CENTERLINE COMMUNICATIONS

750 West Center Street, Floor 3 / Suite 301
West Bridgewater, MA 02379 *Corporate Headquarters*
781.713.4725
617.249.0819

T-Mobile
Centerline Communications
Ryan Clark
750 West Center Street, Floor 3
West Bridgewater, MA 02379
203-300-7310
rclark@clinellc.com

July 8, 2022

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

Notice of Exempt Modification
630 James Farm Road Stratford, CT 06614
Latitude: 41.245347
Longitude: -73.120169
T-Mobile Site#: CT11926A

Dear Ms. Bachman,

T-Mobile/Sprint currently maintains three (3) antennas and (2) microwave dishes at the 110-foot level of the existing 110- foot self-support tower at 630 James Farm Road Stratford, CT 06614. The 110 foot tower is owned by Tarpon Towers and the property is owned by CV James Farm RD LLC. T-Mobile now intends to install six (6) new antennas and replace three (3) of its existing antennas. The new antennas would be installed at the 110-foot level of the tower. (3) Site Pro 1 VFA10 mounts will be installed as part of this modification. The proposed modifications will make the site available for 5G at some point in the future.

Planned Modifications:

Remove and Replace:
(3) KMW ETCR-654L12H6 **(Remove)** - (3) AIR 6419 B41 Antennas **(Replace)**
(3) 1900 MHz RRH (**Remove**) – (3) 4460 B25 + B66 (**Replace**)
(3) 2500 MHz RRH (**Remove**) – (3) 4480 B71 + B85 (**Replace**)
(3) 800 MHZ RRH (**Remove**)
(3) 1-1/4 Hybrid (**Remove**) – 6x24 Hybrid Cables (**Replace**)
(1) 1-1/2" Hybrid (**Remove**)

Install New:

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(3) APXVAALL24 Antennas
(3) VV-65A-R1 Antennas

To Remain:
(1) 24" microwave dish
(1) 36"microwave dish

Ground:
(1) 6160 Cabinet (**Add**)
(1) B160 Cabinet (**Add**)
(1) Cabinet (**Remain**)

This facility was approved by the Town of Stratford on January 17, 1984. The original facility approval is attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16-SOj-73,for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to Mayor Laura R. Hoydick, Chief Elected Official, Susmitha Attota, Town Planner, Tarpon Towers as the tower owner and CV James Farm Rd, LLC as property owner.

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

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

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

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

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility

to a level at or above the Federal Communications Commission safety standard.

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

characteristics of the site.

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

For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under

R.C.S.A. § 16-50j-72(b)(2).

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617.249.0819

Sincerely,

Ryan Clark
Mobile: 203-300-7310
Fax: 508-819-3017
Office: 750 West Center Street, Floor 3 West Bridgewater, MA 02379
Email: rclark@clinellc.com

Attachments
cc: Mayor Laura R. Hoydick, Chief Elected Officia
Susmitha Attota, Town Planner
Tarpon Towers as the tower owner
CV James Farm Rd, LLC as property owner

Exhibit A

Original Facility Approval

600226 VOL. 589 PG. 857

TOWN OF STRATFORD

ZONING - SPECIAL EXCEPTION OR VARIANCE, RECORDING, GEN. STAT. SEC. 8-3d

1. NAME OF RECORD OWNER EVERD FEDORKO & VELMA R. FEDORKO

NAME OF APPLICANT (If other than owner)

2. DESCRIPTION OF PREMISES

A. Street Address 630 JAMES FARM ROAD

B. Lot No. NONE Name of Record Map NONE

C. Description of Property (If lot number is not available.)

DEED REFERENCE - Volume 208 Page 389 Zone RS-1

3. NATURE OF VARIANCE

NATURE OF SPECIAL PERMIT

NATURE OF SPECIAL EXCEPTION TO ERECT A WINDMILL FOR ELECTRICITY

4. BY-LAW, ORDINANCE OR REGULATION WHICH IS VARIED - Sec. 30

of the Zoning Regulations

CONDITIONS ATTACHED TO DECISION YES

5. DATE OF PUBLIC HEARING NOVEMBER 16, 1983

6. DATE OF DECISION DECEMBER 20, 1983

LEGAL NOTICE PUBLISHED IN THE BRIDGEPORT POST ON DECEMBER 22, 1983

7. APPROVED BY: BOARD OF ZONING APPEALS

PLANNING AND ZONING COMMISSION XX

SECRETARY/PLANNING ADMINISTRATOR Michael Sotto

DATE JANUARY 13, 1984

NOTE: In accordance with Section 21.2 of the Zoning Regulations of the Town of Stratford, if a building permit is not obtained within eighteen months from the date of decision, this approval is null and void.

Received for record JAN 17 1984 at 9:41 AM Attest Town Clerk

Exhibit B

Property Card

630 JAMES FARM RD

Location	630 JAMES FARM RD	**Mblu**	50/19 3/ 28/ /
Acct#	0857800	**Owner**	CV JAMES FARM RD LLC
PBN		**Assessment**	$532,770
Appraisal	$761,100	**PID**	8882
Building Count	1	**Sewer Use**	ESP
EPA Action			

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$371,400	$389,700	$761,100
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$259,980	$272,790	$532,770

Owner of Record

Owner	CV JAMES FARM RD LLC	**Sale Price**	$1,900,000
Co-Owner		**Certificate**	
Address	1175 S CLAYTON ST DENVER, CO 80210	**Book**	4443
		Page	0292
		Sale Date	11/16/2020
		Instrument	25

Ownership History

Ownership History						
Owner	**Sale Price**	**Certificate**	**Instrument**	**Sale Date**	**Book**	**Page**
CV JAMES FARM RD LLC	$1,900,000		25	11/16/2020	4443	0292
SHOOP DARCY (50%) &	$0		04	07/19/2012	3594	0229
FEDORKO WILHELMINA EST & SHOOP RANDY CO-	$0		04	10/27/2011	3517	0310
FEDORKO WILHELMINA &	$0		25	02/24/2005	2587	0348
FEDORKO PETRO EST & WILMA B	$0		04	06/27/2003	2181	0244

Building Information

Building 1 : Section 1

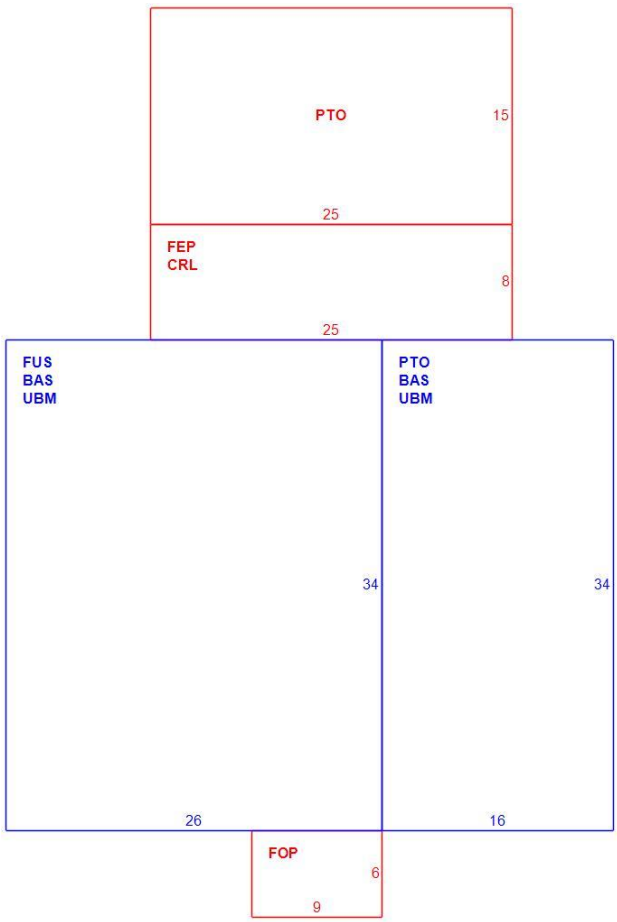
Year Built: 1947
Living Area: 2,312
Building Percent Good: 41

Building Attributes	
Field	**Description**
Style:	Modern/Contemp
Model	Residential
Grade:	C+
Stories:	2 Stories
Occupancy	1
Exterior Wall 1	Stone
Exterior Wall 2	
Roof Structure:	Flat
Roof Cover	T&G/Rubber
Interior Wall 1	Plastered
Interior Wall 2	
Interior Flr 1	Vinyl/Asphalt
Interior Flr 2	Ceram Clay Til
Heat Fuel	Oil
Heat Type:	Radiant
AC Type:	None
Total Bedrooms:	3 Bedrooms
Total Bthrms:	2
Total Half Baths:	1
Total Xtra Fixtrs:	1
Total Rooms:	6
Bath Style:	Average
Kitchen Style:	Below Average
Total Kitchens	1
Whirlpool Tub	
Fireplaces	1
Rec Room Area	
Rec Room Quality	
Num Park	
Fireplaces 2	
Fndtn Cndtn	
Basement	

Building Photo

(https://images.vgsi.com/photos/StratfordCTPhotos///0079/IMG_4602_798

Building Layout



(ParcelSketch.ashx?pid=8882&bid=8882)

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	1,428	1,428
FUS	Finished Upper Story	884	884

CRL	Crawl Space	200	0
FEP	Finished Enclosed Porch	200	0
FOP	Finished Open Porch	54	0
PTO	Patio	919	0
UBM	Unfinished Basement	1,428	0
		5,113	2,312

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	101
Description	Single Family
Zone	RS-1
Neighborhood	3
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	9.61
Frontage	0
Depth	0
Assessed Value	$272,790
Appraised Value	$389,700

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FGR1	Garage	FR	Frame	1890.00 S.F.	$25,700	1
SHD1	Shed	FR	Frame	264.00 S.F.	$1,500	1
SHD1	Shed	MT	Metal	60.00 S.F.	$0	1
SHD1	Shed	C	Cell	360.00 S.F.	$113,400	1
SHD1	Shed	C	Cell	420.00 S.F.	$132,300	1
MSC2	ELEVATOR-NON FUNCTIONAL			1.00 UNIT	$0	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$371,400	$389,700	$761,100
2020	$371,400	$389,700	$761,100
2019	$371,400	$389,700	$761,100

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**

2021	$259,980	$272,790	$532,770
2020	$259,980	$272,790	$532,770
2019	$259,980	$272,790	$532,770

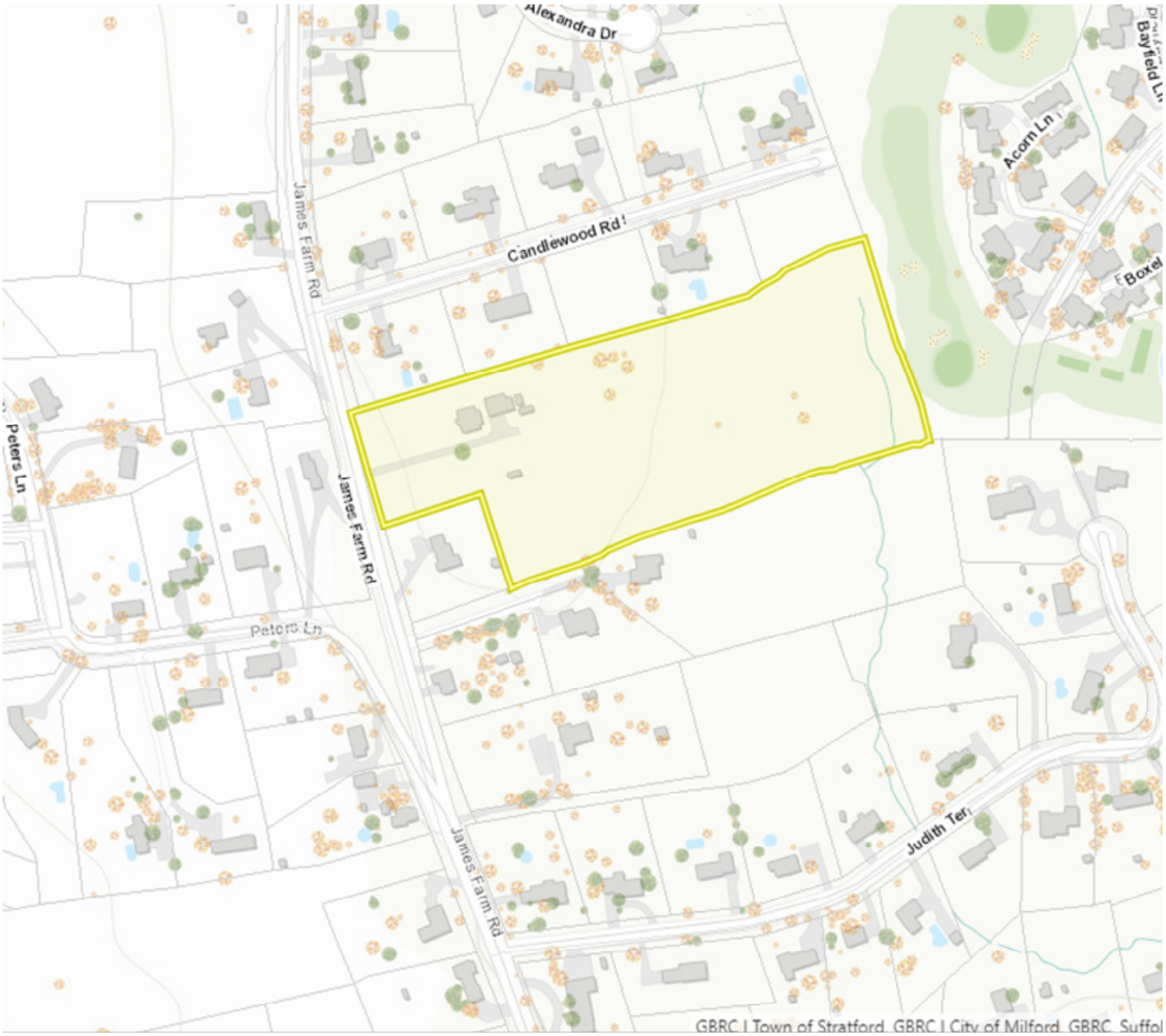

Alexandra Dr
Bayfield Ln
Acorn Ln
Candlewood Rd
James Farm Rd
Peters Ln
Peters Ln
James Farm Rd
James Farm Rd
Judith Ter
GBRC | Town of Stratford, GBRC | City of Milford, GBRC, Suffol

Exhibit C

Construction Drawings

PROJECT INFORMATION

SITE NAME:	CT52XC083
SITE NUMBER:	CT11926A
SITE ADDRESS:	630 JAMES FARM RD STRATFORD, CT 06614
COUNTY	FAIRFIELD
MUNICIPALITY:	TOWN OF STRATFORD
ZONING:	N/A
LATITUDE:	N 41°14'43.25" (41.245347°) (NAD83)
LONGITUDE:	W 73°07'12.61" (-73.120169°) (NAD83)
TYPE OF SITE:	SELF SUPPORT TOWER
STRUCTURE HEIGHT:	110'-0" AGL
ANTENNA CENTER:	110'-0" AGL
GROUND ELEVATION:	251'-0" (NAVD 88)
BUILDING OWNER NAME:	PETRO & WILMA FEDORKO
BUILDING OWNER ADDRESS:	630 JAMES FARM RD STRATFORD, CT 06614
APPLICANT:	T-MOBILE NORTHEAST, LLC. 35 GRIFFIN RD S BLOOMFIELD, CONNECTICUT 06002
APPLICANT PHONE:	(860) 692-7100

PROJECT DIRECTORY

ENGINEERING FIRM:
CENTERLINE ENGINEERING SERVICES, PA
750 WEST CENTER ST, SUITE 301
WEST BRIDGEWATER, MA 02379
DEREK CREASER (617) 306-3034

CARRIER:
T-MOBILE NORTHEAST, LLC.
35 GRIFFIN RD S
BLOOMFIELD, CT 06002
PHONE: (860) 692-1700

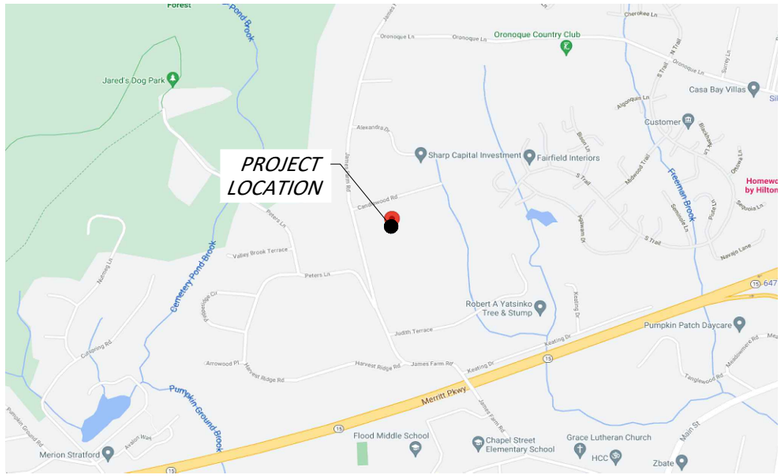
811 Know what's below. Call before you dig.

CENTERLINE ENGINEERING SERVICES, PA

T - Mobile NORTHEAST LLC

SITE NAME: CT52XC083
SITE ID: CT11926A
ADDRESS: 630 JAMES FARM RD
STRATFORD, CT 06614

TECHNOLOGY: 67E5A998E 6160
MODIFICATION: NEW BUILD_SPRINT OPTIMIZATION



VICINITY MAP
NOT TO SCALE

N

LOCATION MAP
NOT TO SCALE

GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF T–MOBILE. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSE OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.

2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.

3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE T–MOBILE REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

SCOPE OF WORK

1. REMOVE ALL EXISTING TOWER EQUIPMENT AT 110' ELEVATION
2. INSTALL NINE NEW ANTENNAS
3. INSTALL SIX NEW RRUS
4. INSTALL THREE NEW 6x24 HYBRID CABLES
5. REMOVE EXISTING GROUND CABINETS
6. INSTALL NEW 6160 EQUIPMENT CABINET
7. INSTALL NEW B160 BATTERY CABINET
8. INSTALL NEW 200A MINI PPC CABINET
9. INSTALL NEW AAV CABINET
10. INSTALL TWO NEW PSU 4813 vR4A

DRAWING INDEX

NO.	DESCRIPTION
T–1	TITLE SHEET
GN–1	GENERAL NOTES, RF NOTES, CABLING NOTES
A–1	COMPOUND PLAN
A–2	EQUIPMENT LAYOUT
A–3	DETAILS
A–4	SOUTH ELEVATION
A–5	ANTENNA LAYOUT
A–6	10'–6" HEAVY DUTY V–FRAME ASSEMBLY
SN–1	STRUCTURAL NOTES & SPECIAL INSPECTIONS
S–1	ANTENNA & RRU MOUNTING DETAILS
G–1	GROUNDING & ONE LINE DIAGRAM
E–1	ELECTRICAL DETAILS

DRAWING SCALE NOTES:

THESE DRAWINGS ARE FORMATTED TO BE FULL SIZE AT 22"x34". CONTRACTOR SHALL VERIFY ALL PLANS & EXISTING DIMENSIONS & CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

T - Mobile NORTHEAST LLC

T-MOBILE NORTHEAST, LLC.
35 GRIFFIN RD S
BLOOMFIELD, CT 06002
PHONE: (860) 629-1700

CENTERLINE ENGINEERING SERVICES, PA

750 W CENTER ST, SUITE 301
WEST BRIDGEWATER, MA 02379
PHONE: 781.713.4725

REVISIONS

REV	DATE	DESCRIPTION	BY
0	05/31/22	ISSUED FOR CONSTRUCTION	CM
C	04/28/22	REVISED PER COMMENTS	RL
B	01/21/22	REVISED PER COMMENTS	MP
A	01/11/22	ISSUED FOR REVIEW	MP

DESIGNED BY:	APPROVED BY:
MP	WRD

STATE OF CONNECTICUT
DEREK J. CREASER
No. 28554
LICENSED PROFESSIONAL ENGINEER

DATE: 05/31/2022

SITE NAME: CT52XC083
SITE ID: CT11926A
SITE ADDRESS: 630 JAMES FARM RD
STRATFORD, CT 06614
FAIRFIELD COUNTY

SHEET TITLE: **TITLE SHEET**
DRAWING: **T-1**

RF NOTES

1. ACTUAL LENGTHS SHALL BE DETERMINED PER SITE CONDITION BY SUBCONTRACTOR
2. THE DESIGN IS BASED ON RF DATA SHEETS, SIGNED AND APPROVED.
3. RADIO SIGNAL CABLE AND RACEWAY SHALL COMPLY WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC, NFPA 70), CHAPTER 8.
4. ALL SPECIFIED MATERIAL FOR EACH LOCATION (E.G. OUT DOORS-OCCUPIED, INDOORS-UNOCCUPIED, PLENUMS, RISER SHAFTS, ETC.) SHALL BE APPROVED, LISTED, OR LABELED AS REQUIRED BY THE NEC.
5. RADIO SIGNAL CABLE SHALL BE SUPPORTED AT MINIMUM OF EVERY THREE (3) FEET EXCEPT INSIDE MONOPOLES OR MONOPOLES WHERE CABLE AND CONNECTOR MANUFACTURERS SUPPORT RECOMMENDATIONS SHALL BE FOLLOWED. MANUFACTURER RECOMMENDATION CABLES SUPPORT ACCESSORIES SHALL BE USED.
6. THE OUTDOOR CABLE SUPPORT SYSTEM SHALL BE PROVIDED WITH AN ICE SHIELD TO SUPPORT AND PROTECT ANTENNA CABLE RUNS.
7. DRIP LOOPS SHALL BE REQUIRED ON ALL OUTSIDE CABLES. CABLES SHALL BE SLOPED AWAY FROM BUILDING OR OUTDOOR BTS CABINETS TO PREVENT WATER FROM ENTERING THROUGH THE COAXIAL CABLE PORT.
8. ALL FEEDER LINE AND JUMPER CONNECTORS SHALL BE 7/16 DIN CABLE CONNECTORS THAT MEET IP68 STANDARDS.
9. 7/16 DIN CONNECTORS REQUIRE NO ADDITIONAL WEATHER PROOFING IN INDOOR APPLICATIONS IF INSTALLED AND TORQUED PROPERLY. IN OUTDOOR APPLICATIONS WEATHER PROOFING IS REQUIRED AND THE FOLLOWING PROCEDURE SHOULD BE FOLLOWED.
10. USING WEATHERPROOFING KIT APPROVED BY CABLE MANUFACTURER AND CONTRACTOR START TAPE APPROXIMATELY 5 INCHES FROM THE CONNECTOR, AND WRAP 2 INCHES TOWARD THE CONNECTOR, THEN REVERSE THE TAPE SO THAT THE STICKY SIDE IS UP. TAPE OVER THE CONNECTOR OR SURGE ARRESTOR UNTIL THREE (3) TO FOUR (4) INCHES BEYOND THE CONNECTOR AND REVERSE AGAIN WITH THE STICKY SIDE DOWN FOR ANOTHER INCH OR TWO. PASS THE BUTYL RUBBER AND FINISH WITH A FINAL LAYER OF TAPE.
11. ANTENNAS SHALL BE PAINTED,WHEN REQUIRED, BY THE LANDLORD OR AUTHORITY OF HAVING JURISDICTION IN ACCORDANCE WITH ANTENNA MANUFACTURERS' SURFACES PREPARATION AND PAINTING REQUIREMENTS.
12. CABLE SHIELDS AND TOWER CONDUITS SHALL BE GROUNDED AT THE TOP OF THE TOWER WITHIN 10 FEET OF THEIR CONNECTORS, AND AT THE BOTTOM OF THE TOWER ABOUT 6 INCHES BEFORE THEY TURN TOWARD THE FACILITY. THEY SHALL BE GROUNDED AT THE MIDPOINT OF THE TOWERS THAT ARE BETWEEN 60 FEET AND 200 FEET HIGH, AND AT INTERVALS OF 60 FEET OR LESS ON TOWERS THAT ARE HIGHER THAN 200 FEET.

ANTENNA CABLE & SCHEDULING NOTES

1. SUBCONTRACTOR SHALL VERIFY THE ACTUAL LENGTH IN THE FIELD BEFORE INSTALLATION.
2. TAG AND COLOR CODE ALL MAIN CABLES AT LOCATIONS PER T-MOBILE ANTENNA CABLE MARKING STANDARD:
   - TOP OF TOWER END OF MAIN COAX
   - BOTTOM OF TOWER END OF MAIN COAX
   - DIRECTLY BEFORE AND AFTER RF EQUIPMENT
   - END OF JUMPERS AT BTS EQUIPMENT
3. ANTENNAS SHALL BE PROCURED AND INSTALLED WITH DOWN TILT MOUNTING BRACKETS SUPPLIED BY ANTENNA MANUFACTURER.
4. PRIOR APPROVAL IS REQUIRED BEFORE PERFORMING ANY WORK ON EXISTING CELL SITE EQUIPMENT.

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR - CENTERLINE COMMUNICATIONS
   SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER - T-MOBILE MOBILITY

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF T-MOBILE MOBILITY SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. APPLICABLE BUILDING CODES:
SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

BUILDING CODE: IBC 2015 & CONNECTICUT STATE BUILDING CODE 2018
ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE
LIGHTNING CODE: NFPA 70-2017

SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL

ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	G.C.	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
AWG	AMERICAN WIRE GAUGE	MGB	MASTER GROUND BUS		
BCW	BARE COPPER WIRE	MIN	MINIMUM	TBD	TO BE DETERMINED
BTS	BASE TRANSCEIVER STATION	PROPOSED	NEW	TBR	TO BE REMOVED
EXISTING	EXISTING	N.T.S.	NOT TO SCALE	TBRR	TO BE REMOVED AND REPLACED
EG	EQUIPMENT GROUND	REF	REFERENCE	TYP	TYPICAL
EGR	EQUIPMENT GROUND RING	REQ	REQUIRED		

T - Mobile NORTHEAST LLC

T-MOBILE NORTHEAST, LLC.
35 GRIFFIN RD S
BLOOMFIELD, CT 06002
PHONE: (860) 629-1700

CENTERLINE ENGINEERING SERVICES, PA

750 W CENTER ST, SUITE 301
WEST BRIDGEWATER, MA 02379
PHONE: 781.713.4725

REVISIONS

REV	DATE	DESCRIPTION	BY
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B	01/21/22	REVISED PER COMMENTS	MP
A	01/11/22	ISSUED FOR REVIEW	MP

DESIGNED BY:	APPROVED BY:
MP	WRD

STATE OF CONNECTICUT
DEREK J. CREASER
No. 28551
LICENSED PROFESSIONAL ENGINEER

DATE: 05/31/2022

SITE NAME: CT52XC083

SITE ID: CT11926A

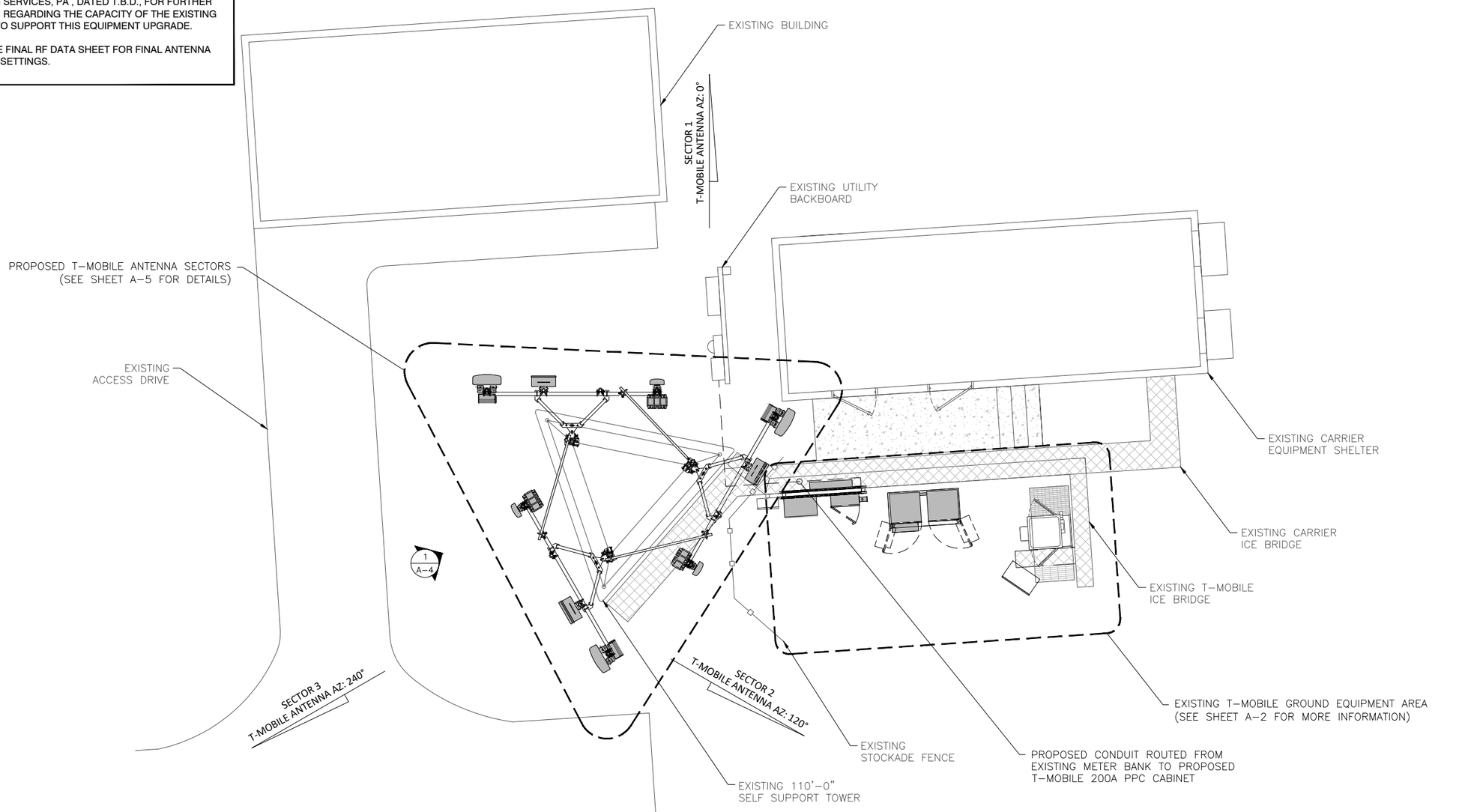
SITE ADDRESS:
630 JAMES FARM RD
STRATFORD, CT 06614
FAIRFIELD COUNTY

SHEET TITLE: GENERAL NOTES, RF NOTES, CABLING NOTES

DRAWING: GN-1

NOTES

1. CONTRACTOR SHALL MAKE A UTILITY 811 DIG SAFE CALL TO LOCATE ALL UTILITIES PRIOR TO EXCAVATING.
2. REFERENCE MOUNT ANALYSIS BY CENTERLINE ENGINEERING SERVICES, PA , DATED T.B.D., FOR FURTHER INFORMATION REGARDING THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THIS EQUIPMENT UPGRADE.
3. REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA MODELS AND SETTINGS.



1/A-1 COMPOUND PLAN

GRAPHIC SCALE

8 4 0 1 2 4 8

1/4 INCH = 1 FOOT (22X34)
1/8 INCH = 1 FOOT (11X17)

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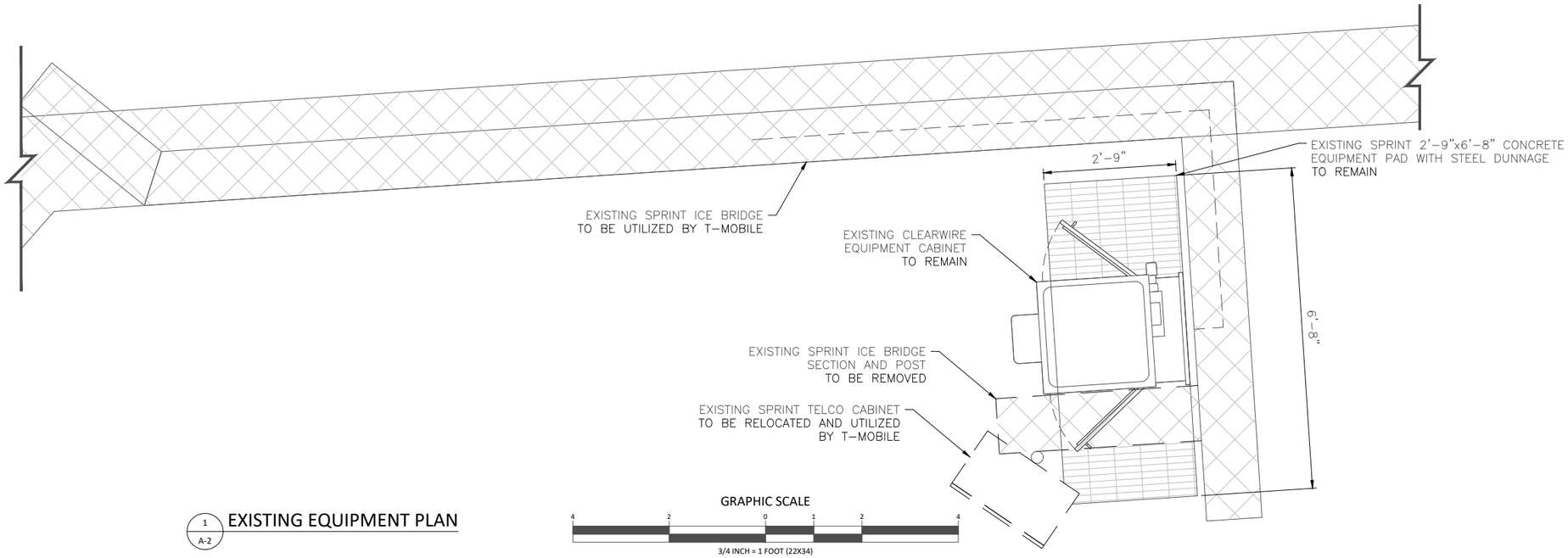
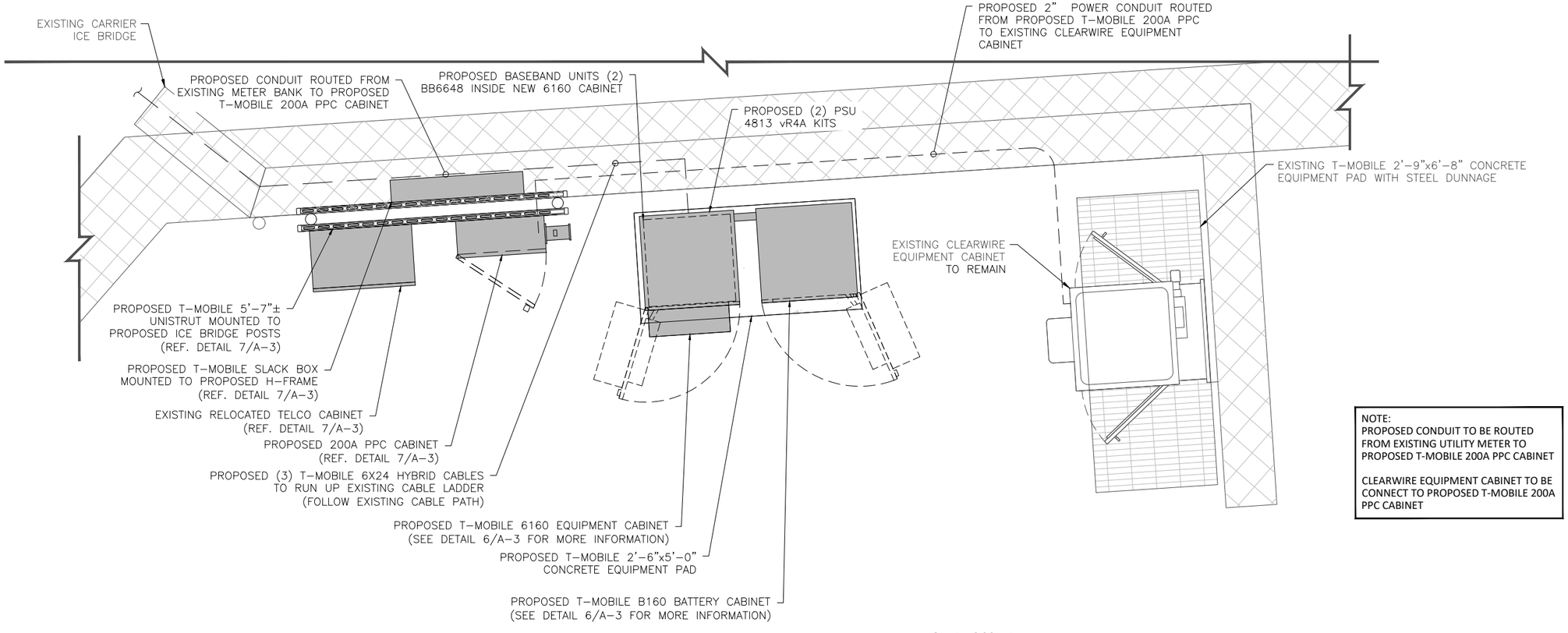
SHEET TITLE:
COMPOUND PLAN

DRAWING:
A-1



1 / A-2 EXISTING EQUIPMENT PLAN



2 / A-2 PROPOSED EQUIPMENT PLAN

GRAPHIC SCALE
4 2 0 1 2 4
3/4 INCH = 1 FOOT (22X34)
3/8 INCH = 1 FOOT (11X17)

NOTE:
PROPOSED CONDUIT TO BE ROUTED FROM EXISTING UTILITY METER TO PROPOSED T-MOBILE 200A PPC CABINET

CLEARWIRE EQUIPMENT CABINET TO BE CONNECT TO PROPOSED T-MOBILE 200A PPC CABINET

N TRUE NORTH

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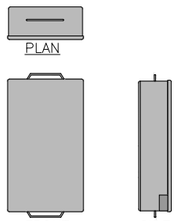
FAIRFIELD COUNTY

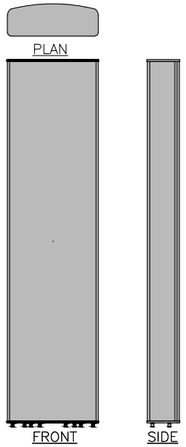
SHEET TITLE: EQUIPMENT LAYOUT

DRAWING: A-2

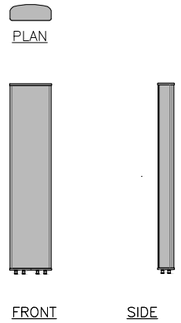
ERICSSON AIR 6419 B41	
MODEL #	AIR 6419 B41
MANUF.	ERICSSON
HEIGHT	36.3"
WIDTH	20.9"
DEPTH	9.0"
WEIGHT	83.3 LBS
FRONT EPA:	5.27 FT^2
SIDE EPA:	2.27 FT^2



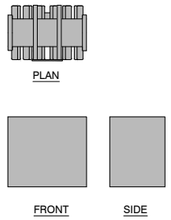
RFS APXVAALL24_43-U-NA20	
MODEL #	APXVAALL24_43-U-NA20
MANUF.	RFS
HEIGHT	95.9"
WIDTH	24.0"
DEPTH	8.5"
WEIGHT	128 LBS W/O MTG HARDWARE 153.3LBS W/ MTG HARDWARE
FRONT EPA:	15.98 FT^2
SIDE EPA:	5.66 FT^2



