



NORTHEAST
SITE SOLUTIONS

Turnkey Wireless Development

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

August 10, 2020

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

RE: Notice of Exempt Modification
82 North Eagle Road, Mansfield CT 06268
Latitude: 41.814537
Longitude: -72.259742
T-Mobile Site#: CT11303B_L700 4x2 AAS

Dear Ms. Bachman:

T-Mobile received an exempt modification approval and extension for 82 North Eagle Road, Mansfield (EM-T-MOBILE -078-190610). T-Mobile has changed their scope of work for this project and will be removing some of the previously proposed equipment. Please note the new proposed application to replace T-MOBILE-078-190610.

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 replace six (6) of its existing antennas with three (3) new 600/700/1900 MHz antenna and three (3) new 1900/2100 MHz antenna. The new antennas would be installed at the 232-foot level of the tower.

Tower Planned Modifications:

Remove:

(3) Twin TMA
(12) 1-5/8" Coax

Remove and Replace:

(3)AIR21 Antenna (REMOVE) - (3) AIR3246 B66 Antenna 1900/2100 MHz (REPLACE)
(3) LNX-6515 Antenna (REMOVE) - (3) APXVAAR24 Antenna 600/700/1900 MHZ (REPLACE)
(3)RRUS-11 B12 (REMOVE) - (3) RRUS B71 B85 (REPLACE)
Sector Mount (REMOVE) – SitePro Valmont (REPLACE)

Install New:

(3) Hybrid Cable

Existing to Remain:

(3) AIR32 B66AA/B2A Antenna 2100 MHz
(2) 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 Paul Shapiro, 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 Antonia 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 Office

Exhibit A



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

Web Site: www.ct.gov/csc

VIA ELECTRONIC MAIL

June 8, 2020

Victoria Masse
Northeast Site Solutions
420 Main Street, Unit 2
Sturbridge, MA 01566

RE: **T-MOBILE-078-190610** – T-Mobile notice of intent to modify an existing telecommunications facility located at 82 North Eagleville Road, Mansfield, Connecticut.

Dear Ms. Masse:

The Connecticut Siting Council (Council) is in receipt of your letter dated July 1, 2019, submitted on behalf of T-Mobile, requesting an extension of time to submit a notice of completion of construction for the above-referenced exempt modification.

The Council hereby grants an extension of time until January 2, 2021, to submit a notice of completion of construction.

This extension is granted with the understanding that the Council will be notified should T-Mobile need additional time to submit a notice of completion or decides not to proceed with construction.

Thank you for your attention to this matter.

Sincerely,

s/Melanie A. Bachman

Melanie A. Bachman
Executive Director

MAB/IN/emr

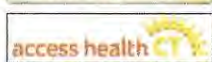
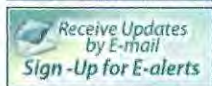
c: Denise Sabo, Northeast Site Solutions



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

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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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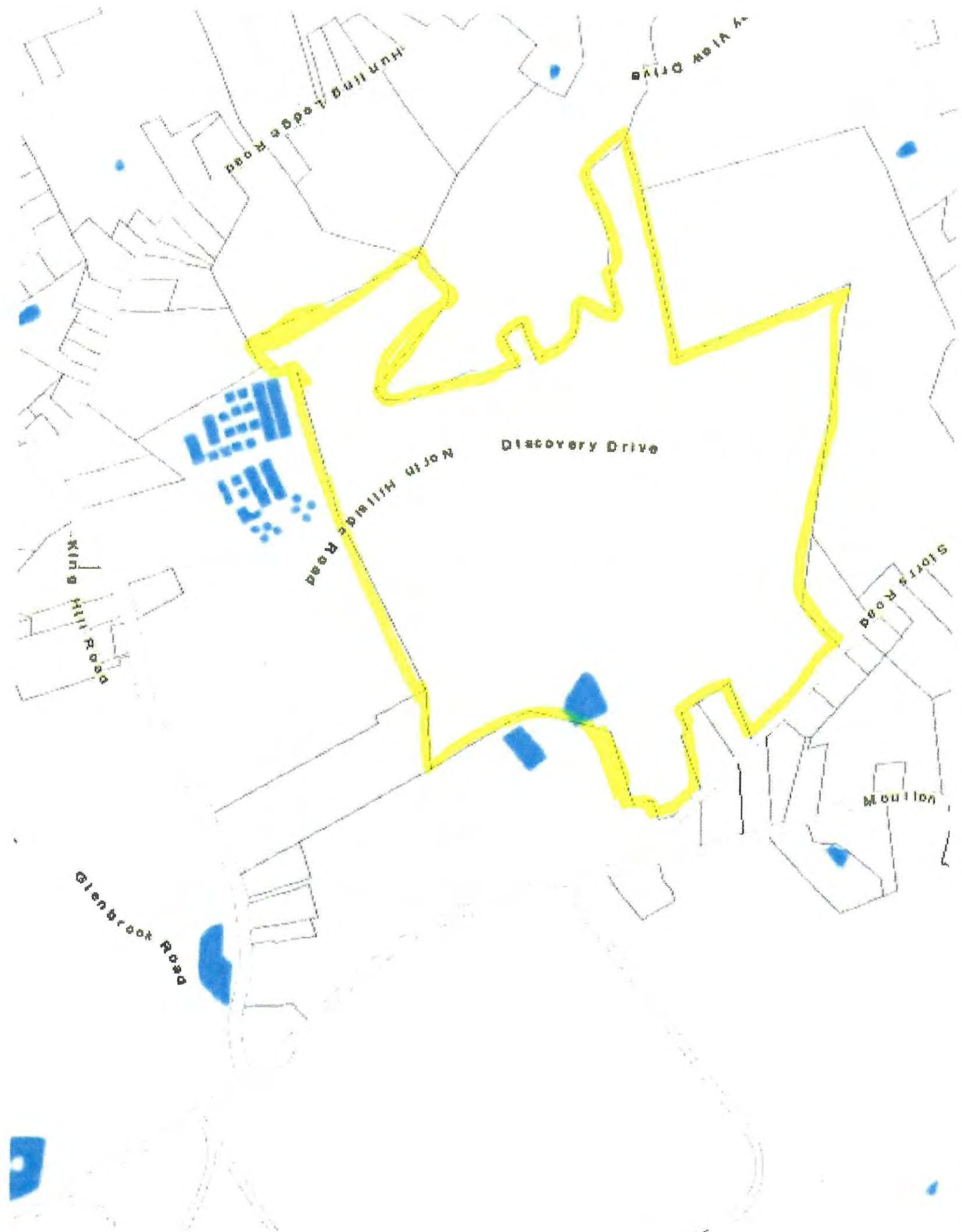
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Exhibit B





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

Grantor
 UNIVERSITY OF CONNECTICUT

Book / Page
 51/ 518

Sale Date
 1919-09-27

Sale Price



MainStreetGIS, LLC
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

Description
 Covered Loading Platform

Area / Units
 240

Assessment
 2900

Sub Areas

Description
 FUS - Finished Upper Story
 BAS - First Floor
 BSM - Basement
 SLB - Slab
 OLP - Loading Platform

Living Area

49389
 25463
 0
 0
 0

Gross Area

49389
 25463
 24439
 1024
 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: 67D92M_2XAIR+1OP)

PROJECT SCOPE:

UPGRADE OF EXISTING WIRELESS FACILITY AS FOLLOWS:
UPGADE EXISTING RBS 6102 CABINET INTERNALLY.
REPLACE (6) OF (9) EXISTING ANTENNAS.
REPLACE (3) OF (3) EXISTING REMOTE RADIO UNITS AT ANTENNAS.

REMOVE ALL EXISTING (12) 1-5/8" COAX. ADD (2) 6X12 HCS HYBRID CABLES.
FOR FINAL COUNT OF (4) 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 SPECIFICATIONS
E-1: GROUNDING DETAILS AND POWER ONE LINE DIAGRAM

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	07/16/20

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**

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617-212-3123



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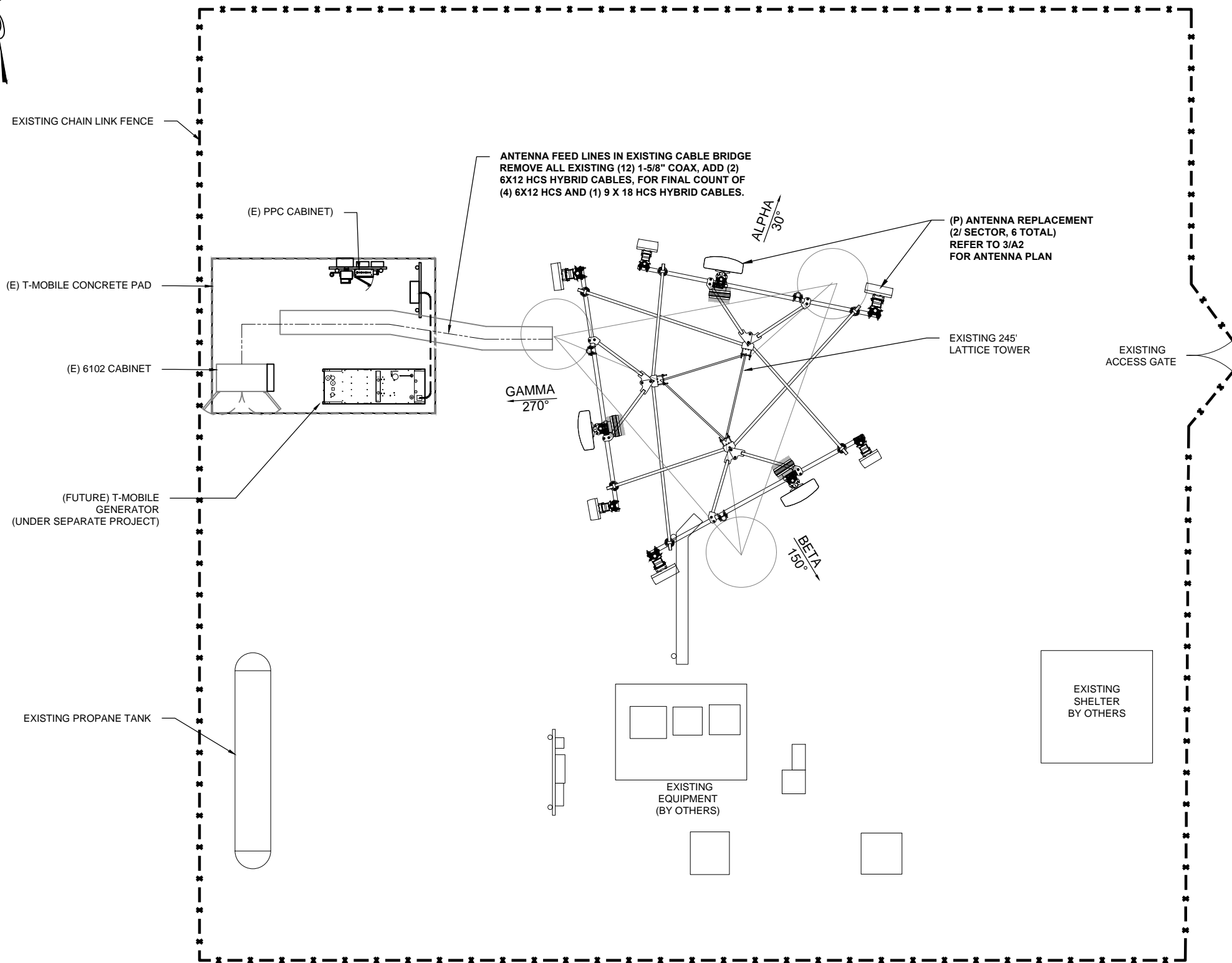
REV	DESCRIPTION	DATE
A	PRELIMINARY	07/16/20

SITE NUMBER: CT11303B
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



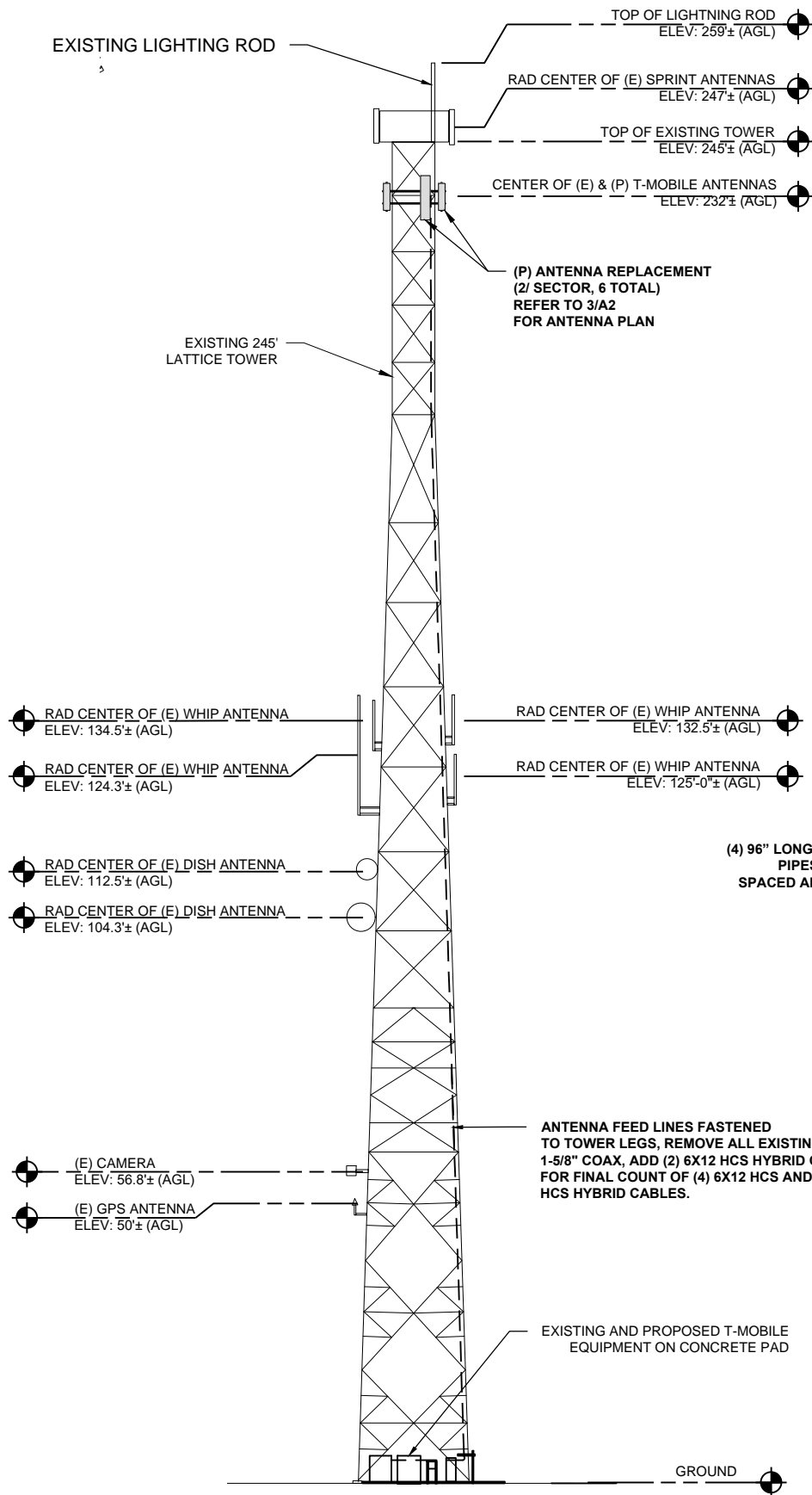
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STORRS, CT 06268

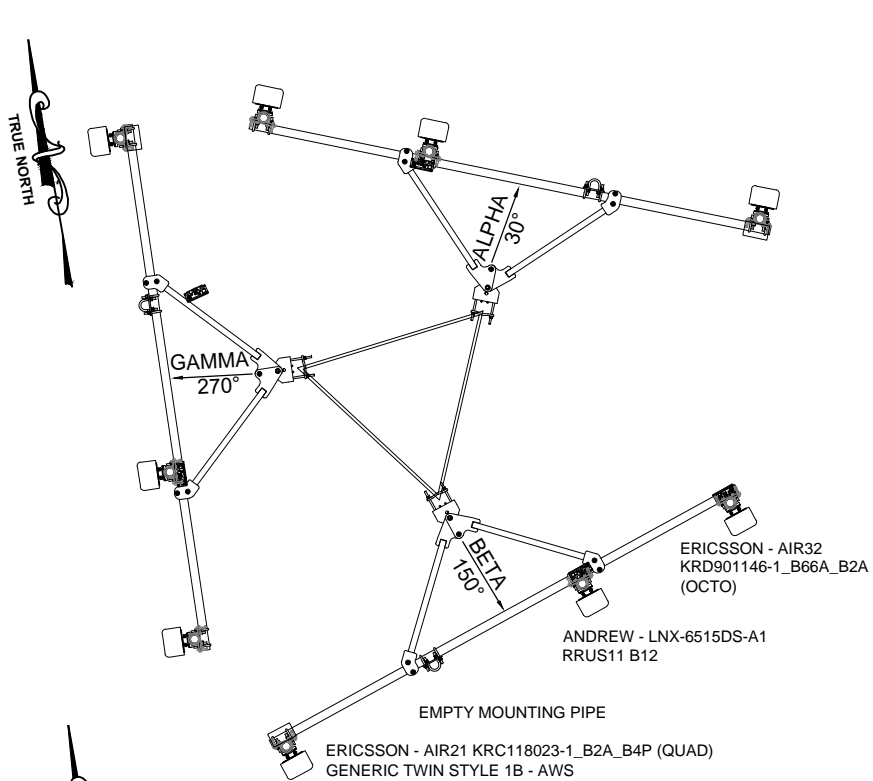
SHEET TITLE:
A-1: PLAN

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ELEVATION
N.T.S.

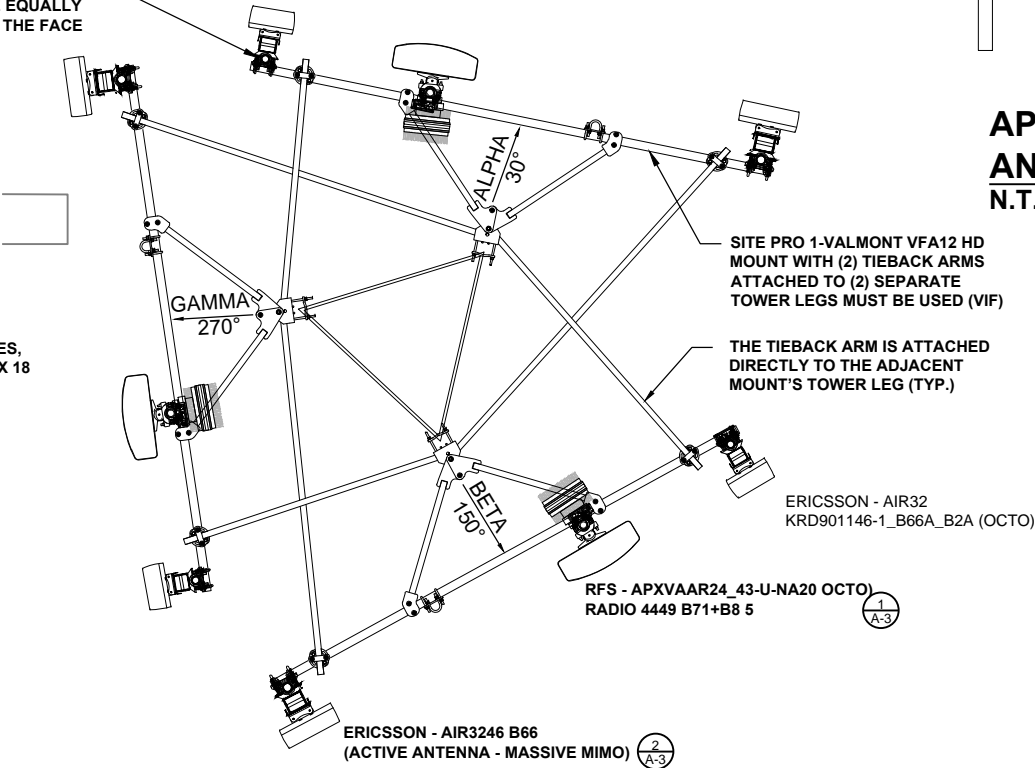
1
A-2



EXISTING ANTENNA PLAN
N.T.S.

2
A-2

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

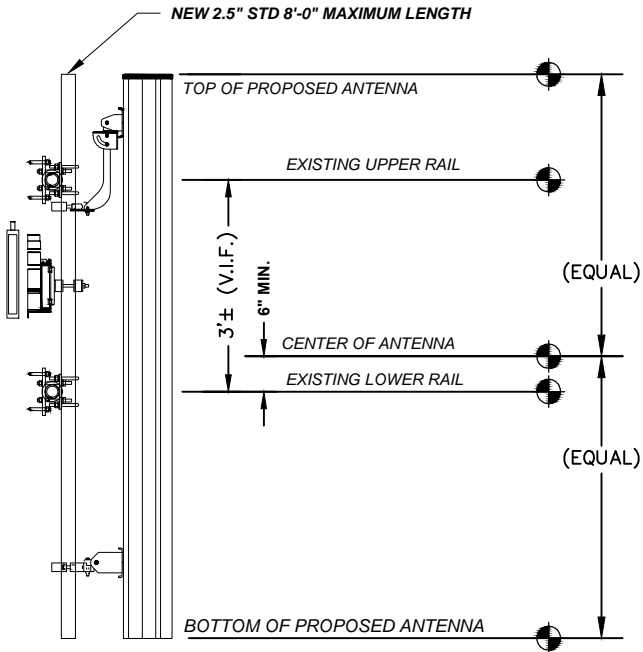


FINAL ANTENNA PLAN
N.T.S.

3
A-2

STRUCTURAL NOTES:
PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO TOWER STRUCTURAL ANALYSIS PROVIDED BY OTHERS TO DETERMINE IF THERE ARE ANY SUPPLEMENTAL OR SPECIAL REQUIREMENTS FOR TOWER TOP EQUIPMENT AND FOR CABLE BUNDLING, SHIELDING, MOUNTING OR RELOCATION ARRANGEMENTS.

REFER TO STRUCTURAL ANALYSIS REPORT AND MOUNT ANALYSIS BY EFI GLOBAL INC. DATED JULY 10, 2020.



APXVAAR24_43-U-NA20
ANTENNA MOUNTING
N.T.S.

