Transcend Wireless

10 Industrial Ave,
Suite 3
Mahwah NJ 07430

Phone: 201.684.0055
Fax: 201.684.0066

October 3, 2019

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification
330 Pokorny Rd. Haddam, CT 06441
Latitude: 41.443608
Longitude: -72.566478
Sprint Site#: CT33XC89 – DO Macro

Dear Ms. Bachman:

Sprint currently maintains three (3) antennas at the 155-foot level of the existing 280-foot lattice tower at 330 Pokorny Rd. Haddam, CT. The 280-foot lattice tower and property are owned by The Connecticut Light & Power Company, d/b/a Eversource Energy. Sprint now intends to replace three (3) of its existing antennas with three (3) new 800/1900/2500 MHz antennas, add (3) additional 2500 MHz antennas, relocate (3) RRHs and add (9) RRHs. The new antennas will be installed at the same 155-foot level of the tower.

Planned Modifications:
Tower:

Remove
N/A

Remove and Replace:
(3) RFS APXVSPP18-C antennas (Remove) - CommScope NNVV-65B-R4 antennas (Replace) 800/1900/2500 MHz

Install New:
(3) RFS APXTVM14 panel antennas
(6) FD-RRH2X50- 800 RRHs
(4) 1-1/4" hybrid cable
(3) FD-RRH4x45 1900 RRHs (moved from lease area)
(3) Nokia FZHN 2500 MHz RRHs

Existing to Remain:
none

Ground:
Relocate: (3) FD-RRH4x45 1900 RRHs (to tower)

This facility was approved by the CSC for Sprint use in Petition No. 1027 dated May 10, 2012. This modification complies with this approval. Please see the enclosed.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to First Selectman – Lizz Milardo, Elected Official, and Jim Puska, Zoning Enforcement Officer for the Town of Haddam, as well as the owner.

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

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

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

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

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications 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 referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Jake Shappy
Transcend Wireless
Cell: 845-553-3330
Email: jshappy@transcendwireless.com

Attachments
cc: Lizz Milardo – Town of Haddam First Selectman
Jim Puska – Town of Haddam Zoning Enforcement Officer
The Connecticut Light & Power Company, d/b/a Eversource Energy – property and tower owner

EVERSOURCE ENERGY

107 Selden Street
Berlin, CT 06037

August 21, 2019

Mr. Jake Shappy
Transcend Wireless, LLC.
10 Industrial Ave. Suite 3
Mahwah, New Jersey. 07430

RE: Letter of Authorization

Project: Sprint Site # CT33XC089
330 Pokorny Road
Haddam, CT. 06441

Owner: Eversource Energy

Dear Mr. Shappy,

Eversource Energy, owner of the tower facility located at the address identified above, do hereby authorize Sprint PCS, and/ or it's agent, to use this authorization letter for the sole purpose of filing and consummating any land-use or building permit application(s) as may be required by the applicable permitting authorities for the Licensee's telecommunication's installation.

Sincerely,

Steven J. Florio
Eversource Energy

REF: CENTEK Engineering, LLC
Project # 17159.10
Structural Analysis Rev. Date 10/31/2018
CD's Rev. Date 02/18/2019

Petition No. 1027
Connecticut Light & Power
Haddam, Connecticut
Staff Report
May 10, 2012

On April 5, 2012, the Connecticut Siting Council (Council) received a petition from The Connecticut Light & Power (CL&P) for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the proposed replacement of an existing guyed lattice communications tower in Haddam, Connecticut. Council member Phil Ashton and Siting Analyst David Martin visited the site on May 4, 2012 to review the proposal. John Morissette and Steve Florio represented CL&P at the field review.

CL&P currently owns and operates a 280-foot guyed lattice wireless communications tower at 330 Pokorny Road in Haddam. The tower is host for a number of different antennas for several different users, including CL&P, the Connecticut State Police, Valley Shore Communications, and Sprint/Nextel. It provides critical microwave communication links for both CL&P and the State Police. A detailed structural analysis of the existing tower determined that it was overstressed and that there was no practical way of reinforcing the tower to bring it into compliance with state building code and CL&P engineering requirements.

CL&P proposes to replace the existing tower with a self-supporting lattice tower at the same height. The center of the replacement tower would be located approximately 50 feet to the west of the existing tower, which is the only location where it is possible to erect the new tower between the existing guy wires. CL&P would relocate the antennas on the existing tower onto the replacement tower. The replacement tower would also include a yield point to effectively reduce its potential fall zone and would be lit to comply with FAA requirements.

There are two fence lines on the CL&P property on which the existing tower is located. An outer fence encloses the locations where the guy wires are anchored to the ground. A smaller, inner fence encloses the existing tower and several equipment shelters. This inner fence would have to be extended a short distance to surround the proposed replacement tower. But the outer fence would remain at its current dimensions.

A number of large, single family homes have been built in the area surrounding CL&P's tower within the last twenty years. However, mature deciduous trees around the perimeter of CL&P's property help to minimize the visible impact of the tower on the nearest homes. Council member Ashton recommended that CL&P submit a D&M plan to show additional evergreen trees that would be planted within the facility's outer fence to help augment the existing vegetative screening of the tower.

The proposed replacement tower is not expected to have any substantial adverse environmental impacts. In fact, eliminating the existing guy wires will greatly reduce this wireless communications tower's potential for causing bird fatalities.

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: CT33XC089

330 Pokorny Road
Haddam, Connecticut 06441

June 4, 2019

EBI Project Number: 6219001933

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**9.18%**

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

June 4, 2019

Sprint
Attn: RF Engineering Manager
1 International Boulevard, Suite 800
Mahwah, New Jersey 07495

Emissions Analysis for Site: CT33XC089

EBI Consulting was directed to analyze the proposed Sprint facility located at **330 Pokorny Road** in **Haddam, Connecticut** 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 ($\mu W/cm^2$). 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.

Public 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 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency 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 330 Pokorny Road in Haddam, Connecticut 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 manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, 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) 4 CDMA channels (800 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 50 Watts per Channel.

2) 4 PCS channels (1900 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 45 Watts per Channel.

3) 8 BRS channels (2500 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

4) 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.

5) 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 manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, 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.

6) The antennas used in this modeling are the RFS APXVTM14 for the 2500 MHz channel(s), the Commscope NNVV-65B-R4 for the 800 MHz / 1900 MHz channel(s) in Sector A, the RFS APXVTM14 for the 2500 MHz channel(s), the Commscope NNVV-65B-R4 for the 800 MHz / 1900 MHz channel(s) in Sector B, the RFS APXVTM14 for the 2500 MHz channel(s), the Commscope NNVV-65B-R4 for the 800 MHz / 1900 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, 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.

7) The antenna mounting height centerline of the proposed antennas is 155 feet above ground level (AGL).

8) 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.

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

Sprint Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APXVTM14	Make / Model:	RFS APXVTM14	Make / Model:	RFS APXVTM14
Frequency Bands:	2500 MHz	Frequency Bands:	2500 MHz	Frequency Bands:	2500 MHz
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	155 feet	Height (AGL):	155 feet	Height (AGL):	155 feet
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 A1 MPE %:	**0.93%**	Antenna B1 MPE %:	**0.93%**	Antenna C1 MPE %:	**0.93%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4
Frequency Bands:	800 MHz / 1900 MHz	Frequency Bands:	800 MHz / 1900 MHz	Frequency Bands:	800 MHz / 1900 MHz
Gain:	12.35 dBd / 15.05 dBd	Gain:	12.35 dBd / 15.05 dBd	Gain:	12.35 dBd / 15.05 dBd
Height (AGL):	155 feet	Height (AGL):	155 feet	Height (AGL):	155 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts
ERP (W):	9,193.83	ERP (W):	9,193.83	ERP (W):	9,193.83
Antenna A2 MPE %:	**1.83%**	Antenna B2 MPE %:	**1.83%**	Antenna C2 MPE %:	**1.83%**

Site Composite MPE %	
Carrier	MPE %
Sprint (Max at Sector A):	2.76%
Verizon	3.91%
Eversource	0.43%
Northeast	0.5%
Town/Other	1.04%
MWs	0.12%
Voicestream	0.42%
Site Total MPE % :	9.18%

Sprint MPE % Per Sector	
Sprint Sector A Total:	2.76%
Sprint Sector B Total:	2.76%
Sprint Sector C Total:	2.76%
Site Total MPE % :	9.18%

Sprint Maximum MPE Power Values (Sector A)

Sprint Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
Sprint 2500 MHz BRS	8	778.09	155.0	9.31	2500 MHz BRS	1000	0.93%
Sprint 800 MHz CDMA	4	858.95	155.0	5.14	800 MHz CDMA	533	0.96%
Sprint 1900 MHz PCS	4	1439.50	155.0	8.62	1900 MHz PCS	1000	0.86%
						Total:	**2.76%**

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

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:	2.76%
Sector B:	2.76%
Sector C:	2.76%
Sprint Maximum MPE % (Sector A):	2.76%
Site Total:	9.18%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **9.18%** 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.

Property Location: 330 POKORNY RD | **MAP ID:** 55/ 004/ 1A/ / | **Bldg Name:** | **State Use:** 350

Vision ID: 2699 | **Account #** P0506400 | **Bldg #:** 1 of 1 | **Sec #:** 1 of 1 | **Card** 1 of 1 | **Print Date:** 08/09/2018 14:02

CURRENT OWNER

CONN LIGHT + POWER CO
TAX DEPT
PO BOX 270

HARTFORD, CT 06141
Additional Owners:

TOPO.	UTILITIES	STRT./ROAD	LOCATION
10	6	1	2 Suburban
03 Rolling	7		

SUPPLEMENTAL DATA

Other ID:			
Dev Lot		3.7	
Census Tract	5901	R-2A	
490 Penalty		Town Line?	
Section	2	Callback Ltr	
GIS ID:		ASSOC PID#	

CURRENT ASSESSMENT

Description	Code	Appraised Value	Assessed Value
UTL LAND	4-1	227,950	159,570
UTL OUTBL	4-3	5,740	4,020
	Total	233,690	163,590

6061
HADDAM, CT

VISION

RECORD OF OWNERSHIP

RECORD OF OWNERSHIP	BK-VOL/PAGE	SALE DATE	q/u	v/i	SALE PRICE	V.C.
CONN LIGHT + POWER CO	132/ 86	08/29/1977	U	V		29

PREVIOUS ASSESSMENTS (HISTORY)

Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
2017	4-1	159,570	2016	4-1	89,570	2015	4-1	89,570
2017	4-3	4,020	2016	4-3	4,020	2015	4-3	4,020
	Total:	163,590		Total:	93,590		Total:	93,590

EXEMPTIONS

Year	Type	Description	Amount
		Total:	

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm. Int.

This signature acknowledges a visit by a Data Collector or Assessor

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	0
Appraised XF (B) Value (Bldg)	0
Appraised OB (L) Value (Bldg)	5,740
Appraised Land Value (Bldg)	227,950
Special Land Value	0
Total Appraised Parcel Value	233,690
Valuation Method:	C
Adjustment:	0
Net Total Appraised Parcel Value	233,690

ASSESSING NEIGHBORHOOD

NBHD/ SUB	NBHD Name	Street Index Name	Tracing	Batch
0001/A				

NOTES

CELL TOWER LOT AND T-MOBILE AS TENANTS
VACANT W/OB -R2010 GATED
2014 I&E: NA
2017-BP TO ADD VERIZON ANTENNA; ADDED LA
ND LINE TO BE IN LINE W/ OTHER C-TOWERS
SITING COUNCIL INDICATES SPRINT, VERIZON

BUILDING PERMIT RECORD

Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date Comp.	Comments
13480		BP	Permit	85,000		100	09/25/2017	ADD VZW ANTENNA,

VISIT/ CHANGE HISTORY

Date	Type	IS	ID	Cd.	Purpose/Result
08/17/2015			VA	20	Field Review
09/10/2010			NFB	99	Vacant Land - Inspected

LAND LINE VALUATION SECTION

B #	Use Code	Use Description	Zone	D	Front	Depth	Units		Unit Price	I. Factor	S.A.		C. Factor	ST. Idx	Adj.	Notes- Adj	Special Pricing: Spec Use	Special Pricing: Spec Calc	S Adj Fact	Adj. Unit Price	Land Value
1	350	Cell Tower	R-2A				2.00	AC	113,750.00	0.5385	C		1.00	ELI	1.00				1.00		122,510
1	350	Cell Tower					1.70	AC	3,200.00	1.0000	0		1.00		0.00				1.00		5,440
1	350	Cell Tower					1.00	BL	100,000.00	1.0000	0		1.00	ELI	1.00	LAND LEASE			1.00		100,000

Total Card Land Units: 3.70 AC | Parcel Total Land Area: 3.7 AC | Total Land Value: 227,950

Property Location: 330 POKORNY RD **MAP ID:** 55/ 004/ 1A/ / **Bldg Name:** **State Use:** 350

Vision ID: 2699 **Account #** P0506400 **Bldg #:** 1 of 1 **Sec #:** 1 of 1 **Card** 1 of 1 **Print Date:** 08/09/2018 14:02

CONSTRUCTION DETAIL

Element	Cd.	Ch.	Description
Model	00		Vacant

CONSTRUCTION DETAIL (CONTINUED)

Element	Cd.	Ch.	Description

MIXED USE

Code	Description	Percentage
350	Cell Tower	100

COST/MARKET VALUATION

Adj. Base Rate:	0.00
Replace Cost	0
AYB	
Dep Code	
Remodel Rating	
Year Remodeled	
Dep %	
Functional Obslnc	
External Obslnc	
Cost Trend Factor	
Condition	
% Complete	
Overall % Cond	
Apprais Val	
Dep % Ovr	0
Dep Ovr Comment	
Misc Imp Ovr	0
Misc Imp Ovr Comment	
Cost to Cure Ovr	0
Cost to Cure Ovr Comment	

OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B)

Code	Description	Sub	Sub Descript	L/B	Units	Unit Price	Yr	Gde	Dp Rt	Cnd	%Cnd	Apr Value
SHD1	Shed	FR	Frame	L	638	12.00	1986		0		75	5,740

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value
	Ttl. Gross Liv/Lease Area:	0	0			

No Photo On Record

330 POKORNY RD

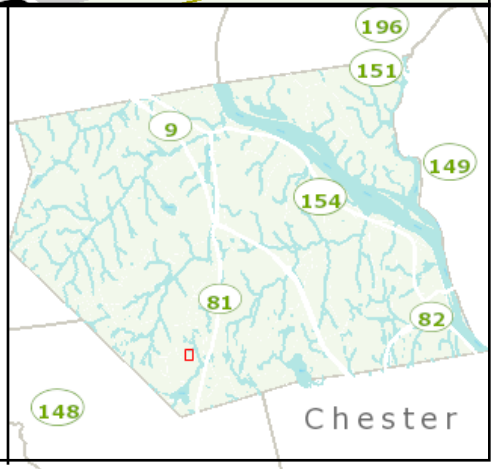
10/3/2019 10:04:07

1"=100'

Property Information

Parcel_ID	55 004 1A
Street Address	330 POKORNY RD
Sale Price	null

The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analyses.



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1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the 'Find Locations' Quick link at ups.com.
   Schedule a same day or future day Pickup to have a UPS driver pickup all of your Internet Shipping packages.
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RAMSEY ,NJ 07446

UPS Access Point™
THE UPS STORE
115 FRANKLIN TPKE
MAHWAH ,NJ 07430

UPS Access Point™
THE UPS STORE
120 E MAIN ST
RAMSEY ,NJ 07446

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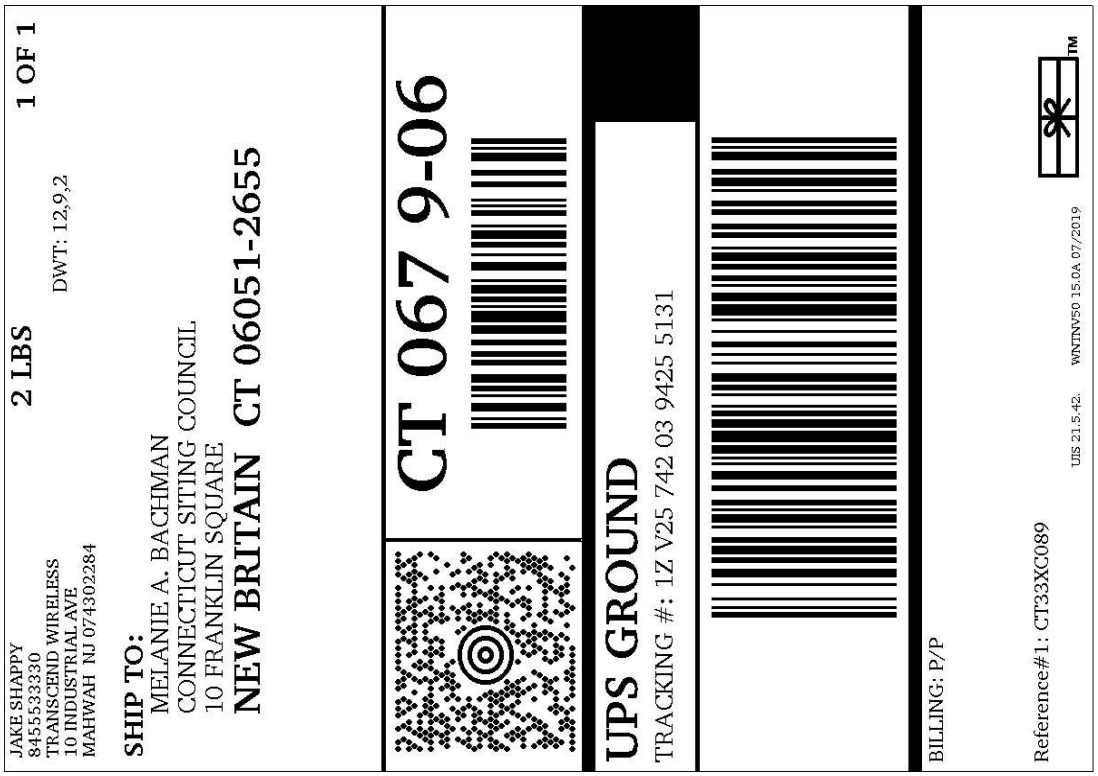

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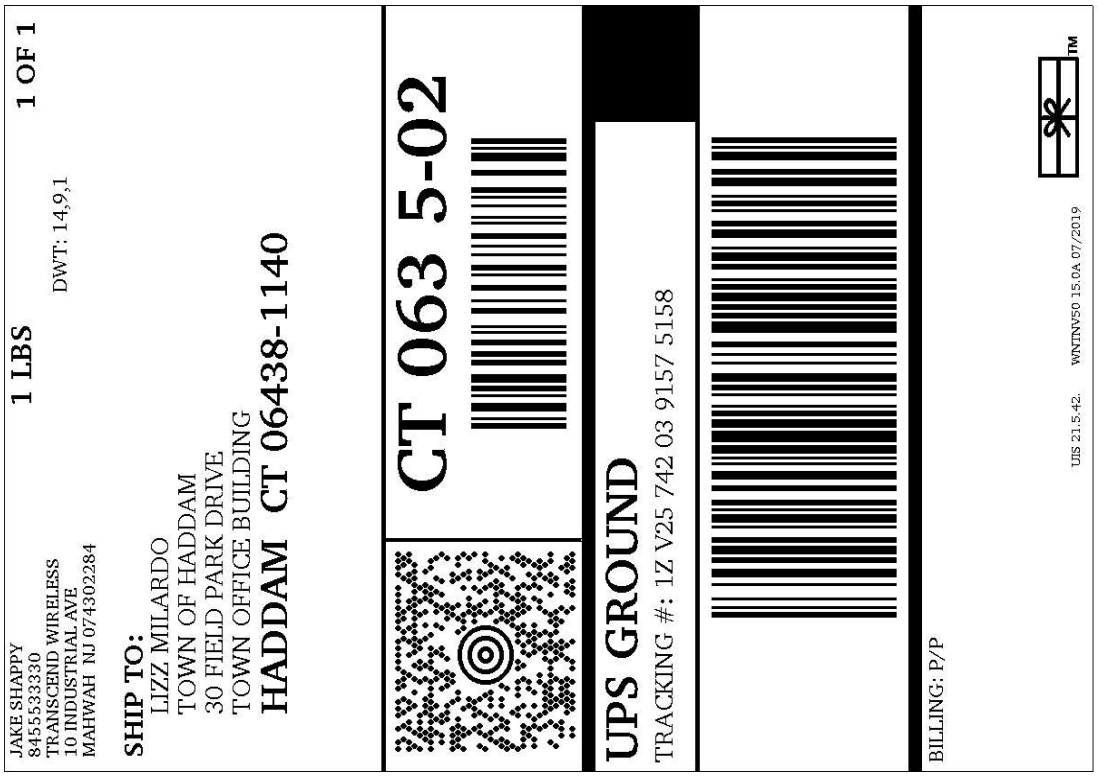


UPS Internet Shipping: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

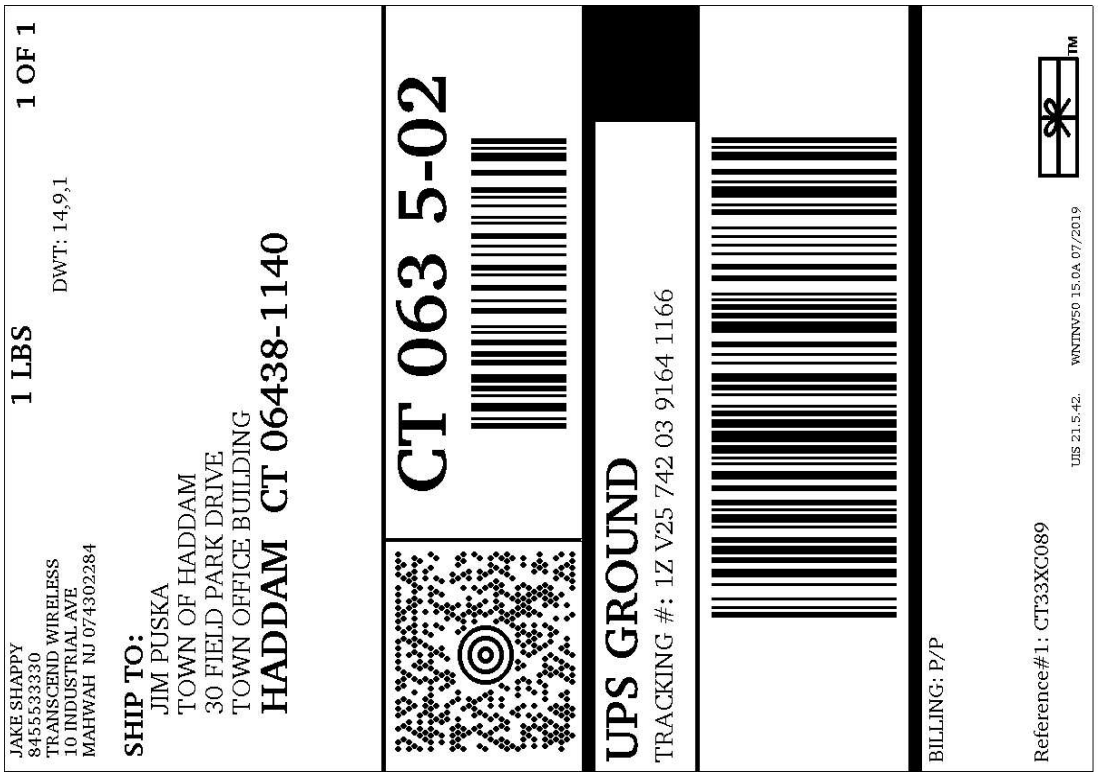
   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the 'Find Locations' Quick link at ups.com.
   Schedule a same day or future day Pickup to have a UPS driver pickup all of your Internet Shipping packages.
   Hand the package to any UPS driver in your area.

UPS Access Point™
MICHAELS STORE # 7773
75 INTERSTATE SHOP CTR
RAMSEY ,NJ 07446

UPS Access Point™
THE UPS STORE
115 FRANKLIN TPKE
MAHWAH ,NJ 07430

UPS Access Point™
THE UPS STORE
120 E MAIN ST
RAMSEY ,NJ 07446

FOLD HERE



WIRELESS COMMUNICATIONS FACILITY

SITE ID: CT33XC089

330 POKORNY ROAD

HADDAM, CT 06441

PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:

   A. REMOVE (3) EXISTING PANEL ANTENNAS FROM EXISTING TOWER MOUNT.

   B. INSTALL (6) PROPOSED PANEL ANTENNAS, (2) PER SECTOR.

   C. INSTALL (9) PROPOSED REMOTE RADIO UNITS ON TOWER.

   D. RELOCATE (3) REMOTE RADIO UNITS FROM GRADE TO TOWER.

   E. INSTALL (4) HYBRID CABLES FROM EQUIPMENT AT GRADE TO RRHs ON TOWER.

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2015 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2018 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "G" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2016 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
3. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
4. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
5. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN "AS-BUILT" SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
7. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
8. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
9. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
10. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
11. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
12. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE SPRINT CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
14. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
15. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
16. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
17. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
18. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
19. CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

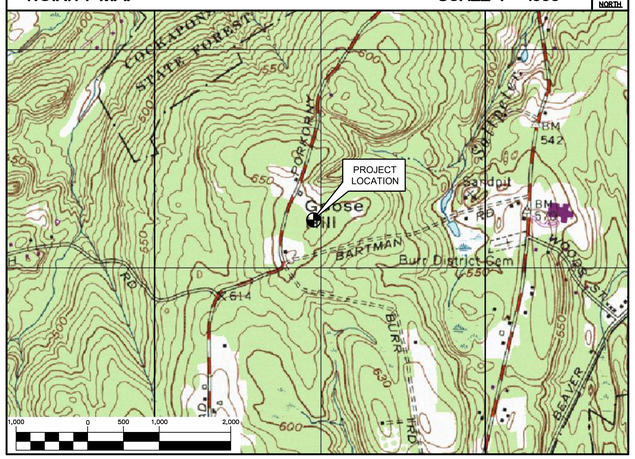
SITE DIRECTIONS

FROM: 5 WAYSIDE ROAD, BURLINGTON, MA 01803 **TO:** 330 POKORNY ROAD, HADDAM, CT 06441

1.	START OUT BY GOING TO WAYSIDE ROAD.	0.12 MI.
2.	TURN LEFT ONTO CAMBRIDGE ST/US-3 N/MA.	0.12 MI.
3.	MERGE ONTO I-95 S/MA-128 S/YANKEE DIVISION HWY S TOWARD WALTHAM/LOWELL	0.27 MI.
4.	TAKE THE I-90/MASS PIKE EXIT, EXIT 25, TOWARD BOSTON/ALBANY NY.	12.32 MI.
5.	MERGE ONTO I-90 W/MASSACHUSETTS TPKE W TOWARD WORCESTER (PORTIONS TOLL).	44.30 MI.
6.	MERGE ONTO I-84 W/WILBUR CROSS HWY S VIA EXIT 9 TOWARD US-20(PORTIONS TOLL).	0.90 MI.
7.	CONTINUE ON I-84.	40.90 MI.
8.	TAKE EXIT 57 FOR CT-15 S TOWARD I-91 S/CHARTER OAK BRIDGE/NYC.	0.60 MI.
9.	CONTINUE ONTO CT-15 S/US-5 S.	1.30 MI.
10.	TAKE EXIT 86 TO MERGE ONTO I-91 S TOWARD NEW HAVEN/NEW YORK CITY.	8.90 MI.
11.	TAKE EXIT 22S TO MERGE ONTO CT-9 S TOWARD MIDDLETOWN/OLD SAYBROOK.	13.90 MI.
12.	TAKE EXIT 9 FOR CT-81 TOWARD KILLINGWORTH/CLINTON.	0.20 MI.
13.	TURN RIGHT ONO CT-81 S/KILLINGWORTH RD.	0.70 MI.
14.	TURN RIGHT ONTO POKORNY RD.	1.40 MI.

VICINITY MAP

SCALE: 1" = 1000'



PROJECT INFORMATION

SITE ID:	CT33XC089
SITE ADDRESS:	330 POKORNY ROAD HADDAM, CT 06441
APPLICANT:	SPRINT 5 WAYSIDE ROAD BURLINGTON, MA 01803
CONTACT PERSON:	DOUG TALMADGE (PROJECT MANAGER) (475)434-4292
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405
PROJECT COORDINATES:	LATITUDE: 41° 26' 36.99"N LONGITUDE: 72° 33' 59.32"W GROUND ELEVATION: ±661' AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	1
N-1	DESIGN BASIS AND SITE NOTES	1
C-1	COMPOUND PLANS AND ELEVATION	1
C-2	TYPICAL DETAILS	1
C-3	COLOR CODE AND CPRI DETAILS	1

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	02/18/19	TJL	CAG	ISSUED FOR CONSTRUCTION
0	02/04/19	TJL	CAG	ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

STATE OF CONNECTICUT — TIMOTHY J. LAMPHERE — LICENSED PROFESSIONAL ENGINEER

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(203) 488-8587 Fax
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Branford, CT 06405
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WIRELESS COMMUNICATIONS FACILITY

SITE ID: CT33CX089
330 POKORNY ROAD
HADDAM, CT 06441

DATE: 09/26/18
SCALE: AS NOTED
JOB NO. 17159.10

TITLE SHEET

T-1

Sheet No. 1 of 5

DESIGN BASIS:

GOVERNING CODE: 2015 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2018 CT STATE BUILDING CODE AND AMENDMENTS.

1. DESIGN CRITERIA:
   - RISK CATEGORY: III (BASED ON IBC TABLE 1604.5)
   - NOMINAL DESIGN SPEED (OTHER STRUCTURE): 101 MPH (Vasd) (EXPOSURE C/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7–10) PER 2015 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2018 CONNECTICUT STATE BUILDING CODE.
   - SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7–10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
2. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
3. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
4. DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST EXISTING FIELD CONDITIONS.
5. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
6. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS, ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
7. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
8. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING ADEQUATE SHORING, BRACING, AND BARRICADES AS MAY BE REQUIRED FOR THE PROTECTION OF EXISTING PROPERTY, CONSTRUCTION WORKERS, AND FOR PUBLIC SAFETY.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING SITE OPERATIONS, COORDINATE WORK WITH NORTHEAST UTILITIES
10. THE STRUCTURE IS DESIGNED TO BE SELF–SUPPORTING AND STABLE AFTER FOUNDATION REMEDIATION WORK IS COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, TEMPORARY BRACING, GUYS OR TIEDOWNS, WHICH MIGHT BE NECESSARY.
11. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
12. SHOP DRAWINGS, CONCRETE MIX DESIGNS, TEST REPORTS, AND OTHER SUBMITTALS PERTAINING TO STRUCTURAL WORK SHALL BE FORWARDED TO THE OWNER FOR REVIEW BEFORE FABRICATION AND/OR INSTALLATION IS MADE. SHOP DRAWINGS SHALL INCLUDE ERECTION DRAWINGS AND COMPLETE DETAILS OF CONNECTIONS AS WELL AS MANUFACTURER'S SPECIFICATION DATA WHERE APPROPRIATE. SHOP DRAWINGS SHALL BE CHECKED BY THE CONTRACTOR AND BEAR THE CHECKER'S INITIALS BEFORE BEING SUBMITTED FOR REVIEW.
13. NO DRILLING WELDING OR TAPING ON EVERSOURCE OWNED EQUIPMENT.
14. REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)

   A. STRUCTURAL STEEL (W SHAPES)–––ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)–––ASTM A36 (FY = 36 KSI)
   C. STRUCTURAL HSS (RECTANGULAR SHAPES)–––ASTM A500 GRADE B, (FY = 46 KSI)
   D. STRUCTURAL HSS (ROUND SHAPES)–––ASTM A500 GRADE B, (FY = 42 KSI)
   E. PIPE–––ASTM A53 (FY = 35 KSI)
   F. CONNECTION BOLTS–––ASTM A325–N
   G. U–BOLTS–––ASTM A36
   H. ANCHOR RODS–––ASTM F 1554
   I. WELDING ELECTRODE–––ASTM E 70XX

2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
3. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
6. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
7. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON–GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
8. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
9. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT–DIP) ON IRON AND STEEL HARDWARE".
10. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
11. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
12. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.
13. LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
14. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
15. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
16. FABRICATE BEAMS WITH MILL CAMBER UP.
17. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
18. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
19. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
20. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	02/18/19	TJL	CAG	ISSUED FOR CONSTRUCTION
0	02/04/19	TJL	CAG	ISSUED FOR CONSTRUCTION

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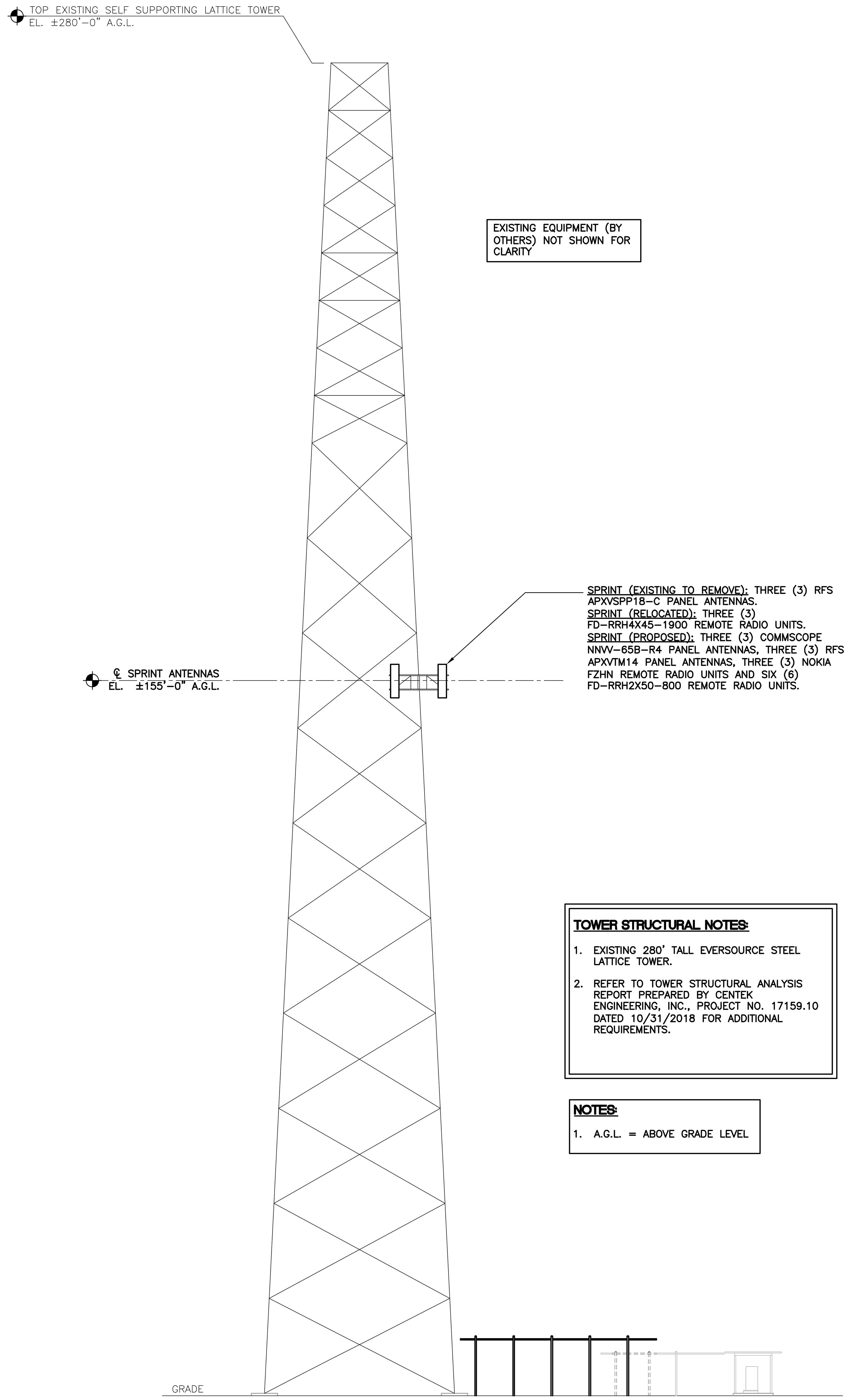
SPRINT
WIRELESS COMMUNICATIONS FACILITY
SITE ID: CT33CX089
330 POKORNY ROAD
HADDAM, CT 06441

DATE: 09/26/18
SCALE: AS NOTED
JOB NO. 17159.10

DESIGN BASIS AND SITE NOTES

N-1



TOWER STRUCTURAL NOTES:

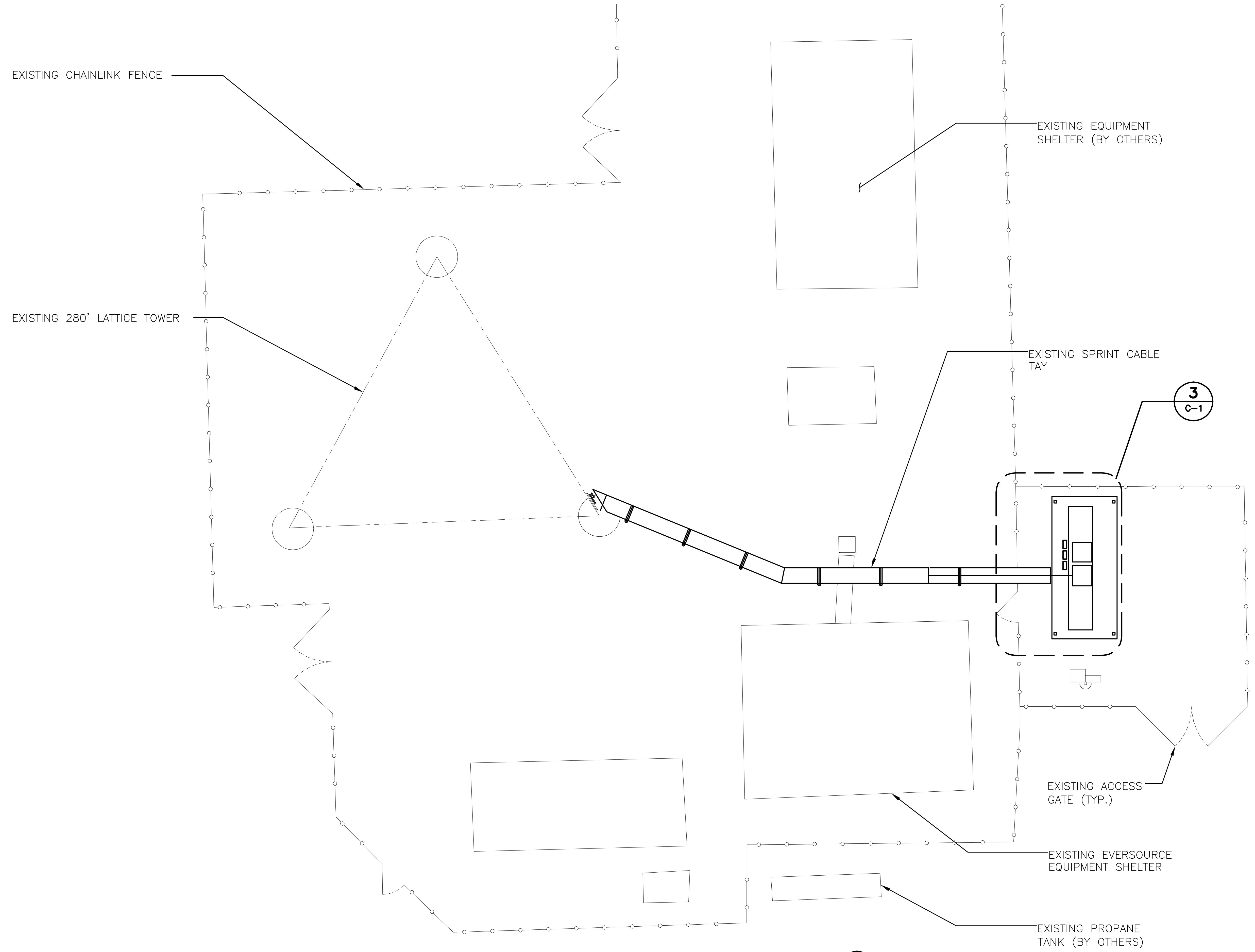
1. EXISTING 280' TALL EVERSOURCE STEEL LATTICE TOWER.
2. REFER TO TOWER STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING, INC., PROJECT NO. 17159.10 DATED 10/31/2018 FOR ADDITIONAL REQUIREMENTS.

