Robinson+Cole

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Also admitted in Massachusetts

December 4, 2015

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

Re: **Notice of Exempt Modification – Facility Modification**
30 Oliver Terrace, Shelton, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) antennas at the top of the existing 140-foot tower at 30 Oliver Terrace in Shelton, Connecticut (the "Property"). The tower is owned by Crown Castle ("Crown"). The Council approved Cellco's use of this tower in 2005. Cellco now intends to modify its facility by replacing nine (9) of its existing antennas with three (3) model X7C-FRO-660-V, 700 MHz antennas; three (3) model HBXX-6516DS-VTM, 1900 MHz antennas; and three (3) model HBXX-6516DS-VTM, 2100 MHz antennas, all at the same level on the tower. Cellco also intends to replace three (3) remote radio heads ("RRHs"), and install six (6) new RRHs and two (2) HYBRIFLEX™ antenna cables. Included in Attachment 1 are specifications for Cellco's replacement antennas, RRHs and HYBRIFLEX™ cables.

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 Mark A. Lauretti, Mayor for the City of Shelton. A copy of this letter is also being sent to Brennan Realty, 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 top of the 140-foot tower.

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

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

4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative General Power Density table is included behind 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 certain modifications, can support Cellco's proposed modifications. (*See* Structural Modification Report included in Attachment 3).

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,

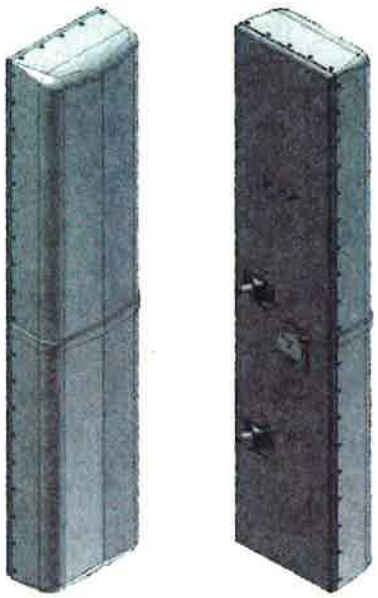
Kenneth C. Baldwin

Enclosures
Copy to:
Mark A. Lauretti, Shelton Mayor
Brennan Realty, LLC
Crown
Tim Parks

ATTACHMENT 1

X7C-FRO-660-V

X-Pol Antenna, 698-896MHz, Fast-Roll-Off 60° H-Beam
RET/MET



- Designed to improve SNR
- Greatly increases LTE data rates
- Broadband radiator
- Macro Cell, high gain antenna
- Suitable for LTE/CDMA/UMTS/GSM
- AISG 2.0 RET or manual MET tilt control

Electrical Specifications

Frequency Band, MHz	**698-824**	**824-896**
Horizontal Beamwidth, 3dB points	62	58
Gain, dBi	15.9	16.0
Vertical Beamwidth, 3dB points	12.0	10.5
Front-to-Back at 180°, dB	>28	
Upper Sidelobe Suppression, Typical, dB	<-18	
Polarization	+/-45°	
Electrical Downtilt	0-10° or 4-14°	
VSWR/Return Loss, dB, Maximum	1.5:1/14.0	
Isolation Between Ports, dB, Mimimum	-28	
Intermodulation (2x20w), IM3, dBc, Maximum	-150	
Impedance, ohms	50	
Maximum Power Per Connector, CW	500	

www.cssantenna.com
410-612-0080
customerservice@cssantenna.com

X7C-FRO-660-V

X-Pol Antenna, 698-896MHz, Fast-Roll-Off 60° H-Beam
RET/MET

Mechanical Specifications

Dimensions, Length/Width/Depth	72.0/14.6/8.0 in (1829/372/204 mm)
Connector (Quantity) Type	(2) 7-16 DIN Female
Connector Torque	220-265 lbf-in (25-30 N-m)
Connector Location	Back
Antenna Weight	35.0 lbs
Bracket Weight	13.2 lbs (6.0 kg)
Standard Bracket Kit	CSS P/N 919011
Mechanical Downtilt Range	0-12°
Radome Material	Ultra High Strength Luran, UV Stabilized, ASTM D1925
Wind Survival	150 mph (241 km/h)
Front Wind Load	205.39 lbf (913.65 N) @100mph
Equivalent Flat Plate	4.09 sq-ft (c=2) @ 100mph

RET Information

Model	CSS-RET-200
Mounting Location	Rear of Antenna
Weight	1.2 lb (0.54 kg)
Communication Standard	AISG 2.0
Control System	CSS-PCU-220

Order Information

Model	*Description*
X7C-FRO-660-VR0	Antenna with manual RET adjust electrical downtilt 0-10°
X7C-FRO-660-VR4	Antenna with manual RET adjust electrical downtilt 4-14°
X7C-FRO-660-VM0	Antenna with remote MET adjust electrical downtilt 0-10°
X7C-FRO-660-VM4	Antenna with remote MET adjust electrical downtilt 4-14°

Optional Bracket Kit

919036	Bracket Kit, 2-Point, 12 deg D-tilt, For 4.5" OD Pole

Product Specifications

COMMSCOPE®

POWERED BY ANDREW.

HBXX-6516DS-VTM

Andrew® Quad Port Antenna, 1710–2180 MHz, 65° horizontal beamwidth, RET compatible

- Each DualPol® array can be independently adjusted for greater flexibility
- Excellent gain, VSWR, front-to-back ratio, and PIM specifications for robust network performance
- Ideal choice for site collocations and tough zoning restrictions
- Great solution to maximize network coverage and capacity

Electrical Specifications

Frequency Band, MHz	**1710–1880**	**1850–1990**	**1920–2180**
Gain, dBi	17.7	18.0	18.0
Beamwidth, Horizontal, degrees	67	66	64
Beamwidth, Vertical, degrees	7.5	7.0	6.6
Beam Tilt, degrees	0–10	0–10	0–10
USLS, dB	18	18	18
Front-to-Back Ratio at 180°, dB	30	30	30
CPR at Boresight, dB	22	22	21
CPR at Sector, dB	8	9	9
Isolation, dB	30	30	30
VSWR | Return Loss, dB	1.4 | 15.6	1.4 | 15.6	1.4 | 15.6
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350
Polarization	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	**1710–1880**	**1850–1990**	**1920–2180**
Gain by all Beam Tilts, average, dBi	17.2	17.2	17.5
Gain by all Beam Tilts Tolerance, dB	±0.3	±0.3	±0.5
Gain by Beam Tilt, average, dBi	0 ° | 17.0 5 ° | 17.3 10 ° | 17.0	0 ° | 17.1 5 ° | 17.4 10 ° | 17.0	0 ° | 17.4 5 ° | 17.7 10 ° | 17.2
Beamwidth, Horizontal Tolerance, degrees	±2.7	±2.3	±3.5
Beamwidth, Vertical Tolerance, degrees	±0.5	±0.4	±0.4
USLS, dB	18	19	19
Front-to-Back Total Power at 180° ± 30°, dB	26	26	26
CPR at Boresight, dB	22	22	22
CPR at Sector, dB	9	9	9

* 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.

General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol® quad
Band	Single band
Brand	DualPol® | Teletilt®
Operating Frequency Band	1710 – 2180 MHz

Product Specifications

HBXX-6516DS-VTM

Performance Note	Outdoor usage

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground
Radiator Material	Low loss circuit board
Radome Material	PVC, UV resistant
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	4
Wind Loading, maximum	419.0 N @ 150 km/h 94.2 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Dimensions

Depth	166.0 mm | 6.5 in
Length	1297.0 mm | 51.1 in
Width	305.0 mm | 12.0 in
Net Weight	13.9 kg | 30.6 lb

Remote Electrical Tilt (RET) Information

Model with Factory Installed AISG 2.0 Actuator	HBXX-6516DS-A2M
RET System	Teletilt®

Packed Dimensions

Depth	294.0 mm | 11.6 in
Length	1609.0 mm | 63.3 in
Width	409.0 mm | 16.1 in
Shipping Weight	25.1 kg | 55.3 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

Included Products

600899A-2 — 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.

Product Specifications

HBXX-6516DS-VTM

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

ALCATEL-LUCENT B13 RRH4X30-4R

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

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

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

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

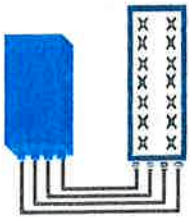
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

FEATURES

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

BENEFITS

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



4x30W with 4T4R
or
2x60W with 2T4R

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

Alcatel·Lucent

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

PCS RF MODULES

RRH1900 2X60 - HW CHARACTERISTICS

LA6.0.1/13.3

	RRH2x60
RF Output Power	2x60W
Instantaneous Bandwidth	20MHz
Transmitter	2 TX
Receiver 1900 HW version	2 Branch RX – LA6.0.1
1900A HW version	4 Branch RX – LR13.3
Features	AISG 2.0 for RET/TMA
	Internal Smart Bias-T
Power	-48VDC
CPRI Ports	2 CPRI Rate 3 Ports
External Alarms	4 External User Alarms
Monitor Ports	TX
Environmental	GR487 Compliance
RF Connectors	7/16 DIN (top mounted)

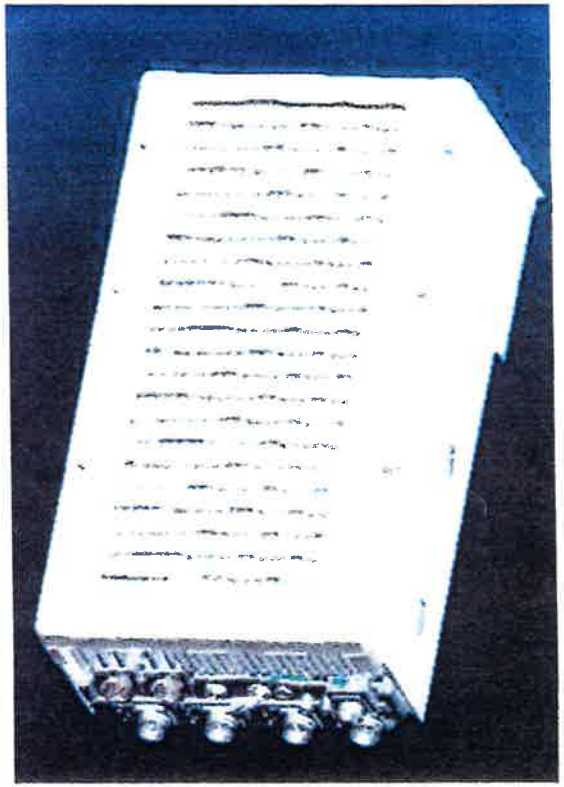
** Not a Verizon Wireless deployed product

NEW PCS RF MODULES FOR VZW

RRH2X60 - HW CHARACTERISTICS

LR14.3

	RRH2x60
RF Output Power	2x60W (4x30W HW Ready)
Instantaneous Bandwidth	60MHz
Target Reliability (Annual Return Rate)	<2%
Receiver	4 Branch Rx
Features	AISG 2.0 for RET/TMA
Power	-48VDC
	Internal Smart Bias-T
CPRI Ports	2 CPRI Rate 5 Ports
External Alarms	4 External User Alarms
Monitor Ports	TX, RX
Environmental	GR487 Compliance
RF Connectors	7/16 DIN (downward facing)
Dimensions	22"(h) x 12"(w)x 9.4" (d)**
Weight	55lb**



**- Includes solar shield but not mounting brackets (8 lbs.)

Alcatel·Lucent

B66A RRH 4X45 - PHYSICAL CHARACTERISTICS- TARGET 15.1

B4 RRH4x45-4R (AWS-Extension Band)	
Frequency Band	LR15.1 – B4 / LR16.1 B66 (AWS 1 and 3 only)
RF Output Power	2x90W/4x45W (SW configurable)
Operational range	2110-2180 MHz, DL/ 1710-1780 MHz UL
Instantaneous Bandwidth	70MHz
Configuration (HW readiness)	LTE: 2T2R, 2T4R, 4T4R
Carrier Bandwidths	5, 10, 15 and 20 MHz
Interfaces	2x CPRI Rate 7 Ports Antenna Connectors 4.3-10
AISG Support	AISG 2.0 for RET Internal Smart Bias T
Monitor Ports	NA (Spec An to replace ports)
Environmental	GR487 Compliance / GR3178 Compliance (with exceptions)
Mounting options	Pole/Wall
Connectors location	All bottom
External Alarms	4
Annual Return Rate (Target)	<2%
Operating Temperature	-40 C to +55 C (without solar load)

- Commercial Product Will include B66 support of AWS 1 and 3.
- Lower AWS 3 UL Not in 3GPP Band 66 Definition

Physical Dimensions – Not to Exceed		
	W/O Solar Shield	With Solar Shield
Dimensions HxWxD	H = 26in (H=660mm) W = 11.4in (W=290mm) D = 5.9in (D=150mm)	H = 26.6in (H=675mm) W = 12in (W=304mm) D = 6.8n (D=173mm)
Volume	29l	35.5l
Weight		64lbs / 29kg

B66A RRH 4X45 – PHYSICAL CHARACTERISTICS- TARGET 15.1

B4 RRH4x45-4R (AWS-Extension Band)	
Frequency Band	LR15.1 – B4 / LR16.1 B66 (AWS 1 and 3 only)
RF Output Power	2x90W/4x45W (SW configurable)
Operational range	2110-2180 MHz, DL/ 1710-1780 MHz UL
Instantaneous Bandwidth	70MHz
Configuration (HW readiness)	LTE: 2T2R, 2T4R, 4T4R
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Volume	29l	35.5l
Weight		64lbs / 29kg

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[9] 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-93-658 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)

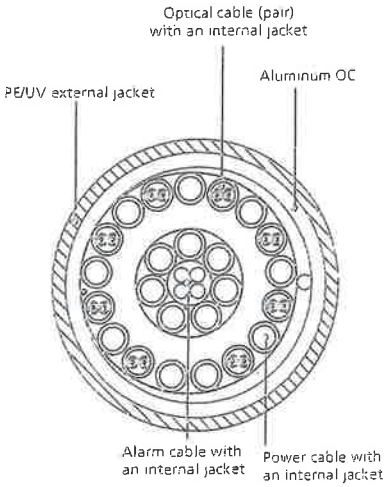


Figure 2: Construction Detail

* This data is provisional and subject to change

ATTACHMENT 2

	General	Power	Density					
Site Name: Shelton 2								
Tower Height: 140'								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*AT&T	RF calculated by taking field measurements of all existing antennas and adding LTE calculation							
*MetroPCS	3	444	110	0.0442	2140	1.0000	0.44%	
*T-Mobile 1900/2100 MHz	2	2559	120	0.1416	1900	1.0000	1.42%	
*T-Mobile 1900/2100 MHz	4	1280	120	0.1416	1900	1.0000	1.42%	
*T-Mobile 700	1	865	120	0.0239	700	0.4667	0.51%	
*J. Brennan Constrcn	2	500	96.5	0.0439	31	0.2000	2.20%	
*Nextel	9	100	84.5	0.0525	851	0.5673	0.93%	
*Clearwire	2	153	75	0.0231	2496	1.0000	0.23%	
*Clearwire	1	211	75	0.0159	18 GHz	1.0000	0.16%	
*Sprint CDMA/LTE	4	693	74.7	0.2112	1900	1.0000	2.11%	
*Sprint CDMA/LTE	1	390	74.7	0.0297	850	0.5667	0.52%	
Verizon	**1**	**1618**	**140**	**0.0297**	**1970**	**1.0000**	**2.97%**	
Verizon	**9**	**409**	**140**	**0.0675**	**869**	**0.5793**	**11.66%**	
Verizon	**1**	**2129**	**140**	**0.0391**	**2145**	**1.0000**	**3.91%**	
Verizon	**1**	**510**	**140**	**0.0094**	**746**	**0.4973**	**1.88%**	
								30.3%
* Source: Siting Council								

ATTACHMENT 3

Date: **November 4, 2015**

Adam Winters
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

JACOBS
Jacobs Engineering Group, Inc.
5449 Bells Ferry Road
Acworth, GA 30102
(770) 701-2500

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Verizon Wireless* Co-Locate**	
	Carrier Site Number:	118089
	Carrier Site Name:	Shelton 2 CT
Crown Castle Designation:	**Crown Castle BU Number:**	842873
	Crown Castle Site Name:	SHELTON NE
	Crown Castle JDE Job Number:	346141
	Crown Castle Work Order Number:	1121760
	Crown Castle Application Number:	306000 Rev. 0
Engineering Firm Designation:	**Jacobs Engineering Group, Inc. Project Number:**	1121760 (R1)
Site Data:	**30 Oliver Terrace, SHELTON, Fairfield County, CT** **Latitude *41° 17' 38.21"*, Longitude *-73° 6' 25.83"*** **140 Foot - Monopole Tower**	

Dear Adam Winters,

Jacobs Engineering Group, Inc. 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 826622, in accordance with application 306000, 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:

LC4.7: Modified Structure w/ Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 Connecticut State Building Code based upon a wind speed of 85 mph fastest mile.

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

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

Structural analysis prepared by:

Earnest Johnson, E.I.
Tower Structural Engineer

Reviewed by:

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

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 101.58 ft Monopole tower designed by FWT INC. in January of 2003. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F. The tower was later extended to an overall height of 140 ft according to the modification drawings by Paul J. Ford and Company in October of 2004.The tower has been modified multiple times in the past to accommodate additional loading. Proposed modifications designed by FDH Velocitel in July of 2015, which consisted of addition of flat plate reinforcements, are considered in this analysis. Proposed modifications designed by Jacobs Engineering in November of 2015 are considered in this analysis.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 38 mph with 0.75 inch ice thickness and 50 mph under service loads.

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
138.0	140.0	3	Alcatel Lucent	AWS4 (B66) 4x45 RRH	2	1-5/8	-
		3	Alcatel Lucent	RRH2X60-PCS			
		3	Alcatel Lucent	RRH2x60-700			
		6	Andrew	HBXX-6516DS-A2M w/ pipe mount			
		3	CSS	X7C-FRO-660-VR0 w/ Mount Pipe			
		1	RFS Celwave	DB-T1-6Z-8AB-0Z			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
138.0	145.0	1	Andrew	DB636-C	1	1-1/4	4
	140.0	3	Amphenol	BXA-80063-6BF-EDIN-4 w/ Mount Pipe	12	1-5/8	1
		6	Antel	BXA-171063-8BF-2 w/ Mount Pipe	-	-	3
		3	Antel	BXA-70063-6CF-2 w/ Mount Pipe			
		6	RFS Celwave	FD9R6004/2C-3L			
		3	Lucent	RRH2x40-AWS			
		1	RFS Celwave	DB-T1-6Z-8AB-0Z	-	-	1
	138.0	1	Tower Mounts	Platform Mount [LP 403-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
120.0	120.0	3	Commscope	ATBT-BOTTOM-24V	-	-	2
		3	Commscope	LNX-6515DS-VTM w/ Mount Pipe			
		6	Communication Components Inc.	DTMA-1819-DD-12	18	1-5/8	1
		3	RFS Celwave	APX16DWV-16DWVS-E-A20 w/ pipe mount			
		3	RFS Celwave	APX16PV-16PVL w/ pipe mount			
		3	Tower Mounts	T-Arm Mount [TA 602-1]			
110.0	110.0	3	Kathrein	800-10504 w/ pipe mount	6	1-5/8	3
		3	Kathrein	860-10025			
		3	Tower Mounts	T-Arm Mount [TA 702-1]			
99.0	99.0	6	Ericsson	RRUS-11	1 2	3/4 7/8	1
		1	Raycap	DC6-48-60-18-8F			
		3	Tower Mounts	Side Arm Mount [SO 102-1]			
95.0	95.0	3	Powerwave Technologies	7770.00 w/ Mount Pipe	6	7/8	1
		3	Powerwave Technologies	P65-16-XLH-RR w/ pipe mount			
		6	Powerwave Technologies	LGP21401			
		1	Tower Mounts	Platform Mount [LP 1001-1]			
73.0	75.0	3	Alcatel Lucent	1900MHz 4X40W RRH	3	1-1/4	1
		3	Alcatel Lucent	800 External Notch Filter			
		3	Alcatel Lucent	800MHZ 2X50W RRH			
		3	RFS Celwave	APXVSPP18-C-A20 w/ Mount Pipe			
	73.0	1	Tower Mounts	Platform Mount [LP 1201-1]			
50.0	50.0	1	Pctel	GPS-TMG-HR-26NCM	-	-	1

Notes:
1) Existing equipment
2) Reserved Equipment
3) Existing Equipment to be Removed; Not Considered in this Analysis.
4) Second Carrier

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)
100.0	100.0	2	Generic	4' Dia. Standard Dish	-	-
		6	Allgon	7920.XX Panel Antenna		
90.0	90.0	9	Generic	4' x 1' x 3' Panel Antenna	-	-
80.0	80.0	9	Generic	4' x 1' x 3' Panel Antenna	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-Geotechnical Report	Clarence Welti Associates., Inc.	4529442	CCISites
4-Tower Foundation Drawings	Dewberry-Goodkind, Inc.	4598376	CCISites
4-Tower Manufacturer Drawings	FWT, Inc.	4598387	CCISites
4-Tower Reinforcement Drawings	B+T Enginnering, Inc.	4858944	CCISites
4-Tower Reinforcement Drawings	GPD Associates	5461041	CCISites
4-Tower Reinforcement Drawings	GPD Associates	5461043	CCISites
4-Tower Reinforcement Drawings	GPD Associates	-	Project No. 2010266.16
4-Tower Reinforcement Drawings	FDH Velocitel	5785413	CCISites
4-Post Modification Inspection	B+T Group	5095590	CCISites
4-Tower Reinforcement Drawings	Jacobs Engineering Group, Inc.	-	1121760

3.1) Analysis Method

tnxTower (version 6.1.4.1), 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) Modifications per reinforcement drawings prepared by FDH Velocitel (CCI Doc# 5785413) were considered in this analysis.
6) Modifications per reinforcement drawings prepared by Jacobs Engineering Group (Project No. 1121760 (R1)) dated November 4, 2015 must be installed for this analysis to be valid.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
140 - 135	Pole	TP14.296x13.161x0.1875	Pole	26.5%	Pass
135 - 130	Pole	TP15.431x14.296x0.1875	Pole	46.7%	Pass
130 - 125	Pole	TP16.566x15.431x0.1875	Pole	61.9%	Pass
125 - 120	Pole	TP17.701x16.566x0.1875	Pole	73.6%	Pass
120 - 115	Pole	TP18.836x17.701x0.1875	Pole	91.6%	Pass
115 - 114.75	Pole + Reinf.	TP18.893x18.836x0.4625	Reinf. 9 Compression	54.4%	Pass
114.75 - 109.75	Pole + Reinf.	TP20.028x18.893x0.45	Reinf. 9 Compression	64.9%	Pass
109.75 - 104.75	Pole + Reinf.	TP21.163x20.028x0.425	Reinf. 9 Compression	74.1%	Pass
104.75 - 101.48	Pole	TP21.905x21.163x0.3125	Pole	75.6%	Pass
101.48 - 101.25	Pole	TP21.958x21.905x0.3125	Pole	75.9%	Pass
101.25 - 96.25	Pole	TP23.093x21.958x0.3125	Pole	81.2%	Pass
96.25 - 91.25	Pole	TP24.228x23.093x0.3125	Pole	88.7%	Pass
91.25 - 90.91	Pole	TP24.305x24.228x0.3125	Pole	89.2%	Pass
90.91 - 90.66	Pole + Reinf.	TP24.362x24.305x0.6	Reinf. 8 Bolt Shear	62.4%	Pass
90.66 - 85.66	Pole + Reinf.	TP25.497x24.362x0.5875	Reinf. 8 Compression	67.4%	Pass
85.66 - 80.66	Pole + Reinf.	TP26.632x25.497x0.5625	Reinf. 8 Compression	72.6%	Pass
80.66 - 75.66	Pole + Reinf.	TP27.767x26.632x0.55	Reinf. 8 Compression	77.2%	Pass
75.66 - 72.08	Pole + Reinf.	TP28.579x27.767x0.55	Reinf. 8 Compression	80.9%	Pass

72.08 - 71.83	Pole + Reinf.	TP28.636x28.579x0.7375	Reinf. 8 Compression	60.6%	Pass
71.83 - 70.08	Pole + Reinf.	TP29.033x28.636x0.725	Reinf. 8 Bolt Shear	63.1%	Pass
70.08 - 69.83	Pole + Reinf.	TP29.09x29.033x0.4875	Reinf. 4 Tension Rupture	89.1%	Pass
69.83 - 64.83	Pole + Reinf.	TP30.225x29.09x0.4875	Reinf. 4 Tension Rupture	94.1%	Pass
64.83 - 63	Pole + Reinf.	TP30.64x30.225x0.475	Reinf. 4 Tension Rupture	95.8%	Pass
63 - 62.75	Pole + Reinf.	TP30.697x30.64x0.75	Reinf. 4 Tension Rupture	69.3%	Pass
62.75 - 59.08	Pole + Reinf.	TP31.53x30.697x0.7375	Reinf. 4 Tension Rupture	71.9%	Pass
59.08 - 58.82	Pole + Reinf.	TP31.59x31.53x0.625	Reinf. 11 Tension Rupture	76.4%	Pass
58.82 - 58.67	Pole + Reinf.	TP31.624x31.59x0.625	Reinf. 11 Tension Rupture	76.5%	Pass
58.67 - 53.67	Pole + Reinf.	TP32.759x31.624x0.6125	Reinf. 11 Tension Rupture	79.8%	Pass
53.67 - 53	Pole + Reinf.	TP33.913x32.759x0.6125	Reinf. 11 Tension Rupture	80.2%	Pass
53 - 47.58	Pole + Reinf.	TP33.515x32.285x0.6375	Reinf. 3 Tension Rupture	85.6%	Pass
47.58 - 42.58	Pole + Reinf.	TP34.65x33.515x0.625	Reinf. 3 Tension Rupture	88.4%	Pass
42.58 - 40	Pole + Reinf.	TP35.237x34.65x0.6125	Reinf. 3 Tension Rupture	89.7%	Pass
40 - 39.75	Pole + Reinf.	TP35.293x35.237x0.8125	Reinf. 3 Tension Rupture	69.7%	Pass
39.75 - 34.75	Pole + Reinf.	TP36.428x35.293x0.7875	Reinf. 3 Tension Rupture	71.8%	Pass
34.75 - 31.41	Pole + Reinf.	TP37.186x36.428x0.775	Reinf. 3 Tension Rupture	73.1%	Pass
31.41 - 31.16	Pole + Reinf.	TP37.243x37.186x0.775	Reinf. 12 Tension Rupture	73.3%	Pass
31.16 - 29	Pole + Reinf.	TP37.734x37.243x0.7625	Reinf. 12 Tension Rupture	74.1%	Pass
29 - 28.75	Pole + Reinf.	TP37.79x37.734x0.5875	Reinf. 12 Tension Rupture	94.8%	Pass
28.75 - 23.75	Pole + Reinf.	TP38.925x37.79x0.5875	Reinf. 12 Tension Rupture	96.8%	Pass
23.75 - 23.5	Pole + Reinf.	TP38.982x38.925x0.5875	Reinf. 12 Tension Rupture	96.9%	Pass
23.5 - 23.25	Pole + Reinf.	TP39.039x38.982x0.65	Reinf. 12 Tension Rupture	89.5%	Pass
23.25 - 18.25	Pole + Reinf.	TP40.174x39.039x0.6375	Reinf. 12 Tension Rupture	91.2%	Pass
18.25 - 13.25	Pole + Reinf.	TP41.309x40.174x0.625	Reinf. 12 Tension Rupture	92.8%	Pass
13.25 - 8.25	Pole + Reinf.	TP42.444x41.309x0.6125	Reinf. 12 Tension Rupture	94.3%	Pass
8.25 - 5.5	Pole + Reinf.	TP43.068x42.444x0.6125	Reinf. 12 Tension Rupture	95.0%	Pass
5.5 - 5.25	Pole + Reinf.	TP43.125x43.068x0.6625	Reinf. 12 Tension Rupture	85.1%	Pass

5.25 - 0.25	Pole + Reinf.	TP44.26x43.125x0.65	Reinf. 12 Tension Rupture	86.4%	Pass
0.25 - 0	Pole + Reinf.	TP44.317x44.26x0.65	Reinf. 12 Tension Rupture	86.5%	Pass
				Summary	
			Pole	91.6%	Pass
			Reinforcement	96.9%	Pass
			Overall	96.9%	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC4.7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	84.8	Pass
1	Base Plate	0	79.1	Pass
1	Base Foundation Structural	0	71.2	Pass
1	Base Foundation Soil Interaction	0	65.0	Pass
1	Flange Connection	101.58	91.6	Pass

Structure Rating (max from all components) =	**96.9%**

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

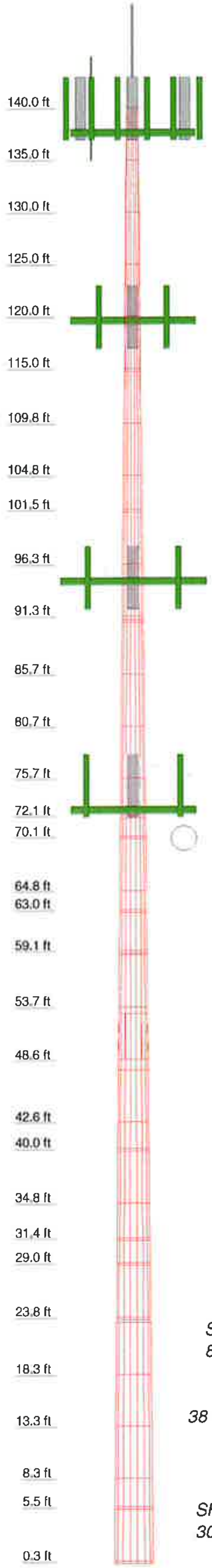
4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the existing, reserved and proposed loads once the proposed modifications 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	5.000	18	0.188		13.161	14.296		0.1
2	5.000	18	0.188		14.296	15.431		0.1
3	5.000	18	0.188		15.431	16.566		0.2
4	5.000	18	0.188		16.566	17.701		0.2
5	5.000	18	0.188		17.701	18.836		0.2
8	5.000	18	0.425		20.028	21.163		0.4
16	5.000	18	0.563		25.497	26.632		0.7
17	5.000	18	0.550		26.632	27.767		0.8
[illegible]	[illegible]	[illegible]	[illegible]	4.417	[illegible]	[illegible]	A572-65	[illegible]
43	5.000	18	0.625		40.174	41.309		1.5
44	5.000	18	0.613		41.309	42.444		1.5
								24.0



DESIGNED APPURTENANCE LOADING

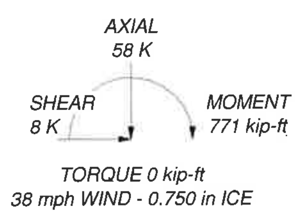
TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 3/4" x 7'	140	ATBT-BOTTOM-24V	120
Platform Mount [LP 403-1]	138	flange transition stiffener	103.7
BXA-80063-6BF-EDIN-4 w/ Mount Pipe	138	flange transition stiffener	103.7
		flange transition stiffener	103.7
BXA-80063-6BF-EDIN-4 w/ Mount Pipe	138	(2) RRUS-11	99
		6' x 2" Mount Pipe	99
BXA-80063-6BF-EDIN-4 w/ Mount Pipe	138	6' x 2" Mount Pipe	99
		6' x 2" Mount Pipe	99
DB636-C	138	DC6-48-60-18-8F	99
DB-T1-6Z-8AB-0Z	138	Side Arm Mount [SO 102-3]	99
X7C-FRO-660-VR0 w/ Mount Pipe	138	(2) RRUS-11	99
X7C-FRO-660-VR0 w/ Mount Pipe	138	(2) RRUS-11	99
X7C-FRO-660-VR0 w/ Mount Pipe	138	P65-16-XLH-RR w/ pipe mount	95
(2) HBXX-6516DS-A2M w/ pipe mount	138	7770.00 w/ Mount Pipe	95
(2) HBXX-6516DS-A2M w/ pipe mount	138	7770.00 w/ Mount Pipe	95
(2) HBXX-6516DS-A2M w/ pipe mount	138	7770.00 w/ Mount Pipe	95
AWS4 (B66) 4x45 RRH	138	(2) LGP21401	95
AWS4 (B66) 4x45 RRH	138	(2) LGP21401	95
AWS4 (B66) 4x45 RRH	138	(2) LGP21401	95
RRH2X60-PCS	138	Platform Mount [LP 1001-1]	95
RRH2X60-PCS	138	P65-16-XLH-RR w/ pipe mount	95
RRH2X60-PCS	138	P65-16-XLH-RR w/ pipe mount	95
RRH2x60-700	138	APXVSPP18-C-A20 w/ Mount Pipe	73
RRH2x60-700	138	800 External Notch Filter	73
RRH2x60-700	138	800 External Notch Filter	73
DB-T1-6Z-8AB-0Z	138	800 External Notch Filter	73
T-Arm Mount [TA 602-3]	120	800MHZ 2X50W RRH	73
APX16PV-16PVL w/ pipe mount	120	800MHZ 2X50W RRH	73
APX16PV-16PVL w/ pipe mount	120	800MHZ 2X50W RRH	73
APX16PV-16PVL w/ pipe mount	120	1900MHz 4X40W RRH	73
APX16DWV-16DWVS-E-A20 w/ pipe mount	120	1900MHz 4X40W RRH	73
APX16DWV-16DWVS-E-A20 w/ pipe mount	120	1900MHz 4X40W RRH	73
		10' x 3" Pipe Mount	73
APX16DWV-16DWVS-E-A20 w/ pipe mount	120	10' x 3" Pipe Mount	73
		10' x 3" Pipe Mount	73
(2) DTMA-1819-DD-12	120	6' x 2" Mount Pipe	73
(2) DTMA-1819-DD-12	120	6' x 2" Mount Pipe	73
(2) DTMA-1819-DD-12	120	6' x 2" Mount Pipe	73
LNX-6515DS-VTM w/ Mount Pipe	120	Platform Mount [LP 1201-1]	73
LNX-6515DS-VTM w/ Mount Pipe	120	APXVSPP18-C-A20 w/ Mount Pipe	73
LNX-6515DS-VTM w/ Mount Pipe	120	APXVSPP18-C-A20 w/ Mount Pipe	73
ATBT-BOTTOM-24V	120	Side Arm Mount [SO 201-1]	50
ATBT-BOTTOM-24V	120	GPS-TMG-HR-26NCM	50

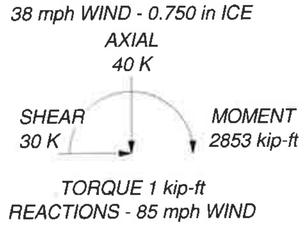
MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
3. Deflections are based upon a 50 mph wind.





Jacobs Engineering Group 5449 Bells Ferry Road Acworth, GA 30102 Phone: FAX:	Job: **CN4-478 / 6150003** Project: **842873 / Shelton Ne** Client: Crown Castle USA Code: TIA/EIA-222-F Path:	Drawn by: Dan Chang Date: 11/04/15	App'd: Scale: N Dwg No.

