Robinson+Cole

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Also admitted in Massachusetts

February 13, 2017

Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification – Facility Modification**
40 Taugwonk Spur Road, Stonington, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) wireless telecommunications antennas at the 114-foot level on an existing 150-foot monopole tower at 40 Taugwonk Spur Road in Stonington, Connecticut (the "Property"). The tower is owned by Crown Castle ("Crown"). Cellco now intends to modify its facility by replacing six (6) of its existing antennas with three (3) model SBNHH-1D65B, 700/2100 MHz antennas and three (3) model SBNHH-1D65B, 1900 MHz antennas, all at the same level on the tower. Cellco also intends to replace three (3) remote radio heads ("RRHs") and install three (3) new RRHs behind its antennas, and install one (1) new HYBRIFLEX™ antenna cable. Included in Attachment 1 are specifications for the replacement antennas, RRHs and HYBRIFLEX™ cable.

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 Robert Simmons, First Selectman of the Town of Stonington, Jason Vincent, Stonington's Director of Planning, Taugwonk LLC, the owner of the Property 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. The replacement antennas and RRHs will be located at the same 114-foot level on the 150-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 modified facility 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 with Cellco's modified facility is included 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, with modifications, can support Cellco's proposed modifications. (*See* Structural Modification Report included in Attachment 3).

A copy of the Stonington Assessor's Parcel Map and property owner information is included in Attachment 4.

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:
Robert Simmons, Stonington First Selectman
Jason Vincent, Stonington Director of Planning
Taugwonk LLC
Crown
Tim Parks

ATTACHMENT 1

Product Specifications

COMMSCOPE®

SBNHH-1D65B

Multiband Antenna, 698–896 and 2x 1695–2360 MHz, 65° horizontal beamwidth, internal 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

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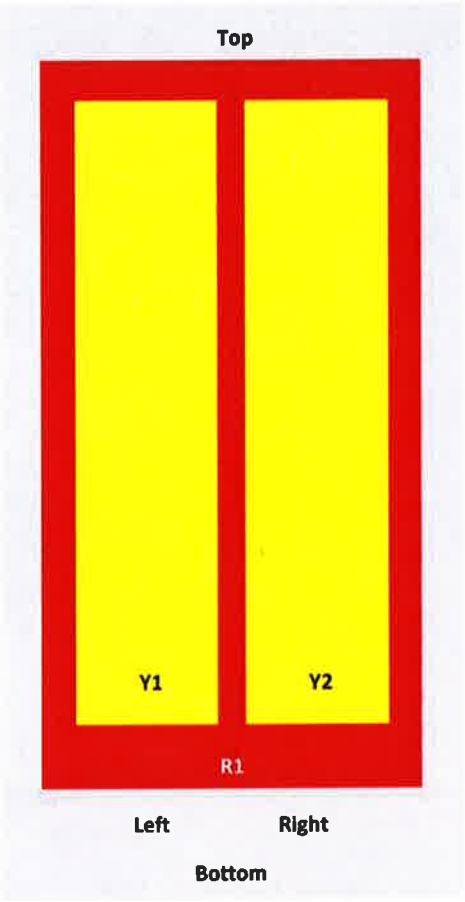
Product Specifications

SBNHH-1D65B

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

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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

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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

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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.

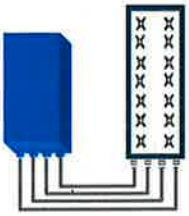
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

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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.

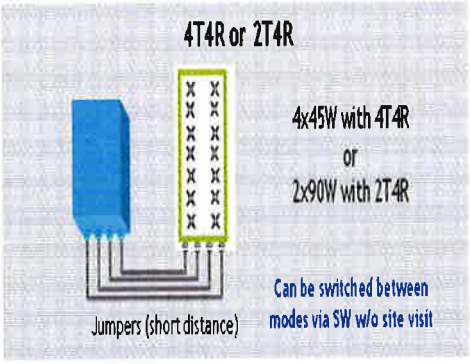
The Alcatel-Lucent B66a RRH4x45 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x90W or 4x45W RF output power. It also supports 4-way Rx diversity at the 70 MHz instantaneous bandwidth.

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

TECHNICAL SPECIFICATIONS

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

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Alcatel·Lucent

Product Data Sheet HB158-1-08U8-S8J18

HYBRIFLEX™ RRH Hybrid Feeder Cabling Solution, 1-5/8", Single-Mode Fiber

Product Description

RFS' HYBRIFLEX Remote Radio Head (RRH) hybrid feeder cabling solution combines optical fiber and DC power for RRHs in a single lightweight aluminum corrugated cable, making it the world's most innovative solution for RRH deployments.

It was developed to reduce installation complexity and costs at Cellular sites. HYBRIFLEX allows mobile operators deploying an RRH architecture to standardize the RRH installation process and eliminate the need for and cost of cable grounding. HYBRIFLEX combines optical fiber (multi-mode or single-mode) and power in a single corrugated cable. It eliminates the need for junction boxes and can connect multiple RRHs with a single feeder. Standard RFS CELLFLEX® accessories can be used with HYBRIFLEX cable. Both pre-connectorized and on-site options are available.

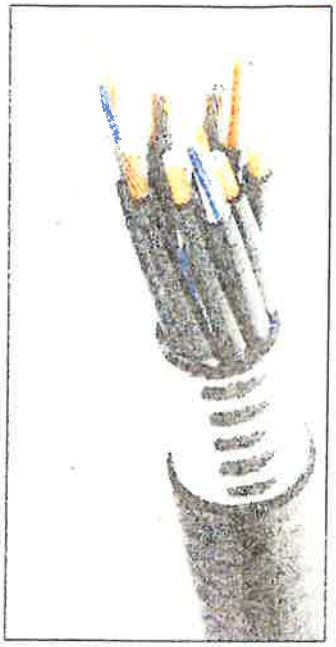


Figure 1: HYBRIFLEX Series

Features/Benefits

- Aluminum corrugated armor with outstanding bending characteristics – minimizes installation time and enables mechanical protection and shielding
- Same accessories as 1 5/8" coaxial cable
- Outer conductor grounding – Eliminates typical grounding requirements and saves on installation costs
- Lightweight solution and compact design – Decreases tower loading
- Robust cabling – Eliminates need for expensive cable trays and ducts
- Installation of tight bundled fiber optic cable pairs directly to the RRH – Reduces CAPEX and wind load by eliminating need for interconnection
- Optical fiber and power cables housed in single corrugated cable – Saves CAPEX by standardizing RRH cable installation and reducing installation requirements
- Outdoor polyethylene jacket – Ensures long-lasting cable protection

Technical Specifications

Outer Conductor Armor:	Corrugated Aluminum	[mm (in)]	46.5 (1.83)
Jacket:	Polyethylene, PE	[mm (in)]	50.3 (1.98)
UV-Protection:	Individual and External Jacket		Yes
Weight, Approximate		[kg/m (lb/ft)]	1.9 (1.30)
Minimum Bending Radius, Single Bending		[mm (in)]	200 (8)
Minimum Bending Radius, Repeated Bending		[mm (in)]	500 (20)
Recommended/Maximum Clamp Spacing		[m (ft)]	1.0 / 1.2 (3.25 / 4.0)
DC-Resistance Outer Conductor Armor		[Ω/km (Ω/1000ft)]	068 (0.205)
DC-Resistance Power Cable, 8.4mm²(8AWG)		[Ω/km (Ω/1000ft)]	2.1 (0.307)
Version			Single-mode OM3
Quantity, Fiber Count			16 (8 pairs)
Core/Clad		[µm]	50/125
Primary Coating (Acrylate)		[µm]	245
Buffer Diameter, Nominal		[µm]	900
Secondary Protection, Jacket, Nominal		[mm (in)]	2.0 (0.08)
Minimum Bending Radius		[mm (in)]	104 (4.1)
Insertion Loss @ wavelength 850nm		dB/km	3.0
Insertion Loss @ wavelength 1310nm		dB/km	1.0
Standards (Meets or exceeds)			UL94-V0, UL1666 RoHS Compliant
Size (Power)		[mm² (AWG)]	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		[mm² (AWG)]	0.8 (18)
Quantity, Wire Count (Alarm)			4 (2 pairs)
Type			UV protected
Strands			19
Primary Jacket Diameter, Nominal		[mm (in)]	6.8 (0.27)
Standards (Meets or exceeds)			NFPA 130, ICEA S-95-658 UL Type XHHW-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1202/FT4 RoHS Compliant
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to149)

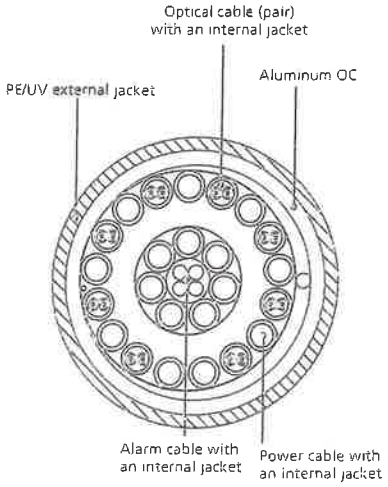


Figure 2: Construction Detail

* This data is provisional and subject to change

All information contained in the present datasheet is subject to confirmation at time of ordering.

ATTACHMENT 2

	General	Power	Density					
Site Name: Stonington								
Tower Height: 150Ft.								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*AT&T	1	283	153	880	0.0047	0.5867	0.08%	
*AT&T	4	525	153	1900	0.0349	1.0000	0.35%	
*AT&T	2	565	153	880	0.0188	0.5867	0.32%	
*AT&T	2	875	153	1900	0.0291	1.0000	0.29%	
*AT&T	1	1615	153	734	0.0269	0.4893	0.55%	
Verizon PCS	**11**	**421**	**114**	**0.1281**	**1970**	**1.0000**	**12.81%**	
Verizon Cellular	**9**	**387**	**114**	**0.0964**	**869**	**0.5793**	**16.63%**	
Verizon AWS	**1**	**7216**	**114**	**0.1996**	**2145**	**1.0000**	**19.96%**	
Verizon 700	**1**	**1689**	**114**	**0.0467**	**746**	**0.4973**	**9.40%**	
								60.40%
* Source: Siting Council								

ATTACHMENT 3

Date: **December 14, 2016**

BLACK & VEATCH
Building a world of difference.

Steve Tuttle
Crown Castle
8 Parkmeadow Drive
Pittsford, NY 14534

Black & Veatch Corp.
6800 W. 115th St., Suite 2292
Overland Park, KS 66211
(913) 458-7245

Subject: **Structural Modification Report**

Carrier Designation:	***Verizon Wireless* Co-Locate**	
	Carrier Site Number:	117880
	Carrier Site Name:	Stonington
Crown Castle Designation:	**Crown Castle BU Number:**	841291
	Crown Castle Site Name:	STONINGTON
	Crown Castle JDE Job Number:	401452
	Crown Castle Work Order Number:	1332501
	Crown Castle Application Number:	365313 Rev. 0
Engineering Firm Designation:	**Black & Veatch Corp. Project Number:**	182896
Site Data:	**40 Taugwonk Road Unit 22, Stonington, New London County, CT**	
	Latitude *41° 22' 58.17"*, Longitude *-71° 54' 6.53"*	
	150 Foot - Monopole Tower	

Dear Steve Tuttle,

Black & Veatch Corp. is pleased to submit this **"Structural Modification 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 976615, in accordance with application 365313, 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:

LC4: Modified Structure w/ 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 140 mph converted to a nominal 3-second gust wind speed of 108 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, Kzt, 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 0.159 g and S_1 of 0.058 g.

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

We at *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: Justin Vibbert

Respectfully submitted by: Ping Jiang, P.E.

STATE OF CONNECTICUT
PING JIANG
30767
LICENSED
PROFESSIONAL ENGINEER

12/19/2016

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 150 ft Monopole designed by ITT Meyer. The original design standard and wind speed are unknown.

The tower has been modified per reinforcement drawings prepared by SpectraSite in September of 2002. Reinforcement consists of adding flange plate stiffeners and (8) additional anchor rods. This modification has been considered ineffective due to no passing LMI report/pull out test and conversation with Charles McGuirt from Crown Castle.

The tower has been modified per reinforcement drawings prepared by GPD Group., in August of 2011 and passing PMI report by GPD Group in March of 2012. Reinforcement consists of installing shaft reinforcing plates, bridge stiffeners at the flange connection and additional anchor rods. These modifications have been considered effective.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas using a 3-second gust wind speed of 108 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 0.159g and S_1 of 0.058g.

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
114.0	114.0	3	alcatel lucent	B13 RRH 4X30	1	1-1/4	1
		3	alcatel lucent	B66A RRH4X45			
		6	commscope	SBNHH-1D65B w/ Mount Pipe			
		2	rfs celwave	DB-B1-6C-12AB-0Z			

Notes:
1) See Appendix B For proposed coax configuration

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
152.0	152.0	1	ericsson	RRUS 11 B12	12 2 1	1-5/8 3/4 1/2	1
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP13519			
		4	powerwave technologies	LGP21401			
		1	tower mounts	Platform Mount [LP 101-1]			
		1	tower mounts	Side Arm Mount [SO 203-3]			
	151.0	2	ericsson	RRUS 11 B12			
		2	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		2	powerwave	LGP21401			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
			technologies				
		1	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
		1	raycap	DC6-48-60-18-8F			
114.0	114.0	3	alcatel lucent	RRH2x40 700	-	-	2
		3	antel	BXA-171085-12BF w/ Mount Pipe			
		3	commscope	LNX-6514DS-AIM w/ Mount Pipe			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		6	antel	LPA-80080/6CF w/ Mount Pipe	1 12	1-5/8 1-1/4	1
		1	tower mounts	Side Arm Mount [SO 701-3]			

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)
154	154	9	Swedcom	ALP 1101	9	7/8
114	114	9	Decibel	DB 844H80E-XY	9	1-1/4

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Wilkinson Engineering	4287404	CCISITES
4-POST-MODIFICATION INSPECTION	GPD Group	4710149	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Wilkinson Engineering (Mapped)	4468655	CCISITES
4- TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	SpectraSite	5110803	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	GPD Group	4945084	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	GPD Group (Used For Tower Geometry)	4945083	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	Black & Veatch Corp.	6538144	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 was not considered in this analysis.
5) Minimum steel was assumed in the foundation pad.
6) 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
150 - 145	Pole	TP15.781x15x0.1875	Pole	21.5%	Pass
145 - 140	Pole	TP16.563x15.781x0.1875	Pole	35.3%	Pass
140 - 135	Pole	TP17.344x16.563x0.1875	Pole	48.0%	Pass
135 - 130	Pole	TP18.125x17.344x0.1875	Pole	59.6%	Pass
130 - 125	Pole	TP18.906x18.125x0.1875	Pole	70.3%	Pass
125 - 120	Pole	TP19.688x18.906x0.1875	Pole	80.2%	Pass
120 - 118.75	Pole	TP19.883x19.688x0.1875	Pole	82.6%	Pass
118.75 - 118.5	Pole + Reinf.	TP19.922x19.883x0.475	Reinf. 5 Tension Rupture	72.6%	Pass
118.5 - 113.5	Pole + Reinf.	TP20.703x19.922x0.4625	Reinf. 5 Tension Rupture	82.1%	Pass
113.5 - 110	Pole + Reinf.	TP21.25x20.703x0.45	Reinf. 5 Tension Rupture	92.1%	Pass
110 - 109.75	Pole	TP21.29x21.25x0.25	Pole	72.0%	Pass
109.75 - 106.58	Pole	TP21.793x21.29x0.25	Pole	77.6%	Pass
106.58 - 106.33	Pole + Reinf.	TP21.833x21.793x0.65	Reinf. 4 Tension Rupture	61.6%	Pass
106.33 - 101.33	Pole + Reinf.	TP22.628x21.833x0.6375	Reinf. 4 Tension Rupture	69.5%	Pass
101.33 - 96.33	Pole + Reinf.	TP23.423x22.628x0.625	Reinf. 4 Tension Rupture	76.9%	Pass
96.33 - 91.33	Pole + Reinf.	TP24.218x23.423x0.6	Reinf. 4 Tension Rupture	84.0%	Pass
91.33 - 86.33	Pole + Reinf.	TP25.013x24.218x0.5875	Reinf. 4 Tension Rupture	90.7%	Pass

86.33 - 83	Pole + Reinf.	TP25.543x25.013x0.575	Reinf. 4 Tension Rupture	95.0%	Pass
83 - 82.75	Pole + Reinf.	TP25.583x25.543x0.8625	Reinf. 4 Tension Rupture	66.5%	Pass
82.75 - 77.75	Pole + Reinf.	TP26.378x25.583x0.8375	Reinf. 4 Tension Rupture	71.1%	Pass
77.75 - 73.5	Pole + Reinf.	TP27.61x26.378x0.825	Reinf. 4 Tension Rupture	74.9%	Pass
73.5 - 69	Pole + Reinf.	TP27.255x26.554x0.7625	Reinf. 3 Tension Rupture	83.0%	Pass
69 - 64	Pole + Reinf.	TP28.034x27.255x0.75	Reinf. 3 Tension Rupture	87.1%	Pass
64 - 59	Pole + Reinf.	TP28.814x28.034x0.7375	Reinf. 3 Tension Rupture	91.1%	Pass
59 - 54	Pole + Reinf.	TP29.593x28.814x0.7125	Reinf. 3 Tension Rupture	94.9%	Pass
54 - 49	Pole + Reinf.	TP30.372x29.593x0.7	Reinf. 3 Tension Rupture	98.6%	Pass
49 - 48.75	Pole + Reinf.	TP30.411x30.372x0.7	Reinf. 3 Tension Rupture	98.7%	Pass
48.75 - 48.5	Pole + Reinf.	TP30.45x30.411x0.9375	Reinf. 3 Tension Rupture	76.3%	Pass
48.5 - 43.5	Pole + Reinf.	TP31.23x30.45x0.9125	Reinf. 3 Tension Rupture	79.2%	Pass
43.5 - 38.5	Pole + Reinf.	TP32.009x31.23x0.8875	Reinf. 3 Tension Rupture	82.0%	Pass
38.5 - 35.67	Pole + Reinf.	TP33.1x32.009x0.8875	Reinf. 3 Tension Rupture	83.5%	Pass
35.67 - 30.67	Pole + Reinf.	TP32.604x31.825x0.95	Reinf. 3 Tension Rupture	82.5%	Pass
30.67 - 25.67	Pole + Reinf.	TP33.383x32.604x0.925	Reinf. 3 Tension Rupture	84.8%	Pass
25.67 - 20.67	Pole + Reinf.	TP34.161x33.383x0.9125	Reinf. 3 Tension Rupture	87.0%	Pass
20.67 - 17.75	Pole + Reinf.	TP34.616x34.161x0.9	Reinf. 3 Tension Rupture	88.3%	Pass
17.75 - 17.5	Pole + Reinf.	TP34.655x34.616x0.825	Reinf. 2 Tension Rupture	96.1%	Pass
17.5 - 12.5	Pole + Reinf.	TP35.433x34.655x0.8125	Reinf. 2 Tension Rupture	98.3%	Pass
12.5 - 10	Pole + Reinf.	TP35.823x35.433x0.8	Reinf. 2 Tension Rupture	99.4%	Pass
10 - 9.75	Pole + Reinf.	TP35.862x35.823x0.8125	Reinf. 6 Compression	76.9%	Pass
9.75 - 4.75	Pole + Reinf.	TP36.64x35.862x0.8	Reinf. 6 Compression	78.5%	Pass
4.75 - 2.5	Pole + Reinf.	TP36.991x36.64x0.8	Reinf. 6 Weldment	79.8%	Pass
2.5 - 2.25	Pole + Reinf.	TP37.03x36.991x0.75	Reinf. 7 Compression	86.6%	Pass
2.25 - 0	Pole + Reinf.	TP37.38x37.03x0.7375	Reinf. 7 Compression	87.3%	Pass
				Summary	
			Pole	82.6%	Pass
			Reinforcement	99.4%	Pass
			Overall	99.4%	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC4

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Bolts	110	79.0	Pass
	Top Flange Plate		69.0	Pass
	Bottom Flange Plate		69.0	Pass
	Bridge Stiffeners		23.0	Pass
1	Anchor Rods	0	79.6	Pass
	Base Plate		48.1	Pass
1	Base Foundation	0	58.0	Pass
	Base Foundation Soil Interaction		46.6	Pass

4.2) Seismic Results

The 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 governs the tower and foundation stress.

Structure Rating (max from all components) =	99.6%

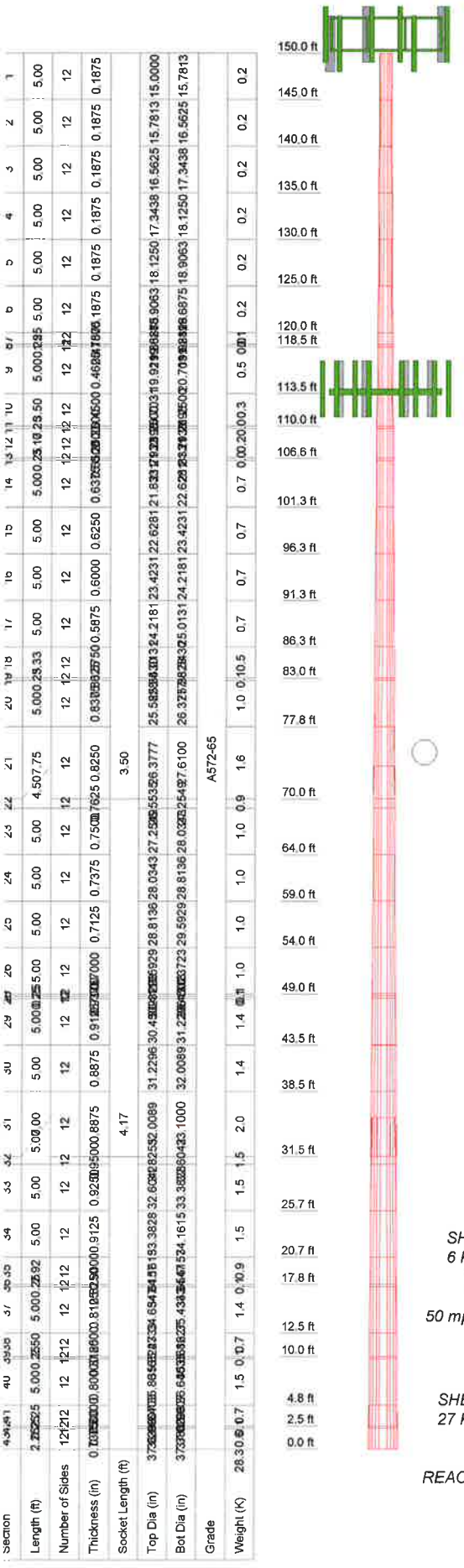
Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.3) Recommendations

The tower and its anchor rods, base plate, flange connection, and foundation will have sufficient capacity to carry the existing and proposed loads after the modifications detailed in Appendix D are installed.

APPENDIX A

TNXTOWER OUTPUT



Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.00	12	0.1875		15.0000	15.7813		0.2
2	5.00	12	0.1875		15.7813	16.5625		0.2
3	5.00	12	0.1875		16.5625	17.3438		0.2
4	5.00	12	0.1875		17.3438	18.1250		0.2
5	5.00	12	0.1875		18.1250	18.9063		0.2
6	5.00	12	0.1875		18.9063	19.6875		0.2
7	5.00	12	0.4688		19.6875	20.7094		0.5
8	5.00	12	0.4500		20.7094	21.6281		0.3
9	5.00	12	0.4500		21.6281	22.6281		0.3
10	5.00	12	0.4500		22.6281	23.4231		0.3
11	5.00	12	0.4500		23.4231	24.2181		0.3
12	5.00	12	0.4500		24.2181	25.0131		0.3
13	5.00	12	0.4500		25.0131	25.8081		0.3
14	5.00	12	0.6250		25.8081	26.6031		0.7
15	5.00	12	0.6250		26.6031	27.3981		0.7
16	5.00	12	0.6000		27.3981	28.0343		0.7
17	5.00	12	0.5875		28.0343	28.8136		0.7
18	5.00	12	0.5625		28.8136	29.5929		0.5
19	5.00	12	0.5625		29.5929	30.3723		0.5
20	5.00	12	0.6250		30.3723	31.2296		1.0
21	4.50	12	0.8250	3.50	31.2296	32.0089	A572-65	1.6
22	5.00	12	0.7625		32.0089	32.8882		0.9
23	5.00	12	0.7500		32.8882	33.7675		1.0
24	5.00	12	0.7375		33.7675	34.6468		1.0
25	5.00	12	0.7125		34.6468	35.5261		1.0
26	5.00	12	0.7000		35.5261	36.4054		1.0
27	5.00	12	0.9125		36.4054	37.2847		1.4
28	5.00	12	0.8875		37.2847	38.1640		1.4
29	5.00	12	0.8750		38.1640	39.0433		2.0
30	5.00	12	0.8750	4.17	39.0433	39.9226		1.5
31	5.00	12	0.9250		39.9226	40.8019		1.5
32	5.00	12	0.9125		40.8019	41.6812		1.5
33	5.00	12	0.9000		41.6812	42.5605		1.4
34	5.00	12	0.8125		42.5605	43.4398		1.4
35	5.00	12	0.8000		43.4398	44.3191		1.5
36	5.00	12	0.7875		44.3191	45.1984		1.5
37	5.00	12	0.7750		45.1984	46.0777		1.4
38	5.00	12	0.7625		46.0777	46.9570		1.4
39	5.00	12	0.7500		46.9570	47.8363		1.4
40	5.00	12	0.7375		47.8363	48.7156		1.5
41	2.25	12	0.7250		48.7156	49.1653		0.7

ALL REACTIONS ARE FACTORED

AXIAL 76 K
SHEAR 6 K
MOMENT 614 kip-ft
TORQUE 1 kip-ft
50 mph WIND - 0.7500 in ICE

AXIAL 43 K
SHEAR 27 K
MOMENT 2772 kip-ft
TORQUE 3 kip-ft
REACTIONS - 108 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount [LP 101-1]	152	12' horizontal x 3" Pipe Mount	114
Side Arm Mount [SO 203-3]	152	12' horizontal x 3" Pipe Mount	114
Transition Ladder	152	12' horizontal x 3" Pipe Mount	114
P65-17-XLH-RR w/ Mount Pipe	152	(2) SBNHH-1D65B w/ Mount Pipe	114
7770.00 w/ Mount Pipe	152	(2) SBNHH-1D65B w/ Mount Pipe	114
7770.00 w/ Mount Pipe	152	(2) SBNHH-1D65B w/ Mount Pipe	114
(2) 7770.00 w/ Mount Pipe	152	LPA-80080/6CF w/ Mount Pipe	114
(2) 7770.00 w/ Mount Pipe	152	LPA-80080/6CF w/ Mount Pipe	114
AM-X-CD-16-65-00T-RET w/ Mount Pipe	152	LPA-80080/6CF w/ Mount Pipe	114
		LPA-80080/6CF w/ Mount Pipe	114
AM-X-CD-16-65-00T-RET w/ Mount Pipe	152	LPA-80080/6CF w/ Mount Pipe	114
		LPA-80080/6CF w/ Mount Pipe	114
(2) LGP21401	152	B13 RRH 4X30	114
(2) LGP21401	152	B13 RRH 4X30	114
(2) LGP21401	152	B13 RRH 4X30	114
RRUS 11 B12	152	DB-B1-6C-12AB-0Z	114
RRUS 11 B12	152	DB-B1-6C-12AB-0Z	114
RRUS 11 B12	152	B66A RRH4X45	114
(2) LGP13519	152	B66A RRH4X45	114
(2) LGP13519	152	B66A RRH4X45	114
(2) LGP13519	152	Bridge Stiffener	110
DC6-48-60-18-8F	152	Bridge Stiffener	110
14" x 2' Top Hat	151	Bridge Stiffener	110
Side Arm Mount [SO 701-3]	114		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 108 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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Job:	*STONINGTON (BU#841291)*		
Project:	*182896 (841291.1332501)*		
Client:	Crown Castle	Drawn by: Justin D. Vibbert, E.I.T.	App'd:
Code:	TIA-222-G	Date: 12/14/16	Scale: N
Path:	C:\Users\vb70985\Desktop\Prepare\841291\841291.1332501 Structural Modification - Final.en		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 New London County, Connecticut.
2) Basic wind speed of 108 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.

Options

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

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	150.00-145.00	5.00	0.00	12	15.0000	15.7813	0.1875	0.7500	A572-65 (65 ksi)
L2	145.00-140.00	5.00	0.00	12	15.7813	16.5625	0.1875	0.7500	A572-65 (65 ksi)
L3	140.00-135.00	5.00	0.00	12	16.5625	17.3438	0.1875	0.7500	A572-65 (65 ksi)
L4	135.00-130.00	5.00	0.00	12	17.3438	18.1250	0.1875	0.7500	A572-65 (65 ksi)
L5	130.00-125.00	5.00	0.00	12	18.1250	18.9063	0.1875	0.7500	A572-65 (65 ksi)
L6	125.00-120.00	5.00	0.00	12	18.9063	19.6875	0.1875	0.7500	A572-65 (65 ksi)
L7	120.00-118.75	1.25	0.00	12	19.6875	19.8828	0.1875	0.7500	A572-65 (65 ksi)
L8	118.75-118.50	0.25	0.00	12	19.8828	19.9219	0.4750	1.9000	A572-65

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
L9	118.50-113.50	5.00	0.00	12	19.9219	20.7031	0.4625	1.8500	(65 ksi) A572-65 (65 ksi)
L10	113.50-110.00	3.50	0.00	12	20.7031	21.2500	0.4500	1.8000	A572-65 (65 ksi)
L11	110.00-109.75	0.25	0.00	12	21.2500	21.2898	0.2500	1.0000	A572-65 (65 ksi)
L12	109.75-106.58	3.17	0.00	12	21.2898	21.7933	0.2500	1.0000	A572-65 (65 ksi)
L13	106.58-106.33	0.25	0.00	12	21.7933	21.8331	0.6500	2.6000	A572-65 (65 ksi)
L14	106.33-101.33	5.00	0.00	12	21.8331	22.6281	0.6375	2.5500	A572-65 (65 ksi)
L15	101.33-96.33	5.00	0.00	12	22.6281	23.4231	0.6250	2.5000	A572-65 (65 ksi)
L16	96.33-91.33	5.00	0.00	12	23.4231	24.2181	0.6000	2.4000	A572-65 (65 ksi)
L17	91.33-86.33	5.00	0.00	12	24.2181	25.0131	0.5875	2.3500	A572-65 (65 ksi)
L18	86.33-83.00	3.33	0.00	12	25.0131	25.5430	0.5750	2.3000	A572-65 (65 ksi)
L19	83.00-82.75	0.25	0.00	12	25.5430	25.5828	0.8625	3.4500	A572-65 (65 ksi)
L20	82.75-77.75	5.00	0.00	12	25.5828	26.3777	0.8375	3.3500	A572-65 (65 ksi)
L21	77.75-70.00	7.75	3.50	12	26.3777	27.6100	0.8250	3.3000	A572-65 (65 ksi)
L22	70.00-69.00	4.50	0.00	12	26.5535	27.2549	0.7625	3.0500	A572-65 (65 ksi)
L23	69.00-64.00	5.00	0.00	12	27.2549	28.0343	0.7500	3.0000	A572-65 (65 ksi)
L24	64.00-59.00	5.00	0.00	12	28.0343	28.8136	0.7375	2.9500	A572-65 (65 ksi)
L25	59.00-54.00	5.00	0.00	12	28.8136	29.5929	0.7125	2.8500	A572-65 (65 ksi)
L26	54.00-49.00	5.00	0.00	12	29.5929	30.3723	0.7000	2.8000	A572-65 (65 ksi)
L27	49.00-48.75	0.25	0.00	12	30.3723	30.4113	0.7000	2.8000	A572-65 (65 ksi)
L28	48.75-48.50	0.25	0.00	12	30.4113	30.4502	0.9375	3.7500	A572-65 (65 ksi)
L29	48.50-43.50	5.00	0.00	12	30.4502	31.2296	0.9125	3.6500	A572-65 (65 ksi)
L30	43.50-38.50	5.00	0.00	12	31.2296	32.0089	0.8875	3.5500	A572-65 (65 ksi)
L31	38.50-31.50	7.00	4.17	12	32.0089	33.1000	0.8875	3.5500	A572-65 (65 ksi)
L32	31.50-30.67	5.00	0.00	12	31.8255	32.6042	0.9500	3.8000	A572-65 (65 ksi)
L33	30.67-25.67	5.00	0.00	12	32.6042	33.3828	0.9250	3.7000	A572-65 (65 ksi)
L34	25.67-20.67	5.00	0.00	12	33.3828	34.1615	0.9125	3.6500	A572-65 (65 ksi)
L35	20.67-17.75	2.92	0.00	12	34.1615	34.6157	0.9000	3.6000	A572-65 (65 ksi)
L36	17.75-17.50	0.25	0.00	12	34.6157	34.6547	0.8250	3.3000	A572-65 (65 ksi)
L37	17.50-12.50	5.00	0.00	12	34.6547	35.4333	0.8125	3.2500	A572-65 (65 ksi)
L38	12.50-10.00	2.50	0.00	12	35.4333	35.8227	0.8000	3.2000	A572-65 (65 ksi)
L39	10.00-9.75	0.25	0.00	12	35.8227	35.8616	0.8125	3.2500	A572-65 (65 ksi)
L40	9.75-4.75	5.00	0.00	12	35.8616	36.6403	0.8000	3.2000	A572-65 (65 ksi)
L41	4.75-2.50	2.25	0.00	12	36.6403	36.9907	0.8000	3.2000	A572-65 (65 ksi)
L42	2.50-2.25	0.25	0.00	12	36.9907	37.0296	0.7500	3.0000	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
L43	2.25-0.00	2.25		12	37.0296	37.3800	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	15.5291	8.9430	250.4541	5.3029	7.7700	32.2335	507.4880	4.4015	3.5175	18.76
	16.3380	9.4147	292.2098	5.5826	8.1747	35.7457	592.0963	4.6336	3.7269	19.877
L2	16.3380	9.4147	292.2098	5.5826	8.1747	35.7457	592.0963	4.6336	3.7269	19.877
	17.1468	9.8864	338.3662	5.8622	8.5794	39.4395	685.6217	4.8658	3.9363	20.993
L3	17.1468	9.8864	338.3662	5.8622	8.5794	39.4395	685.6217	4.8658	3.9363	20.993
	17.9556	10.3581	389.1439	6.1419	8.9841	43.3149	788.5110	5.0979	4.1456	22.11
L4	17.9556	10.3581	389.1439	6.1419	8.9841	43.3149	788.5110	5.0979	4.1456	22.11
	18.7644	10.8298	444.7632	6.4216	9.3887	47.3719	901.2108	5.3301	4.3550	23.227
L5	18.7644	10.8298	444.7632	6.4216	9.3887	47.3719	901.2108	5.3301	4.3550	23.227
	19.5732	11.3014	505.4447	6.7013	9.7934	51.6105	1024.1679	5.5622	4.5644	24.343
L6	19.5732	11.3014	505.4447	6.7013	9.7934	51.6105	1024.1679	5.5622	4.5644	24.343
	20.3820	11.7731	571.4088	6.9810	10.1981	56.0308	1157.8292	5.7944	4.7737	25.46
L7	20.3820	11.7731	571.4088	6.9810	10.1981	56.0308	1157.8292	5.7944	4.7737	25.46
	20.5842	11.8910	588.7511	7.0509	10.2993	57.1642	1192.9694	5.8524	4.8261	25.739
L8	20.5842	29.6842	1427.1356	6.9480	10.2993	138.5663	2891.7636	14.6097	4.0556	8.538
	20.6246	29.7440	1435.7701	6.9620	10.3195	139.1313	2909.2594	14.6391	4.0661	8.56
L9	20.6246	28.9799	1400.6842	6.9665	10.3195	135.7314	2838.1659	14.2630	4.0996	8.864
	21.4335	30.1434	1576.2508	7.2461	10.7242	146.9805	3193.9114	14.8356	4.3089	9.317
L10	21.4335	29.3468	1536.4926	7.2506	10.7242	143.2731	3113.3505	14.4436	4.3424	9.65
	21.9996	30.1392	1664.3488	7.4464	11.0075	151.2013	3372.4218	14.8336	4.4890	9.976
L11	21.9996	16.9050	951.5678	7.5180	11.0075	86.4472	1928.1342	8.3201	5.0250	20.1
	22.0408	16.9370	956.9815	7.5322	11.0281	86.7767	1939.1040	8.3359	5.0357	20.143
L12	22.0408	16.9370	956.9815	7.5322	11.0281	86.7767	1939.1040	8.3359	5.0357	20.143
	22.5621	17.3424	1027.3506	7.7125	11.2889	91.0051	2081.6909	8.5354	5.1706	20.682
L13	22.5621	44.2529	2525.0715	7.5693	11.2889	223.6768	5116.4794	21.7799	4.0986	6.306
	22.6032	44.3361	2539.3399	7.5835	11.3095	224.5312	5145.3911	21.8209	4.1093	6.322
L14	22.6032	43.5092	2494.9179	7.5880	11.3095	220.6033	5055.3802	21.4139	4.1428	6.498
	23.4263	45.1411	2786.3166	7.8726	11.7213	237.7133	5645.8329	22.2171	4.3558	6.833
L15	23.4263	44.2811	2736.3439	7.8771	11.7213	233.4499	5544.5745	21.7938	4.3893	7.023
	24.2493	45.8811	3043.7930	8.1617	12.1331	250.8660	6167.5499	22.5813	4.6024	7.364
L16	24.2493	44.0941	2931.6646	8.1707	12.1331	241.6245	5940.3474	21.7018	4.6694	7.782
	25.0724	45.6301	3248.8178	8.4553	12.5450	258.9741	6582.9856	22.4577	4.8824	8.137
L17	25.0724	44.7031	3186.1876	8.4597	12.5450	253.9817	6456.0800	22.0015	4.9159	8.368
	25.8954	46.2070	3518.7054	8.7443	12.9568	271.5729	7129.8511	22.7417	5.1290	8.73
L18	25.8954	45.2471	3449.1293	8.7488	12.9568	266.2030	6988.8710	22.2692	5.1625	8.978
	26.4441	46.2283	3678.4168	8.9385	13.2313	278.0093	7453.4696	22.7521	5.3045	9.225
L19	26.4441	68.5439	5329.2094	8.8356	13.2313	402.7737	10798.4231	33.7352	4.5340	5.257
	26.4852	68.6543	5355.0003	8.8498	13.2519	404.0941	10850.6825	33.7896	4.5447	5.269
L20	26.4852	66.7318	5215.5748	8.8588	13.2519	393.5729	10568.1685	32.8433	4.6117	5.506
	27.3083	68.8757	5734.5860	9.1434	13.6637	419.6957	11619.8259	33.8985	4.8247	5.761
L21	27.3083	67.8809	5657.2935	9.1479	13.6637	414.0390	11463.2103	33.4089	4.8582	5.889
	28.5840	71.1544	6515.8447	9.5890	14.3020	455.5904	13202.8678	35.0200	5.1885	6.289
L22	28.0550	63.3234	5376.3337	9.2332	13.7547	390.8721	10893.9096	31.1658	5.0728	6.653
	28.2164	65.0455	5827.0148	9.4843	14.1180	412.7353	11807.1118	32.0134	5.2608	6.899
L23	28.2164	64.0094	5739.6067	9.4888	14.1180	406.5440	11629.9993	31.5035	5.2943	7.059
	29.0232	65.8915	6260.9384	9.7678	14.5217	431.1423	12686.3587	32.4298	5.5032	7.338
L24	29.0232	64.8230	6165.0551	9.7722	14.5217	424.5396	12492.0730	31.9039	5.5367	7.507
	29.8300	66.6737	6708.3272	10.0512	14.9254	449.4557	13592.8895	32.8148	5.7455	7.791

