

10 INDUSTRIAL AVE,
SUITE 3
MAHWAH NJ 07430
PHONE: 201.684.0055
FAX: 201.684.0066



August 19th, 2022

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

RE: Notice of Exempt Modification
7 Surdan Mountain Road, Sharon, CT, 06069
Latitude: 41.8623935100
Longitude: -73.4005328700
T-Mobile Site#: CTNH544A - Anchor

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 140-foot level of the existing 195-foot lattice tower at 7 Surdan Mountain Road, Sharon, CT. The 195-foot lattice tower is owned and operated by Litchfield County Dispatch. The property is owned by Anne Adele Prindle. T-Mobile now intends to remove and replace (3) antennas with (3) antennas that support 5G services. The antennas will be installed at the same 140-foot level of the tower.

Planned Modifications:

Tower:

Remove:

(3) APX16DWV Antennas
(3) RRUS11 B2
(3) RRUS11 B4
Existing Coax Cables

Install New:

(3) AIR6419 B41 Antennas
(3) Radio 4460 B25 B66
(2) Hybrid Cables

To Remain:

(3) APXVAARR24 Antennas

(3) Radio 4449 B12 B71

Ground:

Install:

(1) Power 6230 Enclosure, (1) 6230 Battery Rack, (1) 19 Inch Rack.

This facility was approved by the Town of Sharon on January 21, 1998. A copy of this approval has been attached to this modification request. This approval did not come with conditions that would be violated by the modification.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to First Selectman - Brent Colley, Elected Official, and Jamie Casey, Sharon Land Use Administrator, and the property and tower owners.

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

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,

Eric Breun

Transcend Wireless

Cell: 201-658-7728

Email: ebreun@transcendwireless.com

Attachments

cc: Brent Colley - First Selectman of Sharon
Jamie Casey - Sharon Land Use Administrator
Litchfield County Dispatch - Tower Owner
Anne Adele Prindle - Property Owner

ERIC BREUN
2016587728
1 INTERNATIONAL BLVD.
MAHWAH NJ 07495

1 LBS

1 OF 1

SHIP TO:

BRENT COLLEY
TOWN OF SHARON
63 MAIN STREET
SHARON CT 06069



CT 067 9-02



UPS GROUND

TRACKING #: 1Z V25 742 03 9067 5480



BILLING: P/P

Reference #1: CTNH544A

XOL 22.08.04 NV45 33.0A 08/2022*



TM

ERIC BREUN
2016587728
1 INTERNATIONAL BLVD.
MAHWAH NJ 07495

1 LBS

1 OF 1

SHIP TO:

ANN PRINDLE
7 SURDAN MOUNTAIN ROAD
SHARON CT 06069

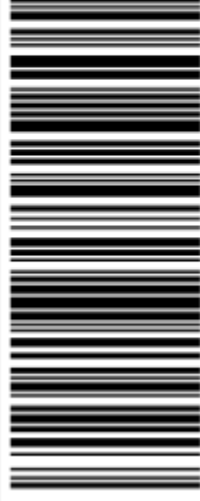


CT 067 9-02



UPS GROUND

TRACKING #: 1Z V25 742 03 9730 9149



BILLING: P/P

Reference #1: CTNH544A

XOL 22.08.04 NV45 33.0A 08/2022*



TM

ERIC BREUN
2016587728
1 INTERNATIONAL BLVD.
MAHWAH NJ 07495

1 LBS

1 OF 1

SHIP TO:
JAMIE CASEY - LAND USE
63 MAIN STREET
SHARON CT 06069

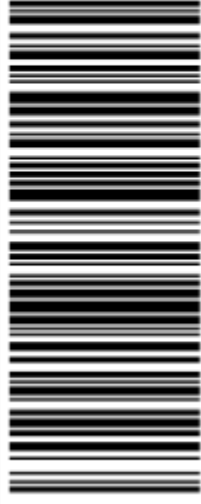


CT 067 9-02



UPS GROUND

TRACKING #: 1Z V25 742 03 9149 1462



BILLING: P/P

Reference #1: CTNH544A

XOL 22.08.04 NV45 33.0A 08/2022*



TM

ERIC BREUN
2016587728
1 INTERNATIONAL BLVD.
MAHWAH NJ 07495

1 LBS

1 OF 1

SHIP TO:
DAN SOULE
LITCHFIELD COUNTY DISPATCH
111 WATER STREET
TORRINGTON CT 06790



CT 067 9-02



UPS GROUND

TRACKING #: 1Z V25 742 03 9308 1473



BILLING: P/P

Reference #1: CTNH544A

XOL 22.08.04 NV45 33.0A 08/2022*



TM

Hello, your package has been delivered.

Delivery Date: Tuesday, 08/16/2022

Delivery Time: 11:54 AM

Signed by: DESK

TRANSCEND WIRELESS

Tracking Number: [1ZV257420393081473](#)

Ship To: LITCHFIELD COUNTY DISPATCH
111 WATER STREET
TORRINGTON, CT 06790
US

Number of Packages: 1

UPS Service: UPS Ground

Package Weight: 1.0 LBS

Reference Number: CTNH544A

Hello, your package has been delivered.

Delivery Date: Tuesday, 08/16/2022

Delivery Time: 12:35 PM

Signed by: WOODMAN

TRANSCEND WIRELESS

Tracking Number: [1ZV257420390675480](#)

Ship To: TOWN OF SHARON
63 MAIN STREET
SHARON, CT 06069
US

Number of Packages: 1

UPS Service: UPS Ground

Package Weight: 1.0 LBS

Reference Number: CTNH544A

Hello, your package has been delivered.

Delivery Date: Tuesday, 08/16/2022

Delivery Time: 12:35 PM

Signed by: WOODMAN

TRANSCEND WIRELESS

Tracking Number:	1ZV257420391491462
Ship To:	JAMIE CASEY - LAND USE 63 MAIN STREET SHARON, CT 06069 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CTNH544A

Hello, your package has been delivered.

Delivery Date: Tuesday, 08/16/2022

Delivery Time: 2:32 PM

Experience UPS My Choice® Premium Today

Be in total control of how, when and where your packages are delivered.

[Upgrade to Premium Now](#)



[Set Delivery Instructions](#)

[Manage Preferences](#)

TRANSCEND WIRELESS

Tracking Number:	1ZV257420397309149
Ship To:	ANN PRINDLE 7 SURDAN MOUNTAIN ROAD SHARON, CT 06069 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CTNH544A

Summary

Account Number	00173200
Parcel ID	15-2
Property Address	7 SURDAN MOUNTAIN RD
Use Class/Description	101 Single Family
Map/Block/Lot/Unit	15/2//
Zoning	RR
NBHD Code	5A
Acres	9.6
Utilities	Septic,Well,
Is Homesteaded	False

[View Map](#)

Owner

PRINDLE ANN ADELE

Current Appraised Value

Columns		
Assessed Year	2021	2019
Appraised Building Value	\$154,000.00	\$154,000.00
Appraised XF/OB Value	\$249,200.00	\$249,200.00
Appraised Land Value	\$222,500.00	\$222,500.00
Appraised Total Value	\$625,700.00	\$625,700.00
Assessed Building Value	\$107,800.00	\$107,800.00
Assessed XF/OB Value	\$174,400.00	\$174,400.00
Assessed Land Value	\$155,800.00	\$155,800.00
Assessed Total Value	\$438,000.00	\$438,000.00

Assessment History

Columns		
Assessed Year	2021	2019
Appraised Building Value	\$154,000.00	\$154,000.00
Appraised XF/OB Value	\$249,200.00	\$249,200.00
Appraised Land Value	\$222,500.00	\$222,500.00
Appraised Total Value	\$625,700.00	\$625,700.00
Assessed Building Value	\$107,800.00	\$107,800.00
Assessed XF/OB Value	\$174,400.00	\$174,400.00
Assessed Land Value	\$155,800.00	\$155,800.00
Assessed Total Value	\$438,000.00	\$438,000.00

Land

Building Number	1	Land Units	2 AC
Land Use	101 - Single Family	Value	131,700
Building Number	1	Land Units	7.6 AC
Land Use	101 - Single Family	Value	90,800

Building Information

Building #	1	Fireplaces		
Style	Conventional	Roof Cover	Asphalt Shngl.	
Occupancy	1	Roof Structure	Gable/Hip	
Actual Year Built	1952	Floor Type	Hardwood Carpet	
Effective Year Built	1998	Heat Type	Hot Water	
Living Area	1,736	Fuel Type	Oil	
Stories	2	AC	None	
Grade	04 C+	Bdrms/Full Bth/Hlf Bth/Ttl Rm	03/2/0/7	
Condition	G	Basement Finished Area		
Exterior Wall	Vinyl Siding	Basement Sq. Ft.	560	
Interior Wall	Drywall			
Code	Description	Living Area	Gross Area	Effective Area
BAS	First Floor	1,136	1,136	1,136
FEP	Enclosed Porch	0	79	55
FOP	Open Porch	0	49	12
FUS	Upper Story, Finished	600	600	600
PTO	Patio	0	198	20
UBM	Basement, Unfinished	0	560	112
Totals		1,736	2,622	1,935

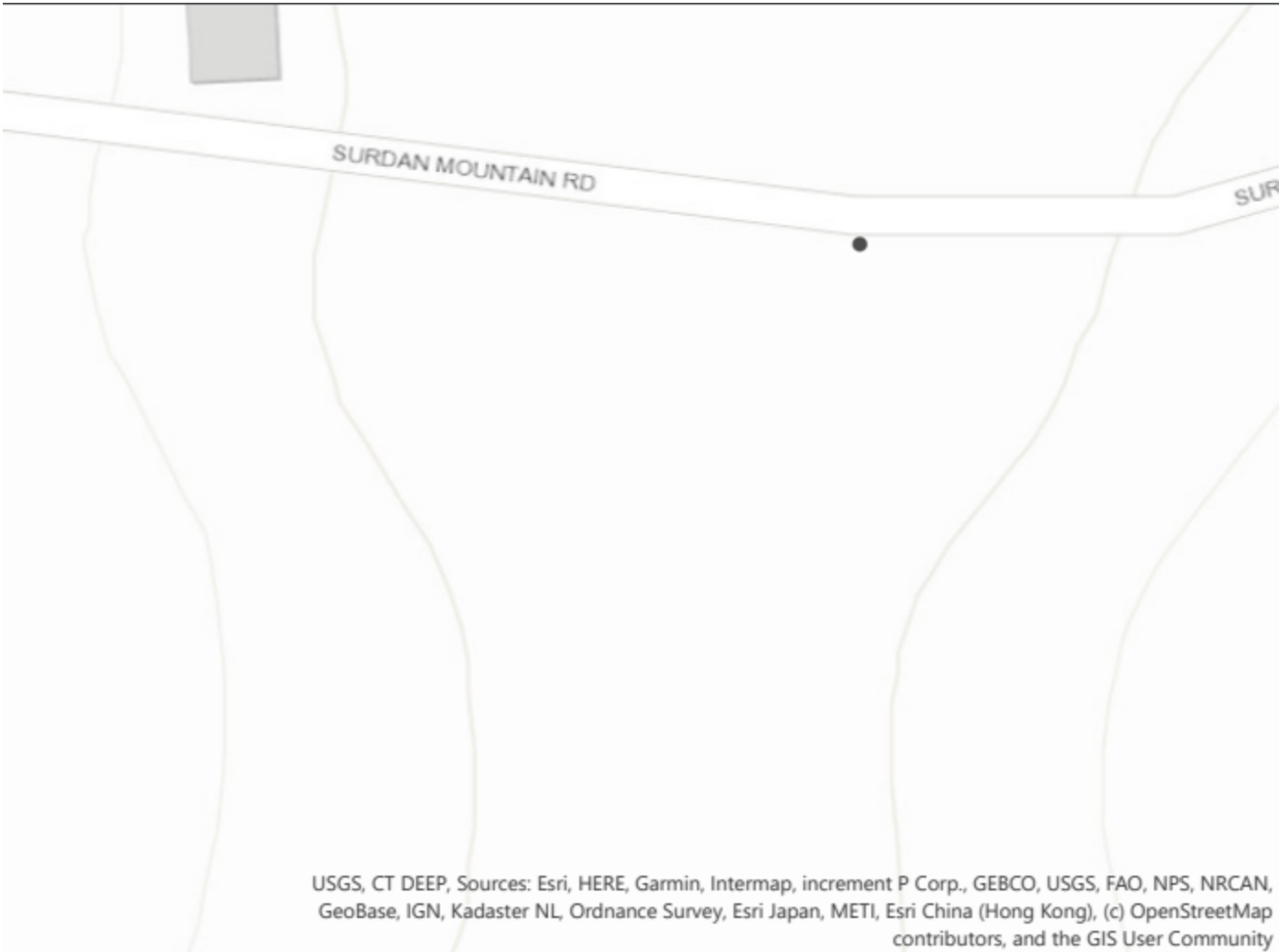
Out Buildings\Extra Features

Description	Barn 1 St.	Year Built	1983
Sub Description		Value	\$11,600
Area	860 S.F.		
Description	Shed	Year Built	1986
Sub Description		Value	\$1,400
Area	100 S.F.		
Description	Garage w/Shop	Year Built	1999
Sub Description		Value	\$31,000
Area	1254 S.F.		
Description	Cell Tower site	Year Built	2008
Sub Description		Value	\$205,200
Area	1 UNITS		

Sales History

Columns

Sales Date	Instrument Type
4/19/2004	
9/23/1999	Transfer of Convienience
8/3/1998	Love and Affection
10/19/1981	Family Sale



USGS, CT DEEP, Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

TOWN OF SHARON, CONN.

ZONING PERMIT

№ 2640

Date 1/21 19 98
Permission is hereby given to Litchfield County Dispatch
of PO Box 1349 Litchfield CT 06759
to erect a 195' telecomm tower (28' high) & a 22' x 58' building
located on 7 Sunden Mt Road, Map # 15 Lot # 2nd
Owner of property Warren Prindle
in accordance with application dated 1/13 19 98
Signed Elizabeth M. Sherr
Sharon Planning and Zoning Commission

ZBA decision 2/22/94

TOWN OF SHARON

ZONING PERMIT APPLICATION

NO. _____

PERMIT FEE: \$15.00 plus \$10.00 (CT Fee) = \$25.00

APPLICATION IS HEREBY MADE TO THE PLANNING & ZONING COMMISSION FOR A PERMIT TO:

() Construct (X) Enlarge () Alter () Move () Other _____

The building(s) described below: *Existing tower & existing building* Assessor Tax Map # 15 Lot # 2

Location of Property 7 Sudden Mt Road.

Subdivision/development: _____ Lot No. _____

✓ Name of Owner: Darien R Prindle Address: 7 Sudden Mt Rd

✗ Name of Applicant: Litchfield County Dispatch Inc. Address: P.O. Box 1349 Litchfield CT 06759

Phone: 860-567-3877

ZONE: RR

Width of Lot _____ Depth of Lot _____ Area of Lot 4A. *(dimensions of easement: 75' x 145')*

Use of building(s): () Dwelling for _____ families; () Accessory; () Commercial;

() Industrial; (X) Other telecommunication tower -
current bldg. is 8x12' to be removed

Size of Building(s) or addition(s): 22' x 58'; height 195' tower
size of tower - leg of triangle 28'

Additional Information: _____

ZBA approval for hgt. of tower 2/22/94

Complete a PLOT PLAN on reverse side. Show boundaries, location of existing building(s) if any, proposed construction / or work.

OWNER Signature Darien R Prindle

✗ Date: 1-13-98 Applicant's Signature Alan J. Gornel MANAGER.

Approved by Planning and Zoning Commission.

Date: 1/21/98

Permit No. 2640

Rejected

Date: _____

Reason: _____

Signature: Elizabeth M. Hall for Planning & Zoning Commission

This permit is granted with the express condition that the applicant shall conform in all respects to the zoning regulations of the Town of Sharon. This permit may be revoked at any time upon violation of any provisions of said regulations. Any deviation from the approved application must be authorized by approval of the revised plans subject to the same procedures established for the examination of the original plans. Zoning permit expires 12 months from date of issue unless it has been renewed by ZEO or a valid building permit is in effect.

**TOWN OF SHARON
ZONING BOARD OF APPEALS
LEGAL NOTICE**

At a regular quarterly meeting of the Sharon Zoning Board of Appeals held on February 22, 1994, the Board voted unanimously to approve Appeal #102 of Litchfield County Dispatch. A copy of this decision will be on file with the Town Clerk, Sharon, CT.

Dated at Sharon, Connecticut this 23rd day of February 1994.

Robert Loucks, Chairman
Sharon Zoning Board of Appeals

To appear in Waterbury Republican: 2/24

**TOWN OF SHARON
ZONING BOARD OF APPEALS
LEGAL NOTICE**

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Dated at Sharon, Connecticut this 23rd day of February, 1994

Robert Loucks, Chairman
Sharon Zoning Board
of Appeals

R-A FEBRUARY 24, 1994

TOWN OF SHARON
ZONING BOARD OF APPEALS
SHARON, CONNECTICUT 06069

LEGAL NOTICE

To Whom It May Concern, notice is hereby given that on Tuesday, February 22, 1994 at 7:30PM at the Sharon Town Hall, Assessors' Office, 63 Main Street, Sharon, CT, the Sharon Zoning Board of Appeals will hold a public hearing on the following application for a variance:

Appeal #102 of Litchfield County Dispatch to modify an existing building (height of existing antenna tower) to have a maximum height of 195 feet where the Regulations require 35 feet. The property is owned by Darien and Ann Adele Prindle and located at 7 Surdan Mountain Road, Sharon, CT, in the Rural Residence Zone.

At this hearing interested persons may be heard and written communication received. The application is on file at the Selectmen's Office, 63 Main Street, Sharon, CT.

Dated at Sharon, Connecticut this 8th day of February 1994.

Robert Loucks, Chairman
Sharon Zoning Board of Appeals

To Appear in Waterbury Republican: 2/9 & 2/17

Sent to:
Certified - Litchfield County Dispatch

Regular mail to:
Darien & Ann Prindle
Leo Nickerk
Fred J. Hill + Judith M. Cavanaugh
Alfred Andrews



SHARON, CT 06069

67D5D998E INDOOR

15. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
16. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
17. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED' ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE T-MOBILE CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
18. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
19. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
20. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
21. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUITS AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND CONFIRMED WITH THE PROJECT MANAGER AND OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK.
22. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE, PREMISES, DRIVEWAY, VEGETATION, LANDSCAPING, ETC., INCLUDING THAT CAUSED BY VEHICLES, SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
23. THE CONTRACTOR SHALL CONTACT 'CALL BEFORE YOU DIG' AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
24. CONTRACTOR SHALL COMPLY WITH THE OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
25. THE COUNTY/CITY/TOWN MAY MAKE PERIODIC FIELD INSPECTIONS TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, AND CONTRACT DOCUMENTS.
26. THE COUNTY/CITY/TOWN MUST BE NOTIFIED (2) WORKING DAYS PRIOR TO CONCEALMENT/BURIAL OF ANY SYSTEM OR MATERIAL THAT WILL PREVENT THE DIRECT INSPECTION OF MATERIALS, METHODS OR WORKMANSHIP. EXAMPLES OF THESE PROCESSES ARE BACKFILLING A GROUND RING OR TOWER FOUNDATION, POURING TOWER FOUNDATIONS, BURYING GROUND RODS, PLATES OR GRIDS, ETC. THE CONTRACTOR MAY PROCEED WITH THE SCHEDULED PROCESS (2) WORKING DAYS AFTER PROVIDING NOTICE UNLESS NOTIFIED OTHERWISE BY THE COUNTY/CITY/TOWN.
27. PRIOR TO THE SUBMISSION OF BIDS, THE CONTRACTOR SHALL VISIT THE 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 ENGINEER ON RECORD, PRIOR TO THE COMMENCEMENT OF ANY WORK.
28. PRIOR TO ANY WORK, CONTRACTOR SHALL PROVIDE TO LANDLORD COPIES OF ALL PERMITS INCLUDING TRADE PERMITS. CONTRACTOR TO PROVIDE TO LANDLORD TOWN OF SALEM INSPECTION REPORTS AND AFTER FINISH CONTRACTOR LETTER OF COMPLIANCE, ENGINEER'S SPECIAL INSPECTION REPORT AND TOWN OF SALEM CERTIFICATE OF COMPLETION.
29. CONTRACTOR AND SUBCONTRACTORS SHALL PROVIDE TO LANDLORD PRIOR TO START OF WORK, CURRENT CERTIFICATE(S) OF INSURANCE FOR GENERAL LIABILITY, AND AUTOMOBILE WITH ENDORSEMENT TO INCLUDE AND PROVIDE ADDITIONAL INSURANCE. ANY SUPPLEMENTARY INSURANCE CONDITIONAL ACCESS TO SITE IS CONDITIONAL ON EVIDENCE OF REQUIRED INSURANCE FOR ALL, INCLUDING PRIVATE VEHICLES.

NORTH

SHEET. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
N-1	SPECIFICATIONS, NOTES, AND ANT. SCHEDULE	0
C-1	COMPOUND PLAN, EQUIPMENT PLANS AND ELEVATION	0
C-2	ANTENNA PLANS AND ELEVATIONS	0
C-3	TYPICAL EQUIPMENT DETAILS	0
E-1	ELECTRICAL DIAGRAM AND CONDUIT ROUTING	0
E-2	TYPICAL ELECTRICAL DETAILS	0
E-3	ELECTRICAL SPECIFICATIONS	0

SHEET NO. 1 OF 8

DESIGN BASIS:

1. DESIGN CRITERIA:

- ## SITE NOTES

- ## GENERAL NOTES

- ## STRUCTURAL STEEL

- ## ANTENNA/APPURTENANCE SCHEDULE

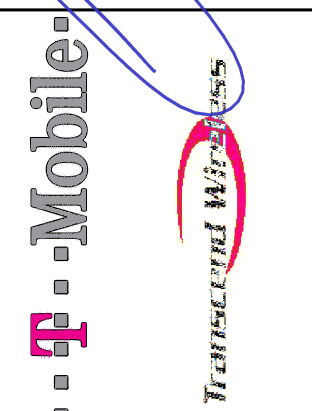
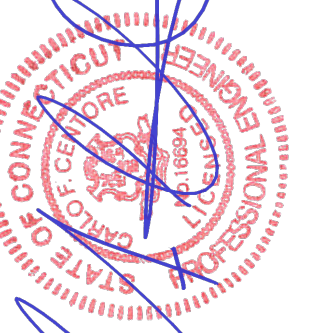
NOTE:
ALL HYBRID/COAX LENGTHS TO BE MEASURED
AND VERIFIED IN FIELD BEFORE ORDERING



NOTE: NO EQUIPMENT SHALL BE INSTALLED ON THE HOSTING STRUCTURE WITHOUT A PASSING STRUCTURAL ANALYSIS REPORT AND CONTRACTOR PRIOR CONFIRMATION THAT ANY AND ALL REQUISITE MODIFICATIONS HAVE BEEN COMPLETED.

[illegible]

הוא לא יאמץ את המדיניות של הממשלה



CENEX engineering
Centered on Solutions™

203) 488-0580
203) 488-8587 Fax
33-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

T-MOBILE NORTHEAST LLC

SITE NAME: CTNH544A

SITE ID: CTNH544A

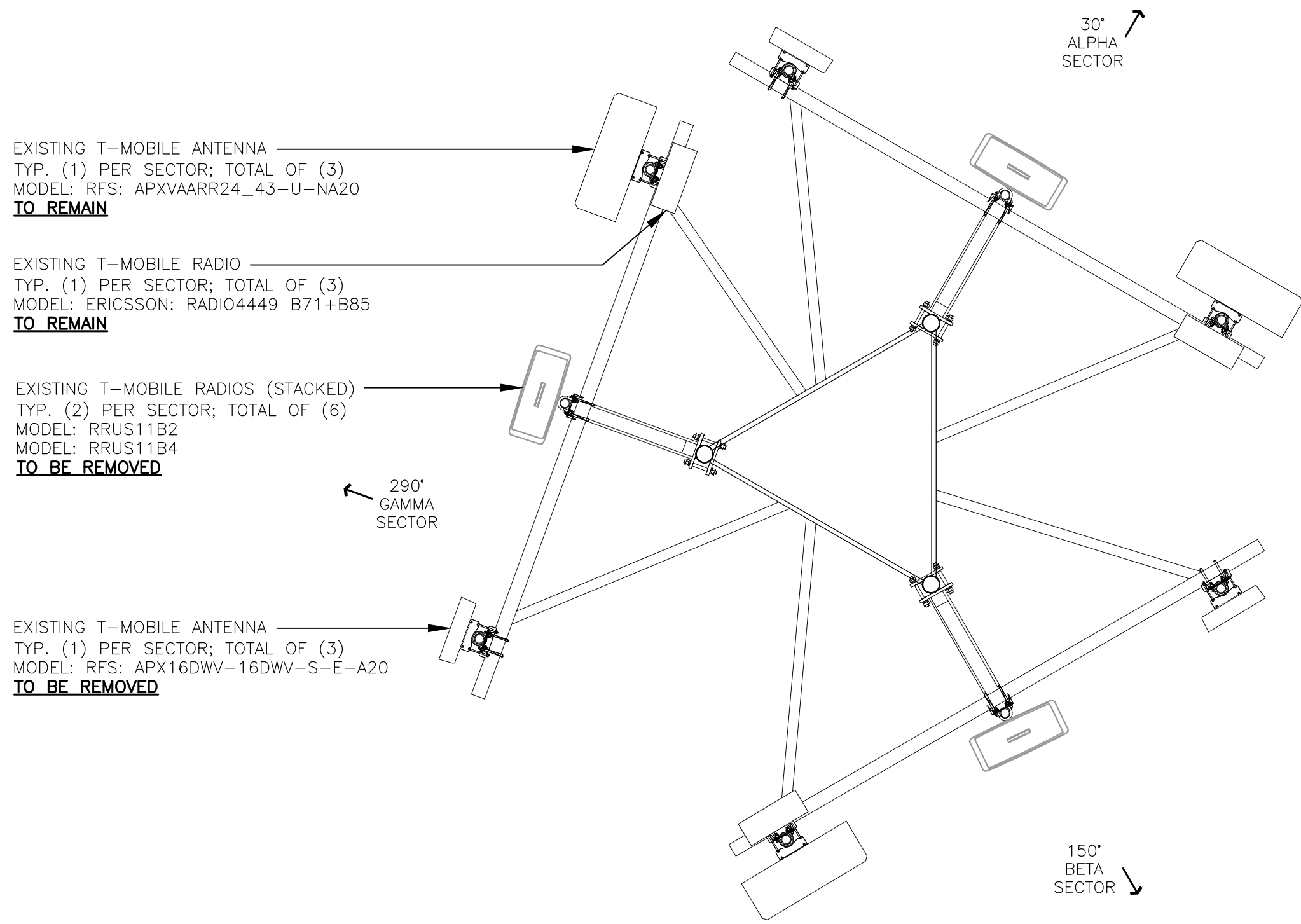
SHARON, CT 06069

DATE:	06/29/22
SCALE:	AS NOTED
JOB NO.	22022.17

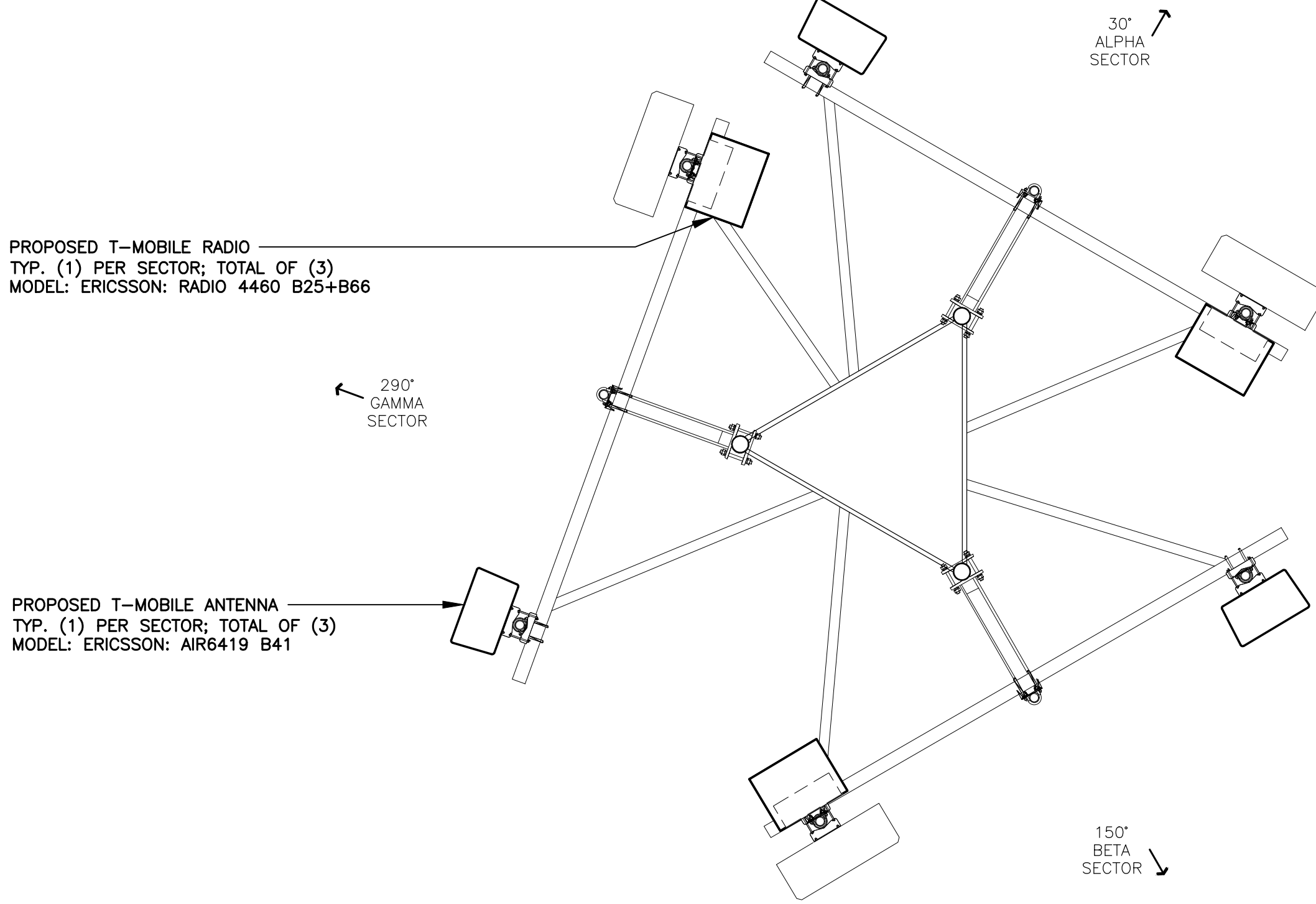
COMPOUND PLAN, EQUIPMENT PLANS AND ELEVATION

C-1

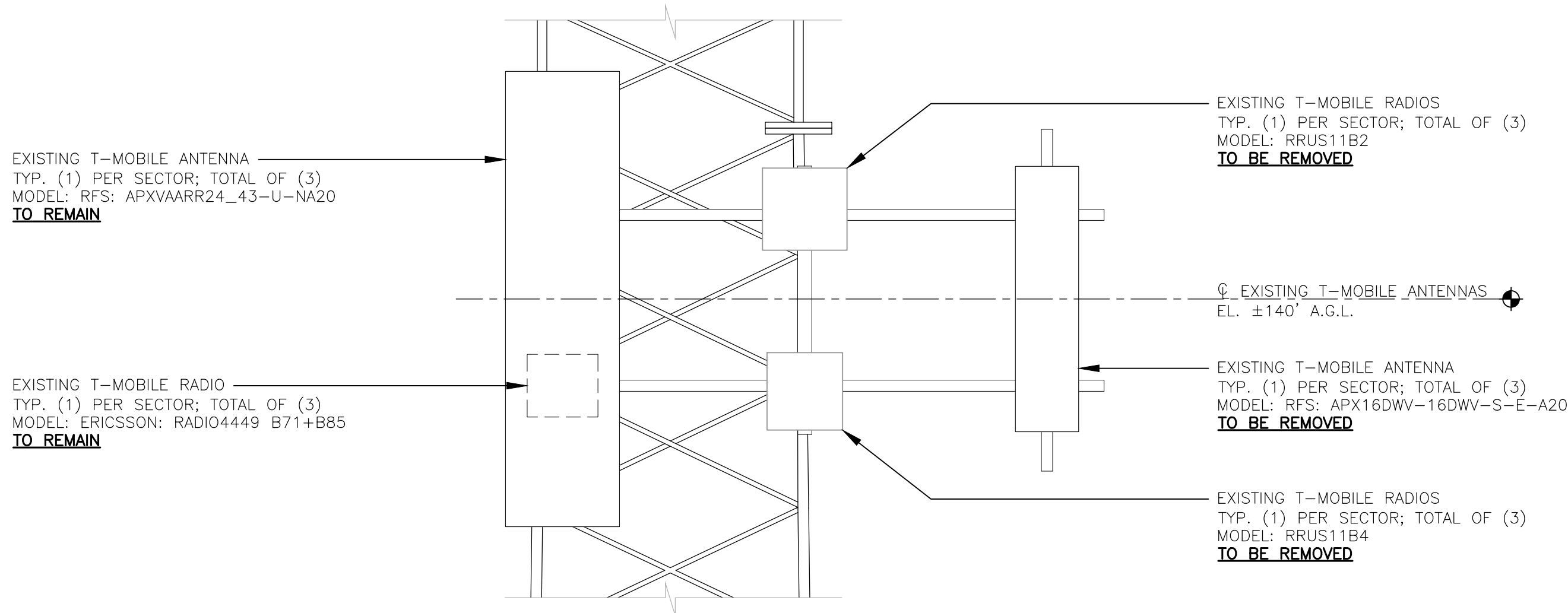
SHEET NO. 3 OF 8



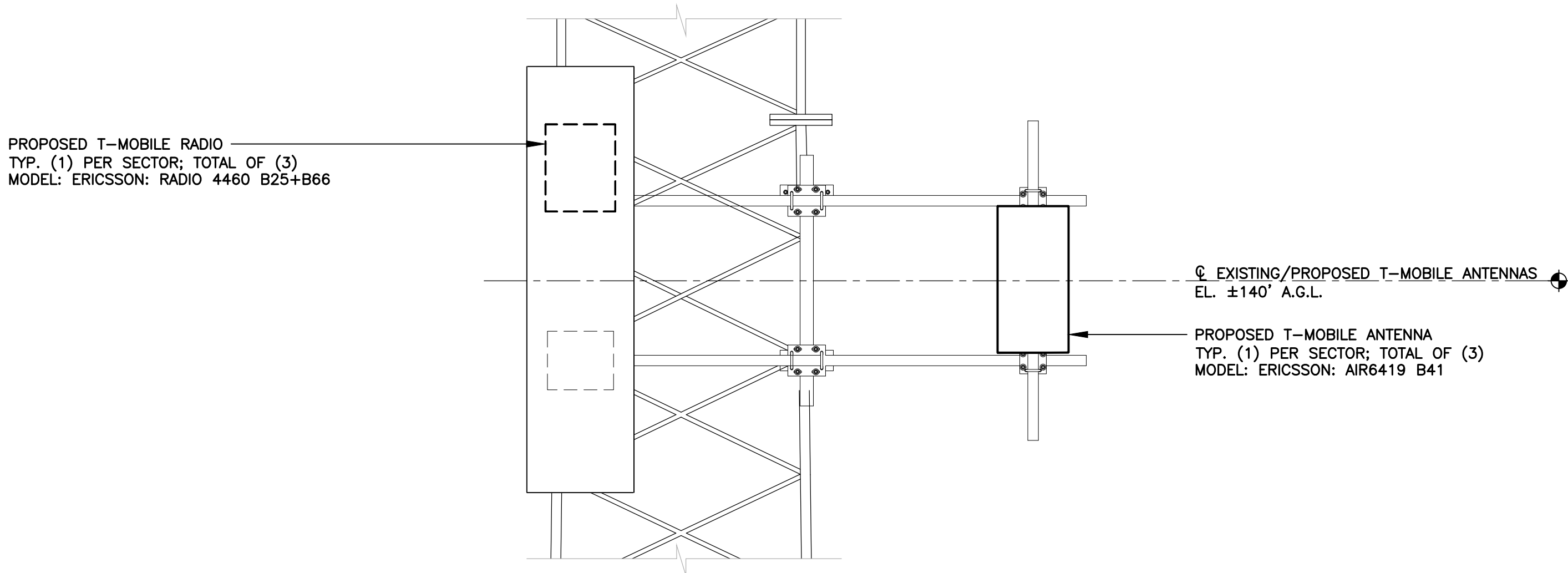
1 ANTENNA PLAN - EXISTING
C-2 SCALE: 1/2" = 1' TRUE NORTH



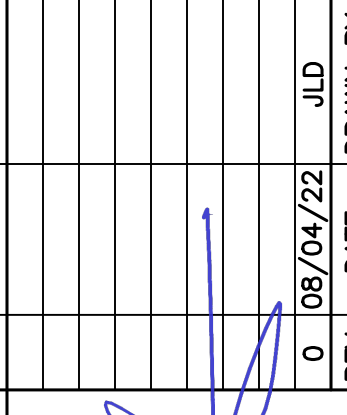
2 ANTENNA PLAN - PROPOSED
C-2 SCALE: 1/2" = 1' TRUE NORTH



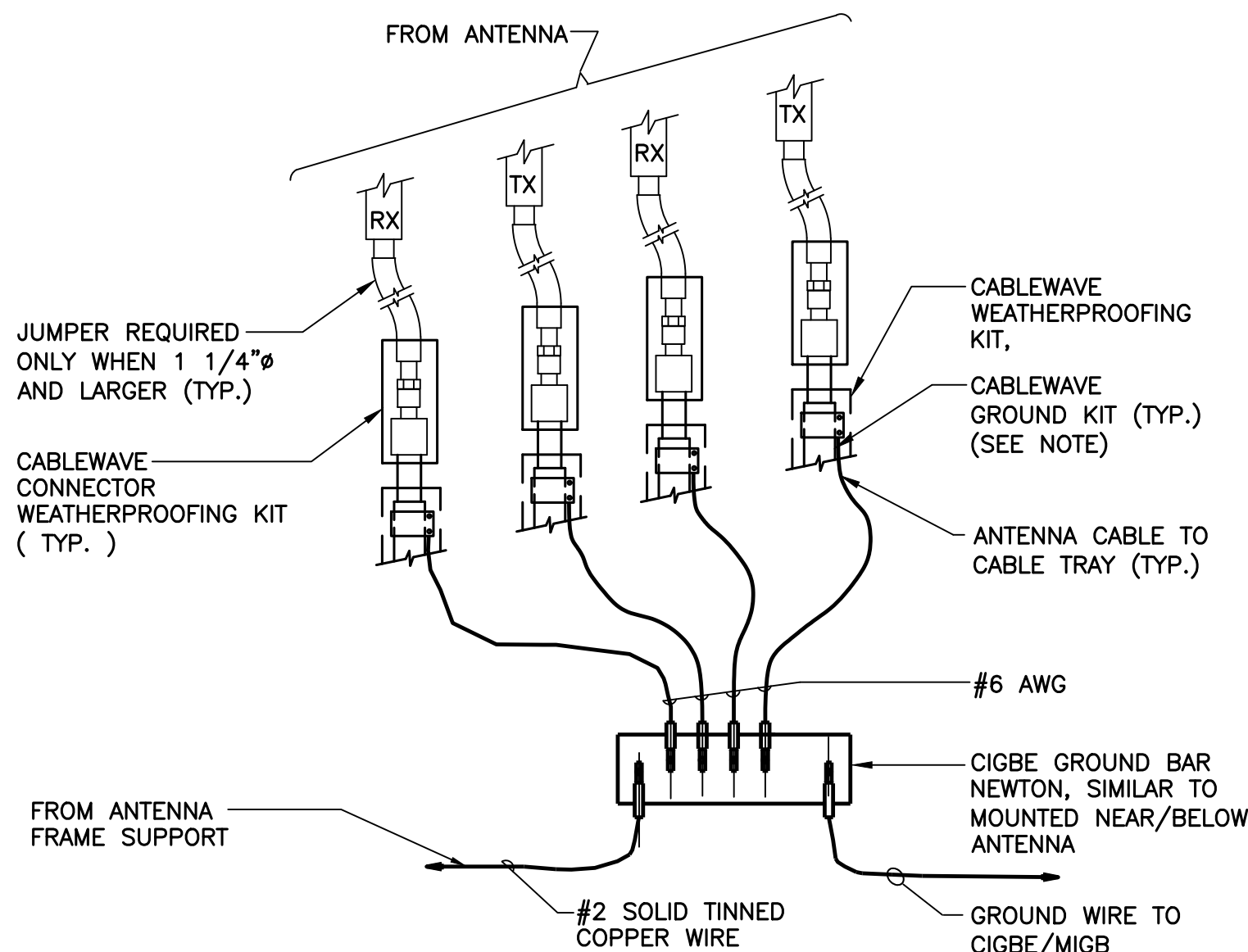
1A ANTENNA ELEVATION - EXISTING
C-2 SCALE: 1/2" = 1'



2A ANTENNA ELEVATION - PROPOSED
C-2 SCALE: 1/2" = 1'

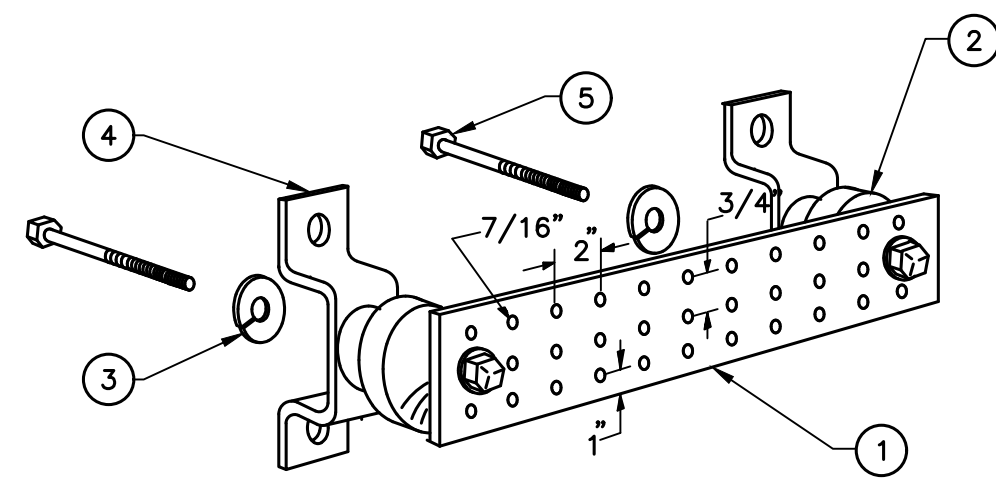
T-MOBILE NORTHEAST LLC		SITE NAME: CTNH544A SITE ID: CTNH544A 7 SURDAN MOUNTAIN RD SHAFON, CT 06069	
DATE: 06/29/22		ANTENNA PLANS AND ELEVATIONS	
SCALE: AS NOTED		SHEET NO. 4 OF 8	
JOB NO. 22022.17		C-2	
 CERK engineering Centered on Solutions™ (203) 488-0580 (203) 488-8587 Fax 632 North Branford Road Branford, CT 06405 www.CenterEng.com		 T-Mobile T-Mobile Wireless	
			
REV.	DATE	DRAWN BY	CHECKED BY
0	08/04/22	JLD	TJR
		CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION	

[illegible]



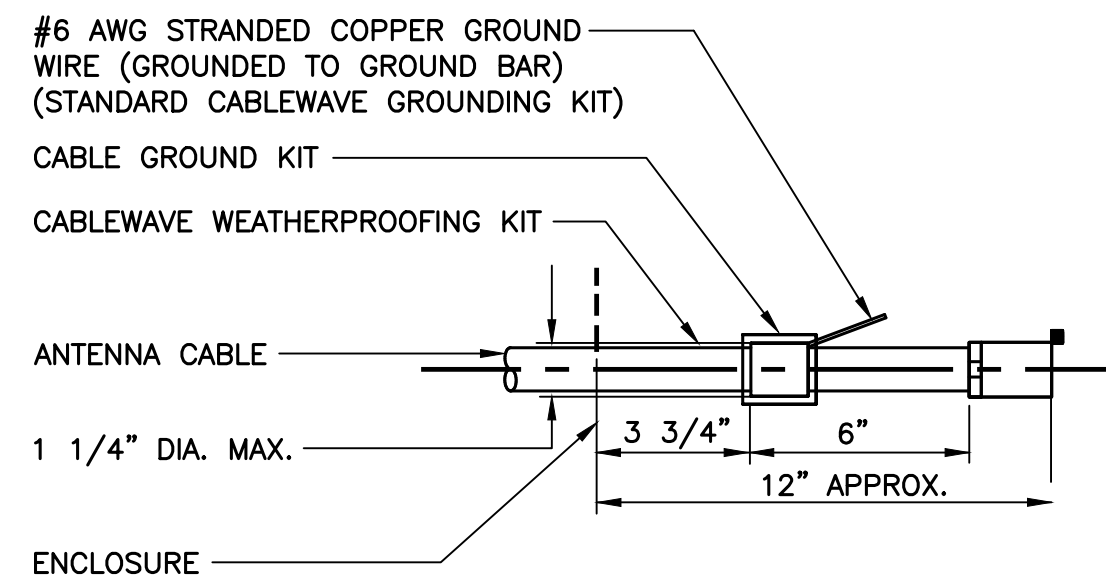
- NOTES:**
- DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

1 CONNECTION OF GROUND WIRES TO GROUND BAR
E-2 SCALE: NOT TO SCALE



- NOTES**
- TINNED COPPER GROUND BAR, 1/4" x 4" x 20", NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.
 - INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4.
 - 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
 - WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-6056.
 - 5/8-11 x 1" STAINLESS STEEL TRUSS SPANNER MACHINE SCREWS.

