



**NSS**

**NORTHEAST**  
SITE SOLUTIONS

*Turnkey Wireless Development*

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

November 10, 2020

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

RE: Notice of Exempt Modification  
82 North Eagleville Road, Mansfield CT 06268  
Latitude: 41.814537  
Longitude: -72.259742  
T-Mobile Site#: CT11303B\_ANCHOR

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 232-foot level of the existing 245-foot lattice at 82 North Eagle Road, Mansfield CT 06268. The tower is owned by University of Connecticut. The property is owned by University of Connecticut. T-Mobile now intends to add three (3) new antennas with three (3) new 2500 MHz antenna. The new antennas would be installed at the 232-foot level of the tower.

**Tower Planned Modifications:**

Remove: NONE

Remove and Replace: NONE

Install New:

- (4) Hybrid Cable
- (3) AIR6449 Antenna 2500 MHz
- (3) RRU4415 B25

Existing to Remain:

- (3) AIR32 B66AA/B2A Antenna 2100 MHz
- (3) AIR3246 B66 Antenna 1900/2100 MHz
- (3) APXVAAR24 Antenna 600/700/1900 MHZ
- (3) RRUS 4449 B71
- (5) Hybrid Cable



This facility was approved by the Connecticut Siting Council. Docket No.179 – 1. The height of the proposed tower shall not exceed a height of 327 feet above ground level (AGL). Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Mayor Toni Moran, Elected Official for the Town of Mansfield, 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  
Email: victoria@northeastsitesolutions.com



Cc: Attachments:

Town of Mansfield  
4 South Eagleville Road, Storrs Mansfield, CT 06268  
Attn: Town Council Office  
Mayor Toni Moran

Town of Mansfield  
4 South Eagleville Road, Storrs Mansfield, CT 06268  
Attn: Town Planning Office  
Linda Painter – Director of planning and zoning

University of Connecticut - as tower owner & as property owner

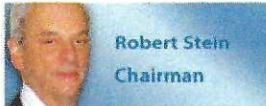
University of Connecticut  
Office of University Planning  
Real Estate & Risk Management  
31 LeDoyt Road, Unit 3094  
Storrs, Connecticut 06269-3094  
Attn: Robert J. Sitkowski, Real Estate Officer

# Exhibit A

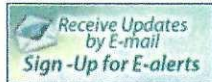




## CONNECTICUT SITING COUNCIL

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Chairman

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Robert Stein,  
Chairman

Melanie Bachman,  
Acting Executive Director

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**DOCKET NO. 179** - An application of WHUS Radio for a Certificate of Environmental Compatibility and Public Need for the construction, operation, and maintenance of a telecommunications facility at the University of Connecticut Campus approximately 2,700 feet northwest of the intersection of North Eagleville Road and Storrs Road (Route 195), Storrs, Connecticut.

**Connecticut Siting Council****November 19, 1997****Decision and Order**

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction of a telecommunications tower and associated equipment at the proposed site in Storrs, Connecticut, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to WHUS Radio for the construction of a telecommunications tower, associated equipment, and an equipment building at the proposed site, located at the University of Connecticut, north of North Eagleville Road, Storrs, Connecticut.

The facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The height of the proposed tower shall not exceed a height of 327 feet above ground level (AGL).
2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of construction and shall include specifications for the placement of all antennas to be attached to this tower; confirmation by a Professional Engineer that the tower design is adequate to hold all proposed antennas and meets all current applicable structural standards; plans for the new equipment building; and plans for water drainage and erosion and sedimentation controls consistent with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.
3. The Certificate Holder shall remove the existing 212-foot WHUS tower within 60 days of the completion of the new tower.
4. No construction activities shall be undertaken on the proposed site from March 1 to June 30, so that the two existing populations of species of special concern are not affected.
5. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies used at this facility, the facility granted herein shall be brought into compliance with such standards.
6. The Certificate Holder shall provide the Council a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels originally calculated and provided in the application.
7. The Certificate Holder shall permit public and/or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
8. If the facility does not provide, or permanently ceases to provide the proposed telecommunications services following completion of construction, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply to the Council for any proposed new use. If any associated equipment permanently ceases to provide the proposed telecommunications services, such equipment shall be removed within 60 days after such equipment ceases to provide the proposed telecommunications services.
9. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the effective date of this Decision and Order or within three years after all appeals to this Decision and Order have been resolved.

Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The

document does not constitute or imply endorsement by the Connecticut Siting Council. Finally, the Connecticut Siting Council assumes no responsibility for the use of documents posted on this site.

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Hartford Courant and The Willimantic Chronicle.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

**APPLICANT**

WHUS Radio,  
The University of Connecticut

**ITS REPRESENTATIVE**

Paul Shapiro Assistant Attorney General  
University of Connecticut Box U-177, 605 Gilbert Road  
Storrs, CT 06269-1177 (860) 486-4241

John Murphy  
General Manager  
WHUS Radio  
The University of Connecticut  
Box U-8R, 2110 Hillside Road  
Storrs, CT 06269-3008 (860) 486-2955

**INTERVENOR**

Bell Atlantic NYNEX Mobile

**ITS REPRESENTATIVE**

Jennifer Young Gaudet  
Regulatory Manager  
Bell Atlantic NYNEX Mobile  
20 Alexander Drive, P.O. Box 5029  
Wallingford, CT 06492 (203) 949-2805

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Ten Franklin Square New Britain, CT 06051 / 860-827-2935

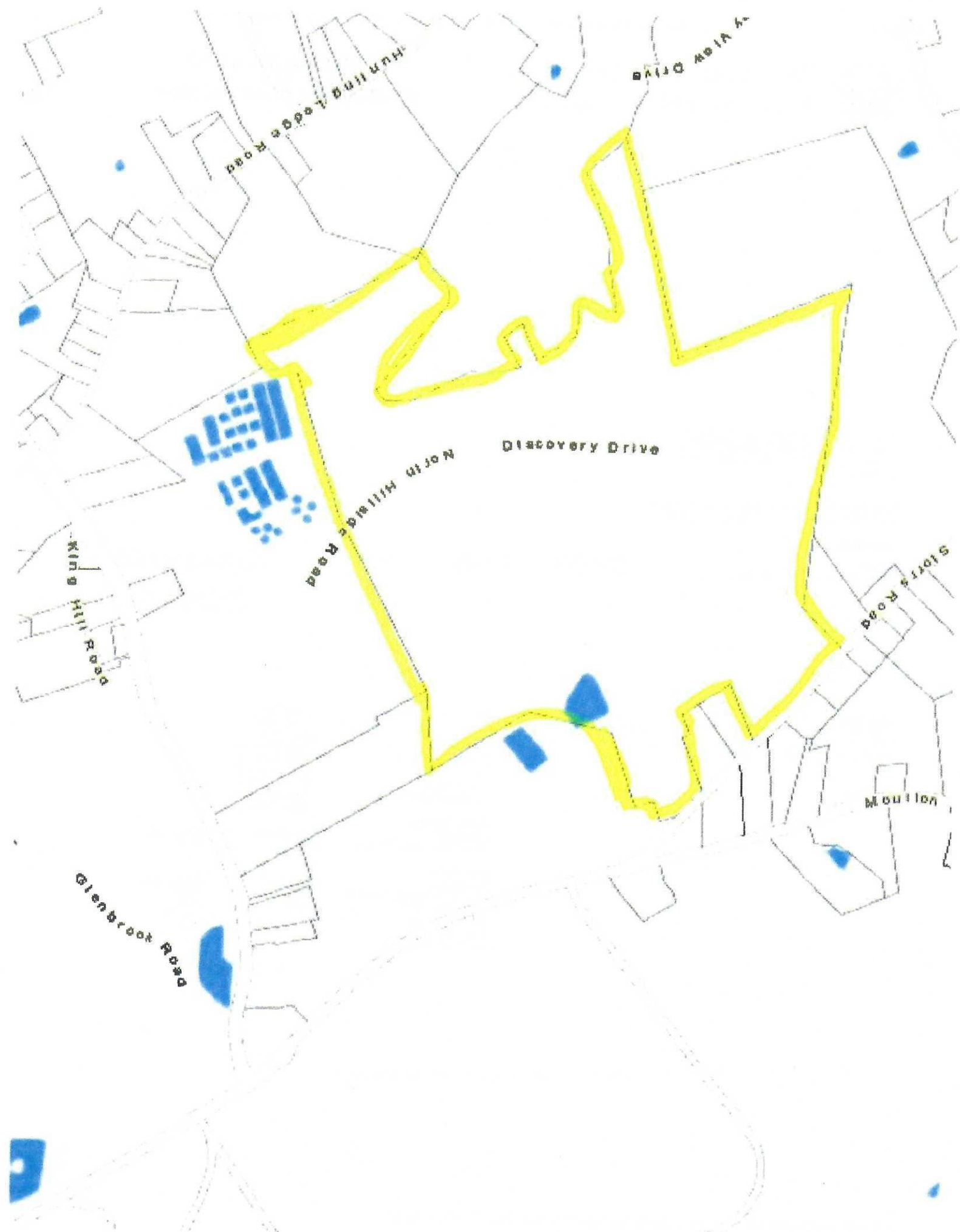
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# Exhibit B







**Town of Mansfield, Connecticut**  
**Property Record Card**      Card 1 of 1

**82 NO EAGLEVILLE RD**

ID: 9.23.UC159    Account #: 9 23 UC159

Owner: UNIVERSITY OF CONNECTICUT  
 Co-Owner: NORTH CAMPUS RESIDENCES  
 Address: U BOX 3038 FACILITIES MGMT  
 STORRS CT 06269

Assessment: Total: 6059200, Assessed Value:  
 Building: 5867300    Land: 191900    Yard: 0

**Sales History**

<u>Grantor</u>	<u>Book / Page</u>	<u>Sale Date</u>	<u>Sale Price</u>
UNIVERSITY OF CONNECTICUT	51/ 518	1919-09-27	



MainStreetGIS, LLC  
[www.mainstreetgis.com](http://www.mainstreetgis.com)

**Land Information**

Land Area: 1 AC    Zoning: (See Official Zoning Map)  
 Land Use: 902 - State Com  
 Neighborhood: C200

**Building Information**

Style:  
 Year Built: 1950  
 Stories:  
 Rooms: Bedrooms:  
 Baths: Half Baths:  
 Living Area:  
 Finished Basement:

Heat Fuel:  
 Heat Type:  
 AC Type:  
 Roof Structure:  
 Roof Covering:  
 Exterior Wall 1:  
 Exterior Wall 2:  
 Interior Floor 1:  
 Interior Floor 2:

**Extra Features**

<u>Description</u>	<u>Area / Units</u>	<u>Assessment</u>
Covered Loading Platform	240	2900

**Sub Areas**

<u>Description</u>	<u>Living Area</u>	<u>Gross Area</u>
FUS - Finished Upper Story	49389	49389
BAS - First Floor	25463	25463
BSM - Basement	0	24439
SLB - Slab	0	1024
OLP - Loading Platform	0	240

Printed from: <http://www.mainstreetmaps.com/ct/mansfield/>

# Exhibit C



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WIRELESS SITE UPGRADES BY

**T-Mobile**

**T-MOBILE NORTHEAST LLC**

PROJECT: ANCHOR

SITE NUMBER: CT11303B

SITE NAME: UCONN

SITE ADDRESS: 82 NORTH EAGLEVILLE ROAD

STORRS, CT 06268

(RF CONFIGURATION: 67D5992M\_3XAIR+1OP)

**PROJECT SCOPE:**

UPGRADE OF EXISTING WIRELESS FACILITY AS FOLLOWS:

ADD (3) NEW ANTENNAS FOR TOTAL OF (12).  
ADD (3) REMOTE RADIO UNITS FOR TOTAL OF (6).

ADD (4) 6X12 HCS HYBRID CABLES, FOR FINAL COUNT OF (8) 6X12 HCS AND  
(1) 9 X 18 HCS HYBRID CABLES.

**PROJECT NOTES:**

1. THIS IS AN UNMANNED TELECOMMUNICATION FACILITY AND NOT FOR HUMAN HABITATION:  
HANDICAPPED ACCESS IS NOT REQUIRED.  
POTABLE WATER OR SANITARY SERVICE IS NOT REQUIRED.  
NO OUTDOOR STORAGE OR ANY  
SOLID WASTE RECEPTACLES REQUIRED.
2. CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON THE JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACES THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.
3. DEVELOPMENT AND USE OF THE SITE WILL CONFORM TO ALL APPLICABLE CODES, ORDINANCES AND SPECIFICATIONS.
4. REFER TO STRUCTURAL ANALYSIS REPORT AND MOUNT ANALYSIS BY EFI GLOBAL INC. DATED JULY 10, 2020.

**CODE COMPLIANCE:**

CONNECTICUT STATE BUILDING CODE (CSBC).  
ANSI/TIA-222-G STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.  
NATIONAL ELECTRICAL CODE (NEC) FOR POWER AND GROUNDING REQUIREMENTS.  
OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA).  
NFPA - NATIONAL FIRE PROTECTION ASSOCIATION.

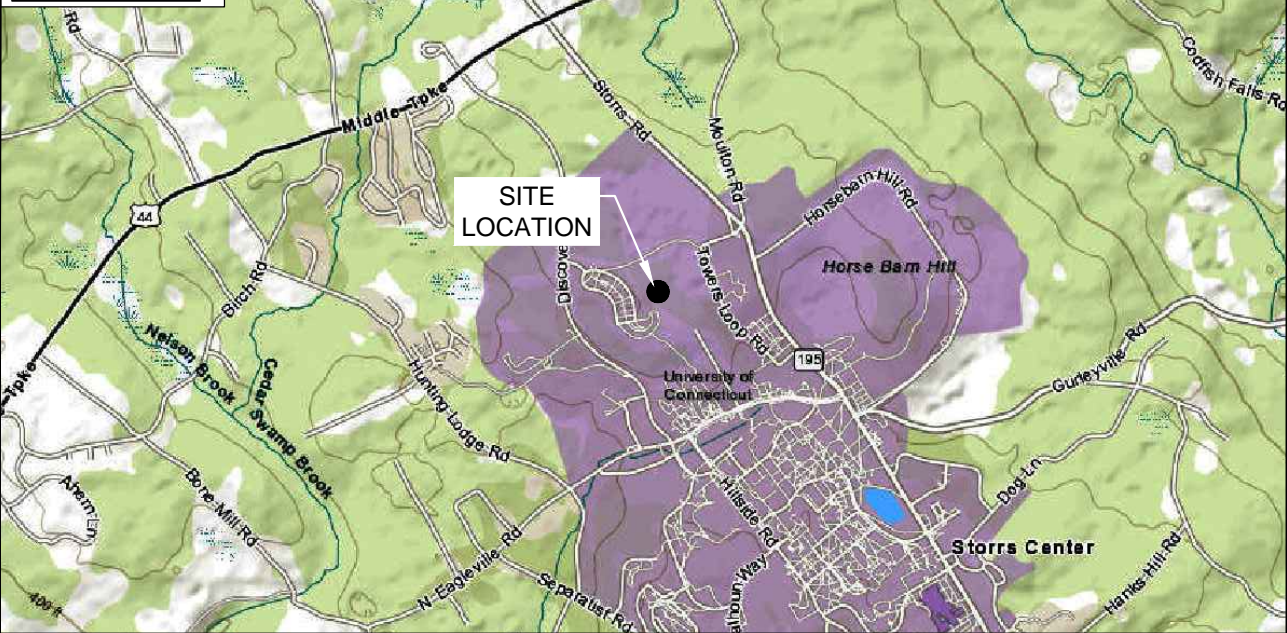
**APPROVALS:**

FSA CM	DATE
RF ENGINEER	DATE
FOPS	DATE
T-MOBILE ENGINEERING AND DEVELOPMENT	DATE
	DATE
	DATE

**SITE IMAGE:**



**VICINITY MAP:**



**PROJECT INFORMATION:**

ADDRESS: 82 NORTH EAGLEVILLE ROAD  
STORRS, CT 06268

STRUCTURE TYPE: LATTICE TOWER

COORDINATES: N 41.814537 / W -72.259742

TOWER HEIGHT: 245'-0" AGL

TOP OF T-MOBILE ANTENNAS ELEV: 236'-0" AGL

**PROJECT TEAM:**

APPLICANT: T-MOBILE NORTHEAST, LLC.  
35 GRIFFIN ROAD SOUTH  
BLOOMFIELD, CT 06002  
860-692-7100

LANDLORD: UNIVERSITY OF CONNECTICUT  
OFFICE OF UNIVERSITY PLANNING  
REAL ESTATE & RISK MANAGEMENT  
31 LEDOYT ROAD, UNIT 3094  
STORRS, CONNECTICUT 06269-3094  
ATTN: ROBERT J. SITKOWSKI,  
REAL ESTATE OFFICER  
ROBERT.SITKOWSKI@UCONN.EDU  
DESK: 860-486-3396 CELL: 860-803-7913

PROJECT MANAGER: NORTHEAST SITE SOLUTIONS  
420 MAIN STREET, BLDG 4  
STURBRIDGE, MA 01566  
SHELDON FREINCLE  
SHELDON@NORTHEASTSITESOLUTIONS.COM  
201-776-8521

CONSULTANTS: FORESITE LLC  
462 WALNUT ST  
NEWTON, MA 02460  
SAEED MOSSAVAT  
SMOSSAVAT@FORESITELLC.COM  
617-212-3123

**SHEET INDEX:**

T-1: TITLE SHEET  
N-1: GENERAL NOTES  
A-1: SITE PLAN  
A-2: ELEVATION AND ANTENNA PLANS  
A-3: ANTENNA AND EQUIPMENT SPECIFICATIONS  
E-1: ELECTRICAL DETAILS

**APPLICANT:**

**T-Mobile**

**T-MOBILE NORTHEAST LLC**

35 GRIFFIN ROAD SOUTH  
BLOOMFIELD, CT 06002  
860-692-7100

**PROJECT MANAGER**

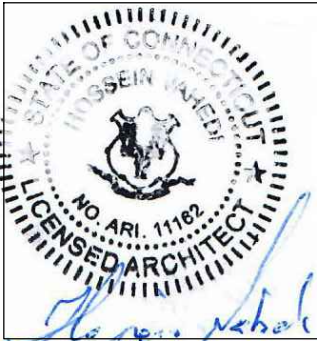
**NSS** NORTHEAST  
SITE SOLUTIONS  
Turnkey Wireless Development  
420 MAIN STREET, BLDG 4  
STURBRIDGE, MA 01566  
203-275-6669

**CONSULTANT:**

**FORESITE** LLC

Architects . Engineers . Surveyors

462 WALNUT STREET  
NEWTON, MA 02460  
617-212-3123



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REV	DESCRIPTION	DATE
A	PRELIMINARY	09/28/20
0	FINAL ISSUED	10/15/20

SITE NUMBER: CT11303B  
SITE NAME: UCONN  
SITE ADDRESS: 82 NORTH EAGLEVILLE ROAD  
STORRS, CT 06268

**SHEET TITLE:**

T-1: TITLE SHEET



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GENERAL NOTES:

1.

THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.
2.

THE ARCHITECT/ENGINEER HAS MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
3.

THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE CLIENT'S REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK.
5.

THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS.
6.

THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S / VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
7.

THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS DURING CONSTRUCTION.
8.

THE CONTRACTOR SHALL COMPLY WITH ALL PERTINENT SECTIONS OF THE BASIC STATE BUILDING CODE, LATEST EDITION, AND ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJEC
9.

THE CONTRACTOR SHALL NOTIFY THE CLIENT'S REPRESENTATIVE IN WRITING WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE CLIENT'S REPRESENTATIVE.
10.

THE WORK SHALL CONFORM TO THE CODES AND STANDARDS OF THE FOLLOWING AGENCIES AS FURTHER CITED HEREIN:
- A.

ASTM: AMERICAN SOCIETY FOR TESTING AND MATERIALS, AS PUBLISHED IN "COMPILATION OF ASTM STANDARDS BUILDING CODES" OR LATEST EDITION.
- B.

AWS: AMERICAN WELDING SOCIETY INC. AS PUBLISHED IN "STANDARD D1.1-08, STRUCTURAL WELDING CODE" OR LATEST EDITION.
- C.

AISC: AMERICAN INSTITUTE FOR STEEL CONSTRUCTION AS PUBLISHED IN "CODE FOR STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES"; "SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS" (LATEST EDITION).
11.

BOLTING:
- A.

BOLTS SHALL BE CONFORMING TO ASTM A325 HIGH STRENGTH, HOT DIP GALVANIZED WITH ASTM A153 HEAVY HEX TYPE NUTS.
- B.

BOLTS SHALL BE 3/4"Ø MINIMUM (UNLESS OTHERWISE NOTED)
- C.

ALL CONNECTIONS SHALL BE 2 BOLTS MINIMUM.
12.

FABRICATION:
- A.

FABRICATION OF STEEL SHALL CONFORM TO THE AISC AND AWS STANDARDS AND CODES (LATEST EDITION).
- B.

ALL STRUCTURAL STEEL SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 (LATEST EDITION), UNLESS OTHERWISE NOTED.
13.

ERECTION OF STEEL:
- A.

PROVIDE ALL ERECTION EQUIPMENT, BRACING, PLANKING, FIELD BOLTS, NUTS, WASHERS, DRIFT PINS, AND SIMILAR MATERIALS WHICH DO NOT FORM A PART OF THE COMPLETED CONSTRUCTION BUT ARE NECESSARY FOR ITS PROPER ERECTION.
- B.

ERECT AND ANCHOR ALL STRUCTURAL STEEL IN ACCORDANCE WITH AISC REFERENCE STANDARDS. ALL WORK SHALL BE ACCURATELY SET TO ESTABLISHED LINES AND ELEVATIONS AND RIGIDLY FASTENED IN PLACE WITH SUITABLE ATTACHMENTS TO THE CONSTRUCTION OF THE BUILDING.
- C.

TEMPORARY BRACING, GUYING AND SUPPORT SHALL BE PROVIDED TO KEEP THE STRUCTURE SAFE AND ALIGNED AT ALL TIMES DURING CONSTRUCTION, AND TO PREVENT DANGER TO PERSONS AND PROPERTY. CHECK ALL TEMPORARY LOADS AND STAY WITHIN SAFE CAPACITY OF ALL BUILDING COMPONENTS.
14.

ANTENNA INSTALLATION:
- A.

INSTALL ANTENNAS AS INDICATED ON DRAWINGS AND CLIENT'S REPRESENTATIVE SPECIFICATIONS.
- B.

INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.

- C.

INSTALL COAXIAL / FIBER CABLES AND TERMINATIONS BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTORS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS.
15.

ANTENNA AND COAXIAL / FIBER CABLE GROUNDING:
- A.

ALL EXTERIOR #6 GREEN GROUND WIRE "DAISY CHAIN" CONNECTIONS ARE TO BE WEATHER SEALED WITH ANDREWS CONNECTOR/SPLICE WEATHERPROOFING KIT TYPE #221213 OR EQUAL.
- B.

ALL COAXIAL / FIBER CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF COAXIAL / FIBER CABLE (NOT WITHIN BENDS).
16.

RELATED WORK, FURNISH THE FOLLOWING WORK AS SPECIFIED UNDER CONSTRUCTION DOCUMENTS, BUT COORDINATE WITH OTHER TRADES PRIOR TO BID:
- A.

FLASHING OF OPENING INTO OUTSIDE WALLS
- B.

SEALING AND CAULKING ALL OPENINGS
- C.

PAINTING
- D.

CUTTING AND PATCHING
17.

REQUIREMENTS OF REGULATORY AGENCIES:
- A.

FURNISH U.L. LISTED EQUIPMENT WHERE SUCH LABEL IS AVAILABLE. INSTALL IN CONFORMANCE WITH U.L. STANDARDS WHERE APPLICABLE.
- B.

INSTALL ANTENNA, ANTENNA CABLES, GROUNDING SYSTEM IN ACCORDANCE WITH DRAWINGS AND SPECIFICATION IN EFFECT AT PROJECT LOCATION AND RECOMMENDATIONS OF STATE AND LOCAL BUILDING CODES, AND SPECIAL CODES HAVING JURISDICTION OVER SPECIFIC PORTIONS OF WORK. THIS WORK INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:
- C.

TIA-EIA - 222 (LATEST EDITION). STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES.
- D.

FAA - FEDERAL AVIATION ADMINISTRATION ADVISORY CIRCULAR AC 70/7460-IH, OBSTRUCTION MARKING AND LIGHTING.
- E.

FCC - FEDERAL COMMUNICATIONS COMMISSION RULES AND REGULATIONS FORM 715, OBSTRUCTION MARKING AND LIGHTING SPECIFICATION FOR ANTENNA STRUCTURES AND FORM 715A, HIGH INTENSITY OBSTRUCTION LIGHTING SPECIFICATIONS FOR ANTENNA STRUCTURES.
- F.

AISC - AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 BOLTS (LATEST EDITION).
- G.

NEC - NATIONAL ELECTRICAL CODE - ON TOWER LIGHTING KITS.
- H.

UL - UNDERWRITER'S LABORATORIES APPROVED ELECTRICAL PRODUCTS.
- I.

IN ALL CASES, PART 77 OF THE FAA RULES AND PARTS 17 AND 22 OF THE FCC RULES ARE APPLICABLE AND IN THE EVENT OF CONFLICT, SUPERSEDE ANY OTHER STANDARDS OR SPECIFICATIONS.
- J.

2009 LIFE SAFETY CODE NFPA - 101.

APPLICANT:

**T-MOBILE NORTHEAST LLC**

35 GRIFFIN ROAD SOUTH  
BLOOMFIELD, CT 06002  
860-692-7100

**PROJECT MANAGER**

**NSS NORTHEAST**  
SITE SOLUTIONS  
*Turnkey Wireless Development*  
420 MAIN STREET, BLDG 4  
STURBRIDGE, MA 01566  
203-275-6669

CONSULTANT:

**Architects . Engineers . Surveyors**

462 WALNUT STREET  
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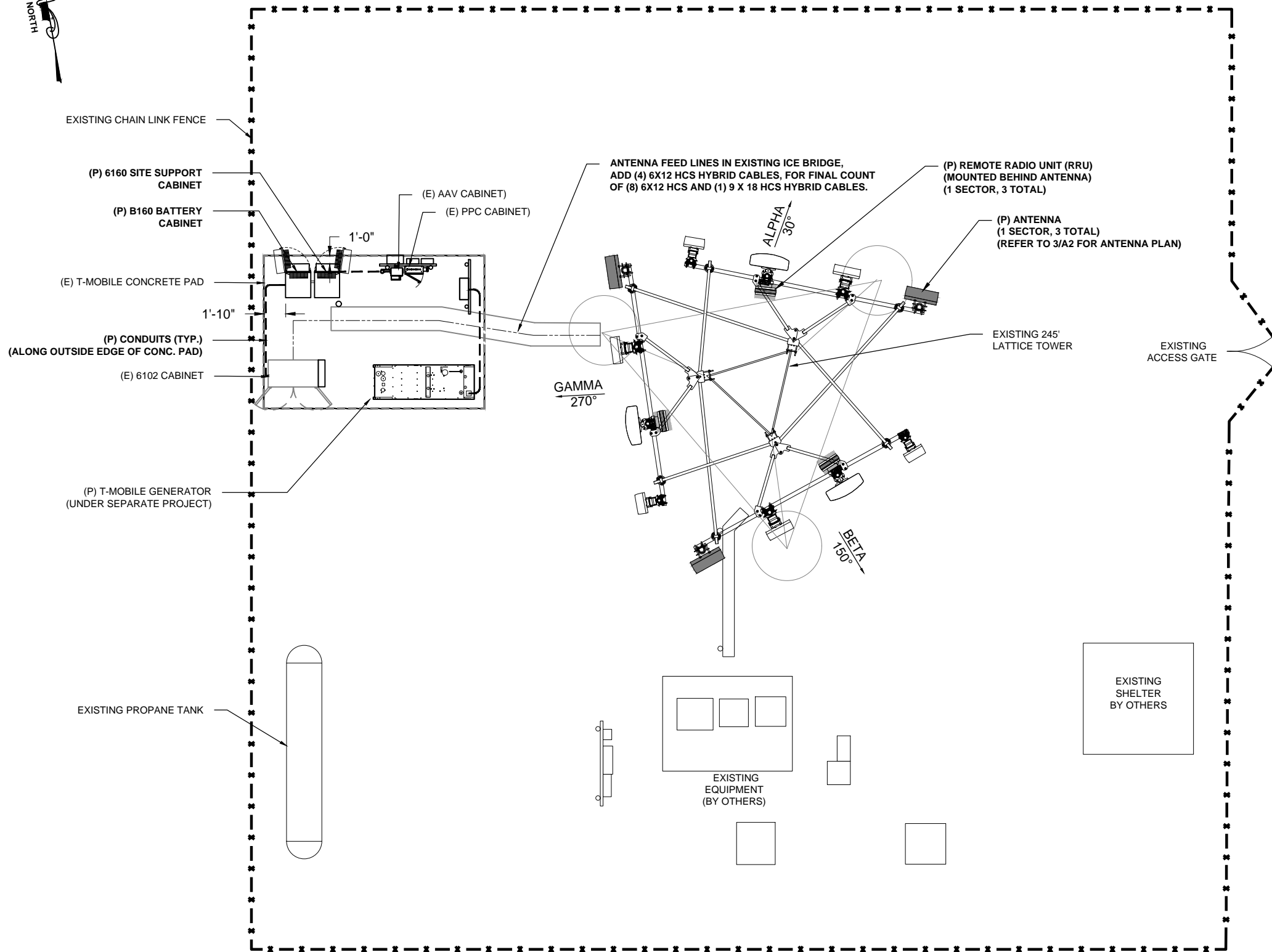
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SITE NAME: UCONN  
SITE ADDRESS: 82 NORTH EAGLEVILLE ROAD  
STORRS, CT 06268

SHEET TITLE:

N-1: GENERAL NOTES



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**SITE PLAN**  
SCALE: 1/8" = 1'-0"

1  
A-1

APPLICANT:  
**T-Mobile**  
**T-MOBILE NORTHEAST LLC**

35 GRIFFIN ROAD SOUTH  
BLOOMFIELD, CT 06002  
860-692-7100

PROJECT MANAGER  
**NSS** NORTHEAST  
SITE SOLUTIONS  
Turnkey Wireless Development  
420 MAIN STREET, BLDG 4  
STURBRIDGE, MA 01566  
203-275-6669

CONSULTANT:  
**FORESITE** LLC  
Architects . Engineers . Surveyors  
462 WALNUT STREET  
NEWTON, MA 02460  
617-212-3123



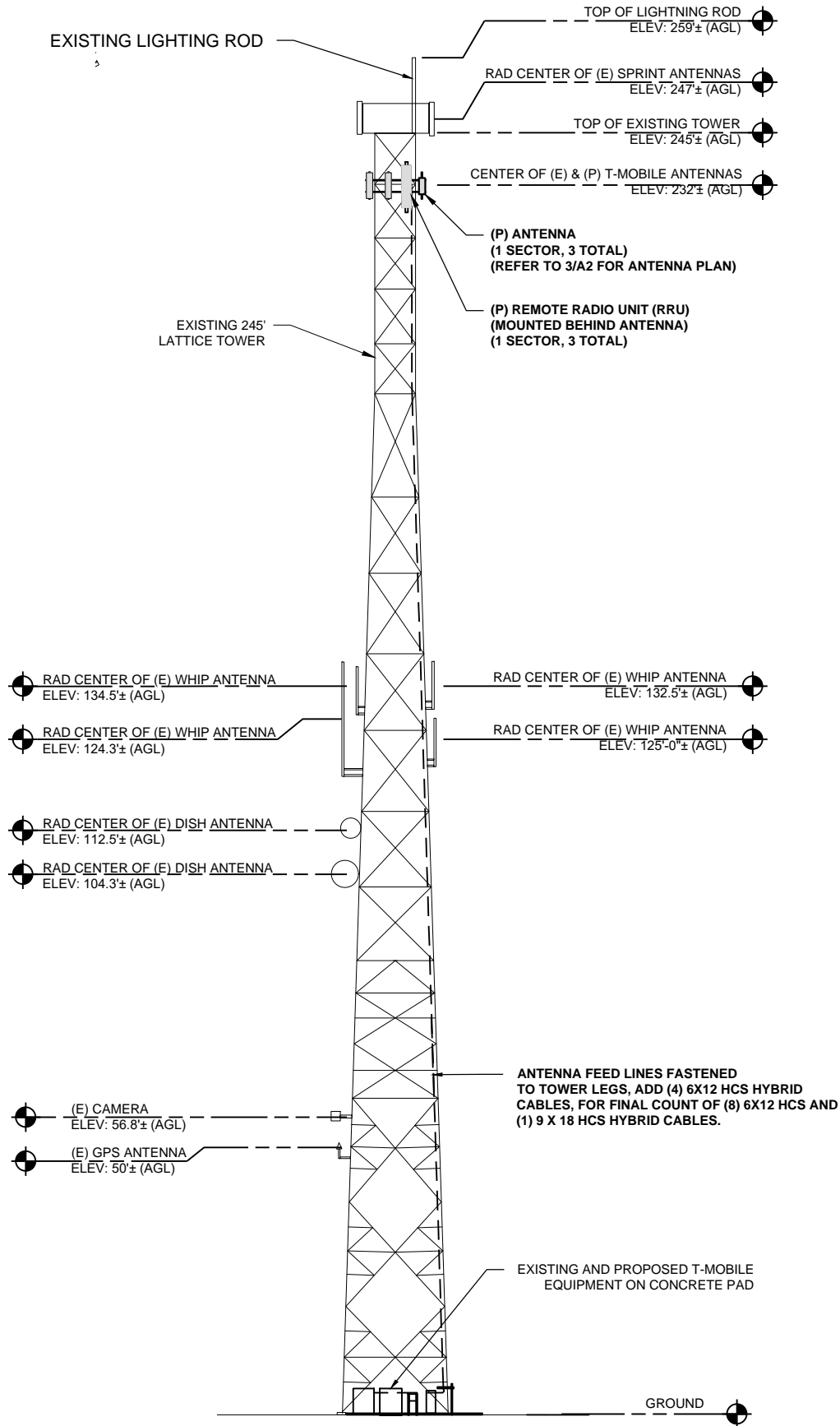
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REV	DESCRIPTION	DATE
A	PRELIMINARY	09/28/20
0	FINAL ISSUED	10/15/20

SITE NUMBER: CT11303B  
SITE NAME: UCONN  
SITE ADDRESS: 82 NORTH EAGLEVILLE ROAD  
STORRS, CT 06268

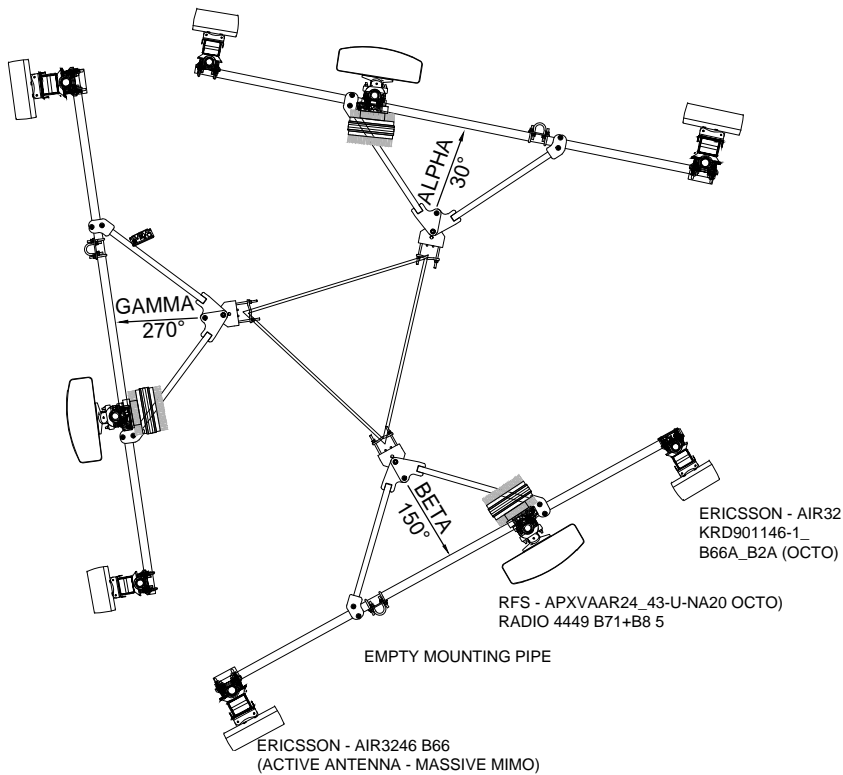
SHEET TITLE:  
A-1: SITE PLAN

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ELEVATION  
N.T.S.

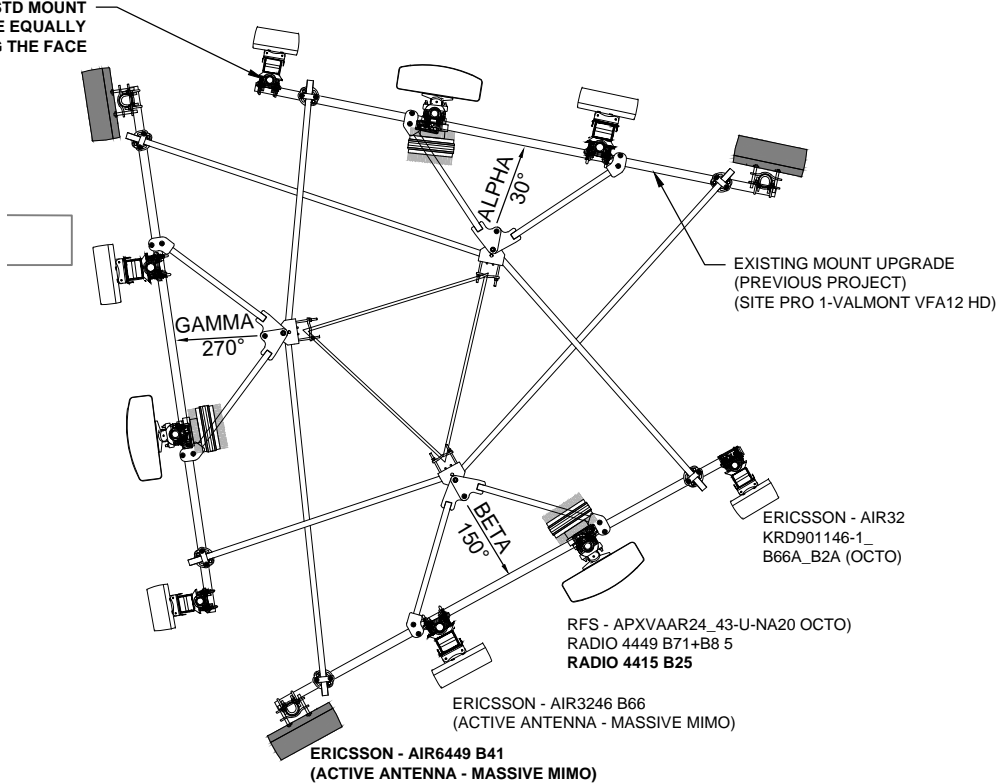
1  
A-2



EXISTING ANTENNA PLAN  
N.T.S.

2  
A-2

(4) 96" LONG 2.5 STD MOUNT  
PIPES ARE EQUALLY  
SPACED ALONG THE FACE



FINAL ANTENNA PLAN  
N.T.S.

