Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

February 5, 2019

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

RE: **Notice of Exempt Modification for Sprint Crown Site BU: 828402**
Sprint Site ID: CT23XC410
720 Thompson Rd Thompson, CT 06277
Latitude: 41° 58′ 39.74″ / Longitude: -71° 50′ 47.55″

Dear Ms. Bachman:

Sprint currently maintains 6 antennas at the 150 foot level of the existing 144 foot Monopole at 720 Thompson Rd Thompson, CT 06277. The tower is owned by Crown Castle. USA The property is owned by Crown Castle USA. Sprint intends replace (3) antennas and add (3) antennas, replace (4) lines and add (12) RRHs.

This facility was approved by the Connecticut Siting Council Petition, an email has been sent out for the approval that was given. I have attached is the email requesting the docket with the approval from the township.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 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.S.C.A. § 16-50j-73, a copy of this letter is being sent to Ken Beausoleil First Selectman, the Cynthia Dunne and Zoning Enforcement Officer. Crown Castle is the tower and land owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modification 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 emissions at the facility to a level at or above the Federal Communication Commission safety standard.

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

6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, Sprint respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Nesmet Badawi.

Sincerely,

Nesmet Badawi
Real Estate Specialist
1200 MacArthur Blvd Suite 200 Mahwah NJ 07430
201-514-7374
Nesmet.Badawi.Contractor@crowncastle.com

Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes
Tab 2: Exhibit-2: Structural Modification Report
Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: Ken Beausoleil, 1st Selectman
815 Riverside Drive
P.O. Box 899
North Grosvenordale, CT 06255

Cindy Dunne, Zoning Enforcement Officer
815 Riverside Drive
P.O. Box 899
North Grosvenordale, CT 06255

Badawi, Nesmet (Contractor)

From: ZEO@thompsonct.org
Sent: Wednesday, February 6, 2019 10:22 AM
To: Badawi, Nesmet (Contractor)
Subject: 720 Thompson Rd

In response to your inquiry at 720 Thompson Rd, I found the following information:

Certificate of Zoning Permit:
03/26/98 - Re: Omnipoint Telecommunications
08/17/99 - Co-Location on existing Tower- revised 11/04/99
11/03/99 - Co-locating an existing Moro-Pole Antenna by Nexter Communications
11/14/05 - no notation on zoning permit, but building permit states Reinforcing Existing Telecommunication Ground Plate.

If I can be of further assistance please call me at 860-923-9475, my office hours are Mon, Wed and Fri 9 am to 2 pm.

Cindy Dunne

ZEO Town of Thompson
860-923-9475
zeo@thompsonct.org
Office Hours Mon, Wed, and Fri 9 am to 2 pm

720 THOMPSON RD

Location	720 THOMPSON RD	**Mblu**	120/ 30/ 14/ 1/
Acct#	005601	**Owner**	MELROSE ASSOCIATION LIMITED PART
Assessment	$235,100	**Appraisal**	$335,800
PID	3748	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$135,800	$200,000	$335,800
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$95,100	$140,000	$235,100

Owner of Record

Owner	MELROSE ASSOCIATION LIMITED PART	**Sale Price**	$0
Co-Owner	C/O CROWN CASTLE	**Certificate**	
Address	PMB 331 4017 WASHINGTON RD MCMURRAY, PA 15317	**Book & Page**	0163/0152
		Sale Date	11/03/1983

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
MELROSE ASSOCIATION LIMITED PART	$0		0163/0152	11/03/1983

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: $0
Building Percent Good:
Replacement Cost Less Depreciation: $0

Building Attributes	
Field	**Description**
Style	Outbuildings

Building Photo

Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	

(http://images.vgsi.com/photos/ThompsonCTPhotos//\00\00\37/28.jpg)

Building Layout

Building

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	390A
Description	DEVEL LAND MDL-00
Zone	IND
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0
Frontage	0
Depth	0
Assessed Value	$140,000
Appraised Value	$200,000

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
TWR2	MONOPOLE			140 HEIGHT	$113,400	1
CB1	PRECAST CONC CELL			77 S.F.	$9,100	1
FN5	FENCE-10'CHAIN			400 L.F.	$13,300	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2017	$135,800	$200,000	$335,800
2016	$135,800	$200,000	$335,800
2014	$135,800	$200,000	$335,800

Assessment			
Valuation Year	Improvements	Land	Total
2017	$95,100	$140,000	$235,100
2016	$95,100	$140,000	$235,100
2014	$95,100	$140,000	$235,100

Badawi, Nesmet (Contractor)

From: TrackingUpdates@fedex.com
Sent: Wednesday, February 6, 2019 3:34 PM
To: Badawi, Nesmet (Contractor)
Subject: FedEx Shipment 774398514763 Delivered

Your package has been delivered

Tracking # 774398514763

Ship date:
Tue, 2/5/2019

Nesmet Badawi
Crown Castle
MAHWAH, NJ 07430
US

Delivery date:
Wed, 2/6/2019 3:31 pm

Cindy Dunne
Zoning Enforcement Office
815 Riverside Drive
NORTH GROSVENORDALE, CT 06255
US

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:	774398514763
Status:	Delivered: 02/06/2019 3:31 PM Signed for By: M.MORGEAU
Reference:	1766.6680
Signed for by:	M.MORGEAU
Delivery location:	NORTH GROSVENORDALE, CT
Delivered to:	Receptionist/Front Desk
Service type:	FedEx Priority Overnight®
Packaging type:	FedEx® Envelope
Number of pieces:	1

Weight:	1.00 lb.
Special handling/Services:	Adult Signature Required
	Deliver Weekday
Standard transit:	2/6/2019 by 4:30 pm

Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 2:33 PM CST on 02/06/2019.

All weights are estimated.

To track the latest status of your shipment, click on the tracking number above.

Standard transit is the date and time the package is scheduled to be delivered by, based on the selected service, destination and ship date. Limitations and exceptions may apply. Please see the FedEx Service Guide for terms and conditions of service, including the FedEx Money-Back Guarantee, or contact your FedEx Customer Support representative.

Thank you for your business.

Badawi, Nesmet (Contractor)

From: TrackingUpdates@fedex.com
Sent: Wednesday, February 6, 2019 3:33 PM
To: Badawi, Nesmet (Contractor)
Subject: FedEx Shipment 774398482319 Delivered

Your package has been delivered

Tracking # 774398482319

Ship date:
Tue, 2/5/2019

Nesmet Badawi
Crown Castle
MAHWAH, NJ 07430
US

Delivered

Delivery date:
Wed, 2/6/2019 3:31 pm

Ken Beausoleil
Selectman's Office, Town of Thomps
815 Riverside Drive
NORTH GROSVENORDALE, CT 06255
US

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:	774398482319
Status:	Delivered: 02/06/2019 3:31 PM Signed for By: M.MORGEAU
Reference:	1766.6680
Signed for by:	M.MORGEAU
Delivery location:	NORTH GROSVENORDALE, CT
Delivered to:	Receptionist/Front Desk
Service type:	FedEx Priority Overnight®
Packaging type:	FedEx® Envelope

Number of pieces:	1
Weight:	1.00 lb.
Special handling/Services:	Adult Signature Required
	Deliver Weekday
Standard transit:	2/6/2019 by 4:30 pm

Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 2:33 PM CST on 02/06/2019.

All weights are estimated.

To track the latest status of your shipment, click on the tracking number above.

Standard transit is the date and time the package is scheduled to be delivered by, based on the selected service, destination and ship date. Limitations and exceptions may apply. Please see the FedEx Service Guide for terms and conditions of service, including the FedEx Money-Back Guarantee, or contact your FedEx Customer Support representative.

Thank you for your business.

EBI Consulting
environmental | engineering | due diligence

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

SPRINT Existing Facility

Site ID: CT23XC410

Omnipoint/Thompson
720 Thompson Road
Thompson, CT 06277

January 22, 2019

EBI Project Number: 6219000180

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	5.25 %

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

EBI Consulting
environmental | engineering | due diligence

January 22, 2019

SPRINT
Attn: RF Engineering Manager
1 International Boulevard, Suite 800
Mahwah, NJ 07495

Emissions Analysis for Site: **CT23XC410 – Omnipoint/Thompson**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **720 Thompson Road, Thompson, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 850 MHz Band is approximately 567 $\mu W/cm^2$. The general population exposure limit for the 1900 MHz (PCS) and 2500 MHz (BRS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed SPRINT Wireless antenna facility located at **720 Thompson Road, Thompson, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

1) 1 CDMA channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

2) 2 LTE channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 50 Watts per Channel.

3) 5 CDMA channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 16 Watts per Channel.

4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

5) 8 LTE channels (2500 MHz (BRS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

7) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antennas used in this modeling are the **Commscope NNVV-65B-R4 and the RFS APXVTM14-ALU-I20** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antenna mounting height centerlines of the proposed panel antennas are **150 feet** above ground level (AGL) for **Sector A**, **150 feet** above ground level (AGL) for **Sector B** and **150 feet** above ground level (AGL) for Sector C.

10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculations were done with respect to uncontrolled / general population threshold limits.

SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4
Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd
Height (AGL):	**150 feet**	Height (AGL):	**150 feet**	Height (AGL):	**150 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts
ERP (W):	7,378.61	ERP (W):	7,378.61	ERP (W):	7,378.61
Antenna A1 MPE%	**1.58 %**	Antenna B1 MPE%	**1.58 %**	Antenna C1 MPE%	**1.58 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVTM14-ALU-I20	Make / Model:	RFS APXVTM14-ALU-I20	Make / Model:	RFS APXVTM14-ALU-I20
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	**150 feet**	Height (AGL):	**150 feet**	Height (AGL):	**150 feet**
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	6,224.72	ERP (W):	6,224.72	ERP (W):	6,224.72
Antenna A2 MPE%	**1.08 %**	Antenna B2 MPE%	**1.08 %**	Antenna C2 MPE%	**1.08 %**

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Max per sector	**2.66 %**
Nextel	0.38 %
Omnipoint	0.06 %
T-Mobile	2.15 %
Site Total MPE %:	**5.25 %**

SPRINT Sector A Total:	2.66 %
SPRINT Sector B Total:	2.66 %
SPRINT Sector C Total:	2.66 %
Site Total:	5.25 %

SPRINT _ Frequency Band / Technology (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	376.73	150	0.65	850 MHz	567	0.12%
Sprint 850 MHz LTE	2	941.82	150	3.27	850 MHz	567	0.58%
Sprint 1900 MHz (PCS) CDMA	5	511.82	150	4.44	1900 MHz (PCS)	1000	0.44%
Sprint 1900 MHz (PCS) LTE	2	1,279.56	150	4.44	1900 MHz (PCS)	1000	0.44%
Sprint 2500 MHz (BRS) LTE	8	778.09	150	10.79	2500 MHz (BRS)	1000	1.08%
						Total:	**2.66%**

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the SPRINT facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

SPRINT Sector	Power Density Value (%)
Sector A:	2.66 %
Sector B:	2.66 %
Sector C:	2.66 %
SPRINT Maximum MPE % (per sector):	2.66 %
Site Total:	5.25 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **5.25 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

Sprint

CROWN CASTLE

PROJECT:	MIMO REDESIGN
SITE NAME:	OMNIPOINT/THOMPSON
SITE CASCADE:	CT23XC410
SITE NUMBER:	828402
SITE ADDRESS:	720 THOMPSON ROAD THOMPSON, CT 06277
SITE TYPE:	MONOPOLE TOWER
MARKET:	NORTHERN CONNECTICUT

SITE INFORMATION

TOWER OWNER:
CROWN ATLANTIC COMPANY LLC
2000 CORPORATE DRIVE
CANONSBURG, PA 15317
(704) 405-6555

LATITUDE (NAD83):
41° 58' 39.74" N
41.97774°

LONGITUDE (NAD83):
-71° 50' 47.55" W
-71.84654°

COUNTY:
WINDHAM

ZONING JURISDICTION:
CONNECTICUT SITTING COUNCIL

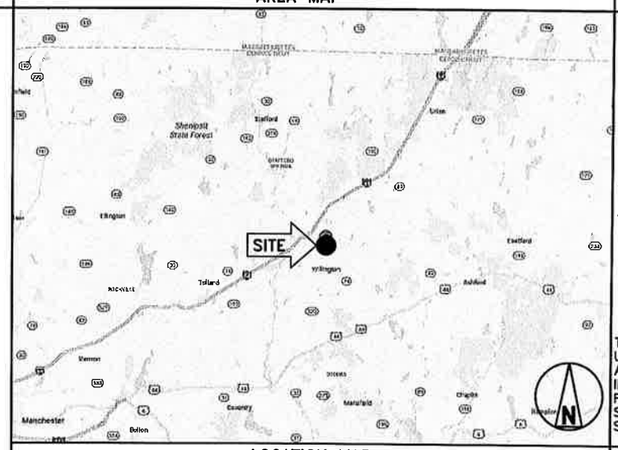
ZONING DISTRICT:
N/A

POWER COMPANY:
CONNECTICUT LINE & POWER
(800) 286-2000

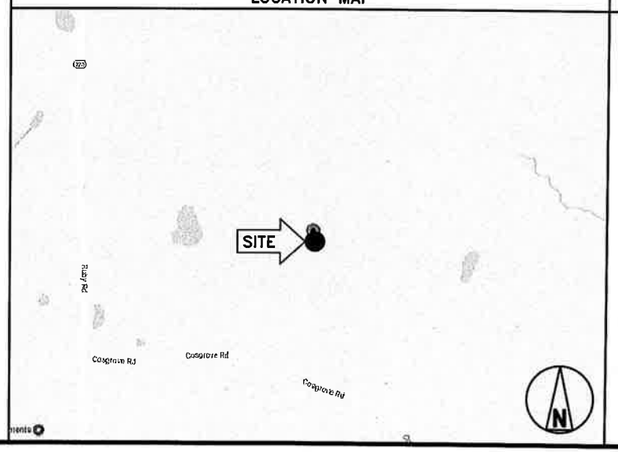
SPRINT CONSTRUCTION:
TBD

CROWN PM:
SCOTT WIATROSKI
(201) 236-9228

AREA MAP



LOCATION MAP



PROJECT DESCRIPTION

SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

- INSTALL 2.5 EQUIPMENT INSIDE EXISTING N.V. MMBS CABINET
- INSTALL (6) PANEL ANTENNAS (3 800/1900, 3 2500)
- REMOVE (3) PANEL ANTENNAS
- INSTALL (12) RRH'S TO TOWER (6 800, 3 1900, 3 2500)
- INSTALL (4) HYBRID CABLES
- REMOVE (4) COAX CABLE

THESE PLANS HAVE BEEN DEVELOPED FOR THE MODIFICATION OF AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY OWNED OR LEASED BY SPRINT IN ACCORDANCE WITH THE SCOPE OF WORK PROVIDED BY SPRINT. INFINIGY HAS INCORPORATED THIS SCOPE OF WORK IN THE PLANS. THESE PLANS ARE NOT FOR CONSTRUCTION UNLESS ACCOMPANIED BY A PASSING STRUCTURAL STABILITY ANALYSIS PREPARED BY A LICENSED STRUCTURAL ENGINEER. STRUCTURAL ANALYSIS MUST INCLUDE BOTH STRUCTURE AND MOUNT.

APPLICABLE CODES

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALL 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.

1. INTERNATIONAL BUILDING CODE (2015 IBC)
2. TIA-222-G OR LATEST EDITION
3. NFPA 780 – LIGHTNING PROTECTION CODE
4. 2011 NATIONAL ELECTRIC CODE OR LATEST EDITION
5. ANY OTHER NATIONAL OR LOCAL APPLICABLE CODES, MOST RECENT EDITIONS
6. LOCAL BUILDING CODE
7. CITY/COUNTY ORDINANCES

811 Know what's below. Call before you dig. www.call811.com

DRAWING INDEX

SHEET NO.	SHEET TITLE	REV.
T-1	TITLE SHEET & PROJECT DATA	0
SP-1	SPRINT SPECIFICATIONS	0
SP-2	SPRINT SPECIFICATIONS	0
SP-3	SPRINT SPECIFICATIONS	0
A-1	SITE PLAN	0
A-2	TOWER ELEVATION & CABLE PLAN	0
A-3	ANTENNA LAYOUT & MOUNTING DETAILS	0
A-4	EQUIPMENT & MOUNTING DETAILS	0
A-5	CIVIL DETAILS	0
A-6	PLUMBING DIAGRAM	0
E-1	ELECTRICAL & GROUNDING DETAILS	0
E-2	ELECTRICAL & GROUNDING DETAILS	0

PLANS PREPARED FOR:
Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:
INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526-103

MLA PARTNER:
CROWN CASTLE

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
JAN 08 2019
LICENSED PROFESSIONAL ENGINEER

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	01/08/19	SL	0
ISSUED FOR REVIEW	06/28/18	SL	A

SITE NAME:
OMNIPOINT/THOMPSON

SITE CASCADE:
CT23XC410

SITE ADDRESS:
720 THOMPSON ROAD
THOMPSON, CT 06277

SHEET DESCRIPTION:
TITLE SHEET
& PROJECT DATA

SHEET NUMBER:
T-1

THESE OUTLINE SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT STANDARD CONSTRUCTION SPECIFICATIONS, INCLUDING CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

SECTION 01 100 – SCOPE OF WORK

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT CONSTRUCTION STANDARDS FOR WIRELESS SITES, CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

1.3 PRECEDENCE: SHOULD CONFLICTS OCCUR BETWEEN THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES INCLUDING THE STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE CONSTRUCTION DRAWINGS, INFORMATION ON THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE. NOTIFY SPRINT CONSTRUCTION MANAGER IF THIS OCCURS.

1.4 NATIONALLY RECOGNIZED CODES AND STANDARDS:

A. THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL AND LOCAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:

1. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
5. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
3. GR-1089 CORE, ELECTROMAGNETIC COMPATIBILITY AND ELECTRICAL SAFETY –GENERIC CRITERIA FOR NETWORK TELECOMMUNICATIONS EQUIPMENT.
4. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE – "NEC") AND NFPA 101 (LIFE SAFETY CODE).
5. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM)
6. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE)
7. AMERICAN CONCRETE INSTITUTE (ACI)
8. AMERICAN WIRE PRODUCERS ASSOCIATION (AWPA)
9. CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
10. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
11. PORTLAND CEMENT ASSOCIATION (PCA)
12. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)
13. BRICK INDUSTRY ASSOCIATION (BIA)
14. AMERICAN WELDING SOCIETY (AWS)
15. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)
16. SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
17. DOOR AND HARDWARE INSTITUTE (DHI)
18. OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
19. APPLICABLE BUILDING CODES INCLUDING UNIFORM BUILDING CODE, SOUTHERN BUILDING CODE, BOCA, AND THE INTERNATIONAL BUILDING CODE.

1.5 DEFINITIONS:

A. WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.

B. COMPANY: SPRINT CORPORATION

C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.

D. CONTRACTOR: CONSTRUCTION CONTRACTOR; CONSTRUCTION VENDOR; INDIVIDUAL OR ENTITY WHO AFTER EXECUTION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WORK.

E. THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE COMPANY, A&E, OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK.

F. OFCI: OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT.

G. CONSTRUCTION MANAGER – ALL PROJECTS RELATED COMMUNICATION TO FLOW THROUGH SPRINT REPRESENTATIVE IN CHARGE OF PROJECT...

1.6 SITE FAMILIARITY: CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE SPRINT CONSTRUCTION MANAGER PRIOR TO THE COMMENCEMENT OF WORK. NO COMPENSATION WILL BE AWARDED BASED ON CLAIM OF LACK OF KNOWLEDGE OR FIELD CONDITIONS.

1.7 POINT OF CONTACT: COMMUNICATION BETWEEN SPRINT AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE SPRINT CONSTRUCTION MANAGER APPOINTED TO MANAGE THE PROJECT FOR SPRINT.

1.8 ON-SITE SUPERVISION: THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL EMPLOY A COMPETENT SUPERINTENDENT WHO SHALL BE IN ATTENDANCE AT THE SITE AT ALL TIMES DURING PERFORMANCE OF THE WORK.

1.9 DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE: THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS, STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.

A. THE JOBSITE DRAWINGS, SPECIFICATIONS AND DETAILS SHALL BE CLEARLY MARKED DAILY IN RED PENCIL WITH ANY CHANGES IN CONSTRUCTION OVER WHAT IS DEPICTED IN THE DOCUMENTS. AT CONSTRUCTION COMPLETION, THIS JOBSITE MARKUP SET SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED REPRESENTATIVE TO BE FORWARDED TO THE COMPANY'S A&E VENDOR FOR PRODUCTION OF "AS-BUILT" DRAWINGS.

B. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK. CONTRACTOR SHALL NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY VARIATIONS PRIOR TO PROCEEDING WITH THE WORK.

C. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS NOTED OTHERWISE. SPACING BETWEEN EQUIPMENT IS THE REQUIRED CLEARANCE. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE SPRINT CONSTRUCTION MANAGER PRIOR TO PROCEEDING WITH THE WORK.

1.10 USE OF JOB SITE: THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION AND RELATED OPERATIONS INCLUDING STAGING AND STORAGE OF MATERIALS AND EQUIPMENT, PARKING, TEMPORARY FACILITIES, AND WASTE STORAGE TO THE LEASE PARCEL UNLESS OTHERWISE PERMITTED BY THE CONTRACT DOCUMENTS.

1.11 UTILITIES SERVICES: WHERE NECESSARY TO CUT EXISTING PIPES, ELECTRICAL WIRES, CONDUITS, CABLES, ETC., OF UTILITY SERVICES, OR OF FIRE PROTECTION OR COMMUNICATIONS SYSTEMS, THEY SHALL BE CUT AND CAPPED AT SUITABLE PLACES OR WHERE SHOWN. ALL SUCH ACTIONS SHALL BE COORDINATED WITH THE UTILITY COMPANY INVOLVED:

1.12 PERMITS / FEES: WHEN REQUIRED THAT A PERMIT OR CONNECTION FEE BE PAID TO A PUBLIC UTILITY PROVIDER FOR NEW SERVICE TO THE CONSTRUCTION PROJECT, PAYMENT OF SUCH FEE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

1.13 CONTRACTOR SHALL TAKE ALL MEASURES AND PROVIDE ALL MATERIAL NECESSARY FOR PROTECTING EXISTING EQUIPMENT AND PROPERTY.

1.14 METHODS OF PROCEDURE (MOPS) FOR CONSTRUCTION: CONTRACTOR SHALL PERFORM WORK AS DESCRIBED IN THE FOLLOWING INSTALLATION AND COMMISSIONING MOPS.

NOTE: IN SHORT-FORM SPECIFICATIONS ON THE DRAWINGS, A/E TO INSERT LIST OF APPLICABLE MOPS INCLUDING EN-2012-001, EN-2013-002, EL-0568, AND TS-0193

1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 TEMPORARY UTILITIES AND FACILITIES: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY UTILITIES AND FACILITIES NECESSARY EXCEPT AS OTHERWISE INDICATED IN THE CONSTRUCTION DOCUMENTS. TEMPORARY UTILITIES AND FACILITIES INCLUDE POTABLE WATER, HEAT, HVAC, ELECTRICITY, SANITARY FACILITIES, WASTE DISPOSAL FACILITIES, AND TELEPHONE/COMMUNICATION SERVICES. PROVIDE TEMPORARY UTILITIES AND FACILITIES IN ACCORDANCE WITH OSHA AND THE AUTHORITY HAVING JURISDICTION. CONTRACTOR MAY UTILIZE THE COMPANY ELECTRICAL SERVICE IN THE COMPLETION OF THE WORK WHEN IT BECOMES AVAILABLE. USE OF THE LESSORS OR SITE OWNER'S UTILITIES OR FACILITIES IS EXPRESSLY FORBIDDEN EXCEPT AS OTHERWISE ALLOWED IN THE CONTRACT DOCUMENTS.

3.2 ACCESS TO WORK: THE CONTRACTOR SHALL PROVIDE ACCESS TO THE JOB SITE FOR AUTHORIZED COMPANY PERSONNEL AND AUTHORIZED REPRESENTATIVES OF THE ARCHITECT/ENGINEER DURING ALL PHASES OF THE WORK.

3.3 TESTING: REQUIREMENTS FOR TESTING BY THIS CONTRACTOR SHALL BE AS INDICATED HEREWITH, ON THE CONSTRUCTION DRAWINGS, AND IN THE INDIVIDUAL SECTIONS OF THESE SPECIFICATIONS. SHOULD COMPANY CHOOSE TO ENGAGE ANY THIRD-PARTY TO CONDUCT ADDITIONAL TESTING, THE CONTRACTOR SHALL COOPERATE WITH AND PROVIDE A WORK AREA FOR COMPANY'S TEST AGENCY.

3.4 DIMENSIONS: VERIFY DIMENSIONS INDICATED ON DRAWINGS WITH FIELD DIMENSIONS BEFORE FABRICATION OR ORDERING OF MATERIALS. DO NOT SCALE DRAWINGS.

3.5 EXISTING CONDITIONS: NOTIFY THE SPRINT CONSTRUCTION MANAGER OF EXISTING CONDITIONS DIFFERING FROM THOSE INDICATED ON THE DRAWINGS. DO NOT REMOVE OR ALTER STRUCTURAL COMPONENTS WITHOUT PRIOR WRITTEN APPROVAL FROM THE ARCHITECT AND ENGINEER.

SECTION 01 200 – COMPANY FURNISHED MATERIAL AND EQUIPMENT

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 RECEIPT OF MATERIAL AND EQUIPMENT:

A. A COMPANY FURNISHED MATERIAL AND EQUIPMENT IS IDENTIFIED ON THE RF DATA SHEET IN THE CONSTRUCTION DOCUMENTS.

B. THE CONTRACTOR IS RESPONSIBLE FOR SPRINT PROVIDED MATERIAL AND EQUIPMENT AND UPON RECEIPT SHALL:

1 ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.
2. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.
3. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.
4. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO SPRINT OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.
5. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.
6. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.

3.2 DELIVERABLES:

A. COMPLETE SHIPPING AND RECEIPT DOCUMENTATION IN ACCORDANCE WITH COMPANY PRACTICE.

B. IF APPLICABLE, COMPLETE LOST/STOLEN/DAMAGED DOCUMENTATION REPORT AS NECESSARY IN ACCORDANCE WITH COMPANY PRACTICE, AND AS DIRECTED BY COMPANY.

C. UPLOAD DOCUMENTATION INTO SPRINT SITE MANAGEMENT SYSTEM (SMS) AND/OR PROVIDE HARD COPY DOCUMENTATION AS REQUESTED.

SECTION 01 300 – CELL SITE CONSTRUCTION CO.

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

1.3 NOTICE TO PROCEED

A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED AND THE ISSUANCE OF THE WORK ORDER.

B. UPON RECEIVING NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK NECESSARY TO PROVIDE SPRINT WITH AN OPERATIONAL WIRELESS FACILITY.

TOWER OWNER NOTIFICATION
ONCE THE CONTRACTOR HAS RECEIVED AND ACCEPTED THE NOTICE TO PROCEED, CONTRACTOR WILL CONTACT THE CROWN CASTLE CONSTRUCTION MANAGER OF RECORD (NOTED ON THE FIRST PAGE ON THIS CONSTRUCTION DRAWING) A MINIMUM OF 48 HOURS PRIOR TO WORK START. UPON ARRIVAL TO THE JOB SITE, CONTRACTOR CREW IS REQUIRED CALL 1-800-788-7011 TO NOTIFY THE CROWN CASTLE NOC WORK HAS BEGUN.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 FUNCTIONAL REQUIREMENTS:

A. THE ACTIVITIES DESCRIBED IN THIS PARAGRAPH REPRESENT MINIMUM ACTIONS AND PROCESSES REQUIRED TO SUCCESSFULLY COMPLETE THE WORK. THE ACTIVITIES DESCRIBED ARE NOT EXHAUSTIVE, AND CONTRACTOR SHALL TAKE ANY AND ALL ACTIONS AS NECESSARY TO SUCCESSFULLY COMPLETE THE CONSTRUCTION OF A FULLY FUNCTIONING WIRELESS FACILITY AT THE SITE IN ACCORDANCE WITH COMPANY PROCESSES.

B. SUBMIT SPECIFIC DOCUMENTATION AS INDICATED HEREIN, AND OBTAIN REQUIRED APPROVALS WHILE THE WORK IS BEING PERFORMED.

C. MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES

D. PROVIDE CONSTRUCTION ACTIVITIES TO THE EXTENT REQUIRED BY THE CONTRACT DOCUMENTS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

PLANS PREPARED FOR:
Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:
INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526-103

MLA PARTNER:
CROWN CASTLE

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
LICENSED PROFESSIONAL ENGINEER
JAN 08 2019

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	01/08/19	SL	0
ISSUED FOR REVIEW	06/28/18	SL	A

SITE NAME:
OMNIPOINT/THOMPSON

SITE CASCADE:
CT23XC410

SITE ADDRESS:
720 THOMPSON ROAD
THOMPSON, CT 06277

SHEET DESCRIPTION:
SPRINT SPECIFICATIONS

SHEET NUMBER:
SP-1

CONTINUE FROM SP-1

1. PERFORM ANY REQUIRED SITE ENVIRONMENTAL MITIGATION.
2. PREPARE GROUND SITES; PROVIDE DE-GRUBBING; AND ROUGH AND FINAL GRADING, AND COMPOUND SURFACE TREATMENTS.
3. MANAGE AND CONDUCT ALL ACTIVITIES FOR INSTALLATION OF UTILITIES INCLUDING ELECTRICAL AND TELCO BACKHAUL.
4. INSTALL UNDERGROUND FACILITIES INCLUDING UNDERGROUND POWER AND COMMUNICATIONS CONDUITS, AND UNDERGROUND GROUNDING SYSTEM.
5. INSTALL ABOVE GROUND GROUNDING SYSTEMS.
6. PROVIDE NEW HVAC INSTALLATIONS AND MODIFICATIONS.
7. INSTALL "H-FRAMES", CABINETS AND SHELTERS AS INDICATED.
8. INSTALL ROADS, ACCESS WAYS, CURBS AND DRAINS AS INDICATED.
9. ACCOMPLISH REQUIRED MODIFICATION OF EXISTING FACILITIES.
10. PROVIDE ANTENNA SUPPORT STRUCTURE FOUNDATIONS.
11. PROVIDE SLABS AND EQUIPMENT PLATFORMS.
12. INSTALL COMPOUND FENCING, SIGHT SHIELDING, LANDSCAPING AND ACCESS BARRIERS.
13. PERFORM INSPECTION AND MATERIAL TESTING AS REQUIRED HEREINAFTER.
14. CONDUCT SITE RESISTANCE TO EARTH TESTING AS REQUIRED HEREINAFTER
15. INSTALL FIXED GENERATOR SETS AND OTHER STANDBY POWER SOLUTIONS.
16. INSTALL TOWERS, ANTENNA SUPPORT STRUCTURES AND PLATFORMS ON EXISTING TOWERS AS REQUIRED.
17. INSTALL CELL SITE RADIOS, MICROWAVE, GPS, COAXIAL MAINLINE, ANTENNAS, CROSS BAND COUPLERS, TOWER TOP AMPLIFIERS, LOW NOISE AMPLIFIERS AND RELATED EQUIPMENT.
18. PERFORM, DOCUMENT, AND CLOSE OUT ANY CONSTRUCTION CONTROL DOCUMENTS THAT MAY BE REQUIRED BY GOVERNMENT AGENCIES AND LANDLORDS.
19. PERFORM ANTENNAL AND COAX SWEEP TESTING AND MAKE ANY AND ALL NECESSARY CORRECTIONS.
20. REMAIN ON SITE MOBILIZED THROUGHOUT HAND-OFF AND INTEGRATION TO ASSIST AS NEEDED UNTIL SITE IS DEEMED SUBSTANTIALLY COMPLETE AND PLACED "ON AIR."

3.2 GENERAL REQUIREMENTS FOR CIVIL CONSTRUCTION:

A. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.

B. EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.

C. CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.

1. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
2. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.

D. CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LIMITS. SHOULD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTOR'S ACTIVITIES, CONTRACTOR SHALL IMMEDIATELY RETURN THEM TO ORIGINAL CONDITION

E. CONDUCT TESTING AS REQUIRED HEREIN.

3.3 DELIVERABLES:

A. CONTRACTOR SHALL REVIEW, APPROVE, AND SUBMIT TO SPRINT SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND SIMILAR SUBMITTALS AS REQUIRED HEREINAFTER

B. PROVIDE DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING. DOCUMENTATION SHALL BE FORWARDED IN ORIGINAL FORMAT AND/OR UPLOADED INTO SMS.

1. ALL CORRESPONDENCE AND PRELIMINARY CONSTRUCTION REPORTS.
2. PROJECT PROGRESS REPORTS.
3. CIVIL CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
4. ELECTRICAL SERVICE COMPLETION DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
5. LINES AND ANTENNA INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
6. POWER INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
7. TELCO READY DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
8. PPC (OR SHELTER) INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
9. TOWER CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
10. TOWER CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
11. BTS AND RADIO EQUIPMENT DELIVERED AT SITE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
12. NETWORK OPERATIONS HANDOFF CHECKLIST (HOC WALK) COMPLETE (UPLOAD FORM IN SMS)
13. CIVIL CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
14. SITE CONSTRUCTION PROGRESS PHOTOS UNLOADED INTO SMS.

SECTION 01 400 - SUBMITTALS & TESTS

PART 1 - GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

1.3 SUBMITTALS:

A. THE WORK IN ALL ASPECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS.

B. SUBMIT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL.

1. CONCRETE MIX-DESIGNS FOR TOWER FOUNDATIONS, ANCHORS PIERS, AND CONCRETE PAVING.
2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.
3. SPECIAL FINISHES FOR INTERIOR SPACES, IF ANY.
4. ALL EQUIPMENT AND MATERIALS SO IDENTIFIED ON THE CONSTRUCTION DRAWINGS.
5. CHEMICAL GROUNDING DESIGN

D. ALTERNATES: AT THE COMPANY'S REQUEST, ANY ALTERNATIVES TO THE MATERIALS OR METHODS SPECIFIED SHALL BE SUBMITTED TO SPRINT'S CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO BEING SHIPPED TO SITE. SPRINT WILL REVIEW AND APPROVE ONLY THOSE REQUESTS MADE IN WRITING. NO VERBAL APPROVALS WILL BE CONSIDERED. SUBMITTAL FOR APPROVAL SHALL INCLUDE A STATEMENT OF COST REDUCTION PROPOSED FOR USE OF ALTERNATE PRODUCT.

1.4 TESTS AND INSPECTIONS:

A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.

B. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1. COAX SWEEPS AND FIBER TESTS PER CURRENT VERSION OF SPRINT'S TS-0200 ANTENNA LINE ACCEPTANCE STANDARDS.
2. AGL, AZIMUTH AND DOWNTILT USING ELECTRONIC COMMERCIAL MADE-FOR-THE-PURPOSE ANTENNA ALIGNMENT TOOL.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.

C. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING;

1. AZIMUTH, DOWNTILT, AGL - UPLOAD REPORT FROM ANTENNA ALIGNMENT TOOL TO SITERRA TASK 465. INSTALLED AZIMUTH, DOWNTILT, AND AGL MUST CONFORM TO THE RF DATA SHEETS. SWEEP AND FIBER TESTS
2. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
3. ALL AVAILABLE JURISDICTIONAL INFORMATION
4. PDF SCAN OF REDLINES PRODUCED IN FIELD
5. ELECTRONIC AS-BUILT DRAWINGS IN AUTOCAD AND PDF FORMATS. ANY FIELD CHANGE MUST BE REFLECTED BY MODIFYING THE PLANS, ELEVATIONS, AND DETAILS IN THE DRAWING SETS. GENERAL NOTES INDICATING MODIFICATIONS WILL NOT BE ACCEPTED. CHANGES SHALL BE HIGHLIGHTED AS "CLOUDS" IDENTIFIED AS THE "AS-BUILT" CONDITION.
6. LIEN WAIVERS
7. FINAL PAYMENT APPLICATION
8. REQUIRED FINAL CONSTRUCTION PHOTOS
9. CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFICIENT ITEMS
10. ALL POST NTP TASKS INCLUDING DOCUMENT UPLOADS COMPLETED IN SITERRA (SPRINTS DOCUMENT REPOSITORY OF RECORD).

1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPs

1.6 INTEGRATION: PERFORM ALL INTEGRATION ACTIVITIES AS REQUIRED BY APPLICABLE MOPs

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 REQUIREMENTS FOR TESTING:

A. THIRD PARTY TESTING AGENCY:

1. WHEN THE USE OF A THIRD PARTY INDEPENDENT TESTING AGENCY IS REQUIRED, THE AGENCY THAT IS SELECTED MUST PERFORM SUCH WORK ON A REGULAR BASIS IN THE STATE WHERE THE PROJECT IS LOCATED AND HAVE A THOROUGH UNDERSTANDING OF LOCAL AVAILABLE MATERIALS, INCLUDING THE SOIL, ROCK, AND GROUNDWATER CONDITIONS.
2. THE THIRD PARTY TESTING AGENCY IS TO BE FAMILIAR WITH THE APPLICABLE REQUIREMENTS FOR THE TESTS TO BE DONE, EQUIPMENT TO BE USED, AND ASSOCIATED HEALTH AND SAFETY ISSUES.
3. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASJTO, AND OTHER METHODS IS NEEDED.
4. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASJTO, AND OTHER METHODS IS NEEDED.

3.2 REQUIRED TESTS:

A. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1. CONCRETE CYLINDER BREAK TESTS FOR THE TOWER AND ANCHOR FOUNDATIONS AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
2. ASPHALT ROADWAY COMPACTED THICKNESS, SURFACE SMOOTHNESS, AND COMPACTED DENSITY TESTING AS SPECIFIED IN SECTION: HOT MIX ASPHALT PAVING.
3. FIELD QUALITY CONTROL TESTING AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
4. TESTING REQUIRED UNDER SECTION: AGGREGATE BASE FOR ACCESS ROADS, PADS AND ANCHOR LOCATIONS
5. STRUCTURAL BACKFILL COMPACTION TESTS FOR THE TOWER FOUNDATION.
6. SITE RESISTANCE TO EARTH TESTING PER EXHIBIT: CELL SITE GROUNDING SYSTEM DESIGN.
7. ANTENNA AND COAX SWEEP TESTS PER EXHIBIT: ANTENNA TRANSMISSION LINE ACCEPTANCE STANDARDS.
8. GROUNDING AT ANTENNA MASTS FOR GPS AND ANTENNAS
9. ALL OTHER TESTS REQUIRED BY COMPANY OR JURISDICTION.

3.3 REQUIRED INSPECTIONS

A. SCHEDULE INSPECTIONS WITH COMPANY REPRESENTATIVE.

B. CONDUCT INSPECTIONS INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1. GROUNDING SYSTEM INSTALLATION PRIOR TO EARTH CONCEALMENT DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
2. FORMING FOR CONCRETE AND REBAR PLACEMENT PRIOR TO POUR DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
3. COMPACTION OF BACKFILL MATERIALS; AGGREGATE BASE FOR ROADS, PADS, AND ANCHORS; ASPHALT PAVING; AND SHAFT BACKFILL FOR CONCRETE AND WOOD POLES, BY INDEPENDENT THIRD PARTY AGENCY.
4. PRE- AND POST-CONSTRUCTION ROOFTOP AND STRUCTURAL INSPECTIONS ON EXISTING FACILITIES.
5. TOWER ERECTION SECTION STACKING AND PLATFORM ATTACHMENT DOCUMENTED BY DIGITAL PHOTOGRAPHS BY THIRD PARTY AGENCY.
6. ANTENNA AZIMUTH , DOWN TILT AND PER SUNLIGHT TOOL SUNSIGHT INSTRUMENTS - ANTENNALIGN ALIGNMENT TOOL (AAT)

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526-103

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 21795
LICENSED PROFESSIONAL ENGINEER
JAN 08 2019

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	01/08/19	SL	0
ISSUED FOR REVIEW	06/28/18	SL	A

SITE NAME:

OMNIPOINT/THOMPSON

SITE CASCADE:

CT23XC410

SITE ADDRESS:

720 THOMPSON ROAD
THOMPSON, CT 06277

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-2

CONTINUE FROM SP-2

7. VERIFICATION DOCUMENTED WITH THE ANTENNA CHECKLIST REPORT, BY A&E, SITE DEVELOPMENT REP, OR RF REP.

8. FINAL INSPECTION CHECKLIST AND HANDOFF WALK (HOC.). SIGNED FORM SHOWING ACCEPTANCE BY FIELD OPS IS TO BE UPLOADED INTO SMS.

9. COAX SWEEP AND FIBER TESTING DOCUMENTS SUBMITTED VIA SMS FOR RF APPROVAL.

10. SCAN-ABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT

11. ALL AVAILABLE JURISDICTIONAL INFORMATION

12. PDF SCAN OF REDLINES PRODUCED IN FIELD

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.

D. CONSTRUCTION INSPECTIONS AND CORRECTIVE MEASURES SHALL BE DOCUMENTED BY THE CONTRACTOR WITH WRITTEN REPORTS AND PHOTOGRAPHS. PHOTOGRAPHS MUST BE DIGITAL AND OF SUFFICIENT QUALITY TO CLEARLY SHOW THE SITE CONSTRUCTION. PHOTOGRAPHS MUST CLEARLY IDENTIFY THE PHOTOGRAPHED ITEM AND BE LABELED WITH THE SITE CASCADE NUMBER, SITE NAME, DESCRIPTION, AND DATE.

