



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

September 28, 2022

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

RE: Notice of Exempt Modification
179 Shunpike Road, Cromwell, CT 06416
Latitude: 41.623281
Longitude: -72.679005
T-Mobile Site#: CT11059C_Anchor_L600_Radio Upgrade

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 125-foot level of the existing 170-foot lattice tower located at 179 Shunpike Road, Cromwell, CT 06416. The tower is owned and property is owned by Cromwell Fire District. T-Mobile now intends to remove nine (9) existing antenna and replace with six (6) new 600/700/1900/2100/2500 MHz antenna. The new antennas would be installed at the 125-foot level of the lattice tower. This modification includes B2, B5 hardware that is both 4G (LTE), and 5G capable.

T-Mobile Planned Modifications:

Remove:

- (3) AIR21 B2P B4A Antenna
- (12) Coax Line
- (3) Twin Style TMA

Remove and Replace:

- (3) Andrew LNX-6515DS Antenna (Remove) – (3) RFS APXVAALL24 600/700/1900/2100 MHz Antenna (Replace)
- (3) AIR21 B2P B4A Antenna (Remove) – (3) AIR 6419 B41 2500 MHz Antenna (Replace)

Install New:

- (3) RRU 4480 B71+B85
- (3) RRU 4460 B25+B66
- (3) Hybrid Line

Existing to Remain: NONE



This facility was approved by the CT Siting Council Tower Share No.TS-VOICESTREAM-033-000609 on June 26, 2000. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-SOj-73, a copy of this letter is being sent to Steve Fortenbach, Mayor and Stuart Popper, Director of Planning and Development for the Town of Cromwell, as well as the property owner and the tower owner.

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

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



NSS

NORTHEAST
SITE SOLUTIONS

Turnkey Wireless Development

Attachments:

cc:

Steve Fortenbach, Mayor
Cromwell Town Hall
41 West Street
Cromwell, CT 06416

Stuart Popper, Director of Planning and Development
Cromwell Town Hall
41 West Street
Cromwell, CT 06416

Cromwell Fire District – property and tower owner
1 West Street
Cromwell, CT 06416

Exhibit A

Original Facility Approval



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Ten Franklin Square
New Britain, Connecticut 06051
Phone: (860) 827-2935
Fax: (860) 827-2950

File
Paul
Sharkey
Terry

June 26, 2000

J. Brendan Sharkey, Esq.
VoiceStream Wireless, Inc.
100 Filley Street
Cromwell, CT 06002

RE: TS-VOICESTREAM-033-000609 - VoiceStream Wireless request for an order to approve tower sharing at an existing telecommunications facility located at 179 Shunpike Road in Cromwell, Connecticut.

Dear Attorney Sharkey:

At a public meeting held June 20, 2000, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Any additional change to this facility may require an explicit request to this agency pursuant to General Statutes § 16-50aa or notice pursuant to Regulations of Connecticut State Agencies Section 16-50j-73, as applicable. Such request or notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

This decision applies only to this request for tower sharing and is not applicable to any other request or construction. The proposed shared use is to be implemented as specified in your letter dated June 9, 2000.

Thank you for your attention and cooperation.

Very truly yours,

Mortimer A. Gelston
Chairman

MAG/PMA/grg

c: Honorable Stanley A. Terry, Jr., First Selectman, Town of Cromwell

Exhibit B

Property Card



Patriot Properties Inc.

Parcel ID: **00109100** Location: **179 SHUNPIKE ROAD** Map-Lot **24-17B** Last Revaluation - **October 1, 2017**

Current Owner
CROMWELL FIRE DISTRICT
Percent: 100
0 1 WEST ST
CROMWELL CT 06416

Current Value Information

Use Code	Land Value	PA 490 Value	Building Value	Outbuildings	Total Value	Total Assessed
920	120,300	0	0	0	120,300	84,210
TOTAL	120,300	0	0	0	120,300	84,210

Previous Value Information

Tax Yr	Land Value	Bldg Value	Outbuildings	Total Value	Total Assessment
2018	120,300	0	0	120,300	84,210
2017	120,300	0	0	120,300	84,210
2016	118,140	0	0	118,140	82,700
2015	118,140	0	0	118,140	82,700
2014	118,140	0	0	118,140	82,700
2013	118,140	0	0	118,140	82,700

Sales Information

Grantee	Vol-Page	Type	SaleDate	SalePrice	Sale Verif	GeneralNotes
CROMWELL FIRE DISTRICT	86-469		09/21/1970	0		

General Notes

Communication Tower Fire Dept

Previous Owner(s)

Property Factors

Census 5701

Flood:
Topo:
Street: Paved
Dev. Map
Dev. Map

Zoning Data

Desc. %
R-25 100.00

Utilities

6 Septic
9 Well-Pot Wat

BAA

Activity Information

Date	Results	Visited By
09/07/2017	Change - Value Change Company	John Valente
05/19/2017	No Change - Field Review	Dave Stannard
11/13/2014	Permit- Miscellaneous	AO
01/31/2013	Permit- Miscellaneous	AO
01/07/2013	Permit- Miscellaneous	AO
09/11/2012	Permit - Measure Exterior	
09/11/2012	Permit- Miscellaneous	AO
10/22/2010	Permit- Miscellaneous	AO
04/12/2010	Permit- Miscellaneous	AO
04/06/2009	Permit- Miscellaneous	AO

Building Permit Information

Date	Permit #	Description	Amount	% Comp	Visit Date	CO Date	GeneralNotes
11/13/2014	23012	Other	15,000	100	11/13/2014	08/11/2015	Modifications to existing
01/31/2013	21434	Other	5,000	100	01/31/2013		Rplc & insll 2 Telecom ca
01/07/2013	21382	Other	15,000	100	01/07/2013	02/21/2013	Swap 12 of 12 existing an
07/31/2012	20958	Other	25,000	100	09/11/2012		Add 3 new antennas to exs
10/22/2010	19434	Electric	8,000	100	10/22/2010		Feed for cell towers
04/12/2010	18982	Electric	0	100	04/12/2010		Disconnect & re-connect c
04/13/2009	18277	Electric	15,000	100	04/06/2009		rep 6 antennas & modifyin
11/17/2008	18085	Electric	15,000	100	11/06/2008		Electric work at cell sit

Land Data

Use	Description	Units	Unit Type	Neiah	Land Adjustments	Special Land Calc	Appraised Value	PA 490 Asmt	Neigh Order	Notes
920	Mun Land Com	43,560	SF	ED			85,000	0	2700	
920	Mun Land Com	3,000	AC	ED			35,300	0	2700	

Total Area: 4.00 PA 490 Use Asmt: 0 Total Appraised: 120,300 Assessed Value: 84,210

ParcelID: 00109100
Bldg Seq 1 **Of** 1

Location: 179 SHUNPIKE ROAD

Printed By: Shawna 04/06/2018 4:42:44PM

Exterior Information

Building Type:
 Story Ht:
 Living Units: 0
 Foundation:
 Prim. Ext. Wall:
 Sec. Ext. Wall:
 Roof Type:
 Roof Cover:
 Avg. Wall Ht:
 Color:

Condo Information

Name:
 Style:
 Location:
 Tot Units:

General Information

Year Blt:
 Grade:
 Remodeled Yr:
 Rem. Kitchen Yr:
 Rem. Bath Yr:

Interior Information

Prime Wall:
 Sec. Wall:
 Floor Type:
 Sec. Floor:
 Heat Fuel:
 Heat Type:
 Sec. Ht Type:
 % A/C: 0
 % Sprinkled: 0
 Bsmt. Gar: 0
 Kitchens: 0 Add. Kit: 0
 Fireplaces: 0 Gas: 0
 Int. Condition: Typical

Depreciation %

Phys Cond Average 0.00
 Func
 Econ
 Spec
 OV
 Total %Dep: 0.00

Calculation

Basic \$/SQ 0.00
 Replacement Cost 0
 Depreciation 0
 Depreciated Value 0
 Final Total (Rounded) 0

Room Count

Total Rooms:
 Bedrooms:

Bath Features

Full Baths: 0
 Addl. Full Baths: 0
 Half Baths: 0
 Addl. Half Baths: 0
 Full Bths Below: 0
 Half Bths Below: 0
 Other Fixtures: 0
 Total Baths: 0.0

Extra Features / Yard Items (1st 10 Lines Displayed)

Code	Description	Qty	Size	Cond.	Year	Unit Price	Dep%	UndepValue	Appraised Value	Assessment
------	-------------	-----	------	-------	------	------------	------	------------	-----------------	------------

Total Sp. Features: **Total Yard Items** **Total Appraised:** **Total Assessed Value**

Sub Area Detail

Code	Desc.	Living	Gross Area
------	-------	--------	------------

Total



Exhibit C

Construction Drawings

MODIFICATION OF EXISTING WIRELESS FACILITY BY



T-MOBILE NORTHEAST LLC

PROJECT TITLE: ANCHOR

SITE NUMBER: CT11059C

SITE NAME: ROCKYHILL/ I-91/ X23

SITE ADDRESS: 179 SHUNPIKE ROAD

CROMWELL, CT 06416

(RF CONFIG: 67E5998E_1XAIR+1OP)

APPLICANT:

T-Mobile
T-MOBILE NORTHEAST LLC

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



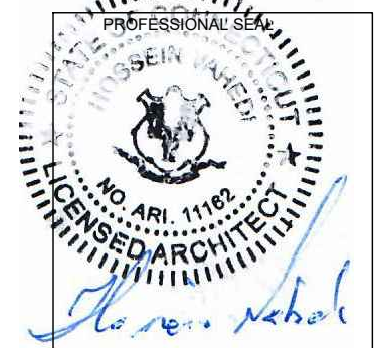
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
203-275-6669

CONSULTANT:



Architects . Engineers . Surveyors

462 WALNUT STREET, SUITE 1
NEWTON, MA 02460
617-212-3123



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PROJECT NOTES:

- 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.
- DEVELOPMENT AND USE OF THE SITE WILL CONFORM TO ALL APPLICABLE CODES, ORDINANCES AND SPECIFICATIONS.

CODE COMPLIANCE:

ALL WORK SHALL COMPLY WITH THE CURRENT NATIONAL AND CONNECTICUT STATE BUILDING AND LIFE SAFETY CODES, SUPPLEMENTS AND AMENDMENTS INCLUDING BUT NOT LIMITED TO THE 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.

CONTRACTOR'S NOTES:

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.

PRIOR TO INSTALLATION OF THE PROPOSED EQUIPMENT, A STRUCTURAL EVALUATION SHOULD BE PERFORMED TO CERTIFY THAT THE EXISTING/PROPOSED STRUCTURE AND COMPONENTS HAVE ADEQUATE STRUCTURAL CAPACITY PER ALL THE APPLICABLE CODES AND STANDARDS. CONTRACTOR SHOULD REVIEW THE REPORT AND ADHERE TO THE REPORT FULLY AND ALL THE RECOMMENDATIONS THEREIN. REFER TO STRUCTURAL ANALYSIS REPORT DATED 04/14/2022 PREPARED BY EFI GLOBAL INC. AND MOUNT STRUCTURAL ANALYSIS REPORT DATED 4/14/2022 PREPARED BY EFI GLOBAL INC.

811 Connecticut - Call Before You Dig
811 or 1-800-922-4455
Advance Notice: Minimum of 2 working days in advance, no more than 30 days in advance

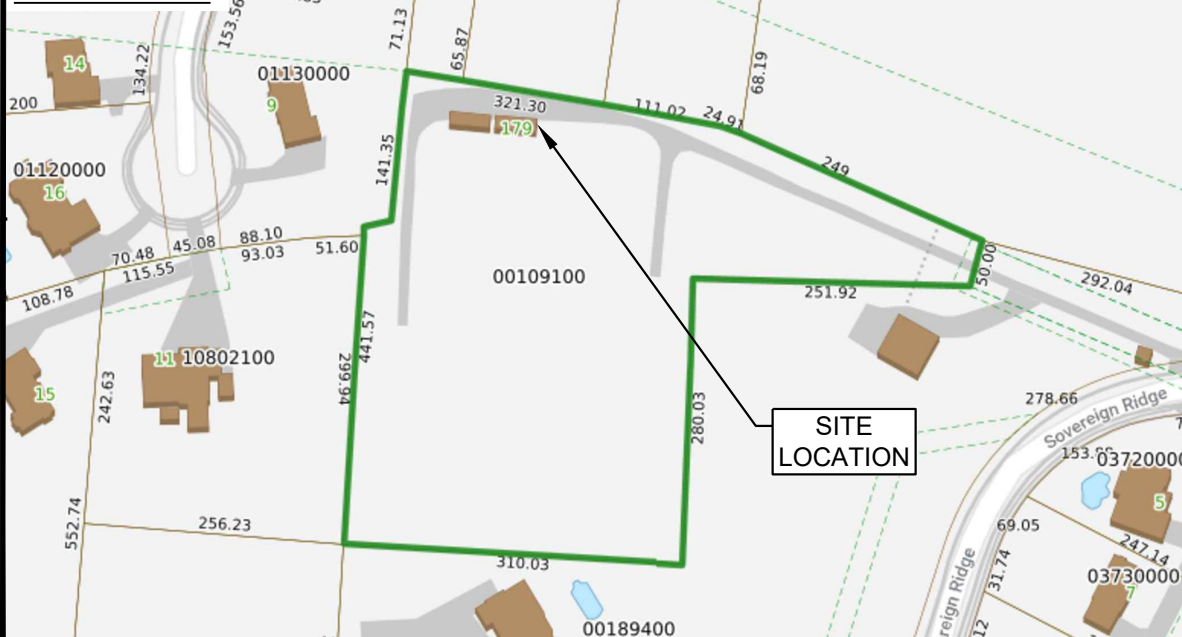
APPROVALS:

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

SITE IMAGE:



SITE VICINITY :



PROJECT SUMMARY:

EQUIPMENT: UPGRADE THE EXISTING RBS 6131 CABINET, REMOVE (1) OF (2) EXISTING NORTEL S8000 CABINET, ADD A B160 AND 6160 CABINET IN EXISTING T-MOBILE EQUIPMENT AREA.

ANTENNAS: REMOVE ALL (9) EXISTING ANTENNAS AND REPLACE WITH (6) NEW ANTENNAS ON THE TOWER.

COMPONENTS: REMOVE (3) OF (3) EXISTING TMA, ADD (6) NEW RADIOS (RRU), AT ANTENNAS.

CABLES: REMOVE ALL COAX CABLES AND (1) 9X18 HCS, ADD (3) 6X24 HCS FOR FINAL CONFIGURATION OF (3) 6X24 HCS CABLES.

PROJECT INFORMATION:

ADDRESS: 179 SHUNPIKE ROAD
CROMWELL, CT 06416

COORDINATES: 41.623281 N, -72.679005 W
GROUND ELEV: 264± (AMSL)

STRUCTURE TYPE: LATTICE TOWER

JURISDICTION: CROMWELL, CT

PROJECT TEAM:

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

LANDLORD: CROMWELL FIRE DISTRICT
1 WEST STREET
CROMWELL, CT 06416

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

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

SHEET INDEX:

T-1:	TITLE SHEET
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A-2:	ELEVATION AND ANTENNA PLANS
A-3:	ANTENNA AND EQUIPMENT SPECIFICATIONS
A-4:	ANTENNA MOUNTING DETAILS
E-1:	ELECTRICAL DETAILS

REV	DESCRIPTION	DATE
A	PRELIMINARY	04/18/22
0	FINAL ISSUED	05/02/22
1	REVISED PER COMMENTS	09/30/22

SITE NUMBER: CT11059C
SITE NAME: ROCKYHILL/ I-91/ X23
SITE ADDRESS: 179 SHUNPIKE ROAD
CROMWELL, CT 06416

SHEET TITLE:
T-1: TITLE SHEET

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GENERAL NOTES:

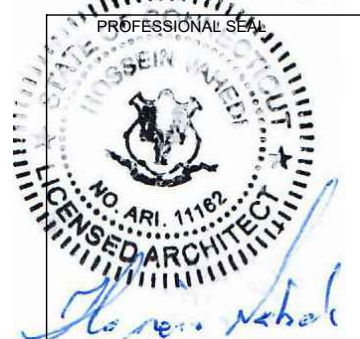
1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.
2. THE ARCHITECT/ENGINEER HAS MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE CLIENT'S REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS.
6. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S / VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
7. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS DURING CONSTRUCTION.
8. THE CONTRACTOR SHALL COMPLY WITH ALL PERTINENT SECTIONS OF THE BASIC STATE BUILDING CODE, LATEST EDITION, AND ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJEC
9. THE CONTRACTOR SHALL NOTIFY THE CLIENT'S REPRESENTATIVE IN WRITING WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE CLIENT'S REPRESENTATIVE.
10. THE WORK SHALL CONFORM TO THE CODES AND STANDARDS OF THE FOLLOWING AGENCIES AS FURTHER CITED HEREIN:
 - A. ASTM: AMERICAN SOCIETY FOR TESTING AND MATERIALS, AS PUBLISHED IN "COMPILATION OF ASTM STANDARDS BUILDING CODES" OR LATEST EDITION.
 - B. AWS: AMERICAN WELDING SOCIETY INC. AS PUBLISHED IN "STANDARD D1.1-08, STRUCTURAL WELDING CODE" OR LATEST EDITION.
 - C. AISC: AMERICAN INSTITUTE FOR STEEL CONSTRUCTION AS PUBLISHED IN "CODE FOR STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES"; "SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS" (LATEST EDITION).
11. BOLTING:
 - A. BOLTS SHALL BE CONFORMING TO ASTM A325 HIGH STRENGTH, HOT DIP GALVANIZED WITH ASTM A153 HEAVY HEX TYPE NUTS.
 - B. BOLTS SHALL BE 3/4"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. 2018 LIFE SAFETY CODE NFPA - 101.

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


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, SUITE 1
 NEWTON, MA 02460
 617-212-3123



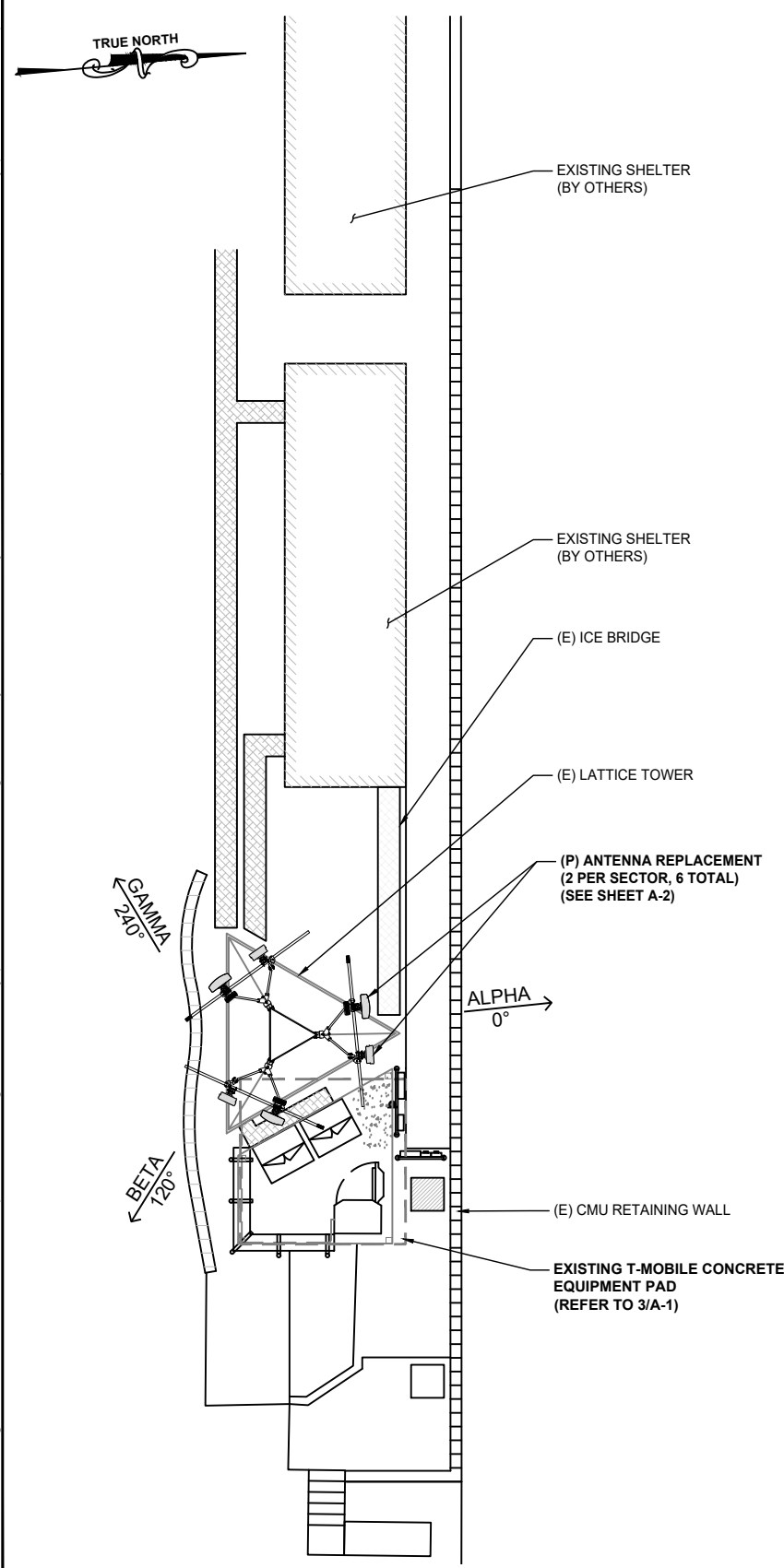
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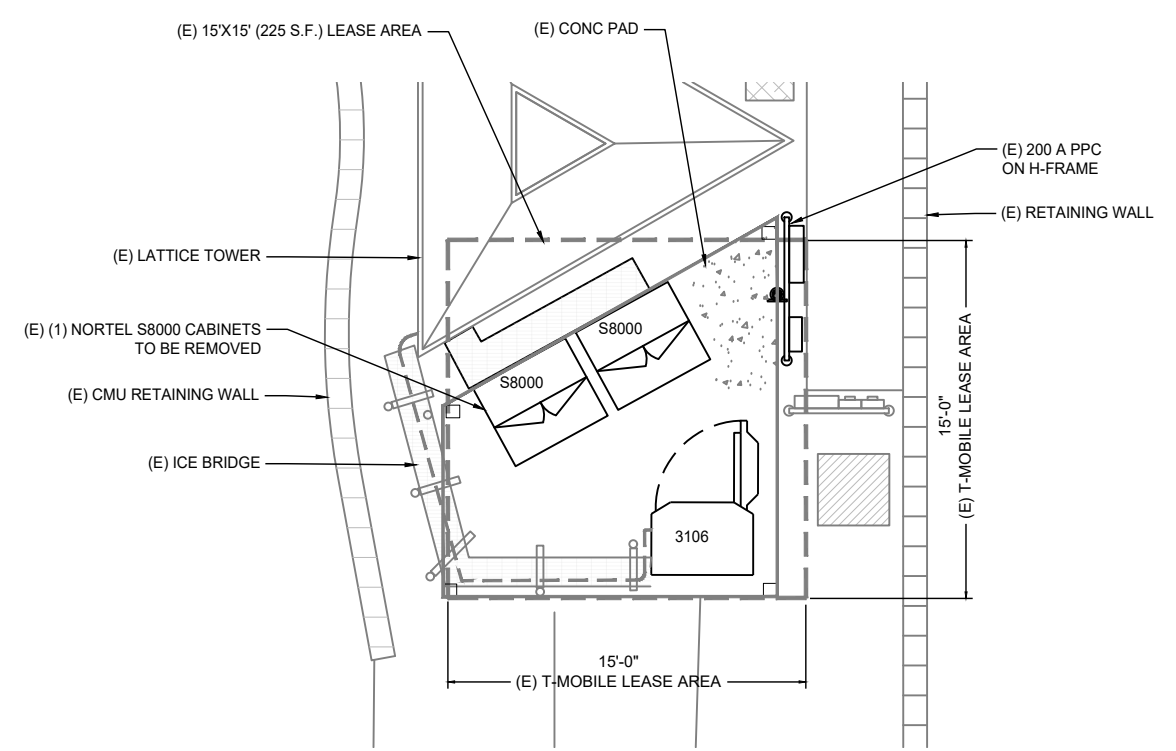
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 SITE NAME: ROCKYHILL/ I-91/ X23
 SITE ADDRESS: 179 SHUNPIKE ROAD
 CROMWELL, CT 06416

SHEET TITLE:
 N-1: GENERAL NOTES

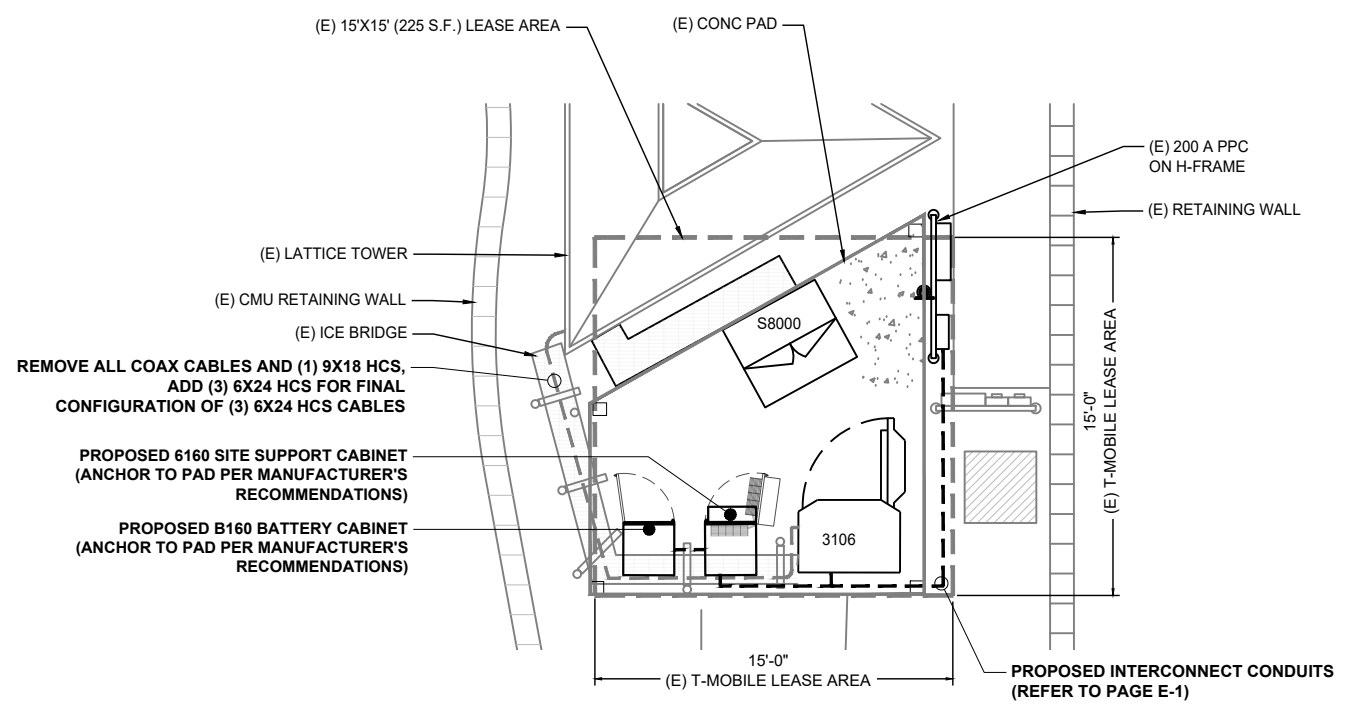
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SITE PLAN
SCALE: 1/16" = 1'-0"
1
A-1



EXISTING EQUIPMENT LAYOUT
SCALE: 1/8" = 1'-0"
2
A-1



PROPOSED EQUIPMENT LAYOUT
SCALE: 1/8" = 1'-0"
3
A-1

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

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, SUITE 1
NEWTON, MA 02460
617-212-3123
PROFESSIONAL SEAL
Thomas Nehal

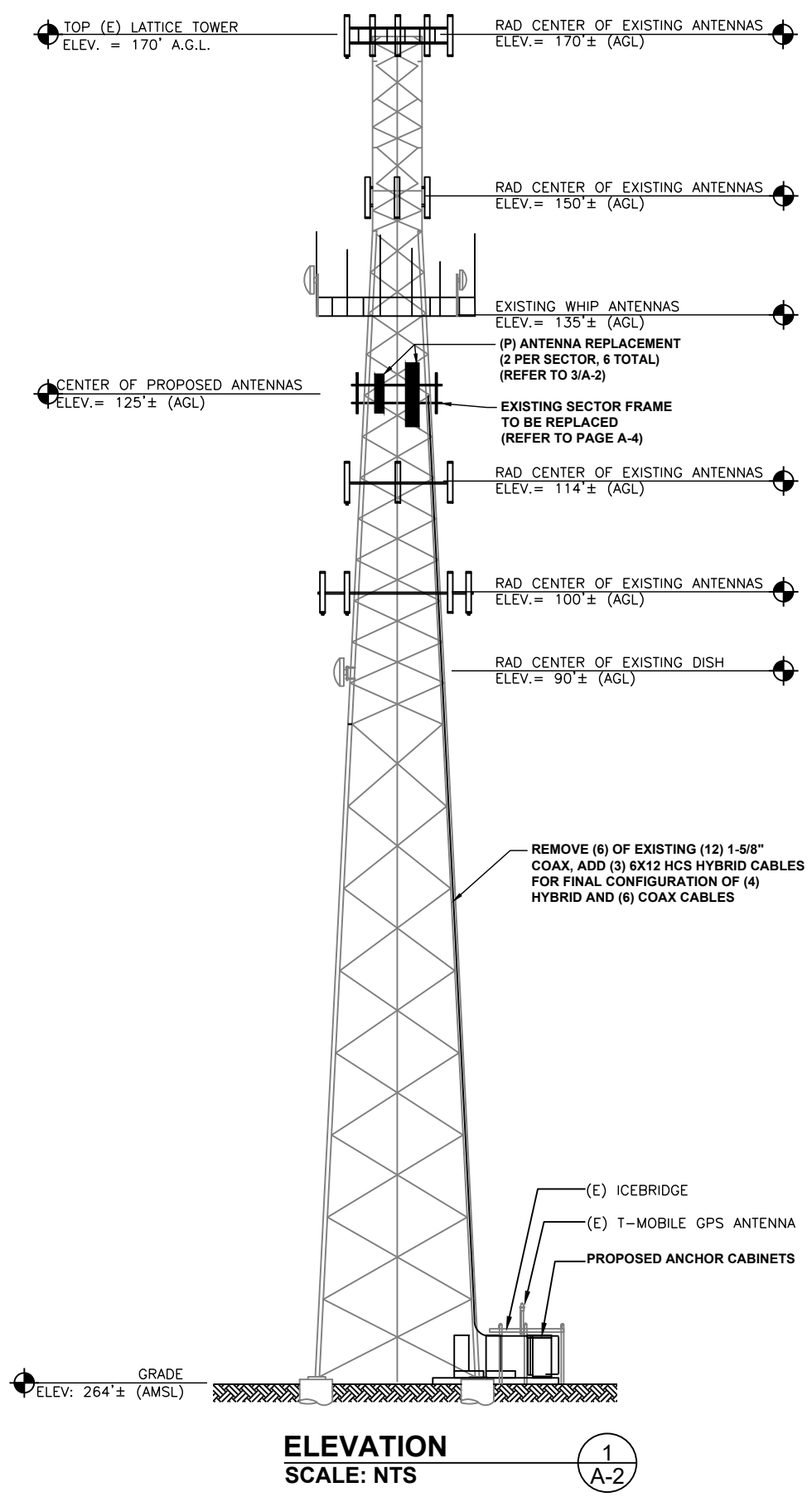
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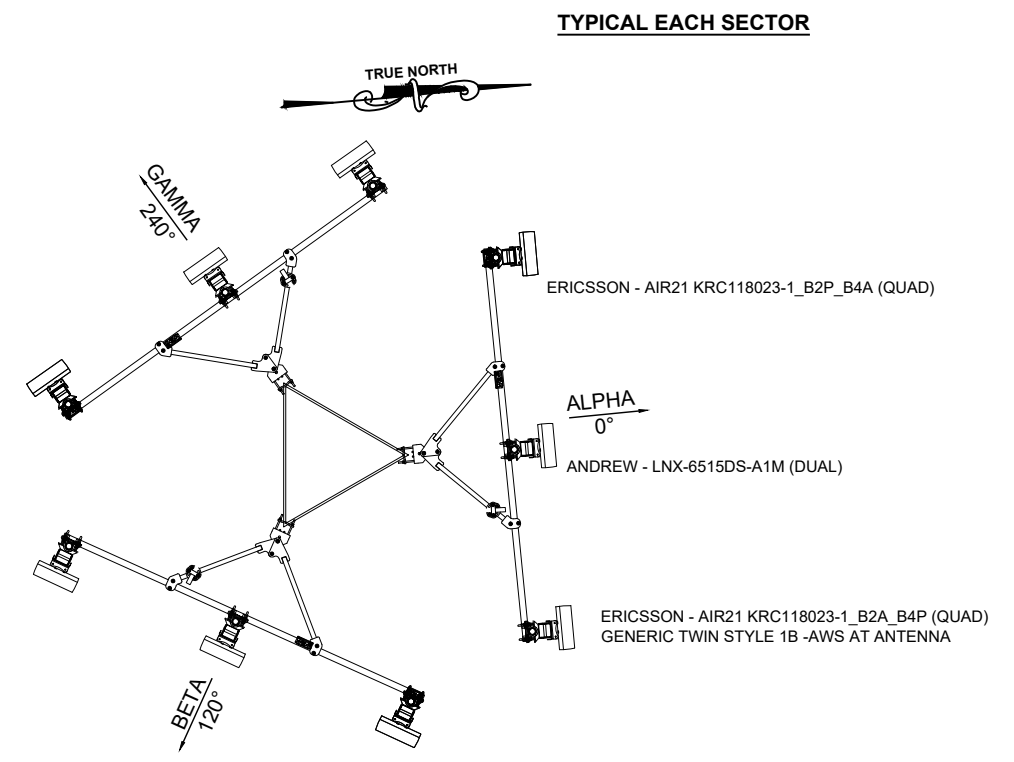
SITE NUMBER: CT11059C
SITE NAME: ROCKYHILL/ I-91/ X23
SITE ADDRESS: 179 SHUNPIKE ROAD
CROMWELL, CT 06416