3  
A-2

APPLICANT:  
**T-Mobile**  
**T-MOBILE NORTHEAST LLC**

35 GRIFFIN ROAD SOUTH  
BLOOMFIELD, CT 06002  
860-692-7100

PROJECT MANAGER  
**NSS** NORTHEAST  
SITE SOLUTIONS  
*Turnkey Wireless Development*  
420 MAIN STREET, BLDG 4  
STURBRIDGE, MA 01566  
203-275-6669

CONSULTANT:  
**FORESITE** LLC  
Architects . Engineers . Surveyors  
462 WALNUT STREET  
NEWTON, MA 02460  
617-212-3123



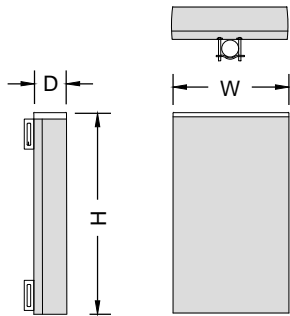
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SITE NAME: UCONN  
SITE ADDRESS: 82 NORTH EAGLEVILLE ROAD  
STORRS, CT 06268

SHEET TITLE:  
A-2: ELEVATION AND ANTENNA PLANS

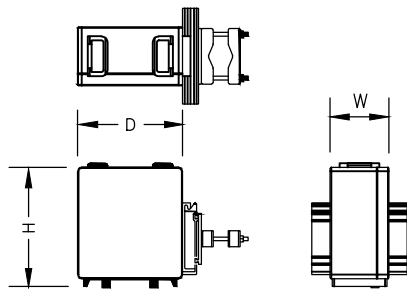
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ERICSSON ANTENNA SPECIFICATIONS	
MODEL #	AIR6449 B41
MANUF.	ERICSSON
HEIGHT	33.1"
WIDTH	20.5"
DEPTH	8.3"
WEIGHT	103 LB

ERICSSON ANTENNA  
N.T.S

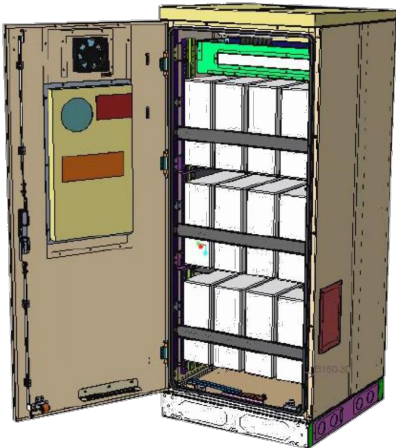
1  
A-3



REMOTE RADIO UNIT SPECIFICATIONS	
MODEL #	RADIO 4415 B25
MANUF.	ERICSSON
HEIGHT	14.9"
WIDTH	13.2"
DEPTH	5.4"
WEIGHT	46.3 LB

REMOTE RADIO UNIT  
N.T.S

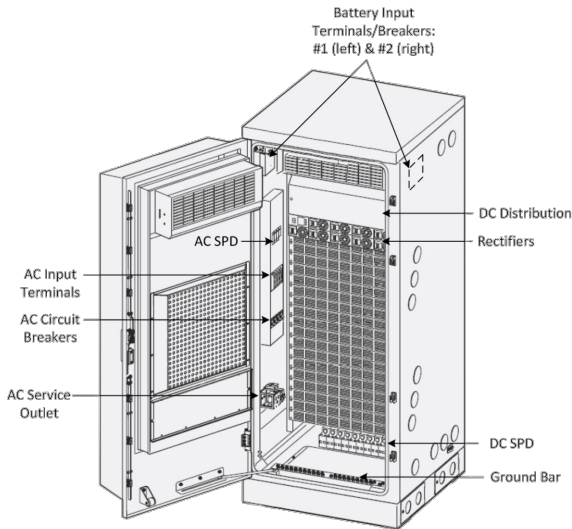
2  
A-3



BATTERY CABINET SPECIFICATIONS	
MODEL #	B160
MANUF.	ERICSSON
HEIGHT	63"
WIDTH	26"
DEPTH	26"
WEIGHT	1883 lbs

BATTERY CABINET  
N.T.S.

3  
A-3



SITE SUPPORT CABINET SPECIFICATIONS	
MODEL #	6160
MANUF.	ERICSSON
HEIGHT	63"
WIDTH	25.6"
DEPTH	33.5"
WEIGHT	605 lbs

SITE SUPPORT CABINET  
N.T.S.

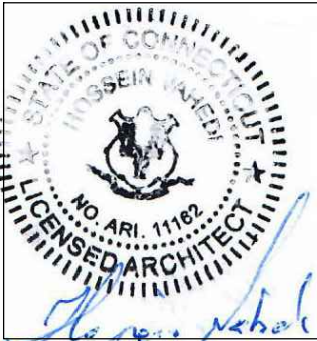
4  
A-3

APPLICANT:  
**T-Mobile**  
**T-MOBILE NORTHEAST LLC**

35 GRIFFIN ROAD SOUTH  
BLOOMFIELD, CT 06002  
860-692-7100

PROJECT MANAGER  
**NSS** **NORTHEAST**  
SITE SOLUTIONS  
*Turnkey Wireless Development*  
420 MAIN STREET, BLDG 4  
STURBRIDGE, MA 01566  
203-275-6669

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STORRS, CT 06268

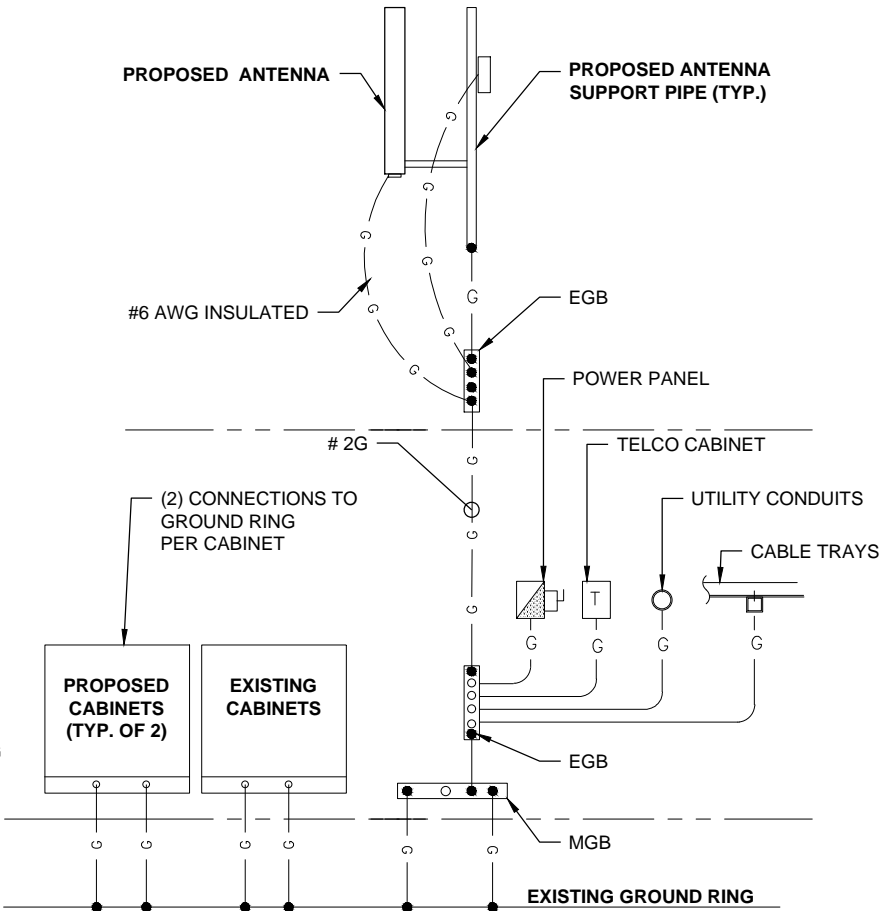
SHEET TITLE:  
A-3: EQUIPMENT SPECIFICATIONS



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**ELECTRICAL & GROUNDING NOTES**

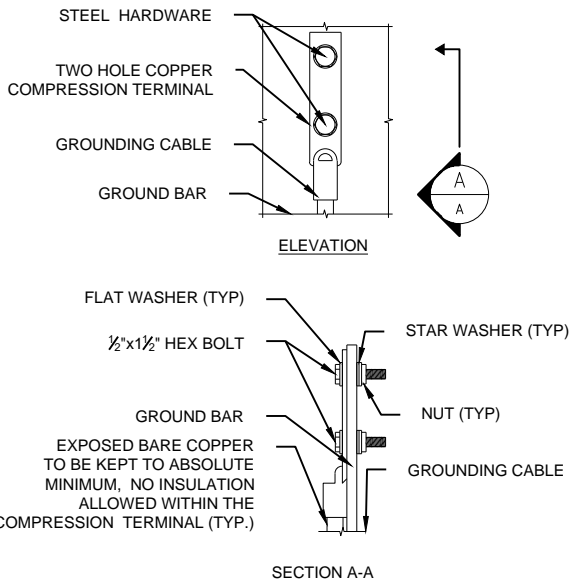
1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PRODUCED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) ND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLING BETWEEN ELECTRICAL ROOM AND PROPOSED CELL SITE ARE PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELECOM CABINET AND RBS CABINET AS INDICATED ON DRAWING A -1. PROVIDE FULL LENGTH PULL ROPE INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NAME 3R ENCLOSURE.
11. GROUNDING SHALL COMPLY WITH NEC ART. 250.
12. GROUNDING COAX CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURES COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
13. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSTALLATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE GROUND.
14. ALL GROUND CONNECTION TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
15. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AS RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY BOND ANY METER OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
16. CONNECTIONS TO MGB SHALL BE ARRANGED IN THREE MAIN GROUPS: SURGE PROCEDURES (COAXIAL CABLE GROUND KITS, TELCO AND POWER PANEL GROUND); (GROUNDING ELECTRODE RING OR BUILDING STEEL); NON-SURGING OBJECTS (EGB GROUND IN RBS UNIT).
17. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
18. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTION.
19. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.
20. BOND ANTENNA EGB'S AND MGB TO WATER MAIN.
21. TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION.
22. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
23. VERIFY PROPOSED SERVICE UPGRADE WITH LOCAL UTILITY COMPANY PRIOR TO CONSTRUCTION.



**GROUNDING RISER DIAGRAM**

N.T.S.

1  
E-1

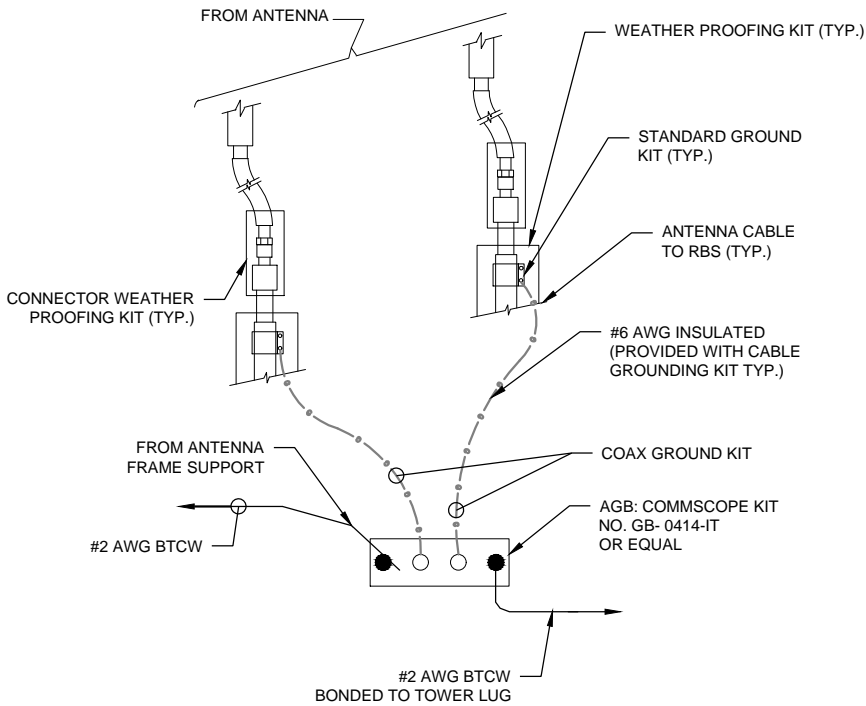


- NOTES:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
  2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

**GROUND BAR CONNECTIONS**

N.T.S.

3  
E-1



- NOTES:
- INSTALL CABLE GROUND KIT ABOVE HORIZONTAL BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO AGB/EGB

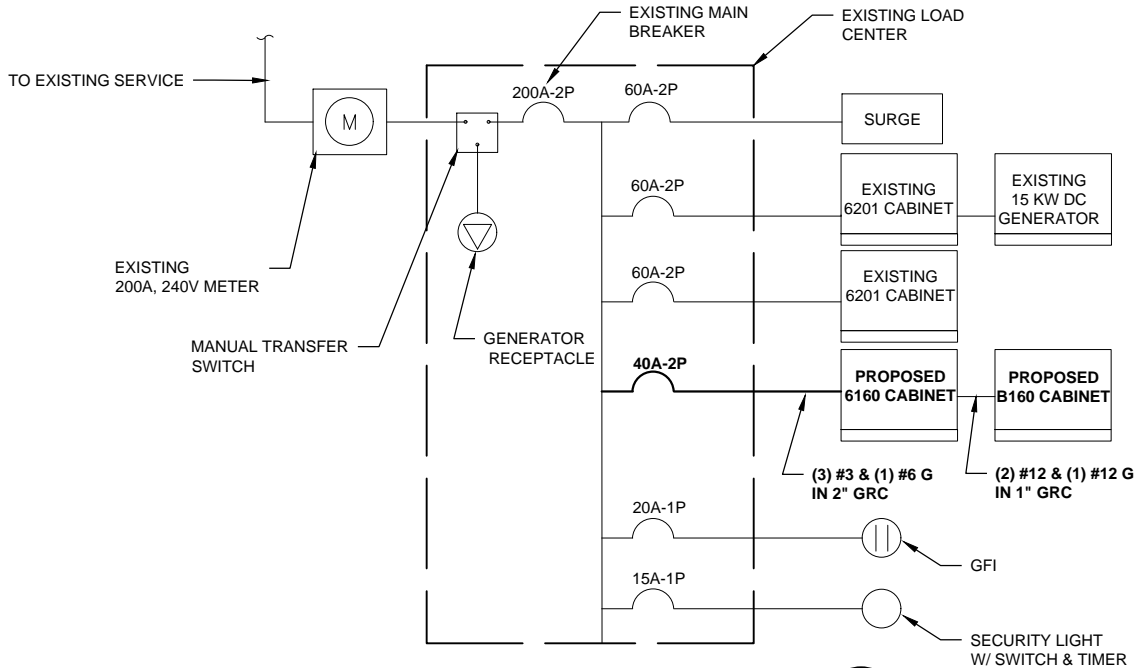
**ANTENNA CABLE GROUNDING**

N.T.S.

2  
E-1

**SPECIAL CONTRACTOR NOTES:**

CONTRACTOR TO VERIFY THE POWER FEED & PHASE OF METER BANK AND THAT THE EXISTING AND PROPOSED CONDUITS AND WIRE SIZES ARE ADEQUATE FOR THE PROPOSED LOADING IN ACCORDANCE WITH NEC AND INCLUDE ELECTRICAL UPGRADES IN THE SCOPE OF WORK AS REQUIRED.



**ONE LINE DIAGRAM**

SCALE: N.T.S.

4  
E-1

**APPLICANT:**

**T-Mobile**  
**T-MOBILE NORTHEAST LLC**

35 GRIFFIN ROAD SOUTH  
BLOOMFIELD, CT 06002  
860-692-7100

**PROJECT MANAGER**

**NSS** NORTHEAST  
SITE SOLUTIONS  
Turnkey Wireless Development  
420 MAIN STREET, BLDG 4  
STURBRIDGE, MA 01566  
203-275-6669

**CONSULTANT:**

**FORESITE** LLC

Architects . Engineers . Surveyors

462 WALNUT STREET  
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SITE NUMBER: CT11303B  
SITE NAME: UCONN  
SITE ADDRESS: 82 NORTH EAGLEVILLE ROAD  
STORRS, CT 06268

SHEET TITLE:  
E-1: GROUNDING AND  
ELECTRICAL DETAILS

# Exhibit D

**STRUCTURAL ANALYSIS REPORT REV.2**  
**SELF-SUPPORT**



Prepared For:



**T-Mobile Northeast, LLC**  
**35 Griffin Road South**  
**Bloomfield, CT 06002**



**Structure Rating**

<b>Tower:</b>	<b>Pass (96.9%)</b>
<b>Anchor Bolts:</b>	<b>Pass (26.0%)</b>
<b>Foundation:</b>	<b>Pass (71.9%)</b>

Sincerely,  
EFI Global, Inc.  
License No: PEC0001429

09/17/2020



Ahmet Colakoglu, PE  
Connecticut Professional Engineer  
License No: 27057

**Site ID: CT11303B**  
**Site Name: UCONN**  
**82 North Eagleville Road**  
**Storrs, CT 06268**

## **CONTENTS**

1.0 – SUBJECT AND REFERENCES

1.1 – STRUCTURE

2.0 – EXISTING AND PROPOSED APPURTENANCES

3.0 - CODES AND LOADING

4.0 - STANDARD CONDITIONS FOR ENGINEERING SERVICES ON EXISTING  
STRUCTURES

5.0 - ANALYSIS AND ASSUMPTIONS

6.0 – RESULTS AND CONCLUSION

APPENDIX

A – SOFTWARE OUTPUT

## 1.0 **SUBJECT AND REFERENCES**

The purpose of this analysis is to evaluate the structural capacity of the 245 ft. self-support tower located at 82 North Eagleville Road, Storrs, CT 06268 for the additions and alterations proposed by T-Mobile.

The structural analysis of the site is based on the following documents provided to EFI Global, Inc. (EFI):

- RFDS provided by T-Mobile, dated 09/10/2020.
- Construction Drawings prepared by Foresite, LLC, dated 2/27/2019.
- Tower Mapping Report prepared by HighTower Solutions, Inc., dated 6/25/2020.
- Structural Analysis Report prepared by Infinigy Engineering, dated 05/25/2018.

## 1.1 **STRUCTURE**

The subject structure is a 245 ft. tall self-support tower. Truss legs are X-Braced with single/double angles and solid round members throughout the length of the tower. The tower is 24 ft wide at the base and 4 ft at the top. Please refer to the software output in Appendix A for tower geometry, member sizes, and other details.

## 2.0 **EXISTING AND PROPOSED APPURTENANCES**

### **Existing Configuration of T-Mobile Appurtenances:**

<b>Rad Center (ft.)</b>	<b>Antennas &amp; Equipment</b>	<b>Coax</b>	<b>Mounts</b>
232.0	(3) Ericsson - AIR32 KRD901146-1_B66A_B2A (3) RFS - APXVAARR24_43-U-NA20 (3) Ericsson - AIR3246 B66 (3) Radio 4449 B71+B85	(1) 9X18 HCS (4) 6x12 HCS	(3) Sector Mounts

### **Proposed and Final Configuration of T-Mobile Appurtenances:**

<b>Rad Center (ft.)</b>	<b>Antennas &amp; Equipment</b>	<b>Coax</b>	<b>Mounts</b>
232.0	(3) Ericsson AIR32 KRD901146-1_B66A/B2A (3) RFS APXVAARR24_43-U-NA20 (3) Ericsson - AIR3246 B66 (3) Ericsson - AIR6449 B41 (3) Radio 4449 B71+B85*, (3) Radio 4415 B25*	(1) 9x18 HCS (8) 6x12 HCS	(3) Sector Mounts

**\*RRUs to be mounted behind antennas**



**Appurtenances by Others:**

<b>Rad Center (ft.)</b>	<b>Antennas &amp; Equipment</b>	<b>Coax</b>	<b>Mounts</b>
245.0	(3) APXVSPP18-C-A20 (3) RRH 2x50-800 (6) RRH 1900-4x45	(3) 1-1/4"	(1) Low Profile Platform Mount w/ Handrails
161.25	(1) Camera (1) TMA	(1) 0.4" (1) 1/4"	Leg Mounted
135.0	(2) 7' Omni	(2) 1/2"	(2) Standoff Mount
134.0	(1) 8' Whip	(1) 7/8"	(1) Standoff Mount
122.0	(1) 20' Omni	(1) 1-1/4"	(1) Standoff Mount
112.5	(1) 4' Grid Dish	(1) 0.4"	Leg Mounted
112.0	(1) 8' Omni	(1) 7/8"	(1) Standoff Mount
111.0	(1) 7' Omni	(1) 1/2"	(1) Standoff Mount
104.25	(1) Andrew D6E-6	(1) EW63	(1) Pipe Mount
72.0	(1) 18' Whip	(1) 7/8"	(1) Standoff Mount
70.75	(1) Camera	(1) 1.05"	Leg Mounted
49.0	(1) GPS	(1) 1/2"	(1) Standoff Mount

### 3.0 CODES AND LOADING

The tower was analyzed per *ANSI/TIA-222-G* as referenced by the *2018 Connecticut State Building Code* with all of the adopted Addendums and Supplements. The following wind loading was used in compliance with the standard for Mansfield, CT:

- Basic wind speed 101 mph without ice ( $W_0$ )
- Basic wind speed 50 mph with 1" escalating ice ( $W_i$ )
- Exposure Category C
- Topographic Category 1
- Structure Class II

The following load combinations were used with wind blowing at 0°, 30°, 45°, 60°, and 90° measured from a line normal to the face of the tower.

- $1.2 D + 1.6 W_0$
- $0.9 D + 1.6 W_0$
- $1.2 D + 1.0 D_i + 1.0 W_i$

D: Dead Load of structure and appurtenances

$W_0$ : Wind Load, without ice

$W_i$ : Wind Load, with ice

$D_i$ : Weight of Ice

#### **4.0 STANDARD CONDITIONS FOR ENGINEERING SERVICES ON EXISTING STRUCTURES**

The analysis is based on the information provided to EFI and is assumed to be current and correct. Unless otherwise noted, the structure and the foundation system are assumed to be in good condition, free of defects and can achieve theoretical strength.

It is assumed that the structure has been maintained and shall be maintained during its service. The superstructure and the foundation system are assumed to be designed with proper engineering practice and fabricated, constructed and erected in accordance with the design documents. EFI will accept no liability which may arise due to any existing deficiency in design, material, fabrication, erection, construction, etc. or lack of maintenance.

The analysis does not include a qualification of the mounts attached on the structure or their connections. The analysis is performed to verify the capacity of the main structural members, which is the current practice in the tower industry.

The analysis results presented in this report are only applicable for the previously mentioned existing and proposed additions and alterations. Any deviation of the proposed equipment and placement, etc., will require EFI to generate an additional structural analysis.

#### **5.0 ANALYSIS AND ASSUMPTIONS**

The tower was analyzed by utilizing tnxTower, a non-linear, three-dimensional, finite element-analysis software package, a product of Tower Numerics, Inc. Software output for this analysis is provided in Appendix A of this report.

## 6.0 **RESULTS AND CONCLUSION**

Based on a structural analysis per ANSI/TIA-222-G, the existing self-support tower is found to have **adequate** structural capacity for the proposed changes by T-Mobile. For the code specified load combinations and as a maximum, the tower diagonals from 230' to 232.6' are stressed to **96.9%** of their structural capacity. The tower legs, horizontals, and anchor bolts are stressed to **77.0%, 55.2%, and 26.0%** of their structural capacity, respectively.

The existing foundation is found to have **adequate** capacity for the proposed changes by T-Mobile. For the code specified load combinations and as a maximum, the foundation is stressed to **71.9%** of its structural capacity.

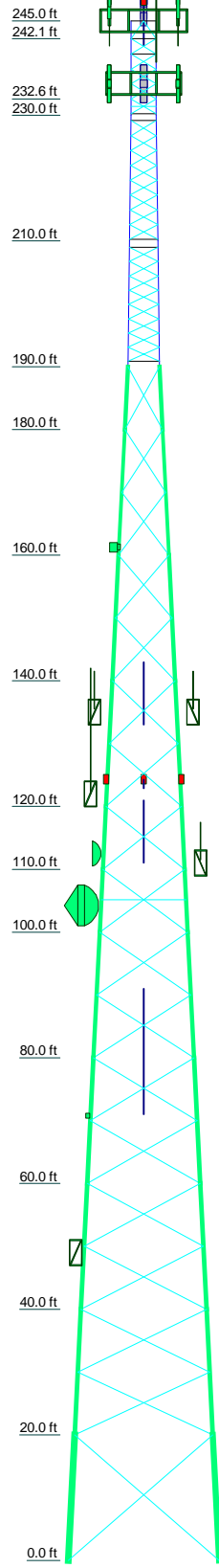
Therefore, the proposed additions and alterations by T-Mobile **can** be implemented as intended and with the conditions outlined in this report.

Should you have any questions about this report, please contact EFI at [telecom@efiglobal.com](mailto:telecom@efiglobal.com).

## **APPENDIX A**

### **SOFTWARE OUTPUT**

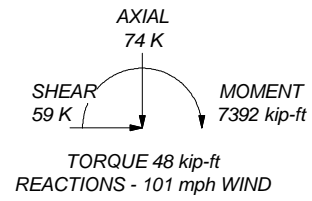
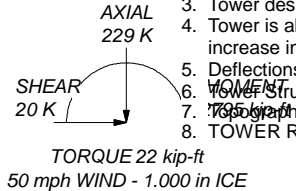
Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	
Legs																		
Leg Grade																		
Diagonals																		
Diagonal Grade																		
Top Girts																		
Bottom Girts																		
Sec. Horizontals																		
Face Width (ft)	24																	
# Panels @ (ft)	1 @ 20																	
Weight (K)	45.5																	



ALL REACTION  
ARE FACTOR

MAX. CORNER  
DOWN: 380  
SHEAR: 44

UPLIFT: -323 K  
SHEAR: 371



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Flash Beacon Lighting	247.5	RRUS 4415 B25	232
Lightning Rod 5/8" x 5'	245	RRUS 4415 B25	232
13.25'-P2x0.148	245	RRUS 4415 B25	232
APXVSP18-C-A20 w/ Mount Pipe	245	Sector Mount [SM 502-3]	232
APXVSP18-C-A20 w/ Mount Pipe	245	Knife Plate	230
APXVSP18-C-A20 w/ Mount Pipe	245	Knife Plate	230
RRH2X50-800	245	Knife Plate	230
RRH2X50-800	245	2.5'x1.5'x0.5' Camera	161.25
RRH2X50-800	245	11"x10"x6" TMA	161.25
RRH4X45-19	245	7' Omni	135
RRH4X45-19	245	7' Omni	135
RRH4X45-19	245	Side Arm Mount [SO 305-1]	135
RRH4X45-19	245	Side Arm Mount [SO 305-1]	135
RRH4X45-19	245	8' Omni	134
RRH4X45-19	245	Side Arm Mount [SO 311-1]	134
Platform Mount [LP 1201-1]	245	6"x8"0.25" Ice Bridge	124.5
Miscellaneous [NA 510-1]	245	6"x8"0.25" Ice Bridge	124.5
Side Arm Mount [SO 306-3]	245	6"x8"0.25" Ice Bridge	124.5
(3) 8'-P2x0.203	245	MKR-LTE-0IR Beacon	123.6
(3) 8'-P2x0.203	245	MKR-LTE-0IR Beacon	123.6
(3) 8'-P2x0.203	245	MKR-LTE-0IR Beacon	123.6
AIR 32 B2a/B66Aa w/ Mount Pipe	232	1.5'-P1x0.133	123.6
AIR 32 B2a/B66Aa w/ Mount Pipe	232	1.5'-P1x0.133	123.6
AIR 32 B2a/B66Aa w/ Mount Pipe	232	1.5'-P1x0.133	123.6
APXVAARR24_43-U-NA20 w/ Mount Pipe	232	20' Omni	122
APXVAARR24_43-U-NA20 w/ Mount Pipe	232	Side Arm Mount [SO 602-1]	122
APXVAARR24_43-U-NA20 w/ Mount Pipe	232	4' Grid Dish	112.5
APXVAARR24_43-U-NA20 w/ Mount Pipe	232	Side Arm Mount [SO 311-1]	112
AIR 3246 B66 w/ Mount Pipe	232	8' Omni	112
AIR 3246 B66 w/ Mount Pipe	232	Side Arm Mount [SO 305-1]	111
AIR 3246 B66 w/ Mount Pipe	232	7' Omni	111
Ericsson AIR6449 B41 w/ Mount Pipe	232	Pipe Mount [PM 601-1]	104.25
Ericsson AIR6449 B41 w/ Mount Pipe	232	Andrew D6E-6	104.25
Ericsson AIR6449 B41 w/ Mount Pipe	232	18"x2.5" Omni/Whip	72
Radio 4449 B71+B85_T-Mobile	232	Side Arm Mount [SO 308-1]	72
Radio 4449 B71+B85_T-Mobile	232	16"x15"x9" Camera	70.75
Radio 4449 B71+B85_T-Mobile	232	Side Arm Mount [SO 203-1]	49
Radio 4449 B71+B85_T-Mobile	232	GPS	49

SYMBOL LIST


MARK	SIZE	MARK	SIZE
A	Pirol 105245	F	SR 7/8
B	2L3 1/2x3 1/2x5/16x3/8	G	SR 3/4
C	6x3/4	H	L3x3x3/16
D	SR 1	I	1 @ 2.875
E	N.A.		

MATERIAL STRENGTH

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

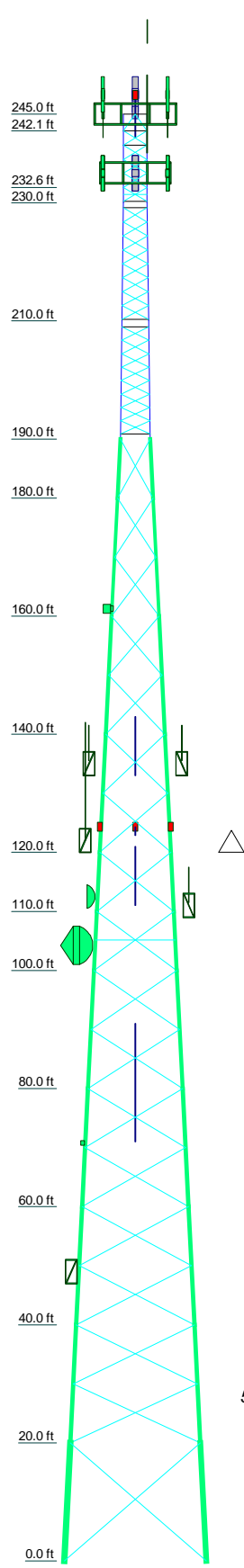
TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 101 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Wind is Structure Class II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TOWER RATING: 96.9%

**EFI Global, Inc.**  
1117 Perimeter Center West, Suite E500  
Atlanta, GA 30338  
Phone: (770) 693-0835  
FAX:

**Job: CT11303B**  
**Project: 049.00394 - 2075011**  
Client: Foresite LLC  
Code: TIA-222-G  
Path:  
Drawn by: Ahmet Colakoglu  
Date: 09/17/20  
App'd:  
Scale: NTS  
Dwg No. E-1

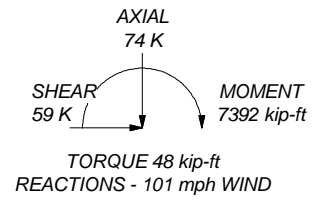
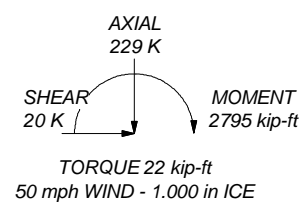
Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	
Legs																		
Leg Grade																		
Diagonals																		
Diagonal Grade																		
Top Girts																		
Bottom Girts																		
Sec. Horizontals																		
Face Width (ft)	24																	
# Panels @ (ft)	1 @ 20																	
Weight (K)	45.5																	



ALL REACTIONS  
ARE FACTORED

MAX. CORNER REACTIONS AT BASE:  
DOWN: 380 K  
SHEAR: 44 K

UPLIFT: -323 K  
SHEAR: 37 K



### SYMBOL LIST


MARK	SIZE	MARK	SIZE
A	Pirol 105245	F	SR 7/8
B	2L3 1/2x3 1/2x5/16x3/8	G	SR 3/4
C	6x3/4	H	L3x3x3/16
D	SR 1	I	1 @ 2.875
E	N.A.		

### MATERIAL STRENGTH

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

### TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 101 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TOWER RATING: 96.9%

**EFI Global, Inc.**  
1117 Perimeter Center West, Suite E500  
Atlanta, GA 30338  
Phone: (770) 693-0835  
FAX:

Job: <b>CT11303B</b>		
Project: <b>049.00394 - 2075011</b>		
Client: <b>Foresite LLC</b>	Drawn by: <b>Ahmet Colakoglu</b>	App'd:
Code: <b>TIA-222-G</b>	Date: <b>09/17/20</b>	Scale: <b>NTS</b>
Path:		Dwg No. <b>E-1</b>

<b>tnxTower</b>  <b>EFI Global, Inc.</b> 1117 Perimeter Center West, Suite E500 Atlanta, GA 30338 Phone: (770) 693-0835 FAX:	<b>Job</b>  CT11303B	<b>Page</b>  1 of 42
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	<b>Client</b>  Foresite LLC	<b>Designed by</b>  Ahmet Colakoglu

## Tower Input Data

The main tower is a 3x free standing tower with an overall height of 245.000 ft above the ground line.

The base of the tower is set at an elevation of 0.000 ft above the ground line.

The face width of the tower is 4.000 ft at the top and 24.000 ft at the base.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

Tower is located in Tolland County, Connecticut.

Basic wind speed of 101 mph.

Structure Class II.

Exposure Category C.

Topographic Category 1.

Crest Height 0.000 ft.

Nominal ice thickness of 1.000 in.

Ice thickness is considered to increase with height.

Ice density of 56.000 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50.000 °F.

Deflections calculated using a wind speed of 60 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in tower member design is 1.

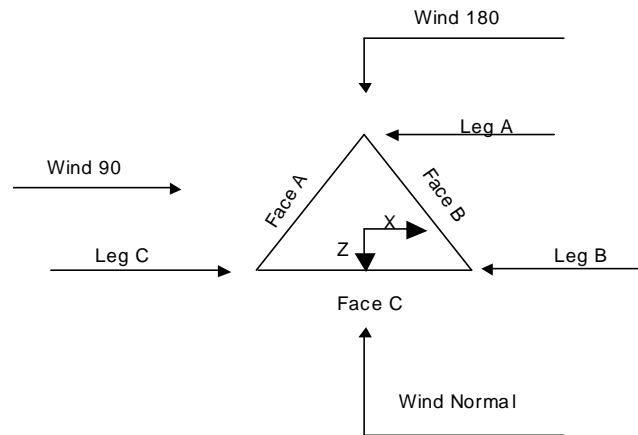
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Options

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



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**Triangular Tower**

## Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	245.000-242.125			4.000	1	2.875
T2	242.125-239.746			4.000	1	2.379
T3	239.746-232.608			4.000	1	7.138
T4	232.608-230.000			4.000	1	2.608
T5	230.000-210.000			4.000	1	20.000
T6	210.000-190.000			4.500	1	20.000
T7	190.000-180.000			5.000	1	10.000
T8	180.000-160.000			6.000	1	20.000
T9	160.000-140.000			8.000	1	20.000
T10	140.000-120.000			10.000	1	20.000
T11	120.000-110.000			12.000	1	10.000
T12	110.000-100.000			13.000	1	10.000
T13	100.000-80.000			14.000	1	20.000
T14	80.000-60.000			16.000	1	20.000
T15	60.000-40.000			18.000	1	20.000
T16	40.000-20.000			20.000	1	20.000
T17	20.000-0.000			22.000	1	20.000

## Tower Section Geometry (cont'd)

<b><i>tnxTower</i></b>  <b><i>EFI Global, Inc.</i></b> 1117 Perimeter Center West, Suite E500 Atlanta, GA 30338 Phone: (770) 693-0835 FAX:	<b>Job</b>	CT11303B	<b>Page</b>	3 of 42
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<i>Tower Section</i>	<i>Tower Elevation</i>	<i>Diagonal Spacing</i>	<i>Bracing Type</i>	<i>Has K Brace End Panels</i>	<i>Has Horizontals</i>	<i>Top Girt Offset</i>	<i>Bottom Girt Offset</i>
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
T1	245.000-242.125	2.875	K Brace Down	No	Yes	0.000	0.000
T2	242.125-239.746	2.379	X Brace	No	No	0.000	0.000
T3	239.746-232.608	2.379	X Brace	No	No	0.000	0.000
T4	232.608-230.000	2.379	X Brace	No	Yes	0.000	2.750
T5	230.000-210.000	2.362	X Brace	No	No	10.500	2.750
T6	210.000-190.000	2.276	X Brace	No	No	12.000	9.500
T7	190.000-180.000	10.000	X Brace	No	No	0.000	0.000
T8	180.000-160.000	10.000	X Brace	No	No	0.000	0.000
T9	160.000-140.000	10.000	X Brace	No	No	0.000	0.000
T10	140.000-120.000	10.000	X Brace	No	No	0.000	0.000
T11	120.000-110.000	10.000	X Brace	No	No	0.000	0.000
T12	110.000-100.000	10.000	X Brace	No	Yes	0.000	0.000
T13	100.000-80.000	10.000	X Brace	No	No	0.000	0.000
T14	80.000-60.000	10.000	X Brace	No	No	0.000	0.000
T15	60.000-40.000	10.000	X Brace	No	No	0.000	0.000
T16	40.000-20.000	10.000	X Brace	No	No	0.000	0.000
T17	20.000-0.000	20.000	X Brace	No	No	0.000	0.000

### Tower Section Geometry (cont'd)

<i>Tower Elevation</i>	<i>Leg Type</i>	<i>Leg Size</i>	<i>Leg Grade</i>	<i>Diagonal Type</i>	<i>Diagonal Size</i>	<i>Diagonal Grade</i>
<i>ft</i>						
T1	Solid Round	1 1/2	A572-50	Solid Round	3/4	A572-50
245.000-242.125			(50 ksi)			(50 ksi)
T2	Solid Round	1 1/2	A572-50	Solid Round	3/4	A572-50
242.125-239.746			(50 ksi)			(50 ksi)
T3	Solid Round	1 1/2	A572-50	Solid Round	3/4	A572-50
239.746-232.608			(50 ksi)			(50 ksi)
T4	Solid Round	1 1/2	A572-50	Solid Round	3/4	A572-50
232.608-230.000			(50 ksi)			(50 ksi)
T5	Solid Round	2	A572-50	Solid Round	7/8	A572-50
230.000-210.000			(50 ksi)			(50 ksi)
T6	Solid Round	2 1/2	A572-50	Solid Round	1	A572-50
210.000-190.000			(50 ksi)			(50 ksi)
T7	Truss Leg	Pirol 105245	A572-50	Equal Angle	L2 1/2x2 1/2x3/16	A36
190.000-180.000			(50 ksi)			(36 ksi)
T8	Truss Leg	Pirol 105217	A572-50	Equal Angle	L2 1/2x2 1/2x3/16	A36
180.000-160.000			(50 ksi)			(36 ksi)
T9	Truss Leg	Pirol 105218	A572-50	Equal Angle	L2 1/2x2 1/2x3/16	A36
160.000-140.000			(50 ksi)			(36 ksi)
T10	Truss Leg	Pirol 105218	A572-50	Equal Angle	L3x3x3/16	A36
140.000-120.000			(50 ksi)			(36 ksi)
T11	Truss Leg	Pirol 105219	A572-50	Equal Angle	L3x3x5/16	A36
120.000-110.000			(50 ksi)			(36 ksi)
T12	Truss Leg	Pirol 105219	A572-50	Equal Angle	L3x3x5/16	A36
110.000-100.000			(50 ksi)			(36 ksi)
T13	Truss Leg	Pirol 105219	A572-50	Equal Angle	L3x3x5/16	A36
100.000-80.000			(50 ksi)			(36 ksi)
T14	Truss Leg	Pirol 105220	A572-50	Equal Angle	L3 1/2x3 1/2x5/16	A36
80.000-60.000			(50 ksi)			(36 ksi)
T15	Truss Leg	Pirol 105220	A572-50	Equal Angle	L3 1/2x3 1/2x5/16	A36
60.000-40.000			(50 ksi)			(36 ksi)
T16	Truss Leg	Pirol 105220	A572-50	Equal Angle	L4x4x5/16	A36
40.000-20.000			(50 ksi)			(36 ksi)
T17 20.000-0.000	Truss Leg	Pirol 112738	A572-50	Double Angle	2L3 1/2x3 1/2x5/16x3/8	A36

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<i>Tower Elevation ft</i>	<i>Leg Type</i>	<i>Leg Size</i>	<i>Leg Grade</i>	<i>Diagonal Type</i>	<i>Diagonal Size</i>	<i>Diagonal Grade</i>
			(50 ksi)			(36 ksi)

