NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

September 1, 2022

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

RE: Notice of Exempt Modification
20 Barnabas Road, Newtown, CT 06470
Latitude: 41.42762905
Longitude: -73.34360000
T-Mobile Site#: CT11111A_ Anchor _L600_Radio Upgrade

Dear Ms. Bachman:
T-Mobile currently maintains six (6) antennas at the 150-foot level of the existing 180-foot lattice tower located at 20 Barnabas Road, Newtown, CT 06470. The tower and property are owned by Eversource. T-Mobile now intends to remove six (6) existing antenna and replace with six 6) new 600/700/1900/2100/2500 MHz antenna. The new antennas would be installed at the 150-foot level of the lattice tower. This modification includes B2, B5 hardware that is both 4G (LTE), and 5G capable.
T-Mobile Planned Modifications:
Remove:
(12) Coax

Remove and Replace:
(3) AIR21 KRC118023 Antenna (Remove) – (3) RFS APXVAALL24 600/700/1900/2100 MHz Antenna (Replace)
(3) Andrew LNX-6515DS Antenna (Remove) – (3) AIR6419 B41 2500 MHz Antenna (Replace)

Install New:
(3) RRU 4480 B71
(3) RRY 4460 B25
(3) Hybrid Line

Existing to Remain:
NONE

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This facility was approved by the Connecticut Siting Council Docket No. 144 on November 20, 1991. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Daniel Rosenthal, First Selectman and George Benson, Director of Planning as well as the property owner and the tower owner.

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

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

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

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

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

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

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

Sincerely,

Victoria Masse

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

Attachments:

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

cc: Daniel Rosenthal, First Selectman
Town of Newtown
3 Primrose Street
Newtown, CT 06470

George Benson, Director of Planning
Town of Newtown
3 Primrose Street
Newtown, CT 06470

Eversource – as property and tower owner

Exhibit A

Original Facility Approval

ORIGINAL

DOCKET NO. 144 - An application of the Connecticut Light and Power Company for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications tower in the Town of Newtown, Connecticut. The proposed prime site is north of Barnabas Road approximately 400 feet west of the intersection of Tunnel and Barnabas Roads. The proposed alternate site is located south of Barnabas Road approximately 800 feet west of the intersection of Tunnel and Barnabas Roads.

Connecticut

Siting

Council

November 20, 1991

DECISION AND ORDER

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility and its associated equipment at the proposed Newtown Area Work Center prime site including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by section 16-50k of the Connecticut General Statutes (CGS), be issued to the Connecticut Light and Power Company (CL&P) for the construction, operation, and maintenance of a telecommunications facility at the proposed Newtown Area Work Center prime site in Newtown, Connecticut.

The facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The self-supporting lattice tower shall be no taller than necessary to provide the proposed communications service and in no event shall the tower exceed a total height of 199 feet above ground level, with antennas and appurtenances.

2. The Certificate holder shall prepare a D&M plan for this site in compliance with sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies. The D&M plan shall include detailed plans of the tower, antenna placement, tower foundation, tower pedestal, and barriers to protect the tower from traffic.

3. The Certificate Holder shall comply with existing and future radio frequency (RF) standards promulgated by State or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facility granted herein shall be brought into compliance with such standards.

4. The Certificate Holder shall provide the Council a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels originally calculated and provided in the application.

5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

6. If the facility does not initially provide, or permanently ceases to provide telecommunications service following completion of construction, this Decision and Order shall be void, and the tower and all associated equipment shall be dismantled and removed or reapplication for any new use shall be made to the Council before any such new use is made.

7. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the effective date of this Decision and Order or within three years after all appeals to this Decision and Order have been resolved.

Pursuant to CGS section 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in the The Hartford Courant, the Newtown Bee, and the Danbury News-Times.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with section 16-50j-17 of the Regulations of State Agencies.

The parties and intervenors to this proceeding are:

PARTY	ITS REPRESENTATIVE
Northeast Utilities Service Company	Roger C. Zaklukiewicz Vice President Transmission and Distribution Northeast Utilities Service Company P.O. Box 270 Hartford, CT 06141-0270 Telephone (203) 634-5885 Philip M. Small Senior Counsel Northeast Utilities Service Company P.O. Box 270 Hartford, CT 06141-0270 Telephone (203) 665-3214

INTERVENOR	ITS REPRESENTATIVE
The Honorable Julia B. Wasserman State Representative 106th District State of Connecticut House of Representatives State Capitol Hartford, CT 06106	

smh/SMH

5629E

CERTIFICATION

The undersigned members of the Connecticut Siting Council (Council) hereby certify that they have heard this case, or read the record thereof, in Docket No. 144, an application of the Connecticut Light and Power Company for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility in the Town of Newtown, Connecticut, and voted as follows to approve the proposed prime site located north of Barnabas Road approximately 400 feet west of the intersection of Tunnel and Barnabas Roads:

Council Members	Vote Cast
Mortimer A. Gelston Chairman	YES
Commissioner Clifton A. Leonhardt Designee: Commissioner Richard G. Patterson	ABSTAIN
Commissioner Timothy R.E. Keeney Designee: Brian Emerick	YES
Harry E. Covey	YES
Daniel P. Lynch, Jr.	YES
Gloria Dibble Pond	YES
Paulann H. Sheets	YES
William H. Smith	YES
Colin C. Tait	YES

Dated at New Britain, Connecticut, November 20, 1991.

5643E-2

Exhibit B

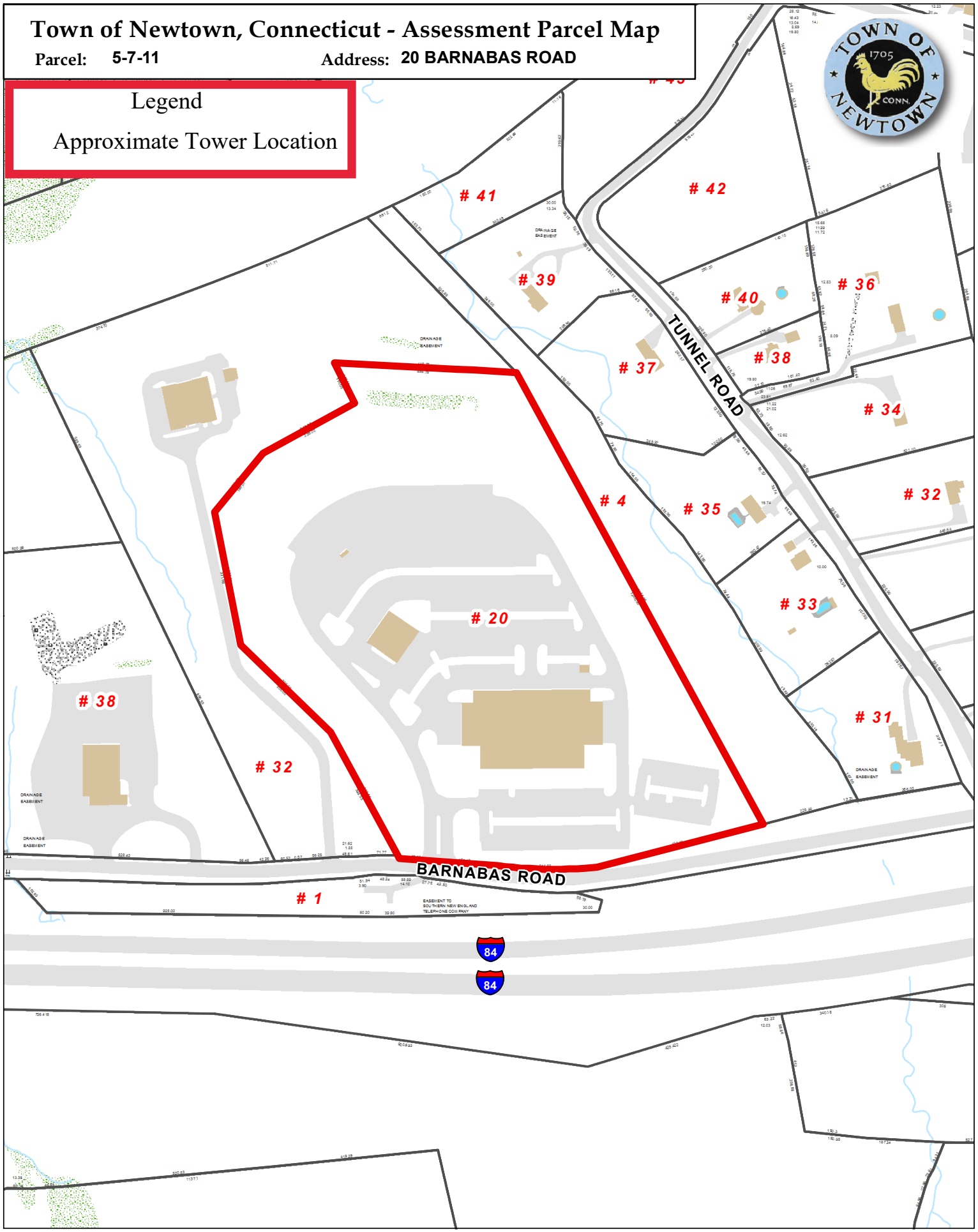
Property Card

Town of Newtown, Connecticut - Assessment Parcel Map

Parcel: 5-7-11 **Address:** 20 BARNABAS ROAD

Legend

Approximate Tower Location



Approximate Scale:

0 75 150 225 300 Feet

N W E S

Disclaimer: This map is for informational purposes only. All information is subject to verification by any user. The Town of Newtown and its mapping contractors assume no legal responsibility for the information contained herein.

Map Produced Oct 2016

Town of Newtown, CT

Property Listing Report

Map Block Lot **5-7-11-1** Account **00696701**

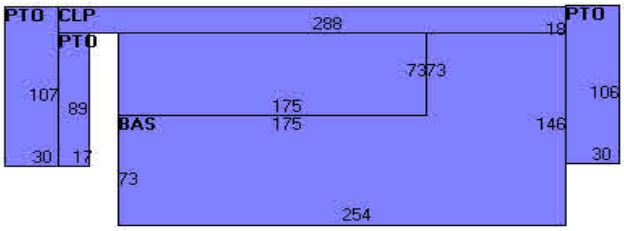
Property Information

Property Location	**20 BARNABAS ROAD**
Owner	**BARNABAS REALTY GROUP GEN PRTSHP**
Co-Owner	**C/O EVERSOURCE**
Mailing Address	**107 SELDEN STREET** **BERLIN CT 06037**
Land Use	**3400 OFFICE**
Land Class	**C**
Zoning Code	**M-1**
Census Tract	
Sub Lot	

Neighborhood	**C090**
Acreage	**23.9**
Utilities	**Well,Septic**
Lot Setting/Desc	
Survey Map	
TC Survey Numbers	

Photo

Sketch



Primary Construction Details

Year Built	**1991**
Stories	**1**
Building Style	**Office**
Building Use	**Comm/Ind**
Building Condition	**B**
Floors	**Carpet**
Total Rooms	

Bedrooms	
Full Bathrooms	
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	**Flat**
Roof Cover	**Rolled Compos**

Exterior Walls	**Concr/CinderBk**
Interior Walls	**Drywall/Sheet**
Heating Type	**Hot Water**
Heating Fuel	**Gas**
AC Type	**Central**
Gross Bldg Area	**71702**
Total Living Area	**40066**

Report Created On **3/16/2020**

Town of Newtown, CT

Property Listing Report | Map Block Lot **5-7-11-1** | Account **00696701**

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	4870910	3409640
Extras	13200	9240
Outbuildings	300050	210030
Land	2872800	2010960
Total	8056960	5639870

Outbuilding and Extra Items

Type	Description
Fence	1600 L.F.
Fence	1600 L.F.
Tower	1 UNITS
Tower	1 UNITS
Paving	340000 S.F.
Paving	340000 S.F.
Fence	19200 L.F.
Fence	19200 L.F.
Lights	12 UNITS
Lights	12 UNITS

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Canopy	17596	0
Canopy	17596	0
Patio - Concrete	11418	0
Patio - Concrete	11418	0
Open Porch	168	0
Open Porch	168	0
First Floor	40066	40066
First Floor	40066	40066
Loading Platform	2454	0
Total Area	71702	40066

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
BARNABAS REALTY GROUP GEN PRTSHP	423 /805	9/25/1990	0
BARNABAS REALTY GROUP GEN PRTSHP	423 /805	9/25/1990	0

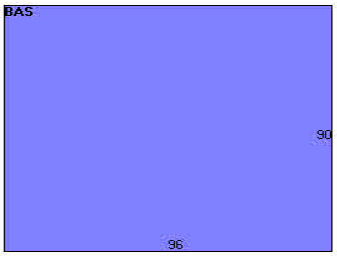
Report Created On **3/16/2020**

Town of Newtown, CT

Property Listing Report | Map Block Lot **5-7-11-1** | Account **00696701**

Photo

Sketch



Primary Construction Details

Year Built	1991
Stories	1
Building Style	Light Indust
Building Use	Comm/Ind
Building Condition	B
Floors	Concr-Finished
Total Rooms	
Bedrooms	
Bathrooms	
Bath Style	
Half Bath	

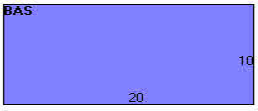
Kitchen Style	
Roof Style	Flat
Roof Cover	Rolled Compos
Exterior Walls	Pre-Fin Metal
Interior Walls	Drywall/Sheet
Heating Type	Susp. Space
Heating Fuel	Gas
AC Type	Central
Gross Bldg Area	
Total Living Area	

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	9216	9216
First Floor	9216	9216
Total Area		

Photo

Sketch



Primary Construction Details

Year Built	1995
Stories	1
Building Style	Light Indust
Building Use	Ind/Comm
Building Condition	B
Floors	Concr-Finished
Total Rooms	
Bedrooms	
Bathrooms	
Bath Style	
Half Bath	

Kitchen Style	
Roof Style	Flat
Roof Cover	Rolled Compos
Exterior Walls	Pre-cast Concr
Interior Walls	Minim/Masonry
Heating Type	Susp. Space
Heating Fuel	Gas
AC Type	Central
Gross Bldg Area	
Total Living Area	

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	200	200
First Floor	200	200
Total Area		

Report Created On **3/16/2020**

Exhibit C

Construction Drawings

SITE NAME: NEWTOWN/ I-84 X9
SITE ID: CT11111A
NEWTOWN SERVICE CENTER
20 BARNABAS RD
NEWTOWN, CT 06470

T-MOBILE A/L TEMPLATE (PROVIDED BY RFDS)
67E5998E_1xAIR+1OP

T-MOBILE RAN TEMPLATE (PROVIDED BY RFDS)
67E5D998E HYBRID

GENERAL NOTES

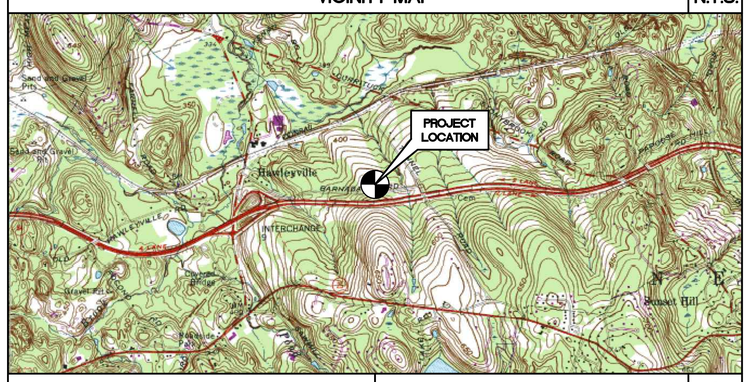
1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2015 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2018 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "G" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2017 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE, WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
5. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS AND ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
6. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS, AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
7. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
8. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
9. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL, AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
10. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
11. LOCATION OF EQUIPMENT AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS, SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
12. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
13. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
14. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
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 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.