SHEET TITLE:
A-1: PLAN, ELEVATION AND MOUNTING DETAILS

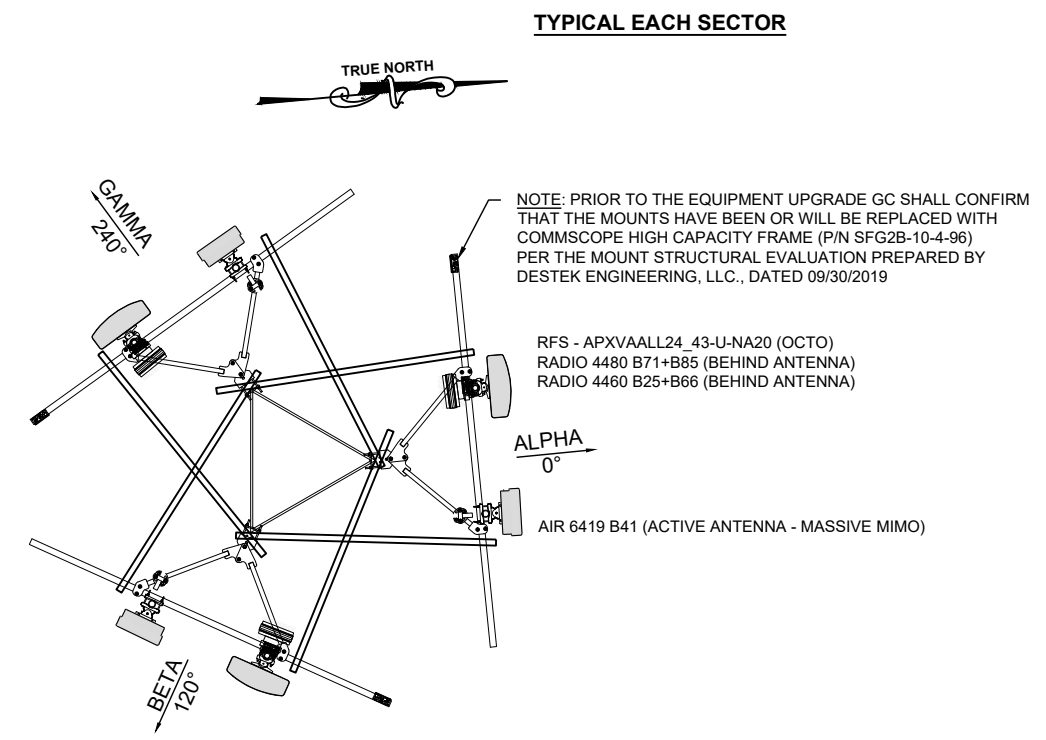
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ELEVATION
SCALE: NTS 1
A-2



EXISTING ANTENNA PLAN
N.T.S. 2
A-2



FINAL ANTENNA PLAN
N.T.S. 3
A-2

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

NSS NORTHEAST
SITE SOLUTIONS
Turnkey Wireless Development
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203-275-6669

CONSULTANT:
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Architects . Engineers . Surveyors
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617-212-3123

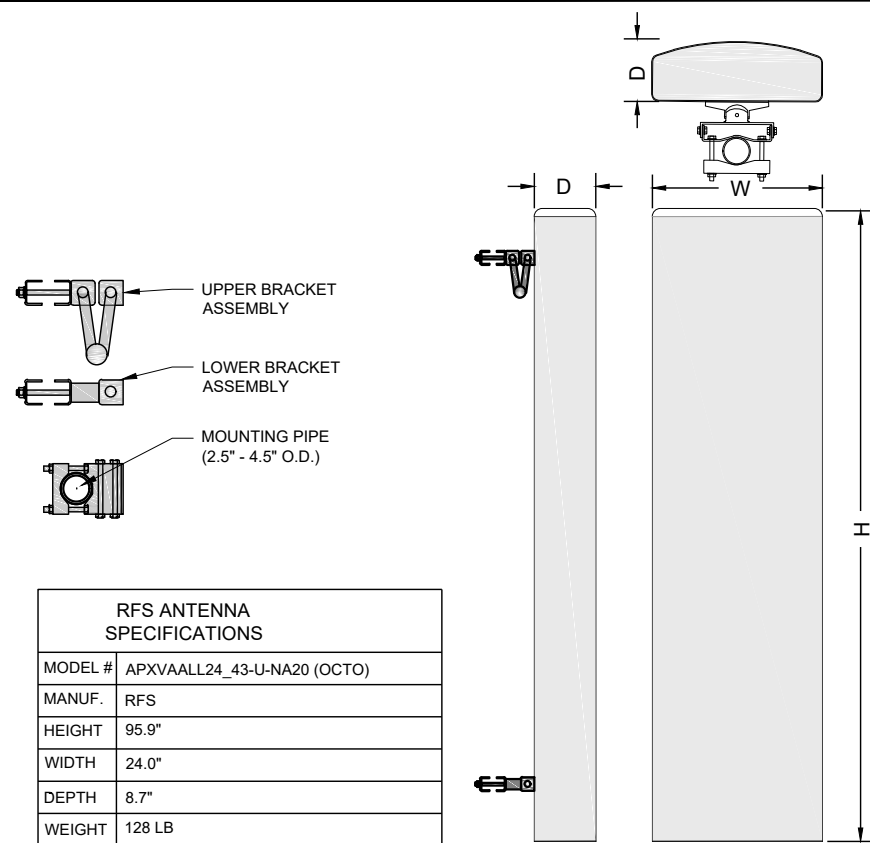
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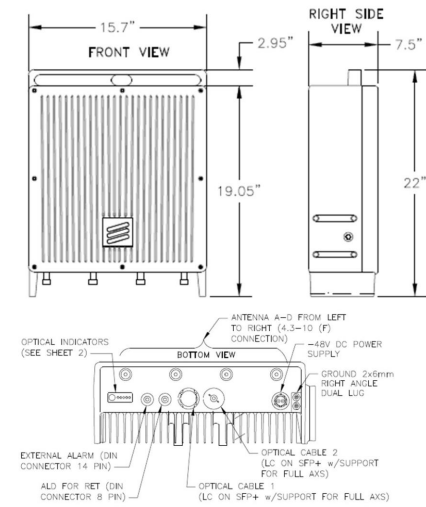
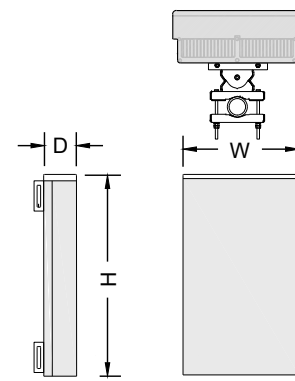
SHEET TITLE:
A-2: ELEVATION AND ANTENNA PLANS

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RFS ANTENNA SPECIFICATIONS	
MODEL #	APXVAALL24_43-U-NA20 (OCTO)
MANUF.	RFS
HEIGHT	95.9"
WIDTH	24.0"
DEPTH	8.7"
WEIGHT	128 LB

ANTENNA SPECIFICATIONS	
MODEL #	AIR6419 B41
MANUF.	ERICSSON
HEIGHT	33.3"
WIDTH	20.9"
DEPTH	9"
WEIGHT	83.3 LB



RRU SPECIFICATIONS	
MODEL #	4480 B71
MANUF.	ERICSSON
LENGTH	22.0"
WIDTH	15.7"
DEPTH	7.5"
WEIGHT	93.0 LB

RFS ANTENNA
N.T.S

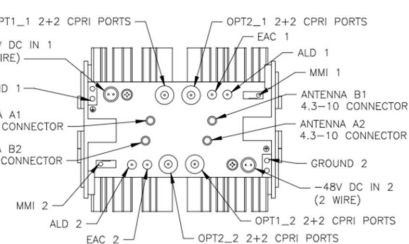
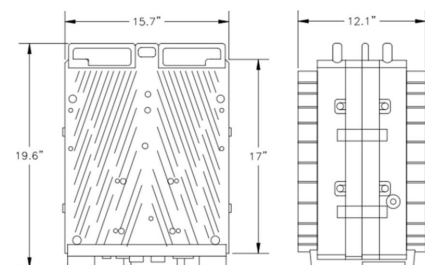
1
A-3

ERICSSON ANTENNA
N.T.S

2
A-3

REMOTE RADIO UNIT
N.T.S

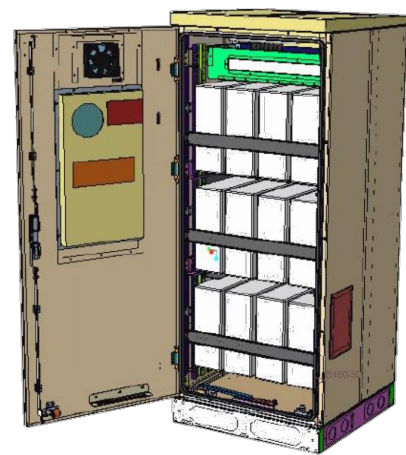
3
A-3



RRU SPECIFICATIONS	
MODEL #	4460 B2/25
MANUF.	ERICSSON
LENGTH	19.6"
WIDTH	15.7"
DEPTH	12.1"
WEIGHT	109 LB

REMOTE RADIO UNIT
N.T.S

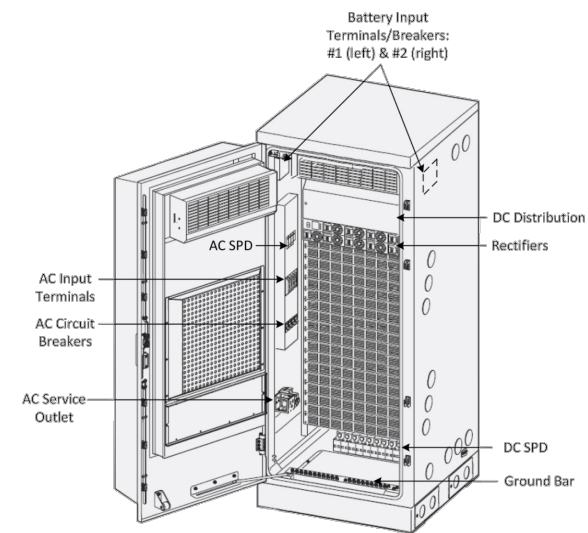
4
A-3



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

BATTERY CABINET
N.T.S.

5
A-3



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

SITE SUPPORT CABINET
N.T.S.

6
A-3

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

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

CONSULTANT:
FORESITE LLC
Architects . Engineers . Surveyors
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PROFESSIONAL SEAL
Thomas Nehal

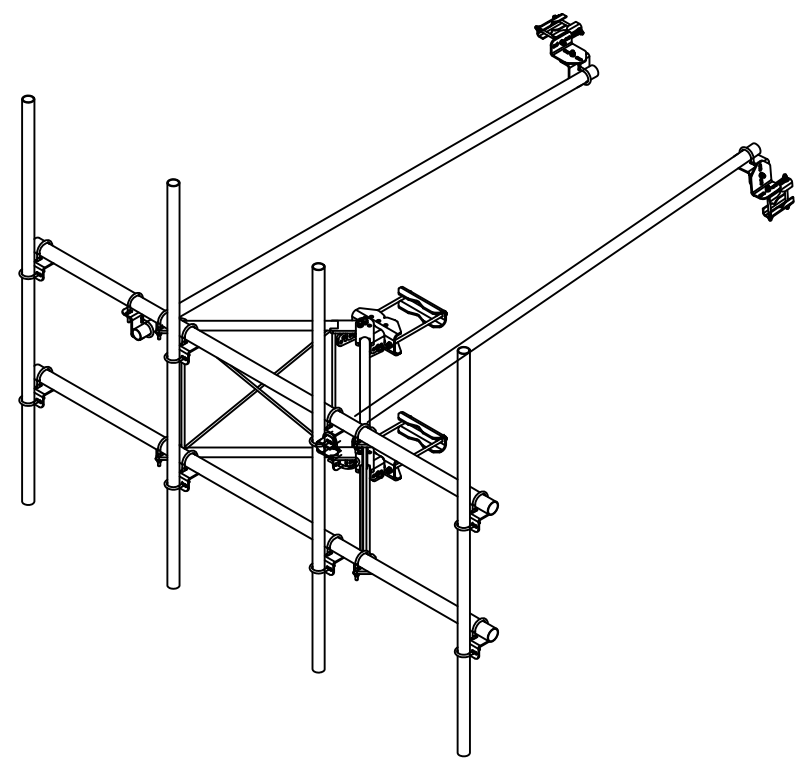
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SITE NAME: ROCKYHILL/ I-91/ X23
SITE ADDRESS: 179 SHUNPIKE ROAD
CROMWELL, CT 06416

SHEET TITLE:
A-3: ANTENNA AND EQUIPMENT SPECS

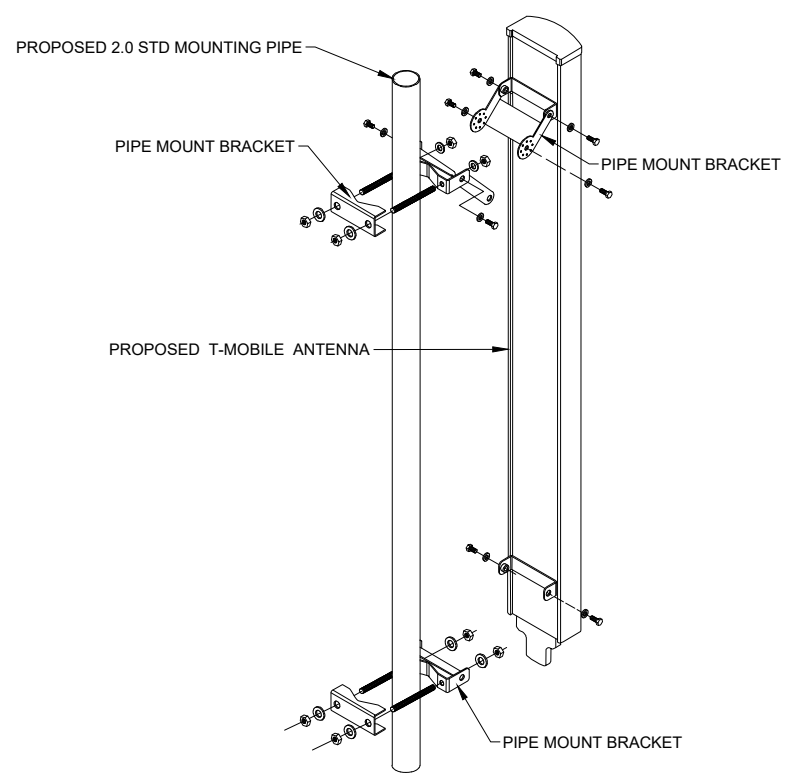
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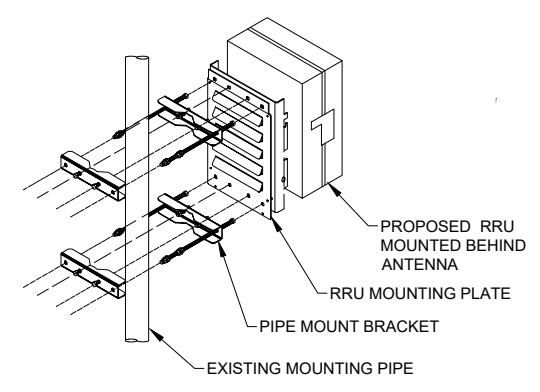
COMMSCOPE HIGH CAPACITY SECTOR FRAME SPECIFICATIONS	
MODEL #	SFG2B-10-4-96
MANUF.	COMMSCOPE
HEIGHT	96.0"
FACE WIDTH	10.5'
MOUNTING DIA.	1 1/2" MIN, 8 5/8" MAX.
WEIGHT	380 LB

NOTE:
 1- INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
 2- (2) TIEBACK ARMS ARE ATTACHED DIRECTLY TO THE ADJACENT MOUNT'S TOWER LEG SHOULD BE USED.

SECTOR FRAME 1
 N.T.S. A-4



ANTENNA MOUNT DETAIL 2
 N.T.S. A-4

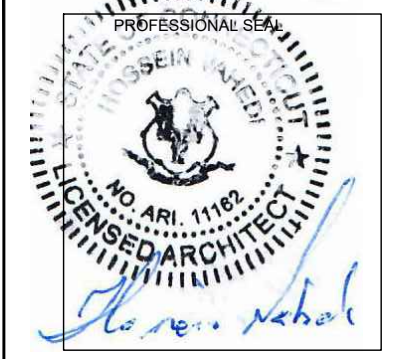


RRU MOUNT DETAIL 3
 N.T.S. A-4

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

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 SITE SOLUTIONS
Turnkey Wireless Development
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 STURBRIDGE, MA 01566
 203-275-6669

CONSULTANT:
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 Architects . Engineers . Surveyors
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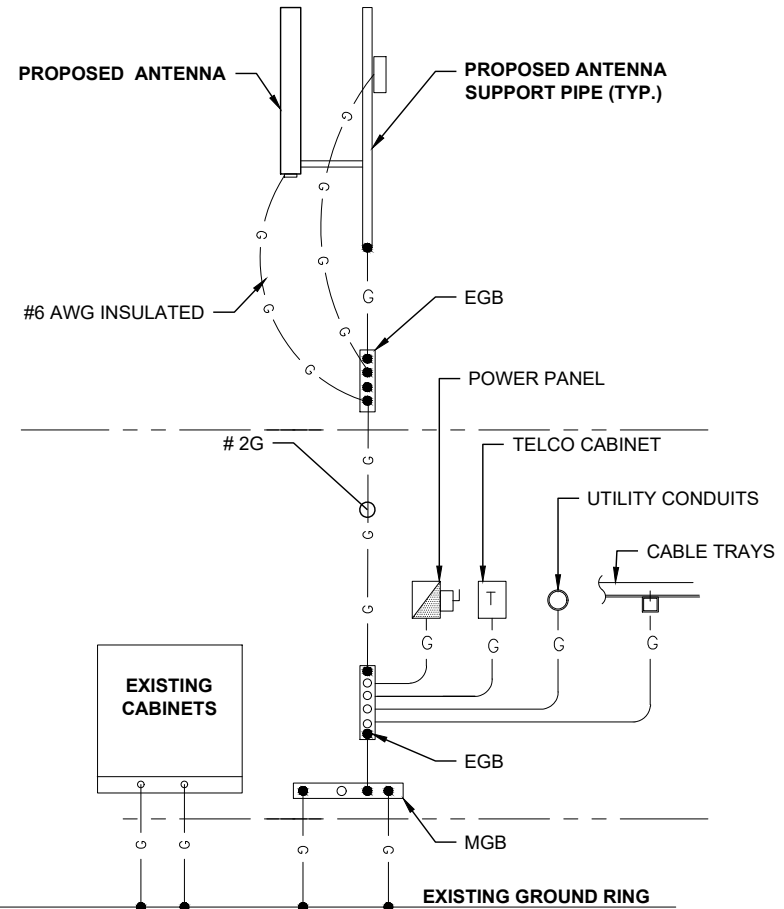
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 SITE ADDRESS: 179 SHUNPIKE ROAD
 CROMWELL, CT 06416

SHEET TITLE:
 A-4: ANTENNA MOUNTING DETAILS

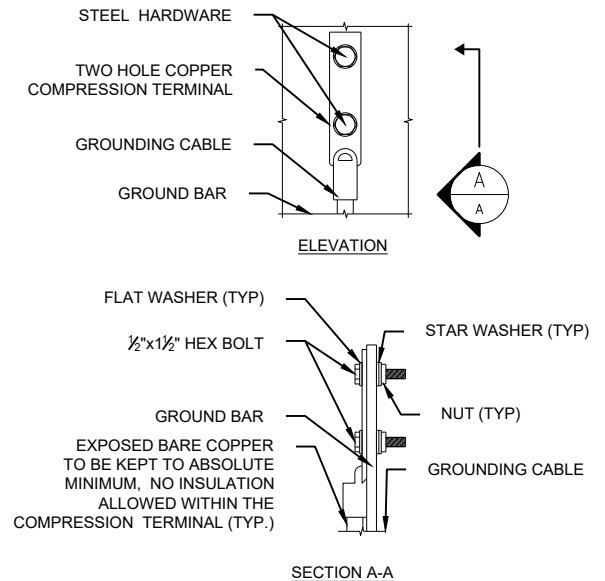
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ELECTRICAL & GROUNDING NOTES

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

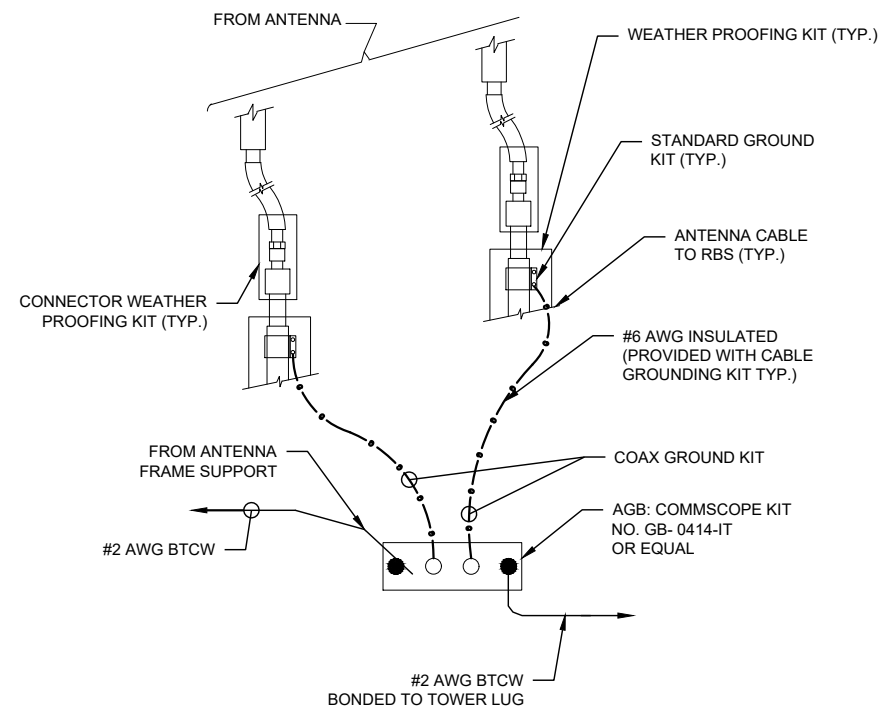


GROUNDING RISER DIAGRAM 1
N.T.S. E-1



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

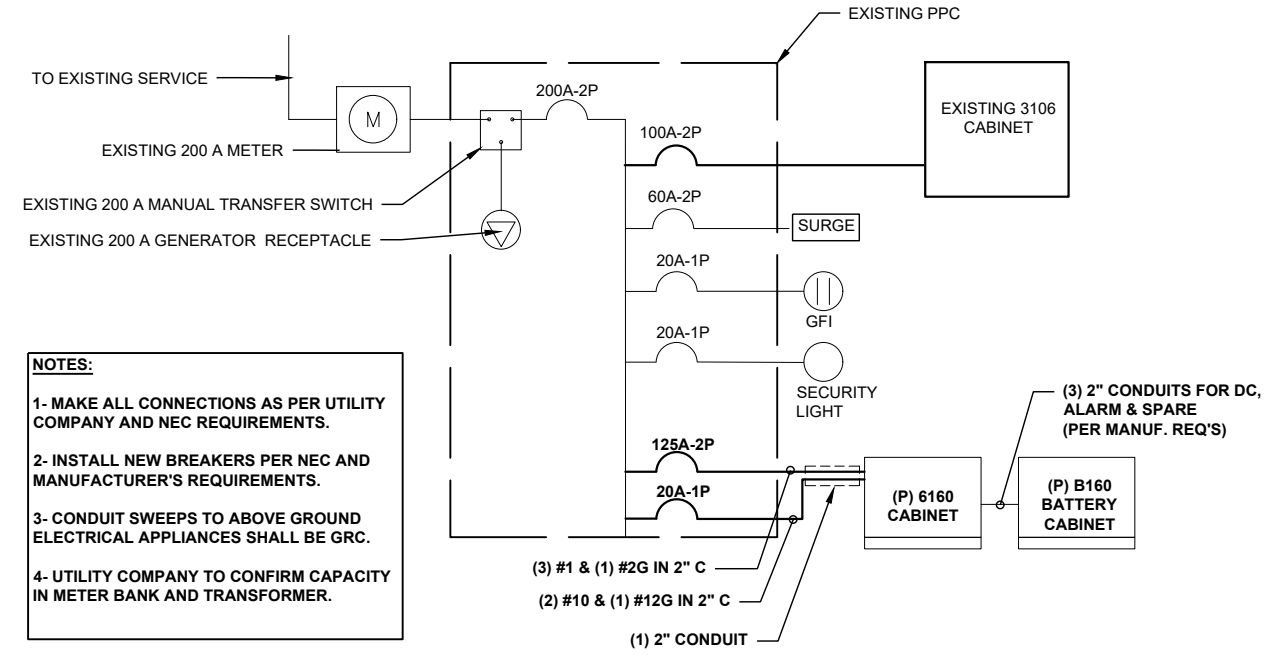
GROUND BAR CONNECTIONS 3
N.T.S. E-1



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

ANTENNA CABLE GROUNDING 2
N.T.S. E-1

- SPECIAL CONTRACTOR'S 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- INSTALL NEW BREAKERS PER NEC AND MANUFACTURER'S REQUIREMENTS.
 3- CONDUIT SWEEPS TO ABOVE GROUND ELECTRICAL APPLIANCES SHALL BE GRC.
 4- UTILITY COMPANY TO CONFIRM CAPACITY IN METER BANK AND TRANSFORMER.

TYPICAL ONE LINE DIAGRAM 4
N.T.S. E-1

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

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, SUITE 1
 NEWTON, MA 02460
 617-212-3123
 PROFESSIONAL SEAL
 NO. ARI. 11162
 LICENSED ARCHITECT
 [Signature]

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SITE NUMBER: CT11059C
 SITE NAME: ROCKYHILL/ I-91/ X23
 SITE ADDRESS: 179 SHUNPIKE ROAD
 CROMWELL, CT 06416

SHEET TITLE:
 E-1: ELECTRICAL AND GROUNDING DETAILS

Exhibit D

Structural Analysis Report

Prepared For:



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



Structure Rating:

Self-Support Tower:	76.0% (Pass)
Anchor Rods:	57.3% (Pass)
Foundation:	36.0% (Pass)

Sincerely,
EFI Global, Inc.

09-12-2022



Ahmet Colakoglu, PE
Connecticut Professional Engineer
License No: 27057

Site ID: CT11059C
Site Name: ROCKYHILL/I-91/X23
179 Shunpike Road
Cromwell, CT 06416

CONTENTS

1.0 - SUBJECT AND REFERENCES

1.1 - STRUCTURE

2.0 - EXISTING AND PROPOSED APPURTENANCES

3.0 - CODES AND LOADING

4.0 - STANDARD CONDITIONS FOR ENGINEERING SERVICES ON EXISTING
STRUCTURES

5.0 - ANALYSIS AND ASSUMPTIONS

6.0 - RESULTS AND CONCLUSION

APPENDICES

A - SOFTWARE OUTPUT

1.0 SUBJECT AND REFERENCES

The purpose of this analysis is to evaluate the structural capacity of the 170' tall self-support tower located at 179 Shunpike Road, Cromwell, CT 06416 for the additions and alterations proposed by T-Mobile.

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

- RFDS provided by T-Mobile, dated 03/29/2022.
- Structural Analysis Report prepared by AECOM, dated 09/03/2020.
- Structural Analysis Report prepared by Centek Engineering, dated 01/03/2022.
- Structural Analysis Report prepared by Centek Engineering, dated 04/11/2022.
- Cromwell Tower Updated Pricing 4, packing slip, prepared by SitePro1, dated 08-07-19)
- Email Correspondence with Foresite LLC, dated 09/02/2022.

1.1 STRUCTURE

The subject structure is a three-sided, 170' tall self-support lattice tower formed by (7) 20' sections and (3) 10' section. Truss legs are X-braced with single angle diagonals from base to 150 ft. and Solid round legs are X-braced with single angle diagonals from 150 ft. to the top. The tower tapers from 20 feet wide at the base to 5 ft. wide at 150 ft. and 170 ft., the tower is 5 feet wide. 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
125	(6) Ericsson AIR21 B2A/B4P (3) Andrew LNX-6515DS-A1M (3) Generic Twin Style 1B - AWS	(12) 1-5/8" (1) 9x18 HCS	(3) SFG2B-10-4-96

Proposed and Final Configuration of T-Mobile Appurtenances:

Rad Center (ft.)	Antennas & Equipment	Coax	Mounts
125	(3) RFS - APXVAALL24_43-U-NA20 (3) AIR 6419 B41 (3) Radio 4480 B71+B85 (3) Radio 4460 B25+B66	(3) 6x24 HCS	(3) SFG2B-10-4-96

Appurtenances by Others:

Rad Center (ft.)	Antennas & Equipment	Coax	Mounts
187.0	(1) tx rx systems 101 -90-08-0-01	(1) 7/8"	Leg mounted 9' Arm Halo Mount
178	(1) ANT150F6-3 20' Omni antenna (1) 20' 8-Bay Dipole	(1) 1-5/8"	
175.5	(1) 3' Omni Antenna (1) DS1F03F36U-D	(1) 1-5/8" (1) 3/8"	
175	(3) 2.5"x15' Omni	(2) 7/8" (1) 1/2"	
174.5	(2) 10' Omni	(2) 7/8"	
171.5	(1) DS1F03F36D-D	(2) 7/8"	
170	(1) DS-2DF6236V-Dome Camera	(1) 1/2"	
168	(1) radiowaves HPD2-4.7 w/ Radome (1) Cambium PTP49600 Antenna (1) SU-RA-HP-2.4	(1) 3/8"	
158.5	(1) SC420-HFL1LDF	(1) 1-5/8"	(1) Pipe Mount
144	(2) 3"x20' Omni	(2) 7/8"	(1) Pirod 20' Universal Platform
141	(1) 2"x15' Omni	(1) 1/2"	
139	(1) 1.5"x10' Omni	(1) 1/2"	
138.5	(1) 3.5"x9' Whip	-	
136	(1) Grid Dish Antenna	(1) 1/2"	
115	(3) CCI DMP65R-BU6D (3) Ericsson 4449 B5/B12 RRH (3) Ericsson 8843 B2/B66A (3) Ericsson RRUS-32 RRH (3) Ericsson 4478 B14 RRH (3) Raycap Surge Arrestor (3) CCI TPA65R-BU6D (3) Ericsson AIR6449 (3) Ericsson AIR6419	(6) 1-5/8" (6) DC Cable (3) Fiber Cable	(3) 12 ft HD V- Boom
100	(6) JMA MX06FRO660-03 (3) Commscope LNX-6514DS (3) Samsung MT6407-77A (3) Samsung XXDWMM-12.5-65-8T (3) Samsung B2/B66A RRH (3) Samsung B5/B13 RRH (3) Samsung CBS RRH RT4401 (1) Distribution Box	(2) 1-5/8" (6) 7/8"	(3) T-Frames w/ Modifications

Appurtenances by Others (Cont.):

Rad Center (ft.)	Antennas & Equipment	Coax	Mounts
87	(1) 3"x2"x22" Panel (1) TMA	(2) Cat5	(1) Pipe Mount
83	(1) 3' Dish (1) TMA	(2) Cat5	(1) 3' Stand-off
80	(1) 3"x2"x22" Panel (1) TMA	(2) Cat5	(1) 3' Stand-off
30	(1) Camera	(2) 1/2"	-
24	(1) 3' Yagi	(1) 1/2"	-

3.0 CODES AND LOADING

This analysis has been performed in accordance with TIA-222-H, based upon a 3-second gust wind speed of 135 mph (Risk Category III). The following loading criteria were used in the analysis:

- Basic wind speed 135 mph without ice (V)
- Basic wind speed 50 mph concurrent with design ice thickness of 1.5" (V_i and t_i)
- Exposure Category C, Risk Category III
- Topographic Category 3 w/ Crest Height 55 ft
- TIA-222-H Annex S.

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 W₀
- 0.9 D + 1.0 W₀
- 1.2 D + 1.0 D_i + 1.0 W_i + 1.0 T_i

D: Dead load of structures and appurtenances

D_i: Weight of ice due to factored ice thickness (based upon t_i)

T_i: Load effects due to temperature

W₀: Wind load without ice (based upon V)

W_i: Wind load with ice (based upon V_i)

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.

The truss leg reinforcement bars installed at sections between 0'-40' and 60'-90' were assumed to be 1" solid rods and A36 steel. EFI should be notified if this assumption is discovered to be incorrect.

6.0 RESULTS AND CONCLUSION

Based on a structural analysis per *ANSI/TIA-222-H*, the existing self-support tower has **adequate** structural capacity for the proposed changes by T-Mobile. For the code specified load combinations and as a maximum, the tower legs between 20 and 40 ft are stressed to **76.0%** of their structural capacity. The diagonals, girts, anchor bolts, and foundation are stressed to **71.3%**, **30.0%**, **57.3%**, and **36.0%** of their structural capacity, respectively.

