NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Northeast Site Solutions
Victoria Masse
420 Main Street #2, Sturbridge, MA 01566
860-306-2326
victoria@northeastsitesolutions.com

January 18, 2021

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

RE: Notice of Exempt Modification
1975 Huntington Rd, Stratford CT 06614
Latitude: 41.23326000
Longitude: -73.13980000
T-Mobile Site#: CT11681A_L600

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antenna at the 110-foot level of the existing 110-foot transmission pole (#826) located at 1975 Huntington Rd, Stratford CT. The electric transmission pole (#826) is owned by CL&P d/b/a Eversource. The property which holds the utility easement is owned by CL&P d/b/a Eversource. T-Mobile now intends to install three (3) new 600/700/1900/2100 MHz 5G antenna. The new antenna would be installed at the 110-foot level of the tower. T-Mobile also intends to make the following modifications.
Planned Modifications:
Remove: NONE

Remove and Replace:
(3)ANDREW-LNX-615D5-A1M (**Remove**) - (3) RFSAPXVAARR24- 600/700/1900 MHz **5G** Antenna (**Replace**)

Install New:
(1) Handrail Kit
(6) 1-5/8" Coax

Existing to Remain:
(3) RF5-APX16DWV-16DWV-S-E-A20- 2100 MHz Antenna
(6) Smart Bias-T
(18) 1-5/8" Coax

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This facility was approved by the CT Siting Council. Per the attached Petition No. 622A – Dated March 16, 2018. Please see attached.

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 Mayor Laura R. Hoydick, John Rusatsky Zoning Enforcement Officer, for the Town of Stratford, as well as the property owner and the tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing 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, T-Mobile 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,

Victoria Masse
Mobile: 860-306-2326
Fax: 413-521-0558
Office: 420 Main Street, Unit 2, Sturbridge MA 01566
Email: victoria@northeastsitesolutions.com

NORTHEAST SITE SOLUTIONS

Turnkey Wireless Development

Attachments

cc: Laura R. Hoydick- Mayor - as elected official
John Rusatsky- Zoning Enforcement Officer
CL&P d/b/a Eversource - as tower owner & property owner

Exhibit A

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

March 16, 2018

Denise Sabo
Northeast Site Solutions
199 Brickyard Road
Farmington, CT 06032

RE: **PETITION NO. 622A –** T-Mobile Northeast LLC (T-Mobile) request to amend its declaratory ruling pursuant to Connecticut General Statues §4-176 and §16-50k for the proposed relocation of an existing T-Mobile facility attached to an Eversource electric transmission line structure (#826) onto an approved replacement electric transmission line structure (#826) within the existing Eversource right-of-way located at 1975 Huntington Road, Stratford, Connecticut.

Dear Ms. Sabo:

At a public meeting held on March 15, 2018, the Connecticut Siting Council (Council) considered and ruled that the above-referenced proposal to amend its declaratory ruling would not have a substantial adverse environmental effect, and pursuant to Connecticut General Statutes § 16-50k, would not require a Certificate of Environmental Compatibility and Public Need with the following conditions:

1. Approval of any minor project changes be delegated to Council staff;

2. Deployment and operation of a temporary facility subject to the submission of final design details to the Executive Director for review and final authorization, if applicable;

3. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed within three years from the date of the mailing of the Council's decision, this decision shall be void, and the facility owner/operator shall dismantle the facility and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The facility owner/operator shall provide written notice to the Executive Director of any schedule changes as soon as is practicable;

4. Any request for extension of the time period to fully construct the facility shall be filed with the Council not later than 60 days prior to the expiration date of this decision and shall be served on all parties and intervenors, if applicable, and the Town of Stratford;

5. Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;

6. Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by the Petitioner shall be removed within 60 days of the date the antenna ceased to function;

7. The facility owner/operator shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v;

8. This Declaratory Ruling may be transferred, provided the facility owner/operator/transferor is current with payments to the Council for annual assessments and invoices under Conn. Gen. Stat. §16-50v and the transferee provides written confirmation that the transferee agrees to comply with the terms, limitations and conditions contained in the Declaratory Ruling, including timely payments to the Council for annual assessments and invoices under Conn. Gen. Stat. §16-50v; and

9. If the facility owner/operator is a wholly owned subsidiary of a corporation or other entity and is sold/transferred to another corporation or other entity, the Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the facility within 30 days of the sale and/or transfer.

This decision is under the exclusive jurisdiction of the Council and is not applicable to any other modification or construction. All work is to be implemented as specified in the petition dated January 10, 2018 and additional information received on February 16, 2018.

Enclosed for your information is a copy of the staff report on this project.

Sincerely,

Robert Stein

Robert Stein
Chairman

RS/MP/lm

Enclosure: Staff Report dated March 15, 2018

c: The Honorable Laura R. Hoydick, Mayor, Town of Stratford
John Rusatsky, Town Manager, Town of Stratford
Jay Habansky, Planning & Zoning Administrator, Town of Stratford

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

Petition No. 622A
T-Mobile Northeast LLC
Stratford, Connecticut
Staff Report
March 15, 2018

On January 16, 2018, the Connecticut Siting Council (Council) received a petition (Petition) from T-Mobile Northeast LLC (T-Mobile) to amend its declaratory ruling, pursuant to Connecticut General Statutes §4-176 and §16-50k, for the proposed relocation of an existing telecommunications facility attached to an existing Eversource electric transmission structure within an existing Eversource right-of-way (ROW) located at 1975 Huntington Road in Stratford. On or about January 8, 2018, T-Mobile notified the Town of Stratford and abutting property owners of the proposed replacement project. No comments have been received to date.

By letter dated January 19, 2018, per §16-50j-39a and §16-50j-40 of the Regulations of Connecticut State Agencies, the Council deemed the Petition incomplete, pending receipt of proof of notice to the underlying property owner of record. On or about February 15, 2018, T-Mobile mailed revised notice to abutters and notice to the underlying property owner of record based on the most updated configuration (which involves a minor shift of the structure by about 1.7 additional feet to the west versus the original January 16, 2018 request to amend the Petition). On February 16, 2018, T-Mobile provided proof of such notice to the Council and responses to Council interrogatories.

On June 11, 2003, T-Mobile (formerly Omnipoint) received approval from the Council in Petition No. 622 to install a telecommunications facility on an existing 80-foot tall lattice electric transmission line Structure No. 826 located at Huntington Road in Stratford. T-Mobile's existing facility consists of panel antennas installed on a pipe mast extending approximately 10.5 feet above the existing lattice structure and associated ground equipment installed within a fenced compound directly underneath the lattice structure. The Council's decision included a condition that a six-foot high wooden stockade fence enclose the compound area on all four sides.

On April 28, 2017, the Council approved Petition No. 1291, filed by Eversource, to modify an approximately 4.4-mile section of existing #1710 and #1730 115-kilovolt electric transmission lines extending from Devon 7R Substation in Milford through the Town of Stratford to Trumbull Junction (adjacent to Trumbull Substation) in Trumbull. As part of Petition No. 1291, Eversource identified Structure No. 826 for replacement. Specifically, Eversource will install a 110-foot double-circuit galvanized monopole structure approximately 23.9 feet to the west of the existing lattice structure. Eversource's existing lattice structure will be removed. Therefore, T-Mobile proposes to remove its equipment from the existing structure and install equipment on the new structure. T-Mobile would install six new antennas and six Smart Bias Tees on transmission pole mounts on the replacement structure at a centerline elevation of 110 feet above ground level.

T-Mobile's existing stockade compound fence would be removed. T-Mobile's existing equipment pad and equipment would remain. Three new equipment cabinets would be installed in the northwest corner of the existing equipment area. A new ice bridge would be installed to protect the coax cables. The fenced compound would increase from about 15-foot by 15-foot to 24-foot by 24-foot and would have a gravel surface. A landscaping plan has been provided to screen around the compound that includes the installation of various tree/shrub species around all sides of the facility (including the compound and monopole structure). A new six-foot tall white vinyl fence would be installed around T-Mobile's equipment compound.

Eversource and the underlying property owner have reviewed the fencing and landscaping plans and have no objections. Access to the site would connect to the north side of the fenced compound which is the same route as for the existing compound.

The area surrounding the transmission structure is residential. All work would be within Eversource's existing ROW. The proposed project would not require site clearing outside of the existing Eversource ROW. No wetlands are located in the vicinity of the proposed project. No vernal pools were identified during Eversource's review of this transmission upgrade route area. The proposed project is not located within the shaded area of the Connecticut Department of Energy and Environmental Protection's Natural Diversity Database. The maximum worst-case power density of T-Mobile's proposed LTE, GSM and UMTS equipment would be 3.75 percent of the applicable Federal Communications Commission limit for radio frequency power density using a -10 dB off-beam adjustment.

A Professional Engineer duly licensed in the State of Connecticut has certified that T-Mobile's proposed loading has been incorporated within the design of the replacement Eversource Structure No. 826. T-Mobile's TOWAIR determination results indicate that notice to the Federal Aviation Administration is not required.

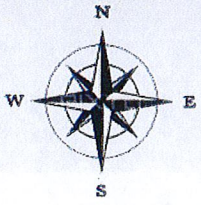
While the proposed relocated telecommunications facility would be located on a taller structure than the existing structure, the incremental visual impact is not expected to be significant because the replacement monopole structure has a more narrow visual profile than the existing (wider) lattice structure. In addition, the proposed vinyl fence would screen the ground equipment, and a landscaping plan has been provided for additional screening and aesthetics.

A temporary facility would not be required. T-Mobile would install the new antennas and lines, cut over to the existing ground equipment, and then remove the old antennas and lines. T-Mobile's work schedule would be based on an April 15, 2018 transmission line outage.

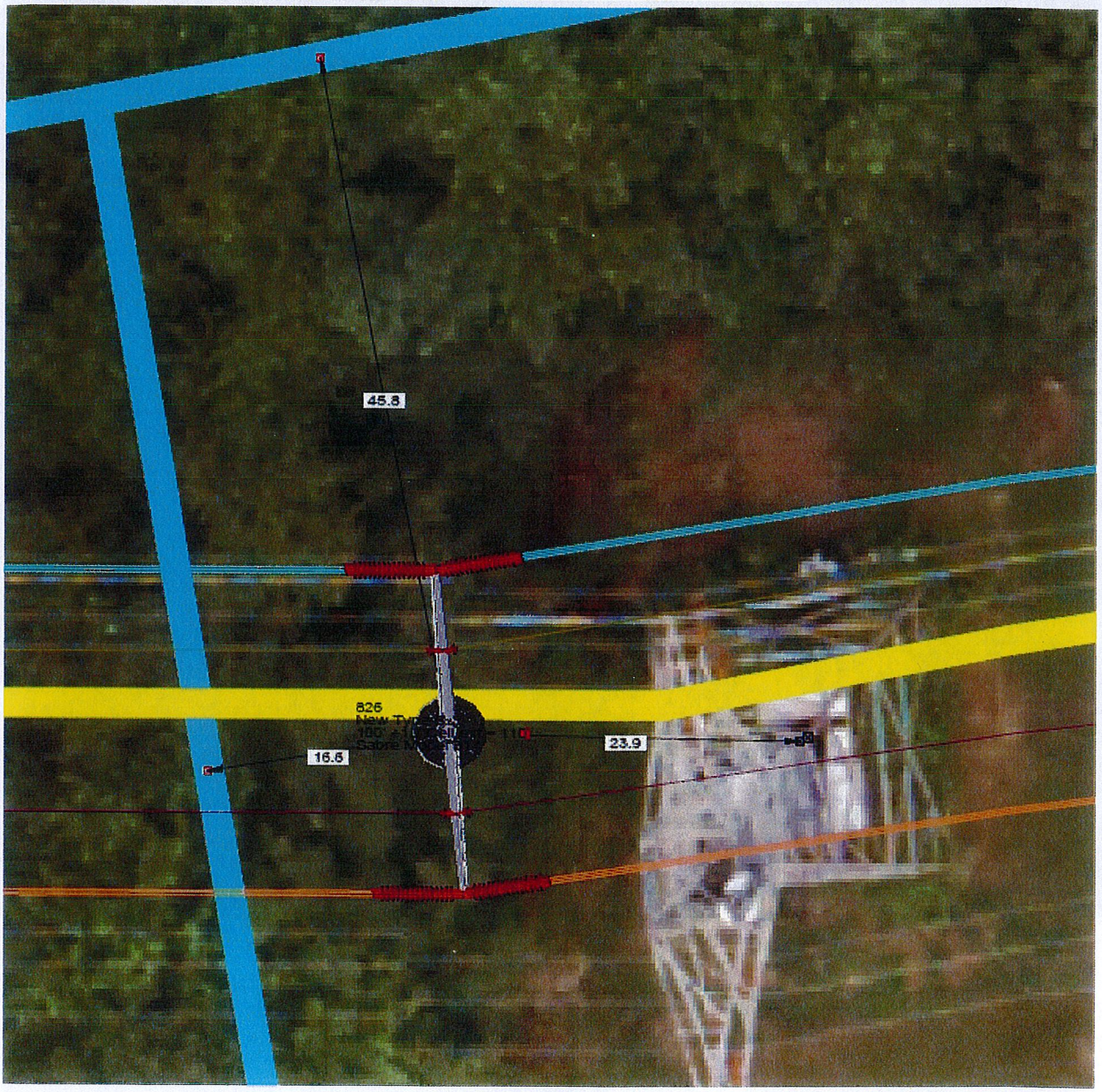
Staff recommends the following condition:

1. Approval of any minor project changes be delegated to Council staff.

Existing Facility and Site Conditions



Proposed Relocated Telecommunications Facility



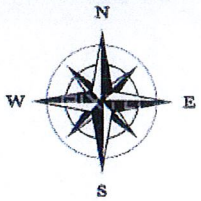


Exhibit B

1975 HUNTINGTON RD

Location	1975 HUNTINGTON RD	**Mblu**	30/16 3/ 1/ /
Acct#	0834900	**Owner**	RAE JUDITH A
PBN		**Assessment**	$194,810
Appraisal	$278,300	**PID**	8628
Building Count	1		

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$124,200	$154,100	$278,300
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$86,940	$107,870	$194,810

Owner of Record

Owner	RAE JUDITH A	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	1975 HUNTINGTON RD STRATFORD, CT 06614	**Book**	4013
		Page	0324
		Sale Date	10/03/2016
		Instrument	31

Ownership History

Ownership History						
Owner	**Sale Price**	**Certificate**	**Instrument**	**Sale Date**	**Book**	**Page**
RAE JUDITH A	$0		31	10/03/2016	4013	0324
RAE WILLIAM R & JUDITH A(SV)	$0		UNKU	11/06/1978	0535	0289
PATEGAS JEAN M & EUGENE J	$0			06/30/1976	0508	0213
PATEGAS WILLIAM T & JEAN ETAL	$0			02/26/1973	0480	0359

Building Information

Building 1 : Section 1

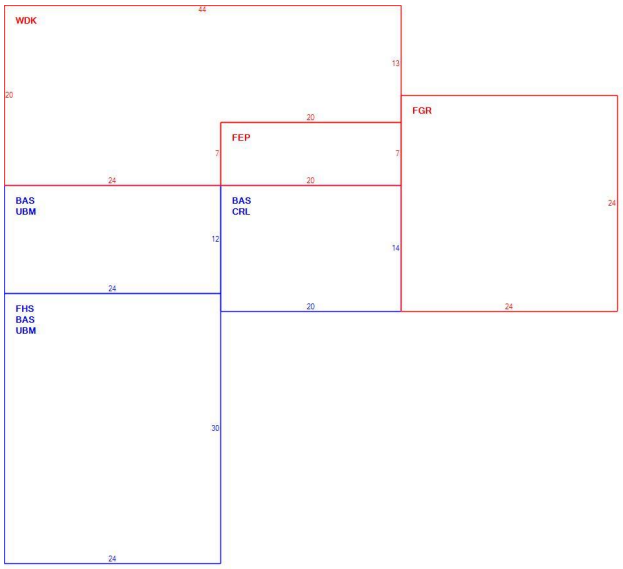
Year Built: 1928
Living Area: 1,756
Building Percent Good: 61

Building Attributes	
Field	**Description**
Style	Colonial
Model	Residential
Stories:	1 1/2 Stories
Occupancy	1
Exterior Wall 1	Wood Shingle
Exterior Wall 2	
Roof Structure:	Gable
Roof Cover	Asph/F Gls/Cmp
Interior Wall 1	Wall Brd/Wood
Interior Wall 2	Drywall/Sheet
Interior Flr 1	Laminate Floor
Interior Flr 2	Carpet
Heat Fuel	Oil
Heat Type:	Forced Air-Duc
AC Type:	None
Total Bedrooms:	3 Bedrooms
Total Bthrms:	1
Total Half Baths:	0
Total Xtra Fixtrs:	0
Total Rooms:	7
Bath Style:	Average
Kitchen Style:	Below Average
Total Kitchens	1
Whirlpool Tub	
Fireplaces	1
Usrfld 104	
Usrfld 105	
Rec Room Area	
Rec Room Quality	
Num Park	
Fireplaces	
Usrfld 108	
Usrfld 101	3
Usrfld 102	I
Usrfld 100	0
Usrfld 300	
Usrfld 301	

Building Photo

Building Photo
(http://images.vgsi.com/photos/StratfordCTPhotos///0084/DSC_3986_8480

Building Layout



(ParcelSketch.ashx?pid=8628&bid=8628)

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	1,288	1,288
FHS	Finished Half Story	720	468
CRL	Crawl Space	280	0
FEP	Finished Enclosed Porch	140	0
FGR	Garage	576	0
UBM	Unfinished Basement	1,008	0
WDK	Wood Deck	740	0
		4,752	1,756

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	101
Description	Single Family
Zone	RS-3
Neighborhood	8
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0.7
Frontage	0
Depth	0
Assessed Value	$107,870
Appraised Value	$154,100

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
SHD1	Shed	FR	Frame	200.00 S.F.	$2,000	1
SHD1	Shed	VN	Vinyl	80.00 S.F.	$0	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$124,200	$154,100	$278,300
2018	$134,200	$129,700	$263,900
2017	$134,200	$129,700	$263,900

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$86,940	$107,870	$194,810
2018	$93,940	$90,790	$184,730
2017	$93,940	$90,790	$184,730

qPublic.net™ Town of Stratford, CT

Summary

ParcelId	8628
Account Number	0834900
Location Address	1975 HUNTINGTON RD
Map-Block-Lot	30 /16 /3 /1
	Dev Lot. LT W/S
Use Class/Description	101 Single Family
Assessing Neighborhood	8A
Census Tract	0811
Acreage	0.7

Owner

RAE JUDITH A
1975 HUNTINGTON RD
STRATFORD, CT 06614

Appraised Value

		2018	2017
+	Building Value	$132,200	$132,200
+	XF Value	$0	$0
+	OB Value	$2,000	$2,000
+	Land Value	$129,700	$129,700
+	Special Land Value		
+	Total Appraised Value	$263,900	$263,900
+	Net Appraised Value	$263,900	$263,900
+	Current Assessment	$184,730	$184,730

Assessment History

		2018	2017
+	Building Value	$92,540	$92,540
+	OB/Misc	$1,400	$1,400
+	Land	$90,790	$90,790
+	Total Assessment	$184,730	$184,730

Land

Use	Class	Zoning	Area	Value
101 Single Family	R	RS-3	0.7 AC	$129,700

Building Data

Building #	1
Style	Colonial
Actual Year Built	1928
Living Area	1756
Stories	1.5
Exterior Wall	Wood Shingle
Interior Wall	Wall Brd/Wood
Fireplaces	1
Roof Cover	Asph/F Gls/Cmp
Roof Structure	Gable
Floor Type	Laminate Floor
Heat Type	Forced Air-Duc
Fuel Type	Oil
AC	None
Bdrms/Ful Bth/Hlf Bth/Ttl Rm	3/1/0/7
Basement Sq. Ft.	1008

Building Sub Areas

Code	Description	Living Area	Gross Area	Effective Area
BAS	First Floor	1288	1288	1288

CRL	Crawl Space	0	280	0
FEP	Finished Enclosed Porch	0	140	98
FGR	Garage	0	576	288
FHS	Finished Half Story	468	720	468
UBM	Unfinished Basement	0	1008	202
WDK	Wood Deck	0	740	74
	Totals	1756	4752	2418

Out Buildings\Extra Features

Description	Sub Description	Area	Year Built	Value
Shed	Frame	200S.F.	1990	$2,000
Shed	Vinyl	80S.F.	2004	$0

Sales History

Sales Date	Type of Document	Grantee	Vacant/Improved	Book/Page	Amount
10-03-2016		RAE JUDITH A	Improved	4013/ 324	$0
11-06-1978		RAE WILLIAM R & JUDITH A(SV)	Improved	0535/0289	$0
06-30-1976		PATEGAS JEAN M & EUGENE J	Improved	0508/0213	$0
02-26-1973		PATEGAS WILLIAM T & JEAN ETAL	Improved	0480/0359	$0

Recent Sales in Neighborhood

Sale date range:

From:

01/12/2018

To:

01/12/2021

Sales by Neighborhood

1500

Feet

Sales by Distance

Permit Information

Permit ID	Issue Date	Type	Description	Amount	Inspection Date	% Complete	Date Complete	Comments
25081	03-22-2018	BP	Building Permi	$44,000	9/20/2018 12:00:00 AM	100		RELOCATE 6 ANTENNAS
20156	09-07-2012	BP	Building Permi	$3,900	10/4/2012 12:00:00 AM	100		SHINGLE REPL

Generate Owner List by Radius

Distance:

100

Fee

Show All Owners

Show Parcel ID on Label

Use Address From:

Owner **Property**

Skip Labels

0

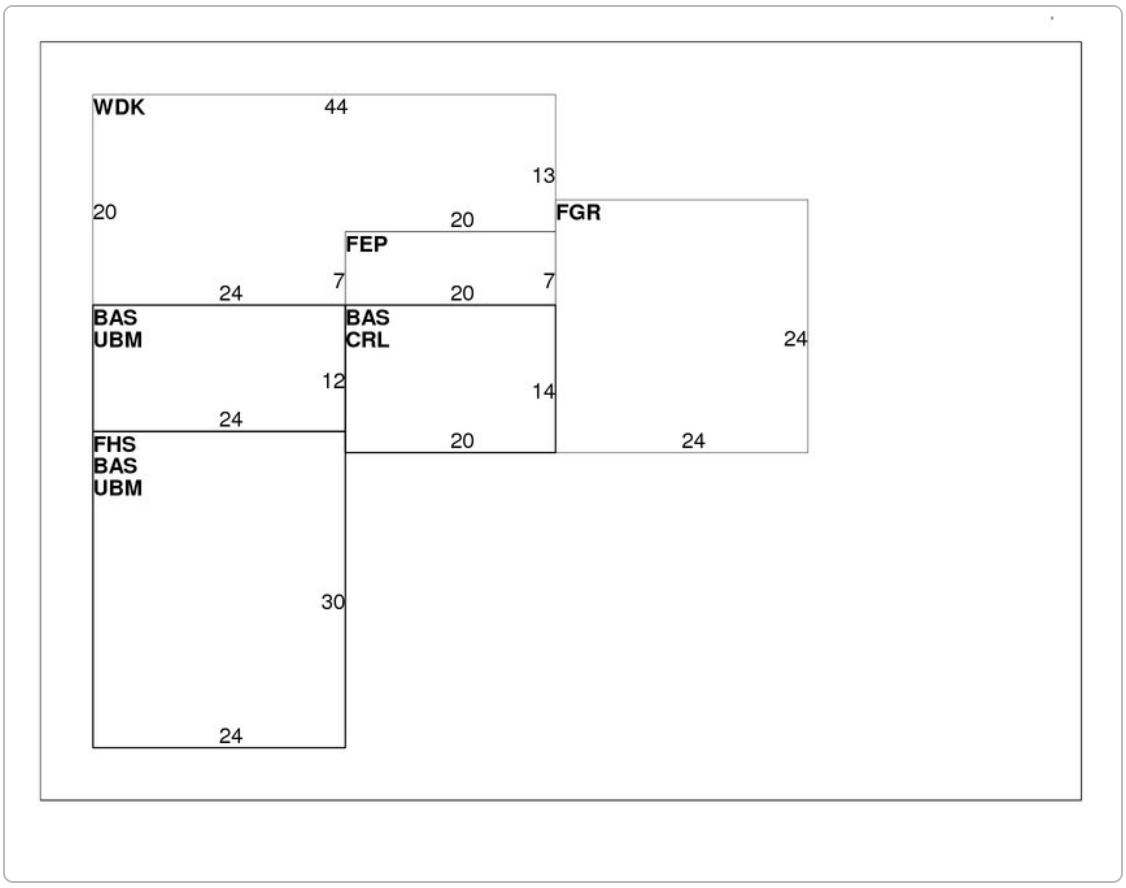
Select export file format:

Address labels (5160)

International mailing labels that exceed 5 lines are not supported on the Address labels (5160). For international addresses, please use the xlsx, csv or tab download formats.

Download

Sketch



Photos

No data available for the following modules: Commercial Building.

Last Data Upload: 1/8/2021, 8:19:12 PM

Version 2.3.102

Exhibit C

T-Mobile

WIRELESS COMMUNICATIONS FACILITY

CL&P UTILITY POLE

SITE ID: CT11681A

1975 HUNTINGTON RD

STRATFORD, CT 06614

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2015 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2018 CONNECTICUT STATE BUILDING CODE, INCLUDING THE TIA-222 REVISION "G" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES, 2016 CONNECTICUT FIRE SAFETY CODE AND, 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 T-MOBILE 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: 35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

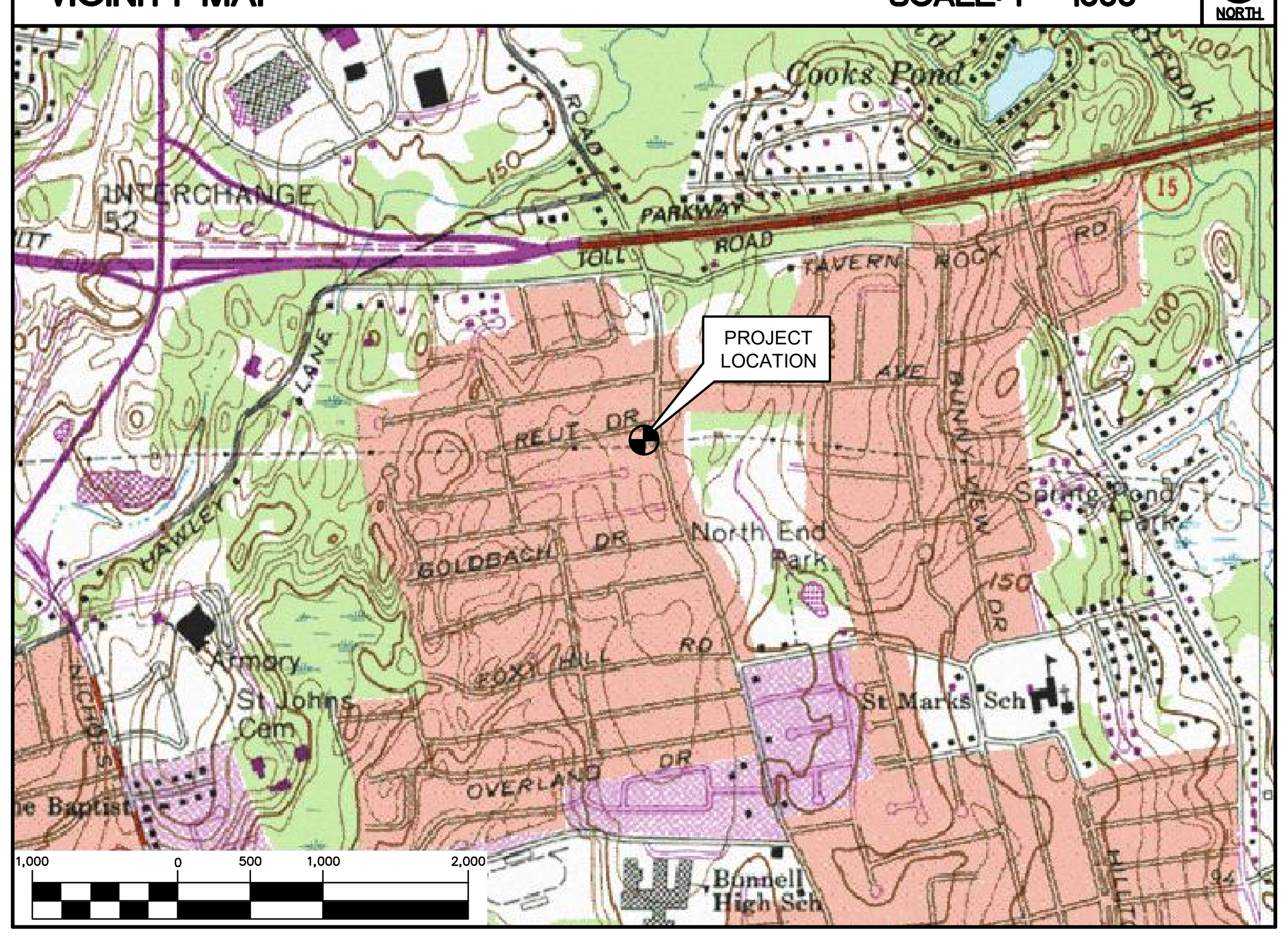
TO: 1975 HUNTINGTON RD
STRATFORD, CT 06614

1. START OUT GOING NORTH ON GRIFFIN RD TOWARD HARTMAN RD.	0.30 MI.
2. TAKE THE SECOND RIGHT ONTO DAY HILL RD.	0.14 MI.
3. TAKE THE FIRST RIGHT ONTO BLUE HILLS AVENUE EXT/CT-187. CONTINUE TO FOLLOW CT-187	0.64 MI.
4. STAY STRAIGHT TO GO ONTO BLUE ILLS AVE/CT-187.	1.24 MI.
5. TURN LEFT ONTO OLD WINDSOR RD/CT-305. CONTINUE TO FOLLOW CT-305.	2.33 MI.
6. MERGE ONTO I-91 S TOWARD HARTFORD.	24.76 MI.
7. MERGE ONTO CT-15 S VIA EXIT 17 TOWARD E MAIN ST.	30.24 MI.
8. TAKE THE CT-8 S EXIT, EXIT 52 TOWARD CT-108 S/BRIDGEPORT.	0.64 MI.
9. KEEP RIGHT TO TAKE THE CT-108 RAMP TOWARD STRATFORD	0.22 MI.
10. TURN LEFT ONTO NICHOLS AVE/CT-108	0.27 MI.
11. TURN LEFT ONTO HAWLEY LN.	0.96 MI
12. TURN RIGHT ONTO HUNTINGTON RD.	0.24 MI.
13. 1975 HUNTING RD, STRATFORD, CT 06614-1974 IS ON THE RIGHT.	

VICINITY MAP

SCALE: 1" = 1000'

NORTH



T-MOBILE RF CONFIGURATION

67D94B_1DP+1OP

PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
   - A. INSTALL (1) BB6630 FOR FUTURE 5G N600
   - B. ADD (6) COAXIAL LINES
   - C. ADD (3) 4449 B71+B12 AT GROUND LEVEL.
   - D. REMOVE (3) ANDREW ANTENNAS FROM ANTENNA MOUNT.
   - E. ADD (3) RFS ANTENNAS ON ANTENNA MOUNT.
   - F. INSTALL HANDRAIL KIT ON ANTENNA MOUNT.

PROJECT INFORMATION

SITE NAME:	CL&P UTILITY POLE
SITE ID:	CT11681A
SITE ADDRESS:	1975 HUNTINGTON RD STRATFORD, CT 06614
APPLICANT:	T-MOBILE NORTHEAST, LLC 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002
CONTACT PERSON:	SHELDON FREINCLE (PROJECT MANAGER) NORTHEAST SITE SOLUTIONS (203) 776-8521
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405
PROJECT COORDINATES:	LATITUDE: 41°-13'-59.7" N LONGITUDE: 73°-8'-23.4" W GROUND ELEVATION: 166'± AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	2
N-1	DESIGN BASIS AND SITE NOTES	2
C-1	SITE LOCATION PLAN	2
C-2	COMPOUND PLAN, EQUIPMENT PLAN AND ELEVATION	2
C-3	ANTENNA PLANS AND ELEVATIONS	2
C-4	TYPICAL DETAILS	2
E-1	ELECTRICAL DETAILS	2

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
2	1/13/21	TJL	TJR	CONSTRUCTION DRAWINGS – TOP OF POLE HEIGHT CORRECTED
1	1/8/21	TJL	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION
0	12/23/20	TJL	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

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NSS NORTHEAST SITE SOLUTIONS

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T-MOBILE NORTHEAST LLC
WIRELESS COMMUNICATIONS FACILITY
CL&P UTILITY POLE
SITE ID: CT11681A
1975 HUNTINGTON RD
STRATFORD, CT 06614

DATE: 5/28/19
SCALE: AS NOTED
JOB NO. 19066.06

TITLE SHEET

T-1

Sheet No. 1 of 7

NOTES AND SPECIFICATIONS

DESIGN BASIS:

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

1. DESIGN CRITERIA:

- RISK CATEGORY II (BASED ON IBC TABLE 1604.5)
- NOMINAL DESIGN SPEED (OTHER STRUCTURE): 97 MPH (Vasd) (EXPOSURE B/ IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-10).

SITE NOTES

1. THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
2. ACTIVE EXISTING UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY, PRIOR TO PROCEEDING, SHOULD ANY UNCOVERED EXISTING UTILITY PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
3. THE AREAS OF THE COMPOUND DISTURBED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.
4. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
5. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.

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." 2017 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 IT'S 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 SITE OWNER'S 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.
18. CONTRACTOR SHALL COMPLY WITH OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
19. THE COUNTY/CITY/TOWN WILL MAKE PERIODIC FIELD OBSERVATION AND INSPECTIONS TO MONITOR THE INSTALLATION, MATERIALS, WORKMANSHIP AND EQUIPMENT INCORPORATED INTO THE PROJECT TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, CONTRACT DOCUMENTS AND APPROVED SHOP DRAWINGS.
20. THE COUNTY/CITY/TOWN MUST BE NOTIFIED (2) WORKING DAYS PRIOR TO CONCEALMENT/BURIAL OF ANY SYSTEM OR MATERIAL THAT WILL PREVENT THE DIRECT INSPECTION OF MATERIALS, METHODS OR WORKMANSHIP. EXAMPLES OF THESE PROCESSES ARE BACKFILLING A GROUND RING OR TOWER FOUNDATION, POURING TOWER FOUNDATIONS, BURYING GROUND RODS, PLATES OR GRIDS, ETC. THE CONTRACTOR MAY PROCEED WITH THE SCHEDULED PROCESS (2) WORKING DAYS AFTER PROVIDING NOTICE UNLESS NOTIFIED OTHERWISE BY THE COUNTY/CITY/TOWN.

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
2	1/13/21	TJL	TJR	CONSTRUCTION DRAWINGS - TOP OF POLE HEIGHT CORRECTED
1	1/8/21	TJL	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION
0	12/23/20	TJL	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

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CENTEK engineering
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www.CentekEng.com

T-MOBILE NORTHEAST LLC

WIRELESS COMMUNICATIONS FACILITY

CL&P UTILITY POLE

SITE ID: CT11681A

1975 HUNTINGTON RD
STRATFORD, CT 06614

DATE: 5/28/19
SCALE: AS NOTED
JOB NO. 19066.06

DESIGN BASIS AND SITE NOTES

N-1

ANTENNA SCHEDULE

SECTOR	EXISTING/PROPOSED	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	(E/P) RRU (QTY)	(E/P) TMA (QTY)	(QTY) PROPOSED COAX (LENGTH)
A1	EMPTY	–	–	–	–	–	–	(2) 1 5/8" COAX (±115')
A2	EMPTY	–	–	–	–	–	–	
A3	PROPOSED	RFS (APXVAARR24_43-U_NA20)	95.9 x 24 x 8.7	110'	0°	(P) RADIO 4449 B71+B12 (1)	(E) ANDREW SMART BIAS T (1)	
A4	EXISTING	RFS (APX16DWV-16DWV-S-E-A20)	55.9 x 13.0 x 3.15	110'	0°		(E) ANDREW SMART BIAS T (1)	
B1	EMPTY	–	–	–	–	–	–	(2) 1 5/8" COAX (±115')
B2	EMPTY	–	–	–	–	–	–	
B3	PROPOSED	RFS (APXVAARR24_43-U_NA20)	95.9 x 24 x 8.7	110'	120°	(P) RADIO 4449 B71+B12 (1)	(E) ANDREW SMART BIAS T (1)	
B4	EXISTING	RFS (APX16DWV-16DWV-S-E-A20)	55.9 x 13.0 x 3.15	110'	120°		(E) ANDREW SMART BIAS T (1)	
C1	EMPTY	–	–	–	–	–	–	(2) 1 5/8" COAX (±115')
C2	EMPTY	–	–	–	–	–	–	
C3	PROPOSED	RFS (APXVAARR24_43-U_NA20)	95.9 x 24 x 8.7	110'	240°	(P) RADIO 4449 B71+B12 (1)	(E) ANDREW SMART BIAS T (1)	
C4	EXISTING	RFS (APX16DWV-16DWV-S-E-A20)	55.9 x 13.0 x 3.15	110'	240°		(E) ANDREW SMART BIAS T (1)	

1 / C-1 SITE LOCATION PLAN
SCALE: 1" = 100'
APPROX. NORTH

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
2	1/13/21	TJL	TJR	CONSTRUCTION DRAWINGS – TOP OF POLE HEIGHT CORRECTED
1	1/8/21	TJL	TJL	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION
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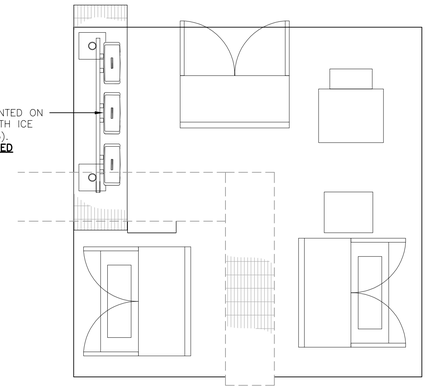
SITE ID: CT11681A
1975 HUNTINGTON RD
STRATFORD, CT 06614

DATE: 5/28/19
SCALE: AS NOTED
JOB NO. 19066.06

SITE LOCATION PLAN

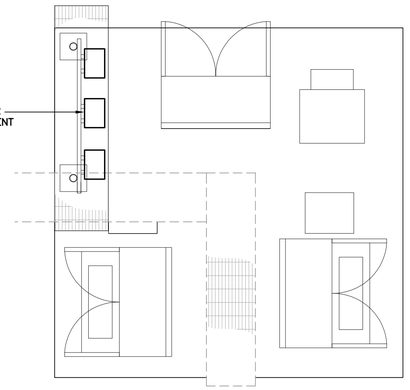
C-1

Sheet No. 3 of 7



3 C-2 **EQUIPMENT PLAN - EXISTING**
SCALE: 3/8" = 1'

TRUE NORTH

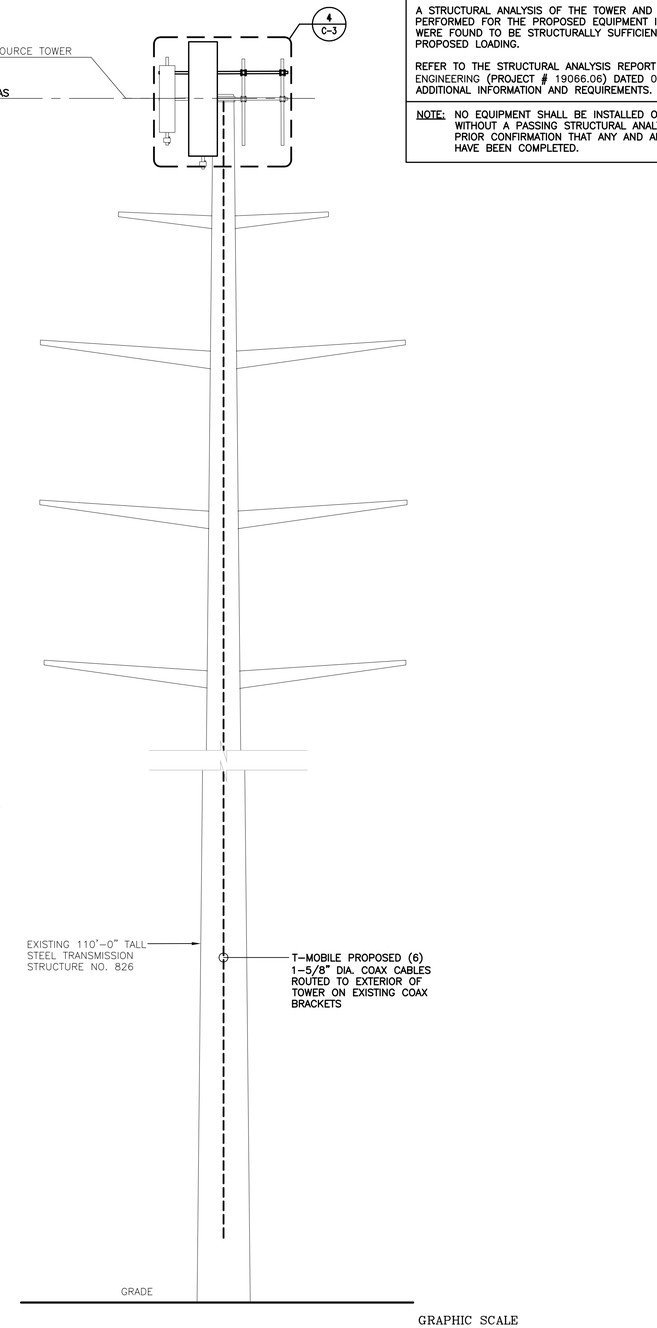


4 C-2 **EQUIPMENT PLAN - PROPOSED**
SCALE: 3/8" = 1'

TRUE NORTH

1 C-2 **COMPOUND PLAN**
SCALE: 3/8" = 1'

TRUE NORTH



2 C-2 **TOWER ELEVATION - PROPOSED**
SCALE: 1" = 8'

GRAPHIC SCALE
8 0 4 8 16 32
(IN FEET)
1 inch = 8 ft.

STRUCTURAL COMPLIANCE

ANTENNA MOUNTS

A STRUCTURAL ANALYSIS OF THE ANTENNA MOUNTS WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY DEFICIENT AND WARRANTING MODIFICATION PRIOR TO INSTALLATION OF THE PROPOSED EQUIPMENT. FOR REQUIRED STRUCTURAL MODIFICATIONS, SEE SHEET(S) C-3 AND C-4 FOR ADDITIONAL DETAILS.

REFER TO THE ANTENNA MOUNT ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 19066.06) DATED 06/11/19 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

TOWER AND TOWER FOUNDATION

A STRUCTURAL ANALYSIS OF THE TOWER AND TOWER FOUNDATION WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING.

REFER TO THE STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 19066.06) DATED 07/12/19 REV. 1 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

NOTE: NO EQUIPMENT SHALL BE INSTALLED ON THE HOSTING STRUCTURE WITHOUT A PASSING STRUCTURAL ANALYSIS REPORT AND CONTRACTOR PRIOR CONFIRMATION THAT ANY AND ALL REQUISITE MODIFICATIONS HAVE BEEN COMPLETED.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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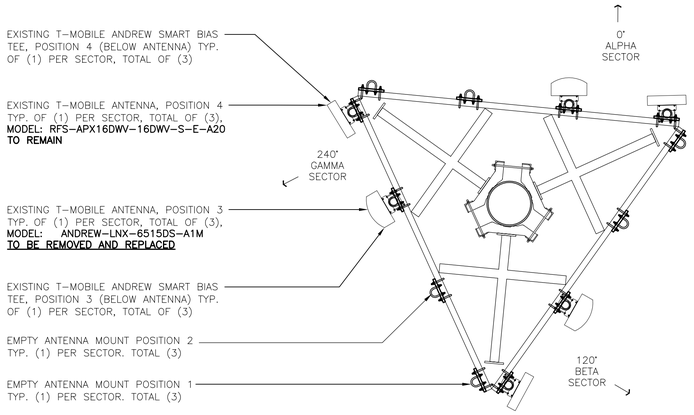
DATE: 5/28/19
SCALE: AS NOTED
JOB NO. 19066.06

COMPOUND PLAN, EQUIPMENT PLAN, AND ELEVATION

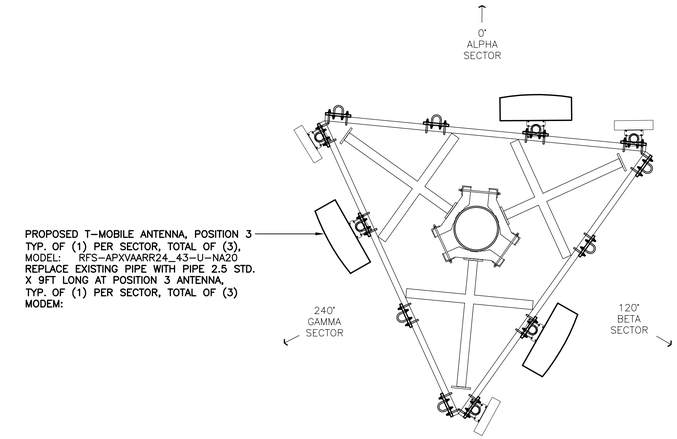
C-2

Sheet No. 4 of 7



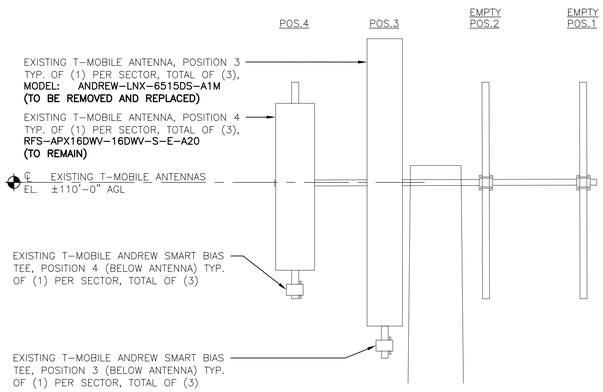
1 C-3 **EQUIPMENT AND ANTENNA PLAN - EXISTING**
SCALE: 1/2" = 1'

TRUE NORTH

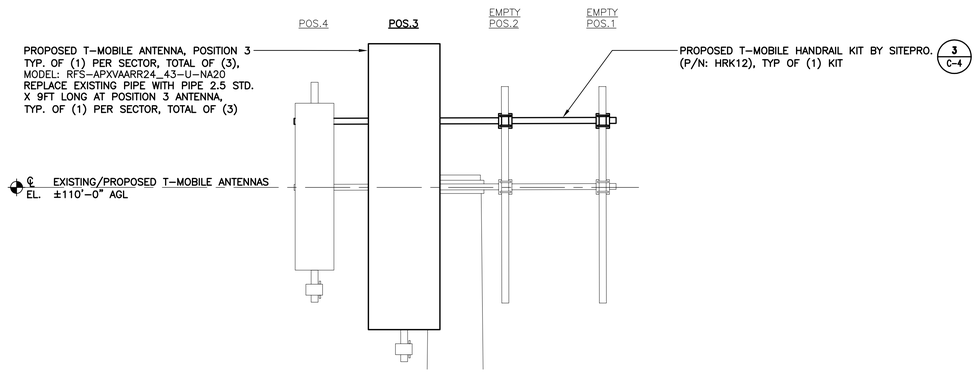


2 C-3 **EQUIPMENT AND ANTENNA PLAN - PROPOSED**
SCALE: 1/2" = 1'

TRUE NORTH



3 C-3 **ANTENNA ELEVATION - EXISTING**
SCALE: 1/2" = 1'



4 C-3 **ANTENNA ELEVATION - PROPOSED**
SCALE: 1/2" = 1'

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
2	1/13/21	TJL	TJR	CONSTRUCTION DRAWINGS - TOP OF POLE HEIGHT CORRECTED
1	1/8/21	TJL	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION
0	12/23/20	TJL	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

STATE OF CONNECTICUT — TIMOTHY J. LYNN — 29358 — LICENSED PROFESSIONAL ENGINEER

T-Mobile

NSS NORTHEAST

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T-MOBILE NORTHEAST LLC
WIRELESS COMMUNICATIONS FACILITY

CL&P UTILITY POLE
SITE ID: CT11681A
1975 HUNTINGTON RD
STRATFORD, CT 06614

DATE: 5/28/19
SCALE: AS NOTED
JOB NO. 19066.06

ANTENNA PLANS AND ELEVATIONS

C-3

Sheet No. 5 of 7

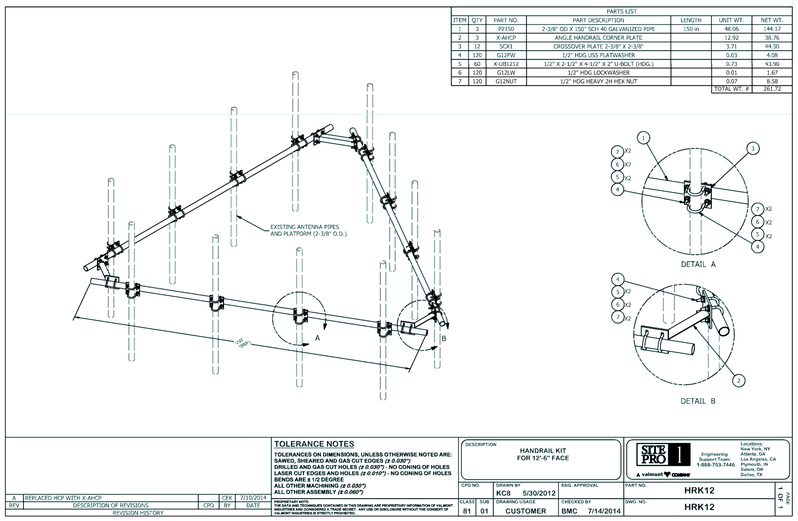
RADIO 4449 B71+B12

RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RADIO 4449 B12,B71	14.9"L x 13.4"W x 9.4"D	±74 LBS.	BEHIND ANT.: 8" MIN. BELOW ANT.: 20" MIN. BELOW RRU: 16" MIN.