3.4 DELIVERABLES: TEST AND INSPECTION REPORTS AND CLOSEOUT DOCUMENTATION SHALL BE UPLOADED TO THE SMS AND/OR FORWARDED TO SPRINT FOR INCLUSION INTO THE PERMANENT SITE FILES.

A. THE FOLLOWING TEST AND INSPECTION REPORTS SHALL BE PROVIDED AS APPLICABLE.

1. CONCRETE MIX AND CYLINDER BREAK REPORTS.
2. STRUCTURAL BACKFILL COMPACTION REPORTS.
3. SITE RESISTANCE TO EARTH TEST.
4. ANTENNA AZIMUTH AND DOWN TILT VERIFICATION
5. TOWER ERECTION INSPECTIONS AND MEASUREMENTS DOCUMENTING TOWER INSTALLED PER SUPPLIER'S REQUIREMENTS AND THE APPLICABLE SECTIONS HEREIN.
6. COAX CABLE SWEEP TESTS PER COMPANY'S "ANTENNA LINE ACCEPTANCE STANDARDS".

B. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES THE FOLLOWING;

1. TEST WELLS AND TRENCHES: PHOTOGRAPHS OF ALL TEST WELLS; PHOTOGRAPHS SHOWING ALL OPEN EXCAVATIONS AND TRENCHING PRIOR TO BACKFILLING SHOWING A TAPE MEASURE VISIBLE IN THE EXCAVATIONS INDICATING DEPTH.
2. CONDUITS, CONDUCTORS AND GROUNDING: PHOTOGRAPHS SHOWING TYPICAL INSTALLATION OF CONDUCTORS AND CONNECTORS; PHOTOGRAPHS SHOWING TYPICAL BEND RADIUS OF INSTALLED GROUND WIRES AND GROUND ROD SPACING;
3. CONCRETE FORMS AND REINFORCING: CONCRETE FORMING AT TOWER AND EQUIPMENT/SHELTER PAD/FOUNDATIONS – PHOTOGRAPHS SHOWING ALL REINFORCING STEEL, UTILITY AND CONDUIT STUB OUTS; PHOTOGRAPHS SHOWING CONCRETE POUR OF SHELTER SLAB/FOUNDATION, TOWER FOUNDATION AND GUY ANCHORS WITH VIBRATOR IN USE; PHOTOGRAPHS SHOWING EACH ANCHOR ON GUYED TOWERS, BEFORE CONCRETE POUR.
4. TOWER, ANTENNAS AND MAINLINE: INSPECTION AND PHOTOGRAPHS OF SECTION STACKING; INSPECTION AND PHOTOGRAPHS OF PLATFORM COMPONENT ATTACHMENT POINTS; PHOTOGRAPHS OF TOWER TOP GROUNDING; PHOTOS OF TOWER COAX LINE COLOR CODING AT THE TOP AND AT GROUND LEVEL; INSPECTION AND PHOTOGRAPHS OF OPERATIONAL OF TOWER LIGHTING, AND PLACEMENT OF FAA REGISTRATION SIGN; PHOTOGRAPHS SHOWING ADDITIONAL GROUNDING POINTS FOR TOWERS GREATER THAN 200 FEET.; PHOTOS OF ANTENNA GROUND BAR, EQUIPMENT GROUND BAR, AND MASTER GROUND BAR; PHOTOS OF GPS ANTENNA(S); PHOTOS OF EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA; PHOTOS OF COAX WEATHERPROOFING – TOP AND BOTTOM; PHOTOS OF COAX GROUNDING--TOP AND BOTTOM; PHOTOS OF ANTENNA AND MAST GROUNDING; PHOTOS OF COAX CABLE ENTRY INTO SHELTER; PHOTOS OF PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
5. ROOF TOPS: PRE-CONSTRUCTION AND POST-CONSTRUCTION VISUAL INSPECTION AND PHOTOGRAPHS OF THE ROOF AND INTERIOR TO DETERMINE AND DOCUMENT CONDITIONS; ROOF TOP CONSTRUCTION INSPECTIONS AS REQUIRED BY THE JURISDICTION; PHOTOGRAPHS OF CABLE TRAY AND/OR ICE BRIDGE; PHOTOGRAPHS OF DOGHOUSE/CABLE EXIT FROM ROOF;
6. SITE LAYOUT – PHOTOGRAPHS OF THE OVERALL COMPOUND, INCLUDING EQUIPMENT PLATFORM FROM ALL FOUR CORNERS.
7. FINISHED UTILITIES: CLOSE-UP PHOTOGRAPHS OF THE PPC BREAKER PANEL; CLOSE-UP PHOTOGRAPH OF THE INSIDE OF THE TELCO PANEL AND NIU; CLOSE-UP PHOTOGRAPH OF THE POWER METER AND DISCONNECT; PHOTOS OF POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE; PHOTOGRAPHS AT METER BOX AND/OR FACILITY DISTRIBUTION PANEL.
8. REQUIRED MATERIALS CERTIFICATIONS: CONCRETE MIX DESIGNS; MILL CERTIFICATION FOR ALL REINFORCING AND STRUCTURAL STEEL; AND ASPHALT PAVING MIX DESIGN.
9. ANY AND ALL SUBMITTALS BY THE JURISDICTION OR COMPANY.

SECTION 01 400 – SUBMITTALS & TESTS

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 WEEKLY REPORTS:

A. CONTRACTOR SHALL PROVIDE SPRINT WITH WEEKLY REPORTS SHOWING PROJECT STATUS. THIS STATUS REPORT FORMAT WILL BE PROVIDED TO THE CONTRACTOR BY SPRINT. THE REPORT WILL CONTAIN SITE ID NUMBER, THE MILESTONES FOR EACH SITE, INCLUDING THE BASELINE DATE, ESTIMATED COMPLETION DATE AND ACTUAL COMPLETION DATE.

B. REPORT INFORMATION WILL BE TRANSMITTED TO SPRINT VIA ELECTRONIC MEANS AS REQUIRED. THIS INFORMATION WILL PROVIDE A BASIS FOR PROGRESS MONITORING AND PAYMENT.

3.2 PROJECT CONFERENCE CALLS:

A. SPRINT MAY HOLD WEEKLY PROJECT CONFERENCE CALLS. CONTRACTOR WILL BE REQUIRED TO COMMUNICATE SITE STATUS, MILESTONE COMPLETIONS AND UPCOMING MILESTONE PROJECTIONS, AND ANSWER ANY OTHER SITE STATUS QUESTIONS AS NECESSARY.

3.3 PROJECT TRACKING IN SMS:

A. CONTRACTOR SHALL PROVIDE SCHEDULE UPDATES AND PROJECTIONS IN THE SMS SYSTEM ON A WEEKLY BASIS.

3.4 ADDITIONAL REPORTING:

A. ADDITIONAL OR ALTERNATE REPORTING REQUIREMENTS MAY BE ADDED TO THE REPORT AS DETERMINED TO BE REASONABLY NECESSARY BY COMPANY.

3.5 PROJECT PHOTOGRAPHS:

A. FILE DIGITAL PHOTOGRAPHS OF COMPLETED SITE IN JPEG FORMAT IN THE SMS PHOTO LIBRARY FOR THE RESPECTIVE SITE. PHOTOGRAPHS SHALL BE CLEARLY LABELED WITH SITE NUMBER, NAME AND DESCRIPTION, AND SHALL INCLUDE AT A MINIMUM THE FOLLOWING AS APPLICABLE:

1. 1SHELTER AND TOWER OVERVIEW.
2. TOWER FOUNDATION(S) – FORMS AND STEEL BEFORE POUR (EACH ANCHOR ON GUYED TOWERS).
3. TOWER FOUNDATION(S) POUR WITH VIBRATOR IN USE (EACH ANCHOR ON GUYED TOWERS).
4. TOWER STEEL AS BEING INSTALLED INTO HOLE (SHOW ANCHOR STEEL ON GUYED TOWERS).
5. PHOTOS OF TOWER SECTION STACKING.
6. CONCRETE TESTING / SAMPLES.
7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.
8. BUILDING/WATER TANK FROM ROAD FOR TENANT IMPROVEMENTS OR COMMENTS.
9. SHELTER FOUNDATION---FORMS AND STEEL BEFORE POURING.
10. SHELTER FOUNDATION POUR WITH VIBRATOR IN USE.
11. COAX CABLE ENTRY INTO SHELTER.
12. PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
13. ROOFTOP PRE AND POST CONSTRUCTION PHOTOS TO INCLUDE PENETRATIONS AND INTERIOR CEILING.
14. PHOTOS OF TOWER TOP COAX LINE COLOR CODING AND COLOR CODING AT GROUND LEVEL.
15. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.
16. PHOTOS OF EQUIPMENT BOLT DOWN INSIDE SHELTER.
17. POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE AND POWER AND TELCO SUPPLY LOCATIONS INCLUDING METER/DISCONNECT.
18. ELECTRICAL TRENCH(S) WITH ELECTRICAL / CONDUIT BEFORE BACKFILL.
19. ELECTRICAL TRENCH(S) WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
20. TELCO TRENCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL.
21. TELCO TRENCH WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
22. SHELTER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
23. TOWER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
24. FENCE GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
25. ALL BTS GROUND CONNECTIONS.
26. ALL GROUND TEST WELLS.
27. ANTENNA GROUND BAR AND EQUIPMENT GROUND BAR.
28. ADDITIONAL GROUNDING POINTS ON TOWERS ABOVE 200'.
29. HVAC UNITS INCLUDING CONDENSERS ON SPLIT SYSTEMS.
30. GPS ANTENNAS.
31. CABLE TRAY AND/OR WAVEGUIDE BRIDGE.
32. DOGHOUSE/CABLE EXIT FROM ROOF.
33. EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA.
34. MASTER BUS BAR.
35. TELCO BOARD AND NIU.
36. ELECTRICAL DISTRIBUTION WALL.
37. CABLE ENTRY WITH SURGE SUPPRESSION.
38. ENTRANCE TO EQUIPMENT ROOM.
39. COAX WEATHERPROOFING-TOP AND BOTTOM OF TOWER.
40. COAX GROUNDING -TOP AND BOTTOM OF TOWER.
41. ANTENNA AND MAST GROUNDING.
42. LANDSCAPING – WHERE APPLICABLE.

3.6 FINAL PROJECT ACCEPTANCE: COMPLETE ALL REQUIRED REPORTING TASKS PER CONTRACT, CONTRACT DOCUMENTS OR THE SPRINT INTEGRATED CONSTRUCTION STANDARDS FOR WIRELESS SITES AND UPLOAD INTO SITERRA.

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526-103

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER
JAN 08 2019

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	01/08/19	SL	0
ISSUED FOR REVIEW	06/28/18	SL	A

SITE NAME:

OMNIPOINT/THOMPSON

SITE CASCADE:

CT23XC410

SITE ADDRESS:

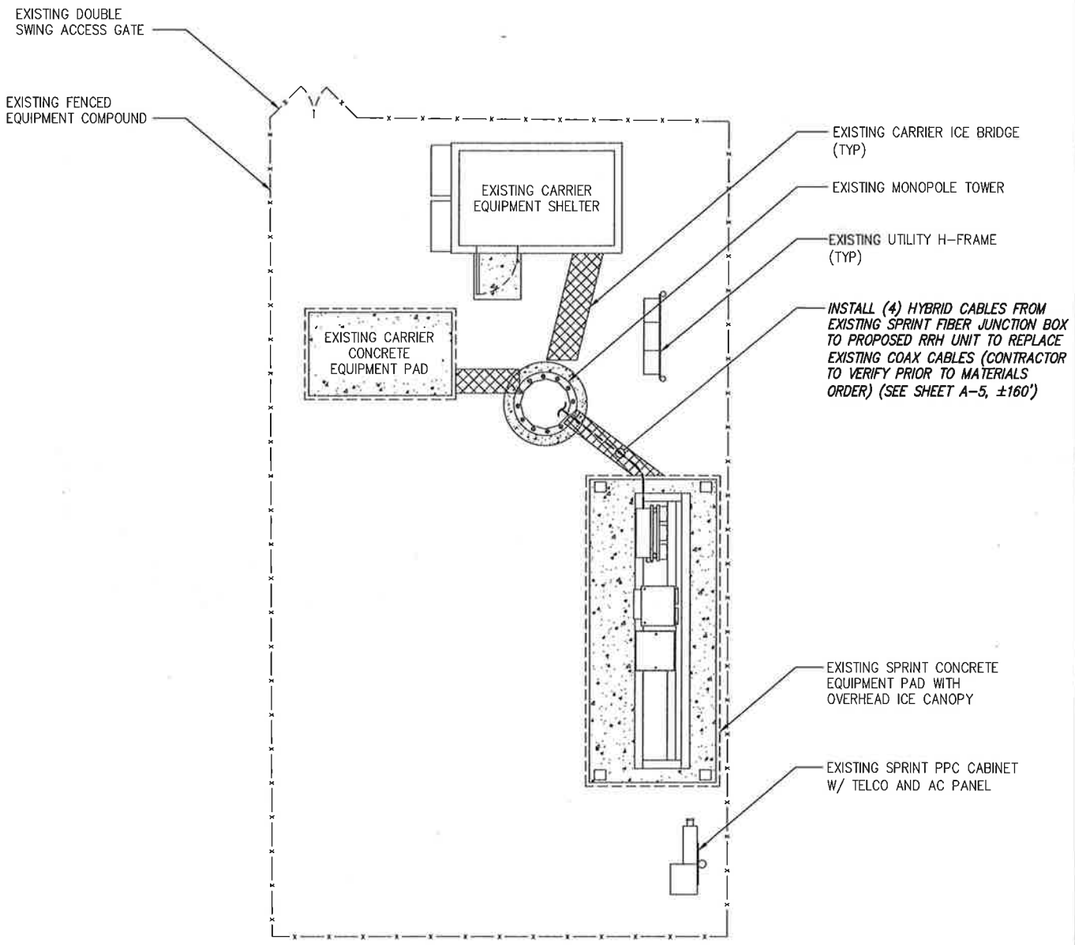
720 THOMPSON ROAD
THOMPSON, CT 06277

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-3



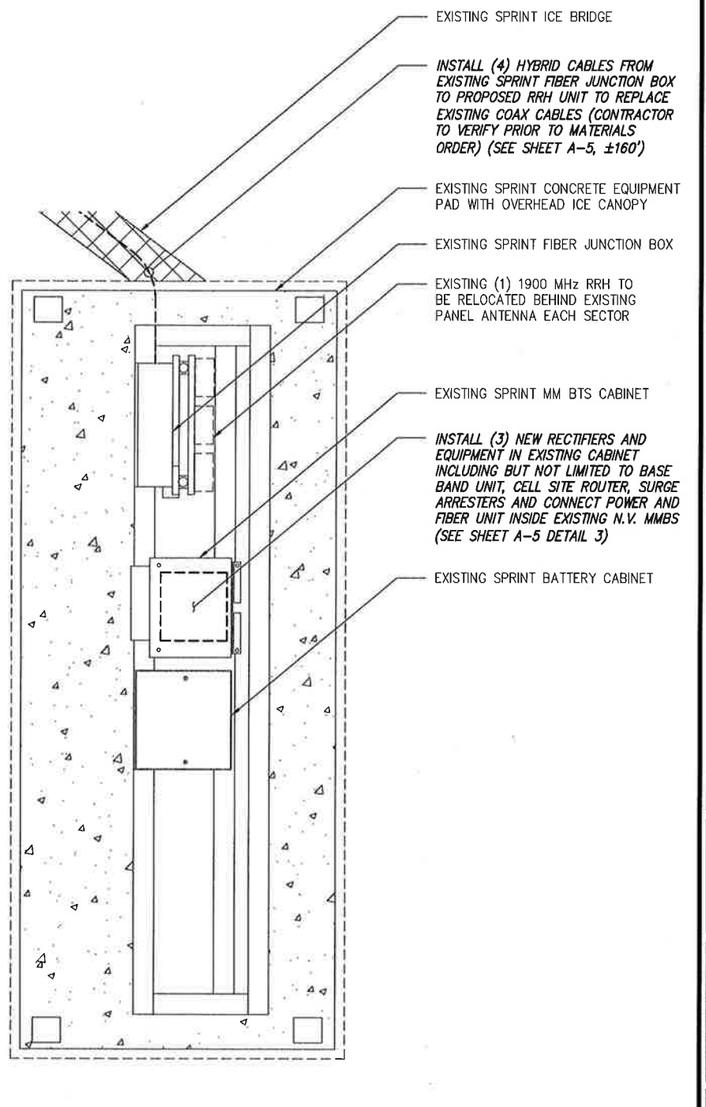
GRAPHIC SCALE:

10' 5' 0 5' 10'

SCALE (11x17): 1" = 10'-0"
SCALE (22x34): 1" = 5'-0"

INFORMATION CONTAINED WITHIN DRAWINGS ARE BASED ON PROVIDED INFORMATION AND ARE NOT THE RESULT OF A FIELD SURVEY.

OVERALL SITE PLAN | SCALE: AS NOTED | 1



GRAPHIC SCALE:

4' 2' 0 2' 4'

SCALE (11x17): 1" = 4'-0"
SCALE (22x34): 1" = 2'-0"

NOTE:
NO LIQUID TIGHT FLEXIBLE METALLIC CONDUIT IS TO EXCEED 6 FEET PER SP-2 SECTION 26 200 ITEM E.

SPRINT EQUIPMENT PLAN | SCALE: AS NOTED | 2

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526-103

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER
JAN 08 2019

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	01/08/19	SL	0
ISSUED FOR REVIEW	06/28/18	SL	A

SITE NAME:

OMNIPOINT/THOMPSON

SITE CASCADE:

CT23XC410

SITE ADDRESS:

720 THOMPSON ROAD
THOMPSON, CT 06277

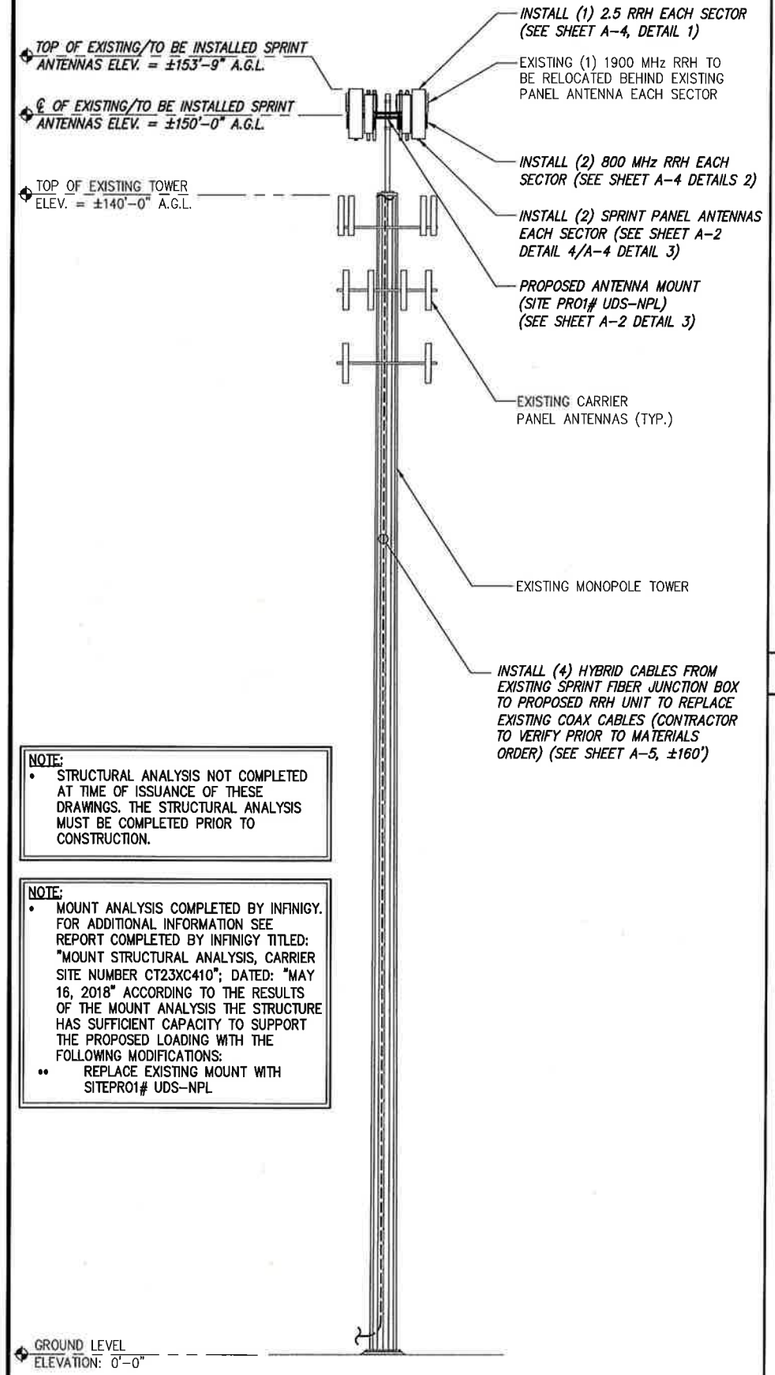
SHEET DESCRIPTION:

SITE PLAN

SHEET NUMBER:

A-1

NOTE:
SEE DETAIL 2 ON A-3 FOR ANTENNA LAYOUT



NOTE:
- STRUCTURAL ANALYSIS NOT COMPLETED AT TIME OF ISSUANCE OF THESE DRAWINGS. THE STRUCTURAL ANALYSIS MUST BE COMPLETED PRIOR TO CONSTRUCTION.

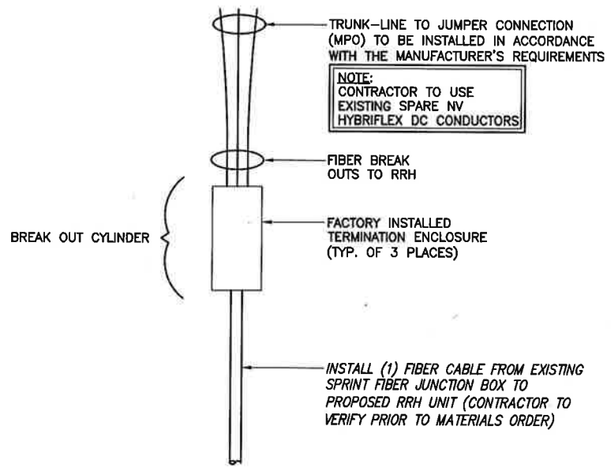
NOTE:
- MOUNT ANALYSIS COMPLETED BY INFINIGY. FOR ADDITIONAL INFORMATION SEE REPORT COMPLETED BY INFINIGY TITLED: "MOUNT STRUCTURAL ANALYSIS, CARRIER SITE NUMBER CT23XC410"; DATED: "MAY 16, 2018" ACCORDING TO THE RESULTS OF THE MOUNT ANALYSIS THE STRUCTURE HAS SUFFICIENT CAPACITY TO SUPPORT THE PROPOSED LOADING WITH THE FOLLOWING MODIFICATIONS:
  - REPLACE EXISTING MOUNT WITH SITEPRO1# UDS-NPL

TOWER ELEVATION

NO SCALE | 1

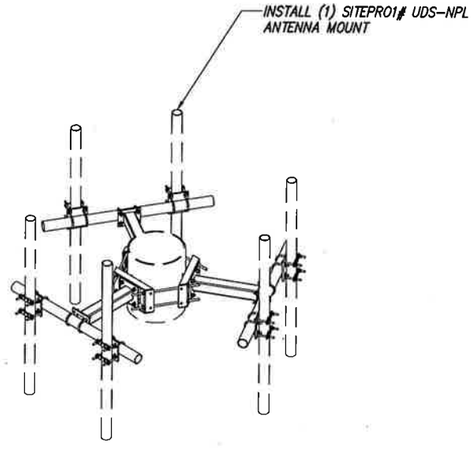
NOTE:
CONTRACTOR TO LINE UP WHITE MARKINGS ON JUMPER AND RISER IP-MPO CONNECTORS AND SLIDE THE RISER CONNECTOR TO THE JUMPER CONNECTOR. PUSH THE WHITE MARK ON THE JUMPER CONNECTOR FLUSH AGAIN THE RED SEAL ON THE RISER CONNECTOR.

CONTRACTOR TO ROTATE THE BAYONET HOUSING CLOCKWISE UNTIL YOU HEAR A CLICK SOUND TO ENSURE A PROPER CONNECTION IS IN PLACE.



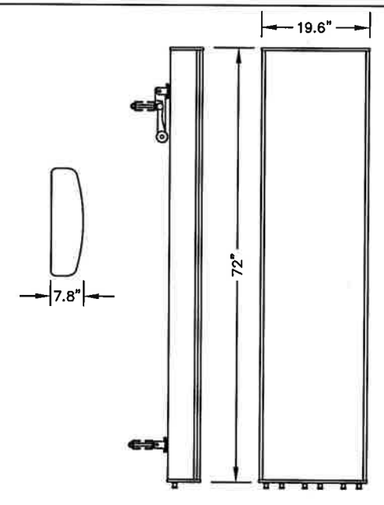
HYBRID BREAKOUT DETAIL

NO SCALE | 2



SECTOR MOUNT DETAIL

NO SCALE | 3



ANTENNA COMMSCOPE NNVV-65B-R4

RADOME MATERIAL:	FIBERGLASS
RADOME COLOR:	LIGHT GREY
DIMENSIONS, HxWxD.In(mlm):	72"x19.6"x7.8"
WEIGHT:	77.4 lbs
CONNECTORS:	(8) 4.3-10 DIN FEMALE

800/1900 ANTENNA DETAIL

NO SCALE | 4

PLANS PREPARED FOR:
Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:
INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526-103

MLA PARTNER:
CROWN CASTLE

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER
JAN 08 2019

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	01/08/19	SL	0
ISSUED FOR REVIEW	06/28/18	SL	A

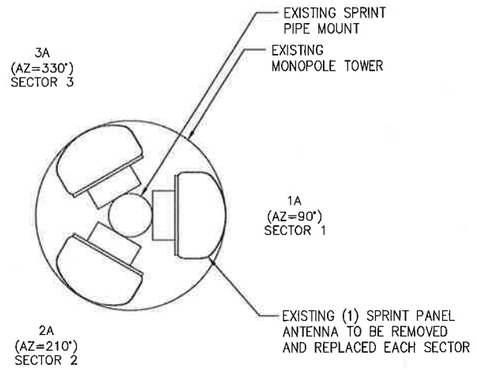
SITE NAME:
OMNIPOINT/THOMPSON

SITE CASCADE:
CT23XC410

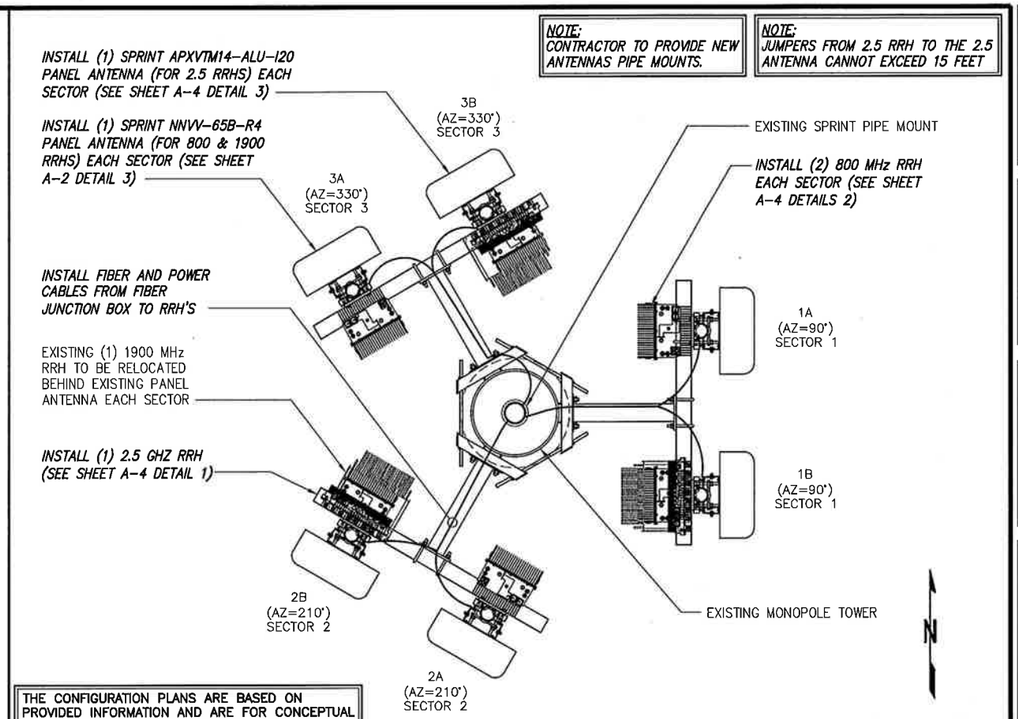
SITE ADDRESS:
720 THOMPSON ROAD
THOMPSON, CT 06277

SHEET DESCRIPTION:
TOWER ELEVATION & CABLE PLAN

SHEET NUMBER:
A-2



EXISTING ANTENNA LAYOUT | NO SCALE | 1



THE CONFIGURATION PLANS ARE BASED ON PROVIDED INFORMATION AND ARE FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR TO VERIFY FIELD CONDITIONS PRIOR TO CONSTRUCTION.

FINAL ANTENNA & RRH LAYOUT | NO SCALE | 2

NOTES:

1. ALL ANTENNA HEIGHTS ARE TO CENTER OF HORIZONTAL ANTENNA.

2. VERIFY AZIMUTH AND CL HEIGHT WITH AS-BUILT DRAWINGS IF AVAILABLE.

3. NO OBJECT IS TO BE WITHIN 45 DEGREES OF BORE-SIGHT OF 2.5G OR ANY OTHER TOWER ANTENNA. IF NECESSARY, 2.5G ANTENNA CAN BE PLACED AT FAR EDGE OF HORIZONTAL ANTENNA MOUNT MEMBER FOR CLEAR LINE OF SITE OR EVEN ON ANOTHER SECTOR FOR CLEAR LINE OF SITE.

4. 2.5G ANTENNA MUST BE AT LEAST 6" FROM 1900MHZ ANTENNA, 30" FROM 800MHZ ANTENNA AND 30MHZ FROM DUAL BAND 1900MHZ AND 800MHZ ANTENNA.

5. IF ANTENNAS ARE MOUNTED ON A FACE SURFACE SUCH AS A BUILDING WALL, PARAPET WALL, OR WATER TOWER WALL, THIS RFDS MUST BE ACCOMPANIED BY A SKETCH PROVIDED BY ITS ORIGINATING RF ENGINEER CALLING OUT THE EXACT LOCATION OF WHERE ANTENNA IS TO BE LOCATED. CONTACT SPRINT RF ENGINEER IF THE SKETCH IS MISSING.

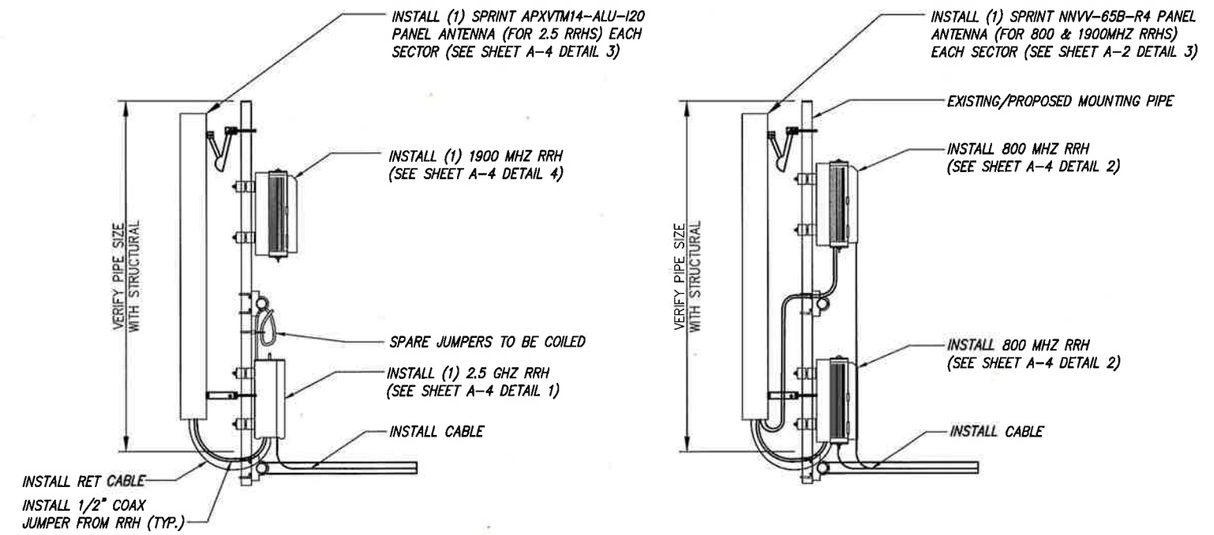
6. GENERAL CONTRACTOR TO FIELD VERIFY AZIMUTH AND CL HEIGHT AND MECHANICAL DOWNTILT. IF DIFFERENT THAN CALLED OUT BELOW, HALT ANTENNA WORK FOR ONE HOUR, CALL SPRINT RF ENGINEER (OR MANAGER IF RF ENGINEER DOES NOT ANSWER, BUT STILL LEAVE A MESSAGE TO RF ENGINEER) USING CONTACT INFORMATION ABOVE FOR FURTHER INSTRUCTIONS. IF SPRINT DOES NOT RESPOND WITHIN ONE HOUR, PLACE 2.5G ANTENNA AT SAME CL HEIGHT AS 1.9G ANTENNA AND EMAIL CORRECT CL HEIGHT AND AZIMUTH TO SPRINT RF ENGINEER. UPDATE AS-BUILD DRAWING WITH CORRECT CL HEIGHT. ALSO EMAIL CORRECT 1900 MHZ AND 800 MHZ ANTENNA CL HEIGHT, AZIMUTH AND MECHANICAL DOWNTILT TO RF ENGINEER.

7. AISG TESTS TO VERIFY OPERATION IS TO BE PERFORMED AFTER FINAL INSTALLATION OF ANTENNAS AND AISG CABLES HAVE BEEN CONNECTED. VERIFY OPERATION OF ALL EXISTING SPRINT AISG EQUIPMENT INCLUDING 800MHZ, 1.9GHZ AND 2.5G. TEST INCLUDE COMPLETE DOWNTILT, AZIMUTH (IF APPLICABLE) AND BEAMWIDTH SWINGS (IF APPLICABLE). DOCUMENT AISG TEST RESULTS IN COAX SWEEP TEST SPREADSHEET.

8. GENERAL CONTRACTOR MUST INSURE THAT NO OBJECT IS LOCATED IN FRONT OF ANTENNA. THIS MEANS NO OBJECT IS TO BE LOCATED 45 DEGREES LEFT AND RIGHT OF FRONT OF ANTENNA OR 7 DEGREES UP AND DOWN FROM CENTER OF ANTENNA. IF THIS IS NOT POSSIBLE, CONTACT RF ENGINEER FOR FURTHER INSTRUCTION. IN ADDITION, 2.5G ANTENNA IS NOT TO BE PLACED IN FRONT OF ANY OTHER ANTENNA USING THE SAME 45 DEGREE RULE. THIS INCLUDES SPRINT AND NON-SPRINT ANTENNAS.

9. GENERAL CONTRACT IS REQUIRED TO USE A DIGITAL ALIGNMENT TOOL TO SET AZIMUTH, ROLL AND DOWNTILT. AZIMUTH ACCURACY IS TO BE WITHIN 1 DEGREES. DOWNTILT AND ROLL (LEFT TO RIGHT TILT) IS TO BE WITHIN 0.1 DEGREES. IF FOR SOME REASON THIS ACCURACY CANNOT BE ACHIEVED, UPDATE AS-BUILT DRAWINGS AND EMAIL SPRINT RF ENGINEER WITH AS-BUILT SETTINGS. USE 3Z RF ALIGNMENT TOOL OR EQUIVALENT TOOL. HTTP://WWW.3ZTELECOM.COM/ANTENNA-ALIGNMENT-TOOL/

NOTES | NO SCALE | 3



NOTES:

1. CUT DC CONDUCTORS TO LENGTH.

2. COIL FIBER CABLE AND SECURE AT SIDE OF RRH.

3. DO NO EXCEED BEND RADIUS.

NOTE: CONTRACTOR TO POSITION RRH ON MOUNT BEHIND ANTENNA SUCH THAT THE RRH DOES NOT INTERFERE WITH THE EXISTING PLATFORM/T-ARM MOUNTING HARDWARE.

NOTE: SPARE DC CABLES ARE COILED UP ON NV RRHS AT SPRINT ARRAY. THESE ARE TO BE USED TO POWER UP THE 2.5 RRHS AND TIED INTO EXISTING DC BREAKERS INSIDE THE FIBER JUNCTION BOX LOCATED AT EQUIPMENT.

NOTE: THE DIAGRAM IS FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR IS TO REFER TO PASSING STRUCTURAL ANALYSIS FOR ANTENNA AND RRH MOUNTING DETAILS

TYPICAL ANTENNA & RRH MOUNTING DETAILS | NO SCALE | 4

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526-103

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24,705
LICENSED PROFESSIONAL ENGINEER
JUN 08 2019

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	01/08/19	SL	0
ISSUED FOR REVIEW	06/28/18	SL	A

SITE NAME:

OMNIPOINT/THOMPSON

SITE CASCADE:

CT23XC410

SITE ADDRESS:

720 THOMPSON ROAD
THOMPSON, CT 06277

SHEET DESCRIPTION:

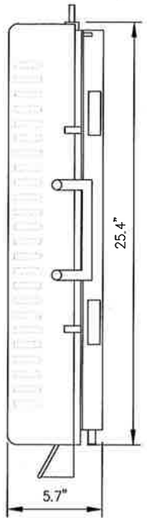
ANTENNA LAYOUT & MOUNTING DETAILS

SHEET NUMBER:

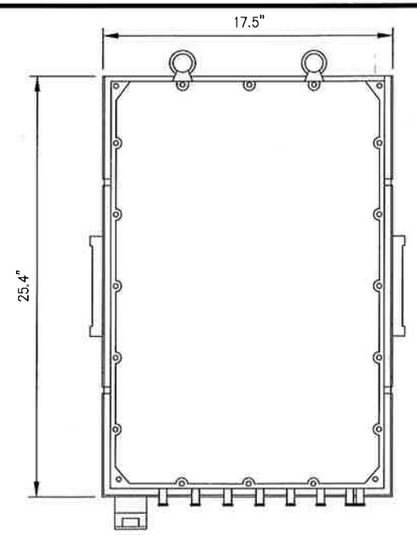
A-3

RRH: ALCATEL LUCENT TD-RRH8X20

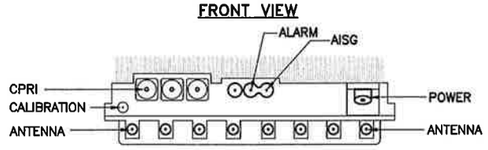
COLOR: LIGHT GREY
WEIGHT: 70 LBS.



SIDE VIEW



FRONT VIEW



PLAN VIEW

NOTES

COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRH'S RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRH PACKAGES IN THE RAIN.

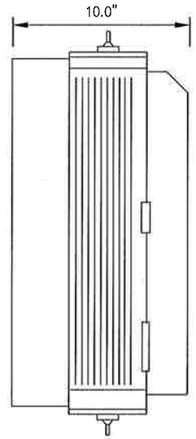
2.5 RRH'S | NO SCALE | 1

RRH: ALCATEL LUCENT RRH 800 MHz 2x50W

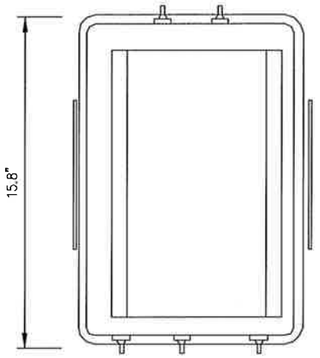
COLOR: LIGHT GREY
WEIGHT: 53 LBS.

NOTES

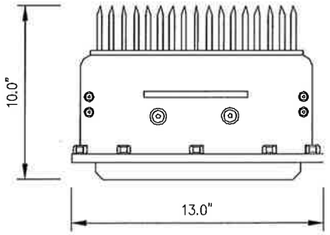
COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRH'S RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRH PACKAGES IN THE RAIN.