SITE LOCATION MAP

N.T.S.

VICINITY MAP

N.T.S.



COORDINATES AND GROUND ELEVATION ARE REFERENCED FROM GOOGLE EARTH.

SITE COORDINATES: LATITUDE: 41°-25'-39" N
LONGITUDE: 73°-20'-36" W
GROUND ELEVATION: ±456' AMSL

NORTH

PROJECT SUMMARY

THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:

1. REMOVE EXISTING LNX-6513DS-A1M ANTENNA, TYP. (1) PER SECTOR; TOTAL OF (3)
2. REMOVE EXISTING ERICSSON: AIR21 B2A/B4P ANTENNA, TYP. (1) PER SECTOR; TOTAL OF (3)
3. REMOVE EXISTING TMA AND DIPLEXER
4. REMOVE EXISTING ANTENNA FRAMES
5. REMOVE EXISTING (12) COAX LINES
6. INSTALL (3) 6/24 4AWG HYBRID CABLES
7. INSTALL ERICSSON: AIR6419 B41 ANTENNA, TYP. (1) PER SECTOR; TOTAL OF (3)
8. INSTALL RFS: APXVAALL24_34-U-NA20 ANTENNA, TYP. (1) PER SECTOR; TOTAL OF (3)
9. INSTALL ERICSSON: RADIO 4460 B25+B66, TYP. (1) PER SECTOR; TOTAL OF (3)
10. INSTALL ERICSSON: RADIO 4480 B71+B85, TYP. (1) PER SECTOR; TOTAL OF (3)
11. INSTALL T-MOBILE 6160 POWER ENCLOSURE
12. INSTALL T-MOBILE B160 BATTERY CABINET
13. INSTALL NEW 100A CIRCUIT BREAKER TO SERVE NEW EQUIPMENT.
14. INSTALL NEW 200A PPC CABINET
15. INSTALL NEW 200A DISCONNECT MOUNTED TO NEW UNISTRUT FRAME
16. INSTALL SITE PRO: VFA12-HD ANTENNA FRAMES, TYP. (1) PER SECTOR; TOTAL OF (3)

PROJECT INFORMATION

SITE NAME:	NEWTOWN/ I-84 X9
SITE ID:	CT11111A
SITE ADDRESS:	NEWTOWN SERVICE CENTER. 20 BARNABAS RD NEWTOWN, CT 06470
APPLICANT:	T-MOBILE NORTHEAST, LLC 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT. 06002
CONTACT PERSON:	DEREK WAITE (PROJECT MANAGER) NORTHEAST SITE SOLUTIONS (231) 409-5439
ENGINEER OF RECORD:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD ROAD BRANFORD, CT. 06405 CARLO F. CENTORE, PE (203) 488-0580 EXT. 122
SITE COORDINATES:	LATITUDE: 41°-25'-39" N LONGITUDE: 73°-20'-36" W GROUND ELEVATION: ±456' AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

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C-2	ANTENNA PLANS AND ELEVATIONS	1
C-3	TYPICAL EQUIPMENT DETAILS	1
C-3	TYPICAL EQUIPMENT DETAILS	1
E-1	ELECTRICAL DIAGRAM AND CONDUIT ROUTING	1
E-2	TYPICAL ELECTRICAL DETAILS	1
E-3	ELECTRICAL SPECIFICATIONS	1

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
-	09/02/22	JLD	TJR	CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS
0	09/01/22	JLD	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

T-MOBILE NORTHEAST LLC

SITE NAME: NEWTOWN/ I-84
SITE ID: CT11111A
NEWTOWN SERVICE CENTER. 20 BARNABAS RD
NEWTOWN, CT 06470

DATE: 04/19/22
SCALE: AS NOTED
JOB NO. 22006.07

TITLE SHEET

T-1

SHEET NO. 1 OF 9

NOTES AND SPECIFICATIONS:

DESIGN BASIS:

GOVERNING CODE: 2015 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2018 CONNECTICUT STATE BUILDING CODE.

1. DESIGN CRITERIA:

- RISK CATEGORY II (BASED ON IBC TABLE 1604.5)
- NOMINAL DESIGN SPEED: 93 MPH (Vult)
  (EXPOSURE B/ IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-10).

SITE NOTES

1. THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
2. ACTIVE EXISTING UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY, PRIOR TO PROCEEDING, SHOULD ANY UNCOVERED EXISTING UTILITY PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
3. THE AREAS OF THE COMPOUND DISTURBED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.
4. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
5. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2015 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2018 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "G" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2017 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE, WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
5. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS AND ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
6. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS, AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
7. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
8. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
9. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL, AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
10. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
11. LOCATION OF EQUIPMENT AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS, SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
12. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
13. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
14. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
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 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.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)

   A. STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI)
   C. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
   D. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
   E. PIPE---ASTM A53 (FY = 35 KSI)
   F. CONNECTION BOLTS---ASTM A325-N
   G. U-BOLTS---ASTM A36
   H. ANCHOR RODS---ASTM F 1554
   I. WELDING ELECTRODE---ASTM E 70XX
2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
3. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
6. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
7. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
8. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
9. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".
10. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
11. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
12. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.
13. LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
14. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
15. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
16. FABRICATE BEAMS WITH MILL CAMBER UP.
17. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
18. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
19. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
20. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

ANTENNA/APPURTENANCE SCHEDULE

SECTOR	EXISTING/PROPOSED	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	(E/P) RRU (QTY)	(E/P) TMA (QTY)	(QTY) PROPOSED HYBRID/COAX
A1	PROPOSED	RFS (APXVAALL24_43-U_NA20)	95.9 x 24 x 8.5	149'	90°	(P) RADIO 4460 B25+B66 (1), (P) RADIO 4480 B71+B85 (1)		(3) 6/24 4AWG HYBRID CABLES
A2	PROPOSED	ERICSSON (AIR 6419 B41)	33 x 16 x 9	149'	90°			
B1	PROPOSED	RFS (APXVAALL24_43-U_NA20)	95.9 x 24 x 8.5	149'	190°	(P) RADIO 4460 B25+B66 (1), (P) RADIO 4480 B71+B85 (1)		
B2	PROPOSED	ERICSSON (AIR 6419 B41)	33 x 16 x 9	149'	190°			
C1	PROPOSED	RFS (APXVAALL24_43-U_NA20)	95.9 x 24 x 8.5	149'	290°	(P) RADIO 4460 B25+B66 (1), (P) RADIO 4480 B71+B85 (1)		
C2	PROPOSED	ERICSSON (AIR 6419 B41)	33 x 16 x 9	149'	290°			

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

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
1	09/02/22	JLD	TJR	CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS
0	09/01/22	JLD	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

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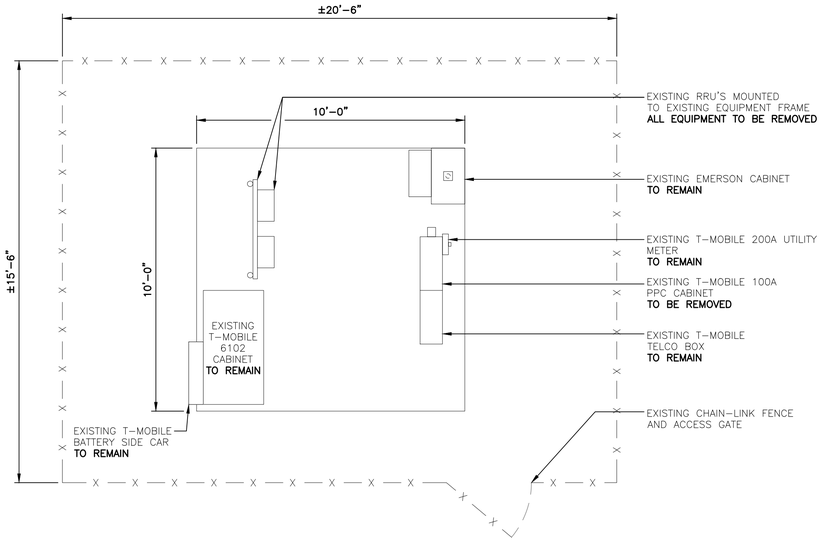
SITE NAME: NEWTOWN/ I-84
SITE ID: CT11111A
NEWTOWN SERVICE CENTER 20 BARNABAS RD
NEWTOWN, CT 06470

DATE: 04/19/22
SCALE: AS NOTED
JOB NO. 22006.07

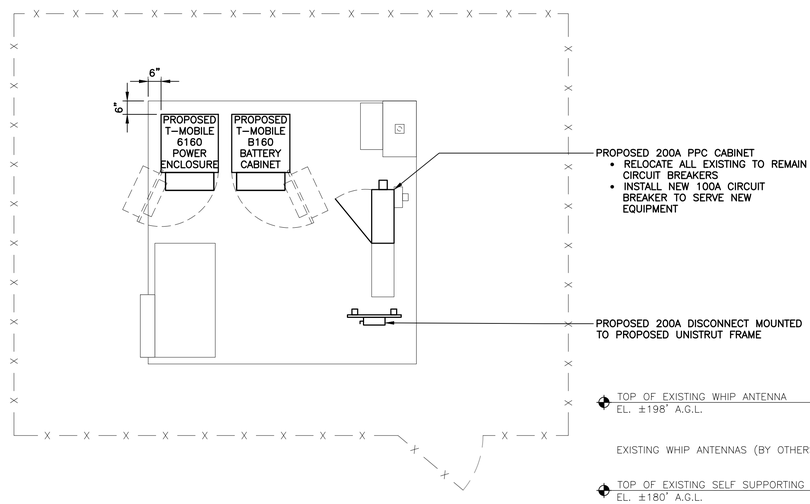
NOTES AND SPECIFICATIONS, ANT. SCHEDULE

N-1

SHEET NO. 2 OF 9



2 C-1 **EQUIPMENT PLAN - EXISTING**
SCALE: 3/8" = 1'
TRUE NORTH



3 C-1 **EQUIPMENT PLAN - PROPOSED**
SCALE: 3/8" = 1'
TRUE NORTH

ANTENNA MOUNTS

A STRUCTURAL ANALYSIS OF THE ANTENNA MOUNTS WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING..