Tower Input Data

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

Basic wind speed of 85 mph.
Nominal ice thickness of 0.750 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 38 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 50 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
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
	Consider Moments - Horizontals		Assume Legs Pinned
	Consider Moments - Diagonals	√	Assume Rigid Index Plate
	Use Moment Magnification	√	Use Clear Spans For Wind Area
√	Use Code Stress Ratios		Use Clear Spans For KL/r
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension
√	Escalate Ice	√	Bypass Mast Stability Checks
	Always Use Max Kz	√	Use Azimuth Dish Coefficients
	Use Special Wind Profile	√	Project Wind Area of Appurt.
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas
	Leg Bolts Are At Top Of Section		SR Members Have Cut Ends
	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing
	Add IBC .6D+W Combination		Use TIA-222-G Tension Splice Capacity Exemption

	Treat Feedline Bundles As Cylinder
	Use ASCE 10 X-Brace Ly Rules
	Calculate Redundant Bracing Forces
	Ignore Redundant Members in FEA
	SR Leg Bolts Resist Compression
	All Leg Panels Have Same Allowable
	Offset Girt At Foundation
√	Consider Feedline Torque
	Include Angle Block Shear Check
	Poles
√	Include Shear-Torsion Interaction
	Always Use Sub-Critical Flow
	Use Top Mounted Sockets

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	140.000-135.000	5.000	0.000	18	13.161	14.296	0.188	0.750	A572-65 (65 ksi)
L2	135.000-130.000	5.000	0.000	18	14.296	15.431	0.188	0.750	A572-65 (65 ksi)
L3	130.000-125.000	5.000	0.000	18	15.431	16.566	0.188	0.750	A572-65 (65 ksi)
L4	125.000-120.000	5.000	0.000	18	16.566	17.701	0.188	0.750	A572-65 (65 ksi)
L5	120.000-115.000	5.000	0.000	18	17.701	18.836	0.188	0.750	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
L6	115.000-114.750	0.250	0.000	18	18.836	18.893	0.463	1.850	A572-65 (65 ksi)
L7	114.750-109.750	5.000	0.000	18	18.893	20.028	0.450	1.800	A572-65 (65 ksi)
L8	109.750-104.750	5.000	0.000	18	20.028	21.163	0.425	1.700	A572-65 (65 ksi)
L9	104.750-101.483	3.267	0.000	18	21.163	21.905	0.313	1.250	A572-65 (65 ksi)
L10	101.483-101.250	0.233	0.000	18	21.905	21.958	0.313	1.250	A572-65 (65 ksi)
L11	101.250-96.250	5.000	0.000	18	21.958	23.093	0.313	1.250	A572-65 (65 ksi)
L12	96.250-91.250	5.000	0.000	18	23.093	24.228	0.313	1.250	A572-65 (65 ksi)
L13	91.250-90.910	0.340	0.000	18	24.228	24.305	0.313	1.250	A572-65 (65 ksi)
L14	90.910-90.660	0.250	0.000	18	24.305	24.362	0.600	2.400	A572-65 (65 ksi)
L15	90.660-85.660	5.000	0.000	18	24.362	25.497	0.588	2.350	A572-65 (65 ksi)
L16	85.660-80.660	5.000	0.000	18	25.497	26.632	0.563	2.250	A572-65 (65 ksi)
L17	80.660-75.660	5.000	0.000	18	26.632	27.767	0.550	2.200	A572-65 (65 ksi)
L18	75.660-72.080	3.580	0.000	18	27.767	28.579	0.550	2.200	A572-65 (65 ksi)
L19	72.080-71.830	0.250	0.000	18	28.579	28.636	0.738	2.950	A572-65 (65 ksi)
L20	71.830-70.080	1.750	0.000	18	28.636	29.033	0.725	2.900	A572-65 (65 ksi)
L21	70.080-69.830	0.250	0.000	18	29.033	29.090	0.487	1.950	A572-65 (65 ksi)
L22	69.830-64.830	5.000	0.000	18	29.090	30.225	0.487	1.950	A572-65 (65 ksi)
L23	64.830-63.000	1.830	0.000	18	30.225	30.640	0.475	1.900	A572-65 (65 ksi)
L24	63.000-62.750	0.250	0.000	18	30.640	30.697	0.750	3.000	A572-65 (65 ksi)
L25	62.750-59.083	3.667	0.000	18	30.697	31.530	0.738	2.950	A572-65 (65 ksi)
L26	59.083-58.817	0.267	0.000	18	31.530	31.590	0.625	2.500	A572-65 (65 ksi)
L27	58.817-58.667	0.150	0.000	18	31.590	31.624	0.625	2.500	A572-65 (65 ksi)
L28	58.667-53.667	5.000	0.000	18	31.624	32.759	0.613	2.450	A572-65 (65 ksi)
L29	53.667-48.583	5.083	4.417	18	32.759	33.913	0.613	2.450	A572-65 (65 ksi)
L30	48.583-47.583	5.417	0.000	18	32.285	33.515	0.637	2.550	A572-65 (65 ksi)
L31	47.583-42.583	5.000	0.000	18	33.515	34.650	0.625	2.500	A572-65 (65 ksi)
L32	42.583-40.000	2.583	0.000	18	34.650	35.237	0.613	2.450	A572-65 (65 ksi)
L33	40.000-39.750	0.250	0.000	18	35.237	35.293	0.813	3.250	A572-65 (65 ksi)
L34	39.750-34.750	5.000	0.000	18	35.293	36.428	0.787	3.150	A572-65 (65 ksi)
L35	34.750-31.413	3.337	0.000	18	36.428	37.186	0.775	3.100	A572-65 (65 ksi)
L36	31.413-31.163	0.250	0.000	18	37.186	37.243	0.775	3.100	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
									(65 ksi)
L37	31.163-29.000	2.163	0.000	18	37.243	37.734	0.762	3.050	A572-65 (65 ksi)
L38	29.000-28.750	0.250	0.000	18	37.734	37.790	0.588	2.350	A572-65 (65 ksi)
L39	28.750-23.750	5.000	0.000	18	37.790	38.925	0.588	2.350	A572-65 (65 ksi)
L40	23.750-23.500	0.250	0.000	18	38.925	38.982	0.588	2.350	A572-65 (65 ksi)
L41	23.500-23.250	0.250	0.000	18	38.982	39.039	0.650	2.600	A572-65 (65 ksi)
L42	23.250-18.250	5.000	0.000	18	39.039	40.174	0.637	2.550	A572-65 (65 ksi)
L43	18.250-13.250	5.000	0.000	18	40.174	41.309	0.625	2.500	A572-65 (65 ksi)
L44	13.250-8.250	5.000	0.000	18	41.309	42.444	0.613	2.450	A572-65 (65 ksi)
L45	8.250-5.500	2.750	0.000	18	42.444	43.068	0.613	2.450	A572-65 (65 ksi)
L46	5.500-5.250	0.250	0.000	18	43.068	43.125	0.662	2.650	A572-65 (65 ksi)
L47	5.250-0.250	5.000	0.000	18	43.125	44.260	0.650	2.600	A572-65 (65 ksi)
L48	0.250-0.000	0.250		18	44.260	44.317	0.650	2.600	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	13.364	7.721	164.179	4.606	6.686	24.556	328.574	3.861	1.986	10.594
	14.517	8.396	211.151	5.009	7.262	29.075	422.580	4.199	2.186	11.659
L2	14.517	8.396	211.151	5.009	7.262	29.075	422.580	4.199	2.186	11.659
	15.669	9.072	266.323	5.411	7.839	33.974	532.997	4.537	2.386	12.725
L3	15.669	9.072	266.323	5.411	7.839	33.974	532.997	4.537	2.386	12.725
	16.822	9.747	330.355	5.814	8.416	39.255	661.145	4.875	2.586	13.79
L4	16.822	9.747	330.355	5.814	8.416	39.255	661.145	4.875	2.586	13.79
	17.974	10.423	403.906	6.217	8.992	44.917	808.344	5.212	2.785	14.856
L5	17.974	10.423	403.906	6.217	8.992	44.917	808.344	5.212	2.785	14.856
	19.127	11.098	487.637	6.620	9.569	50.961	975.915	5.550	2.985	15.921
L6	19.127	26.972	1150.406	6.523	9.569	120.224	2302.325	13.489	2.501	5.408
	19.184	27.056	1161.099	6.543	9.598	120.977	2323.725	13.530	2.511	5.43
L7	19.184	26.342	1132.018	6.547	9.598	117.947	2265.525	13.174	2.533	5.629
	20.337	27.963	1354.151	6.950	10.174	133.096	2710.083	13.984	2.733	6.073
L8	20.337	26.444	1283.826	6.959	10.174	126.184	2569.341	13.224	2.777	6.534
	21.490	27.975	1519.995	7.362	10.751	141.383	3041.990	13.990	2.977	7.004
L9	21.490	20.681	1135.937	7.402	10.751	105.660	2273.368	10.343	3.175	10.159
	22.243	21.417	1261.494	7.665	11.128	113.366	2524.647	10.710	3.305	10.577
L10	22.243	21.417	1261.494	7.665	11.128	113.366	2524.647	10.710	3.305	10.577
	22.296	21.469	1270.800	7.684	11.154	113.927	2543.272	10.737	3.315	10.607
L11	22.296	21.469	1270.800	7.684	11.154	113.927	2543.272	10.737	3.315	10.607
	23.449	22.595	1481.375	8.087	11.731	126.278	2964.699	11.300	3.514	11.246
L12	23.449	22.595	1481.375	8.087	11.731	126.278	2964.699	11.300	3.514	11.246
	24.601	23.721	1714.015	8.490	12.308	139.264	3430.285	11.863	3.714	11.885
L13	24.601	23.721	1714.015	8.490	12.308	139.264	3430.285	11.863	3.714	11.885
	24.680	23.797	1730.663	8.517	12.347	140.170	3463.604	11.901	3.728	11.928

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
L14	24.680	45.144	3204.845	8.415	12.347	259.568	6413.907	22.576	3.222	5.369
	24.737	45.252	3227.918	8.435	12.376	260.827	6460.083	22.630	3.232	5.386
L15	24.737	44.332	3165.660	8.440	12.376	255.797	6335.486	22.170	3.254	5.538
	25.890	46.449	3641.046	8.843	12.952	281.113	7286.883	23.229	3.453	5.878
L16	25.890	44.517	3496.615	8.852	12.952	269.962	6997.830	22.263	3.497	6.218
	27.042	46.543	3996.178	9.255	13.529	295.382	7997.614	23.276	3.697	6.573
L17	27.042	45.531	3912.997	9.259	13.529	289.234	7831.144	22.770	3.719	6.762
	28.195	47.512	4446.400	9.662	14.105	315.226	8898.650	23.761	3.919	7.125
L18	28.195	47.512	4446.400	9.662	14.105	315.226	8898.650	23.761	3.919	7.125
	29.020	48.931	4856.706	9.950	14.518	334.524	9719.802	24.470	4.062	7.385
L19	29.020	65.173	6382.580	9.884	14.518	439.624	12773.558	32.593	3.732	5.06
	29.078	65.306	6421.689	9.904	14.547	441.441	12851.827	32.659	3.742	5.074
L20	29.078	64.227	6321.336	9.908	14.547	434.543	12650.989	32.120	3.764	5.192
	29.481	65.142	6595.105	10.049	14.749	447.159	13198.888	32.577	3.834	5.288
L21	29.481	44.170	4547.196	10.134	14.749	308.308	9100.375	22.089	4.252	8.722
	29.539	44.257	4574.370	10.154	14.778	309.545	9154.758	22.133	4.262	8.742
L22	29.539	44.257	4574.370	10.154	14.778	309.545	9154.758	22.133	4.262	8.742
	30.691	46.014	5140.823	10.557	15.354	334.813	10288.410	23.011	4.462	9.152
L23	30.691	44.853	5015.326	10.561	15.354	326.640	10037.251	22.431	4.484	9.439
	31.113	45.479	5228.365	10.709	15.565	335.898	10463.611	22.744	4.557	9.593
L24	31.113	71.154	8031.590	10.611	15.565	515.992	16073.748	35.584	4.073	5.43
	31.171	71.289	8077.423	10.631	15.594	517.977	16165.474	35.651	4.083	5.444
L25	31.171	70.130	7952.749	10.636	15.594	509.983	15915.963	35.072	4.105	5.566
	32.016	72.079	8634.166	10.931	16.017	539.063	17279.693	36.046	4.251	5.764
L26	32.016	61.307	7397.583	10.971	16.017	461.859	14804.900	30.659	4.449	7.119
	32.077	61.427	7441.127	10.993	16.048	463.687	14892.044	30.719	4.460	7.136
L27	32.077	61.427	7441.127	10.993	16.048	463.687	14892.044	30.719	4.460	7.136
	32.112	61.494	7465.701	11.005	16.065	464.718	14941.226	30.753	4.466	7.145
L28	32.112	60.289	7325.241	11.009	16.065	455.974	14660.121	30.150	4.488	7.327
	33.264	62.495	8159.332	11.412	16.642	490.297	16329.400	31.254	4.688	7.653
L29	33.264	62.495	8159.332	11.412	16.642	490.297	16329.400	31.254	4.688	7.653
	34.436	64.739	9069.905	11.822	17.228	526.469	18151.744	32.375	4.891	7.985
L30	33.802	64.037	8103.263	11.235	16.401	494.072	16217.188	32.025	4.560	7.153
	34.032	66.525	9084.966	11.672	17.026	533.605	18181.886	33.269	4.777	7.493
L31	34.032	65.246	8916.992	11.676	17.026	523.739	17845.718	32.629	4.799	7.678
	35.185	67.497	9872.410	12.079	17.602	560.860	19757.811	33.755	4.998	7.997
L32	35.185	66.172	9685.629	12.083	17.602	550.249	19384.003	33.092	5.020	8.197
	35.780	67.312	10194.934	12.292	17.900	569.544	20403.282	33.662	5.124	8.365
L33	35.780	88.775	13290.887	12.221	17.900	742.501	26599.263	44.396	4.772	5.873
	35.838	88.922	13356.732	12.241	17.929	744.979	26731.038	44.469	4.782	5.885
L34	35.838	86.248	12973.934	12.250	17.929	723.628	25964.940	43.132	4.826	6.128
	36.990	89.085	14296.829	12.653	18.506	772.567	28612.470	44.551	5.025	6.381
L35	36.990	87.702	14084.704	12.657	18.506	761.105	28187.941	43.859	5.047	6.513
	37.759	89.565	15001.614	12.926	18.890	794.139	30022.968	44.791	5.181	6.685
L36	37.759	89.565	15001.614	12.926	18.890	794.139	30022.968	44.791	5.181	6.685
	37.817	89.705	15071.871	12.946	18.919	796.643	30163.573	44.861	5.191	6.698
L37	37.817	88.288	14844.030	12.950	18.919	784.600	29707.592	44.152	5.213	6.836
	38.316	89.477	15451.625	13.125	19.169	806.086	30923.581	44.747	5.299	6.95
L38	38.316	69.267	12075.211	13.187	19.169	629.944	24166.310	34.640	5.607	9.544
	38.373	69.373	12130.642	13.207	19.198	631.885	24277.246	34.693	5.617	9.561
L39	38.373	69.373	12130.642	13.207	19.198	631.885	24277.246	34.693	5.617	9.561
	39.526	71.490	13275.173	13.610	19.774	671.340	26567.814	35.752	5.817	9.901
L40	39.526	71.490	13275.173	13.610	19.774	671.340	26567.814	35.752	5.817	9.901
	39.584	71.596	13334.216	13.630	19.803	673.344	26685.977	35.805	5.827	9.918
L41	39.584	79.083	14680.822	13.608	19.803	741.344	29380.960	39.549	5.717	8.795
	39.641	79.200	14746.125	13.628	19.832	743.559	29511.654	39.608	5.727	8.811
L42	39.641	77.703	14476.678	13.633	19.832	729.973	28972.405	38.859	5.749	9.018
	40.794	79.999	15798.681	14.035	20.408	774.126	31618.151	40.007	5.949	9.331
L43	40.794	78.455	15503.599	14.040	20.408	759.667	31027.598	39.235	5.971	9.553
	41.946	80.707	16877.132	14.443	20.985	804.246	33776.472	40.361	6.170	9.873
L44	41.946	79.117	16554.840	14.447	20.985	788.888	33131.462	39.566	6.192	10.11
	43.099	81.324	17979.008	14.850	21.562	833.843	35981.674	40.670	6.392	10.436

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
L45	43.099	81.324	17979.008	14.850	21.562	833.843	35981.674	40.670	6.392	10.436
	43.733	82.538	18796.016	15.072	21.879	859.099	37616.765	41.277	6.502	10.616
L46	43.733	89.170	20258.641	15.054	21.879	925.950	40543.939	44.594	6.414	9.682
	43.790	89.289	20340.088	15.074	21.908	928.449	40706.940	44.653	6.424	9.697
L47	43.790	87.631	19973.942	15.079	21.908	911.736	39974.166	43.824	6.446	9.917
	44.943	89.972	21618.391	15.482	22.484	961.492	43265.228	44.995	6.646	10.224
L48	44.943	89.972	21618.391	15.482	22.484	961.492	43265.228	44.995	6.646	10.224
	45.001	90.089	21702.901	15.502	22.513	964.015	43434.360	45.053	6.656	10.24

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
L1 140.000-135.000				1	1	1		
L2 135.000-130.000				1	1	1		
L3 130.000-125.000				1	1	1		
L4 125.000-120.000				1	1	1		
L5 120.000-115.000				1	1	1		
L6 115.000-114.750				1	1	0.910446		
L7 114.750-109.750				1	1	0.905045		
L8 109.750-104.750				1	1	0.928825		
L9 104.750-101.483				1	1	1		
L10 101.483-101.250				1	1	1		
L11 101.250-96.250				1	1	1		
L12 96.250-91.250				1	1	1		
L13 91.250-90.910				1	1	1		
L14 90.910-90.660				1	1	0.924926		
L15 90.660-85.660				1	1	0.925326		
L16 85.660-80.660				1	1	0.947635		
L17 80.660-75.660				1	1	0.952005		
L18 75.660-72.080				1	1	0.940877		

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft^2	in					in	in
L19 72.080-71.830				1	1	0.969974		
L20 71.830-70.080				1	1	0.978464		
L21 70.080-69.830				1	1	1.03473		
L22 69.830-64.830				1	1	1.0197		
L23 64.830-63.000				1	1	1.04075		
L24 63.000-62.750				1	1	0.917236		
L25 62.750-59.083				1	1	0.918644		
L26 59.083-58.817				1	1	0.999798		
L27 58.817-58.667				1	1	0.999249		
L28 58.667-53.667				1	1	1.00126		
L29 53.667-48.583				1	1	0.998958		
L30 48.583-47.583				1	1	0.940603		
L31 47.583-42.583				1	1	0.943737		
L32 42.583-40.000				1	1	0.95498		
L33 40.000-39.750				1	1	0.925964		
L34 39.750-34.750				1	1	0.936902		
L35 34.750-31.413				1	1	0.94027		
L36 31.413-31.163				1	1	0.939434		
L37 31.163-29.000				1	1	0.947273		
L38 29.000-28.750				1	1	0.963116		
L39 28.750-23.750				1	1	0.95035		
L40 23.750-23.500				1	1	0.949731		
L41 23.500-23.250				1	1	1.08653		
L42 23.250-18.250				1	1	1.08975		
L43 18.250-13.250				1	1	1.09414		
L44 13.250-8.250				1	1	1.09969		
L45 8.250-5.500				1	1	1.09102		
L46 5.500-5.250				1	1	0.898495		
L47 5.250-0.250				1	1	0.90419		
L48				1	1	0.903639		

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft^2	in					in	in
0.250-0.000								

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 klf
AVA6-50(1-1/4")	B	No	Inside Pole	138.000 - 5.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
LDF7-50A(1-5/8")	B	No	Inside Pole	138.000 - 5.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
HB158-1-08U8-S8J18(1-5/8)	B	No	CaAa (Out Of Face)	120.000 - 5.000	2	No Ice	0.000	0.001
						1/2" Ice	0.000	0.003
						1" Ice	0.000	0.005
						2" Ice	0.000	0.011
						4" Ice	0.000	0.031
HB158-1-08U8-S8J18(1-5/8)	B	No	CaAa (Out Of Face)	138.000 - 120.000	1	No Ice	0.198	0.001
						1/2" Ice	0.298	0.003
						1" Ice	0.398	0.005
						2" Ice	0.598	0.011
						4" Ice	0.998	0.031
HB158-1-08U8-S8J18(1-5/8)	B	No	CaAa (Out Of Face)	138.000 - 120.000	1	No Ice	0.000	0.001
						1/2" Ice	0.000	0.003
						1" Ice	0.000	0.005
						2" Ice	0.000	0.011
						4" Ice	0.000	0.031
***								
LDF7-50A(1-5/8")	B	No	CaAa (Out Of Face)	120.000 - 8.000	3	No Ice	0.198	0.001
						1/2" Ice	0.298	0.002
						1" Ice	0.398	0.004
						2" Ice	0.598	0.011
						4" Ice	0.998	0.030
LDF7-50A(1-5/8")	B	No	CaAa (Out Of Face)	120.000 - 8.000	15	No Ice	0.000	0.001
						1/2" Ice	0.000	0.002
						1" Ice	0.000	0.004
						2" Ice	0.000	0.011
						4" Ice	0.000	0.030
***								
***								
LDF5-50A(7/8)	A	No	Inside Pole	99.000 - 8.000	2	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
9776(3/4")	A	No	Inside Pole	99.000 - 8.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
***								
LDF5-50A(7/8)	A	No	Inside Pole	95.000 - 8.000	6	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
***								
LDF6-50A(1-1/4")	A	No	Inside Pole	73.000 - 8.000	3	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
***								
CCI-SFP-060100 Reinforcement	A	No	CaAa (Out Of Face)	93.000 - 72.000	1	No Ice	0.167	0.000
						1/2" Ice	0.278	0.000
						1" Ice	0.389	0.000
						2" Ice	0.611	0.000
						4" Ice	1.056	0.000
1"x5-3/4" Flat Plate Reinforcement	A	No	CaAa (Out Of Face)	72.000 - 60.500	1	No Ice	0.170	0.000
						1/2" Ice	0.280	0.000
						1" Ice	0.390	0.000
						2" Ice	0.610	0.000
						4" Ice	1.050	0.000
4.5" x 1" Flat Plate (F)	A	No	CaAa (Out Of Face)	117.000 - 102.000	1	No Ice	0.167	0.000
						1/2" Ice	0.278	0.000
						1" Ice	0.389	0.000
						2" Ice	0.611	0.000
						4" Ice	1.056	0.000
Aero MP304	A	No	CaAa (Out Of Face)	60.500 - 0.500	1	No Ice	0.268	0.000
						1/2" Ice	0.908	0.000
						1" Ice	1.019	0.000
						2" Ice	1.241	0.000
						4" Ice	1.686	0.000

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	140.000-135.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.594	0.039
		C	0.000	0.000	0.000	0.000	0.000
L2	135.000-130.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.990	0.064
		C	0.000	0.000	0.000	0.000	0.000
L3	130.000-125.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.990	0.064
		C	0.000	0.000	0.000	0.000	0.000
L4	125.000-120.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.990	0.064
		C	0.000	0.000	0.000	0.000	0.000
L5	120.000-115.000	A	0.000	0.000	0.000	0.333	0.000
		B	0.000	0.000	0.000	2.970	0.138
		C	0.000	0.000	0.000	0.000	0.000
L6	115.000-114.750	A	0.000	0.000	0.000	0.042	0.000
		B	0.000	0.000	0.000	0.148	0.007
		C	0.000	0.000	0.000	0.000	0.000
L7	114.750-109.750	A	0.000	0.000	0.000	0.833	0.000

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	0.000	2.970	0.138
		C	0.000	0.000	0.000	0.000	0.000
L8	109.750-104.750	A	0.000	0.000	0.000	0.833	0.000
		B	0.000	0.000	0.000	2.970	0.138
		C	0.000	0.000	0.000	0.000	0.000
L9	104.750-101.483	A	0.000	0.000	0.000	0.458	0.000
		B	0.000	0.000	0.000	1.940	0.090
		C	0.000	0.000	0.000	0.000	0.000
L10	101.483-101.250	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.139	0.006
		C	0.000	0.000	0.000	0.000	0.000
L11	101.250-96.250	A	0.000	0.000	0.000	0.000	0.003
		B	0.000	0.000	0.000	2.970	0.138
		C	0.000	0.000	0.000	0.000	0.000
L12	96.250-91.250	A	0.000	0.000	0.000	0.292	0.012
		B	0.000	0.000	0.000	2.970	0.138
		C	0.000	0.000	0.000	0.000	0.000
L13	91.250-90.910	A	0.000	0.000	0.000	0.057	0.001
		B	0.000	0.000	0.000	0.202	0.009
		C	0.000	0.000	0.000	0.000	0.000
L14	90.910-90.660	A	0.000	0.000	0.000	0.042	0.001
		B	0.000	0.000	0.000	0.148	0.007
		C	0.000	0.000	0.000	0.000	0.000
L15	90.660-85.660	A	0.000	0.000	0.000	0.833	0.015
		B	0.000	0.000	0.000	2.970	0.138
		C	0.000	0.000	0.000	0.000	0.000
L16	85.660-80.660	A	0.000	0.000	0.000	0.833	0.015
		B	0.000	0.000	0.000	2.970	0.138
		C	0.000	0.000	0.000	0.000	0.000
L17	80.660-75.660	A	0.000	0.000	0.000	0.833	0.015
		B	0.000	0.000	0.000	2.970	0.138
		C	0.000	0.000	0.000	0.000	0.000
L18	75.660-72.080	A	0.000	0.000	0.000	0.597	0.012
		B	0.000	0.000	0.000	2.127	0.099
		C	0.000	0.000	0.000	0.000	0.000
L19	72.080-71.830	A	0.000	0.000	0.000	0.042	0.001
		B	0.000	0.000	0.000	0.148	0.007
		C	0.000	0.000	0.000	0.000	0.000
L20	71.830-70.080	A	0.000	0.000	0.000	0.297	0.009
		B	0.000	0.000	0.000	1.040	0.048
		C	0.000	0.000	0.000	0.000	0.000
L21	70.080-69.830	A	0.000	0.000	0.000	0.043	0.001
		B	0.000	0.000	0.000	0.148	0.007
		C	0.000	0.000	0.000	0.000	0.000
L22	69.830-64.830	A	0.000	0.000	0.000	0.850	0.025
		B	0.000	0.000	0.000	2.970	0.138
		C	0.000	0.000	0.000	0.000	0.000
L23	64.830-63.000	A	0.000	0.000	0.000	0.311	0.009
		B	0.000	0.000	0.000	1.087	0.051
		C	0.000	0.000	0.000	0.000	0.000
L24	63.000-62.750	A	0.000	0.000	0.000	0.043	0.001
		B	0.000	0.000	0.000	0.148	0.007
		C	0.000	0.000	0.000	0.000	0.000
L25	62.750-59.083	A	0.000	0.000	0.000	0.762	0.018
		B	0.000	0.000	0.000	2.178	0.101
		C	0.000	0.000	0.000	0.000	0.000
L26	59.083-58.817	A	0.000	0.000	0.000	0.071	0.001
		B	0.000	0.000	0.000	0.158	0.007
		C	0.000	0.000	0.000	0.000	0.000
L27	58.817-58.667	A	0.000	0.000	0.000	0.040	0.001
		B	0.000	0.000	0.000	0.089	0.004

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
		C	0.000	0.000	0.000	0.000	0.000
L28	58.667-53.667	A	0.000	0.000	0.000	1.340	0.025
		B	0.000	0.000	0.000	2.970	0.138
		C	0.000	0.000	0.000	0.000	0.000
L29	53.667-48.583	A	0.000	0.000	0.000	1.362	0.025
		B	0.000	0.000	0.000	3.020	0.141
		C	0.000	0.000	0.000	0.000	0.000
L30	48.583-47.583	A	0.000	0.000	0.000	0.268	0.005
		B	0.000	0.000	0.000	0.594	0.028
		C	0.000	0.000	0.000	0.000	0.000
L31	47.583-42.583	A	0.000	0.000	0.000	1.340	0.025
		B	0.000	0.000	0.000	2.970	0.138
		C	0.000	0.000	0.000	0.000	0.000
L32	42.583-40.000	A	0.000	0.000	0.000	0.692	0.013
		B	0.000	0.000	0.000	1.534	0.071
		C	0.000	0.000	0.000	0.000	0.000
L33	40.000-39.750	A	0.000	0.000	0.000	0.067	0.001
		B	0.000	0.000	0.000	0.148	0.007
		C	0.000	0.000	0.000	0.000	0.000
L34	39.750-34.750	A	0.000	0.000	0.000	1.340	0.025
		B	0.000	0.000	0.000	2.970	0.138
		C	0.000	0.000	0.000	0.000	0.000
L35	34.750-31.413	A	0.000	0.000	0.000	0.894	0.016
		B	0.000	0.000	0.000	1.982	0.092
		C	0.000	0.000	0.000	0.000	0.000
L36	31.413-31.163	A	0.000	0.000	0.000	0.067	0.001
		B	0.000	0.000	0.000	0.148	0.007
		C	0.000	0.000	0.000	0.000	0.000
L37	31.163-29.000	A	0.000	0.000	0.000	0.580	0.011
		B	0.000	0.000	0.000	1.285	0.060
		C	0.000	0.000	0.000	0.000	0.000
L38	29.000-28.750	A	0.000	0.000	0.000	0.067	0.001
		B	0.000	0.000	0.000	0.148	0.007
		C	0.000	0.000	0.000	0.000	0.000
L39	28.750-23.750	A	0.000	0.000	0.000	1.340	0.025
		B	0.000	0.000	0.000	2.970	0.138
		C	0.000	0.000	0.000	0.000	0.000
L40	23.750-23.500	A	0.000	0.000	0.000	0.067	0.001
		B	0.000	0.000	0.000	0.148	0.007
		C	0.000	0.000	0.000	0.000	0.000
L41	23.500-23.250	A	0.000	0.000	0.000	0.067	0.001
		B	0.000	0.000	0.000	0.148	0.007
		C	0.000	0.000	0.000	0.000	0.000
L42	23.250-18.250	A	0.000	0.000	0.000	1.340	0.025
		B	0.000	0.000	0.000	2.970	0.138
		C	0.000	0.000	0.000	0.000	0.000
L43	18.250-13.250	A	0.000	0.000	0.000	1.340	0.025
		B	0.000	0.000	0.000	2.970	0.138
		C	0.000	0.000	0.000	0.000	0.000
L44	13.250-8.250	A	0.000	0.000	0.000	1.340	0.025
		B	0.000	0.000	0.000	2.970	0.138
		C	0.000	0.000	0.000	0.000	0.000
L45	8.250-5.500	A	0.000	0.000	0.000	0.737	0.001
		B	0.000	0.000	0.000	0.148	0.039
		C	0.000	0.000	0.000	0.000	0.000
L46	5.500-5.250	A	0.000	0.000	0.000	0.067	0.000
		B	0.000	0.000	0.000	0.000	0.003
		C	0.000	0.000	0.000	0.000	0.000
L47	5.250-0.250	A	0.000	0.000	0.000	1.273	0.000
		B	0.000	0.000	0.000	0.000	0.003
		C	0.000	0.000	0.000	0.000	0.000

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
L48	0.250-0.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000

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	140.000-135.000	A	0.890	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	1.128	0.058
		C		0.000	0.000	0.000	0.000	0.000
L2	135.000-130.000	A	0.886	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	1.876	0.096
		C		0.000	0.000	0.000	0.000	0.000
L3	130.000-125.000	A	0.882	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	1.872	0.096
		C		0.000	0.000	0.000	0.000	0.000
L4	125.000-120.000	A	0.878	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	1.868	0.096
		C		0.000	0.000	0.000	0.000	0.000
L5	120.000-115.000	A	0.873	0.000	0.000	0.000	0.722	0.000
		B		0.000	0.000	0.000	5.590	0.449
		C		0.000	0.000	0.000	0.000	0.000
L6	115.000-114.750	A	0.871	0.000	0.000	0.000	0.090	0.000
		B		0.000	0.000	0.000	0.279	0.022
		C		0.000	0.000	0.000	0.000	0.000
L7	114.750-109.750	A	0.869	0.000	0.000	0.000	1.798	0.000
		B		0.000	0.000	0.000	5.576	0.447
		C		0.000	0.000	0.000	0.000	0.000
L8	109.750-104.750	A	0.864	0.000	0.000	0.000	1.793	0.000
		B		0.000	0.000	0.000	5.562	0.444
		C		0.000	0.000	0.000	0.000	0.000
L9	104.750-101.483	A	0.860	0.000	0.000	0.000	0.984	0.000
		B		0.000	0.000	0.000	3.626	0.289
		C		0.000	0.000	0.000	0.000	0.000
L10	101.483-101.250	A	0.858	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.259	0.021
		C		0.000	0.000	0.000	0.000	0.000
L11	101.250-96.250	A	0.855	0.000	0.000	0.000	0.000	0.003
		B		0.000	0.000	0.000	5.536	0.441
		C		0.000	0.000	0.000	0.000	0.000
L12	96.250-91.250	A	0.850	0.000	0.000	0.000	0.622	0.012
		B		0.000	0.000	0.000	5.520	0.439
		C		0.000	0.000	0.000	0.000	0.000
L13	91.250-90.910	A	0.847	0.000	0.000	0.000	0.121	0.001
		B		0.000	0.000	0.000	0.375	0.030
		C		0.000	0.000	0.000	0.000	0.000
L14	90.910-90.660	A	0.847	0.000	0.000	0.000	0.089	0.001
		B		0.000	0.000	0.000	0.276	0.022
		C		0.000	0.000	0.000	0.000	0.000
L15	90.660-85.660	A	0.844	0.000	0.000	0.000	1.771	0.015
		B		0.000	0.000	0.000	5.502	0.436
		C		0.000	0.000	0.000	0.000	0.000
L16	85.660-80.660	A	0.838	0.000	0.000	0.000	1.764	0.015
		B		0.000	0.000	0.000	5.484	0.433
		C		0.000	0.000	0.000	0.000	0.000
L17	80.660-75.660	A	0.832	0.000	0.000	0.000	1.757	0.015