SIDE VIEW



FRONT VIEW

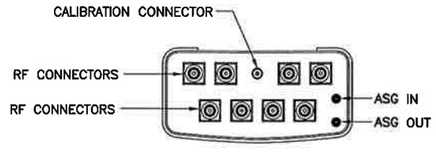


PLAN VIEW

800 MHz RRH | NO SCALE | 2

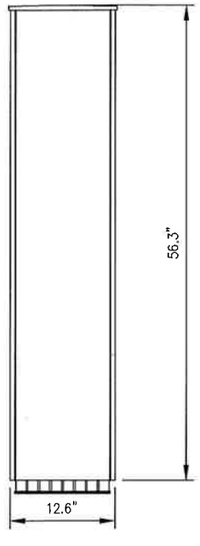
ANTENNA RFS APXVTM14-ALU-I20

RADOME MATERIAL:	ASA
RADOME COLOR:	LIGHT GREY
DIMENSIONS, HxWxD.in(mlm):	56.3"x12.6"x6.3" (1430x320x160mm)
WEIGHT:	56.2 lbs
CONNECTORS:	(8) 4.1/9.5 DIN FEMALE (1) NF – CALIBRATION CONNECTOR



PLAN VIEW

SIDE VIEW

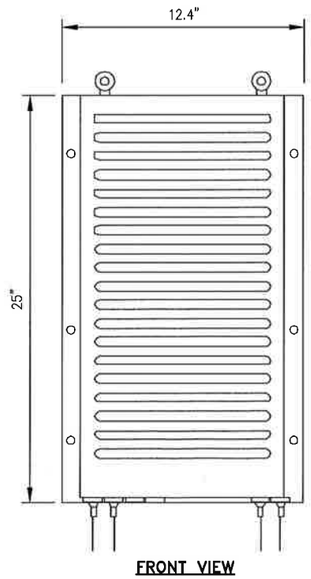


FRONT VIEW

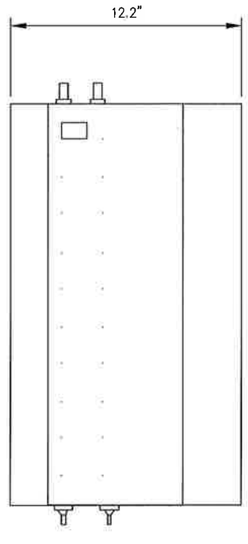
2.5 ANTENNA | NO SCALE | 3

RRH: ALCATEL LUCENT 1900 MHz

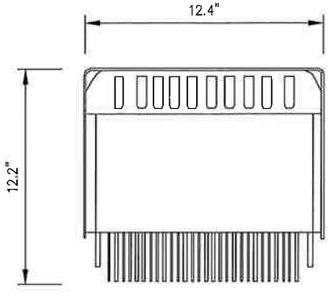
COLOR: LIGHT GREY
WEIGHT: 70 LBS.
(INCLUDING OPTIONAL SOLAR SHIELD)



FRONT VIEW



SIDE VIEW



TOP VIEW

1900 MHz RRH | NO SCALE | 4

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526-103

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER
JAN 08 2019

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	01/08/19	SL	0
ISSUED FOR REVIEW	06/28/18	SL	A

SITE NAME:

OMNIPOINT/THOMPSON

SITE CASCADE:

CT23XC410

SITE ADDRESS:

720 THOMPSON ROAD
THOMPSON, CT 06277

SHEET DESCRIPTION:

EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:

A-4

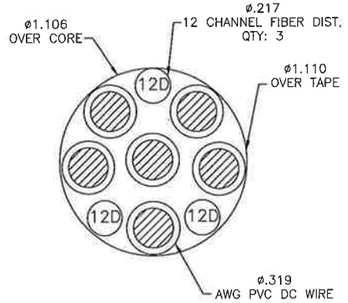
RFS HYBRIFLEX RISER CABLE SCHEDULE

Fiber Only (Existing DC Power)	**Hybrid cable** MN: HB058-M12-050F 12x multi-mode fiber pairs, Top: Outdoor protected connectors, Bottom: LC Connectors, 5/8 cable, 50 ft	50 ft
	MN: HB058-M12-075F	75 ft
	MN: HB058-M12-100F	100 ft
	MN: HB058-M12-125F	125 ft
	MN: HB058-M12-150F	150 ft
	MN: HB058-M12-175F	175 ft
	MN: HB058-M12-200F	200 ft
8 AWG Power	**Hybrid cable** MN: HB114-08U3M12-050F 3x 8 AWG power pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 50 ft	50 ft
	MN: HB114-08U3M12-075F	75 ft
	MN: HB114-08U3M12-100F	100 ft
	MN: HB114-08U3M12-125F	125 ft
	MN: HB114-08U3M12-150F	150 ft
	MN: HB114-08U3M12-175F	175 ft
	MN: HB114-08U3M12-200F	200 ft
6 AWG Power	**Hybrid cable** MN: HB114-13U3M12-225F 3x 6 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 225 ft	225 ft
	MN: HB114-13U3M12-250F	250 ft
	MN: HB114-13U3M12-275F	275 ft
	MN: HB114-13U3M12-300F	300 ft
4 AWG Power	**Hybrid cable** MN: HB114-21U3M12-325F 3x 4 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 325 ft	325 ft
	MN: HB114-21U3M12-350F	350 ft
	MN: HB114-21U3M12-375F	375 ft

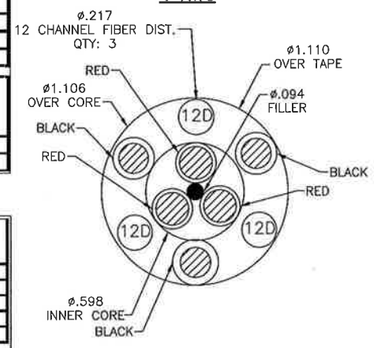
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

Fiber Only	**Hybrid Jumper cable** MN: HBF012-M3-5F1 5 ft, 3x multi-mode fiber pairs, Outdoor & LC connectors, 1/2 cable	5 ft
	MN: HBF012-M3-10F1	10 ft
	MN: HBF012-M3-15F1	15 ft
	MN: HBF012-M3-20F1	20 ft
	MN: HBF012-M3-25F1	25 ft
	MN: HBF012-M3-30F1	30 ft
8 AWG Power	**Hybrid Jumper cable** MN: HBF058-08U1M3-5F1 5 ft, 1x 8 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-08U1M3-10F1	10 ft
	MN: HBF058-08U1M3-15F1	15 ft
	MN: HBF058-08U1M3-20F1	20 ft
	MN: HBF058-08U1M3-25F1	25 ft
	MN: HBF058-08U1M3-30F1	30 ft
6 AWG Power	**Hybrid Jumper cable** MN: HBF058-13U1M3-5F1 5 ft, 1x 6 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-13U1M3-10F1	10 ft
	MN: HBF058-13U1M3-15F1	15 ft
	MN: HBF058-13U1M3-20F1	20 ft
	MN: HBF058-13U1M3-25F1	25 ft
	MN: HBF058-13U1M3-30F1	30 ft
4 AWG Power	**Hybrid Jumper cable** MN: HBF078-21U1M3-5F1 5 ft, 1x 4 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 7/8 cable	5 ft
	MN: HBF078-21U1M3-10F1	10 ft
	MN: HBF078-21U1M3-15F1	15 ft
	MN: HBF078-21U1M3-20F1	20 ft
	MN: HBF078-21U1M3-25F1	25 ft
	MN: HBF078-21U1M3-30F1	30 ft

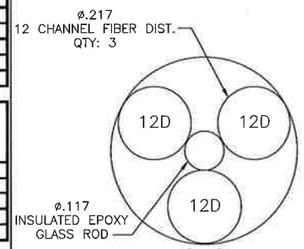
NOTE:
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.



4 AWG

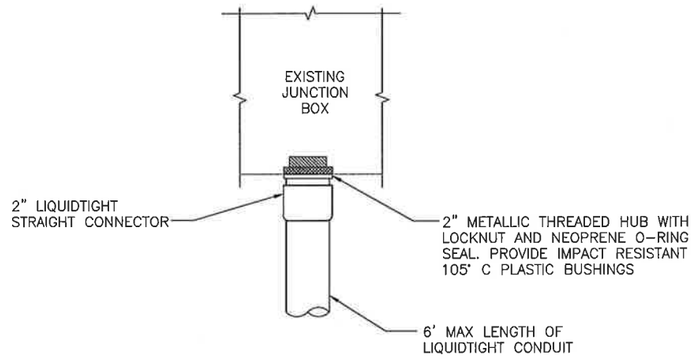


8 & 6 AWG

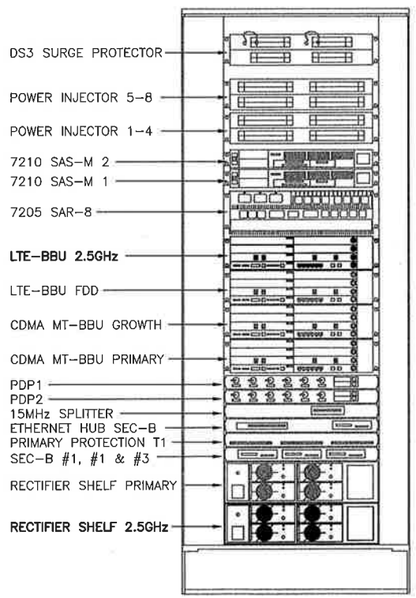


FIBER ONLY

2.5 CABLE CROSS SECTION DATA | NO SCALE | 1



FIBER JUNCTION BOX PENETRATION | NO SCALE | 2



NEW EQUIPMENT RACK IN EXISTING CABINET | NO SCALE | 3

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526-103

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED
PROFESSIONAL ENGINEER
JAN 08 2019

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	01/08/19	SL	0
ISSUED FOR REVIEW	06/28/18	SL	A

SITE NAME:
OMNIPOINT/THOMPSON

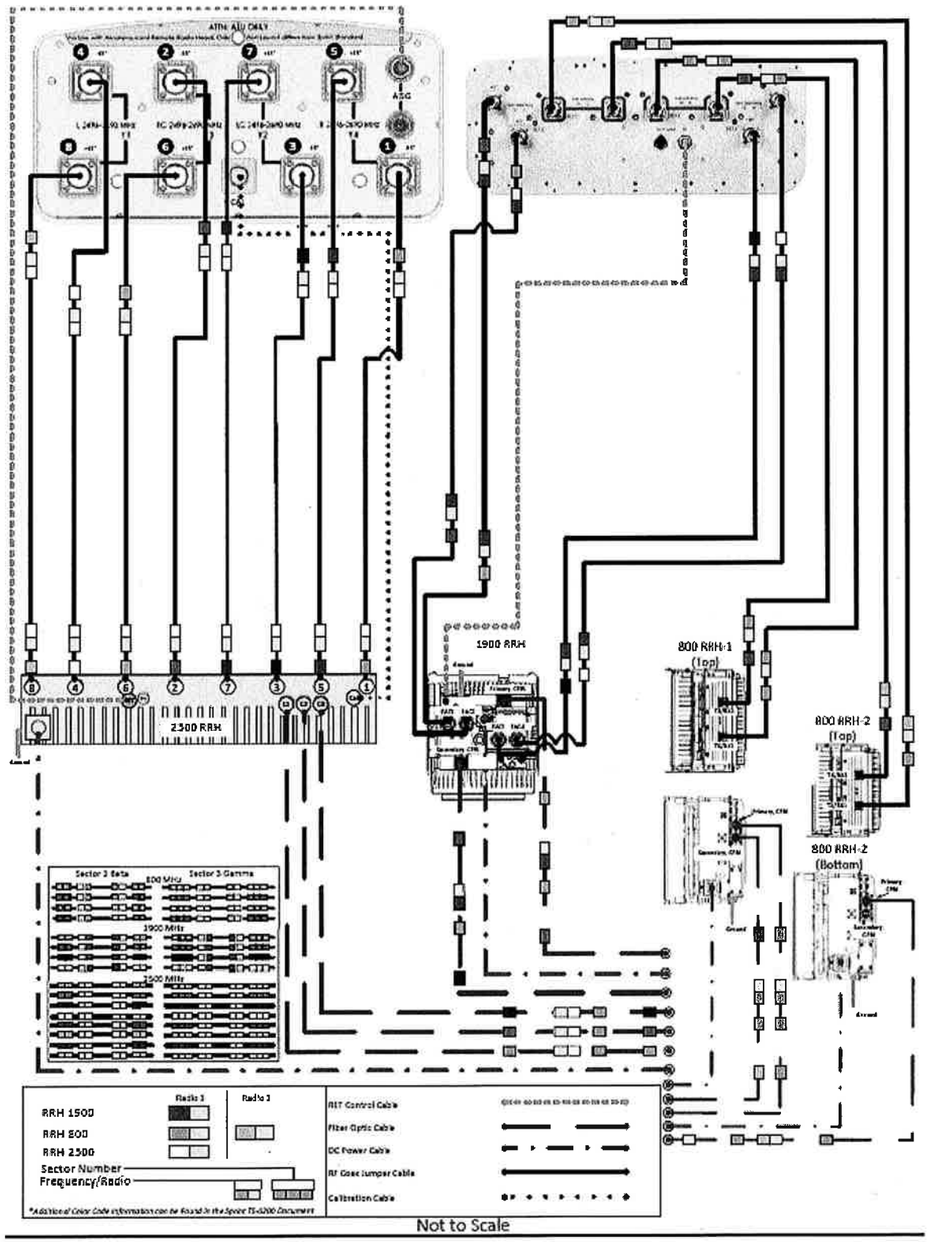
SITE CASCADE:
CT23XC410

SITE ADDRESS:
720 THOMPSON ROAD
THOMPSON, CT 06277

SHEET DESCRIPTION:
CIVIL DETAILS

SHEET NUMBER:
A-5

ALU 211 APXVTM14-ALU-I20 & NNVV-65B-R4 wo Filters



Not to Scale

PLUMBING DIAGRAM | NO SCALE | 1

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.Infinigy.com
JOB NUMBER 526-103

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER
JAN 08 2019

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	01/08/19	SL	0
ISSUED FOR REVIEW	06/28/18	SL	A

SITE NAME:

OMNIPOINT/THOMPSON

SITE CASCADE:

CT23XC410

SITE ADDRESS:

720 THOMPSON ROAD
THOMPSON, CT 06277

SHEET DESCRIPTION:

PLUMBING DIAGRAM

SHEET NUMBER:

A-6

FINAL EQUIPMENT CONFIGURATION

SECTOR	ANTENNA MANUFACTURER	ANTENNA MODEL	RAD CENTER	AZIMUTH	RRH/ODU MAKE AND MODEL
1	COMMSCOPE	NNVV-65B-R4	150'	90°	(1) ALU 1900MHZ 4X45W (2) ALU 800MHZ 2x50-800
	RFS	APXVTM14-ALU-I20	150'	90°	(1) ALU 2.5GHZ RRH8X20-25
2	COMMSCOPE	NNVV-65B-R4	150'	210°	(1) ALU 1900MHZ 4X45W (2) ALU 800MHZ 2x50-800
	RFS	APXVTM14-ALU-I20	150'	210°	(1) ALU 2.5GHZ RRH8X20-25
3	COMMSCOPE	NNVV-65B-R4	150'	330°	(1) ALU 1900MHZ 4X45W (2) ALU 800MHZ 2x50-800
	RFS	APXVTM14-ALU-I20	150'	330°	(1) ALU 2.5GHZ RRH8X20-25

FEEDER CABLES

MANUFACTURER	MODEL	LENGTH	QTY
RFS	HB114-13U3M12-175F	175'±	(1)
RFS	HB114-13U3M12-175F	175'±	(3)

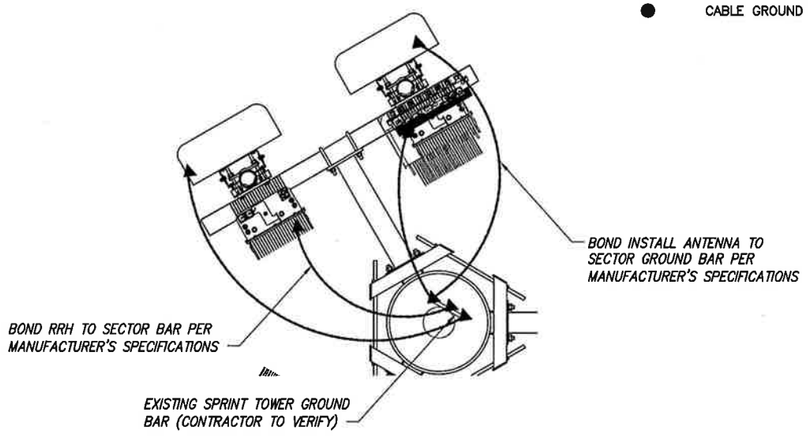
LEGEND
EXISTING
PROPOSED

NOTES:
1. CONTRACTOR TO VERIFY PROPOSED ANTENNA INFORMATION IS THE MOST CURRENT DATA AT TIME OF CONSTRUCTION.
2. CONTRACTOR TO CONFIRM CABLE LENGTHS PRIOR TO CONSTRUCTION.

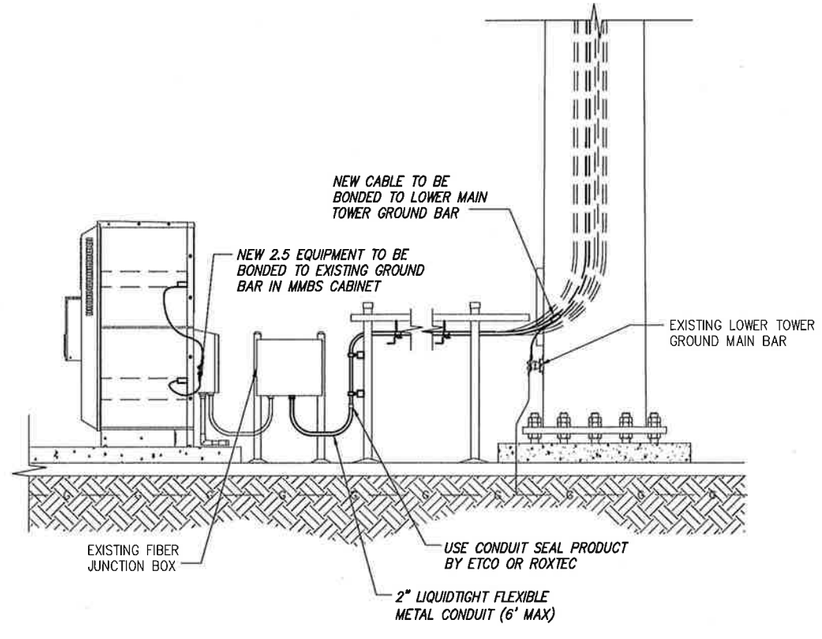
ANTENNA/CABLE SCHEDULE — NO SCALE — 1

LEGEND:

- G — EXISTING GROUND RING
- ■ CADWELD CONNECTION (EXOTHERMIC WELD)
- ▲ MECHANICAL CONNECTION
- ⊗ GROUND ROD
- ● CABLE GROUND KIT



TYPICAL ANTENNA GROUNDING PLAN — NO SCALE — 2



TYPICAL EQUIPMENT GROUNDING PLAN (ELEVATION) — NO SCALE — 3

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.Infinigy.com
JOB NUMBER 526-103

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

STATE OF CONNECTICUT · JOHN S. STEVENS · No. 24705 · JAN 08 2019 · LICENSED PROFESSIONAL ENGINEER

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	01/08/19	SL	0
ISSUED FOR REVIEW	06/28/18	SL	A

SITE NAME:
OMNIPOINT/THOMPSON

SITE CASCADE:
CT23XC410

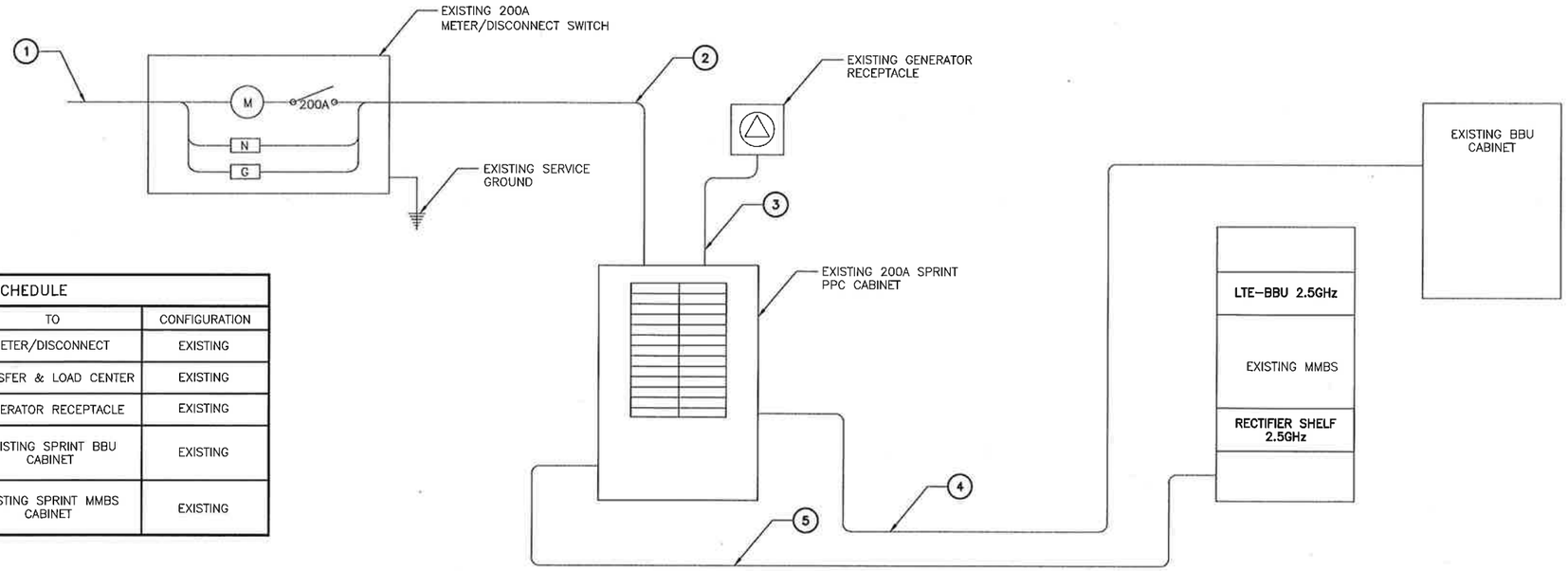
SITE ADDRESS:
720 THOMPSON ROAD
THOMPSON, CT 06277

SHEET DESCRIPTION:
ELECTRICAL & GROUNDING DETAILS

SHEET NUMBER:
E-1

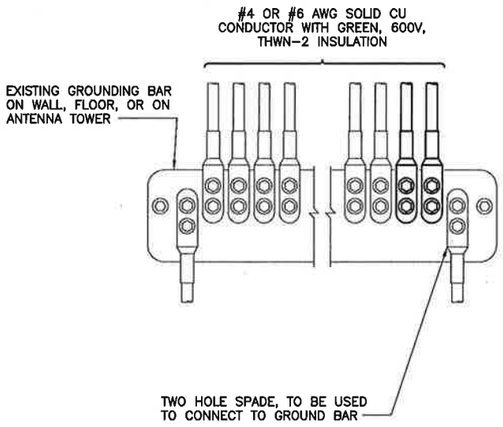
NOTES

CG SHALL REFERENCE ALL SPECS FOR "CONNECTING THE POWER SUPPLY" OF THE NEW INSTALLATION DOCUMENTS, FOR ALL CONNECTION SPECIFICATIONS.



CIRCUIT SCHEDULE			
NO	FROM	TO	CONFIGURATION
1	UTILITY SOURCE	METER/DISCONNECT	EXISTING
2	METER/DISCONNECT	TRANSFER & LOAD CENTER	EXISTING
3	TRANSFER & LOAD CENTER	GENERATOR RECEPTACLE	EXISTING
4	TRANSFER & LOAD CENTER	EXISTING SPRINT BBU CABINET	EXISTING
5	TRANSFER & LOAD CENTER	EXISTING SPRINT MMBS CABINET	EXISTING

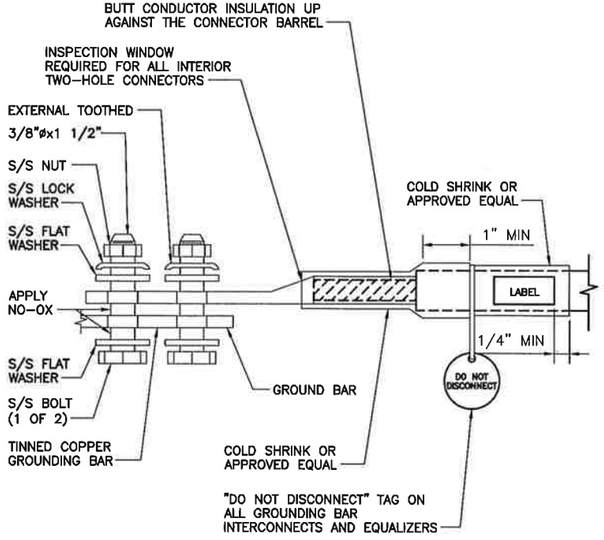
ELECTRICAL ONE–LINE DIAGRAM — NO SCALE — 1



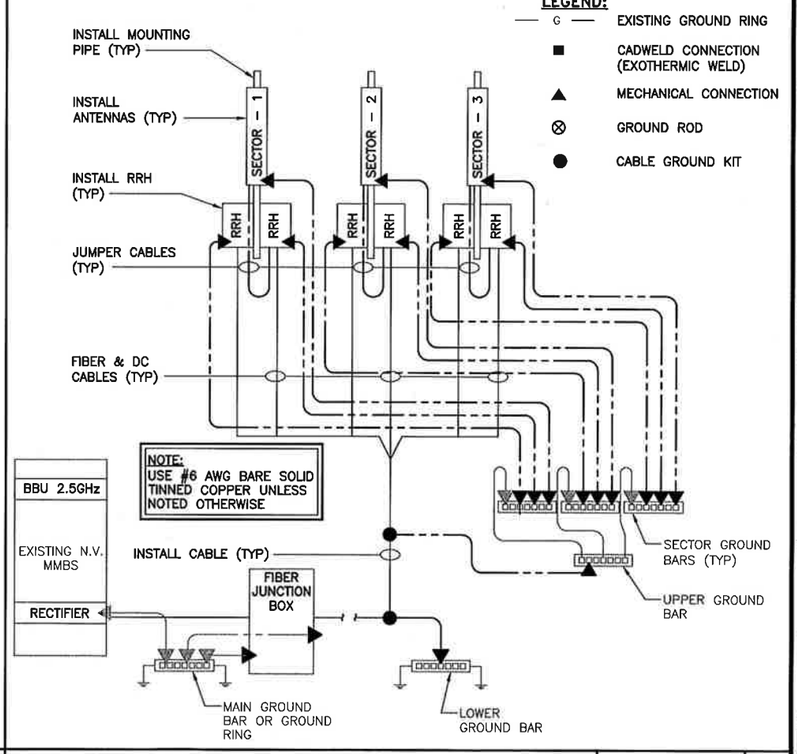
NOTES

1. APPLY NO–OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.
2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.

INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR — NO SCALE — 2



TWO HOLE LUG — NO SCALE — 3



GROUNDING RISER DIAGRAM — NO SCALE — 4

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526–103

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 27705
PROFESSIONAL ENGINEER
JAN 08 2019

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	01/08/19	SL	0
ISSUED FOR REVIEW	06/28/18	SL	A

SITE NAME:

OMNIPOINT/THOMPSON

SITE CASCADE:

CT23XC410

SITE ADDRESS:

720 THOMPSON ROAD
THOMPSON, CT 06277

SHEET DESCRIPTION:

ELECTRICAL & GROUNDING DETAILS

SHEET NUMBER:

E-2

PAUL J. FORD & COMPANY

Date: **November 1, 2018**

Cheryl Schultz
Crown Castle
3530 Toringdon WaySuite 300
Charlotte, NC 28277

Paul J. Ford and Company
250 East Broad St., Suite 600
Columbus, OH 43215
(614) 221-6679

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Sprint PCS* Co-Locate**	
	Carrier Site Number:	CT23XC410
	Carrier Site Name:	CT23XC410
Crown Castle Designation:	**Crown Castle BU Number:**	828402
	Crown Castle Site Name:	Thompson/ I-395 X99_1
	Crown Castle JDE Job Number:	505910
	Crown Castle Work Order Number:	1656212
	Crown Castle Order Number:	441412 Rev. 2
Engineering Firm Designation:	**Paul J. Ford and Company Project Number:**	37518-0348.006.7805
Site Data:	**720 Thompson Rd, Thompson, Windham County, CT** **Latitude *41° 58' 39.74"*, Longitude *-71° 50' 47.55"*** **156 Foot - Monopole Tower**	

Dear Cheryl Schultz,

Paul J. Ford and Company is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower.

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: Proposed Equipment Configuration **Sufficient Capacity**

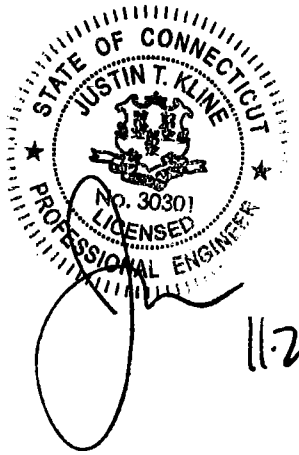
This analysis utilizes an ultimate 3-second gust wind speed of 130 mph from the 2016 Connecticut State Building Code per section 1609.3 and Appendix N. Applicable Standards referenced and design criteria are listed in Section 2 – Analysis Criteria.

All modifications and equipment proposed in this report shall be installed in accordance with the proposed modifications drawings, referenced in Table 3 of this report, for the determined available structural capacity to be effective.

Respectfully submitted by:

Aaron E. Pike

Aaron E. Pike, E.I.
Structural Designer
apike@pauljford.com



11.2.18

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 156 ft Monopole tower designed by FRED A. NUDD CORPORATION.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	130 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
150.0	150.0	3	alcatel lucent	PCS 1900MHZ 4X45W-65MHZ	4	1-1/4
		6	alcatel lucent	RRH2X50-800		
		3	alcatel lucent	TD-RRH8X20-25		
		3	commscope	NNVV-65B-R4		
		3	rfs celwave	APXVTM14-ALU-I20		
		2	SitePro1	USD-NPL		

Table 2 – Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
143.0	143.0	1	tower mounts	Platform Mount [LP 701-1]	4	1-1/4
	140.0	4	ericsson	AIR 32 B2A/B66AA w/ Mount Pipe		
		4	ericsson	RRUS 11 B12		
		4	ericsson	RRUS 11 B4		
		4	rfs celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe		
		4	rfs celwave	APXVAA24_43-U-A20 w/ Mount Pipe		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH, 1424JV1600, 3/25/2014	4726392	CCISITES
4-POST-MODIFICATION INSPECTION	Robert E. Adar, P.E., 10/11/2005	3675131	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Fred A. Nudd, 98-5979-1, 4/29/1998	3918434	CCISITES
4-TOWER MANUFACTURER MAPPING	FDH, 1424CT1500, 3/21/2014	3508519	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	APT, CT107593, 5/6/2005	3675126	CCISITES
4-PROPOSED TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 37518-0348.002.7700, 7/25/2018	7744596	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.4.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) The monopole manufacturer drawings did not match the geometry of the FDH tower mapping (CCI Ref# 3508519). We have based our geometry off the FDH tower mapping; we have also assumed the pole shaft and base plate steel yield strength(s) (Fy) as shown in the attached calculations. Anchor rods are assumed to be 2.0" diam, (Fu = 58 ksi, Fy = 42 ksi).
5) Monopole was modified in conformance with the referenced modification drawings.
6) Monopole will be modified in conformance with the attached proposed modification drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J. Ford and Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
156 - 151	Pole	TP10.75x10.75x0.365	Pole	0.5%	Pass
151 - 146	Pole	TP10.75x10.75x0.365	Pole	19.5%	Pass
146 - 144.5	Pole	TP10.75x10.75x0.365	Pole	25.9%	Pass
144.5 - 144	Pole	TP18x10.75x0.365	Pole	9.9%	Pass
144 - 139	Pole	TP18.944x18x0.25	Pole	31.8%	Pass
139 - 134	Pole	TP19.887x18.944x0.25	Pole	56.6%	Pass
134 - 129	Pole	TP20.831x19.887x0.25	Pole	77.6%	Pass
129 - 128.25	Pole	TP20.972x20.831x0.25	Pole	80.5%	Pass
128.25 - 128	Pole + Reinf.	TP21.019x20.972x0.575	Pole	36.7%	Pass
128 - 123	Pole + Reinf.	TP21.963x21.019x0.5625	Pole	45.9%	Pass
123 - 118	Pole + Reinf.	TP22.906x21.963x0.55	Pole	54.4%	Pass
118 - 113	Pole + Reinf.	TP23.85x22.906x0.525	Pole	62.2%	Pass
113 - 108	Pole + Reinf.	TP24.793x23.85x0.5125	Pole	69.4%	Pass
108 - 103	Pole + Reinf.	TP25.737x24.793x0.5	Pole	76.1%	Pass
103 - 98	Pole + Reinf.	TP26.68x25.737x0.4938	Pole	82.3%	Pass
98 - 96.5	Pole + Reinf.	TP27.624x26.68x0.4875	Pole	84.1%	Pass
96.5 - 92	Pole + Reinf.	TP27.313x26.464x0.7	Pole	65.9%	Pass
92 - 87	Pole + Reinf.	TP28.257x27.313x0.675	Pole	70.9%	Pass
87 - 82	Pole + Reinf.	TP29.201x28.257x0.65	Pole	75.9%	Pass
82 - 77.5	Pole + Reinf.	TP30.05x29.201x0.6375	Pole	80.3%	Pass
77.5 - 72.5	Pole + Reinf.	TP30.994x30.05x0.6875	Pole	74.5%	Pass
72.5 - 70.58	Pole + Reinf.	TP31.356x30.994x0.6875	Pole	75.7%	Pass
70.58 - 70.33	Pole + Reinf.	TP31.403x31.356x0.6875	Pole	75.9%	Pass
70.33 - 67.08	Pole + Reinf.	TP32.016x31.403x0.675	Pole	77.9%	Pass
67.08 - 66.83	Pole + Reinf.	TP32.063x32.016x0.975	Pole	55.9%	Pass
66.83 - 61.83	Pole + Reinf.	TP33.007x32.063x0.95	Pole	58.3%	Pass
61.83 - 61.75	Pole + Reinf.	TP33.824x33.007x0.95	Pole	58.4%	Pass
61.75 - 56.75	Pole + Reinf.	TP33.341x32.397x0.9375	Pole	62.2%	Pass
56.75 - 51.75	Pole + Reinf.	TP34.284x33.341x0.9125	Pole	64.6%	Pass
51.75 - 46.75	Pole + Reinf.	TP35.228x34.284x0.9	Pole	67.3%	Pass
46.75 - 41.75	Pole + Reinf.	TP36.171x35.228x0.8875	Pole	70.1%	Pass
41.75 - 39.8	Pole + Reinf.	TP36.539x36.171x0.875	Pole	71.1%	Pass
39.8 - 39.33	Pole + Reinf.	TP36.628x36.539x0.95	Pole	65.3%	Pass
39.33 - 39.08	Pole + Reinf.	TP36.675x36.628x0.9375	Pole	65.4%	Pass
39.08 - 38.33	Pole + Reinf.	TP36.816x36.675x0.9375	Pole	65.6%	Pass
38.33 - 38.08	Pole + Reinf.	TP36.864x36.816x0.8875	Pole	70.8%	Pass
38.08 - 33.08	Pole + Reinf.	TP37.807x36.864x0.875	Pole	72.7%	Pass
33.08 - 30.75	Pole + Reinf.	TP38.247x37.807x0.8625	Pole	73.6%	Pass
30.75 - 30.5	Pole + Reinf.	TP38.294x38.247x0.9375	Pole	68.0%	Pass
30.5 - 25.5	Pole + Reinf.	TP39.238x38.294x0.925	Pole	69.7%	Pass
25.5 - 20.5	Pole + Reinf.	TP40.182x39.238x0.9	Pole	71.4%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
20.5 - 15.5	Pole + Reinf.	TP41.125x40.182x0.8875	Pole	73.0%	Pass
15.5 - 15.05	Pole + Reinf.	TP42.201x41.125x0.8875	Pole	73.2%	Pass
15.05 - 8.8	Pole + Reinf.	TP41.639x40.46x0.875	Pole	77.3%	Pass
8.8 - 8.25	Pole + Reinf.	TP41.743x41.639x0.875	Pole	77.5%	Pass
8.25 - 8	Pole + Reinf.	TP41.79x41.743x0.875	Pole	78.2%	Pass
8 - 4.25	Pole + Reinf.	TP42.498x41.79x0.875	Pole	79.7%	Pass
4.25 - 4	Pole + Reinf.	TP42.545x42.498x1.05	Pole	66.7%	Pass
4 - 3	Pole + Reinf.	TP42.734x42.545x1.05	Pole	67.1%	Pass
3 - 2.75	Pole + Reinf.	TP42.781x42.734x1.15	Pole	62.1%	Pass
2.75 - 0	Pole + Reinf.	TP43.3x42.781x1.125	Pole	63.1%	Pass
				Summary	
			Pole	84.1%	Pass
			Reinforcement	72.5%	Pass
			Overall	84.1%	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC4.7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	89.5	Pass
1	Base Plate	0	89.3	Pass
1	Base Foundation Steel	0	90.8	Pass
1	Base Foundation Soil Interaction	0	28.5	Pass
1	Flange Connection	144	4.8	Pass

Structure Rating (max from all components) =	90.8%

- All structural ratings are per TIA-222-H Section 15.5

Notes:

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

4.1) Recommendations

The monopole and its foundation will have sufficient capacity to carry the proposed loading configuration once the proposed modifications are installed.

- Install the modifications as per the proposed modification drawings referenced in Table 3.