### Tower Section Geometry (cont'd)

<i>Tower Elevation ft</i>	<i>Top Girt Type</i>	<i>Top Girt Size</i>	<i>Top Girt Grade</i>	<i>Bottom Girt Type</i>	<i>Bottom Girt Size</i>	<i>Bottom Girt Grade</i>
T1 245.000-242.125	Flat Bar	6x3/4	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T2 242.125-239.746	Solid Round	1	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T4 232.608-230.000	Solid Round		A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T5 230.000-210.000	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T6 210.000-190.000	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)

### Tower Section Geometry (cont'd)

<i>Tower Elevation ft</i>	<i>No. of Mid Girts</i>	<i>Mid Girt Type</i>	<i>Mid Girt Size</i>	<i>Mid Girt Grade</i>	<i>Horizontal Type</i>	<i>Horizontal Size</i>	<i>Horizontal Grade</i>
T1 245.000-242.125	None	Solid Round		A572-50 (50 ksi)	Solid Round	Dummy 0 Number	A572-50 (50 ksi)

### Tower Section Geometry (cont'd)

<i>Tower Elevation ft</i>	<i>Secondary Horizontal Type</i>	<i>Secondary Horizontal Size</i>	<i>Secondary Horizontal Grade</i>	<i>Inner Bracing Type</i>	<i>Inner Bracing Size</i>	<i>Inner Bracing Grade</i>
T4 232.608-230.000	Solid Round	3/4	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T12 110.000-100.000	Equal Angle	L3x3x3/16	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

### Tower Section Geometry (cont'd)

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<i>Tower Elevation</i>	<i>Gusset Area (per face)</i>	<i>Gusset Thickness</i>	<i>Gusset Grade</i>	<i>Adjust. Factor A<sub>f</sub></i>	<i>Adjust. Factor A<sub>r</sub></i>	<i>Weight Mult.</i>	<i>Double Angle Stitch Bolt Spacing Diagonals in</i>	<i>Double Angle Stitch Bolt Spacing Horizontals in</i>	<i>Double Angle Stitch Bolt Spacing Redundants in</i>
<i>ft</i>	<i>ft<sup>2</sup></i>	<i>in</i>							
T1 245.000-242.1 25	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T2 242.125-239.7 46	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T3 239.746-232.6 08	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T4 232.608-230.0 00	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T5 230.000-210.0 00	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T6 210.000-190.0 00	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T7 190.000-180.0 00	0.000	0.000	A36 (36 ksi)	1.03	1	1.05	36.000	36.000	36.000
T8 180.000-160.0 00	0.000	0.000	A36 (36 ksi)	1.03	1	1.05	36.000	36.000	36.000
T9 160.000-140.0 00	0.000	0.000	A36 (36 ksi)	1.03	1	1.05	36.000	36.000	36.000
T10 140.000-120.0 00	0.000	0.000	A36 (36 ksi)	1.03	1	1.05	36.000	36.000	36.000
T11 120.000-110.0 00	0.000	0.000	A36 (36 ksi)	1.03	1	1.05	36.000	36.000	36.000
T12 110.000-100.0 00	0.000	0.000	A36 (36 ksi)	1.03	1	1.05	36.000	36.000	36.000
T13 100.000-80.00 0	0.000	0.000	A36 (36 ksi)	1.03	1	1.05	36.000	36.000	36.000
T14 80.000-60.000	0.000	0.000	A36 (36 ksi)	1.03	1	1.05	36.000	36.000	36.000
T15 60.000-40.000	0.000	0.000	A36 (36 ksi)	1.03	1	1.05	36.000	36.000	36.000
T16 40.000-20.000	0.000	0.000	A36 (36 ksi)	1.03	1	1.05	36.000	36.000	36.000
T17 20.000-0.000	0.000	0.000	A36 (36 ksi)	1.03	1	1.05	84.500	36.000	36.000

## Tower Section Geometry (cont'd)

*K Factors<sup>1</sup>*

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<i>Tower Elevation</i>	<i>Calc K Single Angles</i>	<i>Calc K Solid Rounds</i>	<i>Legs</i>	<i>X Brace Diags X Y</i>	<i>K Brace Diags X Y</i>	<i>Single Diags X Y</i>	<i>Girts X Y</i>	<i>Horiz. X Y</i>	<i>Sec. Horiz. X Y</i>	<i>Inner Brace X Y</i>
<i>ft</i>										
T1 245.000-242.1	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 242.125-239.7	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 239.746-232.6	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 232.608-230.0	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 230.000-210.0	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 210.000-190.0	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T7 190.000-180.0	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T8 180.000-160.0	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T9 160.000-140.0	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T10 140.000-120.0	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T11 120.000-110.0	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T12 110.000-100.0	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T13 100.000-80.000	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T14 80.000-60.000	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T15 60.000-40.000	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T16 40.000-20.000	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T17 20.000-0.000	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

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

## Tower Section Geometry (cont'd)

<i>Truss-Leg K Factors</i>	
<i>Truss-Legs Used As Leg Members</i>	<i>Truss-Legs Used As Inner Members</i>

<b><i>tnxTower</i></b>  <b><i>EFI Global, Inc.</i></b> 1117 Perimeter Center West, Suite E500 Atlanta, GA 30338 Phone: (770) 693-0835 FAX:	<b>Job</b>	CT11303B	<b>Page</b>	7 of 42
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<i>Tower Elevation ft</i>	<i>Leg Panels</i>	<i>X Brace Diagonals</i>	<i>Z Brace Diagonals</i>	<i>Leg Panels</i>	<i>X Brace Diagonals</i>	<i>Z Brace Diagonals</i>
T7 190.000-180.000	1	0.5	0.85	1	0.5	0.85
T8 180.000-160.000	1	0.5	0.85	1	0.5	0.85
T9 160.000-140.000	1	0.5	0.85	1	0.5	0.85
T10 140.000-120.000	1	0.5	0.85	1	0.5	0.85
T11 120.000-110.000	1	0.5	0.85	1	0.5	0.85
T12 110.000-100.000	1	0.5	0.85	1	0.5	0.85
T13 100.000-80.000	1	0.5	0.85	1	0.5	0.85
T14 80.000-60.000	1	0.5	0.85	1	0.5	0.85
T15 60.000-40.000	1	0.5	0.85	1	0.5	0.85
T16 40.000-20.000	1	0.5	0.85	1	0.5	0.85
T17 20.000-0.000	1	0.5	0.85	1	0.5	0.85

### Tower Section Geometry (cont'd)

<i>Tower Elevation ft</i>	<i>Leg</i>		<i>Diagonal</i>		<i>Top Girt</i>		<i>Bottom Girt</i>		<i>Mid Girt</i>		<i>Long Horizontal</i>		<i>Short Horizontal</i>	
	<i>Net Width Deduct in</i>	<i>U</i>	<i>Net Width Deduct in</i>	<i>U</i>	<i>Net Width Deduct in</i>	<i>U</i>	<i>Net Width Deduct in</i>	<i>U</i>	<i>Net Width Deduct in</i>	<i>U</i>	<i>Net Width Deduct in</i>	<i>U</i>	<i>Net Width Deduct in</i>	<i>U</i>
T1 245.000-242.125	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T2 242.125-239.746	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	1
T3 239.746-232.608	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T4 232.608-230.000	0.000	1	0.000	0.75	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T5 230.000-210.000	0.000	1	0.000	0.75	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1

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Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T6 210.000-190.000	0.000	1	0.000	0.75	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T7 190.000-180.000	0.000	1	0.000	0.75	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	1
T8 180.000-160.000	0.000	1	0.000	0.75	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T9 160.000-140.000	0.000	1	0.000	0.75	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T10 140.000-120.000	0.000	1	0.000	0.75	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T11 120.000-110.000	0.000	1	0.000	0.75	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T12 110.000-100.000	0.000	1	0.000	0.75	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T13 100.000-80.000	0.000	1	0.000	0.75	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T14 80.000-60.000	0.000	1	0.000	0.75	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T15 60.000-40.000	0.000	1	0.000	0.75	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T16 40.000-20.000	0.000	1	0.000	0.75	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T17 20.000-0.000	0.000	1	0.000	0.75	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1

### Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 245.000-242.125	Sleeve DS	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T2 242.125-239.746	Sleeve DS	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T3 239.746-232.608	Sleeve DS	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T4 232.608-230.000	Sleeve DS	0.625 A325N	5	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0

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Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T5 230.000-210.0 00	Sleeve DS	0.750 A325N	5	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T6 210.000-190.0 00	Flange	1.000 A325N	6	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T7 190.000-180.0 00	Flange	1.000 A325N	6	1.000 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T8 180.000-160.0 00	Flange	1.000 A325N	6	1.000 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T9 160.000-140.0 00	Flange	1.000 A325N	6	1.000 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T10 140.000-120.0 00	Flange	1.250 A325N	6	1.000 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T11 120.000-110.0 00	Flange	0.000 A325N	0	1.250 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T12 110.000-100.0 00	Flange	1.250 A325N	6	1.250 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.500 A325N	2
T13 100.000-80.00 0	Flange	1.250 A325N	6	1.250 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T14 80.000-60.000	Flange	1.250 A325N	6	1.250 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T15 60.000-40.000	Flange	1.250 A325N	6	1.250 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T16 40.000-20.000	Flange	1.250 A325N	12	1.250 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T17 20.000-0.000	Flange	0.000 A687	0	1.000 A325N	2	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0

## Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
** 245' **													
T-Brackets	A	No	No	Af (CaAa)	245.000 - 0.000	-8.000	0.4	1	1	1.000	1.000		3.650
T-Brackets	C	No	No	Af (CaAa)	245.000 - 0.000	-8.000	0.45	1	1	1.000	1.000		3.650
Waveguide	B	No	No	Af (CaAa)	245.000 - 0.000	0.000	0.45	1	1	2.000	2.000		3.650
***Leg A***													
(1) 9x18 + (5) 6x12	A	No	No	Ar (CaAa)	235.000 - 0.000	-8.000	0.4	6	6	0.500 1.660	1.660		2.400
***Leg C***													
LDF6-50A(1-	C	No	No	Ar (CaAa)	124.250 -	-8.000	0.4	4	4	1.550	1.550		0.660



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Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1/4")					0.000								
LDF6-50A(1-1/4")	C	No	No	Ar (CaAa)	245.000 - 124.250	-8.000	0.4	3	3	1.550	1.550		0.660
LDF4-50A(1/2")	C	No	No	Ar (CaAa)	112.500 - 0.000	-8.000	0.42	4	2	0.630	0.630		0.150
LDF4-50A(1/2")	C	No	No	Ar (CaAa)	135.500 - 112.500	-8.000	0.42	2	2	0.630	0.630		0.150
EW63(ELLIP TICAL)	C	No	No	Ar (CaAa)	104.250 - 0.000	-8.000	0.45	1	1	2.010	2.010		0.510
LDF4-50A(1/2")	C	No	No	Ar (CaAa)	161.250 - 0.000	-8.000	0.47	2	1	0.630	0.630		0.150
LDF4-50A(1/2")	C	No	No	Ar (CaAa)	50.000 - 0.000	-8.000	0.4	3	3	0.630	0.630		0.150
LDF4-50A(1/2")	C	No	No	Ar (CaAa)	123.600 - 0.000	-8.000	0.4	2	2	0.630	0.630		0.150
LDF4-50A(1/2")	C	No	No	Ar (CaAa)	245.000 - 126.600	-8.000	0.4	1	1	0.630	0.630		0.150
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	71.500 - 0.000	-8.000	0.465	3	2	0.500	1.090		0.330
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	112.300 - 71.500	-8.000	0.465	2	2	0.500	1.090		0.330
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	133.500 - 112.300	-8.000	0.465	1	1	0.500	1.090		0.330
***Face C***													
LDF2-2R(1")	C	No	No	Ar (CaAa)	70.750 - 0.000	0.000	0.47	1	1	0.986	0.986		0.300

## Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
T1	245.000-242.125	A	0.000	0.000	0.479	0.000	0.010
		B	0.000	0.000	0.958	0.000	0.010
		C	0.000	0.000	1.997	0.000	0.017
T2	242.125-239.746	A	0.000	0.000	0.397	0.000	0.009
		B	0.000	0.000	0.793	0.000	0.009
		C	0.000	0.000	1.653	0.000	0.014
T3	239.746-232.608	A	0.000	0.000	3.572	0.000	0.060
		B	0.000	0.000	2.379	0.000	0.026
		C	0.000	0.000	4.958	0.000	0.041
T4	232.608-230.000	A	0.000	0.000	3.033	0.000	0.047
		B	0.000	0.000	0.869	0.000	0.010
		C	0.000	0.000	1.812	0.000	0.015
T5	230.000-210.000	A	0.000	0.000	23.253	0.000	0.361
		B	0.000	0.000	6.667	0.000	0.073
		C	0.000	0.000	13.893	0.000	0.116
T6	210.000-190.000	A	0.000	0.000	23.253	0.000	0.361
		B	0.000	0.000	6.667	0.000	0.073
		C	0.000	0.000	13.893	0.000	0.116
T7	190.000-180.000	A	0.000	0.000	11.627	0.000	0.180
		B	0.000	0.000	3.333	0.000	0.036
		C	0.000	0.000	6.947	0.000	0.058
T8	180.000-160.000	A	0.000	0.000	23.253	0.000	0.361
		B	0.000	0.000	6.667	0.000	0.073
		C	0.000	0.000	14.051	0.000	0.116

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<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face</i>	<i>A<sub>R</sub></i> <i>ft<sup>2</sup></i>	<i>A<sub>F</sub></i> <i>ft<sup>2</sup></i>	<i>C<sub>A</sub>A<sub>A</sub></i> <i>In Face ft<sup>2</sup></i>	<i>C<sub>A</sub>A<sub>A</sub></i> <i>Out Face ft<sup>2</sup></i>	<i>Weight K</i>
T9	160.000-140.000	A	0.000	0.000	23.253	0.000	0.361
		B	0.000	0.000	6.667	0.000	0.073
		C	0.000	0.000	16.413	0.000	0.122
T10	140.000-120.000	A	0.000	0.000	23.253	0.000	0.361
		B	0.000	0.000	6.667	0.000	0.073
		C	0.000	0.000	20.534	0.000	0.134
T11	120.000-110.000	A	0.000	0.000	11.627	0.000	0.180
		B	0.000	0.000	3.333	0.000	0.036
		C	0.000	0.000	13.302	0.000	0.077
T12	110.000-100.000	A	0.000	0.000	11.627	0.000	0.180
		B	0.000	0.000	3.333	0.000	0.036
		C	0.000	0.000	15.941	0.000	0.084
T13	100.000-80.000	A	0.000	0.000	23.253	0.000	0.361
		B	0.000	0.000	6.667	0.000	0.073
		C	0.000	0.000	34.193	0.000	0.173
T14	80.000-60.000	A	0.000	0.000	23.253	0.000	0.361
		B	0.000	0.000	6.667	0.000	0.073
		C	0.000	0.000	36.507	0.000	0.180
T15	60.000-40.000	A	0.000	0.000	23.253	0.000	0.361
		B	0.000	0.000	6.667	0.000	0.073
		C	0.000	0.000	40.235	0.000	0.190
T16	40.000-20.000	A	0.000	0.000	23.253	0.000	0.361
		B	0.000	0.000	6.667	0.000	0.073
		C	0.000	0.000	42.125	0.000	0.195
T17	20.000-0.000	A	0.000	0.000	23.253	0.000	0.361
		B	0.000	0.000	6.667	0.000	0.073
		C	0.000	0.000	42.125	0.000	0.195

## Feed Line/Linear Appurtenances Section Areas - With Ice

<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face or Leg</i>	<i>Ice Thickness in</i>	<i>A<sub>R</sub></i> <i>ft<sup>2</sup></i>	<i>A<sub>F</sub></i> <i>ft<sup>2</sup></i>	<i>C<sub>A</sub>A<sub>A</sub></i> <i>In Face ft<sup>2</sup></i>	<i>C<sub>A</sub>A<sub>A</sub></i> <i>Out Face ft<sup>2</sup></i>	<i>Weight K</i>
T1	245.000-242.125	A	2.443	0.000	0.000	1.884	0.000	0.043
		B		0.000	0.000	2.363	0.000	0.048
		C		0.000	0.000	8.565	0.000	0.150
T2	242.125-239.746	A	2.440	0.000	0.000	1.558	0.000	0.035
		B		0.000	0.000	1.954	0.000	0.040
		C		0.000	0.000	7.083	0.000	0.124
T3	239.746-232.608	A	2.435	0.000	0.000	10.202	0.000	0.224
		B		0.000	0.000	5.855	0.000	0.119
		C		0.000	0.000	21.224	0.000	0.370
T4	232.608-230.000	A	2.430	0.000	0.000	7.736	0.000	0.168
		B		0.000	0.000	2.137	0.000	0.043
		C		0.000	0.000	7.746	0.000	0.135
T5	230.000-210.000	A	2.418	0.000	0.000	59.192	0.000	1.282
		B		0.000	0.000	16.338	0.000	0.330
		C		0.000	0.000	59.218	0.000	1.028
T6	210.000-190.000	A	2.395	0.000	0.000	58.953	0.000	1.271
		B		0.000	0.000	16.246	0.000	0.326
		C		0.000	0.000	58.880	0.000	1.015
T7	190.000-180.000	A	2.376	0.000	0.000	29.380	0.000	0.631
		B		0.000	0.000	8.086	0.000	0.161
		C		0.000	0.000	29.303	0.000	0.503
T8	180.000-160.000	A	2.356	0.000	0.000	58.550	0.000	1.253
		B		0.000	0.000	16.092	0.000	0.319
		C		0.000	0.000	59.639	0.000	1.016
T9	160.000-140.000	A	2.327	0.000	0.000	58.245	0.000	1.239

<b>tnxTower</b>  <b>EFI Global, Inc.</b> 1117 Perimeter Center West, Suite E500 Atlanta, GA 30338 Phone: (770) 693-0835 FAX:	<b>Job</b>	CT11303B	<b>Page</b>	12 of 42
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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight K
T10	140.000-120.000	B	2.294	0.000	0.000	15.974	0.000	0.314
		C		0.000	0.000	78.908	0.000	1.321
		A		0.000	0.000	57.900	0.000	1.223
		B		0.000	0.000	15.842	0.000	0.308
T11	120.000-110.000	C	2.266	0.000	0.000	103.775	0.000	1.612
		A		0.000	0.000	28.805	0.000	0.605
		B		0.000	0.000	7.865	0.000	0.152
T12	110.000-100.000	C	2.245	0.000	0.000	64.993	0.000	0.954
		A		0.000	0.000	28.698	0.000	0.600
		B		0.000	0.000	7.824	0.000	0.150
T13	100.000-80.000	C	2.211	0.000	0.000	72.622	0.000	1.044
		A		0.000	0.000	57.038	0.000	1.184
		B		0.000	0.000	15.511	0.000	0.294
T14	80.000-60.000	C	2.156	0.000	0.000	151.255	0.000	2.184
		A		0.000	0.000	56.468	0.000	1.158
		B		0.000	0.000	15.291	0.000	0.285
T15	60.000-40.000	C	2.085	0.000	0.000	156.125	0.000	2.236
		A		0.000	0.000	55.728	0.000	1.126
		B		0.000	0.000	15.006	0.000	0.274
T16	40.000-20.000	C	1.981	0.000	0.000	169.758	0.000	2.356
		A		0.000	0.000	54.652	0.000	1.079
		B		0.000	0.000	14.591	0.000	0.258
T17	20.000-0.000	C	1.775	0.000	0.000	175.140	0.000	2.315
		A		0.000	0.000	52.523	0.000	0.991
		B		0.000	0.000	13.766	0.000	0.228
		C		0.000	0.000	164.117	0.000	2.015

### Feed Line Center of Pressure

Section	Elevation ft	CP <sub>x</sub> in	CP <sub>z</sub> in	CP <sub>x</sub> Ice in	CP <sub>z</sub> Ice in
T1	245.000-242.125	-2.393	0.477	-1.423	0.313
T2	242.125-239.746	-3.969	0.739	-0.096	0.020
T3	239.746-232.608	-4.194	-2.034	-2.290	-0.296
T4	232.608-230.000	-2.531	-5.214	-0.366	-0.336
T5	230.000-210.000	-2.816	-5.648	-1.865	-1.651
T6	210.000-190.000	-2.970	-5.759	-2.136	-1.777
T7	190.000-180.000	-2.034	-4.054	-1.217	-0.955
T8	180.000-160.000	-2.725	-5.062	-2.457	-1.665
T9	160.000-140.000	-3.864	-5.555	-5.280	-1.608
T10	140.000-120.000	-5.684	-5.539	-9.403	-0.700
T11	120.000-110.000	-7.915	-5.313	-13.296	0.210
T12	110.000-100.000	-8.869	-4.013	-13.822	1.027
T13	100.000-80.000	-11.533	-4.191	-18.343	2.038
T14	80.000-60.000	-12.449	-3.282	-20.492	3.204
T15	60.000-40.000	-14.546	-2.550	-23.996	4.876
T16	40.000-20.000	-15.057	-2.312	-26.020	5.595
T17	20.000-0.000	-18.493	-2.709	-28.276	5.571

### Shielding Factor Ka

<b><i>tnxTower</i></b>  <b><i>EFI Global, Inc.</i></b> 1117 Perimeter Center West, Suite E500 Atlanta, GA 30338 Phone: (770) 693-0835 FAX:	<b>Job</b>	CT11303B	<b>Page</b>	13 of 42
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	<b>Client</b>	Foresite LLC	<b>Designed by</b>	Ahmet Colakoglu

<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K<sub>a</sub> No Ice</i>	<i>K<sub>a</sub> Ice</i>
T1	2	T-Brackets	242.13 - 245.00	0.6000	0.2509
T1	3	T-Brackets	242.13 - 245.00	0.6000	0.2509
T1	4	Waveguide	242.13 - 245.00	0.6000	0.2509
T1	10	LDF6-50A(1-1/4")	242.13 - 245.00	0.6000	0.2509
T1	17	LDF4-50A(1/2")	242.13 - 245.00	0.6000	0.2509
T2	2	T-Brackets	239.75 - 242.13	0.6000	0.0245
T2	3	T-Brackets	239.75 - 242.13	0.6000	0.0245
T2	4	Waveguide	239.75 - 242.13	0.6000	0.0245
T2	10	LDF6-50A(1-1/4")	239.75 - 242.13	0.6000	0.0245
T2	17	LDF4-50A(1/2")	239.75 - 242.13	0.6000	0.0245
T3	2	T-Brackets	232.61 - 239.75	0.6000	0.3739
T3	3	T-Brackets	232.61 - 239.75	0.6000	0.3739
T3	4	Waveguide	232.61 - 239.75	0.6000	0.3739
T3	7	(1) 9x18 + (5) 6x12	232.61 - 235.00	0.6000	0.3739
T3	10	LDF6-50A(1-1/4")	232.61 - 239.75	0.6000	0.3739
T3	17	LDF4-50A(1/2")	232.61 - 239.75	0.6000	0.3739
T4	2	T-Brackets	230.00 - 232.61	0.6000	0.0992
T4	3	T-Brackets	230.00 - 232.61	0.6000	0.0992
T4	4	Waveguide	230.00 - 232.61	0.6000	0.0992
T4	7	(1) 9x18 + (5) 6x12	230.00 - 232.61	0.6000	0.0992
T4	10	LDF6-50A(1-1/4")	230.00 - 232.61	0.6000	0.0992
T4	17	LDF4-50A(1/2")	230.00 - 232.61	0.6000	0.0992
T5	2	T-Brackets	210.00 - 230.00	0.6000	0.3527
T5	3	T-Brackets	210.00 - 230.00	0.6000	0.3527
T5	4	Waveguide	210.00 - 230.00	0.6000	0.3527
T5	7	(1) 9x18 + (5) 6x12	210.00 - 230.00	0.6000	0.3527
T5	10	LDF6-50A(1-1/4")	210.00 - 230.00	0.6000	0.3527
T5	17	LDF4-50A(1/2")	210.00 - 230.00	0.6000	0.3527
T6	2	T-Brackets	190.00 - 210.00	0.6000	0.3693
T6	3	T-Brackets	190.00 - 210.00	0.6000	0.3693
T6	4	Waveguide	190.00 -	0.6000	0.3693

<b><i>tnxTower</i></b>  <b><i>EFI Global, Inc.</i></b> 1117 Perimeter Center West, Suite E500 Atlanta, GA 30338 Phone: (770) 693-0835 FAX:	<b>Job</b>	CT11303B	<b>Page</b>	14 of 42
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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K<sub>a</sub> No Ice</i>	<i>K<sub>a</sub> Ice</i>
T6	7	(1) 9x18 + (5) 6x12	210.00 190.00 - 210.00	0.6000	0.3693
T6	10	LDF6-50A(1-1/4")	190.00 - 210.00	0.6000	0.3693
T6	17	LDF4-50A(1/2")	190.00 - 210.00	0.6000	0.3693
T7	2	T-Brackets	180.00 - 190.00	0.6000	0.2499
T7	3	T-Brackets	180.00 - 190.00	0.6000	0.2499
T7	4	Waveguide	180.00 - 190.00	0.6000	0.2499
T7	7	(1) 9x18 + (5) 6x12	180.00 - 190.00	0.6000	0.2499
T7	10	LDF6-50A(1-1/4")	180.00 - 190.00	0.6000	0.2499
T7	17	LDF4-50A(1/2")	180.00 - 190.00	0.6000	0.2499
T8	2	T-Brackets	160.00 - 180.00	0.6000	0.3666
T8	3	T-Brackets	160.00 - 180.00	0.6000	0.3666
T8	4	Waveguide	160.00 - 180.00	0.6000	0.3666
T8	7	(1) 9x18 + (5) 6x12	160.00 - 180.00	0.6000	0.3666
T8	10	LDF6-50A(1-1/4")	160.00 - 180.00	0.6000	0.3666
T8	14	LDF4-50A(1/2")	160.00 - 161.25	0.6000	0.3666
T8	17	LDF4-50A(1/2")	160.00 - 180.00	0.6000	0.3666
T9	2	T-Brackets	140.00 - 160.00	0.6000	0.4691
T9	3	T-Brackets	140.00 - 160.00	0.6000	0.4691
T9	4	Waveguide	140.00 - 160.00	0.6000	0.4691
T9	7	(1) 9x18 + (5) 6x12	140.00 - 160.00	0.6000	0.4691
T9	10	LDF6-50A(1-1/4")	140.00 - 160.00	0.6000	0.4691
T9	14	LDF4-50A(1/2")	140.00 - 160.00	0.6000	0.4691
T9	17	LDF4-50A(1/2")	140.00 - 160.00	0.6000	0.4691
T10	2	T-Brackets	120.00 - 140.00	0.6000	0.5319
T10	3	T-Brackets	120.00 - 140.00	0.6000	0.5319
T10	4	Waveguide	120.00 - 140.00	0.6000	0.5319
T10	7	(1) 9x18 + (5) 6x12	120.00 - 140.00	0.6000	0.5319
T10	9	LDF6-50A(1-1/4")	120.00 - 124.25	0.6000	0.5319
T10	10	LDF6-50A(1-1/4")	124.25 - 140.00	0.6000	0.5319
T10	12	LDF4-50A(1/2")	120.00 - 135.50	0.6000	0.5319
T10	14	LDF4-50A(1/2")	120.00 -	0.6000	0.5319

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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K<sub>a</sub> No Ice</i>	<i>K<sub>a</sub> Ice</i>
T10	16	LDF4-50A(1/2")	140.00 120.00 - 123.60	0.6000	0.5319
T10	17	LDF4-50A(1/2")	126.60 - 140.00	0.6000	0.5319
T10	20	LDF5-50A(7/8")	120.00 - 133.50	0.6000	0.5319
T11	2	T-Brackets	110.00 - 120.00	0.6000	0.5705
T11	3	T-Brackets	110.00 - 120.00	0.6000	0.5705
T11	4	Waveguide	110.00 - 120.00	0.6000	0.5705
T11	7	(1) 9x18 + (5) 6x12	110.00 - 120.00	0.6000	0.5705
T11	9	LDF6-50A(1-1/4")	110.00 - 120.00	0.6000	0.5705
T11	11	LDF4-50A(1/2")	110.00 - 112.50	0.6000	0.5705
T11	12	LDF4-50A(1/2")	112.50 - 120.00	0.6000	0.5705
T11	14	LDF4-50A(1/2")	110.00 - 120.00	0.6000	0.5705
T11	16	LDF4-50A(1/2")	110.00 - 120.00	0.6000	0.5705
T11	19	LDF5-50A(7/8")	110.00 - 112.30	0.6000	0.5705
T11	20	LDF5-50A(7/8")	112.30 - 120.00	0.6000	0.5705
T12	2	T-Brackets	100.00 - 110.00	0.6000	0.5409
T12	3	T-Brackets	100.00 - 110.00	0.6000	0.5409
T12	4	Waveguide	100.00 - 110.00	0.6000	0.5409
T12	7	(1) 9x18 + (5) 6x12	100.00 - 110.00	0.6000	0.5409
T12	9	LDF6-50A(1-1/4")	100.00 - 110.00	0.6000	0.5409
T12	11	LDF4-50A(1/2")	100.00 - 110.00	0.6000	0.5409
T12	13	EW63(ELLIPTICAL)	100.00 - 104.25	0.6000	0.5409
T12	14	LDF4-50A(1/2")	100.00 - 110.00	0.6000	0.5409
T12	16	LDF4-50A(1/2")	100.00 - 110.00	0.6000	0.5409
T12	19	LDF5-50A(7/8")	100.00 - 110.00	0.6000	0.5409
T13	2	T-Brackets	80.00 - 100.00	0.6000	0.6000
T13	3	T-Brackets	80.00 - 100.00	0.6000	0.6000
T13	4	Waveguide	80.00 - 100.00	0.6000	0.6000
T13	7	(1) 9x18 + (5) 6x12	80.00 - 100.00	0.6000	0.6000
T13	9	LDF6-50A(1-1/4")	80.00 - 100.00	0.6000	0.6000
T13	11	LDF4-50A(1/2")	80.00 - 100.00	0.6000	0.6000
T13	13	EW63(ELLIPTICAL)	80.00 - 100.00	0.6000	0.6000
T13	14	LDF4-50A(1/2")	80.00 - 100.00	0.6000	0.6000
T13	16	LDF4-50A(1/2")	80.00 - 100.00	0.6000	0.6000
T13	19	LDF5-50A(7/8")	80.00 - 100.00	0.6000	0.6000
T14	2	T-Brackets	60.00 - 80.00	0.6000	0.6000
T14	3	T-Brackets	60.00 - 80.00	0.6000	0.6000
T14	4	Waveguide	60.00 - 80.00	0.6000	0.6000

<b><i>tnxTower</i></b>  <b><i>EFI Global, Inc.</i></b> 1117 Perimeter Center West, Suite E500 Atlanta, GA 30338 Phone: (770) 693-0835 FAX:	<b>Job</b>	CT11303B	<b>Page</b>	16 of 42
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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K<sub>a</sub> No Ice</i>	<i>K<sub>a</sub> Ice</i>
T14	7	(1) 9x18 + (5) 6x12	60.00 - 80.00	0.6000	0.6000
T14	9	LDF6-50A(1-1/4")	60.00 - 80.00	0.6000	0.6000
T14	11	LDF4-50A(1/2")	60.00 - 80.00	0.6000	0.6000
T14	13	EW63(ELLIPTICAL)	60.00 - 80.00	0.6000	0.6000
T14	14	LDF4-50A(1/2")	60.00 - 80.00	0.6000	0.6000
T14	16	LDF4-50A(1/2")	60.00 - 80.00	0.6000	0.6000
T14	18	LDF5-50A(7/8")	60.00 - 71.50	0.6000	0.6000
T14	19	LDF5-50A(7/8")	71.50 - 80.00	0.6000	0.6000
T14	22	LDF2-2R( 1")	60.00 - 70.75	0.6000	0.6000
T15	2	T-Brackets	40.00 - 60.00	0.6000	0.6000
T15	3	T-Brackets	40.00 - 60.00	0.6000	0.6000
T15	4	Waveguide	40.00 - 60.00	0.6000	0.6000
T15	7	(1) 9x18 + (5) 6x12	40.00 - 60.00	0.6000	0.6000
T15	9	LDF6-50A(1-1/4")	40.00 - 60.00	0.6000	0.6000
T15	11	LDF4-50A(1/2")	40.00 - 60.00	0.6000	0.6000
T15	13	EW63(ELLIPTICAL)	40.00 - 60.00	0.6000	0.6000
T15	14	LDF4-50A(1/2")	40.00 - 60.00	0.6000	0.6000
T15	15	LDF4-50A(1/2")	40.00 - 50.00	0.6000	0.6000
T15	16	LDF4-50A(1/2")	40.00 - 60.00	0.6000	0.6000
T15	18	LDF5-50A(7/8")	40.00 - 60.00	0.6000	0.6000
T15	22	LDF2-2R( 1")	40.00 - 60.00	0.6000	0.6000
T16	2	T-Brackets	20.00 - 40.00	0.6000	0.6000
T16	3	T-Brackets	20.00 - 40.00	0.6000	0.6000
T16	4	Waveguide	20.00 - 40.00	0.6000	0.6000
T16	7	(1) 9x18 + (5) 6x12	20.00 - 40.00	0.6000	0.6000
T16	9	LDF6-50A(1-1/4")	20.00 - 40.00	0.6000	0.6000
T16	11	LDF4-50A(1/2")	20.00 - 40.00	0.6000	0.6000
T16	13	EW63(ELLIPTICAL)	20.00 - 40.00	0.6000	0.6000
T16	14	LDF4-50A(1/2")	20.00 - 40.00	0.6000	0.6000
T16	15	LDF4-50A(1/2")	20.00 - 40.00	0.6000	0.6000
T16	16	LDF4-50A(1/2")	20.00 - 40.00	0.6000	0.6000
T16	18	LDF5-50A(7/8")	20.00 - 40.00	0.6000	0.6000
T16	22	LDF2-2R( 1")	20.00 - 40.00	0.6000	0.6000
T17	2	T-Brackets	0.00 - 20.00	0.6000	0.6000
T17	3	T-Brackets	0.00 - 20.00	0.6000	0.6000
T17	4	Waveguide	0.00 - 20.00	0.6000	0.6000
T17	7	(1) 9x18 + (5) 6x12	0.00 - 20.00	0.6000	0.6000
T17	9	LDF6-50A(1-1/4")	0.00 - 20.00	0.6000	0.6000
T17	11	LDF4-50A(1/2")	0.00 - 20.00	0.6000	0.6000
T17	13	EW63(ELLIPTICAL)	0.00 - 20.00	0.6000	0.6000
T17	14	LDF4-50A(1/2")	0.00 - 20.00	0.6000	0.6000
T17	15	LDF4-50A(1/2")	0.00 - 20.00	0.6000	0.6000
T17	16	LDF4-50A(1/2")	0.00 - 20.00	0.6000	0.6000
T17	18	LDF5-50A(7/8")	0.00 - 20.00	0.6000	0.6000
T17	22	LDF2-2R( 1")	0.00 - 20.00	0.6000	0.6000

## Discrete Tower Loads

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert</i>	<i>Azimuth Adjustment</i>	<i>Placement</i>	<i>C<sub>A</sub>A<sub>A</sub> Front</i>	<i>C<sub>A</sub>A<sub>A</sub> Side</i>	<i>Weight</i>
			<i>ft</i> <i>ft</i> <i>ft</i>	<i>°</i>	<i>ft</i>	<i>ft<sup>2</sup></i>	<i>ft<sup>2</sup></i>	<i>K</i>

<b><i>tnxTower</i></b>  <b><i>EFI Global, Inc.</i></b> 1117 Perimeter Center West, Suite E500 Atlanta, GA 30338 Phone: (770) 693-0835 FAX:	<b>Job</b>	CT11303B	<b>Page</b>	17 of 42
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	<b>Client</b>	Foresite LLC	<b>Designed by</b>	Ahmet Colakoglu

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>	<i>C<sub>AA</sub> Front ft<sup>2</sup></i>	<i>C<sub>AA</sub> Side ft<sup>2</sup></i>	<i>Weight K</i>
Flash Beacon Lighting	C	None		0.000	247.500	No Ice 2.700 1/2" Ice 3.100 1" Ice 3.500	2.700 3.100 3.500	0.050 0.070 0.090
***								
Lightning Rod 5/8" x 5'	B	From Leg	0.000 0.000 14.000	0.000	245.000	No Ice 0.313 1/2" Ice 0.826 1" Ice 1.322	0.313 0.826 1.322	0.006 0.010 0.016
13.25'-P2x0.148	B	From Leg	0.000 0.000 0.000	0.000	245.000	No Ice 3.147 1/2" Ice 4.500 1" Ice 5.870	3.147 4.500 5.870	0.048 0.072 0.104
***								
***245'***								
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.000 0.000 3.333	0.000	245.000	No Ice 4.601 1/2" Ice 5.045 1" Ice 5.500	4.011 4.448 4.894	0.095 0.160 0.235
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.000 0.000 3.333	0.000	245.000	No Ice 4.601 1/2" Ice 5.045 1" Ice 5.500	4.011 4.448 4.894	0.095 0.160 0.235
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.000 0.000 3.333	0.000	245.000	No Ice 4.601 1/2" Ice 5.045 1" Ice 5.500	4.011 4.448 4.894	0.095 0.160 0.235
RRH2X50-800	A	From Leg	4.000 0.000 3.333	0.000	245.000	No Ice 1.701 1/2" Ice 1.864 1" Ice 2.035	1.282 1.428 1.580	0.053 0.070 0.090
RRH2X50-800	B	From Leg	4.000 0.000 3.333	0.000	245.000	No Ice 1.701 1/2" Ice 1.864 1" Ice 2.035	1.282 1.428 1.580	0.053 0.070 0.090
RRH2X50-800	C	From Leg	4.000 0.000 3.333	0.000	245.000	No Ice 1.701 1/2" Ice 1.864 1" Ice 2.035	1.282 1.428 1.580	0.053 0.070 0.090
RRH4X45-19	A	From Leg	4.000 0.000 3.333	0.000	245.000	No Ice 2.313 1/2" Ice 2.517 1" Ice 2.728	2.375 2.581 2.794	0.060 0.083 0.111
RRH4X45-19	B	From Leg	4.000 0.000 3.333	0.000	245.000	No Ice 2.313 1/2" Ice 2.517 1" Ice 2.728	2.375 2.581 2.794	0.060 0.083 0.111
RRH4X45-19	C	From Leg	4.000 0.000 3.333	0.000	245.000	No Ice 2.313 1/2" Ice 2.517 1" Ice 2.728	2.375 2.581 2.794	0.060 0.083 0.111
RRH4X45-19	A	From Leg	4.000 0.000 0.250	0.000	245.000	No Ice 2.313 1/2" Ice 2.517 1" Ice 2.728	2.375 2.581 2.794	0.060 0.083 0.111
RRH4X45-19	B	From Leg	4.000 0.000 0.250	0.000	245.000	No Ice 2.313 1/2" Ice 2.517 1" Ice 2.728	2.375 2.581 2.794	0.060 0.083 0.111
RRH4X45-19	C	From Leg	4.000 0.000 0.250	0.000	245.000	No Ice 2.313 1/2" Ice 2.517 1" Ice 2.728	2.375 2.581 2.794	0.060 0.083 0.111
Platform Mount [LP 1201-1]	C	None		0.000	245.000	No Ice 19.962 1/2" Ice 23.689 1" Ice 27.415	19.962 23.689 27.415	2.250 2.841 3.433
Miscellaneous [NA 510-1]	C	None		0.000	245.000	No Ice 6.814 1/2" Ice 9.128 1" Ice 11.443	6.814 9.128 11.443	0.274 0.368 0.462
Side Arm Mount [SO 306-3]	C	None		0.000	245.000	No Ice 3.200 1/2" Ice 5.570 1" Ice 8.050	3.200 5.570 8.050	0.126 0.187 0.281



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	<b>Client</b>	Foresite LLC	<b>Designed by</b>	Ahmet Colakoglu