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

1 / C-4 **PROPOSED RRU DETAIL**
SCALE: NOT TO SCALE

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2150	2-3/8" OD X 150" SCH 40 GALVANIZED PIPE	150 in	48.06	144.17
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	12	SCH1	CROSSOVER PLATE 2-3/8" X 2-3/8"		3.71	44.50
4	120	G12FW	1/2" HDG USS FLATWASHER		0.03	4.08
5	60	X-UBU212	1/2" X 2-1/2" X 4-1/2" X 4" U-BOLT (HDG.)		0.73	43.90
6	120	G12LW	1/2" HDG LOCKWASHER		0.01	1.67
7	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.58
					TOTAL WT. #	261.72



TOLERANCE NOTES
TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")*
DRILLED AND GAS CUT HOLES *(± 0.030") - NO CONING OF HOLES*
LASER CUT EDGES AND HOLES *(± 0.010") - NO CONING OF HOLES*
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

PROPRIETARY NOTE:
THE IDEAS AND DESIGNS CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

REVISION HISTORY			
REV	DESCRIPTION OF REVISIONS	CPD BY	DATE
A	REPLACED HCP WITH X-AHCP	CEK	7/10/2014

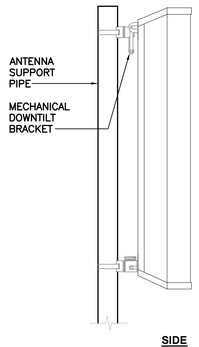
DESCRIPTION: HANDRAIL KIT FOR 12'-6" FACE

SITE PRO 1 — Engineering Support Team: 1-888-753-7446 — Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Portland, Or; Tulsa, Ok; Dallas, TX

CPD NO.		DRAWN BY		ENG. APPROVAL	PART NO.	
		KCB	5/30/2012		HRK12	
CLASS	SUB	DRAWING USAGE		CHECKED BY	DWG. NO.	
81	01	CUSTOMER		BMC 7/14/2014	HRK12	

SHT 1 OF 1

3 / C-4 **PROPOSED HANDRAIL KIT**
SCALE: NOT TO SCALE



SIDE

FRONT

ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: RFS MODEL: APXVAARR24_43-U-NA20	95.9"L x 24.0"W x 8.5"D	±150 LBS.

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

2 / C-4 **PROPOSED ANTENNA DETAIL**
SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
2	1/13/21	TJL	TJR	CONSTRUCTION DRAWINGS - TOP OF POLE HEIGHT CORRECTED
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PROFESSIONAL ENGINEER SEAL

STATE OF CONNECTICUT — TIMOTHY J. LYNCH — No. 29535 — REGISTERED PROFESSIONAL ENGINEER

T-Mobile

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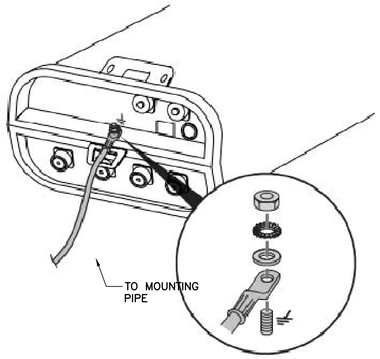
DATE: 5/28/19
SCALE: AS NOTED
JOB NO. 19066.06

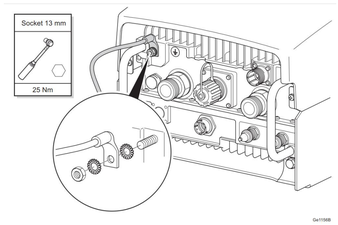
TYPICAL DETAILS

C-4

Sheet No. 6 of 7



1 E-1 **TYPICAL ANTENNA GROUNDING DETAIL**
SCALE: NONE



2 E-1 **TYPICAL RRU GROUNDING DETAIL**
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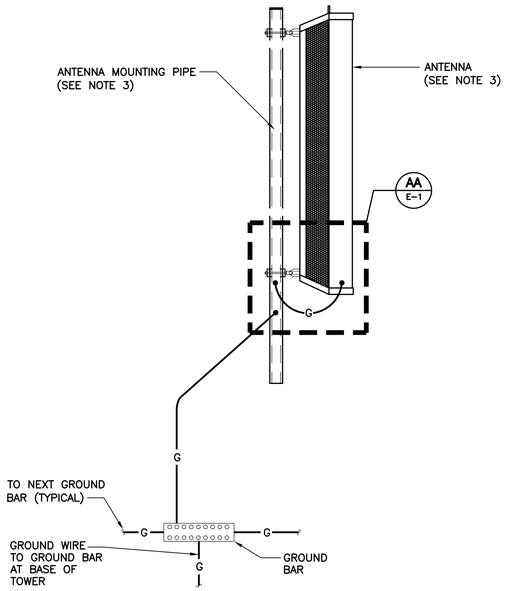
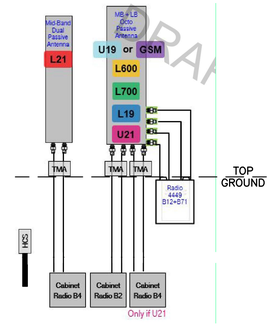


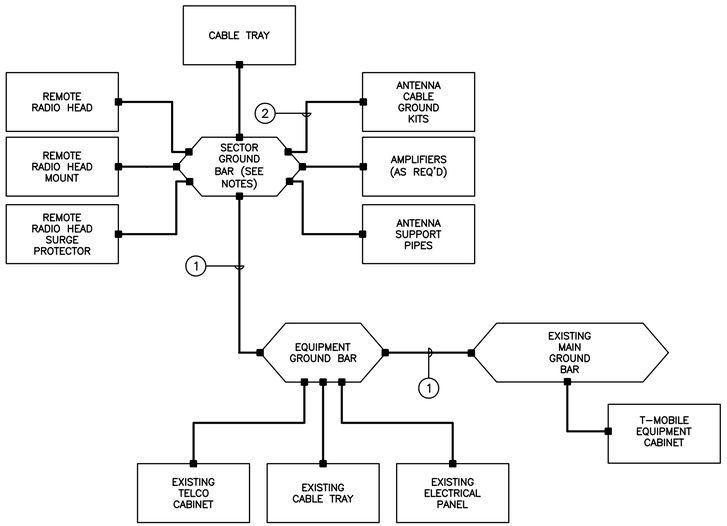
NOTES:

1. BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
2. BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
3. DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

3 E-1 **TYPICAL ANTENNA GROUNDING DETAIL**
SCALE: NONE



4 E-1 **PROPOSED PLUMBING DIAGRAM**
SCALE: NONE



GROUNDING SCHEMATIC NOTES

(1) #2 AWG

(2) #6 AWG

GENERAL NOTES:

1. ALL SURGE SUPPRESSION EQUIPMENT SHALL BE BONDED TO GROUND PER MANUFACTURER'S SPECIFICATIONS
2. UNLESS OTHERWISE NOTED OR REQUIRED BY CODE, GROUND CONDUCTORS SHOWN SHALL BE #2 AWG (SOLID TINNED BCW – EXTERIOR; STRANDED GREEN INSULATED – INTERIOR).
3. ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
4. BOND ALL EQUIPMENT CABINETS AND BATTERY CABINETS TO GROUND PER MANUFACTURER'S SPECIFICATIONS.
5. COORDINATE ALL ROOF MOUNTED EQUIPMENT WITH OWNER.
6. ALL ROOF MOUNTED AMPLIFIERS AND ASSOCIATED EQUIPMENT SHALL BE BONDED TO THE SECTOR GROUND BAR PER MANUFACTURER'S SPECIFICATIONS.
7. ALL GROUNDING SHALL BE IN ACCORDANCE WITH NEC AND OWNER'S REQUIREMENTS.

5 E-1 **TYPICAL GROUNDING SCHEMATIC DETAIL**
SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
2	1/13/21	TJL	TJR	CONSTRUCTION DRAWINGS – TOP OF POLE HEIGHT CORRECTED
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DATE:	5/28/19
SCALE:	AS NOTED
JOB NO.	19066.06

ELECTRICAL DETAILS

E-1

Sheet No. 7 of 7

Exhibit D

CENTEK engineering

Centered on Solutions℠

Structural Analysis of Antenna Mast and Utility Pole

T-Mobile: CT11681A

Structure No. 826

110' Electric Transmission Pole

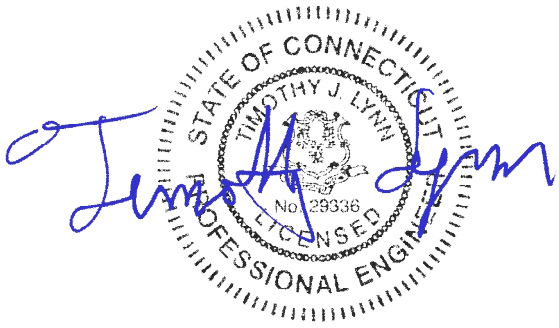
1975 Huntington Road
Stratford, CT

CENTEK Project No. 19066.06

~~Date: June 11, 2019~~

Rev 1: July 12, 2019

Max Stress Ratio = 67.5%



Prepared for:
T-Mobile USA
35 Griffin Road
Bloomfield, CT 06002

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- PRIMARY ASSUMPTIONS USED IN THE ANALYSIS
- ANALYSIS
- DESIGN BASIS
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- CONCLUSION

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- STANDARD ENGINEERING CONDITIONS
- GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAMS
  - TNXTOWER
  - PLS POLE

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- CRITERIA FOR DESIGN OF PCS FACILITIES ON OR EXTENDING ABOVE METAL ELECTRIC TRANSMISSON TOWERS
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- RF DATA SHEET
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Introduction

The purpose of this report is to analyze the existing 110' utility pole located at 1975 Huntington Road in Stratford, CT for the proposed antenna and equipment upgrade by T-Mobile.

The proposed loads consist of the following:

- T-MOBILE (Existing to Remain):
  Antennas: Three (3) RFS APX16DWV-16DWVS-E-A20 panel antennas and six (6) Bias Tees mounted on an existing low profile platform to the existing utility pole with a RAD center elevation of 110-ft above grade.
  Coax Cables: Eighteen (18) 1-5/8" ∅ coax cables mounted to the exterior of the existing pole and antenna mast.
- **T-MOBILE (Existing to Remove):**
  Antennas: Three (3) Andrew LNX-6515DS panel antennas mounted on an existing low profile platform to the existing utility pole with a RAD center elevation of 110-ft above grade.
- **T-MOBILE (Proposed):**
  Antennas: Three (3) RFS APXVAARR24_43 panel antennas mounted on a existing low profile platform with a proposed handrail kit p/n HRK12 to the existing utility pole with a RAD center elevation of 110-ft above grade.
  Coax Cables: Six (6) 1-5/8" ∅ coax cables mounted to the outside of the pole as indicated in Section 4 of this report.

Primary assumptions used in the analysis

- Design steel stresses are defined by AISC-LRFD 14th edition for design of the antenna Mast and antenna supporting elements.
- ASCE Manual No. 48-11, "Design of Steel Transmission Pole Structures", defines allowable steel stresses for evaluation of the utility pole.
- All utility pole members are adequately protected to prevent corrosion of steel members.
- All proposed antenna mounts are modeled as listed above.
- Pipe mast will be properly installed and maintained.
- No residual stresses exist due to incorrect pole erection.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds conform to the requirements of AWS D1.1.
- Pipe mast and utility pole will be in plumb condition.
- Utility pole was properly installed and maintained and all members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
- Any deviation from the analyzed loading will require a new analysis for verification of structural adequacy.

A n a l y s i s

Structural analysis of the existing antenna mast was independently completed using the current version of tnxtower computer program licensed to CENTEK Engineering, Inc.

The existing mast consisting of the top 10-ft long pole section was analyzed for its ability to resist loads prescribed by the TIA standard. Section 5 of this report details the mast analysis. NESC prescribed loads were also applied to the mast in order to analyze the utility tower.

D e s i g n B a s i s

Our analysis was performed in accordance with TIA-222-G, ASCE 48-11, "Design of Steel Transmission Pole Structures", NESC C2-2012 and Eversource Design Criteria.

- UTILITY POLE ANALYSIS

  The purpose of this analysis is to determine the adequacy of the existing utility pole to support the proposed antenna loads. The loading and design requirements were analyzed in accordance with the Eversource Design Criteria Table, NESC C2-2012 ~ Construction Grade B, and ASCE Manual No. 48-11.

  Load cases considered:

  Load Case 1: NESC Heavy Wind
  Wind Pressure…….. 4.0 psf
  Radial Ice Thickness……. 0.5"
  Vertical Overload Capacity Factor……. 1.50
  Wind Overload Capacity Factor……. 2.50
  Wire Tension Overload Capacity Factor…… 1.65

  Load Case 2: NESC Extreme Wind
  Wind Speed…… 110 mph (1)
  Radial Ice Thickness…….. 0"

  Load Case 3: NESC Extreme Ice w/ Wind
  Wind Pressure…….. 6.4 psf
  Radial Ice Thickness……. 0.75"
  Vertical Overload Capacity Factor……. 1.0
  Wind Overload Capacity Factor……. 1.0

  Note 1: NESC C2-2012, Section25, Rule 250C: Extreme Wind Loading, 1.25 x Gust Response Factor (wind speed: 3-second gust)

- MAST ASSEMBLY ANALYSIS

  Mast, appurtenances and connections to the utility tower were analyzed and designed in accordance with the Eversource Design Criteria Table, TIA-222-G and AISC standards.

  Load cases considered:

  Load Case 1:
  Wind Speed…….. 97 mph (2018 CSBC Appendix-N)
  Radial Ice Thickness…….. 0"

  Load Case 2:
  Wind Pressure…….. 50 mph wind pressure
  Radial Ice Thickness…….. 0.75"

R e s u l t s

- MAST ASSEMBLY

  The existing pipe mast was determined to be structurally adequate.

Component	Size	Stress Ratio	Result
Top 10-ft Pole Section	15.625" – 19.375	16.3%	**PASS**
Connection	-	15.4%	**PASS**

- UTILITY POLE

  This analysis finds that the subject utility pole is adequate to support the proposed antenna mast and related appurtenances. The pole stresses meet the requirements set forth by the ASCE Manual No. 48-11, "Design of Steel Transmission Pole Structures", for the applied NESC Heavy and Hi-Wind load cases. The detailed analysis results are provided in Section 6 of this report. The analysis results are summarized as follows:

  A maximum usage of **67.50%** occurs in the utility pole base plate under the **NESC Extreme** loading condition.

  POLE SECTION:

  The utility pole was found to be within allowable limits.

Tower Section	Elevation	Stress Ratio (% of capacity)	Result
Section 3	0.00' -52.75' (AGL)	54.71%	**PASS**

  BASE PLATE:

  The base plate was found to be within allowable limits from the PLS output based on 8 bend lines.

Tower Component	Design Limit	Stress Ratio (percentage of capacity)	Result
Base Plate	Bending	67.50%	**PASS**

- FOUNDATION AND ANCHORS

  The base of the tower is connected to the foundation by means of (20) 2.25"∅, ASTM A615-75 anchor bolts embedded into the concrete foundation structure. Review of the foundation consisted of a comparison of the base reactions obtained from the proposed tower analysis and the original tower design calculation.

BASE REACTIONS:

From PLS-Pole analysis of utility pole based on NESC/NU prescribed loads.

Load Case	Shear	Axial	Moment
NESC Heavy Wind	31.54 kips	64.10 kips	2390.23 ft-kips
NESC Extreme Wind	44.30 kips	34.35 kips	3179.14 ft-kips
NESC Extreme Ice w/ Wind	22.61 kips	53.75 kips	1735.87 ft-kips

Note 1 – 10% increase applied to tower base reactions per OTRM 051

ANCHOR BOLTS:

The anchor bolts were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (% of capacity)	Result
Anchor Bolts	Tension	46.0%	**PASS**

FOUNDATION:

Original Design Loading	Proposed Loading	Result
5540.0 ft-kips	3497.1 ft-kips	**PASS**

Note 1: Taken from Sabre Design drawing 164568-014 dated 7/5/17.

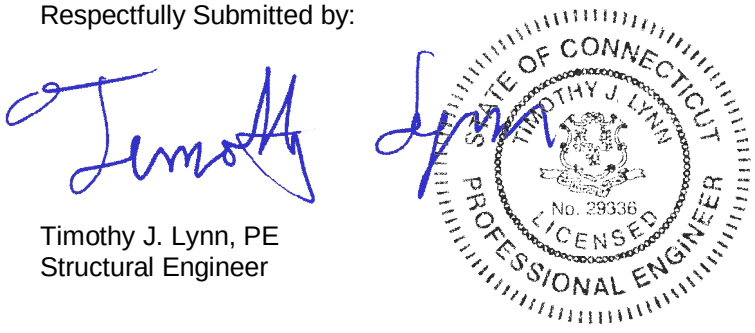
Conclusion

This analysis shows that the subject utility pole **is adequate** to support the proposed equipment upgrade.

The analysis is based, in part on the information provided to this office by Eversource and T-Mobile. 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 are performed, results obtained, and recommendations made 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 RISA Tower, 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.

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ PLS-POLE

PLS-POLE provides all of the capabilities a structural engineer requires to design transmission, substation or communications structures. It does so using a simple easy to use graphical interface that rests upon our time tested finite element engine. Regardless of whether you want to model a simple wood pole or a guyed steel X-Frame; PLS-POLE can handle the job simply, reliably and efficiently.

Modeling Features:

- Structures are made of standard reusable components that are available in libraries. You can easily create your own libraries or get them from a manufacturer
- Structure models are built interactively using interactive menus and graphical commands
- Automatic generation of underlying finite element model of structure
- Steel poles can have circular, 4, 6, 8, 12, 16, or 18-sided, regular, elliptical or user input cross sections (flat-to-flat or tip-to-tip orientations)
- Steel and concrete poles can be selected from standard sizes available from manufacturers
- Automatic pole class selection
- Cross brace position optimizer
- Capability to specify pole ground line rotations
- Capability to model foundation displacements
- Can optionally model foundation stiffness
- Guys are easily handled (modeled as exact cable elements in nonlinear analysis)
- Powerful graphics module (members color-coded by stress usage)
- Graphical selection of joints and components allows graphical editing and checking
- Poles can be shown as lines, wire frames or can be rendered as 3-d polygon surfaces

Analysis Features:

- Automatic distribution of loads in 2-part suspension insulators (v-strings, horizontal vees, etc.)
- Design checks for ASCE, ANSI/TIA/EIA 222 (Revisions F and G) or other requirements
- Automatic calculation of dead and wind loads
- Automated loading on structure (wind, ice and drag coefficients) according to:
    - ASCE 74-1991
    - NESC 2002
    - NESC 2007
    - IEC 60826:2003
    - EN50341-1:2001 (CENELEC)
    - EN50341-3-9:2001 (UK NNA)
    - EN50341-3-17:2001 (Portugal NNA)
    - ESAA C(b)1-2003 (Australia)
    - TPNZ (New Zealand)
    - REE (Spain)
    - EIA/TIA 222-F
    - ANSI/TIA 222-G
    - CSA S37-01
- Automated microwave antenna loading as per EIA/TIA 222-F and ANSI/TIA 222-G
- Detects buckling by nonlinear analysis

Results Features:

- Detects buckling by nonlinear analysis
- Easy to interpret text, spreadsheet and graphics design summaries
- Automatic determination of allowable wind and weight spans
- Automatic determination of interaction diagrams between allowable wind and weight spans
- Automatic tracking of part numbers and costs

Criteria for Design of PCS Facilities On or Extending Above Metal Electric Transmission Towers & Analysis of Transmission Towers Supporting PCS Masts (1)

Introduction

This criteria is the result from an evaluation of the methods and loadings specified by the separate standards, which are used in designing telecommunications towers and electric transmission towers. That evaluation is detailed elsewhere, but in summary; the methods and loadings are significantly different. This criteria specifies the manner in which the appropriate standard is used to design PCS facilities including masts and brackets (hereafter referred to as "masts"), and to evaluate the electric transmission towers to support PCS masts. The intent is to achieve an equivalent level of safety and security under the extreme design conditions expected in Connecticut and Massachusetts.

ANSI Standard TIA-222-G covering the design of telecommunications structures specifies a limit state design approach. This approach applies the loads from extreme weather loading conditions, and designs the structure so that the design strength exceeds the required strength.

ANSI Standard C2-2012 (National Electrical Safety Code) covering the design of electric transmission metal structures is based upon an ultimate strength/yield stress design approach. This approach applies a multiplier (overload capacity factor) to the loads possible from extreme weather loading conditions, and designs the structure so that it does not exceed its ultimate strength (yield stress).

Each standard defines the details of how loads are to be calculated differently. Most of the NU effort in "unifying" both codes was to establish what level of strength each approach would provide, and then increasing the appropriate elements of each to achieve a similar level of security under extreme weather loadings.

Two extreme weather conditions are considered. The first is an extreme wind condition (hurricane) based upon a 50-year recurrence (2% annual probability). The second is a winter condition combining wind and ice loadings.

The following sections describe the design criteria for any PCS mast extending above the top of an electric transmission tower, and the analysis criteria for evaluating the loads on the transmission tower from such a mast from the lower portions of such a mast, and loads on the pre-existing electric lower portions of such a mast, and loads on the pre-existing electric transmission tower and the conductors it supports.

Note 1: Prepared from documentation provide from Northeast Utilities.

P C S M a s t

The PCS facility (mast, external cable/trays, including the initial and any planned future support platforms, antennas, etc. extending the full height above the top level of the electric transmission structure) shall be designed in accordance with the provisions of TIA 222-G:

E L E C T R I C T R A N S M I S S I O N T O W E R

The electric transmission tower shall be analyzed using yield stress theory in accordance with the attached table titled “Eversource Design Criteria”. This specifies uniform loadings (different from the TIA loadings) on the each of the following components of the installed facility:

- PCS mast for its total height above ground level, including the initial and planned future support platforms, antennas, etc. above the top of an electric transmission structure.
- Conductors are related devices and hardware.
- Electric transmission structure. The loads from the PCS facility and from the electric conductors shall be applied to the structure at conductor and PCS mast attachment points, where those load transfer to the tower.

The uniform loadings and factors specified for the above components in the table are based upon the National Electrical Safety Code 2012 Edition Extreme Wind (Rule 250C) and Combined Ice and Wind (Rule 250B-Heavy) Loadings. These provide equivalent loadings compared to TIA and its loads and factors with the exceptions noted above. (Note that the NESC does not require the projected wind surfaces of structures and equipment to be increased by the ice covering.)

In the event that the electric transmission tower is not sufficient to support the additional loadings of the PCS mast, reinforcement will be necessary to upgrade the strength of the overstressed members.

Attachment A
Eversource Design Criteria

		Attachment A ES Design Criteria	Basic Wind Speed	Pressure	Height Factor	Gust Factor	Load or Stress Factor	Force Coef. - Shape Factor
			V (MPH)	Q (PSF)	Kz	Gh		
Ice Condition	TIA/EIA	Antenna Mount	TIA	TIA (0.75Wi)	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
	NESC Heavy	Tower/Pole Analysis with antennas extending above top of Tower/Pole (Yield Stress)	-----	4	1	1	2.5	1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with antennas below top of Tower/Pole (on two faces)	-----	4	1	1	2.5	1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor Loads Provided by ES					
High Wind Condition	TIA/EIA	Antenna Mount	85	TIA	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
	NESC Extreme Wind	Tower/Pole Analysis with antennas extending above top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250C: Extreme Wind Loading Apply a 1.25 x Gust Response Factor to all telecommunication equipment projected above top of tower/pole and apply a 1.0 x Gust Response Factor to the tower/pole structure					1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with antennas below top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250C: Extreme Wind Loading Height above ground is based on overall height to top of tower/pole					1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor Loads Provided by ES					
NESC Extreme Ice with Wind Condition*		Tower/Pole Analysis with antennas extending above top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250D: Extreme Ice with Wind Loading 4 PSF Wind Load 1.25 x Gust Response Factor Apply a 1.25 x Gust Response Factor to all telecommunication equipment projected above top of tower/pole and apply a 1.0 x Gust Response Factor to the tower/pole structure					1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with antennas below top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250D: Extreme Ice with Wind Loading 4 PSF Wind Load Height above ground is based on overall height to top of tower/pole					1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor Loads Provided by ES					
		*Only for structures installed after 2007						

determined from NESC applied loading conditions (not TIA Loads) on the structure and mount as specified below, and shall include the wireless communication mast and antenna loads per NESC criteria)

The strength reduction factor obtained from the field investigation shall be applied to the members or connections that are showing signs of deterioration from their original condition With the written approval of Eversource Transmission Line Engineering on a case by case the existing structures may be analyzed initially using the current NESC code, then it is permitted to use the original design code with the original conductor load should the existing tower fail the current NESC code.

The structure shall be analyzed using yield stress theory in accordance with Attachment A, "Eversource Design Criteria." This specifies uniform loadings (different from the TIA loadings) on each of the following components of the installed facility:

a) Wireless communication mast for its total height above ground level, including the initial and any planned future equipment (Support Platforms, Antennas, TMA's etc.) above the top of an electric transmission structure.

b) Conductors and related devices and hardware (wire loads will be provided by Eversource).

c) Electric Transmission Structure

i) The loads from the wireless communication equipment components based on NESC and Eversource Criteria in Attachment A, and from the electric conductors shall be applied to the structure at conductor and wireless communication mast attachment points, where those loads transfer to the tower. ii)

ii) Shape Factor Multiplier:

NESC Structure Shape	Cd
Polyround (for polygonal steel poles)	1.3
Flat	1.6
Open Lattice	3.2
Pole with Coaxial Cable	See Below Table

iii) When Coaxial Cables are mounted alongside the pole structure, the shape multiplier shall be:

Mount Type	Cable Cd	Pole Cd
Coaxial Cables on outside periphery (One layer)	1.45	1.45
Coaxial Cables mounted on stand offs	1.6	1.6

d) The uniform loadings and factors specified for the above components in Attachment A, "Eversource Design Criteria" are based upon the National Electric Safety Code 2007 Edition Extreme Wind (Rule 250C) and Combined Ice and Wind (Rule 250B-Heavy) Loadings. These provide equivalent loadings compared to the TIA and its loads and factors with the exceptions noted above.

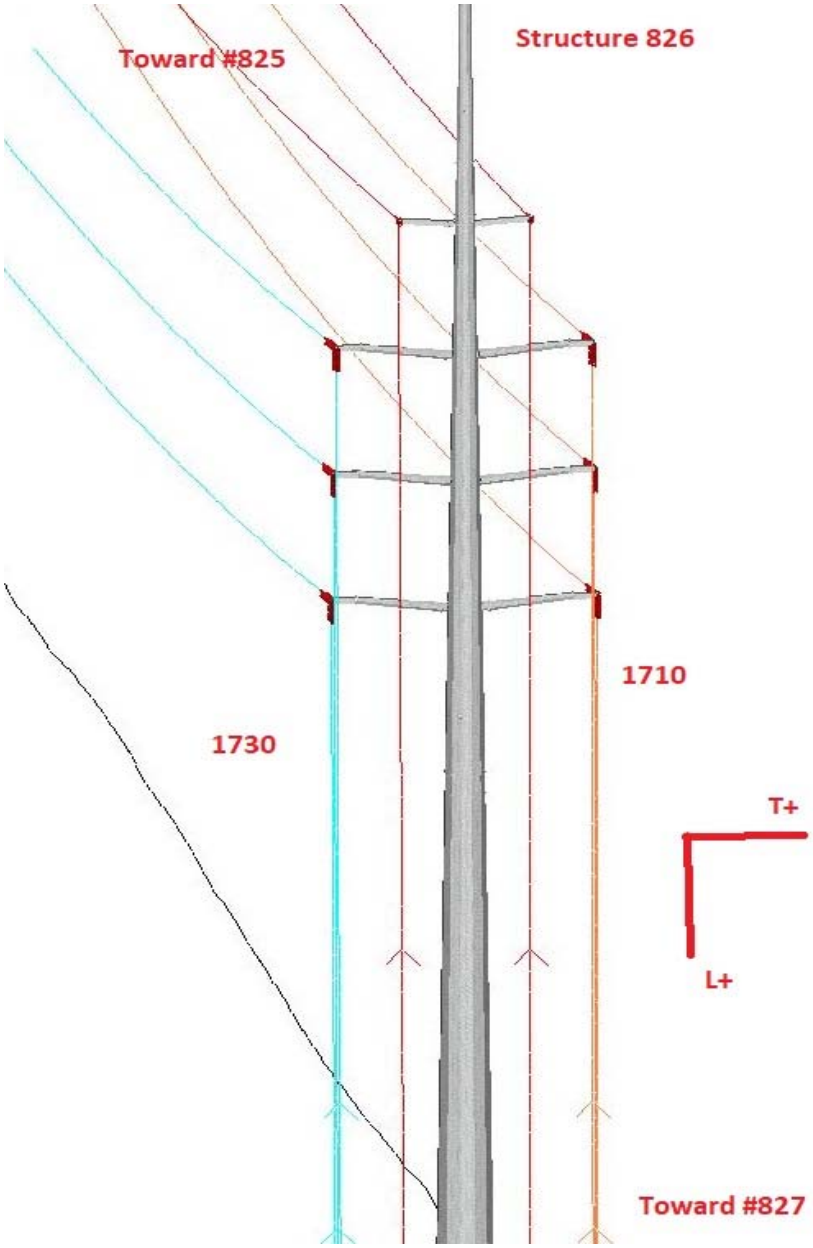
Project: 1710/1730 Lines, Structure 826
Date: 5/23/19
Engineer: JS
Purpose: Recalculate wire loads for T-Mobile site.

Shield Wires:
1710: AFL DNO-7757 OPGW, sagged to 5500 lbs at NESC 250B final condition
1730: AFL DNO-11426 OPGW, sagged to 5500 lbs at NESC 250B final condition

Conductors:
795 Drake ACSS, sagged to 7000 lbs at NESC 250B Creep condition

NESC 250B

1730 Line				**1710 Line**	
OPGW	**V**	1012		963	**V OPGW**
	T	-2432		-2222	**T**
	L	-40		-70	**L**
Phase:	**V**	2473		2473	**V**
	T	-2977		-2921	**T**
	L	-127		-138	**L**
Phase:	**V**	2473		2472	**V**
	T	-2972		-2926	**T**
	L	-127		-136	**L**
t Phase:	**V**	2472		2472	**V**
	T	-2967		-2932	**T**
	L	-127		-136	**L**


Structure 826
Toward #825
1710
1730
T+
L+
Toward #827

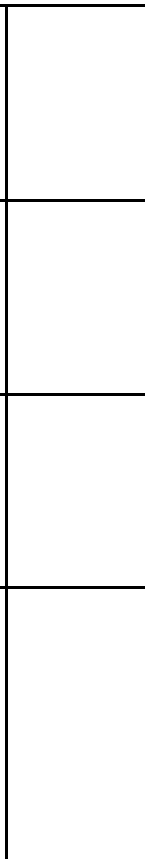
Project: 1710/1730 Lines, Structure 826
Date: 5/23/19
Engineer: JS
Purpose: Recalculate wire loads for T-Mobile site.

Shield Wires:
1710: AFL DNO-7757 OPGW, sagged to 5500 lbs at NESC 250B final condition
1730: AFL DNO-11426 OPGW, sagged to 5500 lbs at NESC 250B final condition

Conductors:
795 Drake ACSS, sagged to 7000 lbs at NESC 250B Creep condition

NESC 250C

1730 Line			**1710 Line**	
OPGW	**V**	251	218	**V OPGW**
	T	-1932	-1841	**T**
	L	128	77	**L**
Phase:	**V**	1056	1057	**V**
	T	-2797	-2765	**T**
	L	107	92	**L**
Phase:	**V**	1056	1057	**V**
	T	-2759	-2734	**T**
	L	107	95	**L**
t Phase:	**V**	1056	1056	**V**
	T	-2716	-2696	**T**
	L	107	96	**L**



Project: 1710/1730 Lines, Structure 826
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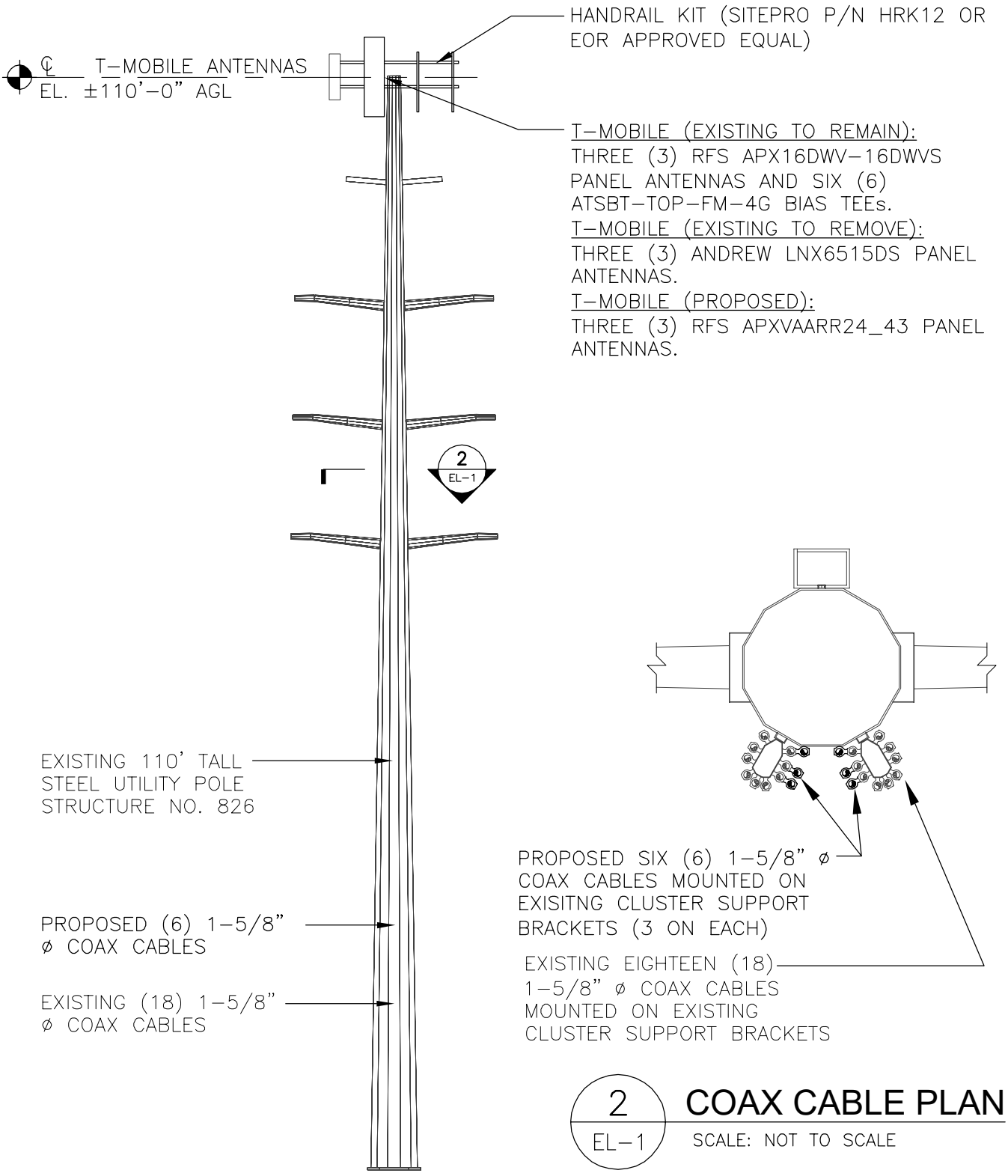
1730: AFL DNO-11426 OPGW, sagged to 5500 lbs at NESC 250B final condition

Conductors:
795 Drake ACSS, sagged to 7000 lbs at NESC 250B Creep condition

NESC 250D

1730 Line				**1710 Line**	
OPGW	**V**	1437		1404	**V OPGW**
	T	-1858		-1658	**T**
	L	179		198	**L**
Phase:	**V**	2591		2591	**V**
	T	-2166		-2122	**T**
	L	153		153	**L**
Phase:	**V**	2591		2589	**V**
	T	-2163		-2126	**T**
	L	153		154	**L**
t Phase:	**V**	2589		2589	**V**
	T	-2159		-2131	**T**
	L	153		154	**L**



2 / EL-1 **COAX CABLE PLAN**

SCALE: NOT TO SCALE

1 / EL-1 **TOWER + MAST ELEVATION**

SCALE: NOT TO SCALE

REVISIONS		
00	6/11/19	ISSUED FOR REVIEW
01	7/12/19	CONSTRUCTION

CENTEK engineering
Centered on Solutions℠
www.CentekEng.com
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road, Branford, CT 06405

CT11681A

1975 HUNTINGTON ROAD
STRATFORD, CT 06614

PROJECT NO:	19066.06
DRAWN BY:	TJL
CHECKED BY:	CAG
SCALE:	AS NOTED
DATE:	6/11/19

T-Mobile

TOWER AND MAST ELEVATION

EL-1

DWG. 1 OF 2

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
APX16DWV-16DWVS-E-A20 (T-Mobile Existing)	109	APXVAARR24-43 (T-Mobile Propoed)	109
APXVAARR24-43 (T-Mobile Propoed)	109	(2) ATSBT-TOP-FM-4G (T-Mobile Existing)	109
APX16DWV-16DWVS-E-A20 (T-Mobile Existing)	109	(2) ATSBT-TOP-FM-4G (T-Mobile Existing)	109
APXVAARR24-43 (T-Mobile Propoed)	109	(2) ATSBT-TOP-FM-4G (T-Mobile Existing)	109
APX16DWV-16DWVS-E-A20 (T-Mobile Existing)	109	13' Platform w/rails (T-Mobile Existing)	109

MATERIAL STRENGTH

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

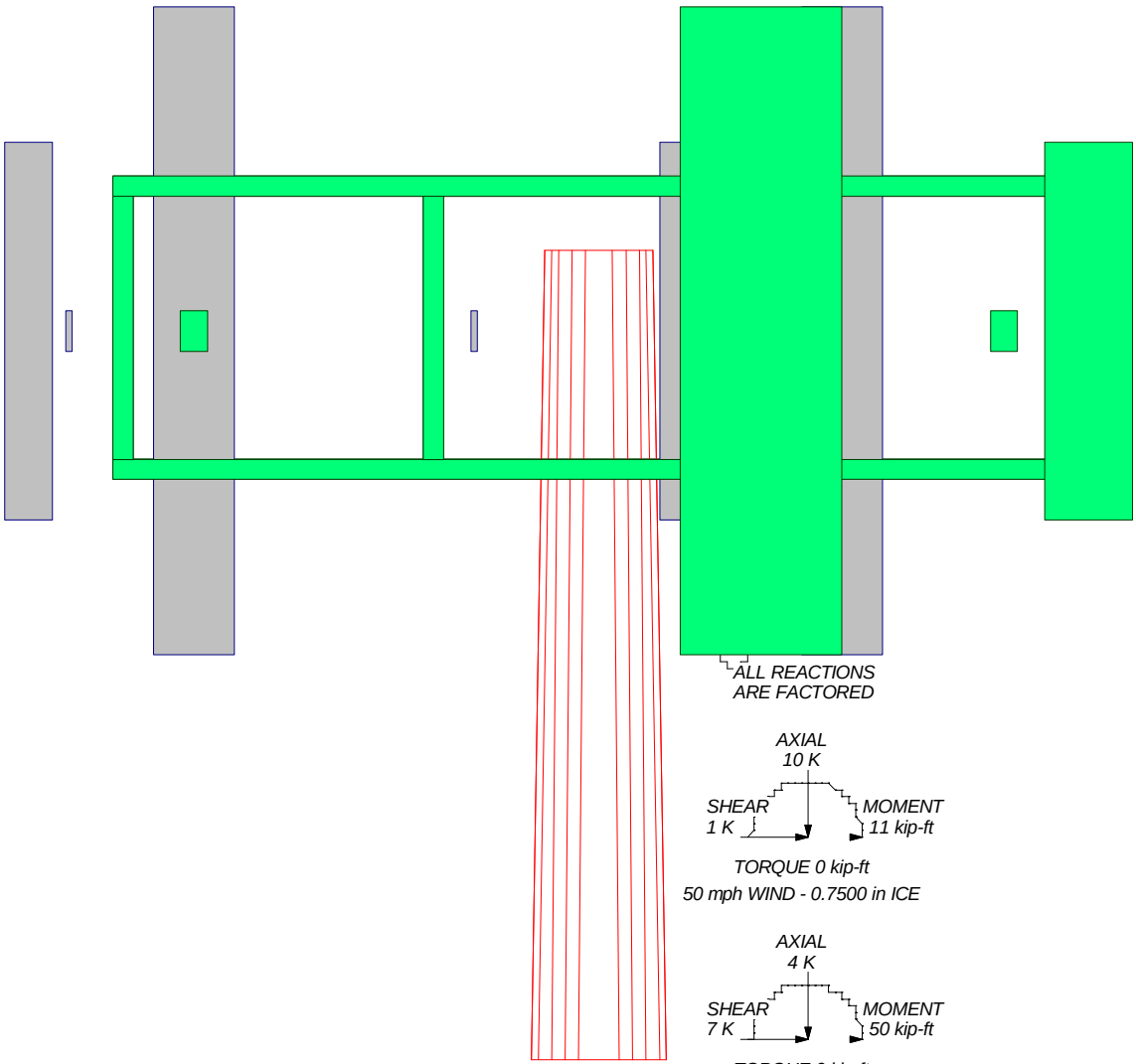
TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-G Standard.
2. Tower designed for a 97 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: 16.3%

Section	Length (ft)	Number of Sides	Thickness (in)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	10.00	12	0.1875	15.6250	19.3750	A572-65	0.4

110.0 ft

100.0 ft



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

Job: **19066.06 - CT11681A**			
Project: **10-ft Pole Top Section - 1975 Huntington Rd Stratford, CT**			
Client: T-Mobile	Drawn by: TJL	App'd:	
Code: TIA-222-G	Date: 01/13/21	Scale: NTS	
Path:		Dwg No. E-1	

Tower Input Data

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

Basic wind speed of 97 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 pole 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		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known

Tapered Pole Section Geometry

Section	*Elevation* ft	*Section Length* ft	*Splice Length* ft	*Number of Sides*	*Top Diameter* in	*Bottom Diameter* in	*Wall Thickness* in	*Bend Radius* in	*Pole Grade*
L1	110.00-100.00	10.00		12	15.6250	19.3750	0.1875	0.7500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	16.1100	9.3204	283.5137	5.5266	8.0938	35.0287	574.4756	4.5872	3.6850	19.653
	19.9923	11.5845	544.3751	6.8691	10.0363	54.2409	1103.0516	5.7015	4.6900	25.013

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 110.00-100.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
1 5/8 (T-Mobile Existing)	A	No	Surface Ar (CaAa)	110.00 - 103.00	9	2	0.000 0.000	1.9800		1.04
1 5/8 (T-Mobile Existing)	B	No	Surface Ar (CaAa)	110.00 - 103.00	9	2	0.000 0.000	1.9800		1.04
1 5/8 (T-Mobile Existing)	C	No	Surface Ar (CaAa)	110.00 - 103.00	6	2	0.000 0.000	1.9800		1.04

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	110.00-100.00	A	0.000	0.000	2.772	0.000	0.07
		B	0.000	0.000	2.772	0.000	0.07
		C	0.000	0.000	2.772	0.000	0.04

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	110.00-100.00	A	2.105	0.000	0.000	7.148	0.000	0.43
		B		0.000	0.000	7.148	0.000	0.43
		C		0.000	0.000	7.148	0.000	0.28

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	110.00-100.00	0.0000	-0.4163	0.0000	-0.4722

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	1	1 5/8	103.00 - 110.00	1.0000	1.0000
L1	2	1 5/8	103.00 - 110.00	1.0000	1.0000
L1	3	1 5/8	103.00 - 110.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
APX16DWV-16DWVS-E-A20	A	From Face	4.00 -6.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice	6.46 6.83 7.21	2.15 2.49 2.84	0.04 0.07 0.11
(T-Mobile Existing)									
APXVAARR24-43	A	From Face	4.00 -2.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice	20.24 20.89 21.54	8.89 9.49 10.09	0.15 0.27 0.39
(T-Mobile Propoed)									
APX16DWV-16DWVS-E-A20	B	From Face	4.00 -6.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice	6.46 6.83 7.21	2.15 2.49 2.84	0.04 0.07 0.11
(T-Mobile Existing)									
APXVAARR24-43	B	From Face	4.00 -2.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice	20.24 20.89 21.54	8.89 9.49 10.09	0.15 0.27 0.39
(T-Mobile Propoed)									
APX16DWV-16DWVS-E-A20	C	From Face	4.00 -6.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice	6.46 6.83 7.21	2.15 2.49 2.84	0.04 0.07 0.11
(T-Mobile Existing)									
APXVAARR24-43	C	From Face	4.00 -2.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice	20.24 20.89 21.54	8.89 9.49 10.09	0.15 0.27 0.39
(T-Mobile Propoed)									
(2) ATSBT-TOP-FM-4G	A	From Face	4.00 0.00	0.0000	109.00	No Ice 1/2" Ice	0.17 0.23	0.09 0.14	0.05 0.05
(T-Mobile Existing)									

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1" Ice	0.29	0.19	0.05
(2) ATSBT-TOP-FM-4G	B	From Face	4.00	0.0000	109.00	No Ice	0.17	0.09	0.05
(T-Mobile Existing)			0.00			1/2" Ice	0.23	0.14	0.05
			0.00			1" Ice	0.29	0.19	0.05
(2) ATSBT-TOP-FM-4G	C	From Face	4.00	0.0000	109.00	No Ice	0.17	0.09	0.05
(T-Mobile Existing)			0.00			1/2" Ice	0.23	0.14	0.05
			0.00			1" Ice	0.29	0.19	0.05
13' Platform w/rails	C	None		0.0000	109.00	No Ice	31.30	31.30	1.82
(T-Mobile Existing)						1/2" Ice	40.20	40.20	2.45
						1" Ice	49.10	49.10	3.08

Tower Pressures - No Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg % %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1	104.82	1.278	34	15.043	A	0.000	15.043	15.043	100.00	2.772	0.000
110.00-100.00					B	0.000	15.043		100.00	2.772	0.000
					C	0.000	15.043		100.00	2.772	0.000

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg % %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1	104.82	1.278	8	2.1047	18.551	A	0.000	18.551	18.551	100.00	7.148	0.000
110.00-100.00						B	0.000	18.551		100.00	7.148	0.000
						C	0.000	18.551		100.00	7.148	0.000

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	104.82	1.278	10	15.043	A	0.000	15.043	15.043	100.00	2.772	0.000
110.00-100.00					B	0.000	15.043		100.00	2.772	0.000
					C	0.000	15.043		100.00	2.772	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
L1	0.17	0.36	A	1	1.2	34	1	1	15.043	1.60	159.94	C
110.00-100.00			B	1	1.2		1	1	15.043			
			C	1	1.2		1	1	15.043			
Sum Weight:	0.17	0.36						OTM	7.71 kip-ft	1.60		

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 ft²	F K	w plf	Ctrl. Face
L1	0.17	0.36	A	1	1.2	34	1	1	15.043	1.60	159.94	A
110.00-100.00			B	1	1.2		1	1	15.043			
			C	1	1.2		1	1	15.043			
Sum Weight:	0.17	0.36						OTM	7.71 kip-ft	1.60		

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 ft²	F K	w plf	Ctrl. Face
L1	0.17	0.36	A	1	1.2	34	1	1	15.043	1.44	144.06	B
110.00-100.00			B	1	1.2		1	1	15.043			
			C	1	1.2		1	1	15.043			
Sum Weight:	0.17	0.36						OTM	6.95 kip-ft	1.44		

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 ft^2	F K	w plf	Ctrl. Face
L1	1.15	0.87	A	1	1.2	8	1	1	18.551	0.43	43.28	C
110.00-100.00			B	1	1.2		1	1	18.551			
			C	1	1.2		1	1	18.551			
Sum Weight:	1.15	0.87						OTM	2.09 kip-ft	0.43		

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 ft^2	F K	w plf	Ctrl. Face
L1	1.15	0.87	A	1	1.2	8	1	1	18.551	0.43	43.28	A
110.00-100.00			B	1	1.2		1	1	18.551			
			C	1	1.2		1	1	18.551			
Sum Weight:	1.15	0.87						OTM	2.09 kip-ft	0.43		

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
L1	1.15	0.87	A	1	1.2	8	1	1	18.551	0.40	40.03	B
110.00-100.00			B	1	1.2		1	1	18.551			
			C	1	1.2		1	1	18.551			
Sum Weight:	1.15	0.87						OTM	1.93 kip-ft	0.40		

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
L1	0.17	0.36	A	1	1.2	10	1	1	15.043	0.48	47.61	C
110.00-100.00			B	1	1.2		1	1	15.043			
			C	1	1.2		1	1	15.043			
Sum Weight:	0.17	0.36						OTM	2.30 kip-ft	0.48		

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
L1	0.17	0.36	A	1	1.2	10	1	1	15.043	0.48	47.61	A
110.00-100.00			B	1	1.2		1	1	15.043			
			C	1	1.2		1	1	15.043			
Sum Weight:	0.17	0.36						OTM	2.30 kip-ft	0.48		