NOTES:

1. A.G.L. = ABOVE GRADE LEVEL

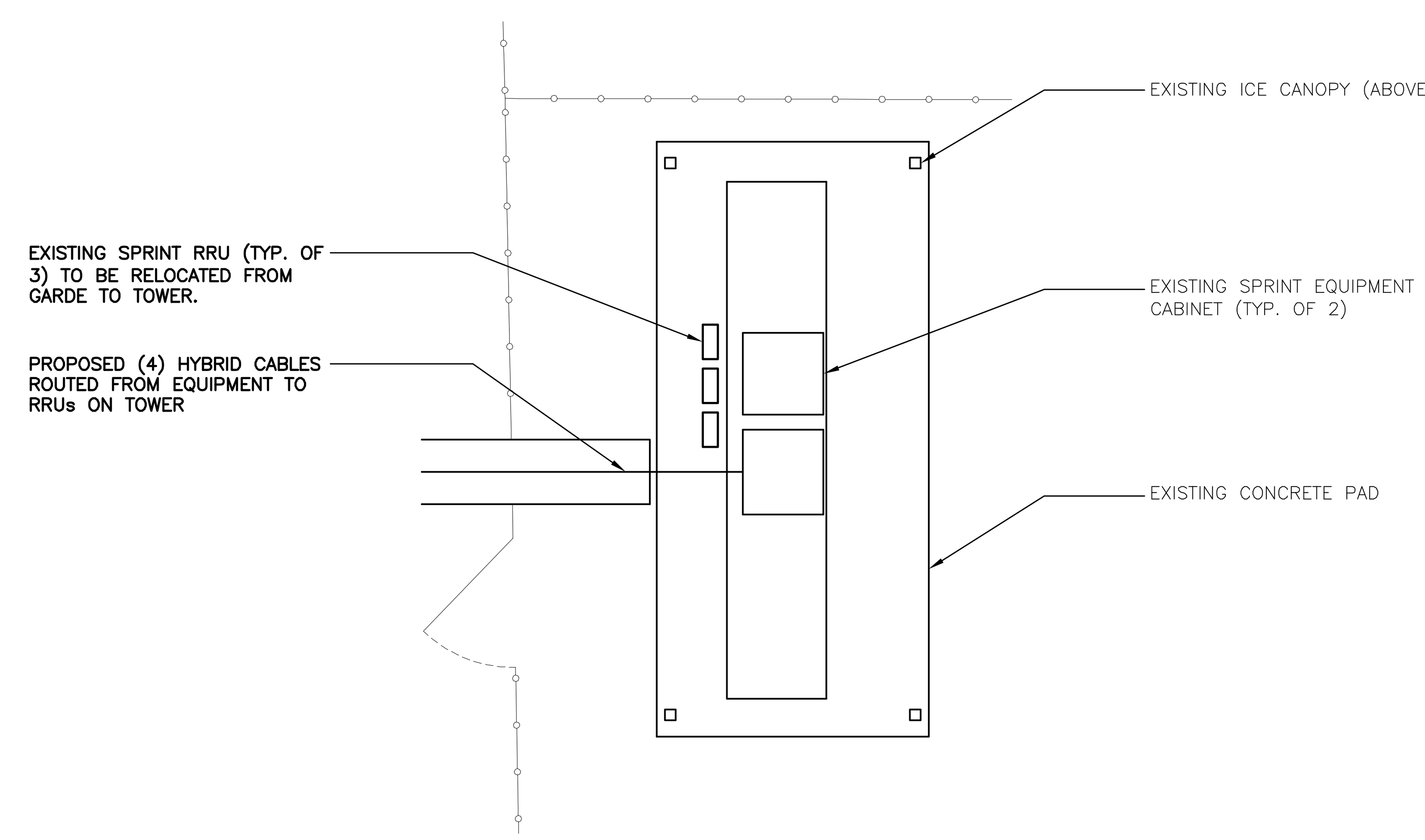
1 / C-1 **SOUTH TOWER ELEVATION**
SCALE: 1" = 15'-0"

GRAPHIC SCALE: 15 0 7.5 15 30 60 (IN FEET) 1 inch = 15 ft.



2 / C-1 **COMPOUND PLAN**
SCALE: 1" = 10'-0"

APPROX. NORTH



3 / C-1 **EQUIPMENT PLAN**
SCALE: 1/4" = 1'-0"

APPROX. NORTH

GRAPHIC SCALE: 4 0 2 4 8 16 (IN FEET) 1/4 inch = 1 ft.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	02/18/19	TJL	CAG	ISSUED FOR CONSTRUCTION
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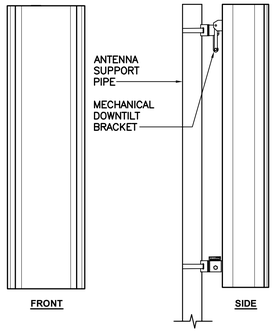
SITE ID: CT33CX089
330 POKORNY ROAD
HADDAM, CT 06441

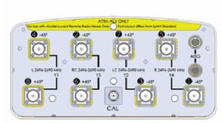
DATE:	09/26/18
SCALE:	AS NOTED
JOB NO.	17159.10

COMPOUND PLANS AND ELEVATION

C-1

Sheet No. 3 of 5



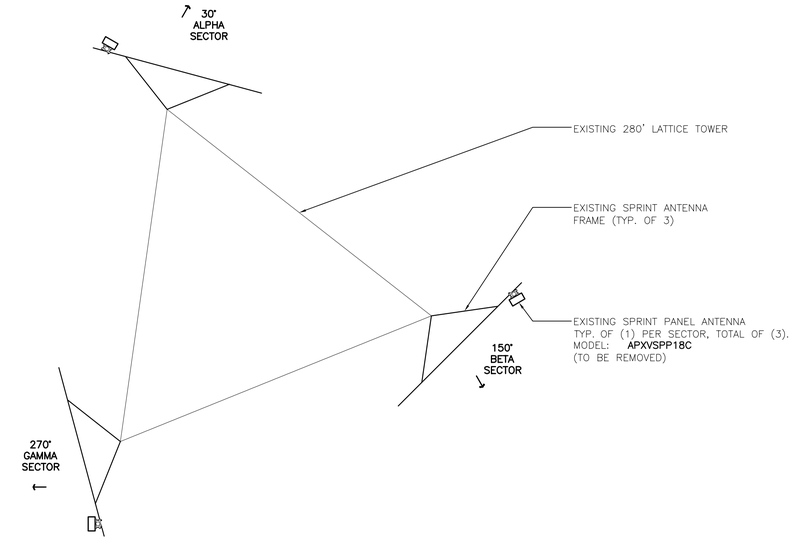


BOTTOM - APXVTM14 ANTENNA

BOTTOM - NNVV-65B-R4 ANTENNA

ALPHA/BETA/GAMMA ANTENNA			
EQUIPMENT		DIMENSIONS	WEIGHT
MAKE: MODEL:	COMMSCOPE NNVV-65B-R4	72.0"L x 19.6"W x 7.8"D	78 LBS.
MAKE: MODEL:	RFS APXVTM14	56.3"L x 12.6"W x 6.3"D	68 LBS.

1 / C-2 **PROPOSED ANTENNA DETAIL**
SCALE: 1/2" = 1'-0"



3 / C-2 **EXISTING ANTENNA MOUNTING CONFIGURATION**
SCALE: 3/16" = 1'
155' ELEVATION
TRUE NORTH

FZHN

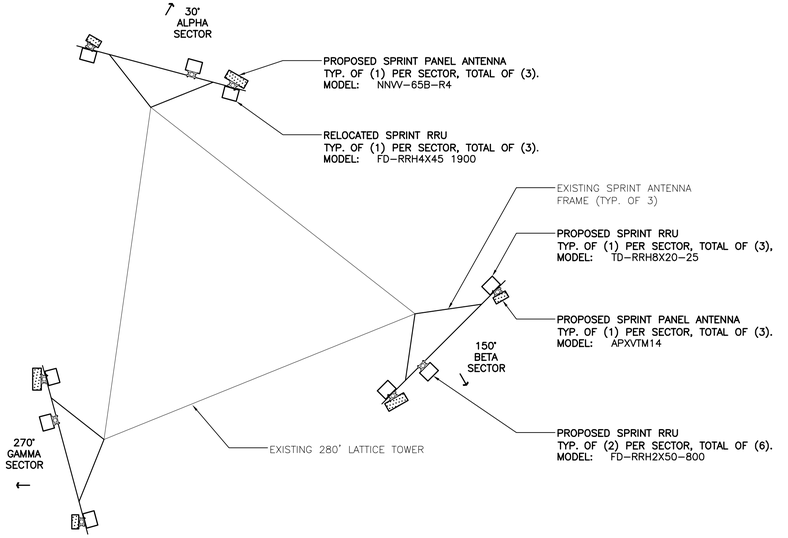
RRH-2x50-800

RRH-4x45-1900

RRU (REMOTE RADIO UNIT)				
EQUIPMENT		DIMENSIONS	WEIGHT	CLEARANCES
MAKE: MODEL:	NOKIA FZHN	16.63"L x 14.57"W x 5.94"D	44 LBS.	ABOVE: XX" MIN. BELOW: XX" MIN. FRONT: XX" MIN.
MAKE: MODEL:	ALCATEL-LUCENT RRH-2x50-800	15.7"L x 13.0"W x 9.8"D	53 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.
MAKE: MODEL:	ALCATEL-LUCENT RRH-4x45-1900	25.0"L x 11.1"W x 11.4"D	60 LBS.	ABOVE: XX" MIN. BELOW: XX" MIN. FRONT: XX" MIN.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH SPRINT CONSTRUCTION MANAGER PRIOR TO ORDERING.

2 / C-2 **REMOTE RADIO HEAD DETAIL**
SCALE: NOT TO SCALE



4 / C-2 **PROPOSED ANTENNA MOUNTING CONFIGURATION**
SCALE: 3/16" = 1'
155' ELEVATION
TRUE NORTH

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	02/18/19	TJL	CAG	ISSUED FOR CONSTRUCTION
0	02/04/19	TJL	CAG	ISSUED FOR CONSTRUCTION

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WIRELESS COMMUNICATIONS FACILITY

SITE ID: CT33CX089
330 POKORNY ROAD
HADDAM, CT 06441

DATE: 09/26/18
SCALE: AS NOTED
JOB NO. 17159.10

TYPICAL DETAILS

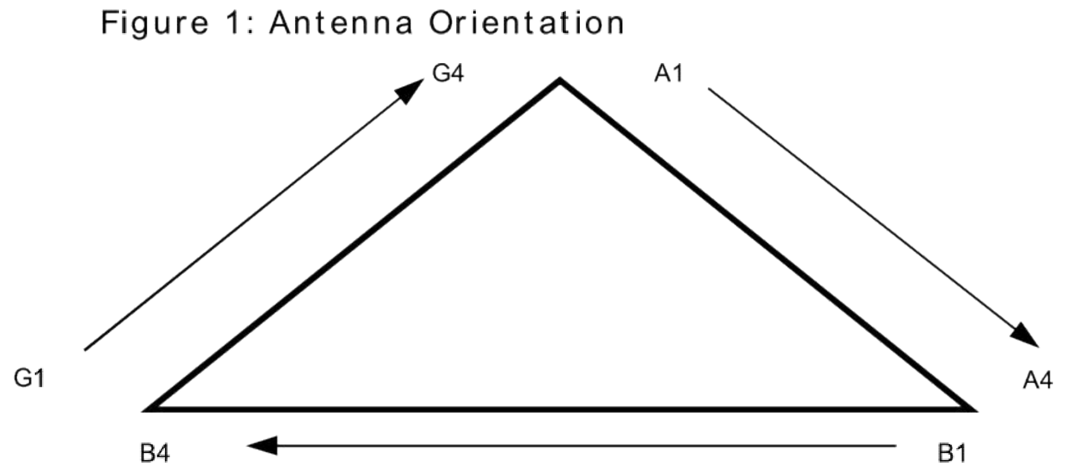
C-2
Sheet No. 4 of 5

NV CABLES				
BAND	INDICATOR		PORT	COLOR
800-1	YEL	GRN	NV-1	GRN
1900-1	YEL	RED	NV-2	BLU
1900-2	YEL	BRN	NV-3	BRN
1900-3	YEL	BLU	NV-4	WHT
1900-4	YEL	SLT	NV-5	RED
800-2	YEL	ORG	NV-6	SLT
SPARE	YEL	WHT	NV-7	PPL
2500	YEL	PPL	NV-8	ORG

HYBRID	
HYBRID	COLOR
1	GRN
2	BLU
3	BRN
4	WHT
5	RED
6	SLT
7	PPL
8	ORG

2.5 Band		
2500 Radio 1		COLOR
YEL	WHT	GRN
YEL	WHT	BLU
YEL	WHT	BRN
YEL	WHT	WHT
YEL	WHT	RED
YEL	WHT	SLT
YEL	WHT	PPL
YEL	WHT	ORG

Figure 1: Antenna Orientation



NOTES

1. *All cables shall be marked at the top and bottom with 2″ colored tape, stencil tag colored tape, or colored heat shrink tubing*
2. *Colored tape may be obtained from Graybar Electronic. UV stabilized tape or heat shrink are preferred.*
3. *The first ring shall be closest to the end of the cable, and there shall be a 1″ space between each ring.*
4. *The cable color code shall be applied in accordance to Table 19-1.*
   A. Table 19-1 only shows 3 sectors, but additional sectors are easily supported by adding the appropriate number of colored rings to the cable color code.
5. *After the cable color code is applied, the frequency color code, Table 19-2, must be applied for the specific frequency band in use on a*
   A.2″ gap shall separate the cable color code from the frequency color code.
   B. The 2″ color rings for the frequency code shall be placed next to each other with no spaces.
6. *Wrap 2″ colored tape a minimum of 3 times around the coax, and keep the tape in the same area as much as possible. This will allow remova*
7. *Examples of the cable and frequency color codes are shown in Figure 19-1 and Figure 19-2.*

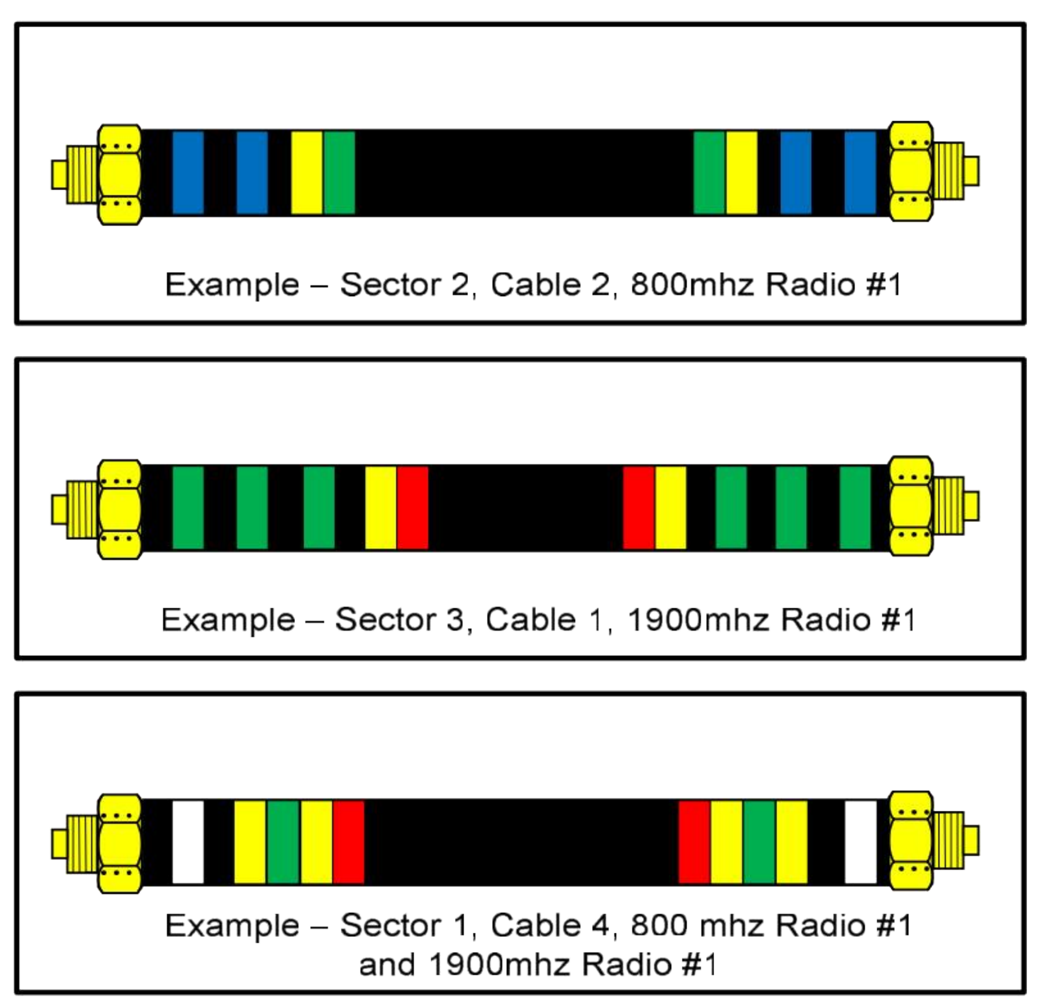
FIGURE 19.1 CABLE COLOR CODE

Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1	Green	No Tape	No Tape
1	2	Blue	No Tape	No Tape
1	3	Brown	No Tape	No Tape
1	4	White	No Tape	No Tape
1	5	Red	No Tape	No Tape
1	6	Grey	No Tape	No Tape
1	7	Purple	No Tape	No Tape
1	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
2	2	Blue	Blue	No Tape
2	3	Brown	Brown	No Tape
2	4	White	White	No Tape
2	5	Red	Red	No Tape
2	6	Grey	Grey	No Tape
2	7	Purple	Purple	No Tape
2	8	Orange	Orange	No Tape
3 Gamma	1	Green	Green	Green
3	2	Blue	Blue	Blue
3	3	Brown	Brown	Brown
3	4	White	White	White
3	5	Red	Red	Red
3	6	Grey	Grey	Grey
3	7	Purple	Purple	Purple
3	8	Orange	Orange	Orange

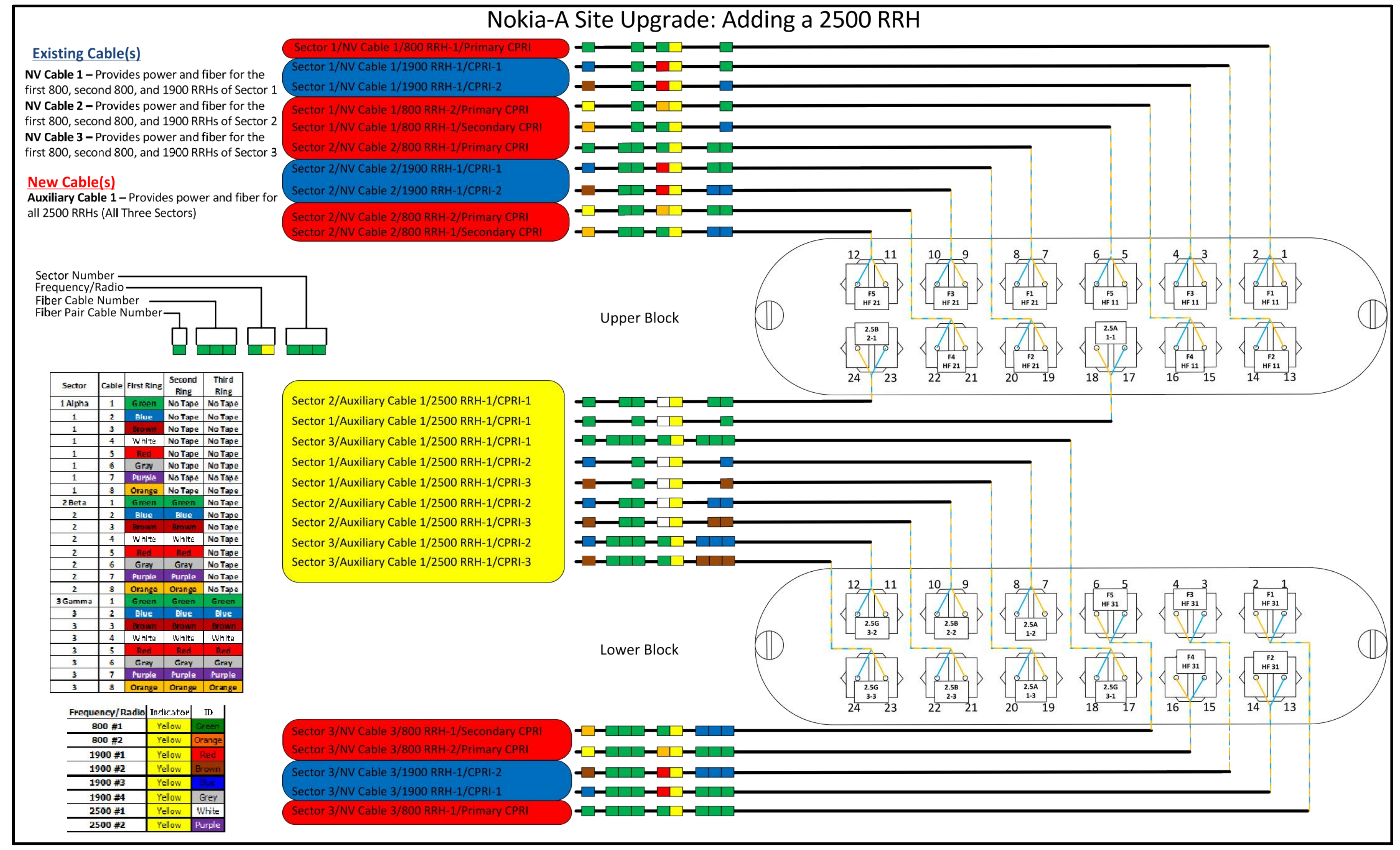
FIGURE 19.2 COLOR CODE

FREQUENC	INDICATOR	ID
800-1	YEL	GRN
1900-1	YEL	RED
1900-2	YEL	BRN
1900-3	YEL	BLU
1900-4	YEL	SLT
800-1	YEL	ORG
RESERVED	YEL	WHT
RESERVED	YEL	PPL

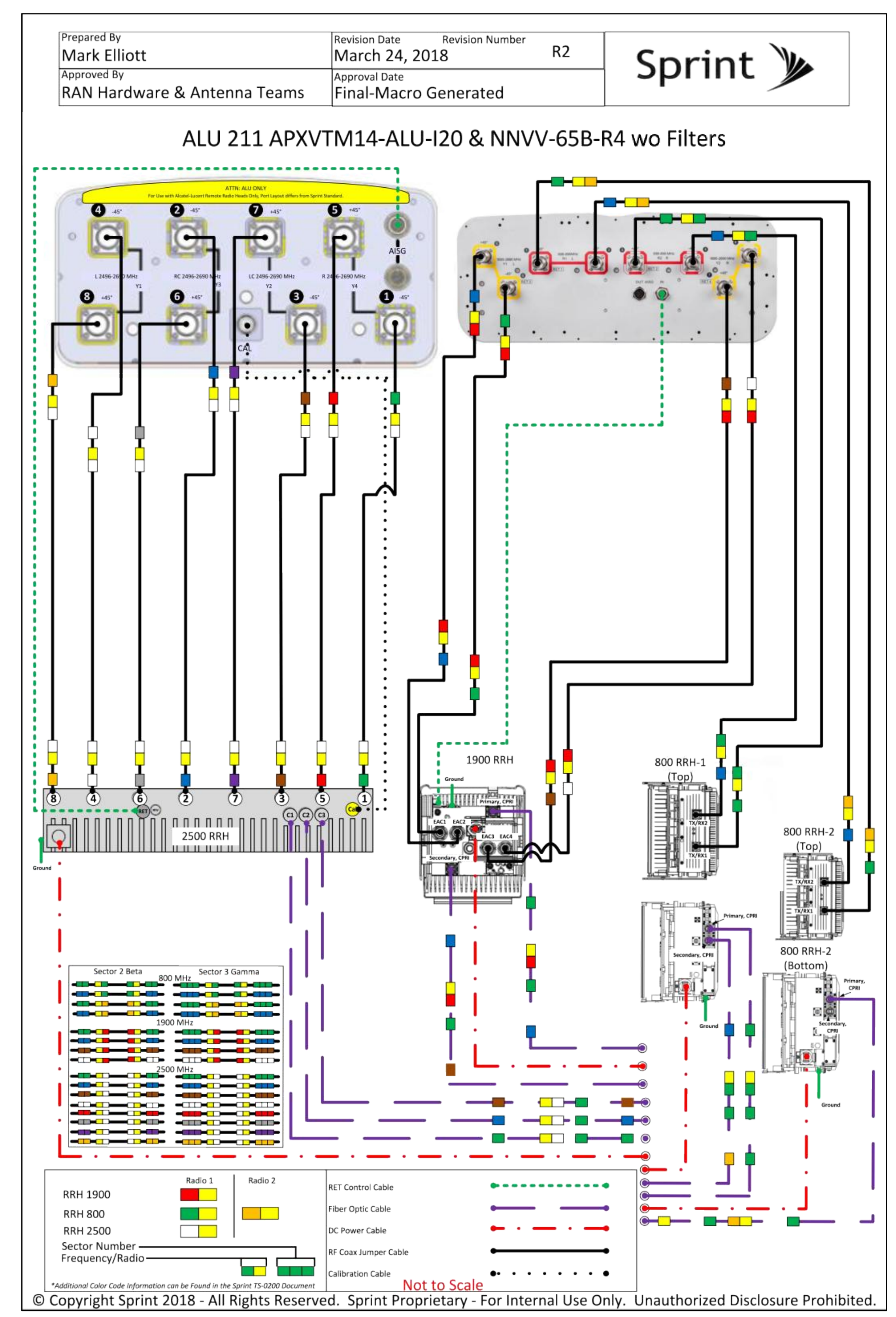
FREQUE	INDICATOR		ID
2500 -1	YEL	WHT	GRN
2500 -2	YEL	WHT	RED
2500 -3	YEL	WHT	BRN
2500 -4	YEL	WHT	BLU
2500 -5	YEL	WHT	SLT
2500 -6	YEL	WHT	ORG
2500 -7	YEL	WHT	WHT
2500 -8	YEL	WHT	PPL



1 C-3 **COLOR CODE DIAGRAM** NOT TO SCALE



2 C-3 **CPRI DIAGRAM** NOT TO SCALE



3 C-3 **PLUMBING DIAGRAM** NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	02/18/19	TJL	CAG	ISSUED FOR CONSTRUCTION
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HADDAM, CT 06441

DATE: 09/26/18
SCALE: AS NOTED
JOB NO. 17159.10

COLOR CODE AND CPRI DETAILS

C-3

CENTEK engineering

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Structural Analysis Report

280' Existing Valmont Lattice Tower

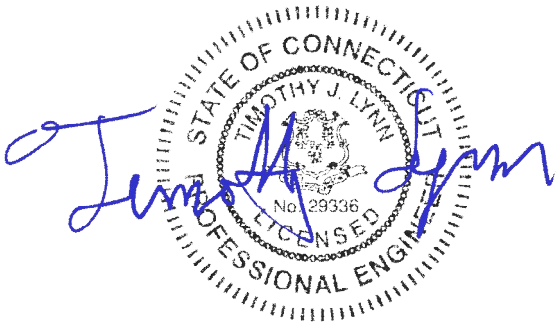
Proposed Sprint Antenna Upgrade

Sprint Site Ref: CT33XC089

330 Pokorny Road
Haddam, CT

CENTEK Project No. 17159.10

~~Date: August 21, 2018~~
Rev 1: October 31, 2018



Prepared for:
Transcend Wireless
10 Industrial Ave, Suite 3
Mahwah, NJ 07430

Table of Contents

Introduction

The purpose of this report is to summarize the results of the non-linear, P-Δ structural analysis of the antenna upgrade proposed by Sprint on the existing lattice tower located in Haddam, Connecticut.

The host tower is a 280-ft, three legged, lattice tower originally manufactured by Valmont eng. file no. A-175068 dated 5/14/2012. The tower geometry, structure member sizes and foundation information were taken from the original design documents.

Antenna and appurtenance inventory were taken from a previous structural analysis report prepared by Centek job no. 16095.000 dated June 7, 2016, a previous structural analysis report prepared by Paul J. Ford job no.24317-0014.001.8700_R1 dated August 22, 2017 and a Sprint RF data sheet.

The tower consists of fourteen (14) vertical sections consisting of steel truss legs conforming to ASTM A572 Gr. 50 and lateral bracing conforming to ASTM A36. The vertical tower sections are connected by bolted flange plates with the diagonal and horizontal bracing to pipe legs consisting of bolted connections. The width of the tower face is 12-ft at the top and 40-ft at the bottom.

Summary

The existing and proposed loads considered in the analysis consist of the following:

- UNKNOWN (Existing):
  Antenna: Lighting mounted to the top of the tower.
  Cable: One (1) 3/8" ∅ cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- VSC (Existing):
  Antenna: One (1) Celwave PD1142-2C Omni-directional whip antenna leg mounted with an elevation of ±279-ft above grade level.
  Coax Cable: One (1) 1-5/8" ∅ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- Eversource (Existing):
  Antenna: One (1) Decibel DB538 Omni-directional whip antenna leg mounted with an elevation of ±279-ft above grade level.
  Coax Cable: One (1) 7/8" ∅ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- Eversource (Existing):
  Antenna: One (1) Telewave ANT150F6 Omni-directional whip antenna leg mounted with an elevation of ±279-ft above grade level.
  Coax Cable: One (1) 7/8" ∅ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.

- EVERSOURCE (Existing):
  Antenna: Two (2) 8-ft microwave dishes pipe mounted with an elevation of ±276-ft above grade level.
  Cables: Two (2) EW63 cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- EVERSOURCE (Reserved):
  Antenna: One (1) 8-ft microwave dish pipe mounted with an elevation of ±276-ft above grade level.
  Cables: One (1) EW63 cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- EVERSOURCE (Existing):
  Antenna: One (1) 8-ft microwave dish pipe mounted with an elevation of ±266-ft above grade level.
  Cables: One (1) EW63 cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- EVERSOURCE (Existing):
  Antenna: One (1) 8-ft microwave dish pipe mounted with an elevation of ±266-ft above grade level.
  Cables: One (1) EW63 cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- VSC (Existing):
  Antenna: One (1) 10-ft dipole mounted on one (1) 6-ft side arm with an elevation of ±161-ft above grade level.
  Coax Cable: Two (2) 7/8” ∅ coax cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- EVERSOURCE (Existing):
  Antenna: Two (2) Decibel DB589-Y Omni-directional whip antennas (one upright and one inverted) and one (1) 12”x16”x6” TMA mounted on one (1) 6-ft side arm with an elevation of ±260-ft above grade level.
  Coax Cable: Two (2) 1-5/8” ∅ and one (1) 1/2” ∅ coax cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- EVERSOURCE (Existing):
  Antenna: One (1) Decibel DB212-C dipole antenna mounted on one (1) 6-ft side arm with an elevation of ±255-ft above grade level.
  Coax Cable: One (1) 7/8” ∅ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- EVERSOURCE (Existing):
  Antenna: One (1) Sinclair SD110-SFXPASNM dipole antenna mounted on one (1) 6-ft side arm with an elevation of ±241-ft above grade level.
  Coax Cable: One (1) 7/8” ∅ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.

- EVERSOURCE (Existing):
  Antenna: One (1) Kreco CO-36A Omni-directional whip antenna mounted on one (1) 6-ft side arm with an elevation of ±240-ft above grade level.
  Coax Cable: One (1) 7/8" ∅ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- EVERSOURCE (Existing):
  Antenna: One (1) 6-ft microwave dish pipe mounted with an elevation of ±240-ft above grade level.
  Cables: Two (2) E65 cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- CSP (Existing):
  Antenna: Two (2) Sinclair SE419-SF3P4LDF panel antennas (one upright and one inverted) and one (1) 12"x16"x6" TMA mounted on one (1) 6-ft side arm with an elevation of ±235-ft above grade level.
  Coax Cable: Two (2) 1-5/8" ∅ and two (2) 1/2" ∅ coax cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- EVERSOURCE (Reserved):
  Antenna: One (1) 8-ft microwave dish pipe mounted with an elevation of ±230-ft above grade level.
  Cables: One (1) EW63 cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- EVERSOURCE (Existing):
  Antenna: One (1) Comprod 531-70HD dipole antenna mounted on one (1) 3-ft side arm with an elevation of ±230-ft above grade level.
  Coax Cable: One (1) 7/8" ∅ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- EVERSOURCE (Existing):
  Antenna: One (1) 8-ft microwave dish pipe mounted with an elevation of ±220-ft above grade level.
  Cables: One (1) EW63 cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- EVERSOURCE (Existing):
  Antenna: One (1) Sinclair SD110-SFXPASNM dipole antenna mounted on one (1) 6-ft side arm with an elevation of ±216-ft above grade level.
  Coax Cable: One (1) 7/8" ∅ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- VSC (Existing):
  Antenna: One (1) Telewave ANT450F10 Omni-directional whip antenna mounted on one (1) 6-ft side arm with an elevation of ±216-ft above grade level.
  Coax Cable: One (1) 7/8" ∅ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.

- EVERSOURCE (Reserved):
  Antenna: One (1) 10-ft microwave dish pipe mounted with an elevation of ±205.5-ft above grade level.
  Cables: One (1) EW63 cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- CSP (Existing):
  Antenna: Two (2) Sinclair SC479 Omni-directional whip antennas (one upright and one inverted) and one (1) 12”x16”x6” TMA mounted on one (1) 6-ft side arm with an elevation of ±200-ft above grade level.
  Coax Cable: Two (2) 1-5/8” ∅ and one (1) 1/2” ∅ coax cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- CSP (Existing):
  Antenna: One (1) Sinclair SC479 Omni-directional whip antenna (inverted) mounted on one (1) 3-ft side arm with an elevation of ±200-ft above grade level.
  Coax Cable: One (1) 1-5/8” ∅ cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- CSP (Existing):
  Antenna: One (1) 6-ft microwave dish pipe mounted with an elevation of ±197-ft above grade level.
  Cables: One (1) EW63 cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- CSP (Existing):
  Antenna: One (1) 10-ft microwave dish pipe mounted with an elevation of ±195-ft above grade level.
  Cables: One (1) EW63 cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- CSP (Existing):
  Antenna: Two (2) Sinclair SC479 Omni-directional whip antennas (one upright and one inverted) mounted on one (1) 6-ft side arm with an elevation of ±175-ft above grade level.
  Coax Cable: Two (2) 1-5/8” ∅ coax cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- CSP (Existing):
  Antenna: One (1) Antel BCR-80010-90 Omni-directional whip antenna with reflector (upright), one (1) Antel BCD-80609 Omni-directional whip antenna (inverted) and one (1) 12”x16”x6” TMA mounted on one (1) 3-ft side arm with an elevation of ±175-ft above grade level.
  Coax Cable: Two (2) 1-5/8” ∅ and two (2) 1/2” ∅ coax cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- Town of Haddam (Existing):
  Antenna: One (1) Telewave ANT450F6 Omni-directional whip antenna mounted on one (1) 3-ft side arm with an elevation of ±168-ft above grade level.
  Coax Cable: One (1) 7/8” ∅ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.

- CSP (Existing):
  Antenna: One (1) 6-ft microwave dish pipe mounted with an elevation of ±163-ft above grade level.
  Cables: One (1) EW63 cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- VERIZON (Existing):
  Antennas: Six (6) Andrew HBXX-6517DS panel antennas, six (6) Andrew LNX-6515DS panel antennas, three (3) Alcatel-Lucent B25 RRH4x30 remote radio heads, three (3) Alcatel-Lucent B13 RRH4x30 remote radio heads, three (3) Alcatel-Lucent RRH4x45 remote radio heads and two (2) RFS DB-T1-6Z-8AB main distribution boxes mounted on three (3) 12-ft frames with a RAD center elevation of ±145-ft above grade level.
  Coax Cables: Three (3) 1-5/8" ∅ fiber cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- VSC (Existing):
  Antenna: One (1) Kreco CO-36A Omni-directional whip antenna mounted on one (1) 6-ft side arm with an elevation of ±130-ft above grade level.
  Coax Cable: One (1) 7/8" ∅ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- VSC (Existing):
  Antenna: One (1) Kathrein PR-950 paraflector mounted on one (1) 6-ft side arm with an elevation of ±126-ft above grade level.
  Coax Cable: One (1) 7/8" ∅ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- VSC (Existing):
  Antenna: One (1) Telewave ANT450F6 Omni-directional whip antenna mounted on one (1) 6-ft side arm with an elevation of ±124-ft above grade level.
  Coax Cable: One (1) 7/8" ∅ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- EVERSOURCE (Existing):
  Antenna: One (1) RFS SBX4-W60 microwave dish pipe mounted with an elevation of ±123-ft above grade level on leg "C".
  Cables: One (1) E60 cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- VSC (Existing):
  Antenna: One (1) grid dish mounted on one (1) 3-ft side arm with an elevation of ±117-ft above grade level.
  Coax Cable: One (1) 7/8" ∅ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- VSC (Existing):
  Antenna: One (1) Browning BR6155 Omni-directional whip antenna mounted on one (1) 3-ft side arm with an elevation of ±116-ft above grade level.
  Coax Cable: One (1) 7/8" ∅ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.

- CSP (Existing):
  Antenna: One (1) Telewave ANT400D dipole antenna mounted on the 3-ft side arm (above) with an elevation of ±116-ft above grade level.
  Coax Cable: One (1) 7/8" ∅ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- CSP (Existing):
  Antenna: One (1) 6-ft microwave dish pipe mounted with an elevation of ±104-ft above grade level.
  Cables: One (1) EW63 cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- VSC (Existing):
  Antenna: One (1) Browning BR6155 Omni-directional whip antenna mounted on one (1) 3-ft side arm with an elevation of ±97-ft above grade level.
  Coax Cable: One (1) 7/8" ∅ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- CSP (Existing):
  Antenna: One (1) 5-ft dipole antenna mounted on one (1) 3-ft side arm with an elevation of ±55-ft above grade level.
  Coax Cable: One (1) 7/8" ∅ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- SPRINT (Existing to Remain):
  Coax Cable: Six (6) 1-5/8" ∅ coax cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- **SPRINT (Existing to Relocate):**
  Appurtenances: Three (3) 1900MHz 4X45W RRHs to be relocated from grade to tower.
- **SPRINT (Existing to Remove):**
  Antennas: Three (3) RFS APXVSPP18C panel antennas mounted on three (3) 12-ft frames with a RAD center elevation of ±155-ft above grade level.
- **SPRINT (Proposed):**
  Antennas: Three (3) Commscope NNVV-65B-R4 panel antennas, three (3) RFS APXVTM14 panel antennas, three (3) TD-RRH8x20-25 radio heads and six (6) RRH2x50-800 radio heads mounted on three (3) 12-ft frames with a RAD center elevation of ±155-ft above grade level..
  Coax Cables: Four (4) 1-1/4"∅ Hybriflex cable running on a face of the existing tower as specified in Section 3 of this report.

Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.
- All coax cables should be routed as specified in section 3 of this report.

Analysis

The existing tower was analyzed using a comprehensive computer program entitled tnxTower. The program analyzes the tower, considering the worst case loading condition. The tower is considered as loaded by concentric forces along the tower, and the model assumes that the tower members are subjected to bending, axial, and shear forces.

The existing tower was analyzed for the controlling basic wind speed (3-second gust) with no ice and the applicable wind and ice combination to determine stresses in members as per guidelines of TIA-222-G-2005 entitled "Structural Standard for Antenna Support Structures and Antennas", the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Load and Resistance Factor Design (LRFD).

The controlling wind speed is determined by evaluating the local available wind speed data as provided in Appendix N of the CSBC[1] and the wind speed data available in the TIA-222-G-2005 Standard.

Tower Loading

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA-222-G-2005, gravity loads of the tower structure and its components, and the application of 0.75" radial ice on the tower structure and its components.

Basic Wind Speed:	Middlesex County; v = 100-120 mph (3-second gust)	*[Annex B of TIA-222-G-2005]*
	Haddam; v = 101 mph (Nominal – Structure Class III)	*[Appendix N of the 2016 CT Building Code]*
Load Cases:	Load Case 1; 101 mph wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation.	*[Appendix N of the 2016 CT Building Code]*
	Load Case 2; 50 mph wind speed w/ 0.75" radial ice plus gravity load – used in calculation of tower stresses.	*[Annex B of TIA-222-G-2005]*

[1] The 2012 International Building Code as amended by the 2016 Connecticut State Building Code (CSBC).

Tower Capacity

- Calculated stresses were found to be within allowable limits. This tower was found to be at **80.0%** of its total capacity.