2 GROUND BAR DETAIL
E-2 SCALE: NOT TO SCALE



- NOTES:**
- DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

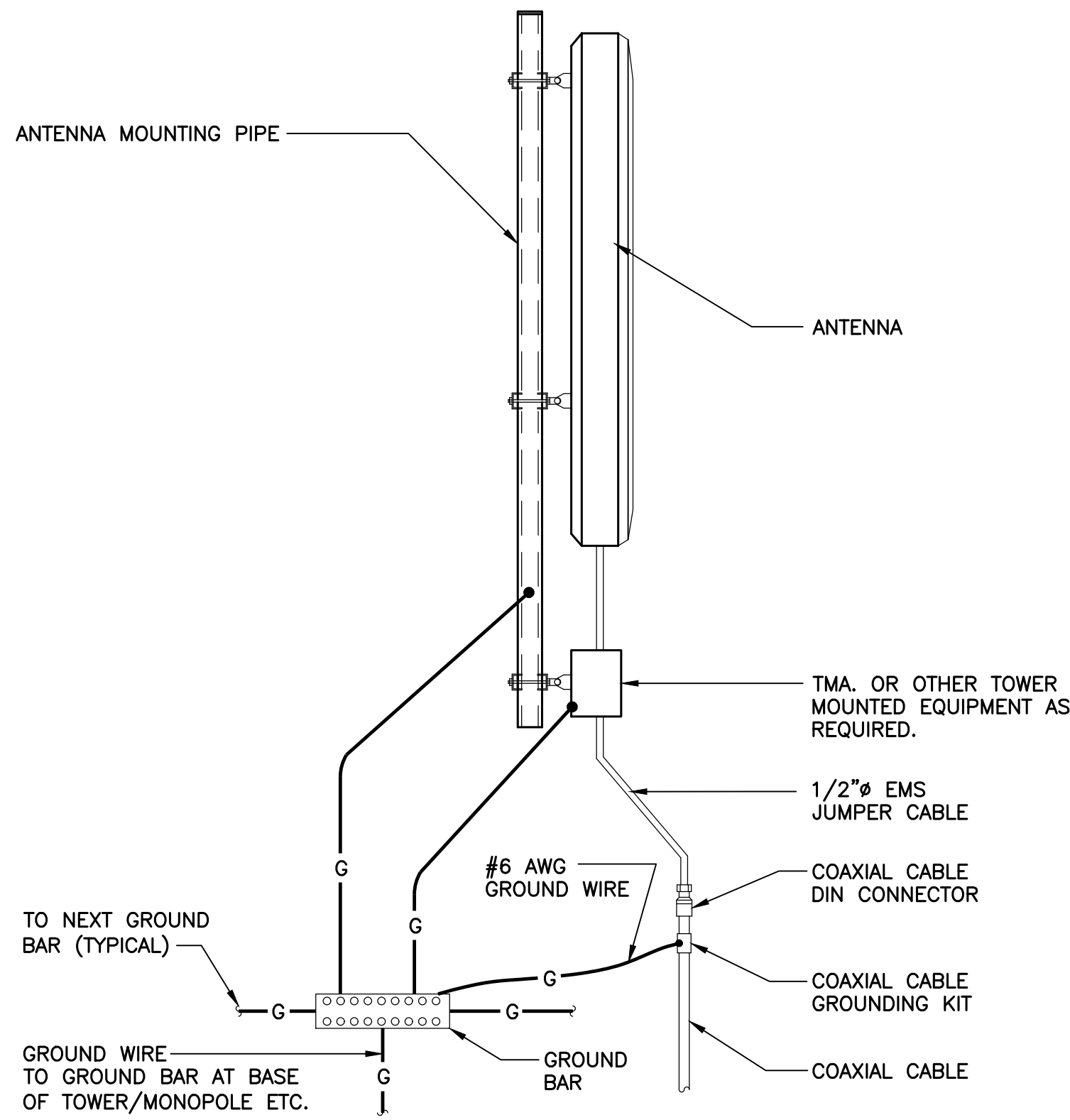
3 ANTENNA CABLE GROUNDING DETAIL
E-2 SCALE: NOT TO SCALE



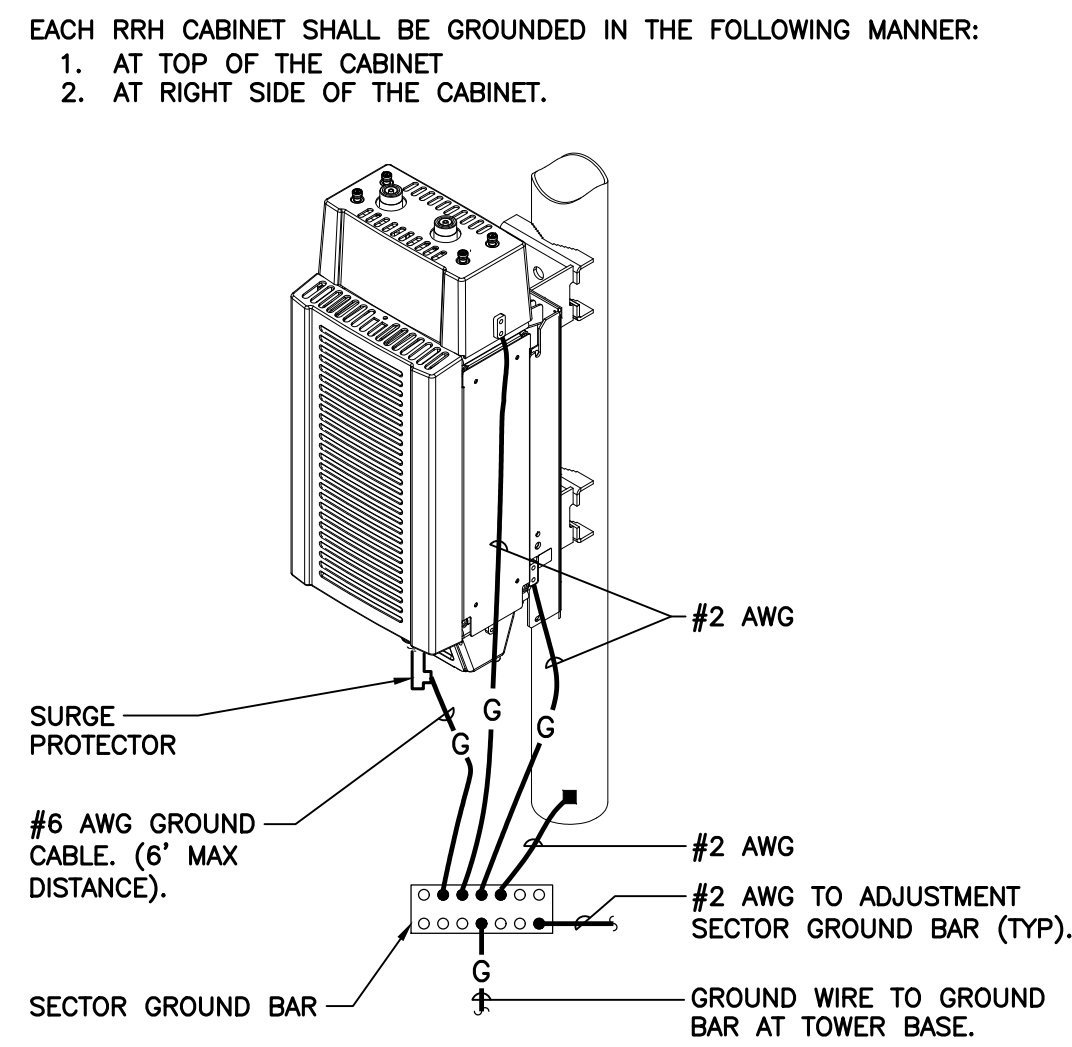
GROUNDING SCHEMATIC NOTES

- #6 AWG**
- GENERAL NOTES:**
- ALL SURGE SUPPRESSION EQUIPMENT SHALL BE BONDED TO GROUND PER MANUFACTURER'S SPECIFICATIONS
 - UNLESS OTHERWISE NOTED OR REQUIRED BY CODE, GROUND CONDUCTORS SHOWN SHALL BE #2 AWG (SOLID TINNED BCW - EXTERIOR; STRANDED GREEN INSULATED - INTERIOR).
 - BOND CABLE TRAY SECTIONS TOGETHER WITH #6 AWG STRANDED GREEN INSULATED JUMPERS.
 - ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
 - BOND ALL EQUIPMENT CABINETS AND BATTERY CABINETS TO GROUND PER MANUFACTURER'S SPECIFICATIONS.
 - REFER TO ALL ELECTRICAL AND GROUNDING DETAILS.
 - COORDINATE ALL TOWER MOUNTED EQUIPMENT WITH OWNER.
 - ALL ROOF MOUNTED AMPLIFIERS AND ASSOCIATED EQUIPMENT SHALL BE BONDED TO THE SECTOR GROUND BAR PER MANUFACTURER'S SPECIFICATIONS.
 - ALL GROUNDING SHALL BE IN ACCORDANCE WITH NEC AND OWNER'S REQUIREMENTS.

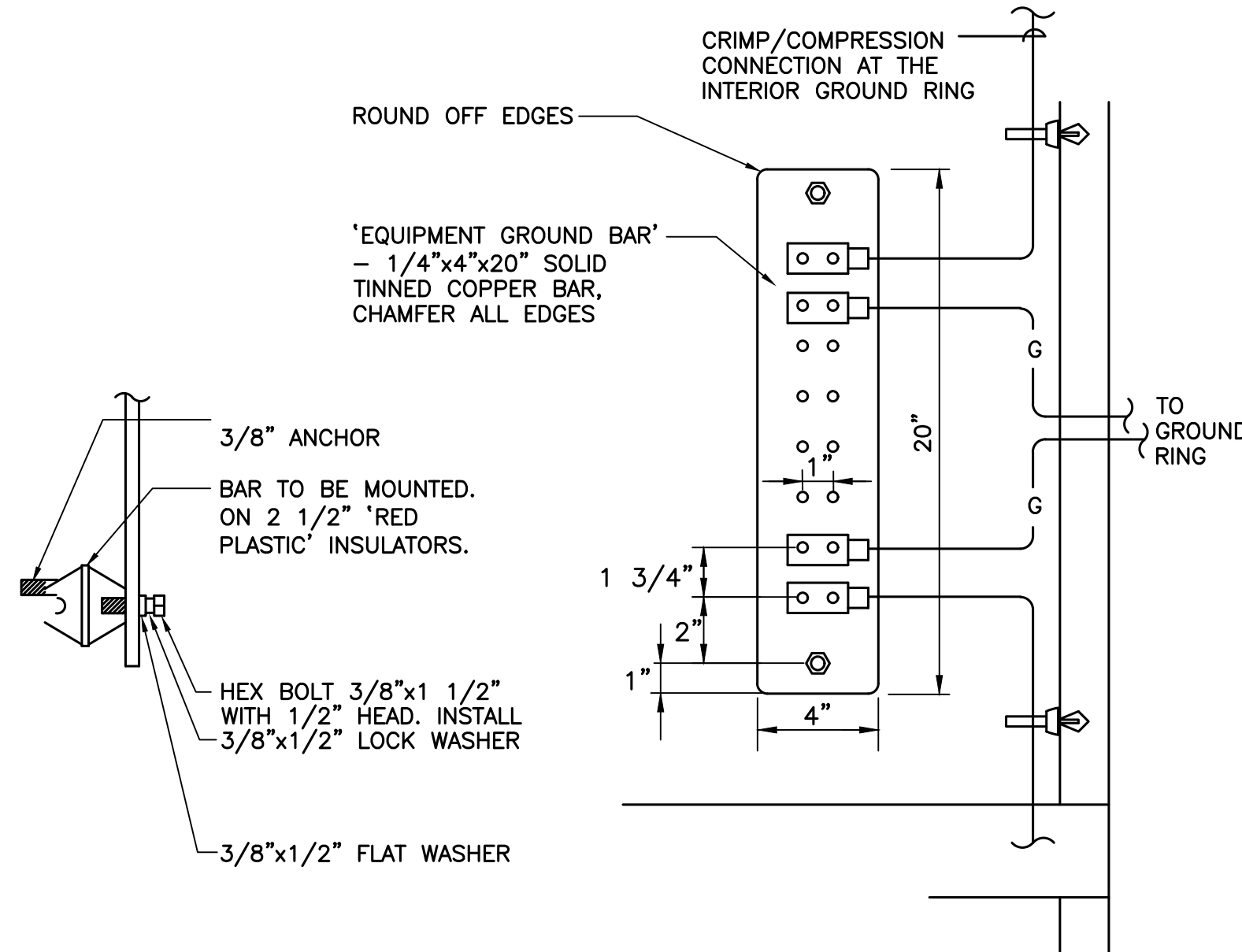
7 ELECTRICAL SCHEMATIC DIAGRAM
E-2 SCALE: NOT TO SCALE



4 TYPICAL ANTENNA GROUNDING DETAIL
E-2 SCALE: NOT TO SCALE



5 RRH POLE MOUNT GROUNDING
E-2 SCALE: NOT TO SCALE



6 EQUIPMENT GROUND BAR DETAIL
E-2 SCALE: NOT TO SCALE

SECTION 16010

- B. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.
- B. THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNERS REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.
- C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES THAT MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR THE SCHEDULING OF ALL INSPECTIONS THAT MAY BE REQUIRED BY THE LOCAL AUTHORITY.
- D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.
- E. NO MATERIAL OTHER THAN THAT CONTAINED IN THE "LATEST LIST OF ELECTRICAL FITTINGS" APPROVED BY THE UNDERWRITERS' LABORATORIES, SHALL BE USED IN ANY PART OF THE WORK. ALL MATERIAL FOR WHICH LABEL SERVICE HAS BEEN ESTABLISHED SHALL BEAR THE U.L. LABEL.
- F. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.
- G. DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL, WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.
- H. THE ELECTRICAL CONTRACTOR SHALL SUPPLY THREE (3) COMPLETE SETS OF APPROVED DRAWINGS, ENGINEERING DATA SHEETS, MAINTENANCE AND OPERATING INSTRUCTION MANUALS FOR ALL SYSTEMS AND THEIR RESPECTIVE EQUIPMENT. THESE MANUALS SHALL BE INSERTED IN VINYL COVERED 3-RING BINDERS AND TURNED OVER TO OWNER'S REPRESENTATIVE ONE (1) WEEK PRIOR TO FINAL PUNCH LIST.
- I. ALL WORK SHALL BE INSTALLED IN A NEAT AND WORKMAN LIKE MANNER AND WILL BE SUBJECT TO THE APPROVAL OF THE OWNER'S REPRESENTATIVE.
- J. ALL EQUIPMENT AND MATERIALS TO BE INSTALLED SHALL BE NEW, UNLESS OTHERWISE NOTED.
- K. BEFORE FINAL PAYMENT, THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF PRINTS (AS-BUILTS), LEGIBLY MARKED IN RED PENCIL TO SHOW ALL CHANGES FROM THE ORIGINAL PLANS.
- L. PROVIDE TEMPORARY POWER AND LIGHTING IN WORK AREAS AS REQUIRED.
- M. SHOP DRAWINGS:
 - 1. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF SHOP DRAWINGS ON ALL EQUIPMENT AND MATERIALS PROPOSED FOR USE ON THIS PROJECT, GIVING ALL DETAILS, WHICH INCLUDE DIMENSIONS, CAPACITIES, ETC.
 - 2. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF ALL TEST REPORTS CALLED FOR IN THE SPECIFICATIONS AND DRAWINGS.
- N. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH OWNER'S SPECIFICATIONS, AND REQUIREMENTS OF ALL LOCAL AUTHORITIES HAVING JURISDICTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH APPROPRIATE INDIVIDUALS TO OBTAIN ALL SUCH SPECIFICATIONS AND REQUIREMENTS. NOTHING CONTAINED IN, OR OMITTED FROM, THESE DOCUMENTS SHALL RELIEVE CONTRACTOR FROM THIS OBLIGATION.

- A. MINIMUM CONDUIT SIZE FOR BRANCH CIRCUITS, LOW VOLTAGE CONTROL AND ALARM CIRCUITS SHALL BE 3/4". CONDUITS SHALL BE PROPERLY FASTENED AS REQUIRED BY THE N.E.C.
- B. THE INTERIOR OF RACEWAYS/ENCLOSURES INSTALLED UNDERGROUND SHALL BE CONSIDERED TO BE WET LOCATION, INSULATED CONDUCTORS SHALL BE LISTED FOR USE IN WET LOCATIONS. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.
- C. CONDUIT INSTALLED UNDERGROUND SHALL BE INSTALLED TO MEET MINIMUM COVER REQUIREMENTS OF TABLE 300.5.
- D. PROVIDE RIGID GALVANIZED STEEL CONDUIT (RMC) FOR THE FIRST 10 FOOT SECTION WHEN LEAVING A BUILDING OR SECTIONS PASSING THROUGH FLOOR SLABS
- E. ONLY LISTED PVC CONDUIT AND FITTINGS ARE PERMITTED FOR THE INSTALLATION OF ELECTRICAL CONDUCTORS, SUITABLE FOR UNDERGROUND APPLICATIONS.

CONDUIT TYPE	NEC REFERENCE	APPLICATION	MIN. BURIAL DEPTH (PER NEC TABLE 300.5) ^{1,2}
EMT	ARTICLE 358	INTERIOR CIRCUITING, EQUIPMENT ROOMS, SHELTERS	N/A
RMC, RIGID GALV. STEEL	ARTICLE 344, 300.5, 300.50	ALL INTERIOR/ EXTERIOR CIRCUITING, ALL UNDERGROUND INSTALLATIONS.	6 INCHES
PVC, SCHEDULE 40	ARTICLE 352, 300.5, 300.50	INTERIOR/ EXTERIOR CIRCUITING AND GROUNDING SYSTEMS, UNDERGROUND INSTALLATIONS, WHERE NOT SUBJECT TO PHYSICAL DAMAGE. ¹	18 INCHES
PVC, SCHEDULE 80	ARTICLE 352, 300.5, 300.50	INTERIOR/ EXTERIOR CIRCUITING AND GROUNDING SYSTEMS, UNDERGROUND INSTALLATIONS, WHERE SUBJECT TO PHYSICAL DAMAGE. ¹	18 INCHES
LIQUID TIGHT FLEX. METAL	ARTICLE 350	SHORT LENGTHS (MAX. 3FT.) WIRING TO VIBRATING EQUIPMENT IN WET LOCATIONS.	N/A
FLEX. METAL	ARTICLE 348	SHORT LENGTHS (MAX. 3FT.) WIRING TO VIBRATING EQUIPMENT IN WET LOCATIONS.	N/A

¹ PHYSICAL DAMAGE IS SUBJECT TO THE AUTHORITY HAVING JURISDICTION.

² UNDERGROUND CONDUIT INSTALLED UNDER ROADS, HIGHWAYS, DRIVEWAYS, PARKING LOTS SHALL HAVE MINIMUM DEPTH OF 24".

³ WHERE SOLID ROCK PREVENTS COMPLIANCE WITH MINIMUM COVER DEPTHS, WIRING SHALL BE INSTALLED IN PERMITTED RACEWAY FOR DIRECT BURIAL. THE RACEWAY SHALL BE COVERED BY A MINIMUM OF 2" OF CONCRETE EXTENDING DOWN TO ROCK.

A. ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT-BOLT TYPE CONNECTORS. #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION:

LINE	COLOR	277/480V
A	120/208	BROWN
B	RED	BLACK
C	BLUE	ORANGE
N	CONTINUOUS WHITE	YELLOW
G	CONTINUOUS GREEN	GREY
		GREEN WITH YELLOW STRIPE

B. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.

A. FURNISH AND INSTALL OUTLET BOXES FOR ALL DEVICES, SWITCHES, RECEPTACLES, ETC.. BOXES TO BE ZINC COATED STEEL.

B. FURNISH AND INSTALL PULL BOXES IN MAIN FEEDERS RUNS WHERE REQUIRED. PULL BOXES SHALL BE GALVANIZED STEEL WITH SCREW REMOVABLE COVERS, SIZE AND QUANTITY AS REQUIRED. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.

A. THE FOLLOWING LIST IS PROVIDED TO CONVEY THE QUALITY AND RATING OF WIRING DEVICES WHICH ARE TO BE INSTALLED. A COMPLETE LIST OF ALL DEVICES MUST BE SUBMITTED BEFORE INSTALLATION FOR APPROVAL.

- 1. 15 MINUTE TIMER SWITCH – INTERMATIC #FF15M (INTERIOR LIGHTS)
- 2. DUPLEX RECEPTACLE – P&S #2095 (GFCI) SPECIFICATION GRADE
- 3. SINGLE POLE SWITCH – P&S #CSB20AC2 (20A-120V HARD USE) SPECIFICATION GRADE
- 4. DUPLEX RECEPTACLE – P&S #5362 (20A-120V HARD USE) SPECIFICATION GRADE

B. PLATES – ALL PLATES USED SHALL BE CORROSION RESISTANT TYPE 304 STAINLESS STEEL. PLATES SHALL BE FROM SAME MANUFACTURER AS SWITCHES AND RECEPTACLES. PROVIDE WEATHERPROOF HOUSING FOR DEVICES LOCATED IN WET LOCATIONS.

C. OTHER MANUFACTURERS OF THE SWITCHES, RECEPTACLES AND PLATES MAY BE SUBMITTED FOR APPROVAL BY THE ENGINEER.

A. FUSIBLE AND NON-FUSIBLE, 600V, HEAVY DUTY DISCONNECT SWITCHES SHALL BE AS MANUFACTURED BY SQUARE "D". PROVIDE FUSES AS CALLED FOR ON THE CONTRACT DRAWINGS. AMPERE RATING SHALL BE CONSISTENT WITH LOAD BEING SERVED. DISCONNECT SWITCH COVER SHALL BE MECHANICALLY INTERLOCKED TO PREVENT COVER FROM OPENING WHEN THE SWITCH IS IN THE "ON" POSITION. EXTERIOR APPLICATIONS SHALL BE NEMA 3R CONSTRUCTION WITH PADLOCK FEATURE.

A. ALL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH ZONE 2 SEISMIC REQUIREMENTS.

- A. CONTRACTOR SHALL FURNISH AND INSTALL NON-METALLIC ENGRAVED BACK-LIT NAMEPLATES ON ALL PANELS AND MAJOR ITEMS OF ELECTRICAL EQUIPMENT.
- B. LETTERS TO BE WHITE ON BLACK BACKGROUND WITH LETTERS 1-1/2 INCH HIGH WITH 1/4 INCH MARGIN.
- C. IDENTIFICATION NOMENCLATURE SHALL BE IN ACCORDANCE WITH OWNER'S STANDARDS.
- D. ADD TO SIGNAGE AT GENERATOR, OR WHERE MOST VISIBLE, EMERGENCY CONTACT INFORMATION FOR T-MOBILE, TO INCLUDE TELEPHONE NUMBER, POINT OF CONTACT, ETC..

A. ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.

B. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.

C. GROUNDING OF PANELBOARDS:

1. PANELBOARD SHALL BE GROUNDED BY TERMINATING THE PANELBOARD FEEDER'S EQUIPMENT GROUND CONDUCTOR TO THE EQUIPMENT GROUND BAR KIT(S) LUGGED TO THE CABINET. ENSURE THAT THE SURFACE BETWEEN THE KIT AND CABINET ARE BARE METAL TO BARE METAL. PRIME AND PAINT OVER TO PREVENT CORROSION.
2. CONDUIT(S) TERMINATING INTO THE PANELBOARD SHALL HAVE GROUNDING TYPE BUSHINGS. THE BUSHINGS SHALL BE BONDED TOGETHER WITH BARE #10 AWG COPPER CONDUCTOR WHICH IS TERMINATED INTO THE PANELBOARD'S EQUIPMENT GROUND BAR KIT(S).

D. EQUIPMENT GROUNDING CONDUCTOR:

1. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122.
2. THE MINIMUM SIZE OF EQUIPMENT GROUND CONDUCTOR SHALL BE #12 AWG COPPER.
3. EACH FEEDER OR BRANCH CIRCUIT SHALL HAVE EQUIPMENT GROUND CONDUCTOR(S) INSTALLED IN THE SAME RACEWAY(S).

E. CELLULAR GROUNDING SYSTEM:

CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 10 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

PROVIDE THE CELLULAR GROUNDING SYSTEM AS SPECIFIED ON DRAWINGS, INCLUDING, BUT NOT LIMITED TO:

1. GROUND BARS
2. EXTERIOR GROUNDING (WHERE REQUIRED DUE TO MEASURED AC RESISTANCE GREATER THAN SPECIFIED).
3. ANTENNA GROUND CONNECTIONS AND PLATES.

F. CONTRACTOR, AFTER COMPLETION OF THE COMPLETE GROUNDING SYSTEM BUT PRIOR TO CONCEALMENT/BURIAL OF SAME, SHALL NOTIFY OWNER'S PROJECT ENGINEER WHO WILL HAVE A DESIGN ENGINEER VISIT SITE AND MAKE A VISUAL INSPECTION OF THE GROUNDING GRID AND CONNECTIONS OF THE SYSTEM.

G. ALL EQUIPMENT SHALL BE BONDED TO GROUND AS REQUIRED BY N.E.C., MFG. SPECIFICATIONS, AND OWNER'S SPECIFICATIONS.

A. REFER TO CONTRACT DRAWINGS FOR DETAILS AND SCHEDULES.

A. FUSES SHALL BE NONRENEWABLE TYPE AS MANUFACTURED BY "BUSSMAN" OR APPROVED EQUAL. FUSES RATED TO 1/10 AMPERE UP TO 600 AMPERES SHALL BE EQUIVALENT TO BUSSMAN TYPE LPN-RK (250V) UL CLASS RK1, LOW PEAK, DUAL ELEMENT, TIME-DELAY FUSES. FUSES SHALL HAVE SEPARATE SHORT CIRCUIT AND OVERLOAD ELEMENTS AND HAVE AN INTERRUPTING RATING OF 200 KAIC. UPON COMPLETION OF WORK, PROVIDE ONE SPARE SET OF FUSES FOR EACH TYPE INSTALLED.

CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:

TEST 1: THERMAL OVERLOAD AND MAGNETIC TRIP TEST, AND CABLE INSULATION TEST FOR ALL CIRCUIT BREAKERS RATED 100 AMPS OR GREATER.

TEST 2: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.

THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:

1. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
2. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
3. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.

B. THESE TESTS SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNER'S CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION REPRESENTATIVE AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.

C. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM'S REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.

D. CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

A. ALL TESTS AS REQUIRED UPON COMPLETION OF WORK, SHALL BE MADE BY THIS CONTRACTOR. THESE SHALL BE CONTINUITY AND INSULATION TESTS; TEST TO DETERMINE THE QUALITY OF MATERIALS, ETC. AND SHALL BE MADE IN ACCORDANCE WITH N.E.C. RECOMMENDATIONS. ALL FEEDERS AND BRANCH CIRCUIT WIRING (EXCEPT CLASS 2 SIGNAL CIRCUITS) MUST BE TESTED FREE FROM SHORT CIRCUIT AND GROUND FAULT CONDITIONS AT 500V IN A REASONABLY DRY AMBIENT OF APPROXIMATELY 70 DEGREES F.

B. CONTRACTOR SHALL PERFORM LOAD PHASE BALANCING TESTS. CIRCUITS SHALL BE CONNECTED TO THE PANELBOARDS SO THAT THE NEW LOAD IS DISTRIBUTED AS EQUALLY AS POSSIBLE BETWEEN EACH LOAD AND NEUTRAL. 10% SHALL BE CONSIDERED REASONABLE AND ACCEPTABLE. BALANCE. BRANCH CIRCUITS BALANCED ON THEIR OWN PANELBOARDS. FEEDER LOADS SHALL, IN TURN, BE BALANCED ON THE SERVICE EQUIPMENT. REASONABLE LOAD TEST SHALL BE ARRANGED TO VERIFY LOAD BALANCE IF REQUESTED BY THE ENGINEER.

C. ALL TESTS, UPON REQUEST, SHALL BE REPEATED IN THE PRESENCE OF OWNER'S REPRESENTATIVE. ALL TESTS SHALL BE DOCUMENTED AND TURNED OVER TO OWNER. ENGINEER SIGNATURE REQUIRED TO STOP ANY OF THE WORK NOT BEING PROPERLY INSTALLED. ALL SUCH DETECTED WORK SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL EXPENSE TO THE OWNER AND THE TESTS SHALL BE REPEATED.

T-MOBILE NORTHEAST LLC SITE NAME: CTNH544A SITE ID: CTNH544A 7 SURDAN MOUNTAIN RD SHARON, CT 06069		CEIREK[®] engineering Centered on Solutions™ (203) 488-0380 (203) 488-5587 Fax 63-2 North Branford Road Branford, CT 06405 www.CenterEng.com	T-Mobile TS-14174-174E1 M3-2022-05-05 CONNECTION STATE OF CONNECTICUT PROFESSIONAL ENGINEER SEAL	PROFESSIONAL ENGINEER SEAL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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Structural Analysis Report

195-ft Existing Valmont Lattice Tower

*Proposed T-Mobile
Antenna Upgrade*

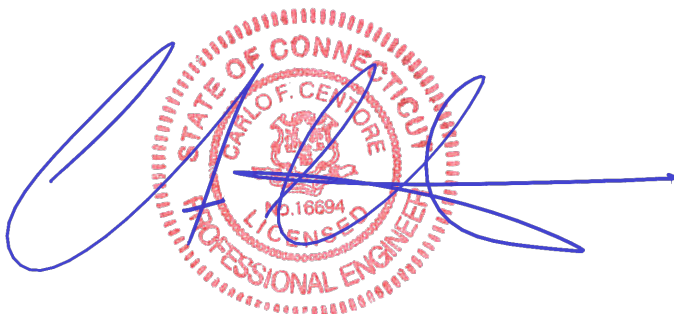
Verizon Site Ref: CTNH544A

*7 Surdan Mountain Road
Sharon, CT*

CENTEK Project No. 22022.17

Date: July 25, 2022

Max Stress Ratio = 93 %



Prepared for:
T-Mobile Northeast
35 Griffin Road South
Bloomfield, CT 06002

Table of Contents

SECTION 1 – REPORT

- INTRODUCTION
- ANTENNA AND APPURTENANCE SUMMARY
- PRIMARY ASSUMPTIONS USED IN THE ANALYSIS
- ANALYSIS
- TOWER LOADING
- TOWER CAPACITY
- FOUNDATION AND ANCHORS
- CONCLUSION

SECTION 2 – CONDITIONS & SOFTWARE

- STANDARD ENGINEERING CONDITIONS
- GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

SECTION 3 – CALCULATIONS

- tnxTower INPUT/OUTPUT SUMMARY
- tnxTower FEED LINE PLAN
- tnxTower FEED LINE DISTRIBUTION
- tnxTower DETAILED OUTPUT
- FOUNDATION ANALYSIS

SECTION 4 – REFERENCE MATERIALS

- RF DATA SHEET

Introduction

The purpose of this report is to summarize the results of the non-linear, P- Δ structural analysis of the antenna modification proposed by the T-Mobile on the existing lattice tower located in Sharon, Connecticut.

The host tower is a 195-ft, three-legged, steel lattice tower originally designed and manufactured by PiROD Inc., Job No. A-115074, signed and sealed 10/14/1998. The tower geometry and structure member sizes were taken from a combination of the original design documents and a previous structural analysis prepared by Centek project no. 21007.12 dated June 14, 2021.

Antenna and appurtenance information were obtained from a previous structural analysis prepared by Infinigy project no. 10050790 dated February 4, 2020, a previous structural analysis prepared by Black & Veatch project no. 405025 dated December 15, 2020, a previous structural analysis prepared by Centek project no. 21007.12 dated June 14, 2021 and a T-Mobile RF sheet.

The tower consists of eleven (11) vertical sections consisting of solid round/truss legs conforming to ASTM A572 Gr. 50. Horizontal and diagonal lateral support bracing consists of steel angle and solid round construction conforming to ASTM A572-50 and ASTM A36. The vertical tower sections are connected by bolted flange plates while the legs and bracing are connected by bolted and welded gusset connections. The tower face width is 4.50-ft at the top and 20.00-ft at the bottom.

Antenna and Appurtenance Summary

The existing, proposed and future loads considered in this analysis consist of the following:

- Unknown (Existing):
Antennas: One (1) single dipole antenna leg mounted with a RAD center elevation of ± 196.26 -ft above grade level.
Coax Cable: One (1) 7/8" $\varnothing$ coax cable running on the leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
Equipment: One (1) vacant 6-ft PiROD Rigid Side arm face mounted to the existing tower with a RAD center elevation of ± 196 -ft above grade level.
- CSP (Existing):
Antennas: One (1) RFS PA6-65AC Microwave dish and one (1) 6ft x 4in. pipe mount leg mounted with a RAD center elevation of ± 194.25 -ft above grade level.
Coax Cable: One (1) WE-65 elliptical coax cable running on the leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
Antennas: One (1) 9-ft Omni-directional whip antenna mounted on one (1) existing 4-ft side arm with a RAD center elevation of 192.75-ft above grade level.
Coax Cables: One (1) 1-5/8" $\varnothing$ coax cable running on the leg/face of the existing tower as specified in Section 3 of this report.

- Unknown (Existing):
Antennas: (1) Kathrein OGT9-840N-ft Omni-directional whip antenna mounted on a low profile rotatable platform with a RAD center elevation of 190.25-ft above grade level.
Coax Cables: One (1) 1-5/8" Ø coax cable running on the leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
Antennas: One (1) DB222-A 2-Bay Dipole antenna mounted on an existing low profile rotatable platform with a RAD center elevation of 188.25-ft above grade level.
Coax Cables: One (1) 7/8" Ø coax cable running on the leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
Antennas: One (1) RFS PD220 Omni-directional whip antenna mounted on an existing 6-ft side arm with a RAD center elevation of ±182.25-ft above grade level.
Coax Cable: One (1) 7/8" Ø coax cable running on the leg/face of the existing tower as specified in Section 3 of this report.
- CSP (Existing):
Antennas: Two (2) Sinclair SC479-HF1LDF antennas (inverted), one (1) Sinclair SE414-SWBP4LDF antenna and one (1) Bird 432E-83I-01T TTA mounted to an existing low profile rotatable platform with an elevation of 182-ft above grade level.
Coax Cables: Two (2) 1-5/8" Ø and one (1) 1/2" Ø coax cable running on the leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
Antennas: One (1) BCD87077 Omni-directional whip antenna mounted on an existing 4-ft side arm with a RAD center elevation of ±181.50-ft above grade level.
Coax Cable: One (1) 7/8" Ø coax cable running on the leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
Antennas: One (1) DB222-A 2-Bay Dipole antenna (inverted) mounted to an existing 4-ft side arm (same as Omni @180.25-ft) with a RAD center elevation of ±180.25-ft above grade level.
Coax Cables: One (1) 7/8" Ø coax cable running on the leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
Antennas: One (1) 12-ft Omni-directional whip antenna (inverted) and one (1) 10-ft Omni-directional whip antenna (inverted) mounted on an existing low profile rotatable platform with respective RAD center elevations of 175.25-ft and 174.25-ft above grade level.
Coax Cables: Two (2) 1-5/8" Ø coax cables running on the leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
Antennas: One (1) 12-ft Omni-directional whip antenna mounted on an existing 3-ft side arm with a RAD center elevation of 175.25-ft above grade level.
Coax Cables: One (1) 7/8" Ø coax cable running on the leg/face of the existing tower as specified in Section 3 of this report.

- Unknown (Existing):
Antennas: One (1) Telewave ANT150D6-9, 4 bay dipole antenna (inverted) mounted on an existing low profile rotatable platform with a RAD center elevation of 173.75-ft above grade level.
Coax Cables: One (1) 7/8" Ø coax cable running on the leg/face of the existing tower as specified in Section 3 of this report.
- AT&T (Existing):
Antenna: Three (3) Powerwave 7770 panel antennas, four (4) CCI DMP65R-BU6D panel antennas, two (2) CCI DMP65R-BU4D panel antenna, six (6) Powerwave LGP21401 TMAs, six (6) Powerwave LGP13519 Diplexers, three (3) Ericsson 8843 B2/B66A remote radio heads, three (3) 4478 B14 remote radio heads, three (3) 4449 B5/B12 remote radio heads and three (3) Raycap DC6-48-60-18-8F surge arrestors mounted on three (3) existing 12-ft T-Frames with a RAD center elevation of ±150-ft above grade level.
Coax Cable: Twelve (12) 1-5/8" Ø coax cables, three (3) fiber cable and six (6) dc control cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- Eversource (Existing):
Antennas: One (1) Sinclair SD210 single dipole antenna mounted to an existing PiROD 6-ft Rigid side arm with an elevation of ±135ft above grade level.
Coax Cable: One (1) 7/8" Ø coax cable running on the leg/face of the existing tower as specified in Section 3 of this report.
- Eversource (Existing):
Antennas: Two (2) Andrew DB586-Y Omni-directional whip antennas (one upright, one inverted) and one (1) TTA mounted to an existing PiROD 6-ft Rigid side arm with respective RAD center elevations of ±130ft and ±125ft above grade level.
Coax Cable: Two (2) 7/8" Ø coax cables running on the leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
Equipment: One (1) vacant 6-ft PiROD Rigid Side arm face mounted to the existing tower with a RAD center elevation of ±120.5-ft above grade level.
- Unknown (Existing):
Antennas: One (1) DB212 Single Dipole antenna mounted to an existing PiROD 6-ft Rigid side arm with an elevation of ±120.67ft above grade level.
Coax Cables: One (1) 7/8" Ø coax cable running on the leg/face of the existing tower as specified in Section 3 of this report.
- Eversource (Existing):
Antennas: One (1) dBspectra DS2C03F36D-D antenna mounted to a 4-ft side arm with an elevation of ±117.5ft above grade level.
Coax Cables: Two (2) 7/8" Ø coax cable running on the leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
Antennas: One (1) DB205-L Omni-directional whip antenna mounted to an existing PiROD 6-ft Rigid side arm with an elevation of ±109.25ft above grade level.
Coax Cables: One (1) 7/8" Ø coax cable running on the leg/face of the existing tower as specified in Section 3 of this report.

- **CSP (Existing):**
Antennas: One (1) RFS PA6-65AC Microwave dish and one (1) 6ft x 4in. pipe mount leg mounted with a RAD center elevation of ± 102.25 -ft above grade level.
Coax Cable: One (1) WE-65 elliptical coax cable running on the leg/face of the existing tower as specified in Section 3 of this report.
- **Unknown (Existing):**
Antennas: One (1) DB224-A 4 Bay Dipole antenna mounted to an existing 2-ft side arm with a RAD center elevation of ± 94 -ft above grade level.
Coax Cables: One (1) 1/2" $\varnothing$ coax cable running on the leg/face of the existing tower as specified in Section 3 of this report.
- **Unknown (Existing):**
Antennas: One (1) RFS PD220-2 Omni-directional whip antenna mounted to an existing PiROD 6-ft Rigid side arm with a RAD center elevation of ± 90.41 ft above grade level.
Coax Cables: One (1) 1/2" $\varnothing$ coax cable running on the leg/face of the existing tower as specified in Section 3 of this report.
- **Unknown (Existing):**
Antennas: One (1) 12-ftx3in. $\varnothing$ Omni-directional whip antenna (inverted) mounted to an existing PiROD 6-ft Rigid side arm with a RAD center elevation of ± 79.5 ft above grade level.
Coax Cables: One (1) 1/2" $\varnothing$ coax cable running on the leg/face of the existing tower as specified in Section 3 of this report.
- **Unknown (Existing):**
Antennas: One (1) Andrew DB432-A Yagi antenna leg mounted with a RAD center elevation of ± 70.25 ft above grade level.
Coax Cables: One (1) 1/2" $\varnothing$ coax cable running on the leg/face of the existing tower as specified in Section 3 of this report.
- **Unknown (Existing):**
Antennas: One (1) Channel Master 1.2M Dish antenna mounted on a side arm with a RAD center elevation of ± 17 -ft above grade level.
Coax Cables: Two (2) 1/4" $\varnothing$ coax cables running on the leg/face of the existing tower as specified in Section 3 of this report.
- **Verizon (Existing):**
Antennas: Six (6) JMA MX06FIT665-02 panel antennas, six (6) Antel LPA80080-4CF panel antennas, three (3) Samsung MT6407-77A panel antennas, three (3) Samsung B2/B66A remote radio heads, three (3) Samsung B5/B13 remote radio heads and one (1) main distribution box mounted on three (3) existing 15-ft T-Frames with a RAD center elevation of ± 161.2 -ft above grade level.
Coax Cable: Twelve (12) 1-5/8" $\varnothing$ coax cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- **T-MOBILE (EXISTING TO BE REMOVED):**
Antennas: Three (3) RFS APX16DWV-16DWVS panel antennas and six (6) Ericsson RRUS-11 remote radio heads on (3) 10-ft T-Frames with a RAD center elevation of 140-ft above grade level.
Coax Cables: Existing Coax Cables

- **T-MOBILE (EXISTING TO REMAIN):**
Antennas: Three (3) RFS APXVAARR24_43 panel antennas and three (3) Ericsson 4449 B71 B12 remote radio heads mounted on (3) 10-ft T-Frames with a RAD center elevation of 140-ft above grade level.
Coax Cables: Three (3) 6x12 HCS running on a leg of the existing tower.
- **T-MOBILE (PROPOSED):**
Antennas: Three (3) Ericsson AIR6419 B41 panel antennas and three (3) Ericsson 4460 B25+B66 remote radio heads mounted on (3) 10-ft T-Frames with a RAD center elevation of 140-ft above grade level.
Coax Cables: Two (2) 6x24 HCS running on a leg of the existing tower.

Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.

A n a l y s i s

The existing tower was analyzed using a comprehensive computer program entitled tnxTower. The program analyzes the tower, considering the worst case loading condition. The tower is considered as loaded by concentric forces along the tower, and the model assumes that the tower members are subjected to bending, axial, and shear forces.

The existing tower was analyzed for the controlling basic wind speed (3-second gust) with no ice and the applicable wind and ice combination to determine stresses in members as per guidelines of TIA-222-G-2005 entitled “Structural Standard for Antenna Support Structures and Antennas”, the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Load and Resistance Factor Design (LRFD).

The controlling wind speed is determined by evaluating the local available wind speed data as provided in Appendix N of the CSBC¹ and the wind speed data available in the TIA-222-G-2005 Standard.

T o w e r L o a d i n g

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA-222-G-2005, gravity loads of the tower structure and its components, and the application of 1.00” radial ice on the tower structure and its components.

Basic Wind Speed:	Sharon; $V_{asd} = 93$ mph (Risk Category III)	[Appendix N of the 2018 CT Building Code]
Load Cases:	<u>Load Case 1</u> ; 93 mph wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation.	[Appendix N of the 2018 CT Building Code]
	<u>Load Case 2</u> ; = 40 mph wind speed w/ 1.00” radial ice plus gravity load – used in calculation of tower stresses.	[Annex B of TIA-222-G-2005]

¹ The 2015 International Building Code as amended by the 2018 Connecticut State Building Code (CSBC).

Tower Capacity

- Calculated stresses were found to be within allowable limits.

Tower Section	Elevation	Stress Ratio (percentage of capacity)	Result
Leg (T3)	152'-0" - 172'-0"	89.5%	PASS
Diagonal (T11)	2'-0" - 22'-0"	93.2%	PASS

Foundation and Anchors

The existing foundation consists of three (3) rock anchored reinforced concrete pad and piers bearing directly on existing sub grade. The sub-grade conditions used in the analysis of the existing foundation were obtained from a combination of the aforementioned manufacturers original design documents; PiROD Job No. A-115075 (foundation alternate #2) and a geo-technical soils study report prepared by Clarence Welti & Associates, Inc., dated March 03, 1998. The tower legs are connected to the foundation by means of six (6) 1.25"Ø, ASTM 687 Grade 105 anchor bolts per leg, embedded ±6-ft into the concrete foundation structure.

- The tower reactions developed from the governing Load Case of the were used in the verification of the foundation and anchor bolts:

Leg Reactions	Vector	Proposed Tower Reactions
Leg	Shear	47 kips
	Compression	468 kips
	Uplift	414 kips
Base	Shear	74 kips
	Compression	71 kips
	Moment	7691 kip-ft

- The anchor bolts were found to be within allowable limits.

Tower Section	Component	Stress Ratio (percentage of capacity)	Result
Anchor Bolts	Tension	69.7%	PASS

- The foundation was found to be within allowable limits.

Foundation Type	Design Limit	Allowable Limit/FS	Proposed Loading	Result
Rock Anchored Pad and Pier (x3)	Ultimate Bearing Pressure	20.00 ksf	6.8 ksf	PASS
	Rock Mass Uplift Resistance	1.00 ⁽¹⁾	1.38	PASS

Note 1: Minimum required Factor of Safety (FS) of 1.0 required per TIA-222-G section 9.4

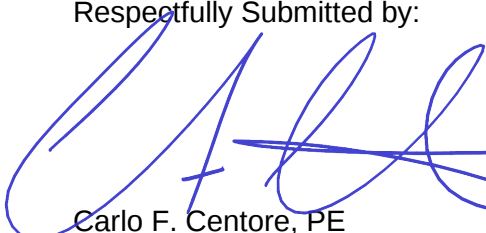
Conclusion

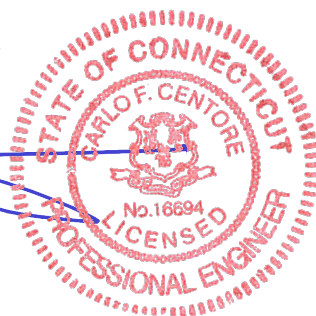
This analysis shows that the subject tower **IS ADEQUATE** to support the proposed T-Mobile antenna configuration.

The analysis is based, in part, on the information provided to this office by T-Mobile. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:


Carlo F. Centore, PE
Principle ~ Structural Engineer



Prepared by:


Pablo Perez-Gomez
Structural Engineer

*Standard Conditions for Furnishing of
Professional Engineering Services on
Existing Structures*

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the “as new” condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

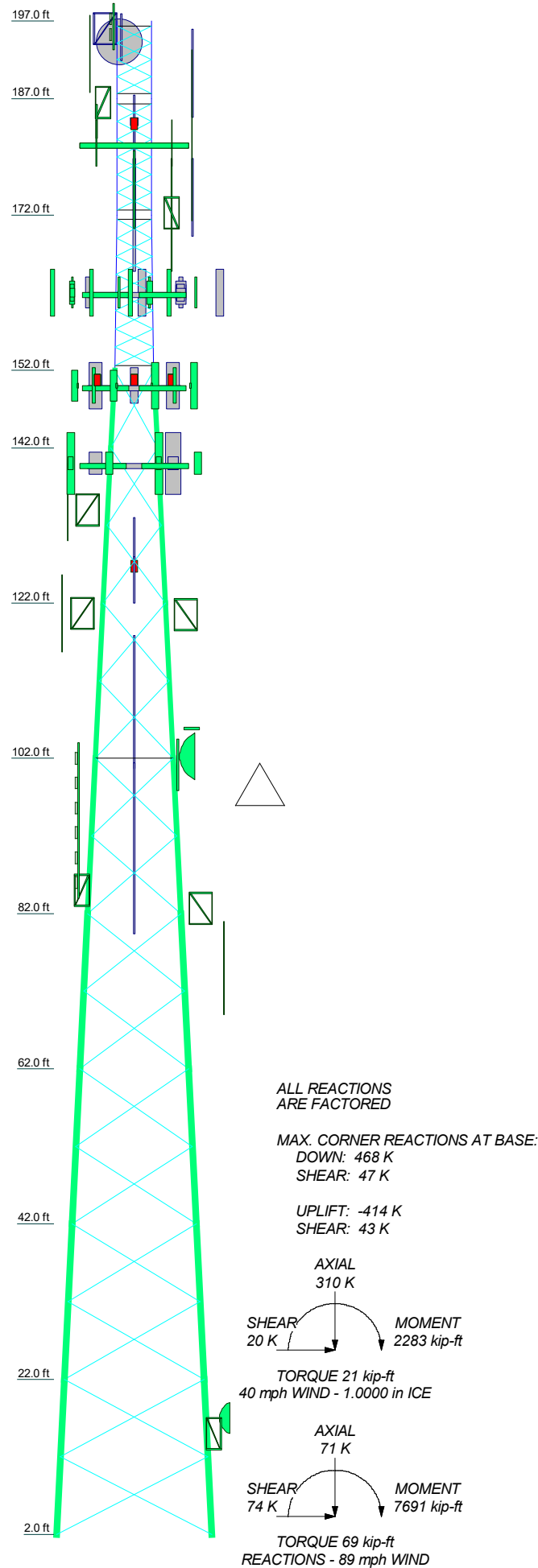
GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

tnxTower, is an integrated structural analysis and design software package for Designed specifically for the telecommunications industry, tnxTower, formerly RISA Tower, automates much of the tower analysis and design required by the TIA/EIA 222 Standard.

tnxTower Features:

- tnxTower can analyze and design 3- and 4-sided guyed towers, 3- and 4-sided self-supporting towers and either round or tapered ground mounted poles with or without guys.
- The program analyzes towers using the TIA-222-G (2005) standard or any of the previous TIA/EIA standards back to RS-222 (1959). Steel design is checked using the AISC ASD 9th Edition or the AISC LRFD specifications.
- Linear and non-linear (P-delta) analyses can be used in determining displacements and forces in the structure. Wind pressures and forces are automatically calculated.
- Extensive graphics plots include material take-off, shear-moment, leg compression, displacement, twist, feed line, guy anchor and stress plots.
- tnxTower contains unique features such as True Cable behavior, hog rod take-up, foundation stiffness and much more.

Section	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1				
Legs	Prod 105220 reinf. w/1" dia. S.R.		Prod 105219 reinf. w/1" dia. S.R.		A	Prod 105218		Prod 105217	SR 2 1/4		SR 1 3/4				
Leg Grade	A572-50														
Diagonals	L4x4x1/4	L3 1/2x3 1/2x5/16		L3 1/2x3 1/2x1/4		L3x3x1/4		B	SR 1		SR 7/8				
Diagonal Grade	A572-50	A36		A572-50		A572-50		A36	A572-50						
Top Girts	N.A.		N.A.		L3x3x3/16		N.A.					SR 1	L3x3x5/16		
Bottom Girts	N.A.											SR 1	SR 7/8		
Face Width (ft)	20	18	16	14	12	10	8	6	5	4.5					
# Panels @ (ft)	15 @ 10											9 @ 2.344		7 @ 2.27733	5 @ 2.166
Weight (K)	38.2	6.4	6.4	5.6	5.5	4.2	3.2	2.5	1.3	1.6	0.9	0.6			



DESIGNED APPURTENANCE LOADING			
TYPE	ELEVATION	TYPE	ELEVATION
Single Dipole (Unknown)	196.26	8843 B2/B66A (ATI)	150
PIROD 6'-8" Rigid Side Arm (Vacant)	196	8843 B2/B66A (ATI)	150
6'x4" Pipe Mount (CSP)	194.92	4478 B14 (ATI)	150
PA6-65AC (CSP)	194.25	4478 B14 (ATI)	150
9' x 3" Dia Omni (Unknown)	192.75	4478 B14 (ATI)	150
OGT9-840 (Unknown)	190.25	4449 B5/B12 (ATI)	150
Pirod 4' Side Mount Standoff (1) (Unknown)	186.5	4449 B5/B12 (ATI)	150
DB222-A (Unknown)	185.25	4449 B5/B12 (ATI)	150
SC479-HF1LDF (CSP (Inverted))	184	DC6-48-60-18-8F Surge Arrestor (ATI)	150
SC479-HF1LDF (CSP (Inverted))	184	DC6-48-60-18-8F Surge Arrestor (ATI)	150
SE414-SWB4LDF (D00) (CSP)	184	DC6-48-60-18-8F Surge Arrestor (ATI)	150
TX/RX 432E-83I-01T (CSP)	184	Pirod 12' T-Frame Sector Mount (1) (ATI)	150
Filter Box (CSP)	183	Pirod 12' T-Frame Sector Mount (1) (ATI)	150
PD220 (Unknown)	182.25	Pirod 12' T-Frame Sector Mount (1) (ATI)	150
BCD-87077 (Pagenet)	181.5	7770.00 (ATI)	150
(4) 6'x2" Pipe Mount (Unknown)	181.25	7770.00 (ATI)	150
(4) 6'x2" Pipe Mount (Unknown)	181.25	7770.00 (ATI)	150
PIROD 15' Rotatable Platform (Lattice) (Unknown)	181.25	(2) DMP65R-BU6D (ATI)	150
(4) 6'x2" Pipe Mount (Unknown)	181.25	(2) DMP65R-BU6D (ATI)	150
DB222-A (Unknown (Inverted))	180.25	APXVAARR24-43 (T-Mobile Existing)	140
12' x 3" Dia Omni (Unknown)	175.25	APXVAARR24-43 (T-Mobile Existing)	140
12' x 3" Dia Omni (Unknown (Inverted))	175.25	APXVAARR24-43 (T-Mobile Existing)	140
Pirod 4' Side Mount Standoff (1) (Unknown)	174.25	Radio 4449 B71 B12 (T-Mobile Existing)	140
10' x 3" Dia Omni (Unknown (Inverted))	174.25	Radio 4449 B71 B12 (T-Mobile Existing)	140
ANT150D6-9 (Unknown (Inverted))	173.75	Radio 4449 B71 B12 (T-Mobile Existing)	140
Pirod 6' Side Mount Standoff (1) (Unknown)	172.25	AIR6449 (T-Mobile Proposed)	140
3' Sidearm (Unknown)	170.2	AIR6449 (T-Mobile Proposed)	140
(2) MX06FIT665-02 (Verizon)	162	AIR6449 (T-Mobile Proposed)	140
MT6407-77A (Verizon)	162	4460 B25+B66 (T-Mobile Proposed)	140
LPA-80080-4CF (Verizon)	162	4460 B25+B66 (T-Mobile Proposed)	140
LPA-80080-4CF (Verizon)	162	4460 B25+B66 (T-Mobile Proposed)	140
(2) MX06FIT665-02 (Verizon)	162	10-ft T-Frame (T-Mobile Existing)	140
MT6407-77A (Verizon)	162	10-ft T-Frame (T-Mobile Existing)	140
LPA-80080-4CF (Verizon)	162	10-ft T-Frame (T-Mobile Existing)	140
B2/B66A RRH (Verizon)	162	SRL110A (Eversource)	135
B2/B66A RRH (Verizon)	162	PIROD 6' Rigid Side Arm w/ 3" STD mount pipe (Eversource)	134
B2/B66A RRH (Verizon)	162	DB586-Y (Eversource)	130
B5/B13 RRH (Verizon)	162	PIROD 6' Rigid Side Arm w/ 3" STD mount pipe (Eversource)	126
B5/B13 RRH (Verizon)	162	Tower Top Amplifier (Eversource)	126
B5/B13 RRH (Verizon)	162	DB586-Y (Eversource)	125
RC2DC-3315-PF-48 (Verizon)	162	DB212-1 (Unknown)	120.67
PIROD 15' T-Frame (Verizon)	162	PIROD 6' Rigid Side Arm w/ 3" STD mount pipe (Unknown)	120.67
PIROD 15' T-Frame (Verizon)	162	PIROD 6' Rigid Side Arm w/ 3" STD mount pipe (Vacant)	120.5
PIROD 15' T-Frame (Verizon)	162	DS2C03F36D-D (Eversource)	117.5
MT6407-77A (Verizon)	162	Pirod 4' Side Mount Standoff (1) (Eversource)	117.5
LPA-80080-4CF (Verizon)	162	DB205-L (Unknown)	109.25
LPA-80080-4CF (Verizon)	162	Ice Canopy	106
LPA-80080-4CF (Verizon)	162	PA6-65AC (CSP)	102.25
(2) MX06FIT665-02 (Verizon)	162	6'8"x4" Pipe Mount (CSP)	101.2
(2) DMP65R-BU4D (ATI)	150	PIROD 6' Rigid Side Arm w/ 3" STD mount pipe (Unknown)	100.83
(2) LGP21401 TMA (ATI)	150	DB224 (Unknown)	94
(2) LGP21401 TMA (ATI)	150	PD220 (Unknown)	90.41
(2) LGP21401 TMA (ATI)	150	2-ft Stand Off (Unknown)	85
(2) LGP13519 Diplexer (ATI)	150	PIROD 6' Rigid Side Arm w/ 3" STD mount pipe (Unknown)	82.67
(2) LGP13519 Diplexer (ATI)	150	PIROD 6' Rigid Side Arm w/ 3" STD mount pipe (Unknown)	79.5
(2) LGP13519 Diplexer (ATI)	150	12' x 3" Dia Omni (Unknown)	75
(2) 7020 Dual Band RET (ATI)	150	DB432-A (Unknown)	70.25
(2) 7020 Dual Band RET (ATI)	150	1.2M (Verizon)	17
(2) 7020 Dual Band RET (ATI)	150	2-ft Stand Off (Unknown)	15
8843 B2/B66A (ATI)	150		

SYMBOL LIST			
MARK	SIZE	MARK	SIZE
A	Pirod 105218 reinf. w/1" dia. S.R.	B	L2 1/2x2 1/2x3/16

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

1. Tower designed for Exposure C to the TIA-222-G Standard.
 2. Tower designed for a 89 mph basic wind in accordance with the TIA-222-G Standard.
 3. Tower is also designed for a 40 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
 4. Deflections are based upon a 60 mph wind.
 5. Tower Structure Class III.
 6. Topographic Category 1 with Crest Height of 0.00 ft
 7. TOWER RATING: 93.2%

Centek Engineering
 63-2 North Branford Rd.
 Branford, CT 06405
 Phone: (203) 488-0580
 FAX: (203) 488-8587

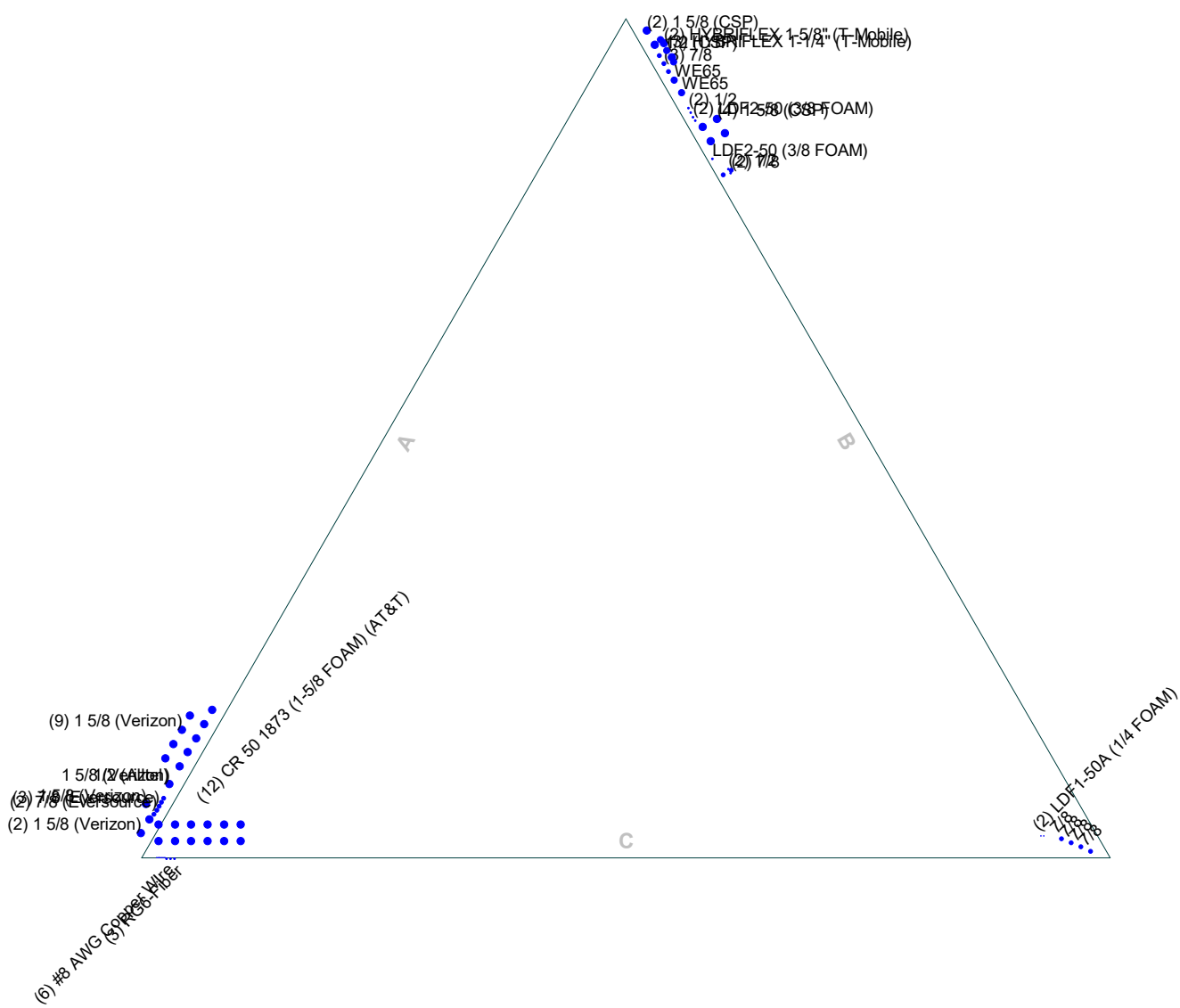
Job: 22022.17 CTNH544A
Project: 7 Surdan Mountain Road, Sharon, CT

Client: T-Mobile	Drawn by: PPG	App'd:
Code: TIA-22-G	Date: 07/27/22	Scale: NTS
Path:		Dwg No. E-1

\\share02\22022017-CTNH544A-Structure\22 Design\22CTNH544A.dwg 22.0X16.6 Valmont Lattice Tower

Feed Line Plan

Round Flat App In Face App Out Face Truss-Leg

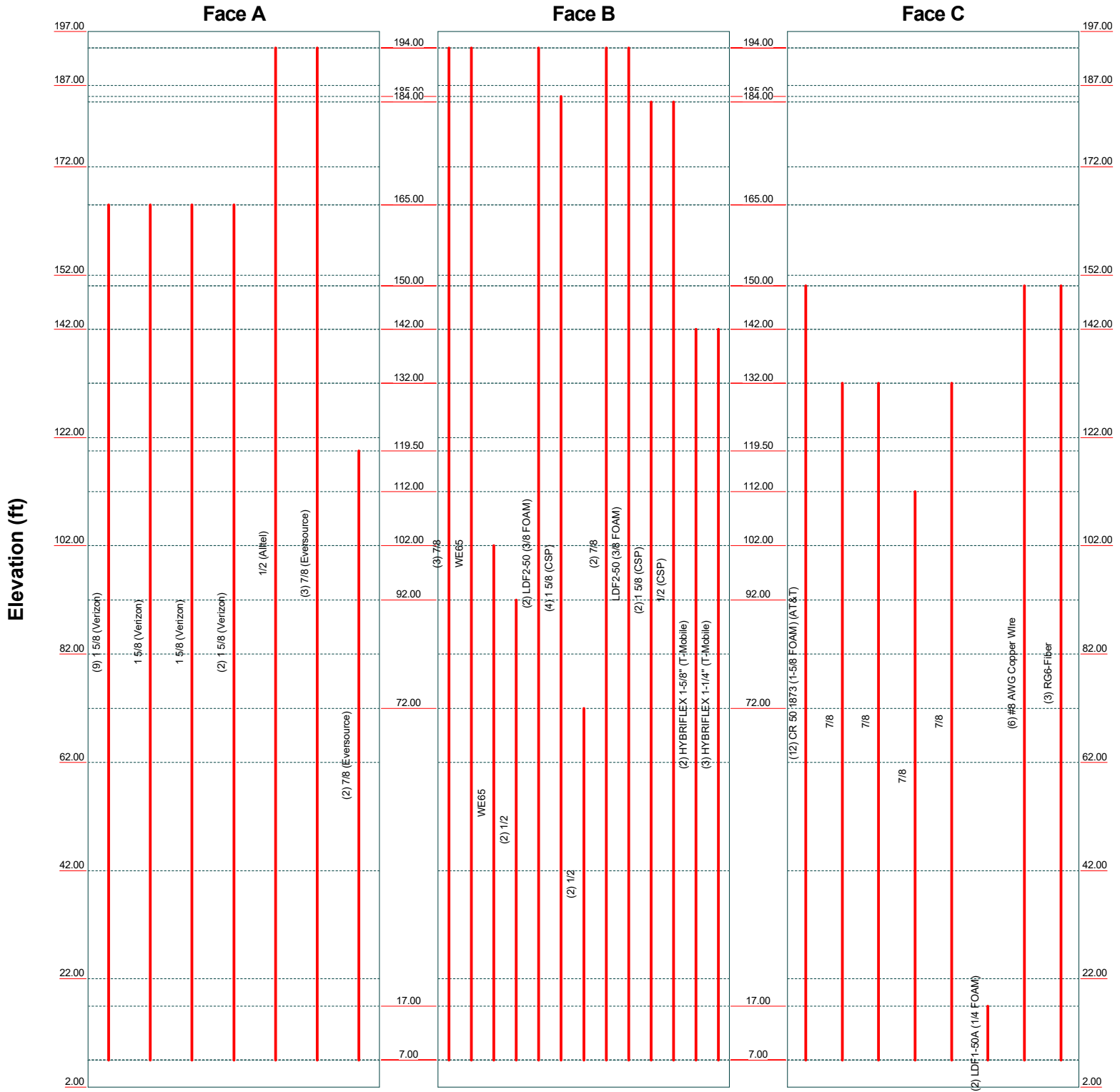


Centek Engineering			Job: 22022.17 CTNH544A		
63-2 North Branford Rd.			Project: 7 Surdan Mountain Road, Sharon, CT		
Branford, CT 06405			Client: T-Mobile	Drawn by: PPG	App'd:
Phone: (203) 488-0580			Code: TIA-222-G	Date: 07/27/22	Scale: NTS
FAX: (203) 488-8587			Path:	Dwg No. E-7	

J:\Jobs\22022.17\17 CTNH544A\05 Branford\02 Design\24\CS\Tower Analysis\4\20.0X105\4_Volmount Lattice Tower.dwg

Feed Line Distribution Chart 2' - 197'

Round Flat App In Face App Out Face Truss Leg



Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587			Job: 22022.17 CTNH544A Project: 7 Surdan Mountain Road, Sharon, CT Client: T-Mobile Code: TIA-222-G Path: J:\Jobs\22022.17\17 CTNH544A\05 Branford\02 Design\24\CR50Tower Analysis\4\20.0X19.5H_Vermont Lattice Tower.mxd		
Drawn by: PPG Date: 07/27/22		App'd: Scale: NTS Dwg No. E-7			

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job 22022.17 CTNH544A	Page 1 of 55
	Project 7 Surdan Mountain Road, Sharon, CT	Date 12:26:28 07/27/22
	Client T-Mobile	Designed by PPG

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 197.00 ft above the ground line.

The base of the tower is set at an elevation of 2.00 ft above the ground line.

The face width of the tower is 4.50 ft at the top and 20.00 ft at the base.

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

The following design criteria apply:

Basic wind speed of 89 mph.

Structure Class III.

Exposure Category C.

Topographic Category 1.

Crest Height 0.00 ft.

Nominal ice thickness of 1.0000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 40 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

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

Pressures are calculated at each section.

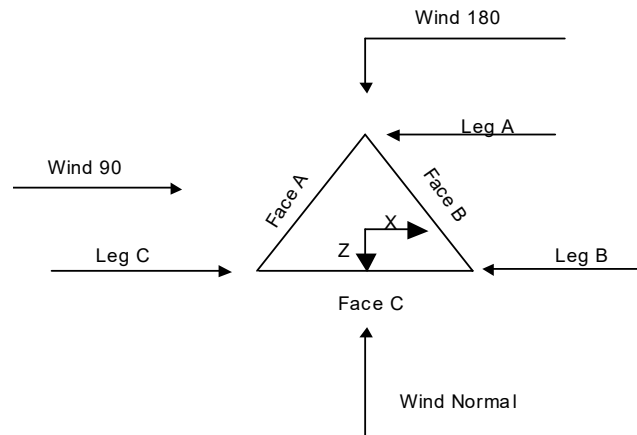
Stress ratio used in tower member design is 1.

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

Options

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

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	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	197.00-187.00		V4.5 111574	4.50	1	10.00
T2	187.00-172.00		V4.5 111574	4.50	1	15.00
T3	172.00-152.00		H5.0 116640	4.50	1	20.00
T4	152.00-142.00		U6.0 105245	5.00	1	10.00
T5	142.00-122.00		U8.0 105217	6.00	1	20.00
T6	122.00-102.00		U10.0 105217 L3x3/16	8.00	1	20.00
T7	102.00-82.00		U12.0 105218	10.00	1	20.00
T8	82.00-62.00		U14.0 105218	12.00	1	20.00
T9	62.00-42.00		U16.0 105219	14.00	1	20.00
T10	42.00-22.00		U18.0 105219	16.00	1	20.00
T11	22.00-2.00		U20.0 105219 L3.5x5/16	18.00	1	20.00

Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
T1	197.00-187.00	2.17	X Brace	No	Steps	8.0160	8.0160
T2	187.00-172.00	2.28	X Brace	No	Steps	8.0160	8.0160
T3	172.00-152.00	2.34	X Brace	No	Steps	7.4880	7.4880
T4	152.00-142.00	10.00	X Brace	No	No	0.0000	0.0000

<i>tnxTower</i> <i>Centek Engineering</i> 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	3 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

<i>Tower Section</i>	<i>Tower Elevation</i>	<i>Diagonal Spacing</i>	<i>Bracing Type</i>	<i>Has K Brace End Panels</i>	<i>Has Horizontals</i>	<i>Top Girt Offset</i>	<i>Bottom Girt Offset</i>
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
T5	142.00-122.00	10.00	X Brace	No	No	0.0000	0.0000
T6	122.00-102.00	10.00	X Brace	No	No	0.0000	0.0000
T7	102.00-82.00	10.00	X Brace	No	Yes	0.0000	0.0000
T8	82.00-62.00	10.00	X Brace	No	No	0.0000	0.0000
T9	62.00-42.00	10.00	X Brace	No	Yes	0.0000	0.0000
T10	42.00-22.00	10.00	X Brace	No	No	0.0000	0.0000
T11	22.00-2.00	10.00	X Brace	No	Yes	0.0000	0.0000

Tower Section Geometry (cont'd)

<i>Tower Elevation</i>	<i>Leg Type</i>	<i>Leg Size</i>	<i>Leg Grade</i>	<i>Diagonal Type</i>	<i>Diagonal Size</i>	<i>Diagonal Grade</i>
<i>ft</i>						
T1 197.00-187.00	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T2 187.00-172.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T3 172.00-152.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T4 152.00-142.00	Truss Leg	Pirod 105245	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T5 142.00-122.00	Truss Leg	Pirod 105217	A572-50 (50 ksi)	Single Angle	L3x3x3/16	A572-50 (50 ksi)
T6 122.00-102.00	Truss Leg	Pirod 105218	A572-50 (50 ksi)	Single Angle	L3x3x1/4	A572-50 (50 ksi)
T7 102.00-82.00	Truss Leg	Pirod 105218 reinf. w/1" dia. S.R.	A572-50 (50 ksi)	Single Angle	L3x3x1/4	A572-50 (50 ksi)
T8 82.00-62.00	Truss Leg	Pirod 105219 reinf. w/1" dia. S.R.	A572-50 (50 ksi)	Single Angle	L3x3x5/16	A36 (36 ksi)
T9 62.00-42.00	Truss Leg	Pirod 105219 reinf. w/1" dia. S.R.	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T10 42.00-22.00	Truss Leg	Pirod 105220 reinf. w/1" dia. S.R.	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x5/16	A36 (36 ksi)
T11 22.00-2.00	Truss Leg	Pirod 105220 reinf. w/1" dia. S.R.	A572-50 (50 ksi)	Single Angle	L4x4x1/4	A572-50 (50 ksi)

Tower Section Geometry (cont'd)

<i>Tower Elevation</i>	<i>Top Girt Type</i>	<i>Top Girt Size</i>	<i>Top Girt Grade</i>	<i>Bottom Girt Type</i>	<i>Bottom Girt Size</i>	<i>Bottom Girt Grade</i>
<i>ft</i>						
T1 197.00-187.00	Single Angle	L3x3x5/16	A36 (36 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T2 187.00-172.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T3 172.00-152.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T7 102.00-82.00	Single Angle	L3x3x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page 4 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date 12:26:28 07/27/22
	Client	T-Mobile	Designed by PPG

Tower Section Geometry (cont'd)

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft ²	in							
T1 197.00-187.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	36.0000	36.0000	36.0000
T2 187.00-172.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	36.0000	36.0000	36.0000
T3 172.00-152.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	36.0000	36.0000	36.0000
T4 152.00-142.00	1.78	0.5000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T5 142.00-122.00	3.22	0.5000	A36 (36 ksi)	1	1.02	1.05	36.0000	36.0000	36.0000
T6 122.00-102.00	3.22	0.5000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T7 102.00-82.00	3.22	0.5000	A36 (36 ksi)	1	1.02	1.05	36.0000	36.0000	36.0000
T8 82.00-62.00	3.22	0.5000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T9 62.00-42.00	3.22	0.5000	A36 (36 ksi)	1	1.02	1.05	36.0000	36.0000	36.0000
T10 42.00-22.00	3.22	0.5000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T11 22.00-2.00	3.22	0.5000	A36 (36 ksi)	1	1.02	1.05	36.0000	36.0000	36.0000

Tower Section Geometry (cont'd)

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	Legs	K Factors ¹						
				X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
				X Y	X Y	X Y	X Y	X Y	X Y	X Y
T1 197.00-187.00	No	Yes	1	1	1	1	1	1	1	1
T2 187.00-172.00	No	Yes	1	1	1	1	0.5	1	1	1
T3 172.00-152.00	No	Yes	1	1	1	1	0.5	1	1	1
T4 152.00-142.00	Yes	No	1	1	1	1	1	1	1	1
T5 142.00-122.00	Yes	No	1	1	1	1	1	1	1	1
T6 122.00-102.00	Yes	No	1	1	1	1	1	1	1	1
T7 102.00-82.00	Yes	No	1	1	1	1	1	1	1	1
T8 82.00-62.00	Yes	No	1	1	1	1	1	1	1	1
T9 62.00-42.00	Yes	No	1	1	1	1	1	1	1	1
T10 42.00-22.00	Yes	No	1	1	1	1	1	1	1	1

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	7 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T4 152.00-142.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 142.00-122.00	Flange	1.0000 A325N	6	1.0000 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 122.00-102.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 102.00-82.00	Flange	1.0000 A325N	6	1.0000 A325X	1	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 82.00-62.00	Flange	1.2500 A325N	6	1.2500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0
T9 62.00-42.00	Flange	1.2500 A325N	6	1.2500 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0
T10 42.00-22.00	Flange	1.2500 A325N	6	1.2500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0
T11 22.00-2.00	Flange	1.2500 A687	6	1.2500 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	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)	# Row	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1 5/8 (Verizon)	A	No	No	Ar (CaAa)	165.00 - 7.00	2.0000	-0.365	9	5	1.9800	1.9800		1.04
1 5/8 (Verizon)	A	No	No	Ar (CaAa)	165.00 - 7.00	2.0000	-0.42	1	1	1.9800	1.9800		1.04
1 5/8 (Verizon)	A	No	No	Ar (CaAa)	165.00 - 7.00	4.5000	-0.45	1	1	1.9800	1.9800		1.04
1 5/8 (Verizon)	A	No	No	Ar (CaAa)	165.00 - 7.00	2.0000	-0.47	2	2	1.9800	1.9800		1.04
1/2 (Alltel)	A	No	No	Ar (CaAa)	194.00 - 7.00	3.0000	-0.42	1	1	0.5800	0.5800		0.25
7/8 (Eversource)	A	No	No	Ar (CaAa)	194.00 - 7.00	2.0000	-0.445	3	3	1.1100	1.1100		0.54
CR 50 1873 (1-5/8 FOAM)	C	No	No	Ar (CaAa)	150.00 - 7.00	-7.0000	0.44	12	6	1.9800	1.9800		0.83
(AT&T) 7/8	C	No	No	Ar (CaAa)	132.00 - 7.00	-1.0000	-0.48	1	1	1.1100	1.1100		0.54
7/8	C	No	No	Ar (CaAa)	132.00 - 7.00	-2.0000	-0.47	1	1	1.1100	1.1100		0.54
7/8	C	No	No	Ar (CaAa)	112.00 - 7.00	-3.0000	-0.46	1	1	1.1100	1.1100		0.54
7/8	C	No	No	Ar (CaAa)	132.00 - 7.00	-4.0000	-0.45	1	1	1.1100	1.1100		0.54
7/8	B	No	No	Ar (CaAa)	194.00 - 7.00	2.0000	-0.44	3	3	1.1100	1.1100		0.54
WE65	B	No	No	Ar (CaAa)	194.00 - 7.00	2.0000	-0.42	1	1	1.5836	1.5836		0.53
WE65	B	No	No	Ar (CaAa)	102.00 - 7.00	2.0000	-0.405	1	1	1.5836	1.5836		0.53
1/2	B	No	No	Ar (CaAa)	92.00 - 7.00	2.0000	-0.385	2	2	0.5800	0.5800		0.25
LDF2-50 (3/8)	B	No	No	Ar (CaAa)	194.00 -	2.0000	-0.375	2	2	0.4400	0.4400		0.08

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	8 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

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
FOAM)					7.00								
1 5/8 (CSP)	B	No	No	Ar (CaAa)	185.00 - 7.00	2.0000	-0.355	4	2	1.9800	1.9800		1.04
1/2	B	No	No	Ar (CaAa)	72.00 - 7.00	3.0000	-0.31	2	2	0.5800	0.5800		0.25
7/8	B	No	No	Ar (CaAa)	194.00 - 7.00	1.0000	-0.31	2	1	1.1100	1.1100		0.54
LDF1-50A (1/4 FOAM)	C	No	No	Ar (CaAa)	17.00 - 7.00	-5.0000	-0.43	2	2	0.3500	0.3500		0.06
#8 AWG Copper Wre	C	No	No	Ar (CaAa)	150.00 - 7.00	0.0000	0.48	6	6	0.2500	0.1285		0.05
RG6-Fiber	C	No	No	Ar (CaAa)	150.00 - 7.00	0.0000	0.47	3	3	0.5000	0.5000		1.00
LDF2-50 (3/8 FOAM)	B	No	No	Ar (CaAa)	194.00 - 7.00	1.0000	-0.33	1	1	0.4400	0.4400		0.08
1 5/8 (CSP)	B	No	No	Ar (CaAa)	184.00 - 7.00	2.0000	-0.47	2	2	1.9800	1.9800		1.04
1/2 (CSP)	B	No	No	Ar (CaAa)	184.00 - 7.00	4.0000	-0.45	1	1	0.5800	0.5800		0.25
HYBRIFLEX 1-5/8" (T-Mobile)	B	No	No	Ar (CaAa)	142.00 - 7.00	4.0000	-0.45	2	2	1.9800	1.9800		1.90
HYBRIFLEX 1-1/4" (T-Mobile)	B	No	No	Ar (CaAa)	142.00 - 7.00	4.0000	-0.45	3	3	1.5400	1.5400		1.30
7/8 (Eversource)	A	No	No	Ar (CaAa)	119.50 - 7.00	2.0000	-0.445	2	2	1.1100	1.1100		0.54

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
T1	197.00-187.00	A	0.000	0.000	2.737	0.000	0.01
		B	0.000	0.000	5.918	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.00
T2	187.00-172.00	A	0.000	0.000	5.865	0.000	0.03
		B	0.000	0.000	28.424	0.000	0.13
		C	0.000	0.000	0.000	0.000	0.00
T3	172.00-152.00	A	0.000	0.000	41.282	0.000	0.21
		B	0.000	0.000	41.827	0.000	0.20
		C	0.000	0.000	0.000	0.000	0.00
T4	152.00-142.00	A	0.000	0.000	29.650	0.000	0.15
		B	0.000	0.000	20.914	0.000	0.10
		C	0.000	0.000	20.825	0.000	0.11
T5	142.00-122.00	A	0.000	0.000	59.300	0.000	0.31
		B	0.000	0.000	58.987	0.000	0.35
		C	0.000	0.000	55.392	0.000	0.28
T6	122.00-102.00	A	0.000	0.000	63.185	0.000	0.33
		B	0.000	0.000	58.987	0.000	0.35
		C	0.000	0.000	59.832	0.000	0.30
T7	102.00-82.00	A	0.000	0.000	63.740	0.000	0.33
		B	0.000	0.000	63.314	0.000	0.37
		C	0.000	0.000	60.942	0.000	0.31
T8	82.00-62.00	A	0.000	0.000	63.740	0.000	0.33
		B	0.000	0.000	65.634	0.000	0.38
		C	0.000	0.000	60.942	0.000	0.31

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	Page
	22022.17 CTNH544A	9 of 55
	Project	Date
	7 Surdan Mountain Road, Sharon, CT	12:26:28 07/27/22
	Client	Designed by
	T-Mobile	PPG

<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face</i>	<i>A_R ft²</i>	<i>A_F ft²</i>	<i>C_AA_A In Face ft²</i>	<i>C_AA_A Out Face ft²</i>	<i>Weight K</i>
T9	62.00-42.00	A	0.000	0.000	63.740	0.000	0.33
		B	0.000	0.000	66.794	0.000	0.38
		C	0.000	0.000	60.942	0.000	0.31
T10	42.00-22.00	A	0.000	0.000	63.740	0.000	0.33
		B	0.000	0.000	66.794	0.000	0.38
		C	0.000	0.000	60.942	0.000	0.31
T11	22.00-2.00	A	0.000	0.000	47.805	0.000	0.25
		B	0.000	0.000	50.096	0.000	0.29
		C	0.000	0.000	46.407	0.000	0.23

Feed Line/Linear Appurtenances Section Areas - With Ice

<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face or Leg</i>	<i>Ice Thickness in</i>	<i>A_R ft²</i>	<i>A_F ft²</i>	<i>C_AA_A In Face ft²</i>	<i>C_AA_A Out Face ft²</i>	<i>Weight K</i>
T1	197.00-187.00	A	2.981	0.000	0.000	16.403	0.000	0.29
		B		0.000	0.000	40.291	0.000	0.72
		C		0.000	0.000	0.000	0.000	0.00
T2	187.00-172.00	A	2.961	0.000	0.000	34.986	0.000	0.61
		B		0.000	0.000	142.349	0.000	2.70
		C		0.000	0.000	0.000	0.000	0.00
T3	172.00-152.00	A	2.931	0.000	0.000	132.734	0.000	2.92
		B		0.000	0.000	203.700	0.000	3.85
		C		0.000	0.000	0.000	0.000	0.00
T4	152.00-142.00	A	2.903	0.000	0.000	89.172	0.000	2.01
		B		0.000	0.000	101.185	0.000	1.90
		C		0.000	0.000	50.232	0.000	1.21
T5	142.00-122.00	A	2.872	0.000	0.000	177.333	0.000	3.97
		B		0.000	0.000	274.150	0.000	5.08
		C		0.000	0.000	145.502	0.000	3.44
T6	122.00-102.00	A	2.825	0.000	0.000	200.400	0.000	4.25
		B		0.000	0.000	271.313	0.000	4.97
		C		0.000	0.000	171.298	0.000	3.95
T7	102.00-82.00	A	2.770	0.000	0.000	201.740	0.000	4.21
		B		0.000	0.000	294.113	0.000	5.30
		C		0.000	0.000	176.047	0.000	4.01
T8	82.00-62.00	A	2.703	0.000	0.000	199.093	0.000	4.09
		B		0.000	0.000	312.849	0.000	5.41
		C		0.000	0.000	173.596	0.000	3.90
T9	62.00-42.00	A	2.616	0.000	0.000	195.679	0.000	3.95
		B		0.000	0.000	317.695	0.000	5.32
		C		0.000	0.000	170.435	0.000	3.77
T10	42.00-22.00	A	2.492	0.000	0.000	190.793	0.000	3.76
		B		0.000	0.000	307.950	0.000	4.99
		C		0.000	0.000	165.908	0.000	3.59
T11	22.00-2.00	A	2.259	0.000	0.000	136.222	0.000	2.55
		B		0.000	0.000	217.253	0.000	3.31
		C		0.000	0.000	127.309	0.000	2.53

Feed Line Center of Pressure

<i>Section</i>	<i>Elevation</i>	<i>CP_X</i>	<i>CP_Z</i>	<i>CP_X</i>	<i>CP_Z</i>
	<i>ft</i>	<i>in</i>	<i>in</i>	<i>Ice in</i>	<i>Ice in</i>

<i>tnxTower</i> Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	10 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