4
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
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617-212-3123

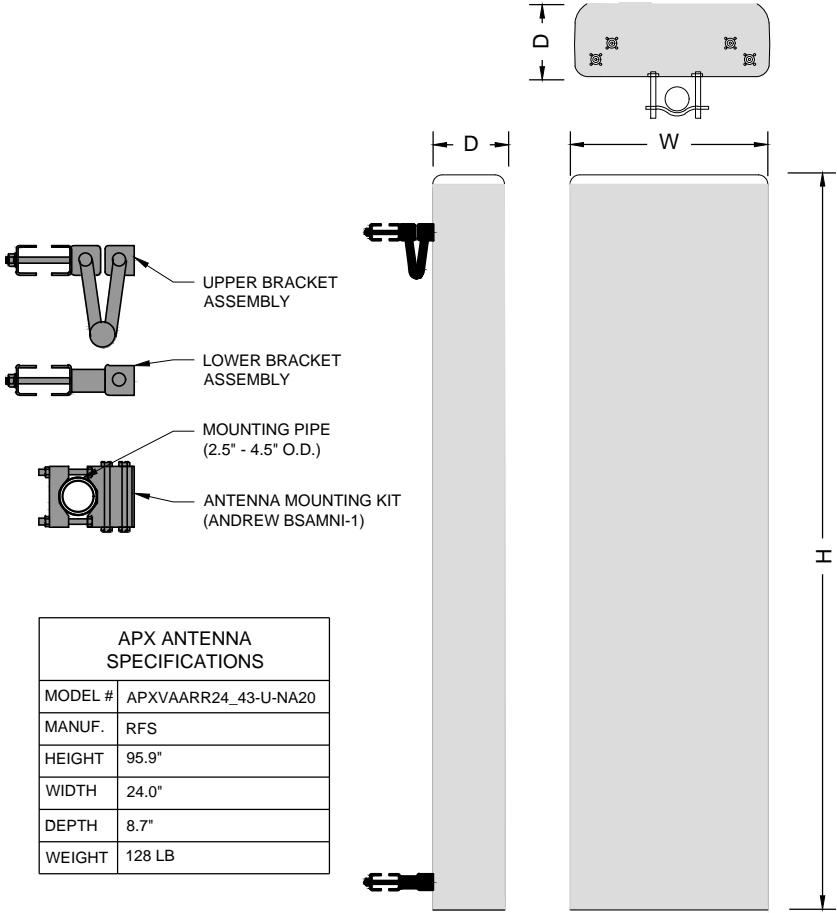


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SITE ADDRESS: 82 NORTH EAGLEVILLE ROAD
STORRS, CT 06268

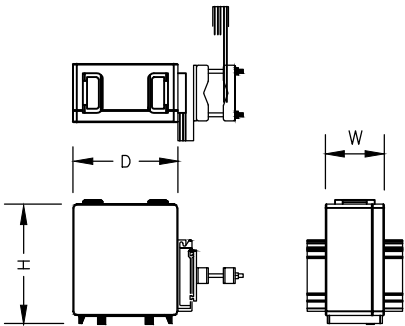
SHEET TITLE:
A-2: ELEVATION



APX ANTENNA SPECIFICATIONS	
MODEL #	APXVAARR24_43-U-NA20
MANUF.	RFS
HEIGHT	95.9"
WIDTH	24.0"
DEPTH	8.7"
WEIGHT	128 LB

RFS APXVAARR24_43-U-NA20 ANTENNA
N.T.S

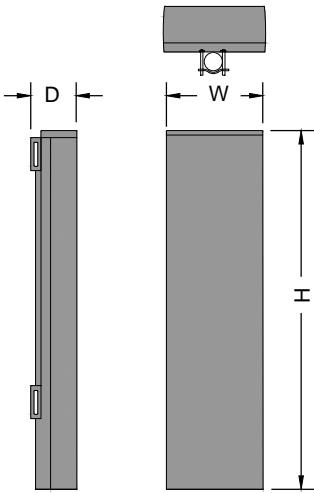
1A-3



REMOTE RADIO UNIT SPECIFICATIONS	
MODEL #	RADIO 4449 B71+B12
MANUF.	ERICSSON
HEIGHT	14.9"
WIDTH	13.2"
DEPTH	10.4"
WEIGHT	74 LB

REMOTE RADIO UNIT
N.T.S

3A-3



ERICSSON ANTENNA SPECIFICATIONS	
MODEL #	AIR3246 B66
MANUF.	ERICSSON
HEIGHT	58.1"
WIDTH	15.7"
DEPTH	9.4"
WEIGHT	180 LB

ERICSSON AIR3246 ANTENNA
N.T.S

2A-3

APPLICANT:
T-Mobile
T-MOBILE NORTHEAST LLC

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

PROJECT MANAGER
NSS **NORTHEAST**
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CONSULTANT:
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REV	DESCRIPTION	DATE
A	PRELIMINARY	07/16/20

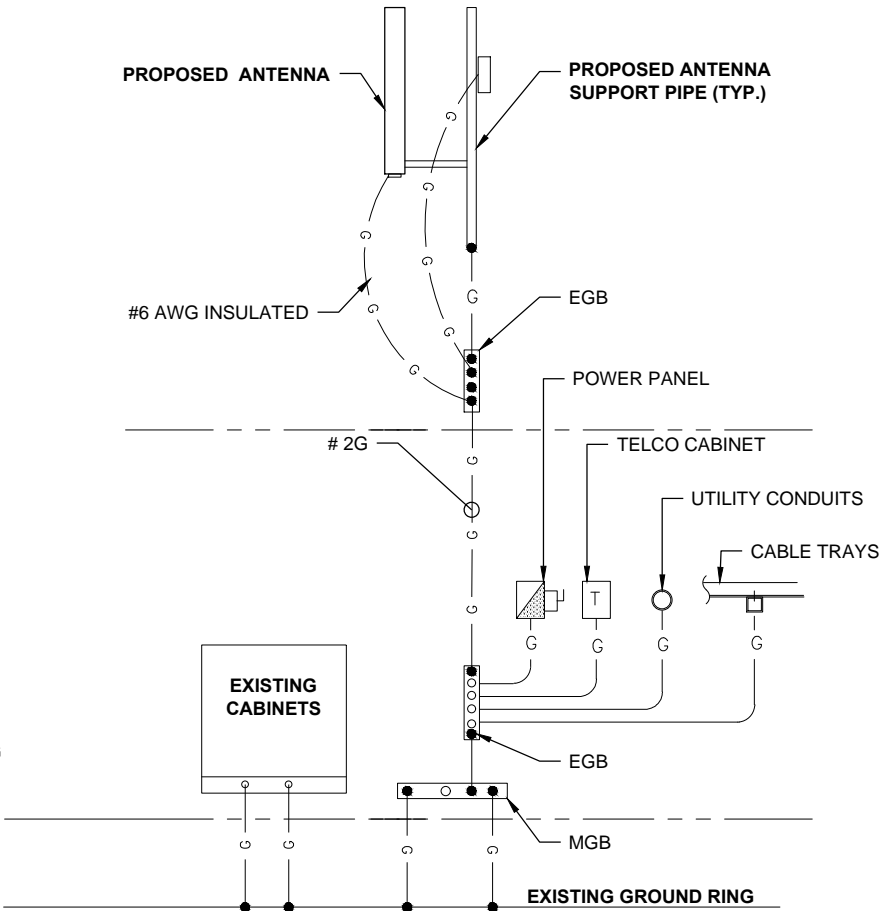
SITE NUMBER: CT11303B
SITE NAME: UCONN
SITE ADDRESS: 82 NORTH EAGLEVILLE ROAD
STORRS, CT 06268

SHEET TITLE:
A-3: EQUIPMENT SPECIFICATIONS

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ELECTRICAL & GROUNDING NOTES

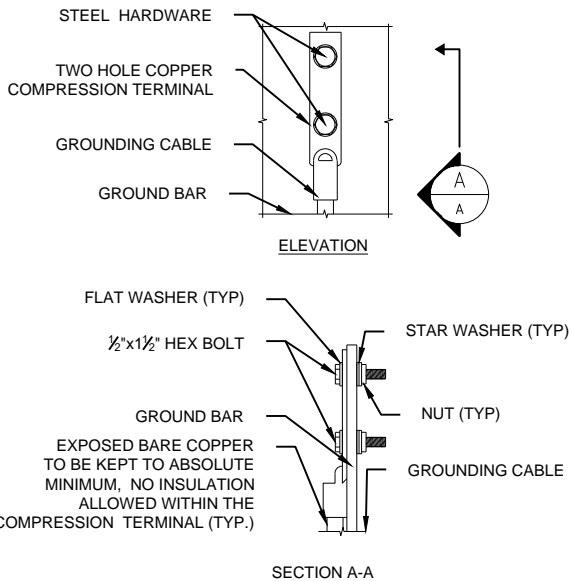
1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PRODUCED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED 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

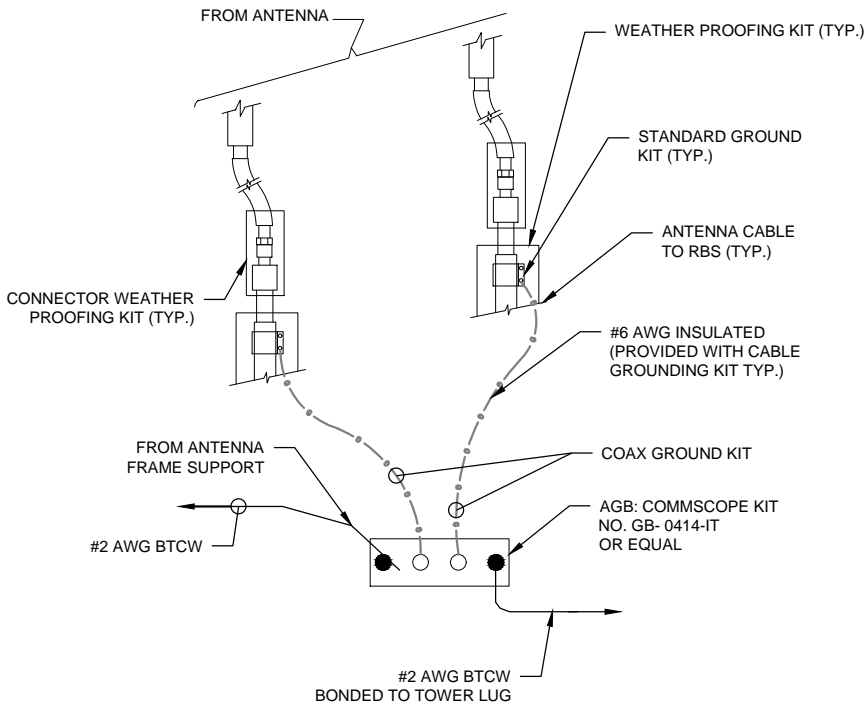


- NOTES:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
 2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

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

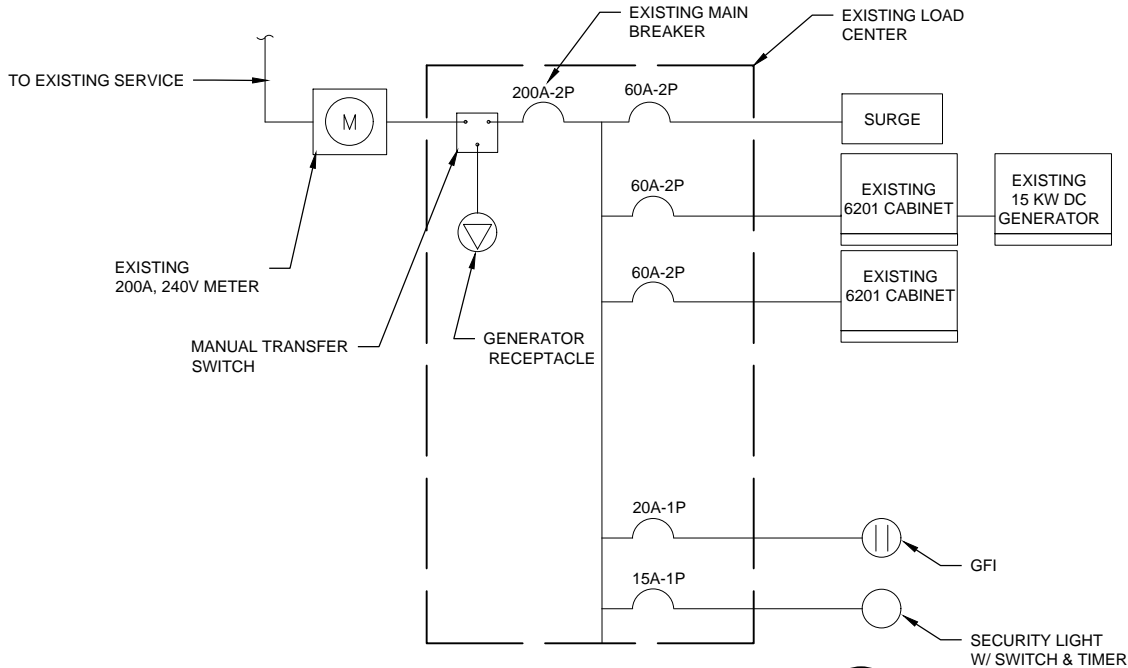
ANTENNA CABLE GROUNDING

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
NEWTON, MA 02460
617-212-3123



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REV	DESCRIPTION	DATE
A	PRELIMINARY	07/16/20

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 SELF-SUPPORT



Prepared For:



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



Structure Rating

Tower:	Pass (89.3%)
Anchor Bolts:	Pass (24.8%)
Foundation:	Pass (69.9%)

Sincerely,
EFI Global, Inc.
License No: PEC0001429

08/10/2020



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 06/26/2020.
- Structural Analysis Report prepared by EFI, dated 07/08/2020.
- Mount Structural Analysis Report prepared by EFI, dated 08/03/2020.
- Tower Mapping Report prepared by HighTower Solutions, Inc., dated 6/25/2020.
- Construction Drawings prepared by Foresite, LLC, dated 2/27/2019.
- 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:

Rad Center (ft.)	Antennas & Equipment	Coax	Mounts
235.0	(3) Ericsson AIR32 KRD901146-1_B66A/B2A (3) Andrew LNX6515DS-A1M (3) Ericsson AIR21 KRC118023-1_B2A_B4P (3) Generic Twin Style 1B-AWS (3) Radio RRUS11 B12	(12) Coax (2) Hybrids	(3) Existing Sector Mounts

Proposed and Final Configuration of T-Mobile Appurtenances:

Rad Center (ft.)	Antennas & Equipment	Coax	Mounts
235.0	(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) New Sector Mounts**

*RRUs to be mounted behind antennas

** Refer to Mount Analysis Report by EFI Global, Inc., dated 08/03/2020

Appurtenances by Others:

Rad Center (ft.)	Antennas & Equipment	Coax	Mounts
245.0	(3) APXVSP18-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_o)
- 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.

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

D: Dead Load of structure and appurtenances

W_o : 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 ft. to 232.6 ft. are stressed to **89.3%** of their structural capacity. The tower legs, horizontals, and anchor bolts are stressed to **72.2%, 51.1%, and 24.8%** of their structural capacity, respectively.

The existing foundation has **adequate** capacity for the proposed changes by T-Mobile. For the code specified load combinations and as a maximum, the foundation is stressed to **69.9%** of its structural capacity.

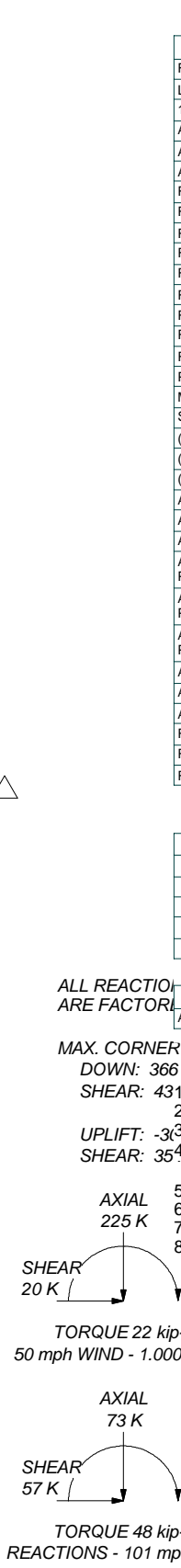
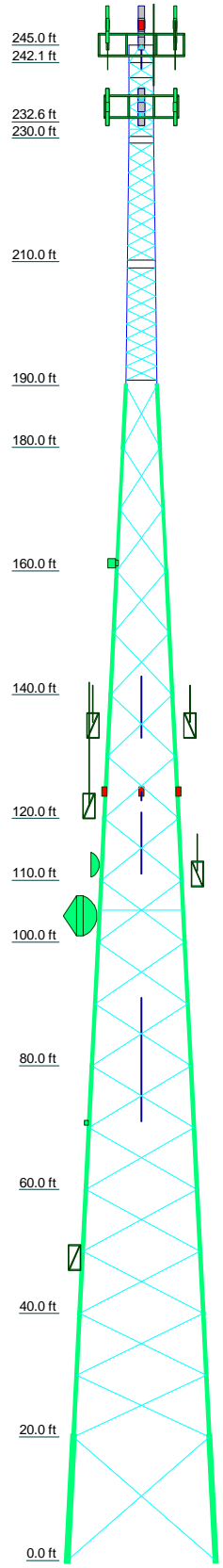
Therefore, the proposed additions and alterations by T-Mobile **can** be implemented as intended and with the conditions outlined in this report.

Should you have any questions about this report, please contact EFI at telecom@efiglobal.com.

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																	



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Flash Beacon Lighting	247.5	Sector Mount [SM 502-3]	235
Lightning Rod 5/8" x 5'	245	Knife Plate	230
13.25'-P2x0.148	245	Knife Plate	230
APXVSP18-C-A20 w/ Mount Pipe	245	Knife Plate	230
APXVSP18-C-A20 w/ Mount Pipe	245	2.5x1.5x0.5' Camera	161.25
APXVSP18-C-A20 w/ Mount Pipe	245	11"x10"x6" TMA	161.25
RRH2X50-800	245	7' Omni	135
RRH2X50-800	245	7' Omni	135
RRH2X50-800	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
RRH4X45-19	245	6"x8"0.25" Ice Bridge	124.5
RRH4X45-19	245	6"x8"0.25" Ice Bridge	124.5
RRH4X45-19	245	6"x8"0.25" Ice Bridge	124.5
Platform Mount [LP 1201-1]	245	MKR-LTE-0IR Beacon	123.6
Miscellaneous [NA 510-1]	245	MKR-LTE-0IR Beacon	123.6
Side Arm Mount [SO 306-3]	245	MKR-LTE-0IR Beacon	123.6
(3) 8'-P2x0.203	245	1.5'-P1x0.133	123.6
(3) 8'-P2x0.203	245	1.5'-P1x0.133	123.6
(3) 8'-P2x0.203	245	1.5'-P1x0.133	123.6
AIR 32 B2a/B66Aa w/ Mount Pipe	235	20' Omni	122
AIR 32 B2a/B66Aa w/ Mount Pipe	235	Side Arm Mount [SO 602-1]	122
AIR 32 B2a/B66Aa w/ Mount Pipe	235	4' Grid Dish	112.5
APXVAARR24_43-U-NA20 w/ Mount Pipe	235	Side Arm Mount [SO 311-1]	112
APXVAARR24_43-U-NA20 w/ Mount Pipe	235	8' Omni	112
APXVAARR24_43-U-NA20 w/ Mount Pipe	235	Side Arm Mount [SO 305-1]	111
APXVAARR24_43-U-NA20 w/ Mount Pipe	235	7' Omni	111
APXVAARR24_43-U-NA20 w/ Mount Pipe	235	Pipe Mount [PM 601-1]	104.25
AIR 3246 B66 w/ Mount Pipe	235	Andrew D6E-6	104.25
AIR 3246 B66 w/ Mount Pipe	235	18"x2.5" Omni/Whip	72
AIR 3246 B66 w/ Mount Pipe	235	Side Arm Mount [SO 308-1]	72
Radio 4449 B71+B85_T-Mobile	235	16"x15"x9" Camera	70.75
Radio 4449 B71+B85_T-Mobile	235	Side Arm Mount [SO 203-1]	49
Radio 4449 B71+B85_T-Mobile	235	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

ALL REACTION
ARE FACTOR

MAX. CORNER REACTIONS AT BASE:

DOWN: 366 K

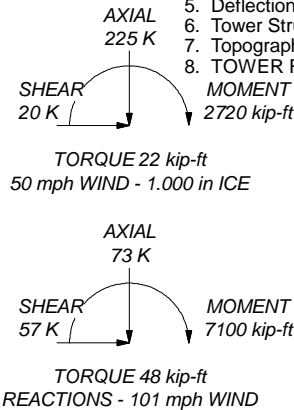
SHEAR: 431 K

UPLIFT: -33 K

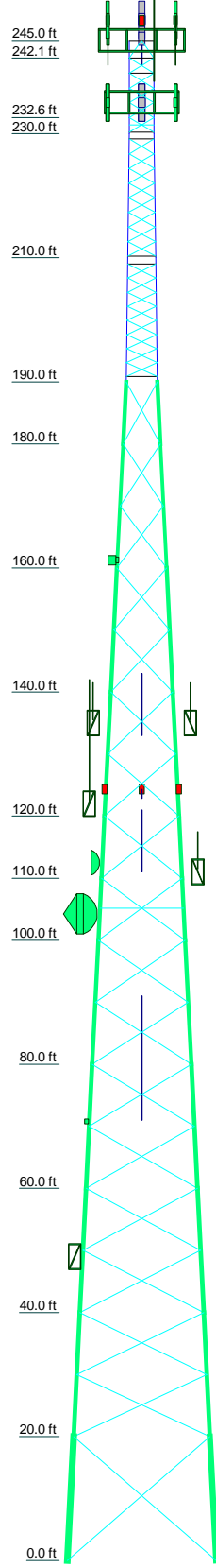
SHEAR: 354 K

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: 89.3%



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: 366 K
SHEAR: 43 K

UPLIFT: -309 K
SHEAR: 35 K

AXIAL
225 K

SHEAR
20 K

MOMENT
2720 kip-ft

TORQUE 22 kip-ft
50 mph WIND - 1.000 in ICE

AXIAL
73 K

SHEAR
57 K

MOMENT
7100 kip-ft

TORQUE 48 kip-ft
REACTIONS - 101 mph WIND

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.
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**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	Drawn by: Ahmet Colakoglu	App'd:
Code: TIA-222-G	Date: 07/10/20	Scale: NTS
Path:		Dwg No. E-1

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	Client Foresite LLC	Designed by 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.

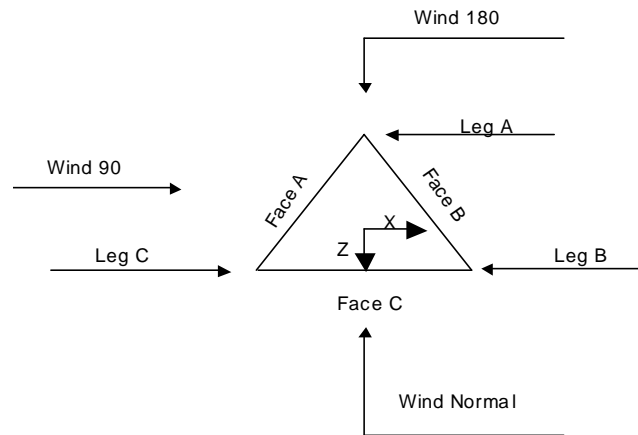
Stress ratio used in tower member design is 1.

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

<i>Tower Section</i>	<i>Tower Elevation</i>	<i>Assembly Database</i>	<i>Description</i>	<i>Section Width</i>	<i>Number of Sections</i>	<i>Section Length</i>
	<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)

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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_f</i>	<i>Adjust. Factor A_r</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>ft²</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 Factors¹

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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

¹Note: 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>

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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	5	5	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 _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	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	3.175	0.000	0.055
		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	2.600	0.000	0.041
		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	19.933	0.000	0.313
		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	19.933	0.000	0.313
		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	9.967	0.000	0.157
		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	19.933	0.000	0.313
		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_R ft²</i>	<i>A_F ft²</i>	<i>C_AA_A In Face ft²</i>	<i>C_AA_A Out Face ft²</i>	<i>Weight K</i>
T9	160.000-140.000	A	0.000	0.000	19.933	0.000	0.313
		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	19.933	0.000	0.313
		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	9.967	0.000	0.157
		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	9.967	0.000	0.157
		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	19.933	0.000	0.313
		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	19.933	0.000	0.313
		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	19.933	0.000	0.313
		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	19.933	0.000	0.313
		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	19.933	0.000	0.313
		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_R ft²</i>	<i>A_F ft²</i>	<i>C_AA_A In Face ft²</i>	<i>C_AA_A Out Face ft²</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	9.603	0.000	0.208
		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	7.083	0.000	0.150
		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	54.181	0.000	1.142
		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	53.939	0.000	1.132
		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	26.871	0.000	0.562
		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	53.531	0.000	1.114
		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	53.222	0.000	1.101

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	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	52.873	0.000	1.087
T11	120.000-110.000	B	2.266	0.000	0.000	15.842	0.000	0.308
		C		0.000	0.000	103.775	0.000	1.612
		A		0.000	0.000	26.289	0.000	0.537
T12	110.000-100.000	B	2.245	0.000	0.000	7.865	0.000	0.152
		C		0.000	0.000	64.993	0.000	0.954
		A		0.000	0.000	26.181	0.000	0.533
T13	100.000-80.000	B	2.211	0.000	0.000	7.824	0.000	0.150
		C		0.000	0.000	72.622	0.000	1.044
		A		0.000	0.000	52.000	0.000	1.050
T14	80.000-60.000	B	2.156	0.000	0.000	15.511	0.000	0.294
		C		0.000	0.000	151.255	0.000	2.184
		A		0.000	0.000	51.423	0.000	1.027
T15	60.000-40.000	B	2.085	0.000	0.000	15.291	0.000	0.285
		C		0.000	0.000	156.125	0.000	2.236
		A		0.000	0.000	50.673	0.000	0.997
T16	40.000-20.000	B	1.981	0.000	0.000	15.006	0.000	0.274
		C		0.000	0.000	169.758	0.000	2.356
		A		0.000	0.000	49.583	0.000	0.954
T17	20.000-0.000	B	1.775	0.000	0.000	14.591	0.000	0.258
		C		0.000	0.000	175.140	0.000	2.315
		A		0.000	0.000	47.426	0.000	0.872
		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_x in	CP_z in	CP_x Ice in	CP_z 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	-4.288	-1.600	-2.301	-0.207
T4	232.608-230.000	-2.706	-4.478	-0.371	-0.290
T5	230.000-210.000	-2.997	-4.847	-1.892	-1.429
T6	210.000-190.000	-3.128	-4.906	-2.162	-1.525
T7	190.000-180.000	-2.105	-3.380	-1.227	-0.807
T8	180.000-160.000	-2.791	-4.199	-2.472	-1.384
T9	160.000-140.000	-3.923	-4.506	-5.303	-1.169
T10	140.000-120.000	-5.740	-4.361	-9.435	-0.133
T11	120.000-110.000	-7.975	-4.051	-13.336	0.867
T12	110.000-100.000	-8.922	-2.822	-13.857	1.646
T13	100.000-80.000	-11.601	-2.771	-18.392	2.820
T14	80.000-60.000	-12.507	-1.843	-20.541	4.050
T15	60.000-40.000	-14.605	-1.015	-24.049	5.793
T16	40.000-20.000	-15.106	-0.767	-26.072	6.570
T17	20.000-0.000	-18.560	-0.864	-28.333	6.680

Shielding Factor Ka

<i>tnxTower</i> <i>EFI Global, Inc.</i> 1117 Perimeter Center West, Suite E500 Atlanta, GA 30338 Phone: (770) 693-0835 FAX:	Job	CT11303B	Page	13 of 41
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	Client	Foresite LLC	Designed by	Ahmet Colakoglu

<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a 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