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 ft^2	F K	w plf	Ctrl. Face
L1	0.17	0.36	A	1	1.2	10	1	1	15.043	0.43	42.88	B
110.00-100.00			B	1	1.2		1	1	15.043			
			C	1	1.2		1	1	15.043			
Sum Weight:	0.17	0.36						OTM	2.07 kip-ft	0.43		

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
Leg Weight	0.36					
Bracing Weight	0.00					
Total Member Self-Weight	0.36			-0.05	0.00	
Total Weight	3.22			-0.05	0.00	
Wind 0 deg - No Ice		0.00	-4.19	-31.06	0.00	0.00
Wind 30 deg - No Ice		2.01	-3.49	-26.24	-15.12	-0.04
Wind 60 deg - No Ice		3.44	-1.98	-15.02	-25.93	-0.07
Wind 90 deg - No Ice		3.90	0.00	-0.05	-29.63	-0.07
Wind 120 deg - No Ice		3.44	1.98	14.93	-25.93	-0.07
Wind 150 deg - No Ice		2.01	3.49	26.15	-15.12	-0.04
Wind 180 deg - No Ice		0.00	4.19	30.97	0.00	0.00
Wind 210 deg - No Ice		-2.01	3.49	26.15	15.12	0.04
Wind 240 deg - No Ice		-3.44	1.98	14.93	25.93	0.07
Wind 270 deg - No Ice		-3.90	0.00	-0.05	29.63	0.07
Wind 300 deg - No Ice		-3.44	-1.98	-15.02	25.93	0.07
Wind 330 deg - No Ice		-2.01	-3.49	-26.24	15.12	0.04
Member Ice	0.52					
Total Weight Ice	9.62			-0.31	0.00	
Wind 0 deg - Ice		0.00	-1.37	-10.85	0.00	0.00
Wind 30 deg - Ice		0.67	-1.16	-9.31	-5.20	-0.01
Wind 60 deg - Ice		1.14	-0.66	-5.46	-8.92	-0.01
Wind 90 deg - Ice		1.31	0.00	-0.31	-10.25	-0.01
Wind 120 deg - Ice		1.14	0.66	4.85	-8.92	-0.01
Wind 150 deg - Ice		0.67	1.16	8.70	-5.20	-0.01

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
Wind 180 deg - Ice		0.00	1.37	10.24	0.00	0.00
Wind 210 deg - Ice		-0.67	1.16	8.70	5.20	0.01
Wind 240 deg - Ice		-1.14	0.66	4.85	8.92	0.01
Wind 270 deg - Ice		-1.31	0.00	-0.31	10.25	0.01
Wind 300 deg - Ice		-1.14	-0.66	-5.46	8.92	0.01
Wind 330 deg - Ice		-0.67	-1.16	-9.31	5.20	0.01
Total Weight	3.22			-0.05	0.00	
Wind 0 deg - Service		0.00	-1.25	-9.23	0.00	0.00
Wind 30 deg - Service		0.60	-1.04	-7.80	-4.50	-0.01
Wind 60 deg - Service		1.02	-0.59	-4.46	-7.72	-0.02
Wind 90 deg - Service		1.16	0.00	0.00	-8.82	-0.02
Wind 120 deg - Service		1.02	0.59	4.46	-7.72	-0.02
Wind 150 deg - Service		0.60	1.04	7.80	-4.50	-0.01
Wind 180 deg - Service		0.00	1.25	9.23	0.00	0.00
Wind 210 deg - Service		-0.60	1.04	7.80	4.50	0.01
Wind 240 deg - Service		-1.02	0.59	4.46	7.72	0.02
Wind 270 deg - Service		-1.16	0.00	0.00	8.82	0.02
Wind 300 deg - Service		-1.02	-0.59	-4.46	7.72	0.02
Wind 330 deg - Service		-0.60	-1.04	-7.80	4.50	0.01

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+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

Comb. No.	Description
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	110 - 100	Pole	Max Tension	32	0.00	0.00	0.00
			Max. Compression	26	-10.26	0.00	0.31
			Max. Mx	8	-3.87	-47.46	0.06
			Max. My	2	-3.87	0.00	49.73
			Max. Vy	8	6.24	-47.46	0.06
			Max. Vx	2	-6.70	0.00	49.73
			Max. Torque	9			0.11

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	10.26	0.00	0.00
	Max. H_x	21	2.90	6.24	0.00
	Max. H_z	2	3.87	0.00	6.70
	Max. M_x	2	49.73	0.00	6.70
	Max. M_z	8	47.46	-6.24	0.00
	Max. Torsion	8	0.11	-6.24	0.00
	Min. Vert	21	2.90	6.24	0.00
	Min. H_x	8	3.87	-6.24	0.00
	Min. H_z	15	2.90	0.00	-6.70
	Min. M_x	15	-49.62	0.00	-6.70
	Min. M_z	20	-47.46	6.24	0.00
	Min. Torsion	20	-0.11	6.24	0.00

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	3.22	0.00	0.00	-0.05	0.00	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	3.87	0.00	-6.70	-49.73	0.00	0.00
0.9 Dead+1.6 Wind 0 deg - No Ice	2.90	0.00	-6.70	-49.70	0.00	0.00
1.2 Dead+1.6 Wind 30 deg - No Ice	3.87	3.22	-5.58	-42.01	-24.22	-0.07
0.9 Dead+1.6 Wind 30 deg - No Ice	2.90	3.22	-5.58	-41.99	-24.22	-0.07
1.2 Dead+1.6 Wind 60 deg - No Ice	3.87	5.50	-3.17	-24.03	-41.53	-0.11
0.9 Dead+1.6 Wind 60 deg - No Ice	2.90	5.50	-3.17	-24.01	-41.52	-0.11
1.2 Dead+1.6 Wind 90 deg - No Ice	3.87	6.24	0.00	-0.06	-47.46	-0.11
0.9 Dead+1.6 Wind 90 deg - No Ice	2.90	6.24	0.00	-0.04	-47.44	-0.11
1.2 Dead+1.6 Wind 120 deg - No Ice	3.87	5.50	3.17	23.92	-41.53	-0.11
0.9 Dead+1.6 Wind 120 deg - No Ice	2.90	5.50	3.17	23.93	-41.52	-0.11
1.2 Dead+1.6 Wind 150 deg - No Ice	3.87	3.22	5.58	41.90	-24.22	-0.07
0.9 Dead+1.6 Wind 150 deg - No Ice	2.90	3.22	5.58	41.90	-24.22	-0.07
1.2 Dead+1.6 Wind 180 deg - No Ice	3.87	0.00	6.70	49.62	0.00	0.00
0.9 Dead+1.6 Wind 180 deg - No Ice	2.90	0.00	6.70	49.62	0.00	0.00
1.2 Dead+1.6 Wind 210 deg - No Ice	3.87	-3.22	5.58	41.90	24.22	0.07
0.9 Dead+1.6 Wind 210 deg - No Ice	2.90	-3.22	5.58	41.90	24.22	0.07
1.2 Dead+1.6 Wind 240 deg - No Ice	3.87	-5.50	3.17	23.92	41.53	0.11
0.9 Dead+1.6 Wind 240 deg - No Ice	2.90	-5.50	3.17	23.93	41.52	0.11
1.2 Dead+1.6 Wind 270 deg - No Ice	3.87	-6.24	0.00	-0.06	47.46	0.11
0.9 Dead+1.6 Wind 270 deg - No Ice	2.90	-6.24	0.00	-0.04	47.44	0.11
1.2 Dead+1.6 Wind 300 deg - No Ice	3.87	-5.50	-3.17	-24.03	41.53	0.11
0.9 Dead+1.6 Wind 300 deg - No Ice	2.90	-5.50	-3.17	-24.01	41.52	0.11
1.2 Dead+1.6 Wind 330 deg - No Ice	3.87	-3.22	-5.58	-42.01	24.22	0.07
0.9 Dead+1.6 Wind 330 deg - No Ice	2.90	-3.22	-5.58	-41.99	24.22	0.07
1.2 Dead+1.0 Ice+1.0 Temp	10.26	0.00	0.00	-0.31	0.00	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	10.26	0.00	-1.37	-10.89	0.00	0.00
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	10.26	0.67	-1.16	-9.34	-5.21	-0.01
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	10.26	1.14	-0.66	-5.48	-8.94	-0.01
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	10.26	1.31	0.00	-0.32	-10.27	-0.01
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	10.26	1.14	0.66	4.85	-8.94	-0.01

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	10.26	0.67	1.16	8.71	-5.21	-0.01
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	10.26	0.00	1.37	10.26	0.00	0.00
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	10.26	-0.67	1.16	8.71	5.21	0.01
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	10.26	-1.14	0.66	4.85	8.94	0.01
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	10.26	-1.31	0.00	-0.32	10.27	0.01
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	10.26	-1.14	-0.66	-5.48	8.94	0.01
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	10.26	-0.67	-1.16	-9.34	5.21	0.01
Dead+Wind 0 deg - Service	3.22	0.00	-1.25	-9.29	0.00	0.00
Dead+Wind 30 deg - Service	3.22	0.60	-1.04	-7.85	-4.51	-0.01
Dead+Wind 60 deg - Service	3.22	1.02	-0.59	-4.51	-7.73	-0.02
Dead+Wind 90 deg - Service	3.22	1.16	0.00	-0.05	-8.83	-0.02
Dead+Wind 120 deg - Service	3.22	1.02	0.59	4.41	-7.73	-0.02
Dead+Wind 150 deg - Service	3.22	0.60	1.04	7.76	-4.51	-0.01
Dead+Wind 180 deg - Service	3.22	0.00	1.25	9.19	0.00	0.00
Dead+Wind 210 deg - Service	3.22	-0.60	1.04	7.76	4.51	0.01
Dead+Wind 240 deg - Service	3.22	-1.02	0.59	4.41	7.73	0.02
Dead+Wind 270 deg - Service	3.22	-1.16	0.00	-0.05	8.83	0.02
Dead+Wind 300 deg - Service	3.22	-1.02	-0.59	-4.51	7.73	0.02
Dead+Wind 330 deg - Service	3.22	-0.60	-1.04	-7.85	4.51	0.01

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-3.22	0.00	0.00	3.22	0.00	0.000%
2	0.00	-3.87	-6.70	0.00	3.87	6.70	0.000%
3	0.00	-2.90	-6.70	0.00	2.90	6.70	0.000%
4	3.22	-3.87	-5.58	-3.22	3.87	5.58	0.000%
5	3.22	-2.90	-5.58	-3.22	2.90	5.58	0.000%
6	5.50	-3.87	-3.17	-5.50	3.87	3.17	0.000%
7	5.50	-2.90	-3.17	-5.50	2.90	3.17	0.000%
8	6.24	-3.87	0.00	-6.24	3.87	0.00	0.000%
9	6.24	-2.90	0.00	-6.24	2.90	0.00	0.000%
10	5.50	-3.87	3.17	-5.50	3.87	-3.17	0.000%
11	5.50	-2.90	3.17	-5.50	2.90	-3.17	0.000%
12	3.22	-3.87	5.58	-3.22	3.87	-5.58	0.000%
13	3.22	-2.90	5.58	-3.22	2.90	-5.58	0.000%
14	0.00	-3.87	6.70	0.00	3.87	-6.70	0.000%
15	0.00	-2.90	6.70	0.00	2.90	-6.70	0.000%
16	-3.22	-3.87	5.58	3.22	3.87	-5.58	0.000%
17	-3.22	-2.90	5.58	3.22	2.90	-5.58	0.000%
18	-5.50	-3.87	3.17	5.50	3.87	-3.17	0.000%
19	-5.50	-2.90	3.17	5.50	2.90	-3.17	0.000%
20	-6.24	-3.87	0.00	6.24	3.87	0.00	0.000%
21	-6.24	-2.90	0.00	6.24	2.90	0.00	0.000%
22	-5.50	-3.87	-3.17	5.50	3.87	3.17	0.000%
23	-5.50	-2.90	-3.17	5.50	2.90	3.17	0.000%
24	-3.22	-3.87	-5.58	3.22	3.87	5.58	0.000%
25	-3.22	-2.90	-5.58	3.22	2.90	5.58	0.000%
26	0.00	-10.26	0.00	0.00	10.26	0.00	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
27	0.00	-10.26	-1.37	0.00	10.26	1.37	0.000%
28	0.67	-10.26	-1.16	-0.67	10.26	1.16	0.000%
29	1.14	-10.26	-0.66	-1.14	10.26	0.66	0.000%
30	1.31	-10.26	0.00	-1.31	10.26	0.00	0.000%
31	1.14	-10.26	0.66	-1.14	10.26	-0.66	0.000%
32	0.67	-10.26	1.16	-0.67	10.26	-1.16	0.000%
33	0.00	-10.26	1.37	0.00	10.26	-1.37	0.000%
34	-0.67	-10.26	1.16	0.67	10.26	-1.16	0.000%
35	-1.14	-10.26	0.66	1.14	10.26	-0.66	0.000%
36	-1.31	-10.26	0.00	1.31	10.26	0.00	0.000%
37	-1.14	-10.26	-0.66	1.14	10.26	0.66	0.000%
38	-0.67	-10.26	-1.16	0.67	10.26	1.16	0.000%
39	0.00	-3.22	-1.25	0.00	3.22	1.25	0.000%
40	0.60	-3.22	-1.04	-0.60	3.22	1.04	0.000%
41	1.02	-3.22	-0.59	-1.02	3.22	0.59	0.000%
42	1.16	-3.22	0.00	-1.16	3.22	0.00	0.000%
43	1.02	-3.22	0.59	-1.02	3.22	-0.59	0.000%
44	0.60	-3.22	1.04	-0.60	3.22	-1.04	0.000%
45	0.00	-3.22	1.25	0.00	3.22	-1.25	0.000%
46	-0.60	-3.22	1.04	0.60	3.22	-1.04	0.000%
47	-1.02	-3.22	0.59	1.02	3.22	-0.59	0.000%
48	-1.16	-3.22	0.00	1.16	3.22	0.00	0.000%
49	-1.02	-3.22	-0.59	1.02	3.22	0.59	0.000%
50	-0.60	-3.22	-1.04	0.60	3.22	1.04	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000001
3	Yes	4	0.00000001	0.00000001
4	Yes	4	0.00000001	0.00000001
5	Yes	4	0.00000001	0.00000001
6	Yes	4	0.00000001	0.00000001
7	Yes	4	0.00000001	0.00000001
8	Yes	4	0.00000001	0.00000001
9	Yes	4	0.00000001	0.00000001
10	Yes	4	0.00000001	0.00000001
11	Yes	4	0.00000001	0.00000001
12	Yes	4	0.00000001	0.00000001
13	Yes	4	0.00000001	0.00000001
14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00000001
16	Yes	4	0.00000001	0.00000001
17	Yes	4	0.00000001	0.00000001
18	Yes	4	0.00000001	0.00000001
19	Yes	4	0.00000001	0.00000001
20	Yes	4	0.00000001	0.00000001
21	Yes	4	0.00000001	0.00000001
22	Yes	4	0.00000001	0.00000001
23	Yes	4	0.00000001	0.00000001
24	Yes	4	0.00000001	0.00000001
25	Yes	4	0.00000001	0.00000001
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00000001

28	Yes	4	0.00000001	0.00000001
29	Yes	4	0.00000001	0.00000001
30	Yes	4	0.00000001	0.00000001
31	Yes	4	0.00000001	0.00000001
32	Yes	4	0.00000001	0.00000001
33	Yes	4	0.00000001	0.00000001
34	Yes	4	0.00000001	0.00000001
35	Yes	4	0.00000001	0.00000001
36	Yes	4	0.00000001	0.00000001
37	Yes	4	0.00000001	0.00000001
38	Yes	4	0.00000001	0.00000001
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00000001
41	Yes	4	0.00000001	0.00000001
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00000001
44	Yes	4	0.00000001	0.00000001
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00000001
47	Yes	4	0.00000001	0.00000001
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000001
50	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	110 - 100	0.035	39	0.0246	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
109.00	APX16DWV-16DWVS-E-A20	39	0.032	0.0221	0.0001	Inf

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	110 - 100	0.188	2	0.1316	0.0005

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
109.00	APX16DWV-16DWVS-E-A20	2	0.169	0.1184	0.0004	Inf

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	110 - 100 (1)	TP19.375x15.625x0.1875	10.00	10.00	17.5	11.5845	-3.87	779.90	0.005

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	110 - 100 (1)	TP19.375x15.625x0.1875	49.73	315.01	0.158	0.00	315.01	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	110 - 100 (1)	TP19.375x15.625x0.1875	6.70	403.66	0.017	0.00	640.85	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	110 - 100 (1)	0.005	0.158	0.000	0.017	0.000	0.163 ✔	1.000	4.8.2 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	110 - 100	Pole	TP19.375x15.625x0.1875	1	-3.87	779.90	16.3	Pass
						Summary		
						Pole (L1)	16.3	Pass
						RATING =	**16.3**	**Pass**

Program Version 8.0.5.0 - 11/28/2018 File:J:/Jobs/1906600.WI/06_CT11681A/05_Structural/Tower Analysis/Backup Documentation/Rev (1)/Calcs/ERI Files/10' Pole Extension Stratford, CT.eri

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Subject:	Flange Bolts and Flangeplate Analysis
Location:	10-ft Pole Top Section Stratford, CT
Rev. 0: 6/10/19	Prepared by: T.J.L. Checked by: C.A.G. Job No. 19066.06

Flange Bolt and Flange Plate Analysis:

Input Data:

Tower Reactions:

Overturning Moment =	OM := 50·ft·kips	(Input From tnxTower)
Shear Force =	Shear := 7·kips	(Input From tnxTower)
Axial Force =	Axial := 4·kips	(Input From tnxTower)

Flange Bolt Data:

ASTMA325

Number of Flange Bolts =	N := 12	(User Input)
Diameter of Bolt Circle =	D_{bc} := 23.5·in	(User Input)
Bolt Minimum Tensile Strength =	F_{ub} := 120·ksi	(User Input)
Bolt Modulus =	E := 29000·ksi	(User Input)
Diameter of Flange Bolts =	D := 1.00·in	(User Input)
Threads per Inch =	n := 8	(User Input)

Flange Plate Data:

ASTMA572-65

Plate Yield Strength =	Fy_{bp} := 65·ksi	(User Input)
Flange Plate Thickness =	t_{bp} := 1.0·in	(User Input)
Flange Plate Diameter =	D_{bp} := 26.25·in	(User Input)
Outer Pole Diameter =	D_{pole} := 19.375·in	(User Input)

Geometric Layout Data:

Distance from Bolts to Centroid of Pole:

Radius of Bolt Circle =: $R_{bc} := \frac{D_{bc}}{2} = 11.75 \cdot in$

Distance to Bolts = $i := 1 .. N$

$d_i := \left\| \theta \leftarrow 2 \cdot \pi \cdot \left(\frac{i}{N} \right) \right.$
$\left. d \leftarrow R_{bc} \cdot \sin(\theta) \right.$

$d_1 = 5.87 \cdot in$ $d_7 = -5.88 \cdot in$

$d_2 = 10.18 \cdot in$ $d_8 = -10.18 \cdot in$

$d_3 = 11.75 \cdot in$ $d_9 = -11.75 \cdot in$

$d_4 = 10.18 \cdot in$ $d_{10} = -10.18 \cdot in$

$d_5 = 5.87 \cdot in$ $d_{11} = -5.88 \cdot in$

$d_6 = 0.00 \cdot in$ $d_{12} = -0.00 \cdot in$

Critical Distances For Bending in Plate:

Outer Pole Radius = $R_{pole} := \frac{D_{pole}}{2} = 9.688 \cdot in$

Moment Arms of Bolts about Neutral Axis = $MA_i := if\left(d_i \geq R_{pole}, d_i - R_{pole}, 0in\right)$

$MA_1 = 0.00 \cdot in$ $MA_7 = 0.00 \cdot in$

$MA_2 = 0.49 \cdot in$ $MA_8 = 0.00 \cdot in$

$MA_3 = 2.06 \cdot in$ $MA_9 = 0.00 \cdot in$

$MA_4 = 0.49 \cdot in$ $MA_{10} = 0.00 \cdot in$

$MA_5 = 0.00 \cdot in$ $MA_{11} = 0.00 \cdot in$

$MA_6 = 0.00 \cdot in$ $MA_{12} = 0.00 \cdot in$

Effective Width of Flangeplate for Bending = $B_{eff} := .8 \cdot 2 \cdot \sqrt{\left(\frac{D_{bp}}{2}\right)^2 - \left(\frac{D_{pole}}{2}\right)^2} = 14.2 \cdot in$

Flange Bolt Analysis:

Calculated Flange Bolt Properties:

Polar Moment of Inertia = $I_p := \sum_i \left(d_i\right)^2 = 828.375 \cdot in^2$

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 0.785 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n}\right)^2 = 0.606 \cdot in^2$

Net Diameter = $D_n := \frac{2 \cdot \sqrt{A_n}}{\sqrt{\pi}} = 0.878 \cdot in$

Radius of Gyration of Bolt = $r := \frac{D_n}{4} = 0.22 \cdot in$

Section Modulus of Bolt = $S_x := \frac{\pi \cdot D_n^3}{32} = 0.066 \cdot in^3$

Check Flange Bolt Tension Force:

Maximum Tensile Force = $T_{Max} := OM \cdot \frac{R_{bc}}{I_p} - \frac{Axial}{N} = 8.2 \cdot kips$

Maximum Shear Force = $V_{Max} := \frac{Shear}{N} = 0.6 \cdot kips$

Design Tensile Strength = $\Phi R_{nt} := \left(0.75 \cdot F_{ub} \cdot 0.75 \cdot A_g\right) = 53 \cdot kips$

Bolt Tension % of Capacity = $\frac{T_{Max}}{\Phi R_{nt}} = 15.42 \cdot \%$

Condition1 = $Condition1 := if\left(\frac{T_{Max}}{\Phi R_{nt}} \le 1.00, "OK", "Overstressed"\right)$

Condition1 = "OK"

Design Shear Strength = $\Phi R_{nv} := \left(0.75 \cdot 0.45 \cdot F_{ub} \cdot A_g\right) = 31.8 \cdot kips$

Condition2 = $Condition2 := if\left[\left(\frac{V_{Max}}{\Phi R_{nv}}\right)^2 + \left(\frac{T_{Max}}{\Phi R_{nt}}\right)^2 \le 1.00, "OK", "Overstressed"\right]$

Condition2 = "OK"

Flange Plate Analysis:

Force from Bolts = $C_i := \frac{OM \cdot d_i}{I_p} + \frac{Axial}{N}$

$C_1 = 4.6 \cdot kips$ $C_7 = -3.9 \cdot kips$

$C_2 = 7.7 \cdot kips$ $C_8 = -7.0 \cdot kips$

$C_3 = 8.8 \cdot kips$ $C_9 = -8.2 \cdot kips$

$C_4 = 7.7 \cdot kips$ $C_{10} = -7.0 \cdot kips$

$C_5 = 4.6 \cdot kips$ $C_{11} = -3.9 \cdot kips$

$C_6 = 0.3 \cdot kips$ $C_{12} = 0.3 \cdot kips$

Maximum Bending Stress in Plate =

$$f_{bp} := \sum_i \frac{4 \cdot C_i \cdot MA_i}{\left(B_{eff} \, t_{bp}^{\,2}\right)} = 7.3 \cdot ksi$$

Allowable Bending Stress in Plate = $F_{bp} := 0.9 \cdot Fy_{bp} = 58.5 \cdot ksi$

Plate Bending Stress % of Capacity = $\frac{f_{bp}}{F_{bp}} = 12.4 \cdot \%$

Condition3 = $Condition3 := if\left(\frac{f_{bp}}{F_{bp}} < 1.00, "Ok", "Overstressed"\right)$

Condition3 = "Ok"

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Subject: Load Analysis of T-Mobile Equipment on Structure #826

Location: Stratford, CT

Rev. 0: 6/10/19

Prepared by: T.J.L Checked by: C.A.G.
Job No. 19066.06

Basic Components

Heavy Wind Pressure =	p := 4.00	psf	(User Input NESC 2012 Figure 250-1 & Table 250-1)
Basic Windspeed =	V := 110	mph	(User Input NESC 2012 Figure 250-2(e))
Radial Ice Thickness =	Ir := 0.50	in	(User Input)
Radial Ice Density =	Id := 56.0	pcf	(User Input)

Factors for Extreme Wind Calculation

Elevation of Top of Tower Above Grade =	TME := 110	ft	(User Input)
Multiplier Gust Response Factor =	m := 1.25		(User Input - Only for NESC Extreme wind case)
NESC Factor =	kv := 1.43		(User Input from NESC 2012 Table 250-3 equation)
Importance Factor =	I := 1.0		(User Input from NESC 2012 Section 250.C.2)
Velocity Pressure Coefficient =	$Kz := 2.01 \cdot \left(\frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.291$		(NESC 20127 Table 250-2)
Exposure Factor =	$Es := 0.346 \left[\frac{33}{(0.67 \cdot TME)}\right]^{\frac{1}{7}} = 0.308$		(NESC 2012 Table 250-3)
Response Term =	$Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.842$		(NESC 2012 Table 250-3)
Gust Response Factor =	$Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.863$		(NESC 2012 Table 250-3)
Wind Pressure =	$qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 34.5$	psf	(NESC 2012 Section 250.C.2)

NESC Extreme Ice w/ Wind Components

Heavy Wind Pressure =	$p_{ex} := 6.4$	psf	(User Input NESC 2012 Figure 250-3 & Table 250-4)
Radial Ice Thickness =	$Ir_{ex} := 0.75$	in	(User Input NESC 2012 Figure 250-3)

Shape Factors

Shape Factor for Round Members =	$Cd_R := 1.3$	(User Input)
Shape Factor for Flat Members =	$Cd_F := 1.6$	(User Input)
Shape Factor for Coax Cables Attached to Outside of Pole =	$Cd_{coax} := 1.6$	(User Input)

Overload Factors

Overload Factors for Wind Loads:

NESC Heavy Wind Loading =	**2.5**	(User Input)
NESC Extreme Wind Loading =	**1.0**	(User Input)
NESC Extreme Ice w/ Wind Loading =	**1.0**	(User Input)

Overload Factors for Vertical Loads:

NESC Heavy Wind Loading =	**1.5**	(User Input)
NESC Extreme Wind Loading =	**1.0**	(User Input)
NESC Extreme Ice w/ Wind Loading =	**1.0**	(User Input)

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Subject: Load Analysis of T-Mobile Equipment on Structure #826

Location: Stratford, CT

Rev. 0: 6/10/19

Prepared by: T.J.L Checked by: C.A.G.
Job No. 19066.06

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	RFSAPXVAARR24_43		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 95.9$	in	(User Input)
Antenna Width =	$W_{ant} := 24$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.7$	in	(User Input)
Antenna Weight =	$WT_{ant} := 153$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant1} := WT_{ant} \cdot N_{ant} = 459$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2 \times 10^{4}$ cu in

Volume of Ice on Each Antenna = $V_{ice} := \left(L_{ant} + 2 \cdot Ir\right)\left(W_{ant} + 2 \cdot Ir\right)\left(T_{ant} + 2 \cdot Ir\right) - V_{ant} = 3474$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 113$ lbs

Weight of Ice on All Antennas = $Wt_{ice.ant1} := W_{ICEant} \cdot N_{ant} = 338$ lbs

Gravity Load (Extreme ice only)

Volume of Extreme Ice on Each Antenna = $V_{ice.ex} := \left(L_{ant} + 2 \cdot Ir_{ex}\right)\left(W_{ant} + 2 \cdot Ir_{ex}\right)\left(T_{ant} + 2 \cdot Ir_{ex}\right) - V_{ant} = 5310$ cu in

Weight of Extreme Ice on Each Antenna = $W_{ICE.exant} := \frac{V_{ice.ex}}{1728} \cdot Id = 172$ lbs

Weight of Extreme Ice on All Antennas = $Wt_{ice.ex.ant1} := W_{ICE.exant} \cdot N_{ant} = 516$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{\left(L_{ant} + 2 \cdot Ir\right) \cdot \left(W_{ant} + 2 \cdot Ir\right)}{144} = 16.8$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 50.5$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant1} := p \cdot Cd_F \cdot A_{ICEant} = 323$ lbs

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 16$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 48$	sf
Total Antenna Wind Force =	$F_{ant1} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 3310$	lbs

Wind Load (NESC Extreme Ice w/ Wind)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Extreme Ice =	$SA_{ICE.exant} := \frac{(L_{ant} + 2 \cdot Ir_{ex}) \cdot (W_{ant} + 2 \cdot Ir_{ex})}{144} = 17.2$	sf
Antenna Projected Surface Area w/ Extreme Ice =	$A_{ICE.exant} := SA_{ICE.exant} \cdot N_{ant} = 51.7$	sf
Total Antenna Wind Force w/ Extreme Ice =	$Fi_{ex.ant1} := p_{ex} \cdot Cd_F \cdot A_{ICE.exant} \cdot m = 662$	lbs

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Subject: Load Analysis of T-Mobile Equipment on Structure #826

Location: Stratford, CT

Rev. 0: 6/10/19

Prepared by: T.J.L Checked by: C.A.G.
Job No. 19066.06

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	RFSAPX16DWV-16DWVS-E-A20		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 55.9$	in	(User Input)
Antenna Width =	$W_{ant} := 13$	in	(User Input)
Antenna Thickness =	$T_{ant} := 3.15$	in	(User Input)
Antenna Weight =	$WT_{ant} := 41$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant2} := WT_{ant} \cdot N_{ant} = 123$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2289$ cu in

Volume of Ice on Each Antenna = $V_{ice} := \left(L_{ant} + 2 \cdot Ir\right)\left(W_{ant} + 2 \cdot Ir\right)\left(T_{ant} + 2 \cdot Ir\right) - V_{ant} = 1017$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 33$ lbs

Weight of Ice on All Antennas = $Wt_{ice.ant2} := W_{ICEant} \cdot N_{ant} = 99$ lbs

Gravity Load (Extreme ice only)

Volume of Extreme Ice on Each Antenna = $V_{ice.ex} := \left(L_{ant} + 2 \cdot Ir_{ex}\right)\left(W_{ant} + 2 \cdot Ir_{ex}\right)\left(T_{ant} + 2 \cdot Ir_{ex}\right) - V_{ant} = 1581$ cu in

Weight of Extreme Ice on Each Antenna = $W_{ICE.exant} := \frac{V_{ice.ex}}{1728} \cdot Id = 51$ lbs

Weight of Extreme Ice on All Antennas = $Wt_{ice.ex.ant2} := W_{ICE.exant} \cdot N_{ant} = 154$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{\left(L_{ant} + 2 \cdot Ir\right) \cdot \left(W_{ant} + 2 \cdot Ir\right)}{144} = 5.5$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 16.6$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant2} := p \cdot Cd_F \cdot A_{ICEant} = 106$ lbs

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 5$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 15.1$ sf

Total Antenna Wind Force = $F_{ant2} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1045$ lbs

Wind Load (NESC Extreme Ice w/ Wind)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Extreme Ice = $SA_{ICE.exant} := \frac{\left(L_{ant} + 2 \cdot Ir_{ex}\right) \cdot \left(W_{ant} + 2 \cdot Ir_{ex}\right)}{144} = 5.8$ sf

Antenna Projected Surface Area w/ Extreme Ice = $A_{ICE.exant} := SA_{ICE.exant} \cdot N_{ant} = 17.3$ sf

Total Antenna Wind Force w/ Extreme Ice = $Fi_{ex.ant2} := p_{ex} \cdot Cd_F \cdot A_{ICE.exant} \cdot m = 222$ lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Andrew ATSBT-TOP-FM-4G		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 5.63$	in	(User Input)
Antenna Width =	$W_{ant} := 3.7$	in	(User Input)
Antenna Thickness =	$T_{ant} := 2$	in	(User Input)
Antenna Weight =	$WT_{ant} := 2$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 6$		(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant3} := WT_{ant} \cdot N_{ant} = 12$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 42$ cu in

Volume of Ice on Each Antenna = $V_{ice} := \left(L_{ant} + 2 \cdot Ir\right)\left(W_{ant} + 2 \cdot Ir\right)\left(T_{ant} + 2 \cdot Ir\right) - V_{ant} = 52$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 2$ lbs

Weight of Ice on All Antennas = $Wt_{ice.ant3} := W_{ICEant} \cdot N_{ant} = 10$ lbs

Gravity Load (Extreme ice only)

Volume of Extreme Ice on Each Antenna = $V_{ice.ex} := \left(L_{ant} + 2 \cdot Ir_{ex}\right)\left(W_{ant} + 2 \cdot Ir_{ex}\right)\left(T_{ant} + 2 \cdot Ir_{ex}\right) - V_{ant} = 88$ cu in

Weight of Extreme Ice on Each Antenna = $W_{ICE.exant} := \frac{V_{ice.ex}}{1728} \cdot Id = 3$ lbs

Weight of Extreme Ice on All Antennas = $Wt_{ice.ex.ant3} := W_{ICE.exant} \cdot N_{ant} = 17$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{\left(L_{ant} + 2 \cdot Ir\right) \cdot \left(W_{ant} + 2 \cdot Ir\right)}{144} = 0.2$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 1.3$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant3} := p \cdot Cd_F \cdot A_{ICEant} = 8$ lbs

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.1$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 0.9$	sf
Total Antenna Wind Force =	$F_{ant3} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 60$	lbs

Wind Load (NESC Extreme Ice w/ Wind)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Extreme Ice =	$SA_{ICE.exant} := \frac{\left(L_{ant} + 2 \cdot Ir_{ex}\right) \cdot \left(W_{ant} + 2 \cdot Ir_{ex}\right)}{144} = 0.3$	sf
Antenna Projected Surface Area w/ Extreme Ice =	$A_{ICE.exant} := SA_{ICE.exant} \cdot N_{ant} = 1.5$	sf
Total Antenna Wind Force w/ Extreme Ice =	$Fi_{ex.ant3} := p_{ex} \cdot Cd_F \cdot A_{ICE.exant} \cdot m = 20$	lbs

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Subject:	Load Analysis of T-Mobile Equipment on Structure #826
Location:	Stratford, CT
Rev. 0: 6/10/19	Prepared by: T.J.L Checked by: C.A.G. Job No. 19066.06

Development of Wind & Ice Load on Platform

Platform Data:

Platform Model =	SitePro 12-ft Low Profile Platform RMQP-472 w/ Handrail		
Mount Shape =	Flat		
Mount Projected Surface Area =	$CdAa := 25$	sf	(User Input)
Mount Projected Surface Area w/ Ice =	$CdAa_{ice} := 29$	sf	(User Input)
Mount Projected Surface Area w/ Extreme Ice =	$CdAa_{ice.ex} := 32$	sf	(User Input)
Mount Weight =	$WT_{mnt} := 2100$	lbs	(User Input)
Mount Weight w/ Ice =	$WT_{mnt.ice} := 2500$	lbs	(User Input)
Mount Weight w/ Extreme Ice =	$WT_{mnt.ice.ex} := 2850$	lbs	(User Input)

Gravity Loads (without ice)

Weight of All Mounts = $Wt_{mnt1} := WT_{mnt} = 2100$ lbs

Gravity Load (ice only)

Weight of Ice on All Mounts = $Wt_{ice.mnt1} := \left(WT_{mnt.ice} - WT_{mnt}\right) = 400$ lbs

Gravity Load (ice only)

Weight of Ice on All Mounts = $Wt_{ice.ex.mnt1} := \left(WT_{mnt.ice.ex} - WT_{mnt}\right) = 750$ lbs

Wind Load (NESC Heavy)

Total Mount Wind Force w/ Ice = $Fi_{mnt1} := p \cdot CdAa_{ice} = 116$ lbs

Wind Load (NESC Extreme)

Total Mount Wind Force = $F_{mnt1} := qz \cdot CdAa \cdot m = 1078$ lbs

Wind Load (NESC Extreme Ice w/ Wind)

Total Mount Wind Force = $Fi_{ex.mnt1} := p_{ex} \cdot CdAa_{ice.ex} \cdot m = 256$ lbs

Total Equipment Loads:

NESC Heavy Wind Vertical = $\left(Wt_{ant1} + Wt_{ice.ant1} + Wt_{ant2} + Wt_{ice.ant2} + Wt_{ant3} + Wt_{ice.ant3} + Wt_{mnt1} + Wt_{ice.mnt1}\right) \cdot 1.5 = 5311$ lbs

NESC Heavy Wind Trasnsverse = $\left(Fi_{ant1} + Fi_{ant2} + Fi_{ant3} + Fi_{mnt1}\right) \cdot 2.5 = 1384$ lbs

NESC Extreme Wind Vertical = $\left(Wt_{ant1} + Wt_{ant2} + Wt_{ant3} + Wt_{mnt1}\right) = 2694$ lbs

NESC Extreme Wind Trasnsverse = $\left(F_{ant1} + F_{ant2} + F_{ant3} + F_{mnt1}\right) = 5493$ lbs

NESC Extreme Ice w/ Wind Vertical =

$NESC_{ice.ex} := Wt_{ant1} + Wt_{ice.ex.ant1} + Wt_{ant2} + Wt_{ice.ex.ant2} + Wt_{ant3} + Wt_{ice.ex.ant3} + Wt_{mnt1} + Wt_{ice.ex.mnt1} = 4131$ lbs

NESC Extreme Ice w/ Wind Trasnsverse = $\left(Fi_{ex.ant1} + Fi_{ex.ant2} + Fi_{ex.ant3} + Fi_{ex.mnt1}\right) = 1160$ lbs

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63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject:	Coax Cable on Pole #826
Location:	Stratford, CT
Rev. 0: 6/10/19	Prepared by: T.J.L Checked by: C.A.G. Job No. 19066.06

Coax Cable on Pole

Distance Between Coax Cable Attach Points =

Coaxial Cable Span = $Coax_{Span} := \begin{pmatrix} 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \end{pmatrix}$ ft *(User Input)*

Diameter of Coax Cable = $D_{coax} := 1.98 \cdot in$ *(User Input)*

Weight of Coax Cable = $W_{coax} := 1.04 \cdot plf$ *(User Input)*

Number of Coax Cables = $N_{coax} := 24$ *(User Input)*

Number of Projected Coax Cables = $NP_{coax} := 8$ *(User Input)*

Extreme Wind Pressure = $qz := 34.5 \cdot psf$ *(User Input)*

Heavy Wind Pressure = $p := 4 \cdot psf$ *(User Input)*

Radial Ice Thickness = $Ir := 0.5 \cdot in$ *(User Input)*

Radial Ice Density = $Id := 56 \cdot pcf$ *(User Input)*

Extreme Ice w/ Wind Pressure = $p_{ex} := 6.4 \cdot psf$ *(User Input)*

Extreme Radial Ice Thickness = $Ir_{ex} := 0.75 \cdot in$ *(User Input)*

Shape Factor = $Cd_{coax} := 1.6$ *(User Input)*

Overload Factor for NESC Heavy Wind Transverse Load = $OF_{HWT} := 2.5$ *(User Input)*

Overload Factor for NESC Heavy Wind Vertical Load = $OF_{HWV} := 1.5$ *(User Input)*

Overload Factor for NESC Extreme Wind Transverse Load = $OF_{EWT} := 1.0$ *(User Input)*

Overload Factor for NESC Extreme Wind Vertical Load = $OF_{EWV} := 1.0$ *(User Input)*

Overload Factor for NESC Extreme Ice w/ Wind Transverse Load = $OF_{EIT} := 1.0$ *(User Input)*

Overload Factor for NESC Extreme Ice w/ Wind Vertical Load = $OF_{EIV} := 1.0$ *(User Input)*

Wind Area without Ice = $A := \left(NP_{coax} \cdot D_{coax}\right) = 15.84 \cdot in$

Wind Area with Ice = $A_{ice} := \left(NP_{coax} \cdot D_{coax} + 2 \cdot Ir\right) = 16.84 \cdot in$

Wind Area with Extreme Ice = $A_{ice.ex} := \left(NP_{coax} \cdot D_{coax} + 2 \cdot Ir_{ex}\right) = 17.34 \cdot in$

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Subject:	Coax Cable on Pole #826
Location:	Stratford, CT
Rev. 0: 6/10/19	Prepared by: T.J.L Checked by: C.A.G. Job No. 19066.06

Ice Area per Liner Ft =

$$Ai_{coax} := \frac{\pi}{4}\cdot\left[\left(D_{coax} + 2\cdot Ir\right)^2 - D_{coax}^2\right] = 0.027\,ft^2$$

Weight of Ice on All Coax Cables =

$$W_{ice} := Ai_{coax}\cdot Id\cdot N_{coax} = 36.359\cdot plf$$

Extreme Ice Area per Liner Ft =

$$Ai_{coax.ex} := \frac{\pi}{4}\cdot\left[\left(D_{coax} + 2\cdot Ir_{ex}\right)^2 - D_{coax}^2\right] = 0.045\,ft^2$$

Weight of Extreme Ice on All Coax Cables =

$$W_{ice.ex} := Ai_{coax.ex}\cdot Id\cdot N_{coax} = 60.036\cdot plf$$

Heavy Vertical Load =

$$Heavy_{Vert} := \overrightarrow{\left[\left(N_{coax}\cdot W_{coax} + W_{ice}\right)\cdot Coax_{Span}\cdot OF_{HWV}\right]}$$

Heavy Transverse Load =

$$Heavy_{Trans} := \overrightarrow{\left(p\cdot A_{ice}\cdot Cd_{coax}\cdot Coax_{Span}\cdot OF_{HWT}\right)}$$

$$Heavy_{Vert} = \begin{pmatrix}920\\920\\920\\920\\920\\920\\920\\920\\920\\920\\920\end{pmatrix} lb \qquad Heavy_{Trans} = \begin{pmatrix}225\\225\\225\\225\\225\\225\\225\\225\\225\\225\\225\end{pmatrix} lb$$

Extreme Wind Vertical Load =

$$Extreme\_Wind_{Vert} := \overrightarrow{\left(N_{coax}\cdot W_{coax}\cdot Coax_{Span}\cdot OF_{EWV}\right)}$$

Extreme Wind Transverse Load =

$$Extreme\_Wind_{Trans} := \overrightarrow{\left[\left(qz\cdot A\cdot Cd_{coax}\right)\cdot Coax_{Span}\cdot OF_{EWT}\right]}$$

$$Extreme\_Wind_{Vert} = \begin{pmatrix}250\\250\\250\\250\\250\\250\\250\\250\\250\\250\\250\end{pmatrix} lb \qquad Extreme\_Wind_{Trans} = \begin{pmatrix}729\\729\\729\\729\\729\\729\\729\\729\\729\\729\\729\end{pmatrix} lb$$

Extreme Ice w/ Wind Vertical Load =

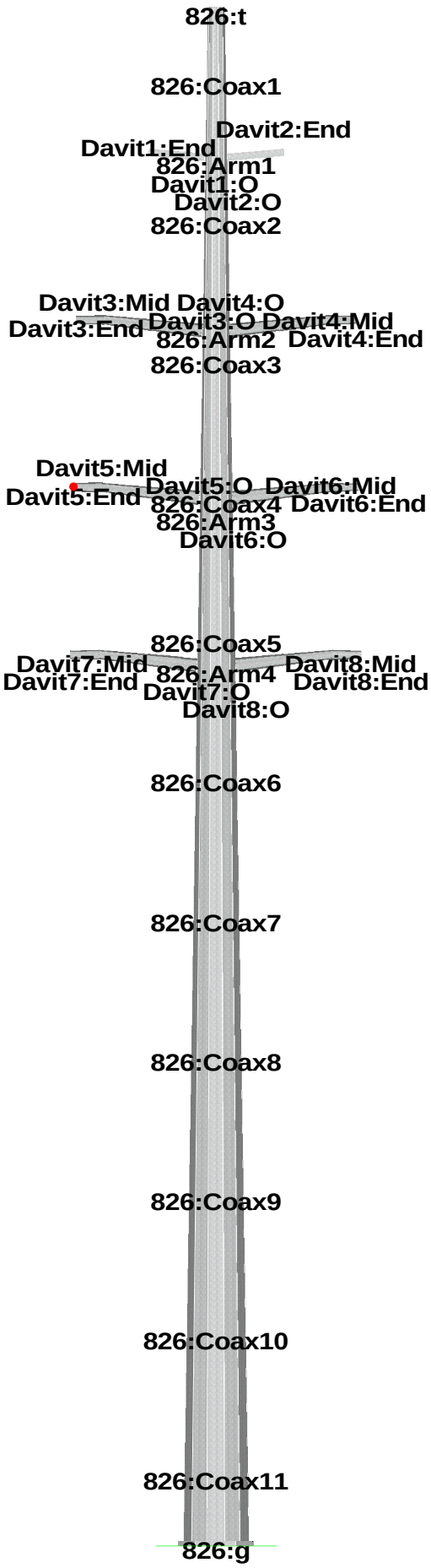
$$Extreme\_Ice_{Vert} := \overrightarrow{\left[\left(N_{coax} \cdot W_{coax} + W_{ice.ex}\right) \cdot Coax_{Span} \cdot OF_{EIV}\right]}$$

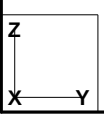
Extreme Ice w/ Wind Transverse Load =

$$Extreme\_Ice_{Trans} := \overrightarrow{\left(p_{ex} \cdot A_{ice.ex} \cdot Cd_{coax} \cdot Coax_{Span} \cdot OF_{EIT}\right)}$$

$$Extreme\_Ice_{Vert} = \begin{pmatrix} 850 \\ 850 \\ 850 \\ 850 \\ 850 \\ 850 \\ 850 \\ 850 \\ 850 \\ 850 \\ 850 \end{pmatrix} lb \qquad Extreme\_Ice_{Trans} = \begin{pmatrix} 148 \\ 148 \\ 148 \\ 148 \\ 148 \\ 148 \\ 148 \\ 148 \\ 148 \\ 148 \\ 148 \end{pmatrix} lb$$

Centek Engineering Inc, Project: "Structure # 826"
PLS-POLE Version 12.50, 8:27:50 AM Tuesday, June 11, 2019
Undeformed geometry displayed





Project Name : 19066.06 - Stratford, CT
Project Notes: Struct # 826/T-Mobile - CT11681A
Project File : J:\Jobs\1906600.WI\06_CT11681A\05_Structural\Tower Analysis\Backup Documentation\Rev (1)\Calcs\PLS-Pole\Structure # 826.pol
Date run : 8:37:09 AM Friday, July 12, 2019
by : PLS-POLE Version 12.50
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

The model has 0 warnings.

