Robinson+Cole

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Also admitted in Massachusetts

October 12, 2017

Melanie A. Bachman, Esq.
Executive Director/Staff Attorney
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification – Facility Modification**
47-51 Unity Street, Plainfield, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) antennas, at the 127-foot level of the existing 160-foot tower at 47-51 Unity Street in Plainfield, Connecticut (the "Property"). The Property is owned by the Town of Plainfield. The tower is owned by Crown Castle ("Crown"). Cellco's use of this tower was approved by the Council in 2007. Cellco now intends to modify its facility by replacing six (6) of its existing antennas with three (3) model SBNHH-1D65B, 700 MHz antennas and three (3) model SBNHH-1D65B, 2100 MHz antennas, all at the 127-foot level on the tower. Cellco also intends to install six (6) remote radio heads ("RRHs") behind its new 700 and 2100 MHz antennas. Included in Attachment 1 are specifications for Cellco's replacement antennas and RRHs.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Paul E. Sweet, First Selectman for the Town of Plainfield; Lou Soja, Plainfield's Planning and Engineering Supervisor; and Crown, the tower owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's replacement antennas and RRHs will be installed on Cellco's existing platform at the 127-foot level on the 160-foot tower.

2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard A cumulative General Power Density table for Cellco's modified facility in Attachment 2.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The tower and its foundation can support Cellco's proposed modifications. (*See* Structural Analysis Report included in Attachment 3).

A copy of the parcel map and property owner information is included in Attachment 4. A Certificate of Mailing verifying that this filing was sent to municipal officials and the owner of the Property is included in Attachment 5.

For the foregoing reasons, Cellco respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Paul E. Sweet, Plainfield First Selectman
Lou Soja, Plainfield Planning and Engineering Supervisor
Crown Castle
Tim Parks

ATTACHMENT 1

Product Specifications

COMMSCOPE®

SBNHH-1D65B

6-port sector antenna, 2x 698–896 and 4x 1695–2360 MHz, 65° HPBW, 2x RET. Both high bands share the same electrical tilt.

- Interleaved dipole technology providing for attractive, low wind load mechanical package

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	14.9	14.7	17.7	18.2	18.6	18.6
Beamwidth, Horizontal, degrees	68	66	69	66	63	58
Beamwidth, Vertical, degrees	12.1	10.7	5.6	5.2	5.0	4.5
Beam Tilt, degrees	0–14	0–14	0–7	0–7	0–7	0–7
USLS (First Lobe), dB	14	13	15	15	15	13
Front-to-Back Ratio at 180°, dB	27	29	28	28	28	27
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350	350	350	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

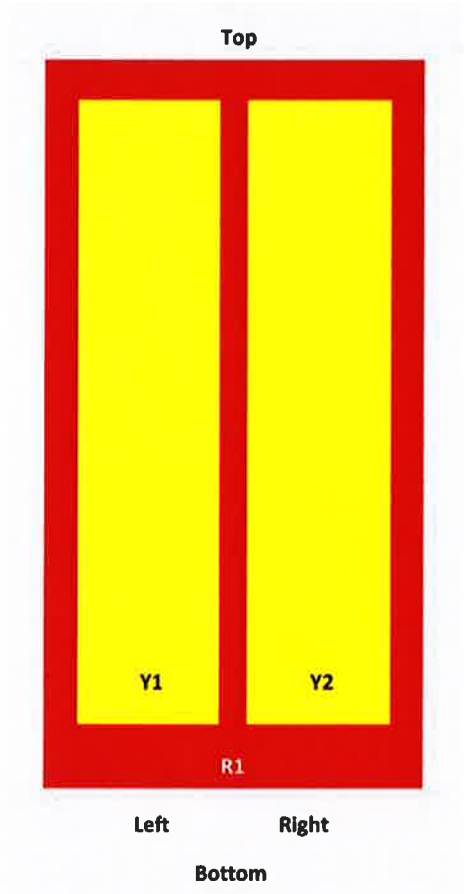
Electrical Specifications, BASTA*

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	14.5	14.3	17.4	17.9	18.2	18.3
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.8	±0.4	±0.3	±0.5	±0.3
Gain by Beam Tilt, average, dBi	0 ° | 14.6	0 ° | 14.5	0 ° | 17.4	0 ° | 17.8	0 ° | 18.1	0 ° | 18.2
	7 ° | 14.6	7 ° | 14.4	3 ° | 17.5	3 ° | 17.9	3 ° | 18.3	3 ° | 18.4
	14 ° | 14.2	14 ° | 13.6	7 ° | 17.4	7 ° | 17.9	7 ° | 18.2	7 ° | 18.4
Beamwidth, Horizontal Tolerance, degrees	±2.2	±3.4	±2	±4.6	±5.7	±4.3
Beamwidth, Vertical Tolerance, degrees	±0.8	±1	±0.3	±0.2	±0.3	±0.2
USLS, beampeak to 20° above beampeak, dB	16	14	16	16	16	15
Front-to-Back Total Power at 180° ± 30°, dB	25	26	27	26	26	26
CPR at Boresight, dB	22	23	21	20	20	22
CPR at Sector, dB	13	11	16	12	11	4

* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, download the whitepaper Time to Raise the Bar on BSAs.

Array Layout

SBNHH 65



Array	Freq (MHz)	Conns	RET (MRET)	AISG RET UID
R1	698-896	1-2	1	ANxxxxxxxxxxxxxxxx.1
Y1	1695-2360	3-4	2	ANxxxxxxxxxxxxxxxx.2
Y2	1695-2360	5-6		

View from the front of the antenna

(Sizes of colored boxes are not true depictions of array sizes)

General Specifications

Operating Frequency Band	1695 – 2360 MHz | 698 – 896 MHz
Antenna Type	Sector
Band	Multiband
Performance Note	Outdoor usage

Mechanical Specifications

RF Connector Quantity, total	6
RF Connector Quantity, low band	2
RF Connector Quantity, high band	4
RF Connector Interface	7-16 DIN Female

Product Specifications

SBNHH-1D65B

Color	Light gray
Grounding Type	RF connector inner conductor and body grounded to reflector and mounting bracket
Radiator Material	Aluminum | Low loss circuit board
Radome Material	Fiberglass, UV resistant
Reflector Material	Aluminum
RF Connector Location	Bottom
Wind Loading, frontal	618.0 N @ 150 km/h 138.9 lbf @ 150 km/h
Wind Loading, lateral	197.0 N @ 150 km/h 44.3 lbf @ 150 km/h
Wind Loading, rear	728.0 N @ 150 km/h 163.7 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Dimensions

Length	1851.0 mm | 72.9 in
Width	301.0 mm | 11.9 in
Depth	180.0 mm | 7.1 in
Net Weight, without mounting kit	18.4 kg | 40.6 lb

Remote Electrical Tilt (RET) Information

Input Voltage	10–30 Vdc
Internal RET	High band (1) | Low band (1)
Power Consumption, idle state, maximum	2.0 W
Power Consumption, normal conditions, maximum	13.0 W
Protocol	3GPP/AISG 2.0 (Multi-RET)
RET Interface	8-pin DIN Female | 8-pin DIN Male
RET Interface, quantity	1 female | 1 male

Packed Dimensions

Length	2025.0 mm | 79.7 in
Width	390.0 mm | 15.4 in
Depth	296.0 mm | 11.7 in
Shipping Weight	31.0 kg | 68.3 lb

Regulatory Compliance/Certifications

Agency	Classification
RoHS 2011/65/EU	Compliant by Exemption
China RoHS SJ/T 11364-2006	Above Maximum Concentration Value (MCV)
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system

Product Specifications

SBNHH-1D65B

Included Products

BSAMNT-1 — Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

ALCATEL-LUCENT B13 RRH4X30-4R

Alcatel-Lucent B13 Remote Radio Head 4x30-4R is the newest addition of Remote Radio Head to the extended product line of Alcatel-Lucent's distributed Base Station solutions, aimed at facilitating smooth RF site acquisition and related civil engineering.

Supporting 2Tx/4Tx MIMO and 4-way Rx diversity, Alcatel-Lucent B13 RRH4x30-4R allows operators to have a compact radio solution to deploy LTE in the 700U band (700 MHz, 3GPP band 13), providing them with the means to achieve high capacity, high quality and high coverage with minimum site requirements.

The Alcatel-Lucent B13 RRH4x30-4R product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x60 W or 4x30 W RF output power. It supports also 4-way Rx diversity and up to 10MHz instantaneous bandwidth.

The Alcatel-Lucent B13 RRH4x30-4R is a near zero-footprint solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

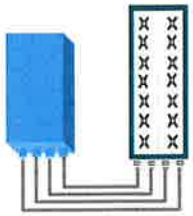
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the RF feeder needs and installation costs.

FEATURES

- Supporting LTE in 700 MHz band (700U, 3GPP band 13)
- LTE 2Tx or 4Tx MIMO (SW switchable)
- Output power: Up to 2x60W or 4x30W
- 10MHz LTE carrier with 4Rx Diversity
- Convection-cooled (fan-less)
- Supports AISG 2.0 ALD devices (RET, TMA) through RS485 or RF ports

BENEFITS

- Compact to reduce additional footprint when adding LTE in 700U band
- MIMO scheme operation selection (2Tx or 4Tx) by software only
- Improves downlink spectral efficiency through MIMO4
- Increases LTE coverage thanks to 4Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options: Pole or Wall



4x30W with 4T4R
or
2x60W with 2T4R

Can be switched between modes via SW w/o site visit

Alcatel·Lucent

Features & performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R by SW)
Frequency band	U700 (C) (3GPP bands 13): DL: 746 - 756 MHz / UL: 777 - 787 MHz
Instantaneous bandwidth - #carriers	10MHz – 1 LTE carrier (in 10MHz occupied bandwidth)
LTE carrier bandwidth	10 MHz
RF output power	2x60W or 4x30W (by SW)
Noise figure – RX Diversity scheme	2 dB typ. (<2.5 dB max) – 2 or 4 way Rx diversity
Sizes (HxWxD) in mm (in.) Volume in L Weight in kg (lb) (w/o mounting HW)	550 x 305 x 230 (21.6" x 12.0" x 9") (with solar shield) 38 (with solar shield) 26 (57.2) (with solar shield)
DC voltage range DC power consumption	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption 550W typical @100% RF load (in 2Tx or 4TX mode)
Environmental conditions Wind load (@150km/h or 93mph)	-40°C (-40°F) /+55°C (+131°F) IP65 Frontal:<200N / Lateral :<150N
Antenna ports	4 ports 7/16 DIN female (50 ohms) VSWR < 1.5
CPRI ports	2 CPRI ports (HW ready for Rate7, 9.8 Gbps) SFP single mode dual fiber
AISG interfaces	1 AISG2.0 output (RS485) Integrated Smart Bias Tees (x2)
Misc. Interfaces	4 external alarms (1 connector) – 4 RF Tx & 4 RF Rx monitor ports - 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27

ALCATEL-LUCENT B66A RRH4X45

The Alcatel-Lucent B66a Remote Radio Head 4x45 is the newest addition of Remote Radio Head to the extended product line of Alcatel-Lucent's distributed Base Station solutions, aimed at facilitating smooth RF site acquisition and related civil engineering. Its operational range covers beyond that of B4 (AWS) and B10 (AWS+).

Supporting 2Tx/4Tx MIMO and 2-way/4-way Rx diversity, the Alcatel-Lucent B66a RRH4x45 allows operators to have a compact radio solution to deploy LTE in the 2100 band (3GPP band 4, 10, and 66), providing them with the means to achieve high capacity, high quality, high reliability, large instantaneous bandwidth, and high coverage with minimum site requirements.

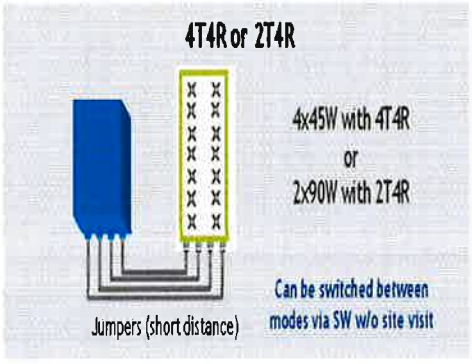
The Alcatel-Lucent B66a RRH4x45 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x90W or 4x45W RF output power. It also supports 4-way Rx diversity at the 70 MHz instantaneous bandwidth.

The Alcatel-Lucent B66a RRH4x45 is a compact (near zero-footprint) solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

Its compactness and slim design makes the Alcatel-Lucent B66a RRH4x45 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the RF feeder needs and installation costs.

FEATURES

- Supporting LTE in 2110 - 2180 MHz band/DL, 1710-1780MHz/UL (3GPP band 4, 10, and 66a)
- LTE 2Tx or 4Tx MIMO (SW selectable)
- Configuration: 2T2R/2T4R/4T4R
- Output power: Up to 2x90W or 4x45W (SW configurable)
- 70MHz LTE carrier with 4Rx Diversity
- Convection-cooled (fan-less)
- Supports AISG 2.0 ALD devices (RET, TMA) through RS485 or RF ports



BENEFITS

- Compact to reduce additional footprint when adding LTE in AWS 1-3 band
- Selection of MIMO configuration (2Tx or 4Tx) by software only
- Improves downlink spectral efficiency through 4Tx MIMO
- Increases LTE coverage thanks to 4Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options: Pole or Wall

Features & Performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R selectable by SW)
Frequency band	AWS 1-3, B4/B66a DL: 2110-2180 MHz / UL: 1710-1780 MHz
Instantaneous bandwidth - #carriers	70 MHz – 4 LTE MIMO carriers (in 70 MHz occupied bandwidth)
LTE carrier bandwidth	5, 10, 15, 20 MHz
RF output power	2x90W or 4x45W (selectable by SW)
Noise figure – RX Diversity scheme Receiver Sensivity (FRC A1-3)	2 dB typical (<2.5 dB max) – 2 or 4 way Rx diversity -104.5 dBm maximum
Sizes (HxWxD) in mm (in.) Volume in Liters Weight in kg (lb) (w/o mounting HW)	655x299x182 (25.8x11.8x7.2) (with solar shield) 640x290x160 (25.2x11.4x6.3) (without solar shield) 35.5 (with solar shield) 29.7 (without solar shield) 25.8kg (56.8lb) (with solar shield)
DC voltage range DC power consumption	Nominal: -48V, -40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption 750W typical @100% RF load (in 2Tx or 4Tx mode); Add 58W for 2A*29V for AISG
Environmental conditions Wind load (@150km/h or 93mph)	-40°C (-40°F) /+55°C (+131°F) UL50E Type 4 Enclosure 250N (56lb) Frontal/150N (34lb) Lateral
Antenna ports	4 ports 4.3-10 female (50 ohms) VSWR < 1.5
CPRI ports	2 CPRI ports (HW ready for Rate 7, 9.8 Gbps) SFP: SMDF (HW supports also SMSF and MMDF)
AISG interfaces	1 AISG 2.0 output (RS485) Integrated Smart Bias Tees (x2)
Misc. Interfaces	4 external alarms (1 connector) 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-487 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27 / FCC Part 15 / GR-3178-CORE

ATTACHMENT 2

	General	Power	Density					
Site Name: Plainfield N 2								
Tower Height: 160Ft								
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total
*Sprint	1	438	159	850	0.0067	0.5667	0.12%	
*Sprint	2	438	159	850	0.0135	0.5667	0.24%	
*Sprint	5	622	159	1900	0.0478	1.0000	0.48%	
*Sprint	2	1556	159	1900	0.0478	1.0000	0.48%	
*Sprint	8	778	159	2500	0.0956	1.0000	0.96%	
*MetroPCS	3	444	105	2140	0.0488	1.0000	0.49%	
*AT&T	2	565	150	880	0.0196	0.5867	0.33%	
*AT&T	2	875	150	1900	0.0303	1.0000	0.30%	
*AT&T	1	283	150	880	0.0049	0.5867	0.08%	
*AT&T	4	525	150	1900	0.0364	1.0000	0.36%	
*AT&T	1	1771	150	734	0.0307	0.4893	0.63%	
*Town	2	250	115	806	0.0151	0.5373	0.28%	
*T-Mobile	2	2906	139	2100	0.1182	1.0000	1.18%	
*T-Mobile	1	387	139	700	0.0079	0.4667	0.17%	
*T-Mobile	2	1453	139	1900	0.0591	1.0000	0.59%	
*T-Mobile	2	1453	139	2100	0.0591	1.0000	0.59%	
Verizon PCS	**0**	**0**	**127**	**0.0000**	**1970**	**1.0000**	**0.00%**	
Verizon Cellular	**1**	**3120**	**127**	**0.0696**	**869**	**0.5793**	**12.01%**	
Verizon AWS	**1**	**7848**	**127**	**0.1750**	**2145**	**1.0000**	**17.50%**	
Verizon 700	**1**	**2899**	**127**	**0.0646**	**746**	**0.4973**	**13.00%**	
								49.78%
* Source: Siting Council								

ATTACHMENT 3

Date: **March 30, 2017**

BLACK & VEATCH
Building a world of difference.

Charles Trask
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Black & Veatch Corp.
6800 W. 115th St., Suite 2292
Overland Park, KS 66211
(913) 458-8145

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Verizon Wireless* Co-Locate**	
	Carrier Site Number:	118624
	Carrier Site Name:	Plainfield North 2 CT
Crown Castle Designation:	**Crown Castle BU Number:**	876401
	Crown Castle Site Name:	TOWN OF PLAINFIELD/SSUSA
	Crown Castle JDE Job Number:	429247
	Crown Castle Work Order Number:	1380710
	Crown Castle Application Number:	382498 Rev. 0
Engineering Firm Designation:	**Black & Veatch Corp. Project Number:**	194393
Site Data:	**47-51 Unity Street, Plainfield, Windham County, CT** **Latitude *41° 42' 54.49"*, Longitude *-71° 53' 46.73"*** **159.857 Foot - Monopole Tower**	

Dear Charles Trask,

Black & Veatch Corp. 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 1016556, in accordance with application 382498, 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:

LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing 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 131 mph converted to a nominal 3-second gust wind speed of 101 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 with a maximum topographic factor, K_{zt}, of 1.0 and Risk Category II were used in this analysis. Seismic forces have been evaluated based on site class D with spectral response factors S_s of 0.170g and S_1 of 0.061g.

We at *Black & Veatch Corp.* 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: Deepika Pegu / Teddy Haile-Mariam

Respectfully submitted by:

Ping Jiang, P.E.

Professional Engineer

Apr 11, 2017

tnxTower Report - version 7.0.5.1

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 159.854 ft Monopole tower designed by Engineered Endeavors Inc. in May of 2003. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

The tower has been modified per reinforcement drawing prepared by Semaan Endeavors in September of 2005. Reinforcement consists of installation of base plate stiffeners. These modifications are considered ineffective due to no PMI.

The tower was later reinforced per reinforcement drawing prepared by Vertical Solutions in August of 2008. Reinforcement consists of installation of plates from 0' to 127'.

The tower was later reinforced per reinforcement drawing prepared by PJF in February of 2013. Reinforcement consists of installation of channels from 0.6' to 76.5' and (3) new anchor rods with brackets. These modifications are considered effective per PMI prepared by TEP In September of 2013.

The tower was later reinforced per reinforcement drawing prepared by Black & Veatch Corp. in November of 2014. Reinforcement consists of installation of plates from 0' to 100' and (9) new anchor rods with brackets. These modifications are considered effective per PMI prepared by FDH Velocitel, Inc. in May of 2015.

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 101 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. Seismic forces have been evaluated based on site class D with spectral response factors S_s of 0.170g and S_1 of 0.061g.

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
125.0	127.0	3	alcatel lucent	B66A RRH4X45	-	-	-
		3	alcatel lucent	RRH2x60-700			
		6	commscope	SBNHH-1D65B w/ Mount Pipe			

Table 2 - Existing 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
159.0	159.0	1	cci tower mounts	Platform Mount [LP 712-1]	3	1 1/4	1
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
157.0	157.0	1	alcatel lucent	PCS 1900MHz 4x45W-65MHz	-	-	1
		2	alcatel lucent	800MHz 2X50W RRH W/FILTER			
		1	cci tower mounts	Pipe Mount [PM 601-3]			
		1	cci tower mounts	Side Arm Mount [SO 102-3]			
	154.0	2	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
		1	alcatel lucent	800MHz 2X50W RRH W/FILTER			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
152.0	152.0	1	cci tower mounts	Side Arm Mount [SO 102-3]	-	-	1
		6	ericsson	TME-RRUS-11			
150.0	150.0	1	cci tower mounts	Platform Mount [LP 303-1]	12 2 1	1 5/8 7/16 3/8	1
		3	kmw communications	AM-X-CD-17-65-00T-RET w/ Mount Pipe			
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP21401			
		6	powerwave technologies	LGP21901			
		1	raycap	DC6-48-60-18-8F			
139.0	139.0	1	cci tower mounts	T-Arm Mount [TA 602-3]	12	1 5/8	1
		3	commscope	ATBT-BOTTOM-24V			
		3	commscope	LNX-6512DS-VTM w/ Mount Pipe			
		3	commscope	TMAT7LA-11A			
		3	rfs celwave	APXV18-203219-C-A20 w/ Mount Pipe			
125.0	127.0	3	alcatel lucent	RRH2X40-07-U	-	-	2
		3	commscope	LNX-6514DS-A1M w/ Mount Pipe			
		6	commscope	HBXX-6517DS-A2M w/ Mount Pipe			
		3	alcatel lucent	RRH2X60-AWS			
		3	alcatel lucent	RRH2X60-PCS	2	1 5/8	1
		3	commscope	LNX-6514DS-A1M w/ Mount Pipe			
		2	rfs celwave	DB-T1-6Z-8AB-0Z			
	125.0	1	cci tower mounts	Platform Mount [LP 303-1]			
109.0	114.0	1	decibel	DB589	1	7/8	1
	109.0	1	cci tower mounts	Side Arm Mount [SO 201-1]			
		1	cci tower mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) 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)
160.0	160.0	12	dapa	48000	-	-
150.0	150.0	12	dapa	48000	-	-
140.0	140.0	12	dapa	48000	-	-
75.0	75.0	1	unknown	GPS Antenna	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH	1610729	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	EEI	1615418	CCISITES
4-TOWER MANUFACTURER DRAWINGS	EEI	1615382	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Vertical Solitons	2819430	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF	3667143	CCISITES
4-POST-MODIFICATION INSPECTION	TEP	3986355	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Black & Veatch Corp.	5422409	CCISITES
4-POST-MODIFICATION INSPECTION	FDH Velocitel	5666814	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	Tectonic Engineering & Surveying Consultants, P.C.	5897246	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), 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.
4) The existing base plate grout is not considered in this analysis.
5) This analysis was performed under the assumption that all information provided to Black & Veatch is current and correct. This is to include site data, existing/proposed appurtenance loading, tower/foundation details, and geotechnical data. The existing/proposed loading on the structure is based on CAD level drawings and carrier applications provided by the owner. If any of this information is not current and correct, this report should be considered obsolete and further analysis will be required.

This analysis may be affected if any assumptions are not valid or have been made in error. Black & Veatch Corp. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

4.1) Wind Results

Table 5 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
159.86 - 154.86	Pole	TP17.62x16.5x0.1875	Pole	5.8%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
154.86 - 149.86	Pole	TP18.741x17.62x0.1875	Pole	13.7%	Pass
149.86 - 144.86	Pole	TP19.861x18.741x0.1875	Pole	25.7%	Pass
144.86 - 139.86	Pole	TP20.981x19.861x0.1875	Pole	35.9%	Pass
139.86 - 134.86	Pole	TP22.102x20.981x0.1875	Pole	46.8%	Pass
134.86 - 129.86	Pole	TP23.222x22.102x0.1875	Pole	56.4%	Pass
129.86 - 125.75	Pole	TP24.142x23.222x0.1875	Pole	63.4%	Pass
125.75 - 125.5	Pole	TP24.199x24.142x0.1875	Pole	63.8%	Pass
125.5 - 122.73	Pole	TP25.66x24.199x0.1875	Pole	72.0%	Pass
122.73 - 117.98	Pole	TP25.489x24.445x0.25	Pole	58.4%	Pass
117.98 - 112.98	Pole + Reinf.	TP26.588x25.489x0.4813	Reinf. 13 Tension Rupture	60.9%	Pass
112.98 - 107.98	Pole + Reinf.	TP27.688x26.588x0.475	Reinf. 13 Tension Rupture	67.0%	Pass
107.98 - 103	Pole + Reinf.	TP28.782x27.688x0.4625	Reinf. 13 Tension Rupture	72.4%	Pass
103 - 102.75	Pole + Reinf.	TP28.837x28.782x0.55	Reinf. 13 Tension Rupture	65.3%	Pass
102.75 - 100.21	Pole + Reinf.	TP29.396x28.837x0.5375	Reinf. 13 Tension Rupture	67.7%	Pass
100.21 - 100.02	Pole + Reinf.	TP30.39x29.396x0.6875	Reinf. 13 Tension Rupture	51.1%	Pass
100.02 - 94.69	Pole + Reinf.	TP30.119x28.937x0.7375	Reinf. 13 Tension Rupture	51.3%	Pass
94.69 - 93.5	Pole + Reinf.	TP30.382x30.119x0.7375	Reinf. 13 Tension Rupture	52.0%	Pass
93.5 - 93.25	Pole + Reinf.	TP30.437x30.382x0.9125	Reinf. 13 Tension Rupture	42.9%	Pass
93.25 - 89.25	Pole + Reinf.	TP31.323x30.437x0.8875	Reinf. 13 Tension Rupture	44.9%	Pass
89.25 - 89	Pole + Reinf.	TP31.379x31.323x0.9375	Reinf. 9 Tension Rupture	42.0%	Pass
89 - 86.5	Pole + Reinf.	TP31.933x31.379x0.925	Reinf. 9 Tension Rupture	43.2%	Pass
86.5 - 86.25	Pole + Reinf.	TP31.988x31.933x0.7625	Reinf. 12 Tension Rupture	49.2%	Pass
86.25 - 81.25	Pole + Reinf.	TP33.096x31.988x0.7375	Reinf. 12 Tension Rupture	51.5%	Pass
81.25 - 76.25	Pole + Reinf.	TP34.203x33.096x0.725	Reinf. 12 Tension Rupture	53.5%	Pass
76.25 - 75.42	Pole + Reinf.	TP34.388x34.203x0.725	Reinf. 12 Tension Rupture	53.8%	Pass
75.42 - 75.17	Pole + Reinf.	TP34.443x34.388x0.8125	Reinf. 12 Tension Rupture	47.9%	Pass
75.17 - 70.17	Pole + Reinf.	TP35.551x34.443x0.8	Reinf. 12 Tension Rupture	49.7%	Pass
70.17 - 65.17	Pole + Reinf.	TP36.659x35.551x0.7875	Reinf. 12 Tension Rupture	51.3%	Pass
65.17 - 60.17	Pole + Reinf.	TP37.766x36.659x0.7625	Reinf. 12 Tension Rupture	52.8%	Pass
60.17 - 59.5	Pole + Reinf.	TP37.914x37.766x0.7625	Reinf. 12 Tension Rupture	53.0%	Pass
59.5 - 59.25	Pole + Reinf.	TP37.97x37.914x0.7625	Reinf. 11 Tension Rupture	53.1%	Pass
59.25 - 54.25	Pole + Reinf.	TP39.077x37.97x0.75	Reinf. 11 Tension Rupture	54.5%	Pass
54.25 - 53	Pole + Reinf.	TP39.354x39.077x0.7375	Reinf. 11 Tension Rupture	54.8%	Pass
53 - 52.75	Pole + Reinf.	TP39.41x39.354x0.7375	Reinf. 11 Tension Rupture	54.3%	Pass
52.75 - 52.64	Pole + Reinf.	TP40.67x39.41x0.7375	Reinf. 11 Tension Rupture	54.3%	Pass
52.64 - 46.06	Pole + Reinf.	TP40.27x38.808x0.7625	Reinf. 11 Tension Rupture	54.8%	Pass
46.06 - 41.06	Pole + Reinf.	TP41.381x40.27x0.75	Reinf. 11 Tension Rupture	55.8%	Pass
41.06 - 39.33	Pole + Reinf.	TP41.765x41.381x0.75	Reinf. 11 Tension Rupture	56.1%	Pass
39.33 - 39.08	Pole + Reinf.	TP41.821x41.765x0.825	Reinf. 11 Tension Rupture	51.2%	Pass
39.08 - 37.75	Pole + Reinf.	TP42.116x41.821x0.825	Reinf. 11 Tension Rupture	51.5%	Pass
37.75 - 37.5	Pole + Reinf.	TP42.171x42.116x0.75	Reinf. 11 Tension Rupture	56.5%	Pass
37.5 - 32.5	Pole + Reinf.	TP43.282x42.171x0.7375	Reinf. 11 Tension Rupture	57.4%	Pass
32.5 - 29.75	Pole + Reinf.	TP43.893x43.282x0.725	Reinf. 11 Tension Rupture	57.8%	Pass
29.75 - 29.5	Pole + Reinf.	TP43.948x43.893x0.725	Reinf. 10 Tension Rupture	57.8%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
29.5 - 24.5	Pole + Reinf.	TP45.059x43.948x0.7125	Reinf. 10 Tension Rupture	58.6%	Pass
24.5 - 21.25	Pole + Reinf.	TP45.781x45.059x0.7125	Reinf. 10 Tension Rupture	59.1%	Pass
21.25 - 21	Pole + Reinf.	TP45.836x45.781x0.725	Reinf. 7 Tension Rupture	56.5%	Pass
21 - 20	Pole + Reinf.	TP46.058x45.836x0.725	Reinf. 7 Tension Rupture	56.6%	Pass
20 - 19.75	Pole + Reinf.	TP46.114x46.058x0.825	Reinf. 10 Tension Rupture	52.7%	Pass
19.75 - 17	Pole + Reinf.	TP46.724x46.114x0.8125	Reinf. 10 Tension Rupture	53.1%	Pass
17 - 16.75	Pole + Reinf.	TP46.78x46.724x0.775	Reinf. 10 Tension Rupture	58.0%	Pass
16.75 - 11.75	Pole + Reinf.	TP47.89x46.78x0.7625	Reinf. 10 Tension Rupture	58.7%	Pass
11.75 - 6.75	Pole + Reinf.	TP49.001x47.89x0.75	Reinf. 10 Tension Rupture	59.3%	Pass
6.75 - 1.75	Pole + Reinf.	TP50.111x49.001x0.7375	Reinf. 10 Tension Rupture	59.9%	Pass
1.75 - 0	Pole + Reinf.	TP50.5x50.111x0.7375	Reinf. 10 Tension Rupture	60.1%	Pass
				Summary	
			Pole	72.0%	Pass
			Reinforcement	72.4%	Pass
			Overall	72.4%	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	36.3	Pass
1	Base Plate	0	45.0	Pass
1	Base Foundation	0	69.7	Pass
1	Base Foundation Soil Interaction	0	23.0	Pass

4.2) Seismic Results

Tower and foundation have been analyzed based on the seismic criteria outlined in section 2 of this report. Based on the analysis, seismic loading is not governing the tower and foundation stress. Wind loading governing the tower and foundation stress.

Structure Rating (max from all components) =	72.4%

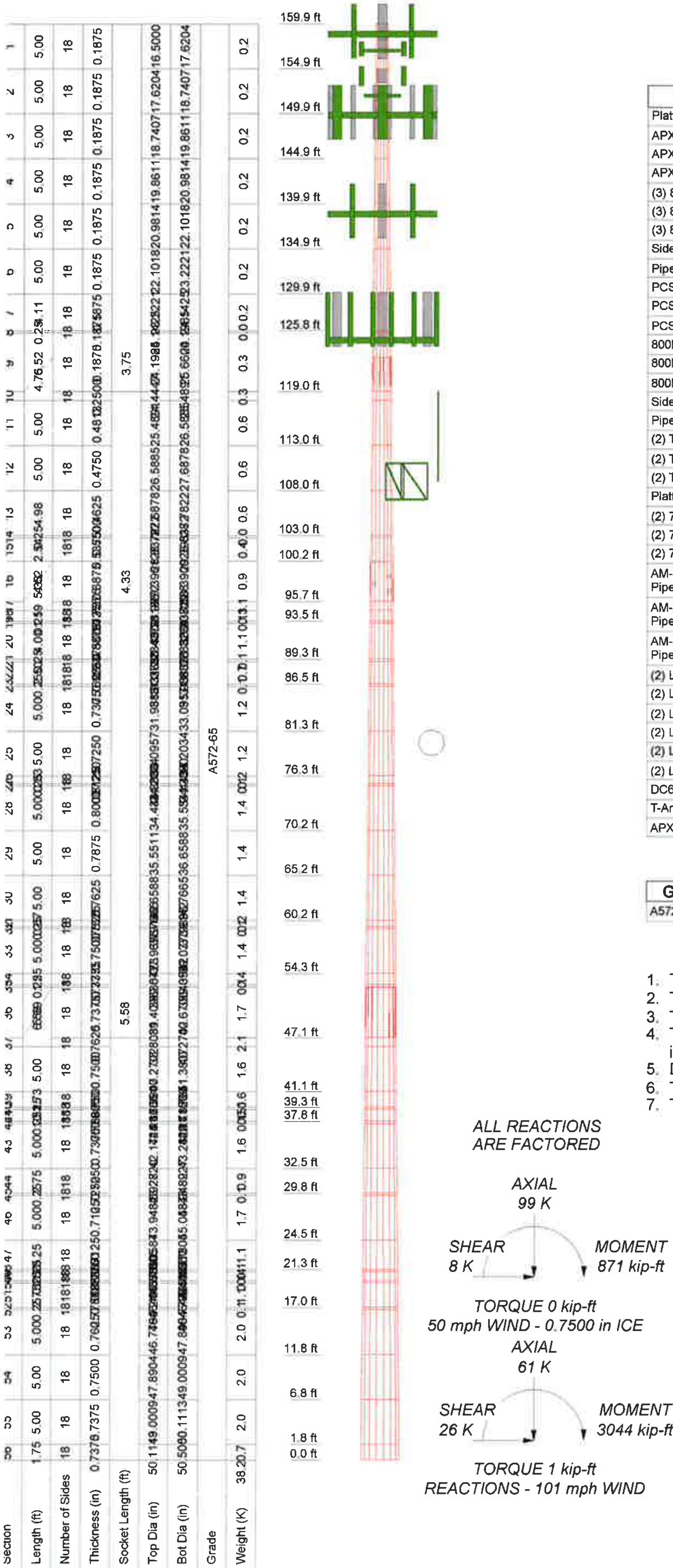
Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.3) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount [LP 712-1]	159	APXV18-203219-C-A20 w/ Mount Pipe	139
APXVSPP18-C-A20 w/ Mount Pipe	159	APXV18-203219-C-A20 w/ Mount Pipe	139
APXVSPP18-C-A20 w/ Mount Pipe	159	LNX-6512DS-VTM w/ Mount Pipe	139
APXVSPP18-C-A20 w/ Mount Pipe	159	LNX-6512DS-VTM w/ Mount Pipe	139
(3) 8'x2" Antenna Mount Pipe	159	LNX-6512DS-VTM w/ Mount Pipe	139
(3) 8'x2" Antenna Mount Pipe	159	TMAT7LA-11A	139
(3) 8'x2" Antenna Mount Pipe	159	TMAT7LA-11A	139
Side Arm Mount [SO 102-3]	157	TMAT7LA-11A	139
Pipe Mount [PM 601-3]	157	ATBT-BOTTOM-24V	139
PCS 1900MHz 4x45W-65MHz	157	ATBT-BOTTOM-24V	139
PCS 1900MHz 4x45W-65MHz	157	ATBT-BOTTOM-24V	139
PCS 1900MHz 4x45W-65MHz	157	6' x 2" Mount Pipe	139
800MHz 2X50W RRH W/FILTER	157	6' x 2" Mount Pipe	139
800MHz 2X50W RRH W/FILTER	157	6' x 2" Mount Pipe	139
800MHz 2X50W RRH W/FILTER	157	Platform Mount [LP 303-1]	125
Side Arm Mount [SO 102-3]	152	LNX-6514DS-A1M w/ Mount Pipe	125
Pipe Mount [PM 601-3]	152	LNX-6514DS-A1M w/ Mount Pipe	125
(2) TME-RRUS-11	152	LNX-6514DS-A1M w/ Mount Pipe	125
(2) TME-RRUS-11	152	(2) SBNHH-1D65B w/ Mount Pipe	125
(2) TME-RRUS-11	152	(2) SBNHH-1D65B w/ Mount Pipe	125
Platform Mount [LP 303-1]	150	(2) SBNHH-1D65B w/ Mount Pipe	125
(2) 7770.00 w/ Mount Pipe	150	6' x 2" Mount Pipe	125
(2) 7770.00 w/ Mount Pipe	150	6' x 2" Mount Pipe	125
(2) 7770.00 w/ Mount Pipe	150	6' x 2" Mount Pipe	125
AM-X-CD-17-65-00T-RET w/ Mount Pipe	150	B66A RRH4X45	125
		B66A RRH4X45	125
AM-X-CD-17-65-00T-RET w/ Mount Pipe	150	B66A RRH4X45	125
		RRH2x60-700	125
AM-X-CD-17-65-00T-RET w/ Mount Pipe	150	RRH2x60-700	125
		RRH2x60-700	125
(2) LGP21401	150	RRH2X60-PCS	125
(2) LGP21401	150	RRH2X60-PCS	125
(2) LGP21401	150	RRH2X60-PCS	125
(2) LGP21901	150	DB-T1-6Z-8AB-0Z	125
(2) LGP21901	150	DB-T1-6Z-8AB-0Z	125
(2) LGP21901	150	Side Arm Mount [SO 201-1]	109
DC6-48-60-18-8F	150	Side Arm Mount [SO 701-1]	109
T-Arm Mount [TA 602-3]	139	DB589	109
APXV18-203219-C-A20 w/ Mount Pipe	139		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Windham County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 101 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft

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Project: 194393 (876401.1380710)	
Client: Crown Castle	Drawn by: Teddy Haile-Mariam, E.I.T. App'd:
Code: TIA-222-G	Date: 03/30/17 Scale: N
Path: C:\Users\HAI85635\Desktop\Completed Projects\876401\876401.1380710 - TSA\Structural\mod.eri	Dwg No.