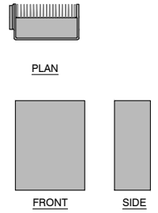
COMMSCOPE VV-65A-R1	
MODEL #	VV-65A-R1
MANUF.	COMMSCOPE
HEIGHT	54.7"
WIDTH	12.1"
DEPTH	4.6"
WEIGHT	23.81 LBS W/O MTG HARDWARE 32.41 LBS W/ MTG HARDWARE
FRONT EPA:	4.06 FT^2
SIDE EPA:	1.75 FT^2



1 A-3 ANTENNA DETAILS

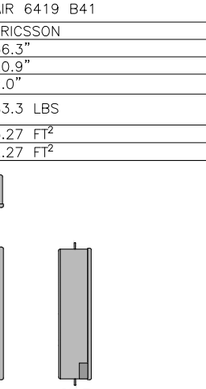


RADIO DIMENSIONS	
MODEL #	RADIO 4460 B25_B66
MANUF.	ERICSSON
HEIGHT	15.1"
WIDTH	17.0"
DEPTH	11.9"
WEIGHT	108 LBS
FRONT EPA:	
SIDE EPA:	

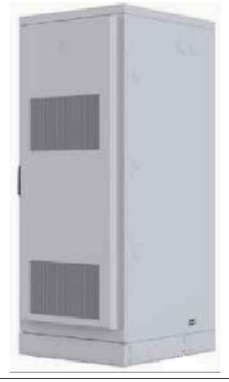


RADIO DIMENSIONS	
MODEL #	RADIO 4480 B71+B85
MANUF.	ERICSSON
HEIGHT	19.5"
WIDTH	15.1"
DEPTH	7.8"
WEIGHT	87 LBS
FRONT EPA:	
SIDE EPA:	

2 A-3 RADIO DETAILS

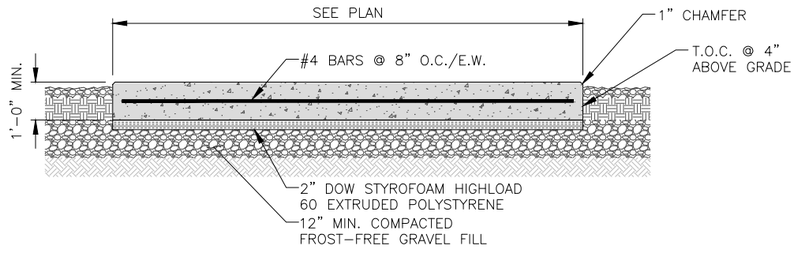


6160 AC ENCLOSURE	
CAPACITY	
RACK SPACE USER EQUIP.	19U(19" RACK)
HARDWARE CAPABILITIES	POWER AND CPRI SUPPORT FOR MULTI-STANDARD REMOTE RADIOS (RRU OR AIR) ERS BASEBAND AND TRANSPORT UNITS Li-ION BATTERIES 3PP EQUIPMENT ADDITIONAL POWER FEED OPTIONS AVAILABLE
MECHANICAL SPECIFICATIONS	
WEIGHT	320lbs (INCLUDING ACTIVE EQUIPMENT)
DIMENSIONS (HWD)	63"x26"x26" (INCLUDING BASE FRAME)
BASE FRAME HEIGHT	6"
MOUNTING POSITION	GROUND
ENCLOSURE MATERIAL	ALUMINUM
COLOR	POWDER PAINT NCS 2002-B
DOOR	FRONT ACCESS
RACK TYPE	19" (IEC 60297-3-100)
LOCK TYPE	CYLINDER/PAD LOCK
POWER SYSTEM	
INPUT VOLTAGE	3P+N+PE 346/200-415/240 VAC 2P+N+PE 208/120-220/127 VAC 1P+N+PE 200-250 VAC

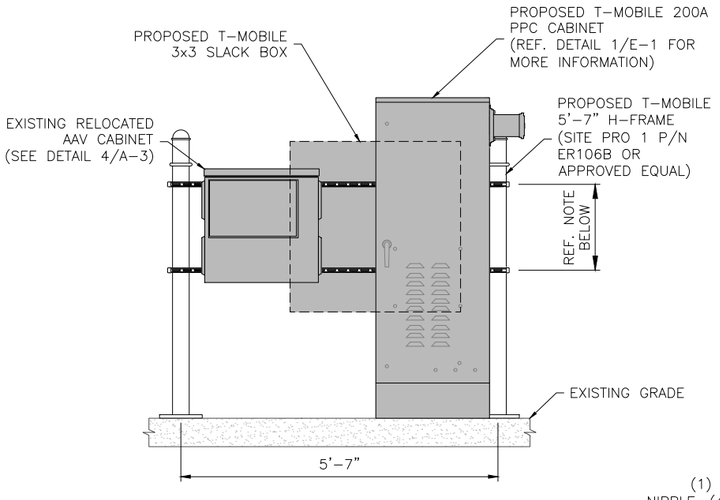


B160 BATTERY ENCLOSURE	
CAPACITY	
VRLA12V:	100Ah/150Ah/170Ah/190Ah/210Ah
Li-ION	24U 19"/23"
SODIUM-NICKEL	3xFIAMM
ELECTRICAL SPECIFICATIONS	
DC OUTPUT	-48VDC/200A
BATTERY BREAKERS	2x125/2p
ALARMS	DOOR OPEN, CLIMATE FAILURE, MCB CONNECTION
MECHANICAL SPECIFICATIONS	
WEIGHT	295 lbs (PLUS 3 STRINGS OF RECOMMENDED 190 aHR FOR ADDITIONAL 1588LBS)
DIMENSIONS (HWD)	63"x26"x26" (INCLUDING BASE FRAME)
BASE FRAME HEIGHT	6"
MATERIAL	GALVANIZED STEEL (180g/m^2)
COLOR	POWDER PAINT NCS 2002-B
LOCKING TYPE	CYLINDER/PAD LOCK

3 A-3 PROPOSED EQUIPMENT CABINET SPECIFICATIONS

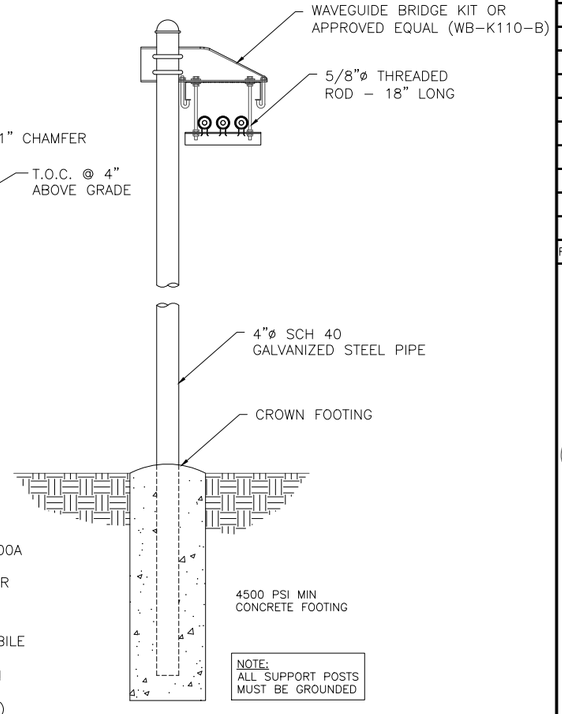


4 A-3 CONCRETE SLAB DETAIL

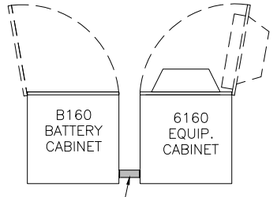


NOTE:
HORIZONTAL & VERTICAL UNISTRUT TO BE SPACED SO EQUIPMENT MOUNTING HOLES ALIGN.

7 A-3 CONCRETE SLAB DETAIL



5 A-3 ICE BRIDGE DETAIL



(1) PROPOSED 2"øX 8" GALV. NIPPLE, (4) 2"ø LOCK RINGS. & (2) 2"ø PLASTIC BUSHING (NOT SHOWN)

6 A-3 PROPOSED EQUIPMENT CONDUIT DETAIL

T - Mobile NORTHEAST LLC

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STATE OF CONNECTICUT · DEREK J. CREASER · No. 28551 · LICENSED PROFESSIONAL ENGINEER

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SITE ID: CT11926A

SITE ADDRESS: 630 JAMES FARM RD
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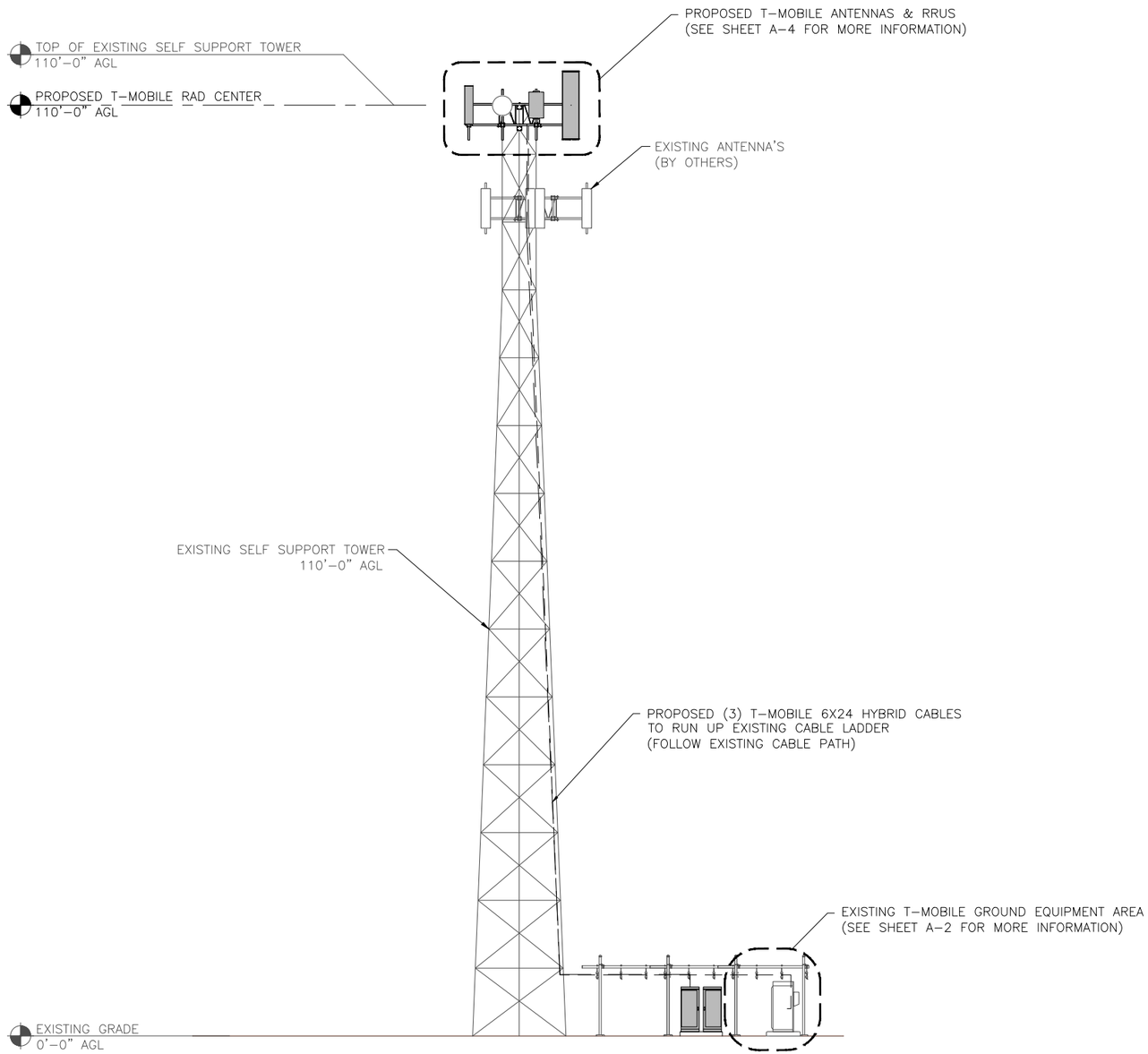
FAIRFIELD COUNTY

SHEET TITLE: **EQUIPMENT DETAILS**

DRAWING: **A-3**



1 A-4 SOUTH ELEVATION

GRAPHIC SCALE

16 8 0 1 2 4 8 16

1/8 INCH = 1 FOOT (22X34)
1/16 INCH = 1 FOOT (11X17)

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SHEET TITLE:
SOUTH ELEVATION

DRAWING:
A-4

TRUE NORTH

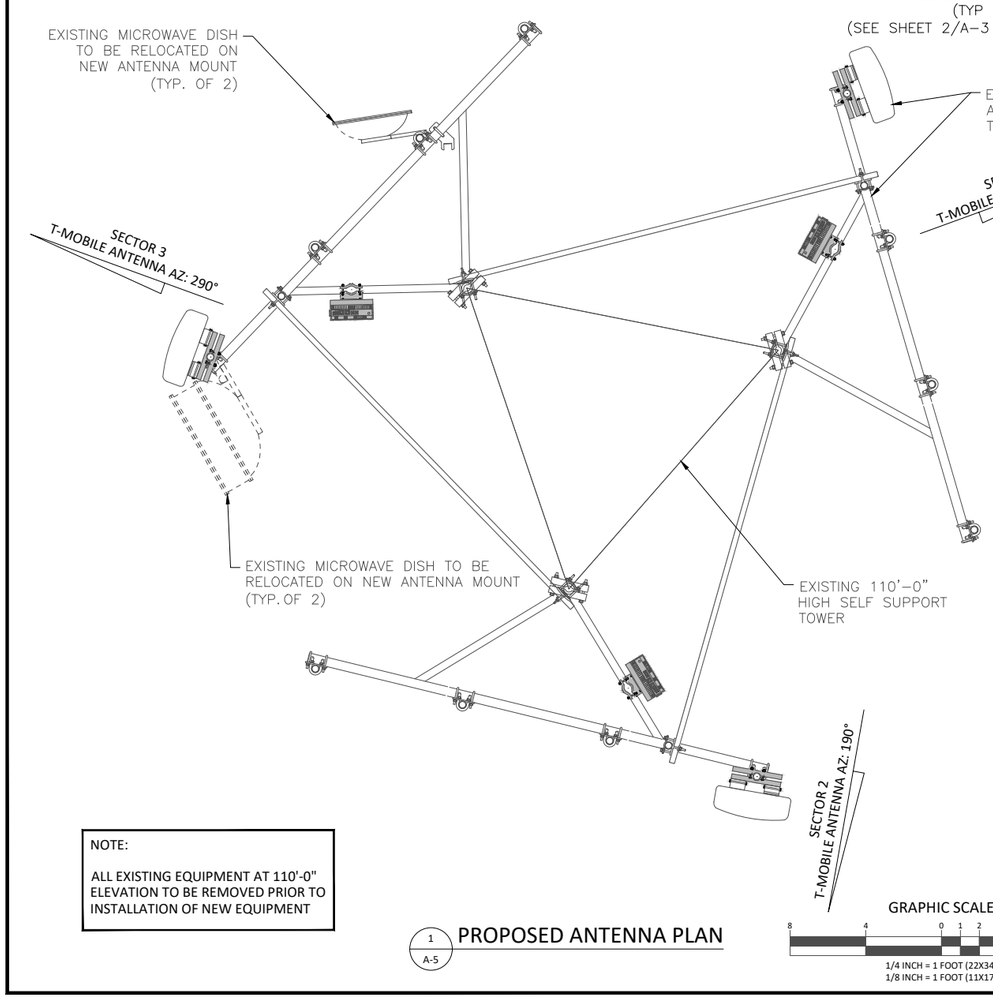
N

NOTES

1. CONTRACTOR SHALL MAKE A UTILITY 811 DIG SAFE CALL TO LOCATE ALL UTILITIES PRIOR TO EXCAVATING.
2. REFERENCE STRUCTURAL ANALYSIS BY TARPON, FOR FURTHER INFORMATION REGARDING THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THIS EQUIPMENT UPGRADE.
3. REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA MODELS AND SETTINGS.

ANTENNA & CABLE SCHEDULE:

	LOCATION	AZIMUTH	RAD CENTER	STATUS	TECHNOLOGY	ANTENNA MODEL NO.	MECH DOWNTILT	ELEC DOWNTILT	CABLES	DIPLEXERS	TMA/RRU	CABLE SIZE	CABLE LENGTH
ALPHA	A-1	0°	110'-0"	PROPOSED	L700, L600, N600	APXVAALL24_43-U-NA20	0°	N/A	(2) COAX JUMPER (X2)	N/A	4480 B71+B85	6x24 HYBRID	170'
	A-2	0°	110'-0"	PROPOSED	L2500, N2500	AIR6419	0°	N/A	N/A	N/A	N/A	SHARED	N/A
	–	0°	110'-0"	EXISTING	–	MICROWAVE DISH	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	A-3	0°	110'-0"	PROPOSED	L2100, L1900, G1900	VV-65A-R1	0°	N/A	(2) COAX JUMPER (X2)	N/A	4460 B25+B66	SHARED	N/A
BETA	B-1	120°	110'-0"	PROPOSED	L700, L600, N600	APXVAALL24_43-U-NA20	0°	N/A	(2) COAX JUMPER (X2)	N/A	4480 B71+B85	6x24 HYBRID	170'
	B-2	120°	110'-0"	PROPOSED	L2500, N2500	AIR6419	0°	N/A	N/A	N/A	N/A	SHARED	N/A
	B-3	120°	110'-0"	PROPOSED	L2100, L1900, G1900	VV-65A-R1	0°	N/A	(2) COAX JUMPER (X2)	N/A	4460 B25+B66	SHARED	N/A
GAMMA	G-1	240°	110'-0"	PROPOSED	L700, L600, N600	APXVAALL24_43-U-NA20	0°	N/A	(2) COAX JUMPER (X2)	N/A	4480 B71+B85	6x24 HYBRID	170'
	G-2	240°	110'-0"	PROPOSED	L2500, N2500	AIR6419	0°	N/A	N/A	N/A	N/A	SHARED	N/A
	–	240°	110'-0"	EXISTING	–	MICROWAVE DISH	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	G-3	240°	110'-0"	PROPOSED	L2100, L1900, G1900	VV-65A-R1	0°	N/A	(2) COAX JUMPER (X2)	N/A	4460 B25+B66	SHARED	N/A
NOTE: DARK TEXT IN TABLE ABOVE DENOTES PROPOSED EQUIPMENT											(3) TOTAL 6x24 HYBRID CABLES		510'



NOTE:

ALL EXISTING EQUIPMENT AT 110'-0" ELEVATION TO BE REMOVED PRIOR TO INSTALLATION OF NEW EQUIPMENT

1 A-5 PROPOSED ANTENNA PLAN

GRAPHIC SCALE

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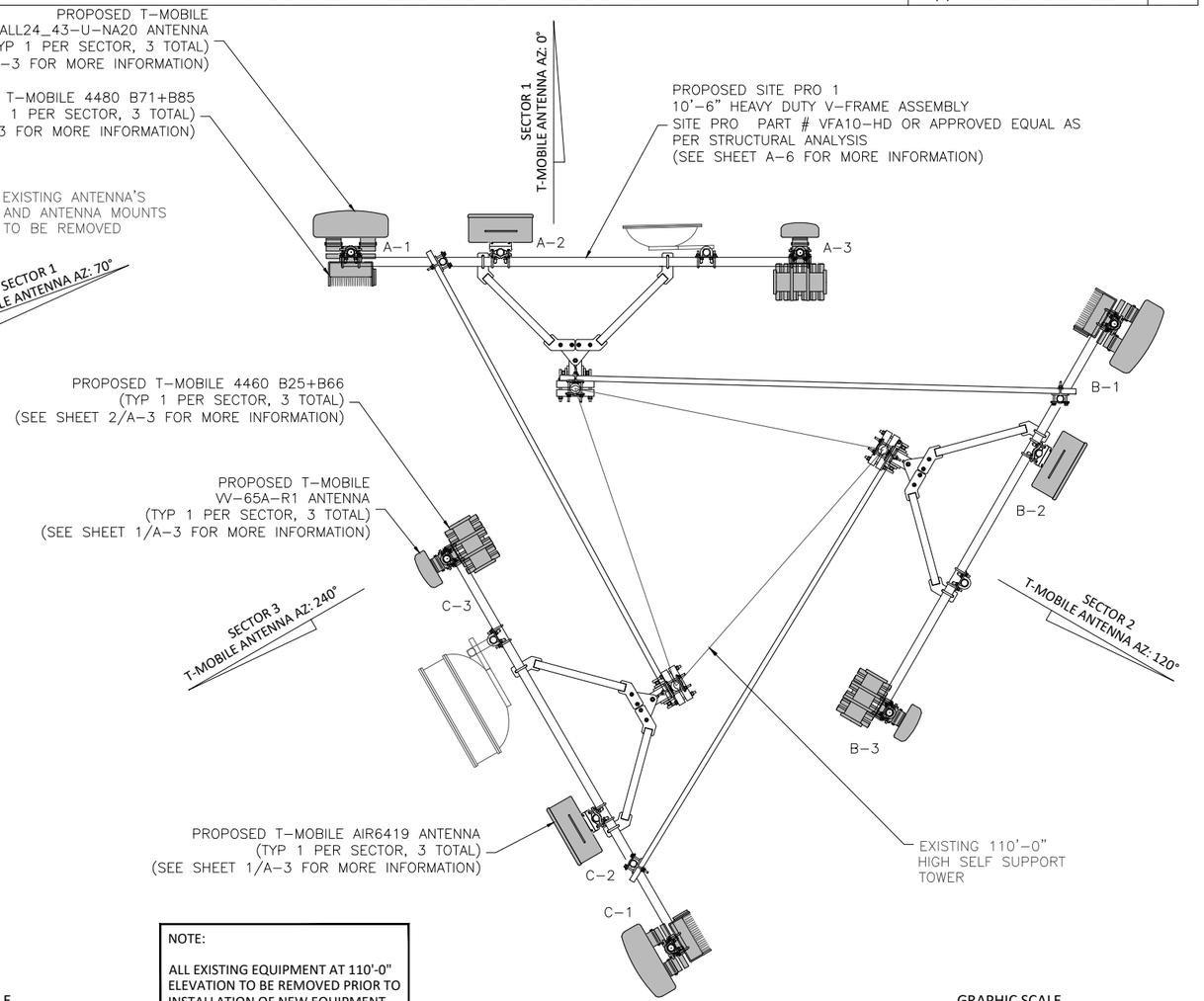
1/8 INCH = 1 FOOT (11X17)



NOTE:

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2 A-5 PROPOSED ANTENNA PLAN

GRAPHIC SCALE

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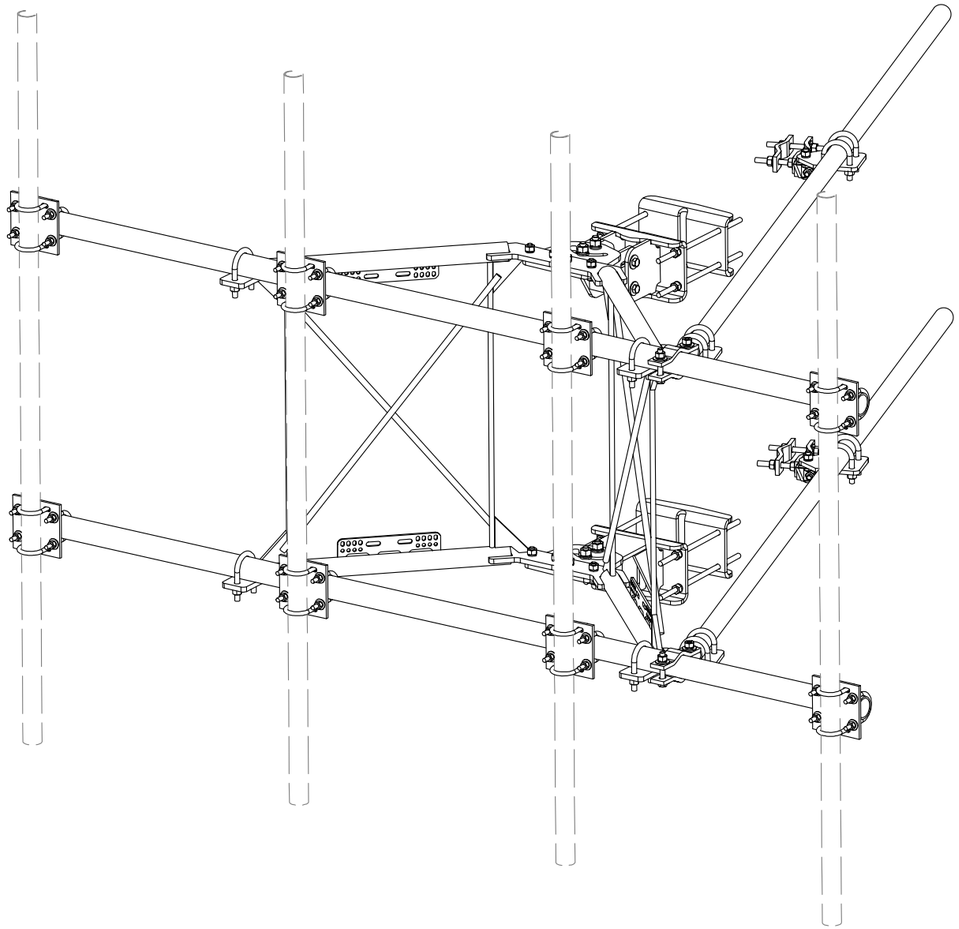
FAIRFIELD COUNTY

SHEET TITLE: ANTENNA PLAN & SCHEDULE

DRAWING: A-5



PARTS LIST

ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	2	X-VFAW	SUPPORT ARM		71.41	142.81
2	1	X-HDCAMTBW	CLAMP WELDMENT FOR BCAM-HD		33.86	33.86
3	1	X-MHTPHD	MULTI-HOLE TAPER PLATE WELDMENT		36.24	36.24
4	2	X-VFAPL4	VFA-HD PIVOT PLATE	12 in	15.88	31.77
5	2	X-LCBP4	BENT BACKING PLATE	13 in	20.04	40.09
6	1	X-HDCAMSS	ANGLE ADJUSTMENT WELDMENT FOR BCAM-HD		16.39	16.39
7	4	X-SPTB	SLIDING PIPE TIE BACK PLATE	5 1/2 in	5.87	23.49
8	1	X-HDCAMSP	POSITIONING PLATE WELDMENT FOR BCAM-HD		2.58	2.58
9	4	X-TBCA	TIE BACK CLIP ANGLE		2.01	8.02
10	8	SCX2	CROSSOVER PLATE	7 in	4.80	38.37
11	4	MCP	CLAMP HALF 1/2" THICK, 11-5/8" LONG	12 1/16 in	3.59	14.37
12	8	DCP	1/2" THICK, 5-3/4" CNTER TO CENTER CLAMP HALF	8 1/8 in	2.36	18.90
13	2	P2126	2-3/8" X 126" (2" SCH. 40) GALVANIZED PIPE	126 in	40.75	81.50
14	2	P30126	2-7/8" O.D. X 126" SCH. 40 PIPE	126 in	64.63	129.25
15	4	A34212	3/4" x 2-1/2" UNC HEX BOLT (A325)	2 1/2 in	0.48	1.92
16	4	G34FW	3/4" HDG USS FLATWASHER		0.06	0.24
17	4	G34LW	3/4" HDG LOCKWASHER		0.04	0.17
18	4	G34NUT	3/4" HDG HEAVY 2H HEX NUT		0.21	0.85
19	8	G58R-18	5/8" x 18" THREADED ROD (HDG.)		1.57	12.54
20	4	G58R-12	5/8" x 12" THREADED ROD (HDG.)		1.05	4.18
21	4	G58R-8	5/8" x 8" THREADED ROD (HDG.)		0.70	2.79
22	4	X-UB5300	5/8" X 3" X 5-1/4" X 2-1/2" U-BOLT (HDG.)		1.15	4.60
23	8	X-UB5258	5/8" X 2-5/8" X 4-1/2" X 2" U-BOLT (HDG.)		1.00	8.00
24	2	G5807	5/8" x 7" HDG HEX BOLT GR5 FULL THREAD	7 in	0.70	1.41
25	1	G5806	5/8" x 6" HDG HEX BOLT GR5 FULL THREAD	6 in	0.62	0.62
26	8	G5804	5/8" x 4" HDG HEX BOLT GR5		0.44	3.55
27	4	G5802	5/8" x 2" HDG HEX BOLT GR5		0.27	1.08
28	8	A582114	5/8" x 2-1/4" HDG A325 HEX BOLT	2 1/4 in	0.31	2.50
29	25	G58FW	5/8" HDG USS FLATWASHER	1/8 in	0.07	1.76
30	66	G58LW	5/8" HDG LOCKWASHER		0.03	1.72
31	71	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	9.22
32	32	X-UB1300	1/2" X 3" X 5" X 2" GALV U-BOLT		0.74	23.64
33	16	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.60	9.56
34	64	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	2.18
35	64	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	0.89
36	64	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	4.58
					TOTAL WT. #	713.44

REV	DESCRIPTION OF REVISIONS	CPD BY	DATE
D	UPDATED BCAM VERSION 1 TO BCAM VERSION 2		CEK 6/29/2018
C	UPDATED PIN LEG CONNECTION T0 BCAM CONNECTION		CEK 12/14/2017
B	CHANGED TIE-BACK BACK CONNECTION		CEK 7/28/2017
A	CHANGED TIE-BACK FRONT CONNECTION		CEK 2/2/2017

REVISION HISTORY

TOLERANCE NOTES

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

DESCRIPTION
10' 6" HEAVY DUTY
V-FRAME ASSEMBLY
WITH TWO STIFF ARMS

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.	PAGE
	CEK 1/25/2017		VFA10-HD	1 OF 5
CLASS SUB	DRAWING USAGE	CHECKED BY	DWG. NO.	
81 02	CUSTOMER	BMC 6/29/2018	VFA10-HD	

SITE PRO 1 — A valmont COMPANY

Engineering Support Team: 1-888-753-7446

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

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REVISIONS

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DESIGNED BY: MP
APPROVED BY: WRD

STATE OF CONNECTICUT
DEREK J. CREASER
No. 28551
LICENSED PROFESSIONAL ENGINEER

DATE: 05/31/2022

SITE NAME: CT52XC083

SITE ID: CT11926A

SITE ADDRESS:
630 JAMES FARM RD
STRATFORD, CT 06614
FAIRFIELD COUNTY

SHEET TITLE: **10'-6" HEAVY DUTY V-FRAME ASSEMBLY**

DRAWING: **A-6**

STRUCTURAL NOTES:

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-H STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
4. STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
6. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
10. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND DI.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
11. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
12. UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
13. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-270 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
15. LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
16. WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
17. ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
18. NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
19. SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

GENERAL: WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

SPECIAL INSPECTION CHECKLIST	
BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	ENGINEER OF RECORD APPROVED SHOP DRAWINGS [1]
N/A	MATERIAL SPECIFICATIONS REPORT [2]
N/A	FABRICATOR NDE INSPECTION
N/A	PACKING SLIPS [3]
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS [4]
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION [5]
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
ADDITIONAL TESTING AND INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	**MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS [6]**
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTES:

1. REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
2. PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
3. PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
4. HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
5. ADHESIVE FOR REBAR AND ANCHORS SHALL HAVE BEEN TESTED IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR CRACKED CONCRETE AND SEISMIC APPLICATIONS. DESIGN ADHESIVE BOND STRENGTH HAS BEEN BASED ON ACI 355.4 TEMPERATURE CATEGORY B WITH INSTALLATIONS INTO DRY HOLES DRILLED USING A CARBIDE BIT INTO CRACKED CONCRETE THAT HAS CURED FOR AT LEAST 21 DAYS. ADHESIVE ANCHORS REQUIRING CERTIFIED INSTALLATIONS SHALL BE INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER PER ACI 318-11 D.9.2.2. INSTALLATIONS REQUIRING CERTIFIED INSTALLERS SHALL BE INSPECTED PER ACI 318-11 D.8.2.4.
6. AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

NOTES:

1. ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
2. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
3. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
4. VERIFICATION OF EXISTING ROOF CONSTRUCTION IS REQUIRED PRIOR TO THE INSTALLATION OF THE ROOF PLATFORM. ENGINEER OF RECORD IS TO APPROVE EXISTING CONDITIONS IN ORDER TO MOVE FORWARD.
5. CENTERLINE OF PROPOSED STEEL PLATFORM SUPPORT COLUMNS TO BE CENTRALLY LOCATED OVER THE EXISTING BUILDING COLUMNS.
6. EXISTING BRICK MASONRY COLUMNS/BEARING TO BE REPAIRED/REPLACED AT ALL PROPOSED PLATFORM SUPPORT POINTS. ENGINEER OF RECORD TO REVIEW AND APPROVE.

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REVISIONS

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DESIGNED BY:	APPROVED BY:
MP	WRD

STATE OF CONNECTICUT
DEREK J. CREASER
No. 28551
LICENSED PROFESSIONAL ENGINEER

DATE: 05/31/2022

SITE NAME: CT52XC083

SITE ID: CT11926A

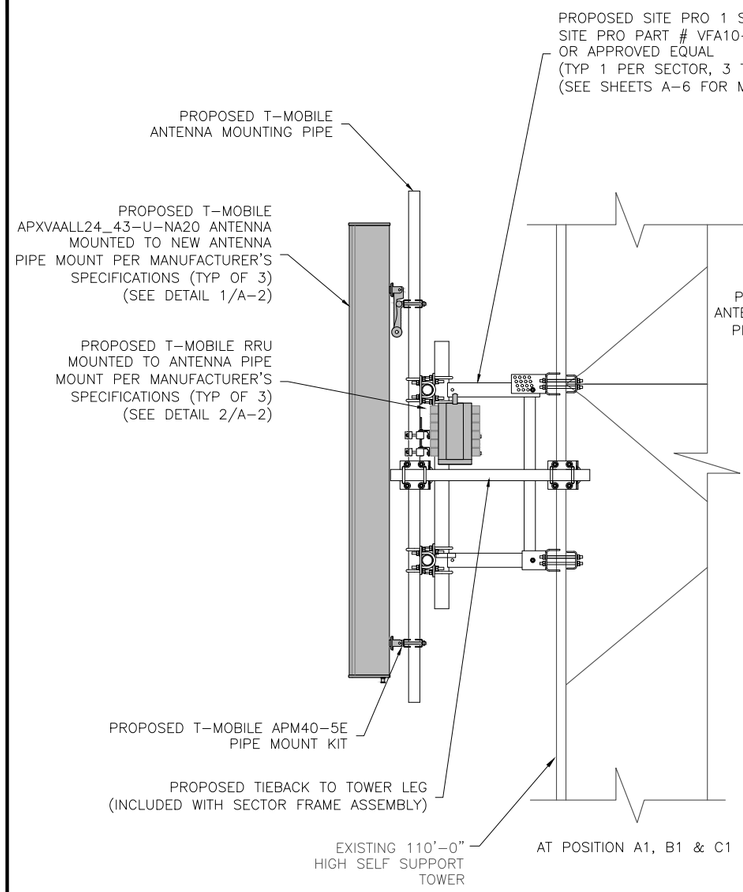
SITE ADDRESS:
630 JAMES FARM RD
STRATFORD, CT 06614
FAIRFIELD COUNTY

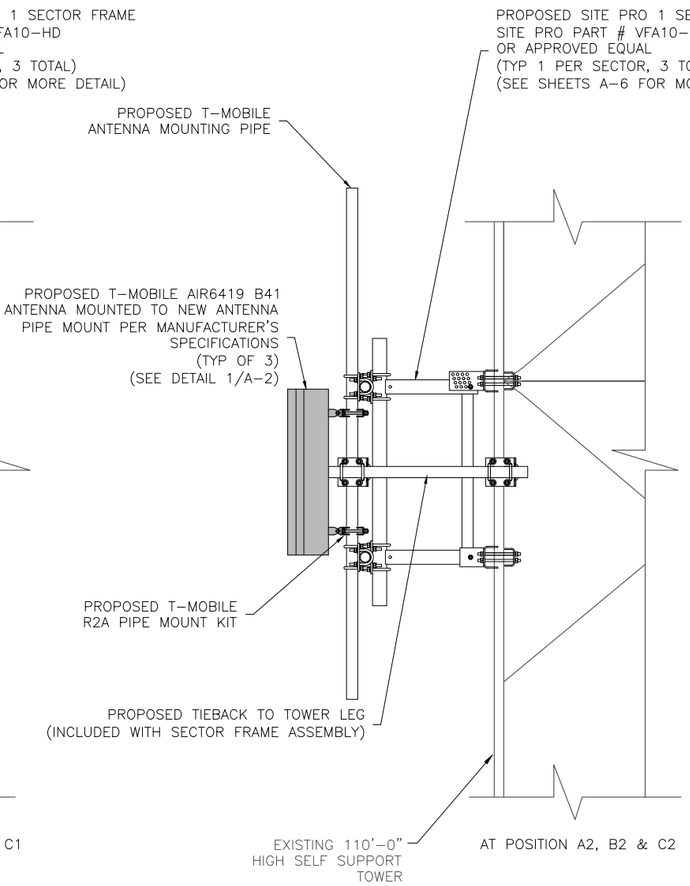
SHEET TITLE: STRUCTURAL NOTES & SPECIAL INSPECTIONS

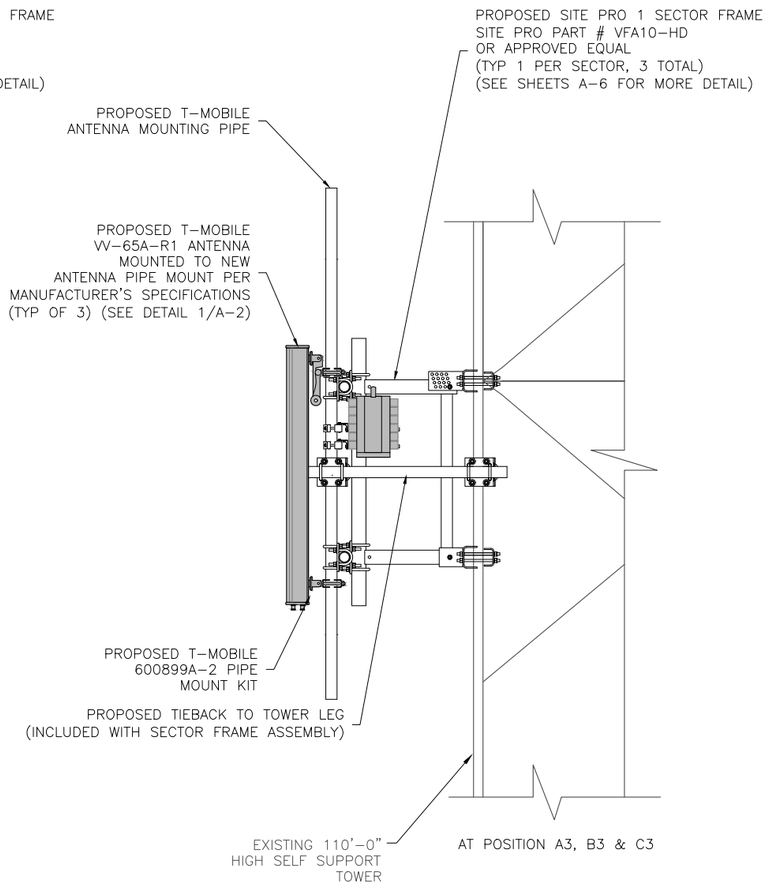
DRAWING: SN-1

NOTES FOR ANTENNA MOUNTS:

1. VV-65A-R1: 600899A-2 DOWN TILT PIPE MOUNT KIT
2. AIR6419: ERICSSON R2A PIPE MOUNT KIT
3. APXVAALL24-43-U-NA20: APM40-5E PIPE MOUNT KIT







1 S-1 TYPICAL ANTENNA & RRU MOUNTING DETAIL

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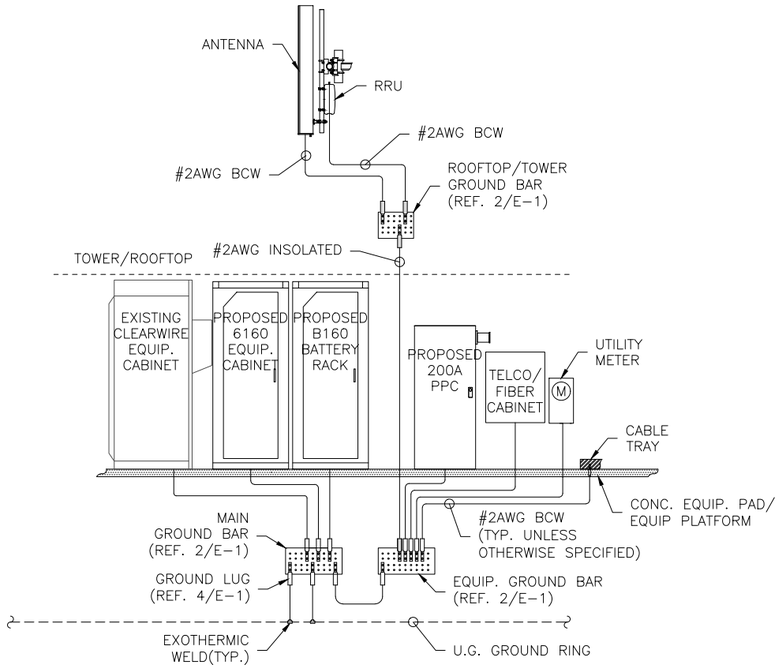
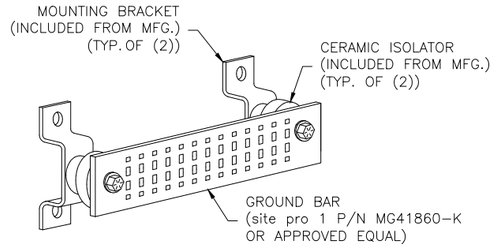
SHEET TITLE: ANTENNA & RRU MOUNTING DETAILS

DRAWING: S-1



GROUNDING RISER NOTE:
UNLESS OTHERWISE SPECIFIED ALL GROUNDING CONDUCTORS ARE TO BE #2AWG BCW

1 G-1 GROUNDING RISER DIAGRAM



2 G-1 GROUND BAR DETAIL

EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

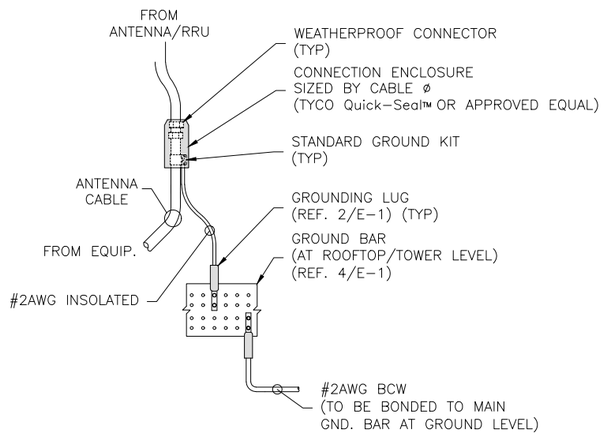
SECTION "P" – SURGE PRODUCERS

CABLE ENTRY PORTS (HATCH PLATES) (#2)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
+24V POWER SUPPLY RETURN BAR (#2)
-48V POWER SUPPLY RETURN BAR (#2)
RECTIFIER FRAMES.