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

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

APPENDIX A
SOFTWARE OUTPUT

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
101-90-08-0-01	170	8843 B2/B66A RRH	115
15' Mount Pipe	170	TPA65R-BU6D_TIA w/ Mount Pipe	115
ANT150F6	170	TPA65R-BU6D_TIA w/ Mount Pipe	115
20' 8 Bay Di-Pole	170	TPA65R-BU6D_TIA w/ Mount Pipe	115
2.5' Decibel Omni	170	AIR 6449_TIA w/ Mount Pipe	115
2.5' Decibel Omni	170	AIR 6449_TIA w/ Mount Pipe	115
2.5' Decibel Omni	170	AIR 6419_TIA w/ Mount Pipe	115
DS1F03F36U-D Omni Antenna	170	AIR 6419_TIA w/ Mount Pipe	115
DS1F03F36D 23' Omni	170	AIR 6419_TIA w/ Mount Pipe	115
3' Whip (3in diameter) w/ Mount	170	AIR 6419_TIA w/ Mount Pipe	115
2' Dia 10' Omni	170	(3) DC6-48-60-18-8F (Round)	115
2' Dia 10' Omni	170	Sabre 12" HD V-Boom	115
CFD Halo Camera Bracket	170	Sabre 12" HD V-Boom	115
CFD Halo Mounted Camera	170	Sabre 12" HD V-Boom	115
SU-RA-HP-2.4 Antenna	168	DMP65R-BU6DA	115
PTP49600-SK	168	DMP65R-BU6DA	115
9 Arm Halo Mount	168	RVZDC-6627-PF-48	101
HPD2-5.2	168	LNx-6514DS w/ Mount Pipe	100
SC420-HFL1LDF-SK	158.5	LNx-6514DS w/ Mount Pipe	100
3' Dia 20' Omni	144	LNx-6514DS w/ Mount Pipe	100
3' Dia 20' Omni	144	MT6407-77A w/ Mount Pipe	100
2"x15' Omni	141	MT6407-77A w/ Mount Pipe	100
1.5"x10' Omni	139	MT6407-77A w/ Mount Pipe	100
9' Whip	138.5	XXDWMM-12.5-65-8T	100
Pirod 20' Universal Platform	134	XXDWMM-12.5-65-8T	100
4' Grid Dish	134	XXDWMM-12.5-65-8T	100
AIR 6419 B41_TMO_TIA w/ Mount Pipe	125	(2) MX06FRO660-03_TIA w/ Mount Pipe	100
APXVAALL24_43-U-NA20_TIA w/ Mount Pipe	125	CBRS RRH-RT4401-48A	100
APXVAALL24_43-U-NA20_TIA w/ Mount Pipe	125	CBRS RRH-RT4401-48A	100
APXVAALL24_43-U-NA20_TIA w/ Mount Pipe	125	CBRS RRH-RT4401-48A	100
RADIO 4480 B71+B85	125	Alcatel Lucent B2/B66A RRH Unit	100
RADIO 4480 B71+B85	125	Alcatel Lucent B2/B66A RRH Unit	100
RADIO 4480 B71+B85	125	Alcatel Lucent B5/B13 RRH Unit	100
RADIO 4480 B25 B66	125	Alcatel Lucent B5/B13 RRH Unit	100
RADIO 4480 B25 B66	125	(2) VZWSMART-SFK3	100
Sector Mount [SM 502-3]	125	(2) VZWSMART-SFK3	100
AIR 6419 B41_TMO_TIA w/ Mount Pipe	125	(2) VZWSMART-SFK3	100
AIR 6419 B41_TMO_TIA w/ Mount Pipe	125	SitePro1 VFA12-RRU Mount Assembly	100
AIR 6419 B41_TMO_TIA w/ Mount Pipe	125	SitePro1 VFA12-RRU Mount Assembly	100
DMP65R-BU6DA	115	(2) MX06FRO660-03_TIA w/ Mount Pipe	100
RADIO 4478 B14	115	(2) MX06FRO660-03_TIA w/ Mount Pipe	100
RADIO 4478 B14	115	3"x2"x22" Panel	87
RADIO 4478 B14	115	TMA	84.5
Ericsson RRUS-32 RRH Unit	115	3' Stand Off	83.5
Ericsson RRUS-32 RRH Unit	115	3' Stand Off	83.5
Ericsson RRUS-32 RRH Unit	115	VHLP3-11W	83
4449 B5/B12	115	TMA	83
4449 B5/B12	115	TMA	82.5
4449 B5/B12	115	3"x2"x22" Panel	80
8843 B2/B66A RRH	115	Camera	30
8843 B2/B66A RRH	115	PC9013N	24

ALL RADIOS ARE FULLY MOUNTED ON THE TOWER. MAXIMUM DOWN SHEAR UPLIFT SHEAR REACTIONS

SYMBOL LIST

SHEAR 22 K
TORQ 50 mph WIND

MARK	SIZE	MARK	SIZE
A	Pirod 105217 w/ 1"rod 36ksi	D	Pirod 105220 w/ 1"rod 36ksi
B	Pirod 105218 w/ 1"rod 36ksi	E	L2 1/2x3 1/2x3/16
C	Pirod 105219 w/ 1"rod 36ksi		

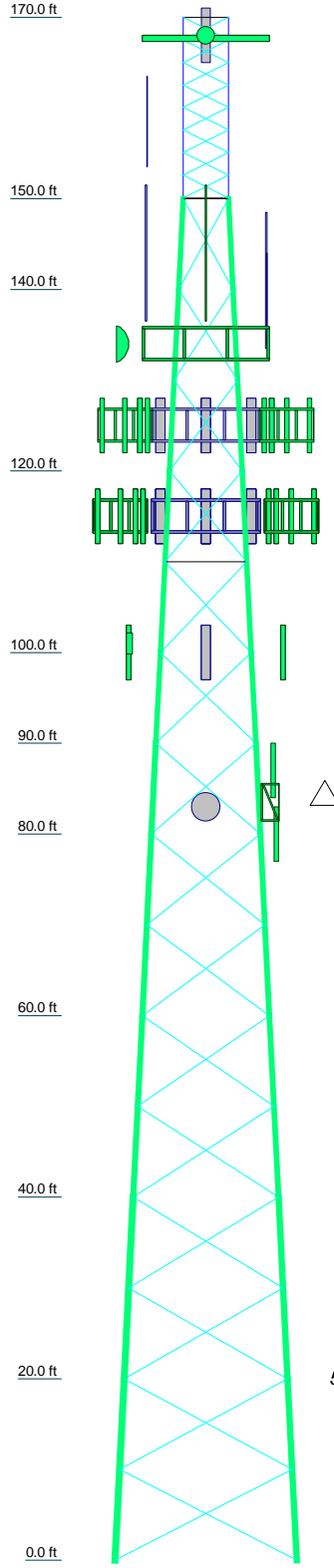
MATERIAL STRENGTH

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 Middlesex County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 135 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category III.
7. Topographic Category 3 with Crest Height of 55.00 ft
8. TOWER RATING: 76%

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
Legs	SR 1 3/4	Pirod 105244	Pirod 105216	Pirod 105217	Pirod 105218	Pirod 105219	Pirod 105217	Pirod 105219	Pirod 105217	Pirod 105217
Leg Grade										
Diagonals	SR 7/8	E	L3x3x5/16	L3x3x1/4	L3 1/2x3 1/2x5/16	A36	L3 1/2x3 1/2x5/16	L4x4x3/8	L5x5x3/8	
Diagonal Grade	A572-50	A36	A572-50	A36	A572-50	A36	A572-50	A572-50	A572-50	
Top Girts	SR 7/8	L3x3x3/16	N.A.	L3x3x3/16	N.A.	N.A.	N.A.	N.A.	N.A.	
Mid Girts										
Bottom Girts	SR 7/8									
Face Width (ft)	5	6	8	10	11	12	14	16	18	20
# Panels @ (ft)	8 @ 2.48958	1.1	2.5	2.8	1.6	1.8	4.1	6.6	7.1	
Weight (K)	1.2									32.1



EFI Global, Inc.
 1117 Perimeter Center West
 Atlanta, GA 30338
 Phone: (470) 990-6593
 FAX:

Job: **CT11059C**
 Project: **2275013 - 049.03232**
 Client: **Foresite LLC** Drawn by: **Patrick Baxter** App'd:
 Code: **TIA-222-H** Date: **09/09/22** Scale: **NTS**
 Path: Dwg No. **E-1**

tnxTower EFI Global, Inc. 1117 Perimeter Center West Atlanta, GA 30338 Phone: (470) 990-6593 FAX:	Job CT11059C	Page 1 of 37
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	Client Foresite LLC	Designed by Patrick.Baxter

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 170.00 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 5.00 ft at the top and 20.00 ft at the base.

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

The following design criteria apply:

Tower is located in Middlesex County, Connecticut.

Tower base elevation above sea level: 277.00 ft.

Basic wind speed of 135 mph.

Risk Category III.

Exposure Category C.

Simplified Topographic Factor Procedure for wind speed-up calculations is used.

Topographic Category: 3.

Crest Height: 55.00 ft.

Nominal ice thickness of 1.5000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

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

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

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

Pressures are calculated at each section.

Stress ratio used in tower member design is 1.

Tower analysis based on target reliabilities in accordance with Annex S.

Load Modification Factors used: $K_{es}(F_w) = 1.0$, $K_{es}(t_i) = 1.0$.

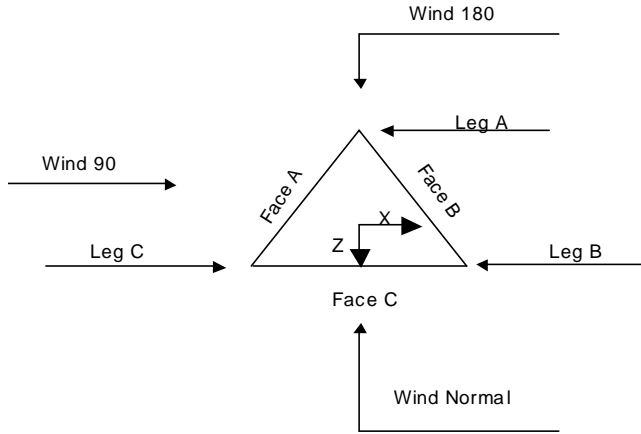
Maximum demand-capacity ratio is: 1.05.

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

Options

<ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile √ Include Bolts In Member Capacity √ Leg Bolts Are At Top Of Section √ Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) √ SR Members Have Cut Ends SR Members Are Concentric 	<ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area √ Use Clear Spans For KL/r Retension Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination √ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs 	<ul style="list-style-type: none"> Use ASCE 10 X-Brace Ly Rules √ Calculate Redundant Bracing Forces Ignore Redundant Members in FEA √ SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feed Line Torque √ Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption <li style="text-align: center; background-color: #e0e0e0;">Poles Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
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	Client Foresite LLC	Designed by Patrick.Baxter



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	170.00-150.00			5.00	1	20.00
T2	150.00-140.00			5.00	1	10.00
T3	140.00-120.00			6.00	1	20.00
T4	120.00-100.00			8.00	1	20.00
T5	100.00-90.00			10.00	1	10.00
T6	90.00-80.00			11.00	1	10.00
T7	80.00-60.00			12.00	1	20.00
T8	60.00-40.00			14.00	1	20.00
T9	40.00-20.00			16.00	1	20.00
T10	20.00-0.00			18.00	1	20.00

Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
T1	170.00-150.00	2.49	X Brace	No	No	0.0000	1.0000
T2	150.00-140.00	10.00	X Brace	No	No	0.0000	0.0000
T3	140.00-120.00	10.00	X Brace	No	No	0.0000	0.0000

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	Client Foresite LLC	Designed by Patrick.Baxter

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
T4	120.00-100.00	10.00	X Brace	No	No	0.0000	0.0000
T5	100.00-90.00	10.00	X Brace	No	No	0.0000	0.0000
T6	90.00-80.00	10.00	X Brace	No	No	0.0000	0.0000
T7	80.00-60.00	10.00	X Brace	No	No	0.0000	0.0000
T8	60.00-40.00	10.00	X Brace	No	No	0.0000	0.0000
T9	40.00-20.00	10.00	X Brace	No	No	0.0000	0.0000
T10	20.00-0.00	10.00	X Brace	No	No	0.0000	0.0000

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 170.00-150.00	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T2 150.00-140.00	Truss Leg	Pirod 105244	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T3 140.00-120.00	Truss Leg	Pirod 105216	A572-50 (50 ksi)	Single Angle	L3x3x5/16	A572-50 (50 ksi)
T4 120.00-100.00	Truss Leg	Pirod 105217	A572-50 (50 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T5 100.00-90.00	Truss Leg	Pirod 105217	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x5/16	A572-50 (50 ksi)
T6 90.00-80.00	Truss Leg	Pirod 105217 w/ 1"rod 36ksi	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x5/16	A572-50 (50 ksi)
T7 80.00-60.00	Truss Leg	Pirod 105218 w/ 1"rod 36ksi	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x5/16	A572-50 (50 ksi)
T8 60.00-40.00	Truss Leg	Pirod 105219	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x5/16	A36 (36 ksi)
T9 40.00-20.00	Truss Leg	Pirod 105219 w/ 1"rod 36ksi	A572-50 (50 ksi)	Single Angle	L4x4x3/8	A572-50 (50 ksi)
T10 20.00-0.00	Truss Leg	Pirod 105220 w/ 1"rod 36ksi	A572-50 (50 ksi)	Single Angle	L5x5x3/8	A572-50 (50 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 170.00-150.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T2 150.00-140.00	Single Angle	L3x3x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry (cont'd)

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Tower Elevation	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
ft							
T4 120.00-100.00	1	Single Angle	L3x3x3/16	A36 (36 ksi)	Pipe		A572-50 (50 ksi)

Tower Section Geometry (cont'd)

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
T1 170.00-150.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T2 150.00-140.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T3 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T4 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T5 100.00-90.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T6 90.00-80.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T7 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T8 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T9 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T10 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000

Tower Section Geometry (cont'd)

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	Legs	K Factors ¹							
				X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace	
											X
ft				Y	Y	Y	Y	Y	Y	Y	
T1 170.00-150.00	Yes	Yes	1	1	1	1	1	1	1	1	1
T2 150.00-140.00	Yes	Yes	1	1	1	1	1	1	1	1	1
T3 140.00-120.00	Yes	Yes	1	1	1	1	1	1	1	1	1
T4 120.00-100.00	Yes	Yes	1	1	1	1	1	1	0.5	1	1
T5 100.00-90.00	Yes	Yes	1	1	1	1	1	1	0.5	1	1
T6 90.00-80.00	Yes	Yes	1	1	1	1	1	1	0.5	1	1

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Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T2 150.00-140.00	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
T3 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
T4 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
T5 100.00-90.00	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 90.00-80.00	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 20.00-0.00	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 Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	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 170.00-150.00	0.0000	0.75	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 150.00-140.00	0.0000	0.75	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 140.00-120.00	0.0000	0.75	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 120.00-100.00	0.0000	0.75	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 100.00-90.00	0.0000	0.75	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 90.00-80.00	0.0000	0.75	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	0.75	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	0.75	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	0.75	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 20.00-0.00	0.0000	0.75	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 170.00-150.00	Flange	0.7500	0	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T2 150.00-140.00	Flange	1.0000	6	1.0000	1	1.0000	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T3 140.00-120.00	Flange	1.0000	6	1.0000	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0

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Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T4 120.00-100.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	1
T5 100.00-90.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T6 90.00-80.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	1.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T7 80.00-60.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T8 60.00-40.00	Flange	1.2500 A325N	6	1.2500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T9 40.00-20.00	Flange	1.2500 A325N	6	1.2500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T10 20.00-0.00	Flange	1.2500 A325N	6	1.2500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1

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
*** AVA7-50 (1-5/8 LOW DENS. FOAM)	A	No	No	Ar (CaAa)	158.50 - 7.00	0.0000	0.38	1	1	1.9800	1.9800		0.72
1/2"	A	No	No	Ar (CaAa)	170.00 - 7.00	-12.0000	0.4	1	1	0.5800	0.5800		0.25
7/8"	A	No	No	Ar (CaAa)	170.00 - 7.00	-12.0000	0.4	4	4	1.1100	1.1100		0.33
FSJ2-50 (3/8 SUPERFLEX. FOAM)	A	No	No	Ar (CaAa)	170.00 - 7.00	-12.0000	0.4	1	1	0.4300	0.4300		0.08
7/8"	A	No	No	Ar (CaAa)	170.00 - 7.00	-24.0000	-0.38	2	2	1.1100	1.0900		0.33
RG-11 590609 (1 1/2 FOAM)	A	No	No	Ar (CaAa)	170.00 - 7.00	-12.0000	0.4	1	1	1.5900	1.5900		0.94
FSJ2-50 (3/8 SUPERFLEX. FOAM)	A	No	No	Ar (CaAa)	168.00 - 7.00	-12.0000	0.4	1	1	0.4300	0.4300		0.08
1/2"	A	No	No	Ar (CaAa)	144.00 - 7.00	-12.0000	0.4	1	1	0.5800	0.5800		0.25
1/2"	A	No	No	Ar (CaAa)	140.00 - 7.00	-12.0000	0.4	2	1	0.5800	0.5800		0.25
1/2"	A	No	No	Ar (CaAa)	30.00 - 7.00	-10.0000	0.4	3	1	0.5800	0.5800		0.25
CATEGORY 5e (1 WIRE)	C	No	No	Ar (CaAa)	87.00 - 7.00	0.0000	0.49	4	2	1.0000	1.0000		0.21
CATEGORY 5e (1 WIRE)	C	No	No	Ar (CaAa)	83.00 - 7.00	0.0000	0.46	2	2	1.0000	1.0000		0.21
*** 6x24 HCS	B	No	No	Ar (CaAa)	125.00 - 7.00	-2.0000	0.45	3	3	1.9800	1.9800		0.72

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Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	# Per Row	#	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1 5/8	B	No	No	Ar (CaAa)	100.00 - 7.00	-14.000 0	0.44	2	2	1.9800	1.9800		1.04
AVA5-50 (7/8 LOW DENSIFOA M) ***	B	No	No	Ar (CaAa)	100.00 - 7.00	-2.0000	0.45	6	3	1.1000	1.1000		0.30
1 5/8	A	No	No	Ar (CaAa)	115.00 - 7.00	-28.000 0	-0.38	6	6	1.9800	1.9800		1.04
Fiber Trunk	C	No	No	Ar (CaAa)	115.00 - 7.00	-3.0000	0.3	3	3	0.4000	0.4000		1.00
DC Trunk	C	No	No	Ar (CaAa)	115.00 - 7.00	-3.0000	0.28	6	6	0.4000	0.4000		0.11

AVA7-50 (1-5/8 LOW DENSIFOAM)	A	No	No	Ar (CaAa)	170.00 - 7.00	-12.000 0	0.4	1	1	1.9800	1.9800		0.72
AVA5-50 (7/8 LOW DENSIFOA M)	A	No	No	Ar (CaAa)	170.00 - 7.00	-12.000 0	0.4	2	2	1.1000	1.1000		0.30

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} _{In Face} ft ²	C _{AA} _{Out Face} ft ²	Weight K
T1	170.00-150.00	A	0.000	0.000	29.257	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T2	150.00-140.00	A	0.000	0.000	16.042	0.000	0.05
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T3	140.00-120.00	A	0.000	0.000	35.100	0.000	0.12
		B	0.000	0.000	2.970	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.00
T4	120.00-100.00	A	0.000	0.000	52.920	0.000	0.22
		B	0.000	0.000	11.880	0.000	0.04
		C	0.000	0.000	5.400	0.000	0.05
T5	100.00-90.00	A	0.000	0.000	29.430	0.000	0.12
		B	0.000	0.000	16.500	0.000	0.06
		C	0.000	0.000	3.600	0.000	0.04
T6	90.00-80.00	A	0.000	0.000	29.430	0.000	0.12
		B	0.000	0.000	16.500	0.000	0.06
		C	0.000	0.000	7.000	0.000	0.04
T7	80.00-60.00	A	0.000	0.000	58.860	0.000	0.25
		B	0.000	0.000	33.000	0.000	0.12
		C	0.000	0.000	19.200	0.000	0.10
T8	60.00-40.00	A	0.000	0.000	58.860	0.000	0.25
		B	0.000	0.000	33.000	0.000	0.12
		C	0.000	0.000	19.200	0.000	0.10
T9	40.00-20.00	A	0.000	0.000	60.600	0.000	0.25
		B	0.000	0.000	33.000	0.000	0.12
		C	0.000	0.000	19.200	0.000	0.10

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Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
T10	20.00-0.00	A	0.000	0.000	40.521	0.000	0.17
		B	0.000	0.000	21.450	0.000	0.08
		C	0.000	0.000	12.480	0.000	0.06

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} In Face ft ²	C _{AA} Out Face ft ²	Weight K
T1	170.00-150.00	A	2.022	0.000	0.000	131.715	0.000	1.79
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T2	150.00-140.00	A	2.004	0.000	0.000	71.199	0.000	0.97
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T3	140.00-120.00	A	1.985	0.000	0.000	165.233	0.000	2.26
		B		0.000	0.000	9.433	0.000	0.14
		C		0.000	0.000	0.000	0.000	0.00
T4	120.00-100.00	A	1.959	0.000	0.000	213.222	0.000	3.04
		B		0.000	0.000	37.560	0.000	0.55
		C		0.000	0.000	31.307	0.000	0.36
T5	100.00-90.00	A	1.940	0.000	0.000	114.263	0.000	1.64
		B		0.000	0.000	47.776	0.000	0.70
		C		0.000	0.000	20.741	0.000	0.24
T6	90.00-80.00	A	1.928	0.000	0.000	113.901	0.000	1.63
		B		0.000	0.000	47.656	0.000	0.70
		C		0.000	0.000	32.294	0.000	0.38
T7	80.00-60.00	A	1.914	0.000	0.000	226.909	0.000	3.23
		B		0.000	0.000	95.015	0.000	1.38
		C		0.000	0.000	86.160	0.000	1.00
T8	60.00-40.00	A	1.905	0.000	0.000	226.394	0.000	3.21
		B		0.000	0.000	94.844	0.000	1.38
		C		0.000	0.000	85.928	0.000	0.99
T9	40.00-20.00	A	1.916	0.000	0.000	237.142	0.000	3.42
		B		0.000	0.000	95.072	0.000	1.38
		C		0.000	0.000	86.237	0.000	1.00
T10	20.00-0.00	A	1.907	0.000	0.000	160.258	0.000	2.32
		B		0.000	0.000	61.670	0.000	0.90
		C		0.000	0.000	55.882	0.000	0.64

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
T1	170.00-150.00	2.2445	-7.5586	2.0263	-6.7090
T2	150.00-140.00	0.8959	-5.2044	0.7016	-3.6569
T3	140.00-120.00	1.2911	-6.6870	1.1889	-7.4841
T4	120.00-100.00	-0.0048	-1.7043	-0.5403	-4.8771
T5	100.00-90.00	2.8790	2.1898	1.5401	-2.0386
T6	90.00-80.00	0.8006	3.0789	-0.7844	-1.3300
T7	80.00-60.00	-0.9592	3.6638	-3.4687	-0.8064
T8	60.00-40.00	-1.4296	3.6345	-4.3594	-1.3594
T9	40.00-20.00	-1.7735	2.9375	-5.0651	-2.8476

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Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
T10	20.00-0.00	-1.3688	1.5927	-4.1823	-3.2181

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T1	2	AVA7-50 (1-5/8 LOW DENS. FOAM)	150.00 - 158.50	0.6000	0.4632
T1	3	1/2"	150.00 - 170.00	0.6000	0.4632
T1	4	7/8"	150.00 - 170.00	0.6000	0.4632
T1	5	FSJ2-50 (3/8 SUPERFLEX. FOAM)	150.00 - 170.00	0.6000	0.4632
T1	6	7/8"	150.00 - 170.00	0.6000	0.4632
T1	7	RG-11 590609 (1 1/2 FOAM)	150.00 - 170.00	0.6000	0.4632
T1	9	FSJ2-50 (3/8 SUPERFLEX. FOAM)	150.00 - 168.00	0.6000	0.4632
T1	29	AVA7-50 (1-5/8 LOW DENS. FOAM)	150.00 - 170.00	0.6000	0.4632
T1	30	AVA5-50 (7/8 LOW DENS. FOAM)	150.00 - 170.00	0.6000	0.4632
T2	2	AVA7-50 (1-5/8 LOW DENS. FOAM)	140.00 - 150.00	0.6000	0.2713
T2	3	1/2"	140.00 - 150.00	0.6000	0.2713
T2	4	7/8"	140.00 - 150.00	0.6000	0.2713
T2	5	FSJ2-50 (3/8 SUPERFLEX. FOAM)	140.00 - 150.00	0.6000	0.2713
T2	6	7/8"	140.00 - 150.00	0.6000	0.2713
T2	7	RG-11 590609 (1 1/2 FOAM)	140.00 - 150.00	0.6000	0.2713
T2	9	FSJ2-50 (3/8 SUPERFLEX. FOAM)	140.00 - 150.00	0.6000	0.2713
T2	10	1/2"	140.00 - 144.00	0.6000	0.2713
T2	29	AVA7-50 (1-5/8 LOW DENS. FOAM)	140.00 - 150.00	0.6000	0.2713
T2	30	AVA5-50 (7/8 LOW DENS. FOAM)	140.00 - 150.00	0.6000	0.2713
T3	2	AVA7-50 (1-5/8 LOW DENS. FOAM)	120.00 - 140.00	0.6000	0.3926
T3	3	1/2"	120.00 - 140.00	0.6000	0.3926
T3	4	7/8"	120.00 - 140.00	0.6000	0.3926
T3	5	FSJ2-50 (3/8 SUPERFLEX. FOAM)	120.00 - 140.00	0.6000	0.3926
T3	6	7/8"	120.00 - 140.00	0.6000	0.3926
T3	7	RG-11 590609 (1 1/2 FOAM)	120.00 -	0.6000	0.3926

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
			140.00		
T3	9	FSJ2-50 (3/8 SUPERFLEX. FOAM)	120.00 - 140.00	0.6000	0.3926
T3	10	1/2"	120.00 - 140.00	0.6000	0.3926
T3	11	1/2"	120.00 - 140.00	0.6000	0.3926
T3	20	6x24 HCS	120.00 - 125.00	0.6000	0.3926
T3	29	AVA7-50 (1-5/8 LOW DENS. FOAM)	120.00 - 140.00	0.6000	0.3926
T3	30	AVA5-50 (7/8 LOW DENS. FOAM)	120.00 - 140.00	0.6000	0.3926
T4	2	AVA7-50 (1-5/8 LOW DENS. FOAM)	100.00 - 120.00	0.6000	0.4688
T4	3	1/2"	100.00 - 120.00	0.6000	0.4688
T4	4	7/8"	100.00 - 120.00	0.6000	0.4688
T4	5	FSJ2-50 (3/8 SUPERFLEX. FOAM)	100.00 - 120.00	0.6000	0.4688
T4	6	7/8"	100.00 - 120.00	0.6000	0.4688
T4	7	RG-11 590609 (1 1/2 FOAM)	100.00 - 120.00	0.6000	0.4688
T4	9	FSJ2-50 (3/8 SUPERFLEX. FOAM)	100.00 - 120.00	0.6000	0.4688
T4	10	1/2"	100.00 - 120.00	0.6000	0.4688
T4	11	1/2"	100.00 - 120.00	0.6000	0.4688
T4	20	6x24 HCS	100.00 - 120.00	0.6000	0.4688
T4	25	1 5/8	100.00 - 115.00	0.6000	0.4688
T4	26	Fiber Trunk	100.00 - 115.00	0.6000	0.4688
T4	27	DC Trunk	100.00 - 115.00	0.6000	0.4688
T4	29	AVA7-50 (1-5/8 LOW DENS. FOAM)	100.00 - 120.00	0.6000	0.4688
T4	30	AVA5-50 (7/8 LOW DENS. FOAM)	100.00 - 120.00	0.6000	0.4688
T5	2	AVA7-50 (1-5/8 LOW DENS. FOAM)	90.00 - 100.00	0.6000	0.5357
T5	3	1/2"	90.00 - 100.00	0.6000	0.5357
T5	4	7/8"	90.00 - 100.00	0.6000	0.5357
T5	5	FSJ2-50 (3/8 SUPERFLEX. FOAM)	90.00 - 100.00	0.6000	0.5357
T5	6	7/8"	90.00 - 100.00	0.6000	0.5357
T5	7	RG-11 590609 (1 1/2 FOAM)	90.00 - 100.00	0.6000	0.5357
T5	9	FSJ2-50 (3/8 SUPERFLEX. FOAM)	90.00 - 100.00	0.6000	0.5357
T5	10	1/2"	90.00 - 100.00	0.6000	0.5357
T5	11	1/2"	90.00 - 100.00	0.6000	0.5357
T5	20	6x24 HCS	90.00 - 100.00	0.6000	0.5357
T5	22	1 5/8	90.00 - 100.00	0.6000	0.5357
T5	23	AVA5-50 (7/8 LOW DENS. FOAM)	90.00 - 100.00	0.6000	0.5357
T5	25	1 5/8	90.00 - 100.00	0.6000	0.5357
T5	26	Fiber Trunk	90.00 - 100.00	0.6000	0.5357
T5	27	DC Trunk	90.00 - 100.00	0.6000	0.5357

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T5	29	AVA7-50 (1-5/8 LOW DENS. FOAM)	90.00 - 100.00	0.6000	0.5357
T5	30	AVA5-50 (7/8 LOW DENS. FOAM)	90.00 - 100.00	0.6000	0.5357
T6	2	AVA7-50 (1-5/8 LOW DENS. FOAM)	80.00 - 90.00	0.6000	0.5625
T6	3	1/2"	80.00 - 90.00	0.6000	0.5625
T6	4	7/8"	80.00 - 90.00	0.6000	0.5625
T6	5	FSJ2-50 (3/8 SUPERFLEX. FOAM)	80.00 - 90.00	0.6000	0.5625
T6	6	7/8"	80.00 - 90.00	0.6000	0.5625
T6	7	RG-11 590609 (1 1/2 FOAM)	80.00 - 90.00	0.6000	0.5625
T6	9	FSJ2-50 (3/8 SUPERFLEX. FOAM)	80.00 - 90.00	0.6000	0.5625
T6	10	1/2"	80.00 - 90.00	0.6000	0.5625
T6	11	1/2"	80.00 - 90.00	0.6000	0.5625
T6	15	CATEGORY 5e (1 WIRE)	80.00 - 87.00	0.6000	0.5625
T6	16	CATEGORY 5e (1 WIRE)	80.00 - 83.00	0.6000	0.5625
T6	20	6x24 HCS	80.00 - 90.00	0.6000	0.5625
T6	22	1 5/8	80.00 - 90.00	0.6000	0.5625
T6	23	AVA5-50 (7/8 LOW DENS. FOAM)	80.00 - 90.00	0.6000	0.5625
T6	25	1 5/8	80.00 - 90.00	0.6000	0.5625
T6	26	Fiber Trunk	80.00 - 90.00	0.6000	0.5625
T6	27	DC Trunk	80.00 - 90.00	0.6000	0.5625
T6	29	AVA7-50 (1-5/8 LOW DENS. FOAM)	80.00 - 90.00	0.6000	0.5625
T6	30	AVA5-50 (7/8 LOW DENS. FOAM)	80.00 - 90.00	0.6000	0.5625
T7	2	AVA7-50 (1-5/8 LOW DENS. FOAM)	60.00 - 80.00	0.6000	0.5962
T7	3	1/2"	60.00 - 80.00	0.6000	0.5962
T7	4	7/8"	60.00 - 80.00	0.6000	0.5962
T7	5	FSJ2-50 (3/8 SUPERFLEX. FOAM)	60.00 - 80.00	0.6000	0.5962
T7	6	7/8"	60.00 - 80.00	0.6000	0.5962
T7	7	RG-11 590609 (1 1/2 FOAM)	60.00 - 80.00	0.6000	0.5962
T7	9	FSJ2-50 (3/8 SUPERFLEX. FOAM)	60.00 - 80.00	0.6000	0.5962
T7	10	1/2"	60.00 - 80.00	0.6000	0.5962
T7	11	1/2"	60.00 - 80.00	0.6000	0.5962
T7	15	CATEGORY 5e (1 WIRE)	60.00 - 80.00	0.6000	0.5962
T7	16	CATEGORY 5e (1 WIRE)	60.00 - 80.00	0.6000	0.5962
T7	20	6x24 HCS	60.00 - 80.00	0.6000	0.5962
T7	22	1 5/8	60.00 - 80.00	0.6000	0.5962
T7	23	AVA5-50 (7/8 LOW DENS. FOAM)	60.00 - 80.00	0.6000	0.5962
T7	25	1 5/8	60.00 - 80.00	0.6000	0.5962
T7	26	Fiber Trunk	60.00 - 80.00	0.6000	0.5962
T7	27	DC Trunk	60.00 - 80.00	0.6000	0.5962
T7	29	AVA7-50 (1-5/8 LOW DENS. FOAM)	60.00 - 80.00	0.6000	0.5962
T7	30	AVA5-50 (7/8 LOW DENS. FOAM)	60.00 - 80.00	0.6000	0.5962
T8	2	AVA7-50 (1-5/8 LOW DENS. FOAM)	40.00 - 60.00	0.6000	0.6000
T8	3	1/2"	40.00 - 60.00	0.6000	0.6000
T8	4	7/8"	40.00 - 60.00	0.6000	0.6000
T8	5	FSJ2-50 (3/8 SUPERFLEX. FOAM)	40.00 - 60.00	0.6000	0.6000
T8	6	7/8"	40.00 - 60.00	0.6000	0.6000
T8	7	RG-11 590609 (1 1/2 FOAM)	40.00 - 60.00	0.6000	0.6000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T8	9	FSJ2-50 (3/8 SUPERFLEX. FOAM)	40.00 - 60.00	0.6000	0.6000
T8	10	1/2"	40.00 - 60.00	0.6000	0.6000
T8	11	1/2"	40.00 - 60.00	0.6000	0.6000
T8	15	CATEGORY 5e (1 WIRE)	40.00 - 60.00	0.6000	0.6000
T8	16	CATEGORY 5e (1 WIRE)	40.00 - 60.00	0.6000	0.6000
T8	20	6x24 HCS	40.00 - 60.00	0.6000	0.6000
T8	22	1 5/8	40.00 - 60.00	0.6000	0.6000
T8	23	AVA5-50 (7/8 LOW DENS.FOAM)	40.00 - 60.00	0.6000	0.6000
T8	25	1 5/8	40.00 - 60.00	0.6000	0.6000
T8	26	Fiber Trunk	40.00 - 60.00	0.6000	0.6000
T8	27	DC Trunk	40.00 - 60.00	0.6000	0.6000
T8	29	AVA7-50 (1-5/8 LOW DENS.FOAM)	40.00 - 60.00	0.6000	0.6000
T8	30	AVA5-50 (7/8 LOW DENS.FOAM)	40.00 - 60.00	0.6000	0.6000
T9	2	AVA7-50 (1-5/8 LOW DENS.FOAM)	20.00 - 40.00	0.6000	0.6000
T9	3	1/2"	20.00 - 40.00	0.6000	0.6000
T9	4	7/8"	20.00 - 40.00	0.6000	0.6000
T9	5	FSJ2-50 (3/8 SUPERFLEX. FOAM)	20.00 - 40.00	0.6000	0.6000
T9	6	7/8"	20.00 - 40.00	0.6000	0.6000
T9	7	RG-11 590609 (1 1/2 FOAM)	20.00 - 40.00	0.6000	0.6000
T9	9	FSJ2-50 (3/8 SUPERFLEX. FOAM)	20.00 - 40.00	0.6000	0.6000
T9	10	1/2"	20.00 - 40.00	0.6000	0.6000
T9	11	1/2"	20.00 - 40.00	0.6000	0.6000
T9	12	1/2"	20.00 - 30.00	0.6000	0.6000
T9	15	CATEGORY 5e (1 WIRE)	20.00 - 40.00	0.6000	0.6000
T9	16	CATEGORY 5e (1 WIRE)	20.00 - 40.00	0.6000	0.6000
T9	20	6x24 HCS	20.00 - 40.00	0.6000	0.6000
T9	22	1 5/8	20.00 - 40.00	0.6000	0.6000
T9	23	AVA5-50 (7/8 LOW DENS.FOAM)	20.00 - 40.00	0.6000	0.6000
T9	25	1 5/8	20.00 - 40.00	0.6000	0.6000
T9	26	Fiber Trunk	20.00 - 40.00	0.6000	0.6000
T9	27	DC Trunk	20.00 - 40.00	0.6000	0.6000
T9	29	AVA7-50 (1-5/8 LOW DENS.FOAM)	20.00 - 40.00	0.6000	0.6000
T9	30	AVA5-50 (7/8 LOW DENS.FOAM)	20.00 - 40.00	0.6000	0.6000
T10	2	AVA7-50 (1-5/8 LOW DENS.FOAM)	7.00 - 20.00	0.6000	0.6000
T10	3	1/2"	7.00 - 20.00	0.6000	0.6000
T10	4	7/8"	7.00 - 20.00	0.6000	0.6000
T10	5	FSJ2-50 (3/8 SUPERFLEX. FOAM)	7.00 - 20.00	0.6000	0.6000
T10	6	7/8"	7.00 - 20.00	0.6000	0.6000
T10	7	RG-11 590609 (1 1/2 FOAM)	7.00 - 20.00	0.6000	0.6000
T10	9	FSJ2-50 (3/8 SUPERFLEX. FOAM)	7.00 - 20.00	0.6000	0.6000
T10	10	1/2"	7.00 - 20.00	0.6000	0.6000
T10	11	1/2"	7.00 - 20.00	0.6000	0.6000
T10	12	1/2"	7.00 - 20.00	0.6000	0.6000
T10	15	CATEGORY 5e (1 WIRE)	7.00 - 20.00	0.6000	0.6000
T10	16	CATEGORY 5e (1 WIRE)	7.00 - 20.00	0.6000	0.6000
T10	20	6x24 HCS	7.00 - 20.00	0.6000	0.6000
T10	22	1 5/8	7.00 - 20.00	0.6000	0.6000
T10	23	AVA5-50 (7/8 LOW DENS.FOAM)	7.00 - 20.00	0.6000	0.6000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T10	25	1 5/8	7.00 - 20.00	0.6000	0.6000
T10	26	Fiber Trunk	7.00 - 20.00	0.6000	0.6000
T10	27	DC Trunk	7.00 - 20.00	0.6000	0.6000
T10	29	AVA7-50 (1-5/8 LOW DENSIFOAM)	7.00 - 20.00	0.6000	0.6000
T10	30	AVA5-50 (7/8 LOW DENSIFOAM)	7.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K