Section	Elevation	CP _x	CP _z	CP _x	CP _z
	<i>ft</i>	<i>in</i>	<i>in</i>	<i>Ice</i>	<i>Ice</i>
				<i>in</i>	<i>in</i>
T1	197.00-187.00	-1.5379	-4.5250	-0.6553	-2.4507
T2	187.00-172.00	0.1190	-11.9565	-0.3320	-6.7768
T3	172.00-152.00	-7.9139	-6.8037	-3.6493	-5.9495
T4	152.00-142.00	-11.9438	-0.7341	-4.8153	-1.8768
T5	142.00-122.00	-13.0427	-2.3271	-8.1646	-5.2812
T6	122.00-102.00	-15.5731	-1.5784	-11.7661	-5.8242
T7	102.00-82.00	-17.1096	-2.1061	-13.4064	-7.8458
T8	82.00-62.00	-19.6734	-2.6083	-16.2953	-11.0011
T9	62.00-42.00	-21.1866	-2.8268	-18.2254	-12.9133
T10	42.00-22.00	-23.2216	-2.9040	-20.6510	-14.1900
T11	22.00-2.00	-20.0753	-2.3200	-18.5345	-12.2900

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T1	5	1/2	187.00 - 194.00	0.6000	0.2102
T1	6	7/8	187.00 - 194.00	0.6000	0.2102
T1	12	7/8	187.00 - 194.00	0.6000	0.2102
T1	13	WE65	187.00 - 194.00	0.6000	0.2102
T1	16	LDF2-50 (3/8 FOAM)	187.00 - 194.00	0.6000	0.2102
T1	19	7/8	187.00 - 194.00	0.6000	0.2102
T1	23	LDF2-50 (3/8 FOAM)	187.00 - 194.00	0.6000	0.2102
T2	5	1/2	172.00 - 187.00	0.6000	0.2530
T2	6	7/8	172.00 - 187.00	0.6000	0.2530
T2	12	7/8	172.00 - 187.00	0.6000	0.2530
T2	13	WE65	172.00 - 187.00	0.6000	0.2530
T2	16	LDF2-50 (3/8 FOAM)	172.00 - 187.00	0.6000	0.2530
T2	17	1 5/8	172.00 - 185.00	0.6000	0.2530
T2	19	7/8	172.00 - 187.00	0.6000	0.2530
T2	23	LDF2-50 (3/8 FOAM)	172.00 - 187.00	0.6000	0.2530
T2	24	1 5/8	172.00 - 184.00	0.6000	0.2530
T2	25	1/2	172.00 - 184.00	0.6000	0.2530
T3	1	1 5/8	152.00 - 165.00	0.6000	0.2737
T3	2	1 5/8	152.00 - 165.00	0.6000	0.2737
T3	3	1 5/8	152.00 -	0.6000	0.2737

<i>tnxTower</i> <i>Centek Engineering</i> 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	11 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T3	4	1 5/8	165.00 152.00 - 165.00	0.6000	0.2737
T3	5	1/2	152.00 - 172.00	0.6000	0.2737
T3	6	7/8	152.00 - 172.00	0.6000	0.2737
T3	12	7/8	152.00 - 172.00	0.6000	0.2737
T3	13	WE65	152.00 - 172.00	0.6000	0.2737
T3	16	LDF2-50 (3/8 FOAM)	152.00 - 172.00	0.6000	0.2737
T3	17	1 5/8	152.00 - 172.00	0.6000	0.2737
T3	19	7/8	152.00 - 172.00	0.6000	0.2737
T3	23	LDF2-50 (3/8 FOAM)	152.00 - 172.00	0.6000	0.2737
T3	24	1 5/8	152.00 - 172.00	0.6000	0.2737
T3	25	1/2	152.00 - 172.00	0.6000	0.2737
T4	1	1 5/8	142.00 - 152.00	0.6000	0.1709
T4	2	1 5/8	142.00 - 152.00	0.6000	0.1709
T4	3	1 5/8	142.00 - 152.00	0.6000	0.1709
T4	4	1 5/8	142.00 - 152.00	0.6000	0.1709
T4	5	1/2	142.00 - 152.00	0.6000	0.1709
T4	6	7/8	142.00 - 152.00	0.6000	0.1709
T4	7	CR 50 1873 (1-5/8 FOAM)	142.00 - 150.00	0.6000	0.1709
T4	12	7/8	142.00 - 152.00	0.6000	0.1709
T4	13	WE65	142.00 - 152.00	0.6000	0.1709
T4	16	LDF2-50 (3/8 FOAM)	142.00 - 152.00	0.6000	0.1709
T4	17	1 5/8	142.00 - 152.00	0.6000	0.1709
T4	19	7/8	142.00 - 152.00	0.6000	0.1709
T4	21	#8 AWG Copper Wire	142.00 - 150.00	0.6000	0.1709
T4	22	RG6-Fiber	142.00 - 150.00	0.6000	0.1709
T4	23	LDF2-50 (3/8 FOAM)	142.00 - 152.00	0.6000	0.1709
T4	24	1 5/8	142.00 - 152.00	0.6000	0.1709
T4	25	1/2	142.00 - 152.00	0.6000	0.1709
T5	1	1 5/8	122.00 - 142.00	0.6000	0.3091
T5	2	1 5/8	122.00 - 142.00	0.6000	0.3091
T5	3	1 5/8	122.00 -	0.6000	0.3091

<i>tnxTower</i> <i>Centek Engineering</i> 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	12 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T5	4	1 5/8	142.00 122.00 - 142.00	0.6000	0.3091
T5	5	1/2	122.00 - 142.00	0.6000	0.3091
T5	6	7/8	122.00 - 142.00	0.6000	0.3091
T5	7	CR 50 1873 (1-5/8 FOAM)	122.00 - 142.00	0.6000	0.3091
T5	8	7/8	122.00 - 132.00	0.6000	0.3091
T5	9	7/8	122.00 - 132.00	0.6000	0.3091
T5	11	7/8	122.00 - 132.00	0.6000	0.3091
T5	12	7/8	122.00 - 142.00	0.6000	0.3091
T5	13	WE65	122.00 - 142.00	0.6000	0.3091
T5	16	LDF2-50 (3/8 FOAM)	122.00 - 142.00	0.6000	0.3091
T5	17	1 5/8	122.00 - 142.00	0.6000	0.3091
T5	19	7/8	122.00 - 142.00	0.6000	0.3091
T5	21	#8 AWG Copper Wire	122.00 - 142.00	0.6000	0.3091
T5	22	RG6-Fiber	122.00 - 142.00	0.6000	0.3091
T5	23	LDF2-50 (3/8 FOAM)	122.00 - 142.00	0.6000	0.3091
T5	24	1 5/8	122.00 - 142.00	0.6000	0.3091
T5	25	1/2	122.00 - 142.00	0.6000	0.3091
T5	26	HYBRIFLEX 1-5/8"	122.00 - 142.00	0.6000	0.3091
T5	27	HYBRIFLEX 1-1/4"	122.00 - 142.00	0.6000	0.3091
T6	1	1 5/8	102.00 - 122.00	0.6000	0.4289
T6	2	1 5/8	102.00 - 122.00	0.6000	0.4289
T6	3	1 5/8	102.00 - 122.00	0.6000	0.4289
T6	4	1 5/8	102.00 - 122.00	0.6000	0.4289
T6	5	1/2	102.00 - 122.00	0.6000	0.4289
T6	6	7/8	102.00 - 122.00	0.6000	0.4289
T6	7	CR 50 1873 (1-5/8 FOAM)	102.00 - 122.00	0.6000	0.4289
T6	8	7/8	102.00 - 122.00	0.6000	0.4289
T6	9	7/8	102.00 - 122.00	0.6000	0.4289
T6	10	7/8	102.00 - 112.00	0.6000	0.4289
T6	11	7/8	102.00 - 122.00	0.6000	0.4289
T6	12	7/8	102.00 -	0.6000	0.4289

<i>tnxTower</i> <i>Centek Engineering</i> 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	13 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T6	13	WE65	122.00 - 102.00	0.6000	0.4289
T6	16	LDF2-50 (3/8 FOAM)	122.00 - 102.00	0.6000	0.4289
T6	17	1 5/8	122.00 - 102.00	0.6000	0.4289
T6	19	7/8	122.00 - 102.00	0.6000	0.4289
T6	21	#8 AWG Copper Wire	122.00 - 102.00	0.6000	0.4289
T6	22	RG6-Fiber	122.00 - 102.00	0.6000	0.4289
T6	23	LDF2-50 (3/8 FOAM)	122.00 - 102.00	0.6000	0.4289
T6	24	1 5/8	122.00 - 102.00	0.6000	0.4289
T6	25	1/2	122.00 - 102.00	0.6000	0.4289
T6	26	HYBRIFLEX 1-5/8"	122.00 - 102.00	0.6000	0.4289
T6	27	HYBRIFLEX 1-1/4"	122.00 - 102.00	0.6000	0.4289
T6	28	7/8	122.00 - 119.50	0.6000	0.4289
T7	1	1 5/8	82.00 - 102.00	0.6000	0.4670
T7	2	1 5/8	82.00 - 102.00	0.6000	0.4670
T7	3	1 5/8	82.00 - 102.00	0.6000	0.4670
T7	4	1 5/8	82.00 - 102.00	0.6000	0.4670
T7	5	1/2	82.00 - 102.00	0.6000	0.4670
T7	6	7/8	82.00 - 102.00	0.6000	0.4670
T7	7	CR 50 1873 (1-5/8 FOAM)	82.00 - 102.00	0.6000	0.4670
T7	8	7/8	82.00 - 102.00	0.6000	0.4670
T7	9	7/8	82.00 - 102.00	0.6000	0.4670
T7	10	7/8	82.00 - 102.00	0.6000	0.4670
T7	11	7/8	82.00 - 102.00	0.6000	0.4670
T7	12	7/8	82.00 - 102.00	0.6000	0.4670
T7	13	WE65	82.00 - 102.00	0.6000	0.4670
T7	14	WE65	82.00 - 102.00	0.6000	0.4670
T7	15	1/2	82.00 - 92.00	0.6000	0.4670
T7	16	LDF2-50 (3/8 FOAM)	82.00 - 102.00	0.6000	0.4670
T7	17	1 5/8	82.00 - 102.00	0.6000	0.4670
T7	19	7/8	82.00 - 102.00	0.6000	0.4670
T7	21	#8 AWG Copper Wire	82.00 - 102.00	0.6000	0.4670
T7	22	RG6-Fiber	82.00 - 102.00	0.6000	0.4670
T7	23	LDF2-50 (3/8 FOAM)	82.00 - 102.00	0.6000	0.4670
T7	24	1 5/8	82.00 - 102.00	0.6000	0.4670
T7	25	1/2	82.00 - 102.00	0.6000	0.4670
T7	26	HYBRIFLEX 1-5/8"	82.00 - 102.00	0.6000	0.4670
T7	27	HYBRIFLEX 1-1/4"	82.00 - 102.00	0.6000	0.4670
T7	28	7/8	82.00 - 102.00	0.6000	0.4670
T8	1	1 5/8	62.00 - 82.00	0.6000	0.5556
T8	2	1 5/8	62.00 - 82.00	0.6000	0.5556
T8	3	1 5/8	62.00 - 82.00	0.6000	0.5556
T8	4	1 5/8	62.00 - 82.00	0.6000	0.5556
T8	5	1/2	62.00 - 82.00	0.6000	0.5556
T8	6	7/8	62.00 - 82.00	0.6000	0.5556
T8	7	CR 50 1873 (1-5/8 FOAM)	62.00 - 82.00	0.6000	0.5556
T8	8	7/8	62.00 - 82.00	0.6000	0.5556
T8	9	7/8	62.00 - 82.00	0.6000	0.5556
T8	10	7/8	62.00 - 82.00	0.6000	0.5556
T8	11	7/8	62.00 - 82.00	0.6000	0.5556

<i>tnxTower</i> <i>Centek Engineering</i> 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	14 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T8	12	7/8	62.00 - 82.00	0.6000	0.5556
T8	13	WE65	62.00 - 82.00	0.6000	0.5556
T8	14	WE65	62.00 - 82.00	0.6000	0.5556
T8	15	1/2	62.00 - 82.00	0.6000	0.5556
T8	16	LDF2-50 (3/8 FOAM)	62.00 - 82.00	0.6000	0.5556
T8	17	1 5/8	62.00 - 82.00	0.6000	0.5556
T8	18	1/2	62.00 - 72.00	0.6000	0.5556
T8	19	7/8	62.00 - 82.00	0.6000	0.5556
T8	21	#8 AWG Copper Wire	62.00 - 82.00	0.6000	0.5556
T8	22	RG6-Fiber	62.00 - 82.00	0.6000	0.5556
T8	23	LDF2-50 (3/8 FOAM)	62.00 - 82.00	0.6000	0.5556
T8	24	1 5/8	62.00 - 82.00	0.6000	0.5556
T8	25	1/2	62.00 - 82.00	0.6000	0.5556
T8	26	HYBRIFLEX 1-5/8"	62.00 - 82.00	0.6000	0.5556
T8	27	HYBRIFLEX 1-1/4"	62.00 - 82.00	0.6000	0.5556
T8	28	7/8	62.00 - 82.00	0.6000	0.5556
T9	1	1 5/8	42.00 - 62.00	0.6000	0.5846
T9	2	1 5/8	42.00 - 62.00	0.6000	0.5846
T9	3	1 5/8	42.00 - 62.00	0.6000	0.5846
T9	4	1 5/8	42.00 - 62.00	0.6000	0.5846
T9	5	1/2	42.00 - 62.00	0.6000	0.5846
T9	6	7/8	42.00 - 62.00	0.6000	0.5846
T9	7	CR 50 1873 (1-5/8 FOAM)	42.00 - 62.00	0.6000	0.5846
T9	8	7/8	42.00 - 62.00	0.6000	0.5846
T9	9	7/8	42.00 - 62.00	0.6000	0.5846
T9	10	7/8	42.00 - 62.00	0.6000	0.5846
T9	11	7/8	42.00 - 62.00	0.6000	0.5846
T9	12	7/8	42.00 - 62.00	0.6000	0.5846
T9	13	WE65	42.00 - 62.00	0.6000	0.5846
T9	14	WE65	42.00 - 62.00	0.6000	0.5846
T9	15	1/2	42.00 - 62.00	0.6000	0.5846
T9	16	LDF2-50 (3/8 FOAM)	42.00 - 62.00	0.6000	0.5846
T9	17	1 5/8	42.00 - 62.00	0.6000	0.5846
T9	18	1/2	42.00 - 62.00	0.6000	0.5846
T9	19	7/8	42.00 - 62.00	0.6000	0.5846
T9	21	#8 AWG Copper Wire	42.00 - 62.00	0.6000	0.5846
T9	22	RG6-Fiber	42.00 - 62.00	0.6000	0.5846
T9	23	LDF2-50 (3/8 FOAM)	42.00 - 62.00	0.6000	0.5846
T9	24	1 5/8	42.00 - 62.00	0.6000	0.5846
T9	25	1/2	42.00 - 62.00	0.6000	0.5846
T9	26	HYBRIFLEX 1-5/8"	42.00 - 62.00	0.6000	0.5846
T9	27	HYBRIFLEX 1-1/4"	42.00 - 62.00	0.6000	0.5846
T9	28	7/8	42.00 - 62.00	0.6000	0.5846
T10	1	1 5/8	22.00 - 42.00	0.6000	0.6000
T10	2	1 5/8	22.00 - 42.00	0.6000	0.6000
T10	3	1 5/8	22.00 - 42.00	0.6000	0.6000
T10	4	1 5/8	22.00 - 42.00	0.6000	0.6000
T10	5	1/2	22.00 - 42.00	0.6000	0.6000
T10	6	7/8	22.00 - 42.00	0.6000	0.6000
T10	7	CR 50 1873 (1-5/8 FOAM)	22.00 - 42.00	0.6000	0.6000
T10	8	7/8	22.00 - 42.00	0.6000	0.6000
T10	9	7/8	22.00 - 42.00	0.6000	0.6000
T10	10	7/8	22.00 - 42.00	0.6000	0.6000
T10	11	7/8	22.00 - 42.00	0.6000	0.6000
T10	12	7/8	22.00 - 42.00	0.6000	0.6000
T10	13	WE65	22.00 - 42.00	0.6000	0.6000
T10	14	WE65	22.00 - 42.00	0.6000	0.6000
T10	15	1/2	22.00 - 42.00	0.6000	0.6000
T10	16	LDF2-50 (3/8 FOAM)	22.00 - 42.00	0.6000	0.6000
T10	17	1 5/8	22.00 - 42.00	0.6000	0.6000
T10	18	1/2	22.00 - 42.00	0.6000	0.6000
T10	19	7/8	22.00 - 42.00	0.6000	0.6000

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job 22022.17 CTNH544A	Page 15 of 55
	Project 7 Surdan Mountain Road, Sharon, CT	Date 12:26:28 07/27/22
	Client T-Mobile	Designed by PPG

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T10	21	#8 AWG Copper Wire	22.00 - 42.00	0.6000	0.6000
T10	22	RG6-Fiber	22.00 - 42.00	0.6000	0.6000
T10	23	LDF2-50 (3/8 FOAM)	22.00 - 42.00	0.6000	0.6000
T10	24	1 5/8	22.00 - 42.00	0.6000	0.6000
T10	25	1/2	22.00 - 42.00	0.6000	0.6000
T10	26	HYBRIFLEX 1-5/8"	22.00 - 42.00	0.6000	0.6000
T10	27	HYBRIFLEX 1-1/4"	22.00 - 42.00	0.6000	0.6000
T10	28	7/8	22.00 - 42.00	0.6000	0.6000
T11	1	1 5/8	7.00 - 22.00	0.6000	0.6000
T11	2	1 5/8	7.00 - 22.00	0.6000	0.6000
T11	3	1 5/8	7.00 - 22.00	0.6000	0.6000
T11	4	1 5/8	7.00 - 22.00	0.6000	0.6000
T11	5	1/2	7.00 - 22.00	0.6000	0.6000
T11	6	7/8	7.00 - 22.00	0.6000	0.6000
T11	7	CR 50 1873 (1-5/8 FOAM)	7.00 - 22.00	0.6000	0.6000
T11	8	7/8	7.00 - 22.00	0.6000	0.6000
T11	9	7/8	7.00 - 22.00	0.6000	0.6000
T11	10	7/8	7.00 - 22.00	0.6000	0.6000
T11	11	7/8	7.00 - 22.00	0.6000	0.6000
T11	12	7/8	7.00 - 22.00	0.6000	0.6000
T11	13	WE65	7.00 - 22.00	0.6000	0.6000
T11	14	WE65	7.00 - 22.00	0.6000	0.6000
T11	15	1/2	7.00 - 22.00	0.6000	0.6000
T11	16	LDF2-50 (3/8 FOAM)	7.00 - 22.00	0.6000	0.6000
T11	17	1 5/8	7.00 - 22.00	0.6000	0.6000
T11	18	1/2	7.00 - 22.00	0.6000	0.6000
T11	19	7/8	7.00 - 22.00	0.6000	0.6000
T11	20	LDF1-50A (1/4 FOAM)	7.00 - 17.00	0.6000	0.6000
T11	21	#8 AWG Copper Wire	7.00 - 22.00	0.6000	0.6000
T11	22	RG6-Fiber	7.00 - 22.00	0.6000	0.6000
T11	23	LDF2-50 (3/8 FOAM)	7.00 - 22.00	0.6000	0.6000
T11	24	1 5/8	7.00 - 22.00	0.6000	0.6000
T11	25	1/2	7.00 - 22.00	0.6000	0.6000
T11	26	HYBRIFLEX 1-5/8"	7.00 - 22.00	0.6000	0.6000
T11	27	HYBRIFLEX 1-1/4"	7.00 - 22.00	0.6000	0.6000
T11	28	7/8	7.00 - 22.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
Single Dipole (Unknown)	C	From Leg	0.50 0.00 0.00	0.0000	196.26	No Ice 1/2" Ice 1" Ice	0.90 1.40 1.90	0.90 1.40 1.90	0.01 0.02 0.02
PIROD 6'-8" Rigid Side Arm (Vacant)	A	From Face	3.00 0.00 0.00	0.0000	196.00	No Ice 1/2" Ice 1" Ice	8.00 9.60 11.20	8.00 9.60 11.20	0.19 0.22 0.26
6'x4" Pipe Mount (CSP)	A	From Face	0.67 0.00 0.00	0.0000	194.92	No Ice 1/2" Ice 1" Ice	1.80 2.46 2.83	1.80 2.46 2.83	0.05 0.07 0.09

<i>tnxTower</i> <i>Centek Engineering</i> 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page 16 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date 12:26:28 07/27/22
	Client	T-Mobile	Designed by PPG

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
OGT9-840 (Unknown)	A	From Leg	3.00 7.50 0.00	0.0000	190.25	No Ice 1/2" Ice 1" Ice	2.27 3.44 4.61	2.27 3.44 4.61	0.02 0.04 0.06
Filter Box (CSP)	C	From Face	0.00 0.00 0.00	0.0000	183.00	No Ice 1/2" Ice 1" Ice	3.00 3.21 3.44	1.20 1.35 1.50	0.04 0.06 0.09
10' x 3" Dia Omni (Unknown (Inverted))	A	From Leg	3.00 7.50 0.00	0.0000	174.25	No Ice 1/2" Ice 1" Ice	3.00 4.03 5.03	3.00 4.03 5.03	0.03 0.05 0.08
12' x 3" Dia Omni (Unknown (Inverted))	C	From Face	4.00 0.00 0.00	0.0000	175.25	No Ice 1/2" Ice 1" Ice	3.60 4.83 6.08	3.60 4.83 6.08	0.04 0.06 0.09
DB222-A (Unknown)	A	From Leg	3.00 -7.50 0.00	0.0000	185.25	No Ice 1/2" Ice 1" Ice	1.60 2.88 4.16	1.60 2.88 4.16	0.02 0.02 0.03
ANT150D6-9 (Unknown (Inverted))	A	From Leg	3.00 -7.50 0.00	0.0000	173.75	No Ice 1/2" Ice 1" Ice	4.00 4.60 5.20	4.00 4.60 5.20	0.03 0.03 0.04
9' x 3" Dia Omni (Unknown)	C	From Leg	4.00 0.00 0.00	-60.0000	192.75	No Ice 1/2" Ice 1" Ice	2.70 3.63 4.33	2.70 3.63 4.33	0.03 0.05 0.08
Pirol 4' Side Mount Standoff (1) (Unknown)	C	From Leg	2.00 0.00 0.00	-60.0000	186.50	No Ice 1/2" Ice 1" Ice	2.72 4.91 7.10	2.72 4.91 7.10	0.05 0.09 0.13
DB222-A (Unknown (Inverted))	C	From Leg	4.00 0.00 0.00	-60.0000	180.25	No Ice 1/2" Ice 1" Ice	1.60 2.88 4.16	1.60 2.88 4.16	0.02 0.02 0.03
BCD-87077 (Pagenet)	A	From Leg	4.00 0.00 0.00	0.0000	181.50	No Ice 1/2" Ice 1" Ice	3.06 4.27 5.49	3.06 4.27 5.49	0.03 0.05 0.08
PiROD 15' Rotatable Platform (Lattice) (Unknown)	C	None		0.0000	181.25	No Ice 1/2" Ice 1" Ice	24.90 30.70 36.50	24.90 30.70 36.50	1.81 2.44 3.06
(4) 6'x2" Pipe Mount (Unknown)	A	From Leg	3.00 0.00 0.00	0.0000	181.25	No Ice 1/2" Ice 1" Ice	1.20 1.80 2.17	1.20 1.80 2.17	0.02 0.03 0.04
(4) 6'x2" Pipe Mount (Unknown)	B	From Leg	3.00 0.00 0.00	0.0000	181.25	No Ice 1/2" Ice 1" Ice	1.20 1.80 2.17	1.20 1.80 2.17	0.02 0.03 0.04
(4) 6'x2" Pipe Mount (Unknown)	C	From Leg	3.00 0.00 0.00	0.0000	181.25	No Ice 1/2" Ice 1" Ice	1.20 1.80 2.17	1.20 1.80 2.17	0.02 0.03 0.04
Pirol 4' Side Mount Standoff (1) (Unknown)	A	From Leg	2.00 0.00 0.00	0.0000	174.25	No Ice 1/2" Ice 1" Ice	2.72 4.91 7.10	2.72 4.91 7.10	0.05 0.09 0.13
PD220 (Unknown)	B	From Leg	6.00 0.00 0.00	0.0000	182.25	No Ice 1/2" Ice 1" Ice	3.08 5.30 7.54	3.08 5.30 7.54	0.02 0.05 0.09
Pirol 6' Side Mount Standoff (1) (Unknown)	B	From Leg	3.00 0.00 0.00	0.0000	172.25	No Ice 1/2" Ice 1" Ice	4.97 6.12 7.27	4.97 6.12 7.27	0.07 0.13 0.19
12' x 3" Dia Omni (Unknown)	A	From Leg	2.50 0.00 0.00	-10.0000	175.25	No Ice 1/2" Ice 1" Ice	3.60 4.83 6.08	3.60 4.83 6.08	0.04 0.06 0.09
3' Sidearm (Unknown)	A	From Leg	1.25 0.00 0.00	-10.0000	170.20	No Ice 1/2" Ice 1" Ice	5.90 6.60 7.30	5.90 6.60 7.30	0.13 0.15 0.16

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page 17 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date 12:26:28 07/27/22
	Client	T-Mobile	Designed by PPG

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
LPA-80080-4CF (Verizon)	A	From Leg	3.00 6.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice	2.62 2.92 3.23	5.40 5.73 6.06	0.01 0.05 0.08
(2) MX06FIT665-02 (Verizon)	A	From Leg	3.00 6.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice	8.15 8.60 9.06	7.34 7.78 8.24	0.06 0.12 0.18
MT6407-77A (Verizon)	A	From Leg	3.00 6.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice	4.71 5.00 5.29	1.84 2.06 2.29	0.00 0.03 0.06
LPA-80080-4CF (Verizon)	A	From Leg	3.00 -6.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice	2.62 2.92 3.23	5.40 5.73 6.06	0.01 0.05 0.08
LPA-80080-4CF (Verizon)	B	From Leg	3.00 6.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice	2.62 2.92 3.23	5.40 5.73 6.06	0.01 0.05 0.08
(2) MX06FIT665-02 (Verizon)	B	From Leg	3.00 6.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice	8.15 8.60 9.06	7.34 7.78 8.24	0.06 0.12 0.18
MT6407-77A (Verizon)	B	From Leg	3.00 6.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice	4.71 5.00 5.29	1.84 2.06 2.29	0.00 0.03 0.06
LPA-80080-4CF (Verizon)	B	From Leg	3.00 -6.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice	2.62 2.92 3.23	5.40 5.73 6.06	0.01 0.05 0.08
LPA-80080-4CF (Verizon)	C	From Leg	3.00 6.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice	2.62 2.92 3.23	5.40 5.73 6.06	0.01 0.05 0.08
(2) MX06FIT665-02 (Verizon)	C	From Leg	3.00 6.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice	8.15 8.60 9.06	7.34 7.78 8.24	0.06 0.12 0.18
MT6407-77A (Verizon)	C	From Leg	3.00 6.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice	4.71 5.00 5.29	1.84 2.06 2.29	0.00 0.03 0.06
LPA-80080-4CF (Verizon)	C	From Leg	3.00 -6.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice	2.62 2.92 3.23	5.40 5.73 6.06	0.01 0.05 0.08
B2/B66A RRH (Verizon)	A	From Leg	3.00 6.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice	2.54 2.75 2.97	1.61 1.79 1.98	0.06 0.08 0.10
B2/B66A RRH (Verizon)	B	From Leg	3.00 6.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice	2.54 2.75 2.97	1.61 1.79 1.98	0.06 0.08 0.10
B2/B66A RRH (Verizon)	C	From Leg	3.00 6.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice	2.54 2.75 2.97	1.61 1.79 1.98	0.06 0.08 0.10
B5/B13 RRH (Verizon)	A	From Leg	3.00 6.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice	1.87 2.03 2.21	1.02 1.15 1.29	0.07 0.09 0.11
B5/B13 RRH (Verizon)	B	From Leg	3.00 6.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice	1.87 2.03 2.21	1.02 1.15 1.29	0.07 0.09 0.11
B5/B13 RRH (Verizon)	C	From Leg	3.00 6.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice	1.87 2.03 2.21	1.02 1.15 1.29	0.07 0.09 0.11
RC2DC-3315-PF-48 (Verizon)	A	From Leg	3.00 6.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice	3.01 3.23 3.46	1.96 2.15 2.35	0.03 0.05 0.08

<i>tnxTower</i> <i>Centek Engineering</i> 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page 18 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date 12:26:28 07/27/22
	Client	T-Mobile	Designed by PPG

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
PiROD 15' T-Frame (Verizon)	A	From Leg	1.50 0.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice	15.00 20.60 26.20	15.00 20.60 26.20	0.50 0.65 0.80
PiROD 15' T-Frame (Verizon)	B	From Leg	1.50 0.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice	15.00 20.60 26.20	15.00 20.60 26.20	0.50 0.65 0.80
PiROD 15' T-Frame (Verizon)	C	From Leg	1.50 0.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice	15.00 20.60 26.20	15.00 20.60 26.20	0.50 0.65 0.80
7770.00 (AT&T)	A	From Leg	3.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	5.51 5.87 6.23	2.93 3.27 3.63	0.04 0.07 0.11
7770.00 (AT&T)	B	From Leg	3.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	5.51 5.87 6.23	2.93 3.27 3.63	0.04 0.07 0.11
7770.00 (AT&T)	C	From Leg	3.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	5.51 5.87 6.23	2.93 3.27 3.63	0.04 0.07 0.11
(2) DMP65R-BU6D (AT&T)	A	From Leg	3.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	12.71 13.21 13.71	5.62 6.07 6.53	0.10 0.17 0.25
(2) DMP65R-BU6D (AT&T)	B	From Leg	3.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	12.71 13.21 13.71	5.62 6.07 6.53	0.10 0.17 0.25
(2) DMP65R-BU4D (AT&T)	C	From Leg	3.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	8.00 8.38 8.77	3.51 3.81 4.12	0.07 0.12 0.17
(2) LGP21401 TMA (AT&T)	A	From Leg	2.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.37 0.48 0.60	0.02 0.02 0.03
(2) LGP21401 TMA (AT&T)	B	From Leg	2.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.37 0.48 0.60	0.02 0.02 0.03
(2) LGP21401 TMA (AT&T)	C	From Leg	2.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.37 0.48 0.60	0.02 0.02 0.03
(2) LGP13519 Diplexer (AT&T)	A	From Leg	2.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	0.23 0.29 0.36	0.16 0.21 0.28	0.01 0.01 0.01
(2) LGP13519 Diplexer (AT&T)	B	From Leg	2.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	0.23 0.29 0.36	0.16 0.21 0.28	0.01 0.01 0.01
(2) LGP13519 Diplexer (AT&T)	C	From Leg	2.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	0.23 0.29 0.36	0.16 0.21 0.28	0.01 0.01 0.01
(2) 7020 Dual Band RET (AT&T)	A	From Leg	2.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	0.34 0.42 0.51	0.18 0.24 0.31	0.00 0.01 0.01
(2) 7020 Dual Band RET (AT&T)	B	From Leg	2.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	0.34 0.42 0.51	0.18 0.24 0.31	0.00 0.01 0.01
(2) 7020 Dual Band RET (AT&T)	C	From Leg	2.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	0.34 0.42 0.51	0.18 0.24 0.31	0.00 0.01 0.01
8843 B2/B66A (AT&T)	A	From Leg	2.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	0.07 0.09 0.11

<i>tnxTower</i> <i>Centek Engineering</i> 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	19 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>		<i>C_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight K</i>
8843 B2/B66A (AT&T)	B	From Leg	2.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	0.07 0.09 0.11
8843 B2/B66A (AT&T)	C	From Leg	2.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	0.07 0.09 0.11
4478 B14 (AT&T)	A	From Leg	2.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	1.06 1.20 1.34	0.06 0.08 0.09
4478 B14 (AT&T)	B	From Leg	2.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	1.06 1.20 1.34	0.06 0.08 0.09
4478 B14 (AT&T)	C	From Leg	2.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	1.06 1.20 1.34	0.06 0.08 0.09
4449 B5/B12 (AT&T)	A	From Leg	2.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
4449 B5/B12 (AT&T)	B	From Leg	2.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
4449 B5/B12 (AT&T)	C	From Leg	2.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
DC6-48-60-18-8F Surge Arrestor (AT&T)	A	From Leg	2.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.91 2.10 2.29	1.91 2.10 2.29	0.02 0.04 0.06
DC6-48-60-18-8F Surge Arrestor (AT&T)	B	From Leg	2.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.91 2.10 2.29	1.91 2.10 2.29	0.02 0.04 0.06
DC6-48-60-18-8F Surge Arrestor (AT&T)	C	From Leg	2.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.91 2.10 2.29	1.91 2.10 2.29	0.02 0.04 0.06
Pirot 12' T-Frame Sector Mount (1) (AT&T)	A	From Leg	1.25 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	13.60 18.40 23.20	13.60 18.40 23.20	0.47 0.60 0.73
Pirot 12' T-Frame Sector Mount (1) (AT&T)	B	From Leg	1.25 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	13.60 18.40 23.20	13.60 18.40 23.20	0.47 0.60 0.73
Pirot 12' T-Frame Sector Mount (1) (AT&T)	C	From Leg	1.25 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	13.60 18.40 23.20	13.60 18.40 23.20	0.47 0.60 0.73
SRL110A (Eversource)	C	From Leg	6.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	9.00 10.58 12.16	9.00 10.58 12.16	0.03 0.09 0.14
PIROD 6' Rigid Side Arm w/ 3" STD mount pipe (Eversource)	C	From Leg	3.00 0.00 0.00	0.0000	134.00	No Ice 1/2" Ice 1" Ice	2.60 4.21 5.82	3.41 7.18 10.95	0.20 0.30 0.40
DB586-Y (Eversource)	A	From Leg	6.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	1.01 1.28 1.56	1.01 1.28 1.56	0.01 0.02 0.03
PIROD 6' Rigid Side Arm w/ 3" STD mount pipe (Eversource)	A	From Leg	3.00 0.00 0.00	0.0000	126.00	No Ice 1/2" Ice 1" Ice	2.60 4.21 5.82	3.41 7.18 10.95	0.20 0.30 0.40
Tower Top Amplifier (Eversource)	A	From Leg	3.00 0.00 0.00	0.0000	126.00	No Ice 1/2" Ice 1" Ice	2.10 2.40 2.70	2.10 2.40 2.70	0.04 0.06 0.08

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	20 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>		<i>C_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight K</i>
DB586-Y (Eversource)	A	From Leg	6.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	1.01 1.28 1.56	1.01 1.28 1.56	0.01 0.02 0.03
PIROD 6' Rigid Side Arm w/ 3" STD mount pipe (Vacant)	B	From Leg	3.00 0.00 0.00	0.0000	120.50	No Ice 1/2" Ice 1" Ice	2.60 4.21 5.82	3.41 7.18 10.95	0.20 0.30 0.40
DB212-1 (Unknown)	C	From Leg	6.00 0.00 0.00	0.0000	120.67	No Ice 1/2" Ice 1" Ice	4.40 8.42 12.45	4.40 8.42 12.45	0.03 0.07 0.13
PIROD 6' Rigid Side Arm w/ 3" STD mount pipe (Unknown)	C	From Leg	3.00 0.00 0.00	0.0000	120.67	No Ice 1/2" Ice 1" Ice	2.60 4.21 5.82	3.41 7.18 10.95	0.20 0.30 0.40
DB205-L (Unknown)	A	From Leg	5.20 0.00 0.00	0.0000	109.25	No Ice 1/2" Ice 1" Ice	1.72 3.45 5.20	1.72 3.45 5.20	0.04 0.05 0.08
PIROD 6' Rigid Side Arm w/ 3" STD mount pipe (Unknown)	A	From Leg	3.00 0.00 0.00	0.0000	100.83	No Ice 1/2" Ice 1" Ice	2.60 4.21 5.82	3.41 7.18 10.95	0.20 0.30 0.40
Ice Canopy	B	From Leg	3.00 0.00 0.00	-50.0000	106.00	No Ice 1/2" Ice 1" Ice	3.73 4.39 5.05	2.80 3.30 3.80	0.30 0.55 0.80
6'8"x4" Pipe Mount (CSP)	B	From Leg	0.67 0.00 0.00	0.0000	101.20	No Ice 1/2" Ice 1" Ice	2.16 3.01 3.42	2.16 3.01 3.42	0.07 0.09 0.12
DB224 (Unknown)	C	From Leg	2.00 0.00 0.00	60.0000	94.00	No Ice 1/2" Ice 1" Ice	3.15 5.67 8.19	3.15 5.67 8.19	0.03 0.04 0.05
2-ft Stand Off (Unknown)	C	From Leg	1.00 0.00 0.00	60.0000	85.00	No Ice 1/2" Ice 1" Ice	1.07 1.62 2.17	1.07 1.62 2.17	0.02 0.03 0.04
PD220 (Unknown)	A	From Leg	5.20 0.00 0.00	0.0000	90.41	No Ice 1/2" Ice 1" Ice	3.08 5.30 7.54	3.08 5.30 7.54	0.02 0.05 0.09
PIROD 6' Rigid Side Arm w/ 3" STD mount pipe (Unknown)	A	From Leg	3.00 0.00 0.00	0.0000	79.50	No Ice 1/2" Ice 1" Ice	2.60 4.21 5.82	3.41 7.18 10.95	0.20 0.30 0.40
PIROD 6' Rigid Side Arm w/ 3" STD mount pipe (Unknown)	B	From Leg	3.00 0.00 0.00	0.0000	82.67	No Ice 1/2" Ice 1" Ice	2.60 4.21 5.82	3.41 7.18 10.95	0.20 0.30 0.40
12' x 3" Dia Omni (Unknown)	B	From Leg	6.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice	3.60 4.83 6.08	3.60 4.83 6.08	0.04 0.06 0.09
DB432-A (Unknown)	A	From Leg	1.50 0.00 0.00	0.0000	70.25	No Ice 1/2" Ice 1" Ice	0.30 0.54 0.78	0.30 0.54 0.78	0.01 0.01 0.01
2-ft Stand Off (Unknown)	B	From Leg	1.00 0.00 0.00	0.0000	15.00	No Ice 1/2" Ice 1" Ice	1.07 1.62 2.17	1.07 1.62 2.17	0.02 0.03 0.04
SC479-HF1LDF (CSP (Inverted))	A	From Leg	3.00 0.00 -12.00	0.0000	184.00	No Ice 1/2" Ice 1" Ice	4.85 6.54 8.04	4.85 6.54 8.04	0.03 0.07 0.11
SC479-HF1LDF (CSP (Inverted))	B	From Leg	3.00 0.00 -12.00	0.0000	184.00	No Ice 1/2" Ice 1" Ice	4.85 6.54 8.04	4.85 6.54 8.04	0.03 0.07 0.11
SE414-SWBP4LDF (D00) (CSP)	C	From Leg	3.00 0.00 0.00	0.0000	184.00	No Ice 1/2" Ice 1" Ice	1.90 2.22 2.55	4.27 4.61 4.95	0.01 0.04 0.06

<i>tnxTower</i> <i>Centek Engineering</i> 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page 21 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date 12:26:28 07/27/22
	Client	T-Mobile	Designed by PPG

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
TX/RX 432E-83I-01T (CSP)	A	From Leg	0.00 0.00 0.00	0.0000	184.00	No Ice 1/2" Ice 1" Ice	1.20 1.34 1.48	0.75 0.86 0.98	0.03 0.04 0.05
APXVAARR24-43 (T-Mobile Existing)	A	From Leg	3.00 5.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	20.24 20.89 21.54	8.89 9.49 10.09	0.15 0.27 0.39
APXVAARR24-43 (T-Mobile Existing)	B	From Leg	3.00 5.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	20.24 20.89 21.54	8.89 9.49 10.09	0.15 0.27 0.39
APXVAARR24-43 (T-Mobile Existing)	C	From Leg	3.00 5.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	20.24 20.89 21.54	8.89 9.49 10.09	0.15 0.27 0.39
Radio 4449 B71 B12 (T-Mobile Existing)	A	From Leg	3.00 5.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.29 1.44 1.59	0.07 0.09 0.11
Radio 4449 B71 B12 (T-Mobile Existing)	B	From Leg	3.00 5.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.29 1.44 1.59	0.07 0.09 0.11
Radio 4449 B71 B12 (T-Mobile Existing)	C	From Leg	3.00 5.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.29 1.44 1.59	0.07 0.09 0.11
AIR6449 (T-Mobile Proposed)	A	From Leg	3.00 -5.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	5.65 5.96 6.26	2.42 2.64 2.87	0.10 0.14 0.18
AIR6449 (T-Mobile Proposed)	B	From Leg	3.00 -5.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	5.65 5.96 6.26	2.42 2.64 2.87	0.10 0.14 0.18
AIR6449 (T-Mobile Proposed)	C	From Leg	3.00 -5.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	5.65 5.96 6.26	2.42 2.64 2.87	0.10 0.14 0.18
4460 B25+B66 (T-Mobile Proposed)	A	From Leg	3.00 5.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	2.56 2.76 2.97	1.98 2.16 2.34	0.11 0.13 0.16
4460 B25+B66 (T-Mobile Proposed)	B	From Leg	3.00 5.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	2.56 2.76 2.97	1.98 2.16 2.34	0.11 0.13 0.16
4460 B25+B66 (T-Mobile Proposed)	C	From Leg	3.00 5.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	2.56 2.76 2.97	1.98 2.16 2.34	0.11 0.13 0.16
10-ft T-Frame (T-Mobile Existing)	A	From Leg	1.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	13.60 17.50 21.40	13.60 17.50 21.40	0.38 0.53 0.68
10-ft T-Frame (T-Mobile Existing)	B	From Leg	1.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	13.60 17.50 21.40	13.60 17.50 21.40	0.38 0.53 0.68
10-ft T-Frame (T-Mobile Existing)	C	From Leg	1.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	13.60 17.50 21.40	13.60 17.50 21.40	0.38 0.53 0.68
DS2C03F36D-D (Eversource)	A	From Leg	4.00 0.00 9.00	0.0000	117.50	No Ice 1/2" Ice 1" Ice	7.30 9.77 12.25	7.30 9.77 12.25	0.08 0.13 0.20
Pirol 4' Side Mount Standoff (1) (Eversource)	A	From Leg	4.00 0.00 0.00	0.0000	117.50	No Ice 1/2" Ice 1" Ice	2.72 4.91 7.10	2.72 4.91 7.10	0.05 0.09 0.13

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	22 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft ²	Weight K
PA6-65AC (CSP)	B	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	-50.0000		102.25	6.00	No Ice 28.27 1/2" Ice 29.05 1" Ice 29.83	0.09 0.24 0.39
PA6-65AC (CSP)	A	Paraboloid w/o Radome	From Face	1.00 0.00 0.00	-10.0000		194.25	6.00	No Ice 28.27 1/2" Ice 29.05 1" Ice 29.83	0.09 0.24 0.39
1.2M (Verizon)	B	Paraboloid w/o Radome	From Leg	2.00 0.00 0.00	40.0000		17.00	4.00	No Ice 12.17 1/2" Ice 13.09 1" Ice 14.01	0.17 0.23 0.30

