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

July 14, 2020

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

RE: Notice of Exempt Modification
99 Briar Hill Road (aka 115 Briar Hill Road), Groton CT 06340
Latitude: 41.3851388
Longitude: -72.0698611
T-Mobile Site#: CTNL223A_Anchor

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 177-foot level of the existing 250-foot lattice tower at 115 Briar Hill Road, Groton CT 06340. The tower is owned by Citadel Broadcasting Co. The property is owned by Citadel Broadcasting Co. T-Mobile now intends to add three (3) new 2500 MHz antenna and add three (3) RRU. The new antennas would be installed at the 177-foot level of the tower.

Planned Modifications:
Remove: (1) 9x18 Hybrid

Remove and Replace: (3) Sector Mounts (Remove) – (3) Valmont Pro Heavy Duty Sector Mounts (Replace)

Install New: (3) AIR6449 B41 Antenna
(3) Radio 4415 B25
(1) 6x12 Hybrid Lines

Existing to Remain:
(3) RFS APXAARR24-43-U-NA20 Antenna
(3) Radio 4449 B71+B12
(2) 6x12 Hybrid Cable
(3)AIR32 B66Aa/B2a Antenna
(3)AIR21 B2A /B4P Antenna

This facility was approved by the Town of Groton PZC. File No. 262 – Special permit was approved by the Town of Groton to install new tower, not to exceed 250 feet in height. Please see attached documentation.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to Town Manager John Burt, Elected Official and Kevin Quinn, Zoning Manager for the Town of Groton, as well as the property owner and the tower owner.

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

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

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

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

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

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

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

For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

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

Attachments
cc: John Burt- Town Manager - as elected official
Kevin Quinn- Zoning Manager
Citadel Broadcasting Co - as tower owner and property owner

NORTHEAST SITE SOLUTIONS, LLC
420 MAIN ST. BUILDING #4, 2nd FLOOR
Sturbridge, MA 01566

WEBSTER BANK
51-7010/2111

4091

06/25/2020

PAY TO THE ORDER OF Connecticut Siting Council

$ *625.00

EXACTLY SIX HUNDRED TWENTY-FIVE DOLLARS

DOLLARS

Photo Safe Deposit®

Details on Back.

Connecticut Siting Council
10 Franklin Square
New Britain CT 06051

MEMO CTNL223A Anchor

AUTHORIZED SIGNATURE

⑈004091⑈ ⑆211170101⑆10 0010608887⑈

Check#: 4091 **Date: 06/25/2020** **Vendor#: 10023 Connecticut Siting Co** **Check Total: *625.00** 4091

Invoice#	*Invoice Date*	*Job/Description*	*Balance*	*Retain*	*Discount*	*This Check*
CTNL223A CSC	06/25/2020	2 TMO Anchor Program	625.00			625.00

Check#: 4091 **Date: 06/25/2020** **Vendor#: 10023 Connecticut Siting Co** **Check Total: *625.00** 4091

Invoice#	*Invoice Date*	*Job/Description*	*Balance*	*Retain*	*Discount*	*This Check*
CTNL223A CSC	06/25/2020	2 TMO Anchor Program	625.00			625.00

Exhibit A

KQ

TOWN OF GROTON

ZONING COMMISSION

NOTICE OF GRANT OF SPECIAL PERMIT #262

This is to certify that on November 6, 2002 the Zoning Commission of the Town of Groton granted a Special Permit under Section 7.1-41 of the Zoning Regulations as follows:

1. Owner of Record: Citadel Communications (Miguel Nobre, Applicant)

2. Description of the premises: 99 Briar Hill Road

3. Description of the special permit: To allow for a new tower structure for FM radio stations with the following conditions:

    1. Tower height shall not exceed 250 feet (10 feet less than the existing installation).

    2. A subdued, non-reflective grey color will be required for the new tower and tower to remain at the site. Lighting for both towers if required by FAA, shall incorporate white strobe lights during the day and red lighting at night. Any modification to this lighting scheme shall require commission approval.

    3. Technical study information provided shall be endorsed by a State of Connecticut Registered Professional Engineer and address any potential interference problems.

    4. Existing towers slated for removal shall be removed no later than 6 months from the completion of new tower construction.

    5. Repainting of the tower to remain shall be accomplished within 6 months of completion of new tower construction.

ZONING COMMISSION

by Michael J. Murphy

Michael J. Murphy, AICP
Assistant Director of Planning
and Development

Date: November 7, 2002

NOTE: This notice is to be recorded on the Land Records of the Town of Groton, indexed in the grantor's index under the name of the record owner.

Town of Groton

Building Inspection

BUILDING/ZONING PERMIT APPLICATION

Please Print

(office use only)

Permit No. 03-611 Date Permit Issued 11/19/03

Bldg. Zon. C.O. State

Estimated Cost $ 128,378.00 Fee 1300 10 26 20.64 $ 1356.64

Address of Building 99 BRIAR HILL ROAD, GROTON, CT

Zone RU-20 Pin # 1780.19-61-6743

Owner CITADEL COMMUNICATIONS Address 7 GOVERNOR WINTHROP BLVD NEW LONDON, CT. 06320 Ph. # 860.443.1980

Contractor ..... Address .....

Nature of Proposed Work and Use REPLACE EXISTING 250' GUYED TOWER WITH NEW STRUCTURALLY SOUND TOWER

Plans: Yes ☑ No ☐ Type of Construction ..... Residential ☐ Commercial ☑ Size .....

No. of Stories Ø No. of Rooms Ø No. of Baths Ø

Garage Ø Breezeway Ø Fireplace Ø Heat Ø

ZONING PERMIT

(To be filled out in conjunction with a building permit involving any new structure, addition to an existing structure, or change of use.)

Flood Hazard District ..... HDC # ..... ZBA # .....

Site Plan Approval # ..... Special Zoning Permit # .....

Wetlands ..... Coastal Area Management .....

Site Suitability # ..... Sewer # ..... A2 Survey .....

Zoning Official Signature .....

CERTIFICATION: I hereby certify that: ☑ I am the owner of record of the named property or ☐ that the proposed work is authorized by the owner of record and/or I have been authorized to make this application as an authorized agent, and we agree to conform to all applicable laws, codes, regulations and ordinances. All information contained within is true and accurate to the best of my knowledge aud belief.

BOB COX — Print Name in Ink

860 443 1980 — Phone #

Lic. #

Signature (in INK) of Owner/Authorized Agent

10-20-2003 — Date

Building Official

11/19/03 — Completed Application Received Date

Exhibit B

Back

Parcel Detail

99 BRIAR HILL RD

Property Information

PIN: 178019616743
PROPERTY TYPE: COMMERCIAL
DISTRICT: CENTER GROTON FIRE DISTRICT
OWNER: CITADEL BROADCASTING CO
ACREAGE: 6.1AC.
ZONING: RU-20
USE CODE: MANUFACTURING WAREHOUSE FACILITIES
CT GRAND LIST CODE: INDUSTRIAL
LIVING UNITS: 1
NEIGHBORHOOD: 3100
DEED BOOK/PAGE: 709/691
LAND VALUE: $226,500
BUILDING VALUE: $55,900
TOTAL VALUE: $282,400
GROSS ASSESSED VALUE: $197,680

Sales Information

SALE DATE: 4/20/2000
SALE PRICE: $10,000
DEED BOOK/PAGE: 709/691

SALE DATE: 6/3/1997
SALE PRICE: $100,000
DEED BOOK/PAGE: 644/197

GrotonGIS Lite

PIN: 178019616743
TYPE: COMMERCIAL
DISTRICT: CENTER GROTON FIRE DISTRICT
ACREAGE: 6.1 AC.
ZONING: RU-20

Get More Info | Zoom To Extent | Clear Selection

Exhibit C

UPGRADE OF EXISTING WIRELESS FACILITY BY

T-Mobile

T-MOBILE NORTHEAST LLC

PROJECT: ANCHOR

SITE NUMBER: CTNL223A

SITE NAME: CITADEL GROTON GUYED

SITE ADDRESS: 99 BRIAR HILL ROAD

GROTON, CT 06340

(RF CONFIGURATION: 67D5992DB_3XAIR+1OP)

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 REPORT, SITE ID: CTNL223A, DATED JUNE 23, 2020 PREPARED BY EFI GLOBAL, INC. TO DETERMINE IF THERE ARE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS FOR TOWER EQUIPMENT AND FOR CABLE BUNDLING, SHIELDING, MOUNTING, OR RELOCATION ARRANGEMENTS.

APPLICABLE STATE ADOPTED CODES:

LATEST EDITION OF:
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 SCOPE:

UPGRADE OF EXISTING WIRELESS FACILITY AS FOLLOWS:

ADD (1) ENCLOSURE 6160.
ADD (1) BATTERY CABINET B160.
REMOVE (1) 9X18 HCS AND ADD (2) 6X12 HCS CABLES FOR FINAL COUNT OF (3) 6X12 HCS CABLES.
ADD (3) NEW ANTENNAS FOR FINAL COUNT OF (12) ANTENNAS.
ADD (3) RRUS FOR FINAL COUNT OF (6) RRUS

PROJECT INFORMATION:

ADDRESS:	99 BRIAR HILL ROAD GROTON, CT 06340
STRUCTURE TYPE:	GUYED TOWER
ZONING DISTRICT:	RU-20
PARCEL ID:	178019616743
COORDINATES:	41.385100 N -72.069900 W
GROUND ELEVATION:	184'± (AMSL)

PROJECT TEAM:

APPLICANT:	T-MOBILE NORTHEAST, LLC. 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002 860-692-7100
LANDLORD:	CITADEL BROADCASTING CO FRANK DOREMUS CHIEF ENGINEER FOR CUMULUS AND TOWNSQUARE MOBILE - 508-965-7751 OFFICE - 508-999-6690 EXT 3022 EMAIL - FRANK.DOREMUS@TOWNSQUAREMEDIA.COM
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:

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

PROFESSIONAL SEAL

REV	DESCRIPTION	DATE
A	PRELIMINARY	07/06/20

SITE NUMBER: CTNL223A
SITE NAME: CITADEL GROTON GUYED
SITE ADDRESS: 99 BRIAR HILL ROAD
GROTON, CT 06340

SHEET TITLE:

T-1: TITLE SHEET

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"ϕ 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
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860-692-7100

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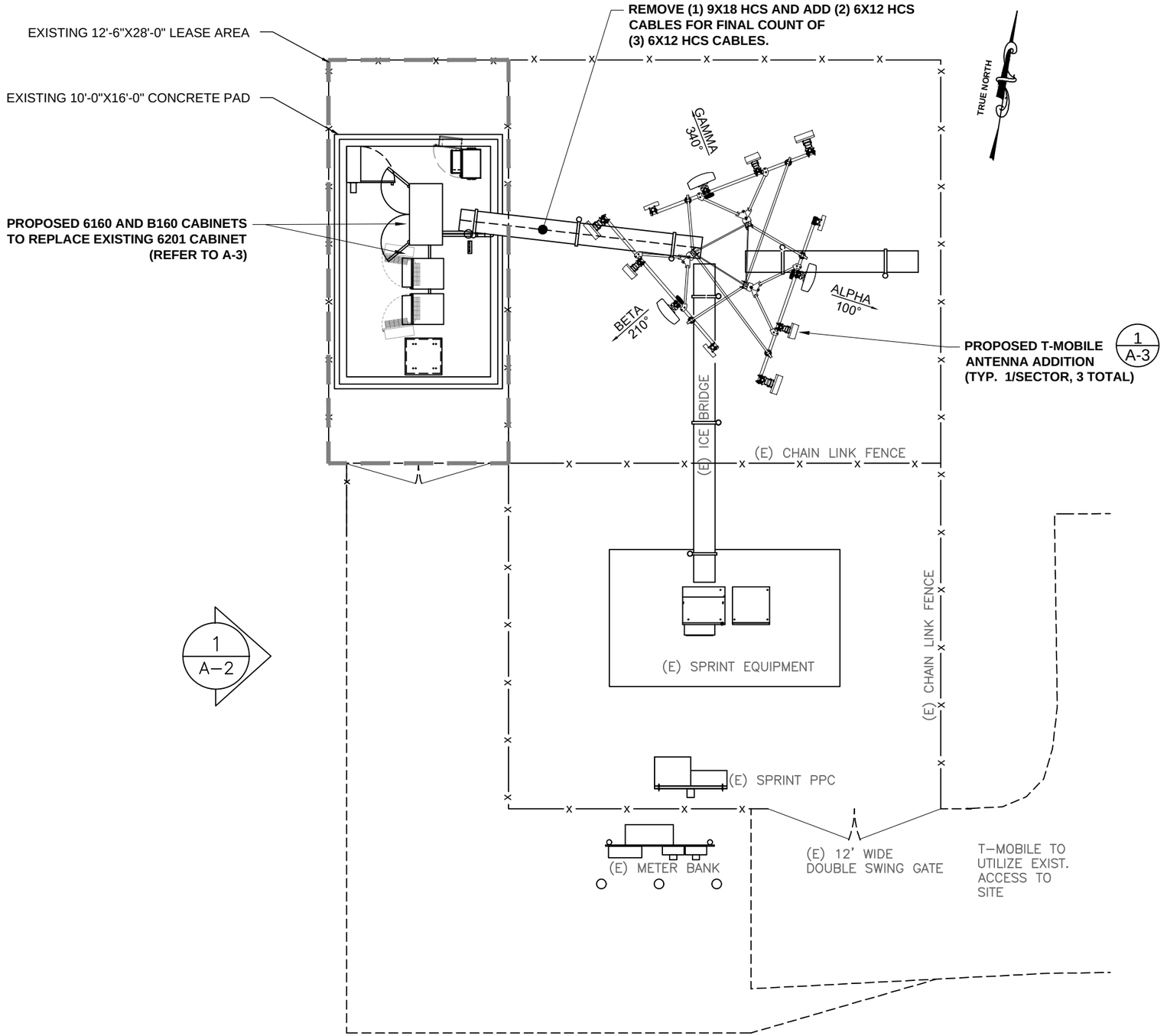
CONSULTANT:
FORESITE LLC
Architects . Engineers . Surveyors
462 WALNUT STREET
NEWTON, MA 02460
617-212-3123

PROFESSIONAL SEAL

REV	DESCRIPTION	DATE
A	PRELIMINARY	07/06/20

SITE NUMBER: CTNL223A
SITE NAME: CITADEL GROTON GUYED
SITE ADDRESS: 99 BRIAR HILL ROAD
GROTON, CT 06340

SHEET TITLE:
N-1: NOTES AND DISCLAIMERS



SITE PLAN

SCALE: 1/8" = 1'-0" (1 / A-1)

APPLICANT:
T-Mobile
T-MOBILE NORTHEAST LLC
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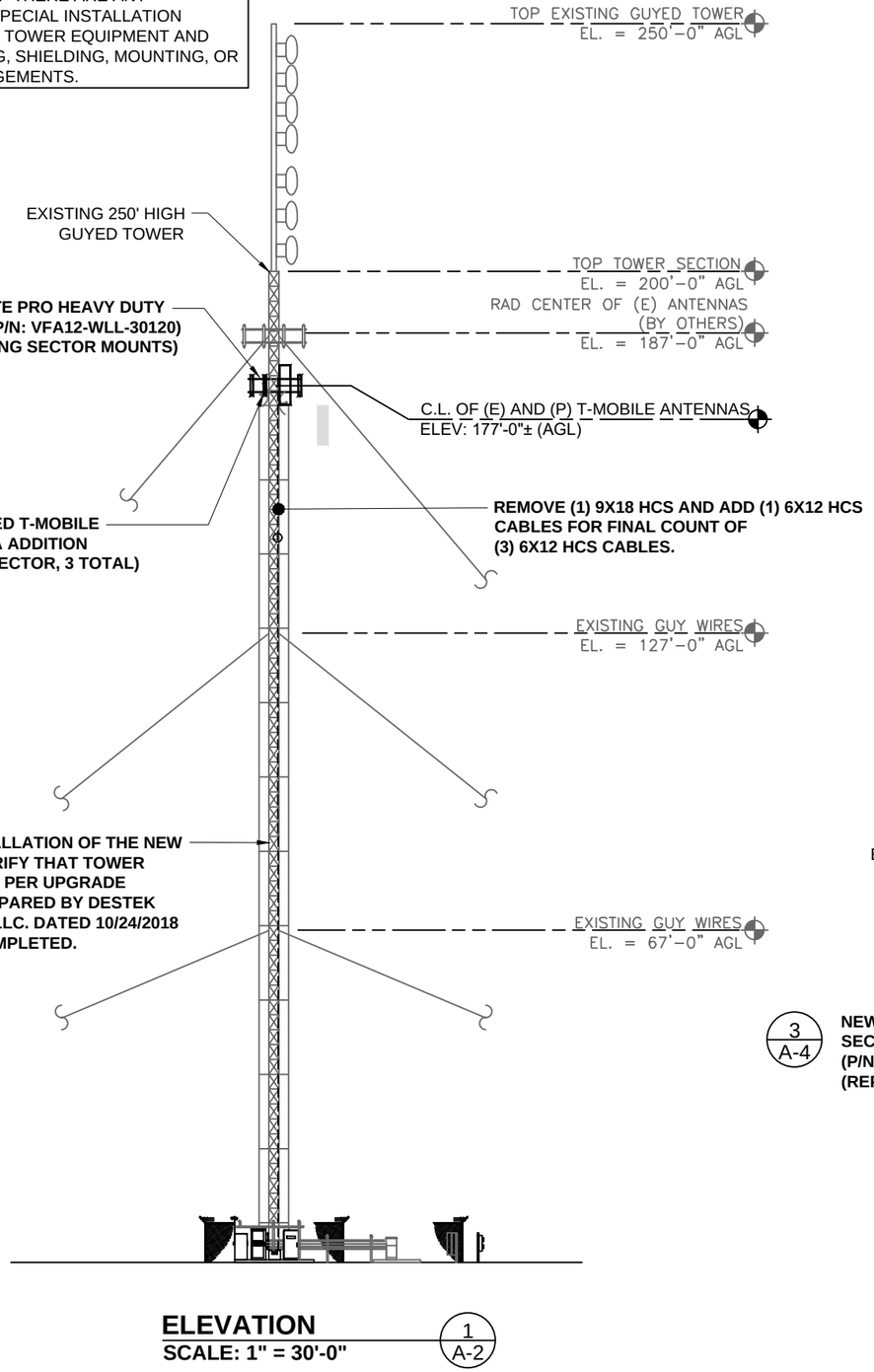
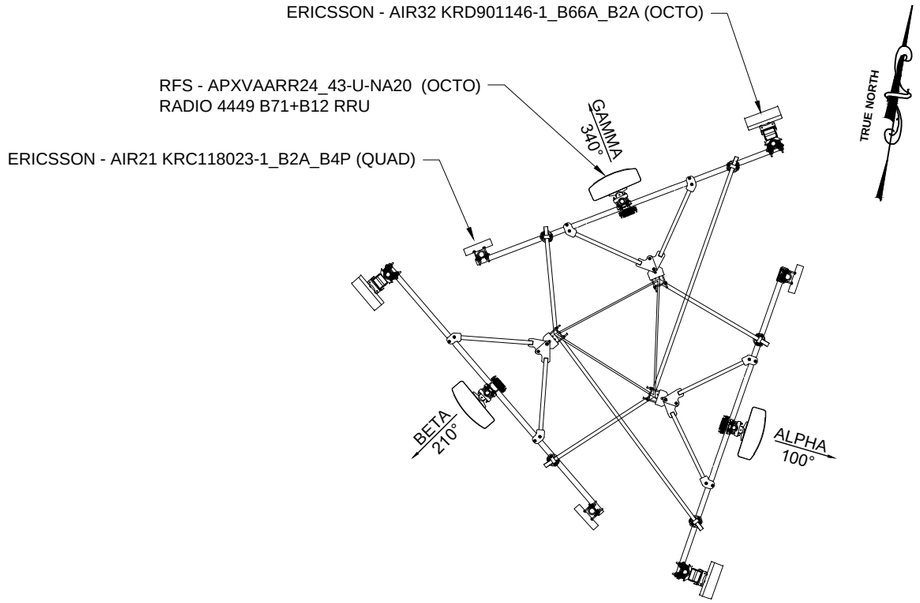
SHEET TITLE:
A-1: PLAN

STRUCTURAL NOTES:

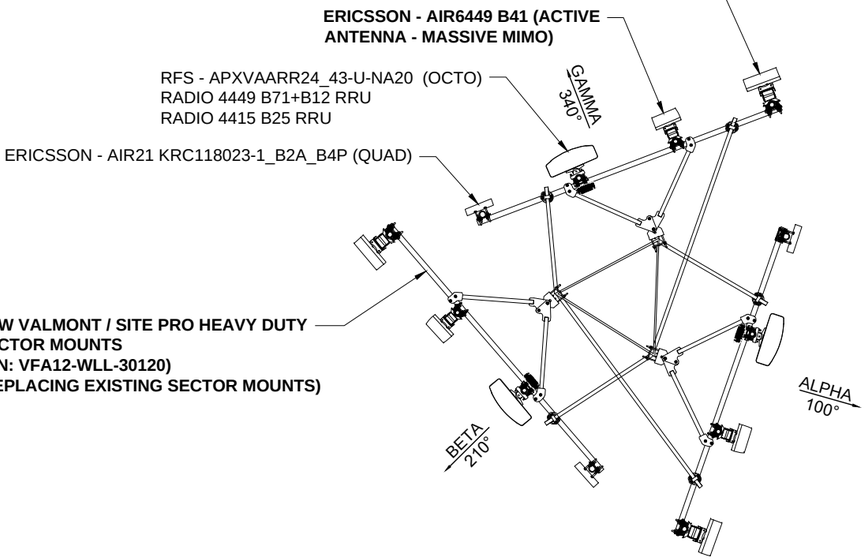
REFER TO STRUCTURAL ANALYSIS REPORT AND MOUNT ANALYSIS REPORT, SITE ID: CTNL223A, DATED JUNE 23, 2020 PREPARED BY EFI GLOBAL, INC. TO DETERMINE IF THERE ARE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS FOR TOWER EQUIPMENT AND FOR CABLE BUNDLING, SHIELDING, MOUNTING, OR RELOCATION ARRANGEMENTS.



ELEVATION
SCALE: 1" = 30'-0" (1 / A-2)



EXISTING ANTENNA PLAN
(ANTENNA MODELS TYP. ALL SECTORS) (2 / A-2)
N.T.S.



FINAL ANTENNA PLAN
(ANTENNA MODELS TYP. ALL SECTORS) (3 / A-2)
N.T.S.

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

PROJECT MANAGER
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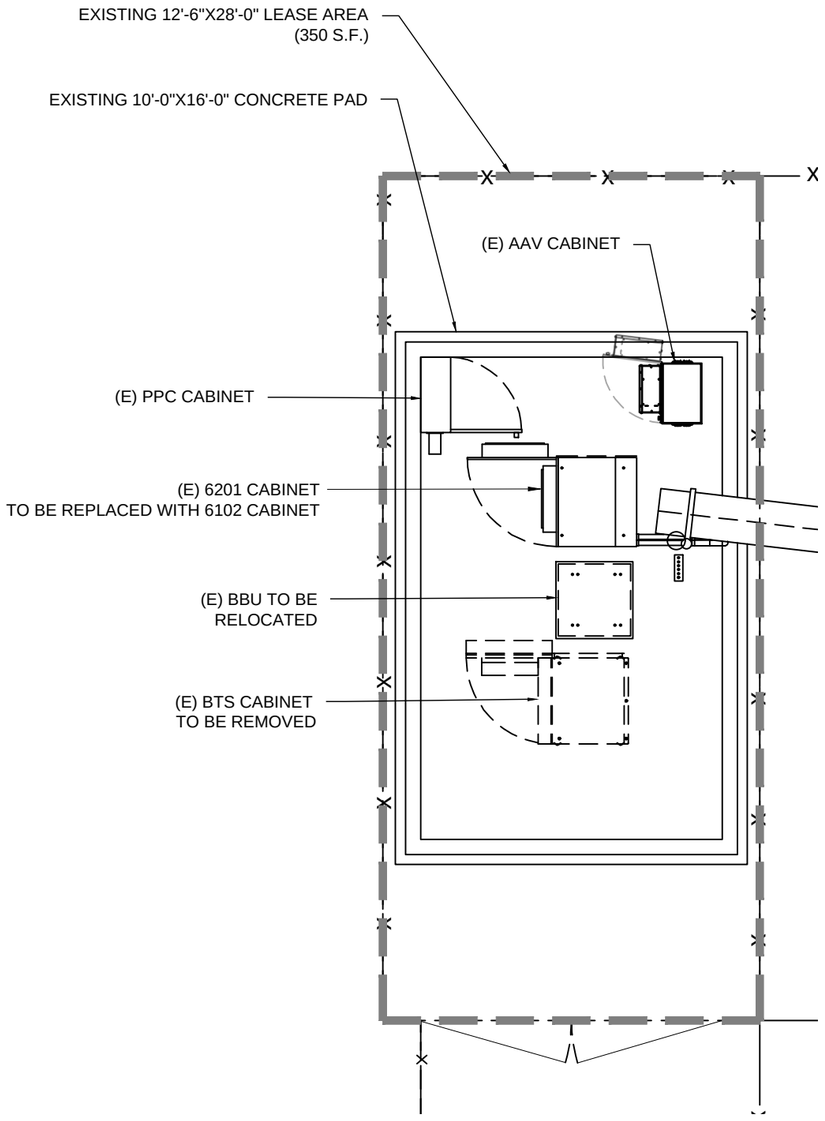
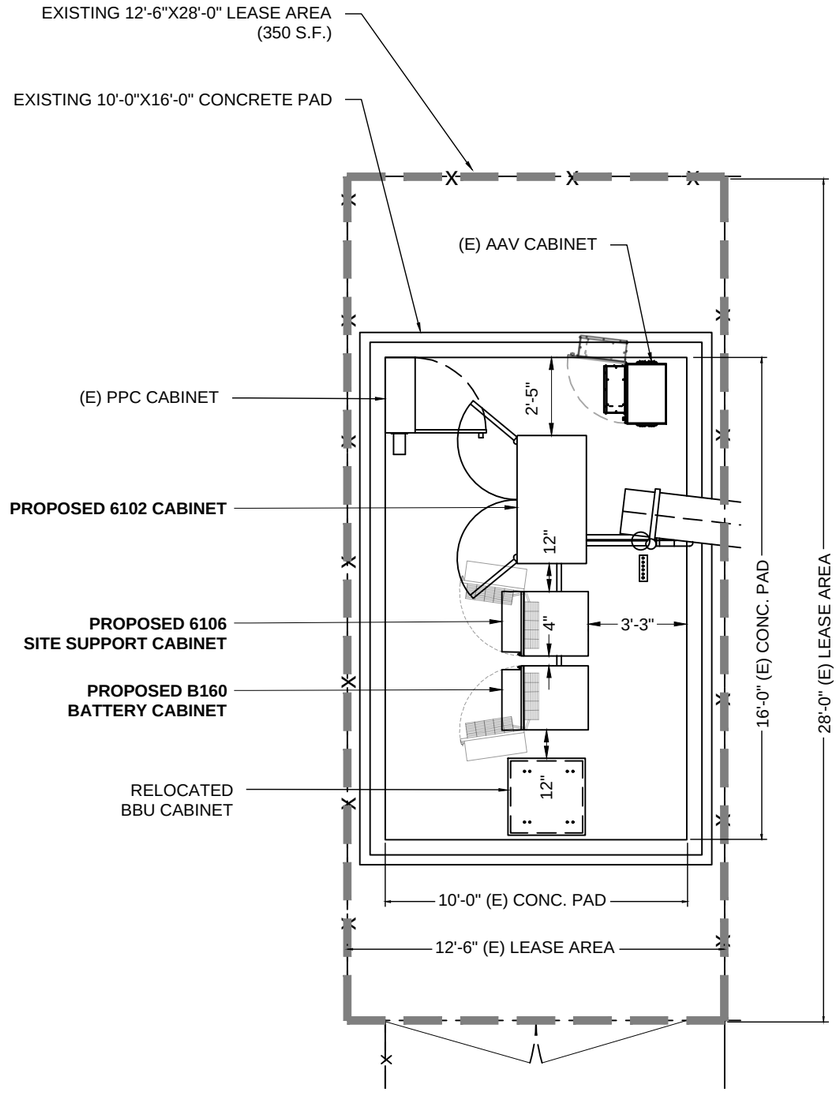
SHEET TITLE:
A-2: ELEVATION AND ANTENNA PLAN



EXISTING EQUIPMENT PLAN

SCALE: 1" = 5'-0"

1 / A-3



FINAL EQUIPMENT PLAN

SCALE: 1" = 5'-0"

2 / A-3

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:

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

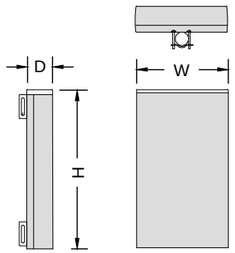
PROFESSIONAL SEAL

REV	DESCRIPTION	DATE
A	PRELIMINARY	07/06/20

SITE NUMBER: CTNL223A
SITE NAME: CITADEL GROTON GUYED
SITE ADDRESS: 99 BRIAR HILL ROAD
GROTON, CT 06340

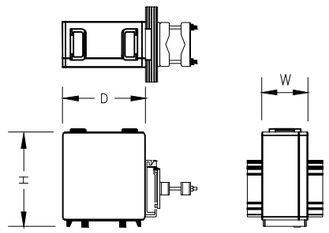
SHEET TITLE:

A-3: EQUIPMENT LAYOUT PLAN



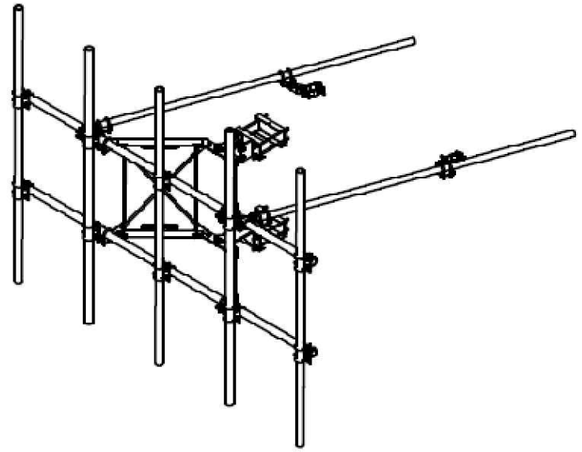
ERICSON ANTENNA SPECIFICATIONS	
MODEL #	AIR6449 B41
MANUF.	ERICSSON
HEIGHT	33.1"
WIDTH	20.5"
DEPTH	8.3"
WEIGHT	103 LB

ERICSSON ANTENNA 1 A-4
N.T.S



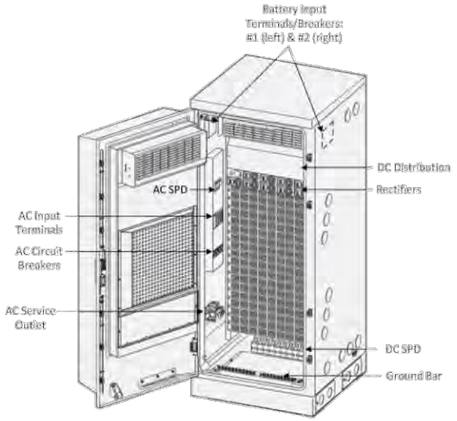
REMOTE RADIO UNIT SPECIFICATIONS	
MODEL #	RADIO 4415 B25
MANUF.	ERICSSON
HEIGHT	14.9"
WIDTH	13.2"
DEPTH	5.4"
WEIGHT	46.3 LB

REMOTE RADIO UNIT 2 A-4
N.T.S



VALMONT/SITE PRO 1 HEAVY DUTY SECTOR MOUNTS
(P/N: VFA12-WLL-30120)

SECTOR MOUNT 3 A-4
N.T.S

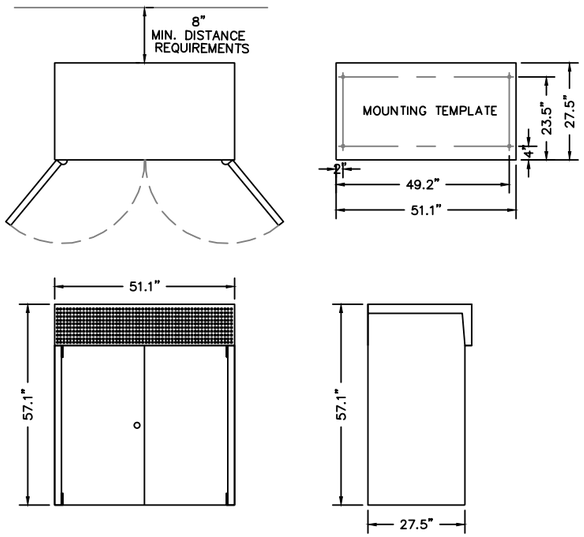


SITE SUPPORT CABINET SPECIFICATIONS	
MODEL #	6160
MANUF.	ERICSSON
HEIGHT	63"
WIDTH	25.6"
DEPTH	33.5"
WEIGHT	605 lbs

SITE SUPPORT CABINET 4 A-4
N.T.S.

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

BATTERY CABINET 5 A-4
N.T.S.



ERICSSON RBS 6102 EQUIPMENT CABINET 6 A-4
N.T.S.

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

PROJECT MANAGER
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420 MAIN STREET, BLDG 4
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203-275-6669

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

PROFESSIONAL SEAL

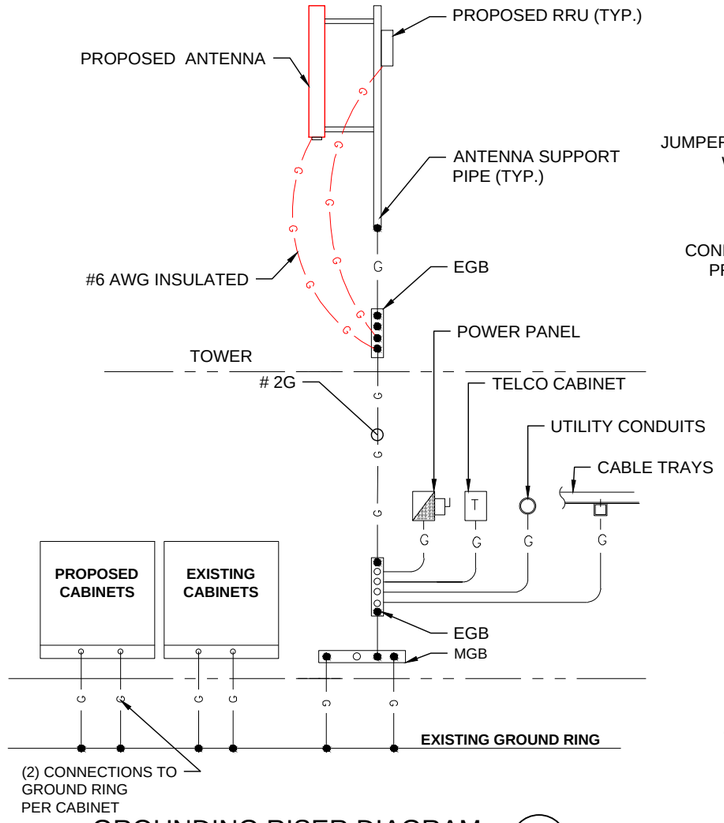
REV	DESCRIPTION	DATE
A	PRELIMINARY	07/06/20

SITE NUMBER: CTNL223A
SITE NAME: CITADEL GROTON GUYED
SITE ADDRESS: 99 BRIAR HILL ROAD
GROTON, CT 06340

SHEET TITLE:
A-4: DETAILS

ELECTRICAL & GROUNDING NOTES

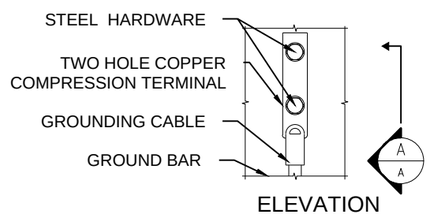
1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PRODUCED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED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



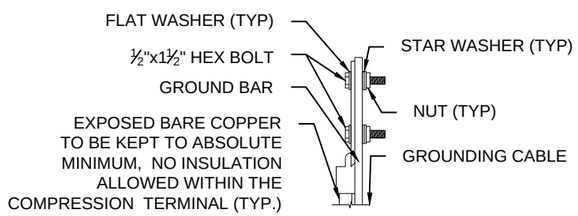
GROUNDING RISER DIAGRAM

SCALE: N.T.S

1 / E-1



ELEVATION



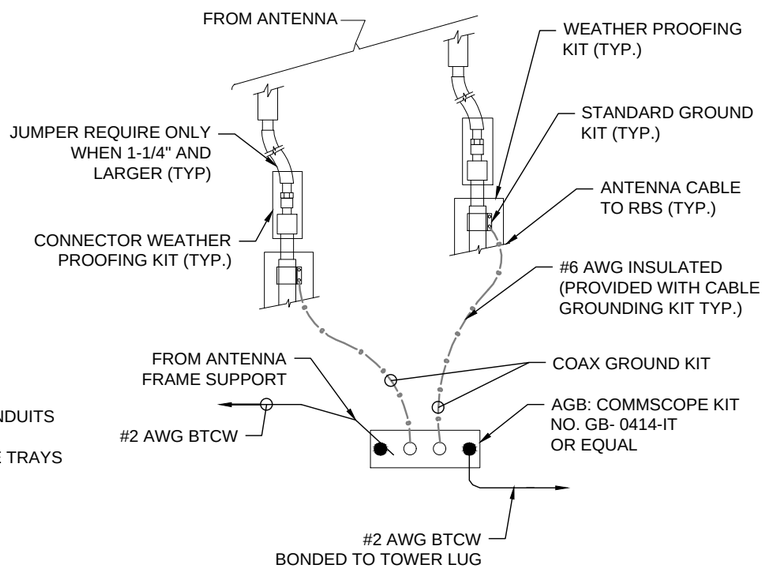
SECTION A-A

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

TYPICAL GROUND BAR CONNECTIONS DETAIL

SCALE: N.T.S

3 / E-1



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

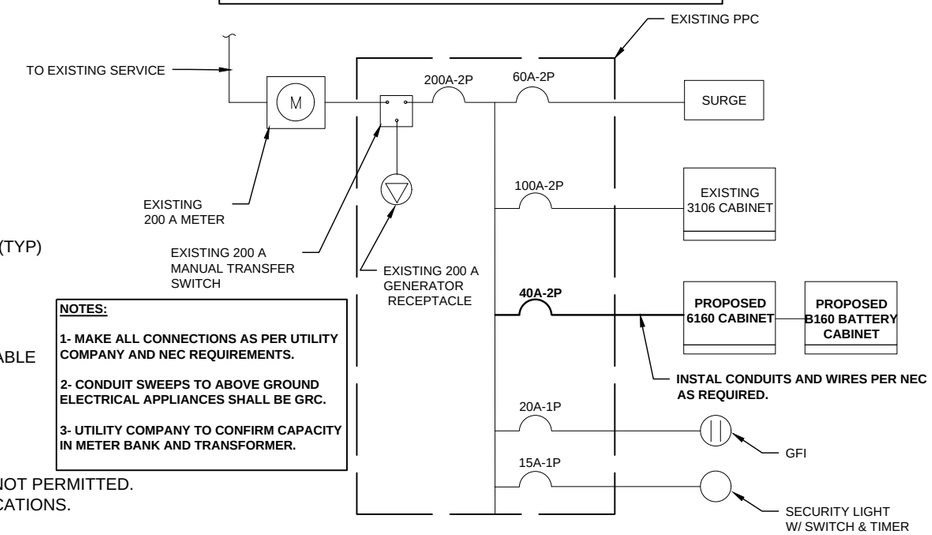
TOWER TOP CABLE GROUNDING DETAIL

SCALE: 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.