SECTION "A" – SURGE ABSORBERS

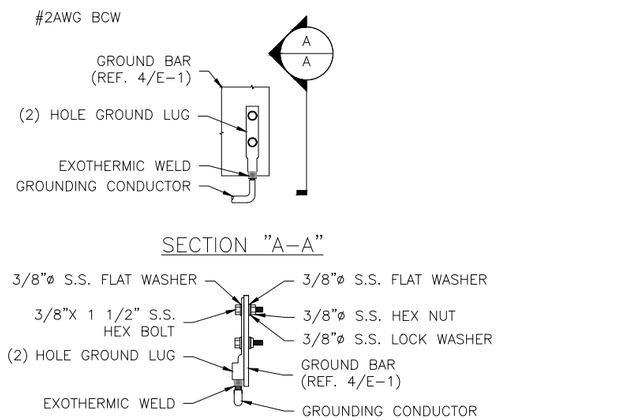
INTERIOR GROUND RING (#2)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
BUILDING STEEL (IF AVAILABLE) (#2)

3 G-1 GROUND WIRE SCHEDULE



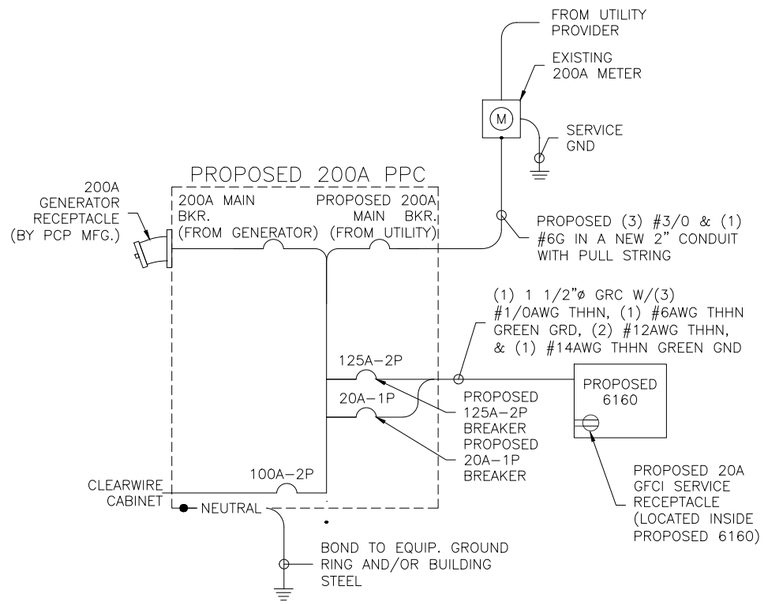
NOTES:
1. DO NOT INSTALL CABLE GROUND KIT AT BEND IN CABLE.
2. GROUND CABLES DIRECTLY TO CIGBE
3. JUMPER REQUIRED ONLY WHEN CABLE IS 1 1/4" OR LARGER

4 G-1 ANTENNA/RRU GROUNDING DETAIL



GROUNDING LUG NOTES:
1. DO NOT DOUBLE UP OR STACK LUGS.
2. OXIDE INHIBITING COMPOUND TO BE APPLIED TO ALL LUGS.
3. ALL LUGS ARE TO BE EXOTHERMIC WELDED TO GROUNDING CONDUCTORS.
4. FOR INSOLATED GROUNDING CONDUCTORS, EXPOSED BARE COPPER TO BE KEPT TO ABSOLUTE MINIMUM.
5. NO INSULATION IS ALLOWED WITHIN THE BARREL OF THE COMPRESSION TERMINAL.

5 G-1 GROUND LUG DETAIL



6 G-1 ONE LINE DIAGRAM

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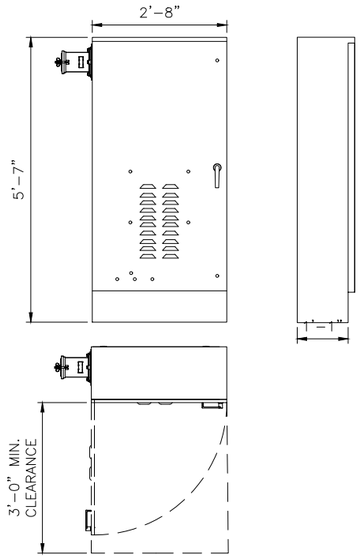
SHEET TITLE: **GROUNDING & ONE LINE DIAGRAM**

DRAWING: **G-1**



PPC CABINET SPECIFICATIONS:

MANUFACTURER: TRANSTECTOR
MODEL: POWER TRANSFER SWITCH CABINET 1101-791-200

PHYSICAL:

CABINET TYPE:	UL TYPE 3R
CABINET MATERIAL:	5052-H32 ALUMINUM
WEIGHT:	APPROX. 150 LBS

POWER CENTER:

UL:	LISTED TO UL 891
SERVICE:	120/240V, 1 PHASE, 200 AMP
GENERATOR & UTILITY BREAKERS	SQUARE D, Q FRAME, 200 AMP
GENERATOR RECEPTACLE:	200A APPLETON AR20044RS OR 200A APPLETON AR20033RS
LOAD CENTER:	200A, 24 POSITION SQUARE D, QO

QO STYLE BRANCH BREAKERS:
- (1) 20A DUAL POLE (TVSS)
- (1) 15A SINGLE POLE (GFCI RECEPTACLE)
- (1) 10A VENTILATION FAN (INCLUDED IF OPTION SELECTED)

SUPPRESSIONL 120/240V TRANSTECTOR MCP120TA-10M SUPPRESSION PRIMARY

TELCO CENTER:

GROUND:	10 POSITION MASTER COPPER GROUND BAR
RECEPTACLE:	15 A GFCI, DUPLEX

1 / E-1 **PPC DETAIL**

T - Mobile
NORTHEAST LLC

T-MOBILE NORTHEAST, LLC.
35 GRIFFIN RD S
BLOOMFIELD, CT 06002
PHONE: (860) 629-1700

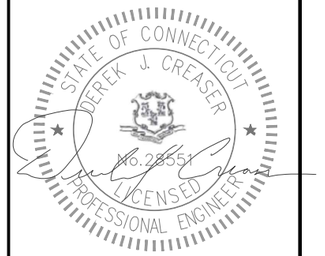
CENTERLINE
ENGINEERING SERVICES, PA

750 W CENTER ST, SUITE 301
WEST BRIDGEWATER, MA 02379
PHONE: 781.713.4725

REVISIONS

REV	DATE	DESCRIPTION	BY
0	05/31/22	ISSUED FOR CONSTRUCTION	CM
C	04/28/22	REVISED PER COMMENTS	RL
B	01/21/22	REVISED PER COMMENTS	MP
A	01/11/22	ISSUED FOR REVIEW	MP

DESIGNED BY:	APPROVED BY:
MP	WRD



DATE: 05/31/2022

SITE NAME:
CT52XC083

SITE ID:
CT11926A

SITE ADDRESS:
630 JAMES FARM RD
STRATFORD, CT 06614
FAIRFIELD COUNTY

SHEET TITLE:
ELECTRICAL DETAILS

DRAWING:
E-1

Exhibit D

Structural Analysis Report

Date: **June 03, 2022**

Todd Bowman
Tarpon Towers II, LLC
8916 77th Terrace East, Suite 103
Lakewood Ranch, FL 34202

Engineered Tower Solutions, PLLC
3227 Wellington Court
Raleigh, NC 27615
(919) 782-2710

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
Tarpon Towers Designation:	**Tarpon Towers Site Number:**	CT1232
	Tarpon Towers Site Name:	Stratford North
Engineering Firm Designation:	**ETS, PLLC Job Number:**	22107457.STR.6690
Site Data:	**630 James Farm Road, Stratford, Fairfield County, CT 06614** **Latitude *41° 14' 43.08"*, Longitude *-73° 7' 12.36"*** **110.5 Foot - Self Support Tower**	

Dear Todd Bowman,

Engineered Tower Solutions, PLLC is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

Existing + Proposed Equipment Configuration	**Tower:**	**94.9%**	**Sufficient Capacity**
	Foundation:	**75.3%**	**Sufficient Capacity**

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2018 Connecticut State Building Code (2015 IBC). Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by:

Helen Tesfaye, EI
Structural Engineer II

Respectfully submitted by:

Frederic G. Bost, PE
Chief Technical Officer

6/3/22

STATE OF CONNECTICUT
FREDERIC BOST
PEN.0029529
LICENSED PROFESSIONAL ENGINEER

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 110.5 ft Self Support tower mapped by ETS, PLLC in September of 2020. The original design standard and windspeed are unknown.

The tower has been modified multiple times to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
110.0 (T-Mobile)	110.0	3	RFS	APXVAALL24	3 2	1-5/8 Hybrid CAT5
		3	Ericsson	AIR6419		
		3	Commscope	VV-65A-R1		
		3	Ericsson	4460 B25 + B66		
		3	Ericsson	4480 B71+B85		
		1	Generic	3Ø Dish w/ Radome		
		1	Generic	2Ø Dish w/ Radome		
		3	Site Pro 1	VFA10-HD		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
98.0 (Verizon)	98.0	3	Commscope	LRX-8512DS-A1M	13	1-5/8
		3	Samsung	L-Sub6		
		3	Commscope	BSAMNT-SBS-2-2		
		3	Commscope	CBC78T-DS-43-2X		
		6	Commscope	JAHH-65B-R3B		
		1	RFS	OVP-12		
		3	Samsung	B2/B66A RRH-BR049		
		3	Samsung	B5/B13 RRH-BR04C		
		3	Samsung	CBRS Integrated XXDWMM-12.5-65-8T/RRH-RT4401-48A		
		3	Site Pro 1	VFA12-HD		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Tower Mapping Report	ETS, PLLC (Job. No. 203789.IE.02)	09/25/2020	On File
TIA Inspection Report	ETS, PLLC (Job. No. 203789.IE.01)	09/23/2020	On File
Structural Opinion Letter	ETS, PLLC (Job. No. 21090219.STR.5009)	03/04/2021	On File
Previous Structural Analysis Report	Paul J. Ford and Company (Job No. A42920-0001.004.8700)	01/11/2021	Tarpon Towers

3.1) Analysis Method

tnxTower (version 8.1.1.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built and have been maintained in accordance with the manufacturer's specifications.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Table 1 and 2 and the referenced drawings.
3) Member steel grades have been assumed as follows: Tower legs (A572-50), Bracing (A36), Bolts (A325N) and Anchor Rod (F1554-105).

This analysis may be affected if any assumptions are not valid or have been made in error. Engineered Tower Solutions, PLLC should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	110.46 - 100.96	Leg	P3x.300 (3.50 OD)	1	-16.43	135.71	12.1	Pass
T2	100.96 - 80.96	Leg	P3x.300 (3.50 OD)	34	-44.88	119.19	37.7	Pass
T3	80.96 - 60.96	Leg	P3x.300 (3.50 OD)	70	-65.88	119.06	55.3	Pass
T4	60.96 - 40.96	Leg	P3x.300 (3.50 OD)	106	-82.83	128.54	64.4	Pass
T5	40.96 - 20.96	Leg	P3.5x.318 (4.00 OD)	148	-98.55	125.72	78.4	Pass
T6	20.96 - 0.96	Leg	P3.5x.318 + PL 3/4 (Stratford North)	172	-114.61	232.11	49.4	Pass
T1	110.46 - 100.96	Diagonal	L1 1/2x1 1/2x3/16	26	1.94	13.38	14.5 41.4 (b)	Pass
T2	100.96 - 80.96	Diagonal	L1 1/2x1 1/2x1/8	59	-2.99	8.63	34.6 94.9 (b)	Pass
T3	80.96 - 60.96	Diagonal	L1 1/2x1 1/2x1/8	77	-2.16	4.72	45.8 68.7 (b)	Pass
T4	60.96 - 40.96	Diagonal	L2x2x1/8	112	-2.83	6.60	42.9 64.0 (b)	Pass
T5	40.96 - 20.96	Diagonal	L2x2x1/8	154	-3.21	8.02	40.0 73.8 (b)	Pass
T6	20.96 - 0.96	Diagonal	L2 1/2x2 1/2x3/16	178	-3.33	9.10	36.6 50.3 (b)	Pass
T4	60.96 - 40.96	Secondary Horizontal	L2 1/2x2 1/2x3/16	120	-1.44	17.49	8.2 11.0 (b)	Pass
T1	110.46 - 100.96	Top Girt	L1 1/2x1 1/2x3/16	6	0.38	13.38	2.8 8.1 (b)	Pass
T2	100.96 - 80.96	Top Girt	L1 1/2x1 1/2x1/8	39	-0.78	8.83	8.8 24.9 (b)	Pass
T3	80.96 - 60.96	Top Girt	L1 1/2x1 1/2x1/8	75	-1.14	3.77	30.3 36.5 (b)	Pass
T4	60.96 - 40.96	Top Girt	L2x2x1/8	111	-1.44	4.01	35.8	Pass
T5	40.96 - 20.96	Top Girt	L2 1/2x2 1/2x3/16	153	-1.71	6.53	26.2 27.6 (b)	Pass
T6	20.96 - 0.96	Top Girt	L3 1/2x3 1/2x1/4	177	-1.99	15.66	12.7 32.1 (b)	Pass
T1	110.46 - 100.96	Bottom Girt	L1 1/2x1 1/2x3/16	9	-0.28	12.95	2.2 6.1 (b)	Pass
							Summary	
						Leg (T5)	78.4	Pass
						Diagonal (T2)	94.9	Pass
						Secondary Horizontal (T4)	11.0	Pass
						Top Girt (T3)	36.5	Pass
						Bottom Girt (T1)	6.1	Pass
						Bolt Checks	94.9	Pass
						RATING =	**94.9**	**Pass**

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	58.6	Pass
1	Base Foundation Soil Interaction	0	75.3	Pass

Structure Rating (max from all components) =	94.9%

Notes:
1) See additional documentation in “Appendix C - Additional Calculations” for calculations supporting the % capacity consumed.

4.1) Recommendations

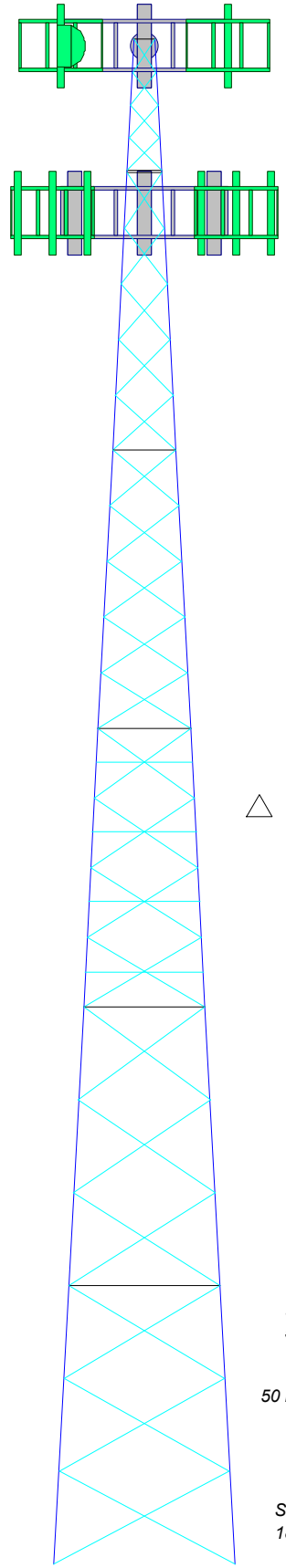
The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section		T1	T2	T3	T4	T5	T6
Legs				P3x.300 (3.50 OD)		P3.5x.318 (4.00 OD)	P3.5x.318 + PL 3/4 (Stratford North)
Leg Grade				A572-50			A36
Diagonals		L1 1/2x1 1/2x3/16	L1 1/2x1 1/2x1/8		L2x2x1/8		L2 1/2x2 1/2x3/16
Diagonal Grade					A36		
Top Girts		L1 1/2x1 1/2x3/16	L1 1/2x1 1/2x1/8		L2x2x1/8	L2 1/2x2 1/2x3/16	L3 1/2x3 1/2x1/4
Bottom Girts		L1 1/2x1 1/2x3/16			N.A.		
Sec. Horizontals		N.A.			L2 1/2x2 1/2x3/16		N.A.
Face Width (ft)	12.9167	1.5	2.49049	4.57572	6.66096	8.7462	10.8314
# Panels @ (ft)	7.5	4 @ 2.35417	5 @ 3.98333	5 @ 4	4 @ 5		6 @ 6.66667
Weight (K)		0.4	0.8	0.9	1.3	1.2	2.8

110.5 ft
101.0 ft
81.0 ft
61.0 ft
41.0 ft
21.0 ft
1.0 ft



MATERIAL STRENGTH

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

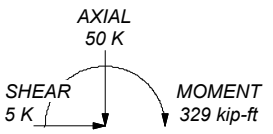
TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-H Standard.
2. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 94.9%

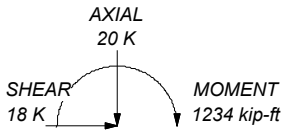
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 117 K
SHEAR: 11 K

UPLIFT: -102 K
SHEAR: 10 K



TORQUE 3 kip-ft
50 mph WIND - 1.5000 in ICE



TORQUE 10 kip-ft
REACTIONS - 125 mph WIND

Engineered Tower Solutions, PLLC
3227 Wellington Court
Raleigh, NC 27615
Phone: (919) 782-2710
FAX: (919) 435-0631
ETS,PLLC

Job:	***Stratford North_CT1232***		
Project:	***ETS, PLLC Job # 22107457.STR.6690***		
Client: Tarpon Towers	Drawn by: Helen.Tesfaye	App'd:	
Code: TIA-222-H	Date: 06/03/22	Scale: NTS	
Path:		Dwg No. E-1	

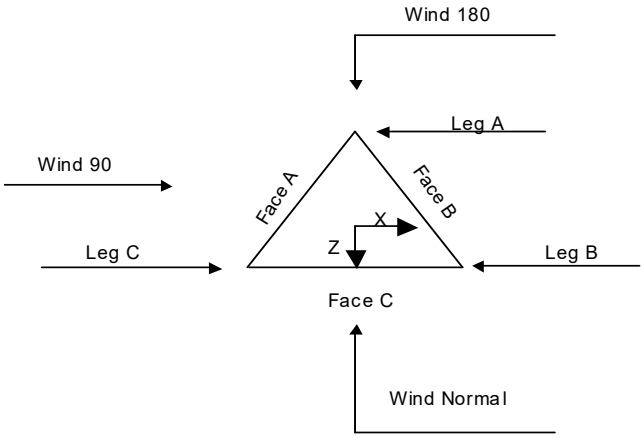
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 110.46 ft above the ground line.
The base of the tower is set at an elevation of 0.96 ft above the ground line.
The face width of the tower is 1.50 ft at the top and 12.92 ft at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower base elevation above sea level: 257.70 ft.
Basic wind speed of 125 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.5000 in.
Ice thickness is considered to increase with height.
Ice density of 56.00 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Maximum demand-capacity ratio is: 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned	√	Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area	√	SR Leg Bolts Resist Compression
√	Use Code Stress Ratios	√	Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-H Bracing Resist. Exemption
√	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-H Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
√	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component		Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	110.46-100.96			1.50	1	9.50
T2	100.96-80.96			2.49	1	20.00
T3	80.96-60.96			4.58	1	20.00
T4	60.96-40.96			6.66	1	20.00
T5	40.96-20.96			8.75	1	20.00
T6	20.96-0.96			10.83	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	110.46-100.96	2.35	X Brace	No	No	0.0000	1.0000
T2	100.96-80.96	3.98	X Brace	No	No	1.0000	0.0000
T3	80.96-60.96	4.00	X Brace	No	No	0.0000	0.0000
T4	60.96-40.96	5.00	X Brace	No	Yes	0.0000	0.0000
T5	40.96-20.96	6.67	X Brace	No	No	0.0000	0.0000
T6	20.96-0.96	6.67	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 110.46-100.96	Pipe	P3x.300 (3.50 OD)	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T2 100.96-80.96	Pipe	P3x.300 (3.50 OD)	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)
T3 80.96-60.96	Pipe	P3x.300 (3.50 OD)	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)
T4 60.96-40.96	Pipe	P3x.300 (3.50 OD)	A572-50 (50 ksi)	Equal Angle	L2x2x1/8	A36 (36 ksi)
T5 40.96-20.96	Pipe	P3.5x.318 (4.00 OD)	A572-50 (50 ksi)	Equal Angle	L2x2x1/8	A36 (36 ksi)
T6 20.96-0.96	Arbitrary Shape	P3.5x.318 + PL 3/4 (Stratford North)	A36 (36 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 110.46-100.96	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T2 100.96-80.96	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T3 80.96-60.96	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T4 60.96-40.96	Equal Angle	L2x2x1/8	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T5 40.96-20.96	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T6 20.96-0.96	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Equal Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T4 60.96-40.96	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 110.46-100.96	0.00	0.1875	A36 (36 ksi)	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
T2 100.96-80.96	0.00	0.1875	A36 (36 ksi)	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
T3 80.96-60.96	0.00	0.1875	A36 (36 ksi)	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
T4 60.96-40.96	0.00	0.1875	A36 (36 ksi)	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
T5 40.96-20.96	0.00	0.1875	A36 (36 ksi)	1.326	1	1	Mid-Pt	Mid-Pt	Mid-Pt
T6 20.96-0.96	0.00	0.1875	A36 (36 ksi)	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	Yes	No	1	1	1	1	1	1	1	1
110.46-100.96				1	1	1	1	1	1	1
T2	Yes	No	1	1	1	1	1	1	1	1
100.96-80.96				1	1	1	1	1	1	1
T3	Yes	No	1	1	1	1	1	1	1	1
80.96-60.96				1	1	1	1	1	1	1
T4	Yes	No	1	1	1	1	1	1	0.5	1
60.96-40.96				1	1	1	1	1	1	1
T5	Yes	No	1	0.7	1	1	1	1	1	1
40.96-20.96				0.7	1	1	1	1	1	1
T6 20.96-0.96	Yes	No	1.0005	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 110.46-100.96	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1	0.0000	0.75
T2 100.96-80.96	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1	0.0000	0.75
T3 80.96-60.96	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1	0.0000	0.75
T4 60.96-40.96	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1	0.0000	0.75

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
T5 40.96-20.96	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1	0.0000	0.75
T6 20.96-0.96	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1	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 110.46-100.96	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 100.96-80.96	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 80.96-60.96	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 60.96-40.96	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 40.96-20.96	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 20.96-0.96	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 110.46-100.96	Flange	0.8750 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.5000 A325N	0	0.5000 A325N	0
T2 100.96-80.96	Flange	0.8750 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	0	0.6250 A325N	0	0.5000 A325N	0	0.5000 A325N	0
T3 80.96-60.96	Flange	0.8750 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	0	0.6250 A325N	0	0.5000 A325N	0	0.5000 A325N	0
T4 60.96-40.96	Flange	0.8750 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	0	0.6250 A325N	0	0.5000 A325N	0	0.5000 A325N	2
T5 40.96-20.96	Flange	0.8750 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	0	0.6250 A325N	0	0.5000 A325N	0	0.5000 A325N	0
T6 20.96-0.96	Flange	0.8750 A325N	0	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	0	0.6250 A325N	0	0.5000 A325N	0	0.5000 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Banjo	B	No	No	Af (CaAa)	100.00 -	0.0000	0.45	1	1	0.5000	0.5000		1.10

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
Brackets (7-Hole) ***					10.00								
Safety Line 3/8	C	No	No	Ar (CaAa)	110.46 - 2.00	0.0000	0.5	1	1	0.3750	0.3750		0.22
Step Pegs (5/8" SR) 7-in. w/ 30" Step ***Proposed**	C	No	No	Ar (CaAa)	110.46 - 2.00	0.0000	0.5	1	1	0.3500	0.3500		0.49
LDF7-50A(1-5/8)	C	No	No	Ar (CaAa)	110.00 - 7.00	0.0000	0.4	3	3	1.9800	1.9800		0.82
CAT5E(1/4)	C	No	No	Ar (CaAa)	110.00 - 7.00	0.0000	0.45	2	2	0.2638	0.2638		0.05
Feedline Ladder (Af) *** ***	C	No	No	Af (CaAa)	110.00 - 7.00	0.0000	0.43	1	1	3.0000	3.0000		8.40
LDF7-50A(1-5/8)	B	No	No	Ar (CaAa)	98.00 - 10.00	0.0000	0.35	13	13	0.5000	1.9800		0.82
1.5" flat Cable Ladder	B	No	No	Af (CaAa)	98.00 - 10.00	0.0000	0.35	2	2	0.5000	1.9800		0.82

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	110.46-100.96	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	11.055	0.000	0.11
T2	100.96-80.96	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	56.694	0.000	0.23
		C	0.000	0.000	24.385	0.000	0.23
T3	80.96-60.96	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	66.347	0.000	0.27
		C	0.000	0.000	24.385	0.000	0.23
T4	60.96-40.96	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	66.347	0.000	0.27
		C	0.000	0.000	24.385	0.000	0.23
T5	40.96-20.96	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	66.347	0.000	0.27
		C	0.000	0.000	24.385	0.000	0.23
T6	20.96-0.96	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	36.358	0.000	0.15
		C	0.000	0.000	17.383	0.000	0.17

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	110.46-100.96	A	1.432	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	34.108	0.000	0.45
T2	100.96-80.96	A	1.411	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	98.933	0.000	1.27
		C		0.000	0.000	74.258	0.000	0.98
T3	80.96-60.96	A	1.376	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	114.692	0.000	1.45
		C		0.000	0.000	73.376	0.000	0.96
T4	60.96-40.96	A	1.332	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	113.957	0.000	1.41
		C		0.000	0.000	72.234	0.000	0.93
T5	40.96-20.96	A	1.267	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	112.897	0.000	1.35
		C		0.000	0.000	70.586	0.000	0.89
T6	20.96-0.96	A	1.142	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	60.749	0.000	0.69
		C		0.000	0.000	49.697	0.000	0.59

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	110.46-100.96	-3.0879	1.9339	-1.8244	1.0170
T2	100.96-80.96	1.0867	4.6277	-1.7970	5.0248
T3	80.96-60.96	2.1531	6.7436	-2.1216	7.8078
T4	60.96-40.96	2.1182	7.3385	-2.3729	8.9314
T5	40.96-20.96	2.6051	9.1632	-3.0135	11.4193
T6	20.96-0.96	0.2894	7.0284	-5.0206	9.4289

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	6	Safety Line 3/8	100.96 - 110.46	0.6000	0.2086
T1	7	Step Pegs (5/8" SR) 7-in. w/ 30" Step	100.96 - 110.46	0.6000	0.2086
T1	9	LDF7-50A(1-5/8)	100.96 - 110.00	0.6000	0.2086
T1	10	CAT5E(1/4)	100.96 - 110.00	0.6000	0.2086
T1	11	Feedline Ladder (Af)	100.96 - 110.00	0.6000	0.2086
T2	1	Banjo Brackets (7-Hole)	80.96 - 100.00	0.6000	0.5130
T2	6	Safety Line 3/8	80.96 - 100.96	0.6000	0.5130
T2	7	Step Pegs (5/8" SR) 7-in. w/ 30" Step	80.96 - 100.96	0.6000	0.5130
T2	9	LDF7-50A(1-5/8)	80.96 - 100.96	0.6000	0.5130
T2	10	CAT5E(1/4)	80.96 - 100.96	0.6000	0.5130
T2	11	Feedline Ladder (Af)	80.96 - 100.96	0.6000	0.5130

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T2	15	LDF7-50A(1-5/8)	80.96 - 98.00	0.6000	0.5130
T2	16	1.5" flat Cable Ladder	80.96 - 98.00	0.6000	0.5130
T3	1	Banjo Brackets (7-Hole)	60.96 - 80.96	0.6000	0.6000
T3	6	Safety Line 3/8	60.96 - 80.96	0.6000	0.6000
T3	7	Step Pegs (5/8" SR) 7-in. w/ 30" Step	60.96 - 80.96	0.6000	0.6000
T3	9	LDF7-50A(1-5/8)	60.96 - 80.96	0.6000	0.6000
T3	10	CAT5E(1/4)	60.96 - 80.96	0.6000	0.6000
T3	11	Feedline Ladder (Af)	60.96 - 80.96	0.6000	0.6000
T3	15	LDF7-50A(1-5/8)	60.96 - 80.96	0.6000	0.6000
T3	16	1.5" flat Cable Ladder	60.96 - 80.96	0.6000	0.6000
T4	1	Banjo Brackets (7-Hole)	40.96 - 60.96	0.6000	0.6000
T4	6	Safety Line 3/8	40.96 - 60.96	0.6000	0.6000
T4	7	Step Pegs (5/8" SR) 7-in. w/ 30" Step	40.96 - 60.96	0.6000	0.6000
T4	9	LDF7-50A(1-5/8)	40.96 - 60.96	0.6000	0.6000
T4	10	CAT5E(1/4)	40.96 - 60.96	0.6000	0.6000
T4	11	Feedline Ladder (Af)	40.96 - 60.96	0.6000	0.6000
T4	15	LDF7-50A(1-5/8)	40.96 - 60.96	0.6000	0.6000
T4	16	1.5" flat Cable Ladder	40.96 - 60.96	0.6000	0.6000
T5	1	Banjo Brackets (7-Hole)	20.96 - 40.96	0.6000	0.6000
T5	6	Safety Line 3/8	20.96 - 40.96	0.6000	0.6000
T5	7	Step Pegs (5/8" SR) 7-in. w/ 30" Step	20.96 - 40.96	0.6000	0.6000
T5	9	LDF7-50A(1-5/8)	20.96 - 40.96	0.6000	0.6000
T5	10	CAT5E(1/4)	20.96 - 40.96	0.6000	0.6000
T5	11	Feedline Ladder (Af)	20.96 - 40.96	0.6000	0.6000
T5	15	LDF7-50A(1-5/8)	20.96 - 40.96	0.6000	0.6000
T5	16	1.5" flat Cable Ladder	20.96 - 40.96	0.6000	0.6000
T6	1	Banjo Brackets (7-Hole)	10.00 - 20.96	0.6000	0.6000
T6	6	Safety Line 3/8	2.00 - 20.96	0.6000	0.6000
T6	7	Step Pegs (5/8" SR) 7-in. w/ 30" Step	2.00 - 20.96	0.6000	0.6000
T6	9	LDF7-50A(1-5/8)	7.00 - 20.96	0.6000	0.6000
T6	10	CAT5E(1/4)	7.00 - 20.96	0.6000	0.6000
T6	11	Feedline Ladder (Af)	7.00 - 20.96	0.6000	0.6000
T6	15	LDF7-50A(1-5/8)	10.00 - 20.96	0.6000	0.6000
T6	16	1.5" flat Cable Ladder	10.00 - 20.96	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
APXVAALL24_43-U-NA20 _TIA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	20.48 21.23 21.99 23.44	10.87 12.39 13.94 16.29	0.18 0.32 0.46 0.79
APXVAALL24_43-U-NA20 _TIA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	20.48 21.23 21.99	10.87 12.39 13.94	0.18 0.32 0.46

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	23.44	16.29	0.79
APXVAALL24_43-U-NA20 _TIA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	20.48 21.23 21.99 23.44	10.87 12.39 13.94 16.29	0.18 0.32 0.46 0.79
Air 6419 B41 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.50 8.34 9.09 10.39	4.78 5.85 6.78 8.30	0.11 0.18 0.25 0.41
Air 6419 B41 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.50 8.34 9.09 10.39	4.78 5.85 6.78 8.30	0.11 0.18 0.25 0.41
Air 6419 B41 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.50 8.34 9.09 10.39	4.78 5.85 6.78 8.30	0.11 0.18 0.25 0.41
VV-65A-R1 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.75 7.46 8.12 9.31	4.63 5.80 6.82 8.54	0.06 0.12 0.18 0.33
VV-65A-R1 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.75 7.46 8.12 9.31	4.63 5.80 6.82 8.54	0.06 0.12 0.18 0.33
VV-65A-R1 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.75 7.46 8.12 9.31	4.63 5.80 6.82 8.54	0.06 0.12 0.18 0.33
4460 B25+B66	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.14 2.32 2.51 2.91	1.69 1.85 2.02 2.39	0.11 0.13 0.16 0.22
4460 B25+B66	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.14 2.32 2.51 2.91	1.69 1.85 2.02 2.39	0.11 0.13 0.16 0.22
4460 B25+B66	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.14 2.32 2.51 2.91	1.69 1.85 2.02 2.39	0.11 0.13 0.16 0.22
4480 B71+B85	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.85 3.06 3.28 3.74	1.38 1.54 1.71 2.07	0.08 0.11 0.13 0.19
4480 B71+B85	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.85 3.06 3.28 3.74	1.38 1.54 1.71 2.07	0.08 0.11 0.13 0.19
4480 B71+B85	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.85 3.06 3.28 3.74	1.38 1.54 1.71 2.07	0.08 0.11 0.13 0.19
4.5" Dia/ x 4-ft Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.67 2.39 2.83 3.71	1.67 2.39 2.83 3.71	0.03 0.04 0.06 0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
4.5" Dia/ x 4-ft Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.67 2.39 2.83 3.71	1.67 2.39 2.83 3.71	0.03 0.04 0.06 0.11
Sector Mount [SM 502-3]	C	None		0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	29.82 42.21 54.43 78.49	29.82 42.21 54.43 78.49	1.67 2.27 3.05 5.18
***									
(2) JAHH-65B-R3B_TIA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.35 9.92 10.46 11.55	7.65 8.83 9.73 11.56	0.09 0.17 0.25 0.45
(2) JAHH-65B-R3B_TIA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.35 9.92 10.46 11.55	7.65 8.83 9.73 11.56	0.09 0.17 0.25 0.45
(2) JAHH-65B-R3B_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.35 9.92 10.46 11.55	7.65 8.83 9.73 11.56	0.09 0.17 0.25 0.45
CBRS w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.71 1.93 2.15 2.59	1.17 1.44 1.71 2.25	0.03 0.05 0.07 0.11
CBRS w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.71 1.93 2.15 2.59	1.17 1.44 1.71 2.25	0.03 0.05 0.07 0.11
CBRS w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.71 1.93 2.15 2.59	1.17 1.44 1.71 2.25	0.03 0.05 0.07 0.11
BSAMNT-SBS-2-2 (Mount Bracket)	A	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.07 0.09 0.11 0.15
BSAMNT-SBS-2-2 (Mount Bracket)	B	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.07 0.09 0.11 0.15
BSAMNT-SBS-2-2 (Mount Bracket)	C	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.07 0.09 0.11 0.15
CBC78T-DS-43-2X	A	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.37 0.45 0.53 0.69	0.51 0.60 0.69 0.87	0.02 0.03 0.04 0.06
CBC78T-DS-43-2X	B	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.37 0.45 0.53 0.69	0.51 0.60 0.69 0.87	0.02 0.03 0.04 0.06
CBC78T-DS-43-2X	C	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.37 0.45 0.53 0.69	0.51 0.60 0.69 0.87	0.02 0.03 0.04 0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RC3DC-3315-PF-48	C	From Leg	0.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.79 4.04 4.30 4.84	2.51 2.72 2.94 3.41	0.03 0.06 0.10 0.18
B2/B66A RRH-BR049	A	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.01 0.03 0.05 0.10
B2/B66A RRH-BR049	B	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.01 0.03 0.05 0.10
B2/B66A RRH-BR049	C	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.01 0.03 0.05 0.10
B5/B13 RRH-BR04C	A	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.00 1.13 1.27 1.57	0.07 0.09 0.11 0.15
B5/B13 RRH-BR04C	B	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.00 1.13 1.27 1.57	0.07 0.09 0.11 0.15
B5/B13 RRH-BR04C	C	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.00 1.13 1.27 1.57	0.07 0.09 0.11 0.15
LRX-8512DS-A1M_TIA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.62 6.03 6.44 7.28	4.77 5.44 6.09 7.44	0.05 0.10 0.16 0.29
LRX-8512DS-A1M_TIA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.62 6.03 6.44 7.28	4.77 5.44 6.09 7.44	0.05 0.10 0.16 0.29
LRX-8512DS-A1M_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.62 6.03 6.44 7.28	4.77 5.44 6.09 7.44	0.05 0.10 0.16 0.29
64T64R w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.70 5.03 5.36 6.02	1.99 2.39 2.79 3.59	0.09 0.12 0.15 0.21
64T64R w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.70 5.03 5.36 6.02	1.99 2.39 2.79 3.59	0.09 0.12 0.15 0.21
64T64R w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.70 5.03 5.36 6.02	1.99 2.39 2.79 3.59	0.09 0.12 0.15 0.21
Site Pro 1 VFA12-HD	A	From Leg	2.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	13.20 19.50 25.80 38.40	9.20 14.60 20.00 30.80	0.66 0.80 0.94 1.22
Site Pro 1 VFA12-HD	B	From Leg	2.00	0.0000	98.00	No Ice	13.20	9.20	0.66