Truss-Leg Interaction Properties

Section Designation	Area in ²	Area Ice in ²	Self Weight K	Ice Weight K	Equiv. Diameter in	Equiv. Diameter Ice in	Section Modulus S _x in ³	Section Modulus S _y in ³	Leg Area in ²
Pirod 105245	1090.3344	3704.6418	0.68	1.39	7.5718	25.7267	18.4723	21.3300	5.3014
Pirod 105217	2296.2363	7024.0136	0.59	2.50	7.9730	24.3889	18.4723	21.3300	5.3014
Pirod 105218	2425.3141	7062.7245	0.72	2.46	8.4212	24.5233	25.1958	29.0936	7.2158
Pirod 105218 reinf. w/1" dia. S.R.	2638.2422	7138.7823	0.98	2.43	9.1606	24.7874	38.1835	44.0905	10.8915
Pirod 105219 reinf. w/1" dia. S.R.	2799.7828	7152.9920	1.35	2.44	9.7215	24.8368	46.3174	53.4827	13.1787
Pirod 105219 reinf. w/1" dia. S.R.	2799.7828	7091.4325	1.35	2.31	9.7215	24.6230	46.3174	53.4827	13.1787
Pirod 105220 reinf. w/1" dia. S.R.	2877.1901	7042.1146	1.46	2.16	9.9902	24.4518	51.8434	59.8636	14.7262
Pirod 105220 reinf. w/1" dia. S.R.	2877.1901	6876.4820	1.46	1.85	9.9902	23.8767	51.8434	59.8636	14.7262

Tower Pressures - No Ice

$$G_H = 0.850$$

Section Elevation ft	z ft	K _Z	q _z psf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
T1 197.00-187.00	192.00	1.452	29	46.458	A	1.089	6.053	2.917	40.84	2.737	0.000
					B	1.089	6.053		40.84	5.918	0.000
					C	1.089	6.053		40.84	0.000	0.000
T2 187.00-172.00	179.50	1.431	28	70.000	A	0.000	9.972	5.000	50.14	5.865	0.000
					B	0.000	9.972		50.14	28.424	0.000
					C	0.000	9.972		50.14	0.000	0.000
T3 172.00-152.00	162.00	1.401	28	98.750	A	0.000	15.045	7.501	49.85	41.282	0.000
					B	0.000	15.045		49.85	41.827	0.000
					C	0.000	15.045		49.85	0.000	0.000

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page 23 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date 12:26:28 07/27/22
	Client	T-Mobile	Designed by PPG

Section Elevation ft	z ft	K _Z	q _z psf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
T4 152.00-142.00	147.00	1.373	27	66.264	A	5.673	12.641	12.641	69.02	29.650	0.000
					B	5.673	12.641		69.02	20.914	0.000
					C	5.673	12.641		69.02	20.825	0.000
T5 142.00-122.00	132.00	1.342	27	162.528	A	13.687	27.153	26.621	65.18	59.300	0.000
					B	13.687	27.153		65.18	58.987	0.000
					C	13.687	27.153		65.18	55.392	0.000
T6 122.00-102.00	112.00	1.296	26	202.945	A	15.184	28.118	28.118	64.93	63.185	0.000
					B	15.184	28.118		64.93	58.987	0.000
					C	15.184	28.118		64.93	59.832	0.000
T7 102.00-82.00	92.00	1.244	25	243.613	A	18.990	31.198	30.586	60.94	63.740	0.000
					B	18.990	31.198		60.94	63.314	0.000
					C	18.990	31.198		60.94	60.942	0.000
T8 82.00-62.00	72.00	1.181	23	283.972	A	18.364	32.459	32.459	63.87	63.740	0.000
					B	18.364	32.459		63.87	65.634	0.000
					C	18.364	32.459		63.87	60.942	0.000
T9 62.00-42.00	52.00	1.103	22	323.972	A	22.855	33.108	32.459	58.00	63.740	0.000
					B	22.855	33.108		58.00	66.794	0.000
					C	22.855	33.108		58.00	60.942	0.000
T10 42.00-22.00	32.00	0.996	20	364.197	A	24.881	33.356	33.356	57.28	63.740	0.000
					B	24.881	33.356		57.28	66.794	0.000
					C	24.881	33.356		57.28	60.942	0.000
T11 22.00-2.00	12.00	0.85	17	404.197	A	30.345	34.023	33.356	51.82	47.805	0.000
					B	30.345	34.023		51.82	50.096	0.000
					C	30.345	34.023		51.82	46.407	0.000

Tower Pressure - With Ice

$$G_H = 0.850$$

Section Elevation ft	z ft	K _Z	q _z psf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
T1 197.00-187.00	192.00	1.452	5	2.9814	51.427	A	1.089	39.527	12.855	31.65	16.403	0.000
						B	1.089	39.527		31.65	40.291	0.000
						C	1.089	39.527		31.65	0.000	0.000
T2 187.00-172.00	179.50	1.431	5	2.9614	77.403	A	0.000	57.821	19.807	34.26	34.986	0.000
						B	0.000	57.821		34.26	142.349	0.000
						C	0.000	57.821		34.26	0.000	0.000
T3 172.00-152.00	162.00	1.401	5	2.9312	108.522	A	0.000	78.817	27.044	34.31	132.734	0.000
						B	0.000	78.817		34.31	203.700	0.000
						C	0.000	78.817		34.31	0.000	0.000
T4 152.00-142.00	147.00	1.373	5	2.9028	71.108	A	5.673	53.281	42.949	72.85	89.172	0.000
						B	5.673	53.281		72.85	101.185	0.000
						C	5.673	53.281		72.85	50.232	0.000
T5 142.00-122.00	132.00	1.342	5	2.8717	172.113	A	13.687	105.218	81.432	68.48	177.333	0.000
						B	13.687	105.218		68.48	274.150	0.000
						C	13.687	105.218		68.48	145.502	0.000
T6 122.00-102.00	112.00	1.296	5	2.8249	212.374	A	15.184	106.103	81.881	67.51	200.400	0.000
						B	15.184	106.103		67.51	271.313	0.000
						C	15.184	106.103		67.51	171.298	0.000
T7 102.00-82.00	92.00	1.244	4	2.7699	252.857	A	18.990	115.778	82.762	61.41	201.740	0.000
						B	18.990	115.778		61.41	294.113	0.000
						C	18.990	115.778		61.41	176.047	0.000
T8 82.00-62.00	72.00	1.181	4	2.7028	292.992	A	18.364	111.832	82.927	63.69	199.093	0.000
						B	18.364	111.832		63.69	312.849	0.000

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page 24 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date 12:26:28 07/27/22
	Client	T-Mobile	Designed by PPG

Section Elevation	z	K _Z	q _z	t _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	in	ft ²		ft ²	ft ²	ft ²			ft ²
T9 62.00-42.00	52.00	1.103	4	2.6163	332.703	C	18.364	111.832		63.69	173.596	0.000
						A	22.855	115.364	82.213	59.48	195.679	0.000
						B	22.855	115.364		59.48	317.695	0.000
						C	22.855	115.364		59.48	170.435	0.000
T10 42.00-22.00	32.00	0.996	3	2.4923	372.515	A	24.881	113.981	81.642	58.79	190.793	0.000
						B	24.881	113.981		58.79	307.950	0.000
						C	24.881	113.981		58.79	165.908	0.000
T11 22.00-2.00	12.00	0.85	3	2.2595	411.738	A	30.345	113.924	79.721	55.26	136.222	0.000
						B	30.345	113.924		55.26	217.253	0.000
						C	30.345	113.924		55.26	127.309	0.000

Tower Pressure - Service

$$G_H = 0.850$$

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	ft ²		ft ²	ft ²	ft ²			ft ²
T1 197.00-187.00	192.00	1.452	11	46.458	A	1.089	6.053	2.917	40.84	2.737	0.000
					B	1.089	6.053		40.84	5.918	0.000
					C	1.089	6.053		40.84	0.000	0.000
T2 187.00-172.00	179.50	1.431	11	70.000	A	0.000	9.972	5.000	50.14	5.865	0.000
					B	0.000	9.972		50.14	28.424	0.000
					C	0.000	9.972		50.14	0.000	0.000
T3 172.00-152.00	162.00	1.401	11	98.750	A	0.000	15.045	7.501	49.85	41.282	0.000
					B	0.000	15.045		49.85	41.827	0.000
					C	0.000	15.045		49.85	0.000	0.000
T4 152.00-142.00	147.00	1.373	11	66.264	A	5.673	12.641	12.641	69.02	29.650	0.000
					B	5.673	12.641		69.02	20.914	0.000
					C	5.673	12.641		69.02	20.825	0.000
T5 142.00-122.00	132.00	1.342	11	162.528	A	13.687	27.153	26.621	65.18	59.300	0.000
					B	13.687	27.153		65.18	58.987	0.000
					C	13.687	27.153		65.18	55.392	0.000
T6 122.00-102.00	112.00	1.296	10	202.945	A	15.184	28.118	28.118	64.93	63.185	0.000
					B	15.184	28.118		64.93	58.987	0.000
					C	15.184	28.118		64.93	59.832	0.000
T7 102.00-82.00	92.00	1.244	10	243.613	A	18.990	31.198	30.586	60.94	63.740	0.000
					B	18.990	31.198		60.94	63.314	0.000
					C	18.990	31.198		60.94	60.942	0.000
T8 82.00-62.00	72.00	1.181	9	283.972	A	18.364	32.459	32.459	63.87	63.740	0.000
					B	18.364	32.459		63.87	65.634	0.000
					C	18.364	32.459		63.87	60.942	0.000
T9 62.00-42.00	52.00	1.103	9	323.972	A	22.855	33.108	32.459	58.00	63.740	0.000
					B	22.855	33.108		58.00	66.794	0.000
					C	22.855	33.108		58.00	60.942	0.000
T10 42.00-22.00	32.00	0.996	8	364.197	A	24.881	33.356	33.356	57.28	63.740	0.000
					B	24.881	33.356		57.28	66.794	0.000
					C	24.881	33.356		57.28	60.942	0.000
T11 22.00-2.00	12.00	0.85	7	404.197	A	30.345	34.023	33.356	51.82	47.805	0.000
					B	30.345	34.023		51.82	50.096	0.000
					C	30.345	34.023		51.82	46.407	0.000

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	25 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

Tower Forces - No Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 197.00-187.00	0.04	0.61	A	0.154	2.758	29	1	1	4.526	0.43	43.24	C
			B	0.154	2.758		1	1	4.526			
			C	0.154	2.758		1	1	4.526			
T2 187.00-172.00	0.16	0.94	A	0.142	2.799	28	1	1	5.652	0.88	58.52	C
			B	0.142	2.799		1	1	5.652			
			C	0.142	2.799		1	1	5.652			
T3 172.00-152.00	0.41	1.60	A	0.152	2.763	28	1	1	8.542	1.73	86.70	C
			B	0.152	2.763		1	1	8.542			
			C	0.152	2.763		1	1	8.542			
T4 152.00-142.00	0.47	1.24	A	0.276	2.361	27	1	1	13.156	1.71	170.87	C
			B	0.276	2.361		1	1	13.156			
			C	0.276	2.361		1	1	13.156			
T5 142.00-122.00	1.14	2.33	A	0.251	2.434	27	1	1	29.580	3.98	199.16	C
			B	0.251	2.434		1	1	29.580			
			C	0.251	2.434		1	1	29.580			
T6 122.00-102.00	1.18	3.00	A	0.213	2.552	26	1	1	31.407	4.14	206.76	C
			B	0.213	2.552		1	1	31.407			
			C	0.213	2.552		1	1	31.407			
T7 102.00-82.00	1.20	3.99	A	0.206	2.576	25	1	1	36.946	4.36	217.88	C
			B	0.206	2.576		1	1	36.946			
			C	0.206	2.576		1	1	36.946			
T8 82.00-62.00	1.21	5.31	A	0.179	2.668	23	1	1	36.902	4.23	211.56	C
			B	0.179	2.668		1	1	36.902			
			C	0.179	2.668		1	1	36.902			
T9 62.00-42.00	1.22	5.37	A	0.173	2.69	22	1	1	41.734	4.22	211.02	C
			B	0.173	2.69		1	1	41.734			
			C	0.173	2.69		1	1	41.734			
T10 42.00-22.00	1.22	6.16	A	0.16	2.735	20	1	1	43.848	3.94	196.97	C
			B	0.16	2.735		1	1	43.848			
			C	0.16	2.735		1	1	43.848			
T11 22.00-2.00	0.96	6.18	A	0.159	2.738	17	1	1	49.689	3.19	159.41	C
			B	0.159	2.738		1	1	49.689			
			C	0.159	2.738		1	1	49.689			
Sum Weight:	9.22	38.22						OTM	2785.30 kip-ft	32.81		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 197.00-187.00	0.04	0.61	A	0.154	2.758	29	0.825	1	4.336	0.42	41.95	C
			B	0.154	2.758		0.825	1	4.336			
			C	0.154	2.758		0.825	1	4.336			
T2 187.00-172.00	0.16	0.94	A	0.142	2.799	28	0.825	1	5.652	0.88	58.52	C
			B	0.142	2.799		0.825	1	5.652			
			C	0.142	2.799		0.825	1	5.652			
T3 172.00-152.00	0.41	1.60	A	0.152	2.763	28	0.825	1	8.542	1.73	86.70	C
			B	0.152	2.763		0.825	1	8.542			
			C	0.152	2.763		0.825	1	8.542			

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	26 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
ft	K	K										
T4 152.00-142.00	0.47	1.24	A	0.276	2.361	27	0.825	1	12.163	1.65	165.45	C
			B	0.276	2.361		0.825	1	12.163			
			C	0.276	2.361		0.825	1	12.163			
T5 142.00-122.00	1.14	2.33	A	0.251	2.434	27	0.825	1	27.185	3.85	192.57	C
			B	0.251	2.434		0.825	1	27.185			
			C	0.251	2.434		0.825	1	27.185			
T6 122.00-102.00	1.18	3.00	A	0.213	2.552	26	0.825	1	28.749	3.99	199.35	C
			B	0.213	2.552		0.825	1	28.749			
			C	0.213	2.552		0.825	1	28.749			
T7 102.00-82.00	1.20	3.99	A	0.206	2.576	25	0.825	1	33.623	4.18	208.91	C
			B	0.206	2.576		0.825	1	33.623			
			C	0.206	2.576		0.825	1	33.623			
T8 82.00-62.00	1.21	5.31	A	0.179	2.668	23	0.825	1	33.688	4.06	203.03	C
			B	0.179	2.668		0.825	1	33.688			
			C	0.179	2.668		0.825	1	33.688			
T9 62.00-42.00	1.22	5.37	A	0.173	2.69	22	0.825	1	37.735	4.02	201.02	C
			B	0.173	2.69		0.825	1	37.735			
			C	0.173	2.69		0.825	1	37.735			
T10 42.00-22.00	1.22	6.16	A	0.16	2.735	20	0.825	1	39.494	3.74	186.98	C
			B	0.16	2.735		0.825	1	39.494			
			C	0.16	2.735		0.825	1	39.494			
T11 22.00-2.00	0.96	6.18	A	0.159	2.738	17	0.825	1	44.379	2.98	149.00	C
			B	0.159	2.738		0.825	1	44.379			
			C	0.159	2.738		0.825	1	44.379			
Sum Weight:	9.22	38.22						OTM	2695.42 kip-ft	31.50		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
ft	K	K										
T1 197.00-187.00	0.04	0.61	A	0.154	2.758	29	0.8	1	4.309	0.42	41.77	C
			B	0.154	2.758		0.8	1	4.309			
			C	0.154	2.758		0.8	1	4.309			
T2 187.00-172.00	0.16	0.94	A	0.142	2.799	28	0.8	1	5.652	0.88	58.52	C
			B	0.142	2.799		0.8	1	5.652			
			C	0.142	2.799		0.8	1	5.652			
T3 172.00-152.00	0.41	1.60	A	0.152	2.763	28	0.8	1	8.542	1.73	86.70	C
			B	0.152	2.763		0.8	1	8.542			
			C	0.152	2.763		0.8	1	8.542			
T4 152.00-142.00	0.47	1.24	A	0.276	2.361	27	0.8	1	12.021	1.65	164.68	C
			B	0.276	2.361		0.8	1	12.021			
			C	0.276	2.361		0.8	1	12.021			
T5 142.00-122.00	1.14	2.33	A	0.251	2.434	27	0.8	1	26.843	3.83	191.63	C
			B	0.251	2.434		0.8	1	26.843			
			C	0.251	2.434		0.8	1	26.843			
T6 122.00-102.00	1.18	3.00	A	0.213	2.552	26	0.8	1	28.370	3.97	198.29	C
			B	0.213	2.552		0.8	1	28.370			
			C	0.213	2.552		0.8	1	28.370			
T7 102.00-82.00	1.20	3.99	A	0.206	2.576	25	0.8	1	33.148	4.15	207.63	C
			B	0.206	2.576		0.8	1	33.148			
			C	0.206	2.576		0.8	1	33.148			

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	27 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T8 82.00-62.00	1.21	5.31	A	0.179	2.668	23	0.8	1	33.229	4.04	201.81	C
			B	0.179	2.668		0.8	1	33.229			
			C	0.179	2.668		0.8	1	33.229			
T9 62.00-42.00	1.22	5.37	A	0.173	2.69	22	0.8	1	37.163	3.99	199.60	C
			B	0.173	2.69		0.8	1	37.163			
			C	0.173	2.69		0.8	1	37.163			
T10 42.00-22.00	1.22	6.16	A	0.16	2.735	20	0.8	1	38.872	3.71	185.55	C
			B	0.16	2.735		0.8	1	38.872			
			C	0.16	2.735		0.8	1	38.872			
T11 22.00-2.00	0.96	6.18	A	0.159	2.738	17	0.8	1	43.620	2.95	147.51	C
			B	0.159	2.738		0.8	1	43.620			
			C	0.159	2.738		0.8	1	43.620			
Sum Weight:	9.22	38.22						OTM	2682.58 kip-ft	31.32		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 197.00-187.00	0.04	0.61	A	0.154	2.758	29	0.85	1	4.363	0.42	42.14	C
			B	0.154	2.758		0.85	1	4.363			
			C	0.154	2.758		0.85	1	4.363			
T2 187.00-172.00	0.16	0.94	A	0.142	2.799	28	0.85	1	5.652	0.88	58.52	C
			B	0.142	2.799		0.85	1	5.652			
			C	0.142	2.799		0.85	1	5.652			
T3 172.00-152.00	0.41	1.60	A	0.152	2.763	28	0.85	1	8.542	1.73	86.70	C
			B	0.152	2.763		0.85	1	8.542			
			C	0.152	2.763		0.85	1	8.542			
T4 152.00-142.00	0.47	1.24	A	0.276	2.361	27	0.85	1	12.305	1.66	166.22	C
			B	0.276	2.361		0.85	1	12.305			
			C	0.276	2.361		0.85	1	12.305			
T5 142.00-122.00	1.14	2.33	A	0.251	2.434	27	0.85	1	27.527	3.87	193.52	C
			B	0.251	2.434		0.85	1	27.527			
			C	0.251	2.434		0.85	1	27.527			
T6 122.00-102.00	1.18	3.00	A	0.213	2.552	26	0.85	1	29.129	4.01	200.41	C
			B	0.213	2.552		0.85	1	29.129			
			C	0.213	2.552		0.85	1	29.129			
T7 102.00-82.00	1.20	3.99	A	0.206	2.576	25	0.85	1	34.098	4.20	210.19	C
			B	0.206	2.576		0.85	1	34.098			
			C	0.206	2.576		0.85	1	34.098			
T8 82.00-62.00	1.21	5.31	A	0.179	2.668	23	0.85	1	34.147	4.08	204.25	C
			B	0.179	2.668		0.85	1	34.147			
			C	0.179	2.668		0.85	1	34.147			
T9 62.00-42.00	1.22	5.37	A	0.173	2.69	22	0.85	1	38.306	4.05	202.45	C
			B	0.173	2.69		0.85	1	38.306			
			C	0.173	2.69		0.85	1	38.306			
T10 42.00-22.00	1.22	6.16	A	0.16	2.735	20	0.85	1	40.116	3.77	188.41	C
			B	0.16	2.735		0.85	1	40.116			
			C	0.16	2.735		0.85	1	40.116			
T11 22.00-2.00	0.96	6.18	A	0.159	2.738	17	0.85	1	45.137	3.01	150.48	C
			B	0.159	2.738		0.85	1	45.137			
			C	0.159	2.738		0.85	1	45.137			

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	28 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
Sum Weight:	9.22	38.22						OTM	2708.26 kip-ft	31.69		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 197.00-187.00	1.01	3.36	A	0.79	1.809	5	1	1	35.779	0.33	32.93	C
			B	0.79	1.809		1	1	35.779			
			C	0.79	1.809		1	1	35.779			
T2 187.00-172.00	3.31	4.66	A	0.747	1.786	5	1	1	48.875	0.56	37.33	C
			B	0.747	1.786		1	1	48.875			
			C	0.747	1.786		1	1	48.875			
T3 172.00-152.00	6.76	6.69	A	0.726	1.78	5	1	1	65.419	0.86	43.23	C
			B	0.726	1.78		1	1	65.419			
			C	0.726	1.78		1	1	65.419			
T4 152.00-142.00	5.40	4.89	A	0.829	1.84	5	1	1	52.895	0.56	56.24	C
			B	0.829	1.84		1	1	52.895			
			C	0.829	1.84		1	1	52.895			
T5 142.00-122.00	12.97	13.49	A	0.691	1.776	5	1	1	96.964	1.42	70.83	C
			B	0.691	1.776		1	1	96.964			
			C	0.691	1.776		1	1	96.964			
T6 122.00-102.00	13.65	14.33	A	0.571	1.825	5	1	1	90.971	1.69	84.73	C
			B	0.571	1.825		1	1	90.971			
			C	0.571	1.825		1	1	90.971			
T7 102.00-82.00	13.99	16.25	A	0.533	1.861	4	1	1	99.256	1.83	91.73	C
			B	0.533	1.861		1	1	99.256			
			C	0.533	1.861		1	1	99.256			
T8 82.00-62.00	13.88	17.15	A	0.444	1.983	4	1	1	90.726	1.96	98.00	C
			B	0.444	1.983		1	1	90.726			
			C	0.444	1.983		1	1	90.726			
T9 62.00-42.00	13.50	17.55	A	0.415	2.034	4	1	1	96.035	1.94	97.11	C
			B	0.415	2.034		1	1	96.035			
			C	0.415	2.034		1	1	96.035			
T10 42.00-22.00	12.78	18.00	A	0.373	2.12	3	1	1	95.174	1.77	88.49	C
			B	0.373	2.12		1	1	95.174			
			C	0.373	2.12		1	1	95.174			
T11 22.00-2.00	8.81	17.36	A	0.35	2.171	3	1	1	99.713	1.27	63.50	C
			B	0.35	2.171		1	1	99.713			
			C	0.35	2.171		1	1	99.713			
Sum Weight:	106.06	135.22						OTM	1217.61 kip-ft	14.20		

Tower Forces - With Ice - Wind 45 To Face

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	29 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
ft	K	K										
T1 197.00-187.00	1.01	3.36	A	0.79	1.809	5	0.825	1	35.588	0.33	32.78	C
			B	0.79	1.809		0.825	1	35.588			
			C	0.79	1.809		0.825	1	35.588			
T2 187.00-172.00	3.31	4.66	A	0.747	1.786	5	0.825	1	48.875	0.56	37.33	C
			B	0.747	1.786		0.825	1	48.875			
			C	0.747	1.786		0.825	1	48.875			
T3 172.00-152.00	6.76	6.69	A	0.726	1.78	5	0.825	1	65.419	0.86	43.23	C
			B	0.726	1.78		0.825	1	65.419			
			C	0.726	1.78		0.825	1	65.419			
T4 152.00-142.00	5.40	4.89	A	0.829	1.84	5	0.825	1	51.903	0.56	55.50	C
			B	0.829	1.84		0.825	1	51.903			
			C	0.829	1.84		0.825	1	51.903			
T5 142.00-122.00	12.97	13.49	A	0.691	1.776	5	0.825	1	94.569	1.40	69.98	C
			B	0.691	1.776		0.825	1	94.569			
			C	0.691	1.776		0.825	1	94.569			
T6 122.00-102.00	13.65	14.33	A	0.571	1.825	5	0.825	1	88.314	1.68	83.80	C
			B	0.571	1.825		0.825	1	88.314			
			C	0.571	1.825		0.825	1	88.314			
T7 102.00-82.00	13.99	16.25	A	0.533	1.861	4	0.825	1	95.933	1.81	90.59	C
			B	0.533	1.861		0.825	1	95.933			
			C	0.533	1.861		0.825	1	95.933			
T8 82.00-62.00	13.88	17.15	A	0.444	1.983	4	0.825	1	87.512	1.94	96.89	C
			B	0.444	1.983		0.825	1	87.512			
			C	0.444	1.983		0.825	1	87.512			
T9 62.00-42.00	13.50	17.55	A	0.415	2.034	4	0.825	1	92.035	1.92	95.78	C
			B	0.415	2.034		0.825	1	92.035			
			C	0.415	2.034		0.825	1	92.035			
T10 42.00-22.00	12.78	18.00	A	0.373	2.12	3	0.825	1	90.820	1.74	87.13	C
			B	0.373	2.12		0.825	1	90.820			
			C	0.373	2.12		0.825	1	90.820			
T11 22.00-2.00	8.81	17.36	A	0.35	2.171	3	0.825	1	94.403	1.24	62.05	C
			B	0.35	2.171		0.825	1	94.403			
			C	0.35	2.171		0.825	1	94.403			
Sum Weight:	106.06	135.22						OTM	1205.97 kip-ft	14.03		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
ft	K	K										
T1 197.00-187.00	1.01	3.36	A	0.79	1.809	5	0.8	1	35.561	0.33	32.76	C
			B	0.79	1.809		0.8	1	35.561			
			C	0.79	1.809		0.8	1	35.561			
T2 187.00-172.00	3.31	4.66	A	0.747	1.786	5	0.8	1	48.875	0.56	37.33	C
			B	0.747	1.786		0.8	1	48.875			
			C	0.747	1.786		0.8	1	48.875			
T3 172.00-152.00	6.76	6.69	A	0.726	1.78	5	0.8	1	65.419	0.86	43.23	C
			B	0.726	1.78		0.8	1	65.419			
			C	0.726	1.78		0.8	1	65.419			
T4 152.00-142.00	5.40	4.89	A	0.829	1.84	5	0.8	1	51.761	0.55	55.40	C
			B	0.829	1.84		0.8	1	51.761			
			C	0.829	1.84		0.8	1	51.761			

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	30 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
ft	K	K										
T5 142.00-122.00	12.97	13.49	A	0.691	1.776	5	0.8	1	94.227	1.40	69.86	C
			B	0.691	1.776		0.8	1	94.227			
			C	0.691	1.776		0.8	1	94.227			
T6 122.00-102.00	13.65	14.33	A	0.571	1.825	5	0.8	1	87.934	1.67	83.67	C
			B	0.571	1.825		0.8	1	87.934			
			C	0.571	1.825		0.8	1	87.934			
T7 102.00-82.00	13.99	16.25	A	0.533	1.861	4	0.8	1	95.458	1.81	90.43	C
			B	0.533	1.861		0.8	1	95.458			
			C	0.533	1.861		0.8	1	95.458			
T8 82.00-62.00	13.88	17.15	A	0.444	1.983	4	0.8	1	87.053	1.93	96.73	C
			B	0.444	1.983		0.8	1	87.053			
			C	0.444	1.983		0.8	1	87.053			
T9 62.00-42.00	13.50	17.55	A	0.415	2.034	4	0.8	1	91.464	1.91	95.59	C
			B	0.415	2.034		0.8	1	91.464			
			C	0.415	2.034		0.8	1	91.464			
T10 42.00-22.00	12.78	18.00	A	0.373	2.12	3	0.8	1	90.198	1.74	86.93	C
			B	0.373	2.12		0.8	1	90.198			
			C	0.373	2.12		0.8	1	90.198			
T11 22.00-2.00	8.81	17.36	A	0.35	2.171	3	0.8	1	93.644	1.24	61.85	C
			B	0.35	2.171		0.8	1	93.644			
			C	0.35	2.171		0.8	1	93.644			
Sum Weight:	106.06	135.22						OTM	1204.30 kip-ft	14.01		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
ft	K	K										
T1 197.00-187.00	1.01	3.36	A	0.79	1.809	5	0.85	1	35.615	0.33	32.80	C
			B	0.79	1.809		0.85	1	35.615			
			C	0.79	1.809		0.85	1	35.615			
T2 187.00-172.00	3.31	4.66	A	0.747	1.786	5	0.85	1	48.875	0.56	37.33	C
			B	0.747	1.786		0.85	1	48.875			
			C	0.747	1.786		0.85	1	48.875			
T3 172.00-152.00	6.76	6.69	A	0.726	1.78	5	0.85	1	65.419	0.86	43.23	C
			B	0.726	1.78		0.85	1	65.419			
			C	0.726	1.78		0.85	1	65.419			
T4 152.00-142.00	5.40	4.89	A	0.829	1.84	5	0.85	1	52.044	0.56	55.61	C
			B	0.829	1.84		0.85	1	52.044			
			C	0.829	1.84		0.85	1	52.044			
T5 142.00-122.00	12.97	13.49	A	0.691	1.776	5	0.85	1	94.911	1.40	70.10	C
			B	0.691	1.776		0.85	1	94.911			
			C	0.691	1.776		0.85	1	94.911			
T6 122.00-102.00	13.65	14.33	A	0.571	1.825	5	0.85	1	88.693	1.68	83.93	C
			B	0.571	1.825		0.85	1	88.693			
			C	0.571	1.825		0.85	1	88.693			
T7 102.00-82.00	13.99	16.25	A	0.533	1.861	4	0.85	1	96.407	1.82	90.75	C
			B	0.533	1.861		0.85	1	96.407			
			C	0.533	1.861		0.85	1	96.407			
T8 82.00-62.00	13.88	17.15	A	0.444	1.983	4	0.85	1	87.971	1.94	97.05	C
			B	0.444	1.983		0.85	1	87.971			
			C	0.444	1.983		0.85	1	87.971			

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page 31 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date 12:26:28 07/27/22
	Client	T-Mobile	Designed by PPG

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
ft	K	K										
T9 62.00-42.00	13.50	17.55	A	0.415	2.034	4	0.85	1	92.606	1.92	95.97	C
			B	0.415	2.034		0.85	1	92.606			
			C	0.415	2.034		0.85	1	92.606			
T10 42.00-22.00	12.78	18.00	A	0.373	2.12	3	0.85	1	91.442	1.75	87.32	C
			B	0.373	2.12		0.85	1	91.442			
			C	0.373	2.12		0.85	1	91.442			
T11 22.00-2.00	8.81	17.36	A	0.35	2.171	3	0.85	1	95.162	1.25	62.26	C
			B	0.35	2.171		0.85	1	95.162			
			C	0.35	2.171		0.85	1	95.162			
Sum Weight:	106.06	135.22						OTM	1207.63 kip-ft	14.06		

Tower Forces - Service - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
ft	K	K										
T1 197.00-187.00	0.04	0.61	A	0.154	2.758	11	1	1	4.526	0.17	17.09	C
			B	0.154	2.758		1	1	4.526			
			C	0.154	2.758		1	1	4.526			
T2 187.00-172.00	0.16	0.94	A	0.142	2.799	11	1	1	5.652	0.35	23.13	C
			B	0.142	2.799		1	1	5.652			
			C	0.142	2.799		1	1	5.652			
T3 172.00-152.00	0.41	1.60	A	0.152	2.763	11	1	1	8.542	0.69	34.27	C
			B	0.152	2.763		1	1	8.542			
			C	0.152	2.763		1	1	8.542			
T4 152.00-142.00	0.47	1.24	A	0.276	2.361	11	1	1	13.156	0.68	67.53	C
			B	0.276	2.361		1	1	13.156			
			C	0.276	2.361		1	1	13.156			
T5 142.00-122.00	1.14	2.33	A	0.251	2.434	11	1	1	29.580	1.57	78.71	C
			B	0.251	2.434		1	1	29.580			
			C	0.251	2.434		1	1	29.580			
T6 122.00-102.00	1.18	3.00	A	0.213	2.552	10	1	1	31.407	1.63	81.71	C
			B	0.213	2.552		1	1	31.407			
			C	0.213	2.552		1	1	31.407			
T7 102.00-82.00	1.20	3.99	A	0.206	2.576	10	1	1	36.946	1.72	86.11	C
			B	0.206	2.576		1	1	36.946			
			C	0.206	2.576		1	1	36.946			
T8 82.00-62.00	1.21	5.31	A	0.179	2.668	9	1	1	36.902	1.67	83.61	C
			B	0.179	2.668		1	1	36.902			
			C	0.179	2.668		1	1	36.902			
T9 62.00-42.00	1.22	5.37	A	0.173	2.69	9	1	1	41.734	1.67	83.40	C
			B	0.173	2.69		1	1	41.734			
			C	0.173	2.69		1	1	41.734			
T10 42.00-22.00	1.22	6.16	A	0.16	2.735	8	1	1	43.848	1.56	77.84	C
			B	0.16	2.735		1	1	43.848			
			C	0.16	2.735		1	1	43.848			
T11 22.00-2.00	0.96	6.18	A	0.159	2.738	7	1	1	49.689	1.26	63.00	C
			B	0.159	2.738		1	1	49.689			
			C	0.159	2.738		1	1	49.689			
Sum Weight:	9.22	38.22						OTM	1100.77 kip-ft	12.97		

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	32 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

Tower Forces - Service - Wind 45 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K				psf			ft ²	K	plf	
T1 197.00-187.00	0.04	0.61	A	0.154	2.758	11	0.825	1	4.336	0.17	16.58	C
			B	0.154	2.758		0.825	1	4.336			
			C	0.154	2.758		0.825	1	4.336			
T2 187.00-172.00	0.16	0.94	A	0.142	2.799	11	0.825	1	5.652	0.35	23.13	C
			B	0.142	2.799		0.825	1	5.652			
			C	0.142	2.799		0.825	1	5.652			
T3 172.00-152.00	0.41	1.60	A	0.152	2.763	11	0.825	1	8.542	0.69	34.27	C
			B	0.152	2.763		0.825	1	8.542			
			C	0.152	2.763		0.825	1	8.542			
T4 152.00-142.00	0.47	1.24	A	0.276	2.361	11	0.825	1	12.163	0.65	65.39	C
			B	0.276	2.361		0.825	1	12.163			
			C	0.276	2.361		0.825	1	12.163			
T5 142.00-122.00	1.14	2.33	A	0.251	2.434	11	0.825	1	27.185	1.52	76.11	C
			B	0.251	2.434		0.825	1	27.185			
			C	0.251	2.434		0.825	1	27.185			
T6 122.00-102.00	1.18	3.00	A	0.213	2.552	10	0.825	1	28.749	1.58	78.79	C
			B	0.213	2.552		0.825	1	28.749			
			C	0.213	2.552		0.825	1	28.749			
T7 102.00-82.00	1.20	3.99	A	0.206	2.576	10	0.825	1	33.623	1.65	82.56	C
			B	0.206	2.576		0.825	1	33.623			
			C	0.206	2.576		0.825	1	33.623			
T8 82.00-62.00	1.21	5.31	A	0.179	2.668	9	0.825	1	33.688	1.60	80.24	C
			B	0.179	2.668		0.825	1	33.688			
			C	0.179	2.668		0.825	1	33.688			
T9 62.00-42.00	1.22	5.37	A	0.173	2.69	9	0.825	1	37.735	1.59	79.45	C
			B	0.173	2.69		0.825	1	37.735			
			C	0.173	2.69		0.825	1	37.735			
T10 42.00-22.00	1.22	6.16	A	0.16	2.735	8	0.825	1	39.494	1.48	73.90	C
			B	0.16	2.735		0.825	1	39.494			
			C	0.16	2.735		0.825	1	39.494			
T11 22.00-2.00	0.96	6.18	A	0.159	2.738	7	0.825	1	44.379	1.18	58.88	C
			B	0.159	2.738		0.825	1	44.379			
			C	0.159	2.738		0.825	1	44.379			
Sum Weight:	9.22	38.22						OTM	1065.25 kip-ft	12.45		

Tower Forces - Service - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K				psf			ft ²	K	plf	
T1 197.00-187.00	0.04	0.61	A	0.154	2.758	11	0.8	1	4.309	0.17	16.51	C
			B	0.154	2.758		0.8	1	4.309			
			C	0.154	2.758		0.8	1	4.309			
T2 187.00-172.00	0.16	0.94	A	0.142	2.799	11	0.8	1	5.652	0.35	23.13	C
			B	0.142	2.799		0.8	1	5.652			
			C	0.142	2.799		0.8	1	5.652			

<i>tnxTower</i> Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	33 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
ft	K	K										
T3 172.00-152.00	0.41	1.60	A	0.152	2.763	11	0.8	1	8.542	0.69	34.27	C
			B	0.152	2.763		0.8	1	8.542			
			C	0.152	2.763		0.8	1	8.542			
T4 152.00-142.00	0.47	1.24	A	0.276	2.361	11	0.8	1	12.021	0.65	65.08	C
			B	0.276	2.361		0.8	1	12.021			
			C	0.276	2.361		0.8	1	12.021			
T5 142.00-122.00	1.14	2.33	A	0.251	2.434	11	0.8	1	26.843	1.51	75.73	C
			B	0.251	2.434		0.8	1	26.843			
			C	0.251	2.434		0.8	1	26.843			
T6 122.00-102.00	1.18	3.00	A	0.213	2.552	10	0.8	1	28.370	1.57	78.37	C
			B	0.213	2.552		0.8	1	28.370			
			C	0.213	2.552		0.8	1	28.370			
T7 102.00-82.00	1.20	3.99	A	0.206	2.576	10	0.8	1	33.148	1.64	82.06	C
			B	0.206	2.576		0.8	1	33.148			
			C	0.206	2.576		0.8	1	33.148			
T8 82.00-62.00	1.21	5.31	A	0.179	2.668	9	0.8	1	33.229	1.60	79.76	C
			B	0.179	2.668		0.8	1	33.229			
			C	0.179	2.668		0.8	1	33.229			
T9 62.00-42.00	1.22	5.37	A	0.173	2.69	9	0.8	1	37.163	1.58	78.88	C
			B	0.173	2.69		0.8	1	37.163			
			C	0.173	2.69		0.8	1	37.163			
T10 42.00-22.00	1.22	6.16	A	0.16	2.735	8	0.8	1	38.872	1.47	73.33	C
			B	0.16	2.735		0.8	1	38.872			
			C	0.16	2.735		0.8	1	38.872			
T11 22.00-2.00	0.96	6.18	A	0.159	2.738	7	0.8	1	43.620	1.17	58.30	C
			B	0.159	2.738		0.8	1	43.620			
			C	0.159	2.738		0.8	1	43.620			
Sum Weight:	9.22	38.22						OTM	1060.18 kip-ft	12.38		

Tower Forces - Service - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
ft	K	K										
T1 197.00-187.00	0.04	0.61	A	0.154	2.758	11	0.85	1	4.363	0.17	16.65	C
			B	0.154	2.758		0.85	1	4.363			
			C	0.154	2.758		0.85	1	4.363			
T2 187.00-172.00	0.16	0.94	A	0.142	2.799	11	0.85	1	5.652	0.35	23.13	C
			B	0.142	2.799		0.85	1	5.652			
			C	0.142	2.799		0.85	1	5.652			
T3 172.00-152.00	0.41	1.60	A	0.152	2.763	11	0.85	1	8.542	0.69	34.27	C
			B	0.152	2.763		0.85	1	8.542			
			C	0.152	2.763		0.85	1	8.542			
T4 152.00-142.00	0.47	1.24	A	0.276	2.361	11	0.85	1	12.305	0.66	65.69	C
			B	0.276	2.361		0.85	1	12.305			
			C	0.276	2.361		0.85	1	12.305			
T5 142.00-122.00	1.14	2.33	A	0.251	2.434	11	0.85	1	27.527	1.53	76.48	C
			B	0.251	2.434		0.85	1	27.527			
			C	0.251	2.434		0.85	1	27.527			
T6 122.00-102.00	1.18	3.00	A	0.213	2.552	10	0.85	1	29.129	1.58	79.20	C
			B	0.213	2.552		0.85	1	29.129			
			C	0.213	2.552		0.85	1	29.129			

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page 34 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date 12:26:28 07/27/22
	Client	T-Mobile	Designed by PPG

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T7 102.00-82.00	1.20	3.99	A	0.206	2.576	10	0.85	1	34.098	1.66	83.07	C
			B	0.206	2.576		0.85	1	34.098			
			C	0.206	2.576		0.85	1	34.098			
T8 82.00-62.00	1.21	5.31	A	0.179	2.668	9	0.85	1	34.147	1.61	80.72	C
			B	0.179	2.668		0.85	1	34.147			
			C	0.179	2.668		0.85	1	34.147			
T9 62.00-42.00	1.22	5.37	A	0.173	2.69	9	0.85	1	38.306	1.60	80.01	C
			B	0.173	2.69		0.85	1	38.306			
			C	0.173	2.69		0.85	1	38.306			
T10 42.00-22.00	1.22	6.16	A	0.16	2.735	8	0.85	1	40.116	1.49	74.46	C
			B	0.16	2.735		0.85	1	40.116			
			C	0.16	2.735		0.85	1	40.116			
T11 22.00-2.00	0.96	6.18	A	0.159	2.738	7	0.85	1	45.137	1.19	59.47	C
			B	0.159	2.738		0.85	1	45.137			
			C	0.159	2.738		0.85	1	45.137			
Sum Weight:	9.22	38.22						OTM	1070.32 kip-ft	12.52		

Force Totals

Load Case	Vertical Forces	Sum of Forces X	Sum of Forces Z	Sum of Overturning Moments, M _x	Sum of Overturning Moments, M _z	Sum of Torques
	K	K	K	kip-ft	kip-ft	kip-ft
Leg Weight	26.37					
Bracing Weight	10.36					
Total Member Self-Weight	36.73			-7.65	15.90	
Gusset Weight	1.49					
Total Weight	59.14			-7.65	15.90	
Wind 0 deg - No Ice		-0.19	-45.48	-4676.18	49.13	-43.30
Wind 30 deg - No Ice		22.32	-38.27	-3937.88	-2339.34	-42.14
Wind 45 deg - No Ice		31.85	-31.02	-3175.78	-3364.51	-35.98
Wind 60 deg - No Ice		38.75	-21.55	-2192.02	-4081.86	-28.81
Wind 90 deg - No Ice		44.92	0.50	79.24	-4691.50	-10.14
Wind 120 deg - No Ice		39.96	22.88	2363.11	-4150.67	12.65
Wind 135 deg - No Ice		32.52	31.73	3278.61	-3404.68	23.80
Wind 150 deg - No Ice		23.12	38.28	3968.14	-2454.09	33.20
Wind 180 deg - No Ice		0.16	44.35	4624.73	-76.58	40.40
Wind 210 deg - No Ice		-22.89	38.15	3933.00	2395.61	41.74
Wind 225 deg - No Ice		-31.76	31.09	3209.82	3319.67	37.06
Wind 240 deg - No Ice		-39.76	22.78	2330.52	4108.37	29.38
Wind 270 deg - No Ice		-44.94	0.07	10.97	4686.42	8.87
Wind 300 deg - No Ice		-38.83	-21.86	-2280.50	4070.59	-16.59
Wind 315 deg - No Ice		-31.98	-31.16	-3247.76	3348.99	-27.53
Wind 330 deg - No Ice		-22.56	-38.36	-3985.75	2358.74	-34.94
Member Ice	97.00					
Gusset Ice	2.03					
Total Weight Ice	297.70			-98.94	188.35	
Wind 0 deg - Ice		-0.04	-19.51	-2099.21	195.96	-16.20
Wind 30 deg - Ice		9.73	-16.74	-1812.96	-819.43	-20.61
Wind 45 deg - Ice		13.82	-13.64	-1490.66	-1247.86	-20.51
Wind 60 deg - Ice		16.89	-9.57	-1072.02	-1563.35	-19.33
Wind 90 deg - Ice		19.52	0.10	-80.71	-1828.32	-13.36
Wind 120 deg - Ice		17.05	9.78	909.24	-1571.87	-3.48