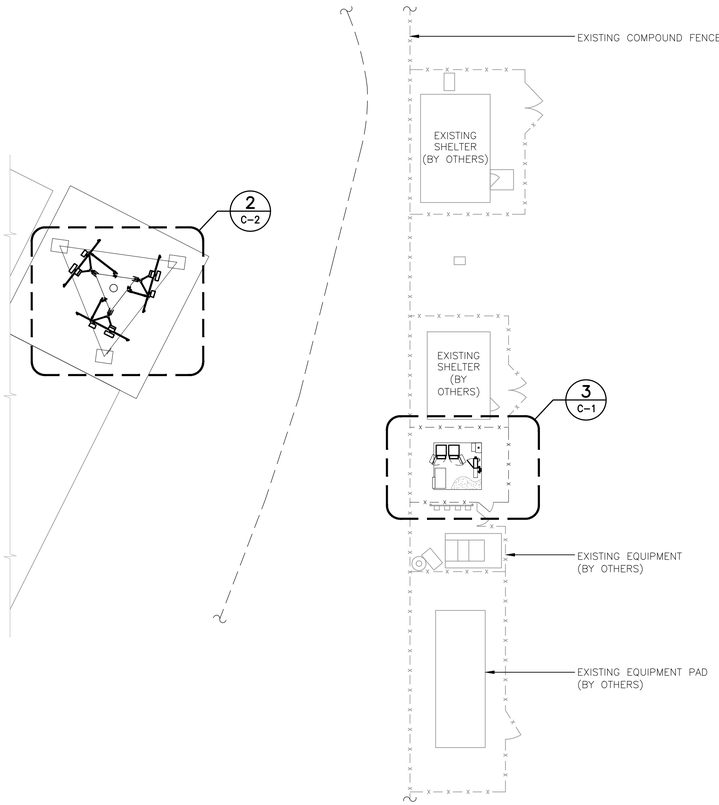
REFER TO THE ANTENNA MOUNT ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 22006.07) DATED 04/13/22 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

TOWER AND TOWER FOUNDATION

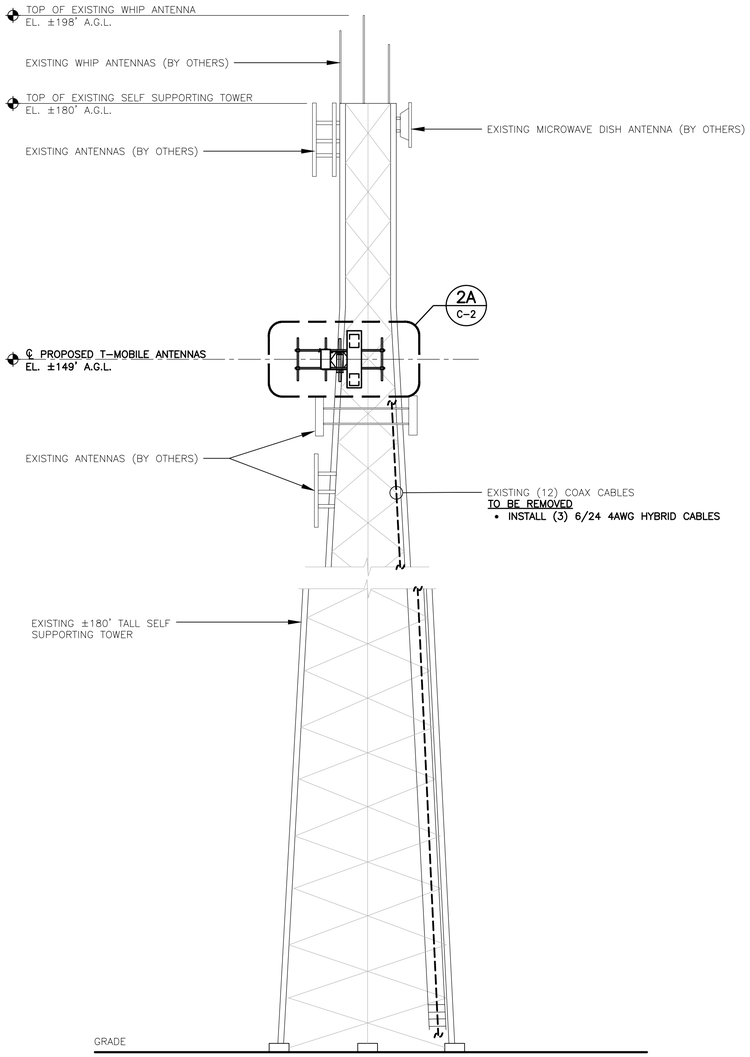
A STRUCTURAL ANALYSIS OF THE TOWER AND TOWER FOUNDATION WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING.

REFER TO THE STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 22006.07) DATED 04/13/22 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

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.



1 C-1 **COMPOUND PLAN - PROPOSED**
SCALE: 1" = 15'
TRUE NORTH



4 C-1 **TOWER ELEVATION - PROPOSED**
SCALE: 1" = 8'

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
-	09/02/22	JLD	TJR	CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS
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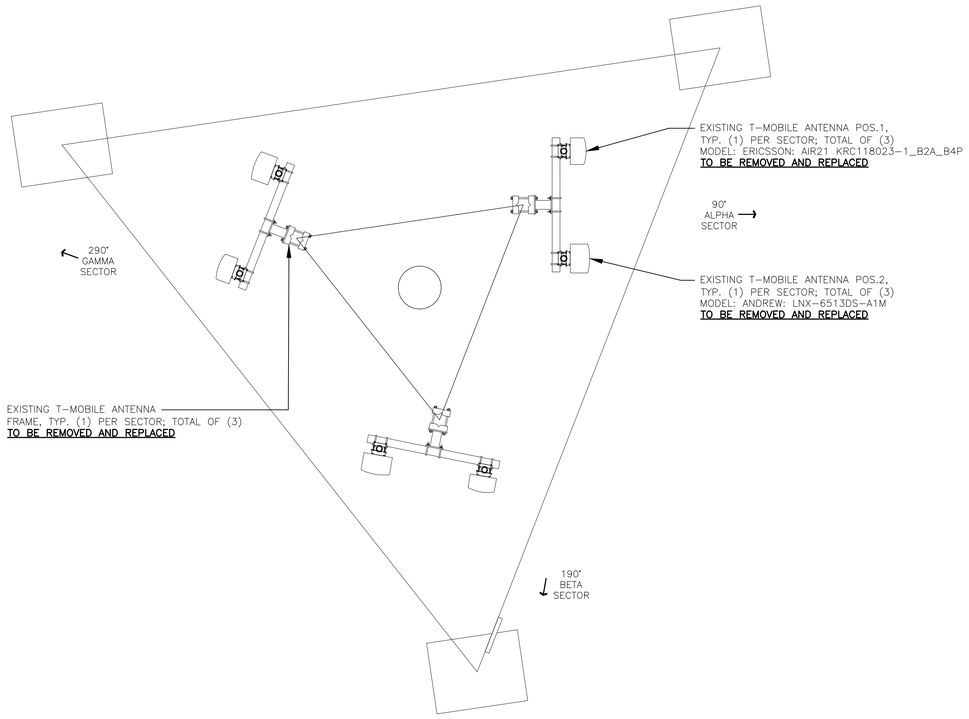
NEWTOWN, CT 06470

DATE:	04/19/22
SCALE:	AS NOTED
JOB NO.	22006.07

COMPOUND PLAN, EQUIPMENT PLANS, AND ELEVATION

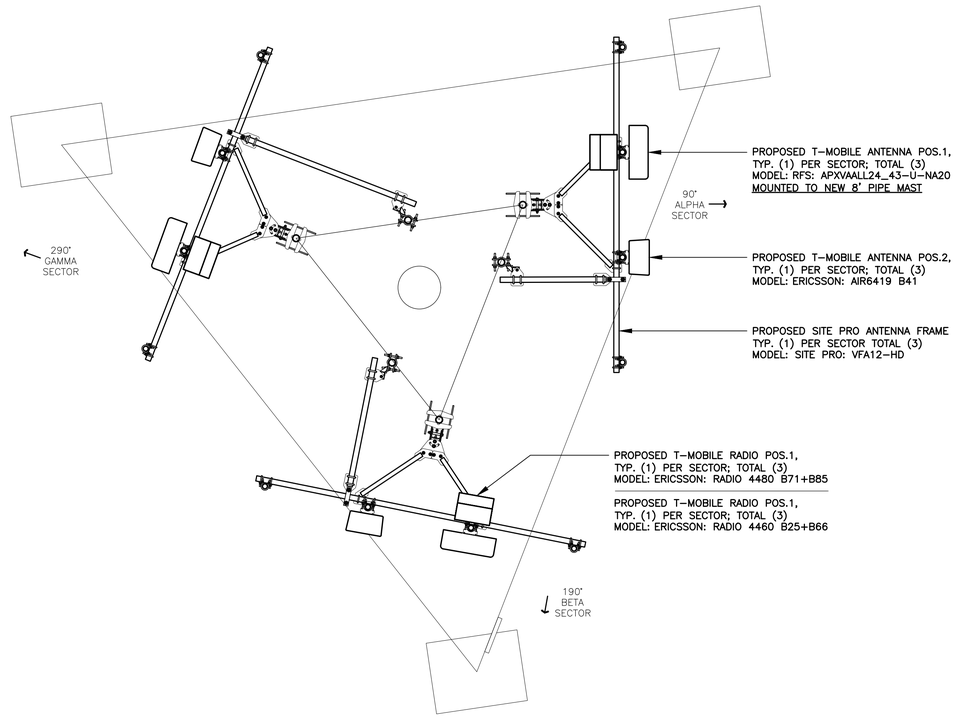
C-1

SHEET NO. 3 OF 9



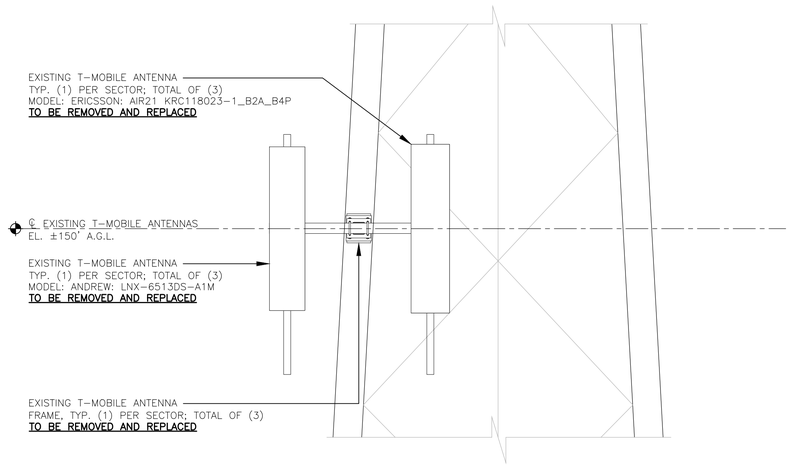
1 C-2 **ANTENNA PLAN - EXISTING** TRUE NORTH

SCALE: 3/8" = 1'



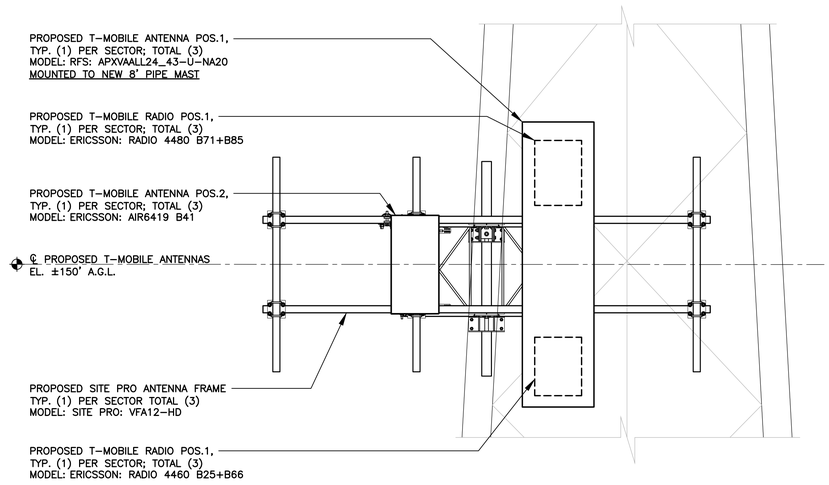
2 C-2 **ANTENNA PLAN - PROPOSED** TRUE NORTH

SCALE: 3/8" = 1'



1A C-2 **ANTENNA ELEVATION - EXISTING**

SCALE: 1/2" = 1'



2A C-2 **ANTENNA ELEVATION - PROPOSED**

SCALE: 1/2" = 1'

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
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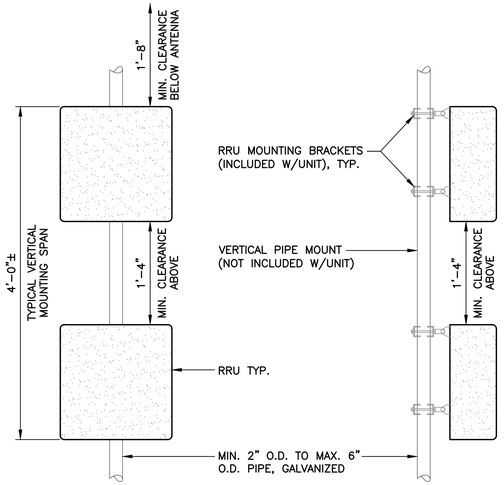
ANTENNA PLANS AND ELEVATIONS

C-2

SHEET NO. 4 OF 9



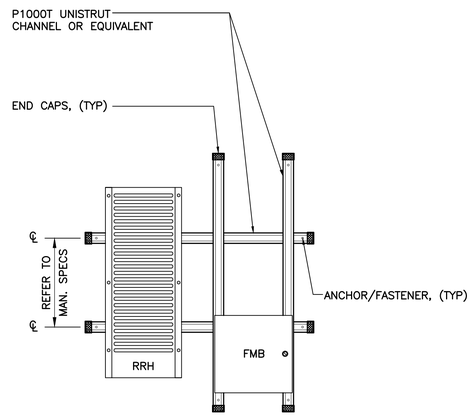
FRONT ELEVATION SIDE ELEVATION

NOTES: (PIPE MOUNTING)

1. T-MOBILE SHALL SUPPLY RRU, AND RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRU POLE-MOUNTING BRACKET.
2. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

1 C-3 TYPICAL RRU MOUNTING DETAILS

SCALE: NOT TO SCALE



FRONT ELEVATION

NOTES: (UNISTRUT MOUNTING)

1. INSTALL A MINIMUM OF (2) ANCHORS PER UNISTRUT (± 16"o/c MIN).
2. MOUNT RRU TO UNISTRUT WITH 3/8"ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS. TYPICAL FOUR PER BRACKET.
3. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

APXVAALL24_43-U-NA20

AIR6419 B41

ALPHA/BETA/GAMMA ANTENNA			
EQUIPMENT		DIMENSIONS	WEIGHT
MAKE: RFS MODEL: APXVAALL24_43-U-NA20		95.9"L x 24.0"W x 8.5"D	±150 LBS.
MAKE: ERICSSON MODEL: AIR6419 B41		33"L x 16"W x 9"D	±41 LBS.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T-MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.			