Loads from file: j:\jobs\1906600.wi\06_ct11681a\05_structural\tower analysis\backup documentation\rev (1)\calcs\pls-pole\structure #826.lca

*** Analysis Results:

Maximum element usage is 67.50% for Base Plate "826" in load case "NESC Extreme"
Maximum insulator usage is 7.65% for Clamp "Clamp20" in load case "NESC Extreme"

Summary of Joint Support Reactions For All Load Cases:

Load Case	Joint Label	Long. Force (kips)	Tran. Force (kips)	Vert. Force (kips)	Shear Force (kips)	Tran. Moment (ft-k)	Long. Moment (ft-k)	Bending Moment (ft-k)	Vert. Moment (ft-k)	Found. Usage %
NESC Heavy	826:g	0.90	-31.53	-64.10	31.54	2389.12	72.61	2390.23	-0.40	0.00
NESC Extreme	826:g	-0.81	-44.29	-34.35	44.30	3178.44	-66.87	3179.14	-0.66	0.00
NESC Extreme Ice w/ Wind	826:g	-1.30	-22.58	-53.75	22.61	1732.40	-109.70	1735.87	0.08	0.00

Summary of Tip Deflections For All Load Cases:

Note: postive tip load results in positive deflection

Load Case	Joint Label	Long. Defl. (in)	Tran. Defl. (in)	Vert. Defl. (in)	Resultant Defl. (in)	Long. Rot. (deg)	Tran. Rot. (deg)	Twist (deg)
NESC Heavy	826:t	-0.89	30.58	-0.50	30.60	-0.06	-2.33	0.00
NESC Extreme	826:t	0.86	41.97	-0.91	41.99	0.06	-3.46	0.00
NESC Extreme Ice w/ Wind	826:t	1.45	22.39	-0.28	22.44	0.11	-1.72	-0.00

Tubes Summary:

Pole Label	Tube Num.	Weight (lbs)	Load Case	Maximum Usage %	Resultant Moment (ft-k)
826	1	355	NESC Extreme	20.87	62.48
826	2	6343	NESC Extreme	49.45	1109.74
826	3	11683	NESC Extreme	54.71	3179.14

*** Overall summary for all load cases - Usage = Maximum Stress / Allowable Stress

Summary of Steel Pole Usages:

Steel Pole Label	Maximum Usage %	Load Case	Segment Number	Weight (lbs)
826	54.71	NESC Extreme	28	20384.2

Summary of Tubular Davit Usages:

Tubular Davit Label	Maximum Usage %	Load Case	Segment Number	Weight (lbs)
Davit1	8.86	NESC Extreme Ice w/ Wind	1	97.1
Davit2	10.43	NESC Extreme Ice w/ Wind	1	97.1
Davit3	18.23	NESC Extreme Ice w/ Wind	1	210.2
Davit4	20.70	NESC Extreme Ice w/ Wind	1	210.2
Davit5	18.29	NESC Extreme Ice w/ Wind	1	210.2
Davit6	20.72	NESC Extreme Ice w/ Wind	1	210.2
Davit7	18.34	NESC Extreme Ice w/ Wind	1	210.2
Davit8	20.78	NESC Extreme Ice w/ Wind	1	210.2

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	52.26	826	Base Plate
NESC Extreme	67.50	826	Base Plate
NESC Extreme Ice w/ Wind	38.84	826	Base Plate

Summary of Steel Pole Usages by Load Case:

Load Case	Maximum Usage %	Steel Pole Label	Segment Number
NESC Heavy	41.98	826	28
NESC Extreme	54.71	826	28
NESC Extreme Ice w/ Wind	30.83	826	28

Summary of Base Plate Usages by Load Case:

Load Case	Pole Label	Bend Line #	Length (in)	Vertical Load (kips)	X Moment (ft-k)	Y Moment (ft-k)	Bending Stress (ksi)	Bolt Moment Sum (ft-k)	# Bolts Acting On Bend Line	Max Bolt Load For Bend Line (kips)	Minimum Plate Thickness (in)	Usage %
NESC Heavy	826	8	15.173	62.093	2389.124	72.607	26.128	58.157	2.5	86.096	2.349	52.26
NESC Extreme	826	1	15.173	32.344	3178.438	-66.869	33.750	75.121	2.5	111.586	2.670	67.50
NESC Extreme Ice w/ Wind	826	1	15.173	51.744	1732.403	-109.701	19.418	43.221	2.5	63.611	2.025	38.84

Summary of Tubular Davit Usages by Load Case:

Load Case	Maximum Usage %	Tubular Davit Label	Segment Number
NESC Heavy	20.61	Davit8	1
NESC Extreme	9.71	Davit8	1
NESC Extreme Ice w/ Wind	20.78	Davit8	1

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
Clamp1	Clamp	3.29	NESC Heavy	0.0
Clamp2	Clamp	3.03	NESC Heavy	0.0
Clamp3	Clamp	4.84	NESC Heavy	0.0
Clamp4	Clamp	4.79	NESC Heavy	0.0
Clamp5	Clamp	4.84	NESC Heavy	0.0
Clamp6	Clamp	4.79	NESC Heavy	0.0
Clamp7	Clamp	4.83	NESC Heavy	0.0
Clamp8	Clamp	4.80	NESC Heavy	0.0
Clamp9	Clamp	1.18	NESC Heavy	0.0
Clamp10	Clamp	1.18	NESC Heavy	0.0
Clamp11	Clamp	1.18	NESC Heavy	0.0
Clamp12	Clamp	1.18	NESC Heavy	0.0
Clamp13	Clamp	1.18	NESC Heavy	0.0
Clamp14	Clamp	1.18	NESC Heavy	0.0
Clamp15	Clamp	1.18	NESC Heavy	0.0
Clamp16	Clamp	1.18	NESC Heavy	0.0
Clamp17	Clamp	1.18	NESC Heavy	0.0
Clamp18	Clamp	1.18	NESC Heavy	0.0
Clamp19	Clamp	1.18	NESC Heavy	0.0
Clamp20	Clamp	7.65	NESC Extreme	0.0

*** Weight of structure (lbs):
Weight of Tubular Davit Arms: 1455.6
Weight of Steel Poles: 20384.2
Total: 21839.8

*** End of Report

```
**************************************************************************
*                                                                        *
*                              PLS-POLE                                  *
*                   POLE AND FRAME ANALYSIS AND DESIGN                   *
*               Copyright Power Line Systems, Inc. 1999-2011             *
*                                                                        *
**************************************************************************

Project Name : 19066.06 - Stratford, CT
Project Notes: Struct # 826/T-Mobile - CT11681A
Project File : J:\Jobs\1906600.WI\06_CT11681A\05_Structural\Tower Analysis\Backup Documentation\Rev (1)\Calcs\PLS-Pole\Structure # 826.pol
Date run     : 8:37:09 AM Friday, July 12, 2019
by           : PLS-POLE Version 12.50
Licensed to  : Centek Engineering Inc

Successfully performed nonlinear analysis

The model has 0 warnings.
```

```
Modeling options:
  Offset Arms from Pole/Mast:   Yes
  Offset Braces from Pole/Mast: Yes
  Offset Guys from Pole/Mast:   Yes
  Offset Posts from Pole/Mast:  Yes
  Offset Strains from Pole/Mast:  Yes
  Use Alternate Convergence Process: No
  Steel poles checked with ASCE/SEI 48-11


Default Modulus of Elasticity for Steel = 29000.00 (ksi)
Default Weight Density for Steel = 490.00 (lbs/ft^3)
```

Steel Pole Properties:

Steel Pole Property	Stock Length Number	Default Embedded	Base Plate	Shape	Tip Diameter	Base Diameter	Taper	Default Drag	Tubes Modulus of Elasticity	Weight Density	Shape At	Strength Check	Distance From	Ultimate Ultimate

Label	Length (ft)	Length (ft)			Coef. (in)	Override (in)	(in/ft)	Override (ksi)	Override (lbs/ft^3)	Base	Type	Tip (ft)	Trans. Load (kips)	Long. Load (kips)
826	826	110.00	0	Yes	12F	15.63	56.63	0	1.6	3 tubes	0	0	Calculated	0.000	0.0000	0.0000

Steel Tubes Properties:

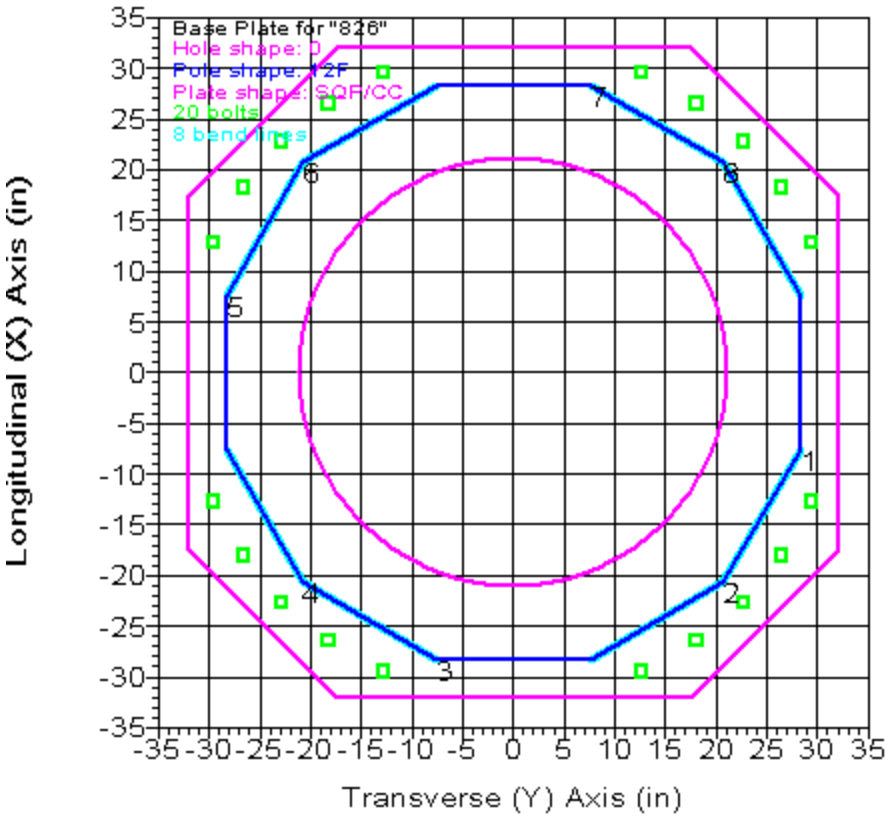
Pole Property	Tube No.	Length (ft)	Thickness (in)	Lap Length (ft)	Lap Factor	Lap Gap (in)	Yield Stress (ksi)	Moment Cap. Override (ft-k)	Tube Weight (lbs)	Center of Gravity (ft)	Calculated Taper (in/ft)	Tube Top Diameter (in)	Tube Bot. Diameter (in)	1.5x Diam. Lap Length (ft)	Actual Overlap (ft)
826	1	10	0.1875	0.000	0.000	0.000	65.000	0.000	355	5.18	0.37614	15.63	19.39	2.376	0.000
826	2	52.75	0.375	5.500	0.000	0.000	65.000	0.000	6343	29.35	0.37614	19.76	39.60	4.857	5.500
826	3	52.75	0.4375	0.000	0.000	0.000	65.000	0.000	11683	28.26	0.37614	36.78	56.62	0.000	0.000

Base Plate Properties:

Pole Property	Plate Diam. (in)	Plate Shape	Plate Thick. (in)	Plate Weight (lbs)	Bend Line Length Override (in)	Hole Diam. (in)	Hole Shape	Steel Density (lbs/ft^3)	Steel Yield Stress (ksi)	Bolt Diam. (in)	Bolt Pattern Diam. (in)	Num. Of Bolts	Bolt Cage X Inertia (in^4)	Bolt Cage Y Inertia (in^4)
826	64.000	SQP/CC	3.250	2003	0.000	42.500	0	490.00	50.000	2.250	64.250	20	41052.35	41052.35

Base Plate Bolt Coordinates for Property "826":

Bolt X Coord.	Bolt Y Coord.	Bolt Angle (deg)
0.3969	0.9183	0
0.5642	0.8249	0
0.7082	0.7082	0
0.8249	0.5642	0
0.9183	0.3969	0



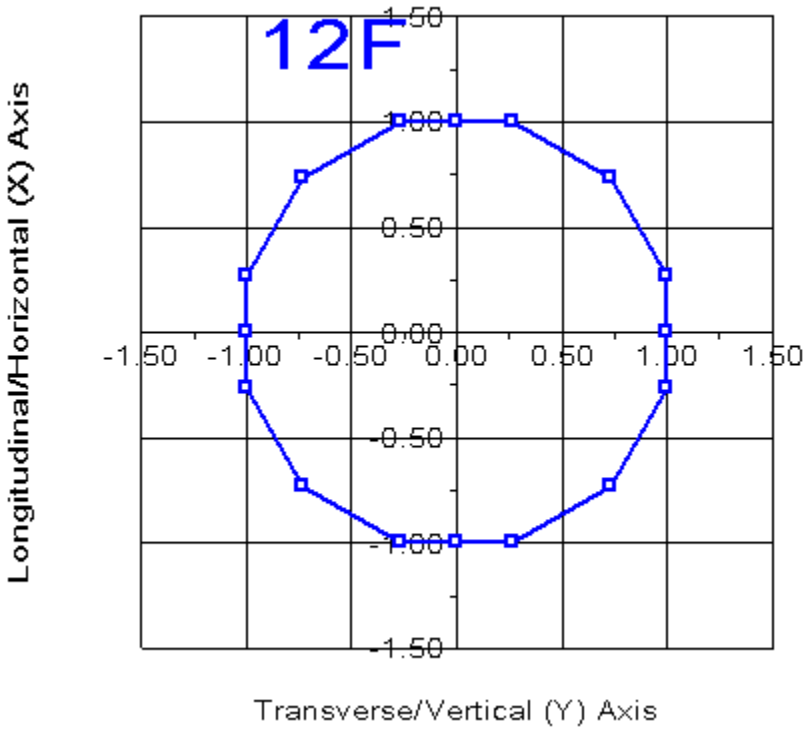
Steel Pole Connectivity:

Pole Label	Tip Joint	Base Joint	X of Base (ft)	Y of Base (ft)	Z of Base (ft)	Inclin. About X (deg)	Inclin. About Y (deg)	Property Set	Attach. Labels	Base Connect	Embed % Override	Embed C. Override (ft)
826			0	0	0	0	0	826	15 labels	Fixed	0.00	0

Relative Attachment Labels for Steel Pole "826":

Joint Label	Distance From Origin/Top Joint (ft)	Global Z of Attach (ft)
826:Arm1	10.75	0.00
826:Arm2	23.17	0.00
826:Arm3	35.17	0.00
826:Arm4	47.17	0.00
826:Coax1	0.00	105.00

826:Coax2	0.00	95.00
826:Coax3	0.00	85.00
826:Coax4	0.00	75.00
826:Coax5	0.00	65.00
826:Coax6	0.00	55.00
826:Coax7	0.00	45.00
826:Coax8	0.00	35.00
826:Coax9	0.00	25.00
826:Coax10	0.00	15.00
826:Coax11	0.00	5.00



Pole Steel Properties:

Warning: Capacities and usages printed in splices are listed for the inner tube except at the splice top which uses the outer tube. ??

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Outer Diam. (in)	Area (in^2)	T-Moment Inertia (in^4)	L-Moment Inertia (in^4)	D/t	W/t Max.	Fy (ksi)	Fa Min. (ksi)	T-Moment Capacity (ft-k)	L-Moment Capacity (ft-k)
826	826:t	826:t Ori	0.00	15.63	9.31	283.93	283.93	0.00	19.6	65.00	65.00	196.86	196.86
826	826:Coax1	826:Coax1 End	5.00	17.51	10.44	400.84	400.84	0.00	22.3	65.00	65.00	248.06	248.06
826	826:Coax1	826:Coax1 Ori	5.00	17.51	10.44	400.84	400.84	0.00	22.3	65.00	65.00	248.06	248.06
826	#826:0	SpliceT End	10.00	19.39	11.57	546.11	546.11	0.00	25.0	65.00	65.00	305.17	305.17
826	#826:0	SpliceT Ori	10.00	19.76	23.38	1124.84	1124.84	0.00	11.4	65.00	65.00	616.65	616.65

826	826:Arm1	826:Arm1 End	10.75	20.04	23.72	1174.65	1174.65	0.00	11.6	65.00	65.00	634.89	634.89	
826	826:Arm1	826:Arm1 Ori	10.75	20.04	23.72	1174.66	1174.66	0.00	11.6	65.00	65.00	634.89	634.89	
826	826:Coax2	826:Coax2 End	15.00	21.64	25.64	1484.90	1484.90	0.00	12.8	65.00	65.00	743.30	743.30	
826	826:Coax2	826:Coax2 Ori	15.00	21.64	25.64	1484.90	1484.90	0.00	12.8	65.00	65.00	743.30	743.30	
826	#826:1	Tube 2 End	19.08	23.18	27.50	1830.49	1830.49	0.00	13.9	65.00	65.00	855.55	855.55	
826	#826:1	Tube 2 Ori	19.08	23.18	27.50	1830.49	1830.49	0.00	13.9	65.00	65.00	855.55	855.55	
826	826:Arm2	826:Arm2 End	23.17	24.72	29.35	2225.93	2225.93	0.00	15.0	65.00	65.00	975.69	975.69	
826	826:Arm2	826:Arm2 Ori	23.17	24.72	29.35	2225.93	2225.93	0.00	15.0	65.00	65.00	975.69	975.69	
826	826:Coax3	826:Coax3 End	25.00	25.40	30.18	2420.14	2420.14	0.00	15.5	65.00	65.00	1032.07	1032.07	
826	826:Coax3	826:Coax3 Ori	25.00	25.40	30.18	2420.14	2420.14	0.00	15.5	65.00	65.00	1032.07	1032.07	
826	#826:2	Tube 2 End	30.00	27.28	32.45	3007.64	3007.64	0.00	16.8	65.00	65.00	1194.20	1194.20	
826	#826:2	Tube 2 Ori	30.00	27.28	32.45	3007.64	3007.64	0.00	16.8	65.00	65.00	1194.20	1194.20	
826	826:Coax4	826:Coax4 End	35.00	29.16	34.71	3683.26	3683.26	0.00	18.2	65.00	65.00	1368.16	1368.16	
826	826:Coax4	826:Coax4 Ori	35.00	29.16	34.71	3683.26	3683.26	0.00	18.2	65.00	65.00	1368.16	1368.16	
826	826:Arm3	826:Arm3 End	35.17	29.23	34.79	3707.86	3707.86	0.00	18.2	65.00	65.00	1374.28	1374.28	
826	826:Arm3	826:Arm3 Ori	35.17	29.23	34.79	3707.86	3707.86	0.00	18.2	65.00	65.00	1374.28	1374.28	
826	#826:3	Tube 2 End	40.09	31.08	37.02	4467.12	4467.12	0.00	19.5	65.00	65.00	1557.20	1557.20	
826	#826:3	Tube 2 Ori	40.09	31.08	37.02	4467.12	4467.12	0.00	19.5	65.00	65.00	1557.20	1557.20	
826	826:Coax5	826:Coax5 End	45.00	32.93	39.25	5323.54	5323.54	0.00	20.8	65.00	65.00	1751.55	1751.55	
826	826:Coax5	826:Coax5 Ori	45.00	32.93	39.25	5323.55	5323.55	0.00	20.8	65.00	65.00	1751.55	1751.55	
826	826:Arm4	826:Arm4 End	47.17	33.74	40.23	5734.10	5734.10	0.00	21.4	65.00	65.00	1840.99	1840.99	
826	826:Arm4	826:Arm4 Ori	47.17	33.74	40.23	5734.10	5734.10	0.00	21.4	65.00	65.00	1840.99	1840.99	
826	#826:4	Tube 2 End	51.09	35.21	42.01	6527.20	6527.20	0.00	22.5	65.00	65.00	2007.99	2007.99	
826	#826:4	Tube 2 Ori	51.09	35.21	42.01	6527.20	6527.20	0.00	22.5	65.00	65.00	2007.99	2007.99	
826	826:Coax6	826:Coax6 End	55.00	36.69	43.78	7390.26	7390.26	0.00	23.5	65.00	65.00	2182.24	2182.24	
826	826:Coax6	826:Coax6 Ori	55.00	36.69	43.78	7390.26	7390.26	0.00	23.5	65.00	65.00	2182.24	2182.24	
826	#826:5	SpliceT End	57.25	37.53	44.81	7919.08	7919.08	0.00	24.1	65.00	65.00	2285.67	2285.67	
826	#826:5	SpliceT Ori	57.25	37.53	44.81	7919.08	7919.08	0.00	24.1	65.00	65.00	2285.67	2285.67	
826	#826:6	Tube 2 End	60.00	37.82	52.58	9405.73	9405.73	0.00	20.5	65.00	65.00	2694.35	2694.35	
826	#826:6	Tube 2 Ori	60.00	37.82	52.58	9405.74	9405.74	0.00	20.5	65.00	65.00	2694.35	2694.35	
826	#826:7	SpliceB End	62.75	38.85	54.04	10208.28	10208.28	0.00	21.1	65.00	65.00	2846.39	2846.39	
826	#826:7	SpliceB Ori	62.75	38.85	54.04	10208.28	10208.28	0.00	21.1	65.00	65.00	2846.39	2846.39	
826	826:Coax7	826:Coax7 End	65.00	39.70	55.23	10897.87	10897.87	0.00	21.6	65.00	65.00	2973.89	2973.89	
826	826:Coax7	826:Coax7 Ori	65.00	39.70	55.23	10897.87	10897.87	0.00	21.6	65.00	65.00	2973.89	2973.89	
826	#826:8	Tube 3 End	70.00	41.58	57.88	12540.03	12540.03	0.00	22.8	65.00	65.00	3267.23	3267.23	
826	#826:8	Tube 3 Ori	70.00	41.58	57.88	12540.03	12540.03	0.00	22.8	65.00	65.00	3267.23	3267.23	
826	826:Coax8	826:Coax8 End	75.00	43.46	60.52	14339.39	14339.39	0.00	23.9	65.00	65.00	3574.37	3574.37	
826	826:Coax8	826:Coax8 Ori	75.00	43.46	60.52	14339.39	14339.39	0.00	23.9	65.00	65.00	3574.38	3574.38	
826	#826:9	Tube 3 End	80.00	45.34	63.17	16303.14	16303.14	0.00	25.1	65.00	65.00	3895.31	3895.31	
826	#826:9	Tube 3 Ori	80.00	45.34	63.17	16303.14	16303.14	0.00	25.1	65.00	65.00	3895.31	3895.31	
826	826:Coax9	826:Coax9 End	85.00	47.22	65.81	18438.46	18438.46	0.00	26.2	65.00	65.00	4230.05	4230.05	
826	826:Coax9	826:Coax9 Ori	85.00	47.22	65.81	18438.46	18438.46	0.00	26.2	65.00	65.00	4230.05	4230.05	
826	#826:10	Tube 3 End	90.00	49.10	68.46	20752.54	20752.54	0.00	27.4	65.00	65.00	4578.58	4578.58	
826	#826:10	Tube 3 Ori	90.00	49.10	68.46	20752.55	20752.55	0.00	27.4	65.00	65.00	4578.58	4578.58	
826	826:Coax10	826:Coax10 End	95.00	50.98	71.10	23252.58	23252.58	0.00	28.5	65.00	65.00	4940.92	4940.92	
826	826:Coax10	826:Coax10 Ori	95.00	50.98	71.10	23252.58	23252.58	0.00	28.5	65.00	65.00	4940.92	4940.92	
826	#826:11	Tube 3 End	100.00	52.86	73.75	25945.74	25945.74	0.00	29.7	65.00	65.00	5317.05	5317.05	
826	#826:11	Tube 3 Ori	100.00	52.86	73.75	25945.74	25945.74	0.00	29.7	65.00	65.00	5317.05	5317.05	
826	826:Coax11	826:Coax11 End	105.00	54.74	76.40	28839.22	28839.22	0.00	30.8	65.00	64.01	5620.13	5620.13	
826	826:Coax11	826:Coax11 Ori	105.00	54.74	76.40	28839.23	28839.23	0.00	30.8	65.00	64.01	5620.13	5620.13	
826	826:g	826:g End	110.00	56.62	79.04	31940.21	31940.21	0.00	32.0	65.00	62.88	5911.57	5911.57	

Tubular Davit Properties:

Davit Property	Stock Number	Steel Shape	Thickness	Base Diameter	Tip Diameter	Taper Coef.	Drag	Modulus of	Geometry Check	Strength Capacity	Vertical Capacity	Tension Capacity	Compres. Capacity	Long. Stress	Yield Steel Density	Weight Shape

Label			or Depth (in)	or Depth (in)	Depth (in)	Elasticity (in/ft)		Type						Override At End (lbs/ft^3)
ARM AF / AG	ARM AF / AG	4F	0.3125	6	6	0	1.6	29000	1 point	Calculated	0	0	0	0	65	0
ARM AJ / AH	ARM AJ / AH	8T	0.25	11	6	0	1.3	29000	2 points	Calculated	0	0	0	0	65	0

Intermediate Joints for Davit Property "ARM AF / AG":

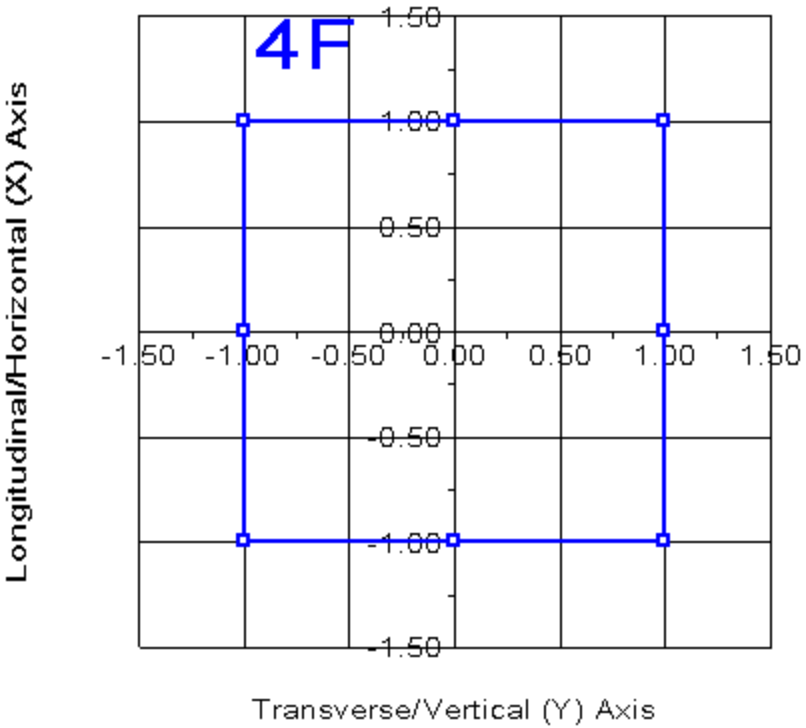
Joint Label	Horz. Offset (ft)	Vert. Offset (ft)
End	4	-0.333

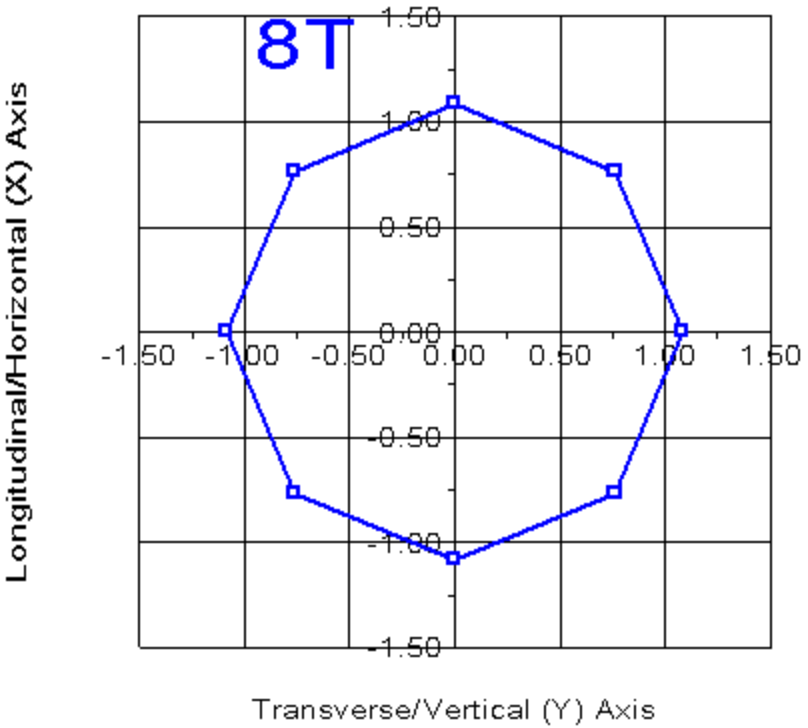
Intermediate Joints for Davit Property "ARM AJ / AH":

Joint Label	Horz. Offset (ft)	Vert. Offset (ft)
Mid	7	-0.75
End	9	-0.75

Tubular Davit Arm Connectivity:

Davit Label	Attach Label	Davit Property Set	Azimuth (deg)
Davit1	826:Arm1	ARM AF / AG	180
Davit2	826:Arm1	ARM AF / AG	0
Davit3	826:Arm2	ARM AJ / AH	180
Davit4	826:Arm2	ARM AJ / AH	0
Davit5	826:Arm3	ARM AJ / AH	180
Davit6	826:Arm3	ARM AJ / AH	0
Davit7	826:Arm4	ARM AJ / AH	180
Davit8	826:Arm4	ARM AJ / AH	0


4F
1.50
1.00
0.50
0.00
-0.50
-1.00
-1.50
-1.50
-1.00
-0.50
0.00
0.50
1.00
1.50
Longitudinal/Horizontal (X) Axis
Transverse/Vertical (Y) Axis



Tubular Davit Arm Steel Properties:

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Outer Diam. (in)	Area (in^2)	V-Moment Inertia (in^4)	H-Moment Inertia (in^4)	D/t	W/t Max.	Fy (ksi)	Fa Min. (ksi)	V-Moment Capacity (ft-k)	H-Moment Capacity (ft-k)
Davit1	Davit1:O	Origin	0.00	6.00	7.11	38.44	38.44	0.00	9.2	65.00	65.00	69.41	69.41
Davit1	Davit1:End	End	4.01	6.00	7.11	38.44	38.44	0.00	9.2	65.00	65.00	69.41	69.41
Davit2	Davit2:O	Origin	0.00	6.00	7.11	38.44	38.44	0.00	9.2	65.00	65.00	69.41	69.41
Davit2	Davit2:End	End	4.01	6.00	7.11	38.44	38.44	0.00	9.2	65.00	65.00	69.41	69.41
Davit3	Davit3:O	Origin	0.00	11.00	8.91	136.07	136.07	0.00	14.1	65.00	65.00	123.81	123.81
Davit3	#Davit3:0	End	3.52	9.05	7.29	74.74	74.74	0.00	10.9	65.00	65.00	82.63	82.63
Davit3	#Davit3:0	Origin	3.52	9.05	7.29	74.74	74.74	0.00	10.9	65.00	65.00	82.63	82.63
Davit3	Davit3:Mid	End	7.04	7.11	5.68	35.33	35.33	0.00	7.6	65.00	65.00	49.76	49.76
Davit3	Davit3:Mid	Origin	7.04	7.11	5.68	35.33	35.33	0.00	7.6	65.00	65.00	49.76	49.76
Davit3	Davit3:End	End	9.04	6.00	4.76	20.85	20.85	0.00	5.8	65.00	65.00	34.78	34.78
Davit4	Davit4:O	Origin	0.00	11.00	8.91	136.07	136.07	0.00	14.1	65.00	65.00	123.81	123.81
Davit4	#Davit4:0	End	3.52	9.05	7.29	74.74	74.74	0.00	10.9	65.00	65.00	82.63	82.63
Davit4	#Davit4:0	Origin	3.52	9.05	7.29	74.74	74.74	0.00	10.9	65.00	65.00	82.63	82.63
Davit4	Davit4:Mid	End	7.04	7.11	5.68	35.33	35.33	0.00	7.6	65.00	65.00	49.76	49.76

Davit4	Davit4:Mid	Origin	7.04	7.11	5.68	35.33	35.33	0.00	7.6	65.00	65.00	49.76	49.76
Davit4	Davit4:End	End	9.04	6.00	4.76	20.85	20.85	0.00	5.8	65.00	65.00	34.78	34.78
Davit5	Davit5:O	Origin	0.00	11.00	8.91	136.07	136.07	0.00	14.1	65.00	65.00	123.81	123.81
Davit5	#Davit5:0	End	3.52	9.05	7.29	74.74	74.74	0.00	10.9	65.00	65.00	82.63	82.63
Davit5	#Davit5:0	Origin	3.52	9.05	7.29	74.74	74.74	0.00	10.9	65.00	65.00	82.63	82.63
Davit5	Davit5:Mid	End	7.04	7.11	5.68	35.33	35.33	0.00	7.6	65.00	65.00	49.76	49.76
Davit5	Davit5:Mid	Origin	7.04	7.11	5.68	35.33	35.33	0.00	7.6	65.00	65.00	49.76	49.76
Davit5	Davit5:End	End	9.04	6.00	4.76	20.85	20.85	0.00	5.8	65.00	65.00	34.78	34.78
Davit6	Davit6:O	Origin	0.00	11.00	8.91	136.07	136.07	0.00	14.1	65.00	65.00	123.81	123.81
Davit6	#Davit6:0	End	3.52	9.05	7.29	74.74	74.74	0.00	10.9	65.00	65.00	82.63	82.63
Davit6	#Davit6:0	Origin	3.52	9.05	7.29	74.74	74.74	0.00	10.9	65.00	65.00	82.63	82.63
Davit6	Davit6:Mid	End	7.04	7.11	5.68	35.33	35.33	0.00	7.6	65.00	65.00	49.76	49.76
Davit6	Davit6:Mid	Origin	7.04	7.11	5.68	35.33	35.33	0.00	7.6	65.00	65.00	49.76	49.76
Davit6	Davit6:End	End	9.04	6.00	4.76	20.85	20.85	0.00	5.8	65.00	65.00	34.78	34.78
Davit7	Davit7:O	Origin	0.00	11.00	8.91	136.07	136.07	0.00	14.1	65.00	65.00	123.81	123.81
Davit7	#Davit7:0	End	3.52	9.05	7.29	74.74	74.74	0.00	10.9	65.00	65.00	82.63	82.63
Davit7	#Davit7:0	Origin	3.52	9.05	7.29	74.74	74.74	0.00	10.9	65.00	65.00	82.63	82.63
Davit7	Davit7:Mid	End	7.04	7.11	5.68	35.33	35.33	0.00	7.6	65.00	65.00	49.76	49.76
Davit7	Davit7:Mid	Origin	7.04	7.11	5.68	35.33	35.33	0.00	7.6	65.00	65.00	49.76	49.76
Davit7	Davit7:End	End	9.04	6.00	4.76	20.85	20.85	0.00	5.8	65.00	65.00	34.78	34.78
Davit8	Davit8:O	Origin	0.00	11.00	8.91	136.07	136.07	0.00	14.1	65.00	65.00	123.81	123.81
Davit8	#Davit8:0	End	3.52	9.05	7.29	74.74	74.74	0.00	10.9	65.00	65.00	82.63	82.63
Davit8	#Davit8:0	Origin	3.52	9.05	7.29	74.74	74.74	0.00	10.9	65.00	65.00	82.63	82.63
Davit8	Davit8:Mid	End	7.04	7.11	5.68	35.33	35.33	0.00	7.6	65.00	65.00	49.76	49.76
Davit8	Davit8:Mid	Origin	7.04	7.11	5.68	35.33	35.33	0.00	7.6	65.00	65.00	49.76	49.76
Davit8	Davit8:End	End	9.04	6.00	4.76	20.85	20.85	0.00	5.8	65.00	65.00	34.78	34.78

*** Insulator Data

Clamp Properties:

Label	Stock Number	Holding Capacity (lbs)
clamp	clamp1	8e+004

Clamp Insulator Connectivity:

Clamp Label	Structure And Tip Attach	Property Set	Min. Required Vertical Load (uplift) (lbs)
Clamp1	Davit1:End	clamp	No Uplift
Clamp2	Davit2:End	clamp	No Uplift
Clamp3	Davit3:End	clamp	No Uplift
Clamp4	Davit4:End	clamp	No Uplift
Clamp5	Davit5:End	clamp	No Uplift
Clamp6	Davit6:End	clamp	No Uplift
Clamp7	Davit7:End	clamp	No Uplift
Clamp8	Davit8:End	clamp	No Uplift
Clamp9	826:Coax1	clamp	No Uplift
Clamp10	826:Coax2	clamp	No Uplift
Clamp11	826:Coax3	clamp	No Uplift

Clamp12	826:Coax4	clamp	No Uplift
Clamp13	826:Coax5	clamp	No Uplift
Clamp14	826:Coax6	clamp	No Uplift
Clamp15	826:Coax7	clamp	No Uplift
Clamp16	826:Coax8	clamp	No Uplift
Clamp17	826:Coax9	clamp	No Uplift
Clamp18	826:Coax10	clamp	No Uplift
Clamp19	826:Coax11	clamp	No Uplift
Clamp20	826:t	clamp	No Uplift

*** Loads Data

Loads from file: j:\jobs\1906600.wi\06_ct11681a\05_structural\tower analysis\backup documentation\rev (1)\calcs\pls-pole\structure #826.lca

Insulator dead and wind loads are already included in the point loads printed below.

Loading Method Parameters:

Structure Height Summary (used for calculating wind/ice adjust with height):
  Z of ground for wind height adjust 0.00 (ft) and structure Z coordinate that will be put on the centerline ground profile in PLS-CADD.
  Ground elevation shift 0.00 (ft)
  Z of ground with shift 0.00 (ft)
  Z of structure top (highest joint) 110.00 (ft)
  Structure height 110.00 (ft)
  Structure height above ground 110.00 (ft)

Vector Load Cases:

Load Case Description	Dead Load Factor	Wind Area Factor	SF for Steel Tubular Poles and Towers	SF for Wood Arms	SF for Conc. Poles	SF for Conc. Ult. Check	SF for First Crack	SF for Zero Tens.	SF for Guys and Cables	SF for Tubular Arms	SF For Braces	SF for Insuls.	SF for Found.	Point Loads	Wind/Ice Model	Trans. Wind Pressure (psf)	Longit. Wind Pressure (psf)	Ice Thick. (in)	Ice Density (lbs/ft^3)	Temperature (deg F)	Deflection % or (ft)	Deflection Limit
NESC Heavy	1.5000	2.5000	1.00000	0.6500	0.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	20 loads	Wind on All	4	0	0.000	0.000	0.0	No Limit	0
NESC Extreme	1.0000	1.0000	1.00000	0.6500	0.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	20 loads	NESC 2012	31	0	0.000	0.000	0.0	No Limit	0
NESC Extreme Ice w/ Wind	1.0000	1.0000	1.00000	0.6500	0.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	20 loads	Wind on All	6.4	0	0.000	0.000	0.0	No Limit	0

Point Loads for Load Case "NESC Heavy":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
Davit1:End	1012	2432	-40	Shield Wire
Davit2:End	963	2222	-70	Shield Wire
Davit3:End	2473	2977	-127	Conductor
Davit4:End	2473	2921	-138	Conductor
Davit5:End	2473	2972	-127	Conductor
Davit6:End	2472	2926	-136	Conductor
Davit7:End	2472	2967	-127	Conductor
Davit8:End	2472	2932	-136	Conductor
826:t	5311	1384	0	Antennas
826:Coax1	920	225	0	Coax
826:Coax2	920	225	0	Coax
826:Coax3	920	225	0	Coax
826:Coax4	920	225	0	Coax
826:Coax5	920	225	0	Coax

826:Coax6	920	225	0	Coax
826:Coax7	920	225	0	Coax
826:Coax8	920	225	0	Coax
826:Coax9	920	225	0	Coax
826:Coax10	920	225	0	Coax
826:Coax11	920	225	0	Coax

Point Loads for Load Case "NESC Extreme":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
Davit1:End	251	1932	128	Shield Wire
Davit2:End	218	1841	77	Shield Wire
Davit3:End	1056	2797	107	Conductor
Davit4:End	1057	2765	92	Conductor
Davit5:End	1056	2759	107	Conductor
Davit6:End	1057	2734	95	Conductor
Davit7:End	1056	2716	107	Conductor
Davit8:End	1056	2696	96	Conductor
826:t	2694	5493	0	Antennas
826:Coax1	250	729	0	Coax
826:Coax2	250	729	0	Coax
826:Coax3	250	729	0	Coax
826:Coax4	250	729	0	Coax
826:Coax5	250	729	0	Coax
826:Coax6	250	729	0	Coax
826:Coax7	250	729	0	Coax
826:Coax8	250	729	0	Coax
826:Coax9	250	729	0	Coax
826:Coax10	250	729	0	Coax
826:Coax11	250	729	0	Coax

Detailed Pole Loading Data for Load Case "NESC Extreme":

Notes: Does not include loads from equipment, arms, guys, braces, etc. or user input loads.
Wind load is calculated for the undeformed shape of a pole.

Pole Label	Top Joint	Bottom Joint	Section Top Z (ft)	Section Bottom Z (ft)	Section Average Elevation (ft)	Outer Diameter (in)	Reynolds Number	Drag Coef.	Adjusted Wind Pressure (psf)	Adjusted Ice Thickness (in)	Pole Vert. Load (lbs)	Pole Wind Load (lbs)	Pole Vertical Load (lbs)	Pole Ice Wind Load (lbs)	Tran. Wind Load (lbs)	Long. Wind Load (lbs)
826	826:t	826:Coax1	110.00	105.00	107.50	16.565	1.4e+006	1.000	31.72	0.00	167.99	218.91	0.00	0.00	218.91	0.00
826	826:Coax1		105.00	100.00	102.50	18.446	1.56e+006	1.000	31.72	0.00	187.29	243.76	0.00	0.00	243.76	0.00
826		826:Arm1	100.00	99.25	99.62	19.902	1.68e+006	1.000	31.72	0.00	60.09	39.45	0.00	0.00	39.45	0.00
826	826:Arm1	826:Coax2	99.25	95.00	97.12	20.843	1.76e+006	1.000	31.72	0.00	356.91	234.12	0.00	0.00	234.12	0.00
826	826:Coax2		95.00	90.92	92.96	22.410	1.89e+006	1.000	31.72	0.00	369.33	241.95	0.00	0.00	241.95	0.00
826		826:Arm2	90.92	86.83	88.87	23.947	2.02e+006	1.000	31.72	0.00	395.08	258.54	0.00	0.00	258.54	0.00
826	826:Arm2	826:Coax3	86.83	85.00	85.92	25.059	2.11e+006	1.000	31.72	0.00	185.34	121.20	0.00	0.00	121.20	0.00
826	826:Coax3		85.00	80.00	82.50	26.344	2.22e+006	1.000	31.72	0.00	532.75	348.13	0.00	0.00	348.13	0.00
826		826:Coax4	80.00	75.00	77.50	28.224	2.38e+006	1.000	31.72	0.00	571.33	372.98	0.00	0.00	372.98	0.00
826	826:Coax4	826:Arm3	75.00	74.83	74.91	29.197	2.46e+006	1.000	31.72	0.00	20.10	13.12	0.00	0.00	13.12	0.00
826	826:Arm3		74.83	69.91	72.37	30.153	2.54e+006	1.000	31.72	0.00	600.51	391.69	0.00	0.00	391.69	0.00
826		826:Coax5	69.91	65.00	67.46	32.002	2.7e+006	1.000	31.72	0.00	637.79	415.71	0.00	0.00	415.71	0.00
826	826:Coax5	826:Arm4	65.00	62.83	63.91	33.334	2.81e+006	1.000	31.72	0.00	293.45	191.18	0.00	0.00	191.18	0.00
826	826:Arm4		62.83	58.91	60.87	34.479	2.91e+006	1.000	31.72	0.00	547.81	356.76	0.00	0.00	356.76	0.00
826		826:Coax6	58.91	55.00	56.96	35.951	3.03e+006	1.000	31.72	0.00	571.47	371.99	0.00	0.00	371.99	0.00

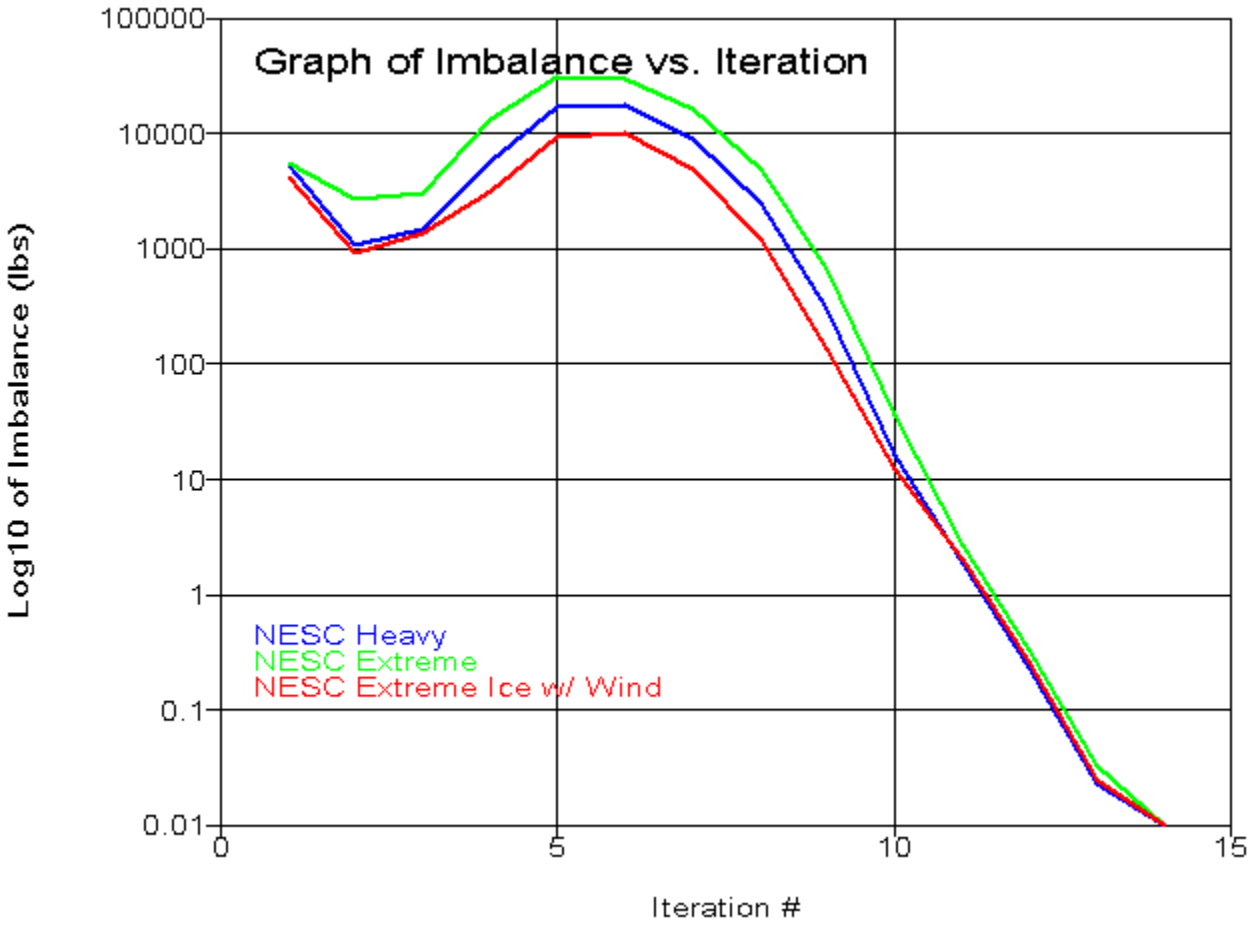
826	826:Coax6		55.00	52.75	53.88	37.111	3.13e+006	1.000	31.72	0.00	339.13	220.68	0.00	0.00	220.68	0.00
826			52.75	50.00	51.38	37.676	3.18e+006	1.000	31.72	0.00	910.36	273.83	0.00	0.00	273.83	0.00
826			50.00	47.25	48.62	38.335	3.23e+006	1.000	31.72	0.00	935.43	278.63	0.00	0.00	278.63	0.00
826		826:Coax7	47.25	45.00	46.13	39.276	3.31e+006	1.000	31.72	0.00	418.30	233.56	0.00	0.00	233.56	0.00
826	826:Coax7		45.00	40.00	42.50	40.639	3.43e+006	1.000	31.72	0.00	962.19	537.04	0.00	0.00	537.04	0.00
826		826:Coax8	40.00	35.00	37.50	42.520	3.59e+006	1.000	31.72	0.00	1007.20	561.89	0.00	0.00	561.89	0.00
826	826:Coax8		35.00	30.00	32.50	44.401	3.74e+006	1.000	31.72	0.00	1052.21	586.74	0.00	0.00	586.74	0.00
826		826:Coax9	30.00	25.00	27.50	46.281	3.9e+006	1.000	31.72	0.00	1097.22	611.60	0.00	0.00	611.60	0.00
826	826:Coax9		25.00	20.00	22.50	48.162	4.06e+006	1.000	31.72	0.00	1142.24	636.45	0.00	0.00	636.45	0.00
826		826:Coax10	20.00	15.00	17.50	50.043	4.22e+006	1.000	31.72	0.00	1187.25	661.30	0.00	0.00	661.30	0.00
826	826:Coax10		15.00	10.00	12.50	51.923	4.38e+006	1.000	31.72	0.00	1232.26	686.15	0.00	0.00	686.15	0.00
826		826:Coax11	10.00	5.00	7.50	53.804	4.54e+006	1.000	31.72	0.00	1277.27	711.01	0.00	0.00	711.01	0.00
826	826:Coax11	826:g	5.00	0.00	2.50	55.685	4.7e+006	1.000	31.72	0.00	1322.29	735.86	0.00	0.00	735.86	0.00

Point Loads for Load Case "NESC Extreme Ice w/ Wind":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
Davit1:End	1437	1858	179	Shield Wire
Davit2:End	1404	1658	198	Shield Wire
Davit3:End	2591	2166	153	Conductor
Davit4:End	2591	2122	153	Conductor
Davit5:End	2591	2163	153	Conductor
Davit6:End	2589	2126	154	Conductor
Davit7:End	2589	2159	153	Conductor
Davit8:End	2589	2131	154	Conductor
826:t	4131	1160	0	Antennas
826:Coax1	850	148	0	Coax
826:Coax2	850	148	0	Coax
826:Coax3	850	148	0	Coax
826:Coax4	850	148	0	Coax
826:Coax5	850	148	0	Coax
826:Coax6	850	148	0	Coax
826:Coax7	850	148	0	Coax
826:Coax8	850	148	0	Coax
826:Coax9	850	148	0	Coax
826:Coax10	850	148	0	Coax
826:Coax11	850	148	0	Coax

*** Analysis Results:

Maximum element usage is 67.50% for Base Plate "826" in load case "NESC Extreme"
Maximum insulator usage is 7.65% for Clamp "Clamp20" in load case "NESC Extreme"



*** Analysis Results for Load Case No. 1 "NESC Heavy" - Number of iterations in SAPS 14

Equilibrium Joint Positions and Rotations for Load Case "NESC Heavy":

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
826:g	0	0	0	0.0000	0.0000	0.0000	0	0	0
826:t	-0.07428	2.548	-0.04159	-2.3313	-0.0629	0.0015	-0.07428	2.548	110
826:Coax1	-0.06879	2.345	-0.03737	-2.3141	-0.0628	0.0016	-0.06879	2.345	105