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	0.000	5.465	0.431
		C		0.000	0.000	0.000	0.000	0.000
L18	75.660-72.080	A	0.826	0.000	0.000	0.000	1.254	0.012
		B		0.000	0.000	0.000	3.901	0.307
		C		0.000	0.000	0.000	0.000	0.000
L19	72.080-71.830	A	0.824	0.000	0.000	0.000	0.088	0.001
		B		0.000	0.000	0.000	0.272	0.021
		C		0.000	0.000	0.000	0.000	0.000
L20	71.830-70.080	A	0.822	0.000	0.000	0.000	0.614	0.009
		B		0.000	0.000	0.000	1.903	0.149
		C		0.000	0.000	0.000	0.000	0.000
L21	70.080-69.830	A	0.821	0.000	0.000	0.000	0.088	0.001
		B		0.000	0.000	0.000	0.272	0.021
		C		0.000	0.000	0.000	0.000	0.000
L22	69.830-64.830	A	0.817	0.000	0.000	0.000	1.749	0.025
		B		0.000	0.000	0.000	5.421	0.425
		C		0.000	0.000	0.000	0.000	0.000
L23	64.830-63.000	A	0.812	0.000	0.000	0.000	0.638	0.009
		B		0.000	0.000	0.000	1.979	0.155
		C		0.000	0.000	0.000	0.000	0.000
L24	63.000-62.750	A	0.810	0.000	0.000	0.000	0.087	0.001
		B		0.000	0.000	0.000	0.270	0.021
		C		0.000	0.000	0.000	0.000	0.000
L25	62.750-59.083	A	0.807	0.000	0.000	0.000	2.165	0.018
		B		0.000	0.000	0.000	3.954	0.308
		C		0.000	0.000	0.000	0.000	0.000
L26	59.083-58.817	A	0.804	0.000	0.000	0.000	0.260	0.001
		B		0.000	0.000	0.000	0.287	0.022
		C		0.000	0.000	0.000	0.000	0.000
L27	58.817-58.667	A	0.804	0.000	0.000	0.000	0.146	0.001
		B		0.000	0.000	0.000	0.161	0.013
		C		0.000	0.000	0.000	0.000	0.000
L28	58.667-53.667	A	0.799	0.000	0.000	0.000	4.872	0.025
		B		0.000	0.000	0.000	5.368	0.417
		C		0.000	0.000	0.000	0.000	0.000
L29	53.667-48.583	A	0.790	0.000	0.000	0.000	4.943	0.025
		B		0.000	0.000	0.000	5.430	0.420
		C		0.000	0.000	0.000	0.000	0.000
L30	48.583-47.583	A	0.785	0.000	0.000	0.000	0.972	0.005
		B		0.000	0.000	0.000	1.068	0.083
		C		0.000	0.000	0.000	0.000	0.000
L31	47.583-42.583	A	0.779	0.000	0.000	0.000	4.848	0.025
		B		0.000	0.000	0.000	5.306	0.408
		C		0.000	0.000	0.000	0.000	0.000
L32	42.583-40.000	A	0.770	0.000	0.000	0.000	2.500	0.013
		B		0.000	0.000	0.000	2.729	0.209
		C		0.000	0.000	0.000	0.000	0.000
L33	40.000-39.750	A	0.767	0.000	0.000	0.000	0.242	0.001
		B		0.000	0.000	0.000	0.264	0.020
		C		0.000	0.000	0.000	0.000	0.000
L34	39.750-34.750	A	0.761	0.000	0.000	0.000	4.829	0.025
		B		0.000	0.000	0.000	5.253	0.401
		C		0.000	0.000	0.000	0.000	0.000
L35	34.750-31.413	A	0.750	0.000	0.000	0.000	3.214	0.016
		B		0.000	0.000	0.000	3.484	0.264
		C		0.000	0.000	0.000	0.000	0.000
L36	31.413-31.163	A	0.750	0.000	0.000	0.000	0.241	0.001
		B		0.000	0.000	0.000	0.261	0.020
		C		0.000	0.000	0.000	0.000	0.000
L37	31.163-29.000	A	0.750	0.000	0.000	0.000	2.084	0.011
		B		0.000	0.000	0.000	2.258	0.171

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	0.000	0.000	0.000
L38	29.000-28.750	A	0.750	0.000	0.000	0.000	0.241	0.001
		B		0.000	0.000	0.000	0.261	0.020
		C		0.000	0.000	0.000	0.000	0.000
L39	28.750-23.750	A	0.750	0.000	0.000	0.000	4.817	0.025
		B		0.000	0.000	0.000	5.220	0.396
		C		0.000	0.000	0.000	0.000	0.000
L40	23.750-23.500	A	0.750	0.000	0.000	0.000	0.241	0.001
		B		0.000	0.000	0.000	0.261	0.020
		C		0.000	0.000	0.000	0.000	0.000
L41	23.500-23.250	A	0.750	0.000	0.000	0.000	0.241	0.001
		B		0.000	0.000	0.000	0.261	0.020
		C		0.000	0.000	0.000	0.000	0.000
L42	23.250-18.250	A	0.750	0.000	0.000	0.000	4.817	0.025
		B		0.000	0.000	0.000	5.220	0.396
		C		0.000	0.000	0.000	0.000	0.000
L43	18.250-13.250	A	0.750	0.000	0.000	0.000	4.817	0.025
		B		0.000	0.000	0.000	5.220	0.396
		C		0.000	0.000	0.000	0.000	0.000
L44	13.250-8.250	A	0.750	0.000	0.000	0.000	4.817	0.025
		B		0.000	0.000	0.000	5.220	0.396
		C		0.000	0.000	0.000	0.000	0.000
L45	8.250-5.500	A	0.750	0.000	0.000	0.000	2.649	0.001
		B		0.000	0.000	0.000	0.261	0.065
		C		0.000	0.000	0.000	0.000	0.000
L46	5.500-5.250	A	0.750	0.000	0.000	0.000	0.241	0.000
		B		0.000	0.000	0.000	0.000	0.005
		C		0.000	0.000	0.000	0.000	0.000
L47	5.250-0.250	A	0.750	0.000	0.000	0.000	4.576	0.000
		B		0.000	0.000	0.000	0.000	0.005
		C		0.000	0.000	0.000	0.000	0.000
L48	0.250-0.000	A	0.750	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	140.000-135.000	0.142	0.082	0.225	0.130
L2	135.000-130.000	0.222	0.128	0.343	0.198
L3	130.000-125.000	0.224	0.129	0.350	0.202
L4	125.000-120.000	0.226	0.130	0.356	0.205
L5	120.000-115.000	0.538	0.240	0.755	0.321
L6	115.000-114.750	0.520	0.132	0.714	0.146
L7	114.750-109.750	0.525	0.133	0.725	0.149
L8	109.750-104.750	0.535	0.135	0.744	0.153
L9	104.750-101.483	0.548	0.167	0.773	0.205
L10	101.483-101.250	0.582	0.336	0.855	0.494
L11	101.250-96.250	0.586	0.338	0.863	0.499
L12	96.250-91.250	0.580	0.268	0.846	0.377
L13	91.250-90.910	0.561	0.142	0.800	0.164
L14	90.910-90.660	0.561	0.142	0.801	0.165
L15	90.660-85.660	0.565	0.143	0.809	0.166
L16	85.660-80.660	0.571	0.145	0.823	0.169
L17	80.660-75.660	0.578	0.146	0.836	0.172

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L18	75.660-72.080	0.583	0.148	0.847	0.175
L19	72.080-71.830	0.585	0.146	0.851	0.175
L20	71.830-70.080	0.585	0.145	0.853	0.175
L21	70.080-69.830	0.587	0.145	0.855	0.175
L22	69.830-64.830	0.589	0.146	0.861	0.176
L23	64.830-63.000	0.593	0.146	0.868	0.178
L24	63.000-62.750	0.594	0.147	0.871	0.179
L25	62.750-59.083	0.589	0.102	0.826	-0.047
L26	59.083-58.817	0.581	0.033	0.764	-0.358
L27	58.817-58.667	0.581	0.033	0.764	-0.358
L28	58.667-53.667	0.584	0.033	0.769	-0.362
L29	53.667-48.583	0.589	0.033	0.779	-0.369
L30	48.583-47.583	0.589	0.033	0.779	-0.369
L31	47.583-42.583	0.592	0.033	0.783	-0.374
L32	42.583-40.000	0.595	0.034	0.789	-0.379
L33	40.000-39.750	0.597	0.034	0.791	-0.381
L34	39.750-34.750	0.599	0.034	0.795	-0.385
L35	34.750-31.413	0.602	0.034	0.800	-0.390
L36	31.413-31.163	0.604	0.034	0.804	-0.392
L37	31.163-29.000	0.605	0.034	0.806	-0.393
L38	29.000-28.750	0.606	0.034	0.808	-0.395
L39	28.750-23.750	0.608	0.034	0.814	-0.397
L40	23.750-23.500	0.610	0.034	0.819	-0.400
L41	23.500-23.250	0.610	0.034	0.819	-0.400
L42	23.250-18.250	0.612	0.034	0.824	-0.402
L43	18.250-13.250	0.615	0.035	0.833	-0.407
L44	13.250-8.250	0.619	0.035	0.842	-0.411
L45	8.250-5.500	0.064	-0.332	0.092	-1.032
L46	5.500-5.250	0.000	-0.374	0.000	-1.109
L47	5.250-0.250	0.000	-0.357	0.000	-1.067
L48	0.250-0.000	0.000	0.000	0.000	0.000

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
Lightning Rod 3/4" x 7'	C	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.525 1.240 1.971 3.066 4.909	0.525 1.240 1.971 3.066 4.909	0.030 0.035 0.045 0.079 0.208
***									
Platform Mount [LP 403-1]	C	None		0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	18.850 24.300 29.750 40.650 62.450	18.850 24.300 29.750 40.650 62.450	1.500 1.797 2.093 2.686 3.872
BXA-80063-6BF-EDIN-4 w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice	7.707 8.328 8.919 10.132	5.630 6.719 7.561 9.294	0.044 0.103 0.170 0.329

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
						4" Ice	12.677	12.968	0.786
BXA-80063-6BF-EDIN-4 w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.707 8.328 8.919 10.132 12.677	5.630 6.719 7.561 9.294 12.968	0.044 0.103 0.170 0.329 0.786
BXA-80063-6BF-EDIN-4 w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.707 8.328 8.919 10.132 12.677	5.630 6.719 7.561 9.294 12.968	0.044 0.103 0.170 0.329 0.786
DB636-C	A	From Leg	4.000 0.000 7.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.375 3.354 4.350 5.581 8.030	2.375 3.354 4.350 5.581 8.030	0.030 0.048 0.072 0.139 0.354
DB-T1-6Z-8AB-0Z	C	From Leg	4.000 0.000 2.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.600 5.915 6.240 6.914 8.365	2.333 2.558 2.791 3.284 4.373	0.044 0.080 0.120 0.213 0.455
X7C-FRO-660-VR0 w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.458 11.127 11.763 13.064 15.784	7.529 8.715 9.615 11.449 15.603	0.061 0.139 0.225 0.426 0.975
X7C-FRO-660-VR0 w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.458 11.127 11.763 13.064 15.784	7.529 8.715 9.615 11.449 15.603	0.061 0.139 0.225 0.426 0.975
X7C-FRO-660-VR0 w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.458 11.127 11.763 13.064 15.784	7.529 8.715 9.615 11.449 15.603	0.061 0.139 0.225 0.426 0.975
(2) HBXX-6516DS-A2M w/ pipe mount	A	From Leg	4.000 0.000 2.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.365 6.923 7.452 8.544 10.864	4.708 5.538 6.275 7.837 11.176	0.022 0.073 0.131 0.268 0.664
(2) HBXX-6516DS-A2M w/ pipe mount	B	From Leg	4.000 0.000 2.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.365 6.923 7.452 8.544 10.864	4.708 5.538 6.275 7.837 11.176	0.022 0.073 0.131 0.268 0.664
(2) HBXX-6516DS-A2M w/ pipe mount	C	From Leg	4.000 0.000 2.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.365 6.923 7.452 8.544 10.864	4.708 5.538 6.275 7.837 11.176	0.022 0.073 0.131 0.268 0.664
AWS4 (B66) 4x45 RRH	A	From Leg	4.000 0.000 2.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.103 3.358 3.621 4.173 5.381	1.759 1.979 2.209 2.694 3.767	0.064 0.084 0.108 0.165 0.326
AWS4 (B66) 4x45 RRH	B	From Leg	4.000	0.000	138.000	No Ice	3.103	1.759	0.064

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
			0.000			1/2" Ice	3.358	1.979	0.084
			2.000			1" Ice	3.621	2.209	0.108
						2" Ice	4.173	2.694	0.165
						4" Ice	5.381	3.767	0.326
AWS4 (B66) 4x45 RRH	C	From Leg	4.000	0.000	138.000	No Ice	3.103	1.759	0.064
			0.000			1/2" Ice	3.358	1.979	0.084
			2.000			1" Ice	3.621	2.209	0.108
						2" Ice	4.173	2.694	0.165
						4" Ice	5.381	3.767	0.326
RRH2X60-PCS	A	From Leg	4.000	0.000	138.000	No Ice	2.567	2.011	0.055
			0.000			1/2" Ice	2.791	2.218	0.075
			2.000			1" Ice	3.025	2.435	0.099
						2" Ice	3.517	2.894	0.155
						4" Ice	4.606	3.915	0.313
RRH2X60-PCS	B	From Leg	4.000	0.000	138.000	No Ice	2.567	2.011	0.055
			0.000			1/2" Ice	2.791	2.218	0.075
			2.000			1" Ice	3.025	2.435	0.099
						2" Ice	3.517	2.894	0.155
						4" Ice	4.606	3.915	0.313
RRH2X60-PCS	C	From Leg	4.000	0.000	138.000	No Ice	2.567	2.011	0.055
			0.000			1/2" Ice	2.791	2.218	0.075
			2.000			1" Ice	3.025	2.435	0.099
						2" Ice	3.517	2.894	0.155
						4" Ice	4.606	3.915	0.313
RRH2x60-700	A	From Leg	4.000	0.000	138.000	No Ice	3.957	1.816	0.060
			0.000			1/2" Ice	4.272	2.075	0.083
			2.000			1" Ice	4.596	2.360	0.109
						2" Ice	5.271	2.957	0.173
						4" Ice	6.722	4.253	0.354
RRH2x60-700	B	From Leg	4.000	0.000	138.000	No Ice	3.957	1.816	0.060
			0.000			1/2" Ice	4.272	2.075	0.083
			2.000			1" Ice	4.596	2.360	0.109
						2" Ice	5.271	2.957	0.173
						4" Ice	6.722	4.253	0.354
RRH2x60-700	C	From Leg	4.000	0.000	138.000	No Ice	3.957	1.816	0.060
			0.000			1/2" Ice	4.272	2.075	0.083
			2.000			1" Ice	4.596	2.360	0.109
						2" Ice	5.271	2.957	0.173
						4" Ice	6.722	4.253	0.354
DB-T1-6Z-8AB-0Z	C	From Leg	4.000	0.000	138.000	No Ice	5.600	2.333	0.044
			0.000			1/2" Ice	5.915	2.558	0.080
			2.000			1" Ice	6.240	2.791	0.120
						2" Ice	6.914	3.284	0.213
						4" Ice	8.365	4.373	0.455
***									
T-Arm Mount [TA 602-3]	A	None		0.000	120.000	No Ice	11.590	11.590	0.774
						1/2" Ice	15.440	15.440	0.990
						1" Ice	19.290	19.290	1.206
						2" Ice	26.990	26.990	1.639
						4" Ice	42.390	42.390	2.503
APX16PV-16PVL w/ pipe mount	A	From Leg	3.000	0.000	120.000	No Ice	7.075	4.265	0.068
			0.000			1/2" Ice	7.639	5.099	0.119
			0.000			1" Ice	8.177	5.809	0.177
						2" Ice	9.286	7.280	0.316
						4" Ice	11.638	10.619	0.715
APX16PV-16PVL w/ pipe mount	B	From Leg	3.000	0.000	120.000	No Ice	7.075	4.265	0.068
			0.000			1/2" Ice	7.639	5.099	0.119

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
			0.000			1" Ice	8.177	5.809	0.177
						2" Ice	9.286	7.280	0.316
						4" Ice	11.638	10.619	0.715
APX16PV-16PVL w/ pipe mount	C	From Leg	3.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.075 7.639 8.177 9.286 11.638	4.265 5.099 5.809 7.280 10.619	0.068 0.119 0.177 0.316 0.715
APX16DWV-16DWVS-E-A 20 w/ pipe mount	A	From Leg	3.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.146 7.618 8.099 9.089 11.182	3.337 3.985 4.644 6.012 8.996	0.070 0.116 0.168 0.296 0.665
APX16DWV-16DWVS-E-A 20 w/ pipe mount	B	From Leg	3.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.146 7.618 8.099 9.089 11.182	3.337 3.985 4.644 6.012 8.996	0.070 0.116 0.168 0.296 0.665
APX16DWV-16DWVS-E-A 20 w/ pipe mount	C	From Leg	3.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.146 7.618 8.099 9.089 11.182	3.337 3.985 4.644 6.012 8.996	0.070 0.116 0.168 0.296 0.665
(2) DTMA-1819-DD-12	A	From Leg	3.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.706 0.831 0.966 1.260 1.952	0.411 0.521 0.641 0.905 1.538	0.014 0.019 0.026 0.045 0.111
(2) DTMA-1819-DD-12	B	From Leg	3.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.706 0.831 0.966 1.260 1.952	0.411 0.521 0.641 0.905 1.538	0.014 0.019 0.026 0.045 0.111
(2) DTMA-1819-DD-12	C	From Leg	3.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.706 0.831 0.966 1.260 1.952	0.411 0.521 0.641 0.905 1.538	0.014 0.019 0.026 0.045 0.111
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	3.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.683 12.404 13.135 14.601 17.875	9.842 11.366 12.914 15.267 20.139	0.083 0.173 0.273 0.506 1.151
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	3.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.683 12.404 13.135 14.601 17.875	9.842 11.366 12.914 15.267 20.139	0.083 0.173 0.273 0.506 1.151
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	3.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.683 12.404 13.135 14.601 17.875	9.842 11.366 12.914 15.267 20.139	0.083 0.173 0.273 0.506 1.151
ATBT-BOTTOM-24V	A	From Leg	3.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.121 0.172 0.232 0.377	0.075 0.119 0.172 0.303	0.003 0.004 0.006 0.013

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
						4" Ice	0.771	0.668	0.045
ATBT-BOTTOM-24V	B	From Leg	3.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.121 0.172 0.232 0.377 0.771	0.075 0.119 0.172 0.303 0.668	0.003 0.004 0.006 0.013 0.045
ATBT-BOTTOM-24V	C	From Leg	3.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.121 0.172 0.232 0.377 0.771	0.075 0.119 0.172 0.303 0.668	0.003 0.004 0.006 0.013 0.045
***									
***									
Side Arm Mount [SO 102-3]	A	None		0.000	99.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.000 3.480 3.960 4.920 6.840	3.000 3.480 3.960 4.920 6.840	0.081 0.111 0.141 0.201 0.321
(2) RRUS-11	A	From Leg	1.000 0.000 0.000	0.000	99.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.942 3.172 3.410 3.913 5.023	1.246 1.412 1.587 1.963 2.819	0.055 0.074 0.097 0.151 0.302
(2) RRUS-11	B	From Leg	1.000 0.000 0.000	0.000	99.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.942 3.172 3.410 3.913 5.023	1.246 1.412 1.587 1.963 2.819	0.055 0.074 0.097 0.151 0.302
(2) RRUS-11	C	From Leg	1.000 0.000 0.000	0.000	99.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.942 3.172 3.410 3.913 5.023	1.246 1.412 1.587 1.963 2.819	0.055 0.074 0.097 0.151 0.302
6' x 2" Mount Pipe	A	From Leg	1.000 0.000 0.000	0.000	99.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
6' x 2" Mount Pipe	B	From Leg	1.000 0.000 0.000	0.000	99.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
6' x 2" Mount Pipe	C	From Leg	1.000 0.000 0.000	0.000	99.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
DC6-48-60-18-8F	A	From Leg	1.000 0.000 0.000	0.000	99.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.600 1.806 2.022 2.489 3.556	1.600 1.806 2.022 2.489 3.556	0.033 0.053 0.075 0.127 0.271
***									
Platform Mount [LP 1001-1]	C	None		0.000	95.000	No Ice 1/2" Ice 1" Ice	47.700 59.500 71.300	47.700 59.500 71.300	3.017 3.621 4.225

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
						2" Ice	94.900	94.900	5.433
						4" Ice	142.100	142.100	7.849
P65-16-XLH-RR w/ pipe mount	A	From Leg	4.000 0.000 0.000	0.000	95.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.400 8.949 9.506 10.647 13.032	6.125 7.072 7.896 9.593 13.223	0.086 0.149 0.220 0.388 0.860
P65-16-XLH-RR w/ pipe mount	B	From Leg	4.000 0.000 0.000	0.000	95.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.400 8.949 9.506 10.647 13.032	6.125 7.072 7.896 9.593 13.223	0.086 0.149 0.220 0.388 0.860
P65-16-XLH-RR w/ pipe mount	C	From Leg	4.000 0.000 0.000	0.000	95.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.400 8.949 9.506 10.647 13.032	6.125 7.072 7.896 9.593 13.223	0.086 0.149 0.220 0.388 0.860
7770.00 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	95.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.119 6.626 7.128 8.164 10.360	4.254 5.014 5.711 7.155 10.412	0.055 0.103 0.157 0.287 0.665
7770.00 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	95.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.119 6.626 7.128 8.164 10.360	4.254 5.014 5.711 7.155 10.412	0.055 0.103 0.157 0.287 0.665
7770.00 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	95.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.119 6.626 7.128 8.164 10.360	4.254 5.014 5.711 7.155 10.412	0.055 0.103 0.157 0.287 0.665
(2) LGP21401	A	From Leg	4.000 0.000 0.000	0.000	95.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.288 1.445 1.611 1.969 2.788	0.233 0.313 0.403 0.608 1.121	0.014 0.021 0.030 0.055 0.135
(2) LGP21401	B	From Leg	4.000 0.000 0.000	0.000	95.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.288 1.445 1.611 1.969 2.788	0.233 0.313 0.403 0.608 1.121	0.014 0.021 0.030 0.055 0.135
(2) LGP21401	C	From Leg	4.000 0.000 0.000	0.000	95.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.288 1.445 1.611 1.969 2.788	0.233 0.313 0.403 0.608 1.121	0.014 0.021 0.030 0.055 0.135
***									
Platform Mount [LP 1201-1]	C	None		0.000	73.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	23.100 26.800 30.500 37.900 52.700	23.100 26.800 30.500 37.900 52.700	2.100 2.500 2.900 3.700 5.300
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	73.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.498 9.149 9.767 11.031	6.946 8.127 9.021 10.844	0.083 0.151 0.227 0.406

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
						4" Ice	13.679	14.851	0.909
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	73.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.946 8.127 9.021 10.844 14.851	0.083 0.151 0.227 0.406 0.909
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	73.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.946 8.127 9.021 10.844 14.851	0.083 0.151 0.227 0.406 0.909
800 External Notch Filter	A	From Leg	4.000 0.000 2.000	0.000	73.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.770 0.890 1.018 1.301 1.970	0.375 0.465 0.563 0.787 1.337	0.011 0.017 0.024 0.045 0.114
800 External Notch Filter	B	From Leg	4.000 0.000 2.000	0.000	73.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.770 0.890 1.018 1.301 1.970	0.375 0.465 0.563 0.787 1.337	0.011 0.017 0.024 0.045 0.114
800 External Notch Filter	C	From Leg	4.000 0.000 2.000	0.000	73.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.770 0.890 1.018 1.301 1.970	0.375 0.465 0.563 0.787 1.337	0.011 0.017 0.024 0.045 0.114
800MHZ 2X50W RRH	A	From Leg	4.000 0.000 2.000	0.000	73.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.490 2.706 2.931 3.407 4.462	2.068 2.271 2.481 2.928 3.927	0.053 0.074 0.098 0.157 0.318
800MHZ 2X50W RRH	B	From Leg	4.000 0.000 2.000	0.000	73.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.490 2.706 2.931 3.407 4.462	2.068 2.271 2.481 2.928 3.927	0.053 0.074 0.098 0.157 0.318
800MHZ 2X50W RRH	C	From Leg	4.000 0.000 2.000	0.000	73.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.490 2.706 2.931 3.407 4.462	2.068 2.271 2.481 2.928 3.927	0.053 0.074 0.098 0.157 0.318
1900MHz 4X40W RRH	A	From Leg	4.000 0.000 2.000	0.000	73.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.709 2.948 3.195 3.716 4.862	2.609 2.845 3.090 3.606 4.741	0.060 0.083 0.109 0.172 0.346
1900MHz 4X40W RRH	B	From Leg	4.000 0.000 2.000	0.000	73.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.709 2.948 3.195 3.716 4.862	2.609 2.845 3.090 3.606 4.741	0.060 0.083 0.109 0.172 0.346
1900MHz 4X40W RRH	C	From Leg	4.000 0.000 2.000	0.000	73.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.709 2.948 3.195 3.716 4.862	2.609 2.845 3.090 3.606 4.741	0.060 0.083 0.109 0.172 0.346
10' x 3" Pipe Mount	A	From Leg	4.000	0.000	73.000	No Ice	3.000	3.000	0.080

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
			0.000			1/2" Ice	4.033	4.033	0.102
			0.000			1" Ice	5.027	5.027	0.130
						2" Ice	6.257	6.257	0.207
						4" Ice	8.830	8.830	0.447
10' x 3" Pipe Mount	B	From Leg	4.000	0.000	73.000	No Ice	3.000	3.000	0.080
			0.000			1/2" Ice	4.033	4.033	0.102
			0.000			1" Ice	5.027	5.027	0.130
						2" Ice	6.257	6.257	0.207
						4" Ice	8.830	8.830	0.447
10' x 3" Pipe Mount	C	From Leg	4.000	0.000	73.000	No Ice	3.000	3.000	0.080
			0.000			1/2" Ice	4.033	4.033	0.102
			0.000			1" Ice	5.027	5.027	0.130
						2" Ice	6.257	6.257	0.207
						4" Ice	8.830	8.830	0.447
6' x 2" Mount Pipe	A	From Leg	4.000	0.000	73.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
6' x 2" Mount Pipe	B	From Leg	4.000	0.000	73.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
6' x 2" Mount Pipe	C	From Leg	4.000	0.000	73.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
***									
GPS-TMG-HR-26NCM	C	From Leg	1.000	0.000	50.000	No Ice	0.156	0.156	0.001
			0.000			1/2" Ice	0.213	0.213	0.002
			0.000			1" Ice	0.279	0.279	0.005
						2" Ice	0.437	0.437	0.014
						4" Ice	0.857	0.857	0.052
Side Arm Mount [SO 201-1]	C	From Leg	0.500	0.000	50.000	No Ice	2.960	2.110	0.096
			0.000			1/2" Ice	4.100	2.930	0.117
			0.000			1" Ice	5.240	3.750	0.138
						2" Ice	7.520	5.390	0.180
						4" Ice	12.080	8.670	0.264
flange transition stiffener	A	From Leg	0.200	0.000	103.700	No Ice	1.800	0.600	0.110
			0.000			1/2" Ice	2.300	0.800	0.130
			0.000			1" Ice	2.800	1.000	0.150
						2" Ice	3.800	1.400	0.190
						4" Ice	5.800	2.200	0.270
flange transition stiffener	B	From Leg	0.200	0.000	103.700	No Ice	1.800	0.600	0.110
			0.000			1/2" Ice	2.300	0.800	0.130
			0.000			1" Ice	2.800	1.000	0.150
						2" Ice	3.800	1.400	0.190
						4" Ice	5.800	2.200	0.270
flange transition stiffener	C	From Leg	0.200	0.000	103.700	No Ice	1.800	0.600	0.110
			0.000			1/2" Ice	2.300	0.800	0.130
			0.000			1" Ice	2.800	1.000	0.150
						2" Ice	3.800	1.400	0.190
						4" Ice	5.800	2.200	0.270

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	140 - 135	Pole	Max Tension	14	0.000	0.000	0.000
			Max. Compression	14	-5.327	1.041	-0.318
			Max. Mx	11	-1.924	32.407	-0.807
			Max. My	8	-1.958	1.030	-31.301
			Max. Vy	11	-6.858	32.407	-0.807
			Max. Vx	8	6.701	1.030	-31.301
			Max. Torque	8			-1.036
L2	135 - 130	Pole	Max Tension	1	0.000	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	14	-5.658	1.018	-0.341
			Max. Mx	11	-2.140	67.300	-1.500
			Max. My	8	-2.172	1.726	-65.421
			Max. Vy	11	-7.107	67.300	-1.500
			Max. Vx	8	6.950	1.726	-65.421
			Max. Torque	8			-1.035
L3	130 - 125	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-6.005	0.992	-0.365
			Max. Mx	11	-2.383	103.450	-2.194
			Max. My	8	-2.413	2.419	-100.797
			Max. Vy	11	-7.361	103.450	-2.194
			Max. Vx	8	7.204	2.419	-100.797
			Max. Torque	8			-1.030
L4	125 - 120	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-6.370	0.961	-0.390
			Max. Mx	11	-2.649	140.886	-2.887
			Max. My	8	-2.676	3.107	-137.460
			Max. Vy	11	-7.622	140.886	-2.887
			Max. Vx	8	7.465	3.107	-137.460
			Max. Torque	8			-1.025
L5	120 - 115	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-10.118	0.691	-0.553
			Max. Mx	11	-4.153	198.711	-3.616
			Max. My	8	-4.183	3.754	-194.582
			Max. Vy	5	11.764	-197.938	3.254
			Max. Vx	8	11.606	3.754	-194.582
			Max. Torque	8			-1.019
L6	115 - 114.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-10.167	0.677	-0.562
			Max. Mx	11	-4.192	201.651	-3.652
			Max. My	8	-4.221	3.786	-197.487
			Max. Vy	5	11.782	-200.884	3.287
			Max. Vx	8	11.624	3.786	-197.487
			Max. Torque	8			-1.002
L7	114.75 - 109.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-11.140	0.389	-0.735
			Max. Mx	11	-4.757	261.576	-4.383
			Max. My	8	-4.785	4.428	-256.715
			Max. Vy	5	12.219	-260.931	3.945
			Max. Vx	8	12.060	4.428	-256.715
			Max. Torque	8			-1.001
L8	109.75 - 104.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-12.129	0.085	-0.917
			Max. Mx	11	-5.348	323.675	-5.117
			Max. My	8	-5.374	5.066	-318.121
			Max. Vy	5	12.655	-323.160	4.601
			Max. Vx	8	12.496	5.066	-318.121
			Max. Torque	8			-0.983
L9	104.75 - 101.483	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-13.163	-0.123	-1.040
			Max. Mx	11	-6.018	365.811	-5.598
			Max. My	8	-6.044	5.481	-359.805
			Max. Vy	5	13.112	-365.384	5.030
			Max. Vx	8	12.952	5.481	-359.805
			Max. Torque	8			-0.964
L10	101.483 - 101.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-13.207	-0.138	-1.049

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	11	-6.052	368.868	-5.632
			Max. My	8	-6.078	5.510	-362.830
			Max. Vy	5	13.126	-368.447	5.061
			Max. Vx	8	12.966	5.510	-362.830
			Max. Torque	8			-0.951
L11	101.25 - 96.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-15.020	-0.469	-1.113
			Max. Mx	11	-7.059	438.000	-6.318
			Max. My	8	-7.083	6.141	-431.213
			Max. Vy	5	14.468	-437.722	5.769
			Max. Vx	8	14.308	6.141	-431.213
			Max. Torque	8			-0.950
L12	96.25 - 91.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-21.224	-0.818	-1.321
			Max. Mx	11	-10.921	526.364	-7.067
			Max. My	8	-10.945	6.775	-518.888
			Max. Vy	5	18.894	-526.236	6.429
			Max. Vx	8	18.732	6.775	-518.888
			Max. Torque	8			-0.931
L13	91.25 - 90.91	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-21.291	-0.843	-1.336
			Max. Mx	11	-10.976	532.784	-7.118
			Max. My	8	-11.000	6.818	-525.262
			Max. Vy	5	18.915	-532.667	6.474
			Max. Vx	8	18.753	6.818	-525.262
			Max. Torque	8			-0.911
L14	90.91 - 90.66	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-21.356	-0.861	-1.346
			Max. Mx	11	-11.024	537.511	-7.156
			Max. My	8	-11.048	6.850	-529.954
			Max. Vy	5	18.936	-537.402	6.507
			Max. Vx	8	18.774	6.850	-529.954
			Max. Torque	8			-0.910
L15	90.66 - 85.66	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-22.655	-1.227	-1.563
			Max. Mx	5	-11.934	-633.264	7.165
			Max. My	8	-11.958	7.481	-624.974
			Max. Vy	5	19.386	-633.264	7.165
			Max. Vx	8	19.224	7.481	-624.974
			Max. Torque	8			-0.909
L16	85.66 - 80.66	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-23.977	-1.607	-1.788
			Max. Mx	5	-12.879	-731.351	7.821
			Max. My	8	-12.901	8.107	-722.217
			Max. Vy	5	19.829	-731.351	7.821
			Max. Vx	8	19.667	8.107	-722.217
			Max. Torque	8			-0.888
L17	80.66 - 75.66	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-25.320	-2.000	-2.020
			Max. Mx	5	-13.850	-831.642	8.473
			Max. My	8	-13.870	8.728	-821.664
			Max. Vy	5	20.268	-831.642	8.473
			Max. Vx	8	20.106	8.728	-821.664
			Max. Torque	8			-0.866
L18	75.66 - 72.08	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-30.779	-2.290	-2.191
			Max. Mx	5	-17.420	-910.832	8.940
			Max. My	8	-17.440	9.170	-900.247
			Max. Vy	5	23.737	-910.832	8.940
			Max. Vx	8	23.574	9.170	-900.247
			Max. Torque	8			-0.845

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L19	72.08 - 71.83	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-30.863	-2.311	-2.203
			Max. Mx	5	-17.496	-916.771	8.972
			Max. My	8	-17.516	9.201	-906.143
			Max. Vy	5	23.752	-916.771	8.972
			Max. Vx	8	23.589	9.201	-906.143
			Max. Torque	8			-0.829
L20	71.83 - 70.08	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-31.451	-2.456	-2.288
			Max. Mx	5	-17.937	-958.505	9.201
			Max. My	8	-17.957	9.418	-947.578
			Max. Vy	5	23.921	-958.505	9.201
			Max. Vx	8	23.757	9.418	-947.578
			Max. Torque	8			-0.828
L21	70.08 - 69.83	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-31.520	-2.477	-2.301
			Max. Mx	5	-18.001	-964.489	9.234
			Max. My	8	-18.021	9.449	-953.520
			Max. Vy	5	23.932	-964.489	9.234
			Max. Vx	8	23.769	9.449	-953.520
			Max. Torque	8			-0.820
L22	69.83 - 64.83	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-32.905	-2.899	-2.549
			Max. Mx	5	-19.040	-1085.237	9.885
			Max. My	8	-19.058	10.064	-1073.415
			Max. Vy	5	24.343	-1085.237	9.885
			Max. Vx	8	24.181	10.064	-1073.415
			Max. Torque	8			-0.819
L23	64.83 - 63	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-33.419	-3.056	-2.642
			Max. Mx	5	-19.420	-1129.935	10.122
			Max. My	8	-19.438	10.288	-1117.801
			Max. Vy	5	24.498	-1129.935	10.122
			Max. Vx	8	24.336	10.288	-1117.801
			Max. Torque	8			-0.796
L24	63 - 62.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-33.505	-3.078	-2.655
			Max. Mx	5	-19.509	-1136.063	10.154
			Max. My	8	-19.526	10.318	-1123.886
			Max. Vy	5	24.503	-1136.063	10.154
			Max. Vx	8	24.341	10.318	-1123.886
			Max. Torque	8			-0.788
L25	62.75 - 59.0833	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-34.763	-3.397	-2.842
			Max. Mx	5	-20.483	-1226.574	10.627
			Max. My	8	-20.499	10.764	-1213.773
			Max. Vy	5	24.839	-1226.574	10.627
			Max. Vx	8	24.676	10.764	-1213.773
			Max. Torque	8			-0.787
L26	59.0833 - 58.8167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-34.851	-3.421	-2.856
			Max. Mx	5	-20.560	-1233.202	10.662
			Max. My	8	-20.576	10.796	-1220.355
			Max. Vy	5	24.856	-1233.202	10.662
			Max. Vx	8	24.694	10.796	-1220.355
			Max. Torque	8			-0.770
L27	58.8167 - 58.6667	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-34.900	-3.435	-2.864