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
L25	29.8300	64.4710	6498.2542	10.0602	14.9254	435.3809	13167.2248	31.7306	5.8125	8.158
	30.6369	66.2590	7054.0475	10.3392	15.3291	460.1722	14293.4126	32.6106	6.0214	8.451
L26	30.6369	65.1247	6939.2948	10.3437	15.3291	452.6863	14060.8927	32.0524	6.0549	8.65
	31.4437	66.8813	7516.1103	10.6227	15.7328	477.7336	15229.6772	32.9170	6.2638	8.948
L27	31.4437	66.8813	7516.1103	10.6227	15.7328	477.7336	15229.6772	32.9170	6.2638	8.948
	31.4841	66.9692	7545.7607	10.6366	15.7530	479.0037	15289.7569	32.9602	6.2742	8.963
L28	31.4841	88.9739	9865.5132	10.5516	15.7530	626.2612	19990.2044	43.7903	5.6377	6.014
	31.5244	89.0915	9904.6943	10.5656	15.7732	627.9438	20069.5959	43.8481	5.6482	6.025
L29	31.5244	86.7892	9665.0892	10.5745	15.7732	612.7532	19584.0911	42.7150	5.7152	6.263
	32.3312	89.0791	10450.4843	10.8535	16.1769	646.0121	21175.5145	43.8420	5.9240	6.492
L30	32.3312	86.7101	10189.3351	10.8625	16.1769	629.8688	20646.3553	42.6761	5.9910	6.75
	33.1381	88.9372	10994.8238	11.1415	16.5806	663.1130	22278.4938	43.7722	6.1999	6.986
L31	33.1381	88.9372	10994.8238	11.1415	16.5806	663.1130	22278.4938	43.7722	6.1999	6.986
	34.2676	92.0553	12192.2393	11.5321	17.1458	711.0919	24704.7823	45.3068	6.4923	7.315
L32	33.6200	94.4481	11492.3058	11.0534	16.4856	697.1115	23286.5272	46.4845	5.9832	6.298
	33.7543	96.8301	12383.9059	11.3322	16.8890	733.2548	25093.1507	47.6568	6.1919	6.518
L33	33.7543	94.3564	12086.6059	11.3411	16.8890	715.6516	24490.7404	46.4393	6.2589	6.766
	34.5604	96.6756	12999.9439	11.6199	17.2923	751.7765	26341.4107	47.5808	6.4676	6.992
L34	34.5604	95.4059	12839.0911	11.6244	17.2923	742.4745	26015.4794	46.9559	6.5011	7.124
	35.3666	97.6938	13785.0910	11.9031	17.6956	779.0103	27932.3316	48.0819	6.7098	7.353
L35	35.3666	96.3918	13611.5945	11.9076	17.6956	769.2058	27580.7806	47.4411	6.7433	7.493
	35.8369	97.7082	14176.9499	12.0702	17.9310	790.6409	28726.3442	48.0890	6.8650	7.628
L36	35.8369	89.7651	13082.4554	12.0971	17.9310	729.6016	26508.6015	44.1797	7.0660	8.565
	35.8772	89.8686	13127.7287	12.1110	17.9511	731.3039	26600.3375	44.2306	7.0765	8.578
L37	35.8772	88.5396	12943.1606	12.1155	17.9511	721.0222	26226.3524	43.5765	7.1100	8.751
	36.6833	90.5768	13857.2861	12.3943	18.3545	754.9814	28078.6185	44.5791	7.3186	9.008
L38	36.6833	89.2155	13658.8812	12.3987	18.3545	744.1718	27676.5963	43.9092	7.3521	9.19
	37.0864	90.2184	14124.7181	12.5381	18.5561	761.1881	28620.5082	44.4028	7.4565	9.321
L39	37.0864	91.5954	14330.0621	12.5336	18.5561	772.2542	29036.5910	45.0805	7.4230	9.136
	37.1267	91.6972	14377.9225	12.5476	18.5763	773.9922	29133.5690	45.1306	7.4334	9.149
L40	37.1267	90.3187	14171.8757	12.5521	18.5763	762.9003	28716.0624	44.4521	7.4669	9.334
	37.9328	92.3245	15137.2040	12.8308	18.9797	797.5487	30672.0792	45.4393	7.6756	9.594
L41	37.9328	92.3245	15137.2040	12.8308	18.9797	797.5487	30672.0792	45.4393	7.6756	9.594
	38.2956	93.2272	15585.5324	12.9563	19.1612	813.3916	31580.5141	45.8836	7.7695	9.712
L42	38.2956	87.5212	14672.0806	12.9742	19.1612	765.7196	29729.6131	43.0753	7.9035	10.538

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
	38.3359	87.6152	14719.4176	12.9881	19.1813	767.3824	29825.5307	43.1216	7.9139	10.552
L43	38.3359	86.1847	14489.0601	12.9926	19.1813	755.3729	29358.7640	42.4175	7.9474	10.776
	38.6986	87.0168	14912.7980	13.1180	19.3628	770.1762	30217.3719	42.8270	8.0413	10.904

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 150.00-145.00				1	1	1			
L2 145.00-140.00				1	1	1			
L3 140.00-135.00				1	1	1			
L4 135.00-130.00				1	1	1			
L5 130.00-125.00				1	1	1			
L6 125.00-120.00				1	1	1			
L7 120.00-118.75				1	1	1			
L8 118.75-118.50				1	1	0.905599			
L9 118.50-113.50				1	1	0.909249			
L10 113.50-110.00				1	1	0.920329			
L11 110.00-109.75				1	1	1			
L12 109.75-106.58				1	1	1			
L13 106.58-106.33				1	1	0.900092			
L14 106.33-101.33				1	1	0.898219			
L15 101.33-96.33				1	1	0.897681			
L16 96.33-91.33				1	1	0.916644			
L17 91.33-86.33				1	1	0.919049			
L18 86.33-83.00				1	1	0.927855			
L19 83.00-82.75				1	1	0.887795			
L20 82.75-77.75				1	1	0.894233			
L21 77.75-70.00				1	1	0.891769			
L22 70.00-69.00				1	1	0.901768			
L23 69.00-64.00				1	1	0.902092			
L24 64.00-59.00				1	1	0.90327			
L25 59.00-54.00				1	1	0.92076			
L26 54.00-49.00				1	1	0.923917			
L27 49.00-48.75				1	1	0.923291			
L28 48.75-48.50				1	1	0.896797			
L29 48.50-				1	1	0.905726			

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
43.50									
L30 43.50-38.50				1	1	0.915989			
L31 38.50-31.50				1	1	0.9081			
L32 31.50-30.67				1	1	0.913845			
L33 30.67-25.67				1	1	0.925031			
L34 25.67-20.67				1	1	0.925014			
L35 20.67-17.75				1	1	0.930491			
L36 17.75-17.50				1	1	0.928611			
L37 17.50-12.50				1	1	0.931731			
L38 12.50-10.00				1	1	0.940643			
L39 10.00-9.75				1	1	0.931446			
L40 9.75-4.75				1	1	0.935301			
L41 4.75-2.50				1	1	0.930784			
L42 2.50-2.25				1	1	0.819491			
L43 2.25-0.00				1	1	0.829989			

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)	150.00 - 10.00	1	1	0.000 0.000	0.3750		0.22
HB158-1-08U8-S8J18(1-5/8")	C	Surface Ar (CaAa)	114.00 - 3.00	1	1	0.000 0.070	1.9800		1.30
***									
PL1.5x7 Reinforcement	A	Surface Af (CaAa)	20.75 - 10.00	1	1	0.000 0.000	7.0000	17.0000	0.00
PL1.5x7 Reinforcement	B	Surface Af (CaAa)	20.75 - 10.00	1	1	0.000 0.000	7.0000	17.0000	0.00
PL1.5x7 Reinforcement	C	Surface Af (CaAa)	20.75 - 10.00	1	1	0.000 0.000	7.0000	17.0000	0.00
***									
PL1.5x7 Reinforcement	A	Surface Af (CaAa)	70.00 - 17.50	1	1	0.000 0.000	7.0000	17.0000	0.00
PL1.5x7 Reinforcement	B	Surface Af (CaAa)	70.00 - 17.50	1	1	0.000 0.000	7.0000	17.0000	0.00
PL1.5x7 Reinforcement	C	Surface Af (CaAa)	70.00 - 17.50	1	1	0.000 0.000	7.0000	17.0000	0.00
***									
PL1.25x6 Reinforcement	A	Surface Af (CaAa)	110.00 - 70.00	1	1	0.000 0.000	6.0000	14.5000	0.00
PL1.25x6 Reinforcement	B	Surface Af (CaAa)	110.00 - 70.00	1	1	0.000 0.000	6.0000	14.5000	0.00
PL1.25x6 Reinforcement	C	Surface Af (CaAa)	110.00 - 70.00	1	1	0.000 0.000	6.0000	14.5000	0.00
***									
PL1.25x4 Reinforcement	A	Surface Af (CaAa)	120.00 - 110.00	1	1	0.000 0.000	4.0000	10.5000	0.00
PL1.25x4 Reinforcement	B	Surface Af (CaAa)	120.00 - 110.00	1	1	0.000 0.000	4.0000	10.5000	0.00
PL1.25x4 Reinforcement	C	Surface Af	120.00 - 110.00	1	1	0.000	4.0000	10.5000	0.00

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
		(CaAa)				0.000			
***									
CCI-SFP-085125	A	Surface Af (CaAa)	10.00 - 0.50	1	1	0.000 0.000	8.5000	19.5000	0.00
CCI-SFP-085125	B	Surface Af (CaAa)	10.00 - 0.50	1	1	0.000 0.000	8.5000	19.5000	0.00
CCI-SFP-085125	C	Surface Af (CaAa)	10.00 - 0.50	1	1	0.000 0.000	8.5000	19.5000	0.00
CCI-SFP-085125	C	Surface Af (CaAa)	10.00 - 0.50	1	1	0.000 0.000	8.5000	19.5000	0.00
***									
CCI-SFP-060100	A	Surface Af (CaAa)	50.75 - 15.75	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	B	Surface Af (CaAa)	50.75 - 15.75	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	C	Surface Af (CaAa)	50.75 - 15.75	1	1	0.000 0.000	6.0000	14.0000	0.00
***									
CCI-SFP-060100	A	Surface Af (CaAa)	85.00 - 70.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	B	Surface Af (CaAa)	85.00 - 70.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	C	Surface Af (CaAa)	85.00 - 70.00	1	1	0.000 0.000	6.0000	14.0000	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
***								
2" innerduct conduit	B	No	Inside Pole	150.00 - 8.00	1	No Ice	0.00	0.20
						1/2" Ice	0.00	0.20
						1" Ice	0.00	0.20
WR-VG86ST-BRD(3/4)	B	No	Inside Pole	150.00 - 8.00	2	No Ice	0.00	0.58
						1/2" Ice	0.00	0.58
						1" Ice	0.00	0.58
LDF4-50A(1/2")	B	No	Inside Pole	150.00 - 8.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
LDF7-50A(1-5/8")	B	No	Inside Pole	150.00 - 8.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
***								
HB114-U6S12-xxx-LI(1-1/4")	C	No	Inside Pole	114.00 - 3.00	1	No Ice	0.00	1.70
						1/2" Ice	0.00	1.70
						1" Ice	0.00	1.70
LDF6-50A(1-1/4")	C	No	Inside Pole	114.00 - 3.00	12	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66

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	150.00-145.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.188	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.00
L2	145.00-140.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.188	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.00
L3	140.00-135.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.188	0.000	0.06
		C	0.000	0.000	0.000	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
L4	135.00-130.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.188	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.00
L5	130.00-125.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.188	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.00
L6	125.00-120.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.188	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.00
L7	120.00-118.75	A	0.000	0.000	0.833	0.000	0.00
		B	0.000	0.000	0.880	0.000	0.01
		C	0.000	0.000	0.833	0.000	0.00
L8	118.75-118.50	A	0.000	0.000	0.167	0.000	0.00
		B	0.000	0.000	0.176	0.000	0.00
		C	0.000	0.000	0.167	0.000	0.00
L9	118.50-113.50	A	0.000	0.000	3.333	0.000	0.00
		B	0.000	0.000	3.521	0.000	0.06
		C	0.000	0.000	3.432	0.000	0.01
L10	113.50-110.00	A	0.000	0.000	2.333	0.000	0.00
		B	0.000	0.000	2.465	0.000	0.04
		C	0.000	0.000	3.026	0.000	0.04
L11	110.00-109.75	A	0.000	0.000	0.250	0.000	0.00
		B	0.000	0.000	0.259	0.000	0.00
		C	0.000	0.000	0.299	0.000	0.00
L12	109.75-106.58	A	0.000	0.000	3.167	0.000	0.00
		B	0.000	0.000	3.286	0.000	0.04
		C	0.000	0.000	3.794	0.000	0.03
L13	106.58-106.33	A	0.000	0.000	0.250	0.000	0.00
		B	0.000	0.000	0.259	0.000	0.00
		C	0.000	0.000	0.299	0.000	0.00
L14	106.33-101.33	A	0.000	0.000	5.000	0.000	0.00
		B	0.000	0.000	5.188	0.000	0.06
		C	0.000	0.000	5.990	0.000	0.05
L15	101.33-96.33	A	0.000	0.000	5.000	0.000	0.00
		B	0.000	0.000	5.188	0.000	0.06
		C	0.000	0.000	5.990	0.000	0.05
L16	96.33-91.33	A	0.000	0.000	5.000	0.000	0.00
		B	0.000	0.000	5.188	0.000	0.06
		C	0.000	0.000	5.990	0.000	0.05
L17	91.33-86.33	A	0.000	0.000	5.000	0.000	0.00
		B	0.000	0.000	5.188	0.000	0.06
		C	0.000	0.000	5.990	0.000	0.05
L18	86.33-83.00	A	0.000	0.000	5.333	0.000	0.00
		B	0.000	0.000	5.458	0.000	0.04
		C	0.000	0.000	5.993	0.000	0.04
L19	83.00-82.75	A	0.000	0.000	0.500	0.000	0.00
		B	0.000	0.000	0.509	0.000	0.00
		C	0.000	0.000	0.549	0.000	0.00
L20	82.75-77.75	A	0.000	0.000	10.000	0.000	0.00
		B	0.000	0.000	10.188	0.000	0.06
		C	0.000	0.000	10.990	0.000	0.05
L21	77.75-70.00	A	0.000	0.000	15.500	0.000	0.00
		B	0.000	0.000	15.791	0.000	0.09
		C	0.000	0.000	17.035	0.000	0.08
L22	70.00-69.00	A	0.000	0.000	1.167	0.000	0.00
		B	0.000	0.000	1.204	0.000	0.01
		C	0.000	0.000	1.365	0.000	0.01
L23	69.00-64.00	A	0.000	0.000	5.833	0.000	0.00
		B	0.000	0.000	6.021	0.000	0.06
		C	0.000	0.000	6.823	0.000	0.05
L24	64.00-59.00	A	0.000	0.000	5.833	0.000	0.00
		B	0.000	0.000	6.021	0.000	0.06
		C	0.000	0.000	6.823	0.000	0.05
L25	59.00-54.00	A	0.000	0.000	5.833	0.000	0.00
		B	0.000	0.000	6.021	0.000	0.06
		C	0.000	0.000	6.823	0.000	0.05
L26	54.00-49.00	A	0.000	0.000	7.583	0.000	0.00
		B	0.000	0.000	7.771	0.000	0.06
		C	0.000	0.000	8.573	0.000	0.05

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
L27	49.00-48.75	A	0.000	0.000	0.542	0.000	0.00
		B	0.000	0.000	0.551	0.000	0.00
		C	0.000	0.000	0.591	0.000	0.00
L28	48.75-48.50	A	0.000	0.000	0.542	0.000	0.00
		B	0.000	0.000	0.551	0.000	0.00
		C	0.000	0.000	0.591	0.000	0.00
L29	48.50-43.50	A	0.000	0.000	10.833	0.000	0.00
		B	0.000	0.000	11.021	0.000	0.06
		C	0.000	0.000	11.823	0.000	0.05
L30	43.50-38.50	A	0.000	0.000	10.833	0.000	0.00
		B	0.000	0.000	11.021	0.000	0.06
		C	0.000	0.000	11.823	0.000	0.05
L31	38.50-31.50	A	0.000	0.000	15.167	0.000	0.00
		B	0.000	0.000	15.429	0.000	0.08
		C	0.000	0.000	16.553	0.000	0.08
L32	31.50-30.67	A	0.000	0.000	1.805	0.000	0.00
		B	0.000	0.000	1.836	0.000	0.01
		C	0.000	0.000	1.970	0.000	0.01
L33	30.67-25.67	A	0.000	0.000	10.833	0.000	0.00
		B	0.000	0.000	11.021	0.000	0.06
		C	0.000	0.000	11.823	0.000	0.05
L34	25.67-20.67	A	0.000	0.000	10.930	0.000	0.00
		B	0.000	0.000	11.118	0.000	0.06
		C	0.000	0.000	12.017	0.000	0.05
L35	20.67-17.75	A	0.000	0.000	9.723	0.000	0.00
		B	0.000	0.000	9.833	0.000	0.03
		C	0.000	0.000	13.704	0.000	0.03
L36	17.75-17.50	A	0.000	0.000	0.833	0.000	0.00
		B	0.000	0.000	0.843	0.000	0.00
		C	0.000	0.000	1.175	0.000	0.00
L37	17.50-12.50	A	0.000	0.000	7.583	0.000	0.00
		B	0.000	0.000	7.771	0.000	0.06
		C	0.000	0.000	14.407	0.000	0.05
L38	12.50-10.00	A	0.000	0.000	2.917	0.000	0.00
		B	0.000	0.000	3.010	0.000	0.03
		C	0.000	0.000	6.328	0.000	0.03
L39	10.00-9.75	A	0.000	0.000	0.354	0.000	0.00
		B	0.000	0.000	0.354	0.000	0.00
		C	0.000	0.000	0.758	0.000	0.00
L40	9.75-4.75	A	0.000	0.000	7.083	0.000	0.00
		B	0.000	0.000	7.083	0.000	0.02
		C	0.000	0.000	15.157	0.000	0.05
L41	4.75-2.50	A	0.000	0.000	3.188	0.000	0.00
		B	0.000	0.000	3.188	0.000	0.00
		C	0.000	0.000	6.721	0.000	0.02
L42	2.50-2.25	A	0.000	0.000	0.354	0.000	0.00
		B	0.000	0.000	0.354	0.000	0.00
		C	0.000	0.000	0.708	0.000	0.00
L43	2.25-0.00	A	0.000	0.000	2.479	0.000	0.00
		B	0.000	0.000	2.479	0.000	0.00
		C	0.000	0.000	4.958	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	150.00-145.00	A	1.742	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	1.930	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.00
L2	145.00-140.00	A	1.736	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	1.924	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.00
L3	140.00-135.00	A	1.730	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	1.918	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.00
L4	135.00-130.00	A	1.724	0.000	0.000	0.000	0.000	0.00

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	1.911	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.00
L5	130.00-125.00	A	1.717	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	1.905	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.00
L6	125.00-120.00	A	1.710	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	1.898	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.00
L7	120.00-118.75	A	1.706	0.000	0.000	1.117	0.000	0.01
		B		0.000	0.000	1.591	0.000	0.03
		C		0.000	0.000	1.117	0.000	0.01
L8	118.75-118.50	A	1.705	0.000	0.000	0.223	0.000	0.00
		B		0.000	0.000	0.318	0.000	0.01
		C		0.000	0.000	0.223	0.000	0.00
L9	118.50-113.50	A	1.701	0.000	0.000	4.467	0.000	0.06
		B		0.000	0.000	6.355	0.000	0.14
		C		0.000	0.000	4.736	0.000	0.07
L10	113.50-110.00	A	1.695	0.000	0.000	3.125	0.000	0.04
		B		0.000	0.000	4.442	0.000	0.09
		C		0.000	0.000	5.004	0.000	0.10
L11	110.00-109.75	A	1.692	0.000	0.000	0.335	0.000	0.00
		B		0.000	0.000	0.429	0.000	0.01
		C		0.000	0.000	0.469	0.000	0.01
L12	109.75-106.58	A	1.689	0.000	0.000	4.237	0.000	0.04
		B		0.000	0.000	5.425	0.000	0.09
		C		0.000	0.000	5.934	0.000	0.10
L13	106.58-106.33	A	1.686	0.000	0.000	0.334	0.000	0.00
		B		0.000	0.000	0.428	0.000	0.01
		C		0.000	0.000	0.468	0.000	0.01
L14	106.33-101.33	A	1.682	0.000	0.000	6.682	0.000	0.07
		B		0.000	0.000	8.552	0.000	0.15
		C		0.000	0.000	9.354	0.000	0.16
L15	101.33-96.33	A	1.674	0.000	0.000	6.674	0.000	0.07
		B		0.000	0.000	8.535	0.000	0.15
		C		0.000	0.000	9.338	0.000	0.16
L16	96.33-91.33	A	1.665	0.000	0.000	6.665	0.000	0.07
		B		0.000	0.000	8.518	0.000	0.15
		C		0.000	0.000	9.320	0.000	0.16
L17	91.33-86.33	A	1.656	0.000	0.000	6.656	0.000	0.07
		B		0.000	0.000	8.500	0.000	0.15
		C		0.000	0.000	9.302	0.000	0.16
L18	86.33-83.00	A	1.648	0.000	0.000	6.934	0.000	0.07
		B		0.000	0.000	8.158	0.000	0.12
		C		0.000	0.000	8.693	0.000	0.13
L19	83.00-82.75	A	1.645	0.000	0.000	0.645	0.000	0.01
		B		0.000	0.000	0.737	0.000	0.01
		C		0.000	0.000	0.777	0.000	0.01
L20	82.75-77.75	A	1.639	0.000	0.000	12.891	0.000	0.13
		B		0.000	0.000	14.718	0.000	0.21
		C		0.000	0.000	15.520	0.000	0.22
L21	77.75-70.00	A	1.626	0.000	0.000	19.949	0.000	0.20
		B		0.000	0.000	22.760	0.000	0.32
		C		0.000	0.000	24.004	0.000	0.34
L22	70.00-69.00	A	1.616	0.000	0.000	1.492	0.000	0.01
		B		0.000	0.000	1.854	0.000	0.03
		C		0.000	0.000	2.015	0.000	0.03
L23	69.00-64.00	A	1.609	0.000	0.000	7.442	0.000	0.07
		B		0.000	0.000	9.239	0.000	0.15
		C		0.000	0.000	10.041	0.000	0.16
L24	64.00-59.00	A	1.596	0.000	0.000	7.430	0.000	0.07
		B		0.000	0.000	9.213	0.000	0.15
		C		0.000	0.000	10.016	0.000	0.16
L25	59.00-54.00	A	1.583	0.000	0.000	7.416	0.000	0.07
		B		0.000	0.000	9.187	0.000	0.15
		C		0.000	0.000	9.989	0.000	0.16
L26	54.00-49.00	A	1.568	0.000	0.000	9.700	0.000	0.09
		B		0.000	0.000	11.456	0.000	0.17
		C		0.000	0.000	12.259	0.000	0.18
L27	49.00-48.75	A	1.560	0.000	0.000	0.698	0.000	0.01

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	0.785	0.000	0.01
		C		0.000	0.000	0.825	0.000	0.01
L28	48.75-48.50	A	1.559	0.000	0.000	0.698	0.000	0.01
		B		0.000	0.000	0.785	0.000	0.01
		C		0.000	0.000	0.825	0.000	0.01
L29	48.50-43.50	A	1.551	0.000	0.000	13.935	0.000	0.13
		B		0.000	0.000	15.673	0.000	0.20
		C		0.000	0.000	16.475	0.000	0.22
L30	43.50-38.50	A	1.533	0.000	0.000	13.899	0.000	0.13
		B		0.000	0.000	15.619	0.000	0.20
		C		0.000	0.000	16.422	0.000	0.21
L31	38.50-31.50	A	1.509	0.000	0.000	19.391	0.000	0.17
		B		0.000	0.000	21.766	0.000	0.28
		C		0.000	0.000	22.889	0.000	0.30
L32	31.50-30.67	A	1.491	0.000	0.000	2.308	0.000	0.02
		B		0.000	0.000	2.590	0.000	0.03
		C		0.000	0.000	2.724	0.000	0.04
L33	30.67-25.67	A	1.476	0.000	0.000	13.786	0.000	0.12
		B		0.000	0.000	15.450	0.000	0.20
		C		0.000	0.000	16.252	0.000	0.21
L34	25.67-20.67	A	1.448	0.000	0.000	13.828	0.000	0.12
		B		0.000	0.000	15.463	0.000	0.19
		C		0.000	0.000	16.365	0.000	0.21
L35	20.67-17.75	A	1.421	0.000	0.000	11.449	0.000	0.10
		B		0.000	0.000	12.387	0.000	0.15
		C		0.000	0.000	16.326	0.000	0.19
L36	17.75-17.50	A	1.409	0.000	0.000	0.980	0.000	0.01
		B		0.000	0.000	1.060	0.000	0.01
		C		0.000	0.000	1.397	0.000	0.02
L37	17.50-12.50	A	1.386	0.000	0.000	8.166	0.000	0.08
		B		0.000	0.000	9.740	0.000	0.15
		C		0.000	0.000	16.474	0.000	0.22
L38	12.50-10.00	A	1.347	0.000	0.000	2.955	0.000	0.03
		B		0.000	0.000	3.723	0.000	0.06
		C		0.000	0.000	7.079	0.000	0.10
L39	10.00-9.75	A	1.330	0.000	0.000	0.322	0.000	0.00
		B		0.000	0.000	0.322	0.000	0.01
		C		0.000	0.000	0.759	0.000	0.01
L40	9.75-4.75	A	1.289	0.000	0.000	6.412	0.000	0.06
		B		0.000	0.000	6.412	0.000	0.08
		C		0.000	0.000	15.103	0.000	0.20
L41	4.75-2.50	A	1.203	0.000	0.000	2.865	0.000	0.03
		B		0.000	0.000	2.865	0.000	0.03
		C		0.000	0.000	6.497	0.000	0.08
L42	2.50-2.25	A	1.153	0.000	0.000	0.317	0.000	0.00
		B		0.000	0.000	0.317	0.000	0.00
		C		0.000	0.000	0.634	0.000	0.01
L43	2.25-0.00	A	1.070	0.000	0.000	2.203	0.000	0.02
		B		0.000	0.000	2.203	0.000	0.02
		C		0.000	0.000	4.407	0.000	0.03

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	150.00-145.00	0.0469	-0.0271	0.3287	-0.1898
L2	145.00-140.00	0.0469	-0.0271	0.3330	-0.1923
L3	140.00-135.00	0.0469	-0.0271	0.3370	-0.1946
L4	135.00-130.00	0.0469	-0.0271	0.3407	-0.1967
L5	130.00-125.00	0.0469	-0.0271	0.3440	-0.1986
L6	125.00-120.00	0.0469	-0.0271	0.3470	-0.2003
L7	120.00-118.75	0.0219	-0.0126	0.1636	-0.0945
L8	118.75-118.50	0.0219	-0.0127	0.1641	-0.0948
L9	118.50-113.50	0.0210	0.0019	0.1621	-0.0654
L10	113.50-110.00	0.0111	0.1277	0.1332	0.1820
L11	110.00-109.75	0.0090	0.1032	0.1088	0.1485

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L12	109.75-106.58	0.0091	0.1039	0.1097	0.1496
L13	106.58-106.33	0.0092	0.1046	0.1106	0.1507
L14	106.33-101.33	0.0093	0.1057	0.1119	0.1524
L15	101.33-96.33	0.0095	0.1077	0.1144	0.1556
L16	96.33-91.33	0.0097	0.1097	0.1168	0.1587
L17	91.33-86.33	0.0099	0.1116	0.1191	0.1617
L18	86.33-83.00	0.0076	0.0849	0.0926	0.1256
L19	83.00-82.75	0.0066	0.0733	0.0806	0.1094
L20	82.75-77.75	0.0066	0.0741	0.0815	0.1105
L21	77.75-70.00	0.0068	0.0760	0.0835	0.1133
L22	70.00-69.00	0.0097	0.1077	0.1181	0.1601
L23	69.00-64.00	0.0098	0.1087	0.1186	0.1614
L24	64.00-59.00	0.0100	0.1104	0.1203	0.1638
L25	59.00-54.00	0.0102	0.1120	0.1218	0.1661
L26	54.00-49.00	0.0089	0.0974	0.1054	0.1440
L27	49.00-48.75	0.0071	0.0777	0.0836	0.1144
L28	48.75-48.50	0.0071	0.0778	0.0837	0.1145
L29	48.50-43.50	0.0072	0.0784	0.0842	0.1154
L30	43.50-38.50	0.0073	0.0797	0.0852	0.1171
L31	38.50-31.50	0.0074	0.0812	0.0861	0.1190
L32	31.50-30.67	0.0074	0.0812	0.0861	0.1190
L33	30.67-25.67	0.0075	0.0819	0.0857	0.1195
L34	25.67-20.67	0.0076	0.0914	0.0854	0.1272
L35	20.67-17.75	0.0052	0.4210	0.0619	0.4021
L36	17.75-17.50	0.0053	0.4233	0.0618	0.4043
L37	17.50-12.50	0.0085	0.6863	0.1032	0.6826
L38	12.50-10.00	0.0098	0.7847	0.1176	0.7939
L39	10.00-9.75	-0.0077	0.8376	-0.0180	0.9136
L40	9.75-4.75	-0.0077	0.8435	-0.0179	0.9167
L41	4.75-2.50	-0.0061	0.8319	-0.0137	0.8747
L42	2.50-2.25	0.0000	0.7647	0.0000	0.7170
L43	2.25-0.00	0.0000	0.6946	0.0000	0.6437