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2" Ice	19.50	14.60	0.80
			0.00			1" Ice	25.80	20.00	0.94
						2" Ice	38.40	30.80	1.22
Site Pro 1 VFA12-HD	C	From Leg	2.00	0.0000	98.00	No Ice	13.20	9.20	0.66
			0.00			1/2" Ice	19.50	14.60	0.80
			0.00			1" Ice	25.80	20.00	0.94
						2" Ice	38.40	30.80	1.22
***									
GPS	C	From Leg	0.50	0.0000	55.00	No Ice	0.15	0.15	0.02
			0.00			1/2" Ice	0.24	0.24	0.02
			0.00			1" Ice	0.33	0.33	0.02
						2" Ice	0.51	0.51	0.02
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***									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
3 ft standard	C	Paraboloid w/Shroud (HP)	From Leg	4.00	45.0000		110.00	3.00	No Ice	7.06	0.10
				0.00					1/2" Ice	7.47	0.18
				0.00					1" Ice	7.88	0.26
									2" Ice	8.70	0.42
2 ft standard	A	Paraboloid w/Shroud (HP)	From Leg	4.00	45.0000		110.00	2.00	No Ice	2.00	0.01
				0.00					1/2" Ice	3.14	0.06
				0.00					1" Ice	3.41	0.11
									2" Ice	3.95	0.21
***											

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
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice

Comb. No.	Description
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	110.46 - 100.96	Leg	Max Tension	23	13.35	-0.118	-0.033
			Max. Compression	18	-16.43	0.204	0.003
			Max. Mx	6	0.01	0.412	-0.008
			Max. My	12	-1.76	-0.024	0.515
			Max. Vy	6	1.16	-0.206	0.006
			Max. Vx	12	-1.12	0.000	0.000
		Diagonal	Max Tension	15	1.94	0.000	0.000
			Max. Compression	2	-1.97	0.000	0.000
			Max. Mx	18	0.89	0.008	0.001
			Max. My	14	-1.82	-0.001	-0.005
			Max. Vy	35	-0.01	0.007	0.000
			Max. Vx	14	0.00	0.000	0.000
		Top Girt	Max Tension	11	0.38	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	6	-0.39	0.000	0.000
			Max. Mx	26	-0.02	-0.002	0.000
			Max. My	26	-0.02	0.000	0.000
			Max. Vy	26	0.01	0.000	0.000
			Max. Vx	26	0.00	0.000	0.000
		Bottom Girt	Max Tension	22	0.26	0.000	0.000
			Max. Compression	19	-0.18	0.000	0.000
			Max. Mx	26	0.09	-0.006	0.000
			Max. My	26	0.11	0.000	0.000
			Max. Vy	26	0.01	0.000	0.000
			Max. Vx	26	0.00	0.000	0.000
T2	100.96 - 80.96	Leg	Max Tension	7	38.08	-0.114	-0.015
			Max. Compression	18	-44.88	0.243	0.009
			Max. Mx	6	13.23	0.458	-0.016
			Max. My	4	-3.08	-0.028	0.489
			Max. Vy	6	1.16	-0.302	0.000
			Max. Vx	12	0.79	-0.009	-0.216
		Diagonal	Max Tension	8	2.97	0.000	0.000
			Max. Compression	8	-2.99	0.000	0.000
			Max. Mx	35	0.32	0.010	0.001
			Max. My	2	-2.82	-0.006	0.003
			Max. Vy	35	-0.01	0.010	0.001
			Max. Vx	2	-0.00	0.000	0.000
		Top Girt	Max Tension	22	0.07	0.000	0.000
			Max. Compression	11	-0.05	0.000	0.000
			Max. Mx	26	0.02	-0.006	0.000
			Max. My	26	0.03	0.000	0.000
			Max. Vy	26	0.01	0.000	0.000
			Max. Vx	26	0.00	0.000	0.000
T3	80.96 - 60.96	Leg	Max Tension	7	57.73	-0.154	-0.011
			Max. Compression	18	-65.88	0.053	0.022
			Max. Mx	18	-49.51	0.243	0.009
			Max. My	16	-2.99	-0.020	0.277
			Max. Vy	2	0.05	0.237	-0.001
			Max. Vx	16	-0.11	-0.020	0.277
		Diagonal	Max Tension	8	2.15	0.000	0.000
			Max. Compression	8	-2.18	0.000	0.000
			Max. Mx	35	0.47	0.013	-0.002
			Max. My	8	-2.17	-0.004	-0.002
			Max. Vy	34	0.02	0.013	0.002
			Max. Vx	32	0.00	0.000	0.000
		Top Girt	Max Tension	6	0.57	0.000	0.000
			Max. Compression	19	-0.47	0.000	0.000
			Max. Mx	26	0.14	-0.019	0.000
			Max. My	26	0.15	0.000	0.001
			Max. Vy	26	0.02	0.000	0.000
			Max. Vx	26	0.00	0.000	0.000
T4	60.96 - 40.96	Leg	Max Tension	7	72.89	0.370	-0.016
			Max. Compression	18	-82.83	0.057	0.019
			Max. Mx	18	-74.26	0.752	-0.005
			Max. My	16	-3.59	-0.071	0.520
			Max. Vy	18	-0.54	0.752	-0.005
			Max. Vx	16	0.28	-0.071	0.520
		Diagonal	Max Tension	7	2.64	0.012	-0.002
			Max. Compression	18	-2.83	0.000	0.000
			Max. Mx	35	0.52	0.028	-0.002
			Max. My	18	-2.69	-0.011	0.007
			Max. Vy	34	0.02	0.026	0.002
			Max. Vx	18	0.00	0.000	0.000
		Secondary Horizontal	Max Tension	16	0.68	0.014	-0.003

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	17	-0.60	-0.000	0.005
			Max. Mx	34	0.14	0.032	0.006
			Max. My	34	-0.02	0.027	0.007
			Max. Vy	34	-0.03	0.032	0.006
			Max. Vx	34	-0.00	0.000	0.000
		Top Girt	Max Tension	6	0.59	0.000	0.000
			Max. Compression	19	-0.52	0.000	0.000
			Max. Mx	26	0.11	-0.048	0.000
			Max. My	26	0.12	0.000	0.001
			Max. Vy	26	0.03	0.000	0.000
			Max. Vx	26	-0.00	0.000	0.000
T5	40.96 - 20.96	Leg	Max Tension	7	86.65	-0.150	-0.022
			Max. Compression	18	-98.55	0.340	0.052
			Max. Mx	18	-98.55	0.340	0.052
			Max. My	16	-4.62	-0.011	0.329
			Max. Vy	19	-0.06	0.338	0.052
			Max. Vx	16	-0.09	-0.011	0.329
		Diagonal	Max Tension	18	3.05	0.000	0.000
			Max. Compression	18	-3.21	0.000	0.000
			Max. Mx	34	0.33	0.038	0.005
			Max. My	35	0.14	0.038	0.006
			Max. Vy	34	0.03	0.038	0.005
			Max. Vx	35	-0.00	0.000	0.000
		Top Girt	Max Tension	6	0.86	0.000	0.000
			Max. Compression	19	-0.73	0.000	0.000
			Max. Mx	26	0.23	-0.106	0.000
			Max. My	26	0.24	0.000	0.003
			Max. Vy	26	-0.05	0.000	0.000
			Max. Vx	26	-0.00	0.000	0.000
T6	20.96 - 0.96	Leg	Max Tension	7	99.66	-0.203	-0.020
			Max. Compression	18	-114.61	0.000	0.000
			Max. Mx	27	-38.45	0.646	0.003
			Max. My	16	-5.78	-0.017	0.282
			Max. Vy	37	-0.17	-0.494	0.004
			Max. Vx	16	0.09	-0.017	0.282
		Diagonal	Max Tension	18	3.12	0.000	0.000
			Max. Compression	18	-3.33	0.000	0.000
			Max. Mx	33	-0.58	0.070	-0.007
			Max. My	35	1.50	0.036	0.009
			Max. Vy	33	0.04	0.070	-0.007
			Max. Vx	35	-0.00	0.000	0.000
		Top Girt	Max Tension	6	0.82	0.000	0.000
			Max. Compression	19	-0.71	0.000	0.000
			Max. Mx	26	-0.49	-0.226	0.000
			Max. My	26	-0.48	0.000	0.007
			Max. Vy	26	-0.08	0.000	0.000
			Max. Vx	26	-0.00	0.000	0.000

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	117.09	10.03	-5.27
	Max. H_x	18	117.09	10.03	-5.27
	Max. H_z	7	-101.61	-8.83	4.58
	Min. Vert	7	-101.61	-8.83	4.58

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. H_x	7	-101.61	-8.83	4.58
	Min. H_z	18	117.09	10.03	-5.27
Leg B	Max. Vert	10	107.24	-8.89	-4.91
	Max. H_x	21	-85.64	7.64	3.55
	Max. H_z	23	-91.18	7.64	4.21
	Min. Vert	23	-91.18	7.64	4.21
	Min. H_x	10	107.24	-8.89	-4.91
	Min. H_z	10	107.24	-8.89	-4.91
Leg A	Max. Vert	2	106.37	0.00	10.16
	Max. H_x	21	4.58	0.66	0.37
	Max. H_z	2	106.37	0.00	10.16
	Min. Vert	15	-91.97	-0.00	-8.78
	Min. H_x	8	6.29	-0.65	0.51
	Min. H_z	15	-91.97	-0.00	-8.78

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	16.91	-0.00	0.00	4.140	0.440	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	20.29	-0.02	-15.80	-1114.210	2.664	0.073
0.9 Dead+1.0 Wind 0 deg - No Ice	15.22	-0.02	-15.80	-1115.452	2.532	0.073
1.2 Dead+1.0 Wind 30 deg - No Ice	20.29	8.61	-14.75	-1028.542	-606.290	9.146
0.9 Dead+1.0 Wind 30 deg - No Ice	15.22	8.61	-14.75	-1029.784	-606.422	9.146
1.2 Dead+1.0 Wind 60 deg - No Ice	20.29	14.72	-8.37	-582.723	-1040.648	10.087
0.9 Dead+1.0 Wind 60 deg - No Ice	15.22	14.72	-8.37	-583.964	-1040.780	10.087
1.2 Dead+1.0 Wind 90 deg - No Ice	20.29	16.68	0.00	5.258	-1178.535	6.563
0.9 Dead+1.0 Wind 90 deg - No Ice	15.22	16.68	0.00	4.016	-1178.667	6.563
1.2 Dead+1.0 Wind 120 deg - No Ice	20.29	13.68	7.83	559.892	-974.508	4.123
0.9 Dead+1.0 Wind 120 deg - No Ice	15.22	13.68	7.83	558.650	-974.640	4.123
1.2 Dead+1.0 Wind 150 deg - No Ice	20.29	7.08	12.07	889.946	-522.571	5.191
0.9 Dead+1.0 Wind 150 deg - No Ice	15.22	7.08	12.07	888.704	-522.703	5.191
1.2 Dead+1.0 Wind 180 deg - No Ice	20.29	0.02	14.96	1086.829	-1.590	-0.063
0.9 Dead+1.0 Wind 180 deg - No Ice	15.22	0.02	14.96	1085.587	-1.722	-0.063
1.2 Dead+1.0 Wind 210 deg - No Ice	20.29	-8.62	14.77	1040.626	608.006	-9.004
0.9 Dead+1.0 Wind 210 deg - No Ice	15.22	-8.62	14.77	1039.384	607.874	-9.004
1.2 Dead+1.0 Wind 240 deg - No Ice	20.29	-15.41	8.81	613.438	1070.900	-9.830
0.9 Dead+1.0 Wind 240 deg - No Ice	15.22	-15.41	8.81	612.196	1070.768	-9.830

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 270 deg - No Ice	20.29	-16.64	0.02	6.755	1174.987	-6.315
0.9 Dead+1.0 Wind 270 deg - No Ice	15.22	-16.64	0.02	5.513	1174.855	-6.315
1.2 Dead+1.0 Wind 300 deg - No Ice	20.29	-12.90	-7.39	-529.003	937.324	-3.980
0.9 Dead+1.0 Wind 300 deg - No Ice	15.22	-12.90	-7.39	-530.245	937.192	-3.980
1.2 Dead+1.0 Wind 330 deg - No Ice	20.29	-7.04	-12.06	-878.358	519.422	-5.078
0.9 Dead+1.0 Wind 330 deg - No Ice	15.22	-7.04	-12.06	-879.600	519.290	-5.078
1.2 Dead+1.0 Ice+1.0 Temp	50.18	-0.00	0.00	17.758	-3.532	-0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	50.18	-0.00	-4.21	-281.419	-3.398	-0.866
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	50.18	2.24	-3.85	-252.924	-161.782	1.604
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	50.18	3.92	-2.24	-139.515	-280.110	2.721
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	50.18	4.31	-0.00	17.548	-310.139	1.962
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	50.18	3.53	2.02	162.555	-257.242	1.601
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	50.18	1.96	3.36	261.967	-146.562	1.950
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	50.18	0.00	4.09	312.219	-3.572	0.874
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	50.18	-2.24	3.85	288.970	154.957	-1.571
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	50.18	-4.01	2.30	177.957	276.772	-2.668
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	50.18	-4.30	0.01	18.447	302.325	-1.912
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	50.18	-3.42	-1.96	-124.165	244.888	-1.575
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	50.18	-1.95	-3.35	-226.144	138.743	-1.927
Dead+Wind 0 deg - Service	16.91	-0.00	-3.84	-267.368	0.958	0.018
Dead+Wind 30 deg - Service	16.91	2.09	-3.58	-246.580	-146.768	2.218
Dead+Wind 60 deg - Service	16.91	3.58	-2.03	-138.429	-252.140	2.446
Dead+Wind 90 deg - Service	16.91	4.05	0.00	4.210	-285.591	1.592
Dead+Wind 120 deg - Service	16.91	3.33	1.90	138.762	-236.099	1.000
Dead+Wind 150 deg - Service	16.91	1.72	2.93	218.837	-126.464	1.259
Dead+Wind 180 deg - Service	16.91	0.00	3.64	266.597	-0.074	-0.015
Dead+Wind 210 deg - Service	16.91	-2.09	3.59	255.381	147.808	-2.184
Dead+Wind 240 deg - Service	16.91	-3.74	2.14	151.748	260.100	-2.384
Dead+Wind 270 deg - Service	16.91	-4.04	0.00	4.573	285.354	-1.532
Dead+Wind 300 deg - Service	16.91	-3.14	-1.79	-125.401	227.704	-0.965
Dead+Wind 330 deg - Service	16.91	-1.71	-2.93	-210.157	126.324	-1.232

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-16.91	0.00	0.00	16.91	-0.00	0.000%
2	-0.02	-20.29	-15.80	0.02	20.29	15.80	0.000%
3	-0.02	-15.22	-15.80	0.02	15.22	15.80	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
4	8.61	-20.29	-14.75	-8.61	20.29	14.75	0.000%
5	8.61	-15.22	-14.75	-8.61	15.22	14.75	0.000%
6	14.72	-20.29	-8.37	-14.72	20.29	8.37	0.000%
7	14.72	-15.22	-8.37	-14.72	15.22	8.37	0.000%
8	16.68	-20.29	0.00	-16.68	20.29	-0.00	0.000%
9	16.68	-15.22	0.00	-16.68	15.22	-0.00	0.000%
10	13.68	-20.29	7.83	-13.68	20.29	-7.83	0.000%
11	13.68	-15.22	7.83	-13.68	15.22	-7.83	0.000%
12	7.08	-20.29	12.07	-7.08	20.29	-12.07	0.000%
13	7.08	-15.22	12.07	-7.08	15.22	-12.07	0.000%
14	0.02	-20.29	14.96	-0.02	20.29	-14.96	0.000%
15	0.02	-15.22	14.96	-0.02	15.22	-14.96	0.000%
16	-8.62	-20.29	14.77	8.62	20.29	-14.77	0.000%
17	-8.62	-15.22	14.77	8.62	15.22	-14.77	0.000%
18	-15.41	-20.29	8.81	15.41	20.29	-8.81	0.000%
19	-15.41	-15.22	8.81	15.41	15.22	-8.81	0.000%
20	-16.64	-20.29	0.02	16.64	20.29	-0.02	0.000%
21	-16.64	-15.22	0.02	16.64	15.22	-0.02	0.000%
22	-12.90	-20.29	-7.39	12.90	20.29	7.39	0.000%
23	-12.90	-15.22	-7.39	12.90	15.22	7.39	0.000%
24	-7.04	-20.29	-12.06	7.04	20.29	12.06	0.000%
25	-7.04	-15.22	-12.06	7.04	15.22	12.06	0.000%
26	0.00	-50.18	0.00	0.00	50.18	-0.00	0.000%
27	-0.00	-50.18	-4.21	0.00	50.18	4.21	0.000%
28	2.24	-50.18	-3.85	-2.24	50.18	3.85	0.000%
29	3.92	-50.18	-2.24	-3.92	50.18	2.24	0.000%
30	4.31	-50.18	-0.00	-4.31	50.18	0.00	0.000%
31	3.53	-50.18	2.02	-3.53	50.18	-2.02	0.000%
32	1.96	-50.18	3.36	-1.96	50.18	-3.36	0.000%
33	0.00	-50.18	4.09	-0.00	50.18	-4.09	0.000%
34	-2.24	-50.18	3.85	2.24	50.18	-3.85	0.000%
35	-4.01	-50.18	2.30	4.01	50.18	-2.30	0.000%
36	-4.30	-50.18	0.01	4.30	50.18	-0.01	0.000%
37	-3.42	-50.18	-1.96	3.42	50.18	1.96	0.000%
38	-1.95	-50.18	-3.35	1.95	50.18	3.35	0.000%
39	-0.00	-16.91	-3.84	0.00	16.91	3.84	0.000%
40	2.09	-16.91	-3.58	-2.09	16.91	3.58	0.000%
41	3.58	-16.91	-2.03	-3.58	16.91	2.03	0.000%
42	4.05	-16.91	0.00	-4.05	16.91	-0.00	0.000%
43	3.33	-16.91	1.90	-3.33	16.91	-1.90	0.000%
44	1.72	-16.91	2.93	-1.72	16.91	-2.93	0.000%
45	0.00	-16.91	3.64	-0.00	16.91	-3.64	0.000%
46	-2.09	-16.91	3.59	2.09	16.91	-3.59	0.000%
47	-3.74	-16.91	2.14	3.74	16.91	-2.14	0.000%
48	-4.04	-16.91	0.00	4.04	16.91	-0.00	0.000%
49	-3.14	-16.91	-1.79	3.14	16.91	1.79	0.000%
50	-1.71	-16.91	-2.93	1.71	16.91	2.93	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	110.46 - 100.96	2.344	47	0.2110	0.0569
T2	100.96 - 80.96	1.927	47	0.2009	0.0419
T3	80.96 - 60.96	1.144	47	0.1577	0.0292

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T4	60.96 - 40.96	0.570	47	0.1058	0.0191
T5	40.96 - 20.96	0.214	47	0.0550	0.0113
T6	20.96 - 0.96	0.046	47	0.0151	0.0038

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
110.00	3 ft standard	47	2.323	0.2106	0.0562	79930
98.00	(2) JAHH-65B-R3B_TIA w/ Mount Pipe	47	1.801	0.1963	0.0378	36714
55.00	GPS	47	0.442	0.0903	0.0166	22515

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	110.46 - 100.96	9.574	18	0.8534	0.2348
T2	100.96 - 80.96	7.882	18	0.8171	0.1727
T3	80.96 - 60.96	4.685	18	0.6443	0.1203
T4	60.96 - 40.96	2.336	18	0.4328	0.0788
T5	40.96 - 20.96	0.881	18	0.2254	0.0466
T6	20.96 - 0.96	0.188	18	0.0619	0.0155

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
110.00	3 ft standard	18	9.492	0.8520	0.2317	21336
98.00	(2) JAHH-65B-R3B_TIA w/ Mount Pipe	18	7.370	0.7992	0.1557	9596
55.00	GPS	18	1.813	0.3696	0.0686	5512

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	110.46	Leg	A325N	0.8750	4	3.34	41.56	0.080	1	Bolt Tension
		Diagonal	A325N	0.5000	1	1.94	4.69	0.414	1	Member Block

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	0.5000	1	0.38	4.69	0.081	1	Shear Member Block
		Bottom Girt	A325N	0.5000	1	0.28	4.69	0.061	1	Shear Member Block
T2	100.96	Leg	A325N	0.8750	4	9.52	41.56	0.229	1	Shear Bolt Tension
		Diagonal	A325N	0.5000	1	2.97	3.13	0.949	1	Member Block Shear
		Top Girt	A325N	0.5000	1	0.78	3.13	0.249	1	Member Block Shear
T3	80.96	Leg	A325N	0.8750	4	14.43	41.56	0.347	1	Bolt Tension
		Diagonal	A325N	0.5000	1	2.15	3.13	0.687	1	Member Block Shear
		Top Girt	A325N	0.5000	1	1.14	3.13	0.365	1	Member Block Shear
T4	60.96	Leg	A325N	0.8750	4	18.20	41.56	0.438	1	Bolt Tension
		Diagonal	A325N	0.5000	1	2.64	4.13	0.640	1	Member Bearing
		Secondary Horizontal	A325N	0.5000	2	0.72	6.53	0.110	1	Member Block Shear
		Top Girt	A325N	0.5000	1	1.44	4.13	0.348	1	Member Bearing
T5	40.96	Leg	A325N	0.8750	4	21.66	41.56	0.521	1	Bolt Tension
		Diagonal	A325N	0.5000	1	3.05	4.13	0.738	1	Member Bearing
		Top Girt	A325N	0.5000	1	1.71	6.20	0.276	1	Member Bearing
T6	20.96	Diagonal	A325N	0.5000	1	3.12	6.20	0.503	1	Member Bearing
		Top Girt	A325N	0.5000	1	1.99	6.20	0.321	1	Gusset 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	110.46 - 100.96	P3x.300 (3.50 OD)	9.52	0.08	0.9 K=1.00	3.0159	-16.43	135.71	0.121 [1]
T2	100.96 - 80.96	P3x.300 (3.50 OD)	20.04	3.99	42.1 K=1.00	3.0159	-44.88	119.19	0.377 [1]
T3	80.96 - 60.96	P3x.300 (3.50 OD)	20.04	4.01	42.3 K=1.00	3.0159	-65.88	119.06	0.553 [1]
T4	60.96 - 40.96	P3x.300 (3.50 OD)	20.04	2.58	27.3 K=1.00	3.0159	-82.83	128.54	0.644 [1]
T5	40.96 - 20.96	P3.5x.318 (4.00 OD)	20.04	6.68	61.3 K=1.00	3.6784	-98.55	125.72	0.784 [1]
T6	20.96 - 0.96	P3.5x.318 + PL 3/4 (Stratford North)	20.04	6.68	70.0 K=1.00	9.2744	-114.61	232.11	0.494 [1]

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	110.46 - 100.96	L1 1/2x1 1/2x3/16	3.01	1.29	69.6 K=1.32	0.5273	-1.97	16.09	0.122 [1]
T2	100.96 - 80.96	L1 1/2x1 1/2x1/8	5.06	2.40	102.9 K=1.06	0.3594	-2.99	8.63	0.346 [1]
T3	80.96 - 60.96	L1 1/2x1 1/2x1/8	7.59	3.64	147.6 K=1.00	0.3594	-2.16	4.72	0.458 [1]
T4	60.96 - 40.96	L2x2x1/8	9.85	4.80	145.0 K=1.00	0.4844	-2.83	6.60	0.429 [1]
T5	40.96 - 20.96	L2x2x1/8	12.43	6.22	131.5 K=0.70	0.4844	-3.21	8.02	0.400 [1]
T6	20.96 - 0.96	L2 1/2x2 1/2x3/16	14.23	6.95	168.4 K=1.00	0.9020	-3.33	9.10	0.366 [1]

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T4	60.96 - 40.96	L2 1/2x2 1/2x3/16	8.48	7.85	121.1 K=1.00	0.9020	-1.44	17.49	0.082 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	110.46 - 100.96	L1 1/2x1 1/2x3/16	1.50	1.00	80.5 K=1.97	0.5273	-0.39	15.12	0.026 [1]
T2	100.96 - 80.96	L1 1/2x1 1/2x1/8	2.50	2.00	100.5 K=1.24	0.3594	-0.78	8.83	0.088 [1]
T3	80.96 - 60.96	L1 1/2x1 1/2x1/8	4.58	4.08	165.1 K=1.00	0.3594	-1.14	3.77	0.303 [1]
T4	60.96 - 40.96	L2x2x1/8	6.66	6.16	186.0 K=1.00	0.4844	-1.44	4.01	0.358 [1]
T5	40.96 - 20.96	L2 1/2x2 1/2x3/16	8.75	8.20	198.9 K=1.00	0.9020	-1.71	6.53	0.262 [1]
T6	20.96 - 0.96	L3 1/2x3 1/2x1/4	10.83	10.16	175.8 K=1.00	1.6900	-1.99	15.66	0.127 [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	110.46 - 100.96	L1 1/2x1 1/2x3/16	2.48	1.98	100.5 K=1.24	0.5273	-0.28	12.95	0.022 [1]

[1] $P_u / \phi P_n$ controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	110.46 - 100.96	P3x.300 (3.50 OD)	9.52	0.08	0.9	3.0159	13.35	135.72	0.098 [1]
T2	100.96 - 80.96	P3x.300 (3.50 OD)	20.04	3.99	42.1	3.0159	38.08	135.72	0.281 [1]
T3	80.96 - 60.96	P3x.300 (3.50 OD)	20.04	4.01	42.3	3.0159	57.73	135.72	0.425 [1]
T4	60.96 - 40.96	P3x.300 (3.50 OD)	20.04	2.43	25.6	3.0159	72.89	135.72	0.537 [1]
T5	40.96 - 20.96	P3.5x.318 (4.00 OD)	20.04	6.68	61.3	3.6784	86.65	165.53	0.523 [1]
T6	20.96 - 0.96	P3.5x.318 + PL 3/4 (Stratford North)	20.04	6.68	70.0	9.2744	99.66	300.49	0.332 [1]

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	110.46 - 100.96	L1 1/2x1 1/2x3/16	3.01	1.29	36.7	0.3076	1.94	13.38	0.145 [1]
T2	100.96 - 80.96	L1 1/2x1 1/2x1/8	5.06	2.40	64.6	0.2109	2.97	9.18	0.323 [1]
T3	80.96 - 60.96	L1 1/2x1 1/2x1/8	6.56	3.14	83.6	0.2109	2.15	9.18	0.234 [1]
T4	60.96 - 40.96	L2x2x1/8	9.85	4.80	94.0	0.3047	2.64	13.25	0.199 [1]
T5	40.96 - 20.96	L2x2x1/8	11.85	5.94	113.7	0.3047	3.05	13.25	0.230 [1]
T6	20.96 - 0.96	L2 1/2x2 1/2x3/16	13.62	6.65	104.1	0.5886	3.12	25.60	0.122 [1]

[1] $P_u / \phi P_n$ controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T4	60.96 - 40.96	L2 1/2x2 1/2x3/16	7.96	7.33	118.2	0.5886	1.44	25.60	0.056 [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	110.46 - 100.96	L1 1/2x1 1/2x3/16	1.50	1.00	31.8	0.3076	0.38	13.38	0.028 [1]
T2	100.96 - 80.96	L1 1/2x1 1/2x1/8	2.50	2.00	56.9	0.2109	0.78	9.18	0.085 [1]
T3	80.96 - 60.96	L1 1/2x1 1/2x1/8	4.58	4.08	110.5	0.2109	1.14	9.18	0.125 [1]
T4	60.96 - 40.96	L2x2x1/8	6.66	6.16	122.0	0.3047	1.44	13.25	0.108 [1]
T5	40.96 - 20.96	L2 1/2x2 1/2x3/16	8.75	8.20	129.8	0.5886	1.71	25.60	0.067 [1]
T6	20.96 - 0.96	L3 1/2x3 1/2x1/4	10.83	10.16	114.2	1.1503	1.99	50.04	0.040 [1]

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	110.46 - 100.96	L1 1/2x1 1/2x3/16	2.48	1.98	57.5	0.3076	0.28	13.38	0.021 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	110.46 - 100.96	Leg	P3x.300 (3.50 OD)	1	-16.43	135.71	12.1	Pass
T2	100.96 - 80.96	Leg	P3x.300 (3.50 OD)	34	-44.88	119.19	37.7	Pass
T3	80.96 - 60.96	Leg	P3x.300 (3.50 OD)	70	-65.88	119.06	55.3	Pass
T4	60.96 - 40.96	Leg	P3x.300 (3.50 OD)	106	-82.83	128.54	64.4	Pass
T5	40.96 - 20.96	Leg	P3.5x.318 (4.00 OD)	148	-98.55	125.72	78.4	Pass
T6	20.96 - 0.96	Leg	P3.5x.318 + PL 3/4 (Stratford North)	172	-114.61	232.11	49.4	Pass
T1	110.46 - 100.96	Diagonal	L1 1/2x1 1/2x3/16	26	1.94	13.38	14.5 41.4 (b)	Pass
T2	100.96 - 80.96	Diagonal	L1 1/2x1 1/2x1/8	59	-2.99	8.63	34.6 94.9 (b)	Pass
T3	80.96 - 60.96	Diagonal	L1 1/2x1 1/2x1/8	77	-2.16	4.72	45.8 68.7 (b)	Pass
T4	60.96 - 40.96	Diagonal	L2x2x1/8	112	-2.83	6.60	42.9	Pass

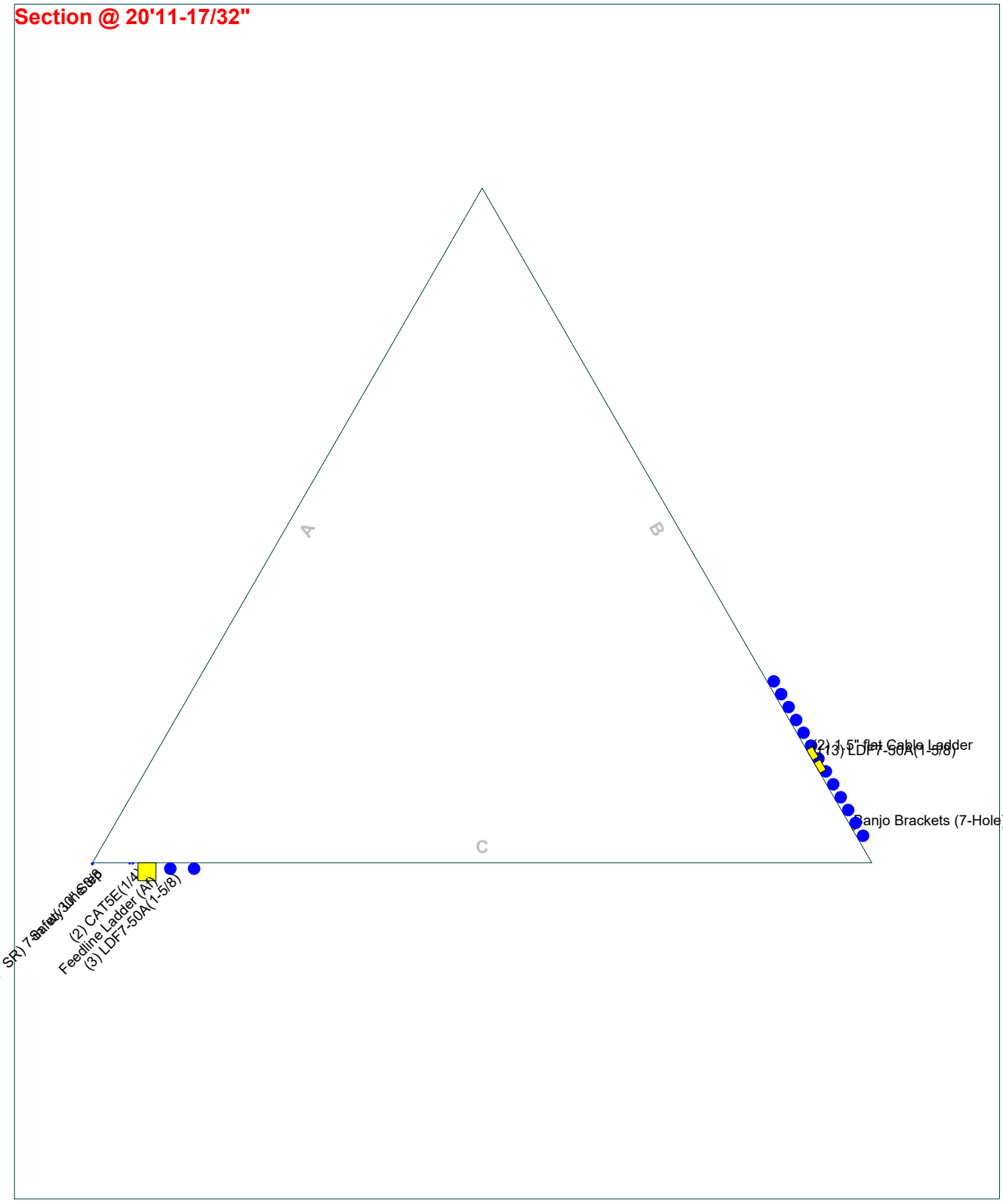
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
							64.0 (b)	
T5	40.96 - 20.96	Diagonal	L2x2x1/8	154	-3.21	8.02	40.0	Pass
							73.8 (b)	
T6	20.96 - 0.96	Diagonal	L2 1/2x2 1/2x3/16	178	-3.33	9.10	36.6	Pass
							50.3 (b)	
T4	60.96 - 40.96	Secondary Horizontal	L2 1/2x2 1/2x3/16	120	-1.44	17.49	8.2	Pass
							11.0 (b)	
T1	110.46 - 100.96	Top Girt	L1 1/2x1 1/2x3/16	6	0.38	13.38	2.8	Pass
							8.1 (b)	
T2	100.96 - 80.96	Top Girt	L1 1/2x1 1/2x1/8	39	-0.78	8.83	8.8	Pass
							24.9 (b)	
T3	80.96 - 60.96	Top Girt	L1 1/2x1 1/2x1/8	75	-1.14	3.77	30.3	Pass
							36.5 (b)	
T4	60.96 - 40.96	Top Girt	L2x2x1/8	111	-1.44	4.01	35.8	Pass
T5	40.96 - 20.96	Top Girt	L2 1/2x2 1/2x3/16	153	-1.71	6.53	26.2	Pass
							27.6 (b)	
T6	20.96 - 0.96	Top Girt	L3 1/2x3 1/2x1/4	177	-1.99	15.66	12.7	Pass
							32.1 (b)	
T1	110.46 - 100.96	Bottom Girt	L1 1/2x1 1/2x3/16	9	-0.28	12.95	2.2	Pass
							6.1 (b)	
							Summary	
						Leg (T5)	78.4	Pass
						Diagonal (T2)	94.9	Pass
						Secondary Horizontal (T4)	11.0	Pass
						Top Girt (T3)	36.5	Pass
						Bottom Girt (T1)	6.1	Pass
						Bolt Checks	94.9	Pass
						RATING =	**94.9**	**Pass**

APPENDIX B

BASE LEVEL DRAWING

Feed Line Plan
20'11-17/32"

Round Flat App In Face App Out Face



Engineered Tower Solutions, PLLC
3227 Wellington Court
Raleigh, NC 27615
Phone: (919) 782-2710
FAX: (919) 435-0631
ETS,PLLC

Job:	***Stratford North_CT1232***		
Project:	***ETS, PLLC Job # 22107457.STR.6690***		
Client: Tarpon Towers	Drawn by: Helen.Tesfaye		App'd:
Code: TIA-222-H	Date: 06/03/22		Scale: NTS
Path:			Dwg No. E-7

APPENDIX C

ADDITIONAL CALCULATIONS

Self Support Anchor Rod Capacity

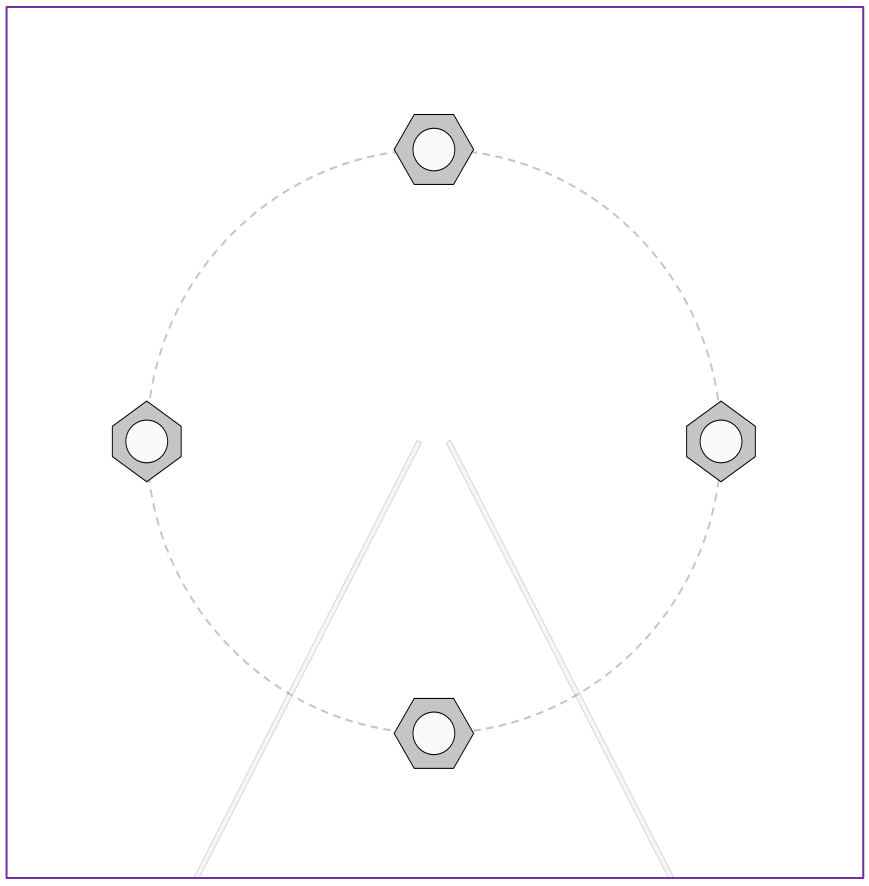
Site Info	
Site #	CT1232
Site Name	Stratford North
ETS Job #	22107457.STR.6690

