFP-045100	70.42 - 70.67	1.0000	1.0000
L17	35	CCI-SFP-045100	70.42 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
			70.67		
L17	36	CCI-SFP-045100	70.42 -	1.0000	1.0000
			70.67		
L18	1	Safety Line 3/8	65.42 -	1.0000	1.0000
			70.42		
L18	11	FB-L98-002-XXX( 3/8)	65.42 -	1.0000	1.0000
			70.42		
L18	12	WR-VG82ST-BRDA( 5/8")	65.42 -	1.0000	1.0000
			70.42		
L18	13	WR-VG82ST-BRDA( 5/8")	65.42 -	1.0000	1.0000
			70.42		
L18	14	FB-L98B-034-XXX(3/8")	65.42 -	1.0000	1.0000
			70.42		
L18	15	WR-VG86ST-BRD(3/4")	65.42 -	1.0000	1.0000
			70.42		
L18	34	CCI-SFP-045100	65.42 -	1.0000	1.0000
			70.42		
L18	35	CCI-SFP-045100	65.42 -	1.0000	1.0000
			70.42		
L18	36	CCI-SFP-045100	65.42 -	1.0000	1.0000
			70.42		
L19	1	Safety Line 3/8	63.67 -	1.0000	1.0000
			65.42		
L19	11	FB-L98-002-XXX( 3/8)	63.67 -	1.0000	1.0000
			65.42		
L19	12	WR-VG82ST-BRDA( 5/8")	63.67 -	1.0000	1.0000
			65.42		
L19	13	WR-VG82ST-BRDA( 5/8")	63.67 -	1.0000	1.0000
			65.42		
L19	14	FB-L98B-034-XXX(3/8")	63.67 -	1.0000	1.0000
			65.42		
L19	15	WR-VG86ST-BRD(3/4")	63.67 -	1.0000	1.0000
			65.42		
L19	34	CCI-SFP-045100	63.67 -	1.0000	1.0000
			65.42		
L19	35	CCI-SFP-045100	63.67 -	1.0000	1.0000
			65.42		
L19	36	CCI-SFP-045100	63.67 -	1.0000	1.0000
			65.42		
L20	1	Safety Line 3/8	63.42 -	1.0000	1.0000
			63.67		
L20	11	FB-L98-002-XXX( 3/8)	63.42 -	1.0000	1.0000
			63.67		
L20	12	WR-VG82ST-BRDA( 5/8")	63.42 -	1.0000	1.0000
			63.67		
L20	13	WR-VG82ST-BRDA( 5/8")	63.42 -	1.0000	1.0000
			63.67		
L20	14	FB-L98B-034-XXX(3/8")	63.42 -	1.0000	1.0000
			63.67		
L20	15	WR-VG86ST-BRD(3/4")	63.42 -	1.0000	1.0000
			63.67		
L20	34	CCI-SFP-045100	63.42 -	1.0000	1.0000
			63.67		
L20	35	CCI-SFP-045100	63.42 -	1.0000	1.0000
			63.67		
L20	36	CCI-SFP-045100	63.42 -	1.0000	1.0000
			63.67		
L21	1	Safety Line 3/8	58.25 -	1.0000	1.0000
			63.42		
L21	11	FB-L98-002-XXX( 3/8)	58.25 -	1.0000	1.0000
			63.42		
L21	12	WR-VG82ST-BRDA( 5/8")	58.25 -	1.0000	1.0000
			63.42		
L21	13	WR-VG82ST-BRDA( 5/8")	58.25 -	1.0000	1.0000
			63.42		
L21	14	FB-L98B-034-XXX(3/8")	58.25 -	1.0000	1.0000
			63.42		
L21	15	WR-VG86ST-BRD(3/4")	58.25 -	1.0000	1.0000
			63.42		



Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L21	34	CCI-SFP-045100	62.17 - 63.42	1.0000	1.0000
L21	35	CCI-SFP-045100	62.17 - 63.42	1.0000	1.0000
L21	36	CCI-SFP-045100	62.17 - 63.42	1.0000	1.0000
L23	1	Safety Line 3/8	53.23 - 57.25	1.0000	1.0000
L23	11	FB-L98-002-XXX( 3/8)	53.23 - 57.25	1.0000	1.0000
L23	12	WR-VG82ST-BRDA( 5/8")	53.23 - 57.25	1.0000	1.0000
L23	13	WR-VG82ST-BRDA( 5/8")	53.23 - 57.25	1.0000	1.0000
L23	14	FB-L98B-034-XXX(3/8")	53.23 - 57.25	1.0000	1.0000
L23	15	WR-VG86ST-BRD(3/4")	53.23 - 57.25	1.0000	1.0000
L23	31	CCI-SFP-060100	53.23 - 55.23	1.0000	1.0000
L23	32	CCI-SFP-060100	53.23 - 55.23	1.0000	1.0000
L23	33	CCI-SFP-060100	53.23 - 55.23	1.0000	1.0000
L24	1	Safety Line 3/8	52.98 - 53.23	1.0000	1.0000
L24	11	FB-L98-002-XXX( 3/8)	52.98 - 53.23	1.0000	1.0000
L24	12	WR-VG82ST-BRDA( 5/8")	52.98 - 53.23	1.0000	1.0000
L24	13	WR-VG82ST-BRDA( 5/8")	52.98 - 53.23	1.0000	1.0000
L24	14	FB-L98B-034-XXX(3/8")	52.98 - 53.23	1.0000	1.0000
L24	15	WR-VG86ST-BRD(3/4")	52.98 - 53.23	1.0000	1.0000
L24	31	CCI-SFP-060100	52.98 - 53.23	1.0000	1.0000
L24	32	CCI-SFP-060100	52.98 - 53.23	1.0000	1.0000
L24	33	CCI-SFP-060100	52.98 - 53.23	1.0000	1.0000
L25	1	Safety Line 3/8	47.98 - 52.98	1.0000	1.0000
L25	11	FB-L98-002-XXX( 3/8)	47.98 - 52.98	1.0000	1.0000
L25	12	WR-VG82ST-BRDA( 5/8")	47.98 - 52.98	1.0000	1.0000
L25	13	WR-VG82ST-BRDA( 5/8")	47.98 - 52.98	1.0000	1.0000
L25	14	FB-L98B-034-XXX(3/8")	47.98 - 52.98	1.0000	1.0000
L25	15	WR-VG86ST-BRD(3/4")	47.98 - 52.98	1.0000	1.0000
L25	31	CCI-SFP-060100	47.98 - 52.98	1.0000	1.0000
L25	32	CCI-SFP-060100	47.98 - 52.98	1.0000	1.0000
L25	33	CCI-SFP-060100	47.98 - 52.98	1.0000	1.0000
L26	1	Safety Line 3/8	42.98 - 47.98	1.0000	1.0000
L26	11	FB-L98-002-XXX( 3/8)	42.98 - 47.98	1.0000	1.0000
L26	12	WR-VG82ST-BRDA( 5/8")	42.98 - 47.98	1.0000	1.0000
L26	13	WR-VG82ST-BRDA( 5/8")	42.98 - 47.98	1.0000	1.0000
L26	14	FB-L98B-034-XXX(3/8")	42.98 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
			47.98		
L26	15	WR-VG86ST-BRD(3/4")	42.98 -	1.0000	1.0000
			47.98		
L26	31	CCI-SFP-060100	42.98 -	1.0000	1.0000
			47.98		
L26	32	CCI-SFP-060100	42.98 -	1.0000	1.0000
			47.98		
L26	33	CCI-SFP-060100	42.98 -	1.0000	1.0000
			47.98		
L27	1	Safety Line 3/8	37.98 -	1.0000	1.0000
			42.98		
L27	11	FB-L98-002-XXX( 3/8)	37.98 -	1.0000	1.0000
			42.98		
L27	12	WR-VG82ST-BRDA( 5/8")	37.98 -	1.0000	1.0000
			42.98		
L27	13	WR-VG82ST-BRDA( 5/8")	37.98 -	1.0000	1.0000
			42.98		
L27	14	FB-L98B-034-XXX(3/8")	37.98 -	1.0000	1.0000
			42.98		
L27	15	WR-VG86ST-BRD(3/4")	37.98 -	1.0000	1.0000
			42.98		
L27	31	CCI-SFP-060100	37.98 -	1.0000	1.0000
			42.98		
L27	32	CCI-SFP-060100	37.98 -	1.0000	1.0000
			42.98		
L27	33	CCI-SFP-060100	37.98 -	1.0000	1.0000
			42.98		
L28	1	Safety Line 3/8	35.13 -	1.0000	1.0000
			37.98		
L28	11	FB-L98-002-XXX( 3/8)	35.13 -	1.0000	1.0000
			37.98		
L28	12	WR-VG82ST-BRDA( 5/8")	35.13 -	1.0000	1.0000
			37.98		
L28	13	WR-VG82ST-BRDA( 5/8")	35.13 -	1.0000	1.0000
			37.98		
L28	14	FB-L98B-034-XXX(3/8")	35.13 -	1.0000	1.0000
			37.98		
L28	15	WR-VG86ST-BRD(3/4")	35.13 -	1.0000	1.0000
			37.98		
L28	31	CCI-SFP-060100	35.13 -	1.0000	1.0000
			37.98		
L28	32	CCI-SFP-060100	35.13 -	1.0000	1.0000
			37.98		
L28	33	CCI-SFP-060100	35.13 -	1.0000	1.0000
			37.98		
L29	1	Safety Line 3/8	34.88 -	1.0000	1.0000
			35.13		
L29	11	FB-L98-002-XXX( 3/8)	34.88 -	1.0000	1.0000
			35.13		
L29	12	WR-VG82ST-BRDA( 5/8")	34.88 -	1.0000	1.0000
			35.13		
L29	13	WR-VG82ST-BRDA( 5/8")	34.88 -	1.0000	1.0000
			35.13		
L29	14	FB-L98B-034-XXX(3/8")	34.88 -	1.0000	1.0000
			35.13		
L29	15	WR-VG86ST-BRD(3/4")	34.88 -	1.0000	1.0000
			35.13		
L29	27	CCI-SFP-065125	34.88 -	1.0000	1.0000
			35.13		
L29	28	CCI-SFP-065125	34.88 -	1.0000	1.0000
			35.13		
L29	30	CCI-SFP-065125	34.88 -	1.0000	1.0000
			35.13		
L30	1	Safety Line 3/8	28.75 -	1.0000	1.0000
			34.88		
L30	11	FB-L98-002-XXX( 3/8)	28.75 -	1.0000	1.0000
			34.88		
L30	12	WR-VG82ST-BRDA( 5/8")	28.75 -	1.0000	1.0000
			34.88		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L30	13	WR-VG82ST-BRDA( 5/8")	28.75 - 34.88	1.0000	1.0000
L30	14	FB-L98B-034-XXX(3/8")	28.75 - 34.88	1.0000	1.0000
L30	15	WR-VG86ST-BRD(3/4")	28.75 - 34.88	1.0000	1.0000
L30	27	CCI-SFP-065125	28.75 - 34.88	1.0000	1.0000
L30	28	CCI-SFP-065125	28.75 - 34.88	1.0000	1.0000
L30	30	CCI-SFP-065125	28.75 - 34.88	1.0000	1.0000
L30	29	CCI-SFP-065125	28.75 - 28.50	1.0000	1.0000
L32	1	Safety Line 3/8	25.88 - 27.75	1.0000	1.0000
L32	11	FB-L98-002-XXX( 3/8)	25.88 - 27.75	1.0000	1.0000
L32	12	WR-VG82ST-BRDA( 5/8")	25.88 - 27.75	1.0000	1.0000
L32	13	WR-VG82ST-BRDA( 5/8")	25.88 - 27.75	1.0000	1.0000
L32	14	FB-L98B-034-XXX(3/8")	25.88 - 27.75	1.0000	1.0000
L32	15	WR-VG86ST-BRD(3/4")	25.88 - 27.75	1.0000	1.0000
L32	27	CCI-SFP-065125	25.88 - 27.75	1.0000	1.0000
L32	28	CCI-SFP-065125	25.88 - 27.75	1.0000	1.0000
L32	29	CCI-SFP-065125	25.88 - 27.75	1.0000	1.0000
L32	30	CCI-SFP-065125	25.88 - 27.75	1.0000	1.0000
L33	1	Safety Line 3/8	25.75 - 25.88	1.0000	1.0000
L33	11	FB-L98-002-XXX( 3/8)	25.75 - 25.88	1.0000	1.0000
L33	12	WR-VG82ST-BRDA( 5/8")	25.75 - 25.88	1.0000	1.0000
L33	13	WR-VG82ST-BRDA( 5/8")	25.75 - 25.88	1.0000	1.0000
L33	14	FB-L98B-034-XXX(3/8")	25.75 - 25.88	1.0000	1.0000
L33	15	WR-VG86ST-BRD(3/4")	25.75 - 25.88	1.0000	1.0000
L33	27	CCI-SFP-065125	25.75 - 25.88	1.0000	1.0000
L33	28	CCI-SFP-065125	25.75 - 25.88	1.0000	1.0000
L33	29	CCI-SFP-065125	25.75 - 25.88	1.0000	1.0000
L33	30	CCI-SFP-065125	25.75 - 25.88	1.0000	1.0000
L34	1	Safety Line 3/8	25.63 - 25.75	1.0000	1.0000
L34	11	FB-L98-002-XXX( 3/8)	25.63 - 25.75	1.0000	1.0000
L34	12	WR-VG82ST-BRDA( 5/8")	25.63 - 25.75	1.0000	1.0000
L34	13	WR-VG82ST-BRDA( 5/8")	25.63 - 25.75	1.0000	1.0000
L34	14	FB-L98B-034-XXX(3/8")	25.63 - 25.75	1.0000	1.0000
L34	15	WR-VG86ST-BRD(3/4")	25.63 - 25.75	1.0000	1.0000
L34	27	CCI-SFP-065125	25.63 - 25.75	1.0000	1.0000
L34	28	CCI-SFP-065125	25.63 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
			25.75		
L34	29	CCI-SFP-065125	25.63 -	1.0000	1.0000
			25.75		
L34	30	CCI-SFP-065125	25.63 -	1.0000	1.0000
			25.75		
L35	1	Safety Line 3/8	25.50 -	1.0000	1.0000
			25.63		
L35	11	FB-L98-002-XXX( 3/8)	25.50 -	1.0000	1.0000
			25.63		
L35	12	WR-VG82ST-BRDA( 5/8")	25.50 -	1.0000	1.0000
			25.63		
L35	13	WR-VG82ST-BRDA( 5/8")	25.50 -	1.0000	1.0000
			25.63		
L35	14	FB-L98B-034-XXX(3/8")	25.50 -	1.0000	1.0000
			25.63		
L35	15	WR-VG86ST-BRD(3/4")	25.50 -	1.0000	1.0000
			25.63		
L35	27	CCI-SFP-065125	25.50 -	1.0000	1.0000
			25.63		
L35	28	CCI-SFP-065125	25.50 -	1.0000	1.0000
			25.63		
L35	29	CCI-SFP-065125	25.50 -	1.0000	1.0000
			25.63		
L35	30	CCI-SFP-065125	25.50 -	1.0000	1.0000
			25.63		
L36	1	Safety Line 3/8	20.50 -	1.0000	1.0000
			25.50		
L36	11	FB-L98-002-XXX( 3/8)	20.50 -	1.0000	1.0000
			25.50		
L36	12	WR-VG82ST-BRDA( 5/8")	20.50 -	1.0000	1.0000
			25.50		
L36	13	WR-VG82ST-BRDA( 5/8")	20.50 -	1.0000	1.0000
			25.50		
L36	14	FB-L98B-034-XXX(3/8")	20.50 -	1.0000	1.0000
			25.50		
L36	15	WR-VG86ST-BRD(3/4")	20.50 -	1.0000	1.0000
			25.50		
L36	27	CCI-SFP-065125	20.50 -	1.0000	1.0000
			25.50		
L36	28	CCI-SFP-065125	20.50 -	1.0000	1.0000
			25.50		
L36	29	CCI-SFP-065125	20.50 -	1.0000	1.0000
			25.50		
L36	30	CCI-SFP-065125	23.13 -	1.0000	1.0000
			25.50		
L37	1	Safety Line 3/8	15.50 -	1.0000	1.0000
			20.50		
L37	11	FB-L98-002-XXX( 3/8)	15.50 -	1.0000	1.0000
			20.50		
L37	12	WR-VG82ST-BRDA( 5/8")	15.50 -	1.0000	1.0000
			20.50		
L37	13	WR-VG82ST-BRDA( 5/8")	15.50 -	1.0000	1.0000
			20.50		
L37	14	FB-L98B-034-XXX(3/8")	15.50 -	1.0000	1.0000
			20.50		
L37	15	WR-VG86ST-BRD(3/4")	15.50 -	1.0000	1.0000
			20.50		
L37	27	CCI-SFP-065125	15.50 -	1.0000	1.0000
			20.50		
L37	28	CCI-SFP-065125	15.50 -	1.0000	1.0000
			20.50		
L37	29	CCI-SFP-065125	15.50 -	1.0000	1.0000
			20.50		
L38	1	Safety Line 3/8	10.50 -	1.0000	1.0000
			15.50		
L38	11	FB-L98-002-XXX( 3/8)	10.50 -	1.0000	1.0000
			15.50		
L38	12	WR-VG82ST-BRDA( 5/8")	10.50 -	1.0000	1.0000
			15.50		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L38	13	WR-VG82ST-BRDA( 5/8")	10.50 - 15.50	1.0000	1.0000
L38	14	FB-L98B-034-XXX(3/8")	10.50 - 15.50	1.0000	1.0000
L38	15	WR-VG86ST-BRD(3/4")	10.50 - 15.50	1.0000	1.0000
L38	27	CCI-SFP-065125	10.50 - 15.50	1.0000	1.0000
L38	28	CCI-SFP-065125	10.50 - 15.50	1.0000	1.0000
L38	29	CCI-SFP-065125	10.50 - 15.50	1.0000	1.0000
L39	1	Safety Line 3/8	6.00 - 10.50	1.0000	1.0000
L39	11	FB-L98-002-XXX( 3/8)	8.00 - 10.50	1.0000	1.0000
L39	12	WR-VG82ST-BRDA( 5/8")	8.00 - 10.50	1.0000	1.0000
L39	13	WR-VG82ST-BRDA( 5/8")	8.00 - 10.50	1.0000	1.0000
L39	14	FB-L98B-034-XXX(3/8")	8.00 - 10.50	1.0000	1.0000
L39	15	WR-VG86ST-BRD(3/4")	8.00 - 10.50	1.0000	1.0000
L39	27	CCI-SFP-065125	5.50 - 10.50	1.0000	1.0000
L39	28	CCI-SFP-065125	5.50 - 10.50	1.0000	1.0000
L39	29	CCI-SFP-065125	5.50 - 10.50	1.0000	1.0000
L40	27	CCI-SFP-065125	0.50 - 5.50	1.0000	1.0000
L40	28	CCI-SFP-065125	0.50 - 5.50	1.0000	1.0000
L40	29	CCI-SFP-065125	0.50 - 5.50	1.0000	1.0000
L41	27	CCI-SFP-065125	0.00 - 0.50	1.0000	1.0000
L41	28	CCI-SFP-065125	0.00 - 0.50	1.0000	1.0000
L41	29	CCI-SFP-065125	0.00 - 0.50	1.0000	1.0000