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	1	Safety Line 3/8	145.00 - 150.00	1.0000	1.0000
L2	1	Safety Line 3/8	140.00 - 145.00	1.0000	1.0000
L3	1	Safety Line 3/8	135.00 - 140.00	1.0000	1.0000
L4	1	Safety Line 3/8	130.00 - 135.00	1.0000	1.0000
L5	1	Safety Line 3/8	125.00 - 130.00	1.0000	1.0000
L6	1	Safety Line 3/8	120.00 - 125.00	1.0000	1.0000
L7	1	Safety Line 3/8	118.75 - 120.00	1.0000	1.0000
L7	25	PL1.25x4 Reinforcement	118.75 - 120.00	1.0000	1.0000
L7	26	PL1.25x4 Reinforcement	118.75 - 120.00	1.0000	1.0000
L7	27	PL1.25x4 Reinforcement	118.75 - 120.00	1.0000	1.0000
L8	1	Safety Line 3/8	118.50 - 118.75	1.0000	1.0000
L8	25	PL1.25x4 Reinforcement	118.50 - 118.75	1.0000	1.0000
L8	26	PL1.25x4 Reinforcement	118.50 - 118.75	1.0000	1.0000
L8	27	PL1.25x4 Reinforcement	118.50 - 118.75	1.0000	1.0000
L9	1	Safety Line 3/8	113.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L9	9	HB158-1-08U8-S8J18(1-5/8")	118.50 - 113.50	1.0000	1.0000
L9	25	PL1.25x4 Reinforcement	114.00 - 113.50	1.0000	1.0000
L9	26	PL1.25x4 Reinforcement	118.50 - 113.50	1.0000	1.0000
L9	27	PL1.25x4 Reinforcement	118.50 - 113.50	1.0000	1.0000
L10	1	Safety Line 3/8	118.50 - 110.00	1.0000	1.0000
L10	9	HB158-1-08U8-S8J18(1-5/8")	113.50 - 110.00	1.0000	1.0000
L10	25	PL1.25x4 Reinforcement	113.50 - 110.00	1.0000	1.0000
L10	26	PL1.25x4 Reinforcement	113.50 - 110.00	1.0000	1.0000
L10	27	PL1.25x4 Reinforcement	113.50 - 110.00	1.0000	1.0000
L11	1	Safety Line 3/8	113.50 - 109.75	1.0000	1.0000
L11	9	HB158-1-08U8-S8J18(1-5/8")	110.00 - 109.75	1.0000	1.0000
L11	21	PL1.25x6 Reinforcement	110.00 - 109.75	1.0000	1.0000
L11	22	PL1.25x6 Reinforcement	110.00 - 109.75	1.0000	1.0000
L11	23	PL1.25x6 Reinforcement	110.00 - 109.75	1.0000	1.0000
L12	1	Safety Line 3/8	109.75 - 106.58	1.0000	1.0000
L12	9	HB158-1-08U8-S8J18(1-5/8")	109.75 - 106.58	1.0000	1.0000
L12	21	PL1.25x6 Reinforcement	109.75 - 106.58	1.0000	1.0000
L12	22	PL1.25x6 Reinforcement	109.75 - 106.58	1.0000	1.0000
L12	23	PL1.25x6 Reinforcement	109.75 - 106.58	1.0000	1.0000
L13	1	Safety Line 3/8	106.58 - 106.33	1.0000	1.0000
L13	9	HB158-1-08U8-S8J18(1-5/8")	106.58 - 106.33	1.0000	1.0000
L13	21	PL1.25x6 Reinforcement	106.58 - 106.33	1.0000	1.0000
L13	22	PL1.25x6 Reinforcement	106.58 - 106.33	1.0000	1.0000
L13	23	PL1.25x6 Reinforcement	106.58 - 106.33	1.0000	1.0000
L14	1	Safety Line 3/8	106.33 - 101.33	1.0000	1.0000
L14	9	HB158-1-08U8-S8J18(1-5/8")	106.33 - 101.33	1.0000	1.0000
L14	21	PL1.25x6 Reinforcement	106.33 - 101.33	1.0000	1.0000
L14	22	PL1.25x6 Reinforcement	106.33 - 101.33	1.0000	1.0000
L14	23	PL1.25x6 Reinforcement	106.33 - 101.33	1.0000	1.0000
L15	1	Safety Line 3/8	101.33 - 96.33	1.0000	1.0000
L15	9	HB158-1-08U8-S8J18(1-5/8")	101.33 - 96.33	1.0000	1.0000
L15	21	PL1.25x6 Reinforcement	101.33 - 96.33	1.0000	1.0000
L15	22	PL1.25x6 Reinforcement	101.33 - 96.33	1.0000	1.0000
L15	23	PL1.25x6 Reinforcement	101.33 - 96.33	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L16	1	Safety Line 3/8	91.33 - 96.33	1.0000	1.0000
L16	9	HB158-1-08U8-S8J18(1-5/8")	91.33 - 96.33	1.0000	1.0000
L16	21	PL1.25x6 Reinforcement	91.33 - 96.33	1.0000	1.0000
L16	22	PL1.25x6 Reinforcement	91.33 - 96.33	1.0000	1.0000
L16	23	PL1.25x6 Reinforcement	91.33 - 96.33	1.0000	1.0000
L17	1	Safety Line 3/8	86.33 - 91.33	1.0000	1.0000
L17	9	HB158-1-08U8-S8J18(1-5/8")	86.33 - 91.33	1.0000	1.0000
L17	21	PL1.25x6 Reinforcement	86.33 - 91.33	1.0000	1.0000
L17	22	PL1.25x6 Reinforcement	86.33 - 91.33	1.0000	1.0000
L17	23	PL1.25x6 Reinforcement	86.33 - 91.33	1.0000	1.0000
L18	1	Safety Line 3/8	83.00 - 86.33	1.0000	1.0000
L18	9	HB158-1-08U8-S8J18(1-5/8")	83.00 - 86.33	1.0000	1.0000
L18	21	PL1.25x6 Reinforcement	83.00 - 86.33	1.0000	1.0000
L18	22	PL1.25x6 Reinforcement	83.00 - 86.33	1.0000	1.0000
L18	23	PL1.25x6 Reinforcement	83.00 - 86.33	1.0000	1.0000
L18	38	CCI-SFP-060100	83.00 - 85.00	1.0000	1.0000
L18	39	CCI-SFP-060100	83.00 - 85.00	1.0000	1.0000
L18	40	CCI-SFP-060100	83.00 - 85.00	1.0000	1.0000
L19	1	Safety Line 3/8	82.75 - 83.00	1.0000	1.0000
L19	9	HB158-1-08U8-S8J18(1-5/8")	82.75 - 83.00	1.0000	1.0000
L19	21	PL1.25x6 Reinforcement	82.75 - 83.00	1.0000	1.0000
L19	22	PL1.25x6 Reinforcement	82.75 - 83.00	1.0000	1.0000
L19	23	PL1.25x6 Reinforcement	82.75 - 83.00	1.0000	1.0000
L19	38	CCI-SFP-060100	82.75 - 83.00	1.0000	1.0000
L19	39	CCI-SFP-060100	82.75 - 83.00	1.0000	1.0000
L19	40	CCI-SFP-060100	82.75 - 83.00	1.0000	1.0000
L20	1	Safety Line 3/8	77.75 - 82.75	1.0000	1.0000
L20	9	HB158-1-08U8-S8J18(1-5/8")	77.75 - 82.75	1.0000	1.0000
L20	21	PL1.25x6 Reinforcement	77.75 - 82.75	1.0000	1.0000
L20	22	PL1.25x6 Reinforcement	77.75 - 82.75	1.0000	1.0000
L20	23	PL1.25x6 Reinforcement	77.75 - 82.75	1.0000	1.0000
L20	38	CCI-SFP-060100	77.75 - 82.75	1.0000	1.0000
L20	39	CCI-SFP-060100	77.75 - 82.75	1.0000	1.0000
L20	40	CCI-SFP-060100	77.75 - 82.75	1.0000	1.0000
L21	1	Safety Line 3/8	70.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_e No Ice	K_a Ice
			77.75		
L21	9	HB158-1-08U8-S8J18(1-5/8")	70.00 - 77.75	1.0000	1.0000
L21	21	PL1.25x6 Reinforcement	70.00 - 77.75	1.0000	1.0000
L21	22	PL1.25x6 Reinforcement	70.00 - 77.75	1.0000	1.0000
L21	23	PL1.25x6 Reinforcement	70.00 - 77.75	1.0000	1.0000
L21	38	CCI-SFP-060100	70.00 - 77.75	1.0000	1.0000
L21	39	CCI-SFP-060100	70.00 - 77.75	1.0000	1.0000
L21	40	CCI-SFP-060100	70.00 - 77.75	1.0000	1.0000
L21	17	PL1.5x7 Reinforcement	70.00 - 70.00	1.0000	1.0000
L21	18	PL1.5x7 Reinforcement	70.00 - 70.00	1.0000	1.0000
L21	19	PL1.5x7 Reinforcement	70.00 - 70.00	1.0000	1.0000
L23	1	Safety Line 3/8	64.00 - 69.00	1.0000	1.0000
L23	9	HB158-1-08U8-S8J18(1-5/8")	64.00 - 69.00	1.0000	1.0000
L23	17	PL1.5x7 Reinforcement	64.00 - 69.00	1.0000	1.0000
L23	18	PL1.5x7 Reinforcement	64.00 - 69.00	1.0000	1.0000
L23	19	PL1.5x7 Reinforcement	64.00 - 69.00	1.0000	1.0000
L24	1	Safety Line 3/8	59.00 - 64.00	1.0000	1.0000
L24	9	HB158-1-08U8-S8J18(1-5/8")	59.00 - 64.00	1.0000	1.0000
L24	17	PL1.5x7 Reinforcement	59.00 - 64.00	1.0000	1.0000
L24	18	PL1.5x7 Reinforcement	59.00 - 64.00	1.0000	1.0000
L24	19	PL1.5x7 Reinforcement	59.00 - 64.00	1.0000	1.0000
L25	1	Safety Line 3/8	54.00 - 59.00	1.0000	1.0000
L25	9	HB158-1-08U8-S8J18(1-5/8")	54.00 - 59.00	1.0000	1.0000
L25	17	PL1.5x7 Reinforcement	54.00 - 59.00	1.0000	1.0000
L25	18	PL1.5x7 Reinforcement	54.00 - 59.00	1.0000	1.0000
L25	19	PL1.5x7 Reinforcement	54.00 - 59.00	1.0000	1.0000
L26	1	Safety Line 3/8	49.00 - 54.00	1.0000	1.0000
L26	9	HB158-1-08U8-S8J18(1-5/8")	49.00 - 54.00	1.0000	1.0000
L26	17	PL1.5x7 Reinforcement	49.00 - 54.00	1.0000	1.0000
L26	18	PL1.5x7 Reinforcement	49.00 - 54.00	1.0000	1.0000
L26	19	PL1.5x7 Reinforcement	49.00 - 54.00	1.0000	1.0000
L26	34	CCI-SFP-060100	49.00 - 50.75	1.0000	1.0000
L26	35	CCI-SFP-060100	49.00 - 50.75	1.0000	1.0000
L26	36	CCI-SFP-060100	49.00 - 50.75	1.0000	1.0000
L27	1	Safety Line 3/8	48.75 - 49.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L27	9	HB158-1-08U8-S8J18(1-5/8")	48.75 - 49.00	1.0000	1.0000
L27	17	PL1.5x7 Reinforcement	48.75 - 49.00	1.0000	1.0000
L27	18	PL1.5x7 Reinforcement	48.75 - 49.00	1.0000	1.0000
L27	19	PL1.5x7 Reinforcement	48.75 - 49.00	1.0000	1.0000
L27	34	CCI-SFP-060100	48.75 - 49.00	1.0000	1.0000
L27	35	CCI-SFP-060100	48.75 - 49.00	1.0000	1.0000
L27	36	CCI-SFP-060100	48.75 - 49.00	1.0000	1.0000
L28	1	Safety Line 3/8	48.50 - 48.75	1.0000	1.0000
L28	9	HB158-1-08U8-S8J18(1-5/8")	48.50 - 48.75	1.0000	1.0000
L28	17	PL1.5x7 Reinforcement	48.50 - 48.75	1.0000	1.0000
L28	18	PL1.5x7 Reinforcement	48.50 - 48.75	1.0000	1.0000
L28	19	PL1.5x7 Reinforcement	48.50 - 48.75	1.0000	1.0000
L28	34	CCI-SFP-060100	48.50 - 48.75	1.0000	1.0000
L28	35	CCI-SFP-060100	48.50 - 48.75	1.0000	1.0000
L28	36	CCI-SFP-060100	48.50 - 48.75	1.0000	1.0000
L29	1	Safety Line 3/8	43.50 - 48.50	1.0000	1.0000
L29	9	HB158-1-08U8-S8J18(1-5/8")	43.50 - 48.50	1.0000	1.0000
L29	17	PL1.5x7 Reinforcement	43.50 - 48.50	1.0000	1.0000
L29	18	PL1.5x7 Reinforcement	43.50 - 48.50	1.0000	1.0000
L29	19	PL1.5x7 Reinforcement	43.50 - 48.50	1.0000	1.0000
L29	34	CCI-SFP-060100	43.50 - 48.50	1.0000	1.0000
L29	35	CCI-SFP-060100	43.50 - 48.50	1.0000	1.0000
L29	36	CCI-SFP-060100	43.50 - 48.50	1.0000	1.0000
L30	1	Safety Line 3/8	38.50 - 43.50	1.0000	1.0000
L30	9	HB158-1-08U8-S8J18(1-5/8")	38.50 - 43.50	1.0000	1.0000
L30	17	PL1.5x7 Reinforcement	38.50 - 43.50	1.0000	1.0000
L30	18	PL1.5x7 Reinforcement	38.50 - 43.50	1.0000	1.0000
L30	19	PL1.5x7 Reinforcement	38.50 - 43.50	1.0000	1.0000
L30	34	CCI-SFP-060100	38.50 - 43.50	1.0000	1.0000
L30	35	CCI-SFP-060100	38.50 - 43.50	1.0000	1.0000
L30	36	CCI-SFP-060100	38.50 - 43.50	1.0000	1.0000
L31	1	Safety Line 3/8	31.50 - 38.50	1.0000	1.0000
L31	9	HB158-1-08U8-S8J18(1-5/8")	31.50 - 38.50	1.0000	1.0000
L31	17	PL1.5x7 Reinforcement	31.50 - 38.50	1.0000	1.0000
L31	18	PL1.5x7 Reinforcement	31.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L31	19	PL1.5x7 Reinforcement	38.50 31.50 - 38.50	1.0000	1.0000
L31	34	CCI-SFP-060100	31.50 - 38.50	1.0000	1.0000
L31	35	CCI-SFP-060100	31.50 - 38.50	1.0000	1.0000
L31	36	CCI-SFP-060100	31.50 - 38.50	1.0000	1.0000
L33	1	Safety Line 3/8	25.67 - 30.67	1.0000	1.0000
L33	9	HB158-1-08U8-S8J18(1-5/8")	25.67 - 30.67	1.0000	1.0000
L33	17	PL1.5x7 Reinforcement	25.67 - 30.67	1.0000	1.0000
L33	18	PL1.5x7 Reinforcement	25.67 - 30.67	1.0000	1.0000
L33	19	PL1.5x7 Reinforcement	25.67 - 30.67	1.0000	1.0000
L33	34	CCI-SFP-060100	25.67 - 30.67	1.0000	1.0000
L33	35	CCI-SFP-060100	25.67 - 30.67	1.0000	1.0000
L33	36	CCI-SFP-060100	25.67 - 30.67	1.0000	1.0000
L34	1	Safety Line 3/8	20.67 - 25.67	1.0000	1.0000
L34	9	HB158-1-08U8-S8J18(1-5/8")	20.67 - 25.67	1.0000	1.0000
L34	12	PL1.5x7 Reinforcement	20.67 - 20.75	1.0000	1.0000
L34	13	PL1.5x7 Reinforcement	20.67 - 20.75	1.0000	1.0000
L34	14	PL1.5x7 Reinforcement	20.67 - 20.75	1.0000	1.0000
L34	15	PL1.5x7 Reinforcement	20.67 - 20.75	1.0000	1.0000
L34	17	PL1.5x7 Reinforcement	20.67 - 25.67	1.0000	1.0000
L34	18	PL1.5x7 Reinforcement	20.67 - 25.67	1.0000	1.0000
L34	19	PL1.5x7 Reinforcement	20.67 - 25.67	1.0000	1.0000
L34	34	CCI-SFP-060100	20.67 - 25.67	1.0000	1.0000
L34	35	CCI-SFP-060100	20.67 - 25.67	1.0000	1.0000
L34	36	CCI-SFP-060100	20.67 - 25.67	1.0000	1.0000
L35	1	Safety Line 3/8	17.75 - 20.67	1.0000	1.0000
L35	9	HB158-1-08U8-S8J18(1-5/8")	17.75 - 20.67	1.0000	1.0000
L35	12	PL1.5x7 Reinforcement	17.75 - 20.67	1.0000	1.0000
L35	13	PL1.5x7 Reinforcement	17.75 - 20.67	1.0000	1.0000
L35	14	PL1.5x7 Reinforcement	17.75 - 20.67	1.0000	1.0000
L35	15	PL1.5x7 Reinforcement	17.75 - 20.67	1.0000	1.0000
L35	17	PL1.5x7 Reinforcement	17.75 - 20.67	1.0000	1.0000
L35	18	PL1.5x7 Reinforcement	17.75 - 20.67	1.0000	1.0000
L35	19	PL1.5x7 Reinforcement	17.75 - 20.67	1.0000	1.0000
L35	34	CCI-SFP-060100	17.75 - 20.67	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L35	35	CCI-SFP-060100	17.75 - 20.67	1.0000	1.0000
L35	36	CCI-SFP-060100	17.75 - 20.67	1.0000	1.0000
L36	1	Safety Line 3/8	17.50 - 17.75	1.0000	1.0000
L36	9	HB158-1-08U8-S8J18(1-5/8")	17.50 - 17.75	1.0000	1.0000
L36	12	PL1.5x7 Reinforcement	17.50 - 17.75	1.0000	1.0000
L36	13	PL1.5x7 Reinforcement	17.50 - 17.75	1.0000	1.0000
L36	14	PL1.5x7 Reinforcement	17.50 - 17.75	1.0000	1.0000
L36	15	PL1.5x7 Reinforcement	17.50 - 17.75	1.0000	1.0000
L36	17	PL1.5x7 Reinforcement	17.50 - 17.75	1.0000	1.0000
L36	18	PL1.5x7 Reinforcement	17.50 - 17.75	1.0000	1.0000
L36	19	PL1.5x7 Reinforcement	17.50 - 17.75	1.0000	1.0000
L36	34	CCI-SFP-060100	17.50 - 17.75	1.0000	1.0000
L36	35	CCI-SFP-060100	17.50 - 17.75	1.0000	1.0000
L36	36	CCI-SFP-060100	17.50 - 17.75	1.0000	1.0000
L37	1	Safety Line 3/8	12.50 - 17.50	1.0000	1.0000
L37	9	HB158-1-08U8-S8J18(1-5/8")	12.50 - 17.50	1.0000	1.0000
L37	12	PL1.5x7 Reinforcement	12.50 - 17.50	1.0000	1.0000
L37	13	PL1.5x7 Reinforcement	12.50 - 17.50	1.0000	1.0000
L37	14	PL1.5x7 Reinforcement	12.50 - 17.50	1.0000	1.0000
L37	15	PL1.5x7 Reinforcement	12.50 - 17.50	1.0000	1.0000
L37	34	CCI-SFP-060100	15.75 - 17.50	1.0000	1.0000
L37	35	CCI-SFP-060100	15.75 - 17.50	1.0000	1.0000
L37	36	CCI-SFP-060100	15.75 - 17.50	1.0000	1.0000
L38	1	Safety Line 3/8	10.00 - 12.50	1.0000	1.0000
L38	9	HB158-1-08U8-S8J18(1-5/8")	10.00 - 12.50	1.0000	1.0000
L38	12	PL1.5x7 Reinforcement	10.00 - 12.50	1.0000	1.0000
L38	13	PL1.5x7 Reinforcement	10.00 - 12.50	1.0000	1.0000
L38	14	PL1.5x7 Reinforcement	10.00 - 12.50	1.0000	1.0000
L38	15	PL1.5x7 Reinforcement	10.00 - 12.50	1.0000	1.0000
L39	9	HB158-1-08U8-S8J18(1-5/8")	9.75 - 10.00	1.0000	1.0000
L39	29	CCI-SFP-085125	9.75 - 10.00	1.0000	1.0000
L39	30	CCI-SFP-085125	9.75 - 10.00	1.0000	1.0000
L39	31	CCI-SFP-085125	9.75 - 10.00	1.0000	1.0000
L39	32	CCI-SFP-085125	9.75 - 10.00	1.0000	1.0000
L40	9	HB158-1-08U8-S8J18(1-5/8")	4.75 - 9.75	1.0000	1.0000
L40	29	CCI-SFP-085125	4.75 - 9.75	1.0000	1.0000
L40	30	CCI-SFP-085125	4.75 - 9.75	1.0000	1.0000
L40	31	CCI-SFP-085125	4.75 - 9.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L40	32	CCI-SFP-085125	4.75 - 9.75	1.0000	1.0000
L41	9	HB158-1-08U8-S8J18(1-5/8")	3.00 - 4.75	1.0000	1.0000
L41	29	CCI-SFP-085125	2.50 - 4.75	1.0000	1.0000
L41	30	CCI-SFP-085125	2.50 - 4.75	1.0000	1.0000
L41	31	CCI-SFP-085125	2.50 - 4.75	1.0000	1.0000
L41	32	CCI-SFP-085125	2.50 - 4.75	1.0000	1.0000
L42	29	CCI-SFP-085125	2.25 - 2.50	1.0000	1.0000
L42	30	CCI-SFP-085125	2.25 - 2.50	1.0000	1.0000
L42	31	CCI-SFP-085125	2.25 - 2.50	1.0000	1.0000
L42	32	CCI-SFP-085125	2.25 - 2.50	1.0000	1.0000
L43	29	CCI-SFP-085125	0.50 - 2.25	1.0000	1.0000
L43	30	CCI-SFP-085125	0.50 - 2.25	1.0000	1.0000
L43	31	CCI-SFP-085125	0.50 - 2.25	1.0000	1.0000
L43	32	CCI-SFP-085125	0.50 - 2.25	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
14" x 2' Top Hat	C	None		0.00	151.00	No Ice	1.17	1.17	0.11
						1/2" Ice	1.82	1.82	0.13
						1" Ice	2.02	2.02	0.16
***									
Platform Mount [LP 101-1]	C	None		0.00	152.00	No Ice	36.21	36.21	1.50
						1/2" Ice	42.82	42.82	2.30
						1" Ice	49.43	49.43	3.10
Side Arm Mount [SO 203-3]	A	None		0.00	152.00	No Ice	7.12	7.12	0.38
						1/2" Ice	9.88	9.88	0.46
						1" Ice	12.64	12.64	0.55
Transition Ladder	C	From Face	0.50 0.00 -5.00	0.00	152.00	No Ice	6.00	6.00	0.16
						1/2" Ice	8.00	8.00	0.24
						1" Ice	10.00	10.00	0.32
P65-17-XLH-RR w/ Mount Pipe	A	From Leg	4.00 -6.00 -1.00	-30.00	152.00	No Ice	11.70	8.94	0.09
						1/2" Ice	12.42	10.45	0.18
						1" Ice	13.15	11.99	0.27
7770.00 w/ Mount Pipe	A	From Leg	4.00 -2.00 0.00	-30.00	152.00	No Ice	5.75	4.25	0.06
						1/2" Ice	6.18	5.01	0.10
						1" Ice	6.61	5.71	0.16
7770.00 w/ Mount Pipe	A	From Leg	4.00 6.00 0.00	-30.00	152.00	No Ice	5.75	4.25	0.06
						1/2" Ice	6.18	5.01	0.10
						1" Ice	6.61	5.71	0.16
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	-30.00	152.00	No Ice	5.75	4.25	0.06
						1/2" Ice	6.18	5.01	0.10
						1" Ice	6.61	5.71	0.16
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	-30.00	152.00	No Ice	5.75	4.25	0.06
						1/2" Ice	6.18	5.01	0.10
						1" Ice	6.61	5.71	0.16
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00 2.00 -1.00	-30.00	152.00	No Ice	8.26	6.30	0.07
						1/2" Ice	8.82	7.48	0.14
						1" Ice	9.35	8.37	0.21
AM-X-CD-16-65-00T-RET	C	From Leg	4.00	-30.00	152.00	No Ice	8.26	6.30	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
w/ Mount Pipe			2.00				1/2" Ice	8.82	7.48	0.14
			-1.00				1" Ice	9.35	8.37	0.21
(2) LGP21401	A	From Leg	4.00		0.00	152.00	No Ice	1.10	0.35	0.01
			0.00				1/2" Ice	1.24	0.44	0.02
			-1.00				1" Ice	1.38	0.54	0.03
(2) LGP21401	B	From Leg	4.00		0.00	152.00	No Ice	1.10	0.35	0.01
			0.00				1/2" Ice	1.24	0.44	0.02
			0.00				1" Ice	1.38	0.54	0.03
(2) LGP21401	C	From Leg	4.00		0.00	152.00	No Ice	1.10	0.35	0.01
			0.00				1/2" Ice	1.24	0.44	0.02
			0.00				1" Ice	1.38	0.54	0.03
RRUS 11 B12	A	From Leg	4.00		0.00	152.00	No Ice	2.83	1.18	0.05
			0.00				1/2" Ice	3.04	1.33	0.07
			0.00				1" Ice	3.26	1.48	0.10
RRUS 11 B12	B	From Leg	4.00		0.00	152.00	No Ice	2.83	1.18	0.05
			0.00				1/2" Ice	3.04	1.33	0.07
			-1.00				1" Ice	3.26	1.48	0.10
RRUS 11 B12	C	From Leg	4.00		0.00	152.00	No Ice	2.83	1.18	0.05
			0.00				1/2" Ice	3.04	1.33	0.07
			0.00				1" Ice	3.26	1.48	0.10
(2) LGP13519	A	From Leg	4.00		0.00	152.00	No Ice	0.29	0.18	0.01
			0.00				1/2" Ice	0.36	0.24	0.01
			0.00				1" Ice	0.44	0.31	0.01
(2) LGP13519	B	From Leg	4.00		0.00	152.00	No Ice	0.29	0.18	0.01
			0.00				1/2" Ice	0.36	0.24	0.01
			0.00				1" Ice	0.44	0.31	0.01
(2) LGP13519	C	From Leg	4.00		0.00	152.00	No Ice	0.29	0.18	0.01
			0.00				1/2" Ice	0.36	0.24	0.01
			0.00				1" Ice	0.44	0.31	0.01
DC6-48-60-18-8F	A	From Leg	1.00		0.00	152.00	No Ice	0.92	0.92	0.02
			0.00				1/2" Ice	1.46	1.46	0.04
			-1.00				1" Ice	1.64	1.64	0.06
***										
Side Arm Mount [SO 701-3]	C	None			0.00	114.00	No Ice	2.83	2.83	0.20
							1/2" Ice	3.92	3.92	0.24
							1" Ice	5.01	5.01	0.28
12' horizontal x 3" Pipe Mount	A	From Leg	4.00		0.00	114.00	No Ice	1.50	1.50	0.10
			0.00				1/2" Ice	2.82	2.82	0.66
			0.00				1" Ice	3.55	3.55	1.23
12' horizontal x 3" Pipe Mount	B	From Leg	4.00		0.00	114.00	No Ice	1.50	1.50	0.10
			0.00				1/2" Ice	2.82	2.82	0.66
			0.00				1" Ice	3.55	3.55	1.23
12' horizontal x 3" Pipe Mount	C	From Leg	4.00		0.00	114.00	No Ice	1.50	1.50	0.10
			0.00				1/2" Ice	2.82	2.82	0.66
			0.00				1" Ice	3.55	3.55	1.23
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00		-30.00	114.00	No Ice	8.32	7.00	0.07
			0.00				1/2" Ice	8.88	8.19	0.13
			0.00				1" Ice	9.40	9.08	0.21
(2) SBNHH-1D65B w/	B	From Leg	4.00		-30.00	114.00	No Ice	8.32	7.00	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount Pipe			0.00				1/2" Ice	8.88	8.19	0.13
			0.00				1" Ice	9.40	9.08	0.21
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00		-30.00	114.00	No Ice	8.32	7.00	0.07
			0.00				1/2" Ice	8.88	8.19	0.13
			0.00				1" Ice	9.40	9.08	0.21
LPA-80080/6CF w/ Mount Pipe	A	From Leg	4.00		-30.00	114.00	No Ice	4.56	10.26	0.05
			-2.00				1/2" Ice	5.11	11.43	0.11
			0.00				1" Ice	5.61	12.31	0.19
LPA-80080/6CF w/ Mount Pipe	A	From Leg	4.00		-30.00	114.00	No Ice	4.56	10.26	0.05
			2.00				1/2" Ice	5.11	11.43	0.11
			0.00				1" Ice	5.61	12.31	0.19
LPA-80080/6CF w/ Mount Pipe	B	From Leg	4.00		-30.00	114.00	No Ice	4.56	10.26	0.05
			-2.00				1/2" Ice	5.11	11.43	0.11
			0.00				1" Ice	5.61	12.31	0.19
LPA-80080/6CF w/ Mount Pipe	B	From Leg	4.00		-30.00	114.00	No Ice	4.56	10.26	0.05
			2.00				1/2" Ice	5.11	11.43	0.11
			0.00				1" Ice	5.61	12.31	0.19
LPA-80080/6CF w/ Mount Pipe	C	From Leg	4.00		-30.00	114.00	No Ice	4.56	10.26	0.05
			-2.00				1/2" Ice	5.11	11.43	0.11
			0.00				1" Ice	5.61	12.31	0.19
LPA-80080/6CF w/ Mount Pipe	C	From Leg	4.00		-30.00	114.00	No Ice	4.56	10.26	0.05
			2.00				1/2" Ice	5.11	11.43	0.11
			0.00				1" Ice	5.61	12.31	0.19
B13 RRH 4X30	A	From Leg	4.00		0.00	114.00	No Ice	2.06	1.32	0.06
			0.00				1/2" Ice	2.24	1.48	0.07
			0.00				1" Ice	2.43	1.64	0.09
B13 RRH 4X30	B	From Leg	4.00		0.00	114.00	No Ice	2.06	1.32	0.06
			0.00				1/2" Ice	2.24	1.48	0.07
			0.00				1" Ice	2.43	1.64	0.09
B13 RRH 4X30	C	From Leg	4.00		0.00	114.00	No Ice	2.06	1.32	0.06
			0.00				1/2" Ice	2.24	1.48	0.07
			0.00				1" Ice	2.43	1.64	0.09
DB-B1-6C-12AB-0Z	A	From Leg	1.00		0.00	114.00	No Ice	3.36	2.19	0.02
			0.00				1/2" Ice	3.60	2.39	0.05
			0.00				1" Ice	3.84	2.61	0.08
DB-B1-6C-12AB-0Z	B	From Leg	1.00		0.00	114.00	No Ice	3.36	2.19	0.02
			0.00				1/2" Ice	3.60	2.39	0.05
			0.00				1" Ice	3.84	2.61	0.08
B66A RRH4X45	A	From Leg	4.00		0.00	114.00	No Ice	2.58	1.63	0.06
			0.00				1/2" Ice	2.79	1.81	0.08
			0.00				1" Ice	3.01	2.00	0.10
B66A RRH4X45	B	From Leg	4.00		0.00	114.00	No Ice	2.58	1.63	0.06
			0.00				1/2" Ice	2.79	1.81	0.08
			0.00				1" Ice	3.01	2.00	0.10
B66A RRH4X45	C	From Leg	4.00		0.00	114.00	No Ice	2.58	1.63	0.06
			0.00				1/2" Ice	2.79	1.81	0.08
			0.00				1" Ice	3.01	2.00	0.10
***										
Bridge Stiffener	A	From Face	0.50		0.00	110.00	No Ice	0.69	1.60	0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00				1/2" Ice	1.14	3.00	0.08
			0.00				1" Ice	1.58	4.40	0.09
Bridge Stiffener	B	From Face	0.50		0.00	110.00	No Ice	0.69	1.60	0.06
			0.00				1/2" Ice	1.14	3.00	0.08
			0.00				1" Ice	1.58	4.40	0.09
Bridge Stiffener	C	From Face	0.50		0.00	110.00	No Ice	0.69	1.60	0.06
			0.00				1/2" Ice	1.14	3.00	0.08
			0.00				1" Ice	1.58	4.40	0.09

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

Comb. No.	Description
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	150 - 145	Pole	Max Tension	36	0.00	-0.00	-0.00
			Max. Compression	26	-10.25	2.45	0.12
			Max. Mx	20	-2.75	46.44	0.01
			Max. My	14	-2.76	0.03	-46.05
			Max. Vy	20	-7.42	46.44	0.01
			Max. Vx	14	7.44	0.03	-46.05
			Max. Torque	14			-3.30
L2	145 - 140	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-10.73	2.49	0.13
			Max. Mx	20	-3.00	84.55	0.11
			Max. My	14	-3.00	-0.02	-84.26
			Max. Vy	20	-7.83	84.55	0.11
			Max. Vx	14	7.85	-0.02	-84.26
			Max. Torque	14			-3.30
L3	140 - 135	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-11.24	2.52	0.14
			Max. Mx	20	-3.27	124.69	0.21
			Max. My	14	-3.27	-0.07	-124.49
			Max. Vy	20	-8.24	124.69	0.21
			Max. Vx	14	8.25	-0.07	-124.49
			Max. Torque	14			-3.29
L4	135 - 130	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-11.75	2.54	0.15
			Max. Mx	20	-3.57	166.89	0.32
			Max. My	14	-3.57	-0.14	-166.78
			Max. Vy	20	-8.65	166.89	0.32
			Max. Vx	14	8.67	-0.14	-166.78
			Max. Torque	14			-3.29
L5	130 - 125	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-12.29	2.56	0.16
			Max. Mx	20	-3.89	211.17	0.42
			Max. My	14	-3.90	-0.22	-211.16
			Max. Vy	20	-9.07	211.17	0.42
			Max. Vx	14	9.09	-0.22	-211.16
			Max. Torque	14			-3.28
L6	125 - 120	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-12.84	2.57	0.17
			Max. Mx	20	-4.24	257.56	0.53
			Max. My	14	-4.25	-0.30	-257.64
			Max. Vy	20	-9.50	257.56	0.53
			Max. Vx	14	9.51	-0.30	-257.64
			Max. Torque	14			-3.28
L7	120 - 118.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-13.02	2.57	0.18
			Max. Mx	20	-4.33	269.49	0.55
			Max. My	14	-4.34	-0.32	-269.59
			Max. Vy	20	-9.60	269.49	0.55
			Max. Vx	14	9.62	-0.32	-269.59
			Max. Torque	14			-3.27
L8	118.75 - 118.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-13.07	2.57	0.18
			Max. Mx	20	-4.38	271.89	0.56
			Max. My	14	-4.38	-0.33	-271.99
			Max. Vy	20	-9.62	271.89	0.56
			Max. Vx	14	9.64	-0.33	-271.99
			Max. Torque	14			-3.27
L9	118.5 - 113.5	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	-25.92	2.35	0.31
			Max. Mx	20	-6.43	323.63	0.69
			Max. My	14	-6.44	-0.44	-323.85
			Max. Vy	20	-15.01	323.63	0.69
			Max. Vx	14	15.05	-0.44	-323.85
			Max. Torque	14			-3.27
L10	113.5 - 110	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-26.74	2.36	0.29
			Max. Mx	20	-6.93	376.84	0.83
			Max. My	14	-6.95	-0.57	-377.11
			Max. Vy	20	-15.40	376.84	0.83
			Max. Vx	14	15.39	-0.57	-377.11
			Max. Torque	14			-3.13
L11	110 - 109.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.15	2.36	0.29
			Max. Mx	20	-7.18	380.73	0.84
			Max. My	14	-7.19	-0.58	-381.00
			Max. Vy	20	-15.59	380.73	0.84
			Max. Vx	14	15.57	-0.58	-381.00
			Max. Torque	14			-3.13
L12	109.75 - 106.583	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.79	2.37	0.26
			Max. Mx	20	-7.54	430.59	0.97
			Max. My	14	-7.56	-0.70	-430.76
			Max. Vy	20	-15.91	430.59	0.97
			Max. Vx	14	15.86	-0.70	-430.76
			Max. Torque	14			-3.13
L13	106.583 - 106.333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.86	2.37	0.26
			Max. Mx	20	-7.60	434.57	0.98
			Max. My	14	-7.62	-0.71	-434.73
			Max. Vy	20	-15.93	434.57	0.98
			Max. Vx	14	15.88	-0.71	-434.73
			Max. Torque	14			-3.13
L14	106.333 - 101.333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.32	2.38	0.23
			Max. Mx	20	-8.56	515.67	1.18
			Max. My	14	-8.59	-0.90	-515.42
			Max. Vy	20	-16.52	515.67	1.18
			Max. Vx	14	16.40	-0.90	-515.42
			Max. Torque	14			-3.13
L15	101.333 - 96.333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.80	2.39	0.19
			Max. Mx	20	-9.55	599.69	1.38
			Max. My	14	-9.59	-1.09	-598.74
			Max. Vy	20	-17.10	599.69	1.38
			Max. Vx	14	16.93	-1.09	-598.74
			Max. Torque	14			-3.12
L16	96.333 - 91.333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.30	2.40	0.15
			Max. Mx	20	-10.57	686.56	1.59
			Max. My	14	-10.61	-1.29	-684.67
			Max. Vy	20	-17.67	686.56	1.59
			Max. Vx	14	17.45	-1.29	-684.67
			Max. Torque	14			-3.12
L17	91.333 - 86.333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.82	2.40	0.11
			Max. Mx	20	-11.61	776.27	1.79
			Max. My	14	-11.65	-1.48	-773.21
			Max. Vy	20	-18.23	776.27	1.79
			Max. Vx	14	17.97	-1.48	-773.21
			Max. Torque	14			-3.12
L18	86.333 - 83	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	-34.92	2.40	0.09
			Max. Mx	20	-12.32	837.65	1.92
			Max. My	14	-12.36	-1.62	-833.66
			Max. Vy	20	-18.62	837.65	1.92
			Max. Vx	14	18.32	-1.62	-833.66
			Max. Torque	14			-3.12
L19	83 - 82.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.03	2.40	0.08
			Max. Mx	20	-12.40	842.31	1.93
			Max. My	14	-12.44	-1.63	-838.24
			Max. Vy	20	-18.65	842.31	1.93
			Max. Vx	14	18.34	-1.63	-838.24
			Max. Torque	14			-3.12
L20	82.75 - 77.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.13	2.39	0.04
			Max. Mx	20	-13.80	937.14	2.14
			Max. My	14	-13.84	-1.83	-931.32
			Max. Vy	20	-19.30	937.14	2.14
			Max. Vx	14	18.90	-1.83	-931.32
			Max. Torque	14			-3.12
L21	77.75 - 70	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-38.94	2.37	0.01
			Max. Mx	20	-15.01	1020.26	2.31
			Max. My	14	-15.06	-2.00	-1012.61
			Max. Vy	20	-19.83	1020.26	2.31
			Max. Vx	14	19.36	-2.00	-1012.61
			Max. Torque	14			-3.11
L22	70 - 69	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.85	2.36	-0.03
			Max. Mx	20	-17.10	1110.95	2.49
			Max. My	14	-17.15	-2.18	-1101.03
			Max. Vy	20	-20.46	1110.95	2.49
			Max. Vx	14	19.93	-2.18	-1101.03
			Max. Torque	14			-3.11
L23	69 - 64	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.75	2.34	-0.07
			Max. Mx	20	-18.50	1214.57	2.69
			Max. My	14	-18.55	-2.38	-1201.90
			Max. Vy	20	-21.01	1214.57	2.69
			Max. Vx	14	20.44	-2.38	-1201.90
			Max. Torque	14			-3.11
L24	64 - 59	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.66	2.32	-0.11
			Max. Mx	20	-19.92	1320.89	2.90
			Max. My	14	-19.97	-2.59	-1305.31
			Max. Vy	20	-21.54	1320.89	2.90
			Max. Vx	14	20.94	-2.59	-1305.31
			Max. Torque	14			-3.11
L25	59 - 54	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.60	2.31	-0.15
			Max. Mx	20	-21.37	1429.81	3.10
			Max. My	14	-21.41	-2.79	-1411.19
			Max. Vy	20	-22.05	1429.81	3.10
			Max. Vx	14	21.43	-2.79	-1411.19
			Max. Torque	14			-3.11
L26	54 - 49	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.61	2.29	-0.19
			Max. Mx	20	-22.83	1541.28	3.30
			Max. My	14	-22.88	-3.00	-1519.46
			Max. Vy	20	-22.56	1541.28	3.30
			Max. Vx	14	21.90	-3.00	-1519.46
			Max. Torque	14			-3.11
L27	49 - 48.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.72	2.29	-0.20
			Max. Mx	20	-22.92	1546.92	3.31
			Max. My	14	-22.96	-3.01	-1524.94
			Max. Vy	20	-22.58	1546.92	3.31
			Max. Vx	14	21.92	-3.01	-1524.94

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	14			-3.11
L28	48.75 - 48.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.85	2.29	-0.20
			Max. Mx	20	-23.01	1552.57	3.32
			Max. My	14	-23.05	-3.02	-1530.42
			Max. Vy	20	-22.61	1552.57	3.32
			Max. Vx	14	21.94	-3.02	-1530.42
			Max. Torque	14			-3.11
L29	48.5 - 43.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.36	2.27	-0.24
			Max. Mx	20	-24.83	1666.98	3.52
			Max. My	14	-24.87	-3.22	-1641.36
			Max. Vy	20	-23.17	1666.98	3.52
			Max. Vx	14	22.44	-3.22	-1641.36
			Max. Torque	14			-3.11
L30	43.5 - 38.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.89	2.25	-0.29
			Max. Mx	20	-26.68	1784.12	3.72
			Max. My	14	-26.72	-3.43	-1754.72
			Max. Vy	20	-23.71	1784.12	3.72
			Max. Vx	14	22.92	-3.43	-1754.72
			Max. Torque	14			-3.11
L31	38.5 - 31.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.33	2.24	-0.31
			Max. Mx	20	-27.74	1851.65	3.83
			Max. My	14	-27.78	-3.55	-1819.99
			Max. Vy	20	-24.00	1851.65	3.83
			Max. Vx	14	23.18	-3.55	-1819.99
			Max. Torque	14			-3.10
L32	31.5 - 30.667	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.66	2.22	-0.36
			Max. Mx	20	-31.11	1973.07	4.03
			Max. My	14	-31.15	-3.75	-1937.20
			Max. Vy	20	-24.58	1973.07	4.03
			Max. Vx	14	23.71	-3.75	-1937.20
			Max. Torque	14			-3.10
L33	30.667 - 25.667	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.33	2.21	-0.40
			Max. Mx	20	-33.14	2097.04	4.23
			Max. My	14	-33.17	-3.96	-2056.75
			Max. Vy	20	-25.04	2097.04	4.23
			Max. Vx	14	24.13	-3.96	-2056.75
			Max. Torque	14			-3.10
L34	25.667 - 20.667	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.02	2.19	-0.45
			Max. Mx	20	-35.19	2223.32	4.43
			Max. My	14	-35.21	-4.17	-2178.36
			Max. Vy	20	-25.50	2223.32	4.43
			Max. Vx	14	24.54	-4.17	-2178.36
			Max. Torque	14			-3.10
L35	20.667 - 17.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.73	2.18	-0.53
			Max. Mx	20	-36.39	2298.22	4.54
			Max. My	14	-36.42	-4.29	-2250.26
			Max. Vy	20	-25.90	2298.22	4.54
			Max. Vx	14	24.79	-4.29	-2250.26
			Max. Torque	14			-3.10
L36	17.75 - 17.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.87	2.18	-0.53
			Max. Mx	20	-36.50	2304.69	4.55
			Max. My	14	-36.52	-4.30	-2256.46
			Max. Vy	20	-25.91	2304.69	4.55
			Max. Vx	14	24.79	-4.30	-2256.46
			Max. Torque	14			-3.10
L37	17.5 - 12.5	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	-70.36	2.16	-0.67
			Max. Mx	20	-38.43	2435.39	4.74
			Max. My	14	-38.45	-4.51	-2381.37
			Max. Vy	20	-26.39	2435.39	4.74
			Max. Vx	14	25.19	-4.51	-2381.37
			Max. Torque	14			-3.10
L38	12.5 - 10	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.58	2.15	-0.73
			Max. Mx	20	-39.42	2501.59	4.84
			Max. My	14	-39.43	-4.61	-2444.56
			Max. Vy	20	-26.61	2501.59	4.84
			Max. Vx	14	25.39	-4.61	-2444.56
			Max. Torque	14			-3.10
L39	10 - 9.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.70	2.15	-0.74
			Max. Mx	20	-39.53	2508.24	4.85
			Max. My	14	-39.54	-4.62	-2450.91
			Max. Vy	20	-26.62	2508.24	4.85
			Max. Vx	14	25.39	-4.62	-2450.91
			Max. Torque	14			-3.10
L40	9.75 - 4.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.11	2.16	-0.89
			Max. Mx	20	-41.46	2642.33	5.04
			Max. My	14	-41.47	-4.83	-2578.83
			Max. Vy	20	-27.04	2642.33	5.04
			Max. Vx	14	25.79	-4.83	-2578.83
			Max. Torque	14			-3.10
L41	4.75 - 2.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-75.17	2.16	-0.95
			Max. Mx	20	-42.33	2703.34	5.13
			Max. My	14	-42.34	-4.92	-2637.02
			Max. Vy	20	-27.22	2703.34	5.13
			Max. Vx	14	25.97	-4.92	-2637.02
			Max. Torque	14			-3.10
L42	2.5 - 2.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-75.26	2.16	-0.95
			Max. Mx	20	-42.42	2710.14	5.14
			Max. My	14	-42.42	-4.93	-2643.51
			Max. Vy	20	-27.22	2710.14	5.14
			Max. Vx	14	25.97	-4.93	-2643.51
			Max. Torque	14			-3.10
L43	2.25 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.11	2.16	-0.98
			Max. Mx	20	-43.13	2771.57	5.23
			Max. My	14	-43.13	-5.02	-2702.12
			Max. Vy	20	-27.41	2771.57	5.23
			Max. Vx	14	26.15	-5.02	-2702.12
			Max. Torque	14			-3.10

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	36	76.11	5.61	0.00
	Max. H_x	20	43.14	27.38	0.04
	Max. H_z	3	32.36	0.04	26.13
	Max. M_x	2	2701.61	0.04	26.13
	Max. M_z	8	2770.54	-27.38	-0.04
	Max. Torsion	2	3.09	0.04	26.13
	Min. Vert	23	32.36	22.61	13.10
	Min. H_x	9	32.36	-27.38	-0.04
	Min. H_z	15	32.36	-0.04	-26.13
	Min. M_x	14	-2702.12	-0.04	-26.13
	Min. M_z	20	-2771.57	27.38	0.04
	Min. Torsion	14	-3.10	-0.04	-26.13

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K

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	35.95	0.00	0.00	0.21	0.40	-0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	43.14	-0.04	-26.13	-2701.61	5.96	-3.09
0.9 Dead+1.6 Wind 0 deg - No Ice	32.36	-0.04	-26.13	-2672.62	5.77	-3.07
1.2 Dead+1.6 Wind 30 deg - No Ice	43.14	13.01	-22.62	-2337.09	-1342.66	-2.75
0.9 Dead+1.6 Wind 30 deg - No Ice	32.36	13.01	-22.62	-2312.03	-1328.35	-2.74
1.2 Dead+1.6 Wind 60 deg - No Ice	43.14	22.57	-13.03	-1345.92	-2331.18	-1.69
0.9 Dead+1.6 Wind 60 deg - No Ice	32.36	22.57	-13.03	-1331.52	-2306.24	-1.68
1.2 Dead+1.6 Wind 90 deg - No Ice	43.14	27.38	0.04	5.75	-2770.54	-0.15
0.9 Dead+1.6 Wind 90 deg - No Ice	32.36	27.38	0.04	5.62	-2741.16	-0.15
1.2 Dead+1.6 Wind 120 deg - No Ice	43.14	22.61	13.10	1355.93	-2336.63	1.40
0.9 Dead+1.6 Wind 120 deg - No Ice	32.36	22.61	13.10	1341.28	-2311.63	1.39
1.2 Dead+1.6 Wind 150 deg - No Ice	43.14	13.09	22.67	2343.23	-1352.24	2.60
0.9 Dead+1.6 Wind 150 deg - No Ice	32.36	13.09	22.67	2317.97	-1337.82	2.58
1.2 Dead+1.6 Wind 180 deg - No Ice	43.14	0.04	26.13	2702.12	-5.02	3.10
0.9 Dead+1.6 Wind 180 deg - No Ice	32.36	0.04	26.13	2673.00	-5.08	3.08
1.2 Dead+1.6 Wind 210 deg - No Ice	43.14	-13.01	22.62	2337.65	1343.61	2.77
0.9 Dead+1.6 Wind 210 deg - No Ice	32.36	-13.01	22.62	2312.44	1329.05	2.75
1.2 Dead+1.6 Wind 240 deg - No Ice	43.14	-22.57	13.03	1346.48	2332.18	1.68
0.9 Dead+1.6 Wind 240 deg - No Ice	32.36	-22.57	13.03	1331.93	2306.98	1.68
1.2 Dead+1.6 Wind 270 deg - No Ice	43.14	-27.38	-0.04	-5.23	2771.57	0.13
0.9 Dead+1.6 Wind 270 deg - No Ice	32.36	-27.38	-0.04	-5.23	2741.92	0.14
1.2 Dead+1.6 Wind 300 deg - No Ice	43.14	-22.61	-13.10	-1355.45	2337.63	-1.42
0.9 Dead+1.6 Wind 300 deg - No Ice	32.36	-22.61	-13.10	-1340.92	2312.37	-1.40
1.2 Dead+1.6 Wind 330 deg - No Ice	43.14	-13.09	-22.67	-2342.75	1353.20	-2.60
0.9 Dead+1.6 Wind 330 deg - No Ice	32.36	-13.09	-22.67	-2317.62	1338.52	-2.58
1.2 Dead+1.0 Ice	76.11	-0.00	0.00	0.98	2.16	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice	76.11	-0.00	-5.02	-573.03	2.70	-0.62
1.2 Dead+1.0 Wind 30 deg+1.0 Ice	76.11	2.51	-4.36	-496.19	-284.30	-0.57
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	76.11	4.34	-2.51	-285.68	-494.24	-0.37
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	76.11	5.61	0.00	1.40	-608.89	-0.06
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	76.11	4.35	2.51	288.36	-494.62	0.25