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

1) Tower is located in Windham County, Connecticut.
2) Tower base elevation above sea level: 538.0 ft.
3) Basic wind speed of 130 mph.
4) Risk Category II.
5) Exposure Category C.
6) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
7) Topographic Category: 1.
8) Crest Height 0.0000 ft.
9) Nominal ice thickness of 1.2750 in.
10) Ice thickness is considered to increase with height.
11) Ice density of 56.00 pcf.
12) A wind speed of 50 mph is used in combination with ice.
13) Temperature drop of 50 °F.
14) Deflections calculated using a wind speed of 60 mph.
15) TIA-222-H Annex S.
16) A non-linear (P-delta) analysis was used.
17) Pressures are calculated at each section.
18) Stress ratio used in pole design is 1.05.
19) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules	
Consider Moments - Horizontals		Assume Legs Pinned		Calculate Redundant Bracing Forces	
Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA	
Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression	
Use Code Stress Ratios		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable	
Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation	
Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque	
Always Use Max Kz	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check	
Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-H Bracing Resist. Exemption	
Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-H Tension Splice Exemption	
Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles	
Secondary Horizontal Braces Leg		Sort Capacity Reports By Component	√	Include Shear-Torsion Interaction	
Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow	
SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets	
SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments	
				Pole With Shroud Or No Appurtenances	
				Outside and Inside Corner Radii Are Known	

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	156.0000-151.0000	5.0000	0.00	Round	10.7500	10.7500	0.3650		A53-B-35 (35 ksi)
L2	151.0000-146.0000	5.0000	0.00	Round	10.7500	10.7500	0.3650		A53-B-35 (35 ksi)
L3	146.0000-144.5000	1.5000	0.00	Round	10.7500	10.7500	0.3650		A53-B-35 (35 ksi)
L4	144.5000-144.0000	0.5000	0.00	Round	10.7500	18.0000	0.3650		A53-B-35 (35 ksi)
L5	144.0000-139.0000	5.0000	0.00	12	18.0000	18.9435	0.2500	1.0000	A36 (36 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	139.0000-134.0000	5.0000	0.00	12	18.9435	19.8871	0.2500	1.0000	A36 (36 ksi)
L7	134.0000-129.0000	5.0000	0.00	12	19.8871	20.8306	0.2500	1.0000	A36 (36 ksi)
L8	129.0000-128.2500	0.7500	0.00	12	20.8306	20.9721	0.2500	1.0000	A36 (36 ksi)
L9	128.2500-128.0000	0.2500	0.00	12	20.9721	21.0193	0.5750	2.3000	A36 (36 ksi)
L10	128.0000-123.0000	5.0000	0.00	12	21.0193	21.9628	0.5625	2.2500	A36 (36 ksi)
L11	123.0000-118.0000	5.0000	0.00	12	21.9628	22.9064	0.5500	2.2000	A36 (36 ksi)
L12	118.0000-113.0000	5.0000	0.00	12	22.9064	23.8499	0.5250	2.1000	A36 (36 ksi)
L13	113.0000-108.0000	5.0000	0.00	12	23.8499	24.7934	0.5125	2.0500	A36 (36 ksi)
L14	108.0000-103.0000	5.0000	0.00	12	24.7934	25.7369	0.5000	2.0000	A36 (36 ksi)
L15	103.0000-98.0000	5.0000	0.00	12	25.7369	26.6805	0.4938	1.9750	A36 (36 ksi)
L16	98.0000-93.0000	5.0000	3.50	12	26.6805	27.6240	0.4875	1.9500	A36 (36 ksi)
L17	93.0000-92.0000	4.5000	0.00	12	26.4635	27.3130	0.7000	2.8000	A36 (36 ksi)
L18	92.0000-87.0000	5.0000	0.00	12	27.3130	28.2568	0.6750	2.7000	A36 (36 ksi)
L19	87.0000-82.0000	5.0000	0.00	12	28.2568	29.2006	0.6500	2.6000	A36 (36 ksi)
L20	82.0000-77.5000	4.5000	0.00	12	29.2006	30.0500	0.6375	2.5500	A36 (36 ksi)
L21	77.5000-72.5000	5.0000	0.00	12	30.0500	30.9935	0.6875	2.7500	A36 (36 ksi)
L22	72.5000-70.5800	1.9200	0.00	12	30.9935	31.3558	0.6875	2.7500	A36 (36 ksi)
L23	70.5800-70.3300	0.2500	0.00	12	31.3558	31.4030	0.6875	2.7500	A36 (36 ksi)
L24	70.3300-67.0800	3.2500	0.00	12	31.4030	32.0163	0.6750	2.7000	A36 (36 ksi)
L25	67.0800-66.8300	0.2500	0.00	12	32.0163	32.0634	0.9750	3.9000	A36 (36 ksi)
L26	66.8300-61.8300	5.0000	0.00	12	32.0634	33.0069	0.9500	3.8000	A36 (36 ksi)
L27	61.8300-57.5000	4.3300	4.25	12	33.0069	33.8240	0.9500	3.8000	A36 (36 ksi)
L28	57.5000-56.7500	5.0000	0.00	12	32.3970	33.3405	0.9375	3.7500	A36 (36 ksi)
L29	56.7500-51.7500	5.0000	0.00	12	33.3405	34.2840	0.9125	3.6500	A36 (36 ksi)
L30	51.7500-46.7500	5.0000	0.00	12	34.2840	35.2275	0.9000	3.6000	A36 (36 ksi)
L31	46.7500-41.7500	5.0000	0.00	12	35.2275	36.1710	0.8875	3.5500	A36 (36 ksi)
L32	41.7500-39.8000	1.9500	0.00	12	36.1710	36.5390	0.8750	3.5000	A36 (36 ksi)
L33	39.8000-39.3300	0.4700	0.00	12	36.5390	36.6277	0.9500	3.8000	A36 (36 ksi)
L34	39.3300-39.0800	0.2500	0.00	12	36.6277	36.6749	0.9375	3.7500	A36 (36 ksi)
L35	39.0800-38.3300	0.7500	0.00	12	36.6749	36.8164	0.9375	3.7500	A36 (36 ksi)
L36	38.3300-38.0800	0.2500	0.00	12	36.8164	36.8636	0.8875	3.5500	A36 (36 ksi)
L37	38.0800-33.0800	5.0000	0.00	12	36.8636	37.8073	0.8750	3.5000	A36 (36 ksi)
L38	33.0800-30.7500	2.3300	0.00	12	37.8073	38.2470	0.8625	3.4500	A36 (36 ksi)
L39	30.7500-30.5000	0.2500	0.00	12	38.2470	38.2942	0.9375	3.7500	A36 (36 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
L40	30.5000-25.5000	5.0000	0.00	12	38.2942	39.2379	0.9250	3.7000	A36 (36 ksi)
L41	25.5000-20.5000	5.0000	0.00	12	39.2379	40.1816	0.9000	3.6000	A36 (36 ksi)
L42	20.5000-15.5000	5.0000	0.00	12	40.1816	41.1252	0.8875	3.5500	A36 (36 ksi)
L43	15.5000-9.8000	5.7000	5.25	12	41.1252	42.2010	0.8875	3.5500	A36 (36 ksi)
L44	9.8000-8.8000	6.2500	0.00	12	40.4601	41.6395	0.8750	3.5000	A36 (36 ksi)
L45	8.8000-8.2500	0.5500	0.00	12	41.6395	41.7433	0.8750	3.5000	A36 (36 ksi)
L46	8.2500-8.0000	0.2500	0.00	12	41.7433	41.7904	0.8750	3.5000	A36 (36 ksi)
L47	8.0000-4.2500	3.7500	0.00	12	41.7904	42.4980	0.8750	3.5000	A36 (36 ksi)
L48	4.2500-4.0000	0.2500	0.00	12	42.4980	42.5452	1.0500	4.2000	A36 (36 ksi)
L49	4.0000-3.0000	1.0000	0.00	12	42.5452	42.7339	1.0500	4.2000	A36 (36 ksi)
L50	3.0000-2.7500	0.2500	0.00	12	42.7339	42.7811	1.1500	4.6000	A36 (36 ksi)
L51	2.7500-0.0000	2.7500		12	42.7811	43.3000	1.1250	4.5000	A36 (36 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	10.7500	11.9083	160.7342	3.6739	5.3750	29.9040	321.4685	5.9506	0.0000	0
	10.7500	11.9083	160.7342	3.6739	5.3750	29.9040	321.4685	5.9506	0.0000	0
L2	10.7500	11.9083	160.7342	3.6739	5.3750	29.9040	321.4685	5.9506	0.0000	0
	10.7500	11.9083	160.7342	3.6739	5.3750	29.9040	321.4685	5.9506	0.0000	0
L3	10.7500	11.9083	160.7342	3.6739	5.3750	29.9040	321.4685	5.9506	0.0000	0
	10.7500	11.9083	160.7342	3.6739	5.3750	29.9040	321.4685	5.9506	0.0000	0
L4	10.7500	11.9083	160.7342	3.6739	5.3750	29.9040	321.4685	5.9506	0.0000	0
	18.0000	20.2217	786.4392	6.2362	9.0000	87.3821	1572.8784	10.1048	0.0000	0
L5	18.5468	14.2888	574.6149	6.3545	9.3240	61.6275	1164.3256	7.0325	4.1540	16.616
	19.5236	15.0483	671.2058	6.6923	9.8127	68.4014	1360.0450	7.4063	4.4069	17.627
L6	19.5236	15.0483	671.2058	6.6923	9.8127	68.4014	1360.0450	7.4063	4.4069	17.627
	20.5004	15.8078	778.0566	7.0301	10.3015	75.5285	1576.5535	7.7801	4.6597	18.639
L7	20.5004	15.8078	778.0566	7.0301	10.3015	75.5285	1576.5535	7.7801	4.6597	18.639
	21.4772	16.5674	895.6847	7.3679	10.7902	83.0088	1814.9001	8.1540	4.9126	19.65
L8	21.4772	16.5674	895.6847	7.3679	10.7902	83.0088	1814.9001	8.1540	4.9126	19.65
	21.6237	16.6813	914.2906	7.4185	10.8636	84.1613	1852.6006	8.2100	4.9505	19.802
L9	21.5091	37.7653	2005.4696	7.3022	10.8636	184.6052	4063.6252	18.5869	4.0795	7.095
	21.5579	37.8526	2019.4171	7.3191	10.8880	185.4719	4091.8864	18.6299	4.0922	7.117
L10	21.5623	37.0524	1979.1425	7.3235	10.8880	181.7729	4010.2793	18.2360	4.1257	7.335
	22.5392	38.7613	2265.8199	7.6613	11.3767	199.1624	4591.1655	19.0772	4.3785	7.784
L11	22.5436	37.9221	2219.3528	7.6658	11.3767	195.0781	4497.0106	18.6641	4.4120	8.022
	23.5204	39.5931	2525.8490	8.0036	11.8655	212.8735	5118.0549	19.4865	4.6649	8.482
L12	23.5292	37.8357	2419.1352	8.0125	11.8655	203.8799	4901.8237	18.6216	4.7319	9.013
	24.5060	39.4307	2738.1642	8.3503	12.3542	221.6376	5548.2631	19.4066	4.9848	9.495
L13	24.5104	38.5125	2677.2695	8.3548	12.3542	216.7086	5424.8739	18.9547	5.0183	9.792
	25.4872	40.0696	3015.3010	8.6926	12.8430	234.7819	6109.8174	19.7210	5.2711	10.285
L14	25.4916	39.1124	2946.3028	8.6970	12.8430	229.4095	5970.0082	19.2499	5.3046	10.609
	26.4685	40.6315	3303.1018	9.0348	13.3317	247.7623	6692.9798	19.9976	5.5575	11.115
L15	26.4707	40.1335	3264.2371	9.0371	13.3317	244.8471	6614.2293	19.7525	5.5743	11.29
	27.4475	41.6336	3644.1168	9.3748	13.8205	263.6751	7383.9687	20.4908	5.8271	11.802
L16	27.4497	41.1164	3600.5656	9.3771	13.8205	260.5238	7295.7221	20.2362	5.8439	11.987
	28.4265	42.5975	4003.8513	9.7149	14.3092	279.8090	8112.8882	20.9652	6.0967	12.506
L17	27.8341	58.0710	4919.8959	9.2233	13.7081	358.9041	9969.0430	28.5808	5.2162	7.452
	28.0295	59.9856	5422.7459	9.5274	14.1481	383.2841	10987.9535	29.5231	5.4439	7.777
L18	28.0383	57.8976	5243.8268	9.5364	14.1481	370.6379	10625.4147	28.4954	5.5109	8.164

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
	29.0154	59.9490	5821.1898	9.8743	14.6370	397.7036	11795.3086	29.5051	5.7638	8.539
L19	29.0243	57.7810	5620.8466	9.8832	14.6370	384.0162	11389.3591	28.4380	5.8308	8.97
	30.0014	59.7563	6217.2691	10.2211	15.1259	411.0347	12597.8728	29.4103	6.0838	9.36
L20	30.0058	58.6328	6105.7188	10.2256	15.1259	403.6600	12371.8417	28.8573	6.1173	9.596
	30.8852	60.3765	6666.8062	10.5297	15.5659	428.2956	13508.7569	29.7155	6.3449	9.953
L21	30.8675	65.0012	7153.0888	10.5118	15.5659	459.5358	14494.0971	31.9916	6.2109	9.034
	31.8443	67.0899	7865.0300	10.8495	16.0546	489.8916	15936.6830	33.0196	6.4638	9.402
L22	31.8443	67.0899	7865.0300	10.8495	16.0546	489.8916	15936.6830	33.0196	6.4638	9.402
	32.2194	67.8920	8150.4916	10.9793	16.2423	501.8063	16515.1056	33.4144	6.5609	9.543
L23	32.2194	67.8920	8150.4916	10.9793	16.2423	501.8063	16515.1056	33.4144	6.5609	9.543
	32.2682	67.9964	8188.1615	10.9961	16.2667	503.3682	16591.4352	33.4658	6.5735	9.561
L24	32.2726	66.7873	8049.1049	11.0006	16.2667	494.8197	16309.6687	32.8707	6.6070	9.788
	32.9076	68.1202	8540.7243	11.2202	16.5844	514.9848	17305.8229	33.5267	6.7714	10.032
L25	32.8017	97.4540	11985.7223	11.1128	16.5844	722.7098	24286.3228	47.9639	5.9674	6.12
	32.8506	97.6021	12040.4513	11.1297	16.6089	724.9416	24397.2187	48.0368	5.9800	6.133
L26	32.8594	95.1760	11760.0470	11.1386	16.6089	708.0588	23829.0436	46.8427	6.0470	6.365
	33.8362	98.0621	12862.6713	11.4764	17.0976	752.3091	26063.2594	48.2632	6.2999	6.631
L27	33.8362	98.0621	12862.6713	11.4764	17.0976	752.3091	26063.2594	48.2632	6.2999	6.631
	34.6821	100.5616	13871.4889	11.7689	17.5208	791.7141	28107.3973	49.4933	6.5188	6.862
L28	34.0394	94.9684	11996.9150	11.2625	16.7817	714.8825	24309.0023	46.7406	6.1699	6.581
	34.1859	97.8166	13109.0085	11.6003	17.2704	759.0452	26562.4053	48.1424	6.4228	6.851
L29	34.1948	95.2817	12788.9907	11.6092	17.2704	740.5153	25913.9625	46.8947	6.4898	7.112
	35.1715	98.0539	13938.0831	11.9470	17.7591	784.8405	28242.3352	48.2591	6.7426	7.389
L30	35.1760	96.7469	13762.6041	11.9515	17.7591	774.9595	27886.7672	47.6159	6.7761	7.529
	36.1527	99.4812	14962.7725	12.2893	18.2479	819.9740	30318.6337	48.9616	7.0290	7.81
L31	36.1571	98.1352	14771.0807	12.2937	18.2479	809.4691	29930.2141	48.2992	7.0625	7.958
	37.1339	100.8315	16022.3574	12.6315	18.7366	855.1371	32465.6401	49.6262	7.3153	8.243
L32	37.1383	99.4466	15813.4854	12.6360	18.7366	843.9893	32042.4087	48.9446	7.3488	8.399
	37.5193	100.4833	16313.2326	12.7677	18.9272	861.8935	33055.0320	49.4548	7.4475	8.511
L33	37.4928	108.8668	17600.0046	12.7409	18.9272	929.8788	35662.3810	53.5809	7.2465	7.628
	37.5847	109.1381	17731.9361	12.7726	18.9732	934.5804	35929.7099	53.7145	7.2702	7.653
L34	37.5891	107.7398	17517.0200	12.7771	18.9732	923.2531	35494.2316	53.0263	7.3037	7.791
	37.6379	107.8822	17586.5852	12.7940	18.9976	925.7271	35635.1896	53.0964	7.3164	7.804
L35	37.6379	107.8822	17586.5852	12.7940	18.9976	925.7271	35635.1896	53.0964	7.3164	7.804
	37.7845	108.3095	17796.3868	12.8447	19.0709	933.1690	36060.3046	53.3067	7.3543	7.845

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
L36	37.8021	102.6759	16917.7781	12.8626	19.0709	887.0984	34280.0051	50.5340	7.4883	8.438
	37.8510	102.8108	16984.5165	12.8795	19.0954	889.4580	34415.2352	50.6003	7.5010	8.452
L37	37.8554	101.3979	16762.7587	12.8839	19.0954	877.8448	33965.8937	49.9050	7.5345	8.611
	38.8323	104.0567	18116.2588	13.2218	19.5842	925.0458	36708.4518	51.2136	7.7874	8.9
L38	38.8367	102.6049	17875.5932	13.2262	19.5842	912.7570	36220.7981	50.4990	7.8209	9.068
	39.2920	103.8262	18521.5336	13.3837	19.8120	934.8661	37529.6486	51.1001	7.9387	9.204
L39	39.2655	112.6282	20011.1790	13.3568	19.8120	1010.0552	40548.0740	55.4322	7.7377	8.254
	39.3144	112.7706	20087.1957	13.3737	19.8364	1012.6429	40702.1043	55.5023	7.7504	8.267
L40	39.3188	111.3042	19839.2684	13.3782	19.8364	1000.1443	40199.7365	54.7806	7.7839	8.415
	40.2957	114.1149	21380.5164	13.7160	20.3252	1051.9203	43322.7228	56.1639	8.0368	8.688
L41	40.3046	111.1032	20843.4138	13.7250	20.3252	1025.4948	42234.4073	54.6816	8.1038	9.004
	41.2815	113.8379	22420.7574	14.0628	20.8140	1077.1937	45430.5330	56.0276	8.3567	9.285
L42	41.2859	112.2926	22130.4713	14.0673	20.8140	1063.2470	44842.3348	55.2670	8.3902	9.454
	42.2629	114.9893	23763.4929	14.4051	21.3029	1115.5070	48151.2792	56.5943	8.6431	9.739
L43	42.2629	114.9893	23763.4929	14.4051	21.3029	1115.5070	48151.2792	56.5943	8.6431	9.739
	43.3766	118.0637	25720.8994	14.7902	21.8601	1176.6130	52117.5155	58.1073	8.9314	10.064
L44	42.6044	111.5312	22307.2873	14.1715	20.9584	1064.3624	45200.6118	54.8922	8.4983	9.712
	42.7997	114.8540	24361.0450	14.5937	21.5693	1129.4337	49362.0819	56.5276	8.8144	10.074
L45	42.7997	114.8540	24361.0450	14.5937	21.5693	1129.4337	49362.0819	56.5276	8.8144	10.074
	42.9071	115.1464	24547.5809	14.6308	21.6230	1135.2525	49740.0541	56.6715	8.8422	10.105
L46	42.9071	115.1464	24547.5809	14.6308	21.6230	1135.2525	49740.0541	56.6715	8.8422	10.105
	42.9560	115.2793	24632.6827	14.6477	21.6475	1137.9023	49912.4933	56.7369	8.8548	10.12
L47	42.9560	115.2793	24632.6827	14.6477	21.6475	1137.9023	49912.4933	56.7369	8.8548	10.12
	43.6886	117.2729	25932.9275	14.9011	22.0140	1178.0204	52547.1419	57.7182	9.0445	10.337
L48	43.6268	140.1359	30728.6442	14.8384	22.0140	1395.8689	62264.5641	68.9706	8.5755	8.167
	43.6757	140.2953	30833.6849	14.8553	22.0384	1399.0875	62477.4050	69.0491	8.5881	8.179
L49	43.6757	140.2953	30833.6849	14.8553	22.0384	1399.0875	62477.4050	69.0491	8.5881	8.179
	43.8710	140.9333	31256.2368	14.9228	22.1362	1411.9985	63333.6097	69.3631	8.6387	8.227
L50	43.8357	153.9852	33987.2361	14.8870	22.1362	1535.3712	68867.3547	75.7869	8.3707	7.279
	43.8846	154.1599	34103.0357	14.9039	22.1606	1538.9036	69101.9960	75.8728	8.3833	7.29
L51	43.8934	150.8992	33421.8037	14.9129	22.1606	1508.1630	67721.6355	74.2680	8.4503	7.511
	44.4306	152.7789	34686.4312	15.0986	22.4294	1546.4716	70284.1135	75.1931	8.5894	7.635

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 156.0000-151.0000				1	1	1			
L2 151.0000-146.0000				1	1	1			
L3 146.0000-144.5000				1	1	1			
L4 144.5000-144.0000				1	1	1			
L5 144.0000-139.0000				1	1	1			
L6 139.0000-134.0000				1	1	1			
L7 134.0000-129.0000				1	1	1			
L8 129.0000-128.2500				1	1	1			
L9 128.2500-128.0000				1	1	0.917905			
L10 128.0000-123.0000				1	1	0.915981			
L11 123.0000-118.0000				1	1	0.915921			
L12 118.0000-113.0000				1	1	0.938956			
L13 113.0000-108.0000				1	1	0.942941			
L14 108.0000-103.0000				1	1	0.948594			
L15 103.0000-98.0000				1	1	0.944005			
L16 98.0000-93.0000				1	1	0.951143			
L17 93.0000-92.0000				1	1	0.895321			
L18 92.0000-87.0000				1	1	0.908542			
L19 87.0000-82.0000				1	1	0.924185			
L20 82.0000-77.5000				1	1	0.926017			
L21 77.5000-72.5000				1	1	0.93596			
L22 72.5000-70.5800				1	1	0.930273			
L23 70.5800-70.3300				1	1	0.929542			
L24 70.3300-67.0800				1	1	0.936911			
L25 67.0800-66.8300				1	1	0.904489			
L26 66.8300-61.8300				1	1	0.909927			
L27 61.8300-57.5000				1	1	0.909654			
L28 57.5000-56.7500				1	1	0.915643			
L29 56.7500-51.7500				1	1	0.92311			
L30 51.7500-46.7500				1	1	0.919409			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L31 46.7500-41.7500				1	1	0.916512			
L32 41.7500-39.8000				1	1	0.923373			
L33 39.8000-39.3300				1	1	0.91724			
L34 39.3300-39.0800				1	1	0.928445			
L35 39.0800-38.3300				1	1	0.92636			
L36 38.3300-38.0800				1	1	0.952109			
L37 38.0800-33.0800				1	1	0.951659			
L38 33.0800-30.7500				1	1	0.958886			
L39 30.7500-30.5000				1	1	0.94994			
L40 30.5000-25.5000				1	1	0.948734			
L41 25.5000-20.5000				1	1	0.961052			
L42 20.5000-15.5000				1	1	0.961339			
L43 15.5000-9.8000				1	1	0.960204			
L44 9.8000-8.8000				1	1	0.967879			
L45 8.8000-8.2500				1	1	0.966509			
L46 8.2500-8.0000				1	1	1.03647			
L47 8.0000-4.2500				1	1	1.02614			
L48 4.2500-4.0000				1	1	0.938457			
L49 4.0000-3.0000				1	1	0.935825			
L50 3.0000-2.7500				1	1	0.904623			
L51 2.7500-0.0000				1	1	0.916902			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
****									
HB114-13U3M12-XXXF(1-1/4)	B	No	No	Inside Pole	150.0000 - 0.0000	4	No Ice 1/2" Ice 1" Ice 2" Ice	0.0000 0.0000 0.0000 0.0000	0.99 0.99 0.99 0.99
****									
HB114-U6S12-XXX-LI(1-1/4)	B	No	No	Inside Pole	143.0000 - 0.0000	4	No Ice 1/2" Ice 1" Ice 2" Ice	0.0000 0.0000 0.0000 0.0000	1.70 1.70 1.70 1.70
******									
****									
1 1/4" Flat Reinforcement	B	No	No	CaAa (Out Of Face)	100.6600 - 0.0000	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.2083 0.3194 0.4306 0.6528	0.00 0.00 0.00 0.00

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
1" Flat Reinforcement	B	No	No	CaAa (Out Of Face)	130.7500 - 100.6600	1	No Ice	0.1667	0.00
							1/2" Ice	0.2778	0.00
							1" Ice	0.3889	0.00
							2" Ice	0.6111	0.00
1 1/4" Flat Reinforcement	B	No	No	CaAa (Out Of Face)	65.5833 - 0.0000	1	No Ice	0.2083	0.00
							1/2" Ice	0.3194	0.00
							1" Ice	0.4306	0.00
							2" Ice	0.6528	0.00

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	156.0000-151.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	151.0000-146.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.00
L3	146.0000-144.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.00
L4	144.5000-144.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L5	144.0000-139.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.00
L6	139.0000-134.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.00
L7	134.0000-129.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.292	0.05
		C	0.000	0.000	0.000	0.000	0.00
L8	129.0000-128.2500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.125	0.01
		C	0.000	0.000	0.000	0.000	0.00
L9	128.2500-128.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.042	0.00
		C	0.000	0.000	0.000	0.000	0.00
L10	128.0000-123.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.833	0.05
		C	0.000	0.000	0.000	0.000	0.00
L11	123.0000-118.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.833	0.05
		C	0.000	0.000	0.000	0.000	0.00
L12	118.0000-113.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.833	0.05
		C	0.000	0.000	0.000	0.000	0.00
L13	113.0000-108.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.833	0.05
		C	0.000	0.000	0.000	0.000	0.00
L14	108.0000-103.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.833	0.05
		C	0.000	0.000	0.000	0.000	0.00
L15	103.0000-98.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.944	0.05
		C	0.000	0.000	0.000	0.000	0.00
L16	98.0000-93.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	1.042	0.05
		C	0.000	0.000	0.000	0.000	0.00
L17	93.0000-92.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.208	0.01
		C	0.000	0.000	0.000	0.000	0.00
L18	92.0000-87.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	1.042	0.05

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	0.000	0.000	0.00
L19	87.0000-82.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	1.042	0.05
		C	0.000	0.000	0.000	0.000	0.00
L20	82.0000-77.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.937	0.05
		C	0.000	0.000	0.000	0.000	0.00
L21	77.5000-72.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	1.042	0.05
		C	0.000	0.000	0.000	0.000	0.00
L22	72.5000-70.5800	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.400	0.02
		C	0.000	0.000	0.000	0.000	0.00
L23	70.5800-70.3300	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.052	0.00
		C	0.000	0.000	0.000	0.000	0.00
L24	70.3300-67.0800	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.677	0.03
		C	0.000	0.000	0.000	0.000	0.00
L25	67.0800-66.8300	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.052	0.00
		C	0.000	0.000	0.000	0.000	0.00
L26	66.8300-61.8300	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	1.824	0.05
		C	0.000	0.000	0.000	0.000	0.00
L27	61.8300-57.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	1.804	0.05
		C	0.000	0.000	0.000	0.000	0.00
L28	57.5000-56.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.312	0.01
		C	0.000	0.000	0.000	0.000	0.00
L29	56.7500-51.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	2.083	0.05
		C	0.000	0.000	0.000	0.000	0.00
L30	51.7500-46.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	2.083	0.05
		C	0.000	0.000	0.000	0.000	0.00
L31	46.7500-41.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	2.083	0.05
		C	0.000	0.000	0.000	0.000	0.00
L32	41.7500-39.8000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.812	0.02
		C	0.000	0.000	0.000	0.000	0.00
L33	39.8000-39.3300	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.196	0.01
		C	0.000	0.000	0.000	0.000	0.00
L34	39.3300-39.0800	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.104	0.00
		C	0.000	0.000	0.000	0.000	0.00
L35	39.0800-38.3300	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.312	0.01
		C	0.000	0.000	0.000	0.000	0.00
L36	38.3300-38.0800	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.104	0.00
		C	0.000	0.000	0.000	0.000	0.00
L37	38.0800-33.0800	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	2.083	0.05
		C	0.000	0.000	0.000	0.000	0.00
L38	33.0800-30.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.971	0.03
		C	0.000	0.000	0.000	0.000	0.00
L39	30.7500-30.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.104	0.00
		C	0.000	0.000	0.000	0.000	0.00
L40	30.5000-25.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	2.083	0.05
		C	0.000	0.000	0.000	0.000	0.00
L41	25.5000-20.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	2.083	0.05

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	0.000	0.000	0.00
L42	20.5000-15.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	2.083	0.05
		C	0.000	0.000	0.000	0.000	0.00
L43	15.5000-9.8000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	2.375	0.06
		C	0.000	0.000	0.000	0.000	0.00
L44	9.8000-8.8000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.417	0.01
		C	0.000	0.000	0.000	0.000	0.00
L45	8.8000-8.2500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.229	0.01
		C	0.000	0.000	0.000	0.000	0.00
L46	8.2500-8.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.104	0.00
		C	0.000	0.000	0.000	0.000	0.00
L47	8.0000-4.2500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	1.562	0.04
		C	0.000	0.000	0.000	0.000	0.00
L48	4.2500-4.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.104	0.00
		C	0.000	0.000	0.000	0.000	0.00
L49	4.0000-3.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.417	0.01
		C	0.000	0.000	0.000	0.000	0.00
L50	3.0000-2.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.104	0.00
		C	0.000	0.000	0.000	0.000	0.00
L51	2.7500-0.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	1.146	0.03
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	156.0000-151.0000	A	1.487	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L2	151.0000-146.0000	A	1.482	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.00
L3	146.0000-144.5000	A	1.479	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.00
L4	144.5000-144.0000	A	1.478	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L5	144.0000-139.0000	A	1.475	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.05
		C		0.000	0.000	0.000	0.000	0.00
L6	139.0000-134.0000	A	1.469	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.05
		C		0.000	0.000	0.000	0.000	0.00
L7	134.0000-129.0000	A	1.464	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.861	0.05
		C		0.000	0.000	0.000	0.000	0.00
L8	129.0000-128.2500	A	1.461	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.368	0.01
		C		0.000	0.000	0.000	0.000	0.00
L9	128.2500-128.0000	A	1.460	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.123	0.00
		C		0.000	0.000	0.000	0.000	0.00
L10	128.0000-123.0000	A	1.457	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	2.452	0.05
		C		0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L11	123.0000-118.0000	A	1.451	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	2.446	0.05
		C		0.000	0.000	0.000	0.000	0.00
L12	118.0000-113.0000	A	1.445	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	2.439	0.05
		C		0.000	0.000	0.000	0.000	0.00
L13	113.0000-108.0000	A	1.439	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	2.432	0.05
		C		0.000	0.000	0.000	0.000	0.00
L14	108.0000-103.0000	A	1.432	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	2.425	0.05
		C		0.000	0.000	0.000	0.000	0.00
L15	103.0000-98.0000	A	1.425	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	2.528	0.05
		C		0.000	0.000	0.000	0.000	0.00
L16	98.0000-93.0000	A	1.418	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	2.617	0.05
		C		0.000	0.000	0.000	0.000	0.00
L17	93.0000-92.0000	A	1.413	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.523	0.01
		C		0.000	0.000	0.000	0.000	0.00
L18	92.0000-87.0000	A	1.409	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	2.607	0.05
		C		0.000	0.000	0.000	0.000	0.00
L19	87.0000-82.0000	A	1.401	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	2.598	0.05
		C		0.000	0.000	0.000	0.000	0.00
L20	82.0000-77.5000	A	1.393	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	2.330	0.05
		C		0.000	0.000	0.000	0.000	0.00
L21	77.5000-72.5000	A	1.384	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	2.580	0.05
		C		0.000	0.000	0.000	0.000	0.00
L22	72.5000-70.5800	A	1.378	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.988	0.02
		C		0.000	0.000	0.000	0.000	0.00
L23	70.5800-70.3300	A	1.375	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.128	0.00
		C		0.000	0.000	0.000	0.000	0.00
L24	70.3300-67.0800	A	1.372	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	1.668	0.03
		C		0.000	0.000	0.000	0.000	0.00
L25	67.0800-66.8300	A	1.368	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.128	0.00
		C		0.000	0.000	0.000	0.000	0.00
L26	66.8300-61.8300	A	1.363	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	4.475	0.05
		C		0.000	0.000	0.000	0.000	0.00
L27	61.8300-57.5000	A	1.353	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	4.408	0.05
		C		0.000	0.000	0.000	0.000	0.00
L28	57.5000-56.7500	A	1.347	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.763	0.01
		C		0.000	0.000	0.000	0.000	0.00
L29	56.7500-51.7500	A	1.340	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	5.061	0.05
		C		0.000	0.000	0.000	0.000	0.00
L30	51.7500-46.7500	A	1.327	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	5.032	0.05
		C		0.000	0.000	0.000	0.000	0.00
L31	46.7500-41.7500	A	1.313	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	5.001	0.05
		C		0.000	0.000	0.000	0.000	0.00
L32	41.7500-39.8000	A	1.302	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	1.941	0.02
		C		0.000	0.000	0.000	0.000	0.00
L33	39.8000-39.3300	A	1.298	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.467	0.01
		C		0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L34	39.3300-39.0800	A	1.297	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.248	0.00
		C		0.000	0.000	0.000	0.000	0.00
L35	39.0800-38.3300	A	1.295	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.744	0.01
		C		0.000	0.000	0.000	0.000	0.00
L36	38.3300-38.0800	A	1.294	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.248	0.00
		C		0.000	0.000	0.000	0.000	0.00
L37	38.0800-33.0800	A	1.285	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	4.938	0.05
		C		0.000	0.000	0.000	0.000	0.00
L38	33.0800-30.7500	A	1.271	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	2.287	0.03
		C		0.000	0.000	0.000	0.000	0.00
L39	30.7500-30.5000	A	1.266	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.245	0.00
		C		0.000	0.000	0.000	0.000	0.00
L40	30.5000-25.5000	A	1.254	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	4.870	0.05
		C		0.000	0.000	0.000	0.000	0.00
L41	25.5000-20.5000	A	1.230	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	4.816	0.05
		C		0.000	0.000	0.000	0.000	0.00
L42	20.5000-15.5000	A	1.200	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	4.750	0.05
		C		0.000	0.000	0.000	0.000	0.00
L43	15.5000-9.8000	A	1.158	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	5.309	0.06
		C		0.000	0.000	0.000	0.000	0.00
L44	9.8000-8.8000	A	1.123	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.931	0.01
		C		0.000	0.000	0.000	0.000	0.00
L45	8.8000-8.2500	A	1.114	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.501	0.01
		C		0.000	0.000	0.000	0.000	0.00
L46	8.2500-8.0000	A	1.108	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.227	0.00
		C		0.000	0.000	0.000	0.000	0.00
L47	8.0000-4.2500	A	1.077	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	3.358	0.04
		C		0.000	0.000	0.000	0.000	0.00
L48	4.2500-4.0000	A	1.036	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.219	0.00
		C		0.000	0.000	0.000	0.000	0.00
L49	4.0000-3.0000	A	1.019	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.869	0.01
		C		0.000	0.000	0.000	0.000	0.00
L50	3.0000-2.7500	A	0.999	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.215	0.00
		C		0.000	0.000	0.000	0.000	0.00
L51	2.7500-0.0000	A	0.928	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	2.280	0.03
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	156.0000-151.0000	0.0000	0.0000	0.0000	0.0000
L2	151.0000-146.0000	0.0000	0.0000	0.0000	0.0000
L3	146.0000-144.5000	0.0000	0.0000	0.0000	0.0000
L4	144.5000-144.0000	0.0000	0.0000	0.0000	0.0000

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L5	144.0000-139.0000	0.0000	0.0000	0.0000	0.0000
L6	139.0000-134.0000	0.0000	0.0000	0.0000	0.0000
L7	134.0000-129.0000	0.3035	0.1752	0.6010	0.3470
L8	129.0000-128.2500	0.8055	0.4650	1.5132	0.8736
L9	128.2500-128.0000	0.8097	0.4675	1.5206	0.8779
L10	128.0000-123.0000	0.8110	0.4683	1.5281	0.8822
L11	123.0000-118.0000	0.8136	0.4697	1.5416	0.8900
L12	118.0000-113.0000	0.8158	0.4710	1.5535	0.8969
L13	113.0000-108.0000	0.8180	0.4723	1.5646	0.9033
L14	108.0000-103.0000	0.8201	0.4735	1.5745	0.9090
L15	103.0000-98.0000	0.9234	0.5331	1.6462	0.9504
L16	98.0000-93.0000	1.0121	0.5843	1.7091	0.9867
L17	93.0000-92.0000	1.0148	0.5859	1.7136	0.9893
L18	92.0000-87.0000	1.0161	0.5867	1.7159	0.9907
L19	87.0000-82.0000	1.0184	0.5880	1.7232	0.9949
L20	82.0000-77.5000	1.0206	0.5892	1.7294	0.9985
L21	77.5000-72.5000	1.0233	0.5908	1.7357	1.0021
L22	72.5000-70.5800	1.0248	0.5917	1.7392	1.0041
L23	70.5800-70.3300	1.0253	0.5919	1.7401	1.0047
L24	70.3300-67.0800	1.0259	0.5923	1.7414	1.0054
L25	67.0800-66.8300	1.0297	0.5945	1.7473	1.0088
L26	66.8300-61.8300	1.7127	0.9888	2.8048	1.6193
L27	61.8300-57.5000	1.9269	1.1125	3.1241	1.8037
L28	57.5000-56.7500	1.9256	1.1117	3.1202	1.8015
L29	56.7500-51.7500	1.9290	1.1137	3.1209	1.8019
L30	51.7500-46.7500	1.9353	1.1174	3.1307	1.8075
L31	46.7500-41.7500	1.9413	1.1208	3.1378	1.8116
L32	41.7500-39.8000	1.9453	1.1231	3.1412	1.8136
L33	39.8000-39.3300	1.9479	1.1246	3.1437	1.8150
L34	39.3300-39.0800	1.9481	1.1247	3.1437	1.8150
L35	39.0800-38.3300	1.9487	1.1251	3.1440	1.8152
L36	38.3300-38.0800	1.9485	1.1249	3.1431	1.8147
L37	38.0800-33.0800	1.9512	1.1265	3.1437	1.8150
L38	33.0800-30.7500	1.9551	1.1288	3.1429	1.8145
L39	30.7500-30.5000	1.9576	1.1302	3.1438	1.8151
L40	30.5000-25.5000	1.9602	1.1317	3.1410	1.8135
L41	25.5000-20.5000	1.9650	1.1345	3.1318	1.8081
L42	20.5000-15.5000	1.9697	1.1372	3.1156	1.7988
L43	15.5000-9.8000	1.9747	1.1401	3.0862	1.7818
L44	9.8000-8.8000	1.9740	1.1397	3.0841	1.7806
L45	8.8000-8.2500	1.9747	1.1401	3.0366	1.7532
L46	8.2500-8.0000	1.9750	1.1403	3.0317	1.7503
L47	8.0000-4.2500	1.9769	1.1413	3.0022	1.7333
L48	4.2500-4.0000	1.9812	1.1438	2.9631	1.7108
L49	4.0000-3.0000	1.9817	1.1441	2.9452	1.7004
L50	3.0000-2.7500	1.9837	1.1453	2.9256	1.6891
L51	2.7500-0.0000	1.9846	1.1458	2.8449	1.6425

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
NNVV-65B-R4	A	From Leg	4.0000	0.00	150.0000	No Ice	12.2711	5.7500	0.08
			0.00			1/2" Ice	12.7660	6.2069	0.15
			0.00			1" Ice	13.2679	6.6713	0.23
						2" Ice	14.2927	7.6222	0.41
NNVV-65B-R4	B	From Leg	4.0000	0.00	150.0000	No Ice	12.2711	5.7500	0.08
			0.00			1/2" Ice	12.7660	6.2069	0.15
			0.00			1" Ice	13.2679	6.6713	0.23
						2" Ice	14.2927	7.6222	0.41
NNVV-65B-R4	C	From Leg	4.0000	0.00	150.0000	No Ice	12.2711	5.7500	0.08
			0.00			1/2" Ice	12.7660	6.2069	0.15
			0.00			1" Ice	13.2679	6.6713	0.23
						2" Ice	14.2927	7.6222	0.41
APXVTM14-ALU-I20	A	From Leg	4.0000	0.00	150.0000	No Ice	6.3424	3.6074	0.06
			0.00			1/2" Ice	6.7164	3.9666	0.10
			0.00			1" Ice	7.0974	4.3332	0.14
						2" Ice	7.8804	5.0713	0.25
APXVTM14-ALU-I20	B	From Leg	4.0000	0.00	150.0000	No Ice	6.3424	3.6074	0.06
			0.00			1/2" Ice	6.7164	3.9666	0.10
			0.00			1" Ice	7.0974	4.3332	0.14
						2" Ice	7.8804	5.0713	0.25
APXVTM14-ALU-I20	C	From Leg	4.0000	0.00	150.0000	No Ice	6.3424	3.6074	0.06
			0.00			1/2" Ice	6.7164	3.9666	0.10
			0.00			1" Ice	7.0974	4.3332	0.14
						2" Ice	7.8804	5.0713	0.25
TD-RRH8X20-25	A	From Leg	4.0000	0.00	150.0000	No Ice	4.0455	1.5345	0.07
			0.00			1/2" Ice	4.2975	1.7142	0.10
			0.00			1" Ice	4.5570	1.9008	0.13
						2" Ice	5.0981	2.2951	0.20
TD-RRH8X20-25	A	From Leg	4.0000	0.00	150.0000	No Ice	4.0455	1.5345	0.07
			0.00			1/2" Ice	4.2975	1.7142	0.10
			0.00			1" Ice	4.5570	1.9008	0.13
						2" Ice	5.0981	2.2951	0.20
TD-RRH8X20-25	B	From Leg	4.0000	0.00	150.0000	No Ice	4.0455	1.5345	0.07
			0.00			1/2" Ice	4.2975	1.7142	0.10
			0.00			1" Ice	4.5570	1.9008	0.13
						2" Ice	5.0981	2.2951	0.20
PCS 1900MHZ 4X45W-65MHZ	A	From Leg	4.0000	0.00	150.0000	No Ice	2.3218	2.2381	0.06
			0.00			1/2" Ice	2.5266	2.4407	0.08
			0.00			1" Ice	2.7388	2.6507	0.11
						2" Ice	3.1855	3.0929	0.17
PCS 1900MHZ 4X45W-65MHZ	A	From Leg	4.0000	0.00	150.0000	No Ice	2.3218	2.2381	0.06
			0.00			1/2" Ice	2.5266	2.4407	0.08
			0.00			1" Ice	2.7388	2.6507	0.11
						2" Ice	3.1855	3.0929	0.17
PCS 1900MHZ 4X45W-65MHZ	B	From Leg	4.0000	0.00	150.0000	No Ice	2.3218	2.2381	0.06
			0.00			1/2" Ice	2.5266	2.4407	0.08
			0.00			1" Ice	2.7388	2.6507	0.11
						2" Ice	3.1855	3.0929	0.17
(2) RRH2X50-800	A	From Leg	4.0000	0.00	150.0000	No Ice	1.7008	1.2822	0.05
			0.00				1.8640	1.4275	0.07

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
			0.00			1/2" Ice	2.0345	1.5803	0.09
						1" Ice	2.3979	1.9081	0.14
						2" Ice			
(2) RRH2X50-800	A	From Leg	4.0000 0.00 0.00	0.00	150.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.7008 1.8640 2.0345 2.3979	1.2822 1.4275 1.5803 1.9081	0.05 0.07 0.09 0.14
(2) RRH2X50-800	B	From Leg	4.0000 0.00 0.00	0.00	150.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.7008 1.8640 2.0345 2.3979	1.2822 1.4275 1.5803 1.9081	0.05 0.07 0.09 0.14
Side Arm Mount [SO 104-3]	A	None		0.00	150.0000	No Ice 1/2" Ice 1" Ice 2" Ice	3.3000 4.1300 4.9600 6.6200	3.3000 4.1300 4.9600 6.6200	0.29 0.32 0.35 0.41
(2) 2 3/8" OD x 6 ft mount pipe	A	None		0.00	150.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.4250 1.9250 2.2939 3.0596	1.4250 1.9250 2.2939 3.0596	0.00 0.01 0.03 0.07
(2) 2 3/8" OD x 6 ft mount pipe	B	None		0.00	150.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.4250 1.9250 2.2939 3.0596	1.4250 1.9250 2.2939 3.0596	0.00 0.01 0.03 0.07
(2) 2 3/8" OD x 6 ft mount pipe	C	None		0.00	150.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.4250 1.9250 2.2939 3.0596	1.4250 1.9250 2.2939 3.0596	0.00 0.01 0.03 0.07
6' x 2" Horizontal Pipe	A	None		0.00	150.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.2000 1.6148 2.0370 2.9037	0.0333 0.0593 0.0926 0.1815	0.02 0.03 0.05 0.10
6' x 2" Horizontal Pipe	B	None		0.00	150.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.2000 1.6148 2.0370 2.9037	0.0333 0.0593 0.0926 0.1815	0.02 0.03 0.05 0.10
6' x 2" Horizontal Pipe	C	None		0.00	150.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.2000 1.6148 2.0370 2.9037	0.0333 0.0593 0.0926 0.1815	0.02 0.03 0.05 0.10
***									
RRUS 11 B12	A	From Leg	4.0000 0.00 -3.00	0.00	143.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.8333 3.0426 3.2593 3.7148	1.1821 1.3299 1.4848 1.8259	0.05 0.07 0.10 0.15
RRUS 11 B12	B	From Leg	4.0000 0.00 -3.00	-45.00	143.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.8333 3.0426 3.2593 3.7148	1.1821 1.3299 1.4848 1.8259	0.05 0.07 0.10 0.15
RRUS 11 B12	B	From Leg	4.0000 0.00 -3.00	60.00	143.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.8333 3.0426 3.2593 3.7148	1.1821 1.3299 1.4848 1.8259	0.05 0.07 0.10 0.15