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
Platform Mount [LP 1201-1]	C	None		0.0000	148.0000	No Ice	23.1000	23.1000	2.10
						1/2" Ice	26.8000	26.8000	2.50
						1" Ice	30.5000	30.5000	2.90
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	148.0000	No Ice	8.2619	6.9458	0.08
						1/2" Ice	8.8215	8.1266	0.15
						1" Ice	9.3462	9.0212	0.23
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	148.0000	No Ice	8.2619	6.9458	0.08
						1/2" Ice	8.8215	8.1266	0.15
						1" Ice	9.3462	9.0212	0.23
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	148.0000	No Ice	8.2619	6.9458	0.08
						1/2" Ice	8.8215	8.1266	0.15
						1" Ice	9.3462	9.0212	0.23
LLPX310R w/ Mount Pipe	A	From Leg	4.0000 0.00 3.00	0.0000	148.0000	No Ice	4.5380	2.9846	0.05
						1/2" Ice	4.8915	3.5275	0.08
						1" Ice	5.2541	4.0872	0.13
LLPX310R w/ Mount Pipe	B	From Leg	4.0000 0.00 3.00	0.0000	148.0000	No Ice	4.5380	2.9846	0.05
						1/2" Ice	4.8915	3.5275	0.08
						1" Ice	5.2541	4.0872	0.13
LLPX310R w/ Mount Pipe	C	From Leg	4.0000	0.0000	148.0000	No Ice	4.5380	2.9846	0.05

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Lateral					
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K
			0.00			1/2"	4.8915	3.5275	0.08
			3.00			Ice	5.2541	4.0872	0.13
DB420	C	From Leg	4.0000	0.0000	148.0000	1" Ice	3.3300	3.3300	0.03
			0.00			No Ice	5.9940	5.9940	0.04
			12.00			Ice	8.6580	8.6580	0.05
(6) PCS 1900MHz 4x45W-65MHz	A	From Leg	4.0000	0.0000	148.0000	1" Ice	2.3218	2.2381	0.06
			0.00			No Ice	2.5266	2.4407	0.08
			0.00			Ice	2.7388	2.6507	0.11
(3) PCS 1900MHz 4x45W-65MHz	C	From Leg	4.0000	0.0000	148.0000	1" Ice	2.3218	2.2381	0.06
			0.00			No Ice	2.5266	2.4407	0.08
			0.00			Ice	2.7388	2.6507	0.11
(6) ACU-A20-N	A	From Leg	4.0000	0.0000	148.0000	1" Ice	0.0667	0.1167	0.00
			0.00			No Ice	0.1037	0.1620	0.00
			0.00			Ice	0.1481	0.2148	0.00
(3) ACU-A20-N	C	From Leg	4.0000	0.0000	148.0000	1" Ice	0.0667	0.1167	0.00
			0.00			No Ice	0.1037	0.1620	0.00
			0.00			Ice	0.1481	0.2148	0.00
(2) 800MHZ RRH	A	From Leg	4.0000	0.0000	148.0000	1" Ice	2.1342	1.7730	0.05
			0.00			No Ice	2.3195	1.9461	0.07
			0.00			Ice	2.5123	2.1267	0.10
800MHZ RRH	C	From Leg	4.0000	0.0000	148.0000	1" Ice	2.1342	1.7730	0.05
			0.00			No Ice	2.3195	1.9461	0.07
			0.00			Ice	2.5123	2.1267	0.10
(2) 800 EXTERNAL NOTCH FILTER	A	From Leg	4.0000	0.0000	148.0000	1" Ice	0.6601	0.3211	0.01
			0.00			No Ice	0.7627	0.3983	0.02
			0.00			Ice	0.8727	0.4830	0.02
800 EXTERNAL NOTCH FILTER	C	From Leg	4.0000	0.0000	148.0000	1" Ice	0.6601	0.3211	0.01
			0.00			No Ice	0.7627	0.3983	0.02
			0.00			Ice	0.8727	0.4830	0.02
FDD_R6_RRH	A	From Leg	4.0000	0.0000	148.0000	1" Ice	0.0000	0.7778	0.03
			0.00			No Ice	0.0000	0.9182	0.04
			3.00			Ice	0.0000	1.0673	0.06
FDD_R6_RRH	B	From Leg	4.0000	0.0000	148.0000	1" Ice	0.0000	0.7778	0.03
			0.00			No Ice	0.0000	0.9182	0.04
			3.00			Ice	0.0000	1.0673	0.06
FDD_R6_RRH	C	From Leg	4.0000	0.0000	148.0000	1" Ice	0.0000	0.7778	0.03
			0.00			No Ice	0.0000	0.9182	0.04
			3.00			Ice	0.0000	1.0673	0.06
6' x 2" Mount Pipe	A	From Leg	4.0000	0.0000	148.0000	1" Ice	1.4250	1.4250	0.02
			0.00			No Ice	1.9250	1.9250	0.03
			0.00			Ice	2.2939	2.2939	0.05
6' x 2" Mount Pipe	A	From Leg	4.0000	0.0000	148.0000	1" Ice	1.4250	1.4250	0.02
			0.00			No Ice	1.9250	1.9250	0.03
			0.00			Ice	2.2939	2.2939	0.05
6' x 2" Mount Pipe	B	From Leg	4.0000	0.0000	148.0000	1" Ice	1.4250	1.4250	0.02
			0.00			No Ice	1.9250	1.9250	0.03
			0.00			Ice	2.2939	2.2939	0.05
6' x 2" Mount Pipe	B	From Leg	4.0000	0.0000	148.0000	1" Ice	1.4250	1.4250	0.02
			0.00			No Ice	1.9250	1.9250	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K	
			0.00			Ice 2.2939	2.2939	0.05	
6' x 2" Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	148.0000	1" Ice No Ice 1/2" Ice 1" Ice	1.4250 1.4250 1.9250 2.2939	1.4250 1.4250 1.9250 2.2939	0.02 0.03 0.05
6' x 2" Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	148.0000	1" Ice No Ice 1/2" Ice 1" Ice	1.4250 1.4250 1.9250 2.2939	1.4250 1.4250 1.9250 2.2939	0.02 0.03 0.05
*****									
Pipe Mount [PM 601-1]	A	From Leg	0.5000 0.00 0.00	0.0000	144.0000	No Ice 1/2" Ice 1" Ice	3.0000 3.7400 4.4800	0.9000 1.1200 1.3400	0.07 0.08 0.09
*****									
Platform Mount [LP 302-1]	C	None		0.0000	120.0000	No Ice 1/2" Ice 1" Ice	33.0300 44.6000 56.1700	33.0300 44.6000 56.1700	1.71 2.19 2.68
7770.00	A	From Leg	4.0000 0.00 0.00	0.0000	120.0000	1" Ice No Ice 1/2" Ice 1" Ice	5.5085 5.8673 6.2332	2.9282 3.2730 3.6252	0.04 0.07 0.11
7770.00	B	From Leg	4.0000 0.00 0.00	0.0000	120.0000	1" Ice No Ice 1/2" Ice 1" Ice	5.5085 5.8673 6.2332	2.9282 3.2730 3.6252	0.04 0.07 0.11
7770.00	C	From Leg	4.0000 0.00 0.00	0.0000	120.0000	1" Ice No Ice 1/2" Ice 1" Ice	5.5085 5.8673 6.2332	2.9282 3.2730 3.6252	0.04 0.07 0.11
P65-16-XLH-RR	A	From Leg	4.0000 0.00 0.00	0.0000	120.0000	1" Ice No Ice 1/2" Ice 1" Ice	8.1333 8.5899 9.0535	4.7000 5.1472 5.6019	0.05 0.10 0.15
P65-16-XLH-RR	B	From Leg	4.0000 0.00 0.00	0.0000	120.0000	1" Ice No Ice 1/2" Ice 1" Ice	8.1333 8.5899 9.0535	4.7000 5.1472 5.6019	0.05 0.10 0.15
P65-16-XLH-RR	C	From Leg	4.0000 0.00 0.00	0.0000	120.0000	1" Ice No Ice 1/2" Ice 1" Ice	8.1333 8.5899 9.0535	4.7000 5.1472 5.6019	0.05 0.10 0.15
QS66512-3	A	From Leg	4.0000 0.00 0.00	0.0000	120.0000	1" Ice No Ice 1/2" Ice 1" Ice	8.1333 8.5899 9.0535	6.8000 7.2667 7.7226	0.11 0.16 0.23
QS66512-3	B	From Leg	4.0000 0.00 0.00	0.0000	120.0000	1" Ice No Ice 1/2" Ice 1" Ice	8.1333 8.5899 9.0535	6.8000 7.2667 7.7226	0.11 0.16 0.23
QS66512-3	C	From Leg	4.0000 0.00 0.00	0.0000	120.0000	1" Ice No Ice 1/2" Ice 1" Ice	8.1333 8.5899 9.0535	6.8000 7.2667 7.7226	0.11 0.16 0.23
RRUS-11	A	From Leg	4.0000 0.00 0.00	0.0000	120.0000	1" Ice No Ice 1/2" Ice 1" Ice	2.5217 2.7187 2.9231	1.0680 1.2106 1.3606	0.06 0.07 0.10
RRUS-11	B	From Leg	4.0000 0.00 0.00	0.0000	120.0000	1" Ice No Ice 1/2" Ice 1" Ice	2.5217 2.7187 2.9231	1.0680 1.2106 1.3606	0.06 0.07 0.10
RRUS-11	C	From Leg	4.0000	0.0000	120.0000	No Ice	2.5217	1.0680	0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K	
			0.00			1/2"	2.7187	1.2106	0.07
			0.00			Ice	2.9231	1.3606	0.10
(2) LGP2140X	A	From Leg	4.0000	0.0000	120.0000	1" Ice	1.0800	0.3580	0.01
			0.00			No Ice	1.2137	0.4536	0.02
			0.00			1/2"	1.3548	0.5563	0.03
						Ice			
(2) LGP2140X	B	From Leg	4.0000	0.0000	120.0000	1" Ice	1.0800	0.3580	0.01
			0.00			No Ice	1.2137	0.4536	0.02
			0.00			1/2"	1.3548	0.5563	0.03
						Ice			
(2) LGP2140X	C	From Leg	4.0000	0.0000	120.0000	1" Ice	1.0800	0.3580	0.01
			0.00			No Ice	1.2137	0.4536	0.02
			0.00			1/2"	1.3548	0.5563	0.03
						Ice			
RRUS 32	A	From Leg	4.0000	0.0000	120.0000	1" Ice	2.8571	1.7766	0.06
			0.00			No Ice	3.0830	1.9677	0.08
			0.00			1/2"	3.3163	2.1658	0.10
						Ice			
RRUS 32	B	From Leg	4.0000	0.0000	120.0000	1" Ice	2.8571	1.7766	0.06
			0.00			No Ice	3.0830	1.9677	0.08
			0.00			1/2"	3.3163	2.1658	0.10
						Ice			
RRUS 32	C	From Leg	4.0000	0.0000	120.0000	1" Ice	2.8571	1.7766	0.06
			0.00			No Ice	3.0830	1.9677	0.08
			0.00			1/2"	3.3163	2.1658	0.10
						Ice			
RRUS 32 B2	A	From Leg	4.0000	0.0000	120.0000	1" Ice	2.7313	1.6681	0.05
			0.00			No Ice	2.9531	1.8552	0.07
			0.00			1/2"	3.1823	2.0493	0.10
						Ice			
RRUS 32 B2	B	From Leg	4.0000	0.0000	120.0000	1" Ice	2.7313	1.6681	0.05
			0.00			No Ice	2.9531	1.8552	0.07
			0.00			1/2"	3.1823	2.0493	0.10
						Ice			
RRUS 32 B2	C	From Leg	4.0000	0.0000	120.0000	1" Ice	2.7313	1.6681	0.05
			0.00			No Ice	2.9531	1.8552	0.07
			0.00			1/2"	3.1823	2.0493	0.10
						Ice			
(2) 7020.00	A	From Leg	4.0000	0.0000	120.0000	1" Ice	0.1021	0.1750	0.00
			0.00			No Ice	0.1469	0.2393	0.01
			0.00			1/2"	0.1991	0.3109	0.01
						Ice			
(2) 7020.00	B	From Leg	4.0000	0.0000	120.0000	1" Ice	0.1021	0.1750	0.00
			0.00			No Ice	0.1469	0.2393	0.01
			0.00			1/2"	0.1991	0.3109	0.01
						Ice			
(2) 7020.00	C	From Leg	4.0000	0.0000	120.0000	1" Ice	0.1021	0.1750	0.00
			0.00			No Ice	0.1469	0.2393	0.01
			0.00			1/2"	0.1991	0.3109	0.01
						Ice			
(2) TPX-070821	A	From Leg	4.0000	0.0000	120.0000	1" Ice	0.4688	0.1009	0.01
			0.00			No Ice	0.5585	0.1471	0.01
			0.00			1/2"	0.6556	0.2020	0.02
						Ice			
(2) TPX-070821	B	From Leg	4.0000	0.0000	120.0000	1" Ice	0.4688	0.1009	0.01
			0.00			No Ice	0.5585	0.1471	0.01
			0.00			1/2"	0.6556	0.2020	0.02
						Ice			
(2) TPX-070821	C	From Leg	4.0000	0.0000	120.0000	1" Ice	0.4688	0.1009	0.01
			0.00			No Ice	0.5585	0.1471	0.01
			0.00			1/2"	0.6556	0.2020	0.02
						Ice			
DC6-48-60-18-8F	A	From Leg	4.0000	0.0000	120.0000	1" Ice	0.9167	0.9167	0.03
			0.00			No Ice	1.4583	1.4583	0.05
						1/2"			



Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Lateral					
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K
			0.00			Ice	1.6431	1.6431	0.07
DC6-48-60-18-8F	A	From Leg	4.0000	0.0000	120.0000	1" Ice	0.9167	0.9167	0.03
			0.00			No Ice	1.4583	1.4583	0.05
			0.00			1/2"	1.6431	1.6431	0.07
						Ice			
***									
Platform Mount [LP 1201-1]	C	None		0.0000	96.0000	No Ice	23.1000	23.1000	2.10
						1/2"	26.8000	26.8000	2.50
						Ice	30.5000	30.5000	2.90
						1" Ice			
DB420-B	A	From Leg	4.0000	0.0000	96.0000	No Ice	3.3300	3.3300	0.03
			0.00			1/2"	5.9940	5.9940	0.04
			11.00			Ice	8.6580	8.6580	0.05
						1" Ice			
PD83-1	A	From Leg	4.0000	0.0000	96.0000	No Ice	3.7000	3.7000	0.02
			0.00			1/2"	5.5750	5.5750	0.05
			-6.00			Ice	7.4667	7.4667	0.09
						1" Ice			
PD1110	A	From Leg	4.0000	0.0000	96.0000	No Ice	2.5023	2.5023	0.02
			0.00			1/2"	3.8435	3.8435	0.04
			9.00			Ice	5.2013	5.2013	0.07
						1" Ice			
PD1110	A	From Leg	4.0000	0.0000	96.0000	No Ice	2.5023	2.5023	0.02
			0.00			1/2"	3.8435	3.8435	0.04
			9.00			Ice	5.2013	5.2013	0.07
						1" Ice			
PD201-1	A	From Leg	4.0000	0.0000	96.0000	No Ice	0.6279	0.6279	0.00
			0.00			1/2"	1.5391	1.5391	0.01
			9.00			Ice	2.4669	2.4669	0.02
						1" Ice			
PD83-1	A	From Leg	4.0000	0.0000	96.0000	No Ice	3.7000	3.7000	0.02
			0.00			1/2"	5.5750	5.5750	0.05
			-6.00			Ice	7.4667	7.4667	0.09
						1" Ice			
DB205-A	B	From Leg	4.0000	0.0000	96.0000	No Ice	1.2000	1.2000	0.04
			0.00			1/2"	2.1600	2.1600	0.05
			12.00			Ice	3.1200	3.1200	0.06
						1" Ice			
PD201-1	B	From Leg	4.0000	0.0000	96.0000	No Ice	0.6279	0.6279	0.00
			0.00			1/2"	1.5391	1.5391	0.01
			9.00			Ice	2.4669	2.4669	0.02
						1" Ice			
PD83-1	B	From Leg	4.0000	0.0000	96.0000	No Ice	3.7000	3.7000	0.02
			0.00			1/2"	5.5750	5.5750	0.05
			-6.00			Ice	7.4667	7.4667	0.09
						1" Ice			
DB806E-XT	C	From Leg	4.0000	0.0000	96.0000	No Ice	2.0000	2.0000	0.02
			0.00			1/2"	2.8292	2.8292	0.03
			9.00			Ice	3.4557	3.4557	0.05
						1" Ice			
PD220	C	From Leg	4.0000	0.0000	96.0000	No Ice	3.0800	3.0800	0.02
			0.00			1/2"	5.3000	5.3000	0.05
			14.00			Ice	7.5367	7.5367	0.09
						1" Ice			
DB224	C	From Leg	4.0000	0.0000	96.0000	No Ice	3.1500	3.1500	0.03
			0.00			1/2"	5.6700	5.6700	0.04
			11.00			Ice	8.1900	8.1900	0.05
						1" Ice			
(4) 6' x 2" Mount Pipe	A	From Leg	4.0000	0.0000	96.0000	No Ice	1.4250	1.4250	0.02
			0.00			1/2"	1.9250	1.9250	0.03
			0.00			Ice	2.2939	2.2939	0.05
						1" Ice			
(2) 6' x 2" Mount Pipe	B	From Leg	4.0000	0.0000	96.0000	No Ice	1.4250	1.4250	0.02
			0.00			1/2"	1.9250	1.9250	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
			0.00			Ice 2.2939	2.2939	0.05
(3) 6" x 2" Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	96.0000	1" Ice No Ice 1/2" Ice 1" Ice 1.4250 1.9250 2.2939	1.4250 1.4250 2.2939	0.02 0.03 0.05
*****								
Platform Mount [LP 1201-1]	C	None		0.0000	82.0000	No Ice 1/2" Ice 1" Ice 23.1000 26.8000 30.5000	23.1000 26.8000 30.5000	2.10 2.50 2.90
APXV18-206516S-C-A20 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	82.0000	No Ice 1/2" Ice 1" Ice 3.8586 4.2736 4.6737	3.2963 4.0044 4.6717	0.04 0.07 0.11
APXV18-206516S-C-A20 w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	82.0000	No Ice 1/2" Ice 1" Ice 3.8586 4.2736 4.6737	3.2963 4.0044 4.6717	0.04 0.07 0.11
APXV18-206516S-C-A20 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	82.0000	No Ice 1/2" Ice 1" Ice 3.8586 4.2736 4.6737	3.2963 4.0044 4.6717	0.04 0.07 0.11
APXV18-206516S-C-A20 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	82.0000	No Ice 1/2" Ice 1" Ice 3.8586 4.2736 4.6737	3.2963 4.0044 4.6717	0.04 0.07 0.11
APXV18-206516S-C-A20 w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	82.0000	No Ice 1/2" Ice 1" Ice 3.8586 4.2736 4.6737	3.2963 4.0044 4.6717	0.04 0.07 0.11
APXV18-206516S-C-A20 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	82.0000	No Ice 1/2" Ice 1" Ice 3.8586 4.2736 4.6737	3.2963 4.0044 4.6717	0.04 0.07 0.11
LNx-6515DS-VTM w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	82.0000	No Ice 1/2" Ice 1" Ice 11.6264 12.3456 13.0742	9.7931 11.3114 12.8538	0.07 0.16 0.26
LNx-6515DS-VTM w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	82.0000	No Ice 1/2" Ice 1" Ice 11.6264 12.3456 13.0742	9.7931 11.3114 12.8538	0.07 0.16 0.26
LNx-6515DS-VTM w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	82.0000	No Ice 1/2" Ice 1" Ice 11.6264 12.3456 13.0742	9.7931 11.3114 12.8538	0.07 0.16 0.26
ETW190VS12UB	A	From Leg	4.0000 0.00 0.00	0.0000	82.0000	No Ice 1/2" Ice 1" Ice 0.5695 0.6671 0.7721	0.3175 0.3954 0.4838	0.01 0.02 0.03
ETW190VS12UB	B	From Leg	4.0000 0.00 0.00	0.0000	82.0000	No Ice 1/2" Ice 1" Ice 0.5695 0.6671 0.7721	0.3175 0.3954 0.4838	0.01 0.02 0.03
ETW190VS12UB	C	From Leg	4.0000 0.00 0.00	0.0000	82.0000	No Ice 1/2" Ice 1" Ice 0.5695 0.6671 0.7721	0.3175 0.3954 0.4838	0.01 0.02 0.03
ATMAA1412D-1A20	A	From Leg	4.0000 0.00 0.00	0.0000	82.0000	No Ice 1/2" Ice 1" Ice 1.0000 1.1259 1.2593	0.4074 0.4965 0.5926	0.01 0.02 0.03
ATMAA1412D-1A20	B	From Leg	4.0000 0.00	0.0000	82.0000	No Ice 1/2" 1.0000 1.1259	0.4074 0.4965	0.01 0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
			0.00			Ice 1.2593	0.5926	0.03
ATMAA1412D-1A20	C	From Leg	4.0000	0.0000	82.0000	1" Ice No Ice 1.0000	0.4074	0.01
			0.00			1/2" 1.1259	0.4965	0.02
			0.00			Ice 1.2593	0.5926	0.03
ATSBT-BOTTOM-FM-4G	A	From Leg	4.0000	0.0000	82.0000	1" Ice No Ice 0.1736	0.0949	0.00
			0.00			1/2" 0.2291	0.1399	0.00
			0.00			Ice 0.2921	0.1934	0.01
ATSBT-BOTTOM-FM-4G	B	From Leg	4.0000	0.0000	82.0000	1" Ice No Ice 0.1736	0.0949	0.00
			0.00			1/2" 0.2291	0.1399	0.00
			0.00			Ice 0.2921	0.1934	0.01
ATSBT-BOTTOM-FM-4G	C	From Leg	4.0000	0.0000	82.0000	1" Ice No Ice 0.1736	0.0949	0.00
			0.00			1/2" 0.2291	0.1399	0.00
			0.00			Ice 0.2921	0.1934	0.01
6' x 2" Mount Pipe	A	From Leg	4.0000	0.0000	82.0000	1" Ice No Ice 1.4250	1.4250	0.02
			0.00			1/2" 1.9250	1.9250	0.03
			0.00			Ice 2.2939	2.2939	0.05
6' x 2" Mount Pipe	B	From Leg	4.0000	0.0000	82.0000	1" Ice No Ice 1.4250	1.4250	0.02
			0.00			1/2" 1.9250	1.9250	0.03
			0.00			Ice 2.2939	2.2939	0.05
6' x 2" Mount Pipe	C	From Leg	4.0000	0.0000	82.0000	1" Ice No Ice 1.4250	1.4250	0.02
			0.00			1/2" 1.9250	1.9250	0.03
			0.00			Ice 2.2939	2.2939	0.05
*****						1" Ice		
Side Arm Mount [SO 102-3]	C	None		0.0000	72.0000	No Ice 3.0000	3.0000	0.08
						1/2" 3.4800	3.4800	0.11
						Ice 3.9600	3.9600	0.14
800 10504 w/ Mount Pipe	A	From Face	2.0000	0.0000	72.0000	1" Ice No Ice 3.4817	3.1885	0.05
			0.00			1/2" 3.8572	3.8202	0.08
			0.00			Ice 4.2411	4.4686	0.12
800 10504 w/ Mount Pipe	B	From Face	2.0000	0.0000	72.0000	1" Ice No Ice 3.4817	3.1885	0.05
			0.00			1/2" 3.8572	3.8202	0.08
			0.00			Ice 4.2411	4.4686	0.12
800 10504 w/ Mount Pipe	C	From Face	2.0000	0.0000	72.0000	1" Ice No Ice 3.4817	3.1885	0.05
			0.00			1/2" 3.8572	3.8202	0.08
			0.00			Ice 4.2411	4.4686	0.12
*****						1" Ice		
Side Arm Mount [SO 702-1]	A	None		0.0000	53.0000	No Ice 1.0000	1.4300	0.03
						1/2" 1.2500	2.0500	0.04
						Ice 1.5000	2.6700	0.05
8'x2" Antenna Mount Pipe	A	From Leg	3.0000	0.0000	53.0000	1" Ice No Ice 1.9000	1.9000	0.03
			0.00			1/2" 2.7281	2.7281	0.04
			0.00			Ice 3.4009	3.4009	0.06
BSA150B	A	From Leg	3.0000	0.0000	53.0000	1" Ice No Ice 7.3611	7.3611	0.00
			0.00			1/2" 10.7625	10.7625	0.15
			3.00			Ice 11.2292	11.2292	0.31
BSA150B	A	From Leg	3.0000	0.0000	53.0000	1" Ice No Ice 7.3611	7.3611	0.00
			0.00			1/2" 10.7625	10.7625	0.15
			-3.00			Ice 11.2292	11.2292	0.31
*****						1" Ice		

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>AA</sub> <sub>Front</sub> ft <sup>2</sup>	C <sub>AA</sub> <sub>Side</sub> ft <sup>2</sup>	Weight K
BULLET III	C	From Face	1.0000 0.00 0.00	0.0000	50.0000	No Ice 1/2" Ice 1" Ice	0.0663 0.1015 0.1440 0.1440	0.00 0.00 0.00 0.00
***								

### Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft <sup>2</sup>	Weight K	
VHLP800-11	B	Paraboloid w/Shroud (HP)	From Leg	4.0000 0.00 4.00	90.0000		148.0000	2.9167	No Ice 1/2" Ice 1" Ice	6.6800 7.0700 7.4600	0.02 0.06 0.09
VHLP800-11	C	Paraboloid w/Shroud (HP)	From Leg	4.0000 0.00 4.00	90.0000		148.0000	2.9167	No Ice 1/2" Ice 1" Ice	6.6800 7.0700 7.4600	0.02 0.06 0.09
***											
VHLP2.5-10W	A	Paraboloid w/Shroud (HP)	From Leg	1.0000 0.00 0.00	0.0000		144.0000	2.9167	No Ice 1/2" Ice 1" Ice	6.6800 7.0700 7.4600	0.05 0.08 0.12
***											

### Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp

Comb. No.	Description
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

### Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	148 - 143	Pole	Max Tension	1	0.00	-0.00	-0.00
			Max. Compression	26	-10.03	5.07	7.79
			Max. Mx	20	-4.48	27.62	2.63
			Max. My	2	-4.44	1.35	30.83
			Max. Vy	8	4.65	-24.22	2.97
			Max. Vx	14	5.13	1.63	-25.14
			Max. Torque	16			-4.47
L2	143 - 138	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-10.75	5.11	7.83
			Max. Mx	20	-4.89	51.73	2.63
			Max. My	2	-4.85	1.11	57.19
			Max. Vy	8	5.05	-48.46	3.29
			Max. Vx	14	5.53	1.71	-51.79
			Max. Torque	16			-4.47
L3	138 - 133	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-11.49	5.15	7.88
			Max. Mx	20	-5.31	77.85	2.63
			Max. My	2	-5.27	0.87	85.56
			Max. Vy	8	5.45	-74.71	3.61
			Max. Vx	14	5.94	1.79	-80.45
			Max. Torque	16			-4.47
L4	133 - 128	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-12.27	5.19	7.91
			Max. Mx	20	-5.75	106.01	2.63
			Max. My	2	-5.71	0.63	115.98
			Max. Vy	8	5.87	-103.01	3.93
			Max. Vx	14	6.35	1.87	-111.17
			Max. Torque	16			-4.47
L5	128 - 123	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-13.06	5.22	7.95
			Max. Mx	20	-6.21	136.29	2.63
			Max. My	2	-6.17	0.38	148.50
			Max. Vy	8	6.30	-133.42	4.25
			Max. Vx	14	6.78	1.95	-144.00
			Max. Torque	16			-4.47
L6	123 - 118	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.17	5.26	9.08
			Max. Mx	20	-10.13	176.03	2.99