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
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	76.11	2.62	4.55	511.59	-292.47	0.51
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	76.11	0.00	5.02	575.06	1.93	0.62
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	76.11	-2.51	4.36	498.22	288.93	0.57
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	76.11	-4.34	2.51	287.70	498.88	0.37
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	76.11	-5.61	-0.00	0.63	613.54	0.06
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	76.11	-4.35	-2.51	-286.34	499.26	-0.25
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	76.11	-2.62	-4.55	-509.57	297.10	-0.51
Dead+Wind 0 deg - Service	35.95	-0.01	-4.51	-463.73	1.37	-0.55
Dead+Wind 30 deg - Service	35.95	2.25	-3.90	-401.14	-230.20	-0.49
Dead+Wind 60 deg - Service	35.95	3.90	-2.25	-230.94	-399.95	-0.30
Dead+Wind 90 deg - Service	35.95	4.73	0.01	1.16	-475.44	-0.03
Dead+Wind 120 deg - Service	35.95	3.90	2.26	233.00	-400.89	0.25
Dead+Wind 150 deg - Service	35.95	2.26	3.91	402.54	-231.85	0.46
Dead+Wind 180 deg - Service	35.95	0.01	4.51	464.16	-0.52	0.55
Dead+Wind 210 deg - Service	35.95	-2.25	3.90	401.57	231.06	0.49
Dead+Wind 240 deg - Service	35.95	-3.90	2.25	231.37	400.80	0.30
Dead+Wind 270 deg - Service	35.95	-4.73	-0.01	-0.73	476.29	0.03
Dead+Wind 300 deg - Service	35.95	-3.90	-2.26	-232.58	401.74	-0.25
Dead+Wind 330 deg - Service	35.95	-2.26	-3.91	-402.11	232.71	-0.46

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	-35.95	0.00	0.00	35.95	0.00	0.000%
2	-0.04	-43.14	-26.13	0.04	43.14	26.13	0.000%
3	-0.04	-32.36	-26.13	0.04	32.36	26.13	0.000%
4	13.01	-43.14	-22.62	-13.01	43.14	22.62	0.000%
5	13.01	-32.36	-22.62	-13.01	32.36	22.62	0.000%
6	22.57	-43.14	-13.03	-22.57	43.14	13.03	0.000%
7	22.57	-32.36	-13.03	-22.57	32.36	13.03	0.000%
8	27.38	-43.14	0.04	-27.38	43.14	-0.04	0.000%
9	27.38	-32.36	0.04	-27.38	32.36	-0.04	0.000%
10	22.61	-43.14	13.10	-22.61	43.14	-13.10	0.000%
11	22.61	-32.36	13.10	-22.61	32.36	-13.10	0.000%
12	13.09	-43.14	22.67	-13.09	43.14	-22.67	0.000%
13	13.09	-32.36	22.67	-13.09	32.36	-22.67	0.000%
14	0.04	-43.14	26.13	-0.04	43.14	-26.13	0.000%
15	0.04	-32.36	26.13	-0.04	32.36	-26.13	0.000%
16	-13.01	-43.14	22.62	13.01	43.14	-22.62	0.000%
17	-13.01	-32.36	22.62	13.01	32.36	-22.62	0.000%
18	-22.57	-43.14	13.03	22.57	43.14	-13.03	0.000%
19	-22.57	-32.36	13.03	22.57	32.36	-13.03	0.000%
20	-27.38	-43.14	-0.04	27.38	43.14	0.04	0.000%
21	-27.38	-32.36	-0.04	27.38	32.36	0.04	0.000%
22	-22.61	-43.14	-13.10	22.61	43.14	13.10	0.000%
23	-22.61	-32.36	-13.10	22.61	32.36	13.10	0.000%
24	-13.09	-43.14	-22.67	13.09	43.14	22.67	0.000%
25	-13.09	-32.36	-22.67	13.09	32.36	22.67	0.000%
26	0.00	-76.11	0.00	0.00	76.11	-0.00	0.000%
27	-0.00	-76.11	-5.02	0.00	76.11	5.02	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
28	2.51	-76.11	-4.36	-2.51	76.11	4.36	0.000%
29	4.34	-76.11	-2.51	-4.34	76.11	2.51	0.000%
30	5.61	-76.11	0.00	-5.61	76.11	-0.00	0.000%
31	4.35	-76.11	2.51	-4.35	76.11	-2.51	0.000%
32	2.62	-76.11	4.55	-2.62	76.11	-4.55	0.000%
33	0.00	-76.11	5.02	-0.00	76.11	-5.02	0.000%
34	-2.51	-76.11	4.36	2.51	76.11	-4.36	0.000%
35	-4.34	-76.11	2.51	4.34	76.11	-2.51	0.000%
36	-5.61	-76.11	-0.00	5.61	76.11	0.00	0.000%
37	-4.35	-76.11	-2.51	4.35	76.11	2.51	0.000%
38	-2.62	-76.11	-4.55	2.62	76.11	4.55	0.000%
39	-0.01	-35.95	-4.51	0.01	35.95	4.51	0.000%
40	2.25	-35.95	-3.90	-2.25	35.95	3.90	0.000%
41	3.90	-35.95	-2.25	-3.90	35.95	2.25	0.000%
42	4.73	-35.95	0.01	-4.73	35.95	-0.01	0.000%
43	3.90	-35.95	2.26	-3.90	35.95	-2.26	0.000%
44	2.26	-35.95	3.91	-2.26	35.95	-3.91	0.000%
45	0.01	-35.95	4.51	-0.01	35.95	-4.51	0.000%
46	-2.25	-35.95	3.90	2.25	35.95	-3.90	0.000%
47	-3.90	-35.95	2.25	3.90	35.95	-2.25	0.000%
48	-4.73	-35.95	-0.01	4.73	35.95	0.01	0.000%
49	-3.90	-35.95	-2.26	3.90	35.95	2.26	0.000%
50	-2.26	-35.95	-3.91	2.26	35.95	3.91	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	6	0.00000001	0.00007854
3	Yes	5	0.00000001	0.00074638
4	Yes	6	0.00000001	0.00059127
5	Yes	6	0.00000001	0.00016645
6	Yes	6	0.00000001	0.00065933
7	Yes	6	0.00000001	0.00019057
8	Yes	5	0.00000001	0.00007008
9	Yes	4	0.00000001	0.00070959
10	Yes	6	0.00000001	0.00065798
11	Yes	6	0.00000001	0.00018927
12	Yes	6	0.00000001	0.00059685
13	Yes	6	0.00000001	0.00016761
14	Yes	6	0.00000001	0.00007099
15	Yes	5	0.00000001	0.00067596
16	Yes	6	0.00000001	0.00068060
17	Yes	6	0.00000001	0.00019777
18	Yes	6	0.00000001	0.00060665
19	Yes	6	0.00000001	0.00017174
20	Yes	5	0.00000001	0.00017253
21	Yes	5	0.00000001	0.00007293
22	Yes	6	0.00000001	0.00061353
23	Yes	6	0.00000001	0.00017345
24	Yes	6	0.00000001	0.00068048
25	Yes	6	0.00000001	0.00019699
26	Yes	4	0.00000001	0.00003642
27	Yes	6	0.00000001	0.00015098
28	Yes	6	0.00000001	0.00033489
29	Yes	6	0.00000001	0.00041115
30	Yes	5	0.00000001	0.00046704
31	Yes	6	0.00000001	0.00040012
32	Yes	6	0.00000001	0.00035253
33	Yes	6	0.00000001	0.00015009
34	Yes	6	0.00000001	0.00045558
35	Yes	6	0.00000001	0.00036220
36	Yes	5	0.00000001	0.00048125
37	Yes	6	0.00000001	0.00037035
38	Yes	6	0.00000001	0.00046491
39	Yes	5	0.00000001	0.00006413

40	Yes	5	0.00000001	0.00010021
41	Yes	5	0.00000001	0.00013231
42	Yes	4	0.00000001	0.00029160
43	Yes	5	0.00000001	0.00013062
44	Yes	5	0.00000001	0.00010194
45	Yes	5	0.00000001	0.00006318
46	Yes	5	0.00000001	0.00014917
47	Yes	5	0.00000001	0.00010360
48	Yes	4	0.00000001	0.00029863
49	Yes	5	0.00000001	0.00010602
50	Yes	5	0.00000001	0.00014805

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
L1	150 - 149	TP15.7813x15x0.1875	5.00	0.00	0.0	9.0374	-2.59	666.15	0.004
	149 - 148					9.1317	-2.62	673.10	0.004
	148 - 147					9.2261	-2.66	680.05	0.004
	147 - 146					9.3204	-2.71	687.01	0.004
	146 - 145					9.4147	-2.76	693.96	0.004
L2	145 - 144	TP16.5625x15.7813x0.1875	5.00	0.00	0.0	9.5091	-2.80	700.91	0.004
	144 - 143					9.6034	-2.85	707.87	0.004
	143 - 142					9.6977	-2.90	714.82	0.004
	142 - 141					9.7921	-2.95	721.77	0.004
	141 - 140					9.8864	-3.00	728.00	0.004
L3	140 - 139	TP17.3438x16.5625x0.1875	5.00	0.00	0.0	9.9807	-3.05	732.76	0.004
	139 - 138					10.0751	-3.11	737.48	0.004
	138 - 137					10.1694	-3.16	742.15	0.004
	137 - 136					10.2638	-3.22	746.79	0.004
	136 - 135					10.3581	-3.27	751.38	0.004
L4	135 - 134	TP18.125x17.3438x0.1875	5.00	0.00	0.0	10.4524	-3.33	755.93	0.004
	134 - 133					10.5468	-3.39	760.44	0.004
	133 - 132					10.6411	-3.45	764.91	0.005
	132 - 131					10.7354	-3.51	769.34	0.005
	131 - 130					10.8298	-3.57	773.73	0.005
L5	130 - 129	TP18.9063x18.125x0.1875	5.00	0.00	0.0	10.9241	-3.63	778.07	0.005
	129 - 128					11.0184	-3.70	782.37	0.005
	128 - 127					11.1128	-3.76	786.64	0.005
	127 - 126					11.2071	-3.83	790.86	0.005
	126 - 125					11.3014	-3.90	795.04	0.005
L6	125 - 124	TP19.6875x18.9063x0.1875	5.00	0.00	0.0	11.3958	-3.97	799.17	0.005
	124 - 123					11.4901	-4.03	803.27	0.005
	123 - 122					11.5845	-4.11	807.33	0.005
	122 - 121					11.6788	-4.18	811.34	0.005
	121 - 120					11.773	-4.25	815.31	0.005

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
						1			
L7	120 - 118.75 (7)	TP19.8828x19.6875x0.1875	1.25	0.00	0.0	11.8910	-4.34	820.22	0.005
L8	118.75 - 118.5 (8)	TP19.9219x19.8828x0.475	0.25	0.00	0.0	29.7440	-4.38	2192.43	0.002
L9	118.5 - 117.5	TP20.7031x19.9219x0.4625	5.00	0.00	0.0	29.2126	-4.50	2153.26	0.002
	117.5 - 116.5					29.4453	-4.62	2170.41	0.002
	116.5 - 115.5					29.6780	-4.75	2187.56	0.002
	115.5 - 114.5					29.9107	-4.87	2204.71	0.002
	114.5 - 113.5					30.1434	-6.44	2221.87	0.003
L10	113.5 - 112.333	TP21.25x20.7031x0.45	3.50	0.00	0.0	29.6109	-6.60	2182.62	0.003
	112.333 - 111.167					29.8751	-6.77	2202.09	0.003
	111.167 - 110					30.1392	-6.94	2221.56	0.003
L11	110 - 109.75 (11)	TP21.2898x21.25x0.25	0.25	0.00	0.0	16.9370	-7.19	1248.43	0.006
L12	109.75 - 108.694	TP21.7933x21.2898x0.25	3.17	0.00	0.0	17.0721	-7.30	1258.39	0.006
	108.694 - 107.639					17.2072	-7.43	1268.35	0.006
	107.639 - 106.583					17.3424	-7.55	1278.31	0.006
L13	106.583 - 106.333 (13)	TP21.8331x21.7933x0.65	0.25	0.00	0.0	44.3361	-7.62	3268.02	0.002
L14	106.333 - 105.333	TP22.6281x21.8331x0.6375	5.00	0.00	0.0	43.8356	-7.80	3231.12	0.002
	105.333 - 104.333					44.1619	-8.00	3255.18	0.002
	104.333 - 103.333					44.4883	-8.19	3279.24	0.002
	103.333 - 102.333					44.8147	-8.39	3303.29	0.003
	102.333 - 101.333					45.1411	-8.59	3327.35	0.003
L15	101.333 - 100.333	TP23.4231x22.6281x0.625	5.00	0.00	0.0	44.6011	-8.78	3287.55	0.003
	100.333 - 99.333					44.9211	-8.98	3311.14	0.003
	99.333 - 98.333					45.2411	-9.18	3334.72	0.003
	98.333 - 97.333					45.5611	-9.38	3358.31	0.003
	97.333 - 96.333					45.8811	-9.58	3381.89	0.003
L16	96.333 - 95.333	TP24.2181x23.4231x0.6	5.00	0.00	0.0	44.4013	-9.75	3272.82	0.003
	95.333 - 94.333					44.7085	-9.96	3295.46	0.003
	94.333 - 93.333					45.0157	-10.16	3318.11	0.003
	93.333 - 92.333					45.3229	-10.36	3340.75	0.003
	92.333 - 91.333					45.6301	-10.57	3363.39	0.003
L17	91.333 - 90.333	TP25.0131x24.2181x0.5875	5.00	0.00	0.0	45.0039	-10.77	3317.24	0.003
	90.333 - 89.333					45.3047	-10.98	3339.41	0.003
	89.333 - 88.333					45.6055	-11.19	3361.58	0.003
	88.333 - 87.333					45.9063	-11.40	3383.75	0.003

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	87.333 - 86.333					46.2070	-11.61	3405.92	0.003
L18	86.333 - 85.222	TP25.543x25.0131x0.575	3.33	0.00	0.0	45.5741	-11.84	3359.27	0.004
	85.222 - 84.111					45.9012	-12.08	3383.38	0.004
	84.111 - 83					46.2283	-12.32	3407.48	0.004
L19	83 - 82.75 (19)	TP25.5828x25.543x0.8625	0.25	0.00	0.0	68.6543	-12.40	5060.51	0.002
L20	82.75 - 81.75	TP26.3778x25.5828x0.8375	5.00	0.00	0.0	67.1605	-12.67	4950.40	0.003
	81.75 - 80.75					67.5893	-12.95	4982.01	0.003
	80.75 - 79.75					68.0181	-13.23	5013.61	0.003
	79.75 - 78.75					68.4469	-13.51	5045.22	0.003
	78.75 - 77.75					68.8757	-13.80	5076.83	0.003
L21	77.75 - 76.6875	TP27.61x26.3778x0.825	7.75	0.00	0.0	68.3297	-14.09	5036.58	0.003
	76.6875 - 75.625					68.7784	-14.40	5069.66	0.003
	75.625 - 74.5625					69.2272	-14.70	5102.74	0.003
	74.5625 - 73.5					69.6760	-15.01	5135.82	0.003
	73.5 - 70					71.1544	-8.82	5244.79	0.002
L22	73.5 - 70	TP27.2549x26.5535x0.7625	4.50	0.00	0.0	64.6628	-7.99	4766.29	0.002
	70 - 69					65.0455	-17.10	4794.50	0.004
L23	69 - 68	TP28.0343x27.2549x0.75	5.00	0.00	0.0	64.3858	-17.38	4745.88	0.004
	68 - 67					64.7622	-17.66	4773.62	0.004
	67 - 66					65.1386	-17.94	4801.37	0.004
	66 - 65					65.5151	-18.22	4829.11	0.004
	65 - 64					65.8915	-18.50	4856.86	0.004
L24	64 - 63	TP28.8136x28.0343x0.7375	5.00	0.00	0.0	65.1931	-18.78	4805.39	0.004
	63 - 62					65.5633	-19.06	4832.67	0.004
	62 - 61					65.9334	-19.35	4859.95	0.004
	61 - 60					66.3036	-19.63	4887.24	0.004
	60 - 59					66.6737	-19.92	4914.52	0.004
L25	59 - 58	TP29.5929x28.8136x0.7125	5.00	0.00	0.0	64.8286	-20.21	4778.51	0.004
	58 - 57					65.1862	-20.49	4804.87	0.004
	57 - 56					65.5438	-20.78	4831.23	0.004
	56 - 55					65.9014	-21.07	4857.59	0.004
	55 - 54					66.2590	-21.37	4883.95	0.004
L26	54 - 53	TP30.3723x29.5929x0.7	5.00	0.00	0.0	65.4760	-21.66	4826.24	0.004
	53 - 52					65.8274	-21.95	4852.13	0.005
	52 - 51					66.178	-22.24	4878.03	0.005

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
						7			
	51 - 50					66.530 0	-22.54	4903.93	0.005
	50 - 49					66.881 3	-22.83	4929.82	0.005
L27	49 - 48.75 (27)	TP30.4113x30.3723x0.7	0.25	0.00	0.0	66.969 2	-22.92	4936.30	0.005
L28	48.75 - 48.5 (28)	TP30.4502x30.4113x0.93 75	0.25	0.00	0.0	89.091 5	-23.01	6566.94	0.004
L29	48.5 - 47.5	TP31.2296x30.4502x0.91 25	5.00	0.00	0.0	87.247 2	-23.36	6430.99	0.004
	47.5 - 46.5					87.705 2	-23.73	6464.75	0.004
	46.5 - 45.5					88.163 2	-24.09	6498.51	0.004
	45.5 - 44.5					88.621 2	-24.46	6532.27	0.004
	44.5 - 43.5					89.079 1	-24.83	6566.02	0.004
L30	43.5 - 42.5	TP32.0089x31.2296x0.88 75	5.00	0.00	0.0	87.155 5	-25.20	6424.23	0.004
	42.5 - 41.5					87.600 9	-25.57	6457.06	0.004
	41.5 - 40.5					88.046 4	-25.94	6489.90	0.004
	40.5 - 39.5					88.491 8	-26.31	6522.73	0.004
	39.5 - 38.5					88.937 2	-26.68	6555.56	0.004
L31	38.5 - 37.0835	TP33.1x32.0089x0.8875	7.00	0.00	0.0	89.568 2	-27.21	6602.07	0.004
	37.0835 - 35.667					90.199 1	-27.74	6648.58	0.004
	35.667 - 31.5					92.055 3	-15.05	6785.39	0.002
L32	35.667 - 31.5	TP32.6042x31.8255x0.95	5.00	0.00	0.0	96.433 2	-15.72	7108.09	0.002
	31.5 - 30.667					96.830 1	-31.11	7137.34	0.004
L33	30.667 - 29.667	TP33.3828x32.6042x0.92 5	5.00	0.00	0.0	94.820 2	-31.51	6989.20	0.005
	29.667 - 28.667					95.284 1	-31.92	7023.39	0.005
	28.667 - 27.667					95.747 9	-32.32	7057.58	0.005
	27.667 - 26.667					96.211 8	-32.73	7091.77	0.005
	26.667 - 25.667					96.675 6	-33.14	7125.96	0.005
L34	25.667 - 24.667	TP34.1615x33.3828x0.91 25	5.00	0.00	0.0	95.863 5	-33.54	7066.10	0.005
	24.667 - 23.667					96.321 1	-33.95	7099.83	0.005
	23.667 - 22.667					96.778 6	-34.36	7133.55	0.005
	22.667 - 21.667					97.236 2	-34.77	7167.28	0.005
	21.667 - 20.667					97.693 8	-35.19	7201.01	0.005
L35	20.667 - 19.2085	TP34.6158x34.1615x0.9	2.92	0.00	0.0	97.050 0	-35.78	7153.56	0.005
	19.2085 - 17.75					97.708 2	-36.39	7202.07	0.005
L36	17.75 - 17.5 (36)	TP34.6547x34.6158x0.82 5	0.25	0.00	0.0	89.868 6	-36.50	6624.21	0.006
L37	17.5 - 16.5	TP35.4333x34.6547x0.81 25	5.00	0.00	0.0	88.947 1	-36.87	6556.29	0.006
	16.5 - 15.5					89.354 5	-37.26	6586.32	0.006

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	15.5 - 14.5					89.7619	-37.65	6616.35	0.006
	14.5 - 13.5					90.1693	-38.04	6646.38	0.006
	13.5 - 12.5					90.5768	-38.43	6676.42	0.006
L38	12.5 - 11.25	TP35.8227x35.4333x0.8	2.50	0.00	0.0	89.7170	-38.92	6613.04	0.006
	11.25 - 10					90.2184	-39.42	6650.00	0.006
L39	10 - 9.75 (39)	TP35.8616x35.8227x0.8125	0.25	0.00	0.0	91.6972	-39.53	6759.00	0.006
L40	9.75 - 8.75	TP36.6403x35.8616x0.8	5.00	0.00	0.0	90.7199	-39.90	6686.96	0.006
	8.75 - 7.75					91.1210	-40.29	6716.53	0.006
	7.75 - 6.75					91.5222	-40.68	6746.10	0.006
	6.75 - 5.75					91.9234	-41.07	6775.67	0.006
	5.75 - 4.75					92.3245	-41.46	6805.24	0.006
L41	4.75 - 3.625	TP36.9907x36.6403x0.8	2.25	0.00	0.0	92.7758	-41.90	6838.51	0.006
	3.625 - 2.5					93.2272	-42.33	6871.77	0.006
L42	2.5 - 2.25 (42)	TP37.0296x36.9907x0.75	0.25	0.00	0.0	87.6152	-42.42	6458.12	0.007
L43	2.25 - 1.125	TP37.38x37.0296x0.7375	2.25	0.00	0.0	86.6007	-42.77	6383.34	0.007
	1.125 - 0					87.0168	-43.13	6414.01	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	150 - 149	TP15.7813x15x0.1875	17.34	202.22	0.086	0.00	202.22	0.000
	149 - 148		24.53	206.49	0.119	0.00	206.49	0.000
	148 - 147		31.75	210.80	0.151	0.00	210.80	0.000
	147 - 146		39.06	215.16	0.182	0.00	215.16	0.000
	146 - 145		46.41	219.57	0.211	0.00	219.57	0.000
L2	145 - 144	TP16.5625x15.7813x0.1875	53.89	224.02	0.241	0.00	224.02	0.000
	144 - 143		61.45	228.51	0.269	0.00	228.51	0.000
	143 - 142		69.09	233.05	0.296	0.00	233.05	0.000
	142 - 141		76.82	237.63	0.323	0.00	237.63	0.000
	141 - 140		84.62	242.02	0.350	0.00	242.02	0.000
L3	140 - 139	TP17.3438x16.5625x0.1875	92.50	245.95	0.376	0.00	245.95	0.000
	139 - 138		100.47	249.90	0.402	0.00	249.90	0.000
	138 - 137		108.51	253.86	0.427	0.00	253.86	0.000
	137 - 136		116.64	257.84	0.452	0.00	257.84	0.000
	136 - 135		124.85	261.84	0.477	0.00	261.84	0.000
L4	135 - 134	TP18.125x17.3438x0.1875	133.15	265.85	0.501	0.00	265.85	0.000
	134 - 133		141.49	269.88	0.524	0.00	269.88	0.000
	133 - 132		149.96	273.92	0.547	0.00	273.92	0.000
	132 - 131		158.51	277.97	0.570	0.00	277.97	0.000
	131 - 130		167.15	282.04	0.593	0.00	282.04	0.000
L5	130 - 129	TP18.9063x18.125x0.1875	175.87	286.12	0.615	0.00	286.12	0.000
	129 - 128		184.67	290.21	0.636	0.00	290.21	0.000
	128 - 127		193.56	294.32	0.658	0.00	294.32	0.000
	127 - 126		202.53	298.43	0.679	0.00	298.43	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 $\frac{M_{uy}}{\phi M_{ny}}$
	126 - 125		211.58	302.56	0.699	0.00	302.56	0.000
L6	125 - 124	TP19.6875x18.9063x0.1875	220.72	306.70	0.720	0.00	306.70	0.000
	124 - 123		229.94	310.85	0.740	0.00	310.85	0.000
	123 - 122		239.25	315.01	0.760	0.00	315.01	0.000
	122 - 121		248.64	319.18	0.779	0.00	319.18	0.000
	121 - 120		258.12	323.35	0.798	0.00	323.35	0.000
L7	120 - 118.75 (7)	TP19.8828x19.6875x0.1875	270.09	328.59	0.822	0.00	328.59	0.000
L8	118.75 - 118.5 (8)	TP19.9219x19.8828x0.475	272.50	854.62	0.319	0.00	854.62	0.000
L9	118.5 - 117.5	TP20.7031x19.9219x0.4625	282.20	847.33	0.333	0.00	847.33	0.000
	117.5 - 116.5		291.99	861.04	0.339	0.00	861.04	0.000
	116.5 - 115.5		301.89	874.86	0.345	0.00	874.86	0.000
	115.5 - 114.5		311.88	888.79	0.351	0.00	888.79	0.000
	114.5 - 113.5		324.44	902.83	0.359	0.00	902.83	0.000
L10	113.5 - 112.333	TP21.25x20.7031x0.45	342.08	896.14	0.382	0.00	896.14	0.000
	112.333 - 111.167		359.86	912.38	0.394	0.00	912.38	0.000
	111.167 - 110		377.77	928.76	0.407	0.00	928.76	0.000
L11	110 - 109.75 (11)	TP21.2898x21.25x0.25	381.67	533.03	0.716	0.00	533.03	0.000
L12	109.75 - 108.694	TP21.7933x21.2898x0.25	398.18	541.62	0.735	0.00	541.62	0.000
	108.694 - 107.639		414.79	550.27	0.754	0.00	550.27	0.000
	107.639 - 106.583		431.50	559.00	0.772	0.00	559.00	0.000
L13	106.583 - 106.333 (13)	TP21.8331x21.7933x0.65	435.47	1379.18	0.316	0.00	1379.18	0.000
L14	106.333 - 105.333	TP22.6281x21.8331x0.6375	451.42	1375.76	0.328	0.00	1375.76	0.000
	105.333 - 104.333		467.48	1396.63	0.335	0.00	1396.63	0.000
	104.333 - 103.333		483.63	1417.64	0.341	0.00	1417.64	0.000
	103.333 - 102.333		499.90	1438.82	0.347	0.00	1438.82	0.000
	102.333 - 101.333		516.27	1460.15	0.354	0.00	1460.15	0.000
L15	101.333 - 100.333	TP23.4231x22.6281x0.625	532.75	1455.05	0.366	0.00	1455.05	0.000
	100.333 - 99.333		549.32	1476.29	0.372	0.00	1476.29	0.000
	99.333 - 98.333		566.01	1497.69	0.378	0.00	1497.69	0.000
	98.333 - 97.333		582.80	1519.24	0.384	0.00	1519.24	0.000
	97.333 - 96.333		599.69	1540.94	0.389	0.00	1540.94	0.000
L16	96.333 - 95.333	TP24.2181x23.4231x0.6	616.84	1505.20	0.410	0.00	1505.20	0.000
	95.333 - 94.333		634.10	1526.37	0.415	0.00	1526.37	0.000
	94.333 - 93.333		651.47	1547.68	0.421	0.00	1547.68	0.000
	93.333 - 92.333		668.96	1569.14	0.426	0.00	1569.14	0.000
	92.333 - 91.333		686.57	1590.75	0.432	0.00	1590.75	0.000
L17	91.333 - 90.333	TP25.0131x24.2181x0.5875	704.28	1581.40	0.445	0.00	1581.40	0.000
	90.333 - 89.333		722.11	1602.87	0.451	0.00	1602.87	0.000
	89.333 - 88.333		740.05	1624.48	0.456	0.00	1624.48	0.000
	88.333 -		758.10	1646.23	0.461	0.00	1646.23	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 $\frac{M_{uy}}{\phi M_{ny}}$
	87.333							
	87.333 - 86.333		776.27	1668.13	0.465	0.00	1668.13	0.000
L18	86.333 - 85.222	TP25.543x25.0131x0.575	796.59	1659.15	0.480	0.00	1659.15	0.000
	85.222 - 84.111		817.04	1683.33	0.485	0.00	1683.33	0.000
	84.111 - 83		837.65	1707.68	0.491	0.00	1707.68	0.000
L19	83 - 82.75 (19)	TP25.5828x25.543x0.8625	842.31	2482.15	0.339	0.00	2482.15	0.000
L20	82.75 - 81.75	TP26.3778x25.5828x0.8375	861.02	2449.20	0.352	0.00	2449.20	0.000
	81.75 - 80.75		879.86	2481.08	0.355	0.00	2481.08	0.000
	80.75 - 79.75		898.83	2513.18	0.358	0.00	2513.18	0.000
	79.75 - 78.75		917.92	2545.47	0.361	0.00	2545.47	0.000
	78.75 - 77.75		937.14	2577.98	0.364	0.00	2577.98	0.000
L21	77.75 - 76.6875	TP27.61x26.3778x0.825	957.71	2577.50	0.372	0.00	2577.50	0.000
	76.6875 - 75.625		978.42	2612.00	0.375	0.00	2612.00	0.000
	75.625 - 74.5625		999.27	2646.73	0.378	0.00	2646.73	0.000
	74.5625 - 73.5		1020.27	2681.68	0.380	0.00	2681.68	0.000
	73.5 - 70		580.55	2798.47	0.207	0.00	2798.47	0.000
L22	73.5 - 70	TP27.2549x26.5535x0.7625	510.00	2505.07	0.204	0.00	2505.07	0.000
	70 - 69		1110.95	2535.22	0.438	0.00	2535.22	0.000
L23	69 - 68	TP28.0343x27.2549x0.75	1131.46	2527.06	0.448	0.00	2527.06	0.000
	68 - 67		1152.08	2557.10	0.451	0.00	2557.10	0.000
	67 - 66		1172.80	2587.32	0.453	0.00	2587.32	0.000
	66 - 65		1193.63	2617.72	0.456	0.00	2617.72	0.000
	65 - 64		1214.58	2648.29	0.459	0.00	2648.29	0.000
L24	64 - 63	TP28.8136x28.0343x0.7375	1235.63	2637.99	0.468	0.00	2637.99	0.000
	63 - 62		1256.78	2668.43	0.471	0.00	2668.43	0.000
	62 - 61		1278.05	2699.04	0.474	0.00	2699.04	0.000
	61 - 60		1299.42	2729.82	0.476	0.00	2729.82	0.000
	60 - 59		1320.89	2760.78	0.478	0.00	2760.78	0.000
L25	59 - 58	TP29.5929x28.8136x0.7125	1342.47	2704.45	0.496	0.00	2704.45	0.000
	58 - 57		1364.16	2734.73	0.499	0.00	2734.73	0.000
	57 - 56		1385.94	2765.19	0.501	0.00	2765.19	0.000
	56 - 55		1407.83	2795.82	0.504	0.00	2795.82	0.000
	55 - 54		1429.82	2826.61	0.506	0.00	2826.61	0.000
L26	54 - 53	TP30.3723x29.5929x0.7	1451.90	2811.07	0.516	0.00	2811.07	0.000
	53 - 52		1474.09	2841.67	0.519	0.00	2841.67	0.000
	52 - 51		1496.39	2872.44	0.521	0.00	2872.44	0.000
	51 - 50		1518.78	2903.38	0.523	0.00	2903.38	0.000
	50 - 49		1541.28	2934.47	0.525	0.00	2934.47	0.000
L27	49 - 48.75 (27)	TP30.4113x30.3723x0.7	1546.93	2942.28	0.526	0.00	2942.28	0.000
L28	48.75 - 48.5 (28)	TP30.4502x30.4113x0.9375	1552.57	3857.14	0.403	0.00	3857.14	0.000
L29	48.5 - 47.5	TP31.2296x30.4502x0.9125	1575.23	3804.27	0.414	0.00	3804.27	0.000
	47.5 - 46.5		1598.00	3844.91	0.416	0.00	3844.91	0.000
	46.5 - 45.5		1620.88	3885.77	0.417	0.00	3885.77	0.000
	45.5 - 44.5		1643.88	3926.84	0.419	0.00	3926.84	0.000
	44.5 - 43.5		1666.98	3968.13	0.420	0.00	3968.13	0.000
L30	43.5 - 42.5	TP32.0089x31.2296x0.8875	1690.20	3909.39	0.432	0.00	3909.39	0.000
	42.5 - 41.5		1713.53	3950.02	0.434	0.00	3950.02	0.000
	41.5 - 40.5		1736.95	3990.86	0.435	0.00	3990.86	0.000
	40.5 - 39.5		1760.48	4031.91	0.437	0.00	4031.91	0.000
	39.5 - 38.5		1784.13	4073.18	0.438	0.00	4073.18	0.000
L31	38.5 - 37.0835	TP33.1x32.0089x0.8875	1817.79	4131.98	0.440	0.00	4131.98	0.000
	37.0835 -		1851.66	4191.21	0.442	0.00	4191.21	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 $\frac{M_{uy}}{\phi M_{ny}}$
	35.667							
	35.667 - 31.5		975.11	4367.88	0.223	0.00	4367.88	0.000
L32	35.667 - 31.5	TP32.6042x31.8255x0.95	977.53	4466.64	0.219	0.00	4466.64	0.000
	31.5 - 30.667		1973.07	4504.02	0.438	0.00	4504.02	0.000
L33	30.667 - 29.667	TP33.3828x32.6042x0.925	1997.68	4439.83	0.450	0.00	4439.83	0.000
	29.667 - 28.667		2022.38	4483.99	0.451	0.00	4483.99	0.000
	28.667 - 27.667		2047.18	4528.38	0.452	0.00	4528.38	0.000
	27.667 - 26.667		2072.07	4572.97	0.453	0.00	4572.97	0.000
	26.667 - 25.667		2097.05	4617.78	0.454	0.00	4617.78	0.000
L34	25.667 - 24.667	TP34.1615x33.3828x0.9125	2122.13	4605.10	0.461	0.00	4605.10	0.000
	24.667 - 23.667		2147.28	4649.77	0.462	0.00	4649.77	0.000
	23.667 - 22.667		2172.54	4694.66	0.463	0.00	4694.66	0.000
	22.667 - 21.667		2197.88	4739.76	0.464	0.00	4739.76	0.000
	21.667 - 20.667		2223.32	4785.07	0.465	0.00	4785.07	0.000
L35	20.667 - 19.2085	TP34.6158x34.1615x0.9	2260.63	4790.45	0.472	0.00	4790.45	0.000
	19.2085 - 17.75		2298.22	4856.51	0.473	0.00	4856.51	0.000
L36	17.75 - 17.5 (36)	TP34.6547x34.6158x0.825	2304.70	4492.03	0.513	0.00	4492.03	0.000
L37	17.5 - 16.5	TP35.4333x34.6547x0.8125	2330.65	4470.22	0.521	0.00	4470.22	0.000
	16.5 - 15.5		2356.70	4511.74	0.522	0.00	4511.74	0.000
	15.5 - 14.5		2382.84	4553.46	0.523	0.00	4553.46	0.000
	14.5 - 13.5		2409.07	4595.37	0.524	0.00	4595.37	0.000
	13.5 - 12.5		2435.39	4637.48	0.525	0.00	4637.48	0.000
L38	12.5 - 11.25	TP35.8227x35.4333x0.8	2468.43	4623.19	0.534	0.00	4623.19	0.000
	11.25 - 10		2501.59	4675.60	0.535	0.00	4675.60	0.000
L39	10 - 9.75 (39)	TP35.8616x35.8227x0.8125	2508.24	4754.25	0.528	0.00	4754.25	0.000
L40	9.75 - 8.75	TP36.6403x35.8616x0.8	2534.90	4728.30	0.536	0.00	4728.30	0.000
	8.75 - 7.75		2561.63	4770.68	0.537	0.00	4770.68	0.000
	7.75 - 6.75		2588.45	4813.24	0.538	0.00	4813.24	0.000
	6.75 - 5.75		2615.36	4856.00	0.539	0.00	4856.00	0.000
	5.75 - 4.75		2642.34	4898.94	0.539	0.00	4898.94	0.000
L41	4.75 - 3.625	TP36.9907x36.6403x0.8	2672.79	4947.48	0.540	0.00	4947.48	0.000
	3.625 - 2.5		2703.34	4996.26	0.541	0.00	4996.26	0.000
L42	2.5 - 2.25 (42)	TP37.0296x36.9907x0.75	2710.14	4713.65	0.575	0.00	4713.65	0.000
L43	2.25 - 1.125	TP37.38x37.0296x0.7375	2740.82	4685.23	0.585	0.00	4685.23	0.000
	1.125 - 0		2771.57	4730.81	0.586	0.00	4730.81	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	150 - 149	TP15.7813x15x0.1875	7.09	333.07	0.021	1.71	410.04	0.004
	149 - 148		7.19	336.55	0.021	0.07	418.70	0.000
	148 - 147		7.26	340.03	0.021	0.07	427.45	0.000
	147 - 146		7.34	343.50	0.021	0.07	436.29	0.000
	146 - 145		7.44	346.98	0.021	1.58	445.21	0.004
L2	145 - 144	TP16.5625x15.7813x0.1875	7.52	350.46	0.021	1.58	454.24	0.003
	144 - 143		7.60	353.93	0.021	1.58	463.35	0.003
	143 - 142		7.68	357.41	0.021	1.58	472.55	0.003
	142 - 141		7.76	360.89	0.022	1.58	481.84	0.003

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 $\frac{T_u}{\phi T_n}$
	141 - 140		7.85	364.00	0.022	1.58	490.73	0.003
L3	140 - 139	TP17.3438x16.5625x0.1875	7.93	366.38	0.022	1.58	498.71	0.003
	139 - 138		8.01	368.74	0.022	1.58	506.71	0.003
	138 - 137		8.09	371.08	0.022	1.58	514.76	0.003
	137 - 136		8.17	373.39	0.022	1.58	522.83	0.003
	136 - 135		8.25	375.69	0.022	1.58	530.93	0.003
L4	135 - 134	TP18.125x17.3438x0.1875	8.34	377.97	0.022	1.58	539.06	0.003
	134 - 133		8.43	380.22	0.022	2.80	547.23	0.005
	133 - 132		8.51	382.46	0.022	2.80	555.42	0.005
	132 - 131		8.60	384.67	0.022	2.80	563.64	0.005
	131 - 130		8.68	386.86	0.022	2.80	571.88	0.005
L5	130 - 129	TP18.9063x18.125x0.1875	8.76	389.04	0.023	2.80	580.16	0.005
	129 - 128		8.85	391.19	0.023	2.80	588.46	0.005
	128 - 127		8.93	393.32	0.023	2.80	596.78	0.005
	127 - 126		9.02	395.43	0.023	2.80	605.13	0.005
	126 - 125		9.10	397.52	0.023	2.80	613.50	0.005
L6	125 - 124	TP19.6875x18.9063x0.1875	9.19	399.59	0.023	2.79	621.89	0.004
	124 - 123		9.27	401.64	0.023	2.79	630.30	0.004
	123 - 122		9.35	403.66	0.023	2.79	638.74	0.004
	122 - 121		9.44	405.67	0.023	2.79	647.19	0.004
	121 - 120		9.53	407.66	0.023	2.79	655.66	0.004
L7	120 - 118.75 (7)	TP19.8828x19.6875x0.1875	9.63	410.11	0.023	2.79	666.28	0.004
L8	118.75 - 118.5 (8)	TP19.9219x19.8828x0.475	9.66	1096.22	0.009	2.79	1732.89	0.002
L9	118.5 - 117.5	TP20.7031x19.9219x0.4625	9.75	1076.63	0.009	2.79	1718.12	0.002
	117.5 - 116.5		9.85	1085.21	0.009	2.79	1745.92	0.002
	116.5 - 115.5		9.95	1093.78	0.009	2.79	1773.94	0.002
	115.5 - 114.5		10.05	1102.36	0.009	2.79	1802.18	0.002
	114.5 - 113.5		15.07	1110.93	0.014	2.79	1830.65	0.002
L10	113.5 - 112.333	TP21.25x20.7031x0.45	15.19	1091.31	0.014	2.62	1817.10	0.001
	112.333 - 111.167		15.30	1101.05	0.014	2.62	1850.02	0.001
	111.167 - 110		15.42	1110.78	0.014	2.62	1883.22	0.001
L11	110 - 109.75 (11)	TP21.2898x21.25x0.25	15.60	624.21	0.025	2.62	1080.81	0.002
L12	109.75 - 108.694	TP21.7933x21.2898x0.25	15.70	629.19	0.025	2.62	1098.22	0.002
	108.694 - 107.639		15.79	634.17	0.025	2.62	1115.78	0.002
	107.639 - 106.583		15.88	639.15	0.025	2.62	1133.47	0.002
L13	106.583 - 106.333 (13)	TP21.8331x21.7933x0.65	15.90	1634.01	0.010	2.62	2796.55	0.001
L14	106.333 - 105.333	TP22.6281x21.8331x0.6375	16.01	1615.56	0.010	2.62	2789.62	0.001
	105.333 - 104.333		16.11	1627.59	0.010	2.62	2831.92	0.001
	104.333 - 103.333		16.22	1639.62	0.010	2.62	2874.54	0.001
	103.333 - 102.333		16.32	1651.65	0.010	2.62	2917.47	0.001
	102.333 - 101.333		16.43	1663.68	0.010	2.62	2960.73	0.001
L15	101.333 - 100.333	TP23.4231x22.6281x0.625	16.53	1643.77	0.010	2.62	2950.39	0.001
	100.333 - 99.333		16.64	1655.57	0.010	2.62	2993.47	0.001
	99.333 - 98.333		16.74	1667.36	0.010	2.62	3036.85	0.001
	98.333 - 97.333		16.85	1679.15	0.010	2.62	3080.55	0.001
	97.333 -		16.95	1690.95	0.010	2.62	3124.56	0.001