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>		<i>C<sub>AA</sub> Front ft<sup>2</sup></i>	<i>C<sub>AA</sub> Side ft<sup>2</sup></i>	<i>Weight K</i>
(3) 8'-P2x0.203	A	From Leg	4.000 0.000 0.000	0.000	245.000	No Ice 1/2" Ice 1" Ice	1.900 2.728 3.401	1.900 2.728 3.401	0.029 0.044 0.063
(3) 8'-P2x0.203	B	From Leg	4.000 0.000 0.000	0.000	245.000	No Ice 1/2" Ice 1" Ice	1.900 2.728 3.401	1.900 2.728 3.401	0.029 0.044 0.063
(3) 8'-P2x0.203	C	From Leg	4.000 0.000 0.000	0.000	245.000	No Ice 1/2" Ice 1" Ice	1.900 2.728 3.401	1.900 2.728 3.401	0.029 0.044 0.063
***232'***									
AIR 32 B2a/B66Aa w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	232.000	No Ice 1/2" Ice 1" Ice	6.747 7.202 7.648	6.070 6.867 7.583	0.153 0.214 0.282
AIR 32 B2a/B66Aa w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	232.000	No Ice 1/2" Ice 1" Ice	6.747 7.202 7.648	6.070 6.867 7.583	0.153 0.214 0.282
AIR 32 B2a/B66Aa w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	232.000	No Ice 1/2" Ice 1" Ice	6.747 7.202 7.648	6.070 6.867 7.583	0.153 0.214 0.282
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	232.000	No Ice 1/2" Ice 1" Ice	14.694 15.455 16.230	6.873 7.554 8.247	0.186 0.315 0.458
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	232.000	No Ice 1/2" Ice 1" Ice	14.694 15.455 16.230	6.873 7.554 8.247	0.186 0.315 0.458
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	232.000	No Ice 1/2" Ice 1" Ice	14.694 15.455 16.230	6.873 7.554 8.247	0.186 0.315 0.458
AIR 3246 B66 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	232.000	No Ice 1/2" Ice 1" Ice	8.177 8.656 9.124	6.559 7.393 8.128	0.201 0.272 0.349
AIR 3246 B66 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	232.000	No Ice 1/2" Ice 1" Ice	8.177 8.656 9.124	6.559 7.393 8.128	0.201 0.272 0.349
AIR 3246 B66 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	232.000	No Ice 1/2" Ice 1" Ice	8.177 8.656 9.124	6.559 7.393 8.128	0.201 0.272 0.349
Ericsson AIR6449 B41 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	232.000	No Ice 1/2" Ice 1" Ice	6.899 7.744 8.493	4.316 5.370 6.275	0.132 0.192 0.258
Ericsson AIR6449 B41 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	232.000	No Ice 1/2" Ice 1" Ice	6.899 7.744 8.493	4.316 5.370 6.275	0.132 0.192 0.258
Ericsson AIR6449 B41 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	232.000	No Ice 1/2" Ice 1" Ice	6.899 7.744 8.493	4.316 5.370 6.275	0.132 0.192 0.258
Radio 4449 B71+B85_T-Mobile	A	From Leg	4.000 0.000 0.000	0.000	232.000	No Ice 1/2" Ice 1" Ice	1.970 2.147 2.331	1.587 1.749 1.918	0.073 0.093 0.116
Radio 4449 B71+B85_T-Mobile	B	From Leg	4.000 0.000 0.000	0.000	232.000	No Ice 1/2" Ice 1" Ice	1.970 2.147 2.331	1.587 1.749 1.918	0.073 0.093 0.116
Radio 4449 B71+B85_T-Mobile	C	From Leg	4.000 0.000 0.000	0.000	232.000	No Ice 1/2" Ice 1" Ice	1.970 2.147 2.331	1.587 1.749 1.918	0.073 0.093 0.116
RRUS 4415 B25	A	From Leg	4.000 0.000	0.000	232.000	No Ice 1/2" Ice	1.644 1.804	0.679 0.791	0.044 0.056

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<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>	<i>C<sub>AA</sub> Front ft<sup>2</sup></i>	<i>C<sub>AA</sub> Side ft<sup>2</sup></i>	<i>Weight K</i>
RRUS 4415 B25	B	From Leg	0.000 4.000 0.000 0.000	0.000	232.000	1" Ice 1.972 No Ice 1.644 1/2" Ice 1.804 1" Ice 1.972	0.913 0.679 0.791 0.913	0.071 0.044 0.056 0.071
RRUS 4415 B25	C	From Leg	0.000 4.000 0.000 0.000	0.000	232.000	No Ice 1.644 1/2" Ice 1.804 1" Ice 1.972	0.679 0.791 0.913	0.044 0.056 0.071
Sector Mount [SM 502-3]	C	None	0.000	0.000	232.000	No Ice 29.820 1/2" Ice 42.210 1" Ice 54.430	29.820 42.210 54.430	1.673 2.266 3.052
***230*** Knife Plate	A	From Leg	0.000 0.000 0.000	0.000	230.000	No Ice 4.167 1/2" Ice 4.736 1" Ice 5.305	0.104 0.538 0.972	0.021 0.033 0.045
Knife Plate	B	From Leg	0.000 0.000 0.000	0.000	230.000	No Ice 4.167 1/2" Ice 4.736 1" Ice 5.305	0.104 0.538 0.972	0.021 0.033 0.045
Knife Plate	C	From Leg	0.000 0.000 0.000	0.000	230.000	No Ice 4.167 1/2" Ice 4.736 1" Ice 5.305	0.104 0.538 0.972	0.021 0.033 0.045
***161.25*** 2.5'x1.5'x0.5' Camera	C	From Leg	1.000 0.000 0.000	0.000	161.250	No Ice 4.500 1/2" Ice 4.770 1" Ice 5.048	0.917 1.049 1.187	0.025 0.054 0.086
11"x10"x6" TMA	C	From Leg	0.000 0.000 0.000	0.000	161.250	No Ice 0.917 1/2" Ice 1.037 1" Ice 1.165	0.550 0.648 0.754	0.030 0.039 0.049
***135*** 7' Omni	B	From Leg	3.000 0.000 3.500	0.000	135.000	No Ice 2.100 1/2" Ice 2.640 1" Ice 3.180	2.100 2.640 3.180	0.022 0.037 0.053
7' Omni	C	From Leg	3.000 0.000 3.500	0.000	135.000	No Ice 2.100 1/2" Ice 2.640 1" Ice 3.180	2.100 2.640 3.180	0.022 0.037 0.053
Side Arm Mount [SO 305-1]	B	From Leg	3.000 0.000 0.000	0.000	135.000	No Ice 0.530 1/2" Ice 0.780 1" Ice 1.060	1.520 2.070 2.660	0.030 0.044 0.064
Side Arm Mount [SO 305-1]	C	From Leg	3.000 0.000 0.000	0.000	135.000	No Ice 0.530 1/2" Ice 0.780 1" Ice 1.060	1.520 2.070 2.660	0.030 0.044 0.064
***134*** 8' Omni	A	From Leg	3.000 0.000 4.000	0.000	134.000	No Ice 2.400 1/2" Ice 3.190 1" Ice 3.980	2.400 3.190 3.980	0.025 0.425 0.825
Side Arm Mount [SO 311-1]	A	From Leg	3.000 0.000 0.000	0.000	134.000	No Ice 1.670 1/2" Ice 2.430 1" Ice 3.210	4.530 6.410 8.370	0.062 0.099 0.148
***124*** 6"x8"0.25" Ice Bridge	A	From Leg	0.500 0.000 0.000	0.000	124.500	No Ice 0.013 1/2" Ice 0.051 1" Ice 0.097	0.017 0.066 0.123	0.005 0.007 0.010
6"x8"0.25" Ice Bridge	B	From Leg	0.500 0.000 0.000	0.000	124.500	No Ice 0.013 1/2" Ice 0.051 1" Ice 0.097	0.017 0.066 0.123	0.005 0.007 0.010
6"x8"0.25" Ice Bridge	C	From Leg	0.500 0.000 0.000	0.000	124.500	No Ice 0.013 1/2" Ice 0.051 1" Ice 0.097	0.017 0.066 0.123	0.005 0.007 0.010

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<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>		<i>C<sub>AA</sub> Front ft<sup>2</sup></i>	<i>C<sub>AA</sub> Side ft<sup>2</sup></i>	<i>Weight K</i>
***									
MKR-LTE-0IR Beacon	A	From Leg	0.250 0.000 0.000	0.000	123.600	No Ice 1/2" Ice 1" Ice	0.155 0.264 0.342	0.155 0.264 0.342	0.002 0.005 0.010
MKR-LTE-0IR Beacon	B	From Leg	0.250 0.000 0.000	0.000	123.600	No Ice 1/2" Ice 1" Ice	0.155 0.264 0.342	0.155 0.264 0.342	0.002 0.005 0.010
MKR-LTE-0IR Beacon	C	From Leg	0.250 0.000 0.000	0.000	123.600	No Ice 1/2" Ice 1" Ice	0.155 0.264 0.342	0.155 0.264 0.342	0.002 0.005 0.010
1.5'-P1x0.133	A	From Leg	0.100 0.000 0.000	0.000	123.600	No Ice 1/2" Ice 1" Ice	0.156 0.253 0.359	0.156 0.253 0.359	0.003 0.004 0.007
1.5'-P1x0.133	B	From Leg	0.100 0.000 0.000	0.000	123.600	No Ice 1/2" Ice 1" Ice	0.156 0.253 0.359	0.156 0.253 0.359	0.003 0.004 0.007
1.5'-P1x0.133	C	From Leg	0.100 0.000 0.000	0.000	123.600	No Ice 1/2" Ice 1" Ice	0.156 0.253 0.359	0.156 0.253 0.359	0.003 0.004 0.007
***122'*** 20' Omni	C	From Leg	3.000 0.000 10.000	0.000	122.000	No Ice 1/2" Ice 1" Ice	6.000 8.030 10.060	6.000 8.030 10.060	0.055 0.098 0.141
Side Arm Mount [SO 602-1]	C	From Leg	3.000 0.000 0.000	0.000	122.000	No Ice 1/2" Ice 1" Ice	2.580 3.390 4.180	10.830 13.160 15.840	0.146 0.221 0.314
***112'*** 8' Omni	A	From Leg	3.000 0.000 4.000	0.000	112.000	No Ice 1/2" Ice 1" Ice	2.400 3.190 3.980	2.400 3.190 3.980	0.025 0.425 0.825
Side Arm Mount [SO 311-1]	A	From Leg	3.000 0.000 0.000	0.000	112.000	No Ice 1/2" Ice 1" Ice	1.670 2.430 3.210	4.530 6.410 8.370	0.062 0.099 0.148
***111'*** 7' Omni	B	From Leg	3.000 0.000 3.500	0.000	111.000	No Ice 1/2" Ice 1" Ice	2.100 2.640 3.180	2.100 2.640 3.180	0.022 0.037 0.053
Side Arm Mount [SO 305-1]	B	From Leg	3.000 0.000 0.000	0.000	111.000	No Ice 1/2" Ice 1" Ice	0.530 0.780 1.060	1.520 2.070 2.660	0.030 0.044 0.064
***104.25*** Pipe Mount [PM 601-1]	A	From Leg	0.500 0.000 0.000	0.000	104.250	No Ice 1/2" Ice 1" Ice	1.320 1.580 1.840	1.320 1.580 1.840	0.065 0.077 0.093
***72'*** 18'x2.5" Omni/Whip	A	From Leg	6.000 0.000 9.000	0.000	72.000	No Ice 1/2" Ice 1" Ice	4.500 6.329 8.175	4.500 6.329 8.175	0.020 0.053 0.098
Side Arm Mount [SO 308-1]	A	From Leg	3.000 0.000 0.000	0.000	72.000	No Ice 1/2" Ice 1" Ice	0.410 0.810 1.230	3.060 5.100 7.200	0.053 0.080 0.122
***70.75' 16"x15"x9" Camera	C	From Leg	0.500 0.000 0.000	0.000	70.750	No Ice 1/2" Ice 1" Ice	0.500 0.826 0.962	0.500 0.826 0.962	0.025 0.040 0.057
***49'*** GPS	C	From Leg	3.000	0.000	49.000	No Ice	0.380	0.380	0.010

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
Side Arm Mount [SO 203-1]	C	From Leg	0.000	0.000	49.000	1/2" Ice	0.570	0.016
			2.000			1" Ice	0.760	0.022
			1.500			No Ice	1.780	0.125
			0.000			1/2" Ice	2.240	0.153
			0.000			1" Ice	2.750	0.189

## Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft²	Weight K
4' Grid Dish	C	Grid	From Leg	0.500	0.000		112.500	4.000	No Ice	12.570
				0.000					1/2" Ice	13.100
				0.000					1" Ice	13.630
Andrew D6E-6	C	Paraboloid w/Radome	From Leg	0.500	0.000		104.250	6.500	No Ice	28.270
				0.000					1/2" Ice	29.070
				0.000					1" Ice	29.870
***										

## Truss-Leg Properties

Section Designation	Area	Area Ice	Self Weight K	Ice Weight K	Equiv. Diameter in	Equiv. Diameter Ice in	Leg Area in <sup>2</sup>
Pirod 105245	1090.334	3473.380	0.677	1.032	7.572	24.121	5.301
Pirod 105217	2130.748	7115.980	0.619	1.944	7.398	24.708	5.301
Pirod 105218	2263.469	7162.072	0.755	1.930	7.859	24.868	7.216
Pirod 105218	2263.469	7132.845	0.755	1.885	7.859	24.767	7.216
Pirod 105219	2441.869	7180.136	0.944	1.905	8.479	24.931	9.425
Pirod 105219	2441.869	7161.996	0.944	1.877	8.479	24.868	9.425
Pirod 105219	2441.869	7131.633	0.944	1.831	8.479	24.763	9.425
Pirod 105220	2578.801	7155.123	1.121	1.783	8.954	24.844	11.928
Pirod 105220	2578.801	7092.056	1.121	1.691	8.954	24.625	11.928
Pirod 105220	2578.801	7000.274	1.121	1.560	8.954	24.307	11.928
Pirod 112738	3466.516	8985.647	1.689	1.820	12.037	31.200	14.726

## Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice

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<i>Comb. No.</i>	<i>Description</i>
3	1.2D+1.6W (pattern 1) 0 deg - No Ice
4	1.2D+1.6W (pattern 2) 0 deg - No Ice
5	0.9 Dead+1.6 Wind 0 deg - No Ice
6	1.2 Dead+1.6 Wind 30 deg - No Ice
7	1.2D+1.6W (pattern 1) 30 deg - No Ice
8	1.2D+1.6W (pattern 2) 30 deg - No Ice
9	0.9 Dead+1.6 Wind 30 deg - No Ice
10	1.2 Dead+1.6 Wind 60 deg - No Ice
11	1.2D+1.6W (pattern 1) 60 deg - No Ice
12	1.2D+1.6W (pattern 2) 60 deg - No Ice
13	0.9 Dead+1.6 Wind 60 deg - No Ice
14	1.2 Dead+1.6 Wind 90 deg - No Ice
15	1.2D+1.6W (pattern 1) 90 deg - No Ice
16	1.2D+1.6W (pattern 2) 90 deg - No Ice
17	0.9 Dead+1.6 Wind 90 deg - No Ice
18	1.2 Dead+1.6 Wind 120 deg - No Ice
19	1.2D+1.6W (pattern 1) 120 deg - No Ice
20	1.2D+1.6W (pattern 2) 120 deg - No Ice
21	0.9 Dead+1.6 Wind 120 deg - No Ice
22	1.2 Dead+1.6 Wind 150 deg - No Ice
23	1.2D+1.6W (pattern 1) 150 deg - No Ice
24	1.2D+1.6W (pattern 2) 150 deg - No Ice
25	0.9 Dead+1.6 Wind 150 deg - No Ice
26	1.2 Dead+1.6 Wind 180 deg - No Ice
27	1.2D+1.6W (pattern 1) 180 deg - No Ice
28	1.2D+1.6W (pattern 2) 180 deg - No Ice
29	0.9 Dead+1.6 Wind 180 deg - No Ice
30	1.2 Dead+1.6 Wind 210 deg - No Ice
31	1.2D+1.6W (pattern 1) 210 deg - No Ice
32	1.2D+1.6W (pattern 2) 210 deg - No Ice
33	0.9 Dead+1.6 Wind 210 deg - No Ice
34	1.2 Dead+1.6 Wind 240 deg - No Ice
35	1.2D+1.6W (pattern 1) 240 deg - No Ice
36	1.2D+1.6W (pattern 2) 240 deg - No Ice
37	0.9 Dead+1.6 Wind 240 deg - No Ice
38	1.2 Dead+1.6 Wind 270 deg - No Ice
39	1.2D+1.6W (pattern 1) 270 deg - No Ice
40	1.2D+1.6W (pattern 2) 270 deg - No Ice
41	0.9 Dead+1.6 Wind 270 deg - No Ice
42	1.2 Dead+1.6 Wind 300 deg - No Ice
43	1.2D+1.6W (pattern 1) 300 deg - No Ice
44	1.2D+1.6W (pattern 2) 300 deg - No Ice
45	0.9 Dead+1.6 Wind 300 deg - No Ice
46	1.2 Dead+1.6 Wind 330 deg - No Ice
47	1.2D+1.6W (pattern 1) 330 deg - No Ice
48	1.2D+1.6W (pattern 2) 330 deg - No Ice
49	0.9 Dead+1.6 Wind 330 deg - No Ice
50	1.2 Dead+1.0 Ice+1.0 Temp
51	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
52	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
53	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
54	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
55	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
56	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
57	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
58	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
59	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
60	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
61	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
62	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
63	Dead+Wind 0 deg - Service
64	Dead+Wind 30 deg - Service

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Comb. No.	Description
65	Dead+Wind 60 deg - Service
66	Dead+Wind 90 deg - Service
67	Dead+Wind 120 deg - Service
68	Dead+Wind 150 deg - Service
69	Dead+Wind 180 deg - Service
70	Dead+Wind 210 deg - Service
71	Dead+Wind 240 deg - Service
72	Dead+Wind 270 deg - Service
73	Dead+Wind 300 deg - Service
74	Dead+Wind 330 deg - Service

## Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	245 - 242.125	Leg	Max Tension	55	0.205	0.000	0.000
			Max. Compression	55	-4.617	-0.003	-0.001
			Max. Mx	14	-1.427	-0.014	-0.001
			Max. My	2	-0.802	0.004	0.016
			Max. Vy	14	-1.417	-0.000	-0.000
			Max. Vx	26	-1.420	-0.000	0.000
		Diagonal	Max Tension	38	2.355	0.000	0.000
			Max. Compression	14	-2.530	0.000	0.000
			Max. Mx	62	0.650	0.010	0.000
			Max. My	51	-0.269	0.000	0.000
			Max. Vy	62	0.012	0.000	0.000
			Max. Vx	51	-0.000	0.000	0.000
		Top Girt	Max Tension	10	1.649	-0.088	-0.000
			Max. Compression	34	-1.600	-0.116	0.000
			Max. Mx	57	-0.309	-0.299	0.002
			Max. My	42	-0.796	-0.140	0.007
			Max. Vy	57	0.193	-0.299	0.002
			Max. Vx	42	0.003	-0.140	0.007
T2	242.125 - 239.746	Leg	Max Tension	13	4.897	-0.007	0.003
			Max. Compression	18	-7.730	-0.010	-0.006
			Max. Mx	39	-1.568	-0.016	-0.001
			Max. My	11	-4.638	0.002	-0.016
			Max. Vy	14	-0.019	-0.014	-0.001
			Max. Vx	46	0.022	0.008	0.015
		Diagonal	Max Tension	14	1.719	0.000	0.000
			Max. Compression	38	-1.843	0.000	0.000
			Max. Mx	56	0.494	-0.007	0.000
			Max. My	61	-0.240	-0.007	-0.001
			Max. Vy	56	0.014	-0.007	0.000
			Max. Vx	61	-0.000	0.000	0.000
		Top Girt	Max Tension	57	0.310	0.000	0.000
			Max. Compression	21	-0.028	0.000	0.000
			Max. Mx	50	0.274	0.027	0.000
			Max. My	38	0.099	0.000	-0.000
			Max. Vy	50	0.027	0.000	0.000
			Max. Vx	38	0.000	0.000	0.000
		Bottom Girt	Max Tension	51	0.226	0.000	0.000
			Max. Compression	45	-0.103	0.000	0.000
			Max. Mx	50	0.173	0.025	0.000
			Max. My	38	0.075	0.000	-0.000
			Max. Vy	50	-0.025	0.000	0.000
			Max. Vx	38	0.000	0.000	0.000

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T3	239.746 - 232.608	Leg	Max Tension	13	14.838	-0.036	0.021
			Max. Compression	18	-20.929	0.072	0.041
			Max. Mx	30	-18.464	-0.077	0.012
			Max. My	2	-20.899	-0.001	-0.083
			Max. Vy	14	1.724	-0.023	-0.043
		Diagonal	Max. Vx	2	-1.742	-0.002	0.046
			Max Tension	38	3.940	0.000	0.000
			Max. Compression	14	-3.968	0.000	0.000
			Max. Mx	56	0.239	-0.007	0.000
			Max. My	14	-3.966	-0.000	0.002
			Max. Vy	59	0.014	-0.007	-0.000
			Max. Vx	14	0.001	0.000	0.000
			Max Tension	13	26.770	1.300	-0.730
T4	232.608 - 230	Leg	Max. Compression	18	-33.108	0.543	0.315
			Max. Mx	38	-28.824	-1.478	0.097
			Max. My	2	-33.079	-0.000	-1.546
			Max. Vy	14	3.771	0.613	0.009
			Max. Vx	2	-4.018	-0.001	-0.625
		Diagonal	Max Tension	46	5.696	-0.001	0.000
			Max. Compression	46	-5.733	0.000	0.000
			Max. Mx	59	1.235	-0.008	0.000
			Max. My	34	-0.583	-0.002	-0.002
			Max. Vy	59	0.015	-0.008	0.000
			Max. Vx	34	-0.001	0.000	0.000
		Secondary Horizontal	Max Tension	10	1.873	0.000	0.000
			Max. Compression	34	-1.827	-0.002	-0.001
			Max. Mx	59	-0.674	-0.006	-0.000
			Max. My	33	-1.418	-0.001	-0.001
			Max. Vy	59	0.014	-0.006	-0.000
			Max. Vx	33	0.001	-0.001	-0.001
		Bottom Girt	Max Tension	42	1.613	0.000	0.000
			Max. Compression	18	-1.821	0.000	0.000
			Max. Mx	50	-0.011	0.025	0.000
			Max. My	38	0.293	0.000	-0.000
			Max. Vy	50	-0.025	0.000	0.000
			Max. Vx	38	0.000	0.000	0.000
T5	230 - 210	Leg	Max Tension	45	82.087	1.510	0.035
			Max. Compression	18	-90.337	-0.647	-0.021
			Max. Mx	18	-33.191	2.581	0.010
			Max. My	6	-3.525	-0.017	-2.213
			Max. Vy	18	-4.101	-0.647	-0.021
		Diagonal	Max. Vx	38	3.271	0.014	0.604
			Max Tension	46	5.254	0.000	0.000
			Max. Compression	46	-5.424	0.000	0.000
			Max. Mx	51	1.519	-0.011	-0.000
			Max. My	46	-5.407	0.000	0.003
			Max. Vy	51	0.018	-0.011	-0.000
			Max. Vx	46	-0.001	0.000	0.000
		Top Girt	Max Tension	18	2.545	0.000	0.000
			Max. Compression	42	-2.404	0.000	0.000
			Max. Mx	50	0.032	0.027	0.000
			Max. My	38	-0.260	0.000	-0.000
			Max. Vy	50	0.027	0.000	0.000
		Bottom Girt	Max. Vx	38	0.000	0.000	0.000
			Max Tension	42	2.288	0.000	0.000
			Max. Compression	18	-2.458	0.000	0.000
			Max. Mx	50	0.101	0.034	0.000
			Max. My	38	0.431	0.000	-0.000
			Max. Vy	50	-0.030	0.000	0.000

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T6	210 - 190	Leg	Max. Vx	38	0.000	0.000	0.000
			Max Tension	45	132.781	0.487	0.036
			Max. Compression	18	-143.136	3.443	0.103
			Max. Mx	18	-143.136	3.443	0.103
			Max. My	38	-4.571	-0.029	-2.675
			Max. Vy	18	-5.046	3.443	0.103
		Diagonal	Max. Vx	38	3.287	-0.029	-2.675
			Max Tension	22	5.633	0.000	0.000
			Max. Compression	22	-5.955	0.000	0.000
			Max. Mx	51	1.435	-0.014	-0.000
			Max. My	46	-5.924	0.001	0.004
			Max. Vy	51	0.021	-0.014	-0.000
		Top Girt	Max. Vx	46	-0.002	0.000	0.000
			Max Tension	18	2.106	0.000	0.000
			Max. Compression	42	-1.934	0.000	0.000
			Max. Mx	50	0.047	0.034	0.000
			Max. My	2	-1.249	0.000	0.000
			Max. Vy	50	-0.030	0.000	0.000
		Bottom Girt	Max. Vx	2	-0.000	0.000	0.000
			Max Tension	42	1.561	0.000	0.000
			Max. Compression	18	-1.470	0.000	0.000
			Max. Mx	50	0.117	0.041	0.000
			Max. My	38	-0.108	0.000	-0.000
			Max. Vy	50	0.033	0.000	0.000
T7	190 - 180	Leg	Max. Vx	38	0.000	0.000	0.000
			Max Tension	45	131.183	-3.149	-0.094
			Max. Compression	18	-140.700	6.140	-0.002
			Max. Mx	42	130.688	-6.650	-0.051
			Max. My	46	-5.128	-0.254	10.973
			Max. Vy	26	0.507	-6.527	-0.014
		Diagonal	Max. Vx	14	-1.065	-0.237	10.855
			Max Tension	21	4.630	0.000	0.000
			Max. Compression	42	-4.949	0.000	0.000
			Max. Mx	42	2.352	0.101	0.012
			Max. My	42	0.458	-0.039	-0.025
			Max. Vy	61	0.044	0.072	0.004
		Leg	Max. Vx	61	0.005	0.000	0.000
			Max Tension	45	148.215	-6.389	-0.021
			Max. Compression	18	-160.636	5.881	0.025
			Max. Mx	42	140.595	-6.650	-0.051
			Max. My	46	-6.063	-0.254	10.973
			Max. Vy	34	0.221	6.396	0.004
T8	180 - 160	Diagonal	Max. Vx	14	0.666	-0.237	10.855
			Max Tension	18	3.370	0.000	0.000
			Max. Compression	45	-3.613	0.000	0.000
			Max. Mx	18	2.629	0.098	0.006
			Max. My	52	0.486	0.082	0.015
			Max. Vy	61	0.055	0.087	0.015
		Leg	Max. Vx	52	-0.005	0.000	0.000
			Max Tension	45	164.405	-5.490	0.003
			Max. Compression	18	-180.172	5.651	0.053
			Max. Mx	42	155.784	-5.939	-0.046
			Max. My	38	-8.585	-0.025	-5.531
			Max. Vy	26	-0.214	-5.790	0.002
T9	160 - 140	Diagonal	Max. Vx	15	-0.226	0.000	5.478
			Max Tension	23	3.368	0.000	0.000
			Max. Compression	18	-3.810	0.000	0.000
			Max. Mx	61	1.055	0.103	0.016
			Max. My	51	-0.057	0.094	0.017
			Max. Vy	61	0.066	0.103	0.016
		Leg	Max. Vx	51	0.005	0.000	0.000



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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T10	140 - 120	Leg	Max Tension	45	182.256	-4.779	0.037
			Max. Compression	18	-201.752	6.189	-0.008
			Max. Mx	18	-201.752	6.189	-0.008
			Max. My	46	-9.852	-0.024	6.069
			Max. Vy	21	-0.462	6.171	-0.006
			Max. Vx	47	-0.700	-0.024	6.022
		Diagonal	Max Tension	23	4.121	0.000	0.000
			Max. Compression	18	-4.509	0.000	0.000
			Max. Mx	51	1.087	0.151	0.019
			Max. My	51	-0.130	0.137	0.023
			Max. Vy	61	0.088	0.150	0.021
			Max. Vx	51	0.006	0.000	0.000
T11	120 - 110	Leg	Max Tension	45	192.536	-6.043	0.002
			Max. Compression	18	-213.947	1.424	-0.040
			Max. Mx	18	-213.288	6.189	-0.008
			Max. My	46	-10.192	-0.024	6.069
			Max. Vy	18	0.680	6.189	-0.008
			Max. Vx	38	-0.387	0.005	-6.007
		Diagonal	Max Tension	31	5.271	0.000	0.000
			Max. Compression	2	-5.648	0.000	0.000
			Max. Mx	51	1.320	0.192	0.025
			Max. My	51	-0.318	0.174	0.028
			Max. Vy	61	0.106	0.190	0.027
			Max. Vx	51	0.007	0.000	0.000
T12	110 - 100	Leg	Max Tension	45	201.688	-1.869	0.013
			Max. Compression	18	-224.994	1.461	-0.071
			Max. Mx	18	-224.958	12.536	0.209
			Max. My	46	-11.919	-0.269	5.163
			Max. Vy	18	2.427	12.536	0.209
			Max. Vx	46	-0.878	-0.269	5.163
		Diagonal	Max Tension	29	6.829	0.095	-0.003
			Max. Compression	2	-7.727	0.000	0.000
			Max. Mx	61	1.411	0.205	0.021
			Max. My	57	-3.026	0.171	-0.025
			Max. Vy	61	0.113	0.205	0.021
			Max. Vx	57	-0.006	0.000	0.000
		Secondary Horizontal	Max Tension	18	3.902	0.022	-0.003
			Max. Compression	18	-3.902	0.000	0.000
			Max. Mx	55	0.454	0.128	0.021
			Max. My	60	-0.399	0.127	0.028
			Max. Vy	55	0.095	0.128	0.021
			Max. Vx	62	-0.007	0.000	0.000
T13	100 - 80	Leg	Max Tension	45	225.302	-4.846	-0.001
			Max. Compression	18	-254.249	5.021	-0.018
			Max. Mx	18	-254.249	5.021	-0.018
			Max. My	46	-13.056	-0.058	5.553
			Max. Vy	18	-0.508	4.865	-0.017
			Max. Vx	46	0.325	-0.058	5.553
		Diagonal	Max Tension	7	6.815	0.000	0.000
			Max. Compression	6	-7.094	0.000	0.000
			Max. Mx	61	1.517	0.250	0.033
			Max. My	51	-0.427	0.237	0.035
			Max. Vy	61	0.127	0.250	0.033
			Max. Vx	51	0.007	0.000	0.000
T14	80 - 60	Leg	Max Tension	45	248.091	-4.472	-0.005
			Max. Compression	18	-282.886	4.506	-0.031
			Max. Mx	18	-267.890	5.021	-0.018
			Max. My	46	-14.995	-0.027	4.412
			Max. Vy	21	0.237	4.998	-0.016
			Max. Vx	14	-0.376	-0.028	4.346

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T15	60 - 40	Diagonal	Max Tension	7	7.692	0.000	0.000
			Max. Compression	2	-7.918	0.000	0.000
		Leg	Max. Mx	61	1.710	0.333	0.042
			Max. My	51	0.068	0.286	0.045
			Max. Vy	61	0.157	0.333	0.042
			Max. Vx	51	0.009	0.000	0.000
			Max Tension	45	271.301	-4.131	-0.003
			Max. Compression	18	-312.369	3.492	-0.065
			Max. Mx	42	267.353	-4.649	0.036
			Max. My	46	-18.701	-0.716	7.128
			Max. Vy	18	0.311	4.633	-0.014
			Max. Vx	46	-0.497	-0.716	7.128
T16	40 - 20	Diagonal	Max Tension	7	8.424	0.000	0.000
			Max. Compression	7	-8.491	0.000	0.000
		Leg	Max. Mx	61	1.568	0.387	0.049
			Max. My	51	-0.148	0.339	0.052
			Max. Vy	61	0.169	0.387	0.049
			Max. Vx	51	0.009	0.000	0.000
			Max Tension	45	296.155	-5.026	-0.014
			Max. Compression	18	-344.348	5.733	-0.233
			Max. Mx	42	291.448	-8.193	0.138
			Max. My	46	-21.581	-1.513	20.923
			Max. Vy	53	-0.678	-4.506	-0.058
			Max. Vx	46	-2.734	-1.513	20.923
T17	20 - 0	Diagonal	Max Tension	2	10.596	0.000	0.000
			Max. Compression	2	-10.575	0.000	0.000
		Leg	Max. Mx	62	-1.443	0.522	-0.068
			Max. My	62	-3.645	0.453	0.082
			Max. Vy	62	0.201	0.522	-0.068
			Max. Vx	62	-0.012	0.000	0.000
			Max Tension	45	306.954	-7.818	0.144
			Max. Compression	18	-357.565	0.000	-0.000
			Max. Mx	42	302.794	-8.193	0.138
			Max. My	46	-20.850	-1.513	20.923
			Max. Vy	42	-0.780	-8.193	0.138
			Max. Vx	46	1.437	-1.513	20.923
		Diagonal	Max Tension	29	15.275	0.000	0.000
			Max. Compression	2	-18.523	0.000	0.000
			Max. Mx	62	4.666	-0.876	-0.137
			Max. My	58	-0.370	-0.850	0.146
			Max. Vy	62	-0.282	-0.876	-0.137
			Max. Vx	58	0.018	0.000	0.000

## Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	34	370.295	36.683	-21.602
	Max. H <sub>x</sub>	34	370.295	36.683	-21.602
	Max. H <sub>z</sub>	13	-313.318	-30.594	18.021
	Min. Vert	13	-313.318	-30.594	18.021
	Min. H <sub>x</sub>	13	-313.318	-30.594	18.021
	Min. H <sub>z</sub>	34	370.295	36.683	-21.602
Leg B	Max. Vert	18	380.318	-38.082	-21.687
	Max. H <sub>x</sub>	45	-323.056	31.788	18.027
	Max. H <sub>z</sub>	45	-323.056	31.788	18.027

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Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg A	Min. Vert	45	-323.056	31.788	18.027
	Min. H <sub>x</sub>	18	380.318	-38.082	-21.687
	Min. H <sub>z</sub>	18	380.318	-38.082	-21.687
	Max. Vert	2	369.155	-1.154	42.413
	Max. H <sub>x</sub>	18	-151.854	1.921	-17.452
	Max. H <sub>z</sub>	2	369.155	-1.154	42.413
	Min. Vert	29	-308.653	1.127	-35.014
	Min. H <sub>x</sub>	42	196.049	-2.048	22.251
	Min. H <sub>z</sub>	29	-308.653	1.127	-35.014

## Tower Mast Reaction Summary

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	61.673	0.000	0.000	-15.133	10.855	-0.000
1.2 Dead+1.6 Wind 0 deg - No Ice	74.007	0.071	-56.473	-7160.008	2.230	-47.712
1.2D+1.6W (pattern 1) 0 deg - No Ice	74.007	0.071	-56.308	-7119.467	2.229	-47.711
1.2D+1.6W (pattern 2) 0 deg - No Ice	74.007	0.042	-39.689	-5195.731	6.578	-42.846
0.9 Dead+1.6 Wind 0 deg - No Ice	55.505	0.071	-56.473	-7139.406	-1.037	-47.694
1.2 Dead+1.6 Wind 30 deg - No Ice	74.007	26.540	-45.836	-5892.683	-3390.377	-30.280
1.2D+1.6W (pattern 1) 30 deg - No Ice	74.007	26.464	-45.704	-5860.320	-3371.691	-30.280
1.2D+1.6W (pattern 2) 30 deg - No Ice	74.007	18.555	-32.059	-4252.735	-2438.797	-25.821
0.9 Dead+1.6 Wind 30 deg - No Ice	55.505	26.540	-45.835	-5874.734	-3385.943	-30.239
1.2 Dead+1.6 Wind 60 deg - No Ice	74.007	46.452	-26.697	-3465.925	-5980.150	-13.901
1.2D+1.6W (pattern 1) 60 deg - No Ice	74.007	46.323	-26.623	-3447.767	-5948.701	-13.900
1.2D+1.6W (pattern 2) 60 deg - No Ice	74.007	32.893	-18.918	-2533.222	-4355.937	-11.453
0.9 Dead+1.6 Wind 60 deg - No Ice	55.505	46.452	-26.697	-3453.462	-5969.809	-13.864
1.2 Dead+1.6 Wind 90 deg - No Ice	74.007	55.174	0.039	-17.816	-7089.641	-13.596
1.2D+1.6W (pattern 1) 90 deg - No Ice	74.007	55.022	0.039	-17.814	-7052.271	-13.593
1.2D+1.6W (pattern 2) 90 deg - No Ice	74.007	39.178	0.023	-18.026	-5186.052	-13.810
0.9 Dead+1.6 Wind 90 deg - No Ice	55.505	55.174	0.039	-13.205	-7076.892	-13.574
1.2 Dead+1.6 Wind 120 deg - No Ice	74.007	50.815	29.135	3668.954	-6417.295	11.668
1.2D+1.6W (pattern 1) 120 deg - No Ice	74.007	50.672	29.052	3648.684	-6382.186	11.669
1.2D+1.6W (pattern 2) 120 deg - No Ice	74.007	36.181	20.767	2690.621	-4705.244	9.257
0.9 Dead+1.6 Wind 120 deg - No Ice	55.505	50.815	29.135	3665.333	-6406.270	11.691
1.2 Dead+1.6 Wind 150 deg -	74.007	28.283	48.538	6209.306	-3609.125	37.611

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<i>Load Combination</i>	<i>Vertical K</i>	<i>Shear<sub>x</sub> K</i>	<i>Shear<sub>z</sub> K</i>	<i>Overturning Moment, M<sub>x</sub> kip-ft</i>	<i>Overturning Moment, M<sub>z</sub> kip-ft</i>	<i>Torque kip-ft</i>
No Ice						
1.2D+1.6W (pattern 1) 150 deg	74.007	28.207	48.406	6176.942	-3590.442	37.610
- No Ice						
1.2D+1.6W (pattern 2) 150 deg	74.007	20.342	34.963	4592.165	-2664.782	33.728
- No Ice						
0.9 Dead+1.6 Wind 150 deg -	55.505	28.283	48.538	6199.826	-3604.260	37.617
No Ice						
1.2 Dead+1.6 Wind 180 deg -	74.007	0.072	52.906	6810.792	9.443	47.427
No Ice						
1.2D+1.6W (pattern 1) 180 deg	74.007	0.072	52.758	6774.477	9.442	47.427
- No Ice						
1.2D+1.6W (pattern 2) 180 deg	74.007	0.043	37.531	4967.293	10.910	42.675
- No Ice						
0.9 Dead+1.6 Wind 180 deg -	55.505	0.072	52.906	6799.787	6.150	47.412
No Ice						
1.2 Dead+1.6 Wind 210 deg -	74.007	-26.400	45.567	5827.824	3402.020	30.062
No Ice						
1.2D+1.6W (pattern 1) 210 deg	74.007	-26.323	45.435	5795.459	3383.335	30.062
- No Ice						
1.2D+1.6W (pattern 2) 210 deg	74.007	-18.471	31.897	4199.173	2456.251	25.691
- No Ice						
0.9 Dead+1.6 Wind 210 deg -	55.505	-26.399	45.567	5819.121	3391.021	30.021
No Ice						
1.2 Dead+1.6 Wind 240 deg -	74.007	-49.164	28.263	3562.922	6237.963	13.907
No Ice						
1.2D+1.6W (pattern 1) 240 deg	74.007	-49.021	28.181	3542.652	6202.853	13.906
- No Ice						
1.2D+1.6W (pattern 2) 240 deg	74.007	-34.536	19.866	2578.898	4524.788	11.457
- No Ice						
0.9 Dead+1.6 Wind 240 deg -	55.505	-49.164	28.263	3559.506	6220.756	13.868
No Ice						
1.2 Dead+1.6 Wind 270 deg -	74.007	-54.871	-0.026	-17.580	7084.100	13.815
No Ice						
1.2D+1.6W (pattern 1) 270 deg	74.007	-54.719	-0.026	-17.578	7046.730	13.812
- No Ice						
1.2D+1.6W (pattern 2) 270 deg	74.007	-38.996	-0.016	-17.882	5193.203	13.942
- No Ice						
0.9 Dead+1.6 Wind 270 deg -	55.505	-54.871	-0.026	-12.984	7064.811	13.793
No Ice						
1.2 Dead+1.6 Wind 300 deg -	74.007	-47.655	-27.474	-3562.071	6165.393	-11.391
No Ice						
1.2D+1.6W (pattern 1) 300 deg	74.007	-47.527	-27.400	-3543.914	6133.944	-11.392
- No Ice						
1.2D+1.6W (pattern 2) 300 deg	74.007	-34.270	-19.762	-2639.024	4560.884	-9.092
- No Ice						
0.9 Dead+1.6 Wind 300 deg -	55.505	-47.655	-27.474	-3549.414	6148.134	-11.414
No Ice						
1.2 Dead+1.6 Wind 330 deg -	74.007	-28.076	-48.657	-6258.111	3614.207	-37.613
No Ice						
1.2D+1.6W (pattern 1) 330 deg	74.007	-28.000	-48.526	-6225.749	3595.520	-37.612
- No Ice						
1.2D+1.6W (pattern 2) 330 deg	74.007	-20.217	-35.035	-4636.097	2678.310	-33.729
- No Ice						
0.9 Dead+1.6 Wind 330 deg -	55.505	-28.076	-48.657	-6239.416	3602.794	-37.631
No Ice						
1.2 Dead+1.0 Ice+1.0 Temp	228.581	0.000	0.000	-37.854	127.713	0.000
1.2 Dead+1.0 Wind 0 deg+1.0	228.581	0.097	-19.992	-2712.391	116.815	-22.167
Ice+1.0 Temp						
1.2 Dead+1.0 Wind 30 deg+1.0	228.581	9.792	-16.766	-2301.005	-1190.601	-14.780
Ice+1.0 Temp						
1.2 Dead+1.0 Wind 60 deg+1.0	228.581	16.721	-9.583	-1337.567	-2135.152	-6.156