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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_a No Ice</i>	<i>K_a Ice</i>
T6	7	(1) 9x18 + (5) 6x12	210.00 190.00 -	0.6000	0.3693
T6	10	LDF6-50A(1-1/4")	210.00 190.00 -	0.6000	0.3693
T6	17	LDF4-50A(1/2")	210.00 190.00 -	0.6000	0.3693
T7	2	T-Brackets	180.00 -	0.6000	0.2499
T7	3	T-Brackets	190.00 180.00 -	0.6000	0.2499
T7	4	Waveguide	190.00 180.00 -	0.6000	0.2499
T7	7	(1) 9x18 + (5) 6x12	190.00 180.00 -	0.6000	0.2499
T7	10	LDF6-50A(1-1/4")	190.00 180.00 -	0.6000	0.2499
T7	17	LDF4-50A(1/2")	190.00 180.00 -	0.6000	0.2499
T8	2	T-Brackets	180.00 160.00 -	0.6000	0.3666
T8	3	T-Brackets	180.00 160.00 -	0.6000	0.3666
T8	4	Waveguide	180.00 160.00 -	0.6000	0.3666
T8	7	(1) 9x18 + (5) 6x12	180.00 160.00 -	0.6000	0.3666
T8	10	LDF6-50A(1-1/4")	180.00 160.00 -	0.6000	0.3666
T8	14	LDF4-50A(1/2")	161.25 160.00 -	0.6000	0.3666
T8	17	LDF4-50A(1/2")	180.00 160.00 -	0.6000	0.3666
T9	2	T-Brackets	160.00 140.00 -	0.6000	0.4691
T9	3	T-Brackets	160.00 140.00 -	0.6000	0.4691
T9	4	Waveguide	160.00 140.00 -	0.6000	0.4691
T9	7	(1) 9x18 + (5) 6x12	160.00 140.00 -	0.6000	0.4691
T9	10	LDF6-50A(1-1/4")	160.00 140.00 -	0.6000	0.4691
T9	14	LDF4-50A(1/2")	160.00 140.00 -	0.6000	0.4691
T9	17	LDF4-50A(1/2")	160.00 140.00 -	0.6000	0.4691
T10	2	T-Brackets	140.00 120.00 -	0.6000	0.5319
T10	3	T-Brackets	140.00 120.00 -	0.6000	0.5319
T10	4	Waveguide	140.00 120.00 -	0.6000	0.5319
T10	7	(1) 9x18 + (5) 6x12	140.00 120.00 -	0.6000	0.5319
T10	9	LDF6-50A(1-1/4")	124.25 120.00 -	0.6000	0.5319
T10	10	LDF6-50A(1-1/4")	140.00 124.25 -	0.6000	0.5319
T10	12	LDF4-50A(1/2")	135.50 120.00 -	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_a No Ice</i>	<i>K_a 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

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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_a No Ice</i>	<i>K_a 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_AA_A Front</i>	<i>C_AA_A Side</i>	<i>Weight</i>
			<i>ft</i>	<i>°</i>	<i>ft</i>	<i>ft²</i>	<i>ft²</i>	<i>K</i>
			<i>ft</i>					
			<i>ft</i>					

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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>CAAA Front ft²</i>	<i>CAAA Side ft²</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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<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_{AA} Front ft²</i>	<i>C_{AA} Side ft²</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
235									
AIR 32 B2a/B66Aa w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	235.000	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	235.000	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	235.000	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	235.000	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	235.000	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	235.000	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	235.000	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	235.000	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	235.000	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
Radio 4449 B71+B85_T-Mobile	A	From Leg	4.000 0.000 0.000	0.000	235.000	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	235.000	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	235.000	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
Sector Mount [SM 502-3]	C	None		0.000	235.000	No Ice 1/2" Ice 1" Ice	29.820 42.210 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 1/2" Ice 1" Ice	4.167 4.736 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 1/2" Ice 1" Ice	4.167 4.736 5.305	0.104 0.538 0.972	0.021 0.033 0.045
Knife Plate	C	From Leg	0.000	0.000	230.000	No Ice	4.167	0.104	0.021

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	Foresite LLC						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_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight K</i>
			0.000		1/2" Ice	4.736	0.538	0.033
			0.000		1" Ice	5.305	0.972	0.045
161.25 2.5'x1.5'x0.5' Camera	C	From Leg	1.000	0.000	161.250	No Ice	4.500	0.025
			0.000			1/2" Ice	4.770	0.054
			0.000			1" Ice	5.048	0.086
11"x10"x6" TMA	C	From Leg	0.000	0.000	161.250	No Ice	0.917	0.030
			0.000			1/2" Ice	1.037	0.039
			0.000			1" Ice	1.165	0.049
135' 7' Omni	B	From Leg	3.000	0.000	135.000	No Ice	2.100	0.022
			0.000			1/2" Ice	2.640	0.037
			3.500			1" Ice	3.180	0.053
7' Omni	C	From Leg	3.000	0.000	135.000	No Ice	2.100	0.022
			0.000			1/2" Ice	2.640	0.037
			3.500			1" Ice	3.180	0.053
Side Arm Mount [SO 305-1]	B	From Leg	3.000	0.000	135.000	No Ice	0.530	0.030
			0.000			1/2" Ice	0.780	0.044
			0.000			1" Ice	1.060	0.064
Side Arm Mount [SO 305-1]	C	From Leg	3.000	0.000	135.000	No Ice	0.530	0.030
			0.000			1/2" Ice	0.780	0.044
			0.000			1" Ice	1.060	0.064
134' 8' Omni	A	From Leg	3.000	0.000	134.000	No Ice	2.400	0.025
			0.000			1/2" Ice	3.190	0.425
			4.000			1" Ice	3.980	0.825
Side Arm Mount [SO 311-1]	A	From Leg	3.000	0.000	134.000	No Ice	1.670	0.062
			0.000			1/2" Ice	2.430	0.099
			0.000			1" Ice	3.210	0.148
124' 6"x8"0.25" Ice Bridge	A	From Leg	0.500	0.000	124.500	No Ice	0.013	0.005
			0.000			1/2" Ice	0.051	0.007
			0.000			1" Ice	0.097	0.010
6"x8"0.25" Ice Bridge	B	From Leg	0.500	0.000	124.500	No Ice	0.013	0.005
			0.000			1/2" Ice	0.051	0.007
			0.000			1" Ice	0.097	0.010
6"x8"0.25" Ice Bridge	C	From Leg	0.500	0.000	124.500	No Ice	0.013	0.005
			0.000			1/2" Ice	0.051	0.007
			0.000			1" Ice	0.097	0.010
*** MKR-LTE-0IR Beacon	A	From Leg	0.250	0.000	123.600	No Ice	0.155	0.002
			0.000			1/2" Ice	0.264	0.005
			0.000			1" Ice	0.342	0.010
MKR-LTE-0IR Beacon	B	From Leg	0.250	0.000	123.600	No Ice	0.155	0.002
			0.000			1/2" Ice	0.264	0.005
			0.000			1" Ice	0.342	0.010
MKR-LTE-0IR Beacon	C	From Leg	0.250	0.000	123.600	No Ice	0.155	0.002
			0.000			1/2" Ice	0.264	0.005
			0.000			1" Ice	0.342	0.010
1.5'-P1x0.133	A	From Leg	0.100	0.000	123.600	No Ice	0.156	0.003
			0.000			1/2" Ice	0.253	0.004
			0.000			1" Ice	0.359	0.007
1.5'-P1x0.133	B	From Leg	0.100	0.000	123.600	No Ice	0.156	0.003
			0.000			1/2" Ice	0.253	0.004
			0.000			1" Ice	0.359	0.007
1.5'-P1x0.133	C	From Leg	0.100	0.000	123.600	No Ice	0.156	0.003
			0.000			1/2" Ice	0.253	0.004

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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_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight K</i>
122' 20' Omni	C	From Leg	0.000 3.000 0.000 10.000	0.000	122.000	1" Ice No Ice 1/2" Ice 1" Ice	0.359 6.000 8.030 10.060	0.359 6.000 8.030 10.060	0.007 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 2.000	0.000	49.000	No Ice 1/2" Ice 1" Ice	0.380 0.570 0.760	0.380 0.570 0.760	0.010 0.016 0.022
Side Arm Mount [SO 203-1]	C	From Leg	1.500 0.000 0.000	0.000	49.000	No Ice 1/2" Ice 1" Ice	1.780 2.240 2.750	3.790 4.470 5.210	0.125 0.153 0.189

Dishes

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Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft ²	Weight K
4' Grid Dish	C	Grid	From Leg	0.500 0.000 0.000	0.000		112.500	4.000	No Ice 12.570 1/2" Ice 13.100 1" Ice 13.630	0.051 0.118 0.186
Andrew D6E-6	C	Paraboloid w/Radome	From Leg	0.500 0.000 0.000	0.000		104.250	6.500	No Ice 28.270 1/2" Ice 29.070 1" Ice 29.870	0.250 0.399 0.548

Truss-Leg Properties

Section Designation	Area in ²	Area Ice in ²	Self Weight K	Ice Weight K	Equiv. Diameter in	Equiv. Diameter Ice in	Leg Area in ²
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
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

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<i>Comb. No.</i>	<i>Description</i>
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
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

<i>Section No.</i>	<i>Elevation ft</i>	<i>Component Type</i>	<i>Condition</i>	<i>Gov. Load Comb.</i>	<i>Axial K</i>	<i>Major Axis Moment kip-ft</i>	<i>Minor Axis Moment kip-ft</i>
T1	245 - 242.125	Leg	Max Tension	55	0.205	0.000	0.000
			Max. Compression	55	-4.618	-0.003	-0.001

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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
T2	242.125 - 239.746	Diagonal	Max. Mx	14	-1.428	-0.014	-0.000
			Max. My	2	-0.804	0.004	0.015
			Max. Vy	14	-1.411	-0.000	-0.000
			Max. Vx	26	-1.417	-0.000	0.000
			Max Tension	38	2.349	0.000	0.000
			Max. Compression	14	-2.525	0.000	0.000
			Max. Mx	62	0.646	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
			Max Tension	10	1.644	-0.087	-0.000
			Max. Compression	34	-1.599	-0.117	0.000
		Top Girt	Max. Mx	57	-0.308	-0.299	0.002
			Max. My	10	-0.845	-0.144	0.006
			Max. Vy	57	0.193	-0.299	0.002
			Max. Vx	10	0.003	-0.144	0.006
			Max Tension	13	4.892	-0.007	0.003
			Max. Compression	18	-7.726	-0.010	-0.005
			Max. Mx	39	-1.568	-0.014	0.001
			Max. My	2	1.502	0.004	0.015
			Max. Vy	14	-0.018	-0.014	-0.000
			Max. Vx	46	0.021	0.008	0.015
			Max Tension	14	1.713	0.000	0.000
			Max. Compression	38	-1.839	0.000	0.000
		Bottom Girt	Max. Mx	56	0.490	-0.007	0.000
			Max. My	61	-0.238	-0.007	-0.001
			Max. Vy	56	0.014	-0.007	0.000
			Max. Vx	61	-0.000	0.000	0.000
			Max Tension	57	0.308	0.000	0.000
			Max. Compression	21	-0.022	0.000	0.000
			Max. Mx	50	0.275	0.027	0.000
			Max. My	2	0.146	0.000	0.000
			Max. Vy	50	0.027	0.000	0.000
			Max. Vx	2	-0.000	0.000	0.000
			Max Tension	51	0.214	0.000	0.000
			Max. Compression	45	-0.062	0.000	0.000
T3	239.746 - 232.608	Leg	Max. Mx	50	0.172	0.025	0.000
			Max. My	2	0.017	0.000	0.000
			Max. Vy	50	-0.025	0.000	0.000
			Max. Vx	2	-0.000	0.000	0.000
			Max Tension	13	14.734	-0.033	0.019
			Max. Compression	18	-20.467	0.066	0.038
			Max. Mx	30	-18.049	-0.070	0.011
			Max. My	2	-20.440	-0.001	-0.076
			Max. Vy	14	1.468	-0.022	-0.037
			Max. Vx	2	-1.484	-0.002	0.043
			Max Tension	38	3.637	0.000	0.000
			Max. Compression	14	-3.662	0.000	0.000
		Diagonal	Max. Mx	56	0.256	-0.007	0.000
			Max. My	14	-3.660	-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	25.722	1.202	-0.673
			Max. Compression	18	-31.689	0.499	0.288
			Max. Mx	38	-27.579	-1.363	0.089
			Max. My	2	-31.672	0.000	-1.427
			Max. Vy	14	3.484	0.564	0.007
			Max. Vx	2	-3.720	-0.001	-0.575
			Max Tension	46	5.248	-0.001	0.000
T4	232.608 - 230	Leg	Max. Mx	56	0.256	-0.007	0.000
			Max. My	14	-3.660	-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	25.722	1.202	-0.673
			Max. Compression	18	-31.689	0.499	0.288
T4	232.608 - 230	Diagonal	Max. Mx	38	-27.579	-1.363	0.089
			Max. My	2	-31.672	0.000	-1.427
			Max. Vy	14	3.484	0.564	0.007
			Max. Vx	2	-3.720	-0.001	-0.575
			Max Tension	46	5.248	-0.001	0.000
			Max. Compression	14	-3.662	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
T5	230 - 210	Secondary Horizontal	Max. Compression	46	-5.286	0.000	0.000
			Max. Mx	59	1.154	-0.008	0.000
			Max. My	34	-0.511	-0.002	-0.002
			Max. Vy	59	0.015	-0.008	0.000
			Max. Vx	34	-0.001	0.000	0.000
			Max Tension	10	1.735	0.000	0.000
		Bottom Girt	Max. Compression	34	-1.694	-0.002	-0.001
			Max. Mx	59	-0.633	-0.006	-0.000
			Max. My	33	-1.316	-0.001	-0.001
			Max. Vy	59	0.014	-0.006	-0.000
			Max. Vx	33	0.001	-0.001	-0.001
			Max Tension	42	1.515	0.000	0.000
		Leg	Max. Compression	18	-1.699	0.000	0.000
			Max. Mx	50	-0.007	0.025	0.000
			Max. My	26	-0.628	0.000	-0.000
			Max. Vy	50	-0.025	0.000	0.000
			Max. Vx	26	0.000	0.000	0.000
			Max Tension	45	76.847	1.401	0.027
		Diagonal	Max. Compression	18	-84.666	-0.598	-0.015
			Max. Mx	18	-31.769	2.380	0.005
			Max. My	30	-3.323	-0.015	2.046
			Max. Vy	18	-3.796	-0.598	-0.015
			Max. Vx	38	3.011	0.012	0.556
			Max Tension	46	4.842	0.000	0.000
		Top Girt	Max. Compression	46	-4.995	0.000	0.000
			Max. Mx	51	1.443	-0.010	-0.000
			Max. My	46	-4.978	-0.000	0.003
			Max. Vy	51	0.018	-0.010	-0.000
			Max. Vx	46	-0.001	0.000	0.000
			Max Tension	18	2.340	0.000	0.000
		Bottom Girt	Max. Compression	42	-2.213	0.000	0.000
			Max. Mx	50	0.029	0.027	0.000
			Max. My	2	-1.306	0.000	0.000
			Max. Vy	50	0.027	0.000	0.000
			Max. Vx	2	-0.000	0.000	0.000
			Max Tension	42	2.131	0.000	0.000
T6	210 - 190	Leg	Max. Compression	18	-2.275	0.000	0.000
			Max. Mx	50	0.098	0.034	0.000
			Max. My	26	-0.822	0.000	-0.000
			Max. Vy	50	-0.030	0.000	0.000
			Max. Vx	26	0.000	0.000	0.000
			Max Tension	45	123.954	0.456	0.028
		Diagonal	Max. Compression	18	-133.807	3.204	0.076
			Max. Mx	18	-133.807	3.204	0.076
			Max. My	38	-4.272	-0.023	-2.462
			Max. Vy	18	-4.692	3.204	0.076
			Max. Vx	38	3.026	-0.023	-2.462
			Max Tension	22	5.205	0.000	0.000
		Top Girt	Max. Compression	22	-5.488	0.000	0.000
			Max. Mx	51	1.379	-0.014	-0.000
			Max. My	46	-5.458	0.001	0.004
			Max. Vy	51	0.021	-0.014	-0.000
			Max. Vx	46	-0.001	0.000	0.000
			Max Tension	18	1.945	0.000	0.000
		Bottom Girt	Max. Compression	42	-1.793	0.000	0.000
			Max. Mx	50	0.043	0.034	0.000
			Max. My	2	-1.147	0.000	0.000
			Max. Vy	50	-0.030	0.000	0.000
			Max. Vx	2	-0.000	0.000	0.000
			Max Tension	42	1.455	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
T12	110 - 100	Leg	Max. Mx	51	1.321	0.191	0.025
			Max. My	51	-0.318	0.174	0.028
			Max. Vy	61	0.106	0.189	0.027
			Max. Vx	51	0.007	0.000	0.000
			Max Tension	45	190.330	-1.768	0.015
			Max. Compression	18	-213.086	1.397	-0.072
			Max. Mx	18	-213.032	11.843	0.217
			Max. My	46	-11.659	-0.263	4.891
			Max. Vy	18	2.306	11.843	0.217
			Max. Vx	46	-0.848	-0.263	4.891
		Diagonal	Max Tension	29	6.715	0.092	-0.003
			Max. Compression	2	-7.606	0.000	0.000
			Max. Mx	61	1.376	0.204	0.021
			Max. My	57	-3.000	0.171	-0.025
			Max. Vy	61	0.113	0.204	0.021
			Max. Vx	57	-0.006	0.000	0.000
		Secondary Horizontal	Max Tension	18	3.695	0.022	-0.002
			Max. Compression	18	-3.695	0.000	0.000
			Max. Mx	55	0.444	0.128	0.021
			Max. My	60	-0.380	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	213.367	-4.597	0.002
			Max. Compression	18	-241.735	4.792	-0.027
			Max. Mx	18	-241.735	4.792	-0.027
			Max. My	46	-12.782	-0.056	5.271
			Max. Vy	18	-0.489	4.614	-0.015
			Max. Vx	46	0.319	-0.056	5.271
		Diagonal	Max Tension	7	6.815	0.000	0.000
			Max. Compression	6	-7.077	0.000	0.000
			Max. Mx	61	1.487	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
		Leg	Max Tension	45	235.683	-4.257	-0.003
			Max. Compression	18	-269.876	4.301	-0.031
			Max. Mx	18	-255.110	4.792	-0.027
			Max. My	46	-14.709	-0.026	4.200
			Max. Vy	21	0.235	4.771	-0.026
			Max. Vx	14	-0.371	-0.030	4.135
T14	80 - 60	Diagonal	Max Tension	7	7.696	0.000	0.000
			Max. Compression	6	-7.897	0.000	0.000
			Max. Mx	61	1.678	0.333	0.042
			Max. My	51	0.066	0.286	0.045
			Max. Vy	61	0.157	0.333	0.042
			Max. Vx	51	0.009	0.000	0.000
		Leg	Max Tension	45	258.434	-3.935	-0.002
			Max. Compression	18	-298.881	3.343	-0.074
			Max. Mx	42	254.477	-4.475	0.050
			Max. My	46	-18.390	-0.699	6.833
			Max. Vy	18	0.305	4.429	-0.011
			Max. Vx	46	-0.489	-0.699	6.833
		Diagonal	Max Tension	7	8.431	0.000	0.000
			Max. Compression	7	-8.490	0.000	0.000
			Max. Mx	61	1.531	0.387	0.049
			Max. My	51	-0.153	0.339	0.052
			Max. Vy	61	0.169	0.387	0.049
			Max. Vx	51	0.009	0.000	0.000
T15	60 - 40	Leg	Max Tension	45	282.780	-4.763	-0.022
			Max. Compression	18	-330.334	5.541	-0.272
T16	40 - 20	Leg	Max Tension	45	282.780	-4.763	-0.022
			Max. Compression	18	-330.334	5.541	-0.272

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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
T17	20 - 0	Diagonal	Max. Mx	42	278.074	-7.956	0.192
			Max. My	46	-21.247	-1.484	20.138
			Max. Vy	53	-0.690	-4.516	-0.053
			Max. Vx	46	-2.639	-1.484	20.138
			Max Tension	2	10.503	0.000	0.000
			Max. Compression	2	-10.480	0.000	0.000
			Max. Mx	60	-1.885	0.522	0.070
			Max. My	62	-3.635	0.454	0.082
			Max. Vy	60	0.201	0.522	0.070
			Max. Vx	62	-0.012	0.000	0.000
		Leg	Max Tension	45	293.584	-7.588	0.195
			Max. Compression	18	-343.602	0.000	-0.000
			Max. Mx	42	289.435	-7.956	0.192
			Max. My	46	-20.519	-1.485	20.138
			Max. Vy	42	-0.769	-7.956	0.192
			Max. Vx	46	1.401	-1.485	20.138
			Max Tension	29	15.060	0.000	0.000
			Max. Compression	2	-18.268	0.000	0.000
			Max. Mx	62	4.695	-0.875	-0.137
			Max. My	58	-0.276	-0.850	0.145
		Diagonal	Max. Vy	62	-0.282	-0.875	-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	359.085	35.881	-21.087
	Max. H _x	34	359.085	35.881	-21.087
	Max. H _z	13	-302.768	-29.848	17.548
	Min. Vert	13	-302.768	-29.848	17.548
	Min. H _x	13	-302.768	-29.848	17.548
	Min. H _z	34	359.085	35.881	-21.087
Leg B	Max. Vert	18	365.832	-36.990	-20.935
	Max. H _x	45	-309.239	30.749	17.316
	Max. H _z	45	-309.239	30.749	17.316
	Min. Vert	45	-309.239	30.749	17.316
	Min. H _x	18	365.832	-36.990	-20.935
	Min. H _z	18	365.832	-36.990	-20.935
Leg A	Max. Vert	2	357.660	-1.155	41.451
	Max. H _x	18	-145.410	1.853	-16.856
	Max. H _z	2	357.660	-1.155	41.451
	Min. Vert	29	-298.319	1.127	-34.139
	Min. H _x	42	188.350	-1.980	21.564
	Min. H _z	29	-298.319	1.127	-34.139

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	60.581	0.000	0.000	-11.860	10.860	0.000

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Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
1.2 Dead+1.6 Wind 0 deg - No Ice	72.697	0.071	-55.367	-6930.155	2.234	-47.731
1.2D+1.6W (pattern 1) 0 deg - No Ice	72.697	0.071	-55.202	-6889.636	2.233	-47.731
1.2D+1.6W (pattern 2) 0 deg - No Ice	72.697	0.042	-38.881	-5037.182	6.584	-42.867
0.9 Dead+1.6 Wind 0 deg - No Ice	54.523	0.071	-55.367	-6911.847	-1.035	-47.714
1.2 Dead+1.6 Wind 30 deg - No Ice	72.697	26.169	-45.192	-5733.526	-3300.762	-30.268
1.2D+1.6W (pattern 1) 30 deg - No Ice	72.697	26.092	-45.060	-5701.180	-3282.087	-30.268
1.2D+1.6W (pattern 2) 30 deg - No Ice	72.697	18.332	-31.673	-4155.326	-2384.836	-25.812
0.9 Dead+1.6 Wind 30 deg - No Ice	54.523	26.169	-45.192	-5717.602	-3296.924	-30.233
1.2 Dead+1.6 Wind 60 deg - No Ice	72.697	45.494	-26.144	-3349.019	-5784.535	-12.211
1.2D+1.6W (pattern 1) 60 deg - No Ice	72.697	45.366	-26.070	-3330.872	-5753.104	-12.210
1.2D+1.6W (pattern 2) 60 deg - No Ice	72.697	32.193	-18.514	-2451.969	-4222.071	-9.770
0.9 Dead+1.6 Wind 60 deg - No Ice	54.523	45.494	-26.144	-3338.199	-5775.313	-12.181
1.2 Dead+1.6 Wind 90 deg - No Ice	72.697	53.540	0.039	-13.824	-6795.707	-8.807
1.2D+1.6W (pattern 1) 90 deg - No Ice	72.697	53.388	0.039	-13.822	-6758.357	-8.805
1.2D+1.6W (pattern 2) 90 deg - No Ice	72.697	37.841	0.023	-14.046	-4963.410	-9.033
0.9 Dead+1.6 Wind 90 deg - No Ice	54.523	53.540	0.039	-10.211	-6784.387	-8.792
1.2 Dead+1.6 Wind 120 deg - No Ice	72.697	49.400	28.318	3525.944	-6162.686	15.837
1.2D+1.6W (pattern 1) 120 deg - No Ice	72.697	49.257	28.235	3505.685	-6127.596	15.838
1.2D+1.6W (pattern 2) 120 deg - No Ice	72.697	35.024	20.099	2583.255	-4512.383	13.419
0.9 Dead+1.6 Wind 120 deg - No Ice	54.523	49.400	28.318	3522.046	-6152.914	15.852
1.2 Dead+1.6 Wind 150 deg - No Ice	72.697	27.466	47.122	5958.692	-3462.140	40.042
1.2D+1.6W (pattern 1) 150 deg - No Ice	72.697	27.390	46.991	5926.345	-3443.467	40.041
1.2D+1.6W (pattern 2) 150 deg - No Ice	72.697	19.673	33.805	4403.289	-2553.441	36.157
0.9 Dead+1.6 Wind 150 deg - No Ice	54.523	27.466	47.123	5949.472	-3457.995	40.053
1.2 Dead+1.6 Wind 180 deg - No Ice	72.697	0.072	51.800	6588.896	9.440	47.447
1.2D+1.6W (pattern 1) 180 deg - No Ice	72.697	0.072	51.652	6552.602	9.439	47.446
1.2D+1.6W (pattern 2) 180 deg - No Ice	72.697	0.043	36.723	4816.695	10.911	42.695
0.9 Dead+1.6 Wind 180 deg - No Ice	54.523	0.072	51.800	6578.180	6.147	47.432
1.2 Dead+1.6 Wind 210 deg - No Ice	72.697	-26.028	44.923	5676.592	3312.424	30.050
1.2D+1.6W (pattern 1) 210 deg - No Ice	72.697	-25.952	44.791	5644.245	3293.749	30.050
1.2D+1.6W (pattern 2) 210 deg	72.697	-18.248	31.511	4109.690	2402.305	25.681