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	5	-20.599	-1236.934	10.681
			Max. My	8	-20.615	10.814	-1224.062
			Max. Vy	5	24.868	-1236.934	10.681
			Max. Vx	8	24.706	10.814	-1224.062
			Max. Torque	8			-0.769
L28	58.6667 - 53.6667	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-36.550	-3.880	-3.125
			Max. Mx	5	-21.884	-1362.447	11.323
			Max. My	8	-21.898	11.416	-1348.723
			Max. Vy	5	25.309	-1362.447	11.323
			Max. Vx	8	25.147	11.416	-1348.723
			Max. Torque	8			-0.768
L29	53.6667 - 48.5833	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-36.773	-3.941	-3.161
			Max. Mx	5	-22.063	-1379.347	11.408
			Max. My	8	-22.077	11.495	-1365.509
			Max. Vy	5	25.362	-1379.347	11.408
			Max. Vx	8	25.200	11.495	-1365.509
			Max. Torque	8			-0.745
L30	48.5833 - 47.5833	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-39.796	-4.214	-3.578
			Max. Mx	5	-24.466	-1518.383	12.042
			Max. My	8	-24.480	12.328	-1503.837
			Max. Vy	5	26.002	-1518.383	12.042
			Max. Vx	8	25.826	12.328	-1503.837
			Max. Torque	8			-0.853
L31	47.5833 - 42.5833	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-41.462	-4.672	-3.846
			Max. Mx	5	-25.788	-1649.441	12.743
			Max. My	8	-25.800	12.986	-1633.968
			Max. Vy	5	26.400	-1649.441	12.743
			Max. Vx	8	26.224	12.986	-1633.968
			Max. Torque	8			-0.848
L32	42.5833 - 40	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-42.332	-4.912	-3.986
			Max. Mx	5	-26.479	-1717.928	13.103
			Max. My	8	-26.491	13.323	-1701.976
			Max. Vy	5	26.603	-1717.928	13.103
			Max. Vx	8	26.427	13.323	-1701.976
			Max. Torque	8			-0.825
L33	40 - 39.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-42.432	-4.935	-4.000
			Max. Mx	5	-26.573	-1724.583	13.138
			Max. My	8	-26.585	13.356	-1708.585
			Max. Vy	5	26.612	-1724.583	13.138
			Max. Vx	8	26.436	13.356	-1708.585
			Max. Torque	8			-0.814
L34	39.75 - 34.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-44.427	-5.394	-4.266
			Max. Mx	5	-28.202	-1858.755	13.832
			Max. My	8	-28.212	14.003	-1841.832
			Max. Vy	5	27.024	-1858.755	13.832
			Max. Vx	8	26.849	14.003	-1841.832
			Max. Torque	8			-0.812
L35	34.75 - 31.4133	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-45.770	-5.699	-4.442

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	5	-29.307	-1949.408	14.293
			Max. My	8	-29.317	14.432	-1931.868
			Max. Vy	5	27.287	-1949.408	14.293
			Max. Vx	8	27.112	14.432	-1931.868
			Max. Torque	8			-0.790
L36	31.4133 - 31.1633	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-45.871	-5.723	-4.456
			Max. Mx	5	-29.398	-1956.235	14.327
			Max. My	8	-29.408	14.464	-1938.649
			Max. Vy	5	27.298	-1956.235	14.327
			Max. Vx	8	27.123	14.464	-1938.649
			Max. Torque	8			-0.775
L37	31.1633 - 29	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-46.750	-5.924	-4.572
			Max. Mx	5	-30.115	-2015.517	14.625
			Max. My	8	-30.124	14.741	-1997.532
			Max. Vy	5	27.475	-2015.517	14.625
			Max. Vx	8	27.300	14.741	-1997.532
			Max. Torque	8			-0.773
L38	29 - 28.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-46.836	-5.948	-4.585
			Max. Mx	5	-30.192	-2022.392	14.659
			Max. My	8	-30.201	14.773	-2004.360
			Max. Vy	5	27.486	-2022.392	14.659
			Max. Vx	8	27.311	14.773	-2004.360
			Max. Torque	8			-0.764
L39	28.75 - 23.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-48.577	-6.425	-4.861
			Max. Mx	5	-31.590	-2160.815	15.343
			Max. My	8	-31.597	15.406	-2141.861
			Max. Vy	5	27.853	-2160.815	15.343
			Max. Vx	8	27.679	15.406	-2141.861
			Max. Torque	8			-0.762
L40	23.75 - 23.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-48.665	-6.449	-4.875
			Max. Mx	5	-31.669	-2167.783	15.377
			Max. My	8	-31.676	15.438	-2148.784
			Max. Vy	5	27.861	-2167.783	15.377
			Max. Vx	8	27.688	15.438	-2148.784
			Max. Torque	8			-0.739
L41	23.5 - 23.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-48.768	-6.473	-4.889
			Max. Mx	5	-31.756	-2174.756	15.411
			Max. My	8	-31.762	15.469	-2155.711
			Max. Vy	5	27.880	-2174.756	15.411
			Max. Vx	8	27.706	15.469	-2155.711
			Max. Torque	8			-0.738
L42	23.25 - 18.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-50.838	-6.965	-5.173
			Max. Mx	5	-33.469	-2315.197	16.089
			Max. My	8	-33.474	16.095	-2295.232
			Max. Vy	5	28.263	-2315.197	16.089
			Max. Vx	8	28.090	16.095	-2295.232
			Max. Torque	8			-0.737
L43	18.25 - 13.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-52.932	-7.472	-5.465
			Max. Mx	5	-35.212	-2457.505	16.761
			Max. My	8	-35.216	16.713	-2436.624
			Max. Vy	5	28.635	-2457.505	16.761
			Max. Vx	8	28.463	16.713	-2436.624

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	8			-0.713
L44	13.25 - 8.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-55.051	-7.993	-5.766
			Max. Mx	5	-36.977	-2601.672	17.427
			Max. My	8	-36.979	17.323	-2579.879
			Max. Vy	5	29.006	-2601.672	17.427
			Max. Vx	8	28.835	17.323	-2579.879
			Max. Torque	8			-0.688
L45	8.25 - 5.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-56.064	-8.049	-5.799
			Max. Mx	5	-37.906	-2681.635	17.824
			Max. My	8	-37.908	17.713	-2659.366
			Max. Vy	5	29.169	-2681.635	17.824
			Max. Vx	8	28.998	17.713	-2659.366
			Max. Torque	8			-0.663
L46	5.5 - 5.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-56.147	-8.052	-5.800
			Max. Mx	5	-37.994	-2688.926	17.860
			Max. My	8	-37.995	17.748	-2666.613
			Max. Vy	5	29.168	-2688.926	17.860
			Max. Vx	8	28.997	17.748	-2666.613
			Max. Torque	8			-0.661
L47	5.25 - 0.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-57.723	-8.055	-5.802
			Max. Mx	5	-39.452	-2835.458	18.595
			Max. My	8	-39.452	18.482	-2812.295
			Max. Vy	5	29.462	-2835.458	18.595
			Max. Vx	8	29.292	18.482	-2812.295
			Max. Torque	8			-0.661
L48	0.25 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-57.803	-8.055	-5.802
			Max. Mx	5	-39.536	-2842.821	18.631
			Max. My	8	-39.536	18.519	-2819.616
			Max. Vy	11	-29.461	2839.704	-21.540
			Max. Vx	8	29.292	18.519	-2819.616
			Max. Torque	8			-0.661

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	57.803	-0.000	-0.000
	Max. H_x	11	39.536	29.461	-0.147
	Max. H_z	2	39.536	-0.147	29.292
	Max. M_x	2	2816.716	-0.147	29.292
	Max. M_z	5	2842.821	-29.461	0.147
	Max. Torsion	2	0.626	-0.147	29.292
	Min. Vert	5	39.536	-29.461	0.147
	Min. H_x	5	39.536	-29.461	0.147
	Min. H_z	8	39.536	0.147	-29.292
	Min. M_x	8	-2819.616	0.147	-29.292
	Min. M_z	11	-2839.704	29.461	-0.147
	Min. Torsion	8	-0.661	0.147	-29.292

Tower Mast Reaction Summary

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
Dead Only	39.536	0.000	0.000	1.409	-1.527	0.000
Dead+Wind 0 deg - No Ice	39.536	0.147	-29.292	-2816.716	-21.655	-0.626
Dead+Wind 30 deg - No Ice	39.536	14.857	-25.441	-2449.108	-1439.593	-0.500
Dead+Wind 60 deg - No Ice	39.536	25.587	-14.773	-1424.948	-2472.168	-0.253
Dead+Wind 90 deg - No Ice	39.536	29.461	-0.147	-18.631	-2842.821	0.062
Dead+Wind 120 deg - No Ice	39.536	25.441	14.519	1393.136	-2452.206	0.373
Dead+Wind 150 deg - No Ice	39.536	14.604	25.294	2432.048	-1404.872	0.598
Dead+Wind 180 deg - No Ice	39.536	-0.147	29.292	2819.616	18.519	0.661
Dead+Wind 210 deg - No Ice	39.536	-14.857	25.441	2452.018	1436.458	0.535
Dead+Wind 240 deg - No Ice	39.536	-25.587	14.773	1427.862	2469.043	0.253
Dead+Wind 270 deg - No Ice	39.536	-29.461	0.147	21.540	2839.704	-0.097
Dead+Wind 300 deg - No Ice	39.536	-25.441	-14.519	-1390.239	2449.088	-0.408
Dead+Wind 330 deg - No Ice	39.536	-14.604	-25.294	-2429.155	1401.745	-0.598
Dead+Ice+Temp	57.803	0.000	0.000	5.802	-8.055	0.000
Dead+Wind 0 deg+Ice+Temp	57.803	0.032	-7.776	-751.616	-12.547	-0.154
Dead+Wind 30 deg+Ice+Temp	57.803	3.934	-6.750	-652.340	-393.240	-0.159
Dead+Wind 60 deg+Ice+Temp	57.803	6.782	-3.916	-376.702	-670.742	-0.121
Dead+Wind 90 deg+Ice+Temp	57.803	7.813	-0.032	1.440	-770.698	-0.052
Dead+Wind 120 deg+Ice+Temp	57.803	6.750	3.860	380.766	-666.326	0.033
Dead+Wind 150 deg+Ice+Temp	57.803	3.879	6.718	659.636	-385.590	0.109
Dead+Wind 180 deg+Ice+Temp	57.803	-0.032	7.776	763.327	-3.714	0.157
Dead+Wind 210 deg+Ice+Temp	57.803	-3.934	6.750	664.053	376.979	0.161
Dead+Wind 240 deg+Ice+Temp	57.803	-6.782	3.916	388.417	654.483	0.122
Dead+Wind 270 deg+Ice+Temp	57.803	-7.813	0.032	10.273	754.442	0.050
Dead+Wind 300 deg+Ice+Temp	57.803	-6.750	-3.860	-369.056	650.070	-0.034
Dead+Wind 330 deg+Ice+Temp	57.803	-3.879	-6.718	-647.928	369.332	-0.109
Dead+Wind 0 deg - Service	39.536	0.051	-10.136	-974.941	-8.527	-0.226
Dead+Wind 30 deg - Service	39.536	5.141	-8.803	-847.607	-499.811	-0.181
Dead+Wind 60 deg - Service	39.536	8.854	-5.112	-492.770	-857.587	-0.090
Dead+Wind 90 deg - Service	39.536	10.194	-0.051	-5.508	-985.996	0.026
Dead+Wind 120 deg - Service	39.536	8.803	5.024	483.622	-850.628	0.136
Dead+Wind 150 deg - Service	39.536	5.053	8.752	843.559	-487.751	0.211
Dead+Wind 180 deg - Service	39.536	-0.051	10.136	977.852	5.402	0.230
Dead+Wind 210 deg - Service	39.536	-5.141	8.803	850.519	496.686	0.186
Dead+Wind 240 deg - Service	39.536	-8.854	5.112	495.683	854.463	0.090
Dead+Wind 270 deg - Service	39.536	-10.194	0.051	8.420	982.872	-0.030
Dead+Wind 300 deg - Service	39.536	-8.803	-5.024	-480.711	847.505	-0.140
Dead+Wind 330 deg - Service	39.536	-5.053	-8.752	-840.648	484.627	-0.211

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	0.000	-39.536	0.000	0.000	39.536	0.000	0.000%
2	0.147	-39.536	-29.292	-0.147	39.536	29.292	0.000%
3	14.857	-39.536	-25.441	-14.857	39.536	25.441	0.000%
4	25.587	-39.536	-14.773	-25.587	39.536	14.773	0.000%
5	29.461	-39.536	-0.147	-29.461	39.536	0.147	0.000%
6	25.441	-39.536	14.519	-25.441	39.536	-14.519	0.000%
7	14.604	-39.536	25.294	-14.604	39.536	-25.294	0.000%
8	-0.147	-39.536	29.292	0.147	39.536	-29.292	0.000%
9	-14.857	-39.536	25.441	14.857	39.536	-25.441	0.000%
10	-25.587	-39.536	14.773	25.587	39.536	-14.773	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
11	-29.461	-39.536	0.147	29.461	39.536	-0.147	0.000%
12	-25.441	-39.536	-14.519	25.441	39.536	14.519	0.000%
13	-14.604	-39.536	-25.294	14.604	39.536	25.294	0.000%
14	0.000	-57.803	0.000	-0.000	57.803	-0.000	0.000%
15	0.032	-57.803	-7.776	-0.032	57.803	7.776	0.000%
16	3.934	-57.803	-6.750	-3.934	57.803	6.750	0.000%
17	6.782	-57.803	-3.916	-6.782	57.803	3.916	0.000%
18	7.813	-57.803	-0.032	-7.813	57.803	0.032	0.000%
19	6.750	-57.803	3.860	-6.750	57.803	-3.860	0.000%
20	3.879	-57.803	6.718	-3.879	57.803	-6.718	0.000%
21	-0.032	-57.803	7.776	0.032	57.803	-7.776	0.000%
22	-3.934	-57.803	6.750	3.934	57.803	-6.750	0.000%
23	-6.782	-57.803	3.916	6.782	57.803	-3.916	0.000%
24	-7.813	-57.803	0.032	7.813	57.803	-0.032	0.000%
25	-6.750	-57.803	-3.860	6.750	57.803	3.860	0.000%
26	-3.879	-57.803	-6.718	3.879	57.803	6.718	0.000%
27	0.051	-39.536	-10.136	-0.051	39.536	10.136	0.000%
28	5.141	-39.536	-8.803	-5.141	39.536	8.803	0.000%
29	8.854	-39.536	-5.112	-8.854	39.536	5.112	0.000%
30	10.194	-39.536	-0.051	-10.194	39.536	0.051	0.000%
31	8.803	-39.536	5.024	-8.803	39.536	-5.024	0.000%
32	5.053	-39.536	8.752	-5.053	39.536	-8.752	0.000%
33	-0.051	-39.536	10.136	0.051	39.536	-10.136	0.000%
34	-5.141	-39.536	8.803	5.141	39.536	-8.803	0.000%
35	-8.854	-39.536	5.112	8.854	39.536	-5.112	0.000%
36	-10.194	-39.536	0.051	10.194	39.536	-0.051	0.000%
37	-8.803	-39.536	-5.024	8.803	39.536	5.024	0.000%
38	-5.053	-39.536	-8.752	5.053	39.536	8.752	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00009575
3	Yes	6	0.00000001	0.00018873
4	Yes	6	0.00000001	0.00019394
5	Yes	5	0.00000001	0.00012590
6	Yes	6	0.00000001	0.00019070
7	Yes	6	0.00000001	0.00018460
8	Yes	5	0.00000001	0.00031298
9	Yes	6	0.00000001	0.00019550
10	Yes	6	0.00000001	0.00019043
11	Yes	5	0.00000001	0.00015950
12	Yes	6	0.00000001	0.00018554
13	Yes	6	0.00000001	0.00019149
14	Yes	4	0.00000001	0.00057983
15	Yes	6	0.00000001	0.00022514
16	Yes	6	0.00000001	0.00026666
17	Yes	6	0.00000001	0.00026841
18	Yes	6	0.00000001	0.00023065
19	Yes	6	0.00000001	0.00026751
20	Yes	6	0.00000001	0.00026613
21	Yes	6	0.00000001	0.00022906
22	Yes	6	0.00000001	0.00026801
23	Yes	6	0.00000001	0.00026793

24	Yes	6	0.00000001	0.00022739
25	Yes	6	0.00000001	0.00025890
26	Yes	6	0.00000001	0.00025855
27	Yes	5	0.00000001	0.00005118
28	Yes	5	0.00000001	0.00046811
29	Yes	5	0.00000001	0.00049256
30	Yes	5	0.00000001	0.00004231
31	Yes	5	0.00000001	0.00047366
32	Yes	5	0.00000001	0.00044501
33	Yes	5	0.00000001	0.00006299
34	Yes	5	0.00000001	0.00049924
35	Yes	5	0.00000001	0.00047800
36	Yes	5	0.00000001	0.00004400
37	Yes	5	0.00000001	0.00044744
38	Yes	5	0.00000001	0.00047297

Maximum Tower Deflections - Service Wind

Section No.	*Elevation*	*Horz. Deflection*	*Gov. Load Comb.*	*Tilt*	*Twist*
	ft	*in*		°	°
L1	140 - 135	34.338	35	2.674	0.013
L2	135 - 130	31.549	35	2.638	0.011
L3	130 - 125	28.839	35	2.533	0.008
L4	125 - 120	26.261	35	2.388	0.006
L5	120 - 115	23.849	29	2.220	0.005
L6	115 - 114.75	21.626	29	2.029	0.003
L7	114.75 - 109.75	21.520	29	2.025	0.003
L8	109.75 - 104.75	19.452	29	1.931	0.003
L9	104.75 - 101.483	17.486	29	1.827	0.002
L10	101.483 - 101.25	16.269	29	1.733	0.002
L11	101.25 - 96.25	16.184	29	1.726	0.002
L12	96.25 - 91.25	14.454	29	1.580	0.002
L13	91.25 - 90.91	12.877	29	1.430	0.001
L14	90.91 - 90.66	12.776	29	1.420	0.001
L15	90.66 - 85.66	12.702	29	1.416	0.001
L16	85.66 - 80.66	11.264	29	1.330	0.001
L17	80.66 - 75.66	9.919	29	1.240	0.001
L18	75.66 - 72.08	8.669	29	1.147	0.001
L19	72.08 - 71.83	7.834	29	1.080	0.001
L20	71.83 - 70.08	7.778	29	1.077	0.001
L21	70.08 - 69.83	7.388	29	1.052	0.001
L22	69.83 - 64.83	7.333	29	1.047	0.001
L23	64.83 - 63	6.292	29	0.942	0.001
L24	63 - 62.75	5.938	29	0.903	0.000
L25	62.75 - 59.0833	5.891	29	0.900	0.000
L26	59.0833 - 58.8167	5.220	29	0.848	0.000
L27	58.8167 - 58.6667	5.173	29	0.844	0.000
L28	58.6667 - 53.6667	5.146	29	0.841	0.000
L29	53.6667 - 48.5833	4.309	29	0.758	0.000
L30	53 - 47.5833	4.204	29	0.747	0.000
L31	47.5833 - 42.5833	3.382	29	0.694	0.000
L32	42.5833 - 40	2.700	29	0.610	0.000
L33	40 - 39.75	2.382	29	0.567	0.000
L34	39.75 - 34.75	2.352	29	0.564	0.000
L35	34.75 - 31.4133	1.796	29	0.498	0.000
L36	31.4133 - 31.1633	1.463	29	0.455	0.000
L37	31.1633 - 29	1.439	29	0.452	0.000
L38	29 - 28.75	1.241	29	0.424	0.000
L39	28.75 - 23.75	1.219	29	0.420	0.000

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L40	23.75 - 23.5	0.822	29	0.338	0.000
L41	23.5 - 23.25	0.804	29	0.334	0.000
L42	23.25 - 18.25	0.787	29	0.330	0.000
L43	18.25 - 13.25	0.480	29	0.257	0.000
L44	13.25 - 8.25	0.249	29	0.184	0.000
L45	8.25 - 5.5	0.094	29	0.111	0.000
L46	5.5 - 5.25	0.041	29	0.072	0.000
L47	5.25 - 0.25	0.038	29	0.069	0.000
L48	0.25 - 0	0.000	1	0.000	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140.000	Lightning Rod 3/4" x 7'	35	34.338	2.674	0.013	3862
138.000	Platform Mount [LP 403-1]	35	33.218	2.665	0.013	3862
120.000	T-Arm Mount [TA 602-3]	29	23.849	2.220	0.005	1610
103.700	flange transition stiffener	29	17.088	1.798	0.002	2189
99.000	Side Arm Mount [SO 102-3]	29	15.387	1.660	0.002	1962
95.000	Platform Mount [LP 1001-1]	29	14.045	1.544	0.002	1940
73.000	Platform Mount [LP 1201-1]	29	8.044	1.095	0.001	3245
50.000	GPS-TMG-HR-26NCM	29	3.741	0.715	0.000	4891

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 135	98.675	10	7.674	0.036
L2	135 - 130	90.707	10	7.576	0.030
L3	130 - 125	82.955	10	7.278	0.022
L4	125 - 120	75.573	10	6.867	0.017
L5	120 - 115	68.656	4	6.389	0.012
L6	115 - 114.75	62.270	4	5.842	0.009
L7	114.75 - 109.75	61.965	4	5.830	0.009
L8	109.75 - 104.75	56.018	4	5.562	0.007
L9	104.75 - 101.483	50.366	4	5.262	0.006
L10	101.483 - 101.25	46.866	4	4.993	0.005
L11	101.25 - 96.25	46.623	4	4.973	0.005
L12	96.25 - 91.25	41.644	4	4.553	0.004
L13	91.25 - 90.91	37.108	4	4.122	0.003
L14	90.91 - 90.66	36.816	4	4.093	0.003
L15	90.66 - 85.66	36.602	4	4.081	0.003
L16	85.66 - 80.66	32.463	4	3.834	0.003
L17	80.66 - 75.66	28.588	4	3.573	0.002
L18	75.66 - 72.08	24.990	4	3.306	0.002
L19	72.08 - 71.83	22.585	4	3.114	0.002
L20	71.83 - 70.08	22.423	4	3.104	0.002
L21	70.08 - 69.83	21.299	4	3.033	0.002
L22	69.83 - 64.83	21.141	4	3.018	0.002
L23	64.83 - 63	18.141	4	2.716	0.001

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L24	63 - 62.75	17.121	4	2.605	0.001
L25	62.75 - 59.0833	16.985	4	2.595	0.001
L26	59.0833 - 58.8167	15.051	4	2.446	0.001
L27	58.8167 - 58.6667	14.915	4	2.433	0.001
L28	58.6667 - 53.6667	14.838	4	2.426	0.001
L29	53.6667 - 48.5833	12.425	4	2.186	0.001
L30	53 - 47.5833	12.122	4	2.154	0.001
L31	47.5833 - 42.5833	9.755	4	2.001	0.001
L32	42.5833 - 40	7.787	4	1.760	0.001
L33	40 - 39.75	6.869	4	1.635	0.001
L34	39.75 - 34.75	6.783	4	1.625	0.001
L35	34.75 - 31.4133	5.180	4	1.438	0.001
L36	31.4133 - 31.1633	4.219	4	1.313	0.001
L37	31.1633 - 29	4.151	4	1.303	0.001
L38	29 - 28.75	3.579	4	1.222	0.000
L39	28.75 - 23.75	3.515	4	1.211	0.000
L40	23.75 - 23.5	2.371	4	0.975	0.000
L41	23.5 - 23.25	2.320	4	0.964	0.000
L42	23.25 - 18.25	2.270	4	0.953	0.000
L43	18.25 - 13.25	1.383	4	0.741	0.000
L44	13.25 - 8.25	0.718	4	0.531	0.000
L45	8.25 - 5.5	0.272	4	0.321	0.000
L46	5.5 - 5.25	0.120	4	0.209	0.000
L47	5.25 - 0.25	0.109	4	0.199	0.000
L48	0.25 - 0	0.000	4	0.009	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140.000	Lightning Rod 3/4" x 7'	10	98.675	7.674	0.040	1429
138.000	Platform Mount [LP 403-1]	10	95.475	7.650	0.038	1429
120.000	T-Arm Mount [TA 602-3]	4	68.656	6.389	0.014	578
103.700	flange transition stiffener	4	49.222	5.180	0.007	776
99.000	Side Arm Mount [SO 102-3]	4	44.329	4.784	0.005	693
95.000	Platform Mount [LP 1001-1]	4	40.468	4.451	0.004	684
73.000	Platform Mount [LP 1201-1]	4	23.190	3.157	0.002	1134
50.000	GPS-TMG-HR-26NCM	4	10.787	2.063	0.001	1701

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	140 - 139	TP14.296x13.161x0.188	5.000	0.000	0.0	39.000	7.856	-0.097	306.382	0.000*
	139 - 138					39.000	7.856	-0.125	306.382	0.000*
	138 - 137					39.000	8.126	-1.840	316.920	0.006

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
	137 - 136					39.000	8.261	-1.873	322.189	0.006
	136 - 135					39.000	8.396	-1.907	327.458	0.006
L2	135 - 134	TP15.431x14.296x0.188	5.000	0.000	0.0	39.000	8.531	-1.948	332.727	0.006
	134 - 133					39.000	8.667	-1.990	337.996	0.006
	133 - 132					39.000	8.802	-2.033	343.264	0.006
	132 - 131					39.000	8.937	-2.078	348.533	0.006
	131 - 130					39.000	9.072	-2.123	353.802	0.006
L3	130 - 129	TP16.566x15.431x0.188	5.000	0.000	0.0	39.000	9.207	-2.170	359.071	0.006
	129 - 128					39.000	9.342	-2.218	364.340	0.006
	128 - 127					39.000	9.477	-2.267	369.609	0.006
	127 - 126					39.000	9.612	-2.316	374.878	0.006
	126 - 125					39.000	9.747	-2.367	380.147	0.006
L4	125 - 124	TP17.701x16.566x0.188	5.000	0.000	0.0	39.000	9.882	-2.419	385.416	0.006
	124 - 123					39.000	10.018	-2.472	390.685	0.006
	123 - 122					39.000	10.153	-2.525	395.953	0.006
	122 - 121					39.000	10.288	-2.579	401.222	0.006
	121 - 120					39.000	10.423	-2.634	406.491	0.006
L5	120 - 119	TP18.836x17.701x0.188	5.000	0.000	0.0	39.000	10.558	-3.823	411.760	0.009
	119 - 118					39.000	10.693	-3.900	417.029	0.009
	118 - 117					39.000	10.828	-3.978	422.298	0.009
	117 - 116					39.000	10.963	-4.057	427.567	0.009
	116 - 115					39.000	11.098	-4.137	432.836	0.010
L6	115 - 114.75 (6)	TP18.893x18.836x0.463	0.250	0.000	0.0	39.000	27.055	-4.176	1055.170	0.004
L7	114.75 - 113.75	TP20.028x18.893x0.45	5.000	0.000	0.0	39.000	26.666	-4.284	1039.990	0.004
	113.75 - 112.75					39.000	26.991	-4.396	1052.640	0.004
	112.75 - 111.75					39.000	27.315	-4.510	1065.280	0.004
	111.75 - 110.75					39.000	27.639	-4.625	1077.930	0.004
	110.75 - 109.75					39.000	27.963	-4.742	1090.570	0.004
L8	109.75 - 108.75	TP21.163x20.028x0.425	5.000	0.000	0.0	39.000	26.750	-4.858	1043.240	0.005
	108.75 - 107.75					39.000	27.056	-4.975	1055.180	0.005
	107.75 - 106.75					39.000	27.362	-5.093	1067.130	0.005
	106.75 - 105.75					39.000	27.669	-5.213	1079.070	0.005
	105.75 - 104.75					39.000	27.975	-5.333	1091.010	0.005
L9	104.75 - 103.661	TP21.905x21.163x0.313	3.267	0.000	0.0	39.000	20.926	-5.763	816.131	0.007
	103.661 - 102.572					39.000	21.172	-5.883	825.692	0.007
	102.572 - 101.483					39.000	21.417	-6.005	835.254	0.007
L10	101.483 - 101.25 (10)	TP21.958x21.905x0.313	0.233	0.000	0.0	39.000	21.469	-6.039	837.303	0.007
L11	101.25 - 100.25	TP23.093x21.958x0.313	5.000	0.000	0.0	39.000	21.695	-6.146	846.084	0.007
	100.25 - 99.25					39.000	21.920	-6.260	854.865	0.007
	99.25 - 98.25					39.000	22.145	-6.808	863.646	0.008
	98.25 - 97.25					39.000	22.370	-6.927	872.427	0.008
	97.25 - 96.25					39.000	22.595	-7.046	881.208	0.008
L12	96.25 - 95.25	TP24.228x23.093x0.313	5.000	0.000	0.0	39.000	22.820	-7.168	889.989	0.008
	95.25 - 94.25					39.000	23.045	-10.513	898.770	0.012
	94.25 - 93.25					39.000	23.271	-10.643	907.551	0.012
	93.25 - 92.25					39.000	23.496	-10.775	916.332	0.012
	92.25 - 91.25					39.000	23.721	-10.908	925.113	0.012
L13	91.25 - 90.91 (13)	TP24.305x24.228x0.313	0.340	0.000	0.0	39.000	23.797	-10.963	928.099	0.012
L14	90.91 - 90.66 (14)	TP24.362x24.305x0.6	0.250	0.000	0.0	39.000	45.252	-11.012	1764.810	0.006
L15	90.66 - 89.66	TP25.497x24.362x0.588	5.000	0.000	0.0	39.000	44.755	-11.186	1745.460	0.006
	89.66 - 88.66					39.000	45.179	-11.368	1761.970	0.006
	88.66 - 87.66					39.000	45.602	-11.552	1778.480	0.006
	87.66 - 86.66					39.000	46.025	-11.737	1794.990	0.007
	86.66 - 85.66					39.000	46.449	-11.923	1811.500	0.007

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L16	85.66 - 84.66	TP26.632x25.497x0.563	5.000	0.000	0.0	39.000	44.922	-12.109	1751.960	0.007
	84.66 - 83.66					39.000	45.327	-12.297	1767.760	0.007
	83.66 - 82.66					39.000	45.733	-12.486	1783.570	0.007
	82.66 - 81.66					39.000	46.138	-12.677	1799.380	0.007
	81.66 - 80.66					39.000	46.543	-12.869	1815.180	0.007
L17	80.66 - 79.66	TP27.767x26.632x0.55	5.000	0.000	0.0	39.000	45.927	-13.060	1791.150	0.007
	79.66 - 78.66					39.000	46.323	-13.253	1806.600	0.007
	78.66 - 77.66					39.000	46.720	-13.448	1822.060	0.007
	77.66 - 76.66					39.000	47.116	-13.643	1837.510	0.007
	76.66 - 75.66					39.000	47.512	-13.841	1852.970	0.007
L18	75.66 - 74.4667	TP28.579x27.767x0.55	3.580	0.000	0.0	39.000	47.985	-14.075	1871.410	0.008
	74.4667 - 73.2733					39.000	48.458	-14.312	1889.850	0.008
	73.2733 - 72.08					39.000	48.931	-17.410	1908.300	0.009
L19	72.08 - 71.83 (19)	TP28.636x28.579x0.738	0.250	0.000	0.0	39.000	65.305	-17.486	2546.920	0.007
L20	71.83 - 70.08 (20)	TP29.033x28.636x0.725	1.750	0.000	0.0	39.000	65.142	-17.928	2540.520	0.007
L21	70.08 - 69.83 (21)	TP29.09x29.033x0.488	0.250	0.000	0.0	39.000	44.257	-17.992	1726.040	0.010
L22	69.83 - 68.83	TP30.225x29.09x0.488	5.000	0.000	0.0	39.000	44.609	-18.189	1739.740	0.010
	68.83 - 67.83					39.000	44.960	-18.398	1753.430	0.010
	67.83 - 66.83					39.000	45.311	-18.608	1767.130	0.011
	66.83 - 65.83					39.000	45.662	-18.819	1780.830	0.011
	65.83 - 64.83					39.000	46.014	-19.031	1794.530	0.011
L23	64.83 - 63 (23)	TP30.64x30.225x0.475	1.830	0.000	0.0	39.000	45.479	-19.412	1773.680	0.011
L24	63 - 62.75 (24)	TP30.697x30.64x0.75	0.250	0.000	0.0	39.000	71.289	-19.501	2780.280	0.007
L25	62.75 - 61.5278	TP31.53x30.697x0.738	3.667	0.000	0.0	39.000	70.780	-19.817	2760.410	0.007
	61.5278 - 60.3055					39.000	71.429	-20.145	2785.740	0.007
	60.3055 - 59.0833					39.000	72.079	-20.475	2811.070	0.007
L26	59.0833 - 58.8167 (26)	TP31.59x31.53x0.625	0.267	0.000	0.0	39.000	61.427	-20.552	2395.650	0.009
L27	58.8167 - 58.6667 (27)	TP31.624x31.59x0.625	0.150	0.000	0.0	39.000	61.494	-20.592	2398.280	0.009
L28	58.6667 - 57.6667	TP32.759x31.624x0.613	5.000	0.000	0.0	39.000	60.730	-20.838	2368.480	0.009
	57.6667 - 56.6667					39.000	61.171	-21.096	2385.690	0.009
	56.6667 - 55.6667					39.000	61.613	-21.354	2402.900	0.009
	55.6667 - 54.6667					39.000	62.054	-21.615	2420.110	0.009
	54.6667 - 53.6667					39.000	62.495	-21.877	2437.320	0.009
L29	53.6667 - 53	TP33.913x32.759x0.613	5.083	0.000	0.0	39.000	62.790	-22.056	2448.790	0.009
	53 - 48.5833					39.000	64.739	-12.048	2524.810	0.005
L30	53 - 48.5833	TP33.515x32.285x0.638	5.417	0.000	0.0	39.000	66.066	-12.135	2576.570	0.005
	48.5833 - 47.5833					39.000	66.525	-24.459	2594.490	0.009
L31	47.5833 - 46.5833	TP34.65x33.515x0.625	5.000	0.000	0.0	39.000	65.696	-24.720	2562.140	0.010
	46.5833 - 45.5833					39.000	66.146	-24.984	2579.710	0.010
	45.5833 - 44.5833					39.000	66.597	-25.248	2597.270	0.010
	44.5833 - 43.5833					39.000	67.047	-25.514	2614.830	0.010
	43.5833 -					39.000	67.497	-25.782	2632.400	0.010