Tower Section	Elevation	Stress Ratio (percentage of capacity)	Result
Diagonal (T9)	120’-0”-140’-0”	80.0%	**PASS**
Leg (T15)	0’-0”-20’-0”	76.4%	**PASS**
Mid Girt (T3)	220’-0”-240’-0”	61.0%	**PASS**

- The tower combined deflection is **0.4876 degrees**.

Deflection Criteria	Proposed (degrees)
Sway (Tilt)	0.5855
Twist	0.0496
Combined	0.5876

Note 1: Tower deflection subject to approval by Eversource.

Foundation and Anchors

The existing foundation consists of three (3) 5.5-ft ∅ x 4.25-ft long piers on a 49.5-ft square x 2.25-ft thick reinforced concrete mat. The base of the tower is connected to the foundation by means of (12) 1.25"∅, ASTM F1554-105 anchor bolts per leg embedded approximately 5-ft into the concrete foundation structure.

- The tower reactions developed from the governing Load Case were used in the verification of the foundation:

Reactions	Vector	Proposed Base Reactions
Base	Shear	**165 kips**
	Compression	**149 kips**
	Moment	**24424 kip-ft**
Leg	Shear	**100 kips**
	Uplift	**633 kips**
	Compression	**755 kips**

- The anchor bolts were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (percentage of capacity)	Result
Anchor Bolts	Tension	58.5%	**PASS**

- The foundation was found to be within allowable limits.

Foundation	Design Limit	TIA-222-G Section 9.4 FS[(1)]	Proposed Loading (FS)[(1)]	Result
Reinforced Concrete Piers (3) and Mat	OM[(2)]	1.0	1.77	**PASS**

Note 1: FS denotes Factor of Safety
Note 2: OM denotes Overturning Moment.

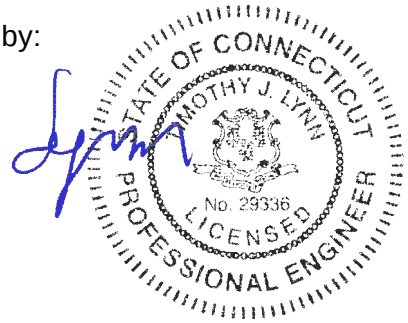
C o n c l u s i o n

This analysis shows that the subject tower **is adequate** to support the proposed modified antenna configuration with the below recommendations.

The analysis is based, in part, on the information provided to this office by Eversource. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:



Timothy J. Lynn, PE
Structural Engineer

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

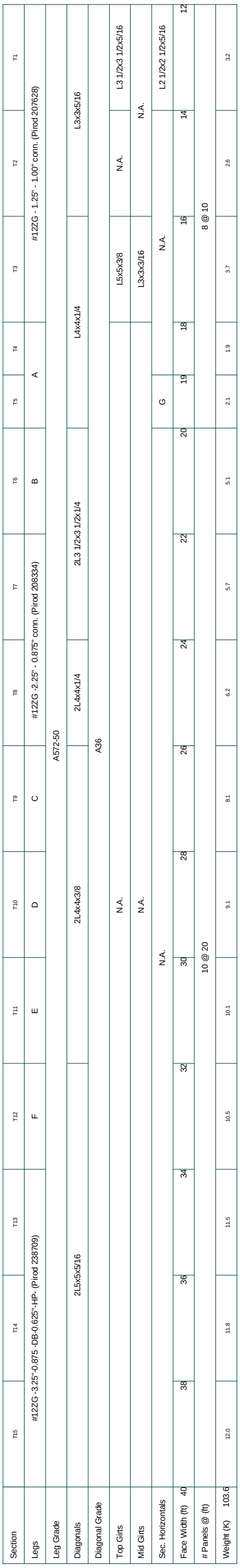
- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the “as new” condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

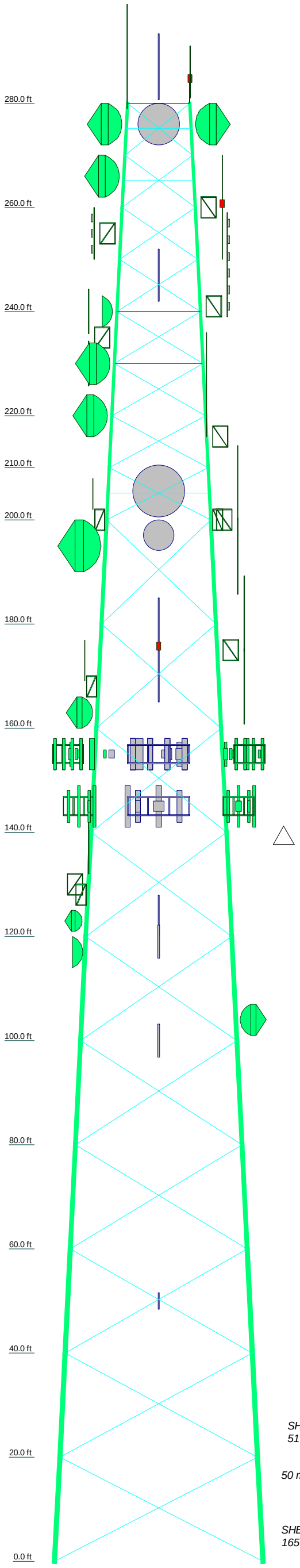
GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

tnxTower, is an integrated structural analysis and design software package for Designed specifically for the telecommunications industry, tnxTower, formerly RISATower, automates much of the tower analysis and design required by the TIA/EIA 222 Standard.

tnxTower Features:

- tnxTower can analyze and design 3- and 4-sided guyed towers, 3- and 4-sided self-supporting towers and either round or tapered ground mounted poles with or without guys.
- The program analyzes towers using the TIA-222-G (2005) standard or any of the previous TIA/EIA standards back to RS-222 (1959). Steel design is checked using the AISC ASD 9th Edition or the AISC LRFD specifications.
- Linear and non-linear (P-delta) analyses can be used in determining displacements and forces in the structure. Wind pressures and forces are automatically calculated.
- Extensive graphics plots include material take-off, shear-moment, leg compression, displacement, twist, feed line, guy anchor and stress plots.
- tnxTower contains unique features such as True Cable behavior, hog rod take-up, foundation stiffness and much more.





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Beacon Extender (4') 803062	280	12' V Frame (Sprint)	155
Beacon	280	FD-RRH 4x45 1900 (Sprint - Proposed)	155
DB538 (Eversource)	279	FD-RRH 4x45 1900 (Sprint - Proposed)	155
ANT150F6 -138-151 MHZ (Eversource)	279	(2) FD-RRH 2x50 800 (Sprint - Proposed)	155
1142-2C (VSC)	279	(2) FD-RRH 2x50 800 (Sprint - Proposed)	155
8' Solid w/ Radome (Eversource)	276	NNVV-65B-R4 (Sprint - Proposed)	155
8' Solid w/ Radome (Eversource)	276	APXVTM14 (Sprint - Proposed)	155
8' Solid w/ Radome (Eversource)	276	(2) FD-RRH 2x50 800 (Sprint - Proposed)	155
8' Solid w/ Radome (Eversource)	266	12' V Frame (Sprint)	155
10' Dipole (VSC)	261	NNVV-65B-R4 (Sprint - Proposed)	155
6' Pivot Side Arm (50" pipe) (VSC)	261	TD-RRH8x20-25 (Sprint - Proposed)	155
DB589-Y (Eversource)	260	TD-RRH8x20-25 (Sprint - Proposed)	155
DB589-Y (Eversource)	260	TD-RRH8x20-25 (Sprint - Proposed)	155
TMA (12"x16"x6"") (Eversource)	260	RRH4x45/2x90-AWS (Verizon)	145
6' Pivot Side Arm (50" pipe) (Eversource)	260	RRH4x45/2x90-AWS (Verizon)	145
DB212-1-C (Eversource)	255	DB-T1-6Z-8AB-0Z (Verizon)	145
6' Pivot Side Arm (50" pipe) (Eversource)	255	DB-T1-6Z-8AB-0Z (Verizon)	145
SD110-SFXPASNM (Eversource)	241	DB-T1-6Z-8AB-0Z (Verizon)	145
6' Pivot Side Arm (50" pipe) (Eversource)	241	12' V Frame (Verizon)	145
KRECO CO-36A (Eversource)	240	12' V Frame (Verizon)	145
6' Pivot Side Arm (50" pipe) (Eversource)	240	12' V Frame (Verizon)	145
6' Dish (Eversource - Proposed)	240	HBXX-6517DS (Verizon)	145
TMA (12"x16"x6"") (CSP)	235	LNX-6515DS (Verizon)	145
SE419-SF3P4LDF (CSP)	235	HBXX-6517DS (Verizon)	145
SE419-SF3P4LDF (CSP)	235	LNX-6515DS (Verizon)	145
6' Pivot Side Arm (50" pipe) (CSP)	235	HBXX-6517DS (Verizon)	145
531-70HD (Eversource)	230	LNX-6515DS (Verizon)	145
3' Pivot Side Arm (50" pipe) (Eversource)	230	HBXX-6517DS (Verizon)	145
8' Solid w/ Radome (Eversource)	230	LNX-6515DS (Verizon)	145
8' Solid w/ Radome (Eversource)	220	HBXX-6517DS (Verizon)	145
ANT450F10 (VSC)	216	LNX-6515DS (Verizon)	145
6' Pivot Side Arm (50" pipe) (VSC)	216	HBXX-6517DS (Verizon)	145
SD110-SFXPASNM (Eversource)	216	B25 RRH4x30 (Verizon)	145
6' Pivot Side Arm (50" pipe) (Eversource)	216	B25 RRH4x30 (Verizon)	145
10' Solid w/ Radome (Eversource)	205.5	B25 RRH4x30 (Verizon)	145
SC479 (CSP)	200	RRH4x30-B13 (Verizon)	145
3' Pivot Side Arm (50" pipe) (CSP)	200	RRH4x30-B13 (Verizon)	145
SC479 (CSP)	200	RRH4x30-B13 (Verizon)	145
3' Pivot Side Arm (50" pipe) (CSP)	200	RRH4x45/2x90-AWS (Verizon)	145
SC479 (CSP)	200	LNX-6515DS (Verizon)	145
3' Pivot Side Arm (50" pipe) (CSP)	200	RRH4x45/2x90-AWS (Verizon)	145
SC479 (CSP)	200	LNX-6515DS (Verizon)	145
6' Pivot Side Arm (50" pipe) (CSP)	200	KRECO CO-36A (VSC)	130
TMA (12"x16"x6"") (CSP)	200	6' Pivot Side Arm (50" pipe) (VSC)	130
ANT900D6-9 (CSP)	200	3' Pivot Side Arm (50" pipe) (VSC)	128
6' Solid w/ Radome (CSP)	197	PR-950 (VSC)	126
10' Solid w/ Radome (CSP)	195	6' Pivot Side Arm (50" pipe) (VSC)	126
6' Pivot Side Arm (50" pipe) (CSP)	175	ANT450F6 (VSC)	124
BCR-80010-90 (CSP)	175	6' Pivot Side Arm (50" pipe) (VSC)	124
BCD-80609 (CSP)	175	SBX4-W60 (Eversource)	123
TMA (12"x16"x6"") (CSP)	175	6' Grid Dish (VSC)	117
3' Pivot Side Arm (50" pipe) (CSP)	175	BR-6155 (VSC)	116
SC479 (CSP)	175	ANT400D (CSP)	116
SC479 (CSP)	175	3' Pivot Side Arm (50" pipe) (VSC/CSP)	116
ANT450F6 (Town of Haddam)	168	6' Solid w/ Radome (Eversource)	104
3' Pivot Side Arm (50" pipe) (Town of Haddam)	168	3' Pivot Side Arm (50" pipe) (VSC)	97
6' Solid w/ Radome (CSP)	163	BR-6155 (VSC)	97
APXVTM14 (Sprint - Proposed)	155	5-ft dipole (CSP)	55
12' V Frame (Sprint)	155	3' Pivot Side Arm (50" pipe) (CSP)	55
FD-RRH 4x45 1900 (Sprint - Proposed)	155	3' Pivot Side Arm (50" pipe)	50
NNVV-65B-R4 (Sprint - Proposed)	155	ANT790F2	50
APXVTM14 (Sprint - Proposed)	155		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	#12ZG - 1.75" - 1.00" conn. (Pirod 195557)	E	#12ZG -3.00"-0.875 -DB-0.625"-HP-Trans- (Pirod 238707)
B	#12ZG -2.00" - 0.875" conn.-Trans (Pirod 211843)	F	#12ZG -3.00"-0.875 -DB-0.625"-HP- (Pirod 238708)
C	#12ZG - 2.50" - 0.875" conn. (Pirod 208335)	G	L2 1/2x2 1/2x3/16
D	#12ZG -2.75"-0.875 -DB-0.625"-HP- (Pirod 238706)		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

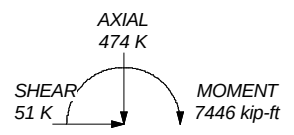
TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-G Standard.
2. Tower designed for a 101 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class III.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 80%

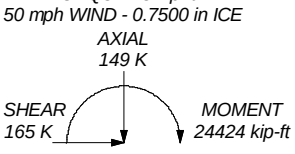
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 755 K
SHEAR: 100 K

UPLIFT: -633 K
SHEAR: 88 K



TORQUE 18 kip-ft
50 mph WIND - 0.7500 in ICE



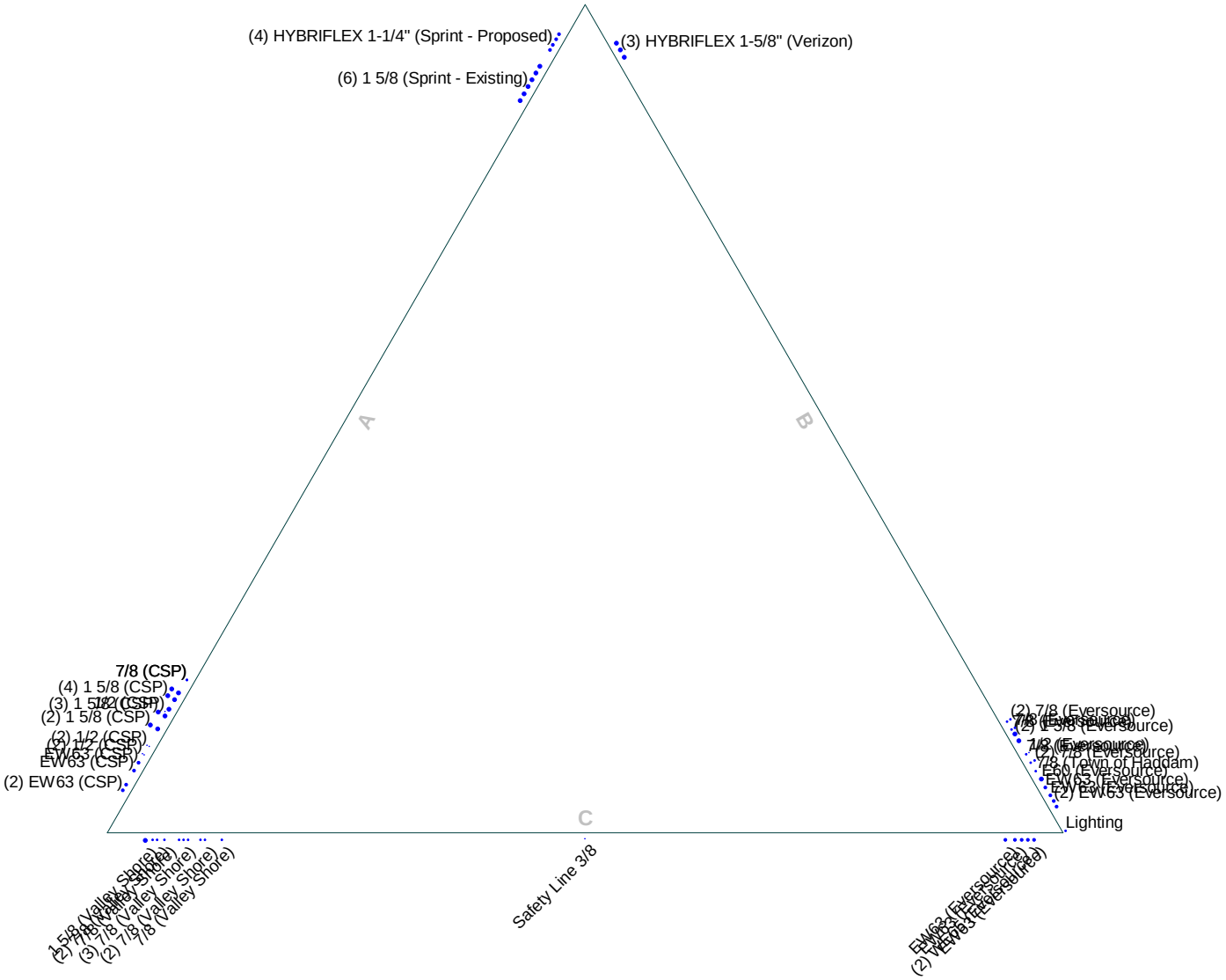
TORQUE 63 kip-ft
REACTIONS - 101 mph WIND

Centek Engineering Inc.
63-2 North Branford Rd.
Branford, CT 06405
Phone: (203) 488-0580
FAX: (203) 488-8587

Job:	***17159.10 - CT33XC089***		
Project:	***U-40 x 280' - Haddam - Goose Hill, CT***		
Client: Sprint	Drawn by: TJL	App'd:	
Code: TIA-222-G	Date: 08/21/18	Scale: NTS	
Path: J:\Jobs\1715900 W\10_CT33XC089 West Haddam\04_Structural\Backup Documentation\Calcs\tnxTower\280' Lattice Tower Goose Hill.eri		Dwg No. E-1	

Feed Line Plan

Round Flat App In Face App Out Face Truss-Leg



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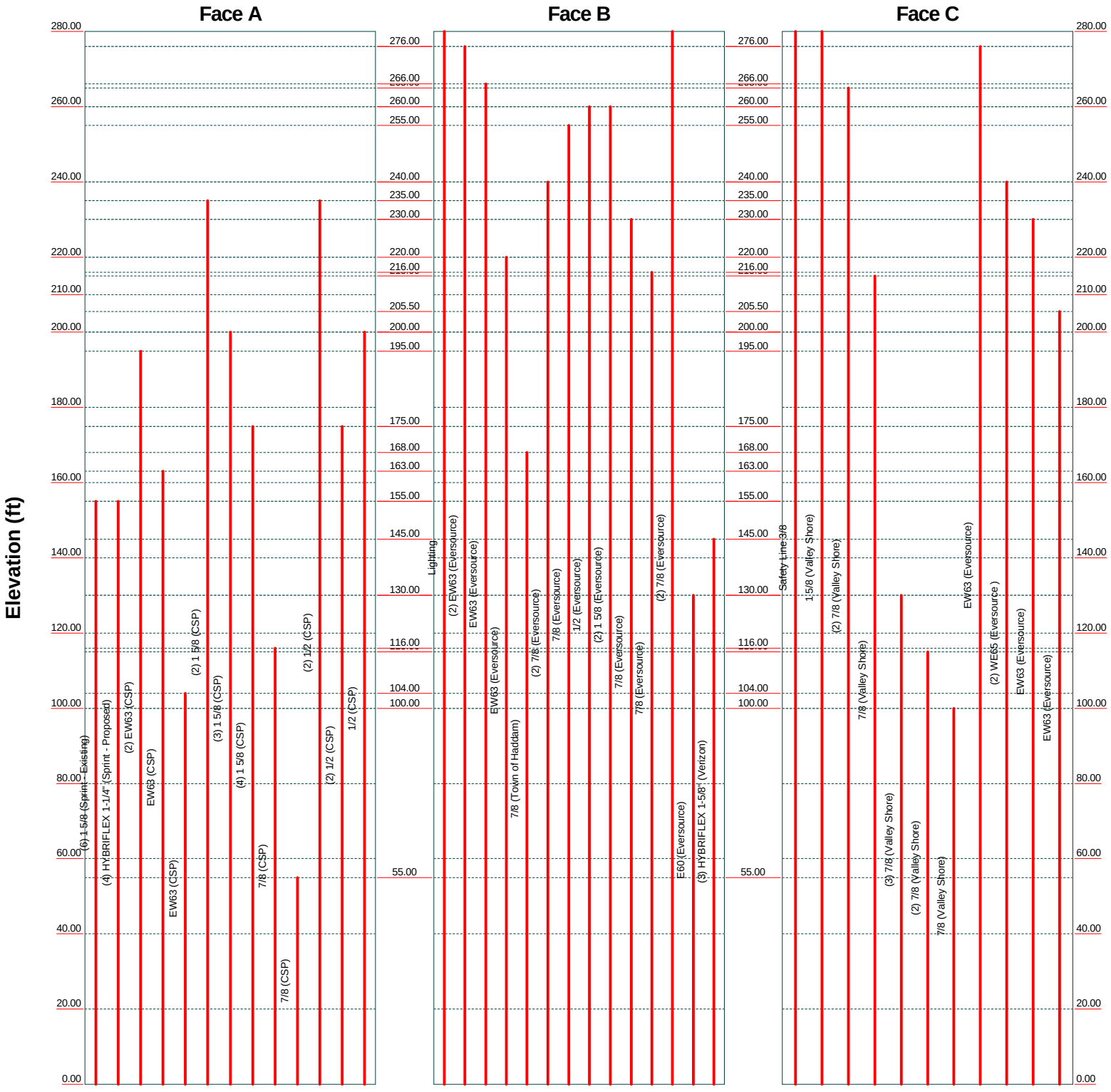
Project: ***U-40 x 280' - Haddam - Goose Hill, CT***		
Client: Sprint	Drawn by: TJL	App'd:
Code: TIA-222-G	Date: 08/21/18	Scale: NTS
Path: J:\Jobs\17159000.W\10_CT33XC089 West Haddam\04_Structural\Backup Documentation\Calcs\tnxTower\280' Lattice Tower Goose Hill.eri		Dwg No. E-7

Feed Line Distribution Chart
0' - 280'

Round | Flat | App In Face | App Out Face | Truss Leg



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Job: 17159.10 - CT33XC089		
Project: U-40 x 280' - Haddam - Goose Hill, CT		
Client: Sprint	Drawn by: TJL	App'd:
Code: TIA-222-G	Date: 08/21/18	Scale: NTS
Path: J:\Jobs\17159\00.W\10_CT33XC089 West Haddam\04_Structural\Backup Documentation\Calcs\tnxTower\280' Lattice Tower Goose Hill.eri		Dwg No. E-7

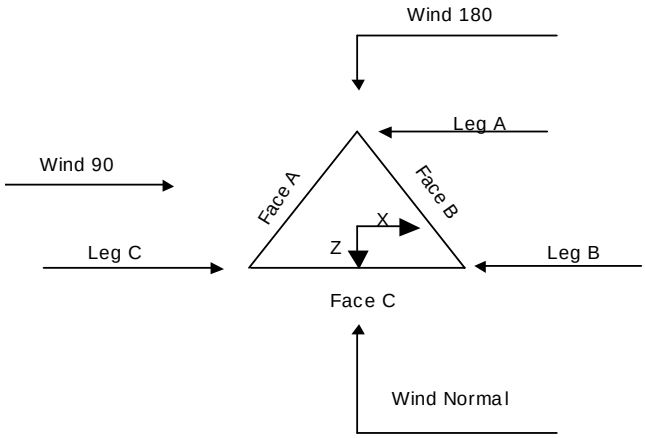
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 280.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 12.00 ft at the top and 40.00 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Basic wind speed of 101 mph.
Structure Class III.
Exposure Category C.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	280.00-260.00		PiRod 12BD Truss Leg	12.00	1	20.00
T2	260.00-240.00		PiRod 12BD Truss Leg	14.00	1	20.00
T3	240.00-220.00		PiRod 12BD Truss Leg	16.00	1	20.00
T4	220.00-210.00		PiRod 12BD Truss Leg	18.00	1	10.00
T5	210.00-200.00		PiRod 12BD Truss Leg	19.00	1	10.00
T6	200.00-180.00		PiRod 12BDH Truss Leg	20.00	1	20.00
T7	180.00-160.00		PiRod 12BDH Truss Leg	22.00	1	20.00
T8	160.00-140.00		PiRod 12BDH Truss Leg	24.00	1	20.00
T9	140.00-120.00		PiRod 12BDH Truss Leg	26.00	1	20.00
T10	120.00-100.00		PiRod 12BDH Truss Leg	28.00	1	20.00
T11	100.00-80.00		PiRod 12BDH Truss Leg	30.00	1	20.00
T12	80.00-60.00		PiRod 12BDH Truss Leg	32.00	1	20.00
T13	60.00-40.00		PiRod 12BDH Truss Leg	34.00	1	20.00
T14	40.00-20.00		PiRod 18BD Truss Leg	36.00	1	20.00
T15	20.00-0.00		PiRod 18BD Truss Leg	38.00	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	280.00-260.00	10.00	X Brace	No	Yes	0.0000	0.0000
T2	260.00-240.00	10.00	X Brace	No	No	0.0000	0.0000
T3	240.00-220.00	10.00	X Brace	No	No	0.0000	0.0000
T4	220.00-210.00	10.00	X Brace	No	Yes	0.0000	0.0000
T5	210.00-200.00	10.00	X Brace	No	Yes	0.0000	0.0000
T6	200.00-180.00	20.00	X Brace	No	No	0.0000	0.0000
T7	180.00-160.00	20.00	X Brace	No	No	0.0000	0.0000
T8	160.00-140.00	20.00	X Brace	No	No	0.0000	0.0000
T9	140.00-120.00	20.00	X Brace	No	No	0.0000	0.0000
T10	120.00-100.00	20.00	X Brace	No	No	0.0000	0.0000
T11	100.00-80.00	20.00	X Brace	No	No	0.0000	0.0000
T12	80.00-60.00	20.00	X Brace	No	No	0.0000	0.0000
T13	60.00-40.00	20.00	X Brace	No	No	0.0000	0.0000
T14	40.00-20.00	20.00	X Brace	No	No	0.0000	0.0000
T15	20.00-0.00	20.00	X Brace	No	No	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 280.00-260.00	Truss Leg	#12ZG - 1.25" - 1.00" conn. (Pirod 207628)	A572-50 (50 ksi)	Equal Angle	L3x3x5/16	A36 (36 ksi)
T2 260.00-240.00	Truss Leg	#12ZG - 1.25" - 1.00" conn. (Pirod 207628)	A572-50 (50 ksi)	Equal Angle	L3x3x5/16	A36 (36 ksi)
T3 240.00-220.00	Truss Leg	#12ZG - 1.25" - 1.00" conn. (Pirod 207628)	A572-50 (50 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)
T4 220.00-210.00	Truss Leg	#12ZG - 1.75" - 1.00" conn. (Pirod 195557)	A572-50 (50 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)
T5 210.00-200.00	Truss Leg	#12ZG - 1.75" - 1.00" conn. (Pirod 195557)	A572-50 (50 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)
T6 200.00-180.00	Truss Leg	#12ZG -2.00" - 0.875" conn.-Trans (Pirod 211843)	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)
T7 180.00-160.00	Truss Leg	#12ZG -2.25" - 0.875" conn. (Pirod 208334)	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)
T8 160.00-140.00	Truss Leg	#12ZG -2.25" - 0.875" conn. (Pirod 208334)	A572-50 (50 ksi)	Double Equal Angle	2L4x4x1/4	A36 (36 ksi)
T9 140.00-120.00	Truss Leg	#12ZG - 2.50" - 0.875" conn. (Pirod 208335)	A572-50 (50 ksi)	Double Equal Angle	2L4x4x3/8	A36 (36 ksi)
T10 120.00-100.00	Truss Leg	#12ZG -2.75"-0.875 -DB-0.625"-HP- (Pirod 238706)	A572-50 (50 ksi)	Double Equal Angle	2L4x4x3/8	A36 (36 ksi)
T11 100.00-80.00	Truss Leg	#12ZG -3.00"-0.875 -DB-0.625"-HP-Trans- (Pirod 238707)	A572-50 (50 ksi)	Double Equal Angle	2L4x4x3/8	A36 (36 ksi)
T12 80.00-60.00	Truss Leg	#12ZG -3.00"-0.875 -DB-0.625"-HP- (Pirod 238708)	A572-50 (50 ksi)	Double Equal Angle	2L5x5x5/16	A36 (36 ksi)
T13 60.00-40.00	Truss Leg	#12ZG -3.25"-0.875 -DB-0.625"-HP- (Pirod 238709)	A572-50 (50 ksi)	Double Equal Angle	2L5x5x5/16	A36 (36 ksi)
T14 40.00-20.00	Truss Leg	#12ZG -3.25"-0.875 -DB-0.625"-HP- (Pirod 238709)	A572-50 (50 ksi)	Double Equal Angle	2L5x5x5/16	A36 (36 ksi)
T15 20.00-0.00	Truss Leg	#12ZG -3.25"-0.875 -DB-0.625"-HP- (Pirod	A572-50 (50 ksi)	Double Equal Angle	2L5x5x5/16	A36 (36 ksi)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
		238709)				

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 280.00-260.00	Equal Angle	L3 1/2x3 1/2x5/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T3 240.00-220.00	Equal Angle	L5x5x3/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T3 240.00-220.00	1	Equal Angle	L3x3x3/16	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 280.00-260.00	Equal Angle	L2 1/2x2 1/2x5/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T5 210.00-200.00	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

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
T1 280.00-260.00	0.00	0.5000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T2	0.00	0.5000	A36	1	1	1.05	36.0000	36.0000	36.0000

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
260.00-240.00			(36 ksi)						
T3	0.00	0.5000	A36	1	1	1.05	36.0000	36.0000	36.0000
240.00-220.00			(36 ksi)						
T4	0.00	0.5000	A36	1	1	1.05	36.0000	36.0000	36.0000
220.00-210.00			(36 ksi)						
T5	0.00	0.5000	A36	1	1	1.05	36.0000	36.0000	36.0000
210.00-200.00			(36 ksi)						
T6	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000	36.0000
200.00-180.00			(36 ksi)						
T7	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000	36.0000
180.00-160.00			(36 ksi)						
T8	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000	36.0000
160.00-140.00			(36 ksi)						
T9	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000	36.0000
140.00-120.00			(36 ksi)						
T10	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000	36.0000
120.00-100.00			(36 ksi)						
T11	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000	36.0000
100.00-80.00			(36 ksi)						
T12	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000	36.0000
80.00-60.00			(36 ksi)						
T13	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000	36.0000
60.00-40.00			(36 ksi)						
T14	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000	36.0000
40.00-20.00			(36 ksi)						
T15 20.00-0.00	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000	36.0000
			(36 ksi)						

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	Yes	Yes	1	1	1	1	1	1	1	1
280.00-260.00				1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1
260.00-240.00				1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1
240.00-220.00				1	1	1	1	1	1	1
T4	Yes	Yes	1	1	1	1	1	1	1	1
220.00-210.00				1	1	1	1	1	1	1
T5	Yes	Yes	1	1	1	1	1	1	1	1
210.00-200.00				1	1	1	1	1	1	1
T6	Yes	Yes	1	1	1	1	1	1	1	1
200.00-180.00				1	1	1	1	1	1	1
T7	Yes	Yes	1	1	1	1	1	1	1	1
180.00-160.00				1	1	1	1	1	1	1
T8	Yes	Yes	1	1	1	1	1	1	1	1
160.00-140.00				1	1	1	1	1	1	1
T9	Yes	Yes	1	1	1	1	1	1	1	1
140.00-120.00				1	1	1	1	1	1	1
T10	Yes	Yes	1	1	1	1	1	1	1	1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
120.00-100.00				1	1	1	1	1	1	1
T11	Yes	Yes	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T12	Yes	Yes	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1
T13	Yes	Yes	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1
T14	Yes	Yes	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1
T15	Yes	Yes	1	1	1	1	1	1	1	1
20.00-0.00				1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Truss-Leg K Factors: Truss-Legs Used As Leg Members — Leg Panels	X Brace Diagonals	Z Brace Diagonals	Truss-Legs Used As Inner Members — Leg Panels	X Brace Diagonals	Z Brace Diagonals
T1	1	0.5	0.7	1	0.5	0.7
280.00-260.00						
T2	1	0.5	0.7	1	0.5	0.7
260.00-240.00						
T3	1	0.5	0.7	1	0.5	0.7
240.00-220.00						
T4	1	0.5	0.7	1	0.5	0.7
220.00-210.00						
T5	1	0.5	0.7	1	0.5	0.7
210.00-200.00						
T6	1	0.5	0.7	1	0.5	0.7
200.00-180.00						
T7	1	0.5	0.7	1	0.5	0.7
180.00-160.00						
T8	1	0.5	0.7	1	0.5	0.7
160.00-140.00						
T9	1	0.5	0.7	1	0.5	0.7
140.00-120.00						
T10	1	0.5	0.7	1	0.5	0.7
120.00-100.00						
T11	1	0.5	0.7	1	0.5	0.7
100.00-80.00						
T12	1	0.5	0.7	1	0.5	0.7
80.00-60.00						
T13	1	0.5	0.7	1	0.5	0.7
60.00-40.00						
T14	1	0.5	0.7	1	0.5	1
40.00-20.00						
T15	1	0.5	0.7	1	0.5	1
20.00-0.00						

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 280.00-260.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 260.00-240.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 240.00-220.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 220.00-210.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 210.00-200.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 200.00-180.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 180.00-160.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 160.00-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 140.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 120.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T1 280.00-260.00	5.0000	10.7500	5.0000	10.7500	0.0000	0.0000	0.0000	0.0000
T2 260.00-240.00	5.0000	10.7500	5.0000	10.7500	0.0000	0.0000	0.0000	0.0000
T3 240.00-220.00	5.0000	10.7500	5.0000	10.7500	0.0000	0.0000	0.0000	0.0000
T4 220.00-210.00	5.0000	10.7500	5.0000	10.7500	0.0000	0.0000	0.0000	0.0000

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T5 210.00-200.00	5.0000	10.7500	5.0000	10.7500	0.0000	0.0000	0.0000	0.0000
T6 200.00-180.00	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000
T7 180.00-160.00	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000
T8 160.00-140.00	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000
T9 140.00-120.00	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000
T10 120.00-100.00	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000
T11 100.00-80.00	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000
T12 80.00-60.00	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000
T13 60.00-40.00	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000
T14 40.00-20.00	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000
T15 20.00-0.00	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 280.00-260.00	Flange	1.0000 A325N	6	1.0000 A325N	1	1.0000 A325N	1	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T2 260.00-240.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T3 240.00-220.00	Flange	1.0000 A325N	6	1.0000 A325N	1	1.0000 A325N	1	1.0000 A325N	0	1.0000 A325N	1	1.0000 A325N	0	1.0000 A325N	0
T4 220.00-210.00	Flange	1.0000 A325N	0	1.0000 A325N	1	0.0000 A325N	0	0.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T5 210.00-200.00	Flange	1.0000 A325N	6	1.0000 A325N	1	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T6 200.00-180.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T7 180.00-160.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T8 160.00-140.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T9 140.00-120.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T10 120.00-100.00	Flange	1.0000 A325N	12	0.8750 A325N	2	0.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T11 100.00-80.00	Flange	1.2500 A325N	12	0.8750 A325N	2	0.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0

Tower Elevation ft	Leg Connection Type	Leg Bolt Size in	Leg No.	Diagonal Bolt Size in	Diagonal No.	Top Girt Bolt Size in	Top Girt No.	Bottom Girt Bolt Size in	Bottom Girt No.	Mid Girt Bolt Size in	Mid Girt No.	Long Horizontal Bolt Size in	Long Horizontal No.	Short Horizontal Bolt Size in	Short Horizontal No.
T12	Flange	1.2500	12	0.8750	2	0.0000	0	1.0000	0	1.0000	0	1.0000	0	1.0000	0
80.00-60.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T13	Flange	1.2500	12	0.8750	2	0.0000	0	1.0000	0	1.0000	0	1.0000	0	1.0000	0
60.00-40.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T14	Flange	1.2500	12	0.8750	2	0.0000	0	1.0000	0	1.0000	0	1.0000	0	1.0000	0
40.00-20.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T15 20.00-0.00	Flange	1.2500	12	0.8750	2	0.0000	0	1.0000	0	1.0000	0	1.0000	0	1.0000	0
		F1554-105		A325N		A325N		A325N		A325N		A325N		A325N	

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	C	No	Ar (CaAa)	280.00 - 0.00	3.0000	0	1	1	0.3750	0.3750		0.22
Lighting	B	No	Ar (CaAa)	280.00 - 0.00	1.0000	0.5	1	1	0.8700	0.8700		0.15
1 5/8 (Sprint - Existing)	A	No	Ar (CaAa)	155.00 - 0.00	3.0000	0.4	6	6	1.9800	1.9800		1.04
HYBRIFLEX 1-1/4" (Sprint - Proposed)	A	No	Ar (CaAa)	155.00 - 0.00	3.0000	0.45	4	4	1.5400	1.5400		1.30
EW63 (CSP)	A	No	Ar (CaAa)	195.00 - 0.00	3.0000	-0.45	2	2	1.5742	1.5742		0.51
EW63 (CSP)	A	No	Ar (CaAa)	163.00 - 0.00	3.0000	-0.43	1	1	1.5742	1.5742		0.51
EW63 (CSP)	A	No	Ar (CaAa)	104.00 - 0.00	3.0000	-0.42	1	1	1.5742	1.5742		0.51
1 5/8 (CSP)	A	No	Ar (CaAa)	235.00 - 0.00	3.0000	-0.38	2	1	1.9800	1.9800		1.04
1 5/8 (CSP)	A	No	Ar (CaAa)	200.00 - 0.00	3.0000	-0.36	3	2	1.9800	1.9800		1.04
1 5/8 (CSP)	A	No	Ar (CaAa)	175.00 - 0.00	3.0000	-0.34	4	2	1.9800	1.9800		1.04
1 5/8 (Valley Shore)	C	No	Ar (CaAa)	280.00 - 0.00	3.0000	0.46	1	1	1.9800	1.9800		1.04
7/8 (Valley Shore)	C	No	Ar (CaAa)	265.00 - 0.00	3.0000	0.45	2	2	1.1100	1.1100		0.54
7/8 (Valley Shore)	C	No	Ar (CaAa)	215.00 - 0.00	3.0000	0.44	1	1	1.1100	1.1100		0.54
7/8 (Valley Shore)	C	No	Ar (CaAa)	130.00 - 0.00	3.0000	0.42	3	3	1.1100	1.1100		0.54
7/8 (Valley Shore)	C	No	Ar (CaAa)	115.00 - 0.00	3.0000	0.4	2	2	1.1100	1.1100		0.54
7/8 (Valley Shore)	C	No	Ar (CaAa)	100.00 - 0.00	3.0000	0.38	1	1	1.1100	1.1100		0.54
EW63 (Eversource)	B	No	Ar (CaAa)	276.00 - 0.00	3.0000	0.47	2	2	1.5742	1.5742		0.51
EW63 (Eversource)	B	No	Ar (CaAa)	266.00 - 0.00	3.0000	0.46	1	1	1.5742	1.5742		0.51
EW63 (Eversource)	B	No	Ar (CaAa)	220.00 - 0.00	3.0000	0.45	1	1	1.5742	1.5742		0.51