826:Arm1	-0.06249	2.115	-0.03265	-2.2702	-0.0626	0.0016	-0.06249	2.115	99.22
826:Coax2	-0.05784	1.948	-0.02929	-2.2373	-0.0623	0.0015	-0.05784	1.948	94.97
826:Arm2	-0.04902	1.635	-0.0232	-2.1359	-0.0609	0.0013	-0.04902	1.635	86.81
826:Coax3	-0.04708	1.567	-0.02191	-2.1072	-0.0604	0.0012	-0.04708	1.567	84.98
826:Coax4	-0.03684	1.215	-0.0155	-1.9100	-0.0562	0.0010	-0.03684	1.215	74.98
826:Arm3	-0.03667	1.21	-0.0154	-1.9063	-0.0562	0.0010	-0.03667	1.21	74.81
826:Coax5	-0.02751	0.9022	-0.01033	-1.6635	-0.0500	0.0007	-0.02751	0.9022	64.99
826:Arm4	-0.02564	0.8402	-0.009392	-1.6057	-0.0484	0.0007	-0.02564	0.8402	62.82
826:Coax6	-0.01943	0.6351	-0.006471	-1.3840	-0.0421	0.0005	-0.01943	0.6351	54.99
826:Coax7	-0.01279	0.4179	-0.003827	-1.1038	-0.0338	0.0004	-0.01279	0.4179	45
826:Coax8	-0.007589	0.2481	-0.002115	-0.8356	-0.0256	0.0002	-0.007589	0.2481	35
826:Coax9	-0.003794	0.1242	-0.001078	-0.5786	-0.0177	0.0002	-0.003794	0.1242	25
826:Coax10	-0.001342	0.04402	-0.0004866	-0.3358	-0.0103	0.0001	-0.001342	0.04402	15
826:Coax11	-0.0001504	0.004954	-0.0001379	-0.1082	-0.0033	0.0000	-0.0001504	0.004954	5
Davit1:O	-0.0625	2.116	0.0004328	-2.2702	-0.0626	0.0016	-0.0625	1.281	99.25
Davit1:End	-0.06304	2.132	0.1564	-2.2237	-0.0629	-0.0008	-0.06304	-2.703	99.74
Davit2:O	-0.06247	2.114	-0.06573	-2.2702	-0.0626	0.0016	-0.06247	2.95	99.18
Davit2:End	-0.06297	2.125	-0.2276	-2.3376	-0.0628	0.0058	-0.06297	6.96	99.36
Davit3:O	-0.04904	1.636	0.01518	-2.1359	-0.0609	0.0013	-0.04904	0.6061	86.85
Davit3:Mid	-0.05109	1.666	0.2553	-1.8244	-0.0625	-0.0162	-0.05109	-6.364	87.84
Davit3:End	-0.05179	1.667	0.3178	-1.7757	-0.0626	-0.0188	-0.05179	-8.363	87.9
Davit4:O	-0.04901	1.634	-0.06158	-2.1359	-0.0609	0.0013	-0.04901	2.664	86.77
Davit4:Mid	-0.05091	1.659	-0.3471	-2.4969	-0.0612	0.0202	-0.05091	9.689	87.23
Davit4:End	-0.05159	1.657	-0.4354	-2.5449	-0.0611	0.0229	-0.05159	11.69	87.14
Davit5:O	-0.03669	1.21	0.02511	-1.9063	-0.0562	0.0010	-0.03669	-0.007408	74.86
Davit5:Mid	-0.03867	1.237	0.2372	-1.5929	-0.0576	-0.0165	-0.03867	-6.981	75.82
Davit5:End	-0.03937	1.237	0.2916	-1.5439	-0.0577	-0.0191	-0.03937	-8.981	75.87
Davit6:O	-0.03665	1.209	-0.05592	-1.9063	-0.0562	0.0010	-0.03665	2.427	74.77
Davit6:Mid	-0.03849	1.232	-0.3134	-2.2687	-0.0565	0.0196	-0.03849	9.45	75.27
Davit6:End	-0.03916	1.23	-0.3938	-2.3169	-0.0564	0.0223	-0.03916	11.45	75.19
Davit7:O	-0.02566	0.8408	0.03	-1.6057	-0.0484	0.0007	-0.02566	-0.5652	62.86
Davit7:Mid	-0.02751	0.8619	0.2054	-1.2901	-0.0498	-0.0168	-0.02751	-7.544	63.79
Davit7:End	-0.0282	0.8624	0.2492	-1.2409	-0.0499	-0.0194	-0.0282	-9.544	63.83
Davit8:O	-0.02563	0.8397	-0.04879	-1.6057	-0.0484	0.0007	-0.02563	2.246	62.78
Davit8:Mid	-0.02739	0.8599	-0.2696	-1.9702	-0.0488	0.0193	-0.02739	9.266	63.31
Davit8:End	-0.02807	0.8587	-0.3395	-2.0187	-0.0488	0.0220	-0.02807	11.26	63.24

Joint Support Reactions for Load Case "NESC Heavy":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	H-Bend-M Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
826:g	0.90	0.0	-31.53	0.0	0.0	-64.10	0.0	0.0	71.44	0.0	2389.12	0.0	72.6	0.0	0.0	-0.40	0.0	0.0

Detailed Steel Pole Usages for Load Case "NESC Heavy":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Trans. Mom. (Local Mx) (ft-k)	Long. Mom. (Local My) (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Tran. Shear (kips)	Long. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
826	826:t	Origin	0.00	30.58	-0.89	-0.50	-0.00	0.00	0.0	-5.38	1.66	0.01	-0.58	0.00	0.36	0.00	0.85	1.3	5
826	826:Coax1	End	5.00	28.14	-0.83	-0.45	8.29	0.03	0.0	-5.38	1.66	0.01	-0.51	2.18	0.08	0.00	2.69	4.1	2
826	826:Coax1	Origin	5.00	28.14	-0.83	-0.45	8.29	0.03	-0.0	-6.55	2.04	0.01	-0.63	2.18	0.10	0.00	2.81	4.3	2
826	SpliceT	End	10.00	25.74	-0.76	-0.40	18.52	0.07	-0.0	-6.55	2.04	0.01	-0.57	3.95	0.09	0.00	4.52	6.9	2
826	SpliceT	Origin	10.00	25.74	-0.76	-0.40	18.52	0.07	-0.0	-6.74	2.12	0.01	-0.29	1.95	0.05	0.00	2.24	3.5	2
826	826:Arm1	End	10.75	25.38	-0.75	-0.39	20.11	0.07	-0.0	-6.74	2.12	0.01	-0.28	2.06	0.05	0.00	2.35	3.6	2
826	826:Arm1	Origin	10.75	25.38	-0.75	-0.39	21.48	0.11	0.1	-9.13	6.94	0.12	-0.39	2.20	0.16	0.01	2.60	4.0	2

826	826:Coax2	End	15.00	23.37	-0.69	-0.35	50.97	0.62	0.1	-9.13	6.94	0.12	-0.36	4.47	0.14	0.01	4.84	7.4	2
826	826:Coax2	Origin	15.00	23.37	-0.69	-0.35	50.97	0.62	0.1	-10.59	7.33	0.12	-0.41	4.47	0.15	0.01	4.89	7.5	2
826	Tube 2	End	19.08	21.48	-0.64	-0.31	80.93	1.12	0.1	-10.59	7.33	0.12	-0.39	6.17	0.14	0.01	6.56	10.1	2
826	Tube 2	Origin	19.08	21.48	-0.64	-0.31	80.93	1.12	0.1	-11.17	7.47	0.12	-0.41	6.17	0.14	0.01	6.58	10.1	2
826	826:Arm2	End	23.17	19.62	-0.59	-0.28	111.46	1.61	0.1	-11.17	7.47	0.12	-0.38	7.45	0.14	0.00	7.84	12.1	2
826	826:Arm2	Origin	23.17	19.62	-0.59	-0.28	115.85	1.82	0.2	-16.97	13.68	0.39	-0.58	7.75	0.25	0.01	8.34	12.8	2
826	826:Coax3	End	25.00	18.81	-0.56	-0.26	140.87	2.54	0.2	-16.97	13.68	0.39	-0.56	8.92	0.24	0.01	9.49	14.6	2
826	826:Coax3	Origin	25.00	18.81	-0.56	-0.26	140.87	2.54	0.2	-18.43	14.06	0.39	-0.61	8.92	0.25	0.01	9.54	14.7	2
826	Tube 2	End	30.00	16.64	-0.50	-0.22	211.15	4.51	0.2	-18.43	14.06	0.39	-0.57	11.56	0.23	0.01	12.13	18.7	2
826	Tube 2	Origin	30.00	16.64	-0.50	-0.22	211.15	4.51	0.2	-19.28	14.23	0.39	-0.59	11.56	0.23	0.01	12.16	18.7	2
826	826:Coax4	End	35.00	14.59	-0.44	-0.19	282.32	6.48	0.2	-19.28	14.23	0.39	-0.56	13.50	0.22	0.01	14.06	21.6	2
826	826:Coax4	Origin	35.00	14.59	-0.44	-0.19	282.32	6.48	0.2	-20.65	14.58	0.40	-0.59	13.50	0.22	0.01	14.10	21.7	2
826	826:Arm3	End	35.17	14.52	-0.44	-0.18	284.80	6.55	0.2	-20.65	14.58	0.40	-0.59	13.55	0.22	0.01	14.15	21.8	2
826	826:Arm3	Origin	35.17	14.52	-0.44	-0.18	289.16	6.75	0.3	-26.51	20.75	0.66	-0.76	13.76	0.32	0.01	14.53	22.4	2
826	Tube 2	End	40.09	12.61	-0.38	-0.15	391.16	10.01	0.3	-26.51	20.75	0.66	-0.72	16.44	0.30	0.01	17.16	26.4	2
826	Tube 2	Origin	40.09	12.61	-0.38	-0.15	391.16	10.01	0.3	-27.48	20.93	0.66	-0.74	16.44	0.30	0.01	17.19	26.4	2
826	826:Coax5	End	45.00	10.83	-0.33	-0.12	494.03	13.27	0.3	-27.48	20.93	0.66	-0.70	18.47	0.28	0.01	19.17	29.5	2
826	826:Coax5	Origin	45.00	10.83	-0.33	-0.12	494.03	13.27	0.3	-29.13	21.31	0.66	-0.74	18.47	0.29	0.01	19.21	29.6	2
826	826:Arm4	End	47.17	10.08	-0.31	-0.11	540.27	14.71	0.3	-29.13	21.31	0.66	-0.72	19.21	0.28	0.01	19.94	30.7	2
826	826:Arm4	Origin	47.17	10.08	-0.31	-0.11	544.61	14.91	0.4	-35.20	27.47	0.93	-0.87	19.37	0.36	0.01	20.25	31.2	2
826	Tube 2	End	51.09	8.81	-0.27	-0.09	652.16	18.55	0.4	-35.20	27.47	0.93	-0.84	21.27	0.35	0.01	22.12	34.0	2
826	Tube 2	Origin	51.09	8.81	-0.27	-0.09	652.16	18.55	0.4	-36.10	27.61	0.93	-0.86	21.27	0.35	0.01	22.14	34.1	2
826	826:Coax6	End	55.00	7.62	-0.23	-0.08	760.24	22.19	0.4	-36.10	27.61	0.93	-0.82	22.82	0.34	0.01	23.65	36.4	2
826	826:Coax6	Origin	55.00	7.62	-0.23	-0.08	760.24	22.18	0.4	-37.74	27.96	0.93	-0.86	22.82	0.34	0.01	23.69	36.4	2
826	SpliceT	End	57.25	6.98	-0.21	-0.07	823.15	24.27	0.4	-37.74	27.96	0.93	-0.84	23.59	0.33	0.01	24.44	37.6	2
826	SpliceT	Origin	57.25	6.98	-0.21	-0.07	823.15	24.27	0.4	-38.71	28.06	0.93	-0.86	23.59	0.33	0.01	24.46	37.6	2
826	Tube 2	End	60.00	6.24	-0.19	-0.06	900.32	26.82	0.4	-38.71	28.06	0.93	-0.74	21.89	0.28	0.01	22.63	34.8	2
826	Tube 2	Origin	60.00	6.24	-0.19	-0.06	900.32	26.82	0.4	-40.13	28.18	0.93	-0.76	21.89	0.29	0.01	22.66	34.9	2
826	SpliceB	End	62.75	5.55	-0.17	-0.05	977.80	29.37	0.4	-40.13	28.18	0.93	-0.74	22.51	0.28	0.00	23.26	35.8	2
826	SpliceB	Origin	62.75	5.55	-0.17	-0.05	977.80	29.37	0.4	-41.18	28.28	0.93	-0.76	22.51	0.28	0.00	23.28	35.8	2
826	826:Coax7	End	65.00	5.01	-0.15	-0.05	1041.43	31.46	0.4	-41.18	28.28	0.93	-0.75	22.95	0.27	0.00	23.70	36.5	2
826	826:Coax7	Origin	65.00	5.01	-0.15	-0.05	1041.43	31.45	0.4	-43.18	28.66	0.93	-0.78	22.95	0.28	0.00	23.73	36.5	2
826	Tube 3	End	70.00	3.93	-0.12	-0.03	1184.74	36.08	0.4	-43.18	28.66	0.93	-0.75	23.76	0.26	0.00	24.51	37.7	2
826	Tube 3	Origin	70.00	3.93	-0.12	-0.03	1184.74	36.08	0.4	-44.72	28.86	0.92	-0.77	23.76	0.27	0.00	24.54	37.8	2
826	826:Coax8	End	75.00	2.98	-0.09	-0.03	1329.05	40.69	0.4	-44.72	28.86	0.92	-0.74	24.37	0.25	0.00	25.11	38.6	2
826	826:Coax8	Origin	75.00	2.98	-0.09	-0.03	1329.05	40.69	0.4	-47.25	29.31	0.92	-0.78	24.37	0.26	0.00	25.15	38.7	2
826	Tube 3	End	80.00	2.17	-0.07	-0.02	1475.59	45.29	0.4	-47.25	29.31	0.92	-0.75	24.83	0.25	0.00	25.58	39.3	2
826	Tube 3	Origin	80.00	2.17	-0.07	-0.02	1475.59	45.29	0.4	-48.93	29.52	0.92	-0.77	24.83	0.25	0.00	25.60	39.4	2
826	826:Coax9	End	85.00	1.49	-0.05	-0.01	1623.19	49.88	0.4	-48.93	29.52	0.92	-0.74	25.15	0.24	0.00	25.89	39.8	2
826	826:Coax9	Origin	85.00	1.49	-0.05	-0.01	1623.19	49.88	0.4	-51.59	29.98	0.92	-0.78	25.15	0.24	0.00	25.94	39.9	2
826	Tube 3	End	90.00	0.95	-0.03	-0.01	1773.08	54.46	0.4	-51.59	29.98	0.92	-0.75	25.38	0.23	0.00	26.14	40.2	2
826	Tube 3	Origin	90.00	0.95	-0.03	-0.01	1773.08	54.46	0.4	-53.40	30.21	0.91	-0.78	25.38	0.23	0.00	26.16	40.2	2
826	826:Coax10	End	95.00	0.53	-0.02	-0.01	1924.12	59.02	0.4	-53.40	30.21	0.91	-0.75	25.52	0.23	0.00	26.27	40.4	2
826	826:Coax10	Origin	95.00	0.53	-0.02	-0.01	1924.12	59.02	0.4	-56.20	30.68	0.91	-0.79	25.52	0.23	0.00	26.31	40.5	2
826	Tube 3	End	100.00	0.23	-0.01	-0.00	2077.50	63.56	0.4	-56.20	30.68	0.91	-0.76	25.61	0.22	0.00	26.37	40.6	2
826	Tube 3	Origin	100.00	0.23	-0.01	-0.00	2077.50	63.56	0.4	-58.14	30.92	0.91	-0.79	25.61	0.22	0.00	26.40	40.6	2
826	826:Coax11	End	105.00	0.06	-0.00	-0.00	2232.11	68.09	0.4	-58.14	30.92	0.91	-0.76	25.63	0.21	0.00	26.39	41.2	2
826	826:Coax11	Origin	105.00	0.06	-0.00	-0.00	2232.11	68.09	0.4	-61.07	31.40	0.90	-0.80	25.63	0.22	0.00	26.43	41.3	2
826	826:g	End	110.00	0.00	0.00	0.00	2389.12	72.61	0.4	-61.07	31.40	0.90	-0.77	25.62	0.21	0.00	26.40	42.0	2

Detailed Tubular Davit Arm Usages for Load Case "NESC Heavy":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Vert. Mom. (ft-k)	Horz. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Vert. Shear (kips)	Horz. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
Davit1	Davit1:O	Origin	0.00	25.39	-0.75	0.01	-3.13	-0.17	-0.0	-2.55	0.78	0.04	-0.36	3.09	0.17	0.00	3.46	5.3	2
Davit1	Davit1:End	End	4.01	25.58	-0.76	1.88	-0.00	-0.00	-0.0	-2.55	0.78	0.04	-0.36	0.00	0.25	0.00	0.57	0.9	3

Davit2	Davit2:O	Origin	0.00	25.37	-0.75	-0.79	-4.53	0.28	-0.0	2.18	1.13	-0.07	0.31	4.51	0.25	0.00	4.84	7.4	2
Davit2	Davit2:End	End	4.01	25.50	-0.76	-2.73	0.00	-0.00	-0.0	2.18	1.13	-0.07	0.31	0.00	0.37	0.00	0.71	1.1	3
Davit3	Davit3:O	Origin	0.00	19.63	-0.59	0.18	-20.33	-1.18	-0.0	-3.33	2.26	0.13	-0.37	10.67	0.03	0.01	11.05	17.0	1
Davit3	#Davit3:0	End	3.52	19.82	-0.60	1.68	-12.36	-0.72	-0.0	-3.33	2.26	0.13	-0.46	9.72	0.04	0.01	10.18	15.7	1
Davit3	#Davit3:0	Origin	3.52	19.82	-0.60	1.68	-12.36	-0.72	-0.0	-3.31	2.14	0.13	-0.45	9.72	0.04	0.01	10.18	15.7	1
Davit3	Davit3:Mid	End	7.04	19.99	-0.61	3.06	-4.81	-0.26	-0.0	-3.31	2.14	0.13	-0.58	6.28	0.05	0.02	6.87	10.6	1
Davit3	Davit3:Mid	Origin	7.04	19.99	-0.61	3.06	-4.81	-0.26	-0.0	-3.05	2.41	0.13	-0.54	6.28	0.05	0.00	6.82	10.5	1
Davit3	Davit3:End	End	9.04	20.00	-0.62	3.81	-0.00	-0.00	-0.0	-3.05	2.41	0.13	-0.64	0.00	1.05	0.00	1.93	3.0	3
Davit4	Davit4:O	Origin	0.00	19.61	-0.59	-0.74	-24.71	1.26	0.0	2.73	2.91	-0.14	0.31	12.97	0.03	0.01	13.28	20.4	1
Davit4	#Davit4:0	End	3.52	19.76	-0.60	-2.38	-14.48	0.77	0.0	2.73	2.91	-0.14	0.37	11.39	0.04	0.01	11.76	18.1	1
Davit4	#Davit4:0	Origin	3.52	19.76	-0.60	-2.38	-14.48	0.77	0.0	2.75	2.77	-0.14	0.38	11.39	0.04	0.01	11.76	18.1	1
Davit4	Davit4:Mid	End	7.04	19.91	-0.61	-4.17	-4.74	0.28	0.0	2.75	2.77	-0.14	0.48	6.19	0.05	0.02	6.67	10.3	1
Davit4	Davit4:Mid	Origin	7.04	19.91	-0.61	-4.17	-4.74	0.28	-0.0	3.03	2.37	-0.14	0.53	6.19	0.05	0.00	6.72	10.3	1
Davit4	Davit4:End	End	9.04	19.89	-0.62	-5.23	0.00	-0.00	-0.0	3.03	2.37	-0.14	0.64	0.00	1.04	0.00	1.90	2.9	3
Davit5	Davit5:O	Origin	0.00	14.53	-0.44	0.30	-20.45	-1.17	-0.0	-3.32	2.28	0.13	-0.37	10.74	0.03	0.01	11.11	17.1	1
Davit5	#Davit5:0	End	3.52	14.69	-0.45	1.63	-12.43	-0.72	-0.0	-3.32	2.28	0.13	-0.46	9.78	0.04	0.01	10.24	15.7	1
Davit5	#Davit5:0	Origin	3.52	14.69	-0.45	1.63	-12.43	-0.72	-0.0	-3.29	2.16	0.13	-0.45	9.78	0.04	0.01	10.23	15.7	1
Davit5	Davit5:Mid	End	7.04	14.84	-0.46	2.85	-4.84	-0.26	-0.0	-3.29	2.16	0.13	-0.58	6.32	0.05	0.02	6.90	10.6	1
Davit5	Davit5:Mid	Origin	7.04	14.84	-0.46	2.85	-4.84	-0.26	-0.0	-3.04	2.42	0.13	-0.54	6.32	0.05	0.00	6.85	10.5	1
Davit5	Davit5:End	End	9.04	14.85	-0.47	3.50	-0.00	-0.00	-0.0	-3.04	2.42	0.13	-0.64	0.00	1.06	0.00	1.94	3.0	3
Davit6	Davit6:O	Origin	0.00	14.51	-0.44	-0.67	-24.80	1.25	0.0	2.72	2.92	-0.14	0.31	13.02	0.03	0.01	13.33	20.5	1
Davit6	#Davit6:0	End	3.52	14.64	-0.45	-2.15	-14.53	0.76	0.0	2.72	2.92	-0.14	0.37	11.43	0.04	0.01	11.81	18.2	1
Davit6	#Davit6:0	Origin	3.52	14.64	-0.45	-2.15	-14.53	0.76	0.0	2.74	2.78	-0.14	0.38	11.43	0.04	0.01	11.81	18.2	1
Davit6	Davit6:Mid	End	7.04	14.78	-0.46	-3.76	-4.76	0.27	0.0	2.74	2.78	-0.14	0.48	6.22	0.05	0.02	6.70	10.3	1
Davit6	Davit6:Mid	Origin	7.04	14.78	-0.46	-3.76	-4.76	0.27	-0.0	3.02	2.38	-0.14	0.53	6.22	0.05	0.00	6.75	10.4	1
Davit6	Davit6:End	End	9.04	14.77	-0.47	-4.73	0.00	-0.00	-0.0	3.02	2.38	-0.14	0.63	0.00	1.04	0.00	1.91	2.9	3
Davit7	Davit7:O	Origin	0.00	10.09	-0.31	0.36	-20.60	-1.17	-0.0	-3.30	2.30	0.13	-0.37	10.82	0.03	0.01	11.19	17.2	1
Davit7	#Davit7:0	End	3.52	10.22	-0.32	1.47	-12.52	-0.72	-0.0	-3.30	2.30	0.13	-0.45	9.85	0.04	0.01	10.30	15.9	1
Davit7	#Davit7:0	Origin	3.52	10.22	-0.32	1.47	-12.52	-0.72	-0.0	-3.28	2.18	0.13	-0.45	9.85	0.04	0.01	10.30	15.8	1
Davit7	Davit7:Mid	End	7.04	10.34	-0.33	2.46	-4.87	-0.26	-0.0	-3.28	2.18	0.13	-0.58	6.36	0.05	0.02	6.93	10.7	1
Davit7	Davit7:Mid	Origin	7.04	10.34	-0.33	2.46	-4.87	-0.26	-0.0	-3.02	2.43	0.13	-0.53	6.36	0.05	0.00	6.89	10.6	1
Davit7	Davit7:End	End	9.04	10.35	-0.34	2.99	-0.00	-0.00	-0.0	-3.02	2.43	0.13	-0.63	0.00	1.06	0.00	1.95	3.0	3
Davit8	Davit8:O	Origin	0.00	10.08	-0.31	-0.59	-24.94	1.24	0.0	2.71	2.93	-0.14	0.30	13.09	0.03	0.01	13.40	20.6	1
Davit8	#Davit8:0	End	3.52	10.19	-0.31	-1.84	-14.62	0.76	0.0	2.71	2.93	-0.14	0.37	11.50	0.04	0.01	11.87	18.3	1
Davit8	#Davit8:0	Origin	3.52	10.19	-0.31	-1.84	-14.62	0.76	0.0	2.73	2.79	-0.14	0.37	11.50	0.04	0.01	11.87	18.3	1
Davit8	Davit8:Mid	End	7.04	10.32	-0.33	-3.23	-4.79	0.27	0.0	2.73	2.79	-0.14	0.48	6.26	0.05	0.02	6.74	10.4	1
Davit8	Davit8:Mid	Origin	7.04	10.32	-0.33	-3.23	-4.79	0.27	-0.0	3.02	2.39	-0.14	0.53	6.26	0.05	0.00	6.79	10.4	1
Davit8	Davit8:End	End	9.04	10.30	-0.34	-4.07	0.00	-0.00	-0.0	3.02	2.39	-0.14	0.63	0.00	1.05	0.00	1.92	3.0	3

Summary of Clamp Capacities and Usages for Load Case "NESC Heavy":

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
Clamp1	2.634	80.00	80.00	3.29
Clamp2	2.423	80.00	80.00	3.03
Clamp3	3.872	80.00	80.00	4.84
Clamp4	3.830	80.00	80.00	4.79
Clamp5	3.868	80.00	80.00	4.84

Clamp6	3.833	80.00	80.00	4.79
Clamp7	3.864	80.00	80.00	4.83
Clamp8	3.837	80.00	80.00	4.80
Clamp9	0.947	80.00	80.00	1.18
Clamp10	0.947	80.00	80.00	1.18
Clamp11	0.947	80.00	80.00	1.18
Clamp12	0.947	80.00	80.00	1.18
Clamp13	0.947	80.00	80.00	1.18
Clamp14	0.947	80.00	80.00	1.18
Clamp15	0.947	80.00	80.00	1.18
Clamp16	0.947	80.00	80.00	1.18
Clamp17	0.947	80.00	80.00	1.18
Clamp18	0.947	80.00	80.00	1.18
Clamp19	0.947	80.00	80.00	1.18
Clamp20	5.488	80.00	80.00	6.86

*** Analysis Results for Load Case No. 2 "NESC Extreme" - Number of iterations in SAPS 14

Equilibrium Joint Positions and Rotations for Load Case "NESC Extreme":

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
826:g	0	0	0	0.0000	0.0000	0.0000	0	0	0
826:t	0.07193	3.498	-0.07621	-3.4565	0.0635	0.0035	0.07193	3.498	109.9
826:Coax1	0.06641	3.198	-0.06716	-3.3967	0.0635	0.0035	0.06641	3.198	104.9
826:Arm1	0.06006	2.864	-0.05741	-3.2475	0.0634	0.0033	0.06006	2.864	99.19
826:Coax2	0.05539	2.626	-0.05071	-3.1640	0.0629	0.0029	0.05539	2.626	94.95
826:Arm2	0.0466	2.188	-0.03894	-2.9590	0.0606	0.0024	0.0466	2.188	86.79
826:Coax3	0.04468	2.095	-0.03652	-2.9067	0.0599	0.0023	0.04468	2.095	84.96
826:Coax4	0.03468	1.614	-0.02486	-2.5841	0.0546	0.0017	0.03468	1.614	74.98
826:Arm3	0.03451	1.606	-0.02469	-2.5783	0.0545	0.0017	0.03451	1.606	74.81
826:Coax5	0.02573	1.193	-0.01588	-2.2197	0.0477	0.0012	0.02573	1.193	64.98
826:Arm4	0.02395	1.111	-0.01428	-2.1375	0.0460	0.0012	0.02395	1.111	62.82
826:Coax6	0.01808	0.8385	-0.009441	-1.8312	0.0397	0.0009	0.01808	0.8385	54.99
826:Coax7	0.01187	0.5517	-0.005181	-1.4557	0.0316	0.0006	0.01187	0.5517	44.99
826:Coax8	0.007024	0.3278	-0.002535	-1.1018	0.0238	0.0004	0.007024	0.3278	35
826:Coax9	0.003505	0.1644	-0.001059	-0.7639	0.0164	0.0002	0.003505	0.1644	25
826:Coax10	0.001238	0.0584	-0.0003543	-0.4445	0.0095	0.0001	0.001238	0.0584	15
826:Coax11	0.0001385	0.006596	-7.451e-005	-0.1436	0.0030	0.0000	0.0001385	0.006596	5
Davit1:O	0.06016	2.865	-0.0101	-3.2475	0.0634	0.0033	0.06016	2.03	99.24
Davit1:End	0.06137	2.89	0.2159	-3.2459	0.0645	0.0109	0.06137	-1.945	99.8
Davit2:O	0.05996	2.862	-0.1047	-3.2475	0.0634	0.0033	0.05996	3.698	99.15
Davit2:End	0.06006	2.875	-0.3327	-3.2663	0.0635	-0.0013	0.06006	7.71	99.25
Davit3:O	0.0467	2.19	0.01422	-2.9590	0.0606	0.0024	0.0467	1.16	86.84
Davit3:Mid	0.04913	2.237	0.3676	-2.8502	0.0621	0.0172	0.04913	-5.793	87.95
Davit3:End	0.04989	2.239	0.4666	-2.8312	0.0623	0.0194	0.04989	-7.791	88.05
Davit4:O	0.0465	2.187	-0.0921	-2.9590	0.0606	0.0024	0.0465	3.217	86.74
Davit4:Mid	0.04743	2.217	-0.4651	-3.1165	0.0606	-0.0102	0.04743	10.25	87.11
Davit4:End	0.04772	2.214	-0.5743	-3.1351	0.0605	-0.0120	0.04772	12.24	87.01
Davit5:O	0.0346	1.607	0.0301	-2.5783	0.0545	0.0017	0.0346	0.3896	74.86
Davit5:Mid	0.03679	1.647	0.3371	-2.4663	0.0559	0.0165	0.03679	-6.571	75.92
Davit5:End	0.0375	1.649	0.4226	-2.4469	0.0560	0.0186	0.0375	-8.569	76
Davit6:O	0.03443	1.605	-0.07947	-2.5783	0.0545	0.0017	0.03443	2.823	74.75
Davit6:Mid	0.03548	1.632	-0.406	-2.7382	0.0546	-0.0113	0.03548	9.85	75.17
Davit6:End	0.03583	1.63	-0.502	-2.7573	0.0545	-0.0132	0.03583	11.85	75.08
Davit7:O	0.02402	1.112	0.03816	-2.1375	0.0460	0.0012	0.02402	-0.2944	62.87
Davit7:Mid	0.02594	1.143	0.2913	-2.0218	0.0474	0.0159	0.02594	-7.263	63.87
Davit7:End	0.02661	1.145	0.3614	-2.0020	0.0474	0.0181	0.02661	-9.261	63.94
Davit8:O	0.02388	1.11	-0.06672	-2.1375	0.0460	0.0012	0.02388	2.516	62.76
Davit8:Mid	0.02499	1.134	-0.3393	-2.3000	0.0462	-0.0120	0.02499	9.539	63.24
Davit8:End	0.0254	1.132	-0.4201	-2.3196	0.0461	-0.0139	0.0254	11.54	63.16

Joint Support Reactions for Load Case "NESC Extreme":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Uplift Usage %	Result. Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	H-Bend-M Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
826:g	-0.81	0.0	-44.29	0.0	0.0	-34.35	0.0	0.0	56.06	0.0	3178.44	0.0	-66.9	0.0	0.0	-0.66	0.0	0.0

Detailed Steel Pole Usages for Load Case "NESC Extreme":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Trans. Mom. (Local Mx) (ft-k)	Long. Mom. (Local My) (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Tran. Shear (kips)	Long. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
826	826:t	Origin	0.00	41.97	0.86	-0.91	-0.00	0.00	-0.0	-2.44	5.76	-0.00	-0.26	0.00	1.26	0.00	2.20	3.4	5
826	826:Coax1	End	5.00	38.37	0.80	-0.81	28.79	-0.02	-0.0	-2.44	5.76	-0.00	-0.23	7.55	0.29	0.00	7.80	12.0	2
826	826:Coax1	Origin	5.00	38.37	0.80	-0.81	28.79	-0.02	-0.0	-2.84	6.74	-0.00	-0.27	7.55	0.34	0.00	7.84	12.1	2
826	SpliceT	End	10.00	34.88	0.73	-0.70	62.48	-0.04	-0.0	-2.84	6.74	-0.00	-0.25	13.31	0.31	0.00	13.57	20.9	2
826	SpliceT	Origin	10.00	34.88	0.73	-0.70	62.48	-0.04	-0.0	-2.97	6.88	-0.00	-0.13	6.59	0.16	0.00	6.72	10.3	2
826	826:Arm1	End	10.75	34.37	0.72	-0.69	67.64	-0.04	-0.0	-2.97	6.88	-0.00	-0.13	6.93	0.15	0.00	7.06	10.9	2
826	826:Arm1	Origin	10.75	34.37	0.72	-0.69	68.78	-0.11	0.2	-3.63	10.83	-0.21	-0.15	7.04	0.24	0.01	7.21	11.1	2
826	826:Coax2	End	15.00	31.51	0.66	-0.61	114.81	-1.00	0.2	-3.63	10.83	-0.21	-0.14	10.06	0.23	0.01	10.21	15.7	2
826	826:Coax2	Origin	15.00	31.51	0.66	-0.61	114.81	-1.00	0.2	-4.22	11.82	-0.21	-0.16	10.06	0.25	0.01	10.24	15.8	2
826	Tube 2	End	19.08	28.84	0.61	-0.54	163.12	-1.86	0.2	-4.22	11.82	-0.21	-0.15	12.43	0.23	0.01	12.59	19.4	2
826	Tube 2	Origin	19.08	28.84	0.61	-0.54	163.12	-1.86	0.2	-4.63	12.09	-0.21	-0.17	12.43	0.23	0.01	12.61	19.4	2
826	826:Arm2	End	23.17	26.26	0.56	-0.47	212.49	-2.72	0.2	-4.63	12.09	-0.21	-0.16	14.20	0.22	0.01	14.37	22.1	2
826	826:Arm2	Origin	23.17	26.26	0.56	-0.47	216.72	-2.88	0.4	-7.17	17.97	-0.41	-0.24	14.49	0.33	0.01	14.75	22.7	2
826	826:Coax3	End	25.00	25.13	0.54	-0.44	249.61	-3.63	0.4	-7.17	17.97	-0.41	-0.24	15.78	0.32	0.01	16.03	24.7	2
826	826:Coax3	Origin	25.00	25.13	0.54	-0.44	249.61	-3.63	0.4	-7.78	18.95	-0.41	-0.26	15.78	0.33	0.01	16.05	24.7	2
826	Tube 2	End	30.00	22.17	0.47	-0.36	344.35	-5.70	0.4	-7.78	18.95	-0.41	-0.24	18.83	0.31	0.01	19.07	29.3	2
826	Tube 2	Origin	30.00	22.17	0.47	-0.36	344.35	-5.70	0.4	-8.38	19.31	-0.41	-0.26	18.83	0.32	0.01	19.09	29.4	2
826	826:Coax4	End	35.00	19.37	0.42	-0.30	440.91	-7.76	0.4	-8.38	19.31	-0.41	-0.24	21.05	0.30	0.01	21.29	32.8	2
826	826:Coax4	Origin	35.00	19.37	0.42	-0.30	440.91	-7.76	0.4	-8.93	20.24	-0.41	-0.26	21.05	0.31	0.01	21.31	32.8	2
826	826:Arm3	End	35.17	19.27	0.41	-0.30	444.36	-7.83	0.4	-8.93	20.24	-0.41	-0.26	21.12	0.31	0.01	21.38	32.9	2
826	826:Arm3	Origin	35.17	19.27	0.41	-0.30	448.52	-7.99	0.5	-11.55	26.05	-0.62	-0.33	21.32	0.40	0.01	21.66	33.3	2
826	Tube 2	End	40.09	16.70	0.36	-0.24	576.53	-11.02	0.5	-11.55	26.05	-0.62	-0.31	24.19	0.37	0.01	24.51	37.7	2
826	Tube 2	Origin	40.09	16.70	0.36	-0.24	576.53	-11.03	0.5	-12.25	26.44	-0.62	-0.33	24.19	0.38	0.01	24.53	37.7	2
826	826:Coax5	End	45.00	14.32	0.31	-0.19	706.47	-14.06	0.5	-12.25	26.44	-0.62	-0.31	26.36	0.36	0.01	26.68	41.0	2
826	826:Coax5	Origin	45.00	14.32	0.31	-0.19	706.47	-14.06	0.5	-13.01	27.47	-0.62	-0.33	26.36	0.37	0.01	26.70	41.1	2
826	826:Arm4	End	47.17	13.33	0.29	-0.17	766.07	-15.40	0.5	-13.01	27.47	-0.62	-0.32	27.19	0.36	0.01	27.52	42.3	2
826	826:Arm4	Origin	47.17	13.33	0.29	-0.17	770.15	-15.55	0.7	-15.81	33.23	-0.82	-0.39	27.34	0.44	0.01	27.74	42.7	2
826	Tube 2	End	51.09	11.63	0.25	-0.14	900.25	-18.77	0.7	-15.81	33.23	-0.82	-0.38	29.30	0.42	0.01	29.69	45.7	2
826	Tube 2	Origin	51.09	11.63	0.25	-0.14	900.25	-18.77	0.7	-16.46	33.57	-0.82	-0.39	29.30	0.42	0.01	29.71	45.7	2
826	826:Coax6	End	55.00	10.06	0.22	-0.11	1031.67	-21.99	0.7	-16.46	33.57	-0.82	-0.38	30.90	0.41	0.01	31.29	48.1	2
826	826:Coax6	Origin	55.00	10.06	0.22	-0.11	1031.67	-21.99	0.7	-17.22	34.58	-0.82	-0.39	30.90	0.42	0.01	31.31	48.2	2
826	SpliceT	End	57.25	9.22	0.20	-0.10	1109.48	-23.84	0.7	-17.22	34.58	-0.82	-0.38	31.73	0.41	0.01	32.13	49.4	2
826	SpliceT	Origin	57.25	9.22	0.20	-0.10	1109.48	-23.84	0.7	-17.90	34.82	-0.82	-0.40	31.73	0.41	0.01	32.14	49.4	2
826	Tube 2	End	60.00	8.24	0.18	-0.08	1205.23	-26.09	0.7	-17.90	34.82	-0.82	-0.34	29.24	0.35	0.01	29.59	45.5	2
826	Tube 2	Origin	60.00	8.24	0.18	-0.08	1205.23	-26.09	0.7	-18.88	35.09	-0.82	-0.36	29.24	0.35	0.01	29.61	45.6	2
826	SpliceB	End	62.75	7.33	0.16	-0.07	1301.72	-28.35	0.7	-18.88	35.09	-0.82	-0.35	29.90	0.34	0.01	30.26	46.5	2
826	SpliceB	Origin	62.75	7.33	0.16	-0.07	1301.72	-28.35	0.7	-19.62	35.33	-0.82	-0.36	29.90	0.35	0.01	30.27	46.6	2
826	826:Coax7	End	65.00	6.62	0.14	-0.06	1381.21	-30.20	0.7	-19.62	35.33	-0.82	-0.36	30.37	0.34	0.01	30.73	47.3	2
826	826:Coax7	Origin	65.00	6.62	0.14	-0.06	1381.21	-30.20	0.7	-20.62	36.42	-0.82	-0.37	30.37	0.35	0.01	30.75	47.3	2
826	Tube 3	End	70.00	5.18	0.11	-0.04	1563.32	-34.29	0.7	-20.62	36.42	-0.82	-0.36	31.28	0.33	0.01	31.65	48.7	2
826	Tube 3	Origin	70.00	5.18	0.11	-0.04	1563.32	-34.29	0.7	-21.72	36.93	-0.82	-0.38	31.28	0.34	0.01	31.67	48.7	2
826	826:Coax8	End	75.00	3.93	0.08	-0.03	1747.96	-38.39	0.7	-21.72	36.93	-0.82	-0.36	31.97	0.32	0.01	32.34	49.8	2
826	826:Coax8	Origin	75.00	3.93	0.08	-0.03	1747.96	-38.39	0.7	-23.10	38.19	-0.82	-0.38	31.97	0.33	0.01	32.36	49.8	2
826	Tube 3	End	80.00	2.86	0.06	-0.02	1938.91	-42.48	0.7	-23.10	38.19	-0.82	-0.37	32.54	0.32	0.01	32.91	50.6	2
826	Tube 3	Origin	80.00	2.86	0.06	-0.02	1938.91	-42.48	0.7	-24.28	38.74	-0.82	-0.38	32.54	0.33	0.01	32.93	50.7	2
826	826:Coax9	End	85.00	1.97	0.04	-0.01	2132.58	-46.56	0.7	-24.28	38.74	-0.82	-0.37	32.96	0.31	0.01	33.33	51.3	2
826	826:Coax9	Origin	85.00	1.97	0.04	-0.01	2132.58	-46.56	0.7	-25.76	40.03	-0.82	-0.39	32.96	0.32	0.01	33.36	51.3	2
826	Tube 3	End	90.00	1.25	0.03	-0.01	2332.75	-50.63	0.7	-25.76	40.03	-0.82	-0.38	33.31	0.31	0.00	33.69	51.8	2
826	Tube 3	Origin	90.00	1.25	0.03	-0.01	2332.75	-50.63	0.7	-27.03	40.62	-0.81	-0.39	33.31	0.31	0.00	33.71	51.9	2
826	826:Coax10	End	95.00	0.70	0.01	-0.00	2535.86	-54.70	0.7	-27.03	40.62	-0.81	-0.38	33.55	0.30	0.00	33.94	52.2	2
826	826:Coax10	Origin	95.00	0.70	0.01	-0.00	2535.86	-54.70	0.7	-28.60	41.96	-0.81	-0.40	33.55	0.31	0.00	33.96	52.2	2
826	Tube 3	End	100.00	0.31	0.01	-0.00	2745.66	-58.77	0.7	-28.60	41.96	-0.81	-0.39	33.76	0.30	0.00	34.15	52.5	2
826	Tube 3	Origin	100.00	0.31	0.01	-0.00	2745.66	-58.77	0.7	-29.97	42.59	-0.81	-0.41	33.76	0.31	0.00	34.17	52.6	2
826	826:Coax11	End	105.00	0.08	0.00	-0.00	2958.61	-62.82	0.7	-29.97	42.59	-0.81	-0.39	33.89	0.29	0.00	34.29	53.6	2

826	826:Coax11	Origin	105.00	0.08	0.00	-0.00	2958.61	-62.82	0.7	-31.62	43.97	-0.81	-0.41	33.89	0.30	0.00	34.31	53.6	2
826	826:g	End	110.00	0.00	0.00	0.00	3178.44	-66.87	0.7	-31.62	43.97	-0.81	-0.40	34.00	0.29	0.00	34.40	54.7	2

Detailed Tubular Davit Arm Usages for Load Case "NESC Extreme":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Vert. Mom. (ft-k)	Horz. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Vert. Shear (kips)	Horz. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
Davit1	Davit1:O	Origin	0.00	34.38	0.72	-0.12	-0.11	0.52	0.0	-1.95	0.03	-0.13	-0.27	0.58	0.03	0.00	0.86	1.3	2
Davit1	Davit1:End	End	4.01	34.69	0.74	2.59	-0.00	0.00	0.0	-1.95	0.03	-0.13	-0.27	0.00	0.04	0.00	0.28	0.4	1
Davit2	Davit2:O	Origin	0.00	34.35	0.72	-1.26	-1.26	-0.31	0.0	1.83	0.31	0.08	0.26	1.47	0.07	0.00	1.74	2.7	2
Davit2	Davit2:End	End	4.01	34.50	0.72	-3.99	0.00	0.00	0.0	1.83	0.31	0.08	0.26	0.00	0.10	0.00	0.31	0.5	3
Davit3	Davit3:O	Origin	0.00	26.28	0.56	0.17	-6.93	0.98	0.0	-2.95	0.76	-0.11	-0.33	3.64	0.03	0.01	3.97	6.1	1
Davit3	#Davit3:0	End	3.52	26.56	0.57	2.31	-4.25	0.60	0.0	-2.95	0.76	-0.11	-0.41	3.35	0.03	0.01	3.75	5.8	1
Davit3	#Davit3:0	Origin	3.52	26.56	0.57	2.31	-4.25	0.60	0.0	-2.94	0.68	-0.11	-0.40	3.35	0.03	0.01	3.75	5.8	1
Davit3	Davit3:Mid	End	7.04	26.84	0.59	4.41	-1.87	0.22	0.0	-2.94	0.68	-0.11	-0.52	2.44	0.04	0.02	2.96	4.6	1
Davit3	Davit3:Mid	Origin	7.04	26.84	0.59	4.41	-1.87	0.22	0.0	-2.85	0.93	-0.11	-0.50	2.44	0.04	0.00	2.94	4.5	1
Davit3	Davit3:End	End	9.04	26.87	0.60	5.60	-0.00	0.00	0.0	-2.85	0.93	-0.11	-0.60	0.00	0.41	0.00	0.93	1.4	3
Davit4	Davit4:O	Origin	0.00	26.24	0.56	-1.11	-11.15	-0.84	-0.0	2.69	1.37	0.09	0.30	5.85	0.02	0.01	6.16	9.5	1
Davit4	#Davit4:0	End	3.52	26.42	0.56	-3.31	-6.33	-0.51	-0.0	2.69	1.37	0.09	0.37	4.98	0.03	0.01	5.35	8.2	1
Davit4	#Davit4:0	Origin	3.52	26.42	0.56	-3.31	-6.33	-0.51	-0.0	2.70	1.28	0.09	0.37	4.98	0.03	0.01	5.35	8.2	1
Davit4	Davit4:Mid	End	7.04	26.60	0.57	-5.58	-1.84	-0.18	-0.0	2.70	1.28	0.09	0.48	2.41	0.03	0.01	2.89	4.4	1
Davit4	Davit4:Mid	Origin	7.04	26.60	0.57	-5.58	-1.84	-0.19	0.0	2.82	0.92	0.09	0.50	2.41	0.03	0.00	2.91	4.5	1
Davit4	Davit4:End	End	9.04	26.57	0.57	-6.89	0.00	0.00	0.0	2.82	0.92	0.09	0.59	0.00	0.40	0.00	0.92	1.4	3
Davit5	Davit5:O	Origin	0.00	19.29	0.42	0.36	-7.15	0.98	0.0	-2.91	0.78	-0.11	-0.33	3.75	0.03	0.01	4.08	6.3	1
Davit5	#Davit5:0	End	3.52	19.53	0.43	2.22	-4.39	0.60	0.0	-2.91	0.78	-0.11	-0.40	3.45	0.03	0.01	3.85	5.9	1
Davit5	#Davit5:0	Origin	3.52	19.53	0.43	2.22	-4.39	0.60	0.0	-2.90	0.70	-0.11	-0.40	3.45	0.03	0.01	3.85	5.9	1
Davit5	Davit5:Mid	End	7.04	19.77	0.44	4.04	-1.91	0.22	0.0	-2.90	0.70	-0.11	-0.51	2.49	0.04	0.02	3.01	4.6	1
Davit5	Davit5:Mid	Origin	7.04	19.77	0.44	4.04	-1.91	0.22	0.0	-2.80	0.95	-0.11	-0.49	2.49	0.04	0.00	2.99	4.6	1
Davit5	Davit5:End	End	9.04	19.79	0.45	5.07	-0.00	0.00	0.0	-2.80	0.95	-0.11	-0.59	0.00	0.42	0.00	0.93	1.4	3
Davit6	Davit6:O	Origin	0.00	19.26	0.41	-0.95	-11.30	-0.86	-0.0	2.65	1.38	0.10	0.30	5.93	0.02	0.01	6.23	9.6	1
Davit6	#Davit6:0	End	3.52	19.42	0.42	-2.88	-6.43	-0.53	-0.0	2.65	1.38	0.10	0.36	5.06	0.03	0.01	5.42	8.3	1
Davit6	#Davit6:0	Origin	3.52	19.42	0.42	-2.88	-6.43	-0.53	-0.0	2.66	1.29	0.10	0.37	5.06	0.03	0.01	5.42	8.3	1
Davit6	Davit6:Mid	End	7.04	19.59	0.43	-4.87	-1.88	-0.19	-0.0	2.66	1.29	0.10	0.47	2.46	0.03	0.01	2.93	4.5	1
Davit6	Davit6:Mid	Origin	7.04	19.59	0.43	-4.87	-1.88	-0.19	0.0	2.78	0.94	0.10	0.49	2.46	0.03	0.00	2.95	4.5	1
Davit6	Davit6:End	End	9.04	19.56	0.43	-6.02	0.00	0.00	0.0	2.78	0.94	0.10	0.58	0.00	0.41	0.00	0.92	1.4	3
Davit7	Davit7:O	Origin	0.00	13.34	0.29	0.46	-7.40	0.98	0.0	-2.86	0.81	-0.11	-0.32	3.88	0.03	0.01	4.20	6.5	1
Davit7	#Davit7:0	End	3.52	13.53	0.30	2.00	-4.53	0.60	0.0	-2.86	0.81	-0.11	-0.39	3.57	0.03	0.01	3.96	6.1	1
Davit7	#Davit7:0	Origin	3.52	13.53	0.30	2.00	-4.53	0.60	0.0	-2.85	0.73	-0.11	-0.39	3.57	0.03	0.01	3.96	6.1	1
Davit7	Davit7:Mid	End	7.04	13.72	0.31	3.50	-1.96	0.22	0.0	-2.85	0.73	-0.11	-0.50	2.55	0.04	0.02	3.06	4.7	1
Davit7	Davit7:Mid	Origin	7.04	13.72	0.31	3.50	-1.96	0.22	0.0	-2.75	0.98	-0.11	-0.48	2.55	0.04	0.00	3.04	4.7	1
Davit7	Davit7:End	End	9.04	13.74	0.32	4.34	-0.00	0.00	0.0	-2.75	0.98	-0.11	-0.58	0.00	0.43	0.00	0.94	1.4	3
Davit8	Davit8:O	Origin	0.00	13.31	0.29	-0.80	-11.46	-0.87	-0.0	2.61	1.40	0.10	0.29	6.02	0.02	0.01	6.31	9.7	1
Davit8	#Davit8:0	End	3.52	13.46	0.29	-2.41	-6.53	-0.53	-0.0	2.61	1.40	0.10	0.36	5.14	0.03	0.01	5.50	8.5	1
Davit8	#Davit8:0	Origin	3.52	13.46	0.29	-2.41	-6.53	-0.53	-0.0	2.61	1.31	0.10	0.36	5.14	0.03	0.01	5.50	8.5	1
Davit8	Davit8:Mid	End	7.04	13.60	0.30	-4.07	-1.93	-0.19	-0.0	2.61	1.31	0.10	0.46	2.52	0.04	0.01	2.98	4.6	1
Davit8	Davit8:Mid	Origin	7.04	13.60	0.30	-4.07	-1.93	-0.19	0.0	2.74	0.96	0.10	0.48	2.52	0.04	0.00	3.00	4.6	1
Davit8	Davit8:End	End	9.04	13.58	0.30	-5.04	0.00	0.00	0.0	2.74	0.96	0.10	0.57	0.00	0.42	0.00	0.93	1.4	3

Summary of Clamp Capacities and Usages for Load Case "NESC Extreme":