NOTES:

1- MAKE ALL CONNECTIONS AS PER UTILITY COMPANY AND NEC REQUIREMENTS.

2- CONDUIT SWEEPS TO ABOVE GROUND ELECTRICAL APPLIANCES SHALL BE GRC.

3- UTILITY COMPANY TO CONFIRM CAPACITY IN METER BANK AND TRANSFORMER.

ONE LINE DIAGRAM

N.T.S.

4 / E-1

APPLICANT:
T-MOBILE NORTHEAST LLC
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BLOOMFIELD, CT 06002
860-692-7100

PROJECT MANAGER
NSS NORTHEAST SITE SOLUTIONS
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420 MAIN STREET, BLDG 4
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CONSULTANT:
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PROFESSIONAL SEAL

REV	DESCRIPTION	DATE
A	PRELIMINARY	07/06/20

SITE NUMBER: CTNL223A
SITE NAME: CITADEL GROTON GUYED
SITE ADDRESS: 99 BRIAR HILL ROAD
GROTON, CT 06340

SHEET TITLE:
E-1: GROUNDING AND ELECTRICAL DETAILS

Exhibit D

STRUCTURAL ANALYSIS REPORT
GUYED TOWER

Prepared For:

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

Structure Rating:

Guyed Tower: **Pass (87.7%)**

Sincerely,
EFI Global, Inc.
License No: PEC0001429

06/23/2020

Ahmet Colakoglu, PE
Connecticut Professional Engineer
License No: 27057

Site ID: CTNL223A
Site Name: Citadel Groton Guyed
99 Briar Hill Road
Groton, CT 06340

EFI Global, Inc.
1117 Perimeter Center West, Ste E500, Atlanta, GA 30338-Tel: (770) 693-0835

CONTENTS

EFI Global, Inc.
1117 Perimeter Center West, Ste E500, Atlanta, GA 30338 - Tel: (770) 693-0835

1.0 SUBJECT AND REFERENCES

The purpose of this analysis is to evaluate the structural capacity of the 250' tall guyed tower located at 99 Briar Hill Road, Groton, CT 06340 for the additions and alterations proposed by T-Mobile.

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

- Structural Analysis Report - Upgrade Rev. prepared by Destek Engineering, LLC., dated 10/24/2018.
- Construction Drawings prepared by ForeSite, LLC., dated 03/13/2019.
- RFDS provided by T-Mobile, dated 05/19/2020.
- Site Audit pictures, dated 04/27/2020.

1.1 STRUCTURE

The subject structure is a three-sided, 200' tall guyed lattice tower with a 50' pole extension. The base tower has a 3'-0" face width, and the pole extension has a 1'-0" diameter. Solid round legs are K-braced along the length of the base tower with solid round diagonals. The tower is guyed at (3) different elevations: 66'-9", 126'-9", 186'-9" above grade level. All the guy wires are terminated at anchors 160' away from the tower base. 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
177.0	(3) AIR21 KRC118023-1_B2A_B4P (3) APXVAARR24_43-U-NA20 (3) AIR32 KRD901146-1_B66A_B2A (3) Radio 4449 B71+B85	(1) 9x18 Hybrid (2) 6x12 Hybrid	(3) Sector Mounts

Proposed and Final Configuration of T-Mobile Appurtenances:

Rad Center (ft.)	Antennas & Equipment	Coax	Mounts
177.0	(3) AIR21 KRC118023-1_B2A_B4P (3) APXVAARR24_43-U-NA20 (3) AIR6449 B41 (3) AIR32 KRD901146-1_B66A_B2A (3) Radio 4449 B71+B85 (3) Radio 4415 B25	(3) 6x12 Hybrid	(3) Valmont/Site Pro 1 Heavy Duty Sector Mounts (P/N: VFA12-WLL-30120)

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Appurtenances by Others:

Rad Center (ft.)	Antennas & Equipment	Coax	Mounts
250	(1) 4' Lightning Rod (1) Beacon	(1) 3/4" Conduit	Pole Mounted
237.5	(1) 6810	(1) 1-5/8"	(1) Pole Mount
215	(1) 6810-2	(1) 1-5/8"	(1) Pole Mount
199	(1) PR-950 Grid Dish	(1) 1-5/8"	Leg Mounted
187	(2) DB844G65ZAXY (1) DB980H90E-M (2) APXVSPP18-C (1) KMW ET-XU-42-15-37-18 (3) 1900 MHz RRH (3) 800 MHz RRH (3) APXV9TM14-ALU-120 (3) TD-RRH8x20	(6) 1-5/8" (3) 1-1/4" Hybrid (1) 3/8" Hybrid	(1) Delta Mount
172	(1) PR-950 Grid Dish	(1) 7/8"	Leg Mounted
170	--	(3) Tuning Wires	--
150	(1) 4' Grid Dish	(1) 1/2"	Leg Mounted
130	(1) 8' Omni	(1) 7/8"	(1) Standoff Mount
123	(3) Beacon Spurs	(1) 3/4" Conduit	Leg Mounted

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3.0 CODES AND LOADING

The tower was analyzed per *TIA/EIA-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 Groton, CT:

- Basic wind speed 105 mph without ice (V)
- Basic wind speed 50 mph with 0.75" escalating ice (V_i)
- Exposure Category: B
- Topographic Category: 1
- Structure Class: II

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

- 1.2 D + 1.0 D_g + 1.6 W_0
- 0.9 D + 1.0 D_g + 1.6 W_0
- 1.2 D + 1.0 D_g + 1.0 D_i + 1.0 W_i + 1.0 T_i

D: Dead load of structures and appurtenances, excluding guy assemblies
D_g: Dead load of guy assemblies
D_i: Weight of ice due to factored ice thickness (based upon t_i)
T_i: Load effects due to temperature
W_0: Wind load without ice (based upon V)
W_i: Wind load with ice (based upon V_i)

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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.

It is assumed that the modifications to the tower has been installed as per Upgrade Drawings prepared by Destek Engineering, LLC. dated 10/24/2018.

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6.0 RESULTS AND CONCLUSION

Based on a structural analysis per *ANSI/TIA-222-G*, the existing guyed 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 legs from 180' to 200' are stressed to **87.7%** of their structural capacities. The pole, tower diagonals, horizontals and guy wires are stressed to **69.5%**, **86.6%**, **47.3%** and **85.0%** of their capacities, respectively.

Information regarding the tower base foundation and anchor block foundations was not available at the time of this analysis, thus a qualification of the foundations could not be completed.

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.

EFI Global, Inc.
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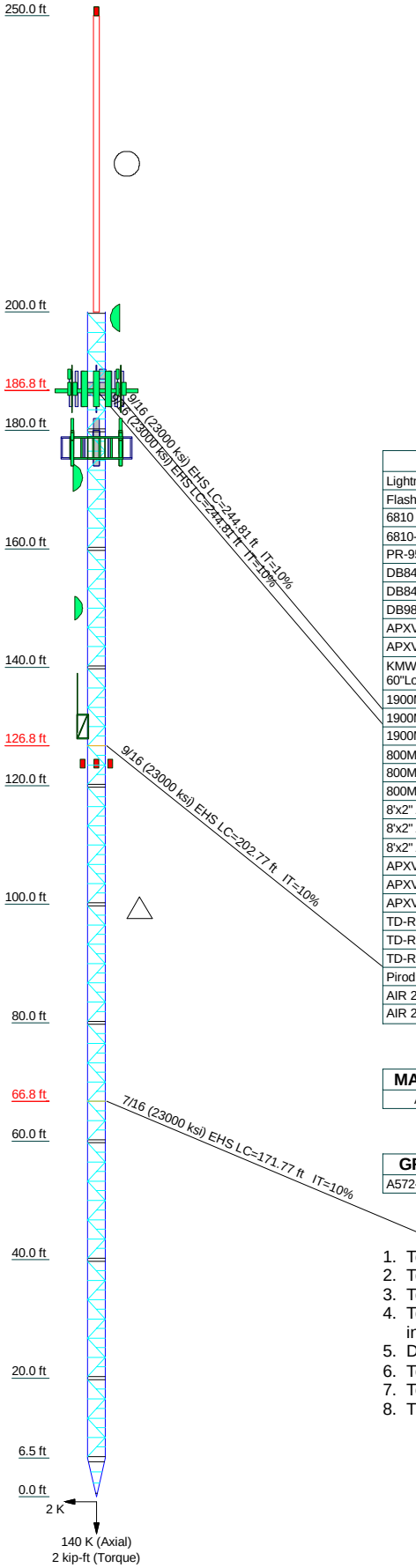
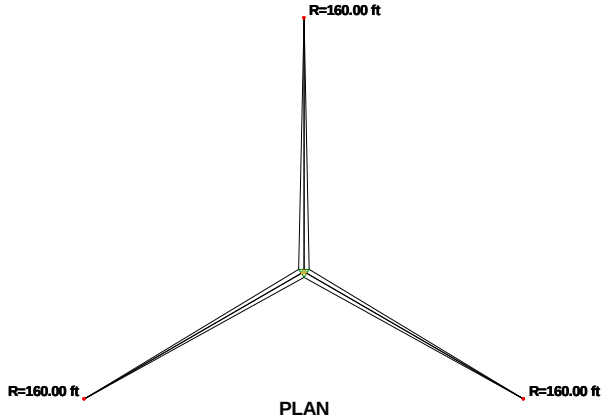
APPENDIX A
SOFTWARE OUTPUT

Section	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1	L1
Legs		SR 2 1/4					SR 2					P12x.5
Leg Grade							A572-50					A53-B-35
Diagonals	N.A.	SR 1 1/4					SR 1					N.A.
Diagonal Grade	N.A.						A36					N.A.
Top Girts	8x3/8				SR 7/8						L3x3x3/8	N.A.
Bottom Girts	8x3/8					SR 7/8						N.A.
Horizontals	8x3/8					SR 7/8						N.A.
Sec. Horizontals	N.A.				SR 7/8							N.A.
Top Guy Pull-Offs			N.A.		3 1/2x1 3/8	N.A.		3 1/2x1 3/8	N.A.	N.A.	SR 1	N.A.
Face Width (ft)							58 @ 3.25				3	1.0625
# Panels @ (ft)	A			1.1	1.2	1.1	1.1	1.2	1.1	1.1	1.5	3.4
Weight (K)	15.1	0.9	1.1	1.1	1.2	1.1	1.1	1.2	1.1	1.1	1.5	3.4





PLAN

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 5/8x4'	252	APXVAARR24_43-U-NA20 w/ Mount Pipe	177
Flash Beacon Lighting	250	APXVAARR24_43-U-NA20 w/ Mount Pipe	177
6810	237.5	APXVAARR24_43-U-NA20 w/ Mount Pipe	177
6810-2	215	Ericsson AIR6449 B41 w/ Mount Pipe	177
PR-950	199	Ericsson AIR6449 B41 w/ Mount Pipe	177
DB844G65ZAXY w/Mount Pipe	187	Ericsson AIR6449 B41 w/ Mount Pipe	177
DB844G65ZAXY w/Mount Pipe	187	AIR 32 B2a/B66Aa w/ Mount Pipe	177
DB980H90E-M w/Mount Pipe	187	AIR 32 B2a/B66Aa w/ Mount Pipe	177
APXVSPP18-C w/ Mount Pipe	187	AIR 32 B2a/B66Aa w/ Mount Pipe	177
APXVSPP18-C w/ Mount Pipe	187	Radio 4449 B71+B85_T-Mobile	177
KMW - ET-XU-42-15-37-18 w/ 2"MP 60"Long	187	Radio 4449 B71+B85_T-Mobile	177
1900MHz 4X40W RRH	187	Radio 4449 B71+B85_T-Mobile	177
1900MHz 4X40W RRH	187	RRUS 4415 B25	177
1900MHz 4X40W RRH	187	RRUS 4415 B25	177
800MHZ 2X50W RRH	187	RRUS 4415 B25	177
800MHZ 2X50W RRH	187	VFA12-WLL-30120	177
800MHZ 2X50W RRH	187	VFA12-WLL-30120	177
8'x2" Antenna Mount Pipe	187	VFA12-WLL-30120	177
8'x2" Antenna Mount Pipe	187	AIR 21 B2A/B4P w/ Mount Pipe	177
8'x2" Antenna Mount Pipe	187	PR-950	172
APXV9TM14-ALU-120 with mount pipe	187	4' Grid Dish	150
APXV9TM14-ALU-120 with mount pipe	187	2' standoff	130
APXV9TM14-ALU-120 with mount pipe	187	8' Omni	130
TD-RRH8x20	187	Small Beacon	123
TD-RRH8x20	187	Small Beacon	123
TD-RRH8x20	187	Small Beacon	123
Pirod Delta Mount (3)	187		
AIR 21 B2A/B4P w/ Mount Pipe	177		
AIR 21 B2A/B4P w/ Mount Pipe	177		

SYMBOL LIST

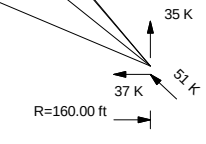
MARK	SIZE	MARK	SIZE
A	4 @ 1.77778		

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 New London County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 105 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 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 0.00 ft
8. TOWER RATING: 87.7%



ALL REACTIONS ARE FACTORED

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

Job: ***CTNL223A***			
Project: ***049.00477 - 2075038***			
Client: ForeSite LLC	Drawn by: Ahmet Colakoglu	App'd:	
Code: TIA-222-G	Date: 06/22/20	Scale: NTS	
Path: D:\Sedgwick\Destek Server - Documents\Projects\2020\75 - ForeSite LLC\049.00477 - 038 - CTNL223A\tnxTower\CTNL223A.eri		Dwg No. E-1	

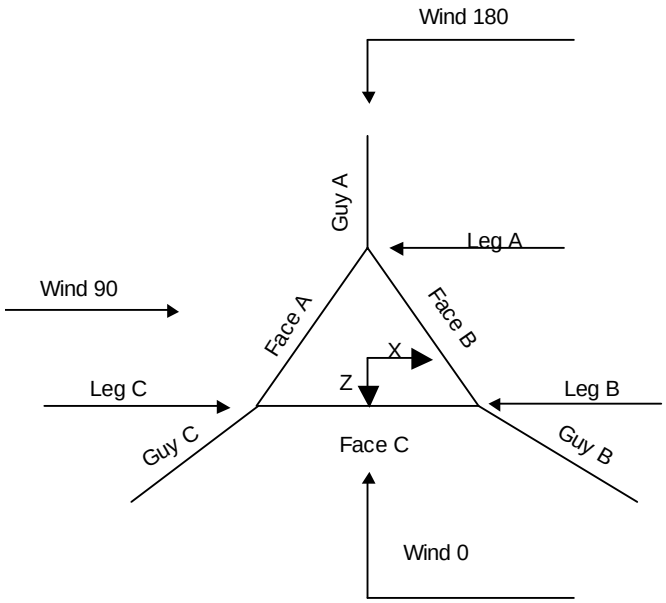
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 250.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.00 ft at the top and tapered at the base.
An index plate is provided at the 3x guyed -tower connection.
There is a pole section.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

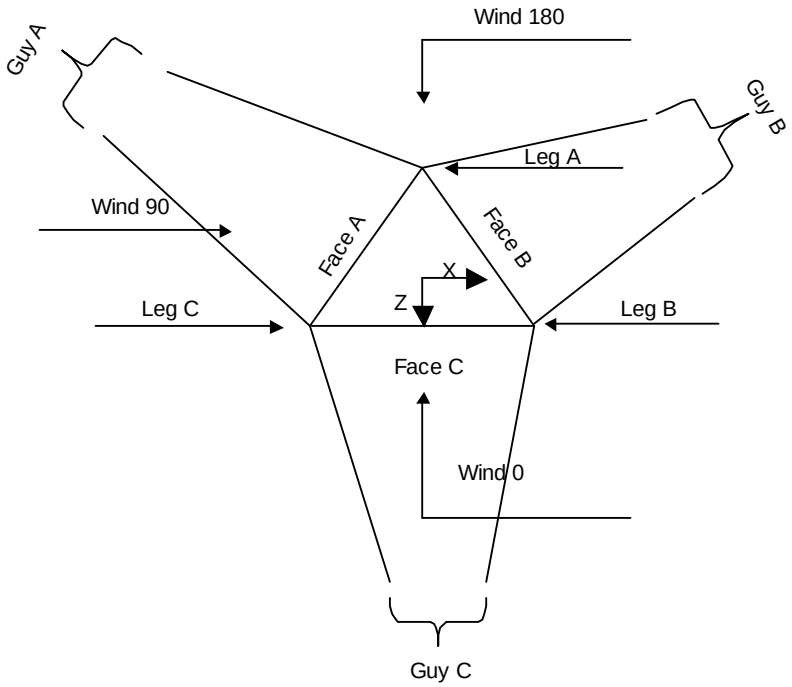
Tower is located in New London County, Connecticut.
Basic wind speed of 105 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Safety factor used in guy design is 1.
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



Corner & Starmount Guyed Tower



Face Guyed

Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Pole Size*	*Pole Grade*	*Socket Length* *ft*
L1	250.00-200.00	50.00	P12x.5	A53-B-35 (35 ksi)	

Tower Elevation *ft*	*Gusset Area (per face)* ft^2	*Gusset Thickness* *in*	*Gusset Grade*	*Adjust. Factor* A_f	*Adjust. Factor* A_r	*Weight Mult.*	*Double Angle Stitch Bolt Spacing Diagonals* *in*	*Double Angle Stitch Bolt Spacing Horizontals* *in*	*Double Angle Stitch Bolt Spacing Redundants* *in*
L1 250.00-200.00				1	1	1.05			

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	200.00-180.00			3.00	1	20.00
T2	180.00-160.00			3.00	1	20.00
T3	160.00-140.00			3.00	1	20.00
T4	140.00-120.00			3.00	1	20.00
T5	120.00-100.00			3.00	1	20.00
T6	100.00-80.00			3.00	1	20.00
T7	80.00-60.00			3.00	1	20.00
T8	60.00-40.00			3.00	1	20.00
T9	40.00-20.00			3.00	1	20.00
T10	20.00-6.50			3.00	1	13.50
T11	6.50-0.00			3.00	1	6.50

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	200.00-180.00	3.25	K Brace Left	No	Yes+Steps	3.0000	3.0000
T2	180.00-160.00	3.25	K Brace Left	No	Yes+Steps	3.0000	3.0000
T3	160.00-140.00	3.25	K Brace Left	No	Yes+Steps	3.0000	3.0000
T4	140.00-120.00	3.25	K Brace Left	No	Yes+Steps	3.0000	3.0000
T5	120.00-100.00	3.25	K Brace Left	No	Yes+Steps	3.0000	3.0000
T6	100.00-80.00	3.25	K Brace Left	No	Yes+Steps	3.0000	3.0000
T7	80.00-60.00	3.25	K Brace Left	No	Yes+Steps	3.0000	3.0000
T8	60.00-40.00	3.25	K Brace Left	No	Yes+Steps	3.0000	3.0000
T9	40.00-20.00	3.25	K Brace Left	No	Yes+Steps	3.0000	3.0000
T10	20.00-6.50	3.25	K Brace Left	No	Yes+Steps	3.0000	3.0000
T11	6.50-0.00	1.78	K Brace Left	No	Yes	7.0000	7.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 200.00-180.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T2 180.00-160.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T3 160.00-140.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T4 140.00-120.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T5 120.00-100.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T6 100.00-80.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T7 80.00-60.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T8 60.00-40.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T9 40.00-20.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T10 20.00-6.50	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T11 6.50-0.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 200.00-180.00	Equal Angle	L3x3x3/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T2 180.00-160.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T3 160.00-140.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T4 140.00-120.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T5 120.00-100.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T6 100.00-80.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T7 80.00-60.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T8 60.00-40.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T9 40.00-20.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T10 20.00-6.50	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T11 6.50-0.00	Flat Bar	8x3/8	A36 (36 ksi)	Flat Bar	8x3/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 200.00-180.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T2 180.00-160.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T3 160.00-140.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T4 140.00-120.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T5 120.00-100.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T6 100.00-80.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T7 80.00-60.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T8 60.00-40.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T9 40.00-20.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T10 20.00-6.50	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T11 6.50-0.00	None	Flat Bar		A36 (36 ksi)	Flat Bar	8x3/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 200.00-180.00	Solid Round	7/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T2 180.00-160.00	Solid Round	7/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T3 160.00-140.00	Solid Round	7/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T4 140.00-120.00	Solid Round	7/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T5 120.00-100.00	Solid Round	7/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T6 100.00-80.00	Solid Round	7/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T7 80.00-60.00	Solid Round	7/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T8 60.00-40.00	Solid Round	7/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T9 40.00-20.00	Solid Round	7/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T10 20.00-6.50	Solid Round	7/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T11 6.50-0.00	Solid Round	7/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

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

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 200.00-180.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T2 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T3 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T4 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T5 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T6 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T7 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T8 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T9 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T10 20.00-6.50	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T11 6.50-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 200.00-180.00	Yes	No	1	1 1	0.495 0.495	1 1	1 1	1 1	1 1	1 1
T2 180.00-160.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 160.00-140.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 140.00-120.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 120.00-100.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 100.00-80.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T7 80.00-60.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T8 60.00-40.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T9 40.00-20.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T10 20.00-6.50	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T11 6.50-0.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 200.00-180.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 180.00-160.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 160.00-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 140.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 120.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 20.00-6.50	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 6.50-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation 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 200.00-180.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T2 180.00-160.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T3 160.00-140.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T4 140.00-120.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T5 120.00-100.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T6 100.00-80.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T7 80.00-60.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T8 60.00-40.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T9 40.00-20.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T10 20.00-6.50	Flange	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0

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.
T11 6.50-0.00	Flange	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0

Guy Data

Guy Elevation ft	Guy Grade	Guy Size	Initial Tension K	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
186.75	EHS	A 9/16 (23000	3.50	10%	23000	0.671	244.63	160.00	0.0000	0.00	100%
		B ksi)	3.50	10%	23000	0.671	244.63	160.00	0.0000	0.00	100%
		C 9/16 (23000 ksi)	3.50	10%	23000	0.671	244.63	160.00	0.0000	0.00	100%
		9/16 (23000 ksi)									
126.75	EHS	A 9/16 (23000	3.50	10%	23000	0.671	202.61	160.00	0.0000	0.00	100%
		B ksi)	3.50	10%	23000	0.671	202.61	160.00	0.0000	0.00	100%
		C 9/16 (23000 ksi)	3.50	10%	23000	0.671	202.61	160.00	0.0000	0.00	100%
		9/16 (23000 ksi)									
66.75	EHS	A 7/16 (23000	2.08	10%	21000	0.399	171.63	160.00	0.0000	0.00	100%
		B ksi)	2.08	10%	21000	0.399	171.63	160.00	0.0000	0.00	100%
		C 7/16 (23000 ksi)	2.08	10%	21000	0.399	171.63	160.00	0.0000	0.00	100%
		7/16 (23000 ksi)									

Guy Data *(cont'd)*

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
186.75	Torque Arm	6.00	0.0000	Channel	A36 (36 ksi)	Channel	C12x20.7
126.75	Corner						
66.75	Corner						

Guy Data *(cont'd)*

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
186.75	A572-50	Solid Round			No	A36	Solid Round	1

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
	(50 ksi)					(36 ksi)		
126.75	A572-50	Solid Round			Yes	A36	Flat Bar	3 1/2x1 3/8
	(50 ksi)					(36 ksi)		
66.75	A572-50	Solid Round			Yes	A36	Flat Bar	3 1/2x1 3/8
	(50 ksi)					(36 ksi)		

Guy Data *(cont'd)*

Guy Elevation ft	Cable Weight A K	Cable Weight B K	Cable Weight C K	Cable Weight D K	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
186.75	0.16	0.16	0.16		5.64	5.64	5.64	
					4.1 sec/pulse	4.1 sec/pulse	4.1 sec/pulse	
126.75	0.14	0.14	0.14		3.89	3.89	3.89	
					3.4 sec/pulse	3.4 sec/pulse	3.4 sec/pulse	
66.75	0.07	0.07	0.07		2.81	2.81	2.81	
					2.9 sec/pulse	2.9 sec/pulse	2.9 sec/pulse	

Guy Data *(cont'd)*

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
186.75	Yes	Yes	1	1	1	1	1	1
126.75	No	No			1	1	1	1
66.75	No	No			1	1	1	1

Guy Data *(cont'd)*

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
186.75	0.0000	0	0.0000	1	0.0000	0	0.0000	1	0.0000	0	0.0000	1
	A325N				A325N				A325N			
126.75	0.0000	0	0.0000	1	0.0000	0	0.0000	1	0.0000	0	0.0000	1
	A325N				A325N				A325N			
66.75	0.0000	0	0.0000	1	0.0000	0	0.0000	1	0.0000	0	0.0000	1
	A325N				A325N				A325N			

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
186.75	A	93.38	23	5	1.6644
	B	93.38	23	5	1.6644
	C	93.38	23	5	1.6644
126.75	A	63.38	21	5	1.6011
	B	63.38	21	5	1.6011
	C	63.38	21	5	1.6011
66.75	A	33.38	17	4	1.5017
	B	33.38	17	4	1.5017
	C	33.38	17	4	1.5017

Guy-Mast Forces (Excluding Wind) - No Ice

Guy Elevation ft	Guy Location	Chord Angle °	Guy Tension Top Bottom K	F_x K	F_y K	F_z K	M_x kip-ft	M_y kip-ft	M_z kip-ft
186.75	A	49.7141	3.63 3.50	-0.04	2.80	-2.30	-4.85	6.98	-8.40
	A	49.7141	3.63 3.50	0.04	2.80	-2.30	-4.85	-6.98	8.40
	B	49.7141	3.63 3.50	2.02	2.80	1.11	9.70	6.98	0.00
	B	49.7141	3.63 3.50	1.97	2.80	1.19	-4.85	-6.98	-8.40
	C	49.7141	3.63 3.50	-1.97	2.80	1.19	-4.85	6.98	8.40
	C	49.7141	3.63 3.50	-2.02	2.80	1.11	9.70	-6.98	0.00
			Sum:	0.00	16.80	0.00	-0.00	0.00	0.00
126.75	A	38.6897	3.58 3.50	0.00	2.28	-2.76	-3.95	0.00	0.00
	B	38.6897	3.58 3.50	2.39	2.28	1.38	1.98	0.00	-3.42
	C	38.6897	3.58 3.50	-2.39	2.28	1.38	1.98	0.00	3.42
			Sum:	0.00	6.85	0.00	0.00	0.00	0.00
66.75	A	22.8677	2.11 2.08	0.00	0.85	-1.93	-1.47	0.00	0.00
	B	22.8677	2.11 2.08	1.67	0.85	0.96	0.73	0.00	-1.27
	C	22.8677	2.11 2.08	-1.67	0.85	0.96	0.73	0.00	1.27
			Sum:	0.00	2.54	0.00	0.00	0.00	0.00

Guy-Mast Forces (Excluding Wind) - Ice

Guy Elevation ft	Guy Location	Chord Angle °	Guy Tension Top Bottom K	F_x K	F_y K	F_z K	M_x kip-ft	M_y kip-ft	M_z kip-ft
186.75	A	49.7141	7.75	-0.09	6.17	-4.68	-10.69	14.20	-18.52

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom K	F_x	F_y	F_z	M_x	M_y	M_z
ft		°		K	K	K	kip-ft	kip-ft	kip-ft
			6.78						
	A	49.7141	7.75	0.09	6.17	-4.68	-10.69	-14.20	18.52
			6.78						
	B	49.7141	7.75	4.10	6.17	2.26	21.38	14.20	0.00
			6.78						
	B	49.7141	7.75	4.01	6.17	2.42	-10.69	-14.20	-18.52
			6.78						
	C	49.7141	7.75	-4.01	6.17	2.42	-10.69	14.20	18.52
			6.78						
	C	49.7141	7.75	-4.10	6.17	2.26	21.38	-14.20	0.00
			6.78						
			Sum:	0.00	37.04	0.00	-0.00	0.00	0.00
126.75	A	38.6897	7.38	0.00	4.92	-5.51	-8.52	0.00	0.00
			6.76						
	B	38.6897	7.38	4.77	4.92	2.76	4.26	0.00	-7.38
			6.76						
	C	38.6897	7.38	-4.77	4.92	2.76	4.26	-0.00	7.38
			6.76						
			Sum:	0.00	14.75	0.00	0.00	0.00	0.00
66.75	A	22.8677	4.77	0.00	2.14	-4.26	-3.71	0.00	0.00
			4.51						
	B	22.8677	4.77	3.69	2.14	2.13	1.85	0.00	-3.21
			4.51						
	C	22.8677	4.77	-3.69	2.14	2.13	1.85	-0.00	3.21
			4.51						
			Sum:	0.00	6.42	0.00	0.00	0.00	0.00

Guy-Mast Forces (Excluding Wind) - Service

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom K	F_x	F_y	F_z	M_x	M_y	M_z
ft		°		K	K	K	kip-ft	kip-ft	kip-ft
186.75	A	49.7141	3.63	-0.04	2.80	-2.30	-4.85	6.98	-8.40
			3.50						
	A	49.7141	3.63	0.04	2.80	-2.30	-4.85	-6.98	8.40
			3.50						
	B	49.7141	3.63	2.02	2.80	1.11	9.70	6.98	0.00
			3.50						
	B	49.7141	3.63	1.97	2.80	1.19	-4.85	-6.98	-8.40
			3.50						
	C	49.7141	3.63	-1.97	2.80	1.19	-4.85	6.98	8.40
			3.50						
	C	49.7141	3.63	-2.02	2.80	1.11	9.70	-6.98	0.00
			3.50						
			Sum:	0.00	16.80	0.00	-0.00	0.00	0.00
126.75	A	38.6897	3.58	0.00	2.28	-2.76	-3.95	0.00	0.00
			3.50						
	B	38.6897	3.58	2.39	2.28	1.38	1.98	0.00	-3.42
			3.50						
	C	38.6897	3.58	-2.39	2.28	1.38	1.98	0.00	3.42
			3.50						
			Sum:	0.00	6.85	0.00	0.00	0.00	0.00

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom K	F_x	F_y	F_z	M_x	M_y	M_z
ft		°		K	K	K	kip-ft	kip-ft	kip-ft
66.75	A	22.8677	2.11 2.08	0.00	0.85	-1.93	-1.47	0.00	0.00
	B	22.8677	2.11 2.08	1.67	0.85	0.96	0.73	0.00	-1.27
	C	22.8677	2.11 2.08	-1.67	0.85	0.96	0.73	0.00	1.27
			Sum:	0.00	2.54	0.00	0.00	0.00	0.00

Guy-Tensioning Information

Guy Elevation		H	V	Temperature At Time Of Tensioning: 0 F Initial Tension	0 F Intercept	20 F Initial Tension	20 F Intercept	40 F Initial Tension	40 F Intercept	60 F Initial Tension	60 F Intercept	80 F Initial Tension	80 F Intercept	100 F Initial Tension	100 F Intercept	120 F Initial Tension	120 F Intercept
ft		ft	ft	K	ft	K	ft	K	ft	K	ft	K	ft	K	ft	K	ft
186.75	A	158.30	186.75	4.180	4.73	3.950	5.01	3.724	5.31	3.500	5.64	3.280	6.01	3.060	6.44	2.849	6.90
	B	158.30	186.75	4.180	4.73	3.950	5.01	3.724	5.31	3.500	5.64	3.280	6.01	3.060	6.44	2.849	6.90
	C	158.30	186.75	4.180	4.73	3.950	5.01	3.724	5.31	3.500	5.64	3.280	6.01	3.060	6.44	2.849	6.90
126.75	A	158.27	126.75	4.498	3.03	4.160	3.28	3.827	3.56	3.500	3.89	3.181	4.28	2.872	4.73	2.576	5.27
	B	158.27	126.75	4.498	3.03	4.160	3.28	3.827	3.56	3.500	3.89	3.181	4.28	2.872	4.73	2.576	5.27
	C	158.27	126.75	4.498	3.03	4.160	3.28	3.827	3.56	3.500	3.89	3.181	4.28	2.872	4.73	2.576	5.27
66.75	A	158.27	66.75	2.842	2.06	2.584	2.26	2.330	2.51	2.080	2.81	1.837	3.18	1.605	3.64	1.388	4.20
	B	158.27	66.75	2.842	2.06	2.584	2.26	2.330	2.51	2.080	2.81	1.837	3.18	1.605	3.64	1.388	4.20
	C	158.27	66.75	2.842	2.06	2.584	2.26	2.330	2.51	2.080	2.81	1.837	3.18	1.605	3.64	1.388	4.20

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
Safety Line 3/8	B	No	No	Ar (CaAa)	200.00 - 6.50	0.0000	0.1	1	1	0.3750	0.3750		0.22
3/4" Rigid Conduit	C	No	No	Ar (CaAa)	200.00 - 6.50	0.0000	0	1	1	1.0500	1.0500		1.05
3/4" Rigid Conduit ***	C	No	No	Ar (CaAa)	123.00 - 6.50	0.0000	0.2	1	1	1.0500	1.0500		1.05
LDF7-50A(1-5/8")	C	No	No	Ar (CaAa)	200.00 - 6.50	0.0000	0.3	1	1	1.9800	1.9800		1.04
LDF7-50A(1-5/8")	B	No	No	Ar (CaAa)	200.00 - 6.50	0.0000	0.4	2	2	1.9800	1.9800		1.04
LDF7-50A(1-5/8")	A	No	No	Ar (CaAa)	187.00 - 6.50	0.0000	0.25	6	3	1.9800 1.0000	1.9800		1.04
LDF6-50A(1-1/4")	A	No	No	Ar (CaAa)	187.00 - 6.50	0.0000	0.25	3	3	1.5500	1.5500		0.66
RFFT-36SM-001-xxM(3/8")	A	No	No	Ar (CaAa)	187.00 - 6.50	0.0000	0.4	1	1	0.4000	0.4000		0.30
(1) 9x18 + (3) 6x12 Hybrid	A	No	No	Ar (CaAa)	177.00 - 6.50	0.0000	0.3	4	4	1.6600	1.6600		2.40
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	172.00 - 6.50	0.0000	0.25	1	1	1.1100	1.1100		0.54

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
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	130.00 - 6.50	0.0000	0.4	1	1	1.1100	1.1100		0.54
1/2 ***	C	No	No	Ar (CaAa)	150.00 - 6.50	0.0000	0.4	1	1	0.5800	0.5800		0.25
3/8	A	No	No	Ar (CaAa)	170.00 - 6.50	0.0000	0.5	1	1	0.3750	0.3750		0.26
3/8	B	No	No	Ar (CaAa)	170.00 - 6.50	0.0000	0.5	1	1	0.3750	0.3750		0.26
3/8	C	No	No	Ar (CaAa)	170.00 - 6.50	0.0000	0.5	1	1	0.3750	0.3750		0.26

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	250.00-200.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T1	200.00-180.00	A	0.000	0.000	11.851	0.000	0.06
		B	0.000	0.000	8.670	0.000	0.05
		C	0.000	0.000	6.060	0.000	0.04
T2	180.00-160.00	A	0.000	0.000	45.523	0.000	0.34
		B	0.000	0.000	9.045	0.000	0.05
		C	0.000	0.000	7.767	0.000	0.05
T3	160.00-140.00	A	0.000	0.000	47.890	0.000	0.37
		B	0.000	0.000	9.420	0.000	0.05
		C	0.000	0.000	9.610	0.000	0.06
T4	140.00-120.00	A	0.000	0.000	47.890	0.000	0.37
		B	0.000	0.000	9.420	0.000	0.05
		C	0.000	0.000	11.615	0.000	0.07
T5	120.00-100.00	A	0.000	0.000	47.890	0.000	0.37
		B	0.000	0.000	9.420	0.000	0.05
		C	0.000	0.000	14.510	0.000	0.09
T6	100.00-80.00	A	0.000	0.000	47.890	0.000	0.37
		B	0.000	0.000	9.420	0.000	0.05
		C	0.000	0.000	14.510	0.000	0.09
T7	80.00-60.00	A	0.000	0.000	47.890	0.000	0.37
		B	0.000	0.000	9.420	0.000	0.05
		C	0.000	0.000	14.510	0.000	0.09
T8	60.00-40.00	A	0.000	0.000	47.890	0.000	0.37
		B	0.000	0.000	9.420	0.000	0.05
		C	0.000	0.000	14.510	0.000	0.09
T9	40.00-20.00	A	0.000	0.000	47.890	0.000	0.37
		B	0.000	0.000	9.420	0.000	0.05
		C	0.000	0.000	14.510	0.000	0.09
T10	20.00-6.50	A	0.000	0.000	32.326	0.000	0.25
		B	0.000	0.000	6.359	0.000	0.03
		C	0.000	0.000	9.794	0.000	0.06
T11	6.50-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	250.00-200.00	A	1.818	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T1	200.00-180.00	A	1.787	0.000	0.000	27.613	0.000	0.46
		B		0.000	0.000	35.439	0.000	0.45
		C		0.000	0.000	20.356	0.000	0.33
T2	180.00-160.00	A	1.767	0.000	0.000	116.499	0.000	1.95
		B		0.000	0.000	39.134	0.000	0.50
		C		0.000	0.000	29.680	0.000	0.46
T3	160.00-140.00	A	1.745	0.000	0.000	125.804	0.000	2.08
		B		0.000	0.000	42.717	0.000	0.54
		C		0.000	0.000	41.024	0.000	0.60
T4	140.00-120.00	A	1.720	0.000	0.000	125.113	0.000	2.06
		B		0.000	0.000	42.350	0.000	0.53
		C		0.000	0.000	50.496	0.000	0.72
T5	120.00-100.00	A	1.692	0.000	0.000	124.320	0.000	2.03
		B		0.000	0.000	41.927	0.000	0.52
		C		0.000	0.000	61.884	0.000	0.88
T6	100.00-80.00	A	1.658	0.000	0.000	123.385	0.000	2.00
		B		0.000	0.000	41.429	0.000	0.50
		C		0.000	0.000	60.943	0.000	0.86
T7	80.00-60.00	A	1.617	0.000	0.000	122.241	0.000	1.96
		B		0.000	0.000	40.819	0.000	0.49
		C		0.000	0.000	59.790	0.000	0.83
T8	60.00-40.00	A	1.564	0.000	0.000	120.756	0.000	1.91
		B		0.000	0.000	40.026	0.000	0.47
		C		0.000	0.000	58.292	0.000	0.79
T9	40.00-20.00	A	1.486	0.000	0.000	118.596	0.000	1.83
		B		0.000	0.000	38.873	0.000	0.44
		C		0.000	0.000	56.112	0.000	0.74
T10	20.00-6.50	A	1.369	0.000	0.000	77.875	0.000	1.17
		B		0.000	0.000	25.075	0.000	0.27
		C		0.000	0.000	35.672	0.000	0.44
T11	6.50-0.00	A	1.190	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	250.00-200.00	0.0000	0.0000	0.0000	0.0000
T1	200.00-180.00	0.7855	-0.6544	0.8992	0.2141
T2	180.00-160.00	-1.3277	-5.4706	-0.6091	-3.4334
T3	160.00-140.00	-1.5433	-5.3496	-0.9783	-3.1162
T4	140.00-120.00	-1.7563	-4.8656	-1.4068	-2.5656
T5	120.00-100.00	-2.0980	-4.5323	-1.8613	-2.1370
T6	100.00-80.00	-2.0980	-4.5323	-1.8721	-2.1729
T7	80.00-60.00	-2.0214	-4.4091	-1.8142	-2.1466
T8	60.00-40.00	-2.0980	-4.5323	-1.9015	-2.2773
T9	40.00-20.00	-2.0980	-4.5323	-1.9247	-2.3671
T10	20.00-6.50	-2.0311	-4.4039	-1.9051	-2.4495