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page 35 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date 12:26:28 07/27/22
	Client	T-Mobile	Designed by PPG

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Wind 135 deg - Ice		13.93	13.74	1315.04	-1254.73	2.10
Wind 150 deg - Ice		9.89	16.74	1625.05	-843.93	7.52
Wind 180 deg - Ice		0.03	19.39	1901.19	168.92	15.63
Wind 210 deg - Ice		-9.84	16.71	1617.08	1200.95	20.55
Wind 225 deg - Ice		-13.81	13.64	1302.52	1609.29	20.76
Wind 240 deg - Ice		-17.01	9.76	901.12	1932.79	19.46
Wind 270 deg - Ice		-19.52	0.01	-96.32	2197.66	13.14
Wind 300 deg - Ice		-16.91	-9.64	-1091.36	1932.40	2.77
Wind 315 deg - Ice		-13.85	-13.66	-1506.36	1616.46	-2.79
Wind 330 deg - Ice		-9.78	-16.76	-1823.45	1195.32	-7.83
Total Weight	59.14			-7.65	15.90	
Wind 0 deg - Service		-0.07	-17.98	-1849.07	8.12	-17.09
Wind 30 deg - Service		8.83	-15.14	-1557.08	-936.60	-16.63
Wind 45 deg - Service		12.60	-12.27	-1255.64	-1342.08	-14.20
Wind 60 deg - Service		15.33	-8.52	-866.52	-1625.83	-11.37
Wind 90 deg - Service		17.76	0.20	31.88	-1866.98	-4.01
Wind 120 deg - Service		15.80	9.05	935.26	-1653.03	4.99
Wind 135 deg - Service		12.86	12.55	1297.40	-1357.96	9.39
Wind 150 deg - Service		9.14	15.14	1570.15	-981.95	13.10
Wind 180 deg - Service		0.06	17.54	1829.85	-41.56	15.94
Wind 210 deg - Service		-9.05	15.08	1556.26	936.25	16.47
Wind 225 deg - Service		-12.56	12.29	1270.21	1301.77	14.63
Wind 240 deg - Service		-15.72	9.01	922.38	1613.72	11.59
Wind 270 deg - Service		-17.77	0.03	4.89	1842.38	3.50
Wind 300 deg - Service		-15.36	-8.64	-901.49	1598.79	-6.55
Wind 315 deg - Service		-12.65	-12.32	-1284.09	1313.36	-10.87
Wind 330 deg - Service		-8.92	-15.17	-1575.99	921.68	-13.79

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 45 deg - No Ice
7	0.9 Dead+1.6 Wind 45 deg - No Ice
8	1.2 Dead+1.6 Wind 60 deg - No Ice
9	0.9 Dead+1.6 Wind 60 deg - No Ice
10	1.2 Dead+1.6 Wind 90 deg - No Ice
11	0.9 Dead+1.6 Wind 90 deg - No Ice
12	1.2 Dead+1.6 Wind 120 deg - No Ice
13	0.9 Dead+1.6 Wind 120 deg - No Ice
14	1.2 Dead+1.6 Wind 135 deg - No Ice
15	0.9 Dead+1.6 Wind 135 deg - No Ice
16	1.2 Dead+1.6 Wind 150 deg - No Ice
17	0.9 Dead+1.6 Wind 150 deg - No Ice
18	1.2 Dead+1.6 Wind 180 deg - No Ice
19	0.9 Dead+1.6 Wind 180 deg - No Ice
20	1.2 Dead+1.6 Wind 210 deg - No Ice
21	0.9 Dead+1.6 Wind 210 deg - No Ice
22	1.2 Dead+1.6 Wind 225 deg - No Ice
23	0.9 Dead+1.6 Wind 225 deg - No Ice
24	1.2 Dead+1.6 Wind 240 deg - No Ice

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	36 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

<i>Comb. No.</i>	<i>Description</i>
25	0.9 Dead+1.6 Wind 240 deg - No Ice
26	1.2 Dead+1.6 Wind 270 deg - No Ice
27	0.9 Dead+1.6 Wind 270 deg - No Ice
28	1.2 Dead+1.6 Wind 300 deg - No Ice
29	0.9 Dead+1.6 Wind 300 deg - No Ice
30	1.2 Dead+1.6 Wind 315 deg - No Ice
31	0.9 Dead+1.6 Wind 315 deg - No Ice
32	1.2 Dead+1.6 Wind 330 deg - No Ice
33	0.9 Dead+1.6 Wind 330 deg - No Ice
34	1.2 Dead+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
39	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
40	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
41	1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp
42	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
43	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
44	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
45	1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp
46	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
47	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
48	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
49	1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp
50	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
51	Dead+Wind 0 deg - Service
52	Dead+Wind 30 deg - Service
53	Dead+Wind 45 deg - Service
54	Dead+Wind 60 deg - Service
55	Dead+Wind 90 deg - Service
56	Dead+Wind 120 deg - Service
57	Dead+Wind 135 deg - Service
58	Dead+Wind 150 deg - Service
59	Dead+Wind 180 deg - Service
60	Dead+Wind 210 deg - Service
61	Dead+Wind 225 deg - Service
62	Dead+Wind 240 deg - Service
63	Dead+Wind 270 deg - Service
64	Dead+Wind 300 deg - Service
65	Dead+Wind 315 deg - Service
66	Dead+Wind 330 deg - Service

Maximum Member Forces

<i>Section No.</i>	<i>Elevation ft</i>	<i>Component Type</i>	<i>Condition</i>	<i>Gov. Load Comb.</i>	<i>Axial K</i>	<i>Major Axis Moment kip-ft</i>	<i>Minor Axis Moment kip-ft</i>
T1	197 - 187	Leg	Max Tension	7	4.07	0.40	-0.33
			Max. Compression	12	-5.15	-0.11	-0.07
			Max. Mx	6	-1.38	0.65	-0.13
			Max. My	2	0.49	-0.14	-0.52
			Max. Vy	6	1.20	-0.15	0.03
		Diagonal	Max. Vx	2	-0.97	0.04	0.12
			Max Tension	4	1.63	0.00	0.00
			Max. Compression	22	-1.65	0.00	0.00
			Max. Mx	39	0.29	-0.01	0.00
			Max. My	23	-1.64	-0.00	0.00
			Max. Vy	38	0.02	-0.01	0.00

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	37 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T2	187 - 172	Top Girt	Max. Vx	22	-0.00	-0.00	0.00
			Max Tension	7	0.19	0.00	0.00
			Max. Compression	8	-0.26	0.00	0.00
			Max. Mx	43	-0.03	-0.09	0.00
			Max. My	22	0.05	0.00	-0.00
			Max. Vy	43	0.08	0.00	0.00
		Bottom Girt	Max. Vx	22	-0.00	0.00	0.00
			Max Tension	6	0.68	0.00	0.00
			Max. Compression	13	-0.76	0.00	0.00
			Max. Mx	43	0.21	0.04	0.00
			Max. My	22	0.22	0.00	0.00
			Max. Vy	43	-0.04	0.00	0.00
		Leg	Max. Vx	22	-0.00	0.00	0.00
			Max Tension	7	21.56	-0.30	0.36
			Max. Compression	12	-26.89	-0.39	-0.33
			Max. Mx	26	-2.57	-1.49	0.01
			Max. My	18	19.51	0.09	1.35
			Max. Vy	26	-2.88	0.43	0.01
		Diagonal	Max. Vx	18	2.70	0.01	-0.43
			Max Tension	6	4.13	0.00	0.00
			Max. Compression	22	-4.21	0.00	0.00
			Max. Mx	48	1.19	-0.01	-0.00
			Max. My	22	-4.21	-0.00	0.00
			Max. Vy	48	0.02	-0.01	-0.00
		Top Girt	Max. Vx	22	-0.00	-0.00	0.00
			Max Tension	12	0.81	0.00	0.00
			Max. Compression	6	-0.73	0.00	0.00
			Max. Mx	43	-0.23	0.04	0.00
			Max. My	22	-0.22	0.00	0.00
			Max. Vy	43	-0.04	0.00	0.00
		Bottom Girt	Max. Vx	22	-0.00	0.00	0.00
			Max Tension	8	1.58	0.00	0.00
			Max. Compression	12	-1.72	0.00	0.00
			Max. Mx	43	0.58	0.04	0.00
			Max. My	22	0.52	0.00	0.00
			Max. Vy	43	-0.04	0.00	0.00
T3	172 - 152	Leg	Max. Vx	22	-0.00	0.00	0.00
			Max Tension	9	68.93	0.79	-0.10
			Max. Compression	12	-79.43	3.36	0.28
			Max. Mx	12	-79.43	3.36	0.28
			Max. My	26	-2.61	-0.01	-2.24
			Max. Vy	12	-6.73	3.36	0.28
		Diagonal	Max. Vx	26	3.57	0.02	-1.70
			Max Tension	4	6.14	0.00	0.00
			Max. Compression	22	-6.23	0.00	0.00
			Max. Mx	35	1.22	-0.02	-0.00
			Max. My	22	-4.64	-0.00	0.00
			Max. Vy	35	0.03	-0.02	-0.00
		Top Girt	Max. Vx	22	-0.00	-0.00	0.00
			Max Tension	12	1.81	0.00	0.00
			Max. Compression	8	-1.69	0.00	0.00
			Max. Mx	43	-0.61	0.04	0.00
			Max. My	4	0.04	0.00	0.00
			Max. Vy	43	0.04	0.00	0.00
		Bottom Girt	Max. Vx	4	0.00	0.00	0.00
			Max Tension	8	0.64	0.00	0.00
			Max. Compression	13	-0.66	0.00	0.00
			Max. Mx	48	0.34	0.05	0.00
			Max. My	4	-0.06	0.00	0.00
			Max. Vy	48	-0.04	0.00	0.00
		Leg	Max. Vx	4	0.00	0.00	0.00

<i>tnxTower</i> Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	38 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T4	152 - 142	Leg	Max Tension	9	77.82	-3.09	0.27
			Max. Compression	12	-89.31	5.82	-0.14
			Max. Mx	8	75.80	-6.06	-0.65
			Max. My	10	0.76	-0.52	7.86
			Max. Vy	18	-1.00	-3.09	-0.03
			Max. Vx	16	1.15	-0.72	-7.61
		Diagonal	Max Tension	7	10.22	0.05	0.00
			Max. Compression	24	-10.88	0.00	0.00
			Max. Mx	48	1.19	0.06	0.01
			Max. My	24	-10.85	-0.04	-0.06
			Max. Vy	48	0.05	0.06	0.01
			Max. Vx	24	0.01	0.00	0.00
T5	142 - 122	Leg	Max Tension	9	132.52	-5.22	-0.38
			Max. Compression	12	-150.48	7.35	0.06
			Max. Mx	12	-150.48	7.35	0.06
			Max. My	10	0.48	-0.52	7.86
			Max. Vy	8	-1.25	-6.06	-0.65
			Max. Vx	16	-1.43	-0.72	-7.61
		Diagonal	Max Tension	20	12.16	0.00	0.00
			Max. Compression	20	-12.58	0.00	0.00
			Max. Mx	35	1.10	0.15	0.02
			Max. My	22	-12.19	-0.05	-0.04
			Max. Vy	35	-0.08	0.15	0.02
			Max. Vx	22	0.01	0.00	0.00
T6	122 - 102	Leg	Max Tension	29	183.71	-4.86	0.09
			Max. Compression	12	-206.61	8.34	-0.08
			Max. Mx	12	-206.61	8.34	-0.08
			Max. My	10	-2.37	-0.55	9.37
			Max. Vy	24	-1.02	7.92	-0.38
			Max. Vx	16	-1.04	-0.67	-9.32
		Diagonal	Max Tension	7	12.93	0.00	0.00
			Max. Compression	22	-13.59	0.00	0.00
			Max. Mx	35	1.29	0.18	-0.02
			Max. My	3	-8.84	-0.02	0.04
			Max. Vy	49	0.10	0.16	0.03
			Max. Vx	37	-0.01	0.00	0.00
T7	102 - 82	Leg	Max Tension	29	234.17	-4.96	0.12
			Max. Compression	12	-262.38	7.69	-0.10
			Max. Mx	12	-234.13	8.34	-0.08
			Max. My	10	-3.92	-0.51	8.94
			Max. Vy	12	0.59	8.34	-0.08
			Max. Vx	16	1.06	-0.61	-8.91
		Diagonal	Max Tension	20	12.73	0.00	0.00
			Max. Compression	20	-13.03	0.00	0.00
			Max. Mx	35	1.87	0.19	0.03
			Max. My	4	-12.41	-0.03	0.04
			Max. Vy	48	0.11	0.19	0.03
			Max. Vx	37	-0.01	0.00	0.00
		Top Girt	Max Tension	8	4.51	0.00	0.00
			Max. Compression	13	-4.13	0.00	0.00
			Max. Mx	34	1.75	-0.35	0.00
			Max. My	46	2.04	0.00	0.01
			Max. Vy	34	-0.14	0.00	0.00
			Max. Vx	46	0.00	0.00	0.00
T8	82 - 62	Leg	Max Tension	29	280.61	-6.32	0.04
			Max. Compression	12	-313.96	6.20	-0.07
			Max. Mx	12	-287.91	7.69	-0.10
			Max. My	16	-0.51	-0.22	-6.65
			Max. Vy	18	-0.32	-7.23	-0.06
			Max. Vx	2	0.36	-3.47	5.89
		Diagonal	Max Tension	20	13.31	0.00	0.00

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	39 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T9	62 - 42	Leg	Max. Compression	20	-13.65	0.00	0.00
			Max. Mx	48	2.13	0.24	0.03
			Max. My	46	-0.14	0.20	-0.04
			Max. Vy	48	0.13	0.24	0.03
			Max. Vx	46	-0.01	0.00	0.00
			Max Tension	29	324.29	-6.05	0.07
		Diagonal	Max. Compression	12	-363.01	7.48	-0.14
			Max. Mx	12	-363.01	7.48	-0.14
			Max. My	16	-4.83	-0.25	-7.43
			Max. Vy	8	0.29	-7.23	-0.01
			Max. Vx	2	-0.36	-3.59	6.57
			Max Tension	20	13.76	0.00	0.00
			Max. Compression	20	-14.19	0.00	0.00
			Max. Mx	48	2.18	0.30	0.04
			Max. My	46	-0.10	0.27	-0.04
			Max. Vy	48	0.16	0.30	0.04
			Max. Vx	46	-0.01	0.00	0.00
T10	42 - 22	Leg	Max Tension	29	365.84	-6.29	0.07
			Max. Compression	12	-410.68	6.53	-0.01
			Max. Mx	12	-386.27	7.48	-0.14
			Max. My	16	-5.16	-0.25	-7.43
			Max. Vy	38	0.78	-6.56	0.11
			Max. Vx	32	0.37	-0.05	6.03
		Diagonal	Max Tension	20	14.68	0.00	0.00
			Max. Compression	20	-15.09	0.00	0.00
			Max. Mx	48	2.99	0.37	0.04
			Max. My	37	-3.13	0.32	0.05
			Max. Vy	48	0.18	0.37	0.04
			Max. Vx	37	0.01	0.00	0.00
			Max Tension	29	404.16	-6.48	0.06
			Max. Compression	12	-455.61	0.00	-0.00
			Max. Mx	35	-211.88	9.70	-0.32
			Max. My	26	-20.93	-0.39	-10.84
			Max. Vy	37	-1.38	-6.51	0.45
			Max. Vx	16	-1.25	-0.63	-10.77
T11	22 - 2	Leg	Max Tension	5	15.67	0.00	0.00
			Max. Compression	20	-16.33	0.00	0.00
			Max. Mx	48	0.07	0.42	-0.06
			Max. My	37	-6.30	0.38	0.06
			Max. Vy	49	0.18	0.36	0.04
			Max. Vx	37	-0.01	0.00	0.00
		Diagonal	Max Tension	20	14.68	0.00	0.00
			Max. Compression	20	-15.09	0.00	0.00
			Max. Mx	48	2.99	0.37	0.04
			Max. My	37	-3.13	0.32	0.05

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	24	462.11	39.83	-24.54
	Max. H _x	24	462.11	39.83	-24.54
	Max. H _z	7	-400.23	-34.60	23.15
	Min. Vert	9	-412.23	-36.31	22.63
	Min. H _x	9	-412.23	-36.31	22.63
	Min. H _z	24	462.11	39.83	-24.54
Leg B	Max. Vert	12	467.71	-41.03	-23.05
	Max. H _x	29	-414.30	37.64	20.78
	Max. H _z	29	-414.30	37.64	20.78
	Min. Vert	29	-414.30	37.64	20.78

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	40 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg A	Min. H _x	12	467.71	-41.03	-23.05
	Min. H _z	12	467.71	-41.03	-23.05
	Max. Vert	2	457.81	-1.98	46.42
	Max. H _x	25	-198.72	4.66	-21.22
	Max. H _z	2	457.81	-1.98	46.42
	Min. Vert	19	-411.55	2.03	-42.76
	Min. H _x	9	220.75	-4.15	22.45
	Min. H _z	19	-411.55	2.03	-42.76

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	59.14	0.00	0.00	-7.66	15.90	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	70.97	-0.30	-72.77	-7519.75	73.17	-69.42
0.9 Dead+1.6 Wind 0 deg - No Ice	53.22	-0.30	-72.77	-7507.09	68.22	-69.39
1.2 Dead+1.6 Wind 30 deg - No Ice	70.97	35.71	-61.24	-6332.10	-3769.99	-67.56
0.9 Dead+1.6 Wind 30 deg - No Ice	53.22	35.71	-61.24	-6321.08	-3769.47	-67.52
1.2 Dead+1.6 Wind 45 deg - No Ice	70.97	50.96	-49.63	-5105.98	-5419.69	-57.71
0.9 Dead+1.6 Wind 45 deg - No Ice	53.22	50.96	-49.63	-5096.69	-5416.80	-57.67
1.2 Dead+1.6 Wind 60 deg - No Ice	70.97	62.01	-34.48	-3523.21	-6573.81	-46.24
0.9 Dead+1.6 Wind 60 deg - No Ice	53.22	62.01	-34.48	-3516.13	-6569.33	-46.20
1.2 Dead+1.6 Wind 90 deg - No Ice	70.97	71.88	0.80	130.74	-7554.46	-16.37
0.9 Dead+1.6 Wind 90 deg - No Ice	53.22	71.88	0.80	132.79	-7548.68	-16.34
1.2 Dead+1.6 Wind 120 deg - No Ice	70.97	63.94	36.61	3804.84	-6684.28	20.21
0.9 Dead+1.6 Wind 120 deg - No Ice	53.22	63.94	36.61	3801.89	-6679.73	20.22
1.2 Dead+1.6 Wind 135 deg - No Ice	70.97	52.03	50.77	5277.75	-5484.24	38.11
0.9 Dead+1.6 Wind 135 deg - No Ice	53.22	52.03	50.77	5272.76	-5481.31	38.10
1.2 Dead+1.6 Wind 150 deg - No Ice	70.97	36.99	61.25	6387.14	-3955.01	53.19
0.9 Dead+1.6 Wind 150 deg - No Ice	53.22	36.99	61.25	6380.60	-3954.16	53.18
1.2 Dead+1.6 Wind 180 deg - No Ice	70.97	0.26	70.96	7443.56	-130.19	64.76
0.9 Dead+1.6 Wind 180 deg - No Ice	53.22	0.26	70.96	7435.51	-134.58	64.72
1.2 Dead+1.6 Wind 210 deg - No Ice	70.97	-36.63	61.03	6330.13	3847.84	66.94
0.9 Dead+1.6 Wind 210 deg - No Ice	53.22	-36.63	61.03	6323.72	3837.74	66.89
1.2 Dead+1.6 Wind 225 deg - No Ice	70.97	-50.82	49.74	5166.70	5334.40	59.46

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page 41 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date 12:26:28 07/27/22
	Client	T-Mobile	Designed by PPG

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
0.9 Dead+1.6 Wind 225 deg - No Ice	53.22	-50.82	49.74	5161.89	5322.25	59.41
1.2 Dead+1.6 Wind 240 deg - No Ice	70.97	-63.61	36.45	3752.02	6602.95	47.17
0.9 Dead+1.6 Wind 240 deg - No Ice	53.22	-63.61	36.45	3749.18	6589.10	47.13
1.2 Dead+1.6 Wind 270 deg - No Ice	70.97	-71.90	0.11	20.46	7533.11	14.34
0.9 Dead+1.6 Wind 270 deg - No Ice	53.22	-71.90	0.11	22.78	7517.89	14.31
1.2 Dead+1.6 Wind 300 deg - No Ice	70.97	-62.13	-34.97	-3666.01	6542.45	-26.52
0.9 Dead+1.6 Wind 300 deg - No Ice	53.22	-62.13	-34.97	-3658.54	6528.59	-26.52
1.2 Dead+1.6 Wind 315 deg - No Ice	70.97	-51.17	-49.86	-5222.06	5381.54	-44.10
0.9 Dead+1.6 Wind 315 deg - No Ice	53.22	-51.17	-49.86	-5212.45	5369.30	-44.10
1.2 Dead+1.6 Wind 330 deg - No Ice	70.97	-36.09	-61.37	-6409.22	3788.48	-56.01
0.9 Dead+1.6 Wind 330 deg - No Ice	53.22	-36.09	-61.37	-6397.99	3778.45	-55.99
1.2 Dead+1.0 Ice+1.0 Temp	309.53	0.00	0.00	-104.13	196.30	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	309.53	-0.04	-19.51	-2158.01	204.47	-16.55
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	309.53	9.73	-16.74	-1864.05	-838.43	-21.05
1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp	309.53	13.82	-13.64	-1533.06	-1278.54	-20.96
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	309.53	16.89	-9.57	-1103.15	-1602.45	-19.74
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	309.53	19.52	0.10	-85.38	-1874.36	-13.63
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	309.53	17.05	9.78	930.93	-1611.03	-3.55
1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp	309.53	13.93	13.74	1347.60	-1285.47	2.15
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	309.53	9.89	16.74	1665.96	-863.75	7.68
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	309.53	0.03	19.39	1949.59	176.09	15.99
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	309.53	-9.84	16.71	1657.65	1236.23	21.00
1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp	309.53	-13.81	13.64	1334.71	1655.48	21.20
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	309.53	-17.01	9.76	922.55	1987.53	19.87
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	309.53	-19.52	0.01	-101.59	2259.62	13.42
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	309.53	-16.91	-9.64	-1123.38	1987.25	2.84
1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp	309.53	-13.85	-13.66	-1549.49	1662.81	-2.85
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	309.53	-9.78	-16.76	-1875.02	1230.39	-8.00
Dead+Wind 0 deg - Service	59.14	-0.07	-17.98	-1862.78	29.23	-17.12
Dead+Wind 30 deg - Service	59.14	8.83	-15.14	-1569.44	-919.96	-16.67
Dead+Wind 45 deg - Service	59.14	12.60	-12.27	-1266.59	-1327.38	-14.24
Dead+Wind 60 deg - Service	59.14	15.33	-8.52	-875.66	-1612.43	-11.40
Dead+Wind 90 deg - Service	59.14	17.76	0.20	26.86	-1854.65	-4.02
Dead+Wind 120 deg - Service	59.14	15.80	9.05	934.34	-1639.70	4.99

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page 42 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date 12:26:28 07/27/22
	Client	T-Mobile	Designed by PPG

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead+Wind 135 deg - Service	59.14	12.86	12.55	1298.15	-1343.30	9.39
Dead+Wind 150 deg - Service	59.14	9.14	15.14	1572.18	-965.59	13.11
Dead+Wind 180 deg - Service	59.14	0.06	17.54	1833.09	-20.90	15.97
Dead+Wind 210 deg - Service	59.14	-9.05	15.08	1558.15	961.58	16.52
Dead+Wind 225 deg - Service	59.14	-12.56	12.29	1270.80	1328.77	14.67
Dead+Wind 240 deg - Service	59.14	-15.72	9.01	921.36	1642.11	11.63
Dead+Wind 270 deg - Service	59.14	-17.77	0.03	-0.35	1871.88	3.52
Dead+Wind 300 deg - Service	59.14	-15.36	-8.64	-910.93	1627.17	-6.54
Dead+Wind 315 deg - Service	59.14	-12.65	-12.32	-1295.28	1340.41	-10.87
Dead+Wind 330 deg - Service	59.14	-8.92	-15.17	-1588.51	946.94	-13.80

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-59.14	0.00	0.00	59.14	0.00	0.000%
2	-0.30	-70.97	-72.77	0.30	70.97	72.77	0.000%
3	-0.30	-53.22	-72.77	0.30	53.22	72.77	0.000%
4	35.71	-70.97	-61.24	-35.71	70.97	61.24	0.000%
5	35.71	-53.22	-61.24	-35.71	53.22	61.24	0.000%
6	50.96	-70.97	-49.63	-50.96	70.97	49.63	0.000%
7	50.96	-53.22	-49.63	-50.96	53.22	49.63	0.000%
8	62.01	-70.97	-34.48	-62.01	70.97	34.48	0.000%
9	62.01	-53.22	-34.48	-62.01	53.22	34.48	0.000%
10	71.88	-70.97	0.80	-71.88	70.97	-0.80	0.000%
11	71.88	-53.22	0.80	-71.88	53.22	-0.80	0.000%
12	63.94	-70.97	36.61	-63.94	70.97	-36.61	0.000%
13	63.94	-53.22	36.61	-63.94	53.22	-36.61	0.000%
14	52.03	-70.97	50.77	-52.03	70.97	-50.77	0.000%
15	52.03	-53.22	50.77	-52.03	53.22	-50.77	0.000%
16	36.99	-70.97	61.25	-36.99	70.97	-61.25	0.000%
17	36.99	-53.22	61.25	-36.99	53.22	-61.25	0.000%
18	0.26	-70.97	70.96	-0.26	70.97	-70.96	0.000%
19	0.26	-53.22	70.96	-0.26	53.22	-70.96	0.000%
20	-36.63	-70.97	61.03	36.63	70.97	-61.03	0.000%
21	-36.63	-53.22	61.03	36.63	53.22	-61.03	0.000%
22	-50.82	-70.97	49.74	50.82	70.97	-49.74	0.000%
23	-50.82	-53.22	49.74	50.82	53.22	-49.74	0.000%
24	-63.61	-70.97	36.45	63.61	70.97	-36.45	0.000%
25	-63.61	-53.22	36.45	63.61	53.22	-36.45	0.000%
26	-71.90	-70.97	0.11	71.90	70.97	-0.11	0.000%
27	-71.90	-53.22	0.11	71.90	53.22	-0.11	0.000%
28	-62.13	-70.97	-34.97	62.13	70.97	34.97	0.000%
29	-62.13	-53.22	-34.97	62.13	53.22	34.97	0.000%
30	-51.17	-70.97	-49.86	51.17	70.97	49.86	0.000%
31	-51.17	-53.22	-49.86	51.17	53.22	49.86	0.000%
32	-36.09	-70.97	-61.37	36.09	70.97	61.37	0.000%
33	-36.09	-53.22	-61.37	36.09	53.22	61.37	0.000%
34	0.00	-309.53	0.00	-0.00	309.53	-0.00	0.000%
35	-0.04	-309.53	-19.51	0.04	309.53	19.51	0.000%
36	9.73	-309.53	-16.74	-9.73	309.53	16.74	0.000%
37	13.82	-309.53	-13.64	-13.82	309.53	13.64	0.000%
38	16.89	-309.53	-9.57	-16.89	309.53	9.57	0.000%
39	19.52	-309.53	0.10	-19.52	309.53	-0.10	0.000%
40	17.05	-309.53	9.78	-17.05	309.53	-9.78	0.000%
41	13.93	-309.53	13.74	-13.93	309.53	-13.74	0.000%
42	9.89	-309.53	16.74	-9.89	309.53	-16.74	0.000%

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	43 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
43	0.03	-309.53	19.39	-0.03	309.53	-19.39	0.000%
44	-9.84	-309.53	16.71	9.84	309.53	-16.71	0.000%
45	-13.81	-309.53	13.64	13.81	309.53	-13.64	0.000%
46	-17.01	-309.53	9.76	17.01	309.53	-9.76	0.000%
47	-19.52	-309.53	0.01	19.52	309.53	-0.01	0.000%
48	-16.91	-309.53	-9.64	16.91	309.53	9.64	0.000%
49	-13.85	-309.53	-13.66	13.85	309.53	13.66	0.000%
50	-9.78	-309.53	-16.76	9.78	309.53	16.76	0.000%
51	-0.07	-59.14	-17.98	0.07	59.14	17.98	0.000%
52	8.83	-59.14	-15.14	-8.83	59.14	15.14	0.000%
53	12.60	-59.14	-12.27	-12.60	59.14	12.27	0.000%
54	15.33	-59.14	-8.52	-15.33	59.14	8.52	0.000%
55	17.76	-59.14	0.20	-17.76	59.14	-0.20	0.000%
56	15.80	-59.14	9.05	-15.80	59.14	-9.05	0.000%
57	12.86	-59.14	12.55	-12.86	59.14	-12.55	0.000%
58	9.14	-59.14	15.14	-9.14	59.14	-15.14	0.000%
59	0.06	-59.14	17.54	-0.06	59.14	-17.54	0.000%
60	-9.05	-59.14	15.08	9.05	59.14	-15.08	0.000%
61	-12.56	-59.14	12.29	12.56	59.14	-12.29	0.000%
62	-15.72	-59.14	9.01	15.72	59.14	-9.01	0.000%
63	-17.77	-59.14	0.03	17.77	59.14	-0.03	0.000%
64	-15.36	-59.14	-8.64	15.36	59.14	8.64	0.000%
65	-12.65	-59.14	-12.32	12.65	59.14	12.32	0.000%
66	-8.92	-59.14	-15.17	8.92	59.14	15.17	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000179
3	Yes	4	0.00000001	0.00000156
4	Yes	4	0.00000001	0.00000097
5	Yes	4	0.00000001	0.00000069
6	Yes	4	0.00000001	0.00000133
7	Yes	4	0.00000001	0.00000123
8	Yes	4	0.00000001	0.00000199
9	Yes	4	0.00000001	0.00000188
10	Yes	4	0.00000001	0.00000217
11	Yes	4	0.00000001	0.00000198
12	Yes	4	0.00000001	0.00000166
13	Yes	4	0.00000001	0.00000154
14	Yes	4	0.00000001	0.00000168
15	Yes	4	0.00000001	0.00000153
16	Yes	4	0.00000001	0.00000202
17	Yes	4	0.00000001	0.00000180
18	Yes	4	0.00000001	0.00000152
19	Yes	4	0.00000001	0.00000130
20	Yes	4	0.00000001	0.00000114
21	Yes	4	0.00000001	0.00000089
22	Yes	4	0.00000001	0.00000210
23	Yes	4	0.00000001	0.00000190
24	Yes	4	0.00000001	0.00000269
25	Yes	4	0.00000001	0.00000250
26	Yes	4	0.00000001	0.00000200
27	Yes	4	0.00000001	0.00000183

<i>tnxTower</i> <i>Centek Engineering</i> 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	44 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

28	Yes	4	0.00000001	0.00000097
29	Yes	4	0.00000001	0.00000080
30	Yes	4	0.00000001	0.00000146
31	Yes	4	0.00000001	0.00000127
32	Yes	4	0.00000001	0.00000196
33	Yes	4	0.00000001	0.00000176
34	Yes	4	0.00000001	0.00000856
35	Yes	4	0.00000001	0.00005288
36	Yes	4	0.00000001	0.00005178
37	Yes	4	0.00000001	0.00005169
38	Yes	4	0.00000001	0.00005102
39	Yes	4	0.00000001	0.00004855
40	Yes	4	0.00000001	0.00004641
41	Yes	4	0.00000001	0.00004617
42	Yes	4	0.00000001	0.00004662
43	Yes	4	0.00000001	0.00004843
44	Yes	4	0.00000001	0.00004968
45	Yes	4	0.00000001	0.00005056
46	Yes	4	0.00000001	0.00005164
47	Yes	4	0.00000001	0.00005411
48	Yes	4	0.00000001	0.00005544
49	Yes	4	0.00000001	0.00005525
50	Yes	4	0.00000001	0.00005451
51	Yes	4	0.00000001	0.00000001
52	Yes	4	0.00000001	0.00000001
53	Yes	4	0.00000001	0.00000001
54	Yes	4	0.00000001	0.00000001
55	Yes	4	0.00000001	0.00000001
56	Yes	4	0.00000001	0.00000001
57	Yes	4	0.00000001	0.00000001
58	Yes	4	0.00000001	0.00000001
59	Yes	4	0.00000001	0.00000001
60	Yes	4	0.00000001	0.00000001
61	Yes	4	0.00000001	0.00000001
62	Yes	4	0.00000001	0.00000001
63	Yes	4	0.00000001	0.00000001
64	Yes	4	0.00000001	0.00000001
65	Yes	4	0.00000001	0.00000001
66	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	197 - 187	6.559	56	0.3119	0.1612
T2	187 - 172	5.893	56	0.3112	0.1454
T3	172 - 152	4.888	56	0.3005	0.1095
T4	152 - 142	3.655	56	0.2600	0.0775
T5	142 - 122	3.111	56	0.2370	0.0626
T6	122 - 102	2.191	56	0.1819	0.0435
T7	102 - 82	1.500	56	0.1360	0.0310
T8	82 - 62	0.965	56	0.1040	0.0225
T9	62 - 42	0.560	56	0.0767	0.0162
T10	42 - 22	0.266	56	0.0492	0.0101
T11	22 - 2	0.083	56	0.0245	0.0050

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page 45 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date 12:26:28 07/27/22
	Client	T-Mobile	Designed by PPG

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load	Deflection	Tilt	Twist	Radius of Curvature
ft		Comb.	in	°	°	ft
196.26	Single Dipole	56	6.510	0.3119	0.1602	157655
196.00	PIROD 6'-8" Rigid Side Arm	56	6.493	0.3119	0.1598	157655
194.92	6'x4" Pipe Mount	56	6.421	0.3119	0.1583	157655
194.25	PA6-65AC	56	6.376	0.3119	0.1574	157655
192.75	9' x 3" Dia Omni	56	6.277	0.3119	0.1553	157655
190.25	OGT9-840	56	6.110	0.3117	0.1514	118751
186.50	Pirol 4' Side Mount Standoff (1)	56	5.859	0.3111	0.1444	111916
185.25	DB222-A	56	5.775	0.3108	0.1417	140334
184.00	SC479-HF1LDF	56	5.691	0.3103	0.1389	208305
183.00	Filter Box	56	5.624	0.3099	0.1365	350839
182.25	PD220	56	5.573	0.3096	0.1347	466208
181.50	BCD-87077	56	5.522	0.3092	0.1329	253486
181.25	PiROD 15' Rotatable Platform (Lattice)	56	5.506	0.3091	0.1322	220016
180.25	DB222-A	56	5.438	0.3085	0.1297	143976
175.25	12' x 3" Dia Omni	56	5.103	0.3044	0.1171	50514
174.25	10' x 3" Dia Omni	56	5.036	0.3033	0.1147	44741
173.75	ANT150D6-9	56	5.003	0.3027	0.1135	42465
172.25	Pirol 6' Side Mount Standoff (1)	56	4.904	0.3008	0.1100	37452
170.20	3' Sidearm	56	4.770	0.2979	0.1057	33678
162.00	LPA-80080-4CF	56	4.250	0.2825	0.0915	27791
150.00	7770.00	56	3.542	0.2555	0.0746	23023
140.00	APXVAARR24-43	56	3.009	0.2320	0.0600	21751
135.00	SRL110A	56	2.763	0.2185	0.0543	20911
134.00	PIROD 6' Rigid Side Arm w/ 3" STD mount pipe	56	2.715	0.2157	0.0533	20749
130.00	DB586-Y	56	2.531	0.2044	0.0496	20122
126.00	PIROD 6' Rigid Side Arm w/ 3" STD mount pipe	56	2.356	0.1930	0.0464	19537
125.00	DB586-Y	56	2.314	0.1902	0.0457	19422
120.67	DB212-1	56	2.139	0.1784	0.0426	19754
120.50	PIROD 6' Rigid Side Arm w/ 3" STD mount pipe	56	2.132	0.1779	0.0424	19805
117.50	DS2C03F36D-D	56	2.018	0.1702	0.0404	21092
109.25	DB205-L	56	1.728	0.1508	0.0351	26507
106.00	Ice Canopy	56	1.623	0.1439	0.0332	29483
102.25	PA6-65AC	56	1.507	0.1365	0.0311	33018
101.20	6'8"x4" Pipe Mount	56	1.476	0.1345	0.0306	33687
100.83	PIROD 6' Rigid Side Arm w/ 3" STD mount pipe	56	1.465	0.1338	0.0304	33871
94.00	DB224	56	1.270	0.1220	0.0272	35043
90.41	PD220	56	1.173	0.1163	0.0257	35420
85.00	2-ft Stand Off	56	1.037	0.1082	0.0236	36019
82.67	PIROD 6' Rigid Side Arm w/ 3" STD mount pipe	56	0.981	0.1049	0.0228	36403
79.50	PIROD 6' Rigid Side Arm w/ 3" STD mount pipe	56	0.908	0.1005	0.0217	37319
75.00	12' x 3" Dia Omni	56	0.810	0.0943	0.0202	39137
70.25	DB432-A	56	0.713	0.0879	0.0187	41295
17.00	1.2M	56	0.056	0.0184	0.0038	52578
15.00	2-ft Stand Off	56	0.046	0.0160	0.0033	60667

Maximum Tower Deflections - Design Wind

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	46 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	197 - 187	26.825	12	1.2848	0.6535
T2	187 - 172	24.084	12	1.2798	0.5899
T3	172 - 152	19.959	12	1.2325	0.4444
T4	152 - 142	14.913	12	1.0640	0.3143
T5	142 - 122	12.690	12	0.9696	0.2538
T6	122 - 102	8.931	12	0.7434	0.1764
T7	102 - 82	6.108	12	0.5550	0.1257
T8	82 - 62	3.931	12	0.4242	0.0914
T9	62 - 42	2.279	12	0.3130	0.0659
T10	42 - 22	1.080	12	0.2009	0.0410
T11	22 - 2	0.336	12	0.1000	0.0204

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
196.26	Single Dipole	12	26.623	1.2847	0.6495	42970
196.00	PIROD 6'-8" Rigid Side Arm	12	26.552	1.2846	0.6480	42970
194.92	6'x4" Pipe Mount	12	26.257	1.2844	0.6420	42970
194.25	PA6-65AC	12	26.074	1.2842	0.6383	42970
192.75	9' x 3" Dia Omni	12	25.664	1.2838	0.6296	42970
190.25	OGT9-840	12	24.979	1.2826	0.6139	32320
186.50	Pirod 4' Side Mount Standoff (1)	12	23.946	1.2792	0.5858	29322
185.25	DB222-A	12	23.601	1.2775	0.5750	35331
184.00	SC479-HF1LDF	12	23.255	1.2755	0.5635	50516
183.00	Filter Box	12	22.978	1.2736	0.5539	84057
182.25	PD220	12	22.770	1.2720	0.5465	105862
181.50	BCD-87077	12	22.562	1.2703	0.5390	62947
181.25	PiROD 15' Rotatable Platform (Lattice)	12	22.493	1.2697	0.5365	53643
180.25	DB222-A	12	22.216	1.2671	0.5263	33710
175.25	12' x 3" Dia Omni	12	20.841	1.2492	0.4752	11836
174.25	10' x 3" Dia Omni	12	20.568	1.2445	0.4653	10562
173.75	ANT150D6-9	12	20.432	1.2420	0.4605	10055
172.25	Pirod 6' Side Mount Standoff (1)	12	20.026	1.2339	0.4466	8925
170.20	3' Sidearm	12	19.477	1.2214	0.4290	8058
162.00	LPA-80080-4CF	12	17.346	1.1570	0.3715	6675
150.00	7770.00	12	14.451	1.0455	0.3025	5565
140.00	APXVAARR24-43	12	12.271	0.9488	0.2431	5320
135.00	SRL110A	12	11.266	0.8935	0.2200	5111
134.00	PIROD 6' Rigid Side Arm w/ 3" STD mount pipe	12	11.071	0.8820	0.2160	5070
130.00	DB586-Y	12	10.319	0.8354	0.2012	4913
126.00	PIROD 6' Rigid Side Arm w/ 3" STD mount pipe	12	9.605	0.7887	0.1883	4767
125.00	DB586-Y	12	9.433	0.7772	0.1852	4738
120.67	DB212-1	12	8.716	0.7288	0.1726	4817
120.50	PIROD 6' Rigid Side Arm w/ 3" STD mount pipe	12	8.689	0.7270	0.1722	4829
117.50	DS2C03F36D-D	12	8.222	0.6952	0.1638	5144
109.25	DB205-L	12	7.041	0.6157	0.1423	6468
106.00	Ice Canopy	12	6.612	0.5874	0.1346	7197
102.25	PA6-65AC	12	6.139	0.5570	0.1263	8064
101.20	6'8"x4" Pipe Mount	12	6.010	0.5489	0.1241	8229
100.83	PIROD 6' Rigid Side Arm w/ 3" STD mount pipe	12	5.966	0.5460	0.1233	8275

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	47 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
ft						
94.00	DB224	12	5.170	0.4976	0.1102	8576
90.41	PD220	12	4.779	0.4744	0.1041	8677
85.00	2-ft Stand Off	12	4.222	0.4416	0.0957	8837
82.67	PIROD 6' Rigid Side Arm w/ 3" STD mount pipe	12	3.995	0.4280	0.0923	8935
79.50	PIROD 6' Rigid Side Arm w/ 3" STD mount pipe	12	3.697	0.4100	0.0879	9160
75.00	12' x 3" Dia Omni	12	3.297	0.3848	0.0820	9599
70.25	DB432-A	12	2.902	0.3587	0.0761	10120
17.00	1.2M	12	0.225	0.0752	0.0154	12883
15.00	2-ft Stand Off	12	0.188	0.0652	0.0134	14865

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	197	Leg	A325N	0.6250	5	1.03	24.85	0.041 ✓	1	Bolt DS
T2	187	Leg	A325N	0.7500	5	5.38	35.78	0.150 ✓	1	Bolt DS
T3	172	Leg	A325N	1.0000	6	11.49	53.01	0.217 ✓	1	Bolt Tension
T4	152	Leg	A325N	1.0000	6	12.97	53.01	0.245 ✓	1	Bolt Tension
		Diagonal	A325N	1.0000	1	10.22	12.72	0.803 ✓	1	Member Bearing
T5	142	Leg	A325N	1.0000	6	22.09	53.01	0.417 ✓	1	Bolt Tension
		Diagonal	A325X	1.0000	1	12.16	14.26	0.853 ✓	1	Member Bearing
T6	122	Leg	A325N	1.0000	6	30.62	53.01	0.578 ✓	1	Bolt Tension
		Diagonal	A325N	1.0000	1	12.93	19.01	0.680 ✓	1	Member Bearing
T7	102	Leg	A325N	1.0000	6	39.03	53.01	0.736 ✓	1	Bolt Tension
		Diagonal	A325X	1.0000	1	12.73	19.01	0.670 ✓	1	Member Bearing
		Top Girt	A325N	1.0000	1	4.55	12.72	0.358 ✓	1	Member Bearing
T8	82	Leg	A325N	1.2500	6	46.77	82.83	0.565 ✓	1	Bolt Tension
		Diagonal	A325N	1.2500	1	13.31	26.64	0.500 ✓	1	Member Bearing
T9	62	Leg	A325N	1.2500	6	54.05	82.83	0.652 ✓	1	Bolt Tension
		Diagonal	A325X	1.2500	1	13.76	23.89	0.576 ✓	1	Member Bearing
T10	42	Leg	A325N	1.2500	6	60.97	82.83	0.736 ✓	1	Bolt Tension
		Diagonal	A325N	1.2500	1	14.68	26.64	0.551 ✓	1	Member Bearing
T11	22	Leg	A687	1.2500	6	67.36	96.64	0.697 ✓	1	Bolt Tension
		Diagonal	A325X	1.2500	1	15.67	23.89	0.656 ✓	1	Member Bearing