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

Applied Loads		
	Comp.	Uplift
Axial Force (kips)	117.09	101.61
Shear Force (kips)	11.33	9.95

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

Anchor Rod Data

(4) 7/8" ø bolts (F1554-105 N; Fy=105 ksi, Fu=125 ksi)

l_{ar} (in): 0

Analysis Results

Anchor Rod Summary *(units of kips, kip-in)*

Pu_t = 25.4	ϕPn_t = 43.31	**Stress Rating**
Vu = 2.49	ϕVn = 28.19	**58.6%**
Mu = n/a	ϕMn = n/a	**Pass**

Analysis Date: 6/3/2022

Pier and Pad Foundation

Site # :	CT1232
Site Name:	Stratford North
ETS Job #:	22107457.STR.669

TIA-222 Revision:	H
Tower Type:	Self Support

Top & Bot. Pad Rein. Different?:	☐
Block Foundation?:	☐
Rectangular Pad?:	☐

Superstructure Analysis Reactions		
Compression, P_{comp}:	117.09	kips
Compression Shear, Vu_comp:	11.33	kips
Uplift, P_{uplift}:	101.61	kips
Uplift Shear, V_{u_uplift}:	9.95	kips
Tower Height, **H**:	110.46	ft
Base Face Width, **BW**:	12.92	ft
BP Dist. Above Fdn, bp_{dist}:	1.45833	in

Foundation Analysis Checks				
	Capacity	**Demand**	**Rating**	**Check**
Uplift (kips)	166.19	101.61	**61.1%**	**Pass**
Lateral (Sliding) (kips)	53.19	9.95	**18.7%**	**Pass**
Bearing Pressure (ksf)	3.83	2.88	**75.3%**	**Pass**

Pier Properties		
Pier Shape:	Circular	
Pier Diameter, **dpier**:	2	ft
Ext. Above Grade, **E**:	0.5	ft

Soil Rating:	**75.3%**

Pad Properties		
Depth, **D**:	10	ft
Pad Width, W_1:	9	ft
Pad Thickness, **T**:	2	ft

Soil Properties		
Total Soil Unit Weight, **γ**:	110	pcf
Ultimate Net Bearing, Qnet:	4.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, **ϕ**:	30	degrees
SPT Blow Count, N_{blows}:	10	
Base Friction, **μ**:		
Neglected Depth, **N**:	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	N/A	ft

<--Toggle between Gross and Net

Leg Built-Up Member Compression Capacity

Tower Section	0-20
P_u	114.61 kip
Code	H
ø Factor	0.90
Controlling Load Case	Wind
Allowable Stress Increase	1.00
F_y	35 ksi
F_u	60 ksi
E	29,000 ksi
Effective Length Factor, "K_{eff}"	1.00
Stitch Connection Type	Welded

Member Type	Member	Area (in^2)	Moment of Inertia (in^4)	Radius of Gyration (in)	Unbraced Length (in)	$^{KL}/_{r}$	$^{a_i}/_{r_i} \leq 0.75(^{KL}/_{r})_o$
Original Member	P3.5x.318	3.6784	6.2801	1.307	80.16	61.35	-
Additional Member	3/4" PL	5.5960	5.8780	1.025	12.00	11.71	11.71
Built-Up Member	P3.5x.318 + 3/4" PL	9.2744	12.1581	1.145	80.16	70.01	52.51
							Sufficient

Welded Option	
a_i	12.00 in
r_{ib}	1.025 in
Distance between centroid of original and additional member, h	0.443 in
Seperation Ratio, α_i	0.216
$^{KL}/_{r.m}$	70.05 ksi
F_a	16.07 ksi
F_e	58.33 ksi
λ_c	0.77
F_{cr}	27.23 ksi
$øP_n$	227.26 kip

Bolted Option	
r_{ib}	1.025 in
$^{KL}/_{r.m}$	70.98
F_a	15.98 ksi
F_e	56.80 ksi
λ_c	0.78
F_{cr}	27.04 ksi
øPn	225.73 kip

Weld to Flange?	
Load at Top of Sect.	121.92 kip
Original Leg Fy	50 ksi
Top?	No
Top Crushing Capacity	73.66%
Bottom?	Yes
Btm Crushing Capacity	33.53%

Compression Capacity	50.4%

ongitudinal Termination Weld	
Thickness of Fillet Weld	0.3750
Required Weld Length	11.0000

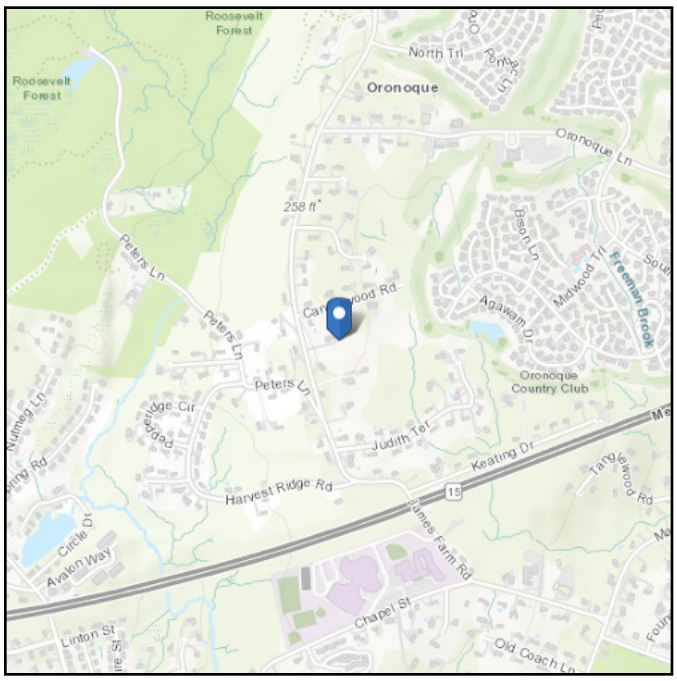
tnxTower Inputs	
Effective Length Factor	1.0005

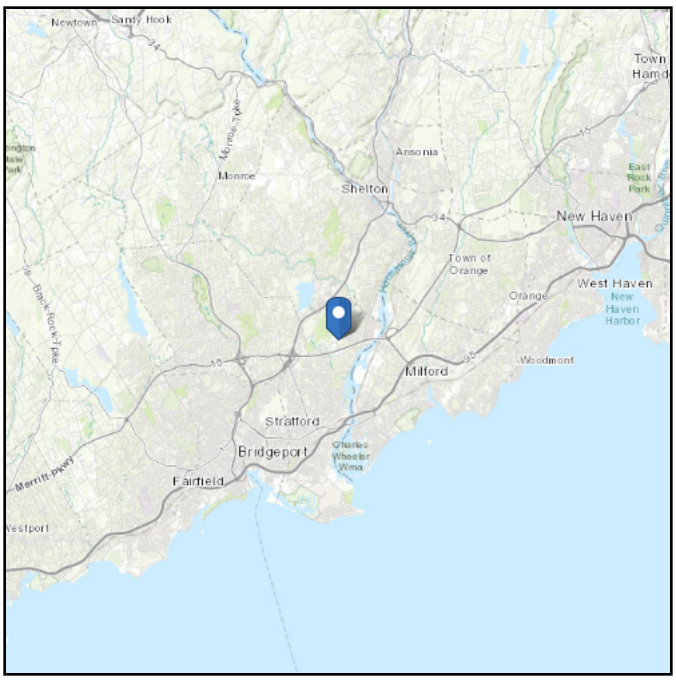
ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 256.74 ft (NAVD 88)
Latitude: 41.2453
Longitude: -73.1201





Wind

Results:

Wind Speed	123 Vmph
10-year MRI	77 Vmph
25-year MRI	87 Vmph
50-year MRI	93 Vmph
100-year MRI	100 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

Date Accessed: Thu Jun 02 2022

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

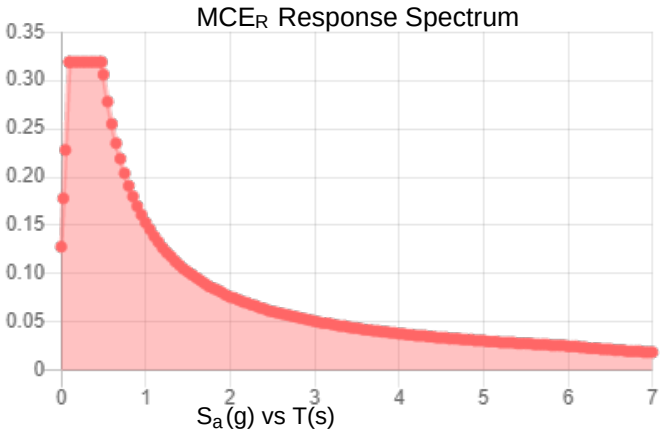
Seismic

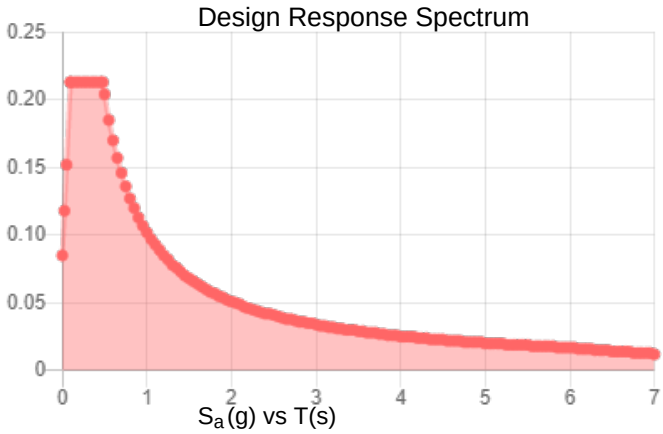
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.199	S_{DS} :	0.213
S_1 :	0.064	S_{D1} :	0.102
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.107
S_{MS} :	0.319	PGA_M :	0.169
S_{M1} :	0.153	F_{PGA} :	1.587
		I_e :	1

Seismic Design Category B





Data Accessed: **Thu Jun 02 2022**

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Thu Jun 02 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 50-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.

Exhibit E

Mount Analysis

CENTERLINE
ENGINEERING SERVICES, PA

750 West Center Street, Suite 301
West Bridgewater, MA 02379
781.713.4725

Revised Mount Analysis Report

Site Address	630 James Farm Rd, Stratford, CT 06614
Site Name	CT52XC083
Site ID	CT11926A
Project Name	Anchor
Design Codes	2015 International Building Code ASCE 7-10 TIA-222-G Standards 2018 CT State Building Code

	Stress Ratio	Overall Result
Proposed Sector Frame Mounts	**38.0%**	**PASS**

Client:

T - Mobile

NORTHEAST, LLC
35 Griffin Rd S
Bloomfield, CT 06002

Date: 05/26/2022 (Rev.1)
05/13/2022 (Rev.0)

CENTERLINE
ENGINEERING SERVICES, PA

750 West Center Street, Suite 301
West Bridgewater, MA 02379
781.713.4725

Scope of Work:

Centerline Communications was authorized by T-Mobile Northeast LLC to perform an analysis of the proposed antenna mounts to determine their capacity to support the existing and proposed T-Mobile equipment listed in this report. These mounts were analyzed using RISA 3D v17.0.4.

Final Appurtenances Configuration:

Elevation (ft)	Position[1]	Azimuth (degrees)	Quantity	Appurtenance	Sector
110	**-**	**0**	**1**	**RFS APXVAALL24_43-U-NA20**	Sector 1
110	**-**	**0**	**1**	**Ericsson AIR 6419 B41**	
110	**-**	**0**	**1**	**Commscope VV-65A-R1**	
110	**-**	**0**	**1**	**Ericsson 4480 B71+B85 RRU**	
110	**-**	**0**	**1**	**Ericsson 4460 B25+B66 RRU**	
110	-	0	1	24" Dish	
110	**-**	**120**	**1**	**RFS APXVAALL24_43-U-NA20**	Sector 2
110	**-**	**120**	**1**	**Ericsson AIR 6419 B41**	
110	**-**	**120**	**1**	**Commscope VV-65A-R1**	
110	**-**	**120**	**1**	**Ericsson 4480 B71+B85 RRU**	
110	**-**	**120**	**1**	**Ericsson 4460 B25+B66 RRU**	
110	**MP9**	**240**	**1**	**RFS APXVAALL24_43-U-NA20**	Sector 3
110	**MP10**	**240**	**1**	**Ericsson AIR 6419 B41**	
110	**MP12**	**240**	**1**	**Commscope VV-65A-R1**	
110	**MP9**	**240**	**1**	**Ericsson 4480 B71+B85 RRU**	
110	**MP12**	**240**	**1**	**Ericsson 4460 B25+B66 RRU**	
110	MP11	240	1	36" Dish	

Notes:

1. MP represents Mount Pipe
2. Existing Appurtenance
3. **Proposed Appurtenance**

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West Bridgewater, MA 02379
781.713.4725

Design Criteria:

Design Codes:

2015 International Building Code
ASCE 7-10
TIA-222-G Standards
2018 CT State Building Code

Ultimate Wind Speed	123 mph
Nominal Wind Speed	96 mph
Wind Speed with Ice	50 mph
Ice Thickness	0.75 in.
Exposure Category	B
Topographic Category	1
Risk Category	II
Site Soil Class (Assumed)	D-Stiff Soil
Seismic Design Category	B
Spectral Response Acceleration Parameter at a Short Periods, S_S	0.199 g
Spectral Response Acceleration Parameter at a Period of 1 Second, S_1	0.064 g
Short Period Site Coefficient, F_a	1.6
Long Period Site Coefficient, F_v	2.4

***Refer to calculations for additional design criteria.**

Conclusion:

Based on the results of the analysis, we have determined that the proposed T-Mobile mounts *are adequate* to support the existing and proposed T-Mobile equipment loading. Mount summary is as follows:

- Remove the (3) existing sector frame mounts at approximately 110ft.
- Install (3) Site Pro 1 VFA10-HD mounts with (4) 2" STD x 8ft mount pipes per sector.

	Stress Ratio	Overall Result
Proposed Sector Frame Mounts	**38.0%**	**PASS**

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ENGINEERING SERVICES, PA

750 West Center Street, Suite 301
West Bridgewater, MA 02379
781.713.4725

Reference Documents:

- T-Mobile RFDS CT11926A_Sprint Retain_1, dated 05/10/2022.
- Construction Drawings by Cherundolo Consulting, dated 02/06/2018.
- Mount Analysis Report by Westchester Services, dated 11/22/2019.

Assumptions and Limitations:

- The calculations performed by Centerline Communications are limited to the structural members in these calculations only.
- Structural calculations in this report do not check the adequacy of the supporting structure, other mounts, or coax mounting attachments.
- The calculation assumes all structural members to be in good condition i.e. no damage, rust, or other defects.

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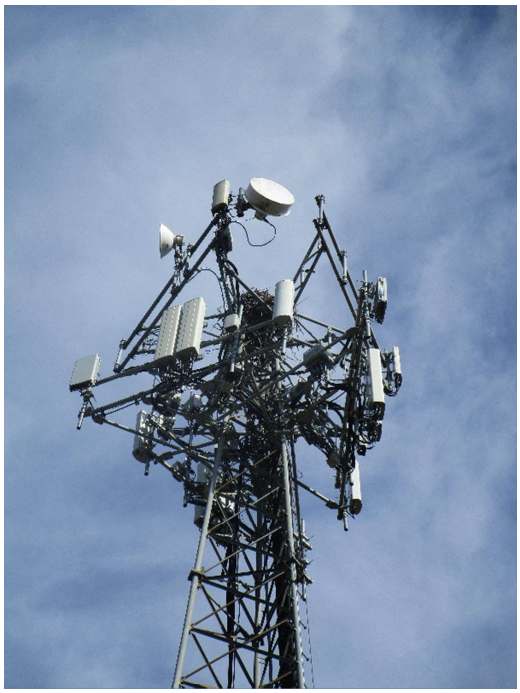
781.713.4725

Photos:



Existing Mounts at 110’

Overall

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West Bridgewater, MA 02379
781.713.4725

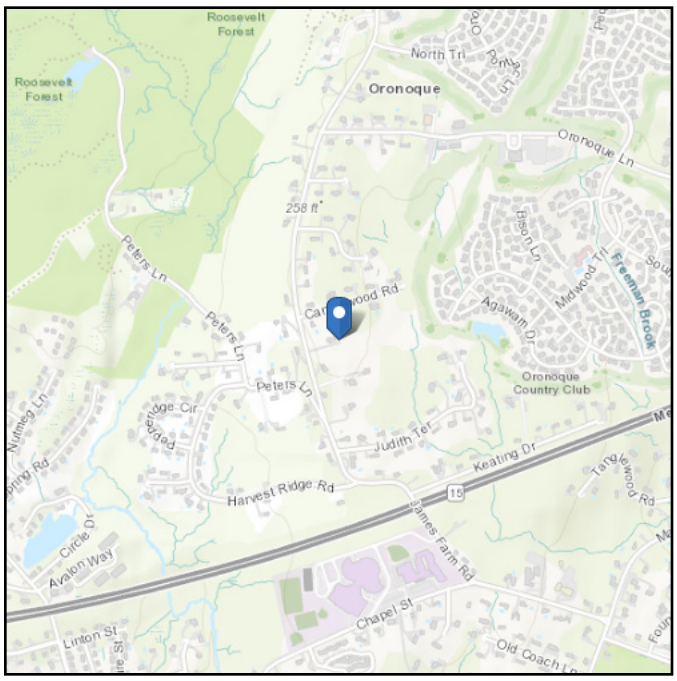
Design Calculations

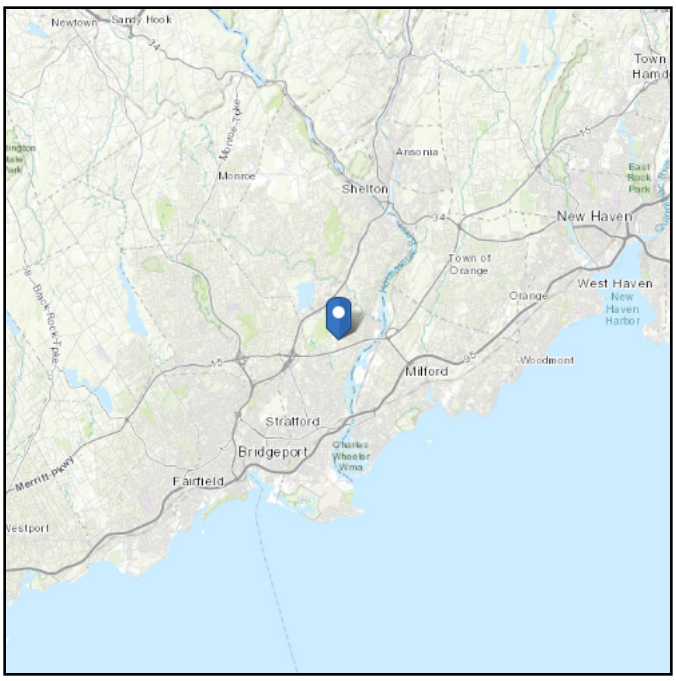
ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 256.74 ft (NAVD 88)
Latitude: 41.245347
Longitude: -73.120169





Wind

Results:

Wind Speed	123 Vmph
10-year MRI	77 Vmph
25-year MRI	87 Vmph
50-year MRI	93 Vmph
100-year MRI	100 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

Date Accessed: Thu Feb 17 2022

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

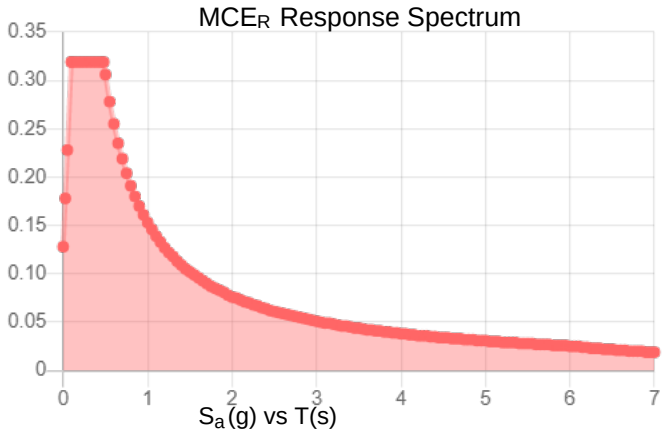
Seismic

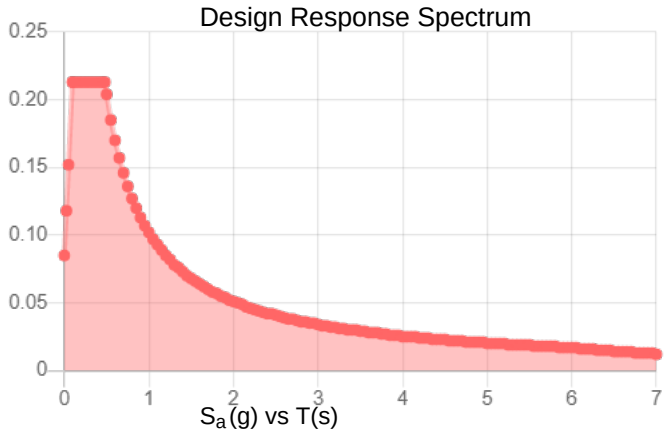
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.199	S_{DS} :	0.213
S_1 :	0.064	S_{D1} :	0.102
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.107
S_{MS} :	0.319	PGA_M :	0.169
S_{M1} :	0.153	F_{PGA} :	1.587
		I_e :	1

Seismic Design Category B





Data Accessed: **Thu Feb 17 2022**

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Thu Feb 17 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 50-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.

CENTERLINE COMMUNICATIONS

750 West Center Street, Suite 301
West Bridgewater, MA 02379
781.713.4725

Site Details	
Site Name	CT52XC083
Carrier	T - Mobile
City, State	Stratford, CT
Project	Anchor

Mount Details		
Mount Type	Sector Frame	
Mount Height, z	110	ft
Number of Sectors	3	
Tower Type	SST	
Tower Height, h	110	ft

Topographic Factors		
Topographic Category	1	
Feature	Flat	
Crest Height, H	N/A	ft
Distance from Crest, x	N/A	ft
Slope (H/L)	N/A	
Topographic Factor, K_{zt}	1.00	

Seismic Factors		
Importance Factor, I_E	1	
Short Period Spectral Acceleration, S_s	0.199	g
1 Second Period Spectral Acceleration, S_1	0.064	g
Long-Period Transition Period, T_L	6	
Design Category	B	
Short Period Site Coefficient, F_a	1.60	
Long-Period Site Coefficient, F_v	2.4	

Site Parameters		
Ultimate Wind Speed, V_{ULT}	123	mph
Nominal Wind Speed, V	96	mph
Wind Speed with Ice, V_i	50	mph
Design Ice Thickness, t_i	0.75	in
Structural Class	II	
Exposure Category	B	
Site Soil Class	D-Stiff Soil (Assumed)	

Code	
Building Code	2015 IBC
TIA Code	TIA-222-G
ASCE Code	7-10

Site Constants		
Importance Factor, I (Wind no Ice)	1.00	
Importance Factor, I (Ice Thickness)	1.00	
Importance Factor, I (wind with Ice)	1.00	
Wind Direction Prob. Factor, K_d	0.95	
Velocity Pressure Coefficient, K_z	1.02	
Gust Effect Factor, G_h	1.00	
Design Ice Thickness, t_{iz}	1.69	in
Velocity Pressure, q_z	22.76	psf
Velocity Pressure with Ice, q_{zi}	6.17	psf
Shielding Factor, K_a	1.00	
Flat Velocity Pressure (Ca =2.0)	45.52	psf
Round Velocity Pressure (Ca = 1.2)	27.31	psf
Round Velocity Pressure with Ice (Ca = 1.2)	7.41	psf
Engineer Initials	**MS**	

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Members Forces							
Member Label	**Shape**	**Type**	**w, lbs/ft**	**q_z, psf**	**w_i, lbs/ft**	**q_{zi}, psf**	**V_s, lbs/ft**
Mount Pipe	PIPE_2.0	Column	3.47	27.31	8.41	7.41	0.49
Standoff Horizontal	PIPE_2.0	Beam	3.47	27.31	8.41	7.41	0.49
Stanodff Vertical	SR_0.625	Column	1.04	27.31	4.79	7.41	0.15
Standoff Diagonal	SR_0.75	Beam	1.50	27.31	5.05	7.41	0.21
Face Horizontal	PIPE_2.5	Beam	5.48	27.31	9.70	7.41	0.78
Tie-back	PIPE_2.0	Beam	3.47	27.31	8.41	7.41	0.49
Connection Plate	PL5/8x3.5	Beam	7.45	45.52	10.85	7.41	1.05

CENTERLINE COMMUNICATIONS

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Sector 1							
		Wind Force				Dimensions	Weights
Appurtenances	Rad. Ht., ft	Front EPA ft^2	Side EPA ft^2	0° Force lbs.	90° Force lbs.	H\W\D, in	Wt.\$Wt._{ice}$, lbs.
RFS APXVAALL24_43-U-NA20 Antenna	110	20.27	8.74	461.29	199.03	96\24\8.5	153.3\413.45
Ericsson AIR6419 B41 Antenna	110	6.32	2.88	143.90	65.49	36.3\20.9\9	83.3\165.47
Commscope VV-65A-R1 Antenna	110	5.93	2.73	134.94	62.16	54.7\12.1\4.6	32.41\134.03
Ericsson 4480 B71+B85 RRU RRH	110	2.45	1.27	55.85	28.85	19.5\15.1\7.8	87\78.87
Ericsson 4460 B25+B66 RRU RRH	110	2.14	1.50	48.69	34.08	15.1\17\11.9	108\87.62
36" Dish	110	12.87	5.63	292.95	128.21	39.3\39.3\17.2	40\354.43

CENTERLINE COMMUNICATIONS

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West Bridgewater, MA 02379
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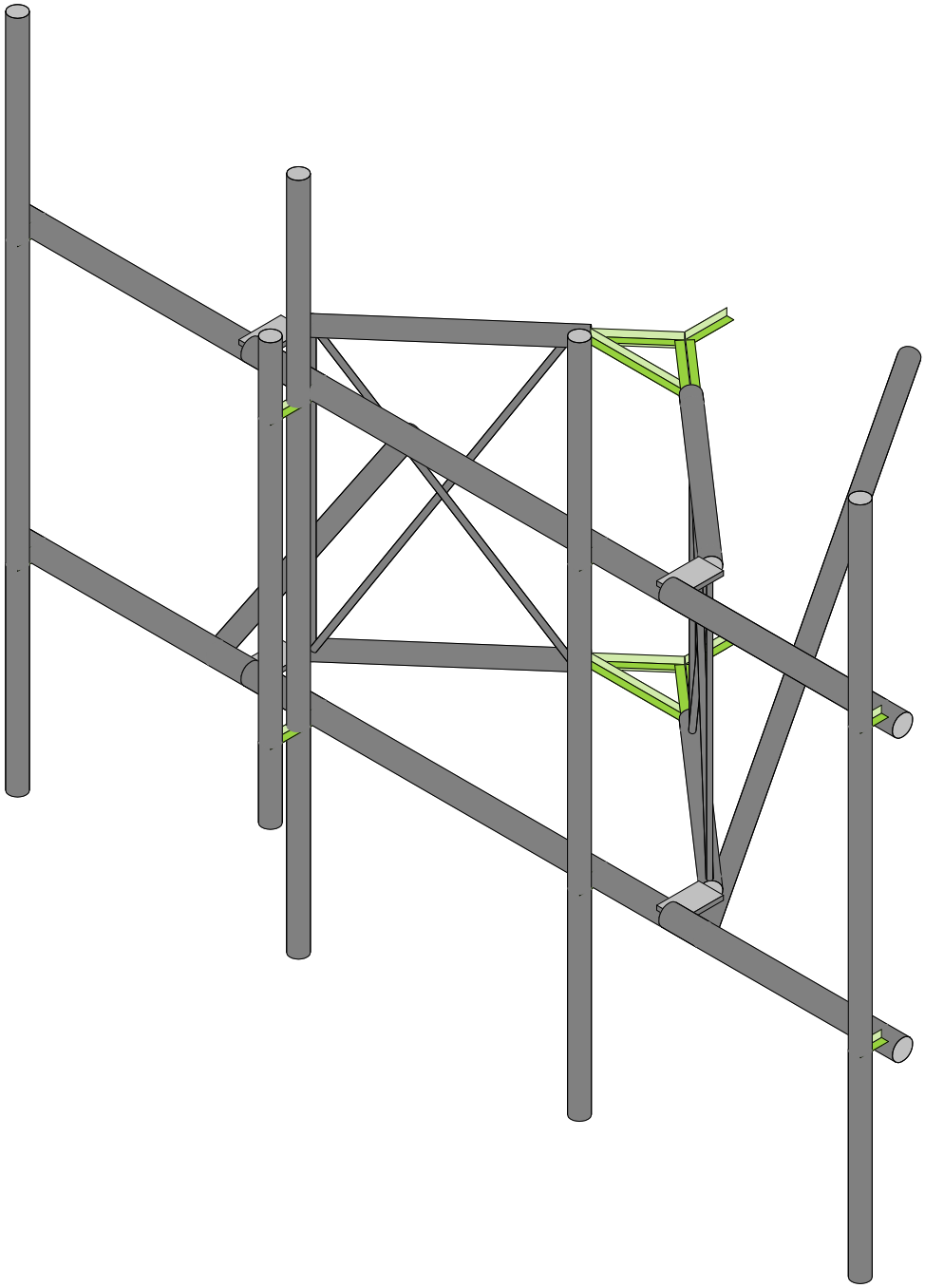
Sector 1 Continue…								
		Wind Force with Ice				Wind Force V = 30 mph		Seismic Force
Appurtenances	Rad. Ht., ft	Front EPA ft^2	Side EPA ft^2	0° Force lbs.	90° Force lbs.	0° Force lbs.	90° Force lbs.	Vs, lbs
RFS APXVAALL24_43-U-NA20 Antenna	110	13.70	6.81	209.74	96.04	45.05	19.44	21.69
Ericsson AIR6419 B41 Antenna	110	4.68	2.44	67.96	32.84	14.05	6.40	11.79
Commscope VV-65A-R1 Antenna	110	4.55	2.60	64.67	32.89	13.18	6.07	4.59
Ericsson 4480 B71+B85 RRU RRH	110	2.06	1.24	27.85	15.51	5.45	2.82	12.31
Ericsson 4460 B25+B66 RRU RRH	110	1.83	1.37	24.52	17.72	4.75	3.33	15.28
36" Dish	110	8.86	4.27	134.15	61.15	28.61	12.52	5.66

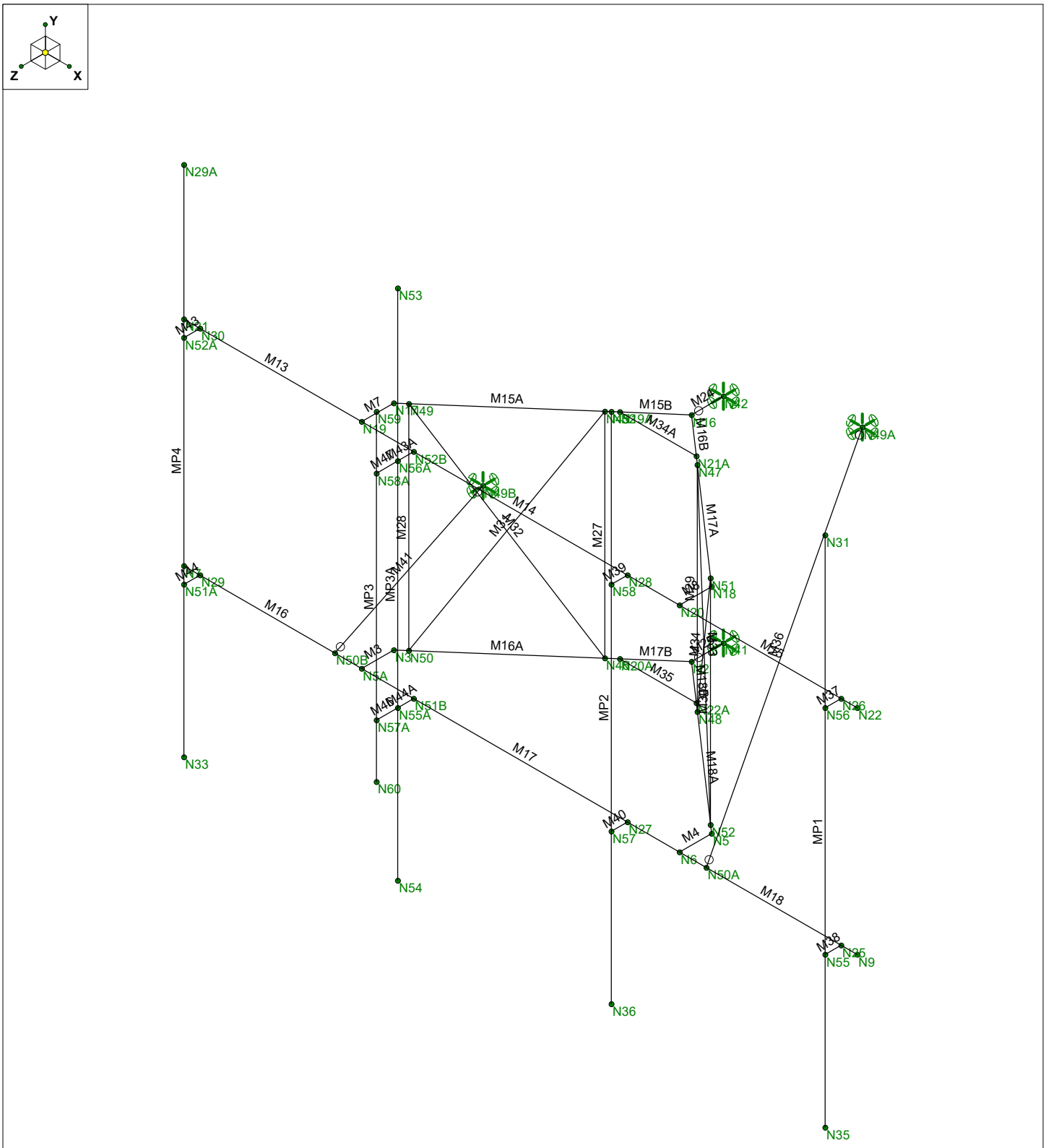
Proposed Mount Results

Remove (3) existing sector frame mounts

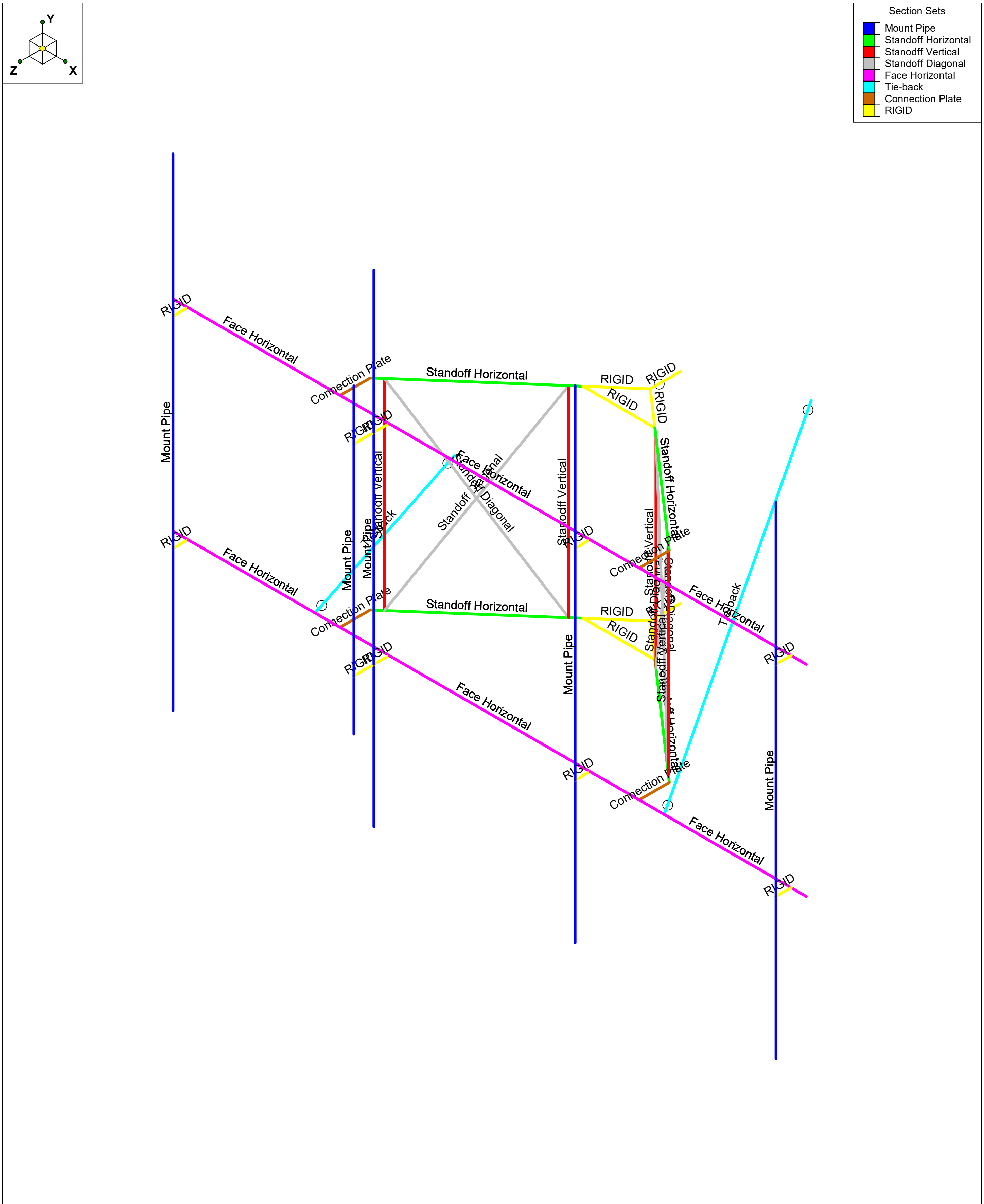
Install (3) new Site Pro 1 VFA10-HD
with (4) 8ft mount pipes per sector