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T11	6.50-0.00	0.0000	0.0000	0.0000	0.0000

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	Safety Line 3/8	180.00 - 200.00	0.6000	0.4802
T1	2	3/4" Rigid Conduit	180.00 - 200.00	0.6000	0.4802
T1	5	LDF7-50A(1-5/8")	180.00 - 200.00	0.6000	0.4802
T1	6	LDF7-50A(1-5/8")	180.00 - 200.00	0.6000	0.4802
T1	7	LDF7-50A(1-5/8")	180.00 - 187.00	0.6000	0.4802
T1	8	LDF6-50A(1-1/4")	180.00 - 187.00	0.6000	0.4802
T1	9	RFFT-36SM-001-xxM(3/8")	180.00 - 187.00	0.6000	0.4802
T2	1	Safety Line 3/8	160.00 - 180.00	0.6000	0.4914
T2	2	3/4" Rigid Conduit	160.00 - 180.00	0.6000	0.4914
T2	5	LDF7-50A(1-5/8")	160.00 - 180.00	0.6000	0.4914
T2	6	LDF7-50A(1-5/8")	160.00 - 180.00	0.6000	0.4914
T2	7	LDF7-50A(1-5/8")	160.00 - 180.00	0.6000	0.4914
T2	8	LDF6-50A(1-1/4")	160.00 - 180.00	0.6000	0.4914
T2	9	RFFT-36SM-001-xxM(3/8")	160.00 - 180.00	0.6000	0.4914
T2	10	(1) 9x18 + (3) 6x12 Hybrid	160.00 - 177.00	0.6000	0.4914
T2	12	LDF5-50A(7/8")	160.00 - 172.00	0.6000	0.4914
T2	16	3/8	160.00 - 170.00	0.6000	0.4914
T2	17	3/8	160.00 - 170.00	0.6000	0.4914
T2	18	3/8	160.00 - 170.00	0.6000	0.4914
T3	1	Safety Line 3/8	140.00 - 160.00	0.6000	0.4954
T3	2	3/4" Rigid Conduit	140.00 - 160.00	0.6000	0.4954
T3	5	LDF7-50A(1-5/8")	140.00 - 160.00	0.6000	0.4954
T3	6	LDF7-50A(1-5/8")	140.00 - 160.00	0.6000	0.4954

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T3	7	LDF7-50A(1-5/8")	140.00 - 160.00	0.6000	0.4954
T3	8	LDF6-50A(1-1/4")	140.00 - 160.00	0.6000	0.4954
T3	9	RFFT-36SM-001-xxM(3/8")	140.00 - 160.00	0.6000	0.4954
T3	10	(1) 9x18 + (3) 6x12 Hybrid	140.00 - 160.00	0.6000	0.4954
T3	12	LDF5-50A(7/8")	140.00 - 160.00	0.6000	0.4954
T3	14	1/2	140.00 - 150.00	0.6000	0.4954
T3	16	3/8	140.00 - 160.00	0.6000	0.4954
T3	17	3/8	140.00 - 160.00	0.6000	0.4954
T3	18	3/8	140.00 - 160.00	0.6000	0.4954
T4	1	Safety Line 3/8	120.00 - 140.00	0.6000	0.4761
T4	2	3/4" Rigid Conduit	120.00 - 140.00	0.6000	0.4761
T4	3	3/4" Rigid Conduit	120.00 - 123.00	0.6000	0.4761
T4	5	LDF7-50A(1-5/8")	120.00 - 140.00	0.6000	0.4761
T4	6	LDF7-50A(1-5/8")	120.00 - 140.00	0.6000	0.4761
T4	7	LDF7-50A(1-5/8")	120.00 - 140.00	0.6000	0.4761
T4	8	LDF6-50A(1-1/4")	120.00 - 140.00	0.6000	0.4761
T4	9	RFFT-36SM-001-xxM(3/8")	120.00 - 140.00	0.6000	0.4761
T4	10	(1) 9x18 + (3) 6x12 Hybrid	120.00 - 140.00	0.6000	0.4761
T4	12	LDF5-50A(7/8")	120.00 - 140.00	0.6000	0.4761
T4	13	LDF5-50A(7/8")	120.00 - 130.00	0.6000	0.4761
T4	14	1/2	120.00 - 140.00	0.6000	0.4761
T4	16	3/8	120.00 - 140.00	0.6000	0.4761
T4	17	3/8	120.00 - 140.00	0.6000	0.4761
T4	18	3/8	120.00 - 140.00	0.6000	0.4761
T5	1	Safety Line 3/8	100.00 - 120.00	0.6000	0.5050
T5	2	3/4" Rigid Conduit	100.00 - 120.00	0.6000	0.5050
T5	3	3/4" Rigid Conduit	100.00 - 120.00	0.6000	0.5050
T5	5	LDF7-50A(1-5/8")	100.00 - 120.00	0.6000	0.5050
T5	6	LDF7-50A(1-5/8")	100.00 - 120.00	0.6000	0.5050
T5	7	LDF7-50A(1-5/8")	100.00 - 120.00	0.6000	0.5050
T5	8	LDF6-50A(1-1/4")	100.00 - 120.00	0.6000	0.5050

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T5	9	RFFT-36SM-001-xxM(3/8")	100.00 - 120.00	0.6000	0.5050
T5	10	(1) 9x18 + (3) 6x12 Hybrid	100.00 - 120.00	0.6000	0.5050
T5	12	LDF5-50A(7/8")	100.00 - 120.00	0.6000	0.5050
T5	13	LDF5-50A(7/8")	100.00 - 120.00	0.6000	0.5050
T5	14	1/2	100.00 - 120.00	0.6000	0.5050
T5	16	3/8	100.00 - 120.00	0.6000	0.5050
T5	17	3/8	100.00 - 120.00	0.6000	0.5050
T5	18	3/8	100.00 - 120.00	0.6000	0.5050
T6	1	Safety Line 3/8	80.00 - 100.00	0.6000	0.5111
T6	2	3/4" Rigid Conduit	80.00 - 100.00	0.6000	0.5111
T6	3	3/4" Rigid Conduit	80.00 - 100.00	0.6000	0.5111
T6	5	LDF7-50A(1-5/8")	80.00 - 100.00	0.6000	0.5111
T6	6	LDF7-50A(1-5/8")	80.00 - 100.00	0.6000	0.5111
T6	7	LDF7-50A(1-5/8")	80.00 - 100.00	0.6000	0.5111
T6	8	LDF6-50A(1-1/4")	80.00 - 100.00	0.6000	0.5111
T6	9	RFFT-36SM-001-xxM(3/8")	80.00 - 100.00	0.6000	0.5111
T6	10	(1) 9x18 + (3) 6x12 Hybrid	80.00 - 100.00	0.6000	0.5111
T6	12	LDF5-50A(7/8")	80.00 - 100.00	0.6000	0.5111
T6	13	LDF5-50A(7/8")	80.00 - 100.00	0.6000	0.5111
T6	14	1/2	80.00 - 100.00	0.6000	0.5111
T6	16	3/8	80.00 - 100.00	0.6000	0.5111
T6	17	3/8	80.00 - 100.00	0.6000	0.5111
T6	18	3/8	80.00 - 100.00	0.6000	0.5111
T7	1	Safety Line 3/8	60.00 - 80.00	0.6000	0.4955
T7	2	3/4" Rigid Conduit	60.00 - 80.00	0.6000	0.4955
T7	3	3/4" Rigid Conduit	60.00 - 80.00	0.6000	0.4955
T7	5	LDF7-50A(1-5/8")	60.00 - 80.00	0.6000	0.4955
T7	6	LDF7-50A(1-5/8")	60.00 - 80.00	0.6000	0.4955
T7	7	LDF7-50A(1-5/8")	60.00 - 80.00	0.6000	0.4955
T7	8	LDF6-50A(1-1/4")	60.00 - 80.00	0.6000	0.4955
T7	9	RFFT-36SM-001-xxM(3/8")	60.00 - 80.00	0.6000	0.4955
T7	10	(1) 9x18 + (3) 6x12 Hybrid	60.00 - 80.00	0.6000	0.4955
T7	12	LDF5-50A(7/8")	60.00 - 80.00	0.6000	0.4955
T7	13	LDF5-50A(7/8")	60.00 - 80.00	0.6000	0.4955
T7	14	1/2	60.00 - 80.00	0.6000	0.4955
T7	16	3/8	60.00 - 80.00	0.6000	0.4955
T7	17	3/8	60.00 - 80.00	0.6000	0.4955
T7	18	3/8	60.00 - 80.00	0.6000	0.4955
T8	1	Safety Line 3/8	40.00 - 60.00	0.6000	0.5284
T8	2	3/4" Rigid Conduit	40.00 - 60.00	0.6000	0.5284
T8	3	3/4" Rigid Conduit	40.00 - 60.00	0.6000	0.5284
T8	5	LDF7-50A(1-5/8")	40.00 - 60.00	0.6000	0.5284
T8	6	LDF7-50A(1-5/8")	40.00 - 60.00	0.6000	0.5284
T8	7	LDF7-50A(1-5/8")	40.00 - 60.00	0.6000	0.5284
T8	8	LDF6-50A(1-1/4")	40.00 - 60.00	0.6000	0.5284
T8	9	RFFT-36SM-001-xxM(3/8")	40.00 - 60.00	0.6000	0.5284
T8	10	(1) 9x18 + (3) 6x12 Hybrid	40.00 - 60.00	0.6000	0.5284
T8	12	LDF5-50A(7/8")	40.00 - 60.00	0.6000	0.5284
T8	13	LDF5-50A(7/8")	40.00 - 60.00	0.6000	0.5284
T8	14	1/2	40.00 - 60.00	0.6000	0.5284
T8	16	3/8	40.00 - 60.00	0.6000	0.5284
T8	17	3/8	40.00 - 60.00	0.6000	0.5284
T8	18	3/8	40.00 - 60.00	0.6000	0.5284
T9	1	Safety Line 3/8	20.00 - 40.00	0.6000	0.5427

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	2	3/4" Rigid Conduit	20.00 - 40.00	0.6000	0.5427
T9	3	3/4" Rigid Conduit	20.00 - 40.00	0.6000	0.5427
T9	5	LDF7-50A(1-5/8")	20.00 - 40.00	0.6000	0.5427
T9	6	LDF7-50A(1-5/8")	20.00 - 40.00	0.6000	0.5427
T9	7	LDF7-50A(1-5/8")	20.00 - 40.00	0.6000	0.5427
T9	8	LDF6-50A(1-1/4")	20.00 - 40.00	0.6000	0.5427
T9	9	RFFT-36SM-001-xxM(3/8")	20.00 - 40.00	0.6000	0.5427
T9	10	(1) 9x18 + (3) 6x12 Hybrid	20.00 - 40.00	0.6000	0.5427
T9	12	LDF5-50A(7/8")	20.00 - 40.00	0.6000	0.5427
T9	13	LDF5-50A(7/8")	20.00 - 40.00	0.6000	0.5427
T9	14	1/2	20.00 - 40.00	0.6000	0.5427
T9	16	3/8	20.00 - 40.00	0.6000	0.5427
T9	17	3/8	20.00 - 40.00	0.6000	0.5427
T9	18	3/8	20.00 - 40.00	0.6000	0.5427
T10	1	Safety Line 3/8	6.50 - 20.00	0.6000	0.5452
T10	2	3/4" Rigid Conduit	6.50 - 20.00	0.6000	0.5452
T10	3	3/4" Rigid Conduit	6.50 - 20.00	0.6000	0.5452
T10	5	LDF7-50A(1-5/8")	6.50 - 20.00	0.6000	0.5452
T10	6	LDF7-50A(1-5/8")	6.50 - 20.00	0.6000	0.5452
T10	7	LDF7-50A(1-5/8")	6.50 - 20.00	0.6000	0.5452
T10	8	LDF6-50A(1-1/4")	6.50 - 20.00	0.6000	0.5452
T10	9	RFFT-36SM-001-xxM(3/8")	6.50 - 20.00	0.6000	0.5452
T10	10	(1) 9x18 + (3) 6x12 Hybrid	6.50 - 20.00	0.6000	0.5452
T10	12	LDF5-50A(7/8")	6.50 - 20.00	0.6000	0.5452
T10	13	LDF5-50A(7/8")	6.50 - 20.00	0.6000	0.5452
T10	14	1/2	6.50 - 20.00	0.6000	0.5452
T10	16	3/8	6.50 - 20.00	0.6000	0.5452
T10	17	3/8	6.50 - 20.00	0.6000	0.5452
T10	18	3/8	6.50 - 20.00	0.6000	0.5452

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lightning Rod 5/8x4'	C	None		0.0000	252.00	No Ice	0.25	0.25	0.03
						1/2" Ice	0.66	0.66	0.03
						1" Ice	0.97	0.97	0.04
Flash Beacon Lighting	B	None		0.0000	250.00	No Ice	2.70	2.70	0.05
						1/2" Ice	3.10	3.10	0.07
						1" Ice	3.50	3.50	0.09
***									
6810	B	From Face	3.00 0.00 0.00	0.0000	237.50	No Ice 1/2" Ice 1" Ice	22.30 40.14 57.98	22.30 40.14 57.98	0.35 0.46 0.57
6810-2	B	From Face	3.00 0.00 0.00	0.0000	215.00	No Ice 1/2" Ice 1" Ice	10.80 19.44 28.08	10.80 19.44 28.08	0.25 0.32 0.40
***									
Pirod Delta Mount (3)	C	From Face	3.00 0.00	0.0000	187.00	No Ice 1/2" Ice	32.94 47.60	32.94 47.60	0.74 1.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1" Ice	62.26	62.26	1.26
DB844G65ZAXY w/Mount Pipe	A	From Face	3.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	5.05 5.68 6.19	5.28 6.31 7.06	0.04 0.09 0.15
DB844G65ZAXY w/Mount Pipe	B	From Face	3.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	5.05 5.68 6.19	5.28 6.31 7.06	0.04 0.09 0.15
DB980H90E-M w/Mount Pipe	C	From Face	3.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	4.27 4.86 5.37	3.86 4.95 5.75	0.03 0.07 0.12
APXVSPP18-C w/ Mount Pipe	A	From Face	3.00 -2.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	4.60 5.05 5.50	4.01 4.45 4.89	0.09 0.15 0.23
APXVSPP18-C w/ Mount Pipe	B	From Face	3.00 -2.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	4.60 5.05 5.50	4.01 4.45 4.89	0.09 0.15 0.23
KMW - ET-XU-42-15-37-18 w/ 2"MP 60"Long	C	From Face	3.00 -2.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	8.68 9.18 9.68	4.50 5.17 5.85	0.08 0.14 0.20
1900MHz 4X40W RRH	A	From Leg	3.00 1.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
1900MHz 4X40W RRH	B	From Leg	3.00 1.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
1900MHz 4X40W RRH	C	From Leg	3.00 1.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
800MHZ 2X50W RRH	A	From Leg	3.00 1.00 2.50	0.0000	187.00	No Ice 1/2" Ice 1" Ice	2.13 2.32 2.51	1.77 1.95 2.13	0.05 0.07 0.10
800MHZ 2X50W RRH	B	From Leg	3.00 1.00 2.50	0.0000	187.00	No Ice 1/2" Ice 1" Ice	2.13 2.32 2.51	1.77 1.95 2.13	0.05 0.07 0.10
800MHZ 2X50W RRH	C	From Leg	3.00 1.00 2.50	0.0000	187.00	No Ice 1/2" Ice 1" Ice	2.13 2.32 2.51	1.77 1.95 2.13	0.05 0.07 0.10
8'x2" Antenna Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8'x2" Antenna Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8'x2" Antenna Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
***									
APXV9TM14-ALU-120 with mount pipe	A	From Face	3.00 2.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	8.20 8.85 9.50	6.75 7.59 8.43	0.13 0.20 0.28
APXV9TM14-ALU-120 with mount pipe	B	From Face	3.00 2.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	8.20 8.85 9.50	6.75 7.59 8.43	0.13 0.20 0.28
APXV9TM14-ALU-120 with mount pipe	C	From Face	3.00 2.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	8.20 8.85 9.50	6.75 7.59 8.43	0.13 0.20 0.28
TD-RRH8x20	A	From Leg	3.00	0.0000	187.00	No Ice	3.70	1.29	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			-1.00			1/2" Ice	3.95	1.46	0.09
			0.00			1" Ice	4.20	1.64	0.12
TD-RRH8x20	B	From Leg	3.00	0.0000	187.00	No Ice	3.70	1.29	0.07
			-1.00			1/2" Ice	3.95	1.46	0.09
			0.00			1" Ice	4.20	1.64	0.12
TD-RRH8x20	C	From Leg	3.00	0.0000	187.00	No Ice	3.70	1.29	0.07
			-1.00			1/2" Ice	3.95	1.46	0.09
			0.00			1" Ice	4.20	1.64	0.12
***									
AIR 21 B2A/B4P w/ Mount Pipe	A	From Leg	3.00	0.0000	177.00	No Ice	6.16	5.55	0.10
			0.00			1/2" Ice	6.60	6.30	0.16
			0.00			1" Ice	7.03	7.00	0.22
AIR 21 B2A/B4P w/ Mount Pipe	B	From Leg	3.00	0.0000	177.00	No Ice	6.16	5.55	0.10
			0.00			1/2" Ice	6.60	6.30	0.16
			0.00			1" Ice	7.03	7.00	0.22
AIR 21 B2A/B4P w/ Mount Pipe	C	From Leg	3.00	0.0000	177.00	No Ice	6.16	5.55	0.10
			0.00			1/2" Ice	6.60	6.30	0.16
			0.00			1" Ice	7.03	7.00	0.22
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	3.00	0.0000	177.00	No Ice	14.69	6.87	0.19
			0.00			1/2" Ice	15.46	7.55	0.31
			2.00			1" Ice	16.23	8.25	0.46
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	3.00	0.0000	177.00	No Ice	14.69	6.87	0.19
			0.00			1/2" Ice	15.46	7.55	0.31
			2.00			1" Ice	16.23	8.25	0.46
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	3.00	0.0000	177.00	No Ice	14.69	6.87	0.19
			0.00			1/2" Ice	15.46	7.55	0.31
			2.00			1" Ice	16.23	8.25	0.46
Ericsson AIR6449 B41 w/ Mount Pipe	A	From Leg	3.00	0.0000	177.00	No Ice	6.90	4.32	0.13
			0.00			1/2" Ice	7.74	5.37	0.19
			0.00			1" Ice	8.49	6.28	0.26
Ericsson AIR6449 B41 w/ Mount Pipe	B	From Leg	3.00	0.0000	177.00	No Ice	6.90	4.32	0.13
			0.00			1/2" Ice	7.74	5.37	0.19
			0.00			1" Ice	8.49	6.28	0.26
Ericsson AIR6449 B41 w/ Mount Pipe	C	From Leg	3.00	0.0000	177.00	No Ice	6.90	4.32	0.13
			0.00			1/2" Ice	7.74	5.37	0.19
			0.00			1" Ice	8.49	6.28	0.26
AIR 32 B2a/B66Aa w/ Mount Pipe	A	From Leg	3.00	0.0000	177.00	No Ice	6.75	6.07	0.15
			0.00			1/2" Ice	7.20	6.87	0.21
			0.00			1" Ice	7.65	7.58	0.28
AIR 32 B2a/B66Aa w/ Mount Pipe	B	From Leg	3.00	0.0000	177.00	No Ice	6.75	6.07	0.15
			0.00			1/2" Ice	7.20	6.87	0.21
			0.00			1" Ice	7.65	7.58	0.28
AIR 32 B2a/B66Aa w/ Mount Pipe	C	From Leg	3.00	0.0000	177.00	No Ice	6.75	6.07	0.15
			0.00			1/2" Ice	7.20	6.87	0.21
			0.00			1" Ice	7.65	7.58	0.28
Radio 4449 B71+B85_T-Mobile	A	From Leg	3.00	0.0000	177.00	No Ice	1.97	1.59	0.07
			0.00			1/2" Ice	2.15	1.75	0.09
			2.00			1" Ice	2.33	1.92	0.12
Radio 4449 B71+B85_T-Mobile	B	From Leg	3.00	0.0000	177.00	No Ice	1.97	1.59	0.07
			0.00			1/2" Ice	2.15	1.75	0.09
			2.00			1" Ice	2.33	1.92	0.12
Radio 4449 B71+B85_T-Mobile	C	From Leg	3.00	0.0000	177.00	No Ice	1.97	1.59	0.07
			0.00			1/2" Ice	2.15	1.75	0.09
			2.00			1" Ice	2.33	1.92	0.12
RRUS 4415 B25	A	From Leg	3.00	0.0000	177.00	No Ice	1.64	0.68	0.04
			0.00			1/2" Ice	1.80	0.79	0.06
			2.00			1" Ice	1.97	0.91	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RRUS 4415 B25	B	From Leg	3.00 0.00 2.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.68 0.79 0.91	0.04 0.06 0.07
RRUS 4415 B25	C	From Leg	3.00 0.00 2.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.68 0.79 0.91	0.04 0.06 0.07
VFA12-WLL-30120	A	From Leg	0.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice	13.20 19.50 25.80	9.20 14.60 20.00	0.66 0.80 1.01
VFA12-WLL-30120	B	From Leg	0.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice	13.20 19.50 25.80	9.20 14.60 20.00	0.66 0.80 1.01
VFA12-WLL-30120	C	From Leg	0.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice	13.20 19.50 25.80	9.20 14.60 20.00	0.66 0.80 1.01
***									
2' standoff	C	From Leg	1.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	1.80 3.30 4.80	1.80 3.30 4.80	0.03 0.06 0.09
8' Omni	C	From Leg	2.00 0.00 4.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	2.40 3.19 3.98	2.40 3.19 3.98	0.03 0.05 0.07
***									
Small Beacon	A	From Leg	1.00 0.00 0.00	0.0000	123.00	No Ice 1/2" Ice 1" Ice	0.31 0.40 0.49	0.31 0.40 0.49	0.01 0.01 0.01
Small Beacon	B	From Leg	1.00 0.00 0.00	0.0000	123.00	No Ice 1/2" Ice 1" Ice	0.31 0.40 0.49	0.31 0.40 0.49	0.01 0.01 0.01
Small Beacon	C	From Leg	1.00 0.00 0.00	0.0000	123.00	No Ice 1/2" Ice 1" Ice	0.31 0.40 0.49	0.31 0.40 0.49	0.01 0.01 0.01
***									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
PR-950	B	Grid	From Leg	1.00 0.00 0.00	0.0000		199.00	4.65	No Ice 1/2" Ice 1" Ice	17.00 17.61 18.22	0.04 0.09 0.15
PR-950	C	Grid	From Leg	1.00 0.00 0.00	0.0000		172.00	4.65	No Ice 1/2" Ice 1" Ice	17.00 17.61 18.22	0.04 0.09 0.15
4' Grid Dish	C	Grid	From Leg	1.00 0.00 0.00	0.0000		150.00	4.00	No Ice 1/2" Ice 1" Ice	12.57 13.10 13.62	0.10 0.17 0.23

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy
3	1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy
4	1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy
5	1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy
6	1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy
7	1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy
8	1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy
9	1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy
10	1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy
11	1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy
12	1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy
13	1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy
14	1.2 Dead+1.0 Ice+1.0 Temp+Guy
15	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
16	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
17	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
18	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
19	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
20	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
21	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
22	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
23	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
24	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
25	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
26	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
27	Dead+Wind 0 deg - Service+Guy
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	250 - 200	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-7.32	-4.48	2.47
			Max. Mx	5	-4.80	-135.09	1.50
			Max. My	2	-4.78	-4.50	134.62
			Max. Vy	5	4.56	-135.09	1.50
			Max. Vx	2	-4.58	-4.50	134.62
			Max. Torque	7			7.70
T1	200 - 180	Leg	Max Tension	8	74.61	-0.29	-0.36
			Max. Compression	2	-79.50	-0.14	0.09

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	22	-21.02	-2.72	1.40
			Max. My	16	-23.86	0.04	-2.97
			Max. Vy	22	-11.96	0.27	-0.20
			Max. Vx	17	-13.40	-0.00	0.38
		Diagonal	Max Tension	7	10.03	0.00	0.00
			Max. Compression	13	-10.01	0.00	0.00
			Max. Mx	20	4.65	0.02	0.00
			Max. My	15	2.09	0.00	-0.00
			Max. Vy	20	-0.01	0.00	0.00
			Max. Vx	15	0.00	0.00	0.00
		Horizontal	Max Tension	2	1.38	0.00	0.00
			Max. Compression	2	-1.38	0.00	0.00
			Max. Mx	14	0.29	0.01	0.00
			Max. My	9	1.18	0.00	-0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	9	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	18	0.00	-0.00	-0.00
			Max. Compression	24	-0.00	-0.00	-0.00
			Max. Mx	2	0.00	0.01	0.00
			Max. My	2	0.00	0.01	0.00
			Max. Vy	24	0.01	-0.00	-0.00
			Max. Vx	2	-0.00	0.00	0.00
		Top Girt	Max Tension	26	8.25	0.00	0.00
			Max. Compression	7	-1.71	0.00	0.00
			Max. Mx	14	7.39	-0.02	0.00
			Max. My	9	0.23	0.00	0.00
			Max. Vy	14	-0.03	0.00	0.00
			Max. Vx	9	-0.00	0.00	0.00
		Bottom Girt	Max Tension	8	2.80	0.00	0.00
			Max. Compression	2	-2.66	0.00	0.00
			Max. Mx	14	0.05	0.01	0.00
			Max. My	9	2.22	0.00	-0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	9	0.00	0.00	0.00
		Guy A	Bottom Tension	9	17.40		
			Top Tension	9	17.52		
			Top Cable Vert	9	13.44		
			Top Cable Norm	9	11.24		
			Top Cable Tan	9	0.02		
			Bot Cable Vert	9	-13.12		
			Bot Cable Norm	9	11.42		
			Bot Cable Tan	9	0.17		
		Guy B	Bottom Tension	11	17.63		
			Top Tension	11	17.76		
			Top Cable Vert	11	13.62		
			Top Cable Norm	11	11.40		
			Top Cable Tan	11	0.01		
			Bot Cable Vert	11	-13.30		
			Bot Cable Norm	11	11.58		
			Bot Cable Tan	11	0.18		
		Guy C	Bottom Tension	5	17.73		
			Top Tension	5	17.85		
			Top Cable Vert	5	13.69		
			Top Cable Norm	5	11.46		
			Top Cable Tan	5	0.01		
			Bot Cable Vert	5	-13.37		
			Bot Cable Norm	5	11.64		
			Bot Cable Tan	5	0.18		
		Top Guy Pull-Off	Max Tension	5	10.98	0.00	0.00
			Max. Compression	11	-10.88	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	25	2.80	0.01	0.00
			Max. My	9	-4.05	0.00	-0.00
			Max. Vy	25	0.01	0.00	0.00
			Max. Vx	9	0.00	0.00	0.00
		Torque Arm Top	Max Tension	7	12.20	0.00	0.00
			Max. Compression	7	-5.74	0.00	0.00
			Max. Mx	7	0.51	-41.76	0.00
			Max. My	9	-2.25	-21.33	-0.00
			Max. Vy	7	13.96	-41.76	0.00
			Max. Vx	9	-0.00	-21.33	-0.00
T2	180 - 160	Leg	Max Tension	8	32.22	0.02	-0.14
			Max. Compression	6	-65.75	0.19	0.44
			Max. Mx	4	-34.42	0.63	-0.33
			Max. My	8	32.22	-0.23	0.54
			Max. Vy	4	-2.67	-0.04	0.13
			Max. Vx	8	-2.76	0.02	-0.14
		Diagonal	Max Tension	8	7.77	0.00	0.00
			Max. Compression	4	-7.80	0.00	0.00
			Max. Mx	20	-1.55	0.02	0.00
			Max. My	15	0.36	0.00	-0.00
			Max. Vy	20	0.01	0.00	0.00
			Max. Vx	15	0.00	0.00	0.00
		Horizontal	Max Tension	4	2.06	0.00	0.00
			Max. Compression	10	-1.79	0.00	0.00
			Max. Mx	14	0.39	0.01	0.00
			Max. My	3	1.82	0.00	-0.00
			Max. Vy	14	0.01	0.00	0.00
			Max. Vx	3	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	18	0.00	-0.00	-0.00
			Max. Compression	24	-0.00	-0.00	-0.00
			Max. Mx	2	0.00	0.00	0.00
			Max. My	2	0.00	0.00	0.00
			Max. Vy	24	0.01	-0.00	-0.00
			Max. Vx	2	-0.00	0.00	0.00
		Top Girt	Max Tension	2	2.42	0.00	0.00
			Max. Compression	8	-2.42	0.00	0.00
			Max. Mx	25	0.46	0.01	0.00
			Max. My	9	-1.88	0.00	-0.00
			Max. Vy	25	0.01	0.00	0.00
			Max. Vx	9	0.00	0.00	0.00
		Bottom Girt	Max Tension	8	0.84	0.00	0.00
			Max. Compression	4	-0.62	0.00	0.00
			Max. Mx	14	0.07	0.01	0.00
			Max. My	6	-0.17	0.00	0.00
			Max. Vy	14	0.01	0.00	0.00
			Max. Vx	6	-0.00	0.00	0.00
T3	160 - 140	Leg	Max Tension	8	13.87	-0.07	-0.05
			Max. Compression	2	-63.21	0.16	0.05
			Max. Mx	10	-60.64	-0.28	-0.18
			Max. My	7	-53.50	-0.04	0.27
			Max. Vy	10	-0.96	-0.04	-0.17
			Max. Vx	2	-1.01	0.00	0.14
		Diagonal	Max Tension	2	2.47	0.00	0.00
			Max. Compression	10	-2.99	0.00	0.00
			Max. Mx	20	-0.08	0.02	0.00
			Max. My	15	0.42	0.00	-0.00
			Max. Vy	20	-0.01	0.00	0.00
			Max. Vx	15	0.00	0.00	0.00
		Horizontal	Max Tension	2	1.09	0.00	0.00
			Max. Compression	2	-1.09	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	14	0.45	0.01	0.00
			Max. My	11	0.88	0.00	-0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	6	0.00	0.00	-0.00
			Max. Compression	10	-0.00	-0.00	-0.00
			Max. Mx	24	-0.00	-0.00	-0.00
			Max. My	2	0.00	0.00	0.00
			Max. Vy	24	0.01	-0.00	-0.00
			Max. Vx	2	-0.00	0.00	0.00
		Top Girt	Max Tension	4	0.68	0.00	0.00
			Max. Compression	8	-0.67	0.00	0.00
			Max. Mx	14	0.06	0.01	0.00
			Max. My	6	0.16	0.00	0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	6	-0.00	0.00	0.00
		Bottom Girt	Max Tension	10	0.96	0.00	0.00
			Max. Compression	4	-0.60	0.00	0.00
			Max. Mx	25	0.01	0.01	0.00
			Max. My	11	0.83	0.00	-0.00
			Max. Vy	25	-0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
T4	140 - 120	Leg	Max Tension	8	20.08	0.07	-0.11
			Max. Compression	2	-73.65	0.21	0.13
			Max. Mx	11	-14.86	0.48	-0.14
			Max. My	13	3.26	0.18	0.43
			Max. Vy	5	-1.39	-0.46	-0.03
			Max. Vx	2	1.40	0.05	0.40
		Diagonal	Max Tension	4	3.98	0.00	0.00
			Max. Compression	10	-4.36	0.00	0.00
			Max. Mx	23	0.25	0.02	0.00
			Max. My	6	-0.24	0.00	0.00
			Max. Vy	23	-0.01	0.00	0.00
			Max. Vx	6	-0.00	0.00	0.00
		Horizontal	Max Tension	2	1.28	0.00	0.00
			Max. Compression	2	-1.28	0.00	0.00
			Max. Mx	14	0.55	0.01	0.00
			Max. My	11	1.08	0.00	-0.00
			Max. Vy	14	0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	6	0.00	0.00	-0.00
			Max. Compression	10	-0.00	-0.00	-0.00
			Max. Mx	18	0.00	-0.00	-0.00
			Max. My	2	0.00	0.00	0.00
			Max. Vy	18	0.01	-0.00	-0.00
			Max. Vx	2	-0.00	0.00	0.00
		Top Girt	Max Tension	4	0.76	0.00	0.00
			Max. Compression	10	-0.91	0.00	0.00
			Max. Mx	25	0.14	0.01	0.00
			Max. My	11	-0.81	0.00	-0.00
			Max. Vy	25	0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Bottom Girt	Max Tension	8	1.36	0.00	0.00
			Max. Compression	6	-1.43	0.00	0.00
			Max. Mx	25	-0.20	0.01	0.00
			Max. My	11	-0.78	0.00	-0.00
			Max. Vy	25	0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Guy A	Bottom Tension	7	10.95		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Top Tension	7	11.04		
			Top Cable Vert	7	6.98		
			Top Cable Norm	7	8.55		
			Top Cable Tan	7	0.04		
			Bot Cable Vert	7	-6.74		
			Bot Cable Norm	7	8.63		
			Bot Cable Tan	7	0.08		
		Guy B	Bottom Tension	11	11.42		
			Top Tension	11	11.51		
			Top Cable Vert	11	7.27		
			Top Cable Norm	11	8.92		
			Top Cable Tan	11	0.04		
			Bot Cable Vert	11	-7.03		
			Bot Cable Norm	11	9.00		
			Bot Cable Tan	11	0.08		
		Guy C	Bottom Tension	5	11.49		
			Top Tension	5	11.57		
			Top Cable Vert	5	7.31		
			Top Cable Norm	5	8.97		
			Top Cable Tan	5	0.03		
			Bot Cable Vert	5	-7.07		
			Bot Cable Norm	5	9.05		
			Bot Cable Tan	5	0.08		
		Top Guy Pull-Off	Max Tension	5	4.80	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	2.75	0.04	0.00
			Max. My	11	4.33	0.00	-0.00
			Max. Vy	14	-0.05	0.00	0.00
			Max. Vx	11	-0.00	0.00	0.00
T5	120 - 100	Leg	Max Tension	8	4.77	0.07	-0.03
			Max. Compression	10	-66.11	-0.32	-0.02
			Max. Mx	5	-15.10	0.41	-0.03
			Max. My	7	-57.24	0.07	0.40
			Max. Vy	5	-1.39	-0.11	-0.07
			Max. Vx	2	1.41	0.18	0.05
		Diagonal	Max Tension	10	3.63	0.00	0.00
			Max. Compression	3	-4.05	0.00	0.00
			Max. Mx	23	-1.26	0.01	0.00
			Max. My	11	-2.21	0.00	-0.00
			Max. Vy	23	-0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Horizontal	Max Tension	10	1.12	0.00	0.00
			Max. Compression	10	-1.12	0.00	0.00
			Max. Mx	14	0.59	0.01	0.00
			Max. My	11	0.94	0.00	-0.00
			Max. Vy	14	0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	6	0.00	-0.00	-0.00
			Max. Compression	10	-0.00	-0.00	-0.00
			Max. Mx	19	0.00	-0.00	-0.00
			Max. My	2	0.00	0.00	0.00
			Max. Vy	19	0.01	-0.00	-0.00
			Max. Vx	2	-0.00	0.00	0.00
		Top Girt	Max Tension	6	1.44	0.00	0.00
			Max. Compression	8	-1.14	0.00	0.00
			Max. Mx	25	0.36	0.01	0.00
			Max. My	11	0.83	0.00	-0.00
			Max. Vy	25	0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Bottom Girt	Max Tension	8	0.82	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	2	-0.76	0.00	0.00
			Max. Mx	25	-0.11	0.01	0.00
			Max. My	11	-0.39	0.00	-0.00
			Max. Vy	25	0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
T6	100 - 80	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	10	-46.41	-0.21	-0.06
			Max. Mx	3	-43.91	0.28	-0.15
			Max. My	6	-43.04	0.05	0.25
			Max. Vy	6	-0.76	-0.10	-0.10
			Max. Vx	2	0.81	0.16	0.03
		Diagonal	Max Tension	9	2.14	0.00	0.00
			Max. Compression	3	-2.55	0.00	0.00
			Max. Mx	23	-0.81	0.01	0.00
			Max. My	11	-0.93	0.00	-0.00
			Max. Vy	23	-0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Horizontal	Max Tension	10	0.79	0.00	0.00
			Max. Compression	10	-0.79	0.00	0.00
			Max. Mx	25	0.62	0.01	0.00
			Max. My	11	0.65	0.00	-0.00
			Max. Vy	25	-0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	6	0.00	-0.00	-0.00
			Max. Compression	10	-0.00	-0.00	-0.00
			Max. Mx	19	0.00	-0.00	-0.00
			Max. My	2	0.00	-0.00	0.00
			Max. Vy	19	0.01	-0.00	-0.00
			Max. Vx	2	-0.00	0.00	0.00
		Top Girt	Max Tension	2	0.81	0.00	0.00
			Max. Compression	8	-0.59	0.00	0.00
			Max. Mx	25	0.28	0.01	0.00
			Max. My	11	0.46	0.00	-0.00
			Max. Vy	25	-0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Bottom Girt	Max Tension	9	0.34	0.00	0.00
			Max. Compression	3	-0.26	0.00	0.00
			Max. Mx	25	-0.01	0.01	0.00
			Max. My	11	-0.04	0.00	-0.00
			Max. Vy	25	-0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
T7	80 - 60	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	25	-44.76	-0.04	0.23
			Max. Mx	5	-29.85	-0.36	-0.15
			Max. My	2	-26.60	-0.02	0.33
			Max. Vy	11	1.13	0.21	-0.11
			Max. Vx	2	0.90	0.09	0.23
		Diagonal	Max Tension	11	2.84	0.00	0.00
			Max. Compression	5	-3.30	0.00	0.00
			Max. Mx	26	-1.03	0.01	0.00
			Max. My	11	0.34	0.00	-0.00
			Max. Vy	26	0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Horizontal	Max Tension	25	0.76	0.00	0.00
			Max. Compression	25	-0.76	0.00	0.00
			Max. Mx	25	0.68	0.01	0.00
			Max. My	11	0.59	0.00	-0.00
			Max. Vy	25	-0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Secondary	Max Tension	6	0.00	-0.00	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Horizontal					
			Max. Compression	11	-0.00	-0.00	-0.00
			Max. Mx	19	0.00	-0.00	-0.00
			Max. My	2	0.00	-0.00	0.00
			Max. Vy	19	0.01	-0.00	-0.00
			Max. Vx	2	-0.00	0.00	0.00
		Top Girt	Max Tension	3	0.33	0.00	0.00
			Max. Compression	9	-0.13	0.00	0.00
			Max. Mx	25	0.18	0.01	0.00
			Max. My	11	0.12	0.00	-0.00
			Max. Vy	25	-0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Bottom Girt	Max Tension	5	0.86	0.00	0.00
			Max. Compression	2	-0.74	0.00	0.00
			Max. Mx	25	-0.11	0.01	0.00
			Max. My	5	0.86	0.00	-0.00
			Max. Vy	25	-0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Guy A	Bottom Tension	20	5.29		
			Top Tension	20	5.55		
			Top Cable Vert	20	2.46		
			Top Cable Norm	20	4.97		
			Top Cable Tan	20	0.03		
			Bot Cable Vert	20	-1.74		
			Bot Cable Norm	20	4.99		
			Bot Cable Tan	20	0.03		
		Guy B	Bottom Tension	12	5.84		
			Top Tension	12	5.87		
			Top Cable Vert	12	2.32		
			Top Cable Norm	12	5.39		
			Top Cable Tan	12	0.00		
			Bot Cable Vert	12	-2.22		
			Bot Cable Norm	12	5.40		
			Bot Cable Tan	12	0.00		
		Guy C	Bottom Tension	17	5.53		
			Top Tension	5	5.62		
			Top Cable Vert	17	2.48		
			Top Cable Norm	17	5.05		
			Top Cable Tan	17	0.00		
			Bot Cable Vert	5	-2.10		
			Bot Cable Norm	5	5.12		
			Bot Cable Tan	5	0.03		
		Top Guy Pull-Off	Max Tension	18	2.83	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	25	2.02	0.04	0.00
			Max. My	5	0.47	0.00	-0.00
			Max. Vy	25	-0.05	0.00	0.00
			Max. Vx	5	-0.00	0.00	0.00
T8	60 - 40	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	25	-49.92	-0.10	0.19
			Max. Mx	11	-29.34	-0.35	-0.15
			Max. My	7	-27.45	0.06	0.30
			Max. Vy	5	-1.13	-0.08	-0.12
			Max. Vx	2	0.90	0.15	0.01
		Diagonal	Max Tension	5	2.62	0.00	0.00
			Max. Compression	11	-3.07	0.00	0.00
			Max. Mx	18	-0.66	0.01	0.00
			Max. My	11	-0.61	0.00	-0.00
			Max. Vy	18	0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Horizontal	Max Tension	25	0.86	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	25	-0.86	0.00	0.00
			Max. Mx	25	0.68	0.01	0.00
			Max. My	11	0.69	0.00	-0.00
			Max. Vy	25	0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	18	0.00	-0.00	-0.00
			Max. Compression	24	-0.00	-0.00	-0.00
			Max. Mx	18	0.00	-0.00	-0.00
			Max. My	5	0.00	-0.00	-0.00
			Max. Vy	18	0.01	-0.00	-0.00
			Max. Vx	5	0.00	0.00	0.00
		Top Girt	Max Tension	11	0.81	0.00	0.00
			Max. Compression	5	-0.63	0.00	0.00
			Max. Mx	25	0.30	0.01	0.00
			Max. My	5	-0.63	0.00	-0.00
			Max. Vy	25	0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Bottom Girt	Max Tension	5	0.52	0.00	0.00
			Max. Compression	11	-0.39	0.00	0.00
			Max. Mx	17	0.09	0.01	0.00
			Max. My	5	0.52	0.00	-0.00
			Max. Vy	17	0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
T9	40 - 20	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	25	-50.51	0.14	-0.25
			Max. Mx	18	-44.26	0.30	-0.02
			Max. My	20	-39.80	-0.09	0.27
			Max. Vy	5	0.62	0.12	-0.00
			Max. Vx	12	-0.59	-0.08	0.17
		Diagonal	Max Tension	12	1.54	0.00	0.00
			Max. Compression	5	-1.87	0.00	0.00
			Max. Mx	18	-0.10	0.01	0.00
			Max. My	11	0.50	0.00	-0.00
			Max. Vy	18	0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Horizontal	Max Tension	25	0.87	0.00	0.00
			Max. Compression	25	-0.87	0.00	0.00
			Max. Mx	17	0.72	0.01	0.00
			Max. My	11	0.71	0.00	-0.00
			Max. Vy	17	0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	18	0.00	-0.00	-0.00
			Max. Compression	24	-0.00	-0.00	-0.00
			Max. Mx	18	0.00	-0.00	-0.00
			Max. My	5	0.00	-0.00	-0.00
			Max. Vy	18	0.01	-0.00	-0.00
			Max. Vx	5	0.00	0.00	0.00
		Top Girt	Max Tension	11	0.48	0.00	0.00
			Max. Compression	5	-0.29	0.00	0.00
			Max. Mx	17	0.10	0.01	0.00
			Max. My	5	-0.29	0.00	-0.00
			Max. Vy	17	0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Bottom Girt	Max Tension	5	0.52	0.00	0.00
			Max. Compression	12	-0.45	0.00	0.00
			Max. Mx	17	0.19	0.01	0.00
			Max. My	5	0.19	0.00	-0.00
			Max. Vy	17	0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T10	20 - 6.5	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	25	-50.19	-0.13	0.24
			Max. Mx	18	-47.99	-1.56	0.73
			Max. My	20	-48.07	0.14	-1.72
			Max. Vy	17	6.49	-1.56	0.74
			Max. Vx	21	7.45	0.14	-1.72
		Diagonal	Max Tension	12	2.62	0.00	0.00
			Max. Compression	6	-2.68	0.00	0.00
			Max. Mx	18	0.24	0.02	0.00
			Max. My	11	-1.75	0.00	-0.00
			Max. Vy	18	-0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Horizontal	Max Tension	20	0.86	0.00	0.00
			Max. Compression	20	-0.86	0.00	0.00
			Max. Mx	14	0.78	0.01	0.00
			Max. My	11	0.66	0.00	-0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	18	0.00	-0.00	-0.00
			Max. Compression	24	-0.00	-0.00	-0.00
			Max. Mx	18	0.00	-0.00	-0.00
			Max. My	5	0.00	-0.00	-0.00
			Max. Vy	18	0.01	-0.00	-0.00
			Max. Vx	5	0.00	0.00	0.00
		Top Girt	Max Tension	12	0.75	0.00	0.00
			Max. Compression	5	-0.47	0.00	0.00
			Max. Mx	17	0.04	0.01	0.00
			Max. My	5	0.05	0.00	-0.00
			Max. Vy	17	-0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Bottom Girt	Max Tension	19	4.49	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	4.10	0.01	0.00
			Max. My	11	2.72	0.00	-0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
T11	6.5 - 0	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	20	-49.97	-0.09	-0.11
			Max. Mx	25	-48.27	1.72	0.13
			Max. My	11	-26.47	-0.04	1.00
			Max. Vy	19	5.26	-1.47	0.04
			Max. Vx	11	-2.36	-0.15	0.89
		Horizontal	Max Tension	20	0.89	0.05	0.01
			Max. Compression	20	-0.89	-0.23	-0.01
			Max. Mx	11	0.62	-1.33	-0.08
			Max. My	11	0.62	-1.33	-0.08
			Max. Vy	11	-2.32	-1.33	-0.08
			Max. Vx	11	-0.15	-1.33	-0.08
		Top Girt	Max Tension	19	3.24	-0.81	-0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	11	2.09	-1.27	-0.04
			Max. My	11	2.09	-1.27	-0.04
			Max. Vy	11	-0.57	-1.27	-0.04
			Max. Vx	11	-0.03	-1.27	-0.04
		Bottom Girt	Max Tension	1	0.00	0.00	0.00
			Max. Compression	19	-0.52	0.12	0.02
			Max. Mx	11	-0.37	-1.61	-0.08
			Max. My	11	-0.37	-1.61	-0.08
			Max. Vy	11	-10.70	-1.61	-0.08
			Max. Vx	11	-0.61	-1.61	-0.08