2 C-3 PROPOSED ANTENNA DETAIL

SCALE: NOT TO SCALE

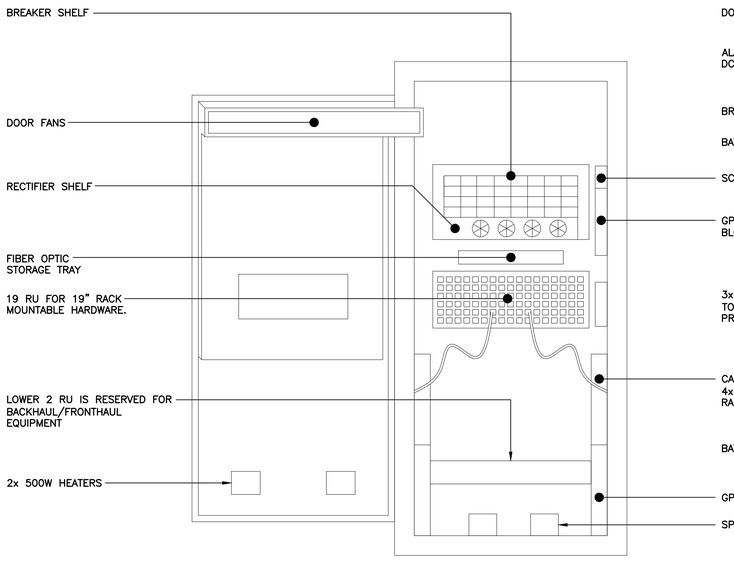
RADIO 4460 B25+B66

RADIO 4480 B71+B85

RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RADIO 4460 B25+B66	19.6"L x 15.7"W x 12.1"D	±109 LBS.	BEHIND ANT.: 8" MIN. BELOW ANT.: 20" MIN. BELOW RRU: 16" MIN.
MAKE: ERICSSON MODEL: RADIO 4480 B71+B85	21.8"L x 15.7"W x 7.5"D	±84 LBS.	BEHIND ANT.: 8" MIN. BELOW ANT.: 20" MIN. BELOW RRU: 16" MIN.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T-MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.			

3 C-3 PROPOSED RRU DETAIL

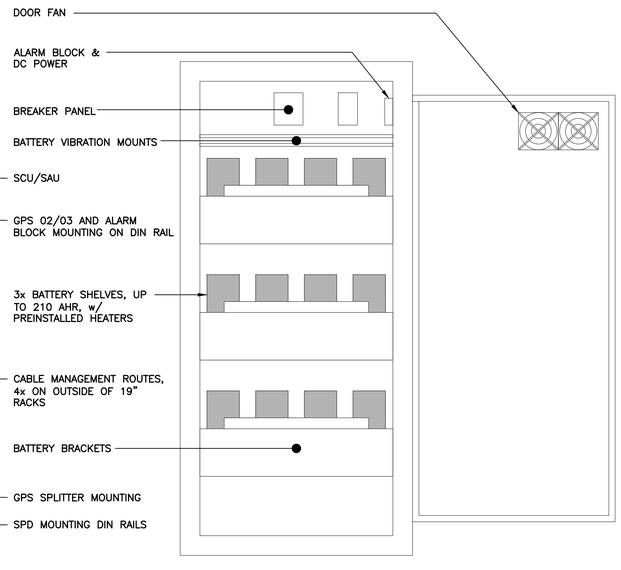
SCALE: NOT TO SCALE



EQUIPMENT CABINET		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ERICSSON MODEL: ENCLOSURE 6160 CABINET	62.0"H x 26.0"W x 26.0"D	±1200 LBS

4 C-3 ENCLOSURE 6160 CABINET DETAIL

SCALE: NOT TO SCALE



EQUIPMENT CABINET		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ERICSSON MODEL: BATTERY B160 CABINET	62.0"H x 26.0"W x 26.0"D	±1883 LBS

5 C-3 BATTERY B160 CABINET DETAIL

SCALE: NOT TO SCALE

PPC CABINET		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: VERTIV MODEL: BS2S2W000	59.0"H x 24.0"W x 10.0"D	±150 LBS

6 C-3 PPC CABINET DETAIL

SCALE: NOT TO SCALE

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SITE ID: CT11111A

NEWTOWN SERVICE CENTER. 20 BARNABAS RD

NEWTOWN, CT 06470

DATE: 04/19/22

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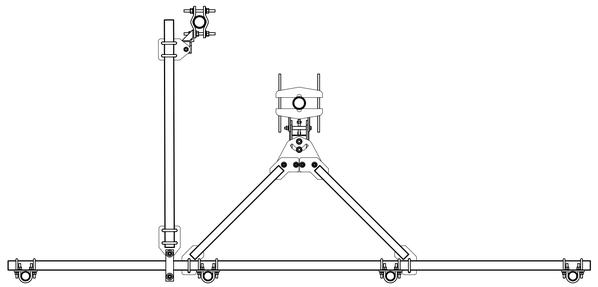
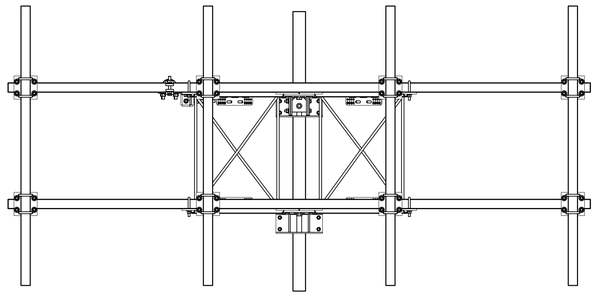
TYPICAL EQUIPMENT DETAILS

C-3

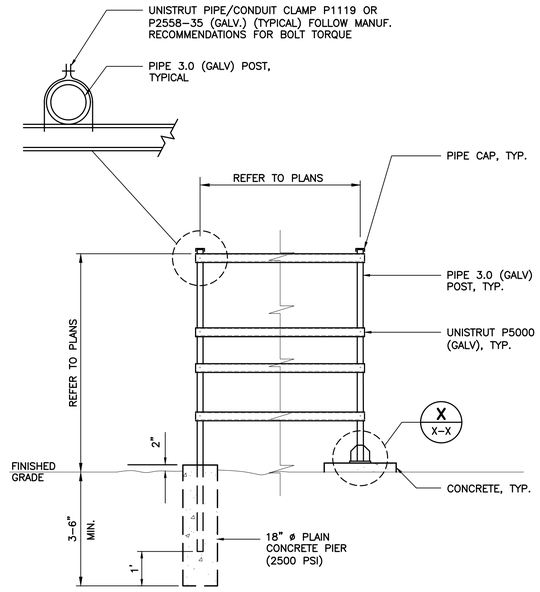
SHEET NO. 5 OF 9



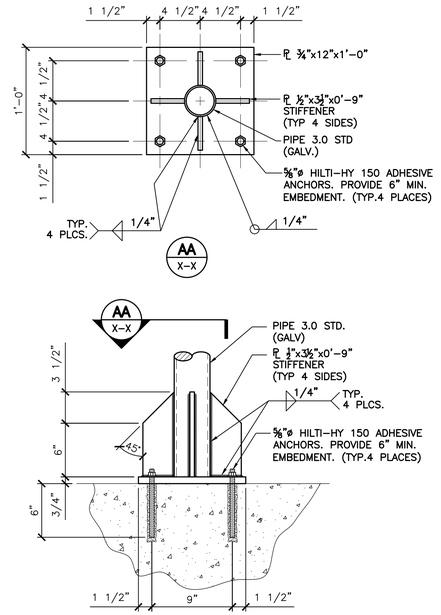
SITE PRO - VFA12-HD



1 C-4 **SITE PRO V-SECTOR ANTENNA FRAME DETAIL**
SCALE: NOT TO SCALE



2 C-4 **TYPICAL FRAME MOUNTING DETAIL**
SCALE: NOT TO SCALE



3 C-4 **FRAME TO CONCRETE CONNECTION DETAIL**
SCALE: NOT TO SCALE

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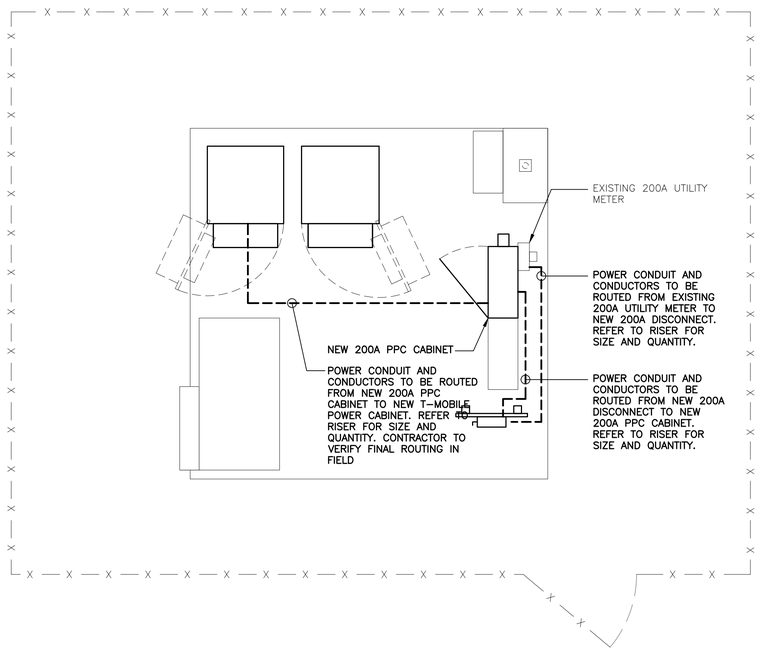
TYPICAL EQUIPMENT DETAILS

C-4

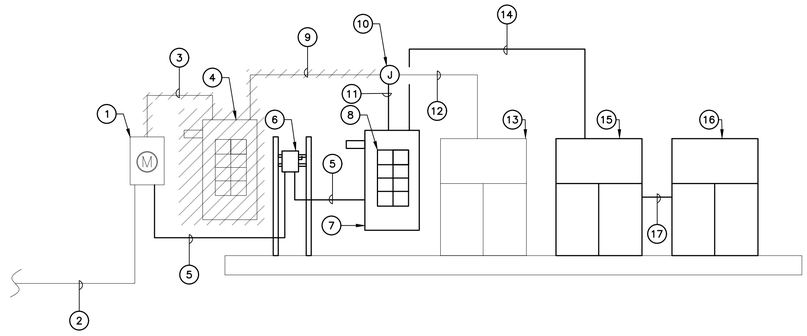
SHEET NO. 6 OF 9



1 / E-1 **ELECTRICAL CONDUIT ROUTING PLAN**
SCALE: 1/4" = 1'

RISER DIAGRAM NOTES

1. EXISTING 200A RATED UTILITY METER TO REMAIN.
2. EXISTING INCOMING SERVICE CONDUCTORS. CONTRACTOR TO VERIFY EXISTING SERVICE SIZE IN FIELD.
3. EXISTING CONDUITS AND CONDUCTORS TO BE REMOVED
4. EXISTING 100A PPC CABINET TO BE REMOVED AND REPLACED. RELOCATE ALL EXISTING TO REMAIN CIRCUIT BREAKERS TO NEW PPC CABINET.
5. (3) 3/0 AWG, (1) #6 AWG GROUND, 2-1/2" CONDUIT.
6. HEAVY DUTY, SERVICE ENTRANCE RATED, 240V/200A RATED, NEMA 3R DISCONNECT WITH (3) 200A FUSES.
7. NEW 200A PPC CABINET.
8. NEW 100/2P CIRCUIT BREAKER TO SERVE NEW EQUIPMENT CABINET.
9. SECTION OF EXISTING CONDUITS AND CONDUCTORS TO BE REMOVED.
10. JUNCTION BOX SIZED PER NEC REQUIREMENTS
11. EXTEND EXISTING CONDUITS AND CONDUCTORS TO NEW PPC CABINET
12. SECTION OF EXISTING CONDUITS AND CONDUCTORS TO REMAIN.
13. EXISTING CABINET TO REMAIN.
14. (3) #1 AWG, (1) #8 AWG GROUND, 1-1/2" CONDUIT.
15. NEW T-MOBILE EQUIPMENT CABINET
16. NEW T-MOBILE BATTERY CABINET
17. DC CONDUIT AND CONDUCTORS FOR BATTERY CABINET CONNECTION PER MANUFACTURERS SPECIFICATIONS.



2 / E-1 **ELECTRICAL RISER DIAGRAM**
SCALE: 1/4" = 1'

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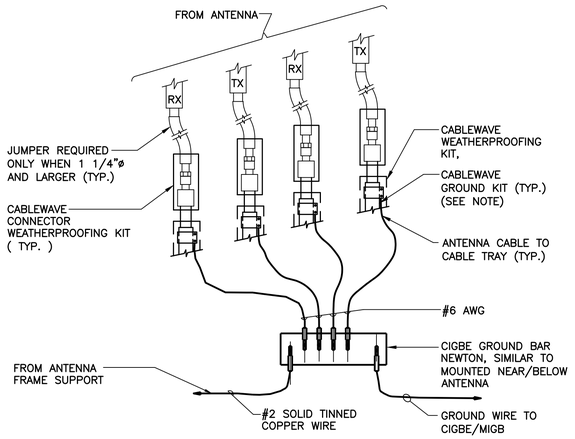
ELECTRICAL DIAGRAM AND CONDUIT ROUTING

E-1

SHEET NO. 7 OF 9

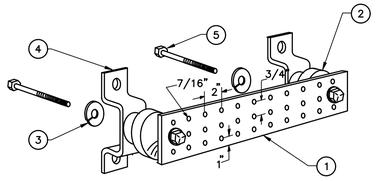


NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

1 E-2 CONNECTION OF GROUND WIRES TO GROUND BAR

SCALE: NOT TO SCALE

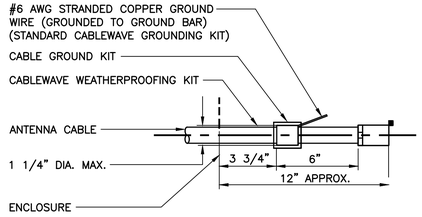


NOTES

1. TINNED COPPER GROUND BAR, 1/4" x 4" x 20", NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4.
3. 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-6056.
5. 5/8-11 x 1" STAINLESS STEEL TRUSS SPANNER MACHINE SCREWS.