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 $\frac{T_u}{\phi T_n}$
	96.333							
L16	96.333 - 95.333	TP24.2181x23.4231x0.6	17.21	1636.41	0.011	0.15	3052.07	0.000
	95.333 - 94.333		17.32	1647.73	0.011	0.15	3094.99	0.000
	94.333 - 93.333		17.44	1659.05	0.011	0.15	3138.21	0.000
	93.333 - 92.333		17.55	1670.38	0.011	0.15	3181.72	0.000
	92.333 - 91.333		17.67	1681.70	0.011	0.15	3225.54	0.000
L17	91.333 - 90.333	TP25.0131x24.2181x0.5875	17.78	1658.62	0.011	0.15	3206.59	0.000
	90.333 - 89.333		17.89	1669.70	0.011	0.15	3250.12	0.000
	89.333 - 88.333		18.00	1680.79	0.011	0.15	3293.94	0.000
	88.333 - 87.333		18.11	1691.87	0.011	0.15	3338.05	0.000
	87.333 - 86.333		18.23	1702.96	0.011	0.15	3382.46	0.000
L18	86.333 - 85.222	TP25.543x25.0131x0.575	18.36	1679.63	0.011	0.15	3364.24	0.000
	85.222 - 84.111		18.49	1691.69	0.011	0.15	3413.26	0.000
	84.111 - 83		18.62	1703.74	0.011	0.15	3462.63	0.000
L19	83 - 82.75 (19)	TP25.5828x25.543x0.8625	18.65	2530.25	0.007	0.15	5033.02	0.000
L20	82.75 - 81.75	TP26.3778x25.5828x0.8375	18.78	2475.20	0.008	0.15	4966.22	0.000
	81.75 - 80.75		18.91	2491.00	0.008	0.15	5030.87	0.000
	80.75 - 79.75		19.04	2506.81	0.008	0.15	5095.94	0.000
	79.75 - 78.75		19.17	2522.61	0.008	0.15	5161.43	0.000
	78.75 - 77.75		19.30	2538.41	0.008	0.15	5227.34	0.000
L21	77.75 - 76.6875	TP27.61x26.3778x0.825	19.43	2518.29	0.008	0.15	5226.38	0.000
	76.6875 - 75.625		19.56	2534.83	0.008	0.15	5296.32	0.000
	75.625 - 74.5625		19.70	2551.37	0.008	0.15	5366.74	0.000
	74.5625 - 73.5		19.83	2567.91	0.008	0.15	5437.63	0.000
	73.5 - 70		10.94	2622.39	0.004	0.08	5674.41	0.000
L22	73.5 - 70	TP27.2549x26.5535x0.7625	9.42	2383.15	0.004	0.07	5079.49	0.000
	70 - 69		20.46	2397.25	0.009	0.15	5140.65	0.000
L23	69 - 68	TP28.0343x27.2549x0.75	20.57	2372.94	0.009	0.15	5124.09	0.000
	68 - 67		20.68	2386.81	0.009	0.15	5185.01	0.000
	67 - 66		20.79	2400.68	0.009	0.15	5246.27	0.000
	66 - 65		20.90	2414.56	0.009	0.15	5307.92	0.000
	65 - 64		21.01	2428.43	0.009	0.15	5369.91	0.000
L24	64 - 63	TP28.8136x28.0343x0.7375	21.11	2402.69	0.009	0.15	5349.03	0.000
	63 - 62		21.22	2416.33	0.009	0.15	5410.74	0.000
	62 - 61		21.33	2429.98	0.009	0.15	5472.81	0.000
	61 - 60		21.43	2443.62	0.009	0.15	5535.23	0.000
	60 - 59		21.54	2457.26	0.009	0.15	5598.00	0.000
L25	59 - 58	TP29.5929x28.8136x0.7125	21.64	2389.26	0.009	0.15	5483.77	0.000
	58 - 57		21.74	2402.44	0.009	0.15	5545.18	0.000
	57 - 56		21.85	2415.62	0.009	0.15	5606.94	0.000
	56 - 55		21.95	2428.79	0.009	0.15	5669.04	0.000
	55 - 54		22.05	2441.97	0.009	0.15	5731.47	0.000
L26	54 - 53	TP30.3723x29.5929x0.7	22.15	2413.12	0.009	0.15	5699.96	0.000
	53 - 52		22.25	2426.07	0.009	0.15	5762.02	0.000
	52 - 51		22.36	2439.02	0.009	0.15	5824.41	0.000
	51 - 50		22.46	2451.96	0.009	0.15	5887.14	0.000
	50 - 49		22.56	2464.91	0.009	0.15	5950.21	0.000
L27	49 - 48.75	TP30.4113x30.3723x0.7	22.58	2468.15	0.009	0.15	5966.02	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 $\frac{T_u}{\phi T_n}$
	(27)							
L28	48.75 - 48.5	TP30.4502x30.4113x0.9375	22.61	3283.47	0.007	0.15	7821.08	0.000
	(28)							
L29	48.5 - 47.5	TP31.2296x30.4502x0.9125	22.72	3215.50	0.007	0.15	7713.86	0.000
	47.5 - 46.5		22.84	3232.37	0.007	0.15	7796.27	0.000
	46.5 - 45.5		22.95	3249.25	0.007	0.15	7879.12	0.000
	45.5 - 44.5		23.06	3266.13	0.007	0.15	7962.40	0.000
	44.5 - 43.5		23.17	3283.01	0.007	0.15	8046.12	0.000
L30	43.5 - 42.5	TP32.0089x31.2296x0.8875	23.28	3212.12	0.007	0.15	7927.02	0.000
	42.5 - 41.5		23.39	3228.53	0.007	0.15	8009.41	0.000
	41.5 - 40.5		23.49	3244.95	0.007	0.15	8092.22	0.000
	40.5 - 39.5		23.60	3261.37	0.007	0.15	8175.46	0.000
	39.5 - 38.5		23.71	3277.78	0.007	0.15	8259.12	0.000
L31	38.5 - 37.0835	TP33.1x32.0089x0.8875	23.85	3301.04	0.007	0.15	8378.33	0.000
	37.0835 - 35.667		24.00	3324.29	0.007	0.15	8498.42	0.000
	35.667 - 31.5		12.36	3392.70	0.004	0.08	8856.67	0.000
L32	35.667 - 31.5	TP32.6042x31.8255x0.95	12.15	3554.05	0.003	0.08	9056.92	0.000
	31.5 - 30.667		24.58	3568.67	0.007	0.15	9132.75	0.000
L33	30.667 - 29.667	TP33.3828x32.6042x0.925	24.67	3494.60	0.007	0.15	9002.58	0.000
	29.667 - 28.667		24.76	3511.69	0.007	0.15	9092.17	0.000
	28.667 - 27.667		24.86	3528.79	0.007	0.15	9182.17	0.000
	27.667 - 26.667		24.95	3545.88	0.007	0.15	9272.58	0.000
	26.667 - 25.667		25.04	3562.98	0.007	0.15	9363.42	0.000
L34	25.667 - 24.667	TP34.1615x33.3828x0.9125	25.13	3533.05	0.007	0.15	9337.75	0.000
	24.667 - 23.667		25.22	3549.91	0.007	0.15	9428.25	0.000
	23.667 - 22.667		25.31	3566.78	0.007	0.15	9519.33	0.000
	22.667 - 21.667		25.41	3583.64	0.007	0.15	9610.75	0.000
	21.667 - 20.667		25.50	3600.51	0.007	0.15	9702.67	0.000
L35	20.667 - 19.2085	TP34.6158x34.1615x0.9	25.70	3576.78	0.007	0.15	9713.58	0.000
	19.2085 - 17.75		25.90	3601.04	0.007	0.14	9847.50	0.000
L36	17.75 - 17.5	TP34.6547x34.6158x0.825	25.91	3312.11	0.008	0.13	9108.42	0.000
	(36)							
L37	17.5 - 16.5	TP35.4333x34.6547x0.8125	26.02	3278.14	0.008	0.13	9064.17	0.000
	16.5 - 15.5		26.11	3293.16	0.008	0.13	9148.42	0.000
	15.5 - 14.5		26.20	3308.18	0.008	0.13	9233.00	0.000
	14.5 - 13.5		26.29	3323.19	0.008	0.13	9318.00	0.000
	13.5 - 12.5		26.39	3338.21	0.008	0.13	9403.33	0.000
L38	12.5 - 11.25	TP35.8227x35.4333x0.8	26.50	3306.52	0.008	0.13	9374.42	0.000
	11.25 - 10		26.61	3325.00	0.008	0.13	9480.67	0.000
L39	10 - 9.75 (39)	TP35.8616x35.8227x0.8125	26.62	3379.50	0.008	0.13	9640.17	0.000
L40	9.75 - 8.75	TP36.6403x35.8616x0.8	26.71	3343.48	0.008	0.13	9587.50	0.000
	8.75 - 7.75		26.79	3358.27	0.008	0.13	9673.42	0.000
	7.75 - 6.75		26.88	3373.05	0.008	0.13	9759.75	0.000
	6.75 - 5.75		26.96	3387.84	0.008	0.13	9846.42	0.000
	5.75 - 4.75		27.04	3402.62	0.008	0.13	9933.50	0.000
L41	4.75 - 3.625	TP36.9907x36.6403x0.8	27.13	3419.25	0.008	0.13	10031.92	0.000
	3.625 - 2.5		27.22	3435.89	0.008	0.13	10130.83	0.000
L42	2.5 - 2.25 (42)	TP37.0296x36.9907x0.75	27.22	3229.06	0.008	0.13	9557.83	0.000
L43	2.25 - 1.125	TP37.38x37.0296x0.7375	27.32	3191.67	0.009	0.13	9500.17	0.000
	1.125 - 0		27.41	3207.00	0.009	0.13	9592.58	0.000

Pole Interaction Design Data

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
L1	150 - 149	0.004	0.086	0.000	0.021	0.004	0.090 ✔	1.000	4.8.2 ✔
	149 - 148	0.004	0.119	0.000	0.021	0.000	0.123 ✔	1.000	4.8.2 ✔
	148 - 147	0.004	0.151	0.000	0.021	0.000	0.155 ✔	1.000	4.8.2 ✔
	147 - 146	0.004	0.182	0.000	0.021	0.000	0.186 ✔	1.000	4.8.2 ✔
	146 - 145	0.004	0.211	0.000	0.021	0.004	0.216 ✔	1.000	4.8.2 ✔
L2	145 - 144	0.004	0.241	0.000	0.021	0.003	0.245 ✔	1.000	4.8.2 ✔
	144 - 143	0.004	0.269	0.000	0.021	0.003	0.274 ✔	1.000	4.8.2 ✔
	143 - 142	0.004	0.296	0.000	0.021	0.003	0.301 ✔	1.000	4.8.2 ✔
	142 - 141	0.004	0.323	0.000	0.022	0.003	0.328 ✔	1.000	4.8.2 ✔
	141 - 140	0.004	0.350	0.000	0.022	0.003	0.354 ✔	1.000	4.8.2 ✔
L3	140 - 139	0.004	0.376	0.000	0.022	0.003	0.381 ✔	1.000	4.8.2 ✔
	139 - 138	0.004	0.402	0.000	0.022	0.003	0.407 ✔	1.000	4.8.2 ✔
	138 - 137	0.004	0.427	0.000	0.022	0.003	0.432 ✔	1.000	4.8.2 ✔
	137 - 136	0.004	0.452	0.000	0.022	0.003	0.457 ✔	1.000	4.8.2 ✔
	136 - 135	0.004	0.477	0.000	0.022	0.003	0.482 ✔	1.000	4.8.2 ✔
L4	135 - 134	0.004	0.501	0.000	0.022	0.003	0.506 ✔	1.000	4.8.2 ✔
	134 - 133	0.004	0.524	0.000	0.022	0.005	0.529 ✔	1.000	4.8.2 ✔
	133 - 132	0.005	0.547	0.000	0.022	0.005	0.553 ✔	1.000	4.8.2 ✔
	132 - 131	0.005	0.570	0.000	0.022	0.005	0.576 ✔	1.000	4.8.2 ✔
	131 - 130	0.005	0.593	0.000	0.022	0.005	0.598 ✔	1.000	4.8.2 ✔
L5	130 - 129	0.005	0.615	0.000	0.023	0.005	0.620 ✔	1.000	4.8.2 ✔
	129 - 128	0.005	0.636	0.000	0.023	0.005	0.642 ✔	1.000	4.8.2 ✔
	128 - 127	0.005	0.658	0.000	0.023	0.005	0.663 ✔	1.000	4.8.2 ✔
	127 - 126	0.005	0.679	0.000	0.023	0.005	0.684 ✔	1.000	4.8.2 ✔
	126 - 125	0.005	0.699	0.000	0.023	0.005	0.705 ✔	1.000	4.8.2 ✔
L6	125 - 124	0.005	0.720	0.000	0.023	0.004	0.725 ✔	1.000	4.8.2 ✔
	124 - 123	0.005	0.740	0.000	0.023	0.004	0.746 ✔	1.000	4.8.2 ✔
	123 - 122	0.005	0.760	0.000	0.023	0.004	0.765 ✔	1.000	4.8.2 ✔
	122 - 121	0.005	0.779	0.000	0.023	0.004	0.785	1.000	4.8.2 ✔

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
	121 - 120	0.005	0.798	0.000	0.023	0.004	0.804	1.000	4.8.2
L7	120 - 118.75 (7)	0.005	0.822	0.000	0.023	0.004	0.828	1.000	4.8.2
L8	118.75 - 118.5 (8)	0.002	0.319	0.000	0.009	0.002	0.321	1.000	4.8.2
L9	118.5 - 117.5	0.002	0.333	0.000	0.009	0.002	0.335	1.000	4.8.2
	117.5 - 116.5	0.002	0.339	0.000	0.009	0.002	0.341	1.000	4.8.2
	116.5 - 115.5	0.002	0.345	0.000	0.009	0.002	0.347	1.000	4.8.2
	115.5 - 114.5	0.002	0.351	0.000	0.009	0.002	0.353	1.000	4.8.2
	114.5 - 113.5	0.003	0.359	0.000	0.014	0.002	0.362	1.000	4.8.2
L10	113.5 - 112.333	0.003	0.382	0.000	0.014	0.001	0.385	1.000	4.8.2
	112.333 - 111.167	0.003	0.394	0.000	0.014	0.001	0.398	1.000	4.8.2
	111.167 - 110	0.003	0.407	0.000	0.014	0.001	0.410	1.000	4.8.2
L11	110 - 109.75 (11)	0.006	0.716	0.000	0.025	0.002	0.723	1.000	4.8.2
L12	109.75 - 108.694	0.006	0.735	0.000	0.025	0.002	0.742	1.000	4.8.2
	108.694 - 107.639	0.006	0.754	0.000	0.025	0.002	0.760	1.000	4.8.2
	107.639 - 106.583	0.006	0.772	0.000	0.025	0.002	0.779	1.000	4.8.2
L13	106.583 - 106.333 (13)	0.002	0.316	0.000	0.010	0.001	0.318	1.000	4.8.2
L14	106.333 - 105.333	0.002	0.328	0.000	0.010	0.001	0.331	1.000	4.8.2
	105.333 - 104.333	0.002	0.335	0.000	0.010	0.001	0.337	1.000	4.8.2
	104.333 - 103.333	0.002	0.341	0.000	0.010	0.001	0.344	1.000	4.8.2
	103.333 - 102.333	0.003	0.347	0.000	0.010	0.001	0.350	1.000	4.8.2
	102.333 - 101.333	0.003	0.354	0.000	0.010	0.001	0.356	1.000	4.8.2
L15	101.333 - 100.333	0.003	0.366	0.000	0.010	0.001	0.369	1.000	4.8.2
	100.333 - 99.333	0.003	0.372	0.000	0.010	0.001	0.375	1.000	4.8.2
	99.333 - 98.333	0.003	0.378	0.000	0.010	0.001	0.381	1.000	4.8.2
	98.333 - 97.333	0.003	0.384	0.000	0.010	0.001	0.387	1.000	4.8.2
	97.333 - 96.333	0.003	0.389	0.000	0.010	0.001	0.392	1.000	4.8.2
L16	96.333 - 95.333	0.003	0.410	0.000	0.011	0.000	0.413	1.000	4.8.2
	95.333 - 94.333	0.003	0.415	0.000	0.011	0.000	0.419	1.000	4.8.2
	94.333 - 93.333	0.003	0.421	0.000	0.011	0.000	0.424	1.000	4.8.2

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
	93.333 - 92.333	0.003	0.426	0.000	0.011	0.000	0.430 ✔	1.000	4.8.2 ✔
	92.333 - 91.333	0.003	0.432	0.000	0.011	0.000	0.435 ✔	1.000	4.8.2 ✔
L17	91.333 - 90.333	0.003	0.445	0.000	0.011	0.000	0.449 ✔	1.000	4.8.2 ✔
	90.333 - 89.333	0.003	0.451	0.000	0.011	0.000	0.454 ✔	1.000	4.8.2 ✔
	89.333 - 88.333	0.003	0.456	0.000	0.011	0.000	0.459 ✔	1.000	4.8.2 ✔
	88.333 - 87.333	0.003	0.461	0.000	0.011	0.000	0.464 ✔	1.000	4.8.2 ✔
	87.333 - 86.333	0.003	0.465	0.000	0.011	0.000	0.469 ✔	1.000	4.8.2 ✔
L18	86.333 - 85.222	0.004	0.480	0.000	0.011	0.000	0.484 ✔	1.000	4.8.2 ✔
	85.222 - 84.111	0.004	0.485	0.000	0.011	0.000	0.489 ✔	1.000	4.8.2 ✔
	84.111 - 83	0.004	0.491	0.000	0.011	0.000	0.494 ✔	1.000	4.8.2 ✔
L19	83 - 82.75 (19)	0.002	0.339	0.000	0.007	0.000	0.342 ✔	1.000	4.8.2 ✔
L20	82.75 - 81.75	0.003	0.352	0.000	0.008	0.000	0.354 ✔	1.000	4.8.2 ✔
	81.75 - 80.75	0.003	0.355	0.000	0.008	0.000	0.357 ✔	1.000	4.8.2 ✔
	80.75 - 79.75	0.003	0.358	0.000	0.008	0.000	0.360 ✔	1.000	4.8.2 ✔
	79.75 - 78.75	0.003	0.361	0.000	0.008	0.000	0.363 ✔	1.000	4.8.2 ✔
	78.75 - 77.75	0.003	0.364	0.000	0.008	0.000	0.366 ✔	1.000	4.8.2 ✔
L21	77.75 - 76.6875	0.003	0.372	0.000	0.008	0.000	0.374 ✔	1.000	4.8.2 ✔
	76.6875 - 75.625	0.003	0.375	0.000	0.008	0.000	0.377 ✔	1.000	4.8.2 ✔
	75.625 - 74.5625	0.003	0.378	0.000	0.008	0.000	0.380 ✔	1.000	4.8.2 ✔
	74.5625 - 73.5	0.003	0.380	0.000	0.008	0.000	0.383 ✔	1.000	4.8.2 ✔
	73.5 - 70	0.002	0.207	0.000	0.004	0.000	0.209 ✔	1.000	4.8.2 ✔
L22	73.5 - 70	0.002	0.204	0.000	0.004	0.000	0.205 ✔	1.000	4.8.2 ✔
	70 - 69	0.004	0.438	0.000	0.009	0.000	0.442 ✔	1.000	4.8.2 ✔
L23	69 - 68	0.004	0.448	0.000	0.009	0.000	0.451 ✔	1.000	4.8.2 ✔
	68 - 67	0.004	0.451	0.000	0.009	0.000	0.454 ✔	1.000	4.8.2 ✔
	67 - 66	0.004	0.453	0.000	0.009	0.000	0.457 ✔	1.000	4.8.2 ✔
	66 - 65	0.004	0.456	0.000	0.009	0.000	0.460 ✔	1.000	4.8.2 ✔
	65 - 64	0.004	0.459	0.000	0.009	0.000	0.463 ✔	1.000	4.8.2 ✔
L24	64 - 63	0.004	0.468	0.000	0.009	0.000	0.472 ✔	1.000	4.8.2 ✔
	63 - 62	0.004	0.471	0.000	0.009	0.000	0.475 ✔	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
	62 - 61	0.004	0.474	0.000	0.009	0.000	0.478 ✔	1.000	4.8.2 ✔
	61 - 60	0.004	0.476	0.000	0.009	0.000	0.480 ✔	1.000	4.8.2 ✔
	60 - 59	0.004	0.478	0.000	0.009	0.000	0.483 ✔	1.000	4.8.2 ✔
L25	59 - 58	0.004	0.496	0.000	0.009	0.000	0.501 ✔	1.000	4.8.2 ✔
	58 - 57	0.004	0.499	0.000	0.009	0.000	0.503 ✔	1.000	4.8.2 ✔
	57 - 56	0.004	0.501	0.000	0.009	0.000	0.506 ✔	1.000	4.8.2 ✔
	56 - 55	0.004	0.504	0.000	0.009	0.000	0.508 ✔	1.000	4.8.2 ✔
	55 - 54	0.004	0.506	0.000	0.009	0.000	0.510 ✔	1.000	4.8.2 ✔
L26	54 - 53	0.004	0.516	0.000	0.009	0.000	0.521 ✔	1.000	4.8.2 ✔
	53 - 52	0.005	0.519	0.000	0.009	0.000	0.523 ✔	1.000	4.8.2 ✔
	52 - 51	0.005	0.521	0.000	0.009	0.000	0.526 ✔	1.000	4.8.2 ✔
	51 - 50	0.005	0.523	0.000	0.009	0.000	0.528 ✔	1.000	4.8.2 ✔
	50 - 49	0.005	0.525	0.000	0.009	0.000	0.530 ✔	1.000	4.8.2 ✔
L27	49 - 48.75 (27)	0.005	0.526	0.000	0.009	0.000	0.530 ✔	1.000	4.8.2 ✔
L28	48.75 - 48.5 (28)	0.004	0.403	0.000	0.007	0.000	0.406 ✔	1.000	4.8.2 ✔
L29	48.5 - 47.5	0.004	0.414	0.000	0.007	0.000	0.418 ✔	1.000	4.8.2 ✔
	47.5 - 46.5	0.004	0.416	0.000	0.007	0.000	0.419 ✔	1.000	4.8.2 ✔
	46.5 - 45.5	0.004	0.417	0.000	0.007	0.000	0.421 ✔	1.000	4.8.2 ✔
	45.5 - 44.5	0.004	0.419	0.000	0.007	0.000	0.422 ✔	1.000	4.8.2 ✔
	44.5 - 43.5	0.004	0.420	0.000	0.007	0.000	0.424 ✔	1.000	4.8.2 ✔
L30	43.5 - 42.5	0.004	0.432	0.000	0.007	0.000	0.436 ✔	1.000	4.8.2 ✔
	42.5 - 41.5	0.004	0.434	0.000	0.007	0.000	0.438 ✔	1.000	4.8.2 ✔
	41.5 - 40.5	0.004	0.435	0.000	0.007	0.000	0.439 ✔	1.000	4.8.2 ✔
	40.5 - 39.5	0.004	0.437	0.000	0.007	0.000	0.441 ✔	1.000	4.8.2 ✔
	39.5 - 38.5	0.004	0.438	0.000	0.007	0.000	0.442 ✔	1.000	4.8.2 ✔
L31	38.5 - 37.0835	0.004	0.440	0.000	0.007	0.000	0.444 ✔	1.000	4.8.2 ✔
	37.0835 - 35.667	0.004	0.442	0.000	0.007	0.000	0.446 ✔	1.000	4.8.2 ✔
	35.667 - 31.5	0.002	0.223	0.000	0.004	0.000	0.225 ✔	1.000	4.8.2 ✔
L32	35.667 - 31.5	0.002	0.219	0.000	0.003	0.000	0.221 ✔	1.000	4.8.2 ✔
	31.5 - 30.667	0.004	0.438	0.000	0.007	0.000	0.442 ✔	1.000	4.8.2 ✔

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
L33	30.667 - 29.667	0.005	0.450	0.000	0.007	0.000	0.455	1.000	4.8.2
	29.667 - 28.667	0.005	0.451	0.000	0.007	0.000	0.456	1.000	4.8.2
	28.667 - 27.667	0.005	0.452	0.000	0.007	0.000	0.457	1.000	4.8.2
	27.667 - 26.667	0.005	0.453	0.000	0.007	0.000	0.458	1.000	4.8.2
	26.667 - 25.667	0.005	0.454	0.000	0.007	0.000	0.459	1.000	4.8.2
L34	25.667 - 24.667	0.005	0.461	0.000	0.007	0.000	0.466	1.000	4.8.2
	24.667 - 23.667	0.005	0.462	0.000	0.007	0.000	0.467	1.000	4.8.2
	23.667 - 22.667	0.005	0.463	0.000	0.007	0.000	0.468	1.000	4.8.2
	22.667 - 21.667	0.005	0.464	0.000	0.007	0.000	0.469	1.000	4.8.2
	21.667 - 20.667	0.005	0.465	0.000	0.007	0.000	0.470	1.000	4.8.2
L35	20.667 - 19.2085	0.005	0.472	0.000	0.007	0.000	0.477	1.000	4.8.2
	19.2085 - 17.75	0.005	0.473	0.000	0.007	0.000	0.478	1.000	4.8.2
L36	17.75 - 17.5 (36)	0.006	0.513	0.000	0.008	0.000	0.519	1.000	4.8.2
L37	17.5 - 16.5	0.006	0.521	0.000	0.008	0.000	0.527	1.000	4.8.2
	16.5 - 15.5	0.006	0.522	0.000	0.008	0.000	0.528	1.000	4.8.2
	15.5 - 14.5	0.006	0.523	0.000	0.008	0.000	0.529	1.000	4.8.2
	14.5 - 13.5	0.006	0.524	0.000	0.008	0.000	0.530	1.000	4.8.2
	13.5 - 12.5	0.006	0.525	0.000	0.008	0.000	0.531	1.000	4.8.2
L38	12.5 - 11.25	0.006	0.534	0.000	0.008	0.000	0.540	1.000	4.8.2
	11.25 - 10	0.006	0.535	0.000	0.008	0.000	0.541	1.000	4.8.2
L39	10 - 9.75 (39)	0.006	0.528	0.000	0.008	0.000	0.533	1.000	4.8.2
L40	9.75 - 8.75	0.006	0.536	0.000	0.008	0.000	0.542	1.000	4.8.2
	8.75 - 7.75	0.006	0.537	0.000	0.008	0.000	0.543	1.000	4.8.2
	7.75 - 6.75	0.006	0.538	0.000	0.008	0.000	0.544	1.000	4.8.2
	6.75 - 5.75	0.006	0.539	0.000	0.008	0.000	0.545	1.000	4.8.2
	5.75 - 4.75	0.006	0.539	0.000	0.008	0.000	0.546	1.000	4.8.2
L41	4.75 - 3.625	0.006	0.540	0.000	0.008	0.000	0.546	1.000	4.8.2
	3.625 - 2.5	0.006	0.541	0.000	0.008	0.000	0.547	1.000	4.8.2
L42	2.5 - 2.25 (42)	0.007	0.575	0.000	0.008	0.000	0.582	1.000	4.8.2
L43	2.25 - 1.125	0.007	0.585	0.000	0.009	0.000	0.592	1.000	4.8.2

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
	1.125 - 0	0.007	0.586	0.000	0.009	0.000	0.593 ✔	1.000	4.8.2 ✔

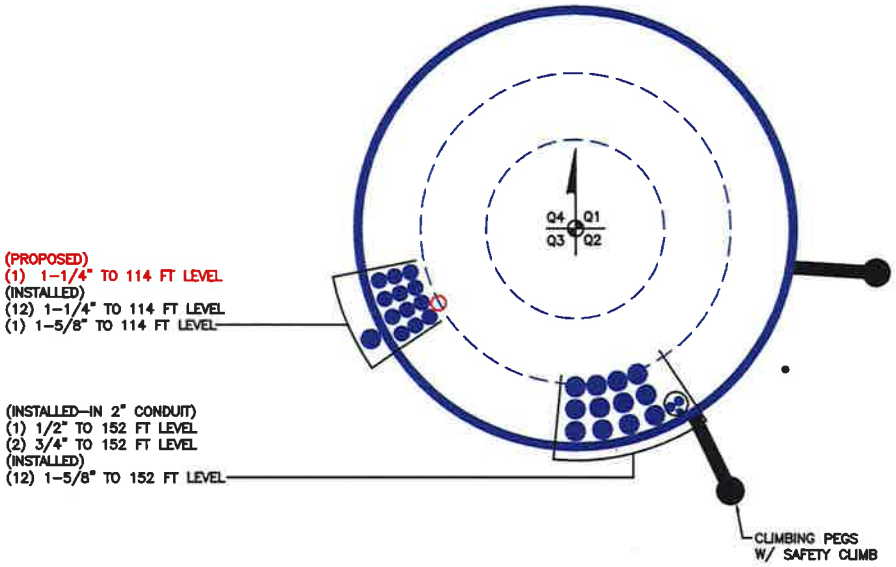
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	150 - 145	Pole	TP15.7813x15x0.1875	1	-2.76	693.96	21.6	Pass
L2	145 - 140	Pole	TP16.5625x15.7813x0.1875	2	-3.00	728.00	35.4	Pass
L3	140 - 135	Pole	TP17.3438x16.5625x0.1875	3	-3.27	751.38	48.2	Pass
L4	135 - 130	Pole	TP18.125x17.3438x0.1875	4	-3.57	773.73	59.8	Pass
L5	130 - 125	Pole	TP18.9063x18.125x0.1875	5	-3.90	795.04	70.5	Pass
L6	125 - 120	Pole	TP19.6875x18.9063x0.1875	6	-4.25	815.31	80.4	Pass
L7	120 - 118.75	Pole	TP19.8828x19.6875x0.1875	7	-4.34	820.22	82.8	Pass
L8	118.75 - 118.5	Pole	TP19.9219x19.8828x0.475	8	-4.38	2192.43	32.1	Pass
L9	118.5 - 113.5	Pole	TP20.7031x19.9219x0.4625	9	-6.44	2221.87	36.2	Pass
L10	113.5 - 110	Pole	TP21.25x20.7031x0.45	10	-6.94	2221.56	41.0	Pass
L11	110 - 109.75	Pole	TP21.2898x21.25x0.25	11	-7.19	1248.43	72.3	Pass
L12	109.75 - 106.583	Pole	TP21.7933x21.2898x0.25	12	-7.55	1278.31	77.9	Pass
L13	106.583 - 106.333	Pole	TP21.8331x21.7933x0.65	13	-7.62	3268.02	31.8	Pass
L14	106.333 - 101.333	Pole	TP22.6281x21.8331x0.6375	14	-8.59	3327.35	35.6	Pass
L15	101.333 - 96.333	Pole	TP23.4231x22.6281x0.625	15	-9.58	3381.89	39.2	Pass
L16	96.333 - 91.333	Pole	TP24.2181x23.4231x0.6	16	-10.57	3363.39	43.5	Pass
L17	91.333 - 86.333	Pole	TP25.0131x24.2181x0.5875	17	-11.61	3405.92	46.9	Pass
L18	86.333 - 83	Pole	TP25.543x25.0131x0.575	18	-12.32	3407.48	49.4	Pass
L19	83 - 82.75	Pole	TP25.5828x25.543x0.8625	19	-12.40	5060.51	34.2	Pass
L20	82.75 - 77.75	Pole	TP26.3778x25.5828x0.8375	20	-13.80	5076.83	36.6	Pass
L21	77.75 - 70	Pole	TP27.61x26.3778x0.825	21	-15.01	5135.82	38.3	Pass
L22	70 - 69	Pole	TP27.2549x26.5535x0.7625	22	-17.10	4794.50	44.2	Pass
L23	69 - 64	Pole	TP28.0343x27.2549x0.75	23	-18.50	4856.86	46.3	Pass
L24	64 - 59	Pole	TP28.8136x28.0343x0.7375	24	-19.92	4914.52	48.3	Pass
L25	59 - 54	Pole	TP29.5929x28.8136x0.7125	25	-21.37	4883.95	51.0	Pass
L26	54 - 49	Pole	TP30.3723x29.5929x0.7	26	-22.83	4929.82	53.0	Pass
L27	49 - 48.75	Pole	TP30.4113x30.3723x0.7	27	-22.92	4936.30	53.0	Pass
L28	48.75 - 48.5	Pole	TP30.4502x30.4113x0.9375	28	-23.01	6566.94	40.6	Pass
L29	48.5 - 43.5	Pole	TP31.2296x30.4502x0.9125	29	-24.83	6566.02	42.4	Pass
L30	43.5 - 38.5	Pole	TP32.0089x31.2296x0.8875	30	-26.68	6555.56	44.2	Pass
L31	38.5 - 31.5	Pole	TP33.1x32.0089x0.8875	31	-27.74	6648.58	44.6	Pass
L32	31.5 - 30.667	Pole	TP32.6042x31.8255x0.95	32	-31.11	7137.34	44.2	Pass
L33	30.667 - 25.667	Pole	TP33.3828x32.6042x0.925	33	-33.14	7125.96	45.9	Pass
L34	25.667 - 20.667	Pole	TP34.1615x33.3828x0.9125	34	-35.19	7201.01	47.0	Pass
L35	20.667 - 17.75	Pole	TP34.6158x34.1615x0.9	35	-36.39	7202.07	47.8	Pass
L36	17.75 - 17.5	Pole	TP34.6547x34.6158x0.825	36	-36.50	6624.21	51.9	Pass
L37	17.5 - 12.5	Pole	TP35.4333x34.6547x0.8125	37	-38.43	6676.42	53.1	Pass
L38	12.5 - 10	Pole	TP35.8227x35.4333x0.8	38	-39.42	6650.00	54.1	Pass
L39	10 - 9.75	Pole	TP35.8616x35.8227x0.8125	39	-39.53	6759.00	53.3	Pass
L40	9.75 - 4.75	Pole	TP36.6403x35.8616x0.8	40	-41.46	6805.24	54.6	Pass
L41	4.75 - 2.5	Pole	TP36.9907x36.6403x0.8	41	-42.33	6871.77	54.7	Pass
L42	2.5 - 2.25	Pole	TP37.0296x36.9907x0.75	42	-42.42	6458.12	58.2	Pass
L43	2.25 - 0	Pole	TP37.38x37.0296x0.7375	43	-43.13	6414.01	59.3	Pass
							Summary	
						Pole (L7)	82.8	Pass
						RATING =	**82.8**	**Pass**

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

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 841291 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- G

Site BU: 841291

Work Order: 1332501

CROWN CASTLE

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Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	150	40	0	12	15	21.25	0.1875	0.75	A572-65
2	110	40	3.5	12	21.25	27.61	0.25	1	A572-65
3	73.5	42	4.167	12	26.55	33.1	0.3125	1.25	A572-65
4	35.667	35.667	0	12	31.83	37.38	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
1	10	17.75	plate	PL7x1.5"	3					E			E			E	
2	10	70	plate	PL7x1.5"	1		E										
3	17.75	70	plate	PL7x1.5"	2						E				E		
4	70	106.583	plate	PL6x1.25	3		E				E				E		
5	110	118.75	plate	PL4x1.25	3			E				E				E	
6	2.5	10	plate	CFP-085125	4		P			P			P			P	
7	0	2.5	plate	TS	4		P			P			P			P	
8	17.75	48.75	plate	CCI-SFP-060100	2				P								P
9	17.75	48.75	plate	CCI-SFP-060100	1								P				
10	72	83	plate	CCI-SFP-060100	3				P				P				P
11																	

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	7	1.5	10.5	0.75	36.000	36.000	18.000	8.578	1.2188	A572-50
2	7	1.5	10.5	0.75	36.000	36.000	18.000	8.578	1.2188	A572-50
3	7	1.5	10.5	0.75	36.000	36.000	18.000	8.578	1.2188	A572-50
4	6	1.25	7.5	0.625	24.000	24.000	18.000	5.898	1.2188	A572-50
5	4	1.25	5	0.625	15.000	15.000	18.000	3.398	1.2188	A572-50
6	8.5	1.25	10.625	0.625	n/a	51.000	17.000	9.063	1.1875	A572-65
7	1.25	5.5	6.875	4	n/a	n/a	0.000	6.875	0.0000	A572-65
8	6	1	6	0.5	24.000	24.000	5.000	4.750	1.1875	A572-65
9	6	1	6	0.5	24.000	24.000	5.000	4.750	1.1875	A572-65
10	6	1	6	0.5	24.000	24.000	5.000	4.750	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	150 - 145	5		12	15.000	15.781	0.1875	A572-65	1.000
2	145 - 140	5		12	15.781	16.563	0.1875	A572-65	1.000
3	140 - 135	5		12	16.563	17.344	0.1875	A572-65	1.000
4	135 - 130	5		12	17.344	18.125	0.1875	A572-65	1.000
5	130 - 125	5		12	18.125	18.906	0.1875	A572-65	1.000
6	125 - 120	5		12	18.906	19.688	0.1875	A572-65	1.000
7	120 - 118.75	1.25		12	19.688	19.883	0.1875	A572-65	1.000
8	118.75 - 118.5	0.25		12	19.883	19.922	0.475	A572-65	0.906
9	118.5 - 113.5	5		12	19.922	20.703	0.4625	A572-65	0.909
10	113.5 - 110	3.5	0	12	20.703	21.250	0.45	A572-65	0.920
11	110 - 109.75	0.25		12	21.250	21.290	0.25	A572-65	1.000
12	109.75 - 106.583	3.167		12	21.290	21.793	0.25	A572-65	1.000
13	106.583 - 106.333	0.25		12	21.793	21.833	0.65	A572-65	0.900
14	106.333 - 101.333	5		12	21.833	22.628	0.6375	A572-65	0.898
15	101.333 - 96.333	5		12	22.628	23.423	0.625	A572-65	0.898
16	96.333 - 91.333	5		12	23.423	24.218	0.6	A572-65	0.917
17	91.333 - 86.333	5		12	24.218	25.013	0.5875	A572-65	0.919
18	86.333 - 83	3.333		12	25.013	25.543	0.575	A572-65	0.928
19	83 - 82.75	0.25		12	25.543	25.583	0.8625	A572-65	0.888
20	82.75 - 77.75	5		12	25.583	26.378	0.8375	A572-65	0.894
21	77.75 - 73.5	7.75	3.5	12	26.378	27.610	0.825	A572-65	0.892
22	73.5 - 69	4.5		12	26.554	27.255	0.7625	A572-65	0.902
23	69 - 64	5		12	27.255	28.034	0.75	A572-65	0.902
24	64 - 59	5		12	28.034	28.814	0.7375	A572-65	0.903
25	59 - 54	5		12	28.814	29.593	0.7125	A572-65	0.921
26	54 - 49	5		12	29.593	30.372	0.7	A572-65	0.924
27	49 - 48.75	0.25		12	30.372	30.411	0.7	A572-65	0.923
28	48.75 - 48.5	0.25		12	30.411	30.450	0.9375	A572-65	0.897
29	48.5 - 43.5	5		12	30.450	31.230	0.9125	A572-65	0.906
30	43.5 - 38.5	5		12	31.230	32.009	0.8875	A572-65	0.916
31	38.5 - 35.667	7	4.167	12	32.009	33.100	0.8875	A572-65	0.908
32	35.667 - 30.667	5		12	31.825	32.604	0.95	A572-65	0.914
33	30.667 - 25.667	5		12	32.604	33.383	0.925	A572-65	0.925
34	25.667 - 20.667	5		12	33.383	34.161	0.9125	A572-65	0.925
35	20.667 - 17.75	2.917		12	34.161	34.616	0.9	A572-65	0.930
36	17.75 - 17.5	0.25		12	34.616	34.655	0.825	A572-65	0.929
37	17.5 - 12.5	5		12	34.655	35.433	0.8125	A572-65	0.932
38	12.5 - 10	2.5		12	35.433	35.823	0.8	A572-65	0.941
39	10 - 9.75	0.25		12	35.823	35.862	0.8125	A572-65	0.931
40	9.75 - 4.75	5		12	35.862	36.640	0.8	A572-65	0.935
41	4.75 - 2.5	2.25		12	36.640	36.991	0.8	A572-65	0.931
42	2.5 - 2.25	0.25		12	36.991	37.030	0.75	A572-65	0.819
43	2.25 - 0	2.25		12	37.030	37.380	0.7375	A572-65	0.830