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L7	118 - 113	Pole	Max. My	2	-10.08	0.14	190.89
			Max. Vy	8	10.39	-173.31	4.92
			Max. Vx	14	10.89	2.03	-185.95
			Max. Torque	16			-4.61
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.20	5.30	8.98
			Max. Mx	20	-10.70	228.95	2.98
			Max. My	2	-10.66	-0.11	246.09
			Max. Vy	8	10.83	-226.35	5.24
			Max. Vx	14	11.32	2.11	-241.47
L8	113 - 108	Pole	Max. Torque	16			-4.61
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24.26	5.35	8.88
			Max. Mx	20	-11.30	284.06	2.97
			Max. My	2	-11.26	-0.35	303.48
			Max. Vy	8	11.27	-281.60	5.56
			Max. Vx	14	11.76	2.19	-299.19
			Max. Torque	16			-4.61
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-25.02	5.37	8.80
L9	108 - 100.5	Pole	Max. Mx	20	-11.73	323.95	2.96
			Max. My	2	-11.69	-0.53	344.96
			Max. Vy	8	11.58	-321.59	5.77
			Max. Vx	14	12.08	2.25	-340.91
			Max. Torque	16			-4.61
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.04	5.41	8.68
			Max. Mx	20	-13.00	382.97	2.95
			Max. My	2	-12.96	-0.77	406.26
			Max. Vy	8	12.08	-380.75	6.09
L10	100.5 - 99.5	Pole	Max. Vx	14	12.57	2.33	-402.54
			Max. Torque	16			-4.61
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.34	5.98	11.30
			Max. Mx	20	-16.85	451.42	3.39
			Max. My	2	-16.81	-0.88	477.35
			Max. Vy	8	14.58	-449.00	6.85
			Max. Vx	14	15.08	2.55	-472.92
			Max. Torque	16			-5.88
			Max Tension	1	0.00	0.00	0.00
L11	99.5 - 94.5	Pole	Max. Compression	26	-35.77	6.02	11.19
			Max. Mx	20	-17.80	525.34	3.38
			Max. My	2	-17.76	-1.13	553.57
			Max. Vy	8	15.05	-523.06	7.16
			Max. Vx	14	15.54	2.63	-549.47
			Max. Torque	16			-5.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.22	6.05	11.06
			Max. Mx	20	-18.77	601.57	3.37
			Max. My	2	-18.73	-1.38	632.10
L12	94.5 - 89.5	Pole	Max. Vy	8	15.51	-599.43	7.48
			Max. Vx	14	16.01	2.71	-628.34
			Max. Torque	16			-5.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.50	6.09	10.93
			Max. Mx	20	-22.93	686.14	3.35
			Max. My	2	-22.89	-1.63	718.97
			Max. Vy	8	18.38	-684.13	7.79
			Max. Vx	14	18.88	2.78	-715.54
			Max. Torque	16			-5.88
L13	89.5 - 84.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.08	6.13	10.79
			Max. Mx	20	-24.03	779.01	3.34
			Max. My	2	-24.00	-1.89	814.15
			Max. Vy	8	18.84	-777.15	8.10
			Max. Vx	14	19.33	2.86	-811.06
			Max. Torque	16			-5.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.08	6.13	10.79
			Max. Mx	20	-24.03	779.01	3.34
L14	84.5 - 79.5	Pole	Max. My	2	-24.00	-1.89	814.15
			Max. Vy	8	18.84	-777.15	8.10
			Max. Vx	14	19.33	2.86	-811.06
			Max. Torque	16			-5.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.08	6.13	10.79
			Max. Mx	20	-24.03	779.01	3.34
			Max. My	2	-24.00	-1.89	814.15
			Max. Vy	8	18.84	-777.15	8.10
			Max. Vx	14	19.33	2.86	-811.06
L15	79.5 - 74.5	Pole	Max. Torque	16			-5.88
			Max Tension	1	0.00	0.00	0.00
L16	74.5 - 70.667	Pole	Max. Compression	26	-47.08	6.13	10.79
			Max. Mx	20	-24.03	779.01	3.34

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L17	70.667 - 70.417	Pole	Max. Compression	26	-49.14	6.15	10.68
			Max. Mx	20	-25.17	852.21	3.32
			Max. My	2	-25.14	-2.08	889.10
			Max. Vy	8	19.53	-850.45	8.34
			Max. Vx	14	20.03	2.92	-886.28
			Max. Torque	16			-5.88
			Max Tension	1	0.00	0.00	0.00
L18	70.417 - 65.417	Pole	Max. Compression	26	-49.23	6.16	10.68
			Max. Mx	20	-25.24	857.09	3.32
			Max. My	2	-25.20	-2.10	894.09
			Max. Vy	8	19.55	-855.33	8.35
			Max. Vx	14	20.04	2.92	-891.29
			Max. Torque	16			-5.88
			Max Tension	1	0.00	0.00	0.00
L19	65.417 - 63.667	Pole	Max. Compression	26	-51.07	6.19	10.53
			Max. Mx	20	-26.42	955.79	3.30
			Max. My	2	-26.39	-2.35	995.09
			Max. Vy	8	20.00	-954.18	8.66
			Max. Vx	14	20.50	2.99	-992.63
			Max. Torque	16			-5.88
			Max Tension	1	0.00	0.00	0.00
L20	63.667 - 63.417	Pole	Max. Compression	26	-51.71	6.20	10.47
			Max. Mx	20	-26.84	990.87	3.29
			Max. My	2	-26.81	-2.44	1030.96
			Max. Vy	8	20.16	-989.30	8.76
			Max. Vx	14	20.66	3.02	-1028.62
			Max. Torque	16			-5.88
			Max Tension	1	0.00	0.00	0.00
L21	63.417 - 58.25	Pole	Max. Compression	26	-51.81	6.20	10.46
			Max. Mx	20	-26.91	995.90	3.29
			Max. My	2	-26.88	-2.45	1036.11
			Max. Vy	8	20.18	-994.34	8.78
			Max. Vx	14	20.67	3.02	-1033.79
			Max. Torque	16			-5.87
			Max Tension	1	0.00	0.00	0.00
L22	58.25 - 57.25	Pole	Max. Compression	26	-51.86	6.20	10.46
			Max. Mx	20	-26.95	999.27	3.29
			Max. My	2	-26.93	-2.46	1039.55
			Max. Vy	8	20.19	-997.71	8.79
			Max. Vx	14	20.68	3.02	-1037.24
			Max. Torque	16			-5.87
			Max Tension	1	0.00	0.00	0.00
L23	57.25 - 53.229	Pole	Max. Compression	26	-55.49	6.23	10.26
			Max. Mx	20	-29.52	1122.05	3.26
			Max. My	2	-29.49	-2.77	1165.08
			Max. Vy	8	20.79	-1120.67	9.15
			Max. Vx	14	21.29	3.11	-1163.18
			Max. Torque	16			-5.87
			Max Tension	1	0.00	0.00	0.00
L24	53.229 - 52.979	Pole	Max. Compression	26	-57.07	6.25	10.13
			Max. Mx	20	-30.65	1206.22	3.24
			Max. My	2	-30.62	-2.97	1251.07
			Max. Vy	8	21.14	-1204.94	9.39
			Max. Vx	14	21.63	3.17	-1249.45
			Max. Torque	16			-5.87
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.36	6.25	15.34
			Max. Mx	20	-30.79	1211.52	3.39
			Max. My	2	-30.76	-2.98	1256.68
			Max. Vy	8	21.62	-1210.26	9.55
			Max. Vx	14	22.11	3.17	-1254.70

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L25	52.979 - 47.979	Pole	Max. Torque	6			7.52
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.46	6.27	15.15
			Max. Mx	20	-32.22	1320.52	3.36
			Max. My	2	-32.19	-3.24	1367.94
			Max. Vy	8	22.05	-1319.39	9.84
			Max. Vx	14	22.54	3.24	-1366.31
L26	47.979 - 42.979	Pole	Max. Torque	6			7.52
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.59	6.29	14.97
			Max. Mx	20	-33.68	1431.62	3.33
			Max. My	2	-33.66	-3.50	1481.29
			Max. Vy	8	22.46	-1430.63	10.13
			Max. Vx	14	22.95	3.30	-1480.01
L27	42.979 - 37.979	Pole	Max. Torque	6			7.52
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.75	6.31	14.79
			Max. Mx	20	-35.18	1544.76	3.29
			Max. My	2	-35.17	-3.75	1596.68
			Max. Vy	8	22.87	-1543.92	10.42
			Max. Vx	14	23.35	3.37	-1595.75
L28	37.979 - 35.125	Pole	Max. Torque	6			7.52
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-65.99	6.31	14.67
			Max. Mx	20	-36.05	1610.24	3.27
			Max. My	2	-36.04	-3.90	1663.43
			Max. Vy	8	23.10	-1609.47	10.58
			Max. Vx	14	23.58	3.41	-1662.70
L29	35.125 - 34.875	Pole	Max. Torque	6			7.52
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.12	6.31	14.66
			Max. Mx	20	-36.16	1616.00	3.27
			Max. My	2	-36.14	-3.91	1669.30
			Max. Vy	8	23.10	-1615.25	10.59
			Max. Vx	14	23.59	3.41	-1668.59
L30	34.875 - 28.75	Pole	Max. Torque	6			7.52
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.33	6.31	14.64
			Max. Mx	20	-36.31	1624.66	3.26
			Max. My	2	-36.30	-3.93	1678.13
			Max. Vy	8	23.14	-1623.92	10.61
			Max. Vx	14	23.62	3.41	-1677.44
L31	28.75 - 27.75	Pole	Max. Torque	6			7.52
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.06	6.31	14.30
			Max. Mx	20	-40.60	1782.70	3.22
			Max. My	2	-40.59	-4.27	1839.17
			Max. Vy	8	23.75	-1782.15	10.99
			Max. Vx	14	24.23	3.50	-1838.96
L32	27.75 - 25.875	Pole	Max. Torque	6			7.51
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.00	6.31	14.13
			Max. Mx	20	-41.24	1827.30	3.20
			Max. My	2	-41.23	-4.37	1884.58
			Max. Vy	8	23.91	-1826.80	11.10
			Max. Vx	14	24.37	3.52	-1884.50
L33	25.875 - 25.75	Pole	Max. Torque	6			7.51
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.06	6.31	14.12
			Max. Mx	20	-41.30	1830.28	3.20



Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L34	25.75 - 25.625	Pole	Max. My	2	-41.29	-4.38	1887.61
			Max. Vy	8	23.90	-1829.79	11.10
			Max. Vx	14	24.36	3.52	-1887.55
			Max. Torque	6			7.51
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.14	6.31	14.11
			Max. Mx	20	-41.36	1833.27	3.20
			Max. My	2	-41.35	-4.38	1890.65
			Max. Vy	8	23.91	-1832.77	11.11
			Max. Vx	14	24.37	3.53	-1890.59
L35	25.625 - 25.5	Pole	Max. Torque	6			7.51
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.22	6.31	14.10
			Max. Mx	20	-41.42	1836.25	3.20
			Max. My	2	-41.41	-4.39	1893.69
			Max. Vy	8	23.93	-1835.76	11.12
			Max. Vx	14	24.38	3.53	-1893.64
			Max. Torque	6			7.51
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.37	6.31	13.71
L36	25.5 - 20.5	Pole	Max. Mx	20	-43.81	1956.79	3.16
			Max. My	14	-43.80	3.59	-2016.59
			Max. Vy	8	24.36	-1956.44	11.39
			Max. Vx	14	24.80	3.59	-2016.59
			Max. Torque	6			7.51
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-79.51	6.31	13.37
			Max. Mx	20	-46.25	2079.42	3.12
			Max. My	14	-46.24	3.65	-2141.57
			Max. Vy	8	24.77	-2079.22	11.67
L37	20.5 - 15.5	Pole	Max. Vx	14	25.20	3.65	-2141.57
			Max. Torque	6			7.51
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.67	6.31	13.05
			Max. Mx	20	-48.71	2204.11	3.07
			Max. My	14	-48.71	3.71	-2268.60
			Max. Vy	8	25.18	-2204.05	11.94
			Max. Vx	14	25.61	3.71	-2268.60
			Max. Torque	6			7.51
			Max Tension	1	0.00	0.00	0.00
L38	15.5 - 10.5	Pole	Max. Compression	26	-85.67	6.31	12.83
			Max. Mx	8	-51.10	-2330.94	12.22
			Max. My	14	-51.10	3.77	-2397.67
			Max. Vy	8	25.59	-2330.94	12.22
			Max. Vx	14	26.03	3.77	-2397.67
			Max. Torque	6			7.51
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88.49	6.31	12.73
			Max. Mx	8	-53.41	-2459.91	12.50
			Max. My	14	-53.41	3.82	-2528.79
L39	10.5 - 5.5	Pole	Max. Vy	8	26.01	-2459.91	12.50
			Max. Vx	14	26.44	3.82	-2528.79
			Max. Torque	6			7.51
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88.76	6.31	12.72
			Max. Mx	8	-53.65	-2472.92	12.53
			Max. My	14	-53.65	3.83	-2542.02
			Max. Vy	8	26.04	-2472.92	12.53
			Max. Vx	14	26.47	3.83	-2542.02
			Max. Torque	6			7.51
L40	5.5 - 0.5	Pole	Max. Torque	6			7.51
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88.76	6.31	12.72
			Max. Mx	8	-53.65	-2472.92	12.53
			Max. My	14	-53.65	3.83	-2542.02
			Max. Vy	8	26.04	-2472.92	12.53
			Max. Vx	14	26.47	3.83	-2542.02
			Max. Torque	6			7.51
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88.76	6.31	12.72
L41	0.5 - 0	Pole	Max. Mx	8	-53.65	-2472.92	12.53
			Max. My	14	-53.65	3.83	-2542.02
			Max. Vy	8	26.04	-2472.92	12.53
			Max. Vx	14	26.47	3.83	-2542.02
			Max. Torque	6			7.51
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88.76	6.31	12.72
			Max. Mx	8	-53.65	-2472.92	12.53
			Max. My	14	-53.65	3.83	-2542.02
			Max. Vy	8	26.04	-2472.92	12.53

**Maximum Reactions**

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	88.76	0.00	0.00
	Max. H <sub>x</sub>	20	53.65	26.02	-0.00
	Max. H <sub>z</sub>	2	53.65	-0.05	26.41
	Max. M <sub>x</sub>	2	2540.33	-0.05	26.41
	Max. M <sub>z</sub>	8	2472.92	-26.04	0.06
	Max. Torsion	6	7.51	-22.49	13.36
	Min. Vert	3	40.23	-0.05	26.41
	Min. H <sub>x</sub>	8	53.65	-26.04	0.06
	Min. H <sub>z</sub>	14	53.65	0.01	-26.47
	Min. M <sub>x</sub>	14	-2542.02	0.01	-26.47
	Min. M <sub>z</sub>	20	-2472.68	26.02	-0.00
	Min. Torsion	18	-7.33	22.46	-13.32