2 E-2 GROUND BAR DETAIL

SCALE: NOT TO SCALE

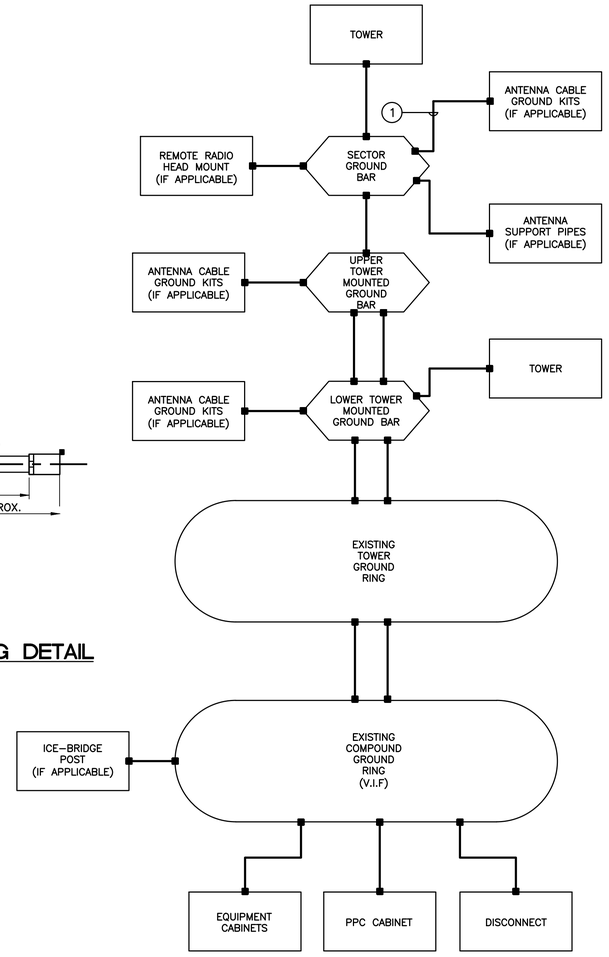


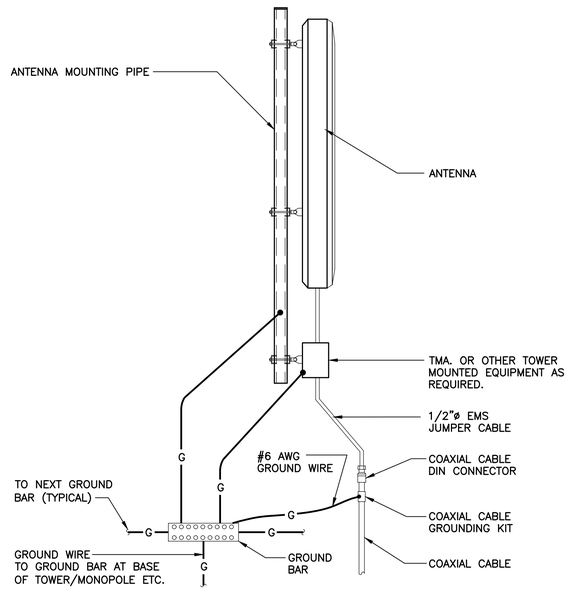
NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

3 E-2 ANTENNA CABLE GROUNDING DETAIL

SCALE: NOT TO SCALE



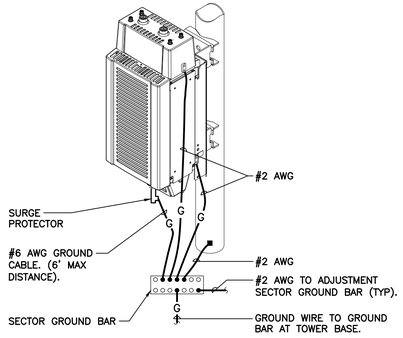


4 E-2 TYPICAL ANTENNA GROUNDING DETAIL

SCALE: NOT TO SCALE

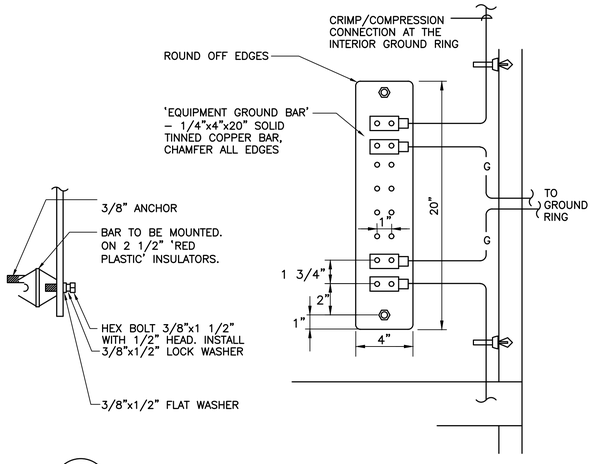
EACH RRH CABINET SHALL BE GROUNDED IN THE FOLLOWING MANNER:

1. AT TOP OF THE CABINET
2. AT RIGHT SIDE OF THE CABINET.



5 E-2 RRH POLE MOUNT GROUNDING

SCALE: NOT TO SCALE



6 E-2 EQUIPMENT GROUND BAR DETAIL

SCALE: NOT TO SCALE

GROUNDING SCHEMATIC NOTES

#6 AWG

GENERAL NOTES:

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

7 E-2 ELECTRICAL SCHEMATIC DIAGRAM

SCALE: NOT TO SCALE

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TYPICAL ELECTRICAL DETAILS

E-2

SHEET NO. 8 OF 9

ELECTRICAL SPECIFICATIONS

SECTION 16010

1.01. SCOPE OF WORK

A. WORK SHALL INCLUDE ALL LABOR, EQUIPMENT AND SERVICES REQUIRED TO COMPLETE (MAKE READY FOR OPERATION) ALL THE ELECTRICAL WORK INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

1. INSTALL 200A, 240/120V, 1P, 3 WIRE ELECTRIC SERVICE WITH REVENUE METER AND 200A MAIN CIRCUIT BREAKER FOR OWNER AND ASSOCIATED DISTRIBUTION EQUIPMENT. (AS REQUIRED BY UTILITY CO.)

2. FEEDERS AND BRANCH CIRCUIT WIRING TO PANELS, EQUIPMENT, ETC. AS INDICATED OR NOTED ON PLANS.

3. COORDINATE ALL WORK SHOWN, ON THESE PLANS WITH LOCAL UTILITY COMPANIES.

B. LOCAL UTILITY COMPANIES SHALL PROVIDE THE FOLLOWING:

1. SHUTDOWN OF SERVICE (COORDINATE WITH OWNER).

C. CONTRACTOR SHALL CONFER WITH LOCAL UTILITY COMPANIES TO ASCERTAIN THE LIMITS OF THEIR WORK AND SHALL INCLUDE IN BID ANY CHARGES OR FEES MADE BY THE UTILITY COMPANIES FOR THEIR PORTION OF THE WORK AND SHALL PROVIDE AND INSTALL ALL ITEMS REQUIRED, BUT NOT PROVIDED BY UTILITY COMPANY.

D. ELECTRICAL CONTRACTOR SHALL COORDINATE ELECTRICAL INSTALLATION WITH ELECTRIC UTILITY CO. PRIOR TO INSTALLATION.

1.02. GENERAL REQUIREMENTS

A. 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 THE 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.

SECTION 16111

1.01. CONDUITS

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 SCHEDULE SECTION 16111

CONDUIT TYPE	NEC REFERENCE	APPLICATION	MIN. BURIAL DEPTH (PER NEC TABLE 300.5) [2,3]
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.

SECTION 16123

1.01. CONDUCTORS

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:

	120/208/240V	277/480V
LINE	COLOR	COLOR
A	BLACK	BROWN
B	RED	ORANGE
C	BLUE	YELLOW
N	CONTINUOUS WHITE	GREY
G	CONTINUOUS GREEN	GREEN WITH YELLOW STRIPE

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

SECTION 16130

1.01. BOXES

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.

SECTION 16140

1.01. WIRING DEVICES

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.

SECTION 16170

1.01. DISCONNECT SWITCHES

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.

SECTION 16190

1.01. SEISMIC RESTRAINT

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

SECTION 16195

1.01. LABELING AND IDENTIFICATION NOMENCLATURE FOR ELECTRICAL EQUIPMENT

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.

SECTION 16450

1.01. GROUNDING

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 IN TURN 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.

SECTION 16470

1.01. DISTRIBUTION EQUIPMENT

A. REFER TO CONTRACT DRAWINGS FOR DETAILS AND SCHEDULES.

SECTION 16477

1.01. FUSES

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.

SECTION 16960

1.01. TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

A. 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.

SECTION 16961

1.01. TESTS BY CONTRACTOR

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 AS A REASONABLE AND ACCEPTABLE ALLOWANCE. BRANCH CIRCUITS SHALL BE 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. OWNER SHALL HAVE THE AUTHORITY 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.

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
1	09/02/22	JLD	TJR	CONSTRUCTION DRAWINGS – REVISED PER CLIENT COMMENTS
0	09/01/22	JLD	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

T-Mobile

NSS NORTHEAST SITE SOLUTIONS

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

T-MOBILE NORTHEAST LLC

SITE NAME: NEWTOWN/ I-84
SITE ID: CT11111A
NEWTOWN SERVICE CENTER 20 BARNABAS RD
NEWTOWN, CT 06470

DATE: 04/19/22
SCALE: AS NOTED
JOB NO. 22006.07

ELECTRICAL SPECIFICATIONS

E-3

SHEET NO. 9 OF 9

Exhibit D

Structural Analysis Report

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

180-ft Existing ROHN SSV Lattice Tower

Proposed T-Mobile
Antenna Upgrade

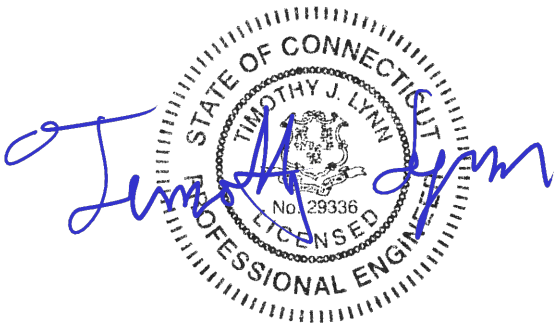
Site Ref: CT11111A

20 Barnabas Road
Newtown, CT

CENTEK Project No. 22006.07

Date: April 13, 2022

Max Stress Ratio = 78%



Prepared for:

T-Mobile USA
35 Griffin Road
Bloomfield, CT 06002

63-2 North Branford Road, Branford, CT 06405 203.488.0580 Fax 203.488.8587 www.CentekEng.com

Table of Contents

Introduction

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

The host tower is a 180-ft three legged, tapered steel lattice tower originally designed and manufactured by UNR-ROHN. The tower geometry, structure member sizes and foundation information were taken from previous structural report prepared by Centek engineering job no. 21007.62, dated February 7, 2022,

Antenna and appurtenance inventory were obtained from a combination of the aforementioned Centek Engineering, Inc. structural analysis and a T-Mobile RF Sheet.

The existing tower consists of nine (9) tapered steel pipe leg sections conforming to ASTM A572-50. Diagonal lateral support bracing consists of single angle steel sections conforming to ASTM A36. All tower connections are bolted. The width of the tower face is 8.56-ft at the top and 24.86-ft at the base.

Antenna and Appurtenance Summary

- UNKNOWN (Existing):
  Antenna: One (1) 10-ft Dipole antenna, one (1) 15-ft Omni-directional whip antenna and one (1) 20-ft Omni –directional whip antenna leg mounted with an elevations of ±192.5-ft, ±100-ft and ±189-ft above grade level, respectively.
  Coax Cable: One (1) 1/2" ∅ coax cable and two (2) 7/8" ∅ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- UNKNOWN (Existing):
  Antenna: One (1) 6-ft ∅Microwave dish antenna mounted to the leg of the existing tower with a RAD center elevation of ±177-ft above grade level.
  Coax Cable: One (1) EW63 elliptical coax cable running on the face of the existing tower as specified in Section 3 of this report.
- UNKNOWN (Existing):
  Antenna: One (1) 12-ft Dipole antenna leg mounted with an elevation of ±161-ft above grade level.
  Coax Cable: One (1) 1/2" ∅coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- UNKNOWN (Existing):
  Antenna: Two (2) 5-ft Omni-directional whip antennas (one upright, one inverted) and one (1) TTA mounted to the leg of the existing tower on a 3-ft stand-off with a RAD center elevation of ±157-ft above grade level.
  Coax Cable: Two (2) 7/8" ∅ coax cables running on the face of the existing tower as specified in Section 3 of this report.
- EVERSOURCE (Existing):
  Antenna: One (1) dBspectra SP2D03P36D-D antenna mounted on one (1) 4-ft side arm with an elevation of ±165-ft above grade level.
  Coax Cable: One (1) 7/8" ∅ coax cable running on the face of the existing tower as specified in Section 3 of this report