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<i>Load Combination</i>	<i>Vertical K</i>	<i>Shear_x K</i>	<i>Shear_z K</i>	<i>Overturning Moment, M_x kip-ft</i>	<i>Overturning Moment, M_z kip-ft</i>	<i>Torque kip-ft</i>
- No Ice						
0.9 Dead+1.6 Wind 210 deg - No Ice	54.523	-26.028	44.923	5667.918	3302.018	30.015
1.2 Dead+1.6 Wind 240 deg - No Ice	72.697	-48.207	27.711	3453.942	6042.329	12.216
1.2D+1.6W (pattern 1) 240 deg - No Ice	72.697	-48.064	27.628	3433.683	6007.238	12.215
1.2D+1.6W (pattern 2) 240 deg - No Ice	72.697	-33.836	19.462	2505.569	4390.909	9.773
0.9 Dead+1.6 Wind 240 deg - No Ice	54.523	-48.207	27.711	3450.178	6026.246	12.184
1.2 Dead+1.6 Wind 270 deg - No Ice	72.697	-53.237	-0.026	-13.591	6790.181	9.026
1.2D+1.6W (pattern 1) 270 deg - No Ice	72.697	-53.085	-0.026	-13.590	6752.831	9.024
1.2D+1.6W (pattern 2) 270 deg - No Ice	72.697	-37.659	-0.016	-13.905	4970.574	9.164
0.9 Dead+1.6 Wind 270 deg - No Ice	54.523	-53.237	-0.026	-9.992	6772.317	9.011
1.2 Dead+1.6 Wind 300 deg - No Ice	72.697	-46.240	-26.657	-3411.122	5910.835	-15.559
1.2D+1.6W (pattern 1) 300 deg - No Ice	72.697	-46.111	-26.583	-3392.975	5879.403	-15.560
1.2D+1.6W (pattern 2) 300 deg - No Ice	72.697	-33.112	-19.094	-2523.724	4368.067	-13.252
0.9 Dead+1.6 Wind 300 deg - No Ice	54.523	-46.240	-26.657	-3400.179	5894.818	-15.575
1.2 Dead+1.6 Wind 330 deg - No Ice	72.697	-27.259	-47.242	-5999.573	3467.231	-40.043
1.2D+1.6W (pattern 1) 330 deg - No Ice	72.697	-27.183	-47.110	-5967.228	3448.554	-40.042
1.2D+1.6W (pattern 2) 330 deg - No Ice	72.697	-19.549	-33.877	-4439.295	2566.980	-36.158
0.9 Dead+1.6 Wind 330 deg - No Ice	54.523	-27.259	-47.242	-5983.121	3456.534	-40.054
1.2 Dead+1.0 Ice+1.0 Temp	224.873	0.000	0.000	-27.967	127.675	0.001
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	224.873	0.097	-19.757	-2647.613	116.787	-22.161
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	224.873	9.697	-16.601	-2248.073	-1165.764	-14.760
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	224.873	16.518	-9.466	-1300.247	-2087.644	-5.895
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	224.873	19.316	-0.036	-32.610	-2457.816	0.907
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	224.873	17.268	9.786	1274.417	-2163.485	9.800
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	224.873	9.854	16.898	2225.561	-1183.335	19.795
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	224.873	0.032	19.289	2549.648	125.199	22.342
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	224.873	-9.591	16.554	2186.383	1410.723	15.093
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	224.873	-16.782	9.619	1255.702	2364.617	5.899
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	224.873	-19.222	-0.032	-31.136	2703.861	-1.242
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	224.873	-16.798	-9.664	-1322.535	2376.593	-9.987
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	224.873	-9.813	-16.922	-2284.577	1435.101	-19.794
Dead+Wind 0 deg - Service	60.581	0.016	-12.212	-1535.309	8.497	-10.526

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Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead+Wind 30 deg - Service	60.581	5.772	-9.968	-1271.633	-718.998	-6.674
Dead+Wind 60 deg - Service	60.581	10.034	-5.767	-746.430	-1266.086	-2.690
Dead+Wind 90 deg - Service	60.581	11.809	0.009	-11.812	-1488.826	-1.936
Dead+Wind 120 deg - Service	60.581	10.896	6.246	767.873	-1349.436	3.496
Dead+Wind 150 deg - Service	60.581	6.058	10.394	1303.692	-754.585	8.829
Dead+Wind 180 deg - Service	60.581	0.016	11.425	1442.482	10.079	10.463
Dead+Wind 210 deg - Service	60.581	-5.741	9.909	1241.528	737.606	6.626
Dead+Wind 240 deg - Service	60.581	-10.633	6.112	752.019	1338.954	2.690
Dead+Wind 270 deg - Service	60.581	-11.742	-0.006	-11.763	1503.648	1.984
Dead+Wind 300 deg - Service	60.581	-10.199	-5.880	-760.120	1309.946	-3.434
Dead+Wind 330 deg - Service	60.581	-6.012	-10.420	-1330.282	771.710	-8.829

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	-60.581	0.000	0.000	60.581	0.000	0.000%
2	0.071	-72.697	-55.367	-0.071	72.697	55.367	0.000%
3	0.071	-72.697	-55.202	-0.071	72.697	55.202	0.000%
4	0.042	-72.697	-38.881	-0.042	72.697	38.881	0.000%
5	0.071	-54.523	-55.367	-0.071	54.523	55.367	0.000%
6	26.169	-72.697	-45.192	-26.169	72.697	45.192	0.000%
7	26.092	-72.697	-45.060	-26.092	72.697	45.060	0.000%
8	18.332	-72.697	-31.673	-18.332	72.697	31.673	0.000%
9	26.169	-54.523	-45.192	-26.169	54.523	45.192	0.000%
10	45.494	-72.697	-26.144	-45.494	72.697	26.144	0.000%
11	45.366	-72.697	-26.070	-45.366	72.697	26.070	0.000%
12	32.193	-72.697	-18.514	-32.193	72.697	18.514	0.000%
13	45.494	-54.523	-26.144	-45.494	54.523	26.144	0.000%
14	53.540	-72.697	0.039	-53.540	72.697	-0.039	0.000%
15	53.388	-72.697	0.039	-53.388	72.697	-0.039	0.000%
16	37.841	-72.697	0.023	-37.841	72.697	-0.023	0.000%
17	53.540	-54.523	0.039	-53.540	54.523	-0.039	0.000%
18	49.400	-72.697	28.318	-49.400	72.697	-28.318	0.000%
19	49.257	-72.697	28.235	-49.257	72.697	-28.235	0.000%
20	35.024	-72.697	20.099	-35.024	72.697	-20.099	0.000%
21	49.400	-54.523	28.318	-49.400	54.523	-28.318	0.000%
22	27.466	-72.697	47.122	-27.466	72.697	-47.122	0.000%
23	27.390	-72.697	46.991	-27.390	72.697	-46.991	0.000%
24	19.673	-72.697	33.805	-19.673	72.697	-33.805	0.000%
25	27.466	-54.523	47.122	-27.466	54.523	-47.123	0.000%
26	0.072	-72.697	51.800	-0.072	72.697	-51.800	0.000%
27	0.072	-72.697	51.652	-0.072	72.697	-51.652	0.000%
28	0.043	-72.697	36.723	-0.043	72.697	-36.723	0.000%
29	0.072	-54.523	51.800	-0.072	54.523	-51.800	0.000%
30	-26.028	-72.697	44.923	26.028	72.697	-44.923	0.000%
31	-25.952	-72.697	44.791	25.952	72.697	-44.791	0.000%
32	-18.248	-72.697	31.511	18.248	72.697	-31.511	0.000%
33	-26.028	-54.523	44.923	26.028	54.523	-44.923	0.000%
34	-48.207	-72.697	27.711	48.207	72.697	-27.711	0.000%
35	-48.064	-72.697	27.628	48.064	72.697	-27.628	0.000%
36	-33.836	-72.697	19.462	33.836	72.697	-19.462	0.000%
37	-48.207	-54.523	27.711	48.207	54.523	-27.711	0.000%
38	-53.237	-72.697	-0.026	53.237	72.697	0.026	0.000%
39	-53.085	-72.697	-0.026	53.085	72.697	0.026	0.000%
40	-37.659	-72.697	-0.016	37.659	72.697	0.016	0.000%
41	-53.237	-54.523	-0.026	53.237	54.523	0.026	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	
42	-46.240	-72.697	-26.657	46.240	72.697	26.657	0.000%
43	-46.111	-72.697	-26.583	46.111	72.697	26.583	0.000%
44	-33.112	-72.697	-19.094	33.112	72.697	19.094	0.000%
45	-46.240	-54.523	-26.657	46.240	54.523	26.657	0.000%
46	-27.259	-72.697	-47.242	27.259	72.697	47.242	0.000%
47	-27.183	-72.697	-47.110	27.183	72.697	47.110	0.000%
48	-19.549	-72.697	-33.877	19.549	72.697	33.877	0.000%
49	-27.259	-54.523	-47.242	27.259	54.523	47.242	0.000%
50	0.000	-224.873	0.000	-0.000	224.873	-0.000	0.000%
51	0.097	-224.873	-19.757	-0.097	224.873	19.757	0.000%
52	9.697	-224.873	-16.601	-9.697	224.873	16.601	0.000%
53	16.518	-224.873	-9.466	-16.518	224.873	9.466	0.000%
54	19.316	-224.873	-0.036	-19.316	224.873	0.036	0.000%
55	17.268	-224.873	9.786	-17.268	224.873	-9.786	0.000%
56	9.854	-224.873	16.898	-9.854	224.873	-16.898	0.000%
57	0.032	-224.873	19.289	-0.032	224.873	-19.289	0.000%
58	-9.591	-224.873	16.554	9.591	224.873	-16.554	0.000%
59	-16.782	-224.873	9.619	16.782	224.873	-9.619	0.000%
60	-19.222	-224.873	-0.032	19.222	224.873	0.032	0.000%
61	-16.798	-224.873	-9.664	16.798	224.873	9.664	0.000%
62	-9.813	-224.873	-16.922	9.813	224.873	16.922	0.000%
63	0.016	-60.581	-12.212	-0.016	60.581	12.212	0.000%
64	5.772	-60.581	-9.968	-5.772	60.581	9.968	0.000%
65	10.034	-60.581	-5.767	-10.034	60.581	5.767	0.000%
66	11.809	-60.581	0.009	-11.809	60.581	-0.009	0.000%
67	10.896	-60.581	6.246	-10.896	60.581	-6.246	0.000%
68	6.058	-60.581	10.394	-6.058	60.581	-10.394	0.000%
69	0.016	-60.581	11.425	-0.016	60.581	-11.425	0.000%
70	-5.741	-60.581	9.909	5.741	60.581	-9.909	0.000%
71	-10.633	-60.581	6.112	10.633	60.581	-6.112	0.000%
72	-11.742	-60.581	-0.006	11.742	60.581	0.006	0.000%
73	-10.199	-60.581	-5.880	10.199	60.581	5.880	0.000%
74	-6.012	-60.581	-10.420	6.012	60.581	10.420	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000606
3	Yes	4	0.00000001	0.00000611
4	Yes	4	0.00000001	0.00000696
5	Yes	4	0.00000001	0.00000214
6	Yes	4	0.00000001	0.00000762
7	Yes	4	0.00000001	0.00000760
8	Yes	4	0.00000001	0.00000789
9	Yes	4	0.00000001	0.00000383
10	Yes	4	0.00000001	0.00000768
11	Yes	4	0.00000001	0.00000770
12	Yes	4	0.00000001	0.00000831
13	Yes	4	0.00000001	0.00000293
14	Yes	4	0.00000001	0.00000802
15	Yes	4	0.00000001	0.00000798
16	Yes	4	0.00000001	0.00000804
17	Yes	4	0.00000001	0.00000433
18	Yes	4	0.00000001	0.00000602

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19	Yes	4	0.00000001	0.00000606
20	Yes	4	0.00000001	0.00000689
21	Yes	4	0.00000001	0.00000215
22	Yes	4	0.00000001	0.00000769
23	Yes	4	0.00000001	0.00000767
24	Yes	4	0.00000001	0.00000784
25	Yes	4	0.00000001	0.00000403
26	Yes	4	0.00000001	0.00000771
27	Yes	4	0.00000001	0.00000774
28	Yes	4	0.00000001	0.00000833
29	Yes	4	0.00000001	0.00000294
30	Yes	4	0.00000001	0.00000761
31	Yes	4	0.00000001	0.00000759
32	Yes	4	0.00000001	0.00000790
33	Yes	4	0.00000001	0.00000381
34	Yes	4	0.00000001	0.00000606
35	Yes	4	0.00000001	0.00000610
36	Yes	4	0.00000001	0.00000695
37	Yes	4	0.00000001	0.00000213
38	Yes	4	0.00000001	0.00000802
39	Yes	4	0.00000001	0.00000797
40	Yes	4	0.00000001	0.00000803
41	Yes	4	0.00000001	0.00000433
42	Yes	4	0.00000001	0.00000765
43	Yes	4	0.00000001	0.00000767
44	Yes	4	0.00000001	0.00000826
45	Yes	4	0.00000001	0.00000292
46	Yes	4	0.00000001	0.00000768
47	Yes	4	0.00000001	0.00000765
48	Yes	4	0.00000001	0.00000782
49	Yes	4	0.00000001	0.00000403
50	Yes	4	0.00000001	0.00001187
51	Yes	4	0.00000001	0.00022650
52	Yes	4	0.00000001	0.00022830
53	Yes	4	0.00000001	0.00023034
54	Yes	4	0.00000001	0.00022728
55	Yes	4	0.00000001	0.00022430
56	Yes	4	0.00000001	0.00022723
57	Yes	4	0.00000001	0.00022997
58	Yes	4	0.00000001	0.00022718
59	Yes	4	0.00000001	0.00022507
60	Yes	4	0.00000001	0.00022870
61	Yes	4	0.00000001	0.00023209
62	Yes	4	0.00000001	0.00022970
63	Yes	4	0.00000001	0.00000468
64	Yes	4	0.00000001	0.00000482
65	Yes	4	0.00000001	0.00000495
66	Yes	4	0.00000001	0.00000482
67	Yes	4	0.00000001	0.00000467
68	Yes	4	0.00000001	0.00000481
69	Yes	4	0.00000001	0.00000495
70	Yes	4	0.00000001	0.00000482
71	Yes	4	0.00000001	0.00000466
72	Yes	4	0.00000001	0.00000481
73	Yes	4	0.00000001	0.00000493
74	Yes	4	0.00000001	0.00000481

Maximum Tower Deflections - Service Wind

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	245 - 242.125	8.373	74	0.418	0.021
T2	242.125 - 239.746	8.118	74	0.418	0.022
T3	239.746 - 232.608	7.908	74	0.416	0.022
T4	232.608 - 230	7.284	74	0.407	0.022
T5	230 - 210	7.051	74	0.400	0.022
T6	210 - 190	5.417	74	0.341	0.021
T7	190 - 180	4.074	74	0.274	0.019
T8	180 - 160	3.530	74	0.241	0.017
T9	160 - 140	2.641	67	0.184	0.015
T10	140 - 120	1.939	67	0.148	0.013
T11	120 - 110	1.380	67	0.114	0.011
T12	110 - 100	1.149	67	0.102	0.010
T13	100 - 80	0.941	67	0.091	0.009
T14	80 - 60	0.597	67	0.067	0.007
T15	60 - 40	0.338	67	0.049	0.005
T16	40 - 20	0.151	67	0.032	0.003
T17	20 - 0	0.034	67	0.014	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	8.373	0.418	0.021	50923
245.000	Lightning Rod 5/8" x 5'	74	8.373	0.418	0.021	50923
235.000	AIR 32 B2a/B66Aa w/ Mount Pipe	74	7.494	0.411	0.022	43357
230.000	Knife Plate	74	7.051	0.400	0.022	37438
161.250	2.5'x1.5'x0.5' Camera	67	2.690	0.187	0.015	25362
135.000	7' Omni	67	1.787	0.139	0.012	35390
134.000	8' Omni	67	1.757	0.137	0.012	35374
124.500	6"x8"0.25" Ice Bridge	67	1.494	0.121	0.012	35230
123.600	MKR-LTE-0IR Beacon	67	1.471	0.120	0.011	35242
122.000	20' Omni	67	1.430	0.117	0.011	35449
112.500	4' Grid Dish	67	1.204	0.105	0.010	49797
112.000	8' Omni	67	1.193	0.105	0.010	50939
111.000	7' Omni	67	1.171	0.104	0.010	52972
104.250	Andrew D6E-6	67	1.027	0.096	0.010	51353
72.000	18"x2.5" Omni/Whip	67	0.484	0.060	0.006	59987
70.750	16"x15"x9" Camera	67	0.467	0.059	0.006	60653
49.000	GPS	67	0.227	0.040	0.004	72539

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	245 - 242.125	38.106	18	1.899	0.097
T2	242.125 - 239.746	36.949	18	1.897	0.099
T3	239.746 - 232.608	35.997	18	1.890	0.099
T4	232.608 - 230	33.162	18	1.845	0.101
T5	230 - 210	32.106	18	1.814	0.101
T6	210 - 190	24.691	18	1.546	0.096

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T7	190 - 180	18.602	18	1.244	0.084
T8	180 - 160	16.133	18	1.092	0.077
T9	160 - 140	12.072	18	0.836	0.067
T10	140 - 120	8.866	18	0.672	0.058
T11	120 - 110	6.308	18	0.523	0.051
T12	110 - 100	5.251	18	0.468	0.046
T13	100 - 80	4.300	18	0.414	0.041
T14	80 - 60	2.725	18	0.308	0.031
T15	60 - 40	1.541	18	0.226	0.022
T16	40 - 20	0.687	18	0.145	0.013
T17	20 - 0	0.157	18	0.064	0.004

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
247.500	Flash Beacon Lighting	18	38.106	1.899	0.097	11212
245.000	Lightning Rod 5/8" x 5'	18	38.106	1.899	0.097	11212
235.000	AIR 32 B2a/B66Aa w/ Mount Pipe	18	34.118	1.866	0.100	9469
230.000	Knife Plate	18	32.106	1.814	0.101	8271
161.250	2.5'x1.5'x0.5' Camera	18	12.298	0.849	0.067	5602
135.000	7' Omni	18	8.169	0.633	0.056	7826
134.000	8' Omni	18	8.034	0.625	0.056	7823
124.500	6"x8"0.25" Ice Bridge	18	6.830	0.553	0.052	7759
123.600	MKR-LTE-0IR Beacon	18	6.723	0.546	0.052	7758
122.000	20' Omni	18	6.536	0.535	0.051	7800
112.500	4' Grid Dish	18	5.504	0.481	0.047	11027
112.000	8' Omni	18	5.453	0.478	0.047	11285
111.000	7' Omni	18	5.352	0.473	0.047	11738
104.250	Andrew D6E-6	18	4.692	0.437	0.043	11387
72.000	18"x2.5" Omni/Whip	18	2.208	0.273	0.027	13158
70.750	16"x15"x9" Camera	18	2.133	0.268	0.026	13307
49.000	GPS	18	1.034	0.182	0.017	15874

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	6.338	24.851	0.255	1	Bolt DS
T5	230	Leg	A325N	0.750	5	16.933	35.785	0.473	1	Bolt DS
T6	210	Leg	A325N	1.000	6	20.659	53.014	0.390	1	Bolt Tension
T7	190	Leg	A325N	1.000	6	20.408	53.014	0.385	1	Bolt Tension
		Diagonal	A325N	1.000	1	4.262	9.144	0.466	1	Member Block Shear
T8	180	Leg	A325N	1.000	6	23.087	53.014	0.435	1	Bolt Tension
		Diagonal	A325N	1.000	1	3.133	9.144	0.343	1	Member Block Shear
T9	160	Leg	A325N	1.000	6	25.680	53.014	0.484	1	Bolt Tension
		Diagonal	A325N	1.000	1	3.212	9.144	0.351	1	Member Block

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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
T10	140	Leg	A325N	1.250	6	28.559	82.835	0.345	1	Shear
		Diagonal	A325N	1.000	1	4.056	10.164	0.399	1	Bolt Tension
T11	120	Diagonal	A325N	1.250	1	5.254	17.139	0.307	1	Member Block Shear
T12	110	Leg	A325N	1.250	6	31.652	82.835	0.382	1	Shear
		Diagonal	A325N	1.250	1	6.715	17.139	0.392	1	Bolt Tension
		Secondary Horizontal	A325N	0.500	2	1.848	7.035	0.263	1	Member Block Shear
T13	100	Leg	A325N	1.250	6	35.561	82.835	0.429	1	Shear
		Diagonal	A325N	1.250	1	6.815	17.139	0.398	1	Bolt Tension
T14	80	Leg	A325N	1.250	6	39.281	82.835	0.474	1	Member Block Shear
		Diagonal	A325N	1.250	1	7.696	20.537	0.375	1	Bolt Tension
T15	60	Leg	A325N	1.250	6	43.072	82.835	0.520	1	Member Block Shear
		Diagonal	A325N	1.250	1	8.431	20.537	0.411	1	Bolt Tension
T16	40	Leg	A325N	1.250	12	23.565	82.835	0.284	1	Member Block Shear
		Diagonal	A325N	1.250	1	10.504	20.537	0.511	1	Bolt Tension
T17	20	Diagonal	A325N	1.000	2	7.530	35.525	0.212	1	Member Block Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	KL/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	245 - 242.125	1 1/2	2.875	2.875	92.0 K=1.00	1.767	-4.618	42.827	0.108 ¹
T2	242.125 - 239.746	1 1/2	2.379	2.379	76.1 K=1.00	1.767	-7.726	52.051	0.148 ¹
T3	239.746 - 232.608	1 1/2	7.138	2.379	76.1 K=1.00	1.767	-20.467	52.051	0.393 ¹
T4	232.608 - 230	1 1/2	2.608	0.229	7.3 K=1.00	1.767	-31.689	79.210	0.400 ¹
T5	230 - 210	2	20.002	2.362	56.7 K=1.00	3.142	-80.684	111.763	0.722 ¹
T6	210 - 190	2 1/2	20.002	2.276	43.7 K=1.00	4.909	-130.427	192.101	0.679 ¹
T7	190 - 180	Pirol 105245	10.017	10.017	37.8 K=1.00	5.301	-131.577	214.859	0.612 ¹
T8	180 - 160	Pirol 105217	20.033	10.017	37.8 K=1.00	5.301	-150.508	214.859	0.700 ¹
T9	160 - 140	Pirol 105218	20.033	10.017	32.4 K=1.00	7.216	-169.344	300.681	0.563 ¹
T10	140 - 120	Pirol 105218	20.033	10.017	32.4	7.216	-190.322	300.681	0.633 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T11	120 - 110	Pirod 105219	10.017	10.017	K=1.00 28.4	9.425	-202.219	399.868	0.506 ¹
T12	110 - 100	Pirod 105219	10.017	5.194	K=1.00 28.4	9.425	-213.086	399.868	0.533 ¹
T13	100 - 80	Pirod 105219	20.033	10.017	K=1.00 28.4	9.425	-241.735	399.868	0.605 ¹
T14	80 - 60	Pirod 105220	20.033	10.017	K=1.00 25.2	11.928	-269.876	512.375	0.527 ¹
T15	60 - 40	Pirod 105220	20.033	10.017	K=1.00 25.2	11.928	-298.881	512.375	0.583 ¹
T16	40 - 20	Pirod 105220	20.033	10.017	K=1.00 25.2	11.928	-330.334	512.375	0.645 ¹
T17	20 - 0	Pirod 112738	20.033	20.033	K=1.00 32.6	14.726	-343.602	613.145	0.560 ¹

¹ P_u / φP_n controls

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L _d ft	Kl/r	φP _n K	A in ²	V _u K	φV _n K	Stress Ratio
T7	190 - 180	0.5	1.471	120.0	238.565	0.196	1.003	3.446	0.292
T8	180 - 160	0.5	1.471	120.0	238.565	0.196	0.627	3.335	0.189
T9	160 - 140	0.5	1.459	119.0	324.713	0.196	0.222	3.378	0.066
T10	140 - 120	0.5	1.459	119.0	324.713	0.196	0.703	3.378	0.209
T11	120 - 110	0.625	1.446	94.4	424.115	0.307	0.656	6.958	0.094
T12	110 - 100	0.625	1.446	94.4	424.115	0.307	2.310	6.958	0.332
T13	100 - 80	0.625	1.446	94.4	424.115	0.307	0.489	6.958	0.070
T14	80 - 60	0.625	1.435	93.6	536.771	0.307	0.372	7.011	0.054
T15	60 - 40	0.625	1.435	93.6	536.771	0.307	0.502	7.011	0.072
T16	40 - 20	0.625	1.435	93.6	536.771	0.307	2.656	7.011	0.380
T17	20 - 0	0.75	1.727	93.9	662.680	0.442	1.407	14.364	0.099