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
RRUS 11 B12	C	From Leg	4.0000 0.00 -3.00	40.00	143.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.8333 3.0426 3.2593 3.7148	1.1821 1.3299 1.4848 1.8259	0.05 0.07 0.10 0.15
RRUS 11 B4	A	From Leg	4.0000 0.00 -3.00	0.00	143.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.8333 3.0426 3.2593 3.7148	1.1821 1.3299 1.4848 1.8259	0.05 0.07 0.10 0.15
RRUS 11 B4	B	From Leg	4.0000 0.00 -3.00	-45.00	143.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.8333 3.0426 3.2593 3.7148	1.1821 1.3299 1.4848 1.8259	0.05 0.07 0.10 0.15
RRUS 11 B4	B	From Leg	4.0000 0.00 -3.00	60.00	143.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.8333 3.0426 3.2593 3.7148	1.1821 1.3299 1.4848 1.8259	0.05 0.07 0.10 0.15
RRUS 11 B4	C	From Leg	4.0000 0.00 -3.00	40.00	143.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.8333 3.0426 3.2593 3.7148	1.1821 1.3299 1.4848 1.8259	0.05 0.07 0.10 0.15
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Leg	4.0000 0.00 -3.00	0.00	143.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.8239 7.2751 7.7192 8.6333	3.4938 4.2631 4.9598 6.4031	0.06 0.11 0.16 0.30
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	B	From Leg	4.0000 0.00 -3.00	-45.00	143.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.8239 7.2751 7.7192 8.6333	3.4938 4.2631 4.9598 6.4031	0.06 0.11 0.16 0.30
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	B	From Leg	4.0000 0.00 -3.00	60.00	143.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.8239 7.2751 7.7192 8.6333	3.4938 4.2631 4.9598 6.4031	0.06 0.11 0.16 0.30
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	C	From Leg	4.0000 0.00 -3.00	40.00	143.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.8239 7.2751 7.7192 8.6333	3.4938 4.2631 4.9598 6.4031	0.06 0.11 0.16 0.30
APXVAA24_43-U-A20 w/ Mount Pipe	A	From Leg	4.0000 0.00 -3.00	0.00	143.0000	No Ice 1/2" Ice 1" Ice 2" Ice	20.5042 21.2552 22.0151 23.4705	10.8819 12.4078 13.9578 16.3111	0.13 0.27 0.42 0.75
APXVAA24_43-U-A20 w/ Mount Pipe	B	From Leg	4.0000 0.00 -3.00	-45.00	143.0000	No Ice 1/2" Ice 1" Ice 2" Ice	20.5042 21.2552 22.0151 23.4705	10.8819 12.4078 13.9578 16.3111	0.13 0.27 0.42 0.75
APXVAA24_43-U-A20 w/ Mount Pipe	B	From Leg	4.0000 0.00 -3.00	60.00	143.0000	No Ice 1/2" Ice 1" Ice 2" Ice	20.5042 21.2552 22.0151 23.4705	10.8819 12.4078 13.9578 16.3111	0.13 0.27 0.42 0.75
APXVAA24_43-U-A20 w/ Mount Pipe	C	From Leg	4.0000 0.00 -3.00	40.00	143.0000	No Ice 1/2" Ice 1" Ice 2" Ice	20.5042 21.2552 22.0151 23.4705	10.8819 12.4078 13.9578 16.3111	0.13 0.27 0.42 0.75

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
AIR 32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.0000 0.00 -3.00	0.00	143.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.7474 7.2017 7.6475 8.5651	6.0700 6.8671 7.5828 9.0629	0.15 0.21 0.28 0.44
AIR 32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.0000 0.00 -3.00	-45.00	143.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.7474 7.2017 7.6475 8.5651	6.0700 6.8671 7.5828 9.0629	0.15 0.21 0.28 0.44
AIR 32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.0000 0.00 -3.00	60.00	143.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.7474 7.2017 7.6475 8.5651	6.0700 6.8671 7.5828 9.0629	0.15 0.21 0.28 0.44
AIR 32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.0000 0.00 -3.00	40.00	143.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.7474 7.2017 7.6475 8.5651	6.0700 6.8671 7.5828 9.0629	0.15 0.21 0.28 0.44
Platform Mount [LP 701-1]	B	None		0.00	143.0000	No Ice 1/2" Ice 1" Ice 2" Ice	59.1500 71.1200 83.0900 107.0300	59.1500 71.1200 83.0900 107.0300	2.75 3.42 4.10 5.45
**********									
********									

Tower Pressures - No Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 156.0000-151.0000	153.5000	1.385	52.88	4.479	A	0.000	4.479	4.479	100.00	0.000	0.000
					B	0.000	4.479		100.00	0.000	0.000
					C	0.000	4.479		100.00	0.000	0.000
L2 151.0000-146.0000	148.5000	1.375	52.51	4.479	A	0.000	4.479	4.479	100.00	0.000	0.000
					B	0.000	4.479		100.00	0.000	0.000
					C	0.000	4.479		100.00	0.000	0.000
L3 146.0000-144.5000	145.2500	1.369	52.27	1.344	A	0.000	1.344	1.344	100.00	0.000	0.000
					B	0.000	1.344		100.00	0.000	0.000
					C	0.000	1.344		100.00	0.000	0.000
L4 144.5000-144.0000	144.2290	1.367	52.19	0.599	A	0.000	0.599	0.599	100.00	0.000	0.000
					B	0.000	0.599		100.00	0.000	0.000
					C	0.000	0.599		100.00	0.000	0.000
L5 144.0000-139.0000	141.4787	1.362	51.98	7.931	A	0.000	7.931	7.931	100.00	0.000	0.000
					B	0.000	7.931		100.00	0.000	0.000
					C	0.000	7.931		100.00	0.000	0.000
L6 139.0000-134.0000	136.4798	1.351	51.59	8.338	A	0.000	8.338	8.338	100.00	0.000	0.000
					B	0.000	8.338		100.00	0.000	0.000
					C	0.000	8.338		100.00	0.000	0.000
L7 134.0000-129.0000	131.4807	1.341	51.18	8.745	A	0.000	8.745	8.745	100.00	0.000	0.000
					B	0.000	8.745		100.00	0.000	0.292
					C	0.000	8.745		100.00	0.000	0.000
L8 129.0000-128.2500	128.6246	1.334	50.95	1.347	A	0.000	1.347	1.347	100.00	0.000	0.000
					B	0.000	1.347		100.00	0.000	0.125
					C	0.000	1.347		100.00	0.000	0.000
L9 128.2500-128.0000	128.1250	1.333	50.90	0.449	A	0.000	0.449	0.449	100.00	0.000	0.000
					B	0.000	0.449		100.00	0.000	0.042
					C	0.000	0.449		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L10 128.0000-123.0000	125.4817	1.328	50.68	9.188	A	0.000	9.188	9.188	100.00	0.000	0.000
					B	0.000	9.188		100.00	0.000	0.833
					C	0.000	9.188		100.00	0.000	0.000
L11 123.0000-118.0000	120.4825	1.316	50.25	9.597	A	0.000	9.597	9.597	100.00	0.000	0.000
					B	0.000	9.597		100.00	0.000	0.833
					C	0.000	9.597		100.00	0.000	0.000
L12 118.0000-113.0000	115.4832	1.305	49.80	10.007	A	0.000	10.007	10.007	100.00	0.000	0.000
					B	0.000	10.007		100.00	0.000	0.833
					C	0.000	10.007		100.00	0.000	0.000
L13 113.0000-108.0000	110.4838	1.292	49.34	10.416	A	0.000	10.416	10.416	100.00	0.000	0.000
					B	0.000	10.416		100.00	0.000	0.833
					C	0.000	10.416		100.00	0.000	0.000
L14 108.0000-103.0000	105.4844	1.28	48.86	10.825	A	0.000	10.825	10.825	100.00	0.000	0.000
					B	0.000	10.825		100.00	0.000	0.833
					C	0.000	10.825		100.00	0.000	0.000
L15 103.0000-98.0000	100.4850	1.267	48.37	11.233	A	0.000	11.233	11.233	100.00	0.000	0.000
					B	0.000	11.233		100.00	0.000	0.944
					C	0.000	11.233		100.00	0.000	0.000
L16 98.0000-93.0000	95.4855	1.253	47.85	11.641	A	0.000	11.641	11.641	100.00	0.000	0.000
					B	0.000	11.641		100.00	0.000	1.042
					C	0.000	11.641		100.00	0.000	0.000
L17 93.0000-92.0000	92.4994	1.245	47.53	2.328	A	0.000	2.328	2.328	100.00	0.000	0.000
					B	0.000	2.328		100.00	0.000	0.208
					C	0.000	2.328		100.00	0.000	0.000
L18 92.0000-87.0000	89.4858	1.236	47.20	11.886	A	0.000	11.886	11.886	100.00	0.000	0.000
					B	0.000	11.886		100.00	0.000	1.042
					C	0.000	11.886		100.00	0.000	0.000
L19 87.0000-82.0000	84.4863	1.221	46.63	12.297	A	0.000	12.297	12.297	100.00	0.000	0.000
					B	0.000	12.297		100.00	0.000	1.042
					C	0.000	12.297		100.00	0.000	0.000
L20 82.0000-77.5000	79.7392	1.207	46.07	11.417	A	0.000	11.417	11.417	100.00	0.000	0.000
					B	0.000	11.417		100.00	0.000	0.937
					C	0.000	11.417		100.00	0.000	0.000
L21 77.5000-72.5000	74.9871	1.191	45.48	13.065	A	0.000	13.065	13.065	100.00	0.000	0.000
					B	0.000	13.065		100.00	0.000	1.042
					C	0.000	13.065		100.00	0.000	0.000
L22 72.5000-70.5800	71.5381	1.179	45.03	5.125	A	0.000	5.125	5.125	100.00	0.000	0.000
					B	0.000	5.125		100.00	0.000	0.400
					C	0.000	5.125		100.00	0.000	0.000
L23 70.5800-70.3300	70.4550	1.176	44.88	0.672	A	0.000	0.672	0.672	100.00	0.000	0.000
					B	0.000	0.672		100.00	0.000	0.052
					C	0.000	0.672		100.00	0.000	0.000
L24 70.3300-67.0800	68.6998	1.169	44.64	8.826	A	0.000	8.826	8.826	100.00	0.000	0.000
					B	0.000	8.826		100.00	0.000	0.677
					C	0.000	8.826		100.00	0.000	0.000
L25 67.0800-66.8300	66.9550	1.163	44.40	0.684	A	0.000	0.684	0.684	100.00	0.000	0.000
					B	0.000	0.684		100.00	0.000	0.052
					C	0.000	0.684		100.00	0.000	0.000
L26 66.8300-61.8300	64.3179	1.153	44.03	13.895	A	0.000	13.895	13.895	100.00	0.000	0.000
					B	0.000	13.895		100.00	0.000	1.824
					C	0.000	13.895		100.00	0.000	0.000
L27 61.8300-57.5000	59.6562	1.135	43.34	12.362	A	0.000	12.362	12.362	100.00	0.000	0.000
					B	0.000	12.362		100.00	0.000	1.804
					C	0.000	12.362		100.00	0.000	0.000
L28 57.5000-56.7500	57.1247	1.125	42.94	2.132	A	0.000	2.132	2.132	100.00	0.000	0.000
					B	0.000	2.132		100.00	0.000	0.312
					C	0.000	2.132		100.00	0.000	0.000
L29 56.7500-51.7500	54.2384	1.113	42.48	14.451	A	0.000	14.451	14.451	100.00	0.000	0.000
					B	0.000	14.451		100.00	0.000	2.083
					C	0.000	14.451		100.00	0.000	0.000
L30 51.7500-46.7500	49.2387	1.09	41.62	14.860	A	0.000	14.860	14.860	100.00	0.000	0.000
					B	0.000	14.860		100.00	0.000	2.083
					C	0.000	14.860		100.00	0.000	0.000
L31 46.7500-41.7500	44.2390	1.066	40.69	15.269	A	0.000	15.269	15.269	100.00	0.000	0.000
					B	0.000	15.269		100.00	0.000	2.083
					C	0.000	15.269		100.00	0.000	0.000
L32 41.7500-39.8000	40.7734	1.048	40.00	6.066	A	0.000	6.066	6.066	100.00	0.000	0.000
					B	0.000	6.066		100.00	0.000	0.812

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	0.000	6.066		100.00	0.000	0.000
L33 39.8000-39.3300	39.5649	1.041	39.75	1.470	A	0.000	1.470	1.470	100.00	0.000	0.000
					B	0.000	1.470		100.00	0.000	0.196
					C	0.000	1.470		100.00	0.000	0.000
L34 39.3300-39.0800	39.2050	1.039	39.67	0.784	A	0.000	0.784	0.784	100.00	0.000	0.000
					B	0.000	0.784		100.00	0.000	0.104
					C	0.000	0.784		100.00	0.000	0.000
L35 39.0800-38.3300	38.7048	1.036	39.57	2.357	A	0.000	2.357	2.357	100.00	0.000	0.000
					B	0.000	2.357		100.00	0.000	0.312
					C	0.000	2.357		100.00	0.000	0.000
L36 38.3300-38.0800	38.2050	1.034	39.46	0.788	A	0.000	0.788	0.788	100.00	0.000	0.000
					B	0.000	0.788		100.00	0.000	0.104
					C	0.000	0.788		100.00	0.000	0.000
L37 38.0800-33.0800	35.5695	1.018	38.87	15.977	A	0.000	15.977	15.977	100.00	0.000	0.000
					B	0.000	15.977		100.00	0.000	2.083
					C	0.000	15.977		100.00	0.000	0.000
L38 33.0800-30.7500	31.9128	0.995	37.99	7.585	A	0.000	7.585	7.585	100.00	0.000	0.000
					B	0.000	7.585		100.00	0.000	0.971
					C	0.000	7.585		100.00	0.000	0.000
L39 30.7500-30.5000	30.6250	0.987	37.66	0.819	A	0.000	0.819	0.819	100.00	0.000	0.000
					B	0.000	0.819		100.00	0.000	0.104
					C	0.000	0.819		100.00	0.000	0.000
L40 30.5000-25.5000	27.9899	0.968	36.96	16.586	A	0.000	16.586	16.586	100.00	0.000	0.000
					B	0.000	16.586		100.00	0.000	2.083
					C	0.000	16.586		100.00	0.000	0.000
L41 25.5000-20.5000	22.9901	0.929	35.46	16.997	A	0.000	16.997	16.997	100.00	0.000	0.000
					B	0.000	16.997		100.00	0.000	2.083
					C	0.000	16.997		100.00	0.000	0.000
L42 20.5000-15.5000	17.9903	0.882	33.67	17.406	A	0.000	17.406	17.406	100.00	0.000	0.000
					B	0.000	17.406		100.00	0.000	2.083
					C	0.000	17.406		100.00	0.000	0.000
L43 15.5000-9.8000	12.6377	0.85	32.45	20.339	A	0.000	20.339	20.339	100.00	0.000	0.000
					B	0.000	20.339		100.00	0.000	2.375
					C	0.000	20.339		100.00	0.000	0.000
L44 9.8000-8.8000	9.2996	0.85	32.45	3.559	A	0.000	3.559	3.559	100.00	0.000	0.000
					B	0.000	3.559		100.00	0.000	0.417
					C	0.000	3.559		100.00	0.000	0.000
L45 8.8000-8.2500	8.5249	0.85	32.45	1.964	A	0.000	1.964	1.964	100.00	0.000	0.000
					B	0.000	1.964		100.00	0.000	0.229
					C	0.000	1.964		100.00	0.000	0.000
L46 8.2500-8.0000	8.1250	0.85	32.45	0.894	A	0.000	0.894	0.894	100.00	0.000	0.000
					B	0.000	0.894		100.00	0.000	0.104
					C	0.000	0.894		100.00	0.000	0.000
L47 8.0000-4.2500	6.1198	0.85	32.45	13.538	A	0.000	13.538	13.538	100.00	0.000	0.000
					B	0.000	13.538		100.00	0.000	1.562
					C	0.000	13.538		100.00	0.000	0.000
L48 4.2500-4.0000	4.1250	0.85	32.45	0.909	A	0.000	0.909	0.909	100.00	0.000	0.000
					B	0.000	0.909		100.00	0.000	0.104
					C	0.000	0.909		100.00	0.000	0.000
L49 4.0000-3.0000	3.4996	0.85	32.45	3.648	A	0.000	3.648	3.648	100.00	0.000	0.000
					B	0.000	3.648		100.00	0.000	0.417
					C	0.000	3.648		100.00	0.000	0.000
L50 3.0000-2.7500	2.8750	0.85	32.45	0.914	A	0.000	0.914	0.914	100.00	0.000	0.000
					B	0.000	0.914		100.00	0.000	0.104
					C	0.000	0.914		100.00	0.000	0.000
L51 2.7500-0.0000	1.3722	0.85	32.45	10.120	A	0.000	10.120	10.120	100.00	0.000	0.000
					B	0.000	10.120		100.00	0.000	1.146
					C	0.000	10.120		100.00	0.000	0.000

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 156.0000-151.0000	153.5000	1.385	7.82	1.4869	5.718	A	0.000	5.718	5.718	100.00	0.000	0.000
						B	0.000	5.718		100.00	0.000	0.000
						C	0.000	5.718		100.00	0.000	0.000
L2 151.0000-146.0000	148.5000	1.375	7.77	1.4819	5.714	A	0.000	5.714	5.714	100.00	0.000	0.000
						B	0.000	5.714		100.00	0.000	0.000
						C	0.000	5.714		100.00	0.000	0.000
L3 146.0000-144.5000	145.2500	1.369	7.73	1.4787	1.713	A	0.000	1.713	1.713	100.00	0.000	0.000
						B	0.000	1.713		100.00	0.000	0.000
						C	0.000	1.713		100.00	0.000	0.000
L4 144.5000-144.0000	144.2290	1.367	7.72	1.4776	0.722	A	0.000	0.722	0.722	100.00	0.000	0.000
						B	0.000	0.722		100.00	0.000	0.000
						C	0.000	0.722		100.00	0.000	0.000
L5 144.0000-139.0000	141.4787	1.362	7.69	1.4748	9.160	A	0.000	9.160	9.160	100.00	0.000	0.000
						B	0.000	9.160		100.00	0.000	0.000
						C	0.000	9.160		100.00	0.000	0.000
L6 139.0000-134.0000	136.4798	1.351	7.63	1.4695	9.563	A	0.000	9.563	9.563	100.00	0.000	0.000
						B	0.000	9.563		100.00	0.000	0.000
						C	0.000	9.563		100.00	0.000	0.000
L7 134.0000-129.0000	131.4807	1.341	7.57	1.4640	9.965	A	0.000	9.965	9.965	100.00	0.000	0.000
						B	0.000	9.965		100.00	0.000	0.861
						C	0.000	9.965		100.00	0.000	0.000
L8 129.0000-128.2500	128.6246	1.334	7.54	1.4608	1.530	A	0.000	1.530	1.530	100.00	0.000	0.000
						B	0.000	1.530		100.00	0.000	0.368
						C	0.000	1.530		100.00	0.000	0.000
L9 128.2500-128.0000	128.1250	1.333	7.53	1.4602	0.509	A	0.000	0.509	0.509	100.00	0.000	0.000
						B	0.000	0.509		100.00	0.000	0.123
						C	0.000	0.509		100.00	0.000	0.000
L10 128.0000-123.0000	125.4817	1.328	7.50	1.4572	10.402	A	0.000	10.402	10.402	100.00	0.000	0.000
						B	0.000	10.402		100.00	0.000	2.452
						C	0.000	10.402		100.00	0.000	0.000
L11 123.0000-118.0000	120.4825	1.316	7.43	1.4513	10.806	A	0.000	10.806	10.806	100.00	0.000	0.000
						B	0.000	10.806		100.00	0.000	2.446
						C	0.000	10.806		100.00	0.000	0.000
L12 118.0000-113.0000	115.4832	1.305	7.37	1.4451	11.212	A	0.000	11.212	11.212	100.00	0.000	0.000
						B	0.000	11.212		100.00	0.000	2.439
						C	0.000	11.212		100.00	0.000	0.000
L13 113.0000-108.0000	110.4838	1.292	7.30	1.4388	11.615	A	0.000	11.615	11.615	100.00	0.000	0.000
						B	0.000	11.615		100.00	0.000	2.432
						C	0.000	11.615		100.00	0.000	0.000
L14 108.0000-103.0000	105.4844	1.28	7.23	1.4321	12.018	A	0.000	12.018	12.018	100.00	0.000	0.000
						B	0.000	12.018		100.00	0.000	2.425
						C	0.000	12.018		100.00	0.000	0.000
L15 103.0000-98.0000	100.4850	1.267	7.15	1.4252	12.421	A	0.000	12.421	12.421	100.00	0.000	0.000
						B	0.000	12.421		100.00	0.000	2.528
						C	0.000	12.421		100.00	0.000	0.000
L16 98.0000-93.0000	95.4855	1.253	7.08	1.4179	12.822	A	0.000	12.822	12.822	100.00	0.000	0.000
						B	0.000	12.822		100.00	0.000	2.617
						C	0.000	12.822		100.00	0.000	0.000
L17 93.0000-92.0000	92.4994	1.245	7.03	1.4134	2.564	A	0.000	2.564	2.564	100.00	0.000	0.000
						B	0.000	2.564		100.00	0.000	0.523
						C	0.000	2.564		100.00	0.000	0.000
L18 92.0000-87.0000	89.4858	1.236	6.98	1.4088	13.060	A	0.000	13.060	13.060	100.00	0.000	0.000
						B	0.000	13.060		100.00	0.000	2.607
						C	0.000	13.060		100.00	0.000	0.000
L19 87.0000-82.0000	84.4863	1.221	6.90	1.4007	13.464	A	0.000	13.464	13.464	100.00	0.000	0.000
						B	0.000	13.464		100.00	0.000	2.598
						C	0.000	13.464		100.00	0.000	0.000
L20 82.0000-77.5000	79.7392	1.207	6.81	1.3926	12.461	A	0.000	12.461	12.461	100.00	0.000	0.000
						B	0.000	12.461		100.00	0.000	2.330
						C	0.000	12.461		100.00	0.000	0.000
L21 77.5000-72.5000	74.9871	1.191	6.73	1.3841	14.218	A	0.000	14.218	14.218	100.00	0.000	0.000
						B	0.000	14.218		100.00	0.000	2.580
						C	0.000	14.218		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L22 72.5000-70.5800	71.5381	1.179	6.66	1.3776	5.566	A	0.000	5.566	5.566	100.00	0.000	0.000
						B	0.000	5.566		100.00	0.000	0.988
						C	0.000	5.566		100.00	0.000	0.000
L23 70.5800-70.3300	70.4550	1.176	6.64	1.3755	0.729	A	0.000	0.729	0.729	100.00	0.000	0.000
						B	0.000	0.729		100.00	0.000	0.128
						C	0.000	0.729		100.00	0.000	0.000
L24 70.3300-67.0800	68.6998	1.169	6.60	1.3720	9.570	A	0.000	9.570	9.570	100.00	0.000	0.000
						B	0.000	9.570		100.00	0.000	1.668
						C	0.000	9.570		100.00	0.000	0.000
L25 67.0800-66.8300	66.9550	1.163	6.57	1.3685	0.741	A	0.000	0.741	0.741	100.00	0.000	0.000
						B	0.000	0.741		100.00	0.000	0.128
						C	0.000	0.741		100.00	0.000	0.000
L26 66.8300-61.8300	64.3179	1.153	6.51	1.3630	15.031	A	0.000	15.031	15.031	100.00	0.000	0.000
						B	0.000	15.031		100.00	0.000	4.475
						C	0.000	15.031		100.00	0.000	0.000
L27 61.8300-57.5000	59.6562	1.135	6.41	1.3528	13.338	A	0.000	13.338	13.338	100.00	0.000	0.000
						B	0.000	13.338		100.00	0.000	4.408
						C	0.000	13.338		100.00	0.000	0.000
L28 57.5000-56.7500	57.1247	1.125	6.35	1.3469	2.301	A	0.000	2.301	2.301	100.00	0.000	0.000
						B	0.000	2.301		100.00	0.000	0.763
						C	0.000	2.301		100.00	0.000	0.000
L29 56.7500-51.7500	54.2384	1.113	6.28	1.3400	15.568	A	0.000	15.568	15.568	100.00	0.000	0.000
						B	0.000	15.568		100.00	0.000	5.061
						C	0.000	15.568		100.00	0.000	0.000
L30 51.7500-46.7500	49.2387	1.09	6.16	1.3271	15.966	A	0.000	15.966	15.966	100.00	0.000	0.000
						B	0.000	15.966		100.00	0.000	5.032
						C	0.000	15.966		100.00	0.000	0.000
L31 46.7500-41.7500	44.2390	1.066	6.02	1.3129	16.363	A	0.000	16.363	16.363	100.00	0.000	0.000
						B	0.000	16.363		100.00	0.000	5.001
						C	0.000	16.363		100.00	0.000	0.000
L32 41.7500-39.8000	40.7734	1.048	5.92	1.3023	6.489	A	0.000	6.489	6.489	100.00	0.000	0.000
						B	0.000	6.489		100.00	0.000	1.941
						C	0.000	6.489		100.00	0.000	0.000
L33 39.8000-39.3300	39.5649	1.041	5.88	1.2983	1.572	A	0.000	1.572	1.572	100.00	0.000	0.000
						B	0.000	1.572		100.00	0.000	0.467
						C	0.000	1.572		100.00	0.000	0.000
L34 39.3300-39.0800	39.2050	1.039	5.87	1.2972	0.838	A	0.000	0.838	0.838	100.00	0.000	0.000
						B	0.000	0.838		100.00	0.000	0.248
						C	0.000	0.838		100.00	0.000	0.000
L35 39.0800-38.3300	38.7048	1.036	5.85	1.2955	2.519	A	0.000	2.519	2.519	100.00	0.000	0.000
						B	0.000	2.519		100.00	0.000	0.744
						C	0.000	2.519		100.00	0.000	0.000
L36 38.3300-38.0800	38.2050	1.034	5.84	1.2938	0.842	A	0.000	0.842	0.842	100.00	0.000	0.000
						B	0.000	0.842		100.00	0.000	0.248
						C	0.000	0.842		100.00	0.000	0.000
L37 38.0800-33.0800	35.5695	1.018	5.75	1.2846	17.047	A	0.000	17.047	17.047	100.00	0.000	0.000
						B	0.000	17.047		100.00	0.000	4.938
						C	0.000	17.047		100.00	0.000	0.000
L38 33.0800-30.7500	31.9128	0.995	5.62	1.2707	8.078	A	0.000	8.078	8.078	100.00	0.000	0.000
						B	0.000	8.078		100.00	0.000	2.287
						C	0.000	8.078		100.00	0.000	0.000
L39 30.7500-30.5000	30.6250	0.987	5.57	1.2655	0.871	A	0.000	0.871	0.871	100.00	0.000	0.000
						B	0.000	0.871		100.00	0.000	0.245
						C	0.000	0.871		100.00	0.000	0.000
L40 30.5000-25.5000	27.9899	0.968	5.47	1.2542	17.632	A	0.000	17.632	17.632	100.00	0.000	0.000
						B	0.000	17.632		100.00	0.000	4.870
						C	0.000	17.632		100.00	0.000	0.000
L41 25.5000-20.5000	22.9901	0.929	5.24	1.2297	18.022	A	0.000	18.022	18.022	100.00	0.000	0.000
						B	0.000	18.022		100.00	0.000	4.816
						C	0.000	18.022		100.00	0.000	0.000
L42 20.5000-15.5000	17.9903	0.882	4.98	1.1999	18.406	A	0.000	18.406	18.406	100.00	0.000	0.000
						B	0.000	18.406		100.00	0.000	4.750
						C	0.000	18.406		100.00	0.000	0.000
L43 15.5000-9.8000	12.6377	0.85	4.80	1.1583	21.440	A	0.000	21.440	21.440	100.00	0.000	0.000
						B	0.000	21.440		100.00	0.000	5.309
						C	0.000	21.440		100.00	0.000	0.000
L44 9.8000-8.8000	9.2996	0.85	4.80	1.1233	3.752	A	0.000	3.752	3.752	100.00	0.000	0.000
						B	0.000	3.752		100.00	0.000	0.931

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						C	0.000	3.752		100.00	0.000	0.000
L45 8.8000-8.2500	8.5249	0.85	4.80	1.1136	2.066	A	0.000	2.066	2.066	100.00	0.000	0.000
						B	0.000	2.066		100.00	0.000	0.501
						C	0.000	2.066		100.00	0.000	0.000
L46 8.2500-8.0000	8.1250	0.85	4.80	1.1083	0.941	A	0.000	0.941	0.941	100.00	0.000	0.000
						B	0.000	0.941		100.00	0.000	0.227
						C	0.000	0.941		100.00	0.000	0.000
L47 8.0000-4.2500	6.1198	0.85	4.80	1.0773	14.212	A	0.000	14.212	14.212	100.00	0.000	0.000
						B	0.000	14.212		100.00	0.000	3.358
						C	0.000	14.212		100.00	0.000	0.000
L48 4.2500-4.0000	4.1250	0.85	4.80	1.0356	0.953	A	0.000	0.953	0.953	100.00	0.000	0.000
						B	0.000	0.953		100.00	0.000	0.219
						C	0.000	0.953		100.00	0.000	0.000
L49 4.0000-3.0000	3.4996	0.85	4.80	1.0187	3.818	A	0.000	3.818	3.818	100.00	0.000	0.000
						B	0.000	3.818		100.00	0.000	0.869
						C	0.000	3.818		100.00	0.000	0.000
L50 3.0000-2.7500	2.8750	0.85	4.80	0.9989	0.955	A	0.000	0.955	0.955	100.00	0.000	0.000
						B	0.000	0.955		100.00	0.000	0.215
						C	0.000	0.955		100.00	0.000	0.000
L51 2.7500-0.0000	1.3722	0.85	4.80	0.9277	10.546	A	0.000	10.546	10.546	100.00	0.000	0.000
						B	0.000	10.546		100.00	0.000	2.280
						C	0.000	10.546		100.00	0.000	0.000

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 156.0000-151.0000	153.5000	1.385	10.08	4.479	A	0.000	4.479	4.479	100.00	0.000	0.000
					B	0.000	4.479		100.00	0.000	0.000
					C	0.000	4.479		100.00	0.000	0.000
L2 151.0000-146.0000	148.5000	1.375	10.01	4.479	A	0.000	4.479	4.479	100.00	0.000	0.000
					B	0.000	4.479		100.00	0.000	0.000
					C	0.000	4.479		100.00	0.000	0.000
L3 146.0000-144.5000	145.2500	1.369	9.96	1.344	A	0.000	1.344	1.344	100.00	0.000	0.000
					B	0.000	1.344		100.00	0.000	0.000
					C	0.000	1.344		100.00	0.000	0.000
L4 144.5000-144.0000	144.2290	1.367	9.95	0.599	A	0.000	0.599	0.599	100.00	0.000	0.000
					B	0.000	0.599		100.00	0.000	0.000
					C	0.000	0.599		100.00	0.000	0.000
L5 144.0000-139.0000	141.4787	1.362	9.91	7.931	A	0.000	7.931	7.931	100.00	0.000	0.000
					B	0.000	7.931		100.00	0.000	0.000
					C	0.000	7.931		100.00	0.000	0.000
L6 139.0000-134.0000	136.4798	1.351	9.83	8.338	A	0.000	8.338	8.338	100.00	0.000	0.000
					B	0.000	8.338		100.00	0.000	0.000
					C	0.000	8.338		100.00	0.000	0.000
L7 134.0000-129.0000	131.4807	1.341	9.76	8.745	A	0.000	8.745	8.745	100.00	0.000	0.000
					B	0.000	8.745		100.00	0.000	0.292
					C	0.000	8.745		100.00	0.000	0.000
L8 129.0000-128.2500	128.6246	1.334	9.71	1.347	A	0.000	1.347	1.347	100.00	0.000	0.000
					B	0.000	1.347		100.00	0.000	0.125
					C	0.000	1.347		100.00	0.000	0.000
L9 128.2500-128.0000	128.1250	1.333	9.70	0.449	A	0.000	0.449	0.449	100.00	0.000	0.000
					B	0.000	0.449		100.00	0.000	0.042
					C	0.000	0.449		100.00	0.000	0.000
L10 128.0000-123.0000	125.4817	1.328	9.66	9.188	A	0.000	9.188	9.188	100.00	0.000	0.000
					B	0.000	9.188		100.00	0.000	0.833
					C	0.000	9.188		100.00	0.000	0.000
L11 123.0000-118.0000	120.4825	1.316	9.58	9.597	A	0.000	9.597	9.597	100.00	0.000	0.000
					B	0.000	9.597		100.00	0.000	0.833
					C	0.000	9.597		100.00	0.000	0.000
L12 118.0000-113.0000	115.4832	1.305	9.49	10.007	A	0.000	10.007	10.007	100.00	0.000	0.000
					B	0.000	10.007		100.00	0.000	0.833
					C	0.000	10.007		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L13	110.4838	1.292	9.40	10.416	A	0.000	10.416	10.416	100.00	0.000	0.000
113.0000-108.0000					B	0.000	10.416		100.00	0.000	0.833
					C	0.000	10.416		100.00	0.000	0.000
L14	105.4844	1.28	9.31	10.825	A	0.000	10.825	10.825	100.00	0.000	0.000
108.0000-103.0000					B	0.000	10.825		100.00	0.000	0.833
					C	0.000	10.825		100.00	0.000	0.000
L15	100.4850	1.267	9.22	11.233	A	0.000	11.233	11.233	100.00	0.000	0.000
103.0000-98.0000					B	0.000	11.233		100.00	0.000	0.944
					C	0.000	11.233		100.00	0.000	0.000
L16 98.0000-93.0000	95.4855	1.253	9.12	11.641	A	0.000	11.641	11.641	100.00	0.000	0.000
					B	0.000	11.641		100.00	0.000	1.042
					C	0.000	11.641		100.00	0.000	0.000
L17 93.0000-92.0000	92.4994	1.245	9.06	2.328	A	0.000	2.328	2.328	100.00	0.000	0.000
					B	0.000	2.328		100.00	0.000	0.208
					C	0.000	2.328		100.00	0.000	0.000
L18 92.0000-87.0000	89.4858	1.236	9.00	11.886	A	0.000	11.886	11.886	100.00	0.000	0.000
					B	0.000	11.886		100.00	0.000	1.042
					C	0.000	11.886		100.00	0.000	0.000
L19 87.0000-82.0000	84.4863	1.221	8.89	12.297	A	0.000	12.297	12.297	100.00	0.000	0.000
					B	0.000	12.297		100.00	0.000	1.042
					C	0.000	12.297		100.00	0.000	0.000
L20 82.0000-77.5000	79.7392	1.207	8.78	11.417	A	0.000	11.417	11.417	100.00	0.000	0.000
					B	0.000	11.417		100.00	0.000	0.937
					C	0.000	11.417		100.00	0.000	0.000
L21 77.5000-72.5000	74.9871	1.191	8.67	13.065	A	0.000	13.065	13.065	100.00	0.000	0.000
					B	0.000	13.065		100.00	0.000	1.042
					C	0.000	13.065		100.00	0.000	0.000
L22 72.5000-70.5800	71.5381	1.179	8.58	5.125	A	0.000	5.125	5.125	100.00	0.000	0.000
					B	0.000	5.125		100.00	0.000	0.400
					C	0.000	5.125		100.00	0.000	0.000
L23 70.5800-70.3300	70.4550	1.176	8.55	0.672	A	0.000	0.672	0.672	100.00	0.000	0.000
					B	0.000	0.672		100.00	0.000	0.052
					C	0.000	0.672		100.00	0.000	0.000
L24 70.3300-67.0800	68.6998	1.169	8.51	8.826	A	0.000	8.826	8.826	100.00	0.000	0.000
					B	0.000	8.826		100.00	0.000	0.677
					C	0.000	8.826		100.00	0.000	0.000
L25 67.0800-66.8300	66.9550	1.163	8.46	0.684	A	0.000	0.684	0.684	100.00	0.000	0.000
					B	0.000	0.684		100.00	0.000	0.052
					C	0.000	0.684		100.00	0.000	0.000
L26 66.8300-61.8300	64.3179	1.153	8.39	13.895	A	0.000	13.895	13.895	100.00	0.000	0.000
					B	0.000	13.895		100.00	0.000	1.824
					C	0.000	13.895		100.00	0.000	0.000
L27 61.8300-57.5000	59.6562	1.135	8.26	12.362	A	0.000	12.362	12.362	100.00	0.000	0.000
					B	0.000	12.362		100.00	0.000	1.804
					C	0.000	12.362		100.00	0.000	0.000
L28 57.5000-56.7500	57.1247	1.125	8.18	2.132	A	0.000	2.132	2.132	100.00	0.000	0.000
					B	0.000	2.132		100.00	0.000	0.312
					C	0.000	2.132		100.00	0.000	0.000
L29 56.7500-51.7500	54.2384	1.113	8.10	14.451	A	0.000	14.451	14.451	100.00	0.000	0.000
					B	0.000	14.451		100.00	0.000	2.083
					C	0.000	14.451		100.00	0.000	0.000
L30 51.7500-46.7500	49.2387	1.09	7.93	14.860	A	0.000	14.860	14.860	100.00	0.000	0.000
					B	0.000	14.860		100.00	0.000	2.083
					C	0.000	14.860		100.00	0.000	0.000
L31 46.7500-41.7500	44.2390	1.066	7.76	15.269	A	0.000	15.269	15.269	100.00	0.000	0.000
					B	0.000	15.269		100.00	0.000	2.083
					C	0.000	15.269		100.00	0.000	0.000
L32 41.7500-39.8000	40.7734	1.048	7.62	6.066	A	0.000	6.066	6.066	100.00	0.000	0.000
					B	0.000	6.066		100.00	0.000	0.812
					C	0.000	6.066		100.00	0.000	0.000
L33 39.8000-39.3300	39.5649	1.041	7.58	1.470	A	0.000	1.470	1.470	100.00	0.000	0.000
					B	0.000	1.470		100.00	0.000	0.196
					C	0.000	1.470		100.00	0.000	0.000
L34 39.3300-39.0800	39.2050	1.039	7.56	0.784	A	0.000	0.784	0.784	100.00	0.000	0.000
					B	0.000	0.784		100.00	0.000	0.104
					C	0.000	0.784		100.00	0.000	0.000
L35 39.0800-38.3300	38.7048	1.036	7.54	2.357	A	0.000	2.357	2.357	100.00	0.000	0.000
					B	0.000	2.357		100.00	0.000	0.312

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	0.000	2.357		100.00	0.000	0.000
L36 38.3300-38.0800	38.2050	1.034	7.52	0.788	A	0.000	0.788	0.788	100.00	0.000	0.000
					B	0.000	0.788		100.00	0.000	0.104
					C	0.000	0.788		100.00	0.000	0.000
L37 38.0800-33.0800	35.5695	1.018	7.41	15.977	A	0.000	15.977	15.977	100.00	0.000	0.000
					B	0.000	15.977		100.00	0.000	2.083
					C	0.000	15.977		100.00	0.000	0.000
L38 33.0800-30.7500	31.9128	0.995	7.24	7.585	A	0.000	7.585	7.585	100.00	0.000	0.000
					B	0.000	7.585		100.00	0.000	0.971
					C	0.000	7.585		100.00	0.000	0.000
L39 30.7500-30.5000	30.6250	0.987	7.18	0.819	A	0.000	0.819	0.819	100.00	0.000	0.000
					B	0.000	0.819		100.00	0.000	0.104
					C	0.000	0.819		100.00	0.000	0.000
L40 30.5000-25.5000	27.9899	0.968	7.04	16.586	A	0.000	16.586	16.586	100.00	0.000	0.000
					B	0.000	16.586		100.00	0.000	2.083
					C	0.000	16.586		100.00	0.000	0.000
L41 25.5000-20.5000	22.9901	0.929	6.76	16.997	A	0.000	16.997	16.997	100.00	0.000	0.000
					B	0.000	16.997		100.00	0.000	2.083
					C	0.000	16.997		100.00	0.000	0.000
L42 20.5000-15.5000	17.9903	0.882	6.42	17.406	A	0.000	17.406	17.406	100.00	0.000	0.000
					B	0.000	17.406		100.00	0.000	2.083
					C	0.000	17.406		100.00	0.000	0.000
L43 15.5000-9.8000	12.6377	0.85	6.18	20.339	A	0.000	20.339	20.339	100.00	0.000	0.000
					B	0.000	20.339		100.00	0.000	2.375
					C	0.000	20.339		100.00	0.000	0.000
L44 9.8000-8.8000	9.2996	0.85	6.18	3.559	A	0.000	3.559	3.559	100.00	0.000	0.000
					B	0.000	3.559		100.00	0.000	0.417
					C	0.000	3.559		100.00	0.000	0.000
L45 8.8000-8.2500	8.5249	0.85	6.18	1.964	A	0.000	1.964	1.964	100.00	0.000	0.000
					B	0.000	1.964		100.00	0.000	0.229
					C	0.000	1.964		100.00	0.000	0.000
L46 8.2500-8.0000	8.1250	0.85	6.18	0.894	A	0.000	0.894	0.894	100.00	0.000	0.000
					B	0.000	0.894		100.00	0.000	0.104
					C	0.000	0.894		100.00	0.000	0.000
L47 8.0000-4.2500	6.1198	0.85	6.18	13.538	A	0.000	13.538	13.538	100.00	0.000	0.000
					B	0.000	13.538		100.00	0.000	1.562
					C	0.000	13.538		100.00	0.000	0.000
L48 4.2500-4.0000	4.1250	0.85	6.18	0.909	A	0.000	0.909	0.909	100.00	0.000	0.000
					B	0.000	0.909		100.00	0.000	0.104
					C	0.000	0.909		100.00	0.000	0.000
L49 4.0000-3.0000	3.4996	0.85	6.18	3.648	A	0.000	3.648	3.648	100.00	0.000	0.000
					B	0.000	3.648		100.00	0.000	0.417
					C	0.000	3.648		100.00	0.000	0.000
L50 3.0000-2.7500	2.8750	0.85	6.18	0.914	A	0.000	0.914	0.914	100.00	0.000	0.000
					B	0.000	0.914		100.00	0.000	0.104
					C	0.000	0.914		100.00	0.000	0.000
L51 2.7500-0.0000	1.3722	0.85	6.18	10.120	A	0.000	10.120	10.120	100.00	0.000	0.000
					B	0.000	10.120		100.00	0.000	1.146
					C	0.000	10.120		100.00	0.000	0.000