- UNKNOWN (Existing):
  Antenna: One (1) 10-ft 2 Bay Dipole antenna mounted on one (1) 3-ft side arm with a RAD center elevation of ±138-ft above grade level.
  Coax Cable: One (1) 7/8" ∅ coax cable running on the face of the existing tower as specified in Section 3 of this report.
- AT&T (Existing):
  Antenna: Three (3) Powerwave P65-16-XLH-RR panel antennas, three (3) Kathrein 800-10121 panel antennas, six (6) Powerwave LGP21401 TMAs, three (3) Ericsson RRUS-11 remote radio heads and one (1) Raycap Squid surge arrestor mounted on three (3) Frames with a RAD center elevation of ±135-ft above grade level.
  Coax Cable: Six (6) 1-5/8" ∅coax cables, one (1) fiber cables and two (2) dc control cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- VERIZON (Existing):
  Antennas: Six (6) JMA MX06FRO660-03 panel antennas, three (3) Samsung MT6407-77A panel antennas, three (3) Samsung RF4439d-25A (B2/B66A RRH) Remote Radio Heads, three (3) Samsung RF4440d-13A (B5/B13 RRH) Remote Radio Heads and one (1) RayCap RVZDC-6627-PF-48 OVP box mounted to three (3) 12ft-6in. Heavy Duty V-Frames with a RAD center elevation of 124-ft above grade level.
  Cables: Two (2) ∅ Hybriflex fiber lines running on a face of the existing tower as specified in Section 3 of this report
- SPRINT (Existing):
  Antennas: Two (2) RFS APXVSPP18-C-A2, one (1) Powerwave P40-16-XLPP-RR-A panel antenna, three (3) 800MHz 2X50W RRHs and three (3) 1900MHz 4X45W RRHs mounted on three (3) existing 10-ft boom gates with a RAD center elevation of ±90-ft above the tower base.
  Coax Cables: Three (3) 1-1/4"∅ Hybriflex cables running on the face of the existing tower as specified in Section 3 of this report.
- SPRINT (Existing):
  Antennas: One (1) GPS antenna mounted on one (1) 1-ft side arm with RAD center elevation of ±62-ft above grade level.
  Coax Cables: One (1) 1/2" ∅ coax cable running on the leg of the existing tower as specified in Section 3 of this report.
- **T-MOBILE (Existing to Remove):**
  Antennas: Three (3) Ericsson AIR21 panel antennas, three (3) Andrew LNX-6512DS panel antennas, three (3) TMAs and three (3) diplexers mounted on three (3) Site Pro Compact Tower Mounts p/n CWT8 with a RAD center elevation of ±149-ft above grade level.
  Coax Cables: Twelve (12) 1-5/8" ∅ coax cables running on a leg of the existing tower as specified in Section 3 of this report
- **T-MOBILE (Proposed):**
  Antennas: Three (3) Ericsson AIR6419 panel antennas, three (3) RFS APXVAALL24_43 panel antennas, three (3) Ericsson 4460 RRHs and three (3) Ericsson 4480 RRHs mounted on three (3) Site Pro V-Frames (p/n VFA12-HD) with a RAD center elevation of ±150-ft above grade level.
  Cables: Three (3) 6x24 hybrid cables running on a leg of the existing tower as specified in Section 3 of this report

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.
- **All previous reinforcements per the below listed structural analysis and modification reports are assumed to be installed.**
  - **Structural report prepared by Centek Engineering for Verizon project no. 13118.00 dated 11/13/13.**
  - **Structural report prepared by Centek Engineering for T-Mobile project no. 14025.02 dated 4/9/14.**

Analysis

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-H 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 CSBC[1] and the wind speed data available in the TIA-222-H Standard.

Tower Loading

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

Load Cases:	Load Case 1; 130 mph (Ultimate) wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation.	*[Appendix N of the 2018 CT Building Code]*
	Load Case 2; 50 mph wind speed w/ 1.00" radial ice plus gravity load – used in calculation of tower stresses.	*[Annex B of TIA-222-H]*
	Load Case 3; 101 mph (Nominal) wind speed used for deflection calculation.	

[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 (T5)	83'-0"-103'-0"	65.2%	**PASS**
Diagonal (T3)	123'-0"-143'-0"	77.8%	**PASS**
Secondary Horizontal (T10)	3'-0"-23'-0"	33.2%	**PASS**

- The tower combined deflection is **0.3258 degrees**.

Deflection Criteria	Proposed (degrees)	Allowable (degrees)	Result
Sway (Tilt)	0.3219	0.5	**PASS**
Twist	0.0505	0.5	**PASS**
Combined	0.3258	0.5	**PASS**

Note 1: *Tower deflection calculated utilizing the service wind load combination and nominal wind speed of 101 mph.*

Foundation and Anchors

The existing foundation system consists of three (3) 2-ft 6in square reinforced concrete piers on three (3) 10-ft square x 2-ft deep reinforced concrete pads concentrically bearing on the existing sub grade, with subsequent mass concrete reinforcement located at grade. The existing foundation geometry was obtained from the aforementioned Centek structural report. The sub-grade conditions used in the analysis of the existing foundation were obtained from a geo-technical soil study prepared by Clarence Welti and Assoc., dated October 19, 2011. The tower legs are connected to the foundation with (6) 1.00"∅, ASTM A-449 (Fu = 120ksi) anchor bolts per leg.

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

Load Effect	Proposed Tower Reactions
Leg Shear	27 kips
Leg Compression	211 kips
Leg Tension	175 kips
Base Moment	4202 ft-kips
Base Shear	44 kips

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

Tower Section	Component	Stress Ratio (percentage of capacity)	Result
Anchor Bolts	Combined Tension and Shear	57.7%	**PASS**

- The foundation was found to be within allowable limits.

Foundation	Design Limit	FS Required [1]	Proposed Loading (FS)[1]	Result
Reinforced Concrete Pad and Piers	OM[2]	1.0	2.7	**PASS**

Note 1: FS denotes Factor of Safety
Note 2: OM denotes Overturning Moment.

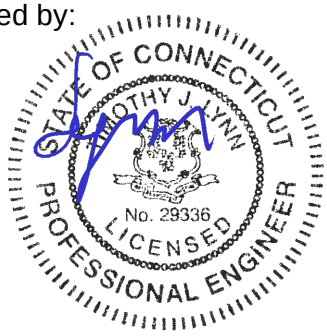
Conclusion

This analysis shows that the subject tower **is adequate** to support the proposed modified 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:



Timothy J. Lynn, PE
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.

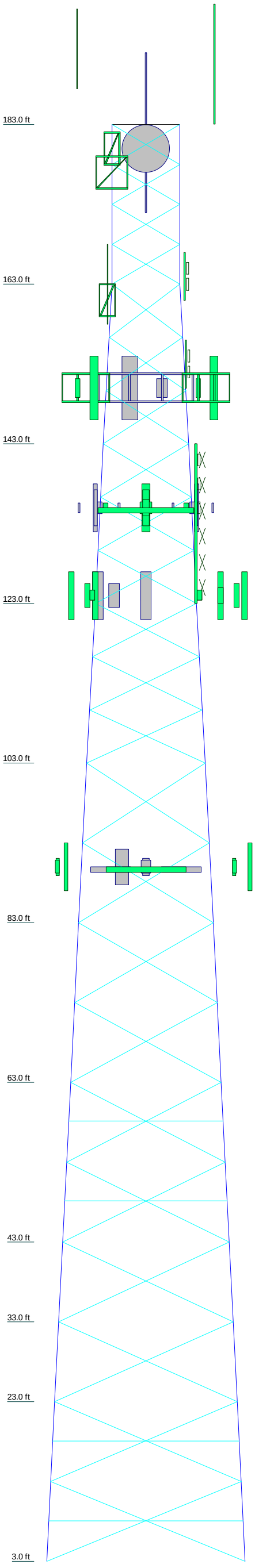
GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

TnxTower, is an integrated structural analysis and design software package for Designed specifically for the telecommunications industry, TnxTower, formerly ERITower, 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	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
Legs	P2.5x.203	P2.5x.276	P3x.216	P4x.337	P5x.258	P5x.375		P6x.432		
Leg Grade	A572-50									
Diagonals	L1 3/4x1 3/4x3/16	L2x2x1/4	L2 1/2x2 1/2x3/16	L2 1/2x2 1/2x5/16	L3X3X3/16 Reinf w/L2.5X2.5X3/16	L3 1/2x3 1/2x5/16	L3 1/2x3 1/2x3/8	L4x4x3/8		
Diagonal Grade	A36									
Top Girts	L2 1/2x2 1/2x3/16									
Sec. Horizontals	N.A.				N.A.		L3 1/2x3 1/2x1/4	N.A.		L4x4x1/4
Face Width (ft)	8.56	10.6	12.68	14.77	16.77	18.77		20.86	21.86	22.86
# Panels @ (ft)	4 @ 5	9 @ 6.66667					10 @ 10			
Weight (K)	0.9	1.1	1.2	2.3	3.3	3.0	4.2	2.2	2.3	5.7



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
10' Dipole (-)	180	DC6-48-60-18-8F Surge Arrestor (ATT)	135
15' x 2" Dia Omni (-)	180	10-ft T-Frame (ATT)	135
5-ft 2" Std. Pipe (-)	180	10-ft T-Frame (ATT)	135
5-ft 2" Std. Pipe (-)	180	10-ft T-Frame (ATT)	135
6' Dish (-)	180	P65-16-XLH-RR (ATT)	135
8.5' x 4.5" dia. Pipe Mount (-)	177	P65-16-XLH-RR (ATT)	135
6'x2" Pipe Mount (-)	177	10' Dipole (-)	133
6'x4" Pipe Mount (-)	177	3' Pipe Mount Side Arm (-)	133
20' x 2" Dia Omni (-)	173	MX06FRO660 (Verizon)	124
SitePro USF-4U (Eversource)	165	MX06FRO660 (Verizon)	124
SP2D03P36D-D (Eversource)	165	MT6407-77A (Verizon)	124
2-ft Stand Off (-)	161	MT6407-77A (Verizon)	124
12' Dipole (-)	161	MT6407-77A (Verizon)	124
5' x 1" dia. Omni (-)	160	RF4439d-25A (B2/B66A RRH) (Verizon)	124
18"x18"x6" Junction box (-)	157	RF4439d-25A (B2/B66A RRH) (Verizon)	124
5-ft dipole (-)	157	RF4439d-25A (B2/B66A RRH) (Verizon)	124
5' x 1" dia. Omni (-)	157	RF4440d-13A (B5/B13 RRH) (Verizon)	124
APXVAALL24-43 (T-Mobile)	150	RF4440d-13A (B5/B13 RRH) (Verizon)	124
AIR6419 (T-Mobile)	150	RF4440d-13A (B5/B13 RRH) (Verizon)	124
AIR6419 (T-Mobile)	150	RVZDC-6627-PF-48 (Verizon)	124
AIR6419 (T-Mobile)	150	12' V-Frame (Verizon)	124
4460 B25+B66 (T-Mobile)	150	12' V-Frame (Verizon)	124
4460 B25+B66 (T-Mobile)	150	12' V-Frame (Verizon)	124
4460 B25+B66 (T-Mobile)	150	MX06FRO660 (Verizon)	124
4480 B71+B85 (T-Mobile)	150	MX06FRO660 (Verizon)	124
4480 B71+B85 (T-Mobile)	150	MX06FRO660 (Verizon)	124
4480 B71+B85 (T-Mobile)	150	MX06FRO660 (Verizon)	124
SitePro VFA12-HD (T-Mobile)	150	FD-RRH 4x40 1900 (Sprint)	90
SitePro VFA12-HD (T-Mobile)	150	FD-RRH 4x40 1900 (Sprint)	90
SitePro VFA12-HD (T-Mobile)	150	FD-RRH 2x50 800 (Sprint)	90
APXVAALL24-43 (T-Mobile)	150	FD-RRH 2x50 800 (Sprint)	90
APXVAALL24-43 (T-Mobile)	150	FD-RRH 2x50 800 (Sprint)	90
P65-16-XLH-RR (ATT)	135	10-ft T-Frame (Sprint)	90
800-10121 (ATT)	135	10-ft T-Frame (Sprint)	90
800-10121 (ATT)	135	10-ft T-Frame (Sprint)	90
800-10121 (ATT)	135	P40-16-XLPP-RR-A (Sprint)	90
(2) LPG21401 TMA (ATT)	135	APXVSPP18-C-A20 (Sprint)	90
(2) LPG21401 TMA (ATT)	135	APXVSPP18-C-A20 (Sprint)	90
(2) LPG21401 TMA (ATT)	135	FD-RRH 4x40 1900 (Sprint)	90
RRUS-11 (ATT)	135	GPS (Sprint)	65
RRUS-11 (ATT)	135	3' Side Mount Standoff (Sprint)	65
RRUS-11 (ATT)	135		

MATERIAL STRENGTH

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

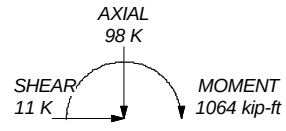
TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 130 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 101 mph wind.
6. Tower Risk Category III.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 77.8%

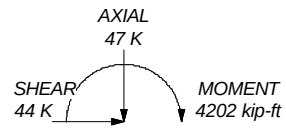
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 211 K
SHEAR: 27 K