Compression Checks

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page 48 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date 12:26:28 07/27/22
	Client	T-Mobile	Designed by PPG

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	197 - 187	1 3/4	10.00	2.17	59.4 K=1.00	2.4053	-1.67	83.62	0.020
T2	187 - 172	2	15.00	2.28	54.7 K=1.00	3.1416	-26.81	113.63	0.236
T3	172 - 152	2 1/4	20.00	2.34	50.0 K=1.00	3.9761	-79.43	149.02	0.533
T4	152 - 142	Pirod 105245	10.02	10.02	37.8 K=1.00	5.3014	-87.15	214.86	0.406
T5	142 - 122	Pirod 105217	20.03	10.02	37.8 K=1.00	5.3014	-150.48	214.86	0.700
T6	122 - 102	Pirod 105218	20.03	10.02	32.4 K=1.00	7.2158	-206.60	300.68	0.687
T7	102 - 82	Pirod 105218 reinf. w/1" dia. S.R.	20.03	10.02	26.4 K=1.00	10.8915	-262.38	465.78	0.563
T8	82 - 62	Pirod 105219 reinf. w/1" dia. S.R.	20.03	10.02	24.4 K=1.00	13.1787	-313.29	567.86	0.552
T9	62 - 42	Pirod 105219 reinf. w/1" dia. S.R.	20.03	10.02	24.4 K=1.00	13.1787	-363.01	567.86	0.639
T10	42 - 22	Pirod 105220 reinf. w/1" dia. S.R.	20.03	10.02	24.3 K=1.00	14.7262	-410.68	634.59	0.647
T11	22 - 2	Pirod 105220 reinf. w/1" dia. S.R.	20.03	10.02	24.3 K=1.00	14.7262	-455.22	634.59	0.717

Leg Bending Design Data (Compression)

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{ux} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M _{uy} kip-ft	φM _{uy} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
T1	197 - 187	1 3/4	0.66	3.35	0.198	0.00	3.35	0.000
T2	187 - 172	2	1.51	5.00	0.301	0.00	5.00	0.000
T3	172 - 152	2 1/4	3.37	7.12	0.474	0.00	7.12	0.000
T4	152 - 142	Pirod 105245	5.65	62.39	0.091	1.49	72.04	0.021
T5	142 - 122	Pirod 105217	7.35	62.39	0.118	0.06	72.04	0.001
T6	122 - 102	Pirod 105218	8.34	87.49	0.095	-0.08	101.03	0.001
T7	102 - 82	Pirod 105218 reinf. w/1" dia. S.R.	7.69	136.08	0.056	-0.10	157.13	0.001
T8	82 - 62	Pirod 105219 reinf. w/1" dia. S.R.	6.41	166.32	0.039	-0.07	192.04	0.000
T9	62 - 42	Pirod 105219 reinf. w/1" dia. S.R.	7.48	166.32	0.045	-0.14	192.04	0.001
T10	42 - 22	Pirod 105220 reinf. w/1" dia. S.R.	6.53	186.17	0.035	-0.01	214.97	0.000
T11	22 - 2	Pirod 105220 reinf. w/1" dia. S.R.	5.97	186.17	0.032	-0.07	214.97	0.000

Leg Interaction Design Data (Compression)

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	49 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

Section No.	Elevation ft	Size	Ratio P_u	Ratio M_{ux}	Ratio M_{uy}	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	197 - 187	1 3/4	0.020	0.198	0.000	0.208	1.000	4.8.1 ✓
T2	187 - 172	2	0.236	0.301	0.000	0.477	1.000	4.8.1 ✓
T3	172 - 152	2 1/4	0.533	0.474	0.000	0.895	1.000	4.8.1 ✓
T4	152 - 142	Pirol 105245	0.406	0.091	0.021	0.517	1.000	4.8.1 ✓
T5	142 - 122	Pirol 105217	0.700	0.118	0.001	0.819	1.000	4.8.1 ✓
T6	122 - 102	Pirol 105218	0.687	0.095	0.001	0.783	1.000	4.8.1 ✓
T7	102 - 82	Pirol 105218 reinf. w/1" dia. S.R.	0.563	0.056	0.001	0.620	1.000	4.8.1 ✓
T8	82 - 62	Pirol 105219 reinf. w/1" dia. S.R.	0.552	0.039	0.000	0.591	1.000	4.8.1 ✓
T9	62 - 42	Pirol 105219 reinf. w/1" dia. S.R.	0.639	0.045	0.001	0.685	1.000	4.8.1 ✓
T10	42 - 22	Pirol 105220 reinf. w/1" dia. S.R.	0.647	0.035	0.000	0.682	1.000	4.8.1 ✓
T11	22 - 2	Pirol 105220 reinf. w/1" dia. S.R.	0.717	0.032	0.000	0.750	1.000	4.8.1 ✓

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n K	A in ²	V_u K	ϕV_n K	Stress Ratio
T4	152 - 142	0.5	1.47	120.0	238.57	0.1963	1.15	3.45	0.336
T5	142 - 122	0.5	1.47	120.0	238.57	0.1963	1.46	3.34	0.438
T6	122 - 102	0.5	1.46	119.0	324.71	0.1963	1.22	3.38	0.362
T7	102 - 82	0.5	1.44	117.4	490.12	0.1963	1.07	3.44	0.311
T8	82 - 62	0.625	1.43	93.3	593.04	0.3068	0.40	7.04	0.057
T9	62 - 42	0.625	1.43	93.3	593.04	0.3068	0.40	7.04	0.058
T10	42 - 22	0.625	1.42	92.9	662.68	0.3068	0.78	7.06	0.111
T11	22 - 2	0.625	1.42	92.9	662.68	0.3068	1.38	7.06	0.195

Diagonal Design Data (Compression)

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	50 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

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	197 - 187	7/8	4.99	2.42	119.3 K=0.90	0.6013	-1.65	9.55	0.173 ¹
T2	187 - 172	7/8	5.04	2.43	119.9 K=0.90	0.6013	-4.21	9.45	0.445 ¹
T3	172 - 152	1	5.48	2.65	114.6 K=0.90	0.7854	-6.23	13.51	0.461 ¹
T4	152 - 142	L2 1/2x2 1/2x3/16	11.42	5.02	121.8 K=1.00	0.9020	-10.88	13.38	0.813 ¹
T5	142 - 122	L3x3x3/16	12.50	5.67	115.6 K=1.01	1.0900	-12.58	18.13	0.694 ¹
T6	122 - 102	L3x3x1/4	13.80	6.37	129.1 K=1.00	1.4400	-13.59	19.52	0.696 ¹
T7	102 - 82	L3x3x1/4	15.24	7.12	144.4 K=1.00	1.4400	-13.03	15.60	0.835 ¹
T8	82 - 62	L3x3x5/16	16.80	7.89	160.8 K=1.00	1.7800	-13.65	15.55	0.878 ¹
T9	62 - 42	L3 1/2x3 1/2x1/4	18.45	8.73	150.9 K=1.00	1.6900	-14.19	16.76	0.846 ¹
T10	42 - 22	L3 1/2x3 1/2x5/16	20.16	9.59	166.8 K=1.00	2.0900	-15.09	16.96	0.889 ¹
T11	22 - 2	L4x4x1/4	21.92	10.48	158.2 K=1.00	1.9400	-16.33	17.52	0.932 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	197 - 187	L3x3x5/16	4.50	4.35	88.7 K=1.00	1.7800	-0.26	38.11	0.007 ¹
T2	187 - 172	1	4.50	4.33	85.3 K=0.41	0.7854	-0.73	20.77	0.035 ¹
T3	172 - 152	1	4.52	4.33	85.3 K=0.41	0.7854	-1.69	20.77	0.081 ¹
T7	102 - 82	L3x3x3/16	10.00	8.67	174.5 K=1.00	1.0900	-4.55	8.09	0.563 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	197 - 187	7/8	4.50	4.35	167.2	0.6013	-0.76	4.86	0.157 ¹

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	51 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
					K=0.70				
T2	187 - 172	1	4.50	4.33	85.3	0.7854	-1.72	20.77	0.083 ¹ ✓
					K=0.41				
T3	172 - 152	1	4.98	4.80	84.8	0.7854	-1.38	20.89	0.066 ¹ ✓
					K=0.37				

¹ P_u / φP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	197 - 187	1 3/4	10.00	2.17	59.4	1.7942	1.16	87.47	0.013 #
T2	187 - 172	2	15.00	2.28	54.7	2.1885	21.55	106.69	0.202 #
T3	172 - 152	2 1/4	20.00	2.34	50.0	3.9761	68.92	178.92	0.385
T4	152 - 142	Pirod 105245	10.02	10.02	37.8	5.3014	77.28	238.57	0.324
T5	142 - 122	Pirod 105217	20.03	10.02	37.8	5.3014	129.19	238.57	0.542
T6	122 - 102	Pirod 105218	20.03	10.02	32.4	7.2158	183.41	324.71	0.565
T7	102 - 82	Pirod 105218 reinf. w/1" dia. S.R.	20.03	10.02	26.4	10.8915	233.90	490.12	0.477
T8	82 - 62	Pirod 105219 reinf. w/1" dia. S.R.	20.03	10.02	24.4	13.1787	280.61	593.04	0.473
T9	62 - 42	Pirod 105219 reinf. w/1" dia. S.R.	20.03	10.02	24.4	13.1787	323.81	593.04	0.546
T10	42 - 22	Pirod 105220 reinf. w/1" dia. S.R.	20.03	10.02	24.3	14.7262	365.84	662.68	0.552
T11	22 - 2	Pirod 105220 reinf. w/1" dia. S.R.	20.03	10.02	24.3	14.7262	404.16	662.68	0.610

Based on net area of leg in section below

Leg Bending Design Data (Tension)

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{ux} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M _{uy} kip-ft	φM _{uy} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
T1	197 - 187	1 3/4	0.61	3.35	0.182	0.00	3.35	0.000
T2	187 - 172	2	1.41	5.00	0.282	0.00	5.00	0.000
T3	172 - 152	2 1/4	3.10	7.12	0.436	0.00	7.12	0.000
T4	152 - 142	Pirod 105245	-5.99	69.27	0.086	-0.66	79.99	0.008
T5	142 - 122	Pirod 105217	-6.65	69.27	0.096	1.42	79.99	0.018
T6	122 - 102	Pirod 105218	-7.23	94.48	0.076	-0.63	109.10	0.006
T7	102 - 82	Pirod 105218 reinf. w/1" dia. S.R.	-7.27	143.19	0.051	0.18	165.34	0.001
T8	82 - 62	Pirod 105219 reinf. w/1" dia. S.R.	-6.32	173.69	0.036	0.04	200.56	0.000

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	52 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{ux} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M_{uy} kip-ft	ϕM_{uy} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
T9	62 - 42	Pirod 105219 reinf. w/1" dia. S.R.	-7.24	173.69	0.042	0.25	200.56	0.001
T10	42 - 22	Pirod 105220 reinf. w/1" dia. S.R.	-6.29	194.41	0.032	0.07	224.49	0.000
T11	22 - 2	Pirod 105220 reinf. w/1" dia. S.R.	-6.48	194.41	0.033	0.06	224.49	0.000

Leg Interaction Design Data (Tension)

Section No.	Elevation ft	Size	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{ux}	Ratio M_{uy} ϕM_{uy}	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	197 - 187	1 3/4	0.013	0.182	0.000	0.189 #	1.000	4.8.1 ✓
T2	187 - 172	2	0.202	0.282	0.000	0.430 #	1.000	4.8.1 ✓
T3	172 - 152	2 1/4	0.385	0.436	0.000	0.730	1.000	4.8.1 ✓
T4	152 - 142	Pirod 105245	0.324	0.086	0.008	0.419	1.000	4.8.1 ✓
T5	142 - 122	Pirod 105217	0.542	0.096	0.018	0.655	1.000	4.8.1 ✓
T6	122 - 102	Pirod 105218	0.565	0.076	0.006	0.647	1.000	4.8.1 ✓
T7	102 - 82	Pirod 105218 reinf. w/1" dia. S.R.	0.477	0.051	0.001	0.529	1.000	4.8.1 ✓
T8	82 - 62	Pirod 105219 reinf. w/1" dia. S.R.	0.473	0.036	0.000	0.510	1.000	4.8.1 ✓
T9	62 - 42	Pirod 105219 reinf. w/1" dia. S.R.	0.546	0.042	0.001	0.589	1.000	4.8.1 ✓
T10	42 - 22	Pirod 105220 reinf. w/1" dia. S.R.	0.552	0.032	0.000	0.585	1.000	4.8.1 ✓
T11	22 - 2	Pirod 105220 reinf. w/1" dia. S.R.	0.610	0.033	0.000	0.643	1.000	4.8.1 ✓

Based on net area of leg in section below

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n K	A in^2	V_u K	ϕV_n K	Stress Ratio
T4	152 - 142	0.5	1.47	120.0	238.57	0.1963	1.15	3.45	0.336 ✓
T5	142 - 122	0.5	1.47	120.0	238.57	0.1963	1.46	3.34	0.438 ✓
T6	122 - 102	0.5	1.46	119.0	324.71	0.1963	1.22	3.38	0.362 ✓
T7	102 - 82	0.5	1.44	117.4	490.12	0.1963	1.07	3.44	0.311 ✓

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page 53 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date 12:26:28 07/27/22
	Client	T-Mobile	Designed by PPG

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n K	A in ²	V_u K	ϕV_n K	Stress Ratio
T8	82 - 62	0.625	1.43	93.3	593.04	0.3068	0.40	7.04	0.057
T9	62 - 42	0.625	1.43	93.3	593.04	0.3068	0.40	7.04	0.058
T10	42 - 22	0.625	1.42	92.9	662.68	0.3068	0.78	7.06	0.111
T11	22 - 2	0.625	1.42	92.9	662.68	0.3068	1.38	7.06	0.195

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	197 - 187	7/8	4.99	2.42	132.5	0.6013	1.63	27.06	0.060 ¹
T2	187 - 172	7/8	5.04	2.43	133.2	0.6013	4.13	27.06	0.153 ¹
T3	172 - 152	1	5.48	2.65	127.4	0.7854	6.14	35.34	0.174 ¹
T4	152 - 142	L2 1/2x2 1/2x3/16	11.42	5.02	80.1	0.9020	10.22	29.22	0.350 ¹
T5	142 - 122	L3x3x3/16	11.93	5.42	71.5	0.8791	12.16	42.85	0.284 ¹
T6	122 - 102	L3x3x1/4	13.80	6.37	84.3	1.1588	12.93	56.49	0.229 ¹
T7	102 - 82	L3x3x1/4	15.24	7.12	94.1	1.1588	12.73	56.49	0.225 ¹
T8	82 - 62	L3x3x5/16	16.80	7.89	105.3	1.7800	13.31	57.67	0.231 ¹
T9	62 - 42	L3 1/2x3 1/2x1/4	18.45	8.73	98.3	1.3463	13.76	65.63	0.210 ¹
T10	42 - 22	L3 1/2x3 1/2x5/16	20.16	9.59	108.8	2.0900	14.68	67.72	0.217 ¹
T11	22 - 2	L4x4x1/4	21.92	10.48	102.5	1.5963	15.67	77.82	0.201 ¹

¹ $P_u / \phi P_n$ controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in ²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	197 - 187	L3x3x5/16	4.50	4.35	56.7	1.7800	0.19	57.67	0.003 ¹
T2	187 - 172	1	4.50	4.33	208.0	0.7854	0.81	35.34	0.023 ¹

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page 54 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date 12:26:28 07/27/22
	Client	T-Mobile	Designed by PPG

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T3	172 - 152	1	4.52	4.33	207.7	0.7854	1.81	35.34	0.051 ¹
T7	102 - 82	L3x3x3/16	10.00	8.67	115.0	1.0900	4.55	35.32	0.129 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	197 - 187	7/8	4.50	4.35	238.9	0.6013	0.68	27.06	0.025 ¹
T2	187 - 172	1	4.50	4.33	208.0	0.7854	1.58	35.34	0.045 ¹
T3	172 - 152	1	4.98	4.80	230.3	0.7854	1.38	35.34	0.039 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	197 - 187	Leg	1 3/4	3	-1.67	83.62	20.8	Pass
T2	187 - 172	Leg	2	35	-26.81	113.63	47.7	Pass
T3	172 - 152	Leg	2 1/4	80	-79.43	149.02	89.5	Pass
T4	152 - 142	Leg	Pirol 105245	137	-87.15	214.86	51.7	Pass
T5	142 - 122	Leg	Pirol 105217	146	-150.48	214.86	81.9	Pass
T6	122 - 102	Leg	Pirol 105218	161	-206.60	300.68	78.3	Pass
T7	102 - 82	Leg	Pirol 105218 reinf. w/1" dia. S.R.	176	-262.38	465.78	62.0 73.6 (b)	Pass
T8	82 - 62	Leg	Pirol 105219 reinf. w/1" dia. S.R.	194	-313.29	567.86	59.1	Pass
T9	62 - 42	Leg	Pirol 105219 reinf. w/1" dia. S.R.	209	-363.01	567.86	68.5	Pass
T10	42 - 22	Leg	Pirol 105220 reinf. w/1" dia. S.R.	224	-410.68	634.59	68.2 73.6 (b)	Pass
T11	22 - 2	Leg	Pirol 105220 reinf. w/1" dia. S.R.	239	-455.22	634.59	75.0	Pass
T1	197 - 187	Diagonal	7/8	15	-1.65	9.55	17.3	Pass
T2	187 - 172	Diagonal	7/8	48	-4.21	9.45	44.5	Pass
T3	172 - 152	Diagonal	1	93	-6.23	13.51	46.1	Pass
T4	152 - 142	Diagonal	L2 1/2x2 1/2x3/16	144	-10.88	13.38	81.3	Pass
T5	142 - 122	Diagonal	L3x3x3/16	153	-12.58	18.13	69.4 85.3 (b)	Pass
T6	122 - 102	Diagonal	L3x3x1/4	168	-13.59	19.52	69.6	Pass
T7	102 - 82	Diagonal	L3x3x1/4	186	-13.03	15.60	83.5	Pass
T8	82 - 62	Diagonal	L3x3x5/16	201	-13.65	15.55	87.8	Pass

tnxTower Centek Engineering 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22022.17 CTNH544A	Page	55 of 55
	Project	7 Surdan Mountain Road, Sharon, CT	Date	12:26:28 07/27/22
	Client	T-Mobile	Designed by	PPG

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T9	62 - 42	Diagonal	L3 1/2x3 1/2x1/4	216	-14.19	16.76	84.6	Pass
T10	42 - 22	Diagonal	L3 1/2x3 1/2x5/16	231	-15.09	16.96	88.9	Pass
T11	22 - 2	Diagonal	L4x4x1/4	246	-16.33	17.52	93.2	Pass
T1	197 - 187	Top Girt	L3x3x5/16	6	-0.26	38.11	0.7	Pass
T2	187 - 172	Top Girt	1	38	-0.73	20.77	3.5	Pass
T3	172 - 152	Top Girt	1	83	-1.69	20.77	8.1	Pass
T7	102 - 82	Top Girt	L3x3x3/16	178	-4.55	8.09	56.3	Pass
T1	197 - 187	Bottom Girt	7/8	9	-0.76	4.86	15.7	Pass
T2	187 - 172	Bottom Girt	1	42	-1.72	20.77	8.3	Pass
T3	172 - 152	Bottom Girt	1	85	-1.38	20.89	6.6	Pass
Summary								
Leg (T3)							89.5	Pass
Diagonal (T11)							93.2	Pass
Top Girt (T7)							56.3	Pass
Bottom Girt (T1)							15.7	Pass
Bolt Checks							85.3	Pass
RATING =							93.2	Pass

Rock Anchor Foundation Analysis:

Input Data:

Max Pier Reactions:

Uplift = $Uplift := 414 \cdot kips$ *user input*
 Shear = $Shear := 47 \cdot kips$ *user input*
 Compression = $Axial := 468 \cdot kips$ *user input*

Structure:

Footing Width = $B_{ftg} := 10.0 \cdot ft$ *user input*
 Footing Length = $L_{ftg} := 10.0 \cdot ft$ *user input*
 Footing Thickness = $T_{ftg} := 3.25 \cdot ft$ *user input*
 Pier Length/Width = $L_{pier} := 4.0 \cdot ft$ *user input*
 Pier Height = $T_{pier} := 3.25 \cdot ft$ *user input*
 Pier Projection Above Grade = $P_p := 3.00 \cdot ft$ *user input*

Depths:

Depth to Bottom of Footing = $D_{ftg} := 3.5 \cdot ft$ *user input* (from grade line)
 Depth to Suitable Rock = $D_{rock} := 5.0 \cdot ft$ *user input* (from grade line)
 Depth to Suitable Earth = $D_{earth} := 1.0 \cdot ft$ *user input* (from grade line)
 Anchor Length = $L_{anchor} := 26.75 \cdot ft$ *user input* (from grade line)
 Depth to Top of Submerged Anchor = $D_{anchortop} := 2.50 \cdot ft$ *user input* (from grade line)
 Anchor Depth = $D_{anchor} := D_{anchortop} + L_{anchor}$ (from grade line)
 $D_{anchor} = 29.25 \cdot ft$

Subgrade Properties:

Internal Friction Angle = $\phi := 35 \cdot deg$ *user input*
 Unit Weight of Earth = $\gamma_{earth} := 120 \cdot \frac{lb}{ft^3}$ *user input*

(Existing sub-grade conditions utilized in the analysis of the existing foundation system were obtained from a geo-technical soils study prepared by Clarence Welti & Assoc., P.E., P.C; dated March 3, 1998.

Unit Weight of Rock = $\gamma_{rock} := 165 \cdot \frac{lb}{ft^3}$ *user input*

Unit Weight of Conc. = $\gamma_{conc} := 150 \cdot \frac{lb}{ft^3}$ *user input*

Ultimate Bearing = $Bearing := 20000 \cdot psf$ *user input*

Rock Anchor Properties:

Number of Anchors = $N_{anchor} := 4$ *user input*

Hole Diameter = $hole_d := 3.00 \cdot in$ *user input*

Allowable Bond Stress Between Rock and Grout = $\sigma_{bond} := 175 \cdot psi$ *user input*

Working bond Strength based on Weathered Rock/Sandstone

Grout Allowable Compressive Stress = $fc_g := 5000 \cdot psi$ *user input*

Anchor Spacing* (along length) = $S_{anchor} := 5.50 \cdot ft$ *user input*

Required Factor of Safety = $F_S := 1.0$ *user input*

Rock Anchor Ultimate Strength = $Fu_{anchor} := 150.0 \cdot ksi$ *user input*

Williams R71-11 1-3/8" dia. 150ksi

Rock Anchor Yield Strength = $Fy_{anchor} := 127.7 \cdot ksi$ *user input*

Per Recommendation of PTI For Prestressed Rock Anchors and Soil Anchors Section 6.6 Design Load Should not be more than 60% of Specified Minimum Tensile Strength.

Rock Anchor Diameter = $d_{ra} := 1.375 \cdot in$ *user input*

Rock Anchor Area per Group = $A_g := 1.58 \cdot in^2$ *user input*

Rock Anchor Ultimate Tensile Load = $T_u := 237 \cdot kips$

Rock Anchor Allowable Tension = $T_{all} := 0.60 \cdot T_u = 142.2 \cdot kips$

Rock Anchor Maximum Working Load to Yield = $T_y := 0.80 \cdot T_u = 189.6 \cdot kips$

Rock Anchor Shear Capacity = $Sh := 0.4 \cdot T_y = 75.84 \cdot kips$

Total Volume of Concrete = $V_{conc} := B_{ftg} \cdot L_{ftg} \cdot T_{ftg} + \frac{\pi \cdot L_{pier}^2}{4} \cdot T_{pier} = 2736.7 \cdot gal$

Weight of Pad = $W_{pad} := (B_{ftg} \cdot L_{ftg} \cdot T_{ftg}) \cdot \gamma_{conc} = 48.75 \cdot kips$

Weight of Pier = $W_{pier} := (L_{pier}^2 \cdot T_{pier}) \cdot \gamma_{conc} = 7.8 \cdot kips$

Total Weight of Concrete = $W_{conc} := W_{pad} + W_{pier} = 56.6 \cdot kips$

Rock Anchor Tension/Shear Check:

Actual Tension Force per Anchor = $T_a := \frac{Uplift - W_{conc}}{N_{anchor}} = 89.4 \text{ kips}$

Design Shear Force per Anchor = $S_a := \frac{Shear}{N_{anchor}} = 11.8 \text{ kips}$

Reduced Tension For Tension/Shear Combination = $T_{allr} := \left(1 - \left(\frac{S_a}{T_{all}} \right)^2 \right) \cdot T_{all} = 141.23 \text{ kips}$

Tension Check = $TensionCheck := \text{if } (T_{allr} \geq T_a, \text{"OK"}, \text{"IncreaseSize"}) = \text{"OK"}$

Shear Check = $ShearCheck := \text{if } (S_a \geq S_a, \text{"OK"}, \text{"IncreaseSize"}) = \text{"OK"}$

Provided Safety Factor = $\frac{T_{allr}}{T_a} = 1.58$

$SafetyFactor := \text{if } \left(\frac{T_{allr}}{T_a} \geq 1.0, \text{"OK"}, \text{"Overstressed"} \right)$

SafetyFactor = "OK"

Rock Anchor Req'd Development Length in Rock:

Minimum Free Stress Length Required = $F_{stressreqd} := 10.0 \cdot ft$ (Original Centek design free stress length)

Minimum Free Stress Length Provided = $F_{stressprov} := 10.0 \cdot ft$

Controlling Free Stress Length: $L_f := \text{if } (F_{stressprov} > F_{stressreqd}, F_{stressprov}, F_{stressreqd}) = 10 \text{ ft}$

Required Rock Anchor Proof Load (1.33x Design Load) = $T_p := T_a \cdot 1.33 = 118.9 \text{ kips}$

Provided Rock Anchor Proof Load (1.33x Design Load) = $T_{pp} := 40 \cdot kips \cdot 1.33 \cdot F_s = 53.2 \text{ kips}$ $T_{PLmax} := 0.80 \cdot T_u = 189.6 \text{ kips}$

Required Release Lock Off Load (1.10x Design Load) = $T_L := T_a \cdot 1.10 = 98.3 \text{ kips}$

Actual Release Lock Off Load (1.00x Design Load) = $T_{LL} := 40 \cdot kips \cdot 1.00 \cdot F_s = 40 \text{ kips}$ $T_{LLmax} := 0.70 \cdot T_u = 165.9 \text{ kips}$

Rock Anchor/Grout Bond Length: $L_d := \frac{\left(\frac{0.04}{in} \cdot T_{LL} \right)}{\sqrt{f_{c_g} \cdot psi}} = 1.886 \text{ ft}$

Required Rock/Grout Bond Length: $L_b := \frac{T_{LL}}{\pi \cdot hole_d \cdot \sigma_{bond}} = 2.02 \text{ ft}$

Note:
 Max Allowable Tensile Load = 60% of Ultimate Strength.
 Max Lock Off Load = 70% of Ultimate Strength.
 Max. Proof Load = 80% of Ultimate Strength.

Controlling Length: $L_a := \text{if}(L_b < L_d, L_d, L_b) = 2.021 \text{ ft}$

$$L_{bprov} := D_{anchor} - L_f - D_{anchortop} = 16.75 \text{ ft}$$

$$Bond_Length_Check := \text{if}\left(\frac{L_a}{L_{bprov}} \leq 1.00, \text{"OK"}, \text{"Increase Length"}\right)$$

$$Bond_Length_Check = \text{"OK"}$$

Calculated Uplift Resistance:

Intermediate Dimension:

Suitable Earth Height = $H := D_{rock} - D_{earth} = 4 \text{ ft}$

Suitable Rock Height = $Z := (D_{anchor} - D_{rock}) = 24.25 \text{ ft}$

Total Anchor Width = $W := S_{anchor} = 5.5 \text{ ft}$

Volumes:

Base Area 1 of Resisting Pyramid = $B_1 := W^2 = 30.25 \text{ ft}^2$

Base Area 2 of Resisting Pyramid = $B_2 := (\tan(\phi) \cdot (Z \cdot 0.5) \cdot 2 + W)^2 = 505.4 \text{ ft}^2$

Base Area 3 of Resisting Pyramid = $B_3 := (\tan(\phi) \cdot (Z \cdot 0.5 + H) \cdot 2 + W)^2 = 788.6 \text{ ft}^2$

Total Volume of Resisting Material = $V_{tot} := \frac{((H + (Z \cdot 0.5)) \cdot (B_1 + B_3 + \sqrt{B_1 \cdot B_3}))}{3} = 5231.4 \text{ ft}^3$

Volume of Rock = $V_{rock} := \frac{((Z \cdot 0.5) \cdot (B_1 + B_2 + \sqrt{B_1 \cdot B_2}))}{3} = 2664.4 \text{ ft}^3$

Volume of Earth = $V_{earth} := V_{tot} - V_{rock} - V_{conc} = 2201.1 \text{ ft}^3$

Resisting Forces:

Resisting Rock Force = $W_{rock} := V_{rock} \cdot \gamma_{rock} = 439.6 \text{ kips}$

Resisting Earth Force = $W_{earth} := V_{earth} \cdot \gamma_{earth} = 264.1 \text{ kips}$

Total Resisting Force = $W_{total} := 0.75 \cdot W_{rock} + 0.75 \cdot W_{earth} + 0.9 \cdot W_{conc} = 578.7 \text{ kips}$

Foundation Uplift Check:

Factor of Safety = $\frac{W_{total}}{Uplift} = 1.40$

$$Uplift_Check := \text{if}\left(\frac{W_{total}}{Uplift} \geq F_s, \text{"OK"}, \text{"Overstressed"}\right)$$

$$Uplift_Check = \text{"OK"}$$

Note: Rock Cone Taken At Half
 Suitable Rock Height - See
 Rock Volume Calculations.

Rock Bearing Capacity Check:

Bearing Force =

$$MaxBearing := \left(\frac{(Axial + W_{conc}) + (N_{anchor} \cdot T_{LL})}{B_{rig} \cdot L_{rig}} \right) = 6846 \text{ psf}$$

$$\frac{MaxBearing}{0.75 \cdot Bearing} = 0.46$$

$$Rock_Bearing_Check := \text{if} \left(\frac{MaxBearing}{0.75 \cdot Bearing} \leq 1.00, \text{"OK"}, \text{"Overstressed"} \right)$$

Rock_Bearing_Check = "OK"

Structural Analysis Report

Antenna Mount Analysis

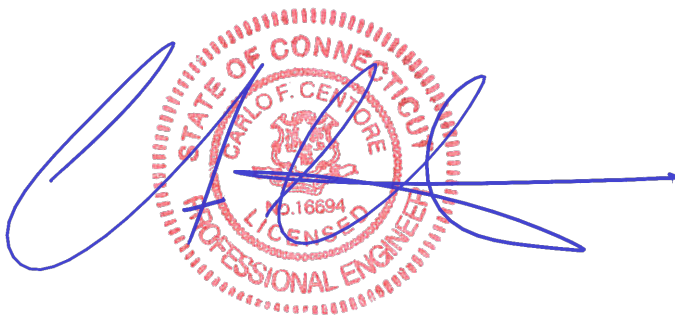
Proposed T-Mobile Antenna Upgrade

Site Ref: CTNH544A

*7 Surdan Mountain Road
Sharon, CT*

CEN TEK Project No. 22022.17

Date: July 25, 2022



Prepared for:
T-Mobile Northeast
35 Griffin Road
Bloomfield, CT 06002

Table of Contents

SECTION 1 - REPORT

- INTRODUCTION
- PRIMARY ASSUMPTIONS
- ANTENNA AND APPURTENANCE SUMMARY
- ANALYSIS
- DESIGN LOADING
- REFERENCE STANDARDS
- RESULTS
- CONCLUSION

SECTION 2 – CONDITIONS & SOFTWARE

- STANDARD ENGINEERING CONDITIONS
- GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

SECTION 3 – CALCULATIONS

- WIND LOAD CALCULATION
- RISA 3D – OUTPUT REPORT

SECTION 4 – REFERENCE MATERIAL (not included in this report)

- RF DATA SHEET

Introduction

This structural analysis report (SAR) was prepared to address the structural viability of installing T-Mobile's proposed antenna configuration on the existing sector mounts attached to the legs of a 195-ft self supporting, 3-legged, host lattice tower located at 7 Surdan Mountain Road, Sharon, Connecticut.

The antenna mount assembly consists of three pipe masts attached to the sector mount and two (2) stiffener arm reinforcements attached to the outer pipe masts. This structural mount analysis report verifies the adequacy of aforementioned antenna mount assembly only.

The antenna mount assembly geometry and member information were gathered through a site visit to investigate the current conditions, performed by Centek personnel on 06/27/2022, and a structural analysis report prepared by Centek Engineering, Job No. 19027.16, dated April 25, 2019. Proposed/existing antenna and appurtenance information was taken from an RF data sheet dated 05/26/2022 provided by T-Mobile.

Primary Assumptions Used in the Analysis

- The host structure's theoretical capacity not including any assessment of the condition of the host structure.
- The existing elevated steel antenna frames carry the horizontal and vertical loads due to the weight of equipment, and wind and transfers into host structure.
- Structure is in plumb condition.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.

Antenna and Equipment Summary

Location	Appurtenance / Equipment	Rad Center Elevation (AGL)	Mount Type
Per Sector	(1) Ericsson Air 6419 B41 Antenna (1) RFS APXVAARR24_43-U_NA20 Antenna (1) Ericsson 4460 B25+B66 Radio (1) 4449 B71+B12 Radio	140-ft	Sector Frames

Equipment – Indicates existing equipment to be relocated.

Equipment – Indicates proposed equipment to be installed.

Analysis

The antenna frames were analyzed using a comprehensive computer program titled Risa3D. The program examines the antenna mounts considering the worst-case code prescribed loading condition. The structures were considered to be loaded by concentric forces, and the model assumes that the members are subjected to bending, axial, and shear forces.

Design Loading

Loading was determined per the requirements of the 2006 ANSI TIA-222-G, 2015 International Building Code amended by the 2018 CSBC and ASCE 7-10 “Minimum Design Loads for Buildings and Other Structures”.

Basic Wind Speed:	$V_{asd} = 89$ mph	<i>Appendix N of the 2018 CT State Building Code</i>
Basic Wind Speed w/ Ice:	$V_i = 40$ mph	<i>Annex B of TIA-222-G</i>
Risk Category:	II	<i>2015 IBC; Table 1604.05</i>
Exposure Category:	Surface Roughness C	<i>ASCE 7-10; Section 26.7.2</i>
Dead Load	Equipment and framing self-weight	<i>Identified within SAR design calculations</i>

Reference Standards

2015 International Building Code:

1. AISC 360-10, *Specification for Structural Steel Buildings*.

Results

Member stresses and design reactions were calculated utilizing the structural analysis software RISA 3D.

The antenna mounting assembly and impacted host building components were found to be structurally acceptable as presented in the following table:

Sector	Component	Stress Ratio (percentage of capacity)	Result
All Sectors	Pipe 2.0 STD (Existing Antenna Mast)	61%	PASS
	Pipe 2.0 STD (Existing Sector Frame Horizontal)	55%	PASS
	Pipe 1.25 STD (Existing Sector Frame Stiff Arm)	55%	PASS

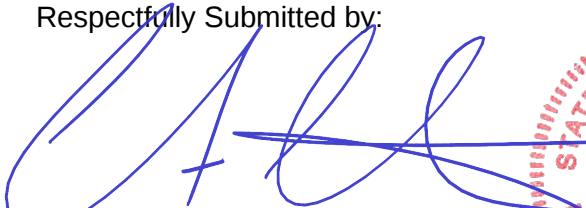
Conclusion

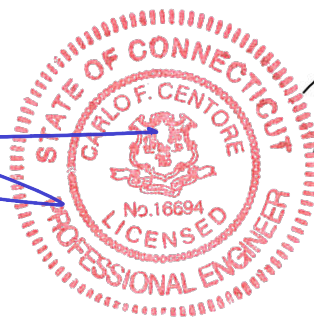
This analysis shows that the proposed subject antenna mount assemblies are **STRUCTURALLY ADEQUATE** to support the proposed T-Mobile antenna configuration.

The analysis is based, in part, on the information provided to this office by T-Mobile. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:


Carlo F. Centore, PE
Principle ~ Structural Engineer



Prepared by:


Pablo Perez-Gomez
Engineer

*Standard Conditions for Furnishing of
Professional Engineering Services on
Existing Structures*

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the “as new” condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

**Development of Design Heights, Exposure Coefficients,
and Velocity Pressures Per TIA-222-G**

Wind Speeds

Basic Wind Speed	$V := 89$	mph	(User Input - 2018 CSBC Appendix N)
Basic Wind Speed with Ice	$V_i := 40$	mph	(User Input per Annex B of TIA-222-G)

Input

Structure Type =	$Structure_Type := Lattice$	(User Input)
Structure Category =	$SC := II$	(User Input)
Exposure Category =	$Exp := C$	(User Input)
Structure Height =	$h := 195$	ft (User Input)
Height to Center of Antennas =	$z := 140$	ft (User Input)
Radial Ice Thickness =	$t_i := 1.00$	in (User Input per Annex B of TIA-222-G)
Radial Ice Density =	$Id := 56.00$	pcf (User Input)
Topographic Factor =	$K_{zt} := 1.0$	(User Input)
	$K_a := 1.0$	(User Input)
Gust Response Factor =	$G_H = 1.105$	(User Input)

Output

Wind Direction Probability Factor =	$K_d := \begin{cases} \text{if } Structure_Type = Pole \\ 0.95 \\ \text{if } Structure_Type = Lattice \\ 0.85 \end{cases} = 0.85$	(Per Table 2-2 of TIA-222-G)
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Importance Factors =

$$I_{Wind} := \begin{cases} \text{if } SC = 1 \\ 0.87 \\ \text{if } SC = 2 \\ 1.00 \\ \text{if } SC = 3 \\ 1.15 \end{cases} = 1$$

$$I_{Wind_w_Ice} := \begin{cases} \text{if } SC = 1 \\ 0 \\ \text{if } SC = 2 \\ 1.00 \\ \text{if } SC = 3 \\ 1.00 \end{cases} = 1$$

$$K_{iz} := \left(\frac{z}{33} \right)^{0.1} = 1.155$$

$$I_{ice} := \begin{cases} \text{if } SC = 1 \\ 0 \\ \text{if } SC = 2 \\ 1.00 \\ \text{if } SC = 3 \\ 1.25 \end{cases} = 1$$

Velocity Pressure Coefficient Antennas =

$$t_{iz} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 2.311$$

$$K_z := 2.01 \cdot \left(\left(\frac{z}{zg} \right) \right)^{\alpha} = 1.359$$

Velocity Pressure w/o Ice Antennas =

$$q_z := 0.00256 \cdot K_d \cdot K_z \cdot V^2 \cdot I_{Wind} = 23.42 \text{ psf}$$

Velocity Pressure with Ice Antennas =

$$q_{z_{ice}} := 0.00256 \cdot K_d \cdot K_z \cdot V_i^2 \cdot I_{Wind} = 4.73 \text{ psf}$$

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	RFS APXVAARR24_43-U-NA20
Antenna Shape =	Flat (User Input)
Antenna Height =	$L_{ant} := 95.9$ in (User Input)
Antenna Width =	$W_{ant} := 19.7$ in (User Input)
Antenna Thickness =	$T_{ant} := 8.7$ in (User Input)
Antenna Weight =	$WT_{ant} := 150$ lbs (User Input)
Number of Antennas =	$N_{ant} := 1$ (User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.9$
Antenna Force Coefficient =	$Ca_{ant} = 1.31$

Wind Load (without ice)

Surface Area for One Antenna = $SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 13.1$ sf

Total Antenna Wind Force Front = $F_{ant} := qz \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 443$ lbs

Surface Area for One Antenna = $SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 5.8$ sf

Total Antenna Wind Force Side = $F_{ant} := qz \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 196$ lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice = $SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 17$ sf

Total Antenna Wind Force w/ Ice Front = $F_{ant} := qz_{ice} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 116$ lbs

Surface Area for One Antenna w/ Ice = $SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 9.3$ sf

Total Antenna Wind Force w/ Ice Side = $F_{ant} := qz_{ice} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 63$ lbs

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 150$ lbs

Gravity Loads (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2 \cdot 10^4$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 2 \cdot 10^4$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 523$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 523$ lbs

Development of Wind & Ice Load on Antennas**Antenna Data:**

Antenna Model =	Ericsson AIR6419 B41	
Antenna Shape =	Flat	(User Input)
Antenna Height =	$L_{ant} := 33$	in (User Input)
Antenna Width =	$W_{ant} := 16$	in (User Input)
Antenna Thickness =	$T_{ant} := 9$	in (User Input)
Antenna Weight =	$WT_{ant} := 41$	lbs (User Input)
Number of Antennas =	$N_{ant} := 1$	(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 2.1$	

Antenna Force Coefficient = $Ca_{ant} = 1.2$

Wind Load (without ice)

Surface Area for One Antenna = $SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 3.7$ sf

Total Antenna Wind Force Front = $F_{ant} := qz \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 114$ lbs

Surface Area for One Antenna = $SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 2.1$ sf

Total Antenna Wind Force Side = $F_{ant} := qz \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 64$ lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice = $SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 5.4$ sf

Total Antenna Wind Force w/ Ice Front = $Fi_{ant} := qz_{ice} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 34$ lbs

Surface Area for One Antenna w/ Ice = $SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 3.6$ sf

Total Antenna Wind Force w/ Ice Side = $Fi_{ant} := qz_{ice} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 22$ lbs

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 41$ lbs

Gravity Loads (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 4752$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 5816$

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 188$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 188$ lbs

Development of Wind & Ice Load on RRUS's

RRUS Data:

RRUS Model =	Ericsson 4460 B25+b66	
RRUS Shape =	Flat	(User Input)
RRUS Height =	$L_{RRUS} := 19.6$	in (User Input)
RRUS Width =	$W_{RRUS} := 15.7$	in (User Input)
RRUS Thickness =	$T_{RRUS} := 12.1$	in (User Input)
RRUS Weight =	$WT_{RRUS} := 109$	lbs (User Input)
Number of RRUS's =	$N_{RRUS} := 1$	
RRUS Aspect Ratio =	$Ar_{RRUS} := \frac{L_{RRUS}}{W_{RRUS}} = 1.2$	
RRUS Force Coefficient =	$Ca_{RRUS} = 1.2$	

Wind Load (without ice)

Surface Area for One RRUS =	$SA_{RRUSF} := \frac{L_{RRUS} \cdot W_{RRUS}}{144} = 2.1$	sf
Total RRUS Wind Force =	$F_{RRUS} := qz \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUSF} = 66$	lbs

Surface Area for One RRUS =	$SA_{RRUS} := \frac{L_{RRUS} \cdot T_{RRUS}}{144} = 1.6$	sf
Total RRUS Wind Force =	$F_{RRUS} := qz \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUS} = 51$	lbs

Wind Load (with ice)

Surface Area for One RRUS w/ Ice =	$SA_{ICERRUSF} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (W_{RRUS} + 2 \cdot t_{iz})}{144} = 3.4$	sf
Total RRUS Wind Force w/ Ice =	$F_{iRRUS} := qz_{ice} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUSF} = 21$	lbs