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 Windham County, Connecticut.
2) Basic wind speed of 101 mph.
3) Structure Class II.
4) Exposure Category B.
5) Topographic Category 1.
6) Crest Height 0.00 ft.
7) Nominal ice thickness of 0.7500 in.
8) Ice thickness is considered to increase with height.
9) Ice density of 56 pcf.
10) A wind speed of 50 mph is used in combination with ice.
11) Deflections calculated using a wind speed of 60 mph.
12) A non-linear (P-delta) analysis was used.
13) Pressures are calculated at each section.
14) Stress ratio used in pole design is 1.
15) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

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	159.86-154.86	5.00	0.00	18	16.5000	17.6204	0.1875	0.7500	A572-65 (65 ksi)
L2	154.86-149.86	5.00	0.00	18	17.6204	18.7407	0.1875	0.7500	A572-65 (65 ksi)
L3	149.86-144.86	5.00	0.00	18	18.7407	19.8611	0.1875	0.7500	A572-65 (65 ksi)
L4	144.86-139.86	5.00	0.00	18	19.8611	20.9814	0.1875	0.7500	A572-65 (65 ksi)
L5	139.86-134.86	5.00	0.00	18	20.9814	22.1018	0.1875	0.7500	A572-65 (65 ksi)
L6	134.86-129.86	5.00	0.00	18	22.1018	23.2221	0.1875	0.7500	A572-65 (65 ksi)
L7	129.86-125.75	4.11	0.00	18	23.2221	24.1425	0.1875	0.7500	A572-65 (65 ksi)
L8	125.75-125.50	0.25	0.00	18	24.1425	24.1985	0.1875	0.7500	A572-65 (65 ksi)
L9	125.50-118.98	6.52	3.75	18	24.1985	25.6600	0.1875	0.7500	A572-65 (65 ksi)
L10	118.98-117.98	4.75	0.00	18	24.4447	25.4891	0.2500	1.0000	A572-65 (65 ksi)
L11	117.98-112.98	5.00	0.00	18	25.4891	26.5885	0.4813	1.9250	A572-65 (65 ksi)
L12	112.98-107.98	5.00	0.00	18	26.5885	27.6878	0.4750	1.9000	A572-65 (65 ksi)
L13	107.98-103.00	4.98	0.00	18	27.6878	28.7822	0.4625	1.8500	A572-65 (65 ksi)
L14	103.00-102.75	0.25	0.00	18	28.7822	28.8372	0.5500	2.2000	A572-65 (65 ksi)
L15	102.75-100.21	2.54	0.00	18	28.8372	29.3961	0.5375	2.1500	A572-65 (65 ksi)
L16	100.21-95.69	4.52	4.33	18	29.3961	30.3900	0.6875	2.7500	A572-65 (65 ksi)
L17	95.69-94.69	5.33	0.00	18	28.9372	30.1188	0.7375	2.9500	A572-65 (65 ksi)
L18	94.69-93.50	1.19	0.00	18	30.1188	30.3819	0.7375	2.9500	A572-65 (65 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
L19	93.50-93.25	0.25	0.00	18	30.3819	30.4372	0.9125	3.6500	A572-65 (65 ksi)
L20	93.25-89.25	4.00	0.00	18	30.4372	31.3234	0.8875	3.5500	A572-65 (65 ksi)
L21	89.25-89.00	0.25	0.00	18	31.3234	31.3788	0.9375	3.7500	A572-65 (65 ksi)
L22	89.00-86.50	2.50	0.00	18	31.3788	31.9326	0.9250	3.7000	A572-65 (65 ksi)
L23	86.50-86.25	0.25	0.00	18	31.9326	31.9880	0.7625	3.0500	A572-65 (65 ksi)
L24	86.25-81.25	5.00	0.00	18	31.9880	33.0957	0.7375	2.9500	A572-65 (65 ksi)
L25	81.25-76.25	5.00	0.00	18	33.0957	34.2034	0.7250	2.9000	A572-65 (65 ksi)
L26	76.25-75.42	0.83	0.00	18	34.2034	34.3880	0.7250	2.9000	A572-65 (65 ksi)
L27	75.42-75.17	0.25	0.00	18	34.3880	34.4434	0.8125	3.2500	A572-65 (65 ksi)
L28	75.17-70.17	5.00	0.00	18	34.4434	35.5511	0.8000	3.2000	A572-65 (65 ksi)
L29	70.17-65.17	5.00	0.00	18	35.5511	36.6588	0.7875	3.1500	A572-65 (65 ksi)
L30	65.17-60.17	5.00	0.00	18	36.6588	37.7665	0.7625	3.0500	A572-65 (65 ksi)
L31	60.17-59.50	0.67	0.00	18	37.7665	37.9142	0.7625	3.0500	A572-65 (65 ksi)
L32	59.50-59.25	0.25	0.00	18	37.9142	37.9696	0.7625	3.0500	A572-65 (65 ksi)
L33	59.25-54.25	5.00	0.00	18	37.9696	39.0773	0.7500	3.0000	A572-65 (65 ksi)
L34	54.25-53.00	1.25	0.00	18	39.0773	39.3542	0.7375	2.9500	A572-65 (65 ksi)
L35	53.00-52.75	0.25	0.00	18	39.3542	39.4096	0.7375	2.9500	A572-65 (65 ksi)
L36	52.75-47.06	5.69	5.58	18	39.4096	40.6700	0.7375	2.9500	A572-65 (65 ksi)
L37	47.06-46.06	6.58	0.00	18	38.8081	40.2702	0.7625	3.0500	A572-65 (65 ksi)
L38	46.06-41.06	5.00	0.00	18	40.2702	41.3807	0.7500	3.0000	A572-65 (65 ksi)
L39	41.06-39.33	1.73	0.00	18	41.3807	41.7651	0.7500	3.0000	A572-65 (65 ksi)
L40	39.33-39.08	0.25	0.00	18	41.7651	41.8206	0.8250	3.3000	A572-65 (65 ksi)
L41	39.08-37.75	1.33	0.00	18	41.8206	42.1160	0.8250	3.3000	A572-65 (65 ksi)
L42	37.75-37.50	0.25	0.00	18	42.1160	42.1715	0.7500	3.0000	A572-65 (65 ksi)
L43	37.50-32.50	5.00	0.00	18	42.1715	43.2820	0.7375	2.9500	A572-65 (65 ksi)
L44	32.50-29.75	2.75	0.00	18	43.2820	43.8927	0.7250	2.9000	A572-65 (65 ksi)
L45	29.75-29.50	0.25	0.00	18	43.8927	43.9482	0.7250	2.9000	A572-65 (65 ksi)
L46	29.50-24.50	5.00	0.00	18	43.9482	45.0587	0.7125	2.8500	A572-65 (65 ksi)
L47	24.50-21.25	3.25	0.00	18	45.0587	45.7805	0.7125	2.8500	A572-65 (65 ksi)
L48	21.25-21.00	0.25	0.00	18	45.7805	45.8360	0.7250	2.9000	A572-65 (65 ksi)
L49	21.00-20.00	1.00	0.00	18	45.8360	46.0581	0.7250	2.9000	A572-65 (65 ksi)
L50	20.00-19.75	0.25	0.00	18	46.0581	46.1137	0.8250	3.3000	A572-65 (65 ksi)
L51	19.75-17.00	2.75	0.00	18	46.1137	46.7244	0.8125	3.2500	A572-65 (65 ksi)
L52	17.00-16.75	0.25	0.00	18	46.7244	46.7799	0.7750	3.1000	A572-65 (65 ksi)
L53	16.75-11.75	5.00	0.00	18	46.7799	47.8904	0.7625	3.0500	A572-65 (65 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
L54	11.75-6.75	5.00	0.00	18	47.8904	49.0009	0.7500	3.0000	A572-65 (65 ksi)
L55	6.75-1.75	5.00	0.00	18	49.0009	50.1113	0.7375	2.9500	A572-65 (65 ksi)
L56	1.75-0.00	1.75		18	50.1113	50.5000	0.7375	2.9500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	16.7545	9.7080	326.3677	5.7909	8.3820	38.9367	653.1649	4.8549	2.5740	13.728
	17.8922	10.3747	398.3373	6.1887	8.9511	44.5013	797.1988	5.1883	2.7712	14.78
L2	17.8922	10.3747	398.3373	6.1887	8.9511	44.5013	797.1988	5.1883	2.7712	14.78
	19.0298	11.0415	480.1782	6.5864	9.5203	50.4374	960.9882	5.5218	2.9684	15.831
L3	19.0298	11.0415	480.1782	6.5864	9.5203	50.4374	960.9882	5.5218	2.9684	15.831
	20.1674	11.7082	572.5248	6.9841	10.0894	56.7451	1145.8029	5.8552	3.1655	16.883
L4	20.1674	11.7082	572.5248	6.9841	10.0894	56.7451	1145.8029	5.8552	3.1655	16.883
	21.3051	12.3750	676.0115	7.3818	10.6586	63.4243	1352.9124	6.1887	3.3627	17.935
L5	21.3051	12.3750	676.0115	7.3818	10.6586	63.4243	1352.9124	6.1887	3.3627	17.935
	22.4427	13.0417	791.2726	7.7796	11.2277	70.4751	1583.5865	6.5221	3.5599	18.986
L6	22.4427	13.0417	791.2726	7.7796	11.2277	70.4751	1583.5865	6.5221	3.5599	18.986
	23.5804	13.7085	918.9427	8.1773	11.7968	77.8974	1839.0946	6.8555	3.7571	20.038
L7	23.5804	13.7085	918.9427	8.1773	11.7968	77.8974	1839.0946	6.8555	3.7571	20.038
	24.5149	14.2562	1033.5542	8.5040	12.2644	84.2728	2068.4683	7.1295	3.9191	20.902
L8	24.5149	14.2562	1033.5542	8.5040	12.2644	84.2728	2068.4683	7.1295	3.9191	20.902
	24.5718	14.2895	1040.8219	8.5239	12.2928	84.6690	2083.0133	7.1461	3.9289	20.954
L9	24.5718	14.2895	1040.8219	8.5239	12.2928	84.6690	2083.0133	7.1461	3.9289	20.954
	26.0558	15.1593	1242.6830	9.0427	13.0353	95.3323	2487.0012	7.5811	4.1862	22.326
L10	25.6591	19.1985	1419.8649	8.5891	12.4179	114.3399	2841.5982	9.6011	3.8623	15.449
	25.8823	20.0272	1611.7836	8.9599	12.9485	124.4768	3225.6880	10.0155	4.0461	16.184
L11	25.8823	38.1992	3018.1787	8.8778	12.9485	233.0915	6040.3288	19.1032	3.6391	7.562
	26.9986	39.8784	3433.9704	9.2681	13.5069	254.2375	6872.4593	19.9430	3.8326	7.964
L12	26.9986	39.3700	3391.8082	9.2703	13.5069	251.1160	6788.0794	19.6887	3.8436	8.092
	28.1149	41.0274	3838.4688	9.6605	14.0654	272.9014	7681.9883	20.5176	4.0371	8.499
L13	28.1149	39.9661	3742.6091	9.6650	14.0654	266.0861	7490.1428	19.9868	4.0591	8.776
	29.2262	41.5726	4212.3295	10.0535	14.6214	288.0942	8430.2018	20.7903	4.2517	9.193
L14	29.2262	49.2850	4962.9684	10.0224	14.6214	339.4327	9932.4673	24.6472	4.0977	7.45
	29.2820	49.3809	4992.0132	10.0419	14.6493	340.7684	9990.5950	24.6952	4.1073	7.468
L15	29.2820	48.2800	4885.0287	10.0464	14.6493	333.4654	9776.4852	24.1446	4.1293	7.682
	29.8496	49.2335	5180.2148	10.2448	14.9332	346.8923	10367.2458	24.6214	4.2277	7.866
L16	29.8496	62.6457	6523.0733	10.1915	14.9332	436.8166	13054.7299	31.3288	3.9637	5.765
	30.8588	64.8146	7224.3053	10.5444	15.4381	467.9524	14458.1165	32.4134	4.1386	6.02
L17	30.3585	66.0106	6631.9525	10.0109	14.7001	451.1497	13272.6314	33.0116	3.7950	5.146
	30.5834	68.7764	7500.9897	10.4304	15.3003	490.2498	15011.8494	34.3948	4.0029	5.428
L18	30.5834	68.7764	7500.9897	10.4304	15.3003	490.2498	15011.8494	34.3948	4.0029	5.428
	30.8505	69.3923	7704.2900	10.5237	15.4340	499.1770	15418.7175	34.7027	4.0492	5.49
L19	30.8505	85.3514	9364.6025	10.4616	15.4340	606.7521	18741.5271	42.6838	3.7412	4.1
	30.9068	85.5118	9417.5016	10.4813	15.4621	609.0692	18847.3950	42.7640	3.7510	4.111
L20	30.9068	83.2394	9182.7749	10.4902	15.4621	593.8885	18377.6327	41.6276	3.7950	4.276
	31.8066	85.7357	10033.9379	10.8047	15.9123	630.5779	20081.0788	42.8760	3.9509	4.452
L21	31.8066	90.4171	10547.0789	10.7870	15.9123	662.8260	21108.0358	45.2171	3.8629	4.12
	31.8629	90.5819	10604.857	10.8067	15.9404	665.2807	21223.668	45.2995	3.8727	4.131

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L22	31.8629	89.4108	10476.3542	10.8111	15.9404	657.2192	20966.4935	44.7139	3.8947	4.21
	32.4253	91.0369	11058.3996	11.0077	16.2218	681.7007	22131.3501	45.5271	3.9921	4.316
L23	32.4253	75.4372	9259.7767	11.0654	16.2218	570.8237	18531.7376	37.7258	4.2781	5.611
	32.4815	75.5712	9309.2245	11.0851	16.2499	572.8783	18630.6983	37.7928	4.2879	5.623
L24	32.4815	73.1520	9025.6479	11.0939	16.2499	555.4273	18063.1719	36.5830	4.3319	5.874
	33.6063	75.7449	10019.8342	11.4872	16.8126	595.9707	20052.8527	37.8797	4.5268	6.138
L25	33.6063	74.4899	9861.4261	11.4916	16.8126	586.5487	19735.8281	37.2520	4.5488	6.274
	34.7311	77.0389	10908.8138	11.8848	17.3753	627.8331	21831.9816	38.5268	4.7438	6.543
L26	34.7311	77.0389	10908.8138	11.8848	17.3753	627.8331	21831.9816	38.5268	4.7438	6.543
	34.9185	77.4635	11090.2078	11.9504	17.4691	634.8475	22195.0084	38.7391	4.7763	6.588
L27	34.9185	86.5869	12332.0154	11.9193	17.4691	705.9335	24680.2576	43.3017	4.6223	5.689
	34.9747	86.7298	12393.1436	11.9390	17.4972	708.2920	24802.5945	43.3731	4.6320	5.701
L28	34.9747	85.4272	12216.0913	11.9434	17.4972	698.1731	24448.2568	42.7217	4.6540	5.818
	36.0995	88.2399	13462.8927	12.3366	18.0599	745.4563	26943.5003	44.1283	4.8490	6.061
L29	36.0995	86.8924	13266.8410	12.3411	18.0599	734.6006	26551.1389	43.4544	4.8710	6.185
	37.2243	89.6611	14575.8778	12.7343	18.6226	782.6963	29170.9350	44.8391	5.0659	6.433
L30	37.2243	86.8752	14142.6801	12.7432	18.6226	759.4344	28303.9694	43.4459	5.1099	6.702
	38.3491	89.5561	15492.7584	13.1364	19.1854	807.5302	31005.9026	44.7865	5.3049	6.957
L31	38.3491	89.5561	15492.7584	13.1364	19.1854	807.5302	31005.9026	44.7865	5.3049	6.957
	38.4991	89.9137	15679.1015	13.1889	19.2604	814.0579	31378.8339	44.9654	5.3309	6.991
L32	38.4991	89.9137	15679.1015	13.1889	19.2604	814.0579	31378.8339	44.9654	5.3309	6.991
	38.5554	90.0477	15749.3283	13.2085	19.2886	816.5113	31519.3800	45.0324	5.3407	7.004
L33	38.5554	88.6013	15506.7610	13.2130	19.2886	803.9356	31033.9261	44.3091	5.3627	7.15
	39.6801	91.2382	16932.8742	13.6062	19.8513	852.9868	33888.0291	45.6278	5.5576	7.41
L34	39.6801	89.7468	16666.9562	13.6106	19.8513	839.5913	33355.8432	44.8819	5.5796	7.566
	39.9613	90.3950	17030.7231	13.7089	19.9920	851.8790	34083.8556	45.2061	5.6283	7.632
L35	39.9613	90.3950	17030.7231	13.7089	19.9920	851.8790	34083.8556	45.2061	5.6283	7.632
	40.0176	90.5247	17104.1058	13.7286	20.0201	854.3472	34230.7177	45.2709	5.6381	7.645
L36	40.0176	90.5247	17104.1058	13.7286	20.0201	854.3472	34230.7177	45.2709	5.6381	7.645
	41.2974	93.4750	18831.5427	14.1760	20.6604	911.4818	37687.8643	46.7464	5.8599	7.946
L37	40.6659	92.0769	16838.2294	13.5062	19.7145	854.1039	33698.6150	46.0472	5.4882	7.198
	40.8914	95.6155	18855.1037	14.0252	20.4573	921.6831	37735.0174	47.8168	5.7456	7.535
L38	40.8914	94.0778	18563.6127	14.0297	20.4573	907.4343	37151.6519	47.0478	5.7676	7.69
	42.0190	96.7213	20172.8380	14.4239	21.0214	959.6347	40372.2199	48.3698	5.9630	7.951
L39	42.0190	96.7213	20172.8380	14.4239	21.0214	959.6347	40372.2199	48.3698	5.9630	7.951

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
	42.4094	97.6363	20750.8383	14.5603	21.2166	978.0450	41528.9811	48.8275	6.0307	8.041
L40	42.4094	107.2036	22700.9327	14.5337	21.2166	1069.9584	45431.7359	53.6120	5.8987	7.15
	42.4657	107.3490	22793.4199	14.5534	21.2449	1072.8913	45616.8320	53.6847	5.9084	7.162
L41	42.4657	107.3490	22793.4199	14.5534	21.2449	1072.8913	45616.8320	53.6847	5.9084	7.162
	42.7657	108.1225	23289.6771	14.6583	21.3949	1088.5615	46609.9994	54.0715	5.9604	7.225
L42	42.7657	98.4717	21288.0148	14.6849	21.3949	995.0037	42604.0410	49.2452	6.0924	8.123
	42.8221	98.6039	21373.8514	14.7046	21.4231	997.7004	42775.8270	49.3113	6.1022	8.136
L43	42.8221	96.9897	21036.6541	14.7091	21.4231	981.9605	42100.9887	48.5041	6.1242	8.304
	43.9497	99.5891	22773.7936	15.1033	21.9872	1035.7734	45577.5536	49.8040	6.3196	8.569
L44	43.9497	97.9299	22407.5362	15.1077	21.9872	1019.1157	44844.5569	48.9743	6.3416	8.747
	44.5698	99.3354	23386.1953	15.3245	22.2975	1048.8259	46803.1627	49.6771	6.4491	8.895
L45	44.5698	99.3354	23386.1953	15.3245	22.2975	1048.8259	46803.1627	49.6771	6.4491	8.895
	44.6262	99.4632	23476.5511	15.3442	22.3257	1051.5480	46983.9933	49.7410	6.4589	8.909
L46	44.6262	97.7765	23091.8056	15.3487	22.3257	1034.3147	46213.9960	48.8976	6.4809	9.096
	45.7538	100.2878	24917.1676	15.7429	22.8898	1088.5697	49867.1219	50.1534	6.6763	9.37
L47	45.7538	100.2878	24917.1676	15.7429	22.8898	1088.5697	49867.1219	50.1534	6.6763	9.37
	46.4867	101.9202	26153.7769	15.9991	23.2565	1124.5793	52341.9676	50.9698	6.8034	9.549
L48	46.4867	103.6795	26590.4775	15.9947	23.2565	1143.3568	53215.9435	51.8496	6.7814	9.354
	46.5431	103.8073	26688.9037	16.0144	23.2847	1146.1989	53412.9254	51.9135	6.7911	9.367
L49	46.5431	103.8073	26688.9037	16.0144	23.2847	1146.1989	53412.9254	51.9135	6.7911	9.367
	46.7686	104.3183	27085.0373	16.0933	23.3975	1157.6025	54205.7137	52.1691	6.8302	9.421
L50	46.7686	118.4452	30617.3913	16.0578	23.3975	1308.5737	61275.0697	59.2339	6.6542	8.066
	46.8250	118.5906	30730.2777	16.0775	23.4257	1311.8170	61500.9912	59.3066	6.6640	8.078
L51	46.8250	116.8260	30289.7342	16.0819	23.4257	1293.0111	60619.3244	58.4241	6.6860	8.229
	47.4452	118.4011	31531.4388	16.2987	23.7360	1328.4226	63104.3675	59.2118	6.7935	8.361
L52	47.4452	113.0287	30149.8988	16.3120	23.7360	1270.2182	60339.4695	56.5251	6.8595	8.851
	47.5016	113.1652	30259.3266	16.3318	23.7642	1273.3153	60558.4692	56.5934	6.8693	8.864
L53	47.5016	111.3702	29795.5470	16.3362	23.7642	1253.7994	59630.2998	55.6957	6.8913	9.038
	48.6292	114.0578	32005.0485	16.7304	24.3283	1315.5468	64052.2101	57.0397	7.0867	9.294
L54	48.6292	112.2177	31505.4314	16.7348	24.3283	1295.0104	63052.3185	56.1195	7.1087	9.478
	49.7568	114.8612	33784.7751	17.1291	24.8924	1357.2303	67614.0051	57.4415	7.3042	9.739
L55	49.7568	112.9761	33247.5217	17.1335	24.8924	1335.6473	66538.7914	56.4988	7.3262	9.934
	50.8844	115.5755	35595.6570	17.5277	25.4566	1398.2902	71238.1516	57.7987	7.5216	10.199
L56	50.8844	115.5755	35595.6570	17.5277	25.4566	1398.2902	71238.1516	57.7987	7.5216	10.199
	51.2790	116.4853	36442.9033	17.6657	25.6540	1420.5544	72933.7592	58.2537	7.5900	10.292

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 159.86-154.86				1	1	1			
L2 154.86-149.86				1	1	1			
L3 149.86-144.86				1	1	1			
L4 144.86-139.86				1	1	1			
L5 139.86-134.86				1	1	1			
L6 134.86-129.86				1	1	1			
L7 129.86-125.75				1	1	1			
L8 125.75-125.50				1	1	1			
L9 125.50-118.98				1	1	1			
L10 118.98-117.98				1	1	1			
L11 117.98-112.98				1	1	0.935503			
L12 112.98-107.98				1	1	0.930567			
L13 107.98-103.00				1	1	0.939252			
L14 103.00-102.75				1	1	1.03463			
L15 102.75-100.21				1	1	1.04674			
L16 100.21-95.69				1	1	0.917623			
L17 95.69-94.69				1	1	0.930138			
L18 94.69-93.50				1	1	0.925644			
L19 93.50-93.25				1	1	0.909675			
L20 93.25-89.25				1	1	0.917552			
L21 89.25-89.00				1	1	0.910469			
L22 89.00-86.50				1	1	0.911953			
L23 86.50-86.25				1	1	0.920665			
L24 86.25-81.25				1	1	0.933059			
L25 81.25-76.25				1	1	0.931649			
L26 76.25-75.42				1	1	0.928904			
L27 75.42-75.17				1	1	0.931301			
L28 75.17-70.17				1	1	0.927814			
L29 70.17-65.17				1	1	0.925361			
L30 65.17-60.17				1	1	0.938715			
L31 60.17-59.50				1	1	0.936611			
L32 59.50-59.25				1	1	0.935827			
L33 59.25-54.25				1	1	0.935659			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L34 54.25-53.00				1	1	0.947425			
L35 53.00-52.75				1	1	0.946675			
L36 52.75-47.06				1	1	0.946358			
L37 47.06-46.06				1	1	0.987321			
L38 46.06-41.06				1	1	0.989699			
L39 41.06-39.33				1	1	0.985109			
L40 39.33-39.08				1	1	0.978201			
L41 39.08-37.75				1	1	0.974455			
L42 37.75-37.50				1	1	0.980349			
L43 37.50-32.50				1	1	0.983922			
L44 32.50-29.75				1	1	0.993754			
L45 29.75-29.50				1	1	0.993141			
L46 29.50-24.50				1	1	0.998154			
L47 24.50-21.25				1	1	0.990597			
L48 21.25-21.00				1	1	1.07558			
L49 21.00-20.00				1	1	1.07285			
L50 20.00-19.75				1	1	1.02229			
L51 19.75-17.00				1	1	1.03007			
L52 17.00-16.75				1	1	1.02529			
L53 16.75-11.75				1	1	1.02885			
L54 11.75-6.75				1	1	1.03316			
L55 6.75-1.75				1	1	1.03821			
L56 1.75-0.00				1	1	1.03408			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	B	Surface Ar (CaAa)	159.85 - 9.00	1	1	-0.010 0.010	0.3750		0.22
Reinforcement									
Aero Channel MP303	A	Surface Af (CaAa)	76.58 - 36.58	1	1	0.000 0.000	4.0625	11.2600	0.00
Aero Channel MP303	B	Surface Af (CaAa)	76.58 - 36.58	1	1	0.000 0.000	4.0625	11.2600	0.00
Aero Channel MP303	C	Surface Af (CaAa)	76.58 - 36.58	1	1	0.000 0.000	4.0625	11.2600	0.00
Aero Channel MP303	A	Surface Af (CaAa)	40.50 - 0.50	1	1	0.000 0.000	4.0625	11.2600	0.00
Aero Channel MP303	B	Surface Af (CaAa)	40.50 - 0.50	1	1	0.000 0.000	4.0625	11.2600	0.00

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Aero Channel MP303	C	Surface Af (CaAa)	40.50 - 0.50	1	1	0.000 0.000	4.0625	11.2600	0.00
PL1.25x5.375	A	Surface Af (CaAa)	89.25 - 0.00	1	1	0.000 0.000	5.3750	13.2500	0.00
PL1.25x5.375	B	Surface Af (CaAa)	89.25 - 0.00	1	1	0.000 0.000	5.3750	13.2500	0.00
PL1.25x5.375	C	Surface Af (CaAa)	89.25 - 0.00	1	1	0.000 0.000	5.3750	13.2500	0.00
PL1.25x4.375	A	Surface Af (CaAa)	119.00 - 89.25	1	1	0.000 0.000	4.3750	11.2500	0.00
PL1.25x4.375	B	Surface Af (CaAa)	119.00 - 89.25	1	1	0.000 0.000	4.3750	11.2500	0.00
PL1.25x4.375	C	Surface Af (CaAa)	119.00 - 89.25	1	1	0.000 0.000	4.3750	11.2500	0.00
PL1.25x3.125	A	Surface Af (CaAa)	127.00 - 119.00	1	1	0.000 0.000	3.1250	8.7500	0.00
PL1.25x3.125	B	Surface Af (CaAa)	127.00 - 119.00	1	1	0.000 0.000	3.1250	8.7500	0.00
PL1.25x3.125	C	Surface Af (CaAa)	127.00 - 119.00	1	1	0.000 0.000	3.1250	8.7500	0.00
CCI-SFP-085125	A	Surface Af (CaAa)	25.00 - 0.00	1	1	0.000 0.000	8.5000	19.5000	0.00
CCI-SFP-085125	B	Surface Af (CaAa)	20.00 - 0.00	1	1	0.000 0.000	8.5000	19.5000	0.00
CCI-SFP-085125	C	Surface Af (CaAa)	20.00 - 0.00	1	1	0.000 0.000	8.5000	19.5000	0.00
CCI-SFP-060100	A	Surface Af (CaAa)	105.00 - 15.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	C	Surface Af (CaAa)	105.00 - 20.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	B	Surface Af (CaAa)	55.00 - 20.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	B	Surface Af (CaAa)	102.20 - 47.20	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-045100	A	Surface Af (CaAa)	95.00 - 85.00	1	1	0.000 0.000	4.5000	11.0000	0.00
CCI-SFP-045100	B	Surface Af (CaAa)	95.00 - 85.00	1	1	0.000 0.000	4.5000	11.0000	0.00
CCI-SFP-045100	C	Surface Af (CaAa)	95.00 - 85.00	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		C_AA_A ft^2/ft	Weight plf
LDF7-50A(1-5/8)	A	No	Inside Pole	139.00 - 8.50	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
HB158-1-08U8-S8J18(1-5/8)	A	No	Inside Pole	125.00 - 10.50	2	No Ice	0.00	1.30
						1/2" Ice	0.00	1.30
						1" Ice	0.00	1.30
CR 50 1070(7/8)	A	No	Inside Pole	109.00 - 8.50	1	No Ice	0.00	0.28
						1/2" Ice	0.00	0.28
						1" Ice	0.00	0.28
HB114-1-08U4-M5J(1-1/4)	C	No	Inside Pole	159.00 - 8.50	3	No Ice	0.00	1.08
						1/2" Ice	0.00	1.08
						1" Ice	0.00	1.08
LDF7-50A(1-5/8)	C	No	Inside Pole	150.00 - 3.50	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
FB-L98B-002-75000(3/8)	C	No	Inside Pole	150.00 - 3.50	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
WR-VG122ST-BRDA(7/16)	C	No	Inside Pole	150.00 - 3.50	2	No Ice	0.00	0.14
						1/2" Ice	0.00	0.14

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
2" innerduct conduit	C	No	Inside Pole	150.00 - 3.50	1	1" Ice	0.00	0.14
						No Ice	0.00	0.20
						1/2" Ice	0.00	0.20
						1" Ice	0.00	0.20

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	159.86-154.86	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.187	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.01
L2	154.86-149.86	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.02
L3	149.86-144.86	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.07
L4	144.86-139.86	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.07
L5	139.86-134.86	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.07
L6	134.86-129.86	A	0.000	0.000	0.000	0.000	0.05
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.07
L7	129.86-125.75	A	0.000	0.000	0.651	0.000	0.04
		B	0.000	0.000	0.805	0.000	0.00
		C	0.000	0.000	0.651	0.000	0.06
L8	125.75-125.50	A	0.000	0.000	0.130	0.000	0.00
		B	0.000	0.000	0.140	0.000	0.00
		C	0.000	0.000	0.130	0.000	0.00
L9	125.50-118.98	A	0.000	0.000	3.402	0.000	0.08
		B	0.000	0.000	3.646	0.000	0.00
		C	0.000	0.000	3.402	0.000	0.09
L10	118.98-117.98	A	0.000	0.000	0.729	0.000	0.01
		B	0.000	0.000	0.767	0.000	0.00
		C	0.000	0.000	0.729	0.000	0.01
L11	117.98-112.98	A	0.000	0.000	3.646	0.000	0.06
		B	0.000	0.000	3.833	0.000	0.00
		C	0.000	0.000	3.646	0.000	0.07
L12	112.98-107.98	A	0.000	0.000	3.646	0.000	0.06
		B	0.000	0.000	3.833	0.000	0.00
		C	0.000	0.000	3.646	0.000	0.07
L13	107.98-103.00	A	0.000	0.000	5.629	0.000	0.06
		B	0.000	0.000	3.816	0.000	0.00
		C	0.000	0.000	5.629	0.000	0.07
L14	103.00-102.75	A	0.000	0.000	0.432	0.000	0.00
		B	0.000	0.000	0.192	0.000	0.00
		C	0.000	0.000	0.432	0.000	0.00
L15	102.75-100.21	A	0.000	0.000	4.396	0.000	0.03
		B	0.000	0.000	3.941	0.000	0.00
		C	0.000	0.000	4.396	0.000	0.03
L16	100.21-95.69	A	0.000	0.000	7.817	0.000	0.06
		B	0.000	0.000	7.986	0.000	0.00
		C	0.000	0.000	7.817	0.000	0.06
L17	95.69-94.69	A	0.000	0.000	1.964	0.000	0.01
		B	0.000	0.000	2.001	0.000	0.00
		C	0.000	0.000	1.964	0.000	0.01
L18	94.69-93.50	A	0.000	0.000	2.944	0.000	0.02
		B	0.000	0.000	2.989	0.000	0.00
		C	0.000	0.000	2.944	0.000	0.02
L19	93.50-93.25	A	0.000	0.000	0.620	0.000	0.00
		B	0.000	0.000	0.629	0.000	0.00
		C	0.000	0.000	0.620	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L20	93.25-89.25	A	0.000	0.000	9.917	0.000	0.05
		B	0.000	0.000	10.067	0.000	0.00
		C	0.000	0.000	9.917	0.000	0.05
L21	89.25-89.00	A	0.000	0.000	0.661	0.000	0.00
		B	0.000	0.000	0.671	0.000	0.00
		C	0.000	0.000	0.661	0.000	0.00
L22	89.00-86.50	A	0.000	0.000	6.615	0.000	0.03
		B	0.000	0.000	6.708	0.000	0.00
		C	0.000	0.000	6.615	0.000	0.03
L23	86.50-86.25	A	0.000	0.000	0.661	0.000	0.00
		B	0.000	0.000	0.671	0.000	0.00
		C	0.000	0.000	0.661	0.000	0.00
L24	86.25-81.25	A	0.000	0.000	10.417	0.000	0.06
		B	0.000	0.000	10.604	0.000	0.00
		C	0.000	0.000	10.417	0.000	0.07
L25	81.25-76.25	A	0.000	0.000	9.705	0.000	0.06
		B	0.000	0.000	9.892	0.000	0.00
		C	0.000	0.000	9.705	0.000	0.07
L26	76.25-75.42	A	0.000	0.000	2.143	0.000	0.01
		B	0.000	0.000	2.174	0.000	0.00
		C	0.000	0.000	2.143	0.000	0.01
L27	75.42-75.17	A	0.000	0.000	0.643	0.000	0.00
		B	0.000	0.000	0.653	0.000	0.00
		C	0.000	0.000	0.643	0.000	0.00
L28	75.17-70.17	A	0.000	0.000	12.865	0.000	0.06
		B	0.000	0.000	13.052	0.000	0.00
		C	0.000	0.000	12.865	0.000	0.07
L29	70.17-65.17	A	0.000	0.000	12.865	0.000	0.06
		B	0.000	0.000	13.052	0.000	0.00
		C	0.000	0.000	12.865	0.000	0.07
L30	65.17-60.17	A	0.000	0.000	12.865	0.000	0.06
		B	0.000	0.000	13.052	0.000	0.00
		C	0.000	0.000	12.865	0.000	0.07
L31	60.17-59.50	A	0.000	0.000	1.716	0.000	0.01
		B	0.000	0.000	1.741	0.000	0.00
		C	0.000	0.000	1.716	0.000	0.01
L32	59.50-59.25	A	0.000	0.000	0.643	0.000	0.00
		B	0.000	0.000	0.653	0.000	0.00
		C	0.000	0.000	0.643	0.000	0.00
L33	59.25-54.25	A	0.000	0.000	12.865	0.000	0.06
		B	0.000	0.000	13.802	0.000	0.00
		C	0.000	0.000	12.865	0.000	0.07
L34	54.25-53.00	A	0.000	0.000	3.216	0.000	0.02
		B	0.000	0.000	4.513	0.000	0.00
		C	0.000	0.000	3.216	0.000	0.02
L35	53.00-52.75	A	0.000	0.000	0.643	0.000	0.00
		B	0.000	0.000	0.903	0.000	0.00
		C	0.000	0.000	0.643	0.000	0.00
L36	52.75-47.06	A	0.000	0.000	14.638	0.000	0.07
		B	0.000	0.000	20.401	0.000	0.00
		C	0.000	0.000	14.638	0.000	0.08
L37	47.06-46.06	A	0.000	0.000	2.573	0.000	0.01
		B	0.000	0.000	2.610	0.000	0.00
		C	0.000	0.000	2.573	0.000	0.01
L38	46.06-41.06	A	0.000	0.000	12.865	0.000	0.06
		B	0.000	0.000	13.052	0.000	0.00
		C	0.000	0.000	12.865	0.000	0.07
L39	41.06-39.33	A	0.000	0.000	5.245	0.000	0.02
		B	0.000	0.000	5.310	0.000	0.00
		C	0.000	0.000	5.245	0.000	0.02
L40	39.33-39.08	A	0.000	0.000	0.813	0.000	0.00
		B	0.000	0.000	0.822	0.000	0.00
		C	0.000	0.000	0.813	0.000	0.00
L41	39.08-37.75	A	0.000	0.000	4.322	0.000	0.02
		B	0.000	0.000	4.372	0.000	0.00
		C	0.000	0.000	4.322	0.000	0.02
L42	37.75-37.50	A	0.000	0.000	0.813	0.000	0.00
		B	0.000	0.000	0.822	0.000	0.00
		C	0.000	0.000	0.813	0.000	0.00
L43	37.50-32.50	A	0.000	0.000	13.485	0.000	0.06