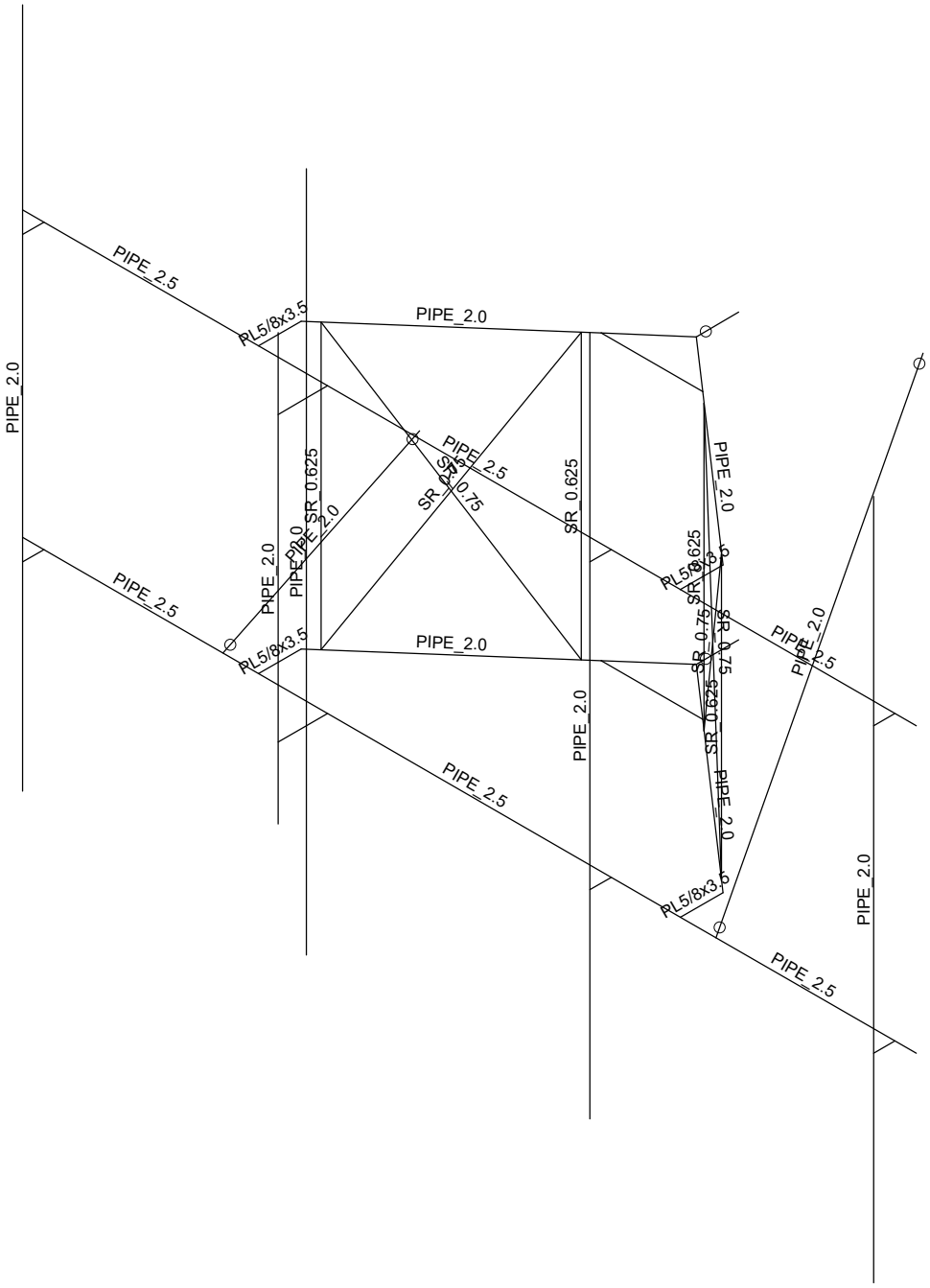
Centerline Communications	CT11926A_MA	Rendered
MS		May 25, 2022 at 1:13 PM
Site Pro 1 VFA10-HD-496		CT11926A_MA.r3d



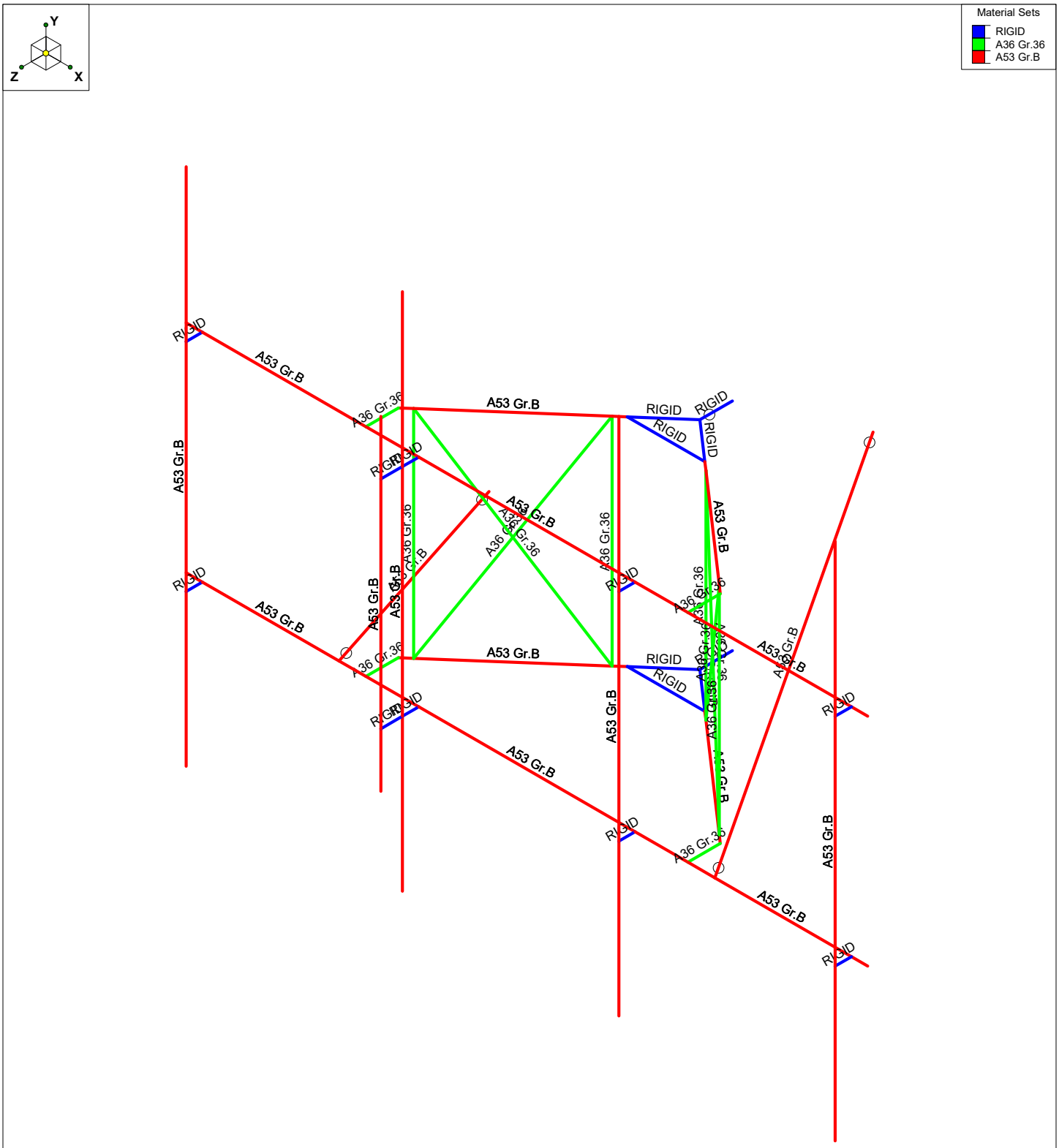
Centerline Communications	CT11926A_MA	Wireframe
MS		May 25, 2022 at 1:14 PM
Site Pro 1 VFA10-HD-496		CT11926A_MA.r3d



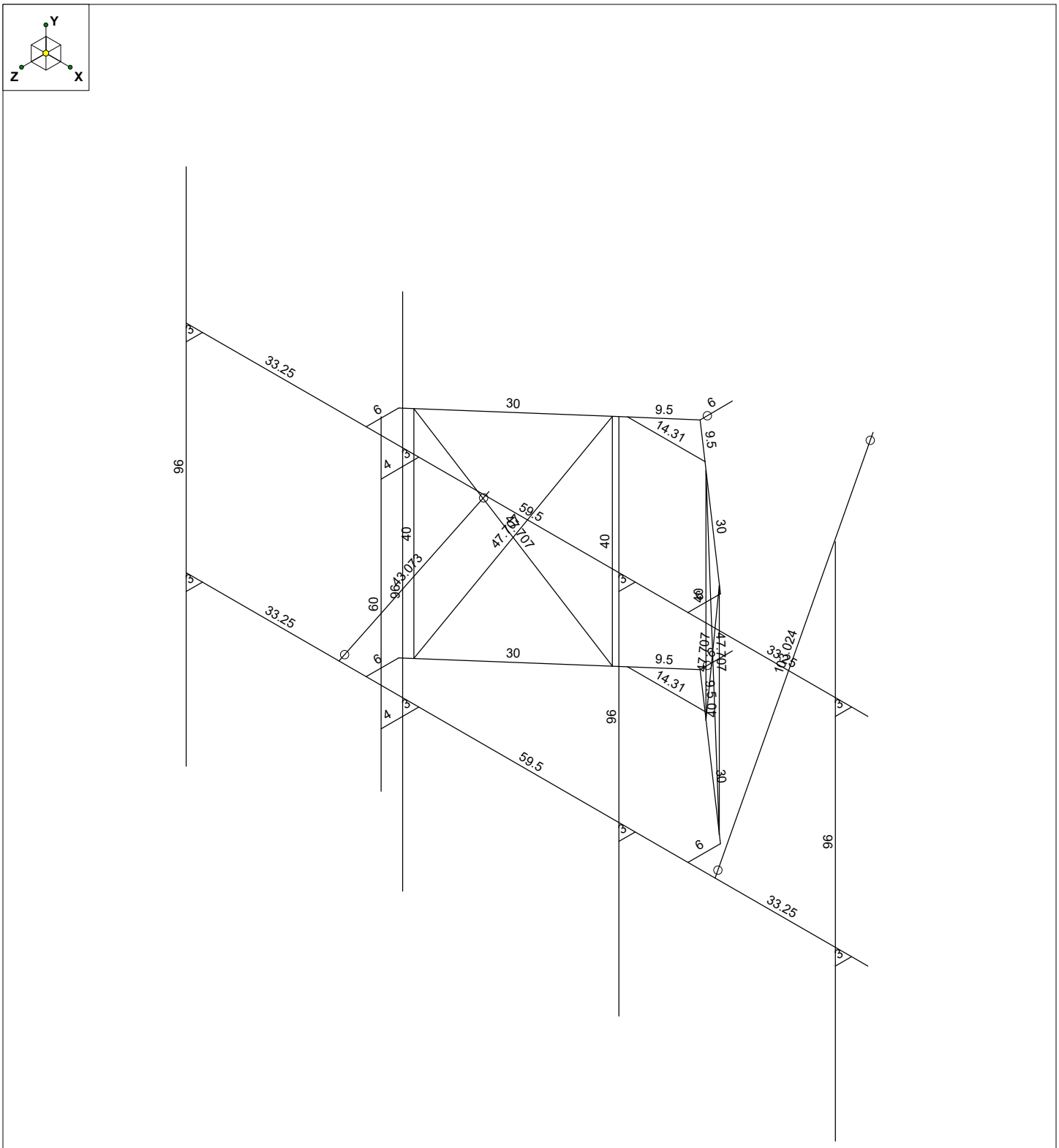
Centerline Communications	CT11926A_MA	Section Sets
MS		May 25, 2022 at 1:14 PM
Site Pro 1 VFA10-HD-496		CT11926A_MA.r3d



Centerline Communications	CT11926A_MA	Member Shape
MS		May 25, 2022 at 1:15 PM
Site Pro 1 VFA10-HD-496		CT11926A_MA.r3d

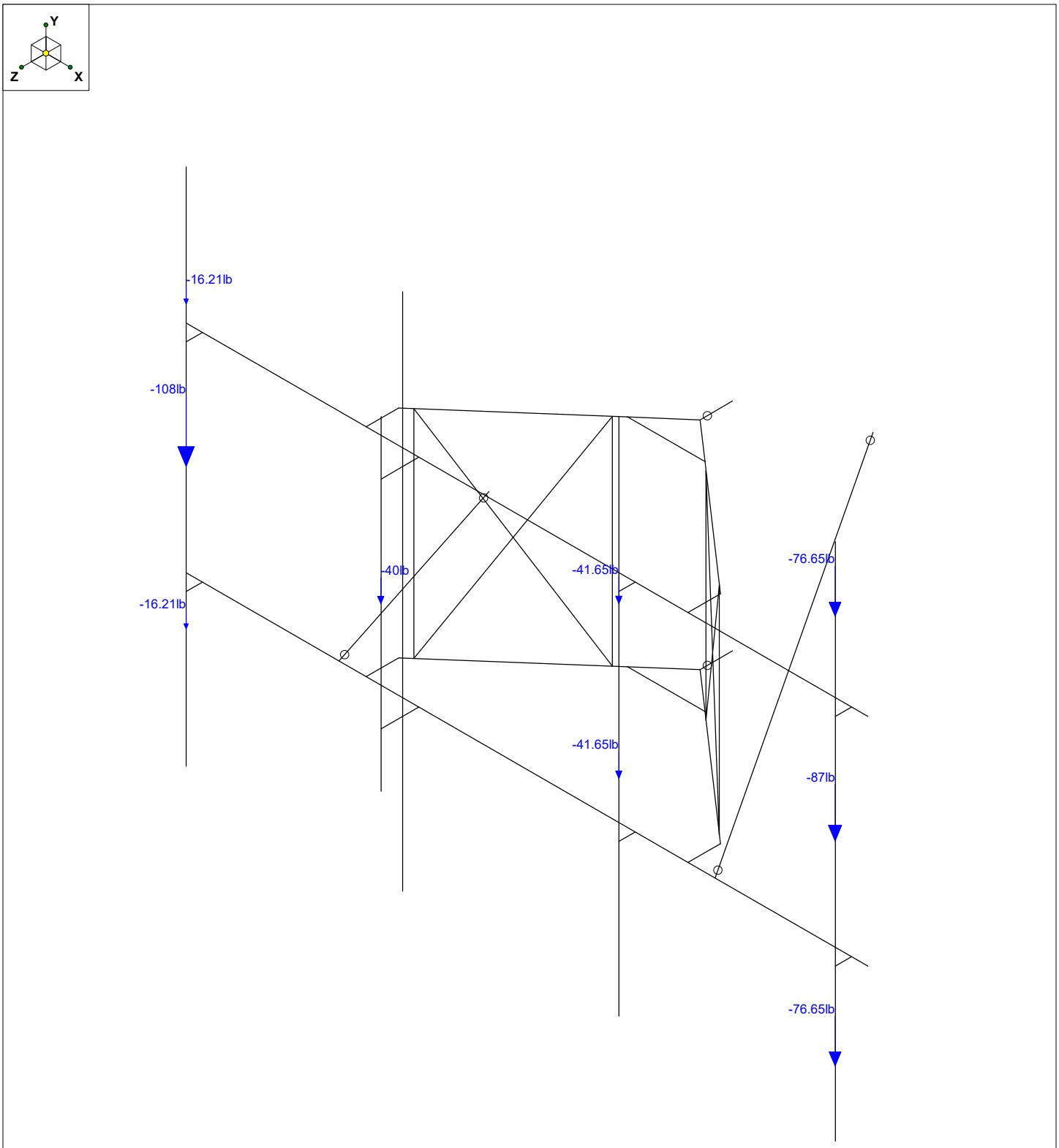


Centerline Communications	CT11926A_MA	Material Sets
MS		May 25, 2022 at 1:15 PM
Site Pro 1 VFA10-HD-496		CT11926A_MA.r3d



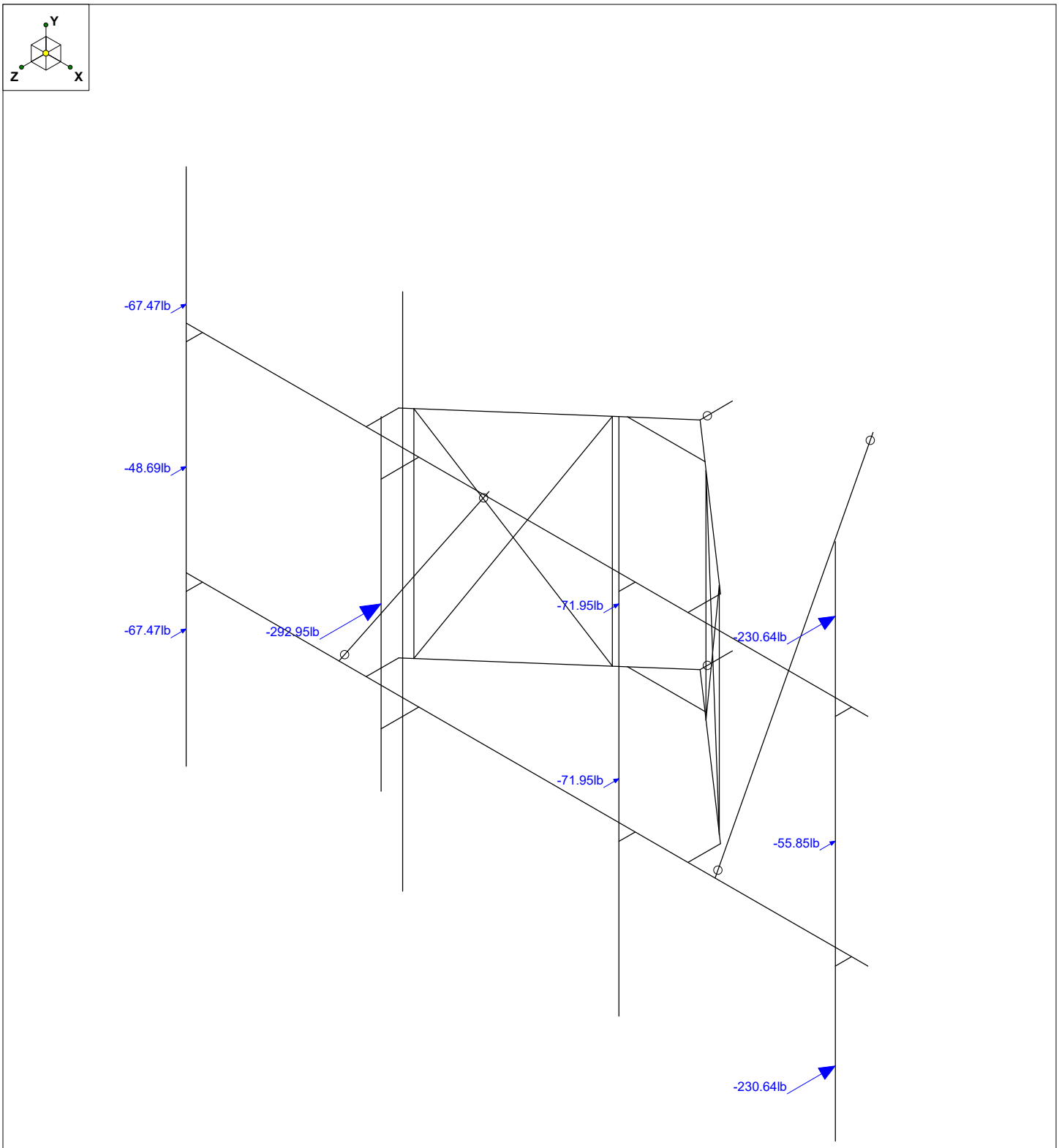
Member Length (in) Displayed

Centerline Communications	CT11926A_MA	Member Length
MS		May 25, 2022 at 1:15 PM
Site Pro 1 VFA10-HD-496		CT11926A_MA.r3d



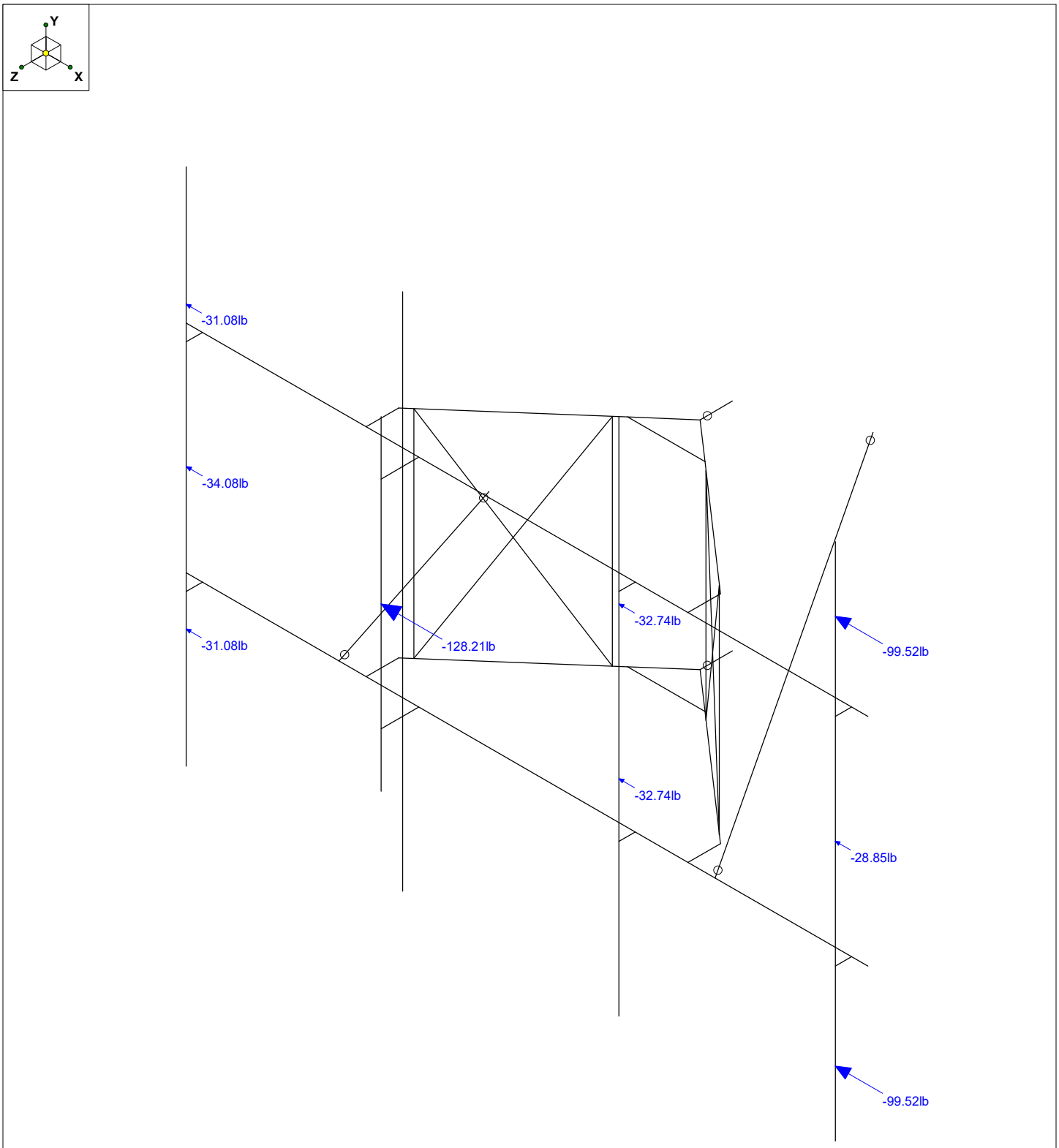
Loads: BLC 1, Dead Load

Centerline Communications	CT11926A_MA	Dead Load
MS		May 25, 2022 at 1:17 PM
Site Pro 1 VFA10-HD-496		CT11926A_MA.r3d



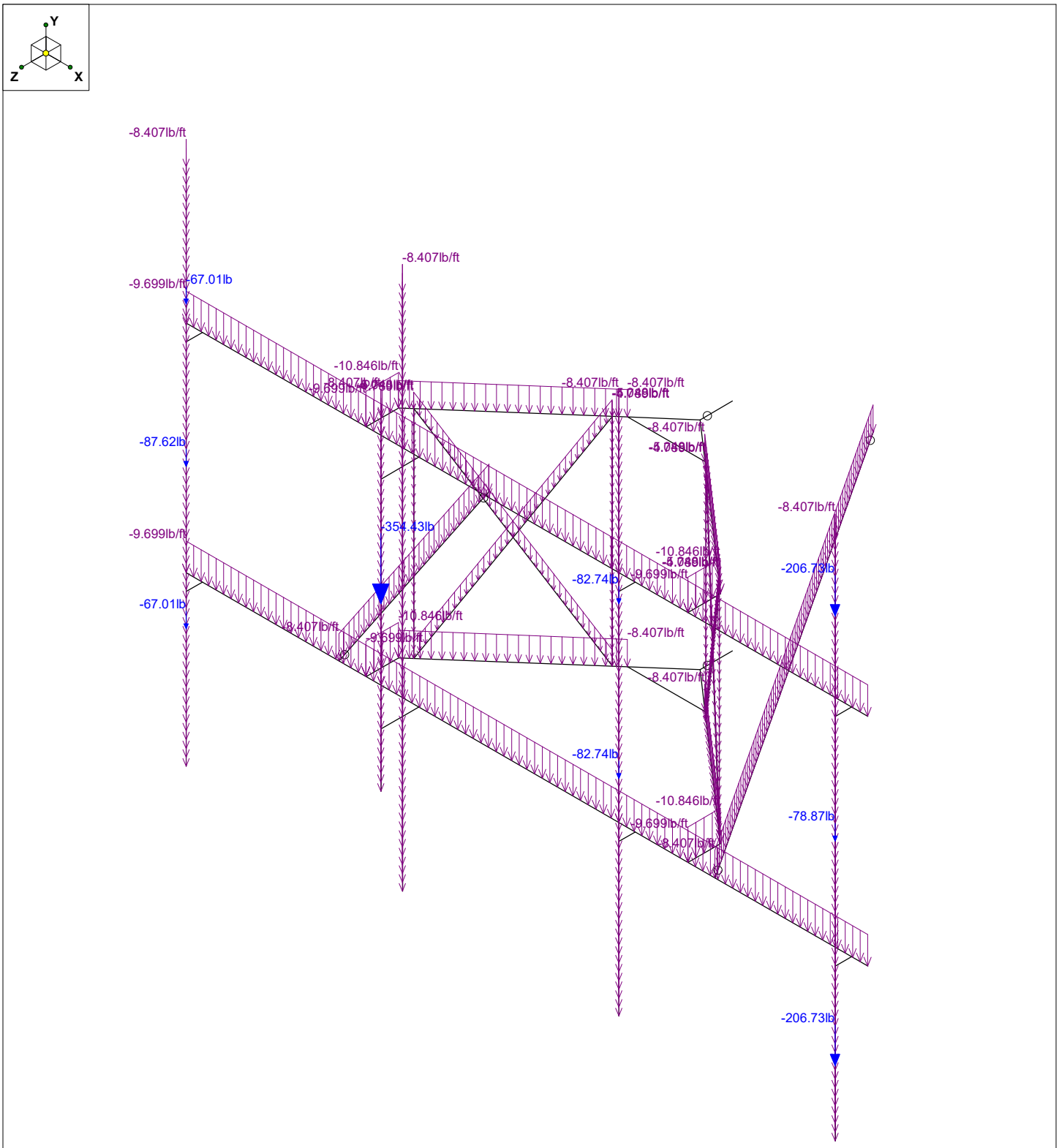
Loads: BLC 2, Wind 0

Centerline Communications	CT11926A_MA	Wind 0
MS		May 25, 2022 at 1:18 PM
Site Pro 1 VFA10-HD-496		CT11926A_MA.r3d



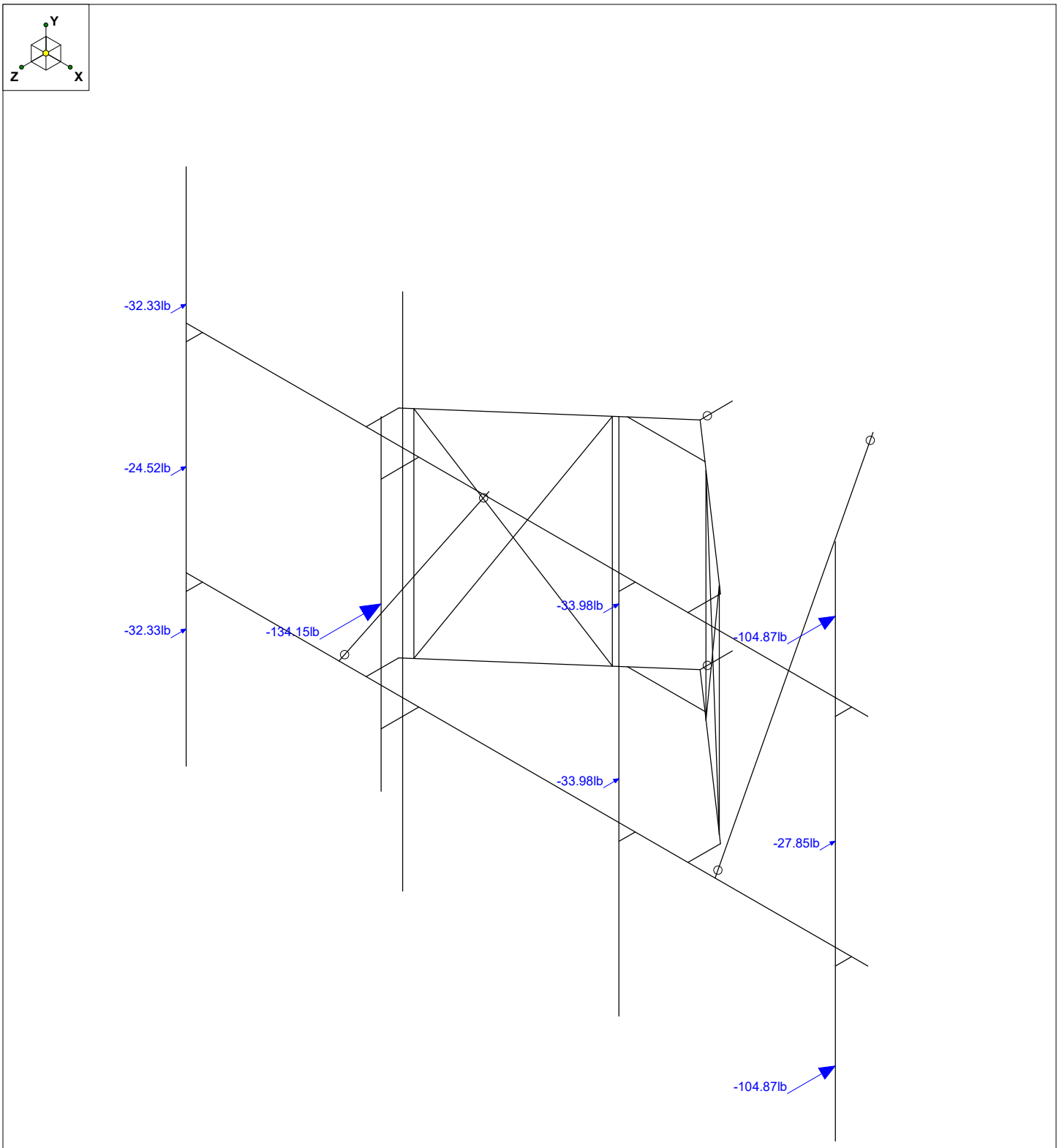
Loads: BLC 5, Wind 90

Centerline Communications	CT11926A_MA	Wind 90
MS		May 25, 2022 at 1:18 PM
Site Pro 1 VFA10-HD-496		CT11926A_MA.r3d



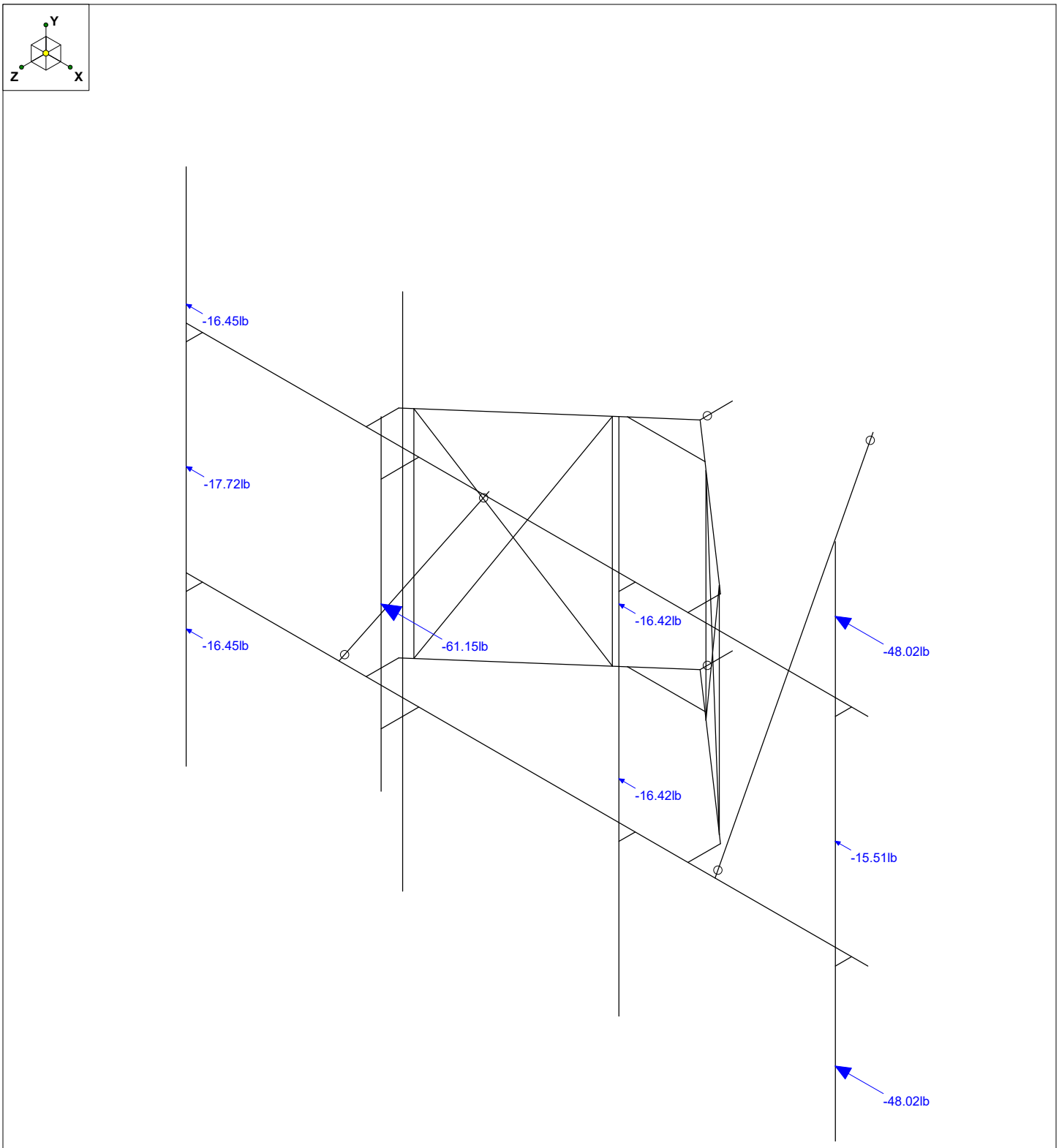
Loads: BLC 9, Ice Weight

Centerline Communications	CT11926A_MA	Ice Weight
MS		May 25, 2022 at 1:20 PM
Site Pro 1 VFA10-HD-496		CT11926A_MA.r3d



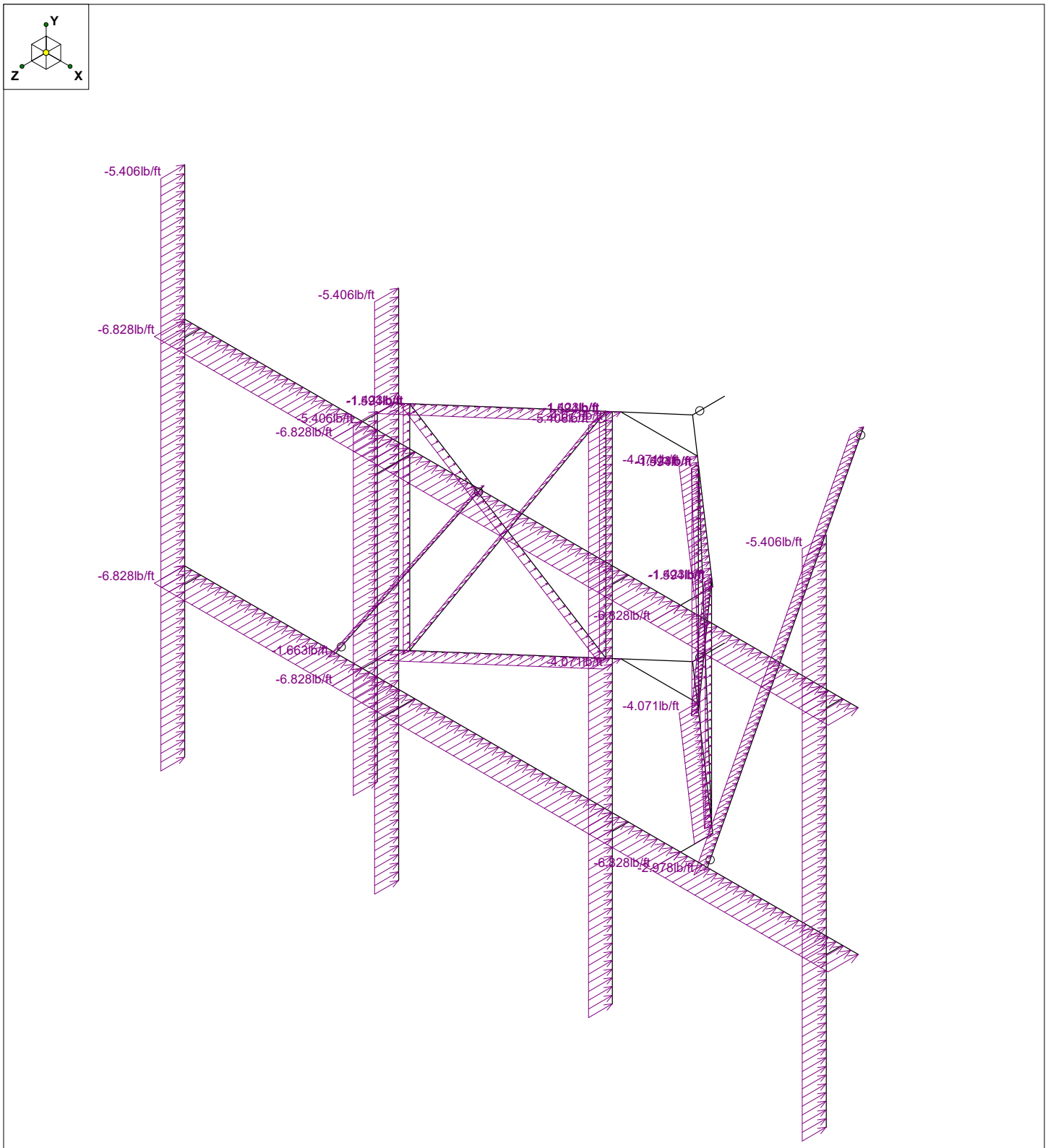
Loads: BLC 10, Ice + Wind 0

Centerline Communications	CT11926A_MA	Ice + Wind 0
MS		May 25, 2022 at 1:20 PM
Site Pro 1 VFA10-HD-496		CT11926A_MA.r3d