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
Clamp1	1.952	80.00	80.00	2.44
Clamp2	1.855	80.00	80.00	2.32
Clamp3	2.992	80.00	80.00	3.74
Clamp4	2.962	80.00	80.00	3.70
Clamp5	2.956	80.00	80.00	3.70
Clamp6	2.933	80.00	80.00	3.67
Clamp7	2.916	80.00	80.00	3.65
Clamp8	2.897	80.00	80.00	3.62
Clamp9	0.771	80.00	80.00	0.96
Clamp10	0.771	80.00	80.00	0.96
Clamp11	0.771	80.00	80.00	0.96
Clamp12	0.771	80.00	80.00	0.96
Clamp13	0.771	80.00	80.00	0.96
Clamp14	0.771	80.00	80.00	0.96
Clamp15	0.771	80.00	80.00	0.96
Clamp16	0.771	80.00	80.00	0.96
Clamp17	0.771	80.00	80.00	0.96
Clamp18	0.771	80.00	80.00	0.96
Clamp19	0.771	80.00	80.00	0.96
Clamp20	6.118	80.00	80.00	7.65

*** Analysis Results for Load Case No. 3 "NESC Extreme Ice w/ Wind" - Number of iterations in SAPS 14

Equilibrium Joint Positions and Rotations for Load Case "NESC Extreme Ice w/ Wind":

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
826:g	0	0	0	0.0000	0.0000	0.0000	0	0	0
826:t	0.1211	1.866	-0.02332	-1.7184	0.1082	-0.0005	0.1211	1.866	110
826:Coax1	0.1116	1.716	-0.021	-1.7047	0.1081	-0.0005	0.1116	1.716	105
826:Arm1	0.1008	1.547	-0.0184	-1.6702	0.1079	-0.0006	0.1008	1.547	99.23
826:Coax2	0.09281	1.424	-0.01656	-1.6448	0.1069	-0.0005	0.09281	1.424	94.98
826:Arm2	0.07783	1.194	-0.01322	-1.5675	0.1025	-0.0004	0.07783	1.194	86.82
826:Coax3	0.07457	1.144	-0.01251	-1.5458	0.1012	-0.0003	0.07457	1.144	84.99
826:Coax4	0.05766	0.8863	-0.008978	-1.3981	0.0917	-0.0002	0.05766	0.8863	74.99
826:Arm3	0.05739	0.8822	-0.008924	-1.3954	0.0915	-0.0002	0.05739	0.8822	74.82
826:Coax5	0.04265	0.6573	-0.006108	-1.2154	0.0796	-0.0002	0.04265	0.6573	64.99
826:Arm4	0.03968	0.6119	-0.005583	-1.1728	0.0767	-0.0002	0.03968	0.6119	62.82
826:Coax6	0.0299	0.4623	-0.003933	-1.0095	0.0659	-0.0001	0.0299	0.4623	55
826:Coax7	0.01958	0.3039	-0.002424	-0.8040	0.0522	-0.0001	0.01958	0.3039	45
826:Coax8	0.01157	0.1803	-0.001421	-0.6080	0.0393	-0.0001	0.01157	0.1803	35
826:Coax9	0.005765	0.09018	-0.0007826	-0.4205	0.0270	-0.0000	0.005765	0.09018	25
826:Coax10	0.002033	0.03195	-0.0003831	-0.2438	0.0156	-0.0000	0.002033	0.03195	15
826:Coax11	0.0002271	0.003591	-0.0001146	-0.0785	0.0050	-0.0000	0.0002271	0.003591	5
Davit1:O	0.1008	1.547	0.00594	-1.6702	0.1079	-0.0006	0.1008	0.7119	99.26
Davit1:End	0.1021	1.558	0.1188	-1.5945	0.1091	0.0101	0.1021	-3.277	99.7
Davit2:O	0.1008	1.546	-0.04274	-1.6702	0.1079	-0.0006	0.1008	2.382	99.21
Davit2:End	0.1018	1.555	-0.1638	-1.7619	0.1085	-0.0123	0.1018	6.39	99.42
Davit3:O	0.07787	1.194	0.01495	-1.5675	0.1025	-0.0004	0.07787	0.1646	86.84
Davit3:Mid	0.08086	1.215	0.1842	-1.2300	0.1042	0.0207	0.08086	-6.815	87.76
Davit3:End	0.08174	1.215	0.2258	-1.1781	0.1043	0.0239	0.08174	-8.815	87.81
Davit4:O	0.07778	1.194	-0.04139	-1.5675	0.1025	-0.0004	0.07778	2.223	86.79
Davit4:Mid	0.08017	1.214	-0.258	-1.9409	0.1030	-0.0213	0.08017	9.243	87.32
Davit4:End	0.08086	1.212	-0.327	-1.9922	0.1030	-0.0244	0.08086	11.24	87.25
Davit5:O	0.05743	0.8825	0.02073	-1.3954	0.0915	-0.0002	0.05743	-0.3353	74.85
Davit5:Mid	0.06022	0.9001	0.1689	-1.0568	0.0931	0.0209	0.06022	-7.318	75.75
Davit5:End	0.06109	0.9005	0.2045	-1.0048	0.0932	0.0240	0.06109	-9.317	75.78
Davit6:O	0.05735	0.8818	-0.03858	-1.3954	0.0915	-0.0002	0.05735	2.1	74.79
Davit6:Mid	0.05965	0.9001	-0.2341	-1.7693	0.0921	-0.0213	0.05965	9.118	75.35
Davit6:End	0.06038	0.8991	-0.2971	-1.8207	0.0920	-0.0244	0.06038	11.12	75.28
Davit7:O	0.03971	0.6122	0.02319	-1.1728	0.0767	-0.0002	0.03971	-0.7937	62.85
Davit7:Mid	0.04225	0.6264	0.1442	-0.8332	0.0783	0.0209	0.04225	-7.78	63.72
Davit7:End	0.0431	0.6266	0.172	-0.7810	0.0783	0.0241	0.0431	-9.779	63.75
Davit8:O	0.03965	0.6116	-0.03436	-1.1728	0.0767	-0.0002	0.03965	2.018	62.8
Davit8:Mid	0.04184	0.6277	-0.2027	-1.5478	0.0774	-0.0212	0.04184	9.034	63.38
Davit8:End	0.04258	0.627	-0.258	-1.5994	0.0773	-0.0243	0.04258	11.03	63.32

Joint Support Reactions for Load Case "NESC Extreme Ice w/ Wind":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Uplift Usage %	Result. Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	H-Bend-M Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
826:g	-1.30	0.0	-22.58	0.0	0.0	-53.75	0.0	0.0	58.31	0.0	1732.40	0.0	-109.7	0.0	0.0	0.08	0.0	0.0

Detailed Steel Pole Usages for Load Case "NESC Extreme Ice w/ Wind":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Trans. Mom. (Local Mx) (ft-k)	Long. Mom. (Local My) (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Tran. Shear (kips)	Long. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
826	826:t	Origin	0.00	22.39	1.45	-0.28	-0.00	0.00	-0.0	-4.18	1.32	-0.01	-0.45	0.00	0.29	0.00	0.67	1.0	5
826	826:Coax1	End	5.00	20.59	1.34	-0.25	6.60	-0.04	-0.0	-4.18	1.32	-0.01	-0.40	1.73	0.07	0.00	2.14	3.3	2
826	826:Coax1	Origin	5.00	20.59	1.34	-0.25	6.60	-0.04	0.0	-5.20	1.57	-0.01	-0.50	1.73	0.08	0.00	2.24	3.4	2
826	SpliceT	End	10.00	18.82	1.23	-0.22	14.46	-0.09	0.0	-5.20	1.57	-0.01	-0.45	3.09	0.07	0.00	3.54	5.4	2
826	SpliceT	Origin	10.00	18.82	1.23	-0.22	14.46	-0.09	0.0	-5.33	1.62	-0.01	-0.23	1.53	0.04	0.00	1.76	2.7	2
826	826:Arm1	End	10.75	18.56	1.21	-0.22	15.68	-0.10	0.0	-5.33	1.62	-0.01	-0.22	1.61	0.04	0.00	1.83	2.8	2
826	826:Arm1	Origin	10.75	18.56	1.21	-0.22	16.73	-0.22	-0.1	-8.47	5.27	-0.39	-0.36	1.72	0.12	0.00	2.09	3.2	2
826	826:Coax2	End	15.00	17.08	1.11	-0.20	39.14	-1.89	-0.1	-8.47	5.27	-0.39	-0.33	3.47	0.11	0.00	3.80	5.8	2
826	826:Coax2	Origin	15.00	17.08	1.11	-0.20	39.14	-1.89	-0.1	-9.68	5.53	-0.40	-0.38	3.47	0.12	0.00	3.85	5.9	2
826	Tube 2	End	19.08	15.69	1.02	-0.18	61.71	-3.51	-0.1	-9.68	5.53	-0.40	-0.35	4.76	0.11	0.00	5.12	7.9	2
826	Tube 2	Origin	19.08	15.69	1.02	-0.18	61.71	-3.51	-0.1	-10.06	5.61	-0.40	-0.37	4.76	0.11	0.00	5.13	7.9	2
826	826:Arm2	End	23.17	14.33	0.93	-0.16	84.63	-5.12	-0.1	-10.06	5.61	-0.40	-0.34	5.73	0.10	0.00	6.08	9.3	2
826	826:Arm2	Origin	23.17	14.33	0.93	-0.16	87.81	-5.36	-0.1	-15.84	10.11	-0.71	-0.54	5.95	0.19	0.00	6.49	10.0	2
826	826:Coax3	End	25.00	13.73	0.89	-0.15	106.31	-6.66	-0.1	-15.84	10.11	-0.71	-0.52	6.81	0.18	0.00	7.34	11.3	2
826	826:Coax3	Origin	25.00	13.73	0.89	-0.15	106.31	-6.66	-0.1	-17.05	10.36	-0.71	-0.57	6.81	0.19	0.00	7.38	11.4	2
826	Tube 2	End	30.00	12.14	0.79	-0.13	158.10	-10.23	-0.1	-17.05	10.36	-0.71	-0.53	8.75	0.17	0.00	9.28	14.3	2
826	Tube 2	Origin	30.00	12.14	0.79	-0.13	158.10	-10.23	-0.1	-17.62	10.46	-0.71	-0.54	8.75	0.18	0.00	9.30	14.3	2
826	826:Coax4	End	35.00	10.64	0.69	-0.11	210.42	-13.79	-0.1	-17.62	10.46	-0.71	-0.51	10.17	0.16	0.00	10.68	16.4	2
826	826:Coax4	Origin	35.00	10.64	0.69	-0.11	210.42	-13.79	-0.1	-18.77	10.69	-0.71	-0.54	10.17	0.17	0.00	10.72	16.5	2
826	826:Arm3	End	35.17	10.59	0.69	-0.11	212.24	-13.91	-0.1	-18.77	10.69	-0.71	-0.54	10.21	0.17	0.00	10.76	16.6	2
826	826:Arm3	Origin	35.17	10.59	0.69	-0.11	215.38	-14.15	-0.1	-24.58	15.17	-1.03	-0.71	10.37	0.24	0.00	11.08	17.0	2
826	Tube 2	End	40.09	9.19	0.60	-0.09	289.94	-19.20	-0.1	-24.58	15.17	-1.03	-0.66	12.32	0.22	0.00	12.99	20.0	2
826	Tube 2	Origin	40.09	9.19	0.60	-0.09	289.94	-19.20	-0.1	-25.22	15.27	-1.03	-0.68	12.32	0.23	0.00	13.00	20.0	2
826	826:Coax5	End	45.00	7.89	0.51	-0.07	365.01	-24.25	-0.1	-25.22	15.27	-1.03	-0.64	13.79	0.21	0.00	14.43	22.2	2
826	826:Coax5	Origin	45.00	7.89	0.51	-0.07	365.01	-24.25	-0.1	-26.55	15.52	-1.03	-0.68	13.79	0.22	0.00	14.47	22.3	2
826	826:Arm4	End	47.17	7.34	0.48	-0.07	398.68	-26.48	-0.1	-26.55	15.52	-1.03	-0.66	14.33	0.21	0.00	14.99	23.1	2
826	826:Arm4	Origin	47.17	7.34	0.48	-0.07	401.83	-26.71	-0.1	-32.50	19.99	-1.34	-0.81	14.44	0.27	0.00	15.26	23.5	2
826	Tube 2	End	51.09	6.41	0.42	-0.06	480.07	-31.96	-0.1	-32.50	19.99	-1.34	-0.77	15.82	0.26	0.00	16.60	25.5	2
826	Tube 2	Origin	51.09	6.41	0.42	-0.06	480.07	-31.95	-0.1	-33.09	20.07	-1.34	-0.79	15.82	0.26	0.00	16.61	25.6	2
826	826:Coax6	End	55.00	5.55	0.36	-0.05	558.64	-37.19	-0.1	-33.09	20.07	-1.34	-0.76	16.94	0.25	0.00	17.70	27.2	2
826	826:Coax6	Origin	55.00	5.55	0.36	-0.05	558.64	-37.19	-0.1	-34.42	20.30	-1.34	-0.79	16.94	0.25	0.00	17.73	27.3	2
826	SpliceT	End	57.25	5.08	0.33	-0.04	604.30	-40.19	-0.1	-34.42	20.30	-1.34	-0.77	17.49	0.25	0.00	18.26	28.1	2
826	SpliceT	Origin	57.25	5.08	0.33	-0.04	604.30	-40.19	-0.1	-35.06	20.35	-1.33	-0.78	17.49	0.25	0.00	18.28	28.1	2
826	Tube 2	End	60.00	4.54	0.29	-0.04	660.27	-43.86	-0.1	-35.06	20.35	-1.33	-0.67	16.21	0.21	0.00	16.88	26.0	2
826	Tube 2	Origin	60.00	4.54	0.29	-0.04	660.27	-43.86	-0.1	-36.00	20.42	-1.33	-0.68	16.21	0.21	0.00	16.90	26.0	2
826	SpliceB	End	62.75	4.04	0.26	-0.03	716.43	-47.53	-0.1	-36.00	20.42	-1.33	-0.67	16.65	0.21	0.00	17.32	26.6	2
826	SpliceB	Origin	62.75	4.04	0.26	-0.03	716.43	-47.53	-0.1	-36.70	20.48	-1.33	-0.68	16.65	0.21	0.00	17.33	26.7	2
826	826:Coax7	End	65.00	3.65	0.23	-0.03	762.52	-50.52	-0.1	-36.70	20.48	-1.33	-0.66	16.96	0.20	0.00	17.63	27.1	2
826	826:Coax7	Origin	65.00	3.65	0.23	-0.03	762.52	-50.52	-0.1	-38.26	20.73	-1.33	-0.69	16.96	0.20	0.00	17.66	27.2	2
826	Tube 3	End	70.00	2.85	0.18	-0.02	866.17	-57.17	-0.1	-38.26	20.73	-1.33	-0.66	17.54	0.19	0.00	18.20	28.0	2
826	Tube 3	Origin	70.00	2.85	0.18	-0.02	866.17	-57.17	-0.1	-39.28	20.85	-1.33	-0.68	17.54	0.20	0.00	18.22	28.0	2
826	826:Coax8	End	75.00	2.16	0.14	-0.02	970.44	-63.80	-0.1	-39.28	20.85	-1.33	-0.65	17.96	0.19	0.00	18.61	28.6	2
826	826:Coax8	Origin	75.00	2.16	0.14	-0.02	970.44	-63.80	-0.1	-41.20	21.14	-1.32	-0.68	17.96	0.19	0.00	18.64	28.7	2
826	Tube 3	End	80.00	1.57	0.10	-0.01	1076.13	-70.42	-0.1	-41.20	21.14	-1.32	-0.65	18.27	0.18	0.00	18.93	29.1	2
826	Tube 3	Origin	80.00	1.57	0.10	-0.01	1076.13	-70.42	-0.1	-42.31	21.27	-1.32	-0.67	18.27	0.18	0.00	18.94	29.1	2
826	826:Coax9	End	85.00	1.08	0.07	-0.01	1182.50	-77.01	-0.1	-42.31	21.27	-1.32	-0.64	18.49	0.18	0.00	19.13	29.4	2
826	826:Coax9	Origin	85.00	1.08	0.07	-0.01	1182.50	-77.01	-0.1	-44.31	21.57	-1.32	-0.67	18.49	0.18	0.00	19.16	29.5	2
826	Tube 3	End	90.00	0.69	0.04	-0.01	1290.35	-83.59	-0.1	-44.31	21.57	-1.32	-0.65	18.64	0.17	0.00	19.29	29.7	2
826	Tube 3	Origin	90.00	0.69	0.04	-0.01	1290.35	-83.59	-0.1	-45.51	21.72	-1.31	-0.66	18.64	0.17	0.00	19.30	29.7	2
826	826:Coax10	End	95.00	0.38	0.02	-0.00	1398.92	-90.15	-0.1	-45.51	21.72	-1.31	-0.64	18.72	0.17	0.00	19.36	29.8	2
826	826:Coax10	Origin	95.00	0.38	0.02	-0.00	1398.92	-90.15	-0.1	-47.60	22.02	-1.31	-0.67	18.72	0.17	0.00	19.39	29.8	2
826	Tube 3	End	100.00	0.17	0.01	-0.00	1509.03	-96.69	-0.1	-47.60	22.02	-1.31	-0.65	18.76	0.16	0.00	19.41	29.9	2
826	Tube 3	Origin	100.00	0.17	0.01	-0.00	1509.03	-96.69	-0.1	-48.89	22.18	-1.30	-0.66	18.76	0.16	0.00	19.43	29.9	2
826	826:Coax11	End	105.00	0.04	0.00	-0.00	1619.93	-103.20	-0.1	-48.89	22.18	-1.30	-0.64	18.77	0.16	0.00	19.41	30.3	2

826	826:Coax11	Origin	105.00	0.04	0.00	-0.00	1619.93	-103.20	-0.1	-51.07	22.50	-1.30	-0.67	18.77	0.16	0.00	19.44	30.4	2
826	826:g	End	110.00	0.00	0.00	0.00	1732.40	-109.70	-0.1	-51.07	22.50	-1.30	-0.65	18.74	0.15	0.00	19.39	30.8	2

Detailed Tubular Davit Arm Usages for Load Case "NESC Extreme Ice w/ Wind":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Vert. Mom. (ft-k)	Horz. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Vert. Shear (kips)	Horz. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
Davit1	Davit1:O	Origin	0.00	18.56	1.21	0.07	-5.10	0.73	0.0	-2.01	1.27	-0.18	-0.28	5.46	0.28	0.00	5.76	8.9	2
Davit1	Davit1:End	End	4.01	18.70	1.23	1.43	-0.00	0.00	0.0	-2.01	1.27	-0.18	-0.28	0.00	0.41	0.00	0.77	1.2	3
Davit2	Davit2:O	Origin	0.00	18.56	1.21	-0.51	-6.17	-0.80	0.0	1.58	1.54	0.20	0.22	6.53	0.34	0.00	6.78	10.4	2
Davit2	Davit2:End	End	4.01	18.66	1.22	-1.97	0.00	0.00	0.0	1.58	1.54	0.20	0.22	0.00	0.50	0.00	0.90	1.4	3
Davit3	Davit3:O	Origin	0.00	14.33	0.93	0.18	-22.04	1.43	0.0	-2.51	2.44	-0.16	-0.28	11.57	0.04	0.01	11.85	18.2	1
Davit3	#Davit3:0	End	3.52	14.46	0.95	1.26	-13.44	0.87	0.0	-2.51	2.44	-0.16	-0.34	10.58	0.04	0.01	10.92	16.8	1
Davit3	#Davit3:0	Origin	3.52	14.46	0.95	1.26	-13.44	0.87	0.0	-2.49	2.36	-0.16	-0.34	10.58	0.04	0.01	10.92	16.8	1
Davit3	Davit3:Mid	End	7.04	14.58	0.97	2.21	-5.13	0.31	0.0	-2.49	2.36	-0.16	-0.44	6.70	0.06	0.02	7.14	11.0	1
Davit3	Davit3:Mid	Origin	7.04	14.58	0.97	2.21	-5.13	0.32	0.0	-2.22	2.56	-0.16	-0.39	6.70	0.06	0.00	7.09	10.9	1
Davit3	Davit3:End	End	9.04	14.58	0.98	2.71	-0.00	0.00	0.0	-2.22	2.56	-0.16	-0.47	0.00	1.12	0.00	2.00	3.1	3
Davit4	Davit4:O	Origin	0.00	14.32	0.93	-0.50	-25.22	-1.42	-0.0	1.90	2.91	0.16	0.21	13.24	0.04	0.01	13.45	20.7	1
Davit4	#Davit4:0	End	3.52	14.44	0.94	-1.72	-14.98	-0.86	-0.0	1.90	2.91	0.16	0.26	11.78	0.04	0.01	12.04	18.5	1
Davit4	#Davit4:0	Origin	3.52	14.44	0.94	-1.72	-14.98	-0.86	-0.0	1.92	2.82	0.16	0.26	11.78	0.04	0.01	12.04	18.5	1
Davit4	Davit4:Mid	End	7.04	14.56	0.96	-3.10	-5.07	-0.31	-0.0	1.92	2.82	0.16	0.34	6.62	0.06	0.02	6.96	10.7	1
Davit4	Davit4:Mid	Origin	7.04	14.56	0.96	-3.10	-5.07	-0.31	0.0	2.21	2.53	0.16	0.39	6.62	0.06	0.00	7.01	10.8	1
Davit4	Davit4:End	End	9.04	14.55	0.97	-3.92	0.00	0.00	0.0	2.21	2.53	0.16	0.46	0.00	1.11	0.00	1.97	3.0	3
Davit5	Davit5:O	Origin	0.00	10.59	0.69	0.25	-22.11	1.42	0.0	-2.50	2.45	-0.16	-0.28	11.61	0.04	0.01	11.89	18.3	1
Davit5	#Davit5:0	End	3.52	10.70	0.70	1.20	-13.49	0.87	0.0	-2.50	2.45	-0.16	-0.34	10.61	0.04	0.01	10.95	16.8	1
Davit5	#Davit5:0	Origin	3.52	10.70	0.70	1.20	-13.49	0.87	0.0	-2.48	2.37	-0.16	-0.34	10.61	0.04	0.01	10.95	16.8	1
Davit5	Davit5:Mid	End	7.04	10.80	0.72	2.03	-5.14	0.31	0.0	-2.48	2.37	-0.16	-0.44	6.71	0.06	0.02	7.15	11.0	1
Davit5	Davit5:Mid	Origin	7.04	10.80	0.72	2.03	-5.14	0.32	0.0	-2.21	2.57	-0.16	-0.39	6.71	0.06	0.00	7.10	10.9	1
Davit5	Davit5:End	End	9.04	10.81	0.73	2.45	-0.00	0.00	0.0	-2.21	2.57	-0.16	-0.46	0.00	1.12	0.00	2.00	3.1	3
Davit6	Davit6:O	Origin	0.00	10.58	0.69	-0.46	-25.25	-1.42	-0.0	1.90	2.91	0.16	0.21	13.26	0.04	0.01	13.47	20.7	1
Davit6	#Davit6:0	End	3.52	10.69	0.70	-1.56	-15.00	-0.87	-0.0	1.90	2.91	0.16	0.26	11.80	0.04	0.01	12.06	18.6	1
Davit6	#Davit6:0	Origin	3.52	10.69	0.70	-1.56	-15.00	-0.87	-0.0	1.91	2.82	0.16	0.26	11.80	0.04	0.01	12.06	18.6	1
Davit6	Davit6:Mid	End	7.04	10.80	0.72	-2.81	-5.08	-0.31	-0.0	1.91	2.82	0.16	0.34	6.63	0.06	0.02	6.97	10.7	1
Davit6	Davit6:Mid	Origin	7.04	10.80	0.72	-2.81	-5.08	-0.31	0.0	2.21	2.54	0.16	0.39	6.63	0.06	0.00	7.02	10.8	1
Davit6	Davit6:End	End	9.04	10.79	0.72	-3.57	0.00	0.00	0.0	2.21	2.54	0.16	0.46	0.00	1.11	0.00	1.98	3.0	3
Davit7	Davit7:O	Origin	0.00	7.35	0.48	0.28	-22.18	1.42	0.0	-2.49	2.46	-0.16	-0.28	11.64	0.04	0.01	11.92	18.3	1
Davit7	#Davit7:0	End	3.52	7.44	0.49	1.07	-13.53	0.87	0.0	-2.49	2.46	-0.16	-0.34	10.64	0.04	0.01	10.98	16.9	1
Davit7	#Davit7:0	Origin	3.52	7.44	0.49	1.07	-13.53	0.87	0.0	-2.47	2.38	-0.16	-0.34	10.64	0.04	0.01	10.98	16.9	1
Davit7	Davit7:Mid	End	7.04	7.52	0.51	1.73	-5.15	0.31	0.0	-2.47	2.38	-0.16	-0.43	6.73	0.06	0.02	7.17	11.0	1
Davit7	Davit7:Mid	Origin	7.04	7.52	0.51	1.73	-5.15	0.31	0.0	-2.19	2.58	-0.16	-0.39	6.73	0.06	0.00	7.12	11.0	1
Davit7	Davit7:End	End	9.04	7.52	0.52	2.06	-0.00	0.00	0.0	-2.19	2.58	-0.16	-0.46	0.00	1.13	0.00	2.01	3.1	3
Davit8	Davit8:O	Origin	0.00	7.34	0.48	-0.41	-25.33	-1.42	-0.0	1.89	2.92	0.16	0.21	13.30	0.04	0.01	13.51	20.8	1
Davit8	#Davit8:0	End	3.52	7.43	0.48	-1.35	-15.04	-0.86	-0.0	1.89	2.92	0.16	0.26	11.83	0.04	0.01	12.09	18.6	1
Davit8	#Davit8:0	Origin	3.52	7.43	0.48	-1.35	-15.04	-0.86	-0.0	1.91	2.83	0.16	0.26	11.83	0.04	0.01	12.10	18.6	1
Davit8	Davit8:Mid	End	7.04	7.53	0.50	-2.43	-5.09	-0.31	-0.0	1.91	2.83	0.16	0.34	6.65	0.06	0.02	6.99	10.8	1
Davit8	Davit8:Mid	Origin	7.04	7.53	0.50	-2.43	-5.09	-0.31	0.0	2.20	2.55	0.16	0.39	6.65	0.06	0.00	7.04	10.8	1
Davit8	Davit8:End	End	9.04	7.52	0.51	-3.10	0.00	0.00	0.0	2.20	2.55	0.16	0.46	0.00	1.11	0.00	1.98	3.1	3

Summary of Clamp Capacities and Usages for Load Case "NESC Extreme Ice w/ Wind":

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
Clamp1	2.356	80.00	80.00	2.94
Clamp2	2.182	80.00	80.00	2.73
Clamp3	3.381	80.00	80.00	4.23
Clamp4	3.353	80.00	80.00	4.19
Clamp5	3.379	80.00	80.00	4.22
Clamp6	3.354	80.00	80.00	4.19
Clamp7	3.375	80.00	80.00	4.22
Clamp8	3.357	80.00	80.00	4.20
Clamp9	0.863	80.00	80.00	1.08
Clamp10	0.863	80.00	80.00	1.08
Clamp11	0.863	80.00	80.00	1.08
Clamp12	0.863	80.00	80.00	1.08
Clamp13	0.863	80.00	80.00	1.08
Clamp14	0.863	80.00	80.00	1.08
Clamp15	0.863	80.00	80.00	1.08
Clamp16	0.863	80.00	80.00	1.08
Clamp17	0.863	80.00	80.00	1.08
Clamp18	0.863	80.00	80.00	1.08
Clamp19	0.863	80.00	80.00	1.08
Clamp20	4.291	80.00	80.00	5.36

*** Overall summary for all load cases - Usage = Maximum Stress / Allowable Stress

Summary of Steel Pole Usages:

Steel Pole Label	Maximum Usage %	Load Case	Segment Number	Weight (lbs)
826	54.71	NESC Extreme	28	20384.2

Base Plate Results by Bend Line:

Pole Label	Load Case	Bend Line #	Start X (ft)	Start Y (ft)	End X (ft)	End Y (ft)	Length (in)	Bending Stress (ksi)	Bolt Mom. Sum (ft-k)	# Bolts Acting	Bolt Max Load (kips)	Min Plate Thickness (in)	Actual Thickness (in)	Usage %
826	NESC Heavy	1	-0.632	2.359	-1.727	1.727	15.173	25.208	56.109	2.5	83.944	2.308	3.250	50.42
826	NESC Heavy	2	-1.727	1.727	-2.359	0.632	15.173	15.410	34.301	2.5	64.358	1.804	3.250	30.82
826	NESC Heavy	3	-2.359	-0.632	-1.727	-1.727	15.173	14.876	33.112	2.5	-61.989	1.773	3.250	29.75
826	NESC Heavy	4	-1.727	-1.727	-0.632	-2.359	15.173	24.096	53.634	2.5	-79.887	2.256	3.250	48.19
826	NESC Heavy	5	0.632	-2.359	1.727	-1.727	15.173	23.176	51.585	2.5	-77.735	2.213	3.250	46.35
826	NESC Heavy	6	1.727	-1.727	2.359	-0.632	15.173	13.378	29.777	2.5	-58.149	1.681	3.250	26.76
826	NESC Heavy	7	2.359	0.632	1.727	1.727	15.173	16.909	37.636	2.5	68.198	1.890	3.250	33.82
826	NESC Heavy	8	1.727	1.727	0.632	2.359	15.173	26.128	58.157	2.5	86.096	2.349	3.250	52.26
826	NESC Extreme	1	-0.632	2.359	-1.727	1.727	15.173	33.750	75.121	2.5	111.586	2.670	3.250	67.50
826	NESC Extreme	2	-1.727	1.727	-2.359	0.632	15.173	21.366	47.557	2.5	87.430	2.124	3.250	42.73
826	NESC Extreme	3	-2.359	-0.632	-1.727	-1.727	15.173	18.927	42.129	2.5	-80.659	2.000	3.250	37.85
826	NESC Extreme	4	-1.727	-1.727	-0.632	-2.359	15.173	31.843	70.878	2.5	-106.370	2.594	3.250	63.69
826	NESC Extreme	5	0.632	-2.359	1.727	-1.727	15.173	32.691	72.765	2.5	-108.352	2.628	3.250	65.38
826	NESC Extreme	6	1.727	-1.727	2.359	-0.632	15.173	20.307	45.200	2.5	-84.196	2.071	3.250	40.61
826	NESC Extreme	7	2.359	0.632	1.727	1.727	15.173	19.986	44.485	2.5	83.894	2.055	3.250	39.97
826	NESC Extreme	8	1.727	1.727	0.632	2.359	15.173	32.902	73.234	2.5	109.604	2.636	3.250	65.80
826	NESC Extreme Ice w/ Wind	1	-0.632	2.359	-1.727	1.727	15.173	19.418	43.221	2.5	63.611	2.025	3.250	38.84
826	NESC Extreme Ice w/ Wind	2	-1.727	1.727	-2.359	0.632	15.173	12.959	28.846	2.5	51.296	1.655	3.250	25.92
826	NESC Extreme Ice w/ Wind	3	-2.359	-0.632	-1.727	-1.727	15.173	9.002	20.037	2.5	-40.321	1.379	3.250	18.00
826	NESC Extreme Ice w/ Wind	4	-1.727	-1.727	-0.632	-2.359	15.173	16.334	36.356	2.5	-55.186	1.858	3.250	32.67
826	NESC Extreme Ice w/ Wind	5	0.632	-2.359	1.727	-1.727	15.173	17.724	39.451	2.5	-58.437	1.935	3.250	35.45
826	NESC Extreme Ice w/ Wind	6	1.727	-1.727	2.359	-0.632	15.173	11.266	25.076	2.5	-46.122	1.543	3.250	22.53
826	NESC Extreme Ice w/ Wind	7	2.359	0.632	1.727	1.727	15.173	10.696	23.807	2.5	45.495	1.503	3.250	21.39
826	NESC Extreme Ice w/ Wind	8	1.727	1.727	0.632	2.359	15.173	18.027	40.125	2.5	60.360	1.951	3.250	36.05

Summary of Tubular Davit Usages:

Tubular Davit Label	Maximum Usage %	Load Case	Segment Number	Weight (lbs)
Davit1	8.86	NESC Extreme Ice w/ Wind	1	97.1
Davit2	10.43	NESC Extreme Ice w/ Wind	1	97.1
Davit3	18.23	NESC Extreme Ice w/ Wind	1	210.2
Davit4	20.70	NESC Extreme Ice w/ Wind	1	210.2
Davit5	18.29	NESC Extreme Ice w/ Wind	1	210.2
Davit6	20.72	NESC Extreme Ice w/ Wind	1	210.2
Davit7	18.34	NESC Extreme Ice w/ Wind	1	210.2
Davit8	20.78	NESC Extreme Ice w/ Wind	1	210.2

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	52.26	826	Base Plate
NESC Extreme	67.50	826	Base Plate
NESC Extreme Ice w/ Wind	38.84	826	Base Plate

Summary of Steel Pole Usages by Load Case:

Load Case	Maximum Usage %	Steel Pole Label	Segment Number
NESC Heavy	41.98	826	28
NESC Extreme	54.71	826	28
NESC Extreme Ice w/ Wind	30.83	826	28

Summary of Base Plate Usages by Load Case:

Load Case	Pole Label	Bend Line #	Length (in)	Vertical Load (kips)	X Moment (ft-k)	Y Moment (ft-k)	Bending Stress (ksi)	Bolt Moment Sum (ft-k)	# Bolts Acting On Bend Line	Max Bolt Load For Bend Line (kips)	Minimum Plate Thickness (in)	Usage %
NESC Heavy	826	8	15.173	62.093	2389.124	72.607	26.128	58.157	2.5	86.096	2.349	52.26
NESC Extreme	826	1	15.173	32.344	3178.438	-66.869	33.750	75.121	2.5	111.586	2.670	67.50
NESC Extreme Ice w/ Wind	826	1	15.173	51.744	1732.403	-109.701	19.418	43.221	2.5	63.611	2.025	38.84

Summary of Tubular Davit Usages by Load Case:

Load Case	Maximum Usage %	Tubular Davit Label	Segment Number
NESC Heavy	20.61	Davit8	1
NESC Extreme	9.71	Davit8	1
NESC Extreme Ice w/ Wind	20.78	Davit8	1

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
Clamp1	Clamp	3.29	NESC Heavy	0.0
Clamp2	Clamp	3.03	NESC Heavy	0.0
Clamp3	Clamp	4.84	NESC Heavy	0.0
Clamp4	Clamp	4.79	NESC Heavy	0.0
Clamp5	Clamp	4.84	NESC Heavy	0.0
Clamp6	Clamp	4.79	NESC Heavy	0.0
Clamp7	Clamp	4.83	NESC Heavy	0.0
Clamp8	Clamp	4.80	NESC Heavy	0.0
Clamp9	Clamp	1.18	NESC Heavy	0.0
Clamp10	Clamp	1.18	NESC Heavy	0.0
Clamp11	Clamp	1.18	NESC Heavy	0.0
Clamp12	Clamp	1.18	NESC Heavy	0.0

Clamp13	Clamp	1.18	NESC Heavy	0.0
Clamp14	Clamp	1.18	NESC Heavy	0.0
Clamp15	Clamp	1.18	NESC Heavy	0.0
Clamp16	Clamp	1.18	NESC Heavy	0.0
Clamp17	Clamp	1.18	NESC Heavy	0.0
Clamp18	Clamp	1.18	NESC Heavy	0.0
Clamp19	Clamp	1.18	NESC Heavy	0.0
Clamp20	Clamp	7.65	NESC Extreme	0.0

Loads At Insulator Attachments For All Load Cases:

Load Case	Insulator Label	Insulator Type	Structure Attach Label	Structure Attach Load X (kips)	Structure Attach Load Y (kips)	Structure Attach Load Z (kips)	Structure Attach Load Res. (kips)
NESC Heavy	Clamp1	Clamp	Davit1:End	-0.040	2.432	1.012	2.634
NESC Heavy	Clamp2	Clamp	Davit2:End	-0.070	2.222	0.963	2.423
NESC Heavy	Clamp3	Clamp	Davit3:End	-0.127	2.977	2.473	3.872
NESC Heavy	Clamp4	Clamp	Davit4:End	-0.138	2.921	2.473	3.830
NESC Heavy	Clamp5	Clamp	Davit5:End	-0.127	2.972	2.473	3.868
NESC Heavy	Clamp6	Clamp	Davit6:End	-0.136	2.926	2.472	3.833
NESC Heavy	Clamp7	Clamp	Davit7:End	-0.127	2.967	2.472	3.864
NESC Heavy	Clamp8	Clamp	Davit8:End	-0.136	2.932	2.472	3.837
NESC Heavy	Clamp9	Clamp	826:Coax1	0.000	0.225	0.920	0.947
NESC Heavy	Clamp10	Clamp	826:Coax2	0.000	0.225	0.920	0.947
NESC Heavy	Clamp11	Clamp	826:Coax3	0.000	0.225	0.920	0.947
NESC Heavy	Clamp12	Clamp	826:Coax4	0.000	0.225	0.920	0.947
NESC Heavy	Clamp13	Clamp	826:Coax5	0.000	0.225	0.920	0.947
NESC Heavy	Clamp14	Clamp	826:Coax6	0.000	0.225	0.920	0.947
NESC Heavy	Clamp15	Clamp	826:Coax7	0.000	0.225	0.920	0.947
NESC Heavy	Clamp16	Clamp	826:Coax8	0.000	0.225	0.920	0.947
NESC Heavy	Clamp17	Clamp	826:Coax9	0.000	0.225	0.920	0.947
NESC Heavy	Clamp18	Clamp	826:Coax10	0.000	0.225	0.920	0.947
NESC Heavy	Clamp19	Clamp	826:Coax11	0.000	0.225	0.920	0.947
NESC Heavy	Clamp20	Clamp	826:t	0.000	1.384	5.311	5.488
NESC Extreme	Clamp1	Clamp	Davit1:End	0.128	1.932	0.251	1.952
NESC Extreme	Clamp2	Clamp	Davit2:End	0.077	1.841	0.218	1.855
NESC Extreme	Clamp3	Clamp	Davit3:End	0.107	2.797	1.056	2.992
NESC Extreme	Clamp4	Clamp	Davit4:End	0.092	2.765	1.057	2.962
NESC Extreme	Clamp5	Clamp	Davit5:End	0.107	2.759	1.056	2.956
NESC Extreme	Clamp6	Clamp	Davit6:End	0.095	2.734	1.057	2.933
NESC Extreme	Clamp7	Clamp	Davit7:End	0.107	2.716	1.056	2.916
NESC Extreme	Clamp8	Clamp	Davit8:End	0.096	2.696	1.056	2.897
NESC Extreme	Clamp9	Clamp	826:Coax1	0.000	0.729	0.250	0.771
NESC Extreme	Clamp10	Clamp	826:Coax2	0.000	0.729	0.250	0.771
NESC Extreme	Clamp11	Clamp	826:Coax3	0.000	0.729	0.250	0.771
NESC Extreme	Clamp12	Clamp	826:Coax4	0.000	0.729	0.250	0.771
NESC Extreme	Clamp13	Clamp	826:Coax5	0.000	0.729	0.250	0.771
NESC Extreme	Clamp14	Clamp	826:Coax6	0.000	0.729	0.250	0.771
NESC Extreme	Clamp15	Clamp	826:Coax7	0.000	0.729	0.250	0.771
NESC Extreme	Clamp16	Clamp	826:Coax8	0.000	0.729	0.250	0.771
NESC Extreme	Clamp17	Clamp	826:Coax9	0.000	0.729	0.250	0.771
NESC Extreme	Clamp18	Clamp	826:Coax10	0.000	0.729	0.250	0.771
NESC Extreme	Clamp19	Clamp	826:Coax11	0.000	0.729	0.250	0.771
NESC Extreme	Clamp20	Clamp	826:t	0.000	5.493	2.694	6.118
NESC Extreme Ice w/ Wind	Clamp1	Clamp	Davit1:End	0.179	1.858	1.437	2.356
NESC Extreme Ice w/ Wind	Clamp2	Clamp	Davit2:End	0.198	1.658	1.404	2.182
NESC Extreme Ice w/ Wind	Clamp3	Clamp	Davit3:End	0.153	2.166	2.591	3.381

NESC Extreme Ice w/ Wind	Clamp4	Clamp	Davit4:End	0.153	2.122	2.591	3.353
NESC Extreme Ice w/ Wind	Clamp5	Clamp	Davit5:End	0.153	2.163	2.591	3.379
NESC Extreme Ice w/ Wind	Clamp6	Clamp	Davit6:End	0.154	2.126	2.589	3.354
NESC Extreme Ice w/ Wind	Clamp7	Clamp	Davit7:End	0.153	2.159	2.589	3.375
NESC Extreme Ice w/ Wind	Clamp8	Clamp	Davit8:End	0.154	2.131	2.589	3.357
NESC Extreme Ice w/ Wind	Clamp9	Clamp	826:Coax1	0.000	0.148	0.850	0.863
NESC Extreme Ice w/ Wind	Clamp10	Clamp	826:Coax2	0.000	0.148	0.850	0.863
NESC Extreme Ice w/ Wind	Clamp11	Clamp	826:Coax3	0.000	0.148	0.850	0.863
NESC Extreme Ice w/ Wind	Clamp12	Clamp	826:Coax4	0.000	0.148	0.850	0.863
NESC Extreme Ice w/ Wind	Clamp13	Clamp	826:Coax5	0.000	0.148	0.850	0.863
NESC Extreme Ice w/ Wind	Clamp14	Clamp	826:Coax6	0.000	0.148	0.850	0.863
NESC Extreme Ice w/ Wind	Clamp15	Clamp	826:Coax7	0.000	0.148	0.850	0.863
NESC Extreme Ice w/ Wind	Clamp16	Clamp	826:Coax8	0.000	0.148	0.850	0.863
NESC Extreme Ice w/ Wind	Clamp17	Clamp	826:Coax9	0.000	0.148	0.850	0.863
NESC Extreme Ice w/ Wind	Clamp18	Clamp	826:Coax10	0.000	0.148	0.850	0.863
NESC Extreme Ice w/ Wind	Clamp19	Clamp	826:Coax11	0.000	0.148	0.850	0.863
NESC Extreme Ice w/ Wind	Clamp20	Clamp	826:t	0.000	1.160	4.131	4.291

Overturning Moments For User Input Concentrated Loads:

Moments are static equivalents based on central axis of 0,0 (i.e. a single pole).

Load Case	Total Tran. Load (kips)	Total Long. Load (kips)	Total Vert. Load (kips)	Transverse Overturning Moment (ft-k)	Longitudinal Overturning Moment (ft-k)	Torsional Moment (ft-k)
NESC Heavy	26.208	-0.901	32.241	2088.953	-70.762	0.441
NESC Extreme	33.752	0.809	12.251	2667.238	66.017	0.634
NESC Extreme Ice w/ Wind	19.171	1.297	31.862	1539.558	107.064	-0.112

*** Weight of structure (lbs):
    Weight of Tubular Davit Arms: 1455.6
    Weight of Steel Poles: 20384.2
    Total: 21839.8

*** End of Report

CENTEK engineering
Centered on Solutions℠ www.centekeng.com
63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject: Anchor Bolt Analysis CL&P Pole #826

Location: Stratford, CT

Rev. 0: 6/11/19

Prepared by: T.J.L. Checked by: C.A.G.
Job No. 19066.06

Anchor Bolt Analysis:

Input Data:

Bolt Force:

Maximum Tensile Force = $T_{Max} := 112 \cdot kips$ (User Input from PLS-Pole)

Maximum Shear Force at Base = $V_{base} := 44.3 \cdot kips$ (User Input from PLS-Pole)

Anchor Bolt Data:

Use AST MA615 Grade 75

Number of Anchor Bolts = $N := 20$ (User Input)

Bolt "Column" Distance = $l := 3.0 \cdot in$ (User Input)

Bolt Ultimate Strength = $F_u := 100 \cdot ksi$ (User Input)

Bolt Yeild Strength= $F_y := 75 \cdot ksi$ (User Input)

Bolt Modulus = $E := 29000 \cdot ksi$ (User Input)

Diameter of Anchor Bolts = $D := 2.25 \cdot in$ (User Input)

Threads per Inch = $n := 4.5$ (User Input)

Anchor Bolt Analysis:

Stress Area of Bolt = $A_s := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n}\right)^2 = 3.248 \cdot in^2$

Maximum Shear Force per Bolt = $V_{Max} := \frac{V_{base}}{N} = 2.2 \times 10^3 lbf$

Shear Stress per Bolt = $f_v := \frac{V_{Max}}{A_s} = 682 psi$

Tensile Stress Permitted = $F_t := 0.75 \cdot F_u = 75 \cdot ksi$

Shear Stress Permitted = $F_v := 0.35 F_y = 26.25 \cdot ksi$

Permitted Axial Tensile Stress in Conjuction with Shear = $F_{tv} := F_t \cdot \sqrt{1 - \left(\frac{f_v}{F_v}\right)^2} = 74.97 \cdot ksi$

Bolt Tension % of Capacity = $\frac{T_{Max}}{F_{tv} \cdot A_s} = 46 \cdot \%$

Condition1 = $Condition1 := if\left(\frac{T_{Max}}{F_{tv} \cdot A_s} \le 1.00, "OK", "Overstressed"\right)$

Condition1 = "OK"

RAN Template:	A&L Template:	Power System Template:
67D94B Outdoor	67D94B_1DP+1OP	Custom

CT11681A_Capacity-L1900_5.1_draft

Section 1 - Site Information

Site ID: CT11681A
Status: Draft
Version: 5.1
Project Type: Capacity-L1900
Approved: Not Approved
Approved By: Not Approved
Last Modified: 5/2/2019 7:47:42 PM
Last Modified By: GSM1900\AMurill9

Site Name: CL&P Utility Pole
Site Class: Utility Lattice Tower
Site Type: Structure Non Building
Plan Year: 2019
Market: CONNECTICUT
Vendor: Ericsson
Landlord: CL&P

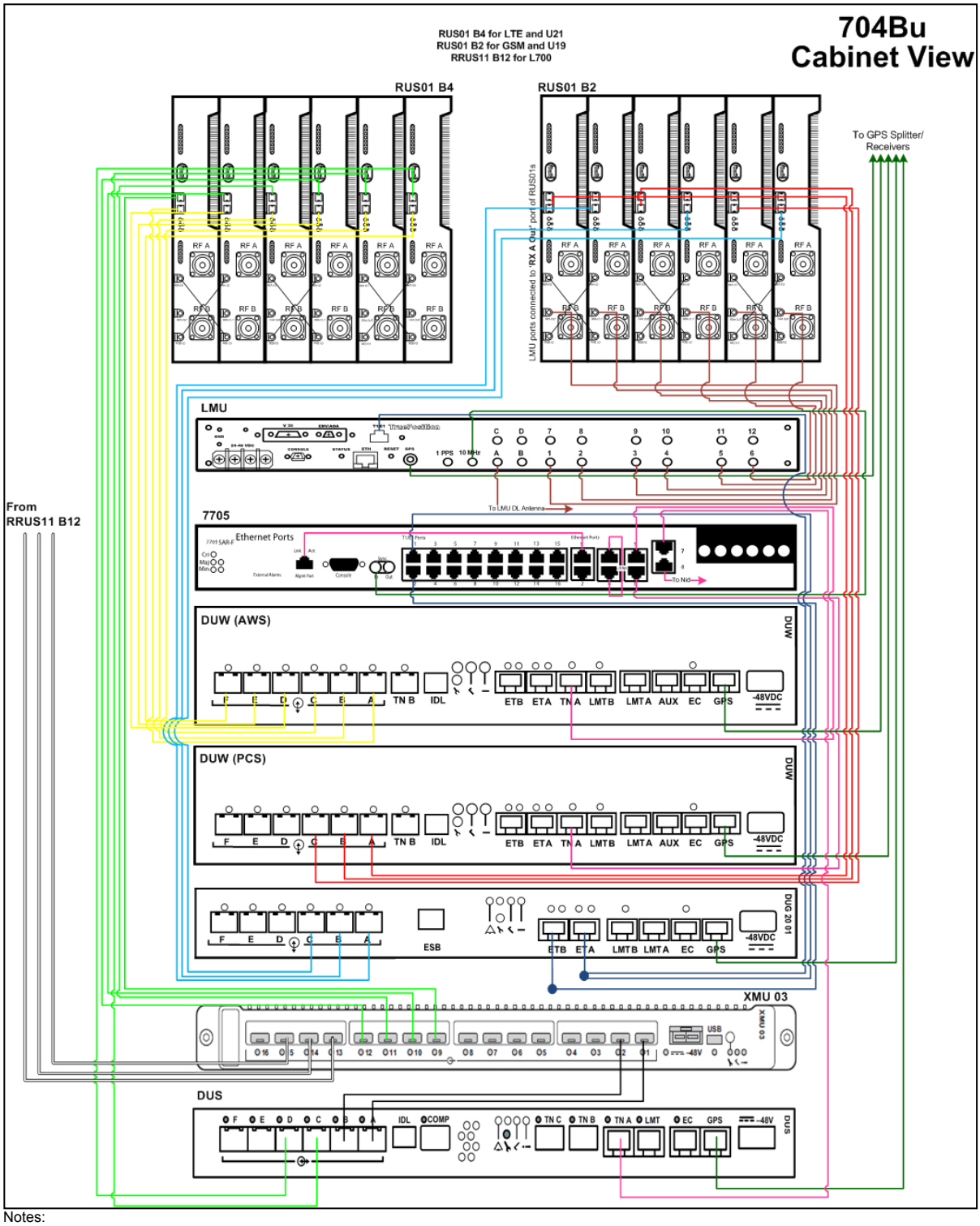
Latitude: 41.2332600000
Longitude: -73.1398000000
Address: 1975 Huntington Rd
City, State: Stratford, CT
Region: NORTHEAST

RAN Template: 67D94B Outdoor			AL Template: 67D94B_1DP+1OP	
Sector Count: 3	**Antenna Count:** 6	**Coax Line Count:** 24	**TMA Count:** 0	**RRU Count:** 3

Section 2 - Existing Template Images

704Bu.png

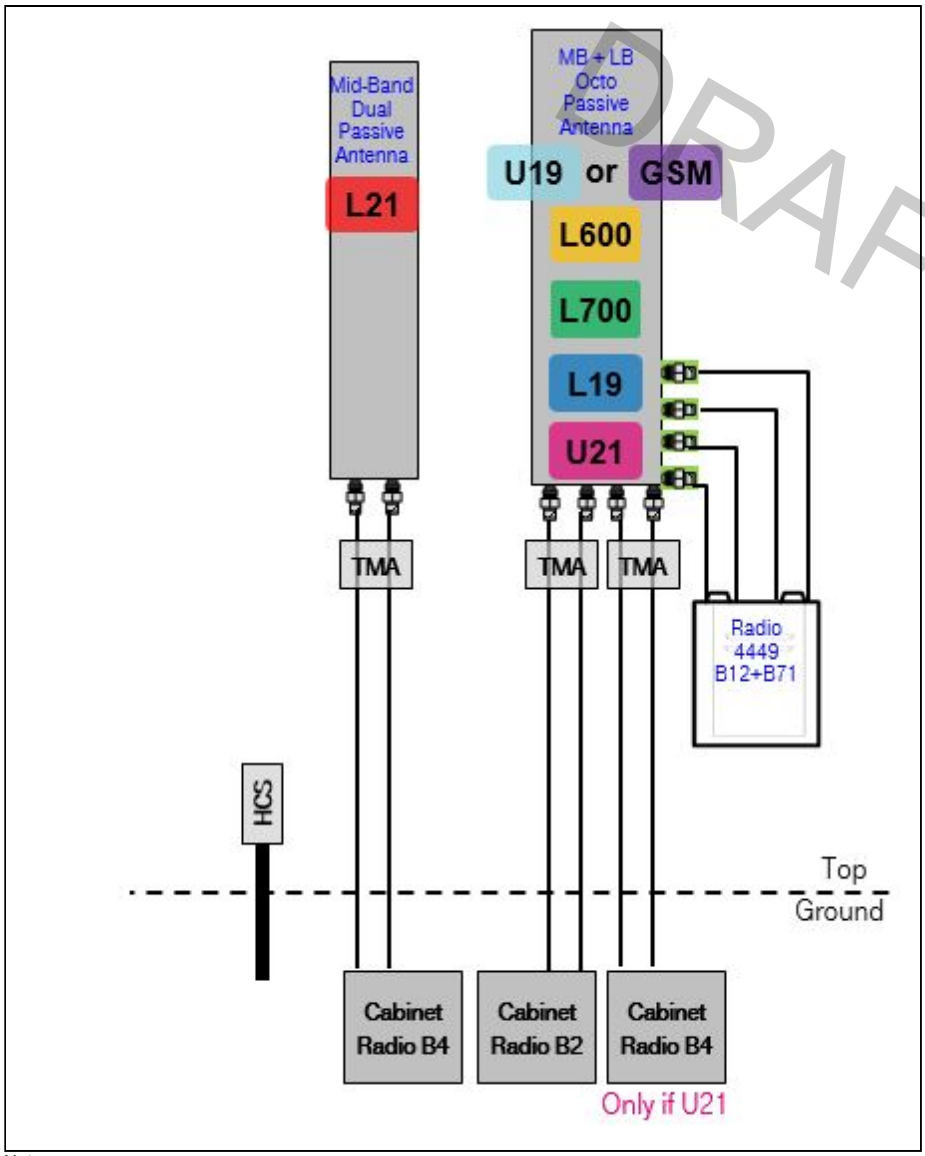
704Bu Cabinet View



Notes:

Section 3 - Proposed Template Images

67D94B_1DP+1OP.JPG



Notes:

Section 4 - Siteplan Images

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RAN Template:	A&L Template:	Power System Template:
67D94B Outdoor	67D94B_1DP+1OP	Custom

Section 5 - RAN Equipment

Existing RAN Equipment

Template: 704Bu Outdoor

Enclosure	1	2
Enclosure Type	RBS 6102	Ground Mount
Baseband	DUW30 (U2100); DUW30 (U1900 (DECOMMISSIONED)); DUG20 (G1900); BB 5216 (L2100, L700)	
Multiplexer	XMU (L2100, L700)	
Radio	RUS01 B2 (x3) (G1900); RUS01 B2 (x3) (U1900 (DECOMMISSIONED)); RUS01 B4 (x3) (L2100); RUS01 B4 (x3) (U2100)	RRUS11 B12 (x3) (L700)

Proposed RAN Equipment

Template: 67D94B Outdoor

Enclosure	1
Enclosure Type	RBS 6102
Baseband	DUW30 (U2100); DUW30 (U1900 (DECOMMISSIONED)); DUG20 (G1900); BB 5216 (L2100, L700, L600); BB 6630 (N600 (DARK))
Multiplexer	XMU
Radio	RUS01 B2 (x3) (G1900); RUS01 B2 (x3) (L1900); RUS01 B4 (x3) (L2100); RUS01 B4 (x3) (U2100)

RAN Scope of Work:

*** U1900 is decommissioned at this site ***
Reuse RUS01 B2 for L1900.

Install (1) BB6630 for future 5G N600.