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Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Ice+1.0 Temp						
1.2 Dead+1.0 Wind 90 deg+1.0	228.581	19.640	-0.036	-42.496	-2522.984	0.075
Ice+1.0 Temp						
1.2 Dead+1.0 Wind 120	228.581	17.587	9.971	1299.721	-2224.406	8.850
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 150	228.581	10.016	17.179	2272.172	-1215.909	19.385
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 180	228.581	0.032	19.524	2594.693	125.236	22.348
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 210	228.581	-9.686	16.719	2219.572	1435.617	15.113
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 240	228.581	-16.986	9.736	1273.262	2412.177	6.158
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 270	228.581	-19.546	-0.032	-41.019	2769.091	-0.409
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 300	228.581	-17.117	-9.849	-1367.605	2437.592	-9.039
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 330	228.581	-9.975	-17.203	-2350.927	1467.749	-19.384
deg+1.0 Ice+1.0 Temp						
Dead+Wind 0 deg - Service	61.673	0.016	-12.456	-1588.221	8.485	-10.520
Dead+Wind 30 deg - Service	61.673	5.854	-10.110	-1309.020	-738.685	-6.677
Dead+Wind 60 deg - Service	61.673	10.246	-5.888	-774.549	-1309.083	-3.062
Dead+Wind 90 deg - Service	61.673	12.170	0.009	-15.112	-1553.467	-2.990
Dead+Wind 120 deg - Service	61.673	11.208	6.426	796.898	-1405.429	2.578
Dead+Wind 150 deg - Service	61.673	6.238	10.706	1356.377	-786.912	8.293
Dead+Wind 180 deg - Service	61.673	0.016	11.669	1488.824	10.075	10.459
Dead+Wind 210 deg - Service	61.673	-5.823	10.050	1272.320	757.283	6.629
Dead+Wind 240 deg - Service	61.673	-10.844	6.234	773.546	1381.949	3.063
Dead+Wind 270 deg - Service	61.673	-12.103	-0.006	-15.062	1568.279	3.038
Dead+Wind 300 deg - Service	61.673	-10.511	-6.060	-795.738	1365.921	-2.516
Dead+Wind 330 deg - Service	61.673	-6.193	-10.732	-1389.563	804.026	-8.293

## Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.000	-61.673	0.000	0.000	61.673	0.000	0.000%
2	0.071	-74.007	-56.473	-0.071	74.007	56.473	0.000%
3	0.071	-74.007	-56.308	-0.071	74.007	56.308	0.000%
4	0.042	-74.007	-39.689	-0.042	74.007	39.689	0.000%
5	0.071	-55.505	-56.473	-0.071	55.505	56.473	0.000%
6	26.540	-74.007	-45.835	-26.540	74.007	45.836	0.000%
7	26.464	-74.007	-45.704	-26.464	74.007	45.704	0.000%
8	18.555	-74.007	-32.059	-18.555	74.007	32.059	0.000%
9	26.540	-55.505	-45.835	-26.540	55.505	45.835	0.000%
10	46.451	-74.007	-26.697	-46.452	74.007	26.697	0.000%
11	46.323	-74.007	-26.623	-46.323	74.007	26.623	0.000%
12	32.893	-74.007	-18.918	-32.893	74.007	18.918	0.000%
13	46.451	-55.505	-26.697	-46.452	55.505	26.697	0.000%
14	55.174	-74.007	0.039	-55.174	74.007	-0.039	0.000%
15	55.022	-74.007	0.039	-55.022	74.007	-0.039	0.000%
16	39.178	-74.007	0.023	-39.178	74.007	-0.023	0.000%
17	55.174	-55.505	0.039	-55.174	55.505	-0.039	0.000%
18	50.815	-74.007	29.135	-50.815	74.007	-29.135	0.000%
19	50.672	-74.007	29.052	-50.672	74.007	-29.052	0.000%
20	36.181	-74.007	20.767	-36.181	74.007	-20.767	0.000%
21	50.815	-55.505	29.135	-50.815	55.505	-29.135	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
22	28.283	-74.007	48.538	-28.283	74.007	-48.538	0.000%
23	28.207	-74.007	48.406	-28.207	74.007	-48.406	0.000%
24	20.342	-74.007	34.963	-20.342	74.007	-34.963	0.000%
25	28.283	-55.505	48.538	-28.283	55.505	-48.538	0.000%
26	0.072	-74.007	52.906	-0.072	74.007	-52.906	0.000%
27	0.072	-74.007	52.758	-0.072	74.007	-52.758	0.000%
28	0.043	-74.007	37.531	-0.043	74.007	-37.531	0.000%
29	0.072	-55.505	52.906	-0.072	55.505	-52.906	0.000%
30	-26.399	-74.007	45.567	26.400	74.007	-45.567	0.000%
31	-26.323	-74.007	45.435	26.323	74.007	-45.435	0.000%
32	-18.471	-74.007	31.897	18.471	74.007	-31.897	0.000%
33	-26.399	-55.505	45.567	26.399	55.505	-45.567	0.000%
34	-49.165	-74.007	28.263	49.164	74.007	-28.263	0.000%
35	-49.021	-74.007	28.181	49.021	74.007	-28.181	0.000%
36	-34.536	-74.007	19.866	34.536	74.007	-19.866	0.000%
37	-49.165	-55.505	28.263	49.164	55.505	-28.263	0.000%
38	-54.871	-74.007	-0.026	54.871	74.007	0.026	0.000%
39	-54.719	-74.007	-0.026	54.719	74.007	0.026	0.000%
40	-38.996	-74.007	-0.016	38.996	74.007	0.016	0.000%
41	-54.871	-55.505	-0.026	54.871	55.505	0.026	0.000%
42	-47.655	-74.007	-27.474	47.655	74.007	27.474	0.000%
43	-47.526	-74.007	-27.400	47.527	74.007	27.400	0.000%
44	-34.270	-74.007	-19.762	34.270	74.007	19.762	0.000%
45	-47.655	-55.505	-27.474	47.655	55.505	27.474	0.000%
46	-28.076	-74.007	-48.657	28.076	74.007	48.657	0.000%
47	-28.000	-74.007	-48.525	28.000	74.007	48.526	0.000%
48	-20.217	-74.007	-35.035	20.217	74.007	35.035	0.000%
49	-28.076	-55.505	-48.657	28.076	55.505	48.657	0.000%
50	0.000	-228.581	0.000	-0.000	228.581	-0.000	0.000%
51	0.097	-228.581	-19.992	-0.097	228.581	19.992	0.000%
52	9.792	-228.581	-16.766	-9.792	228.581	16.766	0.000%
53	16.721	-228.581	-9.583	-16.721	228.581	9.583	0.000%
54	19.640	-228.581	-0.036	-19.640	228.581	0.036	0.000%
55	17.587	-228.581	9.971	-17.587	228.581	-9.971	0.000%
56	10.016	-228.581	17.179	-10.016	228.581	-17.179	0.000%
57	0.032	-228.581	19.524	-0.032	228.581	-19.524	0.000%
58	-9.686	-228.581	16.719	9.686	228.581	-16.719	0.000%
59	-16.986	-228.581	9.736	16.986	228.581	-9.736	0.000%
60	-19.546	-228.581	-0.032	19.546	228.581	0.032	0.000%
61	-17.117	-228.581	-9.849	17.117	228.581	9.849	0.000%
62	-9.975	-228.581	-17.203	9.975	228.581	17.203	0.000%
63	0.016	-61.673	-12.456	-0.016	61.673	12.456	0.000%
64	5.854	-61.673	-10.110	-5.854	61.673	10.110	0.000%
65	10.246	-61.673	-5.888	-10.246	61.673	5.888	0.000%
66	12.170	-61.673	0.009	-12.170	61.673	-0.009	0.000%
67	11.208	-61.673	6.426	-11.208	61.673	-6.426	0.000%
68	6.238	-61.673	10.706	-6.238	61.673	-10.706	0.000%
69	0.016	-61.673	11.669	-0.016	61.673	-11.669	0.000%
70	-5.823	-61.673	10.050	5.823	61.673	-10.050	0.000%
71	-10.844	-61.673	6.234	10.844	61.673	-6.234	0.000%
72	-12.103	-61.673	-0.006	12.103	61.673	0.006	0.000%
73	-10.511	-61.673	-6.060	10.511	61.673	6.060	0.000%
74	-6.193	-61.673	-10.732	6.193	61.673	10.732	0.000%

## Non-Linear Convergence Results



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<i>Load Combination</i>	<i>Converged?</i>	<i>Number of Cycles</i>	<i>Displacement Tolerance</i>	<i>Force Tolerance</i>
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000700
3	Yes	4	0.00000001	0.00000705
4	Yes	4	0.00000001	0.00000806
5	Yes	4	0.00000001	0.00000249
6	Yes	4	0.00000001	0.00000894
7	Yes	4	0.00000001	0.00000891
8	Yes	4	0.00000001	0.00000916
9	Yes	4	0.00000001	0.00000453
10	Yes	4	0.00000001	0.00000889
11	Yes	4	0.00000001	0.00000892
12	Yes	4	0.00000001	0.00000963
13	Yes	4	0.00000001	0.00000339
14	Yes	4	0.00000001	0.00000952
15	Yes	4	0.00000001	0.00000947
16	Yes	4	0.00000001	0.00000934
17	Yes	4	0.00000001	0.00000528
18	Yes	4	0.00000001	0.00000695
19	Yes	4	0.00000001	0.00000700
20	Yes	4	0.00000001	0.00000798
21	Yes	4	0.00000001	0.00000254
22	Yes	4	0.00000001	0.00000900
23	Yes	4	0.00000001	0.00000897
24	Yes	4	0.00000001	0.00000905
25	Yes	4	0.00000001	0.00000487
26	Yes	4	0.00000001	0.00000892
27	Yes	4	0.00000001	0.00000895
28	Yes	4	0.00000001	0.00000967
29	Yes	4	0.00000001	0.00000340
30	Yes	4	0.00000001	0.00000893
31	Yes	4	0.00000001	0.00000890
32	Yes	4	0.00000001	0.00000917
33	Yes	4	0.00000001	0.00000450
34	Yes	4	0.00000001	0.00000701
35	Yes	4	0.00000001	0.00000706
36	Yes	4	0.00000001	0.00000807
37	Yes	4	0.00000001	0.00000250
38	Yes	4	0.00000001	0.00000952
39	Yes	4	0.00000001	0.00000946
40	Yes	4	0.00000001	0.00000934
41	Yes	4	0.00000001	0.00000528
42	Yes	4	0.00000001	0.00000884
43	Yes	4	0.00000001	0.00000886
44	Yes	4	0.00000001	0.00000956
45	Yes	4	0.00000001	0.00000339
46	Yes	4	0.00000001	0.00000899
47	Yes	4	0.00000001	0.00000895
48	Yes	4	0.00000001	0.00000903
49	Yes	4	0.00000001	0.00000476
50	Yes	4	0.00000001	0.00001542
51	Yes	4	0.00000001	0.00026198
52	Yes	4	0.00000001	0.00026408
53	Yes	4	0.00000001	0.00026652
54	Yes	4	0.00000001	0.00026307
55	Yes	4	0.00000001	0.00025949
56	Yes	4	0.00000001	0.00026267
57	Yes	4	0.00000001	0.00026562
58	Yes	4	0.00000001	0.00026232
59	Yes	4	0.00000001	0.00026001
60	Yes	4	0.00000001	0.00026442
61	Yes	4	0.00000001	0.00026846
62	Yes	4	0.00000001	0.00026569

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63	Yes	4	0.00000001	0.00000544
64	Yes	4	0.00000001	0.00000562
65	Yes	4	0.00000001	0.00000576
66	Yes	4	0.00000001	0.00000561
67	Yes	4	0.00000001	0.00000543
68	Yes	4	0.00000001	0.00000560
69	Yes	4	0.00000001	0.00000576
70	Yes	4	0.00000001	0.00000561
71	Yes	4	0.00000001	0.00000543
72	Yes	4	0.00000001	0.00000560
73	Yes	4	0.00000001	0.00000574
74	Yes	4	0.00000001	0.00000559

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	245 - 242.125	8.869	74	0.444	0.023
T2	242.125 - 239.746	8.599	74	0.444	0.023
T3	239.746 - 232.608	8.377	74	0.442	0.024
T4	232.608 - 230	7.713	74	0.432	0.024
T5	230 - 210	7.466	74	0.425	0.024
T6	210 - 190	5.725	74	0.363	0.022
T7	190 - 180	4.297	74	0.291	0.018
T8	180 - 160	3.719	74	0.255	0.017
T9	160 - 140	2.773	74	0.194	0.015
T10	140 - 120	2.031	67	0.156	0.013
T11	120 - 110	1.443	67	0.121	0.011
T12	110 - 100	1.200	67	0.108	0.010
T13	100 - 80	0.982	67	0.095	0.009
T14	80 - 60	0.622	67	0.071	0.007
T15	60 - 40	0.351	67	0.052	0.005
T16	40 - 20	0.156	67	0.033	0.003
T17	20 - 0	0.036	67	0.015	0.001

### Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
247.500	Flash Beacon Lighting	74	8.869	0.444	0.023	50551
245.000	Lightning Rod 5/8" x 5'	74	8.869	0.444	0.023	50551
232.000	AIR 32 B2a/B66Aa w/ Mount Pipe	74	7.937	0.437	0.024	36210
230.000	Knife Plate	74	7.466	0.425	0.024	36895
161.250	2.5'x1.5'x0.5' Camera	74	2.825	0.197	0.015	23694
135.000	7' Omni	67	1.870	0.147	0.012	33200
134.000	8' Omni	67	1.839	0.145	0.012	33195
124.500	6"x8"0.25" Ice Bridge	67	1.562	0.128	0.012	33150
123.600	MKR-LTE-0IR Beacon	67	1.538	0.126	0.011	33169
122.000	20' Omni	67	1.495	0.124	0.011	33377
112.500	4' Grid Dish	67	1.258	0.111	0.010	46879
112.000	8' Omni	67	1.246	0.110	0.010	47952
111.000	7' Omni	67	1.223	0.109	0.010	49861
104.250	Andrew D6E-6	67	1.072	0.101	0.010	48389
72.000	18'x2.5" Omni/Whip	67	0.504	0.063	0.006	56899

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<i>Elevation</i>	<i>Appurtenance</i>	<i>Gov. Load Comb.</i>	<i>Deflection in</i>	<i>Tilt °</i>	<i>Twist °</i>	<i>Radius of Curvature ft</i>
<i>ft</i>			<i>in</i>			
70.750	16"x15"x9" Camera	67	0.486	0.061	0.006	57535
49.000	GPS	67	0.235	0.042	0.004	68928

### Maximum Tower Deflections - Design Wind

<i>Section No.</i>	<i>Elevation ft</i>	<i>Horz. Deflection in</i>	<i>Gov. Load Comb.</i>	<i>Tilt °</i>	<i>Twist °</i>
T1	245 - 242.125	40.299	18	2.013	0.107
T2	242.125 - 239.746	39.074	18	2.012	0.108
T3	239.746 - 232.608	38.065	18	2.004	0.109
T4	232.608 - 230	35.058	18	1.959	0.110
T5	230 - 210	33.935	18	1.927	0.111
T6	210 - 190	26.050	18	1.643	0.102
T7	190 - 180	19.582	18	1.319	0.083
T8	180 - 160	16.964	18	1.157	0.076
T9	160 - 140	12.669	18	0.883	0.066
T10	140 - 120	9.287	18	0.708	0.058
T11	120 - 110	6.597	18	0.549	0.050
T12	110 - 100	5.487	18	0.491	0.046
T13	100 - 80	4.490	18	0.434	0.041
T14	80 - 60	2.840	18	0.323	0.031
T15	60 - 40	1.604	18	0.236	0.022
T16	40 - 20	0.713	18	0.151	0.013
T17	20 - 0	0.163	18	0.066	0.004

### Critical Deflections and Radius of Curvature - Design Wind

<i>Elevation ft</i>	<i>Appurtenance</i>	<i>Gov. Load Comb.</i>	<i>Deflection in</i>	<i>Tilt °</i>	<i>Twist °</i>	<i>Radius of Curvature ft</i>
247.500	Flash Beacon Lighting	18	40.299	2.013	0.107	11121
245.000	Lightning Rod 5/8" x 5'	18	40.299	2.013	0.107	11121
232.000	AIR 32 B2a/B66Aa w/ Mount Pipe	18	36.073	1.980	0.110	7896
230.000	Knife Plate	18	33.935	1.927	0.111	8160
161.250	2.5'x1.5'x0.5' Camera	18	12.907	0.897	0.067	5237
135.000	7' Omni	18	8.553	0.667	0.056	7346
134.000	8' Omni	18	8.411	0.658	0.056	7345
124.500	6"x8"0.25" Ice Bridge	18	7.145	0.581	0.052	7312
123.600	MKR-LTE-0IR Beacon	18	7.033	0.575	0.052	7314
122.000	20' Omni	18	6.836	0.563	0.051	7356
112.500	4' Grid Dish	18	5.752	0.505	0.047	10391
112.000	8' Omni	18	5.699	0.502	0.047	10630
111.000	7' Omni	18	5.592	0.497	0.046	11057
104.250	Andrew D6E-6	18	4.900	0.459	0.043	10738
72.000	18"x2.5" Omni/Whip	18	2.300	0.286	0.027	12508
70.750	16"x15"x9" Camera	18	2.221	0.281	0.026	12650
49.000	GPS	18	1.074	0.190	0.017	15118

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### Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load Allowable	Allowable Ratio	Criteria
T4	232.608	Leg	A325N	0.625	5	6.622	24.851	0.266	1	Bolt DS
T5	230	Leg	A325N	0.750	5	18.067	35.785	0.505	1	Bolt DS
T6	210	Leg	A325N	1.000	6	22.130	53.014	0.417	1	Bolt Tension
T7	190	Leg	A325N	1.000	6	21.864	53.014	0.412	1	Bolt Tension
		Diagonal	A325N	1.000	1	4.630	9.144	0.506	1	Member Block Shear
T8	180	Leg	A325N	1.000	6	24.702	53.014	0.466	1	Bolt Tension
		Diagonal	A325N	1.000	1	3.370	9.144	0.369	1	Member Block Shear
T9	160	Leg	A325N	1.000	6	27.401	53.014	0.517	1	Bolt Tension
		Diagonal	A325N	1.000	1	3.368	9.144	0.368	1	Member Block Shear
T10	140	Leg	A325N	1.250	6	30.376	82.835	0.367	1	Bolt Tension
		Diagonal	A325N	1.000	1	4.121	10.164	0.405	1	Member Block Shear
T11	120	Diagonal	A325N	1.250	1	5.271	17.139	0.308	1	Member Block Shear
T12	110	Leg	A325N	1.250	6	33.543	82.835	0.405	1	Bolt Tension
		Diagonal	A325N	1.250	1	6.829	17.139	0.398	1	Member Block Shear
T13	100	Secondary Horizontal	A325N	0.500	2	1.951	7.035	0.277	1	Member Block Shear
		Leg	A325N	1.250	6	37.550	82.835	0.453	1	Bolt Tension
		Diagonal	A325N	1.250	1	6.815	17.139	0.398	1	Member Block Shear
T14	80	Leg	A325N	1.250	6	41.349	82.835	0.499	1	Bolt Tension
		Diagonal	A325N	1.250	1	7.692	20.537	0.375	1	Member Block Shear
T15	60	Leg	A325N	1.250	6	45.217	82.835	0.546	1	Bolt Tension
		Diagonal	A325N	1.250	1	8.424	20.537	0.410	1	Member Block Shear
T16	40	Leg	A325N	1.250	12	24.680	82.835	0.298	1	Bolt Tension
		Diagonal	A325N	1.250	1	10.596	20.537	0.516	1	Member Block Shear
T17	20	Diagonal	A325N	1.000	2	7.637	35.525	0.215	1	Member Block Shear

### Compression Checks

### Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	$\phi P_n$ K	Ratio $\frac{P_u}{\phi P_n}$
T1	245 - 242.125	1 1/2	2.875	2.875	92.0 K=1.00	1.767	-4.617	42.827	0.108 <sup>1</sup>
T2	242.125 - 239.746	1 1/2	2.379	2.379	76.1 K=1.00	1.767	-7.730	52.051	0.149 <sup>1</sup>
T3	239.746 -	1 1/2	7.138	2.379	76.1	1.767	-20.929	52.051	0.402 <sup>1</sup>

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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
T4	232.608 232.608 - 230	1 1/2	2.608	0.229	K=1.00 7.3	1.767	-33.108	79.210	0.418 <sup>1</sup>
T5	230 - 210	2	20.002	2.362	K=1.00 56.7	3.142	-86.051	111.763	0.770 <sup>1</sup>
T6	210 - 190	2 1/2	20.002	2.276	K=1.00 43.7	4.909	-139.512	192.101	0.726 <sup>1</sup>
T7	190 - 180	Pirod 105245	10.017	10.017	K=1.00 37.8	5.301	-140.700	214.859	0.655 <sup>1</sup>
T8	180 - 160	Pirod 105217	20.033	10.017	K=1.00 37.8	5.301	-160.636	214.859	0.748 <sup>1</sup>
T9	160 - 140	Pirod 105218	20.033	10.017	K=1.00 32.4	7.216	-180.172	300.681	0.599 <sup>1</sup>
T10	140 - 120	Pirod 105218	20.033	10.017	K=1.00 32.4	7.216	-201.752	300.681	0.671 <sup>1</sup>
T11	120 - 110	Pirod 105219	10.017	10.017	K=1.00 28.4	9.425	-213.947	399.868	0.535 <sup>1</sup>
T12	110 - 100	Pirod 105219	10.017	5.194	K=1.00 28.4	9.425	-224.994	399.868	0.563 <sup>1</sup>
T13	100 - 80	Pirod 105219	20.033	10.017	K=1.00 28.4	9.425	-254.249	399.868	0.636 <sup>1</sup>
T14	80 - 60	Pirod 105220	20.033	10.017	K=1.00 25.2	11.928	-282.886	512.375	0.552 <sup>1</sup>
T15	60 - 40	Pirod 105220	20.033	10.017	K=1.00 25.2	11.928	-312.369	512.375	0.610 <sup>1</sup>
T16	40 - 20	Pirod 105220	20.033	10.017	K=1.00 25.2	11.928	-344.348	512.375	0.672 <sup>1</sup>
T17	20 - 0	Pirod 112738	20.033	20.033	K=1.00 32.6	14.726	-357.565	613.145	0.583 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L <sub>d</sub> ft	Kl/r	φP <sub>n</sub> K	A in <sup>2</sup>	V <sub>u</sub> K	φV <sub>n</sub> K	Stress Ratio
T7	190 - 180	0.5	1.471	120.0	238.565	0.196	1.066	3.446	0.310
T8	180 - 160	0.5	1.471	120.0	238.565	0.196	0.667	3.335	0.201
T9	160 - 140	0.5	1.459	119.0	324.713	0.196	0.226	3.378	0.068
T10	140 - 120	0.5	1.459	119.0	324.713	0.196	0.700	3.378	0.208
T11	120 - 110	0.625	1.446	94.4	424.115	0.307	0.680	6.958	0.098
T12	110 - 100	0.625	1.446	94.4	424.115	0.307	2.431	6.958	0.349
T13	100 - 80	0.625	1.446	94.4	424.115	0.307	0.508	6.958	0.073
T14	80 - 60	0.625	1.435	93.6	536.771	0.307	0.377	7.011	0.055
T15	60 - 40	0.625	1.435	93.6	536.771	0.307	0.510	7.011	0.074
T16	40 - 20	0.625	1.435	93.6	536.771	0.307	2.750	7.011	0.393
T17	20 - 0	0.75	1.727	93.9	662.680	0.442	1.443	14.364	0.101

### Diagonal Design Data (Compression)

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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
T1	245 - 242.125	3/4	3.502	3.393	152.0 K=0.70	0.442	-2.530	4.320	0.586 <sup>1</sup>
T2	242.125 - 239.746	3/4	4.654	2.254	129.8 K=0.90	0.442	-1.843	5.919	0.311 <sup>1</sup>
T3	239.746 - 232.608	3/4	4.654	2.254	129.8 K=0.90	0.442	-3.968	5.919	0.670 <sup>1</sup>
T4	232.608 - 230	3/4	4.654	2.254	129.8 K=0.90	0.442	-5.733	5.919	0.969 <sup>1</sup>
T5	230 - 210	7/8	5.051	2.448	120.9 K=0.90	0.601	-4.949	9.300	0.532 <sup>1</sup>
T6	210 - 190	1	5.091	2.447	107.2 K=0.91	0.785	-5.955	15.255	0.390 <sup>1</sup>
T7	190 - 180	L2 1/2x2 1/2x3/16	11.416	5.024	121.8 K=1.00	0.902	-4.949	13.384	0.370 <sup>1</sup>
T8	180 - 160	L2 1/2x2 1/2x3/16	12.503	5.669	137.4 K=1.00	0.902	-3.583	10.790	0.332 <sup>1</sup>
T9	160 - 140	L2 1/2x2 1/2x3/16	13.796	6.369	154.4 K=1.00	0.902	-3.810	8.549	0.446 <sup>1</sup>
T10	140 - 120	L3x3x3/16	15.243	7.123	143.4 K=1.00	1.090	-4.509	11.971	0.377 <sup>1</sup>
T11	120 - 110	L3x3x5/16	16.010	7.487	152.5 K=1.00	1.780	-5.648	17.282	0.327 <sup>1</sup>
T12	110 - 100	L3x3x5/16	16.803	7.892	160.8 K=1.00	1.780	-7.727	15.553	0.497 <sup>1</sup>
T13	100 - 80	L3x3x5/16	18.448	8.729	177.8 K=1.00	1.780	-7.094	12.715	0.558 <sup>1</sup>
T14	80 - 60	L3 1/2x3 1/2x5/16	20.158	9.593	166.8 K=1.00	2.090	-7.918	16.963	0.467 <sup>1</sup>
T15	60 - 40	L3 1/2x3 1/2x5/16	21.916	10.479	182.3 K=1.00	2.090	-8.491	14.215	0.597 <sup>1</sup>
T16	40 - 20	L4x4x5/16	22.811	10.934	165.9 K=1.00	2.400	-10.575	19.704	0.537 <sup>1</sup>
T17	20 - 0	2L3 1/2x3 1/2x5/16x3/8	30.485	14.620	164.4 K=1.00	4.180	-18.523	34.949	0.530 <sup>1</sup>
2L 'a' > 78.857 in - 320									

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
T4	232.608 - 230	3/4	4.000	3.875	173.6 K=0.70	0.442	-1.827	3.312	0.552 <sup>1</sup>
T12	110 - 100	L3x3x3/16	13.481	6.074	121.8 K=1.00	1.090	-3.902	16.046	0.243 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Top Girt Design Data (Compression)

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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	KL/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
T1	245 - 242.125	6x3/4	4.000	2.906	161.1 K=1.00	4.500	-1.600	39.180	0.041 <sup>1</sup>
T2	242.125 - 239.746	1	4.000	3.875	130.2 K=0.70	0.785	-0.028	10.467	0.003 <sup>1</sup>
T5	230 - 210	1	4.022	3.855	129.5 K=0.70	0.785	-2.404	10.574	0.227 <sup>1</sup>
T6	210 - 190	1	4.525	4.317	145.0 K=0.70	0.785	-1.934	8.434	0.229 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	KL/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
T2	242.125 - 239.746	7/8	4.000	3.875	148.8 K=0.70	0.601	-0.103	6.135	0.017 <sup>1</sup>
T4	232.608 - 230	7/8	4.000	3.875	148.8 K=0.70	0.601	-1.821	6.135	0.297 <sup>1</sup>
T5	230 - 210	1	4.494	4.328	145.4 K=0.70	0.785	-2.458	8.392	0.293 <sup>1</sup>
T6	210 - 190	1	4.980	4.772	160.3 K=0.70	0.785	-1.470	6.902	0.213 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Tension Checks

### Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	KL/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
T1	245 - 242.125	1 1/2	2.875	2.875	92.0	1.767	0.205	79.522	0.003 <sup>1</sup>
T2	242.125 - 239.746	1 1/2	2.379	2.379	76.1	1.767	4.897	79.522	0.062 <sup>1</sup>
T3	239.746 - 232.608	1 1/2	7.138	2.379	76.1	1.767	14.838	79.522	0.187 <sup>1</sup>
T4	232.608 - 230	1 1/2	2.608	0.229	7.3	1.767	26.770	79.522	0.337 <sup>1</sup>
T5	230 - 210	2	20.002	0.229	5.5	3.142	82.087	141.372	0.581 <sup>1 #</sup>
T6	210 - 190	2 1/2	20.002	0.792	15.2	4.909	132.781	220.893	0.601 <sup>1</sup>
T7	190 - 180	Pirod 105245	10.017	10.017	37.8	5.301	131.183	238.565	0.550 <sup>1</sup>
T8	180 - 160	Pirod 105217	20.033	10.017	37.8	5.301	148.215	238.565	0.621 <sup>1</sup>
T9	160 - 140	Pirod 105218	20.033	10.017	32.4	7.216	164.405	324.713	0.506 <sup>1</sup>
T10	140 - 120	Pirod 105218	20.033	10.017	32.4	7.216	182.256	324.713	0.561 <sup>1</sup>
T11	120 - 110	Pirod 105219	10.017	10.017	28.4	9.425	192.536	424.115	0.454 <sup>1</sup>
T12	110 - 100	Pirod 105219	10.017	4.823	28.4	9.425	201.688	424.115	0.476 <sup>1</sup>
T13	100 - 80	Pirod 105219	20.033	10.017	28.4	9.425	225.302	424.115	0.531 <sup>1</sup>



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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
T14	80 - 60	Pirod 105220	20.033	10.017	25.2	11.928	248.091	536.771	0.462 <sup>1</sup>
T15	60 - 40	Pirod 105220	20.033	10.017	25.2	11.928	271.301	536.771	0.505 <sup>1</sup>
T16	40 - 20	Pirod 105220	20.033	10.017	25.2	11.928	296.155	536.771	0.552 <sup>1</sup>
T17	20 - 0	Pirod 112738	20.033	20.033	32.6	14.726	306.954	662.680	0.463 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

# Based on net area of leg in section below

### Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L <sub>d</sub> ft	Kl/r	φP <sub>n</sub> K	A in <sup>2</sup>	V <sub>u</sub> K	φV <sub>n</sub> K	Stress Ratio
T7	190 - 180	0.5	1.471	120.0	238.565	0.196	1.066	3.446	0.310
T8	180 - 160	0.5	1.471	120.0	238.565	0.196	0.667	3.335	0.201
T9	160 - 140	0.5	1.459	119.0	324.713	0.196	0.226	3.378	0.068
T10	140 - 120	0.5	1.459	119.0	324.713	0.196	0.700	3.378	0.208
T11	120 - 110	0.625	1.446	94.4	424.115	0.307	0.680	6.958	0.098
T12	110 - 100	0.625	1.446	94.4	424.115	0.307	2.431	6.958	0.349
T13	100 - 80	0.625	1.446	94.4	424.115	0.307	0.508	6.958	0.073
T14	80 - 60	0.625	1.435	93.6	536.771	0.307	0.377	7.011	0.055
T15	60 - 40	0.625	1.435	93.6	536.771	0.307	0.510	7.011	0.074
T16	40 - 20	0.625	1.435	93.6	536.771	0.307	2.750	7.011	0.393
T17	20 - 0	0.75	1.727	93.9	662.680	0.442	1.443	14.364	0.101

### Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
T1	245 - 242.125	3/4	3.502	3.393	217.1	0.442	2.355	19.880	0.118 <sup>1</sup>
T2	242.125 - 239.746	3/4	4.654	2.254	144.3	0.442	1.719	19.880	0.086 <sup>1</sup>
T3	239.746 - 232.608	3/4	4.654	2.254	144.3	0.442	3.940	19.880	0.198 <sup>1</sup>
T4	232.608 - 230	3/4	4.654	2.254	144.3	0.442	5.696	19.880	0.287 <sup>1</sup>
T5	230 - 210	7/8	4.690	2.268	124.4	0.601	5.254	27.059	0.194 <sup>1</sup>
T6	210 - 190	1	5.091	2.447	117.4	0.785	5.633	35.343	0.159 <sup>1</sup>
T7	190 - 180	L2 1/2x2 1/2x3/16	11.416	5.024	80.1	0.518	4.630	22.546	0.205 <sup>1</sup>
T8	180 - 160	L2 1/2x2 1/2x3/16	11.930	5.424	86.2	0.518	3.370	22.546	0.149 <sup>1</sup>
T9	160 - 140	L2 1/2x2 1/2x3/16	13.796	6.369	100.8	0.518	3.368	22.546	0.149 <sup>1</sup>
T10	140 - 120	L3x3x3/16	15.243	7.123	93.2	0.659	4.121	28.679	0.144 <sup>1</sup>
T11	120 - 110	L3x3x5/16	16.010	7.487	100.0	1.013	5.271	44.054	0.120 <sup>1</sup>
T12	110 - 100	L3x3x5/16	16.803	7.892	105.3	1.013	6.829	44.054	0.155 <sup>1</sup>
T13	100 - 80	L3x3x5/16	18.448	8.729	116.2	1.013	6.815	44.054	0.155 <sup>1</sup>
T14	80 - 60	L3 1/2x3 1/2x5/16	20.158	9.593	108.8	1.245	7.692	54.168	0.142 <sup>1</sup>
T15	60 - 40	L3 1/2x3 1/2x5/16	21.916	10.479	118.6	1.245	8.424	54.168	0.156 <sup>1</sup>
T16	40 - 20	L4x4x5/16	23.714	11.383	112.1	1.478	10.596	64.281	0.165 <sup>1</sup>
T17	20 - 0	2L3 1/2x3 1/2x5/16x3/8 2L 'a' > 78.857 in - 320	30.485	14.620	165.7	2.608	15.275	113.433	0.135 <sup>1</sup>

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<sup>1</sup>  $P_u / \phi P_n$  controls

### Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	$L_u$ ft	Kl/r	A in <sup>2</sup>	$P_u$ K	$\phi P_n$ K	Ratio $\frac{P_u}{\phi P_n}$
T4	232.608 - 230	3/4	4.000	3.875	248.0	0.442	1.873	19.880	0.094 <sup>1</sup>
T12	110 - 100	L3x3x3/16	13.481	6.074	159.5	1.090	3.902	35.316	0.110 <sup>1</sup>

<sup>1</sup>  $P_u / \phi P_n$  controls

### Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	$L_u$ ft	Kl/r	A in <sup>2</sup>	$P_u$ K	$\phi P_n$ K	Ratio $\frac{P_u}{\phi P_n}$
T1	245 - 242.125	6x3/4	4.000	2.906	161.1	4.500	1.649	202.500	0.008 <sup>1</sup>
T2	242.125 - 239.746	1	4.000	3.875	186.0	0.785	0.310	35.343	0.009 <sup>1</sup>
T5	230 - 210	1	4.022	3.855	185.1	0.785	2.545	35.343	0.072 <sup>1</sup>
T6	210 - 190	1	4.525	4.317	207.2	0.785	2.106	35.343	0.060 <sup>1</sup>

<sup>1</sup>  $P_u / \phi P_n$  controls

### Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	$L_u$ ft	Kl/r	A in <sup>2</sup>	$P_u$ K	$\phi P_n$ K	Ratio $\frac{P_u}{\phi P_n}$
T2	242.125 - 239.746	7/8	4.000	3.875	212.6	0.601	0.226	27.059	0.008 <sup>1</sup>
T4	232.608 - 230	7/8	4.000	3.875	212.6	0.601	1.613	27.059	0.060 <sup>1</sup>
T5	230 - 210	1	4.494	4.328	207.7	0.785	2.288	35.343	0.065 <sup>1</sup>
T6	210 - 190	1	4.980	4.772	229.1	0.785	1.561	35.343	0.044 <sup>1</sup>

<sup>1</sup>  $P_u / \phi P_n$  controls

### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\phi P_{allow}$ K	% Capacity	Pass Fail
T1	245 - 242.125	Leg	1 1/2	2	-4.617	42.827	10.8	Pass
T2	242.125 - 239.746	Leg	1 1/2	14	-7.730	52.051	14.9	Pass
T3	239.746 - 232.608	Leg	1 1/2	29	-20.929	52.051	40.2	Pass



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	<b>Client</b>	Foresite LLC	<b>Designed by</b>	Ahmet Colakoglu

<i>Section No.</i>	<i>Elevation ft</i>	<i>Component Type</i>	<i>Size</i>	<i>Critical Element</i>	<i>P K</i>	<i><math>\phi P_{allow}</math> K</i>	<i>% Capacity</i>	<i>Pass Fail</i>
<b>RATING =</b>							<b>96.9</b>	<b>Pass</b>

---

Program Version 8.0.5.0 - 11/28/2018 File:D:/Sedgwick/Destek Server - Documents/Projects/2020/75 - ForeSite LLC/049.00394 - 011 - CT11303B/Tower Analysis/SA/tnxTower/Rev.2/CT11303B\_Rev.2.eri

## Project Information

Site ID:	CT11303B
Site Name	UCONN

## Tower Information

Tower Type	Self Support
TIA-222 Rev	G

☐ Load Z Normalization

## Applied Loads

	Comp.	Uplift
Axial (k)	380.00	323.00
Shear (k)	44.00	37.00

## Anchor Rod Data

Quantity:	6
Diameter (in):	2
<a href="#">Material Grade:</a>	A687
Grout Considered:	Yes
$l_{ar}$ (in):	1
Eta Factor, $\eta$ :	0.55
Thread Type:	N-Included
Configuration:	Symmetrical

Fy=105 ksi Fu=150 ksi

Grout Considered

Bending Interaction Not Considered

## Anchor Rod Results

Axial, $Pu_t$ (kips)	53.83
Shear, $Vu$ (kips)	6.17
Moment, $Mu$ (kip-in)	-
Axial Cap., $\phi Pn_t$ (kips)	250.00
Shear Cap., $\phi Vn$ (kips)	-
Moment Cap., $\phi Mn$ (kip-in)	-
Stress Rating	26.0%

Pass

# Drilled Pier Foundation

Site Name:

CT11303B

TIA-222 Revision:

G

Tower Type:

Self Support

Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	0	0
Axial Force (kips)	380	323
Shear Force (kips)	44	37

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

Pier Design Data		
Depth	31	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 31' below grade		
Pier Diameter	5.5	ft
Rebar Quantity	11	
Rebar Size	11	
Clear Cover to Ties	4	in
Tie Size	4	

Analysis Results		
Soil Lateral Capacity	Compression	Uplift
D <sub>v=0</sub> (ft from TOC)	16.16	16.16
Soil Safety Factor	16.47	19.59
Max Moment (kip-ft)	501.97	422.11
Rating	8.1%	6.8%
Soil Vertical Capacity	Compression	Uplift
Skin Friction (kips)	537.87	537.87
End Bearing (kips)	178.19	-
Weight of Concrete (kips)	134.71	101.03
Total Capacity (kips)	716.05	638.90
Axial (kips)	514.71	323.00
Rating	71.9%	50.6%
Reinforced Concrete Capacity	Compression	Uplift
Critical Depth (ft from TOC)	16.76	14.96
Critical Moment (kip-ft)	500.91	418.66
Critical Moment Capacity	2504.01	1766.46
Rating	20.0%	23.7%
Soil Interaction Rating	71.9%	
Structural Foundation Rating	23.7%	

Check Limitation	
N/A	<input checked="" type="checkbox"/>
Load Z Normalization:	<input type="checkbox"/>

Soil Profile									
Groundwater Depth	n/a	ft	# of Layers	2					

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ <sub>soil</sub> (pcf)	γ <sub>concrete</sub> (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3.33	3.33	125	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3.33	31	27.67	125	150	0	30	0.000	0.000	1.50	1.50	10		Cohesionless

# Exhibit E



Date: 9/17/2020

To: T-Mobile Northeast, LLC  
35 Griffin Road South  
Bloomfield, CT06002

**Subject:** Mount Structural Analysis Report

**T-Mobile Designation:** Site ID: CT11303B  
Site Name: UCONN

**EFI Designation:** Project Number: 049.00394 - 2075011

**Site Data:** 82 North Eagleville Road, Storrs, CT 06268  
Latitude 41.814537°, Longitude -72.259742°

EFI Global, Inc. is pleased to submit this “**Mount Structural Analysis Report**” to determine the structural capacity of the antenna mount utilized by T-Mobile at the above referenced site.