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	13.673	0.000	0.00
		C	0.000	0.000	13.485	0.000	0.07
L44	32.50-29.75	A	0.000	0.000	7.076	0.000	0.03
		B	0.000	0.000	7.179	0.000	0.00
		C	0.000	0.000	7.076	0.000	0.04
L45	29.75-29.50	A	0.000	0.000	0.643	0.000	0.00
		B	0.000	0.000	0.653	0.000	0.00
		C	0.000	0.000	0.643	0.000	0.00
L46	29.50-24.50	A	0.000	0.000	13.573	0.000	0.06
		B	0.000	0.000	13.052	0.000	0.00
		C	0.000	0.000	12.865	0.000	0.07
L47	24.50-21.25	A	0.000	0.000	12.966	0.000	0.04
		B	0.000	0.000	8.484	0.000	0.00
		C	0.000	0.000	8.362	0.000	0.04
L48	21.25-21.00	A	0.000	0.000	0.997	0.000	0.00
		B	0.000	0.000	0.653	0.000	0.00
		C	0.000	0.000	0.643	0.000	0.00
L49	21.00-20.00	A	0.000	0.000	3.990	0.000	0.01
		B	0.000	0.000	2.610	0.000	0.00
		C	0.000	0.000	2.573	0.000	0.01
L50	20.00-19.75	A	0.000	0.000	0.997	0.000	0.00
		B	0.000	0.000	0.757	0.000	0.00
		C	0.000	0.000	0.747	0.000	0.00
L51	19.75-17.00	A	0.000	0.000	10.971	0.000	0.03
		B	0.000	0.000	8.324	0.000	0.00
		C	0.000	0.000	8.221	0.000	0.04
L52	17.00-16.75	A	0.000	0.000	0.997	0.000	0.00
		B	0.000	0.000	0.757	0.000	0.00
		C	0.000	0.000	0.747	0.000	0.00
L53	16.75-11.75	A	0.000	0.000	16.698	0.000	0.06
		B	0.000	0.000	15.135	0.000	0.00
		C	0.000	0.000	14.948	0.000	0.07
L54	11.75-6.75	A	0.000	0.000	14.948	0.000	0.04
		B	0.000	0.000	15.051	0.000	0.00
		C	0.000	0.000	14.948	0.000	0.06
L55	6.75-1.75	A	0.000	0.000	14.948	0.000	0.00
		B	0.000	0.000	14.948	0.000	0.00
		C	0.000	0.000	14.948	0.000	0.03
L56	1.75-0.00	A	0.000	0.000	4.893	0.000	0.00
		B	0.000	0.000	4.893	0.000	0.00
		C	0.000	0.000	4.893	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	159.86-154.86	A	1.754	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	1.940	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.01
L2	154.86-149.86	A	1.748	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	1.935	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.02
L3	149.86-144.86	A	1.742	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	1.930	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.07
L4	144.86-139.86	A	1.736	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	1.924	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.07
L5	139.86-134.86	A	1.730	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	1.917	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.07
L6	134.86-129.86	A	1.723	0.000	0.000	0.000	0.000	0.05
		B		0.000	0.000	1.911	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.07
L7	129.86-125.75	A	1.717	0.000	0.000	0.928	0.000	0.05
		B		0.000	0.000	2.493	0.000	0.03

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	0.928	0.000	0.07
L8	125.75-125.50	A	1.715	0.000	0.000	0.185	0.000	0.01
		B		0.000	0.000	0.281	0.000	0.00
		C		0.000	0.000	0.185	0.000	0.01
L9	125.50-118.98	A	1.710	0.000	0.000	4.844	0.000	0.15
		B		0.000	0.000	7.319	0.000	0.10
		C		0.000	0.000	4.844	0.000	0.15
L10	118.98-117.98	A	1.705	0.000	0.000	1.071	0.000	0.02
		B		0.000	0.000	1.451	0.000	0.02
		C		0.000	0.000	1.071	0.000	0.03
L11	117.98-112.98	A	1.700	0.000	0.000	5.346	0.000	0.12
		B		0.000	0.000	7.234	0.000	0.08
		C		0.000	0.000	5.346	0.000	0.13
L12	112.98-107.98	A	1.693	0.000	0.000	5.338	0.000	0.12
		B		0.000	0.000	7.219	0.000	0.08
		C		0.000	0.000	5.338	0.000	0.13
L13	107.98-103.00	A	1.685	0.000	0.000	7.981	0.000	0.15
		B		0.000	0.000	7.171	0.000	0.08
		C		0.000	0.000	7.981	0.000	0.15
L14	103.00-102.75	A	1.681	0.000	0.000	0.600	0.000	0.01
		B		0.000	0.000	0.360	0.000	0.00
		C		0.000	0.000	0.600	0.000	0.01
L15	102.75-100.21	A	1.678	0.000	0.000	6.102	0.000	0.10
		B		0.000	0.000	6.316	0.000	0.07
		C		0.000	0.000	6.102	0.000	0.10
L16	100.21-95.69	A	1.672	0.000	0.000	10.841	0.000	0.17
		B		0.000	0.000	12.522	0.000	0.13
		C		0.000	0.000	10.841	0.000	0.17
L17	95.69-94.69	A	1.668	0.000	0.000	2.692	0.000	0.04
		B		0.000	0.000	3.064	0.000	0.03
		C		0.000	0.000	2.692	0.000	0.04
L18	94.69-93.50	A	1.666	0.000	0.000	3.962	0.000	0.06
		B		0.000	0.000	4.402	0.000	0.05
		C		0.000	0.000	3.962	0.000	0.06
L19	93.50-93.25	A	1.664	0.000	0.000	0.834	0.000	0.01
		B		0.000	0.000	0.927	0.000	0.01
		C		0.000	0.000	0.834	0.000	0.01
L20	93.25-89.25	A	1.661	0.000	0.000	13.335	0.000	0.19
		B		0.000	0.000	14.814	0.000	0.16
		C		0.000	0.000	13.335	0.000	0.20
L21	89.25-89.00	A	1.657	0.000	0.000	0.875	0.000	0.01
		B		0.000	0.000	0.967	0.000	0.01
		C		0.000	0.000	0.875	0.000	0.01
L22	89.00-86.50	A	1.654	0.000	0.000	8.743	0.000	0.12
		B		0.000	0.000	9.664	0.000	0.10
		C		0.000	0.000	8.743	0.000	0.13
L23	86.50-86.25	A	1.652	0.000	0.000	0.874	0.000	0.01
		B		0.000	0.000	0.966	0.000	0.01
		C		0.000	0.000	0.874	0.000	0.01
L24	86.25-81.25	A	1.646	0.000	0.000	13.946	0.000	0.20
		B		0.000	0.000	15.780	0.000	0.16
		C		0.000	0.000	13.946	0.000	0.21
L25	81.25-76.25	A	1.636	0.000	0.000	13.086	0.000	0.19
		B		0.000	0.000	14.910	0.000	0.15
		C		0.000	0.000	13.086	0.000	0.20
L26	76.25-75.42	A	1.630	0.000	0.000	2.958	0.000	0.04
		B		0.000	0.000	3.261	0.000	0.03
		C		0.000	0.000	2.958	0.000	0.04
L27	75.42-75.17	A	1.629	0.000	0.000	0.888	0.000	0.01
		B		0.000	0.000	0.978	0.000	0.01
		C		0.000	0.000	0.888	0.000	0.01
L28	75.17-70.17	A	1.623	0.000	0.000	17.734	0.000	0.24
		B		0.000	0.000	19.545	0.000	0.20
		C		0.000	0.000	17.734	0.000	0.25
L29	70.17-65.17	A	1.612	0.000	0.000	17.700	0.000	0.24
		B		0.000	0.000	19.499	0.000	0.20
		C		0.000	0.000	17.700	0.000	0.25
L30	65.17-60.17	A	1.599	0.000	0.000	17.663	0.000	0.24
		B		0.000	0.000	19.449	0.000	0.20
		C		0.000	0.000	17.663	0.000	0.24

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L31	60.17-59.50	A	1.592	0.000	0.000	2.353	0.000	0.03
		B		0.000	0.000	2.591	0.000	0.03
		C		0.000	0.000	2.353	0.000	0.03
L32	59.50-59.25	A	1.591	0.000	0.000	0.882	0.000	0.01
		B		0.000	0.000	0.971	0.000	0.01
		C		0.000	0.000	0.882	0.000	0.01
L33	59.25-54.25	A	1.584	0.000	0.000	17.615	0.000	0.24
		B		0.000	0.000	20.374	0.000	0.20
		C		0.000	0.000	17.615	0.000	0.24
L34	54.25-53.00	A	1.575	0.000	0.000	4.397	0.000	0.06
		B		0.000	0.000	6.481	0.000	0.06
		C		0.000	0.000	4.397	0.000	0.06
L35	53.00-52.75	A	1.572	0.000	0.000	0.879	0.000	0.01
		B		0.000	0.000	1.296	0.000	0.01
		C		0.000	0.000	0.879	0.000	0.01
L36	52.75-47.06	A	1.563	0.000	0.000	19.974	0.000	0.27
		B		0.000	0.000	29.251	0.000	0.28
		C		0.000	0.000	19.974	0.000	0.27
L37	47.06-46.06	A	1.553	0.000	0.000	3.511	0.000	0.05
		B		0.000	0.000	3.861	0.000	0.04
		C		0.000	0.000	3.511	0.000	0.05
L38	46.06-41.06	A	1.542	0.000	0.000	17.491	0.000	0.23
		B		0.000	0.000	19.221	0.000	0.19
		C		0.000	0.000	17.491	0.000	0.24
L39	41.06-39.33	A	1.530	0.000	0.000	7.192	0.000	0.09
		B		0.000	0.000	7.787	0.000	0.08
		C		0.000	0.000	7.192	0.000	0.09
L40	39.33-39.08	A	1.526	0.000	0.000	1.118	0.000	0.01
		B		0.000	0.000	1.203	0.000	0.01
		C		0.000	0.000	1.118	0.000	0.01
L41	39.08-37.75	A	1.523	0.000	0.000	5.943	0.000	0.07
		B		0.000	0.000	6.398	0.000	0.06
		C		0.000	0.000	5.943	0.000	0.08
L42	37.75-37.50	A	1.520	0.000	0.000	1.116	0.000	0.01
		B		0.000	0.000	1.202	0.000	0.01
		C		0.000	0.000	1.116	0.000	0.01
L43	37.50-32.50	A	1.509	0.000	0.000	18.288	0.000	0.24
		B		0.000	0.000	19.985	0.000	0.19
		C		0.000	0.000	18.288	0.000	0.24
L44	32.50-29.75	A	1.491	0.000	0.000	9.536	0.000	0.12
		B		0.000	0.000	10.459	0.000	0.10
		C		0.000	0.000	9.536	0.000	0.13
L45	29.75-29.50	A	1.484	0.000	0.000	0.866	0.000	0.01
		B		0.000	0.000	0.949	0.000	0.01
		C		0.000	0.000	0.866	0.000	0.01
L46	29.50-24.50	A	1.470	0.000	0.000	18.130	0.000	0.23
		B		0.000	0.000	18.933	0.000	0.18
		C		0.000	0.000	17.275	0.000	0.23
L47	24.50-21.25	A	1.446	0.000	0.000	16.726	0.000	0.19
		B		0.000	0.000	12.243	0.000	0.11
		C		0.000	0.000	11.182	0.000	0.14
L48	21.25-21.00	A	1.435	0.000	0.000	1.284	0.000	0.01
		B		0.000	0.000	0.940	0.000	0.01
		C		0.000	0.000	0.858	0.000	0.01
L49	21.00-20.00	A	1.430	0.000	0.000	5.134	0.000	0.06
		B		0.000	0.000	3.755	0.000	0.03
		C		0.000	0.000	3.431	0.000	0.04
L50	20.00-19.75	A	1.426	0.000	0.000	1.283	0.000	0.01
		B		0.000	0.000	1.027	0.000	0.01
		C		0.000	0.000	0.946	0.000	0.01
L51	19.75-17.00	A	1.415	0.000	0.000	14.084	0.000	0.16
		B		0.000	0.000	11.274	0.000	0.10
		C		0.000	0.000	10.393	0.000	0.13
L52	17.00-16.75	A	1.403	0.000	0.000	1.278	0.000	0.01
		B		0.000	0.000	1.023	0.000	0.01
		C		0.000	0.000	0.943	0.000	0.01
L53	16.75-11.75	A	1.379	0.000	0.000	21.318	0.000	0.24
		B		0.000	0.000	20.374	0.000	0.18
		C		0.000	0.000	18.807	0.000	0.23
L54	11.75-6.75	A	1.321	0.000	0.000	18.910	0.000	0.19

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	19.491	0.000	0.16
		C		0.000	0.000	18.661	0.000	0.21
L55	6.75-1.75	A	1.222	0.000	0.000	18.613	0.000	0.14
		B		0.000	0.000	18.414	0.000	0.14
		C		0.000	0.000	18.414	0.000	0.17
L56	1.75-0.00	A	1.043	0.000	0.000	5.884	0.000	0.04
		B		0.000	0.000	5.845	0.000	0.04
		C		0.000	0.000	5.845	0.000	0.04

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	159.86-154.86	0.0478	-0.0276	0.3448	-0.1991
L2	154.86-149.86	0.0478	-0.0276	0.3507	-0.2025
L3	149.86-144.86	0.0478	-0.0276	0.3559	-0.2055
L4	144.86-139.86	0.0478	-0.0276	0.3606	-0.2082
L5	139.86-134.86	0.0478	-0.0276	0.3647	-0.2106
L6	134.86-129.86	0.0478	-0.0276	0.3684	-0.2127
L7	129.86-125.75	0.0388	-0.0224	0.2963	-0.1711
L8	125.75-125.50	0.0273	-0.0158	0.2047	-0.1182
L9	125.50-118.98	0.0277	-0.0160	0.2078	-0.1200
L10	118.98-117.98	0.0239	-0.0138	0.1756	-0.1014
L11	117.98-112.98	0.0242	-0.0140	0.1778	-0.1026
L12	112.98-107.98	0.0247	-0.0143	0.1819	-0.1050
L13	107.98-103.00	-0.2159	0.1247	-0.0764	0.0441
L14	103.00-102.75	-0.4665	0.2694	-0.3495	0.2018
L15	102.75-100.21	-0.0777	0.0449	0.0255	-0.0147
L16	100.21-95.69	0.0158	-0.0091	0.1175	-0.0678
L17	95.69-94.69	0.0146	-0.0084	0.1086	-0.0627
L18	94.69-93.50	0.0124	-0.0072	0.0930	-0.0537
L19	93.50-93.25	0.0124	-0.0072	0.0933	-0.0539
L20	93.25-89.25	0.0126	-0.0073	0.0943	-0.0544
L21	89.25-89.00	0.0121	-0.0070	0.0918	-0.0530
L22	89.00-86.50	0.0122	-0.0070	0.0924	-0.0534
L23	86.50-86.25	0.0123	-0.0071	0.0931	-0.0537
L24	86.25-81.25	0.0148	-0.0085	0.1111	-0.0642
L25	81.25-76.25	0.0159	-0.0092	0.1185	-0.0684
L26	76.25-75.42	0.0132	-0.0076	0.0962	-0.0555
L27	75.42-75.17	0.0132	-0.0076	0.0964	-0.0556
L28	75.17-70.17	0.0134	-0.0077	0.0974	-0.0562
L29	70.17-65.17	0.0137	-0.0079	0.0993	-0.0574
L30	65.17-60.17	0.0140	-0.0081	0.1012	-0.0584
L31	60.17-59.50	0.0142	-0.0082	0.1022	-0.0590
L32	59.50-59.25	0.0142	-0.0082	0.1023	-0.0591
L33	59.25-54.25	0.0723	-0.0417	0.1602	-0.0925
L34	54.25-53.00	0.3739	-0.2158	0.4579	-0.2644
L35	53.00-52.75	0.3750	-0.2165	0.4593	-0.2652
L36	52.75-47.06	0.3710	-0.2142	0.4565	-0.2636
L37	47.06-46.06	0.0148	-0.0085	0.1057	-0.0610
L38	46.06-41.06	0.0149	-0.0086	0.1060	-0.0612
L39	41.06-39.33	0.0135	-0.0078	0.0941	-0.0543
L40	39.33-39.08	0.0128	-0.0074	0.0892	-0.0515
L41	39.08-37.75	0.0129	-0.0074	0.0893	-0.0516
L42	37.75-37.50	0.0129	-0.0075	0.0895	-0.0517
L43	37.50-32.50	0.0149	-0.0086	0.1043	-0.0602
L44	32.50-29.75	0.0156	-0.0090	0.1089	-0.0629
L45	29.75-29.50	0.0157	-0.0090	0.1091	-0.0630
L46	29.50-24.50	-0.0452	-0.0441	0.0507	-0.0957
L47	24.50-21.25	-0.5356	-0.3257	-0.4258	-0.3596
L48	21.25-21.00	-0.5387	-0.3276	-0.4291	-0.3616
L49	21.00-20.00	-0.5398	-0.3283	-0.4303	-0.3624
L50	20.00-19.75	-0.3530	-0.2195	-0.3051	-0.2854
L51	19.75-17.00	-0.3548	-0.2206	-0.3069	-0.2864
L52	17.00-16.75	-0.3565	-0.2217	-0.3086	-0.2873

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L53	16.75-11.75	-0.1215	-0.0869	-0.0608	-0.1495
L54	11.75-6.75	0.0083	-0.0048	0.0384	-0.0418
L55	6.75-1.75	0.0000	0.0000	-0.0142	-0.0082
L56	1.75-0.00	0.0000	0.0000	-0.0086	-0.0050