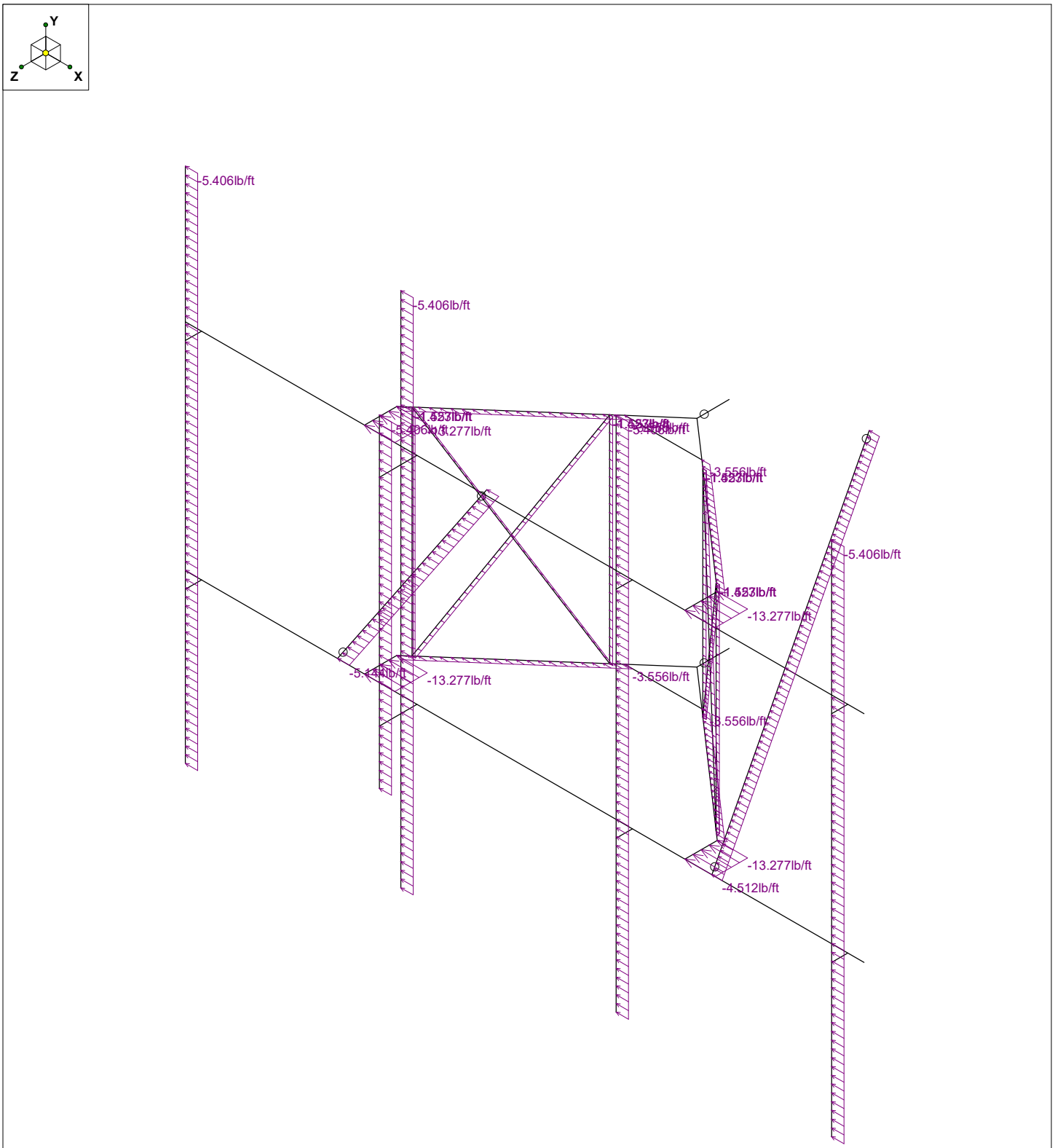
Loads: BLC 13, Ice + Wind 90

Centerline Communications	CT11926A_MA	Ice + Wind 90
MS		May 25, 2022 at 1:20 PM
Site Pro 1 VFA10-HD-496		CT11926A_MA.r3d



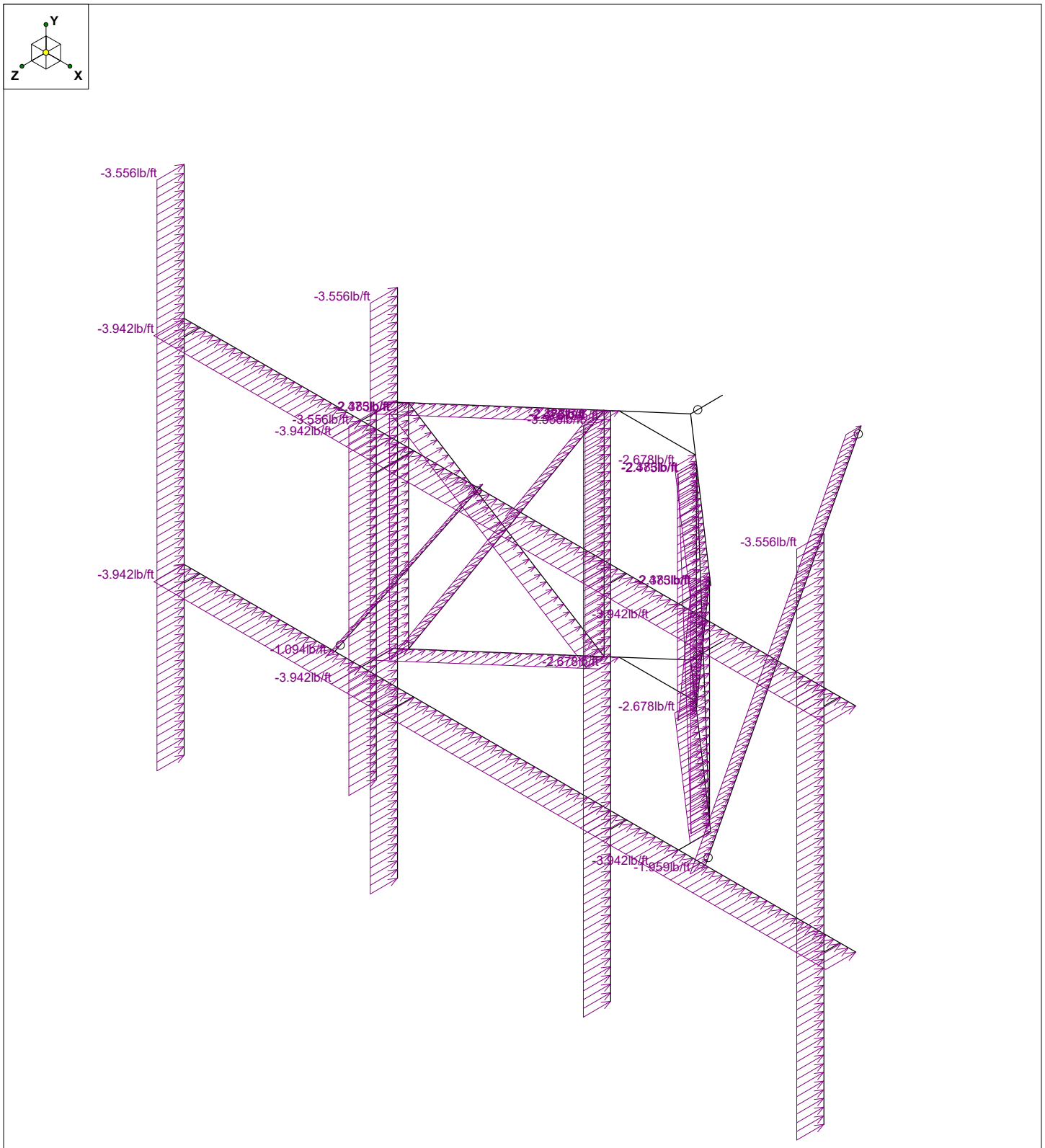
Loads: BLC 17, Distri. Wind Z

Centerline Communications	CT11926A_MA	Distr. Wind 0
MS		May 25, 2022 at 1:21 PM
Site Pro 1 VFA10-HD-496		CT11926A_MA.r3d



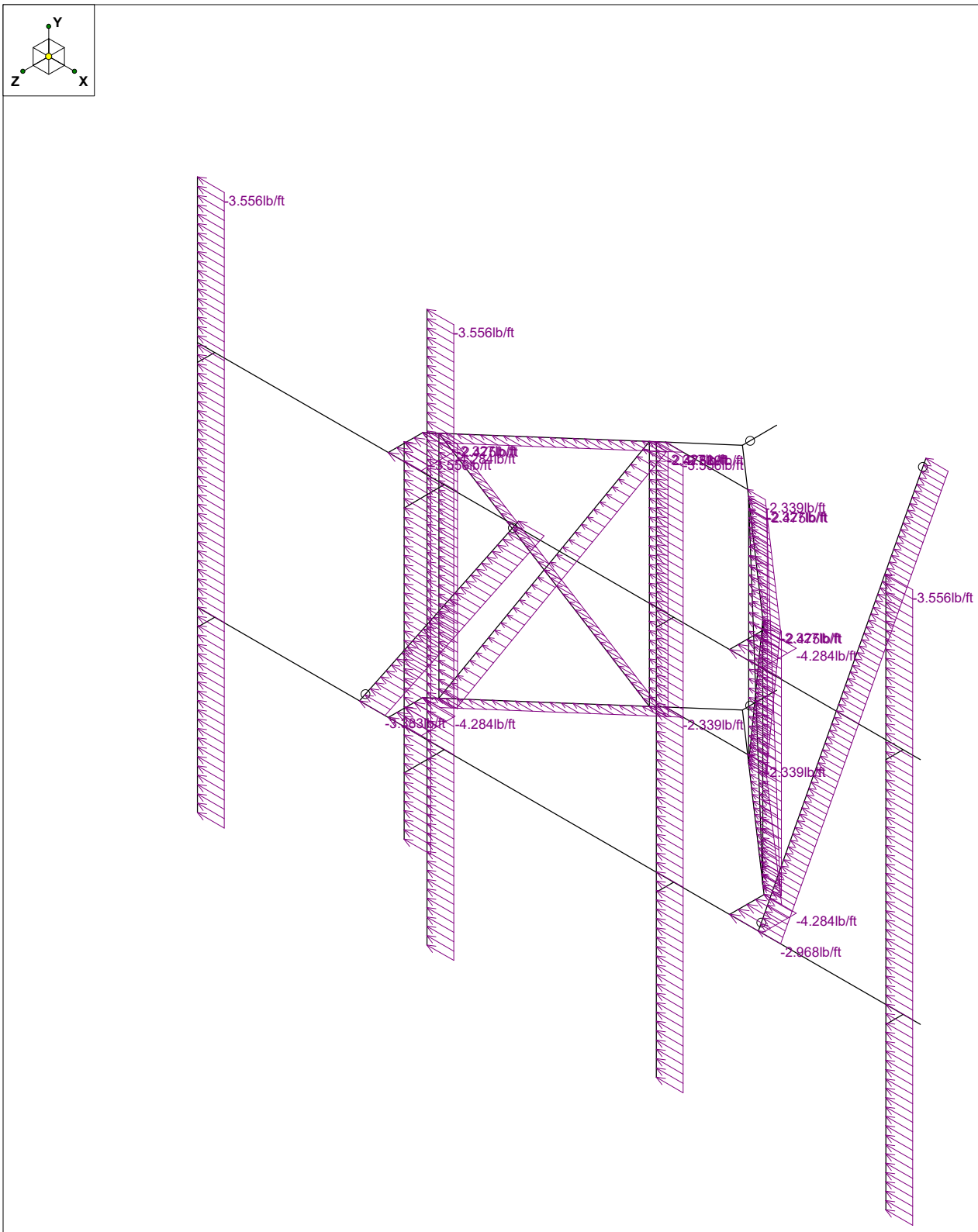
Loads: BLC 18, Distri. Wind X

Centerline Communications	CT11926A_MA	Distr. Wind 90
MS		May 25, 2022 at 1:21 PM
Site Pro 1 VFA10-HD-496		CT11926A_MA.r3d



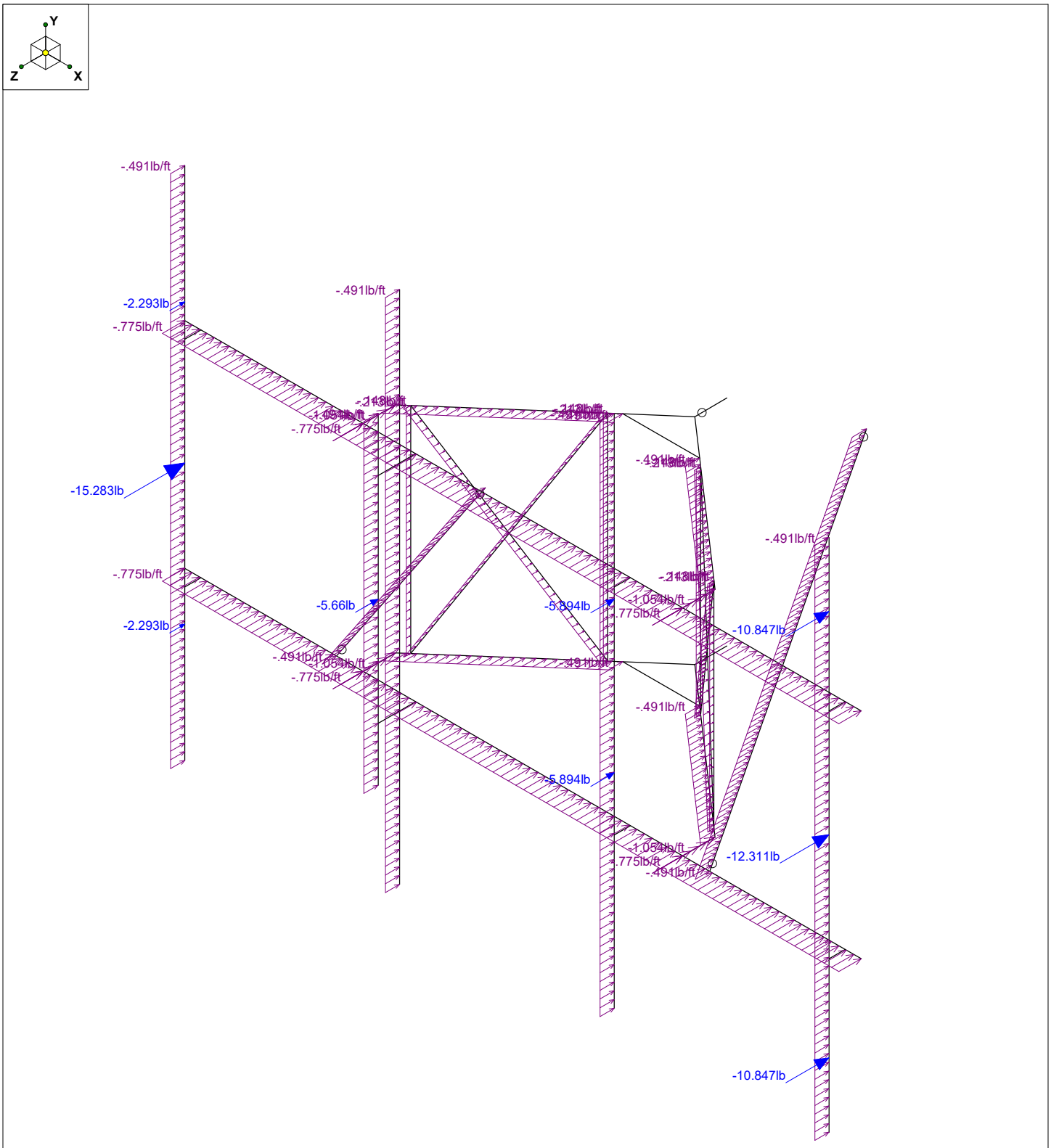
Loads: BLC 19, Distri. Ice + Wind Z

Centerline Communications	CT11926A_MA	Distr. Ice + Wind 0
MS		May 25, 2022 at 1:21 PM
Site Pro 1 VFA10-HD-496		CT11926A_MA.r3d



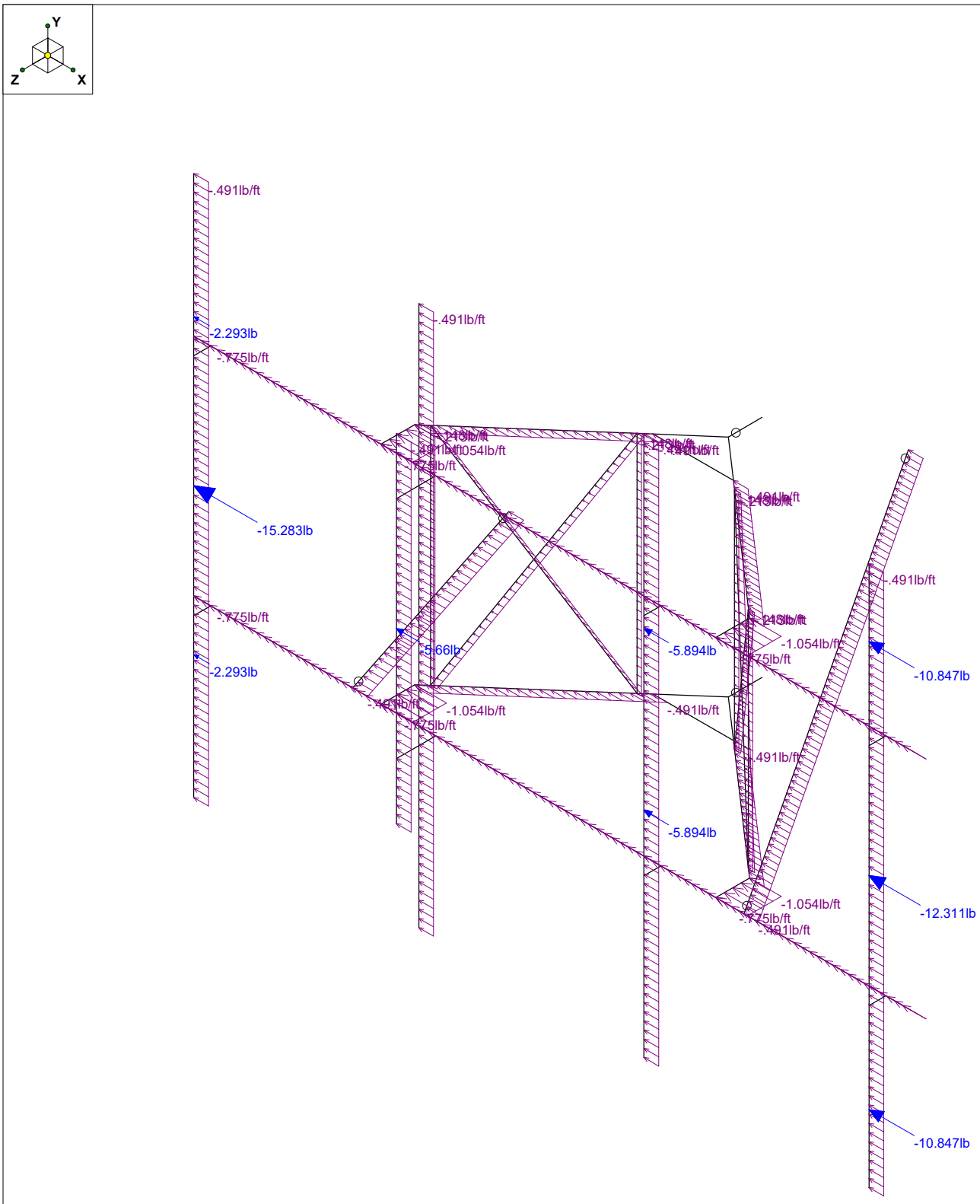
Loads: BLC 20, Distrr. Ice + Wind X

Centerline Communications	CT11926A_MA	Distr. Ice + Wind 90
MS		May 25, 2022 at 1:21 PM
Site Pro 1 VFA10-HD-496		CT11926A_MA.r3d



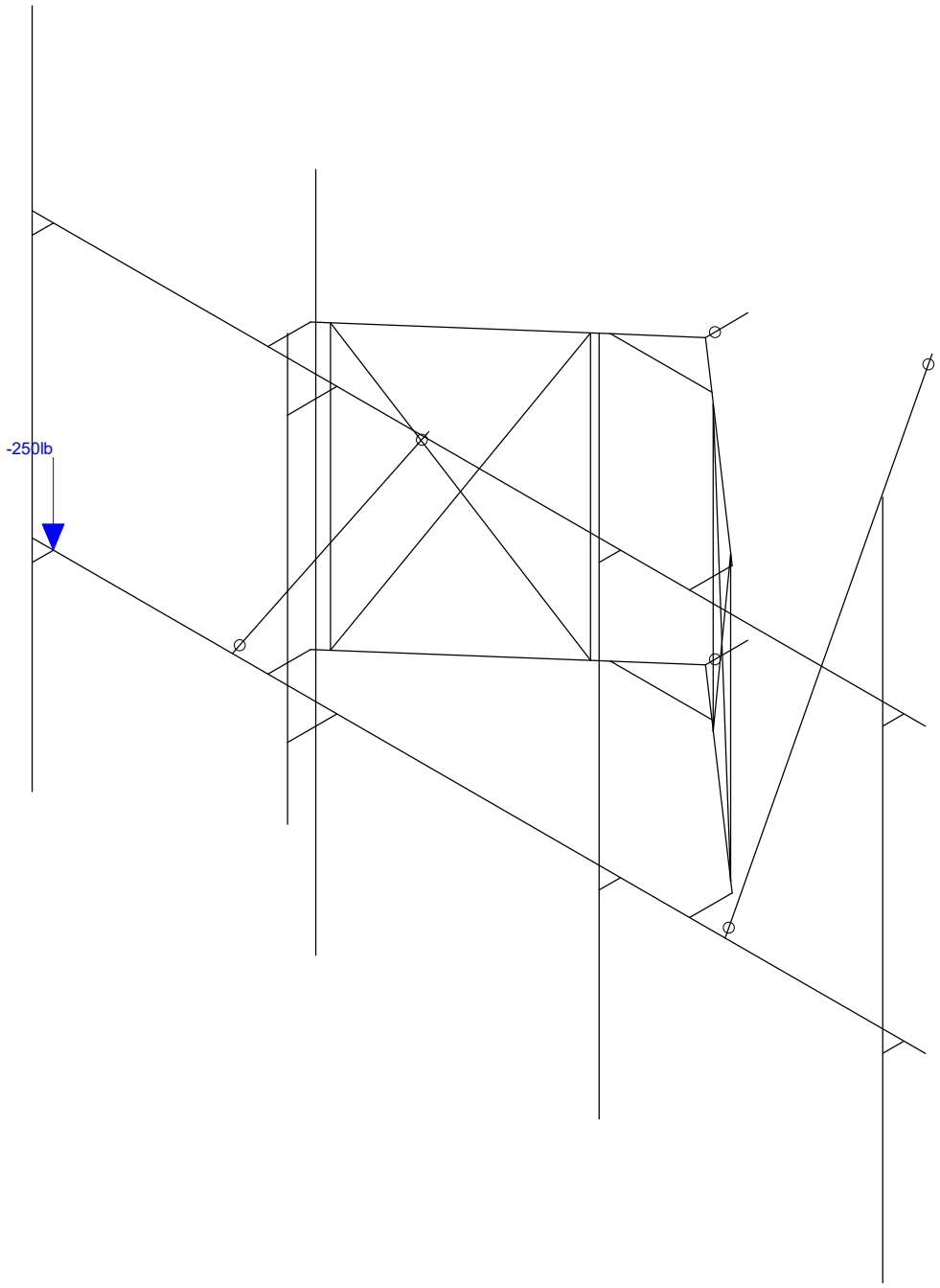
Loads: BLC 21, Seismic Load Z

Centerline Communications	CT11926A_MA	Seismic Z
MS		May 25, 2022 at 1:22 PM
Site Pro 1 VFA10-HD-496		CT11926A_MA.r3d



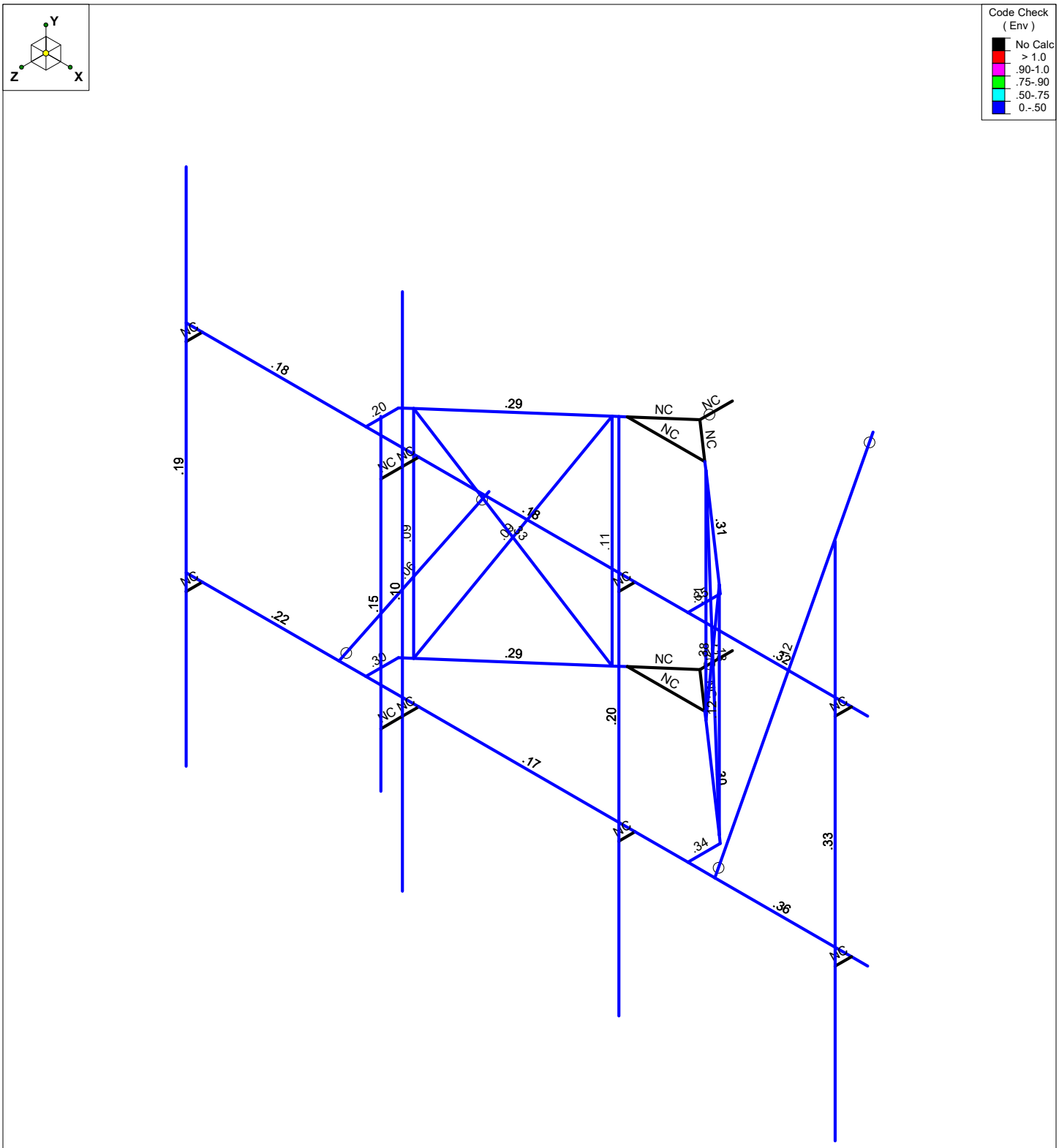
Loads: BLC 22, Seismic Load X

Centerline Communications	CT11926A_MA	Seismic X
MS		May 25, 2022 at 1:22 PM
Site Pro 1 VFA10-HD-496		CT11926A_MA.r3d



Loads: BLC 23, Live Load 1

Centerline Communications	CT11926A_MA	Live Load
MS		May 25, 2022 at 1:22 PM
Site Pro 1 VFA10-HD-496		CT11926A_MA.r3d



Member Code Checks Displayed (Enveloped)
Results for LC 4, 1.2D + 1.6W 60°

Centerline Communications	CT11926A_MA	Bending Capacity
MS		May 25, 2022 at 1:23 PM
Site Pro 1 VFA10-HD-496		CT11926A_MA.r3d

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E...Density[lb/f...		Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	490	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	490	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	490	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	490	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	490	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Mount Pipe	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
2	Standoff Horizontal	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
3	Stanodff Vertical	SR_0.625	Column	BAR	A36 Gr.36	Typical	.307	.007	.007	.015
4	Standoff Diagonal	SR_0.75	Beam	BAR	A36 Gr.36	Typical	.442	.016	.016	.031
5	Face Horizontal	PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
6	Tie-back	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
7	Connection Plate	PL5/8x3.5	Beam	RECT	A36 Gr.36	Typical	2.188	.071	2.233	.253

Joint Coordinates and Temperatures

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
1	N2	0	0	12	0	
2	N3	-29.750004	0	37.98433	0	
3	N5	29.750004	0	37.98433	0	
4	N5A	-29.750004	0	43.98433	0	
5	N6	29.750004	0	43.98433	0	
6	N7	-63	0	43.98433	0	
7	N9	63	0	43.98433	0	
8	N16	0	40.	12	0	
9	N17	-29.750004	40.	37.98433	0	
10	N18	29.750004	40.	37.98433	0	
11	N19	-29.750004	40.	43.98433	0	
12	N20	29.750004	40.	43.98433	0	
13	N21	-63	40.	43.98433	0	
14	N22	63	40.	43.98433	0	
15	N29	-60	0	43.98433	0	
16	N30	-60	40.	43.98433	0	
17	N19A	-7.155068	40.	18.249399	0	
18	N20A	-7.155068	0	18.249399	0	
19	N21A	7.155068	40.	18.249399	0	
20	N22A	7.155068	0	18.249399	0	
21	N25	60	0	43.98433	0	
22	N26	60	40.	43.98433	0	
23	N27	20	0	43.98433	0	
24	N28	20	40.	43.98433	0	
25	N29A	-60	67.999999	46.98433	0	
26	N31	60	67.999999	46.98433	0	
27	N32	20	67.999999	46.98433	0	
28	N33	-60	-28.000001	46.98433	0	
29	N35	60	-28.000001	46.98433	0	
30	N36	20	-28.000001	46.98433	0	
31	N41	0	0	6	0	
32	N42	0	40	6	0	
33	N45	-8.661392	40.	19.565057	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
34	N46	-8.661392	0	19.565057	0	
35	N47	8.661392	40.	19.565057	0	
36	N48	8.661392	0	19.565057	0	
37	N49	-28.243691	40.	36.668681	0	
38	N50	-28.243691	0	36.668681	0	
39	N51	28.243691	40.	36.668681	0	
40	N52	28.243691	0	36.668681	0	
41	N49A	-22	0	-42	0	
42	N50A	34.750004	0	43.98433	0	
43	N51A	-60	0	46.98433	0	
44	N52A	-60	40.	46.98433	0	
45	N55	60	0	46.98433	0	
46	N56	60	40.	46.98433	0	
47	N57	20	0	46.98433	0	
48	N58	20	40.	46.98433	0	
49	N49B	-48	0	3	0	
50	N50B	-34.750004	0	43.98433	0	
51	N51B	-20	0	43.98433	0	
52	N52B	-20	40.	43.98433	0	
53	N53	-20	67.999999	46.98433	0	
54	N54	-20	-28.000001	46.98433	0	
55	N55A	-20	0	46.98433	0	
56	N56A	-20	40.	46.98433	0	
57	N57A	-20	0	50.98433	0	
58	N58A	-20	40.	50.98433	0	
59	N59	-20	50.	50.98433	0	
60	N60	-20	-10	50.98433	0	

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N42	max	28.99	6	1630.532	21	784.514	9	-226.034	9	0	78	1105.942	51
2		min	-62.393	22	189.579	9	-2402.287	22	-1837.454	21	0	1	-791.503	40
3	N41	max	12.669	13	1596.07	16	2408.874	16	-178.18	14	0	78	1118.161	51
4		min	-1.02	19	159.917	14	-2623.723	13	-1803.59	16	0	1	-772.776	40
5	N49A	max	908.6	12	53.938	22	1330.618	12	33.41	57	0	78	50.621	57
6		min	-152.857	15	13.313	9	-252.143	15	-16.022	11	0	1	-24.276	11
7	N49B	max	491.869	6	23.075	21	1483.194	6	30.943	51	0	78	95.712	51
8		min	-170.131	2	1.095	12	-520.779	2	-44.952	40	0	1	-139.042	40
9	Totals:	max	1409.363	5	3153.418	20	2556.082	9						
10		min	-.011	43	789.446	15	-2556.082	15						

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N42	Reaction	Reaction	Reaction	Reaction		Reaction
2	N41	Reaction	Reaction	Reaction	Reaction		Reaction
3	N49A	Reaction	Reaction	Reaction	Reaction		Reaction
4	N49B	Reaction	Reaction	Reaction	Reaction		Reaction

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M3	Connection ...	6			Lbyy						Lateral
2	M4	Connection ...	6			Lbyy						Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
3	M7	Connection ...	6			Lbyy						Lateral
4	M8	Connection ...	6			Lbyy						Lateral
5	M13	Face Horizo...	33.25			Lbyy			2.1	2.1		Lateral
6	M14	Face Horizo...	59.5			Lbyy						Lateral
7	M15	Face Horizo...	33.25			Lbyy			2.1	2.1		Lateral
8	M16	Face Horizo...	33.25			Lbyy			2.1	2.1		Lateral
9	M17	Face Horizo...	59.5			Lbyy						Lateral
10	M18	Face Horizo...	33.25			Lbyy			2.1	2.1		Lateral
11	M15A	Standoff Ho...	30			Lbyy						Lateral
12	M16A	Standoff Ho...	30			Lbyy						Lateral
13	M17A	Standoff Ho...	30			Lbyy						Lateral
14	M18A	Standoff Ho...	30			Lbyy						Lateral
15	MP4	Mount Pipe	96			Lbyy						Lateral
16	MP2	Mount Pipe	96			Lbyy						Lateral
17	MP1	Mount Pipe	96			Lbyy						Lateral
18	M27	Stanodff Ve...	40			Lbyy			.65	.65		Lateral
19	M28	Stanodff Ve...	40			Lbyy			.65	.65		Lateral
20	M29	Stanodff Ve...	40			Lbyy			.65	.65		Lateral
21	M30	Stanodff Ve...	40			Lbyy			.65	.65		Lateral
22	M31	Standoff Di...	47.707			Lbyy			.65	.65		Lateral
23	M32	Standoff Di...	47.707			Lbyy			.65	.65		Lateral
24	M33	Standoff Di...	47.707			Lbyy			.65	.65		Lateral
25	M34	Standoff Di...	47.707			Lbyy			.65	.65		Lateral
26	M36	Tie-back	103.024			Lbyy						Lateral
27	M41	Tie-back	43.073			Lbyy						Lateral
28	MP3A	Mount Pipe	96			Lbyy						Lateral
29	MP3	Mount Pipe	60									Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M3	N3	N5A		90	Connection Pl...	Beam	RECT	A36 Gr.36	Typical
2	M4	N5	N6		90	Connection Pl...	Beam	RECT	A36 Gr.36	Typical
3	M7	N17	N19		90	Connection Pl...	Beam	RECT	A36 Gr.36	Typical
4	M8	N18	N20		90	Connection Pl...	Beam	RECT	A36 Gr.36	Typical
5	M13	N21	N19			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
6	M14	N19	N20			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
7	M15	N20	N22			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
8	M16	N7	N5A			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
9	M17	N5A	N6			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
10	M18	N6	N9			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
11	M15A	N19A	N17			Standoff Horiz...	Beam	Pipe	A53 Gr.B	Typical
12	M16A	N20A	N3			Standoff Horiz...	Beam	Pipe	A53 Gr.B	Typical
13	M17A	N21A	N18			Standoff Horiz...	Beam	Pipe	A53 Gr.B	Typical
14	M18A	N22A	N5			Standoff Horiz...	Beam	Pipe	A53 Gr.B	Typical
15	M15B	N16	N19A			RIGID	Beam	None	RIGID	DR1
16	M16B	N16	N21A			RIGID	Beam	None	RIGID	DR1
17	M17B	N2	N20A			RIGID	Beam	None	RIGID	DR1
18	M18B	N2	N22A			RIGID	Beam	None	RIGID	DR1
19	MP4	N29A	N33			Mount Pipe	Column	Pipe	A53 Gr.B	Typical
20	MP2	N32	N36			Mount Pipe	Column	Pipe	A53 Gr.B	Typical
21	MP1	N31	N35			Mount Pipe	Column	Pipe	A53 Gr.B	Typical
22	M24	N42	N16			RIGID	Beam	None	RIGID	DR1
23	M25	N41	N2			RIGID	Beam	None	RIGID	DR1
24	M27	N45	N46			Stanodff Vertical	Column	BAR	A36 Gr.36	Typical
25	M28	N49	N50			Stanodff Vertical	Column	BAR	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
26	M29	N47	N48			Stanodff Vertical	Column	BAR	A36 Gr.36	Typical
27	M30	N51	N52			Stanodff Vertical	Column	BAR	A36 Gr.36	Typical
28	M31	N45	N50			Standoff Diago...	Beam	BAR	A36 Gr.36	Typical
29	M32	N49	N46			Standoff Diago...	Beam	BAR	A36 Gr.36	Typical
30	M33	N47	N52			Standoff Diago...	Beam	BAR	A36 Gr.36	Typical
31	M34	N51	N48			Standoff Diago...	Beam	BAR	A36 Gr.36	Typical
32	M34A	N19A	N21A			RIGID	Beam	None	RIGID	DR1
33	M35	N20A	N22A			RIGID	Beam	None	RIGID	DR1
34	M36	N50A	N49A			Tie-back	Beam	Pipe	A53 Gr.B	Typical
35	M37	N26	N56			RIGID	Beam	None	RIGID	DR1
36	M38	N25	N55			RIGID	Beam	None	RIGID	DR1
37	M39	N28	N58			RIGID	Beam	None	RIGID	DR1
38	M40	N27	N57			RIGID	Beam	None	RIGID	DR1
39	M43	N30	N52A			RIGID	Beam	None	RIGID	DR1
40	M44	N29	N51A			RIGID	Beam	None	RIGID	DR1
41	M41	N50B	N49B			Tie-back	Beam	Pipe	A53 Gr.B	Typical
42	MP3A	N53	N54			Mount Pipe	Column	Pipe	A53 Gr.B	Typical
43	M43A	N52B	N56A			RIGID	Beam	None	RIGID	DR1
44	M44A	N51B	N55A			RIGID	Beam	None	RIGID	DR1
45	MP3	N59	N60			Mount Pipe	Column	Pipe	A53 Gr.B	Typical
46	M46	N57A	N55A			RIGID	Beam	None	RIGID	DR1
47	M47	N58A	N56A			RIGID	Beam	None	RIGID	DR1