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Mast	Max. Vert	19	139.60	-0.48	-0.34
	Max. H_x	12	76.87	1.47	0.85
	Max. H_z	2	91.54	-0.01	1.12
	Max. M_x	1	0.00	-0.01	-0.02
	Max. M_z	1	0.00	-0.01	-0.02
	Max. Torsion	5	2.11	-1.43	0.18
	Min. Vert	1	52.77	-0.01	-0.02
	Min. H_x	5	88.56	-1.43	0.18
	Min. H_z	8	76.00	-0.02	-1.54
	Min. M_x	1	0.00	-0.01	-0.02
	Min. M_z	1	0.00	-0.01	-0.02
	Min. Torsion	11	-2.12	1.39	0.19
Guy C @ 160 ft Elev 0 ft Azimuth 240 deg	Max. Vert	10	-0.82	-0.59	0.34
	Max. H_x	10	-0.82	-0.59	0.34
	Max. H_z	5	-35.07	-32.03	17.98
	Min. Vert	5	-35.07	-32.03	17.98
	Min. H_x	5	-35.07	-32.03	17.98
	Min. H_z	10	-0.82	-0.59	0.34
Guy B @ 160 ft Elev 0 ft Azimuth 120 deg	Max. Vert	6	-0.78	0.53	0.30
	Max. H_x	11	-34.88	31.85	17.87
	Max. H_z	13	-34.26	30.75	18.28
	Min. Vert	11	-34.88	31.85	17.87
	Min. H_x	6	-0.78	0.53	0.30
	Min. H_z	6	-0.78	0.53	0.30
Guy A @ 160 ft Elev 0 ft Azimuth 0 deg	Max. Vert	2	-0.82	0.00	-0.68
	Max. H_x	11	-18.33	0.82	-19.10
	Max. H_z	2	-0.82	0.00	-0.68
	Min. Vert	7	-34.26	-0.46	-35.73
	Min. H_x	5	-18.40	-0.82	-19.15
	Min. H_z	7	-34.26	-0.46	-35.73

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	52.77	0.01	0.02	0.00	0.00	-0.00
1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy	91.54	0.01	-1.12	0.00	0.00	-0.29
1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy	84.67	0.73	-0.80	0.00	0.00	0.07

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy	76.17	1.34	-0.74	0.00	0.00	-1.09
1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy	88.56	1.43	-0.18	0.00	0.00	-2.11
1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy	94.02	1.15	0.68	0.00	0.00	-1.57
1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy	87.32	0.53	1.31	0.00	0.00	-0.33
1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy	76.00	0.02	1.54	0.00	0.00	0.03
1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy	84.40	-0.34	1.04	0.00	0.00	-0.10
1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy	91.61	-0.96	0.58	0.00	0.00	1.19
1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy	88.30	-1.39	-0.19	0.00	0.00	2.12
1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy	76.87	-1.47	-0.85	0.00	0.00	1.79
1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy	87.37	-0.84	-1.07	0.00	0.00	0.33
1.2 Dead+1.0 Ice+1.0 Temp+Guy	136.55	0.05	0.07	0.00	0.00	-0.01
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	139.50	0.03	-0.39	0.00	0.00	0.22
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	138.88	0.26	-0.32	0.00	0.00	0.34
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	138.54	0.46	-0.16	0.00	0.00	0.00
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	139.04	0.56	0.08	0.00	0.00	-0.52
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy	139.60	0.48	0.34	0.00	0.00	-0.57
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy	138.90	0.30	0.51	0.00	0.00	-0.26
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	138.42	0.05	0.54	0.00	0.00	-0.21
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy	138.79	-0.18	0.46	0.00	0.00	-0.30
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy	139.45	-0.36	0.31	0.00	0.00	0.00
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy	138.99	-0.47	0.07	0.00	0.00	0.47
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy	138.59	-0.41	-0.19	0.00	0.00	0.50
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy	138.93	-0.20	-0.37	0.00	0.00	0.21
Dead+Wind 0 deg - Service+Guy	53.06	0.01	-0.34	0.00	0.00	-0.08
Dead+Wind 30 deg - Service+Guy	53.07	0.16	-0.24	0.00	0.00	-0.02
Dead+Wind 60 deg - Service+Guy	53.12	0.31	-0.15	0.00	0.00	-0.26
Dead+Wind 90 deg - Service+Guy	53.10	0.39	0.02	0.00	0.00	-0.44
Dead+Wind 120 deg - Service+Guy	53.07	0.35	0.21	0.00	0.00	-0.33
Dead+Wind 150 deg - Service+Guy	53.09	0.20	0.34	0.00	0.00	-0.07
Dead+Wind 180 deg - Service+Guy	53.12	0.01	0.36	0.00	0.00	0.07
Dead+Wind 210 deg -	53.07	-0.14	0.27	0.00	0.00	0.01

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
Service+Guy						
Dead+Wind 240 deg - Service+Guy	53.06	-0.29	0.19	0.00	0.00	0.25
Dead+Wind 270 deg - Service+Guy	53.09	-0.37	0.02	0.00	0.00	0.43
Dead+Wind 300 deg - Service+Guy	53.13	-0.32	-0.18	0.00	0.00	0.32
Dead+Wind 330 deg - Service+Guy	53.09	-0.18	-0.31	0.00	0.00	0.06

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-28.18	0.00	0.00	28.18	0.00	0.002%
2	0.03	-33.66	-31.17	-0.03	33.66	31.17	0.000%
3	14.57	-33.50	-25.21	-14.57	33.50	25.21	0.001%
4	27.10	-33.35	-15.64	-27.10	33.35	15.64	0.002%
5	33.10	-33.50	0.01	-33.10	33.50	-0.01	0.000%
6	28.67	-33.66	16.54	-28.67	33.66	-16.54	0.000%
7	16.00	-33.50	27.85	-16.00	33.50	-27.85	0.000%
8	-0.04	-33.35	30.88	0.04	33.35	-30.88	0.000%
9	-14.42	-33.50	25.02	14.42	33.50	-25.02	0.000%
10	-27.00	-33.66	15.60	27.00	33.66	-15.60	0.000%
11	-32.86	-33.50	0.05	32.86	33.50	-0.05	0.000%
12	-28.60	-33.35	-16.46	28.60	33.35	16.46	0.002%
13	-16.07	-33.50	-27.80	16.07	33.50	27.80	0.000%
14	0.00	-95.79	0.00	-0.00	95.79	-0.00	0.000%
15	0.09	-95.95	-12.31	-0.09	95.95	12.31	0.000%
16	6.18	-95.79	-10.44	-6.18	95.79	10.44	0.000%
17	10.83	-95.64	-6.24	-10.83	95.64	6.24	0.000%
18	12.89	-95.79	-0.14	-12.89	95.79	0.14	0.000%
19	11.23	-95.95	6.22	-11.23	95.95	-6.22	0.000%
20	6.21	-95.79	10.77	-6.21	95.79	-10.77	0.000%
21	-0.01	-95.64	12.01	0.01	95.64	-12.01	0.000%
22	-5.93	-95.79	10.27	5.93	95.79	-10.27	0.000%
23	-10.70	-95.95	6.03	10.70	95.95	-6.03	0.000%
24	-12.72	-95.79	-0.08	12.72	95.79	0.08	0.000%
25	-11.10	-95.64	-6.38	11.10	95.64	6.38	0.000%
26	-6.31	-95.79	-10.77	6.31	95.79	10.77	0.000%
27	0.01	-28.22	-6.36	-0.01	28.22	6.36	0.001%
28	2.97	-28.18	-5.14	-2.97	28.18	5.14	0.001%
29	5.53	-28.15	-3.19	-5.53	28.15	3.19	0.000%
30	6.75	-28.18	0.00	-6.75	28.18	-0.00	0.001%
31	5.85	-28.22	3.38	-5.85	28.22	-3.38	0.001%
32	3.26	-28.18	5.68	-3.26	28.18	-5.68	0.001%
33	-0.01	-28.15	6.30	0.01	28.15	-6.30	0.000%
34	-2.94	-28.18	5.11	2.94	28.18	-5.11	0.001%
35	-5.51	-28.22	3.18	5.51	28.22	-3.18	0.001%
36	-6.71	-28.18	0.01	6.71	28.18	-0.01	0.001%
37	-5.84	-28.15	-3.36	5.84	28.15	3.36	0.000%
38	-3.28	-28.18	-5.67	3.28	28.18	5.67	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	9	0.00000001	0.00013103
2	Yes	23	0.00000001	0.00011051
3	Yes	22	0.00004142	0.00014915
4	Yes	15	0.00009427	0.00013921
5	Yes	22	0.00004142	0.00009923
6	Yes	23	0.00000001	0.00008871
7	Yes	22	0.00004188	0.00013719
8	Yes	16	0.00000001	0.00008292
9	Yes	23	0.00000001	0.00008395
10	Yes	22	0.00005358	0.00012586
11	Yes	22	0.00004123	0.00009307
12	Yes	15	0.00000001	0.00011000
13	Yes	22	0.00004141	0.00013559
14	Yes	11	0.00015000	0.00009892
15	Yes	19	0.00014021	0.00011502
16	Yes	19	0.00000001	0.00007003
17	Yes	16	0.00000001	0.00007901
18	Yes	19	0.00000001	0.00006457
19	Yes	19	0.00014247	0.00011274
20	Yes	19	0.00000001	0.00007829
21	Yes	16	0.00000001	0.00012084
22	Yes	19	0.00000001	0.00006549
23	Yes	19	0.00014260	0.00007897
24	Yes	19	0.00000001	0.00005248
25	Yes	16	0.00000001	0.00010255
26	Yes	19	0.00000001	0.00006866
27	Yes	13	0.00000001	0.00012820
28	Yes	13	0.00000001	0.00010856
29	Yes	13	0.00000001	0.00007460
30	Yes	13	0.00000001	0.00012382
31	Yes	13	0.00000001	0.00014674
32	Yes	13	0.00000001	0.00012779
33	Yes	13	0.00000001	0.00007910
34	Yes	13	0.00000001	0.00010507
35	Yes	13	0.00000001	0.00011441
36	Yes	13	0.00000001	0.00010170
37	Yes	13	0.00000001	0.00007862
38	Yes	13	0.00000001	0.00011122

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	250 - 200	8.344	29	0.6598	0.2506
T1	200 - 180	2.588	33	0.2429	0.2026
T2	180 - 160	1.812	37	0.1549	0.1238
T3	160 - 140	1.360	37	0.1053	0.1235
T4	140 - 120	1.025	37	0.0684	0.1399
T5	120 - 100	0.831	37	0.0299	0.1654
T6	100 - 80	0.763	37	0.0156	0.1812
T7	80 - 60	0.694	37	0.0195	0.1849
T8	60 - 40	0.609	37	0.0220	0.1778
T9	40 - 20	0.494	31	0.0387	0.1614

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T10	20 - 6.5	0.285	31	0.0608	0.1354
T11	6.5 - 0	0.097	31	0.0687	0.1197

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
252.00	Lightning Rod 5/8x4'	29	8.344	0.6598	0.2506	38123
250.00	Flash Beacon Lighting	29	8.344	0.6598	0.2506	38123
237.50	6810	29	6.597	0.5416	0.2575	15249
215.00	6810-2	29	3.844	0.3465	0.2457	5446
199.00	PR-950	33	2.528	0.2376	0.1983	4113
187.00	Pirod Delta Mount (3)	37	2.005	0.1811	0.1436	9220
186.75	Guy	37	1.997	0.1800	0.1428	9473
177.00	AIR 21 B2A/B4P w/ Mount Pipe	37	1.737	0.1453	0.1168	28642
172.00	PR-950	37	1.618	0.1314	0.1074	29402
150.00	4' Grid Dish	37	1.177	0.0870	0.1311	29827
130.00	2' standoff	37	0.909	0.0479	0.1533	29688
126.75	Guy	37	0.880	0.0415	0.1574	29784
123.00	Small Beacon	37	0.851	0.0347	0.1620	29981
66.75	Guy	37	0.639	0.0203	0.1813	245764

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	250 - 200	61.793	6	3.7751	1.2790
T1	200 - 180	27.648	6	1.9011	1.3340
T2	180 - 160	20.746	6	1.4597	0.8888
T3	160 - 140	15.449	6	1.1858	0.8078
T4	140 - 120	11.173	6	0.9151	0.8265
T5	120 - 100	8.179	6	0.5774	0.8400
T6	100 - 80	6.404	6	0.3635	0.8871
T7	80 - 60	5.111	6	0.2825	0.8999
T8	60 - 40	4.060	6	0.2358	0.8617
T9	40 - 20	3.047	6	0.2819	0.7800
T10	20 - 6.5	1.679	6	0.3712	0.6535
T11	6.5 - 0	0.563	6	0.4039	0.5784

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
252.00	Lightning Rod 5/8x4'	6	61.793	3.7751	1.5383	8419
250.00	Flash Beacon Lighting	6	61.793	3.7751	1.5383	8419
237.50	6810	6	51.869	3.2488	1.5764	3367

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
215.00	6810-2	6	35.777	2.3753	1.5312	1200
199.00	PR-950	6	27.209	1.8738	1.3143	903
187.00	Pirod Delta Mount (3)	6	22.825	1.5901	1.0398	1949
186.75	Guy	6	22.747	1.5850	1.0340	1999
177.00	AIR 21 B2A/B4P w/ Mount Pipe	6	19.898	1.4110	0.8357	6092
172.00	PR-950	6	18.523	1.3377	0.7623	5674
150.00	4' Grid Dish	6	13.165	1.0601	0.8259	3972
130.00	2' standoff	6	9.505	0.7433	0.8315	3413
126.75	Guy	6	9.035	0.6867	0.8342	3365
123.00	Small Beacon	6	8.540	0.6240	0.8375	3312
66.75	Guy	6	4.395	0.2443	0.8795	18683

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
T1	200	Leg	A325N	0.7500	3	10.74	29.82	0.360	1	Bolt Tension
T2	180	Leg	A325N	0.7500	3	6.22	29.82	0.209	1	Bolt Tension
T3	160	Leg	A325N	0.7500	3	7.02	29.82	0.236	1	Bolt Tension
T4	140	Leg	A325N	0.7500	3	7.34	29.82	0.246	1	Bolt Tension
T5	120	Leg	A325N	0.7500	3	5.16	29.82	0.173	1	Bolt Tension
T6	100	Leg	A325N	0.7500	3	4.28	29.82	0.144	1	Bolt Tension
T7	80	Leg	A325N	0.7500	3	4.97	29.82	0.167	1	Bolt Tension
T8	60	Leg	A325N	0.7500	3	5.55	29.82	0.186	1	Bolt Tension
T9	40	Leg	A325N	0.7500	3	5.58	29.82	0.187	1	Bolt Tension

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T_u K	Allowable ϕT_n K	Required S.F.	Actual S.F.
T1	186.75 (A) (491)	9/16 (23000 ksi) EHS	3.50	35.00	17.52	21.00	1.000	1.199
	186.75 (A) (492)	9/16 (23000 ksi) EHS	3.50	35.00	17.08	21.00	1.000	1.230
	186.75 (B) (487)	9/16 (23000 ksi) EHS	3.50	35.00	17.02	21.00	1.000	1.234
	186.75 (B) (488)	9/16 (23000 ksi) EHS	3.50	35.00	17.76	21.00	1.000	1.183
	186.75 (C) (483)	9/16 (23000 ksi) EHS	3.50	35.00	17.85	21.00	1.000	1.177
	186.75 (C) (484)	9/16 (23000 ksi) EHS	3.50	35.00	17.55	21.00	1.000	1.196
T4	126.75 (A) (500)	9/16 (23000 ksi) EHS	3.50	35.00	11.04	21.00	1.000	1.903
	126.75 (B) (499)	9/16 (23000 ksi) EHS	3.50	35.00	11.51	21.00	1.000	1.825
	126.75 (C) (495)	9/16 (23000 ksi) EHS	3.50	35.00	11.57	21.00	1.000	1.815

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T_u K	Allowable ϕT_n K	Required S.F.	Actual S.F.
T7	66.75 (A) (506)	7/16 (23000 ksi) EHS	2.08	20.80	5.55	12.48	1.000	2.249
	66.75 (B) (505)	7/16 (23000 ksi) EHS	2.08	20.80	5.87	12.48	1.000	2.127
	66.75 (C) (501)	7/16 (23000 ksi) EHS	2.08	20.80	5.62	12.48	1.000	2.219

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	250 - 200 (1)	P12x.5	50.00	0.00	0.0	19.2423	-4.80	606.13	0.008

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	250 - 200 (1)	P12x.5	135.29	197.07	0.687	0.00	197.07	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	250 - 200 (1)	P12x.5	4.57	303.07	0.015	3.80	297.74	0.013

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	250 - 200 (1)	0.008	0.687	0.000	0.015	0.013	0.695	1.000	4.8.2

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	200 - 180	2	20.00	3.25	78.0 K=1.00	3.1416	-79.50	90.61	0.877 [1]
T2	180 - 160	2	20.00	3.25	78.0 K=1.00	3.1416	-64.19	90.61	0.708 [1]
T3	160 - 140	2	20.00	3.25	78.0 K=1.00	3.1416	-62.84	90.61	0.694 [1]
T4	140 - 120	2	20.00	3.25	78.0 K=1.00	3.1416	-73.65	90.61	0.813 [1]
T5	120 - 100	2	20.00	3.25	78.0 K=1.00	3.1416	-64.40	90.61	0.711 [1]
T6	100 - 80	2	20.00	3.25	78.0 K=1.00	3.1416	-45.43	90.61	0.501 [1]
T7	80 - 60	2	20.00	3.25	78.0 K=1.00	3.1416	-43.95	90.61	0.485 [1]
T8	60 - 40	2	20.00	3.25	78.0 K=1.00	3.1416	-49.58	90.61	0.547 [1]
T9	40 - 20	2	20.00	3.25	78.0 K=1.00	3.1416	-50.51	90.61	0.557 [1]
T10	20 - 6.5	2 1/4	13.50	3.25	69.3 K=1.00	3.9761	-49.63	125.90	0.394 [1]
T11	6.5 - 0	2 1/4	6.73	1.84	39.2 K=1.00	3.9761	-49.97	159.86	0.313 [1]

[1] $P_u / \phi P_n$ controls

Leg Bending Design Data (Compression)

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T1	200 - 180	2	0.00	5.00	0.000	0.00	5.00	0.000
T2	180 - 160	2	0.00	5.00	0.000	0.00	5.00	0.000
T3	160 - 140	2	0.00	5.00	0.000	0.00	5.00	0.000
T4	140 - 120	2	0.00	5.00	0.000	0.00	5.00	0.000
T5	120 - 100	2	0.00	5.00	0.000	0.00	5.00	0.000
T6	100 - 80	2	0.00	5.00	0.000	0.00	5.00	0.000
T7	80 - 60	2	0.00	5.00	0.000	0.00	5.00	0.000
T8	60 - 40	2	0.00	5.00	0.000	0.00	5.00	0.000
T9	40 - 20	2	0.00	5.00	0.000	0.00	5.00	0.000
T10	20 - 6.5	2 1/4	0.00	7.12	0.000	0.00	7.12	0.000
T11	6.5 - 0	2 1/4	0.00	7.12	0.000	0.00	7.12	0.000

Leg Interaction Design Data (Compression)

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	200 - 180	2	0.877	0.000	0.000	0.877 [1]	1.000	4.8.1
T2	180 - 160	2	0.708	0.000	0.000	0.708 [1]	1.000	4.8.1
T3	160 - 140	2	0.694	0.000	0.000	0.694 [1]	1.000	4.8.1
T4	140 - 120	2	0.813	0.000	0.000	0.813 [1]	1.000	4.8.1
T5	120 - 100	2	0.711	0.000	0.000	0.711 [1]	1.000	4.8.1
T6	100 - 80	2	0.501	0.000	0.000	0.501 [1]	1.000	4.8.1
T7	80 - 60	2	0.485	0.000	0.000	0.485 [1]	1.000	4.8.1
T8	60 - 40	2	0.547	0.000	0.000	0.547 [1]	1.000	4.8.1
T9	40 - 20	2	0.557	0.000	0.000	0.557 [1]	1.000	4.8.1
T10	20 - 6.5	2 1/4	0.394	0.000	0.000	0.394 [1]	1.000	4.8.1
T11	6.5 - 0	2 1/4	0.313	0.000	0.000	0.313 [1]	1.000	4.8.1

[1] $P_u / \phi P_n$ controls

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	200 - 180	1	4.42	4.18	99.3 K=0.50	0.7854	-10.01	15.15	0.661 [1]
T2	180 - 160	1	4.42	4.18	140.4 K=0.70	0.7854	-7.80	9.01	0.866 [1]
T3	160 - 140	1	4.42	4.18	140.4 K=0.70	0.7854	-2.99	9.01	0.332 [1]
T4	140 - 120	1	4.42	4.18	140.4 K=0.70	0.7854	-4.36	9.01	0.484 [1]
T5	120 - 100	1	4.42	4.18	140.4 K=0.70	0.7854	-4.05	9.01	0.449 [1]
T6	100 - 80	1	4.42	4.18	140.4 K=0.70	0.7854	-2.55	9.01	0.283 [1]
T7	80 - 60	1	4.42	4.18	140.4 K=0.70	0.7854	-3.30	9.01	0.367 [1]
T8	60 - 40	1	4.42	4.18	140.4 K=0.70	0.7854	-3.08	9.01	0.341 [1]
T9	40 - 20	1	4.42	4.18	140.4 K=0.70	0.7854	-1.87	9.01	0.207 [1]
T10	20 - 6.5	1 1/4	4.42	4.15	111.5 K=0.70	1.2272	-2.68	20.67	0.130 [1]

[1] $P_u / \phi P_n$ controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	200 - 180	7/8	3.00	2.83	155.4 K=1.00	0.6013	-1.38	5.62	0.245 [1]
T2	180 - 160	7/8	3.00	2.83	108.8 K=0.70	0.6013	-1.79	10.45	0.172 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T3	160 - 140	7/8	3.00	2.83	108.8 K=0.70	0.6013	-1.09	10.45	0.104 [1]
T4	140 - 120	7/8	3.00	2.83	108.8 K=0.70	0.6013	-1.28	10.45	0.122 [1]
T5	120 - 100	7/8	3.00	2.83	108.8 K=0.70	0.6013	-1.12	10.45	0.107 [1]
T6	100 - 80	7/8	3.00	2.83	108.8 K=0.70	0.6013	-0.79	10.45	0.075 [1]
T7	80 - 60	7/8	3.00	2.83	108.8 K=0.70	0.6013	-0.76	10.45	0.073 [1]
T8	60 - 40	7/8	3.00	2.83	108.8 K=0.70	0.6013	-0.86	10.45	0.082 [1]
T9	40 - 20	7/8	3.00	2.83	108.8 K=0.70	0.6013	-0.87	10.45	0.084 [1]
T10	20 - 6.5	7/8	3.00	2.81	108.0 K=0.70	0.6013	-0.86	10.54	0.082 [1]
T11	6.5 - 0	8x3/8	1.91	1.72	191.0 K=1.00	3.0000	-0.89	18.58	0.048 [1]

[1] $P_u / \phi P_n$ controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	200 - 180	7/8	1.50	1.42	77.7 K=1.00	0.6013	-0.00	14.18	0.000 [1]
T2	180 - 160	7/8	1.50	1.42	77.7 K=1.00	0.6013	-0.00	14.18	0.000 [1]
T3	160 - 140	7/8	1.50	1.42	77.7 K=1.00	0.6013	-0.00	14.18	0.000 [1]
T4	140 - 120	7/8	1.50	1.42	77.7 K=1.00	0.6013	-0.00	14.18	0.000 [1]
T5	120 - 100	7/8	1.50	1.42	77.7 K=1.00	0.6013	-0.00	14.18	0.000 [1]
T6	100 - 80	7/8	1.50	1.42	77.7 K=1.00	0.6013	-0.00	14.18	0.000 [1]
T7	80 - 60	7/8	1.50	1.42	77.7 K=1.00	0.6013	-0.00	14.18	0.000 [1]
T8	60 - 40	7/8	1.50	1.42	77.7 K=1.00	0.6013	-0.00	14.18	0.000 [1]
T9	40 - 20	7/8	1.50	1.42	77.7 K=1.00	0.6013	-0.00	14.18	0.000 [1]
T10	20 - 6.5	7/8	1.50	1.41	77.2 K=1.00	0.6013	-0.00	14.24	0.000 [1]

[1] $P_u / \phi P_n$ 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	200 - 180	L3x3x3/8	3.00	2.83	89.0 K=1.54	2.1100	-1.71	45.07	0.038 [1]
T2	180 - 160	7/8	3.00	2.83	108.8 K=0.70	0.6013	-2.42	10.45	0.231 [1]
T3	160 - 140	7/8	3.00	2.83	108.8 K=0.70	0.6013	-0.67	10.45	0.064 [1]
T4	140 - 120	7/8	3.00	2.83	108.8 K=0.70	0.6013	-0.91	10.45	0.087 [1]
T5	120 - 100	7/8	3.00	2.83	108.8 K=0.70	0.6013	-1.14	10.45	0.109 [1]
T6	100 - 80	7/8	3.00	2.83	108.8 K=0.70	0.6013	-0.59	10.45	0.057 [1]
T7	80 - 60	7/8	3.00	2.83	108.8 K=0.70	0.6013	-0.13	10.45	0.013 [1]
T8	60 - 40	7/8	3.00	2.83	108.8 K=0.70	0.6013	-0.63	10.45	0.060 [1]
T9	40 - 20	7/8	3.00	2.83	108.8 K=0.70	0.6013	-0.29	10.45	0.028 [1]
T10	20 - 6.5	7/8	3.00	2.81	108.0 K=0.70	0.6013	-0.47	10.54	0.045 [1]

[1] P_u / ϕP_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 $\frac{P_u}{\phi P_n}$
T1	200 - 180	7/8	3.00	2.83	155.4 K=1.00	0.6013	-2.66	5.62	0.473 [1]
T2	180 - 160	7/8	3.00	2.83	108.8 K=0.70	0.6013	-0.62	10.45	0.060 [1]
T3	160 - 140	7/8	3.00	2.83	108.8 K=0.70	0.6013	-0.60	10.45	0.057 [1]
T4	140 - 120	7/8	3.00	2.83	108.8 K=0.70	0.6013	-1.43	10.45	0.137 [1]
T5	120 - 100	7/8	3.00	2.83	108.8 K=0.70	0.6013	-0.76	10.45	0.073 [1]
T6	100 - 80	7/8	3.00	2.83	108.8 K=0.70	0.6013	-0.26	10.45	0.025 [1]
T7	80 - 60	7/8	3.00	2.83	108.8 K=0.70	0.6013	-0.74	10.45	0.071 [1]
T8	60 - 40	7/8	3.00	2.83	108.8 K=0.70	0.6013	-0.39	10.45	0.038 [1]
T9	40 - 20	7/8	3.00	2.83	108.8 K=0.70	0.6013	-0.45	10.45	0.043 [1]
T11	6.5 - 0	8x3/8	0.27	0.08	9.1 K=1.00	3.0000	-0.52	96.78	0.005 [1]

[1] P_u / ϕP_n controls

Top Guy Pull-Off 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	200 - 180	1	3.00	2.83	95.2 K=0.70	0.7854	-10.88	15.79	0.689 [1]

[1] P_u / ϕP_n controls

Top Guy Pull-Off Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T1	200 - 180	1	0.00	0.45	0.000	0.00	0.45	0.000

Top Guy Pull-Off Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	200 - 180	1	0.689	0.000	0.000	0.689 [1]	1.000	4.8.1

[1] P_u / ϕP_n controls

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	200 - 180 (485)	C12x20.7	3.00	2.92	43.8 K=1.00	6.0900	-0.19	178.36	0.001
T1	200 - 180 (486)	C12x20.7	3.00	2.92	43.8 K=1.00	6.0900	-4.88	178.36	0.027
T1	200 - 180 (489)	C12x20.7	3.00	2.92	43.8 K=1.00	6.0900	-5.47	178.36	0.031
T1	200 - 180 (490)	C12x20.7	3.00	2.92	43.8 K=1.00	6.0900	-5.44	178.36	0.031
T1	200 - 180 (493)	C12x20.7	3.00	2.92	43.8 K=1.00	6.0900	-5.73	178.36	0.032
T1	200 - 180 (494)	C12x20.7	3.00	2.92	43.8 K=1.00	6.0900	-5.74	178.36	0.032

Torque-Arm Top Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T1	200 - 180 (485)	C12x20.7	-40.89	68.58	0.596	0.00	7.01	0.000
T1	200 - 180 (486)	C12x20.7	-38.47	68.58	0.561	-0.00	7.01	0.000
T1	200 - 180 (489)	C12x20.7	-40.49	68.58	0.590	-0.00	7.01	0.000
T1	200 - 180 (490)	C12x20.7	-40.14	68.58	0.585	0.00	7.01	0.000
T1	200 - 180 (493)	C12x20.7	-40.99	68.58	0.598	0.00	7.01	0.000
T1	200 - 180 (494)	C12x20.7	-41.10	68.58	0.599	-0.00	7.01	0.000

Torque-Arm Top Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	200 - 180 (485)	C12x20.7	0.001	0.596	0.000	0.597	1.000	4.8.1
T1	200 - 180 (486)	C12x20.7	0.027	0.561	0.000	0.575	1.000	4.8.1
T1	200 - 180 (489)	C12x20.7	0.031	0.590	0.000	0.606	1.000	4.8.1
T1	200 - 180 (490)	C12x20.7	0.031	0.585	0.000	0.601	1.000	4.8.1
T1	200 - 180 (493)	C12x20.7	0.032	0.598	0.000	0.614	1.000	4.8.1
T1	200 - 180 (494)	C12x20.7	0.032	0.599	0.000	0.615	1.000	4.8.1

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	200 - 180	2	20.00	3.25	78.0	3.1416	74.61	141.37	0.528 [1]
T2	180 - 160	2	20.00	0.25	6.0	3.1416	32.22	141.37	0.228 [1]
T3	160 - 140	2	20.00	3.25	78.0	3.1416	13.87	141.37	0.098 [1]
T4	140 - 120	2	20.00	3.25	78.0	3.1416	20.15	141.37	0.143 [1]
T5	120 - 100	2	20.00	0.25	6.0	3.1416	4.77	141.37	0.034 [1]