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	9	Safety Line 3/8	154.86 - 159.85	1.0000	1.0000
L2	9	Safety Line 3/8	149.86 - 154.86	1.0000	1.0000
L3	9	Safety Line 3/8	144.86 - 149.86	1.0000	1.0000
L4	9	Safety Line 3/8	139.86 - 144.86	1.0000	1.0000
L5	9	Safety Line 3/8	134.86 - 139.86	1.0000	1.0000
L6	9	Safety Line 3/8	129.86 - 134.86	1.0000	1.0000
L7	9	Safety Line 3/8	125.75 - 129.86	1.0000	1.0000
L7	23	PL1.25x3.125	125.75 - 127.00	1.0000	1.0000
L7	24	PL1.25x3.125	125.75 - 127.00	1.0000	1.0000
L7	25	PL1.25x3.125	125.75 - 127.00	1.0000	1.0000
L8	9	Safety Line 3/8	125.50 - 125.75	1.0000	1.0000
L8	23	PL1.25x3.125	125.50 - 125.75	1.0000	1.0000
L8	24	PL1.25x3.125	125.50 - 125.75	1.0000	1.0000
L8	25	PL1.25x3.125	125.50 - 125.75	1.0000	1.0000
L9	9	Safety Line 3/8	118.98 - 125.50	1.0000	1.0000
L9	20	PL1.25x4.375	118.98 - 119.00	1.0000	1.0000
L9	21	PL1.25x4.375	118.98 - 119.00	1.0000	1.0000
L9	22	PL1.25x4.375	118.98 - 119.00	1.0000	1.0000
L9	23	PL1.25x3.125	119.00 - 125.50	1.0000	1.0000
L9	24	PL1.25x3.125	119.00 - 125.50	1.0000	1.0000
L9	25	PL1.25x3.125	119.00 - 125.50	1.0000	1.0000
L11	9	Safety Line 3/8	112.98 - 117.98	1.0000	1.0000
L11	20	PL1.25x4.375	112.98 - 117.98	1.0000	1.0000
L11	21	PL1.25x4.375	112.98 - 117.98	1.0000	1.0000
L11	22	PL1.25x4.375	112.98 - 117.98	1.0000	1.0000
L12	9	Safety Line 3/8	107.98 - 112.98	1.0000	1.0000
L12	20	PL1.25x4.375	107.98 - 112.98	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L12	21	PL1.25x4.375	107.98 - 112.98	1.0000	1.0000
L12	22	PL1.25x4.375	107.98 - 112.98	1.0000	1.0000
L13	9	Safety Line 3/8	103.00 - 107.98	1.0000	1.0000
L13	20	PL1.25x4.375	103.00 - 107.98	1.0000	1.0000
L13	21	PL1.25x4.375	103.00 - 107.98	1.0000	1.0000
L13	22	PL1.25x4.375	103.00 - 107.98	1.0000	1.0000
L13	29	CCI-SFP-060100	103.00 - 105.00	1.0000	1.0000
L13	30	CCI-SFP-060100	103.00 - 105.00	1.0000	1.0000
L14	9	Safety Line 3/8	102.75 - 103.00	1.0000	1.0000
L14	20	PL1.25x4.375	102.75 - 103.00	1.0000	1.0000
L14	21	PL1.25x4.375	102.75 - 103.00	1.0000	1.0000
L14	22	PL1.25x4.375	102.75 - 103.00	1.0000	1.0000
L14	29	CCI-SFP-060100	102.75 - 103.00	1.0000	1.0000
L14	30	CCI-SFP-060100	102.75 - 103.00	1.0000	1.0000
L15	9	Safety Line 3/8	100.21 - 102.75	1.0000	1.0000
L15	20	PL1.25x4.375	100.21 - 102.75	1.0000	1.0000
L15	21	PL1.25x4.375	100.21 - 102.75	1.0000	1.0000
L15	22	PL1.25x4.375	100.21 - 102.75	1.0000	1.0000
L15	29	CCI-SFP-060100	100.21 - 102.75	1.0000	1.0000
L15	30	CCI-SFP-060100	100.21 - 102.75	1.0000	1.0000
L15	32	CCI-SFP-060100	100.21 - 102.20	1.0000	1.0000
L16	9	Safety Line 3/8	95.69 - 100.21	1.0000	1.0000
L16	20	PL1.25x4.375	95.69 - 100.21	1.0000	1.0000
L16	21	PL1.25x4.375	95.69 - 100.21	1.0000	1.0000
L16	22	PL1.25x4.375	95.69 - 100.21	1.0000	1.0000
L16	29	CCI-SFP-060100	95.69 - 100.21	1.0000	1.0000
L16	30	CCI-SFP-060100	95.69 - 100.21	1.0000	1.0000
L16	32	CCI-SFP-060100	95.69 - 100.21	1.0000	1.0000
L16	33	CCI-SFP-045100	95.69 - 95.00	1.0000	1.0000
L16	34	CCI-SFP-045100	95.69 - 95.00	1.0000	1.0000
L16	35	CCI-SFP-045100	95.69 - 95.00	1.0000	1.0000
L18	9	Safety Line 3/8	93.50 - 94.69	1.0000	1.0000
L18	20	PL1.25x4.375	93.50 - 94.69	1.0000	1.0000
L18	21	PL1.25x4.375	93.50 - 94.69	1.0000	1.0000
L18	22	PL1.25x4.375	93.50 - 94.69	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L18	29	CCI-SFP-060100	93.50 - 94.69	1.0000	1.0000
L18	30	CCI-SFP-060100	93.50 - 94.69	1.0000	1.0000
L18	32	CCI-SFP-060100	93.50 - 94.69	1.0000	1.0000
L18	33	CCI-SFP-045100	93.50 - 94.69	1.0000	1.0000
L18	34	CCI-SFP-045100	93.50 - 94.69	1.0000	1.0000
L18	35	CCI-SFP-045100	93.50 - 94.69	1.0000	1.0000
L19	9	Safety Line 3/8	93.25 - 93.50	1.0000	1.0000
L19	20	PL1.25x4.375	93.25 - 93.50	1.0000	1.0000
L19	21	PL1.25x4.375	93.25 - 93.50	1.0000	1.0000
L19	22	PL1.25x4.375	93.25 - 93.50	1.0000	1.0000
L19	29	CCI-SFP-060100	93.25 - 93.50	1.0000	1.0000
L19	30	CCI-SFP-060100	93.25 - 93.50	1.0000	1.0000
L19	32	CCI-SFP-060100	93.25 - 93.50	1.0000	1.0000
L19	33	CCI-SFP-045100	93.25 - 93.50	1.0000	1.0000
L19	34	CCI-SFP-045100	93.25 - 93.50	1.0000	1.0000
L19	35	CCI-SFP-045100	93.25 - 93.50	1.0000	1.0000
L20	9	Safety Line 3/8	89.25 - 93.25	1.0000	1.0000
L20	20	PL1.25x4.375	89.25 - 93.25	1.0000	1.0000
L20	21	PL1.25x4.375	89.25 - 93.25	1.0000	1.0000
L20	22	PL1.25x4.375	89.25 - 93.25	1.0000	1.0000
L20	29	CCI-SFP-060100	89.25 - 93.25	1.0000	1.0000
L20	30	CCI-SFP-060100	89.25 - 93.25	1.0000	1.0000
L20	32	CCI-SFP-060100	89.25 - 93.25	1.0000	1.0000
L20	33	CCI-SFP-045100	89.25 - 93.25	1.0000	1.0000
L20	34	CCI-SFP-045100	89.25 - 93.25	1.0000	1.0000
L20	35	CCI-SFP-045100	89.25 - 93.25	1.0000	1.0000
L21	9	Safety Line 3/8	89.00 - 89.25	1.0000	1.0000
L21	17	PL1.25x5.375	89.00 - 89.25	1.0000	1.0000
L21	18	PL1.25x5.375	89.00 - 89.25	1.0000	1.0000
L21	19	PL1.25x5.375	89.00 - 89.25	1.0000	1.0000
L21	29	CCI-SFP-060100	89.00 - 89.25	1.0000	1.0000
L21	30	CCI-SFP-060100	89.00 - 89.25	1.0000	1.0000
L21	32	CCI-SFP-060100	89.00 - 89.25	1.0000	1.0000
L21	33	CCI-SFP-045100	89.00 - 89.25	1.0000	1.0000
L21	34	CCI-SFP-045100	89.00 - 89.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L21	35	CCI-SFP-045100	89.00 - 89.25	1.0000	1.0000
L22	9	Safety Line 3/8	86.50 - 89.00	1.0000	1.0000
L22	17	PL1.25x5.375	86.50 - 89.00	1.0000	1.0000
L22	18	PL1.25x5.375	86.50 - 89.00	1.0000	1.0000
L22	19	PL1.25x5.375	86.50 - 89.00	1.0000	1.0000
L22	29	CCI-SFP-060100	86.50 - 89.00	1.0000	1.0000
L22	30	CCI-SFP-060100	86.50 - 89.00	1.0000	1.0000
L22	32	CCI-SFP-060100	86.50 - 89.00	1.0000	1.0000
L22	33	CCI-SFP-045100	86.50 - 89.00	1.0000	1.0000
L22	34	CCI-SFP-045100	86.50 - 89.00	1.0000	1.0000
L22	35	CCI-SFP-045100	86.50 - 89.00	1.0000	1.0000
L23	9	Safety Line 3/8	86.25 - 86.50	1.0000	1.0000
L23	17	PL1.25x5.375	86.25 - 86.50	1.0000	1.0000
L23	18	PL1.25x5.375	86.25 - 86.50	1.0000	1.0000
L23	19	PL1.25x5.375	86.25 - 86.50	1.0000	1.0000
L23	29	CCI-SFP-060100	86.25 - 86.50	1.0000	1.0000
L23	30	CCI-SFP-060100	86.25 - 86.50	1.0000	1.0000
L23	32	CCI-SFP-060100	86.25 - 86.50	1.0000	1.0000
L23	33	CCI-SFP-045100	86.25 - 86.50	1.0000	1.0000
L23	34	CCI-SFP-045100	86.25 - 86.50	1.0000	1.0000
L23	35	CCI-SFP-045100	86.25 - 86.50	1.0000	1.0000
L24	9	Safety Line 3/8	81.25 - 86.25	1.0000	1.0000
L24	17	PL1.25x5.375	81.25 - 86.25	1.0000	1.0000
L24	18	PL1.25x5.375	81.25 - 86.25	1.0000	1.0000
L24	19	PL1.25x5.375	81.25 - 86.25	1.0000	1.0000
L24	29	CCI-SFP-060100	81.25 - 86.25	1.0000	1.0000
L24	30	CCI-SFP-060100	81.25 - 86.25	1.0000	1.0000
L24	32	CCI-SFP-060100	81.25 - 86.25	1.0000	1.0000
L24	33	CCI-SFP-045100	85.00 - 86.25	1.0000	1.0000
L24	34	CCI-SFP-045100	85.00 - 86.25	1.0000	1.0000
L24	35	CCI-SFP-045100	85.00 - 86.25	1.0000	1.0000
L25	9	Safety Line 3/8	76.25 - 81.25	1.0000	1.0000
L25	11	Aero Channel MP303	76.25 - 76.58	1.0000	1.0000
L25	12	Aero Channel MP303	76.25 - 76.58	1.0000	1.0000
L25	13	Aero Channel MP303	76.25 - 76.58	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L25	17	PL1.25x5.375	76.25 - 81.25	1.0000	1.0000
L25	18	PL1.25x5.375	76.25 - 81.25	1.0000	1.0000
L25	19	PL1.25x5.375	76.25 - 81.25	1.0000	1.0000
L25	29	CCI-SFP-060100	76.25 - 81.25	1.0000	1.0000
L25	30	CCI-SFP-060100	76.25 - 81.25	1.0000	1.0000
L25	32	CCI-SFP-060100	76.25 - 81.25	1.0000	1.0000
L26	9	Safety Line 3/8	75.42 - 76.25	1.0000	1.0000
L26	11	Aero Channel MP303	75.42 - 76.25	1.0000	1.0000
L26	12	Aero Channel MP303	75.42 - 76.25	1.0000	1.0000
L26	13	Aero Channel MP303	75.42 - 76.25	1.0000	1.0000
L26	17	PL1.25x5.375	75.42 - 76.25	1.0000	1.0000
L26	18	PL1.25x5.375	75.42 - 76.25	1.0000	1.0000
L26	19	PL1.25x5.375	75.42 - 76.25	1.0000	1.0000
L26	29	CCI-SFP-060100	75.42 - 76.25	1.0000	1.0000
L26	30	CCI-SFP-060100	75.42 - 76.25	1.0000	1.0000
L26	32	CCI-SFP-060100	75.42 - 76.25	1.0000	1.0000
L27	9	Safety Line 3/8	75.17 - 75.42	1.0000	1.0000
L27	11	Aero Channel MP303	75.17 - 75.42	1.0000	1.0000
L27	12	Aero Channel MP303	75.17 - 75.42	1.0000	1.0000
L27	13	Aero Channel MP303	75.17 - 75.42	1.0000	1.0000
L27	17	PL1.25x5.375	75.17 - 75.42	1.0000	1.0000
L27	18	PL1.25x5.375	75.17 - 75.42	1.0000	1.0000
L27	19	PL1.25x5.375	75.17 - 75.42	1.0000	1.0000
L27	29	CCI-SFP-060100	75.17 - 75.42	1.0000	1.0000
L27	30	CCI-SFP-060100	75.17 - 75.42	1.0000	1.0000
L27	32	CCI-SFP-060100	75.17 - 75.42	1.0000	1.0000
L28	9	Safety Line 3/8	70.17 - 75.17	1.0000	1.0000
L28	11	Aero Channel MP303	70.17 - 75.17	1.0000	1.0000
L28	12	Aero Channel MP303	70.17 - 75.17	1.0000	1.0000
L28	13	Aero Channel MP303	70.17 - 75.17	1.0000	1.0000
L28	17	PL1.25x5.375	70.17 - 75.17	1.0000	1.0000
L28	18	PL1.25x5.375	70.17 - 75.17	1.0000	1.0000
L28	19	PL1.25x5.375	70.17 - 75.17	1.0000	1.0000
L28	29	CCI-SFP-060100	70.17 - 75.17	1.0000	1.0000
L28	30	CCI-SFP-060100	70.17 - 75.17	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L28	32	CCI-SFP-060100	70.17 - 75.17	1.0000	1.0000
L29	9	Safety Line 3/8	65.17 - 70.17	1.0000	1.0000
L29	11	Aero Channel MP303	65.17 - 70.17	1.0000	1.0000
L29	12	Aero Channel MP303	65.17 - 70.17	1.0000	1.0000
L29	13	Aero Channel MP303	65.17 - 70.17	1.0000	1.0000
L29	17	PL1.25x5.375	65.17 - 70.17	1.0000	1.0000
L29	18	PL1.25x5.375	65.17 - 70.17	1.0000	1.0000
L29	19	PL1.25x5.375	65.17 - 70.17	1.0000	1.0000
L29	29	CCI-SFP-060100	65.17 - 70.17	1.0000	1.0000
L29	30	CCI-SFP-060100	65.17 - 70.17	1.0000	1.0000
L29	32	CCI-SFP-060100	65.17 - 70.17	1.0000	1.0000
L30	9	Safety Line 3/8	60.17 - 65.17	1.0000	1.0000
L30	11	Aero Channel MP303	60.17 - 65.17	1.0000	1.0000
L30	12	Aero Channel MP303	60.17 - 65.17	1.0000	1.0000
L30	13	Aero Channel MP303	60.17 - 65.17	1.0000	1.0000
L30	17	PL1.25x5.375	60.17 - 65.17	1.0000	1.0000
L30	18	PL1.25x5.375	60.17 - 65.17	1.0000	1.0000
L30	19	PL1.25x5.375	60.17 - 65.17	1.0000	1.0000
L30	29	CCI-SFP-060100	60.17 - 65.17	1.0000	1.0000
L30	30	CCI-SFP-060100	60.17 - 65.17	1.0000	1.0000
L30	32	CCI-SFP-060100	60.17 - 65.17	1.0000	1.0000
L31	9	Safety Line 3/8	59.50 - 60.17	1.0000	1.0000
L31	11	Aero Channel MP303	59.50 - 60.17	1.0000	1.0000
L31	12	Aero Channel MP303	59.50 - 60.17	1.0000	1.0000
L31	13	Aero Channel MP303	59.50 - 60.17	1.0000	1.0000
L31	17	PL1.25x5.375	59.50 - 60.17	1.0000	1.0000
L31	18	PL1.25x5.375	59.50 - 60.17	1.0000	1.0000
L31	19	PL1.25x5.375	59.50 - 60.17	1.0000	1.0000
L31	29	CCI-SFP-060100	59.50 - 60.17	1.0000	1.0000
L31	30	CCI-SFP-060100	59.50 - 60.17	1.0000	1.0000
L31	32	CCI-SFP-060100	59.50 - 60.17	1.0000	1.0000
L32	9	Safety Line 3/8	59.25 - 59.50	1.0000	1.0000
L32	11	Aero Channel MP303	59.25 - 59.50	1.0000	1.0000
L32	12	Aero Channel MP303	59.25 - 59.50	1.0000	1.0000
L32	13	Aero Channel MP303	59.25 - 59.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L32	17	PL1.25x5.375	59.25 - 59.50	1.0000	1.0000
L32	18	PL1.25x5.375	59.25 - 59.50	1.0000	1.0000
L32	19	PL1.25x5.375	59.25 - 59.50	1.0000	1.0000
L32	29	CCI-SFP-060100	59.25 - 59.50	1.0000	1.0000
L32	30	CCI-SFP-060100	59.25 - 59.50	1.0000	1.0000
L32	32	CCI-SFP-060100	59.25 - 59.50	1.0000	1.0000
L33	9	Safety Line 3/8	54.25 - 59.25	1.0000	1.0000
L33	11	Aero Channel MP303	54.25 - 59.25	1.0000	1.0000
L33	12	Aero Channel MP303	54.25 - 59.25	1.0000	1.0000
L33	13	Aero Channel MP303	54.25 - 59.25	1.0000	1.0000
L33	17	PL1.25x5.375	54.25 - 59.25	1.0000	1.0000
L33	18	PL1.25x5.375	54.25 - 59.25	1.0000	1.0000
L33	19	PL1.25x5.375	54.25 - 59.25	1.0000	1.0000
L33	29	CCI-SFP-060100	54.25 - 59.25	1.0000	1.0000
L33	30	CCI-SFP-060100	54.25 - 59.25	1.0000	1.0000
L33	31	CCI-SFP-060100	54.25 - 55.00	1.0000	1.0000
L33	32	CCI-SFP-060100	54.25 - 59.25	1.0000	1.0000
L34	9	Safety Line 3/8	53.00 - 54.25	1.0000	1.0000
L34	11	Aero Channel MP303	53.00 - 54.25	1.0000	1.0000
L34	12	Aero Channel MP303	53.00 - 54.25	1.0000	1.0000
L34	13	Aero Channel MP303	53.00 - 54.25	1.0000	1.0000
L34	17	PL1.25x5.375	53.00 - 54.25	1.0000	1.0000
L34	18	PL1.25x5.375	53.00 - 54.25	1.0000	1.0000
L34	19	PL1.25x5.375	53.00 - 54.25	1.0000	1.0000
L34	29	CCI-SFP-060100	53.00 - 54.25	1.0000	1.0000
L34	30	CCI-SFP-060100	53.00 - 54.25	1.0000	1.0000
L34	31	CCI-SFP-060100	53.00 - 54.25	1.0000	1.0000
L34	32	CCI-SFP-060100	53.00 - 54.25	1.0000	1.0000
L35	9	Safety Line 3/8	52.75 - 53.00	1.0000	1.0000
L35	11	Aero Channel MP303	52.75 - 53.00	1.0000	1.0000
L35	12	Aero Channel MP303	52.75 - 53.00	1.0000	1.0000
L35	13	Aero Channel MP303	52.75 - 53.00	1.0000	1.0000
L35	17	PL1.25x5.375	52.75 - 53.00	1.0000	1.0000
L35	18	PL1.25x5.375	52.75 - 53.00	1.0000	1.0000
L35	19	PL1.25x5.375	52.75 - 53.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L35	29	CCI-SFP-060100	52.75 - 53.00	1.0000	1.0000
L35	30	CCI-SFP-060100	52.75 - 53.00	1.0000	1.0000
L35	31	CCI-SFP-060100	52.75 - 53.00	1.0000	1.0000
L35	32	CCI-SFP-060100	52.75 - 53.00	1.0000	1.0000
L36	9	Safety Line 3/8	47.06 - 52.75	1.0000	1.0000
L36	11	Aero Channel MP303	47.06 - 52.75	1.0000	1.0000
L36	12	Aero Channel MP303	47.06 - 52.75	1.0000	1.0000
L36	13	Aero Channel MP303	47.06 - 52.75	1.0000	1.0000
L36	17	PL1.25x5.375	47.06 - 52.75	1.0000	1.0000
L36	18	PL1.25x5.375	47.06 - 52.75	1.0000	1.0000
L36	19	PL1.25x5.375	47.06 - 52.75	1.0000	1.0000
L36	29	CCI-SFP-060100	47.06 - 52.75	1.0000	1.0000
L36	30	CCI-SFP-060100	47.06 - 52.75	1.0000	1.0000
L36	31	CCI-SFP-060100	47.06 - 52.75	1.0000	1.0000
L36	32	CCI-SFP-060100	47.20 - 52.75	1.0000	1.0000
L38	9	Safety Line 3/8	41.06 - 46.06	1.0000	1.0000
L38	11	Aero Channel MP303	41.06 - 46.06	1.0000	1.0000
L38	12	Aero Channel MP303	41.06 - 46.06	1.0000	1.0000
L38	13	Aero Channel MP303	41.06 - 46.06	1.0000	1.0000
L38	17	PL1.25x5.375	41.06 - 46.06	1.0000	1.0000
L38	18	PL1.25x5.375	41.06 - 46.06	1.0000	1.0000
L38	19	PL1.25x5.375	41.06 - 46.06	1.0000	1.0000
L38	29	CCI-SFP-060100	41.06 - 46.06	1.0000	1.0000
L38	30	CCI-SFP-060100	41.06 - 46.06	1.0000	1.0000
L38	31	CCI-SFP-060100	41.06 - 46.06	1.0000	1.0000
L39	9	Safety Line 3/8	39.33 - 41.06	1.0000	1.0000
L39	11	Aero Channel MP303	39.33 - 41.06	1.0000	1.0000
L39	12	Aero Channel MP303	39.33 - 41.06	1.0000	1.0000
L39	13	Aero Channel MP303	39.33 - 41.06	1.0000	1.0000
L39	14	Aero Channel MP303	39.33 - 40.50	1.0000	1.0000
L39	15	Aero Channel MP303	39.33 - 40.50	1.0000	1.0000
L39	16	Aero Channel MP303	39.33 - 40.50	1.0000	1.0000
L39	17	PL1.25x5.375	39.33 - 41.06	1.0000	1.0000
L39	18	PL1.25x5.375	39.33 - 41.06	1.0000	1.0000
L39	19	PL1.25x5.375	39.33 - 41.06	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L39	29	CCI-SFP-060100	39.33 - 41.06	1.0000	1.0000
L39	30	CCI-SFP-060100	39.33 - 41.06	1.0000	1.0000
L39	31	CCI-SFP-060100	39.33 - 41.06	1.0000	1.0000
L40	9	Safety Line 3/8	39.08 - 39.33	1.0000	1.0000
L40	11	Aero Channel MP303	39.08 - 39.33	1.0000	1.0000
L40	12	Aero Channel MP303	39.08 - 39.33	1.0000	1.0000
L40	13	Aero Channel MP303	39.08 - 39.33	1.0000	1.0000
L40	14	Aero Channel MP303	39.08 - 39.33	1.0000	1.0000
L40	15	Aero Channel MP303	39.08 - 39.33	1.0000	1.0000
L40	16	Aero Channel MP303	39.08 - 39.33	1.0000	1.0000
L40	17	PL1.25x5.375	39.08 - 39.33	1.0000	1.0000
L40	18	PL1.25x5.375	39.08 - 39.33	1.0000	1.0000
L40	19	PL1.25x5.375	39.08 - 39.33	1.0000	1.0000
L40	29	CCI-SFP-060100	39.08 - 39.33	1.0000	1.0000
L40	30	CCI-SFP-060100	39.08 - 39.33	1.0000	1.0000
L40	31	CCI-SFP-060100	39.08 - 39.33	1.0000	1.0000
L41	9	Safety Line 3/8	37.75 - 39.08	1.0000	1.0000
L41	11	Aero Channel MP303	37.75 - 39.08	1.0000	1.0000
L41	12	Aero Channel MP303	37.75 - 39.08	1.0000	1.0000
L41	13	Aero Channel MP303	37.75 - 39.08	1.0000	1.0000
L41	14	Aero Channel MP303	37.75 - 39.08	1.0000	1.0000
L41	15	Aero Channel MP303	37.75 - 39.08	1.0000	1.0000
L41	16	Aero Channel MP303	37.75 - 39.08	1.0000	1.0000
L41	17	PL1.25x5.375	37.75 - 39.08	1.0000	1.0000
L41	18	PL1.25x5.375	37.75 - 39.08	1.0000	1.0000
L41	19	PL1.25x5.375	37.75 - 39.08	1.0000	1.0000
L41	29	CCI-SFP-060100	37.75 - 39.08	1.0000	1.0000
L41	30	CCI-SFP-060100	37.75 - 39.08	1.0000	1.0000
L41	31	CCI-SFP-060100	37.75 - 39.08	1.0000	1.0000
L42	9	Safety Line 3/8	37.50 - 37.75	1.0000	1.0000
L42	11	Aero Channel MP303	37.50 - 37.75	1.0000	1.0000
L42	12	Aero Channel MP303	37.50 - 37.75	1.0000	1.0000
L42	13	Aero Channel MP303	37.50 - 37.75	1.0000	1.0000
L42	14	Aero Channel MP303	37.50 - 37.75	1.0000	1.0000
L42	15	Aero Channel MP303	37.50 - 37.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L42	16	Aero Channel MP303	37.50 - 37.75	1.0000	1.0000
L42	17	PL1.25x5.375	37.50 - 37.75	1.0000	1.0000
L42	18	PL1.25x5.375	37.50 - 37.75	1.0000	1.0000
L42	19	PL1.25x5.375	37.50 - 37.75	1.0000	1.0000
L42	29	CCI-SFP-060100	37.50 - 37.75	1.0000	1.0000
L42	30	CCI-SFP-060100	37.50 - 37.75	1.0000	1.0000
L42	31	CCI-SFP-060100	37.50 - 37.75	1.0000	1.0000
L43	9	Safety Line 3/8	32.50 - 37.50	1.0000	1.0000
L43	11	Aero Channel MP303	36.58 - 37.50	1.0000	1.0000
L43	12	Aero Channel MP303	36.58 - 37.50	1.0000	1.0000
L43	13	Aero Channel MP303	36.58 - 37.50	1.0000	1.0000
L43	14	Aero Channel MP303	32.50 - 37.50	1.0000	1.0000
L43	15	Aero Channel MP303	32.50 - 37.50	1.0000	1.0000
L43	16	Aero Channel MP303	32.50 - 37.50	1.0000	1.0000
L43	17	PL1.25x5.375	32.50 - 37.50	1.0000	1.0000
L43	18	PL1.25x5.375	32.50 - 37.50	1.0000	1.0000
L43	19	PL1.25x5.375	32.50 - 37.50	1.0000	1.0000
L43	29	CCI-SFP-060100	32.50 - 37.50	1.0000	1.0000
L43	30	CCI-SFP-060100	32.50 - 37.50	1.0000	1.0000
L43	31	CCI-SFP-060100	32.50 - 37.50	1.0000	1.0000
L44	9	Safety Line 3/8	29.75 - 32.50	1.0000	1.0000
L44	14	Aero Channel MP303	29.75 - 32.50	1.0000	1.0000
L44	15	Aero Channel MP303	29.75 - 32.50	1.0000	1.0000
L44	16	Aero Channel MP303	29.75 - 32.50	1.0000	1.0000
L44	17	PL1.25x5.375	29.75 - 32.50	1.0000	1.0000
L44	18	PL1.25x5.375	29.75 - 32.50	1.0000	1.0000
L44	19	PL1.25x5.375	29.75 - 32.50	1.0000	1.0000
L44	29	CCI-SFP-060100	29.75 - 32.50	1.0000	1.0000
L44	30	CCI-SFP-060100	29.75 - 32.50	1.0000	1.0000
L44	31	CCI-SFP-060100	29.75 - 32.50	1.0000	1.0000
L45	9	Safety Line 3/8	29.50 - 29.75	1.0000	1.0000
L45	14	Aero Channel MP303	29.50 - 29.75	1.0000	1.0000
L45	15	Aero Channel MP303	29.50 - 29.75	1.0000	1.0000
L45	16	Aero Channel MP303	29.50 - 29.75	1.0000	1.0000
L45	17	PL1.25x5.375	29.50 - 29.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L45	18	PL1.25x5.375	29.50 - 29.75	1.0000	1.0000
L45	19	PL1.25x5.375	29.50 - 29.75	1.0000	1.0000
L45	29	CCI-SFP-060100	29.50 - 29.75	1.0000	1.0000
L45	30	CCI-SFP-060100	29.50 - 29.75	1.0000	1.0000
L45	31	CCI-SFP-060100	29.50 - 29.75	1.0000	1.0000
L46	9	Safety Line 3/8	24.50 - 29.50	1.0000	1.0000
L46	14	Aero Channel MP303	24.50 - 29.50	1.0000	1.0000
L46	15	Aero Channel MP303	24.50 - 29.50	1.0000	1.0000
L46	16	Aero Channel MP303	24.50 - 29.50	1.0000	1.0000
L46	17	PL1.25x5.375	24.50 - 29.50	1.0000	1.0000
L46	18	PL1.25x5.375	24.50 - 29.50	1.0000	1.0000
L46	19	PL1.25x5.375	24.50 - 29.50	1.0000	1.0000
L46	26	CCI-SFP-085125	24.50 - 25.00	1.0000	1.0000
L46	29	CCI-SFP-060100	24.50 - 29.50	1.0000	1.0000
L46	30	CCI-SFP-060100	24.50 - 29.50	1.0000	1.0000
L46	31	CCI-SFP-060100	24.50 - 29.50	1.0000	1.0000
L47	9	Safety Line 3/8	21.25 - 24.50	1.0000	1.0000
L47	14	Aero Channel MP303	21.25 - 24.50	1.0000	1.0000
L47	15	Aero Channel MP303	21.25 - 24.50	1.0000	1.0000
L47	16	Aero Channel MP303	21.25 - 24.50	1.0000	1.0000
L47	17	PL1.25x5.375	21.25 - 24.50	1.0000	1.0000
L47	18	PL1.25x5.375	21.25 - 24.50	1.0000	1.0000
L47	19	PL1.25x5.375	21.25 - 24.50	1.0000	1.0000
L47	26	CCI-SFP-085125	21.25 - 24.50	1.0000	1.0000
L47	29	CCI-SFP-060100	21.25 - 24.50	1.0000	1.0000
L47	30	CCI-SFP-060100	21.25 - 24.50	1.0000	1.0000
L47	31	CCI-SFP-060100	21.25 - 24.50	1.0000	1.0000
L48	9	Safety Line 3/8	21.00 - 21.25	1.0000	1.0000
L48	14	Aero Channel MP303	21.00 - 21.25	1.0000	1.0000
L48	15	Aero Channel MP303	21.00 - 21.25	1.0000	1.0000
L48	16	Aero Channel MP303	21.00 - 21.25	1.0000	1.0000
L48	17	PL1.25x5.375	21.00 - 21.25	1.0000	1.0000
L48	18	PL1.25x5.375	21.00 - 21.25	1.0000	1.0000
L48	19	PL1.25x5.375	21.00 - 21.25	1.0000	1.0000
L48	26	CCI-SFP-085125	21.00 - 21.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L48	29	CCI-SFP-060100	21.00 - 21.25	1.0000	1.0000
L48	30	CCI-SFP-060100	21.00 - 21.25	1.0000	1.0000
L48	31	CCI-SFP-060100	21.00 - 21.25	1.0000	1.0000
L49	9	Safety Line 3/8	20.00 - 21.00	1.0000	1.0000
L49	14	Aero Channel MP303	20.00 - 21.00	1.0000	1.0000
L49	15	Aero Channel MP303	20.00 - 21.00	1.0000	1.0000
L49	16	Aero Channel MP303	20.00 - 21.00	1.0000	1.0000
L49	17	PL1.25x5.375	20.00 - 21.00	1.0000	1.0000
L49	18	PL1.25x5.375	20.00 - 21.00	1.0000	1.0000
L49	19	PL1.25x5.375	20.00 - 21.00	1.0000	1.0000
L49	26	CCI-SFP-085125	20.00 - 21.00	1.0000	1.0000
L49	29	CCI-SFP-060100	20.00 - 21.00	1.0000	1.0000
L49	30	CCI-SFP-060100	20.00 - 21.00	1.0000	1.0000
L49	31	CCI-SFP-060100	20.00 - 21.00	1.0000	1.0000
L50	9	Safety Line 3/8	19.75 - 20.00	1.0000	1.0000
L50	14	Aero Channel MP303	19.75 - 20.00	1.0000	1.0000
L50	15	Aero Channel MP303	19.75 - 20.00	1.0000	1.0000
L50	16	Aero Channel MP303	19.75 - 20.00	1.0000	1.0000
L50	17	PL1.25x5.375	19.75 - 20.00	1.0000	1.0000
L50	18	PL1.25x5.375	19.75 - 20.00	1.0000	1.0000
L50	19	PL1.25x5.375	19.75 - 20.00	1.0000	1.0000
L50	26	CCI-SFP-085125	19.75 - 20.00	1.0000	1.0000
L50	27	CCI-SFP-085125	19.75 - 20.00	1.0000	1.0000
L50	28	CCI-SFP-085125	19.75 - 20.00	1.0000	1.0000
L50	29	CCI-SFP-060100	19.75 - 20.00	1.0000	1.0000
L51	9	Safety Line 3/8	17.00 - 19.75	1.0000	1.0000
L51	14	Aero Channel MP303	17.00 - 19.75	1.0000	1.0000
L51	15	Aero Channel MP303	17.00 - 19.75	1.0000	1.0000
L51	16	Aero Channel MP303	17.00 - 19.75	1.0000	1.0000
L51	17	PL1.25x5.375	17.00 - 19.75	1.0000	1.0000
L51	18	PL1.25x5.375	17.00 - 19.75	1.0000	1.0000
L51	19	PL1.25x5.375	17.00 - 19.75	1.0000	1.0000
L51	26	CCI-SFP-085125	17.00 - 19.75	1.0000	1.0000
L51	27	CCI-SFP-085125	17.00 - 19.75	1.0000	1.0000
L51	28	CCI-SFP-085125	17.00 - 19.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L51	29	CCI-SFP-060100	17.00 - 19.75	1.0000	1.0000
L52	9	Safety Line 3/8	16.75 - 17.00	1.0000	1.0000
L52	14	Aero Channel MP303	16.75 - 17.00	1.0000	1.0000
L52	15	Aero Channel MP303	16.75 - 17.00	1.0000	1.0000
L52	16	Aero Channel MP303	16.75 - 17.00	1.0000	1.0000
L52	17	PL1.25x5.375	16.75 - 17.00	1.0000	1.0000
L52	18	PL1.25x5.375	16.75 - 17.00	1.0000	1.0000
L52	19	PL1.25x5.375	16.75 - 17.00	1.0000	1.0000
L52	26	CCI-SFP-085125	16.75 - 17.00	1.0000	1.0000
L52	27	CCI-SFP-085125	16.75 - 17.00	1.0000	1.0000
L52	28	CCI-SFP-085125	16.75 - 17.00	1.0000	1.0000
L52	29	CCI-SFP-060100	16.75 - 17.00	1.0000	1.0000
L53	9	Safety Line 3/8	11.75 - 16.75	1.0000	1.0000
L53	14	Aero Channel MP303	11.75 - 16.75	1.0000	1.0000
L53	15	Aero Channel MP303	11.75 - 16.75	1.0000	1.0000
L53	16	Aero Channel MP303	11.75 - 16.75	1.0000	1.0000
L53	17	PL1.25x5.375	11.75 - 16.75	1.0000	1.0000
L53	18	PL1.25x5.375	11.75 - 16.75	1.0000	1.0000
L53	19	PL1.25x5.375	11.75 - 16.75	1.0000	1.0000
L53	26	CCI-SFP-085125	11.75 - 16.75	1.0000	1.0000
L53	27	CCI-SFP-085125	11.75 - 16.75	1.0000	1.0000
L53	28	CCI-SFP-085125	11.75 - 16.75	1.0000	1.0000
L53	29	CCI-SFP-060100	15.00 - 16.75	1.0000	1.0000
L54	9	Safety Line 3/8	9.00 - 11.75	1.0000	1.0000
L54	14	Aero Channel MP303	6.75 - 11.75	1.0000	1.0000
L54	15	Aero Channel MP303	6.75 - 11.75	1.0000	1.0000
L54	16	Aero Channel MP303	6.75 - 11.75	1.0000	1.0000
L54	17	PL1.25x5.375	6.75 - 11.75	1.0000	1.0000
L54	18	PL1.25x5.375	6.75 - 11.75	1.0000	1.0000
L54	19	PL1.25x5.375	6.75 - 11.75	1.0000	1.0000
L54	26	CCI-SFP-085125	6.75 - 11.75	1.0000	1.0000
L54	27	CCI-SFP-085125	6.75 - 11.75	1.0000	1.0000
L54	28	CCI-SFP-085125	6.75 - 11.75	1.0000	1.0000
L55	14	Aero Channel MP303	1.75 - 6.75	1.0000	1.0000
L55	15	Aero Channel MP303	1.75 - 6.75	1.0000	1.0000
L55	16	Aero Channel MP303	1.75 - 6.75	1.0000	1.0000
L55	17	PL1.25x5.375	1.75 - 6.75	1.0000	1.0000
L55	18	PL1.25x5.375	1.75 - 6.75	1.0000	1.0000
L55	19	PL1.25x5.375	1.75 - 6.75	1.0000	1.0000
L55	26	CCI-SFP-085125	1.75 - 6.75	1.0000	1.0000
L55	27	CCI-SFP-085125	1.75 - 6.75	1.0000	1.0000
L55	28	CCI-SFP-085125	1.75 - 6.75	1.0000	1.0000
L56	14	Aero Channel MP303	0.50 - 1.75	1.0000	1.0000
L56	15	Aero Channel MP303	0.50 - 1.75	1.0000	1.0000
L56	16	Aero Channel MP303	0.50 - 1.75	1.0000	1.0000
L56	17	PL1.25x5.375	0.00 - 1.75	1.0000	1.0000
L56	18	PL1.25x5.375	0.00 - 1.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L56	19	PL1.25x5.375	0.00 - 1.75	1.0000	1.0000
L56	26	CCI-SFP-085125	0.00 - 1.75	1.0000	1.0000
L56	27	CCI-SFP-085125	0.00 - 1.75	1.0000	1.0000
L56	28	CCI-SFP-085125	0.00 - 1.75	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
159									
Platform Mount [LP 712-1]	C	None		0.0000	159.00	No Ice	24.53	24.53	1.34
						1/2" Ice	29.94	29.94	1.65
						1" Ice	35.35	35.35	1.96
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	159.00	No Ice	8.26	6.95	0.08
						1/2" Ice	8.82	8.13	0.15
						1" Ice	9.35	9.02	0.23
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	159.00	No Ice	8.26	6.95	0.08
						1/2" Ice	8.82	8.13	0.15
						1" Ice	9.35	9.02	0.23
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	159.00	No Ice	8.26	6.95	0.08
						1/2" Ice	8.82	8.13	0.15
						1" Ice	9.35	9.02	0.23
(3) 8'x2" Antenna Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	159.00	No Ice	1.90	1.90	0.03
						1/2" Ice	2.73	2.73	0.04
						1" Ice	3.40	3.40	0.06
(3) 8'x2" Antenna Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	159.00	No Ice	1.90	1.90	0.03
						1/2" Ice	2.73	2.73	0.04
						1" Ice	3.40	3.40	0.06
(3) 8'x2" Antenna Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	159.00	No Ice	1.90	1.90	0.03
						1/2" Ice	2.73	2.73	0.04
						1" Ice	3.40	3.40	0.06
157									
Side Arm Mount [SO 102-3]	C	None		0.0000	157.00	No Ice	3.00	3.00	0.08
						1/2" Ice	3.48	3.48	0.11
						1" Ice	3.96	3.96	0.14
Pipe Mount [PM 601-3]	C	None		0.0000	157.00	No Ice	4.39	4.39	0.20
						1/2" Ice	5.48	5.48	0.24
						1" Ice	6.57	6.57	0.28
PCS 1900MHz 4x45W-65MHz	A	From Leg	2.00 0.00 0.00	0.0000	157.00	No Ice	2.32	2.24	0.06
						1/2" Ice	2.53	2.44	0.08
						1" Ice	2.74	2.65	0.11
PCS 1900MHz 4x45W-65MHz	B	From Leg	2.00 0.00 -3.00	0.0000	157.00	No Ice	2.32	2.24	0.06
						1/2" Ice	2.53	2.44	0.08
						1" Ice	2.74	2.65	0.11
PCS 1900MHz 4x45W-65MHz	C	From Leg	2.00 0.00 -3.00	0.0000	157.00	No Ice	2.32	2.24	0.06
						1/2" Ice	2.53	2.44	0.08
						Ice	2.74	2.65	0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
800MHz 2X50W RRH W/FILTER	A	From Leg	2.00 0.00 -3.00	0.0000	157.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.93 2.11 2.29	0.06 0.09 0.11
800MHz 2X50W RRH W/FILTER	B	From Leg	2.00 0.00 0.00	0.0000	157.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.93 2.11 2.29	0.06 0.09 0.11
800MHz 2X50W RRH W/FILTER	C	From Leg	2.00 0.00 0.00	0.0000	157.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.93 2.11 2.29	0.06 0.09 0.11
152									
Side Arm Mount [SO 102-3]	C	None		0.0000	152.00	No Ice 1/2" Ice 1" Ice	3.00 3.48 3.96	3.00 3.48 3.96	0.08 0.11 0.14
Pipe Mount [PM 601-3]	C	From Face	1.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice	4.39 5.48 6.57	4.39 5.48 6.57	0.20 0.24 0.28
(2) TME-RRUS-11	A	From Face	2.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice	3.25 3.49 3.74	1.37 1.55 1.74	0.05 0.07 0.09
(2) TME-RRUS-11	B	From Face	2.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice	3.25 3.49 3.74	1.37 1.55 1.74	0.05 0.07 0.09
(2) TME-RRUS-11	C	From Face	2.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice	3.25 3.49 3.74	1.37 1.55 1.74	0.05 0.07 0.09
150									
Platform Mount [LP 303-1]	C	None		0.0000	150.00	No Ice 1/2" Ice 1" Ice	14.66 18.87 23.08	14.66 18.87 23.08	1.25 1.48 1.71
(2) 7770.00 w/ Mount Pipe	A	From Face	3.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
(2) 7770.00 w/ Mount Pipe	B	From Face	3.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
(2) 7770.00 w/ Mount Pipe	C	From Face	3.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
AM-X-CD-17-65-00T-RET w/ Mount Pipe	A	From Face	3.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	11.55 12.27 13.00	8.94 10.45 11.99	0.09 0.18 0.27
AM-X-CD-17-65-00T-RET w/ Mount Pipe	B	From Face	3.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	11.55 12.27 13.00	8.94 10.45 11.99	0.09 0.18 0.27
AM-X-CD-17-65-00T-RET w/ Mount Pipe	C	From Face	3.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	11.55 12.27 13.00	8.94 10.45 11.99	0.09 0.18 0.27
(2) LGP21401	A	From Face	3.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice	1.10 1.24 1.38	0.35 0.44 0.54	0.01 0.02 0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
(2) LGP21401	B	From Face	3.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.35 0.44 0.54	0.01 0.02 0.03
(2) LGP21401	C	From Face	3.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.35 0.44 0.54	0.01 0.02 0.03
(2) LGP21901	A	From Face	3.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	0.23 0.29 0.36	0.16 0.21 0.28	0.01 0.01 0.01
(2) LGP21901	B	From Face	3.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	0.23 0.29 0.36	0.16 0.21 0.28	0.01 0.01 0.01
(2) LGP21901	C	From Face	3.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	0.23 0.29 0.36	0.16 0.21 0.28	0.01 0.01 0.01
DC6-48-60-18-8F	B	From Face	3.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	0.92 1.46 1.64	0.92 1.46 1.64	0.02 0.04 0.06
139 T-Arm Mount [TA 602-3]	C	None		0.0000	139.00	No Ice 1/2" Ice 1" Ice	11.59 15.44 19.29	11.59 15.44 19.29	0.77 0.99 1.21
APXV18-203219-C-A20 w/ Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice	6.18 6.68 7.18	4.00 4.74 5.43	0.06 0.11 0.16
APXV18-203219-C-A20 w/ Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice	6.18 6.68 7.18	4.00 4.74 5.43	0.06 0.11 0.16
APXV18-203219-C-A20 w/ Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice	6.18 6.68 7.18	4.00 4.74 5.43	0.06 0.11 0.16
LNX-6512DS-VTM w/ Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice	5.85 6.31 6.77	4.55 5.23 5.91	0.05 0.10 0.15
LNX-6512DS-VTM w/ Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice	5.85 6.31 6.77	4.55 5.23 5.91	0.05 0.10 0.15
LNX-6512DS-VTM w/ Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice	5.85 6.31 6.77	4.55 5.23 5.91	0.05 0.10 0.15
TMAT7LA-11A	A	From Leg	3.00 0.00 0.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice	0.75 0.87 1.00	0.40 0.49 0.59	0.02 0.03 0.04
TMAT7LA-11A	B	From Leg	3.00 0.00 0.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice	0.75 0.87 1.00	0.40 0.49 0.59	0.02 0.03 0.04
TMAT7LA-11A	C	From Leg	3.00 0.00 0.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice	0.75 0.87 1.00	0.40 0.49 0.59	0.02 0.03 0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
ATBT-BOTTOM-24V	A	From Leg	3.00 0.00 0.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice	0.10 0.15 0.20	0.06 0.10 0.15	0.00 0.00 0.01
ATBT-BOTTOM-24V	B	From Leg	3.00 0.00 0.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice	0.10 0.15 0.20	0.06 0.10 0.15	0.00 0.00 0.01
ATBT-BOTTOM-24V	C	From Leg	3.00 0.00 0.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice	0.10 0.15 0.20	0.06 0.10 0.15	0.00 0.00 0.01
6' x 2" Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
6' x 2" Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
6' x 2" Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
130 Platform Mount [LP 303-1]	C	None		0.0000	125.00	No Ice 1/2" Ice 1" Ice	14.66 18.87 23.08	14.66 18.87 23.08	1.25 1.48 1.71
LNX-6514DS-A1M w/ Mount Pipe	A	From Leg	3.00 0.00 2.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	8.67 9.33 9.96	7.10 8.30 9.21	0.06 0.13 0.20
LNX-6514DS-A1M w/ Mount Pipe	B	From Leg	3.00 0.00 2.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	8.67 9.33 9.96	7.10 8.30 9.21	0.06 0.13 0.20
LNX-6514DS-A1M w/ Mount Pipe	C	From Leg	3.00 0.00 2.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	8.67 9.33 9.96	7.10 8.30 9.21	0.06 0.13 0.20
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	3.00 0.00 2.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	8.44 9.00 9.53	7.10 8.30 9.21	0.07 0.14 0.21
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	3.00 0.00 2.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	8.44 9.00 9.53	7.10 8.30 9.21	0.07 0.14 0.21
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	3.00 0.00 2.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	8.44 9.00 9.53	7.10 8.30 9.21	0.07 0.14 0.21
6' x 2" Mount Pipe	A	From Leg	3.00 0.00 2.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
6' x 2" Mount Pipe	B	From Leg	3.00 0.00 2.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
6' x 2" Mount Pipe	C	From Leg	3.00 0.00 2.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
B66A RRH4X45	A	From Leg	3.00	0.0000	125.00	No Ice	2.58	1.63	0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2"	2.79	1.81	0.08
			2.00			Ice	3.01	2.00	0.10
						1" Ice			
B66A RRH4X45	B	From Leg	3.00	0.0000	125.00	No Ice	2.58	1.63	0.06
			0.00			1/2"	2.79	1.81	0.08
			2.00			Ice	3.01	2.00	0.10
						1" Ice			
B66A RRH4X45	C	From Leg	3.00	0.0000	125.00	No Ice	2.58	1.63	0.06
			0.00			1/2"	2.79	1.81	0.08
			2.00			Ice	3.01	2.00	0.10
						1" Ice			
RRH2x60-700	A	From Leg	3.00	0.0000	125.00	No Ice	3.50	1.82	0.06
			0.00			1/2"	3.76	2.05	0.08
			2.00			Ice	4.03	2.29	0.11
						1" Ice			
RRH2x60-700	B	From Leg	3.00	0.0000	125.00	No Ice	3.50	1.82	0.06
			0.00			1/2"	3.76	2.05	0.08
			2.00			Ice	4.03	2.29	0.11
						1" Ice			
RRH2x60-700	C	From Leg	3.00	0.0000	125.00	No Ice	3.50	1.82	0.06
			0.00			1/2"	3.76	2.05	0.08
			2.00			Ice	4.03	2.29	0.11
						1" Ice			
RRH2X60-PCS	A	From Leg	3.00	0.0000	125.00	No Ice	2.20	1.72	0.06
			0.00			1/2"	2.39	1.90	0.08
			2.00			Ice	2.59	2.09	0.10
						1" Ice			
RRH2X60-PCS	B	From Leg	3.00	0.0000	125.00	No Ice	2.20	1.72	0.06
			0.00			1/2"	2.39	1.90	0.08
			2.00			Ice	2.59	2.09	0.10
						1" Ice			
RRH2X60-PCS	C	From Leg	3.00	0.0000	125.00	No Ice	2.20	1.72	0.06
			0.00			1/2"	2.39	1.90	0.08
			2.00			Ice	2.59	2.09	0.10
						1" Ice			
DB-T1-6Z-8AB-0Z	A	From Leg	3.00	0.0000	125.00	No Ice	4.80	2.00	0.04
			0.00			1/2"	5.07	2.19	0.08
			2.00			Ice	5.35	2.39	0.12
						1" Ice			
DB-T1-6Z-8AB-0Z	C	From Leg	3.00	0.0000	125.00	No Ice	4.80	2.00	0.04
			0.00			1/2"	5.07	2.19	0.08
			2.00			Ice	5.35	2.39	0.12
						1" Ice			
109									
Side Arm Mount [SO 201-1]	B	From Leg	0.50	0.0000	109.00	No Ice	2.96	2.11	0.10
			0.00			1/2"	4.10	2.93	0.12
			0.00			Ice	5.24	3.75	0.14
						1" Ice			
Side Arm Mount [SO 701-1]	B	From Leg	3.00	0.0000	109.00	No Ice	0.85	1.67	0.07
			0.00			1/2"	1.14	2.34	0.08
			0.00			Ice	1.43	3.01	0.09
						1" Ice			
DB589	B	From Leg	6.00	0.0000	109.00	No Ice	2.13	2.13	0.01
			0.00			1/2"	3.00	3.00	0.03
			5.00			Ice	3.76	3.76	0.05
						1" Ice			
***									

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
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice
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	159.857 - 154.857	Pole	Max Tension	36	0.00	-0.00	0.00
			Max. Compression	26	-6.88	-0.02	0.01
			Max. Mx	8	-2.79	-15.02	-0.00
			Max. My	14	-2.79	-0.00	-15.02
			Max. Vy	8	4.36	-15.02	-0.00
			Max. Vx	14	4.36	-0.00	-15.02
			Max. Torque	18			-0.00
L2	154.857 - 149.857	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-14.61	-0.36	-0.48
			Max. Mx	8	-5.69	-40.11	-0.34

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	14	-5.69	-0.07	-40.40
			Max. Vy	8	9.11	-40.11	-0.34
			Max. Vx	14	9.11	-0.07	-40.40
			Max. Torque	8			-0.38
L3	149.857 - 144.857	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-15.18	-0.38	-0.48
			Max. Mx	8	-6.00	-86.31	-0.34
			Max. My	14	-6.00	-0.07	-86.60
			Max. Vy	8	9.38	-86.31	-0.34
			Max. Vx	14	9.38	-0.07	-86.60
			Max. Torque	6			-0.33
L4	144.857 - 139.857	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-15.77	-0.41	-0.47
			Max. Mx	8	-6.35	-133.85	-0.34
			Max. My	14	-6.35	-0.07	-134.14
			Max. Vy	8	9.65	-133.85	-0.34
			Max. Vx	14	9.65	-0.07	-134.14
			Max. Torque	6			-0.33
L5	139.857 - 134.857	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-20.12	-0.43	-0.46
			Max. Mx	8	-8.08	-191.35	-0.34
			Max. My	14	-8.08	-0.07	-191.64
			Max. Vy	8	12.00	-191.35	-0.34
			Max. Vx	14	12.00	-0.07	-191.64
			Max. Torque	6			-0.33
L6	134.857 - 129.857	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-20.82	-0.45	-0.45
			Max. Mx	8	-8.55	-251.97	-0.34
			Max. My	14	-8.55	-0.07	-252.27
			Max. Vy	8	12.27	-251.97	-0.34
			Max. Vx	14	12.27	-0.07	-252.27
			Max. Torque	6			-0.33
L7	129.857 - 125.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.45	-0.46	-0.44
			Max. Mx	8	-8.95	-302.78	-0.34
			Max. My	14	-8.95	-0.07	-303.09
			Max. Vy	8	12.49	-302.78	-0.34
			Max. Vx	14	12.49	-0.07	-303.09
			Max. Torque	6			-0.33
L8	125.75 - 125.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.49	-0.46	-0.44
			Max. Mx	8	-8.98	-305.91	-0.34
			Max. My	14	-8.98	-0.07	-306.21
			Max. Vy	8	12.50	-305.91	-0.34
			Max. Vx	14	12.50	-0.07	-306.21
			Max. Torque	6			-0.33
L9	125.5 - 118.978	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.52	0.20	-0.05
			Max. Mx	20	-12.00	358.61	-0.50
			Max. My	14	-12.00	0.27	-359.05
			Max. Vy	8	17.25	-358.46	-0.06
			Max. Vx	14	17.30	0.27	-359.05
			Max. Torque	6			-0.33
L10	118.978 - 117.978	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.93	0.18	-0.03
			Max. Mx	20	-12.82	441.19	-0.73
			Max. My	14	-12.81	0.49	-441.89
			Max. Vy	8	17.54	-441.04	0.15
			Max. Vx	14	17.59	0.49	-441.89
			Max. Torque	22			0.21
L11	117.978 - 112.978	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-32.32	0.16	-0.02
			Max. Mx	20	-13.77	529.64	-0.96
			Max. My	14	-13.77	0.71	-530.61
			Max. Vy	8	17.86	-529.50	0.38
			Max. Vx	14	17.91	0.71	-530.61
			Max. Torque	22			0.21
L12	112.978 - 107.978	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.14	-1.15	-0.75
			Max. Mx	8	-14.94	-620.86	0.34
			Max. My	14	-14.93	0.47	-622.01
			Max. Vy	8	18.46	-620.86	0.34
			Max. Vx	14	18.51	0.47	-622.01
			Max. Torque	4			-1.13
L13	107.978 - 103	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.64	-1.15	-0.76
			Max. Mx	8	-15.93	-713.51	0.56
			Max. My	14	-15.92	0.70	-714.92
			Max. Vy	8	18.78	-713.51	0.56
			Max. Vx	14	18.84	0.70	-714.92
			Max. Torque	4			-1.13
L14	103 - 102.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.73	-1.15	-0.76
			Max. Mx	8	-16.00	-718.21	0.57
			Max. My	14	-15.99	0.71	-719.63
			Max. Vy	8	18.79	-718.21	0.57
			Max. Vx	14	18.85	0.71	-719.63
			Max. Torque	4			-1.13
L15	102.75 - 100.208	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.69	-1.15	-0.75
			Max. Mx	8	-16.63	-766.20	0.69
			Max. My	14	-16.62	0.82	-767.76
			Max. Vy	8	18.98	-766.20	0.69
			Max. Vx	14	19.03	0.82	-767.76
			Max. Torque	4			-1.13
L16	100.208 - 95.6875	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.77	-1.15	-0.75
			Max. Mx	8	-16.69	-769.75	0.70
			Max. My	14	-16.68	0.83	-771.32
			Max. Vy	8	18.98	-769.75	0.70
			Max. Vx	14	19.04	0.83	-771.32
			Max. Torque	4			-1.13
L17	95.6875 - 94.6875	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.40	-1.18	-0.74
			Max. Mx	8	-19.27	-872.25	0.94
			Max. My	14	-19.27	1.07	-874.10
			Max. Vy	8	19.45	-872.25	0.94
			Max. Vx	14	19.50	1.07	-874.10
			Max. Torque	4			-1.13
L18	94.6875 - 93.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.96	-1.18	-0.74
			Max. Mx	8	-19.63	-895.39	0.99
			Max. My	14	-19.62	1.12	-897.30
			Max. Vy	8	19.54	-895.39	0.99
			Max. Vx	14	19.59	1.12	-897.30
			Max. Torque	4			-1.13
L19	93.5 - 93.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.09	-1.18	-0.73
			Max. Mx	8	-19.72	-900.28	1.00
			Max. My	14	-19.72	1.13	-902.20
			Max. Vy	8	19.55	-900.28	1.00
			Max. Vx	14	19.60	1.13	-902.20
			Max. Torque	4			-1.13
L20	93.25 - 89.25	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-43.19	-1.20	-0.72
			Max. Mx	8	-21.13	-979.09	1.19
			Max. My	14	-21.13	1.31	-981.21
			Max. Vy	8	19.86	-979.09	1.19
			Max. Vx	14	19.91	1.31	-981.21
			Max. Torque	4			-1.13
L21	89.25 - 89	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.33	-1.20	-0.72
			Max. Mx	8	-21.23	-984.06	1.20
			Max. My	14	-21.23	1.32	-986.18
			Max. Vy	8	19.88	-984.06	1.20
			Max. Vx	14	19.93	1.32	-986.18
			Max. Torque	4			-1.13
L22	89 - 86.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.70	-1.22	-0.72
			Max. Mx	8	-22.16	-1033.99	1.31
			Max. My	14	-22.16	1.44	-1036.24
			Max. Vy	8	20.08	-1033.99	1.31
			Max. Vx	14	20.13	1.44	-1036.24
			Max. Torque	4			-1.13
L23	86.5 - 86.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.83	-1.22	-0.71
			Max. Mx	8	-22.25	-1039.01	1.32
			Max. My	14	-22.24	1.45	-1041.27
			Max. Vy	8	20.09	-1039.01	1.32
			Max. Vx	14	20.14	1.45	-1041.27
			Max. Torque	4			-1.13
L24	86.25 - 81.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.20	-1.24	-0.70
			Max. Mx	8	-23.86	-1140.37	1.55
			Max. My	14	-23.86	1.67	-1142.86
			Max. Vy	8	20.46	-1140.37	1.55
			Max. Vx	14	20.51	1.67	-1142.86
			Max. Torque	4			-1.13
L25	81.25 - 76.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.56	-1.27	-0.68
			Max. Mx	8	-25.51	-1243.54	1.78
			Max. My	14	-25.50	1.90	-1246.26
			Max. Vy	8	20.82	-1243.54	1.78
			Max. Vx	14	20.87	1.90	-1246.26
			Max. Torque	4			-1.13
L26	76.25 - 75.417	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.99	-1.27	-0.68
			Max. Mx	8	-25.79	-1260.90	1.82
			Max. My	14	-25.78	1.94	-1263.67
			Max. Vy	8	20.88	-1260.90	1.82
			Max. Vx	14	20.93	1.94	-1263.67
			Max. Torque	4			-1.13
L27	75.417 - 75.167	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.12	-1.28	-0.68
			Max. Mx	8	-25.88	-1266.12	1.83
			Max. My	14	-25.88	1.95	-1268.90
			Max. Vy	8	20.90	-1266.12	1.83
			Max. Vx	14	20.94	1.95	-1268.90
			Max. Torque	4			-1.13
L28	75.167 - 70.167	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.85	-1.30	-0.67
			Max. Mx	8	-27.72	-1371.55	2.06
			Max. My	14	-27.72	2.17	-1374.52
			Max. Vy	8	21.28	-1371.55	2.06
			Max. Vx	14	21.32	2.17	-1374.52
			Max. Torque	4			-1.13
L29	70.167 - 65.167	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.61	-1.33	-0.65