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	245 - 242.125	3/4	3.502	3.393	152.0	0.442	-2.525	4.320	0.585 ¹
T2	242.125 - 239.746	3/4	4.654	2.254	K=0.70 129.8	0.442	-1.839	5.919	0.311 ¹
T3	239.746 - 232.608	3/4	4.654	2.254	K=0.90 129.8	0.442	-3.662	5.919	0.619 ¹
T4	232.608 - 230	3/4	4.654	2.254	K=0.90 129.8	0.442	-5.286	5.919	0.893 ¹
T5	230 - 210	7/8	5.051	2.448	K=0.90 120.9	0.601	-4.571	9.300	0.491 ¹
T6	210 - 190	1	5.091	2.447	K=0.90 107.2	0.785	-5.488	15.255	0.360 ¹
T7	190 - 180	L2 1/2x2 1/2x3/16	11.416	5.024	K=0.91 121.8	0.902	-4.567	13.384	0.341 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T8	180 - 160	L2 1/2x2 1/2x3/16	12.503	5.669	K=1.00 137.4	0.902	-3.350	10.790	0.310 ¹
T9	160 - 140	L2 1/2x2 1/2x3/16	13.796	6.369	K=1.00 154.4	0.902	-3.603	8.549	0.421 ¹
T10	140 - 120	L3x3x3/16	15.243	7.123	K=1.00 143.4	1.090	-4.322	11.971	0.361 ¹
T11	120 - 110	L3x3x5/16	16.010	7.487	K=1.00 152.5	1.780	-5.587	17.282	0.323 ¹
T12	110 - 100	L3x3x5/16	16.803	7.892	K=1.00 160.8	1.780	-7.606	15.553	0.489 ¹
T13	100 - 80	L3x3x5/16	18.448	8.729	K=1.00 177.8	1.780	-7.077	12.715	0.557 ¹
T14	80 - 60	L3 1/2x3 1/2x5/16	20.158	9.593	K=1.00 166.8	2.090	-7.897	16.963	0.466 ¹
T15	60 - 40	L3 1/2x3 1/2x5/16	21.916	10.479	K=1.00 182.3	2.090	-8.490	14.215	0.597 ¹
T16	40 - 20	L4x4x5/16	22.811	10.934	K=1.00 165.9	2.400	-10.480	19.704	0.532 ¹
T17	20 - 0	2L3 1/2x3 1/2x5/16x3/8	30.485	14.620	K=1.00 164.4	4.180	-18.268	34.949	0.523 ¹
					K=1.00				
					2L 'a' > 78.857 in - 320				

¹ P_u / φP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T4	232.608 - 230	3/4	4.000	3.875	173.6	0.442	-1.694	3.312	0.511 ¹
T12	110 - 100	L3x3x3/16	13.481	6.074	K=0.70 121.8 K=1.00	1.090	-3.695	16.046	0.230 ¹

¹ P_u / φP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	245 - 242.125	6x3/4	4.000	2.906	161.1	4.500	-1.599	39.180	0.041 ¹
T2	242.125 - 239.746	1	4.000	3.875	K=1.00 130.2 K=0.70	0.785	-0.022	10.467	0.002 ¹
T5	230 - 210	1	4.022	3.855	129.5 K=0.70	0.785	-2.213	10.574	0.209 ¹
T6	210 - 190	1	4.525	4.317	145.0 K=0.70	0.785	-1.793	8.434	0.213 ¹

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¹ $P_u / \phi P_n$ controls

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in ²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	242.125 - 239.746	7/8	4.000	3.875	148.8 K=0.70	0.601	-0.062	6.135	0.010 ¹
T4	232.608 - 230	7/8	4.000	3.875	148.8 K=0.70	0.601	-1.699	6.135	0.277 ¹
T5	230 - 210	1	4.494	4.328	145.4 K=0.70	0.785	-2.275	8.392	0.271 ¹
T6	210 - 190	1	4.980	4.772	160.3 K=0.70	0.785	-1.370	6.902	0.198 ¹

¹ $P_u / \phi P_n$ controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in ²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	245 - 242.125	1 1/2	2.875	2.875	92.0	1.767	0.205	79.522	0.003 ¹
T2	242.125 - 239.746	1 1/2	2.379	2.379	76.1	1.767	4.892	79.522	0.062 ¹
T3	239.746 - 232.608	1 1/2	7.138	2.379	76.1	1.767	14.733	79.522	0.185 ¹
T4	232.608 - 230	1 1/2	2.608	0.229	7.3	1.767	25.722	79.522	0.323 ¹
T5	230 - 210	2	20.002	0.229	5.5	3.142	76.847	141.372	0.544 ^{1 #}
T6	210 - 190	2 1/2	20.002	0.792	15.2	4.909	123.954	220.893	0.561 ¹
T7	190 - 180	Pirol 105245	10.017	10.017	37.8	5.301	122.446	238.565	0.513 ¹
T8	180 - 160	Pirol 105217	20.033	10.017	37.8	5.301	138.520	238.565	0.581 ¹
T9	160 - 140	Pirol 105218	20.033	10.017	32.4	7.216	154.077	324.713	0.475 ¹
T10	140 - 120	Pirol 105218	20.033	10.017	32.4	7.216	171.355	324.713	0.528 ¹
T11	120 - 110	Pirol 105219	10.017	10.017	28.4	9.425	181.356	424.115	0.428 ¹
T12	110 - 100	Pirol 105219	10.017	4.823	28.4	9.425	190.330	424.115	0.449 ¹
T13	100 - 80	Pirol 105219	20.033	10.017	28.4	9.425	213.367	424.115	0.503 ¹
T14	80 - 60	Pirol 105220	20.033	10.017	25.2	11.928	235.683	536.771	0.439 ¹
T15	60 - 40	Pirol 105220	20.033	10.017	25.2	11.928	258.434	536.771	0.481 ¹
T16	40 - 20	Pirol 105220	20.033	10.017	25.2	11.928	282.780	536.771	0.527 ¹
T17	20 - 0	Pirol 112738	20.033	20.033	32.6	14.726	293.584	662.680	0.443 ¹

¹ $P_u / \phi P_n$ controls

Based on net area of leg in section below

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Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n K	A in ²	V_u K	ϕV_n K	Stress Ratio
T7	190 - 180	0.5	1.471	120.0	238.565	0.196	1.003	3.446	0.292
T8	180 - 160	0.5	1.471	120.0	238.565	0.196	0.627	3.335	0.189
T9	160 - 140	0.5	1.459	119.0	324.713	0.196	0.222	3.378	0.066
T10	140 - 120	0.5	1.459	119.0	324.713	0.196	0.703	3.378	0.209
T11	120 - 110	0.625	1.446	94.4	424.115	0.307	0.656	6.958	0.094
T12	110 - 100	0.625	1.446	94.4	424.115	0.307	2.310	6.958	0.332
T13	100 - 80	0.625	1.446	94.4	424.115	0.307	0.489	6.958	0.070
T14	80 - 60	0.625	1.435	93.6	536.771	0.307	0.372	7.011	0.054
T15	60 - 40	0.625	1.435	93.6	536.771	0.307	0.502	7.011	0.072
T16	40 - 20	0.625	1.435	93.6	536.771	0.307	2.656	7.011	0.380
T17	20 - 0	0.75	1.727	93.9	662.680	0.442	1.407	14.364	0.099

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in ²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	245 - 242.125	3/4	3.502	3.393	217.1	0.442	2.349	19.880	0.118 ¹
T2	242.125 - 239.746	3/4	4.654	2.254	144.3	0.442	1.713	19.880	0.086 ¹
T3	239.746 - 232.608	3/4	4.654	2.254	144.3	0.442	3.637	19.880	0.183 ¹
T4	232.608 - 230	3/4	4.654	2.254	144.3	0.442	5.248	19.880	0.264 ¹
T5	230 - 210	7/8	4.690	2.268	124.4	0.601	4.842	27.059	0.179 ¹
T6	210 - 190	1	5.091	2.447	117.4	0.785	5.205	35.343	0.147 ¹
T7	190 - 180	L2 1/2x2 1/2x3/16	11.416	5.024	80.1	0.518	4.262	22.546	0.189 ¹
T8	180 - 160	L2 1/2x2 1/2x3/16	11.930	5.424	86.2	0.518	3.133	22.546	0.139 ¹
T9	160 - 140	L2 1/2x2 1/2x3/16	13.796	6.369	100.8	0.518	3.212	22.546	0.142 ¹
T10	140 - 120	L3x3x3/16	15.243	7.123	93.2	0.659	4.056	28.679	0.141 ¹
T11	120 - 110	L3x3x5/16	16.010	7.487	100.0	1.013	5.254	44.054	0.119 ¹
T12	110 - 100	L3x3x5/16	16.803	7.892	105.3	1.013	6.715	44.054	0.152 ¹
T13	100 - 80	L3x3x5/16	18.448	8.729	116.2	1.013	6.815	44.054	0.155 ¹
T14	80 - 60	L3 1/2x3 1/2x5/16	20.158	9.593	108.8	1.245	7.696	54.168	0.142 ¹
T15	60 - 40	L3 1/2x3 1/2x5/16	21.916	10.479	118.6	1.245	8.431	54.168	0.156 ¹
T16	40 - 20	L4x4x5/16	23.714	11.383	112.1	1.478	10.504	64.281	0.163 ¹
T17	20 - 0	2L3 1/2x3 1/2x5/16x3/8 2L 'a' > 78.857 in - 320	30.485	14.620	165.7	2.608	15.060	113.433	0.133 ¹

¹ $P_u / \phi P_n$ controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in ²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T4	232.608 - 230	3/4	4.000	3.875	248.0	0.442	1.735	19.880	0.087 ¹
T12	110 - 100	L3x3x3/16	13.481	6.074	159.5	1.090	3.695	35.316	0.105 ¹

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¹ $P_u / \phi P_n$ controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	245 - 242.125	6x3/4	4.000	2.906	161.1	4.500	1.644	202.500	0.008 ¹
T2	242.125 - 239.746	1	4.000	3.875	186.0	0.785	0.308	35.343	0.009 ¹
T5	230 - 210	1	4.022	3.855	185.1	0.785	2.340	35.343	0.066 ¹
T6	210 - 190	1	4.525	4.317	207.2	0.785	1.945	35.343	0.055 ¹

¹ $P_u / \phi P_n$ controls

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	242.125 - 239.746	7/8	4.000	3.875	212.6	0.601	0.214	27.059	0.008 ¹
T4	232.608 - 230	7/8	4.000	3.875	212.6	0.601	1.515	27.059	0.056 ¹
T5	230 - 210	1	4.494	4.328	207.7	0.785	2.131	35.343	0.060 ¹
T6	210 - 190	1	4.980	4.772	229.1	0.785	1.455	35.343	0.041 ¹

¹ $P_u / \phi P_n$ controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	245 - 242.125	Leg	1 1/2	2	-4.618	42.827	10.8	Pass
T2	242.125 - 239.746	Leg	1 1/2	14	-7.726	52.051	14.8	Pass
T3	239.746 - 232.608	Leg	1 1/2	29	-20.467	52.051	39.3	Pass
T4	232.608 - 230	Leg	1 1/2	50	-31.689	79.210	40.0	Pass
T5	230 - 210	Leg	2	65	-80.684	111.763	72.2	Pass
T6	210 - 190	Leg	2 1/2	122	-130.427	192.101	67.9	Pass
T7	190 - 180	Leg	Pirol 105245	179	-131.577	214.859	61.2	Pass
T8	180 - 160	Leg	Pirol 105217	188	-150.508	214.859	70.0	Pass
T9	160 - 140	Leg	Pirol 105218	203	-169.344	300.681	56.3	Pass
T10	140 - 120	Leg	Pirol 105218	218	-190.322	300.681	63.3	Pass
T11	120 - 110	Leg	Pirol 105219	233	-202.219	399.868	50.6	Pass
T12	110 - 100	Leg	Pirol 105219	242	-213.086	399.868	53.3	Pass
T13	100 - 80	Leg	Pirol 105219	254	-241.735	399.868	60.5	Pass
T14	80 - 60	Leg	Pirol 105220	269	-269.876	512.375	52.7	Pass
T15	60 - 40	Leg	Pirol 105220	284	-298.881	512.375	58.3	Pass
T16	40 - 20	Leg	Pirol 105220	299	-330.334	512.375	64.5	Pass
T17	20 - 0	Leg	Pirol 112738	314	-343.602	613.145	56.0	Pass

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Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	245 - 242.125	Diagonal	3/4	8	-2.525	4.320	58.5	Pass
T2	242.125 - 239.746	Diagonal	3/4	22	-1.839	5.919	31.1	Pass
T3	239.746 - 232.608	Diagonal	3/4	32	-3.662	5.919	61.9	Pass
T4	232.608 - 230	Diagonal	3/4	58	-5.286	5.919	89.3	Pass
T5	230 - 210	Diagonal	7/8	75	-4.571	9.300	49.1	Pass
T6	210 - 190	Diagonal	1	174	-5.488	15.255	36.0	Pass
T7	190 - 180	Diagonal	L2 1/2x2 1/2x3/16	186	-4.567	13.384	34.1	Pass
							46.6 (b)	
T8	180 - 160	Diagonal	L2 1/2x2 1/2x3/16	192	-3.350	10.790	31.0	Pass
							34.3 (b)	
T9	160 - 140	Diagonal	L2 1/2x2 1/2x3/16	207	-3.603	8.549	42.1	Pass
T10	140 - 120	Diagonal	L3x3x3/16	225	-4.322	11.971	36.1	Pass
							39.9 (b)	
T11	120 - 110	Diagonal	L3x3x5/16	239	-5.587	17.282	32.3	Pass
T12	110 - 100	Diagonal	L3x3x5/16	248	-7.606	15.553	48.9	Pass
T13	100 - 80	Diagonal	L3x3x5/16	260	-7.077	12.715	55.7	Pass
T14	80 - 60	Diagonal	L3 1/2x3 1/2x5/16	275	-7.897	16.963	46.6	Pass
T15	60 - 40	Diagonal	L3 1/2x3 1/2x5/16	290	-8.490	14.215	59.7	Pass
T16	40 - 20	Diagonal	L4x4x5/16	311	-10.480	19.704	53.2	Pass
T17	20 - 0	Diagonal	2L3 1/2x3 1/2x5/16x3/8	320	-18.268	34.949	52.3	Pass
T4	232.608 - 230	Secondary Horizontal	3/4	61	-1.694	3.312	51.1	Pass
T12	110 - 100	Secondary Horizontal	L3x3x3/16	250	-3.695	16.046	23.0	Pass
							26.3 (b)	
T1	245 - 242.125	Top Girt	6x3/4	4	-1.599	39.180	4.1	Pass
T2	242.125 - 239.746	Top Girt	1	16	0.308	35.343	0.9	Pass
T5	230 - 210	Top Girt	1	69	-2.213	10.574	20.9	Pass
T6	210 - 190	Top Girt	1	126	-1.793	8.434	21.3	Pass
T2	242.125 - 239.746	Bottom Girt	7/8	21	-0.062	6.135	1.0	Pass
T4	232.608 - 230	Bottom Girt	7/8	54	-1.699	6.135	27.7	Pass
T5	230 - 210	Bottom Girt	1	72	-2.275	8.392	27.1	Pass
T6	210 - 190	Bottom Girt	1	129	-1.370	6.902	19.8	Pass
							Summary	
							Leg (T5)	Pass
							Diagonal (T4)	Pass
							Secondary Horizontal (T4)	Pass
							Top Girt (T6)	Pass
							Bottom Girt (T4)	Pass
							Bolt Checks	Pass
							RATING =	89.3 Pass

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)	366.00	309.00
Shear (k)	43.00	35.00

Anchor Rod Data

Quantity:	6
Diameter (in):	2
Material Grade:	A687
Grout Considered:	Yes
l_{ar} (in):	1
Eta Factor, η :	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)	51.50
Shear, Vu (kips)	5.83
Moment, Mu (kip-in)	-
Axial Cap., ϕPn_t (kips)	250.00
Shear Cap., ϕVn (kips)	-
Moment Cap., ϕMn (kip-in)	-
Stress Rating	24.8%

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)	366	309
Shear Force (kips)	43	35

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 _{v=0} (ft from TOC)	16.16	16.16
Soil Safety Factor	16.85	20.71
Max Moment (kip-ft)	490.57	399.30
Rating	7.9%	6.4%
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)	500.71	309.00
Rating	69.9%	48.4%
Reinforced Concrete Capacity		
Compression		Uplift
Critical Depth (ft from TOC)	16.74	15.03
Critical Moment (kip-ft)	489.58	396.36
Critical Moment Capacity	2489.34	1785.49
Rating	19.7%	22.2%
Soil Interaction Rating	69.9%	
Structural Foundation Rating	22.2%	

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 _{soil} (pcf)	γ _{concrete} (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	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: 8/3/2020

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 (91.9%)**
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

8/3/2020

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

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

Table 1.1 – Existing Appurtenance Configuration

Qty	Model
3	Ericsson AIR 32 KRD901146-1 B66A/B2A – Antennas
3	Andrew LNX-6515DS – A1M – Antennas
3	Ericsson AIR 21 B2A/B4P – Antennas
3	RRUS 11 B12 – RRUs
3	Generic Twin style 1B - AWS – TMAs

Table 1.2 – Proposed and Final Appurtenance Configuration

Qty	Model
3	Ericsson AIR 32 KRD901146-1 B66A/B2A – Antennas
3	RFS APXVAARR24-43-U-NA20 – Antennas
3	Ericsson Air 3246 B66 – Antennas
3	Radio 4449 B71/B85 – 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	06/26/2020
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	31.2	Pass
Horizontal Standoff Pipe	42.7	Pass
Diagonal Standoff Solid Rod	31.7	Pass
Vertical Standoff Solid Rod	91.9	Pass
Antenna Mount Pipe	33.8	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 **91.9%** 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	α	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
1	0.95

Lattice Tower

DOES NOT CHANGE

Gust Effect Factor Gh

Structure Type	Gh
1	1.00

Lattice Tower

DOES NOT CHANGE

Shielding Factor, Ka

Structure Type	Ka
	0.90

Lattice Tower

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 _N (ft2)	***A _T (ft2)	Aspect (FRONT)	Aspect (SIDE)	Ca (FRONT)	Ca (SIDE)	K _z	q _z (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	232.00 232.00 232.00	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		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0	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					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0					
																				0	0	0	0	0	

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

** A_N is the product of H and W

*** A_T is the product of H and D

DL559

Mount	Height (ft)	Member	*L (in)	**W (in)	D (in)	Weight (lb/ft)	*** Ca	K _z	q _z (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

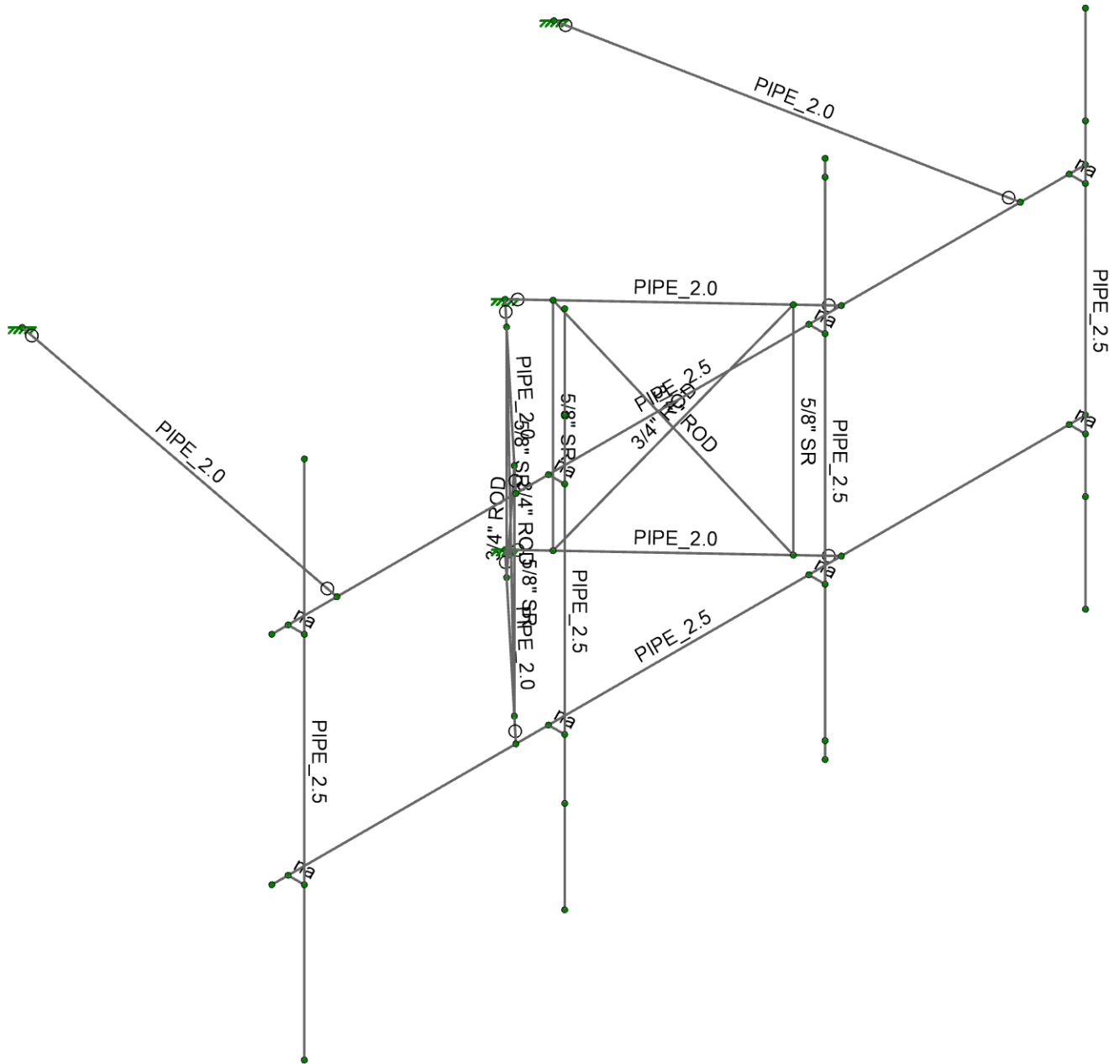
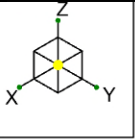
SUBJECT: Antenna Loads -TIA 222 G Stanadard (chapter 16 revisions)

Antenna AND Mount With Ice																							Pounds				
Mounting Pole	Height (ft)	Model Number	#	H (in)	W (in)	D (in)	Ka	*A _N (ft2)	*A _T (ft2)	*Volume Ice (ft3)	*Weight Ice (lbs)	**Ca (FRONT)	**Ca (SIDE)	Kz	q _z (psf)	Ice Wind Load (Front)	Ice Wind Load (Side)	Combined Wind Load (Front)	Combined Wind Load (Side)	Ice Dead Load	**Total Wind Load (Front)	**Total Wind Load (Side)	Total Ice Load				
Pos. 1	232.00	Ericsson AIR 32 B66A/B2A	1	56.6	12.9	8.7	0.90	2.51	2.37	4.88	273.10	0.72	0.75	1.511	9.2	15.0	14.6	68.7	53.4	273	69	53	273				
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0							
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0							
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0							
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0							
Pos.2	232.00 232.00 232.00	RFS APXVAARR24_43-U-NA20	1	95.9	24.0	8.7	0.90	4.21	3.70	11.23	629.16	0.72	0.81	1.511	9.2	25.1	24.7	192.5	98.2	629	192	130	848				
		Radio 4449 B71/B85	1	17.9	13.2	10.6	0.90	-	1.13	2.23	125.04	0.70	0.70	1.511	9.2	0.0	6.5	0.0	19.6	125							
		Radio 4415 B25	1	16.5	13.4	5.9	0.90	-	0.92	1.67	93.77	0.70	0.70	1.511	9.2	0.0	5.3	0.0	12.1	94							
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0							
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0							
Pos.3	232.00	Ericsson AIR 3246 B66A	1	58.1	15.7	9.4	0.90	2.66	2.44	5.72	320.44	0.71	0.74	1.511	9.2	15.6	15.0	81.3	57.7	320	81	58	320				
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0							
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0							
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0							
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0							
Pos.4		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0	0	0	0				
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0							
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0							
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0							
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0							
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0							
																					0	0	0				

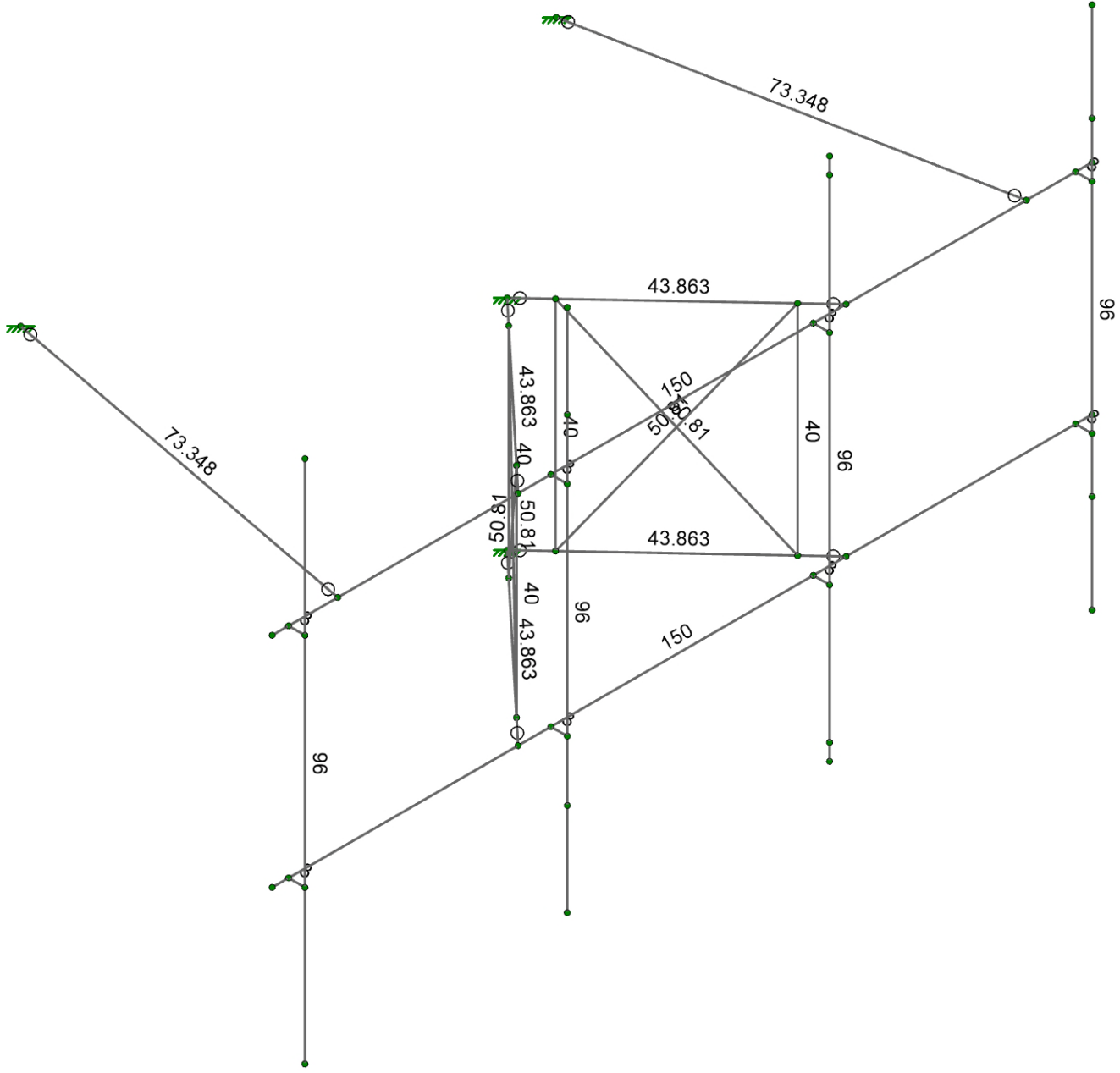
* A_N ,A_T, Volume Ice and Weight Ice are calculated per unit
** Ca will equal 1.2 for all ice load calculations