183ft Municipal								
101-90-08-0-01	A	From Leg	7.00 0.00 13.00	0.0000	170.00	No Ice 2.78 1/2" Ice 4.31 1" Ice 4.93 2" Ice 6.11	2.78 4.31 4.93 6.11	0.04 0.06 0.09 0.17
15' Mount Pipe	A	From Leg	7.00 0.00 8.00	0.0000	170.00	No Ice 4.50 1/2" Ice 6.03 1" Ice 7.58 2" Ice 10.68	4.50 6.03 7.58 10.68	0.09 0.12 0.16 0.25
ANT150F6	A	From Leg	1.00 0.00 4.00	0.0000	170.00	No Ice 4.80 1/2" Ice 6.83 1" Ice 8.87 2" Ice 12.95	4.80 6.83 8.87 12.95	0.03 0.07 0.11 0.17
20' 8 Bay Di-Pole	C	From Leg	0.00 0.00 5.50	0.0000	170.00	No Ice 4.00 1/2" Ice 6.00 1" Ice 8.00 2" Ice 12.00	4.00 6.00 8.00 12.00	0.06 0.10 0.14 0.23
2.5' Decibel Omni	B	From Leg	7.00 0.00 10.00	0.0000	170.00	No Ice 0.41 1/2" Ice 0.56 1" Ice 0.71 2" Ice 1.01	0.41 0.56 0.71 1.01	0.01 0.01 0.02 0.03
2.5' Decibel Omni	C	From Leg	7.00 0.00 10.00	0.0000	170.00	No Ice 0.41 1/2" Ice 0.56 1" Ice 0.71 2" Ice 1.01	0.41 0.56 0.71 1.01	0.01 0.01 0.02 0.03
2.5' Decibel Omni	A	From Leg	7.00 0.00 10.00	0.0000	170.00	No Ice 0.41 1/2" Ice 0.56 1" Ice 0.71 2" Ice 1.01	0.41 0.56 0.71 1.01	0.01 0.01 0.02 0.03
DS1F03F36U-D Omni Antenna	C	From Leg	8.25 0.00 8.00	0.0000	170.00	No Ice 3.77 1/2" Ice 5.07 1" Ice 6.38 2" Ice 9.00	3.77 5.07 6.38 8.97	0.06 0.09 0.12 0.17
DS1F03F36D 23' Omni	A	From Leg	7.00 0.00	0.0000	170.00	No Ice 6.69 1/2" Ice 8.95	6.69 8.95	0.09 0.14

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	CAAA Front ft ²	CAAA Side ft ²	Weight K
			1.50			1" Ice 11.23	11.23	0.20
						2" Ice 15.79	15.79	0.33
3' Whip (3in diameter) w/ Mount	B	From Leg	0.00	0.0000	170.00	No Ice 1.27	1.27	0.02
			0.00			1/2" Ice 1.64	1.64	0.03
			5.50			1" Ice 2.04	2.04	0.05
						2" Ice 2.84	2.84	0.09
2" Dia 10' Omni	B	From Leg	8.25	0.0000	170.00	No Ice 2.00	2.00	0.01
			0.00			1/2" Ice 3.03	3.03	0.03
			5.00			1" Ice 4.06	4.06	0.04
						2" Ice 6.12	6.12	0.07
2" Dia 10' Omni	B	From Leg	7.00	0.0000	170.00	No Ice 2.00	2.00	0.01
			0.00			1/2" Ice 3.03	3.03	0.03
			5.00			1" Ice 4.06	4.06	0.04
						2" Ice 6.12	6.12	0.07

CFD Halo Camera Bracket	A	From Leg	7.00	0.0000	170.00	No Ice 0.72	0.24	0.00
			0.00			1/2" Ice 0.83	0.31	0.01
			0.00			1" Ice 0.95	0.38	0.02
						2" Ice 1.19	0.52	0.03
CFD Halo Mounted Camera	A	From Leg	7.00	0.0000	170.00	No Ice 0.32	0.32	0.02
			0.00			1/2" Ice 0.54	0.54	0.02
			0.00			1" Ice 0.66	0.66	0.03
						2" Ice 0.90	0.90	0.05

170ft Sprint								
SU-RA-HP-2.4 Antenna	A	From Leg	7.00	0.0000	168.00	No Ice 0.80	0.37	0.00
			0.00			1/2" Ice 0.93	0.47	0.01
			0.00			1" Ice 1.06	0.58	0.02
						2" Ice 1.32	0.80	0.03
PTP49600-SK	C	From Leg	7.00	0.0000	168.00	No Ice 2.04	0.53	0.01
			0.00			1/2" Ice 2.24	0.65	0.02
			0.00			1" Ice 2.44	0.78	0.04
						2" Ice 2.84	1.04	0.06
9 Arm Halo Mount	C	None		0.0000	168.00	No Ice 62.60	62.60	3.60
						1/2" Ice 80.40	80.40	4.80
						1" Ice 98.20	98.20	6.00
						2" Ice 133.80	133.80	8.40

SC420-HFL1LDF-SK	A	From Face	6.00	0.0000	158.50	No Ice 2.14	2.14	0.02
			0.00			1/2" Ice 3.02	3.02	0.03
			0.00			1" Ice 3.79	3.79	0.05
						2" Ice 4.85	4.85	0.11
3" Dia 20' Omni	C	From Face	6.00	0.0000	144.00	No Ice 6.00	6.00	0.06
			0.00			1/2" Ice 13.30	13.30	0.10
			0.00			1" Ice 16.60	16.60	0.14
						2" Ice 23.30	23.30	0.22
3" Dia 20' Omni	A	From Face	6.00	0.0000	144.00	No Ice 6.00	6.00	0.06
			0.00			1/2" Ice 13.30	13.30	0.10
			0.00			1" Ice 16.60	16.60	0.14
						2" Ice 23.30	23.30	0.22
2"x15' Omni	B	From Face	6.00	0.0000	141.00	No Ice 3.00	3.00	0.04
			0.00			1/2" Ice 7.50	7.50	0.06
			0.00			1" Ice 10.00	10.00	0.08
						2" Ice 15.00	15.00	0.12
1.5"x10' Omni	B	From Face	6.00	0.0000	139.00	No Ice 1.50	1.50	0.06
			0.00			1/2" Ice 4.16	4.16	0.07
			0.00			1" Ice 5.83	5.83	0.08

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	CAAA Front ft ²	CAAA Side ft ²	Weight K	
9' Whip	A	From Face	6.00	0.0000	138.50	2" Ice	9.16	9.16	0.10
			0.00			No Ice	5.85	5.85	0.12
			0.00			1/2" Ice	7.66	7.66	0.17
			0.00			1" Ice	8.90	8.90	0.23
			0.00			2" Ice	11.38	11.38	0.33
***** ***** **134ft Clearwire**									
Pirod 20' Universal Platform	C	None		0.0000	134.00	No Ice	33.10	33.10	2.27
						1/2" Ice	47.10	47.10	2.70
						1" Ice	61.10	61.10	3.13
						2" Ice	89.10	89.10	3.99
***** ***** **125ft T-Mobile**									
AIR 6419 B41_TMO_TIA w/ Mount Pipe	A	From Leg	4.00	0.0000	125.00	No Ice	6.53	3.75	0.11
			0.00			1/2" Ice	6.92	4.24	0.17
			0.00			1" Ice	7.31	4.75	0.23
						2" Ice	8.12	5.82	0.37
AIR 6419 B41_TMO_TIA w/ Mount Pipe	B	From Leg	4.00	0.0000	125.00	No Ice	6.53	3.75	0.11
			0.00			1/2" Ice	6.92	4.24	0.17
			0.00			1" Ice	7.31	4.75	0.23
						2" Ice	8.12	5.82	0.37
AIR 6419 B41_TMO_TIA w/ Mount Pipe	C	From Leg	4.00	0.0000	125.00	No Ice	6.53	3.75	0.11
			0.00			1/2" Ice	6.92	4.24	0.17
			0.00			1" Ice	7.31	4.75	0.23
						2" Ice	8.12	5.82	0.37
APXVAALL24_43-U-NA20_TIA w/ Mount Pipe	A	From Leg	4.00	0.0000	125.00	No Ice	20.48	10.87	0.18
			0.00			1/2" Ice	21.23	12.39	0.32
			0.00			1" Ice	21.99	13.94	0.46
						2" Ice	23.44	16.29	0.79
APXVAALL24_43-U-NA20_TIA w/ Mount Pipe	B	From Leg	4.00	0.0000	125.00	No Ice	20.48	10.87	0.18
			0.00			1/2" Ice	21.23	12.39	0.32
			0.00			1" Ice	21.99	13.94	0.46
						2" Ice	23.44	16.29	0.79
APXVAALL24_43-U-NA20_TIA w/ Mount Pipe	C	From Leg	4.00	0.0000	125.00	No Ice	20.48	10.87	0.18
			0.00			1/2" Ice	21.23	12.39	0.32
			0.00			1" Ice	21.99	13.94	0.46
						2" Ice	23.44	16.29	0.79
RADIO 4480 B71+B85	A	From Leg	4.00	0.0000	125.00	No Ice	2.85	1.38	0.09
			0.00			1/2" Ice	3.06	1.54	0.11
			0.00			1" Ice	3.28	1.71	0.14
						2" Ice	3.74	2.07	0.20
RADIO 4480 B71+B85	B	From Leg	4.00	0.0000	125.00	No Ice	2.85	1.38	0.09
			0.00			1/2" Ice	3.06	1.54	0.11
			0.00			1" Ice	3.28	1.71	0.14
						2" Ice	3.74	2.07	0.20
RADIO 4480 B71+B85	C	From Leg	4.00	0.0000	125.00	No Ice	2.85	1.38	0.09
			0.00			1/2" Ice	3.06	1.54	0.11
			0.00			1" Ice	3.28	1.71	0.14
						2" Ice	3.74	2.07	0.20
RADIO 4460 B25 B66	A	From Leg	4.00	0.0000	125.00	No Ice	2.14	1.69	0.11
			0.00			1/2" Ice	2.32	1.85	0.13
			0.00			1" Ice	2.51	2.02	0.16
						2" Ice	2.91	2.39	0.22
RADIO 4460 B25 B66	B	From Leg	4.00	0.0000	125.00	No Ice	2.14	1.69	0.11
			0.00			1/2" Ice	2.32	1.85	0.13

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			0.00			1" Ice 2.51	2.02	0.16
						2" Ice 2.91	2.39	0.22
RADIO 4460 B25 B66	C	From Leg	4.00	0.0000	125.00	No Ice 2.14	1.69	0.11
			0.00			1/2" Ice 2.32	1.85	0.13
			0.00			1" Ice 2.51	2.02	0.16
						2" Ice 2.91	2.39	0.22
Sector Mount [SM 502-3]	C	None		0.0000	125.00	No Ice 29.82	29.82	1.67
						1/2" Ice 42.21	42.21	2.27
						1" Ice 54.43	54.43	3.05
						2" Ice 78.49	78.49	5.18

115ft AT&T								
DMP65R-BU6DA	A	From Leg	4.00	0.0000	115.00	No Ice 12.33	5.62	0.08
			0.00			1/2" Ice 12.83	6.07	0.15
			0.00			1" Ice 13.32	6.53	0.23
						2" Ice 14.30	7.45	0.39
DMP65R-BU6DA	B	From Leg	4.00	0.0000	115.00	No Ice 12.33	5.62	0.08
			0.00			1/2" Ice 12.83	6.07	0.15
			0.00			1" Ice 13.32	6.53	0.23
						2" Ice 14.30	7.45	0.39
DMP65R-BU6DA	C	From Leg	4.00	0.0000	115.00	No Ice 12.33	5.62	0.08
			0.00			1/2" Ice 12.83	6.07	0.15
			0.00			1" Ice 13.32	6.53	0.23
						2" Ice 14.30	7.45	0.39
RADIO 4478 B14	A	From Leg	4.00	0.0000	115.00	No Ice 2.02	1.25	0.06
			0.00			1/2" Ice 2.20	1.40	0.08
			0.00			1" Ice 2.39	1.55	0.10
						2" Ice 2.78	1.89	0.15
RADIO 4478 B14	B	From Leg	4.00	0.0000	115.00	No Ice 2.02	1.25	0.06
			0.00			1/2" Ice 2.20	1.40	0.08
			0.00			1" Ice 2.39	1.55	0.10
						2" Ice 2.78	1.89	0.15
RADIO 4478 B14	C	From Leg	4.00	0.0000	115.00	No Ice 2.02	1.25	0.06
			0.00			1/2" Ice 2.20	1.40	0.08
			0.00			1" Ice 2.39	1.55	0.10
						2" Ice 2.78	1.89	0.15
Ericsson RRUS-32 RRH Unit	A	From Leg	4.00	0.0000	115.00	No Ice 3.31	2.42	0.08
			0.00			1/2" Ice 3.56	2.64	0.10
			0.00			1" Ice 3.81	2.86	0.14
						2" Ice 4.31	3.30	0.20
Ericsson RRUS-32 RRH Unit	B	From Leg	4.00	0.0000	115.00	No Ice 3.31	2.42	0.08
			0.00			1/2" Ice 3.56	2.64	0.10
			0.00			1" Ice 3.81	2.86	0.14
						2" Ice 4.31	3.30	0.20
Ericsson RRUS-32 RRH Unit	C	From Leg	4.00	0.0000	115.00	No Ice 3.31	2.42	0.08
			0.00			1/2" Ice 3.56	2.64	0.10
			0.00			1" Ice 3.81	2.86	0.14
						2" Ice 4.31	3.30	0.20
4449 B5/B12	A	From Leg	4.00	0.0000	115.00	No Ice 1.97	1.41	0.07
			0.00			1/2" Ice 2.14	1.56	0.09
			2.50			1" Ice 2.33	1.73	0.11
						2" Ice 2.71	2.07	0.15
4449 B5/B12	B	From Leg	4.00	0.0000	115.00	No Ice 1.97	1.41	0.07
			0.00			1/2" Ice 2.14	1.56	0.09
			2.50			1" Ice 2.33	1.73	0.11
						2" Ice 2.71	2.07	0.15

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Vert					
			Lateral		°	ft	ft ²	ft ²	K
4449 B5/B12	C	From Leg	4.00	0.0000	115.00	No Ice	1.97	1.41	0.07
			0.00			1/2" Ice	2.14	1.56	0.09
			2.50			1" Ice	2.33	1.73	0.11
						2" Ice	2.71	2.07	0.15
8843 B2/B66A RRH	A	From Leg	4.00	0.0000	115.00	No Ice	1.98	1.70	0.07
			0.00			1/2" Ice	2.16	1.86	0.10
			-2.50			1" Ice	2.34	2.04	0.12
						2" Ice	2.70	2.40	0.17
8843 B2/B66A RRH	A	From Leg	4.00	0.0000	115.00	No Ice	1.98	1.70	0.07
			0.00			1/2" Ice	2.16	1.86	0.10
			-2.50			1" Ice	2.34	2.04	0.12
						2" Ice	2.70	2.40	0.17
8843 B2/B66A RRH	A	From Leg	4.00	0.0000	115.00	No Ice	1.98	1.70	0.07
			0.00			1/2" Ice	2.16	1.86	0.10
			-2.50			1" Ice	2.34	2.04	0.12
						2" Ice	2.70	2.40	0.17
TPA65R-BU6D_TIA w/ Mount Pipe	A	From Leg	4.00	0.0000	115.00	No Ice	13.11	7.32	0.10
			0.00			1/2" Ice	13.71	8.49	0.19
			0.00			1" Ice	14.28	9.37	0.29
						2" Ice	15.43	11.19	0.53
TPA65R-BU6D_TIA w/ Mount Pipe	B	From Leg	4.00	0.0000	115.00	No Ice	13.11	7.32	0.10
			0.00			1/2" Ice	13.71	8.49	0.19
			0.00			1" Ice	14.28	9.37	0.29
						2" Ice	15.43	11.19	0.53
TPA65R-BU6D_TIA w/ Mount Pipe	C	From Leg	4.00	0.0000	115.00	No Ice	13.11	7.32	0.10
			0.00			1/2" Ice	13.71	8.49	0.19
			0.00			1" Ice	14.28	9.37	0.29
						2" Ice	15.43	11.19	0.53
AIR 6449_TIA w/ Mount Pipe	A	From Leg	4.00	0.0000	115.00	No Ice	5.89	3.28	0.12
			0.00			1/2" Ice	6.26	3.74	0.17
			0.00			1" Ice	6.63	4.22	0.22
						2" Ice	7.41	5.21	0.35
AIR 6449_TIA w/ Mount Pipe	B	From Leg	4.00	0.0000	115.00	No Ice	5.89	3.28	0.12
			0.00			1/2" Ice	6.26	3.74	0.17
			0.00			1" Ice	6.63	4.22	0.22
						2" Ice	7.41	5.21	0.35
AIR 6449_TIA w/ Mount Pipe	C	From Leg	4.00	0.0000	115.00	No Ice	5.89	3.28	0.12
			0.00			1/2" Ice	6.26	3.74	0.17
			0.00			1" Ice	6.63	4.22	0.22
						2" Ice	7.41	5.21	0.35
AIR 6419_TIA w/ Mount Pipe	A	From Leg	4.00	0.0000	115.00	No Ice	4.38	2.76	0.06
			0.00			1/2" Ice	4.71	3.19	0.10
			0.00			1" Ice	5.05	3.64	0.14
						2" Ice	5.75	4.58	0.24
AIR 6419_TIA w/ Mount Pipe	B	From Leg	4.00	0.0000	115.00	No Ice	4.38	2.76	0.06
			0.00			1/2" Ice	4.71	3.19	0.10
			0.00			1" Ice	5.05	3.64	0.14
						2" Ice	5.75	4.58	0.24
AIR 6419_TIA w/ Mount Pipe	C	From Leg	4.00	0.0000	115.00	No Ice	4.38	2.76	0.06
			0.00			1/2" Ice	4.71	3.19	0.10
			0.00			1" Ice	5.05	3.64	0.14
						2" Ice	5.75	4.58	0.24
(3) DC6-48-60-18-8F (Round)	A	From Leg	0.50	0.0000	115.00	No Ice	0.79	0.79	0.02
			0.00			1/2" Ice	1.27	1.27	0.03
			0.00			1" Ice	1.45	1.45	0.05
						2" Ice	1.83	1.83	0.09
Sabre 12" HD V-Boom	A	From Leg	2.00	0.0000	115.00	No Ice	9.12	8.00	0.60

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	CAAA Front	CAAA Side	Weight	
			Horz	Lateral						Vert
			0.00			1/2" Ice	11.00	9.60	0.75	
			0.00			1" Ice	12.88	11.20	0.90	
						2" Ice	16.64	14.40	1.20	
Sabre 12" HD V-Boom	B	From Leg	2.00		0.0000	115.00	No Ice	9.12	8.00	0.60
			0.00				1/2" Ice	11.00	9.60	0.75
			0.00				1" Ice	12.88	11.20	0.90
							2" Ice	16.64	14.40	1.20
Sabre 12" HD V-Boom	C	From Leg	2.00		0.0000	115.00	No Ice	9.12	8.00	0.60
			0.00				1/2" Ice	11.00	9.60	0.75
			0.00				1" Ice	12.88	11.20	0.90
							2" Ice	16.64	14.40	1.20

100ft Verizon										
(2) MX06FRO660-03_TIA w/ Mount Pipe	A	From Leg	4.00		0.0000	100.00	No Ice	10.11	8.99	0.10
			0.00				1/2" Ice	10.68	10.15	0.19
			0.00				1" Ice	11.22	11.03	0.29
							2" Ice	12.32	12.83	0.51
(2) MX06FRO660-03_TIA w/ Mount Pipe	B	From Leg	4.00		0.0000	100.00	No Ice	10.11	8.99	0.10
			0.00				1/2" Ice	10.68	10.15	0.19
			0.00				1" Ice	11.22	11.03	0.29
							2" Ice	12.32	12.83	0.51
(2) MX06FRO660-03_TIA w/ Mount Pipe	C	From Leg	4.00		0.0000	100.00	No Ice	10.11	8.99	0.10
			0.00				1/2" Ice	10.68	10.15	0.19
			0.00				1" Ice	11.22	11.03	0.29
							2" Ice	12.32	12.83	0.51
LNx-6514DS w/ Mount Pipe	A	From Leg	4.00		0.0000	100.00	No Ice	8.41	7.08	0.06
			0.00				1/2" Ice	8.97	8.27	0.13
			0.00				1" Ice	9.50	9.18	0.21
							2" Ice	10.59	11.02	0.39
LNx-6514DS w/ Mount Pipe	B	From Leg	4.00		0.0000	100.00	No Ice	8.41	7.08	0.06
			0.00				1/2" Ice	8.97	8.27	0.13
			0.00				1" Ice	9.50	9.18	0.21
							2" Ice	10.59	11.02	0.39
LNx-6514DS w/ Mount Pipe	C	From Leg	4.00		0.0000	100.00	No Ice	8.41	7.08	0.06
			0.00				1/2" Ice	8.97	8.27	0.13
			0.00				1" Ice	9.50	9.18	0.21
							2" Ice	10.59	11.02	0.39
MT6407-77A w/ Mount Pipe	A	From Leg	4.00		0.0000	100.00	No Ice	4.91	2.68	0.10
			0.00				1/2" Ice	5.26	3.14	0.14
			0.00				1" Ice	5.61	3.62	0.18
							2" Ice	6.36	4.63	0.29
MT6407-77A w/ Mount Pipe	B	From Leg	4.00		0.0000	100.00	No Ice	4.91	2.68	0.10
			0.00				1/2" Ice	5.26	3.14	0.14
			0.00				1" Ice	5.61	3.62	0.18
							2" Ice	6.36	4.63	0.29
MT6407-77A w/ Mount Pipe	C	From Leg	4.00		0.0000	100.00	No Ice	4.91	2.68	0.10
			0.00				1/2" Ice	5.26	3.14	0.14
			0.00				1" Ice	5.61	3.62	0.18
							2" Ice	6.36	4.63	0.29
XXDWMM-12.5-65-8T	A	From Leg	4.00		0.0000	100.00	No Ice	0.89	0.17	0.01
			0.00				1/2" Ice	1.01	0.25	0.01
			0.00				1" Ice	1.14	0.34	0.02
							2" Ice	1.40	0.52	0.04
XXDWMM-12.5-65-8T	B	From Leg	4.00		0.0000	100.00	No Ice	0.89	0.17	0.01
			0.00				1/2" Ice	1.01	0.25	0.01
			0.00				1" Ice	1.14	0.34	0.02
							2" Ice	1.40	0.52	0.04

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			Horz ft	Vert ft					
XXDWMM-12.5-65-8T	C	From Leg	4.00	0.0000	100.00	No Ice	0.89	0.17	0.01
			0.00			1/2" Ice	1.01	0.25	0.01
			0.00			1" Ice	1.14	0.34	0.02
						2" Ice	1.40	0.52	0.04
RVZDC-6627-PF-48	C	From Leg	4.00	0.0000	101.00	No Ice	3.79	2.51	0.03
			0.00			1/2" Ice	4.04	2.73	0.06
			0.00			1" Ice	4.30	2.95	0.10
						2" Ice	4.84	3.42	0.18
CBRS RRH-RT4401-48A	A	From Leg	4.00	0.0000	100.00	No Ice	0.86	0.42	0.02
			0.00			1/2" Ice	0.98	0.51	0.03
			0.00			1" Ice	1.10	0.61	0.04
						2" Ice	1.34	0.81	0.06
CBRS RRH-RT4401-48A	B	From Leg	4.00	0.0000	100.00	No Ice	0.86	0.42	0.02
			0.00			1/2" Ice	0.98	0.51	0.03
			0.00			1" Ice	1.10	0.61	0.04
						2" Ice	1.34	0.81	0.06
CBRS RRH-RT4401-48A	C	From Leg	4.00	0.0000	100.00	No Ice	0.86	0.42	0.02
			0.00			1/2" Ice	0.98	0.51	0.03
			0.00			1" Ice	1.10	0.61	0.04
						2" Ice	1.34	0.81	0.06
Alcatel Lucent B2/B66A RRH Unit	A	From Leg	4.00	0.0000	100.00	No Ice	2.58	1.57	0.06
			0.00			1/2" Ice	2.90	1.85	0.07
			0.00			1" Ice	3.23	2.14	0.08
						2" Ice	3.89	2.72	0.10
Alcatel Lucent B2/B66A RRH Unit	B	From Leg	4.00	0.0000	100.00	No Ice	2.58	1.57	0.06
			0.00			1/2" Ice	2.90	1.85	0.07
			0.00			1" Ice	3.23	2.14	0.08
						2" Ice	3.89	2.72	0.10
Alcatel Lucent B2/B66A RRH Unit	C	From Leg	4.00	0.0000	100.00	No Ice	2.58	1.57	0.06
			0.00			1/2" Ice	2.90	1.85	0.07
			0.00			1" Ice	3.23	2.14	0.08
						2" Ice	3.89	2.72	0.10
Alcatel Lucent B5/B13 RRH Unit	A	From Leg	4.00	0.0000	100.00	No Ice	2.06	1.31	0.06
			0.00			1/2" Ice	2.34	1.55	0.07
			0.00			1" Ice	2.62	1.80	0.08
						2" Ice	3.18	2.30	0.10
Alcatel Lucent B5/B13 RRH Unit	B	From Leg	4.00	0.0000	100.00	No Ice	2.06	1.31	0.06
			0.00			1/2" Ice	2.34	1.55	0.07
			0.00			1" Ice	2.62	1.80	0.08
						2" Ice	3.18	2.30	0.10
Alcatel Lucent B5/B13 RRH Unit	C	From Leg	4.00	0.0000	100.00	No Ice	2.06	1.31	0.06
			0.00			1/2" Ice	2.34	1.55	0.07
			0.00			1" Ice	2.62	1.80	0.08
						2" Ice	3.18	2.30	0.10
(2) VZSMART-SFK3	A	From Leg	0.00	0.0000	100.00	No Ice	5.00	5.00	0.09
			0.00			1/2" Ice	7.00	7.00	0.12
			0.00			1" Ice	9.00	9.00	0.16
						2" Ice	13.00	13.00	0.24
(2) VZSMART-SFK3	B	From Leg	0.00	0.0000	100.00	No Ice	5.00	5.00	0.09
			0.00			1/2" Ice	7.00	7.00	0.12
			0.00			1" Ice	9.00	9.00	0.16
						2" Ice	13.00	13.00	0.24
(2) VZSMART-SFK3	C	From Leg	0.00	0.0000	100.00	No Ice	5.00	5.00	0.09
			0.00			1/2" Ice	7.00	7.00	0.12
			0.00			1" Ice	9.00	9.00	0.16
						2" Ice	13.00	13.00	0.24
SitePro1 VFA12-RRU Mount	A	From Leg	0.00	0.0000	100.00	No Ice	12.02	7.98	0.45

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Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight	
				ft	°	°	ft	ft	ft ²	K	
***** *****											
VHLP3-11W	A	Paraboloid w/o Radome	From Leg	2.00 0.00 0.00	0.0000		83.00	3.28	No Ice 1/2" Ice 1" Ice 2" Ice	8.47 8.90 9.34 10.21	0.05 0.10 0.14 0.24
HPD2-5.2	C	Paraboloid w/Radome	From Face	9.00 0.00 0.00	0.0000		168.00	2.04	No Ice 1/2" Ice 1" Ice 2" Ice	3.27 3.55 3.82 4.36	0.03 0.05 0.06 0.10
4' Grid Dish	C	Grid	From Leg	6.00 0.00 0.00	0.0000		134.00	4.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.57 13.10 13.62 14.66	0.06 0.11 0.17 0.29

Truss-Leg Properties

Section Designation	Area	Area Ice	Self Weight	Ice Weight	Equiv. Diameter	Equiv. Diameter Ice	Leg Area
	in ²	in ²	K	K	in	in	in ²
Pirod 105244	1026.8606	3273.8837	0.56	0.77	7.1310	22.7353	3.6816
Pirod 105216	1998.0891	6715.7617	0.51	1.44	6.9378	23.3186	3.6816
Pirod 105217	2130.7479	6764.7188	0.62	1.43	7.3984	23.4886	5.3014
Pirod 105217	2130.7479	6747.8389	0.62	1.41	7.3984	23.4300	5.3014
Pirod 105217 w/ 1"rod 36ksi	2249.2872	6801.7659	0.74	1.42	7.8100	23.6172	6.9978
Pirod 105218 w/ 1"rod 36ksi	2367.7164	6852.7103	0.87	1.42	8.2212	23.7941	8.9124
Pirod 105219	2441.8688	6861.1774	0.94	1.44	8.4787	23.8235	9.4248
Pirod 105219 w/ 1"rod 36ksi	2536.0462	6920.7379	1.06	1.47	8.8057	24.0303	11.1213
Pirod 105220 w/ 1"rod 36ksi	2665.2458	6979.1586	1.24	1.48	9.2543	24.2332	13.6248

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice

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Comb. No.	Description
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	170 - 150	Leg	Max Tension	23	25.70	0.05	0.03
			Max. Compression	2	-29.82	-0.01	0.35
			Max. Mx	8	-3.48	0.28	-0.01
			Max. My	2	-29.82	-0.01	0.35
			Max. Vy	10	2.61	-0.27	-0.21
			Max. Vx	2	-3.37	-0.01	0.35
			Max Tension	6	2.89	0.00	0.00
		Diagonal	Max. Compression	18	-2.94	0.00	0.00
			Max. Mx	27	0.73	-0.01	-0.00
			Max. My	6	-2.26	-0.00	-0.00
			Max. Vy	27	0.02	-0.01	-0.00
			Max. Vx	6	-0.00	0.00	0.00

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Section No.	Elevation ft	Component Type	Condition	Gov.	Axial	Major Axis	Minor Axis	
				Load Comb.	K	Moment kip-ft	Moment kip-ft	
T2	150 - 140	Top Girt	Max Tension	5	0.04	0.00	0.00	
			Max. Compression	2	-0.08	0.00	0.00	
			Max. Mx	27	-0.05	0.03	0.00	
			Max. My	20	0.01	0.00	-0.00	
			Max. Vy	27	0.02	0.00	0.00	
		Bottom Girt	Max. Vx	20	0.00	0.00	0.00	
			Max Tension	6	0.14	0.00	0.00	
			Max. Compression	2	-0.14	0.00	0.00	
			Max. Mx	26	-0.01	0.03	0.00	
			Max. My	20	-0.00	0.00	-0.00	
		Leg	Max. Vy	26	0.02	0.00	0.00	
			Max. Vx	20	0.00	0.00	0.00	
			Max Tension	23	28.91	-0.33	-0.05	
			Max. Compression	2	-33.08	2.67	0.28	
			Max. Mx	6	27.95	-2.95	0.41	
			Max. My	20	-2.78	-0.15	-3.70	
			Max. Vy	6	0.57	-2.95	0.41	
			Max. Vx	20	0.67	-0.15	-3.70	
			Diagonal	Max Tension	7	4.31	0.00	0.00
				Max. Compression	18	-4.75	0.00	0.00
Max. Mx	37	0.52		0.05	-0.01			
Max. My	18	-4.73		-0.02	-0.02			
Max. Vy	37	0.03		0.05	-0.01			
Top Girt	Max. Vx	6	-0.00	0.00	0.00			
	Max Tension	22	0.37	0.00	0.00			
	Max. Compression	3	-0.33	0.00	0.00			
	Max. Mx	26	0.05	-0.06	0.00			
	Max. My	30	0.05	0.00	0.00			
T3	140 - 120	Leg	Max. Vy	26	0.05	0.00	0.00	
			Max. Vx	30	-0.00	0.00	0.00	
			Max Tension	23	53.29	-3.35	0.04	
			Max. Compression	2	-62.86	3.35	-0.05	
			Max. Mx	22	51.10	-4.15	-0.10	
		Diagonal	Max. My	20	-6.18	-0.42	-5.30	
			Max. Vy	14	0.95	-4.14	0.02	
			Max. Vx	8	-1.08	-0.41	5.27	
			Max Tension	16	6.71	0.00	0.00	
			Max. Compression	18	-7.00	0.00	0.00	
T4	120 - 100	Leg	Max. Mx	2	4.02	0.13	0.01	
			Max. My	6	-5.04	-0.03	0.02	
			Max. Vy	27	-0.06	0.12	-0.01	
			Max. Vx	30	-0.01	0.00	0.00	
			Max Tension	23	90.75	-4.44	-0.07	
		Diagonal	Max. Compression	2	-106.26	2.59	0.04	
			Max. Mx	2	-83.83	5.14	0.02	
			Max. My	20	-6.10	-0.42	-5.30	
			Max. Vy	18	-1.09	5.13	-0.09	
			Max. Vx	20	-1.40	-0.42	-5.30	
T5	100 - 90	Leg	Max Tension	7	9.66	0.00	0.00	
			Max. Compression	18	-10.55	0.00	0.00	
			Max. Mx	27	1.51	0.12	-0.02	
			Max. My	18	-10.52	-0.05	-0.03	
			Max. Vy	37	0.07	0.10	-0.01	
		Mid Girt	Max. Vx	29	-0.01	0.00	0.00	
			Max Tension	22	3.05	0.00	0.00	
			Max. Compression	3	-2.48	0.00	0.00	
			Max. Mx	26	0.87	-0.20	0.00	
			Max. My	30	0.86	0.00	0.01	
Leg	Max. Vy	26	0.09	0.00	0.00			
	Max. Vx	30	0.00	0.00	0.00			
	Max Tension	23	115.97	-3.07	-0.06			