Existing: (18) Coaxial Lines
Add (6) Coaxial Lines for new total of (24).

RAN Template:	A&L Template:	Power System Template:
67D94B Outdoor	67D94B_1DP+1OP	Custom

Section 6 - A&L Equipment

Existing Template: 1HP_704Bu
Proposed Template: 67D94B_1DP+1OP

Sector 1 (Existing) view from behind

Coverage Type	A - Outdoor Macro				
Antenna	1	2	3	4	
Antenna Model	Empty Antenna Mount (Empty mount)	Empty Antenna Mount (Empty mount)	Andrew - LNX-6515DS-A1M (Dual)	RFS - APX16DWV-16DWV-S-E-A20 (Quad)	
Azimuth			0	0	
M. Tilt			0	0	
Height			110	110	
Ports			P1	P2	P3
Active Tech.			L700	G1900	U2100 L2100
Dark Tech.					
Restricted Tech.					
Decomm. Tech.				U1900	
E. Tilt				2	2
Cables			1-5/8" Coax - 115 ft. **(x2)**	1-5/8" Coax - 115 ft. **(x2)**	1-5/8" Coax - 115 ft. **(x2)**
TMAs					
Diplexers / Combiners					
Radio					
Sector Equipment			Andrew Smart Bias T (At Antenna)		Andrew Smart Bias T (At Antenna)

Unconnected Equipment:

Scope of Work:

*** Existing four mounts per sector. Positions 1 and 2 are empty. LNX in position 3. Quad in position 4 ***
*** U1900 is decommissioned at this site ***

2 Bias-T's / 1 for controlling each antenna

RAN Template:	A&L Template:	Power System Template:
67D94B Outdoor	67D94B_1DP+1OP	Custom

CT11681A_Capacity-L1900_5.1_draft

Sector 1 (Proposed) view from behind								
Coverage Type	A - Outdoor Macro							
Antenna	1	2	3			4		
Antenna Model	Empty Antenna Mount (Empty mount)	Empty Antenna Mount (Empty mount)	RFS - APXVAARR24_43-U-NA20 (Octo)			RFS - APX16DWV-16DWV-S-E-A20 (Quad)		
Azimuth			0			0		
M. Tilt			0			0		
Height			110			110		
Ports			P1	P2	P3	P4	P5	P6
Active Tech.			L700 L600	L700 L600		L1900 G1900		U2100 L2100
Dark Tech.								
Restricted Tech.								
Decomm. Tech.						U1900		
E. Tilt							2	2
Cables			1-5/8" Coax - 115 ft. **(x2)**	1-5/8" Coax - 115 ft. **(x2)**		1-5/8" Coax - 115 ft. **(x2)**		1-5/8" Coax - 115 ft. **(x2)**
TMAs								
Diplexers / Combiners								
Radio			Radio 4449 B71+B12 (At Cabinet)	SHARED Radio 4449 B71+B12 (At Cabinet)				
Sector Equipment						Andrew Smart Bias T (At Antenna)		Andrew Smart Bias T (At Antenna)

Unconnected Equipment:

Scope of Work:

*** Existing four mounts per sector. Positions 1 and 2 are empty. LNX in position 3. Quad in position 4 ***
*** U1900 is decommissioned at this site ***

2 Bias-T's / 1 for controlling each antenna.
Daisy Chain RETs

Replace LB Dual in Position 3 with (1) LB/MB Octo.
Add (4) Coaxial Lines.
Add (1) Radio 4449 B71+B12 for L600 and L700 at Ground Level.
Move lines for PCS (GSM and U1900) to two Mid-Band Ports of LB/MB Octo.

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:	Power System Template:
67D94B Outdoor	67D94B_1DP+1OP	Custom

CT11681A_Capacity-L1900_5.1_draft

Sector 2 (Existing) view from behind					
Coverage Type	A - Outdoor Macro				
Antenna	**1**	**2**	**3**	**4**	
Antenna Model	Empty Antenna Mount (Empty mount)	Empty Antenna Mount (Empty mount)	Andrew - LNX-6515DS-A1M (Dual)	RFS - APX16DWV-16DWV-S-E-A20 (Quad)	
Azimuth			120	120	
M. Tilt			0	0	
Height			110	110	
Ports			**P1**	**P2**	**P3**
Active Tech.			L700	G1900	U2100 L2100
Dark Tech.					
Restricted Tech.					
Decomm. Tech.				U1900	
E. Tilt				2	2
Cables			1-5/8" Coax - 115 ft. **(x2)**	1-5/8" Coax - 115 ft. **(x2)**	1-5/8" Coax - 115 ft. **(x2)**
TMAs					
Diplexers / Combiners					
Radio					
Sector Equipment			Andrew Smart Bias T (At Antenna)		Andrew Smart Bias T (At Antenna)

Unconnected Equipment:

Scope of Work:

*** Existing four mounts per sector. Positions 1 and 2 are empty. LNX in position 3. Quad in position 4 ***
*** U1900 is decommissioned at this site ***

2 Bias-T's / 1 for controlling each antenna

RAN Template:	A&L Template:	Power System Template:
67D94B Outdoor	67D94B_1DP+1OP	Custom

CT11681A_Capacity-L1900_5.1_draft

Sector 2 (Proposed) view from behind								
Coverage Type	A - Outdoor Macro							
Antenna	1	2	3			4		
Antenna Model	Empty Antenna Mount (Empty mount)	Empty Antenna Mount (Empty mount)	RFS - APXVAARR24_43-U-NA20 (Octo)			RFS - APX16DWV-16DWV-S-E-A20 (Quad)		
Azimuth			120			120		
M. Tilt			0			0		
Height			110			110		
Ports			P1	P2	P3	P4	P5	P6
Active Tech.			L700 L600	L700 L600		L1900 G1900		U2100 L2100
Dark Tech.								
Restricted Tech.								
Decomm. Tech.						U1900		
E. Tilt							2	2
Cables			1-5/8" Coax - 115 ft. **(x2)**	1-5/8" Coax - 115 ft. **(x2)**		1-5/8" Coax - 115 ft. **(x2)**		1-5/8" Coax - 115 ft. **(x2)**
TMAs								
Diplexers / Combiners								
Radio			Radio 4449 B71+B12 (At Cabinet)	SHARED Radio 4449 B71+B12 (At Cabinet)				
Sector Equipment						Andrew Smart Bias T (At Antenna)		Andrew Smart Bias T (At Antenna)

Unconnected Equipment:

Scope of Work:

*** Existing four mounts per sector. Positions 1 and 2 are empty. LNX in position 3. Quad in position 4 ***
*** U1900 is decommissioned at this site ***

2 Bias-T's / 1 for controlling each antenna.
Daisy Chain RETs

Replace LB Dual in Position 3 with (1) LB/MB Octo.
Add (4) Coaxial Lines.
Add (1) Radio 4449 B71+B12 for L600 and L700 at Ground Level.
Move lines for PCS (GSM and U1900) to two Mid-Band Ports of LB/MB Octo.

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:	Power System Template:
67D94B Outdoor	67D94B_1DP+1OP	Custom

CT11681A_Capacity-L1900_5.1_draft

Sector 3 (Existing) view from behind					
Coverage Type	A - Outdoor Macro				
Antenna	**1**	**2**	**3**	**4**	
Antenna Model	Empty Antenna Mount (Empty mount)	Empty Antenna Mount (Empty mount)	Andrew - LNX-6515DS-A1M (Dual)	RFS - APX16DWV-16DWV-S-E-A20 (Quad)	
Azimuth			240	240	
M. Tilt			0	0	
Height			110	110	
Ports			**P1**	**P2**	**P3**
Active Tech.			L700	G1900	U2100 L2100
Dark Tech.					
Restricted Tech.					
Decomm. Tech.				U1900	
E. Tilt				2	2
Cables			1-5/8" Coax - 115 ft. **(x2)**	1-5/8" Coax - 115 ft. **(x2)**	1-5/8" Coax - 115 ft. **(x2)**
TMAs					
Diplexers / Combiners					
Radio					
Sector Equipment			Andrew Smart Bias T (At Antenna)		Andrew Smart Bias T (At Antenna)

Unconnected Equipment:

Scope of Work:

*** Existing four mounts per sector. Positions 1 and 2 are empty. LNX in position 3. Quad in position 4 ***
*** U1900 is decommissioned at this site ***

2 Bias-T's / 1 for controlling each antenna

RAN Template:	A&L Template:	Power System Template:
67D94B Outdoor	67D94B_1DP+1OP	Custom

CT11681A_Capacity-L1900_5.1_draft

Sector 3 (Proposed) view from behind

Coverage Type	A - Outdoor Macro							
Antenna	1	2	3				4	
Antenna Model	Empty Antenna Mount (Empty mount)	Empty Antenna Mount (Empty mount)	RFS - APXVAARR24_43-U-NA20 (Octo)				RFS - APX16DWV-16DWV-S-E-A20 (Quad)	
Azimuth			240				240	
M. Tilt			0				0	
Height			110				110	
Ports			P1	P2	P3	P4	P5	P6
Active Tech.			L700 L600	L700 L600		L1900 G1900		U2100 L2100
Dark Tech.								
Restricted Tech.								
Decomm. Tech.						U1900		
E. Tilt							2	2
Cables			1-5/8" Coax - 115 ft. **(x2)**	1-5/8" Coax - 115 ft. **(x2)**		1-5/8" Coax - 115 ft. **(x2)**		1-5/8" Coax - 115 ft. **(x2)**
TMAs								
Diplexers / Combiners								
Radio			Radio 4449 B71+B12 (At Cabinet)	SHARED Radio 4449 B71+B12 (At Cabinet)				
Sector Equipment						Andrew Smart Bias T (At Antenna)		Andrew Smart Bias T (At Antenna)

Unconnected Equipment:

Scope of Work:

*** Existing four mounts per sector. Positions 1 and 2 are empty. LNX in position 3. Quad in position 4 ***
*** U1900 is decommissioned at this site ***

2 Bias-T's / 1 for controlling each antenna.
Daisy Chain RETs

Replace LB Dual in Position 3 with (1) LB/MB Octo.
Add (4) Coaxial Lines.
Add (1) Radio 4449 B71+B12 for L600 and L700 at Ground Level.
Move lines for PCS (GSM and U1900) to two Mid-Band Ports of LB/MB Octo.

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:	Power System Template:
67D94B Outdoor	67D94B_1DP+1OP	Custom

Section 7 - Power Systems Equipment

Existing Power Systems Equipment

----- This section is intentionally blank. -----

Proposed Power Systems Equipment

RADIO FREQUENCY SYSTEMS
The Clear Choice®

Dual Slant Polarized Quad Band (8 Port) Antenna, 617-746/617-746/1695-2200/1695-2200MHz, 65deg, 15/15/18/18dBi, 2.4m (8ft), VET, RET, 0-12°/0-12°/2-12°/2-12°

FEATURES / BENEFITS

This antenna provides a 8 Port multi-band flexible platform for advanced use for flexible use in deployment scenarios for encompassing 600MHz, 700MHz, AWS & PCS applications.

- **24 Inch Width For Easier Zoning**
- **Field Replaceable (Integrated) AISG RET platform for reduced environmental exposure and long lasting quality**
- **Superior elevation pattern performance across the entire electrical down tilt range**
- **Includes three AISG RET motors - Includes 0.5m AISG jumper for optional diasy chain of two high band RET motors for one single AISG point of high band tilt control.**
- **Low band arrays driven by a single RET motor**

Technical Features

LOW BAND LEFT ARRAY (617-746 MHZ) [R1]

Frequency Band	MHz	617-698	698-746
Gain	dBi	15.1	15.5
Horizontal Beamwidth @3dB	Deg	65	62
Vertical Beamwidth @3dB	Deg	11.4	10.4
Electrical Downtilt Range	Deg	0-12	0-12
Upper Side Lobe Suppression 0 to +20	dB	19	20
Front-to-Back, at +/-30°, Copolar	dB	25	24
Cross Polar Discrimination (XPD) @ Boresight	dB	19	19
Cross Polar Discrimination (XPD) @ +/-60	dB	5	3
3rd Order PIM 2 x 43dBm	dBc		-153
VSWR	-	1.5:1	1.5:1
Cross Polar Isolation	dB	25	25
Maximum Effective Power per Port	Watt	250	250

LOW BAND RIGHT ARRAY (617-746 MHZ) [R2]

Frequency Band	MHz	617-698	698-746
Gain	dBi	14.8	15.1
Horizontal Beamwidth @3dB	Deg	65	62
Vertical Beamwidth @3dB	Deg	11.4	10.3
Electrical Downtilt Range	Deg	0-12	0-12
Upper Side Lobe Suppression 0 to +20	dB	19	20
Front-to-Back, at +/-30°, Copolar	dB	25	23
Cross Polar Discrimination (XPD) @ Boresight	dB	19	19
Cross Polar Discrimination (XPD) @ +/-60	dB	5	3
3rd Order PIM 2 x 43dBm	dBc		-153
VSWR	-	1.5:1	1.5:1
Cross Polar Isolation	dB	25	25
Maximum Effective Power per Port	Watt	250	250

RADIO FREQUENCY SYSTEMS
The Clear Choice®

Dual Slant Polarized Quad Band (8 Port) Antenna, 617-746/617-746/1695-2200/1695-2200MHz, 65deg, 15/15/18/18dBi, 2.4m (8ft), VET, RET, 0-12°/0-12°/2-12°/2-12°

ELECTRICAL SPECIFICATIONS

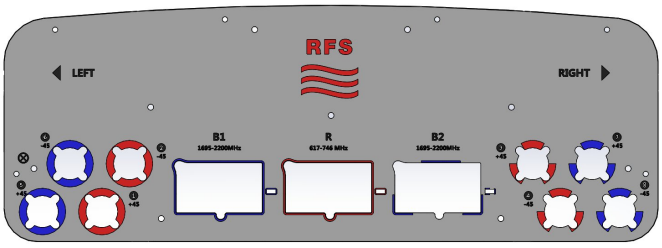
Impedance	Ohm	50.0
Polarization	Deg	±45°

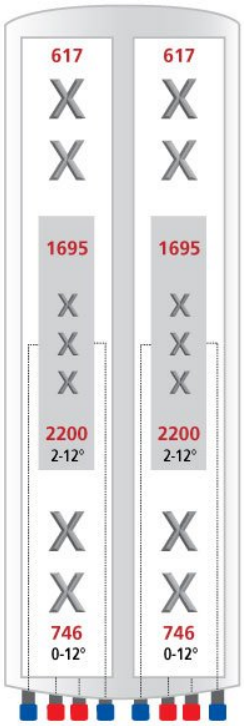
MECHANICAL SPECIFICATIONS

Dimensions - H x W x D	mm (in)	2436 x 609 x 222 (95.9 x 24 x 8.7)
Weight (Antenna Only)	kg (lb)	58 (128)
Weight (Mounting Hardware only)	kg (lb)	11.5 (25.3)
Shipping Weight	kg (lb)	80 (176)
Connector type		8 x 4.3-10 female at bottom + 6 AISG connectors (3 male, 3 female)
Adjustment mechanism		Integrated RET solution AISG compliant (Field Replaceable) + Manual Override + External Tilt Indicator
Mounting Hardware Material		Galvanized steel
Radome Material / Color		Fiber Glass / Light Grey RAL7035

TESTING AND ENVIRONMENTAL

Temperature Range	°C (°F)	-40 to 60 (-40 to 140)
Lightning protection		IEC 61000-4-5
Survival/Rated Wind Velocity	km/h	241 (150)
Environmental		ETSI 300-019-2-4 Class 4.1E





ORDERING INFORMATION

Order No.	Configuration	Mounting Hardware	Mounting pipe Diameter	Shipping Weight
APXVAARR24_43-U-NA20	Field Replace RET included (3)	APM40-5E Beam tilt kit (included)	60-120mm	80 Kg

Exhibit E

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

Antenna Mount Analysis

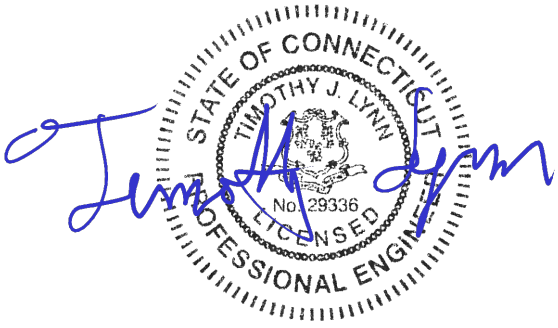
T-Mobile Site #: CT11681A

1975 Huntington Road
Stratford, CT

Centek Project No. 19066.06

Date: June 11, 2019

Max Stress Ratio = 59.5%



Prepared for:

T-Mobile USA
35 Griffin Road
Bloomfield, CT 06002

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CENTEK engineering

Centered on Solutions℠

June 11, 2019

Mr. Sheldon Freincle
Northeast Site Solutions
420 Main Street, Building 4
Sturbridge, MA 01566

Re: Structural Letter ~ Antenna Mount
T-Mobile – Site Ref: CT11681A
1975 Huntington Road
Stratford, CT 06614

Centek Project No. 19066.06

Dear Mr. Reid,

Centek Engineering, Inc. has reviewed the T-Mobile antenna installation at the above referenced site. The purpose of the review is to determine the structural adequacy of the existing mount, consisting one (1)12-ft platform (SitePro P/N RMQP-4) to support the proposed/existing equipment configuration. The review considered the effects of wind load, dead load and ice load in accordance with the 2015 International Building Code as modified by the 2018 Connecticut State Building Code (CTBC) including ASCE 7-10 and ANSI/TIA-222-G *Structural Standards for Steel Antenna Towers and Supporting Structures*.

The loads considered in this analysis consist of the following:

- T-Mobile:
  Platform: Three (3) RFS APXVAARR24_43 panel antennas, three (3) RFS APX16DWV-16DWV-S-E-A20 panel antennas and six (6) Bias Tees mounted on the platform with a RAD center elevation of 110-ft +/- AGL.

The antenna mount was analyzed per the requirements of the 2015 International Building Code as modified by the 2018 Connecticut State Building Code considering a nominal design wind speed of 97 mph for Stratford as required in Appendix N of the 2018 Connecticut State Building Code.

Based on our review of the installation, it is our opinion that the subject antenna mount with modifications below has sufficient capacity to support the aforementioned antenna configuration.

- Installation of one (1) SitePro handrail kit (P/N HRK12) 2'-6" above existing platform
- Replacement of three (3) 2 std. antenna pipes with 2.5 std. (O.D. = 2.875") antenna pipes and associated cross plates (SitePro P/N SP219-H) @ APXVAARR24_43 antennas.

If there are any questions regarding this matter, please feel free to call.

Respectfully Submitted by:

Timothy J. Lynn, PE
Structural Engineer

STATE OF CONNECTICUT
TIMOTHY J. LYNN
No. 29336
LICENSED
PROFESSIONAL ENGINEER

Section 2 - Calculations

CENTEK engineering
Centered on Solutions℠ www.centekeng.com
63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject: TIA-222-G Loads

Location: Stratford, CT

Rev. 0:6/11/19

Prepared by: T.J.L. Checked by: C.A.G.
Job No. 19066.06

Development of Design Heights, Exposure Coefficients, and Velocity Pressures Per TIA-222-G

Wind Speeds

Basic Wind Speed: $V := 97$ mph (User Input - 2018 CSBC Appendix N)

Basic Wind Speed with Ice: $V_i := 50$ mph (User Input per Annex B of TIA-222-G)

Input

Structure Type = Structure_Type := Pole (User Input)

Structure Category = SC := III (User Input)

Exposure Category = Exp := C (User Input)

Structure Height = $h := 110$ ft (User Input)

Height to Center of Antennas = $z_{Ant} := 110$ ft (User Input)

Radial Ice Thickness = $t_i := 0.75$ in (User Input per Annex B of TIA-222-G)

Radial Ice Density = $Id := 56.00$ pcf (User Input)

Topograpic Factor = $K_{zt} := 1.0$ (User Input)

$K_a := 1.0$ (User Input)

Gust Response Factor = $G_H = 1.1$ (User Input)

Output

Wind Direction Probability Factor =

$$K_d := \begin{cases} 0.95 & \text{if Structure\_Type = Pole} \\ 0.85 & \text{if Structure\_Type = Lattice} \end{cases} = 0.95$$

(Per Table 2-2 of TIA-222-G)

Importance Factors =

$$I_{Wind} := \begin{cases} 0.87 & \text{if SC = 1} \\ 1.00 & \text{if SC = 2} \\ 1.15 & \text{if SC = 3} \end{cases} = 1.15$$

(Per Table 2-3 of TIA-222-G)

$$I_{Wind\_w\_Ice} := \begin{cases} 0 & \text{if SC = 1} \\ 1.00 & \text{if SC = 2} \\ 1.00 & \text{if SC = 3} \end{cases} = 1$$

$$I_{ice} := \begin{cases} 0 & \text{if SC = 1} \\ 1.00 & \text{if SC = 2} \\ 1.25 & \text{if SC = 3} \end{cases} = 1.25$$

$$K_{iz} := \left(\frac{z_{Ant}}{33}\right)^{0.1} = 1.128$$

$$t_{iz} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 2.115$$

Velocity Pressure Coefficient Antennas =

$$Kz_{Ant} := 2.01\left(\left(\frac{z_{Ant}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.291$$

Velocity Pressure w/o Ice Antennas =

$$qz_{Ant} := 0.00256 \cdot K_d \cdot Kz_{Ant} \cdot V^2 \cdot I_{Wind} = 33.98$$

Velocity Pressure with Ice Antennas =

$$qz_{ice.Ant} := 0.00256 \cdot K_d \cdot Kz_{Ant} \cdot V_i^2 \cdot I_{Wind} = 9.029$$

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	RFSAPXVAARR24-43		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 95.9$	in	(User Input)
Antenna Width =	$W_{ant} := 24$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.7$	in	(User Input)
Antenna Weight =	$WT_{ant} := 153$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.0$		
Antenna Force Coefficient =	$Ca_{ant} = 1.27$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 16$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 757$	lbs
Surface Area for One Antenna =	$SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 5.8$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 274$	lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 19.6$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 247$	lbs
Surface Area for One Antenna w/ Ice =	$SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 9$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 113$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 153$	lbs

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2 \times 10^4$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 2 \times 10^4$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 535$	lbs
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 535$	lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	RFSAPX16DWV-16DWS		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 55.9$	in	(User Input)
Antenna Width =	$W_{ant} := 13$	in	(User Input)
Antenna Thickness =	$T_{ant} := 3.15$	in	(User Input)
Antenna Weight =	$WT_{ant} := 41$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.3$		
Antenna Force Coefficient =	$Ca_{ant} = 1.28$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 5$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 241$	lbs
Surface Area for One Antenna =	$SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 1.2$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 59$	lbs

Wind Load (with ice)

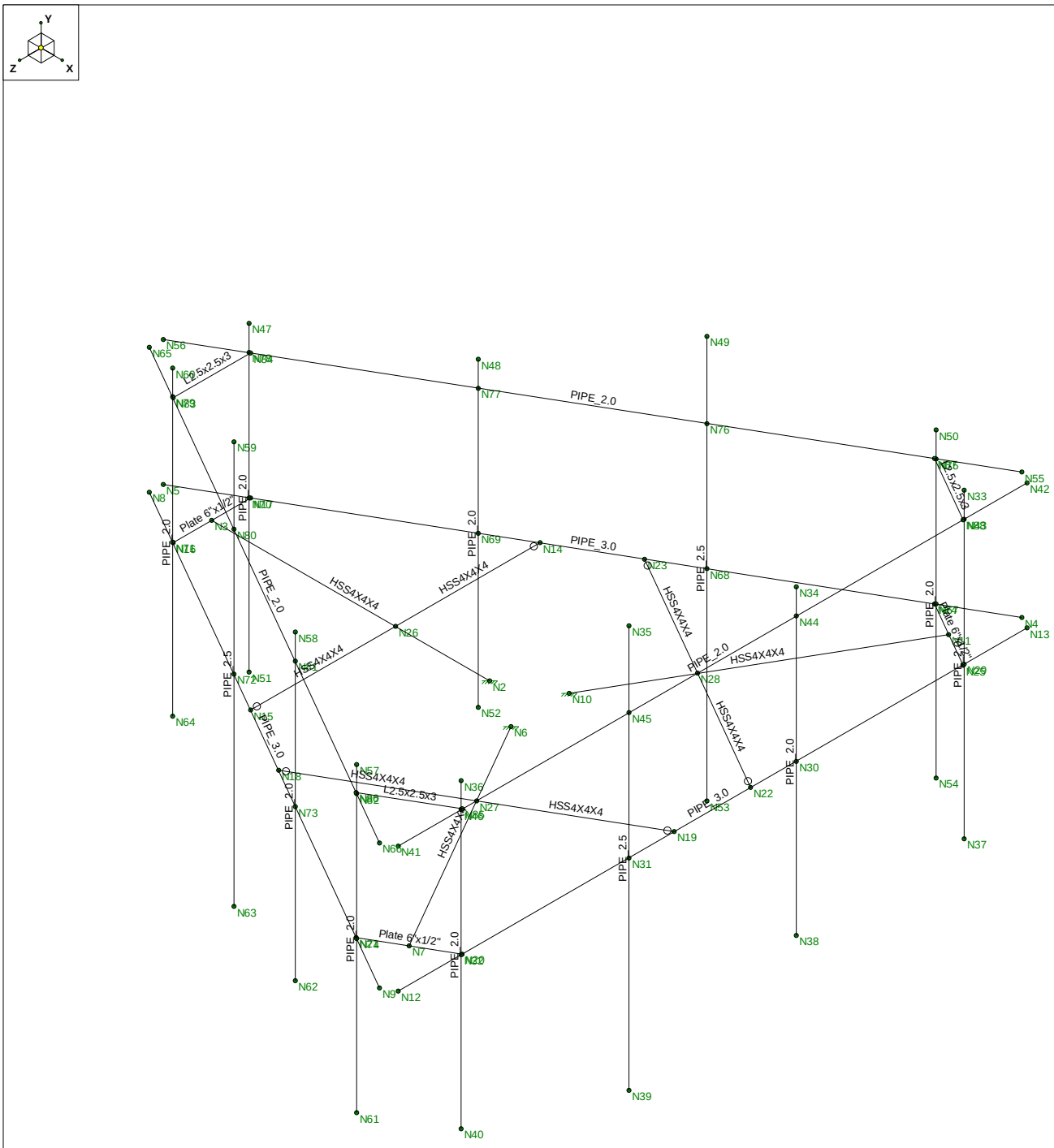
Surface Area for One Antenna w/ Ice =	$SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 7.2$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 91$	lbs
Surface Area for One Antenna w/ Ice =	$SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 3.1$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 39$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 41$	lbs

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2289$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 5357$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 174$	lbs
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 174$	lbs



Envelope Only Solution

		June 11, 2019 at 1:45 PM
	Member Framing	Mount.R3D

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI S100-12: ASD
Wood Code	AWC NDS-15: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-14
Masonry Code	ACI 530-13: ASD
Aluminum Code	AA ADM1-15: ASD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1
Footing Overturning Safety Factor	1
Optimize for OTM/Sliding	No
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	.145
Footing Concrete f'c (ksi)	4
Footing Concrete Ec (ksi)	3644
Lambda	1
Footing Steel fy (ksi)	60
Minimum Steel	0.0018
Maximum Steel	0.0075
Footing Top Bar	#6
Footing Top Bar Cover (in)	1.5
Footing Bottom Bar	#6
Footing Bottom Bar Cover (in)	3
Pedestal Bar	#6
Pedestal Bar Cover (in)	1.5
Pedestal Ties	#4

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1...	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Horz	PIPE_3.0	Beam	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
2	Outrigger	HSS4X4X4	Beam	None	A500 Gr.B ...	Typical	3.37	7.8	7.8	12.8
3	Plate	Plate 6"x1/2"	Beam	None	A36 Gr.36	Typical	3	.063	9	.237
4	Antenna Mast	PIPE_2.0	Column	Wide Flange	A53 Gr.B	Typical	1.02	.627	.627	1.25
5	Handrail	PIPE_2.0	Beam	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
6	Handrail Corner	L2.5x2.5x3	Beam	None	A36 Gr.36	Typical	.901	.535	.535	.011
7	Proposed Pipe Mast	PIPE_2.5	Column	Wide Flange	A53 Gr.B	Typical	1.61	1.45	1.45	2.89

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	Outrigger	5.526			Lbyy						Lateral
2	M2	Horz	12.5			Lbyy						Lateral
3	M3	Outrigger	5.526			Lbyy						Lateral
4	M4	Horz	12.5			Lbyy						Lateral
5	M5	Outrigger	5.526			Lbyy						Lateral
6	M6	Horz	12.5			Lbyy						Lateral
7	M7	Outrigger	2.88			Lbyy						Lateral
8	M8	Plate	1.543			Lbyy						Lateral
9	M9	Outrigger	2.88			Lbyy						Lateral
10	M10	Plate	1.543			Lbyy						Lateral
11	M11	Outrigger	2.88			Lbyy						Lateral
12	M12	Plate	1.543			Lbyy						Lateral
13	M13	Outrigger	2.88			Lbyy						Lateral
14	M14	Outrigger	2.88			Lbyy						Lateral
15	M15	Outrigger	2.88			Lbyy						Lateral
16	M16	Antenna Mast	6									Lateral
17	M17	Proposed Pi...	8									Lateral
18	M18	Antenna Mast	6									Lateral
19	M19	Antenna Mast	6									Lateral
20	M20	Handrail	12.5			Lbyy						Lateral
21	M21	Antenna Mast	6									Lateral
22	M22	Proposed Pi...	8									Lateral
23	M23	Antenna Mast	6									Lateral
24	M24	Antenna Mast	6									Lateral
25	M25	Handrail	12.5			Lbyy						Lateral
26	M26	Antenna Mast	6									Lateral
27	M27	Proposed Pi...	8									Lateral
28	M28	Antenna Mast	6									Lateral
29	M29	Antenna Mast	6									Lateral
30	M30	Handrail	12.5			Lbyy						Lateral
31	M31	Handrail Co...	1.543			Lbyy						Lateral
32	M32	Handrail Co...	1.543			Lbyy						Lateral
33	M33	Handrail Co...	1.543			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	M1	N2	N3			Outrigger	Beam	None	A500 Gr....	Typical
2	M2	N4	N5			Horz	Beam	None	A53 Gr.B	Typical
3	M3	N6	N7			Outrigger	Beam	None	A500 Gr....	Typical
4	M4	N8	N9			Horz	Beam	None	A53 Gr.B	Typical
5	M5	N10	N11			Outrigger	Beam	None	A500 Gr....	Typical
6	M6	N12	N13			Horz	Beam	None	A53 Gr.B	Typical
7	M7	N14	N26			Outrigger	Beam	None	A500 Gr....	Typical
8	M8	N16	N17			Plate	Beam	None	A36 Gr.36	Typical
9	M9	N18	N27			Outrigger	Beam	None	A500 Gr....	Typical
10	M10	N20	N21			Plate	Beam	None	A36 Gr.36	Typical
11	M11	N22	N28			Outrigger	Beam	None	A500 Gr....	Typical
12	M12	N24	N25			Plate	Beam	None	A36 Gr.36	Typical
13	M13	N26	N15			Outrigger	Beam	None	A500 Gr....	Typical
14	M14	N27	N19			Outrigger	Beam	None	A500 Gr....	Typical
15	M15	N28	N23			Outrigger	Beam	None	A500 Gr....	Typical
16	M16	N40	N36			Antenna Mast	Column	Wide Flange	A53 Gr.B	Typical
17	M17	N39	N35			Proposed Pipe Mast	Column	Wide Flange	A53 Gr.B	Typical
18	M18	N38	N34			Antenna Mast	Column	Wide Flange	A53 Gr.B	Typical
19	M19	N37	N33			Antenna Mast	Column	Wide Flange	A53 Gr.B	Typical
20	M20	N41	N42			Handrail	Beam	None	A53 Gr.B	Typical
21	M21	N54	N50			Antenna Mast	Column	Wide Flange	A53 Gr.B	Typical
22	M22	N53	N49			Proposed Pipe Mast	Column	Wide Flange	A53 Gr.B	Typical
23	M23	N52	N48			Antenna Mast	Column	Wide Flange	A53 Gr.B	Typical
24	M24	N51	N47			Antenna Mast	Column	Wide Flange	A53 Gr.B	Typical
25	M25	N55	N56			Handrail	Beam	None	A53 Gr.B	Typical
26	M26	N64	N60			Antenna Mast	Column	Wide Flange	A53 Gr.B	Typical
27	M27	N63	N59			Proposed Pipe Mast	Column	Wide Flange	A53 Gr.B	Typical
28	M28	N62	N58			Antenna Mast	Column	Wide Flange	A53 Gr.B	Typical
29	M29	N61	N57			Antenna Mast	Column	Wide Flange	A53 Gr.B	Typical
30	M30	N65	N66			Handrail	Beam	None	A53 Gr.B	Typical
31	M31	N83	N84			Handrail Corner	Beam	None	A36 Gr.36	Typical
32	M32	N85	N86			Handrail Corner	Beam	None	A36 Gr.36	Typical
33	M33	N87	N88			Handrail Corner	Beam	None	A36 Gr.36	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
1	N2	-0.666667	0	1.895e-14	0	
2	N3	-6.193118	0	0	0	
3	N4	3.530327	0	-6.385294	0	
4	N5	-7.29499	0	-0.135294	0	
5	N6	0.333333	0	0.57735	0	
6	N7	3.096559	0	5.363398	0	
7	N8	-7.29499	0	0.135294	0	
8	N9	3.530327	0	6.385294	0	
9	N10	0.333333	0	-0.57735	0	
10	N11	3.096559	0	-5.363398	0	
11	N12	3.764663	0	6.25	0	
12	N13	3.764663	0	-6.25	0	
13	N14	-2.540533	0	-2.880281	0	
14	N15	-2.540533	0	2.880281	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
15	N16	-6.193118	0	0.77146	0	
16	N17	-6.193118	0	-0.77146	0	
17	N18	-1.22413	0	3.640307	0	
18	N19	3.764663	0	0.760026	0	
19	N20	3.764663	0	4.977668	0	
20	N21	2.428455	0	5.749128	0	
21	N22	3.764663	0	-0.760026	0	
22	N23	-1.22413	0	-3.640307	0	
23	N24	2.428455	0	-5.749128	0	
24	N25	3.764663	0	-4.977668	0	
25	N26	-2.540533	0	-0.	0	
26	N27	1.270267	0	2.200166	0	
27	N28	1.270267	0	-2.200166	0	
28	N29	3.764663	0	-5	0	
29	N30	3.764663	0	-1.667	0	
30	N31	3.764663	0	1.666	0	
31	N32	3.764663	0	4.999	0	
32	N33	3.764663	3	-5	0	
33	N34	3.764663	3	-1.667	0	
34	N35	3.764663	4	1.666	0	
35	N36	3.764663	3	4.999	0	
36	N37	3.764663	-3	-5	0	
37	N38	3.764663	-3	-1.667	0	
38	N39	3.764663	-4	1.666	0	
39	N40	3.764663	-3	4.999	0	
40	N41	3.764663	2.5	6.25	0	
41	N42	3.764663	2.5	-6.25	0	
42	N43	3.764663	2.5	-5	0	
43	N44	3.764663	2.5	-1.667	0	
44	N45	3.764663	2.5	1.666	0	
45	N46	3.764663	2.5	4.999	0	
46	N47	-6.212459	3	-0.760294	0	
47	N48	-3.325996	3	-2.426794	0	
48	N49	-0.439533	4	-4.093294	0	
49	N50	2.446929	3	-5.759794	0	
50	N51	-6.212459	-3	-0.760294	0	
51	N52	-3.325996	-3	-2.426794	0	
52	N53	-0.439533	-4	-4.093294	0	
53	N54	2.446929	-3	-5.759794	0	
54	N55	3.530327	2.5	-6.385294	0	
55	N56	-7.29499	2.5	-0.135294	0	
56	N57	2.447795	3	5.760294	0	
57	N58	-0.438667	3	4.093794	0	
58	N59	-3.32513	4	2.427294	0	
59	N60	-6.211593	3	0.760794	0	
60	N61	2.447795	-3	5.760294	0	
61	N62	-0.438667	-3	4.093794	0	
62	N63	-3.32513	-4	2.427294	0	
63	N64	-6.211593	-3	0.760794	0	
64	N65	-7.29499	2.5	0.135294	0	
65	N66	3.530327	2.5	6.385294	0	
66	N67	2.446929	0	-5.759794	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
67	N68	-0.439533	0	-4.093294	0	
68	N69	-3.325996	0	-2.426794	0	
69	N70	-6.212459	0	-0.760294	0	
70	N71	-6.211593	0	0.760794	0	
71	N72	-3.32513	0	2.427294	0	
72	N73	-0.438667	0	4.093794	0	
73	N74	2.447795	0	5.760294	0	
74	N75	2.446929	2.5	-5.759794	0	
75	N76	-0.439533	2.5	-4.093294	0	
76	N77	-3.325996	2.5	-2.426794	0	
77	N78	-6.212459	2.5	-0.760294	0	
78	N79	-6.211593	2.5	0.760794	0	
79	N80	-3.32513	2.5	2.427294	0	
80	N81	-0.438667	2.5	4.093794	0	
81	N82	2.447795	2.5	5.760294	0	
82	N83	-6.193118	2.5	0.77146	0	
83	N84	-6.193118	2.5	-0.77146	0	
84	N85	3.764663	2.5	4.977668	0	
85	N86	2.428455	2.5	5.749128	0	
86	N87	2.428455	2.5	-5.749128	0	
87	N88	3.764663	2.5	-4.977668	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N6	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N10	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N2	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Member Point Loads (BLC 2 : Dead Load)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M16	Y	-.021	.5
2	M16	Y	-.021	5.5
3	M21	Y	-.021	.5
4	M26	Y	-.021	.5
5	M21	Y	-.021	5.5
6	M26	Y	-.021	5.5
7	M17	Y	-.077	.5
8	M22	Y	-.077	.5
9	M27	Y	-.077	.5
10	M17	Y	-.077	7.5
11	M22	Y	-.077	7.5
12	M27	Y	-.077	7.5

Member Point Loads (BLC 3 : Ice Load)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M16	Y	-.087	.5
2	M16	Y	-.087	5.5
3	M21	Y	-.087	.5

Member Point Loads (BLC 3 : Ice Load) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
4	M26	Y	-.087	.5
5	M21	Y	-.087	5.5
6	M26	Y	-.087	5.5
7	M17	Y	-.268	.5
8	M22	Y	-.268	.5
9	M27	Y	-.268	.5
10	M17	Y	-.268	7.5
11	M22	Y	-.268	7.5
12	M27	Y	-.268	7.5

Member Point Loads (BLC 4 : Wind with Ice X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M16	X	.046	.5
2	M16	X	.046	5.5
3	M21	X	.02	.5
4	M26	X	.02	.5
5	M21	X	.02	5.5
6	M26	X	.02	5.5
7	M17	X	.124	.5
8	M17	X	.124	7.5
9	M22	X	.057	.5
10	M27	X	.057	.5
11	M22	X	.057	7.5
12	M27	X	.057	7.5

Member Point Loads (BLC 5 : Wind X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M16	X	.121	.5
2	M16	X	.121	5.5
3	M21	X	.03	.5
4	M26	X	.03	.5
5	M21	X	.03	5.5
6	M26	X	.03	5.5
7	M17	X	.379	.5
8	M17	X	.379	7.5
9	M22	X	.137	.5
10	M27	X	.137	.5
11	M22	X	.137	7.5
12	M27	X	.137	7.5

Member Point Loads (BLC 6 : Wind with Ice Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M16	Z	.02	.5
2	M16	Z	.02	5.5
3	M21	Z	.046	.5
4	M26	Z	.046	.5
5	M21	Z	.046	5.5
6	M26	Z	.046	5.5
7	M17	Z	.057	.5
8	M17	Z	.057	7.5

Member Point Loads (BLC 6 : Wind with Ice Z) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
9	M22	Z	.124	.5
10	M27	Z	.124	.5
11	M22	Z	.124	7.5
12	M27	Z	.124	7.5

Member Point Loads (BLC 7 : Wind Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M16	Z	.03	.5
2	M16	Z	.03	5.5
3	M21	Z	.121	.5
4	M26	Z	.121	.5
5	M21	Z	.121	5.5
6	M26	Z	.121	5.5
7	M17	Z	.137	.5
8	M17	Z	.137	7.5
9	M22	Z	.379	.5
10	M27	Z	.379	.5
11	M22	Z	.379	7.5
12	M27	Z	.379	7.5

Member Distributed Loads (BLC 4 : Wind with Ice X)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M24	X	.003	.003	0	0
2	M23	X	.003	.003	0	0
3	M22	X	.003	.003	0	0
4	M21	X	.003	.003	0	0
5	M26	X	.003	.003	0	0
6	M27	X	.003	.003	0	0
7	M28	X	.003	.003	0	0
8	M29	X	.003	.003	0	0
9	M18	X	.003	.003	0	0
10	M19	X	.003	.003	0	0
11	M25	X	.003	.003	0	0
12	M30	X	.003	.003	0	0
13	M2	X	.003	.003	0	0
14	M4	X	.003	.003	0	0
15	M20	X	.003	.003	0	0
16	M6	X	.003	.003	0	0

Member Distributed Loads (BLC 5 : Wind X)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M24	X	.009	.009	0	0
2	M23	X	.009	.009	0	0
3	M22	X	.009	.009	0	0
4	M21	X	.009	.009	0	0
5	M26	X	.009	.009	0	0
6	M27	X	.009	.009	0	0
7	M28	X	.009	.009	0	0
8	M29	X	.009	.009	0	0

Member Distributed Loads (BLC 5 : Wind X) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
9	M18	X	.009	.009	0	0
10	M19	X	.009	.009	0	0
11	M25	X	.009	.009	0	0
12	M30	X	.009	.009	0	0
13	M2	X	.009	.009	0	0
14	M4	X	.009	.009	0	0
15	M20	X	.009	.009	0	0
16	M6	X	.009	.009	0	0

Member Distributed Loads (BLC 6 : Wind with Ice Z)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M25	Z	.003	.003	0	0
2	M30	Z	.003	.003	0	0
3	M2	Z	.003	.003	0	0
4	M4	Z	.003	.003	0	0
5	M16	Z	.003	.003	0	0
6	M17	Z	.003	.003	0	0
7	M18	Z	.003	.003	0	0
8	M19	Z	.003	.003	0	0
9	M23	Z	.003	.003	0	0
10	M24	Z	.003	.003	0	0
11	M28	Z	.003	.003	0	0
12	M29	Z	.003	.003	0	0

Member Distributed Loads (BLC 7 : Wind Z)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M25	Z	.009	.009	0	0
2	M30	Z	.009	.009	0	0
3	M2	Z	.009	.009	0	0
4	M4	Z	.009	.009	0	0
5	M16	Z	.009	.009	0	0
6	M17	Z	.009	.009	0	0
7	M18	Z	.009	.009	0	0
8	M19	Z	.009	.009	0	0
9	M23	Z	.009	.009	0	0
10	M24	Z	.009	.009	0	0
11	M28	Z	.009	.009	0	0
12	M29	Z	.009	.009	0	0

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribu...	Area(M...	Surface...
1	Self Weight	None		-1						
2	Dead Load	None					12			
3	Ice Load	None					12			
4	Wind with Ice X	None					12	16		
5	Wind X	None					12	16		
6	Wind with Ice Z	None					12	12		
7	Wind Z	None					12	12		

Load Combinations

	Description	Solve	PDel..	S...	B...	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	B...	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.2D + 1.6W (X-dire...	Yes	Y		1	1.2	2	1.2	5	1.6														
2	0.9D + 1.6W (X-dire...	Yes	Y		1	.9	2	.9	5	1.6														
3	1.2D + 1.0Di + 1.0Wi...	Yes	Y		1	1.2	2	1.2	3	1	4	1												
4	1.2D + 1.6W (Z-direc...	Yes	Y		1	1.2	2	1.2	7	1.6														
5	0.9D + 1.6W (Z-direc...	Yes	Y		1	.9	2	.9	7	1.6														
6	1.2D + 1.0Di + 1.0Wi...	Yes	Y		1	1.2	2	1.2	3	1	6	1												