### Tower Mast Reaction Summary

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overtuning Moment, M <sub>x</sub> kip-ft	Overtuning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	44.70	-0.00	-0.00	-3.01	1.72	-0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	53.65	0.05	-26.41	-2540.33	-5.68	-3.18
0.9 Dead+1.6 Wind 0 deg - No Ice	40.23	0.05	-26.41	-2519.70	-6.16	-3.15
1.2 Dead+1.6 Wind 30 deg - No Ice	53.65	12.96	-22.94	-2210.67	-1228.46	-6.44
0.9 Dead+1.6 Wind 30 deg - No Ice	40.23	12.96	-22.94	-2192.58	-1219.57	-6.39
1.2 Dead+1.6 Wind 60 deg - No Ice	53.65	22.49	-13.36	-1295.57	-2135.96	-7.51
0.9 Dead+1.6 Wind 60 deg - No Ice	40.23	22.49	-13.36	-1284.53	-2120.09	-7.46
1.2 Dead+1.6 Wind 90 deg - No Ice	53.65	26.04	-0.06	-12.53	-2472.92	-5.78
0.9 Dead+1.6 Wind 90 deg - No Ice	40.23	26.04	-0.06	-11.47	-2454.44	-5.74
1.2 Dead+1.6 Wind 120 deg - No Ice	53.65	22.44	13.36	1288.62	-2128.59	-3.64
0.9 Dead+1.6 Wind 120 deg - No Ice	40.23	22.44	13.36	1279.53	-2112.79	-3.62
1.2 Dead+1.6 Wind 150 deg - No Ice	53.65	12.92	22.97	2207.92	-1222.38	-0.15
0.9 Dead+1.6 Wind 150 deg - No Ice	40.23	12.92	22.97	2191.73	-1213.55	-0.15
1.2 Dead+1.6 Wind 180 deg - No Ice	53.65	-0.01	26.47	2542.02	3.83	3.80
0.9 Dead+1.6 Wind 180 deg - No Ice	40.23	-0.01	26.47	2523.25	3.26	3.78
1.2 Dead+1.6 Wind 210 deg - No Ice	53.65	-12.90	22.99	2210.88	1222.84	6.84
0.9 Dead+1.6 Wind 210 deg - No Ice	40.23	-12.90	22.99	2194.66	1212.94	6.80
1.2 Dead+1.6 Wind 240 deg - No Ice	53.65	-22.46	13.32	1281.71	2134.87	7.33
0.9 Dead+1.6 Wind 240 deg - No Ice	40.23	-22.46	13.32	1272.69	2117.93	7.27
1.2 Dead+1.6 Wind 270 deg - No Ice	53.65	-26.02	0.00	-3.01	2472.68	6.36
0.9 Dead+1.6 Wind 270 deg - No Ice	40.23	-26.02	0.00	-2.05	2453.14	6.32
1.2 Dead+1.6 Wind 300 deg - No Ice	53.65	-22.44	-13.21	-1272.19	2132.75	3.91
0.9 Dead+1.6 Wind 300 deg - No Ice	40.23	-22.44	-13.21	-1261.38	2115.83	3.89
1.2 Dead+1.6 Wind 330 deg - No Ice	53.65	-12.83	-22.90	-2204.13	1212.45	0.93

Load Combination	Vertical	Shear <sub>x</sub>	Shear <sub>z</sub>	Overturning Moment, M <sub>x</sub>	Overturning Moment, M <sub>z</sub>	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
0.9 Dead+1.6 Wind 330 deg - No Ice	40.23	-12.83	-22.90	-2186.10	1202.65	0.93
1.2 Dead+1.0 Ice+1.0 Temp	88.76	-0.00	-0.00	-12.72	6.31	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	88.76	0.01	-7.69	-794.91	5.32	-1.37
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	88.76	3.79	-6.67	-692.21	-375.35	-2.50
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	88.76	6.57	-3.88	-408.91	-657.29	-2.86
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	88.76	8.62	-0.01	-14.12	-832.23	-2.27
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	88.76	6.57	3.89	384.90	-656.35	-1.33
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	88.76	3.79	6.68	668.59	-375.37	0.05
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	88.76	0.00	7.70	771.52	5.90	1.52
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	88.76	-3.77	6.68	668.44	385.63	2.61
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	88.76	-6.56	3.87	381.67	668.70	2.82
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	88.76	-8.62	-0.00	-13.53	843.85	2.41
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	88.76	-6.57	-3.85	-404.66	669.05	1.39
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	88.76	-3.76	-6.67	-691.47	384.59	0.13
Dead+Wind 0 deg - Service	44.70	0.01	-6.71	-644.69	-0.21	-0.81
Dead+Wind 30 deg - Service	44.70	3.29	-5.83	-561.30	-309.52	-1.63
Dead+Wind 60 deg - Service	44.70	5.72	-3.39	-329.82	-539.07	-1.90
Dead+Wind 90 deg - Service	44.70	6.62	-0.01	-5.30	-624.29	-1.47
Dead+Wind 120 deg - Service	44.70	5.70	3.40	323.80	-537.20	-0.93
Dead+Wind 150 deg - Service	44.70	3.28	5.84	556.34	-307.99	-0.04
Dead+Wind 180 deg - Service	44.70	-0.00	6.73	640.85	2.19	0.97
Dead+Wind 210 deg - Service	44.70	-3.28	5.84	557.08	310.55	1.74
Dead+Wind 240 deg - Service	44.70	-5.71	3.39	322.05	541.23	1.86
Dead+Wind 270 deg - Service	44.70	-6.61	0.00	-2.90	626.67	1.61
Dead+Wind 300 deg - Service	44.70	-5.70	-3.36	-323.91	540.69	0.99
Dead+Wind 330 deg - Service	44.70	-3.26	-5.82	-559.64	307.91	0.23

## Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-44.70	0.00	0.00	44.70	0.00	0.000%
2	0.05	-53.65	-26.41	-0.05	53.65	26.41	0.000%
3	0.05	-40.23	-26.41	-0.05	40.23	26.41	0.000%
4	12.96	-53.65	-22.94	-12.96	53.65	22.94	0.000%
5	12.96	-40.23	-22.94	-12.96	40.23	22.94	0.000%
6	22.49	-53.65	-13.36	-22.49	53.65	13.36	0.000%
7	22.49	-40.23	-13.36	-22.49	40.23	13.36	0.000%
8	26.04	-53.65	-0.06	-26.04	53.65	0.06	0.000%
9	26.04	-40.23	-0.06	-26.04	40.23	0.06	0.000%
10	22.44	-53.65	13.36	-22.44	53.65	-13.36	0.000%
11	22.44	-40.23	13.36	-22.44	40.23	-13.36	0.000%
12	12.92	-53.65	22.97	-12.92	53.65	-22.97	0.000%
13	12.92	-40.23	22.97	-12.92	40.23	-22.97	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
14	-0.01	-53.65	26.47	0.01	53.65	-26.47	0.000%
15	-0.01	-40.23	26.47	0.01	40.23	-26.47	0.000%
16	-12.90	-53.65	22.99	12.90	53.65	-22.99	0.000%
17	-12.90	-40.23	22.99	12.90	40.23	-22.99	0.000%
18	-22.46	-53.65	13.32	22.46	53.65	-13.32	0.000%
19	-22.46	-40.23	13.32	22.46	40.23	-13.32	0.000%
20	-26.02	-53.65	0.00	26.02	53.65	-0.00	0.000%
21	-26.02	-40.23	0.00	26.02	40.23	-0.00	0.000%
22	-22.44	-53.65	-13.21	22.44	53.65	13.21	0.000%
23	-22.44	-40.23	-13.21	22.44	40.23	13.21	0.000%
24	-12.83	-53.65	-22.90	12.83	53.65	22.90	0.000%
25	-12.83	-40.23	-22.90	12.83	40.23	22.90	0.000%
26	0.00	-88.76	0.00	0.00	88.76	0.00	0.000%
27	0.01	-88.76	-7.69	-0.01	88.76	7.69	0.000%
28	3.79	-88.76	-6.67	-3.79	88.76	6.67	0.000%
29	6.57	-88.76	-3.88	-6.57	88.76	3.88	0.000%
30	8.62	-88.76	-0.01	-8.62	88.76	0.01	0.000%
31	6.57	-88.76	3.89	-6.57	88.76	-3.89	0.000%
32	3.79	-88.76	6.68	-3.79	88.76	-6.68	0.000%
33	0.00	-88.76	7.70	-0.00	88.76	-7.70	0.000%
34	-3.77	-88.76	6.68	3.77	88.76	-6.68	0.000%
35	-6.56	-88.76	3.87	6.56	88.76	-3.87	0.000%
36	-8.62	-88.76	-0.00	8.62	88.76	0.00	0.000%
37	-6.57	-88.76	-3.85	6.57	88.76	3.85	0.000%
38	-3.76	-88.76	-6.67	3.76	88.76	6.67	0.000%
39	0.01	-44.70	-6.71	-0.01	44.70	6.71	0.000%
40	3.29	-44.70	-5.83	-3.29	44.70	5.83	0.000%
41	5.72	-44.70	-3.39	-5.72	44.70	3.39	0.000%
42	6.62	-44.70	-0.01	-6.62	44.70	0.01	0.000%
43	5.70	-44.70	3.40	-5.70	44.70	-3.40	0.000%
44	3.28	-44.70	5.84	-3.28	44.70	-5.84	0.000%
45	-0.00	-44.70	6.73	0.00	44.70	-6.73	0.000%
46	-3.28	-44.70	5.84	3.28	44.70	-5.84	0.000%
47	-5.71	-44.70	3.39	5.71	44.70	-3.39	0.000%
48	-6.61	-44.70	0.00	6.61	44.70	-0.00	0.000%
49	-5.70	-44.70	-3.36	5.70	44.70	3.36	0.000%
50	-3.26	-44.70	-5.82	3.26	44.70	5.82	0.000%

### Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00001069
2	Yes	5	0.00000001	0.00034520
3	Yes	5	0.00000001	0.00016566
4	Yes	6	0.00000001	0.00004877
5	Yes	5	0.00000001	0.00057553
6	Yes	6	0.00000001	0.00007406
7	Yes	5	0.00000001	0.00088358
8	Yes	5	0.00000001	0.00054942
9	Yes	5	0.00000001	0.00027106
10	Yes	6	0.00000001	0.00005160
11	Yes	5	0.00000001	0.00061123
12	Yes	6	0.00000001	0.00005498
13	Yes	5	0.00000001	0.00065160
14	Yes	5	0.00000001	0.00041595
15	Yes	5	0.00000001	0.00020239
16	Yes	6	0.00000001	0.00007404
17	Yes	5	0.00000001	0.00088335
18	Yes	6	0.00000001	0.00005093
19	Yes	5	0.00000001	0.00060357
20	Yes	5	0.00000001	0.00059495
21	Yes	5	0.00000001	0.00029422
22	Yes	6	0.00000001	0.00006281
23	Yes	5	0.00000001	0.00074514

24	Yes	6	0.00000001	0.00005380
25	Yes	5	0.00000001	0.00063431
26	Yes	5	0.00000001	0.00019716
27	Yes	6	0.00000001	0.00040342
28	Yes	6	0.00000001	0.00040452
29	Yes	6	0.00000001	0.00039468
30	Yes	6	0.00000001	0.00039298
31	Yes	6	0.00000001	0.00037433
32	Yes	6	0.00000001	0.00037701
33	Yes	6	0.00000001	0.00037388
34	Yes	6	0.00000001	0.00038721
35	Yes	6	0.00000001	0.00038853
36	Yes	6	0.00000001	0.00040901
37	Yes	6	0.00000001	0.00040523
38	Yes	6	0.00000001	0.00041104
39	Yes	4	0.00000001	0.00088328
40	Yes	5	0.00000001	0.00004530
41	Yes	5	0.00000001	0.00006064
42	Yes	5	0.00000001	0.00003762
43	Yes	5	0.00000001	0.00003842
44	Yes	5	0.00000001	0.00003789
45	Yes	4	0.00000001	0.00093119
46	Yes	5	0.00000001	0.00005974
47	Yes	5	0.00000001	0.00004773
48	Yes	5	0.00000001	0.00004049
49	Yes	5	0.00000001	0.00004698
50	Yes	5	0.00000001	0.00003846

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	148 - 143	14.746	39	0.9138	0.0157
L2	143 - 138	13.793	39	0.9059	0.0139
L3	138 - 133	12.851	39	0.8920	0.0124
L4	133 - 128	11.927	39	0.8731	0.0110
L5	128 - 123	11.024	39	0.8500	0.0098
L6	123 - 118	10.148	39	0.8235	0.0087
L7	118 - 113	9.301	39	0.7937	0.0077
L8	113 - 108	8.487	39	0.7591	0.0068
L9	108 - 100.5	7.712	39	0.7203	0.0060
L10	104.5 - 99.5	7.195	39	0.6909	0.0054
L11	99.5 - 94.5	6.481	39	0.6698	0.0051
L12	94.5 - 89.5	5.797	39	0.6364	0.0046
L13	89.5 - 84.5	5.149	39	0.6009	0.0041
L14	84.5 - 79.5	4.539	39	0.5637	0.0037
L15	79.5 - 74.5	3.969	39	0.5251	0.0033
L16	74.5 - 70.667	3.440	39	0.4850	0.0029
L17	70.667 - 70.417	3.063	39	0.4532	0.0026
L18	70.417 - 65.417	3.040	39	0.4512	0.0026
L19	65.417 - 63.667	2.589	39	0.4087	0.0023
L20	63.667 - 63.417	2.442	39	0.3938	0.0022
L21	63.417 - 58.25	2.422	39	0.3917	0.0022
L22	63.25 - 57.25	2.408	39	0.3902	0.0022
L23	57.25 - 53.229	1.934	39	0.3613	0.0020
L24	53.229 - 52.979	1.643	39	0.3287	0.0018
L25	52.979 - 47.979	1.626	39	0.3267	0.0018
L26	47.979 - 42.979	1.305	39	0.2858	0.0015
L27	42.979 - 37.979	1.027	39	0.2447	0.0012
L28	37.979 - 35.125	0.793	39	0.2034	0.0009
L29	35.125 - 34.875	0.678	39	0.1798	0.0008
L30	34.875 - 28.75	0.669	39	0.1784	0.0008
L31	34.5 - 27.75	0.655	39	0.1762	0.0008
L32	27.75 - 25.875	0.422	39	0.1495	0.0007
L33	25.875 - 25.75	0.366	39	0.1353	0.0006
L34	25.75 - 25.625	0.362	39	0.1344	0.0006
L35	25.625 - 25.5	0.359	39	0.1337	0.0006

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L36	25.5 - 20.5	0.355	39	0.1330	0.0006
L37	20.5 - 15.5	0.229	39	0.1071	0.0004
L38	15.5 - 10.5	0.131	39	0.0808	0.0003
L39	10.5 - 5.5	0.060	39	0.0548	0.0002
L40	5.5 - 0.5	0.016	39	0.0286	0.0001
L41	0.5 - 0	0.000	39	0.0000	0.0000

**Critical Deflections and Radius of Curvature - Service Wind**

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
152.0000	VHLP800-11	39	14.746	0.9138	0.0157	25544
148.0000	Platform Mount [LP 1201-1]	39	14.746	0.9138	0.0157	25544
144.0000	VHLP2.5-10W	39	13.983	0.9079	0.0143	25544
120.0000	Platform Mount [LP 302-1]	39	9.636	0.8061	0.0081	9415
96.0000	Platform Mount [LP 1201-1]	39	5.999	0.6476	0.0048	8733
82.0000	Platform Mount [LP 1201-1]	39	4.249	0.5446	0.0035	7413
72.0000	Side Arm Mount [SO 102-3]	39	3.191	0.4644	0.0028	6898
53.0000	Side Arm Mount [SO 702-1]	39	1.627	0.3269	0.0018	7081
50.0000	BULLET III	39	1.430	0.3025	0.0016	6992