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
	42.5833									
L32	42.5833 - 41.2917	TP35.237x34.65x0.613	2.583	0.000	0.0	39.000	66.742	-26.125	2602.930	0.010
	41.2917 - 40					39.000	67.312	-26.474	2625.160	0.010
L33	40 - 39.75 (33)	TP35.293x35.237x0.813	0.250	0.000	0.0	39.000	88.922	-26.568	3467.950	0.008
L34	39.75 - 38.75	TP36.428x35.293x0.788	5.000	0.000	0.0	39.000	86.816	-26.885	3385.810	0.008
	38.75 - 37.75					39.000	87.383	-27.210	3407.940	0.008
	37.75 - 36.75					39.000	87.950	-27.537	3430.070	0.008
	36.75 - 35.75					39.000	88.518	-27.866	3452.200	0.008
	35.75 - 34.75					39.000	89.085	-28.197	3474.320	0.008
L35	34.75 - 33.6378	TP37.186x36.428x0.775	3.337	0.000	0.0	39.000	88.323	-28.563	3444.600	0.008
	33.6378 - 32.5255					39.000	88.944	-28.932	3468.820	0.008
	32.5255 - 31.4133					39.000	89.565	-29.303	3493.040	0.008
L36	31.4133 - 31.1633 (36)	TP37.243x37.186x0.775	0.250	0.000	0.0	39.000	89.705	-29.394	3498.490	0.008
L37	31.1633 - 30.0817	TP37.734x37.243x0.763	2.163	0.000	0.0	39.000	88.882	-29.748	3466.420	0.009
	30.0817 - 29					39.000	89.477	-30.111	3489.590	0.009
L38	29 - 28.75 (38)	TP37.79x37.734x0.588	0.250	0.000	0.0	39.000	69.373	-30.188	2705.560	0.011
L39	28.75 - 27.75	TP38.925x37.79x0.588	5.000	0.000	0.0	39.000	69.797	-30.458	2722.070	0.011
	27.75 - 26.75					39.000	70.220	-30.738	2738.570	0.011
	26.75 - 25.75					39.000	70.643	-31.020	2755.080	0.011
	25.75 - 24.75					39.000	71.066	-31.302	2771.590	0.011
	24.75 - 23.75					39.000	71.490	-31.586	2788.100	0.011
L40	23.75 - 23.5 (40)	TP38.982x38.925x0.588	0.250	0.000	0.0	39.000	71.596	-31.666	2792.230	0.011
L41	23.5 - 23.25 (41)	TP39.039x38.982x0.65	0.250	0.000	0.0	39.000	79.200	-31.753	3088.810	0.010
L42	23.25 - 22.25	TP40.174x39.039x0.638	5.000	0.000	0.0	39.000	78.162	-32.086	3048.310	0.011
	22.25 - 21.25					39.000	78.621	-32.428	3066.230	0.011
	21.25 - 20.25					39.000	79.081	-32.773	3084.140	0.011
	20.25 - 19.25					39.000	79.540	-33.119	3102.060	0.011
	19.25 - 18.25					39.000	79.999	-33.467	3119.970	0.011
L43	18.25 - 17.25	TP41.309x40.174x0.625	5.000	0.000	0.0	39.000	78.906	-33.812	3077.320	0.011
	17.25 - 16.25					39.000	79.356	-34.159	3094.890	0.011
	16.25 - 15.25					39.000	79.806	-34.508	3112.450	0.011
	15.25 - 14.25					39.000	80.257	-34.858	3130.010	0.011
	14.25 - 13.25					39.000	80.707	-35.210	3147.580	0.011
L44	13.25 - 12.25	TP42.444x41.309x0.613	5.000	0.000	0.0	39.000	79.559	-35.560	3102.780	0.011
	12.25 - 11.25					39.000	80.000	-35.911	3120.000	0.012
	11.25 - 10.25					39.000	80.441	-36.264	3137.210	0.012
	10.25 - 9.25					39.000	80.883	-36.619	3154.420	0.012
	9.25 - 8.25					39.000	81.324	-36.976	3171.630	0.012
L45	8.25 - 6.875	TP43.068x42.444x0.613	2.750	0.000	0.0	39.000	81.931	-37.437	3195.300	0.012
	6.875 - 5.5					39.000	82.537	-37.905	3218.960	0.012
L46	5.5 - 5.25 (46)	TP43.125x43.068x0.663	0.250	0.000	0.0	39.000	89.289	-37.993	3482.290	0.011
L47	5.25 - 4.25	TP44.26x43.125x0.65	5.000	0.000	0.0	39.000	88.099	-38.276	3435.860	0.011
	4.25 - 3.25					39.000	88.567	-38.568	3454.120	0.011
	3.25 - 2.25					39.000	88.567	-38.587	3454.120	0.011
	2.25 - 1.25					39.000	89.036	-38.881	3472.390	0.011
	1.25 - 0.25					39.000	89.504	-39.175	3490.650	0.011
L48	0.25 - 0 (48)	TP44.317x44.26x0.65	0.250	0.000	0.0	39.000	89.972	-39.466	3508.920	0.011

* DL controls

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	140 - 139	TP14.296x13.161x0.188	0.195	0.092	39.000	0.002	0.000	0.000	39.000	0.000
	139 - 138		0.195	0.092	39.000	0.002	0.000	0.000	39.000	0.000
	138 - 137		19.021	8.385	39.000	0.215	0.000	0.000	39.000	0.000
	137 - 136		25.889	11.040	39.000	0.283	0.000	0.000	39.000	0.000
	136 - 135		32.801	13.538	39.000	0.347	0.000	0.000	39.000	0.000
L2	135 - 134	TP15.431x14.296x0.188	39.760	15.891	39.000	0.407	0.000	0.000	39.000	0.000
	134 - 133		46.768	18.110	39.000	0.464	0.000	0.000	39.000	0.000
	133 - 132		53.826	20.204	39.000	0.518	0.000	0.000	39.000	0.000
	132 - 131		60.933	22.182	39.000	0.569	0.000	0.000	39.000	0.000
	131 - 130		68.090	24.050	39.000	0.617	0.000	0.000	39.000	0.000
L3	130 - 129	TP16.566x15.431x0.188	75.298	25.817	39.000	0.662	0.000	0.000	39.000	0.000
	129 - 128		82.556	27.488	39.000	0.705	0.000	0.000	39.000	0.000
	128 - 127		89.865	29.069	39.000	0.745	0.000	0.000	39.000	0.000
	127 - 126		97.224	30.567	39.000	0.784	0.000	0.000	39.000	0.000
	126 - 125		104.636	31.986	39.000	0.820	0.000	0.000	39.000	0.000
L4	125 - 124	TP17.701x16.566x0.188	112.098	33.332	39.000	0.855	0.000	0.000	39.000	0.000
	124 - 123		119.613	34.608	39.000	0.887	0.000	0.000	39.000	0.000
	123 - 122		127.179	35.819	39.000	0.918	0.000	0.000	39.000	0.000
	122 - 121		134.798	36.969	39.000	0.948	0.000	0.000	39.000	0.000
	121 - 120		142.469	38.062	39.000	0.976	0.000	0.000	39.000	0.000
L5	120 - 119	TP18.836x17.701x0.188	153.973	40.084	39.000	1.028	0.000	0.000	39.000	0.000
	119 - 118		165.548	42.009	39.000	1.077	0.000	0.000	39.000	0.000
	118 - 117		177.197	43.845	39.000	1.124	0.000	0.000	39.000	0.000
	117 - 116		188.919	45.594	39.000	1.169	0.000	0.000	39.000	0.000
	116 - 115		200.715	47.263	39.000	1.212	0.000	0.000	39.000	0.000
L6	115 - 114.75 (6)	TP18.893x18.836x0.463	203.676	20.203	39.000	0.518	0.000	0.000	39.000	0.000
L7	114.75 - 113.75	TP20.028x18.893x0.45	215.572	21.396	39.000	0.549	0.000	0.000	39.000	0.000
	113.75 - 112.75		227.555	22.040	39.000	0.565	0.000	0.000	39.000	0.000
	112.75 - 111.75		239.624	22.655	39.000	0.581	0.000	0.000	39.000	0.000
	111.75 - 110.75		251.781	23.243	39.000	0.596	0.000	0.000	39.000	0.000
	110.75 - 109.75		264.026	23.805	39.000	0.610	0.000	0.000	39.000	0.000
L8	109.75 - 108.75	TP21.163x20.028x0.425	276.357	25.677	39.000	0.658	0.000	0.000	39.000	0.000
	108.75 - 107.75		288.774	26.220	39.000	0.672	0.000	0.000	39.000	0.000
	107.75 - 106.75		301.278	26.741	39.000	0.686	0.000	0.000	39.000	0.000
	106.75 - 105.75		313.870	27.239	39.000	0.698	0.000	0.000	39.000	0.000
	105.75 - 104.75		326.550	27.716	39.000	0.711	0.000	0.000	39.000	0.000
L9	104.75 - 103.661	TP21.905x21.163x0.313	340.462	37.760	39.000	0.968	0.000	0.000	39.000	0.000
	103.661 - 102.572		354.664	38.423	39.000	0.985	0.000	0.000	39.000	0.000
	102.572 - 101.483		368.966	39.056	39.000	1.001	0.000	0.000	39.000	0.000
L10	101.483 - 101.25 (10)	TP21.958x21.905x0.313	372.043	39.188	39.000	1.005	0.000	0.000	39.000	0.000
L11	101.25 - 100.25	TP23.093x21.958x0.313	385.277	39.738	39.000	1.019	0.000	0.000	39.000	0.000
	100.25 - 99.25		398.587	40.264	39.000	1.032	0.000	0.000	39.000	0.000
	99.25 - 98.25		412.659	40.837	39.000	1.047	0.000	0.000	39.000	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	98.25 - 97.25		427.077	41.411	39.000	1.062	0.000	0.000	39.000	0.000
	97.25 - 96.25		441.573	41.962	39.000	1.076	0.000	0.000	39.000	0.000
L12	96.25 - 95.25	TP24.228x23.093x0.313	456.146	42.490	39.000	1.089	0.000	0.000	39.000	0.000
	95.25 - 94.25		473.832	43.274	39.000	1.110	0.000	0.000	39.000	0.000
	94.25 - 93.25		492.606	44.116	39.000	1.131	0.000	0.000	39.000	0.000
	93.25 - 92.25		511.452	44.925	39.000	1.152	0.000	0.000	39.000	0.000
	92.25 - 91.25		530.374	45.701	39.000	1.172	0.000	0.000	39.000	0.000
L13	91.25 - 90.91 (13)	TP24.305x24.228x0.313	536.824	45.958	39.000	1.178	0.000	0.000	39.000	0.000
L14	90.91 - 90.66 (14)	TP24.362x24.305x0.6	541.572	24.916	39.000	0.639	0.000	0.000	39.000	0.000
L15	90.66 - 89.66	TP25.497x24.362x0.588	560.623	25.799	39.000	0.662	0.000	0.000	39.000	0.000
	89.66 - 88.66		579.763	26.176	39.000	0.671	0.000	0.000	39.000	0.000
	88.66 - 87.66		598.991	26.539	39.000	0.680	0.000	0.000	39.000	0.000
	87.66 - 86.66		618.308	26.887	39.000	0.689	0.000	0.000	39.000	0.000
	86.66 - 85.66		637.716	27.223	39.000	0.698	0.000	0.000	39.000	0.000
L16	85.66 - 84.66	TP26.632x25.497x0.563	657.212	28.683	39.000	0.735	0.000	0.000	39.000	0.000
	84.66 - 83.66		676.795	29.006	39.000	0.744	0.000	0.000	39.000	0.000
	83.66 - 82.66		696.467	29.317	39.000	0.752	0.000	0.000	39.000	0.000
	82.66 - 81.66		716.227	29.616	39.000	0.759	0.000	0.000	39.000	0.000
	81.66 - 80.66		736.077	29.903	39.000	0.767	0.000	0.000	39.000	0.000
L17	80.66 - 79.66	TP27.767x26.632x0.55	756.015	30.822	39.000	0.790	0.000	0.000	39.000	0.000
	79.66 - 78.66		776.039	31.094	39.000	0.797	0.000	0.000	39.000	0.000
	78.66 - 77.66		796.150	31.355	39.000	0.804	0.000	0.000	39.000	0.000
	77.66 - 76.66		816.349	31.607	39.000	0.810	0.000	0.000	39.000	0.000
	76.66 - 75.66		836.633	31.849	39.000	0.817	0.000	0.000	39.000	0.000
L18	75.66 - 74.4667	TP28.579x27.767x0.55	860.958	32.126	39.000	0.824	0.000	0.000	39.000	0.000
	74.4667 - 73.2733		885.408	32.390	39.000	0.831	0.000	0.000	39.000	0.000
	73.2733 - 72.08		916.017	32.859	39.000	0.843	0.000	0.000	39.000	0.000
L19	72.08 - 71.83 (19)	TP28.636x28.579x0.738	921.967	25.063	39.000	0.643	0.000	0.000	39.000	0.000
L20	71.83 - 70.08 (20)	TP29.033x28.636x0.725	963.792	25.864	39.000	0.663	0.000	0.000	39.000	0.000
L21	70.08 - 69.83 (21)	TP29.09x29.033x0.488	969.792	37.596	39.000	0.964	0.000	0.000	39.000	0.000
L22	69.83 - 68.83	TP30.225x29.09x0.488	993.842	37.919	39.000	0.972	0.000	0.000	39.000	0.000
	68.83 - 67.83		1017.983	38.230	39.000	0.980	0.000	0.000	39.000	0.000
	67.83 - 66.83		1042.208	38.531	39.000	0.988	0.000	0.000	39.000	0.000
	66.83 - 65.83		1066.508	38.820	39.000	0.995	0.000	0.000	39.000	0.000
	65.83 - 64.83		1090.900	39.099	39.000	1.003	0.000	0.000	39.000	0.000
L23	64.83 - 63 (23)	TP30.64x30.225x0.475	1135.725	40.574	39.000	1.040	0.000	0.000	39.000	0.000
L24	63 - 62.75 (24)	TP30.697x30.64x0.75	1141.875	26.454	39.000	0.678	0.000	0.000	39.000	0.000
L25	62.75 - 61.5278	TP31.53x30.697x0.738	1172.000	27.068	39.000	0.694	0.000	0.000	39.000	0.000
	61.5278 - 60.3055		1202.258	27.258	39.000	0.699	0.000	0.000	39.000	0.000
	60.3055 - 59.0833		1232.650	27.440	39.000	0.704	0.000	0.000	39.000	0.000
L26	59.0833 - 58.8167 (26)	TP31.59x31.53x0.625	1239.300	32.072	39.000	0.822	0.000	0.000	39.000	0.000
L27	58.8167 -	TP31.624x31.59x0.625	1243.04	32.098	39.000	0.823	0.000	0.000	39.000	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	58.6667 (27)		2							
L28	58.6667 - 57.6667	TP32.759x31.624x0.613	1268.04	32.884	39.000	0.843	0.000	0.000	39.000	0.000
	57.6667 - 56.6667		2 1293.13	33.047	39.000	0.847	0.000	0.000	39.000	0.000
	56.6667 - 55.6667		3 1318.30	33.205	39.000	0.851	0.000	0.000	39.000	0.000
	55.6667 - 54.6667		8 1343.56	33.358	39.000	0.855	0.000	0.000	39.000	0.000
	54.6667 - 53.6667		7 1368.91	33.504	39.000	0.859	0.000	0.000	39.000	0.000
L29	53.6667 - 53	TP33.913x32.759x0.613	7 1385.86	33.599	39.000	0.862	0.000	0.000	39.000	0.000
	53 - 48.5833		7 757.225	17.260	39.000	0.443	0.000	0.000	39.000	0.000
L30	53 - 48.5833	TP33.515x32.285x0.638	742.004	16.922	39.000	0.434	0.000	0.000	39.000	0.000
	48.5833 - 47.5833		1525.28 3	34.301	39.000	0.880	0.000	0.000	39.000	0.000
L31	47.5833 - 46.5833	TP34.65x33.515x0.625	1551.41 7	35.056	39.000	0.899	0.000	0.000	39.000	0.000
	46.5833 - 45.5833		1577.62 5	35.160	39.000	0.902	0.000	0.000	39.000	0.000
	45.5833 - 44.5833		1603.91 7	35.260	39.000	0.904	0.000	0.000	39.000	0.000
	44.5833 - 43.5833		1630.28 3	35.355	39.000	0.907	0.000	0.000	39.000	0.000
	43.5833 - 42.5833		1656.73 3	35.447	39.000	0.909	0.000	0.000	39.000	0.000
L32	42.5833 - 41.2917	TP35.237x34.65x0.613	1691.01 7	36.245	39.000	0.929	0.000	0.000	39.000	0.000
	41.2917 - 40		1725.42 5	36.354	39.000	0.932	0.000	0.000	39.000	0.000
L33	40 - 39.75 (33)	TP35.293x35.237x0.813	1732.10 0	27.900	39.000	0.715	0.000	0.000	39.000	0.000
L34	39.75 - 38.75	TP36.428x35.293x0.788	1758.85 0	28.783	39.000	0.738	0.000	0.000	39.000	0.000
	38.75 - 37.75		1785.68 3	28.840	39.000	0.739	0.000	0.000	39.000	0.000
	37.75 - 36.75		1812.59 2	28.894	39.000	0.741	0.000	0.000	39.000	0.000
	36.75 - 35.75		1839.58 3	28.945	39.000	0.742	0.000	0.000	39.000	0.000
	35.75 - 34.75		1866.65 8	28.994	39.000	0.743	0.000	0.000	39.000	0.000
L35	34.75 - 33.6378	TP37.186x36.428x0.775	1896.86 7	29.483	39.000	0.756	0.000	0.000	39.000	0.000
	33.6378 - 32.5255		1927.17 5	29.533	39.000	0.757	0.000	0.000	39.000	0.000
	32.5255 - 31.4133		1957.57 5	29.580	39.000	0.758	0.000	0.000	39.000	0.000
L36	31.4133 - 31.1633 (36)	TP37.243x37.186x0.775	1964.41 7	29.590	39.000	0.759	0.000	0.000	39.000	0.000
L37	31.1633 - 30.0817	TP37.734x37.243x0.763	1994.10 0	30.088	39.000	0.771	0.000	0.000	39.000	0.000
	30.0817 - 29		2023.86 7	30.129	39.000	0.773	0.000	0.000	39.000	0.000
L38	29 - 28.75 (38)	TP37.79x37.734x0.588	2030.75 8	38.566	39.000	0.989	0.000	0.000	39.000	0.000
L39	28.75 - 27.75	TP38.925x37.79x0.588	2058.38 3	38.614	39.000	0.990	0.000	0.000	39.000	0.000
	27.75 - 26.75		2086.06	38.659	39.000	0.991	0.000	0.000	39.000	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
			7							
	26.75 - 25.75		2113.833	38.702	39.000	0.992	0.000	0.000	39.000	0.000
	25.75 - 24.75		2141.667	38.743	39.000	0.993	0.000	0.000	39.000	0.000
	24.75 - 23.75		2169.567	38.780	39.000	0.994	0.000	0.000	39.000	0.000
L40	23.75 - 23.5 (40)	TP38.982x38.925x0.588	2176.558	38.789	39.000	0.995	0.000	0.000	39.000	0.000
L41	23.5 - 23.25 (41)	TP39.039x38.982x0.65	2183.550	35.239	39.000	0.904	0.000	0.000	39.000	0.000
L42	23.25 - 22.25	TP40.174x39.039x0.638	2211.567	35.926	39.000	0.921	0.000	0.000	39.000	0.000
	22.25 - 21.25		2239.650	35.955	39.000	0.922	0.000	0.000	39.000	0.000
	21.25 - 20.25		2267.817	35.982	39.000	0.923	0.000	0.000	39.000	0.000
	20.25 - 19.25		2296.058	36.008	39.000	0.923	0.000	0.000	39.000	0.000
	19.25 - 18.25		2324.367	36.031	39.000	0.924	0.000	0.000	39.000	0.000
L43	18.25 - 17.25	TP41.309x40.174x0.625	2352.758	36.739	39.000	0.942	0.000	0.000	39.000	0.000
	17.25 - 16.25		2381.217	36.759	39.000	0.943	0.000	0.000	39.000	0.000
	16.25 - 15.25		2409.758	36.778	39.000	0.943	0.000	0.000	39.000	0.000
	15.25 - 14.25		2438.367	36.795	39.000	0.943	0.000	0.000	39.000	0.000
	14.25 - 13.25		2467.050	36.810	39.000	0.944	0.000	0.000	39.000	0.000
L44	13.25 - 12.25	TP42.444x41.309x0.613	2495.817	37.541	39.000	0.963	0.000	0.000	39.000	0.000
	12.25 - 11.25		2524.650	37.554	39.000	0.963	0.000	0.000	39.000	0.000
	11.25 - 10.25		2553.558	37.566	39.000	0.963	0.000	0.000	39.000	0.000
	10.25 - 9.25		2582.533	37.575	39.000	0.963	0.000	0.000	39.000	0.000
	9.25 - 8.25		2611.592	37.584	39.000	0.964	0.000	0.000	39.000	0.000
L45	8.25 - 6.875	TP43.068x42.444x0.613	2651.633	37.593	39.000	0.964	0.000	0.000	39.000	0.000
	6.875 - 5.5		2691.783	37.599	39.000	0.964	0.000	0.000	39.000	0.000
L46	5.5 - 5.25 (46)	TP43.125x43.068x0.663	2699.092	34.885	39.000	0.894	0.000	0.000	39.000	0.000
L47	5.25 - 4.25	TP44.26x43.125x0.65	2728.375	35.526	39.000	0.911	0.000	0.000	39.000	0.000
	4.25 - 3.25		2757.708	35.527	39.000	0.911	0.000	0.000	39.000	0.000
	3.25 - 2.25		2757.708	35.527	39.000	0.911	0.000	0.000	39.000	0.000
	2.25 - 1.25		2787.100	35.526	39.000	0.911	0.000	0.000	39.000	0.000
	1.25 - 0.25		2816.550	35.524	39.000	0.911	0.000	0.000	39.000	0.000
L48	0.25 - 0 (48)	TP44.317x44.26x0.65	2846.050	35.520	39.000	0.911	0.000	0.000	39.000	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	140 - 139	TP14.296x13.161x0.188	0.000	0.000	26.000	0.000	0.000	0.000	26.000	0.000
	139 - 138		0.000	0.000	26.000	0.000	0.000	0.000	26.000	0.000
	138 - 137		6.846	0.843	26.000	0.065	0.460	0.098	26.000	0.004
	137 - 136		6.891	0.834	26.000	0.064	0.459	0.095	26.000	0.004
	136 - 135		6.936	0.826	26.000	0.064	0.459	0.092	26.000	0.004
L2	135 - 134	TP15.431x14.296x0.188	6.985	0.819	26.000	0.063	0.458	0.089	26.000	0.003
	134 - 133		7.034	0.812	26.000	0.062	0.458	0.086	26.000	0.003
	133 - 132		7.084	0.805	26.000	0.062	0.457	0.083	26.000	0.003
	132 - 131		7.134	0.798	26.000	0.061	0.456	0.081	26.000	0.003
	131 - 130		7.185	0.792	26.000	0.061	0.455	0.078	26.000	0.003
L3	130 - 129	TP16.566x15.431x0.188	7.235	0.786	26.000	0.060	0.454	0.076	26.000	0.003
	129 - 128		7.286	0.780	26.000	0.060	0.453	0.073	26.000	0.003
	128 - 127		7.337	0.774	26.000	0.060	0.452	0.071	26.000	0.003
	127 - 126		7.388	0.769	26.000	0.059	0.451	0.069	26.000	0.003
	126 - 125		7.440	0.763	26.000	0.059	0.450	0.067	26.000	0.003
L4	125 - 124	TP17.701x16.566x0.188	7.491	0.758	26.000	0.058	0.449	0.065	26.000	0.002
	124 - 123		7.543	0.753	26.000	0.058	0.448	0.063	26.000	0.002
	123 - 122		7.595	0.748	26.000	0.058	0.447	0.061	26.000	0.002
	122 - 121		7.648	0.743	26.000	0.057	0.446	0.059	26.000	0.002
	121 - 120		7.701	0.739	26.000	0.057	0.445	0.058	26.000	0.002
L5	120 - 119	TP18.836x17.701x0.188	11.550	1.094	26.000	0.084	0.444	0.056	26.000	0.002
	119 - 118		11.623	1.087	26.000	0.084	0.441	0.054	26.000	0.002
	118 - 117		11.696	1.080	26.000	0.083	0.438	0.053	26.000	0.002
	117 - 116		11.769	1.074	26.000	0.083	0.435	0.051	26.000	0.002
	116 - 115		11.844	1.067	26.000	0.082	0.432	0.049	26.000	0.002
L6	115 - 114.75 (6)	TP18.893x18.836x0.463	11.862	0.438	26.000	0.034	0.429	0.020	26.000	0.001
L7	114.75 - 113.75	TP20.028x18.893x0.45	11.948	0.448	26.000	0.034	0.428	0.020	26.000	0.001
	113.75 - 112.75		12.035	0.446	26.000	0.034	0.425	0.020	26.000	0.001
	112.75 - 111.75		12.122	0.444	26.000	0.034	0.423	0.019	26.000	0.001
	111.75 - 110.75		12.210	0.442	26.000	0.034	0.420	0.019	26.000	0.001
	110.75 - 109.75		12.298	0.440	26.000	0.034	0.418	0.018	26.000	0.001
L8	109.75 - 108.75	TP21.163x20.028x0.425	12.384	0.463	26.000	0.036	0.415	0.019	26.000	0.001
	108.75 - 107.75		12.471	0.461	26.000	0.035	0.412	0.018	26.000	0.001
	107.75 - 106.75		12.558	0.459	26.000	0.035	0.410	0.018	26.000	0.001
	106.75 - 105.75		12.646	0.457	26.000	0.035	0.407	0.017	26.000	0.001
	105.75 - 104.75		12.735	0.455	26.000	0.035	0.404	0.017	26.000	0.001
L9	104.75 - 103.661	TP21.905x21.163x0.313	13.011	0.622	26.000	0.048	0.402	0.022	26.000	0.001
	103.661 - 102.572		13.101	0.619	26.000	0.048	0.399	0.021	26.000	0.001
	102.572 - 101.483		13.192	0.616	26.000	0.047	0.395	0.020	26.000	0.001
L10	101.483 - 101.25 (10)	TP21.958x21.905x0.313	13.206	0.615	26.000	0.047	0.392	0.020	26.000	0.001

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L11	101.25 - 100.25	TP23.093x21.958x0.313	13.285	0.612	26.000	0.047	0.391	0.020	26.000	0.001
	100.25 - 99.25		13.361	0.610	26.000	0.047	0.387	0.019	26.000	0.001
	99.25 - 98.25		14.394	0.650	26.000	0.050	0.494	0.024	26.000	0.001
	98.25 - 97.25		14.470	0.647	26.000	0.050	0.494	0.023	26.000	0.001
	97.25 - 96.25		14.547	0.644	26.000	0.050	0.490	0.023	26.000	0.001
L12	96.25 - 95.25	TP24.228x23.093x0.313	14.625	0.641	26.000	0.049	0.486	0.022	26.000	0.001
	95.25 - 94.25		18.753	0.814	26.000	0.063	0.482	0.021	26.000	0.001
	94.25 - 93.25		18.827	0.809	26.000	0.062	0.479	0.021	26.000	0.001
	93.25 - 92.25		18.901	0.804	26.000	0.062	0.475	0.020	26.000	0.001
	92.25 - 91.25		18.975	0.800	26.000	0.062	0.471	0.020	26.000	0.001
L13	91.25 - 90.91 (13)	TP24.305x24.228x0.313	18.996	0.798	26.000	0.061	0.468	0.019	26.000	0.001
L14	90.91 - 90.66 (14)	TP24.362x24.305x0.6	19.017	0.420	26.000	0.032	0.467	0.010	26.000	0.000
L15	90.66 - 89.66	TP25.497x24.362x0.588	19.108	0.427	26.000	0.033	0.466	0.010	26.000	0.000
	89.66 - 88.66		19.197	0.425	26.000	0.033	0.463	0.010	26.000	0.000
	88.66 - 87.66		19.287	0.423	26.000	0.033	0.460	0.010	26.000	0.000
	87.66 - 86.66		19.377	0.421	26.000	0.032	0.457	0.010	26.000	0.000
	86.66 - 85.66		19.467	0.419	26.000	0.032	0.454	0.009	26.000	0.000
L16	85.66 - 84.66	TP26.632x25.497x0.563	19.555	0.435	26.000	0.033	0.451	0.009	26.000	0.000
	84.66 - 83.66		19.643	0.433	26.000	0.033	0.448	0.009	26.000	0.000
	83.66 - 82.66		19.731	0.431	26.000	0.033	0.445	0.009	26.000	0.000
	82.66 - 81.66		19.820	0.430	26.000	0.033	0.442	0.009	26.000	0.000
	81.66 - 80.66		19.910	0.428	26.000	0.033	0.439	0.009	26.000	0.000
L17	80.66 - 79.66	TP27.767x26.632x0.55	19.997	0.435	26.000	0.033	0.436	0.009	26.000	0.000
	79.66 - 78.66		20.084	0.434	26.000	0.033	0.433	0.008	26.000	0.000
	78.66 - 77.66		20.171	0.432	26.000	0.033	0.430	0.008	26.000	0.000
	77.66 - 76.66		20.259	0.430	26.000	0.033	0.427	0.008	26.000	0.000
	76.66 - 75.66		20.348	0.428	26.000	0.033	0.423	0.008	26.000	0.000
L18	75.66 - 74.4667	TP28.579x27.767x0.55	20.453	0.426	26.000	0.033	0.420	0.008	26.000	0.000
	74.4667 - 73.2733		20.557	0.424	26.000	0.033	0.416	0.007	26.000	0.000
	73.2733 - 72.08		23.818	0.487	26.000	0.037	0.413	0.007	26.000	0.000
L19	72.08 - 71.83 (19)	TP28.636x28.579x0.738	23.833	0.365	26.000	0.028	0.409	0.005	26.000	0.000
L20	71.83 - 70.08 (20)	TP29.033x28.636x0.725	24.002	0.368	26.000	0.028	0.408	0.005	26.000	0.000
L21	70.08 - 69.83 (21)	TP29.09x29.033x0.488	24.014	0.543	26.000	0.042	0.403	0.008	26.000	0.000
L22	69.83 - 68.83	TP30.225x29.09x0.488	24.101	0.540	26.000	0.042	0.402	0.007	26.000	0.000
	68.83 - 67.83		24.181	0.538	26.000	0.041	0.398	0.007	26.000	0.000
	67.83 - 66.83		24.262	0.535	26.000	0.041	0.395	0.007	26.000	0.000
	66.83 - 65.83		24.343	0.533	26.000	0.041	0.392	0.007	26.000	0.000
	65.83 - 64.83		24.424	0.531	26.000	0.041	0.389	0.007	26.000	0.000
L23	64.83 - 63 (23)	TP30.64x30.225x0.475	24.579	0.540	26.000	0.042	0.386	0.007	26.000	0.000
L24	63 - 62.75 (24)	TP30.697x30.64x0.75	24.584	0.345	26.000	0.027	0.380	0.004	26.000	0.000
L25	62.75 - 61.5278	TP31.53x30.697x0.738	24.700	0.349	26.000	0.027	0.379	0.004	26.000	0.000
	61.5278 - 60.3055		24.809	0.347	26.000	0.027	0.375	0.004	26.000	0.000
	60.3055 - 59.0833		24.919	0.346	26.000	0.027	0.372	0.004	26.000	0.000
L26	59.0833 - 58.8167 (26)	TP31.59x31.53x0.625	24.936	0.406	26.000	0.031	0.368	0.005	26.000	0.000
L27	58.8167 - 58.6667 (27)	TP31.624x31.59x0.625	24.949	0.406	26.000	0.031	0.367	0.005	26.000	0.000
L28	58.6667 -	TP32.759x31.624x0.613	25.042	0.412	26.000	0.032	0.367	0.005	26.000	0.000

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
	57.6667									
	57.6667 - 56.6667		25.128	0.411	26.000	0.032	0.364	0.004	26.000	0.000
	56.6667 - 55.6667		25.215	0.409	26.000	0.031	0.362	0.004	26.000	0.000
	55.6667 - 54.6667		25.302	0.408	26.000	0.031	0.359	0.004	26.000	0.000
	54.6667 - 53.6667		25.390	0.406	26.000	0.031	0.357	0.004	26.000	0.000
L29	53.6667 - 53	TP33.913x32.759x0.613	25.443	0.405	26.000	0.031	0.354	0.004	26.000	0.000
	53 - 48.5833		13.310	0.206	26.000	0.016	0.181	0.002	26.000	0.000
L30	53 - 48.5833	TP33.515x32.285x0.638	12.712	0.192	26.000	0.015	0.172	0.002	26.000	0.000
	48.5833 - 47.5833		26.091	0.392	26.000	0.030	0.341	0.004	26.000	0.000
L31	47.5833 - 46.5833	TP34.65x33.515x0.625	26.170	0.398	26.000	0.031	0.339	0.004	26.000	0.000
	46.5833 - 45.5833		26.249	0.397	26.000	0.031	0.336	0.004	26.000	0.000
	45.5833 - 44.5833		26.328	0.395	26.000	0.030	0.334	0.004	26.000	0.000
	44.5833 - 43.5833		26.408	0.394	26.000	0.030	0.331	0.003	26.000	0.000
	43.5833 - 42.5833		26.488	0.392	26.000	0.030	0.329	0.003	26.000	0.000
L32	42.5833 - 41.2917	TP35.237x34.65x0.613	26.591	0.398	26.000	0.031	0.326	0.003	26.000	0.000
	41.2917 - 40		26.691	0.397	26.000	0.030	0.323	0.003	26.000	0.000
L33	40 - 39.75 (33)	TP35.293x35.237x0.813	26.700	0.300	26.000	0.023	0.320	0.002	26.000	0.000
L34	39.75 - 38.75	TP36.428x35.293x0.788	26.787	0.309	26.000	0.024	0.319	0.003	26.000	0.000
	38.75 - 37.75		26.868	0.307	26.000	0.024	0.316	0.002	26.000	0.000
	37.75 - 36.75		26.949	0.306	26.000	0.024	0.314	0.002	26.000	0.000
	36.75 - 35.75		27.030	0.305	26.000	0.023	0.311	0.002	26.000	0.000
	35.75 - 34.75		27.112	0.304	26.000	0.023	0.309	0.002	26.000	0.000
L35	34.75 - 33.6378	TP37.186x36.428x0.775	27.200	0.308	26.000	0.024	0.306	0.002	26.000	0.000
	33.6378 - 32.5255		27.287	0.307	26.000	0.024	0.304	0.002	26.000	0.000
	32.5255 - 31.4133		27.374	0.306	26.000	0.024	0.301	0.002	26.000	0.000
L36	31.4133 - 31.1633 (36)	TP37.243x37.186x0.775	27.385	0.305	26.000	0.023	0.298	0.002	26.000	0.000
L37	31.1633 - 30.0817	TP37.734x37.243x0.763	27.478	0.309	26.000	0.024	0.298	0.002	26.000	0.000
	30.0817 - 29		27.562	0.308	26.000	0.024	0.295	0.002	26.000	0.000
L38	29 - 28.75 (38)	TP37.79x37.734x0.588	27.573	0.397	26.000	0.031	0.292	0.003	26.000	0.000
L39	28.75 - 27.75	TP38.925x37.79x0.588	27.653	0.396	26.000	0.030	0.292	0.003	26.000	0.000
	27.75 - 26.75		27.724	0.395	26.000	0.030	0.289	0.003	26.000	0.000
	26.75 - 25.75		27.796	0.393	26.000	0.030	0.286	0.003	26.000	0.000
	25.75 - 24.75		27.868	0.392	26.000	0.030	0.284	0.002	26.000	0.000
	24.75 - 23.75		27.940	0.391	26.000	0.030	0.281	0.002	26.000	0.000
L40	23.75 - 23.5 (40)	TP38.982x38.925x0.588	27.948	0.390	26.000	0.030	0.279	0.002	26.000	0.000
L41	23.5 - 23.25 (41)	TP39.039x38.982x0.65	27.966	0.353	26.000	0.027	0.278	0.002	26.000	0.000
L42	23.25 - 22.25	TP40.174x39.039x0.638	28.050	0.359	26.000	0.028	0.277	0.002	26.000	0.000
	22.25 - 21.25		28.124	0.358	26.000	0.028	0.275	0.002	26.000	0.000
	21.25 - 20.25		28.199	0.357	26.000	0.027	0.272	0.002	26.000	0.000
	20.25 - 19.25		28.274	0.355	26.000	0.027	0.270	0.002	26.000	0.000
	19.25 - 18.25		28.349	0.354	26.000	0.027	0.267	0.002	26.000	0.000
L43	18.25 - 17.25	TP41.309x40.174x0.625	28.423	0.360	26.000	0.028	0.264	0.002	26.000	0.000