The purpose of the analysis is to determine acceptability of the mount stress level for the changes proposed by T-Mobile. Under the following load case we have determined the mount to have:

Existing + Proposed Equipment **Adequate Capacity (88.1%)**  
Note: See Analysis Criteria for loading configuration

The analysis has been performed in accordance with TIA-222-G Standard and the 2018 Connecticut State Building Code (2015 IBC).

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

Sincerely,  
EFI Global, Inc.  
License No: PEC0001245

9/17/2020

Ahmet Colakoglu, PE  
Connecticut Professional Engineer  
License No: 27057



## 1) ANALYSIS CRITERIA

The analysis was performed for the existing and proposed appurtenances as specified in the loading information referenced below, and per the following loading criteria of Table 1.

**Table 1 – Loading and Analysis Criteria**

<b>Rad Center</b>	232'
<b>Structure Type</b>	Self-Support Tower
<b>Exposure Category</b>	C
<b>Wind Speed</b>	130 mph (ultimate) = 101 mph (3 sec gust)
<b>Ice Loading</b>	1.00" with 50 mph Wind
<b>Risk Category</b>	II
<b>Topographic Factor</b>	Kzt = 1.0

**Table 1.1 – Existing Appurtenance Configuration**

<b>Qty</b>	<b>Model</b>
3	Ericsson AIR 32 KRD901146-1 B66A/B2A – Antennas
3	RFS APXVAARR24-43-U-NA20 – Antennas
3	Ericsson Air 3246 B66A – Antennas
3	Radio 4449 B71/B85 – RRUs

**Table 1.2 – Proposed and Final Appurtenance Configuration**

<b>Qty</b>	<b>Model</b>
3	Ericsson AIR 32 KRD901146-1 B66A/B2A – Antennas
3	RFS APXVAARR24-43-U-NA20 – Antennas
3	Ericsson Air 3246 B66A – Antennas
3	Ericsson Air 6449 B41 – Antennas
3	Radio 4449 B71/B85 – RRUs*
3	Radio 4415 B25 – RRUs*

**\*Mounted behind antennas.**

**Table 1.3 – Assumed Material Properties**

Member Type	ASTM Material Designation	Fy (ksi)	Fu (ksi)
Pipes	A53 Gr. B	35	60
Angles/Channels	A36	36	58
Rectangular HSS	A500 Gr. B - 46	46	58
Round HSS	A500 Gr. B - 42	42	58
Others (UNO)	A572 Gr. 50	50	65

## 2) ANALYSIS PROCEDURE

The analysis is based on the following information:

**Table 2 – Documents**

Document	Provided By	Date
RFDS	T-Mobile	09/10/2020
Construction Drawings	ForeSite	02/27/2019
Mount Analysis Report	Infinigy	05/20/2018

### 2.1) Analysis Method

Risa-3D, a commercially available analysis software package, was used to create a three-dimensional model of the mount and calculate member stresses for various loading cases. Selected output from the analysis is included in the Appendix

### 2.2) Analysis Conditions and Assumptions

- 1) The mount was built and installed in accordance with the manufacturer's specifications.
- 2) The mount has been maintained and will be maintained in accordance with the manufacturer's specifications. All structural members and connections of the mount are in good condition and can achieve theoretical strength.
- 3) The configuration of antennas is as specified in "1) Analysis Criteria".
- 4) The analysis was performed for the subject mount only. It does not include an evaluation of the other mounts or the tower, which should be analyzed by others.
- 5) The evaluation does not include any antenna rigging loads. The equipment should not be rigged using the subject antenna mount as the support.
- 6) The analysis includes a minimum 250 lbf maintenance point load at the worst-case location on the mount, as well as a minimum 250 lbf maintenance point load at each antenna location in conjunction with a 30 mph wind load.
- 7) Any steel grating represented in this model is for loading purposes only and it is not considered to provide any structural restraint or support.

- 8) Member sizes per the available specifications and available mount analysis report and assumed based on our experience with similar structures. Please refer to calculation output in the appendix of this report for sizes and lengths assumed.
- 9) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.

EFI Global, Inc. (EFI) must be notified immediately if any of these assumptions are discovered to be incorrect. The results of this analysis may be affected if any of the assumptions are not valid or have been made in error.

### 3) ANALYSIS RESULTS AND CONCLUSION

The analysis results are shown on the table below.

**Table 3.1 – Mount Component Stresses vs. Capacity**

Component	% Capacity	Pass / Fail
Horizontal Face Pipe	31.7	Pass
Horizontal Standoff Pipe	40.4	Pass
Diagonal Standoff Solid Rod	30.2	Pass
Vertical Standoff Solid Rod	<b>88.1</b>	Pass
Antenna Mount Pipe	24.9	Pass
Pipe Kicker	<20	Pass

**Sector Mounts:** The proposed sector mounts have **adequate** capacity for the proposed changes by T-Mobile. For the code specified load combinations and as a maximum, the mount members are stressed to **88.1%** of their structural capacity.

EFI has assumed that Site Pro 1-Valmont VFA12 HD mount (Specs attached) has been or will be installed at this site prior to the equipment installation proposed in this analysis. The analysis also assumes the following:

- The mount centerline is equal to the RAD centerline
- (4) 96" long 2.5 STD mount pipes are equally spaced along the face
- The tieback arm is attached directly to the adjacent mount's tower leg
- Tieback arms go to (2) separate tower legs

**APPENDIX**

**INPUT LOADS  
ANALYSIS OUTPUT  
MOUNT SPECS**

CLIENT: Foresite LLC / T-Mobile

PROJECT: CT11303B

SUBJECT: Antenna Loads -TIA 222 G Stanadard (chapter 16 revisions)

Tower Height

245.00

ft

Type of Mount

Sector

Basic Wind Speed, V

101

mph (=Ultimate Speed\* $\sqrt{0.6}$ )

Basic Wind Speed with Ice,  $V_i$

50

mph

Maintenance Load Factor,  $L_{FM}$

0.0882

Load Factor for Maint. Load Cases  
(Basic Wind Speed=30 mph)

Design Ice Thickness,  $t_i$

1

inches

Table 2-3 Importance Factors

Structure Classification	Wind Load Without Ice	Wind Load With Ice	Ice Thickness	Earthquake
II	1	1	1	1

1  
Table 2-4 Exposure Category Coefficients

Exposure Category	Zg	$\alpha$	Kzmin	Ke	m
C	900	9.5	0.85	1	0.6

Table 2-5 Topographic Categories

Kzt 1.000

Table 2-2 Wind Directionality Factor, Kd

Structure Type	Kd
Lattice Tower	0.95

DOES NOT CHANGE

Gust Effect Factor Gh

Structure Type	Gh
Lattice Tower	1.00

DOES NOT CHANGE

Shielding Factor, Ka

Structure Type	Ka
Lattice Tower	0.90

DOES NOT CHANGE

Seismic Factors

Ss	0.173
S1	0.062
Fa	1.6
Fv	2.4
R	3

Truss or Pole

CLIENT: Foresite LLC / T-Mobile

PROJECT: CT11303B

SUBJECT: Antenna Loads -TIA 222 G Stanadard (chapter 16 revisions)

Rad Center232.00ft

Antenna AND Mount Without Ice

Antenna AND Mount Without Ice																	Pounds								
Mounting Pole	Height (ft)	Model Number	#	Weight (lbs)	H (in)	*W (in)	D (in)	Ka	**A <sub>N</sub> (ft2)	***A <sub>T</sub> (ft2)	Aspect (FRONT)	Aspect (SIDE)	Ca (FRONT)	Ca (SIDE)	K <sub>z</sub>	q <sub>z</sub> (psf)	Wind Load (Front)	Wind Load (Side)	Dead Load	Total Wind Load (Front)	Total Wind Load (Side)	Total Dead Load	Lateral Load (Seismic)	Vertical Load (Seismic)	
Pos. 1	232.00	Ericsson AIR 32 B66A/B2A	1	132.2	56.6	12.9	8.7	0.90	5.06	3.40	4.40	6.54	1.28	1.38	1.511	37.5	219.2	158.4	132.2	219	158	132	4	5	
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0					
Pos.2	232.00	RFS APXVAARR24_43-U-NA20	1	128.0	95.9	24.0	8.7	0.90	15.98	5.79	4.00	11.02	1.27	1.53	1.511	37.5	682.9	299.8	128	683	381	247	7	9	
		Radio 4449 B71/B85	1	73.2	17.9	N/A	10.6	0.90	-	1.32	-	1.68	-	1.20	1.511	37.5	0.0	53.5	73.21						
		Radio 4415 B25	1	46.0	16.5	N/A	5.9	0.90	-	0.68	-	2.80	-	1.21	1.511	37.5	0.0	27.7	46						
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0					
Pos.3	232.00	Ericsson AIR 3246 B66A	1	180.0	58.1	15.7	9.4	0.90	6.33	3.79	3.70	6.18	1.25	1.36	1.511	37.5	267.8	174.4	180	268	174	180	5	7	
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0					
Pos.4	232.00	Ericsson AIR 6449 B41	1	103.0	33.1	20.5	8.3	0.90	4.71	1.91	1.61	3.99	1.20	1.27	1.511	37.5	190.8	81.5	103	191	81	103	3	4	
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0					
																				96	41	52	2	2	

\* Enter N/A in the W column for front shielded apurtanances.

\*\* A<sub>N</sub> is the product of H and W

\*\*\* A<sub>T</sub> is the product of H and D

DL662

Mount	Height (ft)	Member	*L (in)	**W (in)	D (in)	Weight (lb/ft)	*** Ca	K <sub>z</sub>	q <sub>z</sub> (psf)	Wind Load (PLF)	Lateral Load (Seismic)	Vertical Load (Seismic)
	232.00	2 STD Pipe	12.00	2.38	0.00		1.20	1.511	33.7	8	-	-
	232.00	2.5 STD Pipe	12.00	2.88	0.00		1.20	1.511	33.7	10	-	-
	232.00	3/4" SR	12.00	0.75	0.00		1.20	1.511	33.7	3	-	-
	232.00	5/8" SR	12.00	0.63	0.00		1.20	1.511	33.7	2	-	-
	232.00	(L2.5x2.5)	0.00	2.50	2.50		-	-	-	-	-	-
	232.00	Angle Diagonal	0.00	0.00	0.00		-	-	-	-	-	-
	232.00	Plate Horizontal (PL6x3/8)	0.00	6.00	0.38		-	-	-	-	-	-
	232.00	Plate Horizontal (PL7x0.4)	0.00	0.40	7.00		-	-	-	-	-	-
	232.00	Tube Radial (4x4)	0.00	4.00	4.00		-	-	-	-	-	-
	232.00	Double Angle (LL2x2x3x0)	0.00	2.00	2.00		-	-	-	-	-	-
	232.00	Double Angle (LL3x3x4x0)	0.00	3.00	3.00		-	-	-	-	-	-
	232.00	Channel (Weak Axis Bending)	0.00	0.00	0.00		-	-	-	-	-	-
	232.00	Invert U 5.375x3.625x.375	0.00	3.63	5.38		-	-	-	-	-	-

\* The dimension L is the longest dimension of the member

\*\* The dimension W is the height or width of the member that resists wind load

\*\*\* Ca will equal 1.2 for round members and 2.0 for flat members



CLIENT: **Foresite LLC / T-Mobile**

PROJECT: CT11303B

**SUBJECT:** Antenna Loads -TIA 222 G Stanadard (chapter 16 revisions)

ti (in)	2.430678
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Kiz  
1.2153389

reduction  
0.24507

### Antenna AND Mount With Ice

[illegible]

\*  $A_N$ ,  $A_T$ , Volume Ice and Weight Ice are calculated per unit

\*\* Ca will equal 1.2 for all ice load calculations

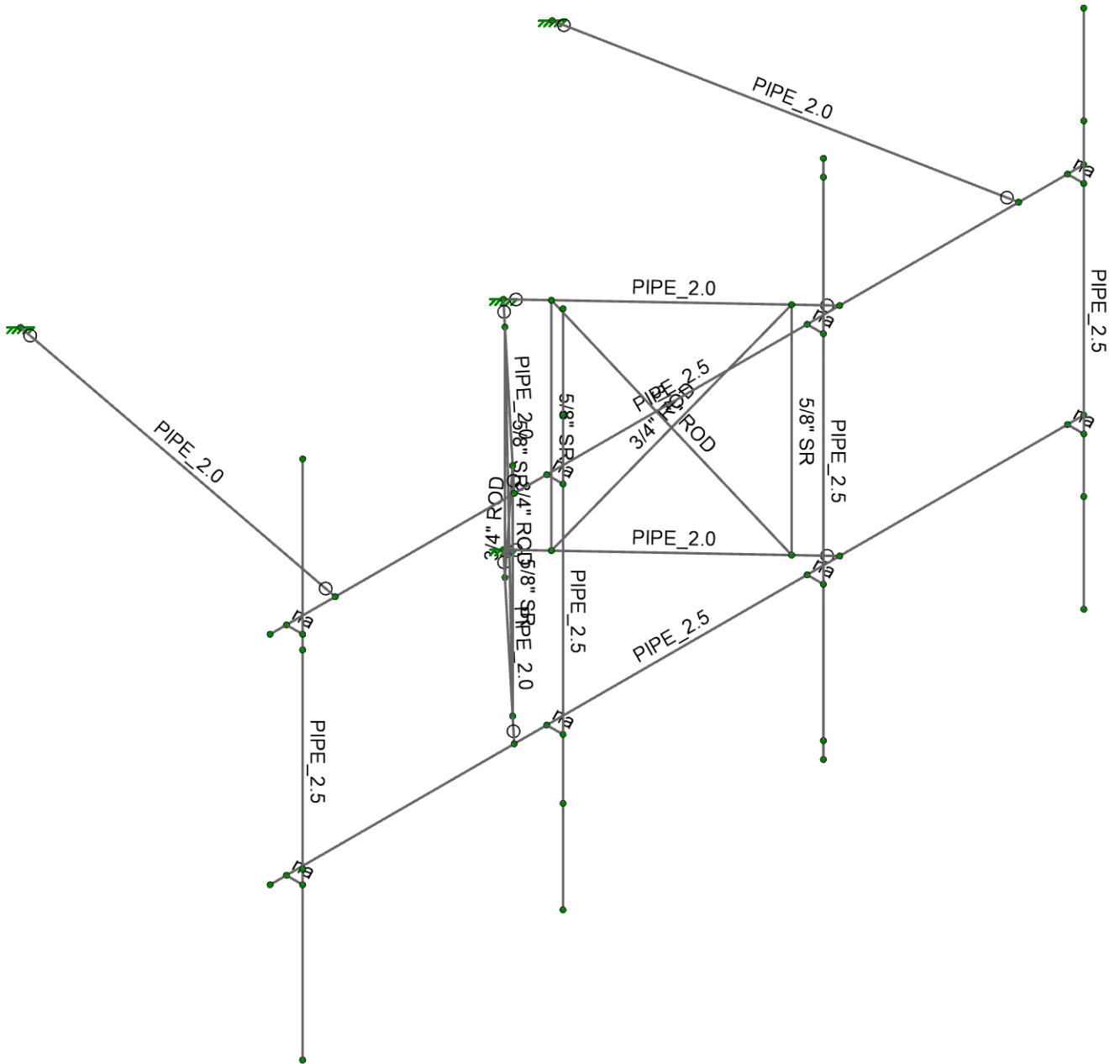
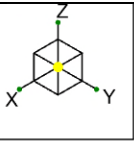
											PLF			
Mount	Height (ft)	Member	*L (in)	**W (in)	D (in)	***A <sub>N</sub> (ft2)	Volume Ice (ft3)	Weight Ice (lbs)	****Ca (FRONT)	Kz	q <sub>z</sub> (psf)	Ice Wind Load (Front)	Combined Wind Load (Front)	Ice Dead Load
	232.00	2 STD Pipe	12.00	2.38	0.00	0.65	0.26	14.29	1.20	1.511	8.3	6.4	8.4	14
	232.00	2.5 STD Pipe	12.00	2.88	0.00	0.67	0.28	15.76	1.20	1.511	8.3	6.6	9.0	16
	232.00	3/4" SR	12.00	0.75	0.00	0.59	0.17	9.45	1.20	1.511	8.3	5.9	6.5	9
	232.00	5/8" SR	12.00	0.63	0.00	0.59	0.16	9.07	1.20	1.511	8.3	5.9	6.4	9
	232.00	(L2.5x2.5)	0.00	2.50	2.50	-	-	-	-	-	-	-	-	-
	232.00	Angle Diagonal	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-
	232.00	Plate Horizontal (PL6x3/8)	0.00	6.00	0.38	-	-	-	-	-	-	-	-	-
	232.00	Plate Horizontal (PL7x0.4)	0.00	0.40	7.00	-	-	-	-	-	-	-	-	-
	232.00	Tube Radial (4x4)	0.00	4.00	4.00	-	-	-	-	-	-	-	-	-
	232.00	Double Angle (LL2x2x3x0)	0.00	2.00	2.00	-	-	-	-	-	-	-	-	-
	232.00	Double Angle (LL3x3x4x0)	0.00	3.00	3.00	-	-	-	-	-	-	-	-	-
	232.00	Channel (Weak Axis Bending)	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-
	232.00	Invert U 5.375x3.625x.375	0.00	3.63	5.38	-	-	-	-	-	-	-	-	-

\* The dimension L is the longest dimension of the member

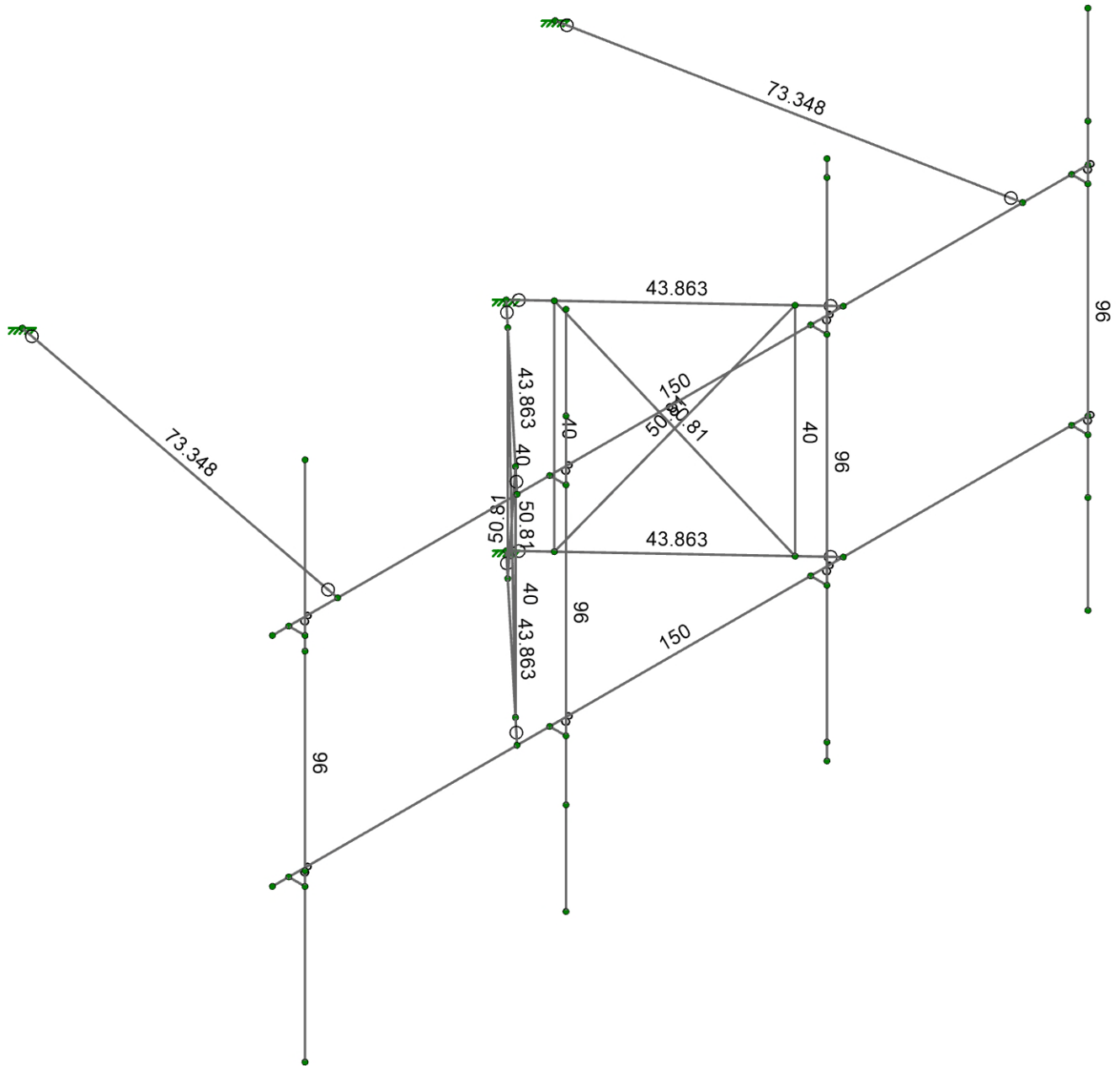
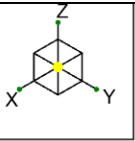
\*\* The dimension W is the height or width of the member that resists wind load

\*\*\*  $A_N$  is the area of ice built up on the LW plane

\*\*\*\* Ca will equal 1.2 for all ice load calculations

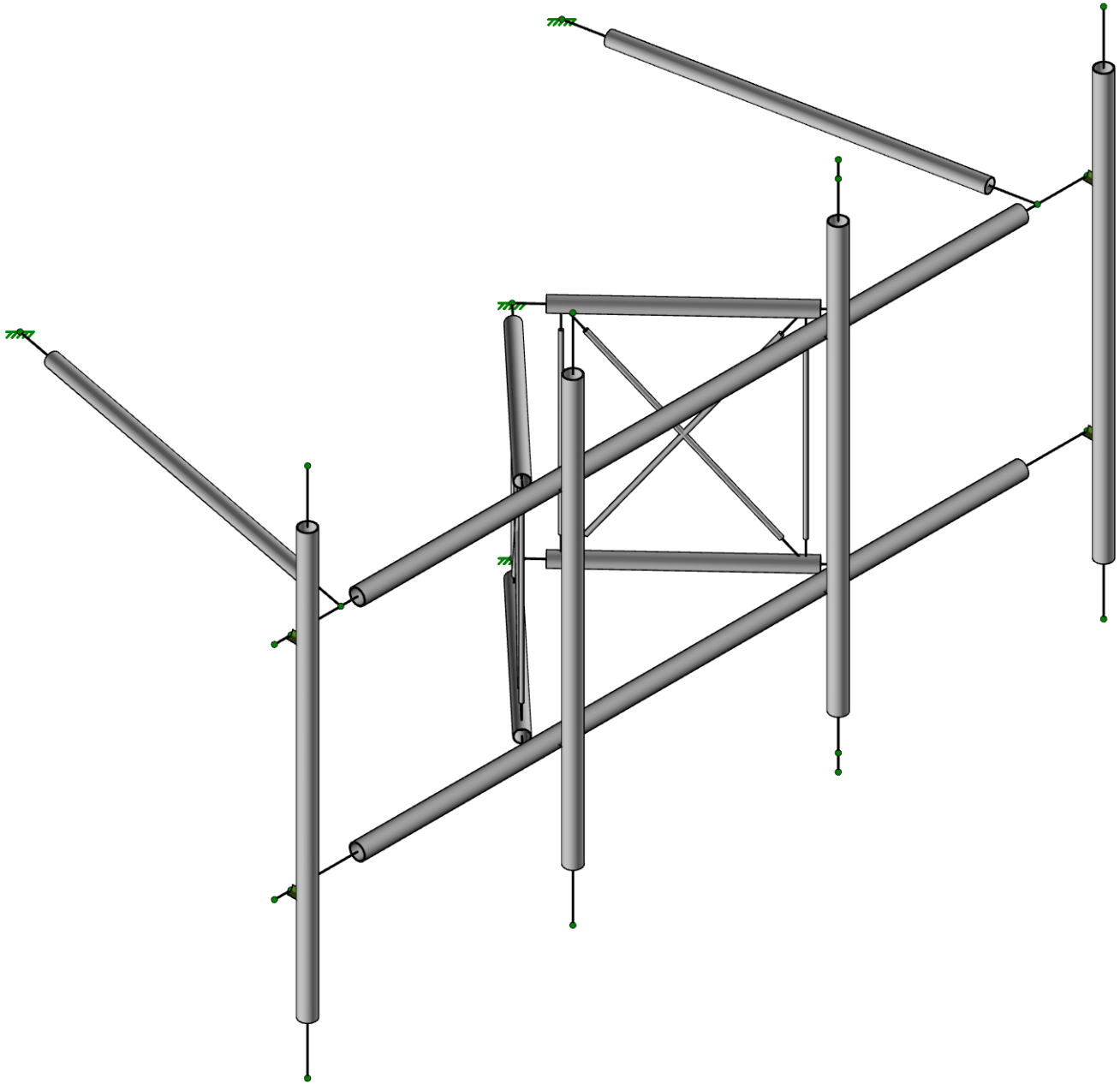
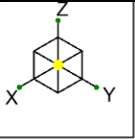


Envelope Only Solution		
EFI Global/ForeSite	CT11303B - VFA12-HD	SK-1
		Sep 17, 2020
2075011		CT11303B - Mount Model - VFA12...



Member Length (in) Displayed  
Envelope Only Solution

EFI Global/ForeSite	CT11303B - VFA12-HD	SK-2
		Sep 17, 2020
2075011		CT11303B - Mount Model - VFA12...



Envelope Only Solution

EFI Global/ForeSite

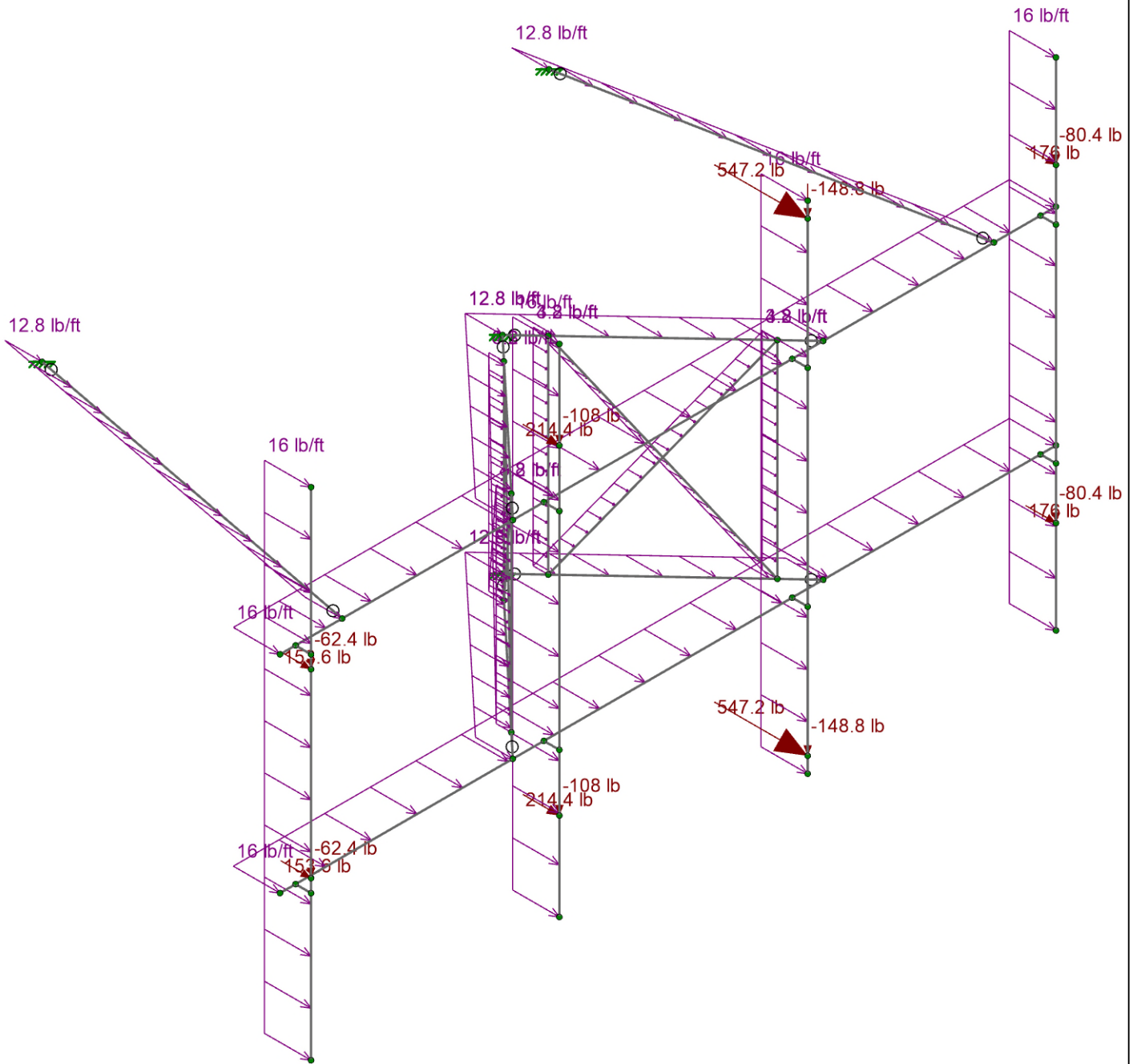
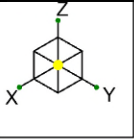
2075011

CT11303B - VFA12-HD

SK-3

Sep 17, 2020

CT11303B - Mount Model - VFA12...



Loads: LC 1, DL + WL (NO ICE) 0 Degree  
Envelope Only Solution

EFI Global/ForeSite

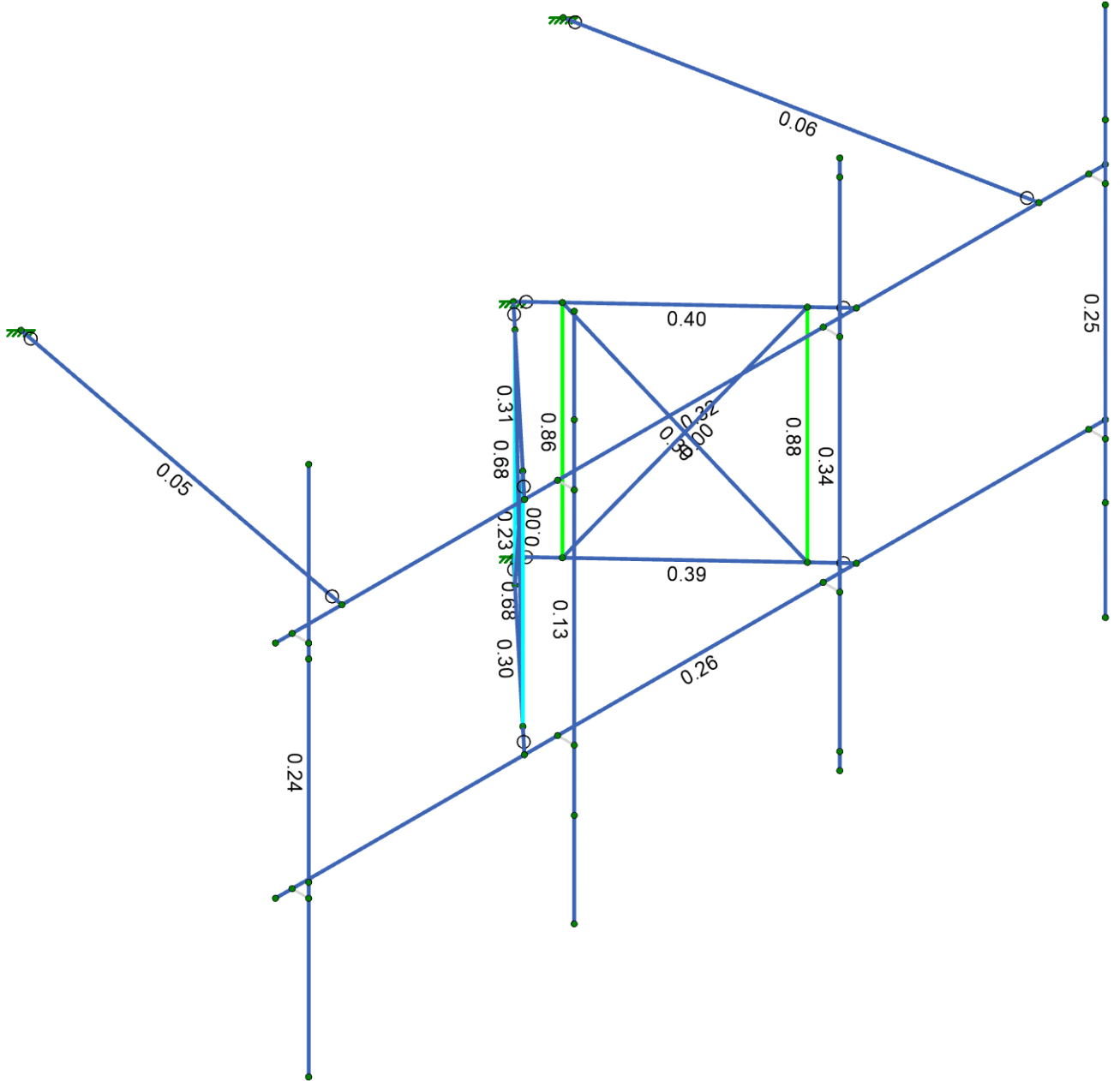
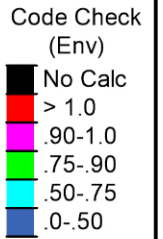
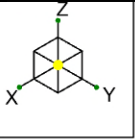
CT11303B - VFA12-HD

SK-4

Sep 17, 2020

2075011

CT11303B - Mount Model - VFA12...



Member Code Checks Displayed (Enveloped)  
Envelope Only Solution

EFI Global/ForeSite

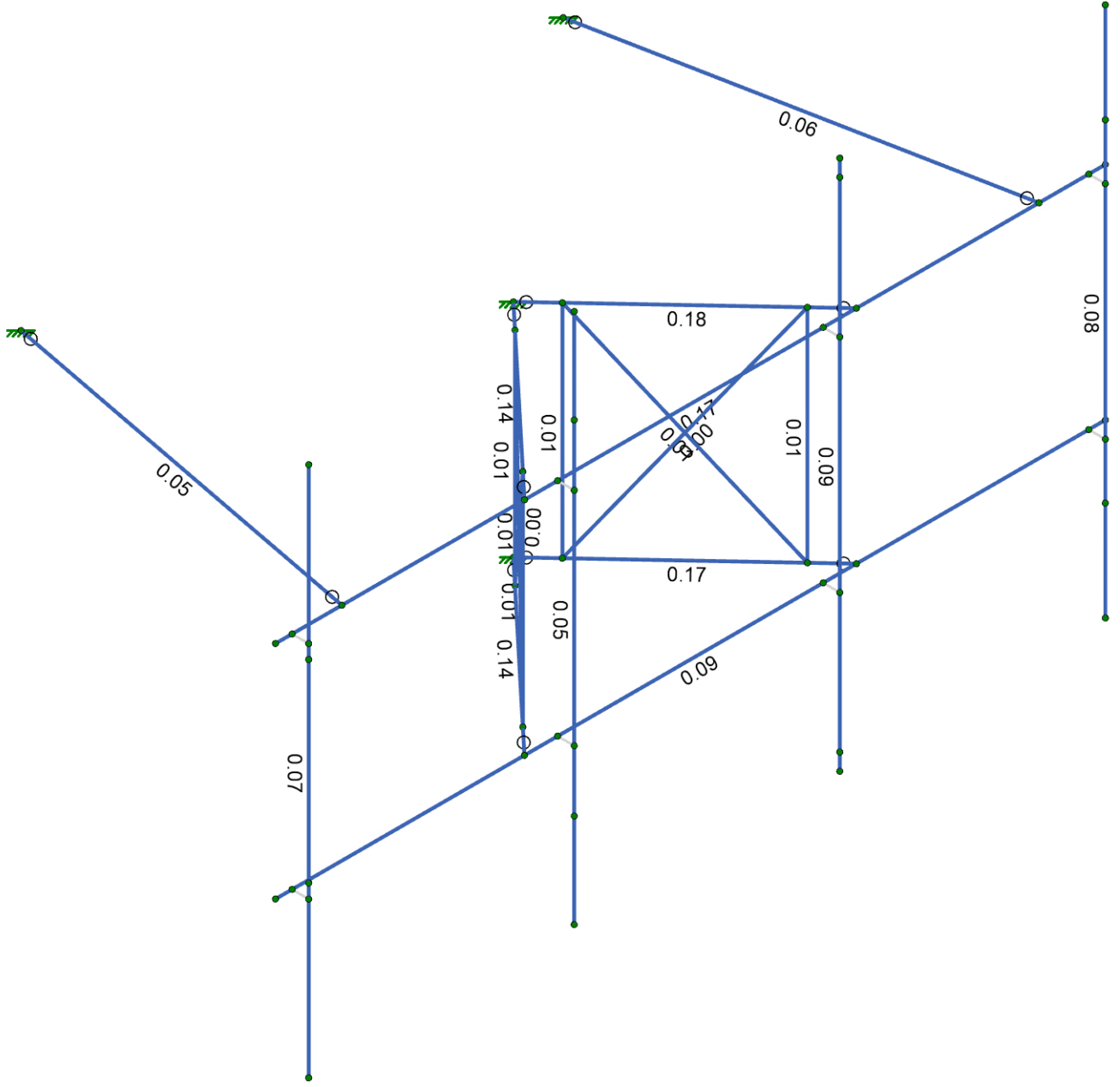
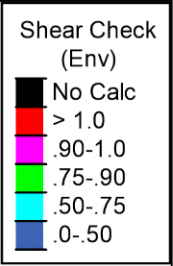
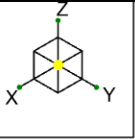
CT11303B - VFA12-HD

SK-5

Sep 17, 2020

2075011

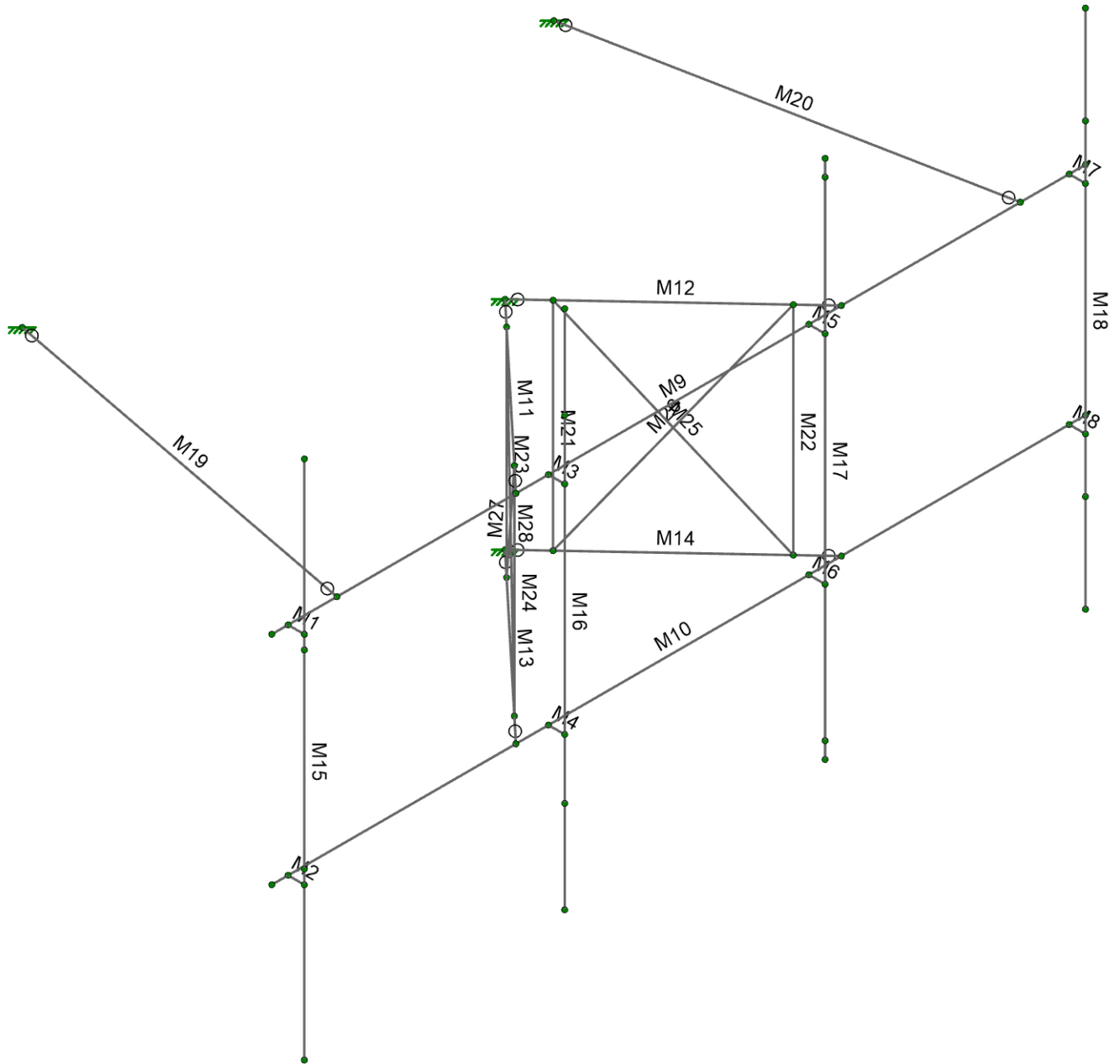
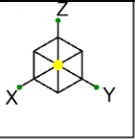
CT11303B - Mount Model - VFA12...