Mount	Height (ft)	Member	*L (in)	**W (in)	D (in)	***A _N (ft2)	Volume Ice (ft3)	Weight Ice (lbs)	****Ca (FRONT)	Kz	q _z (psf)	PLF		
												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	-	-	-	-	-	-	-	-	-

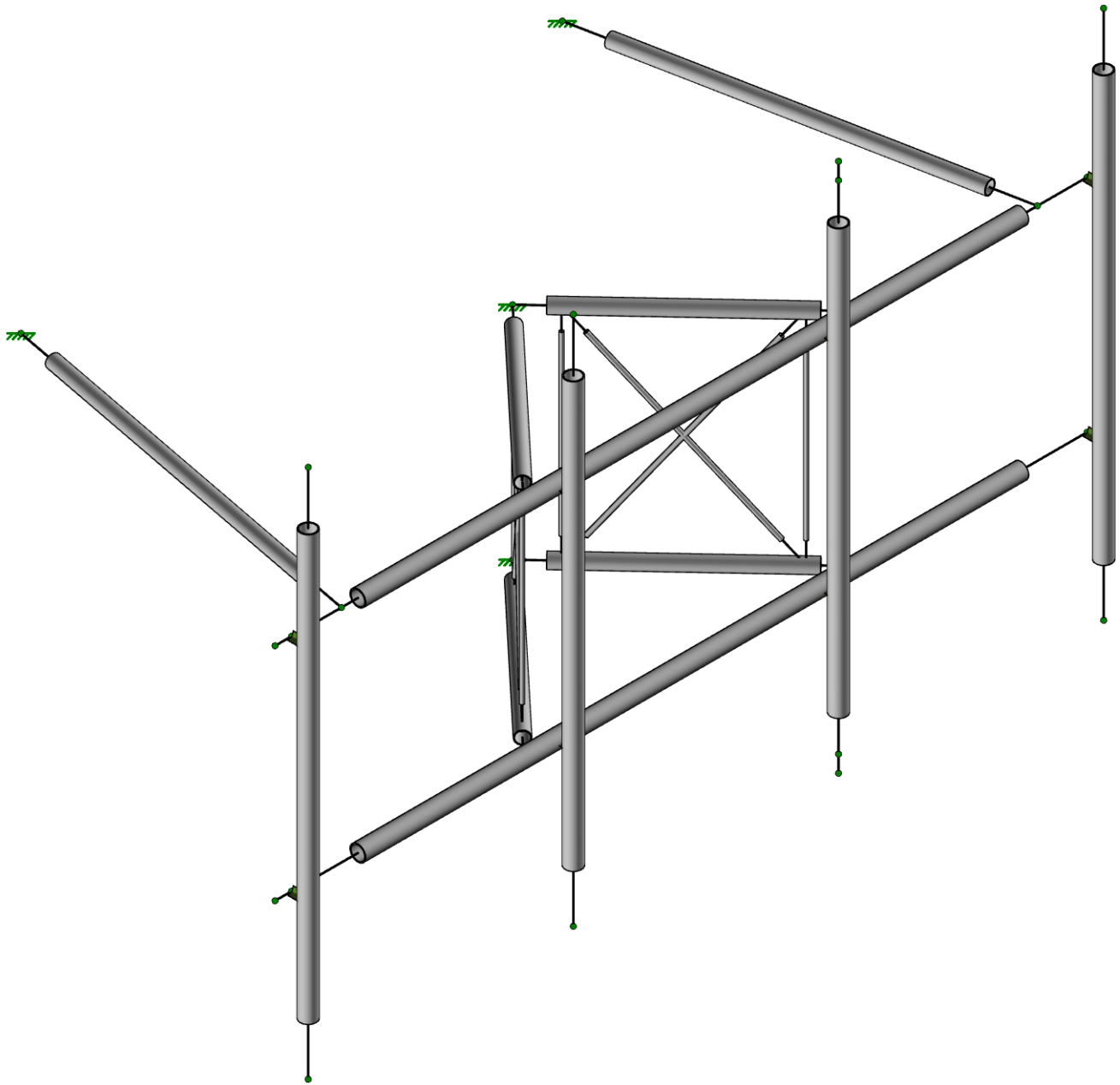
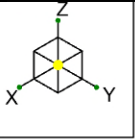
* The dimension L is the longest dimension of the member
** The dimension W is the height or width of the member that resists wind load
*** A_N is the area of ice built up on the LV plane
**** Ca will equal 1.2 for all ice load calculations



Envelope Only Solution		
EFI Global/ForeSite	CT11303B - VFA12-HD	SK-1
		Aug 03, 2020
2075011 - M-MIMO		CT11303B - Mount Model - VFA12...



EFI Global/ForeSite	CT11303B - VFA12-HD	SK-2
		Aug 03, 2020
2075011 - M-MIMO		CT11303B - Mount Model - VFA12...



Envelope Only Solution

EFI Global/ForeSite

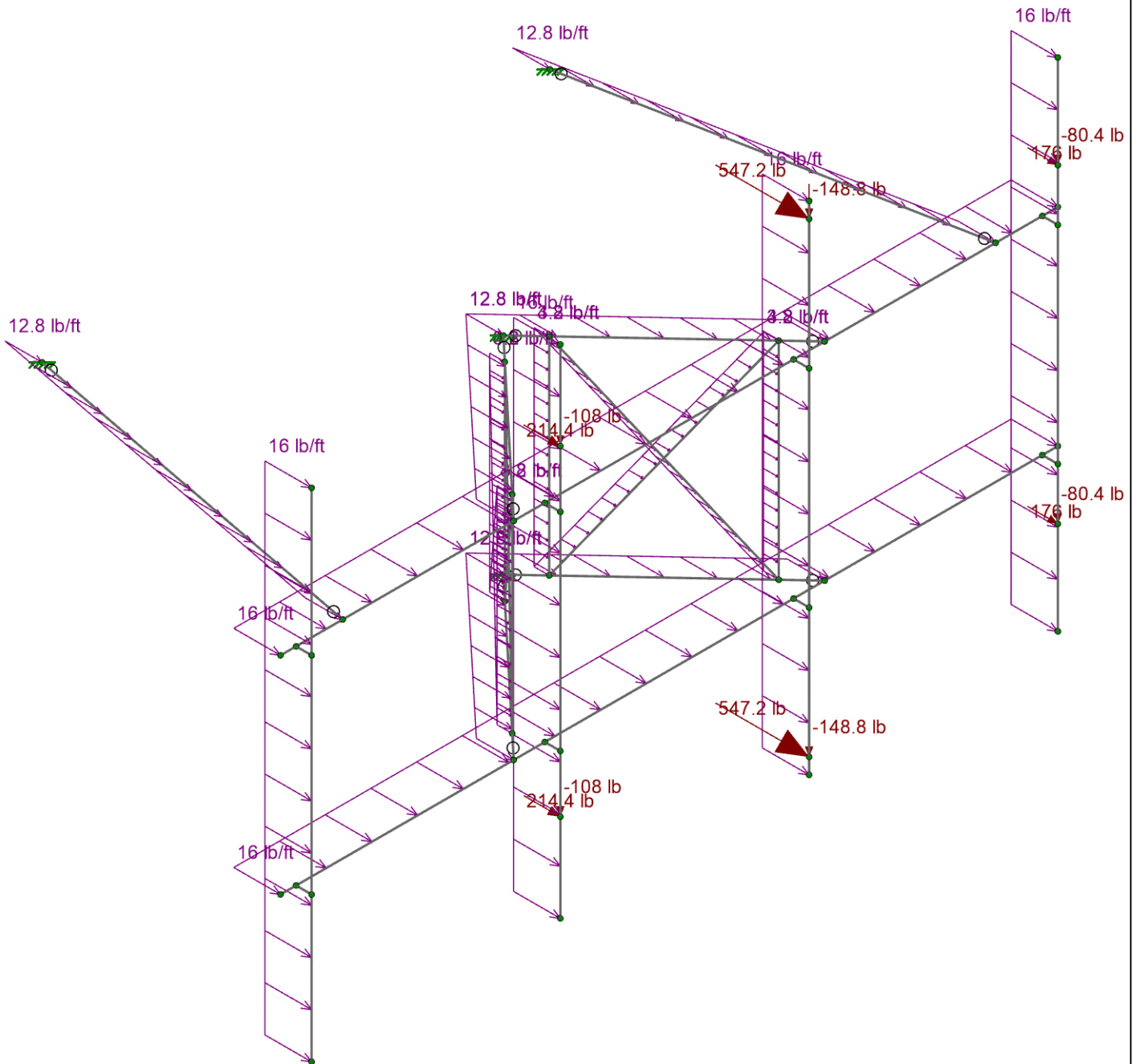
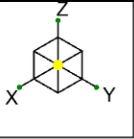
CT11303B - VFA12-HD

SK-3

Aug 03, 2020

2075011 - M-MIMO

CT11303B - Mount Model - VFA12...



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

EFI Global/ForeSite

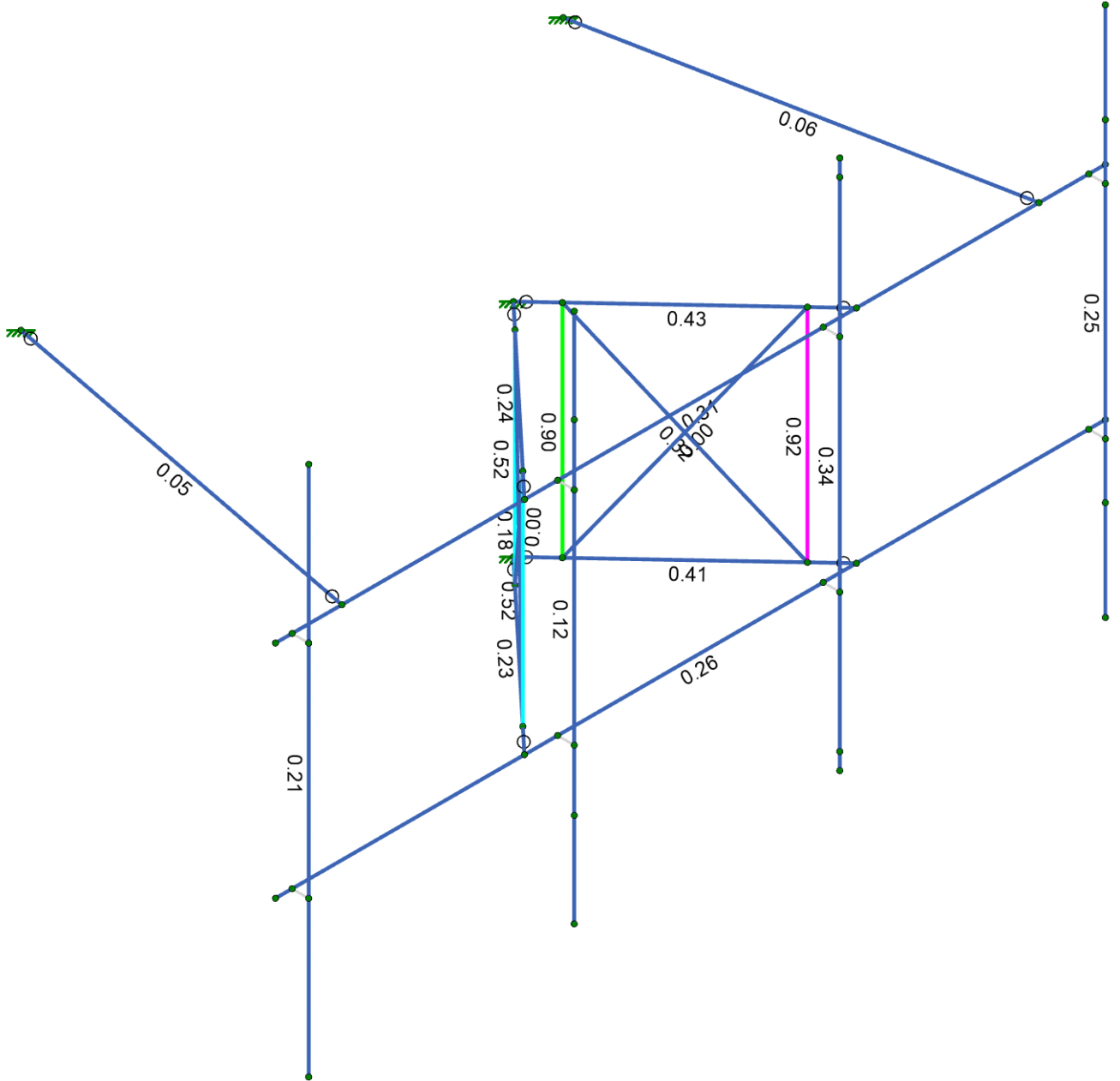
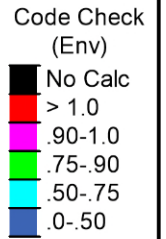
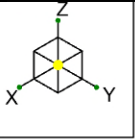
CT11303B - VFA12-HD

SK-4

Aug 03, 2020

2075011 - M-MIMO

CT11303B - Mount Model - VFA12...



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

EFI Global/ForeSite

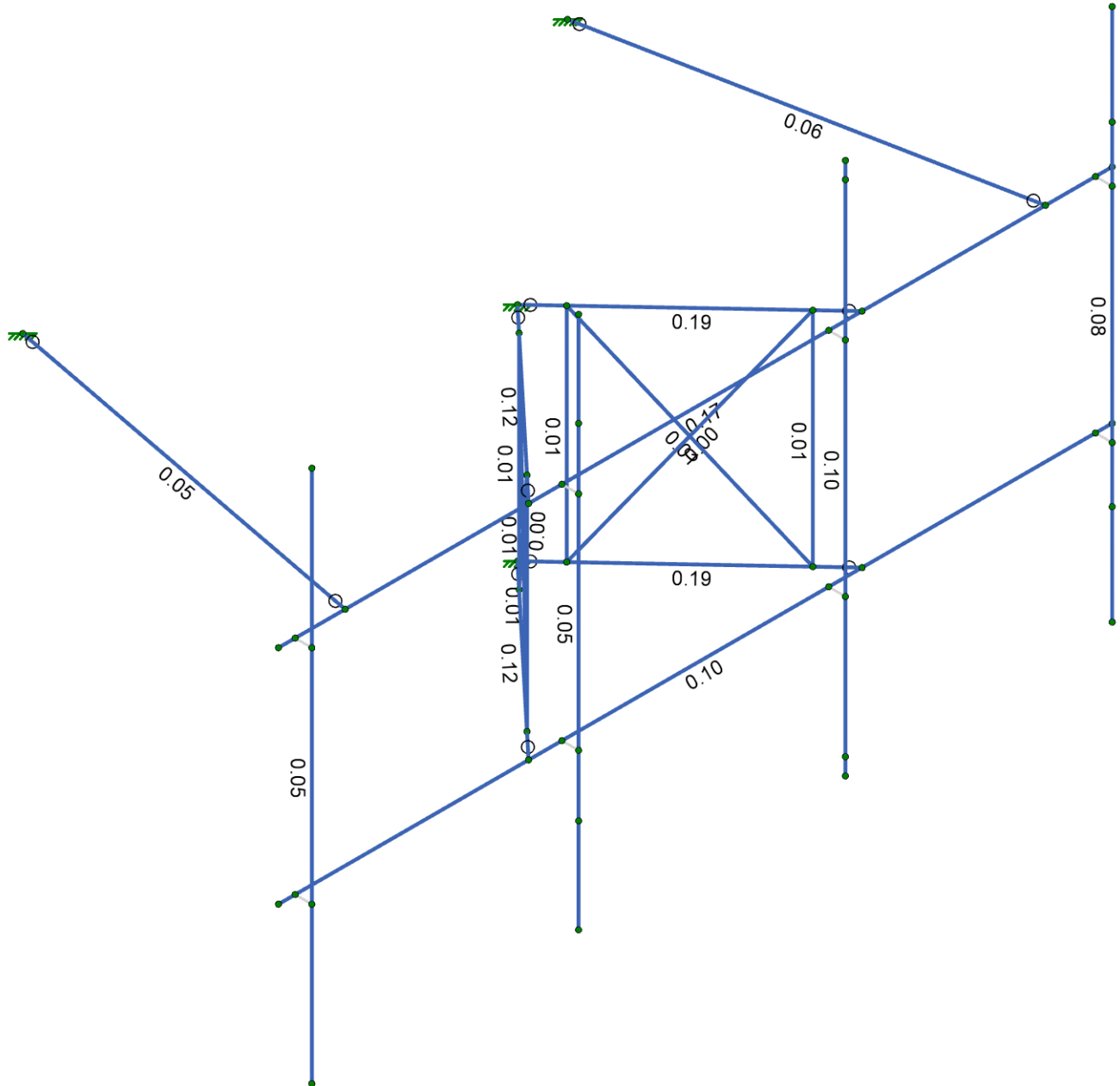
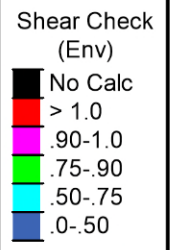
CT11303B - VFA12-HD

SK-5

Aug 03, 2020

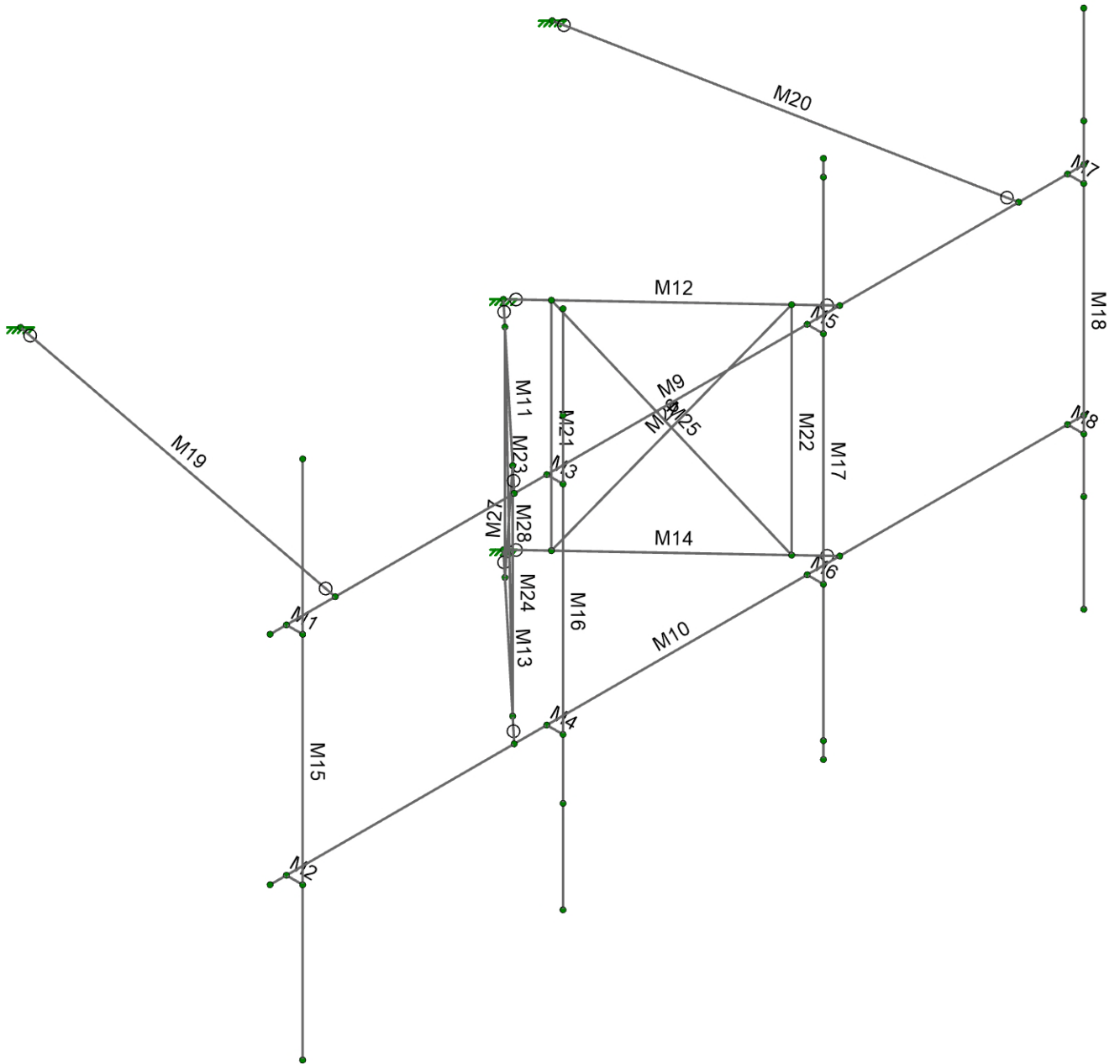
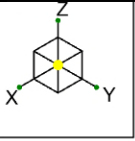
2075011 - M-MIMO

CT11303B - Mount Model - VFA12...



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

EFI Global/ForeSite	CT11303B - VFA12-HD	SK-6
		Aug 03, 2020
2075011 - M-MIMO		CT11303B - Mount Model - VFA12...



Envelope Only Solution

EFI Global/ForeSite

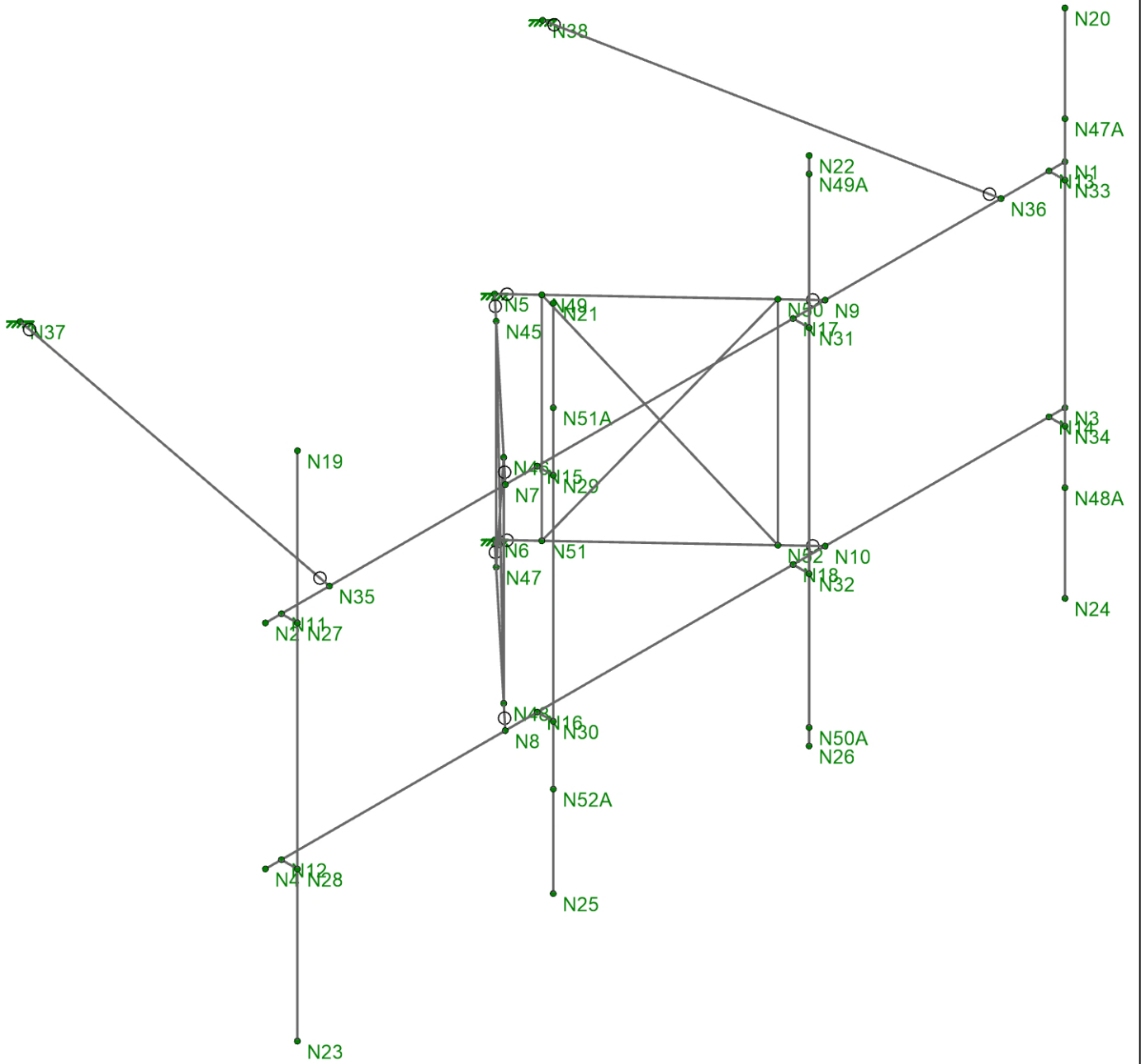
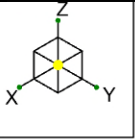
2075011 - M-MIMO

CT11303B - VFA12-HD

SK-7

Aug 03, 2020

CT11303B - Mount Model - VFA12...