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	150 - 145	2.7529	46.438	7.4239
2	145 - 140	3.001	84.619	7.8456
3	140 - 135	3.2734	124.85	8.2546
4	135 - 130	3.5706	167.15	8.681
5	130 - 125	3.8968	211.58	9.101
6	125 - 120	4.2488	258.12	9.5251
7	120 - 118.75	4.3378	270.09	9.633
8	118.75 - 118.5	4.3809	272.5	9.6554
9	118.5 - 113.5	6.4376	324.44	15.072
10	113.5 - 110	6.944	377.77	15.417
11	110 - 109.75	7.189	381.67	15.6
12	109.75 - 106.583	7.5543	431.5	15.882
13	106.583 - 106.333	7.6185	435.47	15.905
14	106.333 - 101.333	8.5862	516.27	16.429
15	101.333 - 96.333	9.5817	599.69	16.954
16	96.333 - 91.333	10.57	686.57	17.667
17	91.333 - 86.333	11.61	776.27	18.228
18	86.333 - 83	12.315	837.65	18.62
19	83 - 82.75	12.396	842.31	18.647
20	82.75 - 77.75	13.795	937.14	19.297
21	77.75 - 73.5	15.007	1020.3	19.832
22	73.5 - 69	17.103	1111	20.461
23	69 - 64	18.499	1214.6	21.008
24	64 - 59	19.92	1320.9	21.539
25	59 - 54	21.366	1429.8	22.051
26	54 - 49	22.834	1541.3	22.56
27	49 - 48.75	22.917	1546.9	22.579
28	48.75 - 48.5	23.01	1552.6	22.607
29	48.5 - 43.5	24.832	1667	23.172
30	43.5 - 38.5	26.684	1784.1	23.706
31	38.5 - 35.667	27.741	1851.7	23.995
32	35.667 - 30.667	31.114	1973.1	24.576
33	30.667 - 25.667	33.138	2097	25.04
34	25.667 - 20.667	35.186	2223.3	25.496
35	20.667 - 17.75	36.388	2298.2	25.897
36	17.75 - 17.5	36.497	2304.7	25.913
37	17.5 - 12.5	38.434	2435.4	26.387
38	12.5 - 10	39.415	2501.6	26.612
39	10 - 9.75	39.5	2508.2	26.6
40	9.75 - 4.75	41.5	2642.3	27.0
41	4.75 - 2.5	42.3	2703.3	27.2
42	2.5 - 2.25	42.4	2710.1	27.2
43	2.25 - 0	43.1	2771.6	27.4

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
150 - 145	Pole	TP15.781x15x0.1875	Pole	21.5%	Pass
145 - 140	Pole	TP16.563x15.781x0.1875	Pole	35.3%	Pass
140 - 135	Pole	TP17.344x16.563x0.1875	Pole	48.0%	Pass
135 - 130	Pole	TP18.125x17.344x0.1875	Pole	59.6%	Pass
130 - 125	Pole	TP18.906x18.125x0.1875	Pole	70.3%	Pass
125 - 120	Pole	TP19.688x18.906x0.1875	Pole	80.2%	Pass
120 - 118.75	Pole	TP19.883x19.688x0.1875	Pole	82.6%	Pass
118.75 - 118.5	Pole + Reinf.	TP19.922x19.883x0.475	Reinf. 5 Tension Rupture	72.6%	Pass
118.5 - 113.5	Pole + Reinf.	TP20.703x19.922x0.4625	Reinf. 5 Tension Rupture	82.1%	Pass
113.5 - 110	Pole + Reinf.	TP21.25x20.703x0.45	Reinf. 5 Tension Rupture	92.1%	Pass
110 - 109.75	Pole	TP21.29x21.25x0.25	Pole	72.0%	Pass
109.75 - 106.58	Pole	TP21.793x21.29x0.25	Pole	77.6%	Pass
106.58 - 106.33	Pole + Reinf.	TP21.833x21.793x0.65	Reinf. 4 Tension Rupture	61.6%	Pass
106.33 - 101.33	Pole + Reinf.	TP22.628x21.833x0.6375	Reinf. 4 Tension Rupture	69.5%	Pass
101.33 - 96.33	Pole + Reinf.	TP23.423x22.628x0.625	Reinf. 4 Tension Rupture	76.9%	Pass
96.33 - 91.33	Pole + Reinf.	TP24.218x23.423x0.6	Reinf. 4 Tension Rupture	84.0%	Pass
91.33 - 86.33	Pole + Reinf.	TP25.013x24.218x0.5875	Reinf. 4 Tension Rupture	90.7%	Pass
86.33 - 83	Pole + Reinf.	TP25.543x25.013x0.575	Reinf. 4 Tension Rupture	95.0%	Pass
83 - 82.75	Pole + Reinf.	TP25.583x25.543x0.8625	Reinf. 4 Tension Rupture	66.5%	Pass
82.75 - 77.75	Pole + Reinf.	TP26.378x25.583x0.8375	Reinf. 4 Tension Rupture	71.1%	Pass
77.75 - 73.5	Pole + Reinf.	TP27.61x26.378x0.825	Reinf. 4 Tension Rupture	74.9%	Pass
73.5 - 69	Pole + Reinf.	TP27.255x26.554x0.7625	Reinf. 3 Tension Rupture	83.0%	Pass
69 - 64	Pole + Reinf.	TP28.034x27.255x0.75	Reinf. 3 Tension Rupture	87.1%	Pass
64 - 59	Pole + Reinf.	TP28.814x28.034x0.7375	Reinf. 3 Tension Rupture	91.1%	Pass
59 - 54	Pole + Reinf.	TP29.593x28.814x0.7125	Reinf. 3 Tension Rupture	94.9%	Pass
54 - 49	Pole + Reinf.	TP30.372x29.593x0.7	Reinf. 3 Tension Rupture	98.6%	Pass
49 - 48.75	Pole + Reinf.	TP30.411x30.372x0.7	Reinf. 3 Tension Rupture	98.7%	Pass
48.75 - 48.5	Pole + Reinf.	TP30.45x30.411x0.9375	Reinf. 3 Tension Rupture	76.3%	Pass
48.5 - 43.5	Pole + Reinf.	TP31.23x30.45x0.9125	Reinf. 3 Tension Rupture	79.2%	Pass
43.5 - 38.5	Pole + Reinf.	TP32.009x31.23x0.8875	Reinf. 3 Tension Rupture	82.0%	Pass
38.5 - 35.67	Pole + Reinf.	TP33.1x32.009x0.8875	Reinf. 3 Tension Rupture	83.5%	Pass
35.67 - 30.67	Pole + Reinf.	TP32.604x31.825x0.95	Reinf. 3 Tension Rupture	82.5%	Pass
30.67 - 25.67	Pole + Reinf.	TP33.383x32.604x0.925	Reinf. 3 Tension Rupture	84.8%	Pass
25.67 - 20.67	Pole + Reinf.	TP34.161x33.383x0.9125	Reinf. 3 Tension Rupture	87.0%	Pass
20.67 - 17.75	Pole + Reinf.	TP34.616x34.161x0.9	Reinf. 3 Tension Rupture	88.3%	Pass
17.75 - 17.5	Pole + Reinf.	TP34:655x34.616x0.825	Reinf. 2 Tension Rupture	96.1%	Pass
17.5 - 12.5	Pole + Reinf.	TP35.433x34.655x0.8125	Reinf. 2 Tension Rupture	98.3%	Pass
12.5 - 10	Pole + Reinf.	TP35.823x35.433x0.8	Reinf. 2 Tension Rupture	99.4%	Pass
10 - 9.75	Pole + Reinf.	TP35.862x35.823x0.8125	Reinf. 6 Compression	76.9%	Pass
9.75 - 4.75	Pole + Reinf.	TP36.64x35.862x0.8	Reinf. 6 Compression	78.5%	Pass
4.75 - 2.5	Pole + Reinf.	TP36.991x36.64x0.8	Reinf. 6 Weldment	79.8%	Pass
2.5 - 2.25	Pole + Reinf.	TP37.03x36.991x0.75	Reinf. 7 Compression	86.6%	Pass
2.25 - 0	Pole + Reinf.	TP37.38x37.03x0.7375	Reinf. 7 Compression	87.3%	Pass
				Summary	
			Pole	82.6%	Pass
			Reinforcement	99.4%	Pass
			Overall	99.4%	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
150 - 145	293	n/a	293	9.40	n/a	9.40	21.5%										
145 - 140	339	n/a	339	9.87	n/a	9.87	35.3%										
140 - 135	390	n/a	390	10.34	n/a	10.34	48.0%										
135 - 130	445	n/a	445	10.81	n/a	10.81	59.6%										
130 - 125	506	n/a	506	11.29	n/a	11.29	70.3%										
125 - 120	572	n/a	572	11.76	n/a	11.76	80.2%										
120 - 118.75	590	n/a	590	11.87	n/a	11.87	82.6%										
118.75 - 118.5	593	851	1445	11.90	15.00	26.90	33.0%					72.6%					
118.5 - 113.5	666	915	1581	12.37	15.00	27.37	38.1%					82.1%					
113.5 - 110	721	960	1681	12.70	15.00	27.70	43.2%					92.1%					
110 - 109.75	958	n/a	958	16.91	n/a	16.91	72.0%										
109.75 - 106.58	1029	n/a	1029	17.32	n/a	17.32	77.6%										
106.58 - 106.33	1034	1534	2568	17.35	22.50	39.85	30.5%				61.6%						
106.33 - 101.33	1153	1639	2792	17.99	22.50	40.49	34.8%				69.5%						
101.33 - 96.33	1280	1747	3028	18.63	22.50	41.13	39.0%				76.9%						
96.33 - 91.33	1417	1859	3276	19.27	22.50	41.77	43.1%				84.0%						
91.33 - 86.33	1562	1975	3537	19.91	22.50	42.41	47.2%				90.7%						
86.33 - 83	1665	2054	3719	20.33	22.50	42.83	49.9%				95.0%						
83 - 82.75	1673	3678	5351	20.36	40.50	60.86	34.9%				66.5%						53.2%
82.75 - 77.75	1835	3896	5731	21.00	40.50	61.50	37.9%				71.1%						57.0%
77.75 - 73.5	1981	4087	6068	21.55	40.50	62.05	40.3%				74.9%						60.0%
73.5 - 69	2515	3323	5838	27.07	31.50	58.57	42.7%		83.0%	83.0%							
69 - 64	2740	3502	6242	27.86	31.50	59.36	45.2%		87.1%	87.1%							
64 - 59	2978	3685	6663	28.64	31.50	60.14	47.8%		91.1%	91.1%							
59 - 54	3229	3874	7103	29.42	31.50	60.92	50.3%		94.9%	94.9%							
54 - 49	3493	4067	7560	30.20	31.50	61.70	52.8%		98.6%	98.6%							
49 - 48.75	3507	4077	7584	30.24	31.50	61.74	52.9%		98.7%	98.7%							
48.75 - 48.5	3521	6340	9861	30.28	49.50	79.78	40.9%		76.3%	76.3%					63.1%	63.1%	
48.5 - 43.5	3801	6650	10451	31.07	49.50	80.57	42.9%		79.2%	79.2%					65.5%	65.5%	
43.5 - 38.5	4096	6968	11063	31.85	49.50	81.35	44.9%		82.0%	82.0%					67.8%	67.8%	
38.5 - 35.67	4269	7151	11420	32.29	49.50	81.79	46.0%		83.5%	83.5%					69.1%	69.1%	
35.67 - 30.67	5167	7215	12382	38.86	49.50	88.36	42.9%		82.5%	82.5%					68.2%	68.2%	
30.67 - 25.67	5550	7546	13096	39.80	49.50	89.30	44.3%		84.8%	84.8%					70.2%	70.2%	
25.67 - 20.67	5952	7884	13837	40.74	49.50	90.24	45.8%		87.0%	87.0%					72.0%	72.0%	
20.67 - 17.75	6196	8085	14281	41.29	49.50	90.79	46.7%		88.3%	88.3%					73.1%	73.1%	
17.75 - 17.5	6217	6952	13169	41.33	42.00	83.33	50.9%	96.1%	96.1%								
17.5 - 12.5	6650	7251	13901	42.27	42.00	84.27	52.5%	98.3%	98.3%								
12.5 - 10	6874	7403	14277	42.74	42.00	84.74	53.3%	99.4%	99.4%								
10 - 9.75	6897	7447	14344	42.79	42.50	85.29	53.2%						76.9%				
9.75 - 4.75	7361	7758	15119	43.73	42.50	86.23	54.8%						78.5%				
4.75 - 2.5	7576	7899	15476	44.15	42.50	86.65	55.5%						79.8%				
2.5 - 2.25	7601	7007	14607	44.20	27.50	71.70	59.0%							86.6%			
2.25 - 0	7821	7115	14936	44.62	27.50	72.12	59.8%							87.3%			

Note: Section capacity checked in 5 degree increments.

BLACK & VEATCH

Owner:	CROWN CASTLE	Prepared By:	J. Vibbert
Project Name:	STONINGTON	Date:	12/5/16
Project No.	182896 (841291.1332501)	Verified By:	A. Siegel
Title:	ANCHOR ROD CALCULATION RESULTS	Date:	########
		Page:	1

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	2771.6	kip-ft	
Axial	P	43.1	kip	
Shear	S	27.4	kip	
Base Plate Type		Square		

		1st BC	2nd BC	3rd BC	4th BC	
Quantity	QTY	8	4	8		
Diameter	Db	2.25	1.75	1.5		in
Material	RMat	#18J	A193 B7	F1554 GR 105		
Bolt Circle	BC	44	54	49.25		in
Square Base Plate Bolt Spacing	B_sp	6	-	-	-	in

Anchor Rod Results

		1st BC	2nd BC	3rd BC	4th BC	
Bolt Group Area	rAg	31.81	9.62	14.14		in^2
Bolt Group MOIx	rMOI	7717	3513	3696		in^4
Moment		1433.0	652.3	686.2		kip-ft
Axial		24.7	7.5	11.0		kip
Shear		27.4	0.0	0.0		kip
Combined Load	Tbolt	206.8	143.9	90.4		kip
Allowable load	ATBolt	259.8	189.9	140.5		kip
Anchor Rod Capacity	RStress	79.6%	75.7%	64.3%		

BU: 841291
WO: 1332501

Done By: J. Vibbert
Checked By: A. Siegel
Date: 12/6/2016

CROWN CASTLE

Additional Anchor Rod Calculations

Tower Reactions From tnx

$Moment := 686.2 \cdot kip \cdot ft$ $Axial := 11 \cdot kip$ $Shear := 0 \cdot kip$

Calculation of Reactions to Existing and New Anchor Rods

$N_{existing} := 0$
$BC_{existing} := 0 \cdot in$
$D_{existing} := 0 \cdot in$
$A_{existing} := 0in^2$

$N_{new} := 8$
$BC_{new} := 49.25 \cdot in$
$D_{new} := 1.5 \cdot in$
$A_{new} := 1.41 \cdot in^2$

$Fu_{rod} := 125ksi$

Anchor Rod Bracket Calculations

Bracket Design Load

$\phi := 0.75$

$\phi P_{nrod} := \phi \cdot Fu_{rod} \cdot A_{new} = 132.19 \cdot kip$ (Rod Tensile Capacity)

Pipe Design (Bearing Capacity):

TRY : Size :=
- (•) Pipe 3 xx-Strong
- ( ) HSS 4x4x0.375
- ( ) HSS 4x4x0.5
- ( ) HSS 5x5x0.5

$F_{ypipe} := 42 \cdot ksi$

$Check_{comp} = "OK"$ $Check_{bear} = "OK"$

Horizontal and Vertical Weld to Pole Checks

Bracket plate thickness	$T := 1.25 \cdot in$	
Pole Grade	$Fy_{pole} := 65ksi$	$Fu_{pole} := 80ksi$
Base Plate Grade	$Fy_{base} := 60ksi$	$Fu_{base} := 75ksi$
Bracket Plate Grade	$Fy_{plate} := 50ksi$	$Fu_{plate} := 65ksi$
Height of vertical weld from base plate	$H := 24 \cdot in$	
	$Notch := 0.5 \cdot in$	
Plate width	$W := 4.25 \cdot in$	
Gap between Base Plate and Pipe	$Gap := 0.5 \cdot in$	
Vertical fillet weld size (bracket to pole) in sixteenths of an inch	$D_{vpole} := 6$	$weldsize_{pole} := \frac{D_{vpole}}{16} = \frac{3}{8}$
Weld Material Grade	$F_{EXX} := 70ksi$	

Check = "OK"

Vertical Weld to Pipe (weld on both sides)

Length of Vertical Weld to Pipe	$l_{vweldpipe} := 12in$	
Vertical fillet weld size (bracket to pipe) in sixteenths of an inch	$D_{vpipe} := 6$	$weldsize_{pipe} = \frac{3}{8}$ Dvpipe = weld size in sixteenths of an inch
Electrode Strength Coefficient	$C_1 := 1.00$	AISC, 13th Edition, Table 8-4 pg 8-66
Coefficient for eccentrically Loaded Weld Groups	$C := 3.72$	

Check = "OK"

Plate Check:

Bracket plate thickness	$T = 1.25 \cdot in$
Plate Fy	$Fy_{plate} = 50 \cdot ksi$

Check = "OK"

Embedment Depth Calculations:

Projected Embedment Depth: $L_{em} := 5 \cdot ft$

Yield Strength of Rebar: $f_y := 60ksi$

Concrete Strength: $f'_c := 3000psi$

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: $D_{pier} := 6ft$

Cover $c_c := 3in$

Rebar Size: $d_s := 9$ $d_b := \frac{d_s}{8}in = 1.13 \cdot in$

Tie Size: $Tie := 4$

Number of Vertical Rebar: $n := 48$

Check = "N/G"

Anchor Rod Pullout Test:

$\phi_p := 0.75$

$$Pullout := \frac{\phi_p \cdot Fu_{rod} \cdot A_{new}}{1.6} = 82.62 \cdot kip$$

Additional Anchor Rod Calculations

Tower Reactions From tnx

$Moment := 652.3 \cdot kip \cdot ft$ $Axial := 7.5 \cdot kip$ $Shear := 0 \cdot kip$

Calculation of Reactions to Existing and New Anchor Rods

$N_{existing} := 0$
$BC_{existing} := 0 \cdot in$
$D_{existing} := 0 \cdot in$
$A_{existing} := 0in^2$

$N_{new} := 4$
$BC_{new} := 52.5 \cdot in$
$D_{new} := 1.75 \cdot in$
$A_{new} := 1.9 \cdot in^2$

$Fu_{rod} := 125ksi$

Anchor Rod Bracket Calculations

Bracket Design Load

$\phi := 0.75$

$\phi P_{nrod} := \phi \cdot Fu_{rod} \cdot A_{new} = 178.13 \cdot kip$ (Rod Tensile Capacity)

Pipe Design (Bearing Capacity):

TRY:

Size :=
- ○ Pipe 3 xx-Strong
- ◉ HSS 4x4x0.375
- ○ HSS 4x4x0.5
- ○ HSS 5x5x0.5

$F_{ypipe} := 42 \cdot ksi$

$Check_{comp} = "OK"$ $Check_{bear} = "OK"$

Horizontal and Vertical Weld to Pole Checks

Bracket plate thickness	$T := 1.25 \cdot in$	
Pole Grade	$Fy_{pole} := 65ksi$	$Fu_{pole} := 80ksi$
Base Plate Grade	$Fy_{base} := 60ksi$	$Fu_{base} := 75ksi$
Bracket Plate Grade	$Fy_{plate} := 65ksi$	$Fu_{plate} := 80ksi$
Height of vertical weld from base plate	$H := 15 \cdot in$	
	$Notch := 0 \cdot in$	
Plate width	$W := 5.5 \cdot in$	
Gap between Base Plate and Pipe	$Gap := 0 \cdot in$	
Vertical fillet weld size (bracket 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"

Vertical Weld to Pipe (weld on both sides)

Length of Vertical Weld to Pipe	$l_{vweldpipe} := 12in$	
Vertical fillet weld size (bracket to pipe) in sixteenths of an inch	$D_{vpipe} := 6$	$weldsize_{pipe} = \frac{3}{8}$ Dvpipe = weld size in sixteenths of an inch
Electrode Strength Coefficient	$C_1 := 1.03$	AISC, 13th Edition, Table 8-4 pg 8-66
Coefficient for eccentrically Loaded Weld Groups	$C := 3.72$	

Check = "OK"

Plate Check:

Bracket plate thickness	$T = 1.25 \cdot in$
Plate Fy	$Fy_{plate} = 65 \cdot ksi$

Check = "OK"

Embedment Depth Calculations:

Projected Embedment Depth:	$L_{em} := 5.5 \cdot ft$	
Yield Strength of Rebar:	$f_y := 60ksi$	
Concrete Strength:	$f'_c := 3000psi$	
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:	$D_{pier} := 6ft$	
Cover	$c_c := 3in$	
Rebar Size:	$d_s := 9$	$d_b := \frac{d_s}{8} in = 1.13 \cdot in$
Tie Size:	$Tie := 4$	
Number of Vertical Rebar:	$n := 48$	

Check = "OK"

Anchor Rod Pullout Test:

$\phi_p := 0.75$

$$Pullout := \frac{\phi_p \cdot Fu_{rod} \cdot A_{new}}{1.6} = 111.33 \cdot kip$$

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

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

Site Data

BU#: *841291*
Site Name: *STONINGTON*
App #: *365313 Rev. 0*

Anchor Rod Data		
Eta Factor, η	0.5	TIA G (Fig. 4-4)
Qty:	8	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	44	in
Anchor Spacing:	6	in

Plate Data		
W=Side:	44	in
Thick:	2.75	in
Grade:	60	ksi
Clip Distance:	6	in

Stiffener Data (Welding at both sides)		
Configuration:	Unstiffened	
Weld Type:		**
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	37.38	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round

Base Reactions		
TIA Revision:	G	
Factored Moment, Mu:	1433	ft-kips
Factored Axial, Pu:	25	kips
Factored Shear, Vu:	27	kips

Base Plate Results	Flexural Check
Base Plate Stress:	26.0 ksi
PL Design Bending Strength, Φ*Fy:	54.0 ksi
Base Plate Stress Ratio:	48.1% Pass

PL Ref. Data
Yield Line (in):
24.85
Max PL Length:
24.85

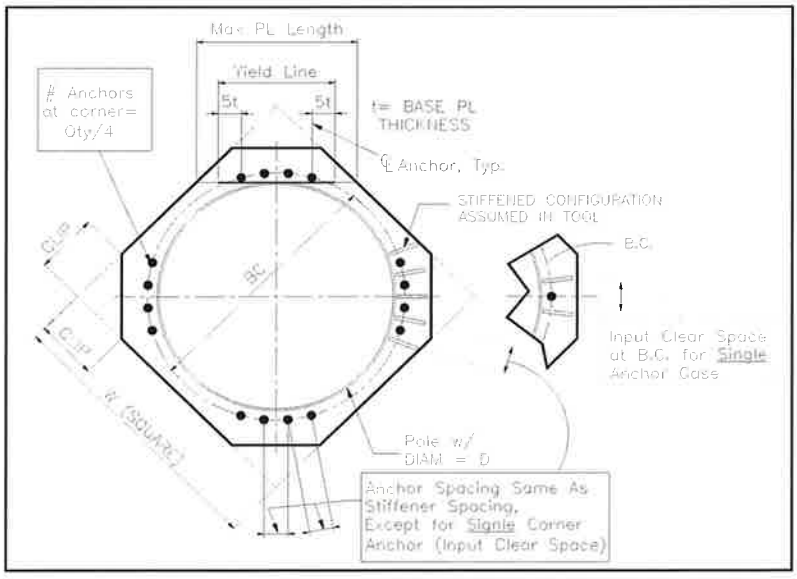
N/A - Unstiffened

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



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

BLACK & VEATCH

Owner:	CROWN CASTLE, INC.	Prepared By:	J. Vibbert
Project Name:	STONINGTON	Date:	12/6/16
Project No.	182896 (841291.1332501)	Verified By:	A. Siegel
Title:	FLANGE AND BRIDGE STIFFENER CALCULATION	Date:	12/14/16
		Page:	1

FLANGE AND BRIDGE STIFFENER CALCULATION

AISC 13th ed

Description	Symbol	Value	Units	Code
Loading Input				
TIA Code		G		
ASIF		1.00		
Failure		100%		
Moment	M	377.8	kip-ft	
Axial	P	6.94	kip	
Shear	S	15.4	kip	
Flange Height	H	110	ft	
Upper Pole Outside Diameter	U Pole OD	21.25	in	
Upper Pole Thickness	U Pole t	0.1875	in	
Lower Pole Outside Diameter	L Pole OD	21.25	in	
Lower Pole Thickness	L Pole t	0.25	in	
Flange Plate Outside Diameter	Plate OD	28.5	in	

Flange Bolt Input and Loading		1st BC	2nd BC	
Quantity	QTY	12		
Diameter	Db	1		in
Material	BMat	A325		
Bolt Circle	BC	25.75		in
Combined Thickness of Flange Plates	th_f	2		in
Relative Moment	RM	270.00		kip-ft
Relative Axial	RP	0.00		kip
Relative Shear	RS	15.40		kip
Deflection:Centroid Ratio	Δ/c	0.00029		

Bridge Stiffener Input and Loading		1st	2nd	3rd	
Quantity	QTY	3			
Check Welds		Yes			
Height at Pole	H	18			in
Thickness	th	1.25			in
Width	W	4			in
Gap to Pole or Flange	g	0.25			in
Plate Yield Strength	fy	50			ksi
Weld Size	t_w	4			in
Weld Strength	Exx	70			ksi
Unbraced Length	L_e	12			in
Relative Moment	RM	107.80			kip-ft
Deflection:Centroid Ratio	Δ/c	0.00029			

FLANGE AND BRIDGE STIFFENER CALCULATION

AISC 13th ed

Description	Symbol	Value		Units	Code
Flange Bolt Capacity					
Bolt Group Area	Total Ag	9.42		in^2	
Bolt Group MOIx	Total MOI	781.15		in^4	
Maximum Tension	Max T	41.94		kip	
Design Tension	Cap A	53.01		kip	
Maximum Shear	Max S	1.28		kip	
Design Shear	SBolt	28.27		kip	
Stress Ratio		**0.79**			J3.7

Bridge Stiffener Capacity		1st	2nd	3rd		
Circle	BC	33.00			in	
Individual Area	Ag	5.00			in^2	
Group Area	Total Ag	15.00			in^2	
Group MOIx	Total MOI	2041.88			in^4	
Max Tension	Max T	52.27			kip	
Max Compression	Max C	26.13			kip	
Design Axial	Cap A	225.00			kip	
Max Shear	Max S	0.00			kip	
Design Shear	Sbolt	150.00			kip	
Axial Stress Ratio		0.23				5-2
Bending Moment	M_{rx}	0.00			kip-ft	
Plastic Modulus	Z_x	5.00			in^3	
Design Moment	M_{cx}	18.75			kip-ft	
Bending Stress Ratio	BSR	0.00				J4.1
Stress Ratio		**0.23**				H1.1

Bridge Stiffener Upper Weld Capacity		1st	2nd	3rd		Table 8-6
Eccentricity	ex	5.88			in	
Weld Length	l	18.00			in	
Weld Factor	a	0.33				
Weld Size	D	64.00			16^{th} in	
Weld Coefficient	C	2.97				
Electrode Coefficient	C_1	1.00				
Stress Ratio		**0.02**				

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *841291*
Site Name: *STONINGTON*
App #: *365313 Rev. 0*

Reactions		
Mu	270.00	ft-kips
Axial, Pu:	0.00	kips
Shear, Vu:	15.40	kips
Elevation:	110	feet

Bolt Threads:
N-Included
Vn=φ(0.45*Ab*Fu)
φ=0.75, φ*Vn (kips):
31.81

Pole Manufacturer:	Other

If No stiffeners, Criteria: TIA G <-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	12		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	100	<-- Disregard	
N/A:	75	<-- Disregard	
Circle (in.):	25.75		

Plate Data		
Diam:	28.5	in
Thick, t:	1	in
Grade (Fy):	65	ksi
Strength, Fu:	80	ksi
Single-Rod B-eff:	5.69	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:	21.25	in
Thick:	0.1875	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Flange Bolt Results

Bolt Tension Capacity, φ*Tn,**B1**:	54.54 kips	
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	54.50 kips	
Max Bolt directly applied Tu:	41.94 Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	0.975 in	
Min PL "treq" for actual **T w/ Pry**:	0.705 in	
Min PL "t1" for actual **T w/o Pry**:	0.856 in	
T allowable w/o Prying:	54.54 kips	α'<0 case
Prying Force, q:	0.00 kips	
Total Bolt Tension=Tu+q:	41.94 kips	

Non-Rigid
φ*Tn
φTn[(1-(Vu/φVn)^2]^0.5

Exterior Flange Plate Results Flexural Check

Compression Side Plate Stress:	40.4 ksi	
Allowable Plate Stress:	58.5 ksi	
Compression Plate Stress Ratio:	69.0%	Pass
No Prying		
Tension Side Stress Ratio, (treq/t)^2:	49.7%	Pass

Non-Rigid
TIA G
φ*Fy
Comp. Y.L. Length:
14.54

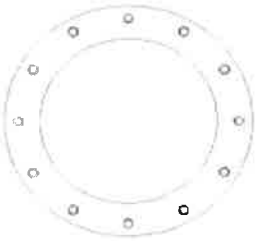
n/a

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

Maximum Allowable Moment of a Circular Pier
Rev.G

Axial Load (Negative for Compression) = -43.10 kips

Pier Properties

Concrete:

Pier Diameter = 6.0 ft

Concrete Area = 4071.5 in^2

Reinforcement:

Clear Cover = 3.00 in

Cage Diameter = 5.41 ft

Bar Size = 9

Bar Diameter = 1.13 in

Bar Area = 1 in^2

Number of Bars = 48

Material Properties

Concrete compressive strength = 3000 psi

Reinforcement yield strength = 60000 psi

Modulus of elasticity = 29000 ksi

Reinforcement yield strain = 0.00207

Limiting compressive strain = 0.003

Axial Loading

Load factor = 1

Reduction factor = 0.9

Factored axial load = -47.8889 kips

Neutral Axis

Distance from extreme edge to neutral axis =	15.97	in
Equivalent compression zone factor =	0.85	
Distance from extreme edge to equivalent compression zone factor =	13.58	in
Distance from centroid to neutral axis =	20.03	in

Compression Zone

Area of steel in compression zone =	13.00	in^2
Angle from centroid of pier to intersection of equivalent compression zone and edge of pier =	51.47	deg
Area of concrete in compression =	532.79	in^2
Force in concrete = 0.85 * f'c * Acc =	1358.61	kips
Total reinforcement forces =	-1310.72	kips
Factored axial load =	-47.89	kips
Force in concrete =	-1358.61	kips
Sum of the forces in concrete =	0.00	kips OK

Maximum Moment

First moment of the concrete area in compression about the centoid =	14892.82	in^3
Distance between centroid of concrete in compression and centroid of pier =	27.95	in
Moment of concrete in compression =	37976.70	in-kips
Total reinforcement moment =	43066.17	in-kips
Nominal moment strength of column =	81042.87	in-kips
Factored moment strength of column =	72938.58	in-kips

Maximum Allowable Moment = 6078.22 ft-kips

Monopole Pier and Pad Foundation

BU # : 841291
Site Name: STONINGTON
App. Number: 365313 Rev. 0
TIA-222 Revision: G

Design Reactions		
Shear, **S**:	27.4	kips
Moment, **M**:	2772.5	ft-kips
Tower Height, **H**:	150	ft
Tower Weight, **Wt**:	43.1	kips
Base Diameter, **BD**:	3.12	ft

Foundation Dimensions		
Depth, **D**:	8	ft
Pad Width, **W**:	22	ft
Neglected Depth, **N**:	4	ft
Thickness, **T**:	3.50	ft
Pier Diameter, **Pd**:	6.00	ft
Ext. Above Grade, **E**:	1.00	ft
BP Dist. Above Pier:	4.5	in.
Clear Cover, **Cc**:	3.0	in

Soil Properties		
Soil Unit Weight, **γ**:	0.120	kcf
Ult. Bearing Capacity, Bc:	30.0	ksf
Angle of Friction, **Φ**:	38	deg
Cohesion, **Co**:	0.000	ksf
Passive Pressure, **Pp**:	0.000	ksf
Base Friction, **μ**:	0.40	

Material Properties		
Rebar Yield Strength, **Fy**:	60000	psi
Concrete Strength, **F'c**:	3000	psi
Concrete Unit Weight, **δc**:	0.150	kcf
Seismic Zone, **z**:	1	

Rebar Properties		
Pier Rebar Size, **Sp**:	9	
Pier Rebar Quanity, **mp**:	48	21
Pad Rebar Size, **Spad**:	7	
Pad Rebar Quanity, **mpad**:	17	17
Pier Tie Size, **St**:	4	3
Tie Quanity, **mt**:	6	6

*assumed steel

Design Checks	Capacity/ Availability	Demand/ Limits	Check
Req'd Pier Diam.(ft)	6	4.615	**OK**
Overturning (ft-kips)	5947.35	2772.50	**46.6%**
Shear Capacity (kips)	197.72	27.40	**13.9%**
Bearing (ksf)	22.50	2.72	**12.1%**
Pad Shear - 1-way (kips)	817.43	290.65	**35.6%**
Pad Shear - 2-way (kips)	2133.96	81.27	**3.8%**
Pad Moment Capacity (k-ft)	1708.99	991.09	**58.0%**
Pier Moment Capacity (k-ft)	6078.22	2923.20	**48.1%**

(Bearing and Stability Checks) Tool for TIA Rev F or G - Application (MP, SST with unitbase)

Site Data

BU#: *841291*
Site Name: *STONINGTON*
App #: *365313 Rev. 0*

Loads Already Factored		
For P (DL)	1.2	<----Disregard
For P,V, and M (WL)	1.35	<----Disregard

Pad & Pier Data		
Base PL Dist. Above Pier:	4.5	in
Pier Dist. Above Grade:	12	in
Pad Bearing Depth, D:	8	ft
Pad Thickness, T:	3.50	ft
Pad Width=Length, L:	22	ft
Pier Cross Section Shape:	Round	<--Pull Down
Enter Pier Diameter:	6.00	ft
Concrete Density:	150.0	pcf
Pier Cross Section Area:	28.27	ft^2
Pier Height:	5.50	ft
Soil (above pad) Height:	4.50	ft

Soil Parameters		
Unit Weight, γ:	120.0	pcf
Ultimate Bearing Capacity, qn:	30.00	ksf
Strength Reduct. factor, ϕ:	0.75	
Angle of Friction, Φ:	38.0	degrees
Undrained Shear Strength, Cu:	0.00	ksf
Allowable Bearing: ϕ*qn:	22.50	ksf
Passive Pres. Coeff., Kp	4.20	

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad Passive Force, Vu):	27.4	kips
Pad Force Location Above D:	1.59	ft
ϕ(Passive Pressure Moment):	43.47	ft-kips
Factored O.T. M(WL), "1.6W":	3029.4	ft-kips
Factored OT (MW-Msoil), M1	2985.90	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	3.52	ft
Sum of Soil Wedges Wt:	43.56	kips
Soil Wedges ecc, K1:	9.69	ft
Ftg+Soil above Pad wt:	523.5	kips
Unfactored (Total ftg-soil Wt):	567.08	kips
1.2D. **No Soil Wedges**.	671.32	kips
0.9D. **With Soil Wedges**	542.70	kips

Resistance due to Cohesion (Vertical)		
ϕ*(1/2*Cu)(Total Vert. Planes)	0.00	kips
Cohesion Force Eccentricity, K2	0.00	ft

Monopole Base Reaction Forces		
TIA Revision:	G	<--Pull Down
Factored DL Axial, PDu:	43.1	kips
Factored WL Axial, PWu:	0	kips
Factored WL Shear, Vu:	27.4	kips
Factored WL Moment, Mu:	2772.5	ft-kips

Load Factor	Shaft Factored Loads		
1.00	1.2D+1.6W, Pu:	43.1	kips
0.90	0.9D+1.6W, Pu:	32.325	kips
1.00	Vu:	27.4	kips
	Mu:	2772.5	ft-kips

1.2D+1.6W Load Combination, Bearing Results:

(**No Soil Wedges**) [Reaction+Conc+Soil]	671.32	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	2985.90	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 =	4.45	ft
Orthogonal qu=	2.51	ksf
qu/ϕ*qn Ratio=	**11.15%**	**Pass**

Diagonal Direction:

ecc2 = (0.707M1)/P1 =	3.14	ft
Diagonal qu=	2.72	ksf
qu/ϕ*qn Ratio=	**12.09%**	**Pass**

Run <-- Press Upon Completing All Input

Overturning Stability Check

0.9D+1.6W Load Combination, Bearing Results:

(**w/ Soil Wedges**) [Reaction+Conc+Soil]	542.70	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	2606.09	ft-kips

Orthogonal ecc3 = M2/P2 =	4.80	ft
Ortho Non Bearing Length,NBL=	9.60	ft
Orthogonal qu=	2.10	ksf
Diagonal qu=	2.35	ksf

Max Reaction Moment (ft-kips) so that qu=φ*qn = 100% Capacity Rating			
Actual M:	2772.50		
M Orthogonal:	5947.35	**46.62%**	**Pass**
M Diagonal:	5947.35	**46.62%**	**Pass**

APPENDIX D

MODIFICATION DRAWINGS

MONOPOLE REINFORCEMENT DRAWINGS

SITE NAME: STONINGTON
BU NUMBER: 841291

SITE ADDRESS:
40 TAUGWONK ROAD UNIT 22
STONINGTON, CT 06378
NEW LONDON COUNTY, USA

ATTENTION ALL CONTRACTORS

ANYTIME YOU ACCESS A CROWN SITE FOR ANY REASON YOU ARE TO CALL THE CROWN NOC UPON ARRIVAL AND DEPARTURE, DAILY AT 800-786-7011.

CODE COMPLIANCE

THIS REINFORCEMENT DESIGN IS BASED ON THE REQUIREMENTS OF TIA-222-G STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS USING A 3-SECOND GUST WIND SPEED OF 108 MPH WITH NO ICE, 50 MPH WITH 0.75 INCH ICE THICKNESS AND 60 MPH UNDER SERVICE LOADS, EXPOSURE CATEGORY C.