[1] P_u / ϕP_n controls

Leg Bending Design Data (Tension)

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T1	200 - 180	2	0.00	5.00	0.000	0.00	5.00	0.000
T2	180 - 160	2	0.00	5.00	0.000	0.00	5.00	0.000
T3	160 - 140	2	0.00	5.00	0.000	0.00	5.00	0.000
T4	140 - 120	2	0.00	5.00	0.000	0.00	5.00	0.000
T5	120 - 100	2	0.00	5.00	0.000	0.00	5.00	0.000

Leg Interaction Design Data (Tension)

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	200 - 180	2	0.528	0.000	0.000	0.528 [1]	1.000	4.8.1
T2	180 - 160	2	0.228	0.000	0.000	0.228 [1]	1.000	4.8.1
T3	160 - 140	2	0.098	0.000	0.000	0.098 [1]	1.000	4.8.1
T4	140 - 120	2	0.143	0.000	0.000	0.143 [1]	1.000	4.8.1
T5	120 - 100	2	0.034	0.000	0.000	0.034 [1]	1.000	4.8.1

[1] $P_u / \phi P_n$ controls

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	200 - 180	1	4.42	4.18	200.5	0.7854	10.03	25.45	0.394 [1]
T2	180 - 160	1	4.42	4.18	200.5	0.7854	7.77	25.45	0.305 [1]
T3	160 - 140	1	4.42	4.18	200.5	0.7854	2.47	25.45	0.097 [1]
T4	140 - 120	1	4.42	4.18	200.5	0.7854	3.98	25.45	0.157 [1]
T5	120 - 100	1	4.42	4.18	200.5	0.7854	3.63	25.45	0.143 [1]
T6	100 - 80	1	4.42	4.18	200.5	0.7854	2.14	25.45	0.084 [1]
T7	80 - 60	1	4.42	4.18	200.5	0.7854	2.84	25.45	0.112 [1]
T8	60 - 40	1	4.42	4.18	200.5	0.7854	2.62	25.45	0.103 [1]
T9	40 - 20	1	4.42	4.18	200.5	0.7854	1.54	25.45	0.061 [1]
T10	20 - 6.5	1 1/4	4.42	4.15	159.2	1.2272	2.62	39.76	0.066 [1]

[1] $P_u / \phi P_n$ controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	200 - 180	7/8	3.00	2.83	155.4	0.6013	1.38	19.48	0.071 [1]
T2	180 - 160	7/8	3.00	2.83	155.4	0.6013	2.06	19.48	0.106 [1]
T3	160 - 140	7/8	3.00	2.83	155.4	0.6013	1.09	19.48	0.056 [1]
T4	140 - 120	7/8	3.00	2.83	155.4	0.6013	1.28	19.48	0.065 [1]
T5	120 - 100	7/8	3.00	2.83	155.4	0.6013	1.12	19.48	0.057 [1]
T6	100 - 80	7/8	3.00	2.83	155.4	0.6013	0.79	19.48	0.040 [1]
T7	80 - 60	7/8	3.00	2.83	155.4	0.6013	0.76	19.48	0.039 [1]
T8	60 - 40	7/8	3.00	2.83	155.4	0.6013	0.86	19.48	0.044 [1]
T9	40 - 20	7/8	3.00	2.83	155.4	0.6013	0.87	19.48	0.045 [1]
T10	20 - 6.5	7/8	3.00	2.81	154.3	0.6013	0.86	19.48	0.044 [1]
T11	6.5 - 0	8x3/8	1.09	0.90	100.0	3.0000	0.89	97.20	0.009 [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 $\frac{P_u}{\phi P_n}$
T1	200 - 180	7/8	1.50	1.42	77.7	0.6013	0.00	19.48	0.000 [1]
T2	180 - 160	7/8	1.50	1.42	77.7	0.6013	0.00	19.48	0.000 [1]
T3	160 - 140	7/8	1.50	1.42	77.7	0.6013	0.00	19.48	0.000 [1]
T4	140 - 120	7/8	1.50	1.42	77.7	0.6013	0.00	19.48	0.000 [1]
T5	120 - 100	7/8	1.50	1.42	77.7	0.6013	0.00	19.48	0.000 [1]
T6	100 - 80	7/8	1.50	1.42	77.7	0.6013	0.00	19.48	0.000 [1]
T7	80 - 60	7/8	1.50	1.42	77.7	0.6013	0.00	19.48	0.000 [1]
T8	60 - 40	7/8	1.50	1.42	77.7	0.6013	0.00	19.48	0.000 [1]
T9	40 - 20	7/8	1.50	1.42	77.7	0.6013	0.00	19.48	0.000 [1]
T10	20 - 6.5	7/8	1.50	1.41	77.2	0.6013	0.00	19.48	0.000 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	200 - 180	L3x3x3/8	3.00	2.83	37.2	2.1100	8.25	68.36	0.121 [1]
T2	180 - 160	7/8	3.00	2.83	155.4	0.6013	2.42	19.48	0.124 [1]
T3	160 - 140	7/8	3.00	2.83	155.4	0.6013	0.68	19.48	0.035 [1]
T4	140 - 120	7/8	3.00	2.83	155.4	0.6013	0.76	19.48	0.039 [1]
T5	120 - 100	7/8	3.00	2.83	155.4	0.6013	1.44	19.48	0.074 [1]
T6	100 - 80	7/8	3.00	2.83	155.4	0.6013	0.81	19.48	0.042 [1]
T7	80 - 60	7/8	3.00	2.83	155.4	0.6013	0.33	19.48	0.017 [1]
T8	60 - 40	7/8	3.00	2.83	155.4	0.6013	0.81	19.48	0.041 [1]
T9	40 - 20	7/8	3.00	2.83	155.4	0.6013	0.48	19.48	0.025 [1]
T10	20 - 6.5	7/8	3.00	2.81	154.3	0.6013	0.75	19.48	0.039 [1]
T11	6.5 - 0	8x3/8	2.73	2.54	281.9	3.0000	3.24	97.20	0.033 [1]

[1] P_u / ϕP_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 $\frac{P_u}{\phi P_n}$
T1	200 - 180	7/8	3.00	2.83	155.4	0.6013	2.80	19.48	0.143 [1]
T2	180 - 160	7/8	3.00	2.83	155.4	0.6013	0.84	19.48	0.043 [1]
T3	160 - 140	7/8	3.00	2.83	155.4	0.6013	0.96	19.48	0.049 [1]
T4	140 - 120	7/8	3.00	2.83	155.4	0.6013	1.36	19.48	0.070 [1]
T5	120 - 100	7/8	3.00	2.83	155.4	0.6013	0.82	19.48	0.042 [1]
T6	100 - 80	7/8	3.00	2.83	155.4	0.6013	0.34	19.48	0.017 [1]
T7	80 - 60	7/8	3.00	2.83	155.4	0.6013	0.86	19.48	0.044 [1]
T8	60 - 40	7/8	3.00	2.83	155.4	0.6013	0.52	19.48	0.027 [1]
T9	40 - 20	7/8	3.00	2.83	155.4	0.6013	0.52	19.48	0.027 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T10	20 - 6.5	7/8	3.00	2.81	154.3	0.6013	4.49	19.48	0.231 [1]

[1] P_u / ϕP_n controls

Top Guy Pull-Off 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	200 - 180	1	3.00	2.83	136.0	0.7854	10.98	25.45	0.432 [1]
T4	140 - 120	3 1/2x1 3/8	3.00	2.83	85.7	4.8125	4.80	155.93	0.031 [1]
T7	80 - 60	3 1/2x1 3/8	3.00	2.83	85.7	4.8125	2.83	155.93	0.018 [1]

[1] P_u / ϕP_n controls

Top Guy Pull-Off Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T1	200 - 180	1	0.00	0.45	0.000	0.00	0.45	0.000
T4	140 - 120	3 1/2x1 3/8	0.00	11.37	0.000	0.00	4.47	0.000
T7	80 - 60	3 1/2x1 3/8	0.00	11.37	0.000	0.00	4.47	0.000

Top Guy Pull-Off Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	200 - 180	1	0.432	0.000	0.000	0.432 [1]	1.000	4.8.1
T4	140 - 120	3 1/2x1 3/8	0.031	0.000	0.000	0.031 [1]	1.000	4.8.1
T7	80 - 60	3 1/2x1 3/8	0.018	0.000	0.000	0.018 [1]	1.000	4.8.1

[1] P_u / ϕP_n controls

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	200 - 180 (485)	C12x20.7	3.00	2.92	43.8	6.0900	4.70	197.32	0.024
T1	200 - 180 (486)	C12x20.7	3.00	2.92	43.8	6.0900	0.51	197.32	0.003

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	200 - 180 (489)	C12x20.7	3.00	2.92	43.8	6.0900	4.40	197.32	0.022
T1	200 - 180 (490)	C12x20.7	3.00	2.92	43.8	6.0900	0.56	197.32	0.003
T1	200 - 180 (493)	C12x20.7	3.00	2.92	43.8	6.0900	5.32	197.32	0.027
T1	200 - 180 (494)	C12x20.7	3.00	2.92	43.8	6.0900	4.74	197.32	0.024

Torque-Arm Top Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T1	200 - 180 (485)	C12x20.7	-34.60	68.58	0.504	0.00	7.01	0.000
T1	200 - 180 (486)	C12x20.7	-41.76	68.58	0.609	0.00	7.01	0.000
T1	200 - 180 (489)	C12x20.7	-33.71	68.58	0.492	-0.00	7.01	0.000
T1	200 - 180 (490)	C12x20.7	-41.48	68.58	0.605	-0.00	7.01	0.000
T1	200 - 180 (493)	C12x20.7	-35.53	68.58	0.518	0.00	7.01	0.000
T1	200 - 180 (494)	C12x20.7	-34.19	68.58	0.499	0.00	7.01	0.000

Torque-Arm Top Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	200 - 180 (485)	C12x20.7	0.024	0.504	0.000	0.516	1.000	4.8.1
T1	200 - 180 (486)	C12x20.7	0.003	0.609	0.000	0.610	1.000	4.8.1
T1	200 - 180 (489)	C12x20.7	0.022	0.492	0.000	0.503	1.000	4.8.1
T1	200 - 180 (490)	C12x20.7	0.003	0.605	0.000	0.606	1.000	4.8.1
T1	200 - 180 (493)	C12x20.7	0.027	0.518	0.000	0.532	1.000	4.8.1
T1	200 - 180 (494)	C12x20.7	0.024	0.499	0.000	0.511	1.000	4.8.1

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	250 - 200	Pole	P12x.5	1	-4.80	606.13	69.5	Pass
T1	200 - 180	Leg	2	4	-79.50	90.61	87.7	Pass
T2	180 - 160	Leg	2	50	-64.19	90.61	70.8	Pass
T3	160 - 140	Leg	2	100	-62.84	90.61	69.4	Pass
T4	140 - 120	Leg	2	148	-73.65	90.61	81.3	Pass
T5	120 - 100	Leg	2	194	-64.40	90.61	71.1	Pass
T6	100 - 80	Leg	2	242	-45.43	90.61	50.1	Pass
T7	80 - 60	Leg	2	291	-43.95	90.61	48.5	Pass
T8	60 - 40	Leg	2	339	-49.58	90.61	54.7	Pass
T9	40 - 20	Leg	2	387	-50.51	90.61	55.7	Pass
T10	20 - 6.5	Leg	2 1/4	436	-49.63	125.90	39.4	Pass
T11	6.5 - 0	Leg	2 1/4	470	-49.97	159.86	31.3	Pass
T1	200 - 180	Diagonal	1	33	-10.01	15.15	66.1	Pass
T2	180 - 160	Diagonal	1	96	-7.80	9.01	86.6	Pass
T3	160 - 140	Diagonal	1	107	-2.99	9.01	33.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T4	140 - 120	Diagonal	1	157	-4.36	9.01	48.4	Pass
T5	120 - 100	Diagonal	1	240	-4.05	9.01	44.9	Pass
T6	100 - 80	Diagonal	1	288	-2.55	9.01	28.3	Pass
T7	80 - 60	Diagonal	1	299	-3.30	9.01	36.7	Pass
T8	60 - 40	Diagonal	1	382	-3.08	9.01	34.1	Pass
T9	40 - 20	Diagonal	1	397	-1.87	9.01	20.7	Pass
T10	20 - 6.5	Diagonal	1 1/4	444	-2.68	20.67	13.0	Pass
T1	200 - 180	Horizontal	7/8	30	-1.38	5.62	24.5	Pass
T2	180 - 160	Horizontal	7/8	93	-1.79	10.45	17.2	Pass
T3	160 - 140	Horizontal	7/8	112	-1.09	10.45	10.4	Pass
T4	140 - 120	Horizontal	7/8	167	-1.28	10.45	12.2	Pass
T5	120 - 100	Horizontal	7/8	209	-1.12	10.45	10.7	Pass
T6	100 - 80	Horizontal	7/8	255	-0.79	10.45	7.5	Pass
T7	80 - 60	Horizontal	7/8	303	-0.76	10.45	7.3	Pass
T8	60 - 40	Horizontal	7/8	351	-0.86	10.45	8.2	Pass
T9	40 - 20	Horizontal	7/8	406	-0.87	10.45	8.4	Pass
T10	20 - 6.5	Horizontal	7/8	448	-0.86	10.54	8.2	Pass
T11	6.5 - 0	Horizontal	8x3/8	482	-0.89	18.58	4.8	Pass
T1	200 - 180	Secondary Horizontal	7/8	21	-0.00	14.18	0.1	Pass
T2	180 - 160	Secondary Horizontal	7/8	97	-0.00	14.18	0.1	Pass
T3	160 - 140	Secondary Horizontal	7/8	145	-0.00	14.18	0.1	Pass
T4	140 - 120	Secondary Horizontal	7/8	193	-0.00	14.18	0.1	Pass
T5	120 - 100	Secondary Horizontal	7/8	206	-0.00	14.18	0.1	Pass
T6	100 - 80	Secondary Horizontal	7/8	254	-0.00	14.18	0.1	Pass
T7	80 - 60	Secondary Horizontal	7/8	302	0.00	19.48	0.1	Pass
T8	60 - 40	Secondary Horizontal	7/8	350	0.00	19.48	0.1	Pass
T9	40 - 20	Secondary Horizontal	7/8	398	0.00	19.48	0.1	Pass
T10	20 - 6.5	Secondary Horizontal	7/8	460	-0.00	14.24	0.1	Pass
T1	200 - 180	Top Girt	L3x3x3/8	6	8.25	68.36	12.1	Pass
T2	180 - 160	Top Girt	7/8	55	-2.42	10.45	23.1	Pass
T3	160 - 140	Top Girt	7/8	103	-0.67	10.45	6.4	Pass
T4	140 - 120	Top Girt	7/8	149	-0.91	10.45	8.7	Pass
T5	120 - 100	Top Girt	7/8	199	-1.14	10.45	10.9	Pass
T6	100 - 80	Top Girt	7/8	247	-0.59	10.45	5.7	Pass
T7	80 - 60	Top Girt	7/8	295	0.33	19.48	1.7	Pass
T8	60 - 40	Top Girt	7/8	341	-0.63	10.45	6.0	Pass
T9	40 - 20	Top Girt	7/8	389	-0.29	10.45	2.8	Pass
T10	20 - 6.5	Top Girt	7/8	438	-0.47	10.54	4.5	Pass
T11	6.5 - 0	Top Girt	8x3/8	473	3.24	97.20	3.3	Pass
T1	200 - 180	Bottom Girt	7/8	10	-2.66	5.62	47.3	Pass
T2	180 - 160	Bottom Girt	7/8	58	-0.62	10.45	6.0	Pass
T3	160 - 140	Bottom Girt	7/8	104	-0.60	10.45	5.7	Pass
T4	140 - 120	Bottom Girt	7/8	153	-1.43	10.45	13.7	Pass
T5	120 - 100	Bottom Girt	7/8	202	-0.76	10.45	7.3	Pass
T6	100 - 80	Bottom Girt	7/8	250	-0.26	10.45	2.5	Pass
T7	80 - 60	Bottom Girt	7/8	298	-0.74	10.45	7.1	Pass
T8	60 - 40	Bottom Girt	7/8	344	-0.39	10.45	3.8	Pass
T9	40 - 20	Bottom Girt	7/8	393	-0.45	10.45	4.3	Pass
T10	20 - 6.5	Bottom Girt	7/8	441	4.49	19.48	23.1	Pass
T11	6.5 - 0	Bottom Girt	8x3/8	475	-0.51	96.78	18.4	Pass
T1	200 - 180	Guy A@186.75	9/16 (23000 ksi)	491	17.52	21.00	83.4	Pass
T4	140 - 120	Guy A@126.75	9/16 (23000 ksi)	500	11.04	21.00	52.6	Pass
T7	80 - 60	Guy A@66.75	7/16 (23000 ksi)	506	5.55	12.48	44.5	Pass
T1	200 - 180	Guy B@186.75	9/16 (23000 ksi)	488	17.76	21.00	84.6	Pass
T4	140 - 120	Guy B@126.75	9/16 (23000 ksi)	499	11.51	21.00	54.8	Pass
T7	80 - 60	Guy B@66.75	7/16 (23000 ksi)	505	5.87	12.48	47.0	Pass
T1	200 - 180	Guy C@186.75	9/16 (23000 ksi)	483	17.85	21.00	85.0	Pass
T4	140 - 120	Guy C@126.75	9/16 (23000 ksi)	495	11.57	21.00	55.1	Pass
T7	80 - 60	Guy C@66.75	7/16 (23000 ksi)	501	5.62	12.48	45.1	Pass
T1	200 - 180	Top Guy Pull-Off@186.75	1	23	-10.88	15.79	68.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T4	140 - 120	Top Guy Pull-Off@126.75	3 1/2x1 3/8	498	4.80	155.93	3.1	Pass
T7	80 - 60	Top Guy Pull-Off@66.75	3 1/2x1 3/8	504	2.83	155.93	1.8	Pass
T1	200 - 180	Torque Arm Top@186.75	C12x20.7	494	-5.74	178.36	61.5	Pass
							Summary	
						Pole (L1)	69.5	Pass
						Leg (T1)	87.7	Pass
						Diagonal (T2)	86.6	Pass
						Horizontal (T1)	24.5	Pass
						Secondary Horizontal (T1)	0.1	Pass
						Top Girt (T2)	23.1	Pass
						Bottom Girt (T1)	47.3	Pass
						Guy A (T1)	83.4	Pass
						Guy B (T1)	84.6	Pass
						Guy C (T1)	85.0	Pass
						Top Guy Pull-Off (T1)	68.9	Pass
						Torque Arm Top (T1)	61.5	Pass
						Bolt Checks	36.0	Pass
						RATING =	**87.7**	**Pass**

Exhibit E

Date: 6/23/2020

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

Subject:	**Mount Structural Analysis Report**	
T-Mobile Designation:	**Site Name:**	Citadel Groton Guyed
	Site Number:	CTNL223A
EFI Designation:	**Project Number:**	049.00477 - 2075038
Site Data:	**99 Briar Hill Road, Groton, CT 06340** **Latitude 41° 23' 6.4", Longitude -72° 4' 11.6"**	

EFI Global, Inc. is pleased to submit this **"Mount Structural Analysis Report"** to determine the structural capacity of the antenna mounts 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 mounts to have:

Existing + Proposed Equipment **Adequate Capacity (55.5%)**
Note: See Analysis Criteria for loading configuration

The analysis has been performed in accordance with the TIA-222-G Standard and 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

6/23/2020

Ahmet Colakoglu, PE
Connecticut Professional Engineer
License No: 27057

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

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	177’
Structure Type	Guyed Tower
Exposure Category	B
Basic Wind Speed (3-Second Gust)	135 * √0.6 = 105 mph (Nominal)
Ice Loading	0.75” with 50 mph Wind
Risk Category	II
Topographic Factor	Kzt = 1.0

Table 1.1 – Existing Appurtenance Configuration

Qty	Model
3	Ericsson AIR32 B66A B2A – Antennas
3	Ericsson AIR21 B2A B4P – Antennas
3	RFS APXVAARR24-43-U-NA20 – Antennas
3	Radio 4449 B71 + B85 – RRHs

Table 1.2 – Proposed and Final Appurtenance Configuration

Qty	Model
3	Ericsson AIR6449 B41 – Antennas
3	Ericsson AIR32 B66A B2A – Antennas
3	Ericsson AIR21 B2A B4P – Antennas
3	RFS APXVAARR24-43-U-NA20 – Antennas
3	Radio 4449 B71 + B85 – RRHs*
3	Radio 4415 B25 – RRHs*
-	Valmont/Site Pro 1 Heavy Duty Sector Mounts (P/N: VFA12-WLL-30120)

***To be mounted behind antennas**

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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	05/19/2020
Construction Drawings	ForeSite LLC	03/13/2019
Structural Analysis Report	Destek Engineering	10/24/2018
Site Photos	-	04/27/2020

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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 500 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 mount specifications 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	24.1	Pass
Horizontal Standoff Pipe	37.4	Pass
Vertical Standoff Solid Rod	55.5	Pass
Diagonal Standoff Solid Rod	32.6	Pass
Antenna Mount Pipe	33.2	Pass
Connection Plates	47.9	Pass
Pipe Kicker	<20.0	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 **55.5%** of their structural capacity.

EFI Global, Inc. has assumed that Valmont/Site Pro 1 Heavy Duty Sector Mounts (P/N: VFA12-WLL-30120, Specs attached) 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.**
- **(5) 120" long 2.5 STD mount pipes are equally spaced along the face.**
- **The (2) tieback arms are attached directly to the adjacent mount's tower legs.**

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APPENDIX

INPUT LOADS
ANALYSIS OUTPUT
MOUNT SPECS

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

CLIENT: ForeSite LLC - T-Mobile

PROJECT: CTNL223A

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

Tower Height	250.00	ft	Type of Mount: Sector
Basic Wind Speed, V	105	mph (=Ultimate Speed*Sqrt(0.6))	
Basic Wind Speed with Ice, V_i	50	mph	
Maintanence Load Factor, L_{FM}	0.0816	Load Factor for Maint. Load Cases (Basic Wind Speed=30 mph)	
Design Ice Thickness, t_i	0.75	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
B	1200	7	0.7	0.9	0.55

Table 2-5 Topographic Categories

Kzt 1.000

Table 2-2 Wind Directionality Factor, Kd

Structure Type	Kd	
Lattice Tower	0.95	DOES NOT CHANGE

Gust Effect Factor Gh

Structure Type	Gh	
Guyed Mast	1.00	DOES NOT CHANGE

Shielding Factor, Ka

Structure Type	Ka	
Guyed Mast	0.90	DOES NOT CHANGE

Seismic Factors

Ss	0.162	
S1	0.058	
Fa	1.6	
Fv	2.4	
R	3	Truss or Pole

CLIENT: ForeSite LLC - T-Mobile

PROJECT: CTNL223A

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

Rad Center **177.00** ft

Antenna AND Mount Without Ice

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)	Pounds: 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	**177.00**	Ericsson AIR21 B2A B4P	1	91.5	56.0	12.1	7.9	0.90	4.71	3.06	4.63	7.12	1.29	1.40	1.163	31.2	171.0	120.6	91.5	171	121	92	3	3
		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					
																				86	**61**	**46**	**1**	**2**
Pos.2	**177.00**	RFS APXVAARR24-43-U-NA20	1	153.3	95.9	24.0	8.7	0.90	15.98	5.79	4.00	11.02	1.27	1.53	1.163	31.2	568.2	249.5	153.3	568	313	271	8	9
	177.00	Radio 4449 B71+B85	1	73.2	17.9	N/A	10.6	0.90	-	1.32	-	1.68	-	1.20	1.163	31.2	0.0	44.5	73.21					
	177.00	Radio 4415 B25	1	44.0	15.0	N/A	5.4	0.90	-	0.56	-	2.78	-	1.21	1.163	31.2	0.0	19.1	44					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
																				285	**157**	**136**	**4**	**5**
Pos.3	**177.00**	Ericsson AIR6449 B41	1	103.0	33.1	20.5	8.3	0.90	4.71	1.91	1.61	3.99	1.20	1.27	1.163	31.2	158.7	67.8	103	159	68	103	3	4
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
																				80	**34**	**52**	**2**	**2**
Pos.4	**177.00**	Ericsson AIR32 B66A B2A	1	132.2	56.6	12.9	8.7	0.90	5.07	3.42	4.39	6.51	1.28	1.38	1.163	31.2	182.7	132.3	132.2	183	132	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					
																				92	**67**	**67**	**2**	**2**

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

** A_N is the product of H and W

*** A_T is the product of H and D

DL #REF!

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)
	177.00	2.5 STD Pipe	12.00	2.88	0.00		1.20	1.163	28.1	8.1	-	-
	177.00	2 STD Pipe	12.00	2.38	0.00		1.20	1.163	28.1	6.7	-	-
	177.00	5/8" Solid Rod	12.00	0.63	0.00		1.20	1.163	28.1	1.8	-	-
	177.00	3/4" Solid Rod	12.00	0.75	0.00		1.20	1.163	28.1	2.1	-	-
	177.00	Angle Horizontal	0.00	0.00	0.00		-	-	-	-	-	-
	177.00	Angle Vertical	0.00	0.00	0.00		-	-	-	-	-	-
	177.00	Angle Diagonal	0.00	0.00	0.00		-	-	-	-	-	-
	177.00	Tube Standoff (4x4)	0.00	4.00	4.00		-	-	-	-	-	-
	177.00	Tube Horizontal	0.00	0.00	0.00		-	-	-	-	-	-
	177.00	5/8x3.5" Plate	12.00	0.63	3.50		2.00	1.163	28.1	2.9	-	-
	177.00	Double Angle	0.00	0.00	0.00		-	-	-	-	-	-
	177.00	Double Angle	0.00	0.00	0.00		-	-	-	-	-	-
	177.00	Channel (Weak Axis Bending)	0.00	0.00	0.00		-	-	-	-	-	-
	177.00	Channel (Strong Axis Bending)	0.00	0.00	0.00		-	-	-	-	-	-

* 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: CTNL223A

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

ti (in) 1.774341 Kiz 1.1828943 reduction 0.22676

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	**177.00**	Ericsson AIR21 B2A B4P	1	56.0	12.1	7.9	0.90	1.77	1.66	3.07	172.01	0.73	0.76	1.163	7.1	8.2	8.0	47.0	35.4	172	47	35	172
		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			
																					24	**18**	**87**
Pos.2	**177.00**	RFS APXVAARR24-43-U-NA20	1	95.9	24.0	8.7	0.90	3.04	2.67	7.83	438.59	0.72	0.82	1.163	7.1	14.0	14.0	142.9	70.6	439	143	91	578
	177.00	Radio 4449 B71+B85	1	17.9	13.2	10.6	0.90	-	0.79	1.49	83.70	0.70	0.70	1.163	7.1	0.0	3.5	0.0	13.6	84			
	177.00	Radio 4415 B25	1	15.0	13.2	5.4	0.90	-	0.59	0.99	55.28	0.70	0.70	1.163	7.1	0.0	2.6	0.0	6.9	55			
		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			
																					72	**46**	**289**
Pos.3	**177.00**	Ericsson AIR6449 B41	1	33.1	20.5	8.3	0.90	1.41	1.11	2.78	155.91	0.70	0.71	1.163	7.1	6.3	5.0	42.3	20.4	156	42	20	156
		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			
																					22	**11**	**78**
Pos.4	**177.00**	Ericsson AIR32 B66A B2A	1	56.6	12.9	8.7	0.90	1.80	1.70	3.34	186.87	0.70	0.70	1.163	7.1	8.0	7.6	49.5	37.6	187	49	38	187
		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			
																					25	**19**	**94**

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

** Ca will equal 1.2 for all ice load calculations

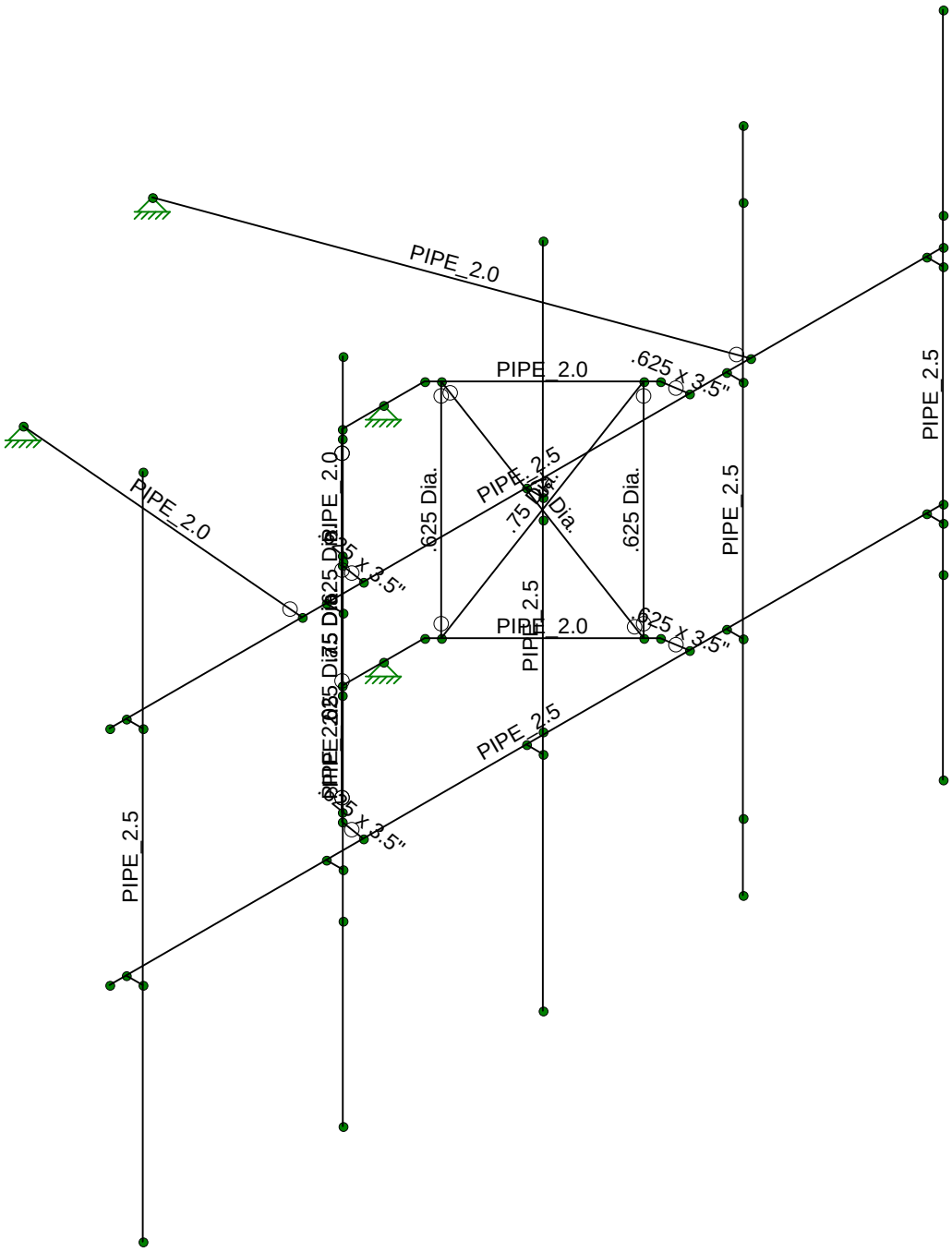
												PLF		
Mount	Height (ft)	Member	*L (in)	**W (in)	D (in)	***A_N (ft2)	Volume Ice (ft3)	Weight Ice (lbs)	****Ca (FRONT)	Kz	q_z (psf)	Ice Wind Load (Front)	Combined Wind Load (Front)	Ice Dead Load
	177.00	2.5 STD Pipe	12.00	2.88	0.00	0.45	0.18	10.09	1.20	1.163	6.4	3.5	5.3	10.1
	177.00	2 STD Pipe	12.00	2.38	0.00	0.44	0.16	9.01	1.20	1.163	6.4	3.4	4.9	9.0
	177.00	5/8" Solid Rod	12.00	0.63	0.00	0.40	0.09	5.20	1.20	1.163	6.4	3.0	3.4	5.2
	177.00	3/4" Solid Rod	12.00	0.75	0.00	0.40	0.10	5.47	1.20	1.163	6.4	3.1	3.5	5.5
	177.00	Angle Horizontal	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-
	177.00	Angle Vertical	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-
	177.00	Angle Diagonal	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-
	177.00	Tube Standoff (4x4)	0.00	4.00	4.00	-	-	-	-	-	-	-	-	-
	177.00	Tube Horizontal	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-
	177.00	5/8x3.5" Plate	12.00	0.63	3.50	0.40	0.25	13.97	1.20	1.163	6.4	3.0	3.7	14.0
	177.00	Double Angle	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-
	177.00	Double Angle	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-
	177.00	Channel (Weak Axis Bending)	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-
	177.00	Channel (Strong Axis Bending)	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-

* The dimension L is the longest dimension of the member

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

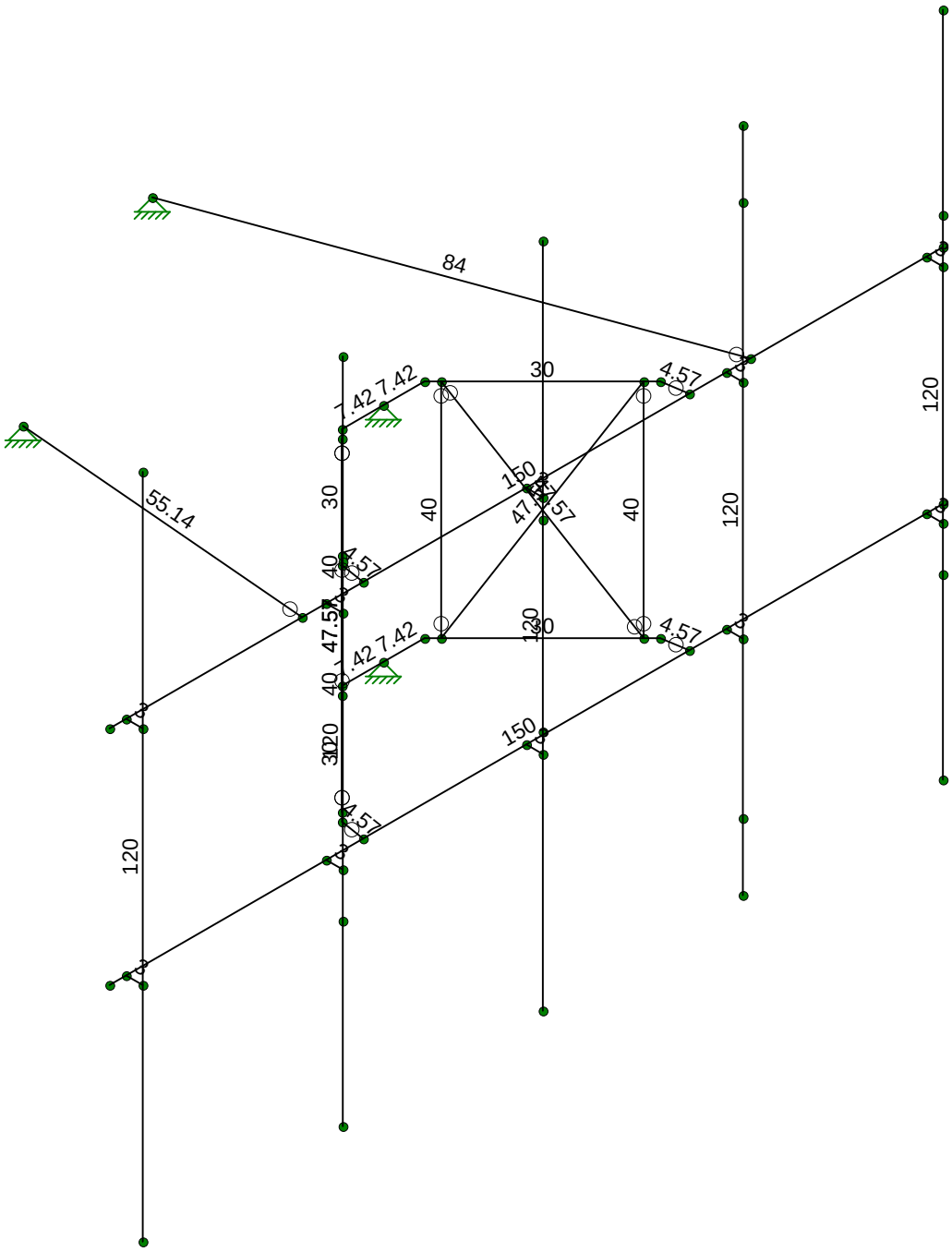
*** A_N is the area of ice built up on the LW plane

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



Envelope Only Solution

ForeSite LLC/T-Mobile	CTNL223A	SK - 1
		June 19, 2020 at 8:41 PM
2075038		CTNL223A - VFA12-WLL-30120.r3d