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	8	-29.59	-1478.84	2.29
			Max. My	14	-29.59	2.40	-1481.99
			Max. Vy	8	21.65	-1478.84	2.29
			Max. Vx	14	21.68	2.40	-1481.99
			Max. Torque	4			-1.13
L30	65.167 - 60.167	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.39	-1.36	-0.63
			Max. Mx	8	-31.48	-1587.97	2.52
			Max. My	14	-31.48	2.63	-1591.27
			Max. Vy	8	22.01	-1587.97	2.52
			Max. Vx	14	22.04	2.63	-1591.27
			Max. Torque	4			-1.13
L31	60.167 - 59.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.77	-1.36	-0.63
			Max. Mx	8	-31.74	-1602.67	2.55
			Max. My	14	-31.74	2.66	-1605.98
			Max. Vy	8	22.06	-1602.67	2.55
			Max. Vx	14	22.09	2.66	-1605.98
			Max. Torque	4			-1.13
L32	59.5 - 59.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.91	-1.36	-0.63
			Max. Mx	8	-31.84	-1608.18	2.56
			Max. My	14	-31.84	2.67	-1611.50
			Max. Vy	8	22.07	-1608.18	2.56
			Max. Vx	14	22.10	2.67	-1611.50
			Max. Torque	4			-1.13
L33	59.25 - 54.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.73	-1.41	-0.61
			Max. Mx	8	-33.76	-1719.42	2.79
			Max. My	14	-33.76	2.89	-1722.89
			Max. Vy	8	22.43	-1719.42	2.79
			Max. Vx	14	22.46	2.89	-1722.89
			Max. Torque	4			-1.13
L34	54.25 - 53	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.45	-1.43	-0.59
			Max. Mx	8	-34.25	-1747.51	2.84
			Max. My	14	-34.24	2.95	-1751.01
			Max. Vy	8	22.52	-1747.51	2.84
			Max. Vx	14	22.55	2.95	-1751.01
			Max. Torque	4			-1.13
L35	53 - 52.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.59	-1.44	-0.59
			Max. Mx	8	-34.35	-1753.14	2.85
			Max. My	14	-34.35	2.96	-1756.65
			Max. Vy	8	22.53	-1753.14	2.85
			Max. Vx	14	22.56	2.96	-1756.65
			Max. Torque	4			-1.13
L36	52.75 - 47.0608	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.66	-1.44	-0.58
			Max. Mx	8	-34.39	-1755.52	2.86
			Max. My	14	-34.39	2.97	-1759.04
			Max. Vy	8	22.54	-1755.52	2.86
			Max. Vx	14	22.57	2.97	-1759.04
			Max. Torque	4			-1.13
L37	47.0608 - 46.0608	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.08	-1.58	-0.51
			Max. Mx	8	-39.10	-1905.73	3.16
			Max. My	14	-39.10	3.26	-1909.44
			Max. Vy	8	23.09	-1905.73	3.16
			Max. Vx	14	23.12	3.26	-1909.44
			Max. Torque	4			-1.13
L38	46.0608 - 41.0608	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.09	-1.61	-0.49
			Max. Mx	8	-41.24	-2021.94	3.39

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	14	-41.24	3.49	-2025.80
			Max. Vy	8	23.41	-2021.94	3.39
			Max. Vx	14	23.44	3.49	-2025.80
			Max. Torque	4			-1.13
L39	41.0608 - 39.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.18	-1.62	-0.48
			Max. Mx	8	-41.99	-2062.55	3.47
			Max. My	14	-41.98	3.57	-2066.45
			Max. Vy	8	23.54	-2062.55	3.47
			Max. Vx	14	23.56	3.57	-2066.45
			Max. Torque	4			-1.13
L40	39.33 - 39.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.35	-1.62	-0.48
			Max. Mx	8	-42.11	-2068.43	3.48
			Max. My	14	-42.11	3.58	-2072.34
			Max. Vy	8	23.54	-2068.43	3.48
			Max. Vx	14	23.56	3.58	-2072.34
			Max. Torque	4			-1.13
L41	39.08 - 37.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.25	-1.63	-0.48
			Max. Mx	8	-42.73	-2099.80	3.54
			Max. My	14	-42.73	3.64	-2103.73
			Max. Vy	8	23.64	-2099.80	3.54
			Max. Vx	14	23.66	3.64	-2103.73
			Max. Torque	4			-1.13
L42	37.75 - 37.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.41	-1.63	-0.48
			Max. Mx	8	-42.85	-2105.71	3.55
			Max. My	14	-42.84	3.65	-2109.64
			Max. Vy	8	23.65	-2105.71	3.55
			Max. Vx	14	23.66	3.65	-2109.64
			Max. Torque	4			-1.13
L43	37.5 - 32.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-77.49	-1.66	-0.46
			Max. Mx	8	-45.03	-2224.70	3.78
			Max. My	14	-45.03	3.88	-2228.69
			Max. Vy	8	23.96	-2224.70	3.78
			Max. Vx	14	23.97	3.88	-2228.69
			Max. Torque	4			-1.13
L44	32.5 - 29.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-79.18	-1.67	-0.45
			Max. Mx	8	-46.24	-2290.77	3.91
			Max. My	14	-46.24	4.00	-2294.81
			Max. Vy	8	24.12	-2290.77	3.91
			Max. Vx	14	24.14	4.00	-2294.81
			Max. Torque	4			-1.13
L45	29.75 - 29.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-79.33	-1.68	-0.45
			Max. Mx	8	-46.36	-2296.80	3.92
			Max. My	14	-46.36	4.01	-2300.84
			Max. Vy	8	24.13	-2296.80	3.92
			Max. Vx	14	24.14	4.01	-2300.84
			Max. Torque	4			-1.13
L46	29.5 - 24.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.43	-1.69	-0.43
			Max. Mx	8	-48.59	-2418.12	4.14
			Max. My	14	-48.59	4.23	-2422.22
			Max. Vy	8	24.42	-2418.12	4.14
			Max. Vx	14	24.43	4.23	-2422.22
			Max. Torque	4			-1.13
L47	24.5 - 21.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-84.49	-1.63	-0.37
			Max. Mx	8	-50.06	-2497.74	4.29
			Max. My	14	-50.06	4.38	-2501.87
			Max. Vy	8	24.60	-2497.74	4.29
			Max. Vx	14	24.62	4.38	-2501.87
			Max. Torque	4			-1.13

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L48	21.25 - 21	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-84.66	-1.63	-0.37
			Max. Mx	8	-50.19	-2503.89	4.30
			Max. My	14	-50.19	4.39	-2508.03
			Max. Vy	8	24.61	-2503.89	4.30
			Max. Vx	14	24.62	4.39	-2508.03
			Max. Torque	4			-1.13
L49	21 - 20	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.34	-1.61	-0.35
			Max. Mx	8	-50.68	-2528.53	4.35
			Max. My	14	-50.68	4.43	-2532.67
			Max. Vy	8	24.68	-2528.53	4.35
			Max. Vx	14	24.69	4.43	-2532.67
			Max. Torque	4			-1.13
L50	20 - 19.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.52	-1.61	-0.35
			Max. Mx	8	-50.82	-2534.70	4.36
			Max. My	14	-50.82	4.45	-2538.84
			Max. Vy	8	24.68	-2534.70	4.36
			Max. Vx	14	24.69	4.45	-2538.84
			Max. Torque	4			-1.13
L51	19.75 - 17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-87.51	-1.57	-0.31
			Max. Mx	8	-52.29	-2602.80	4.48
			Max. My	14	-52.29	4.57	-2606.98
			Max. Vy	8	24.86	-2602.80	4.48
			Max. Vx	14	24.87	4.57	-2606.98
			Max. Torque	4			-1.13
L52	17 - 16.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-87.68	-1.57	-0.31
			Max. Mx	8	-52.42	-2609.01	4.50
			Max. My	14	-52.42	4.58	-2613.19
			Max. Vy	8	24.86	-2609.01	4.50
			Max. Vx	14	24.88	4.58	-2613.19
			Max. Torque	4			-1.13
L53	16.75 - 11.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-91.14	-1.57	-0.27
			Max. Mx	8	-55.00	-2734.06	4.72
			Max. My	14	-55.00	4.80	-2738.30
			Max. Vy	8	25.17	-2734.06	4.72
			Max. Vx	14	25.18	4.80	-2738.30
			Max. Torque	4			-1.13
L54	11.75 - 6.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-94.52	-1.58	-0.26
			Max. Mx	8	-57.56	-2860.60	4.95
			Max. My	14	-57.56	5.02	-2864.90
			Max. Vy	8	25.47	-2860.60	4.95
			Max. Vx	14	25.48	5.02	-2864.90
			Max. Torque	4			-1.13
L55	6.75 - 1.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-97.78	-1.58	-0.26
			Max. Mx	8	-60.08	-2988.62	5.17
			Max. My	14	-60.08	5.25	-2992.98
			Max. Vy	8	25.77	-2988.62	5.17
			Max. Vx	14	25.78	5.25	-2992.98
			Max. Torque	4			-1.13
L56	1.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-98.86	-1.58	-0.26
			Max. Mx	8	-60.95	-3033.78	5.25
			Max. My	14	-60.95	5.32	-3038.16
			Max. Vy	8	25.88	-3033.78	5.25
			Max. Vx	14	25.89	5.32	-3038.16
			Max. Torque	4			-1.13

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	30	98.86	-7.24	0.01
	Max. H_x	20	60.96	25.86	-0.04
	Max. H_z	2	60.96	-0.04	25.87
	Max. M_x	2	3037.00	-0.04	25.87
	Max. M_z	8	3033.78	-25.86	0.04
	Max. Torsion	16	1.13	12.98	-22.47
	Min. Vert	23	45.72	22.34	12.90
	Min. H_x	8	60.96	-25.86	0.04
	Min. H_z	14	60.96	0.04	-25.87
	Min. M_x	14	-3038.16	0.04	-25.87
	Min. M_z	20	-3032.78	25.86	-0.04
	Min. Torsion	4	-1.13	-12.98	22.47

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	50.80	0.00	0.00	0.45	-0.40	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	60.96	0.04	-25.87	-3037.00	-6.33	0.87
0.9 Dead+1.6 Wind 0 deg - No Ice	45.72	0.04	-25.87	-3008.62	-6.14	0.86
1.2 Dead+1.6 Wind 30 deg - No Ice	60.96	12.98	-22.47	-2635.32	-1522.34	1.13
0.9 Dead+1.6 Wind 30 deg - No Ice	45.72	12.98	-22.47	-2610.73	-1507.92	1.12
1.2 Dead+1.6 Wind 60 deg - No Ice	60.96	22.38	-12.97	-1523.26	-2628.22	1.09
0.9 Dead+1.6 Wind 60 deg - No Ice	45.72	22.38	-12.97	-1509.10	-2603.40	1.08
1.2 Dead+1.6 Wind 90 deg - No Ice	60.96	25.86	-0.04	-5.25	-3033.78	0.75
0.9 Dead+1.6 Wind 90 deg - No Ice	45.72	25.86	-0.04	-5.35	-3005.17	0.75
1.2 Dead+1.6 Wind 120 deg - No Ice	60.96	22.34	12.90	1514.33	-2622.41	0.21
0.9 Dead+1.6 Wind 120 deg - No Ice	45.72	22.34	12.90	1499.96	-2597.64	0.21
1.2 Dead+1.6 Wind 150 deg - No Ice	60.96	12.96	22.53	2637.66	-1516.30	-0.38
0.9 Dead+1.6 Wind 150 deg - No Ice	45.72	12.96	22.53	2612.78	-1501.95	-0.38
1.2 Dead+1.6 Wind 180 deg - No Ice	60.96	-0.04	25.87	3038.16	5.32	-0.87
0.9 Dead+1.6 Wind 180 deg - No Ice	45.72	-0.04	25.87	3009.48	5.40	-0.87
1.2 Dead+1.6 Wind 210 deg - No Ice	60.96	-12.98	22.47	2636.48	1521.34	-1.13
0.9 Dead+1.6 Wind 210 deg - No Ice	45.72	-12.98	22.47	2611.58	1507.18	-1.12
1.2 Dead+1.6 Wind 240 deg - No Ice	60.96	-22.38	12.97	1524.41	2627.21	-1.08
0.9 Dead+1.6 Wind 240 deg - No Ice	45.72	-22.38	12.97	1509.95	2602.66	-1.07
1.2 Dead+1.6 Wind 270 deg - No Ice	60.96	-25.86	0.04	6.41	3032.78	-0.75
0.9 Dead+1.6 Wind 270 deg - No Ice	45.72	-25.86	0.04	6.20	3004.42	-0.74
1.2 Dead+1.6 Wind 300 deg - No Ice	60.96	-22.34	-12.90	-1513.17	2621.40	-0.21
0.9 Dead+1.6 Wind 300 deg - No Ice	45.72	-22.34	-12.90	-1499.10	2596.90	-0.21
1.2 Dead+1.6 Wind 330 deg - No Ice	60.96	-12.96	-22.53	-2636.49	1515.29	0.38

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
0.9 Dead+1.6 Wind 330 deg - No Ice	45.72	-12.96	-22.53	-2611.92	1501.21	0.37
1.2 Dead+1.0 Ice	98.86	0.00	0.00	0.26	-1.58	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice	98.86	0.01	-7.03	-831.80	-2.83	0.34
1.2 Dead+1.0 Wind 30 deg+1.0 Ice	98.86	3.65	-6.33	-735.38	-426.50	0.43
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	98.86	6.09	-3.52	-416.67	-721.85	0.40
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	98.86	7.24	-0.01	-0.75	-848.36	0.26
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	98.86	6.08	3.51	415.46	-720.77	0.06
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	98.86	3.81	6.62	753.88	-435.56	-0.16
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	98.86	-0.01	7.03	832.45	-0.66	-0.34
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	98.86	-3.65	6.33	736.04	423.02	-0.43
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	98.86	-6.09	3.52	417.33	718.36	-0.40
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	98.86	-7.24	0.01	1.41	844.88	-0.26
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	98.86	-6.08	-3.51	-414.80	717.28	-0.06
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	98.86	-3.81	-6.62	-753.22	432.07	0.16
Dead+Wind 0 deg - Service	50.80	0.01	-5.11	-595.70	-1.56	0.17
Dead+Wind 30 deg - Service	50.80	2.56	-4.44	-516.87	-299.11	0.22
Dead+Wind 60 deg - Service	50.80	4.42	-2.56	-298.60	-516.16	0.21
Dead+Wind 90 deg - Service	50.80	5.10	-0.01	-0.66	-595.76	0.15
Dead+Wind 120 deg - Service	50.80	4.41	2.55	297.58	-515.01	0.04
Dead+Wind 150 deg - Service	50.80	2.56	4.45	518.06	-297.92	-0.07
Dead+Wind 180 deg - Service	50.80	-0.01	5.11	596.67	0.73	-0.17
Dead+Wind 210 deg - Service	50.80	-2.56	4.44	517.83	298.28	-0.22
Dead+Wind 240 deg - Service	50.80	-4.42	2.56	299.56	515.32	-0.21
Dead+Wind 270 deg - Service	50.80	-5.10	0.01	1.63	594.92	-0.15
Dead+Wind 300 deg - Service	50.80	-4.41	-2.55	-296.62	514.18	-0.04
Dead+Wind 330 deg - Service	50.80	-2.56	-4.45	-517.10	297.09	0.07

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-50.80	0.00	0.00	50.80	0.00	0.000%
2	0.04	-60.96	-25.87	-0.04	60.96	25.87	0.000%
3	0.04	-45.72	-25.87	-0.04	45.72	25.87	0.000%
4	12.98	-60.96	-22.47	-12.98	60.96	22.47	0.000%
5	12.98	-45.72	-22.47	-12.98	45.72	22.47	0.000%
6	22.38	-60.96	-12.97	-22.38	60.96	12.97	0.000%
7	22.38	-45.72	-12.97	-22.38	45.72	12.97	0.000%
8	25.86	-60.96	-0.04	-25.86	60.96	0.04	0.000%
9	25.86	-45.72	-0.04	-25.86	45.72	0.04	0.000%
10	22.34	-60.96	12.90	-22.34	60.96	-12.90	0.000%
11	22.34	-45.72	12.90	-22.34	45.72	-12.90	0.000%
12	12.96	-60.96	22.53	-12.96	60.96	-22.53	0.000%
13	12.96	-45.72	22.53	-12.96	45.72	-22.53	0.000%
14	-0.04	-60.96	25.87	0.04	60.96	-25.87	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
15	-0.04	-45.72	25.87	0.04	45.72	-25.87	0.000%
16	-12.98	-60.96	22.47	12.98	60.96	-22.47	0.000%
17	-12.98	-45.72	22.47	12.98	45.72	-22.47	0.000%
18	-22.38	-60.96	12.97	22.38	60.96	-12.97	0.000%
19	-22.38	-45.72	12.97	22.38	45.72	-12.97	0.000%
20	-25.86	-60.96	0.04	25.86	60.96	-0.04	0.000%
21	-25.86	-45.72	0.04	25.86	45.72	-0.04	0.000%
22	-22.34	-60.96	-12.90	22.34	60.96	12.90	0.000%
23	-22.34	-45.72	-12.90	22.34	45.72	12.90	0.000%
24	-12.96	-60.96	-22.53	12.96	60.96	22.53	0.000%
25	-12.96	-45.72	-22.53	12.96	45.72	22.53	0.000%
26	0.00	-98.86	0.00	-0.00	98.86	0.00	0.000%
27	0.01	-98.86	-7.03	-0.01	98.86	7.03	0.000%
28	3.65	-98.86	-6.33	-3.65	98.86	6.33	0.000%
29	6.09	-98.86	-3.52	-6.09	98.86	3.52	0.000%
30	7.24	-98.86	-0.01	-7.24	98.86	0.01	0.000%
31	6.08	-98.86	3.51	-6.08	98.86	-3.51	0.000%
32	3.81	-98.86	6.62	-3.81	98.86	-6.62	0.000%
33	-0.01	-98.86	7.03	0.01	98.86	-7.03	0.000%
34	-3.65	-98.86	6.33	3.65	98.86	-6.33	0.000%
35	-6.09	-98.86	3.52	6.09	98.86	-3.52	0.000%
36	-7.24	-98.86	0.01	7.24	98.86	-0.01	0.000%
37	-6.08	-98.86	-3.51	6.08	98.86	3.51	0.000%
38	-3.81	-98.86	-6.62	3.81	98.86	6.62	0.000%
39	0.01	-50.80	-5.11	-0.01	50.80	5.11	0.000%
40	2.56	-50.80	-4.44	-2.56	50.80	4.44	0.000%
41	4.42	-50.80	-2.56	-4.42	50.80	2.56	0.000%
42	5.10	-50.80	-0.01	-5.10	50.80	0.01	0.000%
43	4.41	-50.80	2.55	-4.41	50.80	-2.55	0.000%
44	2.56	-50.80	4.45	-2.56	50.80	-4.45	0.000%
45	-0.01	-50.80	5.11	0.01	50.80	-5.11	0.000%
46	-2.56	-50.80	4.44	2.56	50.80	-4.44	0.000%
47	-4.42	-50.80	2.56	4.42	50.80	-2.56	0.000%
48	-5.10	-50.80	0.01	5.10	50.80	-0.01	0.000%
49	-4.41	-50.80	-2.55	4.41	50.80	2.55	0.000%
50	-2.56	-50.80	-4.45	2.56	50.80	4.45	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00036280
3	Yes	5	0.00000001	0.00016476
4	Yes	6	0.00000001	0.00029993
5	Yes	6	0.00000001	0.00010337
6	Yes	6	0.00000001	0.00028374
7	Yes	6	0.00000001	0.00009738
8	Yes	5	0.00000001	0.00029093
9	Yes	5	0.00000001	0.00012610
10	Yes	6	0.00000001	0.00029048
11	Yes	6	0.00000001	0.00010002
12	Yes	6	0.00000001	0.00029276
13	Yes	6	0.00000001	0.00010074
14	Yes	5	0.00000001	0.00031671
15	Yes	5	0.00000001	0.00014031
16	Yes	6	0.00000001	0.00028382
17	Yes	6	0.00000001	0.00009735
18	Yes	6	0.00000001	0.00029924
19	Yes	6	0.00000001	0.00010314
20	Yes	5	0.00000001	0.00033446
21	Yes	5	0.00000001	0.00014959
22	Yes	6	0.00000001	0.00028672
23	Yes	6	0.00000001	0.00009869
24	Yes	6	0.00000001	0.00028673

25	Yes	6	0.00000001	0.00009858
26	Yes	4	0.00000001	0.00000494
27	Yes	5	0.00000001	0.00064164
28	Yes	6	0.00000001	0.00014890
29	Yes	6	0.00000001	0.00013219
30	Yes	5	0.00000001	0.00063807
31	Yes	6	0.00000001	0.00013820
32	Yes	6	0.00000001	0.00014742
33	Yes	5	0.00000001	0.00064283
34	Yes	6	0.00000001	0.00013407
35	Yes	6	0.00000001	0.00014430
36	Yes	5	0.00000001	0.00063476
37	Yes	6	0.00000001	0.00013426
38	Yes	6	0.00000001	0.00013956
39	Yes	4	0.00000001	0.00083374
40	Yes	5	0.00000001	0.00007718
41	Yes	5	0.00000001	0.00006919
42	Yes	4	0.00000001	0.00082389
43	Yes	5	0.00000001	0.00007278
44	Yes	5	0.00000001	0.00007372
45	Yes	4	0.00000001	0.00083418
46	Yes	5	0.00000001	0.00006933
47	Yes	5	0.00000001	0.00007698
48	Yes	4	0.00000001	0.00082464
49	Yes	5	0.00000001	0.00007055
50	Yes	5	0.00000001	0.00007037

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	159.857 - 154.857	15.920	46	1.0878	0.0016
L2	154.857 - 149.857	14.782	46	1.0836	0.0016
L3	149.857 - 144.857	13.656	46	1.0664	0.0015
L4	144.857 - 139.857	12.556	46	1.0324	0.0013
L5	139.857 - 134.857	11.500	46	0.9828	0.0011
L6	134.857 - 129.857	10.502	46	0.9210	0.0009
L7	129.857 - 125.75	9.575	46	0.8485	0.0008
L8	125.75 - 125.5	8.873	46	0.7832	0.0007
L9	125.5 - 118.978	8.832	46	0.7791	0.0007
L10	122.728 - 117.978	8.393	46	0.7313	0.0007
L11	117.978 - 112.978	7.685	46	0.6854	0.0007
L12	112.978 - 107.978	6.989	46	0.6433	0.0007
L13	107.978 - 103	6.339	46	0.5988	0.0006
L14	103 - 102.75	5.739	46	0.5520	0.0005
L15	102.75 - 100.208	5.710	46	0.5500	0.0005
L16	100.208 - 95.6875	5.423	46	0.5290	0.0005
L17	100.021 - 94.6875	5.402	46	0.5278	0.0005
L18	94.6875 - 93.5	4.823	46	0.5071	0.0005
L19	93.5 - 93.25	4.697	46	0.4995	0.0004
L20	93.25 - 89.25	4.671	46	0.4982	0.0004
L21	89.25 - 89	4.263	46	0.4762	0.0004
L22	89 - 86.5	4.238	46	0.4750	0.0004
L23	86.5 - 86.25	3.993	46	0.4618	0.0004
L24	86.25 - 81.25	3.969	46	0.4603	0.0004
L25	81.25 - 76.25	3.504	46	0.4282	0.0003
L26	76.25 - 75.417	3.072	46	0.3961	0.0003

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L27	75.417 - 75.167	3.003	46	0.3908	0.0003
L28	75.167 - 70.167	2.983	46	0.3894	0.0003
L29	70.167 - 65.167	2.590	46	0.3607	0.0003
L30	65.167 - 60.167	2.228	46	0.3320	0.0002
L31	60.167 - 59.5	1.895	46	0.3030	0.0002
L32	59.5 - 59.25	1.853	46	0.2992	0.0002
L33	59.25 - 54.25	1.838	46	0.2978	0.0002
L34	54.25 - 53	1.541	46	0.2691	0.0002
L35	53 - 52.75	1.471	46	0.2619	0.0002
L36	52.75 - 47.0608	1.458	46	0.2605	0.0002
L37	52.6442 - 46.0608	1.452	46	0.2599	0.0002
L38	46.0608 - 41.0608	1.107	46	0.2383	0.0001
L39	41.0608 - 39.33	0.872	46	0.2099	0.0001
L40	39.33 - 39.08	0.798	46	0.2004	0.0001
L41	39.08 - 37.75	0.787	46	0.1991	0.0001
L42	37.75 - 37.5	0.733	46	0.1924	0.0001
L43	37.5 - 32.5	0.723	46	0.1911	0.0001
L44	32.5 - 29.75	0.537	46	0.1634	0.0001
L45	29.75 - 29.5	0.447	46	0.1482	0.0001
L46	29.5 - 24.5	0.440	46	0.1468	0.0001
L47	24.5 - 21.25	0.300	46	0.1193	0.0001
L48	21.25 - 21	0.225	46	0.1018	0.0001
L49	21 - 20	0.220	46	0.1005	0.0001
L50	20 - 19.75	0.199	46	0.0953	0.0001
L51	19.75 - 17	0.194	46	0.0941	0.0000
L52	17 - 16.75	0.144	46	0.0814	0.0000
L53	16.75 - 11.75	0.140	46	0.0801	0.0000
L54	11.75 - 6.75	0.068	46	0.0559	0.0000
L55	6.75 - 1.75	0.022	44	0.0319	0.0000
L56	1.75 - 0	0.001	44	0.0081	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
159.00	Platform Mount [LP 712-1]	46	15.724	1.0875	0.0016	27327
157.00	Side Arm Mount [SO 102-3]	46	15.269	1.0864	0.0016	27327
152.00	Side Arm Mount [SO 102-3]	46	14.137	1.0758	0.0016	15644
150.00	Platform Mount [LP 303-1]	46	13.688	1.0671	0.0015	11610
139.00	T-Arm Mount [TA 602-3]	46	11.324	0.9730	0.0011	4948
125.00	Platform Mount [LP 303-1]	46	8.751	0.7706	0.0007	3775
109.00	Side Arm Mount [SO 201-1]	46	6.468	0.6083	0.0006	6350

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	159.857 - 154.857	81.016	16	5.5345	0.0078
L2	154.857 - 149.857	75.242	16	5.5128	0.0078
L3	149.857 - 144.857	69.523	16	5.4270	0.0073
L4	144.857 - 139.857	63.935	16	5.2569	0.0062
L5	139.857 - 134.857	58.568	16	5.0064	0.0053
L6	134.857 -	53.494	16	4.6928	0.0045

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
	129.857				
L7	129.857 - 125.75	48.778	16	4.3240	0.0039
L8	125.75 - 125.5	45.205	16	3.9917	0.0034
L9	125.5 - 118.978	44.996	16	3.9709	0.0034
L10	122.728 - 117.978	42.763	16	3.7274	0.0033
L11	117.978 - 112.978	39.160	16	3.4939	0.0033
L12	112.978 - 107.978	35.616	16	3.2793	0.0033
L13	107.978 - 103	32.303	16	3.0524	0.0032
L14	103 - 102.75	29.246	16	2.8143	0.0027
L15	102.75 - 100.208	29.099	16	2.8040	0.0027
L16	100.208 - 95.6875	27.636	16	2.6971	0.0025
L17	100.021 - 94.6875	27.530	16	2.6908	0.0025
L18	94.6875 - 93.5	24.577	16	2.5854	0.0023
L19	93.5 - 93.25	23.940	16	2.5465	0.0022
L20	93.25 - 89.25	23.807	16	2.5397	0.0022
L21	89.25 - 89	21.727	16	2.4280	0.0020
L22	89 - 86.5	21.600	16	2.4214	0.0020
L23	86.5 - 86.25	20.350	16	2.3546	0.0019
L24	86.25 - 81.25	20.227	16	2.3466	0.0019
L25	81.25 - 76.25	17.857	16	2.1833	0.0017
L26	76.25 - 75.417	15.657	16	2.0194	0.0015
L27	75.417 - 75.167	15.307	16	1.9926	0.0015
L28	75.167 - 70.167	15.203	16	1.9853	0.0015
L29	70.167 - 65.167	13.202	16	1.8386	0.0013
L30	65.167 - 60.167	11.354	16	1.6925	0.0012
L31	60.167 - 59.5	9.659	16	1.5447	0.0010
L32	59.5 - 59.25	9.445	16	1.5254	0.0010
L33	59.25 - 54.25	9.365	16	1.5181	0.0010
L34	54.25 - 53	7.853	16	1.3716	0.0009
L35	53 - 52.75	7.498	16	1.3353	0.0008
L36	52.75 - 47.0608	7.429	16	1.3280	0.0008
L37	52.6442 - 46.0608	7.399	16	1.3249	0.0008
L38	46.0608 - 41.0608	5.640	16	1.2147	0.0007
L39	41.0608 - 39.33	4.444	16	1.0699	0.0006
L40	39.33 - 39.08	4.065	16	1.0213	0.0006
L41	39.08 - 37.75	4.012	16	1.0149	0.0006
L42	37.75 - 37.5	3.734	16	0.9809	0.0006
L43	37.5 - 32.5	3.682	16	0.9739	0.0006
L44	32.5 - 29.75	2.737	16	0.8327	0.0005
L45	29.75 - 29.5	2.280	16	0.7553	0.0004
L46	29.5 - 24.5	2.240	16	0.7484	0.0004
L47	24.5 - 21.25	1.530	16	0.6081	0.0003
L48	21.25 - 21	1.147	16	0.5188	0.0003
L49	21 - 20	1.120	16	0.5121	0.0003
L50	20 - 19.75	1.015	16	0.4856	0.0003
L51	19.75 - 17	0.990	16	0.4797	0.0003
L52	17 - 16.75	0.732	16	0.4145	0.0002
L53	16.75 - 11.75	0.711	16	0.4084	0.0002
L54	11.75 - 6.75	0.348	16	0.2849	0.0001
L55	6.75 - 1.75	0.114	16	0.1626	0.0001
L56	1.75 - 0	0.008	16	0.0413	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
159.00	Platform Mount [LP 712-1]	16	80.024	5.5328	0.0082	5483
157.00	Side Arm Mount [SO 102-3]	16	77.713	5.5269	0.0083	5483

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
152.00	Side Arm Mount [SO 102-3]	16	71.963	5.4736	0.0080	3183
150.00	Platform Mount [LP 303-1]	16	69.685	5.4306	0.0077	2368
139.00	T-Arm Mount [TA 602-3]	16	57.675	4.9568	0.0055	991
125.00	Platform Mount [LP 303-1]	16	44.584	3.9273	0.0035	749
109.00	Side Arm Mount [SO 201-1]	16	32.961	3.1011	0.0033	1254

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	159.857 - 154.857 (1)	TP17.6204x16.5x0.1875	5.00	0.00	0.0	10.3747	-2.79	770.79	0.004
L2	154.857 - 149.857 (2)	TP18.7407x17.6204x0.1875	5.00	0.00	0.0	11.0415	-5.69	820.33	0.007
L3	149.857 - 144.857 (3)	TP19.8611x18.7407x0.1875	5.00	0.00	0.0	11.7082	-6.00	859.25	0.007
L4	144.857 - 139.857 (4)	TP20.9814x19.8611x0.1875	5.00	0.00	0.0	12.3750	-6.35	894.41	0.007
L5	139.857 - 134.857 (5)	TP22.1018x20.9814x0.1875	5.00	0.00	0.0	13.0417	-8.08	928.08	0.009
L6	134.857 - 129.857 (6)	TP23.2221x22.1018x0.1875	5.00	0.00	0.0	13.7085	-8.55	960.27	0.009
L7	129.857 - 125.75 (7)	TP24.1425x23.2221x0.1875	4.11	0.00	0.0	14.2562	-8.95	985.60	0.009
L8	125.75 - 125.5 (8)	TP24.1985x24.1425x0.1875	0.25	0.00	0.0	14.2895	-8.98	987.11	0.009
L9	125.5 - 118.978 (9)	TP25.66x24.1985x0.1875	6.52	0.00	0.0	14.6593	-11.99	1003.60	0.012
L10	118.978 - 117.978 (10)	TP25.4891x24.4447x0.25	4.75	0.00	0.0	20.0272	-12.81	1484.59	0.009
L11	117.978 - 112.978 (11)	TP26.5885x25.4891x0.4813	5.00	0.00	0.0	39.8784	-13.76	2962.77	0.005
L12	112.978 - 107.978 (12)	TP27.6878x26.5885x0.475	5.00	0.00	0.0	41.0274	-14.93	3048.13	0.005
L13	107.978 - 103 (13)	TP28.7822x27.6878x0.4625	4.98	0.00	0.0	41.5726	-15.92	3088.64	0.005
L14	103 - 102.75 (14)	TP28.8372x28.7822x0.55	0.25	0.00	0.0	49.3809	-15.99	3668.76	0.004
L15	102.75 - 100.208 (15)	TP29.3961x28.8372x0.5375	2.54	0.00	0.0	49.2335	-16.62	3657.80	0.005
L16	100.208 - 95.6875 (16)	TP30.39x29.3961x0.6875	4.52	0.00	0.0	62.7355	-16.68	4660.94	0.004
L17	95.6875 - 94.6875 (17)	TP30.1188x28.9372x0.7375	5.33	0.00	0.0	68.7764	-19.26	5109.75	0.004
L18	94.6875 - 93.5 (18)	TP30.3819x30.1188x0.7375	1.19	0.00	0.0	69.3923	-19.62	5155.50	0.004
L19	93.5 - 93.25 (19)	TP30.4372x30.3819x0.9125	0.25	0.00	0.0	85.5118	-19.71	6353.10	0.003
L20	93.25 - 89.25 (20)	TP31.3234x30.4372x0.8875	4.00	0.00	0.0	85.7357	-21.13	6369.73	0.003
L21	89.25 - 89 (21)	TP31.3788x31.3234x0.9375	0.25	0.00	0.0	90.5819	-21.23	6729.78	0.003
L22	89 - 86.5 (22)	TP31.9326x31.3788x0.925	2.50	0.00	0.0	91.0369	-22.16	6763.59	0.003
L23	86.5 - 86.25 (23)	TP31.988x31.9326x0.7625	0.25	0.00	0.0	75.5712	-22.24	5614.57	0.004
L24	86.25 - 81.25 (24)	TP33.0957x31.988x0.7375	5.00	0.00	0.0	75.7449	-23.86	5627.47	0.004
L25	81.25 - 76.25 (25)	TP34.2034x33.0957x0.725	5.00	0.00	0.0	77.0389	-25.50	5723.60	0.004