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
7/8 (Town of Haddam)	B	No	Ar (CaAa)	168.00 - 0.00	3.0000	0.43	1	1	1.1100	1.1100		0.54
7/8 (Eversource)	B	No	Ar (CaAa)	240.00 - 0.00	3.0000	0.42	2	1	1.1100	1.1100		0.54
7/8 (Eversource)	B	No	Ar (CaAa)	255.00 - 0.00	3.0000	0.41	1	1	1.1100	1.1100		0.54
1/2 (Eversource)	B	No	Ar (CaAa)	260.00 - 0.00	5.0000	0.41	1	1	0.5800	0.5800		0.25
1 5/8 (Eversource)	B	No	Ar (CaAa)	260.00 - 0.00	3.0000	0.39	2	2	1.9800	1.9800		1.04
7/8 (Eversource)	B	No	Ar (CaAa)	230.00 - 0.00	3.0000	0.38	1	1	1.1100	1.1100		0.54
7/8 (Eversource)	B	No	Ar (CaAa)	216.00 - 0.00	5.0000	0.38	1	1	1.1100	1.1100		0.54
7/8 (Eversource)	B	No	Ar (CaAa)	280.00 - 0.00	3.0000	0.37	2	1	1.1100	1.1100		0.54
7/8 (CSP)	A	No	Ar (CaAa)	116.00 - 0.00	3.0000	-0.32	1	1	1.1100	1.1100		0.54
7/8 (CSP)	A	No	Ar (CaAa)	55.00 - 0.00	3.0000	-0.32	1	1	1.1100	1.1100		0.54
1/2 (CSP)	A	No	Ar (CaAa)	235.00 - 0.00	3.0000	-0.41	2	1	0.5800	0.5800		0.25
1/2 (CSP)	A	No	Ar (CaAa)	175.00 - 0.00	3.0000	-0.4	2	1	0.5800	0.5800		0.25
1/2 (CSP)	A	No	Ar (CaAa)	200.00 - 0.00	5.0000	-0.36	1	1	0.5800	0.5800		0.25
E60 (Eversource)	B	No	Ar (CaAa)	130.00 - 0.00	3.0000	0.44	1	1	2.2000	2.2000		0.68
EW63 (Eversource)	C	No	Ar (CaAa)	276.00 - 0.00	3.0000	-0.47	1	1	1.5742	1.5742		0.51
WE65 (Eversource)	C	No	Ar (CaAa)	240.00 - 0.00	3.0000	-0.46	2	2	1.5836	1.5836		0.53
EW63 (Eversource)	C	No	Ar (CaAa)	230.00 - 0.00	3.0000	-0.45	1	1	1.5742	1.5742		0.51
EW63 (Eversource)	C	No	Ar (CaAa)	205.50 - 0.00	3.0000	-0.44	1	1	1.5742	1.5742		0.51
HYBRIFLEX 1-5/8" (Verizon)	B	No	Ar (CaAa)	145.00 - 0.00	3.0000	-0.44	3	3	1.9800	1.9800		1.90

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
T1	280.00-260.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	12.162	0.000	0.04
		C	0.000	0.000	8.339	0.000	0.04
T2	260.00-240.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	26.370	0.000	0.11
		C	0.000	0.000	12.298	0.000	0.06
T3	240.00-220.00	A	0.000	0.000	7.680	0.000	0.04
		B	0.000	0.000	32.475	0.000	0.14
		C	0.000	0.000	20.207	0.000	0.08
T4	220.00-210.00	A	0.000	0.000	5.120	0.000	0.03
		B	0.000	0.000	19.033	0.000	0.08

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	11.446	0.000	0.05
T5	210.00-200.00	A	0.000	0.000	5.120	0.000	0.03
		B	0.000	0.000	19.477	0.000	0.08
		C	0.000	0.000	12.866	0.000	0.05
T6	200.00-180.00	A	0.000	0.000	28.003	0.000	0.13
		B	0.000	0.000	38.954	0.000	0.17
		C	0.000	0.000	27.150	0.000	0.11
T7	180.00-160.00	A	0.000	0.000	43.669	0.000	0.21
		B	0.000	0.000	39.842	0.000	0.17
		C	0.000	0.000	27.150	0.000	0.11
T8	160.00-140.00	A	0.000	0.000	77.945	0.000	0.41
		B	0.000	0.000	44.144	0.000	0.21
		C	0.000	0.000	27.150	0.000	0.11
T9	140.00-120.00	A	0.000	0.000	86.965	0.000	0.47
		B	0.000	0.000	55.254	0.000	0.30
		C	0.000	0.000	30.480	0.000	0.13
T10	120.00-100.00	A	0.000	0.000	89.371	0.000	0.48
		B	0.000	0.000	57.454	0.000	0.30
		C	0.000	0.000	37.140	0.000	0.16
T11	100.00-80.00	A	0.000	0.000	92.334	0.000	0.49
		B	0.000	0.000	57.454	0.000	0.30
		C	0.000	0.000	40.470	0.000	0.17
T12	80.00-60.00	A	0.000	0.000	92.334	0.000	0.49
		B	0.000	0.000	57.454	0.000	0.30
		C	0.000	0.000	40.470	0.000	0.17
T13	60.00-40.00	A	0.000	0.000	93.999	0.000	0.50
		B	0.000	0.000	57.454	0.000	0.30
		C	0.000	0.000	40.470	0.000	0.17
T14	40.00-20.00	A	0.000	0.000	94.554	0.000	0.50
		B	0.000	0.000	57.454	0.000	0.30
		C	0.000	0.000	40.470	0.000	0.17
T15	20.00-0.00	A	0.000	0.000	94.554	0.000	0.50
		B	0.000	0.000	57.454	0.000	0.30
		C	0.000	0.000	40.470	0.000	0.17

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
T1	280.00-260.00	A	2.314	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	61.679	0.000	0.96
		C		0.000	0.000	39.272	0.000	0.68
T2	260.00-240.00	A	2.296	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	125.512	0.000	1.96
		C		0.000	0.000	59.809	0.000	0.95
T3	240.00-220.00	A	2.277	0.000	0.000	38.406	0.000	0.63
		B		0.000	0.000	157.593	0.000	2.49
		C		0.000	0.000	93.440	0.000	1.42
T4	220.00-210.00	A	2.261	0.000	0.000	25.497	0.000	0.42
		B		0.000	0.000	90.740	0.000	1.45
		C		0.000	0.000	52.372	0.000	0.81
T5	210.00-200.00	A	2.251	0.000	0.000	25.423	0.000	0.41
		B		0.000	0.000	92.693	0.000	1.48
		C		0.000	0.000	58.348	0.000	0.91
T6	200.00-180.00	A	2.234	0.000	0.000	118.120	0.000	1.87
		B		0.000	0.000	184.436	0.000	2.93
		C		0.000	0.000	121.518	0.000	1.90

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
T7	180.00-160.00	A	2.209	0.000	0.000	168.339	0.000	2.76
		B		0.000	0.000	187.481	0.000	2.96
		C		0.000	0.000	120.582	0.000	1.87
T8	160.00-140.00	A	2.182	0.000	0.000	272.179	0.000	4.58
		B		0.000	0.000	202.229	0.000	3.18
		C		0.000	0.000	119.540	0.000	1.84
T9	140.00-120.00	A	2.151	0.000	0.000	297.213	0.000	4.97
		B		0.000	0.000	235.943	0.000	3.74
		C		0.000	0.000	132.415	0.000	1.99
T10	120.00-100.00	A	2.115	0.000	0.000	305.852	0.000	5.06
		B		0.000	0.000	239.938	0.000	3.78
		C		0.000	0.000	162.227	0.000	2.33
T11	100.00-80.00	A	2.073	0.000	0.000	314.313	0.000	5.14
		B		0.000	0.000	236.984	0.000	3.68
		C		0.000	0.000	176.354	0.000	2.51
T12	80.00-60.00	A	2.021	0.000	0.000	310.690	0.000	5.00
		B		0.000	0.000	233.369	0.000	3.56
		C		0.000	0.000	173.493	0.000	2.42
T13	60.00-40.00	A	1.955	0.000	0.000	313.511	0.000	4.94
		B		0.000	0.000	228.670	0.000	3.40
		C		0.000	0.000	169.775	0.000	2.32
T14	40.00-20.00	A	1.857	0.000	0.000	308.785	0.000	4.71
		B		0.000	0.000	221.836	0.000	3.18
		C		0.000	0.000	164.367	0.000	2.16
T15	20.00-0.00	A	1.664	0.000	0.000	294.443	0.000	4.20
		B		0.000	0.000	208.286	0.000	2.77
		C		0.000	0.000	153.644	0.000	1.88

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	280.00-260.00	2.3610	2.6069	2.5024	2.7519
T2	260.00-240.00	5.1540	4.6798	5.1301	4.2584
T3	240.00-220.00	5.0091	5.4875	4.6553	5.2370
T4	220.00-210.00	5.9769	6.7815	5.6245	6.6282
T5	210.00-200.00	5.9461	6.8457	5.6710	6.8622
T6	200.00-180.00	3.3103	8.9761	4.5783	8.0494
T7	180.00-160.00	0.5278	9.7981	3.3799	8.7338
T8	160.00-140.00	-0.9042	3.5628	2.1780	4.9719
T9	140.00-120.00	-1.0031	0.8558	2.1566	3.3462
T10	120.00-100.00	-1.9282	1.8456	1.5368	3.9847
T11	100.00-80.00	-2.8941	2.4634	0.4536	4.6974
T12	80.00-60.00	-2.9694	2.5470	0.4459	4.8521
T13	60.00-40.00	-3.3368	2.7361	0.0139	5.0749
T14	40.00-20.00	-3.5776	2.9051	-0.1877	5.1686
T15	20.00-0.00	-3.7380	3.0512	-0.3447	4.9652

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	Safety Line 3/8	260.00 - 280.00	0.6000	0.5359
T1	2	Lighting	260.00 - 280.00	0.6000	0.5359
T1	11	1 5/8	260.00 - 280.00	0.6000	0.5359
T1	12	7/8	260.00 - 265.00	0.6000	0.5359
T1	17	EW63	260.00 - 276.00	0.6000	0.5359
T1	18	EW63	260.00 - 266.00	0.6000	0.5359
T1	27	7/8	260.00 - 280.00	0.6000	0.5359
T1	34	EW63	260.00 - 276.00	0.6000	0.5359
T2	1	Safety Line 3/8	240.00 - 260.00	0.6000	0.6000
T2	2	Lighting	240.00 - 260.00	0.6000	0.6000
T2	11	1 5/8	240.00 - 260.00	0.6000	0.6000
T2	12	7/8	240.00 - 260.00	0.6000	0.6000
T2	17	EW63	240.00 - 260.00	0.6000	0.6000
T2	18	EW63	240.00 - 260.00	0.6000	0.6000
T2	22	7/8	240.00 - 255.00	0.6000	0.6000
T2	23	1/2	240.00 - 260.00	0.6000	0.6000
T2	24	1 5/8	240.00 - 260.00	0.6000	0.6000
T2	27	7/8	240.00 - 260.00	0.6000	0.6000
T2	34	EW63	240.00 - 260.00	0.6000	0.6000
T3	1	Safety Line 3/8	220.00 - 240.00	0.6000	0.5988
T3	2	Lighting	220.00 - 240.00	0.6000	0.5988
T3	8	1 5/8	220.00 - 235.00	0.6000	0.5988
T3	11	1 5/8	220.00 - 240.00	0.6000	0.5988
T3	12	7/8	220.00 - 240.00	0.6000	0.5988
T3	17	EW63	220.00 - 240.00	0.6000	0.5988
T3	18	EW63	220.00 - 240.00	0.6000	0.5988
T3	21	7/8	220.00 - 240.00	0.6000	0.5988
T3	22	7/8	220.00 - 240.00	0.6000	0.5988
T3	23	1/2	220.00 - 240.00	0.6000	0.5988
T3	24	1 5/8	220.00 - 240.00	0.6000	0.5988
T3	25	7/8	220.00 - 230.00	0.6000	0.5988

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T3	27	7/8	220.00 - 240.00	0.6000	0.5988
T3	30	1/2	220.00 - 235.00	0.6000	0.5988
T3	34	EW63	220.00 - 240.00	0.6000	0.5988
T3	35	WE65	220.00 - 240.00	0.6000	0.5988
T3	36	EW63	220.00 - 230.00	0.6000	0.5988
T4	1	Safety Line 3/8	210.00 - 220.00	0.6000	0.6000
T4	2	Lighting	210.00 - 220.00	0.6000	0.6000
T4	8	1 5/8	210.00 - 220.00	0.6000	0.6000
T4	11	1 5/8	210.00 - 220.00	0.6000	0.6000
T4	12	7/8	210.00 - 220.00	0.6000	0.6000
T4	13	7/8	210.00 - 215.00	0.6000	0.6000
T4	17	EW63	210.00 - 220.00	0.6000	0.6000
T4	18	EW63	210.00 - 220.00	0.6000	0.6000
T4	19	EW63	210.00 - 220.00	0.6000	0.6000
T4	21	7/8	210.00 - 220.00	0.6000	0.6000
T4	22	7/8	210.00 - 220.00	0.6000	0.6000
T4	23	1/2	210.00 - 220.00	0.6000	0.6000
T4	24	1 5/8	210.00 - 220.00	0.6000	0.6000
T4	25	7/8	210.00 - 220.00	0.6000	0.6000
T4	26	7/8	210.00 - 216.00	0.6000	0.6000
T4	27	7/8	210.00 - 220.00	0.6000	0.6000
T4	30	1/2	210.00 - 220.00	0.6000	0.6000
T4	34	EW63	210.00 - 220.00	0.6000	0.6000
T4	35	WE65	210.00 - 220.00	0.6000	0.6000
T4	36	EW63	210.00 - 220.00	0.6000	0.6000
T5	1	Safety Line 3/8	200.00 - 210.00	0.6000	0.6000
T5	2	Lighting	200.00 - 210.00	0.6000	0.6000
T5	8	1 5/8	200.00 - 210.00	0.6000	0.6000
T5	11	1 5/8	200.00 - 210.00	0.6000	0.6000
T5	12	7/8	200.00 - 210.00	0.6000	0.6000
T5	13	7/8	200.00 - 210.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T5	17	EW63	200.00 - 210.00	0.6000	0.6000
T5	18	EW63	200.00 - 210.00	0.6000	0.6000
T5	19	EW63	200.00 - 210.00	0.6000	0.6000
T5	21	7/8	200.00 - 210.00	0.6000	0.6000
T5	22	7/8	200.00 - 210.00	0.6000	0.6000
T5	23	1/2	200.00 - 210.00	0.6000	0.6000
T5	24	1 5/8	200.00 - 210.00	0.6000	0.6000
T5	25	7/8	200.00 - 210.00	0.6000	0.6000
T5	26	7/8	200.00 - 210.00	0.6000	0.6000
T5	27	7/8	200.00 - 210.00	0.6000	0.6000
T5	30	1/2	200.00 - 210.00	0.6000	0.6000
T5	34	EW63	200.00 - 210.00	0.6000	0.6000
T5	35	WE65	200.00 - 210.00	0.6000	0.6000
T5	36	EW63	200.00 - 210.00	0.6000	0.6000
T5	37	EW63	200.00 - 205.50	0.6000	0.6000
T6	1	Safety Line 3/8	180.00 - 200.00	0.6000	0.6000
T6	2	Lighting	180.00 - 200.00	0.6000	0.6000
T6	5	EW63	180.00 - 195.00	0.6000	0.6000
T6	8	1 5/8	180.00 - 200.00	0.6000	0.6000
T6	9	1 5/8	180.00 - 200.00	0.6000	0.6000
T6	11	1 5/8	180.00 - 200.00	0.6000	0.6000
T6	12	7/8	180.00 - 200.00	0.6000	0.6000
T6	13	7/8	180.00 - 200.00	0.6000	0.6000
T6	17	EW63	180.00 - 200.00	0.6000	0.6000
T6	18	EW63	180.00 - 200.00	0.6000	0.6000
T6	19	EW63	180.00 - 200.00	0.6000	0.6000
T6	21	7/8	180.00 - 200.00	0.6000	0.6000
T6	22	7/8	180.00 - 200.00	0.6000	0.6000
T6	23	1/2	180.00 - 200.00	0.6000	0.6000
T6	24	1 5/8	180.00 - 200.00	0.6000	0.6000
T6	25	7/8	180.00 - 200.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	26	7/8	180.00 - 200.00	0.6000	0.6000
T6	27	7/8	180.00 - 200.00	0.6000	0.6000
T6	30	1/2	180.00 - 200.00	0.6000	0.6000
T6	32	1/2	180.00 - 200.00	0.6000	0.6000
T6	34	EW63	180.00 - 200.00	0.6000	0.6000
T6	35	WE65	180.00 - 200.00	0.6000	0.6000
T6	36	EW63	180.00 - 200.00	0.6000	0.6000
T6	37	EW63	180.00 - 200.00	0.6000	0.6000
T7	1	Safety Line 3/8	160.00 - 180.00	0.6000	0.6000
T7	2	Lighting	160.00 - 180.00	0.6000	0.6000
T7	5	EW63	160.00 - 180.00	0.6000	0.6000
T7	6	EW63	160.00 - 163.00	0.6000	0.6000
T7	8	1 5/8	160.00 - 180.00	0.6000	0.6000
T7	9	1 5/8	160.00 - 180.00	0.6000	0.6000
T7	10	1 5/8	160.00 - 175.00	0.6000	0.6000
T7	11	1 5/8	160.00 - 180.00	0.6000	0.6000
T7	12	7/8	160.00 - 180.00	0.6000	0.6000
T7	13	7/8	160.00 - 180.00	0.6000	0.6000
T7	17	EW63	160.00 - 180.00	0.6000	0.6000
T7	18	EW63	160.00 - 180.00	0.6000	0.6000
T7	19	EW63	160.00 - 180.00	0.6000	0.6000
T7	20	7/8	160.00 - 168.00	0.6000	0.6000
T7	21	7/8	160.00 - 180.00	0.6000	0.6000
T7	22	7/8	160.00 - 180.00	0.6000	0.6000
T7	23	1/2	160.00 - 180.00	0.6000	0.6000
T7	24	1 5/8	160.00 - 180.00	0.6000	0.6000
T7	25	7/8	160.00 - 180.00	0.6000	0.6000
T7	26	7/8	160.00 - 180.00	0.6000	0.6000
T7	27	7/8	160.00 - 180.00	0.6000	0.6000
T7	30	1/2	160.00 - 180.00	0.6000	0.6000
T7	31	1/2	160.00 - 175.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T7	32	1/2	160.00 - 180.00	0.6000	0.6000
T7	34	EW63	160.00 - 180.00	0.6000	0.6000
T7	35	WE65	160.00 - 180.00	0.6000	0.6000
T7	36	EW63	160.00 - 180.00	0.6000	0.6000
T7	37	EW63	160.00 - 180.00	0.6000	0.6000
T8	1	Safety Line 3/8	140.00 - 160.00	0.6000	0.6000
T8	2	Lighting	140.00 - 160.00	0.6000	0.6000
T8	3	1 5/8	140.00 - 155.00	0.6000	0.6000
T8	4	HYBRIFLEX 1-1/4"	140.00 - 155.00	0.6000	0.6000
T8	5	EW63	140.00 - 160.00	0.6000	0.6000
T8	6	EW63	140.00 - 160.00	0.6000	0.6000
T8	8	1 5/8	140.00 - 160.00	0.6000	0.6000
T8	9	1 5/8	140.00 - 160.00	0.6000	0.6000
T8	10	1 5/8	140.00 - 160.00	0.6000	0.6000
T8	11	1 5/8	140.00 - 160.00	0.6000	0.6000
T8	12	7/8	140.00 - 160.00	0.6000	0.6000
T8	13	7/8	140.00 - 160.00	0.6000	0.6000
T8	17	EW63	140.00 - 160.00	0.6000	0.6000
T8	18	EW63	140.00 - 160.00	0.6000	0.6000
T8	19	EW63	140.00 - 160.00	0.6000	0.6000
T8	20	7/8	140.00 - 160.00	0.6000	0.6000
T8	21	7/8	140.00 - 160.00	0.6000	0.6000
T8	22	7/8	140.00 - 160.00	0.6000	0.6000
T8	23	1/2	140.00 - 160.00	0.6000	0.6000
T8	24	1 5/8	140.00 - 160.00	0.6000	0.6000
T8	25	7/8	140.00 - 160.00	0.6000	0.6000
T8	26	7/8	140.00 - 160.00	0.6000	0.6000
T8	27	7/8	140.00 - 160.00	0.6000	0.6000
T8	30	1/2	140.00 - 160.00	0.6000	0.6000
T8	31	1/2	140.00 - 160.00	0.6000	0.6000
T8	32	1/2	140.00 - 160.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T8	34	EW63	140.00 - 160.00	0.6000	0.6000
T8	35	WE65	140.00 - 160.00	0.6000	0.6000
T8	36	EW63	140.00 - 160.00	0.6000	0.6000
T8	37	EW63	140.00 - 160.00	0.6000	0.6000
T8	38	HYBRIFLEX 1-5/8"	140.00 - 145.00	0.6000	0.6000
T9	1	Safety Line 3/8	120.00 - 140.00	0.6000	0.6000
T9	2	Lighting	120.00 - 140.00	0.6000	0.6000
T9	3	1 5/8	120.00 - 140.00	0.6000	0.6000
T9	4	HYBRIFLEX 1-1/4"	120.00 - 140.00	0.6000	0.6000
T9	5	EW63	120.00 - 140.00	0.6000	0.6000
T9	6	EW63	120.00 - 140.00	0.6000	0.6000
T9	8	1 5/8	120.00 - 140.00	0.6000	0.6000
T9	9	1 5/8	120.00 - 140.00	0.6000	0.6000
T9	10	1 5/8	120.00 - 140.00	0.6000	0.6000
T9	11	1 5/8	120.00 - 140.00	0.6000	0.6000
T9	12	7/8	120.00 - 140.00	0.6000	0.6000
T9	13	7/8	120.00 - 140.00	0.6000	0.6000
T9	14	7/8	120.00 - 130.00	0.6000	0.6000
T9	17	EW63	120.00 - 140.00	0.6000	0.6000
T9	18	EW63	120.00 - 140.00	0.6000	0.6000
T9	19	EW63	120.00 - 140.00	0.6000	0.6000
T9	20	7/8	120.00 - 140.00	0.6000	0.6000
T9	21	7/8	120.00 - 140.00	0.6000	0.6000
T9	22	7/8	120.00 - 140.00	0.6000	0.6000
T9	23	1/2	120.00 - 140.00	0.6000	0.6000
T9	24	1 5/8	120.00 - 140.00	0.6000	0.6000
T9	25	7/8	120.00 - 140.00	0.6000	0.6000
T9	26	7/8	120.00 - 140.00	0.6000	0.6000
T9	27	7/8	120.00 - 140.00	0.6000	0.6000
T9	30	1/2	120.00 - 140.00	0.6000	0.6000
T9	31	1/2	120.00 - 140.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	32	1/2	120.00 - 140.00	0.6000	0.6000
T9	33	E60	120.00 - 130.00	0.6000	0.6000
T9	34	EW63	120.00 - 140.00	0.6000	0.6000
T9	35	WE65	120.00 - 140.00	0.6000	0.6000
T9	36	EW63	120.00 - 140.00	0.6000	0.6000
T9	37	EW63	120.00 - 140.00	0.6000	0.6000
T9	38	HYBRIFLEX 1-5/8"	120.00 - 140.00	0.6000	0.6000
T10	1	Safety Line 3/8	100.00 - 120.00	0.6000	0.6000
T10	2	Lighting	100.00 - 120.00	0.6000	0.6000
T10	3	1 5/8	100.00 - 120.00	0.6000	0.6000
T10	4	HYBRIFLEX 1-1/4"	100.00 - 120.00	0.6000	0.6000
T10	5	EW63	100.00 - 120.00	0.6000	0.6000
T10	6	EW63	100.00 - 120.00	0.6000	0.6000
T10	7	EW63	100.00 - 104.00	0.6000	0.6000
T10	8	1 5/8	100.00 - 120.00	0.6000	0.6000
T10	9	1 5/8	100.00 - 120.00	0.6000	0.6000
T10	10	1 5/8	100.00 - 120.00	0.6000	0.6000
T10	11	1 5/8	100.00 - 120.00	0.6000	0.6000
T10	12	7/8	100.00 - 120.00	0.6000	0.6000
T10	13	7/8	100.00 - 120.00	0.6000	0.6000
T10	14	7/8	100.00 - 120.00	0.6000	0.6000
T10	15	7/8	100.00 - 115.00	0.6000	0.6000
T10	17	EW63	100.00 - 120.00	0.6000	0.6000
T10	18	EW63	100.00 - 120.00	0.6000	0.6000
T10	19	EW63	100.00 - 120.00	0.6000	0.6000
T10	20	7/8	100.00 - 120.00	0.6000	0.6000
T10	21	7/8	100.00 - 120.00	0.6000	0.6000
T10	22	7/8	100.00 - 120.00	0.6000	0.6000
T10	23	1/2	100.00 - 120.00	0.6000	0.6000
T10	24	1 5/8	100.00 - 120.00	0.6000	0.6000
T10	25	7/8	100.00 - 120.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T10	26	7/8	100.00 - 120.00	0.6000	0.6000
T10	27	7/8	100.00 - 120.00	0.6000	0.6000
T10	28	7/8	100.00 - 116.00	0.6000	0.6000
T10	30	1/2	100.00 - 120.00	0.6000	0.6000
T10	31	1/2	100.00 - 120.00	0.6000	0.6000
T10	32	1/2	100.00 - 120.00	0.6000	0.6000
T10	33	E60	100.00 - 120.00	0.6000	0.6000
T10	34	EW63	100.00 - 120.00	0.6000	0.6000
T10	35	WE65	100.00 - 120.00	0.6000	0.6000
T10	36	EW63	100.00 - 120.00	0.6000	0.6000
T10	37	EW63	100.00 - 120.00	0.6000	0.6000
T10	38	HYBRIFLEX 1-5/8"	100.00 - 120.00	0.6000	0.6000
T11	1	Safety Line 3/8	80.00 - 100.00	0.6000	0.6000
T11	2	Lighting	80.00 - 100.00	0.6000	0.6000
T11	3	1 5/8	80.00 - 100.00	0.6000	0.6000
T11	4	HYBRIFLEX 1-1/4"	80.00 - 100.00	0.6000	0.6000
T11	5	EW63	80.00 - 100.00	0.6000	0.6000
T11	6	EW63	80.00 - 100.00	0.6000	0.6000
T11	7	EW63	80.00 - 100.00	0.6000	0.6000
T11	8	1 5/8	80.00 - 100.00	0.6000	0.6000
T11	9	1 5/8	80.00 - 100.00	0.6000	0.6000
T11	10	1 5/8	80.00 - 100.00	0.6000	0.6000
T11	11	1 5/8	80.00 - 100.00	0.6000	0.6000
T11	12	7/8	80.00 - 100.00	0.6000	0.6000
T11	13	7/8	80.00 - 100.00	0.6000	0.6000
T11	14	7/8	80.00 - 100.00	0.6000	0.6000
T11	15	7/8	80.00 - 100.00	0.6000	0.6000
T11	16	7/8	80.00 - 100.00	0.6000	0.6000
T11	17	EW63	80.00 - 100.00	0.6000	0.6000
T11	18	EW63	80.00 - 100.00	0.6000	0.6000
T11	19	EW63	80.00 - 100.00	0.6000	0.6000
T11	20	7/8	80.00 - 100.00	0.6000	0.6000
T11	21	7/8	80.00 - 100.00	0.6000	0.6000
T11	22	7/8	80.00 - 100.00	0.6000	0.6000
T11	23	1/2	80.00 - 100.00	0.6000	0.6000
T11	24	1 5/8	80.00 - 100.00	0.6000	0.6000
T11	25	7/8	80.00 - 100.00	0.6000	0.6000
T11	26	7/8	80.00 - 100.00	0.6000	0.6000
T11	27	7/8	80.00 - 100.00	0.6000	0.6000
T11	28	7/8	80.00 - 100.00	0.6000	0.6000
T11	30	1/2	80.00 - 100.00	0.6000	0.6000
T11	31	1/2	80.00 - 100.00	0.6000	0.6000
T11	32	1/2	80.00 - 100.00	0.6000	0.6000
T11	33	E60	80.00 - 100.00	0.6000	0.6000
T11	34	EW63	80.00 - 100.00	0.6000	0.6000
T11	35	WE65	80.00 - 100.00	0.6000	0.6000
T11	36	EW63	80.00 - 100.00	0.6000	0.6000
T11	37	EW63	80.00 - 100.00	0.6000	0.6000
T11	38	HYBRIFLEX 1-5/8"	80.00 - 100.00	0.6000	0.6000
T12	1	Safety Line 3/8	60.00 - 80.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T12	2	Lighting	60.00 - 80.00	0.6000	0.6000
T12	3	1 5/8	60.00 - 80.00	0.6000	0.6000
T12	4	HYBRIFLEX 1-1/4"	60.00 - 80.00	0.6000	0.6000
T12	5	EW63	60.00 - 80.00	0.6000	0.6000
T12	6	EW63	60.00 - 80.00	0.6000	0.6000
T12	7	EW63	60.00 - 80.00	0.6000	0.6000
T12	8	1 5/8	60.00 - 80.00	0.6000	0.6000
T12	9	1 5/8	60.00 - 80.00	0.6000	0.6000
T12	10	1 5/8	60.00 - 80.00	0.6000	0.6000
T12	11	1 5/8	60.00 - 80.00	0.6000	0.6000
T12	12	7/8	60.00 - 80.00	0.6000	0.6000
T12	13	7/8	60.00 - 80.00	0.6000	0.6000
T12	14	7/8	60.00 - 80.00	0.6000	0.6000
T12	15	7/8	60.00 - 80.00	0.6000	0.6000
T12	16	7/8	60.00 - 80.00	0.6000	0.6000
T12	17	EW63	60.00 - 80.00	0.6000	0.6000
T12	18	EW63	60.00 - 80.00	0.6000	0.6000
T12	19	EW63	60.00 - 80.00	0.6000	0.6000
T12	20	7/8	60.00 - 80.00	0.6000	0.6000
T12	21	7/8	60.00 - 80.00	0.6000	0.6000
T12	22	7/8	60.00 - 80.00	0.6000	0.6000
T12	23	1/2	60.00 - 80.00	0.6000	0.6000
T12	24	1 5/8	60.00 - 80.00	0.6000	0.6000
T12	25	7/8	60.00 - 80.00	0.6000	0.6000
T12	26	7/8	60.00 - 80.00	0.6000	0.6000
T12	27	7/8	60.00 - 80.00	0.6000	0.6000
T12	28	7/8	60.00 - 80.00	0.6000	0.6000
T12	30	1/2	60.00 - 80.00	0.6000	0.6000
T12	31	1/2	60.00 - 80.00	0.6000	0.6000
T12	32	1/2	60.00 - 80.00	0.6000	0.6000
T12	33	E60	60.00 - 80.00	0.6000	0.6000
T12	34	EW63	60.00 - 80.00	0.6000	0.6000
T12	35	WE65	60.00 - 80.00	0.6000	0.6000
T12	36	EW63	60.00 - 80.00	0.6000	0.6000
T12	37	EW63	60.00 - 80.00	0.6000	0.6000
T12	38	HYBRIFLEX 1-5/8"	60.00 - 80.00	0.6000	0.6000
T13	1	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
T13	2	Lighting	40.00 - 60.00	0.6000	0.6000
T13	3	1 5/8	40.00 - 60.00	0.6000	0.6000
T13	4	HYBRIFLEX 1-1/4"	40.00 - 60.00	0.6000	0.6000
T13	5	EW63	40.00 - 60.00	0.6000	0.6000
T13	6	EW63	40.00 - 60.00	0.6000	0.6000
T13	7	EW63	40.00 - 60.00	0.6000	0.6000
T13	8	1 5/8	40.00 - 60.00	0.6000	0.6000
T13	9	1 5/8	40.00 - 60.00	0.6000	0.6000
T13	10	1 5/8	40.00 - 60.00	0.6000	0.6000
T13	11	1 5/8	40.00 - 60.00	0.6000	0.6000
T13	12	7/8	40.00 - 60.00	0.6000	0.6000
T13	13	7/8	40.00 - 60.00	0.6000	0.6000
T13	14	7/8	40.00 - 60.00	0.6000	0.6000
T13	15	7/8	40.00 - 60.00	0.6000	0.6000
T13	16	7/8	40.00 - 60.00	0.6000	0.6000
T13	17	EW63	40.00 - 60.00	0.6000	0.6000
T13	18	EW63	40.00 - 60.00	0.6000	0.6000
T13	19	EW63	40.00 - 60.00	0.6000	0.6000
T13	20	7/8	40.00 - 60.00	0.6000	0.6000
T13	21	7/8	40.00 - 60.00	0.6000	0.6000
T13	22	7/8	40.00 - 60.00	0.6000	0.6000
T13	23	1/2	40.00 - 60.00	0.6000	0.6000
T13	24	1 5/8	40.00 - 60.00	0.6000	0.6000
T13	25	7/8	40.00 - 60.00	0.6000	0.6000
T13	26	7/8	40.00 - 60.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T13	27	7/8	40.00 - 60.00	0.6000	0.6000
T13	28	7/8	40.00 - 60.00	0.6000	0.6000
T13	29	7/8	40.00 - 55.00	0.6000	0.6000
T13	30	1/2	40.00 - 60.00	0.6000	0.6000
T13	31	1/2	40.00 - 60.00	0.6000	0.6000
T13	32	1/2	40.00 - 60.00	0.6000	0.6000
T13	33	E60	40.00 - 60.00	0.6000	0.6000
T13	34	EW63	40.00 - 60.00	0.6000	0.6000
T13	35	WE65	40.00 - 60.00	0.6000	0.6000
T13	36	EW63	40.00 - 60.00	0.6000	0.6000
T13	37	EW63	40.00 - 60.00	0.6000	0.6000
T13	38	HYBRIFLEX 1-5/8"	40.00 - 60.00	0.6000	0.6000
T14	1	Safety Line 3/8	20.00 - 40.00	0.6000	0.6000
T14	2	Lighting	20.00 - 40.00	0.6000	0.6000
T14	3	1 5/8	20.00 - 40.00	0.6000	0.6000
T14	4	HYBRIFLEX 1-1/4"	20.00 - 40.00	0.6000	0.6000
T14	5	EW63	20.00 - 40.00	0.6000	0.6000
T14	6	EW63	20.00 - 40.00	0.6000	0.6000
T14	7	EW63	20.00 - 40.00	0.6000	0.6000
T14	8	1 5/8	20.00 - 40.00	0.6000	0.6000
T14	9	1 5/8	20.00 - 40.00	0.6000	0.6000
T14	10	1 5/8	20.00 - 40.00	0.6000	0.6000
T14	11	1 5/8	20.00 - 40.00	0.6000	0.6000
T14	12	7/8	20.00 - 40.00	0.6000	0.6000
T14	13	7/8	20.00 - 40.00	0.6000	0.6000
T14	14	7/8	20.00 - 40.00	0.6000	0.6000
T14	15	7/8	20.00 - 40.00	0.6000	0.6000
T14	16	7/8	20.00 - 40.00	0.6000	0.6000
T14	17	EW63	20.00 - 40.00	0.6000	0.6000
T14	18	EW63	20.00 - 40.00	0.6000	0.6000
T14	19	EW63	20.00 - 40.00	0.6000	0.6000
T14	20	7/8	20.00 - 40.00	0.6000	0.6000
T14	21	7/8	20.00 - 40.00	0.6000	0.6000
T14	22	7/8	20.00 - 40.00	0.6000	0.6000
T14	23	1/2	20.00 - 40.00	0.6000	0.6000
T14	24	1 5/8	20.00 - 40.00	0.6000	0.6000
T14	25	7/8	20.00 - 40.00	0.6000	0.6000
T14	26	7/8	20.00 - 40.00	0.6000	0.6000
T14	27	7/8	20.00 - 40.00	0.6000	0.6000
T14	28	7/8	20.00 - 40.00	0.6000	0.6000
T14	29	7/8	20.00 - 40.00	0.6000	0.6000
T14	30	1/2	20.00 - 40.00	0.6000	0.6000
T14	31	1/2	20.00 - 40.00	0.6000	0.6000
T14	32	1/2	20.00 - 40.00	0.6000	0.6000
T14	33	E60	20.00 - 40.00	0.6000	0.6000
T14	34	EW63	20.00 - 40.00	0.6000	0.6000
T14	35	WE65	20.00 - 40.00	0.6000	0.6000
T14	36	EW63	20.00 - 40.00	0.6000	0.6000
T14	37	EW63	20.00 - 40.00	0.6000	0.6000
T14	38	HYBRIFLEX 1-5/8"	20.00 - 40.00	0.6000	0.6000
T15	1	Safety Line 3/8	0.00 - 20.00	0.6000	0.6000
T15	2	Lighting	0.00 - 20.00	0.6000	0.6000
T15	3	1 5/8	0.00 - 20.00	0.6000	0.6000
T15	4	HYBRIFLEX 1-1/4"	0.00 - 20.00	0.6000	0.6000
T15	5	EW63	0.00 - 20.00	0.6000	0.6000
T15	6	EW63	0.00 - 20.00	0.6000	0.6000
T15	7	EW63	0.00 - 20.00	0.6000	0.6000
T15	8	1 5/8	0.00 - 20.00	0.6000	0.6000
T15	9	1 5/8	0.00 - 20.00	0.6000	0.6000
T15	10	1 5/8	0.00 - 20.00	0.6000	0.6000
T15	11	1 5/8	0.00 - 20.00	0.6000	0.6000
T15	12	7/8	0.00 - 20.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T15	13	7/8	0.00 - 20.00	0.6000	0.6000
T15	14	7/8	0.00 - 20.00	0.6000	0.6000
T15	15	7/8	0.00 - 20.00	0.6000	0.6000
T15	16	7/8	0.00 - 20.00	0.6000	0.6000
T15	17	EW63	0.00 - 20.00	0.6000	0.6000
T15	18	EW63	0.00 - 20.00	0.6000	0.6000
T15	19	EW63	0.00 - 20.00	0.6000	0.6000
T15	20	7/8	0.00 - 20.00	0.6000	0.6000
T15	21	7/8	0.00 - 20.00	0.6000	0.6000
T15	22	7/8	0.00 - 20.00	0.6000	0.6000
T15	23	1/2	0.00 - 20.00	0.6000	0.6000
T15	24	1 5/8	0.00 - 20.00	0.6000	0.6000
T15	25	7/8	0.00 - 20.00	0.6000	0.6000
T15	26	7/8	0.00 - 20.00	0.6000	0.6000
T15	27	7/8	0.00 - 20.00	0.6000	0.6000
T15	28	7/8	0.00 - 20.00	0.6000	0.6000
T15	29	7/8	0.00 - 20.00	0.6000	0.6000
T15	30	1/2	0.00 - 20.00	0.6000	0.6000
T15	31	1/2	0.00 - 20.00	0.6000	0.6000
T15	32	1/2	0.00 - 20.00	0.6000	0.6000
T15	33	E60	0.00 - 20.00	0.6000	0.6000
T15	34	EW63	0.00 - 20.00	0.6000	0.6000
T15	35	WE65	0.00 - 20.00	0.6000	0.6000
T15	36	EW63	0.00 - 20.00	0.6000	0.6000
T15	37	EW63	0.00 - 20.00	0.6000	0.6000
T15	38	HYBRIFLEX 1-5/8"	0.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Beacon Extender (4') 803062	B	From Leg	0.00	0.0000	280.00	No Ice	1.11	1.11	0.03
			0.00			1/2" Ice	1.32	1.32	0.04
			2.00			1" Ice	1.54	1.53	0.05
Beacon	B	From Leg	0.00	0.0000	280.00	No Ice	2.40	2.40	0.07
			0.00			1/2" Ice	2.67	2.67	0.10
			4.00			1" Ice	2.96	2.96	0.12
DB538 (Eversource)	B	From Leg	0.00	0.0000	279.00	No Ice	2.25	2.25	0.01
			0.00			1/2" Ice	4.46	4.46	0.02
			7.00			1" Ice	6.69	6.69	0.03
DB589-Y (Eversource)	B	From Leg	6.00	0.0000	260.00	No Ice	1.83	1.83	0.01
			0.00			1/2" Ice	2.75	2.75	0.03
			5.00			1" Ice	3.67	3.67	0.05
DB589-Y (Eversource)	B	From Leg	6.00	0.0000	260.00	No Ice	1.83	1.83	0.01
			0.00			1/2" Ice	2.75	2.75	0.03
			-5.00			1" Ice	3.67	3.67	0.05
TMA (12"x16"x6"") (Eversource)	B	From Leg	6.00	0.0000	260.00	No Ice	2.53	1.20	0.02
			0.00			1/2" Ice	2.71	1.33	0.04
			0.00			1" Ice	2.89	1.46	0.06
6' Pivot Side Arm (50" pipe)	B	From Leg	3.00	0.0000	260.00	No Ice	1.91	3.93	0.13