Surface Area for One RRUS w/ Ice =	$SA_{ICERRUS} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz})}{144} = 2.8$	sf
Total RRUS Wind Force w/ Ice =	$F_{iRRUS} := qz_{ice} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUS} = 18$	lbs

Gravity Load (without ice)

Weight of All RRUSs =	$WT_{RRUS} \cdot N_{RRUS} = 109$	lbs
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Gravity Loads (ice only)

Volume of Each RRUS =	$V_{RRUS} := L_{RRUS} \cdot W_{RRUS} \cdot T_{RRUS} = 3723$	cu in
Volume of Ice on Each RRUS =	$V_{ice} := (L_{RRUS} + 2 \cdot t_{iz}) \cdot (W_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz}) - V_{RRUS} = 4508$	cu in
Weight of Ice on Each RRUS =	$W_{ICERRUS} := \frac{V_{ice}}{1728} \cdot Id = 146$	lbs
Weight of Ice on All RRUSs =	$W_{ICERRUS} \cdot N_{RRUS} = 146$	lbs

Development of Wind & Ice Load on RRUS's

RRUS Data:

RRUS Model =	Ericsson 4449 B71+B85	
RRUS Shape =	Flat	(User Input)
RRUS Height =	$L_{RRUS} := 17.9$	in (User Input)
RRUS Width =	$W_{RRUS} := 13.2$	in (User Input)
RRUS Thickness =	$T_{RRUS} := 9.5$	in (User Input)
RRUS Weight =	$WT_{RRUS} := 75$	lbs (User Input)
Number of RRUS's =	$N_{RRUS} := 1$	
RRUS Aspect Ratio =	$Ar_{RRUS} := \frac{L_{RRUS}}{W_{RRUS}} = 1.4$	
RRUS Force Coefficient =	$Ca_{RRUS} = 1.2$	

Wind Load (without ice)

Surface Area for One RRUS =	$SA_{RRUSF} := \frac{L_{RRUS} \cdot W_{RRUS}}{144} = 1.6$	sf
Total RRUS Wind Force =	$F_{RRUS} := qz \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUSF} = 51$	lbs
Surface Area for One RRUS =	$SA_{RRUS} := \frac{L_{RRUS} \cdot T_{RRUS}}{144} = 1.2$	sf
Total RRUS Wind Force =	$F_{RRUS} := qz \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUS} = 37$	lbs

Wind Load (with ice)

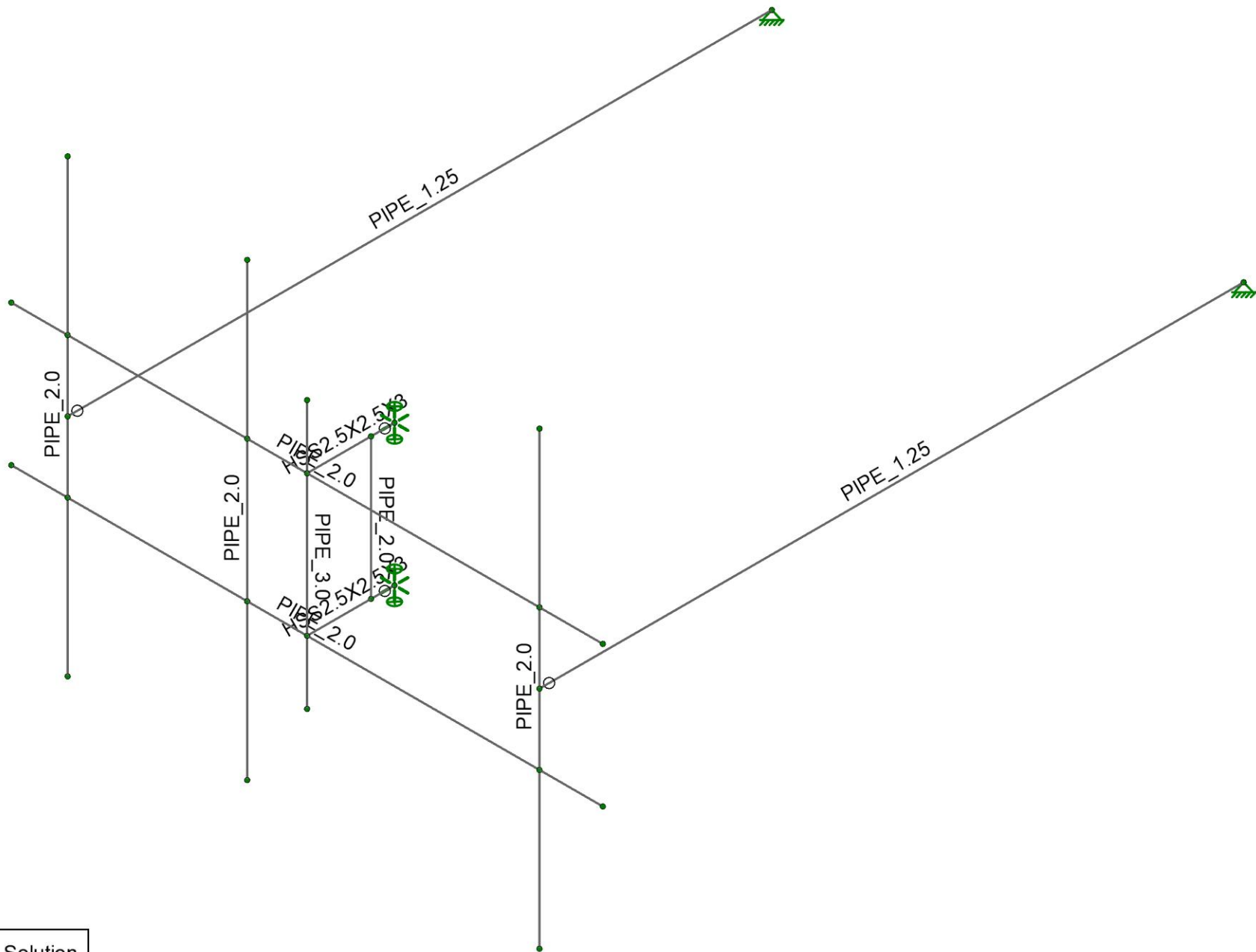
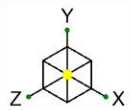
Surface Area for One RRUS w/ Ice =	$SA_{ICERRUSF} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (W_{RRUS} + 2 \cdot t_{iz})}{144} = 2.8$	sf
Total RRUS Wind Force w/ Ice =	$F_{iRRUS} := qz_{ice} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUSF} = 17$	lbs
Surface Area for One RRUS w/ Ice =	$SA_{ICERRUS} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz})}{144} = 2.2$	sf
Total RRUS Wind Force w/ Ice =	$F_{iRRUS} := qz_{ice} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUS} = 14$	lbs

Gravity Load (without ice)

Weight of All RRUSs =	$WT_{RRUS} \cdot N_{RRUS} = 75$	lbs
-----------------------	---------------------------------	-----

Gravity Loads (ice only)

Volume of Each RRUS =	$V_{RRUS} := L_{RRUS} \cdot W_{RRUS} \cdot T_{RRUS} = 2245$	cu in
Volume of Ice on Each RRUS =	$V_{ice} := (L_{RRUS} + 2 \cdot t_{iz}) \cdot (W_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz}) - V_{RRUS} = 3424$	cu in
Weight of Ice on Each RRUS =	$W_{ICERRUS} := \frac{V_{ice}}{1728} \cdot Id = 111$	lbs
Weight of Ice on All RRUSs =	$W_{ICERRUS} \cdot N_{RRUS} = 111$	lbs



Envelope Only Solution

Centek	CTNH544A_AMA	SK-3
PPG		Jul 25, 2022
22022.17		CTNH544A_AMA.R3D

Nodes

	Label	X [in]	Y [in]	Z [in]	Temp [deg F]	Detach From Dia...
1	N1	-16.500027	0	0.000003		
2	N3	-66.000027	0	-18.624997		
3	N4	-66.000027	0	0.000003		
4	N5	-66.000027	-30	-18.624997		
5	N6	-16.500027	-30	0.000003		
6	N8	-66.000027	-30	0.000003		
7	N9	-16.500027	33	0.000003		
8	N10	-16.500027	-63	0.000003		
9	N11	-78.750027	0	0.000003		
10	N12	-78.750027	-30	0.000003		
11	N13	-78.750027	33	0.000003		
12	N14	-78.750027	-63	0.000003		
13	N17	-16.500027	-15	0.000003		
14	N18	-66.000027	-43.5	0.000003		
15	N19	-66.000027	13.5	0.000003		
16	N20	-66.000027	0	-13.624997		
17	N21	-66.000027	-30	-13.624997		
18	N22	-3.000027	0	0.000003		
19	N23	-3.000027	-30	0.000003		
20	N24	-129.000027	0	0.000003		
21	N25	-129.000027	-30	0.000003		
22	N26	-16.499014	-15	-150		
23	N27	-117.000073	-15	0.000003		
24	N28	-117.000072	-15	-150		
25	N34	-117.000027	-63	0.000003		
26	N35	-117.000027	33	0.000003		
27	N36	-117.000027	-15	0.000003		
28	N37	-117.000027	0	0.000003		
29	N38	-117.000027	-30	0.000003		

Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	N3	Reaction	Reaction	Reaction		Reaction	
2	N5	Reaction	Reaction	Reaction		Reaction	
3	N20						
4	N21						
5	N26	Reaction	Reaction	Reaction			
6	N28	Reaction	Reaction	Reaction			

Hot Rolled Steel Properties

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

General Section Sets

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

Hot Rolled Member Properties

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp t...	Lcomp...	L-Torqu...	K y-y	K z-z	Cb	Function
1	M2	Antenn...	96			Lbyy						Lateral
2	M3	Antenn...	96			Lbyy						Lateral
3	M4	(E) Outr...	18.625	Segment	Segment	Segment	Segment	Segment				Lateral
4	M5	(E) Horz	126	Segment	Segment	Segment	Segment	Segment				Lateral
5	M6	(E) Outr...	18.625	Segment	Segment	Segment	Segment	Segment				Lateral
6	M7	(E) Horz	126	Segment	Segment	Segment	Segment	Segment				Lateral
7	M8	(E) Vert	57	Segment	Segment	Lbyy						Lateral
8	M9	(E) Outr...	30									Lateral
9	M10	(P) Stiff...	150			Lbyy						Lateral
10	M11	(P) Stiff...	150			Lbyy						Lateral
11	M13	Antenn...	96			Lbyy						Lateral

Member Point Loads (BLC 2 : Equipment Weight)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(in, %)]	Inactive [(k, k-ft), (in,...
1	M13	Y	-0.075	92.004	Active
2	M13	Y	-0.075	3.996	Active
3	M13	Y	-0.075	60	Active
4	M3	Y	-0.022	40	Active
5	M3	Y	-0.022	70	Active
6	M13	Y	-0.109	36	Active

Member Point Loads (BLC 3 : Ice Weight)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(in, %)]	Inactive [(k, k-ft), (in,...
1	M13	Y	-0.262	92	Active
2	M13	Y	-0.111	60	Active
3	M13	Y	-0.262	4	Active
4	M3	Y	-0.094	70	Active
5	M3	Y	-0.094	40	Active
6	M13	Y	-0.146	36	Active

Member Point Loads (BLC 4 : Wind w/ Ice X)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(in, %)]	Inactive [(k, k-ft), (in,...
1	M13	X	-0.015	60	Active
2	M13	X	-0.032	4	Active
3	M13	X	-0.032	92	Active
4	M3	X	-0.011	40	Active
5	M3	X	-0.011	70	Active
6	M13	X	-0.018	36	Active

Member Point Loads (BLC 5 : Wind X)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(in, %)]	Inactive [(k, k-ft), (in,...
1	M13	X	-0.098	92	Active
2	M13	X	-0.098	4	Active
3	M13	X	-0.037	60	Active
4	M3	X	-0.032	70	Active
5	M3	X	-0.032	40	Active
6	M13	X	-0.051	36	Active

Member Point Loads (BLC 6 : Wind w/ Ice Z)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(in, %)]	Inactive [(k, k-ft), (in,...
1	M13	Z	-0.058	92	Active
2	M13	Z	-0.017	60	Active
3	M13	Z	-0.058	4	Active
4	M3	Z	-0.017	40	Active
5	M3	Z	-0.017	70	Active
6	M13	Z	-0.021	36	Active

Member Point Loads (BLC 7 : Wind Z)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(in, %)]	Inactive [(k, k-ft), (in, ...)]
1	M13	Z	-0.051	60	Active
2	M13	Z	-0.222	92	Active
3	M13	Z	-0.222	4	Active
4	M3	Z	-0.057	40	Active
5	M3	Z	-0.057	70	Active
6	M13	Z	-0.066	36	Active

Member Distributed Loads (BLC 4 : Wind w/ Ice X)

	Member Label	Direction	Start Magnitud...	End Magnitude...	Start Location [...]	End Location [(...]	Inactive [(k, k-f...
1	M9	X	-0.0009	-0.0009	0	%100	Active
2	M10	X	-0.0009	-0.0009	0	%100	Active
3	M2	X	-0.0009	-0.0009	0	%100	Active
4	M6	X	-0.0009	-0.0009	0	%100	Active
5	M4	X	-0.0009	-0.0009	0	%100	Active
6	M8	X	-0.001	-0.001	0	%100	Active
7	M11	X	-0.0009	-0.0009	0	%100	Active
8	M13	X	-0.001	-0.001	0	%100	Active
9	M3	X	-0.001	-0.001	0	%100	Active

Member Distributed Loads (BLC 5 : Wind X)

	Member Label	Direction	Start Magnitud...	End Magnitude...	Start Location [...]	End Location [(...]	Inactive [(k, k-f...
1	M9	X	-0.005	-0.005	0	%100	Active
2	M10	X	-0.005	-0.005	0	%100	Active
3	M2	X	-0.005	-0.005	0	%100	Active
4	M4	X	-0.005	-0.005	0	%100	Active
5	M6	X	-0.005	-0.005	0	%100	Active
6	M8	X	-0.007	-0.007	0	%100	Active
7	M11	X	-0.005	-0.005	0	%100	Active
8	M13	X	-0.005	-0.005	0	%100	Active
9	M3	X	-0.005	-0.005	0	%100	Active

Member Distributed Loads (BLC 6 : Wind w/ Ice Z)

	Member Label	Direction	Start Magnitud...	End Magnitude...	Start Location [...]	End Location [(...]	Inactive [(k, k-f...
1	M5	Z	-0.0009	-0.0009	0	%100	Active
2	M7	Z	-0.0009	-0.0009	0	%100	Active
3	M9	Z	-0.0009	-0.0009	0	%100	Active
4	M2	Z	-0.0009	-0.0009	0	%100	Active
5	M8	Z	-0.001	-0.001	0	%100	Active
6	M3	Z	-0.001	-0.001	70	%100	Active
7	M3	Z	-0.001	-0.001	0	40	Active

Member Distributed Loads (BLC 7 : Wind Z)

	Member Label	Direction	Start Magnitud...	End Magnitude...	Start Location [...]	End Location [(...]	Inactive [(k, k-f...
1	M5	Z	-0.005	-0.005	0	%100	Active
2	M7	Z	-0.005	-0.005	0	%100	Active
3	M9	Z	-0.005	-0.005	0	%100	Active
4	M2	Z	-0.005	-0.005	0	%100	Active
5	M8	Z	-0.007	-0.007	0	%100	Active
6	M3	Z	-0.005	-0.005	0	40	Active
7	M3	Z	-0.005	-0.005	70	%100	Active

Basic Load Cases

	BLC Desc...	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed	Area(Me...	Surface(P...
1	Self Weight	None		-1						
2	Equipmen...	None					6			
3	Ice Weight	None					6			

Basic Load Cases (Continued)

	BLC Desc...	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed	Area(Me...	Surface(P...
4	Wind w/ I...	None					6	9		
5	Wind X	None					6	9		
6	Wind w/ I...	None					6	7		
7	Wind Z	None					6	7		

Load Combinations

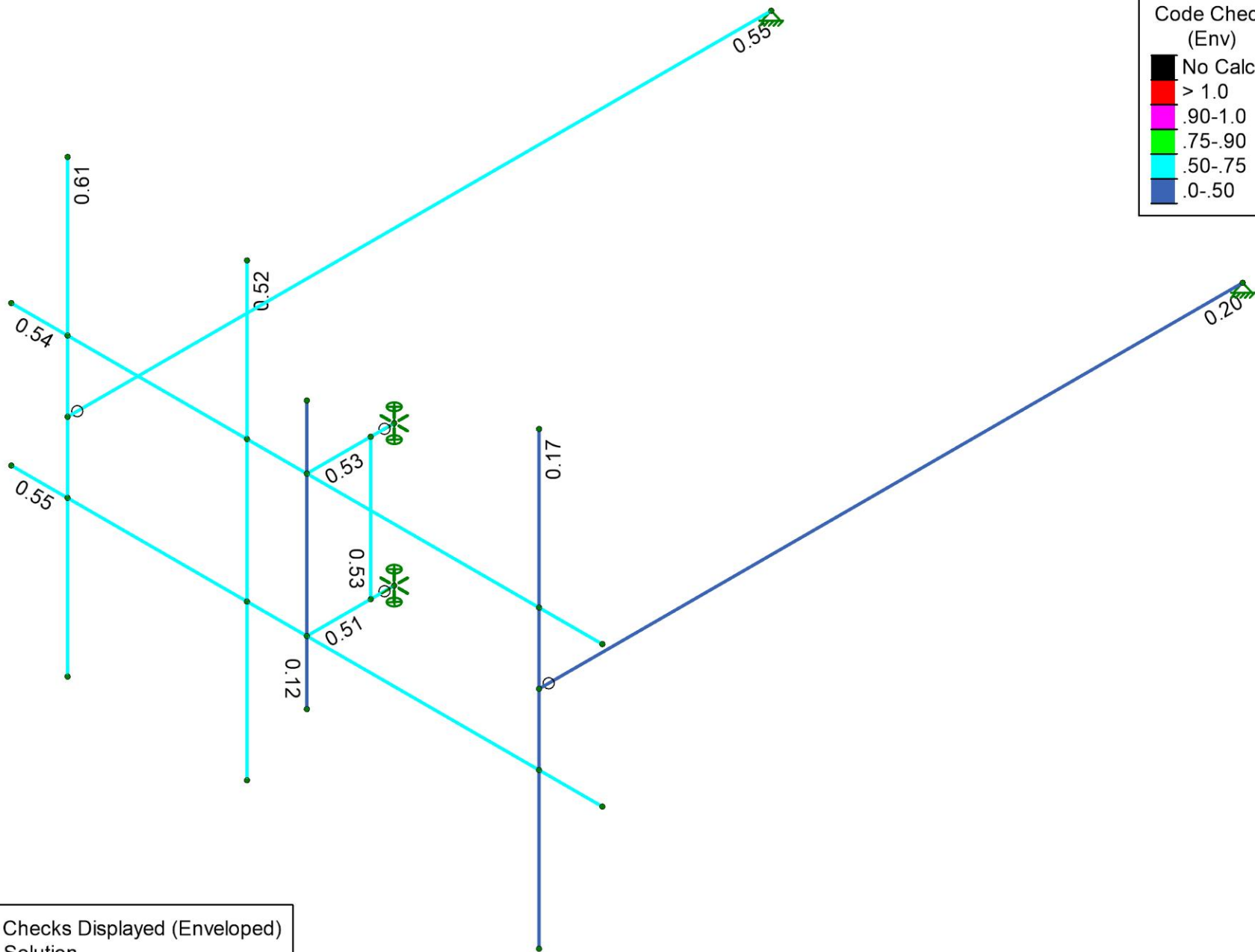
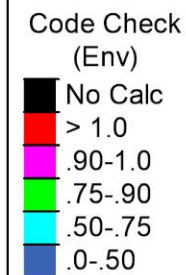
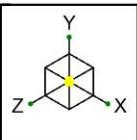
De...	So...	PD...	SR...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...
1	1.2...	Yes	Y	1	1.2	2	1.2	5	1.6					
2	0.9...	Yes	Y	1	0.9	2	0.9	5	1.6					
3	1.2...	Yes	Y	1	1.2	2	1.2	3	1	4	1			
4	1.2...	Yes	Y	1	1.2	2	1.2	7	1.6					
5	0.9...	Yes	Y	1	0.9	2	0.9	7	1.6					
6	1.2...	Yes	Y	1	1.2	2	1.2	3	1	6	1			

Node Reactions

	Node...		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N3	max	1.711	3	0.858	3	-0.173	5	0	6	0	6	0	6
2		min	0.461	5	0.236	5	-1.051	3	0	1	0	1	0	1
3	N5	max	-0.004	2	0.861	6	1.064	6	0	6	0	6	0	6
4		min	-1.629	6	0.279	2	0.343	2	0	1	0	1	0	1
5	N26	max	0.047	2	0.016	4	0.227	4	0	6	0	6	0	6
6		min	0	5	0.012	2	-0.173	2	0	1	0	1	0	1
7	N28	max	0.047	1	0.016	3	0.911	5	0	6	0	6	0	6
8		min	0	5	0.011	5	0.026	3	0	1	0	1	0	1
9	Totals:	max	1.027	1	1.743	6	1.411	4						
10		min	0	5	0.581	5	0	2						

Material Take-Off

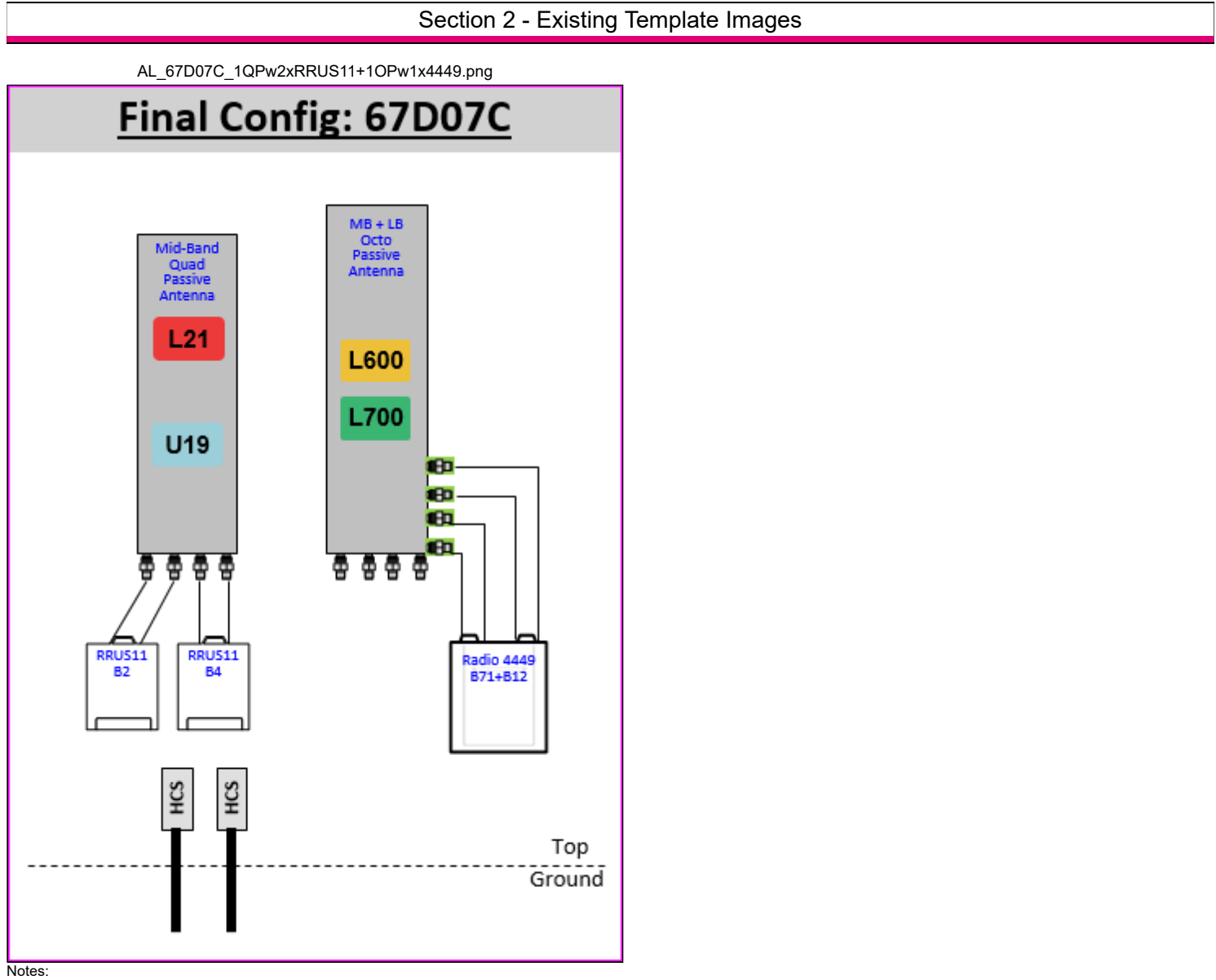
	Material	Size	Pieces	Length [in]	Weight [k]
1	Hot Rolled Steel				
2	A500 Gr.46	HSS2.5X2.5X3	2	37.2	0.016
3	A53 Grade B	PIPE 1.25	2	300	0.053
4	A53 Grade B	PIPE 2.0	6	570	0.165
5	A53 Grade B	PIPE 3.0	1	57	0.033
6	Total HR Steel		11	964.3	0.268



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

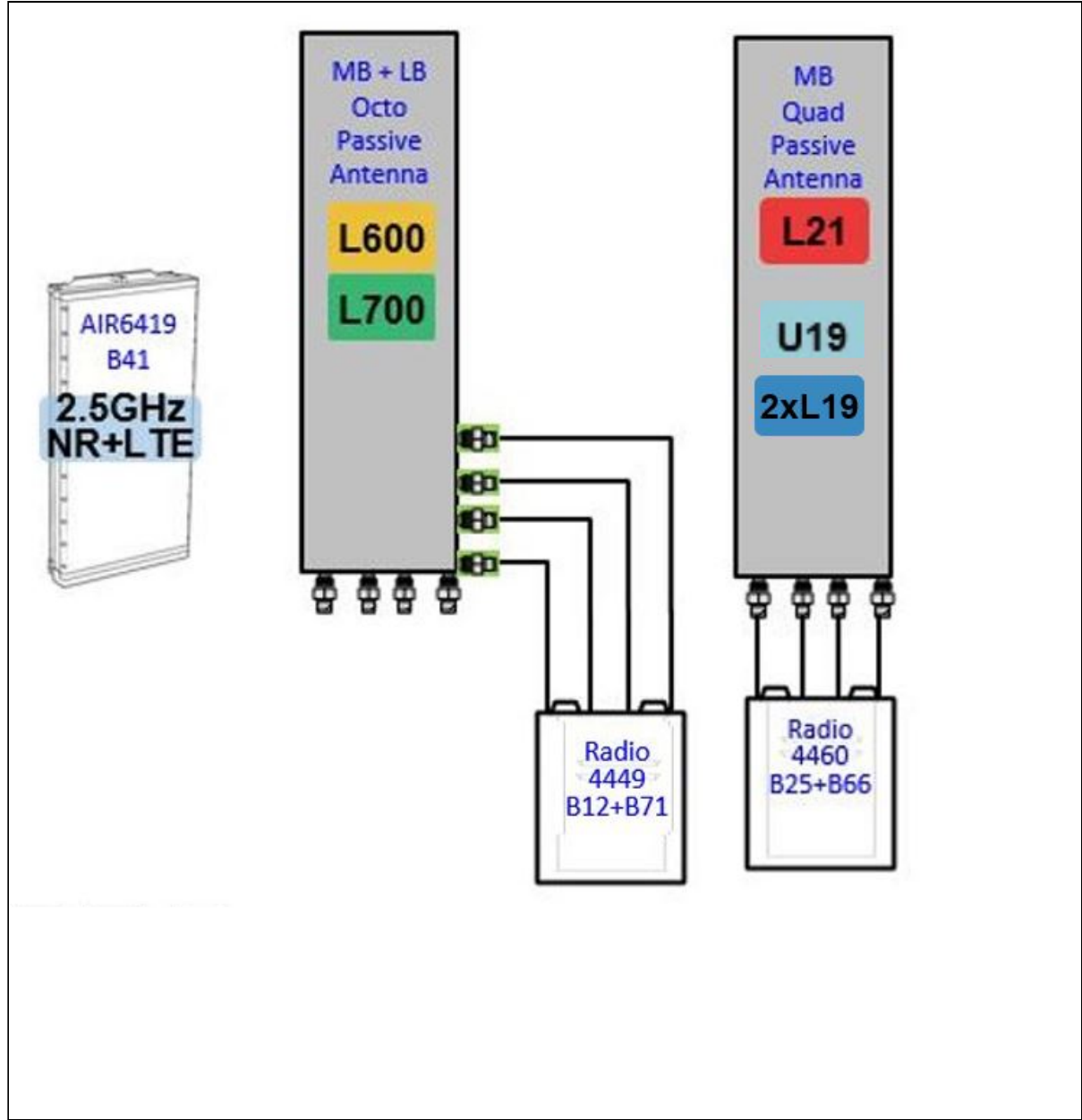
Centek	CTNH544A_AMA	SK-2
PPG		Jul 25, 2022
22022.17		CTNH544A_AMA.R3D

Section 1 - Site Information				
Site ID: CTNH544A Status: Final Version: 5 Project Type: Anchor Approved: 5/26/2022 3:5:39 PM Approved By: Pratik.Patil30@T-Mobile.com Last Modified: 5/26/2022 3:5:39 PM Last Modified By: Pratik.Patil30@T-Mobile.com Site Name: CTNH544A Site Class: Self Support Tower Site Type: Structure Non Building Plan Year: 2022 Market: CONNECTICUT CT Vendor: Ericsson Landlord: Litchfield County Dispatch Latitude: 41.86239351 Longitude: -73.40053287 Address: 7 Surdan Mountain Rd City, State: Sharon, CT Region: NORTHEAST				
RAN Template: 67D5D998E Indoor		AL Template: 67D5998E_1xAIR+1OP		
Sector Count: 3	Antenna Count: 6	Coax Line Count: 0	TMA Count: 0	RRU Count: 6



Section 3 - Proposed Template Images

67D5D998E_1AIR_1QP+1OP_U19.png



Notes:

Section 4 - Siteplan Images

----- This section is intentionally blank. -----

Section 5 - RAN Equipment			
Existing RAN Equipment			
Template: 67D07C 6102 MUAC			
Enclosure	1		
Enclosure Type	RBS 6201		
Baseband	DUW30 U1900 BB 6630 L700 L600 N600 BB 6630 L2100		
Hybrid Cable System	Ericsson 6x12 HCS *Select AWG & Length* Ericsson 6x12 HCS *Select Length & AWG* (x 2)		

Proposed RAN Equipment			
Template: 67D5D998E Indoor			
Enclosure	1	2	3
Enclosure Type	RBS 6201	Ericsson - 19 Inch Rack	Power 6230
Baseband	BB 6630 L700 L600 N600 BB 6630 L2100 L1900	RP 6651 L2500 N2500	
Hybrid Cable System	Ericsson 6x12 HCS *Select AWG & Length* Ericsson 6x12 HCS *Select Length & AWG* (x 2)	PSU 4813 vR4A (Kit)	Hybrid Trunk 6/24 4AWG 70m (x 2)
Transport System		CSR IXRe V2 (Gen2)	

RAN Scope of Work:

Remove and return all cabinet radios from existing base station cabinet.

U1900 will be decommissioned.

Add (1) 19 inch Rack

Add (1) iXRe Router to new 19 inch Rack.

Add (1) RP 6651 for L2500/ N2500 to new 19 inch Rack.

Add (1) PSU4813 Voltage Booster to new 19 inch Rack.

Add (1) P6230 cabinet.

Existing : (3) 6x12

Remove all Coax

Add (2) 6X24 HCS. Connect DC for the AIR6419 B41 to the PSU4813 Voltage Booster.

Section 6 - A&L Equipment

Existing Template: 67D07C_1QP+1OP
Proposed Template: 67D5998E_1xAIR+1OP

Sector 1 (Existing) view from behind						
Coverage Type	A - Outdoor Macro					
Antenna	1			2		
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)			RFS - APXVAARR24_43-U-NA20 (Octo)		
Azimuth	30			30		
M. Tilt	0			0		
Height	140			140		
Ports	P1	P2	P3	P4	P5	P6
Active Tech.	U1900	L2100	L700 L600 N600	L700 L600 N600		
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt	2	2	2	2		
Cables	Coax Jumper (x2)	Coax Jumper (x2)	Coax Jumper (x2)	Coax Jumper (x2)		
TMA's						
Diplexers / Combiners						
Radio	RRUS11 B2 (At Antenna)	RRUS11 B4 (At Antenna)	Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)		
Sector Equipment						
Unconnected Equipment:						
Scope of Work:						
Swap (1) LB Dual Antenna with (1) LB/MB Octa 8' Antenna. Swap (1) RRUS11 B12 with (1) Radio 4449 B71+B12.						
*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.						

Sector 1 (Proposed) view from behind						
Coverage Type	A - Outdoor Macro					
Antenna	1			2		
Antenna Model	AIR 6419 B41 (Active Antenna - Massive MIMO)			RFS - APXVAARR24_43-U-NA20 (Octo)		
Azimuth	30			30		
M. Tilt	0			0		
Height	140			140		
Ports	P1	P2	P3	P4	P5	P6
Active Tech.	N2500 L2500	N2500 L2500	L700 N600 L600	L700 N600 L600	L1900 L2100	L1900 L2100
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt	2	2	2	2	2	2
Cables	Fiber Jumper (x4)	SHARED Fiber Jumper (x4)	Coax Jumper (x2) Fiber Jumper (x2)	SHARED Fiber Jumper (x2) Coax Jumper (x2)	Coax Jumper (x2) Fiber Jumper (x2)	SHARED Fiber Jumper (x2) Coax Jumper (x2)
TMA's						
Diplexers / Combiners						
Radio			Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)	Radio 4460 B25+B66 (At Antenna)	SHARED Radio 4460 B25+B66 (At Antenna)
Sector Equipment						
Unconnected Equipment:						
Scope of Work:						
Replace APX16 and Radio RRUS11 B2 and RRUS11B4 with (1) AIR6419 for L2500/N2500 at Position 1. Add (1) radio 4460 for L2100, L1900 (Both carriers), and GSM to Position 2 at antenna near octo.						
*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.						

Sector 2 (Existing) view from behind						
Coverage Type	A - Outdoor Macro					
Antenna	1			2		
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)			RFS - APXVAARR24_43-U-NA20 (Octo)		
Azimuth	150			150		
M. Tilt	0			0		
Height	140			140		
Ports	P1	P2	P3	P4	P5	P6
Active Tech.	U1900	L2100	L700 L600 N600	L700 L600 N600		
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt	2	2	2	2		
Cables	Coax Jumper (x2)	Coax Jumper (x2)	Coax Jumper (x2)	Coax Jumper (x2)		
TMA's						
Diplexers / Combiners						
Radio	RRUS11 B2 (At Antenna)	RRUS11 B4 (At Antenna)	Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)		
Sector Equipment						
Unconnected Equipment:						
Scope of Work:						
Swap (1) LB Dual Antenna with (1) LB/MB Octa 8' Antenna. Swap (1) RRUS11 B12 with (1) Radio 4449 B71+B12.						
*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.						

Sector 2 (Proposed) view from behind						
Coverage Type	A - Outdoor Macro					
Antenna	1			2		
Antenna Model	AIR 6419 B41 (Active Antenna - Massive MIMO)			RFS - APXVAARR24_43-U-NA20 (Octo)		
Azimuth	150			150		
M. Tilt	0			0		
Height	140			140		
Ports	P1	P2	P3	P4	P5	P6
Active Tech.	N2500 L2500	N2500 L2500	L600 L700 N600	L600 L700 N600	L1900 L2100	L1900 L2100
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt	2	2	2	2	2	2
Cables	Fiber Jumper (x4)	SHARED Fiber Jumper (x4)	Coax Jumper (x2) Fiber Jumper (x2)	SHARED Fiber Jumper (x2) Coax Jumper (x2)	Coax Jumper (x2) Fiber Jumper (x2)	SHARED Fiber Jumper (x2) Coax Jumper (x2)
TMA's						
Diplexers / Combiners						
Radio			Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)	Radio 4460 B25+B66 (At Antenna)	SHARED Radio 4460 B25+B66 (At Antenna)
Sector Equipment						
Unconnected Equipment:						
Scope of Work:						
Replace APX16 and Radio RRUS11 B2 and RRUS11B4 with (1) AIR6419 for L2500/N2500 at Position 1. Add (1) radio 4460 for L2100, L1900 (Both carriers), and GSM to Position 2 at antenna near octo.						
*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.						

Sector 3 (Existing) view from behind						
Coverage Type	A - Outdoor Macro					
Antenna	1			2		
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)			RFS - APXVAARR24_43-U-NA20 (Octo)		
Azimuth	290			290		
M. Tilt	0			0		
Height	140			140		
Ports	P1	P2	P3	P4	P5	P6
Active Tech.	U1900	L2100	L700 L600 N600	L700 L600 N600		
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt	2	2	2	2		
Cables	Coax Jumper (x2)	Coax Jumper (x2)	Coax Jumper (x2)	Coax Jumper (x2)		
TMA's						
Diplexers / Combiners						
Radio	RRUS11 B2 (At Antenna)	RRUS11 B4 (At Antenna)	Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)		
Sector Equipment						
Unconnected Equipment:						
Scope of Work:						
Swap (1) LB Dual Antenna with (1) LB/MB Octa 8' Antenna. Swap (1) RRUS11 B12 with (1) Radio 4449 B71+B12.						
*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.						

Sector 3 (Proposed) view from behind						
Coverage Type	A - Outdoor Macro					
Antenna	1			2		
Antenna Model	AIR 6419 B41 (Active Antenna - Massive MIMO)			RFS - APXVAARR24_43-U-NA20 (Octo)		
Azimuth	290			290		
M. Tilt	0			0		
Height	140			140		
Ports	P1	P2	P3	P4	P5	P6
Active Tech.	N2500 L2500	N2500 L2500	N600 L700 L600	N600 L700 L600	L2100 L1900	L1900 L2100
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt	2	2	2	2	2	2
Cables	Fiber Jumper (x4)	SHARED Fiber Jumper (x4)	Coax Jumper (x2) Fiber Jumper (x2)	SHARED Fiber Jumper (x2) Coax Jumper (x2)	Coax Jumper (x2) Fiber Jumper (x2)	SHARED Fiber Jumper (x2) Coax Jumper (x2)
TMA's						
Diplexers / Combiners						
Radio			Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)	Radio 4460 B25+B66 (At Antenna)	SHARED Radio 4460 B25+B66 (At Antenna)
Sector Equipment						
Unconnected Equipment:						
Scope of Work:						
Replace APX16 and Radio RRUS11 B2 and RRUS11B4 with (1) AIR6419 for L2500/N2500 at Position 1. Add (1) radio 4460 for L2100, L1900 (Both carriers), and GSM to Position 2 at antenna near octo.						
*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.						

Section 7 - Power Systems Equipment	
Existing Power Systems Equipment	
----- This section is intentionally blank. -----	
Proposed Power Systems Equipment	
Enclosure	1
Enclosure Type	Power 6230



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RADIO FREQUENCY EMISSIONS ANALYSIS REPORT EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CTNH544A

7 Surdan Mountain Road
Sharon, Connecticut 06069

August 11, 2022

EBI Project Number: 6222004964

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	28.60%



August 11, 2022

T-Mobile

Attn: Jason Overbey, RF Manager

35 Griffin Road South

Bloomfield, Connecticut 06002

Emissions Analysis for Site: CTNH544A

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **7 Surdan Mountain Road in Sharon, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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



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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 7 Surdan Mountain Road in Sharon, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 1 LTE channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 40 Watts.
- 2) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.
- 3) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 40 Watts per Channel.
- 4) 1 LTE channel (PCS Band - 1900 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 160 Watts per Channel.
- 5) 1 LTE channel (AWS Band – 2100 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 160 Watts per Channel.
- 6) 1 LTE Traffic channel (LTE 1C and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 45 Watts.



- 7) I LTE Broadcast channel (LTE 1C and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 15 Watts.
- 8) I NR Traffic channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 90 Watts.
- 9) I NR Broadcast channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 30 Watts.
- 10) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 11) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 12) The antennas used in this modeling are the Ericsson AIR 6419 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s) in Sector A, the Ericsson AIR 6419 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s) in Sector B, the Ericsson AIR 6419 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 13) The antenna mounting height centerline of the proposed antennas is 140 feet above ground level (AGL).



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- 14) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 15) All calculations were done with respect to uncontrolled / general population threshold limits.



T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR 6419	Make / Model:	Ericsson AIR 6419	Make / Model:	Ericsson AIR 6419
Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz
Gain:	22.05 dBd / 15.55 dBd / 22.05 dBd / 15.55 dBd	Gain:	22.05 dBd / 15.55 dBd / 22.05 dBd / 15.55 dBd	Gain:	22.05 dBd / 15.55 dBd / 22.05 dBd / 15.55 dBd
Height (AGL):	140 feet	Height (AGL):	140 feet	Height (AGL):	140 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	180.00 Watts	Total TX Power (W):	180.00 Watts	Total TX Power (W):	180.00 Watts
ERP (W):	23,258.96	ERP (W):	23,258.96	ERP (W):	23,258.96
Antenna AI MPE %:	4.66%	Antenna BI MPE %:	4.66%	Antenna CI MPE %:	4.66%
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd
Height (AGL):	140 feet	Height (AGL):	140 feet	Height (AGL):	140 feet
Channel Count:	5	Channel Count:	5	Channel Count:	5
Total TX Power (W):	480.00 Watts	Total TX Power (W):	480.00 Watts	Total TX Power (W):	480.00 Watts
ERP (W):	16,012.82	ERP (W):	16,012.82	ERP (W):	16,012.82
Antenna A2 MPE %:	4.11%	Antenna B2 MPE %:	4.11%	Antenna C2 MPE %:	4.11%



Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	8.77%
Various Others	6.91%
AT&T	4.74%
Verizon	7.53%
Eversource	0.65%
Site Total MPE % :	28.60%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	8.77%
T-Mobile Sector B Total:	8.77%
T-Mobile Sector C Total:	8.77%
Site Total MPE % :	28.60%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile 2500 MHz LTE IC & 2C Traffic	1	7214.60	140.0	14.45	2500 MHz LTE IC & 2C Traffic	1000	1.44%
T-Mobile 2500 MHz LTE IC & 2C Broadcast	1	538.38	140.0	1.08	2500 MHz LTE IC & 2C Broadcast	1000	0.11%
T-Mobile 2500 MHz NR Traffic	1	14429.21	140.0	28.89	2500 MHz NR Traffic	1000	2.89%
T-Mobile 2500 MHz NR Broadcast	1	1076.77	140.0	2.16	2500 MHz NR Broadcast	1000	0.22%
T-Mobile 600 MHz LTE	1	788.97	140.0	1.58	600 MHz LTE	400	0.39%
T-Mobile 600 MHz NR	1	1577.94	140.0	3.16	600 MHz NR	400	0.79%
T-Mobile 700 MHz LTE	1	865.09	140.0	1.73	700 MHz LTE	467	0.37%
T-Mobile 1900 MHz LTE	1	5876.52	140.0	11.77	1900 MHz LTE	1000	1.18%
T-Mobile 2100 MHz LTE	1	6904.31	140.0	13.82	2100 MHz LTE	1000	1.38%
						Total:	8.77%

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.



Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

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

T-Mobile Sector	Power Density Value (%)
Sector A:	8.77%
Sector B:	8.77%
Sector C:	8.77%
T-Mobile Maximum MPE % (Sector A):	8.77%
Site Total:	28.60%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **28.60%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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