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T6	90 - 80	Diagonal	Max. Compression	2	-135.20	3.92	-0.04
			Max. Mx	2	-135.20	3.92	-0.04
			Max. My	20	-9.39	-0.32	-4.90
			Max. Vy	6	-2.09	-3.16	0.14
			Max. Vx	4	-2.16	-0.33	-4.61
			Max Tension	16	11.73	0.00	0.00
			Max. Compression	16	-11.90	0.00	0.00
			Max. Mx	27	3.02	0.21	-0.02
			Max. My	30	-1.69	0.11	0.02
			Max. Vy	27	-0.09	0.21	-0.02
		Leg	Max. Vx	35	0.01	0.00	0.00
			Max Tension	23	141.04	-3.72	-0.03
			Max. Compression	2	-163.01	4.54	-0.01
			Max. Mx	18	-162.64	4.54	-0.05
			Max. My	16	-10.23	0.08	4.08
			Max. Vy	14	0.44	-4.46	0.01
			Max. Vx	16	0.36	0.08	4.08
			Max Tension	16	11.32	0.00	0.00
			Max. Compression	4	-11.55	0.00	0.00
			Max. Mx	27	2.74	0.20	-0.02
T7	80 - 60	Diagonal	Max. My	29	2.61	0.18	0.03
			Max. Vy	27	-0.10	0.20	-0.02
			Max. Vx	29	-0.01	0.00	0.00
			Max Tension	23	188.21	-4.24	0.03
			Max. Compression	10	-215.02	4.75	-0.03
			Max. Mx	10	-215.02	4.75	-0.03
			Max. My	24	-12.22	-0.06	4.56
			Max. Vy	11	-0.23	4.73	-0.03
			Max. Vx	24	-0.32	-0.06	4.56
			Max Tension	12	11.39	0.00	0.00
		Leg	Max. Compression	12	-11.66	0.00	0.00
			Max. Mx	27	2.73	0.22	0.02
			Max. My	30	-1.80	0.16	0.03
			Max. Vy	37	0.11	0.20	0.03
			Max. Vx	30	-0.01	0.00	0.00
			Max Tension	23	232.27	-4.37	0.02
			Max. Compression	10	-264.53	6.17	0.02
			Max. Mx	10	-264.53	6.17	0.02
			Max. My	20	-15.22	0.12	-5.25
			Max. Vy	10	-0.38	6.17	0.02
T8	60 - 40	Diagonal	Max. Vx	12	0.27	-0.10	-4.84
			Max Tension	12	11.51	0.00	0.00
			Max. Compression	12	-11.92	0.00	0.00
			Max. Mx	27	3.01	0.26	0.03
			Max. My	30	-1.63	0.20	0.03
			Max. Vy	37	0.13	0.25	0.03
			Max. Vx	30	0.01	0.00	0.00
			Max Tension	23	274.49	-4.43	0.03
			Max. Compression	10	-313.11	6.75	0.00
			Max. Mx	37	38.27	-8.67	-0.02
		Leg	Max. My	24	-16.46	-0.27	5.52
			Max. Vy	29	1.15	-8.62	0.04
			Max. Vx	24	0.44	-0.27	5.52
			Max Tension	8	12.68	0.00	0.00
			Max. Compression	8	-13.18	0.00	0.00
			Max. Mx	27	2.67	0.36	0.04
			Max. My	30	-2.45	0.28	0.04
			Max. Vy	37	0.17	0.34	0.04
			Max. Vx	30	0.01	0.00	0.00
			Max Tension	23	315.93	-5.21	0.02
T10	20 - 0	Leg	Max. Compression	10	-362.12	0.00	-0.00

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	31	-152.01	11.16	-0.04
			Max. My	20	-19.06	-0.48	-9.56
			Max. Vy	29	-1.78	-8.62	0.04
			Max. Vx	24	1.24	-0.48	9.51
		Diagonal	Max Tension	9	15.01	0.00	0.00
			Max. Compression	18	-16.15	0.00	0.00
			Max. Mx	31	0.84	0.63	0.06
			Max. My	29	-6.48	0.50	0.07
			Max. Vy	37	0.23	0.62	-0.06
			Max. Vx	29	-0.01	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	375.64	39.53	-22.94
	Max. H _x	18	375.64	39.53	-22.94
	Max. H _z	7	-326.20	-34.93	20.27
	Min. Vert	7	-326.20	-34.93	20.27
	Min. H _x	7	-326.20	-34.93	20.27
	Min. H _z	18	375.64	39.53	-22.94
Leg B	Max. Vert	10	376.37	-39.71	-22.90
	Max. H _x	23	-327.66	35.14	20.25
	Max. H _z	23	-327.66	35.14	20.25
	Min. Vert	23	-327.66	35.14	20.25
	Min. H _x	10	376.37	-39.71	-22.90
	Min. H _z	10	376.37	-39.71	-22.90
Leg A	Max. Vert	2	373.42	-0.19	45.34
	Max. H _x	21	15.44	4.08	1.39
	Max. H _z	2	373.42	-0.19	45.34
	Min. Vert	15	-325.04	0.19	-40.19
	Min. H _x	9	16.51	-4.08	1.48
	Min. H _z	15	-325.04	0.19	-40.19

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overtuning Moment, M _x kip-ft	Overtuning Moment, M _z kip-ft	Torque kip-ft
Dead Only	52.38	0.00	0.00	-2.04	2.00	-0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	62.86	0.07	-71.45	-6104.82	-8.10	-6.51
0.9 Dead+1.0 Wind 0 deg - No Ice	47.15	0.07	-71.45	-6096.89	-8.69	-6.51
1.2 Dead+1.0 Wind 30 deg - No Ice	62.86	33.11	-57.31	-4990.65	-2880.98	2.19
0.9 Dead+1.0 Wind 30 deg - No Ice	47.15	33.11	-57.31	-4983.99	-2878.10	2.21
1.2 Dead+1.0 Wind 60 deg - No Ice	62.86	59.13	-34.24	-2976.93	-5127.52	-3.30
0.9 Dead+1.0 Wind 60 deg - No Ice	47.15	59.13	-34.24	-2972.71	-5121.95	-3.29

<p style="text-align: center;">tnxTower</p> <p style="text-align: center;">EFI Global, Inc. 1117 Perimeter Center West Atlanta, GA 30338 Phone: (470) 990-6593 FAX:</p>	<p style="text-align: center;">Job</p> <p style="text-align: center;">CT11059C</p>	<p style="text-align: center;">Page</p> <p style="text-align: center;">27 of 37</p>
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	<p style="text-align: center;">Client</p> <p style="text-align: center;">Foresite LLC</p>	<p style="text-align: center;">Designed by</p> <p style="text-align: center;">Patrick.Baxter</p>

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 90 deg - No Ice	62.86	69.75	-0.08	-14.49	-6017.22	-4.37
0.9 Dead+1.0 Wind 90 deg - No Ice	47.15	69.75	-0.08	-13.83	-6010.60	-4.36
1.2 Dead+1.0 Wind 120 deg - No Ice	62.86	62.44	36.52	3104.02	-5316.31	1.82
0.9 Dead+1.0 Wind 120 deg - No Ice	47.15	62.44	36.52	3100.97	-5310.57	1.83
1.2 Dead+1.0 Wind 150 deg - No Ice	62.86	34.14	59.80	5177.68	-2951.72	11.95
0.9 Dead+1.0 Wind 150 deg - No Ice	47.15	34.14	59.81	5172.09	-2948.77	11.96
1.2 Dead+1.0 Wind 180 deg - No Ice	62.86	-0.09	67.99	5908.59	15.21	6.49
0.9 Dead+1.0 Wind 180 deg - No Ice	47.15	-0.09	67.99	5902.10	14.58	6.48
1.2 Dead+1.0 Wind 210 deg - No Ice	62.86	-32.95	57.55	5001.64	2871.63	-3.70
0.9 Dead+1.0 Wind 210 deg - No Ice	47.15	-32.95	57.55	4996.25	2867.55	-3.71
1.2 Dead+1.0 Wind 240 deg - No Ice	62.86	-62.20	36.46	3104.72	5301.31	2.54
0.9 Dead+1.0 Wind 240 deg - No Ice	47.15	-62.20	36.46	3101.66	5294.37	2.53
1.2 Dead+1.0 Wind 270 deg - No Ice	62.86	-69.75	0.05	4.18	6022.04	4.53
0.9 Dead+1.0 Wind 270 deg - No Ice	47.15	-69.75	0.05	4.81	6014.21	4.52
1.2 Dead+1.0 Wind 300 deg - No Ice	62.86	-59.41	-34.30	-2976.99	5158.02	-1.03
0.9 Dead+1.0 Wind 300 deg - No Ice	47.15	-59.41	-34.30	-2972.77	5151.21	-1.04
1.2 Dead+1.0 Wind 330 deg - No Ice	62.86	-34.36	-59.53	-5161.54	2979.63	-10.61
0.9 Dead+1.0 Wind 330 deg - No Ice	47.15	-34.36	-59.53	-5154.69	2975.43	-10.61
1.2 Dead+1.0 Ice+1.0 Temp	184.71	0.00	0.00	-24.02	13.61	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	184.71	0.13	-20.61	-1865.35	-3.46	-3.49
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	184.71	10.17	-17.46	-1592.75	-903.54	-3.25
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	184.71	17.75	-10.26	-945.80	-1578.42	-5.19
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	184.71	21.08	-0.09	-36.22	-1864.46	-6.72
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	184.71	18.65	10.71	918.79	-1640.95	-3.31
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	184.71	10.35	18.03	1584.98	-910.05	2.00
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	184.71	-0.02	20.22	1792.42	17.09	3.76
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	184.71	-10.06	17.50	1546.25	917.53	3.46
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	184.71	-18.02	10.49	908.87	1616.84	5.08
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	184.71	-21.04	0.01	-23.23	1886.29	6.30
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	184.71	-18.26	-10.53	-962.22	1641.03	3.16
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	184.71	-10.38	-17.99	-1631.03	940.49	-1.79

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Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead+Wind 0 deg - Service	52.38	0.01	-14.12	-1207.83	-0.07	-1.29
Dead+Wind 30 deg - Service	52.38	6.54	-11.33	-987.73	-567.74	0.40
Dead+Wind 60 deg - Service	52.38	11.69	-6.77	-589.80	-1011.64	-0.71
Dead+Wind 90 deg - Service	52.38	13.79	-0.02	-4.43	-1187.41	-0.93
Dead+Wind 120 deg - Service	52.38	12.34	7.22	611.74	-1048.91	0.30
Dead+Wind 150 deg - Service	52.38	6.75	11.82	1021.48	-581.71	2.33
Dead+Wind 180 deg - Service	52.38	-0.02	13.44	1165.93	4.53	1.28
Dead+Wind 210 deg - Service	52.38	-6.51	11.37	986.73	568.97	-0.70
Dead+Wind 240 deg - Service	52.38	-12.29	7.21	611.88	1049.02	0.56
Dead+Wind 270 deg - Service	52.38	-13.79	0.01	-0.75	1191.43	0.96
Dead+Wind 300 deg - Service	52.38	-11.74	-6.78	-589.82	1020.73	-0.15
Dead+Wind 330 deg - Service	52.38	-6.79	-11.77	-1021.46	590.28	-2.06

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-52.38	0.00	-0.00	52.38	-0.00	0.000%
2	0.07	-62.86	-71.45	-0.07	62.86	71.45	0.001%
3	0.07	-47.15	-71.45	-0.07	47.15	71.45	0.001%
4	33.11	-62.86	-57.31	-33.11	62.86	57.31	0.001%
5	33.11	-47.15	-57.31	-33.11	47.15	57.31	0.001%
6	59.13	-62.86	-34.24	-59.13	62.86	34.24	0.001%
7	59.13	-47.15	-34.24	-59.13	47.15	34.24	0.001%
8	69.75	-62.86	-0.08	-69.75	62.86	0.08	0.001%
9	69.75	-47.15	-0.08	-69.75	47.15	0.08	0.001%
10	62.44	-62.86	36.52	-62.44	62.86	-36.52	0.001%
11	62.44	-47.15	36.52	-62.44	47.15	-36.52	0.001%
12	34.14	-62.86	59.81	-34.14	62.86	-59.80	0.001%
13	34.14	-47.15	59.81	-34.14	47.15	-59.81	0.001%
14	-0.09	-62.86	67.99	0.09	62.86	-67.99	0.001%
15	-0.09	-47.15	67.99	0.09	47.15	-67.99	0.001%
16	-32.95	-62.86	57.55	32.95	62.86	-57.55	0.001%
17	-32.95	-47.15	57.55	32.95	47.15	-57.55	0.001%
18	-62.20	-62.86	36.46	62.20	62.86	-36.46	0.001%
19	-62.20	-47.15	36.46	62.20	47.15	-36.46	0.001%
20	-69.75	-62.86	0.05	69.75	62.86	-0.05	0.001%
21	-69.75	-47.15	0.05	69.75	47.15	-0.05	0.001%
22	-59.41	-62.86	-34.30	59.41	62.86	34.30	0.001%
23	-59.41	-47.15	-34.30	59.41	47.15	34.30	0.001%
24	-34.36	-62.86	-59.53	34.36	62.86	59.53	0.001%
25	-34.36	-47.15	-59.53	34.36	47.15	59.53	0.001%
26	0.00	-184.71	0.00	-0.00	184.71	-0.00	0.001%
27	0.13	-184.71	-20.61	-0.13	184.71	20.61	0.000%
28	10.17	-184.71	-17.46	-10.17	184.71	17.46	0.000%
29	17.75	-184.71	-10.26	-17.75	184.71	10.26	0.000%
30	21.08	-184.71	-0.09	-21.08	184.71	0.09	0.000%
31	18.65	-184.71	10.71	-18.65	184.71	-10.71	0.000%
32	10.35	-184.71	18.03	-10.35	184.71	-18.03	0.000%
33	-0.02	-184.71	20.22	0.02	184.71	-20.22	0.000%
34	-10.06	-184.71	17.50	10.06	184.71	-17.50	0.000%
35	-18.02	-184.71	10.49	18.02	184.71	-10.49	0.000%
36	-21.04	-184.71	0.01	21.04	184.71	-0.01	0.000%
37	-18.26	-184.71	-10.53	18.26	184.71	10.53	0.000%
38	-10.38	-184.71	-17.99	10.38	184.71	17.99	0.000%
39	0.01	-52.38	-14.12	-0.01	52.38	14.12	0.000%
40	6.54	-52.38	-11.33	-6.54	52.38	11.33	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
41	11.69	-52.38	-6.77	-11.69	52.38	6.77	0.000%
42	13.79	-52.38	-0.02	-13.79	52.38	0.02	0.000%
43	12.34	-52.38	7.22	-12.34	52.38	-7.22	0.000%
44	6.75	-52.38	11.82	-6.75	52.38	-11.82	0.000%
45	-0.02	-52.38	13.44	0.02	52.38	-13.44	0.000%
46	-6.51	-52.38	11.37	6.51	52.38	-11.37	0.000%
47	-12.29	-52.38	7.21	12.29	52.38	-7.21	0.000%
48	-13.79	-52.38	0.01	13.79	52.38	-0.01	0.000%
49	-11.74	-52.38	-6.78	11.74	52.38	6.78	0.000%
50	-6.79	-52.38	-11.77	6.79	52.38	11.77	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.0000001	0.0000001
2	Yes	10	0.0000001	0.00007190
3	Yes	10	0.0000001	0.00005190
4	Yes	10	0.0000001	0.00007895
5	Yes	10	0.0000001	0.00005874
6	Yes	10	0.0000001	0.00008479
7	Yes	10	0.0000001	0.00006436
8	Yes	10	0.0000001	0.00007862
9	Yes	10	0.0000001	0.00005848
10	Yes	10	0.0000001	0.00007160
11	Yes	10	0.0000001	0.00005171
12	Yes	10	0.0000001	0.00007860
13	Yes	10	0.0000001	0.00005852
14	Yes	10	0.0000001	0.00008456
15	Yes	10	0.0000001	0.00006420
16	Yes	10	0.0000001	0.00007870
17	Yes	10	0.0000001	0.00005858
18	Yes	10	0.0000001	0.00007173
19	Yes	10	0.0000001	0.00005180
20	Yes	10	0.0000001	0.00007861
21	Yes	10	0.0000001	0.00005843
22	Yes	10	0.0000001	0.00008483
23	Yes	10	0.0000001	0.00006437
24	Yes	10	0.0000001	0.00007883
25	Yes	10	0.0000001	0.00005863
26	Yes	7	0.0000001	0.00014285
27	Yes	11	0.0000001	0.00005733
28	Yes	11	0.0000001	0.00005750
29	Yes	11	0.0000001	0.00005776
30	Yes	11	0.0000001	0.00005666
31	Yes	11	0.0000001	0.00005529
32	Yes	11	0.0000001	0.00005498
33	Yes	11	0.0000001	0.00005525
34	Yes	11	0.0000001	0.00005497
35	Yes	11	0.0000001	0.00005547
36	Yes	11	0.0000001	0.00005724
37	Yes	11	0.0000001	0.00005862
38	Yes	11	0.0000001	0.00005809
39	Yes	10	0.0000001	0.00006005
40	Yes	10	0.0000001	0.00006108
41	Yes	10	0.0000001	0.00006213

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42	Yes	10	0.00000001	0.00006080
43	Yes	10	0.00000001	0.00005928
44	Yes	10	0.00000001	0.00006042
45	Yes	10	0.00000001	0.00006155
46	Yes	10	0.00000001	0.00006045
47	Yes	10	0.00000001	0.00005960
48	Yes	10	0.00000001	0.00006111
49	Yes	10	0.00000001	0.00006239
50	Yes	10	0.00000001	0.00006135

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	170 - 150	3.383	39	0.1868	0.0401
T2	150 - 140	2.613	39	0.1694	0.0233
T3	140 - 120	2.262	39	0.1588	0.0147
T4	120 - 100	1.641	39	0.1323	0.0087
T5	100 - 90	1.117	47	0.1081	0.0043
T6	90 - 80	0.899	47	0.0930	0.0033
T7	80 - 60	0.710	47	0.0805	0.0025
T8	60 - 40	0.400	43	0.0589	0.0013
T9	40 - 20	0.179	43	0.0367	0.0007
T10	20 - 0	0.050	43	0.0169	0.0003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
170.00	101-90-08-0-01	39	3.383	0.1868	0.0401	161435
168.00	HPD2-5.2	39	3.304	0.1851	0.0386	161435
158.50	SC420-HFL1LDF-SK	39	2.932	0.1771	0.0309	70189
144.00	3" Dia 20' Omni	39	2.399	0.1633	0.0178	41216
141.00	2"x15' Omni	39	2.296	0.1600	0.0154	41823
139.00	1.5"x10' Omni	39	2.229	0.1576	0.0141	42531
138.50	9' Whip	39	2.212	0.1570	0.0138	42757
134.00	4' Grid Dish	39	2.065	0.1512	0.0117	45359
125.00	AIR 6419 B41_TMO_TIA w/ Mount Pipe	39	1.788	0.1389	0.0095	51994
115.00	DMP65R-BU6DA	39	1.501	0.1264	0.0077	50826
101.00	RVZDC-6627-PF-48	47	1.141	0.1095	0.0045	39535
100.00	(2) MX06FRO660-03_TIA w/ Mount Pipe	47	1.117	0.1081	0.0043	39143
87.00	3"x2"x22" Panel	47	0.840	0.0889	0.0031	42531
84.50	TMA	47	0.792	0.0858	0.0028	46579
83.50	3' Stand Off	47	0.773	0.0845	0.0028	48421
83.00	VHLP3-11W	47	0.764	0.0840	0.0027	49352
82.50	TMA	47	0.755	0.0834	0.0027	50275
80.00	3"x2"x22" Panel	47	0.710	0.0805	0.0025	54157
30.00	Camera	43	0.103	0.0264	0.0005	51529
24.00	PC9013N	43	0.068	0.0206	0.0004	50689

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Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	170 - 150	16.929	2	0.9209	0.1955
T2	150 - 140	13.129	18	0.8425	0.1142
T3	140 - 120	11.390	10	0.7920	0.0725
T4	120 - 100	8.297	10	0.6627	0.0427
T5	100 - 90	5.663	10	0.5437	0.0213
T6	90 - 80	4.558	10	0.4694	0.0161
T7	80 - 60	3.600	10	0.4070	0.0121
T8	60 - 40	2.025	10	0.2984	0.0061
T9	40 - 20	0.908	10	0.1862	0.0034
T10	20 - 0	0.254	10	0.0855	0.0017

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
170.00	101-90-08-0-01	2	16.929	0.9209	0.1955	35168
168.00	HPD2-5.2	2	16.539	0.9136	0.1879	35168
158.50	SC420-HFL1LDF-SK	18	14.706	0.8780	0.1510	15290
144.00	3" Dia 20' Omni	10	12.069	0.8138	0.0876	8642
141.00	2"x15' Omni	10	11.558	0.7977	0.0759	8625
139.00	1.5"x10' Omni	10	11.224	0.7861	0.0693	8718
138.50	9' Whip	10	11.141	0.7832	0.0679	8757
134.00	4' Grid Dish	10	10.412	0.7548	0.0578	9289
125.00	AIR 6419 B41_TMO_TIA w/ Mount Pipe	10	9.027	0.6947	0.0470	10696
115.00	DMP65R-BU6DA	10	7.593	0.6334	0.0379	10372
101.00	RVZDC-6627-PF-48	10	5.782	0.5506	0.0221	7969
100.00	(2) MX06FRO660-03_TIA w/ Mount Pipe	10	5.663	0.5437	0.0213	7885
87.00	3"x2"x22" Panel	10	4.257	0.4491	0.0149	8509
84.50	TMA	10	4.015	0.4334	0.0139	9312
83.50	3' Stand Off	10	3.921	0.4274	0.0135	9677
83.00	VHLP3-11W	10	3.874	0.4244	0.0133	9862
82.50	TMA	10	3.828	0.4214	0.0131	10044
80.00	3"x2"x22" Panel	10	3.600	0.4070	0.0121	10811
30.00	Camera	10	0.522	0.1337	0.0026	10168
24.00	PC9013N	10	0.347	0.1042	0.0021	10002

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	170	Diagonal	A325N	0.6250	1	2.94	13.81	0.213	1.05	Bolt Shear
T2	150	Leg	A325N	1.0000	6	4.82	54.52	0.088	1.05	Bolt Tension
		Diagonal	A325N	1.0000	1	4.31	9.14	0.471	1.05	Member Block

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Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load Allowable	Allowable Ratio	Criteria
		Top Girt	A325N	1.0000	1	0.57	10.16	0.056	1.05	Shear Member Block Shear
T3	140	Leg	A325N	1.0000	6	6.69	54.52	0.123	1.05	Bolt Tension
		Diagonal	A325N	1.0000	1	6.71	19.04	0.352	1.05	Member Block Shear
T4	120	Leg	A325N	1.0000	6	11.74	54.52	0.215	1.05	Bolt Tension
		Diagonal	A325N	1.0000	1	9.66	13.55	0.713	1.05	Member Block Shear
		Mid Girt	A325N	1.0000	1	3.05	10.16	0.300	1.05	Member Block Shear
T5	100	Leg	A325N	1.0000	6	19.33	54.52	0.355	1.05	Bolt Tension
		Diagonal	A325N	1.0000	1	11.73	22.85	0.513	1.05	Member Block Shear
T6	90	Leg	A325N	1.0000	6	23.51	54.52	0.431	1.05	Bolt Tension
		Diagonal	A325N	1.0000	1	11.32	22.85	0.496	1.05	Member Block Shear
T7	80	Leg	A325N	1.0000	6	27.51	54.52	0.505	1.05	Bolt Tension
		Diagonal	A325N	1.0000	1	11.39	22.85	0.499	1.05	Member Block Shear
T8	60	Leg	A325N	1.2500	6	35.13	87.22	0.403	1.05	Bolt Tension
		Diagonal	A325N	1.2500	1	11.51	20.54	0.561	1.05	Member Block Shear
T9	40	Leg	A325N	1.2500	6	42.29	87.22	0.485	1.05	Bolt Tension
		Diagonal	A325N	1.2500	1	12.68	27.88	0.455	1.05	Member Block Shear
T10	20	Leg	A325N	1.2500	6	49.36	87.22	0.566	1.05	Bolt Tension
		Diagonal	A325N	1.2500	1	15.01	35.83	0.419	1.05	Member Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	170 - 150	1 3/4	20.00	2.49	68.3	2.4053	-27.82	76.97	0.361 ¹
					K=1.00				
T2	150 - 140	Pirod 105244	10.02	10.02	45.4	3.6816	-33.08	142.49	0.232 ¹
					K=1.00				
T3	140 - 120	Pirod 105216	20.03	10.02	45.4	3.6816	-62.86	142.49	0.441 ¹
					K=1.00				
T4	120 - 100	Pirod 105217	20.03	10.02	37.8	5.3014	-106.26	214.86	0.495 ¹
					K=1.00				
T5	100 - 90	Pirod 105217	10.02	10.02	37.8	5.3014	-135.20	214.86	0.629 ¹
					K=1.00				
T6	90 - 80	Pirod 105217 w/ 1"rod 36ksi	10.02	10.02	53.3	6.9978	-163.01	255.93	0.637 ¹
					K=1.00				
T7	80 - 60	Pirod 105218 w/ 1"rod 36ksi	20.03	10.02	55.7	8.9124	-215.02	319.73	0.673 ¹
					K=1.00				
T8	60 - 40	Pirod 105219	20.03	10.02	28.4	9.4248	-264.53	399.87	0.662 ¹
					K=1.00				

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T9	40 - 20	Pirod 105219 w/ 1"rod 36ksi	20.03	10.02	57.6 K=1.00	11.1213	-313.11	392.52	0.798 ¹
T10	20 - 0	Pirod 105220 w/ 1"rod 36ksi	20.03	10.02	59.2 K=1.00	13.6248	-362.12	474.53	0.763 ¹

¹ P_u / φP_n controls

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L _d ft	Kl/r	φP _n K	A in ²	V _u K	φV _n K	Stress Ratio
T2	150 - 140	0.5	1.48	121.0	165.67	0.1963	0.69	3.39	0.203
T3	140 - 120	0.5	1.48	121.0	165.67	0.1963	1.09	3.29	0.331
T4	120 - 100	0.5	1.47	120.0	238.57	0.1963	1.40	3.34	0.421
T5	100 - 90	0.5	1.47	120.0	238.57	0.1963	2.18	3.34	0.653
T6	90 - 80	0.5	1.46	119.1	314.90	0.1963	0.44	3.37	0.131
T7	80 - 60	0.5	1.45	118.2	401.06	0.1963	0.32	3.41	0.095
T8	60 - 40	0.625	1.45	94.4	424.12	0.3068	0.38	6.96	0.055
T9	40 - 20	0.625	1.44	93.9	500.46	0.3068	1.15	6.99	0.164
T10	20 - 0	0.625	1.43	93.2	613.12	0.3068	1.78	7.04	0.253

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	170 - 150	7/8	5.59	2.71	133.9 K=0.90	0.6013	-2.94	7.58	0.388 ¹
T2	150 - 140	L2 1/2x2 1/2x3/16	11.42	5.02	121.8 K=1.00	0.9020	-4.75	17.33	0.274 ¹
T3	140 - 120	L3x3x5/16	12.50	5.67	116.6 K=1.01	1.7800	-7.00	37.46	0.187 ¹
T4	120 - 100	L3x3x1/4	13.80	6.37	129.1 K=1.00	1.4400	-10.55	24.73	0.427 ¹
T5	100 - 90	L3 1/2x3 1/2x5/16	14.50	6.74	117.9 K=1.01	2.0900	-11.90	43.03	0.277 ¹
T6	90 - 80	L3 1/2x3 1/2x5/16	15.24	7.12	123.9 K=1.00	2.0900	-11.55	38.98	0.296 ¹
T7	80 - 60	L3 1/2x3 1/2x5/16	16.80	7.92	137.8 K=1.00	2.0900	-11.66	31.50	0.370 ¹
T8	60 - 40	L3 1/2x3 1/2x5/16	18.45	8.73	151.8 K=1.00	2.0900	-11.92	25.96	0.459 ¹
T9	40 - 20	L4x4x3/8	20.16	9.59	146.1 K=1.00	2.8600	-13.18	38.36	0.344 ¹
T10	20 - 0	L5x5x3/8	21.92	10.48	127.0 K=1.00	3.6100	-16.15	64.04	0.252 ¹

¹ P_u / φP_n controls

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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	170 - 150	7/8	5.00	4.85	186.4 K=0.70	0.6013	-0.08	3.91	0.019 ¹
T2	150 - 140	L3x3x3/16	5.00	3.67	96.9 K=1.31	1.0900	-0.57	27.09	0.021 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	170 - 150	7/8	5.00	4.85	186.4 K=0.70	0.6013	-0.52	3.91	0.132 ¹

¹ P_u / φP_n controls

Mid Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T4	120 - 100	L3x3x3/16	9.00	7.67	154.4 K=1.00	1.0900	-2.48	13.09	0.189 ¹

¹ P_u / φP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	170 - 150	1 3/4	20.00	0.08	2.3	2.4053	25.70	108.24	0.237 ¹
T2	150 - 140	Piroad 105244	10.02	10.02	45.4	3.6816	28.91	165.67	0.175 ¹
T3	140 - 120	Piroad 105216	20.03	10.02	45.4	3.6816	53.29	165.67	0.322 ¹
T4	120 - 100	Piroad 105217	20.03	10.02	37.8	5.3014	90.75	238.57	0.380 ¹
T5	100 - 90	Piroad 105217	10.02	10.02	37.8	5.3014	115.97	238.57	0.486 ¹
T6	90 - 80	Piroad 105217 w/ 1"rod 36ksi	10.02	10.02	53.3	6.9978	141.04	314.90	0.448 ¹
T7	80 - 60	Piroad 105218 w/ 1"rod 36ksi	20.03	10.02	55.7	8.9124	188.21	401.06	0.469 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T8	60 - 40	Pirol 105219	20.03	10.02	28.4	9.4248	232.27	424.12	0.548 ¹
T9	40 - 20	Pirol 105219 w/ 1"rod 36ksi	20.03	10.02	57.6	11.1213	274.49	500.46	0.548 ¹
T10	20 - 0	Pirol 105220 w/ 1"rod 36ksi	20.03	10.02	59.2	13.6248	315.93	613.12	0.515 ¹

¹ P_u / φP_n controls

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L _d ft	Kl/r	φP _n K	A in ²	V _u K	φV _n K	Stress Ratio
T2	150 - 140	0.5	1.48	121.0	165.67	0.1963	0.69	3.39	0.203
T3	140 - 120	0.5	1.48	121.0	165.67	0.1963	1.09	3.29	0.331
T4	120 - 100	0.5	1.47	120.0	238.57	0.1963	1.40	3.34	0.421
T5	100 - 90	0.5	1.47	120.0	238.57	0.1963	2.18	3.34	0.653
T6	90 - 80	0.5	1.46	119.1	314.90	0.1963	0.44	3.37	0.131
T7	80 - 60	0.5	1.45	118.2	401.06	0.1963	0.32	3.41	0.095
T8	60 - 40	0.625	1.45	94.4	424.12	0.3068	0.38	6.96	0.055
T9	40 - 20	0.625	1.44	93.9	500.46	0.3068	1.15	6.99	0.164
T10	20 - 0	0.625	1.43	93.2	613.12	0.3068	1.78	7.04	0.253

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	170 - 150	7/8	5.59	2.71	148.7	0.6013	2.89	27.06	0.107 ¹
T2	150 - 140	L2 1/2x2 1/2x3/16	11.42	5.02	80.1	0.5183	4.31	22.55	0.191 ¹
T3	140 - 120	L3x3x5/16	12.50	5.67	76.0	1.0713	6.71	52.23	0.128 ¹
T4	120 - 100	L3x3x1/4	13.80	6.37	84.3	0.8691	9.66	37.80	0.256 ¹
T5	100 - 90	L3 1/2x3 1/2x5/16	14.50	6.74	76.7	1.3038	11.73	63.56	0.184 ¹
T6	90 - 80	L3 1/2x3 1/2x5/16	15.24	7.12	81.0	1.3038	11.32	63.56	0.178 ¹
T7	80 - 60	L3 1/2x3 1/2x5/16	16.01	7.54	85.6	1.3038	11.39	63.56	0.179 ¹
T8	60 - 40	L3 1/2x3 1/2x5/16	18.45	8.73	99.2	1.2452	11.51	54.17	0.213 ¹
T9	40 - 20	L4x4x3/8	20.16	9.59	95.5	1.7583	12.68	85.72	0.148 ¹
T10	20 - 0	L5x5x3/8	21.92	10.48	82.1	2.3208	15.01	113.14	0.133 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	170 - 150	7/8	5.00	4.85	266.3	0.6013	0.04	27.06	0.002 ¹
T2	150 - 140	L3x3x3/16	5.00	3.67	51.1	0.6593	0.57	28.68	0.020 ¹

tnxTower EFI Global, Inc. 1117 Perimeter Center West Atlanta, GA 30338 Phone: (470) 990-6593 FAX:	Job CT11059C	Page 36 of 37
	Project 2275013 - 049.03232	Date 16:43:31 09/09/22
	Client Foresite LLC	Designed by Patrick.Baxter

¹ $P_u / \phi P_n$ controls

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in ²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	170 - 150	7/8	5.00	4.85	266.3	0.6013	0.52	27.06	0.019 ¹

¹ $P_u / \phi P_n$ controls

Mid Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in ²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T4	120 - 100	L3x3x3/16	9.00	7.67	102.2	0.6593	3.05	28.68	0.106 ¹

¹ $P_u / \phi P_n$ controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	170 - 150	Leg	1 3/4	3	-27.82	80.82	34.4	Pass
T2	150 - 140	Leg	Piroad 105244	60	-33.08	149.62	22.1	Pass
T3	140 - 120	Leg	Piroad 105216	72	-62.86	149.62	42.0	Pass
T4	120 - 100	Leg	Piroad 105217	87	-106.26	225.60	47.1	Pass
T5	100 - 90	Leg	Piroad 105217	104	-134.29	225.60	62.2	Pass
T6	90 - 80	Leg	Piroad 105217 w/ 1"rod 36ksi	114	-163.01	268.73	60.7	Pass
T7	80 - 60	Leg	Piroad 105218 w/ 1"rod 36ksi	122	-215.02	335.71	64.0	Pass
T8	60 - 40	Leg	Piroad 105219	137	-264.53	419.86	63.0	Pass
T9	40 - 20	Leg	Piroad 105219 w/ 1"rod 36ksi	152	-313.11	412.15	76.0	Pass
T10	20 - 0	Leg	Piroad 105220 w/ 1"rod 36ksi	167	-362.12	498.26	72.7	Pass
T1	170 - 150	Diagonal	7/8	15	-2.94	7.96	36.9	Pass
T2	150 - 140	Diagonal	L2 1/2x2 1/2x3/16	69	-4.75	18.19	26.1	Pass
T3	140 - 120	Diagonal	L3x3x5/16	78	-7.00	39.33	47.1 (b) 17.8	Pass
T4	120 - 100	Diagonal	L3x3x1/4	96	-10.55	25.97	35.2 (b) 40.6	Pass
T5	100 - 90	Diagonal	L3 1/2x3 1/2x5/16	111	-11.90	45.18	71.3 (b) 26.3	Pass
T6	90 - 80	Diagonal	L3 1/2x3 1/2x5/16	119	-11.55	40.93	51.3 (b) 28.2	Pass
T7	80 - 60	Diagonal	L3 1/2x3 1/2x5/16	126	-11.66	33.08	49.6 (b) 35.3	Pass
T8	60 - 40	Diagonal	L3 1/2x3 1/2x5/16	141	-11.92	27.26	49.9 (b) 43.7	Pass
T9	40 - 20	Diagonal	L4x4x3/8	155	-13.18	40.27	56.1 (b) 32.7	Pass
							45.5 (b)	

<p>tnxTower</p> <p>EFI Global, Inc. 1117 Perimeter Center West Atlanta, GA 30338 Phone: (470) 990-6593 FAX:</p>	Job CT11059C	Page 37 of 37
	Project 2275013 - 049.03232	Date 16:43:31 09/09/22
	Client Foresite LLC	Designed by Patrick.Baxter