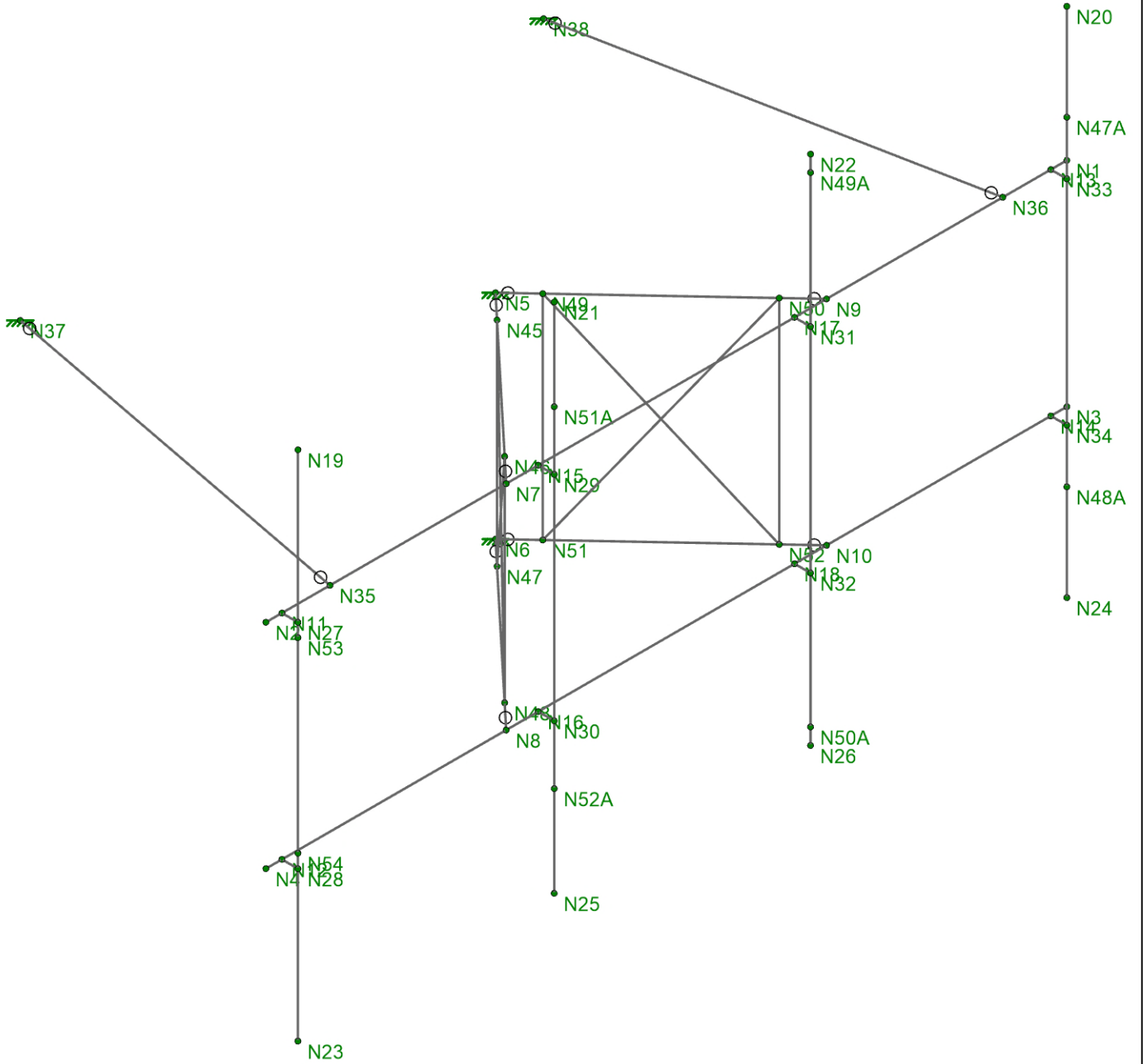
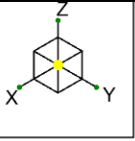
Member Shear Checks Displayed (Enveloped)  
Envelope Only Solution

EFI Global/ForeSite	CT11303B - VFA12-HD	SK-6
		Sep 17, 2020
2075011		CT11303B - Mount Model - VFA12...





Envelope Only Solution		
EFI Global/ForeSite	CT11303B - VFA12-HD	SK-7
		Sep 17, 2020
2075011		CT11303B - Mount Model - VFA12...



Envelope Only Solution		
EFI Global/ForeSite	CT11303B - VFA12-HD	SK-8
		Sep 17, 2020
2075011		CT11303B - Mount Model - VFA12...

### Model Settings

Number of Reported Sections	5
Number of Internal Sections	97
Member Area Load Mesh Size (in <sup>2</sup> )	144
Consider Shear Deformation	Yes
Consider Torsional Warping	Yes
Approximate Mesh Size (in)	12
Transfer Forces Between Intersecting Wood Walls	No
Increase Wood Wall Nailing Capacity for Wind Loads	Yes
Include P-Delta for Walls	Yes
Optimize Masonry and Wood Walls	Yes
Maximum Number of Iterations	3
Single	No
Multiple (Optimum)	Yes
Maximum	No
Global Axis corresponding to vertical direction	Z
Convert Existing Data	Yes
Default Global Plane for z-axis	XZ
Plate Local Axis Orientation	Nodal
Hot Rolled Steel	AISC 14th (360-10): LRFD
Stiffness Adjustment	Yes (Iterative)
Notional Annex	None
Connections	AISC 14th (360-10): LRFD
Cold Formed Steel	AISI NAS-01: ASD
Stiffness Adjustment	Yes (Iterative)
Wood	AF&PA NDS-05/08: ASD
Temperature	< 100F
Concrete	ACI 318-05
Masonry	ACI 530-05: ASD
Aluminum	AA ADM1-05: ASD
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	AISC 14th (360-10): ASD
Stiffness Adjustment	Yes (Iterative)
Analysis Methodology	Exact Integration Method
Parame Beta Factor	0.65
Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	No
List forces which were ignored for design in the Detail Report	Yes
Column Min Steel	1
Column Max Steel	8
Rebar Material Spec	ASTM A615
Warn if beam-column framing arrangement is not understood	No
Number of Shear Regions	4
Region 2 & 3 Spacing Increase Increment (in)	4
Code	ASCE 7-05

**Model Settings (Continued)**

Risk Category	I
Drift Cat	Other
Base Elevation (ft)	-999999
Include the weight of the structure in base shear calcs	Yes

$S_i(g)$	1
$SD_i(g)$	1
$SD_s(g)$	1
$T_i(sec)$	-1

T (sec)	
T (sec)	
$C_t$	0.035
$C_t$	0.035
$C_{tExp.}$	0.75
$C_{tExp.}$	0.75
R	8.5
R	8.5
$\Omega_0$	1
$\Omega_0$	1
$C_d$	4
$C_d$	4
$\rho$	1
$\rho$	1

### Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. C...	Density [k...	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.2
3	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.2
4	A500 Gr.42	29000	11154	0.3	0.65	0.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	0.3	0.65	0.49	46	1.2	58	1.1
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.5	60	1.2
7	A529 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.2

### Cold Formed Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff...	Density [k/ft³]	Yield [ksi]	Fu [ksi]
1	A570 33	29500	11346	0.3	0.65	0.49	33	52
2	A607 C1 55	29500	11346	0.3	0.65	0.49	55	70

### Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	HR1A	C15X50	Beam	Wide Flan...	A36 Gr.36	Typical	14.7	11	404	2.65

### Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	CF1A	1.5CU1.2...	Beam	CU	A570 33	Typical	0.131	0.022	0.052	5.4e-05

### General Section Sets

	Label	Shape	Type	Material	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	GEN1A	RE4X4	Beam	gen_Conc3NW	16	21.333	21.333	31.573
2	RIGID		None	LINK	1e+06	1e+06	1e+06	1e+06

### Primary Member Properties

	Label	I Node	J Node	K Node	Rotate(deg)	Section/S...	Type	Design List	Material	Design Rule
1	M1	N11	N27			RIGID	None	None	LINK	Typical
2	M2	N12	N28			RIGID	None	None	LINK	Typical
3	M3	N15	N29			RIGID	None	None	LINK	Typical
4	M4	N16	N30			RIGID	None	None	LINK	Typical
5	M5	N17	N31			RIGID	None	None	LINK	Typical
6	M6	N18	N32			RIGID	None	None	LINK	Typical
7	M7	N13	N33			RIGID	None	None	LINK	Typical
8	M8	N14	N34			RIGID	None	None	LINK	Typical
9	M9	N2	N1			PIPE 2.5	Beam	Pipe	A53 Gr.B	Typical
10	M10	N4	N3			PIPE 2.5	Beam	Pipe	A53 Gr.B	Typical
11	M11	N5	N7			PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical
12	M12	N5	N9			PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical
13	M13	N6	N8			PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical
14	M14	N6	N10			PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical
15	M15	N19	N23			PIPE 2.5	Beam	Pipe	A53 Gr.B	Typical
16	M16	N21	N25			PIPE 2.5	Beam	Pipe	A53 Gr.B	Typical
17	M17	N22	N26			PIPE 2.5	Beam	Pipe	A53 Gr.B	Typical
18	M18	N20	N24			PIPE 2.5	Beam	Pipe	A53 Gr.B	Typical
19	M19	N37	N35			PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical
20	M20	N38	N36			PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical
21	M21	N49	N51			5/8" SR	Beam	BAR	A36 Gr.36	Typical
22	M22	N50	N52			5/8" SR	Beam	BAR	A36 Gr.36	Typical
23	M23	N45	N47			5/8" SR	Beam	BAR	A36 Gr.36	Typical
24	M24	N46	N48			5/8" SR	Beam	BAR	A36 Gr.36	Typical
25	M25	N49	N52			3/4" ROD	Beam	BAR	A36 Gr.36	Typical
26	M26	N50	N51			3/4" ROD	Beam	BAR	A36 Gr.36	Typical
27	M27	N46	N47			3/4" ROD	Beam	BAR	A36 Gr.36	Typical
28	M28	N45	N48			3/4" ROD	Beam	BAR	A36 Gr.36	Typical



### Advanced Member Properties

	Label	I Release	J Release	I Offset [in]	J Offset [in]	T/C Only	Physical	Deflectio...	Analysis...	Activation	Seismic...
1	M1						Yes	** NA **			None
2	M2						Yes	** NA **			None
3	M3						Yes	** NA **			None
4	M4						Yes	** NA **			None
5	M5						Yes	** NA **			None
6	M6						Yes	** NA **			None
7	M7						Yes	** NA **			None
8	M8						Yes	** NA **			None
9	M9						Yes				None
10	M10						Yes				None
11	M11	BenPIN	BenPIN				Yes				None
12	M12	BenPIN	BenPIN				Yes				None
13	M13	BenPIN	BenPIN				Yes				None
14	M14	BenPIN	BenPIN				Yes				None
15	M15						Yes				None
16	M16						Yes				None
17	M17						Yes				None
18	M18						Yes				None
19	M19	BenPIN	BenPIN				Yes				None
20	M20	BenPIN	BenPIN				Yes				None
21	M21						Yes				None
22	M22						Yes				None
23	M23						Yes				None
24	M24						Yes				None
25	M25					Tension...	Yes				None
26	M26					Tension...	Yes				None
27	M27					Tension...	Yes				None
28	M28					Tension...	Yes				None

### Hot Rolled Member Properties

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp t...	Lcomp...	L-Torqu...	K y-y	K z-z	Cb	Function
1	M9	PIPE 2.5	150			Lbyy						Lateral
2	M10	PIPE 2.5	150			Lbyy						Lateral
3	M11	PIPE 2.0	43.863			Lbyy						Lateral
4	M12	PIPE 2.0	43.863			Lbyy						Lateral
5	M13	PIPE 2.0	43.863			Lbyy						Lateral
6	M14	PIPE 2.0	43.863			Lbyy						Lateral
7	M15	PIPE 2.5	96			Lbyy						Lateral
8	M16	PIPE 2.5	96			Lbyy						Lateral
9	M17	PIPE 2.5	96			Lbyy						Lateral
10	M18	PIPE 2.5	96			Lbyy						Lateral
11	M19	PIPE 2.0	73.348			Lbyy						Lateral
12	M20	PIPE 2.0	73.348			Lbyy						Lateral
13	M21	5/8" SR	40			Lbyy		0.7	0.7			Lateral
14	M22	5/8" SR	40			Lbyy		0.7	0.7			Lateral
15	M23	5/8" SR	40			Lbyy		0.7	0.7			Lateral
16	M24	5/8" SR	40			Lbyy		0.7	0.7			Lateral
17	M25	3/4" ROD	50.81			Lbyy		0.7	0.7			Lateral
18	M26	3/4" ROD	50.81			Lbyy		0.7	0.7			Lateral
19	M27	3/4" ROD	50.81			Lbyy		0.7	0.7			Lateral
20	M28	3/4" ROD	50.81			Lbyy		0.7	0.7			Lateral

### Cold Formed Member Properties

No Data to Print...												
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### Nodes

	Label	X [in]	Y [in]	Z [in]	Temp [deg F]	Detach From Dia...
1	N1	0	0	0		
2	N2	150	0	0		
3	N3	0	0	-40		
4	N4	150	0	-40		
5	N5	75	-32	0		
6	N6	75	-32	-40		
7	N7	105	0	0		
8	N8	105	0	-40		
9	N9	45	0	0		
10	N10	45	0	-40		
11	N11	147	0	0		
12	N12	147	0	-40		
13	N13	3	0	0		
14	N14	3	0	-40		
15	N15	99	0	0		
16	N16	99	0	-40		
17	N17	51	0	0		
18	N18	51	0	-40		
19	N19	147	3	28		
20	N20	3	3	28		
21	N21	99	3	28		
22	N22	51	3	28		
23	N23	147	3	-68		
24	N24	3	3	-68		
25	N25	99	3	-68		
26	N26	51	3	-68		
27	N27	147	3	0		
28	N28	147	3	-40		
29	N29	99	3	0		
30	N30	99	3	-40		
31	N31	51	3	0		
32	N32	51	3	-40		
33	N33	3	3	0		
34	N34	3	3	-40		
35	N35	138	0	0		
36	N36	12	0	0		
37	N37	124	-72	0		
38	N38	26	-72	0		
39	N45	79.285714	-27.428571	0		
40	N46	100.714286	-4.571429	0		
41	N47	79.285714	-27.428571	-40		
42	N48	100.714286	-4.571429	-40		
43	N49	70.714286	-27.428571	0		
44	N50	49.285714	-4.571429	0		
45	N51	70.714286	-27.428571	-40		
46	N52	49.285714	-4.571429	-40		
47	N47A	3	3	10		
48	N48A	3	3	-50		
49	N49A	51	3	25		
50	N50A	51	3	-65		
51	N51A	99	3	11		
52	N52A	99	3	-51		
53	N53	147	3	-2.5		
54	N54	147	3	-37.5		



### Boundary Conditions

	Node 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	N5	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N6	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N38	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N37	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

### Basic Load Cases

	BLC Desc...	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed	Area(Me...	Surface(P...
1	DEAD LO...	None			-1	8				
2	DEAD LO...	None				8		20		
3	WIND LO...	None				8		20		
4	WIND LO...	None				8		20		
5	WIND LO...	None				8		20		
6	WIND LO...	None				8		20		
7	LIVE LOA...	None				1				
8	LIVE LOA...	None				1				
9	LIVE LOA...	None								
10	MAINTEN...	None				1				
11	MAINTEN...	None				1				
12	MAINTEN...	None				1				
13	MAINTEN...	None				1				

### Load Combinations

	De...	So...	PD...	SR...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...
1	DL...	Yes	Y		1	1.2		3	1.6						
2	DL...	Yes	Y		1	1.2		3	1.3...	4	0.8				
3	DL...	Yes	Y		1	1.2		3	0.8	4	1.3...				
4	DL...	Yes	Y		1	1.2				4	1.6				
5	DL...	Yes	Y		1	1.2		3	-0.8	4	1.3...				
6	DL...	Yes	Y		1	1.2		3	-1...	4	0.8				
7	DL...	Yes	Y		1	1.2		3	-1.6						
8	DL...	Yes	Y		1	1.2		3	-1...	4	-0.8				
9	DL...	Yes	Y		1	1.2		3	-0.8	4	-1...				
10	DL...	Yes	Y		1	1.2				4	-1.6				
11	DL...	Yes	Y		1	1.2		3	0.8	4	-1...				
12	DL...	Yes	Y		1	1.2		3	1.3...	4	-0.8				
13	DL...	Yes	Y		1	1.2	2	1	5	1					
14	DL...	Yes	Y		1	1.2	2	1	5	0.8...	6	0.5			
15	DL...	Yes	Y		1	1.2	2	1	5	0.5	6	0.8...			
16	DL...	Yes	Y		1	1.2	2	1		6	1				
17	DL...	Yes	Y		1	1.2	2	1	5	-0.5	6	0.8...			
18	DL...	Yes	Y		1	1.2	2	1	5	-0...	6	0.5			
19	DL...	Yes	Y		1	1.2	2	1	5	-1					
20	DL...	Yes	Y		1	1.2	2	1	5	-0...	6	-0.5			
21	DL...	Yes	Y		1	1.2	2	1	5	-0.5	6	-0...			
22	DL...	Yes	Y		1	1.2	2	1		6	-1				
23	DL...	Yes	Y		1	1.2	2	1	5	0.5	6	-0...			
24	DL...	Yes	Y		1	1.2	2	1	5	0.8...	6	-0.5			
25	DE...	Yes	Y		1	1.2				7	1.5				
26	DE...	Yes	Y		1	1.2				8	1.5				
27	DE...	Yes	Y		1	1.2				9	1.5				
28	DL...	Yes	Y		1	1.2	10	1.5	3	0.0...					
29	DL...	Yes	Y		1	1.2	11	1.5	3	0.0...					
30	DL...	Yes	Y		1	1.2	12	1.5	3	0.0...					
31	DL...	Yes	Y		1	1.2	13	1.5	3	0.0...					
32	DL...	Yes	Y		1	1.2	10	1.5	4	0.0...					
33	DL...	Yes	Y		1	1.2	11	1.5	4	0.0...					
34	DL...	Yes	Y		1	1.2	12	1.5	4	0.0...					

### Load Combinations (Continued)

De...	So...	PD...	SR...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...
35 DL...	Yes	Y		1	1.2	13	1.5	4	0.0...						
36 DL...	Yes	Y		1	1.2	10	1.5	3	-0...						
37 DL...	Yes	Y		1	1.2	11	1.5	3	-0...						
38 DL...	Yes	Y		1	1.2	12	1.5	3	-0...						
39 DL...	Yes	Y		1	1.2	13	1.5	3	-0...						
40 DL...	Yes	Y		1	1.2	10	1.5	4	-0...						
41 DL...	Yes	Y		1	1.2	11	1.5	4	-0...						
42 DL...	Yes	Y		1	1.2	12	1.5	4	-0...						
43 DL...	Yes	Y		1	1.2	13	1.5	4	-0...						

### Node Reactions

	Node...		X [lbs]	LC	Y [lbs]	LC	Z [lbs]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N5	max	1501.7...	10	-351.795	7	2457.9...	20	0.037	1	0.089	35	0	4
2		min	-1281....	4	-3843....	13	583.58	1	-0.059	7	-0.081	40	0	9
3	N6	max	1214.1...	40	4183.4...	19	2018.2...	14	0.064	7	0.085	35	0	4
4		min	-1433....	35	-575.228	1	462.521	7	-0.081	1	-0.077	40	0	9
5	N38	max	149.846	2	881.17	8	56.537	15	0.003	9	0.09	35	0	43
6		min	-152.191	8	-882.389	2	12.118	7	-0.017	35	-0.014	9	0	1
7	N37	max	98.452	5	676.148	5	56.224	23	0.003	4	0.015	4	0	43
8		min	-96.892	11	-678.132	11	12.358	6	-0.017	40	-0.085	40	0	1
9	Totals:	max	2198.5...	10	3367.5...	7	4567.2...	22						
10		min	-2198....	4	-3367....	1	1332.9...	3						

### Node Displacements

	Node...		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rota...	LC	Y Rota...	LC	Z Rota...	LC
1	N1	max	0.137	3	0.025	12	-0.017	40	4.673e...	3	8.177e...	40	3.461e...	5
2		min	-0.139	9	-0.026	6	-0.338	35	-4.991...	9	-3.634...	35	-3.272...	11
3	N2	max	0.136	3	0.03	2	0.001	35	4.143e...	10	3.413e...	40	4.205e...	3
4		min	-0.138	9	-0.033	8	-0.319	40	-4.662...	4	-1.044...	35	-4.474...	9
5	N3	max	0.187	3	0.28	2	-0.017	40	7.679e...	2	8.021e...	40	3.688e...	6
6		min	-0.183	9	-0.289	8	-0.339	35	-8.031...	8	-3.804...	35	-3.611...	12
7	N4	max	0.186	3	0.207	11	0.001	35	4.648e...	11	3.571e...	40	4.223e...	2
8		min	-0.183	9	-0.227	5	-0.32	40	-5.218...	5	-1.03e...	35	-4.376...	8
9	N5	max	0	4	0	13	0	1	0	7	0	40	0	9
10		min	0	10	0	7	0	20	0	1	0	35	0	4
11	N6	max	0	35	0	1	0	7	0	1	0	40	0	9
12		min	0	40	0	19	0	14	0	7	0	35	0	4
13	N7	max	0.136	3	0.127	9	-0.013	31	1.921e...	8	3.772e...	40	1.099e...	8
14		min	-0.138	9	-0.124	4	-0.083	21	-2.29e...	2	-4.561...	35	-1.172...	2
15	N8	max	0.186	3	0.167	9	-0.013	35	2.06e-03	12	3.616e...	40	3.372e...	10
16		min	-0.183	9	-0.174	4	-0.081	22	-2.535...	6	-4.8e-04	35	-3.578...	4
17	N9	max	0.136	3	0.126	3	-0.017	12	3.878e...	6	2.382e...	36	1.101e...	11
18		min	-0.139	9	-0.128	9	-0.109	18	-4.113...	12	-3.994...	31	-1.009...	5
19	N10	max	0.187	3	0.173	3	-0.014	9	5.239e...	1	5.485e...	10	4.356e...	9
20		min	-0.183	9	-0.174	9	-0.107	15	-5.588...	7	-3.854...	35	-4.303...	3
21	N11	max	0.136	3	0.019	1	-0.002	35	4.143e...	10	3.413e...	40	4.205e...	3
22		min	-0.138	9	-0.02	7	-0.309	40	-4.662...	4	-1.044...	35	-4.474...	9
23	N12	max	0.186	3	0.204	11	-0.002	35	4.648e...	11	3.571e...	40	4.223e...	2
24		min	-0.183	9	-0.224	5	-0.31	40	-5.218...	5	-1.03e...	35	-4.376...	8
25	N13	max	0.137	3	0.018	1	-0.02	40	4.673e...	3	8.178e...	40	3.461e...	5
26		min	-0.139	9	-0.019	7	-0.327	35	-4.991...	9	-3.634...	35	-3.272...	11
27	N14	max	0.187	3	0.272	2	-0.02	40	7.679e...	2	8.022e...	40	3.688e...	6
28		min	-0.183	9	-0.282	8	-0.327	35	-8.031...	8	-3.804...	35	-3.61e...	12
29	N15	max	0.136	3	0.116	10	-0.013	2	2.12e-03	8	2.264e...	40	3.039e...	9
30		min	-0.138	9	-0.113	4	-0.078	20	-2.455...	2	-8.272...	35	-3.128...	3
31	N16	max	0.186	3	0.146	9	-0.017	35	1.9e-03	12	2.14e-03	40	4.415e...	10
32		min	-0.183	9	-0.151	3	-0.076	22	-2.349...	6	-8.655...	35	-4.563...	4



### Node Displacements (Continued)

	Node...		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rota...	LC	Y Rota...	LC	Z Rota...	LC
33	N17	max	0.136	3	0.118	3	-0.011	12	4.53e-03	7	6.411e...	36	2.991e...	10
34		min	-0.139	9	-0.118	9	-0.101	18	-4.733...	1	-2.441...	31	-2.843...	4
35	N18	max	0.187	3	0.146	4	-0.014	8	5.276e...	1	1.456e...	10	4.993e...	9
36		min	-0.183	9	-0.146	9	-0.099	14	-5.598...	7	-2.367...	35	-5.029...	3
37	N19	max	0.115	32	0.133	4	-0.008	35	4.143e...	10	3.406e...	40	4.205e...	3
38		min	-0.089	10	-0.12	10	-0.307	40	-4.663...	4	-1.036...	35	-4.474...	9
39	N20	max	0.089	3	0.132	10	-0.025	40	4.471e...	3	7.994e...	40	3.461e...	5
40		min	-0.124	9	-0.126	4	-0.324	35	-4.789...	9	-3.616...	35	-3.272...	11
41	N21	max	0.144	3	0.107	11	-0.02	31	2.581e...	8	2.243e...	40	3.039e...	9
42		min	-0.137	9	-0.095	5	-0.078	20	-2.916...	2	-8.055...	35	-3.128...	3
43	N22	max	0.203	4	0.281	2	-0.024	28	9.77e-03	7	2.923e...	4	2.991e...	10
44		min	-0.223	10	-0.276	8	-0.1	18	-9.973...	1	-3.573...	10	-2.843...	4
45	N23	max	0.209	4	0.336	11	-0.008	35	4.72e-03	11	3.547e...	40	4.223e...	2
46		min	-0.227	10	-0.371	5	-0.308	40	-5.29e...	5	-1.038...	35	-4.376...	8
47	N24	max	0.253	3	0.496	2	-0.025	40	8.03e-03	2	1.062e...	9	3.688e...	6
48		min	-0.215	9	-0.515	8	-0.325	35	-8.381...	8	-3.789...	35	-3.61e...	12
49	N25	max	0.229	3	0.166	10	-0.02	2	2.359e...	12	2.161e...	40	4.415e...	10
50		min	-0.231	9	-0.185	4	-0.077	20	-2.808...	6	-1.132...	3	-4.563...	4
51	N26	max	0.316	4	0.336	2	-0.024	28	1.049e...	1	4.434e...	10	4.993e...	9
52		min	-0.295	10	-0.346	8	-0.099	18	-1.081...	7	-4.976...	4	-5.029...	3
53	N27	max	0.127	4	0.019	1	-0.008	35	4.143e...	10	3.413e...	40	4.205e...	3
54		min	-0.127	10	-0.02	7	-0.307	40	-4.662...	4	-1.044...	35	-4.474...	9
55	N28	max	0.182	4	0.204	11	-0.008	35	4.648e...	11	3.571e...	40	4.223e...	2
56		min	-0.177	10	-0.224	5	-0.307	40	-5.218...	5	-1.03e...	35	-4.376...	8
57	N29	max	0.146	3	0.116	10	-0.02	31	2.12e-03	8	2.264e...	40	3.039e...	9
58		min	-0.147	9	-0.113	4	-0.077	20	-2.455...	2	-8.272...	35	-3.128...	3
59	N30	max	0.199	4	0.146	9	-0.02	2	1.9e-03	12	2.14e-03	40	4.415e...	10
60		min	-0.195	9	-0.151	3	-0.077	20	-2.349...	6	-8.655...	35	-4.563...	4
61	N31	max	0.145	4	0.118	3	-0.024	28	4.53e-03	7	6.411e...	36	2.991e...	10
62		min	-0.147	9	-0.118	9	-0.099	18	-4.733...	1	-2.441...	31	-2.843...	4
63	N32	max	0.202	3	0.146	4	-0.024	28	5.276e...	1	1.456e...	10	4.993e...	9
64		min	-0.198	9	-0.146	9	-0.099	18	-5.598...	7	-2.367...	35	-5.029...	3
65	N33	max	0.13	3	0.018	1	-0.025	40	4.673e...	3	8.178e...	40	3.461e...	5
66		min	-0.134	9	-0.019	7	-0.324	35	-4.991...	9	-3.634...	35	-3.272...	11
67	N34	max	0.19	3	0.272	2	-0.025	40	7.679e...	2	8.022e...	40	3.688e...	6
68		min	-0.186	9	-0.282	8	-0.324	35	-8.031...	8	-3.804...	35	-3.61e...	12
69	N35	max	0.136	3	0.029	10	-0.008	35	3.466e...	10	5.422e...	40	4.573e...	3
70		min	-0.138	9	-0.028	4	-0.268	40	-3.97e...	4	-4.406...	35	-4.723...	9
71	N36	max	0.137	3	0.029	3	-0.024	40	3.714e...	4	1.598e...	40	3.888e...	4
72		min	-0.139	9	-0.03	9	-0.283	35	-4.006...	10	-5.724...	35	-3.854...	10
73	N37	max	0	11	0	11	0	6	0	40	0	40	0	43
74		min	0	5	0	5	0	23	0	4	0	4	0	1
75	N38	max	0	8	0	2	0	7	0	35	0	9	0	43
76		min	0	2	0	8	0	15	0	9	0	35	0	1
77	N45	max	0.021	4	0.019	10	-0.006	35	-6.257...	35	3.058e...	22	4.491e...	10
78		min	-0.021	10	-0.019	4	-0.034	22	-2.974...	20	3.411e...	35	-4.442...	4
79	N46	max	0.118	4	0.109	10	-0.01	35	2.613e...	10	3.458e...	40	4.171e...	9
80		min	-0.119	9	-0.108	4	-0.065	21	-1.288...	16	-8.226...	3	-4.09e...	3
81	N47	max	0.028	4	0.025	10	-0.004	35	-4.556...	2	2.34e-03	21	5.849e...	10
82		min	-0.027	10	-0.026	4	-0.027	21	-2.374...	21	2.471e...	35	-6.031...	4
83	N48	max	0.16	4	0.144	10	-0.009	35	3.133e...	11	3.78e-03	40	5.542e...	9
84		min	-0.157	9	-0.15	4	-0.058	21	-1.848...	17	-6.76e...	5	-5.698...	3
85	N49	max	0.021	3	0.02	3	-0.007	40	-6.164...	8	-5.178...	40	4.601e...	9
86		min	-0.021	9	-0.02	9	-0.043	16	-3.7e-03	15	-3.857...	16	-4.538...	3
87	N50	max	0.118	3	0.11	3	-0.014	40	4.235e...	4	1.364e...	12	4.013e...	10
88		min	-0.121	9	-0.111	9	-0.083	17	-1.629...	22	-3.771...	39	-3.975...	4
89	N51	max	0.028	3	0.026	3	-0.006	40	-3.183...	1	-3.85e...	40	6.069e...	9
90		min	-0.028	9	-0.026	9	-0.034	16	-2.938...	18	-2.934...	16	-6.129...	3



### Node Displacements (Continued)

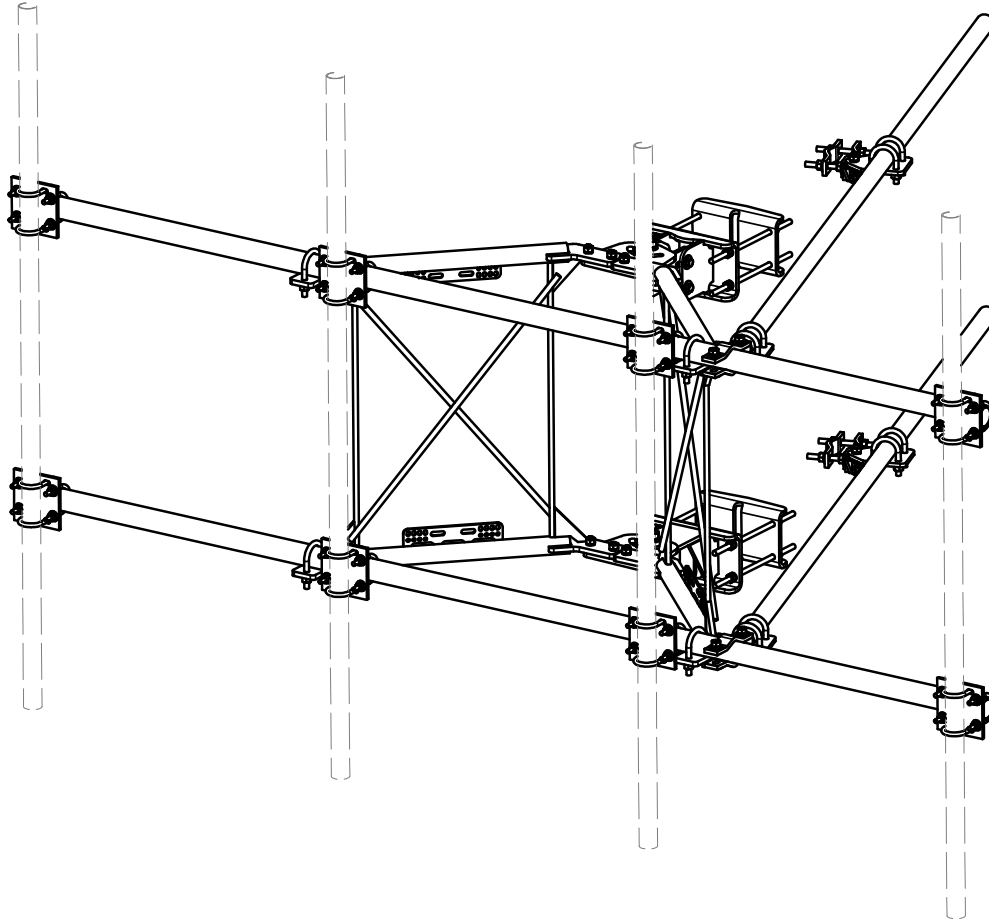
	Node...		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rota...	LC	Y Rota...	LC	Z Rota...	LC
91	N52	max	0.162	3	0.15	3	-0.013	40	4.416e...	2	2.511e...	8	5.436e...	9
92		min	-0.159	9	-0.15	9	-0.074	16	-2.406...	20	-4.47e...	2	-5.517...	4
93	N47A	max	0.115	3	0.048	10	-0.025	40	4.49e-03	3	8.015e...	40	3.461e...	5
94		min	-0.129	9	-0.047	4	-0.324	35	-4.808...	9	-3.618...	35	-3.272...	11
95	N48A	max	0.212	3	0.351	2	-0.025	40	7.997e...	2	1.029e...	9	3.688e...	6
96		min	-0.196	9	-0.364	8	-0.325	35	-8.348...	8	-3.801...	35	-3.61e...	12
97	N49A	max	0.194	4	0.257	2	-0.024	28	9.77e-03	7	2.923e...	4	2.991e...	10
98		min	-0.212	10	-0.252	8	-0.1	18	-9.973...	1	-3.573...	10	-2.843...	4
99	N50A	max	0.301	4	0.307	2	-0.024	28	1.049e...	1	4.434e...	10	4.993e...	9
100		min	-0.282	10	-0.316	8	-0.099	18	-1.081...	7	-4.976...	4	-5.029...	3
101	N51A	max	0.144	3	0.108	10	-0.02	31	2.553e...	8	2.245e...	40	3.039e...	9
102		min	-0.143	9	-0.102	4	-0.078	20	-2.887...	2	-8.072...	35	-3.128...	3
103	N52A	max	0.21	4	0.152	10	-0.02	2	2.331e...	12	2.159e...	40	4.415e...	10
104		min	-0.208	9	-0.163	4	-0.077	20	-2.78e...	6	-1.103...	3	-4.563...	4
105	N53	max	0.129	4	0.022	12	-0.008	35	4.331e...	10	2.745e...	40	4.16e-03	2
106		min	-0.131	10	-0.025	6	-0.307	40	-4.821...	5	-1.229...	35	-4.429...	8
107	N54	max	0.18	4	0.192	11	-0.008	35	4.801e...	11	2.881e...	40	4.219e...	2
108		min	-0.173	10	-0.211	5	-0.307	40	-5.336...	5	-1.215...	35	-4.379...	8

### LRFD

	Member	Shape	Code...	Loc [in]	LC	Shear...	Loc [in]	Dir	LC	phi*P...	phi*P...	phi*M...	phi*M...	Cb	Eqn
1	M9	PIPE...	0.317	104.688	4	0.173	104.688		8	14558...	50715	3.596	3.596	1.832	H1-1b
2	M10	PIPE...	0.260	146.875	43	0.094	104.688		4	14558...	50715	3.596	3.596	2.444	H1-1b
3	M11	PIPE...	0.312	5.94	24	0.141	0		40	27373...	32130	1.872	1.872	1.049	H1-1b
4	M12	PIPE...	0.404	5.94	24	0.176	0		16	27373...	32130	1.872	1.872	1.059	H1-1b
5	M13	PIPE...	0.295	6.397	21	0.136	37.924		40	27373...	32130	1.872	1.872	1.046	H1-1b
6	M14	PIPE...	0.387	37.467	15	0.171	37.924		14	27373...	32130	1.872	1.872	1.044	H1-1b
7	M15	PIPE...	0.240	68	40	0.066	28		5	30038...	50715	3.596	3.596	3	H1-1b
8	M16	PIPE...	0.133	68	6	0.055	28		5	30038...	50715	3.596	3.596	1.905	H1-1b
9	M17	PIPE...	0.337	68	7	0.091	28		2	30038...	50715	3.596	3.596	1.266	H1-1b
10	M18	PIPE...	0.249	68	39	0.079	28		2	30038...	50715	3.596	3.596	3	H1-1b
11	M19	PIPE...	0.055	36.674	17	0.053	73.348		40	20528...	32130	1.872	1.872	1.136	H1-1b
12	M20	PIPE...	0.056	36.674	21	0.056	73.348		35	20528...	32130	1.872	1.872	1.136	H1-1b
13	M21	5/8" SR	0.864	40	16	0.010	40		35	2158....	9940.19	0.104	0.104	2.257	H1-1a
14	M22	5/8" SR	0.881	40	18	0.009	40		35	2158....	9940.19	0.104	0.104	2.667	H1-1a
15	M23	5/8" SR	0.678	40	21	0.009	0		35	2158....	9940.19	0.104	0.104	2.346	H1-1a
16	M24	5/8" SR	0.684	40	21	0.009	0		35	2158....	9940.19	0.104	0.104	2.671	H1-1a
17	M25	3/4" R...	0.302	0	16	0.010	50.81		1	2773.81	14313...	0.179	0.179	2.21	H1-1a*
18	M26	3/4" R...	0.000	50.81	43	0.000	50.81		43	2773.81	14313...	0.179	0.179	1	H1-1a
19	M27	3/4" R...	0.000	50.81	43	0.000	50.81		43	2773.81	14313...	0.179	0.179	1	H1-1a
20	M28	3/4" R...	0.231	0	22	0.007	50.81		23	2773.81	14313...	0.179	0.179	2.266	H1-1a*

### Cold Formed Steel Code Checks

No Data to Print...