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
(Eversource)			0.00			1/2" Ice	2.67	4.99	0.17
			0.00			1" Ice	3.20	5.86	0.22
SD110-SFXPASNM	B	From Leg	6.00	0.0000	241.00	No Ice	2.43	2.43	0.03
(Eversource)			0.00			1/2" Ice	4.46	4.46	0.04
			8.00			1" Ice	6.51	6.51	0.05
6' Pivot Side Arm (50" pipe)	B	From Leg	3.00	0.0000	241.00	No Ice	1.91	3.93	0.13
(Eversource)			0.00			1/2" Ice	2.67	4.99	0.17
			0.00			1" Ice	3.20	5.86	0.22
ANT450F10	B	From Leg	0.00	0.0000	216.00	No Ice	5.59	5.59	0.04
(VSC)			0.00			1/2" Ice	7.63	7.63	0.08
			10.00			1" Ice	9.66	9.66	0.13
6' Pivot Side Arm (50" pipe)	B	From Leg	3.00	0.0000	216.00	No Ice	1.91	3.93	0.13
(VSC)			0.00			1/2" Ice	2.67	4.99	0.17
			0.00			1" Ice	3.20	5.86	0.22
TMA (12"x16"x6"")	B	From Leg	6.00	0.0000	200.00	No Ice	2.53	1.20	0.02
(CSP)			0.00			1/2" Ice	2.71	1.33	0.04
			0.00			1" Ice	2.89	1.46	0.06
SC479	B	From Leg	6.00	0.0000	200.00	No Ice	4.23	4.23	0.03
(CSP)			0.00			1/2" Ice	6.54	6.54	0.07
			7.00			1" Ice	8.04	8.04	0.11
SC479	B	From Leg	6.00	0.0000	200.00	No Ice	4.23	4.23	0.03
(CSP)			0.00			1/2" Ice	6.54	6.54	0.07
			-7.00			1" Ice	8.04	8.04	0.11
6' Pivot Side Arm (50" pipe)	B	From Leg	3.00	0.0000	200.00	No Ice	1.91	3.93	0.13
(CSP)			0.00			1/2" Ice	2.67	4.99	0.17
			0.00			1" Ice	3.20	5.86	0.22
SC479	B	From Leg	6.00	0.0000	200.00	No Ice	4.23	4.23	0.03
(CSP)			0.00			1/2" Ice	6.54	6.54	0.07
			-7.00			1" Ice	8.04	8.04	0.11
3' Pivot Side Arm (50" pipe)	B	From Leg	1.50	0.0000	200.00	No Ice	1.91	2.49	0.11
(CSP)			0.00			1/2" Ice	2.70	3.30	0.13
			0.00			1" Ice	3.27	3.97	0.17
SC479	B	From Leg	6.00	0.0000	175.00	No Ice	4.29	4.29	0.03
(CSP)			0.00			1/2" Ice	6.54	6.54	0.07
			7.00			1" Ice	8.04	8.04	0.11
SC479	B	From Leg	6.00	0.0000	175.00	No Ice	4.29	4.29	0.03
(CSP)			0.00			1/2" Ice	6.54	6.54	0.07
			-7.00			1" Ice	8.04	8.04	0.11
6' Pivot Side Arm (50" pipe)	B	From Leg	3.00	0.0000	175.00	No Ice	1.91	3.93	0.13
(CSP)			0.00			1/2" Ice	2.67	4.99	0.17
			0.00			1" Ice	3.20	5.86	0.22
PR-950	A	From Leg	3.00	0.0000	126.00	No Ice	6.35	6.35	0.04
(VSC)			0.00			1/2" Ice	11.43	11.43	0.05
			0.00			1" Ice	16.51	16.51	0.06
6' Pivot Side Arm (50" pipe)	A	From Leg	3.00	0.0000	126.00	No Ice	1.91	3.93	0.13
(VSC)			0.00			1/2" Ice	2.67	4.99	0.17
			0.00			1" Ice	3.20	5.86	0.22
ANT150F6 -138-151 MHZ	C	From Leg	0.00	0.0000	279.00	No Ice	5.87	5.87	0.03
(Eversource)			0.00			1/2" Ice	8.00	8.00	0.07
			10.00			1" Ice	10.13	10.13	0.13
DB212-1-C	C	From Leg	6.00	0.0000	255.00	No Ice	2.61	2.61	0.01
(Eversource)			0.00			1/2" Ice	5.38	5.38	0.03
			0.00			1" Ice	8.18	8.18	0.05
6' Pivot Side Arm (50" pipe)	C	From Leg	3.00	0.0000	255.00	No Ice	1.91	3.93	0.13
(Eversource)			0.00			1/2" Ice	2.67	4.99	0.17
			0.00			1" Ice	3.20	5.86	0.22
TMA (12"x16"x6"")	C	From Leg	6.00	0.0000	235.00	No Ice	2.53	1.20	0.02

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
(CSP)			0.00			1/2" Ice	2.71	1.33	0.04
			0.00			1" Ice	2.89	1.46	0.06
SE419-SF3P4LDF	C	From Leg	6.00	0.0000	235.00	No Ice	4.12	0.04	0.04
(CSP)			0.00			1/2" Ice	5.11	1.00	0.05
			5.00			1" Ice	6.08	1.97	0.07
SE419-SF3P4LDF	C	From Leg	6.00	0.0000	235.00	No Ice	4.12	0.04	0.04
(CSP)			0.00			1/2" Ice	5.11	1.00	0.05
			-5.00			1" Ice	6.08	1.97	0.07
6' Pivot Side Arm (50" pipe)	C	From Leg	3.00	0.0000	235.00	No Ice	1.91	3.93	0.13
(CSP)			0.00			1/2" Ice	2.67	4.99	0.17
			0.00			1" Ice	3.20	5.86	0.22
ANT900D6-9	C	From Leg	3.00	0.0000	200.00	No Ice	1.39	1.39	0.01
(CSP)			0.00			1/2" Ice	2.03	2.03	0.03
			5.00			1" Ice	2.69	2.69	0.05
3' Pivot Side Arm (50" pipe)	C	From Leg	1.50	0.0000	200.00	No Ice	1.91	2.49	0.11
(CSP)			0.00			1/2" Ice	2.70	3.30	0.13
			0.00			1" Ice	3.27	3.97	0.17
ANT450F6	C	From Leg	3.00	0.0000	168.00	No Ice	1.86	1.86	0.02
(Town of Haddam)			0.00			1/2" Ice	2.67	2.67	0.04
			5.00			1" Ice	3.30	3.30	0.05
3' Pivot Side Arm (50" pipe)	C	From Leg	1.50	0.0000	168.00	No Ice	1.91	2.49	0.11
(Town of Haddam)			0.00			1/2" Ice	2.70	3.30	0.13
			0.00			1" Ice	3.27	3.97	0.17
KRECO CO-36A	C	From Leg	0.00	0.0000	130.00	No Ice	5.87	5.87	0.03
(VSC)			0.00			1/2" Ice	8.00	8.00	0.07
			7.00			1" Ice	10.13	10.13	0.13
6' Pivot Side Arm (50" pipe)	C	From Leg	3.00	0.0000	130.00	No Ice	1.91	3.93	0.13
(VSC)			0.00			1/2" Ice	2.67	4.99	0.17
			0.00			1" Ice	3.20	5.86	0.22
3' Pivot Side Arm (50" pipe)	C	From Leg	1.50	0.0000	128.00	No Ice	1.91	2.49	0.11
(VSC)			0.00			1/2" Ice	2.70	3.30	0.13
			0.00			1" Ice	3.27	3.97	0.17
APXVTM14	A	From Leg	3.00	0.0000	155.00	No Ice	6.34	3.61	0.06
(Sprint - Proposed)			4.00			1/2" Ice	6.72	3.97	0.10
			0.00			1" Ice	7.10	4.33	0.14
NNVV-65B-R4	A	From Leg	3.00	0.0000	155.00	No Ice	14.61	9.17	0.11
(Sprint - Proposed)			-4.00			1/2" Ice	15.13	9.63	0.21
			0.00			1" Ice	15.65	10.11	0.32
APXVTM14	B	From Leg	3.00	0.0000	155.00	No Ice	6.34	3.61	0.06
(Sprint - Proposed)			4.00			1/2" Ice	6.72	3.97	0.10
			0.00			1" Ice	7.10	4.33	0.14
NNVV-65B-R4	B	From Leg	3.00	0.0000	155.00	No Ice	14.61	9.17	0.11
(Sprint - Proposed)			-4.00			1/2" Ice	15.13	9.63	0.21
			0.00			1" Ice	15.65	10.11	0.32
APXVTM14	C	From Leg	3.00	0.0000	155.00	No Ice	6.34	3.61	0.06
(Sprint - Proposed)			4.00			1/2" Ice	6.72	3.97	0.10
			0.00			1" Ice	7.10	4.33	0.14
NNVV-65B-R4	C	From Leg	3.00	0.0000	155.00	No Ice	14.61	9.17	0.11
(Sprint - Proposed)			-4.00			1/2" Ice	15.13	9.63	0.21
			0.00			1" Ice	15.65	10.11	0.32
TD-RRH8x20-25	A	From Leg	3.00	0.0000	155.00	No Ice	4.05	1.53	0.07
(Sprint - Proposed)			4.00			1/2" Ice	4.30	1.71	0.10
			0.00			1" Ice	4.56	1.90	0.13
TD-RRH8x20-25	B	From Leg	3.00	0.0000	155.00	No Ice	4.05	1.53	0.07
(Sprint - Proposed)			4.00			1/2" Ice	4.30	1.71	0.10
			0.00			1" Ice	4.56	1.90	0.13
TD-RRH8x20-25	C	From Leg	3.00	0.0000	155.00	No Ice	4.05	1.53	0.07

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
(Sprint - Proposed)			4.00			1/2" Ice	4.30	1.71	0.10
			0.00			1" Ice	4.56	1.90	0.13
FD-RRH 4x45 1900	A	From Leg	3.00	0.0000	155.00	No Ice	2.32	2.38	0.06
(Sprint - Proposed)			2.00			1/2" Ice	2.52	2.59	0.08
			0.00			1" Ice	2.74	2.80	0.11
FD-RRH 4x45 1900	B	From Leg	3.00	0.0000	155.00	No Ice	2.32	2.38	0.06
(Sprint - Proposed)			2.00			1/2" Ice	2.52	2.59	0.08
			0.00			1" Ice	2.74	2.80	0.11
FD-RRH 4x45 1900	C	From Leg	3.00	0.0000	155.00	No Ice	2.32	2.38	0.06
(Sprint - Proposed)			2.00			1/2" Ice	2.52	2.59	0.08
			0.00			1" Ice	2.74	2.80	0.11
(2) FD-RRH 2x50 800	A	From Leg	3.00	0.0000	155.00	No Ice	2.06	1.93	0.06
(Sprint - Proposed)			-4.00			1/2" Ice	2.24	2.11	0.09
			0.00			1" Ice	2.43	2.29	0.11
(2) FD-RRH 2x50 800	B	From Leg	3.00	0.0000	155.00	No Ice	2.06	1.93	0.06
(Sprint - Proposed)			-4.00			1/2" Ice	2.24	2.11	0.09
			0.00			1" Ice	2.43	2.29	0.11
(2) FD-RRH 2x50 800	C	From Leg	3.00	0.0000	155.00	No Ice	2.06	1.93	0.06
(Sprint - Proposed)			-4.00			1/2" Ice	2.24	2.11	0.09
			0.00			1" Ice	2.43	2.29	0.11
12' V Frame	A	From Leg	3.00	0.0000	155.00	No Ice	9.22	3.08	0.30
(Sprint)			0.00			1/2" Ice	12.97	6.17	0.39
			0.00			1" Ice	16.66	8.88	0.52
12' V Frame	C	From Leg	3.00	0.0000	155.00	No Ice	9.22	3.08	0.30
(Sprint)			0.00			1/2" Ice	12.97	6.17	0.39
			0.00			1" Ice	16.66	8.88	0.52
12' V Frame	B	From Leg	3.00	0.0000	155.00	No Ice	9.22	3.08	0.30
(Sprint)			0.00			1/2" Ice	12.97	6.17	0.39
			0.00			1" Ice	16.66	8.88	0.52
LNX-6515DS	A	From Leg	3.00	0.0000	145.00	No Ice	11.45	7.70	0.06
(Verizon)			-6.00			1/2" Ice	12.06	8.29	0.12
			0.00			1" Ice	12.69	8.89	0.19
HBXX-6517DS	A	From Leg	3.00	0.0000	145.00	No Ice	8.53	5.24	0.05
(Verizon)			-4.00			1/2" Ice	9.00	5.71	0.10
			0.00			1" Ice	9.48	6.18	0.16
LNX-6515DS	A	From Leg	3.00	0.0000	145.00	No Ice	11.45	7.70	0.06
(Verizon)			0.00			1/2" Ice	12.06	8.29	0.12
			0.00			1" Ice	12.69	8.89	0.19
HBXX-6517DS	A	From Leg	3.00	0.0000	145.00	No Ice	8.53	5.24	0.05
(Verizon)			4.00			1/2" Ice	9.00	5.71	0.10
			0.00			1" Ice	9.48	6.18	0.16
LNX-6515DS	B	From Leg	3.00	0.0000	145.00	No Ice	11.45	7.70	0.06
(Verizon)			-6.00			1/2" Ice	12.06	8.29	0.12
			0.00			1" Ice	12.69	8.89	0.19
HBXX-6517DS	B	From Leg	3.00	0.0000	145.00	No Ice	8.53	5.24	0.05
(Verizon)			-4.00			1/2" Ice	9.00	5.71	0.10
			0.00			1" Ice	9.48	6.18	0.16
LNX-6515DS	B	From Leg	3.00	0.0000	145.00	No Ice	11.45	7.70	0.06
(Verizon)			0.00			1/2" Ice	12.06	8.29	0.12
			0.00			1" Ice	12.69	8.89	0.19
HBXX-6517DS	B	From Leg	3.00	0.0000	145.00	No Ice	8.53	5.24	0.05
(Verizon)			4.00			1/2" Ice	9.00	5.71	0.10
			0.00			1" Ice	9.48	6.18	0.16
LNX-6515DS	C	From Leg	3.00	0.0000	145.00	No Ice	11.45	7.70	0.06
(Verizon)			-6.00			1/2" Ice	12.06	8.29	0.12
			0.00			1" Ice	12.69	8.89	0.19
HBXX-6517DS	C	From Leg	3.00	0.0000	145.00	No Ice	8.53	5.24	0.05

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
(Verizon)			-4.00			1/2" Ice	9.00	5.71	0.10
			0.00			1" Ice	9.48	6.18	0.16
LNX-6515DS	C	From Leg	3.00	0.0000	145.00	No Ice	11.45	7.70	0.06
(Verizon)			0.00			1/2" Ice	12.06	8.29	0.12
			0.00			1" Ice	12.69	8.89	0.19
HBXX-6517DS	C	From Leg	3.00	0.0000	145.00	No Ice	8.53	5.24	0.05
(Verizon)			4.00			1/2" Ice	9.00	5.71	0.10
			0.00			1" Ice	9.48	6.18	0.16
B25 RRH4x30	A	From Leg	3.00	0.0000	145.00	No Ice	2.11	1.29	0.06
(Verizon)			-4.00			1/2" Ice	2.30	1.45	0.07
			0.00			1" Ice	2.50	1.61	0.09
B25 RRH4x30	B	From Leg	3.00	0.0000	145.00	No Ice	2.11	1.29	0.06
(Verizon)			-4.00			1/2" Ice	2.30	1.45	0.07
			0.00			1" Ice	2.50	1.61	0.09
B25 RRH4x30	C	From Leg	3.00	0.0000	145.00	No Ice	2.11	1.29	0.06
(Verizon)			-4.00			1/2" Ice	2.30	1.45	0.07
			0.00			1" Ice	2.50	1.61	0.09
RRH4x30-B13	A	From Leg	3.00	0.0000	145.00	No Ice	2.16	1.62	0.06
(Verizon)			-4.00			1/2" Ice	2.35	1.79	0.08
			0.00			1" Ice	2.55	1.97	0.10
RRH4x30-B13	B	From Leg	3.00	0.0000	145.00	No Ice	2.16	1.62	0.06
(Verizon)			-4.00			1/2" Ice	2.35	1.79	0.08
			0.00			1" Ice	2.55	1.97	0.10
RRH4x30-B13	C	From Leg	3.00	0.0000	145.00	No Ice	2.16	1.62	0.06
(Verizon)			-4.00			1/2" Ice	2.35	1.79	0.08
			0.00			1" Ice	2.55	1.97	0.10
RRH4x45/2x90-AWS	A	From Leg	3.00	0.0000	145.00	No Ice	2.58	1.69	0.08
(Verizon)			-4.00			1/2" Ice	2.79	1.87	0.10
			0.00			1" Ice	3.01	2.06	0.12
RRH4x45/2x90-AWS	B	From Leg	3.00	0.0000	145.00	No Ice	2.58	1.69	0.08
(Verizon)			-4.00			1/2" Ice	2.79	1.87	0.10
			0.00			1" Ice	3.01	2.06	0.12
RRH4x45/2x90-AWS	C	From Leg	3.00	0.0000	145.00	No Ice	2.58	1.69	0.08
(Verizon)			-4.00			1/2" Ice	2.79	1.87	0.10
			0.00			1" Ice	3.01	2.06	0.12
DB-T1-6Z-8AB-0Z	A	From Leg	3.00	0.0000	145.00	No Ice	4.80	2.00	0.04
(Verizon)			0.00			1/2" Ice	5.07	2.19	0.08
			0.00			1" Ice	5.35	2.39	0.12
DB-T1-6Z-8AB-0Z	B	From Leg	3.00	0.0000	145.00	No Ice	4.80	2.00	0.04
(Verizon)			0.00			1/2" Ice	5.07	2.19	0.08
			0.00			1" Ice	5.35	2.39	0.12
DB-T1-6Z-8AB-0Z	B	From Leg	3.00	0.0000	145.00	No Ice	4.80	2.00	0.04
(Verizon)			0.00			1/2" Ice	5.07	2.19	0.08
			0.00			1" Ice	5.35	2.39	0.12
12' V Frame	A	From Leg	3.00	0.0000	145.00	No Ice	9.22	3.08	0.30
(Verizon)			0.00			1/2" Ice	12.97	6.17	0.39
			0.00			1" Ice	16.66	8.88	0.52
12' V Frame	B	From Leg	3.00	0.0000	145.00	No Ice	9.22	3.08	0.30
(Verizon)			0.00			1/2" Ice	12.97	6.17	0.39
			0.00			1" Ice	16.66	8.88	0.52
12' V Frame	C	From Leg	3.00	0.0000	145.00	No Ice	9.22	3.08	0.30
(Verizon)			0.00			1/2" Ice	12.97	6.17	0.39
			0.00			1" Ice	16.66	8.88	0.52
1142-2C	A	From Leg	0.00	0.0000	279.00	No Ice	2.09	2.09	0.02
(VSC)			0.00			1/2" Ice	3.37	3.37	0.04
			8.00			1" Ice	4.67	4.67	0.07
10' Dipole	A	From Leg	3.00	0.0000	261.00	No Ice	4.00	4.00	0.05

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
(VSC)			0.00			1/2" Ice	6.00	6.00	0.07
			5.00			1" Ice	8.00	8.00	0.10
6' Pivot Side Arm (50" pipe)	A	From Leg	3.00	0.0000	261.00	No Ice	1.91	3.93	0.13
(VSC)			0.00			1/2" Ice	2.67	4.99	0.17
			0.00			1" Ice	3.20	5.86	0.22
KRECO CO-36A	A	From Leg	0.00	0.0000	240.00	No Ice	5.87	5.87	0.03
(Eversource)			0.00			1/2" Ice	8.00	8.00	0.07
			7.00			1" Ice	10.13	10.13	0.13
6' Pivot Side Arm (50" pipe)	A	From Leg	3.00	0.0000	240.00	No Ice	1.91	3.93	0.13
(Eversource)			0.00			1/2" Ice	2.67	4.99	0.17
			0.00			1" Ice	3.20	5.86	0.22
531-70HD	A	From Leg	6.00	0.0000	230.00	No Ice	6.00	6.00	0.04
(Eversource)			0.00			1/2" Ice	6.90	6.90	0.05
			0.00			1" Ice	7.80	7.80	0.06
3' Pivot Side Arm (50" pipe)	A	From Leg	1.50	0.0000	230.00	No Ice	1.91	2.49	0.11
(Eversource)			0.00			1/2" Ice	2.70	3.30	0.13
			0.00			1" Ice	3.27	3.97	0.17
SD110-SFXPASNM	A	From Leg	6.00	0.0000	216.00	No Ice	2.43	2.43	0.03
(Eversource)			0.00			1/2" Ice	4.46	4.46	0.04
			0.00			1" Ice	6.51	6.51	0.05
6' Pivot Side Arm (50" pipe)	A	From Leg	3.00	0.0000	216.00	No Ice	1.91	3.93	0.13
(Eversource)			0.00			1/2" Ice	2.67	4.99	0.17
			0.00			1" Ice	3.20	5.86	0.22
BCR-80010-90	A	From Leg	6.00	0.0000	175.00	No Ice	4.86	4.86	0.04
(CSP)			0.00			1/2" Ice	5.99	5.99	0.07
			5.00			1" Ice	6.66	6.66	0.11
BCD-80609	A	From Leg	6.00	0.0000	175.00	No Ice	2.95	2.95	0.03
(CSP)			0.00			1/2" Ice	4.08	4.08	0.05
			-5.00			1" Ice	5.21	5.21	0.08
TMA (12"x16"x6"")	A	From Leg	6.00	0.0000	175.00	No Ice	2.53	1.20	0.02
(CSP)			0.00			1/2" Ice	2.71	1.33	0.04
			0.00			1" Ice	2.89	1.46	0.06
3' Pivot Side Arm (50" pipe)	A	From Leg	1.50	0.0000	175.00	No Ice	1.91	2.49	0.11
(CSP)			0.00			1/2" Ice	2.70	3.30	0.13
			0.00			1" Ice	3.27	3.97	0.17
ANT450F6	A	From Leg	6.00	0.0000	124.00	No Ice	1.86	1.86	0.02
(VSC)			0.00			1/2" Ice	2.67	2.67	0.04
			0.00			1" Ice	3.30	3.30	0.05
6' Pivot Side Arm (50" pipe)	A	From Leg	3.00	0.0000	124.00	No Ice	1.91	3.93	0.13
(VSC)			0.00			1/2" Ice	2.67	4.99	0.17
			0.00			1" Ice	3.20	5.86	0.22
BR-6155	A	From Leg	1.50	0.0000	116.00	No Ice	1.90	1.90	0.01
(VSC)			0.00			1/2" Ice	2.29	2.29	0.02
			3.00			1" Ice	2.68	2.68	0.04
ANT400D	A	From Leg	3.00	0.0000	116.00	No Ice	0.34	0.34	0.01
(CSP)			0.00			1/2" Ice	0.40	0.40	0.18
			-1.00			1" Ice	0.46	0.46	0.34
3' Pivot Side Arm (50" pipe)	A	From Leg	1.50	0.0000	116.00	No Ice	1.91	2.49	0.11
(VSC/CSP)			0.00			1/2" Ice	2.70	3.30	0.13
			0.00			1" Ice	3.27	3.97	0.17
BR-6155	A	From Leg	1.50	0.0000	97.00	No Ice	1.90	1.90	0.01
(VSC)			0.00			1/2" Ice	2.29	2.29	0.02
			3.00			1" Ice	2.68	2.68	0.04
3' Pivot Side Arm (50" pipe)	A	From Leg	1.50	0.0000	97.00	No Ice	1.91	2.49	0.11
(VSC)			0.00			1/2" Ice	2.70	3.30	0.13
			0.00			1" Ice	3.27	3.97	0.17
5-ft dipole	A	From Leg	3.00	0.0000	55.00	No Ice	2.70	2.70	0.01

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
(CSP)			0.00			1/2" Ice	4.50	4.50	0.03
			0.00			1" Ice	6.30	6.30	0.04
3' Pivot Side Arm (50" pipe)	A	From Leg	1.50	0.0000	55.00	No Ice	1.91	2.49	0.11
(CSP)			0.00			1/2" Ice	2.70	3.30	0.13
			0.00			1" Ice	3.27	3.97	0.17
ANT790F2	A	From Leg	6.00	0.0000	50.00	No Ice	0.69	0.69	0.01
			0.00			1/2" Ice	0.89	0.89	0.01
			0.00			1" Ice	1.10	1.10	0.02
3' Pivot Side Arm (50" pipe)	A	From Leg	1.50	0.0000	50.00	No Ice	1.91	2.49	0.11
			0.00			1/2" Ice	2.70	3.30	0.13
			0.00			1" Ice	3.27	3.97	0.17

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
8' Solid w/ Radome (Eversource)	C	Paraboloid w/Radome	From Leg	1.00	0.0000		276.00	8.00	No Ice	50.27	0.30
				0.00					1/2" Ice	51.32	0.62
				0.00					1" Ice	52.37	0.94
8' Solid w/ Radome (Eversource)	B	Paraboloid w/Radome	From Leg	1.00	0.0000		276.00	8.00	No Ice	50.27	0.30
				0.00					1/2" Ice	51.32	0.62
				0.00					1" Ice	52.37	0.94
8' Solid w/ Radome (Eversource)	A	Paraboloid w/Radome	From Leg	1.00	0.0000		276.00	8.00	No Ice	50.27	0.30
				0.00					1/2" Ice	51.32	0.62
				0.00					1" Ice	52.37	0.94
8' Solid w/ Radome (Eversource)	C	Paraboloid w/Radome	From Leg	1.00	0.0000		266.00	8.00	No Ice	50.27	0.30
				0.00					1/2" Ice	51.32	0.62
				0.00					1" Ice	52.37	0.94
6' Dish (Eversource - Proposed)	C	Paraboloid w/o Radome	From Leg	1.00	0.0000		240.00	6.00	No Ice	28.27	0.08
				0.00					1/2" Ice	29.07	0.10
				0.00					1" Ice	29.87	0.12
8' Solid w/ Radome (Eversource)	C	Paraboloid w/Radome	From Leg	1.00	0.0000		230.00	8.00	No Ice	50.27	0.30
				0.00					1/2" Ice	51.32	0.62
				0.00					1" Ice	52.37	0.94
8' Solid w/ Radome (Eversource)	C	Paraboloid w/Radome	From Leg	1.00	0.0000		220.00	8.00	No Ice	50.27	0.30
				0.00					1/2" Ice	51.32	0.62
				0.00					1" Ice	52.37	0.94
10' Solid w/ Radome (Eversource)	A	Paraboloid w/Radome	From Leg	1.00	0.0000		205.50	10.00	No Ice	78.54	0.40
				0.00					1/2" Ice	79.85	0.81
				0.00					1" Ice	81.17	1.22
6' Solid w/ Radome (CSP)	A	Paraboloid w/Radome	From Leg	1.00	0.0000		197.00	6.00	No Ice	28.27	0.16
				0.00					1/2" Ice	29.07	0.32
				0.00					1" Ice	32.82	0.49
10' Solid w/ Radome (CSP)	C	Paraboloid w/Radome	From Leg	1.00	0.0000		195.00	10.00	No Ice	78.54	0.40
				0.00					1/2" Ice	79.85	0.81
				0.00					1" Ice	81.17	1.22
6' Solid w/ Radome (CSP)	C	Paraboloid w/Radome	From Leg	1.00	0.0000		163.00	6.00	No Ice	28.27	0.16
				0.00					1/2" Ice	29.07	0.32

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
				0.00					1" Ice	32.82	0.49
SBX4-W60 (Eversource)	C	Paraboloid w/Radome	From Leg	1.00 0.00	0.0000		123.00	4.00	No Ice 1/2" Ice	12.57 13.10	0.08 0.14
				0.00					1" Ice	13.62	0.21
6' Solid w/ Radome (Eversource)	B	Paraboloid w/Radome	From Leg	1.00 0.00	0.0000		104.00	6.00	No Ice 1/2" Ice	28.27 29.07	0.16 0.32
				0.00					1" Ice	32.82	0.49
6' Grid Dish (VSC)	C	Grid	From Leg	0.50 0.00	0.0000		117.00	6.00	No Ice 1/2" Ice	28.27 29.07	0.08 0.23
				0.00					1" Ice	29.86	0.38

Truss-Leg Properties

Section Designation	Area in^2	Area Ice in^2	Self Weight K	Ice Weight K	Equiv. Diameter in	Equiv. Diameter Ice in	Leg Area in^2
#12ZG - 1.25" - 1.00" conn. (Pirod 207628)	2175.9279	6554.9782	0.47	2.50	7.5553	22.7603	3.6816
#12ZG - 1.25" - 1.00" conn. (Pirod 207628)	2175.9279	6542.3611	0.47	2.49	7.5553	22.7165	3.6816
#12ZG - 1.25" - 1.00" conn. (Pirod 207628)	2175.9279	6528.8005	0.47	2.48	7.5553	22.6694	3.6816
#12ZG - 1.75" - 1.00" conn. (Pirod 195557)	2421.2670	6661.9148	0.71	2.56	8.4072	23.1316	7.2158
#12ZG - 1.75" - 1.00" conn. (Pirod 195557)	2421.2670	6654.2712	0.71	2.56	8.4072	23.1051	7.2158
#12ZG -2.00" - 0.875" conn.-Trans (Pirod 211843)	2550.9192	6714.1518	1.05	2.59	8.8574	23.3130	9.4248
#12ZG -2.25" - 0.875" conn. (Pirod 208334)	2686.5516	6768.5770	1.22	2.62	9.3283	23.5020	11.9282
#12ZG -2.25" - 0.875" conn. (Pirod 208334)	2686.5516	6749.0323	1.22	2.61	9.3283	23.4341	11.9282
#12ZG - 2.50" - 0.875" conn. (Pirod 208335)	2826.7749	6798.9842	1.42	2.63	9.8152	23.6076	14.7262
#12ZG -2.75"-0.875 -DB-0.625"-HP- (Pirod 238706)	3044.1575	6845.6415	1.69	2.65	10.5700	23.7696	17.8187
#12ZG -3.00"-0.875 -DB-0.625"-HP-Trans- (Pirod 238707)	3198.8474	6887.7536	1.93	2.66	11.1071	23.9158	21.2058
#12ZG -3.00"-0.875 -DB-0.625"-HP- (Pirod 238708)	3198.8474	6851.1588	1.93	2.63	11.1071	23.7887	21.2058
#12ZG -3.25"-0.875 -DB-0.625"-HP- (Pirod 238709)	3360.5698	6875.5819	2.19	2.62	11.6686	23.8735	24.8873

Section Designation	Area	Area Ice	Self Weight	Ice Weight	Equiv. Diameter	Equiv. Diameter Ice	Leg Area
	in^2	in^2	K	K	in	in	in^2
#12ZG -3.25"-0.875 -DB-0.625"-HP- (Pirod 238709)	3360.5698	6806.3435	2.19	2.53	11.6686	23.6331	24.8873
#12ZG -3.25"-0.875 -DB-0.625"-HP- (Pirod 238709)	3360.5698	6668.8943	2.19	2.37	11.6686	23.1559	24.8873

Tower Pressures - No Ice

$G_H = 0.850$

Section Elevation	z	K_Z	q_z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
T1	270.00	1.56	40	282.111	A	22.686	25.226	25.226	52.65	0.000	0.000
280.00-260.00					B	22.686	25.226		52.65	12.162	0.000
					C	22.686	25.226		52.65	8.339	0.000
T2	250.00	1.535	39	322.111	A	16.082	25.226	25.226	61.07	0.000	0.000
260.00-240.00					B	16.082	25.226		61.07	26.370	0.000
					C	16.082	25.226		61.07	12.298	0.000
T3	230.00	1.508	38	362.111	A	33.932	25.226	25.226	42.64	7.680	0.000
240.00-220.00					B	33.932	25.226		42.64	32.475	0.000
					C	33.932	25.226		42.64	20.207	0.000
T4	215.00	1.487	38	196.473	A	12.706	14.035	14.035	52.48	5.120	0.000
220.00-210.00					B	12.706	14.035		52.48	19.033	0.000
					C	12.706	14.035		52.48	11.446	0.000
T5	205.00	1.472	38	206.473	A	17.146	14.035	14.035	45.01	5.120	0.000
210.00-200.00					B	17.146	14.035		45.01	19.477	0.000
					C	17.146	14.035		45.01	12.866	0.000
T6	190.00	1.449	37	443.362	A	15.781	29.574	29.574	65.21	28.003	0.000
200.00-180.00					B	15.781	29.574		65.21	38.954	0.000
					C	15.781	29.574		65.21	27.150	0.000
T7	170.00	1.415	36	483.780	A	16.624	31.146	31.146	65.20	43.669	0.000
180.00-160.00					B	16.624	31.146		65.20	39.842	0.000
					C	16.624	31.146		65.20	27.150	0.000
T8	150.00	1.378	35	523.780	A	20.006	31.146	31.146	60.89	77.945	0.000
160.00-140.00					B	20.006	31.146		60.89	44.144	0.000
					C	20.006	31.146		60.89	27.150	0.000
T9	130.00	1.337	34	564.197	A	21.049	32.772	32.772	60.89	86.965	0.000
140.00-120.00					B	21.049	32.772		60.89	55.254	0.000
					C	21.049	32.772		60.89	30.480	0.000
T10	110.00	1.291	33	604.614	A	22.123	35.292	35.292	61.47	89.371	0.000
120.00-100.00					B	22.123	35.292		61.47	57.454	0.000
					C	22.123	35.292		61.47	37.140	0.000
T11	90.00	1.238	32	645.031	A	23.224	37.085	37.085	61.49	92.334	0.000
100.00-80.00					B	23.224	37.085		61.49	57.454	0.000
					C	23.224	37.085		61.49	40.470	0.000
T12	70.00	1.174	30	685.031	A	30.435	37.085	37.085	54.92	92.334	0.000
80.00-60.00					B	30.435	37.085		54.92	57.454	0.000
					C	30.435	37.085		54.92	40.470	0.000
T13	50.00	1.094	28	725.448	A	31.865	38.960	38.960	55.01	93.999	0.000
60.00-40.00					B	31.865	38.960		55.01	57.454	0.000
					C	31.865	38.960		55.01	40.470	0.000
T14	30.00	0.982	25	765.448	A	33.318	38.960	38.960	53.90	94.554	0.000
40.00-20.00					B	33.318	38.960		53.90	57.454	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
					C	33.318	38.960		53.90	40.470	0.000
T15 20.00-0.00	10.00	0.85	22	805.448	A	34.790	38.960	38.960	52.83	94.554	0.000
					B	34.790	38.960		52.83	57.454	0.000
					C	34.790	38.960		52.83	40.470	0.000

Tower Pressure - With Ice

$G_H = 0.850$

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
T1	270.00	1.56	8	2.3136	289.833	A	22.686	111.818	75.994	56.50	0.000	0.000
280.00-260.00						B	22.686	111.818		56.50	61.679	0.000
						C	22.686	111.818		56.50	39.272	0.000
T2	250.00	1.535	8	2.2959	329.773	A	16.082	100.463	75.848	65.08	0.000	0.000
260.00-240.00						B	16.082	100.463		65.08	125.512	0.000
						C	16.082	100.463		65.08	59.809	0.000
T3	230.00	1.508	8	2.2768	369.710	A	33.932	114.413	75.691	51.02	38.406	0.000
240.00-220.00						B	33.932	114.413		51.02	157.593	0.000
						C	33.932	114.413		51.02	93.440	0.000
T4	215.00	1.487	8	2.2615	200.246	A	12.706	52.985	38.617	58.79	25.497	0.000
220.00-210.00						B	12.706	52.985		58.79	90.740	0.000
						C	12.706	52.985		58.79	52.372	0.000
T5	205.00	1.472	8	2.2507	210.229	A	17.146	60.469	38.573	49.70	25.423	0.000
210.00-200.00						B	17.146	60.469		49.70	92.693	0.000
						C	17.146	60.469		49.70	58.348	0.000
T6	190.00	1.449	8	2.2337	450.817	A	15.781	97.982	77.839	68.42	118.120	0.000
200.00-180.00						B	15.781	97.982		68.42	184.436	0.000
						C	15.781	97.982		68.42	121.518	0.000
T7	170.00	1.415	8	2.2090	491.152	A	16.624	99.455	78.470	67.60	168.339	0.000
180.00-160.00						B	16.624	99.455		67.60	187.481	0.000
						C	16.624	99.455		67.60	120.582	0.000
T8	150.00	1.378	7	2.1815	531.060	A	20.006	100.065	78.244	65.16	272.179	0.000
160.00-140.00						B	20.006	100.065		65.16	202.229	0.000
						C	20.006	100.065		65.16	119.540	0.000
T9	130.00	1.337	7	2.1505	571.374	A	21.049	101.456	78.823	64.34	297.213	0.000
140.00-120.00						B	21.049	101.456		64.34	235.943	0.000
						C	21.049	101.456		64.34	132.415	0.000
T10	110.00	1.291	7	2.1149	611.673	A	22.123	102.758	79.364	63.55	305.852	0.000
120.00-100.00						B	22.123	102.758		63.55	239.938	0.000
						C	22.123	102.758		63.55	162.227	0.000
T11	90.00	1.238	7	2.0729	651.949	A	23.224	103.922	79.852	62.80	314.313	0.000
100.00-80.00						B	23.224	103.922		62.80	236.984	0.000
						C	23.224	103.922		62.80	176.354	0.000
T12 80.00-60.00	70.00	1.174	6	2.0214	691.778	A	30.435	104.037	79.428	59.07	310.690	0.000
						B	30.435	104.037		59.07	233.369	0.000
						C	30.435	104.037		59.07	173.493	0.000
T13 60.00-40.00	50.00	1.094	6	1.9546	731.972	A	31.865	104.624	79.711	58.40	313.511	0.000
						B	31.865	104.624		58.40	228.670	0.000
						C	31.865	104.624		58.40	169.775	0.000
T14 40.00-20.00	30.00	0.982	5	1.8572	771.647	A	33.318	103.660	78.908	57.61	308.785	0.000
						B	33.318	103.660		57.61	221.836	0.000
						C	33.318	103.660		57.61	164.367	0.000
T15 20.00-0.00	10.00	0.85	5	1.6640	811.002	A	34.790	100.471	77.315	57.16	294.443	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
						B	34.790	100.471		57.16	208.286	0.000
						C	34.790	100.471		57.16	153.644	0.000