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N6	max	-.15	6	1.45	6	-.014	3	-.974	2	-.054	6	1.434	3
2		min	-2.193	2	.641	2	-.944	5	-2.266	6	-2.261	2	.663	5
3	N10	max	.311	4	1.444	3	-.014	3	2.316	3	.946	2	1.269	3
4		min	-.894	2	.407	5	-1.811	4	.546	5	.113	6	.412	5
5	N2	max	.482	5	1.42	6	.042	1	.01	2	.003	3	-.336	2
6		min	-1.584	1	.33	2	-2.421	5	-.16	4	-3.183	5	-2.618	6
7	Totals:	max	0	6	4.266	6	0	3						
8		min	-4.67	1	1.602	2	-5.174	4						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotatio...	LC
1	N2	max	0	6	0	6	0	6	0	6	0	6	0	6
2		min	0	1	0	1	0	1	0	1	0	1	0	1
3	N3	max	0	1	.001	2	.087	5	7.758e-04	4	1.076e-03	5	2.388e-03	6
4		min	0	5	-.131	6	0	3	1.625e-04	2	1.687e-05	3	-1.762e-04	2
5	N4	max	.023	1	-.033	5	.013	1	-2.038e-04	2	2.224e-03	4	-1.477e-05	5
6		min	-.051	5	-.143	3	.005	6	-1.015e-03	6	-2.788e-04	2	-9.404e-04	1
7	N5	max	.018	2	.01	2	.109	5	9.2e-04	4	1.625e-03	5	9.915e-04	6
8		min	0	6	-.143	6	-.001	3	1.641e-04	2	-3.027e-04	1	-6.673e-04	2
9	N6	max	0	6	0	6	0	6	0	6	0	6	0	6
10		min	0	1	0	1	0	1	0	1	0	1	0	1
11	N7	max	.046	2	-.069	2	0	6	1.923e-03	6	5.532e-04	2	-4.967e-04	5
12		min	.001	6	-.133	3	-.026	2	9.225e-04	2	2.573e-05	6	-1.66e-03	3
13	N8	max	.023	1	.008	2	.093	5	5.769e-04	4	1.148e-03	1	7.907e-04	6
14		min	-.015	5	-.143	6	.004	3	1.819e-04	2	7.962e-05	6	-5.487e-04	2
15	N9	max	.057	2	-.078	2	.003	6	1.277e-03	4	9.467e-04	2	-3.519e-04	5
16		min	.006	6	-.148	6	-.033	2	2.679e-04	2	1.504e-04	6	-9.939e-04	3
17	N10	max	0	6	0	6	0	6	0	6	0	6	0	6
18		min	0	1	0	1	0	1	0	1	0	1	0	1
19	N11	max	.02	1	-.026	5	.011	1	-3.912e-04	5	3.744e-04	5	-7.318e-05	5
20		min	-.01	5	-.131	3	-.004	5	-2.198e-03	3	-2.312e-04	1	-1.323e-03	1
21	N12	max	.05	2	-.072	2	.001	5	9.964e-04	4	3.094e-05	4	-2.067e-04	5
22		min	.002	6	-.146	6	0	3	-6.634e-05	2	-7.675e-04	1	-7.816e-04	3
23	N13	max	.028	1	-.023	5	.002	2	1.405e-04	5	1.533e-04	5	1.287e-04	5
24		min	-.015	5	-.145	3	0	3	-1.098e-03	3	-1.73e-04	1	-1.192e-03	1
25	N14	max	.016	2	-.015	2	.031	4	2.44e-04	5	5.153e-04	2	8.855e-04	6
26		min	-.038	4	-.069	6	0	3	-8.075e-04	3	-2.237e-04	4	-3.279e-04	2
27	N15	max	.036	1	-.012	2	.032	4	1.924e-04	3	1.168e-03	5	1.717e-03	6
28		min	.004	6	-.085	6	0	3	-5.701e-04	5	-7.432e-04	1	-1.661e-05	2

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotatio...	LC
29	N16	max	.031	1	0	2	.087	5	5.917e-04	4	1.153e-03	1	7.911e-04	6
30		min	-.011	5	-.136	6	0	3	1.83e-04	2	7.889e-05	6	-5.51e-04	2
31	N17	max	.02	2	.003	2	.087	5	9.091e-04	4	1.619e-03	5	9.952e-04	6
32		min	-.006	4	-.126	6	0	3	1.636e-04	2	-3.09e-04	1	-6.655e-04	2
33	N18	max	.031	1	-.019	2	.027	4	1.213e-03	6	-4.272e-05	6	2.867e-04	6
34		min	.004	6	-.072	6	.003	3	2.054e-04	2	-1.416e-04	1	-7.74e-04	2
35	N19	max	.025	2	-.036	5	.002	5	1.442e-03	3	1.633e-03	2	2.694e-04	2
36		min	.001	6	-.087	3	0	3	5.999e-04	5	6.726e-05	6	-1.028e-03	6
37	N20	max	.062	2	-.072	5	.001	5	9.936e-04	4	3.025e-05	4	-2.084e-04	5
38		min	.002	6	-.138	3	0	3	-7.042e-05	2	-7.749e-04	2	-7.894e-04	3
39	N21	max	.05	2	-.064	2	.014	4	1.276e-03	4	9.444e-04	2	-3.494e-04	5
40		min	.005	6	-.13	6	-.021	2	2.687e-04	2	1.522e-04	6	-9.941e-04	3
41	N22	max	.009	1	-.028	5	.002	5	2.308e-04	5	3.827e-04	5	-5.459e-04	5
42		min	0	5	-.074	3	0	3	-3.048e-04	3	2.065e-05	3	-1.229e-03	3
43	N23	max	.012	2	-.013	5	.049	4	-3.894e-04	2	3.412e-06	2	3.6e-04	5
44		min	-.028	4	-.082	3	-.004	2	-1.648e-03	6	-1.597e-03	4	-7.4e-04	3
45	N24	max	.02	1	-.028	5	.038	4	-2.027e-04	2	2.231e-03	4	-1.631e-05	5
46		min	-.034	5	-.134	3	.004	3	-1.015e-03	6	-2.746e-04	2	-9.356e-04	1
47	N25	max	.025	1	-.025	5	.002	2	1.363e-04	5	1.503e-04	5	1.298e-04	5
48		min	-.013	5	-.128	3	0	3	-1.102e-03	3	-1.643e-04	1	-1.191e-03	1
49	N26	max	0	1	-.003	2	.031	4	3.024e-04	4	1.366e-03	4	1.933e-03	6
50		min	0	5	-.031	6	0	3	-1.826e-05	2	3.477e-05	3	4.976e-05	2
51	N27	max	.018	1	-.015	2	0	6	1.618e-03	6	7.319e-04	1	-5.312e-04	5
52		min	0	6	-.031	6	-.01	1	6.494e-04	2	5.335e-05	6	-1.179e-03	3
53	N28	max	.008	2	-.008	5	.004	2	-3.127e-04	5	3.635e-04	4	-3.634e-04	5
54		min	0	4	-.031	3	0	6	-1.73e-03	3	-3.128e-04	2	-8.696e-04	3
55	N29	max	.025	1	-.025	5	.002	2	1.45e-04	5	1.533e-04	5	1.287e-04	5
56		min	-.013	5	-.129	3	0	3	-1.092e-03	3	-1.628e-04	1	-1.192e-03	1
57	N30	max	.01	1	-.026	5	.002	5	2.278e-04	5	3.041e-04	4	-4.381e-04	5
58		min	-.004	5	-.081	3	0	3	-7.936e-04	3	-2.246e-04	2	-1.417e-03	1
59	N31	max	.046	2	-.042	5	.002	5	1.233e-03	3	1.685e-03	2	1.069e-03	2
60		min	.002	6	-.103	3	0	3	2.818e-04	5	3.496e-05	6	-8.695e-04	6
61	N32	max	.062	2	-.073	5	.001	5	9.904e-04	4	3.094e-05	4	-2.067e-04	5
62		min	.002	6	-.138	3	0	3	-7.084e-05	2	-7.777e-04	1	-7.816e-04	3
63	N33	max	.087	2	-.025	5	.048	4	7.958e-04	5	1.727e-03	5	8.989e-04	4
64		min	-.027	4	-.129	3	0	3	-4.454e-04	1	1.385e-04	3	-1.885e-03	2
65	N34	max	.165	1	-.026	5	.047	4	5.848e-04	5	1.676e-03	1	-2.035e-04	6
66		min	.012	5	-.081	3	.003	3	-2.331e-05	3	2.849e-04	5	-5.37e-03	1
67	N35	max	.382	1	-.042	5	.083	4	2.267e-03	4	4.907e-04	2	-1.952e-04	5
68		min	.022	5	-.104	3	.005	2	3.871e-05	2	-8.864e-05	6	-1.031e-02	1
69	N36	max	.135	1	-.073	5	.05	4	1.007e-03	4	4.628e-04	5	-3.024e-04	6
70		min	.01	6	-.138	3	.007	3	5.035e-04	3	-2.761e-03	1	-2.699e-03	1
71	N37	max	.001	2	-.025	5	.04	3	-4.964e-04	5	1.533e-04	5	1.287e-04	5
72		min	-.01	4	-.129	3	.014	5	-1.091e-03	3	-1.628e-04	1	-5.501e-04	1
73	N38	max	-.019	2	-.026	5	.029	3	-4.137e-04	5	3.041e-04	4	-4.38e-04	5
74		min	-.032	6	-.081	3	.011	5	-7.933e-04	3	-2.246e-04	2	-9.203e-04	3
75	N39	max	.64	2	-.042	5	.208	5	1.225e-03	3	1.685e-03	2	1.695e-02	2
76		min	-.04	6	-.104	3	-.059	3	-6.116e-03	5	3.496e-05	6	-8.638e-04	6
77	N40	max	.209	2	-.073	5	.025	5	4.376e-04	3	3.094e-05	4	5.729e-03	2
78		min	-.025	6	-.138	3	-.016	3	-1.227e-03	5	-7.777e-04	1	-7.507e-04	6
79	N41	max	.079	2	-.085	2	.044	4	1.017e-03	4	4.628e-04	5	-3.024e-04	6
80		min	.004	6	-.146	3	.004	3	5.169e-04	3	-2.714e-03	1	-2.699e-03	1

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotatio...	LC
81	N42	max	.062	1	-.013	5	.044	4	7.827e-04	5	1.727e-03	5	8.989e-04	4
82		min	-.048	5	-.135	3	.003	3	-4.588e-04	1	1.288e-04	3	-1.882e-03	2
83	N43	max	.076	1	-.025	5	.044	4	7.928e-04	5	1.727e-03	5	8.989e-04	4
84		min	-.022	5	-.129	3	.003	3	-4.454e-04	1	1.385e-04	3	-1.882e-03	2
85	N44	max	.133	1	-.026	5	.044	4	5.818e-04	5	1.676e-03	1	-2.035e-04	6
86		min	.01	5	-.081	3	.003	3	-2.331e-05	3	2.849e-04	5	-5.367e-03	1
87	N45	max	.201	1	-.042	5	.044	4	1.763e-03	4	4.907e-04	2	-1.951e-04	5
88		min	.019	5	-.104	3	.004	3	3.87e-05	2	-8.864e-05	6	-9.007e-03	1
89	N46	max	.119	1	-.073	5	.044	4	1.004e-03	4	4.628e-04	5	-3.024e-04	6
90		min	.008	6	-.138	3	.004	3	5.035e-04	3	-2.761e-03	1	-2.699e-03	1
91	N47	max	.082	1	.003	2	.159	4	1.661e-03	4	1.646e-04	2	1.842e-04	6
92		min	-.01	5	-.126	6	.008	3	4.974e-04	3	-2.199e-04	4	-1.619e-03	2
93	N48	max	.08	2	-.011	2	.176	5	4.561e-03	5	3.465e-04	3	-2.116e-04	3
94		min	-.004	6	-.077	6	-.007	3	1.303e-04	3	-3.658e-04	5	-1.937e-03	5
95	N49	max	.13	2	-.018	5	.322	5	8.296e-03	5	8.244e-05	5	-3.277e-04	6
96		min	0	6	-.099	3	-.014	3	-1.384e-04	3	-1.637e-04	1	-3.199e-03	2
97	N50	max	.079	1	-.027	5	.099	5	2.194e-03	5	3.69e-03	5	-1.922e-04	6
98		min	-.046	5	-.134	3	-.003	3	-2.937e-04	3	-2.158e-04	3	-1.172e-03	1
99	N51	max	.035	3	.003	2	.073	5	4.408e-04	6	1.616e-03	5	9.86e-04	6
100		min	.006	5	-.126	6	-.015	3	1.618e-04	2	-3.078e-04	1	-2.967e-05	2
101	N52	max	.04	3	-.011	2	.02	4	3.06e-04	5	7.858e-04	4	1.09e-03	6
102		min	-.021	5	-.077	6	.007	2	-3.148e-04	3	8.903e-05	3	1.548e-04	2
103	N53	max	.22	2	-.018	5	.702	4	-2.024e-04	2	-1.226e-04	3	6.116e-03	2
104		min	-.026	6	-.098	3	.008	2	-1.787e-02	4	-1.07e-03	4	-4.687e-04	6
105	N54	max	.045	2	-.028	5	.222	4	-2.015e-04	2	2.233e-03	4	1.231e-03	2
106		min	-.036	4	-.134	3	.017	2	-6.767e-03	4	-2.736e-04	2	-5.127e-05	4
107	N55	max	.069	1	-.013	5	.039	4	2.189e-03	5	3.65e-03	5	-2.024e-04	5
108		min	-.074	5	-.141	3	.001	3	-3.005e-04	3	-2.206e-04	3	-1.181e-03	1
109	N56	max	.074	1	.02	2	.147	5	1.665e-03	4	1.878e-04	2	1.958e-04	6
110		min	-.012	5	-.134	6	.004	3	5.041e-04	3	-1.798e-04	4	-1.608e-03	2
111	N57	max	.111	1	-.064	2	.07	5	1.922e-03	4	1.521e-03	5	-1.546e-04	5
112		min	.009	6	-.13	6	-.019	1	6.337e-05	3	-7.413e-04	1	-1.163e-03	1
113	N58	max	.112	2	-.029	2	.147	4	3.918e-03	4	1.834e-03	4	1.913e-03	4
114		min	-.016	4	-.08	6	-.023	2	-1.434e-03	2	3.381e-04	2	-1.852e-03	1
115	N59	max	.156	2	-.013	2	.341	4	8.984e-03	4	8.133e-04	5	2.828e-03	4
116		min	-.09	4	-.102	6	-.032	2	-1.021e-03	2	-1.271e-04	3	-3.173e-03	2
117	N60	max	.093	2	0	2	.161	5	1.955e-03	5	1.13e-03	2	1.567e-03	4
118		min	-.029	4	-.136	6	.004	3	-4.026e-04	1	-1.382e-03	4	-1.463e-03	2
119	N61	max	.035	2	-.064	2	-.011	5	7.078e-04	6	9.416e-04	2	-2.394e-04	2
120		min	-.027	6	-.13	6	-.034	1	2.656e-04	2	1.522e-04	6	-8.627e-04	6
121	N62	max	.014	5	-.028	2	.006	2	1.158e-03	6	4.725e-04	1	-1.972e-04	5
122		min	-.006	3	-.08	6	-.037	6	8.62e-05	2	-1.864e-05	6	-4.959e-04	1
123	N63	max	.276	1	-.013	2	.653	5	1.839e-04	3	1.7e-03	5	6.735e-03	1
124		min	.046	5	-.102	6	-.011	3	-1.718e-02	5	-4.137e-04	1	7.327e-04	5
125	N64	max	.072	1	0	2	.224	5	4.617e-04	3	1.153e-03	1	1.692e-03	1
126		min	-.007	5	-.137	6	-.016	3	-5.431e-03	5	7.777e-05	6	1.22e-04	5
127	N65	max	.076	2	.016	2	.132	5	1.95e-03	5	1.107e-03	2	1.579e-03	4
128		min	-.01	4	-.143	6	.004	3	-4.093e-04	1	-1.342e-03	4	-1.451e-03	2
129	N66	max	.099	2	-.081	2	.039	5	1.926e-03	4	1.481e-03	5	-1.633e-04	5
130		min	.008	6	-.139	6	-.011	1	7.008e-05	3	-7.181e-04	1	-1.172e-03	1
131	N67	max	.02	1	-.028	5	.037	4	-2.016e-04	2	2.233e-03	4	-1.087e-05	5
132		min	-.034	5	-.134	3	.004	3	-1.012e-03	6	-2.736e-04	2	-9.352e-04	1

Envelope Joint Displacements (Continued)

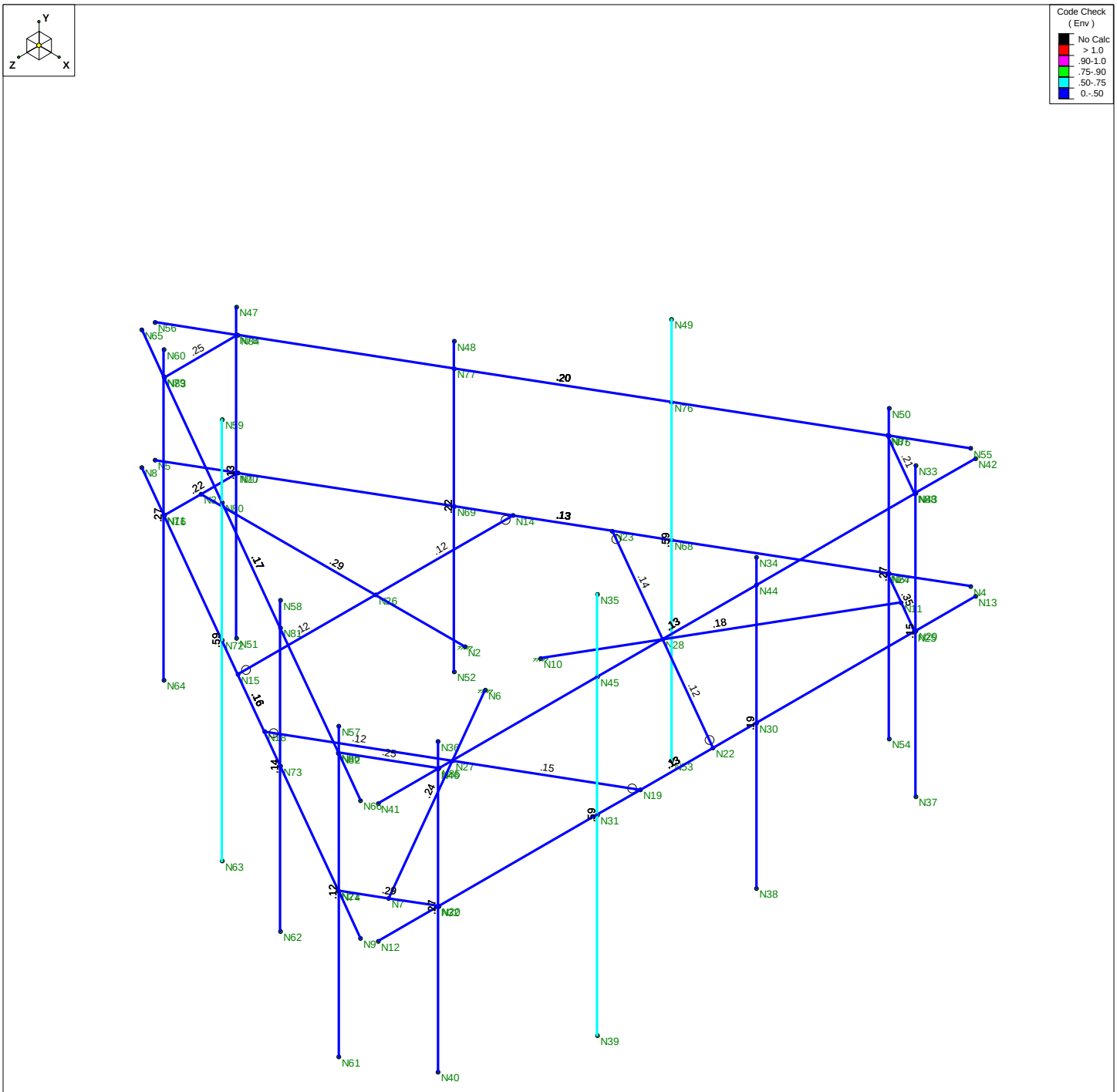
	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotatio...	LC
133	N68	max	.014	2	-.018	5	.063	4	-2.027e-04	2	-1.226e-04	3	2.656e-04	5
134		min	-.02	4	-.098	3	-.002	2	-2.002e-03	4	-1.07e-03	4	-5.634e-04	3
135	N69	max	.018	2	-.011	2	.035	4	9.476e-04	5	7.858e-04	4	1.09e-03	6
136		min	-.036	4	-.077	6	.001	3	-3.149e-04	3	8.903e-05	3	-4.867e-04	2
137	N70	max	.02	2	.003	2	.087	5	9.17e-04	4	1.616e-03	5	9.863e-04	6
138		min	-.006	4	-.126	6	0	3	1.618e-04	2	-3.078e-04	1	-6.712e-04	2
139	N71	max	.031	1	0	2	.087	5	5.799e-04	4	1.153e-03	1	7.855e-04	6
140		min	-.011	5	-.136	6	0	3	1.842e-04	2	7.777e-05	6	-5.526e-04	2
141	N72	max	.04	1	-.013	2	.048	5	1.851e-04	3	1.7e-03	5	1.498e-03	6
142		min	.003	6	-.102	6	-.004	1	-1.295e-03	5	-4.137e-04	1	1.727e-04	2
143	N73	max	.032	1	-.028	2	.028	4	1.42e-03	4	4.725e-04	1	-1.972e-04	5
144		min	.004	6	-.08	6	.003	3	8.622e-05	2	-1.864e-05	6	-1.138e-03	1
145	N74	max	.05	2	-.064	2	.014	4	1.274e-03	4	9.416e-04	2	-3.48e-04	5
146		min	.005	6	-.13	6	-.021	2	2.657e-04	2	1.522e-04	6	-9.887e-04	3
147	N75	max	.072	1	-.027	5	.086	5	2.194e-03	5	3.69e-03	5	-1.922e-04	6
148		min	-.047	5	-.134	3	-.002	3	-2.937e-04	3	-2.158e-04	3	-1.169e-03	1
149	N76	max	.074	2	-.018	5	.177	5	6.996e-03	5	8.244e-05	5	-3.274e-04	6
150		min	-.005	6	-.098	3	-.012	3	-1.382e-04	3	-1.637e-04	1	-2.694e-03	2
151	N77	max	.072	2	-.011	2	.148	5	4.558e-03	5	3.465e-04	3	-2.11e-04	3
152		min	-.012	4	-.077	6	-.008	3	1.303e-04	3	-3.658e-04	5	-1.937e-03	5
153	N78	max	.073	1	.003	2	.149	5	1.658e-03	4	1.646e-04	2	1.842e-04	6
154		min	-.011	5	-.126	6	.005	3	4.974e-04	3	-2.199e-04	4	-1.616e-03	2
155	N79	max	.084	2	0	2	.149	5	1.955e-03	5	1.13e-03	2	1.567e-03	4
156		min	-.02	4	-.136	6	.005	3	-4.026e-04	1	-1.382e-03	4	-1.46e-03	2
157	N80	max	.1	2	-.013	2	.183	4	7.684e-03	4	8.133e-04	5	2.827e-03	4
158		min	-.04	4	-.102	6	-.014	2	-1.021e-03	2	-1.271e-04	3	-2.668e-03	2
159	N81	max	.101	2	-.029	2	.123	4	3.915e-03	4	1.834e-03	4	1.913e-03	4
160		min	-.009	6	-.08	6	-.015	2	-1.434e-03	2	3.381e-04	2	-1.849e-03	1
161	N82	max	.105	2	-.064	2	.058	5	1.919e-03	4	1.521e-03	5	-1.546e-04	5
162		min	.006	6	-.13	6	-.021	1	6.337e-05	3	-7.413e-04	1	-1.16e-03	1
163	N83	max	.084	2	0	2	.15	5	1.927e-03	5	1.131e-03	2	1.609e-03	4
164		min	-.02	4	-.136	6	.005	3	-4.176e-04	1	-1.4e-03	4	-1.432e-03	2
165	N84	max	.072	1	.003	2	.149	5	1.624e-03	4	1.674e-04	2	2.106e-04	6
166		min	-.011	5	-.126	6	.005	3	5.146e-04	3	-2.376e-04	4	-1.596e-03	2
167	N85	max	.12	1	-.072	5	.044	4	9.831e-04	4	4.663e-04	5	-3.16e-04	6
168		min	.008	6	-.138	3	.004	3	5.198e-04	3	-2.779e-03	1	-2.699e-03	1
169	N86	max	.105	2	-.064	2	.059	5	1.932e-03	4	1.528e-03	5	-1.584e-04	5
170		min	.006	6	-.13	6	-.021	1	8.357e-05	3	-7.567e-04	1	-1.122e-03	1
171	N87	max	.072	1	-.028	5	.087	5	2.176e-03	5	3.704e-03	5	-2.026e-04	6
172		min	-.046	5	-.134	3	-.002	3	-3.088e-04	3	-2.167e-04	3	-1.139e-03	1
173	N88	max	.076	1	-.025	5	.044	4	7.519e-04	5	1.74e-03	5	9.175e-04	4
174		min	-.021	5	-.128	3	.003	3	-4.761e-04	1	1.408e-04	3	-1.88e-03	2

Envelope AISC 15th(360-16): LRFD Steel Code Checks

	Member	Shape	Code Check	Lo...	LC	She...	Lo...	...	...	phi*P...	phi*P...	phi*...	phi*...	...	Eqn
1	M1	HSS4X4X4	.285	0	4	.075	0	z	4	122....	139....	16.181	16.181	...	H1-...
2	M2	PIPE 3.0	.128	6.9...	4	.110	5.4...		5	28.251	65.205	5.749	5.749	...	H1-...
3	M3	HSS4X4X4	.240	0	1	.063	0	z	1	122....	139....	16.181	16.181	...	H1-...
4	M4	PIPE 3.0	.160	5.4...	4	.111	5.4...		4	28.251	65.205	5.749	5.749	...	H1-...
5	M5	HSS4X4X4	.178	0	3	.042	0	y	3	122....	139....	16.181	16.181	...	H1-...

Envelope AISC 15th(360-16): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Check	Lo...	LC	She...	Lo...	...	...	phi*P...	phi*P...	phi*...	phi*...	...	Eqn
6	M6	PIPE_3.0	.127	6.9...	3	.138	5.4...		1	28.251	65.205	5.749	5.749	...	H1-...
7	M7	HSS4X4X4	.116	2.88	3	.043	2.88	y	3	134....	139....	16.181	16.181	...	H1-...
8	M8	Plate 6"x1/2"	.216	.771	1	.056	.771	y	6	40.875	97.2	1.012	12.15	...	H1-...
9	M9	HSS4X4X4	.120	2.88	6	.043	2.88	y	6	134....	139....	16.181	16.181	...	H1-...
10	M10	Plate 6"x1/2"	.291	.771	2	.058	.771	y	3	40.875	97.2	1.012	12.15	...	H1-...
11	M11	HSS4X4X4	.117	2.88	3	.043	2.88	y	6	134....	139....	16.181	16.181	...	H1-...
12	M12	Plate 6"x1/2"	.352	.771	4	.051	.771	y	3	40.875	97.2	1.012	12.15	...	H1-...
13	M13	HSS4X4X4	.121	0	3	.022	0	y	6	134....	139....	16.181	16.181	...	H1-...
14	M14	HSS4X4X4	.149	0	1	.026	0	z	1	134....	139....	16.181	16.181	...	H1-...
15	M15	HSS4X4X4	.137	0	4	.022	0	y	3	134....	139....	16.181	16.181	...	H1-...
16	M16	PIPE_2.0	.267	3	1	.066	3		1	20.867	32.13	1.872	1.872	...	H1-...
17	M17	PIPE_2.5	.595	4	1	.074	6.5		1	30.038	50.715	3.596	3.596	...	H1-...
18	M18	PIPE_2.0	.189	3	1	.061	3		1	20.867	32.13	1.872	1.872	...	H1-...
19	M19	PIPE_2.0	.152	3	4	.059	3		4	20.867	32.13	1.872	1.872	...	H1-...
20	M20	PIPE_2.0	.134	4.5...	1	.123	1.3...		1	6.295	32.13	1.872	1.872	...	H1-...
21	M21	PIPE_2.0	.272	3	4	.054	3		4	20.867	32.13	1.872	1.872	...	H1-...
22	M22	PIPE_2.5	.594	4	5	.072	6.5		5	30.038	50.715	3.596	3.596	...	H1-...
23	M23	PIPE_2.0	.223	3	4	.049	3		5	20.867	32.13	1.872	1.872	...	H1-...
24	M24	PIPE_2.0	.129	3	3	.060	3		5	20.867	32.13	1.872	1.872	...	H1-...
25	M25	PIPE_2.0	.201	4.5...	4	.110	1.3...		5	6.295	32.13	1.872	1.872	...	H1-...
26	M26	PIPE_2.0	.269	3	4	.063	3		4	20.867	32.13	1.872	1.872	...	H1-...
27	M27	PIPE_2.5	.592	4	5	.065	6.5		4	30.038	50.715	3.596	3.596	...	H1-...
28	M28	PIPE_2.0	.142	3	5	.055	3		4	20.867	32.13	1.872	1.872	...	H1-...
29	M29	PIPE_2.0	.122	3	2	.058	3		2	20.867	32.13	1.872	1.872	...	H1-...
30	M30	PIPE_2.0	.165	4.5...	4	.114	1.3...		4	6.295	32.13	1.872	1.872	...	H1-...
31	M31	L2.5x2.5x3	.248	0	5	.041	0	y	5	26.978	29.192	.873	1.972	...	H2-1
32	M32	L2.5x2.5x3	.251	0	2	.038	0	y	2	26.978	29.192	.873	1.972	...	H2-1
33	M33	L2.5x2.5x3	.215	0	4	.027	1.5...	y	4	26.978	29.192	.873	1.972	...	H2-1



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

		June 11, 2019 at 1:44 PM
	Unity Check	Mount.R3D

Exhibit F

EBI Consulting

environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11681A

CL&P Utility Pole
1975 Huntington Road
Stratford, Connecticut 06614

May 29, 2019

EBI Project Number: 6219001894

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**6.40%**

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

EBI Consulting

environmental | engineering | due diligence

May 29, 2019

T-Mobile
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, Connecticut 06002

Emissions Analysis for Site: CT11681A - CL&P Utility Pole

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **1975 Huntington Road** in **Stratford, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile 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 T-Mobile Wireless antenna facility located at 1975 Huntington Road in Stratford, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile 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) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

5) 2 UMTS channels (AWS Band - 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

6) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

7) 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.

8) 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.

9) The antennas used in this modeling are the for the channel(s), the RFS APXVAARR24_43-UNA20 for the 1900 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s), the RFS APX16DWV-16DWV-S-EA20 for the 2100 MHz / 2100 MHz channel(s) in Sector A, , the RFS APXVAARR24_43-UNA20 for the 1900 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s), the RFS APX16DWV-16DWV-S-EA20 for the 2100 MHz / 2100 MHz channel(s) in Sector B, , the RFS APXVAARR24_43-UNA20 for the 1900 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s), the RFS APX16DWV-16DWV-S-EA20 for the 2100 MHz / 2100 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.

10) The antenna mounting height centerline of the proposed antennas is 110 feet above ground level (AGL).

11) 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.

12) Emissions from additional carriers were not included because emissions data for the site location are not available.

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

T-Mobile Site Inventory and Power Data

Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	RFS APXVAARR24_43-UNA20	Make / Model:	RFS APXVAARR24_43-UNA20	Make / Model:	RFS APXVAARR24_43-UNA20
Frequency Bands:	1900 MHz / 600 MHz / 700 MHz / 1900 MHz	Frequency Bands:	1900 MHz / 600 MHz / 700 MHz / 1900 MHz	Frequency Bands:	1900 MHz / 600 MHz / 700 MHz / 1900 MHz
Gain:	15.65 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd	Gain:	15.65 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd	Gain:	15.65 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd
Height (AGL):	110 feet	Height (AGL):	110 feet	Height (AGL):	110 feet
Channel Count:	10	Channel Count:	10	Channel Count:	10
Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts
ERP (W):	11,295.86	ERP (W):	11,295.86	ERP (W):	11,295.86
Antenna A3 MPE %:	**4.32%**	Antenna B3 MPE %:	**4.32%**	Antenna C3 MPE %:	**4.32%**
Antenna #:	**4**	Antenna #:	**4**	Antenna #:	**4**
Make / Model:	RFS APX16DWV-16DWV-S-EA20	Make / Model:	RFS APX16DWV-16DWV-S-EA20	Make / Model:	RFS APX16DWV-16DWV-S-EA20
Frequency Bands:	2100 MHz / 2100 MHz	Frequency Bands:	2100 MHz / 2100 MHz	Frequency Bands:	2100 MHz / 2100 MHz
Gain:	15.9 dBd / 15.9 dBd	Gain:	15.9 dBd / 15.9 dBd	Gain:	15.9 dBd / 15.9 dBd
Height (AGL):	110 feet	Height (AGL):	110 feet	Height (AGL):	110 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	180 Watts	Total TX Power (W):	180 Watts	Total TX Power (W):	180 Watts
ERP (W):	7,002.81	ERP (W):	7,002.81	ERP (W):	7,002.81
Antenna A4 MPE %:	**2.08%**	Antenna B4 MPE %:	**2.08%**	Antenna C4 MPE %:	**2.08%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	6.40%
No Other Carriers on Site	N/A
Site Total MPE % :	6.40%

T-Mobile Sector A Total:	6.40%
T-Mobile Sector B Total:	6.40%
T-Mobile Sector C Total:	6.40%
Site Total:	6.40%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile 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
T-Mobile 1900 MHz GSM	4	1101.85	110.0	13.10	1900 MHz GSM	1000	1.31%
T-Mobile 600 MHz LTE	2	591.73	110.0	3.52	600 MHz LTE	400	0.88%
T-Mobile 700 MHz LTE	2	648.82	110.0	3.86	700 MHz LTE	467	0.83%
T-Mobile 1900 MHz LTE	2	2203.69	110.0	13.10	1900 MHz LTE	1000	1.31%
T-Mobile 2100 MHz UMTS	2	1167.14	110.0	6.94	2100 MHz UMTS	1000	0.69%
T-Mobile 2100 MHz LTE	2	2334.27	110.0	13.87	2100 MHz LTE	1000	1.39%
						Total:	**6.40%**

• 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.

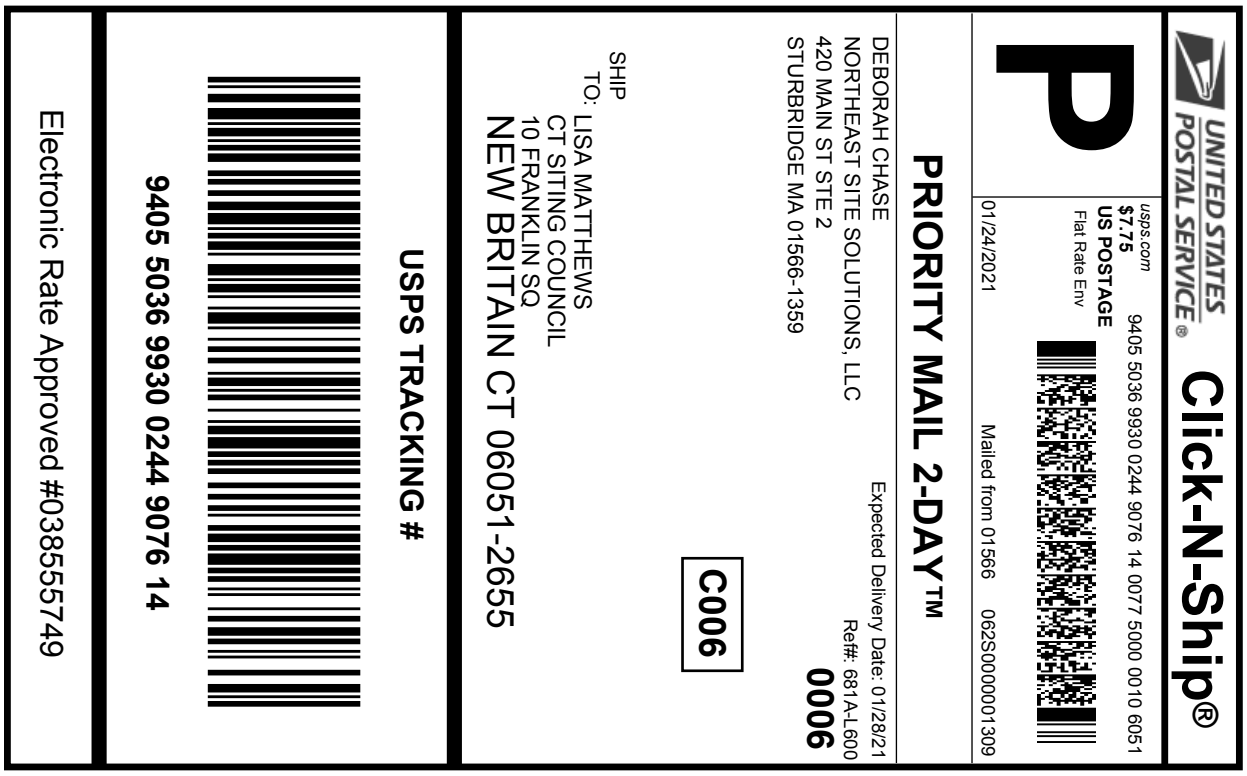
The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector A:	6.40%
Sector B:	6.40%
Sector C:	6.40%
T-Mobile Maximum MPE % (Sector A):	6.40%
Site Total:	6.40%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **6.40%** 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.

Exhibit G



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2. **Place your label so it does not wrap around the edge of the package.**
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Trans. #:	522366259
Print Date:	01/21/2021
Ship Date:	01/24/2021
Expected Delivery Date:	01/28/2021

Priority Mail® Postage:	**$7.75**
Total:	**$7.75**

From: DEBORAH CHASE Ref#: 681A-L600
NORTHEAST SITE SOLUTIONS, LLC
420 MAIN ST STE 2
STURBRIDGE MA 01566-1359

To: LISA MATTHEWS
CT SITING COUNCIL
10 FRANKLIN SQ
NEW BRITAIN CT 06051-2655

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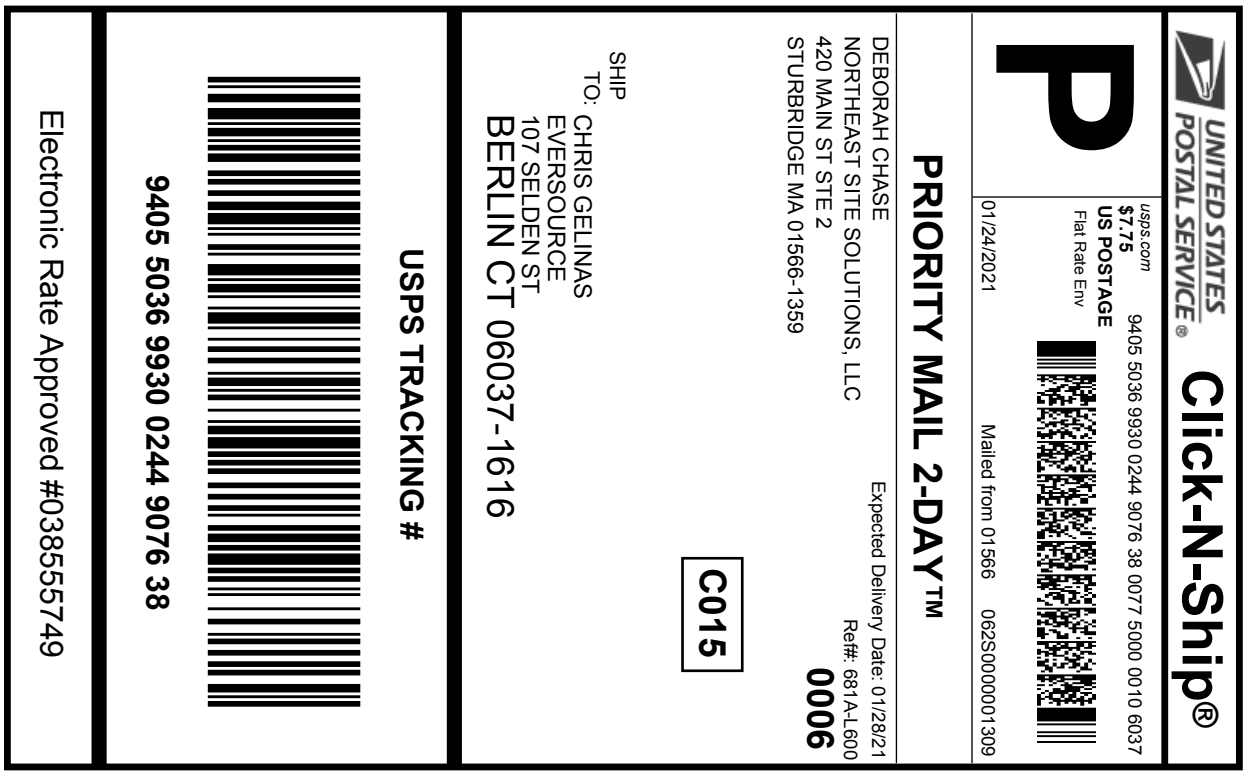

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9405 5036 9930 0244 9076 38

Trans. #:	522366259
Print Date:	01/21/2021
Ship Date:	01/24/2021
Expected Delivery Date:	01/28/2021

Priority Mail® Postage:	**$7.75**
Total:	**$7.75**

From: DEBORAH CHASE Ref#: 681A-L600
NORTHEAST SITE SOLUTIONS, LLC
420 MAIN ST STE 2
STURBRIDGE MA 01566-1359

To: CHRIS GELINAS
EVERSOURCE
107 SELDEN ST
BERLIN CT 06037-1616

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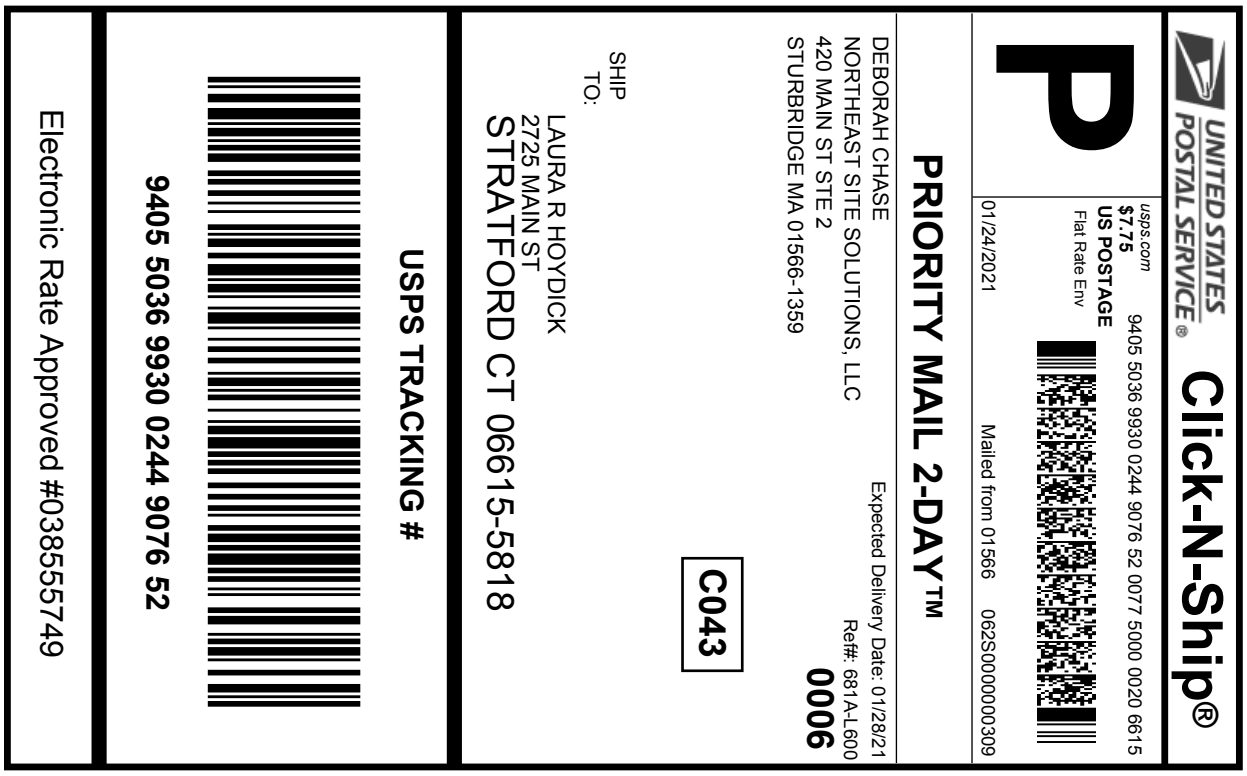

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4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
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Click-N-Ship® Label Record

USPS TRACKING # :
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Trans. #:	522366259
Print Date:	01/21/2021
Ship Date:	01/24/2021
Expected Delivery Date:	01/28/2021

Priority Mail® Postage:	**$7.75**
Total:	**$7.75**

From: DEBORAH CHASE Ref#: 681A-L600
NORTHEAST SITE SOLUTIONS, LLC
420 MAIN ST STE 2
STURBRIDGE MA 01566-1359

To: LAURA R HOYDICK
2725 MAIN ST
STRATFORD CT 06615-5818

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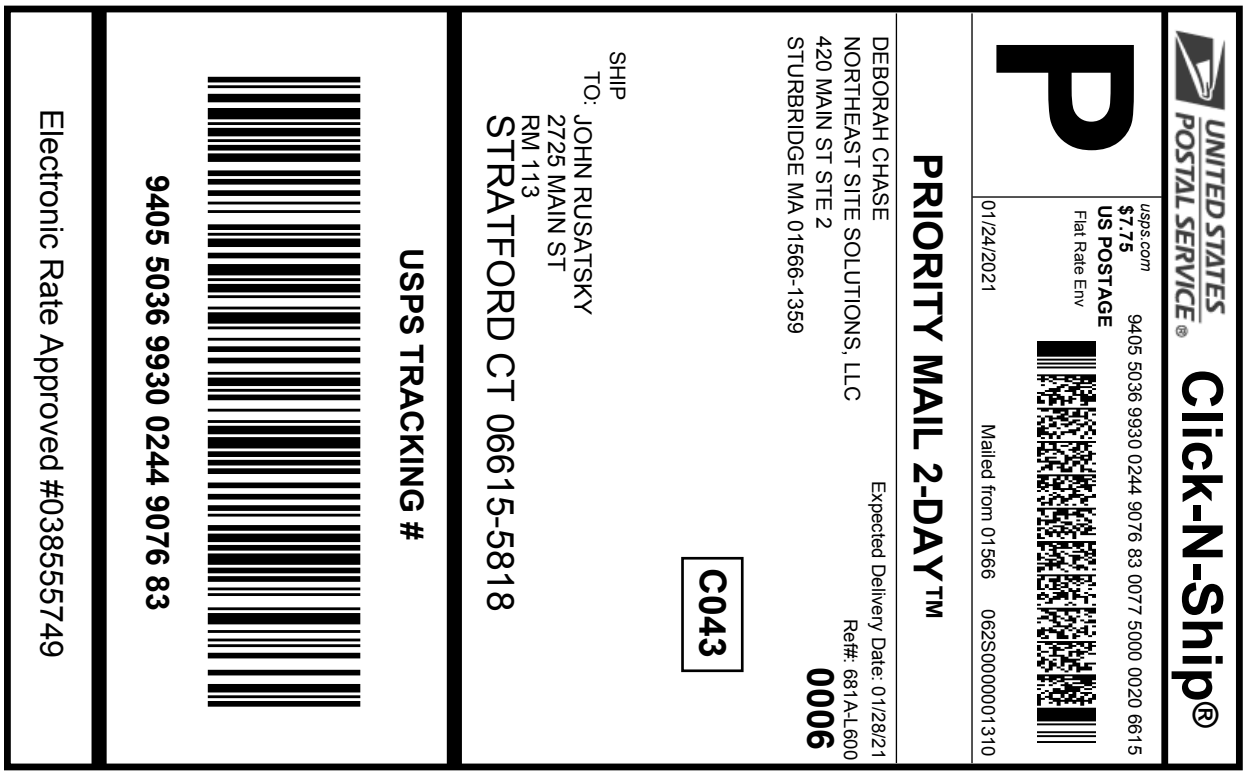

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Click-N-Ship® Label Record

USPS TRACKING # :
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Trans. #:	522366259
Print Date:	01/21/2021
Ship Date:	01/24/2021
Expected Delivery Date:	01/28/2021

Priority Mail® Postage:	**$7.75**
Total:	**$7.75**

From: DEBORAH CHASE Ref#: 681A-L600
NORTHEAST SITE SOLUTIONS, LLC
420 MAIN ST STE 2
STURBRIDGE MA 01566-1359

To: JOHN RUSATSKY
2725 MAIN ST
RM 113
STRATFORD CT 06615-5818

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Exhibit H

Deborah Chase

From: Deborah Chase
Sent: Thursday, January 21, 2021 3:19 PM
To: 'mayor@townofstratford.com'; 'jrusatsky@townofstratford.com'
Cc: 'Gelinas, Christopher'
Subject: 1975 HUNTINGTON RAOD, STRSTFORRD, CT 06614 T-MOBILE EM APPLICATION (CT11681A-L600)
Attachments: 1975 HUNTINGTON ROAD, STRATFORD, CT 06614 T-MOBILE EM APPLICATION (CT11681A L600).pdf

Good afternoon,
This is to inform you that you will be receiving a copy of T-Mobile's Exempt Modification (Zoning) Application to the CT Siting Council for the site listed above.
It will be delivered via Priority Mail.
Please let me know if you have any questions.
Thank you very much

Deborah Chase
Senior Project Coordinator & Analyst
Mobile: 860-490-8839

Save a tree. Refuse.Reduce. Reuse. Recycle.