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice

Comb. No.	Description
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	156 - 151	Pole	Max Tension	1	0.00	0.00	-0.00
			Max. Compression	26	-0.35	-0.00	0.00
			Max. Mx	8	-0.23	-0.45	-0.00
			Max. My	2	-0.23	-0.00	0.45
			Max. Vy	8	0.18	-0.45	-0.00
			Max. Vx	2	-0.18	-0.00	0.45
			Max. Torque	16			-0.00
L2	151 - 146	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-5.01	-2.26	3.85
			Max. Mx	8	-1.83	-18.85	1.34
			Max. My	2	-1.80	-0.72	20.59
			Max. Vy	8	4.36	-18.85	1.34
			Max. Vx	2	-4.60	-0.72	20.59
			Max. Torque	10			2.47
L3	146 - 144.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-5.12	-2.27	3.85
			Max. Mx	8	-1.91	-25.43	1.23
			Max. My	2	-1.88	-0.63	27.53
			Max. Vy	8	4.41	-25.43	1.23
			Max. Vx	2	-4.65	-0.63	27.53
			Max. Torque	10			2.47
L4	144.5 - 144	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-5.17	-2.27	3.85
			Max. Mx	8	-1.95	-27.63	1.19
			Max. My	2	-1.91	-0.60	29.86
			Max. Vy	8	4.43	-27.63	1.19

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-4.67	-0.60	29.86
			Max. Torque	10			2.47
L5	144 - 139	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-16.96	-8.54	0.31
			Max. Mx	8	-6.76	-74.27	0.33
			Max. My	2	-6.70	-1.79	74.45
			Max. Vy	8	14.41	-74.27	0.33
			Max. Vx	2	-14.81	-1.79	74.45
			Max. Torque	16			10.57
L6	139 - 134	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-17.54	-8.65	0.31
			Max. Mx	8	-7.15	-147.43	0.23
			Max. My	2	-7.08	-1.88	149.61
			Max. Vy	8	14.86	-147.43	0.23
			Max. Vx	2	-15.27	-1.88	149.61
			Max. Torque	16			10.57
L7	134 - 129	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.13	-8.74	0.31
			Max. Mx	8	-7.58	-222.93	0.14
			Max. My	2	-7.51	-1.94	227.11
			Max. Vy	8	15.34	-222.93	0.14
			Max. Vx	2	-15.74	-1.94	227.11
			Max. Torque	16			10.58
L8	129 - 128.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.22	-8.76	0.31
			Max. Mx	8	-7.65	-234.46	0.13
			Max. My	2	-7.59	-1.95	238.95
			Max. Vy	8	15.42	-234.46	0.13
			Max. Vx	2	-15.82	-1.95	238.95
			Max. Torque	16			10.58
L9	128.25 - 128	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.27	-8.76	0.31
			Max. Mx	8	-7.69	-238.32	0.12
			Max. My	2	-7.63	-1.95	242.90
			Max. Vy	8	15.45	-238.32	0.12
			Max. Vx	2	-15.85	-1.95	242.90
			Max. Torque	16			10.58
L10	128 - 123	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.25	-8.84	0.32
			Max. Mx	8	-8.46	-316.96	0.04
			Max. My	2	-8.40	-1.99	323.56
			Max. Vy	8	16.02	-316.96	0.04
			Max. Vx	2	-16.42	-1.99	323.56
			Max. Torque	16			10.62
L11	123 - 118	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-20.26	-8.91	0.32
			Max. Mx	8	-9.27	-398.49	-0.03
			Max. My	2	-9.21	-2.02	407.09
			Max. Vy	8	16.60	-398.49	-0.03
			Max. Vx	2	-17.00	-2.02	407.09
			Max. Torque	16			10.66
L12	118 - 113	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.29	-8.98	0.32
			Max. Mx	8	-10.09	-482.93	-0.11
			Max. My	2	-10.04	-2.05	493.55
			Max. Vy	8	17.19	-482.93	-0.11
			Max. Vx	2	-17.59	-2.05	493.55
			Max. Torque	16			10.70
L13	113 - 108	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.34	-9.04	0.32
			Max. Mx	8	-10.95	-570.33	-0.17
			Max. My	2	-10.89	-2.06	582.96
			Max. Vy	8	17.78	-570.33	-0.17
			Max. Vx	2	-18.19	-2.06	582.96
			Max. Torque	16			10.74
L14	108 - 103	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.42	-9.09	0.33
			Max. Mx	8	-11.83	-660.70	-0.24
			Max. My	2	-11.78	-2.07	675.35

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	8	18.38	-660.70	-0.24
			Max. Vx	2	-18.79	-2.07	675.35
			Max. Torque	16			10.78
L15	103 - 98	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24.52	-9.14	0.33
			Max. Mx	8	-12.74	-754.10	-0.30
			Max. My	2	-12.69	-2.07	770.77
			Max. Vy	8	18.99	-754.10	-0.30
			Max. Vx	2	-19.40	-2.07	770.77
			Max. Torque	16			10.83
L16	98 - 93	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24.86	-9.16	0.33
			Max. Mx	8	-13.01	-782.71	-0.32
			Max. My	2	-12.96	-2.07	799.99
			Max. Vy	8	19.18	-782.71	-0.32
			Max. Vx	2	-19.58	-2.07	799.99
			Max. Torque	16			10.85
L17	93 - 92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-26.86	-9.20	0.33
			Max. Mx	8	-14.63	-870.43	-0.37
			Max. My	2	-14.58	-2.07	889.53
			Max. Vy	8	19.81	-870.43	-0.37
			Max. Vx	2	-20.22	-2.07	889.53
			Max. Torque	16			10.90
L18	92 - 87	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-28.28	-9.24	0.33
			Max. Mx	8	-15.83	-971.05	-0.43
			Max. My	2	-15.78	-2.07	992.17
			Max. Vy	8	20.45	-971.05	-0.43
			Max. Vx	2	-20.86	-2.07	992.17
			Max. Torque	16			10.96
L19	87 - 82	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.72	-9.28	0.33
			Max. Mx	8	-17.05	-1074.88	-0.48
			Max. My	2	-17.01	-2.06	1098.03
			Max. Vy	8	21.10	-1074.88	-0.48
			Max. Vx	2	-21.50	-2.06	1098.03
			Max. Torque	16			11.02
L20	82 - 77.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.03	-9.32	0.33
			Max. Mx	8	-18.18	-1171.08	-0.53
			Max. My	2	-18.14	-2.04	1196.04
			Max. Vy	8	21.68	-1171.08	-0.53
			Max. Vx	2	-22.08	-2.04	1196.04
			Max. Torque	16			11.07
L21	77.5 - 72.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.63	-9.35	0.33
			Max. Mx	8	-19.56	-1281.04	-0.58
			Max. My	2	-19.53	-2.02	1308.03
			Max. Vy	8	22.33	-1281.04	-0.58
			Max. Vx	2	-22.73	-2.02	1308.03
			Max. Torque	16			11.13
L22	72.5 - 70.58	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.26	-9.36	0.34
			Max. Mx	8	-20.10	-1324.14	-0.60
			Max. My	2	-20.06	-2.02	1351.90
			Max. Vy	8	22.59	-1324.14	-0.60
			Max. Vx	2	-22.99	-2.02	1351.90
			Max. Torque	16			11.16
L23	70.58 - 70.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.34	-9.36	0.34
			Max. Mx	8	-20.18	-1329.79	-0.60
			Max. My	2	-20.15	-2.02	1357.65
			Max. Vy	8	22.61	-1329.79	-0.60
			Max. Vx	2	-23.01	-2.02	1357.65
			Max. Torque	16			11.16
L24	70.33 - 67.08	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-34.40	-9.38	0.34
			Max. Mx	8	-21.10	-1403.94	-0.63
			Max. My	2	-21.07	-2.00	1433.11
			Max. Vy	8	23.04	-1403.94	-0.63
			Max. Vx	2	-23.44	-2.00	1433.11
			Max. Torque	16			11.20
L25	67.08 - 66.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.51	-9.38	0.34
			Max. Mx	8	-21.20	-1409.70	-0.63
			Max. My	2	-21.17	-2.00	1438.97
			Max. Vy	8	23.07	-1409.70	-0.63
			Max. Vx	2	-23.47	-2.00	1438.97
			Max. Torque	16			11.21
L26	66.83 - 61.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.66	-9.41	0.34
			Max. Mx	8	-23.10	-1526.84	-0.68
			Max. My	2	-23.07	-1.98	1558.12
			Max. Vy	8	23.80	-1526.84	-0.68
			Max. Vx	2	-24.20	-1.98	1558.12
			Max. Torque	16			11.32
L27	61.83 - 57.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.70	-9.41	0.34
			Max. Mx	8	-23.14	-1528.74	-0.68
			Max. My	2	-23.11	-1.98	1560.06
			Max. Vy	8	23.81	-1528.74	-0.68
			Max. Vx	2	-24.21	-1.98	1560.06
			Max. Torque	16			11.33
L28	57.5 - 56.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.67	-9.44	0.34
			Max. Mx	8	-26.58	-1649.83	-0.73
			Max. My	2	-26.55	-1.96	1683.17
			Max. Vy	8	24.62	-1649.83	-0.73
			Max. Vx	2	-25.03	-1.96	1683.17
			Max. Torque	16			11.46
L29	56.75 - 51.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.85	-9.46	0.34
			Max. Mx	8	-28.52	-1774.69	-0.78
			Max. My	2	-28.49	-1.93	1810.05
			Max. Vy	8	25.34	-1774.69	-0.78
			Max. Vx	2	-25.74	-1.93	1810.05
			Max. Torque	16			11.60
L30	51.75 - 46.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.06	-9.49	0.34
			Max. Mx	8	-30.49	-1903.08	-0.82
			Max. My	2	-30.46	-1.90	1940.46
			Max. Vy	8	26.04	-1903.08	-0.82
			Max. Vx	2	-26.44	-1.90	1940.46
			Max. Torque	16			11.73
L31	46.75 - 41.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.29	-9.49	0.34
			Max. Mx	8	-32.48	-2034.94	-0.86
			Max. My	2	-32.46	-1.87	2074.33
			Max. Vy	8	26.73	-2034.94	-0.86
			Max. Vx	2	-27.13	-1.87	2074.33
			Max. Torque	16			11.87
L32	41.75 - 39.8	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.17	-9.49	0.34
			Max. Mx	8	-33.26	-2087.30	-0.88
			Max. My	2	-33.24	-1.86	2127.47
			Max. Vy	8	27.00	-2087.30	-0.88
			Max. Vx	2	-27.41	-1.86	2127.47
			Max. Torque	16			11.92
L33	39.8 - 39.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.40	-9.49	0.34

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	8	-33.47	-2100.00	-0.88
			Max. My	2	-33.45	-1.85	2140.36
			Max. Vy	8	27.05	-2100.00	-0.88
			Max. Vx	2	-27.45	-1.85	2140.36
			Max. Torque	16			11.94
L34	39.33 - 39.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.52	-9.49	0.34
			Max. Mx	8	-33.58	-2106.76	-0.89
			Max. My	2	-33.56	-1.85	2147.23
			Max. Vy	8	27.09	-2106.76	-0.89
			Max. Vx	2	-27.49	-1.85	2147.23
			Max. Torque	16			11.94
L35	39.08 - 38.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.88	-9.49	0.34
			Max. Mx	8	-33.91	-2127.12	-0.89
			Max. My	2	-33.89	-1.85	2167.88
			Max. Vy	8	27.19	-2127.12	-0.89
			Max. Vx	2	-27.59	-1.85	2167.88
			Max. Torque	16			11.96
L36	38.33 - 38.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.00	-9.49	0.34
			Max. Mx	8	-34.02	-2133.92	-0.89
			Max. My	2	-34.00	-1.84	2174.78
			Max. Vy	8	27.22	-2133.92	-0.89
			Max. Vx	2	-27.62	-1.84	2174.78
			Max. Torque	16			11.97
L37	38.08 - 33.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.37	-9.49	0.34
			Max. Mx	8	-36.14	-2271.68	-0.94
			Max. My	2	-36.13	-1.81	2314.55
			Max. Vy	8	27.90	-2271.68	-0.94
			Max. Vx	2	-28.30	-1.81	2314.55
			Max. Torque	16			12.11
L38	33.08 - 30.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.49	-9.49	0.34
			Max. Mx	8	-37.15	-2337.01	-0.95
			Max. My	2	-37.13	-1.79	2380.81
			Max. Vy	8	28.20	-2337.01	-0.95
			Max. Vx	2	-28.60	-1.79	2380.81
			Max. Torque	16			12.17
L39	30.75 - 30.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.62	-9.49	0.34
			Max. Mx	8	-37.27	-2344.06	-0.96
			Max. My	2	-37.26	-1.79	2387.96
			Max. Vy	8	28.23	-2344.06	-0.96
			Max. Vx	2	-28.63	-1.79	2387.96
			Max. Torque	16			12.18
L40	30.5 - 25.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.18	-9.49	0.34
			Max. Mx	8	-39.58	-2486.79	-1.00
			Max. My	2	-39.57	-1.75	2532.68
			Max. Vy	8	28.88	-2486.79	-1.00
			Max. Vx	2	-29.28	-1.75	2532.68
			Max. Torque	16			12.31
L41	25.5 - 20.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.77	-9.49	0.34
			Max. Mx	8	-41.93	-2632.69	-1.03
			Max. My	2	-41.92	-1.71	2680.56
			Max. Vy	8	29.50	-2632.69	-1.03
			Max. Vx	2	-29.90	-1.71	2680.56
			Max. Torque	16			12.45
L42	20.5 - 15.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.37	-9.49	0.34
			Max. Mx	8	-44.31	-2781.58	-1.07

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-44.30	-1.67	2831.43
			Max. Vy	8	30.08	-2781.58	-1.07
			Max. Vx	2	-30.48	-1.67	2831.43
			Max. Torque	16			12.58
L43	15.5 - 9.8	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.61	-9.49	0.34
			Max. Mx	8	-44.53	-2795.12	-1.08
			Max. My	2	-44.52	-1.67	2845.15
			Max. Vy	8	30.13	-2795.12	-1.08
			Max. Vx	2	-30.52	-1.67	2845.15
			Max. Torque	16			12.59
L44	9.8 - 8.8	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.59	-9.49	0.34
			Max. Mx	8	-49.86	-2985.87	-1.12
			Max. My	2	-49.86	-1.62	3038.35
			Max. Vy	8	30.91	-2985.87	-1.12
			Max. Vx	2	-31.31	-1.62	3038.35
			Max. Torque	16			12.75
L45	8.8 - 8.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.88	-9.49	0.34
			Max. Mx	8	-50.14	-3002.88	-1.13
			Max. My	2	-50.13	-1.61	3055.58
			Max. Vy	8	30.97	-3002.88	-1.13
			Max. Vx	2	-31.36	-1.61	3055.58
			Max. Torque	16			12.76
L46	8.25 - 8	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.02	-9.49	0.34
			Max. Mx	8	-50.27	-3010.62	-1.13
			Max. My	2	-50.26	-1.61	3063.42
			Max. Vy	8	30.99	-3010.62	-1.13
			Max. Vx	2	-31.38	-1.61	3063.42
			Max. Torque	16			12.77
L47	8 - 4.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.11	-9.49	0.34
			Max. Mx	8	-52.20	-3127.57	-1.16
			Max. My	2	-52.20	-1.58	3181.84
			Max. Vy	8	31.41	-3127.57	-1.16
			Max. Vx	2	-31.80	-1.58	3181.84
			Max. Torque	16			12.87
L48	4.25 - 4	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.27	-9.49	0.34
			Max. Mx	8	-52.35	-3135.43	-1.16
			Max. My	2	-52.35	-1.57	3189.79
			Max. Vy	8	31.42	-3135.43	-1.16
			Max. Vx	2	-31.81	-1.57	3189.79
			Max. Torque	16			12.87
L49	4 - 3	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.87	-9.49	0.34
			Max. Mx	8	-52.91	-3166.90	-1.16
			Max. My	2	-52.91	-1.56	3221.66
			Max. Vy	8	31.54	-3166.90	-1.16
			Max. Vx	2	-31.93	-1.56	3221.66
			Max. Torque	16			12.90
L50	3 - 2.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.03	-9.49	0.34
			Max. Mx	8	-53.07	-3174.79	-1.17
			Max. My	2	-53.07	-1.56	3229.64
			Max. Vy	8	31.56	-3174.79	-1.17
			Max. Vx	2	-31.95	-1.56	3229.64
			Max. Torque	16			12.91
L51	2.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.77	-9.49	0.34
			Max. Mx	8	-54.70	-3262.01	-1.19
			Max. My	2	-54.70	-1.54	3317.94
			Max. Vy	8	31.89	-3262.01	-1.19
			Max. Vx	2	-32.28	-1.54	3317.94
			Max. Torque	16			12.98

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	71.77	0.00	-0.00
	Max. H_x	20	54.71	31.88	0.01
	Max. H_z	3	41.03	0.01	32.26
	Max. M_x	2	3317.94	0.01	32.26
	Max. M_z	8	3262.01	-31.88	-0.01
	Max. Torsion	16	12.98	15.93	-27.94
	Min. Vert	9	41.03	-31.88	-0.01
	Min. H_x	8	54.71	-31.88	-0.01
	Min. H_z	15	41.03	-0.01	-32.26
	Min. M_x	14	-3316.68	-0.01	-32.26
	Min. M_z	20	-3255.08	31.88	0.01
	Min. Torsion	4	-12.96	-15.93	27.94

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	45.59	-0.00	0.00	-0.48	-2.65	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	54.71	-0.01	-32.26	-3317.94	-1.54	11.22
0.9 Dead+1.0 Wind 0 deg - No Ice	41.03	-0.01	-32.26	-3290.05	-0.66	11.13
1.2 Dead+1.0 Wind 30 deg - No Ice	54.71	15.93	-27.94	-2872.66	-1630.99	12.96
0.9 Dead+1.0 Wind 30 deg - No Ice	41.03	15.93	-27.94	-2848.49	-1616.55	12.89
1.2 Dead+1.0 Wind 60 deg - No Ice	54.71	27.60	-16.13	-1657.81	-2824.45	11.23
0.9 Dead+1.0 Wind 60 deg - No Ice	41.03	27.60	-16.13	-1643.78	-2800.05	11.21
1.2 Dead+1.0 Wind 90 deg - No Ice	54.71	31.88	0.01	1.18	-3262.01	6.49
0.9 Dead+1.0 Wind 90 deg - No Ice	41.03	31.88	0.01	1.34	-3233.95	6.51
1.2 Dead+1.0 Wind 120 deg - No Ice	54.71	27.61	16.14	1659.70	-2826.35	-0.01
0.9 Dead+1.0 Wind 120 deg - No Ice	41.03	27.61	16.14	1645.98	-2801.92	0.05
1.2 Dead+1.0 Wind 150 deg - No Ice	54.71	15.94	27.95	2873.23	-1634.26	-6.51
0.9 Dead+1.0 Wind 150 deg - No Ice	41.03	15.94	27.95	2849.37	-1619.77	-6.43
1.2 Dead+1.0 Wind 180 deg - No Ice	54.71	0.01	32.26	3316.68	-5.27	-11.26
0.9 Dead+1.0 Wind 180 deg - No Ice	41.03	0.01	32.26	3289.13	-4.35	-11.18
1.2 Dead+1.0 Wind 210 deg - No Ice	54.71	-15.93	27.94	2871.32	1624.20	-12.98
0.9 Dead+1.0 Wind 210 deg - No Ice	41.03	-15.93	27.94	2847.51	1611.55	-12.91
1.2 Dead+1.0 Wind 240 deg - No Ice	54.71	-27.60	16.13	1656.42	2817.59	-11.21
0.9 Dead+1.0 Wind 240 deg - No Ice	41.03	-27.60	16.13	1642.76	2795.01	-11.19
1.2 Dead+1.0 Wind 270 deg - No Ice	54.71	-31.88	-0.01	-2.55	3255.08	-6.45
0.9 Dead+1.0 Wind 270 deg - No Ice	41.03	-31.88	-0.01	-2.35	3228.85	-6.47
1.2 Dead+1.0 Wind 300 deg - No Ice	54.71	-27.61	-16.14	-1660.98	2819.40	0.03
0.9 Dead+1.0 Wind 300 deg - No Ice	41.03	-27.61	-16.14	-1646.93	2796.80	-0.03

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 330 deg - No Ice	54.71	-15.94	-27.95	-2874.46	1627.38	6.49
0.9 Dead+1.0 Wind 330 deg - No Ice	41.03	-15.94	-27.95	-2850.28	1614.70	6.41
1.2 Dead+1.0 Ice+1.0 Temp	71.77	-0.00	0.00	-0.34	-9.49	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	71.77	-0.00	-6.91	-724.68	-8.88	2.50
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	71.77	3.42	-5.98	-627.28	-366.70	2.74
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	71.77	5.93	-3.45	-361.90	-628.83	2.24
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	71.77	6.85	0.00	0.36	-725.05	1.15
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	71.77	5.93	3.46	362.44	-629.55	-0.26
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	71.77	3.43	5.98	627.30	-367.93	-1.59
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	71.77	0.00	6.91	723.99	-10.30	-2.50
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	71.77	-3.42	5.98	626.59	347.52	-2.74
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	71.77	-5.93	3.45	361.20	609.65	-2.24
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	71.77	-6.85	-0.00	-1.06	705.86	-1.14
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	71.77	-5.93	-3.46	-363.13	610.36	0.26
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	71.77	-3.43	-5.98	-627.99	348.75	1.59
Dead+Wind 0 deg - Service	45.59	-0.00	-6.17	-632.63	-2.52	2.15
Dead+Wind 30 deg - Service	45.59	3.04	-5.34	-547.77	-313.03	2.49
Dead+Wind 60 deg - Service	45.59	5.28	-3.08	-316.27	-540.44	2.16
Dead+Wind 90 deg - Service	45.59	6.09	0.00	-0.17	-623.80	1.25
Dead+Wind 120 deg - Service	45.59	5.28	3.08	315.83	-540.78	0.00
Dead+Wind 150 deg - Service	45.59	3.05	5.34	547.08	-313.65	-1.24
Dead+Wind 180 deg - Service	45.59	0.00	6.17	631.59	-3.22	-2.16
Dead+Wind 210 deg - Service	45.59	-3.04	5.34	546.73	307.29	-2.49
Dead+Wind 240 deg - Service	45.59	-5.28	3.08	315.23	534.70	-2.16
Dead+Wind 270 deg - Service	45.59	-6.09	-0.00	-0.88	618.05	-1.25
Dead+Wind 300 deg - Service	45.59	-5.28	-3.08	-316.88	535.04	-0.00
Dead+Wind 330 deg - Service	45.59	-3.05	-5.34	-548.11	307.90	1.24

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.00	-45.59	0.00	0.00	45.59	-0.00	0.003%
2	-0.01	-54.71	-32.26	0.01	54.71	32.26	0.000%
3	-0.01	-41.03	-32.26	0.01	41.03	32.26	0.000%
4	15.93	-54.71	-27.94	-15.93	54.71	27.94	0.000%
5	15.93	-41.03	-27.94	-15.93	41.03	27.94	0.000%
6	27.60	-54.71	-16.13	-27.60	54.71	16.13	0.000%
7	27.60	-41.03	-16.13	-27.60	41.03	16.13	0.000%
8	31.88	-54.71	0.01	-31.88	54.71	-0.01	0.000%
9	31.88	-41.03	0.01	-31.88	41.03	-0.01	0.000%
10	27.61	-54.71	16.14	-27.61	54.71	-16.14	0.000%
11	27.61	-41.03	16.14	-27.61	41.03	-16.14	0.000%
12	15.94	-54.71	27.95	-15.94	54.71	-27.95	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
13	15.94	-41.03	27.95	-15.94	41.03	-27.95	0.000%
14	0.01	-54.71	32.26	-0.01	54.71	-32.26	0.000%
15	0.01	-41.03	32.26	-0.01	41.03	-32.26	0.000%
16	-15.93	-54.71	27.94	15.93	54.71	-27.94	0.000%
17	-15.93	-41.03	27.94	15.93	41.03	-27.94	0.000%
18	-27.60	-54.71	16.13	27.60	54.71	-16.13	0.000%
19	-27.60	-41.03	16.13	27.60	41.03	-16.13	0.000%
20	-31.88	-54.71	-0.01	31.88	54.71	0.01	0.000%
21	-31.88	-41.03	-0.01	31.88	41.03	0.01	0.000%
22	-27.61	-54.71	-16.14	27.61	54.71	16.14	0.000%
23	-27.61	-41.03	-16.14	27.61	41.03	16.14	0.000%
24	-15.94	-54.71	-27.95	15.94	54.71	27.95	0.000%
25	-15.94	-41.03	-27.95	15.94	41.03	27.95	0.000%
26	0.00	-71.77	0.00	0.00	71.77	-0.00	0.000%
27	-0.00	-71.77	-6.91	0.00	71.77	6.91	0.000%
28	3.42	-71.77	-5.98	-3.42	71.77	5.98	0.000%
29	5.93	-71.77	-3.45	-5.93	71.77	3.45	0.000%
30	6.85	-71.77	0.00	-6.85	71.77	-0.00	0.000%
31	5.93	-71.77	3.46	-5.93	71.77	-3.46	0.000%
32	3.43	-71.77	5.98	-3.43	71.77	-5.98	0.000%
33	0.00	-71.77	6.91	-0.00	71.77	-6.91	0.000%
34	-3.42	-71.77	5.98	3.42	71.77	-5.98	0.000%
35	-5.93	-71.77	3.45	5.93	71.77	-3.45	0.000%
36	-6.85	-71.77	-0.00	6.85	71.77	0.00	0.000%
37	-5.93	-71.77	-3.46	5.93	71.77	3.46	0.000%
38	-3.43	-71.77	-5.98	3.43	71.77	5.98	0.000%
39	-0.00	-45.59	-6.17	0.00	45.59	6.17	0.000%
40	3.04	-45.59	-5.34	-3.04	45.59	5.34	0.000%
41	5.28	-45.59	-3.08	-5.28	45.59	3.08	0.000%
42	6.09	-45.59	0.00	-6.09	45.59	-0.00	0.000%
43	5.28	-45.59	3.08	-5.28	45.59	-3.08	0.000%
44	3.05	-45.59	5.34	-3.05	45.59	-5.34	0.000%
45	0.00	-45.59	6.17	-0.00	45.59	-6.17	0.000%
46	-3.04	-45.59	5.34	3.04	45.59	-5.34	0.000%
47	-5.28	-45.59	3.08	5.28	45.59	-3.08	0.000%
48	-6.09	-45.59	-0.00	6.09	45.59	0.00	0.000%
49	-5.28	-45.59	-3.08	5.28	45.59	3.08	0.000%
50	-3.05	-45.59	-5.34	3.05	45.59	5.34	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00003357
2	Yes	23	0.00000001	0.00014271
3	Yes	23	0.00000001	0.00010813
4	Yes	25	0.00000001	0.00011728
5	Yes	25	0.00000001	0.00000000
6	Yes	25	0.00000001	0.00007888
7	Yes	24	0.00000001	0.00011684
8	Yes	23	0.00000001	0.00008187
9	Yes	22	0.00000001	0.00012617
10	Yes	25	0.00000001	0.00008919
11	Yes	24	0.00000001	0.00013208
12	Yes	25	0.00000001	0.00010231
13	Yes	25	0.00000001	0.00000000
14	Yes	23	0.00000001	0.00014430
15	Yes	23	0.00000001	0.00010934
16	Yes	25	0.00000001	0.00007688
17	Yes	24	0.00000001	0.00011407
18	Yes	25	0.00000001	0.00011036
19	Yes	25	0.00000001	0.00000000
20	Yes	23	0.00000001	0.00007978
21	Yes	22	0.00000001	0.00012316
22	Yes	25	0.00000001	0.00008864
23	Yes	24	0.00000001	0.00013119
24	Yes	25	0.00000001	0.00008061
25	Yes	24	0.00000001	0.00011915
26	Yes	18	0.00000001	0.00010430
27	Yes	23	0.00000001	0.00012437
28	Yes	23	0.00000001	0.00013518
29	Yes	23	0.00000001	0.00013395
30	Yes	23	0.00000001	0.00012593
31	Yes	23	0.00000001	0.00013371
32	Yes	23	0.00000001	0.00013415
33	Yes	23	0.00000001	0.00012395
34	Yes	23	0.00000001	0.00012746
35	Yes	23	0.00000001	0.00012599
36	Yes	23	0.00000001	0.00011663
37	Yes	23	0.00000001	0.00012557
38	Yes	23	0.00000001	0.00012775
39	Yes	19	0.00000001	0.00009953
40	Yes	19	0.00000001	0.00014828
41	Yes	19	0.00000001	0.00009356
42	Yes	18	0.00000001	0.00011074
43	Yes	18	0.00000001	0.00011684
44	Yes	19	0.00000001	0.00009821
45	Yes	19	0.00000001	0.00009925
46	Yes	19	0.00000001	0.00010232
47	Yes	19	0.00000001	0.00012859
48	Yes	18	0.00000001	0.00010752
49	Yes	18	0.00000001	0.00011363
50	Yes	18	0.00000001	0.00011957

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	156 - 151	18.30	40	1.17	0.03
L2	151 - 146	17.08	40	1.17	0.03
L3	146 - 144.5	15.87	39	1.14	0.03
L4	144.5 - 144	15.52	39	1.13	0.03
L5	144 - 139	15.40	39	1.13	0.03
L6	139 - 134	14.24	39	1.10	0.02
L7	134 - 129	13.10	39	1.06	0.02
L8	129 - 128.25	12.03	39	1.00	0.02
L9	128.25 - 128	11.87	39	0.99	0.01

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L10	128 - 123	11.82	39	0.98	0.01
L11	123 - 118	10.81	39	0.95	0.01
L12	118 - 113	9.84	39	0.90	0.01
L13	113 - 108	8.92	39	0.86	0.01
L14	108 - 103	8.05	39	0.81	0.01
L15	103 - 98	7.24	39	0.75	0.01
L16	98 - 93	6.48	39	0.69	0.01
L17	96.5 - 92	6.26	39	0.68	0.01
L18	92 - 87	5.64	39	0.65	0.01
L19	87 - 82	4.98	39	0.60	0.01
L20	82 - 77.5	4.38	39	0.55	0.00
L21	77.5 - 72.5	3.87	39	0.51	0.00
L22	72.5 - 70.58	3.36	39	0.47	0.00
L23	70.58 - 70.33	3.18	39	0.45	0.00
L24	70.33 - 67.08	3.16	39	0.45	0.00
L25	67.08 - 66.83	2.86	39	0.42	0.00
L26	66.83 - 61.83	2.84	39	0.42	0.00
L27	61.83 - 57.5	2.42	39	0.38	0.00
L28	61.75 - 56.75	2.42	39	0.38	0.00
L29	56.75 - 51.75	2.03	39	0.36	0.00
L30	51.75 - 46.75	1.67	39	0.33	0.00
L31	46.75 - 41.75	1.34	39	0.29	0.00
L32	41.75 - 39.8	1.06	39	0.26	0.00
L33	39.8 - 39.33	0.96	39	0.24	0.00
L34	39.33 - 39.08	0.93	39	0.24	0.00
L35	39.08 - 38.33	0.92	39	0.24	0.00
L36	38.33 - 38.08	0.88	39	0.23	0.00
L37	38.08 - 33.08	0.87	39	0.23	0.00
L38	33.08 - 30.75	0.65	39	0.20	0.00
L39	30.75 - 30.5	0.56	39	0.18	0.00
L40	30.5 - 25.5	0.55	39	0.18	0.00
L41	25.5 - 20.5	0.38	39	0.15	0.00
L42	20.5 - 15.5	0.24	39	0.11	0.00
L43	15.5 - 9.8	0.14	39	0.08	0.00
L44	15.05 - 8.8	0.13	39	0.08	0.00
L45	8.8 - 8.25	0.05	39	0.05	0.00
L46	8.25 - 8	0.04	39	0.05	0.00
L47	8 - 4.25	0.04	39	0.05	0.00
L48	4.25 - 4	0.01	39	0.02	0.00
L49	4 - 3	0.01	39	0.02	0.00
L50	3 - 2.75	0.00	39	0.02	0.00
L51	2.75 - 0	0.00	39	0.01	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.0000	NNVV-65B-R4	40	16.84	1.17	0.03	19108
143.0000	RRUS 11 B12	39	15.16	1.12	0.03	10616

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	156 - 151	95.54	2	5.99	0.15
L2	151 - 146	89.27	2	5.99	0.15
L3	146 - 144.5	83.04	2	5.91	0.15
L4	144.5 - 144	81.19	2	5.84	0.15
L5	144 - 139	80.58	2	5.84	0.15
L6	139 - 134	74.52	2	5.74	0.13
L7	134 - 129	68.62	2	5.53	0.10
L8	129 - 128.25	63.00	2	5.21	0.08
L9	128.25 - 128	62.19	2	5.15	0.08

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L10	128 - 123	61.92	2	5.14	0.08
L11	123 - 118	56.64	2	4.95	0.07
L12	118 - 113	51.57	2	4.73	0.06
L13	113 - 108	46.74	2	4.49	0.05
L14	108 - 103	42.19	2	4.22	0.05
L15	103 - 98	37.93	2	3.93	0.04
L16	98 - 93	33.97	2	3.63	0.03
L17	96.5 - 92	32.84	2	3.54	0.03
L18	92 - 87	29.56	2	3.40	0.03
L19	87 - 82	26.13	2	3.16	0.03
L20	82 - 77.5	22.95	2	2.91	0.02
L21	77.5 - 72.5	20.32	2	2.68	0.02
L22	72.5 - 70.58	17.64	2	2.44	0.02
L23	70.58 - 70.33	16.68	2	2.35	0.02
L24	70.33 - 67.08	16.55	2	2.34	0.02
L25	67.08 - 66.83	15.01	2	2.19	0.02
L26	66.83 - 61.83	14.90	2	2.18	0.02
L27	61.83 - 57.5	12.71	2	2.00	0.01
L28	61.75 - 56.75	12.68	2	2.00	0.01
L29	56.75 - 51.75	10.63	2	1.90	0.01
L30	51.75 - 46.75	8.74	2	1.71	0.01
L31	46.75 - 41.75	7.04	2	1.53	0.01
L32	41.75 - 39.8	5.54	2	1.34	0.01
L33	39.8 - 39.33	5.01	2	1.27	0.01
L34	39.33 - 39.08	4.89	2	1.25	0.01
L35	39.08 - 38.33	4.82	2	1.24	0.01
L36	38.33 - 38.08	4.63	2	1.22	0.01
L37	38.08 - 33.08	4.56	2	1.21	0.01
L38	33.08 - 30.75	3.39	2	1.03	0.01
L39	30.75 - 30.5	2.91	2	0.94	0.01
L40	30.5 - 25.5	2.86	2	0.93	0.01
L41	25.5 - 20.5	1.98	2	0.76	0.00
L42	20.5 - 15.5	1.27	2	0.59	0.00
L43	15.5 - 9.8	0.74	2	0.42	0.00
L44	15.05 - 8.8	0.70	2	0.41	0.00
L45	8.8 - 8.25	0.24	2	0.28	0.00
L46	8.25 - 8	0.21	2	0.26	0.00
L47	8 - 4.25	0.20	2	0.25	0.00
L48	4.25 - 4	0.05	2	0.12	0.00
L49	4 - 3	0.05	2	0.11	0.00
L50	3 - 2.75	0.03	2	0.08	0.00
L51	2.75 - 0	0.02	2	0.08	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.0000	NNVV-65B-R4	2	88.02	5.99	0.15	6135
143.0000	RRUS 11 B12	2	79.36	5.83	0.15	2627

Compression Checks
Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
L1	156 - 151 (1)	TP10.75x10.75x0.365	5.0000	0.0000	0.0	11.9083	-0.23
L2	151 - 146 (2)	TP10.75x10.75x0.365	5.0000	0.0000	0.0	11.9083	-1.80
L3	146 - 144.5 (3)	TP10.75x10.75x0.365	1.5000	0.0000	0.0	11.9083	-1.88
L4	144.5 - 144 (4)	TP18x10.75x0.365	0.5000	0.0000	0.0	11.9083	-1.90

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
L5	144 - 139 (5)	TP18.9435x18x0.25	5.0000	0.0000	0.0	15.0483	-6.71
L6	139 - 134 (6)	TP19.8871x18.9435x0.25	5.0000	0.0000	0.0	15.8078	-7.10
L7	134 - 129 (7)	TP20.8306x19.8871x0.25	5.0000	0.0000	0.0	16.5674	-7.51
L8	129 - 128.25 (8)	TP20.9721x20.8306x0.25	0.7500	0.0000	0.0	16.6813	-7.59
L9	128.25 - 128 (9)	TP21.0193x20.9721x0.575	0.2500	0.0000	0.0	37.8526	-7.63
L10	128 - 123 (10)	TP21.9628x21.0193x0.5625	5.0000	0.0000	0.0	38.7613	-8.40
L11	123 - 118 (11)	TP22.9064x21.9628x0.55	5.0000	0.0000	0.0	39.5931	-9.21
L12	118 - 113 (12)	TP23.8499x22.9064x0.525	5.0000	0.0000	0.0	39.4307	-10.04
L13	113 - 108 (13)	TP24.7934x23.8499x0.5125	5.0000	0.0000	0.0	40.0696	-10.89
L14	108 - 103 (14)	TP25.7369x24.7934x0.5	5.0000	0.0000	0.0	40.6315	-11.78
L15	103 - 98 (15)	TP26.6805x25.7369x0.4938	5.0000	0.0000	0.0	41.6336	-12.69
L16	98 - 93 (16)	TP27.624x26.6805x0.4875	5.0000	0.0000	0.0	41.5607	-12.96
L17	93 - 92 (17)	TP27.313x26.4635x0.7	4.5000	0.0000	0.0	59.9856	-14.58
L18	92 - 87 (18)	TP28.2568x27.313x0.675	5.0000	0.0000	0.0	59.9490	-15.78
L19	87 - 82 (19)	TP29.2006x28.2568x0.65	5.0000	0.0000	0.0	59.7563	-17.01
L20	82 - 77.5 (20)	TP30.05x29.2006x0.6375	4.5000	0.0000	0.0	60.3765	-18.14
L21	77.5 - 72.5 (21)	TP30.9935x30.05x0.6875	5.0000	0.0000	0.0	67.0899	-19.53
L22	72.5 - 70.58 (22)	TP31.3558x30.9935x0.6875	1.9200	0.0000	0.0	67.8920	-20.06
L23	70.58 - 70.33 (23)	TP31.403x31.3558x0.6875	0.2500	0.0000	0.0	67.9964	-20.15
L24	70.33 - 67.08 (24)	TP32.0163x31.403x0.675	3.2500	0.0000	0.0	68.1202	-21.07
L25	67.08 - 66.83 (25)	TP32.0634x32.0163x0.975	0.2500	0.0000	0.0	97.6021	-21.17
L26	66.83 - 61.83 (26)	TP33.0069x32.0634x0.95	5.0000	0.0000	0.0	98.0621	-23.07
L27	61.83 - 57.5 (27)	TP33.824x33.0069x0.95	4.3300	0.0000	0.0	98.1083	-23.11
L28	57.5 - 56.75 (28)	TP33.3405x32.397x0.9375	5.0000	0.0000	0.0	97.8166	-26.55
L29	56.75 - 51.75 (29)	TP34.284x33.3405x0.9125	5.0000	0.0000	0.0	98.0539	-28.49
L30	51.75 - 46.75 (30)	TP35.2275x34.284x0.9	5.0000	0.0000	0.0	99.4812	-30.46
L31	46.75 - 41.75 (31)	TP36.171x35.2275x0.8875	5.0000	0.0000	0.0	100.8320	-32.46
L32	41.75 - 39.8 (32)	TP36.539x36.171x0.875	1.9500	0.0000	0.0	100.4830	-33.24
L33	39.8 - 39.33 (33)	TP36.6277x36.539x0.95	0.4700	0.0000	0.0	109.1380	-33.45
L34	39.33 - 39.08 (34)	TP36.6749x36.6277x0.9375	0.2500	0.0000	0.0	107.8820	-33.56
L35	39.08 - 38.33 (35)	TP36.8164x36.6749x0.9375	0.7500	0.0000	0.0	108.3100	-33.89
L36	38.33 - 38.08 (36)	TP36.8636x36.8164x0.8875	0.2500	0.0000	0.0	102.8110	-34.00
L37	38.08 - 33.08 (37)	TP37.8073x36.8636x0.875	5.0000	0.0000	0.0	104.0570	-36.13
L38	33.08 - 30.75 (38)	TP38.247x37.8073x0.8625	2.3300	0.0000	0.0	103.8260	-37.13
L39	30.75 - 30.5 (39)	TP38.2942x38.247x0.9375	0.2500	0.0000	0.0	112.7710	-37.26