Tower Pressure - Service

$G_H = 0.850$

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
T1	270.00	1.56	12	282.111	A	22.686	25.226	25.226	52.65	0.000	0.000
280.00-260.00					B	22.686	25.226		52.65	12.162	0.000
					C	22.686	25.226		52.65	8.339	0.000
T2	250.00	1.535	12	322.111	A	16.082	25.226	25.226	61.07	0.000	0.000
260.00-240.00					B	16.082	25.226		61.07	26.370	0.000
					C	16.082	25.226		61.07	12.298	0.000
T3	230.00	1.508	12	362.111	A	33.932	25.226	25.226	42.64	7.680	0.000
240.00-220.00					B	33.932	25.226		42.64	32.475	0.000
					C	33.932	25.226		42.64	20.207	0.000
T4	215.00	1.487	12	196.473	A	12.706	14.035	14.035	52.48	5.120	0.000
220.00-210.00					B	12.706	14.035		52.48	19.033	0.000
					C	12.706	14.035		52.48	11.446	0.000
T5	205.00	1.472	12	206.473	A	17.146	14.035	14.035	45.01	5.120	0.000
210.00-200.00					B	17.146	14.035		45.01	19.477	0.000
					C	17.146	14.035		45.01	12.866	0.000
T6	190.00	1.449	11	443.362	A	15.781	29.574	29.574	65.21	28.003	0.000
200.00-180.00					B	15.781	29.574		65.21	38.954	0.000
					C	15.781	29.574		65.21	27.150	0.000
T7	170.00	1.415	11	483.780	A	16.624	31.146	31.146	65.20	43.669	0.000
180.00-160.00					B	16.624	31.146		65.20	39.842	0.000
					C	16.624	31.146		65.20	27.150	0.000
T8	150.00	1.378	11	523.780	A	20.006	31.146	31.146	60.89	77.945	0.000
160.00-140.00					B	20.006	31.146		60.89	44.144	0.000
					C	20.006	31.146		60.89	27.150	0.000
T9	130.00	1.337	10	564.197	A	21.049	32.772	32.772	60.89	86.965	0.000
140.00-120.00					B	21.049	32.772		60.89	55.254	0.000
					C	21.049	32.772		60.89	30.480	0.000
T10	110.00	1.291	10	604.614	A	22.123	35.292	35.292	61.47	89.371	0.000
120.00-100.00					B	22.123	35.292		61.47	57.454	0.000
					C	22.123	35.292		61.47	37.140	0.000
T11	90.00	1.238	10	645.031	A	23.224	37.085	37.085	61.49	92.334	0.000
100.00-80.00					B	23.224	37.085		61.49	57.454	0.000
					C	23.224	37.085		61.49	40.470	0.000
T12	70.00	1.174	9	685.031	A	30.435	37.085	37.085	54.92	92.334	0.000
80.00-60.00					B	30.435	37.085		54.92	57.454	0.000
					C	30.435	37.085		54.92	40.470	0.000
T13	50.00	1.094	9	725.448	A	31.865	38.960	38.960	55.01	93.999	0.000
60.00-40.00					B	31.865	38.960		55.01	57.454	0.000
					C	31.865	38.960		55.01	40.470	0.000
T14	30.00	0.982	8	765.448	A	33.318	38.960	38.960	53.90	94.554	0.000
40.00-20.00					B	33.318	38.960		53.90	57.454	0.000
					C	33.318	38.960		53.90	40.470	0.000
T15 20.00-0.00	10.00	0.85	7	805.448	A	34.790	38.960	38.960	52.83	94.554	0.000
					B	34.790	38.960		52.83	57.454	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
					C	34.790	38.960		52.83	40.470	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.08	3.18	A	0.17	2.7	40	1	1	37.061	3.80	190.16	C
280.00-260.00			B	0.17	2.7		1	1	37.061			
			C	0.17	2.7		1	1	37.061			
T2	0.17	2.63	A	0.128	2.853	39	1	1	30.353	3.66	182.84	C
260.00-240.00			B	0.128	2.853		1	1	30.353			
			C	0.128	2.853		1	1	30.353			
T3	0.26	3.70	A	0.163	2.723	38	1	1	48.286	5.49	274.39	C
240.00-220.00			B	0.163	2.723		1	1	48.286			
			C	0.163	2.723		1	1	48.286			
T4	0.15	1.86	A	0.136	2.823	38	1	1	20.654	2.57	257.05	C
220.00-210.00			B	0.136	2.823		1	1	20.654			
			C	0.136	2.823		1	1	20.654			
T5	0.16	2.09	A	0.151	2.768	38	1	1	25.113	2.94	293.81	C
210.00-200.00			B	0.151	2.768		1	1	25.113			
			C	0.151	2.768		1	1	25.113			
T6	0.41	5.10	A	0.102	2.955	37	1	1	32.473	4.79	239.55	C
200.00-180.00			B	0.102	2.955		1	1	32.473			
			C	0.102	2.955		1	1	32.473			
T7	0.49	5.74	A	0.099	2.969	36	1	1	34.201	5.16	257.85	C
180.00-160.00			B	0.099	2.969		1	1	34.201			
			C	0.099	2.969		1	1	34.201			
T8	0.73	6.17	A	0.098	2.973	35	1	1	37.582	6.02	301.01	C
160.00-140.00			B	0.098	2.973		1	1	37.582			
			C	0.098	2.973		1	1	37.582			
T9	0.89	8.15	A	0.095	2.983	34	1	1	39.541	6.43	321.48	C
140.00-120.00			B	0.095	2.983		1	1	39.541			
			C	0.095	2.983		1	1	39.541			
T10	0.94	9.14	A	0.095	2.984	33	1	1	42.036	6.61	330.37	C
120.00-100.00			B	0.095	2.984		1	1	42.036			
			C	0.095	2.984		1	1	42.036			
T11	0.97	10.06	A	0.093	2.99	32	1	1	44.148	6.61	330.59	C
100.00-80.00			B	0.093	2.99		1	1	44.148			
			C	0.093	2.99		1	1	44.148			
T12	0.97	10.53	A	0.099	2.97	30	1	1	51.363	6.79	339.70	C
80.00-60.00			B	0.099	2.97		1	1	51.363			
			C	0.099	2.97		1	1	51.363			
T13	0.98	11.54	A	0.098	2.974	28	1	1	53.851	6.53	326.66	C
60.00-40.00			B	0.098	2.974		1	1	53.851			
			C	0.098	2.974		1	1	53.851			
T14	0.98	11.76	A	0.094	2.987	25	1	1	55.301	5.98	299.07	C
40.00-20.00			B	0.094	2.987		1	1	55.301			
			C	0.094	2.987		1	1	55.301			
T15	0.98	11.99	A	0.092	2.998	22	1	1	56.771	5.27	263.46	C
20.00-0.00			B	0.092	2.998		1	1	56.771			
			C	0.092	2.998		1	1	56.771			
Sum Weight:	9.18	103.64						OTM	10240.36 kip-ft	78.65		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.08	3.18	A	0.17	2.7	40	0.8	1	32.524	3.39	169.43	C
280.00-260.00			B	0.17	2.7		0.8	1	32.524			
			C	0.17	2.7		0.8	1	32.524			
T2	0.17	2.63	A	0.128	2.853	39	0.8	1	27.136	3.35	167.56	C
260.00-240.00			B	0.128	2.853		0.8	1	27.136			
			C	0.128	2.853		0.8	1	27.136			
T3	0.26	3.70	A	0.163	2.723	38	0.8	1	41.500	4.88	244.16	C
240.00-220.00			B	0.163	2.723		0.8	1	41.500			
			C	0.163	2.723		0.8	1	41.500			
T4	0.15	1.86	A	0.136	2.823	38	0.8	1	18.113	2.34	233.90	C
220.00-210.00			B	0.136	2.823		0.8	1	18.113			
			C	0.136	2.823		0.8	1	18.113			
T5	0.16	2.09	A	0.151	2.768	38	0.8	1	21.684	2.63	263.50	C
210.00-200.00			B	0.151	2.768		0.8	1	21.684			
			C	0.151	2.768		0.8	1	21.684			
T6	0.41	5.10	A	0.102	2.955	37	0.8	1	29.317	4.50	224.89	C
200.00-180.00			B	0.102	2.955		0.8	1	29.317			
			C	0.102	2.955		0.8	1	29.317			
T7	0.49	5.74	A	0.099	2.969	36	0.8	1	30.876	4.85	242.69	C
180.00-160.00			B	0.099	2.969		0.8	1	30.876			
			C	0.099	2.969		0.8	1	30.876			
T8	0.73	6.17	A	0.098	2.973	35	0.8	1	33.581	5.66	283.22	C
160.00-140.00			B	0.098	2.973		0.8	1	33.581			
			C	0.098	2.973		0.8	1	33.581			
T9	0.89	8.15	A	0.095	2.983	34	0.8	1	35.331	6.07	303.26	C
140.00-120.00			B	0.095	2.983		0.8	1	35.331			
			C	0.095	2.983		0.8	1	35.331			
T10	0.94	9.14	A	0.095	2.984	33	0.8	1	37.612	6.24	311.87	C
120.00-100.00			B	0.095	2.984		0.8	1	37.612			
			C	0.095	2.984		0.8	1	37.612			
T11	0.97	10.06	A	0.093	2.99	32	0.8	1	39.504	6.24	311.94	C
100.00-80.00			B	0.093	2.99		0.8	1	39.504			
			C	0.093	2.99		0.8	1	39.504			
T12	0.97	10.53	A	0.099	2.97	30	0.8	1	45.276	6.33	316.67	C
80.00-60.00			B	0.099	2.97		0.8	1	45.276			
			C	0.099	2.97		0.8	1	45.276			
T13	0.98	11.54	A	0.098	2.974	28	0.8	1	47.478	6.08	304.17	C
60.00-40.00			B	0.098	2.974		0.8	1	47.478			
			C	0.098	2.974		0.8	1	47.478			
T14	0.98	11.76	A	0.094	2.987	25	0.8	1	48.638	5.56	277.86	C
40.00-20.00			B	0.094	2.987		0.8	1	48.638			
			C	0.094	2.987		0.8	1	48.638			
T15	0.98	11.99	A	0.092	2.998	22	0.8	1	49.813	4.88	244.22	C
20.00-0.00			B	0.092	2.998		0.8	1	49.813			
			C	0.092	2.998		0.8	1	49.813			
Sum Weight:	9.18	103.64						OTM	9447.46 kip-ft	73.01		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.08	3.18	A	0.17	2.7	40	0.85	1	33.658	3.49	174.61	C
280.00-260.00			B	0.17	2.7		0.85	1	33.658			
			C	0.17	2.7		0.85	1	33.658			
T2	0.17	2.63	A	0.128	2.853	39	0.85	1	27.940	3.43	171.38	C
260.00-240.00			B	0.128	2.853		0.85	1	27.940			
			C	0.128	2.853		0.85	1	27.940			
T3	0.26	3.70	A	0.163	2.723	38	0.85	1	43.197	5.03	251.71	C
240.00-220.00			B	0.163	2.723		0.85	1	43.197			
			C	0.163	2.723		0.85	1	43.197			
T4	0.15	1.86	A	0.136	2.823	38	0.85	1	18.748	2.40	239.69	C
220.00-210.00			B	0.136	2.823		0.85	1	18.748			
			C	0.136	2.823		0.85	1	18.748			
T5	0.16	2.09	A	0.151	2.768	38	0.85	1	22.541	2.71	271.08	C
210.00-200.00			B	0.151	2.768		0.85	1	22.541			
			C	0.151	2.768		0.85	1	22.541			
T6	0.41	5.10	A	0.102	2.955	37	0.85	1	30.106	4.57	228.56	C
200.00-180.00			B	0.102	2.955		0.85	1	30.106			
			C	0.102	2.955		0.85	1	30.106			
T7	0.49	5.74	A	0.099	2.969	36	0.85	1	31.707	4.93	246.48	C
180.00-160.00			B	0.099	2.969		0.85	1	31.707			
			C	0.099	2.969		0.85	1	31.707			
T8	0.73	6.17	A	0.098	2.973	35	0.85	1	34.581	5.75	287.67	C
160.00-140.00			B	0.098	2.973		0.85	1	34.581			
			C	0.098	2.973		0.85	1	34.581			
T9	0.89	8.15	A	0.095	2.983	34	0.85	1	36.383	6.16	307.82	C
140.00-120.00			B	0.095	2.983		0.85	1	36.383			
			C	0.095	2.983		0.85	1	36.383			
T10	0.94	9.14	A	0.095	2.984	33	0.85	1	38.718	6.33	316.50	C
120.00-100.00			B	0.095	2.984		0.85	1	38.718			
			C	0.095	2.984		0.85	1	38.718			
T11	0.97	10.06	A	0.093	2.99	32	0.85	1	40.665	6.33	316.60	C
100.00-80.00			B	0.093	2.99		0.85	1	40.665			
			C	0.093	2.99		0.85	1	40.665			
T12	0.97	10.53	A	0.099	2.97	30	0.85	1	46.798	6.45	322.43	C
80.00-60.00			B	0.099	2.97		0.85	1	46.798			
			C	0.099	2.97		0.85	1	46.798			
T13	0.98	11.54	A	0.098	2.974	28	0.85	1	49.071	6.20	309.79	C
60.00-40.00			B	0.098	2.974		0.85	1	49.071			
			C	0.098	2.974		0.85	1	49.071			
T14	0.98	11.76	A	0.094	2.987	25	0.85	1	50.303	5.66	283.16	C
40.00-20.00			B	0.094	2.987		0.85	1	50.303			
			C	0.094	2.987		0.85	1	50.303			
T15	0.98	11.99	A	0.092	2.998	22	0.85	1	51.553	4.98	249.03	C
20.00-0.00			B	0.092	2.998		0.85	1	51.553			
			C	0.092	2.998		0.85	1	51.553			
Sum Weight:	9.18	103.64						OTM	9645.69 kip-ft	74.42		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	1.64	15.94	A	0.464	1.951	8	1	1	97.185	1.76	87.90	C
280.00-260.00			B	0.464	1.951		1	1	97.185			
			C	0.464	1.951		1	1	97.185			
T2	2.91	13.65	A	0.353	2.164	8	1	1	78.103	1.99	99.43	C
260.00-240.00			B	0.353	2.164		1	1	78.103			
			C	0.353	2.164		1	1	78.103			
T3	4.54	18.02	A	0.401	2.062	8	1	1	106.788	2.74	137.19	C
240.00-220.00			B	0.401	2.062		1	1	106.788			
			C	0.401	2.062		1	1	106.788			
T4	2.68	8.22	A	0.328	2.224	8	1	1	44.929	1.38	138.26	C
220.00-210.00			B	0.328	2.224		1	1	44.929			
			C	0.328	2.224		1	1	44.929			
T5	2.81	9.46	A	0.369	2.128	8	1	1	54.846	1.52	151.52	C
210.00-200.00			B	0.369	2.128		1	1	54.846			
			C	0.369	2.128		1	1	54.846			
T6	6.70	16.99	A	0.252	2.43	8	1	1	73.157	2.90	144.78	C
200.00-180.00			B	0.252	2.43		1	1	73.157			
			C	0.252	2.43		1	1	73.157			
T7	7.59	17.87	A	0.236	2.479	8	1	1	74.485	3.08	153.94	C
180.00-160.00			B	0.236	2.479		1	1	74.485			
			C	0.236	2.479		1	1	74.485			
T8	9.60	18.89	A	0.226	2.511	7	1	1	77.997	3.52	175.99	C
160.00-140.00			B	0.226	2.511		1	1	77.997			
			C	0.226	2.511		1	1	77.997			
T9	10.70	21.10	A	0.214	2.549	7	1	1	79.604	3.72	186.22	C
140.00-120.00			B	0.214	2.549		1	1	79.604			
			C	0.214	2.549		1	1	79.604			
T10	11.17	22.30	A	0.204	2.582	7	1	1	81.231	3.79	189.44	C
120.00-100.00			B	0.204	2.582		1	1	81.231			
			C	0.204	2.582		1	1	81.231			
T11	11.33	23.39	A	0.195	2.613	7	1	1	82.836	3.74	186.89	C
100.00-80.00			B	0.195	2.613		1	1	82.836			
			C	0.195	2.613		1	1	82.836			
T12	10.98	24.94	A	0.194	2.615	6	1	1	90.102	3.62	180.82	C
80.00-60.00			B	0.194	2.615		1	1	90.102			
			C	0.194	2.615		1	1	90.102			
T13	10.66	25.95	A	0.186	2.642	6	1	1	91.736	3.39	169.31	C
60.00-40.00			B	0.186	2.642		1	1	91.736			
			C	0.186	2.642		1	1	91.736			
T14	10.06	25.83	A	0.178	2.673	5	1	1	92.498	3.02	150.84	C
40.00-20.00			B	0.178	2.673		1	1	92.498			
			C	0.178	2.673		1	1	92.498			
T15	8.86	25.05	A	0.167	2.711	5	1	1	92.003	2.53	126.41	C
20.00-0.00			B	0.167	2.711		1	1	92.003			
			C	0.167	2.711		1	1	92.003			
Sum Weight:	112.23	287.61						OTM	5587.92 kip-ft	42.68		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	1.64	15.94	A	0.464	1.951	8	0.8	1	92.648	1.69	84.71	C
280.00-260.00			B	0.464	1.951		0.8	1	92.648			
			C	0.464	1.951		0.8	1	92.648			
T2	2.91	13.65	A	0.353	2.164	8	0.8	1	74.886	1.94	96.96	C
260.00-240.00			B	0.353	2.164		0.8	1	74.886			
			C	0.353	2.164		0.8	1	74.886			
T3	4.54	18.02	A	0.401	2.062	8	0.8	1	100.002	2.65	132.31	C
240.00-220.00			B	0.401	2.062		0.8	1	100.002			
			C	0.401	2.062		0.8	1	100.002			
T4	2.68	8.22	A	0.328	2.224	8	0.8	1	42.388	1.34	134.37	C
220.00-210.00			B	0.328	2.224		0.8	1	42.388			
			C	0.328	2.224		0.8	1	42.388			
T5	2.81	9.46	A	0.369	2.128	8	0.8	1	51.417	1.47	146.56	C
210.00-200.00			B	0.369	2.128		0.8	1	51.417			
			C	0.369	2.128		0.8	1	51.417			
T6	6.70	16.99	A	0.252	2.43	8	0.8	1	70.001	2.84	142.21	C
200.00-180.00			B	0.252	2.43		0.8	1	70.001			
			C	0.252	2.43		0.8	1	70.001			
T7	7.59	17.87	A	0.236	2.479	8	0.8	1	71.161	3.02	151.25	C
180.00-160.00			B	0.236	2.479		0.8	1	71.161			
			C	0.236	2.479		0.8	1	71.161			
T8	9.60	18.89	A	0.226	2.511	7	0.8	1	73.996	3.46	172.79	C
160.00-140.00			B	0.226	2.511		0.8	1	73.996			
			C	0.226	2.511		0.8	1	73.996			
T9	10.70	21.10	A	0.214	2.549	7	0.8	1	75.394	3.66	182.91	C
140.00-120.00			B	0.214	2.549		0.8	1	75.394			
			C	0.214	2.549		0.8	1	75.394			
T10	11.17	22.30	A	0.204	2.582	7	0.8	1	76.807	3.72	186.03	C
120.00-100.00			B	0.204	2.582		0.8	1	76.807			
			C	0.204	2.582		0.8	1	76.807			
T11	11.33	23.39	A	0.195	2.613	7	0.8	1	78.191	3.67	183.42	C
100.00-80.00			B	0.195	2.613		0.8	1	78.191			
			C	0.195	2.613		0.8	1	78.191			
T12	10.98	24.94	A	0.194	2.615	6	0.8	1	84.015	3.53	176.50	C
80.00-60.00			B	0.194	2.615		0.8	1	84.015			
			C	0.194	2.615		0.8	1	84.015			
T13	10.66	25.95	A	0.186	2.642	6	0.8	1	85.363	3.30	165.05	C
60.00-40.00			B	0.186	2.642		0.8	1	85.363			
			C	0.186	2.642		0.8	1	85.363			
T14	10.06	25.83	A	0.178	2.673	5	0.8	1	85.834	2.94	146.80	C
40.00-20.00			B	0.178	2.673		0.8	1	85.834			
			C	0.178	2.673		0.8	1	85.834			
T15	8.86	25.05	A	0.167	2.711	5	0.8	1	85.046	2.45	122.70	C
20.00-0.00			B	0.167	2.711		0.8	1	85.046			
			C	0.167	2.711		0.8	1	85.046			
Sum Weight:	112.23	287.61						OTM	5452.95 kip-ft	41.68		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	1.64	15.94	A	0.464	1.951	8	0.85	1	93.782	1.71	85.51	C
280.00-260.00			B	0.464	1.951		0.85	1	93.782			
			C	0.464	1.951		0.85	1	93.782			
T2	2.91	13.65	A	0.353	2.164	8	0.85	1	75.690	1.95	97.57	C
260.00-240.00			B	0.353	2.164		0.85	1	75.690			
			C	0.353	2.164		0.85	1	75.690			
T3	4.54	18.02	A	0.401	2.062	8	0.85	1	101.698	2.67	133.53	C
240.00-220.00			B	0.401	2.062		0.85	1	101.698			
			C	0.401	2.062		0.85	1	101.698			
T4	2.68	8.22	A	0.328	2.224	8	0.85	1	43.023	1.35	135.35	C
220.00-210.00			B	0.328	2.224		0.85	1	43.023			
			C	0.328	2.224		0.85	1	43.023			
T5	2.81	9.46	A	0.369	2.128	8	0.85	1	52.274	1.48	147.80	C
210.00-200.00			B	0.369	2.128		0.85	1	52.274			
			C	0.369	2.128		0.85	1	52.274			
T6	6.70	16.99	A	0.252	2.43	8	0.85	1	70.790	2.86	142.85	C
200.00-180.00			B	0.252	2.43		0.85	1	70.790			
			C	0.252	2.43		0.85	1	70.790			
T7	7.59	17.87	A	0.236	2.479	8	0.85	1	71.992	3.04	151.92	C
180.00-160.00			B	0.236	2.479		0.85	1	71.992			
			C	0.236	2.479		0.85	1	71.992			
T8	9.60	18.89	A	0.226	2.511	7	0.85	1	74.996	3.47	173.59	C
160.00-140.00			B	0.226	2.511		0.85	1	74.996			
			C	0.226	2.511		0.85	1	74.996			
T9	10.70	21.10	A	0.214	2.549	7	0.85	1	76.447	3.67	183.74	C
140.00-120.00			B	0.214	2.549		0.85	1	76.447			
			C	0.214	2.549		0.85	1	76.447			
T10	11.17	22.30	A	0.204	2.582	7	0.85	1	77.913	3.74	186.89	C
120.00-100.00			B	0.204	2.582		0.85	1	77.913			
			C	0.204	2.582		0.85	1	77.913			
T11	11.33	23.39	A	0.195	2.613	7	0.85	1	79.353	3.69	184.28	C
100.00-80.00			B	0.195	2.613		0.85	1	79.353			
			C	0.195	2.613		0.85	1	79.353			
T12	10.98	24.94	A	0.194	2.615	6	0.85	1	85.537	3.55	177.58	C
80.00-60.00			B	0.194	2.615		0.85	1	85.537			
			C	0.194	2.615		0.85	1	85.537			
T13	10.66	25.95	A	0.186	2.642	6	0.85	1	86.956	3.32	166.12	C
60.00-40.00			B	0.186	2.642		0.85	1	86.956			
			C	0.186	2.642		0.85	1	86.956			
T14	10.06	25.83	A	0.178	2.673	5	0.85	1	87.500	2.96	147.81	C
40.00-20.00			B	0.178	2.673		0.85	1	87.500			
			C	0.178	2.673		0.85	1	87.500			
T15	8.86	25.05	A	0.167	2.711	5	0.85	1	86.785	2.47	123.63	C
20.00-0.00			B	0.167	2.711		0.85	1	86.785			
			C	0.167	2.711		0.85	1	86.785			
Sum Weight:	112.23	287.61						OTM	5486.69 kip-ft	41.93		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.08	3.18	A	0.17	2.7	12	1	1	37.061	1.17	58.35	C
280.00-260.00			B	0.17	2.7		1	1	37.061			
			C	0.17	2.7		1	1	37.061			
T2	0.17	2.63	A	0.128	2.853	12	1	1	30.353	1.12	56.11	C
260.00-240.00			B	0.128	2.853		1	1	30.353			
			C	0.128	2.853		1	1	30.353			
T3	0.26	3.70	A	0.163	2.723	12	1	1	48.286	1.68	84.20	C
240.00-220.00			B	0.163	2.723		1	1	48.286			
			C	0.163	2.723		1	1	48.286			
T4	0.15	1.86	A	0.136	2.823	12	1	1	20.654	0.79	78.88	C
220.00-210.00			B	0.136	2.823		1	1	20.654			
			C	0.136	2.823		1	1	20.654			
T5	0.16	2.09	A	0.151	2.768	12	1	1	25.113	0.90	90.16	C
210.00-200.00			B	0.151	2.768		1	1	25.113			
			C	0.151	2.768		1	1	25.113			
T6	0.41	5.10	A	0.102	2.955	11	1	1	32.473	1.47	73.51	C
200.00-180.00			B	0.102	2.955		1	1	32.473			
			C	0.102	2.955		1	1	32.473			
T7	0.49	5.74	A	0.099	2.969	11	1	1	34.201	1.58	79.13	C
180.00-160.00			B	0.099	2.969		1	1	34.201			
			C	0.099	2.969		1	1	34.201			
T8	0.73	6.17	A	0.098	2.973	11	1	1	37.582	1.85	92.37	C
160.00-140.00			B	0.098	2.973		1	1	37.582			
			C	0.098	2.973		1	1	37.582			
T9	0.89	8.15	A	0.095	2.983	10	1	1	39.541	1.97	98.65	C
140.00-120.00			B	0.095	2.983		1	1	39.541			
			C	0.095	2.983		1	1	39.541			
T10	0.94	9.14	A	0.095	2.984	10	1	1	42.036	2.03	101.38	C
120.00-100.00			B	0.095	2.984		1	1	42.036			
			C	0.095	2.984		1	1	42.036			
T11	0.97	10.06	A	0.093	2.99	10	1	1	44.148	2.03	101.45	C
100.00-80.00			B	0.093	2.99		1	1	44.148			
			C	0.093	2.99		1	1	44.148			
T12	0.97	10.53	A	0.099	2.97	9	1	1	51.363	2.08	104.24	C
80.00-60.00			B	0.099	2.97		1	1	51.363			
			C	0.099	2.97		1	1	51.363			
T13	0.98	11.54	A	0.098	2.974	9	1	1	53.851	2.00	100.24	C
60.00-40.00			B	0.098	2.974		1	1	53.851			
			C	0.098	2.974		1	1	53.851			
T14	0.98	11.76	A	0.094	2.987	8	1	1	55.301	1.84	91.78	C
40.00-20.00			B	0.094	2.987		1	1	55.301			
			C	0.094	2.987		1	1	55.301			
T15	0.98	11.99	A	0.092	2.998	7	1	1	56.771	1.62	80.85	C
20.00-0.00			B	0.092	2.998		1	1	56.771			
			C	0.092	2.998		1	1	56.771			
Sum Weight:	9.18	103.64						OTM	3142.51 kip-ft	24.14		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.08	3.18	A	0.17	2.7	12	0.8	1	32.524	1.04	51.99	C
280.00-260.00			B	0.17	2.7		0.8	1	32.524			
			C	0.17	2.7		0.8	1	32.524			
T2	0.17	2.63	A	0.128	2.853	12	0.8	1	27.136	1.03	51.42	C
260.00-240.00			B	0.128	2.853		0.8	1	27.136			
			C	0.128	2.853		0.8	1	27.136			
T3	0.26	3.70	A	0.163	2.723	12	0.8	1	41.500	1.50	74.93	C
240.00-220.00			B	0.163	2.723		0.8	1	41.500			
			C	0.163	2.723		0.8	1	41.500			
T4	0.15	1.86	A	0.136	2.823	12	0.8	1	18.113	0.72	71.78	C
220.00-210.00			B	0.136	2.823		0.8	1	18.113			
			C	0.136	2.823		0.8	1	18.113			
T5	0.16	2.09	A	0.151	2.768	12	0.8	1	21.684	0.81	80.86	C
210.00-200.00			B	0.151	2.768		0.8	1	21.684			
			C	0.151	2.768		0.8	1	21.684			
T6	0.41	5.10	A	0.102	2.955	11	0.8	1	29.317	1.38	69.01	C
200.00-180.00			B	0.102	2.955		0.8	1	29.317			
			C	0.102	2.955		0.8	1	29.317			
T7	0.49	5.74	A	0.099	2.969	11	0.8	1	30.876	1.49	74.48	C
180.00-160.00			B	0.099	2.969		0.8	1	30.876			
			C	0.099	2.969		0.8	1	30.876			
T8	0.73	6.17	A	0.098	2.973	11	0.8	1	33.581	1.74	86.91	C
160.00-140.00			B	0.098	2.973		0.8	1	33.581			
			C	0.098	2.973		0.8	1	33.581			
T9	0.89	8.15	A	0.095	2.983	10	0.8	1	35.331	1.86	93.06	C
140.00-120.00			B	0.095	2.983		0.8	1	35.331			
			C	0.095	2.983		0.8	1	35.331			
T10	0.94	9.14	A	0.095	2.984	10	0.8	1	37.612	1.91	95.71	C
120.00-100.00			B	0.095	2.984		0.8	1	37.612			
			C	0.095	2.984		0.8	1	37.612			
T11	0.97	10.06	A	0.093	2.99	10	0.8	1	39.504	1.91	95.73	C
100.00-80.00			B	0.093	2.99		0.8	1	39.504			
			C	0.093	2.99		0.8	1	39.504			
T12	0.97	10.53	A	0.099	2.97	9	0.8	1	45.276	1.94	97.18	C
80.00-60.00			B	0.099	2.97		0.8	1	45.276			
			C	0.099	2.97		0.8	1	45.276			
T13	0.98	11.54	A	0.098	2.974	9	0.8	1	47.478	1.87	93.34	C
60.00-40.00			B	0.098	2.974		0.8	1	47.478			
			C	0.098	2.974		0.8	1	47.478			
T14	0.98	11.76	A	0.094	2.987	8	0.8	1	48.638	1.71	85.27	C
40.00-20.00			B	0.094	2.987		0.8	1	48.638			
			C	0.094	2.987		0.8	1	48.638			
T15	0.98	11.99	A	0.092	2.998	7	0.8	1	49.813	1.50	74.95	C
20.00-0.00			B	0.092	2.998		0.8	1	49.813			
			C	0.092	2.998		0.8	1	49.813			
Sum Weight:	9.18	103.64						OTM	2899.19 kip-ft	22.41		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.08	3.18	A	0.17	2.7	12	0.85	1	33.658	1.07	53.58	C
280.00-260.00			B	0.17	2.7		0.85	1	33.658			
			C	0.17	2.7		0.85	1	33.658			
T2	0.17	2.63	A	0.128	2.853	12	0.85	1	27.940	1.05	52.59	C
260.00-240.00			B	0.128	2.853		0.85	1	27.940			
			C	0.128	2.853		0.85	1	27.940			
T3	0.26	3.70	A	0.163	2.723	12	0.85	1	43.197	1.54	77.24	C
240.00-220.00			B	0.163	2.723		0.85	1	43.197			
			C	0.163	2.723		0.85	1	43.197			
T4	0.15	1.86	A	0.136	2.823	12	0.85	1	18.748	0.74	73.55	C
220.00-210.00			B	0.136	2.823		0.85	1	18.748			
			C	0.136	2.823		0.85	1	18.748			
T5	0.16	2.09	A	0.151	2.768	12	0.85	1	22.541	0.83	83.19	C
210.00-200.00			B	0.151	2.768		0.85	1	22.541			
			C	0.151	2.768		0.85	1	22.541			
T6	0.41	5.10	A	0.102	2.955	11	0.85	1	30.106	1.40	70.14	C
200.00-180.00			B	0.102	2.955		0.85	1	30.106			
			C	0.102	2.955		0.85	1	30.106			
T7	0.49	5.74	A	0.099	2.969	11	0.85	1	31.707	1.51	75.64	C
180.00-160.00			B	0.099	2.969		0.85	1	31.707			
			C	0.099	2.969		0.85	1	31.707			
T8	0.73	6.17	A	0.098	2.973	11	0.85	1	34.581	1.77	88.28	C
160.00-140.00			B	0.098	2.973		0.85	1	34.581			
			C	0.098	2.973		0.85	1	34.581			
T9	0.89	8.15	A	0.095	2.983	10	0.85	1	36.383	1.89	94.46	C
140.00-120.00			B	0.095	2.983		0.85	1	36.383			
			C	0.095	2.983		0.85	1	36.383			
T10	0.94	9.14	A	0.095	2.984	10	0.85	1	38.718	1.94	97.13	C
120.00-100.00			B	0.095	2.984		0.85	1	38.718			
			C	0.095	2.984		0.85	1	38.718			
T11	0.97	10.06	A	0.093	2.99	10	0.85	1	40.665	1.94	97.16	C
100.00-80.00			B	0.093	2.99		0.85	1	40.665			
			C	0.093	2.99		0.85	1	40.665			
T12	0.97	10.53	A	0.099	2.97	9	0.85	1	46.798	1.98	98.94	C
80.00-60.00			B	0.099	2.97		0.85	1	46.798			
			C	0.099	2.97		0.85	1	46.798			
T13	0.98	11.54	A	0.098	2.974	9	0.85	1	49.071	1.90	95.07	C
60.00-40.00			B	0.098	2.974		0.85	1	49.071			
			C	0.098	2.974		0.85	1	49.071			
T14	0.98	11.76	A	0.094	2.987	8	0.85	1	50.303	1.74	86.89	C
40.00-20.00			B	0.094	2.987		0.85	1	50.303			
			C	0.094	2.987		0.85	1	50.303			
T15	0.98	11.99	A	0.092	2.998	7	0.85	1	51.553	1.53	76.42	C
20.00-0.00			B	0.092	2.998		0.85	1	51.553			
			C	0.092	2.998		0.85	1	51.553			
Sum Weight:	9.18	103.64						OTM	2960.02 kip-ft	22.84		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft

Load Case	*Vertical Forces K*	*Sum of Forces X K*	*Sum of Forces Z K*	*Sum of Overturning Moments, M_x kip-ft*	*Sum of Overturning Moments, M_z kip-ft*	*Sum of Torques kip-ft*
Leg Weight	57.49					
Bracing Weight	46.14					
Total Member Self-Weight	103.64			-10.48	24.16	
Total Weight	124.28			-10.48	24.16	
Wind 0 deg - No Ice		2.24	-102.66	-15080.92	-499.13	-38.65
Wind 30 deg - No Ice		50.74	-86.37	-12789.24	-7559.34	-30.55
Wind 60 deg - No Ice		84.95	-48.86	-7227.61	-12534.12	-1.06
Wind 90 deg - No Ice		99.83	-0.39	-111.98	-14740.64	29.10
Wind 120 deg - No Ice		89.92	49.58	7115.70	-13247.59	39.16
Wind 150 deg - No Ice		49.15	82.47	11899.83	-7192.02	35.63
Wind 180 deg - No Ice		-0.06	94.20	13630.45	39.81	39.26
Wind 210 deg - No Ice		-49.73	84.75	12411.89	7368.57	33.39
Wind 240 deg - No Ice		-89.45	51.89	7648.48	13172.13	-0.51
Wind 270 deg - No Ice		-97.20	1.03	226.05	14190.90	-32.24
Wind 300 deg - No Ice		-80.71	-46.34	-6653.96	11620.13	-38.21
Wind 330 deg - No Ice		-46.50	-83.15	-12073.24	6636.56	-35.33
Member Ice	183.97					
Total Weight Ice	448.67			271.06	43.33	
Wind 0 deg - Ice		0.75	-50.74	-6899.40	-105.85	2.03
Wind 30 deg - Ice		25.48	-43.50	-5900.67	-3586.83	7.37
Wind 60 deg - Ice		43.34	-24.98	-3267.29	-6098.62	12.80
Wind 90 deg - Ice		50.34	-0.23	231.10	-7094.10	14.93
Wind 120 deg - Ice		44.30	24.76	3737.55	-6230.91	11.22
Wind 150 deg - Ice		24.94	42.55	6236.77	-3480.76	3.89
Wind 180 deg - Ice		-0.03	49.00	7149.16	48.58	-0.76
Wind 210 deg - Ice		-25.09	43.12	6360.61	3598.76	-5.12
Wind 240 deg - Ice		-44.04	25.48	3882.67	6270.56	-13.25
Wind 270 deg - Ice		-49.65	0.24	326.24	7031.95	-17.27
Wind 300 deg - Ice		-42.25	-24.31	-3124.69	5948.80	-12.04
Wind 330 deg - Ice		-24.31	-42.72	-5730.31	3425.11	-3.80
Total Weight	124.28			-10.48	24.16	
Wind 0 deg - Service		0.69	-31.50	-4632.69	-148.69	-11.86
Wind 30 deg - Service		15.57	-26.50	-3929.43	-2315.30	-9.37
Wind 60 deg - Service		26.07	-14.99	-2222.71	-3841.93	-0.32
Wind 90 deg - Service		30.63	-0.12	-39.10	-4519.06	8.93
Wind 120 deg - Service		27.60	15.22	2178.90	-4060.88	12.02
Wind 150 deg - Service		15.08	25.31	3647.03	-2202.57	10.93
Wind 180 deg - Service		-0.02	28.91	4178.12	16.70	12.05
Wind 210 deg - Service		-15.26	26.01	3804.17	2265.71	10.25
Wind 240 deg - Service		-27.45	15.92	2342.40	4046.68	-0.16
Wind 270 deg - Service		-29.83	0.32	64.64	4359.32	-9.89
Wind 300 deg - Service		-24.77	-14.22	-2046.67	3570.41	-11.72
Wind 330 deg - Service		-14.27	-25.52	-3709.71	2041.08	-10.84

Load Combinations

Comb. No.	*Description*
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice

Comb. No.	Description
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
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
T1	280 - 260	Leg	Max Tension	7	7.12	0.13	0.01
			Max. Compression	18	-11.13	2.74	-0.02
			Max. Mx	10	-10.84	2.75	-0.32
			Max. My	4	-1.02	0.01	1.82
			Max. Vy	29	-0.96	-2.53	-0.03
			Max. Vx	16	0.73	-0.04	-0.24
		Diagonal	Max Tension	9	5.02	-0.01	0.01
			Max. Compression	8	-5.20	0.00	0.00
			Max. Mx	32	-1.49	0.16	0.02
			Max. My	31	-0.07	0.14	-0.03
			Max. Vy	32	0.10	0.16	0.02

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	31	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	14	1.14	-0.05	-0.00
			Max. Compression	3	-1.47	0.11	0.01
			Max. Mx	34	0.54	0.16	0.01
			Max. My	35	0.63	0.13	0.02
			Max. Vy	34	0.10	0.16	0.01
			Max. Vx	31	-0.00	0.00	0.00
		Top Girt	Max Tension	35	0.35	0.00	0.00
			Max. Compression	22	-0.34	0.00	0.00
			Max. Mx	26	0.27	-0.53	0.00
			Max. My	36	0.18	0.00	0.02
			Max. Vy	26	0.18	0.00	0.00
			Max. Vx	36	-0.01	0.00	0.00
T2	260 - 240	Leg	Max Tension	7	27.38	0.60	-0.03
			Max. Compression	18	-35.48	2.93	0.15
			Max. Mx	18	-35.48	2.93	0.15
			Max. My	4	-1.94	-0.07	-2.10
			Max. Vy	18	-0.69	2.93	0.15
			Max. Vx	12	0.53	-0.09	-2.09
		Diagonal	Max Tension	8	6.97	0.00	0.00
			Max. Compression	8	-7.08	0.00	0.00
			Max. Mx	31	1.23	0.20	0.02
			Max. My	31	-0.08	0.19	-0.03
			Max. Vy	32	0.12	0.20	-0.03
			Max. Vx	31	-0.01	0.00	0.00
T3	240 - 220	Leg	Max Tension	7	55.33	0.11	-0.06
			Max. Compression	18	-68.46	2.39	0.11
			Max. Mx	18	-50.06	3.13	0.12
			Max. My	5	-3.87	-0.07	-2.72
			Max. Vy	6	-1.00	-0.02	-0.06
			Max. Vx	8	1.17	-0.07	0.12
		Diagonal	Max Tension	8	11.01	0.00	0.00
			Max. Compression	8	-11.13	0.00	0.00
			Max. Mx	31	1.91	0.29	-0.04
			Max. My	35	-1.75	0.23	0.04
			Max. Vy	33	0.15	0.26	-0.04
			Max. Vx	35	-0.01	0.00	0.00
		Top Girt	Max Tension	33	2.76	0.00	0.00
			Max. Compression	11	-1.30	0.00	0.00
			Max. Mx	26	2.45	-1.33	0.00
			Max. My	36	2.55	0.00	0.04
			Max. Vy	26	0.33	0.00	0.00
			Max. Vx	36	-0.01	0.00	0.00
		Mid Girt	Max Tension	33	2.60	0.00	0.00
			Max. Compression	19	-1.51	0.00	0.00
			Max. Mx	26	2.22	-0.82	0.00
			Max. My	36	2.41	0.00	0.02
			Max. Vy	26	0.19	0.00	0.00
			Max. Vx	36	-0.01	0.00	0.00
T4	220 - 210	Leg	Max Tension	7	73.87	0.07	-0.07
			Max. Compression	18	-89.52	3.03	-0.20
			Max. Mx	18	-89.52	3.03	-0.20
			Max. My	16	-3.04	-0.25	2.09
			Max. Vy	6	-0.96	0.00	-0.07
			Max. Vx	10	-1.31	-0.09	-1.41
		Diagonal	Max Tension	8	13.28	0.00	0.00
			Max. Compression	8	-13.40	0.00	0.00
			Max. Mx	35	2.98	0.34	-0.04
			Max. My	36	1.63	0.32	0.05
			Max. Vy	34	0.16	0.34	0.04