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M3						Yes				None
2	M4						Yes				None
3	M7						Yes				None
4	M8						Yes				None
5	M13						Yes				None
6	M14						Yes				None
7	M15						Yes				None
8	M16						Yes				None
9	M17						Yes				None
10	M18						Yes				None
11	M15A						Yes				None
12	M16A						Yes				None
13	M17A						Yes				None
14	M18A						Yes				None
15	M15B						Yes				None
16	M16B						Yes				None
17	M17B						Yes				None
18	M18B						Yes				None
19	MP4						Yes	** NA **			None
20	MP2						Yes	** NA **			None
21	MP1						Yes	** NA **			None
22	M24		OOOOOO				Yes				None
23	M25		OOOOOO				Yes				None
24	M27						Yes	** NA **			None
25	M28						Yes	** NA **			None
26	M29						Yes	** NA **			None
27	M30						Yes	** NA **			None
28	M31						Yes	Default			None
29	M32						Yes				None
30	M33						Yes				None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
31	M34						Yes				None
32	M34A						Yes				None
33	M35						Yes				None
34	M36	BenPIN	BenPIN				Yes				None
35	M37						Yes				None
36	M38						Yes				None
37	M39						Yes				None
38	M40						Yes				None
39	M43						Yes				None
40	M44						Yes				None
41	M41	BenPIN	BenPIN				Yes				None
42	MP3A						Yes	** NA **			None
43	M43A						Yes				None
44	M44A						Yes				None
45	MP3						Yes	** NA **			None
46	M46						Yes				None
47	M47						Yes				None

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Dead Load	DL		-1			9			
2	Wind 0	WLZ					18			
3	Wind 30	None					18			
4	Wind 60	None					18			
5	Wind 90	WLX					18			
6	Wind 120	None					18			
7	Wind 150	None					18			
8	Wind 180	WLZ					18			
9	Ice Weight	DL					9	47		
10	Ice + Wind 0	WLZ					18			
11	Ice + Wind 30	None					18			
12	Ice + Wind 60	None					18			
13	Ice + Wind 90	WLX					18			
14	Ice + Wind 120	None					18			
15	Ice + Wind 150	None					18			
16	Ice + Wind 180	WLZ					18			
17	Distri. Wind Z	WLZ						47		
18	Distri. Wind X	WLX						47		
19	Distri. Ice + Wind Z	WLZ						47		
20	Distrr. Ice + Wind X	WLX						47		
21	Seismic Load Z	ELZ					9	47		
22	Seismic Load X	ELX					9	47		
23	Live Load 1	LL					1			
24	Live Load 2	LL					1			
25	Live Load 3	LL					1			

Load Combinations

	Description	So...	P...	S...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...
1	1.4D	Yes	Y		1	1.4																		
2	1.2D + 1.6W 0°	Yes	Y		1	1.2	2	1.6	17	1.6	18													
3	1.2D + 1.6W 30°	Yes	Y		1	1.2	3	1.6	17	1.386	18	.8												
4	1.2D + 1.6W 60°	Yes	Y		1	1.2	4	1.6	17	.8	18	1.386												
5	1.2D + 1.6W 90°	Yes	Y		1	1.2	5	1.6	17		18	1.6												
6	1.2D + 1.6W 120°	Yes	Y		1	1.2	6	1.6	17	-.8	18	1.386												

Load Combinations (Continued)

	Description	So...	P...	S...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...
7	1.2D + 1.6W 150°	Yes	Y		1	1.2	7	1.6	17	-1.3...	18	.8														
8	1.2D + 1.6W 180°	Yes	Y		1	1.2	8	1.6	17	-1.6	18															
9	0.9D + 1.6W 0°	Yes	Y		1	.9	2	1.6	17	1.6	18															
10	0.9D + 1.6W 30°	Yes	Y		1	.9	3	1.6	17	1.386	18	.8														
11	0.9D + 1.6W 60°	Yes	Y		1	.9	4	1.6	17	.8	18	1.386														
12	0.9D + 1.6W 90°	Yes	Y		1	.9	5	1.6	17		18	1.6														
13	0.9D + 1.6W 120°	Yes	Y		1	.9	6	1.6	17	-.8	18	1.386														
14	0.9D + 1.6W 150°	Yes	Y		1	.9	7	1.6	17	-1.3...	18	.8														
15	0.9D + 1.6W 180°	Yes	Y		1	.9	8	1.6	17	-1.6	18															
16	1.2D + 1.0Di + 1....	Yes	Y		1	1.2	9	1	10	1	19	1	20													
17	1.2D + 1.0Di + 1....	Yes	Y		1	1.2	9	1	11	1	19	.866	20	.5												
18	1.2D + 1.0Di + 1....	Yes	Y		1	1.2	9	1	12	1	19	.5	20	.866												
19	1.2D + 1.0Di + 1....	Yes	Y		1	1.2	9	1	13	1	19		20	1												
20	1.2D + 1.0Di + 1....	Yes	Y		1	1.2	9	1	14	1	19	-.5	20	.866												
21	1.2D + 1.0Di + 1....	Yes	Y		1	1.2	9	1	15	1	19	-.866	20	.5												
22	1.2D + 1.0Di + 1....	Yes	Y		1	1.2	9	1	16	1	19	-1	20													
23	1.2D + 1.0Eh 0°	Yes	Y		1	1.2	21	1	22																	
24	1.2D + 1.0Eh 30°	Yes	Y		1	1.2	21	.866	22	.5																
25	1.2D + 1.0Eh 60°	Yes	Y		1	1.2	21	.5	22	.866																
26	1.2D + 1.0Eh 90°	Yes	Y		1	1.2	21		22	1																
27	1.2D + 1.0Eh 120°	Yes	Y		1	1.2	21	-.5	22	.866																
28	1.2D + 1.0Eh 150°	Yes	Y		1	1.2	21	-.866	22	.5																
29	1.2D + 1.0Eh 180°	Yes	Y		1	1.2	21	-1	22																	
30	0.9D + 1.0Eh 0°	Yes	Y		1	.9	21	1	22																	
31	0.9D + 1.0Eh 30°	Yes	Y		1	.9	21	.866	22	.5																
32	0.9D + 1.0Eh 60°	Yes	Y		1	.9	21	.5	22	.866																
33	0.9D + 1.0Eh 90°	Yes	Y		1	.9	21		22	1																
34	0.9D + 1.0Eh 12...	Yes	Y		1	.9	21	-.5	22	.866																
35	0.9D + 1.0Eh 150°	Yes	Y		1	.9	21	-.866	22	.5																
36	0.9D + 1.0Eh 180°	Yes	Y		1	.9	21	-1	22																	
37	1.0D +1.5Lv + 1....	Yes	Y		1	1	23	1.5	2	.35	17	.35	18													
38	1.0D +1.5Lv + 1....	Yes	Y		1	1	23	1.5	3	.35	17	.303	18	.175												
39	1.0D +1.5Lv + 1....	Yes	Y		1	1	23	1.5	4	.35	17	.175	18	.303												
40	1.0D +1.5Lv + 1....	Yes	Y		1	1	23	1.5	5	.35	17		18	.35												
41	1.0D +1.5Lv + 1....	Yes	Y		1	1	23	1.5	6	.35	17	-.175	18	.303												
42	1.0D +1.5Lv + 1....	Yes	Y		1	1	23	1.5	7	.35	17	-.303	18	.175												
43	1.0D +1.5Lv + 1....	Yes	Y		1	1	23	1.5	8	.35	17	-.35	18													
44	1.0D +1.5Lv + 1....	Yes	Y		1	1	24	1.5	2	.35	17	.35	18													
45	1.0D +1.5Lv + 1....	Yes	Y		1	1	24	1.5	3	.35	17	.303	18	.175												
46	1.0D +1.5Lv + 1....	Yes	Y		1	1	24	1.5	4	.35	17	.175	18	.303												
47	1.0D +1.5Lv + 1....	Yes	Y		1	1	24	1.5	5	.35	17		18	.35												
48	1.0D +1.5Lv + 1....	Yes	Y		1	1	24	1.5	6	.35	17	-.175	18	.303												
49	1.0D +1.5Lv + 1....	Yes	Y		1	1	24	1.5	7	.35	17	-.303	18	.175												
50	1.0D +1.5Lv + 1....	Yes	Y		1	1	24	1.5	8	.35	17	-.35	18													
51	1.0D +1.5Lv + 1....	Yes	Y		1	1	25	1.5	2	.35	17	.35	18													
52	1.0D +1.5Lv + 1....	Yes	Y		1	1	25	1.5	3	.35	17	.303	18	.175												
53	1.0D +1.5Lv + 1....	Yes	Y		1	1	25	1.5	4	.35	17	.175	18	.303												
54	1.0D +1.5Lv + 1....	Yes	Y		1	1	25	1.5	5	.35	17		18	.35												
55	1.0D +1.5Lv + 1....	Yes	Y		1	1	25	1.5	6	.35	17	-.175	18	.303												
56	1.0D +1.5Lv + 1....	Yes	Y		1	1	25	1.5	7	.35	17	-.303	18	.175												
57	1.0D +1.5Lv + 1....	Yes	Y		1	1	25	1.5	8	.35	17	-.35	18													
58	1.2D + 1.0Lv + 1...	Yes	Y		1	1.2	23	1	2	.098	17	.098	18													
59	1.2D + 1.0Lv + 1...	Yes	Y		1	1.2	23	1	3	.098	17	.085	18	.049												
60	1.2D + 1.0Lv + 1...	Yes	Y		1	1.2	23	1	4	.098	17	.049	18	.085												
61	1.2D + 1.0Lv + 1...	Yes	Y		1	1.2	23	1	5	.098	17		18	.098												
62	1.2D + 1.0Lv + 1...	Yes	Y		1	1.2	23	1	6	.098	17	-.049	18	.085												
63	1.2D + 1.0Lv + 1...	Yes	Y		1	1.2	23	1	7	.098	17	-.085	18	.049												

Load Combinations (Continued)

	Description	So...	P...	S...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...
64	1.2D + 1.0Lv + 1...	Yes	Y		1	1.2	23	1	8	.098	17	-.098	18											
65	1.2D + 1.0Lv + 1...	Yes	Y		1	1.2	24	1	2	.098	17	.098	18											
66	1.2D + 1.0Lv + 1...	Yes	Y		1	1.2	24	1	3	.098	17	.085	18	.049										
67	1.2D + 1.0Lv + 1...	Yes	Y		1	1.2	24	1	4	.098	17	.049	18	.085										
68	1.2D + 1.0Lv + 1...	Yes	Y		1	1.2	24	1	5	.098	17		18	.098										
69	1.2D + 1.0Lv + 1...	Yes	Y		1	1.2	24	1	6	.098	17	-.049	18	.085										
70	1.2D + 1.0Lv + 1...	Yes	Y		1	1.2	24	1	7	.098	17	-.085	18	.049										
71	1.2D + 1.0Lv + 1...	Yes	Y		1	1.2	24	1	8	.098	17	-.098	18											
72	1.2D + 1.0Lv + 1...	Yes	Y		1	1.2	25	1	2	.098	17	.098	18											
73	1.2D + 1.0Lv + 1...	Yes	Y		1	1.2	25	1	3	.098	17	.085	18	.049										
74	1.2D + 1.0Lv + 1...	Yes	Y		1	1.2	25	1	4	.098	17	.049	18	.085										
75	1.2D + 1.0Lv + 1...	Yes	Y		1	1.2	25	1	5	.098	17		18	.098										
76	1.2D + 1.0Lv + 1...	Yes	Y		1	1.2	25	1	6	.098	17	-.049	18	.085										
77	1.2D + 1.0Lv + 1...	Yes	Y		1	1.2	25	1	7	.098	17	-.085	18	.049										
78	1.2D + 1.0Lv + 1...	Yes	Y		1	1.2	25	1	8	.098	17	-.098	18											

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc...	phi*Pnt ...	phi*Mn ...	phi*Mn ...	Cb	Eqn
1	M34	SR_0.75	.380	47.707	16	.011	0		8	3648.952	14313.8...	178.929	178.929	2...	H1-1a
2	M18	PIPE_2.5	.363	0	14	.108	0		6	38441.8...	50715	3596.25	3596.25	2...	H1-1b
3	M8	PL5/8x3.5	.355	6	2	.123	6	y	21	66866.46	70875	922.852	5167.97	1...	H1-1b
4	M4	PL5/8x3.5	.343	6	21	.135	6	y	20	66866.46	70875	922.852	5167.97	1...	H1-1b
5	MP1	PIPE_2.0	.330	68	20	.046	28		8	14916.0...	32130	1871.625	1871.625	3...	H1-1b
6	M32	SR_0.75	.329	0	22	.010	0		21	3648.952	14313.8...	178.929	178.929	2...	H1-1a
7	M15	PIPE_2.5	.322	0	8	.117	0		2	38441.8...	50715	3596.25	3596.25	1...	H1-1b
8	M17A	PIPE_2.0	.306	0	57	.135	28.1...		16	29810.2...	32130	1871.625	1871.625	1...	H1-1b
9	M18A	PIPE_2.0	.303	0	51	.129	28.1...		22	29810.2...	32130	1871.625	1871.625	1...	H1-1b
10	M3	PL5/8x3.5	.303	6	6	.096	0	y	7	66866.46	70875	922.852	5167.97	1...	H1-1b
11	M15A	PIPE_2.0	.293	1.875	57	.120	0		22	29810.2...	32130	1871.625	1871.625	1...	H1-1b
12	M16A	PIPE_2.0	.291	1.875	51	.121	0		22	29810.2...	32130	1871.625	1871.625	1...	H1-1b
13	M16	PIPE_2.5	.222	33.25	14	.133	33.25		6	38441.8...	50715	3596.25	3596.25	1...	H1-1b
14	M7	PL5/8x3.5	.205	6	7	.085	0	y	22	66866.46	70875	922.852	5167.97	1...	H1-1b
15	MP2	PIPE_2.0	.198	68	6	.048	68		6	14916.0...	32130	1871.625	1871.625	4...	H1-1b
16	MP4	PIPE_2.0	.188	68	16	.024	68		16	14916.0...	32130	1871.625	1871.625	4...	H1-1b
17	M14	PIPE_2.5	.181	59.5	16	.102	59.5		22	41472.48	50715	3596.25	3596.25	2...	H1-1b
18	M13	PIPE_2.5	.179	33.25	8	.042	33.25		20	38441.8...	50715	3596.25	3596.25	2...	H1-1b
19	M17	PIPE_2.5	.172	59.5	16	.106	59.5		16	41472.48	50715	3596.25	3596.25	2...	H1-1b
20	MP3	PIPE_2.0	.146	10	8	.051	10		8	23808.54	32130	1871.625	1871.625	1...	H1-1b
21	M33	SR_0.75	.129	47.707	16	.004	47.7...		51	3648.952	14313.8...	178.929	178.929	3...	H1-1b
22	M30	SR_0.625	.124	40	16	.008	40		6	2503.081	9940.19	103.542	103.542	2...	H1-1b
23	M36	PIPE_2.0	.121	103.024	12	.036	0		57	13277.23	32130	1871.625	1871.625	1...	H1-1b*
24	M27	SR_0.625	.107	40	12	.009	40		7	2503.081	9940.19	103.542	103.542	2...	H1-1b
25	M29	SR_0.625	.106	40	57	.008	40		7	2503.081	9940.19	103.542	103.542	2...	H1-1b
26	MP3A	PIPE_2.0	.103	68	16	.030	28		7	14916.0...	32130	1871.625	1871.625	4...	H1-1b
27	M28	SR_0.625	.094	0	13	.007	0		7	2503.081	9940.19	103.542	103.542	2...	H1-1b
28	M31	SR_0.75	.090	47.707	16	.009	47.7...		22	3648.952	14313.8...	178.929	178.929	2...	H1-1b
29	M41	PIPE_2.0	.057	43.073	6	.083	0		40	27531.0...	32130	1871.625	1871.625	1...	H1-1b*

Exhibit F

Power Density/RF Emissions Report

Radio Frequency Exposure Analysis Report

July 8, 2022

Centerline on behalf of T-Mobile

T-Mobile Site Name: Stratford North
Site Number: CT11926A

Site Address: 630 James Ford Rd, Stratford, CT 06614

Site Compliance Summary

T-Mobile Compliance Status:	Compliant
Cumulative Calculated Power Density (Ground Level):	5.13144 µW/cm^2
Cumulative General Population % MPE (Ground Level):	0.58559%

750 West Center Street | Suite 301 | West Bridgewater | MA | 02379

July 8, 2022

Centerline
Attn: Ryan Clark, Site Acquisition
750 W Center St, Suite 301
West Bridgewater, MA 02379

RF Exposure Analysis for Site: **Stratford North**

Centerline Communications, LLC ("Centerline") was contracted to analyze the proposed T-Mobile facility at **630 James Ford Rd, Stratford, CT 06614** for the purpose of determining whether the predictive exposure from the proposed facility is within specified federal limits.

All information used in this report was analyzed as a percentage of the Maximum Permissible Exposure (% MPE) limits as detailed in 47 CFR § 1.1310 as well as Federal Communications Commission (FCC) OET Bulletin 65 Edition 97-01. The FCC MPE limits are typically expressed in units of milliwatts per square centimeter (mW/cm^2) or microwatts per square centimeter ($\mu W/cm^2$). The exposure limits vary depending upon the frequencies being utilized. The General Population/Uncontrolled MPE limit (in mW/cm^2) for frequencies between 300 and 1500 is defined as frequency (in MHz) divided by 1500 ($f_{MHz}/1500$). Frequencies between 1500 and 100,000 MHz have a General Population/Uncontrolled MPE limit of 1 mW/cm^2 (1000 $\mu W/cm^2$). The calculated power density at each sample point divided by the limit at each calculated frequency provides a result in % MPE. Summing the calculated % MPE from all contributors provides a cumulative % MPE at a particular sample point. Wireless carriers use different frequency bands with varying MPE limits; therefore, it is useful to report results in terms of % MPE as opposed to power density.

All results were compared to the FCC radio frequency exposure rules as detailed in 47 CFR § 1.1307(b) to determine compliance with the 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.

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, 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.

Calculation Methodology

Centerline Communications, LLC has performed theoretical modeling of the site using a software tool, RoofMaster®, which incorporates calculation methodologies detailed in FCC OET 65. RoofMaster® uses a cylindrical model for conservative power density predictions within the near field of the antenna where the antenna pattern has not truly formed yet. Within this area power density values tend to decrease based upon an inverse distance function. At the point where it is appropriate for modeling to change from near-field calculations to far-field calculations, the power decreases inversely with the square of the distance. The modeling is based on worst-case assumptions in terms of transmitter power and duty cycle. No losses were included in the power calculations unless they were specifically provided for the project.

In OET 65, a far field model is presented to calculate the spatial peak power density. The RoofMaster® implementation of this model incorporates antenna manufacturer's horizontal and vertical pattern data to determine the power density in all directions. This model yields the power density at a single point in space. In order to determine the spatial power density for comparison to the FCC limits, the average of several points calculated within the human profile (0-6') must be conducted. RoofMaster® calculates seven power density values between 0-6' above the specified study plane and performs a linear spatial average.

Data & Results

The following table details the antennas and operating parameters for the T-Mobile antenna system as well as any other antenna systems at the site. This is based on antenna information provided by the client and data compiled from other sources where necessary. The data below was input into Roofmaster® to perform the theoretical exposure calculations at ground level.

The theoretical calculations performed in Roofmaster® determine the cumulative exposure at all sample points at ground level (0-6' spatial average). The results from highest cumulative sample point at ground level surrounding the site are displayed in the table below. The contribution from directional antennas to the maximum cumulative totals varies greatly depending on location; therefore, the contribution from one antenna sector at the highest calculated exposure point may be greater or less than other sectors since sectorized directional antennas are pointed in different directions and there is not much overlapping exposure.

The contribution to the cumulative power density and % MPE for each antenna/frequency band is listed in the table. The cumulative power density and cumulative % MPE are displayed at the bottom of the table.

Maximum Calculated Cumulative Power Density (Location: approximately 5' SE of site)

Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/ Channel (watts)	ERP (watts)	Calculated Power Density (μW/cm²)	General Population MPE Limit (μW/cm²)	General Population % MPE
T-Mobile A 1	RFS APXVAARR24 43-U-NA20	700	13.26	110.00	2.00	40.00	1694.69	0.00045	466.67	0.00010
T-Mobile A 1	RFS APXVAARR24 43-U-NA20	600	13.04	110.00	4.00	60.00	4832.94	0.00029	400.00	0.00007
T-Mobile A 1	RFS APXVAARR24 43-U-NA20	600	13.04	110.00	2.00	40.00	1610.98	0.00010	400.00	0.00002
T-Mobile A 2	ERICSSON AIR6419	2500	22.05	110.00	2.00	80.00	25651.93	0.00222	1000.00	0.00022
T-Mobile A 2	ERICSSON AIR6419	2500	22.05	110.00	2.00	80.00	25651.93	0.00222	1000.00	0.00022
T-Mobile A 3	COMMSCOPE VV-65A-R1	2100	16.43	110.00	2.00	140.00	12307.17	0.00012	1000.00	0.00001
T-Mobile A 3	COMMSCOPE VV-65A-R1	1900	15.80	110.00	2.00	140.00	10645.30	0.00011	1000.00	0.00001
T-Mobile B 4	RFS APXVAARR24 43-U-NA20	700	13.26	110.00	2.00	40.00	1694.69	0.03744	466.67	0.00802
T-Mobile B 4	RFS APXVAARR24 43-U-NA20	600	13.04	110.00	4.00	60.00	4832.94	0.08893	400.00	0.02223
T-Mobile B 4	RFS APXVAARR24 43-U-NA20	600	13.04	110.00	2.00	40.00	1610.98	0.02964	400.00	0.00741
T-Mobile B 5	ERICSSON AIR6419	2500	22.05	110.00	2.00	80.00	25651.93	1.82047	1000.00	0.18205
T-Mobile B 5	ERICSSON AIR6419	2500	22.05	110.00	2.00	80.00	25651.93	1.82047	1000.00	0.18205
T-Mobile B 6	COMMSCOPE VV-65A-R1	2100	16.43	110.00	2.00	140.00	12307.17	0.18901	1000.00	0.01890
T-Mobile B 6	COMMSCOPE VV-65A-R1	1900	15.80	110.00	2.00	140.00	10645.30	0.15195	1000.00	0.01520
T-Mobile C 7	RFS APXVAARR24 43-U-NA20	700	13.26	110.00	2.00	40.00	1694.69	0.00004	466.67	0.00001
T-Mobile C 7	RFS APXVAARR24 43-U-NA20	600	13.04	110.00	4.00	60.00	4832.94	0.00028	400.00	0.00007
T-Mobile C 7	RFS APXVAARR24 43-U-NA20	600	13.04	110.00	2.00	40.00	1610.98	0.00009	400.00	0.00002
T-Mobile C 8	ERICSSON AIR6419	2500	22.05	110.00	2.00	80.00	25651.93	0.00191	1000.00	0.00019
T-Mobile C 8	ERICSSON AIR6419	2500	22.05	110.00	2.00	80.00	25651.93	0.00191	1000.00	0.00019
T-Mobile C 9	COMMSCOPE VV-65A-R1	2100	16.43	110.00	2.00	140.00	12307.17	0.00034	1000.00	0.00003
T-Mobile C 9	COMMSCOPE VV-65A-R1	1900	15.80	110.00	2.00	140.00	10645.30	0.00015	1000.00	0.00001
T-Mobile D 10	GENERIC 3Ø Dish w/ Radome	5600	20.85	110.00	1.00	0.10	12.16	0.00000	1000.00	0.00000
T-Mobile E 11	GENERIC 2Ø Dish w/ Radome	5600	20.85	110.00	1.00	0.10	12.16	0.00001	1000.00	0.00000
Verizon A 12	COMMSCOPE LRX-8512DS-VTM	850	11.48	98.00	7.00	20.00	1969.37	0.00033	566.67	0.00006
Verizon A 13	COMMSCOPE JAHH-65B-R3B	700	12.11	98.00	2.00	40.00	1300.44	0.00018	466.67	0.00004
Verizon A 13	COMMSCOPE JAHH-65B-R3B	850	12.81	98.00	2.00	40.00	1527.88	0.00012	566.67	0.00002
Verizon A 13	COMMSCOPE JAHH-65B-R3B	1900	15.72	98.00	4.00	40.00	5972.00	0.00008	1000.00	0.00001
Verizon A 14	COMMSCOPE JAHH-65B-R3B	700	12.11	98.00	2.00	40.00	1300.44	0.00012	466.67	0.00003
Verizon A 14	COMMSCOPE JAHH-65B-R3B	850	12.81	98.00	2.00	40.00	1527.88	0.00008	566.67	0.00001
Verizon A 14	COMMSCOPE JAHH-65B-R3B	2100	15.71	98.00	4.00	40.00	5958.27	0.00009	1000.00	0.00001
Verizon A 15	SAMSUNG XXDWMM-12.5-65-8T	3600	8.30	98.00	4.00	5.00	135.22	0.00005	1000.00	0.00000
Verizon B 16	COMMSCOPE LRX-8512DS-VTM	850	11.48	98.00	7.00	20.00	1969.37	0.17102	566.67	0.03018
Verizon B 17	COMMSCOPE JAHH-65B-R3B	700	12.11	98.00	2.00	40.00	1300.44	0.09634	466.67	0.02064
Verizon B 17	COMMSCOPE JAHH-65B-R3B	850	12.81	98.00	2.00	40.00	1527.88	0.10066	566.67	0.01776
Verizon B 17	COMMSCOPE JAHH-65B-R3B	1900	15.72	98.00	4.00	40.00	5972.00	0.20038	1000.00	0.02004

Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/ Channel (watts)	ERP (watts)	Calculated Power Density ($\mu W/cm^2$)	General Population MPE Limit ($\mu W/cm^2$)	General Population % MPE
Verizon B 18	COMMSCOPE JAHH-65B-R3B	700	12.11	98.00	2.00	40.00	1300.44	0.09331	466.67	0.02000
Verizon B 18	COMMSCOPE JAHH-65B-R3B	850	12.81	98.00	2.00	40.00	1527.88	0.09954	566.67	0.01757
Verizon B 18	COMMSCOPE JAHH-65B-R3B	2100	15.71	98.00	4.00	40.00	5958.27	0.19559	1000.00	0.01956
Verizon B 19	SAMSUNG XXDWMM-12.5-65-8T	3600	8.30	98.00	4.00	5.00	135.22	0.02382	1000.00	0.00238
Verizon C 20	COMMSCOPE LRX-8512DS-VTM	850	11.48	98.00	7.00	20.00	1969.37	0.00037	566.67	0.00007
Verizon C 21	COMMSCOPE JAHH-65B-R3B	700	12.11	98.00	2.00	40.00	1300.44	0.00010	466.67	0.00002
Verizon C 21	COMMSCOPE JAHH-65B-R3B	850	12.81	98.00	2.00	40.00	1527.88	0.00005	566.67	0.00001
Verizon C 21	COMMSCOPE JAHH-65B-R3B	1900	15.72	98.00	4.00	40.00	5972.00	0.00015	1000.00	0.00002
Verizon C 22	COMMSCOPE JAHH-65B-R3B	700	12.11	98.00	2.00	40.00	1300.44	0.00024	466.67	0.00005
Verizon C 22	COMMSCOPE JAHH-65B-R3B	850	12.81	98.00	2.00	40.00	1527.88	0.00007	566.67	0.00001
Verizon C 22	COMMSCOPE JAHH-65B-R3B	2100	15.71	98.00	4.00	40.00	5958.27	0.00054	1000.00	0.00005
Verizon C 23	SAMSUNG XXDWMM-12.5-65-8T	3600	8.30	98.00	4.00	5.00	135.22	0.00007	1000.00	0.00001
							Cumulative Power Density:	**5.13144 $\mu W/cm^2$**	**Cumulative % MPE:**	**0.58559%**

Summary

The theoretical calculations performed for this analysis yielded cumulative power density totals in all areas at ground level that are within the allowable federal limits for public exposure to RF energy. Therefore, the site is **compliant** with FCC rules and regulations.

Michelle Stone

Michelle Stone
RF EME Technical Writer II
Centerline Communications, LLC

Exhibit G

Mailing Receipts/Proof of Notice

UPS CampusShip: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the Resources area of CampusShip and select UPS Locations.
   Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages.
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DANBURY ,CT 06810

UPS Access Point™
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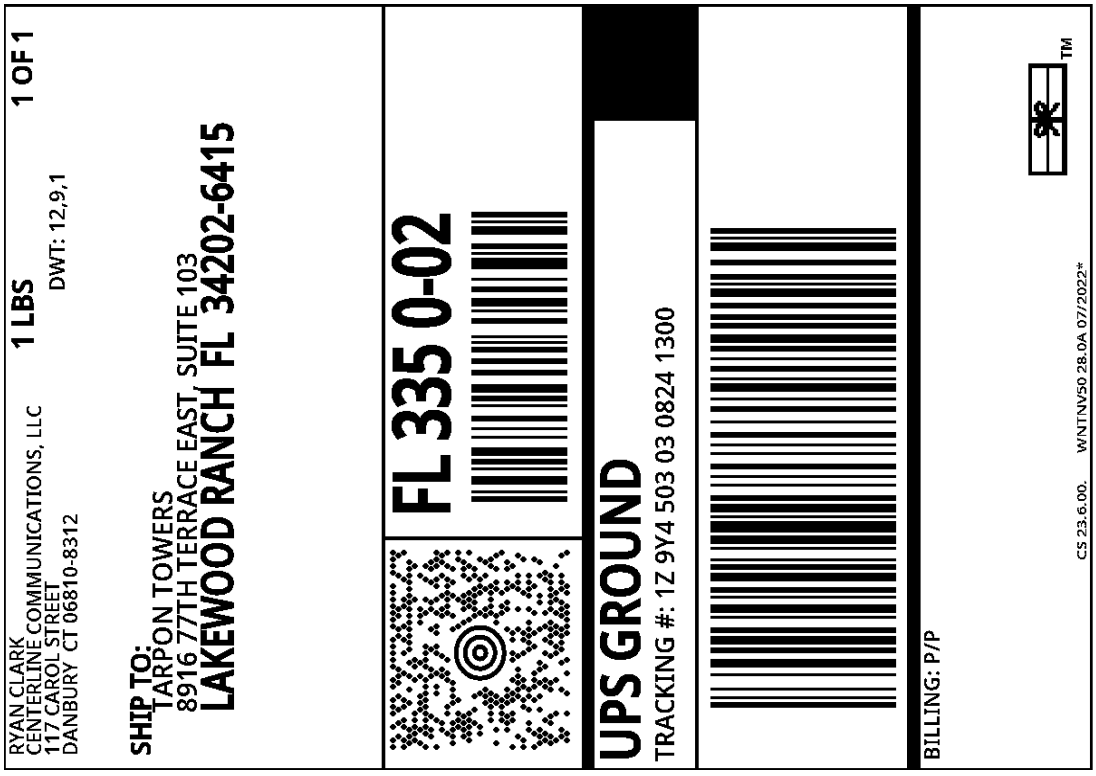

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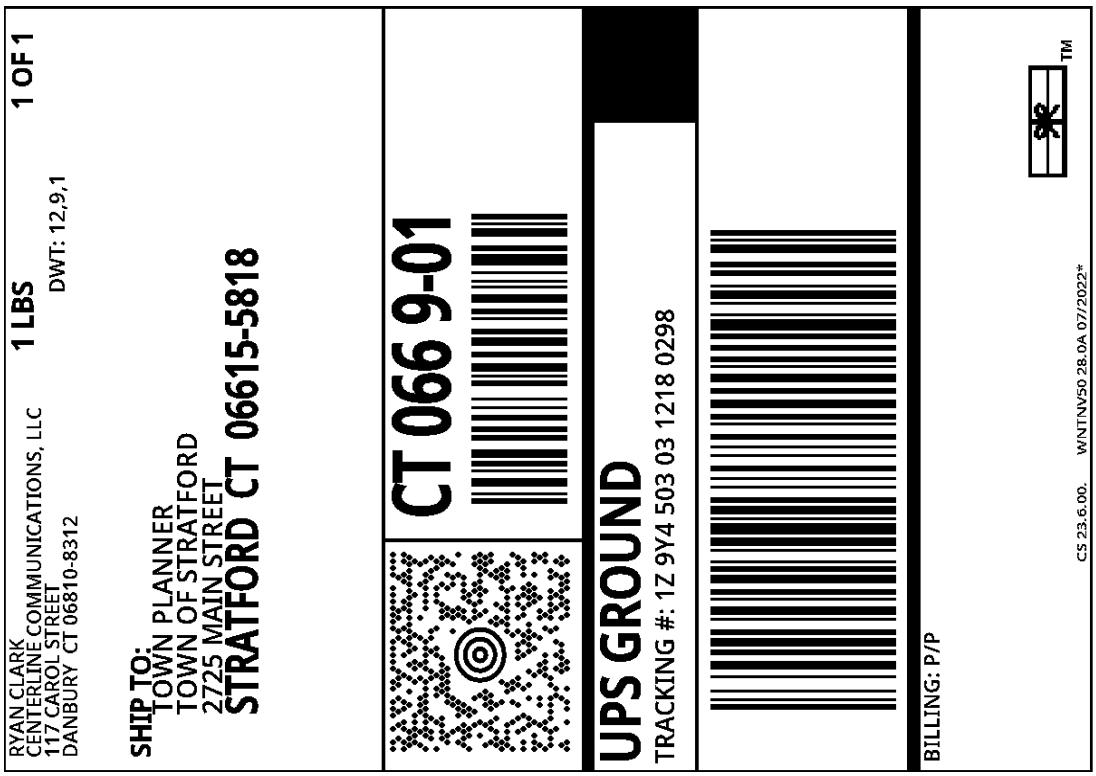

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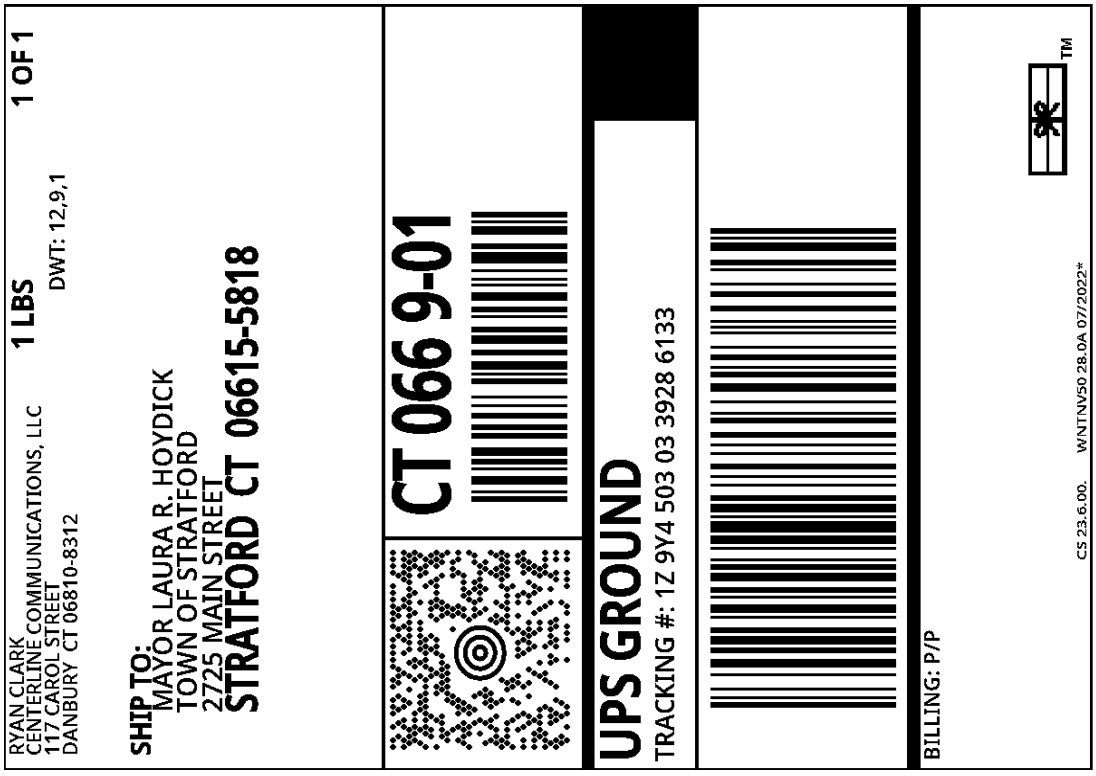

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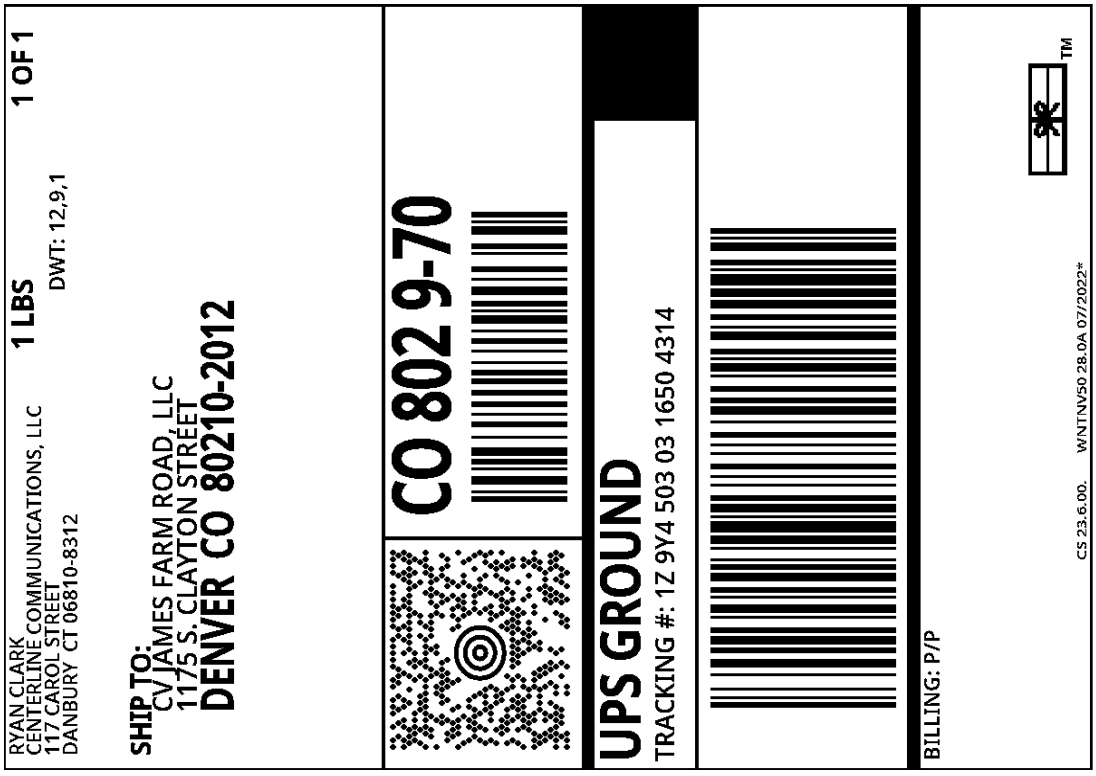

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Estimated delivery
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Label Created

On the Way

Out for Delivery

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DENVER, CO 802102012 US

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Help us improve UPS
Delivery
Would you like to provide feedback to help improve our site? We have some questions that should take only a few minutes. Thanks in advance for your help!

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Estimated delivery
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On the Way

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Delivery

Ship To
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TOWN PLANNER
2725 MAIN STREET
STRATFORD, CT 066155818 US

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Estimated delivery
The delivery date will be provided as soon as possible.

Label Created

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Out for Delivery

Delivery

Ship To
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MAYOR LAURA R. HOYDICK
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