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T10	20 - 0	Diagonal	L5x5x3/8	174	-16.15	67.24	24.0	Pass
							41.9 (b)	
T1	170 - 150	Top Girt	7/8	4	-0.08	4.11	1.9	Pass
T2	150 - 140	Top Girt	L3x3x3/16	62	-0.57	28.45	2.0	Pass
							5.6 (b)	
T1	170 - 150	Bottom Girt	7/8	8	-0.52	4.11	12.6	Pass
T4	120 - 100	Mid Girt	L3x3x3/16	88	-2.48	13.75	18.0	Pass
							30.0 (b)	
							Summary	
							Leg (T9)	76.0 Pass
							Diagonal (T4)	71.3 Pass
							Top Girt (T2)	5.6 Pass
							Bottom Girt (T1)	12.6 Pass
							Mid Girt (T4)	30.0 Pass
							Bolt Checks	67.9 Pass
							RATING =	76.0 Pass

Self Support Anchor Rod Capacity

Site Info	
BU #	
Site Name	
Order #	

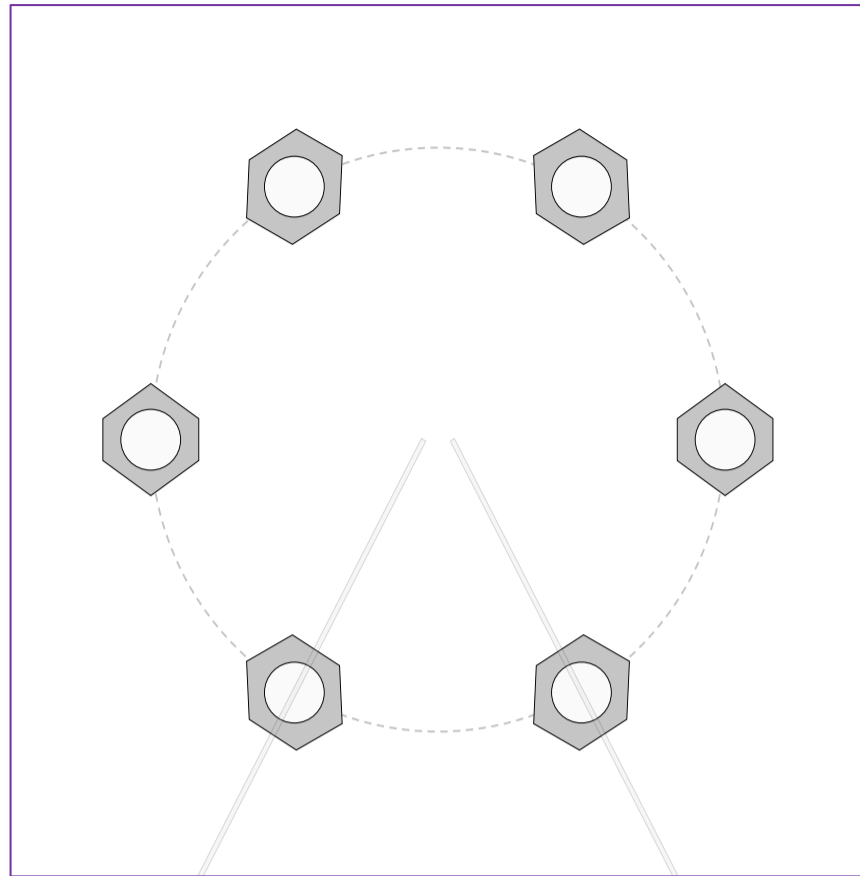
Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0

Applied Loads		
	Comp.	Uplift
Axial Force (kips)	376.00	328.00
Shear Force (kips)	46.00	41.00

*TIA-222-H Section 15.5 Applied

Considered Eccentricity	
Leg Mod Eccentricity (in)	0.000
Anchor Rod N.A Shift (in)	0.000
Total Eccentricity (in)	0.000

*Anchor Rod Eccentricity Applied



Connection Properties	Analysis Results
-----------------------	------------------

Anchor Rod Data	
(6) 1-1/4" ϕ bolts (F1554-105 N; $F_y=105$ ksi, $F_u=125$ ksi)	
l_{ar} (in):	0

Anchor Rod Summary			<i>(units of kips, kip-in)</i>
$P_{u,t} = 54.67$	$\phi P_{n,t} = 90.84$	Stress Rating	
$V_u = 6.83$	$\phi V_n = 57.52$	57.3%	
$M_u = n/a$	$\phi M_n = n/a$	Pass	

Drilled Pier Foundation

BU # :	
Site Name:	CT11059C
Order Number:	
TIA-222 Revision:	H
Tower Type:	Self Support

Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	0	0
Axial Force (kips)	376	328
Shear Force (kips)	46	41

Material Properties		
Concrete Strength, f'c:	3	ksi
Rebar Strength, Fy:	60	ksi
Tie Yield Strength, Fyt:	40	ksi

Pier Design Data		
Depth	41	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
<i>From 0.5' above grade to 41' below grade</i>		
Pier Diameter	5.5	ft
Rebar Quantity	22	
Rebar Size	8	
Clear Cover to Ties	3	in
Tie Size	4	
Tie Spacing		in

[Rebar & Pier Options](#)
[Embedded Pole Inputs](#)
[Belled Pier Inputs](#)

Analysis Results		
Soil Lateral Check		
	Compression	Uplift
D _{v=0} (ft from TOC)	17.18	17.18
Soil Safety Factor	7.98	8.95
Max Moment (kip-ft)	407.68	363.36
Rating*	15.9%	14.1%
Soil Vertical Check		
	Compression	Uplift
Skin Friction (kips)	892.23	892.23
End Bearing (kips)	570.20	-
Weight of Concrete (kips)	177.47	133.11
Total Capacity (kips)	1462.43	1025.34
Axial (kips)	553.47	328.00
Rating*	36.0%	30.5%
Reinforced Concrete Flexure		
	Compression	Uplift
Critical Depth (ft from TOC)	17.70	15.56
Critical Moment (kip-ft)	407.30	360.14
Critical Moment Capacity	2663.87	1785.72
Rating*	14.6%	19.2%
Reinforced Concrete Shear		
	Compression	Uplift
Critical Depth (ft from TOC)	0.00	0.00
Critical Shear (kip)	46.00	41.00
Critical Shear Capacity	505.52	234.44
Rating*	8.7%	16.7%

Structural Foundation Rating*	19.2%
Soil Interaction Rating*	36.0%

Min. Steel is assumed

*Rating per TIA-222-H Section 15.5

Check Limitation	
Apply TIA-222-H Section 15.5:	<input checked="" type="checkbox"/>
N/A	<input type="checkbox"/>
Additional Longitudinal Rebar	
Input Effective Depths (else Actual):	<input type="checkbox"/>
Shear Design Options	
Check Shear along Depth of Pier:	<input checked="" type="checkbox"/>
Utilize Shear-Friction Methodology:	<input type="checkbox"/>
Override Critical Depth:	<input type="checkbox"/>

[Go to Soil Calculations](#)

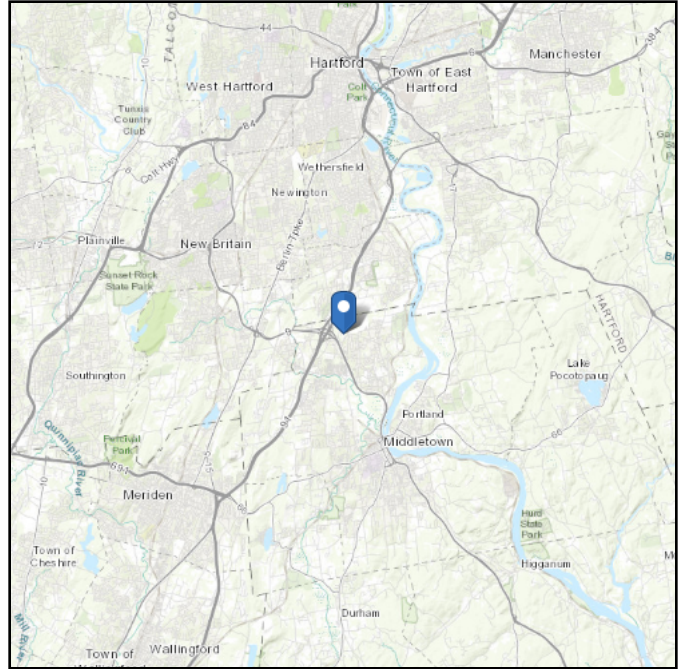
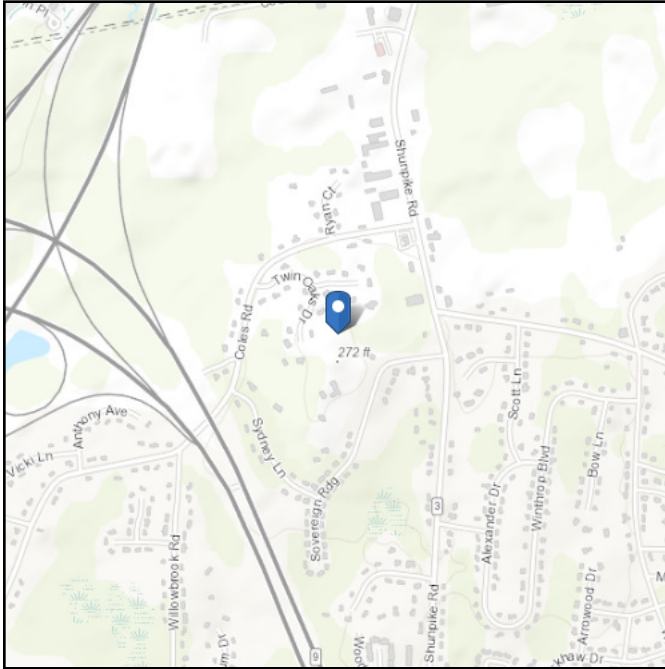
Soil Profile														
Groundwater Depth		N/A		# of Layers		2								
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ _{soil} (pcf)	γ _{concrete} (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	2.75	2.75	125	150	0.5	0	0.275	0.275	0.00	0.00			Cohesive
2	2.75	41	38.25	125	150	0.5	0	0.275	0.275	1.80	1.80	32		Cohesive

ASCE 7 Hazards Report

Address:
No Address at This
Location

Standard: ASCE/SEI 7-16
Risk Category: III
Soil Class: D - Default (see
Section 11.4.3)

Elevation: 276.82 ft (NAVD 88)
Latitude: 41.623281
Longitude: -72.679005

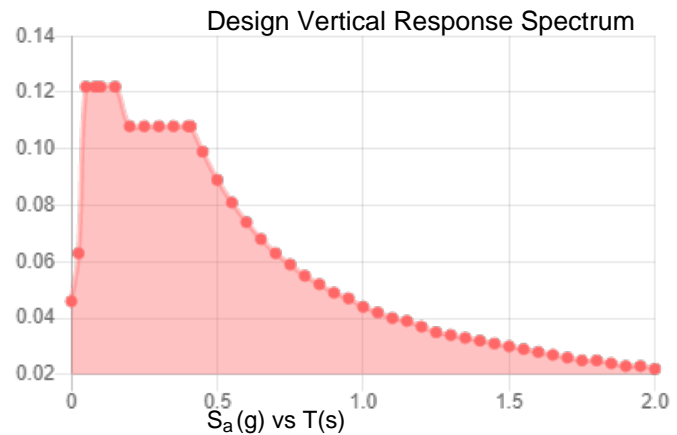
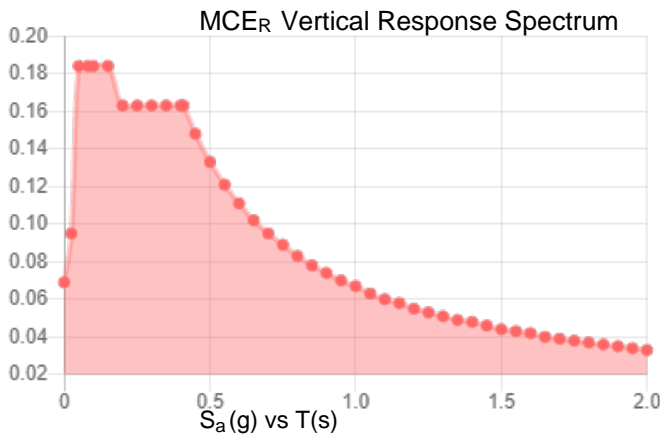
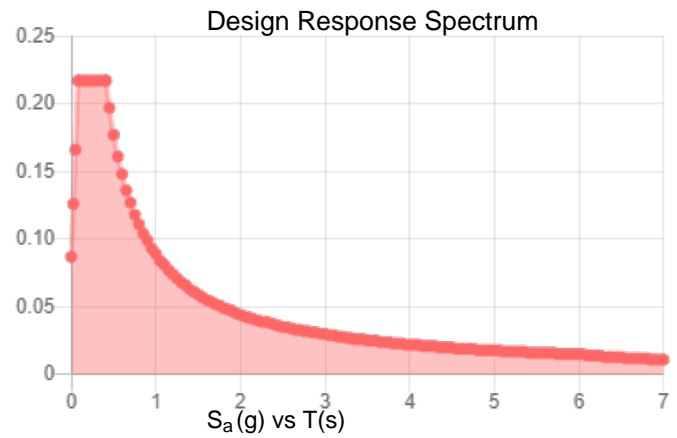
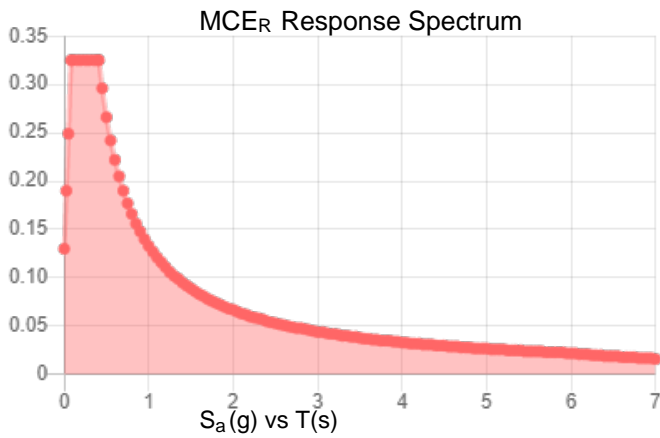


Site Soil Class: D - Default (see Section 11.4.3)

Results:

S_s :	0.203	S_{D1} :	0.089
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.112
F_v :	2.4	PGA _M :	0.177
S_{MS} :	0.325	F_{PGA} :	1.576
S_{M1} :	0.133	I_e :	1.25
S_{DS} :	0.217	C_v :	0.706

Seismic Design Category B



Data Accessed: Fri Sep 09 2022

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness: 1.50 in.
Concurrent Temperature: 15 F
Gust Speed 50 mph

Data Source: Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

Date Accessed: Fri Sep 09 2022

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

September 16, 2022

Mr. Matthew Bandle
Program Manager
Northeast Site Solutions
1053 Farmington Avenue
Farmington, CT 06032

Re: *Independent Structural Engineer's Review*
T-Mobile Site Ref: CT11059C
179 Shunpike Road
Cromwell, CT

Centek Project No. 22006.09

Dear Mr. Bandle,

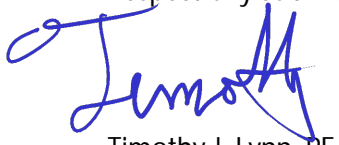
Centek Engineering Inc. has completed the independent structural engineering review of the proposed antenna modifications on the existing 170-ft lattice tower structure located at the above referenced wireless communications facility. Specifically, T-Mobile Structural Analysis Report dated September 12, 2022 prepared by EFI Global signed and sealed by Ahmet Colakoglu, PE (CT License No. 27057), were reviewed for compliance with requirements of the 2015 International Building Code as amended by the 2018 CT State Building Code and the ANSI TIA- 222 design standard.

Per Section 3108 of the 2015 IBC, TIA-222 "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures" governs the structural design for this project. The tower was analyzed to the latest revision of the TIA-222 standard Rev "H" in lieu of the Rev "G" version, currently adopted by the State of CT. Use of Rev "H" has been accepted by the CT Siting Council and State Building Inspector.

Based on our review of structural analysis provided, it is our opinion that the proposed upgrade is in conformance with the applicable structural requirements of the State Building Code. It is noted that our review does not constitute a design, nor is it all-inclusive; the responsibility for the structural design remains with the Structural Engineer of Record.

This completes the independent structural engineering review for this project. Should you have any questions, please do not hesitate to contact us.

Respectfully Submitted by:


Timothy J. Lynn, PE
Structural Engineer

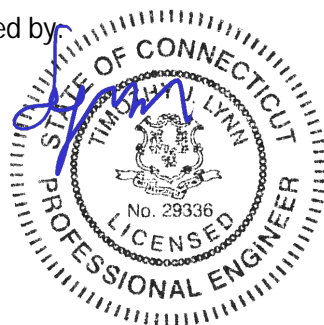


Exhibit E

Mount Analysis

Date: 4/14/2022

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

Subject: Mount Structural Analysis Report

T-Mobile Designation: **Site Name:** RockyHill / I-91/ X23
Site ID: CT11059C

EFI Designation: **Project Number:** 049.03232 - 2275013

Site Data: **179 Shunpike Road, Cromwell, CT 06416**
Latitude 41.623223°, Longitude -72.679038°

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 (76.9%)**
Note: See Analysis Criteria for loading configuration

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

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

Sincerely,
EFI Global, Inc.
License No: PEC0001245

Ahmet Colakoglu, PE
Connecticut Professional Engineer
License No: 27057



1) ANALYSIS CRITERIA

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

Table 1 – Loading and Analysis Criteria

Rad Center	125'
Structure Type	Self-Support Tower
Exposure Category	C
Basic Wind Speed	135 * $\sqrt{0.6}$ = 105 mph (ASD)
Ice Loading	1.00" with 50 mph Wind
Risk Category	III
Topographic Factor	Kzt = 1.0

Table 1.1 – Existing Appurtenance Configuration

Qty	Model
6	Ericsson AIR21 B2A/B4P – Antennas
3	Andrew LNX-6515-A1M – Antennas
3	Generic Twin Style 1B – AWS TMA

Table 1.2 – Proposed and Final Appurtenance Configuration

Qty	Model
3	RFS APXVAALL24_43-U-NA20 – Antennas
3	Ericsson AIR 6419 B41 – Antennas
3	Ericsson Radio 4460 B25 + B66 – RRUs*
3	Ericsson Radio 4480 B71 + B85 – RRUs*

*To be mounted behind antennas.

Table 1.3 – Assumed Material Properties

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

2) ANALYSIS PROCEDURE

The analysis is based on the following information:

Table 2 – Documents

Document	Provided By	Date
RFDS	T-Mobile	3/29/2022
Structural Analysis Report	AECOM	05/03/2020

2.1) Analysis Method

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

2.2) Analysis Conditions and Assumptions

- 1) The mount was built and installed in accordance with the manufacturer's specifications.
- 2) The mount has been maintained and will be maintained in accordance with the manufacturer's specifications. All structural members and connections of the mount are in good condition and can achieve theoretical strength.
- 3) The configuration of antennas is as specified in "1) Analysis Criteria".
- 4) The analysis was performed for the subject mount only. It does not include an evaluation of the other mounts or the tower, which should be analyzed by others.
- 5) The evaluation does not include any antenna rigging loads. The equipment should not be rigged using the subject antenna mount as the support.
- 6) The analysis includes a minimum 250 lbf maintenance point load at the worst-case location on the mount, as well as a minimum 250 lbf maintenance point load at each antenna location in conjunction with a 30 mph wind load.
- 7) Any steel grating represented in this model is for loading purposes only and it is not considered to provide any structural restraint or support.
- 8) Member sizes per 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	63.7	Pass
Antenna Mount Pipe	76.9	Pass
V-Arm Vertical Pipe	25.1	Pass
Tower Connection Pipe	< 20.0	Pass
V-Arm Diagonal Rods	54.3	Pass
Tieback Pipe	< 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 **76.9%** of their structural capacity.

Note: This analysis assumes that the existing sector mounts have been or will be replaced with (3) Commscope SFG Series Sector Mounts (P/N: SFG2BT-10-4-96) prior to the equipment upgrade proposed in this analysis per the Mount Structural Evaluation prepared by Destek Engineering, LLC., dated 09/30/2019. This analysis also assumes the following:

- Mount centerline is equal to RAD centerline at 125'-0" A.G.L. (above grade level).
- The four (4) 96" Long 2.0 STD Mount Pipes are equally spaced along the face.
- The (2) tieback arms are attached directly to the adjacent mount's tower leg.
- The V-arm diagonals must be sloped down to the face per manufacturer drawings, meaning at tower side it would be connected at top V-arm pipe and sloped down to bottom pipe towards the face of the mount.

APPENDIX
INPUT LOADS
ANALYSIS OUTPUT

CLIENT: **Foresite LLC**
 PROJECT: **CT11059C**
 SUBJECT: **Antenna Loads - G Code with Sections 16 Revisions**

Tower Height **175.00** ft
 Basic Wind Speed, V **105** mph (=Ultimate Speed* $\sqrt{0.6}$)
 Basic Wind Speed with Ice, V_i **50** mph
 Maintenance Load Factor, L_{FM} **0.0816** Load Factor for Maint. Load Cases (Basic Wind Speed=30 mph)
 Design Ice Thickness, t_i **1** inches

Table 2-3 Importance Factors

Structure Classification	Wind Load Without Ice	Wind Load With Ice	Ice Thicknesses	Earthquake
III <input type="button" value="▼"/>	1.15	1	1.25	1.5

Table 2-4 Exposure Category Coefficients

Exposure Category	Z_g	α	K_{zmin}	K_e	m
C <input type="button" value="▼"/>	900	9.5	0.85	1	0.6

Table 2-5 Topographic Categories

K_{zt} 1.000

Table 2-2 Wind Directionality Factor, K_d

Structure Type	K_d
Lattice Tower <input type="button" value="▼"/>	0.95

DOES NOT CHANGE

Gust Effect Factor G_h

Structure Type	G_h
Lattice Tower <input type="button" value="▼"/>	1.00

DOES NOT CHANGE

Shielding Factor, K_a

Structure Type	K_a
Lattice Tower <input type="button" value="▼"/>	0.90

DOES NOT CHANGE

CLIENT: Foresite LLC
 PROJECT: CT11059C
 SUBJECT: Antenna Loads - G Code with Sections 16 Revisions

Rad Center 125.00 ft

Antenna AND Mount Without Ice

Mounting Pole	Height (ft)	Model Number	#	Weight (lbs)	H (in)	*W (in)	D (in)	Ka	**A _N (ft ²)	***A _T (ft ²)	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	
Pos. 1	125.00	RFS APXVAALL24_43-U-NA20	1	149.9	95.9	24.0	8.5	0.90	15.98	5.66	4.00	11.28	1.27	1.54	1.326	40.9	745.1	321.5	149.9	745	445	343	
	125.00	Ericsson Radio 4460 B25+B66	1	109.0	19.6	N/A	12.1	0.90	-	1.65	-	1.62	-	1.20	1.326	40.9	0.0	72.8	109				
	125.00	Ericsson Radio 4480 B71+B85	1	84.0	21.8	N/A	7.5	0.90	-	1.14	-	2.91	-	1.22	1.326	40.9	0.0	50.9	84				
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0			
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	-	0.0	0.0	0			
Pos.2	125.00	Ericsson AIR6449 B41	1	114.6	33.1	20.5	8.5	0.90	4.71	1.96	1.61	3.88	1.20	1.26	1.326	40.9	208.2	91.1	114.63	208	91	115	
		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			
																				373	223	172	
																					105	46	58

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

** A_N is the product of H and W

*** A_T is the product of H and D

DL 458

Mount	Height (ft)	Member	*L (in)	**W (in)	D (in)	*** Ca	K _z	q _z (psf)	Wind Load (PLF)
	125.00	4.0 STD Pipe	12.00	4.50	0.00	1.20	1.326	36.8	16.6
	125.00	2.0 STD Pipe	12.00	2.38	0.00	1.20	1.326	36.8	8.7
	125.00	0.75 SR	12.00	0.75	0.00	1.20	1.326	36.8	2.8
	125.00	0.625 SR	0.00	0.63	0.00	-	-	-	-
	125.00	(L3x1.875x0.1875)	0.00	3.00	1.88	-	-	-	-
	125.00	L(1.5X1.5)	0.00	1.50	1.50	-	-	-	-
	125.00	L(2.5X2.5)	0.00	2.50	2.50	-	-	-	-
	125.00	HSS 4X4X4	0.00	4.00	4.00	-	-	-	-
	125.00	PL5.5X0.25	0.00	5.50	0.25	-	-	-	-
	125.00	PL0.5X4	0.00	0.50	4.00	-	-	-	-
	125.00	PL0.375X0.875	0.00	0.38	0.88	-	-	-	-
	125.00	PL0.875X0.375	0.00	0.88	0.38	-	-	-	-
	125.00	Double Angle (LL3x3x4x0)	0.00	3.00	3.00	-	-	-	-
	125.00	Channel (2.5X1.4)	0.00	5.60	2.60	-	-	-	-
	125.00	Channel (5.6X3.1)	0.00	5.60	3.10	-	-	-	-

* 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**
 PROJECT: **CT11059C**
 SUBJECT: **Antenna Loads - G Code with Sections 16 Revisions**

ti (in) 2.856141 Kiz 1.1424563 reduction 0.19718

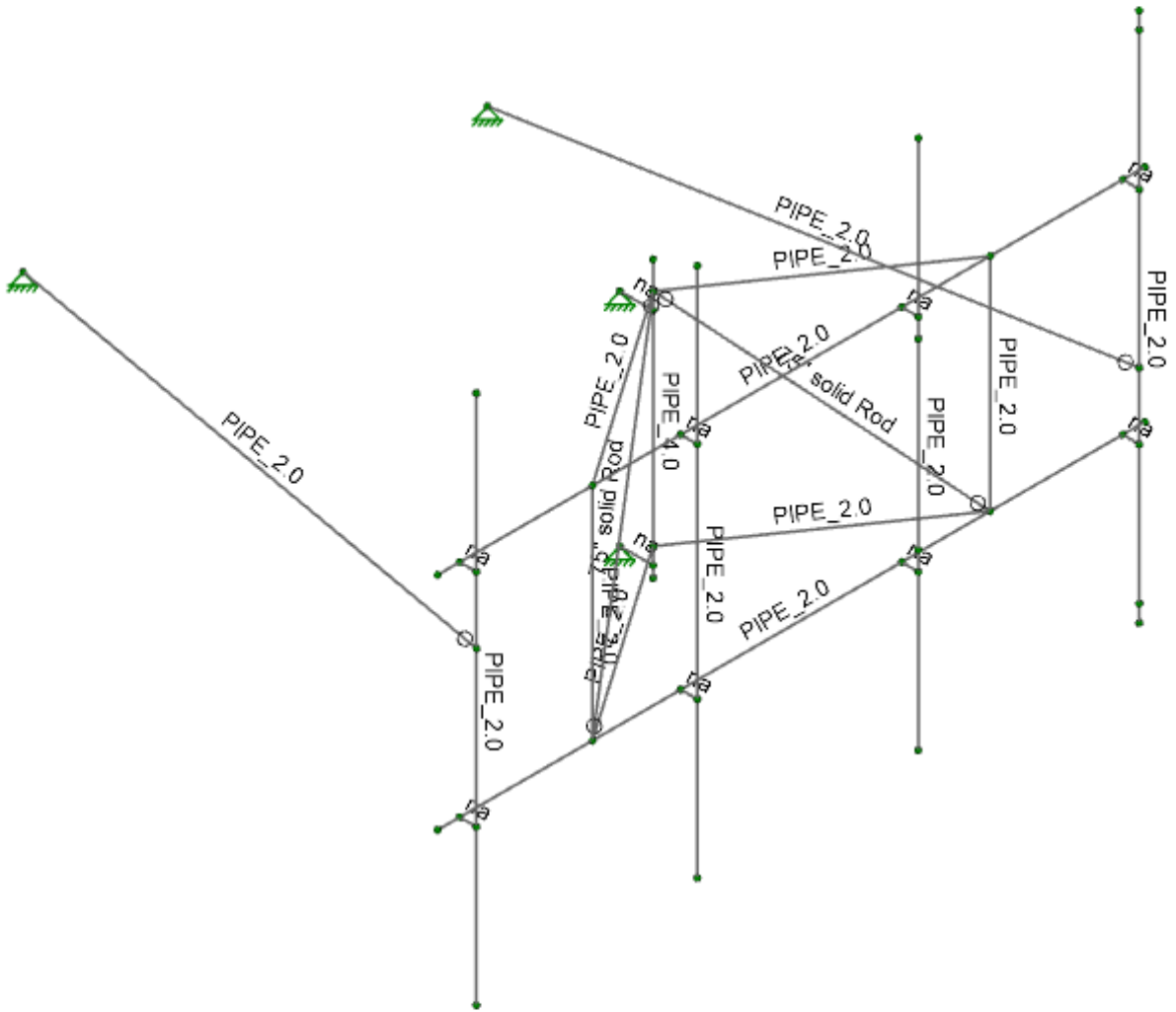
Antenna AND Mount With Ice

Mounting Pole	Height (ft)	Model Number	#	H (in)	W (in)	D (in)	Ka	*A _N (ft ²)	*A _T (ft ²)	*Volume Ice (ft ³)	*Weight Ice (lbs)	**Ca (FRONT)	**Ca (SIDE)	Kz	q _z (psf)	Pounds							
																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	125.00	RFS APXVAALL24_43-U-NA20	1	95.9	24.0	8.5	0.90	4.98	4.37	13.51	756.56	0.70	0.70	1.326	9.3	29.1	25.5	176.0	88.9	757	176	130	1118
	125.00	Ericsson Radio 4460 B25+B66	1	19.6	15.7	12.1	0.90	-	1.48	3.43	192.20	0.70	0.70	1.326	9.3	0.0	8.7	0.0	23.0	192			
	125.00	Ericsson Radio 4480 B71+B85	1	21.8	15.7	7.5	0.90	-	1.39	3.02	169.05	0.70	0.70	1.326	9.3	0.0	8.1	0.0	18.2	169			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
Pos.2	125.00	Ericsson AIR6449 B41	1	33.1	20.5	8.5	0.90	2.35	1.88	5.04	282.10	0.70	0.70	1.326	9.3	13.7	11.0	54.8	28.9	282	55	29	282
		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			
																					89	66	559
																					28	15	142

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

Mount	Height (ft)	Member	*L (in)	**W (in)	D (in)	***A _N (ft ²)	Volume Ice (ft ³)	Weight Ice (lbs)	****Ca (FRONT)	Kz	q _z (psf)	PLF		
												Ice Wind Load (Front)	Combined Wind Load (Front)	Ice Dead Load
	125.00	4.0 STD Pipe	12.00	4.50	0.00	0.88	0.46	25.67	1.20	1.326	8.3	8.8	12.1	25.7
	125.00	2.0 STD Pipe	12.00	2.38	0.00	0.80	0.33	18.25	1.20	1.326	8.3	8.0	9.7	18.3
	125.00	0.75 SR	12.00	0.75	0.00	0.73	0.22	12.58	1.20	1.326	8.3	7.3	7.9	12.6
	125.00	0.625 SR	0.00	0.63	0.00	-	-	-	-	-	-	-	-	
	125.00	(L3x1.875x0.1875)	0.00	3.00	1.88	-	-	-	-	-	-	-	-	
	125.00	L(1.5X1.5)	0.00	1.50	1.50	-	-	-	-	-	-	-	-	
	125.00	L(2.5X2.5)	0.00	2.50	2.50	-	-	-	-	-	-	-	-	
	125.00	HSS 4X4X4	0.00	4.00	4.00	-	-	-	-	-	-	-	-	
	125.00	PL5.5X0.25	0.00	5.50	0.25	-	-	-	-	-	-	-	-	
	125.00	PL0.5X4	0.00	0.50	4.00	-	-	-	-	-	-	-	-	
	125.00	PL0.375X0.875	0.00	0.38	0.88	-	-	-	-	-	-	-	-	
	125.00	PL0.875X0.375	0.00	0.88	0.38	-	-	-	-	-	-	-	-	
	125.00	Double Angle (LL3x3x4x0)	0.00	3.00	3.00	-	-	-	-	-	-	-	-	
	125.00	Channel (2.5X1.4)	0.00	5.60	2.60	-	-	-	-	-	-	-	-	
	125.00	Channel (5.6X3.1)	0.00	5.60	3.10	-	-	-	-	-	-	-	-	