UPLIFT: -175 K
SHEAR: 23 K



TORQUE 4 kip-ft
50 mph WIND - 1.0000 in ICE



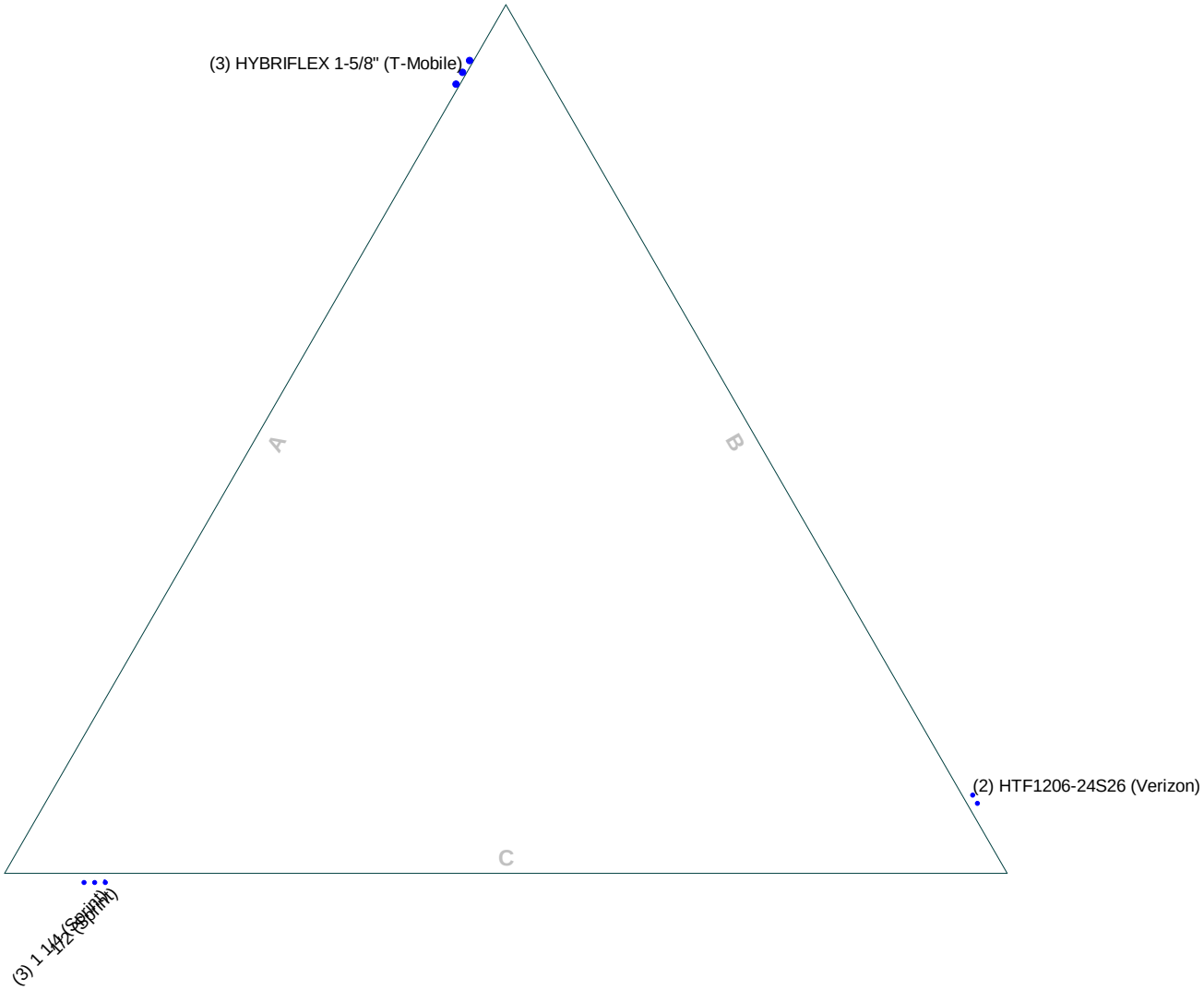
TORQUE 24 kip-ft
REACTIONS - 130 mph WIND

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

Job: 22006.07 - CT11111A		
Project: 180-ft Lattice Tower - 20 Barnabas Rd, Newtown, CT		
Client: T-Mobile	Drawn by: TJL	App'd:
Code: TIA-222-H	Date: 04/13/22	Scale: NTS
Path: J:\Jobs\2200600.WI\07_CT11111A\05_Structural\Tower\Backup Documentation\ERI Files\180 ROHN SSV Lattice Newton CT.eri		Dwg No. E-1

Feed Line Plan

Round Flat App In Face App Out Face

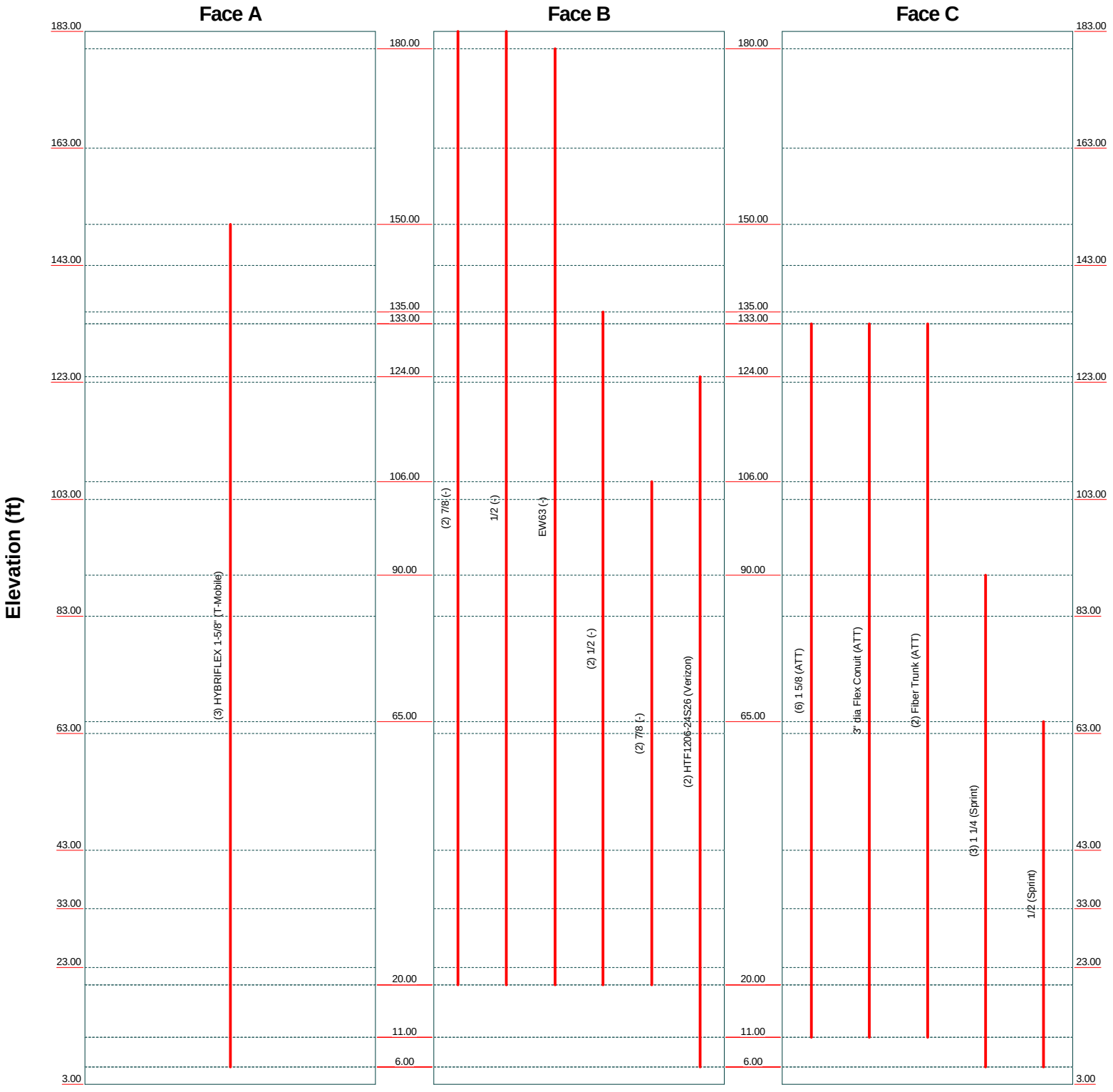


Centek Engineering Inc.
63-2 North Branford Rd.
Branford, CT 06405
Phone: (203) 488-0580
FAX: (203) 488-8587

Job:	***22006.07 - CT11111A***		
Project:	***180-ft Lattice Tower - 20 Barnabas Rd, Newtown, CT***		
Client: T-Mobile		Drawn by: TJL	App'd:
Code: TIA-222-H		Date: 04/13/22	Scale: NTS
Path: J:\Jobs\22000\600.W\07_CT11111A\05_Structural\Tower\Backup Documentation\ERI Files\180 RCHN SSV Lattice Newton CT.eri			Dwg No. E-7

Feed Line Distribution Chart
3' - 183'

Round | Flat | App In Face | App Out Face | Truss Leg



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

Job: 22006.07 - CT11111A			
Project: 180-ft Lattice Tower - 20 Barnabas Rd, Newtown, CT			
Client: T-Mobile	Drawn by: TJL	App'd:	
Code: TIA-222-H	Date: 04/13/22	Scale: NTS	
Path: J:\Jobs\22000\600.W\07_CT11111A\05_Structural\Tower\Backup Documentation\ERI Files\180 ROHN SSV Lattice Newton CT.eri		Dwg No. E-7	

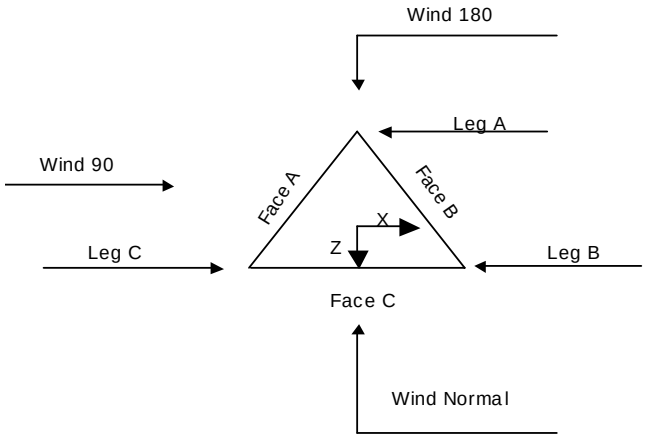
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 183.00 ft above the ground line.
The base of the tower is set at an elevation of 3.00 ft above the ground line.
The face width of the tower is 8.56 ft at the top and 24.86 ft at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower is located in Fairfield County, Connecticut.
Tower base elevation above sea level: 3.00 ft.
Basic wind speed of 130 mph.
Risk Category III.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 101 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	183.00-163.00			8.56	1	20.00
T2	163.00-143.00			8.56	1	20.00
T3	143.00-123.00			10.60	1	20.00
T4	123.00-103.00			12.68	1	20.00
T5	103.00-83.00			14.77	1	20.00
T6	83.00-63.00			16.77	1	20.00
T7	63.00-43.00			18.77	1	20.00
T8	43.00-33.00			20.86	1	10.00
T9	33.00-23.00			21.86	1	10.00
T10	23.00-3.00			22.86	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
	ft	ft				in	in
T1	183.00-163.00	5.00	X Brace	No	No	0.0000	0.0000
T2	163.00-143.00	6.67	X Brace	No	No	0.0000	0.0000
T3	143.00-123.00	6.67	X Brace	No	No	0.0000	0.0000
T4	123.00-103.00	6.67	X Brace	No	No	0.0000	0.0000
T5	103.00-83.00	10.00	X Brace	No	No	0.0000	0.0000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T6	83.00-63.00	10.00	X Brace	No	No	0.0000	0.0000
T7	63.00-43.00	10.00	X Brace	No	Yes	0.0000	0.0000
T8	43.00-33.00	10.00	X Brace	No	No	0.0000	0.0000
T9	33.00-23.00	10.00	X Brace	No	No	0.0000	0.0000
T10	23.00-3.00	10.00	X Brace	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 183.00-163.00	Pipe	P2.5x.203	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T2 163.00-143.00	Pipe	P2.5x.276	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T3 143.00-123.00	Pipe	P3x.216	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T4 123.00-103.00	Pipe	P4x.337	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x5/16	A36 (36 ksi)
T5 103.00-83.00	Pipe	P5x.258	A572-50 (50 ksi)	Arbitrary Shape	L3X3X3/16 Reinf w/L2.5X2.5X3/16	A36 (36 ksi)
T6 83.00-63.00	Pipe	P5x.375	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x5/16	A36 (36 ksi)
T7 63.00-43.00	Pipe	P5x.375	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x3/8	A36 (36 ksi)
T8 43.00-33.00	Pipe	P6x.432	A572-50 (50 ksi)	Equal Angle	L4x4x3/8	A36 (36 ksi)
T9 33.00-23.00	Pipe	P6x.432	A572-50 (50 ksi)	Equal Angle	L4x4x3/8	A36 (36 ksi)
T10 23.00-3.00	Pipe	P6x.432	A572-50 (50 ksi)	Equal Angle	L4x4x3/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 183.00-163.00	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Equal Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T7 63.00-43.00	Equal Angle	L3 1/2x3 1/2x1/4	A36	Equal Angle		A36

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T10 23.00-3.00	Equal Angle	L4x4x1/4	(36 ksi) A36 (36 ksi)	Equal Angle		(36 ksi) A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 183.00-163.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T2 163.00-143.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T3 143.00-123.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T4 123.00-103.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T5 103.00-83.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T6 83.00-63.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T7 63.00-43.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T8 43.00-33.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T9 33.00-23.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T10 23.00-3.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	Yes	Yes	1	1	1	1	1	1	1	1
183.00-163.00				1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1
163.00-143.00				1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1
143.00-123.00				1	1	1	1	1	1	1
T4	Yes	Yes	1	1	1	1	1	1	1	1
123.00-103.00				1	1	1	1	1	1	1
T5	Yes	Yes	1	1	1	1	1	1	1	1
103.00-83.00				1	1	1	1	1	1	1
T6	Yes	Yes	1	1	1	1	1	1	1	1
83.00-63.00				1	1	1	1	1	1	1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T7	Yes	Yes	1	1	1	1	1	1	1	1
63.00-43.00				1	1	1	1	1	1	1
T8	Yes	Yes	1	1	1	1	1	1	1	1
43.00-33.00				1	1	1	1	1	1	1
T9	Yes	Yes	1	1	1	1	1	1	1	1
33.00-23.00				1	1	1	1	1	1	1
T10	Yes	Yes	1	1	1	1	1	1	1	1
23.00-3.00				1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
183.00-163.00														
T2	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
163.00-143.00														
T3	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
143.00-123.00														
T4	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
123.00-103.00														
T5	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
103.00-83.00														
T6 83.00-63.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 63.00-43.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 43.00-33.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 33.00-23.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 23.00-3.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Redundant Horizontal Net Width Deduct in	Redundant Horizontal U	Redundant Diagonal Net Width Deduct in	Redundant Diagonal U	Redundant Sub-Diagonal Net Width Deduct in	Redundant Sub-Diagonal U	Redundant Sub-Horizontal Net Width Deduct in	Redundant Sub-Horizontal U	Redundant Vertical Net Width Deduct in	Redundant Vertical U	Redundant Hip Net Width Deduct in	Redundant Hip U	Redundant Hip Diagonal Net Width Deduct in	Redundant Hip Diagonal U
T1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
183.00-163.00														
T2	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
163.00-143.00														
T3	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
143.00-123.00														
T4	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
123.00-103.00														