Member Length (in) Displayed
Envelope Only Solution

ForeSite LLC/T-Mobile	CTNL223A	SK - 2
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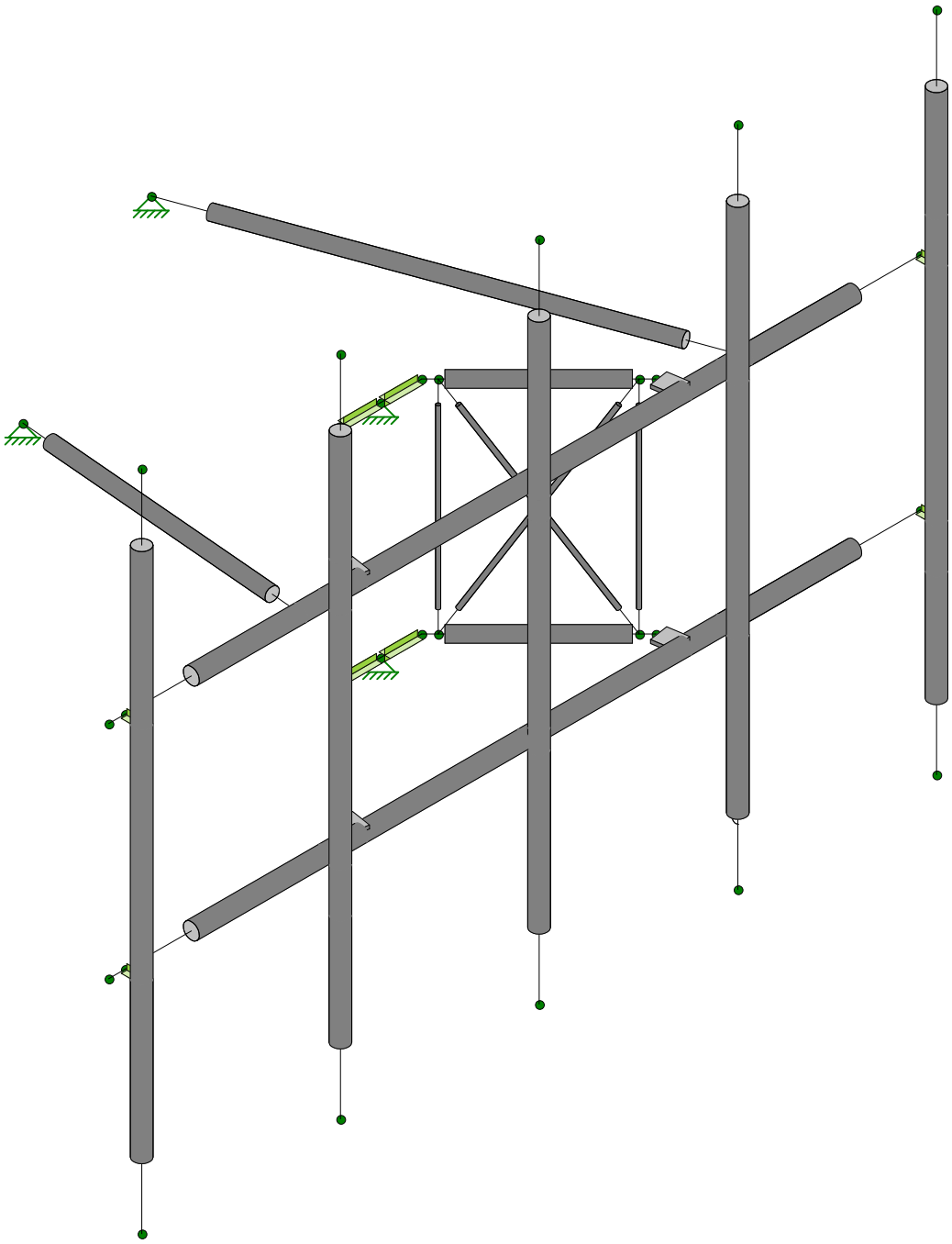

Envelope Only Solution

ForeSite LLC/T-Mobile	CTNL223A	SK - 3
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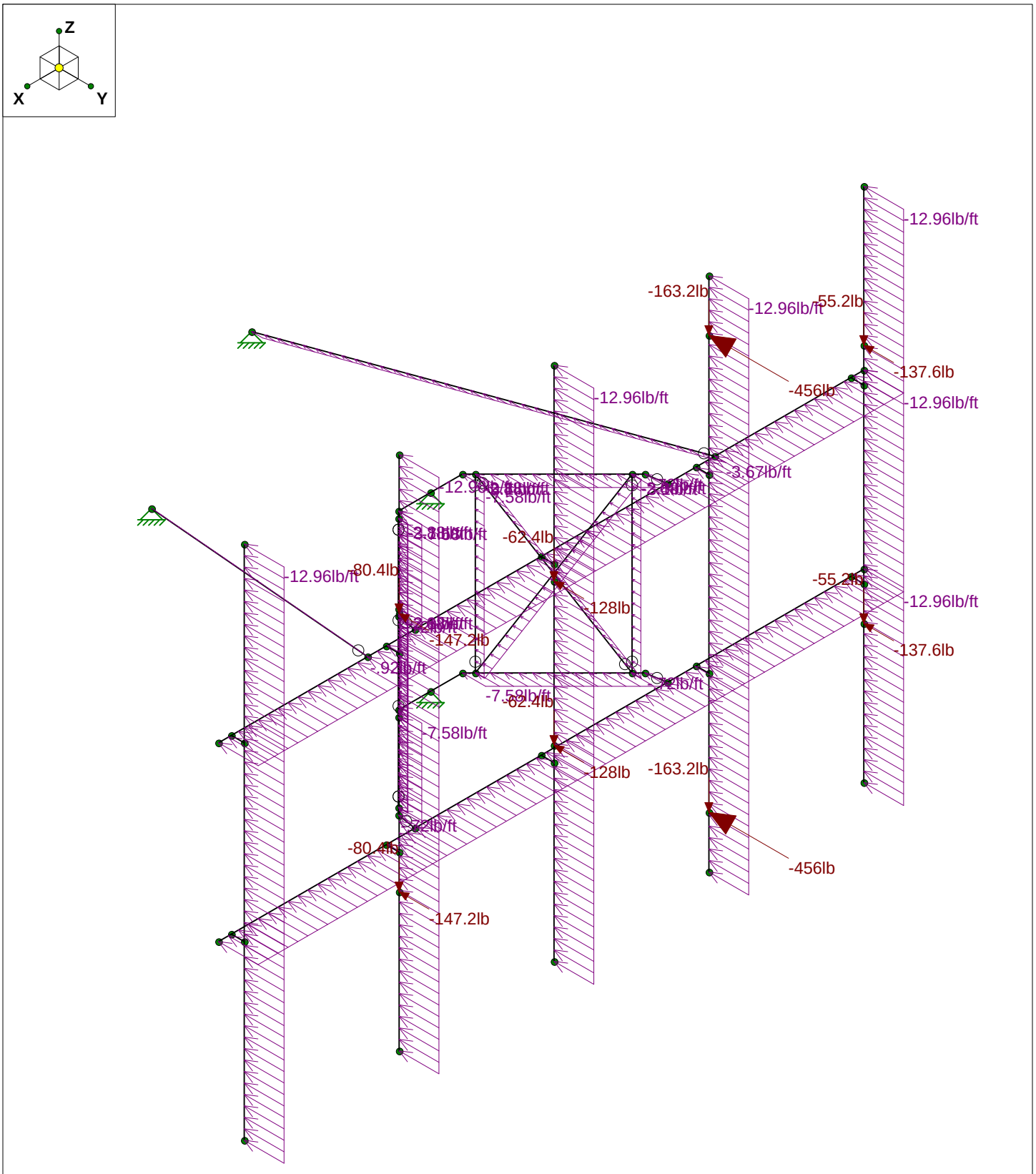

Loads: LC 1, DL + WL (NO ICE) 0 Degree
Envelope Only Solution

ForeSite LLC/T-Mobile	CTNL223A	SK - 4
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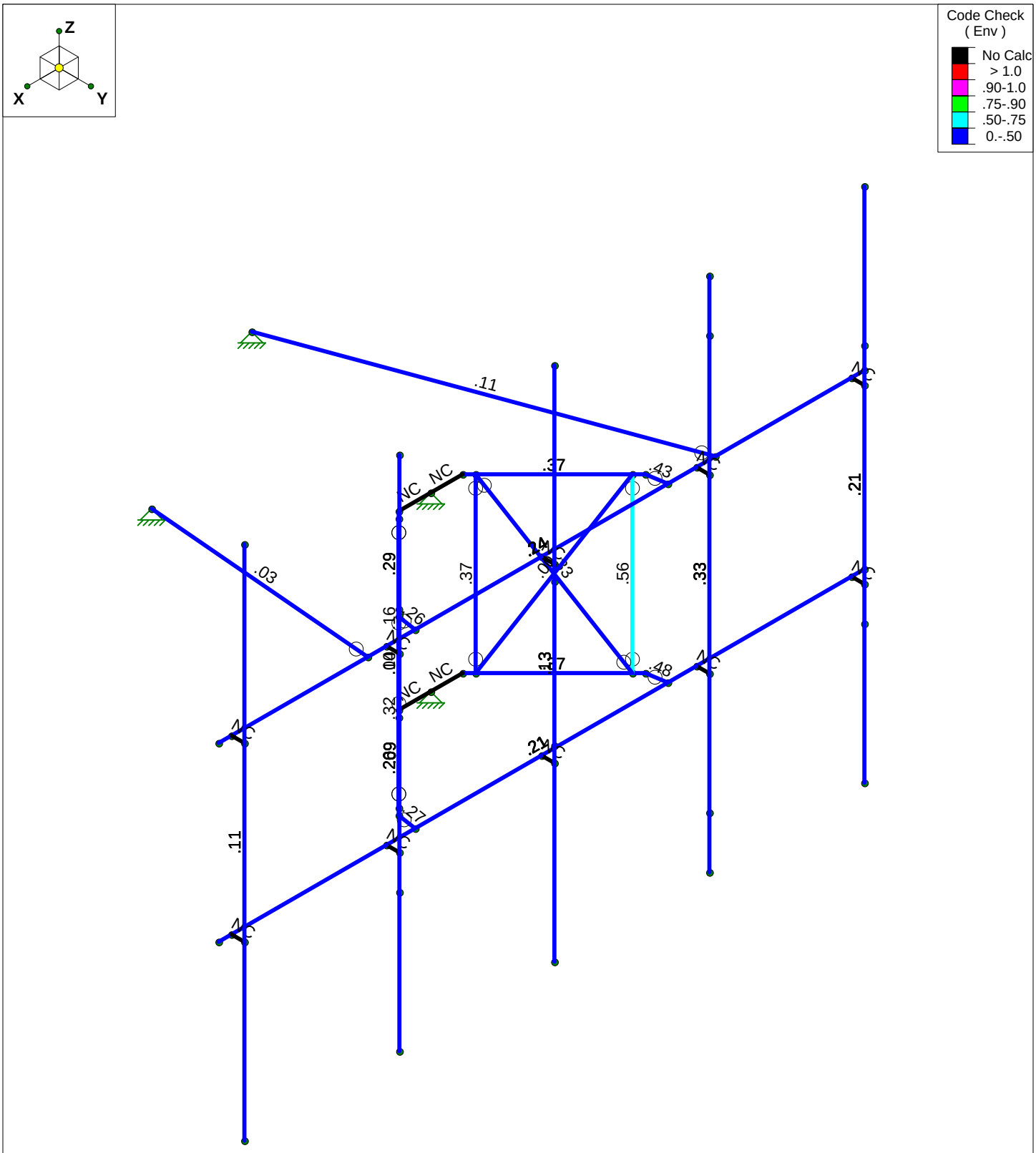

Member Code Checks Displayed (Enveloped)
Envelope Only Solution

ForeSite LLC/T-Mobile	CTNL223A	SK - 5
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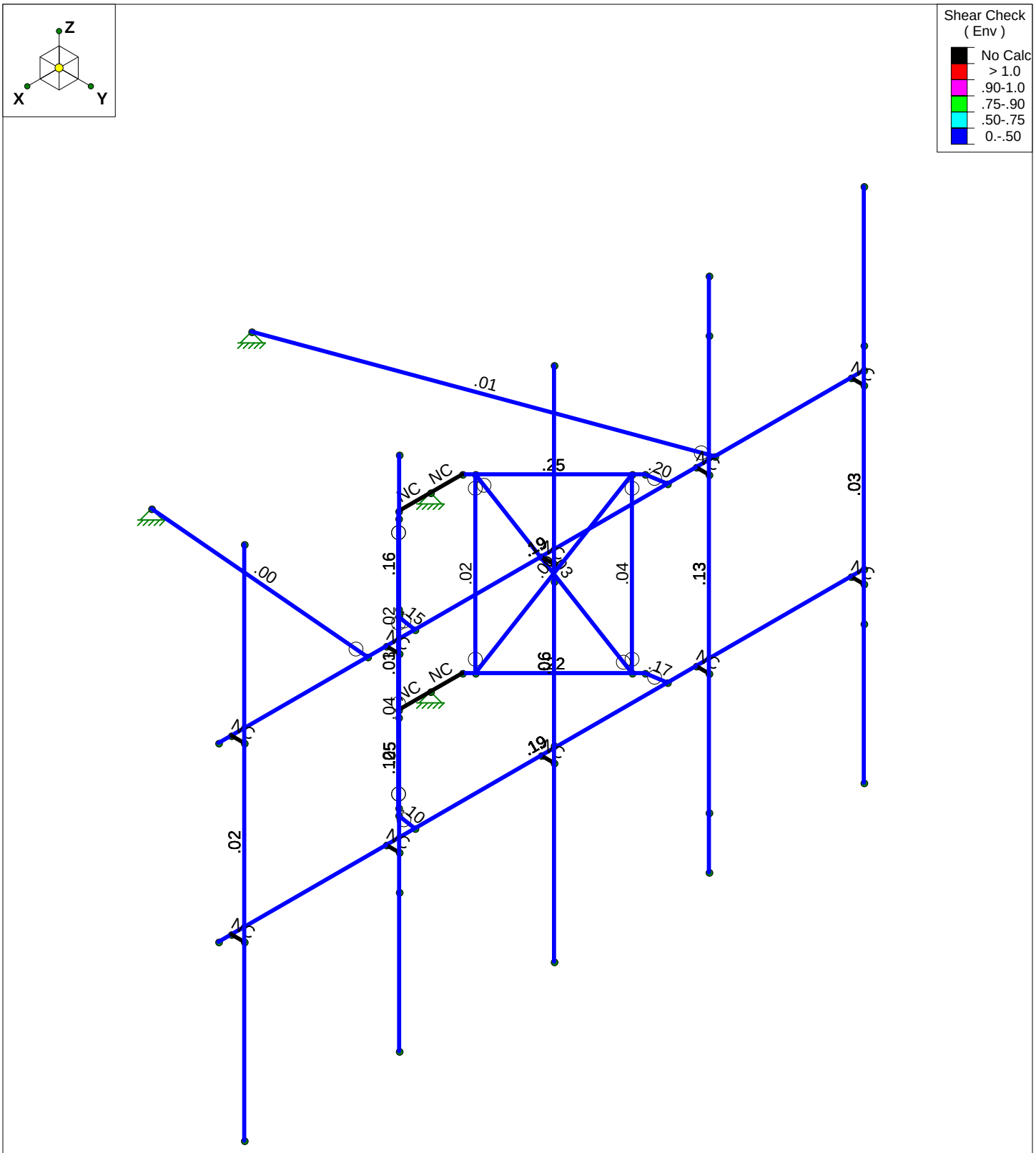

Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

ForeSite LLC/T-Mobile	CTNL223A	SK - 6
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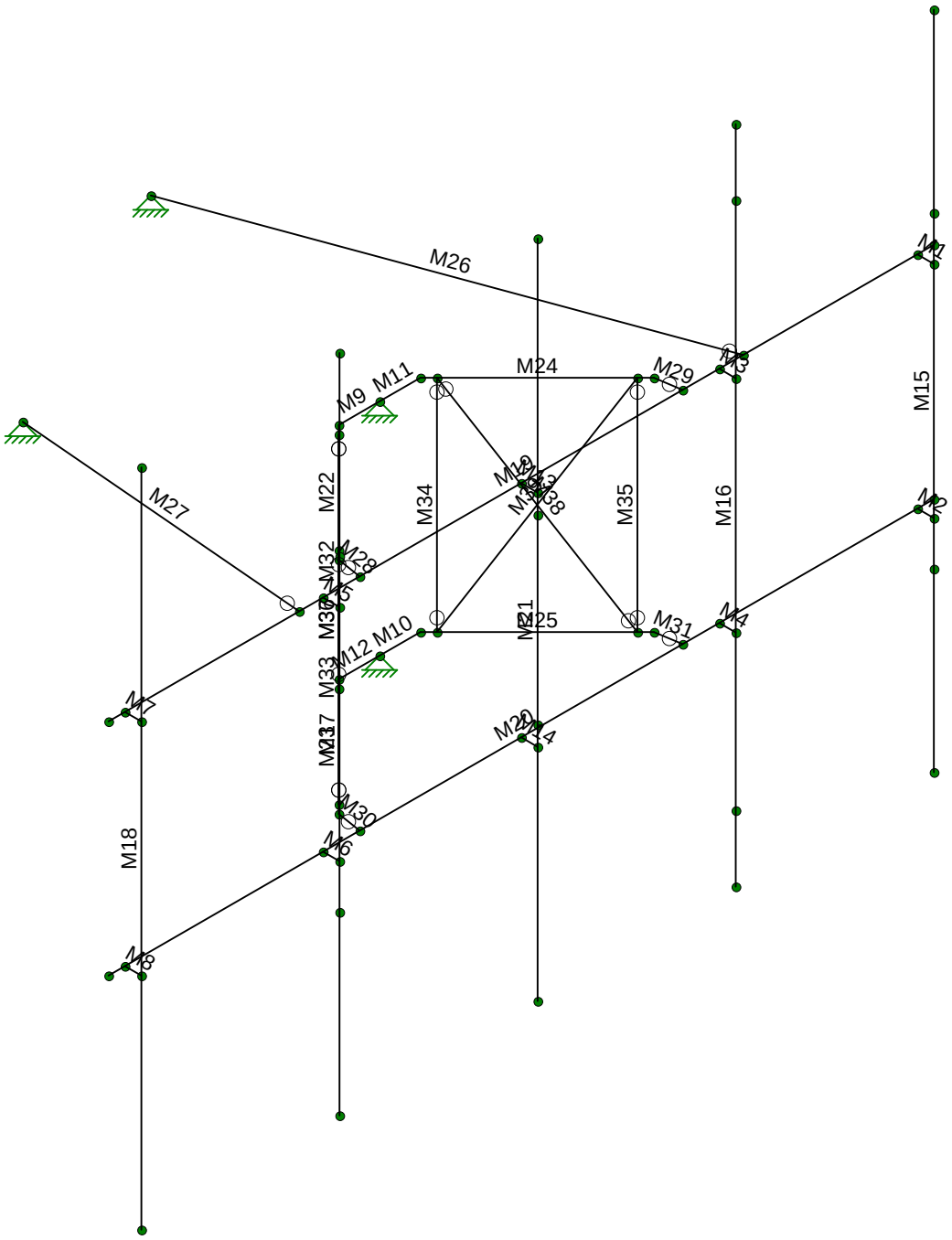

Envelope Only Solution

ForeSite LLC/T-Mobile	CTNL223A	SK - 7
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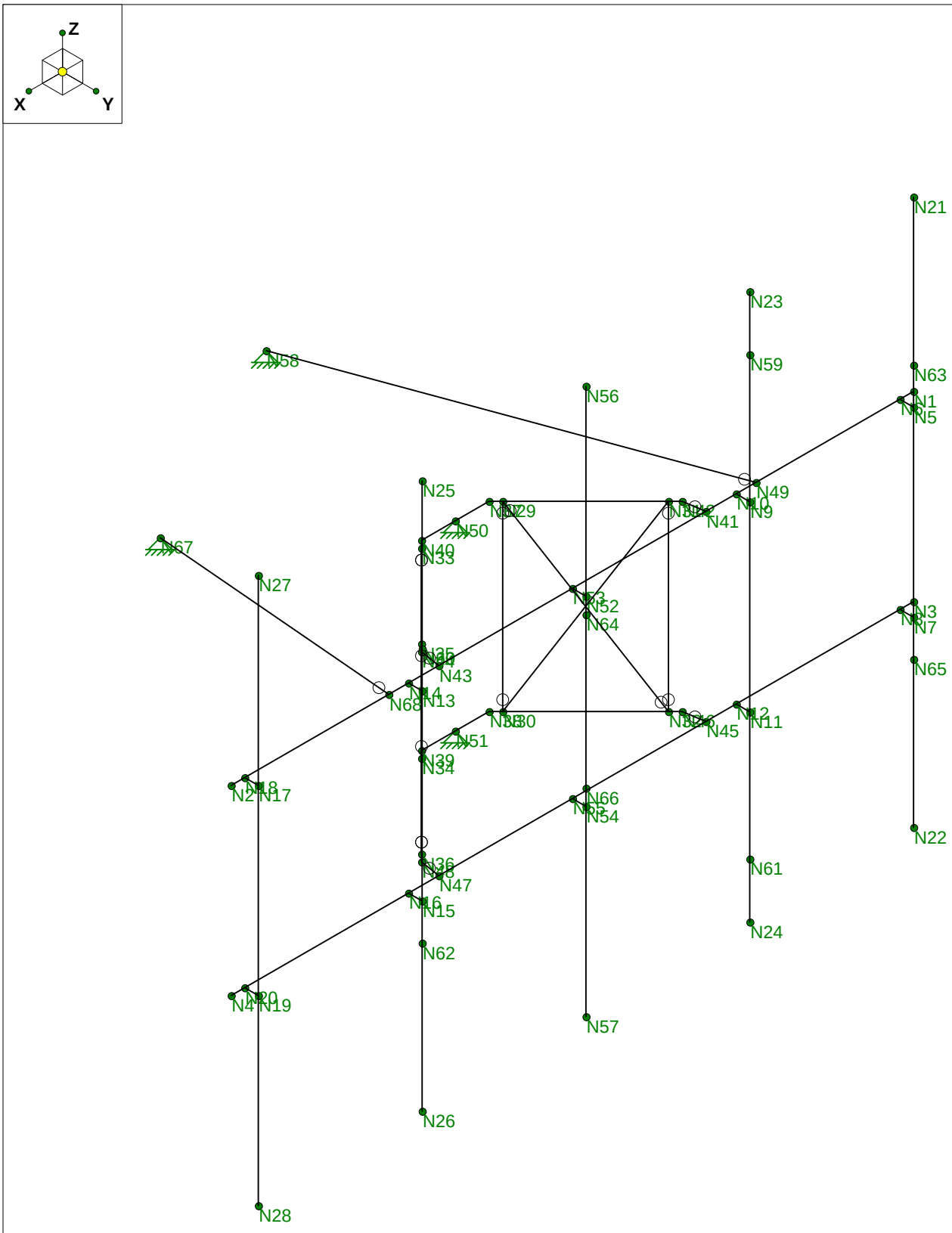


Envelope Only Solution

ForeSite LLC/T-Mobile	CTNL223A	SK - 8
		June 19, 2020 at 8:44 PM
2075038		CTNL223A - VFA12-WLL-30120.r3d

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	No
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Z
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): LRFD
Cold Formed Steel Code	AISI NAS-01: ASD
Wood Code	AF&PA NDS-05/08: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-05
Masonry Code	ACI 530-05: ASD
Aluminum Code	AA ADM1-05: ASD - Building
	AISC 14th(360-10): ASD

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

(Global) Model Settings, Continued

Seismic Code	ASCE 7-05
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.035
Ct Z	.035
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	8.5
R Z	8.5
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	Not Entered
Occupancy Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1

Project Grid Lines

Label	Start X [in]	End X [in]	Start Y [in]	End Y [in]	Start Bubble	End Bubble
No Data to Print ...						

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.2
3	A992	29000	11154	.3	.65	.49	50	1.1	65	1.2
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.2	58	1.1
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.5	60	1.2
7	A529 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	HR1A	C15x50	Beam	Wide Flange	A36 Gr.36	Typical	14.7	11	404	2.65

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
1	M1	N5	N6			RIGID	None	None	LINK	Typical
2	M2	N7	N8			RIGID	None	None	LINK	Typical
3	M3	N9	N10			RIGID	None	None	LINK	Typical
4	M4	N11	N12			RIGID	None	None	LINK	Typical
5	M5	N13	N14			RIGID	None	None	LINK	Typical
6	M6	N15	N16			RIGID	None	None	LINK	Typical
7	M7	N17	N18			RIGID	None	None	LINK	Typical
8	M8	N19	N20			RIGID	None	None	LINK	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
9	M9	N40	N50			RIGID	None	None	LINK	Typical
10	M10	N38	N51			RIGID	None	None	LINK	Typical
11	M11	N50	N37			RIGID	None	None	LINK	Typical
12	M12	N51	N39			RIGID	None	None	LINK	Typical
13	M13	N52	N53			RIGID	None	None	LINK	Typical
14	M14	N54	N55			RIGID	None	None	LINK	Typical
15	M15	N21	N22			PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical
16	M16	N23	N24			PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical
17	M17	N25	N26			PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical
18	M18	N27	N28			PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical
19	M19	N1	N2			PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical
20	M20	N3	N4			PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical
21	M21	N56	N57			PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical
22	M22	N40	N44			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
23	M23	N39	N48			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
24	M24	N37	N42			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
25	M25	N38	N46			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
26	M26	N49	N58			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
27	M27	N68	N67			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
28	M28	N44	N43			.625 x 3.5"	None	None	A36 Gr.36	Typical
29	M29	N42	N41			.625 x 3.5"	None	None	A36 Gr.36	Typical
30	M30	N48	N47			.625 x 3.5"	None	None	A36 Gr.36	Typical
31	M31	N46	N45			.625 x 3.5"	None	None	A36 Gr.36	Typical
32	M32	N33	N34			.625 Dia.	Beam	BAR	A36 Gr.36	Typical
33	M33	N35	N36			.625 Dia.	Beam	BAR	A36 Gr.36	Typical
34	M34	N29	N30			.625 Dia.	Beam	BAR	A36 Gr.36	Typical
35	M35	N31	N32			.625 Dia.	Beam	BAR	A36 Gr.36	Typical
36	M36	N35	N34			.75 Dia.	Beam	BAR	A36 Gr.36	Typical
37	M37	N33	N36			.75 Dia.	Beam	BAR	A36 Gr.36	Typical
38	M38	N29	N32			.75 Dia.	Beam	BAR	A36 Gr.36	Typical
39	M39	N31	N30			.75 Dia.	Beam	BAR	A36 Gr.36	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Analysis ...	Inactive	Seismic Design ...
1	M1						Yes			None
2	M2						Yes			None
3	M3						Yes			None
4	M4						Yes			None
5	M5						Yes			None
6	M6						Yes			None
7	M7						Yes			None
8	M8						Yes			None
9	M9						Yes			None
10	M10						Yes			None
11	M11						Yes			None
12	M12						Yes			None
13	M13						Yes			None
14	M14						Yes			None
15	M15						Yes			None
16	M16						Yes			None
17	M17						Yes			None
18	M18						Yes			None
19	M19						Yes			None
20	M20						Yes			None
21	M21						Yes			None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Analysis ...	Inactive	Seismic Design ...
22	M22						Yes			None
23	M23						Yes			None
24	M24						Yes			None
25	M25						Yes			None
26	M26	BenPIN					Yes			None
27	M27	BenPIN					Yes			None
28	M28		BenPIN				Yes			None
29	M29		BenPIN				Yes			None
30	M30		BenPIN				Yes			None
31	M31		BenPIN				Yes			None
32	M32	BenPIN	BenPIN				Yes			None
33	M33	BenPIN	BenPIN				Yes			None
34	M34	BenPIN	BenPIN				Yes			None
35	M35	BenPIN	BenPIN				Yes			None
36	M36					Tension O...	Yes			None
37	M37	BenPIN	BenPIN				Yes			None
38	M38	BenPIN	BenPIN				Yes			None
39	M39					Tension O...	Yes			None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torq...	Kyy	Kzz	Cb	Function
1	M15	PIPE_2.5	120									Lateral
2	M16	PIPE_2.5	120									Lateral
3	M17	PIPE_2.5	120									Lateral
4	M18	PIPE_2.5	120									Lateral
5	M19	PIPE_2.5	150									Lateral
6	M20	PIPE_2.5	150									Lateral
7	M21	PIPE_2.5	120									Lateral
8	M22	PIPE_2.0	30									Lateral
9	M23	PIPE_2.0	30									Lateral
10	M24	PIPE_2.0	30									Lateral
11	M25	PIPE_2.0	30									Lateral
12	M26	PIPE_2.0	84									Lateral
13	M27	PIPE_2.0	55.14									Lateral
14	M28	.625 x 3.5"	4.57									Lateral
15	M29	.625 x 3.5"	4.57									Lateral
16	M30	.625 x 3.5"	4.57									Lateral
17	M31	.625 x 3.5"	4.57									Lateral
18	M32	.625 Dia.	40	33.62	33.62				.7	.7		Lateral
19	M33	.625 Dia.	40	33.62	33.62				.7	.7		Lateral
20	M34	.625 Dia.	40	33.62	33.62				.7	.7		Lateral
21	M35	.625 Dia.	40	33.62	33.62				.7	.7		Lateral
22	M36	.75 Dia.	47.57									Lateral
23	M37	.75 Dia.	47.57						.7	.7		Lateral
24	M38	.75 Dia.	47.57						.7	.7		Lateral
25	M39	.75 Dia.	47.57									Lateral

Joint Coordinates and Temperatures

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Di...
1	N1	-75	0	40	0	
2	N2	75	0	40	0	
3	N3	-75	0	0	0	
4	N4	75	0	0	0	
5	N5	-72	3	40	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Di...
6	N6	-72	0	40	0	
7	N7	-72	3	0	0	
8	N8	-72	0	0	0	
9	N9	-36	3	40	0	
10	N10	-36	0	40	0	
11	N11	-36	3	0	0	
12	N12	-36	0	0	0	
13	N13	36	3	40	0	
14	N14	36	0	40	0	
15	N15	36	3	0	0	
16	N16	36	0	0	0	
17	N17	72	3	40	0	
18	N18	72	0	40	0	
19	N19	72	3	0	0	
20	N20	72	0	0	0	
21	N21	-72	3	80	0	
22	N22	-72	3	-40	0	
23	N23	-36	3	80	0	
24	N24	-36	3	-40	0	
25	N25	36	3	80	0	
26	N26	36	3	-40	0	
27	N27	72	3	80	0	
28	N28	72	3	-40	0	
29	N29	-8.927223	-24.223102	40	0	
30	N30	-8.927223	-24.223102	0	0	
31	N31	-27.135223	-6.015102	40	0	
32	N32	-27.135223	-6.015102	0	0	
33	N33	8.927223	-24.223102	40	0	
34	N34	8.927223	-24.223102	0	0	
35	N35	27.135223	-6.015102	40	0	
36	N36	27.135223	-6.015102	0	0	
37	N37	-7.424621	-25.725704	40	0	
38	N38	-7.424621	-25.725704	0	0	
39	N39	7.424621	-25.725704	0	0	
40	N40	7.424621	-25.725704	40	0	
41	N41	-29.35	0	40	0	
42	N42	-28.637825	-4.5125	40	0	
43	N43	29.35	0	40	0	
44	N44	28.637825	-4.5125	40	0	
45	N45	-29.35	0	-7.1e-15	0	
46	N46	-28.637825	-4.5125	0	0	
47	N47	29.35	0	7.1e-15	0	
48	N48	28.637825	-4.5125	0	0	
49	N49	-40.35	0	39.999996	0	
50	N50	0	-25.725704	40	0	
51	N51	0	-25.725704	0	0	
52	N52	0	3	40	0	
53	N53	0	0	40	0	
54	N54	0	3	0	0	
55	N55	0	0	0	0	
56	N56	0	3	80	0	
57	N57	0	3	-40	0	
58	N58	-11.620308	-78.93418	39.999996	0	
59	N59	-36	3	68	0	
60	N60	36	3	48	0	
61	N61	-36	3	-28	0	
62	N62	36	3	-8	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Di...
63	N63	-72	3	48	0	
64	N64	0	3	36.5	0	
65	N65	-72	3	-8	0	
66	N66	0	3	3.5	0	
67	N67	35.620308	-54.93418	39.999996	0	
68	N68	40.35	0	39.999996	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N50	Reaction	Reaction	Reaction			
2	N51	Reaction	Reaction	Reaction			
3	N58	Reaction	Reaction	Reaction			
4	N67	Reaction	Reaction	Reaction			

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
1	DEAD LOAD	None			-1	8				
2	DEAD LOAD ICE	None				8		25		
3	WIND LOAD (NO ICE) FRONT	None				8		25		
4	WIND LOAD (NO ICE) SIDE	None				8		25		
5	WIND LOAD (ICE) FRONT	None				8		25		
6	WIND LOAD (ICE) SIDE	None				8		25		
7	LIVE LOAD1	None				1				
8	LIVE LOAD2	None				1				
9	LIVE LOAD3	None								
10	MAINTENANCE LOAD 1	None				1				
11	MAINTENANCE LOAD 2	None				1				
12	MAINTENANCE LOAD 3	None				1				
13	MAINTENANCE LOAD 4	None				1				

Joint Loads and Enforced Displacements (BLC 1 : DEAD LOAD)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N63	L	Z	-46
2	N65	L	Z	-46
3	N59	L	Z	-136
4	N61	L	Z	-136
5	N64	L	Z	-52
6	N66	L	Z	-52
7	N60	L	Z	-67
8	N62	L	Z	-67

Joint Loads and Enforced Displacements (BLC 2 : DEAD LOAD ICE)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N63	L	Z	-87
2	N65	L	Z	-87
3	N59	L	Z	-289
4	N61	L	Z	-289
5	N64	L	Z	-78
6	N66	L	Z	-78
7	N60	L	Z	-94
8	N62	L	Z	-94

Joint Loads and Enforced Displacements (BLC 3 : WIND LOAD (NO ICE) FRONT)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N63	L	Y	-86
2	N65	L	Y	-86
3	N59	L	Y	-285
4	N61	L	Y	-285
5	N64	L	Y	-80
6	N66	L	Y	-80
7	N60	L	Y	-92
8	N62	L	Y	-92

Joint Loads and Enforced Displacements (BLC 4 : WIND LOAD (NO ICE) SIDE)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N63	L	X	-61
2	N65	L	X	-61
3	N59	L	X	-157
4	N61	L	X	-157
5	N64	L	X	-34
6	N66	L	X	-34
7	N60	L	X	-67
8	N62	L	X	-67

Joint Loads and Enforced Displacements (BLC 5 : WIND LOAD (ICE) FRONT)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N63	L	Y	-24
2	N65	L	Y	-24
3	N59	L	Y	-72
4	N61	L	Y	-72
5	N64	L	Y	-22
6	N66	L	Y	-22
7	N60	L	Y	-25
8	N62	L	Y	-25

Joint Loads and Enforced Displacements (BLC 6 : WIND LOAD (ICE) SIDE)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N63	L	X	-18
2	N65	L	X	-18
3	N59	L	X	-46
4	N61	L	X	-46
5	N64	L	X	-11
6	N66	L	X	-11
7	N60	L	X	-19
8	N62	L	X	-19

Joint Loads and Enforced Displacements (BLC 7 : LIVE LOAD1)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N3	L	Z	-250

Joint Loads and Enforced Displacements (BLC 8 : LIVE LOAD2)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N4	L	Z	-250

Joint Loads and Enforced Displacements (BLC 10 : MAINTENANCE LOAD 1)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N22	L	Z	-500

Joint Loads and Enforced Displacements (BLC 11 : MAINTENANCE LOAD 2)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N24	L	Z	-500

Joint Loads and Enforced Displacements (BLC 12 : MAINTENANCE LOAD 3)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N57	L	Z	-500

Joint Loads and Enforced Displacements (BLC 13 : MAINTENANCE LOAD 4)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N26	L	Z	-500

Member Point Loads

Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
No Data to Print ...			

Member Distributed Loads (BLC 2 : DEAD LOAD ICE)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M15	Z	-10.1	-10.1	0	0
2	M16	Z	-10.1	-10.1	0	0
3	M17	Z	-10.1	-10.1	0	0
4	M18	Z	-10.1	-10.1	0	0
5	M19	Z	-10.1	-10.1	0	0
6	M20	Z	-10.1	-10.1	0	0
7	M21	Z	-10.1	-10.1	0	0
8	M22	Z	-9	-9	0	0
9	M23	Z	-9	-9	0	0
10	M24	Z	-9	-9	0	0
11	M25	Z	-9	-9	0	0
12	M26	Z	-9	-9	0	0
13	M27	Z	-9	-9	0	0
14	M28	Z	-14	-14	0	0
15	M29	Z	-14	-14	0	0
16	M30	Z	-14	-14	0	0
17	M31	Z	-14	-14	0	0
18	M32	Z	-5.2	-5.2	0	0
19	M33	Z	-5.2	-5.2	0	0
20	M34	Z	-5.2	-5.2	0	0
21	M35	Z	-5.2	-5.2	0	0
22	M36	Z	-5.5	-5.5	0	0
23	M37	Z	-5.5	-5.5	0	0
24	M38	Z	-5.5	-5.5	0	0
25	M39	Z	-5.5	-5.5	0	0

Member Distributed Loads (BLC 3 : WIND LOAD (NO ICE) FRONT)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M15	PY	-8.1	-8.1	0	0
2	M16	PY	-8.1	-8.1	0	0
3	M17	PY	-8.1	-8.1	0	0
4	M18	PY	-8.1	-8.1	0	0
5	M19	PY	-8.1	-8.1	0	0
6	M20	PY	-8.1	-8.1	0	0
7	M21	PY	-8.1	-8.1	0	0
8	M22	PY	-6.7	-6.7	0	0

Member Distributed Loads (BLC 3 : WIND LOAD (NO ICE) FRONT) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
9	M23	PY	-6.7	-6.7	0	0
10	M24	PY	-6.7	-6.7	0	0
11	M25	PY	-6.7	-6.7	0	0
12	M26	PY	-6.7	-6.7	0	0
13	M27	PY	-6.7	-6.7	0	0
14	M28	PY	-2.9	-2.9	0	0
15	M29	PY	-2.9	-2.9	0	0
16	M30	PY	-2.9	-2.9	0	0
17	M31	PY	-2.9	-2.9	0	0
18	M32	PY	-1.8	-1.8	0	0
19	M33	PY	-1.8	-1.8	0	0
20	M34	PY	-1.8	-1.8	0	0
21	M35	PY	-1.8	-1.8	0	0
22	M36	PY	-2.1	-2.1	0	0
23	M37	PY	-2.1	-2.1	0	0
24	M38	PY	-2.1	-2.1	0	0
25	M39	PY	-2.1	-2.1	0	0

Member Distributed Loads (BLC 4 : WIND LOAD (NO ICE) SIDE)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M15	PX	-8.1	-8.1	0	0
2	M16	PX	-8.1	-8.1	0	0
3	M17	PX	-8.1	-8.1	0	0
4	M18	PX	-8.1	-8.1	0	0
5	M19	PX	-8.1	-8.1	0	0
6	M20	PX	-8.1	-8.1	0	0
7	M21	PX	-8.1	-8.1	0	0
8	M22	PX	-6.7	-6.7	0	0
9	M23	PX	-6.7	-6.7	0	0
10	M24	PX	-6.7	-6.7	0	0
11	M25	PX	-6.7	-6.7	0	0
12	M26	PX	-6.7	-6.7	0	0
13	M27	PX	-6.7	-6.7	0	0
14	M28	PX	-2.9	-2.9	0	0
15	M29	PX	-2.9	-2.9	0	0
16	M30	PX	-2.9	-2.9	0	0
17	M31	PX	-2.9	-2.9	0	0
18	M32	PX	-1.8	-1.8	0	0
19	M33	PX	-1.8	-1.8	0	0
20	M34	PX	-1.8	-1.8	0	0
21	M35	PX	-1.8	-1.8	0	0
22	M36	PX	-2.1	-2.1	0	0
23	M37	PX	-2.1	-2.1	0	0
24	M38	PX	-2.1	-2.1	0	0
25	M39	PX	-2.1	-2.1	0	0

Member Distributed Loads (BLC 5 : WIND LOAD (ICE) FRONT)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M15	PY	-5.3	-5.3	0	0
2	M16	PY	-5.3	-5.3	0	0
3	M17	PY	-5.3	-5.3	0	0
4	M18	PY	-5.3	-5.3	0	0
5	M19	PY	-5.3	-5.3	0	0
6	M20	PY	-5.3	-5.3	0	0
7	M21	PY	-5.3	-5.3	0	0
8	M22	PY	-4.9	-4.9	0	0

Member Distributed Loads (BLC 5 : WIND LOAD (ICE) FRONT) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
9	M23	PY	-4.9	-4.9	0	0
10	M24	PY	-4.9	-4.9	0	0
11	M25	PY	-4.9	-4.9	0	0
12	M26	PY	-4.9	-4.9	0	0
13	M27	PY	-4.9	-4.9	0	0
14	M28	PY	-3.7	-3.7	0	0
15	M29	PY	-3.7	-3.7	0	0
16	M30	PY	-3.7	-3.7	0	0
17	M31	PY	-3.7	-3.7	0	0
18	M32	PY	-3.4	-3.4	0	0
19	M33	PY	-3.4	-3.4	0	0
20	M34	PY	-3.4	-3.4	0	0
21	M35	PY	-3.4	-3.4	0	0
22	M36	PY	-3.5	-3.5	0	0
23	M37	PY	-3.5	-3.5	0	0
24	M38	PY	-3.5	-3.5	0	0
25	M39	PY	-3.5	-3.5	0	0

Member Distributed Loads (BLC 6 : WIND LOAD (ICE) SIDE)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M15	PX	-5.3	-5.3	0	0
2	M16	PX	-5.3	-5.3	0	0
3	M17	PX	-5.3	-5.3	0	0
4	M18	PX	-5.3	-5.3	0	0
5	M19	PX	-5.3	-5.3	0	0
6	M20	PX	-5.3	-5.3	0	0
7	M21	PX	-5.3	-5.3	0	0
8	M22	PX	-4.9	-4.9	0	0
9	M23	PX	-4.9	-4.9	0	0
10	M24	PX	-4.9	-4.9	0	0
11	M25	PX	-4.9	-4.9	0	0
12	M26	PX	-4.9	-4.9	0	0
13	M27	PX	-4.9	-4.9	0	0
14	M28	PX	-3.7	-3.7	0	0
15	M29	PX	-3.7	-3.7	0	0
16	M30	PX	-3.7	-3.7	0	0
17	M31	PX	-3.7	-3.7	0	0
18	M32	PX	-3.4	-3.4	0	0
19	M33	PX	-3.4	-3.4	0	0
20	M34	PX	-3.4	-3.4	0	0
21	M35	PX	-3.4	-3.4	0	0
22	M36	PX	-3.5	-3.5	0	0
23	M37	PX	-3.5	-3.5	0	0
24	M38	PX	-3.5	-3.5	0	0
25	M39	PX	-3.5	-3.5	0	0

Member Area Loads

Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
No Data to Print ...						