* 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

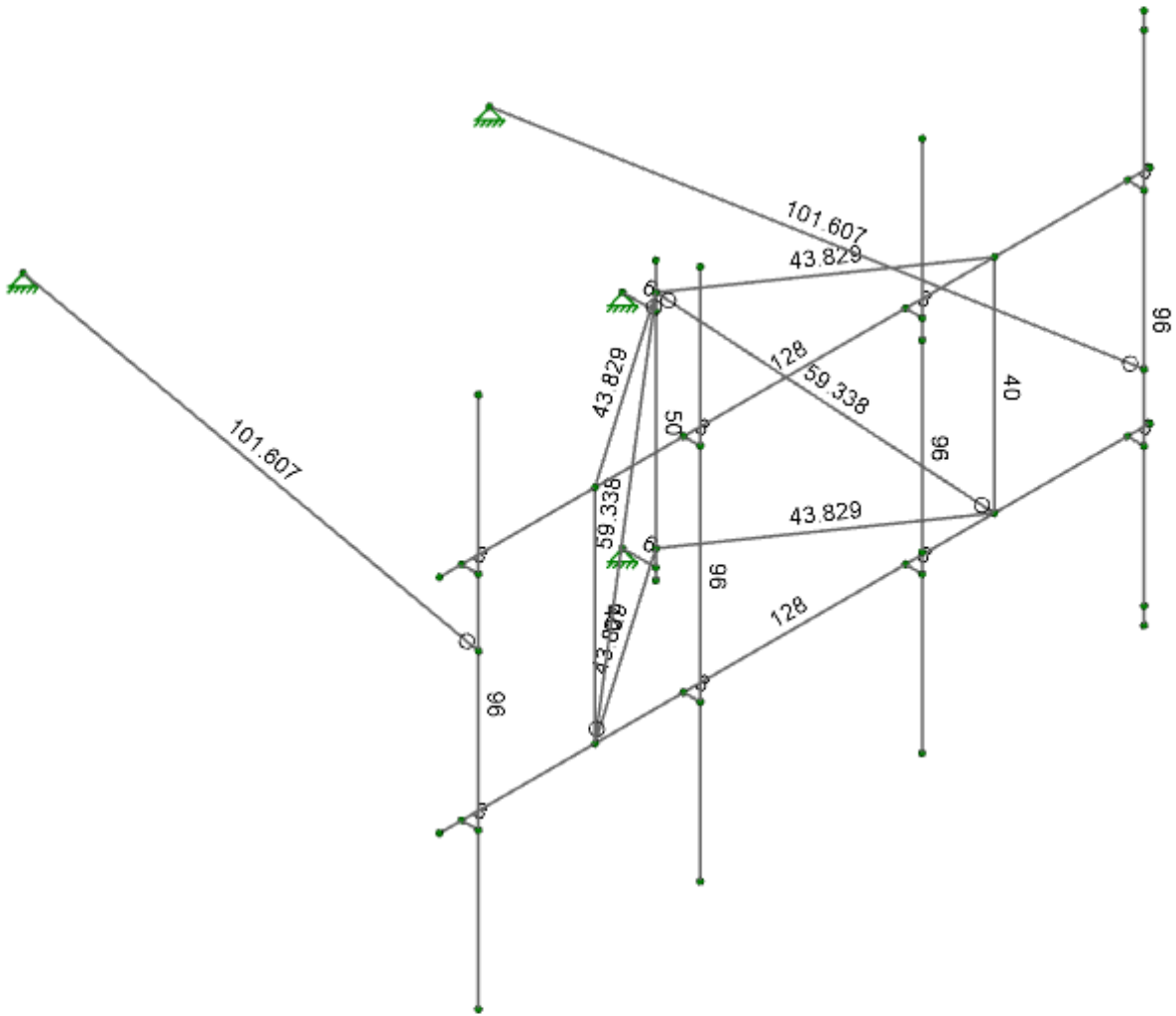


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049.03232 - 2275013

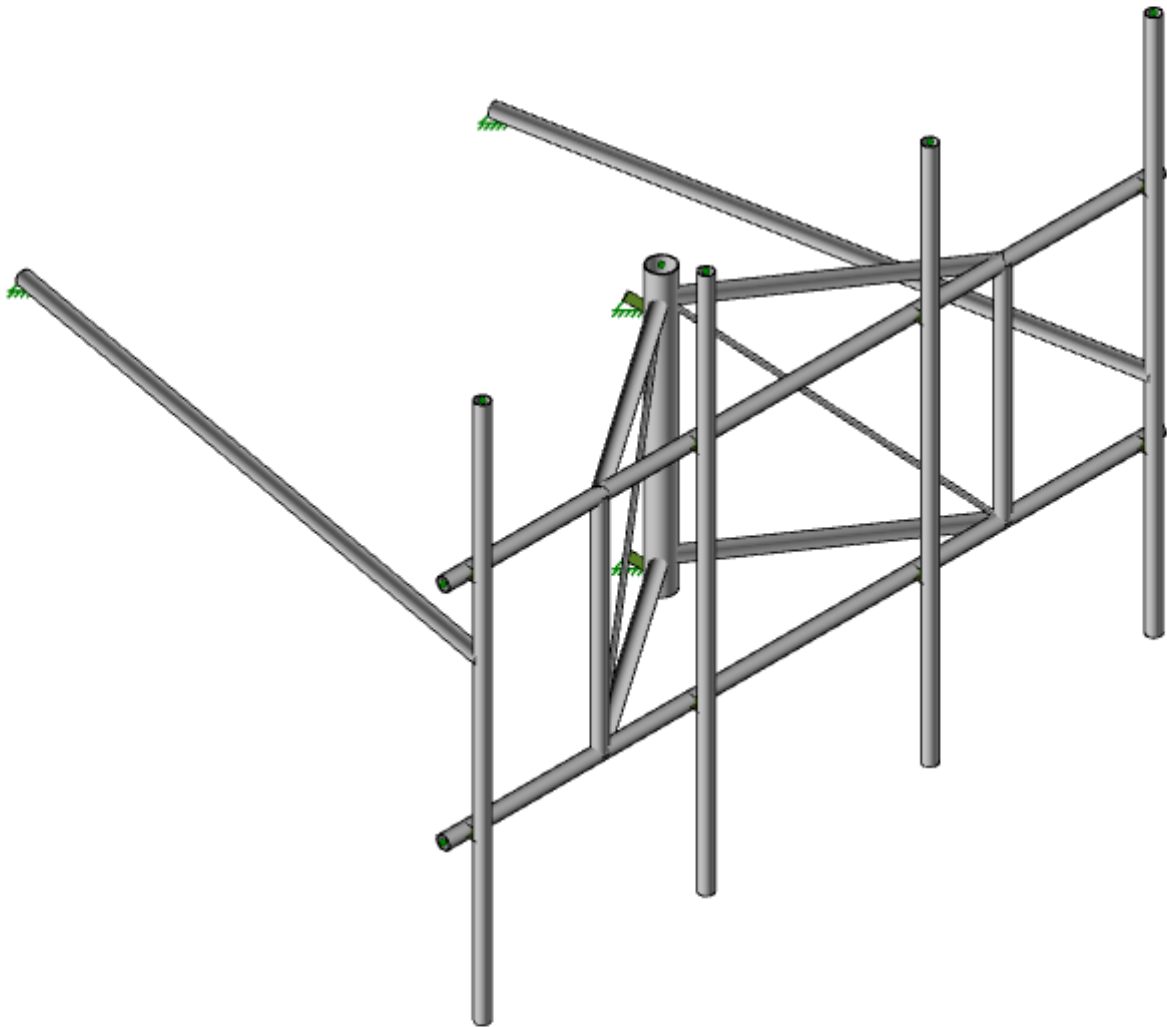
C11059C

SK-1
Apr 14, 2022
CT11059C.r3d



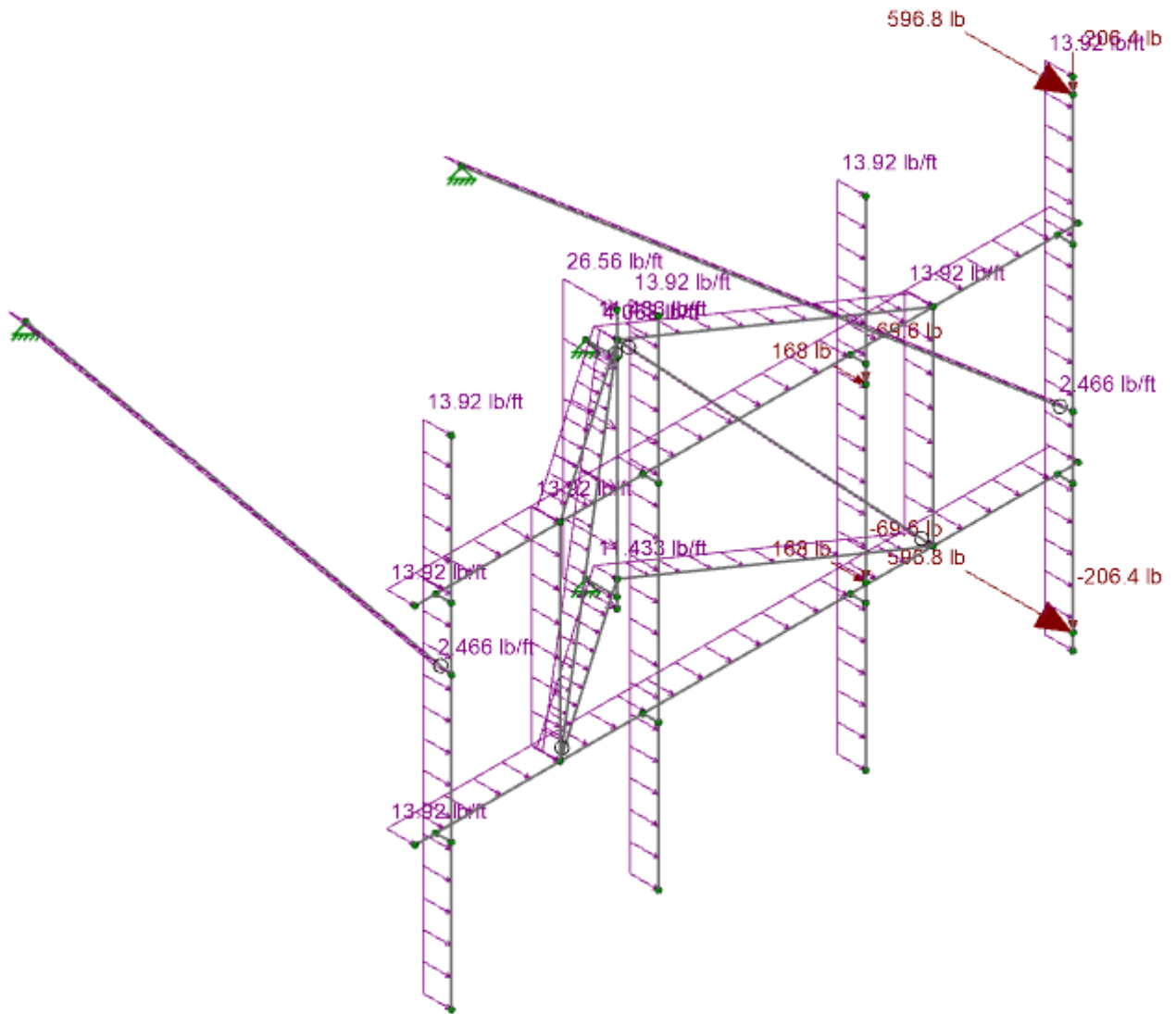
Member Length (in) Displayed
Envelope Only Solution

ForeSite/EFI	C11059C	SK-2
KS		Apr 14, 2022
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Member Length (in) Displayed
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KS		Apr 14, 2022
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Loads: LC 1, DL + WL (NO ICE) 0 Degree
Envelope Only Solution

ForeSite/EFI

C11059C

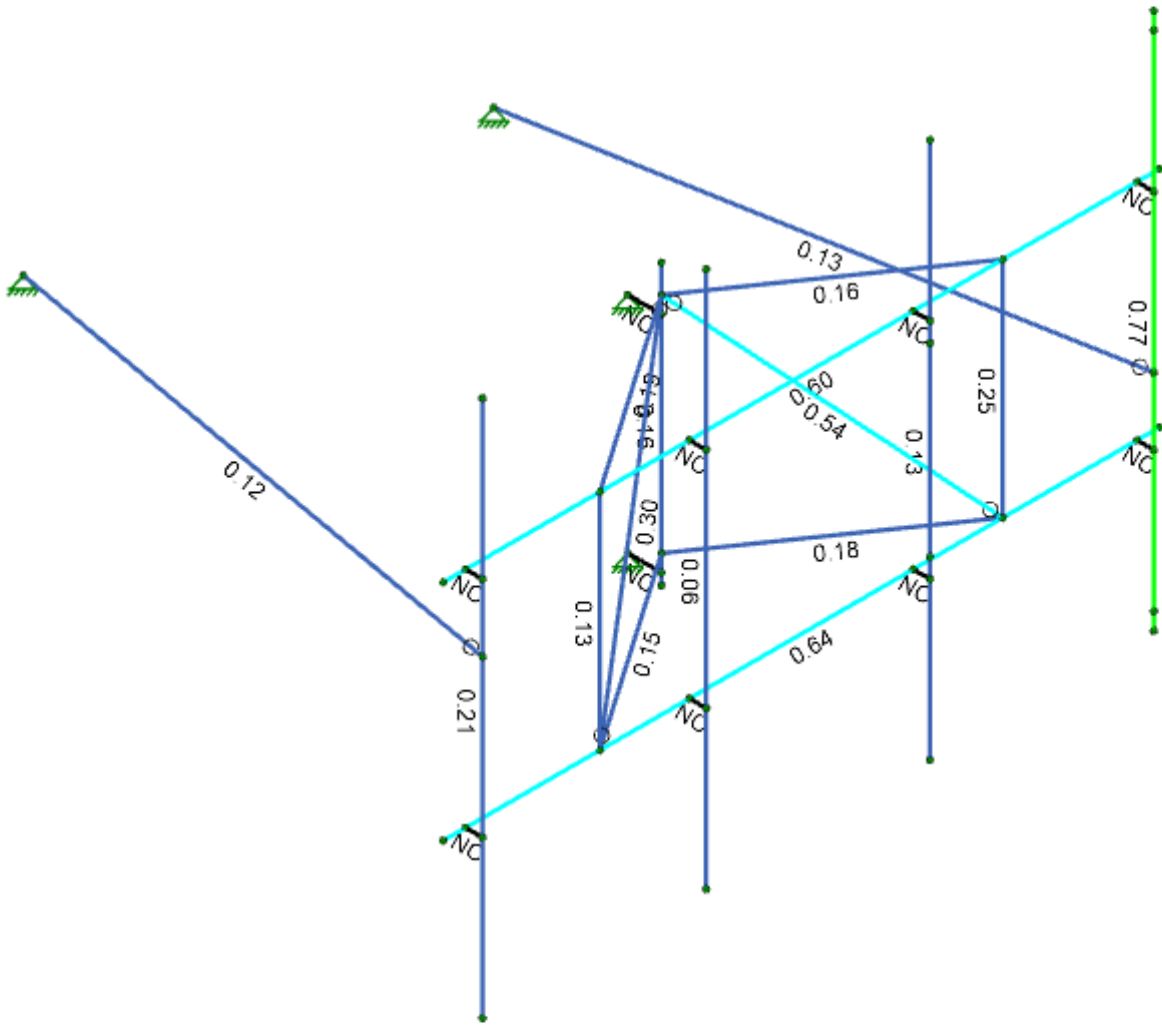
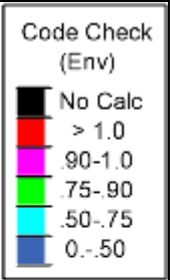
SK-4

KS

Apr 14, 2022

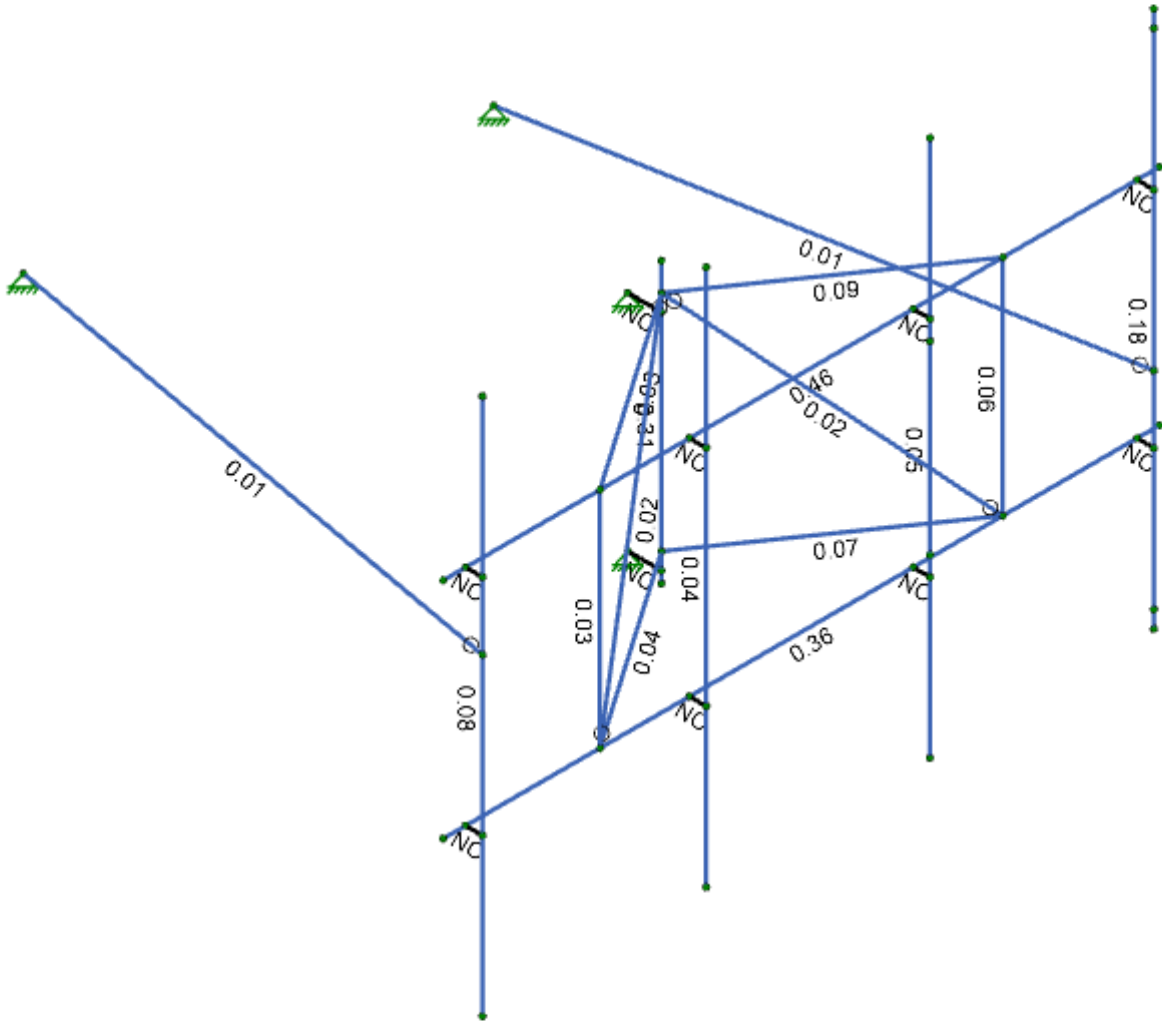
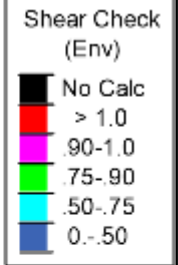
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CT11059C.r3d



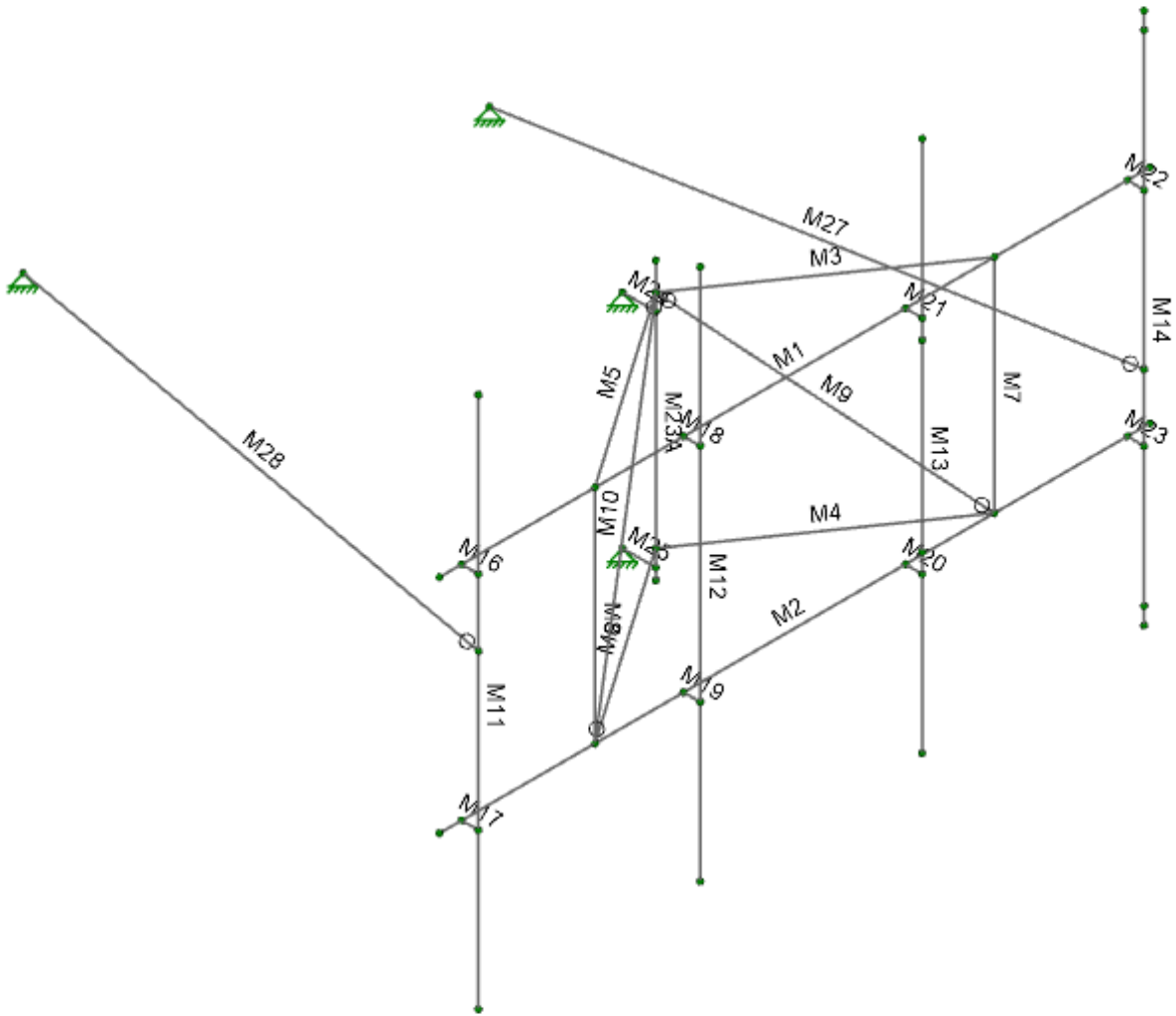
Member Code Checks Displayed (Enveloped)
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KS		Apr 14, 2022
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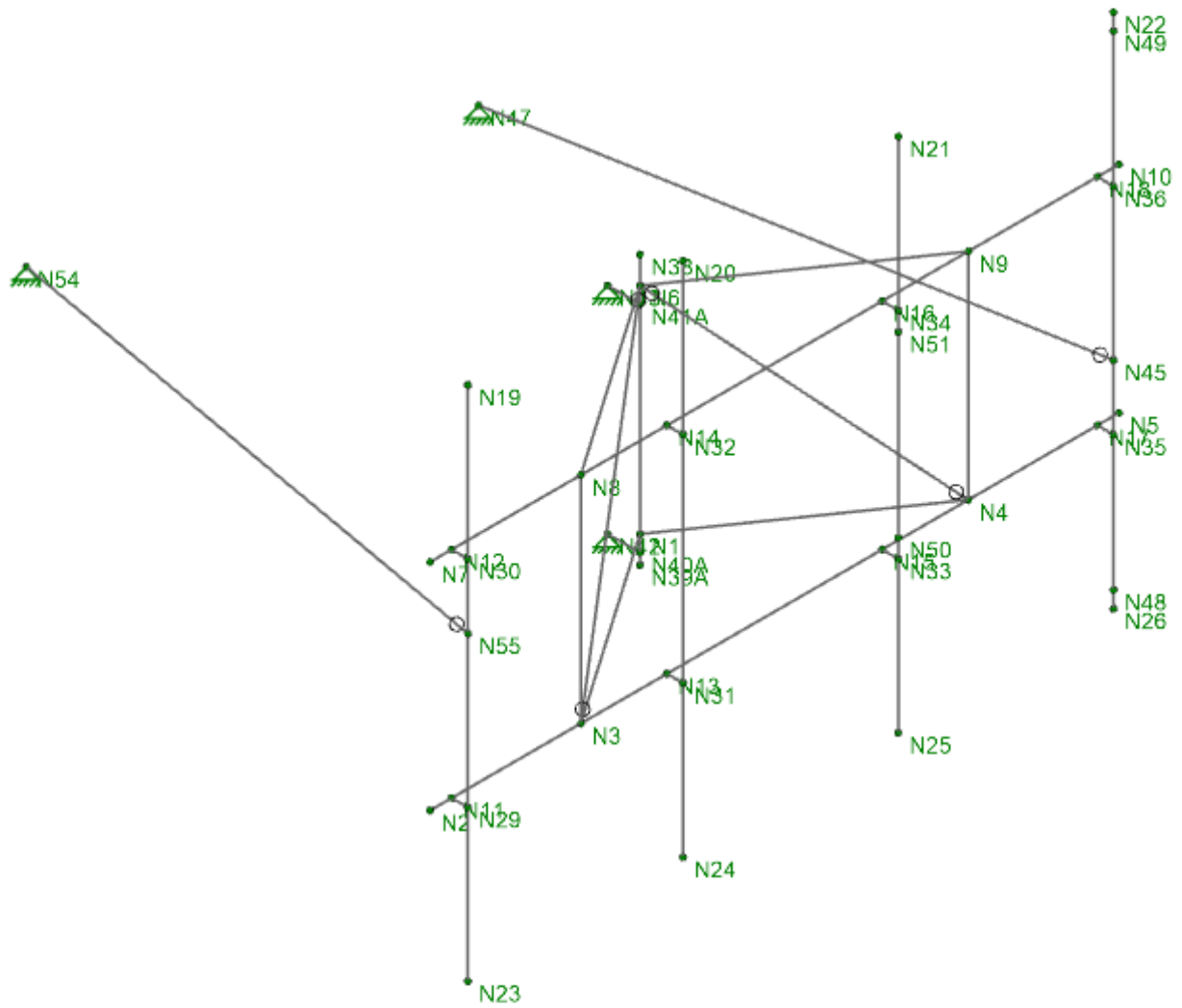
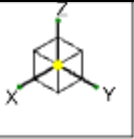
Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

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KS		Apr 14, 2022
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ForeSite/EFI	C11059C	SK-7
KS		Apr 14, 2022
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ForeSite/EFI	C11059C	SK-8
KS		Apr 14, 2022
049.03232 - 2275013		CT11059C.r3d

Model Settings

Solution

Members

Number of Reported Sections	5
Number of Internal Sections	100
Member Area Load Mesh Size (in ²)	144
Consider Shear Deformation	Yes
Consider Torsional Warping	Yes

Wall Panels

Approximate Mesh Size (in)	12
Transfer Forces Between Intersecting Wood Walls	Yes
Increase Wood Wall Nailing Capacity for Wind Loads	Yes
Include P-Delta for Walls	Yes
Optimize Masonry and Wood Walls	No
Maximum Number of Iterations	3

Processor Core Utilization

Single	No
Multiple (Optimum)	Yes
Maximum	No

Axis

Vertical Global Axis

Global Axis corresponding to vertical direction	Z
Convert Existing Data	Yes

Default Member Orientation

Default Global Plane for z-axis	XZ
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Plate Axis

Plate Local Axis Orientation	Nodal
------------------------------	-------

Codes

Hot Rolled Steel	AISC 14th (360-10): LRFD
Stiffness Adjustment	Yes (Iterative)
Notional Annex	None
Connections	AISC 13th (360-05): ASD
Cold Formed Steel	AISI NAS-01: ASD
Stiffness Adjustment	Yes (Iterative)
Wood	AF&PA NDS-05/08: ASD
Temperature	< 100F
Concrete	ACI 318-05
Masonry	ACI 530-05: ASD
Aluminum	AA ADM1-05: ASD
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	AISC 14th (360-10): ASD
Stiffness Adjustment	Yes (Iterative)

Concrete

Column Design

Analysis Methodology	Exact Integration Method
Parme Beta Factor	0.65

Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	No
List forces which were ignored for design in the Detail Report	Yes

Rebar

Column Min Steel	1
Column Max Steel	8
Rebar Material Spec	ASTM A615
Warn if beam-column framing arrangement is not understood	No

Model Settings (Continued)

Shear Reinforcement

Number of Shear Regions	4
Region 2 & 3 Spacing Increase Increment (in)	4

Seismic

RISA-3D Seismic Load Options

Code	ASCE 7-05
Occupancy Cat	I or II
Drift Cat	Other
Base Elevation (ft)	
Include the weight of the structure in base shear calcs	Yes

Site Parameters

S_1 (g)	1
SD_1 (g)	1
SD_s (g)	1
T_L (sec)	-1

Structure Characteristics

T Z (sec)	
T X (sec)	
C_x	0.035
$C_{Exp. Z}$	0.75
$C_{Exp. X}$	0.75
R Z	8.5
R X	8.5
$\Omega_p Z$	1
$\Omega_p X$	1
$C_p Z$	4
$C_p X$	4
ρZ	1
ρX	1

Project Grid Lines

No Data to Print...

Hot Rolled Steel Properties

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

Member Primary Data

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	M9	N6	N4	.75" solid Rod	Beam	Wide Flange	A36 Gr.36	Typical
2	M10	N6	N3	.75" solid Rod	Beam	Wide Flange	A36 Gr.36	Typical
3	M7	N9	N4	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical
4	M11	N19	N23	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical
5	M8	N8	N3	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical
6	M12	N20	N24	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical
7	M13	N21	N25	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical
8	M14	N22	N26	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical
9	M1	N7	N10	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical
10	M2	N2	N5	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical
11	M3	N6	N9	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical
12	M4	N1	N4	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical
13	M5	N6	N8	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical
14	M6	N1	N3	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical
15	M27	N45	N47	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical
16	M23A	N38	N39A	PIPE 4.0	Beam	Pipe	A53 Gr.B	Typical
17	M16	N12	N30	RIGID	None	None	LINK	Typical
18	M17	N11	N29	RIGID	None	None	LINK	Typical
19	M18	N14	N32	RIGID	None	None	LINK	Typical
20	M19	N13	N31	RIGID	None	None	LINK	Typical
21	M20	N15	N33	RIGID	None	None	LINK	Typical
22	M21	N16	N34	RIGID	None	None	LINK	Typical
23	M22	N18	N36	RIGID	None	None	LINK	Typical
24	M23	N17	N35	RIGID	None	None	LINK	Typical
25	M24	N41A	N43	RIGID	None	None	LINK	Typical
26	M25	N40A	N42	RIGID	None	None	LINK	Typical
27	M28	N55	N54	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical

Member Advanced Data

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
1	M9	BenPIN	BenPIN	Yes	Default	None
2	M10	BenPIN	BenPIN	Yes	Default	None
3	M7			Yes		None
4	M11			Yes		None
5	M8			Yes		None
6	M12			Yes		None
7	M13			Yes		None
8	M14			Yes		None
9	M1			Yes		None
10	M2			Yes		None
11	M3			Yes		None
12	M4			Yes		None
13	M5			Yes		None
14	M6			Yes		None
15	M27	BenPIN		Yes	Default	None
16	M23A			Yes		None
17	M16			Yes	** NA **	None
18	M17			Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
19	M18			Yes	** NA **	None
20	M19			Yes	** NA **	None
21	M20			Yes	** NA **	None
22	M21			Yes	** NA **	None
23	M22			Yes	** NA **	None
24	M23			Yes	** NA **	None
25	M24			Yes	** NA **	None
26	M25			Yes	** NA **	None
27	M28	BenPIN		Yes	Default	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lcomp top [in]	K y-y	K z-z	Function
1	M9	.75" solid Rod	59.338	Lbyy	0.7	0.7	Lateral
2	M10	.75" solid Rod	59.338	Lbyy	0.7	0.7	Lateral
3	M7	PIPE 2.0	40	Lbyy			Lateral
4	M11	PIPE 2.0	96	Lbyy			Lateral
5	M8	PIPE 2.0	40	Lbyy			Lateral
6	M12	PIPE 2.0	96	Lbyy			Lateral
7	M13	PIPE 2.0	96	Lbyy			Lateral
8	M14	PIPE 2.0	96	Lbyy			Lateral
9	M1	PIPE 2.0	128	Lbyy			Lateral
10	M2	PIPE 2.0	128	Lbyy			Lateral
11	M3	PIPE 2.0	43.829	Lbyy			Lateral
12	M4	PIPE 2.0	43.829	Lbyy			Lateral
13	M5	PIPE 2.0	43.829	Lbyy			Lateral
14	M6	PIPE 2.0	43.829	Lbyy			Lateral
15	M27	PIPE 2.0	101.607	Lbyy			Lateral
16	M23A	PIPE 4.0	50	Lbyy			Lateral
17	M28	PIPE 2.0	101.607	Lbyy			Lateral

Node Coordinates

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
1	N1	0	0	0	
2	N2	64	25	0	
3	N3	36	25	0	
4	N4	-36	25	0	
5	N5	-64	25	0	
6	N6	0	0	40	
7	N7	64	25	40	
8	N8	36	25	40	
9	N9	-36	25	40	
10	N10	-64	25	40	
11	N11	60	25	0	
12	N12	60	25	40	
13	N13	20	25	0	
14	N14	20	25	40	
15	N15	-20	25	0	
16	N16	-20	25	40	
17	N17	-60	25	0	
18	N18	-60	25	40	
19	N19	60	28	68	
20	N20	20	28	68	
21	N21	-20	28	68	
22	N22	-60	28	68	
23	N23	60	28	-28	
24	N24	20	28	-28	
25	N25	-20	28	-28	
26	N26	-60	28	-28	
27	N29	60	28	0	
28	N30	60	28	40	
29	N31	20	28	0	
30	N32	20	28	40	
31	N33	-20	28	0	

Node Coordinates (Continued)

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
32	N34	-20	28	40	
33	N35	-60	28	0	
34	N36	-60	28	40	
35	N38	0	0	45	
36	N39A	0	0	-5	
37	N40A	0	0	-3	
38	N41A	0	0	37	
39	N42	0	-6	-3	
40	N43	0	-6	37	
41	N45	-60	28	12	
42	N47	-42	-72	12	
43	N48	-60	28	-25	
44	N49	-60	28	65	
45	N50	-20	28	3.45	
46	N51	-20	28	36.55	
47	N54	42	-72	28	
48	N55	60	28	28	

Node Boundary Conditions

	Y [k/in]	X [k/in]	Z [k/in]	Node Label
1				N6
2				N1
3				N38
4				N39A
5				N40A
6				N41A
7	Reaction	Reaction	Reaction	N42
8	Reaction	Reaction	Reaction	N43
9	Reaction	Reaction	Reaction	N47
10	Reaction	Reaction	Reaction	N54

Basic Load Cases

	BLC Description	Category	Z Gravity	Nodal	Distributed
1	DEAD LOAD	None	-1	4	
2	DEAD LOAD ICE	None		4	17
3	WIND LOAD (NO ICE) FRONT	None		4	17
4	WIND LOAD (NO ICE) SIDE	None		4	17
5	WIND LOAD (ICE) FRONT	None		4	17
6	WIND LOAD (ICE) SIDE	None		4	17
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	

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

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s ² /in, lb*s ² *in)]
1	N48	L	Z	-172
2	N49	L	Z	-172
3	N50	L	Z	-58
4	N51	L	Z	-58

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

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s ² /in, lb*s ² *in)]
1	N48	L	Z	-559
2	N49	L	Z	-559
3	N50	L	Z	-142
4	N51	L	Z	-142



Company : ForeSite/EFI
Designer : KS
Job Number : 049.03232 - 2275013
Model Name : C11059C

4/14/2022
10:10:46 AM
Checked By : _____

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

Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s ² /in, lb*s ² *in)]
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Node Loads and Enforced Displacements (BLC 3 : WIND LOAD (NO ICE) FRONT)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s ² /in, lb*s ² *in)]
1	N48	L	Y	373
2	N49	L	Y	373
3	N50	L	Y	105
4	N51	L	Y	105

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

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s ² /in, lb*s ² *in)]
1	N48	L	X	223
2	N49	L	X	223
3	N50	L	X	46
4	N51	L	X	46

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

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s ² /in, lb*s ² *in)]
1	N48	L	Y	89
2	N49	L	Y	89
3	N50	L	Y	28
4	N51	L	Y	28

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

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s ² /in, lb*s ² *in)]
1	N48	L	X	66
2	N49	L	X	66
3	N50	L	X	15
4	N51	L	X	15

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

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s ² /in, lb*s ² *in)]
1	N5	L	Z	-250

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

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s ² /in, lb*s ² *in)]
1	N2	L	Z	-250

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

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s ² /in, lb*s ² *in)]
1	N26	L	Z	-500

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

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s ² /in, lb*s ² *in)]
1	N25	L	Z	-500

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

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s ² /in, lb*s ² *in)]
1	N24	L	Z	-500

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

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s ² /in, lb*s ² *in)]
1	N23	L	Z	-500

Member Point Loads

No Data to Print...