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	2	X-VFAW	SUPPORT ARM		71.41	142.81
2	1	X-HDCAMTBW	CLAMP WELDMENT FOR BCAM-HD		33.86	33.86
3	1	X-MHTPHD	MULTI-HOLE TAPER PLATE WELDMENT		36.24	36.24
4	2	X-VFAPL4	VFA-HD PIVOT PLATE	12 in	15.88	31.77
5	2	X-LCBP4	BENT BACKING PLATE	13 in	19.00	38.01
6	1	X-HDCAMSS	ANGLE ADJUSTMENT WELDMENT FOR BCAM-HD		16.39	16.39
7	4	X-SPTB	SLIDING PIPE TIE BACK PLATE	5 1/2 in	5.87	23.49
8	1	X-HDCAMSP	POSITIONING PLATE WELDMENT FOR BCAM-HD		2.58	2.58
9	4	X-TBCA	TIE BACK CLIP ANGLE		2.01	8.02
10	8	SCX2	CROSSOVER PLATE	7 in	4.80	38.37
11	4	MCP	CLAMP HALF 1/2" THICK, 11-5/8" LONG	12 1/16 in	3.59	14.37
12	8	DCP	1/2" THICK, 5-3/4" CTR TO CENTER CLAMP HALF	8 1/8 in	2.36	18.90
13	2	P2126	2-3/8" X 126" (2" SCH. 40) GALVANIZED PIPE	126 in	40.75	81.50
14	2	P30150	2-7/8" X 150" (2-1/2" SCH. 40) GALVANIZED PIPE	150 in	76.94	153.87
15	4	A34212	3/4" x 2-1/2" UNC HEX BOLT (A325)	2 1/2 in	0.48	1.92
16	4	G34FW	3/4" HDG USS FLATWASHER		0.06	0.24
17	4	G34LW	3/4" HDG LOCKWASHER		0.04	0.17
18	4	G34NUT	3/4" HDG HEAVY 2H HEX NUT		0.21	0.85
19	8	G58R-18	5/8" x 18" THREADED ROD (HDG.)	18 in	0.40	3.19
20	4	G58R-12	5/8" x 12" THREADED ROD (HDG.)		1.05	4.18
21	4	G58R-8	5/8" x 8" THREADED ROD (HDG.)		0.70	2.79
22	4	X-UB5300	5/8" X 3" X 5-1/4" X 2-1/2" U-BOLT (HDG.)		1.15	4.60
23	8	X-UB5258	5/8" X 2-5/8" X 4-1/2" X 2" U-BOLT (HDG.)		1.00	8.00
24	2	G5807	5/8" x 7" HDG HEX BOLT GR5 FULL THREAD	7 in	0.70	1.41
25	1	G5806	5/8" x 6" HDG HEX BOLT GR5 FULL THREAD	6 in	0.62	0.62
26	8	G5804	5/8" x 4" HDG HEX BOLT GR5		0.44	3.55
27	4	G5802	5/8" x 2" HDG HEX BOLT GR5		0.27	1.08
28	8	A582114	5/8" x 2-1/4" HDG A325 HEX BOLT	2 1/4 in	0.31	2.50
29	25	G58FW	5/8" HDG USS FLATWASHER	1/8 in	0.07	1.76
30	66	G58LW	5/8" HDG LOCKWASHER		0.03	1.72
31	71	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	9.22
32	32	X-UB1300	1/2" X 3" X 5" X 2" GALV U-BOLT		0.74	23.64
33	16	X-UB1212	1/2" X 2" X 3" X 1-1/4" U-BOLT (HDG.)		0.60	9.56
34	64	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	2.18
35	64	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	0.89
36	64	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	4.58
					TOTAL WT. #	738.06

D	UPDATED BCAM VERSION 1 TO BCAM VERSION 2		CEK	6/29/2018
C	UPDATED PIN LEG CONNECTION TO B-CAM CONNECTION		CEK	12/7/2017
B	CHANGED TIE-BACK BACK CONNECTION		CEK	7/31/2017
A	CHANGED TIE-BACK FRONT CONNECTION		CEK	2/2/2017
REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
REVISION HISTORY				

#### TOLERANCE NOTES

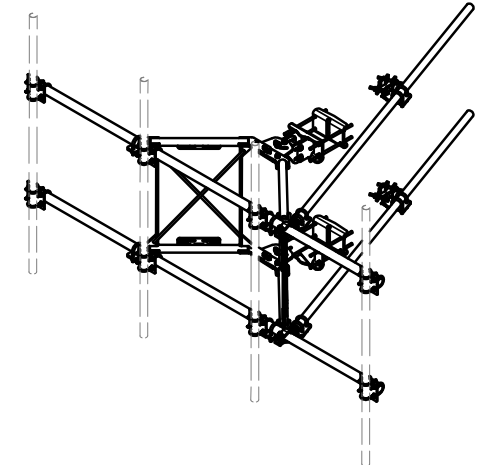
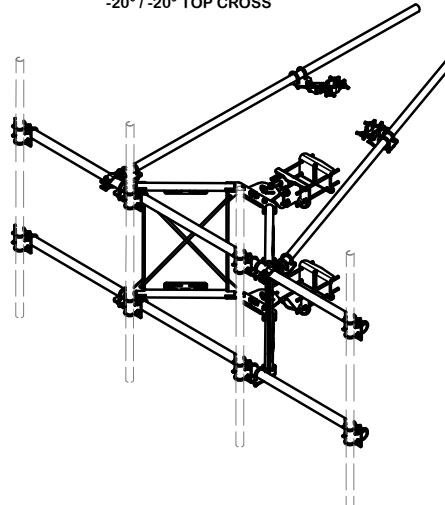
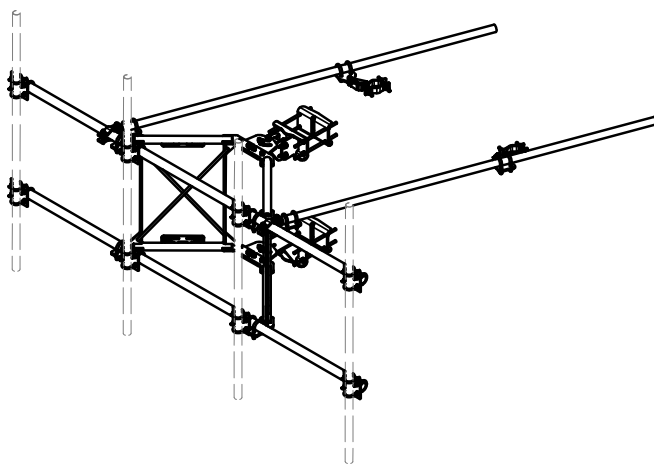
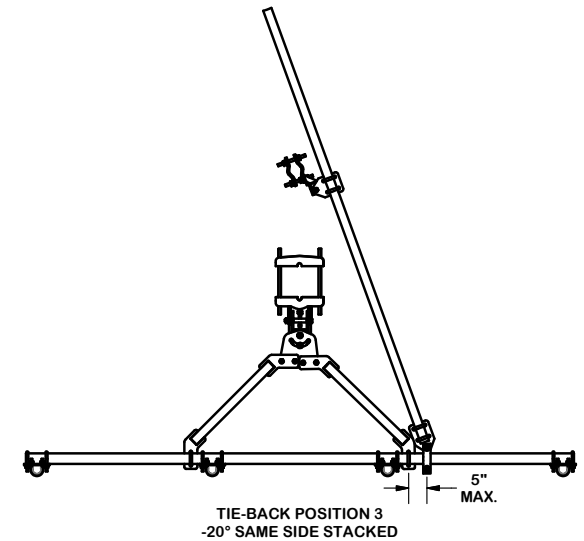
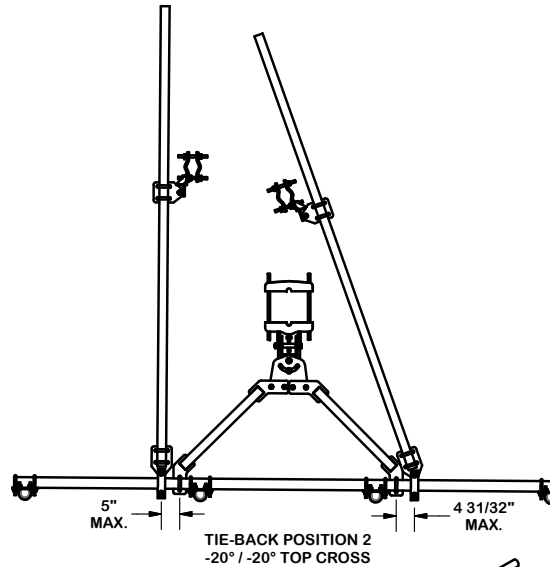
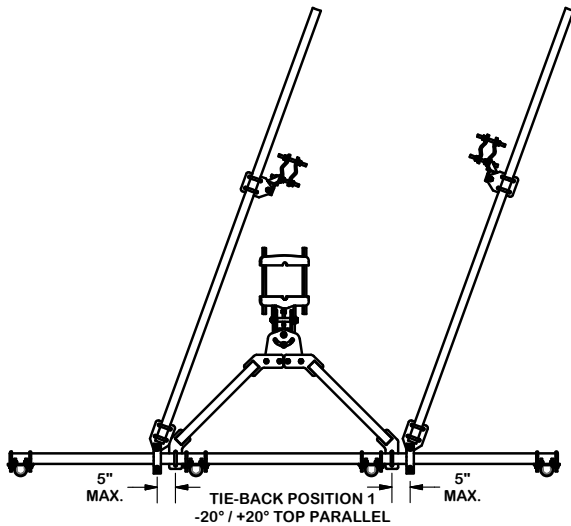
TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:  
SAWED, SHEARED AND GAS CUT EDGES ( $\pm 0.030"$ )  
DRILLED AND GAS CUT HOLES ( $\pm 0.030"$ ) - NO CONING OF HOLES  
LASER CUT EDGES AND HOLES ( $\pm 0.010"$ ) - NO CONING OF HOLES  
BENDS ARE  $\pm 1/2$  DEGREE  
ALL OTHER MACHINING ( $\pm 0.030"$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

PROPRIETARY NOTE:  
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DESCRIPTION			
12' 6" HEAVY DUTY V-FRAME ASSEMBLY WITH TWO STIFF ARMS			
CPD NO.	DRAWN BY	ENG. APPROVAL	
	CEK 1/25/2017		
CLASS	SUB	DRAWING USAGE	CHECKED BY
81	02	CUSTOMER	BMC 12/13/2017

<b>SITE PRO 1</b>		Locations: New York, NY Atlanta, GA Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX
Engineering Support Team: 1-888-753-7446		
A valmont COMPANY		
PART NO.		VFA12-HD
DWG. NO.		VFA12-HD

# TIE-BACK POSITIONS



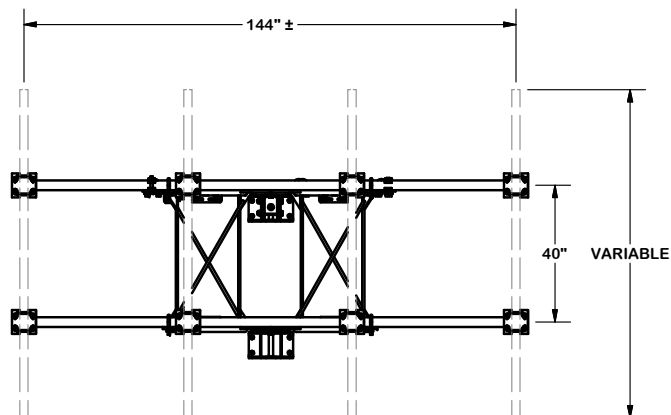
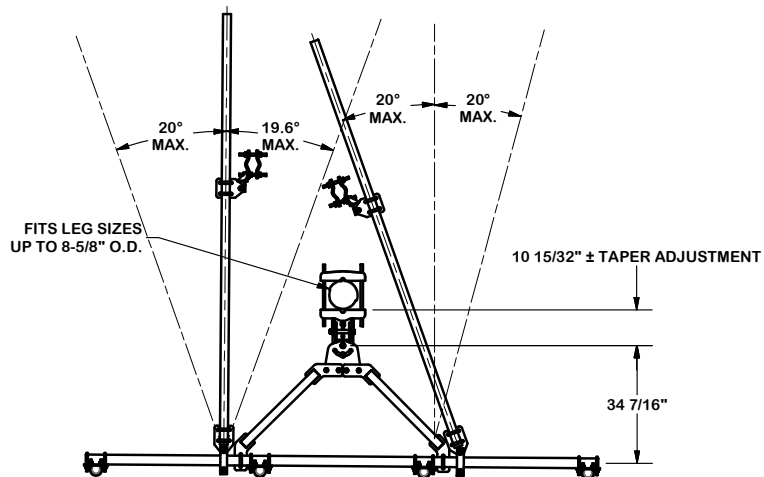
REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
D	UPDATED BCAM VERSION 1 TO BCAM VERSION 2		CEK	6/29/2018
C	UPDATED PIN LEG CONNECTION TO B-CAM CONNECTION		CEK	12/7/2017
B	CHANGED TIE-BACK BACK CONNECTION		CEK	7/31/2017
A	CHANGED TIE-BACK FRONT CONNECTION		CEK	2/2/2017
REVISION HISTORY				

## TOLERANCE NOTES

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BENDS ARE  $\pm 1/2$  DEGREE  
ALL OTHER MACHINING ( $\pm 0.030"$ )  
ALL OTHER ASSEMBLY ( $\pm 0.060"$ )

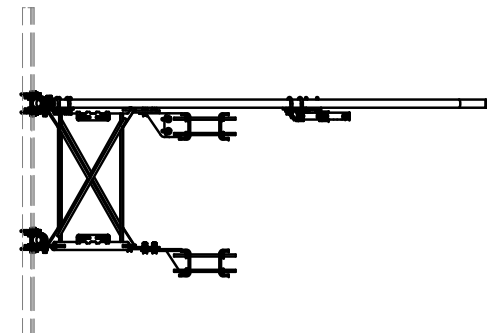
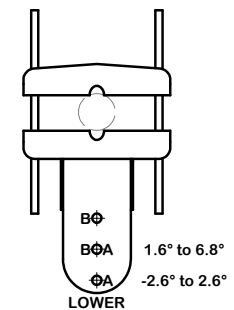
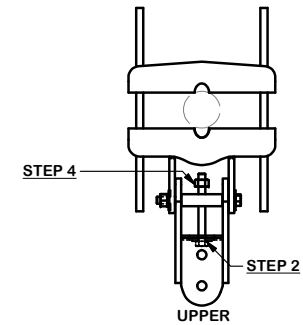
PROPRIETARY NOTE:  
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DESCRIPTION		12' 6" HEAVY DUTY V-FRAME ASSEMBLY WITH TWO STIFF ARMS		<b>SITE PRO 1</b> A valmont COMPANY Engineering Support Team: 1-888-753-7446 Locations: New York, NY Atlanta, GA Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX	
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.	VFA12-HD	
CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.	VFA12-HD
81	02	CUSTOMER	BMC 12/13/2017		



#### ANGLE CALIBRATING PROCEDURE:

1. MEASURE TOWER TAPER AND PICK LOWER BRACKET HOLE:
  - HOLE A = -2.6° TO 2.6°
  - HOLE B = 1.6° TO 6.8°
2. USE CALIBRATING BOLT TO ADJUST FRAME TO DESIRED TAPER
3. TORQUE LOCKING BOLTS TO 100 ft.-lbs.
4. ADVANCE LOCKING NUT TO POSITIONING PLATE, THEN TIGHTEN.



REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
D	UPDATED BCAM VERSION 1 TO BCAM VERSION 2		CEK	6/29/2018
C	UPDATED PIN LEG CONNECTION TO B-CAM CONNECTION		CEK	12/7/2017
B	CHANGED TIE-BACK BACK CONNECTION		CEK	7/31/2017
A	CHANGED TIE-BACK FRONT CONNECTION		CEK	2/2/2017

#### REVISION HISTORY

#### TOLERANCE NOTES

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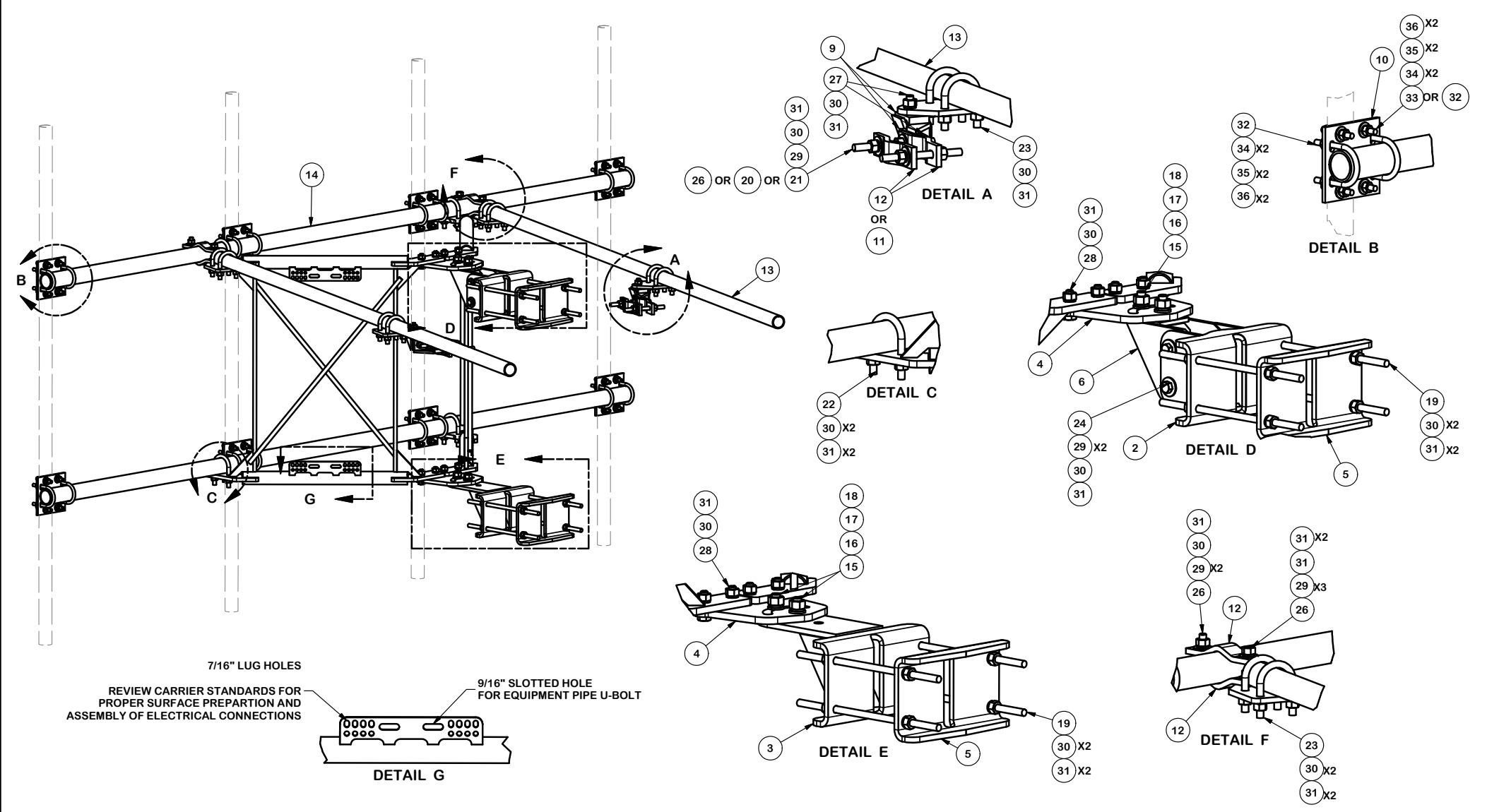
DESCRIPTION			<div><div><div>SITE PRO</div><div>1</div></div><div>A valmont COMPANY</div></div> <div>Locations: New York, NY Atlanta, GA Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX</div> <div>Engineering Support Team: 1-888-753-7446</div>		
CPD NO.	DRAWN BY CEK 1/25/2017		ENG. APPROVAL	PART NO. VFA12-HD	3 OF 3
CLASS 81	SUB 02	DRAWING USAGE CUSTOMER	CHECKED BY BMC 12/13/2017	DWG. NO. VFA12-HD	




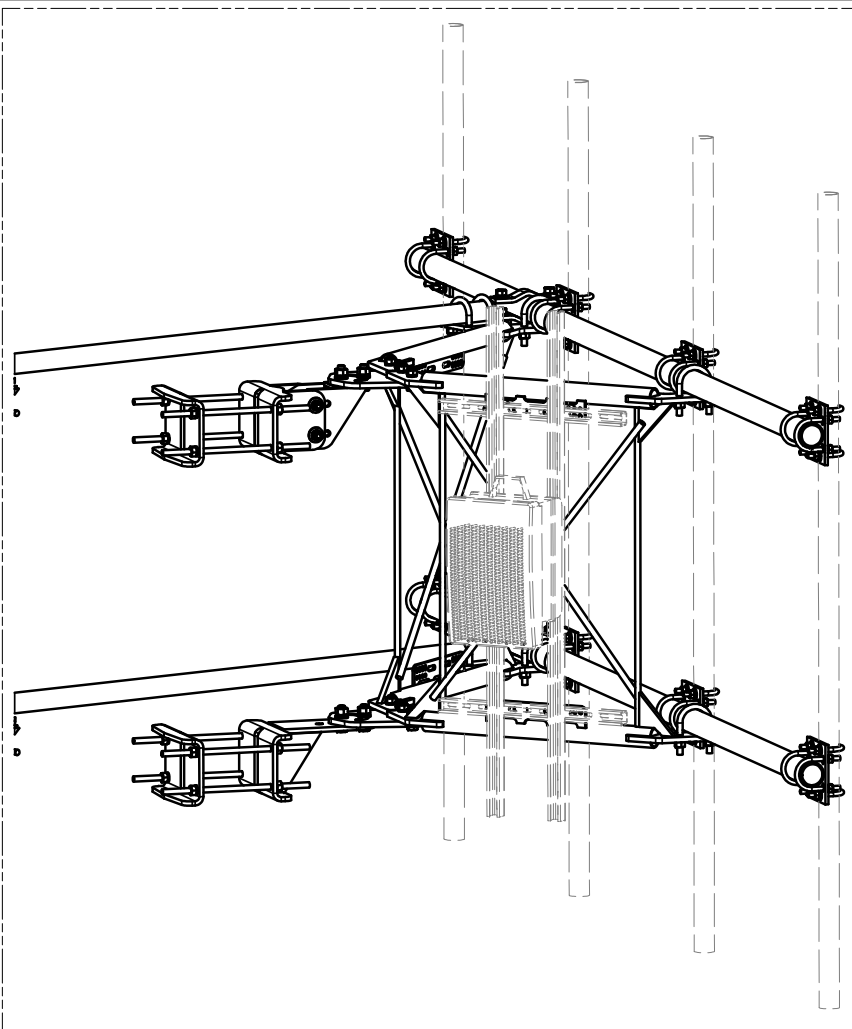
Engineering  
 Support Team:  
 1-888-753-7446

Locations:  
 New York, NY  
 Atlanta, GA  
 Los Angeles, CA  
 Plymouth, IN  
 Salem, OR  
 Dallas, TX



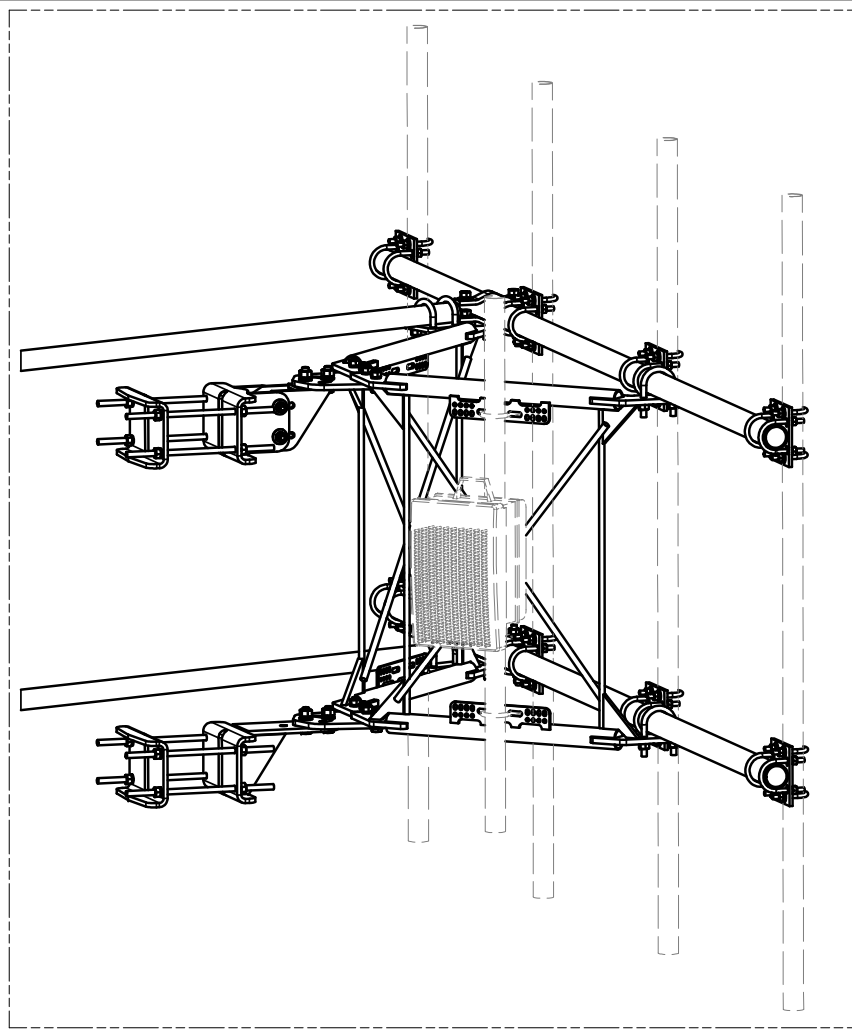


					<b>TOLERANCE NOTES</b>  <b>TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:</b> <b>SAWED, SHEARED AND GAS CUT EDGES (<math>\pm 0.030"</math>)</b> <b>DRILLED AND GAS CUT HOLES (<math>\pm 0.030"</math>) - NO CONING OF HOLES</b> <b>LASER CUT EDGES AND HOLES (<math>\pm 0.010"</math>) - NO CONING OF HOLES</b> <b>BENDS ARE <math>\pm 1/2</math> DEGREE</b> <b>ALL OTHER MACHINING (<math>\pm 0.030"</math>)</b> <b>ALL OTHER ASSEMBLY (<math>\pm 0.060"</math>)</b>  <small>PROPRIETARY NOTE: THE DATA AND TECHNIQUES 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.</small>					<div>DESCRIPTION</div> <div>12' 6" HEAVY DUTY V-FRAME ASSEMBLY WITH TWO STIFF ARMS</div>					<div><div><div><div>SITE PRO</div><div>1</div></div><div>A valmont  COMPANY</div></div><div>Locations: New York, NY Atlanta, GA Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX</div><div>Engineering Support Team: 1-888-753-7446</div></div>				
D	UPDATED BCAM VERSION 1 TO BCAM VERSION 2			CEK	6/29/2018		CPD NO.		DRAWN BY CEK 1/25/2017		ENG. APPROVAL		PART NO. VFA12-HD		4 OF 5				
C	UPDATED PIN LEG CONNECTION TO B-CAM CONNECTION			CEK	12/7/2017		CLASS		SUB		DRAWING USAGE		CHECKED BY						
B	CHANGED TIE-BACK BACK CONNECTION			CEK	7/31/2017		81		02		CUSTOMER		BMC 12/13/2017						
A	CHANGED TIE-BACK FRONT CONNECTION			CEK	2/2/2017														
REV	DESCRIPTION OF REVISIONS			CPD	BY	DATE							DWG. NO. VFA12-HD						
REVISION HISTORY																			



UNISTRUT AND HARDWARE  
SOLD SEPARATELY.

REQUIRES 3/8" HARDWARE



EQUIPMENT PIPE AND HARDWARE  
SOLD SEPARATELY.

REQUIRES 1/2" HARDWARE  
AND 2-3/8" TO 4-1/2" O.D. PIPE

					<div>TOLERANCE NOTES</div> <div>TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE: SAWED, SHEARED AND GAS CUT EDGES (<math>\pm 0.030"</math>) DRILLED AND GAS CUT HOLES (<math>\pm 0.030"</math>) - NO CONING OF HOLES LASER CUT EDGES AND HOLES (<math>\pm 0.010"</math>) - NO CONING OF HOLES BENDS ARE <math>\pm 1/2</math> DEGREE ALL OTHER MACHINING (<math>\pm 0.030"</math>) ALL OTHER ASSEMBLY (<math>\pm 0.060"</math>)</div> <div>PROPRIETARY NOTE: THE DATA AND TECHNIQUES 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.</div>					<div>DESCRIPTION</div> <div>12' 6" HEAVY DUTY V-FRAME ASSEMBLY WITH TWO STIFF ARMS</div>					<div><div><div><div>SITE PRO 1</div><div>A valmont COMPANY</div></div><div>Locations: New York, NY Atlanta, GA Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX</div><div>Engineering Support Team: 1-888-753-7446</div></div></div>				
D	UPDATED BCAM VERSION 1 TO BCAM VERSION 2			CEK	6/29/2018	CPD NO.	DRAWN BY CEK 1/25/2017		ENG. APPROVAL		PART NO.	VFA12-HD		5 OF 5					
C	UPDATED PIN LEG CONNECTION TO B-CAM CONNECTION			CEK	12/7/2017														
B	CHANGED TIE-BACK BACK CONNECTION			CEK	7/31/2017														
A	CHANGED TIE-BACK FRONT CONNECTION			CEK	2/2/2017														
REV	DESCRIPTION OF REVISIONS			CPD	BY	DATE	CLASS 81	SUB 02	DRAWING USAGE CUSTOMER	CHECKED BY BMC 12/13/2017	DWG. NO.	VFA12-HD							
REVISION HISTORY																			

# 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: CT11303B

Uconn  
82 North Eagleville Road  
Storrs, Connecticut 06268

**October 26, 2020**

**EBI Project Number: 6220005522**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>4.62%</b>

October 26, 2020

T-Mobile

Attn: Jason Overbey, RF Manager

35 Griffin Road South

Bloomfield, Connecticut 06002

## Emissions Analysis for Site: CT11303B - Uconn

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **82 North Eagleville Road in Storrs, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  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 ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately  $400 \mu\text{W}/\text{cm}^2$  and  $467 \mu\text{W}/\text{cm}^2$ , respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is  $1000 \mu\text{W}/\text{cm}^2$ . 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 82 North Eagleville Road in Storrs, 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) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.
- 3) 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.
- 4) 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.
- 5) 4 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.



- 6) 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.
- 7) 4 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 8) 2 LTE channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 9) 2 NR channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 10) 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.
- 11) 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.
- 12) The antennas used in this modeling are the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24\_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s), the Ericsson AIR 3246 for the 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector A, the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24\_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s), the Ericsson AIR 3246 for the 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector B, the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24\_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s), the Ericsson AIR 3246 for the 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 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.

- 13) The antenna mounting height centerline of the proposed antennas is 235 feet above ground level (AGL).
- 14) 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.
- 15) All calculations were done with respect to uncontrolled / general population threshold limits.





## T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32
Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd
Height (AGL):	235 feet	Height (AGL):	235 feet	Height (AGL):	235 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	300 Watts	Total TX Power (W):	300 Watts	Total TX Power (W):	300 Watts
ERP (W):	10,533.98	ERP (W):	10,533.98	ERP (W):	10,533.98
Antenna A1 MPE %:	0.69%	Antenna B1 MPE %:	0.69%	Antenna C1 MPE %:	0.69%
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd
Height (AGL):	235 feet	Height (AGL):	235 feet	Height (AGL):	235 feet
Channel Count:	7	Channel Count:	7	Channel Count:	7
Total TX Power (W):	320 Watts	Total TX Power (W):	320 Watts	Total TX Power (W):	320 Watts
ERP (W):	8,466.41	ERP (W):	8,466.41	ERP (W):	8,466.41
Antenna A2 MPE %:	0.92%	Antenna B2 MPE %:	0.92%	Antenna C2 MPE %:	0.92%
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Ericsson AIR 3246	Make / Model:	Ericsson AIR 3246	Make / Model:	Ericsson AIR 3246
Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz
Gain:	15.85 dBd	Gain:	15.85 dBd	Gain:	15.85 dBd
Height (AGL):	235 feet	Height (AGL):	235 feet	Height (AGL):	235 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts
ERP (W):	6,153.47	ERP (W):	6,153.47	ERP (W):	6,153.47
Antenna A3 MPE %:	0.40%	Antenna B3 MPE %:	0.40%	Antenna C3 MPE %:	0.40%
Antenna #:	4	Antenna #:	4	Antenna #:	4
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd
Height (AGL):	235 feet	Height (AGL):	235 feet	Height (AGL):	235 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts
ERP (W):	25,651.93	ERP (W):	25,651.93	ERP (W):	25,651.93
Antenna A4 MPE %:	1.67%	Antenna B4 MPE %:	1.67%	Antenna C4 MPE %:	1.67%



Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	3.67%
CT Public Broadcasting	0.19%
Uconn (All)	0.33%
Sprint	0.43%
Site Total MPE % :	4.62%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	3.67%
T-Mobile Sector B Total:	3.67%
T-Mobile Sector C Total:	3.67%
Site Total MPE % :	4.62%

## 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 ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
T-Mobile 1900 MHz GSM	4	1028.30	235.0	2.68	1900 MHz GSM	1000	0.27%
T-Mobile 1900 MHz LTE	2	2056.61	235.0	2.68	1900 MHz LTE	1000	0.27%
T-Mobile 2100 MHz UMTS	2	1153.78	235.0	1.50	2100 MHz UMTS	1000	0.15%
T-Mobile 600 MHz LTE	2	591.73	235.0	0.77	600 MHz LTE	400	0.19%
T-Mobile 600 MHz NR	1	1577.94	235.0	1.03	600 MHz NR	400	0.26%
T-Mobile 700 MHz LTE	2	648.82	235.0	0.84	700 MHz LTE	467	0.18%
T-Mobile 1900 MHz LTE	2	2203.69	235.0	2.87	1900 MHz LTE	1000	0.29%
T-Mobile 2100 MHz LTE	4	1538.37	235.0	4.01	2100 MHz LTE	1000	0.40%
T-Mobile 2500 MHz LTE	2	6412.98	235.0	8.35	2500 MHz LTE	1000	0.83%
T-Mobile 2500 MHz NR	2	6412.98	235.0	8.35	2500 MHz NR	1000	0.83%
						<b>Total:</b>	<b>3.67%</b>

• 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.


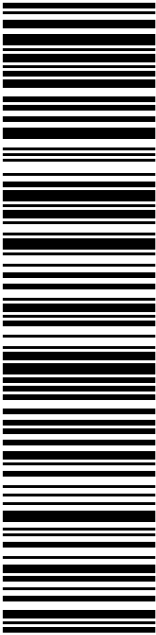
The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:


T-Mobile Sector	Power Density Value (%)
Sector A:	3.67%
Sector B:	3.67%
Sector C:	3.67%
T-Mobile Maximum MPE % (Sector A):	3.67%
Site Total:	4.62%
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **4.62%** 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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SHIP TO: PAUL SHAPIRO MAYOR- TOWN OF MANSFIELD 4 S EAGLEVILLE RD STORRS CT 06268-2574			
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## Instructions



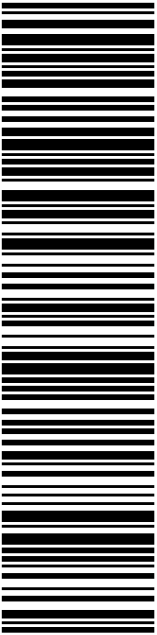
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<b>PRIORITY MAIL 2-DAY™</b>			
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<b>Carrier -- Leave if No Response</b>			
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <b>C006</b> </div>			
SHIP TO: LISA A MATTHEWS CT SITING COUNCIL 10 FRANKLIN SQ NEW BRITAIN CT 06051-2655			
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## Instructions


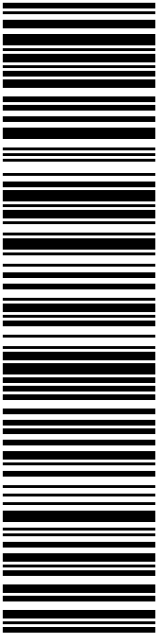
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Re#: 303B-AASL7	
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<b>Carrier -- Leave if No Response</b> <div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>C002</b></div>	
SHIP TO: LINDA PAINTER DIRECTOR-PLANNING & ZONING-TOWN OF 4 S EAGLEVILLE RD TOWN PLANNING OFFICE STORRS CT 06268-2574	
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 Print Date: 11/10/2020  
 Ship Date: 11/10/2020  
 Expected  
 Delivery Date: 11/14/2020

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

**From:** DEBORAH CHASE  
 NORTHEAST SITE SOLUTIONS, LLC  
 420 MAIN ST STE 2  
 STURBRIDGE MA 01566-1359


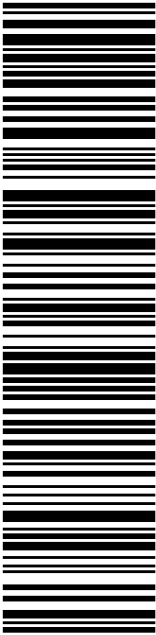
Ref#: 303B-AASL7

**To:** LINDA PAINTER  
 DIRECTOR-PLANNING & ZONING-TOWN OF MANSFIELD  
 4 S EAGLEVILLE RD  
 TOWN PLANNING OFFICE  
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<b>Carrier -- Leave if No Response</b>	
<b>C000</b>	
SHIP TO: ROBERT J SITOWSKI UCONN- REAL ESTATE & RISK MANAGEMENT 31 LEDOYT RD UNIT 3094 STORRS CT 06269-3094	
<b>USPS TRACKING #</b>  <b>9405 5036 9930 0122 1185 21</b>	
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<b>From:</b> DEBORAH CHASE NORTHEAST SITE SOLUTIONS, LLC 420 MAIN ST STE 2 STURBRIDGE MA 01566-1359 Ref#: 303B-AASL7	
<b>To:</b> ROBERT J SITOWSKI UCONN- REAL ESTATE & RISK MANAGEMENT 31 LEDOYT RD UNIT 3094 STORRS CT 06269-3094	
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