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
L40	30.5 - 25.5 (40)	TP39.2379x38.2942x0.925	5.0000	0.0000	0.0	114.1150	-39.57
L41	25.5 - 20.5 (41)	TP40.1816x39.2379x0.9	5.0000	0.0000	0.0	113.8380	-41.92
L42	20.5 - 15.5 (42)	TP41.1252x40.1816x0.8875	5.0000	0.0000	0.0	114.9890	-44.30
L43	15.5 - 9.8 (43)	TP42.201x41.1252x0.8875	5.7000	0.0000	0.0	115.2320	-44.52
L44	9.8 - 8.8 (44)	TP41.6395x40.4602x0.875	6.2500	0.0000	0.0	114.8540	-49.86
L45	8.8 - 8.25 (45)	TP41.7433x41.6395x0.875	0.5500	0.0000	0.0	115.1460	-50.13
L46	8.25 - 8 (46)	TP41.7904x41.7433x0.875	0.2500	0.0000	0.0	115.2790	-50.26
L47	8 - 4.25 (47)	TP42.498x41.7904x0.875	3.7500	0.0000	0.0	117.2730	-52.20
L48	4.25 - 4 (48)	TP42.5452x42.498x1.05	0.2500	0.0000	0.0	140.2950	-52.35
L49	4 - 3 (49)	TP42.7339x42.5452x1.05	1.0000	0.0000	0.0	140.9330	-52.91
L50	3 - 2.75 (50)	TP42.7811x42.7339x1.15	0.2500	0.0000	0.0	154.1600	-53.07
L51	2.75 - 0 (51)	TP43.3x42.7811x1.125	2.7500	0.0000	0.0	152.7790	-54.70

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft
L1	156 - 151 (1)	TP10.75x10.75x0.365	0.45
L2	151 - 146 (2)	TP10.75x10.75x0.365	20.61
L3	146 - 144.5 (3)	TP10.75x10.75x0.365	27.53
L4	144.5 - 144 (4)	TP18x10.75x0.365	27.53
L5	144 - 139 (5)	TP18.9435x18x0.25	74.67
L6	139 - 134 (6)	TP19.8871x18.9435x0.25	149.31
L7	134 - 129 (7)	TP20.8306x19.8871x0.25	227.12
L8	129 - 128.25 (8)	TP20.9721x20.8306x0.25	238.95
L9	128.25 - 128 (9)	TP21.0193x20.9721x0.575	242.91
L10	128 - 123 (10)	TP21.9628x21.0193x0.5625	323.56
L11	123 - 118 (11)	TP22.9064x21.9628x0.55	407.10
L12	118 - 113 (12)	TP23.8499x22.9064x0.525	493.55
L13	113 - 108 (13)	TP24.7934x23.8499x0.5125	582.96
L14	108 - 103 (14)	TP25.7369x24.7934x0.5	675.36
L15	103 - 98 (15)	TP26.6805x25.7369x0.4938	770.77
L16	98 - 93 (16)	TP27.624x26.6805x0.4875	799.99
L17	93 - 92 (17)	TP27.313x26.4635x0.7	889.52
L18	92 - 87 (18)	TP28.2568x27.313x0.675	992.17
L19	87 - 82 (19)	TP29.2006x28.2568x0.65	1098.03
L20	82 - 77.5 (20)	TP30.05x29.2006x0.6375	1196.04
L21	77.5 - 72.5 (21)	TP30.9935x30.05x0.6875	1308.03
L22	72.5 - 70.58 (22)	TP31.3558x30.9935x0.6875	1351.90
L23	70.58 - 70.33 (23)	TP31.403x31.3558x0.6875	1357.65
L24	70.33 - 67.08 (24)	TP32.0163x31.403x0.675	1433.12
L25	67.08 - 66.83 (25)	TP32.0634x32.0163x0.975	1438.97

Section No.	Elevation ft	Size	M_{ux} kip-ft
L26	66.83 - 61.83 (26)	TP33.0069x32.0634x0.95	1558.13
L27	61.83 - 57.5 (27)	TP33.824x33.0069x0.95	1560.06
L28	57.5 - 56.75 (28)	TP33.3405x32.397x0.937 5	1683.18
L29	56.75 - 51.75 (29)	TP34.284x33.3405x0.912 5	1810.06
L30	51.75 - 46.75 (30)	TP35.2275x34.284x0.9	1940.46
L31	46.75 - 41.75 (31)	TP36.171x35.2275x0.887 5	2074.33
L32	41.75 - 39.8 (32)	TP36.539x36.171x0.875	2127.47
L33	39.8 - 39.33 (33)	TP36.6277x36.539x0.95	2140.36
L34	39.33 - 39.08 (34)	TP36.6749x36.6277x0.93 75	2147.22
L35	39.08 - 38.33 (35)	TP36.8164x36.6749x0.93 75	2167.88
L36	38.33 - 38.08 (36)	TP36.8636x36.8164x0.88 75	2174.78
L37	38.08 - 33.08 (37)	TP37.8073x36.8636x0.87 5	2314.55
L38	33.08 - 30.75 (38)	TP38.247x37.8073x0.862 5	2380.81
L39	30.75 - 30.5 (39)	TP38.2942x38.247x0.937 5	2387.96
L40	30.5 - 25.5 (40)	TP39.2379x38.2942x0.92 5	2532.68
L41	25.5 - 20.5 (41)	TP40.1816x39.2379x0.9	2680.56
L42	20.5 - 15.5 (42)	TP41.1252x40.1816x0.88 75	2831.43
L43	15.5 - 9.8 (43)	TP42.201x41.1252x0.887 5	2845.15
L44	9.8 - 8.8 (44)	TP41.6395x40.4602x0.87 5	3038.35
L45	8.8 - 8.25 (45)	TP41.7433x41.6395x0.87 5	3055.58
L46	8.25 - 8 (46)	TP41.7904x41.7433x0.87 5	3063.43
L47	8 - 4.25 (47)	TP42.498x41.7904x0.875	3181.84
L48	4.25 - 4 (48)	TP42.5452x42.498x1.05	3189.79
L49	4 - 3 (49)	TP42.7339x42.5452x1.05	3221.66
L50	3 - 2.75 (50)	TP42.7811x42.7339x1.15	3229.64
L51	2.75 - 0 (51)	TP43.3x42.7811x1.125	3317.93

Pole Shear Design Data

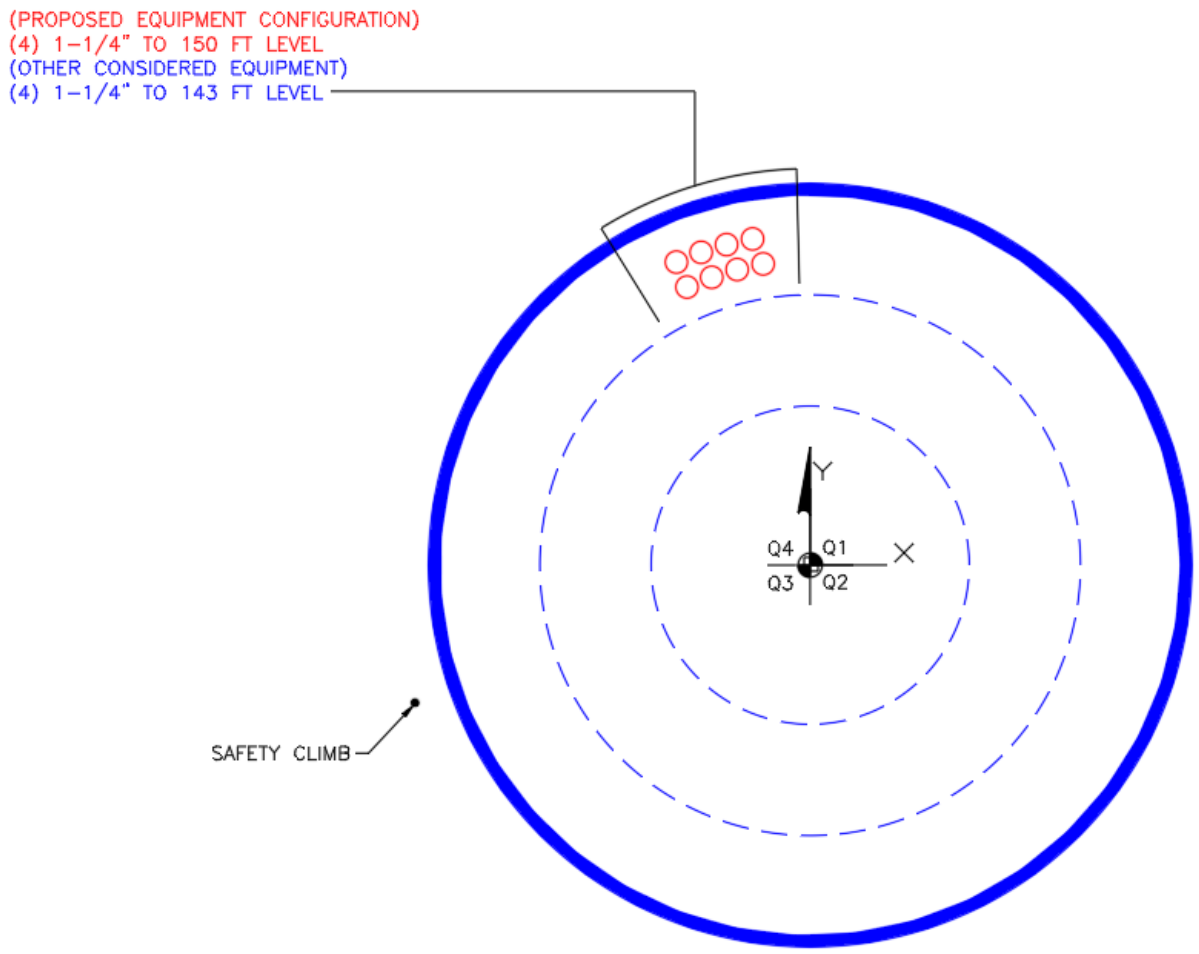
Section No.	Elevation ft	Size	Actual V_u K	Actual T_u kip-ft
L1	156 - 151 (1)	TP10.75x10.75x0.365	0.18	0.00
L2	151 - 146 (2)	TP10.75x10.75x0.365	4.60	1.23
L3	146 - 144.5 (3)	TP10.75x10.75x0.365	4.65	1.23
L4	144.5 - 144 (4)	TP18x10.75x0.365	4.67	1.23
L5	144 - 139 (5)	TP18.9435x18x0.25	14.70	10.55
L6	139 - 134 (6)	TP19.8871x18.9435x0.25	15.16	10.55
L7	134 - 129 (7)	TP20.8306x19.8871x0.25	15.74	9.14
L8	129 - 128.25 (8)	TP20.9721x20.8306x0.25	15.82	9.14
L9	128.25 - 128 (9)	TP21.0193x20.9721x0.57 5	15.85	9.14
L10	128 - 123 (10)	TP21.9628x21.0193x0.56 25	16.42	9.18

Section No.	Elevation ft	Size	Actual V_u K	Actual T_u kip-ft
L11	123 - 118 (11)	TP22.9064x21.9628x0.55	17.00	9.21
L12	118 - 113 (12)	TP23.8499x22.9064x0.525	17.59	9.24
L13	113 - 108 (13)	TP24.7934x23.8499x0.5125	18.19	9.28
L14	108 - 103 (14)	TP25.7369x24.7934x0.5	18.79	9.31
L15	103 - 98 (15)	TP26.6805x25.7369x0.4938	19.40	9.36
L16	98 - 93 (16)	TP27.624x26.6805x0.4875	19.58	9.37
L17	93 - 92 (17)	TP27.313x26.4635x0.7	20.22	9.42
L18	92 - 87 (18)	TP28.2568x27.313x0.675	20.86	9.47
L19	87 - 82 (19)	TP29.2006x28.2568x0.65	21.50	9.52
L20	82 - 77.5 (20)	TP30.05x29.2006x0.6375	22.08	9.57
L21	77.5 - 72.5 (21)	TP30.9935x30.05x0.6875	22.73	9.62
L22	72.5 - 70.58 (22)	TP31.3558x30.9935x0.6875	22.99	9.64
L23	70.58 - 70.33 (23)	TP31.403x31.3558x0.6875	23.01	9.64
L24	70.33 - 67.08 (24)	TP32.0163x31.403x0.675	23.44	9.68
L25	67.08 - 66.83 (25)	TP32.0634x32.0163x0.975	23.47	9.68
L26	66.83 - 61.83 (26)	TP33.0069x32.0634x0.95	24.20	9.78
L27	61.83 - 57.5 (27)	TP33.824x33.0069x0.95	24.21	9.79
L28	57.5 - 56.75 (28)	TP33.3405x32.397x0.9375	25.03	9.90
L29	56.75 - 51.75 (29)	TP34.284x33.3405x0.9125	25.74	10.02
L30	51.75 - 46.75 (30)	TP35.2275x34.284x0.9	26.44	10.14
L31	46.75 - 41.75 (31)	TP36.171x35.2275x0.8875	27.13	10.26
L32	41.75 - 39.8 (32)	TP36.539x36.171x0.875	27.41	10.30
L33	39.8 - 39.33 (33)	TP36.6277x36.539x0.95	27.45	10.31
L34	39.33 - 39.08 (34)	TP36.6749x36.6277x0.9375	27.49	10.32
L35	39.08 - 38.33 (35)	TP36.8164x36.6749x0.9375	27.59	10.34
L36	38.33 - 38.08 (36)	TP36.8636x36.8164x0.8875	27.62	10.34
L37	38.08 - 33.08 (37)	TP37.8073x36.8636x0.875	28.30	10.46
L38	33.08 - 30.75 (38)	TP38.247x37.8073x0.8625	28.60	10.52
L39	30.75 - 30.5 (39)	TP38.2942x38.247x0.9375	28.63	10.52
L40	30.5 - 25.5 (40)	TP39.2379x38.2942x0.925	29.28	10.64
L41	25.5 - 20.5 (41)	TP40.1816x39.2379x0.9	29.90	10.76
L42	20.5 - 15.5 (42)	TP41.1252x40.1816x0.8875	30.48	10.87
L43	15.5 - 9.8 (43)	TP42.201x41.1252x0.8875	30.52	10.88
L44	9.8 - 8.8 (44)	TP41.6395x40.4602x0.875	31.31	11.02
L45	8.8 - 8.25 (45)	TP41.7433x41.6395x0.875	31.36	11.03
L46	8.25 - 8 (46)	TP41.7904x41.7433x0.875	31.38	11.04
L47	8 - 4.25 (47)	TP42.498x41.7904x0.875	31.80	11.12
L48	4.25 - 4 (48)	TP42.5452x42.498x1.05	31.81	11.13
L49	4 - 3 (49)	TP42.7339x42.5452x1.05	31.93	11.15

Section No.	Elevation ft	Size	Actual V_u K	Actual T_u kip-ft
L50	3 - 2.75 (50)	TP42.7811x42.7339x1.15	31.95	11.15
L51	2.75 - 0 (51)	TP43.3x42.7811x1.125	32.28	11.22

APPENDIX B

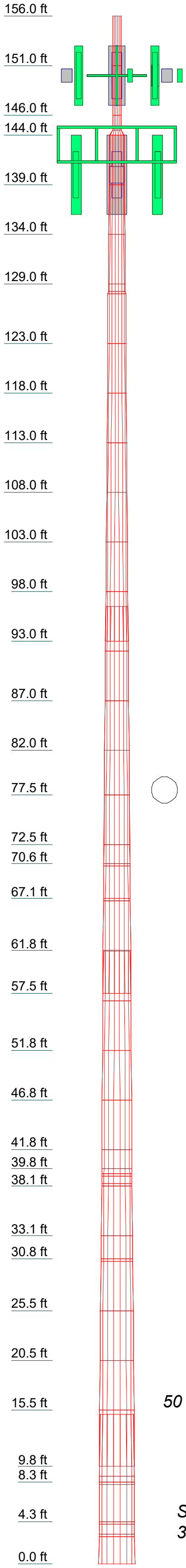
BASE LEVEL DRAWING


(PROPOSED EQUIPMENT CONFIGURATION)
(4) 1-1/4" TO 150 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(4) 1-1/4" TO 143 FT LEVEL
Y
Q4
Q1
X
Q3
Q2
SAFETY CLIMB

APPENDIX C

ADDITIONAL CALCULATIONS

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.0000	0	0.3650		10.7500	10.7500	A53-B-35	0.2
2	5.0000	0	0.3650		10.7500	10.7500	A53-B-35	0.2
3	[illegible]	0	[illegible]		[illegible]	[illegible]	A53-B-35	[illegible]
4	[illegible]	0	[illegible]		[illegible]	[illegible]	A53-B-35	0.1
5	5.0000	12	0.2500		18.0000	18.9435	A36	0.2
6	5.0000	12	0.2500		18.9435	19.8871	A36	0.3
7	5.0000	12	0.2500		19.8871	20.8306	A36	0.3
8	[illegible]	12	[illegible]		[illegible]	[illegible]	A36	[illegible]
9	[illegible]	12	[illegible]		[illegible]	[illegible]	A36	[illegible]
10	5.0000	12	[illegible]		[illegible]	[illegible]	A36	0.6
11	5.0000	12	0.5500		21.9628	22.9064	A36	0.6
12	5.0000	12	0.5250		22.9064	23.8499	A36	0.6
13	5.0000	12	0.5125		23.8499	24.7934	A36	0.6
14	5.0000	12	0.5000		24.7934	25.7369	A36	0.6
15	5.0000	12	0.4938		25.7369	26.6805	A36	0.7
16	5.0000	12	0.4875	3.5000	26.6805	[illegible]	A36	0.7
17	4.5000	12	0.7000		[illegible]	[illegible]	A36	0.8
18	5.0000	12	0.6750		[illegible]	[illegible]	A36	0.9
19	5.0000	12	0.6500		28.2568	29.2006	A36	0.9
20	4.5000	12	0.6375		29.2006	30.0500	A36	0.8
21	5.0000	12	0.6875		30.0500	30.9935	A36	1.1
22	[illegible]	12	[illegible]		[illegible]	[illegible]	A36	0.4
23	[illegible]	12	[illegible]		[illegible]	[illegible]	A36	[illegible]
24	[illegible]	12	[illegible]		[illegible]	[illegible]	A36	[illegible]
25	[illegible]	12	[illegible]		[illegible]	[illegible]	A36	[illegible]
26	5.0000	12	0.9500		[illegible]	[illegible]	A36	1.5
27	[illegible]	12	[illegible]	4.2500	[illegible]	[illegible]	A36	1.3
28	[illegible]	12	[illegible]		[illegible]	[illegible]	A36	1.5
29	5.0000	12	0.9125		[illegible]	34.2840	A36	1.5
30	5.0000	12	0.9000		34.2840	35.2275	A36	1.5
31	5.0000	12	0.8875		35.2275	[illegible]	A36	1.6
32–36	[illegible]	12	[illegible]		[illegible]	[illegible]	A36	[illegible]
37	5.0000	12	[illegible]		[illegible]	[illegible]	A36	1.7
38	[illegible]	12	[illegible]		[illegible]	[illegible]	A36	0.8
39	[illegible]	12	[illegible]		[illegible]	[illegible]	A36	[illegible]
40	5.0000	12	[illegible]		[illegible]	[illegible]	A36	1.8
41	5.0000	12	0.9000		39.2379	40.1816	A36	1.8
42	5.0000	12	0.8875		40.1816	41.1252	A36	1.9
43	[illegible]	12	0.8875	5.2500	41.1252	[illegible]	A36	2.2
44–51	[illegible]	12	[illegible]		[illegible]	[illegible]	A36	[illegible]
								38.0



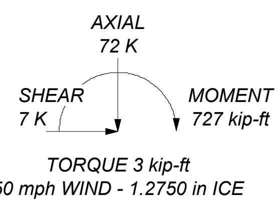
MATERIAL STRENGTH

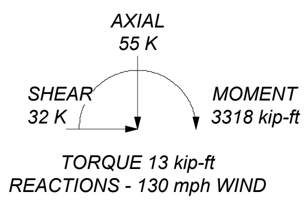
GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	60 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in Windham County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 130 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.27 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.0000 ft
8. TIA-222-H Annex S

ALL REACTIONS ARE FACTORED





Paul J. Ford and Company
250 East Broad st., Suite 600
Columbus, OH 43215
Phone: (614) 221-6679
FAX:

Job: ***156' MP; Thompson/ I-395 X99_1; Thompson, C***		
Project: ***PJF# 37518-0348 / BU# 828402***		
Client: CCI	Drawn by: apike	App'd:
Code: TIA-222-H	Date: 11/01/18	Scale: NTS
Path:		Dwg No. E-1

CCIpole

per TIA-222- H

Site BU: 828402

Work Order: _____

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	156	11.5	0	0	10.75	10.75	0.365		A53-B-35
2	144.5	0.5	0	0	10.75	18	0.365		A53-B-35
3	144	51	3.5	12	18.00	27.624	0.25	Auto	A36
4	96.5	19	0	12	26.46	30.05	0.25	Auto	A36
5	77.5	20	4.25	12	30.05	33.824	0.3125	Auto	A36
6	61.75	21.95	0	12	32.40	36.539	0.3125	Auto	A36
7	39.8	30	5.25	12	36.54	42.201	0.375	Auto	A36
8	15.05	15.05	0	12	40.46	43.3	0.375	Auto	A36

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
1	4.25	39.33	plate	I-085125; (1) (1.1875)	2	o				o							
2	8.25	38.33	plate	CCI-SFP-065125	1									o			
3	39.33	70.58	plate	CCI-AFP-085125	2	o				o							
4	38.33	70.58	plate	CCI-AFP-085125	1									o			
5	70.58	94.67	plate	I-085125; (1) (1.1875)	3	o				o				o			
6	94.67	128.25	plate	CCI-AFP-060100	3	o				o				o			
7	3	30.75	plate	I-085125; (1) (1.1875)	3				o				o				o
8	30.75	67.08	plate	CCI-AFP-065125	3				o				o				o
9	0	4.25	plate	FP 1.25 x 6.5_1	4	o			c	o							c
10	0	8.25	plate	FP 1.25 x 6.5_1	2							c	c				
11	0	3	plate	FP 1.25 x 3.5_1	9		o	o	o		o	o	o		o	o	o
12																	

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	8.5	1.25	10.625	0.625	n/a	n/a	17.000	9.063	1.1875	A572-65
2	6.5	1.25	8.125	0.625	33.000	33.000	19.000	6.563	1.1875	A572-65
3	8.5	1.25	10.625	0.625	51.000	51.000	17.000	9.063	1.1875	A572-65
4	8.5	1.25	10.625	0.625	51.000	51.000	17.000	9.063	1.1875	A572-65
5	8.5	1.25	10.625	0.625	60.000	60.000	17.000	9.063	1.1875	A572-65
6	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
7	8.5	1.25	10.625	0.625	n/a	n/a	17.000	9.063	1.1875	A572-65
8	6.5	1.25	8.125	0.625	42.000	42.000	19.000	6.563	1.1875	A572-65
9	1.25	6.5	8.125	3.25	n/a	n/a	0.000	8.125	0.0000	A572-65
10	1.25	6.5	8.125	3.25	n/a	n/a	0.000	8.125	0.0000	A572-65
11	1.25	3.5	4.375	1.75	n/a	n/a	0.000	4.375	0.0000	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	156 - 151	5		0	10.750	10.750	0.365	A53-B-35	1.000
2	151 - 146	5		0	10.750	10.750	0.365	A53-B-35	1.000
3	146 - 144.5	1.5	0	0	10.750	10.750	0.365	A53-B-35	1.000
4	144.5 - 144	0.5	0	0	10.750	18.000	0.365	A53-B-35	1.000
5	144 - 139	5		12	18.000	18.944	0.25	A36	1.000
6	139 - 134	5		12	18.944	19.887	0.25	A36	1.000
7	134 - 129	5		12	19.887	20.831	0.25	A36	1.000
8	129 - 128.25	0.75		12	20.831	20.972	0.25	A36	1.000
9	128.25 - 128	0.25		12	20.972	21.019	0.575	A36	0.918
10	128 - 123	5		12	21.019	21.963	0.5625	A36	0.916
11	123 - 118	5		12	21.963	22.906	0.55	A36	0.916
12	118 - 113	5		12	22.906	23.850	0.525	A36	0.939
13	113 - 108	5		12	23.850	24.793	0.5125	A36	0.943
14	108 - 103	5		12	24.793	25.737	0.5	A36	0.949
15	103 - 98	5		12	25.737	26.680	0.49375	A36	0.944
16	98 - 96.5	5	3.5	12	26.680	27.624	0.4875	A36	0.951
17	96.5 - 92	4.5		12	26.464	27.313	0.7	A36	0.895
18	92 - 87	5		12	27.313	28.257	0.675	A36	0.909
19	87 - 82	5		12	28.257	29.201	0.65	A36	0.924
20	82 - 77.5	4.5	0	12	29.201	30.050	0.6375	A36	0.926
21	77.5 - 72.5	5		12	30.050	30.994	0.6875	A36	0.936
22	72.5 - 70.58	1.92		12	30.994	31.356	0.6875	A36	0.930
23	70.58 - 70.33	0.25		12	31.356	31.403	0.6875	A36	0.930
24	70.33 - 67.08	3.25		12	31.403	32.016	0.675	A36	0.937
25	67.08 - 66.83	0.25		12	32.016	32.063	0.975	A36	0.904
26	66.83 - 61.83	5		12	32.063	33.007	0.95	A36	0.910
27	61.83 - 61.75	4.33	4.25	12	33.007	33.824	0.95	A36	0.910
28	61.75 - 56.75	5		12	32.397	33.341	0.9375	A36	0.916
29	56.75 - 51.75	5		12	33.341	34.284	0.9125	A36	0.923
30	51.75 - 46.75	5		12	34.284	35.228	0.9	A36	0.919
31	46.75 - 41.75	5		12	35.228	36.171	0.8875	A36	0.917
32	41.75 - 39.8	1.95	0	12	36.171	36.539	0.875	A36	0.923
33	39.8 - 39.33	0.47		12	36.539	36.628	0.95	A36	0.917
34	39.33 - 39.08	0.25		12	36.628	36.675	0.9375	A36	0.928
35	39.08 - 38.33	0.75		12	36.675	36.816	0.9375	A36	0.926
36	38.33 - 38.08	0.25		12	36.816	36.864	0.8875	A36	0.952
37	38.08 - 33.08	5		12	36.864	37.807	0.875	A36	0.952
38	33.08 - 30.75	2.33		12	37.807	38.247	0.8625	A36	0.959
39	30.75 - 30.5	0.25		12	38.247	38.294	0.9375	A36	0.950
40	30.5 - 25.5	5		12	38.294	39.238	0.925	A36	0.949
41	25.5 - 20.5	5		12	39.238	40.182	0.9	A36	0.961
42	20.5 - 15.5	5		12	40.182	41.125	0.8875	A36	0.961
43	15.5 - 15.05	5.7	5.25	12	41.125	42.201	0.8875	A36	0.960
44	15.05 - 8.8	6.25		12	40.460	41.639	0.875	A36	0.968
45	8.8 - 8.25	0.55		12	41.639	41.743	0.875	A36	0.967
46	8.25 - 8	0.25		12	41.743	41.790	0.875	A36	1.036
47	8 - 4.25	3.75		12	41.790	42.498	0.875	A36	1.026
48	4.25 - 4	0.25		12	42.498	42.545	1.05	A36	0.938
49	4 - 3	1		12	42.545	42.734	1.05	A36	0.936
50	3 - 2.75	0.25		12	42.734	42.781	1.15	A36	0.905
51	2.75 - 0	2.75		12	42.781	43.300	1.125	A36	0.917

TNX Section Forces

	Increment (ft): 5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	156 - 151	0.23	0.45	0.18
2	151 - 146	1.80	20.61	4.60
3	146 - 144.5	1.88	27.53	4.65
4	144.5 - 144	1.91	29.86	4.67
5	144 - 139	6.71	74.89	14.71
6	139 - 134	7.10	149.62	15.26
7	134 - 129	7.53	227.12	15.74
8	129 - 128.25	7.59	238.95	15.82
9	128.25 - 128	7.63	242.91	15.85
10	128 - 123	8.40	323.56	16.42
11	123 - 118	9.21	407.10	17.00
12	118 - 113	10.04	493.55	17.59
13	113 - 108	10.89	582.96	18.19
14	108 - 103	11.78	675.36	18.79
15	103 - 98	12.69	770.77	19.40
16	98 - 96.5	12.96	799.99	19.58
17	96.5 - 92	14.58	889.53	20.22
18	92 - 87	15.78	992.17	20.86
19	87 - 82	17.01	1098.03	21.50
20	82 - 77.5	18.14	1196.04	22.08
21	77.5 - 72.5	19.53	1308.03	22.73
22	72.5 - 70.58	20.06	1351.90	22.99
23	70.58 - 70.33	20.15	1357.65	23.01
24	70.33 - 67.08	21.07	1433.11	23.44
25	67.08 - 66.83	21.17	1438.97	23.47
26	66.83 - 61.83	23.07	1558.12	24.20
27	61.83 - 61.75	23.11	1560.06	24.21
28	61.75 - 56.75	26.55	1683.17	25.03
29	56.75 - 51.75	28.49	1810.05	25.74
30	51.75 - 46.75	30.46	1940.46	26.44
31	46.75 - 41.75	32.46	2074.33	27.13
32	41.75 - 39.8	33.24	2127.47	27.41
33	39.8 - 39.33	33.45	2140.36	27.45
34	39.33 - 39.08	33.56	2147.23	27.49
35	39.08 - 38.33	33.89	2167.88	27.59
36	38.33 - 38.08	34.00	2174.78	27.62
37	38.08 - 33.08	36.13	2314.55	28.30
38	33.08 - 30.75	37.13	2380.81	28.60
39	30.75 - 30.5	37.26	2387.96	28.63
40	30.5 - 25.5	39.57	2532.68	29.28
41	25.5 - 20.5	41.92	2680.56	29.90
42	20.5 - 15.5	44.30	2831.43	30.48
43	15.5 - 15.05	44.52	2845.15	30.52
44	15.05 - 8.8	49.86	3038.35	31.31
45	8.8 - 8.25	50.13	3055.58	31.36
46	8.25 - 8	50.26	3063.42	31.38
47	8 - 4.25	52.20	3181.84	31.80
48	4.25 - 4	52.35	3189.79	31.81
49	4 - 3	52.91	3221.66	31.93
50	3 - 2.75	53.07	3229.64	31.95
51	2.75 - 0	54.70	3317.94	32.28

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
156 - 151	Pole	TP10.75x10.75x0.365	Pole	0.5%	Pass
151 - 146	Pole	TP10.75x10.75x0.365	Pole	19.5%	Pass
146 - 144.5	Pole	TP10.75x10.75x0.365	Pole	25.9%	Pass
144.5 - 144	Pole	TP18x10.75x0.365	Pole	9.9%	Pass
144 - 139	Pole	TP18.944x18x0.25	Pole	31.8%	Pass
139 - 134	Pole	TP19.887x18.944x0.25	Pole	56.6%	Pass
134 - 129	Pole	TP20.831x19.887x0.25	Pole	77.6%	Pass
129 - 128.25	Pole	TP20.972x20.831x0.25	Pole	80.5%	Pass
128.25 - 128	Pole + Reinf.	TP21.019x20.972x0.575	Pole	36.7%	Pass
128 - 123	Pole + Reinf.	TP21.963x21.019x0.5625	Pole	45.9%	Pass
123 - 118	Pole + Reinf.	TP22.906x21.963x0.55	Pole	54.4%	Pass
118 - 113	Pole + Reinf.	TP23.85x22.906x0.525	Pole	62.2%	Pass
113 - 108	Pole + Reinf.	TP24.793x23.85x0.5125	Pole	69.4%	Pass
108 - 103	Pole + Reinf.	TP25.737x24.793x0.5	Pole	76.1%	Pass
103 - 98	Pole + Reinf.	TP26.68x25.737x0.4938	Pole	82.3%	Pass
98 - 96.5	Pole + Reinf.	TP27.624x26.68x0.4875	Pole	84.1%	Pass
96.5 - 92	Pole + Reinf.	TP27.313x26.464x0.7	Pole	65.9%	Pass
92 - 87	Pole + Reinf.	TP28.257x27.313x0.675	Pole	70.9%	Pass
87 - 82	Pole + Reinf.	TP29.201x28.257x0.65	Pole	75.9%	Pass
82 - 77.5	Pole + Reinf.	TP30.05x29.201x0.6375	Pole	80.3%	Pass
77.5 - 72.5	Pole + Reinf.	TP30.994x30.05x0.6875	Pole	74.5%	Pass
72.5 - 70.58	Pole + Reinf.	TP31.356x30.994x0.6875	Pole	75.7%	Pass
70.58 - 70.33	Pole + Reinf.	TP31.403x31.356x0.6875	Pole	75.9%	Pass
70.33 - 67.08	Pole + Reinf.	TP32.016x31.403x0.675	Pole	77.9%	Pass
67.08 - 66.83	Pole + Reinf.	TP32.063x32.016x0.975	Pole	55.9%	Pass
66.83 - 61.83	Pole + Reinf.	TP33.007x32.063x0.95	Pole	58.3%	Pass
61.83 - 61.75	Pole + Reinf.	TP33.824x33.007x0.95	Pole	58.4%	Pass
61.75 - 56.75	Pole + Reinf.	TP33.341x32.397x0.9375	Pole	62.2%	Pass
56.75 - 51.75	Pole + Reinf.	TP34.284x33.341x0.9125	Pole	64.6%	Pass
51.75 - 46.75	Pole + Reinf.	TP35.228x34.284x0.9	Pole	67.3%	Pass
46.75 - 41.75	Pole + Reinf.	TP36.171x35.228x0.8875	Pole	70.1%	Pass
41.75 - 39.8	Pole + Reinf.	TP36.539x36.171x0.875	Pole	71.1%	Pass
39.8 - 39.33	Pole + Reinf.	TP36.628x36.539x0.95	Pole	65.3%	Pass
39.33 - 39.08	Pole + Reinf.	TP36.675x36.628x0.9375	Pole	65.4%	Pass
39.08 - 38.33	Pole + Reinf.	TP36.816x36.675x0.9375	Pole	65.6%	Pass
38.33 - 38.08	Pole + Reinf.	TP36.864x36.816x0.8875	Pole	70.8%	Pass
38.08 - 33.08	Pole + Reinf.	TP37.807x36.864x0.875	Pole	72.7%	Pass
33.08 - 30.75	Pole + Reinf.	TP38.247x37.807x0.8625	Pole	73.6%	Pass
30.75 - 30.5	Pole + Reinf.	TP38.294x38.247x0.9375	Pole	68.0%	Pass
30.5 - 25.5	Pole + Reinf.	TP39.238x38.294x0.925	Pole	69.7%	Pass
25.5 - 20.5	Pole + Reinf.	TP40.182x39.238x0.9	Pole	71.4%	Pass
20.5 - 15.5	Pole + Reinf.	TP41.125x40.182x0.8875	Pole	73.0%	Pass
15.5 - 15.05	Pole + Reinf.	TP42.201x41.125x0.8875	Pole	73.2%	Pass
15.05 - 8.8	Pole + Reinf.	TP41.639x40.46x0.875	Pole	77.3%	Pass
8.8 - 8.25	Pole + Reinf.	TP41.743x41.639x0.875	Pole	77.5%	Pass
8.25 - 8	Pole + Reinf.	TP41.79x41.743x0.875	Pole	78.2%	Pass
8 - 4.25	Pole + Reinf.	TP42.498x41.79x0.875	Pole	79.7%	Pass
4.25 - 4	Pole + Reinf.	TP42.545x42.498x1.05	Pole	66.7%	Pass
4 - 3	Pole + Reinf.	TP42.734x42.545x1.05	Pole	67.1%	Pass
3 - 2.75	Pole + Reinf.	TP42.781x42.734x1.15	Pole	62.1%	Pass
2.75 - 0	Pole + Reinf.	TP43.3x42.781x1.125	Pole	63.1%	Pass
				Summary	
			Pole	84.1%	Pass
			Reinforcement	72.5%	Pass
			Overall	84.1%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*											
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11
156 - 151	161	n/a	161	11.91	n/a	11.91	0.5%											
151 - 146	161	n/a	161	11.91	n/a	11.91	19.5%											
146 - 144.5	161	n/a	161	11.91	n/a	11.91	25.9%											
144.5 - 144	786	n/a	786	20.22	n/a	20.22	9.9%											
144 - 139	672	n/a	672	15.03	n/a	15.03	31.8%											
139 - 134	779	n/a	779	15.79	n/a	15.79	56.6%											
134 - 129	897	n/a	897	16.54	n/a	16.54	77.6%											
129 - 128.25	916	n/a	916	16.66	n/a	16.66	80.5%											
128.25 - 128	922	1119	2040	16.70	18.00	34.70	36.7%						32.0%					
128 - 123	1053	1214	2267	17.45	18.00	35.45	45.9%						40.0%					
123 - 118	1197	1314	2510	18.21	18.00	36.21	54.4%						47.2%					
118 - 113	1352	1417	2770	18.97	18.00	36.97	62.2%						53.9%					
113 - 108	1521	1525	3046	19.73	18.00	37.73	69.4%						60.0%					
108 - 103	1703	1636	3340	20.49	18.00	38.49	76.1%						65.7%					
103 - 98	1900	1752	3651	21.25	18.00	39.25	82.3%						71.0%					
98 - 96.5	1961	1787	3749	21.47	18.00	39.47	84.1%						72.5%					
96.5 - 92	2039	3349	5388	21.75	31.88	53.63	65.9%					53.3%						
92 - 87	2260	3567	5827	22.51	31.88	54.39	70.9%					56.8%						
87 - 82	2497	3792	6289	23.27	31.88	55.15	75.9%					60.1%						
82 - 77.5	2723	4001	6724	23.95	31.88	55.83	80.3%					62.9%						
77.5 - 72.5	3714	4240	7955	30.83	31.88	62.70	74.5%					59.9%						
72.5 - 70.58	3848	4334	8182	31.19	31.88	63.07	75.7%					60.9%						
70.58 - 70.33	3865	4346	8211	31.24	31.88	63.12	75.9%			61.0%	61.0%							
70.33 - 67.08	4098	4507	8606	31.86	31.88	63.73	77.9%			62.6%	62.6%							
67.08 - 66.83	4117	7946	12062	31.90	56.25	88.15	55.9%			44.9%	44.9%				47.4%			
66.83 - 61.83	4495	8394	12889	32.85	56.25	89.10	58.3%			46.8%	46.8%				49.4%			
61.83 - 61.75	4501	8401	12902	32.87	56.25	89.12	58.4%			46.9%	46.9%				49.4%			
61.75 - 56.75	4634	8555	13189	33.19	56.25	89.44	62.2%			50.0%	50.0%				52.7%			
56.75 - 51.75	5042	9021	14063	34.13	56.25	90.38	64.6%			51.8%	51.8%				54.6%			
51.75 - 46.75	5474	9498	14972	35.08	56.25	91.33	67.3%			53.5%	53.5%				56.4%			
46.75 - 41.75	5930	9989	15919	36.03	56.25	92.28	70.1%			55.3%	55.3%				58.2%			
41.75 - 39.8	6114	10183	16298	36.40	56.25	92.65	71.1%			55.9%	55.9%				58.9%			
39.8 - 39.33	7353	10230	17584	43.71	56.25	99.96	65.3%			52.2%	52.2%				55.1%			
39.33 - 39.08	7382	10256	17638	43.77	56.25	100.02	65.4%	52.6%			52.3%				55.1%			
39.08 - 38.33	7469	10331	17800	43.94	56.25	100.19	65.6%	52.8%			52.5%				55.4%			
38.33 - 38.08	7508	9475	16983	44.00	53.75	97.75	70.8%	53.0%	60.0%						59.1%			
38.08 - 33.08	8105	9944	18048	45.13	53.75	98.88	72.7%	54.4%	61.5%						60.6%			
33.08 - 30.75	8394	10166	18559	45.67	53.75	99.42	73.6%	55.1%	62.2%						61.3%			
30.75 - 30.5	8424	11712	20136	45.72	61.25	106.97	68.0%	51.1%	57.5%					54.0%				
30.5 - 25.5	9068	12269	21337	46.86	61.25	108.11	69.7%	52.5%	58.9%					55.4%				
25.5 - 20.5	9745	12838	22583	48.00	61.25	109.25	71.4%	53.7%	60.3%					56.7%				
20.5 - 15.5	10454	13421	23875	49.14	61.25	110.39	73.0%	54.9%	61.6%					57.9%				
15.5 - 15.05	10520	13474	23994	49.24	61.25	110.49	73.2%	55.0%	61.7%					58.1%				
15.05 - 8.8	10855	13744	24599	49.76	61.25	111.01	77.3%	58.0%	65.0%					61.1%				
8.8 - 8.25	10937	13810	24747	49.88	61.25	111.13	77.5%	58.1%	65.1%					61.3%				
8.25 - 8	10985	13756	24742	49.94	69.38	119.31	78.2%	58.0%						59.9%			56.4%	
8 - 4.25	11558	14204	25761	50.79	69.38	120.17	79.7%	58.8%						60.7%			57.3%	
4.25 - 4	11603	19429	31033	50.85	80.63	131.47	66.7%							49.3%		54.8%	55.1%	
4 - 3	11760	19585	31345	51.08	80.63	131.70	67.1%							49.5%		55.0%	55.4%	
3 - 2.75	11796	22374	34170	51.13	88.13	139.26	62.1%									51.1%	51.5%	45.4%
2.75 - 0	12234	22861	35095	51.76	88.13	139.88	63.1%									51.7%	52.1%	45.9%

Note: Section capacity checked in 5 degree increments.
Rating per TIA-222-H Section 15.5.