Member Distributed Loads (BLC 2 : DEAD LOAD ICE)

Member Label	Direction	Start Magnitude [lb/ft, F, ksf, k-ft/in]	End Magnitude [lb/ft, F, ksf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M9	Z	-12.6	0	%100
2	M10	Z	-12.6	0	%100
3	M11	Z	-18.3	0	%100
4	M7	Z	-18.3	0	%100
5	M12	Z	-18.3	0	%100
6	M8	Z	-18.3	0	%100
7	M13	Z	-18.3	0	%100
8	M14	Z	-18.3	0	%100
9	M1	Z	-18.3	0	%100
10	M2	Z	-18.3	0	%100
11	M3	Z	-18.3	0	%100
12	M4	Z	-18.3	0	%100
13	M5	Z	-18.3	0	%100
14	M6	Z	-18.3	0	%100
15	M27	Z	-18.3	0	%100
16	M23A	Z	-25.7	0	%100
17	M28	Z	-18.3	0	%100

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

Member Label	Direction	Start Magnitude [lb/ft, F, ksf, k-ft/in]	End Magnitude [lb/ft, F, ksf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M9	PY	2.8	0	%100
2	M10	PY	2.8	0	%100
3	M11	PY	8.7	0	%100
4	M12	PY	8.7	0	%100
5	M7	PY	8.7	0	%100
6	M13	PY	8.7	0	%100
7	M14	PY	8.7	0	%100
8	M8	PY	8.7	0	%100
9	M1	PY	8.7	0	%100
10	M2	PY	8.7	0	%100
11	M3	PY	8.7	0	%100
12	M4	PY	8.7	0	%100
13	M5	PY	8.7	0	%100
14	M6	PY	8.7	0	%100
15	M27	PY	8.7	0	%100
16	M23A	PY	16.6	0	%100
17	M28	PY	8.7	0	%100

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

Member Label	Direction	Start Magnitude [lb/ft, F, ksf, k-ft/in]	End Magnitude [lb/ft, F, ksf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M9	PX	2.8	0	%100
2	M10	PX	2.8	0	%100
3	M11	PX	8.7	0	%100
4	M12	PX	8.7	0	%100
5	M13	PX	8.7	0	%100
6	M14	PX	8.7	0	%100
7	M7	PX	8.7	0	%100
8	M1	PX	8.7	0	%100
9	M8	PX	8.7	0	%100
10	M2	PX	8.7	0	%100
11	M3	PX	8.7	0	%100
12	M4	PX	8.7	0	%100
13	M5	PX	8.7	0	%100
14	M6	PX	8.7	0	%100
15	M27	PX	8.7	0	%100
16	M23A	PX	16.6	0	%100
17	M28	PX	8.7	0	%100



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

Member Label	Direction	Start Magnitude [lb/ft, F, ksf, k-ft/in]	End Magnitude [lb/ft, F, ksf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M9	PY	7.9	7.9	0 %100
2	M10	PY	7.9	7.9	0 %100
3	M11	PY	9.7	9.7	0 %100
4	M12	PY	9.7	9.7	0 %100
5	M13	PY	9.7	9.7	0 %100
6	M14	PY	9.7	9.7	0 %100
7	M1	PY	9.7	9.7	0 %100
8	M2	PY	9.7	9.7	0 %100
9	M3	PY	9.7	9.7	0 %100
10	M7	PY	9.7	9.7	0 %100
11	M4	PY	9.7	9.7	0 %100
12	M8	PY	9.7	9.7	0 %100
13	M5	PY	9.7	9.7	0 %100
14	M6	PY	9.7	9.7	0 %100
15	M27	PY	9.7	9.7	0 %100
16	M23A	PY	12.1	12.1	0 %100
17	M28	PY	9.7	9.7	0 %100

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

Member Label	Direction	Start Magnitude [lb/ft, F, ksf, k-ft/in]	End Magnitude [lb/ft, F, ksf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M9	PX	7.9	7.9	0 %100
2	M10	PX	7.9	7.9	0 %100
3	M11	PX	9.7	9.7	0 %100
4	M12	PX	9.7	9.7	0 %100
5	M13	PX	9.7	9.7	0 %100
6	M14	PX	9.7	9.7	0 %100
7	M1	PX	9.7	9.7	0 %100
8	M2	PX	9.7	9.7	0 %100
9	M3	PX	9.7	9.7	0 %100
10	M4	PX	9.7	9.7	0 %100
11	M7	PX	9.7	9.7	0 %100
12	M5	PX	9.7	9.7	0 %100
13	M8	PX	9.7	9.7	0 %100
14	M6	PX	9.7	9.7	0 %100
15	M27	PX	9.7	9.7	0 %100
16	M23A	PX	12.1	12.1	0 %100
17	M28	PX	9.7	9.7	0 %100

Member Area Loads

No Data to Print...											
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Load Combinations

Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	DL + WL (NO ICE) 0 Degree	Yes	Y	1	1.2			3	1.6	
2	DL + WL (NO ICE) 30 Degree	Yes	Y	1	1.2			3	1.386	4
3	DL + WL (NO ICE) 60 Degree	Yes	Y	1	1.2			3	0.8	4
4	DL + WL (NO ICE) 90 Degree	Yes	Y	1	1.2					4
5	DL + WL (NO ICE) 120 Degree	Yes	Y	1	1.2			3	-0.8	4
6	DL + WL (NO ICE) 150 Degree	Yes	Y	1	1.2			3	-1.386	4
7	DL + WL (NO ICE) 180 Degree	Yes	Y	1	1.2			3	-1.6	
8	DL + WL (NO ICE) 210 Degree	Yes	Y	1	1.2			3	-1.386	4
9	DL + WL (NO ICE) 240 Degree	Yes	Y	1	1.2			3	-0.8	4
10	DL + WL (NO ICE) 270 Degree	Yes	Y	1	1.2					4
11	DL + WL (NO ICE) 300 Degree	Yes	Y	1	1.2			3	0.8	4
12	DL + WL (NO ICE) 330 Degree	Yes	Y	1	1.2			3	1.386	4
13	DL + DL ICE + WL (ICE) 0 Degree	Yes	Y	1	1.2	2	1	5	1	
14	DL + DL ICE + WL (ICE) 30 Degree	Yes	Y	1	1.2	2	1	5	0.866	6
15	DL + DL ICE + WL (ICE) 60 Degree	Yes	Y	1	1.2	2	1	5	0.5	6
16	DL + DL ICE + WL (ICE) 90 Degree	Yes	Y	1	1.2	2	1			6
17	DL + DL ICE + WL (ICE) 120 Degree	Yes	Y	1	1.2	2	1	5	-0.5	6
18	DL + DL ICE + WL (ICE) 150 Degree	Yes	Y	1	1.2	2	1	5	-0.866	6



Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
19	DL + DL ICE + WL (ICE) 180 Degree	Yes	Y	1	1.2	2	1	5	-1		
20	DL + DL ICE + WL (ICE) 210 Degree	Yes	Y	1	1.2	2	1	5	-0.866	6	-0.5
21	DL + DL ICE + WL (ICE) 240 Degree	Yes	Y	1	1.2	2	1	5	-0.5	6	-0.866
22	DL + DL ICE + WL (ICE) 270 Degree	Yes	Y	1	1.2	2	1			6	-1
23	DL + DL ICE + WL (ICE) 300 Degree	Yes	Y	1	1.2	2	1	5	0.5	6	-0.866
24	DL + DL ICE + WL (ICE) 330 Degree	Yes	Y	1	1.2	2	1	5	0.866	6	-0.5
25	DEAD LOAD + LIVE LOAD1	Yes	Y	1	1.2					7	1.5
26	DEAD LOAD + LIVE LOAD2	Yes	Y	1	1.2					8	1.5
27	DEAD LOAD + LIVE LOAD3	Yes	Y	1	1.2					9	1.5
28	DL + MAIN L1+30MPH WL FRONT	Yes	Y	1	1.2	10	1.5	3	0.082		
29	DL + MAIN L2+30MPH WL FRONT	Yes	Y	1	1.2	11	1.5	3	0.082		
30	DL + MAIN L3+30MPH WL FRONT	Yes	Y	1	1.2	12	1.5	3	0.082		
31	DL + MAIN L4+30MPH WL FRONT	Yes	Y	1	1.2	13	1.5	3	0.082		
32	DL + MAIN L1+30MPH WL SIDE	Yes	Y	1	1.2	10	1.5	4	0.082		
33	DL + MAIN L2+30MPH WL SIDE	Yes	Y	1	1.2	11	1.5	4	0.082		
34	DL + MAIN L3+30MPH WL SIDE	Yes	Y	1	1.2	12	1.5	4	0.082		
35	DL + MAIN L4+30MPH WL SIDE	Yes	Y	1	1.2	13	1.5	4	0.082		
36	DL + MAIN L1+30MPH WL FRONT (REVERSED)	Yes	Y	1	1.2	10	1.5	3	-0.082		
37	DL + MAIN L2+30MPH WL FRONT (REVERSED)	Yes	Y	1	1.2	11	1.5	3	-0.082		
38	DL + MAIN L3+30MPH WL FRONT (REVERSED)	Yes	Y	1	1.2	12	1.5	3	-0.082		
39	DL + MAIN L4+30MPH WL FRONT (REVERSED)	Yes	Y	1	1.2	13	1.5	3	-0.082		
40	DL + MAIN L1+30MPH WL SIDE (REVERSED)	Yes	Y	1	1.2	10	1.5	4	-0.082		
41	DL + MAIN L2+30MPH WL SIDE (REVERSED)	Yes	Y	1	1.2	11	1.5	4	-0.082		
42	DL + MAIN L3+30MPH WL SIDE (REVERSED)	Yes	Y	1	1.2	12	1.5	4	-0.082		
43	DL + MAIN L4+30MPH WL SIDE (REVERSED)	Yes	Y	1	1.2	13	1.5	4	-0.082		

Envelope Node Reactions

Node Label	X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC		
1	N42	max	478.155	43	3508.192	18	3078.015	15	0	43	0	43	0	43
2		min	-2885.7	16	195.753	12	544.297	8	0	1	0	1	0	1
3	N43	max	3025.525	22	642.197	7	1121.721	21	0	43	0	43	0	43
4		min	-493.33	35	-3670.084	13	79.717	2	0	1	0	1	0	1
5	N47	max	204.713	1	1263.339	8	96.053	15	0	43	0	43	0	43
6		min	-204.731	7	-1276.035	2	16.588	8	0	1	0	1	0	1
7	N54	max	61.173	2	547.853	3	95.138	16	0	43	0	43	0	43
8		min	-62.797	8	-560.908	9	17.552	8	0	1	0	1	0	1
9	Totals:	max	1892.912	10	2724.441	7	4310.432	14						
10		min	-1892.913	4	-2724.44	1	1001.482	8						

Envelope Node Displacements

Node Label	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC		
1	N1	max	0.051	3	0.001	13	0	7	2.622e-5	7	1.208e-4	6	7.306e-3	9
2		min	-0.044	9	0	7	-0.003	13	-2.342e-4	13	-8.68e-5	12	-8.218e-3	3
3	N2	max	0.156	3	0.047	10	0.046	36	1.601e-3	10	2.549e-3	31	4.319e-3	2
4		min	-0.136	9	-0.09	16	-0.118	31	-3.161e-3	17	-1.26e-3	17	-4.646e-3	8
5	N3	max	0.156	3	0.13	9	0.015	36	2.661e-4	26	1.75e-3	31	5.548e-4	9
6		min	-0.136	9	-0.15	3	-0.023	31	-1.763e-3	17	-1.418e-3	18	-1.106e-3	15
7	N4	max	0.157	3	0.149	3	-0.008	31	3.297e-3	1	-3.358e-4	35	1.564e-3	7
8		min	-0.136	9	-0.135	9	-0.078	18	-2.859e-3	7	-4.317e-3	23	-1.551e-3	1
9	N5	max	0.158	3	0.152	1	-0.042	8	1.413e-2	1	1.367e-3	10	5.037e-3	5
10		min	-0.137	9	-0.146	7	-0.316	15	-1.401e-2	7	-7.082e-3	16	-4.785e-3	11
11	N6	max	0.045	3	0.003	13	0	7	-3.327e-5	7	2.688e-4	31	8.348e-3	9
12		min	-0.053	9	0	7	-0.005	13	-8.606e-4	13	-1.527e-3	21	-7.42e-3	3
13	N7	max	0.148	3	0.035	22	0.047	36	8.965e-4	2	2.516e-3	31	6.164e-3	3
14		min	-0.168	9	-0.009	3	-0.118	31	-2.798e-3	22	-1.287e-3	36	-6.459e-3	9
15	N8	max	0.147	3	0.162	9	0.015	36	3.319e-4	31	1.736e-3	31	5.655e-4	6
16		min	-0.168	9	-0.143	3	-0.024	31	-1.943e-3	20	-1.398e-3	19	-4.394e-4	12
17	N9	max	0.15	3	0.153	3	-0.008	31	4.999e-3	7	2.891e-4	1	4.348e-3	7
18		min	-0.171	9	-0.17	9	-0.08	18	-4.417e-3	1	-4.415e-3	19	-4.115e-3	1
19	N10	max	0.15	3	0.304	2	0.001	2	1.897e-2	7	2.786e-3	3	7.793e-3	7
20		min	-0.171	9	-0.324	8	-0.327	20	-1.889e-2	1	-7.437e-3	21	-7.496e-3	1
21	N11	max	0.156	3	0.064	9	0.041	36	1.601e-3	10	2.549e-3	31	4.318e-3	2
22		min	-0.136	9	-0.094	3	-0.108	31	-3.161e-3	17	-1.261e-3	17	-4.646e-3	8

Envelope Node Displacements (Continued)

Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC	
23	N12	max	0.148	3	0.05	9	0.042	36	8.965e-4	2	2.516e-3	31	6.164e-3	3
24		min	-0.168	9	-0.034	3	-0.108	31	-2.798e-3	22	-1.287e-3	36	-6.458e-3	9
25	N13	max	0.157	3	0.089	9	0	40	5.436e-4	1	4.027e-4	43	4.108e-3	9
26		min	-0.136	9	-0.102	3	-0.034	34	-1.533e-3	19	-1.661e-3	16	-4.603e-3	3
27	N14	max	0.148	3	0.122	9	0	28	2.033e-4	35	4.616e-4	31	4.395e-3	9
28		min	-0.169	9	-0.108	3	-0.034	38	-1.422e-3	23	-1.647e-3	19	-4.039e-3	3
29	N15	max	0.157	3	0.113	3	-0.005	8	1.21e-3	2	3.807e-4	1	3.615e-3	9
30		min	-0.136	9	-0.102	9	-0.048	14	-1.031e-3	8	-1.204e-3	19	-3.951e-3	3
31	N16	max	0.149	3	0.098	3	-0.008	31	1.578e-3	7	1.978e-4	37	4.883e-3	9
32		min	-0.17	9	-0.107	9	-0.047	17	-1.304e-3	1	-1.241e-3	23	-4.377e-3	3
33	N17	max	0.158	3	0.139	1	-0.04	39	1.413e-2	1	1.367e-3	10	5.036e-3	5
34		min	-0.137	9	-0.133	7	-0.289	14	-1.401e-2	7	-7.081e-3	16	-4.784e-3	11
35	N18	max	0.15	3	0.282	2	-0.005	1	1.897e-2	7	2.786e-3	3	7.792e-3	7
36		min	-0.171	9	-0.3	8	-0.297	20	-1.889e-2	1	-7.435e-3	21	-7.495e-3	1
37	N19	max	0.128	3	0.123	22	0.037	36	6.971e-4	3	2.516e-3	31	6.164e-3	3
38		min	-0.169	9	-0.055	3	-0.109	31	-2.821e-3	23	-1.287e-3	36	-6.458e-3	9
39	N20	max	0.159	3	0.135	9	-0.002	1	2.033e-4	35	4.632e-4	35	4.395e-3	9
40		min	-0.204	9	-0.101	3	-0.037	38	-1.597e-3	13	-1.788e-3	21	-4.039e-3	3
41	N21	max	0.158	3	0.132	2	-0.008	8	1.87e-3	7	2.095e-4	33	4.883e-3	9
42		min	-0.199	9	-0.15	8	-0.046	14	-1.596e-3	1	-1.438e-3	22	-4.377e-3	3
43	N22	max	0.372	3	1.066	1	-0.044	31	3.221e-2	7	9.964e-3	4	7.792e-3	7
44		min	-0.489	9	-1.087	7	-0.288	19	-3.212e-2	1	-1.334e-2	10	-7.495e-3	1
45	N23	max	0.16	3	0.106	9	0.037	36	1.601e-3	10	2.507e-3	43	4.318e-3	2
46		min	-0.119	9	-0.18	17	-0.11	31	-3.26e-3	17	-1.436e-3	17	-4.645e-3	8
47	N24	max	0.188	3	0.064	10	-0.002	1	8.352e-4	1	4.175e-4	43	4.108e-3	9
48		min	-0.142	9	-0.098	17	-0.038	38	-1.735e-3	19	-1.863e-3	16	-4.603e-3	3
49	N25	max	0.173	3	0.143	3	-0.008	8	1.462e-3	2	4.404e-4	12	3.615e-3	9
50		min	-0.135	9	-0.127	9	-0.046	14	-1.283e-3	8	-1.328e-3	17	-3.951e-3	3
51	N26	max	0.422	3	0.793	1	-0.044	31	2.714e-2	1	9.294e-3	10	5.036e-3	5
52		min	-0.307	9	-0.784	7	-0.288	19	-2.702e-2	7	-1.267e-2	4	-4.784e-3	11
53	N29	max	0.144	3	0.064	9	0.037	36	1.601e-3	10	2.549e-3	31	4.318e-3	2
54		min	-0.122	9	-0.094	3	-0.109	31	-3.161e-3	17	-1.261e-3	17	-4.645e-3	8
55	N30	max	0.129	3	0.05	9	0.037	36	8.965e-4	2	2.516e-3	31	6.164e-3	3
56		min	-0.149	9	-0.034	3	-0.109	31	-2.798e-3	22	-1.287e-3	36	-6.458e-3	9
57	N31	max	0.17	3	0.089	9	-0.002	1	5.436e-4	1	4.027e-4	43	4.108e-3	9
58		min	-0.148	9	-0.102	3	-0.037	38	-1.533e-3	19	-1.661e-3	16	-4.603e-3	3
59	N32	max	0.16	3	0.122	9	-0.002	1	2.033e-4	35	4.616e-4	31	4.395e-3	9
60		min	-0.182	9	-0.108	3	-0.037	38	-1.422e-3	23	-1.647e-3	19	-4.039e-3	3
61	N33	max	0.169	3	0.113	3	-0.008	8	1.21e-3	2	3.807e-4	1	3.615e-3	9
62		min	-0.147	9	-0.102	9	-0.046	14	-1.031e-3	8	-1.204e-3	19	-3.951e-3	3
63	N34	max	0.162	3	0.098	3	-0.008	8	1.578e-3	7	1.978e-4	37	4.883e-3	9
64		min	-0.185	9	-0.107	9	-0.046	14	-1.304e-3	1	-1.241e-3	23	-4.377e-3	3
65	N35	max	0.153	3	0.139	1	-0.044	31	1.413e-2	1	1.367e-3	10	5.036e-3	5
66		min	-0.132	9	-0.133	7	-0.287	19	-1.401e-2	7	-7.081e-3	16	-4.784e-3	11
67	N36	max	0.156	3	0.282	2	-0.044	31	1.897e-2	7	2.786e-3	3	7.792e-3	7
68		min	-0.179	8	-0.3	8	-0.287	19	-1.889e-2	1	-7.435e-3	21	-7.495e-3	1
69	N38	max	0.044	3	0.007	13	0	7	-3.298e-5	7	2.688e-4	31	8.348e-3	9
70		min	-0.056	9	0	7	-0.005	13	-8.608e-4	13	-1.527e-3	21	-7.42e-3	3
71	N39A	max	0.05	3	0	7	0	7	-1.509e-6	7	1.71e-4	16	7.319e-3	9
72		min	-0.044	9	-0.001	13	-0.003	13	-5.003e-4	13	-7.892e-5	11	-8.395e-3	3
73	N40A	max	0.05	3	0	12	0	7	-1.49e-6	7	1.71e-4	16	7.319e-3	9
74		min	-0.044	9	0	18	-0.003	13	-5.003e-4	13	-7.894e-5	11	-8.395e-3	3
75	N41A	max	0.045	3	0	13	0	7	-5.717e-5	7	2.559e-4	31	8.459e-3	9
76		min	-0.051	9	0	7	-0.005	13	-7.83e-4	13	-1.447e-3	21	-7.516e-3	3
77	N42	max	0	16	0	12	0	8	-1.49e-6	7	1.71e-4	16	7.319e-3	9
78		min	0	43	0	18	0	15	-5.003e-4	13	-7.894e-5	11	-8.395e-3	3
79	N43	max	0	35	0	13	0	2	-5.717e-5	7	2.559e-4	31	8.459e-3	9
80		min	0	22	0	7	0	21	-7.83e-4	13	-1.447e-3	21	-7.516e-3	3
81	N45	max	0.123	3	0.027	2	-0.044	31	4.051e-3	1	7.495e-4	11	5.673e-3	6
82		min	-0.123	9	-0.027	8	-0.287	19	-3.286e-3	7	-1.272e-3	5	-5.424e-3	12
83	N47	max	0	7	0	2	0	8	-1.443e-3	3	5.847e-4	43	4.292e-3	10
84		min	0	1	0	8	0	15	-8.113e-3	20	-2.754e-3	17	-4.3e-3	4
85	N48	max	0.387	3	0.712	1	-0.044	31	2.714e-2	1	9.293e-3	10	5.036e-3	5
86		min	-0.282	9	-0.703	7	-0.288	19	-2.702e-2	7	-1.267e-2	4	-4.784e-3	11
87	N49	max	0.343	3	0.969	1	-0.044	31	3.221e-2	7	9.964e-3	4	7.792e-3	7



Envelope Node Displacements (Continued)

Node Label	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC		
88	min	9	-0.45	7	-0.99	19	-3.212e-2	1	-1.334e-2	10	-7.495e-3	1		
89	N50	max	0.169	3	0.109	3	-0.008	8	1.065e-3	2	3.703e-4	31	3.724e-3	9
90	min	9	-0.15	9	-0.1	9	-0.046	14	-7.524e-4	8	-1.679e-3	19	-3.987e-3	3
91	N51	max	0.164	3	0.096	3	-0.008	8	1.271e-3	7	3.099e-4	31	4.773e-3	9
92	min	9	-0.183	9	-0.104	9	-0.046	14	-8.81e-4	1	-1.655e-3	19	-4.34e-3	3
93	N54	max	0	8	0	9	0	8	-9.926e-4	40	4.474e-4	31	4.576e-3	10
94	min	2	0	3	0	16	-5.854e-3	17	-1.691e-3	18	-4.501e-3	18	-4.501e-3	4
95	N55	max	0.135	3	0.028	9	0.037	36	3.533e-4	31	1.157e-5	31	5.58e-3	2
96	min	9	-0.144	3	-0.027	3	-0.109	31	-2.475e-3	18	-2.304e-3	17	-5.9e-3	8

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

Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	M14	PIPE 2.0	56	7	0.178	56	2	14916.096	32130	1.872	1.872	1.221	H1-1b
2	M2	PIPE 2.0	100	15	0.364	100	1	8645.447	32130	1.872	1.872	2.167	H1-1b
3	M1	PIPE 2.0	100	7	0.462	100	7	8645.447	32130	1.872	1.872	2.661	H3-6
4	M9	.75" solid Rod	29.669	18	0.025	59.338	3	2033.785	14313.866	0.179	0.179	1.136	H1-1a
5	M10	.75" solid Rod	29.669	20	0.021	59.338	9	2033.785	14313.866	0.179	0.179	1.136	H1-1b
6	M7	PIPE 2.0	40	18	0.059	0	8	28122.495	32130	1.872	1.872	2.283	H1-1b
7	M11	PIPE 2.0	68	43	0.078	28	3	14916.096	32130	1.872	1.872	3	H1-1b
8	M5	PIPE 2.0	43.829	8	0.026	43.829	31	27380.812	32130	1.872	1.872	1.495	H1-1b
9	M4	PIPE 2.0	0	16	0.066	0	14	27380.812	32130	1.872	1.872	1.029	H1-1b
10	M3	PIPE 2.0	0	10	0.093	43.829	7	27380.812	32130	1.872	1.872	1.398	H1-1b
11	M23A	PIPE 4.0	47.917	15	0.308	47.917	16	88203.09	93240	10.631	10.631	2.128	H1-1b
12	M6	PIPE 2.0	0	4	0.042	43.829	17	27380.812	32130	1.872	1.872	1.357	H1-1b
13	M8	PIPE 2.0	40	39	0.035	0	17	28122.495	32130	1.872	1.872	2.3	H1-1b
14	M13	PIPE 2.0	68	20	0.048	68	20	14916.096	32130	1.872	1.872	3	H1-1b
15	M27	PIPE 2.0	50.804	21	0.011	101.607	16	13601.577	32130	1.872	1.872	1.136	H1-1b
16	M28	PIPE 2.0	50.804	16	0.011	101.607	22	13601.577	32130	1.872	1.872	1.136	H1-1b
17	M12	PIPE 2.0	28	36	0.038	28	17	14916.096	32130	1.872	1.872	3	H1-1b

Exhibit F

Power Density/RF Emissions Report



Radio Frequency Emissions Analysis Report



Site ID: CT11059C

Rocky Hill / I-91 / X23
179 Shunpike Road
Cromwell, CT 06416

June 6, 2022

Fox Hill Telecom Project Number: 221296

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	33.12 %



June 6, 2022

T-MOBILE
Attn: RF Manager
35 Griffin Road South
Bloomfield, CT 06009

Emissions Analysis for Site: **CT11059C – Rocky Hill / I-91 / X23**

Fox Hill Telecom, Inc (“Fox Hill”) was directed to analyze the proposed upgrades to the T-MOBILE facility located at **179 Shunpike Road, Cromwell, CT**, for the purpose of determining whether the emissions from the Proposed T-MOBILE Antenna Installation located on this property are within specified federal limits.

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

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

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

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



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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **179 Shunpike Road, Cromwell, CT**, 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 manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

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. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20
LTE	1900 MHz (PCS)	4	40
GSM	1900 MHz (PCS)	1	15
LTE	2100 MHz (AWS)	4	40
UMTS	2100 MHz (AWS)	1	40
LTE / 5G NR	2500 MHz (BRS)	8	20

Table 1: Channel Data Table



The following antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz, 700 MHz, 1900 MHz (PCS) and 2100 MHz (AWS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	RFS APXVAALL24_43-U-NA20	125
A	2	Ericsson AIR6419 B41	125
B	1	RFS APXVAALL24_43-U-NA20	125
B	2	Ericsson AIR6419 B41	125
C	1	RFS APXVAALL24_43-U-NA20	125
C	2	Ericsson AIR6419 B41	125

Table 2: Antenna Data

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



RESULTS

Per the calculations completed for the proposed T-MOBILE configurations *Table 3* shows resulting emissions power levels and percentages of the FCC’s allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	13.65 / 13.85 / 16.65 / 16.95	14	495	20,825.23	6.28
Antenna A2	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	5.74
Sector A Composite MPE%							12.02
Antenna B1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	13.65 / 13.85 / 16.65 / 16.95	14	495	20,825.23	6.28
Antenna B2	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	5.74
Sector B Composite MPE%							12.02
Antenna C1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	13.65 / 13.85 / 16.65 / 16.95	14	495	20,825.23	6.28
Antenna C2	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	5.74
Sector C Composite MPE%							12.02

Table 3: T-MOBILE Emissions Levels



The Following table (table 4) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum T-MOBILE MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. Table 5 below shows a summary for each T-MOBILE Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	MPE%
T-MOBILE – Max Per Sector Value	12.02 %
AT&T	12.65 %
CR Police Dept	0.23 %
CR Fire Dept	0.12 %
CR Fire Dept 2	0.12 %
CR Fire Alarm	0.40 %
Clearwire	0.11 %
Sprint	1.83 %
Verizon Wireless	5.64 %
Site Total MPE %:	33.12 %

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	12.02 %
T-MOBILE Sector B Total:	12.02 %
T-MOBILE Sector C Total:	12.02 %
Site Total:	33.12 %

Table 5: Site MPE Summary



FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated T-MOBILE sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

T-MOBILE _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile 600 MHz LTE / 5G NR	2	926.96	125	4.71	600 MHz	400	1.18%
T-Mobile 700 MHz LTE	2	485.32	125	2.46	700 MHz	467	0.53%
T-Mobile 1900 MHz (PCS) LTE	4	1,849.52	125	18.78	1900 MHz (PCS)	1000	1.88%
T-Mobile 1900 MHz (PCS) GSM	1	693.57	125	1.76	1900 MHz (PCS)	1000	0.18%
T-Mobile 2100 MHz (AWS) LTE	4	1,981.80	125	20.12	2100 MHz (AWS)	1000	2.01%
T-Mobile 2100 MHz (AWS) UMTS	1	1,981.80	125	5.03	2100 MHz (AWS)	1000	0.50%
T-Mobile 600 MHz LTE / 5G NR	2	926.96	125	4.71	600 MHz	400	1.18%
T-Mobile 2500 MHz (BRS) LTE / 5G NR	8	2,825.08	125	57.38	2500 MHz (BRS)	1000	5.74%
						Total:	12.02%

Table 6: T-MOBILE Maximum Sector MPE Power Values



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:	12.02 %
Sector B:	12.02 %
Sector C:	12.02 %
T-MOBILE Maximum Total (per sector):	12.02 %
Site Total:	33.12 %
Site Compliance Status:	COMPLIANT


The anticipated composite MPE value for this site assuming all carriers present is **33.12 %** 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.

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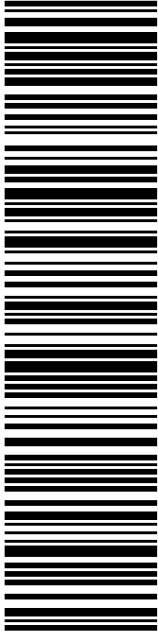
Exhibit G

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 Ref#: CT11059
0000



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Instructions

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

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0359 3022 81

Trans. #: 572833451	Priority Mail® Postage: \$8.95
Print Date: 09/30/2022	Total: \$8.95
Ship Date: 09/30/2022	
Expected Delivery Date: 10/03/2022	

From: DEBORAH CHASE Ref#: CT11059
 NORTHEAST SITE SOLUTIONS
 STE 1
 420 MAIN ST
 STURBRIDGE MA 01566-1359


To: STUART POPPER
 DIRECTOR OF PLANNING & DEVELOPMENT
 41 WEST ST
 CROMWELL CT 06416-2180

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.



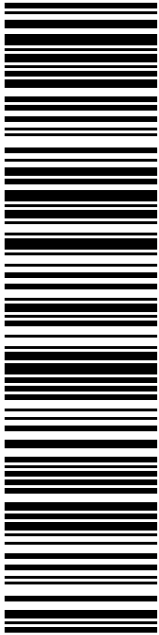
Thank you for shipping with the United States Postal Service!

Check the status of your shipment on the USPS Tracking® page at usps.com



STEVE FORTENBACH
TOWN OF CROMWELL - MAYOR
41 WEST ST
CROMWELL CT 06416-2180

USPS TRACKING #



9405 5036 9930 0359 3023 04


DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
STE 1
420 MAIN ST
STURBRIDGE MA 01566-1359

C003

USPS TRACKING #

9405 5036 9930 0359 3023 04

Electronic Rate Approved #038555749



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USPS.com
US POSTAGE
Flat Rate Env

U.S. POSTAGE PAID
click-n-ship®

09/30/2022 Mailed from 01566

Expected Delivery Date: 10/03/22
Ref#: CT11059C
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PRIORITY MAIL®

UNITED STATES POSTAL SERVICE®

Click-N-Ship®



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USPS TRACKING # :
9405 5036 9930 0359 3023 04

Trans. #: 572833451	Priority Mail® Postage: \$8.95
Print Date: 09/30/2022	Total: \$8.95
Ship Date: 09/30/2022	
Expected Delivery Date: 10/03/2022	

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
STE 1
420 MAIN ST
STURBRIDGE MA 01566-1359


To: STEVE FORTENBACH
TOWN OF CROMWELL- MAYOR
41 WEST ST
CROMWELL CT 06416-2180

Ref#: CT11059C

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

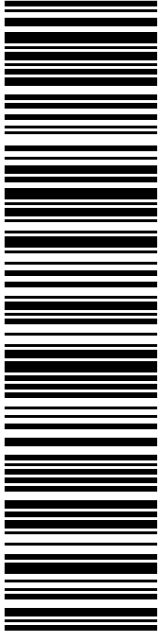


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CROMWELL FIRE DISTRICT
1 WEST ST
CROMWELL CT 06416-2123


USPS TRACKING #



9405 5036 9930 0359 3023 35



Electronic Rate Approved #038555749



Click-N-Ship®

P

USPS.com 9405 5036 9930 0359 3023 35 0089 5000 0020 6416
\$8.95
 US POSTAGE
 Flat Rate Env
 U.S. POSTAGE PAID
 Click-N-Ship®

09/30/2022 Mailed from 01566

PRIORITY MAIL®

DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
STE 1
420 MAIN ST
STURBRIDGE MA 01566-1359

Expected Delivery Date: 10/03/22
Ref#: CT11059C
0000

C003



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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0359 3023 35

Trans. #: 572833451	Priority Mail® Postage: \$8.95
Print Date: 09/30/2022	Total: \$8.95
Ship Date: 09/30/2022	
Expected Delivery Date: 10/03/2022	

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
STE 1
420 MAIN ST
STURBRIDGE MA 01566-1359

Ref#: CT11059C

To: CROMWELL FIRE DISTRICT
1 WEST ST
CROMWELL CT 06416-2123

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CT 11059 - TMW

ANCHOR-6600

LINCOLN FALL
560 LINCOLN ST STE 8
WORCESTER, MA 01605-1925
(800)275-8777

09/30/2022

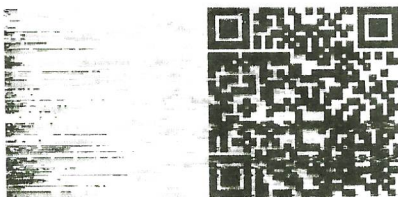
03:05 PM

Product	Qty	Unit Price	Price
Prepaid Mail Cromwell, CT 06416 Weight: 0 lb 12.10 oz Acceptance Date: Fri 09/30/2022 Tracking #: 9405 5036 9930 0359 3022 81	1		\$0.00
Prepaid Mail Cromwell, CT 06416 Weight: 0 lb 11.80 oz Acceptance Date: Fri 09/30/2022 Tracking #: 9405 5036 9930 0359 3023 35	1		\$0.00
Prepaid Mail Cromwell, CT 06416 Weight: 0 lb 11.80 oz Acceptance Date: Fri 09/30/2022 Tracking #: 9405 5036 9930 0359 3023 04	1		\$0.00
Grand Total:			\$0.00

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Clerk: 17