TOWER INFORMATION

TOWER MANUFACTURER / DWG#:	ITT MEYER / DWG #UNKNOWN
TOWER HEIGHT / TYPE:	150 FT MONOPOLE TOWER
TOWER LOCATION:	LATITUDE 41° 22' 58.17"
DATUM: NAD 1983	LONGITUDE -71° 54' 6.53"
STRUCTURAL DESIGN DRAWING:	B&V / WO #1332501
STRUCTURAL ANALYSIS REPORT:	B&V / WO #1318159
APPLICATION ID:	365313 REV #0

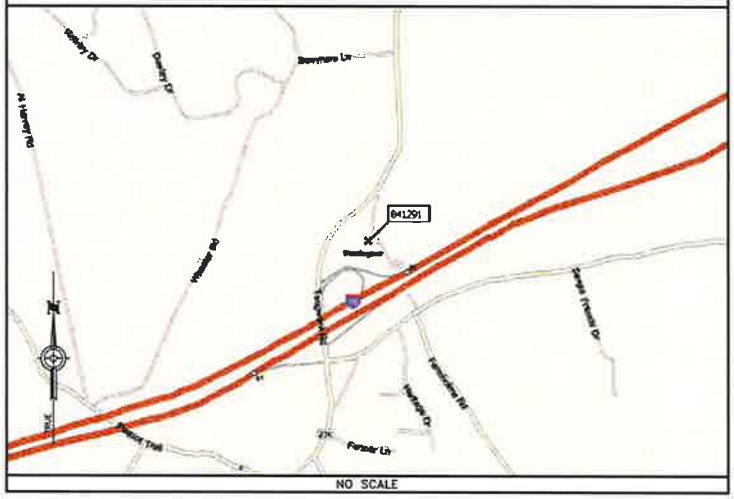
PROJECT CONTACTS

CROWN PROJECT MANAGER
DAN VADNEY
(518) 373-3510
DAN.VADNEY@CROWNCASTLE.COM

CROWN CONSTRUCTION MANAGER
JASON D'AMICO
(860) 209-0104
JASON.D'AMICO@CROWNCASTLE.COM

BLACK & VEATCH CONTACTS
CROWNCASTLERFI@BV.COM
PATRICK DAVIS
(913) 458-6984

LOCATION MAP



NO SCALE

DRIVING DIRECTIONS

FROM 2054 STONINGTON I 95 NORTHBOUND TO EXIT 91. TURN LEFT AT BOTTOM OF RAMP, GO UNDERNEATH I-95 AND CONTINUE APPROX .5 MILE TO TAUGWONK SPUR ON RIGHT. TURN RIGHT AT 2ND DRIVEWAY GO AROUND BACK LAST ROOM ON END OF BUILDING IS OURS. T-1 INFO: GSM- DHXV 238759 DHXV 238760 TDMA- DL0 DHPC 969169 DL1 DHPV 887867 POWER CO.: CL&P METER # -

DRAWING INDEX

SHEET NO:	SHEET TITLE
TM-1	TITLE PAGE
TM-2	MODIFICATION INSPECTION CHECKLIST
TM-3	NOTES
TM-4	NEXGEN2 BOLT SPECIFICATIONS & TIGHTENING PROCEDURE
TM-5	FORGBOLT BOLT SPECIFICATIONS & TIGHTENING PROCEDURE
TM-6	AJAX ONESIDE BOLT SPECIFICATIONS & TIGHTENING PROCEDURE
TM-7	TOWER ELEVATION
TM-8	COAX FEEDLINE PLAN
TM-9	TOWER SECTIONS
TM-10	CUSTOM FLAT PLATE DETAILS
TM-11	BASE PLATE ANCHOR ROD CHAIRS

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS & EXISTING DIMENSIONS & CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH
6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	182896
DRAWN BY:	TYW
CHECKED BY:	JDV

REV	DATE	DESCRIPTION
0	12/19/16	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
PING JIANG
30767
LICENSED PROFESSIONAL ENGINEER
12/19/2016

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

BU #841291
WO #1332501
STONINGTON
40 TAUGWONK RD UNIT 22
STONINGTON, CT 06378
NEW LONDON COUNTY, USA

SHEET TITLE
TITLE PAGE

SHEET NUMBER
TM-1

MODIFICATION INSPECTION NOTES

GENERAL

1. THE MODIFICATION INSPECTION IS A VISUAL INSPECTION OF TOWER MODIFICATIONS AND A REVIEW OF CONSTRUCTION INSPECTIONS AND OTHER REPORTS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS, AS DESIGNED BY THE ENGINEER OF RECORD.
2. THE MODIFICATION INSPECTION IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION ITSELF, NOR DOES THE MODIFICATION INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTENT RESIDES WITH THE ENGINEER OF RECORD AT ALL TIMES.
3. ALL MI'S SHALL BE CONDUCTED BY A CROWN ENGINEERING SERVICE VENDOR (AESV) THAT IS APPROVED TO PERFORM ELEVATED WORK FOR CROWN. SEE CROWN ENG-BUL-10173, "APPROVED MI VENDORS".
4. TO ENSURE THAT THE REQUIREMENTS OF THE MODIFICATION INSPECTION ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MODIFICATION INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS PO OR PAYMENT IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN COMMUNICATION WITH THE OTHER PARTY. CONTACT LISTED ON TITLE SHEET SHALL BE CONTACTED IF SPECIFIC INSPECTOR CONTACT INFORMATION IS NOT KNOWN.
5. ALL REQUEST FOR INFORMATION (RFI'S) SHALL BE MADE AVAILABLE TO THE MODIFICATION INSPECTOR BY GC.
6. REFER TO CROWN ENG-SOW-10007, "MODIFICATION INSPECTION SOW", FOR FURTHER DETAILS AND REQUIREMENTS.

MODIFICATION INSPECTOR

1. THE MODIFICATION INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS RECEIVING A PURCHASE ORDER (PO) OR PAYMENT FOR THE MODIFICATION INSPECTION TO:
   - REVIEW THE REQUIREMENTS OF THE MODIFICATION INSPECTION CHECKLIST.
   - WORK WITH GC TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS.
   - DISCUSS ANY SITE SPECIFIC INSPECTIONS OR CONCERNS.
2. THE MODIFICATION INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GENERAL CONTRACTOR (GC) INSPECTION AND TEST REPORTS, REVIEWING THE DOCUMENTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING THE IN-FIELD INSPECTIONS, AND SUBMITTING THE MODIFICATION INSPECTION REPORT TO CROWN.

GENERAL CONTRACTOR

1. THE GC IS REQUIRED TO CONTACT THE MODIFICATION INSPECTOR AS SOON AS RECEIVING A PO OR PAYMENT FOR THE MODIFICATION INSTALLATION OR TURNKEY PROJECT TO:
   - REVIEW THE REQUIREMENTS OF THE MODIFICATION INSPECTION CHECKLIST.
   - WORK WITH MODIFICATION INSPECTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE MODIFICATION INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS.
   - BETTER UNDERSTAND ALL INSPECTION AND TESTING REQUIREMENTS.
2. THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MODIFICATION INSPECTION CHECKLIST AND CROWN ENG-SOW-10007.

RECOMMENDATIONS

1. THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING A MODIFICATION INSPECTION REPORT:
   - IT IS SUGGESTED THAT THE GC PROVIDE MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLY 10 BUSINESS DAYS, TO THE MODIFICATION INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MODIFICATION INSPECTION TO BE CONDUCTED.
   - THE GC AND MODIFICATION INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
   - WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MODIFICATION INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS.
   - IT MAY BE BENEFICIAL TO INSTALL ALL TOWER MODIFICATIONS PRIOR TO CONDUCTING THE FOUNDATION INSPECTIONS TO ALLOW FOUNDATION AND MODIFICATION INSPECTION(S) TO COMMENCE IN ONE SITE VISIT.
   - WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MODIFICATION INSPECTOR ON-SITE DURING THE MODIFICATION INSPECTION TO HAVE ANY DEFICIENCIES CORRECTED DURING THE INITIAL MODIFICATION INSPECTION. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MODIFICATION INSPECTION CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MODIFICATION INSPECTOR IS ON SITE.

CANCELLATION OR DELAY IN SCHEDULED MODIFICATION INSPECTION

1. IF THE GC AND MODIFICATION INSPECTOR AGREE TO A DATE ON WHICH THE MODIFICATION INSPECTION WILL BE CONDUCTED, AND EITHER PARTY CANCELS OR DELAYS, THE TOWER OWNER SHALL NOT BE RESPONSIBLE FOR COSTS, FEES, LOSS OF DEPOSITS AND/OR OTHER PENALTIES RELATED TO THE CANCELLATION OR DELAY INCURRED BY EITHER PARTY FOR ANY TIME (E.G. TRAVEL AND LODGING, COSTS OF KEEPING EQUIPMENT ON-SITE, ETC). EXCEPTIONS MAY BE MADE IN THE EVENT THAT THE DELAY/CANCELLATION IS CAUSED BY WEATHER OR OTHER CONDITIONS THAT MAY COMPROMISE THE SAFETY OF THE PARTIES INVOLVED.

CORRECTION OF FAILING MODIFICATION INSPECTION

1. IF THE MODIFICATION INSTALLATION SHOULD FAIL THE MODIFICATION INSPECTION ("FAILED MODIFICATION INSPECTION"), THE GC SHALL WORK WITH MODIFICATION INSPECTOR TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:
   - CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT DOCUMENTS AND COORDINATE A SUPPLEMENTAL MODIFICATION INSPECTION.
   - OR, WITH TOWER OWNER'S APPROVAL, THE GC MAY WORK WITH ENGINEER OF RECORD TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION.

VERIFICATION INSPECTIONS

1. TOWER OWNER RESERVES THE RIGHT TO CONDUCT A VERIFICATION INSPECTION TO VERIFY THE ACCURACY AND COMPLETENESS OF PREVIOUSLY COMPLETED MODIFICATION INSPECTION(S) ON TOWER MODIFICATION PROJECTS.
2. ALL VERIFICATION INSPECTIONS SHALL BE HELD TO THE SAME SPECIFICATIONS AND REQUIREMENTS IN THE CONTRACT DOCUMENTS AND IN ACCORDANCE WITH CROWN ENG-SOW-10007.
3. VERIFICATION INSPECTION MAY BE CONDUCTED BY AN INDEPENDENT FIRM AFTER A MODIFICATION PROJECT IS COMPLETED, AS MARKED BY THE DATE OF AN ACCEPTED "PASSING MODIFICATION INSPECTION" OR "PASS AS NOTED MODIFICATION INSPECTION" REPORT FOR THE ORIGINAL PROJECT.

REQUIRED PHOTOS

1. BETWEEN THE GC AND THE MODIFICATION INSPECTOR, THE FOLLOWING PHOTOGRAPHS ARE TO BE TAKEN AND INCLUDED IN THE MODIFICATION INSPECTION REPORT:
   - PRE-CONSTRUCTION GENERAL SITE CONDITIONS.
   - PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION.
     - RAW MATERIALS
     - PHOTOS OF CRITICAL DETAILS
     - FOUNDATION MODIFICATIONS
     - REBAR PLACEMENT
     - FOUNDATION DEPTH VERIFICATION
     - SOIL COMPACTION PROCESS
     - COLD GALVANIZED VERIFICATION
     - GUY WIRE GROUNDING SYSTEM VERIFICATION
     - POST INSTALL ANCHOR DRILL HOLE DIAMETER AND DEPTH
     - WELD PREPARATION
     - WELD INSTALLATION PRIOR TO SURFACE COATING
     - BOLT INSTALLATION AND TORQUE
     - FINAL INSTALLED CONDITION
     - SURFACE COATING REPAIR
   - POST CONSTRUCTION PHOTOGRAPHS.
     - FINAL IN FIELD CONDITION
   - ANY OTHER PHOTOS DEEMED RELEVANT TO SHOW COMPLETE DETAILS OF MODIFICATION.

   THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS PLEASE REFER TO CROWN ENG-SOW-10007.
2. PHOTOS OF ABOVE GROUND MODIFICATIONS TAKEN FROM GROUND LEVEL SHALL BE CONSIDERED INADEQUATE.

MODIFICATION INSPECTION CHECKLIST

BEFORE CONSTRUCTION		DURING CONSTRUCTION		AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED	REPORT ITEM	CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED	REPORT ITEM	CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED	REPORT ITEM
X	MODIFICATION INSPECTION CHECKLIST DRAWING	X	CONSTRUCTION INSPECTION	X	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWING(S)
X	FABRICATOR QUALITY MANAGEMENT DOCUMENTATION	–	FOUNDATION INSPECTION/REBAR INSPECTION	X	POST INSTALLED ANCHOR ROD PULL-OUT TESTING (OR ALTERNATE MANUFACTURER'S APPROVED METHOD)
X	FABRICATOR CERTIFIED WELD INSPECTION	–	CONCRETE COMPRESSIVE STRENGTH AND SLUMP TESTS (7 DAY AND 28 DAY CYLINDER BREAKS - REPORT REQUIRED)	–	HELICAL PILE PULL-OUT TESTING (OR ALTERNATE MANUFACTURER'S APPROVED METHOD)
X	MATERIAL TEST REPORTS	X	POST INSTALLED ANCHOR ROD VERIFICATION	–	HOLLOW BAR ANCHOR PULL-OUT TESTING (OR ALTERNATE MANUFACTURER'S APPROVED METHOD)
–	FABRICATION NDE INSPECTION	–	BASE PLATE GROUT VERIFICATION	X	PHOTOGRAPHS
X	PACKING SLIPS	X	THIRD PARTY CERTIFIED WELD INSPECTION (NDE REPORT REQUIRED)	ADDITIONAL TESTING AND INSPECTIONS:	
X	NDE REPORT OF MONOPOLE BASE PLATE PER ENG-SOW-10033	–	EARTHWORK: LIFT PLACEMENT AND DENSITY (REPORT REQUIRED)		
ADDITIONAL TESTING AND INSPECTIONS:		X	ON-SITE COLD GALVANIZED VERIFICATION		
		–	GUY WIRE TENSION REPORT		
		X	GC AS-BUILT DOCUMENTS		
		ADDITIONAL TESTING AND INSPECTIONS:			

NOTE: NDE DENOTES NON-DESTRUCTIVE EXAMINATION

NOTE: X DENOTES A DOCUMENT REQUIRED FOR THE MODIFICATION INSPECTION REPORT
– DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE MODIFICATION INSPECTION REPORT

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	182896
DRAWN BY:	TYW
CHECKED BY:	JDV

REV	DATE	DESCRIPTION
0	12/19/16	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
PING JIANG
30767
LICENSED PROFESSIONAL ENGINEER

12/19/2016

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

BU #841291
WO #1332501
STONINGTON
40 TAUGWONK RD UNIT 22
STONINGTON, CT 06378
NEW LONDON COUNTY, USA

SHEET TITLE
MODIFICATION INSPECTION CHECKLIST

SHEET NUMBER
TM-2

GENERAL NOTES

1. ALL WORK PRESENTED ON THESE DRAWINGS MUST BE COMPLETED BY THE CONTRACTOR UNLESS NOTED OTHERWISE. THE CONTRACTOR MUST BE EXPERIENCED IN THE PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED HEREIN. BY ACCEPTANCE OF THIS ASSIGNMENT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY, THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED, THAT HE IS PROPERLY LICENSED, AND THAT HE IS PROPERLY REGISTERED TO DO THIS WORK IN THE STATE AND/OR COUNTY IN WHICH IT IS TO BE PERFORMED.
2. THE GENERAL NOTES AND TYPICAL DETAILS ARE APPLICABLE TO ALL PARTS OF THE STRUCTURE AND SHALL BE READ IN CONJUNCTION WITH THE STRUCTURAL DRAWINGS AND PROJECT SPECIFICATIONS.
3. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING APPROVALS FROM ALL AUTHORITIES HAVING JURISDICTION FOR THIS PROJECT AND SHALL NOTIFY THE APPLICABLE JURISDICTIONAL (STATE, COUNTY, OR CITY) ENGINEER 24 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ABIDING BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
5. ERECT GUARDS AND BARRIERS PER APPLICABLE LABOR AND CONSTRUCTION SAFETY REGULATIONS.
6. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS, POSSIBLE INTERFERENCES, AND DIMENSIONS BEFORE PROCEEDING WITH THE WORK. REPORT ANY AND ALL DISCREPANCIES TO THE ENGINEER OF RECORD (EOR) AND FIELD PERSONNEL IMMEDIATELY. ANY AND ALL FIELD CHANGES SHALL BE APPROVED AND DOCUMENTED BY THE EOR PRIOR TO FIELD IMPLEMENTATION.
7. ALL MATERIALS AND WORKMANSHIP SHALL BE WARRANTED FOR TWO (2) YEARS FROM THE DATE OF COMPLETED CONSTRUCTION.
8. USE ONLY THE LATEST ISSUES OF ANY APPLICABLE CODES, STANDARDS, OR REGULATIONS MENTIONED IN THE FOLLOWING NOTES AND SPECIFICATIONS, UNO.
9. ALL WORKMANSHIP SHALL BE IN ACCORDANCE WITH ANSI, ASTM, ACI, TIA, AND AISC STANDARDS AS REFERENCED IN THE APPLICABLE CODE.
10. STRUCTURAL ELEMENTS SHOWN ON THESE DRAWINGS ARE DESIGNED IN ACCORDANCE WITH APPLICABLE BUILDING CODES/STANDARDS. ALL CONSTRUCTION, EXCEPT WHERE NOTED OTHERWISE, SHALL COMPLY WITH THOSE CODES/STANDARDS.
11. ALL MATERIALS AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS, AND IN CONFORMANCE WITH THE DRAWINGS. ANY AND ALL SUBSTITUTIONS MUST BE DULY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER OF RECORD PRIOR TO FABRICATION AND INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF THE MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
12. ALL MANUFACTURER'S HARDWARE ASSEMBLY INSTRUCTIONS SHALL BE FOLLOWED EXACTLY AND SHALL SUPERSEDE ANY CONFLICTING NOTES ENCLOSED HEREIN.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS ALSO RESPONSIBLE FOR ENSURING THAT ALL CONSTRUCTION PROCEDURES MEET THE REQUIREMENTS OF OSHA, THE OWNER, AND ALL OTHER APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY REGULATIONS. CONSTRUCTION SHALL BE PERFORMED ONLY IN "GOOD WEATHER". "GOOD WEATHER" MEANS LITTLE OR NO WIND AND RAIN AND MINIMUM TEMPERATURE OF 50 DEGREES F. CONTACT ENGINEER FOR ADDITIONAL INSTRUCTIONS IF "GOOD WEATHER" CANNOT BE ACHIEVED.
14. ACCESS TO THE PROPOSED WORK SITE MAY BE RESTRICTED. THE CONTRACTOR SHALL COORDINATE INTENDED CONSTRUCTION ACTIVITY, INCLUDING WORK SCHEDULE AND MATERIAL ACCESS, WITH THE RESIDENT LEASING AGENT.
15. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SAFEGUARD ALL EXISTING STRUCTURES OR BURIED SERVICES AFFECTED BY THIS CONSTRUCTION. CONTRACTOR IS ALSO RESPONSIBLE FOR TEMPORARILY RELOCATING ANY LINES OR STRUTS AS NECESSARY TO COMPLETE THE REQUIRED WORK.
16. STRUCTURAL DESIGN IS FOR THE COMPLETE CONDITION ONLY. THE CONTRACTOR MUST BE COGNIZANT THAT THE REMOVAL OF ANY STRUCTURAL COMPONENT OF AN EXISTING TOWER HAS THE POTENTIAL TO CAUSE THE PARTIAL OR COMPLETE COLLAPSE OF THE STRUCTURE. ALL NECESSARY PRECAUTIONS MUST BE TAKEN TO ENSURE STRUCTURAL INTEGRITY, INCLUDING, BUT NOT LIMITED TO, ENGINEERING ASSESSMENT OF CONSTRUCTION STRESSES WITH INSTALLATION MAXIMUM WIND SPEED AND/OR TEMPORARY BRACING AND SHORING.
17. DO NOT SCALE DRAWINGS.
18. FOR THIS ANALYSIS AND MODIFICATION, THE TOWER HAS BEEN ASSUMED TO BE IN GOOD CONDITION WITHOUT ANY DEFECTS. IF THE CONTRACTOR DISCOVERS ANY INDICATION OF AN EXISTING STRUCTURAL DEFECT, CONTACT THE ENGINEER OF RECORD IMMEDIATELY.
19. MODIFICATION WORK SHALL BE COMPLETED IN CALM WIND CONDITIONS / OR APPROPRIATE WIND SPEED FOR THE TYPE OF MODIFICATION WORK TO BE INSTALLED.
20. THE CLIMBING FACILITIES, SAFETY CLIMB AND ALL PARTS THEREOF SHALL NOT BE IMPEDED, MODIFIED OR ALTERED WITHOUT THE EXPRESS APPROVAL OF THE ENGINEER OF RECORD.
21. CONTRACTOR TO VERIFY REQUIRED STEEL PLATE LENGTHS FROM BOTTOM OF SECTION TO BOTTOM OF NEXT SECTION.
22. THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES AND PROCEDURES.
23. ALL CHANGES/ALTERNATES/REVISIONS TO THESE DRAWINGS SHALL BE DOCUMENTED BY REQUEST FOR INFORMATION (RFI) FORM APPROVED BY ENGINEER OF RECORD. FINAL WORK AUTHORIZATION AND ALL CHANGE ORDERS SHALL BE APPROVED BY CLIENT AND/OR CLIENT REPRESENTATIVE PRIOR TO PROCEEDING WITH ANY WORK THAT DEVIATES FROM THE ORIGINAL DESIGN, SCOPE, PRICE AND/OR SCHEDULE.
24. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSI/TIA-1019 (LATEST EDITION), OSHA, AND GENERAL INDUSTRY STANDARDS. ALL RIGGING PLANS SHALL ADHERE TO ANSI/TIA-1019 (LATEST EDITION) INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION.
25. IN THE EVENT OF AN EMERGENCY, CONTRACTOR SHALL CONTACT BLACK & VEATCH AND CROWN CASTLE PERSONNEL TO REPORT ANY EVENT OR EMERGENCY INCIDENT AT ANY CROWN CASTLE TOWER SITE PER THE CONTACT INFORMATION PROVIDED ON SHEET TM-1.
26. ANY WORK PERFORMED WITHOUT A PREFABRICATION MAPPING IS DONE AT THE RISK OF THE GC AND/OR FABRICATOR.

STRUCTURAL STEEL NOTES

1. DESIGN, FABRICATION, ERECTION, ALTERATION AND MAINTENANCE SHALL CONFORM TO THE FOLLOWING, UNLESS NOTED OTHERWISE (UNO):
   A. TIA-222: STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS
   B. TIA-1019-A: INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS
   C. AISC: MANUAL OF STEEL CONSTRUCTION
2. ALL STRUCTURAL ELEMENTS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS, UNO.
   A. STRUCTURAL STEEL, ASTM A572 GRADE 65 (FY = 65 KSI).
   B. ALL BOLTS, ASTM A325 TYPE 1 GALVANIZED HIGH STRENGTH BOLTS.
   C. ALL NUTS, ASTM A563 CARBON AND ALLOY STEEL NUTS.
   D. ALL WASHERS, ASTM F436 HARDENED STEEL WASHERS.
3. ALL HOLES SHALL BE CUT WITH A GRINDER OR DRILLED. HOLES SHALL NOT BE FLAME CUT THRU STEEL UNLESS APPROVED BY THE ENGINEER OF RECORD.
4. ALL FASTENERS SHALL NOT BE REUSED.
5. A NUT LOCKING DEVICE SHALL BE INSTALLED ON ALL PROPOSED AND/OR REPLACED ASTM A325 BOLTS.
6. ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH SUCH THAT THE END OF THE BOLT BE AT LEAST FLUSH WITH THE FACE OF THE NUT. IT IS NOT PERMITTED FOR THE BOLT END TO BE BELOW THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETED.
7. HOT-DIP GALVANIZE ALL ITEMS, UNO.
   GALVANIZE PER ASTM A123, ASTM A153/A153M OR ASTM A653 G90, AS APPLICABLE.
8. FOR A LIST OF CROWN APPROVED COLD GALVANIZING COMPOUNDS, REFER TO CROWN ENG-BUL-10149, "TOWER PROTECTIVE COATINGS BULLETIN".
9. AFTER FINAL INSPECTION, ALL EXPOSED STRUCTURAL STEEL AS THE RESULT OF THIS SCOPE OF WORK INCLUDING WELDS, FIELD DRILLED HOLES, AND SHAFT INTERIORS (WHERE ACCESSIBLE), SHALL BE CLEANED AND COLD GALVANIZING APPLIED BY BRUSH IN ACCORDANCE WITH CROWN ENG-BUL-10149, "TOWER PROTECTIVE COATINGS BULLETIN". PHOTO DOCUMENTATION IS REQUIRED TO BE SUBMITTED TO THE MI INSPECTOR.

DETAIL DRAWINGS SHALL GOVERN OVER ANY VARIANCE FROM THIS SHEET

WELDING NOTES

1. ALL WELDING SHALL BE IN ACCORDANCE WITH THE AWS D1.1/D1.1M, "STRUCTURAL WELDING CODE-STEEL".
2. ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS.
3. ALL ARC WELDING ON CROWN STRUCTURES SHALL BE DONE IN ACCORDANCE WITH THE CROWN ENG-PLN-10015, "CUTTING AND WELDING SAFETY PLAN" AND AWS D1.1 (LATEST EDITION). THIS SHALL INCLUDE A CERTIFIED WELDING INSPECTOR (CWI) FOR ACCEPTANCE OR REJECTION OF ALL WELDING OPERATIONS, PRE-DURING-POST, USING THE ACCEPTANCE CRITERIA OF AWS D1.1. THE CWI SHALL WORK WITH THE QC ON THE LEVEL OF INTERACTION NEEDED TO CONDUCT THE WELDING INSPECTION. THE CERTIFIED WELDING INSPECTION IS THE RESPONSIBILITY OF THE GC.
4. FOR ALL WELDING, USE E8OXX ELECTRODES FOR SMAW PROCESS AND E8XT-XX ELECTRODES FOR FCAW PROCESS, UNO.
5. SURFACES TO BE WELDED SHALL BE FREE FROM SCALE, SLAG, RUST, MOISTURE, GREASE OR ANY OTHER FOREIGN MATERIAL THAT WOULD PREVENT PROPER WELDING. GRIND THE SURFACE ADJACENT TO THE WELD FOR A DISTANCE OF 2" MINIMUM ALL AROUND. ENSURE BOTH AREAS ARE 100% FREE OF ALL GALVANIZING.
6. REPAIR THE GALVANIZED COATING. ALL AREAS AFFECTED BY THE FIELD DRILLING, FIELD GRINDING AND FIELD WELDING, BOTH INSIDE AND OUTSIDE THE MONOPOLE, SHALL BE REPAIRED PER CROWN DOCUMENT ENG-STD-10149. PRODUCTS TO BE APPLIED IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. AREAS THAT HAVE BEEN TOUCHED UP SHOULD BE INSPECTED AS PART OF THE ROUTINE MAINTENANCE OF THE STRUCTURE. NO SPRAY PAINT IS ALLOWED. AFTER ZINC-RICH PAINT IS DRY, OVERCOAT WITH OWNER'S PAINT SPECIFICATIONS, APPLIED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
7. DO NOT WELD IF THE TEMPERATURE OF THE STEEL IN THE VICINITY OF THE WELD AREA IS BELOW 0° F. WHEN THE TEMPERATURE IS BETWEEN 0° F AND 32° F, PREHEAT AND MAINTAIN THE STEEL IN THE VICINITY OF THE WELD AREA AT 70° F DURING THE WELDING PROCESS.
8. DO NOT WELD ON WET OR FROST-COVERED SURFACES & PROVIDE ADEQUATE PROTECTION FROM HIGH WINDS.
9. FIELD NDE MINIMUM REQUIREMENTS
   - FOR NEW BASE STIFFENERS (INCLUSIVE OF TRANSITION STIFFENERS) AND ANCHOR ROD BRACKETS, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY UT. ALL PARTIAL JOINT PENETRATION AND FILLET WELDS SHALL BE 100% INSPECTED BY MT.
   - FOR NEW FLAT PLATE REINFORCEMENT AT THE BASE OF THE TOWER, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY UT. ALL PARTIAL JOINT PENETRATION AND FILLET WELDS SHALL BE 100% INSPECTED BY MT, BUT MAY BE LIMITED TO A HEIGHT OF 10'-0".
   - FOR NDE OF THE EXISTING BASE PLATE CIRCUMFERENTIAL WELD, GC SHALL REFERENCE THE MI CHECKLIST FOR APPLICABILITY. PLEASE SEE ENG-SOW-10033: TOWER BASE PLATE NDE, AND ENG-BUL-10051: NDE REQUIREMENTS FOR MONOPOLE BASEPLATE TO PREVENT CONNECTION FAILURE. NOTIFY THE EOR AND CROWN ENGINEERING IMMEDIATELY IF ANY CRACKS ARE SUSPECTED OR HAVE BEEN IDENTIFIED. THE NDE SHALL INCLUDE ALL EXISTING MODIFICATIONS THAT HAVE BEEN WELDED TO THE BASE PLATE.
   - ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.
10. MOVE ALL COAX AND OTHER FLAMMABLE MATERIALS FROM ANY AREA THAT MAY BE HEATED DURING CONSTRUCTION.
11. CONTRACTOR SHALL MAKE PROPER PRECAUTIONS AND PROCEDURES TO PROTECT THE STRUCTURE FROM CATCHING FIRE DURING ALL WELDING OPERATIONS. THE FOLLOWING FIRE SAFETY PREVENTION PROTOCOL IS THE MINIMUM REQUIREMENTS DURING WELDING OPERATIONS. ALSO REFERENCE CROWN DOCUMENT ENG-BUL-10172 FOR ADDITIONAL WELDING REQUIREMENTS.
   - 500 GALLON WATER TANK WITH PUMP TO BE ON SITE AT ALL TIMES.
   - 2 FIRE EXTINGUISHERS ON SITE AT ALL TIMES.
   - 2 MAN FIRE WATCH ON ANY ADJACENT STRUCTURES, FIELDS AND POLE.
   - INTERMITTENT COOLING OF WELDED SURFACE TO REDUCE HEAT IN STRUCTURE.

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	182896
DRAWN BY:	TYW
CHECKED BY:	JDV

REV	DATE	DESCRIPTION
0	12/19/16	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
PING JIANG
30767
LICENSED PROFESSIONAL ENGINEER

12/19/2016

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BU #841291
WO #1332501
STONINGTON
40 TAUGWONK RD UNIT 22
STONINGTON, CT 06378
NEW LONDON COUNTY, USA

SHEET TITLE
NOTES

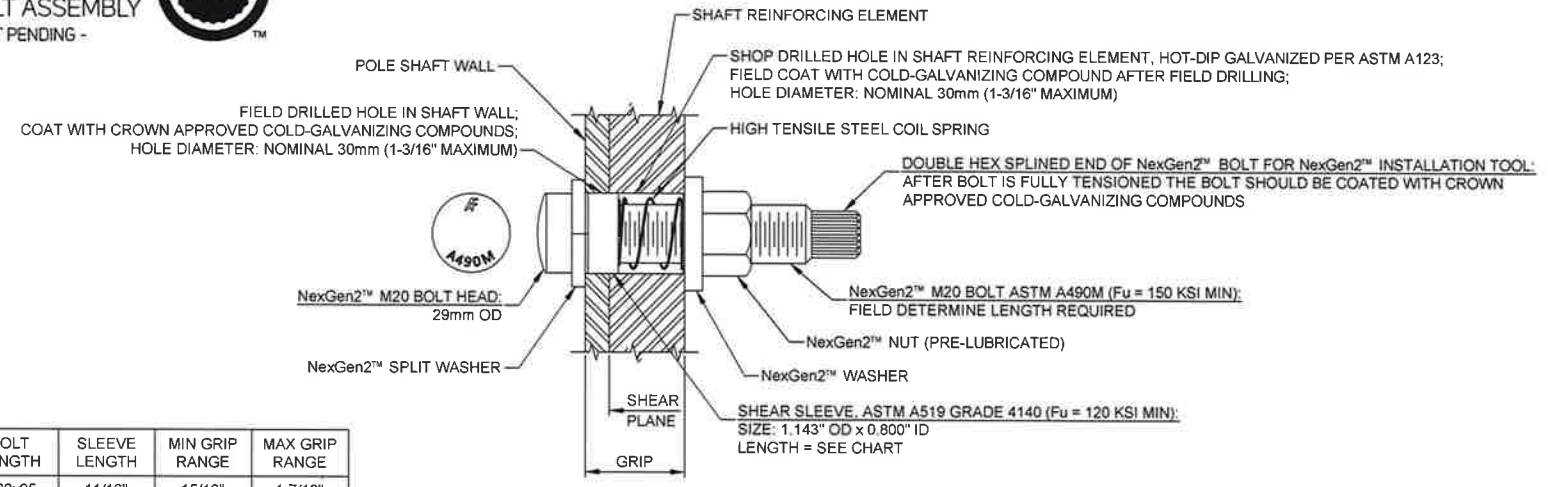
SHEET NUMBER
TM-3

NEXGEN2 BLIND BOLT ASSEMBLY

- PATENT PENDING -

INTERIOR OF POLE SHAFT

EXTERIOR OF POLE SHAFT



TYPICAL NG2 BOLT DETAIL

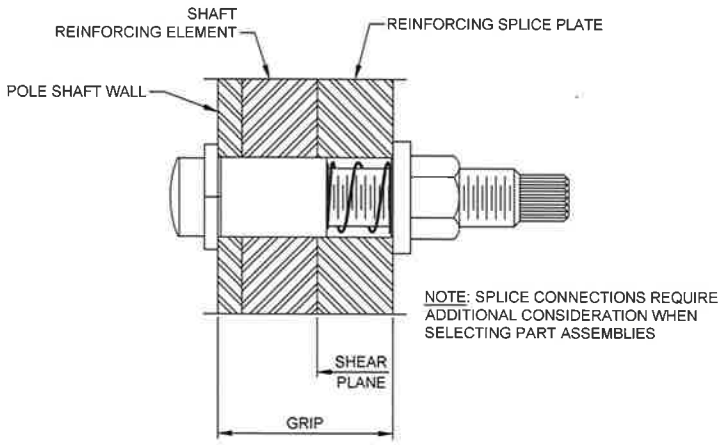
PART NUMBER	BOLT LENGTH	SLEEVE LENGTH	MIN GRIP RANGE	MAX GRIP RANGE
M20x36	M20x95	11/16"	15/16"	1-7/16"
M20x48	M20x95	1-3/16"	1-7/16"	1-7/8"
M20x57	M20x95	1-5/8"	1-7/8"	2-1/4"
M20x68	M20x135	2"	2-1/4"	2-11/16"
M20x96	M20x135	2-7/16"	2-11/16"	3-3/4"
M20x127	M20x165	3"	3-3/4"	5"
M20x212	M20x250	4"	5"	8-5/16"

MANUFACTURER:
ALLFASTENERS
15401 COMMERCE PARK DRIVE, BROOKPARK, OHIO, USA 44142
PHONE: 440-232-6060
WEBSITE: WWW.ALLFASTENERS.COM

NOTE: ALL SHOP AND FIELD DRILLED HOLES SHALL BE NOMINAL 30mm DIAMETER. THE MAXIMUM HOLE DIAMETER PERMITTED IS 1-3/16".

NOTE: NexGen2™ COMPLETE ASSEMBLY SHALL BE MAGNI 565 COATED PER ASTM F2833 AS APPROPRIATE.

NOTE: INSTALL PER MANUFACTURER'S INSTRUCTIONS.



NOTE: SPLICE CONNECTIONS REQUIRE ADDITIONAL CONSIDERATION WHEN SELECTING PART ASSEMBLIES

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

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NEW LONDON COUNTY, USA

SHEET TITLE

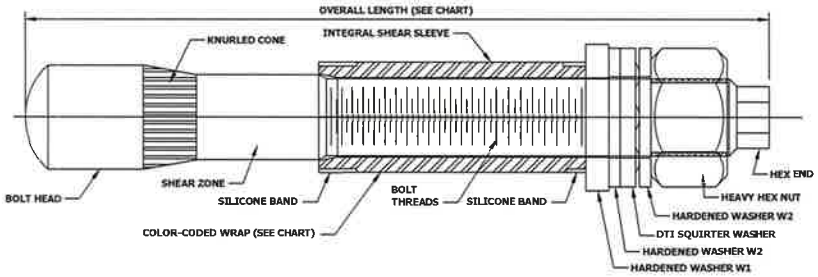
NEXGEN2 BOLT SPECS & TIGHTENING PROCEDURE

SHEET NUMBER

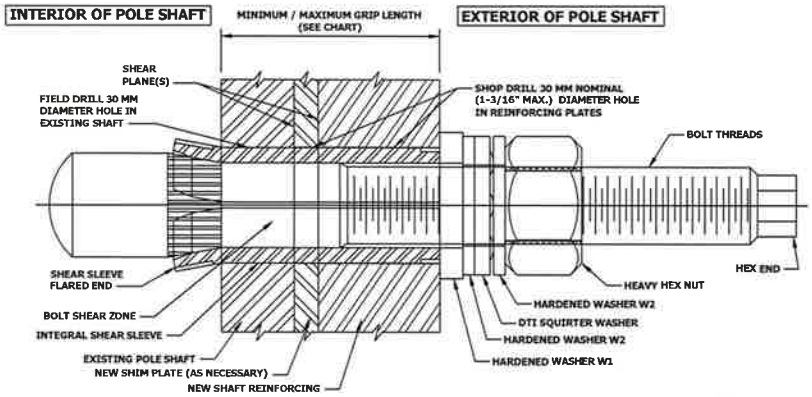
TM-4

FORGBolt™ NOTE SHEET: A325/PC8.8 LANDSCAPE VERSION DATE 01/29/2015; Rev. 1.0 04/23/2015

NOTES:
1. **ALL STRUCTURAL BOLTS SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.**
2. **ALL STRUCTURAL BOLTS SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.**



PRE-INSTALLED FORGBolt™ ASSEMBLY DETAIL 1



INSTALLED FORGBolt™ ASSEMBLY DETAIL 2

BOLT HOLE NOTES:

1. **ALL SHOP-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM SHOP-DRILLED HOLE DIAMETER PERMITTED IS 1-3/16".**
2. **ALL FIELD-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM FIELD-DRILLED HOLE DIAMETER PERMITTED IS 30 MM.**

DISTRIBUTOR CONTACT:
PRECISION TOWER PRODUCTS
PHONE: **888-926-4857**
EMAIL: info@precisiontowerproducts.com
WEB: www.precisiontowerproducts.com

CONTAINS PROPRIETARY INFORMATION
PATENT PENDING

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FORGBolt™ — AISC Group A Material: ASTM A325 and PC8.8 (Tensile Stress, Fu = 120 ksi minimum)

GROUP A		FORGBolt™ Size (mm)	Overall Length (inches)	Estimated Weight Each (lbs)	Grip Range (inch)	Comment	Color Code
FORGBolt™ A325 - PC8.8	1	**135**	5.31	1.3	3/8" to 1"	--	**RED**
	2	**160**	6.30	1.6	3/4" to 1-1/2"	--	**GREEN**
	3	**195**	7.68	1.9	1-1/4" to 2-1/4"	--	**BLUE**
	4	**260**	10.24	2.6	2" to 3-1/2"	Splice Bolt	**YELLOW**
	5	**365**	14.37	3.6	3-1/2" to 5-1/2"	Flange Jump Bolt	**ORANGE**
	6	**440**	17.32	4.3	5-1/2" to 8-1/2"	Flange Jump Bolt	**BLACK**
DTI Note		Each Group A (A325/PC8.8) FORGBolt™ assembly shall have a 'Squirter' DTI that is compatible with a M20-PC8.8 bolt.					

FORGBolt™ Installation

Follow all Manufacturer/Distributer Recommendations for Installation, Tightening, and Inspection.