**Maximum Tower Deflections - Design Wind**

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	148 - 143	57.803	2	3.5485	0.0626
L2	143 - 138	54.100	2	3.5251	0.0557
L3	138 - 133	50.434	2	3.4772	0.0495
L4	133 - 128	46.829	2	3.4086	0.0440
L5	128 - 123	43.305	2	3.3229	0.0391
L6	123 - 118	39.878	2	3.2227	0.0347
L7	118 - 113	36.563	2	3.1095	0.0307
L8	113 - 108	33.376	2	2.9770	0.0271
L9	108 - 100.5	30.337	2	2.8270	0.0238
L10	104.5 - 99.5	28.307	2	2.7133	0.0217
L11	99.5 - 94.5	25.504	2	2.6313	0.0204
L12	94.5 - 89.5	22.817	2	2.5013	0.0184
L13	89.5 - 84.5	20.270	2	2.3627	0.0164
L14	84.5 - 79.5	17.872	2	2.2174	0.0146
L15	79.5 - 74.5	15.629	2	2.0664	0.0130
L16	74.5 - 70.667	13.548	2	1.9089	0.0115
L17	70.667 - 70.417	12.065	2	1.7844	0.0104
L18	70.417 - 65.417	11.972	2	1.7761	0.0103
L19	65.417 - 63.667	10.199	2	1.6094	0.0090
L20	63.667 - 63.417	9.620	2	1.5509	0.0086
L21	63.417 - 58.25	9.539	2	1.5424	0.0086
L22	63.25 - 57.25	9.485	2	1.5367	0.0085
L23	57.25 - 53.229	7.618	14	1.4230	0.0078
L24	53.229 - 52.979	6.474	14	1.2948	0.0070
L25	52.979 - 47.979	6.406	14	1.2869	0.0070
L26	47.979 - 42.979	5.143	14	1.1260	0.0058
L27	42.979 - 37.979	4.049	14	0.9640	0.0047
L28	37.979 - 35.125	3.124	14	0.8015	0.0037
L29	35.125 - 34.875	2.673	14	0.7086	0.0032
L30	34.875 - 28.75	2.636	14	0.7029	0.0032
L31	34.5 - 27.75	2.581	14	0.6944	0.0031
L32	27.75 - 25.875	1.662	14	0.5895	0.0026
L33	25.875 - 25.75	1.442	14	0.5334	0.0023
L34	25.75 - 25.625	1.428	14	0.5296	0.0023

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L35	25.625 - 25.5	1.414	14	0.5270	0.0022
L36	25.5 - 20.5	1.400	14	0.5245	0.0022
L37	20.5 - 15.5	0.905	14	0.4221	0.0017
L38	15.5 - 10.5	0.517	14	0.3187	0.0013
L39	10.5 - 5.5	0.237	14	0.2161	0.0008
L40	5.5 - 0.5	0.065	14	0.1127	0.0004
L41	0.5 - 0	0.001	14	0.0102	0.0000

### Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
152.0000	VHLP800-11	2	57.803	3.5485	0.0626	8043
148.0000	Platform Mount [LP 1201-1]	2	57.803	3.5485	0.0626	8043
144.0000	VHLP2.5-10W	2	54.838	3.5313	0.0570	8043
120.0000	Platform Mount [LP 302-1]	2	37.875	3.1569	0.0323	2486
96.0000	Platform Mount [LP 1201-1]	2	23.609	2.5446	0.0191	2250
82.0000	Platform Mount [LP 1201-1]	2	16.731	2.1426	0.0138	1899
72.0000	Side Arm Mount [SO 102-3]	2	12.569	1.8279	0.0109	1761
53.0000	Side Arm Mount [SO 702-1]	14	6.412	1.2875	0.0071	1801
50.0000	BULLET III	14	5.633	1.1915	0.0064	1778

### Compression Checks

### Pole Design Data

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	KI/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio P <sub>u</sub> / φP <sub>n</sub>
L1	148 - 143 (1)	TP23.0151x22x0.25	5.0000	0.0000	0.0	18.325 9	-4.44	1243.39	0.004
L2	143 - 138 (2)	TP24.0301x23.0151x0.25	5.0000	0.0000	0.0	19.143 0	-4.85	1280.70	0.004
L3	138 - 133 (3)	TP25.0452x24.0301x0.25	5.0000	0.0000	0.0	19.960 1	-5.27	1316.46	0.004
L4	133 - 128 (4)	TP26.0602x25.0452x0.25	5.0000	0.0000	0.0	20.777 2	-5.71	1350.67	0.004
L5	128 - 123 (5)	TP27.0753x26.0602x0.25	5.0000	0.0000	0.0	21.594 3	-6.17	1383.33	0.004
L6	123 - 118 (6)	TP28.0903x27.0753x0.25	5.0000	0.0000	0.0	22.411 5	-10.08	1414.45	0.007
L7	118 - 113 (7)	TP29.1054x28.0903x0.25	5.0000	0.0000	0.0	23.228 6	-10.66	1444.01	0.007
L8	113 - 108 (8)	TP30.1204x29.1054x0.25	5.0000	0.0000	0.0	24.045 7	-11.26	1472.03	0.008
L9	108 - 100.5 (9)	TP31.643x30.1204x0.25	7.5000	0.0000	0.0	24.617 7	-11.69	1490.72	0.008
L10	100.5 - 99.5 (10)	TP31.346x30.331x0.375	5.0000	0.0000	0.0	37.397 5	-12.96	2544.52	0.005
L11	99.5 - 94.5 (11)	TP32.361x31.346x0.375	5.0000	0.0000	0.0	38.623 1	-16.81	2627.92	0.006
L12	94.5 - 89.5 (12)	TP33.3761x32.361x0.375	5.0000	0.0000	0.0	39.848 8	-17.76	2711.31	0.007
L13	89.5 - 84.5 (13)	TP34.3911x33.3761x0.37	5.0000	0.0000	0.0	41.074 4	-18.73	2790.22	0.007
L14	84.5 - 79.5 (14)	TP35.4061x34.3911x0.37	5.0000	0.0000	0.0	42.300 1	-22.89	2846.76	0.008

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	KI/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio P <sub>u</sub> / φP <sub>n</sub>
L15	79.5 - 74.5 (15)	TP36.4211x35.4061x0.375	5.0000	0.0000	0.0	43.5257	-24.00	2901.76	0.008
L16	74.5 - 70.667 (16)	TP37.1993x36.4211x0.375	3.8330	0.0000	0.0	44.4653	-25.14	2942.88	0.009
L17	70.667 - 70.417 (17)	TP37.25x37.1993x0.375	0.2500	0.0000	0.0	44.5266	-25.20	2945.53	0.009
L18	70.417 - 65.417 (18)	TP38.2651x37.25x0.375	5.0000	0.0000	0.0	45.7522	-26.39	2997.71	0.009
L19	65.417 - 63.667 (19)	TP38.6203x38.2651x0.375	1.7500	0.0000	0.0	46.1812	-26.81	3015.61	0.009
L20	63.667 - 63.417 (20)	TP38.6711x38.6203x0.375	0.2500	0.0000	0.0	46.2425	-26.88	3018.16	0.009
L21	63.417 - 58.25 (21)	TP39.72x38.6711x0.375	5.1670	0.0000	0.0	46.2834	-26.93	3019.85	0.009
L22	58.25 - 57.25 (22)	TP39.1731x37.955x0.4375	6.0000	0.0000	0.0	54.5687	-29.49	3712.86	0.008
L23	57.25 - 53.229 (23)	TP39.9894x39.1731x0.4375	4.0210	0.0000	0.0	55.7187	-30.62	3788.98	0.008
L24	53.229 - 52.979 (24)	TP40.0401x39.9894x0.4375	0.2500	0.0000	0.0	55.7902	-30.76	3792.34	0.008
L25	52.979 - 47.979 (25)	TP41.0552x40.0401x0.4375	5.0000	0.0000	0.0	57.2202	-32.19	3858.57	0.008
L26	47.979 - 42.979 (26)	TP42.0703x41.0552x0.4375	5.0000	0.0000	0.0	58.6502	-33.66	3923.25	0.009
L27	42.979 - 37.979 (27)	TP43.0854x42.0703x0.4375	5.0000	0.0000	0.0	60.0802	-35.17	3986.38	0.009
L28	37.979 - 35.125 (28)	TP43.6648x43.0854x0.4375	2.8540	0.0000	0.0	60.8964	-36.04	4021.72	0.009
L29	35.125 - 34.875 (29)	TP43.7155x43.6648x0.6375	0.2500	0.0000	0.0	88.4284	-36.14	6016.67	0.006
L30	34.875 - 28.75 (30)	TP44.959x43.7155x0.6375	6.1250	0.0000	0.0	88.5847	-36.30	6027.30	0.006
L31	28.75 - 27.75 (31)	TP44.2869x42.9167x0.5	6.7500	0.0000	0.0	70.4969	-40.59	4796.61	0.008
L32	27.75 - 25.875 (32)	TP44.6675x44.2869x0.5	1.8750	0.0000	0.0	71.1097	-41.23	4838.30	0.009
L33	25.875 - 25.75 (33)	TP44.6929x44.6675x0.5	0.1250	0.0000	0.0	71.1505	-41.29	4841.08	0.009
L34	25.75 - 25.625 (34)	TP44.7182x44.6929x0.75	0.1250	0.0000	0.0	106.1830	-41.35	7224.71	0.006
L35	25.625 - 25.5 (35)	TP44.7436x44.7182x0.75	0.1250	0.0000	0.0	106.2450	-41.41	7228.88	0.006
L36	25.5 - 20.5 (36)	TP45.7586x44.7436x0.75	5.0000	0.0000	0.0	108.6960	-43.80	7395.66	0.006
L37	20.5 - 15.5 (37)	TP46.7736x45.7586x0.7375	5.0000	0.0000	0.0	109.3240	-46.24	7438.42	0.006
L38	15.5 - 10.5 (38)	TP47.7885x46.7736x0.7375	5.0000	0.0000	0.0	111.7340	-48.71	7602.41	0.006
L39	10.5 - 5.5 (39)	TP48.8035x47.7885x0.725	5.0000	0.0000	0.0	112.2390	-51.10	7636.76	0.007
L40	5.5 - 0.5 (40)	TP49.8185x48.8035x0.725	5.0000	0.0000	0.0	114.6090	-53.41	7797.98	0.007
L41	0.5 - 0 (41)	TP49.92x49.8185x0.725	0.5000	0.0000	0.0	114.8460	-53.65	7814.10	0.007

**Pole Bending Design Data**

Section No.	Elevation ft	Size	M <sub>ux</sub> kip-ft	φM <sub>nx</sub> kip-ft	Ratio M <sub>ux</sub> / φM <sub>nx</sub>	M <sub>uy</sub> kip-ft	φM <sub>ny</sub> kip-ft	Ratio M <sub>uy</sub> / φM <sub>ny</sub>
L1	148 - 143 (1)	TP23.0151x22x0.25	30.86	574.92	0.054	0.00	574.92	0.000
L2	143 - 138 (2)	TP24.0301x23.0151x0.25	57.20	618.86	0.092	0.00	618.86	0.000
L3	138 - 133 (3)	TP25.0452x24.0301x0.25	85.56	663.58	0.129	0.00	663.58	0.000
L4	133 - 128 (4)	TP26.0602x25.0452x0.25	115.98	708.97	0.164	0.00	708.97	0.000
L5	128 - 123 (5)	TP27.0753x26.0602x0.25	148.50	754.95	0.197	0.00	754.95	0.000



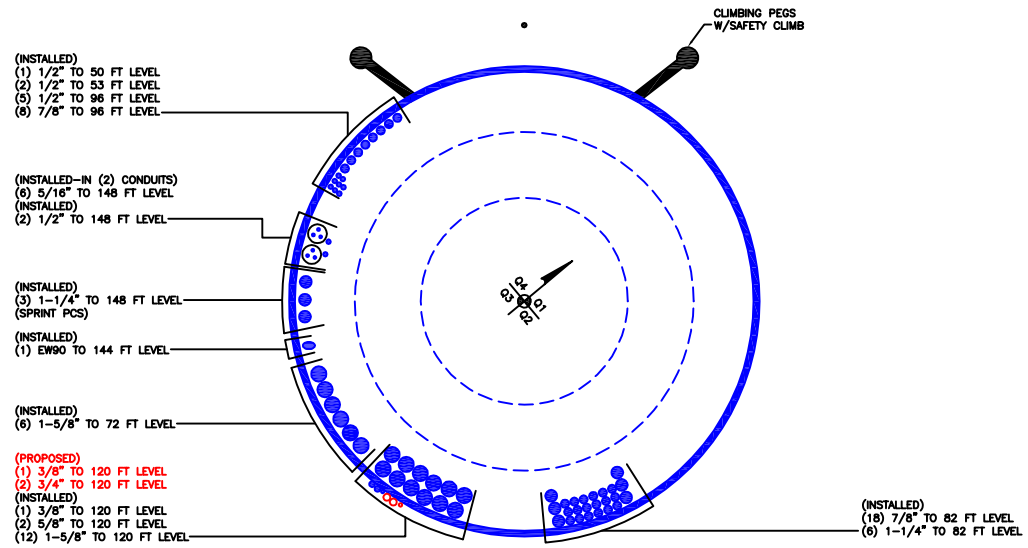
Section No.	Elevation ft	Size	$M_{ux}$ kip-ft	$\phi M_{nx}$ kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	$M_{uy}$ kip-ft	$\phi M_{ny}$ kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L6	123 - 118 (6)	TP28.0903x27.0753x0.25	190.89	801.41	0.238	0.00	801.41	0.000
L7	118 - 113 (7)	TP29.1054x28.0903x0.25	246.09	848.26	0.290	0.00	848.26	0.000
L8	113 - 108 (8)	TP30.1204x29.1054x0.25	303.48	895.39	0.339	0.00	895.39	0.000
L9	108 - 100.5 (9)	TP31.643x30.1204x0.25	344.96	928.51	0.372	0.00	928.51	0.000
L10	100.5 - 99.5 (10)	TP31.346x30.331x0.375	406.26	1598.86	0.254	0.00	1598.86	0.000
L11	99.5 - 94.5 (11)	TP32.361x31.346x0.375	477.35	1706.03	0.280	0.00	1706.03	0.000
L12	94.5 - 89.5 (12)	TP33.3761x32.361x0.375	553.57	1816.67	0.305	0.00	1816.67	0.000
L13	89.5 - 84.5 (13)	TP34.3911x33.3761x0.375	632.10	1927.68	0.328	0.00	1927.68	0.000
L14	84.5 - 79.5 (14)	TP35.4061x34.3911x0.375	718.97	2026.08	0.355	0.00	2026.08	0.000
L15	79.5 - 74.5 (15)	TP36.4211x35.4061x0.375	814.15	2125.69	0.383	0.00	2125.69	0.000
L16	74.5 - 70.667 (16)	TP37.1993x36.4211x0.375	889.11	2202.83	0.404	0.00	2202.83	0.000
L17	70.667 - 70.417 (17)	TP37.25x37.1993x0.375	894.10	2207.88	0.405	0.00	2207.88	0.000
L18	70.417 - 65.417 (18)	TP38.2651x37.25x0.375	995.09	2309.47	0.431	0.00	2309.47	0.000
L19	65.417 - 63.667 (19)	TP38.6203x38.2651x0.375	1030.97	2345.26	0.440	0.00	2345.26	0.000
L20	63.667 - 63.417 (20)	TP38.6711x38.6203x0.375	1036.12	2350.38	0.441	0.00	2350.38	0.000
L21	63.417 - 58.25 (21)	TP39.72x38.6711x0.375	1039.56	2353.81	0.442	0.00	2353.81	0.000
L22	58.25 - 57.25 (22)	TP39.1731x37.955x0.4375	1165.08	2920.22	0.399	0.00	2920.22	0.000
L23	57.25 - 53.229 (23)	TP39.9894x39.1731x0.4375	1251.08	3043.60	0.411	0.00	3043.60	0.000
L24	53.229 - 52.979 (24)	TP40.0401x39.9894x0.4375	1256.68	3050.24	0.412	0.00	3050.24	0.000
L25	52.979 - 47.979 (25)	TP41.0552x40.0401x0.4375	1367.94	3183.93	0.430	0.00	3183.93	0.000
L26	47.979 - 42.979 (26)	TP42.0703x41.0552x0.4375	1481.30	3319.07	0.446	0.00	3319.07	0.000
L27	42.979 - 37.979 (27)	TP43.0854x42.0703x0.4375	1596.68	3455.56	0.462	0.00	3455.56	0.000
L28	37.979 - 35.125 (28)	TP43.6648x43.0854x0.4375	1663.43	3534.04	0.471	0.00	3534.04	0.000
L29	35.125 - 34.875 (29)	TP43.7155x43.6648x0.6375	1669.31	5244.53	0.318	0.00	5244.53	0.000
L30	34.875 - 28.75 (30)	TP44.959x43.7155x0.6375	1678.13	5263.23	0.319	0.00	5263.23	0.000
L31	28.75 - 27.75 (31)	TP44.2869x42.9167x0.5	1839.18	4264.05	0.431	0.00	4264.05	0.000
L32	27.75 - 25.875 (32)	TP44.6675x44.2869x0.5	1884.58	4338.93	0.434	0.00	4338.93	0.000
L33	25.875 - 25.75 (33)	TP44.6929x44.6675x0.5	1887.62	4343.93	0.435	0.00	4343.93	0.000
L34	25.75 - 25.625 (34)	TP44.7182x44.6929x0.75	1890.66	6413.41	0.295	0.00	6413.41	0.000
L35	25.625 - 25.5 (35)	TP44.7436x44.7182x0.75	1893.69	6420.87	0.295	0.00	6420.87	0.000
L36	25.5 - 20.5 (36)	TP45.7586x44.7436x0.75	2016.59	6723.11	0.300	0.00	6723.11	0.000
L37	20.5 - 15.5 (37)	TP46.7736x45.7586x0.7375	2141.57	6920.72	0.309	0.00	6920.72	0.000
L38	15.5 - 10.5 (38)	TP47.7885x46.7736x0.7375	2268.61	7231.72	0.314	0.00	7231.72	0.000
L39	10.5 - 5.5 (39)	TP48.8035x47.7885x0.725	2397.68	7427.37	0.323	0.00	7427.37	0.000
L40	5.5 - 0.5 (40)	TP49.8185x48.8035x0.725	2528.80	7746.66	0.326	0.00	7746.66	0.000
L41	0.5 - 0 (41)	TP49.92x49.8185x0.725	2542.02	7778.96	0.327	0.00	7778.96	0.000