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

v4.5.1 - Effective 09-27-18

Date: 11/1/2018
PJF Project: 37518-0348.005.7805
Client Ref. # 828402
Site Name: Site Name
Description: 144' Micro Jump Connection
Owner: CCI
Engineer: RCK

Asymmetric Bolt Analysis

Moment =	30	k-ft	TIA Ref.	H		η =	N/A	for Base Plates, Rev. G Sect. 4.9.9
Axial =	1.9	kips (+Comp, -Tension)	ASIF =	N/A		Threads =	N-Included	for Flange Plates, Rev. G & H
Shear =	4.7	kips	Max Ratio =	100.0%		lar =	0.00	in, for Base Plates, Rev. H Sect 4.9.9 (Max of Original Items)
Anchor Qty =	10		Location =	Flange Plate		Grout =	0.00	psi, for Base Plates, Rev. H Sect 4.9.9 (Note)

** For Flange Plates: Prying action is not considered in the bolt loads. **

Item	Nominal Bolt Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Bolt Circle, in	Type	Area Override, in^2	Area, in^2	Max Net Comp, kips	Max Net Tension, kips	Tension Override, kips	Comp Override, kips	Tension Cap, kips	Comp Cap, kips	Capacity Ratio
1	0.750	A325	92	120	0.0	19.88	Original	0.00	0.44	0.91	0.77	20.34	20.34	20.34		0.1%
2	0.750	A325	92	120	60.0	19.88	Original	0.00	0.44	0.91	0.77	20.34	20.34	20.34		0.1%
3	0.750	A325	92	120	120.0	19.88	Original	0.00	0.44	0.91	0.77	20.34	20.34	20.34		0.1%
4	0.750	A325	92	120	180.0	19.88	Original	0.00	0.44	0.91	0.77	20.34	20.34	20.34		0.1%
5	0.750	A325	92	120	240.0	19.88	Original	0.00	0.44	0.91	0.77	20.34	20.34	20.34		0.1%
6	0.750	A325	92	120	300.0	19.88	Original	0.00	0.44	0.91	0.77	20.34	20.34	20.34		0.1%
7	1.750	A193 Gr B7	105	125	15.0	38.00	Original	0.00	2.41	9.13	8.38	100.00	100.00	100.00		0.7%
8	1.750	A193 Gr B7	105	125	105.0	38.00	Original	0.00	2.41	9.13	8.38	100.00	100.00	100.00		0.7%
9	1.750	A193 Gr B7	105	125	195.0	38.00	Original	0.00	2.41	9.13	8.38	100.00	100.00	100.00		0.7%
10	1.750	A193 Gr B7	105	125	285.0	38.00	Original	0.00	2.41	9.13	8.38	100.00	100.00	100.00		0.7%
									12.27							

Monopole Flange Plate Connection

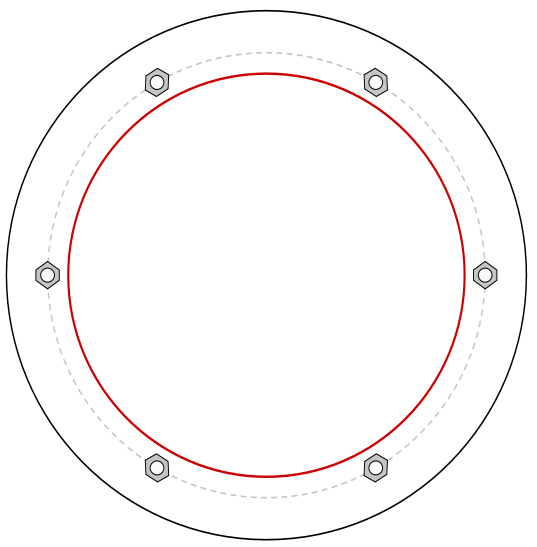
Elevation = 144 ft.

BU #	828402
Site Name	Thompson
Order #	
TIA-222 Revision	H

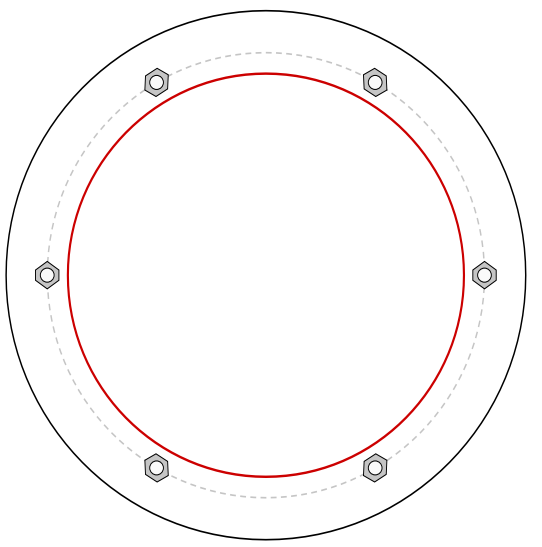
Applied Loads	
Moment (kip-ft)	2.10
Axial Force (kips)	0.40
Shear Force (kips)	1.00

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(6) 5/8" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 19.875" BC

Top Plate Data

23.625" OD x 1.5" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Top Pole Data

18" x 0.365" round pole (A53-B-35; Fy=35 ksi, Fu=60 ksi)

Bottom Plate Data

23.625" OD x 0.5" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Stiffener Data

N/A

Bottom Pole Data

18" x 0.25" 12-sided pole (A36; Fy=36 ksi, Fu=58 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	0.78	
Allowable (kips)	20.34	
Stress Rating:	**3.6%**	**Pass**

Top Plate Capacity

Max Stress (ksi):	0.18	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**0.5%**	**Pass**
Tension Side Stress Rating:	**0.2%**	**Pass**

Bottom Plate Capacity

Max Stress (ksi):	1.62	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**4.8%**	**Pass**
Tension Side Stress Rating:	**1.8%**	**Pass**

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

v4.5.1 - Effective 09-27-18

Date: 11/1/2018
PJF Project: 37518-0348.005.7805
Client Ref. # 1/31/4168
Site Name: Site Name
Description: Description
Owner: CCI
Engineer: RCK

Asymmetric Anchor Rod Analysis

Moment =	3318	k-ft	TIA Ref.	H	η =	N/A	for Base Plates, Rev. G Sect. 4.9.9
Axial =	54.7	kips (+Comp, -Tension)	ASIF =	N/A	Threads =	N/A	for Flange Plates, Rev. G & H
Shear =	32.3	kips	Max Ratio =	100.0%	lar =	1.13	in, for Base Plates, Rev. H Sect 4.9.9 (Max of Original Items)
Anchor Qty =	27		Location =	Base Plate	Grout =	0.00	psi, for Base Plates, Rev. H Sect 4.9.9 (Note)

** For Post Installed Anchors: Check anchors for embedment, epoxy/grout bond, and capacity based on proof load. **

Item	Nominal Anchor Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Anchor Circle, in	Type	Area Override, in^2	Area, in^2	Max Net Comp, kips	Max Net Tension, kips	Tension Override, kips	Comp Override, kips	Tension Cap, kips	Comp Cap, kips	Capacity Ratio
1	2.000	Other	42	60	0.0	51.00	Original	0.00	3.14	98.37	92.29	0.00	0.00	112.42	104.93	89.6%
2	2.000	Other	42	60	20.0	51.00	Original	0.00	3.14	98.37	92.29	0.00	0.00	112.42	104.93	89.6%
3	2.000	Other	42	60	40.0	51.00	Original	0.00	3.14	98.37	92.29	0.00	0.00	112.42	104.93	89.6%
4	2.000	Other	42	60	60.0	51.00	Original	0.00	3.14	98.37	92.29	0.00	0.00	112.42	104.93	89.6%
5	2.000	Other	42	60	80.0	51.00	Original	0.00	3.14	98.37	92.29	0.00	0.00	112.42	104.93	89.6%
6	2.000	Other	42	60	100.0	51.00	Original	0.00	3.14	98.37	92.29	0.00	0.00	112.42	104.93	89.6%
7	2.000	Other	42	60	120.0	51.00	Original	0.00	3.14	98.37	92.29	0.00	0.00	112.42	104.93	89.6%
8	2.000	Other	42	60	140.0	51.00	Original	0.00	3.14	98.37	92.29	0.00	0.00	112.42	104.93	89.6%
9	2.000	Other	42	60	160.0	51.00	Original	0.00	3.14	98.37	92.29	0.00	0.00	112.42	104.93	89.6%
10	2.000	Other	42	60	180.0	51.00	Original	0.00	3.14	98.37	92.29	0.00	0.00	112.42	104.93	89.6%
11	2.000	Other	42	60	200.0	51.00	Original	0.00	3.14	98.37	92.29	0.00	0.00	112.42	104.93	89.6%
12	2.000	Other	42	60	220.0	51.00	Original	0.00	3.14	98.37	92.29	0.00	0.00	112.42	104.93	89.6%
13	2.000	Other	42	60	240.0	51.00	Original	0.00	3.14	98.37	92.29	0.00	0.00	112.42	104.93	89.6%
14	2.000	Other	42	60	260.0	51.00	Original	0.00	3.14	98.37	92.29	0.00	0.00	112.42	104.93	89.6%
15	2.000	Other	42	60	280.0	51.00	Original	0.00	3.14	98.37	92.29	0.00	0.00	112.42	104.93	89.6%
16	2.000	Other	42	60	300.0	51.00	Original	0.00	3.14	98.37	92.29	0.00	0.00	112.42	104.93	89.6%
17	2.000	Other	42	60	320.0	51.00	Original	0.00	3.14	98.37	92.29	0.00	0.00	112.42	104.93	89.6%
18	2.000	Other	42	60	340.0	51.00	Original	0.00	3.14	98.37	92.29	0.00	0.00	112.42	104.93	89.6%
19	2.250	A193 Gr B7	105	125	30.0	58.00	Post-Installed	0.00	3.98	137.21	137.21	0.00	0.00	304.47	341.01	38.3%
20	2.250	A193 Gr B7	105	125	51.0	58.00	Post-Installed	0.00	3.98	137.21	137.21	0.00	0.00	304.47	341.01	38.3%
21	2.250	A193 Gr B7	105	125	90.0	58.00	Post-Installed	0.00	3.98	137.21	137.21	0.00	0.00	304.47	341.01	38.3%
22	2.250	A193 Gr B7	105	125	150.0	58.00	Post-Installed	0.00	3.98	137.21	137.21	0.00	0.00	304.47	341.01	38.3%
23	2.250	A193 Gr B7	105	125	171.0	58.00	Post-Installed	0.00	3.98	137.21	137.21	0.00	0.00	304.47	341.01	38.3%
24	2.250	A193 Gr B7	105	125	210.0	58.00	Post-Installed	0.00	3.98	137.21	137.21	0.00	0.00	304.47	341.01	38.3%
25	2.250	A193 Gr B7	105	125	270.0	58.00	Post-Installed	0.00	3.98	137.21	137.21	0.00	0.00	304.47	341.01	38.3%
26	2.250	A193 Gr B7	105	125	291.0	58.00	Post-Installed	0.00	3.98	137.21	137.21	0.00	0.00	304.47	341.01	38.3%
27	2.250	A193 Gr B7	105	125	330.0	58.00	Post-Installed	0.00	3.98	137.21	137.21	0.00	0.00	304.47	341.01	38.3%
									92.33							

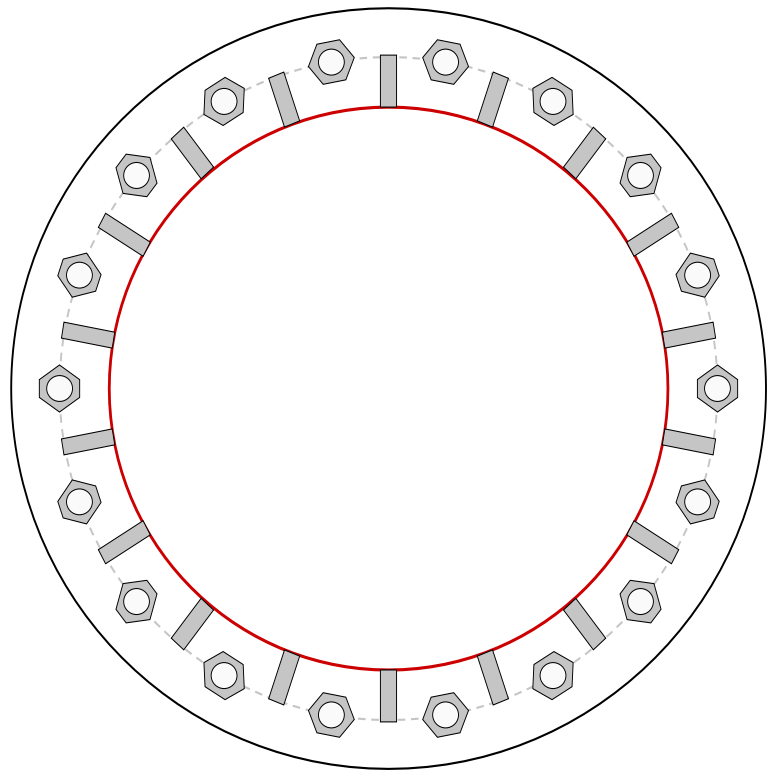
Monopole Base Plate Connection

Site Info	
BU #	828402
Site Name	Thompson
Order #	

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	1.125

Applied Loads	
Moment (kip-ft)	1823.20
Axial Force (kips)	54.70
Shear Force (kips)	32.28

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(18) 2" ø bolts (A572-42 N; Fy=42 ksi, Fu=60 ksi) on 51" BC

Base Plate Data

58.5" OD x 1.5" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Stiffener Data

(18) 18"H x 4"W x 1.25"T, Notch: 1"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.625" fillet
vert. weld: 0.375" fillet

Pole Data

43.3" x 0.375" 12-sided pole (A36; Fy=36 ksi, Fu=58 ksi)

Analysis Results

Anchor Rod Summary *(units of kips, kip-in)*

Pu_c = 98.31	ϕPn_c = 105	**Stress Rating**
Vu = 1.79	ϕVn = 31.5	**89.5%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	30.37	(Roark's Flexural)
Allowable Stress (ksi):	32.4	
Stress Rating:	**89.3%**	**Pass**

Stiffener Summary

Horizontal Weld:	**74.3%**	**Pass**
Vertical Weld:	**23.0%**	**Pass**
Plate Flexure+Shear:	**5.3%**	**Pass**
Plate Tension+Shear:	**52.6%**	**Pass**
Plate Compression:	**85.7%**	**Pass**

Pole Summary

Punching Shear:	**8.7%**	**Pass**

Drilled Pier Foundation

BU # :	828402
Site Name:	Thompson
Order Number:	

TIA-222 Revison:	H
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	3317.94	
Axial Force (kips)	54.7	
Shear Force (kips)	32.28	

Material Properties		
Concrete Strength, f'c:	3	ksi
Rebar Strength, Fy:	60	ksi

Pier Design Data		
Depth	25.25	ft
Ext. Above Grade	0.25	ft
Pier Section 1		
From 0.25' above grade to 25.25' below grade		
Pier Diameter	6	ft
Rebar Quantity	34	
Rebar Size	8	
Clear Cover to Ties	3	in
Tie Size	4	

Analysis Results		
Soil Lateral Capacity	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	6.90	-
Soil Safety Factor	4.44	-
Max Moment (kip-ft)	3505.12	-
Rating*	*28.5%*	-
Soil Vertical Capacity	*Compression*	*Uplift*
Skin Friction (kips)	557.71	-
End Bearing (kips)	566.19	-
Weight of Concrete (kips)	129.78	-
Total Capacity (kips)	1123.90	-
Axial (kips)	184.48	-
Rating*	*15.6%*	-
Reinforced Concrete Capacity	*Compression*	*Uplift*
Critical Depth (ft from TOC)	6.69	-
Critical Moment (kip-ft)	3504.81	-
Critical Moment Capacity	3677.74	-
Rating*	*90.8%*	-

Soil Interaction Rating*	**28.5%**
Structural Foundation Rating*	**90.8%**

Check Limitation	
Apply TIA-222-H Section 15.5:	☑

*Rating per TIA-222-H Section 15.5

Soil Profile

Groundwater Depth	N/A	ft	# of Layers: 5

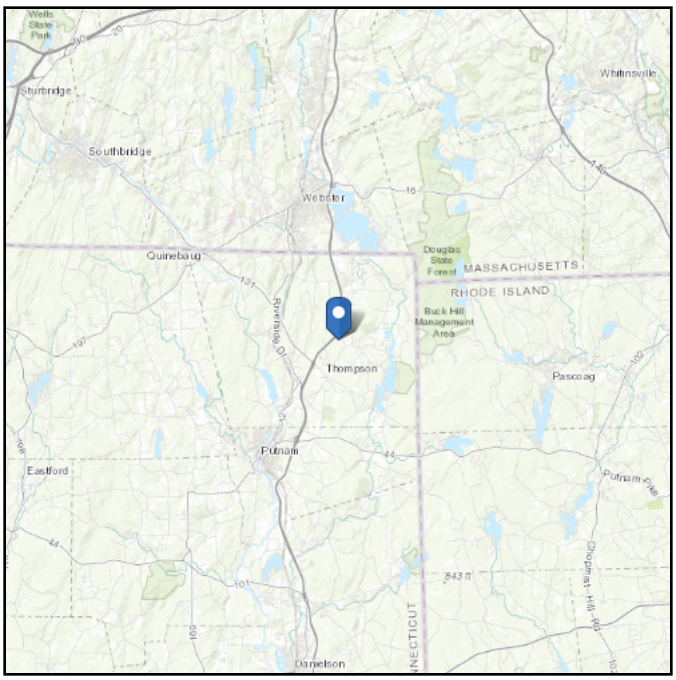
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	4	4	140	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	4	8	4	130	150		38	0.000	0.000	0.90	0.90			Cohesionless
3	8	15	7	140	150		42	0.000	0.000	1.60	1.60			Cohesionless
4	15	20	5	140	150		42	0.000	0.000	2.20	2.20			Cohesionless
5	20	25.25	5.25	140	150		42	0.000	0.000	2.60	2.60	26.7		Cohesionless

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 538.27 ft (NAVD 88)
Latitude: 41.977706
Longitude: -71.855



Wind

Results:

Wind Speed:	127 Vmph
10-year MRI	78 Vmph
25-year MRI	88 Vmph
50-year MRI	96 Vmph
100-year MRI	103 Vmph
Data Source:	ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014
Date Accessed:	Thu Nov 01 2018

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

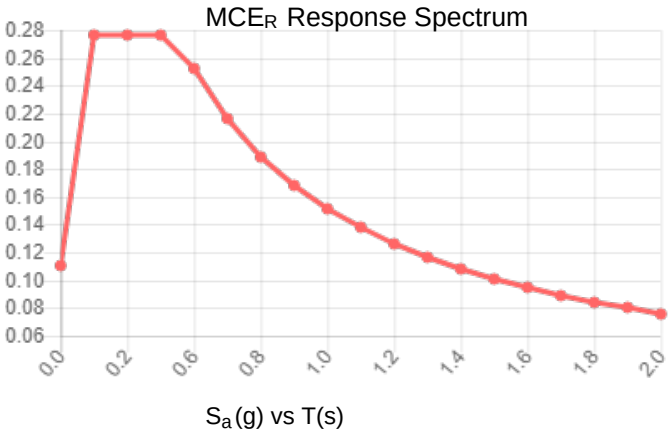
Seismic

Site Soil Class: D - Stiff Soil

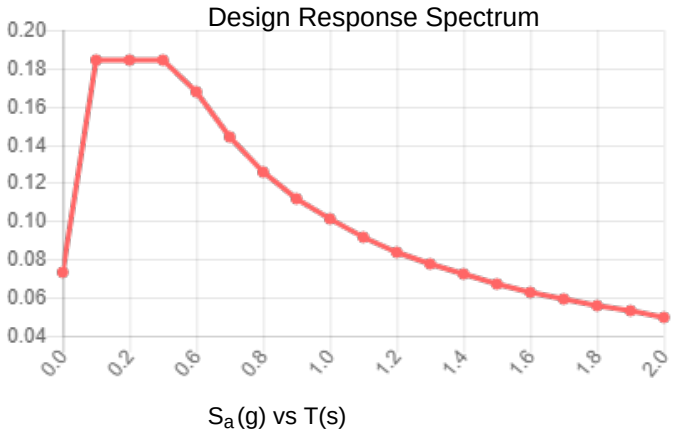
Results:

S_S :	0.172	S_{DS} :	0.184
S_1 :	0.063	S_{D1} :	0.101
F_a :	1.600	T_L :	6.000
F_v :	2.400	PGA :	0.085
S_{MS} :	0.276	PGA_M :	0.136
S_{M1} :	0.151	F_{PGA} :	1.600
		I_e :	1

Seismic Design Category B



Sa(g) vs T(s)



Sa(g) vs T(s)

Data Accessed: Thu Nov 01 2018

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Thu Nov 01 2018

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Date: **May 16, 2018**

Patricia Pelon
Crown Castle
3 Corporate Dr., St 101
Clifton Park, NY 12065

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
Infinigy Engineering, PLLC
1033 Watervliet Shaker Road
Albany, NY 12205
518-690-0790
structural@infinigy.com

Subject:	**Mount Structural Analysis**	
Carrier Designation:	***Sprint PCS Co-Locate***	
	Carrier Site Number:	CT23XC410
	Carrier Site Name:	CT23XC410
Crown Castle Designation:	**Crown Castle BU Number:**	828402
	Crown Castle Site Name:	Thompson/ I-395 X00_1
	Crown Castle JDE Job Number:	505910
	Crown Castle Application Number:	441412 Rev. 0
Engineering Firm Designation:	**Infinigy Report Designation:**	600-002
Site Data:	**720 Thompson Road, Thompson, Windham County, CT 06277** **Latitude 41° 58' 39.74" Longitude -71° 50' 47.55"**	
Structure Information:	**Tower Height & Type:**	**156.0 ft Monopole**
	Mount Elevation:	**154.0 ft**
	Mount Type:	**Proposed 5 Foot T-Arm**

Dear Patricia Pelon,

Infinigy Engineering, PLLC is pleased to submit this **"Mount Structural Analysis Report"** to determine the structural integrity of Sprint's antenna mounting system with the proposed appurtenance and equipment addition on the above mentioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

Based upon our analysis, we have determined the adequacy of the antenna mounting system that will support the existing and proposed loading to be:

T-Arm **Sufficient w/ Modifications**

This analysis has been performed in accordance with the 2015 International Building Code and the local jurisdiction wind speed requirement of a 101 mph nominal 3-second gust wind. Exposure Category C and Risk Category II were used in this analysis.

We at Infinigy Engineering, PLLC 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.

Mount structural analysis prepared by: Brenden Archer

Respectfully Submitted by:

Joseph R. Johnson, P.E.
VP Structural Engineering / Principal

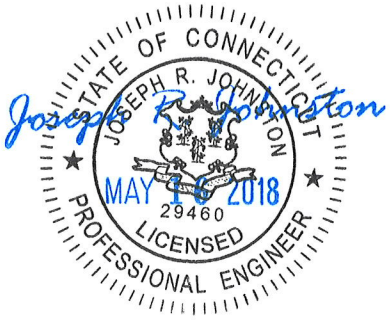


TABLE OF CONTENTS

1) INTRODUCTION

The mount consists of a Proposed 5 Foot T-Arm at the **154** ft elevation**.** The existing and proposed antenna loading was obtained from the Application provided by CCI, Application Number 441412, Revision 0.

2) ANALYSIS CRITERIA

The structural analysis was performed in accordance with the requirements of TIA 222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second wind gust wind speed of 101 mph with no ice, 50 mph with 1-inch escalated ice thickness, Exposure Category C and Topographic Category 1. In addition, the Proposed 5 foot T-Arm has been analyzed for a load combination consisting of a 250-pound man live load using a 3-second wind gustwind speed of 30 mph.

Table 1 – Proposed Equipment Loading Information

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Proposed Mount Type	Note
154.0	154.0	3	Commscope	NNVV-65B-R4	UDS-NPL	1
		3	RFS	APXVTM14-ALU-I20		
	154.0	6	Alcatel Lucent	RRH2x50-800		
		3	Alcatel Lucent	TD-RRH8x20-25		
		3	Alcatel Lucent	1900 MHz 4x45W		

Notes:
1) Proposed Equipment
2) Existing Mount to Remain

Table 2 - Existing and Reserved Antenna and Cable Information

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Existing Mount Type	Note
154.0	154.0	--	--	--	--	--

Notes:
1) Existing Equipment to Remain

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	Sprint Application	441412	CCI Sites
Photos	CCI Sites	-	CCI Sites
Structural Analysis	Tower Analysis	396917	CCI Sites

3.1) Analysis Method

RISA-3D (Version 16.0.3), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

Infinigy Mount Analysis Tool 3.0.2, a tool internally developed by Infinigy, was used to calculate member loading for various load cases. Selected output from the analysis is included in Appendix B.

3.2) Assumptions

1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
2) The configuration of antennas, mounts, and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
4) Steel grades have been assumed as follows:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM A53 (GR B-35)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle should be notified to determine the effect on the structural integrity of the antenna mounting system.

4) ANALYSIS RESULTS

Table 4(a) - Mount Component Stresses vs. Capacity (T-Arm)

Notes	Component	Mount Centerline (ft)	% Capacity	Pass / Fail
1,2	Standoff	154.0	36.9	Pass
	Face Horizontal		41.7	Pass
	Mount Pipe		79.1	Pass

Structure Rating (max from all components) =	79.1%

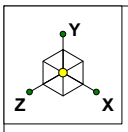
Notes:
1) See additional documentation in "Appendix C - Analysis Output" for calculations supporting the % capacity consumed.
2) All sectors are typical

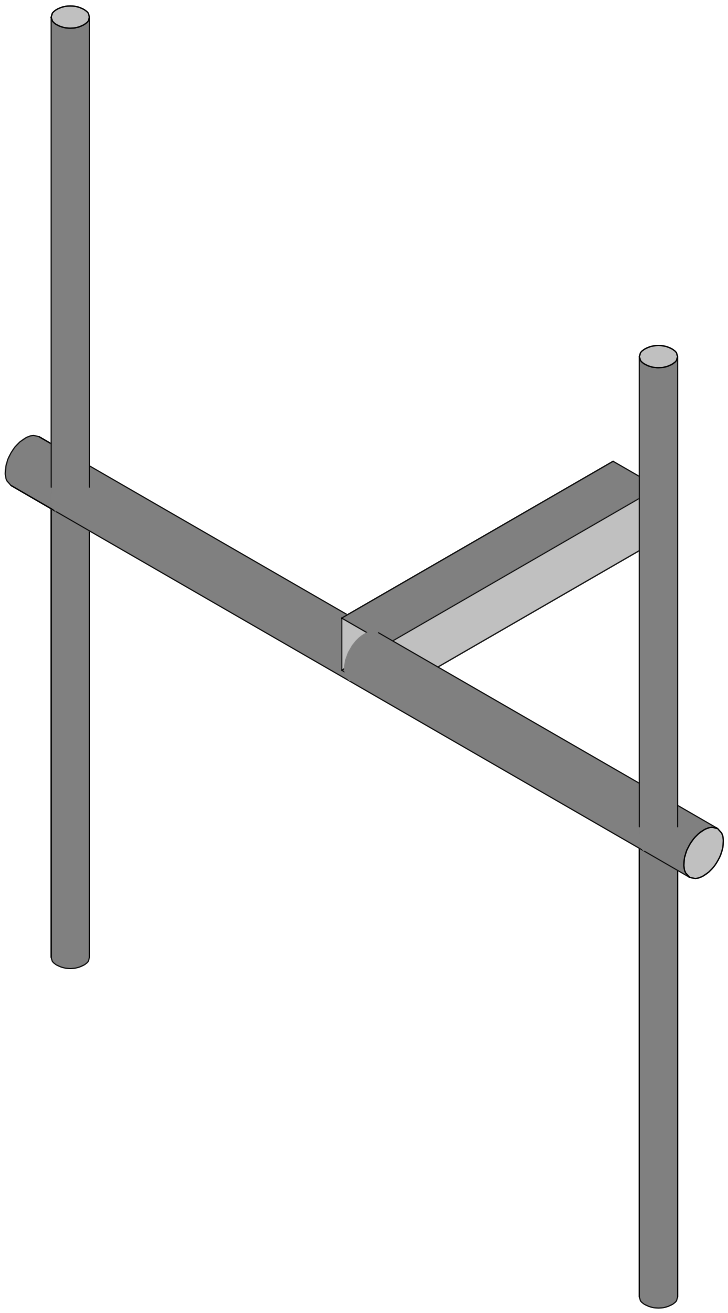
4.1) Recommendations

Installation of (1) SitePro1 UDS-NPL w/ (6) 72” Long 2.375” OD Sch 40 Mount pipes is required to hold proposed configuration.

APPENDIX A

WIRE FRAME AND RENDERED MODELS





Envelope Only Solution

Infinigy Engineering, PLLC	828402	Proposed Configuration
BDA		May 16, 2018 at 12:11 PM
600-002		Proposed_UDS-NPL_828402.r3d

APPENDIX B

SOFTWARE INPUT CALCULATIONS

Site Name:	828402
Client:	Crown Castle
Carrier:	Sprint
Engineer:	BDA
Date:	5/16/2018

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

INFINIGY WIND LOAD CALCULATOR 3.0.2

Site Information Inputs:

Adopted Building Code:	2015 IBC
Structure Load Standard:	TIA-222-G
Antenna Load Standard:	TIA-222-G
Structure Risk Category:	II
Structure Type:	Mount - T-Arm
Number of Sectors:	3
Structure Shape 1:	Round

Rooftop Inputs:

Rooftop Wind Speed-Up?:	No

Wind Loading Inputs:

Design Wind Velocity:	101	mph (nominal 3-second gust)
Wind Centerline 1 (z_1):	154.0	ft
Side Face Angle (θ):	60	degrees
Exposure Category:	C	
Topographic Category:	1	

Wind with No Ice		
q_z (psf)	Gh	F_{ST} (psf)
34.18	1.00	**41.02**

Wind with Ice		
q_z (psf)	Gh	F_{ST} (psf)
8.43	1.00	**25.51**

Ice Loading Inputs:

Is Ice Loading Needed?:	Yes	
Ice Wind Velocity:	50	mph (nominal 3-second gust)
Base Ice Thickness:	1.00	in

Input Appurtenance Information and Load Placements:

Appurtenance Name	Elevation (ft)	Total Quantity	Ka	Front Shape	Side Shape	q_z (psf)	EPA (ft^2)	Fz (lbs)	Fx (lbs)	Fz(60) (lbs)	Fx(30) (lbs)
Commscope NNVV-65B-R4	154.0	3	1.00	Flat	Flat	34.18	12.27	419.44	196.54	252.26	363.71
RFS APXVTM14-ALU-I20	154.0	3	1.00	Flat	Flat	34.18	6.34	216.79	123.30	146.67	193.42
Alcatel Lucent RRH2x50-800	154.0	3	1.00	Flat	Flat	34.18	1.70	58.14	43.83	47.40	54.56
Alcatel Lucent RRH2x50-800	154.0	3	1.00	Flat	Flat	34.18	1.70	58.14	43.83	47.40	54.56
Alcatel Lucent TD-RRH8x20-25	154.0	3	1.00	Flat	Flat	34.18	3.70	126.61	44.23	64.82	106.02
Alcatel Lucent 1900 MHz 4x45W	154.0	3	1.00	Flat	Flat	34.18	2.58	88.30	86.88	87.23	87.94

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	M1	N1	N2			3" STD Pipe	Beam	None	A53 Gr.B	Typical
2	M2	N3	N4			HSS 4"x4"x1/4"	Beam	None	A53 Gr.B	Typical
3	MP2	N22	N23			2" STD Pipe	Beam	None	A53 Gr.B	Typical
4	MP1	N20	N21			2" STD Pipe	Beam	None	A53 Gr.B	Typical

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[K]
1	Hot Rolled Steel				
2	A53 Gr.B	HSS4x4x4	1	24	0
3	A53 Gr.B	PIPE_2.0	2	144	0
4	A53 Gr.B	PIPE_3.0	1	60	0
5	Total HR Steel		4	228	0

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	Self Weight	DL		-1			8			
2	Wind Load AZI 000	WLZ					8		1	
3	Wind Load AZI 090	WLX					8		1	
4	Ice Weight	OL1					8	4		
5	Wind + Ice Load AZI 000	OL2					8		1	
6	Wind + Ice Load AZI 090	OL3					8		1	
7	Service Live 1	LL				2				
8	BLC 2 Transient Area Loads	None						3		
9	BLC 3 Transient Area Loads	None						3		
10	BLC 5 Transient Area Loads	None						3		
11	BLC 6 Transient Area Loads	None						3		

Load Combinations

	Description	S...P...	S...	B...	Fa...	BLC	Fac...	BLC	Fa...	B...	F...	B...	F...	B...	F...	B...	F...	B...	F...	B...	F...	B...	F...	B...	F...
1	1.4D	Y... Y		DL	1.4																				
2	1.2D + 1.6W AZI 000	Y... Y		DL	1.2	WLZ	1.6																		
3	1.2D + 1.6W AZI 030	Y... Y		DL	1.2	WLZ	1.3...	W...	.8																
4	1.2D + 1.6W AZI 060	Y... Y		DL	1.2	WLZ	.8	W...	1.3...																
5	1.2D + 1.6W AZI 090	Y... Y		DL	1.2			W...	1.6																
6	1.2D + 1.6W AZI 120	Y... Y		DL	1.2	WLZ	-.8	W...	1.3...																
7	1.2D + 1.6W AZI 150	Y... Y		DL	1.2	WLZ	-1.3...	W...	.8																
8	1.2D + 1.6W AZI 180	Y... Y		DL	1.2	WLZ	-1.6																		
9	1.2D + 1.6W AZI 210	Y... Y		DL	1.2	WLZ	-1.3...	W...	-.8																
10	1.2D + 1.6W AZI 240	Y... Y		DL	1.2	WLZ	-.8	W...	-1....																
11	1.2D + 1.6W AZI 270	Y... Y		DL	1.2			W...	-1.6																
12	1.2D + 1.6W AZI 300	Y... Y		DL	1.2	WLZ	.8	W...	-1....																
13	1.2D + 1.6W AZI 330	Y... Y		DL	1.2	WLZ	1.3...	W...	-.8																
14	0.9D + 1.6W AZI 000	Y... Y		DL	.9	WLZ	1.6																		
15	0.9D + 1.6W AZI 030	Y... Y		DL	.9	WLZ	1.3...	W...	.8																
16	0.9D + 1.6W AZI 060	Y... Y		DL	.9	WLZ	.8	W...	1.3...																
17	0.9D + 1.6W AZI 090	Y... Y		DL	.9			W...	1.6																
18	0.9D + 1.6W AZI 120	Y... Y		DL	.9	WLZ	-.8	W...	1.3...																
19	0.9D + 1.6W AZI 150	Y... Y		DL	.9	WLZ	-1.3...	W...	.8																
20	0.9D + 1.6W AZI 180	Y... Y		DL	.9	WLZ	-1.6																		
21	0.9D + 1.6W AZI 210	Y... Y		DL	.9	WLZ	-1.3...	W...	-.8																
22	0.9D + 1.6W AZI 240	Y... Y		DL	.9	WLZ	-.8	W...	-1....																

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	BLC	Fac...	BLC	Fa...	B...	F...	B...	F...	B...	F...	B...	F...	B...	F...	B...	F...	B...	F...	B...	F...
23	0.9D + 1.6W AZI 270	Y...	Y		DL	.9			W...	-1.6																
24	0.9D + 1.6W AZI 300	Y...	Y		DL	.9	WLZ	.8	W...	-1....																
25	0.9D + 1.6W AZI 330	Y...	Y		DL	.9	WLZ	1.3...	W...	-.8																
26	1.2D + 1.0Di	Y...	Y		DL	1.2	OL1	1																		
27	1.2D + 1.0Di + 1.0Wi AZI 000	Y...	Y		DL	1.2	OL1	1	OL2	1																
28	1.2D + 1.0Di + 1.0Wi AZI 030	Y...	Y		DL	1.2	OL1	1	OL2	.866	...	.5														
29	1.2D + 1.0Di + 1.0Wi AZI 060	Y...	Y		DL	1.2	OL1	1	OL2	.5	...	.8...														
30	1.2D + 1.0Di + 1.0Wi AZI 090	Y...	Y		DL	1.2	OL1	1			...	1														
31	1.2D + 1.0Di + 1.0Wi AZI 120	Y...	Y		DL	1.2	OL1	1	OL2	-.5	...	.8...														
32	1.2D + 1.0Di + 1.0Wi AZI 150	Y...	Y		DL	1.2	OL1	1	OL2	-.866	...	.5														
33	1.2D + 1.0Di + 1.0Wi AZI 180	Y...	Y		DL	1.2	OL1	1	OL2	-1																
34	1.2D + 1.0Di + 1.0Wi AZI 210	Y...	Y		DL	1.2	OL1	1	OL2	-.866	...	-.5														
35	1.2D + 1.0Di + 1.0Wi AZI 240	Y...	Y		DL	1.2	OL1	1	OL2	-.5	...	-....														
36	1.2D + 1.0Di + 1.0Wi AZI 270	Y...	Y		DL	1.2	OL1	1			...	-1														
37	1.2D + 1.0Di + 1.0Wi AZI 300	Y...	Y		DL	1.2	OL1	1	OL2	.5	...	-....														
38	1.2D + 1.0Di + 1.0Wi AZI 330	Y...	Y		DL	1.2	OL1	1	OL2	.866	...	-.5														
39	1.2D + 1.5L + 1.0WL (30 mph) AZI 000	Y...	Y		DL	1.2	LL	1.5	WLZ	.111																
40	1.2D + 1.5L + 1.0WL (30 mph) AZI 030	Y...	Y		DL	1.2	LL	1.5	WLZ	.096	...	.0...														
41	1.2D + 1.5L + 1.0WL (30 mph) AZI 060	Y...	Y		DL	1.2	LL	1.5	WLZ	.056	...	.0...														
42	1.2D + 1.5L + 1.0WL (30 mph) AZI 090	Y...	Y		DL	1.2	LL	1.5			...	.1...														
43	1.2D + 1.5L + 1.0WL (30 mph) AZI 120	Y...	Y		DL	1.2	LL	1.5	WLZ	-.056	...	.0...														
44	1.2D + 1.5L + 1.0WL (30 mph) AZI 150	Y...	Y		DL	1.2	LL	1.5	WLZ	-.096	...	.0...														
45	1.2D + 1.5L + 1.0WL (30 mph) AZI 180	Y...	Y		DL	1.2	LL	1.5	WLZ	-.111																
46	1.2D + 1.5L + 1.0WL (30 mph) AZI 210	Y...	Y		DL	1.2	LL	1.5	WLZ	-.096	...	-....														
47	1.2D + 1.5L + 1.0WL (30 mph) AZI 240	Y...	Y		DL	1.2	LL	1.5	WLZ	-.056	...	-....														
48	1.2D + 1.5L + 1.0WL (30 mph) AZI 270	Y...	Y		DL	1.2	LL	1.5			...	-....														
49	1.2D + 1.5L + 1.0WL (30 mph) AZI 300	Y...	Y		DL	1.2	LL	1.5	WLZ	.056	...	-....														
50	1.2D + 1.5L + 1.0WL (30 mph) AZI 330	Y...	Y		DL	1.2	LL	1.5	WLZ	.096	...	-....														

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N4	max	1195.008	5	1988.345	35	1799.773	2	-513.184	14	2425.726	6	411.893	36
2		min	-1195.008	11	427.683	17	-1799.773	8	-3973.369	33	-2424.026	12	-107.299	17
3	Totals:	max	1195.008	5	1988.345	35	1799.773	2						
4		min	-1195.008	11	427.683	17	-1799.773	8						

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shear Ch...	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pn...	phi*M...	phi*M...	...	Eqn
1	MP1	PIPE_2.0	.791	36	8	.060	36		8	20866.733	32130	1871....	1871....	...	H1-1b
2	M1	PIPE_3.0	.417	30	8	.102	30		8	57037.472	65205	5748.75	5748.75	...	H1-1b
3	MP2	PIPE_2.0	.402	36	8	.037	36		8	20866.733	32130	1871....	1871....	...	H1-1b
4	M2	HSS4x4x4	.369	24	31	.108	24	y	36	104811.452	106155	12311...	12311...	....	H1-1b

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.