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L26	76.25 - 75.417 (26)	TP34.388x34.2034x0.725	0.83	0.00	0.0	77.4635	-25.78	5755.15	0.004
L27	75.417 - 75.167 (27)	TP34.4434x34.388x0.8125	0.25	0.00	0.0	86.7298	-25.88	6443.59	0.004
L28	75.167 - 70.167 (28)	TP35.5511x34.4434x0.8	5.00	0.00	0.0	88.2399	-27.72	6555.78	0.004
L29	70.167 - 65.167 (29)	TP36.6588x35.5511x0.7875	5.00	0.00	0.0	89.6611	-29.59	6661.37	0.004
L30	65.167 - 60.167 (30)	TP37.7665x36.6588x0.7625	5.00	0.00	0.0	89.5561	-31.48	6653.57	0.005
L31	60.167 - 59.5 (31)	TP37.9142x37.7665x0.7625	0.67	0.00	0.0	89.9137	-31.74	6680.14	0.005
L32	59.5 - 59.25 (32)	TP37.9696x37.9142x0.7625	0.25	0.00	0.0	90.0477	-31.84	6690.10	0.005
L33	59.25 - 54.25 (33)	TP39.0773x37.9696x0.75	5.00	0.00	0.0	91.2382	-33.76	6778.54	0.005
L34	54.25 - 53 (34)	TP39.3542x39.0773x0.7375	1.25	0.00	0.0	90.3950	-34.24	6715.90	0.005
L35	53 - 52.75 (35)	TP39.4096x39.3542x0.7375	0.25	0.00	0.0	90.5247	-34.35	6725.53	0.005
L36	52.75 - 47.0608 (36)	TP40.67x39.4096x0.7375	5.69	0.00	0.0	90.5796	-34.39	6729.61	0.005
L37	47.0608 - 46.0608 (37)	TP40.2702x38.8081x0.7625	6.58	0.00	0.0	95.6155	-39.10	7103.75	0.006
L38	46.0608 - 41.0608 (38)	TP41.3807x40.2702x0.75	5.00	0.00	0.0	96.7213	-41.24	7185.91	0.006
L39	41.0608 - 39.33 (39)	TP41.7651x41.3807x0.75	1.73	0.00	0.0	97.6363	-41.98	7253.89	0.006
L40	39.33 - 39.08 (40)	TP41.8206x41.7651x0.825	0.25	0.00	0.0	107.3490	-42.11	7975.49	0.005
L41	39.08 - 37.75 (41)	TP42.116x41.8206x0.825	1.33	0.00	0.0	108.1220	-42.73	8032.96	0.005
L42	37.75 - 37.5 (42)	TP42.1715x42.116x0.75	0.25	0.00	0.0	98.6039	-42.84	7325.77	0.006
L43	37.5 - 32.5 (43)	TP43.282x42.1715x0.7375	5.00	0.00	0.0	99.5891	-45.02	7398.97	0.006
L44	32.5 - 29.75 (44)	TP43.8927x43.282x0.725	2.75	0.00	0.0	99.3354	-46.24	7380.12	0.006
L45	29.75 - 29.5 (45)	TP43.9482x43.8927x0.725	0.25	0.00	0.0	99.4632	-46.36	7389.62	0.006
L46	29.5 - 24.5 (46)	TP45.0587x43.9482x0.7125	5.00	0.00	0.0	100.2880	-48.59	7450.89	0.007
L47	24.5 - 21.25 (47)	TP45.7805x45.0587x0.7125	3.25	0.00	0.0	101.3760	-49.58	7531.74	0.007
L48	21.25 - 21 (48)	TP45.836x45.7805x0.725	0.25	0.00	0.0	103.6790	-50.06	7702.87	0.006
L49	21 - 20 (49)	TP46.0581x45.836x0.725	1.00	0.00	0.0	103.8070	-50.19	7712.36	0.007
L50	20 - 19.75 (50)	TP46.1137x46.0581x0.825	0.25	0.00	0.0	118.4450	-50.69	8799.89	0.006
L51	19.75 - 17 (51)	TP46.7244x46.1137x0.8125	2.75	0.00	0.0	116.8260	-50.83	8679.59	0.006
L52	17 - 16.75 (52)	TP46.7799x46.7244x0.775	0.25	0.00	0.0	113.0290	-52.29	8397.46	0.006
L53	16.75 - 11.75 (53)	TP47.8904x46.7799x0.7625	5.00	0.00	0.0	111.3700	-52.43	8274.25	0.006
L54	11.75 - 6.75 (54)	TP49.0009x47.8904x0.75	5.00	0.00	0.0	112.2180	-55.01	8337.22	0.007
L55	6.75 - 1.75 (55)	TP50.1113x49.0009x0.7375	5.00	0.00	0.0	112.9760	-57.57	8393.56	0.007
L56	1.75 - 0 (56)	TP50.5x50.1113x0.7375	1.75	0.00	0.0	115.5760	-60.09	8586.68	0.007

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	159.857 - 154.857 (1)	TP17.6204x16.5x0.1875	15.02	275.52	0.055	0.00	275.52	0.000
L2	154.857 - 149.857 (2)	TP18.7407x17.6204x0.1875	40.40	312.27	0.129	0.00	312.27	0.000
L3	149.857 - 144.857 (3)	TP19.8611x18.7407x0.1875	86.60	347.04	0.250	0.00	347.04	0.000
L4	144.857 - 139.857 (4)	TP20.9814x19.8611x0.1875	134.14	382.00	0.351	0.00	382.00	0.000
L5	139.857 - 134.857 (5)	TP22.1018x20.9814x0.1875	191.64	417.93	0.459	0.00	417.93	0.000
L6	134.857 - 129.857 (6)	TP23.2221x22.1018x0.1875	252.27	454.72	0.555	0.00	454.72	0.000
L7	129.857 - 125.75 (7)	TP24.1425x23.2221x0.1875	303.09	485.52	0.624	0.00	485.52	0.000
L8	125.75 - 125.5 (8)	TP24.1985x24.1425x0.1875	306.21	487.40	0.628	0.00	487.40	0.000
L9	125.5 - 118.978 (9)	TP25.66x24.1985x0.1875	359.19	508.47	0.706	0.00	508.47	0.000
L10	118.978 - 117.978 (10)	TP25.4891x24.4447x0.25	442.15	768.94	0.575	0.00	768.94	0.000
L11	117.978 - 112.978 (11)	TP26.5885x25.4891x0.4813	531.00	1574.05	0.337	0.00	1574.05	0.000
L12	112.978 - 107.978 (12)	TP27.6878x26.5885x0.475	622.24	1689.60	0.368	0.00	1689.60	0.000
L13	107.978 - 103 (13)	TP28.7822x27.6878x0.4625	715.28	1783.67	0.401	0.00	1783.67	0.000
L14	103 - 102.75 (14)	TP28.8372x28.7822x0.55	720.00	2109.78	0.341	0.00	2109.78	0.000
L15	102.75 - 100.208 (15)	TP29.3961x28.8372x0.5375	768.19	2147.70	0.358	0.00	2147.70	0.000
L16	100.208 - 95.6875 (16)	TP30.39x29.3961x0.6875	771.76	2712.29	0.285	0.00	2712.29	0.000
L17	95.6875 - 94.6875 (17)	TP30.1188x28.9372x0.7375	874.67	3035.26	0.288	0.00	3035.26	0.000
L18	94.6875 - 93.5 (18)	TP30.3819x30.1188x0.7375	897.91	3090.53	0.291	0.00	3090.53	0.000
L19	93.5 - 93.25 (19)	TP30.4372x30.3819x0.9125	902.81	3770.90	0.239	0.00	3770.90	0.000
L20	93.25 - 89.25 (20)	TP31.3234x30.4372x0.8875	981.94	3904.07	0.252	0.00	3904.07	0.000
L21	89.25 - 89 (21)	TP31.3788x31.3234x0.9375	986.92	4118.92	0.240	0.00	4118.92	0.000
L22	89 - 86.5 (22)	TP31.9326x31.3788x0.925	1037.06	4220.58	0.246	0.00	4220.58	0.000
L23	86.5 - 86.25 (23)	TP31.988x31.9326x0.7625	1042.10	3546.83	0.294	0.00	3546.83	0.000
L24	86.25 - 81.25 (24)	TP33.0957x31.988x0.7375	1143.85	3689.80	0.310	0.00	3689.80	0.000
L25	81.25 - 76.25 (25)	TP34.2034x33.0957x0.725	1247.42	3887.07	0.321	0.00	3887.07	0.000
L26	76.25 - 75.417 (26)	TP34.388x34.2034x0.725	1264.84	3930.50	0.322	0.00	3930.50	0.000
L27	75.417 - 75.167 (27)	TP34.4434x34.388x0.8125	1270.08	4385.22	0.290	0.00	4385.22	0.000
L28	75.167 - 70.167 (28)	TP35.5511x34.4434x0.8	1375.90	4615.31	0.298	0.00	4615.31	0.000
L29	70.167 - 65.167 (29)	TP36.6588x35.5511x0.7875	1483.59	4845.87	0.306	0.00	4845.87	0.000
L30	65.167 - 60.167 (30)	TP37.7665x36.6588x0.7625	1593.12	4999.63	0.319	0.00	4999.63	0.000
L31	60.167 - 59.5 (31)	TP37.9142x37.7665x0.7625	1607.87	5040.03	0.319	0.00	5040.03	0.000
L32	59.5 - 59.25 (32)	TP37.9696x37.9142x0.7625	1613.40	5055.23	0.319	0.00	5055.23	0.000
L33	59.25 - 54.25 (33)	TP39.0773x37.9696x0.75	1725.03	5281.06	0.327	0.00	5281.06	0.000
L34	54.25 - 53 (34)	TP39.3542x39.0773x0.7375	1753.22	5274.19	0.332	0.00	5274.19	0.000
L35	53 - 52.75 (35)	TP39.4096x39.3542x0.7375	1758.87	5289.48	0.333	0.00	5289.48	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L36	52.75 - 47.0608 (36)	TP40.67x39.4096x0.7375	1761.26	5295.95	0.333	0.00	5295.95	0.000
L37	47.0608 - 46.0608 (37)	TP40.2702x38.8081x0.7625	1911.98	5706.37	0.335	0.00	5706.37	0.000
L38	46.0608 - 41.0608 (38)	TP41.3807x40.2702x0.75	2028.58	5941.34	0.341	0.00	5941.34	0.000
L39	41.0608 - 39.33 (39)	TP41.7651x41.3807x0.75	2069.32	6055.32	0.342	0.00	6055.32	0.000
L40	39.33 - 39.08 (40)	TP41.8206x41.7651x0.825	2075.22	6642.54	0.312	0.00	6642.54	0.000
L41	39.08 - 37.75 (41)	TP42.116x41.8206x0.825	2106.70	6739.56	0.313	0.00	6739.56	0.000
L42	37.75 - 37.5 (42)	TP42.1715x42.116x0.75	2112.63	6177.02	0.342	0.00	6177.02	0.000
L43	37.5 - 32.5 (43)	TP43.282x42.1715x0.7375	2232.01	6412.73	0.348	0.00	6412.73	0.000
L44	32.5 - 29.75 (44)	TP43.8927x43.282x0.725	2298.30	6493.54	0.354	0.00	6493.54	0.000
L45	29.75 - 29.5 (45)	TP43.9482x43.8927x0.725	2304.35	6510.40	0.354	0.00	6510.40	0.000
L46	29.5 - 24.5 (46)	TP45.0587x43.9482x0.7125	2426.06	6739.61	0.360	0.00	6739.61	0.000
L47	24.5 - 21.25 (47)	TP45.7805x45.0587x0.7125	2479.24	6887.83	0.360	0.00	6887.83	0.000
L48	21.25 - 21 (48)	TP45.836x45.7805x0.725	2505.94	7078.81	0.354	0.00	7078.81	0.000
L49	21 - 20 (49)	TP46.0581x45.836x0.725	2512.11	7096.40	0.354	0.00	7096.40	0.000
L50	20 - 19.75 (50)	TP46.1137x46.0581x0.825	2536.83	8101.71	0.313	0.00	8101.71	0.000
L51	19.75 - 17 (51)	TP46.7244x46.1137x0.8125	2543.03	8005.36	0.318	0.00	8005.36	0.000
L52	17 - 16.75 (52)	TP46.7799x46.7244x0.775	2611.37	7864.24	0.332	0.00	7864.24	0.000
L53	16.75 - 11.75 (53)	TP47.8904x46.7799x0.7625	2617.61	7762.58	0.337	0.00	7762.58	0.000
L54	11.75 - 6.75 (54)	TP49.0009x47.8904x0.75	2743.12	8017.73	0.342	0.00	8017.73	0.000
L55	6.75 - 1.75 (55)	TP50.1113x49.0009x0.7375	2870.13	8269.32	0.347	0.00	8269.32	0.000
L56	1.75 - 0 (56)	TP50.5x50.1113x0.7375	2998.61	8657.17	0.346	0.00	8657.17	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	159.857 - 154.857 (1)	TP17.6204x16.5x0.1875	4.36	385.39	0.011	0.00	551.71	0.000
L2	154.857 - 149.857 (2)	TP18.7407x17.6204x0.1875	9.11	410.16	0.022	0.12	625.30	0.000
L3	149.857 - 144.857 (3)	TP19.8611x18.7407x0.1875	9.38	429.63	0.022	0.12	694.92	0.000
L4	144.857 - 139.857 (4)	TP20.9814x19.8611x0.1875	9.65	447.20	0.022	0.12	764.94	0.000
L5	139.857 - 134.857 (5)	TP22.1018x20.9814x0.1875	12.00	464.04	0.026	0.12	836.88	0.000
L6	134.857 - 129.857 (6)	TP23.2221x22.1018x0.1875	12.27	480.13	0.026	0.12	910.56	0.000
L7	129.857 - 125.75 (7)	TP24.1425x23.2221x0.1875	12.49	492.80	0.025	0.12	972.22	0.000
L8	125.75 - 125.5 (8)	TP24.1985x24.1425x0.1875	12.50	493.56	0.025	0.12	976.00	0.000
L9	125.5 - 118.978 (9)	TP25.66x24.1985x0.1875	17.32	501.80	0.035	0.03	1018.18	0.000
L10	118.978 -	TP25.4891x24.4447x0.25	17.62	742.29	0.024	0.03	1539.76	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L11	117.978 (10) 117.978 - 112.978 (11)	TP26.5885x25.4891x0.4813	17.94	1481.38	0.012	0.03	3151.95	0.000
L12	112.978 - 107.978 (12)	TP27.6878x26.5885x0.475	18.54	1524.06	0.012	1.13	3383.33	0.000
L13	107.978 - 103 (13)	TP28.7822x27.6878x0.4625	18.86	1544.32	0.012	1.13	3571.69	0.000
L14	103 - 102.75 (14)	TP28.8372x28.7822x0.55	18.87	1834.38	0.010	1.13	4224.73	0.000
L15	102.75 - 100.208 (15)	TP29.3961x28.8372x0.5375	19.05	1828.90	0.010	1.13	4300.65	0.000
L16	100.208 - 95.6875 (16)	TP30.39x29.3961x0.6875	19.06	2330.47	0.008	1.13	5431.22	0.000
L17	95.6875 - 94.6875 (17)	TP30.1188x28.9372x0.7375	19.53	2554.87	0.008	1.13	6077.94	0.000
L18	94.6875 - 93.5 (18)	TP30.3819x30.1188x0.7375	19.62	2577.75	0.008	1.13	6188.62	0.000
L19	93.5 - 93.25 (19)	TP30.4372x30.3819x0.9125	19.63	3176.55	0.006	1.13	7551.02	0.000
L20	93.25 - 89.25 (20)	TP31.3234x30.4372x0.8875	19.94	3184.87	0.006	1.13	7817.68	0.000
L21	89.25 - 89 (21)	TP31.3788x31.3234x0.9375	19.96	3364.89	0.006	1.13	8247.92	0.000
L22	89 - 86.5 (22)	TP31.9326x31.3788x0.925	20.16	3381.79	0.006	1.13	8451.50	0.000
L23	86.5 - 86.25 (23)	TP31.988x31.9326x0.7625	20.17	2807.28	0.007	1.13	7102.34	0.000
L24	86.25 - 81.25 (24)	TP33.0957x31.988x0.7375	20.54	2813.74	0.007	1.13	7388.63	0.000
L25	81.25 - 76.25 (25)	TP34.2034x33.0957x0.725	20.90	2861.80	0.007	1.13	7783.65	0.000
L26	76.25 - 75.417 (26)	TP34.388x34.2034x0.725	20.96	2877.58	0.007	1.13	7870.62	0.000
L27	75.417 - 75.167 (27)	TP34.4434x34.388x0.8125	20.98	3221.79	0.007	1.13	8781.17	0.000
L28	75.167 - 70.167 (28)	TP35.5511x34.4434x0.8	21.36	3277.89	0.007	1.13	9241.92	0.000
L29	70.167 - 65.167 (29)	TP36.6588x35.5511x0.7875	21.73	3330.69	0.007	1.13	9703.58	0.000
L30	65.167 - 60.167 (30)	TP37.7665x36.6588x0.7625	22.09	3326.78	0.007	1.13	10011.50	0.000
L31	60.167 - 59.5 (31)	TP37.9142x37.7665x0.7625	22.14	3340.07	0.007	1.13	10092.42	0.000
L32	59.5 - 59.25 (32)	TP37.9696x37.9142x0.7625	22.15	3345.05	0.007	1.13	10122.83	0.000
L33	59.25 - 54.25 (33)	TP39.0773x37.9696x0.75	22.51	3389.27	0.007	1.13	10575.00	0.000
L34	54.25 - 53 (34)	TP39.3542x39.0773x0.7375	22.60	3357.95	0.007	1.13	10561.25	0.000
L35	53 - 52.75 (35)	TP39.4096x39.3542x0.7375	22.61	3362.77	0.007	1.13	10591.92	0.000
L36	52.75 - 47.0608 (36)	TP40.67x39.4096x0.7375	22.62	3364.80	0.007	1.13	10604.83	0.000
L37	47.0608 - 46.0608 (37)	TP40.2702x38.8081x0.7625	23.17	3551.88	0.007	1.13	11426.67	0.000
L38	46.0608 - 41.0608 (38)	TP41.3807x40.2702x0.75	23.49	3592.95	0.007	1.13	11897.25	0.000
L39	41.0608 - 39.33 (39)	TP41.7651x41.3807x0.75	23.62	3626.95	0.007	1.13	12125.42	0.000
L40	39.33 - 39.08 (40)	TP41.8206x41.7651x0.825	23.62	3987.75	0.006	1.13	13301.33	0.000
L41	39.08 - 37.75 (41)	TP42.116x41.8206x0.825	23.72	4016.48	0.006	1.13	13495.58	0.000
L42	37.75 - 37.5 (42)	TP42.1715x42.116x0.75	23.73	3662.89	0.006	1.13	12369.17	0.000
L43	37.5 - 32.5 (43)	TP43.282x42.1715x0.7375	24.04	3699.49	0.006	1.13	12841.17	0.000
L44	32.5 - 29.75 (44)	TP43.8927x43.282x0.725	24.20	3690.06	0.007	1.13	13003.00	0.000
L45	29.75 - 29.5	TP43.9482x43.8927x0.72	24.20	3694.81	0.007	1.13	13036.75	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
	(45)	5						
L46	29.5 - 24.5 (46)	TP45.0587x43.9482x0.71 25	24.50	3725.44	0.007	1.13	13495.67	0.000
L47	24.5 - 21.25 (47)	TP45.7805x45.0587x0.71 25	24.69	3786.08	0.007	1.13	13792.50	0.000
L48	21.25 - 21 (48)	TP45.836x45.7805x0.725	24.69	3856.18	0.006	1.13	14174.92	0.000
L49	21 - 20 (49)	TP46.0581x45.836x0.725	24.76	3875.17	0.006	1.13	14210.17	0.000
L50	20 - 19.75 (50)	TP46.1137x46.0581x0.82 5	24.77	4405.34	0.006	1.13	16223.25	0.000
L51	19.75 - 17 (51)	TP46.7244x46.1137x0.81 25	24.87	4369.05	0.006	1.13	16030.25	0.000
L52	17 - 16.75 (52)	TP46.7799x46.7244x0.77 5	24.96	4203.81	0.006	1.13	15747.75	0.000
L53	16.75 - 11.75 (53)	TP47.8904x46.7799x0.76 25	25.03	4157.09	0.006	1.13	15544.17	0.000
L54	11.75 - 6.75 (54)	TP49.0009x47.8904x0.75	25.32	4188.25	0.006	1.13	16055.08	0.000
L55	6.75 - 1.75 (55)	TP50.1113x49.0009x0.73 75	25.62	4216.09	0.006	1.13	16558.92	0.000
L56	1.75 - 0 (56)	TP50.5x50.1113x0.7375	25.97	4327.14	0.006	1.13	17335.50	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	159.857 - 154.857 (1)	0.004	0.055	0.000	0.011	0.000	0.058 ✔	1.000	4.8.2 ✔
L2	154.857 - 149.857 (2)	0.007	0.129	0.000	0.022	0.000	0.137 ✔	1.000	4.8.2 ✔
L3	149.857 - 144.857 (3)	0.007	0.250	0.000	0.022	0.000	0.257 ✔	1.000	4.8.2 ✔
L4	144.857 - 139.857 (4)	0.007	0.351	0.000	0.022	0.000	0.359 ✔	1.000	4.8.2 ✔
L5	139.857 - 134.857 (5)	0.009	0.459	0.000	0.026	0.000	0.468 ✔	1.000	4.8.2 ✔
L6	134.857 - 129.857 (6)	0.009	0.555	0.000	0.026	0.000	0.564 ✔	1.000	4.8.2 ✔
L7	129.857 - 125.75 (7)	0.009	0.624	0.000	0.025	0.000	0.634 ✔	1.000	4.8.2 ✔
L8	125.75 - 125.5 (8)	0.009	0.628	0.000	0.025	0.000	0.638 ✔	1.000	4.8.2 ✔
L9	125.5 - 118.978 (9)	0.012	0.706	0.000	0.035	0.000	0.720 ✔	1.000	4.8.2 ✔
L10	118.978 - 117.978 (10)	0.009	0.575	0.000	0.024	0.000	0.584 ✔	1.000	4.8.2 ✔
L11	117.978 - 112.978 (11)	0.005	0.337	0.000	0.012	0.000	0.342 ✔	1.000	4.8.2 ✔
L12	112.978 - 107.978 (12)	0.005	0.368	0.000	0.012	0.000	0.373 ✔	1.000	4.8.2 ✔
L13	107.978 - 103 (13)	0.005	0.401	0.000	0.012	0.000	0.406 ✔	1.000	4.8.2 ✔
L14	103 - 102.75 (14)	0.004	0.341	0.000	0.010	0.000	0.346 ✔	1.000	4.8.2 ✔
L15	102.75 - 100.208 (15)	0.005	0.358	0.000	0.010	0.000	0.362 ✔	1.000	4.8.2 ✔
L16	100.208 - 95.6875 (16)	0.004	0.285	0.000	0.008	0.000	0.288 ✔	1.000	4.8.2 ✔

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L17	95.6875 - 94.6875 (17)	0.004	0.288	0.000	0.008	0.000	0.292 ✔	1.000	4.8.2 ✔
L18	94.6875 - 93.5 (18)	0.004	0.291	0.000	0.008	0.000	0.294 ✔	1.000	4.8.2 ✔
L19	93.5 - 93.25 (19)	0.003	0.239	0.000	0.006	0.000	0.243 ✔	1.000	4.8.2 ✔
L20	93.25 - 89.25 (20)	0.003	0.252	0.000	0.006	0.000	0.255 ✔	1.000	4.8.2 ✔
L21	89.25 - 89 (21)	0.003	0.240	0.000	0.006	0.000	0.243 ✔	1.000	4.8.2 ✔
L22	89 - 86.5 (22)	0.003	0.246	0.000	0.006	0.000	0.249 ✔	1.000	4.8.2 ✔
L23	86.5 - 86.25 (23)	0.004	0.294	0.000	0.007	0.000	0.298 ✔	1.000	4.8.2 ✔
L24	86.25 - 81.25 (24)	0.004	0.310	0.000	0.007	0.000	0.314 ✔	1.000	4.8.2 ✔
L25	81.25 - 76.25 (25)	0.004	0.321	0.000	0.007	0.000	0.325 ✔	1.000	4.8.2 ✔
L26	76.25 - 75.417 (26)	0.004	0.322	0.000	0.007	0.000	0.326 ✔	1.000	4.8.2 ✔
L27	75.417 - 75.167 (27)	0.004	0.290	0.000	0.007	0.000	0.294 ✔	1.000	4.8.2 ✔
L28	75.167 - 70.167 (28)	0.004	0.298	0.000	0.007	0.000	0.302 ✔	1.000	4.8.2 ✔
L29	70.167 - 65.167 (29)	0.004	0.306	0.000	0.007	0.000	0.311 ✔	1.000	4.8.2 ✔
L30	65.167 - 60.167 (30)	0.005	0.319	0.000	0.007	0.000	0.323 ✔	1.000	4.8.2 ✔
L31	60.167 - 59.5 (31)	0.005	0.319	0.000	0.007	0.000	0.324 ✔	1.000	4.8.2 ✔
L32	59.5 - 59.25 (32)	0.005	0.319	0.000	0.007	0.000	0.324 ✔	1.000	4.8.2 ✔
L33	59.25 - 54.25 (33)	0.005	0.327	0.000	0.007	0.000	0.332 ✔	1.000	4.8.2 ✔
L34	54.25 - 53 (34)	0.005	0.332	0.000	0.007	0.000	0.338 ✔	1.000	4.8.2 ✔
L35	53 - 52.75 (35)	0.005	0.333	0.000	0.007	0.000	0.338 ✔	1.000	4.8.2 ✔
L36	52.75 - 47.0608 (36)	0.005	0.333	0.000	0.007	0.000	0.338 ✔	1.000	4.8.2 ✔
L37	47.0608 - 46.0608 (37)	0.006	0.335	0.000	0.007	0.000	0.341 ✔	1.000	4.8.2 ✔
L38	46.0608 - 41.0608 (38)	0.006	0.341	0.000	0.007	0.000	0.347 ✔	1.000	4.8.2 ✔
L39	41.0608 - 39.33 (39)	0.006	0.342	0.000	0.007	0.000	0.348 ✔	1.000	4.8.2 ✔
L40	39.33 - 39.08 (40)	0.005	0.312	0.000	0.006	0.000	0.318 ✔	1.000	4.8.2 ✔
L41	39.08 - 37.75 (41)	0.005	0.313	0.000	0.006	0.000	0.318 ✔	1.000	4.8.2 ✔
L42	37.75 - 37.5 (42)	0.006	0.342	0.000	0.006	0.000	0.348 ✔	1.000	4.8.2 ✔
L43	37.5 - 32.5 (43)	0.006	0.348	0.000	0.006	0.000	0.354 ✔	1.000	4.8.2 ✔
L44	32.5 - 29.75 (44)	0.006	0.354	0.000	0.007	0.000	0.360 ✔	1.000	4.8.2 ✔
L45	29.75 - 29.5 (45)	0.006	0.354	0.000	0.007	0.000	0.360 ✔	1.000	4.8.2 ✔
L46	29.5 - 24.5 (46)	0.007	0.360	0.000	0.007	0.000	0.367 ✔	1.000	4.8.2 ✔

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L47	24.5 - 21.25 (47)	0.007	0.360	0.000	0.007	0.000	0.367 ✔	1.000	4.8.2 ✔
L48	21.25 - 21 (48)	0.006	0.354	0.000	0.006	0.000	0.361 ✔	1.000	4.8.2 ✔
L49	21 - 20 (49)	0.007	0.354	0.000	0.006	0.000	0.361 ✔	1.000	4.8.2 ✔
L50	20 - 19.75 (50)	0.006	0.313	0.000	0.006	0.000	0.319 ✔	1.000	4.8.2 ✔
L51	19.75 - 17 (51)	0.006	0.318	0.000	0.006	0.000	0.324 ✔	1.000	4.8.2 ✔
L52	17 - 16.75 (52)	0.006	0.332	0.000	0.006	0.000	0.338 ✔	1.000	4.8.2 ✔
L53	16.75 - 11.75 (53)	0.006	0.337	0.000	0.006	0.000	0.344 ✔	1.000	4.8.2 ✔
L54	11.75 - 6.75 (54)	0.007	0.342	0.000	0.006	0.000	0.349 ✔	1.000	4.8.2 ✔
L55	6.75 - 1.75 (55)	0.007	0.347	0.000	0.006	0.000	0.354 ✔	1.000	4.8.2 ✔
L56	1.75 - 0 (56)	0.007	0.346	0.000	0.006	0.000	0.353 ✔	1.000	4.8.2 ✔

Section Capacity Table

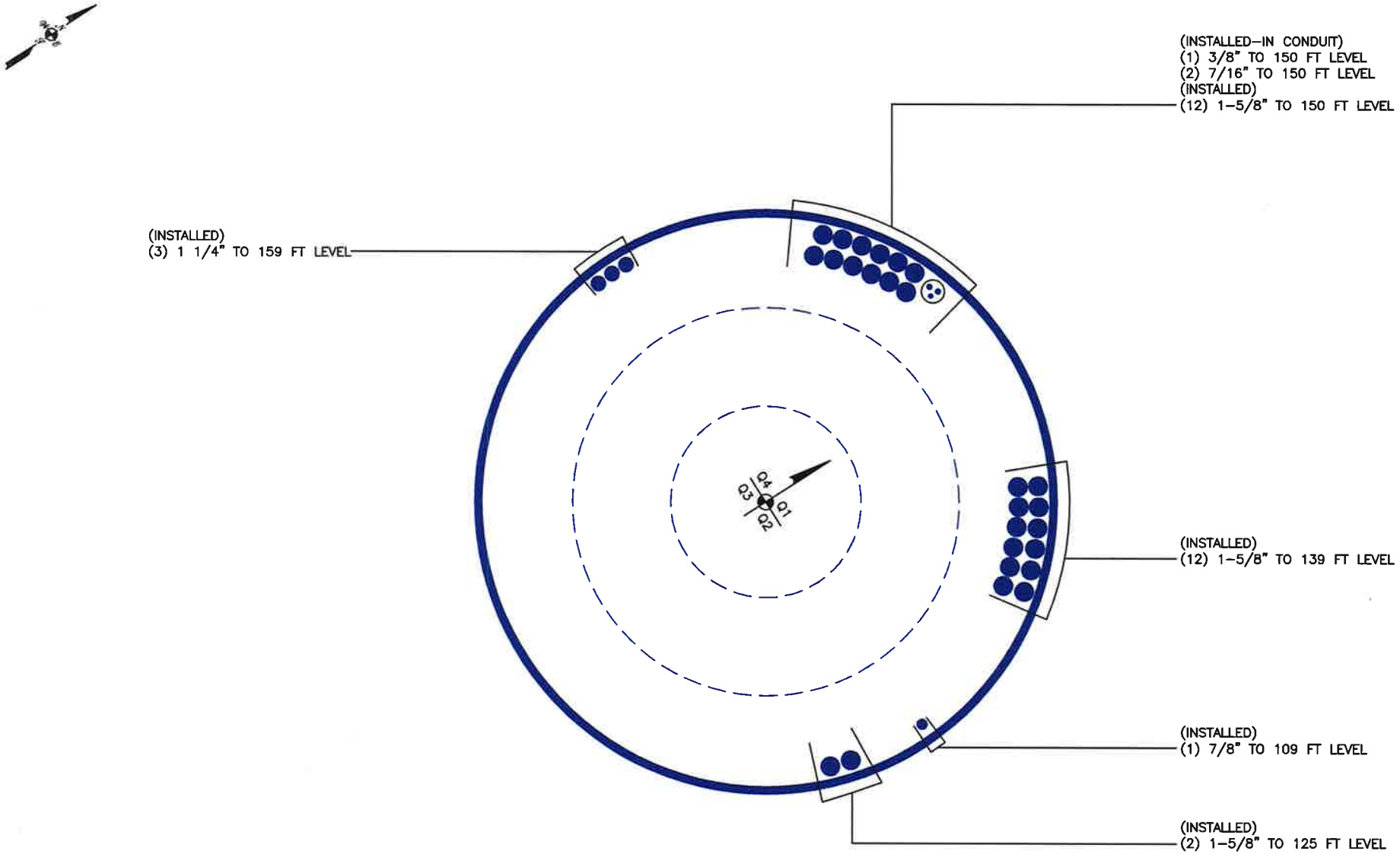
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	159.857 - 154.857	Pole	TP17.6204x16.5x0.1875	1	-2.79	770.79	5.8	Pass
L2	154.857 - 149.857	Pole	TP18.7407x17.6204x0.1875	2	-5.69	820.33	13.7	Pass
L3	149.857 - 144.857	Pole	TP19.8611x18.7407x0.1875	3	-6.00	859.25	25.7	Pass
L4	144.857 - 139.857	Pole	TP20.9814x19.8611x0.1875	4	-6.35	894.41	35.9	Pass
L5	139.857 - 134.857	Pole	TP22.1018x20.9814x0.1875	5	-8.08	928.08	46.8	Pass
L6	134.857 - 129.857	Pole	TP23.2221x22.1018x0.1875	6	-8.55	960.27	56.4	Pass
L7	129.857 - 125.75	Pole	TP24.1425x23.2221x0.1875	7	-8.95	985.60	63.4	Pass
L8	125.75 - 125.5	Pole	TP24.1985x24.1425x0.1875	8	-8.98	987.11	63.8	Pass
L9	125.5 - 118.978	Pole	TP25.66x24.1985x0.1875	9	-11.99	1003.60	72.0	Pass
L10	118.978 - 117.978	Pole	TP25.4891x24.4447x0.25	10	-12.81	1484.59	58.4	Pass
L11	117.978 - 112.978	Pole	TP26.5885x25.4891x0.4813	11	-13.76	2962.77	34.2	Pass
L12	112.978 - 107.978	Pole	TP27.6878x26.5885x0.475	12	-14.93	3048.13	37.3	Pass
L13	107.978 - 103	Pole	TP28.7822x27.6878x0.4625	13	-15.92	3088.64	40.6	Pass
L14	103 - 102.75	Pole	TP28.8372x28.7822x0.55	14	-15.99	3668.76	34.6	Pass
L15	102.75 - 100.208	Pole	TP29.3961x28.8372x0.5375	15	-16.62	3657.80	36.2	Pass
L16	100.208 - 95.6875	Pole	TP30.39x29.3961x0.6875	16	-16.68	4660.94	28.8	Pass
L17	95.6875 - 94.6875	Pole	TP30.1188x28.9372x0.7375	17	-19.26	5109.75	29.2	Pass
L18	94.6875 - 93.5	Pole	TP30.3819x30.1188x0.7375	18	-19.62	5155.50	29.4	Pass
L19	93.5 - 93.25	Pole	TP30.4372x30.3819x0.9125	19	-19.71	6353.10	24.3	Pass
L20	93.25 - 89.25	Pole	TP31.3234x30.4372x0.8875	20	-21.13	6369.73	25.5	Pass
L21	89.25 - 89	Pole	TP31.3788x31.3234x0.9375	21	-21.23	6729.78	24.3	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L22	89 - 86.5	Pole	TP31.9326x31.3788x0.925	22	-22.16	6763.59	24.9	Pass
L23	86.5 - 86.25	Pole	TP31.988x31.9326x0.7625	23	-22.24	5614.57	29.8	Pass
L24	86.25 - 81.25	Pole	TP33.0957x31.988x0.7375	24	-23.86	5627.47	31.4	Pass
L25	81.25 - 76.25	Pole	TP34.2034x33.0957x0.725	25	-25.50	5723.60	32.5	Pass
L26	76.25 - 75.417	Pole	TP34.388x34.2034x0.725	26	-25.78	5755.15	32.6	Pass
L27	75.417 - 75.167	Pole	TP34.4434x34.388x0.8125	27	-25.88	6443.59	29.4	Pass
L28	75.167 - 70.167	Pole	TP35.5511x34.4434x0.8	28	-27.72	6555.78	30.2	Pass
L29	70.167 - 65.167	Pole	TP36.6588x35.5511x0.7875	29	-29.59	6661.37	31.1	Pass
L30	65.167 - 60.167	Pole	TP37.7665x36.6588x0.7625	30	-31.48	6653.57	32.3	Pass
L31	60.167 - 59.5	Pole	TP37.9142x37.7665x0.7625	31	-31.74	6680.14	32.4	Pass
L32	59.5 - 59.25	Pole	TP37.9696x37.9142x0.7625	32	-31.84	6690.10	32.4	Pass
L33	59.25 - 54.25	Pole	TP39.0773x37.9696x0.75	33	-33.76	6778.54	33.2	Pass
L34	54.25 - 53	Pole	TP39.3542x39.0773x0.7375	34	-34.24	6715.90	33.8	Pass
L35	53 - 52.75	Pole	TP39.4096x39.3542x0.7375	35	-34.35	6725.53	33.8	Pass
L36	52.75 - 47.0608	Pole	TP40.67x39.4096x0.7375	36	-34.39	6729.61	33.8	Pass
L37	47.0608 - 46.0608	Pole	TP40.2702x38.8081x0.7625	37	-39.10	7103.75	34.1	Pass
L38	46.0608 - 41.0608	Pole	TP41.3807x40.2702x0.75	38	-41.24	7185.91	34.7	Pass
L39	41.0608 - 39.33	Pole	TP41.7651x41.3807x0.75	39	-41.98	7253.89	34.8	Pass
L40	39.33 - 39.08	Pole	TP41.8206x41.7651x0.825	40	-42.11	7975.49	31.8	Pass
L41	39.08 - 37.75	Pole	TP42.116x41.8206x0.825	41	-42.73	8032.96	31.8	Pass
L42	37.75 - 37.5	Pole	TP42.1715x42.116x0.75	42	-42.84	7325.77	34.8	Pass
L43	37.5 - 32.5	Pole	TP43.282x42.1715x0.7375	43	-45.02	7398.97	35.4	Pass
L44	32.5 - 29.75	Pole	TP43.8927x43.282x0.725	44	-46.24	7380.12	36.0	Pass
L45	29.75 - 29.5	Pole	TP43.9482x43.8927x0.725	45	-46.36	7389.62	36.0	Pass
L46	29.5 - 24.5	Pole	TP45.0587x43.9482x0.7125	46	-48.59	7450.89	36.7	Pass
L47	24.5 - 21.25	Pole	TP45.7805x45.0587x0.7125	47	-49.58	7531.74	36.7	Pass
L48	21.25 - 21	Pole	TP45.836x45.7805x0.725	48	-50.06	7702.87	36.1	Pass
L49	21 - 20	Pole	TP46.0581x45.836x0.725	49	-50.19	7712.36	36.1	Pass
L50	20 - 19.75	Pole	TP46.1137x46.0581x0.825	50	-50.69	8799.89	31.9	Pass
L51	19.75 - 17	Pole	TP46.7244x46.1137x0.8125	51	-50.83	8679.59	32.4	Pass
L52	17 - 16.75	Pole	TP46.7799x46.7244x0.775	52	-52.29	8397.46	33.8	Pass
L53	16.75 - 11.75	Pole	TP47.8904x46.7799x0.7625	53	-52.43	8274.25	34.4	Pass
L54	11.75 - 6.75	Pole	TP49.0009x47.8904x0.75	54	-55.01	8337.22	34.9	Pass
L55	6.75 - 1.75	Pole	TP50.1113x49.0009x0.7375	55	-57.57	8393.56	35.4	Pass
L56	1.75 - 0	Pole	TP50.5x50.1113x0.7375	56	-60.09	8586.68	35.3	Pass
							Summary	
						Pole (L9)	72.0	Pass
						RATING =	**72.0**	**Pass**

NOTE: Above stress ratios for reinforced sections are approximate. More exact calculations are presented in Appendix C.