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	31	-0.01	0.00	0.00
T5	210 - 200	Leg	Max Tension	7	93.09	-0.26	0.14
			Max. Compression	18	-110.94	7.85	-0.62
			Max. Mx	6	91.07	-8.51	0.42
			Max. My	12	-3.65	-0.82	-7.24
			Max. Vy	29	1.27	-4.53	-0.06
			Max. Vx	18	1.50	-4.60	-6.45
		Diagonal	Max Tension	4	13.39	0.00	0.00
			Max. Compression	4	-13.40	0.00	0.00
			Max. Mx	34	3.74	0.32	0.05
			Max. My	32	-1.14	0.29	-0.06
			Max. Vy	32	0.17	0.31	0.06
			Max. Vx	32	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	18	1.92	0.00	0.00
			Max. Compression	18	-1.92	0.02	0.00
			Max. Mx	34	0.58	0.24	0.00
			Max. My	31	-0.33	0.23	0.01
			Max. Vy	34	0.12	0.24	0.00
			Max. Vx	31	-0.00	0.00	0.00
T6	200 - 180	Leg	Max Tension	7	124.22	2.56	0.41
			Max. Compression	18	-146.64	15.08	0.15
			Max. Mx	18	-146.64	15.08	0.15
			Max. My	4	-11.67	0.41	-8.74
			Max. Vy	19	-1.70	15.03	0.15
			Max. Vx	10	-1.65	1.30	-1.92
		Diagonal	Max Tension	4	21.15	0.00	0.00
			Max. Compression	4	-21.64	0.00	0.00
			Max. Mx	33	3.75	-0.70	-0.11
			Max. My	29	-5.81	-0.66	0.12
			Max. Vy	33	-0.25	-0.70	-0.11
			Max. Vx	34	-0.02	0.00	0.00
T7	180 - 160	Leg	Max Tension	7	171.85	7.90	-0.22
			Max. Compression	18	-202.38	19.66	0.25
			Max. Mx	18	-202.38	19.66	0.25
			Max. My	12	-6.77	-0.45	-10.90
			Max. Vy	6	2.36	-18.96	-0.29
			Max. Vx	12	1.46	-0.45	-10.90
		Diagonal	Max Tension	4	22.24	0.00	0.00
			Max. Compression	4	-22.43	0.00	0.00
			Max. Mx	33	5.28	-0.80	0.12
			Max. My	35	0.27	-0.79	-0.12
			Max. Vy	33	-0.27	-0.80	0.12
			Max. Vx	35	-0.02	0.00	0.00
T8	160 - 140	Leg	Max Tension	7	218.47	0.89	-0.14
			Max. Compression	18	-257.28	19.93	-0.09
			Max. Mx	10	-252.88	19.94	-0.84
			Max. My	12	-9.53	-0.43	-13.40
			Max. Vy	11	-3.24	19.94	-0.85
			Max. Vx	12	2.71	-0.43	-13.40
		Diagonal	Max Tension	8	25.60	0.00	0.00
			Max. Compression	8	-26.35	0.00	0.00
			Max. Mx	33	4.81	-1.03	0.15
			Max. My	29	-7.82	-0.97	0.16
			Max. Vy	33	-0.33	-1.03	0.15
			Max. Vx	35	-0.02	0.00	0.00
T9	140 - 120	Leg	Max Tension	7	272.28	1.81	0.13
			Max. Compression	18	-320.94	16.15	-0.26
			Max. Mx	18	-320.94	16.15	-0.26
			Max. My	12	-12.21	-0.05	-8.34
			Max. Vy	10	-1.83	15.98	-0.65

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	18	1.07	-7.68	-7.80
		Diagonal	Max Tension	8	29.57	0.00	0.00
			Max. Compression	8	-30.26	0.00	0.00
			Max. Mx	33	7.04	-1.35	-0.19
			Max. My	31	0.35	-1.32	0.19
			Max. Vy	33	-0.42	-1.35	-0.19
			Max. Vx	31	0.02	0.00	0.00
T10	120 - 100	Leg	Max Tension	7	328.07	4.44	0.35
			Max. Compression	18	-386.54	15.82	0.32
			Max. Mx	18	-386.54	15.82	0.32
			Max. My	4	-29.70	0.07	-9.16
			Max. Vy	19	-1.86	15.80	0.32
			Max. Vx	4	1.25	0.07	-9.16
		Diagonal	Max Tension	4	31.76	0.00	0.00
			Max. Compression	4	-32.19	0.00	0.00
			Max. Mx	33	6.16	-1.55	0.21
			Max. My	35	0.01	-1.37	-0.22
			Max. Vy	33	-0.45	-1.55	0.21
			Max. Vx	35	-0.03	0.00	0.00
T11	100 - 80	Leg	Max Tension	7	384.82	2.70	-0.24
			Max. Compression	18	-453.39	15.72	-0.07
			Max. Mx	18	-453.39	15.72	-0.07
			Max. My	13	-11.33	0.16	-7.72
			Max. Vy	18	-1.50	15.72	-0.07
			Max. Vx	12	0.84	0.28	-7.72
		Diagonal	Max Tension	8	33.16	0.00	0.00
			Max. Compression	8	-33.85	0.00	0.00
			Max. Mx	33	8.74	-1.66	-0.21
			Max. My	35	0.62	-1.64	-0.22
			Max. Vy	33	-0.47	-1.66	-0.21
			Max. Vx	35	-0.03	0.00	0.00
T12	80 - 60	Leg	Max Tension	7	441.17	0.99	0.07
			Max. Compression	18	-520.87	12.17	-0.10
			Max. Mx	19	-512.03	12.24	-0.11
			Max. My	8	-37.31	-0.34	10.96
			Max. Vy	6	1.21	-11.96	0.06
			Max. Vx	12	0.96	-0.53	-10.51
		Diagonal	Max Tension	8	34.61	0.00	0.00
			Max. Compression	8	-35.18	0.00	0.00
			Max. Mx	33	5.93	-2.18	0.28
			Max. My	29	-12.40	-2.07	0.29
			Max. Vy	33	-0.56	-2.18	0.28
			Max. Vx	35	-0.03	0.00	0.00
T13	60 - 40	Leg	Max Tension	7	496.76	0.83	0.07
			Max. Compression	18	-587.84	15.29	-0.09
			Max. Mx	18	-587.84	15.29	-0.09
			Max. My	8	-39.62	-1.22	6.51
			Max. Vy	18	-1.42	15.29	-0.09
			Max. Vx	8	0.83	-1.22	6.51
		Diagonal	Max Tension	4	36.20	0.00	0.00
			Max. Compression	4	-37.01	0.00	0.00
			Max. Mx	33	11.01	-2.18	-0.28
			Max. My	36	7.41	-2.16	-0.28
			Max. Vy	33	-0.57	-2.18	-0.28
			Max. Vx	36	-0.03	0.00	0.00
T14	40 - 20	Leg	Max Tension	7	553.27	-2.25	0.10
			Max. Compression	18	-656.98	10.02	-0.01
			Max. Mx	27	-310.65	14.30	0.06
			Max. My	4	-50.32	-0.56	-15.26
			Max. Vy	35	-1.27	-10.13	-0.05
			Max. Vx	4	1.26	-0.56	-15.26

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Diagonal	Max Tension	4	37.27	0.00	0.00
			Max. Compression	4	-37.67	0.00	0.00
			Max. Mx	33	4.53	-2.60	0.34
			Max. My	29	-15.37	-2.51	0.37
			Max. Vy	33	-0.60	-2.60	0.34
			Max. Vx	29	0.03	0.00	0.00
T15	20 - 0	Leg	Max Tension	7	605.99	-2.48	-0.06
			Max. Compression	18	-721.31	4.86	0.00
			Max. Mx	31	-355.03	8.61	0.06
			Max. My	4	-52.91	-1.44	-12.08
			Max. Vy	29	0.70	-0.95	-0.01
			Max. Vx	4	-0.95	-1.44	-12.08
		Diagonal	Max Tension	4	38.54	0.00	0.00
			Max. Compression	4	-39.86	0.00	0.00
			Max. Mx	34	14.55	-2.33	-0.29
			Max. My	35	12.43	-2.32	-0.29
			Max. Vy	34	-0.58	-2.33	-0.29
			Max. Vx	35	-0.03	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	754.78	86.52	-49.96
	Max. H_x	18	754.78	86.52	-49.96
	Max. H_z	5	-561.86	-63.29	45.47
	Min. Vert	7	-632.54	-75.82	43.77
	Min. H_x	7	-632.54	-75.82	43.77
	Min. H_z	18	754.78	86.52	-49.96
Leg B	Max. Vert	10	745.95	-86.40	-48.68
	Max. H_x	23	-581.78	72.03	40.53
	Max. H_z	25	-507.46	59.54	41.47
	Min. Vert	23	-581.78	72.03	40.53
	Min. H_x	10	745.95	-86.40	-48.68
	Min. H_z	10	745.95	-86.40	-48.68
Leg A	Max. Vert	2	747.85	-1.05	99.19
	Max. H_x	21	26.60	13.13	2.20
	Max. H_z	2	747.85	-1.05	99.19
	Min. Vert	15	-593.64	0.91	-83.77
	Min. H_x	8	54.78	-13.43	4.74
	Min. H_z	15	-593.64	0.91	-83.77

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	124.28	0.00	-0.00	-10.49	24.13	-0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	149.13	3.58	-164.26	-24184.37	-810.45	-61.98
0.9 Dead+1.6 Wind 0 deg - No Ice	111.85	3.58	-164.26	-24166.29	-817.11	-61.95

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.6 Wind 30 deg - No Ice	149.13	81.18	-138.19	-20508.84	-12134.49	-48.94
0.9 Dead+1.6 Wind 30 deg - No Ice	111.85	81.18	-138.19	-20493.01	-12134.19	-48.94
1.2 Dead+1.6 Wind 60 deg - No Ice	149.13	135.92	-78.18	-11588.30	-20113.50	-1.72
0.9 Dead+1.6 Wind 60 deg - No Ice	111.85	135.92	-78.18	-11578.01	-20108.32	-1.72
1.2 Dead+1.6 Wind 90 deg - No Ice	149.13	159.72	-0.62	-175.42	-23652.69	46.54
0.9 Dead+1.6 Wind 90 deg - No Ice	111.85	159.72	-0.62	-172.14	-23645.30	46.56
1.2 Dead+1.6 Wind 120 deg - No Ice	149.13	143.88	79.33	11417.14	-21257.82	62.75
0.9 Dead+1.6 Wind 120 deg - No Ice	111.85	143.88	79.33	11413.29	-21251.91	62.72
1.2 Dead+1.6 Wind 150 deg - No Ice	149.13	78.64	131.94	19090.38	-11544.88	57.15
0.9 Dead+1.6 Wind 150 deg - No Ice	111.85	78.64	131.94	19081.82	-11545.03	57.09
1.2 Dead+1.6 Wind 180 deg - No Ice	149.13	-0.10	150.71	21865.95	54.37	62.93
0.9 Dead+1.6 Wind 180 deg - No Ice	111.85	-0.10	150.71	21855.71	47.07	62.90
1.2 Dead+1.6 Wind 210 deg - No Ice	149.13	-79.57	135.60	19911.80	11809.05	53.49
0.9 Dead+1.6 Wind 210 deg - No Ice	111.85	-79.57	135.60	19902.66	11794.49	53.49
1.2 Dead+1.6 Wind 240 deg - No Ice	149.13	-143.11	83.02	12271.87	21117.38	-0.76
0.9 Dead+1.6 Wind 240 deg - No Ice	111.85	-143.11	83.02	12267.40	21097.06	-0.77
1.2 Dead+1.6 Wind 270 deg - No Ice	149.13	-155.51	1.65	367.09	22751.22	-51.58
0.9 Dead+1.6 Wind 270 deg - No Ice	111.85	-155.51	1.65	369.94	22729.96	-51.58
1.2 Dead+1.6 Wind 300 deg - No Ice	149.13	-129.14	-74.15	-10667.69	18627.67	-61.20
0.9 Dead+1.6 Wind 300 deg - No Ice	111.85	-129.14	-74.15	-10658.06	18609.05	-61.18
1.2 Dead+1.6 Wind 330 deg - No Ice	149.13	-74.40	-133.04	-19359.91	10634.65	-56.67
0.9 Dead+1.6 Wind 330 deg - No Ice	111.85	-74.40	-133.04	-19344.90	10620.92	-56.62
1.2 Dead+1.0 Ice+1.0 Temp	473.52	-0.00	-0.00	272.14	47.99	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	473.52	0.75	-50.74	-6963.60	-102.81	2.07
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	473.52	25.48	-43.50	-5955.82	-3615.62	7.62
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	473.52	43.34	-24.98	-3298.21	-6150.36	13.20
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	473.52	50.34	-0.23	232.24	-7155.02	15.38
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	473.52	44.30	24.76	3770.70	-6283.89	11.61
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	473.52	24.94	42.55	6292.68	-3508.43	4.09
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	473.52	-0.03	49.00	7213.40	53.26	-0.78
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	473.52	-25.09	43.12	6417.88	3636.03	-5.37

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 240 deg+1.0 Ice+1.0 Temp	473.52	-44.04	25.48	3917.38	6332.33	-13.66
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	473.52	-49.65	0.24	328.42	7100.51	-17.71
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	473.52	-42.25	-24.31	-3154.04	6007.20	-12.40
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	473.52	-24.31	-42.72	-5783.58	3460.44	-3.99
Dead+Wind 0 deg - Service	124.28	0.69	-31.50	-4644.70	-136.76	-11.88
Dead+Wind 30 deg - Service	124.28	15.57	-26.50	-3940.03	-2307.78	-9.39
Dead+Wind 60 deg - Service	124.28	26.07	-14.99	-2229.78	-3837.52	-0.33
Dead+Wind 90 deg - Service	124.28	30.63	-0.12	-41.69	-4516.06	8.93
Dead+Wind 120 deg - Service	124.28	27.59	15.22	2180.82	-4056.94	12.03
Dead+Wind 150 deg - Service	124.28	15.08	25.31	3651.94	-2194.79	10.96
Dead+Wind 180 deg - Service	124.28	-0.02	28.91	4184.10	29.03	12.07
Dead+Wind 210 deg - Service	124.28	-15.26	26.01	3809.44	2282.67	10.26
Dead+Wind 240 deg - Service	124.28	-27.45	15.92	2344.70	4067.28	-0.15
Dead+Wind 270 deg - Service	124.28	-29.83	0.32	62.30	4380.52	-9.89
Dead+Wind 300 deg - Service	124.28	-24.77	-14.22	-2053.31	3589.94	-11.74
Dead+Wind 330 deg - Service	124.28	-14.27	-25.52	-3719.78	2057.49	-10.86

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-124.28	0.00	-0.00	124.28	0.00	0.000%
2	3.58	-149.13	-164.26	-3.58	149.13	164.26	0.000%
3	3.58	-111.85	-164.26	-3.58	111.85	164.26	0.000%
4	81.18	-149.13	-138.19	-81.18	149.13	138.19	0.000%
5	81.18	-111.85	-138.19	-81.18	111.85	138.19	0.000%
6	135.92	-149.13	-78.18	-135.92	149.13	78.18	0.000%
7	135.92	-111.85	-78.18	-135.92	111.85	78.18	0.000%
8	159.72	-149.13	-0.62	-159.72	149.13	0.62	0.000%
9	159.72	-111.85	-0.62	-159.72	111.85	0.62	0.000%
10	143.88	-149.13	79.33	-143.88	149.13	-79.33	0.000%
11	143.88	-111.85	79.33	-143.88	111.85	-79.33	0.000%
12	78.64	-149.13	131.94	-78.64	149.13	-131.94	0.000%
13	78.64	-111.85	131.94	-78.64	111.85	-131.94	0.000%
14	-0.10	-149.13	150.71	0.10	149.13	-150.71	0.000%
15	-0.10	-111.85	150.71	0.10	111.85	-150.71	0.000%
16	-79.57	-149.13	135.60	79.57	149.13	-135.60	0.000%
17	-79.57	-111.85	135.60	79.57	111.85	-135.60	0.000%
18	-143.11	-149.13	83.02	143.11	149.13	-83.02	0.000%
19	-143.11	-111.85	83.02	143.11	111.85	-83.02	0.000%
20	-155.51	-149.13	1.65	155.51	149.13	-1.65	0.001%
21	-155.51	-111.85	1.65	155.51	111.85	-1.65	0.000%
22	-129.14	-149.13	-74.15	129.14	149.13	74.15	0.000%
23	-129.14	-111.85	-74.15	129.14	111.85	74.15	0.000%
24	-74.40	-149.13	-133.04	74.40	149.13	133.04	0.000%
25	-74.40	-111.85	-133.04	74.40	111.85	133.04	0.000%
26	0.00	-473.52	0.00	0.00	473.52	0.00	0.000%
27	0.75	-473.52	-50.74	-0.75	473.52	50.74	0.000%
28	25.48	-473.52	-43.50	-25.48	473.52	43.50	0.000%
29	43.34	-473.52	-24.98	-43.34	473.52	24.98	0.000%
30	50.34	-473.52	-0.23	-50.34	473.52	0.23	0.000%
31	44.30	-473.52	24.76	-44.30	473.52	-24.76	0.000%
32	24.94	-473.52	42.55	-24.94	473.52	-42.55	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
33	-0.03	-473.52	49.00	0.03	473.52	-49.00	0.000%
34	-25.09	-473.52	43.12	25.09	473.52	-43.12	0.000%
35	-44.04	-473.52	25.48	44.04	473.52	-25.48	0.000%
36	-49.65	-473.52	0.24	49.65	473.52	-0.24	0.000%
37	-42.25	-473.52	-24.31	42.25	473.52	24.31	0.000%
38	-24.31	-473.52	-42.72	24.31	473.52	42.72	0.000%
39	0.69	-124.28	-31.50	-0.69	124.28	31.50	0.000%
40	15.57	-124.28	-26.50	-15.57	124.28	26.50	0.000%
41	26.07	-124.28	-14.99	-26.07	124.28	14.99	0.000%
42	30.63	-124.28	-0.12	-30.63	124.28	0.12	0.000%
43	27.60	-124.28	15.22	-27.59	124.28	-15.22	0.000%
44	15.08	-124.28	25.31	-15.08	124.28	-25.31	0.000%
45	-0.02	-124.28	28.91	0.02	124.28	-28.91	0.000%
46	-15.26	-124.28	26.01	15.26	124.28	-26.01	0.000%
47	-27.45	-124.28	15.92	27.45	124.28	-15.92	0.000%
48	-29.83	-124.28	0.32	29.83	124.28	-0.32	0.000%
49	-24.77	-124.28	-14.22	24.77	124.28	14.22	0.000%
50	-14.27	-124.28	-25.52	14.27	124.28	25.52	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00005779
2	Yes	9	0.00000001	0.00005197
3	Yes	9	0.00000001	0.00004982
4	Yes	9	0.00000001	0.00005376
5	Yes	9	0.00000001	0.00005157
6	Yes	9	0.00000001	0.00005512
7	Yes	9	0.00000001	0.00005291
8	Yes	9	0.00000001	0.00005377
9	Yes	9	0.00000001	0.00005158
10	Yes	9	0.00000001	0.00005202
11	Yes	9	0.00000001	0.00004985
12	Yes	9	0.00000001	0.00005317
13	Yes	9	0.00000001	0.00005099
14	Yes	9	0.00000001	0.00005456
15	Yes	9	0.00000001	0.00005235
16	Yes	9	0.00000001	0.00005346
17	Yes	9	0.00000001	0.00005126
18	Yes	9	0.00000001	0.00005205
19	Yes	9	0.00000001	0.00004987
20	Yes	9	0.00000001	0.00005341
21	Yes	9	0.00000001	0.00005122
22	Yes	9	0.00000001	0.00005446
23	Yes	9	0.00000001	0.00005228
24	Yes	9	0.00000001	0.00005310
25	Yes	9	0.00000001	0.00005094
26	Yes	7	0.00000001	0.00010574
27	Yes	9	0.00000001	0.00005244
28	Yes	9	0.00000001	0.00005359
29	Yes	9	0.00000001	0.00005475
30	Yes	9	0.00000001	0.00005614
31	Yes	9	0.00000001	0.00005709
32	Yes	9	0.00000001	0.00005706
33	Yes	9	0.00000001	0.00005728

34	Yes	9	0.00000001	0.00005741
35	Yes	9	0.00000001	0.00005665
36	Yes	9	0.00000001	0.00005440
37	Yes	9	0.00000001	0.00005210
38	Yes	9	0.00000001	0.00005124
39	Yes	9	0.00000001	0.00004795
40	Yes	9	0.00000001	0.00004820
41	Yes	9	0.00000001	0.00004817
42	Yes	9	0.00000001	0.00004824
43	Yes	9	0.00000001	0.00004809
44	Yes	9	0.00000001	0.00004750
45	Yes	9	0.00000001	0.00004753
46	Yes	9	0.00000001	0.00004811
47	Yes	9	0.00000001	0.00004837
48	Yes	9	0.00000001	0.00004788
49	Yes	9	0.00000001	0.00004717
50	Yes	9	0.00000001	0.00004720

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	280 - 260	3.958	47	0.1133	0.0095
T2	260 - 240	3.447	47	0.1131	0.0091
T3	240 - 220	2.953	47	0.1077	0.0081
T4	220 - 210	2.496	47	0.0967	0.0065
T5	210 - 200	2.285	47	0.0928	0.0054
T6	200 - 180	2.081	47	0.0882	0.0048
T7	180 - 160	1.689	47	0.0797	0.0039
T8	160 - 140	1.341	47	0.0712	0.0031
T9	140 - 120	1.033	47	0.0611	0.0024
T10	120 - 100	0.775	47	0.0514	0.0019
T11	100 - 80	0.557	47	0.0425	0.0015
T12	80 - 60	0.374	47	0.0343	0.0012
T13	60 - 40	0.227	47	0.0254	0.0008
T14	40 - 20	0.118	47	0.0174	0.0005
T15	20 - 0	0.037	47	0.0088	0.0003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
280.00	Beacon Extender (4') 803062	47	3.958	0.1133	0.0095	Inf
279.00	DB538	47	3.932	0.1134	0.0095	Inf
276.00	8' Solid w/ Radome	47	3.855	0.1135	0.0095	Inf
266.00	8' Solid w/ Radome	47	3.599	0.1135	0.0093	393303
261.00	10' Dipole	47	3.472	0.1132	0.0092	288810
260.00	DB589-Y	47	3.447	0.1131	0.0091	273570
255.00	DB212-1-C	47	3.321	0.1125	0.0089	213718
241.00	SD110-SFXPASNM	47	2.977	0.1081	0.0081	131819
240.00	6' Dish	47	2.953	0.1077	0.0081	128655
235.00	TMA (12"x16"x6"")	47	2.835	0.1050	0.0078	116470
230.00	8' Solid w/ Radome	47	2.719	0.1021	0.0074	106926
220.00	8' Solid w/ Radome	47	2.496	0.0967	0.0065	97269

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
216.00	ANT450F10	47	2.410	0.0951	0.0060	116379
205.50	10' Solid w/ Radome	47	2.192	0.0908	0.0050	239270
200.00	TMA (12"x16"x6"")	47	2.081	0.0882	0.0048	301146
197.00	6' Solid w/ Radome	47	2.020	0.0868	0.0046	247361
195.00	10' Solid w/ Radome	47	1.980	0.0859	0.0046	207202
175.00	SC479	47	1.598	0.0777	0.0037	100325
168.00	ANT450F6	47	1.475	0.0748	0.0034	116606
163.00	6' Solid w/ Radome	47	1.391	0.0726	0.0032	131490
155.00	APXVTM14	47	1.260	0.0688	0.0029	122142
145.00	LNX-6515DS	47	1.106	0.0636	0.0025	94420
130.00	KRECO CO-36A	47	0.898	0.0561	0.0021	102552
128.00	3' Pivot Side Arm (50" pipe)	47	0.873	0.0552	0.0021	107034
126.00	PR-950	47	0.848	0.0542	0.0020	111926
124.00	ANT450F6	47	0.823	0.0533	0.0020	117270
123.00	SBX4-W60	47	0.811	0.0528	0.0020	120024
117.00	6' Grid Dish	47	0.740	0.0500	0.0019	130638
116.00	BR-6155	47	0.729	0.0496	0.0019	131152
104.00	6' Solid w/ Radome	47	0.598	0.0442	0.0016	135755
97.00	BR-6155	47	0.527	0.0413	0.0015	137075
55.00	5-ft dipole	47	0.197	0.0233	0.0008	133180
50.00	ANT790F2	47	0.169	0.0213	0.0007	158820

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	280 - 260	20.517	18	0.5855	0.0496
T2	260 - 240	17.875	18	0.5846	0.0476
T3	240 - 220	15.324	18	0.5566	0.0421
T4	220 - 210	12.961	18	0.5004	0.0341
T5	210 - 200	11.866	18	0.4809	0.0280
T6	200 - 180	10.807	18	0.4571	0.0249
T7	180 - 160	8.778	18	0.4134	0.0204
T8	160 - 140	6.971	18	0.3696	0.0161
T9	140 - 120	5.373	18	0.3170	0.0124
T10	120 - 100	4.032	18	0.2671	0.0101
T11	100 - 80	2.897	18	0.2209	0.0079
T12	80 - 60	1.946	18	0.1782	0.0060
T13	60 - 40	1.184	18	0.1319	0.0044
T14	40 - 20	0.613	18	0.0903	0.0029
T15	20 - 0	0.195	18	0.0458	0.0014

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
280.00	Beacon Extender (4') 803062	18	20.517	0.5855	0.0496	219815
279.00	DB538	18	20.384	0.5856	0.0495	219815
276.00	8' Solid w/ Radome	18	19.986	0.5862	0.0494	219815
266.00	8' Solid w/ Radome	18	18.663	0.5865	0.0485	78505

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
261.00	10' Dipole	18	18.006	0.5851	0.0477	57559
260.00	DB589-Y	18	17.875	0.5846	0.0476	54450
255.00	DB212-1-C	18	17.225	0.5811	0.0465	42096
241.00	SD110-SFXPASNM	18	15.448	0.5590	0.0424	25543
240.00	6' Dish	18	15.324	0.5566	0.0421	24939
235.00	TMA (12"x16"x6"")	18	14.712	0.5430	0.0405	22729
230.00	8' Solid w/ Radome	18	14.114	0.5280	0.0388	21025
220.00	8' Solid w/ Radome	18	12.961	0.5004	0.0341	19314
216.00	ANT450F10	18	12.517	0.4923	0.0315	22982
205.50	10' Solid w/ Radome	18	11.386	0.4706	0.0263	45428
200.00	TMA (12"x16"x6"")	18	10.807	0.4571	0.0249	58304
197.00	6' Solid w/ Radome	18	10.493	0.4499	0.0242	47979
195.00	10' Solid w/ Radome	18	10.285	0.4453	0.0238	40220
175.00	SC479	18	8.305	0.4031	0.0193	19475
168.00	ANT450F6	18	7.668	0.3881	0.0178	22554
163.00	6' Solid w/ Radome	18	7.228	0.3768	0.0168	25348
155.00	APXVTM14	18	6.551	0.3569	0.0151	23556
145.00	LNX-6515DS	18	5.750	0.3303	0.0132	18281
130.00	KRECO CO-36A	18	4.672	0.2915	0.0111	19811
128.00	3' Pivot Side Arm (50" pipe)	18	4.540	0.2865	0.0109	20659
126.00	PR-950	18	4.409	0.2816	0.0107	21582
124.00	ANT450F6	18	4.281	0.2768	0.0105	22588
123.00	SBX4-W60	18	4.218	0.2743	0.0104	23106
117.00	6' Grid Dish	18	3.850	0.2599	0.0098	25135
116.00	BR-6155	18	3.790	0.2575	0.0096	25244
104.00	6' Solid w/ Radome	18	3.109	0.2297	0.0083	26279
97.00	BR-6155	18	2.743	0.2144	0.0076	26526
55.00	5-ft dipole	18	1.025	0.1212	0.0040	25747
50.00	ANT790F2	18	0.878	0.1108	0.0036	30508

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	280	Leg	A325N	1.0000	6	1.19	53.01	0.022 ✔	1	Bolt Tension
		Diagonal	A325N	1.0000	1	5.02	26.38	0.190 ✔	1	Member Bearing
		Top Girt	A325N	1.0000	1	0.35	26.38	0.013 ✔	1	Member Bearing
T2	260	Leg	A325N	1.0000	6	4.56	53.01	0.086 ✔	1	Bolt Tension
		Diagonal	A325N	1.0000	1	6.97	26.38	0.264 ✔	1	Member Bearing
T3	240	Leg	A325N	1.0000	6	9.19	53.01	0.173 ✔	1	Bolt Tension
		Diagonal	A325N	1.0000	1	11.01	21.11	0.522 ✔	1	Member Bearing
		Top Girt	A325N	1.0000	1	2.76	31.66	0.087 ✔	1	Member Bearing
		Mid Girt	A325N	1.0000	1	2.60	12.72	0.205 ✔	1	Member Bearing
T4	220	Diagonal	A325N	1.0000	1	13.28	21.11	0.629 ✔	1	Member Bearing
T5	210	Leg	A325N	1.0000	6	15.52	53.01	0.293 ✔	1	Bolt Tension
		Diagonal	A325N	1.0000	1	13.39	21.11	0.634 ✔	1	Member Bearing
T6	200	Leg	A325N	1.0000	12	10.35	53.01	0.195 ✔	1	Bolt Tension

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
		Diagonal	A325N	0.8750	1	21.15	36.98	0.572 ✔	1	Gusset Bearing
T7	180	Leg	A325N	1.0000	12	14.32	53.01	0.270 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	1	22.24	36.98	0.602 ✔	1	Gusset Bearing
T8	160	Leg	A325N	1.0000	12	18.21	53.01	0.343 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	1	25.60	36.98	0.692 ✔	1	Gusset Bearing
T9	140	Leg	A325N	1.0000	12	22.69	53.01	0.428 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	1	29.57	36.98	0.800 ✔	1	Gusset Bearing
T10	120	Leg	A325N	1.0000	12	27.34	53.01	0.516 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	2	16.09	48.71	0.330 ✔	1	Bolt Shear
T11	100	Leg	A325N	1.2500	12	32.07	82.83	0.387 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	2	16.92	48.71	0.347 ✔	1	Bolt Shear
T12	80	Leg	A325N	1.2500	12	36.76	82.83	0.444 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	2	17.59	48.71	0.361 ✔	1	Bolt Shear
T13	60	Leg	A325N	1.2500	12	41.40	82.83	0.500 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	2	18.50	48.71	0.380 ✔	1	Bolt Shear
T14	40	Leg	A325N	1.2500	12	46.11	82.83	0.557 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	2	18.83	48.71	0.387 ✔	1	Bolt Shear
T15	20	Leg	F1554-105	1.2500	12	50.50	86.29	0.585 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	2	19.93	48.71	0.409 ✔	1	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	280 - 260	#12ZG - 1.25" - 1.00" conn. (Pirod 207628)	20.03	10.02	45.0 K=1.00	3.6816	-11.13	142.87	0.078 [1] ✔
T2	260 - 240	#12ZG - 1.25" - 1.00" conn. (Pirod 207628)	20.03	10.02	45.0 K=1.00	3.6816	-35.48	142.87	0.248 [1] ✔
T3	240 - 220	#12ZG - 1.25" - 1.00" conn. (Pirod 207628)	20.03	10.02	45.0 K=1.00	3.6816	-68.46	142.87	0.479 [1] ✔
T4	220 - 210	#12ZG - 1.75" - 1.00" conn. (Pirod 195557)	10.02	10.02	31.9 K=1.00	7.2158	-89.52	301.49	0.297 [1] ✔
T5	210 - 200	#12ZG - 1.75" - 1.00" conn. (Pirod 195557)	10.02	10.02	31.9 K=1.00	7.2158	-110.94	301.49	0.368 [1] ✔
T6	200 - 180	#12ZG -2.00" - 0.875" conn.-Trans (Pirod 211843)	20.03	20.03	48.8 K=1.00	9.4248	-146.63	356.29	0.412 [1] ✔
T7	180 - 160	#12ZG -2.25" - 0.875" conn.	20.03	20.03	48.8	11.9282	-202.38	451.15	0.449 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
		(Pirod 208334)			K=1.00				✔
T8	160 - 140	#12ZG -2.25" - 0.875" conn. (Pirod 208334)	20.03	20.03	48.8 K=1.00	11.9282	-257.28	451.15	0.570 [1] ✔
T9	140 - 120	#12ZG - 2.50" - 0.875" conn. (Pirod 208335)	20.03	20.03	48.7 K=1.00	14.7262	-320.94	557.27	0.576 [1] ✔
T10	120 - 100	#12ZG -2.75"-0.875 -DB-0.625"-HP- (Pirod 238706)	20.03	20.03	48.6 K=1.00	17.8187	-386.54	674.68	0.573 [1] ✔
T11	100 - 80	#12ZG -3.00"-0.875 -DB-0.625"-HP-Trans- (Pirod 238707)	20.03	20.03	48.5 K=1.00	21.2057	-453.39	803.44	0.564 [1] ✔
T12	80 - 60	#12ZG -3.00"-0.875 -DB-0.625"-HP- (Pirod 238708)	20.03	20.03	48.5 K=1.00	21.2057	-520.87	803.44	0.648 [1] ✔
T13	60 - 40	#12ZG -3.25"-0.875 -DB-0.625"-HP- (Pirod 238709)	20.03	20.03	48.4 K=1.00	24.8873	-587.84	943.57	0.623 [1] ✔
T14	40 - 20	#12ZG -3.25"-0.875 -DB-0.625"-HP- (Pirod 238709)	20.03	20.03	48.4 K=1.00	24.8873	-656.98	943.57	0.696 [1] ✔
T15	20 - 0	#12ZG -3.25"-0.875 -DB-0.625"-HP- (Pirod 238709)	20.03	20.03	48.4 K=1.00	24.8873	-721.31	943.57	0.764 [1] ✔

[1] P_u / ϕP_n controls

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n K	A in^2	V_u K	ϕV_n K	Stress Ratio
T1	280 - 260	0.5	1.48	99.1	165.67	0.1963	0.96	4.85	0.198 ✔
T2	260 - 240	0.5	1.48	99.1	165.67	0.1963	0.70	4.85	0.145 ✔
T3	240 - 220	0.5	1.48	99.1	165.67	0.1963	1.23	4.85	0.254 ✔
T4	220 - 210	0.5	1.44	96.9	324.71	0.1963	1.40	5.03	0.281 ✔
T5	210 - 200	0.5	1.44	96.9	324.71	0.1963	1.67	5.03	0.334 ✔
T6	200 - 180	0.5	1.39	93.2	424.12	0.1963	1.94	4.67	0.419 ✔
T7	180 - 160	0.5	1.38	92.4	536.77	0.1963	2.36	4.71	0.502 ✔
T8	160 - 140	0.5	1.38	92.4	536.77	0.1963	3.24	4.71	0.688 ✔
T9	140 - 120	0.5	1.36	91.6	662.68	0.1963	1.83	4.75	0.387 ✔
T10	120 - 100	0.625	1.35	72.6	801.84	0.3068	1.87	8.74	0.214 ✔
T11	100 - 80	0.625	1.34	72.0	954.26	0.3068	1.50	8.78	0.171 ✔

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n K	A in^2	V_u K	ϕV_n K	Stress Ratio
T12	80 - 60	0.625	1.34	72.0	954.26	0.3068	1.19	8.78	0.141 ✔
T13	60 - 40	0.625	1.33	71.4	1119.93	0.3068	1.42	8.82	0.161 ✔
T14	40 - 20	0.625	1.33	71.4	1119.93	0.3068	1.29	8.82	0.153 ✔
T15	20 - 0	0.625	1.33	71.4	1119.93	0.3068	0.93	8.82	0.112 ✔

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	280 - 260	L3x3x5/16	14.87	7.52	153.2 K=1.00	1.7800	-5.20	17.13	0.304 [1] ✔
T2	260 - 240	L3x3x5/16	16.49	8.32	169.5 K=1.00	1.7800	-7.08	13.99	0.506 [1] ✔
T3	240 - 220	L4x4x1/4	18.19	9.16	138.3 K=1.00	1.9400	-11.13	22.91	0.486 [1] ✔
T4	220 - 210	L4x4x1/4	19.06	9.60	144.8 K=1.00	1.9400	-13.40	20.89	0.641 [1] ✔
T5	210 - 200	L4x4x1/4	19.94	10.04	151.5 K=1.00	1.9400	-13.40	19.10	0.701 [1] ✔
T6	200 - 180	2L3 1/2x3 1/2x1/4	27.05	13.98	153.9 K=1.00	3.3800	-21.64	32.22	0.672 [1] ✔
T7	180 - 160	2L3 1/2x3 1/2x1/4	28.50	14.68	161.6 K=1.00	3.3800	-22.43	29.23	0.768 [1] ✔
T8	160 - 140	2L4x4x1/4	30.01	15.42	148.0 K=1.00	3.8800	-26.35	40.02	0.659 [1] ✔
T9	140 - 120	2L4x4x3/8	31.57	16.18	157.9 K=1.00	5.7200	-30.26	51.84	0.584 [1] ✔
T10	120 - 100	2L4x4x3/8	33.18	16.87	154.0 K=0.94	5.7200	-32.19	54.49	0.591 [1] ✔
T11	100 - 80	2L4x4x3/8	34.84	17.68	160.1 K=0.93	5.7200	-33.85	50.44	0.671 [1] ✔
T12	80 - 60	2L5x5x5/16	36.52	18.52	136.4 K=0.96	6.0500	-35.18	73.41	0.479 [1] ✔
T13	60 - 40	2L5x5x5/16	38.24	19.37	141.4 K=0.96	6.0500	-37.01	68.35	0.541 [1] ✔
T14	40 - 20	2L5x5x5/16	39.98	20.23	146.4 K=0.95	6.0500	-37.67	63.73	0.591 [1] ✔
T15	20 - 0	2L5x5x5/16	41.75	21.11	151.6 K=0.94	6.0500	-39.86	59.50	0.670 [1] ✔

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	280 - 260	L2 1/2x2 1/2x5/16	12.48	11.48	157.5 K=0.87	1.4600	-1.47	13.29	0.111 [1] ✔
T5	210 - 200	L2 1/2x2 1/2x3/16	19.49	18.49	221.6 K=0.78	0.9020	-1.92	4.15	0.464 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	280 - 260	L3 1/2x3 1/2x5/16	12.00	10.62	184.6 K=1.00	2.0900	-0.34	13.85	0.024 [1] ✔
T3	240 - 220	L5x5x3/8	16.00	14.62	177.2 K=1.00	3.6100	-1.30	25.98	0.050 [1] ✔

[1] P_u / ϕP_n controls

Mid Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T3	240 - 220	L3x3x3/16	17.00	15.67	315.4 K=1.00	1.0900	-1.51	2.47	0.610 [1] ✔
		KL/R > 200 (C) - 47							

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	280 - 260	#12ZG - 1.25" - 1.00" conn. (Pirod 207628)	20.03	10.02	45.0	3.6816	7.12	165.67	0.043 [1] ✔
T2	260 - 240	#12ZG - 1.25" - 1.00" conn. (Pirod 207628)	20.03	10.02	45.0	3.6816	27.38	165.67	0.165 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T3	240 - 220	#12ZG - 1.25" - 1.00" conn. (Pirod 207628)	20.03	10.02	45.0	3.6816	55.11	165.67	0.333 [1] ✔
T4	220 - 210	#12ZG - 1.75" - 1.00" conn. (Pirod 195557)	10.02	10.02	31.9	7.2158	73.87	324.71	0.227 [1] ✔
T5	210 - 200	#12ZG - 1.75" - 1.00" conn. (Pirod 195557)	10.02	10.02	31.9	7.2158	93.09	324.71	0.287 [1] ✔
T6	200 - 180	#12ZG -2.00" - 0.875" conn.-Trans (Pirod 211843)	20.03	20.03	48.8	9.4248	124.22	424.12	0.293 [1] ✔
T7	180 - 160	#12ZG -2.25" - 0.875" conn. (Pirod 208334)	20.03	20.03	48.8	11.9282	171.85	536.77	0.320 [1] ✔
T8	160 - 140	#12ZG -2.25" - 0.875" conn. (Pirod 208334)	20.03	20.03	48.8	11.9282	218.47	536.77	0.407 [1] ✔
T9	140 - 120	#12ZG - 2.50" - 0.875" conn. (Pirod 208335)	20.03	20.03	48.7	14.7262	272.28	662.68	0.411 [1] ✔
T10	120 - 100	#12ZG -2.75"-0.875 -DB-0.625"-HP- (Pirod 238706)	20.03	20.03	48.6	17.8187	328.07	801.84	0.409 [1] ✔
T11	100 - 80	#12ZG -3.00"-0.875 -DB-0.625"-HP-Trans- (Pirod 238707)	20.03	20.03	48.5	21.2057	384.82	954.26	0.403 [1] ✔
T12	80 - 60	#12ZG -3.00"-0.875 -DB-0.625"-HP- (Pirod 238708)	20.03	20.03	48.5	21.2057	441.17	954.26	0.462 [1] ✔
T13	60 - 40	#12ZG -3.25"-0.875 -DB-0.625"-HP- (Pirod 238709)	20.03	20.03	48.4	24.8873	496.76	1119.93	0.444 [1] ✔
T14	40 - 20	#12ZG -3.25"-0.875 -DB-0.625"-HP- (Pirod 238709)	20.03	20.03	48.4	24.8873	553.27	1119.93	0.494 [1] ✔
T15	20 - 0	#12ZG -3.25"-0.875 -DB-0.625"-HP- (Pirod 238709)	20.03	20.03	48.4	24.8873	605.99	1119.93	0.541 [1] ✔