### Pole Shear Design Data

Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	148 - 143 (1)	TP23.0151x22x0.25	5.08	617.89	0.008	2.65	1165.76	0.002
L2	143 - 138 (2)	TP24.0301x23.0151x0.25	5.47	636.68	0.009	2.65	1254.86	0.002
L3	138 - 133 (3)	TP25.0452x24.0301x0.25	5.88	654.72	0.009	2.65	1345.53	0.002
L4	133 - 128 (4)	TP26.0602x25.0452x0.25	6.30	671.98	0.009	2.65	1437.58	0.002
L5	128 - 123 (5)	TP27.0753x26.0602x0.25	6.72	688.46	0.010	2.65	1530.80	0.002
L6	123 - 118 (6)	TP28.0903x27.0753x0.25	10.83	704.17	0.015	2.65	1625.00	0.002
L7	118 - 113 (7)	TP29.1054x28.0903x0.25	11.26	719.11	0.016	2.65	1719.99	0.002
L8	113 - 108 (8)	TP30.1204x29.1054x0.25	11.71	733.28	0.016	2.65	1815.58	0.001
L9	108 - 100.5 (9)	TP31.643x30.1204x0.25	12.02	742.29	0.016	2.65	1882.73	0.001
L10	100.5 - 99.5 (10)	TP31.346x30.331x0.375	12.51	1272.26	0.010	2.65	3241.98	0.001
L11	99.5 - 94.5 (11)	TP32.361x31.346x0.375	15.02	1313.96	0.011	3.18	3459.28	0.001
L12	94.5 - 89.5 (12)	TP33.3761x32.361x0.375	15.48	1355.66	0.011	3.18	3683.63	0.001
L13	89.5 - 84.5 (13)	TP34.3911x33.3761x0.375	15.95	1395.11	0.011	3.18	3908.74	0.001
L14	84.5 - 79.5 (14)	TP35.4061x34.3911x0.375	18.82	1423.38	0.013	3.18	4108.25	0.001
L15	79.5 - 74.5 (15)	TP36.4211x35.4061x0.375	19.27	1450.88	0.013	3.18	4310.25	0.001
L16	74.5 - 70.667 (16)	TP37.1993x36.4211x0.375	19.97	1471.44	0.014	3.18	4466.65	0.001
L17	70.667 - 70.417 (17)	TP37.25x37.1993x0.375	19.98	1472.76	0.014	3.18	4476.90	0.001
L18	70.417 - 65.417 (18)	TP38.2651x37.25x0.375	20.43	1498.86	0.014	3.18	4682.89	0.001
L19	65.417 - 63.667 (19)	TP38.6203x38.2651x0.375	20.60	1507.81	0.014	3.18	4755.46	0.001
L20	63.667 - 63.417 (20)	TP38.6711x38.6203x0.375	20.61	1509.08	0.014	3.18	4765.84	0.001
L21	63.417 - 58.25 (21)	TP39.72x38.6711x0.375	20.62	1509.93	0.014	3.18	4772.78	0.001
L22	58.25 - 57.25 (22)	TP39.1731x37.955x0.4375	21.23	1856.43	0.011	3.18	5921.29	0.001
L23	57.25 - 53.229 (23)	TP39.9894x39.1731x0.4375	21.57	1894.49	0.011	3.18	6171.47	0.001
L24	53.229 - 52.979 (24)	TP40.0401x39.9894x0.4375	22.05	1894.49	0.012	3.18	6184.94	0.001
L25	52.979 - 47.979 (25)	TP41.0552x40.0401x0.4375	22.48	1929.28	0.012	3.18	6456.02	0.000
L26	47.979 - 42.979 (26)	TP42.0703x41.0552x0.4375	22.89	1961.62	0.012	3.18	6730.03	0.000
L27	42.979 - 37.979 (27)	TP43.0854x42.0703x0.4375	23.29	1993.19	0.012	3.18	7006.80	0.000
L28	37.979 - 35.125 (28)	TP43.6648x43.0854x0.4375	23.52	2010.86	0.012	3.18	7165.93	0.000
L29	35.125 - 34.875 (29)	TP43.7155x43.6648x0.6375	23.53	3008.34	0.008	3.18	10634.25	0.000
L30	34.875 - 28.75 (30)	TP44.959x43.7155x0.6375	23.56	3013.65	0.008	3.18	10672.17	0.000
L31	28.75 - 27.75 (31)	TP44.2869x42.9167x0.5	24.16	2398.30	0.010	3.18	8646.17	0.000
L32	27.75 - 25.875 (32)	TP44.6675x44.2869x0.5	24.31	2419.15	0.010	3.18	8798.00	0.000
L33	25.875 - 25.75 (33)	TP44.6929x44.6675x0.5	24.30	2420.54	0.010	3.18	8808.17	0.000
L34	25.75 - 25.625 (34)	TP44.7182x44.6929x0.75	24.31	3612.36	0.007	3.18	13004.42	0.000
L35	25.625 - 25.5 (35)	TP44.7436x44.7182x0.75	24.32	3614.44	0.007	3.18	13019.50	0.000
L36	25.5 - 20.5	TP45.7586x44.7436x0.75	24.80	3697.83	0.007	3.80	13632.33	0.000

Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L37	(36) 20.5 - 15.5	TP46.7736x45.7586x0.73	25.20	3719.21	0.007	3.80	14033.08	0.000
L38	(37) 15.5 - 10.5	TP47.7885x46.7736x0.73	25.61	3801.21	0.007	3.80	14663.67	0.000
L39	(38) 10.5 - 5.5 (39)	TP48.8035x47.7885x0.72	26.03	3818.38	0.007	3.80	15060.42	0.000
L40	(40) 5.5 - 0.5	TP49.8185x48.8035x0.72	26.44	3898.99	0.007	3.80	15707.83	0.000
L41	(41) 0.5 - 0	TP49.92x49.8185x0.725	26.47	3907.05	0.007	3.80	15773.33	0.000

**APPENDIX B**  
**BASE LEVEL DRAWING**



**APPENDIX C**  
**ADDITIONAL CALCULATIONS**

# Additional Calculations



Site BU: 876354  
Work Order: 1319229



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## Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	148	47.5	4	12	22	31.643	0.25	1	A607-60
2	104.5	46.25	5	12	30.33	39.72	0.375	1.5	A607-60
3	63.25	34.5	5.75	12	37.95	44.959	0.4375	1.75	A607-60
4	34.5	34.5	0	12	42.92	49.92	0.5	2	A607-60

## Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
1	0	35.125	plate	CCI-WSFP-065125	2		x				x						
2	0	25.75	plate	CCI-WSFP-065125	2									x		x	
3	25.875	35.125	plate	CCI-SFP-065125	1										x		
4	35.125	53.229	plate	CCI-SFP-060100	3		x				x				x		
5	63.667	70.667	plate	CCI-SFP-045100	3				x				x				x
6																	
7																	
8																	
9																	
10																	

## Reinforcement Details

	B (in)	H (in)	Gross Area (in <sup>2</sup> )	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L <sub>v</sub> (in)	Net Area (in <sup>2</sup> )	Bolt Hole Size (in)	Reinforcement Material
1	6.5	1.25	8.125	0.625	n/a	33.000	19.000	6.563	1.1875	A572-65
2	6.5	1.25	8.125	0.625	n/a	33.000	19.000	6.563	1.1875	A572-65
3	6.5	1.25	8.125	0.625	33.000	33.000	19.000	6.563	1.1875	A572-65
4	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
5	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65

# TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	148 - 143	5		12	22.000	23.015	0.25	A607-60	1.000
2	143 - 138	5		12	23.015	24.030	0.25	A607-60	1.000
3	138 - 133	5		12	24.030	25.045	0.25	A607-60	1.000
4	133 - 128	5		12	25.045	26.060	0.25	A607-60	1.000
5	128 - 123	5		12	26.060	27.075	0.25	A607-60	1.000
6	123 - 118	5		12	27.075	28.090	0.25	A607-60	1.000
7	118 - 113	5		12	28.090	29.105	0.25	A607-60	1.000
8	113 - 108	5		12	29.105	30.120	0.25	A607-60	1.000
9	108 - 104.5	7.5	4	12	30.120	31.643	0.25	A607-60	1.000
10	104.5 - 99.5	5		12	30.331	31.346	0.375	A607-60	1.000
11	99.5 - 94.5	5		12	31.346	32.361	0.375	A607-60	1.000
12	94.5 - 89.5	5		12	32.361	33.376	0.375	A607-60	1.000
13	89.5 - 84.5	5		12	33.376	34.391	0.375	A607-60	1.000
14	84.5 - 79.5	5		12	34.391	35.406	0.375	A607-60	1.000
15	79.5 - 74.5	5		12	35.406	36.421	0.375	A607-60	1.000
16	74.5 - 70.667	3.833		12	36.421	37.199	0.375	A607-60	1.000
17	70.667 - 70.417	0.25		12	37.199	37.250	0.375	A607-60	1.000
18	70.417 - 65.417	5		12	37.250	38.265	0.375	A607-60	1.000
19	65.417 - 63.667	1.75		12	38.265	38.620	0.375	A607-60	1.000
20	63.667 - 63.417	0.25		12	38.620	38.671	0.375	A607-60	1.000
21	63.417 - 63.25	5.167	5	12	38.671	39.720	0.375	A607-60	1.000
22	63.25 - 57.25	6		12	37.955	39.173	0.4375	A607-60	1.000
23	57.25 - 53.229	4.021		12	39.173	39.989	0.4375	A607-60	1.000
24	53.229 - 52.979	0.25		12	39.989	40.040	0.4375	A607-60	1.000
25	52.979 - 47.979	5		12	40.040	41.055	0.4375	A607-60	1.000
26	47.979 - 42.979	5		12	41.055	42.070	0.4375	A607-60	1.000
27	42.979 - 37.979	5		12	42.070	43.085	0.4375	A607-60	1.000
28	37.979 - 35.125	2.854		12	43.085	43.665	0.4375	A607-60	1.000
29	35.125 - 34.875	0.25		12	43.665	43.716	0.6375	A607-60	0.966
30	34.875 - 34.5	6.125	5.75	12	43.716	44.959	0.6375	A607-60	0.965
31	34.5 - 27.75	6.75		12	42.917	44.287	0.5	A607-60	1.000
32	27.75 - 25.875	1.875		12	44.287	44.667	0.5	A607-60	1.000
33	25.875 - 25.75	0.125		12	44.667	44.693	0.5	A607-60	1.000
34	25.75 - 25.625	0.125		12	44.693	44.718	0.75	A607-60	0.977
35	25.625 - 25.5	0.125		12	44.718	44.744	0.75	A607-60	0.977
36	25.5 - 20.5	5		12	44.744	45.759	0.75	A607-60	0.970
37	20.5 - 15.5	5		12	45.759	46.774	0.7375	A607-60	0.979
38	15.5 - 10.5	5		12	46.774	47.789	0.7375	A607-60	0.973
39	10.5 - 5.5	5		12	47.789	48.804	0.725	A607-60	0.983
40	5.5 - 0.5	5		12	48.804	49.819	0.725	A607-60	0.977
41	0.5 - 0	0.5		12	49.819	49.920	0.725	A607-60	0.976



## TNX Section Forces

Increment (ft):		5	TNX Output		
	Section Height (ft)	P <sub>u</sub> (K)	M <sub>ux</sub> (kip-ft)	V <sub>u</sub> (K)	
1	148 - 143	4.4428	30.861	5.0758	
2	143 - 138	4.8463	57.201	5.4719	
3	138 - 133	5.2685	85.56	5.8785	
4	133 - 128	5.7096	115.98	6.2951	
5	128 - 123	6.1696	148.5	6.721	
6	123 - 118	10.079	190.89	10.827	
7	118 - 113	10.657	246.09	11.264	
8	113 - 108	11.257	303.48	11.706	
9	108 - 104.5	11.69	344.96	12.016	
10	104.5 - 99.5	12.955	406.26	12.512	
11	99.5 - 94.5	16.807	477.35	15.022	
12	94.5 - 89.5	17.756	553.57	15.484	
13	89.5 - 84.5	18.733	632.1	15.946	
14	84.5 - 79.5	22.895	718.97	18.819	
15	79.5 - 74.5	23.998	814.15	19.274	
16	74.5 - 70.667	25.138	889.1	19.967	
17	70.667 - 70.417	25.203	894.1	19.982	
18	70.417 - 65.417	26.393	995.09	20.435	
19	65.417 - 63.667	26.814	1031	20.597	
20	63.667 - 63.417	26.884	1036.1	20.607	
21	63.417 - 63.25	26.925	1039.6	20.622	
22	63.25 - 57.25	29.495	1165.1	21.226	
23	57.25 - 53.229	30.623	1251.1	21.573	
24	53.229 - 52.979	30.761	1256.7	22.048	
25	52.979 - 47.979	32.194	1367.9	22.479	
26	47.979 - 42.979	33.664	1481.3	22.891	
27	42.979 - 37.979	35.166	1596.7	23.291	
28	37.979 - 35.125	36.035	1663.4	23.518	
29	35.125 - 34.875	36.144	1669.3	23.526	
30	34.875 - 34.5	36.295	1678.1	23.557	
31	34.5 - 27.75	40.587	1839.2	24.165	
32	27.75 - 25.875	41.233	1884.6	24.311	
33	25.875 - 25.75	41.288	1887.6	24.302	
34	25.75 - 25.625	41.348	1890.7	24.312	
35	25.625 - 25.5	41.408	1893.7	24.322	
36	25.5 - 20.5	43.803	2016.6	24.796	
37	20.5 - 15.5	46.239	2141.6	25.204	
38	15.5 - 10.5	48.709	2268.6	25.615	
39	10.5 - 5.5	51.1	2397.7	26.0	
40	5.5 - 0.5	53.4	2528.8	26.4	
41	0.5 - 0	53.6	2542.0	26.5	

# Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
148 - 143	Pole	TP23.015x22x0.25	Pole	5.7%	Pass
143 - 138	Pole	TP24.03x23.015x0.25	Pole	9.6%	Pass
138 - 133	Pole	TP25.045x24.03x0.25	Pole	13.3%	Pass
133 - 128	Pole	TP26.06x25.045x0.25	Pole	16.7%	Pass
128 - 123	Pole	TP27.075x26.06x0.25	Pole	20.1%	Pass
123 - 118	Pole	TP28.09x27.075x0.25	Pole	24.5%	Pass
118 - 113	Pole	TP29.105x28.09x0.25	Pole	29.7%	Pass
113 - 108	Pole	TP30.12x29.105x0.25	Pole	34.6%	Pass
108 - 104.5	Pole	TP31.643x30.12x0.25	Pole	37.9%	Pass
104.5 - 99.5	Pole	TP31.346x30.331x0.375	Pole	25.9%	Pass
99.5 - 94.5	Pole	TP32.361x31.346x0.375	Pole	28.6%	Pass
94.5 - 89.5	Pole	TP33.376x32.361x0.375	Pole	31.1%	Pass
89.5 - 84.5	Pole	TP34.391x33.376x0.375	Pole	33.4%	Pass
84.5 - 79.5	Pole	TP35.406x34.391x0.375	Pole	36.2%	Pass
79.5 - 74.5	Pole	TP36.421x35.406x0.375	Pole	39.0%	Pass
74.5 - 70.67	Pole	TP37.199x36.421x0.375	Pole	41.1%	Pass
70.67 - 70.42	Pole	TP37.25x37.199x0.375	Pole	41.3%	Pass
70.42 - 65.42	Pole	TP38.265x37.25x0.375	Pole	43.9%	Pass
65.42 - 63.67	Pole	TP38.62x38.265x0.375	Pole	44.7%	Pass
63.67 - 63.42	Pole	TP38.671x38.62x0.375	Pole	44.9%	Pass
63.42 - 63.25	Pole	TP39.72x38.671x0.375	Pole	45.0%	Pass
63.25 - 57.25	Pole	TP39.173x37.955x0.4375	Pole	40.6%	Pass
57.25 - 53.23	Pole	TP39.989x39.173x0.4375	Pole	41.8%	Pass
53.23 - 52.98	Pole	TP40.04x39.989x0.4375	Pole	41.9%	Pass
52.98 - 47.98	Pole	TP41.055x40.04x0.4375	Pole	43.7%	Pass
47.98 - 42.98	Pole	TP42.07x41.055x0.4375	Pole	45.4%	Pass
42.98 - 37.98	Pole	TP43.085x42.07x0.4375	Pole	47.0%	Pass
37.98 - 35.13	Pole	TP43.665x43.085x0.4375	Pole	47.8%	Pass
35.13 - 34.88	Pole + Reinf.	TP43.716x43.665x0.6375	Reinf. 3 Tension Rupture	45.5%	Pass
34.88 - 34.5	Pole + Reinf.	TP44.959x43.716x0.6375	Reinf. 3 Tension Rupture	45.6%	Pass
34.5 - 27.75	Pole	TP44.287x42.917x0.5	Pole	43.9%	Pass
27.75 - 25.88	Pole	TP44.667x44.287x0.5	Pole	44.2%	Pass
25.88 - 25.75	Pole	TP44.693x44.667x0.5	Pole	47.3%	Pass
25.75 - 25.63	Pole + Reinf.	TP44.718x44.693x0.75	Reinf. 1 Tension Rupture	42.8%	Pass
25.63 - 25.5	Pole + Reinf.	TP44.744x44.718x0.75	Reinf. 1 Tension Rupture	42.8%	Pass
25.5 - 20.5	Pole + Reinf.	TP45.759x44.744x0.75	Reinf. 1 Tension Rupture	43.8%	Pass
20.5 - 15.5	Pole + Reinf.	TP46.774x45.759x0.7375	Reinf. 1 Tension Rupture	44.8%	Pass
15.5 - 10.5	Pole + Reinf.	TP47.789x46.774x0.7375	Reinf. 1 Tension Rupture	45.8%	Pass
10.5 - 5.5	Pole + Reinf.	TP48.804x47.789x0.725	Reinf. 1 Tension Rupture	46.6%	Pass
5.5 - 0.5	Pole + Reinf.	TP49.819x48.804x0.725	Reinf. 1 Tension Rupture	47.5%	Pass
0.5 - 0	Pole + Reinf.	TP49.92x49.819x0.725	Reinf. 1 Tension Rupture	47.5%	Pass
				Summary	
			Pole	47.8%	Pass
			Reinforcement	47.5%	Pass
			Overall	47.8%	Pass

# Additional Calculations

Section Elevation (ft)	Moment of Inertia (in <sup>4</sup> )			Area (in <sup>2</sup> )			% Capacity					
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5
148 - 143	1214	n/a	1214	18.30	n/a	18.30	5.7%					
143 - 138	1384	n/a	1384	19.12	n/a	19.12	9.6%					
138 - 133	1568	n/a	1568	19.93	n/a	19.93	13.3%					
133 - 128	1769	n/a	1769	20.75	n/a	20.75	16.7%					
128 - 123	1986	n/a	1986	21.56	n/a	21.56	20.1%					
123 - 118	2220	n/a	2220	22.38	n/a	22.38	24.5%					
118 - 113	2472	n/a	2472	23.20	n/a	23.20	29.7%					
113 - 108	2742	n/a	2742	24.01	n/a	24.01	34.6%					
108 - 104.5	2943	n/a	2943	24.58	n/a	24.58	37.9%					
104.5 - 99.5	4585	n/a	4585	37.34	n/a	37.34	25.9%					
99.5 - 94.5	5051	n/a	5051	38.57	n/a	38.57	28.6%					
94.5 - 89.5	5547	n/a	5547	39.79	n/a	39.79	31.1%					
89.5 - 84.5	6075	n/a	6075	41.02	n/a	41.02	33.4%					
84.5 - 79.5	6635	n/a	6635	42.24	n/a	42.24	36.2%					
79.5 - 74.5	7228	n/a	7228	43.46	n/a	43.46	39.0%					
74.5 - 70.67	7707	n/a	7707	44.40	n/a	44.40	41.1%					
70.67 - 70.42	7739	n/a	7739	44.46	n/a	44.46	41.3%					
70.42 - 65.42	8395	n/a	8395	45.69	n/a	45.69	43.9%					
65.42 - 63.67	8634	n/a	8634	46.12	n/a	46.12	44.7%					
63.67 - 63.42	8668	n/a	8668	46.18	n/a	46.18	44.9%					
63.42 - 63.25	8691	n/a	8691	46.22	n/a	46.22	45.0%					
63.25 - 57.25	10465	n/a	10465	54.49	n/a	54.49	40.6%					
57.25 - 53.23	11141	n/a	11141	55.64	n/a	55.64	41.8%					
53.23 - 52.98	11184	n/a	11184	55.71	n/a	55.71	41.9%					
52.98 - 47.98	12066	n/a	12066	57.14	n/a	57.14	43.7%					
47.98 - 42.98	12993	n/a	12993	58.57	n/a	58.57	45.4%					
42.98 - 37.98	13967	n/a	13967	59.99	n/a	59.99	47.0%					
37.98 - 35.13	14544	n/a	14544	60.81	n/a	60.81	47.8%					
35.13 - 34.88	14595	6205	20800	60.88	24.38	85.26	39.8%	45.5%		45.5%		
34.88 - 34.5	14672	6226	20898	60.99	24.38	85.36	39.9%	45.6%		45.6%		
34.5 - 27.75	17276	n/a	17276	70.40	n/a	70.40	43.9%					
27.75 - 25.88	17730	n/a	17730	71.01	n/a	71.01	44.2%					
25.88 - 25.75	18064	n/a	18064	71.05	n/a	71.05	47.3%					
25.75 - 25.63	17832	8544	26376	71.09	32.50	103.59	38.3%	42.8%	39.6%			
25.63 - 25.5	17863	8553	26416	71.13	32.50	103.63	38.3%	42.8%	39.7%			
25.5 - 20.5	19119	8933	28052	72.76	32.50	105.26	39.3%	43.8%	40.7%			
20.5 - 15.5	20433	9322	29755	74.39	32.50	106.89	40.2%	44.8%	41.7%			
15.5 - 10.5	21806	9719	31525	76.03	32.50	108.53	41.0%	45.8%	42.6%			
10.5 - 5.5	23239	10125	33363	77.66	32.50	110.16	41.8%	46.6%	43.5%			
5.5 - 0.5	24733	10538	35271	79.29	32.50	111.79	42.6%	47.5%	44.3%			
0.5 - 0	24886	10580	35466	79.45	32.50	111.95	42.7%	47.5%	44.3%			

Note: Section capacity checked in 5 degree increments.

## Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F / G

- Assumptions:**
- 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
  - 2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
  - 3) Clear space between bottom of leveling nut and top of concrete **not** exceeding  $(1) \times (\text{Rod Diameter})$

### Site Data

BU#:	876354
Site Name:	Westport Fire Department
App #:	364349 Rev.0

### Anchor Rod Data

Eta Factor, $\eta$	0.5	TIA G (Fig. 4-4)
Qty:	20	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, $F_y$ :	75	ksi
Strength, $F_u$ :	100	ksi
Bolt Circle:	58	in
Anchor Spacing:	6	in

### Plate Data

W=Side:	60	in
Thick:	2.75	in
Grade:	50	ksi
Clip Distance:	16	in

### Stiffener Data (Welding at both sides)

Configuration:	Stiffened	
Weld Type:	Both	**
Groove Depth:	0.5	in **
Groove Angle:	45	degrees
Fillet H. Weld:	0.5	in
Fillet V. Weld:	0.375	in
Width:	8	in
Height:	18	in
Thick:	1	in
Notch:	0.75	in
Grade:	50	ksi
Weld str.:	70	ksi

### Pole Data

Diam:	49.92	in
Thick:	0.5	in
Grade:	60	ksi
# of Sides:	12	"0" IF Round

### Base Reactions

TIA Revision:	G	
Factored Moment, $M_u$ :	2542	ft-kips
Factored Axial, $P_u$ :	54	kips
Factored Shear, $V_u$ :	26	kips

### Anchor Rod Results

TIA G --> Max Rod $(C_u + V_u/\eta)$ :	110.5 Kips
Axial Design Strength, $\Phi * F_u * A_{net}$ :	260.0 Kips
Anchor Rod Stress Ratio:	42.5% <b>Pass</b>

### Base Plate Results

Base Plate Stress:	3.2 ksi	Shear Check Only
PL Design Bending Strength, $\Phi * F_y$ :	27.0 ksi	
Base Plate Stress Ratio:	11.8% <b>Pass</b>	

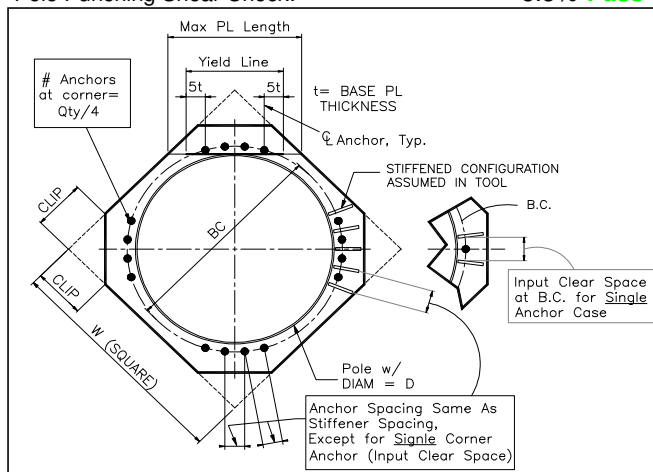
Yield Line (in):	N/A, Roark
Max PL Length:	34.93

### Stiffener Results

Horizontal Weld :	25.4% <b>Pass</b>
Vertical Weld:	23.5% <b>Pass</b>
Plate Flex+Shear, $f_b/F_b + (f_v/F_v)^2$ :	5.8% <b>Pass</b>
Plate Tension+Shear, $f_t/F_t + (f_v/F_v)^2$ :	25.8% <b>Pass</b>
Plate Comp. (AISC Bracket):	25.7% <b>Pass</b>

### Pole Results

Pole Punching Shear Check:	5.8% <b>Pass</b>
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\*\* Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

BU:	876354
Site Name:	Westport Fire Department
App Number:	364349 Rev.0
Work Order:	1319229

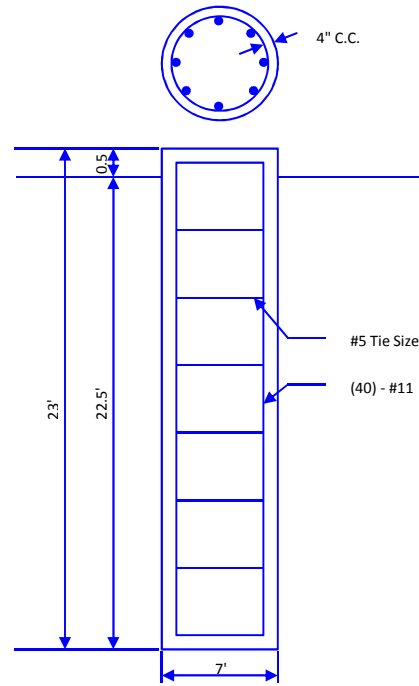


Monopole Drilled Pier

Input

<b>Criteria</b>	
TIA Revision:	G
ACI 318 Revision:	2008
Seismic Category:	B
<b>Forces</b>	
Compression	54 kips
Shear	26 kips
Moment	2542 k-ft
Swelling Force	0 kips
<b>Foundation Dimensions</b>	
Pier Diameter:	7 ft
Ext. above grade:	0.5 ft
Depth below grade:	22.5 ft
<b>Material Properties</b>	
Number of Rebar:	40
Rebar Size:	11
Tie Size	5
Rebar tensile strength:	60 ksi
Concrete Strength:	3000 psi
Ultimate Concrete Strain	0.003 in/in
Clear Cover to Ties:	4 in

Soil Profile: S



Layer	Thickness (ft)	From (ft)	To (ft)	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)	Ultimate Uplift Friction (ksf)	Ultimate Comp. Skin Friction (ksf)	Ultimate Bearing Capacity (ksf)	SPT 'N' Counts
1	3.33	0	3.33	100	0	0			0	
2	4.67	3.33	8	100	0	45			0	
3	14.5	8	22.5	135	0	45			99	

Analysis Results

<b>Soil Lateral Capacity</b>	
Depth to Zero Shear:	5.58 ft
Max Moment, Mu:	2685.29 k-ft
Soil Safety Factor:	4.71
Safety Factor Req'd:	1.33
<b>RATING:</b>	<b>28.3%</b>

<b>Soil Axial Capacity</b>	
Skin Friction (k):	328.32 kips
End Bearing (k):	2857.47 kips
Comp. Capacity (k), φCn:	3185.79 kips
Comp. (k), Cu:	54.00 kips
<b>RATING:</b>	<b>1.7%</b>

<b>Concrete/Steel Check</b>	
Mu (from soil analysis)	2685.29 k-ft
φMn	9090.77 k-ft
<b>RATING:</b>	<b>29.5%</b>

rho provided	1.13
rho required	0.33 OK

Rebar Spacing	4.35
Spacing required	22.56 OK

Dev. Length required	16.59
Dev. Length provided	61.78 OK

**Overall Foundation Rating: 29.5%**