1. FIELD DRILL HOLES TO 30 MM DIAMETER.
2. SELECT CORRECT BOLT SIZE FOR INSTALLATION GRIP (REFER TO PLANS).
3. INSERT BOLT ASSEMBLY THROUGH HOLES IN SHAFT REINFORCING PLATES AND SEAT THE HARDENED WASHER W1 FLUSH AGAINST OUTSIDE OF PLATE.
4. HAND TIGHTEN NUT TO FINGER TIGHT.
5. TIGHTEN NUT TO PRETENSIONED CONDITION AND UNTIL DTI SHOWS PROPER INDICATION.
6. PROPERLY DOCUMENT AND INSPECT BOLT TIGHTENING PER PLAN REQUIREMENTS.

PREPARED FOR:
CROWN CASTLE

BLACK & VEATCH
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OVERLAND PARK, KS 66211

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STONINGTON
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NEW LONDON COUNTY, USA

SHEET TITLE
FORGBOLT BOLT SPECS & TIGHTENING PROCEDURE

SHEET NUMBER
TM-5

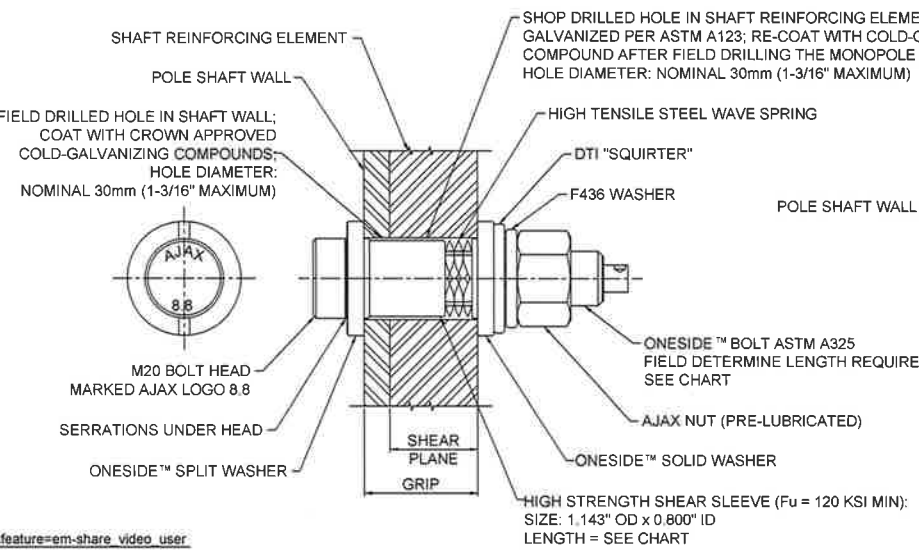
AJAX FASTENERS

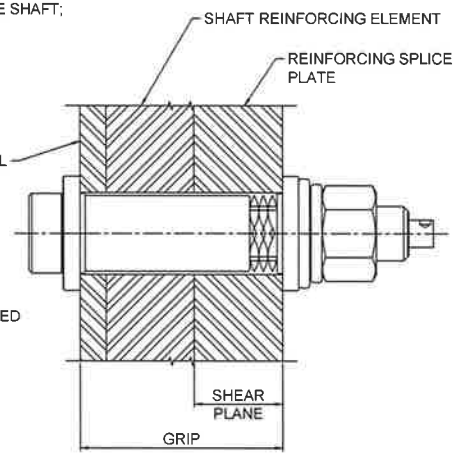
ONESIDE™

PATENT US 7,373,709B2

MANUFACTURER INSTALLATION VIDEO

https://www.youtube.com/watch?v=ZGBS0eLrZsw&feature=em-share_video_user





NOTE:
SPLICE CONNECTIONS REQUIRE ADDITIONAL CONSIDERATION WHEN SELECTING PART ASSEMBLIES

AJAX ONESIDE™ BOLT DETAIL

CODE	SIZE	COLOR	SLEEVE LENGTH	GRIP	GRIP IMP
OSBA20.65-6	M20 x 65	ORANGE	6.0 (0.236")	12.5 / 20.0	0.500" / 0.787"
OSBA20.95-14	M20 x 95	BLACK	14.0 (0.551")	20.0 / 32.0	0.787" / 1.259"
OSBA20.95-22	M20 x 95	GREEN	22.0 (0.866")	30.0 / 50.0	1.181" / 1.968"
OSBA20.95-30	M20 x 95	YELLOW	30.0 (1.181")	40.5 / 50.0	1.595" / 1.968"
OSBA20.135-39	M20 x 135	BLUE	39.0 (1.535")	49.0 / 77.0	1.929" / 3.031"
OSBA20.135-48	M20 x 135	BROWN	48.0 (1.889")	60.5 / 77.0	2.375" / 3.031"
OSBA20.135-57	M20 x 135	PURPLE	57.0 (2.244")	67.0 / 90.0	2.637" / 3.543"
OSBA20.165-76	M20 x 165	RED	76.0 (3.000")	87.0 / 120.0	3.425" / 4.724"
OSBA20.250	M20 x 250	SILVER	MTO	121.0 / 211.0	4.724" / 8.310"

MANUFACTURER
AJAX FASTENERS
SALES + TECH: ONESIDE@AJAXFAST.COM.AU

DISTRIBUTOR
IRA SVENSGAARD AND ASSOCIATES
PETER SVENDSGAARD - PETERS@IRASVENS.COM
JOHN KILLAM - JOHN@IRASVENS.COM
PHONE (530) 647-8225
FAX (530) 647-8229

BOLT ASSEMBLY AND INSTALLATION:
1. BOLT MUST BE PURCHASED PRE-ASSEMBLED.
2. FOLLOW BOLT AND DTI MANUFACTURERS INSTRUCTIONS FOR INSTALLATION.

INSPECTION:
1. A MINIMUM OF 4 OUT OF 5 SQUIRTER® DTI PROTRUSIONS SHALL BE ENGAGED IN ANY AJAX/DTI BOLT ASSEMBLY IN THE REINFORCING MEMBERS. A FEELER GAGE MAY BE USED TO VERIFY PROTRUSION COMPRESSION.
2. INSPECTIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS AND CROWN DOCUMENT ENG-SOW-10007: *MODIFICATION INSPECTION SOW*.

PREPARED FOR:
CROWN CASTLE

BLACK & VEATCH
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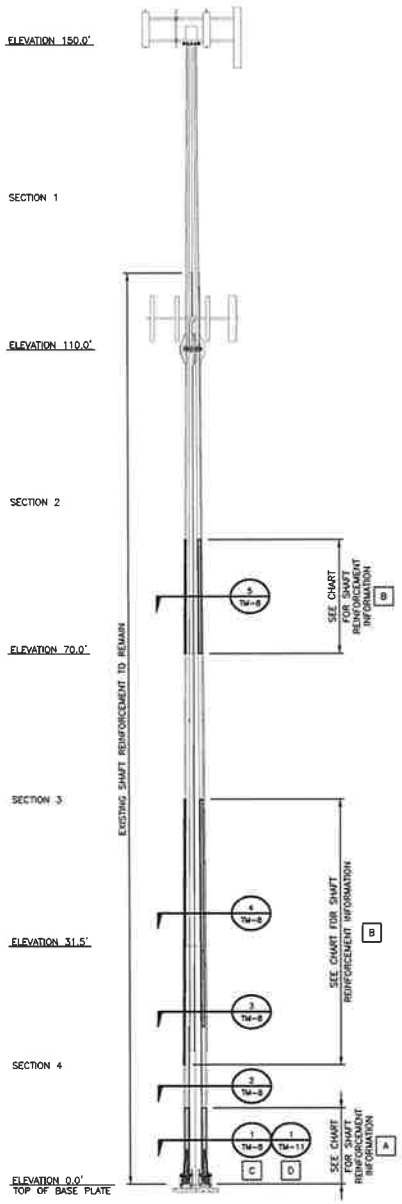
WO #1332501
STONINGTON
40 TAUGWONK RD UNIT 22
STONINGTON, CT 06378
NEW LONDON COUNTY, USA

SHEET TITLE
AJAX ONSIDE BOLT SPECS & TIGHTENING PROCEDURE

SHEET NUMBER
TM-6



TOWER ELEVATION
NO SCALE

POLE MODIFICATION SCHEDULE

CALLOUT	ELEVATION (FT)	MODIFICATION	REFERENCE SHEET
A	0.5 ± 10.0	CUT EXISTING FLAT PLATE REINFORCEMENT AT 10'-1"± TO ACCOMMODATE INSTALLATION OF NEW FLAT PLATE REINFORCEMENT	TM-9 & TM-10
B	15.8 ± 50.9 70.0 ± 85.0	INSTALL NEW FLAT PLATE REINFORCEMENT	TM-9
C	0.0	INSTALL (4) NEW CCI-AR-0175 A193 GR B7 HOT DIP GALVANIZED ALL-THREAD BAR WITH ANCHOR ROD CHAIRS	TM-11
D	3.0	REMOVE AND REPLACE SHROUD AS REQUIRED TO ACCOMMODATE INSTALLATION OF NEW MODIFICATIONS	TM-11

CONTRACTOR SHALL FIELD VERIFY AND MEASURE DIMENSIONS OF THE SITE STRUCTURE BEFORE FABRICATION OF MATERIALS FOR ALL TOWER MODIFICATION INSTALLATIONS.

CCI FLAT PLATE (65 KSI) REINFORCEMENT SCHEDULE

BOTTOM ELEVATION	TOP ELEVATION	PART NUMBER	FLATS / DEGREES (°)	TERMINATION BOLTS (BOTTOM)	TERMINATION BOLTS (TOP)	MAX INTERMEDIATE BOLT SPACING	BOLT QUANTITY PER PLATE	STEEL WEIGHT PER PLATE (BLACK)	TOTAL BOLT QUANTITY	TOTAL STEEL WEIGHT (BLACK)
0'-6"	10'-0"	CFP-08512596	2, 5, 8, 11	0	15	1'-5"	17	344.0	68	1376.0
15'-9"	30'-9"	CCI-SFP-06010015	4, 12	8	8	1'-4"	24	306.0	48	612.0
30'-10"	50'-10"	CCI-SFP-06010020	4, 12	8	8	1'-4"	27	408.0	54	816.0
20'-10"	30'-10"	CCI-SFP-06010010	8	8	8	1'-4"	20	204.0	20	204.0
30'-11"	50'-11"	CCI-SFP-06010020	8	8	8	1'-4"	27	408.0	27	408.0
70'-0"	85'-0"	CCI-SFP-06010015	4, 8, 12	8	8	1'-4"	24	306.0	72	918.0
								TOTAL	289	4334.0

NOTES FOR CROWN REINFORCING (65 KSI) MATERIAL

1. DO NOT WELD WITHOUT APPROVAL FROM THE EOR.
2. SHIMS FOR MONOPOLE REINFORCEMENT MEMBER SHALL BE REQUIRED WHERE GAPS BETWEEN THE POLE SHAFT AND REINFORCING MEMBER EXIST AT FASTENER LOCATIONS. FOR INTERMEDIATE CONNECTIONS, THE MINIMUM SHIM LENGTH AND WIDTH SHALL BE THE WIDTH OF THE REINFORCING MEMBER. FOR TERMINATION CONNECTIONS, A CONTINUOUS SHIM PLATE (PREFERRED) OR EQUIVALENT INDIVIDUAL SHIM PLATES THE WIDTH OF THE REINFORCING MEMBER MAY BE USED. SHIM THICKNESS SHALL BE NO LESS THAN 1/16". STACKING OF SHIMS IS PERMITTED. TIGHTENING BOLTS TO COLD BEND THE STEEL PLATES IN LIEU OF SHIMS IS STRICTLY PROHIBITED AND WILL BE CAUSE FOR REJECTION.
3. ALL FLAT PLATE REINFORCEMENT IS TO BE INSTALLED CENTERED ON ITS DESIGNATED FLAT, UNO.
4. SEE CMRP 65 KSI PARTS CATALOG 2nd EDITION AND TM-10 FOR PART DETAILS.
5. TOWER SHAFT REINFORCEMENTS MAY BE INSTALLED WITH ALLFASTENERS NEXGEN2 BLIND BOLT ASSEMBLY, AS DETAILED ON SHEET TM-4, FORGBOLTS, AS DETAILED ON SHEET TM-5, OR AJAX ONESIDE BOLTS, AS DETAILED ON SHEET TM-6.
6. THE FOLLOWING ELEVATION TOLERANCES ARE ACCEPTABLE. ANY FURTHER DEVIATIONS REQUIRE EOR REVIEW AND APPROVAL.
   - FOR PROPOSED FLAT PLATE REINFORCEMENTS THAT ARE TO START WITHIN 0'-6" FROM THE TOP OF THE BASE PLATE, A ± 1" VERTICAL TOLERANCE FROM THE "BOTTOM ELEVATION" LISTED IN THE TABLE ABOVE IS ACCEPTABLE.
   - FOR ALL OTHER PROPOSED FLAT PLATE REINFORCEMENT ELEVATIONS LISTED ABOVE, A ± 3" VERTICAL TOLERANCE IS ACCEPTABLE.
7. PRIOR TO FABRICATION AND INSTALLATION, CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTH AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSES ONLY, AND SHALL NOT BE USED FOR FABRICATION.

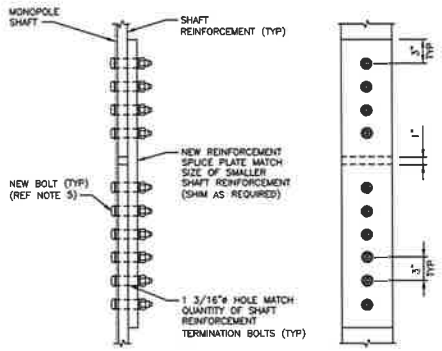
MANUFACTURER POLE SPECIFICATIONS

POLE SHAFT TYPE	12 SIDED POLYGON
SHAFT STEEL	ASTM A572 GRADE 65 (ASSUMED)
BASE PLATE STEEL	ASTM A572 GRADE 60 (60 KSI) (ASSUMED)
ANCHOR RODS	2 1/4"ø #18J ASTM A615 GRADE 75 (ASSUMED)

MANUFACTURER SHAFT SECTION DATA

SHAFT SECTION	SHAFT LENGTH (FT)	THICKNESS (IN)	LAP SPLICE (IN)	DIAMETER ACROSS FLAT (IN)	
				ø TOP	ø BOTTOM
1	40.00	0.1875	NA	15.000	21.250
2	40.00	0.2500	42	21.250	27.610
3	42.00	0.3125	50	26.550	33.100
4	35.67	0.3750		31.830	37.380

NOTE: DIMENSIONS SHOWN DO NOT INCLUDE GALVANIZING TOLERANCES



REINFORCED SPLICE PLATE DETAIL
NO SCALE

REINFORCED SPLICE PLATE SCHEDULE

ELEVATION	FLATS / DEGREES (°)	WIDTH	THICKNESS	QUANTITY BOLTS (BOTTOM)	QUANTITY BOLTS (TOP)
10'-0 1/2"	2, 5, 8, 11	8 1/2"	1 1/4"	15	12
30'-9 1/2"	4, 12	6"	1"	8	8
20'-9 1/2"	8	6"	1"	12	8
30'-10 1/2"	8	6"	1"	8	8

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

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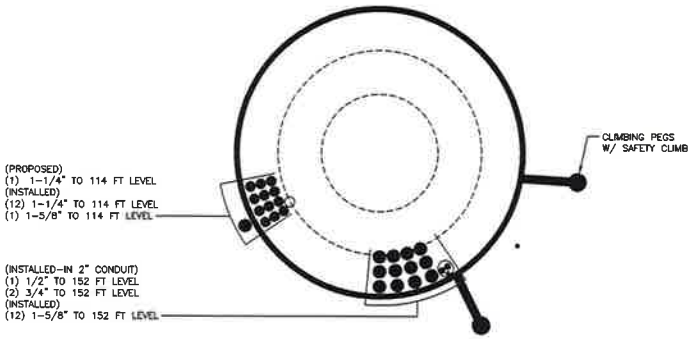
SHEET TITLE
TOWER ELEVATION

SHEET NUMBER
TM-7



COAX FEEDLINE PLAN
NO SCALE

EXISTING FEEDLINE PLAN SHOWN ON THIS DRAWING IS BASED ON CURRENT BEST KNOWLEDGE OF THE EXISTING CONDITION. IF THE EXISTING FEEDLINE LAYOUT IS NOT AS SHOWN ON THIS DRAWING CONTRACTOR SHALL NOTIFY ENGINEER.

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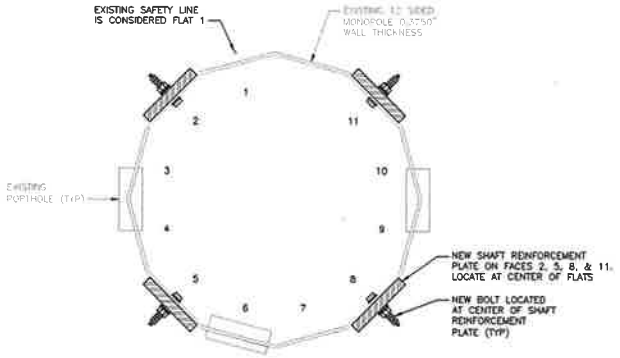
SHEET TITLE

COAX FEEDLINE PLAN

SHEET NUMBER

TM-8



SECTION 1
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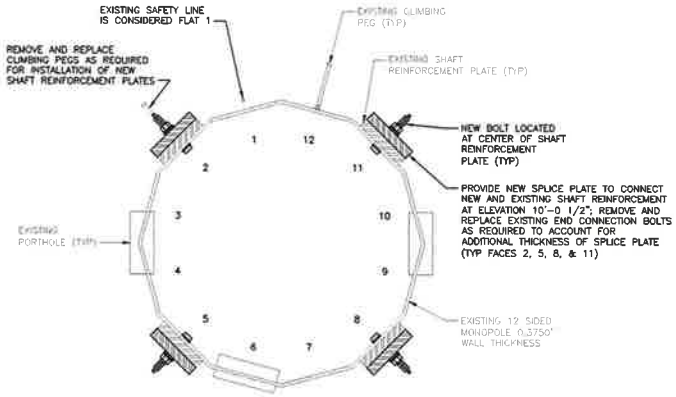

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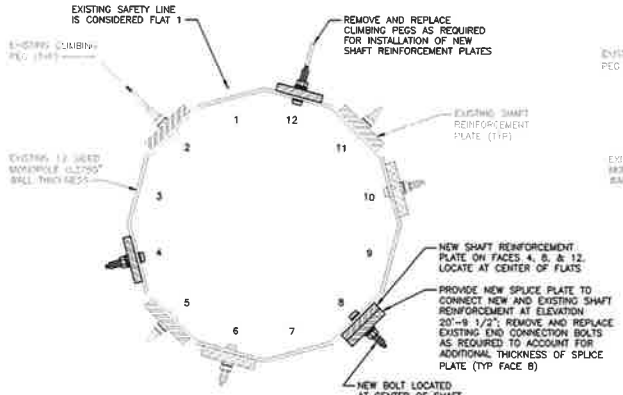

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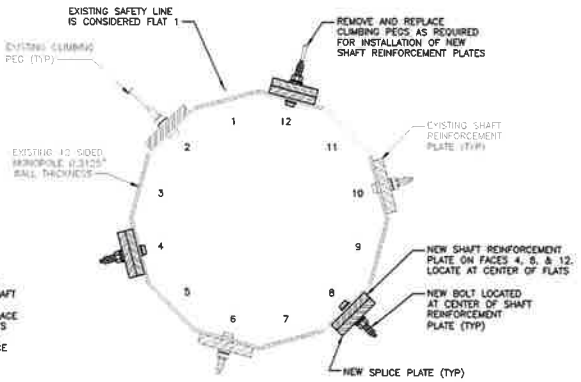

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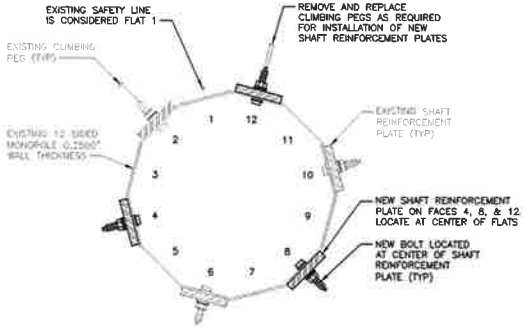


SECTION 5
NO SCALE

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	182896
DRAWN BY:	TYW
CHECKED BY:	JDV

REV	DATE	DESCRIPTION
0	12/19/16	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
PING JIANG
30767
LICENSED PROFESSIONAL ENGINEER
12/19/2016

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

BU #841291
WO #1332501
STONINGTON
40 TAUGWONK RD UNIT 22
STONINGTON, CT 06378
NEW LONDON COUNTY, USA

SHEET TITLE

TOWER SECTIONS

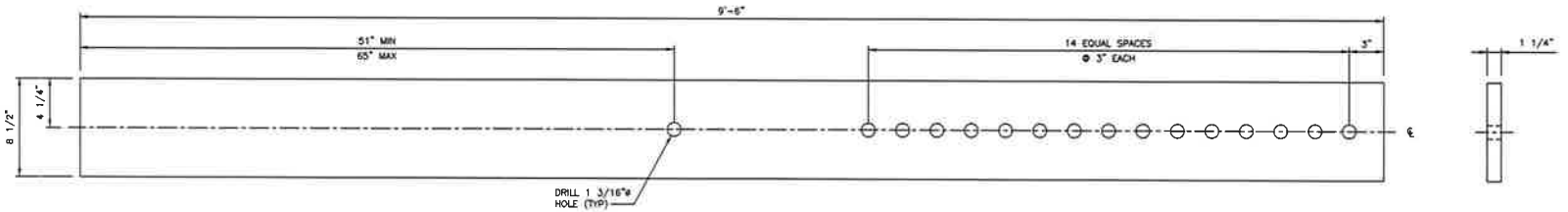
SHEET NUMBER

TM-9

AFTER REMOVING EXISTING REINFORCEMENT ON FLATS 2, 5, 8, & 11 CONTRACTOR TO MATCH EXISTING BOLT HOLES ON TOWER WITH HOLES IN NEW FLAT PLATE REINFORCEMENT. HOLE LOCATIONS SHOWN HERE ARE PRELIMINARY AND BASED ON CURRENT KNOWLEDGE OF EXISTING REINFORCEMENTS. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF EXISTING HOLES PRIOR TO FABRICATION. REAM OUT EXISTING HOLES IN TOWER SHAFT AS REQUIRED TO ALLOW FOR NEW BOLT INSTALLATION. ALL BOLTS TO BE A MINIMUM 3" FROM ADJACENT BOLTS OR BOLT HOLES.

NOTES

1. ALL HOLES ARE TO BE DRILLED. DO NOT BURN OR PUNCH.
2. TOLERANCES: FRACTIONS ± 1/16"
   ANGLES ± 1/2 DEGREE
   DECIMALS ± .010"
3. THE 65 KSI MATERIAL SHALL CONFORM TO THE FOLLOWING.
   A. MATERIAL SHALL BE ASTM A572 HAVING A MINIMUM TENSILE STRENGTH (Fu) OF 80 KSI AND A MINIMUM YIELD STRENGTH (Fy) OF 65 KSI.
   B. THE FINISH SHALL BE HOT-DIPPED GALVANIZED PER ASTM A123.



#CFP-08512596
(4) PL 1 1/4"x8 1/2"x9'-6" (A572-65)

NO SCALE

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	182896
DRAWN BY:	TYW
CHECKED BY:	JDV

REV	DATE	DESCRIPTION
0	12/19/16	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
PING JIANG
30761
LICENSED PROFESSIONAL ENGINEER

12/19/2016

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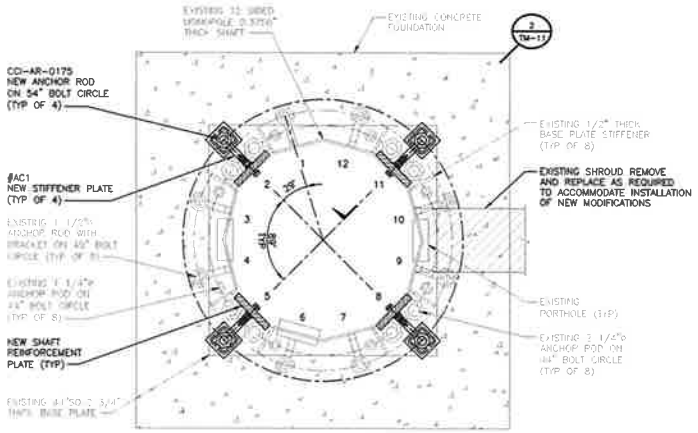
BU #841291
WO #1332501
STONINGTON
40 TAUGWONK RD UNIT 22
STONINGTON, CT 06378
NEW LONDON COUNTY, USA

SHEET TITLE

CUSTOM FLAT PLATE DETAILS

SHEET NUMBER

TM-10



SECTION 1
ANCHOR ROD PLAN
NO SCALE

NOTES

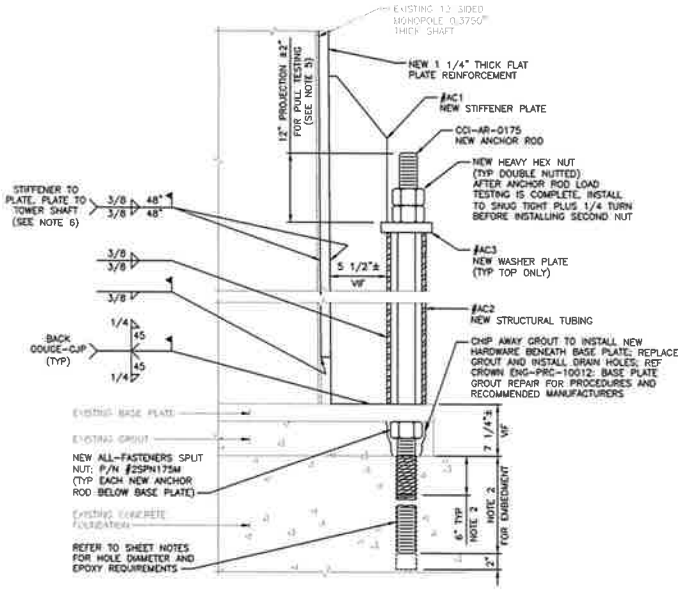
1. ALL HSS SHAPES SHALL BE A500 GRADE C, 50 KSI.
2. NEW ANCHOR RODS TO BE DRILLED AND EPOXIED INTO FOUNDATION USING HILTI RE 500 V3 EPOXY PER MANUFACTURER'S SPECIFICATIONS. ANCHOR ROD TO BE WRAPPED IN ELECTROTAPE 7068 BOND BREAKER TAPE OR APPROVED EQUAL FOR 6" FROM TOP OF FOUNDATION. CONTRACTOR TO HAMMER DRILL HOLE WITH CARBIDE BIT (OR EQUIVALENT), FOR CORE DRILLING OPTION, CLEAN AND MECHANICALLY ROUGHEN HOLES PRIOR TO ANCHOR INSTALLATION. REFERENCE TABLE ON THIS SHEET FOR REQUIRED HOLE DIAMETER, EMBEDMENT DEPTH, AND ANCHOR ROD LENGTH.
3. ALL NEW ANCHOR RODS SHALL BE INSTALLED WITH DOUBLE HEAVY HEX NUTS ON THE TOP OF THE NEW ANCHOR ROD CHAIR AND ONE LEVELING HEAVY HEX NUT ON THE BOTTOM OF THE NEW ANCHOR ROD CHAIR. CONTRACTOR SHALL CAREFULLY REMOVE EXISTING GROUT AS NECESSARY TO ENSURE PROPER INSTALLATION OF LEVELING NUTS.
4. TAKE ALL MEASUREMENTS NECESSARY TO AVOID DAMAGING EXISTING REINFORCING BARS DURING DRILLING OPERATIONS. NOTIFY CROWN CASTLE IMMEDIATELY IF EXISTING REINFORCING BARS ARE ENCOUNTERED AND INTERFERE WITH PLACEMENT OF NEW ANCHORS. MINOR ADJUSTMENTS TO PROPOSED LOCATION OF NEW ANCHORS MAY BE REQUIRED.
5. NEW ANCHOR ROD REINFORCING SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. ONCE ALL RESIN & GROUT HAVE CURED, NEW ANCHOR ROD REINFORCING SHALL HAVE TARGET TENSION LOAD APPLIED. REFERENCE TABLE ON THIS SHEET FOR REQUIRED TARGET TENSION LOAD VALUES. CONTRACTOR TO VERIFY THAT A PULL TEST IS ABLE TO BE PERFORMED USING THE ANCHOR ROD PROJECTION SHOWN.
6. WHEN WELDING THE NEW FLAT PLATE REINFORCEMENT TO THE POLE SHAFT, OMIT THE BOTTOM 1" OF LONGITUDINAL FILLET WELD TO ALLOW FOR DRAINAGE.

NEW ANCHOR ROD TARGET TENSION LOADING [1]

CROWN PART #	ROD DIAMETER (IN)	INSTALLED LENGTH (IN)	MATERIAL	HOLE DIAMETER (IN)	EMBEDMENT DEPTH (IN)	TARGET TENSION LOAD (KIPS)	NOTES
CCI-AR-0175	1.75	120	A193 GR B7	2	66	111	2, 3, 4

NOTES

1. TARGET TENSION LOAD PER SECTION 1.4.6 OF CROWN DOCUMENT ENG-PRC-10119 REVISION G: PULL-OUT TESTING POST-INSTALLED ANCHOR RODS, FOR SPECIFICATIONS.
2. CONTRACTOR MAY SUBSTITUTE F1554-105 FOR A193 GR B7.
3. MATERIAL IS TO BE ALL-THREADED ROD.
4. ANCHOR RODS MAY NEED TO BE CUT IN ORDER TO ACHIEVE PROPER EMBEDMENT AND PROJECTION ABOVE THE BASE PLATE. IF ANCHOR RODS ARE CUT IN THE FIELD THE CUT END SHOULD BE INSTALLED IN THE HOLE.



SECTION 2
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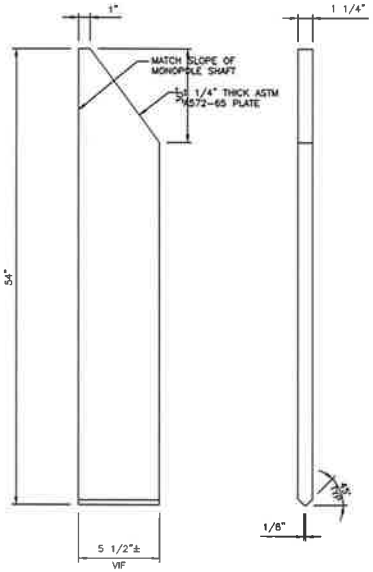
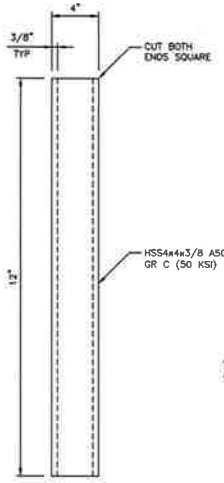
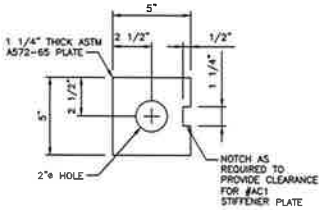


#AC1
STIFFENER PLATE
NO SCALE



#AC2
STRUCTURAL TUBING
NO SCALE



#AC3
WASHER PLATE
NO SCALE

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	182896
DRAWN BY:	TYW
CHECKED BY:	JDV

REV	DATE	DESCRIPTION
0	12/19/16	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
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BU #841291
WO #1332501
STONINGTON
40 TAUGWONK RD UNIT 22
STONINGTON, CT 06378
NEW LONDON COUNTY, USA

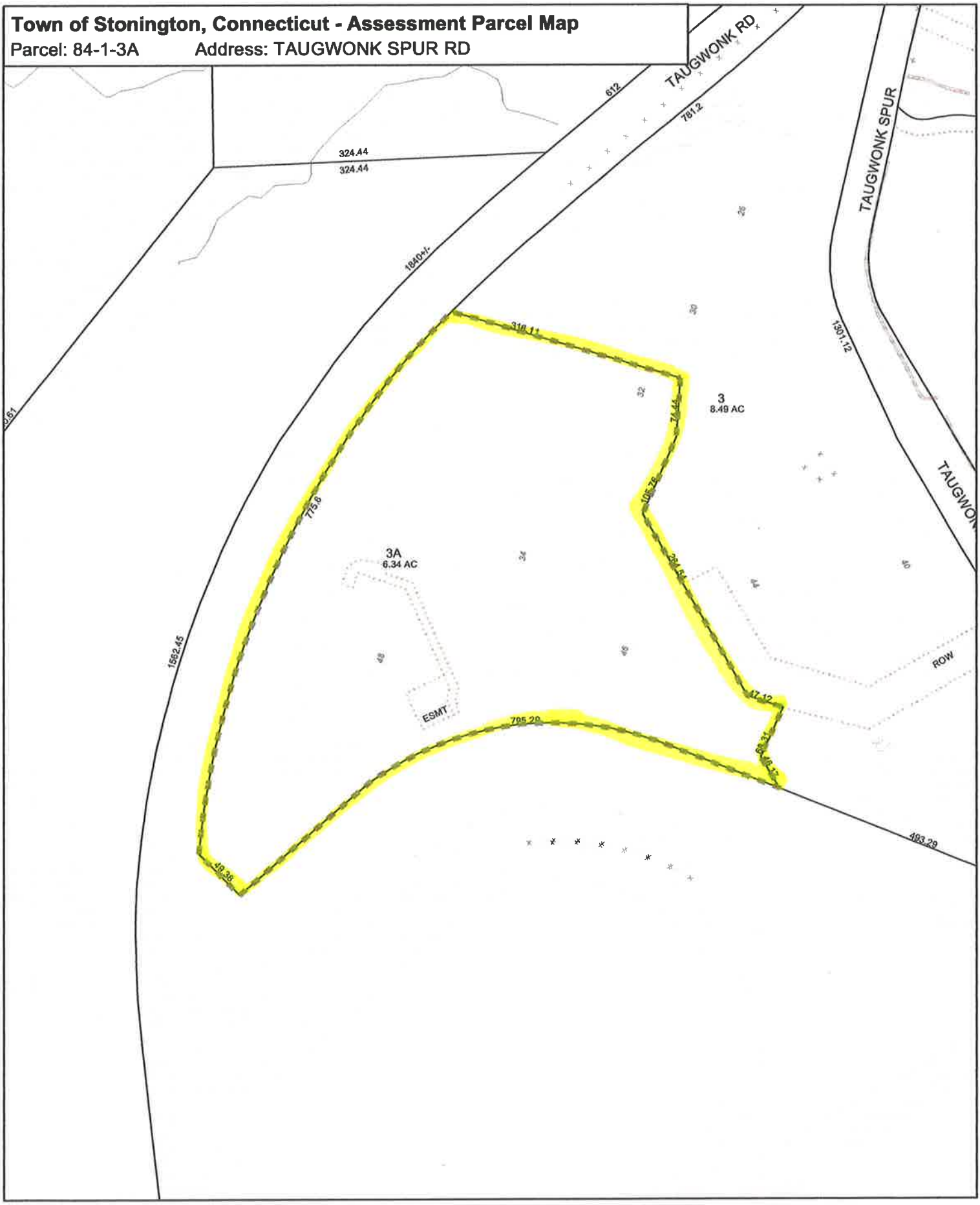
SHEET TITLE
BASE PLATE
ANCHOR ROD CHAIRS

SHEET NUMBER
TM-11

ATTACHMENT 4

Town of Stonington, Connecticut - Assessment Parcel Map

Parcel: 84-1-3A Address: TAUGWONK SPUR RD



Approximate Scale: 1 inch = 150 feet

Revised To: October 2015

Map Produced: April 2016

Disclaimer: This map is for informational purposes only. All information is subject to

Town of Stonington, CT
Property Listing Report

Map Block Lot 84-1-3A

Account 00194501

Property Information

Property Location	TAUGWONK SPUR RD
Owner	TAUGWONK LLC
Co-Owner	
Mailing Address	183 QUARRY RD MILFORD CT 06460
Land Use	4010 IND WHSES MDL-96
Land Class	I
Survey Map #	NA
School District	

Fire District	Wequetequock
Census Tract	7054
Neighborhood	2500
Zoning Code	LI-130
Acreage	6.34
Utilities	
Lot Setting/Desc	Suburban Above Street
Trash Day	TH
Polling Place (District)	Deans Mill 3 School

Photo

Sketch

Primary Construction Details

Year Built	2001
Stories	2
Building Style	Garage/Office
Building Use	Ind/Comm
Building Condition	Average
Floors	Concr-Finished
Total Rooms	0

Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Bath Style	NA
Kitchen Style	NA
Roof Style	Gable/Hip
Roof Cover	Asph/F Gls/Cmp

Exterior Walls	Concr/Cinder
Interior Walls	Minim/Masonry
Heating Type	Hot Air-no Duc
Heating Fuel	Gas
AC Type	None
Gross Bldg Area	19200
Total Living Area	19200

Report Created On

Town of Stonington, CT
Property Listing Report

Map Block Lot 84-1-3A

Account 00194501

Valuation Summary (Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	2175300	1522700
Extras	0	0
Outbuildings	248900	174400
Land	389900	273000
Total	2814100	1970100

Outbuilding and Extra Items

Type	Description
SHELTER	220.00 S.F.
SHELTER	180.00 S.F.
LIGHTS-IN W/PL	5.00 UNITS
FENCE-6' CHAIN	211.00 L.F.
PAVING-ASPHALT	75000.00 S.F.
CELL TOWER	

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	9600	9600
Finished raised bsmt	9600	9600
Total Area	19200	19200

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
TAUGWONK LLC	478/ 229	12/14/2001	
DAMATO INVESTMENTS LLC	421/ 81	7/7/1998	

Town of Stonington, CT
Property Listing Report

Map Block Lot 84-1-3A

Account 00194501

Photo

Sketch

Primary Construction Details

Year Built	2001	Kitchen Style	NA
Stories	1	Roof Style	Gable/Hip
Building Style	Garage/Office	Roof Cover	Asph/F Gls/Cmp
Building Use	Ind/Comm	Exterior Walls	Concr/Cinder
Building Condition	Average	Interior Walls	Minim/Masonry
Floors	Concr-Finished	Heating Type	Hot Air-no Duc
Total Rooms	0	Heating Fuel	Gas
Bedrooms	0	AC Type	None
Bathrooms	0	Gross Bldg Area	9600
Bath Style	NA	Total Living Area	9600

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	9600	9600
Total Area	9600	9600

Photo

Sketch

Primary Construction Details

Year Built	2001	Kitchen Style	NA
Stories	1	Roof Style	Gable/Hip
Building Style	Garage/Office	Roof Cover	Asph/F Gls/Cmp
Building Use	Ind/Comm	Exterior Walls	Brick/Masonry
Building Condition	Average	Interior Walls	Minim/Masonry
Floors	Concr-Finished	Heating Type	Hot Air-no Duc
Total Rooms	0	Heating Fuel	Gas
Bedrooms	0	AC Type	None
Bathrooms	0	Gross Bldg Area	10600
Bath Style	NA	Total Living Area	10600

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	10600	10600
Total Area	10600	10600

Town of Stonington, CT
Property Listing Report

Map Block Lot 84-1-3A

Account 00194501

Photo

Sketch

Primary Construction Details

Year Built	2001	Kitchen Style	NA
Stories	1	Roof Style	Gable/Hip
Building Style	Garage/Office	Roof Cover	Asph/F Gls/Cmp
Building Use	Ind/Comm	Exterior Walls	Concr/Cinder
Building Condition	Average	Interior Walls	Minim/Masonry
Floors	Concr-Finished	Heating Type	Hot Air-no Duc
Total Rooms	0	Heating Fuel	Gas
Bedrooms	0	AC Type	None
Bathrooms	0	Gross Bldg Area	8800
Bath Style	NA	Total Living Area	8800

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	8800	8800
Total Area	8800	8800