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
	17.25 - 16.25		28.497	0.359	26.000	0.028	0.262	0.002	26.000	0.000
	16.25 - 15.25		28.572	0.358	26.000	0.028	0.259	0.002	26.000	0.000
	15.25 - 14.25		28.647	0.357	26.000	0.027	0.256	0.002	26.000	0.000
	14.25 - 13.25		28.721	0.356	26.000	0.027	0.253	0.002	26.000	0.000
L44	13.25 - 12.25	TP42.444x41.309x0.613	28.795	0.362	26.000	0.028	0.251	0.002	26.000	0.000
	12.25 - 11.25		28.869	0.361	26.000	0.028	0.248	0.002	26.000	0.000
	11.25 - 10.25		28.943	0.360	26.000	0.028	0.245	0.002	26.000	0.000
	10.25 - 9.25		29.017	0.359	26.000	0.028	0.242	0.002	26.000	0.000
	9.25 - 8.25		29.092	0.358	26.000	0.028	0.240	0.002	26.000	0.000
L45	8.25 - 6.875	TP43.068x42.444x0.613	29.175	0.356	26.000	0.027	0.239	0.002	26.000	0.000
	6.875 - 5.5		29.254	0.354	26.000	0.027	0.242	0.002	26.000	0.000
L46	5.5 - 5.25 (46)	TP43.125x43.068x0.663	29.253	0.328	26.000	0.025	0.242	0.002	26.000	0.000
L47	5.25 - 4.25	TP44.26x43.125x0.65	29.319	0.333	26.000	0.026	0.244	0.002	26.000	0.000
	4.25 - 3.25		29.375	0.332	26.000	0.026	0.246	0.002	26.000	0.000
	3.25 - 2.25		29.432	0.332	26.000	0.025	0.248	0.002	26.000	0.000
	2.25 - 1.25		29.489	0.331	26.000	0.025	0.251	0.002	26.000	0.000
	1.25 - 0.25		29.546	0.330	26.000	0.025	0.253	0.002	26.000	0.000
L48	0.25 - 0 (48)	TP44.317x44.26x0.65	29.546	0.328	26.000	0.025	0.253	0.002	26.000	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	140 - 139	0.000	0.002	0.000	0.000	0.000	0.003*	1.000	H1-3+VT
	139 - 138	0.000	0.002	0.000	0.000	0.000	0.003*	1.000	H1-3+VT
	138 - 137	0.006	0.215	0.000	0.065	0.004	0.222	1.333	H1-3+VT
	137 - 136	0.006	0.283	0.000	0.064	0.004	0.290	1.333	H1-3+VT
	136 - 135	0.006	0.347	0.000	0.064	0.004	0.354	1.333	H1-3+VT
L2	135 - 134	0.006	0.407	0.000	0.063	0.003	0.415	1.333	H1-3+VT
	134 - 133	0.006	0.464	0.000	0.062	0.003	0.471	1.333	H1-3+VT
	133 - 132	0.006	0.518	0.000	0.062	0.003	0.525	1.333	H1-3+VT
	132 - 131	0.006	0.569	0.000	0.061	0.003	0.576	1.333	H1-3+VT
	131 - 130	0.006	0.617	0.000	0.061	0.003	0.624	1.333	H1-3+VT
L3	130 - 129	0.006	0.662	0.000	0.060	0.003	0.669	1.333	H1-3+VT
	129 - 128	0.006	0.705	0.000	0.060	0.003	0.712	1.333	H1-3+VT
	128 - 127	0.006	0.745	0.000	0.060	0.003	0.753	1.333	H1-3+VT
	127 - 126	0.006	0.784	0.000	0.059	0.003	0.791	1.333	H1-3+VT
	126 - 125	0.006	0.820	0.000	0.059	0.003	0.827	1.333	H1-3+VT
L4	125 - 124	0.006	0.855	0.000	0.058	0.002	0.862	1.333	H1-3+VT
	124 - 123	0.006	0.887	0.000	0.058	0.002	0.895	1.333	H1-3+VT
	123 - 122	0.006	0.918	0.000	0.058	0.002	0.926	1.333	H1-3+VT
	122 - 121	0.006	0.948	0.000	0.057	0.002	0.955	1.333	H1-3+VT
	121 - 120	0.006	0.976	0.000	0.057	0.002	0.983	1.333	H1-3+VT
L5	120 - 119	0.009	1.028	0.000	0.084	0.002	1.039	1.333	H1-3+VT
	119 - 118	0.009	1.077	0.000	0.084	0.002	1.088	1.333	H1-3+VT
	118 - 117	0.009	1.124	0.000	0.083	0.002	1.136	1.333	H1-3+VT
	117 - 116	0.009	1.169	0.000	0.083	0.002	1.180	1.333	H1-3+VT
	116 - 115	0.010	1.212	0.000	0.082	0.002	1.223	1.333	H1-3+VT
L6	115 - 114.75 (6)	0.004	0.518	0.000	0.034	0.001	0.522	1.333	H1-3+VT
L7	114.75 - 113.75	0.004	0.549	0.000	0.034	0.001	0.553	1.333	H1-3+VT
	113.75 - 112.75	0.004	0.565	0.000	0.034	0.001	0.570	1.333	H1-3+VT

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	112.75 - 111.75	0.004	0.581	0.000	0.034	0.001	0.585	1.333	H1-3+VT
	111.75 - 110.75	0.004	0.596	0.000	0.034	0.001	0.601	1.333	H1-3+VT
	110.75 - 109.75	0.004	0.610	0.000	0.034	0.001	0.615	1.333	H1-3+VT
L8	109.75 - 108.75	0.005	0.658	0.000	0.036	0.001	0.663	1.333	H1-3+VT
	108.75 - 107.75	0.005	0.672	0.000	0.035	0.001	0.677	1.333	H1-3+VT
	107.75 - 106.75	0.005	0.686	0.000	0.035	0.001	0.691	1.333	H1-3+VT
	106.75 - 105.75	0.005	0.698	0.000	0.035	0.001	0.704	1.333	H1-3+VT
	105.75 - 104.75	0.005	0.711	0.000	0.035	0.001	0.716	1.333	H1-3+VT
L9	104.75 - 103.661	0.007	0.968	0.000	0.048	0.001	0.976	1.333	H1-3+VT
	103.661 - 102.572	0.007	0.985	0.000	0.048	0.001	0.993	1.333	H1-3+VT
	102.572 - 101.483	0.007	1.001	0.000	0.047	0.001	1.009	1.333	H1-3+VT
L10	101.483 - 101.25 (10)	0.007	1.005	0.000	0.047	0.001	1.013	1.333	H1-3+VT
L11	101.25 - 100.25	0.007	1.019	0.000	0.047	0.001	1.027	1.333	H1-3+VT
	100.25 - 99.25	0.007	1.032	0.000	0.047	0.001	1.040	1.333	H1-3+VT
	99.25 - 98.25	0.008	1.047	0.000	0.050	0.001	1.056	1.333	H1-3+VT
	98.25 - 97.25	0.008	1.062	0.000	0.050	0.001	1.070	1.333	H1-3+VT
	97.25 - 96.25	0.008	1.076	0.000	0.050	0.001	1.085	1.333	H1-3+VT
L12	96.25 - 95.25	0.008	1.089	0.000	0.049	0.001	1.098	1.333	H1-3+VT
	95.25 - 94.25	0.012	1.110	0.000	0.063	0.001	1.122	1.333	H1-3+VT
	94.25 - 93.25	0.012	1.131	0.000	0.062	0.001	1.144	1.333	H1-3+VT
	93.25 - 92.25	0.012	1.152	0.000	0.062	0.001	1.165	1.333	H1-3+VT
	92.25 - 91.25	0.012	1.172	0.000	0.062	0.001	1.185	1.333	H1-3+VT
L13	91.25 - 90.91 (13)	0.012	1.178	0.000	0.061	0.001	1.191	1.333	H1-3+VT
L14	90.91 - 90.66 (14)	0.006	0.639	0.000	0.032	0.000	0.645	1.333	H1-3+VT
L15	90.66 - 89.66	0.006	0.662	0.000	0.033	0.000	0.668	1.333	H1-3+VT
	89.66 - 88.66	0.006	0.671	0.000	0.033	0.000	0.678	1.333	H1-3+VT
	88.66 - 87.66	0.006	0.680	0.000	0.033	0.000	0.687	1.333	H1-3+VT
	87.66 - 86.66	0.007	0.689	0.000	0.032	0.000	0.696	1.333	H1-3+VT
	86.66 - 85.66	0.007	0.698	0.000	0.032	0.000	0.705	1.333	H1-3+VT
L16	85.66 - 84.66	0.007	0.735	0.000	0.033	0.000	0.743	1.333	H1-3+VT
	84.66 - 83.66	0.007	0.744	0.000	0.033	0.000	0.751	1.333	H1-3+VT
	83.66 - 82.66	0.007	0.752	0.000	0.033	0.000	0.759	1.333	H1-3+VT
	82.66 - 81.66	0.007	0.759	0.000	0.033	0.000	0.767	1.333	H1-3+VT
	81.66 - 80.66	0.007	0.767	0.000	0.033	0.000	0.774	1.333	H1-3+VT
L17	80.66 - 79.66	0.007	0.790	0.000	0.033	0.000	0.798	1.333	H1-3+VT
	79.66 - 78.66	0.007	0.797	0.000	0.033	0.000	0.805	1.333	H1-3+VT
	78.66 - 77.66	0.007	0.804	0.000	0.033	0.000	0.812	1.333	H1-3+VT
	77.66 - 76.66	0.007	0.810	0.000	0.033	0.000	0.818	1.333	H1-3+VT
	76.66 - 75.66	0.007	0.817	0.000	0.033	0.000	0.824	1.333	H1-3+VT
L18	75.66 - 74.4667	0.008	0.824	0.000	0.033	0.000	0.832	1.333	H1-3+VT
	74.4667 - 73.2733	0.008	0.831	0.000	0.033	0.000	0.838	1.333	H1-3+VT
	73.2733 - 72.08	0.009	0.843	0.000	0.037	0.000	0.852	1.333	H1-3+VT

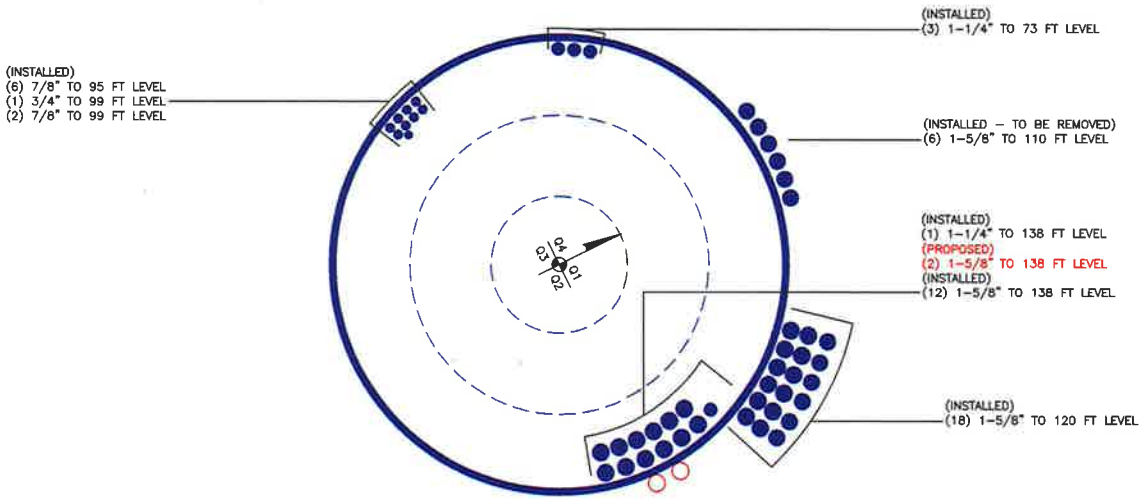
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L19	72.08 - 71.83 (19)	0.007	0.643	0.000	0.028	0.000	0.650	1.333	H1-3+VT
L20	71.83 - 70.08 (20)	0.007	0.663	0.000	0.028	0.000	0.670	1.333	H1-3+VT
L21	70.08 - 69.83 (21)	0.010	0.964	0.000	0.042	0.000	0.975	1.333	H1-3+VT
L22	69.83 - 68.83	0.010	0.972	0.000	0.042	0.000	0.983	1.333	H1-3+VT
	68.83 - 67.83	0.010	0.980	0.000	0.041	0.000	0.991	1.333	H1-3+VT
	67.83 - 66.83	0.011	0.988	0.000	0.041	0.000	0.999	1.333	H1-3+VT
	66.83 - 65.83	0.011	0.995	0.000	0.041	0.000	1.006	1.333	H1-3+VT
	65.83 - 64.83	0.011	1.003	0.000	0.041	0.000	1.014	1.333	H1-3+VT
L23	64.83 - 63 (23)	0.011	1.040	0.000	0.042	0.000	1.052	1.333	H1-3+VT
L24	63 - 62.75 (24)	0.007	0.678	0.000	0.027	0.000	0.685	1.333	H1-3+VT
L25	62.75 - 61.5278	0.007	0.694	0.000	0.027	0.000	0.701	1.333	H1-3+VT
	61.5278 - 60.3055	0.007	0.699	0.000	0.027	0.000	0.706	1.333	H1-3+VT
	60.3055 - 59.0833	0.007	0.704	0.000	0.027	0.000	0.711	1.333	H1-3+VT
L26	59.0833 - 58.8167 (26)	0.009	0.822	0.000	0.031	0.000	0.831	1.333	H1-3+VT
L27	58.8167 - 58.6667 (27)	0.009	0.823	0.000	0.031	0.000	0.832	1.333	H1-3+VT
L28	58.6667 - 57.6667	0.009	0.843	0.000	0.032	0.000	0.852	1.333	H1-3+VT
	57.6667 - 56.6667	0.009	0.847	0.000	0.032	0.000	0.856	1.333	H1-3+VT
	56.6667 - 55.6667	0.009	0.851	0.000	0.031	0.000	0.861	1.333	H1-3+VT
	55.6667 - 54.6667	0.009	0.855	0.000	0.031	0.000	0.865	1.333	H1-3+VT
	54.6667 - 53.6667	0.009	0.859	0.000	0.031	0.000	0.868	1.333	H1-3+VT
L29	53.6667 - 53	0.009	0.862	0.000	0.031	0.000	0.871	1.333	H1-3+VT
	53 - 48.5833	0.005	0.443	0.000	0.016	0.000	0.447	1.333	H1-3+VT
L30	53 - 48.5833	0.005	0.434	0.000	0.015	0.000	0.439	1.333	H1-3+VT
	48.5833 - 47.5833	0.009	0.880	0.000	0.030	0.000	0.889	1.333	H1-3+VT
L31	47.5833 - 46.5833	0.010	0.899	0.000	0.031	0.000	0.909	1.333	H1-3+VT
	46.5833 - 45.5833	0.010	0.902	0.000	0.031	0.000	0.911	1.333	H1-3+VT
	45.5833 - 44.5833	0.010	0.904	0.000	0.030	0.000	0.914	1.333	H1-3+VT
	44.5833 - 43.5833	0.010	0.907	0.000	0.030	0.000	0.917	1.333	H1-3+VT
	43.5833 - 42.5833	0.010	0.909	0.000	0.030	0.000	0.919	1.333	H1-3+VT
L32	42.5833 - 41.2917	0.010	0.929	0.000	0.031	0.000	0.940	1.333	H1-3+VT
	41.2917 - 40	0.010	0.932	0.000	0.030	0.000	0.942	1.333	H1-3+VT
L33	40 - 39.75 (33)	0.008	0.715	0.000	0.023	0.000	0.723	1.333	H1-3+VT
L34	39.75 - 38.75	0.008	0.738	0.000	0.024	0.000	0.746	1.333	H1-3+VT
	38.75 - 37.75	0.008	0.739	0.000	0.024	0.000	0.748	1.333	H1-3+VT
	37.75 - 36.75	0.008	0.741	0.000	0.024	0.000	0.749	1.333	H1-3+VT
	36.75 - 35.75	0.008	0.742	0.000	0.023	0.000	0.750	1.333	H1-3+VT
	35.75 - 34.75	0.008	0.743	0.000	0.023	0.000	0.752	1.333	H1-3+VT
L35	34.75 - 33.6378	0.008	0.756	0.000	0.024	0.000	0.764	1.333	H1-3+VT
	33.6378 -	0.008	0.757	0.000	0.024	0.000	0.766	1.333	H1-3+VT

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	32.5255								
	32.5255 - 31.4133	0.008	0.758	0.000	0.024	0.000	0.767	1.333	H1-3+VT
L36	31.4133 - 31.1633 (36)	0.008	0.759	0.000	0.023	0.000	0.767	1.333	H1-3+VT
L37	31.1633 - 30.0817	0.009	0.771	0.000	0.024	0.000	0.780	1.333	H1-3+VT
	30.0817 - 29	0.009	0.773	0.000	0.024	0.000	0.781	1.333	H1-3+VT
L38	29 - 28.75 (38)	0.011	0.989	0.000	0.031	0.000	1.000	1.333	H1-3+VT
L39	28.75 - 27.75	0.011	0.990	0.000	0.030	0.000	1.002	1.333	H1-3+VT
	27.75 - 26.75	0.011	0.991	0.000	0.030	0.000	1.003	1.333	H1-3+VT
	26.75 - 25.75	0.011	0.992	0.000	0.030	0.000	1.004	1.333	H1-3+VT
	25.75 - 24.75	0.011	0.993	0.000	0.030	0.000	1.005	1.333	H1-3+VT
	24.75 - 23.75	0.011	0.994	0.000	0.030	0.000	1.006	1.333	H1-3+VT
L40	23.75 - 23.5 (40)	0.011	0.995	0.000	0.030	0.000	1.006	1.333	H1-3+VT
L41	23.5 - 23.25 (41)	0.010	0.904	0.000	0.027	0.000	0.914	1.333	H1-3+VT
L42	23.25 - 22.25	0.011	0.921	0.000	0.028	0.000	0.932	1.333	H1-3+VT
	22.25 - 21.25	0.011	0.922	0.000	0.028	0.000	0.933	1.333	H1-3+VT
	21.25 - 20.25	0.011	0.923	0.000	0.027	0.000	0.933	1.333	H1-3+VT
	20.25 - 19.25	0.011	0.923	0.000	0.027	0.000	0.934	1.333	H1-3+VT
	19.25 - 18.25	0.011	0.924	0.000	0.027	0.000	0.935	1.333	H1-3+VT
L43	18.25 - 17.25	0.011	0.942	0.000	0.028	0.000	0.953	1.333	H1-3+VT
	17.25 - 16.25	0.011	0.943	0.000	0.028	0.000	0.954	1.333	H1-3+VT
	16.25 - 15.25	0.011	0.943	0.000	0.028	0.000	0.954	1.333	H1-3+VT
	15.25 - 14.25	0.011	0.943	0.000	0.027	0.000	0.955	1.333	H1-3+VT
	14.25 - 13.25	0.011	0.944	0.000	0.027	0.000	0.955	1.333	H1-3+VT
L44	13.25 - 12.25	0.011	0.963	0.000	0.028	0.000	0.974	1.333	H1-3+VT
	12.25 - 11.25	0.012	0.963	0.000	0.028	0.000	0.975	1.333	H1-3+VT
	11.25 - 10.25	0.012	0.963	0.000	0.028	0.000	0.975	1.333	H1-3+VT
	10.25 - 9.25	0.012	0.963	0.000	0.028	0.000	0.975	1.333	H1-3+VT
	9.25 - 8.25	0.012	0.964	0.000	0.028	0.000	0.976	1.333	H1-3+VT
L45	8.25 - 6.875	0.012	0.964	0.000	0.027	0.000	0.976	1.333	H1-3+VT
	6.875 - 5.5	0.012	0.964	0.000	0.027	0.000	0.976	1.333	H1-3+VT
L46	5.5 - 5.25 (46)	0.011	0.894	0.000	0.025	0.000	0.906	1.333	H1-3+VT
L47	5.25 - 4.25	0.011	0.911	0.000	0.026	0.000	0.922	1.333	H1-3+VT
	4.25 - 3.25	0.011	0.911	0.000	0.026	0.000	0.922	1.333	H1-3+VT
	3.25 - 2.25	0.011	0.911	0.000	0.025	0.000	0.922	1.333	H1-3+VT
	2.25 - 1.25	0.011	0.911	0.000	0.025	0.000	0.922	1.333	H1-3+VT
	1.25 - 0.25	0.011	0.911	0.000	0.025	0.000	0.922	1.333	H1-3+VT
L48	0.25 - 0 (48)	0.011	0.911	0.000	0.025	0.000	0.922	1.333	H1-3+VT

* DL controls

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 842873 TOWER ID: C_BASELEVEL

CROWN REGION ADDRESS

USA

28/03/14	NEW BUILD PER WORK ORDER 734881	AGT
10/06/14	UPDATED PER WORK ORDER # 737538	TDO
10/06/14	UPDATED PER WORK ORDER # 778460	TDO
10/06/14	UPDATED PER WORK ORDER # 780884	TDO
10/06/14	UPDATED PER WORK ORDER # 780887	TDO
15/07/14	UPDATED PER WORK ORDER # 744682	DAB
08/09/15	UPDATED PER WORK ORDER # 1116370	ASF

DRAWN BY: **MMM**
CHECKED BY: **AGT**
DRAWING DATE: **27/03/14**

SITE NUMBER:
SITE NAME:

SITE NAME

SHELTON NE

BUSINESS UNIT NUMBER

842873

SITE ADDRESS

OLIVER TERRACE
SHELTON, CT 06484
FAIRFIELD COUNTY
USA

SHEET TITLE

BASE LEVEL

SHEET NUMBER

A1-0

BASE LEVEL DRAWING | 1" = 1'-0" | 1

PLOT DATE: 9/15/2015 FILE NAME: 842873_BASELEVEL.DWG

APPENDIX C

ADDITIONAL CALCULATIONS

Additional Calculations

CCIpole

per TIA-222- F

Site BU: 842873

Work Order: 1121760

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	140	38.41667	0	18	13.161	21.882	0.1875	0.75	A572-65
2	101.58333	53	4.41667	18	21.88	33.913	0.3125	1.25	A572-65
3	53	53	0	18	32.29	44.317	0.3125	1.25	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Pole Flat Width (in)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	5.5	59.0833	channel	MP3-04 (1.25")	5.56				x														
2	5.5	31.4133	plate	PL 1" x 5-3/4"	6.56							x											
3	31.4133	48.6667	plate	PL 1" x 5-3/4"	5.98						x						x						x
4	58.9167	72.08	plate	PL 1" x 5-3/4"	5.04							x					x						x
5	29	40	plate	CCI-SFP-060100	6.21			x						x						x			
6	5.5	23.5	plate	CCI-SFP-060100	6.87		x							x								x	
7	52	63	plate	CCI-SFP-060100	5.4			x						x					x				
8	70.08	90.91	plate	CCI-SFP-060100	4.29		x						x						x				
9	101.5	115	plate	CCI-AFP-045100	3.32		x						x						x				
10	0	5.5	plate	6" x 1.25" TS	7.59			x					x							x			
11	0	59.0833	channel	MP3-04 (1.25")	5.56										x							x	
12	0	31.4133	plate	PL 1" x 5-3/4"	6.56	x												x					
13																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	4.78	1.61	4.13	0.61	17.000	17.000	18.000	3.566	1.2500	A572-65
2	5.75	1	5.75	0.5	23.000	23.000	16.000	4.438	1.2500	A572-65
3	5.75	1	5.75	0.5	23.000	23.000	16.000	4.438	1.2500	A572-65
4	5.75	1	5.75	0.5	23.000	23.000	16.000	4.438	1.2500	A572-65
5	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
6	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
7	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
8	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
9	4.5	1	4.5	0.5	24.000	24.000	20.000	3.250	1.1875	A572-65
10	1	6	6	3	n/a	n/a	0.000	6.000	0.0000	A572-65
11	4.78	1.61	4.13	0.61	17.000	17.000	18.000	3.566	1.2500	A572-65
12	5.75	1	5.75	0.5	23.000	23.000	16.000	4.438	1.2500	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	140 - 135	5		18	13.161	14.296	0.1875	A572-65	1.000
2	135 - 130	5		18	14.296	15.431	0.1875	A572-65	1.000
3	130 - 125	5		18	15.431	16.566	0.1875	A572-65	1.000
4	125 - 120	5		18	16.566	17.701	0.1875	A572-65	1.000
5	120 - 115	5		18	17.701	18.836	0.1875	A572-65	1.000
6	115 - 114.75	0.25		18	18.836	18.893	0.4625	A572-65	0.910
7	114.75 - 109.75	5		18	18.893	20.028	0.45	A572-65	0.905
8	109.75 - 104.75	5	0	18	20.028	21.163	0.425	A572-65	0.929
9	104.75 - 101.4833	3.26667		18	21.163	21.905	0.3125	A572-65	1.000
10	101.4833 - 101.25	0.23333		18	21.905	21.958	0.3125	A572-65	1.000
11	101.25 - 96.25	5		18	21.958	23.093	0.3125	A572-65	1.000
12	96.25 - 91.25	5		18	23.093	24.228	0.3125	A572-65	1.000
13	91.25 - 90.91	0.34		18	24.228	24.305	0.3125	A572-65	1.000
14	90.91 - 90.66	0.25		18	24.305	24.362	0.6	A572-65	0.925
15	90.66 - 85.66	5		18	24.362	25.497	0.5875	A572-65	0.925
16	85.66 - 80.66	5		18	25.497	26.632	0.5625	A572-65	0.948
17	80.66 - 75.66	5		18	26.632	27.767	0.55	A572-65	0.952
18	75.66 - 72.08	3.58		18	27.767	28.579	0.55	A572-65	0.941
19	72.08 - 71.83	0.25		18	28.579	28.636	0.7375	A572-65	0.970
20	71.83 - 70.08	1.75		18	28.636	29.033	0.725	A572-65	0.978
21	70.08 - 69.83	0.25		18	29.033	29.090	0.4875	A572-65	1.035
22	69.83 - 64.83	5		18	29.090	30.225	0.4875	A572-65	1.020
23	64.83 - 63	1.83		18	30.225	30.640	0.475	A572-65	1.041
24	63 - 62.75	0.25		18	30.640	30.697	0.75	A572-65	0.917
25	62.75 - 59.0833	3.6667		18	30.697	31.530	0.7375	A572-65	0.919
26	59.0833 - 58.8167	0.2666		18	31.530	31.590	0.625	A572-65	1.000
27	58.8167 - 58.6667	0.15		18	31.590	31.624	0.625	A572-65	0.999
28	58.6667 - 53.6667	5		18	31.624	32.759	0.6125	A572-65	1.001
29	53.6667 - 53	5.08337	4.41667	18	32.759	33.913	0.6125	A572-65	0.999
30	53 - 47.58333	5.41667		18	32.285	33.515	0.6375	A572-65	0.941
31	47.58333 - 42.58333	5		18	33.515	34.650	0.625	A572-65	0.944
32	42.58333 - 40	2.58333		18	34.650	35.237	0.6125	A572-65	0.955
33	40 - 39.75	0.25		18	35.237	35.293	0.8125	A572-65	0.926
34	39.75 - 34.75	5		18	35.293	36.428	0.7875	A572-65	0.937
35	34.75 - 31.4133	3.3367		18	36.428	37.186	0.775	A572-65	0.940
36	31.4133 - 31.1633	0.25		18	37.186	37.243	0.775	A572-65	0.939
37	31.1633 - 29	2.1633		18	37.243	37.734	0.7625	A572-65	0.947
38	29 - 28.75	0.25		18	37.734	37.790	0.5875	A572-65	0.963
39	28.75 - 23.75	5		18	37.790	38.925	0.5875	A572-65	0.950
40	23.75 - 23.5	0.25		18	38.925	38.982	0.5875	A572-65	0.950
41	23.5 - 23.25	0.25		18	38.982	39.039	0.65	A572-65	1.087
42	23.25 - 18.25	5		18	39.039	40.174	0.6375	A572-65	1.090
43	18.25 - 13.25	5		18	40.174	41.309	0.625	A572-65	1.094
44	13.25 - 8.25	5		18	41.309	42.444	0.6125	A572-65	1.100
45	8.25 - 5.5	2.75		18	42.444	43.068	0.6125	A572-65	1.091
46	5.5 - 5.25	0.25		18	43.068	43.125	0.6625	A572-65	0.898
47	5.25 - 0.25	5		18	43.125	44.260	0.65	A572-65	0.904
48	0.25 - 0	0.25		18	44.260	44.317	0.65	A572-65	0.904

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	140 - 135	1.9075	32.801	6.9362
2	135 - 130	2.1234	68.09	7.1851
3	130 - 125	2.3672	104.64	7.4401
4	125 - 120	2.6344	142.47	7.7011
5	120 - 115	4.1374	200.72	11.844
6	115 - 114.75	4.1765	203.68	11.862
7	114.75 - 109.75	4.7419	264.03	12.298
8	109.75 - 104.75	5.3335	326.55	12.735
9	104.75 - 101.4833	6.0045	368.97	13.192
10	101.4833 - 101.25	6.039	372.04	13.206
11	101.25 - 96.25	7.0461	441.57	14.548
12	96.25 - 91.25	10.908	530.37	18.975
13	91.25 - 90.91	10.963	536.82	18.996
14	90.91 - 90.66	11.012	541.57	19.017
15	90.66 - 85.66	11.923	637.72	19.467
16	85.66 - 80.66	12.869	736.08	19.91
17	80.66 - 75.66	13.841	836.64	20.348
18	75.66 - 72.08	17.41	916.02	23.818
19	72.08 - 71.83	17.486	921.97	23.833
20	71.83 - 70.08	17.928	963.79	24.002
21	70.08 - 69.83	17.992	969.79	24.014
22	69.83 - 64.83	19.031	1090.9	24.424
23	64.83 - 63	19.412	1135.7	24.579
24	63 - 62.75	19.501	1141.9	24.584
25	62.75 - 59.0833	20.475	1232.7	24.919
26	59.0833 - 58.8167	20.552	1239.3	24.937
27	58.8167 - 58.6667	20.592	1243	24.949
28	58.6667 - 53.6667	21.877	1368.9	25.39
29	53.6667 - 53	22.056	1385.9	25.443
30	53 - 47.58333	24.459	1525.3	26.091
31	47.58333 - 42.58333	25.782	1656.7	26.488
32	42.58333 - 40	26.474	1725.4	26.691
33	40 - 39.75	26.568	1732.1	26.7
34	39.75 - 34.75	28.197	1866.7	27.112
35	34.75 - 31.4133	29.303	1957.6	27.374
36	31.4133 - 31.1633	29.394	1964.4	27.385
37	31.1633 - 29	30.111	2023.9	27.562
38	29 - 28.75	30.188	2030.8	27.573
39	28.75 - 23.75	31.6	2169.6	27.9
40	23.75 - 23.5	31.7	2176.6	27.9
41	23.5 - 23.25	31.8	2183.5	28.0
42	23.25 - 18.25	33.5	2324.4	28.3
43	18.25 - 13.25	35.2	2467.1	28.7
44	13.25 - 8.25	37.0	2611.6	29.1
45	8.25 - 5.5	37.9	2691.8	29.3
46	5.5 - 5.25	38.0	2699.1	29.3
47	5.25 - 0.25	39.5	2846.1	29.5
48	0.25 - 0	39.5	2853.4	29.5