Load Combinations

	Description	Solve	PD..	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	DL + WL (NO ICE) 0..	Yes	Y		1	1.2			3	1.6														
2	DL + WL (NO ICE) 3..	Yes	Y		1	1.2			3	1.39	4	.8												
3	DL + WL (NO ICE) 6..	Yes	Y		1	1.2			3	.8	4	1.39												
4	DL + WL (NO ICE) 9..	Yes	Y		1	1.2					4	1.6												
5	DL + WL (NO ICE) 1..	Yes	Y		1	1.2			3	-.8	4	1.39												
6	DL + WL (NO ICE) 1..	Yes	Y		1	1.2			3	-1....	4	.8												
7	DL + WL (NO ICE) 1..	Yes	Y		1	1.2			3	-1.6														
8	DL + WL (NO ICE) 2..	Yes	Y		1	1.2			3	-1....	4	-.8												
9	DL + WL (NO ICE) 2..	Yes	Y		1	1.2			3	-.8	4	-1....												
10	DL + WL (NO ICE) 2..	Yes	Y		1	1.2					4	-1.6												
11	DL + WL (NO ICE) 3..	Yes	Y		1	1.2			3	.8	4	-1....												
12	DL + WL (NO ICE) 3..	Yes	Y		1	1.2			3	1.39	4	-.8												
13	DL + DL ICE + WL (I...	Yes	Y		1	1.2	2	1	5	1														
14	DL + DL ICE + WL (I...	Yes	Y		1	1.2	2	1	5	.87	6	.5												
15	DL + DL ICE + WL (I...	Yes	Y		1	1.2	2	1	5	.5	6	.87												
16	DL + DL ICE + WL (I...	Yes	Y		1	1.2	2	1			6	1												
17	DL + DL ICE + WL (I...	Yes	Y		1	1.2	2	1	5	-.5	6	.87												
18	DL + DL ICE + WL (I...	Yes	Y		1	1.2	2	1	5	-.87	6	.5												
19	DL + DL ICE + WL (I...	Yes	Y		1	1.2	2	1	5	-1														
20	DL + DL ICE + WL (I...	Yes	Y		1	1.2	2	1	5	-.87	6	-.5												
21	DL + DL ICE + WL (I...	Yes	Y		1	1.2	2	1	5	-.5	6	-.87												
22	DL + DL ICE + WL (I...	Yes	Y		1	1.2	2	1			6	-1												
23	DL + DL ICE + WL (I...	Yes	Y		1	1.2	2	1	5	.5	6	-.87												
24	DL + DL ICE + WL (I...	Yes	Y		1	1.2	2	1	5	.87	6	-.5												
25	DEAD LOAD + LIVE...	Yes	Y		1	1.2					7	1.5												
26	DEAD LOAD + LIVE...	Yes	Y		1	1.2					8	1.5												
27	DEAD LOAD + LIVE...	Yes	Y		1	1.2					9	1.5												
28	DL + MAIN L1+30M...	Yes	Y		1	1.2	10	1.5	3	.08														
29	DL + MAIN L2+30M...	Yes	Y		1	1.2	11	1.5	3	.08														
30	DL + MAIN L3+30M...	Yes	Y		1	1.2	12	1.5	3	.08														
31	DL + MAIN L4+30M...	Yes	Y		1	1.2	13	1.5	3	.08														
32	DL + MAIN L1+30M...	Yes	Y		1	1.2	10	1.5	4	.08														
33	DL + MAIN L2+30M...	Yes	Y		1	1.2	11	1.5	4	.08														
34	DL + MAIN L3+30M...	Yes	Y		1	1.2	12	1.5	4	.08														
35	DL + MAIN L4+30M...	Yes	Y		1	1.2	13	1.5	4	.08														
36	DL + MAIN L1+30M...	Yes	Y		1	1.2	10	1.5	3	-.08														
37	DL + MAIN L2+30M...	Yes	Y		1	1.2	11	1.5	3	-.08														
38	DL + MAIN L3+30M...	Yes	Y		1	1.2	12	1.5	3	-.08														
39	DL + MAIN L4+30M...	Yes	Y		1	1.2	13	1.5	3	-.08														
40	DL + MAIN L1+30M...	Yes	Y		1	1.2	10	1.5	4	-.08														
41	DL + MAIN L2+30M...	Yes	Y		1	1.2	11	1.5	4	-.08														
42	DL + MAIN L3+30M...	Yes	Y		1	1.2	12	1.5	4	-.08														
43	DL + MAIN L4+30M...	Yes	Y		1	1.2	13	1.5	4	-.08														

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N50	max	1782.5017	3	-220.1618	7	2868.8507	17	0	1	0	1	0	1
2		min	-1090.045	9	-2398.6655	13	1054.6197	8	0	1	0	1	0	1
3	N51	max	564.733	4	2737.8102	13	654.5364	24	0	1	0	1	0	1
4		min	-1744.8974	40	-528.3316	7	201.1944	2	0	1	0	1	0	1
5	N58	max	673.943	8	1866.4779	2	47.1017	20	0	1	0	1	0	1
6		min	-659.4346	2	-1914.8826	8	12.8953	2	0	1	0	1	0	1
7	N67	max	51.1033	11	837.0381	11	30.3258	17	0	1	0	1	0	1
8		min	-53.0149	5	-873.0587	5	9.4473	32	0	1	0	1	0	1
9	Totals:	max	1958.7874	4	2903.9963	1	3590.0211	20						

Envelope Joint Reactions (Continued)

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
10		min	-1958.7878	10	-2903.9993	7	1364.3115	1						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...	LC
1	N1	max	.0579	9	.2088	8	-.024	26	2.6523e-03	9	3.0948e-04	26	7.2055e-03	1
2		min	-.0762	3	-.2192	2	-.3827	40	-2.5666e-03	3	-4.5263e-03	40	-6.9799e-03	7
3	N2	max	.0575	9	.0683	7	.1387	40	2.6028e-03	3	1.566e-03	26	2.3821e-03	7
4		min	-.0751	3	-.0756	1	-.15	26	-3.087e-03	9	-2.5346e-03	40	-2.6878e-03	1
5	N3	max	.1121	9	.4049	8	-.0239	26	6.5735e-03	8	3.1351e-04	26	7.7936e-03	1
6		min	-.0898	3	-.4078	2	-.383	40	-6.5341e-03	2	-4.4994e-03	40	-7.6255e-03	7
7	N4	max	.111	9	.093	5	.1388	40	2.3521e-03	4	1.8685e-03	26	2.5423e-03	7
8		min	-.0894	3	-.1191	11	-.1527	26	-2.8714e-03	10	-2.5469e-03	40	-2.8324e-03	1
9	N5	max	.0721	9	.1884	8	-.0268	26	2.6523e-03	9	3.0956e-04	26	7.2054e-03	1
10		min	-.091	3	-.1982	2	-.3664	40	-2.5666e-03	3	-4.5263e-03	40	-6.9798e-03	7
11	N6	max	.0579	9	.1884	8	-.0249	26	2.6523e-03	9	3.0956e-04	26	7.2054e-03	1
12		min	-.0762	3	-.1982	2	-.3691	40	-2.5666e-03	3	-4.5263e-03	40	-6.9798e-03	7
13	N7	max	.1279	9	.3824	8	-.0268	26	6.5735e-03	8	3.1359e-04	26	7.7935e-03	1
14		min	-.106	3	-.3849	2	-.3668	40	-6.5341e-03	2	-4.4993e-03	40	-7.6253e-03	7
15	N8	max	.1121	9	.3824	8	-.0249	26	6.5735e-03	8	3.1359e-04	26	7.7935e-03	1
16		min	-.0898	3	-.3849	2	-.3695	40	-6.5341e-03	2	-4.4993e-03	40	-7.6253e-03	7
17	N9	max	.0601	9	.0233	9	-.023	26	3.0797e-03	12	1.6862e-04	26	1.5078e-03	1
18		min	-.079	3	-.0288	3	-.1489	28	-3.0467e-03	6	-4.4455e-03	32	-1.2397e-03	7
19	N10	max	.0577	9	.0233	9	-.0215	26	3.0797e-03	12	1.6862e-04	26	1.5078e-03	1
20		min	-.0759	3	-.0288	3	-.1518	28	-3.0467e-03	6	-4.4455e-03	32	-1.2397e-03	7
21	N11	max	.1254	9	.1322	8	-.023	26	6.595e-03	7	5.5266e-04	3	5.8481e-03	2
22		min	-.1035	3	-.1273	2	-.1488	28	-6.6889e-03	1	-4.5615e-03	40	-5.7716e-03	8
23	N12	max	.1119	9	.1322	8	-.0213	26	6.595e-03	7	5.5266e-04	3	5.8481e-03	2
24		min	-.0897	3	-.1273	2	-.1508	36	-6.6889e-03	1	-4.5615e-03	40	-5.7716e-03	8
25	N13	max	.0532	9	.0157	3	.0448	28	2.2284e-03	2	1.5248e-03	26	1.4071e-03	9
26		min	-.0701	3	-.013	9	-.0712	39	-2.6742e-03	8	-2.3927e-03	40	-1.6573e-03	3
27	N14	max	.0574	9	.0157	3	.0476	40	2.2284e-03	2	1.5248e-03	26	1.4071e-03	9
28		min	-.0751	3	-.013	9	-.0699	35	-2.6742e-03	8	-2.3927e-03	40	-1.6573e-03	3
29	N15	max	.1116	9	.09	3	.0448	28	1.4116e-03	4	1.5365e-03	26	1.3905e-03	6
30		min	-.0889	3	-.1022	9	-.0716	39	-1.9447e-03	10	-2.3868e-03	40	-1.7296e-03	12
31	N16	max	.111	9	.09	3	.048	28	1.4116e-03	4	1.5365e-03	26	1.3905e-03	6
32		min	-.0893	3	-.1022	9	-.0703	39	-1.9447e-03	10	-2.3868e-03	40	-1.7296e-03	12
33	N17	max	.0535	9	.0612	7	.1271	40	2.6028e-03	3	1.5659e-03	26	2.382e-03	7
34		min	-.0701	3	-.0675	1	-.1443	26	-3.087e-03	9	-2.5346e-03	40	-2.6877e-03	1
35	N18	max	.0575	9	.0612	7	.1311	40	2.6028e-03	3	1.5659e-03	26	2.382e-03	7
36		min	-.0751	3	-.0675	1	-.1453	26	-3.087e-03	9	-2.5346e-03	40	-2.6877e-03	1
37	N19	max	.1074	9	.0894	5	.1271	40	2.3521e-03	4	1.8182e-03	26	2.5421e-03	7
38		min	-.0849	3	-.1146	11	-.1445	26	-2.8714e-03	10	-2.547e-03	40	-2.8323e-03	1
39	N20	max	.111	9	.0894	5	.1311	40	2.3521e-03	4	1.8182e-03	26	2.5421e-03	7
40		min	-.0894	3	-.1146	11	-.147	26	-2.8714e-03	10	-2.547e-03	40	-2.8323e-03	1
41	N21	max	.0211	26	.1447	7	-.0269	26	2.4163e-03	9	3.0964e-04	26	7.2054e-03	1
42		min	-.2288	32	-.1586	1	-.3664	40	-2.3306e-03	3	-4.5245e-03	36	-6.9798e-03	7
43	N22	max	.2474	40	.6586	8	-.0269	26	6.9829e-03	8	3.135e-04	26	7.7935e-03	1
44		min	-.1124	3	-.6596	2	-.3676	40	-6.9435e-03	2	-4.4408e-03	40	-7.6253e-03	7
45	N23	max	.1279	10	.2877	7	-.0232	26	8.3117e-03	1	2.6548e-03	10	1.5078e-03	1
46		min	-.2332	32	-.2942	1	-.149	28	-8.2842e-03	7	-4.6219e-03	32	-1.2397e-03	7
47	N24	max	.3118	9	.5451	8	-.0232	26	1.2229e-02	7	3.7212e-03	4	5.8481e-03	2
48		min	-.2131	3	-.5437	2	-.149	28	-1.2323e-02	1	-5.653e-03	10	-5.7716e-03	8
49	N25	max	.0703	26	.1103	8	.0448	28	2.6483e-03	2	1.5253e-03	26	1.4071e-03	9
50		min	-.1403	32	-.0898	2	-.0713	39	-3.0942e-03	8	-2.3804e-03	36	-1.6573e-03	3
51	N26	max	.1666	40	.136	4	.0448	28	1.5686e-03	5	1.5361e-03	26	1.3905e-03	6

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...	LC
52		min	-.1173	3	-.1699	10	-.0724	39	-2.1037e-03	11	-2.4088e-03	40	-1.7296e-03	12
53	N27	max	.0723	26	.1744	8	.1271	40	2.7747e-03	3	1.5664e-03	26	2.382e-03	7
54		min	-.1443	32	-.1618	2	-.1443	26	-3.2591e-03	9	-2.5178e-03	40	-2.6877e-03	1
55	N28	max	.1722	40	.1764	4	.1271	40	2.3515e-03	4	1.8178e-03	26	2.5421e-03	7
56		min	-.1163	3	-.2223	10	-.1445	26	-2.8707e-03	10	-2.5638e-03	40	-2.8323e-03	1
57	N29	max	.0038	3	.0267	3	.0065	35	-1.0255e-03	8	1.1973e-03	35	1.4717e-03	9
58		min	-.0026	9	-.0174	9	-.0441	40	-2.8891e-03	15	-4.0259e-03	40	-2.2435e-03	3
59	N30	max	.0032	8	.0171	8	.0078	35	-1.0519e-04	8	1.1144e-03	35	3.0113e-03	2
60		min	-.0043	2	-.0254	2	-.0388	40	-1.0864e-03	14	-3.6895e-03	40	-2.3362e-03	8
61	N31	max	.0267	9	.0118	10	-.001	39	-5.0652e-04	7	1.1273e-03	39	6.0333e-03	3
62		min	-.0353	3	-.012	4	-.0853	28	-4.763e-03	13	-1.9992e-03	28	-4.5667e-03	9
63	N32	max	.0798	9	.0895	9	.0022	39	-1.1424e-03	12	6.8485e-04	31	3.7513e-03	4
64		min	-.0682	3	-.0877	3	-.0781	28	-5.1342e-03	17	-2.3447e-03	40	-5.397e-03	10
65	N33	max	.0039	3	.0174	9	.0385	40	-1.082e-03	3	7.4295e-04	35	1.4315e-03	9
66		min	-.0025	9	-.0265	3	-.0125	35	-3.2714e-03	21	-4.444e-03	40	-2.1929e-03	3
67	N34	max	.003	8	.0249	2	.0373	40	-3.8095e-04	5	6.634e-04	35	2.6703e-03	2
68		min	-.0042	2	-.0168	8	-.0097	35	-1.4129e-03	22	-4.0958e-03	40	-2.0475e-03	8
69	N35	max	.0279	9	.0122	3	.0513	28	-1.8091e-03	5	7.9649e-05	26	5.8543e-03	3
70		min	-.0365	3	-.0113	9	-.033	39	-5.3316e-03	24	-2.7724e-03	28	-4.4276e-03	9
71	N36	max	.0748	9	.0789	3	.0521	28	-1.6818e-03	3	4.0892e-04	26	4.1408e-03	3
72		min	-.063	3	-.0852	9	-.0285	39	-5.3071e-03	21	-2.3022e-03	28	-5.73e-03	9
73	N37	max	0	9	.0226	3	.008	35	-1.1999e-03	3	1.0758e-03	35	1.9887e-03	9
74		min	0	15	-.0148	9	-.0347	40	-3.2065e-03	22	-4.6702e-03	40	-3.0425e-03	3
75	N38	max	0	23	.0139	8	.0073	35	-2.8386e-04	7	9.8865e-04	35	2.8163e-03	2
76		min	0	6	-.0209	2	-.0319	40	-1.2614e-03	13	-4.3028e-03	40	-1.8757e-03	8
77	N39	max	0	8	.0209	2	.0319	40	-2.8386e-04	7	9.8865e-04	35	2.8163e-03	2
78		min	0	2	-.0139	8	-.0073	35	-1.2614e-03	13	-4.3028e-03	40	-1.8757e-03	8
79	N40	max	0	10	.0148	9	.0347	40	-1.1999e-03	3	1.0758e-03	35	1.9887e-03	9
80		min	0	4	-.0226	3	-.008	35	-3.2065e-03	22	-4.6702e-03	40	-3.0425e-03	3
81	N41	max	.0576	9	.0209	10	-.0222	26	2.765e-03	12	2.3658e-04	39	7.6979e-04	2
82		min	-.0756	3	-.0245	4	-.1268	13	-2.8073e-03	6	-3.9104e-03	28	-4.8806e-04	8
83	N42	max	.034	9	.0178	10	-.0039	26	-6.7511e-04	7	9.4198e-04	39	6.6308e-03	3
84		min	-.045	3	-.0203	4	-.0927	28	-5.4868e-03	13	-2.3538e-03	28	-5.0724e-03	9
85	N43	max	.0573	9	.0258	3	.0323	28	2.0588e-03	2	1.1573e-03	26	9.5955e-04	9
86		min	-.075	3	-.0217	9	-.0635	39	-2.4845e-03	8	-2.3109e-03	40	-1.1356e-03	3
87	N44	max	.0349	9	.0213	3	.0499	28	-1.9685e-03	6	2.8654e-04	26	6.3461e-03	3
88		min	-.0458	3	-.0182	9	-.0379	39	-5.7209e-03	24	-2.6693e-03	28	-4.8528e-03	9
89	N45	max	.1118	9	.1013	9	-.0218	26	5.5725e-03	7	2.0881e-04	35	5.3904e-03	2
90		min	-.0897	3	-.0957	3	-.1225	16	-5.7278e-03	1	-3.9907e-03	40	-5.402e-03	8
91	N46	max	.0878	9	.0975	9	-.002	26	-1.2777e-03	12	5.2537e-04	31	3.8449e-03	4
92		min	-.0737	3	-.0932	3	-.0868	28	-5.9621e-03	18	-2.704e-03	36	-5.6065e-03	10
93	N47	max	.111	9	.0883	3	.033	28	1.1793e-03	5	1.1943e-03	26	1.3438e-03	5
94		min	-.0893	3	-.0982	9	-.0635	39	-1.6848e-03	11	-2.2802e-03	40	-1.7043e-03	11
95	N48	max	.0837	9	.0852	3	.0503	28	-1.9451e-03	2	6.0793e-04	26	4.3476e-03	3
96		min	-.0694	3	-.094	9	-.0345	39	-5.7466e-03	20	-2.235e-03	28	-5.9871e-03	9
97	N49	max	.0578	9	.0271	9	-.0212	26	2.7067e-03	12	-2.8638e-05	26	2.3605e-03	1
98		min	-.076	3	-.0335	3	-.1734	28	-2.6672e-03	6	-5.4348e-03	36	-2.1504e-03	7
99	N50	max	0	9	0	13	0	8	-1.1999e-03	3	1.0758e-03	35	1.9887e-03	9
100		min	0	3	0	7	0	17	-3.2065e-03	22	-4.6702e-03	40	-3.0425e-03	3
101	N51	max	0	40	0	7	0	2	-2.8386e-04	7	9.8865e-04	35	2.8163e-03	2
102		min	0	4	0	13	0	24	-1.2614e-03	13	-4.3028e-03	40	-1.8757e-03	8
103	N52	max	.062	9	.0121	3	-.0271	7	1.6833e-03	1	5.3027e-04	35	1.6202e-03	3
104		min	-.0803	3	-.0075	9	-.0755	13	-1.903e-03	7	-2.5641e-03	40	-1.4811e-03	9
105	N53	max	.0576	9	.0121	3	-.0214	7	1.6833e-03	1	5.3027e-04	35	1.6202e-03	3
106		min	-.0755	3	-.0075	9	-.0759	13	-1.903e-03	7	-2.5641e-03	40	-1.4811e-03	9
107	N54	max	.1217	9	.0249	2	-.0271	7	1.2117e-03	7	5.3312e-04	26	3.1958e-03	3
108		min	-.0991	3	-.0258	8	-.0754	13	-1.5148e-03	1	-2.5371e-03	36	-3.4633e-03	9

Envelope Joint Displacements (Continued)

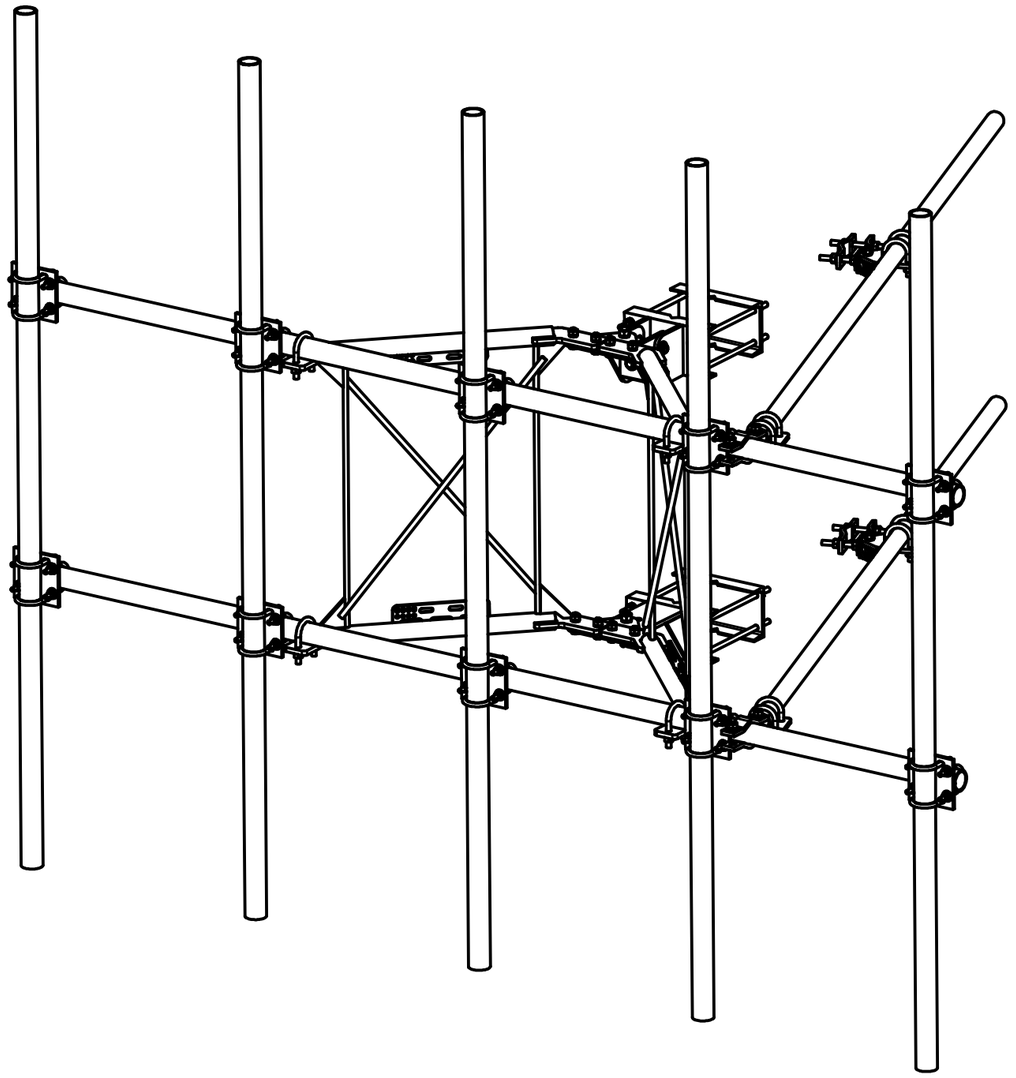
	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...	LC
109	N55	max	.1114	9	.0249	2	-.0278	1	1.2117e-03	7	5.3312e-04	26	3.1958e-03	3
110		min	-.0895	3	-.0258	8	-.0736	20	-1.5148e-03	1	-2.5371e-03	36	-3.4633e-03	9
111	N56	max	.041	9	.0848	7	-.0271	7	2.0262e-03	1	5.2768e-04	26	1.6202e-03	3
112		min	-.1508	32	-.0713	1	-.0755	13	-2.246e-03	7	-2.5554e-03	28	-1.4811e-03	9
113	N57	max	.1732	40	.0339	6	-.0271	7	1.5538e-03	7	5.3636e-04	35	3.1958e-03	3
114		min	-.0918	3	-.0467	1	-.0755	13	-1.8568e-03	1	-2.5519e-03	40	-3.4633e-03	9
115	N58	max	0	2	0	8	0	2	-5.9653e-04	9	-1.3877e-04	26	2.2394e-03	3
116		min	0	8	0	2	0	20	-2.5167e-03	15	-5.9797e-03	40	-2.0103e-03	9
117	N59	max	.096	10	.1883	7	-.0232	26	8.3024e-03	1	2.6456e-03	10	1.5078e-03	1
118		min	-.1777	32	-.1944	1	-.149	28	-8.2749e-03	7	-4.6214e-03	32	-1.2397e-03	7
119	N60	max	.0484	9	.0157	36	.0448	28	2.4956e-03	2	1.5251e-03	26	1.4071e-03	9
120		min	-.0707	3	-.0075	1	-.0712	39	-2.9415e-03	8	-2.3801e-03	36	-1.6573e-03	3
121	N61	max	.2481	9	.4079	8	-.0232	26	1.222e-02	7	3.7119e-03	4	5.8481e-03	2
122		min	-.1724	3	-.4054	2	-.149	28	-1.2314e-02	1	-5.6438e-03	10	-5.7716e-03	8
123	N62	max	.121	9	.0976	3	.0448	28	1.4811e-03	5	1.5363e-03	26	1.3905e-03	6
124		min	-.0933	3	-.114	9	-.0718	39	-2.0163e-03	11	-2.4002e-03	40	-1.7296e-03	12
125	N63	max	.0585	9	.1752	7	-.0269	26	2.5036e-03	9	3.096e-04	26	7.2054e-03	1
126		min	-.0914	3	-.1865	1	-.3664	40	-2.4179e-03	3	-4.5239e-03	36	-6.9798e-03	7
127	N64	max	.0654	9	.015	2	-.0271	7	1.5415e-03	1	6.2938e-04	26	1.7581e-03	3
128		min	-.08	3	-.0111	8	-.0755	13	-1.71e-03	7	-2.701e-03	40	-1.6545e-03	9
129	N65	max	.1419	9	.4364	8	-.0269	26	6.8315e-03	8	3.1354e-04	26	7.7935e-03	1
130		min	-.106	3	-.4385	2	-.367	40	-6.7921e-03	2	-4.4833e-03	40	-7.6253e-03	7
131	N66	max	.1188	9	.0286	2	-.0271	7	7.9857e-04	7	6.34e-04	26	3.0579e-03	3
132		min	-.0998	3	-.0286	8	-.0755	13	-1.0359e-03	1	-2.6751e-03	40	-3.2898e-03	9
133	N67	max	0	5	0	5	0	32	6.7369e-04	28	2.1681e-03	26	1.7384e-03	3
134		min	0	11	0	11	0	17	-1.4242e-03	39	-2.4702e-03	40	-1.4166e-03	9
135	N68	max	.0574	9	.0078	4	.0578	40	2.2205e-03	2	2.0386e-03	26	1.5658e-03	9
136		min	-.0751	3	-.0062	10	-.0737	35	-2.67e-03	8	-2.3136e-03	40	-1.8136e-03	3

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Che...	Loc[...	Dir	LC	phi*Pn...	phi*Pnt...	phi*Mn...	phi*Mn...	Cb	Eqn
1	M15	PIPE_2.5	.206	80	28	.033	40		36	22373....	50715	3.5963	3.5963	3...	H1-1b
2	M16	PIPE_2.5	.332	40	1	.127	40		8	22373....	50715	3.5963	3.5963	1...	H1-1b
3	M17	PIPE_2.5	.091	40	26	.055	40		11	22373....	50715	3.5963	3.5963	4...	H1-1b
4	M18	PIPE_2.5	.112	80	26	.024	40		26	22373....	50715	3.5963	3.5963	2...	H1-1b
5	M19	PIPE_2.5	.241	34.375	7	.194	35.9...		8	14558....	50715	3.5963	3.5963	2...	H1-1b
6	M20	PIPE_2.5	.214	3.125	32	.186	45.3...		7	14558....	50715	3.5963	3.5963	1...	H1-1b
7	M21	PIPE_2.5	.131	80	2	.059	40		9	22373....	50715	3.5963	3.5963	2...	H1-1b
8	M22	PIPE_2.0	.292	2.1875	3	.160	0		15	29810....	32130	1.8716	1.8716	1...	H1-1b
9	M23	PIPE_2.0	.257	0	40	.124	28.1...		16	29810....	32130	1.8716	1.8716	1...	H1-1b
10	M24	PIPE_2.0	.374	1.875	32	.248	0		23	29810....	32130	1.8716	1.8716	1...	H1-1b
11	M25	PIPE_2.0	.365	27.8125	21	.217	28.1...		20	29810....	32130	1.8716	1.8716	1...	H1-1b
12	M26	PIPE_2.0	.111	84	2	.005	84		22	17855....	32130	1.8716	1.8716	1...	H1-1b*
13	M27	PIPE_2.0	.034	0	11	.003	0		16	24944....	32130	1.8716	1.8716	1...	H1-1b*
14	M28	.625 x 3.5"	.260	0	15	.151	0	y	15	68531....	70891.2	.9234	5.1678	1...	H1-1b
15	M29	.625 x 3.5"	.430	0	13	.202	0	y	13	68531....	70891.2	.9234	5.1678	1...	H1-1b
16	M30	.625 x 3.5"	.269	0	17	.097	4.56...	y	17	68531....	70891.2	.9234	5.1678	1...	H1-1b
17	M31	.625 x 3.5"	.479	0	21	.172	0	y	21	68531....	70891.2	.9234	5.1678	1...	H1-1b
18	M32	.625 Dia.	.164	40	35	.022	0		3	3055.1...	9940.1...	.1035	.1035	1	H1-1b*
19	M33	.625 Dia.	.317	20.8333	15	.036	0		28	3055.1...	9940.1...	.1035	.1035	1...	H1-1a
20	M34	.625 Dia.	.371	20.8333	21	.024	0		2	3055.1...	9940.1...	.1035	.1035	1...	H1-1a
21	M35	.625 Dia.	.555	20.8333	23	.036	0		28	3055.1...	9940.1...	.1035	.1035	1...	H1-1a
22	M36	.75 Dia.	.001	47.5717	9	.013	47.5...		9	1550.4...	14313....	.1789	.1789	3...	H1-1b*
23	M37	.75 Dia.	.144	23.7858	15	.028	0		9	3164.2...	14313....	.1789	.1789	1...	H1-1b
24	M38	.75 Dia.	.326	23.7858	23	.029	0		9	3164.2...	14313....	.1789	.1789	1...	H1-1a

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Che...	Loc[...	Dir	LC	phi*Pn...	phi*Pnt...	phi*Mn...	phi*Mn...	Cb	Eqn
25	M39	.75 Dia.	.000	0	1	.000	0		1	1550.4...	14313....	.1789	.1789	1	H1-1a



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-HDCAMDSS	CLAMP WELDMENT FOR BCAM-HD		28.59	28.59
3	1	X-HDMHTP	HEAVY DUTY MULTI-HOLE TAPER PLATE WELDMENT		29.36	29.36
4	2	X-VFAPL3	VFA-HD PIVOT PLATE	24 in	9.69	19.38
5	2	X-HDLCBB	HEAVY DUTY LEG CONNECTION BACKING BRACKET	13 in	16.66	33.33
6	1	X-HDCAMSS	ANGLE ADJUSTMENT WELDMENT FOR BCAM-HD		16.51	16.51
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	10	SCX2	CROSSOVER PLATE	7 in	4.80	47.96
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" CNTER 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	2	A34212	3/4" x 2-1/2" UNC HEX BOLT (A325)	2 1/2 in	0.48	0.96
16	2	G34LW	3/4" HDG LOCKWASHER		0.04	0.09
17	2	G34NUT	3/4" HDG HEAVY 2H HEX NUT		0.21	0.42
18	4	G58R-8	5/8" x 8" THREADED ROD (HDG.)		0.70	2.79
19	4	G58R-12	5/8" x 12" THREADED ROD (HDG.)		1.05	4.18
20	8	G58R-18	5/8" x 18" THREADED ROD (HDG.)	18 in	0.40	3.19
21	4	X-UB5300	5/8" X 3" X 5-1/4" X 2-1/2" U-BOLT (HDG.)		1.15	4.60
22	8	X-UB5258	5/8" X 2-5/8" X 4-1/2" X 2" U-BOLT (HDG.)		1.00	8.00
23	4	G5802	5/8" x 2" HDG HEX BOLT GR5		0.27	1.08
24	8	A582114	5/8" x 2-1/4" HDG A325 HEX BOLT	2 1/4 in	0.31	2.50
25	8	G5804	5/8" x 4" HDG HEX BOLT GR5		0.44	3.55
26	25	G58FW	5/8" HDG USS FLATWASHER	1/8 in	0.07	1.76
27	66	G58LW	5/8" HDG LOCKWASHER		0.03	1.72
28	71	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	9.22
30	48	X-UB1300	1/2" X 3" X 5" X 2" GALV U-BOLT		0.74	35.45
30	20	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" GALV. U-BOLT		0.66	13.13
31	80	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	2.73
32	80	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	1.11
33	80	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	5.73
34	2	G5807	5/8" x 7" HDG HEX BOLT GR5 FULL THREAD	7 in	0.70	1.41
35	1	G5806	5/8" x 6" HDG HEX BOLT GR5 FULL THREAD	6 in	0.53	0.53
36	5	P30120	2-7/8" x 120" (2-1/2" SCH. 40) GALVANIZED PIPE	120 in	58.07	290.33
					TOTAL WT. #	1024.51

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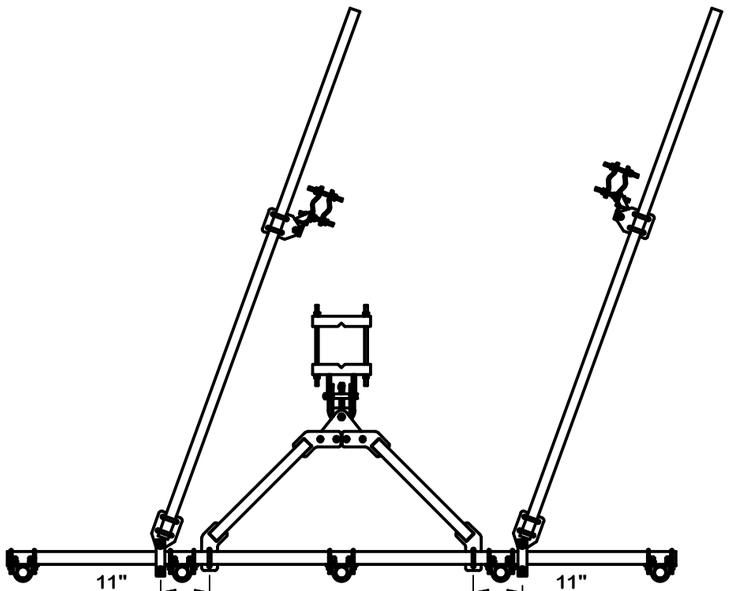
DESCRIPTION: 12' 6" HEAVY DUTY V-FRAME ASSEMBLY W/ 2 STIFF ARMS & MOUNT PIPES

SITE PRO 1
A valmont COMPANY
Engineering Support Team: 1-888-753-7446
Locations:
New York, NY
Atlanta, GA
Los Angeles, CA
Plymouth, IN
Salem, OR
Dallas, TX

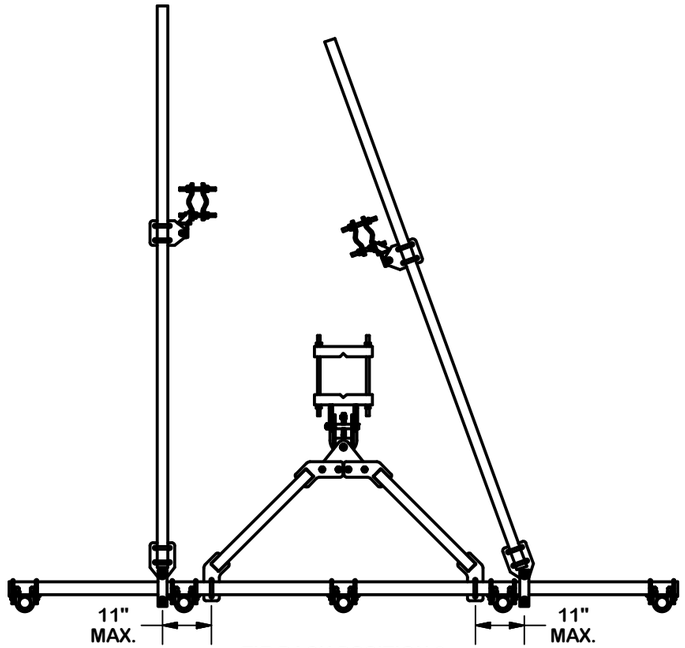
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
SP1	CSL 1/25/2017		VFA12-WLL-30120