[1] P_u / ϕP_n controls

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n K	A in^2	V_u K	ϕV_n K	Stress Ratio
T1	280 - 260	0.5	1.48	99.1	165.67	0.1963	0.96	4.85	0.198 ✔
T2	260 - 240	0.5	1.48	99.1	165.67	0.1963	0.70	4.85	0.145 ✔
T3	240 - 220	0.5	1.48	99.1	165.67	0.1963	1.23	4.85	0.254 ✔
T4	220 - 210	0.5	1.44	96.9	324.71	0.1963	1.40	5.03	0.281 ✔
T5	210 - 200	0.5	1.44	96.9	324.71	0.1963	1.67	5.03	0.334 ✔
T6	200 - 180	0.5	1.39	93.2	424.12	0.1963	1.94	4.67	0.419 ✔
T7	180 - 160	0.5	1.38	92.4	536.77	0.1963	2.36	4.71	0.502

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n K	A in^2	V_u K	ϕV_n K	Stress Ratio
T8	160 - 140	0.5	1.38	92.4	536.77	0.1963	3.24	4.71	0.688
T9	140 - 120	0.5	1.36	91.6	662.68	0.1963	1.83	4.75	0.387
T10	120 - 100	0.625	1.35	72.6	801.84	0.3068	1.87	8.74	0.214
T11	100 - 80	0.625	1.34	72.0	954.26	0.3068	1.50	8.78	0.171
T12	80 - 60	0.625	1.34	72.0	954.26	0.3068	1.19	8.78	0.141
T13	60 - 40	0.625	1.33	71.4	1119.93	0.3068	1.42	8.82	0.161
T14	40 - 20	0.625	1.33	71.4	1119.93	0.3068	1.29	8.82	0.153
T15	20 - 0	0.625	1.33	71.4	1119.93	0.3068	0.93	8.82	0.112

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	280 - 260	L3x3x5/16	14.87	7.52	100.4	1.0713	5.02	46.60	0.108 [1]
T2	260 - 240	L3x3x5/16	16.49	8.32	110.8	1.0713	6.97	46.60	0.150 [1]
T3	240 - 220	L4x4x1/4	18.19	9.16	89.8	1.2441	11.01	54.12	0.204 [1]
T4	220 - 210	L4x4x1/4	19.06	9.60	94.0	1.2441	13.28	54.12	0.245 [1]
T5	210 - 200	L4x4x1/4	19.94	10.04	98.2	1.2441	13.39	54.12	0.247 [1]
T6	200 - 180	2L3 1/2x3 1/2x1/4	27.05	13.98	156.0	2.1600	21.15	93.96	0.225 [1]
T7	180 - 160	2L3 1/2x3 1/2x1/4	28.50	14.68	163.7	2.1600	22.24	93.96	0.237 [1]
T8	160 - 140	2L4x4x1/4	30.01	15.42	149.8	2.5350	25.60	110.27	0.232 [1]
T9	140 - 120	2L4x4x3/8	31.57	16.18	159.7	3.7275	29.57	162.15	0.182 [1]
T10	120 - 100	2L4x4x3/8	33.18	16.87	167.5	3.7275	31.76	162.15	0.196 [1]
T11	100 - 80	2L4x4x3/8	34.84	17.68	175.4	3.7275	33.16	162.15	0.204 [1]
T12	80 - 60	2L5x5x5/16	36.52	18.52	143.8	4.0687	34.61	176.99	0.196 [1]
T13	60 - 40	2L5x5x5/16	38.24	19.37	150.3	4.0687	36.20	176.99	0.205 [1]
T14	40 - 20	2L5x5x5/16	39.98	20.23	156.9	4.0687	37.27	176.99	0.211 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T15	20 - 0	2L5x5x5/16	41.75	21.11	163.6	4.0687	38.54	176.99	0.218 [1]

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	280 - 260	L2 1/2x2 1/2x5/16	12.48	11.48	181.0	1.4600	1.14	47.30	0.024 [1]
T5	210 - 200	L2 1/2x2 1/2x3/16	19.49	18.49	285.1	0.9020	1.92	29.22	0.066 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	280 - 260	L3 1/2x3 1/2x5/16	12.00	10.62	122.2	1.3038	0.35	56.72	0.006 [1]
T3	240 - 220	L5x5x3/8	16.00	14.62	115.4	2.3911	2.76	104.01	0.027 [1]

[1] P_u / ϕP_n controls

Mid Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T3	240 - 220	L3x3x3/16	17.00	15.67	204.5	0.6593	2.60	28.68	0.091 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	280 - 260	Leg	#12ZG - 1.25" - 1.00" conn. (Pirod 207628)	1	-11.13	142.87	19.8	Pass
T2	260 - 240	Leg	#12ZG - 1.25" - 1.00" conn. (Pirod 207628)	25	-35.48	142.87	24.8	Pass
T3	240 - 220	Leg	#12ZG - 1.25" - 1.00" conn. (Pirod 207628)	40	-68.46	142.87	47.9	Pass
T4	220 - 210	Leg	#12ZG - 1.75" - 1.00" conn. (Pirod 195557)	61	-89.52	301.49	29.7	Pass
T5	210 - 200	Leg	#12ZG - 1.75" - 1.00" conn. (Pirod 195557)	70	-110.94	301.49	36.8	Pass
T6	200 - 180	Leg	#12ZG -2.00" - 0.875" conn.-Trans (Pirod 211843)	82	-146.63	356.29	41.9	Pass
T7	180 - 160	Leg	#12ZG -2.25" - 0.875" conn. (Pirod 208334)	91	-202.38	451.15	50.2	Pass
T8	160 - 140	Leg	#12ZG -2.25" - 0.875" conn. (Pirod 208334)	101	-252.88	451.15	68.8	Pass
T9	140 - 120	Leg	#12ZG - 2.50" - 0.875" conn. (Pirod 208335)	109	-320.94	557.27	57.6	Pass
T10	120 - 100	Leg	#12ZG -2.75"-0.875 -DB-0.625"-HP- (Pirod 238706)	118	-386.54	674.68	57.3	Pass
T11	100 - 80	Leg	#12ZG -3.00"-0.875 -DB-0.625"-HP-Trans- (Pirod 238707)	127	-453.39	803.44	56.4	Pass
T12	80 - 60	Leg	#12ZG -3.00"-0.875 -DB-0.625"-HP- (Pirod 238708)	136	-520.87	803.44	64.8	Pass
T13	60 - 40	Leg	#12ZG -3.25"-0.875 -DB-0.625"-HP- (Pirod 238709)	145	-587.84	943.57	62.3	Pass
T14	40 - 20	Leg	#12ZG -3.25"-0.875 -DB-0.625"-HP- (Pirod 238709)	154	-656.98	943.57	69.6	Pass
T15	20 - 0	Leg	#12ZG -3.25"-0.875 -DB-0.625"-HP- (Pirod 238709)	163	-721.31	943.57	76.4	Pass
T1	280 - 260	Diagonal	L3x3x5/16	8	-5.20	17.13	30.4	Pass
T2	260 - 240	Diagonal	L3x3x5/16	29	-7.08	13.99	50.6	Pass
T3	240 - 220	Diagonal	L4x4x1/4	50	-11.13	22.91	48.6 52.2 (b)	Pass
T4	220 - 210	Diagonal	L4x4x1/4	65	-13.40	20.89	64.1	Pass
T5	210 - 200	Diagonal	L4x4x1/4	77	-13.40	19.10	70.1	Pass
T6	200 - 180	Diagonal	2L3 1/2x3 1/2x1/4	89	-21.64	32.22	67.2	Pass
T7	180 - 160	Diagonal	2L3 1/2x3 1/2x1/4	98	-22.43	29.23	76.8	Pass
T8	160 - 140	Diagonal	2L4x4x1/4	104	-26.35	40.02	65.9 69.2 (b)	Pass
T9	140 - 120	Diagonal	2L4x4x3/8	113	-30.26	51.84	58.4 80.0 (b)	Pass
T10	120 - 100	Diagonal	2L4x4x3/8	125	-32.19	54.49	59.1	Pass
T11	100 - 80	Diagonal	2L4x4x3/8	131	-33.85	50.44	67.1	Pass
T12	80 - 60	Diagonal	2L5x5x5/16	140	-35.18	73.41	47.9	Pass
T13	60 - 40	Diagonal	2L5x5x5/16	152	-37.01	68.35	54.1	Pass
T14	40 - 20	Diagonal	2L5x5x5/16	161	-37.67	63.73	59.1	Pass
T15	20 - 0	Diagonal	2L5x5x5/16	170	-39.86	59.50	67.0	Pass
T1	280 - 260	Secondary Horizontal	L2 1/2x2 1/2x5/16	23	-1.47	13.29	11.1	Pass
T5	210 - 200	Secondary Horizontal	L2 1/2x2 1/2x3/16	81	-1.92	4.15	46.4	Pass
T1	280 - 260	Top Girt	L3 1/2x3 1/2x5/16	6	-0.34	13.85	2.4	Pass
T3	240 - 220	Top Girt	L5x5x3/8	45	-1.30	25.98	5.0 8.7 (b)	Pass
T3	240 - 220	Mid Girt	L3x3x3/16	47	-1.51	2.47	61.0	Pass
							Summary	
						Leg (T15)	76.4	Pass
						Diagonal	80.0	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
						(T9) Secondary Horizontal	46.4	Pass
						(T5) Top Girt	8.7	Pass
						(T3) Mid Girt	61.0	Pass
						(T3) Bolt Checks	80.0	Pass
						RATING =	**80.0**	**Pass**

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Subject:	FOUNDATION ANALYSIS
Location:	Haddam, CT
Rev. 0: 8/21/18	Prepared by: T.J.L. Checked by: C.F.C. Job No. 17159.10

Pier and Mat Foundation Analysis:

Input Data:

Tower Data

Overturning Moment =	$OM := 24424 \cdot ft \cdot kips$	(User Input from tnxTower)	
Shear Force =	$S_t := 165 \cdot kip$	(User Input from tnxTower)	
Axial Force =	$WT_t := 149 \cdot kip$	(User Input from tnxTower)	
Max Compression Force =	$C_t := 755 \cdot kip$	(User Input from tnxTower)	
Max Uplift Force =	$U_t := 633 \cdot kip$	(User Input from tnxTower)	
Tower Height =	$H_t := 280 \cdot ft$	(User Input)	
Tower Width =	$W_t := 40 \cdot ft$	(User Input)	
Tower Position on Foundation (1=offset, 2=centered) =	$Pos_t := 1$	(User Input)	

Footing Data:

Overall Depth of Footing =	$D_f := 6.0 \cdot ft$	(User Input)	
Length of Pier =	$L_p := 4.25 \cdot ft$	(User Input)	
Extension of Pier Above Grade =	$L_{pag} := 0.5 \cdot ft$	(User Input)	
Diameter of Pier =	$d_p := 5.5 \cdot ft$	(User Input)	
Thickness of Footing =	$T_f := 2.25 \cdot ft$	(User Input)	
Width of Footing =	$W_f := 49.5 \cdot ft$	(User Input)	

Material Properties:

Concrete Compressive Strength =	$f_c := 4000 \cdot psi$	(User Input)	
Steel Reinforcment Yield Strength =	$f_y := 60000 \cdot psi$	(User Input)	
Internal Friction Angle of Soil =	$\Phi_s := 30 \cdot deg$	(User Input)	
Allowable Soil Bearing Capacity =	$q_s := 6000 \cdot psf$	(User Input)	
Unit Weight of Soil =	$\gamma_{soil} := 125 \cdot pcf$	(User Input)	
Unit Weight of Concrete =	$\gamma_{conc} := 150 \cdot pcf$	(User Input)	
Foundation Bouyancy =	$Bouyancy := 0$	(User Input)	(Yes=1 / No=0)
Depth to Neglect =	$n := 0 \cdot ft$	(User Input)	
Cohesion of Clay Type Soil =	$c := 0 \cdot ksf$	(User Input)	(Use 0 for Sandy Soil)
Seismic Zone Factor =	$Z := 2$	(User Input)	(UBC-1997 Fig 23-2)
Coefficient of Friction Between Concrete =	$\mu := 0.45$	(User Input)	

Pier Reinforcement:

Bar Size =	$BS_{pier} := 9$	(User Input)	
Bar Diameter =	$d_{bpier} := 1.128 \cdot in$	(User Input)	
Number of Bars =	$NB_{pier} := 26$	(User Input)	
Clear Cover of Reinforcement =	$Cvr_{pier} := 3 \cdot in$	(User Input)	
Reinforcement Location Factor =	$\alpha_{pier} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Coating Factor =	$\beta_{pier} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Concrete Strength Factor =	$\lambda_{pier} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Reinforcement Size Factor =	$\gamma_{pier} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Diameter of Tie =	$d_{Tie} := 4 \cdot in$	(User Input)	

Pad Reinforcement:

Bar Size =	$BS_{top} := 11$	(User Input)	(Top of Pad)
Bar Diameter =	$d_{btop} := 1.41 \cdot in$	(User Input)	(Top of Pad)
Number of Bars =	$NB_{top} := 91$	(User Input)	(Top of Pad)
Bar Size =	$BS_{bot} := 11$	(User Input)	(Bottom of Pad)
Bar Diameter =	$d_{bbot} := 1.41 \cdot in$	(User Input)	(Bottom of Pad)
Number of Bars =	$NB_{bot} := 91$	(User Input)	(Bottom of Pad)
Clear Cover of Reinforcement =	$Cvr_{pad} := 3.0 \cdot in$	(User Input)	
Reinforcement Location Factor =	$\alpha_{pad} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Coating Factor =	$\beta_{pad} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Concrete Strength Factor =	$\lambda_{pad} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Reinforcement Size Factor =	$\gamma_{pad} := 1.0$	(User Input)	(ACI-2008 12.2.4)

Calculated Factors:

Pier Reinforcement Bar Area = $A_{bpier} := \frac{\pi \cdot d_{bpier}^2}{4} = 0.999 \cdot in^2$

Pad Top Reinforcement Bar Area = $A_{btop} := \frac{\pi \cdot d_{btop}^2}{4} = 1.561 \cdot in^2$

Pad Bottom Reinforcement Bar Area = $A_{bbot} := \frac{\pi \cdot d_{bbot}^2}{4} = 1.561 \cdot in^2$

Coefficient of Lateral Soil Pressure = $K_p := \frac{1 + \sin(\Phi_s)}{1 - \sin(\Phi_s)} = 3$

Load Factor = $LF := 1$

Stability of Footing:

Adjusted Concrete Unit Weight = $\gamma_c := if(Bouyancy = 1, \gamma_{conc} - 62.4pcf, \gamma_{conc}) = 150 \cdot pcf$

Adjusted Soil Unit Weight = $\gamma_s := if(Bouyancy = 1, \gamma_{soil} - 62.4pcf, \gamma_{soil}) = 125 \cdot pcf$

Passive Pressure = $P_{pn} := K_p \cdot \gamma_s \cdot n + c \cdot 2 \cdot \sqrt{K_p} = 0 \cdot ksf$

$P_{pt} := K_p \cdot \gamma_s \cdot (D_f - T_f) + c \cdot 2 \cdot \sqrt{K_p} = 1.406 \cdot ksf$

$P_{top} := if[n < (D_f - T_f), P_{pt}, P_{pn}] = 1.406 \cdot ksf$

$P_{bot} := K_p \cdot \gamma_s \cdot D_f + c \cdot 2 \cdot \sqrt{K_p} = 2.25 \cdot ksf$

$P_{ave} := \frac{P_{top} + P_{bot}}{2} = 1.828 \cdot ksf$

$T_p := if[n < (D_f - T_f), T_f, (D_f - n)] = 2.25 \cdot ft$

$A_p := W_f \cdot T_p = 111.375 \cdot ft^2$

Ultimate Shear = $S_u := P_{ave} \cdot A_p = 203.607 \cdot kip$

Weight of Concrete = $WT_c := \left[\left(W_f^2 \cdot T_f\right) + (3) \cdot \left(\frac{d_p^2 \cdot \pi}{4} L_p\right)\right] \cdot \gamma_c = 872.397 \cdot kip$

Weight of Soil Above Footing = $WT_{s1} := \left[\left[W_f^2 - (3) \cdot \left(\frac{d_p^2 \cdot \pi}{4}\right)\right] \cdot \left(\left|L_p - L_{pag} - n\right|\right)\right] \cdot \gamma_s = 1115 \cdot kip$

Weight of Soil Wedge at Back Face = $WT_{s2} := \left[\frac{(D_f - n)^2 \cdot \tan(\Phi_s)}{2} \cdot W_f\right] \cdot \gamma_s = 64.302 \cdot kip$

Foundation has undercut toe per Fred A. Nudd dwg 96-4992-1

Tower Offset = $X_{t1} := \left[\frac{W_f}{2} - \frac{(W_t \cdot \cos(30 \cdot deg))}{2}\right]$ $X_{t2} := \frac{W_f}{2} - \frac{(W_t \cdot \cos(30 \cdot deg))}{3}$

$X_t := if(Pos_t = 1, X_{t1}, X_{t2}) = 7.429$

$X_{off1} := \frac{W_f}{2} - \left[\frac{(W_t \cdot \cos(30 \cdot deg))}{3} + X_t\right] = 5.774$ $X_{off2} := 0$

$X_{off} := if(Pos_t = 1, X_{off1}, X_{off2})$ $X_{off} = 5.774 \cdot ft$

Total Weight = $WT_{tot} := 0.9WT_c + 0.75WT_{s1} = 1621.5 \cdot kip$

Resisting Moment = $M_r := (WT_{tot}) \cdot \frac{W_f}{2} + 0.9WT_t \cdot \left(\frac{W_f}{2} - X_{off}\right) + 0.75\left(S_u \cdot \frac{T_p}{3}\right) + 0.75WT_{s2} \cdot \left[W_f + \frac{(D_f - n) \cdot \tan(\Phi_s)}{3}\right] = 45235 \cdot kip \cdot ft$

Overturning Moment = $M_{ot} := OM + S_t \cdot (L_p + T_f) = 25496.5 \cdot kip \cdot ft$

Foundation has undercut toe per Fred A. Nudd dwg 96-4992-1

Factor of Safety Actual = $FS := \frac{M_r}{M_{ot}} = 1.77$

Factor of Safety Required = $FS_{req} := 1$ $OverTurning\_Moment\_Check := if(FS \geq FS_{req}, "Okay", "No Good")$

$OverTurning\_Moment\_Check = "Okay"$

Shear Capacity in Pier:

Shear Resistance of Pier = $S_p := \frac{P_{ave} \cdot A_p + \mu \cdot WT_{tot}}{FS_{req}} = 933.29 \cdot kips$

$Shear\_Check := if(S_p > S_t, "Okay", "No Good")$

$Shear\_Check = "Okay"$

Bearing Pressure Caused by Footing:

Total Load = $Load_{tot} := WT_c + WT_{s1} + WT_t = 2137 \cdot kip$

Area of the Mat = $A_{mat} := W_f^2 = 2.45 \times 10^3$

Section Modulus of Mat = $S := \frac{W_f^3}{6} = 2.02 \times 10^4 \cdot ft^3$

Maximum Pressure in Mat = $P_{max} := \frac{Load_{tot}}{A_{mat}} + \frac{M_{ot}}{S} = 2.133 \cdot ksf$

$Max\_Pressure\_Check := if(P_{max} < 0.75q_s, "Okay", "No Good")$

$Max\_Pressure\_Check = "Okay"$

Minimum Pressure in Mat = $P_{min} := \frac{Load_{tot}}{A_{mat}} - \frac{M_{ot}}{S} = -0.389 \cdot ksf$

$Min\_Pressure\_Check := if[(P_{min} \geq 0) \cdot (P_{min} < 0.75q_s), "Okay", "No Good"]$

$Min\_Pressure\_Check = "No Good"$

Distance to Resultant of Pressure Distribution = $X_p := \frac{P_{max}}{\frac{P_{max} - P_{min}}{W_f}} \cdot \frac{1}{3} = 13.953$

Distance to Kern = $X_k := \frac{W_f}{6} = 8.25$

Since Resultant Force is Not in Kern, Area to which Pressure is Applied Must be Reduced.

Eccentricity = $e := \frac{M_{ot}}{Load_{tot}} = 11.934$

Adjusted Soil Pressure = $P_a := \frac{2 \cdot Load_{tot}}{3 \cdot W_f \cdot \left(\frac{W_f}{2} - e\right)} = 2.245 \cdot ksf$

$q_{adj} := if(P_{min} < 0, P_a, P_{max}) = 2.245 \cdot ksf$

$Pressure\_Check := if(q_{adj} < 0.75q_s, "Okay", "No Good")$

$Pressure\_Check = "Okay"$

Concrete Bearing Capacity:

Strength Reduction Factor = $\Phi_c := 0.65$ (ACI-2008 9.3.2.2)

Bearing Strength Between Pier and Pad = $P_b := \Phi_c \cdot 0.85 \cdot f_c \cdot \frac{\pi \cdot d_p^2}{4} = 7.561 \times 10^3 \cdot kips$ (ACI-2008 10.14)

$Bearing\_Check := if(P_b > LF \cdot C_t, "Okay", "No Good")$

Bearing_Check = "Okay"

Shear Strength of Concrete:

Beam Shear: (Critical section located at a distance d from the face of Pier) (ACI 11.3.1.1)

$\phi_c := 0.85$ (ACI 9.3.2.5)

$d := T_f - Cvr_{pad} - d_{bbot} = 22.59 \cdot in$

$FL := LF \cdot \frac{C_t}{W_f^2} = 0.308 \cdot ksf$

$V_{req} := FL \cdot (X_t - .5 \cdot d_p - d) \cdot W_f = 42.661 \cdot kips$

$V_{Avail} := \phi_c \cdot 2 \cdot \sqrt{f_c \cdot psi} \cdot W_f \cdot d = 1443 \cdot kip$ (ACI-2008 11.2.1.1)

$Beam\_Shear\_Check := if(V_{req} < V_{Avail}, "Okay", "No Good")$

Beam_Shear_Check = "Okay"

Punching Shear: (Critical Section Located at a distance of d/2 from the face of pier) (ACI 11.11.1.2)

Critical Perimeter of Punching Shear = $b_o := (d_p + d) \cdot \pi = 23.2$

Area Included Inside Perimeter = $A_{bo} := \frac{\pi \cdot (d_p + d)^2}{4} = 42.8$

Required Shear Strength = $V_{req} := FL \cdot (W_f^2 - A_{bo}) = 742 \cdot kips$

Available Shear Strength = $V_{Avail} := \phi_c \cdot 4 \cdot \sqrt{f_c \cdot psi} \cdot b_o \cdot d = 1351.9 \cdot kip$ (ACI-2008 11.11.2.1)

$Punching\_Shear\_Check := if(V_{req} < V_{Avail}, "Okay", "No Good")$

Punching_Shear_Check = "Okay"

Steel Reinforcement in Pad:

Required Reinforcement for Bending:

Strength Reduction Factor = $\phi_m := .90$ (ACI-2008 9.3.2.1)

Maximum Moment in Pad = $M_{max} := 12040 \cdot kip \cdot ft$ (User Input)

Design Moment = $M_n := \frac{LF \cdot M_{max}}{\phi_m} = 1.338 \times 10^4 \cdot kips \cdot ft$

$$\beta := \begin{cases} 0.85 & \text{if } 2500 \cdot psi \le f_c \le 4000 \cdot psi \\ 0.65 & \text{if } f_c > 8000 \cdot psi \\ \left[0.85 - \left[\frac{\left(\frac{f_c}{psi} - 4000\right)}{1000}\right] \cdot 0.5\right] & \text{otherwise} \end{cases} = 0.85$$

(ACI-200810.2.7.3)

$b_{eff} := W_t \cdot \cos(30 \cdot deg) + d_p = 481.692 \cdot in$

$A_s := \frac{M_n}{(f_y \cdot d)} = 118.44 \cdot in^2$

$a := \frac{A_s \cdot f_y}{\beta \cdot f_c \cdot b_{eff}} = 4.339 \cdot in$

$A_s := \frac{M_n}{f_y \cdot \left(d - \frac{a}{2}\right)} = 131.023 \cdot in^2$

$\rho := \frac{A_s}{b_{eff} d} = 0.14449 \cdot in$

Required Reinforcement for Temperature and Shrinkage:

$$\rho_{sh} := \begin{cases} .0018 & \text{if } f_y \geq 60000 \cdot psi \\ .0020 & \text{otherwise} \end{cases} = 0.0018$$

(ACI -2008 7.12.2.1)

Check Bottom Bars:

$$As := if\left(\rho \geq \rho_{sh}, A_s, \rho_{sh} \cdot \frac{b_{eff}}{2} \cdot d\right) = 131 \cdot in^2$$

$$As_{prov} := A_{bbot} \cdot NB_{bot} = 142.1 \cdot in^2$$

$$Pad\_Reinforcement\_Bot := if\left(As_{prov} > As, "Okay", "No\ Good"\right)$$

Pad_Reinforcement_Bot = "Okay"

Check top Bars:

$$As := if\left(\rho \geq \rho_{sh}, A_s, \rho_{sh} \cdot \frac{b_{eff}}{2} \cdot d\right) = 131 \cdot in^2$$

$$As_{prov} := A_{btop} \cdot NB_{top} = 142.1 \cdot in^2$$

$$Pad\_Reinforcement\_Top := if\left(As_{prov} > As, "Okay", "No\ Good"\right)$$

Pad_Reinforcement_Top = "Okay"

Steel Reinforcement in Pier:

Area of Pier = $A_p := \frac{\pi \cdot d_p^2}{4} = 3421.19 \cdot in^2$

$A_{smin} := 0.01 \cdot 0.5 \cdot A_p = 17.11 \cdot in^2$ (ACI-2008 10.8.4 & 10.9.1)

$A_{sprov} := NB_{pier} \cdot A_{bpier} = 25.98 \cdot in^2$

$Steel\_Area\_Check := if(A_{sprov} > A_{smin}, "Okay", "No Good")$

Steel_Area_Check = "Okay"

Bar Spacing In Pier = $B_{sPier} := \frac{d_p \cdot \pi}{NB_{pier}} - d_{bpier} = 6.847 \cdot in$

Diameter of Reinforcement Cage = $Diam_{cage} := d_p - 2 \cdot Cvr_{pier} = 60 \cdot in$

Maximum Moment in Pier = $M_p := S_t \cdot (L_p) \cdot LF = 8415 \cdot in \cdot kips$

Pier Check evaluated from outside program and results are listed below;

$(D \ N \ n \ P_u \ M_{xu}) := \left(d_p \cdot 12 \ \ NB_{pier} \ \ BS_{pier} \ \ \frac{C_t \cdot 1.333}{kips} \ \ \frac{M_p}{in \cdot kips}\right)$

$(D \ N \ n \ P_u \ M_{xu}) = (66 \ \ 26 \ \ 9 \ \ 1.006 \times 10^3 \ \ 8.415 \times 10^3)$

$(\phi P_n \ \ \phi M_{xn} \ \ f_{sp} \ \ \rho) := (0 \ \ 0 \ \ 0 \ \ 0)$

$(\phi P_n \ \ \phi M_{xn} \ \ f_{sp} \ \ \rho) := \phi P'_n(D, N, n, P_u, M_{xu})^T$

$(\phi P_n \ \ \phi M_{xn} \ \ f_{sp} \ \ \rho) = (5.114 \times 10^3 \ \ 4.276 \times 10^4 \ \ -26.502 \ \ 7.6 \times 10^{-3})$

$Axial\_Load\_Check := if(\phi P_n \geq P_u, "Okay", "No Good")$

Axial_Load_Check = "Okay"

$Bending\_Check := if(\phi M_{xn} \geq M_{xu}, "Okay", "No Good")$

Bending_Check = "Okay"

Augment ID: CT33XC089Q17.1

RFDS ID: 45820

SprintVision

RF Design Sheet

Site Identification	
Cascade	CT33XC089
SMS Schedule ID	12323228
SMS Schedule Name	DO Macro Upgrade
PID	DOKU_CT33XC089
RRU OEM	ALU
Switch OEM	Alcatel Lucent
RFDS Issue Date	
RFDS Revision Date	2017-10-18 03:20:53.0
RFDS Revision	3

Filter Analysis Complete	YES
RFDS - Issue Date	
Design Status	Complete
Project Description	DO Macro Upgrade - Add 800MHz (3G + 4G) and 2500 MHz

Battery Backup Cabinet Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	

Junction Box Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	
Junction Boxes needed at site	

BTS #2 Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	
Needed at site	

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RF Manager Phone	617-233-2920

Carrier Count	
2500 LTE	3
1900 LTE	1
1900 EVDO	
1900 Voice	1
800 LTE	1
800 Voice	1

UE Relay Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
UE Relay Azimuth	
Manufacturer	
UE Relay CL Height (meters)	

ALU Top Hat Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	
Top Hat Quantity	

Power Protection Cabinet Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	
Power Protection Cabinet	

Location Details	
Latitude	41.44360277
Longitude	-72.56638611
Market	Northern Connecticut
Region	Northeast
City	West Haddam
State	CT
Zip Code	CT/06438
County	Middlesex

2500MHz	3
1900MHz	3
800MHz	3

GPS Antenna Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	
GPS Antenna needed at site	

Repeater Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	

Growth Cabinet Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	

BTS #1 Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	
Number of BTS #1	

A&E Drawing Requirements

10/10/2017 (WR): RFDS revised to modify RRU location to "GM to Standard".

Additional RF Notes Special Construction Requirements

10/10/2017 (WR): RFDS revised to modify RRU location to "GM to Standard".

Band: 2500	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Radio Model						
Model Number	TD-RRH8x20-25	TD-RRH8x20-25	TD-RRH8x20-25	N/A	N/A	N/A
Weight (lbs)	76.2	76.2	76.2	N/A	N/A	N/A
Dimensions	26 x 18.6 x 6.7	26 x 18.6 x 6.7	26 x 18.6 x 6.7	N/A	N/A	N/A
Manufacturer	ALU	ALU	ALU	N/A	N/A	N/A
Number of RRUs needed	1	1	1	0	0	0
Filter Model						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Filter Model 2						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A		N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Filter Model 3						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions		N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Trunk Cable 1						
Model Number	Hybriflex	N/A	N/A	N/A	N/A	N/A
Weight (Lbs.)	1	N/A	N/A	N/A	N/A	N/A
Dimensions (In.)	1.54	N/A	N/A	N/A	N/A	N/A
Manufacturer	ALU	N/A	N/A	N/A	N/A	N/A
Trunk Cable 1 Qty						
Power Junction Cylinder Model						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (Lbs.)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions (In.)	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Power Junction Cylinder Qty	0	0	0	0	0	0
Optical Junction Cylinder Qty needed						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (Lbs.)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions (In.)	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Optical Junction Cylinder Qty needed	0	0	0	0	0	0

Band: 1900	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Radio Model						
Model Number	RRH-4x45-1900	RRH-4x45-1900	RRH-4x45-1900	N/A	N/A	N/A
Weight (lbs)	69.5	69.5	69.5	N/A	N/A	N/A
Dimensions	25 x 12 x 12	25 x 12 x 12	25 x 12 x 12	N/A	N/A	N/A
Manufacturer	ALU	ALU	ALU	N/A	N/A	N/A
Number of RRUs needed	1	1	1	0	0	0
Filter Model						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Filter Model 2						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A		N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Filter Model 3						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions		N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Trunk Cable 1						
Model Number	1900 Hybrid_ALU	1900 Hybrid_ALU	1900 Hybrid_ALU	N/A	N/A	N/A
Weight (Lbs.)	1.1	1.1	1.1	N/A	N/A	N/A
Dimensions (In.)	1.25	1.25	1.25	N/A	N/A	N/A
Manufacturer	ALU	ALU	ALU	N/A	N/A	N/A
Trunk Cable 1 Qty						
Power Junction Cylinder Model						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (Lbs.)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions (In.)	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Power Junction Cylinder Qty	0	0	0	0	0	0
Optical Junction Cylinder Qty needed						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (Lbs.)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions (In.)	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Optical Junction Cylinder Qty needed	0	0	0	0	0	0

Band: 800	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Radio Model						
Model Number	RRH-2x50-800	RRH-2x50-800	RRH-2x50-800	N/A	N/A	N/A
Weight (lbs)	69.1	69.1	69.1	N/A	N/A	N/A
Dimensions	16 x 13 x 10	16 x 13 x 10	16 x 13 x 10	N/A	N/A	N/A
Manufacturer	ALU	ALU	ALU	N/A	N/A	N/A
Number of RRUs needed	2	2	2	0	0	0
Filter Model						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Filter Model 2						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A		N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Filter Model 3						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions		N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Trunk Cable 1						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (Lbs.)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions (In.)	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Trunk Cable 1 Qty						
Power Junction Cylinder Model						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (Lbs.)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions (In.)	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Power Junction Cylinder Qty	0	0	0	0	0	0
Optical Junction Cylinder Qty needed						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (Lbs.)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions (In.)	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Optical Junction Cylinder Qty needed	0	0	0	0	0	0

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RF Design Sheet

Band: 2500	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1						
Model Number	APXVTM14-ALU-I20	APXVTM14-ALU-I20	APXVTM14-ALU-I20			
Weight (lbs)	56.2	56.2	56.2	N/A	N/A	N/A
Dimensions	56.3 x 12.6 x 6.3	56.3 x 12.6 x 6.3	56.3 x 12.6 x 6.3	N/A	N/A	N/A
Manufacturer	RFS	RFS	RFS	N/A	N/A	N/A
Ant1 Top Jumper Make/Mode/Qtyl	2.5 Jumper | 8	2.5 Jumper | 8	2.5 Jumper | 8	N/A | 0	N/A | 0	N/A | 0
Ant 1 RF requested Diameter	1/2"	1/2"	1/2"	N/A	N/A	N/A
Ant 1 RF requested Top Jumper Length(ft)	8	8	8	N/A	N/A	N/A
Antenna 1 Azimuth	30	150	270	N/A	N/A	N/A
Antenna 1 Mechanical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Center Line (ft)	149.9671964	149.9671964	149.9671964	N/A	N/A	N/A
Antenna 1 Electrical DT	2	2	2	N/A	N/A	N/A
Antenna 1 Electrical DT 2	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Electrical DT 3	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Twist	N/A	N/A	N/A	N/A	N/A	N/A
Antenna2						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Ant2 Top Jumper Make/Mode/Qtyl	N/A | 0	N/A | 0	N/A | 0	N/A | 0	N/A | 0	N/A | 0
Ant 2 RF Top Jumper Diameter	N/A	N/A	N/A	N/A	N/A	N/A
Ant 2 RF Top Jumper Length(ft)	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Azimuth	0	N/A	N/A	N/A	N/A	N/A
Antenna 2 Mechanical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Center Line (ft)	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Electrical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Electrical DT 2	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Electrical DT 3	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Twist	N/A	N/A	N/A	N/A	N/A	N/A

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RF Design Sheet

Band: 1900	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1						
Model Number	NNVV-65B-R4	NNVV-65B-R4	NNVV-65B-R4			
Weight (lbs)	84.7	84.7	84.7	N/A	N/A	N/A
Dimensions	72 x 19.6 x 7.8	72 x 19.6 x 7.8	72 x 19.6 x 7.8	N/A	N/A	N/A
Manufacturer	CommScope	CommScope	CommScope	N/A	N/A	N/A
Ant1 Top Jumper Make/Mode/Qtyl	800/1900 Jumper 4	800/1900 Jumper 4	800/1900 Jumper 4	N/A 0	N/A 0	N/A 0
Ant 1 RF requested Diameter	1/2"	1/2"	1/2"	N/A	N/A	N/A
Ant 1 RF requested Top Jumper Length(ft)	8	8	8	N/A	N/A	N/A
Antenna 1 Azimuth	30	150	270	N/A	N/A	N/A
Antenna 1 Mechanical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Center Line (ft)	149.9671964	149.9671964	149.9671964	N/A	N/A	N/A
Antenna 1 Electrical DT	3	3	3	N/A	N/A	N/A
Antenna 1 Electrical DT 2	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Electrical DT 3	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Twist	N/A	N/A	N/A	N/A	N/A	N/A
Antenna2						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	
Ant2 Top Jumper Make/Mode/Qtyl	N/A 0	N/A 0	N/A 0	N/A 0	N/A 0	N/A
Ant 2 RF Top Jumper Diameter	N/A	N/A	N/A	N/A	N/A	N/A
Ant 2 RF Top Jumper Length(ft)	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Azimuth	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Mechanical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Center Line (ft)	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Electrical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Electrical DT 2	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Electrical DT 3	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Twist	N/A	N/A	N/A	N/A	N/A	N/A

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RF Design Sheet

Band: 800	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1						
Model Number	Antenna assigned on a different band	Antenna assigned on a different band	Antenna assigned on a different band			
Weight (lbs)	0	0	0	N/A	N/A	N/A
Dimensions	0 x 0 x 0	0 x 0 x 0	0 x 0 x 0	N/A	N/A	N/A
Manufacturer	-	-	-	N/A	N/A	N/A
Ant1 Top Jumper Make/Mode/Qtyl	800/1900 Jumper | 4	800/1900 Jumper | 4	800/1900 Jumper | 4	N/A | 0	N/A | 0	N/A | 0
Ant 1 RF requested Diameter	1/2"	1/2"	1/2"	N/A	N/A	N/A
Ant 1 RF requested Top Jumper Length(ft)	8	8	8	N/A	N/A	N/A
Antenna 1 Azimuth	30	150	270	N/A	N/A	N/A
Antenna 1 Mechanical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Center Line (ft)	149.9671964	149.9671964	149.9671964	N/A	N/A	N/A
Antenna 1 Electrical DT	5	5	5	N/A	N/A	N/A
Antenna 1 Electrical DT 2	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Electrical DT 3	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Twist	N/A	N/A	N/A	N/A	N/A	N/A
Antenna2						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	
Ant2 Top Jumper Make/Mode/Qtyl	N/A | 0	N/A | 0	N/A | 0	N/A | 0	N/A | 0	N/A |
Ant 2 RF Top Jumper Diameter	N/A	N/A	N/A	N/A	N/A	N/A
Ant 2 RF Top Jumper Length(ft)	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Azimuth	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Mechanical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Center Line (ft)	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Electrical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Electrical DT 2	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Electrical DT 3	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Twist	N/A	N/A	N/A	N/A	N/A	N/A

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RF Design Sheet

Band: 2500	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1 Split						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Accept Proposed Ant1 Model Change?	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 band combined with	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Upper Passive Component Model						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Ant1 Upper Passive Comp Qty needed	0	0	0	0	0	0
Ant1 Upper Pass Comp band combi with						
Antenna 1 Lower Passive Component Model						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Ant1 Lower Passive Comp Qty needed	0	0	0	0	0	0
Ant1 Low Pass Comp band comb with						
Position Ant 1						
Antenna2 Split						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Accept Proposed Ant2 Model Change?	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 band combined with						
Antenna 2 Upper Passive Component Model						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Ant2 Upper Passive Comp Qty needed	0	0	0	0	0	0
Antenna 2 Lower Passive Component Model						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Ant1 Lower Passive Comp Qty needed	0	0	0	0	0	0
Ant1 Lower Passive Component band combined with						
Position Ant 2						

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RF Design Sheet

Band: 1900	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1 Split						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Accept Proposed Ant1 Model Change?	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 band combined with	800MHz	800MHz	800MHz	N/A	N/A	N/A
Antenna 1 Upper Passive Component Model						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Ant1 Upper Passive Comp Qty needed	0	0	0	0	0	0
Ant1 Upper Pass Comp band combi with						
Antenna 1 Lower Passive Component Model						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Ant1 Lower Passive Comp Qty needed	0	0	0	0	0	0
Ant1 Low Pass Comp band comb with						
Position Ant 1						
Antenna2 Split						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Accept Proposed Ant2 Model Change?	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 band combined with						
Antenna 2 Upper Passive Component Model						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Ant2 Upper Passive Comp Qty needed	0	0	0	0	0	0
Antenna 2 Lower Passive Component Model						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Ant1 Lower Passive Comp Qty needed	0	0	0	0	0	0
Ant1 Lower Passive Component band combined with						
Position Ant 2						

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RF Design Sheet

Band: 800	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1 Split						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Accept Proposed Ant1 Model Change?	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 band combined with	1900MHz	1900MHz	1900MHz	N/A	N/A	N/A
Antenna 1 Upper Passive Component Model						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Ant1 Upper Passive Comp Qty needed	0	0	0	0	0	0
Ant1 Upper Pass Comp band combi with						
Antenna 1 Lower Passive Component Model						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Ant1 Lower Passive Comp Qty needed	0	0	0	0	0	0
Ant1 Low Pass Comp band comb with						
Position Ant 1						
Antenna2 Split						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Accept Proposed Ant2 Model Change?	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 band combined with						
Antenna 2 Upper Passive Component Model						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Ant2 Upper Passive Comp Qty needed	0	0	0	0	0	0
Antenna 2 Lower Passive Component Model						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Ant1 Lower Passive Comp Qty needed	0	0	0	0	0	0
Ant1 Lower Passive Component band combined with						
Position Ant 2						