Envelope Only Solution		
EFI Global/ForeSite	CT11303B - VFA12-HD	SK-8
		Aug 03, 2020
2075011 - M-MIMO		CT11303B - Mount Model - VFA12...

Model Settings

Number of Reported Sections	5
Number of Internal Sections	97
Member Area Load Mesh Size (in ²)	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
Ω_0	1
Ω_0	1
C_d	4
C_d	4
ρ	1
ρ	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...												
---------------------	--	--	--	--	--	--	--	--	--	--	--	--

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		

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

Boundary Conditions (Continued)

	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]
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	6				
2	DEAD LO...	None				6		20		
3	WIND LO...	None				6		20		
4	WIND LO...	None				6		20		
5	WIND LO...	None				6		20		
6	WIND LO...	None				6		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...					
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....					

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...
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	1664.3...	43	-55.855	7	2261.6...	20	0.047	1	0.102	35
2		min	-1021.71	32	-3565....	13	514.238	1	-0.06	7	-0.067	40
3	N6	max	999.27	40	3834.3...	19	1859.6...	14	0.065	7	0.099	2
4		min	-1642....	35	-536.336	1	405.33	7	-0.073	1	-0.066	8
5	N38	max	150.38	2	885.493	8	56.608	15	0.002	9	0.093	35
6		min	-153.085	8	-885.05	2	12.132	7	-0.018	35	-0.011	9
7	N37	max	69.48	4	549.688	4	55.793	22	0.006	3	0.029	3
8		min	-67.79	10	-551.528	10	12.65	6	-0.014	40	-0.073	40
9	Totals:	max	2067.3...	10	3060.3...	7	4212.4...	22				
10		min	-2067....	4	-3060....	1	1208.1...	4				

Node Displacements

Node...	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rota...	LC	Y Rota...	LC	Z Rota...	LC
1	N1	max	0.13	3	0.024	12	-0.028	40	4.901e...	3	5.916e...	40
2		min	-0.138	9	-0.025	6	-0.348	35	-4.733...	9	-3.85e...	35
3	N2	max	0.129	3	0.017	2	0.043	35	3.933e...	9	2.906e...	40
4		min	-0.137	9	-0.02	8	-0.277	40	-4.703...	3	-1.537...	35
5	N3	max	0.195	3	0.301	2	-0.028	40	8.177e...	2	6.522e...	9
6		min	-0.177	9	-0.289	8	-0.349	35	-8.041...	8	-4.024...	35
7	N4	max	0.194	3	0.157	10	0.044	35	3.721e...	10	3.051e...	40
8		min	-0.176	9	-0.192	4	-0.278	40	-4.576...	4	-1.545...	35
9	N5	max	0	32	0	13	0	1	0	7	0	40
10		min	0	43	0	7	0	20	0	1	0	35
11	N6	max	0	35	0	1	0	7	0	1	0	8
12		min	0	40	0	19	0	14	0	7	0	2
13	N7	max	0.129	3	0.125	9	-0.004	2	2.324e...	8	3.225e...	40
14		min	-0.137	9	-0.118	3	-0.063	36	-2.927...	2	-9.989...	35
15	N8	max	0.194	3	0.162	9	-0.005	35	1.424e...	11	3.089e...	36
16		min	-0.176	9	-0.18	3	-0.062	40	-2.122...	5	-1.005...	31
17	N9	max	0.13	3	0.12	3	-0.02	28	3.754e...	6	1.193e...	7
18		min	-0.137	9	-0.126	9	-0.114	17	-3.67e...	12	-4.151...	31
19	N10	max	0.195	3	0.181	3	-0.013	8	5.685e...	1	3.581e...	10
20		min	-0.177	9	-0.168	9	-0.113	15	-5.715...	7	-3.993...	35
21	N11	max	0.129	3	0.008	2	0.039	35	3.933e...	9	2.906e...	40
22		min	-0.137	9	-0.01	8	-0.268	40	-4.703...	3	-1.537...	35
23	N12	max	0.194	3	0.161	10	0.039	35	3.721e...	10	3.051e...	40
24		min	-0.176	9	-0.195	4	-0.269	40	-4.576...	4	-1.545...	35
25	N13	max	0.13	3	0.018	1	-0.029	40	4.901e...	3	5.917e...	40
26		min	-0.138	9	-0.019	7	-0.336	35	-4.733...	9	-3.85e...	35
27	N14	max	0.195	3	0.293	2	-0.029	40	8.177e...	2	6.523e...	9
28		min	-0.177	9	-0.281	8	-0.337	35	-8.041...	8	-4.024...	35
29	N15	max	0.129	3	0.112	9	-0.007	2	2.299e...	8	1.914e...	40
30		min	-0.137	9	-0.105	3	-0.064	20	-2.902...	2	-1.172...	35
31	N16	max	0.194	3	0.139	9	-0.012	35	1.452e...	12	1.804e...	36
32		min	-0.176	9	-0.155	3	-0.062	22	-2.148...	6	-1.201...	3
33	N17	max	0.13	3	0.112	3	-0.013	12	4.422e...	7	4.978e...	36
34		min	-0.137	9	-0.117	9	-0.104	18	-4.309...	1	-2.608...	31
35	N18	max	0.195	3	0.153	3	-0.014	7	5.708e...	1	1.252e...	10

Node Displacements (Continued)

	Node...		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rota...	LC	Y Rota...	LC	Z Rota...	LC
36		min	-0.177	9	-0.142	9	-0.102	14	-5.718...	7	-2.517...	35	-5.048...	3
37	N19	max	0.098	32	0.14	3	0.033	35	4.006e...	9	2.899e...	40	3.492e...	3
38		min	-0.101	10	-0.12	9	-0.266	40	-4.776...	3	-1.529...	35	-3.827...	9
39	N20	max	0.074	4	0.12	9	-0.034	40	4.699e...	3	5.804e...	36	3.112e...	5
40		min	-0.132	43	-0.125	3	-0.333	35	-4.531...	9	-3.837...	31	-3.113...	11
41	N21	max	0.124	3	0.112	11	-0.016	31	2.768e...	7	1.893e...	40	3.044e...	9
42		min	-0.143	9	-0.088	5	-0.065	20	-3.374...	1	-1.15e...	35	-3.035...	3
43	N22	max	0.188	4	0.27	2	-0.025	28	9.662e...	7	2.821e...	4	2.84e-03	10
44		min	-0.223	10	-0.278	8	-0.101	18	-9.549...	1	-3.783...	10	-2.658...	4
45	N23	max	0.232	3	0.265	10	0.033	35	3.721e...	10	3.032e...	40	2.06e-03	2
46		min	-0.207	9	-0.324	4	-0.267	40	-4.576...	4	-1.597...	3	-2.31e...	8
47	N24	max	0.271	3	0.53	2	-0.034	40	8.528e...	2	9.425e...	9	3.465e...	6
48		min	-0.205	9	-0.515	8	-0.334	35	-8.391...	8	-4.007...	35	-3.535...	12
49	N25	max	0.25	3	0.146	10	-0.016	31	1.911e...	12	1.825e...	40	4.284e...	9
50		min	-0.218	9	-0.182	4	-0.065	20	-2.607...	6	-1.546...	3	-4.716...	3
51	N26	max	0.316	3	0.363	2	-0.025	28	1.092e...	1	4.231e...	10	4.673e...	9
52		min	-0.274	9	-0.353	8	-0.101	18	-1.093...	7	-5.079...	4	-5.048...	3
53	N27	max	0.119	3	0.008	2	0.033	35	3.933e...	9	2.906e...	40	3.492e...	3
54		min	-0.125	9	-0.01	8	-0.266	40	-4.703...	3	-1.537...	35	-3.827...	9
55	N28	max	0.188	3	0.161	10	0.033	35	3.721e...	10	3.051e...	40	2.06e-03	2
56		min	-0.17	9	-0.195	4	-0.267	40	-4.576...	4	-1.545...	35	-2.31e...	8
57	N29	max	0.138	3	0.112	9	-0.016	31	2.299e...	8	1.914e...	40	3.044e...	9
58		min	-0.146	9	-0.105	3	-0.065	20	-2.902...	2	-1.172...	35	-3.035...	3
59	N30	max	0.208	3	0.139	9	-0.016	31	1.452e...	12	1.804e...	36	4.284e...	9
60		min	-0.189	9	-0.155	3	-0.065	20	-2.148...	6	-1.201...	3	-4.716...	3
61	N31	max	0.137	3	0.112	3	-0.025	28	4.422e...	7	4.978e...	36	2.84e-03	10
62		min	-0.145	9	-0.117	9	-0.101	18	-4.309...	1	-2.608...	31	-2.658...	4
63	N32	max	0.21	3	0.153	3	-0.025	28	5.708e...	1	1.252e...	10	4.673e...	9
64		min	-0.191	9	-0.142	9	-0.101	18	-5.718...	7	-2.517...	35	-5.048...	3
65	N33	max	0.124	3	0.018	1	-0.034	40	4.901e...	3	5.917e...	40	3.112e...	5
66		min	-0.132	9	-0.019	7	-0.333	35	-4.733...	9	-3.85e...	35	-3.113...	11
67	N34	max	0.198	3	0.293	2	-0.034	40	8.177e...	2	6.523e...	9	3.465e...	6
68		min	-0.18	9	-0.281	8	-0.333	35	-8.041...	8	-4.024...	35	-3.535...	12
69	N35	max	0.129	3	0.028	9	0.027	35	3.48e-03	9	4.657e...	40	4.015e...	3
70		min	-0.137	9	-0.027	3	-0.233	40	-4.215...	3	-1.196...	35	-4.302...	9
71	N36	max	0.13	3	0.028	3	-0.032	40	3.723e...	3	5.37e-05	9	3.556e...	4
72		min	-0.138	9	-0.03	9	-0.291	35	-3.597...	9	-5.917...	35	-3.702...	10
73	N37	max	0	10	0	10	0	6	0	40	0	40	0	43
74		min	0	4	0	4	0	22	0	3	0	3	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	0.019	4	0.019	10	-0.003	35	-4.402...	35	2.29e-03	22	4.333e...	9
78		min	-0.02	9	-0.017	4	-0.026	21	-2.448...	20	7.504e...	35	-4.107...	4
79	N46	max	0.111	3	0.108	9	-0.005	35	2.652e...	9	3.016e...	36	4.118e...	9
80		min	-0.118	9	-0.101	3	-0.05	21	-1.559...	16	-1.644...	2	-3.877...	3
81	N47	max	0.028	3	0.024	9	-0.002	35	-3.215...	2	1.746e...	21	5.554e...	9
82		min	-0.026	9	-0.026	3	-0.021	21	-2.006...	21	3.78e-05	35	-6.127...	3
83	N48	max	0.167	3	0.139	9	-0.004	35	-1.293...	10	3.276e...	40	5.356e...	9
84		min	-0.152	9	-0.155	3	-0.044	21	-1.944...	16	-9.824...	35	-5.939...	3
85	N49	max	0.02	3	0.019	3	-0.008	40	-6.113...	8	-5.993...	40	4.554e...	9
86		min	-0.021	9	-0.019	9	-0.045	16	-3.811...	15	-4.077...	16	-4.338...	3
87	N50	max	0.113	3	0.104	3	-0.016	40	4.633e...	4	9.058e...	12	3.955e...	9
88		min	-0.119	9	-0.11	9	-0.087	16	-1.385...	22	-3.935...	39	-3.724...	3
89	N51	max	0.029	3	0.027	3	-0.006	40	-3.752...	1	-4.462...	8	5.873e...	9
90		min	-0.027	9	-0.025	9	-0.035	16	-2.999...	18	-3.121...	15	-6.373...	3
91	N52	max	0.169	3	0.156	3	-0.014	40	5.869e...	2	2.541e...	8	5.241e...	9
92		min	-0.153	9	-0.145	9	-0.078	16	-2.229...	20	-4.881...	2	-5.728...	3
93	N47A	max	0.105	3	0.043	10	-0.034	40	4.718e...	3	5.804e...	36	3.112e...	5

Node Displacements (Continued)

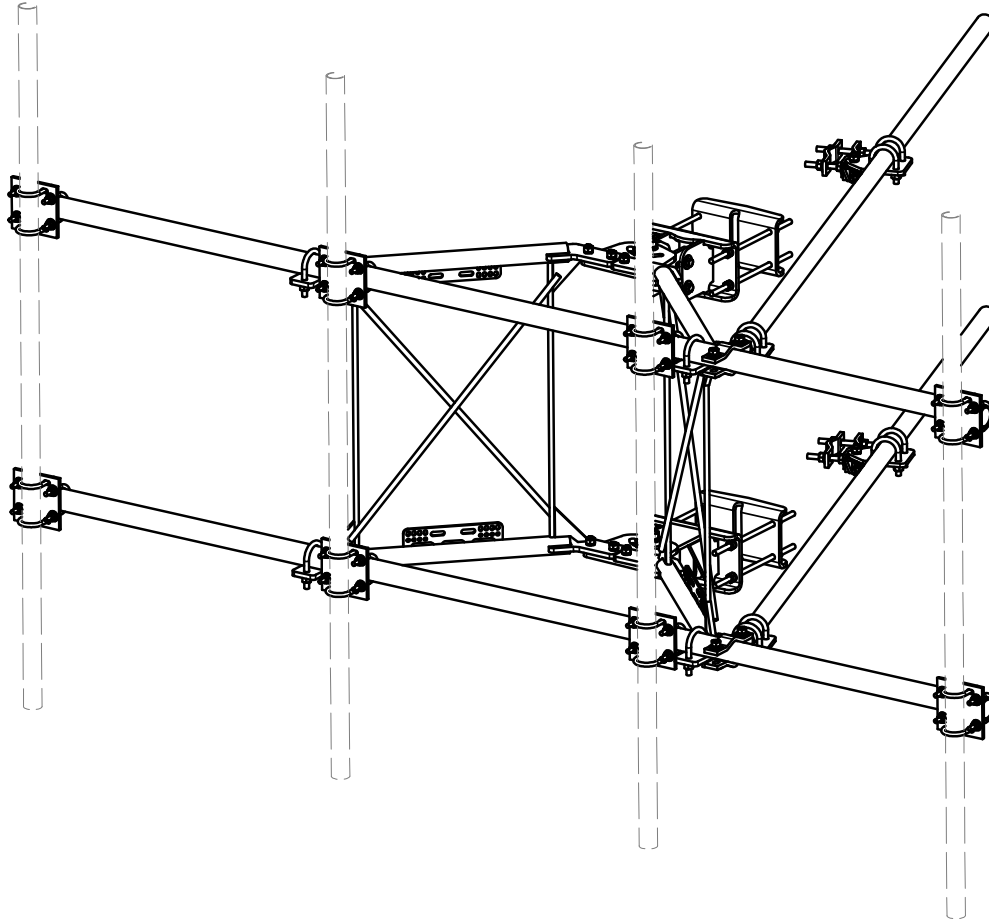
Node...			X [in]	LC	Y [in]	LC	Z [in]	LC	X Rota...	LC	Y Rota...	LC	Z Rota...	LC
94		min	-0.129	9	-0.046	4	-0.333	35	-4.55e...	9	-3.837...	31	-3.113...	11
95	N48A	max	0.223	3	0.377	2	-0.034	40	8.495e...	2	9.092e...	9	3.465e...	6
96		min	-0.188	9	-0.364	8	-0.333	35	-8.358...	8	-4.019...	35	-3.535...	12
97	N49A	max	0.18	4	0.247	2	-0.025	28	9.661e...	7	2.821e...	4	2.84e-03	10
98		min	-0.211	10	-0.255	8	-0.101	18	-9.549...	1	-3.783...	10	-2.658...	4
99	N50A	max	0.303	3	0.334	2	-0.025	28	1.092e...	1	4.231e...	10	4.673e...	9
100		min	-0.263	9	-0.324	8	-0.101	18	-1.093...	7	-5.079...	4	-5.048...	3
101	N51A	max	0.132	3	0.105	10	-0.016	31	2.735e...	7	1.894e...	40	3.044e...	9
102		min	-0.144	9	-0.092	4	-0.065	20	-3.342...	1	-1.152...	35	-3.035...	3
103	N52A	max	0.224	3	0.135	10	-0.016	31	1.883e...	12	1.823e...	40	4.284e...	9
104		min	-0.2	9	-0.16	4	-0.065	20	-2.579...	6	-1.518...	3	-4.716...	3

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...	0.312	45.313	3	0.172	104.688		8	14558...	50715	3.596	3.596	1.843	H1-1b
2	M10	PIPE...	0.258	146.875	43	0.103	51.563		2	14558...	50715	3.596	3.596	2.291	H1-1b
3	M11	PIPE...	0.239	6.397	21	0.124	0		36	27373...	32130	1.872	1.872	1.061	H1-1b
4	M12	PIPE...	0.427	5.94	13	0.192	0		16	27373...	32130	1.872	1.872	1.049	H1-1b
5	M13	PIPE...	0.231	37.467	40	0.119	37.924		40	27373...	32130	1.872	1.872	1.312	H1-1b
6	M14	PIPE...	0.409	37.467	15	0.188	37.924		14	27373...	32130	1.872	1.872	1.044	H1-1b
7	M15	PIPE...	0.210	68	40	0.047	28		4	30038...	50715	3.596	3.596	3	H1-1b
8	M16	PIPE...	0.116	28	2	0.051	28		4	30038...	50715	3.596	3.596	1.332	H1-1b
9	M17	PIPE...	0.338	68	7	0.095	28		2	30038...	50715	3.596	3.596	1.266	H1-1b
10	M18	PIPE...	0.248	68	39	0.078	28		2	30038...	50715	3.596	3.596	3	H1-1b
11	M19	PIPE...	0.055	36.674	16	0.046	73.348		40	20528...	32130	1.872	1.872	1.136	H1-1b
12	M20	PIPE...	0.056	36.674	21	0.059	73.348		35	20528...	32130	1.872	1.872	1.136	H1-1b
13	M21	5/8" SR	0.902	40	16	0.011	40		35	2158....	9940.19	0.104	0.104	2.257	H1-1a
14	M22	5/8" SR	0.919	40	18	0.011	40		35	2158....	9940.19	0.104	0.104	2.643	H1-1a
15	M23	5/8" SR	0.524	40	21	0.011	0		15	2158....	9940.19	0.104	0.104	2.381	H1-1a
16	M24	5/8" SR	0.522	40	21	0.011	0		35	2158....	9940.19	0.104	0.104	2.694	H1-1a
17	M25	3/4" R...	0.317	0	15	0.009	50.81		7	2773.81	14313...	0.179	0.179	2.051	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...	0.175	0	40	0.008	50.81		1	2773.81	14313...	0.179	0.179	1.832	H1-1b*

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

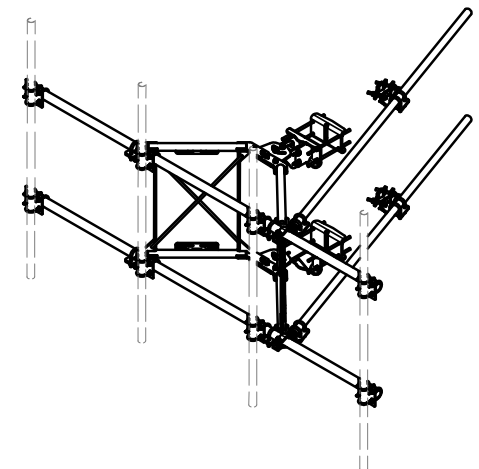
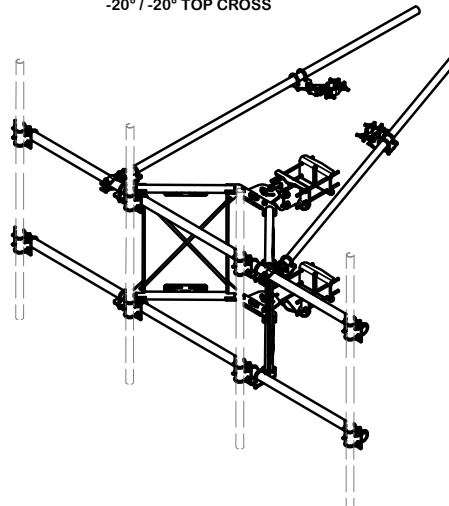
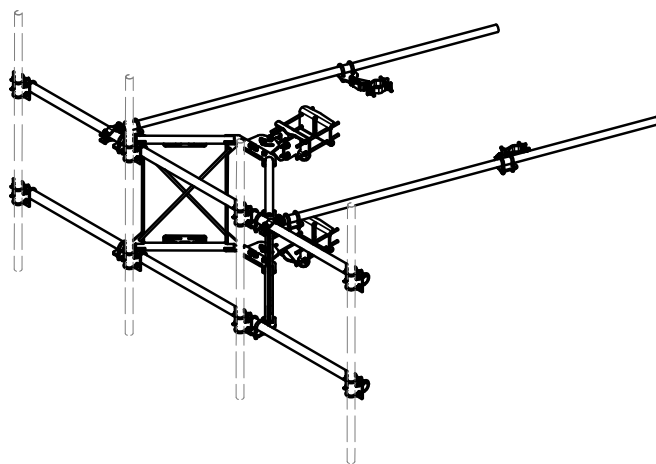
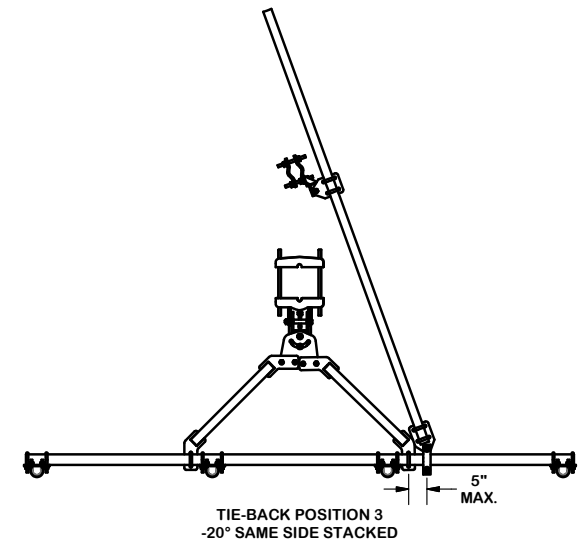
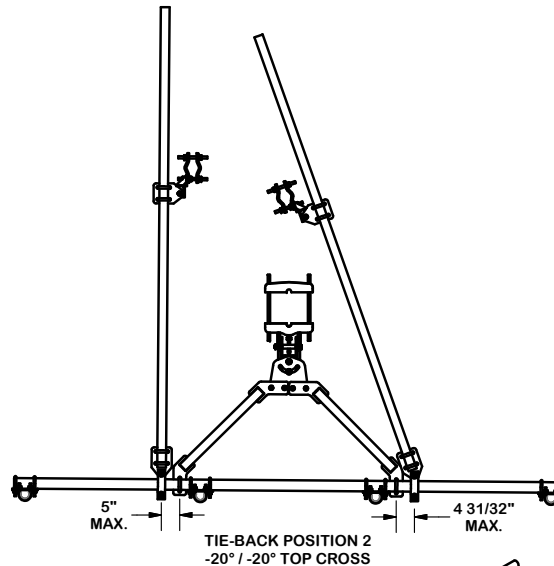
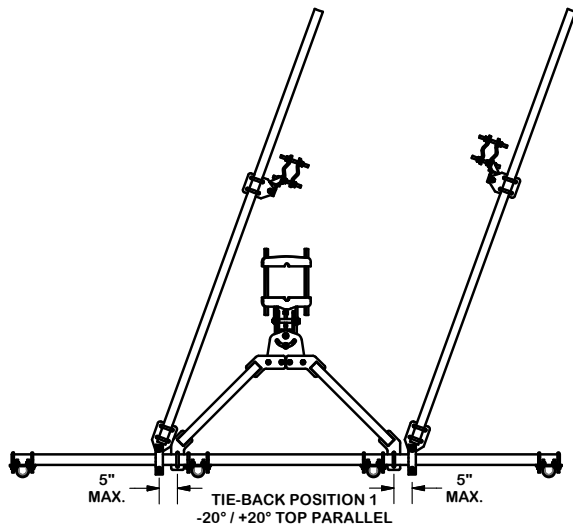
TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES ($\pm 0.030"$)
DRILLED AND GAS CUT HOLES ($\pm 0.030"$) - NO CONING OF HOLES
LASER CUT EDGES AND HOLES ($\pm 0.010"$) - NO CONING OF HOLES
BENDS ARE $\pm 1/2$ DEGREE
ALL OTHER MACHINING ($\pm 0.030"$)
ALL OTHER ASSEMBLY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