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
87	02	CUSTOMER	BMC 5/3/2018	VFA12-WLL-30120

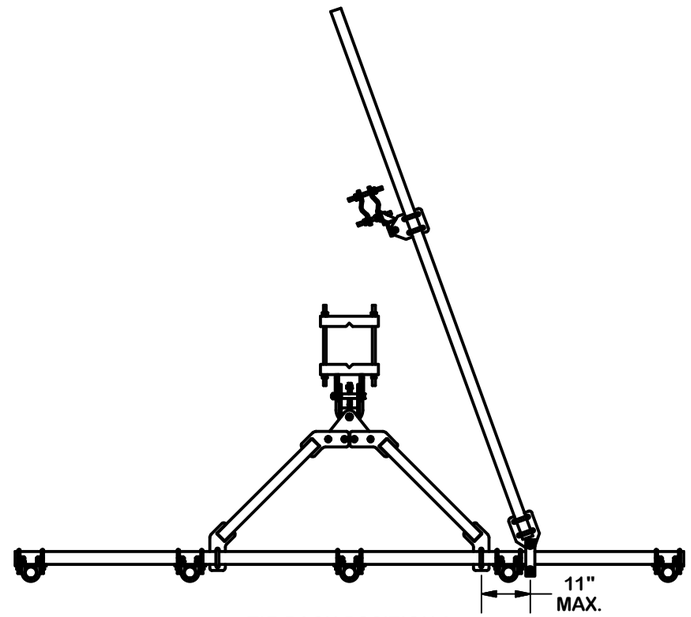
TIE-BACK POSITIONS



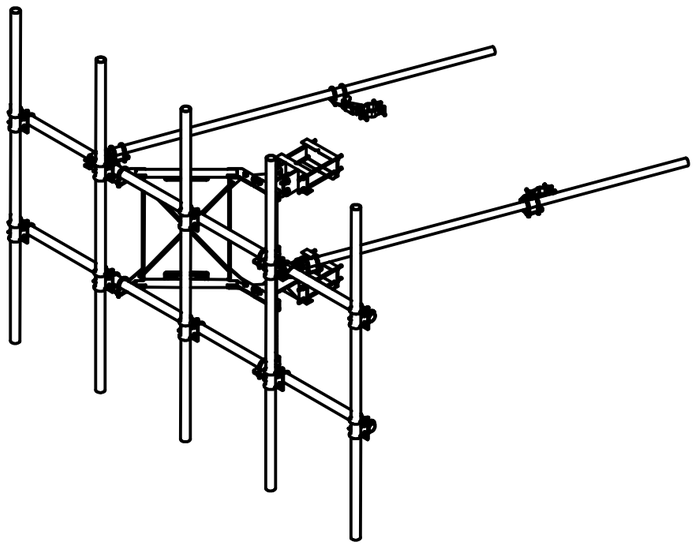
TIE-BACK POSITION 1
-20° / +20° TOP PARALLEL

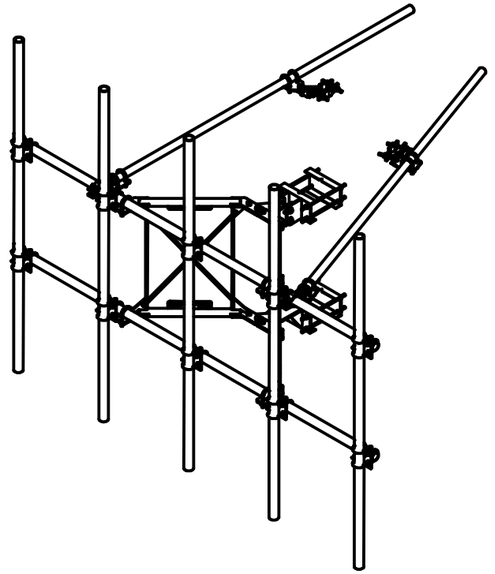


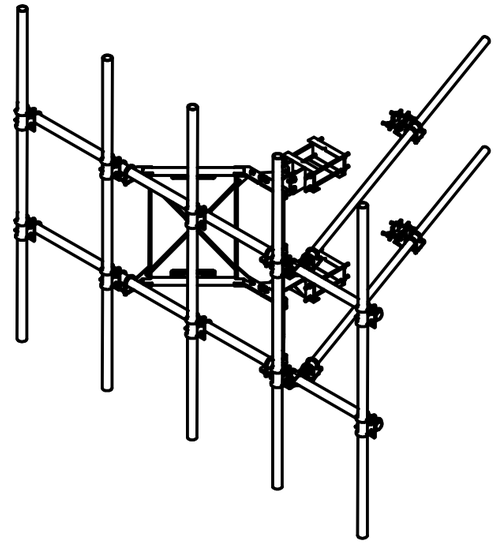
TIE-BACK POSITION 2
-20° / -20° TOP CROSS



TIE-BACK POSITION 3
-20° SAME SIDE STACKED







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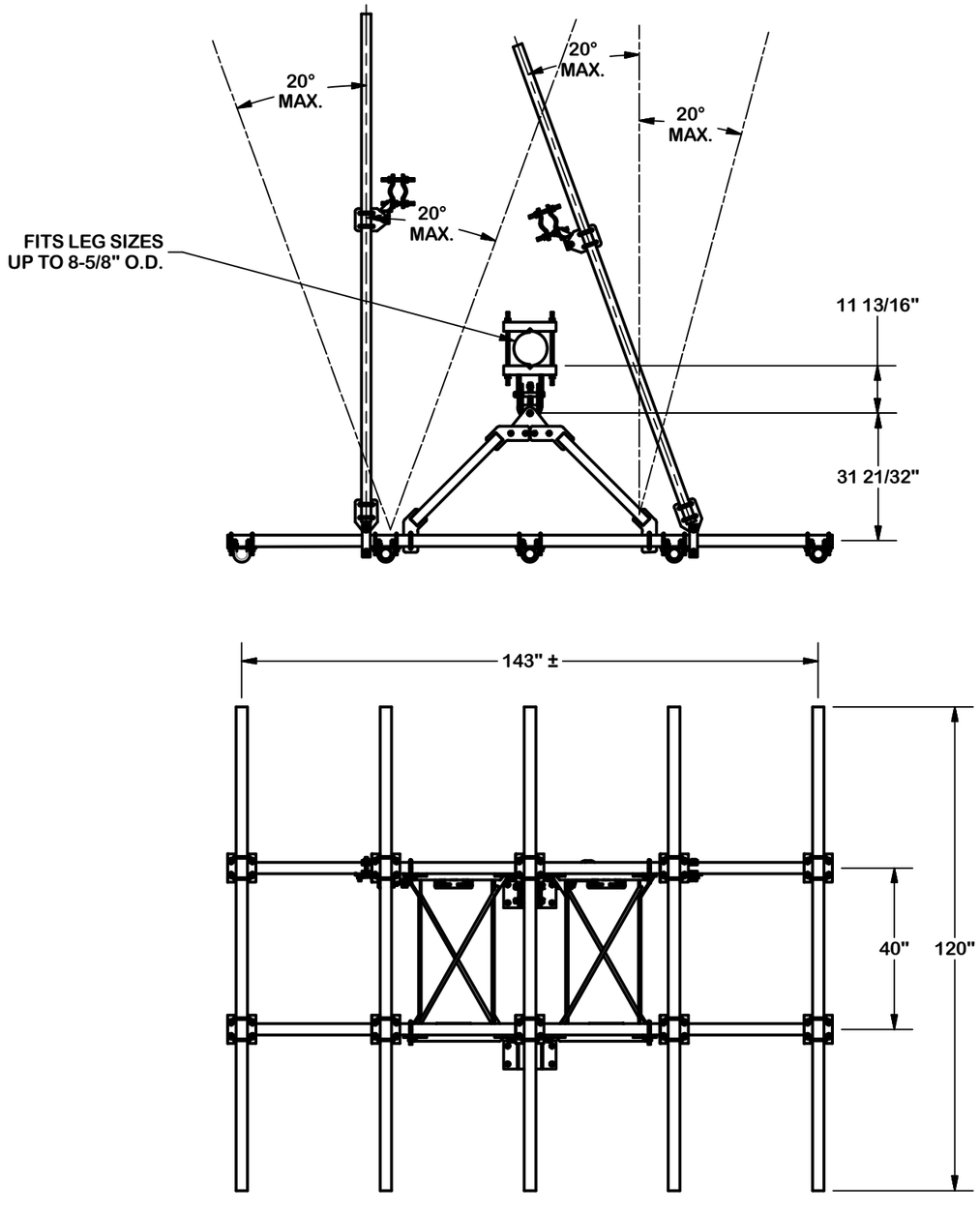
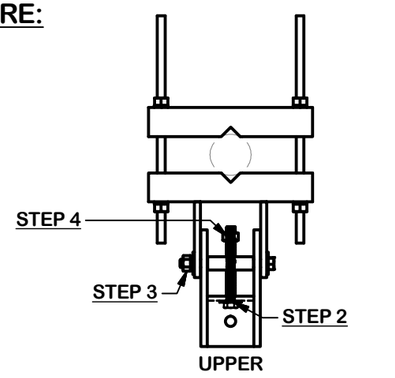
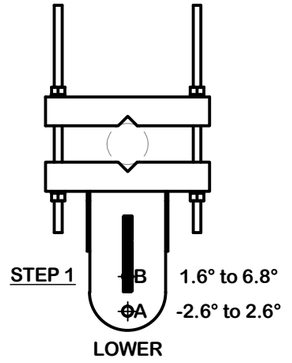
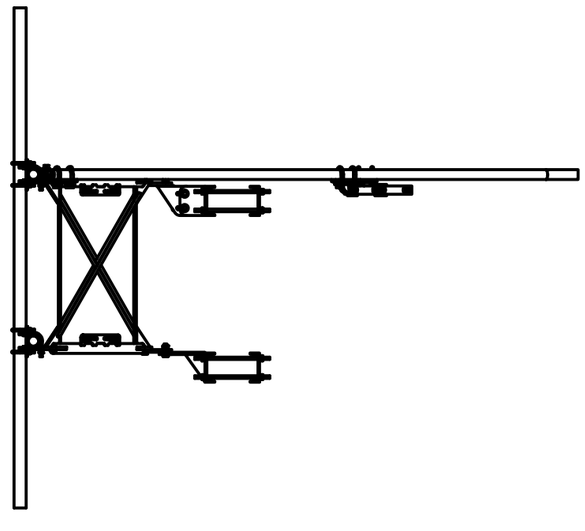


ANGLE CALIBRATING PROCEDURE:

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.







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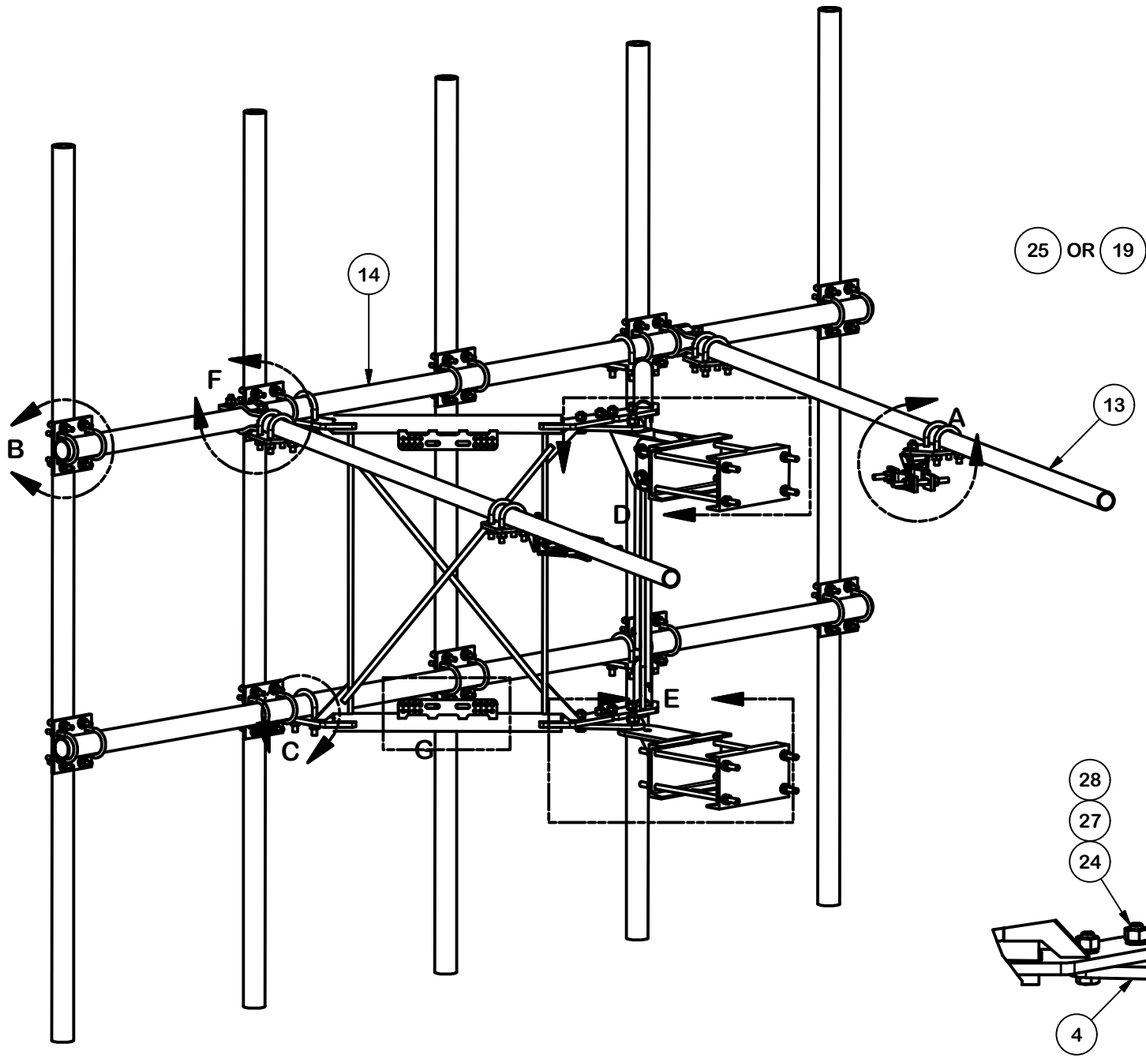
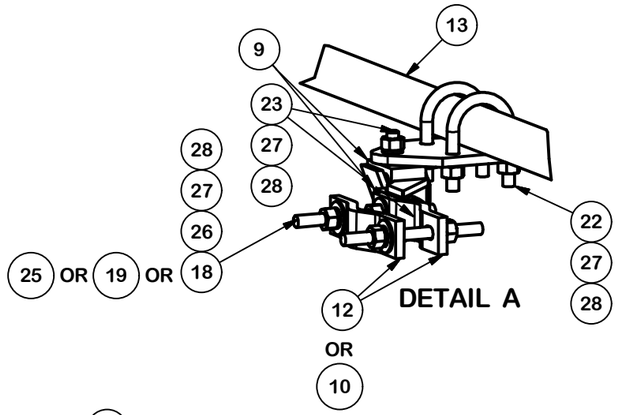
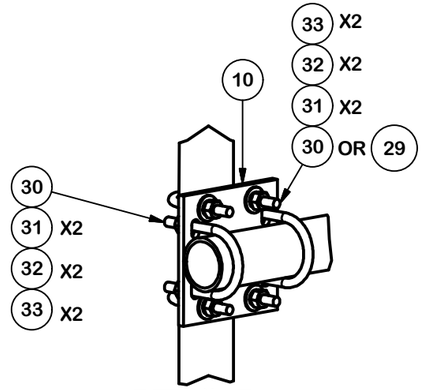
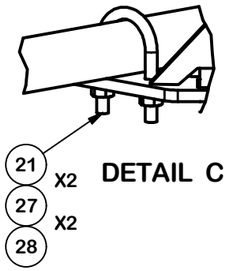




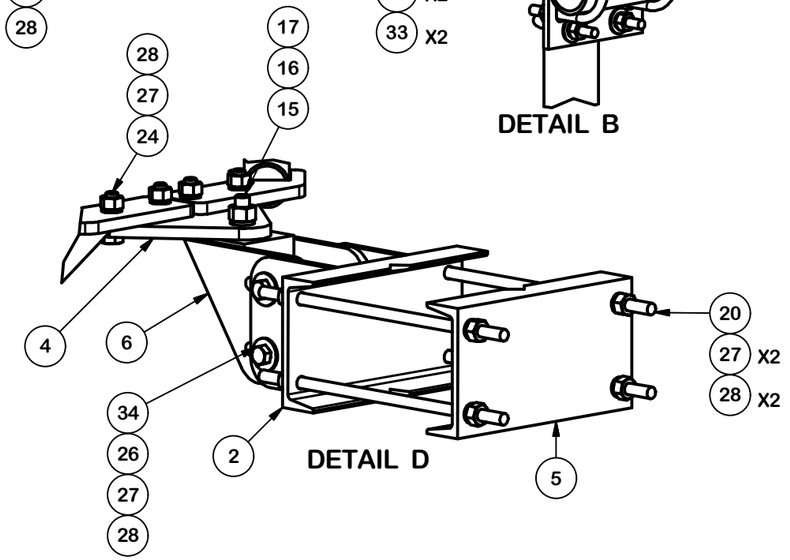
DETAIL A



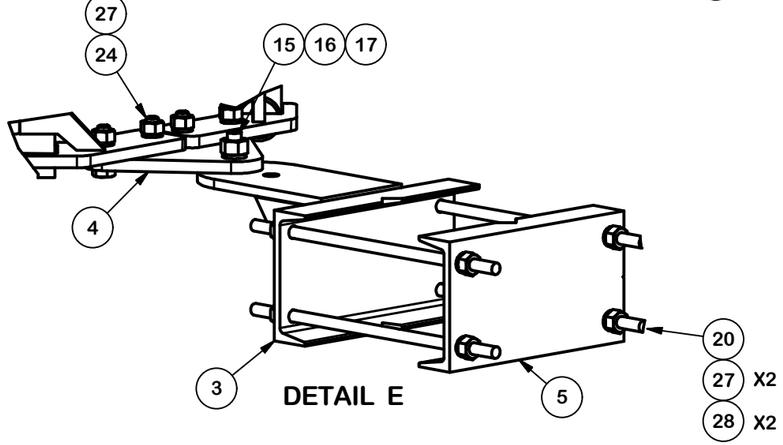
DETAIL B



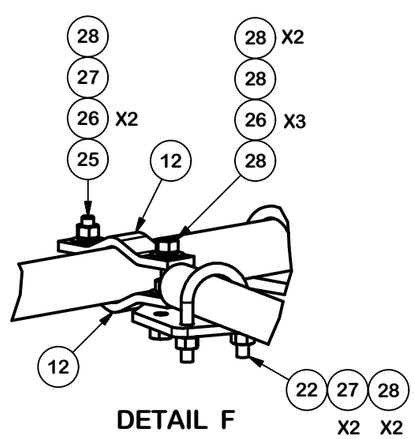
DETAIL C



DETAIL D



DETAIL E

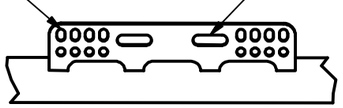


DETAIL F

7/16" LUG HOLES

REVIEW CARRIER STANDARDS FOR PROPER SURFACE PREPARTION AND ASSEMBLY OF ELECTRICAL CONNECTIONS

9/16" SLOTTED HOLE FOR EQUIPMENT PIPE U-BOLT



DETAIL G

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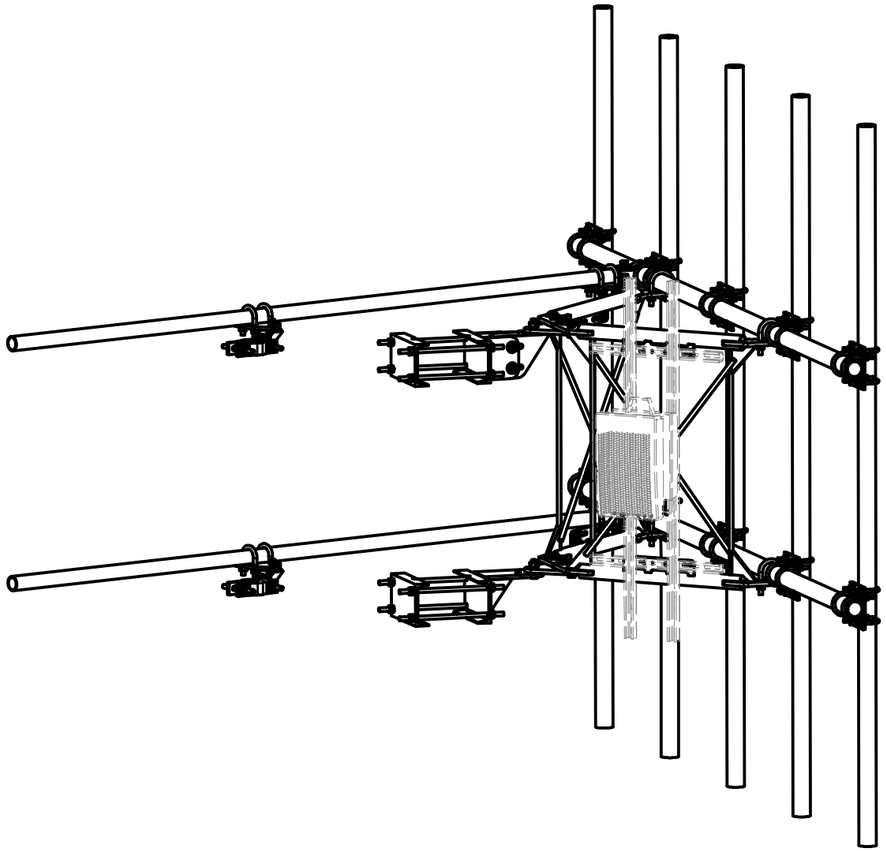
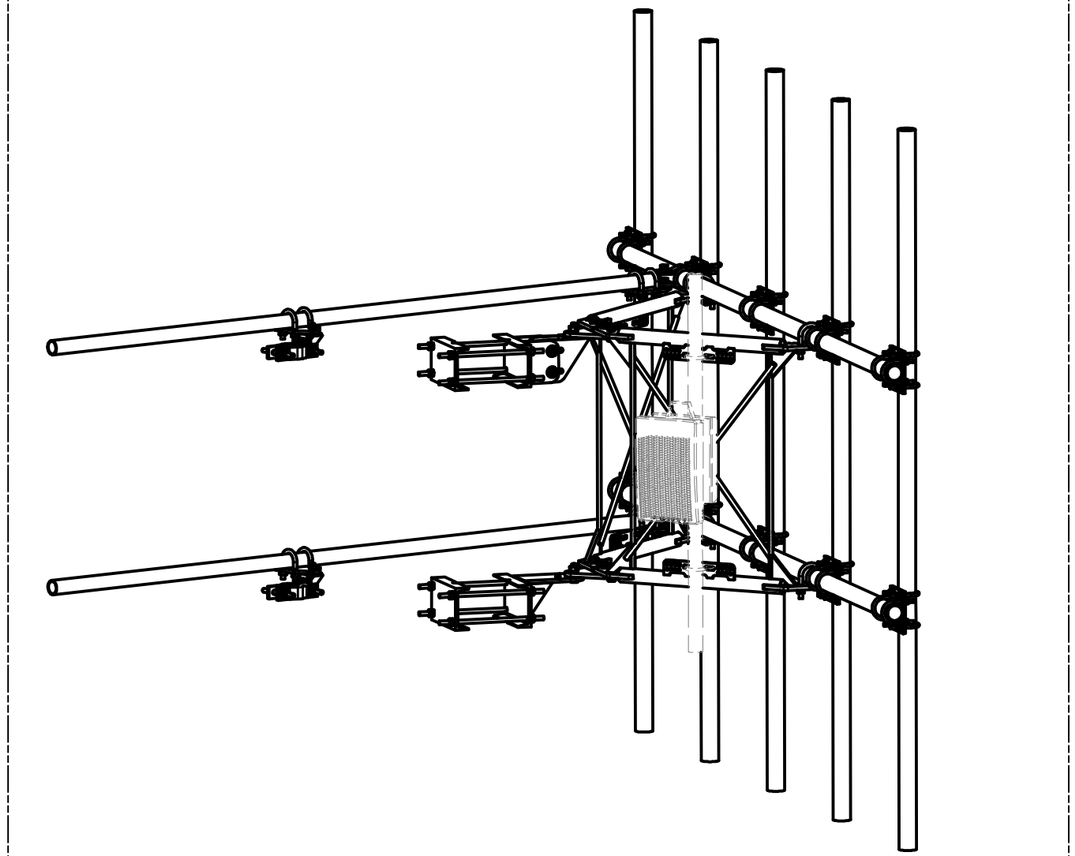
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.	PAGE
SP1	CSL 1/25/2017		VFA12-WLL-30120	4 OF 5
CLASS / SUB: 87 / 02	DRAWING USAGE: CUSTOMER	CHECKED BY: BMC 5/3/2018	DWG. NO.: VFA12-WLL-30120	



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

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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: CTNL223A

Citadel Groton Guyed
99 Briar Hill Road
Groton, Connecticut 06340

July 10, 2020

EBI Project Number: 6220002993

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**11.45%**

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

July 10, 2020

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

Emissions Analysis for Site: CTNL223A - Citadel Groton Guyed

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **99 Briar Hill Road** in **Groton, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 99 Briar Hill Road in Groton, 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) 2 UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

5) 4 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

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

7) 2 LTE channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

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 21 for the 1900 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 2100 MHz channel(s) in Sector A, the Ericsson AIR 21 for the 1900 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 2100 MHz channel(s) in Sector B, the Ericsson AIR 21 for the 1900 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

11) The antenna mounting height centerline of the proposed antennas is 177 feet above ground level (AGL).

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 21	Make / Model:	Ericsson AIR 21	Make / Model:	Ericsson AIR 21
Frequency Bands:	1900 MHz	Frequency Bands:	1900 MHz	Frequency Bands:	1900 MHz
Gain:	15.35 dBd	Gain:	15.35 dBd	Gain:	15.35 dBd
Height (AGL):	177 feet	Height (AGL):	177 feet	Height (AGL):	177 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	60 Watts	Total TX Power (W):	60 Watts	Total TX Power (W):	60 Watts
ERP (W):	2,056.61	ERP (W):	2,056.61	ERP (W):	2,056.61
Antenna A1 MPE %:	**0.24%**	Antenna B1 MPE %:	**0.24%**	Antenna C1 MPE %:	**0.24%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd
Height (AGL):	177 feet	Height (AGL):	177 feet	Height (AGL):	177 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):	8,071.93	ERP (W):	8,071.93	ERP (W):	8,071.93
Antenna A2 MPE %:	**1.50%**	Antenna B2 MPE %:	**1.50%**	Antenna C2 MPE %:	**1.50%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd
Height (AGL):	177 feet	Height (AGL):	177 feet	Height (AGL):	177 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts
ERP (W):	25,651.93	ERP (W):	25,651.93	ERP (W):	25,651.93
Antenna A3 MPE %:	**2.94%**	Antenna B3 MPE %:	**2.94%**	Antenna C3 MPE %:	**2.94%**
Antenna #:	**4**	Antenna #:	**4**	Antenna #:	**4**
Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32
Frequency Bands:	1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.85 dBd
Height (AGL):	177 feet	Height (AGL):	177 feet	Height (AGL):	177 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	8,728.31	ERP (W):	8,728.31	ERP (W):	8,728.31
Antenna A4 MPE %:	**1.00%**	Antenna B4 MPE %:	**1.00%**	Antenna C4 MPE %:	**1.00%**

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	5.68%
WSUB	2.54%
WQGN	0.79%
WNLC	1.76%
Sprint	0.68%
Site Total MPE % :	11.45%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	5.68%
T-Mobile Sector B Total:	5.68%
T-Mobile Sector C Total:	5.68%
Site Total MPE % :	11.45%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 1900 MHz UMTS	2	1028.30	177.0	2.36	1900 MHz UMTS	1000	0.24%
T-Mobile 600 MHz LTE	2	591.73	177.0	1.36	600 MHz LTE	400	0.34%
T-Mobile 600 MHz NR	2	591.73	177.0	1.36	600 MHz NR	400	0.34%
T-Mobile 700 MHz LTE	2	648.82	177.0	1.49	700 MHz LTE	467	0.32%
T-Mobile 1900 MHz LTE	2	2203.69	177.0	5.06	1900 MHz LTE	1000	0.51%
T-Mobile 2500 MHz LTE	2	6412.98	177.0	14.72	2500 MHz LTE	1000	1.47%
T-Mobile 2500 MHz NR	2	6412.98	177.0	14.72	2500 MHz NR	1000	1.47%
T-Mobile 1900 MHz LTE	2	2056.61	177.0	4.72	1900 MHz LTE	1000	0.47%
T-Mobile 2100 MHz LTE	2	2307.55	177.0	5.30	2100 MHz LTE	1000	0.53%
						Total:	**5.68%**

• 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.

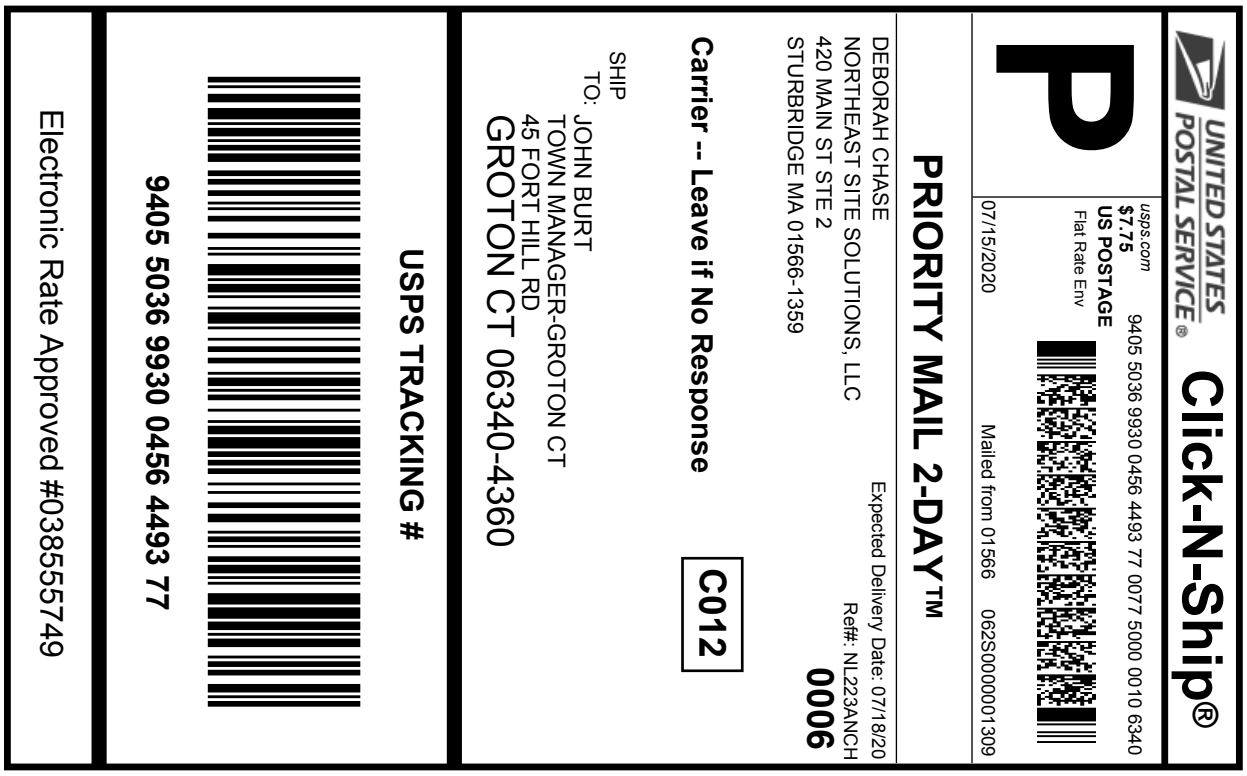
The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector A:	5.68%
Sector B:	5.68%
Sector C:	5.68%
T-Mobile Maximum MPE % (Sector A):	5.68%
Site Total:	11.45%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **11.45%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Exhibit G



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STURBRIDGE MA 01566-1359

To: JOHN BURT
TOWN MANAGER-GROTON CT
45 FORT HILL RD
GROTON CT 06340-4360

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DEBORAH CHASE
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420 MAIN ST STE 2
STURBRIDGE MA 01566-1359

Expected Delivery Date: 07/18/20
Ref#: NL223ANCH

0006

Carrier -- Leave if No Response

C026

SHIP TO: KEVIN QUINN
ZONING MANAGER- TOWN OF GROTON CT
134 GROTON LONG POINT RD
GROTON CT 06340-4873

USPS TRACKING #

9405 5036 9930 0456 4493 91

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Print Date:	07/15/2020
Ship Date:	07/15/2020
Expected Delivery Date:	07/18/2020

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

From: DEBORAH CHASE Ref#: NL223ANCH
NORTHEAST SITE SOLUTIONS, LLC
420 MAIN ST STE 2
STURBRIDGE MA 01566-1359

To: KEVIN QUINN
ZONING MANAGER- TOWN OF GROTON CT
134 GROTON LONG POINT RD
GROTON CT 06340-4873

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PRIORITY MAIL 2-DAY™

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NORTHEAST SITE SOLUTIONS, LLC
420 MAIN ST STE 2
STURBRIDGE MA 01566-1359

Expected Delivery Date: 07/18/20
Ref#: NL223L7ZAP

0006

Carrier -- Leave if No Response

C034

SHIP TO: BRIAN HICKS
CUMULUS MEDIA, INC.
3280 PEACHTREE RD NE
STE 2300
ATLANTA GA 30305-2455

USPS TRACKING #

9405 5036 9930 0456 4494 14

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Trans. #:	499897733
Print Date:	07/15/2020
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Expected Delivery Date:	07/18/2020

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

From: DEBORAH CHASE Ref#: NL223L7ZAP
NORTHEAST SITE SOLUTIONS, LLC
420 MAIN ST STE 2
STURBRIDGE MA 01566-1359

To: BRIAN HICKS
CUMULUS MEDIA, INC.
3280 PEACHTREE RD NE
STE 2300
ATLANTA GA 30305-2455

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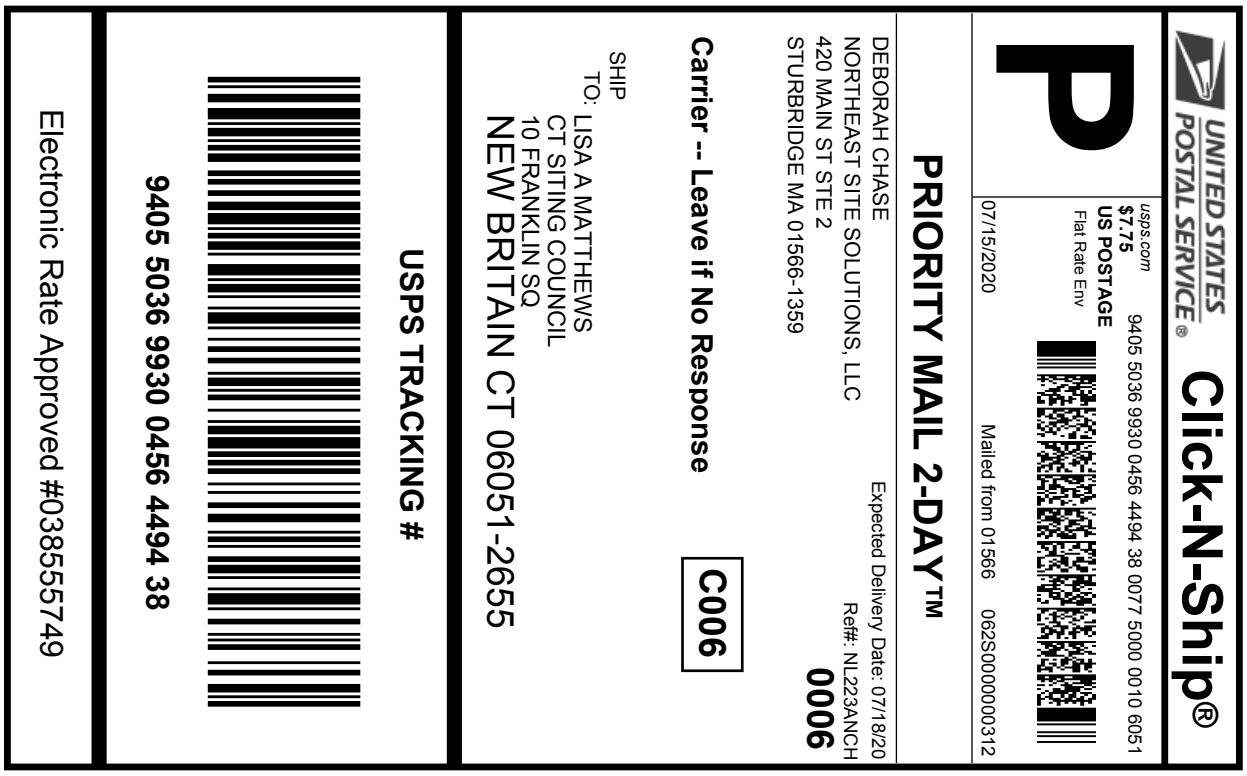

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Print Date:	07/15/2020
Ship Date:	07/15/2020
Expected Delivery Date:	07/18/2020

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

From: DEBORAH CHASE Ref#: NL223ANCH
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

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Exhibit H

From:	Deborah Chase
To:	"jburt@groton-ct.gov"; kquinn@groton-ct.gov
Subject:	99 BRIAR HILL ROAD, GROTON, CT 06340 T-MOBILE EXEMPT MODIFICATION APPLICATION (CTNL223A-ANCHOR)
Date:	Wednesday, July 15, 2020 1:58:00 PM
Attachments:	99 BRIAR HILL ROAD, GROTON, CT 06340 T-MOBILE EM APPLICATION (CTNL223A-ANCHOR).pdf image001.png

Good afternoon,

On behalf of our client, (T-Mobile), I am forwarding copies of T-Mobile's Exempt Modification

Application for a wireless telecommunications facility located at 99 Briar Hill Road in Groton.

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

NSS NORTHEAST SITE SOLUTIONS