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
140 - 135	Pole	TP14.296x13.161x0.1875	Pole	26.5%	Pass
135 - 130	Pole	TP15.431x14.296x0.1875	Pole	46.7%	Pass
130 - 125	Pole	TP16.566x15.431x0.1875	Pole	61.9%	Pass
125 - 120	Pole	TP17.701x16.566x0.1875	Pole	73.6%	Pass
120 - 115	Pole	TP18.836x17.701x0.1875	Pole	91.6%	Pass
115 - 114.75	Pole + Reinf.	TP18.893x18.836x0.4625	Reinf. 9 Compression	54.4%	Pass
114.75 - 109.75	Pole + Reinf.	TP20.028x18.893x0.45	Reinf. 9 Compression	64.9%	Pass
109.75 - 104.75	Pole + Reinf.	TP21.163x20.028x0.425	Reinf. 9 Compression	74.1%	Pass
104.75 - 101.48	Pole	TP21.905x21.163x0.3125	Pole	75.6%	Pass
101.48 - 101.25	Pole	TP21.958x21.905x0.3125	Pole	75.9%	Pass
101.25 - 96.25	Pole	TP23.093x21.958x0.3125	Pole	81.2%	Pass
96.25 - 91.25	Pole	TP24.228x23.093x0.3125	Pole	88.7%	Pass
91.25 - 90.91	Pole	TP24.305x24.228x0.3125	Pole	89.2%	Pass
90.91 - 90.66	Pole + Reinf.	TP24.362x24.305x0.6	Reinf. 8 Bolt Shear	62.4%	Pass
90.66 - 85.66	Pole + Reinf.	TP25.497x24.362x0.5875	Reinf. 8 Compression	67.4%	Pass
85.66 - 80.66	Pole + Reinf.	TP26.632x25.497x0.5625	Reinf. 8 Compression	72.6%	Pass
80.66 - 75.66	Pole + Reinf.	TP27.767x26.632x0.55	Reinf. 8 Compression	77.2%	Pass
75.66 - 72.08	Pole + Reinf.	TP28.579x27.767x0.55	Reinf. 8 Compression	80.9%	Pass
72.08 - 71.83	Pole + Reinf.	TP28.636x28.579x0.7375	Reinf. 8 Compression	60.6%	Pass
71.83 - 70.08	Pole + Reinf.	TP29.033x28.636x0.725	Reinf. 8 Bolt Shear	63.1%	Pass
70.08 - 69.83	Pole + Reinf.	TP29.09x29.033x0.4875	Reinf. 4 Tension Rupture	89.1%	Pass
69.83 - 64.83	Pole + Reinf.	TP30.225x29.09x0.4875	Reinf. 4 Tension Rupture	94.1%	Pass
64.83 - 63	Pole + Reinf.	TP30.64x30.225x0.475	Reinf. 4 Tension Rupture	95.8%	Pass
63 - 62.75	Pole + Reinf.	TP30.697x30.64x0.75	Reinf. 4 Tension Rupture	69.3%	Pass
62.75 - 59.08	Pole + Reinf.	TP31.53x30.697x0.7375	Reinf. 4 Tension Rupture	71.9%	Pass
59.08 - 58.82	Pole + Reinf.	TP31.59x31.53x0.625	Reinf. 11 Tension Rupture	76.4%	Pass
58.82 - 58.67	Pole + Reinf.	TP31.624x31.59x0.625	Reinf. 11 Tension Rupture	76.5%	Pass
58.67 - 53.67	Pole + Reinf.	TP32.759x31.624x0.6125	Reinf. 11 Tension Rupture	79.8%	Pass
53.67 - 53	Pole + Reinf.	TP33.913x32.759x0.6125	Reinf. 11 Tension Rupture	80.2%	Pass
53 - 47.58	Pole + Reinf.	TP33.515x32.285x0.6375	Reinf. 3 Tension Rupture	85.6%	Pass
47.58 - 42.58	Pole + Reinf.	TP34.65x33.515x0.625	Reinf. 3 Tension Rupture	88.4%	Pass
42.58 - 40	Pole + Reinf.	TP35.237x34.65x0.6125	Reinf. 3 Tension Rupture	89.7%	Pass
40 - 39.75	Pole + Reinf.	TP35.293x35.237x0.8125	Reinf. 3 Tension Rupture	69.7%	Pass
39.75 - 34.75	Pole + Reinf.	TP36.428x35.293x0.7875	Reinf. 3 Tension Rupture	71.8%	Pass
34.75 - 31.41	Pole + Reinf.	TP37.186x36.428x0.775	Reinf. 3 Tension Rupture	73.1%	Pass
31.41 - 31.16	Pole + Reinf.	TP37.243x37.186x0.775	Reinf. 12 Tension Rupture	73.3%	Pass
31.16 - 29	Pole + Reinf.	TP37.734x37.243x0.7625	Reinf. 12 Tension Rupture	74.1%	Pass
29 - 28.75	Pole + Reinf.	TP37.79x37.734x0.5875	Reinf. 12 Tension Rupture	94.8%	Pass
28.75 - 23.75	Pole + Reinf.	TP38.925x37.79x0.5875	Reinf. 12 Tension Rupture	96.8%	Pass
23.75 - 23.5	Pole + Reinf.	TP38.982x38.925x0.5875	Reinf. 12 Tension Rupture	96.9%	Pass
23.5 - 23.25	Pole + Reinf.	TP39.039x38.982x0.65	Reinf. 12 Tension Rupture	89.5%	Pass
23.25 - 18.25	Pole + Reinf.	TP40.174x39.039x0.6375	Reinf. 12 Tension Rupture	91.2%	Pass
18.25 - 13.25	Pole + Reinf.	TP41.309x40.174x0.625	Reinf. 12 Tension Rupture	92.8%	Pass
13.25 - 8.25	Pole + Reinf.	TP42.444x41.309x0.6125	Reinf. 12 Tension Rupture	94.3%	Pass
8.25 - 5.5	Pole + Reinf.	TP43.068x42.444x0.6125	Reinf. 12 Tension Rupture	95.0%	Pass
5.5 - 5.25	Pole + Reinf.	TP43.125x43.068x0.6625	Reinf. 12 Tension Rupture	85.1%	Pass
5.25 - 0.25	Pole + Reinf.	TP44.26x43.125x0.65	Reinf. 12 Tension Rupture	86.4%	Pass
0.25 - 0	Pole + Reinf.	TP44.317x44.26x0.65	Reinf. 12 Tension Rupture	86.5%	Pass
				Summary	
			Pole	91.6%	Pass
			Reinforcement	96.9%	Pass
			Overall	96.9%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity	Axial (kips)											
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12
140 - 135	211	n/a	211	8.40	n/a	8.40	26.5%												
135 - 130	266	n/a	266	9.07	n/a	9.07	46.7%												
130 - 125	330	n/a	330	9.75	n/a	9.75	61.9%												
125 - 120	404	n/a	404	10.42	n/a	10.42	73.6%												
120 - 115	487	n/a	487	11.10	n/a	11.10	91.6%												
115 - 114.75	492	680	1172	11.13	13.50	24.63	38.3%									94.1			
114.75 - 109.75	587	758	1345	11.81	13.50	25.31	45.8%									112.3			
109.75 - 104.75	694	841	1535	12.48	13.50	25.98	52.4%									126.3			
104.75 - 101.48	1261	n/a	1261	21.42	n/a	21.42	75.6%												
101.48 - 101.25	1270	n/a	1270	21.47	n/a	21.47	76.9%												
101.25 - 96.25	1481	n/a	1481	22.59	n/a	22.59	81.2%												
96.25 - 91.25	1713	n/a	1713	23.72	n/a	23.72	86.7%												
91.25 - 90.91	1730	n/a	1730	23.80	n/a	23.80	89.2%												
90.91 - 90.66	1742	1475	3217	23.85	18.00	41.85	47.9%								155.3				
90.66 - 85.66	2001	1607	3608	24.98	18.00	42.98	52.6%								170.2				
85.66 - 80.66	2284	1746	4029	26.10	18.00	44.10	56.7%								183.6				
80.66 - 75.66	2592	1890	4482	27.23	18.00	45.23	60.4%								196.2				
75.66 - 72.08	2829	1996	4826	28.04	18.00	46.04	63.4%								204.4				
72.08 - 71.83	2848	3548	6396	28.09	35.25	63.34	49.0%				143.4				153.0				
71.83 - 70.08	2969	3642	6611	28.49	35.25	63.74	50.2%				147.0				156.8				
70.08 - 69.83	2996	1614	4609	28.54	17.25	45.79	76.1%				211.2								
69.83 - 64.83	3364	1736	5099	29.67	17.25	46.92	79.3%				223.0								
64.83 - 63	3505	1782	5287	30.08	17.25	47.33	80.7%				227.0								
63 - 62.75	3536	4565	8100	30.14	35.25	65.39	53.3%				164.1			170.6					
62.75 - 59.08	3834	4806	8639	30.96	35.25	66.21	55.4%				170.3			177.0					
59.08 - 58.82	3836	3576	7412	31.02	30.39	61.41	63.6%	123.6						189.3				139.4	
58.82 - 58.67	3849	3583	7432	31.06	30.39	61.45	63.7%	123.7						189.5				139.6	
58.67 - 53.67	4282	3833	8116	32.18	30.39	62.57	66.5%	129.3						197.9				145.6	
53.67 - 53	4343	3867	8210	32.33	30.39	62.72	66.8%	130.0						199.0				146.4	
53 - 47.58	4585	4468	9054	32.93	29.64	62.57	66.0%	146.6		202.9								146.6	
47.58 - 42.58	5072	4764	9836	34.06	29.64	63.70	68.2%	151.4		209.5								151.4	
42.58 - 40	5336	4921	10257	34.64	29.64	64.28	69.2%	153.7		212.7								153.7	
40 - 39.75	5362	7928	13290	34.70	47.64	82.34	53.8%	119.3		165.0		172.2						119.3	
39.75 - 34.75	5901	8427	14328	35.82	47.64	83.46	55.5%	122.9		170.2		177.6						122.9	
34.75 - 31.41	6280	8768	15049	36.57	47.64	84.21	56.6%	125.2		173.4		180.9						125.2	
31.41 - 31.16	6309	8794	15104	36.63	47.64	84.27	56.6%	125.4	173.6			181.2						125.4	173.6
31.16 - 29	6564	9020	15584	37.12	47.64	84.76	57.3%	126.8	175.6			183.2						126.8	175.6
29 - 28.75	6594	5633	12227	37.17	29.64	66.81	73.4%	162.4	224.9									162.4	224.9
28.75 - 23.75	7212	5964	13176	38.30	29.64	67.94	74.9%	165.7	229.5									165.7	229.5
23.75 - 23.5	7244	5981	13225	38.35	29.64	67.99	75.0%	165.9	229.7									165.9	229.7
23.5 - 23.25	7285	7392	14677	38.41	47.64	86.05	70.3%	145.7	189.6				178.6					133.8	212.0
23.25 - 18.25	7945	7812	15757	39.54	47.64	87.18	71.7%	148.6	193.6				182.6					136.6	216.2
18.25 - 13.25	8642	8244	16887	40.66	47.64	88.30	73.0%	151.3	197.2				186.2					139.2	220.0
13.25 - 8.25	9380	8688	18068	41.79	47.64	89.43	74.2%	153.7	200.6				189.6					141.6	223.4
8.25 - 5.5	9803	8937	18740	42.41	47.64	90.05	74.8%	155.0	202.4				191.3					142.8	225.2
5.5 - 5.25	9836	10362	20198	42.46	37.76	80.22	69.4%										254.1	152.3	201.9
5.25 - 0.25	10639	10877	21516	43.59	37.76	81.35	70.6%										257.2	154.6	205.1
0.25 - 0	10680	10903	21583	43.65	37.76	81.41	70.5%										257.4	154.7	205.2

Note: Section capacity checked in 5 degree increments.

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

TIA Rev F

Site Data

BU#: *842873*
Site Name: *Shelton Ne*
App #: *306000 Rev. 0*

Pole Manufacturer:	*Other*

Reactions		
Moment:	2853.4	ft-kips
Axial:	39.5	kips
Shear:	29.5	kips

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

Anchor Rod Data		
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	51	in

Plate Data		
Diam:	57	in
Thick:	2.25	in
Grade:	60	ksi
Single-Rod B-eff:	8.79	in

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

Pole Data		
Diam:	44.317	in
Thick:	0.55	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Anchor Rod Results

Maximum Rod Tension:	165.4 Kips	Rigid
Allowable Tension:	195.0 Kips	Service, ASD
Anchor Rod Stress Ratio:	84.8% **Pass**	Fty*ASIF

Base Plate Results

Flexural Check		Rigid
Base Plate Stress:	47.4 ksi	Service ASD
Allowable Plate Stress:	60.0 ksi	0.75*Fy*ASIF
Base Plate Stress Ratio:	79.1% **Pass**	Y.L. Length: 25.24

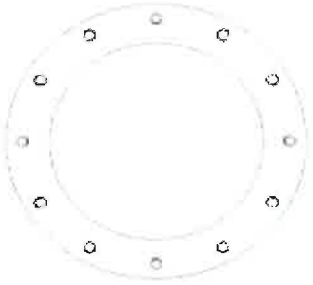
n/a

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

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

Site Data

BU#: *842873*
Site Name: *Shelton Ne*
App #: *306000 Rev. 0*

Pole Manufacturer:	Other

Bolt Data			
Qty:	16		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	Bolt Fty: 44.00
N/A:		<-- Disregard	
Circle (in.):	26		

Plate Data		
Diam:	30	in
Thick, t:	1.5	in
Grade (Fy):	50	ksi
Strength, Fu:	65	ksi
Single-Rod B-eff:	4.34	in

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

Pole Data		
Diam:	21.882	in
Thick:	0.3125	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Reactions		
Moment:	368.97	ft-kips
Axial:	6.0045	kips
Shear:	13.192	kips
Elevation:	101.5	feet

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

Flange Bolt Results

		Rigid
Bolt Tension Capacity, **B**:	46.07 kips	Service, ASD
Max Bolt directly applied T:	42.20 Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	1.416 in	
Min PL "treq" for actual **T w/ Pry**:	1.252 in	
Min PL "t1" for actual **T w/o Pry**:	1.356 in	
T allowable w/o Prying:	46.07 kips	α'<0 case
Prying Force, Q:	0.00 kips	
Total Bolt Tension=T+Q:	42.20 kips	
Non-Prying Bolt Stress Ratio, T/B:	91.6% **Pass**	

Exterior Flange Plate Results Flexural Check

		Rigid
Compression Side Plate Stress:	32.9 ksi	Service ASD
Allowable Plate Stress:	50.0 ksi	0.75*Fy*ASIF
Compression Plate Stress Ratio:	65.9% **Pass**	Comp. Y.L. Length: 14.04
No Prying		
Tension Side Stress Ratio, (treq/t)^2:	69.7% **Pass**	

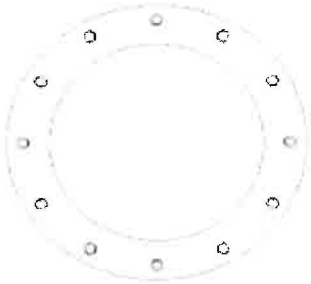
n/a

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

CCI Foundation Tool Suite - Monopole Pier

CCIFTS 1.2.108.14286 - Phase 1-2 Date: 11/4/2015

BU:	842873
Site Name:	Shelton NE
App Number:	306000 Rev. 0
Work Order:	1121760

CROWN CASTLE

Monopole Drilled Pier

Input

Criteria

TIA Revision:	F
ACI 318 Revision:	2005
Seismic Category:	C

Forces

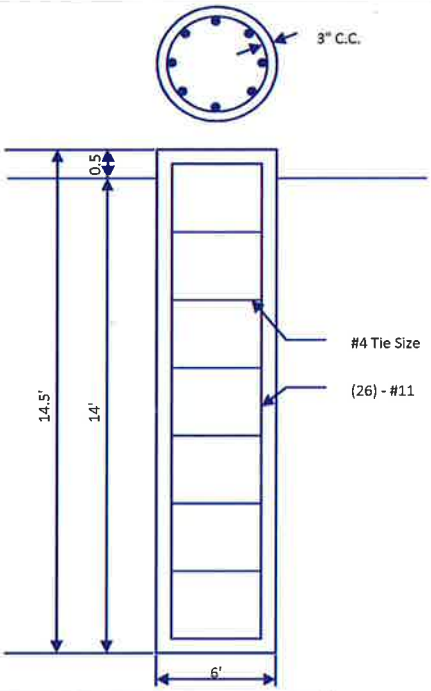
Compression	39.5 kips
Shear	29.5 kips
Moment	2853.4 k-ft
Swelling Force	0 kips

Foundation Dimensions

Pier Diameter:	6 ft
Ext. above grade:	0.5 ft
Depth below grade:	14 ft

Material Properties

Number of Rebar:	26
Rebar Size:	11
Tie Size	4
Rebar tensile strength:	60 ksi
Concrete Strength:	4000 psi
Ultimate Concrete Strain	0.003 in/in
Clear Cover to Ties:	3 in



Soil Profile: soil

Layer	Thickness (ft)	From (ft)	To (ft)	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)	Ultimate Uplift Skin Friction (ksf)	Ultimate Comp. Skin Friction (ksf)	Ultimate Bearing Capacity (ksf)	SPT 'N' Counts
1	3	0	3	100	0				0	
2	5.5	3	8.5	130	4000				0	
3	5.5	8.5	14	130	12000					11

Analysis Results

Soil Lateral Capacity

Depth to Zero Shear:	3.47 ft
Max Moment, Mu:	2937.76 k-ft
Soil Safety Factor:	3.07
Safety Factor Req'd:	2
RATING:	65.0%

Soil Axial Capacity

Skin Friction (k):	292.36 kips
End Bearing (k):	87.97 kips
Comp. Capacity (k), ϕCn:	380.33 kips
Comp. (k), Cu:	51.35 kips
RATING:	13.5%

Concrete/Steel Check

Mu (from soil analysis)	3819.08 k-ft
ϕMn	5361.52 k-ft
RATING:	71.2%

rho provided	1.00	
rho required	0.33	OK
Rebar Spacing	6.27	
Spacing required	22.56	OK
Dev. Length required	10.28	
Dev. Length provided	53.51	OK

Overall Foundation Rating: 71.2%

APPENDIX D

STRUCTURAL MODIFICATION DRAWINGS

CROWN CASTLE

SITE NAME: SHELTON NE

BU NUMBER: 842873

SITE ADDRESS: 30 OLIVER TERRACE
SHELTON, CT 06484

TOWER TYPE: 140 FT MONOPOLE TOWER

SITE INFORMATION

LATITUDE (NAD83):
41° 17' 38.21"

LONGITUDE (NAD83):
-73° 6' 25.83"

COUNTY:
FAIRFIELD

VICINITY MAP

TOWER INFORMATION

FAILING STRUCTURAL ANALYSIS
STRUCTURAL ANALYSIS BY: MORRISON HERSHFIELD
PROJECT NO.: CN4-478/6150003
WORK ORDER NO.: 1116398
APPLICATION & REV. NO.: 306000, REV. 0
DATE: 09/11/2015

PASSING STRUCTURAL ANALYSIS
STRUCTURAL ANALYSIS BY: JACOBS ENGINEERING GROUP, INC.
PROJECT NO.: 1121760 (R1)
WORK ORDER NO.: 1121760
CARRIER NAME: VERIZON
APPLICATION & REV. NO.: 306000, REV. 0
DATE: 11/04/2015

PROJECT DESCRIPTION

- EXISTING MONOPOLE TOWER TO BE MODIFIED PER SHEET S-3.

ENGINEERS COMMENTS

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF CONNECTICUT.

APPLICABLE CODES

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

- ANSI/TIA/EIA-222-F-1996 STANDARD, "STRUCTURAL STANDARD FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES"

- 2005 CONNECTICUT STATE BUILDING CODE

DRAWING INDEX

SHEET NO:	SHEET TITLE	REV	DESIGNER
T-1	TITLE SHEET	0	CJS
N-1	GENERAL NOTES	0	CJS
N-2	MODIFICATION INSPECTION CHECKLIST	0	CJS
S-1	NexGen2™ BOLT SPECS & TIGHTENING PROCEDURE	0	CJS
S-2	FORGBolt™ BOLT SPECS & TIGHTENING PROCEDURE	0	CJS
S-3	POLE MODIFICATION SCHEDULE	0	CJS
S-4	TOWER SECTION VIEW	0	CJS
S-5	TOWER SECTION VIEW (CONT.)	0	CJS
S-6	TOWER SECTION VIEW (CONT.)	0	CJS
S-7	STEP BOLT CLIP	0	CJS

PROJECT CONTACTS

DESIGN ENGINEER - MAIN RFI CONTACT
EARNEST JOHNSON
919-859-5753
111 CORNING RD. STE 200
CARY, NC 27518
Earnest.Johnson@jacobs.com

ENGINEER OF RECORD
MATTHEW WATKINS
770-701-2501
5449 BELLS FERRY ROAD
ACWORTH, GA 30102
Matt.Watkins@jacobs.com

CROWN TOWER MOD PM
DAN VADNEY
518-373-3510
Dan.Vadney@crowncastle.com

CROWN CM INFO
JASON D'AMICO
+18602090104
Jason.D'Amico.Vendor@crowncastle.com

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 800-788-7011.

PLANS PREPARED FOR:
CROWN CASTLE

PLANS PREPARED BY:

JACOBS
Jacobs Engineering Group, Inc.
5449 BELLS FERRY ROAD
ACWORTH, GEORGIA 30102
770-701-2500, FAX: 770-701-2501

OEM:

ENGINEERING LICENSE:
STATE OF CONNECTICUT
MATTHEW E. WATKINS
No. 29955
LICENSED PROFESSIONAL ENGINEER
11/04/15

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
FIRST ISSUE	10/29/15	CJS	0
REVISION	11/04/15	CJS	1

DRAWN BY:	CJS
CHECKED BY:	EBJ
APPROVED BY:	MEW
JACOBS PROJECT NO:	1121760 (R1)

SITE NAME:
SHELTON NE

SITE BU NUMBER:
842873

SITE ADDRESS:
30 OLIVER TERRACE
SHELTON, CT
06484

SHEET DESCRIPTION:
TITLE SHEET

SHEET NUMBER:
T-1

1.0 **CONSTRUCTION TO CONFORM TO CONSTRUCTION STANDARDS:**

1.1 PURPOSE AND INTENT
(A) THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE FULLY EXPLANATORY AND SUPPLEMENTARY. HOWEVER, SHOULD ANYTHING BE SHOWN, INDICATED OR SPECIFIED ON ONE AND NOT THE OTHER, IT SHALL BE DONE THE SAME AS IF SHOWN, INDICATED OR SPECIFIED IN BOTH. SHOULD THERE BE ANY DISCREPANCIES BETWEEN REQUIREMENTS SHOWN IN BOTH, THE MORE STRINGENT REQUIREMENTS SHALL APPLY.
(B) THE INTENTION OF THE DOCUMENTS IS TO INCLUDE ALL LABOR AND MATERIALS REASONABLY NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK AS STIPULATED IN THE CONTRACT.
(C) THE PURPOSE OF THESE CONSTRUCTION SPECIFICATIONS IS TO INTERPRET THE INTENT OF THE DRAWINGS AND TO DESIGNATE THE METHOD OF THE PROCEDURE, TYPE AND QUALITY OF MATERIALS REQUIRED TO COMPLETE THE WORK.

1.2 WORK
ALL WORK PRESENTED ON THESE DRAWINGS MUST BE COMPLETED BY THE CONTRACTOR UNLESS NOTED OTHERWISE (UNO). 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 THE WORK IS TO BE PERFORMED.

1.3 CONFLICTS
(A) CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS, DIMENSIONS, AND POSSIBLE INTERFERENCES AT THE SITE BEFORE ORDERING MATERIAL OR DOING ANY WORK. ANY AND ALL DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER OF RECORD (EOR) AND APPROPRIATE FIELD PERSONNEL IMMEDIATELY. NO EXTRA CHARGE OR COMPENSATION WILL BE ALLOWED DUE TO DIFFERENCES BETWEEN ACTUAL DIMENSIONS OR DIMENSIONS SHOWN ON PLANS. SUBMIT NOTICE OF ANY DISCREPANCY IN DIMENSIONS OR OTHERWISE TO JACOBS FOR RESOLUTION BEFORE PROCEEDING WITH THE WORK.
(B) NO PLEA OF IGNORANCE OF CONDITIONS THAT EXIST OR OF DIFFICULTIES OF CONDITIONS THAT MAY BE ENCOUNTERED, OR OF ANY OTHER RELEVANT MATTER CONCERNING THE EXECUTION OF THE WORK WILL BE ACCEPTED AS AN EXCUSE FOR ANY FAILURE OR OMISSION ON THE PART OF THE CONTRACTOR TO FULFILL EVERY DETAIL OF ALL THE REQUIREMENTS OF THE CONSTRUCTION DOCUMENTS GOVERNING THE WORK.

1.4 CODES
UNLESS NOTED OTHERWISE USE ONLY THE LATEST ISSUES OF ANY APPLICABLE CODES, STANDARDS, OR REGULATIONS MENTIONED IN THE FOLLOWING NOTES AND SPECIFICATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR FOLLOWING ALL LAWS, REGULATIONS AND RULES PROMULGATED BY FEDERAL STATE AND LOCAL AUTHORITIES WITH JURISDICTION OVER THE SITE. THIS RESPONSIBILITY IS IN EFFECT REGARDLESS OF WHETHER THE LAW, ORDINANCE, REGULATION OR RULE IS MENTIONED IN THESE SPECIFICATIONS.

1.5 LICENSING
HAVE AND MAINTAIN A VALID CONTRACTORS LICENSE FOR THE LOCATION IN WHICH THE WORK IS TO BE PERFORMED. FOR JURISDICTIONS THAT LICENSE INDIVIDUAL TRADES, THE TRADESMAN OR SUBCONTRACTORS PERFORMING THOSE TRADES SHALL BE LICENSED, RESEARCH AND COMPLY WITH LICENSING LAWS, PAY LICENSE FEES, AND SELECT AND INFORM SUBCONTRACTORS REGARDING THESE LAWS.

1.6 OSHA
FOLLOW ALL APPLICABLE RULES AND REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), AND STATE LAWS BASED IN THE FEDERAL OCCUPATIONAL SAFETY AND HEALTH ACT, THESE REGULATIONS INCLUDE BUT ARE NOT LIMITED TO REGULATIONS DEALING WITH TOWER CONSTRUCTION AND SAFETY, EXCAVATIONS AND TRENCHING, ERECTION OF GUARDS AND BARRIERS, AND WORK IN CONFINED SPACES. ENSURE THAT EMPLOYEES AND SUBCONTRACTORS WEAR HARD HATS AT ALL TIMES DURING CONSTRUCTION. MODIFICATION WORK SHALL BE COMPLETED IN CALM WIND CONDITIONS/ OR APPROPRIATE WIND SPEED FOR THE TYPE OF MODIFICATION WORK BEING INSTALLED.

1.7 PHOTOS
PROVIDE PHOTOGRAPHIC EVIDENCE OF ALL FOUNDATION INSTALLATION, GROUNDING AND TRENCHING AFTER PLACEMENT OF UTILITIES PRIOR TO BACKFILL.

1.8 BUILDING PERMITS
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.

1.9 ZONING REGULATIONS AND CONDITIONAL USE PERMITS
THE CONTRACTOR SHALL BE RESPONSIBLE FOR ABIDING BY ALL CONDITIONS AND REQUIREMENT OF THE PERMITS, INCLUDING BUT NOT LIMITED TO NOISE REGULATIONS, HOURS OF WORK, ACCESS LIMITATIONS, ETC.

1.10 MATERIALS AND EQUIPMENT
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. ALL MANUFACTURER'S HARDWARE ASSEMBLY INSTRUCTIONS SHALL BE FOLLOWED EXACTLY AND SHALL SUPERSEDE ANY CONFLICTING NOTES ENCLOSED HEREIN. ALL MATERIALS AND WORKMANSHIP SHALL BE WARRANTED FOR (2) YEARS FROM THE DATE OF COMPLETED CONSTRUCTION.

1.11 CLIMBING FACILITIES
THE CLIMBING FACILITIES, SAFETY CLIMB, AND ALL PARTS THEREOF SHALL NOT BE IMPEDED, MODIFIED, OR ALTERED WITHOUT THE EXPRESS APPROVAL OF THE EOR.

1.12 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.

1.13 FAA PERMIT AND TOWER LIGHTING
REFER TO CONSTRUCTION DOCUMENTS AND CONSTRUCTION MANAGER FOR FAA AND STATE LIGHTING REQUIREMENTS. CONTRACTOR SHALL PROVIDE TEMPORARY FM APPROVED LIGHTING UNTIL PERMANENT LIGHTING IS OPERATIONAL.

1.14 TOWER SECURITY
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.

1.15 MODIFICATION PROCESS
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 THE STRUCTURAL INTEGRITY, INCLUDING, BUT NOT LIMITED TO, ENGINEERING ASSESSMENT OF CONSTRUCTION STRESSES WITH INSTALLATION MAXIMUM WIND SPEED AND/OR TEMPORARY BRACING AND SHORING. MODIFICATION WORK IS NOT TO BE PERFORMED WHEN THE WIND SPEED EXCEEDS 30 MPH.

1.16 OWNERSHIP
THE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF JACOBS ENGINEERING GROUP, INC. THEY MAY NOT BE REPRODUCED IN ANY FORM WITHOUT THE EXPRESSED WRITTEN CONSENT/PERMISSION OF JACOBS.

1.17 SITE ASSUMPTIONS
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.

1.18 SITE CONTROL
(A) 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 TEMPORARY RELOCATING ANY LINES OR STRUTS AS NECESSARY TO COMPLETE THE REQUIRED WORK.
(B) THE CONTRACTOR IS COMPLETELY RESPONSIBLE FOR CONTAINMENT OF SEDIMENT AND CONTROL OF EROSION AT THE SITE. ANY DAMAGE TO ADJACENT OR DOWNSTREAM PROPERTIES WILL BE CORRECTED BY THE CONTRACTOR.
(C) THE CONTRACTOR IS TO MAINTAIN ADEQUATE DRAINAGE AT ALL TIMES. DO NOT ALLOW WATER TO STAND OR POND. ANY DAMAGE TO STRUCTURES OR WORK ON THE SITE CAUSED BY INADEQUATE MAINTENANCE OF DRAINAGE PROVISIONS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AND ANY COST ASSOCIATED WITH REPAIRS FOR SUCH DAMAGE WILL BE AT THE CONTRACTOR'S EXPENSE.

1.19 DO NOT SCALE DRAWINGS.

2.0 **STRUCTURAL STEEL NOTES:**

2.1 UNLESS OTHERWISE NOTED, DESIGN, FABRICATION, ERECTION, ALTERATION, AND MAINTENANCE SHALL CONFORM TO THE FOLLOWING:
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

2.2 UNLESS OTHERWISE NOTED, ALL STRUCTURAL ELEMENTS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

A. STRUCTURAL STEEL, ASTM DESIGNATION A572 GRADE 65 (FY = 65 KSI), UNO
B. ALL BOLTS, ASTM A325 TYPE I GALVANIZED HIGH STRENGTH BOLTS.
C. ALL NUTS, ASTM A563 CARBON AND ALLOY STEEL NUTS.
D. ALL WASHERS, ASTM F436 HARDENED STEEL WASHERS

U.N.O. = UNLESS NOTED OTHERWISE.

2.3 ALL CONNECTIONS NOT FULLY DETAILED ON THESE PLANS SHALL BE DETAILED BY THE STEEL FABRICATOR IN ACCORDANCE WITH AISC MANUAL OF STEEL CONSTRUCTION

2.4 HOLES SHALL NOT BE FLAME CUT THRU STEEL UNLESS APPROVED BY THE ENGINEER.

2.5 HOT-DIP GALVANIZE ALL ITEMS UNLESS OTHERWISE NOTED, AFTER FABRICATION WHERE PRACTICABLE. GALVANIZING: ASTM A123, ASTM A153/A153M OR ASTM A653/A653M, G90, AS APPLICABLE.

2.6 REPAIR DAMAGED SURFACES WITH GALVANIZING REPAIR METHOD AND PAINT CONFORMING TO ASTM A780 OR BY APPLICATION OF STICK OR THICK PASTED MATERIAL SPECIFICALLY DESIGNED FOR REPAIR OF GALVANIZING. CLEAN AREAS TO BE REPAIRED AND REMOVE SLAG FROM WELDS. HEAT SURFACES TO WHICH STICK OR PASTE MATERIAL IS APPLIED, WITH A TORCH TO A TEMPERATURE SUFFICIENT TO MELT THE METALLICS IN STICK OR PASTED; SPREAD MOLTEN MATERIAL UNIFORMLY OVER SURFACES TO BE COATED AND WIPE OFF EXCESS MATERIAL.

2.7 A NUT LOCKING DEVICE SHALL BE INSTALLED ON ALL PROPOSED AND/OR REPLACED ASTM A325 BOLTS

2.8 ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH TO EXCLUDE THE THREADS FROM THE SHEAR PLANE.

2.9 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.

2.10 ALL FASTENERS SHALL NOT BE REUSED.

2.11 FOR A LIST OF CROWN APPROVED COLD GALVANIZING COMPOUNDS, REFER TO CROWN ENG-BUL-10149, "TOWER PROTECTIVE COATINGS BULLETIN".

2.12 AFTER FINAL INSPECTION, ALL STRUCTURAL STEEL EXPOSED AS A RESULT OF THIS SCOPE OF WORK, INCLUDING WELDS, FIELD DRILLED HOLES, AND SHAFT INTERIORS (WHERE ACCESSIBLE) SHALL RECEIVE A COLD-GALVANIZED COATING. THIS COATING SHALL BE 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.

3.0 **BOLT-TIGHTENING PROCEDURE:**

3.1 TIGHTEN CONNECTION BOLTS BY AISC - "TURN OF THE NUT" METHOD, USING THE CHART BELOW.
BOLT LENGTHS UP TO AND INCLUDING FOUR DIAMETER
⅝" BOLTS UP TO AND INCLUDING 4.0 INCH LENGTH +1/3 TURN BEYOND SNUG TIGHT
¾" BOLTS UP TO AND INCLUDING 3.5 INCH LENGTH +1/3 TURN BEYOND SNUG TIGHT
⅞" BOLTS UP TO AND INCLUDING 4.0 INCH LENGTH +1/3 TURN BEYOND SNUG TIGHT

BOLT LENGTHS OVER FOUR DIAMETER BUT NOT EXCEEDING EIGHT DIAMETER
⅝" BOLTS 4.25 TO 6.0 INCH LENGTH +1/2 TURN BEYOND SNUG TIGHT
¾" BOLTS 3.75 TO 7.0 INCH LENGTH +1/2 TURN BEYOND SNUG TIGHT
⅞" BOLTS 4.25 TO 8.0 INCH LENGTH +1/2 TURN BEYOND SNUG TIGHT

3.2 CONNECTION BOLTS SUBJECT TO DIRECT TENSION SHALL BE INSTALLED AND TIGHTENED AS PER SECTION 8(d)(1) OF THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS. LOCATED IN THE AISC MANUAL OF STEEL CONSTRUCTION. THE INSTALLATION PROCEDURE IS PARAPHRASED AS FOLLOWS:

8(d)(1) TURN-OF-THE-NUT TIGHTENING METHOD
BOLTS SHALL BE INSTALLED IN ALL HOLES OF THE CONNECTION AND BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8(c). UNTIL ALL THE BOLTS ARE SIMULTANEOUSLY SNUG TIGHT AND THE CONNECTION IS FULLY COMPACTED. FOLLOWING THIS INITIAL OPERATION ALL BOLTS IN THE CONNECTION SHALL BE TIGHTENED FURTHER BY THE APPLICABLE AMOUNT OF ROTATION SPECIFIED ABOVE. DURING THE TIGHTENING O PERATION THERE SHALL BE NO ROTATION OF THE PART NOT TURNED BY THE WRENCH. TIGHTENING SHALL PROGRESS SYSTEMATICALLY.

3.3 FASTENERS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES AND TIGHTENED BY ONE OF THE METHODS DESCRIBED IN SUBSECTION 8(d)(1) THROUGH 8(d)(4).

3.4 ALL OTHER BOLTED CONNECTIONS SHALL BE BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8(c) OF THE SPECIFICATION.

3.5 TURN-OF-THE-NUT TIGHTENING METHOD DOES NOT APPLY TO THE FORGBOLT OR NEXGEN2 BOLTS.

4.0 **WELDING NOTES:**

4.1 ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS AND SHALL BE DONE IN ACCORDANCE WITH THE AWS D1.1/D1.1M: 2010 "STRUCTURAL WELDING CODE - STEEL".

4.2 UNLESS OTHERWISE NOTED, ALL WELDING SHALL BE DONE UTILIZING E80XX ELECTRODES.

4.3 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 QC.

4.4 GRIND THE SURFACE ADJACENT TO THE WELD FOR A DISTANCE OF 2" MINIMUM ALL AROUND AND GRIND THE SURFACE OF THE MATERIAL TO BE INSTALLED FOR A DISTANCE OF 2" MINIMUM ALL AROUND THE AREA TO BE WELDED. ENSURE BOTH AREAS ARE 100% FREE OF ALL GALVANIZING. SURFACES TO BE WELDED SHALL BE FREE FROM SCALE, SLAG, RUST, MOISTURE, GREASE OR ANY OTHER FOREIGN MATERIAL THAT WOULD PREVENT PROPER WELDING.

4.5 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.

4.6 DO NOT WELD ON WET OR FROST-COVERED SURFACES AND PROVIDE ADEQUATE PROTECTION FROM HIGH WINDS.

4.7 FULL PENETRATION WELDS IN THE VICINITY OF THE BASE OF THE TOWER ARE REQUIRED TO BE 100% NDE INSPECTED BY UT IN ACCORDANCE WITH AWS D1.1. PARTIAL PENETRATION AND FILLET WELDS IN THE VICINITY OF THE BASE OF THE TOWER ARE REQUIRED TO BE 50% NDE INSPECTED BY MP IN ACCORDANCE WITH AWS D1.1.

PLANS PREPARED FOR:
CROWN CASTLE

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SITE NAME:
SHELTON NE

SITE BU NUMBER:
842873

SITE ADDRESS:
30 OLIVER TERRACE
SHELTON, CT
06484

SHEET DESCRIPTION:
GENERAL NOTES

SHEET NUMBER:
N-1

MI CHECKLIST

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY EOR)	REPORT ITEM
PRE-CONSTRUCTION	
X	MI CHECKLIST DRAWING
X	EOR APPROVED SHOP DRAWINGS
X	FABRICATION INSPECTION
X	FABRICATOR CERTIFIED WELD INSPECTION
X	MATERIAL TEST REPORT (MTR)
NA	FABRICATOR NDE INSPECTION
NA	NDE REPORT OF MONOPOLE BASE PLATE PER ENG-SOW-10033
X	PACKING SLIPS
ADDITIONAL TESTING AND INSPECTIONS:	
CONSTRUCTION	
X	CONSTRUCTION INSPECTIONS
NA	FOUNDATION INSPECTIONS
NA	CONCRETE COMP. STRENGTH AND SLUMP TESTS
NA	POST INSTALLED ANCHOR ROD VERIFICATION
NA	BASE PLATE GROUT VERIFICATION
X	CONTRACTOR'S CERTIFIED WELD INSPECTION
NA	EARTHWORK: LIFT AND DENSITY
X	ON SITE COLD GALVANIZING VERIFICATION
NA	GUY WIRE TENSION REPORT
X	GC AS-BUILT DOCUMENTS
ADDITIONAL TESTING AND INSPECTIONS:	
POST-CONSTRUCTION	
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)
NA	POST INSTALLED ANCHOR ROD PULL-OUT TESTING
X	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTE: X DENOTES A DOCUMENT NEEDED FOR THE PMI REPORT
NA DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE PMI REPORT

MODIFICATION INSPECTION NOTES:

GENERAL

THE MODIFICATION INSPECTION (MI) 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 (EOR).

THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, NOR DOES THE MI INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES.

ALL MI'S SHALL BE CONDUCTED BY A CROWN ENGINEERING VENDOR (AEV) OR ENGINEERING SERVICE VENDOR (AESV) THAT IS APPROVED TO PERFORM ELEVATED WORK FOR CROWN. SEE ENG-BUL-10173 LIST OF APPROVED MI VENDORS.

TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PO IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN, CONTACT YOUR CROWN POINT OF CONTACT (POC).

REFER TO ENG-SOW-10007 : MODIFICATION INSPECTION SOW FOR FURTHER DETAILS AND REQUIREMENTS.

MI INSPECTOR

THE MI INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS RECEIVING A PO FOR THE MI TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE MI CHECKLIST
- WORK WITH THE GC TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS

THE MI 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 MI REPORT TO CROWN.

GENERAL CONTRACTOR

THE GC IS REQUIRED TO CONTACT THE MI INSPECTOR AS SOON AS RECEIVING A PO FOR THE MODIFICATION INSTALLATION OR TURNKEY PROJECT TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE MI CHECKLIST
- WORK WITH THE MI INSPECTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE MI INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS
- BETTER UNDERSTAND ALL INSPECTION AND TESTING REQUIREMENTS

THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MI CHECKLIST AND ENG-SOW-10007.

RECOMMENDATIONS

THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING A MI REPORT:

- IT IS SUGGESTED THAT THE GC PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLY 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
- THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI 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 MI INSPECTION(S) TO COMMENCE WITH ONE SITE VISIT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

CANCELLATION OR DELAYS IN SCHEDULED MI

IF THE GC AND MI INSPECTOR AGREE TO A DATE ON WHICH THE MI WILL BE CONDUCTED, AND EITHER PARTY CANCELS OR DELAYS, CROWN SHALL NOT BE RESPONSIBLE FOR ANY 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.). IF CROWN CONTRACTS DIRECTLY FOR A THIRD PARTY MI, 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 MI'S

IF THE MODIFICATION INSTALLATION WOULD FAIL THE MI ("FAILED MI"), THE GC SHALL WORK WITH CROWN 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 SUPPLEMENT MI.
- OR, WITH CROWN'S APPROVAL, THE GC MAY WORK WITH THE EOR TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION

MI VERIFICATION INSPECTIONS

CROWN RESERVES THE RIGHT TO CONDUCT A MI VERIFICATION INSPECTION TO VERIFY THE ACCURACY AND COMPLETENESS OF PREVIOUSLY COMPLETED MI INSPECTION(S) ON TOWER MODIFICATION PROJECTS.

ALL VERIFICATION INSPECTIONS SHALL BE HELD TO THE SAME SPECIFICATIONS AND REQUIREMENTS IN THE CONTRACT DOCUMENTS AND IN ACCORDANCE WITH ENG-SOW-10007.

VERIFICATION INSPECTION MAY BE CONDUCTED BY AN INDEPENDENT AEV/AESV FIRM AFTER A MODIFICATION PROJECT IS COMPLETED, AS MARKED BY THE DATE OF AN ACCEPTED "PASSING MI" OR "PASS AS NOTED MI" REPORT FOR THE ORIGINAL PROJECT.

REQUIRED PHOTOS

BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:

- PRE-CONSTRUCTION GENERAL SITE CONDITION
- PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
  - RAW MATERIALS
  - PHOTOS OF ALL CRITICAL DETAILS
  - FOUNDATION MODIFICATIONS (IF APPLICABLE)
  - WELD PREPARATION
  - BOLT INSTALLATION AND TORQUE
  - FINAL INSTALLED CONDITION
  - SURFACE COATING REPAIR
- POST CONSTRUCTION PHOTOGRAPHS
  - FINAL INFIELD CONDITION

PHOTOS OF ELEVATED MODIFICATIONS TAKEN FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS, PLEASE REFER TO ENG-SOW-10007.

PLANS PREPARED FOR:

CROWN CASTLE

PLANS PREPARED BY:

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OEM:

ENGINEERING LICENSE:

STATE OF CONNECTICUT
MATTHEW E. WATTS
No. 29955
LICENSED PROFESSIONAL ENGINEER
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SHELTON NE

SITE BU NUMBER:

842873

SITE ADDRESS:

30 OLIVER TERRACE
SHELTON, CT
06484

SHEET DESCRIPTION:

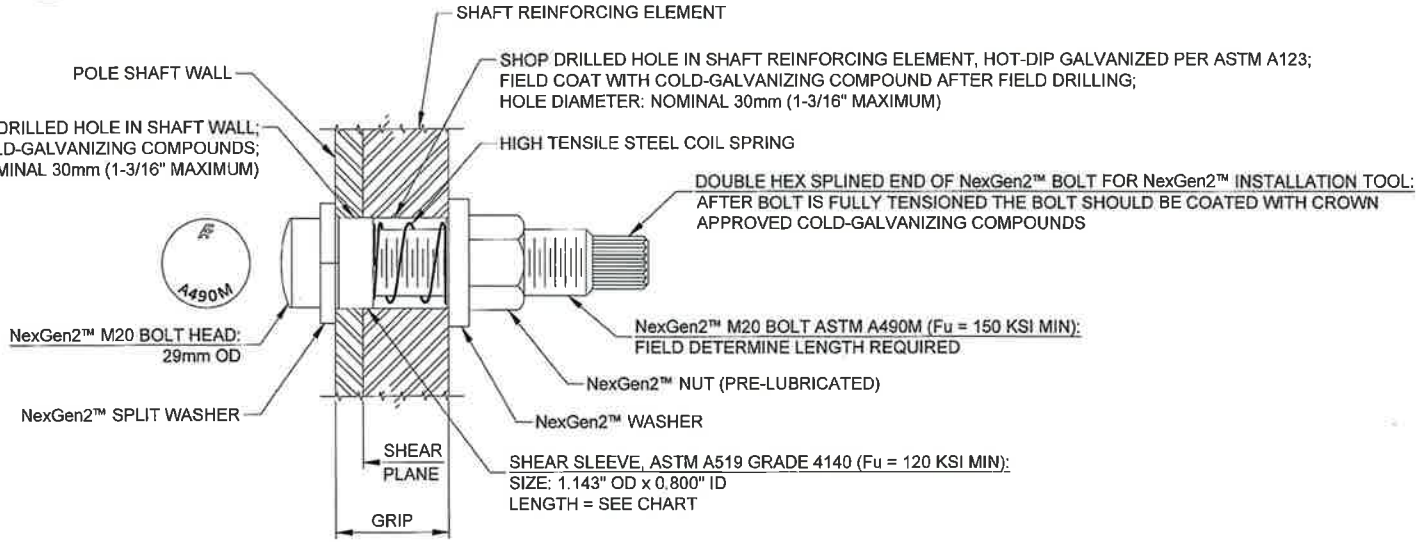
MODIFICATION INSPECTION CHECKLIST

SHEET NUMBER:

N-2

NEXGEN2 BLIND BOLT ASSEMBLY

- PATENT PENDING -



TYPICAL NG2 BOLT DETAIL

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.

	SLEEVE LENGTH	MIN GRIP RANGE	MAX GRIP RANGE
M20x95	3/4"	1-1/16"	2-3/16"
M20x135	1-7/8"	2-1/16"	3-11/16"
M20x165	2-7/8"	3-3/16"	4-15/16"
M20x250	4"	4-5/16"	8-5/16"

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SITE NAME:
SHELTON NE

SITE BU NUMBER:
842873

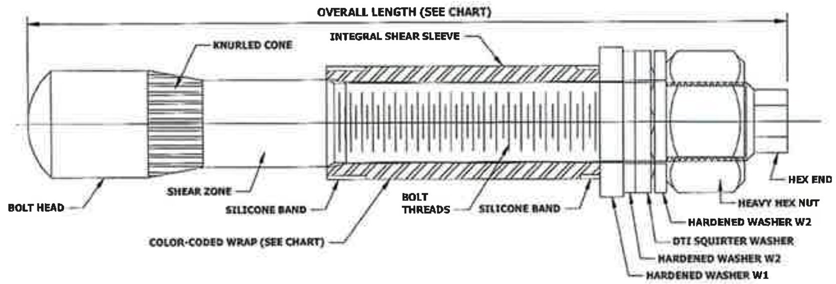
SITE ADDRESS:
30 OLIVER TERRACE
SHELTON, CT
06484

SHEET DESCRIPTION:
NexGen2™ BOLT SPECS & TIGHTENING PROCEDURE

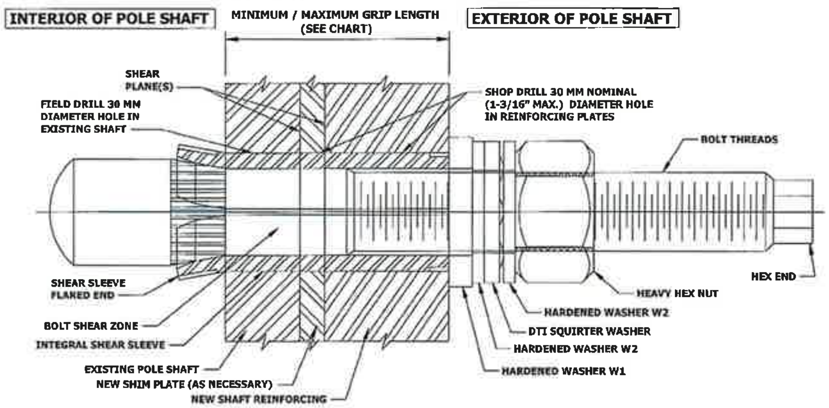
SHEET NUMBER:
S-1

FORGBolt™ NOTE SHEET: A325/PC8.8 LANDSCAPE VERSION DATE 01/29/2015

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: 440-214-2372
EMAIL: info@precisiontowerproducts.com
WEB: www.precisiontowerproducts.com

CONTAINS PROPRIETARY INFORMATION PATENT PENDING

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.

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APPROVED BY:	MEW
JACOBS PROJECT NO:	1121760 (R1)

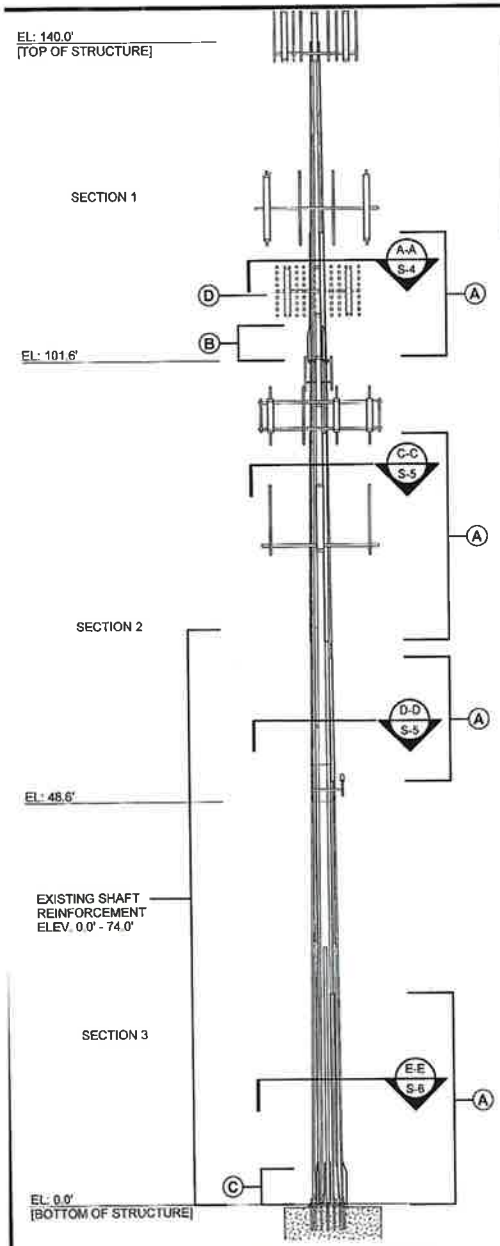
SITE NAME: SHELTON NE

SITE BU NUMBER: 842873

SITE ADDRESS: 30 OLIVER TERRACE SHELTON, CT 06484

SHEET DESCRIPTION: FORGBolt™ BOLT SPECS & TIGHTENING PROCEDURE

SHEET NUMBER: S-2



TOWER ELEVATION VIEW

CCI FLAT PLATE (65 KSI) REINFORCING SCHEDULE

BOTTOM ELEVATION	TOP ELEVATION	PART NUMBER	FLAT / 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)
0.5'	25.5'	CCI-SFP-06010025	2, 9, 17	8	8	1'-4"	31	510.0	93	1530.0
50.0'	65.0'	CCI-SFP-06010015	3, 9, 14	8	8	1'-4"	24	306.0	72	918.0
68.0'	93.0'	CCI-SFP-06010025	2, 8, 14	8	8	1'-4"	31	510.0	93	1530.0
102.0'	117.0'	CCI-AFP-04510015	2, 8, 14	8	8	1'-8"	22	229.5	66	688.5
								TOTAL	324	4646.5

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.
3. ALL FLAT PLATE REINFORCEMENT IS TO BE INSTALLED CENTERED ON ITS DESIGNATED FLAT, UNO.
4. SEE CMRP 65 KSI PARTS CATALOG 2nd EDITION FOR PART DETAILS.
5. ON MULTISIDED POLES, **EXISTING SAFETY CLIMB IS CONSIDERED FLAT 1 THEN FLATS ARE NUMBERED COUNTER CLOCKWISE.**
6. CLIMBING PEGS TO BE RELOCATED IF REQUIRED.

POLE MODIFICATION SCHEDULE

	ELEVATION (FT)	MODIFICATION	REFERENCE SHEET
(A)	0.5' - 25.5' 50.0' - 65.0' 68.0' - 93.0' 102.0' - 117.0'	**INSTALL NEW FLAT PLATE REINFORCEMENT**	S-3, S-4, S-5, S-6
(B)	101.58' - 105.83'	**INSTALL (3) NEW TRANSITION STIFFENERS**	S-3, S-4
(C)	0.0' - 8.0'	**REMOVE (2) EXISTING BASE STIFFENERS ON FLATS 3 & 8, AND INSTALL (3) NEW BASE TRANSITION STIFFENERS ON FLATS 3, 8 & 15**	S-3, S-6
(D)	110.0'	**EXISTING ABANDONED ANTENNAS, EQUIPMENT, FEEDLINES AND MOUNTS TO BE REMOVED**	S-3

POLE SPECIFICATIONS

POLE SHAPE TYPE:	18-SIDED POLYGON
TAPER:	0.227 IN/FT
SHAFT STEEL:	A572 GR. 65
BASE PL STEEL:	ASTM A633 (60 KSI)
ANCHOR RODS:	2.25"Ø #18J ASTM A615 GRADE 75

SHAFT SECTION DATA

SHAFT SECTION	SECTION LENGTH (FT)	PLATE THICKNESS (IN)	LAP SPLICE (IN)	DIAMETER ACROSS FLATS (IN)	
				@ TOP	@ BOTTOM
1	36.42	0.1875		13.161	21.862
2	53.00	0.3125	53.00	21.880	33.913
3	53.00	0.3125		32.290	44.317

NOTE: DIMENSIONS SHOWN DO NOT INCLUDE GALVANIZING TOLERANCES

PLANS PREPARED FOR:
CROWN CASTLE

PLANS PREPARED BY:
JACOBS
Jacobs Engineering Group, Inc.
5449 BELLS FERRY ROAD
ACWORTH, GEORGIA 30102
770-701-2500, FAX: 770-701-2501

OEM:

ENGINEERING LICENSE:
STATE OF CONNECTICUT
MATTHEW E. WEED
No. 29955
LICENSED PROFESSIONAL ENGINEER
11/04/15

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JACOBS PROJECT NO:	1121760 (R1)

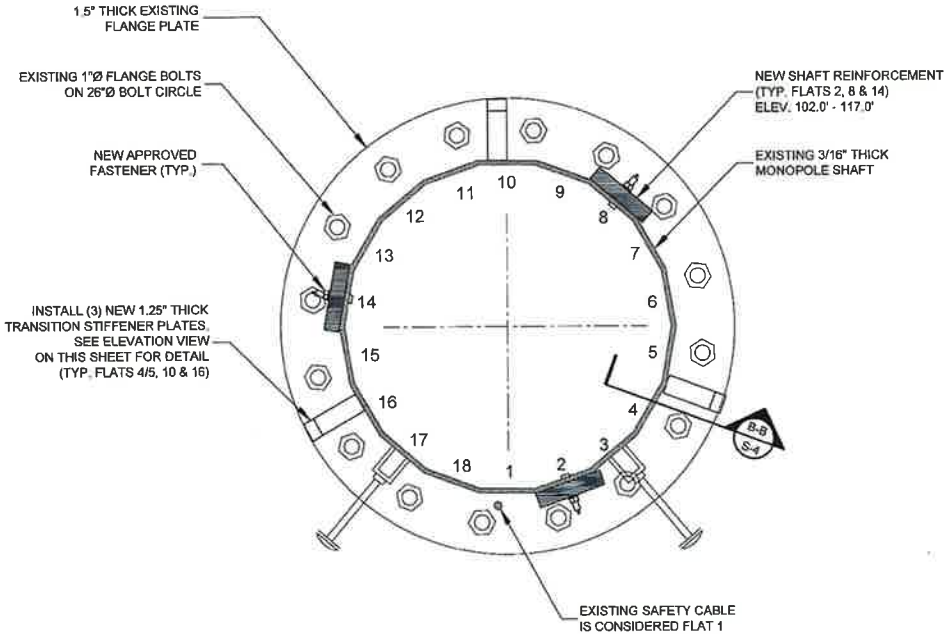
SITE NAME:
SHELTON NE

SITE BU NUMBER:
842873

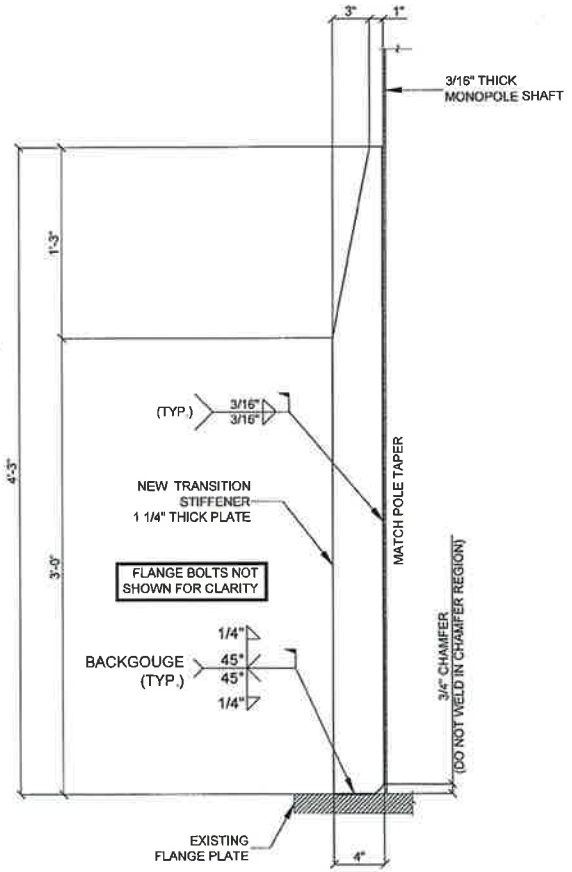
SITE ADDRESS:
30 OLIVER TERRACE
SHELTON, CT
06484

SHEET DESCRIPTION:
POLE MODIFICATION SCHEDULE

SHEET NUMBER:
S-3



A-A / S-4 TOWER SECTION VIEW
SECTION CUT AT 110.0'



B-B / S-4 TRANSITION STIFFENER
ELEVATION VIEW

BILL OF MATERIAL		
ITEM	QUANTITY	DESCRIPTION
1	3	TRANSITION STIFFENER PL 1 1/4" X 4" X 51"

NOTE: ALL MATERIAL TO BE GALVANIZED

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MATTHEW E. WALKER
No. 29955
LICENSED PROFESSIONAL ENGINEER
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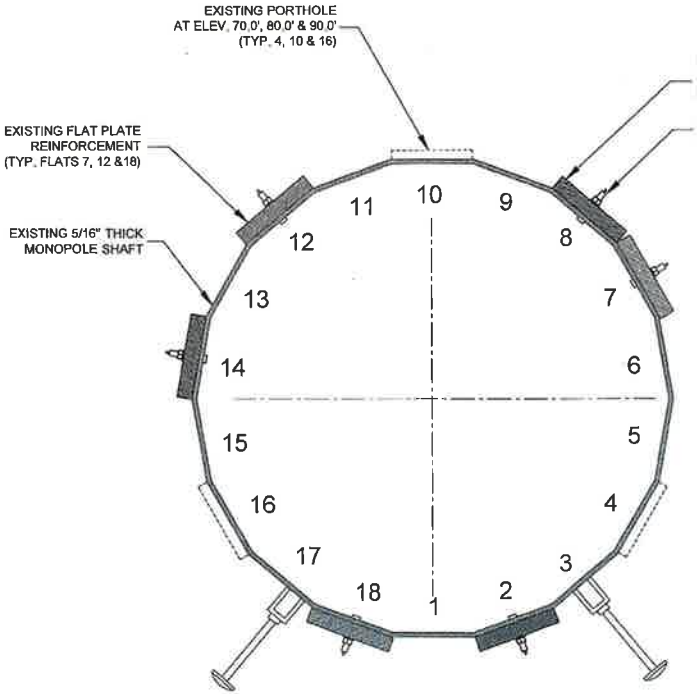
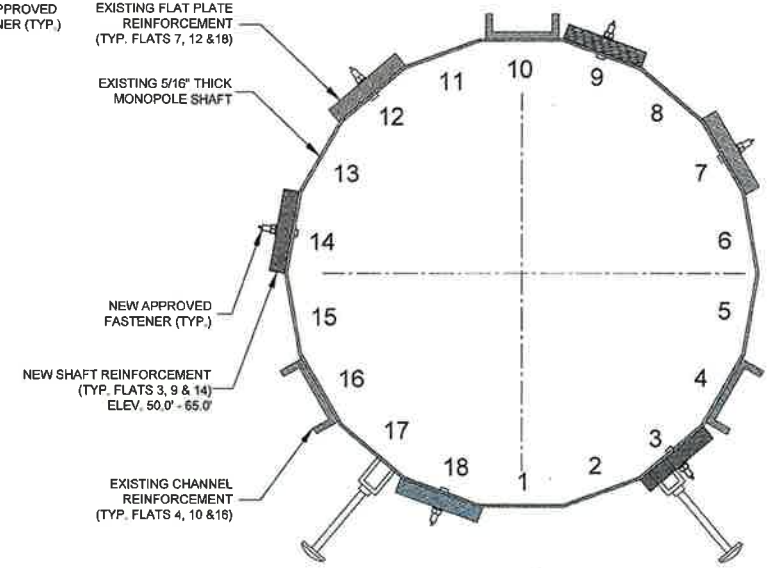
06484

SHEET DESCRIPTION:
TOWER SECTION VIEW

SHEET NUMBER:
S-4



C-C / S-5 TOWER SECTION VIEW
SECTION CUT AT 85.0'



D-D / S-5 TOWER SECTION VIEW
SECTION CUT AT 58.5'

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MATTHEW E. WARS
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SITE ADDRESS:
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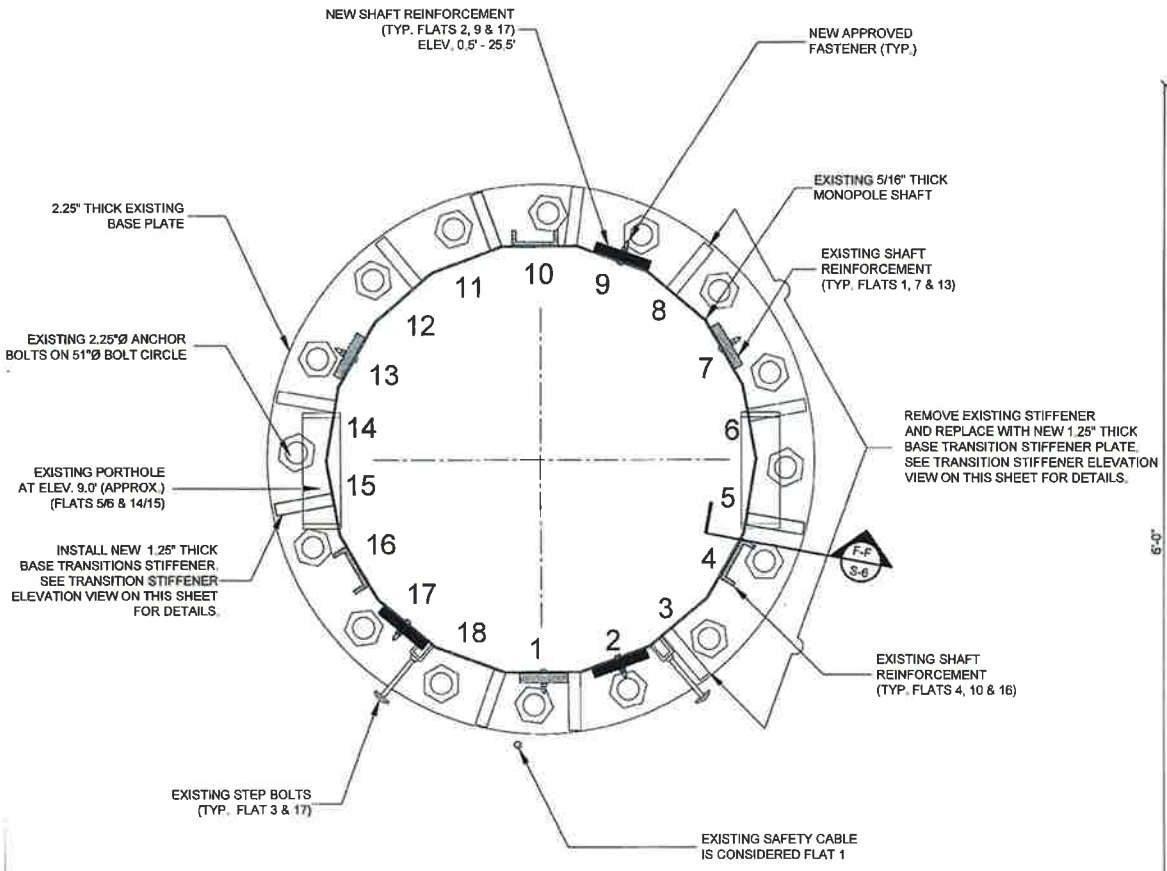
SHELTON, CT
06484

SHEET DESCRIPTION:
TOWER SECTION VIEW
(CONT.)

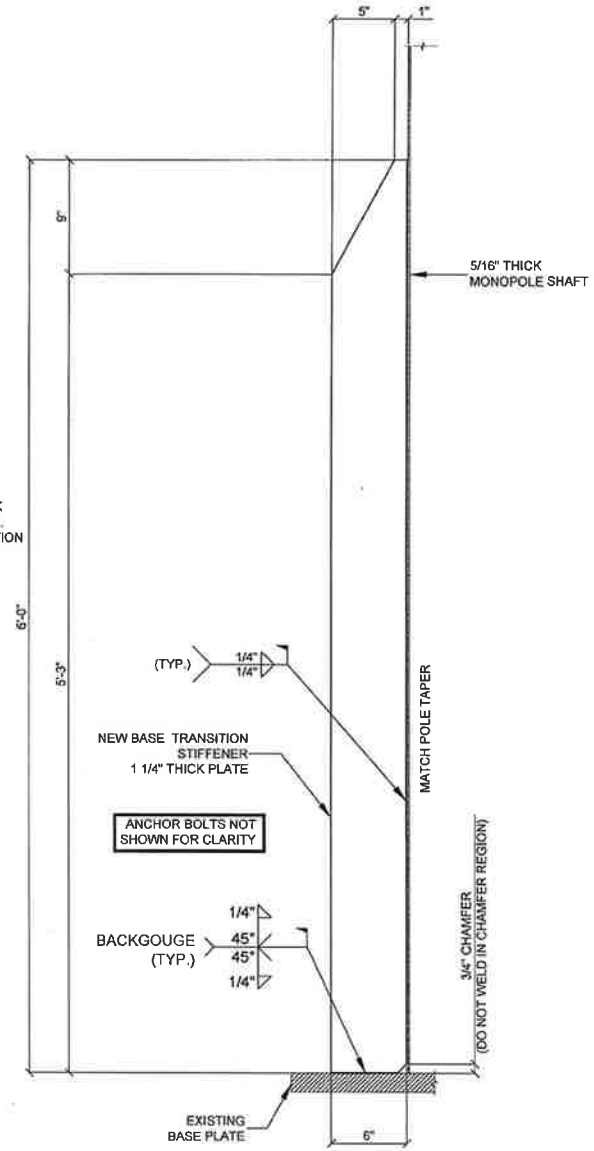
SHEET NUMBER:
S-5



E-E / S-6 TOWER SECTION VIEW
SECTION CUT AT 15.0'

BILL OF MATERIAL		
ITEM	QUANTITY	DESCRIPTION
1	3	BASE TRANSITION STIFFENER PL 1 1/4" X 6" X 72"

NOTE: ALL MATERIAL TO BE GALVANIZED



F-F / S-6 TRANSITION STIFFENER ELEVATION VIEW

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PLANS PREPARED BY:
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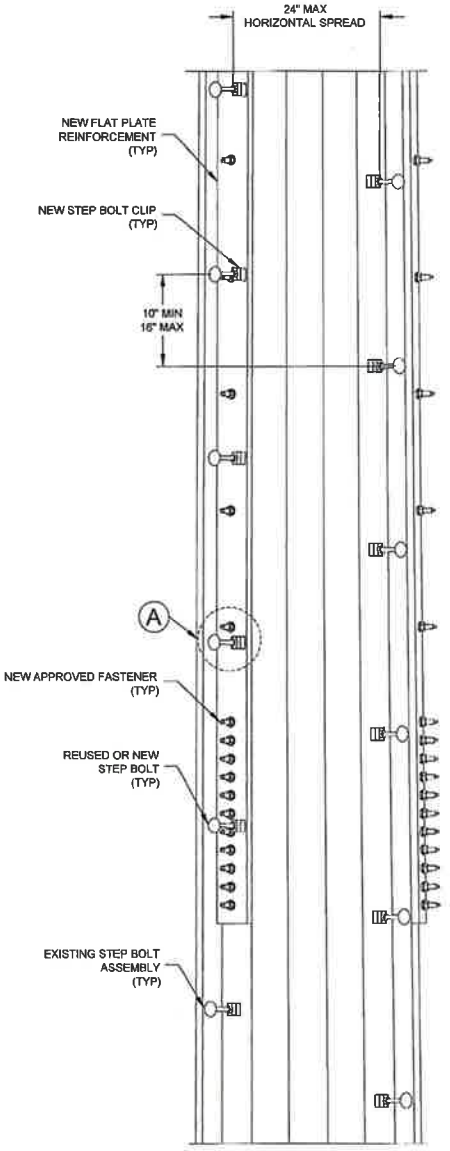
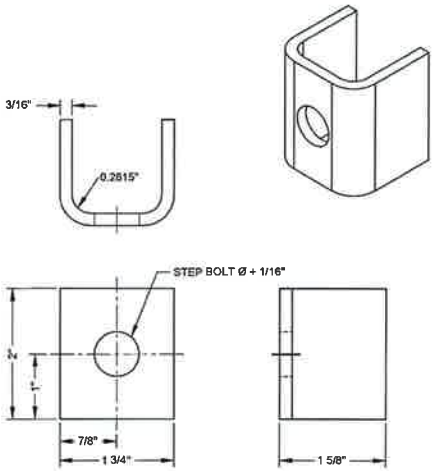
SHEET DESCRIPTION:
TOWER SECTION VIEW (CONT.)

SHEET NUMBER:
S-6

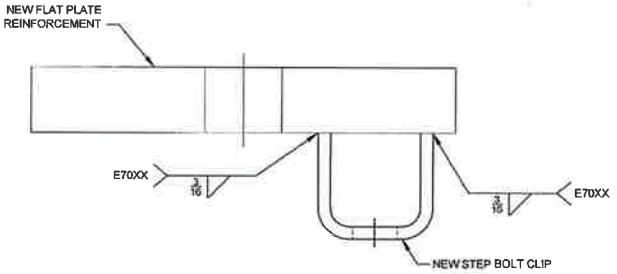


TOWER ELEVATION VIEW

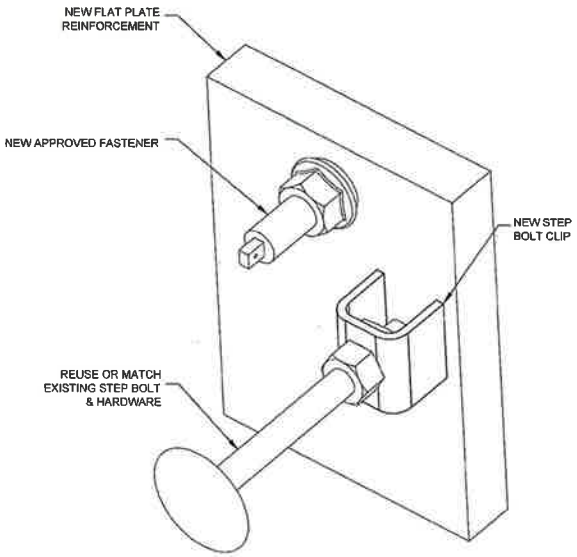
ACTUAL REINFORCEMENT CONFIGURATION NOT SHOWN.
FOR ILLUSTRATION PURPOSES ONLY.



STEP BOLT CLIP (A36)



STEP BOLT CLIP WELD DETAIL



(A) STEP BOLT CLIP INSTALLATION DETAIL

NOTES:

1. STEP BOLT CLIP WELDS ARE SUBJECT TO AWS D1.1 AND MUST BE CWI INSPECTED. REFER TO DOCUMENT "ENG-STD-10069 GC CWI REQUIREMENT STANDARD" FOR CWI REQUIREMENTS.
2. STEP BOLT CLIPS CAN BE FIELD WELDED, BUT IT IS ALSO ACCEPTABLE TO SHOP WELD THE STEP BOLT CLIPS TO THE FLAT BAR, PROVIDED THAT THEY MEET THE CRITERIA NOTED HEREIN. IF STEP BOLT CLIPS ARE NOT NEEDED IN THE FIELD THEY CAN BE LEFT UNUSED.
3. SHOP WELDED STEP PEG CLIPS SHALL BE INSTALLED PRIOR TO HOT DIP GALVANIZING.
4. CONTRACTOR MAY REUSE EXISTING STEP BOLTS AND HARDWARE ONLY IF THEY ARE NOT DAMAGED OR SHOW SIGNIFICANT WEAR AND/OR CORROSION.
5. IF NEW STEP BOLTS ARE REQUIRED, MATCH EXISTING STEP BOLT SIZES. MINIMUM DIAMETER IS 5/8", MAXIMUM DIAMETER IS 3/4" AND MAXIMUM BOLT LENGTH IS 10".
6. CENTER TO CENTER STAGGERED SPACING SHOULD BE MATCHED TO EXISTING FIELD CONDITIONS. STAGGERED SPACING SHALL BE A MINIMUM OF 10" AND MAXIMUM OF 16".
7. MINIMUM CLEAR WIDTH OF STEP BOLTS IS 4 1/2" AND A BUTTON HEAD IS REQUIRED.
8. HORIZONTAL SPREAD IS TO NOT EXCEED 24".

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SHEET DESCRIPTION:

STEP BOLT CLIP

SHEET NUMBER:

S-7