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

SITE PRO 1 A valmont COMPANY		Locations: New York, NY Atlanta, GA Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX
Engineering Support Team: 1-888-753-7446		
PART NO.	VFA12-HD	PAGE 1 OF 5
DWG. NO.	VFA12-HD	

TIE-BACK POSITIONS



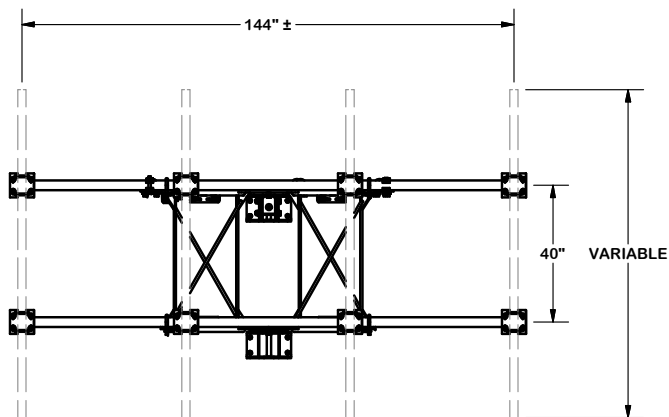
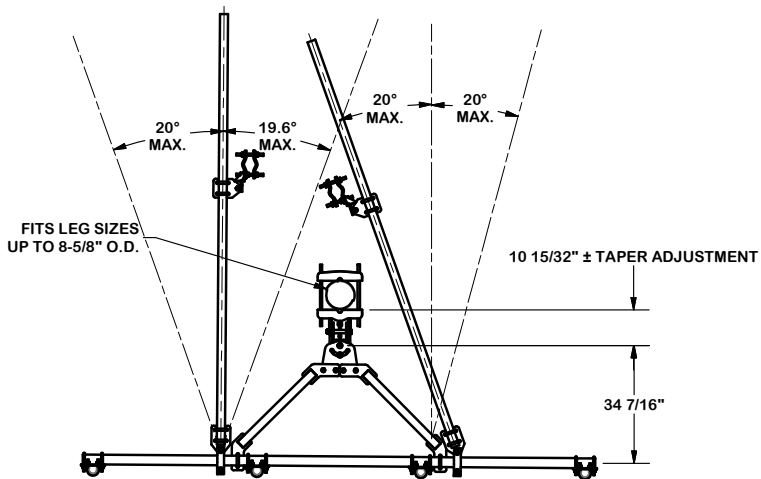
REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
D	UPDATED BCAM VERSION 1 TO BCAM VERSION 2		CEK	6/29/2018
C	UPDATED PIN LEG CONNECTION TO B-CAM CONNECTION		CEK	12/7/2017
B	CHANGED TIE-BACK BACK CONNECTION		CEK	7/31/2017
A	CHANGED TIE-BACK FRONT CONNECTION		CEK	2/2/2017
REVISION HISTORY				

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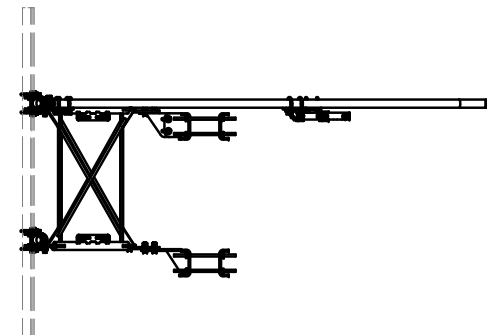
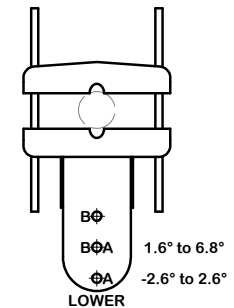
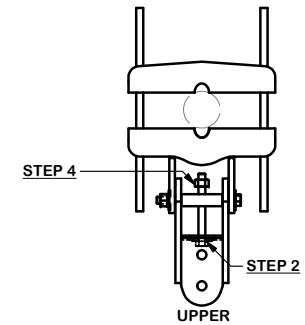
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DESCRIPTION		12' 6" HEAVY DUTY V-FRAME ASSEMBLY WITH TWO STIFF ARMS		SITE PRO 1 A valmont COMPANY Locations: New York, NY Atlanta, GA Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX Engineering Support Team: 1-888-753-7446	
CPD NO.	DRAWN BY	ENG. 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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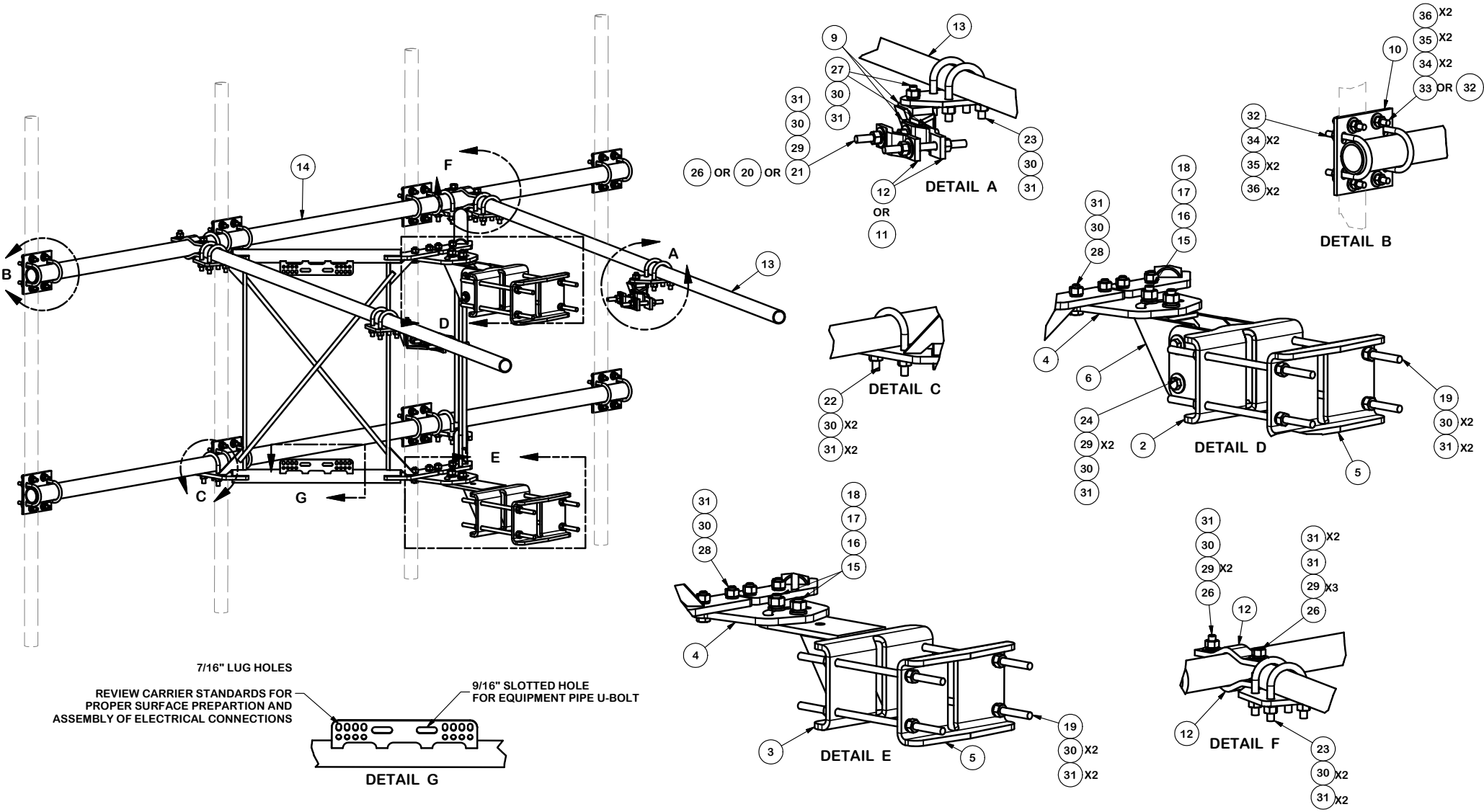
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DESCRIPTION				<div><div><div>SITE PRO</div><div>1</div></div><div><div>Engineering Support Team: 1-888-753-7446</div><div><div>Locations: New York, NY Atlanta, GA Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX</div></div></div></div>			
CPD NO.		DRAWN BY CEK 1/25/2017		ENG. APPROVAL		PART NO. VFA12-HD	
CLASS 81	SUB 02	DRAWING USAGE CUSTOMER		CHECKED BY BMC 12/13/2017		DWG. NO. VFA12-HD	
						S O L S	



Engineering
 Support Team:
 1-888-753-7446

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



D	UPDATED BCAM VERSION 1 TO BCAM VERSION 2		CEK	6/29/2018
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REVISION HISTORY				

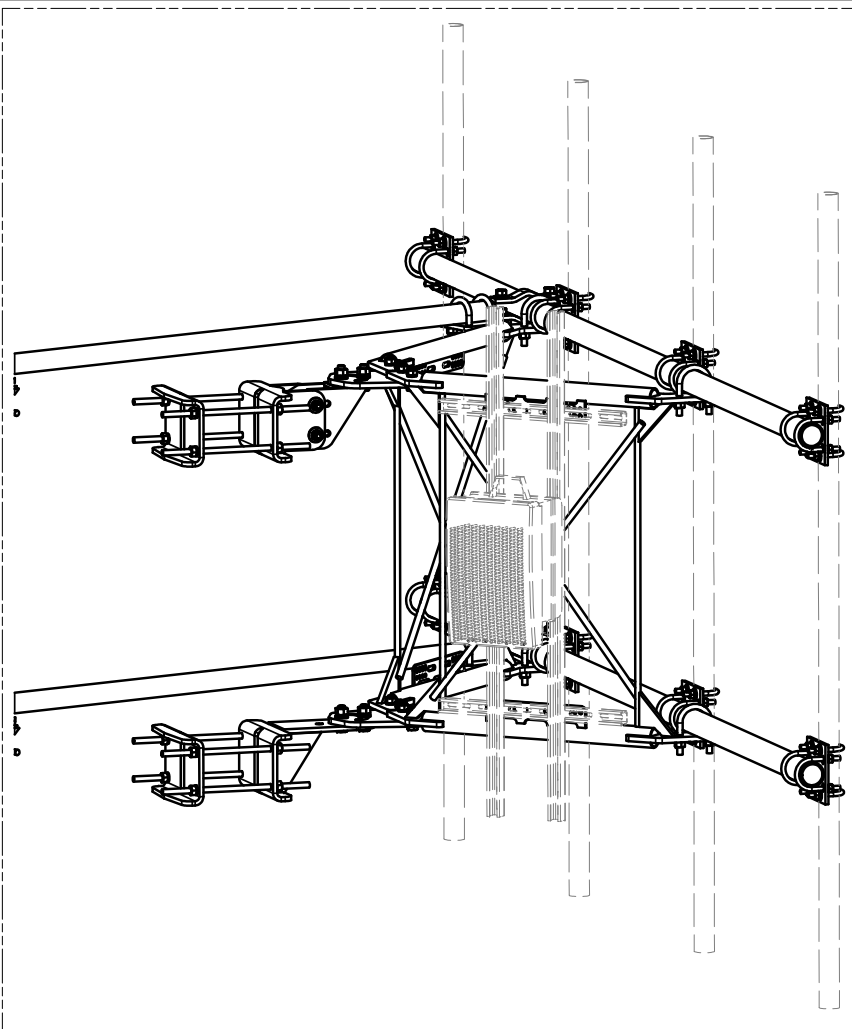
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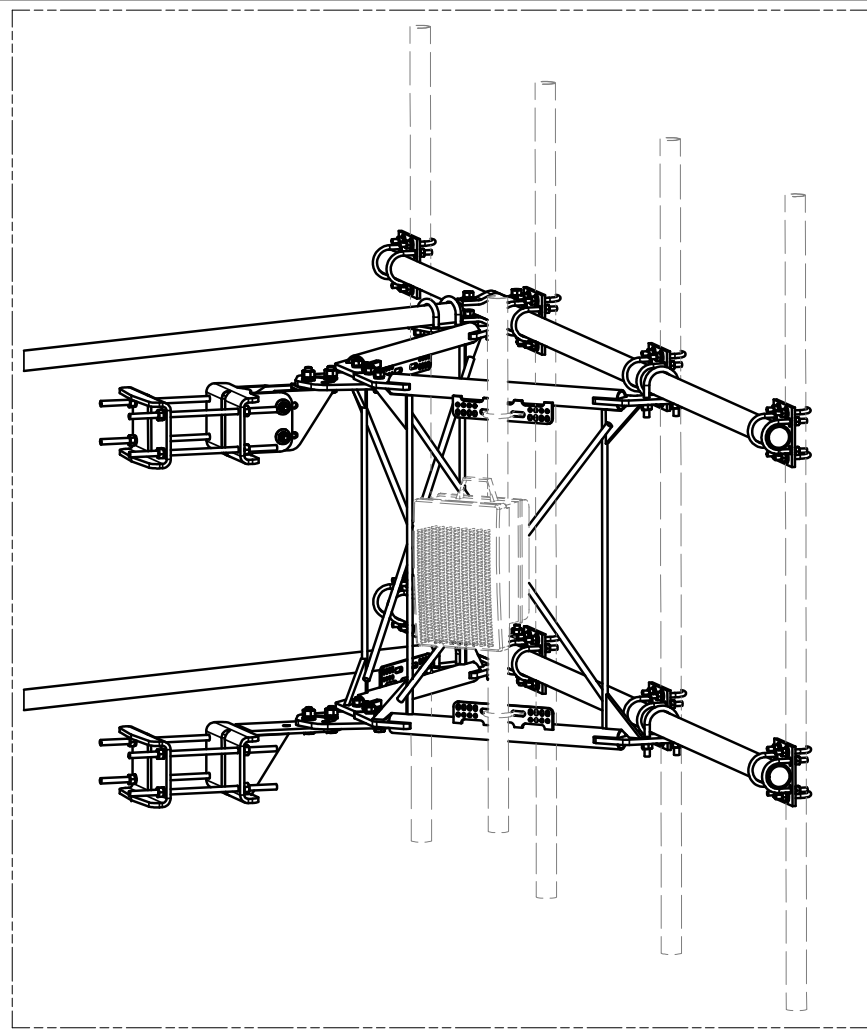
DESCRIPTION		12' 6" HEAVY DUTY V-FRAME ASSEMBLY WITH TWO STIFF ARMS	
CPD NO.	DRAWN BY	ENG. APPROVAL	
	CEK 1/25/2017		
CLASS	SUB	DRAWING USAGE	CHECKED BY
81	02	CUSTOMER	BMC 12/13/2017

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



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 ($\pm 0.030"$) 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 ($\pm 0.060"$)</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</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		5 OF 5 PAGE					
C	UPDATED PIN LEG CONNECTION TO B-CAM CONNECTION			CEK	12/7/2017							VFA12-HD							
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.								
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

July 27, 2020

EBI Project Number: 6220003454

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	2.67%



July 27, 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) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.



- 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) 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.
- 9) 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.
- 10) 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 channel(s), the Ericsson AIR 3246 for the 2100 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 channel(s), the Ericsson AIR 3246 for the 2100 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 channel(s), the Ericsson AIR 3246 for the 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 11) The antenna mounting height centerline of the proposed antennas is 235 feet above ground level (AGL).



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- 12) 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.
- 13) 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	Frequency Bands:	600 MHz / 600 MHz / 700 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd
Height (AGL):	235 feet	Height (AGL):	235 feet	Height (AGL):	235 feet
Channel Count:	5	Channel Count:	5	Channel Count:	5
Total TX Power (W):	200 Watts	Total TX Power (W):	200 Watts	Total TX Power (W):	200 Watts
ERP (W):	4,059.02	ERP (W):	4,059.02	ERP (W):	4,059.02
Antenna A2 MPE %:	0.63%	Antenna B2 MPE %:	0.63%	Antenna C2 MPE %:	0.63%
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%



Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	1.72%
CT Public Broadcasting	0.19%
UConn & UConn Fire	0.33%
Sprint	0.43%
Site Total MPE % :	2.67%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	1.72%
T-Mobile Sector B Total:	1.72%
T-Mobile Sector C Total:	1.72%
Site Total MPE % :	2.67%

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 2100 MHz LTE	4	1538.37	235.0	4.01	2100 MHz LTE	1000	0.40%
						Total:	1.72%

• 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:	1.72%
Sector B:	1.72%
Sector C:	1.72%
T-Mobile Maximum MPE % (Sector A):	1.72%
Site Total:	2.67%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **2.67%** 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

Deborah Chase

From: Deborah Chase
Sent: Tuesday, August 11, 2020 12:49 PM
To: 'MoranT@mansfieldct.org'; 'PlanZoneDept@mansfieldct.org'
Cc: 'robert.sitkowski@uconn.edu'; 'victoria@northeastsitesolutions.com'
Subject: 82 North Eagle Road, Mansfield, CT 06268 T-Mobile EM Application (CT11303B_L700 4x2_AAS)
Attachments: 82 North Eagle Road, Mansfield, CT 06268 T-Mobile EM Application (CT11303B_L700 4x2_AAS).pdf

Good afternoon,

On behalf of our client, (T-Mobile), I am forwarding copies of T-Mobile's Exempt Modification Request to collocate on a wireless telecommunications facility located at 82 Eagle Road in Mansfield, CT.

Hard copies will be sent as well for your records.

Please do not hesitate to contact me with any questions regarding T-Mobile's Exempt Modification Request.

Thank you very much

Deborah Chase



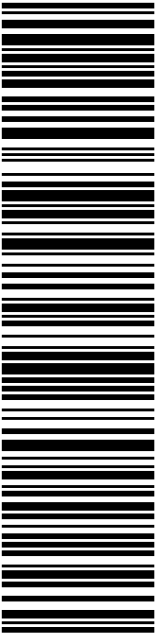
Senior Project Coordinator & Analyst

Mobile: 860-490-8839



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

Exhibit H

 Click-N-Ship®	
P	usps.com US POSTAGE Flat Rate Env 08/12/2020
9405 5036 9930 0488 2527 30 0077 5000 0010 6268 	
Mailed from 01566 062S00000000101	
PRIORITY MAIL 2-DAY™	
DEBORAH CHASE NORTHEAST SITE SOLUTIONS, LLC 420 MAIN ST STE 2 STURBRIDGE MA 01566-1359 Expected Delivery Date: 08/15/20 Ref#: 303B-AAS 0006	
Carrier -- Leave if No Response	
C002	
SHIP TO: TONI MORAN AUDREY P. BECK MUNICIPAL BUILDING 4 S EAGLEVILLE RD STORRS MANFLD CT 06268-2574	
USPS TRACKING #	
	
9405 5036 9930 0488 2527 30	
Electronic Rate Approved #038555749	



Cut on dotted line.

Instructions

- Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.
- Place your label so it does not wrap around the edge of the package.
- Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.
- To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
- Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record


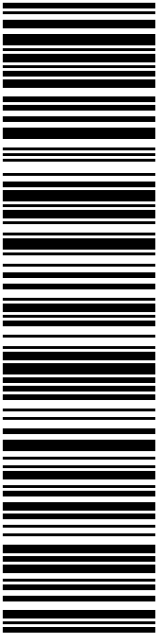
USPS TRACKING # : 9405 5036 9930 0488 2527 30	
Trans. #: 502482428 Print Date: 08/11/2020 Ship Date: 08/12/2020 Expected Delivery Date: 08/15/2020	Priority Mail® Postage: \$7.75 Total: \$7.75
From: DEBORAH CHASE NORTHEAST SITE SOLUTIONS, LLC 420 MAIN ST STE 2 STURBRIDGE MA 01566-1359 Ref#: 303B-AAS	
To: TONI MORAN AUDREY P. BECK MUNICIPAL BUILDING 4 S EAGLEVILLE RD STORRS MANFLD CT 06268-2574	
<small>* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.</small>	



**UNITED STATES
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 UNITED STATES POSTAL SERVICE®		Click-N-Ship®	
P		<small>usps.com</small> US POSTAGE <small>Flat Rate Env</small> \$7.75	
08/12/2020		9405 5036 9930 0488 2527 47 0077 5000 0010 6268 Mailed from 01566 062S0000000101	
PRIORITY MAIL 2-DAY™			
DEBORAH CHASE NORTHEAST SITE SOLUTIONS, LLC 420 MAIN ST STE 2 STURBRIDGE MA 01566-1359		Expected Delivery Date: 08/15/20 Ref#: 303B AAS 0006	
Carrier -- Leave if No Response			
<div style="border: 1px solid black; padding: 2px; display: inline-block;">C002</div>			
SHIP TO: LINDA PAINTER AUDREY P. BECK MUNICIPAL BUILDING 4 S EAGLEVILLE RD STORRS MANFLD CT 06268-2574			
USPS TRACKING #			
			
9405 5036 9930 0488 2527 47			
Electronic Rate Approved #038555749			



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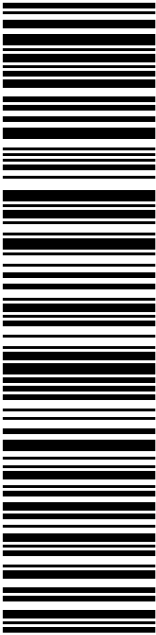
Click-N-Ship® Label Record


USPS TRACKING # : 9405 5036 9930 0488 2527 47	
Trans. #: 502482428 Print Date: 08/11/2020 Ship Date: 08/12/2020 Expected Delivery Date: 08/15/2020	Priority Mail® Postage: \$7.75 Total: \$7.75
From: DEBORAH CHASE NORTHEAST SITE SOLUTIONS, LLC 420 MAIN ST STE 2 STURBRIDGE MA 01566-1359 To: LINDA PAINTER AUDREY P. BECK MUNICIPAL BUILDING 4 S EAGLEVILLE RD STORRS MANFLD CT 06268-2574	
<small>* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.</small>	



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 UNITED STATES POSTAL SERVICE®		Click-N-Ship®	
P		<small>usps.com</small> US POSTAGE <small>Flat Rate Env</small>	
08/12/2020		Mailed from 01566 062S0000001310	
PRIORITY MAIL 2-DAY™			
DEBORAH CHASE NORTHEAST SITE SOLUTIONS, LLC 420 MAIN ST STE 2 STURBRIDGE MA 01566-1359		Expected Delivery Date: 08/15/20 Ref#: 303B AAS 0006	
Carrier -- Leave if No Response			
<div style="border: 1px solid black; padding: 2px; display: inline-block;">C003</div>			
SHIP TO: BOB SITOWSKI UCONN-OFFICE OF UNIV. PLANNING, REAL ESTATE 31 LEDOYT RD UNIT 3094 STORRS CT 06269-9014			
USPS TRACKING #			
			
9405 5036 9930 0488 2527 54			
Electronic Rate Approved #038555749			


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Instructions


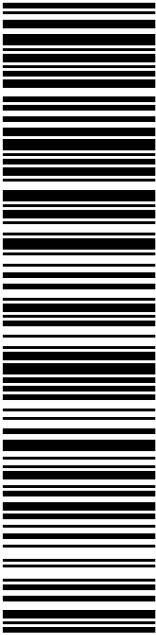
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Click-N-Ship® Label Record

USPS TRACKING # : 9405 5036 9930 0488 2527 54	
Trans. #: 502482428 Print Date: 08/11/2020 Ship Date: 08/12/2020 Expected Delivery Date: 08/15/2020	Priority Mail® Postage: \$7.75 Total: \$7.75
From: DEBORAH CHASE NORTHEAST SITE SOLUTIONS, LLC 420 MAIN ST STE 2 STURBRIDGE MA 01566-1359	
To: BOB SITOWSKI UCONN-OFFICE OF UNIV. PLANNING, REAL ESTATE 31 LEDOYT RD UNIT 3094 STORRS CT 06269-9014	
<small>Ref#: 303B AAS</small>	
<small>* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.</small>	



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 UNITED STATES POSTAL SERVICE®		Click-N-Ship®	
P		<small>usps.com</small> US POSTAGE <small>Flat Rate Env</small> \$7.75	
08/12/2020		9405 5036 9930 0488 2527 61 0077 5000 0010 6051 Mailed from 01566 062S0000001307	
PRIORITY MAIL 2-DAY™			
DEBORAH CHASE NORTHEAST SITE SOLUTIONS, LLC 420 MAIN ST STE 2 STURBRIDGE MA 01566-1359		Expected Delivery Date: 08/15/20 Ref#: 303B AAS 0006	
Carrier -- Leave if No Response			
<div style="border: 1px solid black; padding: 2px; display: inline-block;">C006</div>			
SHIP TO: LISA A MATTHEWS CT SITING COUNCIL 10 FRANKLIN SQ NEW BRITAIN CT 06051-2655			
USPS TRACKING #			
			
9405 5036 9930 0488 2527 61			
Electronic Rate Approved #038555749			



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USPS TRACKING # : 9405 5036 9930 0488 2527 61	
Trans. #: 502482428 Print Date: 08/11/2020 Ship Date: 08/12/2020 Expected Delivery Date: 08/15/2020	Priority Mail® Postage: \$7.75 Total: \$7.75
From: DEBORAH CHASE NORTHEAST SITE SOLUTIONS, LLC 420 MAIN ST STE 2 STURBRIDGE MA 01566-1359	
To: LISA A MATTHEWS CT SITING COUNCIL 10 FRANKLIN SQ NEW BRITAIN CT 06051-2655	
<small>Ref#: 303B AAS</small>	
<small>* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.</small>	



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