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876401 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- G

Site BU: 876401

Work Order: 1380710

CROWN CASTLE

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	159.8575	40.88	3.75	18	16.5	25.66	0.1875	0.75	A572-65
2	122.7275	27.04	4.333333	18	24.44	30.39	0.25	1	A572-65
3	100.020833	52.96	5.583333	18	28.94	40.67	0.3125	1.25	A572-65
4	52.644166	52.644166	0	18	38.81	50.5	0.375	1.5	A572-65

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	13	14	15	16	17	18
1	0	39.33	channel	MP3-03 (1.1875")	3						E						E						E
2	37.75	75.417	channel	MP3-03 (1.1875")	3	E						E						E					
3	0	20	plate	CCI-WSFP-085125	2										E					E			
4	0	21.25	plate	CCI-WSFP-085125	1		E																
5	17	103	plate	CCI-SFP-060100	1			E															
6	20	53	plate	CCI-SFP-060100	1										E								
7	20	103	plate	CCI-SFP-060100	1															E			
8	49.208	100.208	plate	CCI-SFP-060100	1									E									
9	86.5	93.5	plate	CCI-SFP-045100	3	E						E						E					
10	0	29.75	plate	PL 5.375x1.25" (1)	3					E						E						E	
11	29.75	59.5	plate	PL 5.375x1.25" (2)	3					E						E						E	
12	59.5	89.25	plate	PL 5.375x125" (3)	3					E						E						E	
13	89.25	119	plate	PL4.375"x1.25"	3					E						E						E	
14	119	125.75	plate	PL3.125"x1.25"	3					E						E						E	
15																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	4.06	1.57	2.92	0.59	14.000	14.000	18.000	2.545	1.1875	A572-65
2	4.06	1.57	2.92	0.59	14.000	14.000	18.000	2.545	1.1875	A572-65
3	8.5	1.25	10.625	0.625	n/a	45.000	17.000	9.063	1.1875	A572-65
4	8.5	1.25	10.625	0.625	n/a	45.000	17.000	9.063	1.1875	A572-65
5	6	1	6	0.5	24.000	24.000	5.000	4.750	1.1875	A572-65
6	6	1	6	0.5	24.000	24.000	5.000	4.750	1.1875	A572-65
7	6	1	6	0.5	24.000	24.000	5.000	4.750	1.1875	A572-65
8	6	1	6	0.5	24.000	24.000	5.000	4.750	1.1875	A572-65
9	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
10	5.375	1.25	6.71875	0.625	n/a	30.000	15.000	5.156	1.1875	A572-65
11	5.375	1.25	6.71875	0.625	n/a	30.000	15.000	5.156	1.1875	A572-65
12	5.375	1.25	6.71875	0.625	n/a	24.000	15.000	5.156	1.1875	A572-65
13	4.375	1.25	5.46875	0.625	n/a	15.000	21.000	3.906	1.1875	A572-65
14	3.125	1.25	3.90625	0.625	n/a	15.000	24.000	2.344	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	159.8575 - 154.8575	5		18	16.500	17.620	0.1875	A572-65	1.000
2	154.8575 - 149.8575	5		18	17.620	18.741	0.1875	A572-65	1.000
3	149.8575 - 144.8575	5		18	18.741	19.861	0.1875	A572-65	1.000
4	144.8575 - 139.8575	5		18	19.861	20.981	0.1875	A572-65	1.000
5	139.8575 - 134.8575	5		18	20.981	22.102	0.1875	A572-65	1.000
6	134.8575 - 129.8575	5		18	22.102	23.222	0.1875	A572-65	1.000
7	129.8575 - 125.75	4.1075		18	23.222	24.142	0.1875	A572-65	1.000
8	125.75 - 125.5	0.25		18	24.142	24.199	0.1875	A572-65	1.000
9	125.5 - 122.7275	6.5225	3.75	18	24.199	25.660	0.1875	A572-65	1.000
10	122.7275 - 117.9775	4.75		18	24.445	25.489	0.25	A572-65	1.000
11	117.9775 - 112.9775	5		18	25.489	26.588	0.48125	A572-65	0.936
12	112.9775 - 107.9775	5		18	26.588	27.688	0.475	A572-65	0.931
13	107.9775 - 103	4.9775		18	27.688	28.782	0.4625	A572-65	0.939
14	103 - 102.75	0.25		18	28.782	28.837	0.55	A572-65	1.035
15	102.75 - 100.208	2.542		18	28.837	29.396	0.5375	A572-65	1.047
16	100.208 - 100.0208	4.5205	4.333333	18	29.396	30.390	0.6875	A572-65	0.918
17	100.0208 - 94.6875	5.333333		18	28.937	30.119	0.7375	A572-65	0.930
18	94.6875 - 93.5	1.1875		18	30.119	30.382	0.7375	A572-65	0.926
19	93.5 - 93.25	0.25		18	30.382	30.437	0.9125	A572-65	0.910
20	93.25 - 89.25	4		18	30.437	31.323	0.8875	A572-65	0.918
21	89.25 - 89	0.25		18	31.323	31.379	0.9375	A572-65	0.910
22	89 - 86.5	2.5		18	31.379	31.933	0.925	A572-65	0.912
23	86.5 - 86.25	0.25		18	31.933	31.988	0.7625	A572-65	0.921
24	86.25 - 81.25	5		18	31.988	33.096	0.7375	A572-65	0.933
25	81.25 - 76.25	5		18	33.096	34.203	0.725	A572-65	0.932
26	76.25 - 75.417	0.833		18	34.203	34.388	0.725	A572-65	0.929
27	75.417 - 75.167	0.25		18	34.388	34.443	0.8125	A572-65	0.931
28	75.167 - 70.167	5		18	34.443	35.551	0.8	A572-65	0.928
29	70.167 - 65.167	5		18	35.551	36.659	0.7875	A572-65	0.925
30	65.167 - 60.167	5		18	36.659	37.766	0.7625	A572-65	0.939
31	60.167 - 59.5	0.667		18	37.766	37.914	0.7625	A572-65	0.937
32	59.5 - 59.25	0.25		18	37.914	37.970	0.7625	A572-65	0.936
33	59.25 - 54.25	5		18	37.970	39.077	0.75	A572-65	0.936
34	54.25 - 53	1.25		18	39.077	39.354	0.7375	A572-65	0.947
35	53 - 52.75	0.25		18	39.354	39.410	0.7375	A572-65	0.947
36	52.75 - 52.64417	5.689167	5.583333	18	39.410	40.670	0.7375	A572-65	0.946
37	52.64417 - 46.06083	6.583333		18	38.808	40.270	0.7625	A572-65	0.987
38	46.06083 - 41.06083	5		18	40.270	41.381	0.75	A572-65	0.990
39	41.06083 - 39.33	1.730833		18	41.381	41.765	0.75	A572-65	0.985
40	39.33 - 39.08	0.25		18	41.765	41.821	0.825	A572-65	0.978
41	39.08 - 37.75	1.33		18	41.821	42.116	0.825	A572-65	0.974
42	37.75 - 37.5	0.25		18	42.116	42.171	0.75	A572-65	0.980
43	37.5 - 32.5	5		18	42.171	43.282	0.7375	A572-65	0.984
44	32.5 - 29.75	2.75		18	43.282	43.893	0.725	A572-65	0.994
45	29.75 - 29.5	0.25		18	43.893	43.948	0.725	A572-65	0.993
46	29.5 - 24.5	5		18	43.948	45.059	0.7125	A572-65	0.998
47	24.5 - 21.25	3.25		18	45.059	45.781	0.7125	A572-65	0.991
48	21.25 - 21	0.25		18	45.781	45.836	0.725	A572-65	1.076
49	21 - 20	1		18	45.836	46.058	0.725	A572-65	1.073
50	20 - 19.75	0.25		18	46.058	46.114	0.825	A572-65	1.022
51	19.75 - 17	2.75		18	46.114	46.724	0.8125	A572-65	1.030
52	17 - 16.75	0.25		18	46.724	46.780	0.775	A572-65	1.025
53	16.75 - 11.75	5		18	46.780	47.890	0.7625	A572-65	1.029
54	11.75 - 6.75	5		18	47.890	49.001	0.75	A572-65	1.033
55	6.75 - 1.75	5		18	49.001	50.111	0.7375	A572-65	1.038
56	1.75 - 0	1.75		18	50.111	50.500	0.7375	A572-65	1.034

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	159.8575 - 154.8575	2.7942	15.021	4.3614
2	154.8575 - 149.8575	5.6864	40.399	9.1086
3	149.8575 - 144.8575	6.0023	86.6	9.3763
4	144.8575 - 139.8575	6.3463	134.14	9.6466
5	139.8575 - 134.8575	8.0783	191.64	11.996
6	134.8575 - 129.8575	8.5462	252.27	12.267
7	129.8575 - 125.75	8.9494	303.09	12.489
8	125.75 - 125.5	8.9815	306.21	12.498
9	125.5 - 122.7275	11.994	359.19	17.325
10	122.7275 - 117.9775	12.81	442.15	17.618
11	117.9775 - 112.9775	13.764	531	17.94
12	112.9775 - 107.9775	14.928	622.24	18.538
13	107.9775 - 103	15.922	715.28	18.863
14	103 - 102.75	15.993	720	18.874
15	102.75 - 100.208	16.622	768.19	19.055
16	100.208 - 100.0208	16.682	771.76	19.064
17	100.0208 - 94.6875	19.263	874.67	19.527
18	94.6875 - 93.5	19.619	897.91	19.615
19	93.5 - 93.25	19.713	902.81	19.631
20	93.25 - 89.25	21.128	981.94	19.942
21	89.25 - 89	21.225	986.93	19.96
22	89 - 86.5	22.155	1037.1	20.158
23	86.5 - 86.25	22.241	1042.1	20.172
24	86.25 - 81.25	23.856	1143.9	20.54
25	81.25 - 76.25	25.501	1247.4	20.901
26	76.25 - 75.417	25.78	1264.8	20.962
27	75.417 - 75.167	25.876	1270.1	20.978
28	75.167 - 70.167	27.716	1375.9	21.361
29	70.167 - 65.167	29.585	1483.6	21.732
30	65.167 - 60.167	31.48	1593.1	22.094
31	60.167 - 59.5	31.738	1607.9	22.139
32	59.5 - 59.25	31.837	1613.4	22.154
33	59.25 - 54.25	33.756	1725	22.512
34	54.25 - 53	34.242	1753.2	22.601
35	53 - 52.75	34.346	1758.9	22.61
36	52.75 - 52.64417	34.388	1761.3	22.618
37	52.64417 - 46.06083	39.1	1912	23.169
38	46.06083 - 41.06083	41.238	2028.6	23.492
39	41.06083 - 39.33	42.0	2069.3	23.6
40	39.33 - 39.08	42.1	2075.2	23.6
41	39.08 - 37.75	42.7	2106.7	23.7
42	37.75 - 37.5	42.8	2112.6	23.7
43	37.5 - 32.5	45.0	2232.0	24.0
44	32.5 - 29.75	46.2	2298.3	24.2
45	29.75 - 29.5	46.4	2304.4	24.2
46	29.5 - 24.5	48.6	2426.1	24.5
47	24.5 - 21.25	50.1	2505.9	24.7
48	21.25 - 21	50.2	2512.1	24.7
49	21 - 20	50.7	2536.8	24.8
50	20 - 19.75	50.8	2543.0	24.8
51	19.75 - 17	52.3	2611.4	25.0
52	17 - 16.75	52.4	2617.6	25.0
53	16.75 - 11.75	55.0	2743.1	25.3
54	11.75 - 6.75	57.6	2870.1	25.6
55	6.75 - 1.75	60.1	2998.6	25.9
56	1.75 - 0	61.0	3043.9	26.0

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
159.86 - 154.86	Pole	TP17.62x16.5x0.1875	Pole	5.8%	Pass
154.86 - 149.86	Pole	TP18.741x17.62x0.1875	Pole	13.7%	Pass
149.86 - 144.86	Pole	TP19.861x18.741x0.1875	Pole	25.7%	Pass
144.86 - 139.86	Pole	TP20.981x19.861x0.1875	Pole	35.9%	Pass
139.86 - 134.86	Pole	TP22.102x20.981x0.1875	Pole	46.8%	Pass
134.86 - 129.86	Pole	TP23.222x22.102x0.1875	Pole	56.4%	Pass
129.86 - 125.75	Pole	TP24.142x23.222x0.1875	Pole	63.4%	Pass
125.75 - 125.5	Pole	TP24.199x24.142x0.1875	Pole	63.8%	Pass
125.5 - 122.73	Pole	TP25.66x24.199x0.1875	Pole	72.0%	Pass
122.73 - 117.98	Pole	TP25.489x24.445x0.25	Pole	58.4%	Pass
117.98 - 112.98	Pole + Reinf.	TP26.588x25.489x0.4813	Reinf. 13 Tension Rupture	60.9%	Pass
112.98 - 107.98	Pole + Reinf.	TP27.688x26.588x0.475	Reinf. 13 Tension Rupture	67.0%	Pass
107.98 - 103	Pole + Reinf.	TP28.782x27.688x0.4625	Reinf. 13 Tension Rupture	72.4%	Pass
103 - 102.75	Pole + Reinf.	TP28.837x28.782x0.55	Reinf. 13 Tension Rupture	65.3%	Pass
102.75 - 100.21	Pole + Reinf.	TP29.396x28.837x0.5375	Reinf. 13 Tension Rupture	67.7%	Pass
100.21 - 100.02	Pole + Reinf.	TP30.39x29.396x0.6875	Reinf. 13 Tension Rupture	51.1%	Pass
100.02 - 94.69	Pole + Reinf.	TP30.119x28.937x0.7375	Reinf. 13 Tension Rupture	51.3%	Pass
94.69 - 93.5	Pole + Reinf.	TP30.382x30.119x0.7375	Reinf. 13 Tension Rupture	52.0%	Pass
93.5 - 93.25	Pole + Reinf.	TP30.437x30.382x0.9125	Reinf. 13 Tension Rupture	42.9%	Pass
93.25 - 89.25	Pole + Reinf.	TP31.323x30.437x0.8875	Reinf. 13 Tension Rupture	44.9%	Pass
89.25 - 89	Pole + Reinf.	TP31.379x31.323x0.9375	Reinf. 9 Tension Rupture	42.0%	Pass
89 - 86.5	Pole + Reinf.	TP31.933x31.379x0.925	Reinf. 9 Tension Rupture	43.2%	Pass
86.5 - 86.25	Pole + Reinf.	TP31.988x31.933x0.7625	Reinf. 12 Tension Rupture	49.2%	Pass
86.25 - 81.25	Pole + Reinf.	TP33.096x31.988x0.7375	Reinf. 12 Tension Rupture	51.5%	Pass
81.25 - 76.25	Pole + Reinf.	TP34.203x33.096x0.725	Reinf. 12 Tension Rupture	53.5%	Pass
76.25 - 75.42	Pole + Reinf.	TP34.388x34.203x0.725	Reinf. 12 Tension Rupture	53.8%	Pass
75.42 - 75.17	Pole + Reinf.	TP34.443x34.388x0.8125	Reinf. 12 Tension Rupture	47.9%	Pass
75.17 - 70.17	Pole + Reinf.	TP35.551x34.443x0.8	Reinf. 12 Tension Rupture	49.7%	Pass
70.17 - 65.17	Pole + Reinf.	TP36.659x35.551x0.7875	Reinf. 12 Tension Rupture	51.3%	Pass
65.17 - 60.17	Pole + Reinf.	TP37.766x36.659x0.7625	Reinf. 12 Tension Rupture	52.8%	Pass
60.17 - 59.5	Pole + Reinf.	TP37.914x37.766x0.7625	Reinf. 12 Tension Rupture	53.0%	Pass
59.5 - 59.25	Pole + Reinf.	TP37.97x37.914x0.7625	Reinf. 11 Tension Rupture	53.1%	Pass
59.25 - 54.25	Pole + Reinf.	TP39.077x37.97x0.75	Reinf. 11 Tension Rupture	54.5%	Pass
54.25 - 53	Pole + Reinf.	TP39.354x39.077x0.7375	Reinf. 11 Tension Rupture	54.8%	Pass
53 - 52.75	Pole + Reinf.	TP39.41x39.354x0.7375	Reinf. 11 Tension Rupture	54.3%	Pass
52.75 - 52.64	Pole + Reinf.	TP40.67x39.41x0.7375	Reinf. 11 Tension Rupture	54.3%	Pass
52.64 - 46.06	Pole + Reinf.	TP40.27x38.808x0.7625	Reinf. 11 Tension Rupture	54.8%	Pass
46.06 - 41.06	Pole + Reinf.	TP41.381x40.27x0.75	Reinf. 11 Tension Rupture	55.8%	Pass
41.06 - 39.33	Pole + Reinf.	TP41.765x41.381x0.75	Reinf. 11 Tension Rupture	56.1%	Pass
39.33 - 39.08	Pole + Reinf.	TP41.821x41.765x0.825	Reinf. 11 Tension Rupture	51.2%	Pass
39.08 - 37.75	Pole + Reinf.	TP42.116x41.821x0.825	Reinf. 11 Tension Rupture	51.5%	Pass
37.75 - 37.5	Pole + Reinf.	TP42.171x42.116x0.75	Reinf. 11 Tension Rupture	56.5%	Pass
37.5 - 32.5	Pole + Reinf.	TP43.282x42.171x0.7375	Reinf. 11 Tension Rupture	57.4%	Pass
32.5 - 29.75	Pole + Reinf.	TP43.893x43.282x0.725	Reinf. 11 Tension Rupture	57.8%	Pass
29.75 - 29.5	Pole + Reinf.	TP43.948x43.893x0.725	Reinf. 10 Tension Rupture	57.8%	Pass
29.5 - 24.5	Pole + Reinf.	TP45.059x43.948x0.7125	Reinf. 10 Tension Rupture	58.6%	Pass
24.5 - 21.25	Pole + Reinf.	TP45.781x45.059x0.7125	Reinf. 10 Tension Rupture	59.1%	Pass
21.25 - 21	Pole + Reinf.	TP45.836x45.781x0.725	Reinf. 7 Tension Rupture	56.5%	Pass
21 - 20	Pole + Reinf.	TP46.058x45.836x0.725	Reinf. 7 Tension Rupture	56.6%	Pass
20 - 19.75	Pole + Reinf.	TP46.114x46.058x0.825	Reinf. 10 Tension Rupture	52.7%	Pass
19.75 - 17	Pole + Reinf.	TP46.724x46.114x0.8125	Reinf. 10 Tension Rupture	53.1%	Pass
17 - 16.75	Pole + Reinf.	TP46.78x46.724x0.775	Reinf. 10 Tension Rupture	58.0%	Pass
16.75 - 11.75	Pole + Reinf.	TP47.89x46.78x0.7625	Reinf. 10 Tension Rupture	58.7%	Pass
11.75 - 6.75	Pole + Reinf.	TP49.001x47.89x0.75	Reinf. 10 Tension Rupture	59.3%	Pass
6.75 - 1.75	Pole + Reinf.	TP50.111x49.001x0.7375	Reinf. 10 Tension Rupture	59.9%	Pass
1.75 - 0	Pole + Reinf.	TP50.5x50.111x0.7375	Reinf. 10 Tension Rupture	60.1%	Pass
				Summary	
			Pole	72.0%	Pass
			Reinforcement	72.4%	Pass
			Overall	72.4%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity													
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
159.86 - 154.86	398	n/a	398	10.37	n/a	10.37	6.8%														
154.86 - 149.86	480	n/a	480	11.04	n/a	11.04	13.7%														
149.86 - 144.86	572	n/a	572	11.71	n/a	11.71	26.7%														
144.86 - 139.86	676	n/a	676	12.37	n/a	12.37	36.9%														
139.86 - 134.86	791	n/a	791	13.04	n/a	13.04	46.8%														
134.86 - 129.86	919	n/a	919	13.71	n/a	13.71	56.4%														
129.86 - 125.75	1033	n/a	1033	14.26	n/a	14.26	63.4%														
125.75 - 125.5	1040	n/a	1040	14.29	n/a	14.29	63.8%														
125.5 - 122.73	1123	n/a	1123	14.66	n/a	14.66	72.0%														
122.73 - 117.98	1611	n/a	1611	20.03	n/a	20.03	58.4%														
117.98 - 112.98	1831	1603	3435	20.90	16.41	37.31	34.3%													60.9%	
112.98 - 107.98	2070	1731	3802	21.77	16.41	38.18	38.2%													67.0%	
107.98 - 103	2328	1864	4192	22.64	16.41	39.05	41.8%													72.4%	
103 - 102.75	2398	2615	5013	22.68	28.41	51.09	39.6%					44.6%		44.5%						66.3%	
102.75 - 100.21	2541	2713	5254	23.13	28.41	51.53	41.1%					46.2%		46.2%						67.7%	
100.21 - 100.02	2492	4058	6549	23.16	34.41	57.57	29.7%					45.8%		45.8%	45.8%					51.1%	
100.02 - 94.69	3317	4239	7556	29.56	34.41	63.97	26.6%					46.0%		46.0%	46.0%					51.3%	
94.69 - 93.5	3406	4310	7715	29.82	34.41	64.23	28.0%					46.6%		46.6%	46.6%					52.0%	
93.5 - 93.25	3425	6004	9429	29.88	47.91	77.79	24.0%					38.5%		38.5%	38.5%	42.1%				42.9%	
93.25 - 89.25	3736	6344	10080	30.76	47.91	78.66	25.1%					40.2%		40.2%	40.2%	44.1%				44.9%	
89.25 - 89	3756	6876	10632	30.81	51.66	82.47	24.0%					38.4%		38.4%	38.4%	42.0%			41.8%		
89 - 86.5	3960	7110	11070	31.36	51.66	83.02	24.7%					39.4%		39.4%	39.4%	43.2%			41.0%		
86.5 - 86.25	3981	5285	9266	31.42	38.16	69.57	29.7%					47.4%		47.4%	47.4%				49.2%		
86.25 - 81.25	4414	5641	10055	32.52	38.16	70.67	31.3%					49.5%		49.5%	49.5%				51.5%		
81.25 - 76.25	4876	6009	10885	33.61	38.16	71.77	32.9%					51.5%		51.5%	51.5%				53.5%		
76.25 - 75.42	4956	6071	11027	33.80	38.16	71.95	33.2%					51.8%		51.8%	51.8%				53.8%		
75.42 - 75.17	4981	7482	12463	33.85	46.92	80.77	29.5%		44.3%			46.1%		46.1%	46.1%				47.9%		
75.17 - 70.17	5481	7952	13433	34.95	46.92	81.87	30.9%		46.0%			47.8%		47.8%	47.8%				49.7%		
70.17 - 65.17	6015	8436	14450	36.05	46.92	82.97	32.3%		47.5%			49.4%		49.4%	49.4%				51.3%		
65.17 - 60.17	6582	8934	15515	37.15	46.92	84.06	33.6%		48.9%			50.9%		50.9%	50.9%				52.8%		
60.17 - 59.5	6660	9001	15661	37.29	46.92	84.21	33.8%		49.0%			51.1%		51.1%	51.1%				53.0%		
59.5 - 59.25	6689	9027	15716	37.35	46.92	84.27	33.8%		49.1%			51.2%		51.2%	51.2%			53.1%			
59.25 - 54.25	7297	9542	16839	38.45	46.92	85.36	35.1%		50.4%			52.5%		52.5%	52.5%			54.5%			
54.25 - 53	7455	9673	17128	38.72	46.92	85.64	35.4%		50.7%			52.8%		52.8%	52.8%			54.8%			
53 - 52.75	7488	9702	17190	38.78	46.92	85.69	35.8%		50.8%			52.9%		52.9%	52.9%			54.9%			
52.75 - 52.64	7502	9713	17215	38.80	46.92	85.72	35.9%		50.8%			52.9%		52.9%	52.9%			54.9%			
52.64 - 46.06	9548	9354	18902	47.48	46.92	94.40	34.5%		52.4%			50.1%	50.7%	51.9%				54.8%			
46.06 - 41.06	10367	9859	20226	48.81	46.92	95.72	36.4%		53.3%			51.1%	51.7%	52.9%				55.8%			
41.06 - 39.33	10661	10037	20699	49.26	46.92	96.18	35.7%		53.7%			51.4%	52.0%	53.2%				56.1%			
39.33 - 39.08	10704	12091	22795	49.33	55.68	105.01	32.6%	48.4%	48.8%			47.1%	47.6%	48.8%				51.2%			
39.08 - 37.75	10935	12257	23192	49.68	55.68	105.36	32.8%	48.6%	49.1%			47.4%	47.8%	48.9%				51.6%			
37.75 - 37.5	10979	10227	21206	49.75	46.92	96.66	36.0%	53.4%				51.7%	52.3%	53.6%				56.5%			
37.5 - 32.5	11877	10755	22632	51.07	46.92	97.98	36.9%	54.2%				52.6%	53.2%	54.4%				57.4%			
32.5 - 29.75	12391	11051	23442	51.80	46.92	98.71	37.4%	54.7%				53.0%	53.6%	54.9%				57.8%			
29.75 - 29.5	12439	11078	23517	51.86	46.92	98.78	37.4%	54.7%				53.1%	53.6%	54.9%			57.8%				
29.5 - 24.5	13414	11627	25042	53.18	46.92	100.10	38.2%	55.4%				53.8%	54.4%	55.7%			58.6%				
24.5 - 21.25	14075	11992	26066	54.04	46.92	100.96	38.7%	55.9%				54.3%	54.9%	56.1%			59.1%				
21.25 - 21	14123	12518	26642	54.11	57.54	111.65	37.6%	55.2%			38.8%	43.1%	51.7%	56.6%			55.5%				
21 - 20	14331	12636	26967	54.37	57.54	111.91	37.8%	55.3%			38.7%	43.2%	51.8%	56.6%			55.6%				
20 - 19.75	14402	16056	30458	54.44	66.79	121.23	35.0%	51.5%		46.7%	37.7%	42.6%					52.7%				
19.75 - 17	14987	16469	31456	55.17	66.79	121.96	35.4%	51.8%		47.1%	38.0%	42.9%					53.1%				
17 - 16.75	15128	15010	30138	55.23	60.79	116.02	38.1%	54.7%		47.4%	43.5%						58.0%				
16.75 - 11.75	16237	15708	31945	56.55	60.79	117.34	38.9%	55.3%		48.0%	44.1%						58.7%				
11.75 - 6.75	17399	16422	33821	57.87	60.79	118.67	39.6%	55.9%		48.5%	44.7%						59.3%				
6.75 - 1.75	18616	17152	35768	59.20	60.79	119.99	40.3%	56.4%		49.0%	45.2%						59.9%				
1.75 - 0	19055	17411	36466	59.66	60.79	120.45	40.6%	56.6%		49.2%	45.3%						60.1%				

Note: Section capacity checked in 5 degree increments.

BLACK & VEATCH

Owner:	CROWN CASTLE	Prepared By:	Deepika P.
Project Name:	TOWN OF PLAINFIELD/SSUSA	Date:	3/29/17
Project No.	194393	Verified By:	
Title:	ANCHOR ROD CALCULATION RESULTS	Date:	
		Page:	

ANCHOR ROD CALCULATION

TIA-EIA-222

Description	Symbol	Value	Unit	Code
Anchor Rod Input				
TIA Code		G		
ASIF		1.000		
Failure		100%		
eta Factor		0.50		
Moment	M	3044	kip-ft	
Axial	P	61	kip	
Shear	S	26	kip	
Base Plate Type		Circular		

		1st BC	2nd BC	3rd BC	4th BC	
Quantity	QTY	14	3	9		
Diameter	Db	2.25	2	2.25		in
Material	RMat	#18J	A193 B7	#18J		
Bolt Circle	BC	59	62.5	71.1		in
Square Base Plate Bolt Spacing	B_sp		-	-	-	in

Anchor Rod Results

		1st BC	2nd BC	3rd BC	4th BC	
Bolt Group Area	rAg	55.67	9.42	35.78		in^2
Bolt Group MOIx	rMOI	24235	4604	24471		in^4
Moment		1383.8	262.9	1397.3		kip-ft
Axial		33.7	5.7	21.6		kip
Shear		26.0	0.0	0.0		kip
Combined Load	Tbolt	83.9	60.1	94.3		kip
Allowable load	ATBolt	259.8	249.8	259.8		kip
Anchor Rod Capacity	RStress	**32.3%**	**24.1%**	**36.3%**		

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev G Assumption: Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *876401*
Site Name: *TOWN OF PLAINFIELD/SSUSA*
App #: *382498 Rev.0*

Pole Manufacturer:	*Other*

Anchor Rod Data		
Qty:	14	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	59	in

Plate Data		
Diam:	65	in
Thick:	1.75	in
Grade:	60	ksi
Single-Rod B-eff:	11.45	in

Stiffener Data (Welding at both sides)		
Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	50.5	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Reactions		
Mu:	1384	ft-kips
Axial, Pu:	34	kips
Shear, Vu:	26	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

If No stiffeners, Criteria:	AISC LRFD	<-Only Applcable to Unstiffened Cases

Base Plate Results Flexural Check

Base Plate Stress:	24.3 ksi	
Allowable Plate Stress:	54.0 ksi	
Base Plate Stress Ratio:	45.0%	Pass

Non-Rigid
AISC LRFD
φ*Fy
Y.L. Length: 30.51

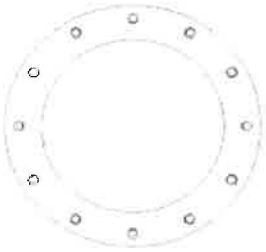
n/a

Stiffener Results

Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check: n/a



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

BU: 876401
WO: 1380710

Done By: Deepika
Checked By:
Date: 3/30/2017

CROWN CASTLE

Additional Anchor Rods: Division of Forces

Base Reactions from tnxTower:

$Moment := 262.9 \cdot kip \cdot ft$

$Axial := 5.7 \cdot kip$

$Shear := 0 \cdot kip$

Existing Anchor Rod Group Moment of Inertia:

$N_{existing} := 0$ $\quad D_{existing} := 0$

$BC_{existing} := 0$ $\quad A_{existing} := 0$

$$I_{existing} := \left(\frac{N_{existing}}{8}\right) \cdot \left(BC_{existing}^{2}\right) \cdot \left(A_{existing}\right) = 0 \cdot in^4$$

Additonal (New) Anchor Rod Group Moment of Inertia:

$N_{new} := 3$ $\quad D_{new} := 2 \cdot in$ $\quad Fu_{rod} := 125ksi$

$BC_{new} := 62.5 \cdot in$ $\quad A_{new} := (2.5in)^2$

$$I_{new} := \left(\frac{N_{new}}{8}\right) \cdot \left(BC_{new}^{2}\right) \cdot \left(A_{new}\right) = 9155.27 \cdot in^4$$

Division of Forces:

$$I_{total} := \left(I_{existing}\right) + \left(I_{new}\right) = 9155.27 \cdot in^4$$

$$Percentage_{existing} := \left(\frac{I_{existing}}{I_{total}}\right) = 0 \cdot \%$$

$$Percentage_{new} := \left(\frac{I_{new}}{I_{total}}\right) = 100 \cdot \%$$

Forces Remaining in Existing Anchor Rods:

$$M_{existing} := Moment \cdot \left(Percentage_{existing}\right) = 0 \cdot kip \cdot ft$$

$$Ax_{existing} := 0 \cdot kip$$

$$S_{existing} := Shear = 0 \cdot kip$$

Forces to New Anchor Rods:

$$M_{new} := Moment \cdot \left(Percentage_{new}\right) = 262.9 \cdot kip \cdot ft$$

$$Ax_{new} := 5.7 \cdot kip$$

$$S_{new} := 0 \cdot kip$$

(It is assumed that all of the Axial and Shear loads will go to the existing anchor rods)

--See attached CCIplate output for additional anchor rod group capacity and structural rating values--

Anchor Rod Bracket Calculations

Design the anchor rod bracket and all components to resist the full capacity of the additional anchors.

Bracket Design Load (Anchor Tensile Capacity):

$\phi := 0.8$

$\phi P_n := 62.7kip$

Tube Design (Square HSS)

Member Size: HSS 4" x 4" x 1/2"

Member Properties (AISC 13th Ed., Table 1-12):

Outside Length: $OD_{HSS} := 4 \cdot in$

Area: $A_{HSS} := 6.02 \cdot in^2$ $A_{e\_HSS} := 0.75 \cdot A_{HSS} = 4.51 \cdot in^2$

Thickness: $t_{HSS} := 0.5 \cdot in$

Yield Strength: $F_{y\_HSS} := 46 \cdot ksi$ $F_{u\_HSS} := 58 \cdot ksi$

Length: $L_{HSS} := 12 \cdot in$

Moment of Inertia: $I_{HSS} := 11.9 \cdot in^4$

Radius of Gyration: $r_{HSS} := 1.41 \cdot in$

Inside Dimension: $ID_{HSS} := OD_{HSS} - 2 \cdot t_{HSS} = 3 \cdot in$

Bearing Check (AISC 13th Ed., Equation J7-1):

$\phi_b := .75$

$\phi P_n = \phi_b \cdot R_n = \phi_b \cdot 1.8 \cdot F_{ypipe} \cdot A_{pb}$

$$A_{pb} := \frac{\phi P_n}{\phi_b \cdot 1.8 \cdot F_{y\_HSS}} = 1.01 \cdot in^2$$

$$Check_{bear} := \begin{cases} \text{"OK"} & \text{if } A_{HSS} \geq A_{pb} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{bear} = \text{"OK"}$

Compression Check
(AISC 13th Ed., Eqs. E3-1 to E3-4):

$\phi_c := 0.9$

$K := 1$

$\phi P_{n\_comp} = \phi_c \cdot F_{cr} \cdot A_g$

$$F_e := \frac{\pi^2 \cdot 29000\,ksi}{\left(\frac{K \cdot L_{HSS}}{r_{HSS}}\right)^2} = 3951.6 \cdot ksi$$

$$\frac{K \cdot L_{HSS}}{r_{HSS}} = 8.51 \quad < \quad 4.71 \cdot \sqrt{\frac{29000 \cdot ksi}{F_{y\_HSS}}} = 118.26$$

$$\therefore \quad F_{cr} := 0.658^{\frac{F_{y\_HSS}}{F_e}} \cdot F_{y\_HSS} = 45.78 \cdot ksi$$

(AISC 13th Ed., Equation J4-6):

$$\phi P_{n\_comp} := \begin{cases} \phi_c \cdot F_{y\_HSS} \cdot A_{HSS} & \text{if } \frac{K \cdot L_{HSS}}{r_{HSS}} \le 25 \\ \phi_c \cdot F_{cr} \cdot A_{HSS} & \text{otherwise} \end{cases}$$

$\phi P_{n\_comp} = 249.23 \cdot kip$

$$Check_{comp} := \begin{cases} \text{"OK"} & \text{if } \phi P_{n\_comp} \ge \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{comp} = \text{"OK"}$

$\frac{\phi P_n}{\phi P_{n\_comp}} = 25.16 \cdot \%$

Gusset Plate Design

Gusset Plate width: $w_{plate} := 4 \cdot in$

Gusset Plate thickness: $t_{plate} := 1.25in$

$L_{plate1} := 30in$

$L_{plate2} := 18in$

Gusset Plate Strength: $Fy_{plate} := 65ksi$

$Fu_{plate} := 80ksi$

Pole thickness: $t_{pole} := 0.375in$

Shear Check (AISC 13th Ed., Equation J4-3 and J4-4):

$A_g := t_{plate} \cdot L_{plate2} = 22.5 \cdot in^2$

$A_{nv} := A_g = 22.5 \cdot in^2$

Shear Yielding

$\phi_v := 1$

$\phi V_{plate} := \phi_v \cdot 0.6 \cdot A_g \cdot Fy_{plate} = 877.5 \cdot kip$

$Check_{shear} := \begin{cases} \text{"OK"} & \text{if } \phi V_{plate} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$

$Check_{shear} = \text{"OK"}$

$\frac{\phi P_n}{\phi V_{plate}} = 7.15 \cdot \%$

Shear Rupture

$\phi_{sw} := 0.75$

$\phi V_{plate} := \phi_v \cdot 0.6 \cdot A_{nv} \cdot Fu_{plate} = 810 \cdot kip$

$Check_{shear} := \begin{cases} \text{"OK"} & \text{if } \phi V_{plate} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$

$Check_{shear} = \text{"OK"}$

$\frac{\phi P_n}{\phi V_{plate}} = 7.74 \cdot \%$

Gusset Plate to Pole and Base Plate Weld Design (Horizontal and Vertical Weld)

Gusset plate thickness: $t_{plate} = 1.25 \cdot in$

Pole Grade: $Fy_{pole} := 65ksi$ $Fu_{pole} := 80ksi$

Base Plate Grade: $Fy_{base} := 60ksi$ $Fu_{base} := 75ksi$

Gussett Plate Grade: $Fy_{plate} = 65 \cdot ksi$ $Fu_{plate} = 80 \cdot ksi$

Height of vertical weld from base plate: $H := L_{plate1} = 30 \cdot in$

$Notch := 0.75 \cdot in$

Gap between Base Plate and HSS: $Gap := 0in$

Vertical fillet weld size to pole: (in sixteenths of an inch) $D_{vpole} := 6$

$weldsize_{pole} := \frac{D_{vpole}}{16} = \frac{3}{8}$

Weld Material Grade: $F_{EXX} := 80ksi$

Check := "OK" if Capacity < 100%
"INSUFFICIENT" otherwise

Check = "OK"

Gusset Plate to HSS Weld Design
(AISC 13th Ed., Table 8-4)

Electrode Strength: $F_{EXX} := 80ksi$

Weld Size (in sixteenths of an inch): $D_1 := 8$ $\quad weldsize_1 := \frac{D_1}{16} = \frac{1}{2}$

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$$ecc_2 := OD_{HSS} - t_{HSS} - \frac{D_{new}}{2} = 2.5 \cdot in$$

Load not in plane with weld group: $k := 0$

$$a := \frac{ecc_2}{L_{plate2}} = 0.14$$

$C_1 := 1.00$

$Coeff_1 := 3.71$

$\phi_w := 0.75$

$$D_{min1} := ceil\left(\frac{\phi P_n \cdot in}{\phi_w \cdot Coeff_1\, C_1 \cdot L_{plate2} \cdot kip}\right) = 2$$

$$minweldsize := \frac{D_{min1}}{16} = \frac{1}{8}$$

$$Check_{weld} := \begin{cases} \text{"OK"} & \text{if } D_1 \geq D_{min1} \wedge D_1 \geq Min_{weldsize} \wedge D_1 \leq Max_{weldsize} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{weld} = \text{"OK"}$

$\phi Rn_{weld1} := \phi_w \cdot Coeff_1\ ksi \cdot in \cdot C_1 \cdot D_1 \cdot L_{plate2} = 400.68 \cdot kip$

$$Check_{weld1} := \begin{cases} \text{"OK"} & \text{if } \phi Rn_{weld1} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{weld1} = \text{"OK"}$

$$\frac{\phi P_n}{\phi Rn_{weld1}} = 15.65 \cdot \%$$

Gusset Plate to Pole Punching Shear Check (max per unit length):

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$$ecc_1 := w_{plate} + OD_{HSS} - t_{HSS} - \frac{D_{new}}{2} = 6.5 \cdot in$$

$$\phi_{vv} := 0.90$$

$$M_1 := \phi P_n \cdot ecc_1 = 407.55 \cdot kip \cdot in$$

$$S_1 := \frac{t_{plate} \cdot L_{plate1}^2}{6} = 187.5 \cdot in^3$$

$$f_v := \frac{M_1}{S_1} \cdot t_{plate} \cdot 1in = 2.72 \cdot kip$$

$$\phi F_v := \phi_v \cdot 0.6 \cdot Fy_{pole} \cdot 2 \cdot t_{pole} \cdot 1in = 26.32 \cdot kip$$

$$\frac{f_v}{\phi F_v} = 10.32\%$$

$$Check_{PS1} := \begin{cases} \text{"OK"} & \text{if } \phi F_v \geq f_v \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{PS1} = \text{"OK"}$

Gusset Plate to HSS Punching Shear Check (max per unit length):

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$$ecc_2 := OD_{HSS} - t_{HSS} - \frac{D_{new}}{2} = 2.5 \cdot in$$

$$\phi_{vv} := 0.90$$

$$M_2 := \phi P_n \cdot ecc_2 = 156.75 \cdot kip \cdot in$$

$$S_2 := \frac{t_{plate} \cdot L_{plate2}^2}{6} = 67.5 \cdot in^3$$

$$f_v := \frac{M_2}{S_2} \cdot t_{plate} \cdot 1in = 2.9 \cdot kip$$

$$\phi F_v := \phi_v \cdot 0.6 \cdot F_{y\_HSS} \cdot 2 \cdot t_{HSS} \cdot 1in = 24.84 \cdot kip$$

$$Check_{PS2} := \begin{cases} \text{"OK"} & \text{if } \phi F_v \geq f_v \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{PS2} = \text{"OK"}$

Embedment Depth Calculations

Projected Embedment Depth:	$L_{em} := 17.5 \cdot ft$	
Yield Strength of Rebar:	$f_y := 60ksi$	
Concrete Strength:	$f'_c := 4000psi$	
Transverse Reinforcement Index:	$k_{rt} := 0$	k_{rt} can be taken as 0 for design per ACI 318
Rebar Location Factor:	$\psi_t := 1$	
Rebar Coating Factor:	$\psi_e := 1$	1.0 non coated rebar
Rebar Size Factor:	$\psi_s := 1$	0.8 for No. 6 and smaller bars, 1.0 for No. 7 and larger bars
Concrete Weight Factor:	$\lambda := 1 \cdot \sqrt{psi}$	1.0 for normal weight concrete
Pier Diameter:	$D_{pier} := 7ft$	
Cover:	$c_c := 4in$	
Rebar Size:	$d_s := 11$	$d_b := \frac{d_s}{8} in = 1.38 \cdot in$
Tie Size:	$Tie := 5$	
Number of Vertical Rebar:	$n := 18$	

Development Length (ACI 318-08 Chapter 12):

$$BC_{rebar} := D_{pier} - 2 \cdot c_c - \frac{Tie \cdot in}{4} - d_b = 73.38 \cdot in$$

$$S_{rebar} := \frac{\pi \cdot BC_{rebar}}{n} = 12.806 \cdot in$$

$$c_b := \min\left(c_c + \frac{Tie}{8} in + \frac{d_b}{2}, S_{rebar} \cdot 0.5\right) = 5.31 \cdot in$$

$$l_d := \left[\frac{3}{40} \cdot \frac{f_y}{\lambda \cdot \sqrt{f'_c}} \cdot \frac{\psi_t \cdot \psi_e \cdot \psi_s}{\min\left[\left(\frac{c_b + k_{rt}}{d_b}\right), 2.5\right]}\right] \cdot d_b = 39.13 \cdot in$$

Calculate Max Distance Between Rebar and New Anchor Rods:

$$A := \frac{1}{2}\cdot S_{rebar} = 6.403\cdot in$$

$$B := \frac{BC_{rebar}}{2} - \frac{BC_{new}}{2} = 5.437\cdot in$$

$$G := \sqrt{A^2 + B^2} = 8.4\cdot in$$

$$l'_d := l_d + \frac{G}{1.5} + 3in = 3.98\ ft$$

Epoxy Development Length:

Bond Strength:

$$\phi_{bond} := 0.55$$

$$S_b = 1450\ psi$$

$$L_{be} := \frac{\phi P_n}{\pi\cdot D_{new}\cdot S_b\cdot \phi_{bond}} = 12.51\cdot in$$

Required Embedment Length:

$$L_{min} := \max\left(L_{be} + 6in, l'_d + 0.25\cdot L_{be}\right) = 4.24\ ft$$

$$L_{min} := ceil\left(\frac{L_{min}}{0.5ft}\right)\cdot 0.5ft$$

$$L_{min} = 4.5\ ft$$

$$Check := \begin{cases} \text{"OK"} & \text{if } L_{min} \le L_{em} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

Check = "OK"

Anchor Rod Pullout Test:

$$\phi_p := 0.75$$

$$Pullout := \frac{\phi_p\cdot Fu_{rod}\cdot A_{new}}{1.6} = 366\cdot kip$$

BU: 876401
WO: 1380710

Done By: Deepika
Checked By:
Date: 3/30/2017

CROWN CASTLE

Additional Anchor Rods: Division of Forces

Base Reactions from tnxTower:

$Moment := 1397.3 \cdot kip \cdot ft$

$Axial := 21.6 \cdot kip$

$Shear := 0 \cdot kip$

Existing Anchor Rod Group Moment of Inertia:

$N_{existing} := 0$ $\quad D_{existing} := 0$

$BC_{existing} := 0 \cdot in$ $\quad A_{existing} := 0$

$$I_{existing} := \left(\frac{N_{existing}}{8}\right) \cdot \left(BC_{existing}^{2}\right) \cdot \left(A_{existing}\right) = 0 \cdot in^{4}$$

Additonal (New) Anchor Rod Group Moment of Inertia:

$N_{new} := 9$ $\quad D_{new} := 2.25 \cdot in$ $\quad Fu_{rod} := 100ksi$

$BC_{new} := 71.1 \cdot in$ $\quad A_{new} := (3.25in)^{2}$

$$I_{new} := \left(\frac{N_{new}}{8}\right) \cdot \left(BC_{new}^{2}\right) \cdot \left(A_{new}\right) = 60070.11 \cdot in^{4}$$

Division of Forces:

$$I_{total} := \left(I_{existing}\right) + \left(I_{new}\right) = 60070.11 \cdot in^{4}$$

$$Percentage_{existing} := \left(\frac{I_{existing}}{I_{total}}\right) = 0 \cdot \%$$

$$Percentage_{new} := \left(\frac{I_{new}}{I_{total}}\right) = 100 \cdot \%$$

Forces Remaining in Existing Anchor Rods:

$$M_{existing} := Moment \cdot \left(Percentage_{existing}\right) = 0 \cdot kip \cdot ft$$

$$Ax_{existing} := 0 \cdot kip$$

$$S_{existing} := Shear = 0 \cdot kip$$

Forces to New Anchor Rods:

$$M_{new} := Moment \cdot \left(Percentage_{new}\right) = 1397.3 \cdot kip \cdot ft$$

$$Ax_{new} := 21.6 \cdot kip$$

$$S_{new} := 0 \cdot kip$$

(It is assumed that all of the Axial and Shear loads will go to the existing anchor rods)

--See attached CCIplate output for additional anchor rod group capacity and structural rating values--

Anchor Rod Bracket Calculations

Design the anchor rod bracket and all components to resist the full capacity of the additional anchors.

Bracket Design Load (Anchor Tensile Capacity):

$\phi := 0.8$

$\phi P_n := 93.3kip$

Tube Design (Square HSS)

Member Size: HSS 5" x 5" x 1/2"

Member Properties (AISC 13th Ed., Table 1-12):

Outside Length: $OD_{HSS} := 5 \cdot in$

Area: $A_{HSS} := 7.88 \cdot in^2$ $A_{e\_HSS} := 0.75 \cdot A_{HSS} = 5.91 \cdot in^2$

Thickness: $t_{HSS} := 0.5 \cdot in$

Yield Strength: $F_{y\_HSS} := 46 \cdot ksi$ $F_{u\_HSS} := 58 \cdot ksi$

Length: $L_{HSS} := 45 \cdot in$

Moment of Inertia: $I_{HSS} := 26 \cdot in^4$

Radius of Gyration: $r_{HSS} := 1.82 \cdot in$

Inside Dimension: $ID_{HSS} := OD_{HSS} - 2 \cdot t_{HSS} = 4 \cdot in$

Bearing Check (AISC 13th Ed., Equation J7-1):

$\phi_b := .75$

$\phi P_n = \phi_b \cdot R_n = \phi_b \cdot 1.8 \cdot F_{ypipe} \cdot A_{pb}$

$$A_{pb} := \frac{\phi P_n}{\phi_b \cdot 1.8 \cdot F_{y\_HSS}} = 1.5 \cdot in^2$$

$$Check_{bear} := \begin{cases} \text{"OK"} & \text{if } A_{HSS} \geq A_{pb} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{bear} = \text{"OK"}$

Compression Check
(AISC 13th Ed., Eqs. E3-1 to E3-4):

$\phi_c := 0.9$

$K := 1$

$\phi P_{n\_comp} = \phi_c \cdot F_{cr} \cdot A_g$

$$F_e := \frac{\pi^2 \cdot 29000ksi}{\left(\frac{K \cdot L_{HSS}}{r_{HSS}}\right)^2} = 468.18 \cdot ksi$$

$$\frac{K \cdot L_{HSS}}{r_{HSS}} = 24.73 \quad < \quad 4.71 \cdot \sqrt{\frac{29000 \cdot ksi}{F_{y\_HSS}}} = 118.26$$

$$\therefore \quad F_{cr} := 0.658^{\frac{F_{y\_HSS}}{F_e}} \cdot F_{y\_HSS} = 44.15 \cdot ksi$$

(AISC 13th Ed., Equation J4-6):

$$\phi P_{n\_comp} := \begin{cases} \phi_c \cdot F_{y\_HSS} \cdot A_{HSS} & \text{if } \frac{K \cdot L_{HSS}}{r_{HSS}} \le 25 \\ \phi_c \cdot F_{cr} \cdot A_{HSS} & \text{otherwise} \end{cases}$$

$\phi P_{n\_comp} = 326.23 \cdot kip$

$$Check_{comp} := \begin{cases} \text{"OK"} & \text{if } \phi P_{n\_comp} \ge \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{comp} = \text{"OK"}$

$\frac{\phi P_n}{\phi P_{n\_comp}} = 28.6 \cdot \%$

Gusset Plate Design

Gusset Plate width: $w_{plate} := 8.25 \cdot in$

Gusset Plate thickness: $t_{plate} := 1.25in$

$L_{plate1} := 44in$

$L_{plate2} := 36in$

Gusset Plate Strength: $Fy_{plate} := 65ksi$

$Fu_{plate} := 80ksi$

Pole thickness: $t_{pole} := 0.375in$

Shear Check (AISC 13th Ed., Equation J4-3 and J4-4):

$A_g := t_{plate} \cdot L_{plate2} = 45 \cdot in^2$

$A_{nv} := A_g = 45 \cdot in^2$

Shear Yielding

$\phi_v := 1$

$\phi V_{plate} := \phi_v \cdot 0.6 \cdot A_g \cdot Fy_{plate} = 1755 \cdot kip$

$Check_{shear} := \begin{cases} \text{"OK"} & \text{if } \phi V_{plate} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$

$Check_{shear} = \text{"OK"}$

$\frac{\phi P_n}{\phi V_{plate}} = 5.32 \cdot \%$

Shear Rupture

$\phi_w := 0.75$

$\phi V_{plate} := \phi_v \cdot 0.6 \cdot A_{nv} \cdot Fu_{plate} = 1620 \cdot kip$

$Check_{shear} := \begin{cases} \text{"OK"} & \text{if } \phi V_{plate} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$

$Check_{shear} = \text{"OK"}$

$\frac{\phi P_n}{\phi V_{plate}} = 5.76 \cdot \%$

Gusset Plate to Pole and Base Plate Weld Design (Horizontal and Vertical Weld)

Gusset plate thickness: $t_{plate} = 1.25 \cdot in$

Pole Grade: $Fy_{pole} := 65ksi$ $Fu_{pole} := 80ksi$

Base Plate Grade: $Fy_{base} := 60ksi$ $Fu_{base} := 75ksi$

Gussett Plate Grade: $Fy_{plate} = 65 \cdot ksi$ $Fu_{plate} = 80 \cdot ksi$

Height of vertical weld from base plate: $H := L_{plate1} = 44 \cdot in$

$Notch := 0 \cdot in$

Gap between Base Plate and HSS: $Gap := 0.25in$

Vertical fillet weld size to pole: (in sixteenths of an inch) $D_{vpole} := 5$

$weldsize_{pole} := \frac{D_{vpole}}{16} = \frac{5}{16}$

Weld Material Grade: $F_{EXX} := 80ksi$

$$Check := \begin{cases} \text{"OK"} & \text{if Capacity} < 100\% \\ \text{"INSUFFICIENT"} & \text{otherwise} \end{cases}$$

Check = "OK"

Gusset Plate to HSS Weld Design
(AISC 13th Ed., Table 8-4)

Electrode Strength: $F_{EXX} := 80ksi$

Weld Size (in sixteenths of an inch): $D_1 := 5$ $\quad weldsize_1 := \frac{D_1}{16} = \frac{5}{16}$

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$$ecc_2 := OD_{HSS} - t_{HSS} - \frac{D_{new}}{2} = 3.38 \cdot in$$

Load not in plane with weld group: $k := 0$

$$a := \frac{ecc_2}{L_{plate2}} = 0.09$$

$C_1 := 1.00$

$Coeff_1 := 3.71$

$\phi_w := 0.75$

$$D_{min1} := ceil\left(\frac{\phi P_n \cdot in}{\phi_w \cdot Coeff_1\, C_1 \cdot L_{plate2} \cdot kip}\right) = 1$$

$$minweldsize := \frac{D_{min1}}{16} = \frac{1}{16}$$

$$Check_{weld} := \begin{cases} \text{"OK"} & \text{if } D_1 \geq D_{min1} \wedge D_1 \geq Min_{weldsize} \wedge D_1 \leq Max_{weldsize} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{weld} = \text{"OK"}$

$$\phi Rn_{weld1} := \phi_w \cdot Coeff_1\, ksi \cdot in \cdot C_1 \cdot D_1 \cdot L_{plate2} = 500.85 \cdot kip$$

$$Check_{weld1} := \begin{cases} \text{"OK"} & \text{if } \phi Rn_{weld1} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{weld1} = \text{"OK"}$

$$\frac{\phi P_n}{\phi Rn_{weld1}} = 18.63 \cdot \%$$

Gusset Plate to Pole Punching Shear Check (max per unit length):

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$$ecc_1 := w_{plate} + OD_{HSS} - t_{HSS} - \frac{D_{new}}{2} = 11.63 \cdot in$$

$\phi_{vv} := 0.90$

$$M_1 := \phi P_n \cdot ecc_1 = 1084.61 \cdot kip \cdot in$$

$$S_1 := \frac{t_{plate} \cdot L_{plate1}^2}{6} = 403.33 \cdot in^3$$

$$f_{vv} := \frac{M_1}{S_1} \cdot t_{plate} \cdot 1in = 3.36 \cdot kip$$

$$\phi F_{vv} := \phi_v \cdot 0.6 \cdot Fy_{pole} \cdot 2 \cdot t_{pole} \cdot 1in = 26.32 \cdot kip$$

$$\frac{f_v}{\phi F_v} = 12.77\%$$

$$Check_{PS1} := \begin{cases} \text{"OK"} & \text{if } \phi F_v \geq f_v \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{PS1} = \text{"OK"}$

Gusset Plate to HSS Punching Shear Check (max per unit length):

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$$ecc_{2v} := OD_{HSS} - t_{HSS} - \frac{D_{new}}{2} = 3.38 \cdot in$$

$\phi_{vv} := 0.90$

$$M_2 := \phi P_n \cdot ecc_2 = 314.89 \cdot kip \cdot in$$

$$S_2 := \frac{t_{plate} \cdot L_{plate2}^2}{6} = 270 \cdot in^3$$

$$f_{vv} := \frac{M_2}{S_2} \cdot t_{plate} \cdot 1in = 1.46 \cdot kip$$

$$\phi F_{vv} := \phi_v \cdot 0.6 \cdot F_{y\_HSS} \cdot 2 \cdot t_{HSS} \cdot 1in = 24.84 \cdot kip$$

$$Check_{PS2} := \begin{cases} \text{"OK"} & \text{if } \phi F_v \geq f_v \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{PS2} = \text{"OK"}$

Embedment Depth Calculations

Projected Embedment Depth:	$L_{em} := 18 \cdot ft$	
Yield Strength of Rebar:	$f_y := 60ksi$	
Concrete Strength:	$f'_c := 4000psi$	
Transverse Reinforcement Index:	$k_{rt} := 0$	k_{rt} can be taken as 0 for design per ACI 318
Rebar Location Factor:	$\psi_t := 1$	
Rebar Coating Factor:	$\psi_e := 1$	1.0 non coated rebar
Rebar Size Factor:	$\psi_s := 1$	0.8 for No. 6 and smaller bars, 1.0 for No. 7 and larger bars
Concrete Weight Factor:	$\lambda := 1 \cdot \sqrt{psi}$	1.0 for normal weight concrete
Pier Diameter:	$D_{pier} := 7ft$	
Cover:	$c_c := 4in$	
Rebar Size:	$d_s := 11$	$d_b := \frac{d_s}{8} in = 1.38 \cdot in$
Tie Size:	$Tie := 5$	
Number of Vertical Rebar:	$n := 18$	

Development Length (ACI 318-08 Chapter 12):

$$BC_{rebar} := D_{pier} - 2 \cdot c_c - \frac{Tie \cdot in}{4} - d_b = 73.38 \cdot in$$

$$S_{rebar} := \frac{\pi \cdot BC_{rebar}}{n} = 12.806 \cdot in$$

$$c_b := \min\left(c_c + \frac{Tie}{8} in + \frac{d_b}{2}, S_{rebar} \cdot 0.5\right) = 5.31 \cdot in$$

$$l_d := \left[\frac{3}{40} \cdot \frac{f_y}{\lambda \cdot \sqrt{f'_c}} \cdot \frac{\psi_t \cdot \psi_e \cdot \psi_s}{\min\left[\left(\frac{c_b + k_{rt}}{d_b}\right), 2.5\right]}\right] \cdot d_b = 39.13 \cdot in$$

Calculate Max Distance Between Rebar and New Anchor Rods:

$$A := \frac{1}{2}\cdot S_{rebar} = 6.403\cdot in$$

$$B := \frac{BC_{rebar}}{2} - \frac{BC_{new}}{2} = 1.137\cdot in$$

$$G := \sqrt{A^2 + B^2} = 6.503\cdot in$$

$$l'_d := l_d + \frac{G}{1.5} + 3in = 3.87\,ft$$

Epoxy Development Length:

Bond Strength:

$$\phi_{bond} := 0.55$$

$$S_b = 1325\,psi$$

$$L_{be} := \frac{\phi P_n}{\pi\cdot D_{new}\cdot S_b\cdot \phi_{bond}} = 18.11\cdot in$$

Required Embedment Length:

$$L_{min} := \max\left(L_{be} + 6in, l'_d + 0.25\cdot L_{be}\right) = 4.25\,ft$$

$$L_{min} := ceil\left(\frac{L_{min}}{0.5ft}\right)\cdot 0.5ft$$

$$L_{min} = 4.5\,ft$$

$$Check := \begin{cases} \text{"OK"} & \text{if } L_{min} \le L_{em} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

Check = "OK"

Anchor Rod Pullout Test:

$$\phi_p := 0.75$$

$$Pullout := \frac{\phi_p\cdot Fu_{rod}\cdot A_{new}}{1.6} = 495\cdot kip$$

CCI Foundation Tool Suite - Monopole Pier

CCIFTS 1.2.108.14286 - Phase 1-2 Date: 3/30/2017

BU:	876401
Site Name:	TOWN OF PLAINFIELD/SSUSA
App Number:	382498 Rev.0
Work Order:	1380710

CROWN CASTLE

Monopole Drilled Pier

Input

Criteria

TIA Revision:	G
ACI 318 Revision:	2008
Seismic Category:	B

Forces

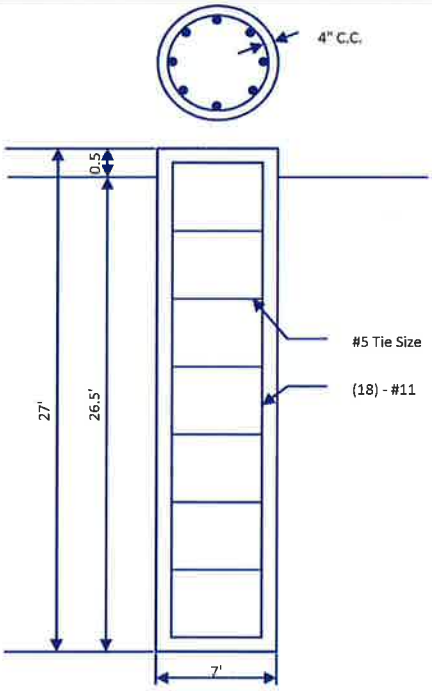
Compression	61 kips
Shear	26 kips
Moment	3044 k-ft
Swelling Force	0 kips

Foundation Dimensions

Pier Diameter:	7 ft
Ext. above grade:	0.5 ft
Depth below grade:	26.5 ft

Material Properties

Number of Rebar:	18
Rebar Size:	11
Tie Size	5
Rebar tensile strength:	60 ksi
Concrete Strength:	4000 psi
Ultimate Concrete Strain	0.003 in/in
Clear Cover to Ties:	4 in



Soil Profile: A

Layer	Thickness (ft)	From (ft)	To (ft)	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)	Ultimate Uplift Skin Friction (ksf)	Ultimate Comp. Skin Friction (ksf)	Ultimate Bearing Capacity (ksf)	SPT 'N' Counts
1	3.5	0	3.5	115	0	0	0	0	0	
2	2.5	3.5	6	115		32			0	
3	4	6	10	120		38			0	
4	16.5	10	26.5	125		43			16	

Analysis Results

Soil Lateral Capacity

Depth to Zero Shear:	6.88 ft
Max Moment, Mu:	3248.08 k-ft
Soil Safety Factor:	5.79
Safety Factor Req'd:	1.33
RATING:	23.0%

Soil Axial Capacity

Skin Friction (k):	372.38 kips
End Bearing (k):	461.81 kips
Comp. Capacity (k), ϕCn:	834.19 kips
Comp. (k), Cu:	61.00 kips
RATING:	7.3%

Concrete/Steel Check

Mu (from soil analysis)	3248.08 k-ft
ϕMn	4659.09 k-ft
RATING:	69.7%

rho provided	0.51	
rho required	0.33	OK
Rebar Spacing	11.39	
Spacing required	22.56	OK
Dev. Length required	19.29	
Dev. Length provided	53.51	OK

Overall Foundation Rating: 69.7%

ATTACHMENT 4

47-51 unity

Search Results

Parcel Details

47-51 UNITY ST

PLAINFIELD TOWN OF

651 NORWICH RD
PLAINFIELD, CT 06374

Parcel ID: 015-0071-0009
Sale Price: $0

Links | Abutters

Parcel Details | Bing Bird's Eye

Photo | Add Parcel

Google Map | Remove Parcel

Abutter Distance: | Print Labels

Adjacent | Export List

Adjacent

50 ft

100 ft

200 ft

300 ft

400 ft

500 ft

Parcel ID 015-0071-009

Find Abutters

Clear Abutters

Street Address 47-51 UNITY ST

Size Legal 12

Size Units AC

VisionURL http:/ Scroll :om/PlainfieldCT/Parcel.aspx?pid=1571

Email Map Link

About

Layers

Identify

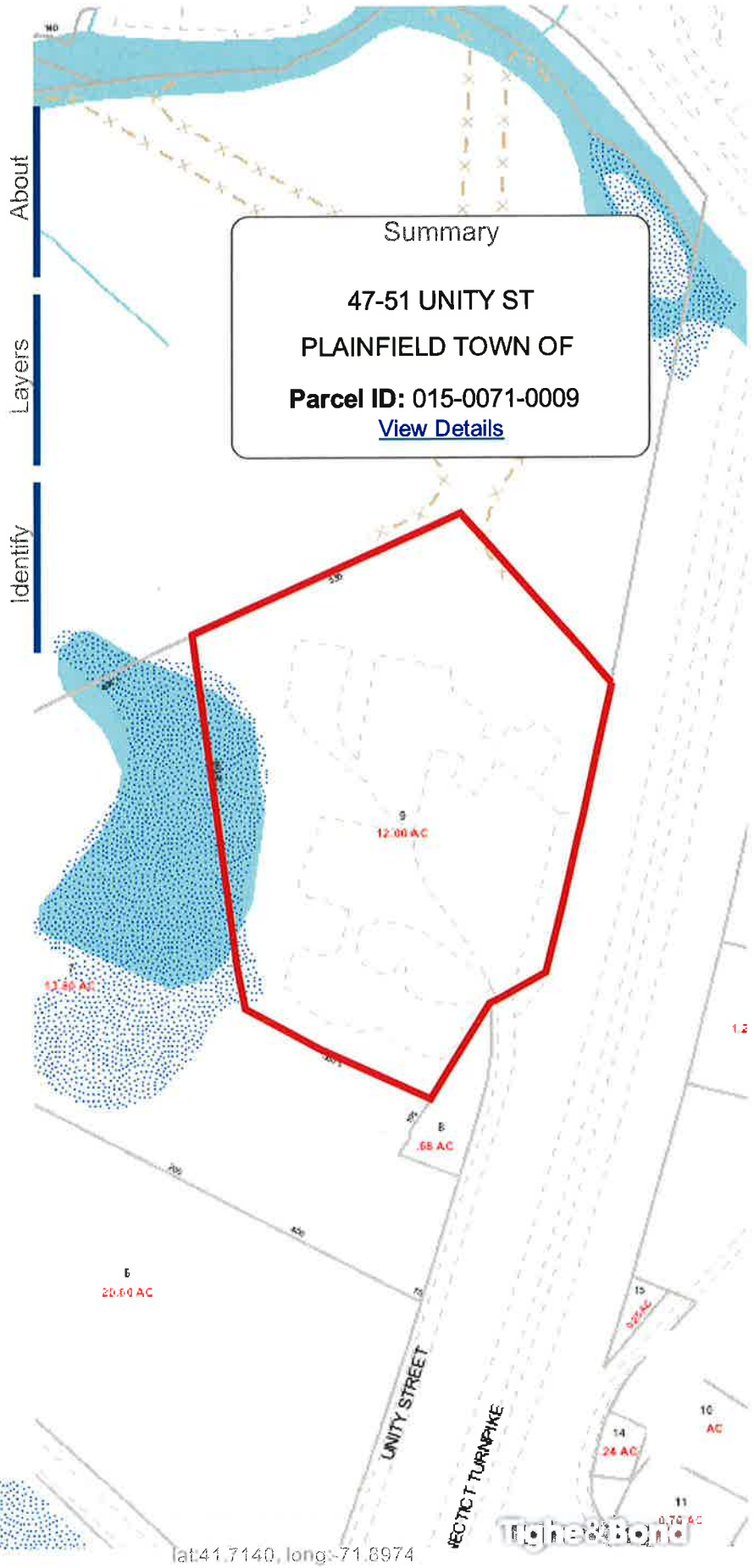
Summary

47-51 UNITY ST

PLAINFIELD TOWN OF

Parcel ID: 015-0071-0009

View Details



Copy ar aste the following string into an email to link to the current map view:

Close

lat:41.7140, long:-71.8974

47-51 UNITY ST

Location	47-51 UNITY ST	**Mblu**	015/ 0071/ 0009/ /
Acct#	00145200	**Owner**	PLAINFIELD TOWN OF
Assessment	$627,590	**Appraisal**	$896,550
PID	1571	**Building Count**	3

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$358,420	$538,130	$896,550
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$250,900	$376,690	$627,590

Owner of Record

Owner	PLAINFIELD TOWN OF	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	651 NORWICH RD PLAINFIELD, CT 06374	**Book & Page**	0025/0002
		Sale Date	04/01/1878

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
PLAINFIELD TOWN OF	$0		0025/0002	04/01/1878

Building Information

Building 1 : Section 1

Year Built:	1973
Living Area:	12,000
Replacement Cost:	$345,480
Building Percent Good:	68
Replacement Cost Less Depreciation:	$234,930

Building Attributes	
Field	**Description**

STYLE	Warehouse
MODEL	Comm/Ind
Grade	C
Stories:	1
Occupancy	
Exterior Wall 1	Pre-finsh Metl
Exterior Wall 2	
Roof Structure	Gable/Hip
Roof Cover	Asph/F Gls/Cmp
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Oil
Heating Type	Forced Air-Duc
AC Type	None
Bldg Use	MUNICIPAL MDL-94
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	9030
Heat/AC	HEAT ONLY
Frame Type	STEEL
Baths/Plumbing	AVERAGE
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	AVERAGE
Wall Height	16
% Comn Wall	

Building 2 : Section 1

Year Built: 1975
Living Area: 3,150
Replacement Cost: $108,581
Building Percent Good: 69
Replacement Cost Less Depreciation: $74,920

Building Attributes : Bldg 2 of 3	
Field	**Description**
STYLE	Warehouse
MODEL	Comm/Ind
Grade	C

Building Photo

(http://images.vgsi.com/photos/PlainfieldCTPhotos//\00\00\13/

Building Layout

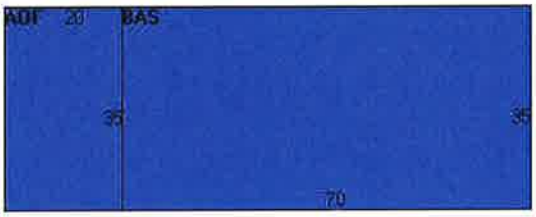
Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	12,000	12,000
		12,000	12,000

Stories:	1
Occupancy	
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	
Roof Structure	Gable/Hip
Roof Cover	Asph/F Gls/Cmp
Interior Wall 1	Typical
Interior Wall 2	
Interior Floor 1	Average
Interior Floor 2	
Heating Fuel	None
Heating Type	None
AC Type	None
Bldg Use	MUNICIPAL MDL-94
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	9030
Heat/AC	NONE
Frame Type	NONE
Baths/Plumbing	AVERAGE
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	AVERAGE
Wall Height	10
% Comn Wall	

Building Photo

(http://images.vgsi.com/photos/PlainfieldCTPhotos//\00\00\59/

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	2,450	2,450
AOF	Office	700	700
		3,150	3,150

Building 3 : Section 1

Year Built: 1975
Living Area: 378
Replacement Cost: $20,782
Building Percent Good: 69
Replacement Cost Less Depreciation: $14,340

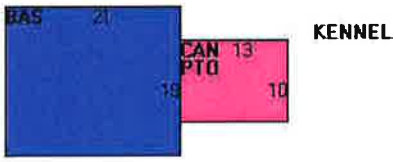
Building Attributes : Bldg 3 of 3	
Field	**Description**
STYLE	Office/Warehs
MODEL	Comm/Ind
Grade	D

Stories:	1
Occupancy	
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	
Roof Structure	Gable/Hip
Roof Cover	Asph/F Gls/Cmp
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Gas
Heating Type	Forced Air-Duc
AC Type	None
Bldg Use	MUNICIPAL MDL-94
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	9030
Heat/AC	HEAT ONLY
Frame Type	REINF. CONCR
Baths/Plumbing	NONE
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	AVERAGE
Wall Height	10
% Comn Wall	

Building Photo

(http://images.vgsi.com/photos/PlainfieldCTPhotos//\00\00\59/

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	378	378
CAN	Canopy	130	0
PTO	Patio	130	0
		638	378

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
OD1	Overhead Dr-Wood/Mtl	1 UNITS	$360	1
OD1	Overhead Dr-Wood/Mtl	1 UNITS	$380	2
A/C	AIR CONDITION	700 S.F.	$670	2
OD1	Overhead Dr-Wood/Mtl	3 UNITS	$1,080	1
MEZ1	MEZZANINE-UNF	1200 S.F.	$3,460	1

Land

Land Use

Use Code	903C
Description	MUNICIPAL MDL-94
Zone	IND
Neighborhood	2000
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	12
Frontage	
Depth	
Assessed Value	$376,690
Appraised Value	$538,130

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
AQ1	Quonset Bldg			840 S.F.	$12,180	1
KEN2	KENNEL-GOOD			468 S.F.	$5,970	3
CNP1	CANOPY AVG			312 S.F.	$1,870	3
CNP1	CANOPY AVG			800 S.F.	$3,200	2
SH1	Frame Shed			128 S.F.	$800	1
SH1	Frame Shed			170 S.F.	$1,060	1
CNP1	CANOPY AVG			800 S.F.	$3,200	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$363,620	$538,130	$901,750
2014	$363,620	$538,130	$901,750
2013	$363,620	$538,130	$901,750

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$254,540	$376,690	$631,230
2014	$254,540	$376,690	$631,230
2013	$254,540	$376,690	$631,230

ATTACHMENT 5

UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here ***Postmark with Date of Receipt.***
Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103	2	2	neopost 10/12/2017 US POSTAGE $002.38 ZIP 06103 041L1220360
	Postmaster, per *(name of receiving employee)*		

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Paul E. Sweet, First Selectman Town of Plainfield 8 Community Avenue Plainfield, CT 06374				
2.	Lou Soja, Planning and Engineering Supervisor Town of Plainfield 8 Community Avenue Plainfield, CT 06374				
3.					
4.					
5.					
6.					

OLD STATE HOUSE STATION 06103 OCT 12 2017 USPS