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T5 103.00-83.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 83.00-63.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 63.00-43.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 43.00-33.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 33.00-23.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 23.00-3.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 183.00-163.00	Flange	0.6250 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 163.00-143.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 143.00-123.00	Flange	0.8750 A325N	4	0.5000 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 123.00-103.00	Flange	1.0000 A325N	4	0.5000 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 103.00-83.00	Flange	1.0000 A325N	4	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 83.00-63.00	Flange	1.0000 A325N	4	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 63.00-43.00	Flange	1.0000 A325N	6	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 43.00-33.00	Flange	0.0000 A325N	0	0.7500 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 33.00-23.00	Flange	1.0000 A325N	6	0.8750 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 23.00-3.00	Flange	1.0000 A449	6	0.8750 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
7/8 (-)	B	No	No	Ar (CaAa)	183.00 - 20.00	0.0000	0.02	2	1	1.1100	1.1100		0.54
1/2 (-)	B	No	No	Ar (CaAa)	183.00 - 20.00	0.0000	0.03	1	1	0.5800	0.5800		0.25
EW63 (-)	B	No	No	Ar (CaAa)	180.00 - 20.00	2.0000	0.02	1	1	1.5742	1.5742		0.51

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1/2 (-)	B	No	No	Ar (CaAa)	135.00 - 20.00	2.0000	0.04	2	1	0.5800	0.5800		0.25
7/8 (-)	B	No	No	Ar (CaAa)	106.00 - 20.00	2.0000	0.4	2	2	1.1100	1.1100		0.54
HYBRIFLEX 1-5/8" (T-Mobile)	A	No	No	Ar (CaAa)	150.00 - 6.00	0.0000	0.42	3	3	1.9800	1.9800		1.90
1 5/8 (ATT)	C	No	No	Ar (CaAa)	133.00 - 11.00	2.0000	0.46	6	3	1.9800	1.9800		1.04
3" dia Flex Conuit (ATT)	C	No	No	Ar (CaAa)	133.00 - 11.00	2.0000	0.45	1	1	3.0000	3.0000		5.00
Fiber Trunk (ATT)	C	No	No	Ar (CaAa)	133.00 - 11.00	2.0000	0.43	2	2	0.4000	0.4000		1.00
HTF1206-24S 26 (Verizon)	B	No	No	Ar (CaAa)	124.00 - 6.00	2.0000	0.42	2	2	1.4300	1.4300		1.63
1 1/4 (Sprint)	C	No	No	Ar (CaAa)	90.00 - 6.00	2.0000	0.41	3	3	1.5500	1.5500		0.66
1/2 (Sprint)	C	No	No	Ar (CaAa)	65.00 - 6.00	2.0000	0.4	1	1	0.5800	0.5800		0.25

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	183.00-163.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	8.276	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.00
T2	163.00-143.00	A	0.000	0.000	4.158	0.000	0.04
		B	0.000	0.000	8.748	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.00
T3	143.00-123.00	A	0.000	0.000	11.880	0.000	0.11
		B	0.000	0.000	10.426	0.000	0.05
		C	0.000	0.000	15.680	0.000	0.13
T4	123.00-103.00	A	0.000	0.000	11.880	0.000	0.11
		B	0.000	0.000	17.454	0.000	0.12
		C	0.000	0.000	31.360	0.000	0.26
T5	103.00-83.00	A	0.000	0.000	11.880	0.000	0.11
		B	0.000	0.000	21.228	0.000	0.13
		C	0.000	0.000	34.615	0.000	0.28
T6	83.00-63.00	A	0.000	0.000	11.880	0.000	0.11
		B	0.000	0.000	21.228	0.000	0.13
		C	0.000	0.000	40.776	0.000	0.30
T7	63.00-43.00	A	0.000	0.000	11.880	0.000	0.11
		B	0.000	0.000	21.228	0.000	0.13
		C	0.000	0.000	41.820	0.000	0.31
T8	43.00-33.00	A	0.000	0.000	5.940	0.000	0.06
		B	0.000	0.000	10.614	0.000	0.07
		C	0.000	0.000	20.910	0.000	0.15
T9	33.00-23.00	A	0.000	0.000	5.940	0.000	0.06
		B	0.000	0.000	10.614	0.000	0.07
		C	0.000	0.000	20.910	0.000	0.15
T10	23.00-3.00	A	0.000	0.000	10.098	0.000	0.10

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	7.188	0.000	0.07
		C	0.000	0.000	27.707	0.000	0.20

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	183.00-163.00	A	1.357	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	31.761	0.000	0.35
		C		0.000	0.000	0.000	0.000	0.00
T2	163.00-143.00	A	1.341	0.000	0.000	11.740	0.000	0.16
		B		0.000	0.000	32.801	0.000	0.36
		C		0.000	0.000	0.000	0.000	0.00
T3	143.00-123.00	A	1.322	0.000	0.000	33.423	0.000	0.46
		B		0.000	0.000	41.691	0.000	0.44
		C		0.000	0.000	30.773	0.000	0.57
T4	123.00-103.00	A	1.301	0.000	0.000	33.286	0.000	0.45
		B		0.000	0.000	68.244	0.000	0.72
		C		0.000	0.000	61.162	0.000	1.12
T5	103.00-83.00	A	1.276	0.000	0.000	33.125	0.000	0.45
		B		0.000	0.000	82.218	0.000	0.83
		C		0.000	0.000	70.413	0.000	1.22
T6	83.00-63.00	A	1.245	0.000	0.000	32.929	0.000	0.44
		B		0.000	0.000	81.132	0.000	0.81
		C		0.000	0.000	88.297	0.000	1.39
T7	63.00-43.00	A	1.206	0.000	0.000	32.678	0.000	0.43
		B		0.000	0.000	79.737	0.000	0.78
		C		0.000	0.000	92.708	0.000	1.42
T8	43.00-33.00	A	1.166	0.000	0.000	16.213	0.000	0.21
		B		0.000	0.000	39.167	0.000	0.38
		C		0.000	0.000	45.793	0.000	0.69
T9	33.00-23.00	A	1.131	0.000	0.000	16.102	0.000	0.21
		B		0.000	0.000	38.544	0.000	0.36
		C		0.000	0.000	45.295	0.000	0.68
T10	23.00-3.00	A	1.048	0.000	0.000	26.921	0.000	0.34
		B		0.000	0.000	23.883	0.000	0.24
		C		0.000	0.000	60.830	0.000	0.85

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	183.00-163.00	2.4517	-1.3241	5.2593	-2.6677
T2	163.00-143.00	2.6529	-4.5689	5.5300	-7.4105
T3	143.00-123.00	-4.7748	-2.1499	-2.2554	-6.5176
T4	123.00-103.00	-7.7038	3.5572	-2.7916	0.5662
T5	103.00-83.00	-7.7385	5.3325	-1.6566	3.5261
T6	83.00-63.00	-10.1609	7.1796	-5.6610	6.4965
T7	63.00-43.00	-9.3069	6.6527	-6.4803	6.9203
T8	43.00-33.00	-10.7434	7.5662	-7.4073	7.7006
T9	33.00-23.00	-10.9537	7.6956	-7.6881	7.8599
T10	23.00-3.00	-8.4115	4.0794	-10.8825	5.0484

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	7/8	163.00 - 183.00	0.6000	0.6000
T1	2	1/2	163.00 - 183.00	0.6000	0.6000
T1	3	EW63	163.00 - 180.00	0.6000	0.6000
T2	1	7/8	143.00 - 163.00	0.6000	0.6000
T2	2	1/2	143.00 - 163.00	0.6000	0.6000
T2	3	EW63	143.00 - 163.00	0.6000	0.6000
T2	6	HYBRIFLEX 1-5/8"	143.00 - 150.00	0.6000	0.6000
T3	1	7/8	123.00 - 143.00	0.6000	0.6000
T3	2	1/2	123.00 - 143.00	0.6000	0.6000
T3	3	EW63	123.00 - 143.00	0.6000	0.6000
T3	4	1/2	123.00 - 135.00	0.6000	0.6000
T3	6	HYBRIFLEX 1-5/8"	123.00 - 143.00	0.6000	0.6000
T3	7	1 5/8	123.00 - 133.00	0.6000	0.6000
T3	8	3" dia Flex Conuit	123.00 - 133.00	0.6000	0.6000
T3	9	Fiber Trunk	123.00 - 133.00	0.6000	0.6000
T3	10	HTF1206-24S26	123.00 - 124.00	0.6000	0.6000
T4	1	7/8	103.00 - 123.00	0.6000	0.6000
T4	2	1/2	103.00 - 123.00	0.6000	0.6000
T4	3	EW63	103.00 - 123.00	0.6000	0.6000
T4	4	1/2	103.00 - 123.00	0.6000	0.6000
T4	5	7/8	103.00 - 106.00	0.6000	0.6000
T4	6	HYBRIFLEX 1-5/8"	103.00 - 123.00	0.6000	0.6000
T4	7	1 5/8	103.00 - 123.00	0.6000	0.6000
T4	8	3" dia Flex Conuit	103.00 - 123.00	0.6000	0.6000
T4	9	Fiber Trunk	103.00 - 123.00	0.6000	0.6000
T4	10	HTF1206-24S26	103.00 - 123.00	0.6000	0.6000
T5	1	7/8	83.00 - 103.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T5	2	1/2	83.00 - 103.00	0.6000	0.6000
T5	3	EW63	83.00 - 103.00	0.6000	0.6000
T5	4	1/2	83.00 - 103.00	0.6000	0.6000
T5	5	7/8	83.00 - 103.00	0.6000	0.6000
T5	6	HYBRIFLEX 1-5/8"	83.00 - 103.00	0.6000	0.6000
T5	7	1 5/8	83.00 - 103.00	0.6000	0.6000
T5	8	3" dia Flex Conuit	83.00 - 103.00	0.6000	0.6000
T5	9	Fiber Trunk	83.00 - 103.00	0.6000	0.6000
T5	10	HTF1206-24S26	83.00 - 103.00	0.6000	0.6000
T5	11	1 1/4	83.00 - 90.00	0.6000	0.6000
T6	1	7/8	63.00 - 83.00	0.6000	0.6000
T6	2	1/2	63.00 - 83.00	0.6000	0.6000
T6	3	EW63	63.00 - 83.00	0.6000	0.6000
T6	4	1/2	63.00 - 83.00	0.6000	0.6000
T6	5	7/8	63.00 - 83.00	0.6000	0.6000
T6	6	HYBRIFLEX 1-5/8"	63.00 - 83.00	0.6000	0.6000
T6	7	1 5/8	63.00 - 83.00	0.6000	0.6000
T6	8	3" dia Flex Conuit	63.00 - 83.00	0.6000	0.6000
T6	9	Fiber Trunk	63.00 - 83.00	0.6000	0.6000
T6	10	HTF1206-24S26	63.00 - 83.00	0.6000	0.6000
T6	11	1 1/4	63.00 - 83.00	0.6000	0.6000
T6	12	1/2	63.00 - 65.00	0.6000	0.6000
T7	1	7/8	43.00 - 63.00	0.6000	0.6000
T7	2	1/2	43.00 - 63.00	0.6000	0.6000
T7	3	EW63	43.00 - 63.00	0.6000	0.6000
T7	4	1/2	43.00 - 63.00	0.6000	0.6000
T7	5	7/8	43.00 - 63.00	0.6000	0.6000
T7	6	HYBRIFLEX 1-5/8"	43.00 - 63.00	0.6000	0.6000
T7	7	1 5/8	43.00 - 63.00	0.6000	0.6000
T7	8	3" dia Flex Conuit	43.00 - 63.00	0.6000	0.6000
T7	9	Fiber Trunk	43.00 - 63.00	0.6000	0.6000
T7	10	HTF1206-24S26	43.00 - 63.00	0.6000	0.6000
T7	11	1 1/4	43.00 - 63.00	0.6000	0.6000
T7	12	1/2	43.00 - 63.00	0.6000	0.6000
T8	1	7/8	33.00 - 43.00	0.6000	0.6000
T8	2	1/2	33.00 - 43.00	0.6000	0.6000
T8	3	EW63	33.00 - 43.00	0.6000	0.6000
T8	4	1/2	33.00 - 43.00	0.6000	0.6000
T8	5	7/8	33.00 - 43.00	0.6000	0.6000
T8	6	HYBRIFLEX 1-5/8"	33.00 - 43.00	0.6000	0.6000
T8	7	1 5/8	33.00 - 43.00	0.6000	0.6000
T8	8	3" dia Flex Conuit	33.00 - 43.00	0.6000	0.6000
T8	9	Fiber Trunk	33.00 - 43.00	0.6000	0.6000
T8	10	HTF1206-24S26	33.00 - 43.00	0.6000	0.6000
T8	11	1 1/4	33.00 - 43.00	0.6000	0.6000
T8	12	1/2	33.00 - 43.00	0.6000	0.6000
T9	1	7/8	23.00 - 33.00	0.6000	0.6000
T9	2	1/2	23.00 - 33.00	0.6000	0.6000
T9	3	EW63	23.00 - 33.00	0.6000	0.6000
T9	4	1/2	23.00 - 33.00	0.6000	0.6000
T9	5	7/8	23.00 - 33.00	0.6000	0.6000
T9	6	HYBRIFLEX 1-5/8"	23.00 - 33.00	0.6000	0.6000
T9	7	1 5/8	23.00 - 33.00	0.6000	0.6000
T9	8	3" dia Flex Conuit	23.00 - 33.00	0.6000	0.6000
T9	9	Fiber Trunk	23.00 - 33.00	0.6000	0.6000
T9	10	HTF1206-24S26	23.00 - 33.00	0.6000	0.6000
T9	11	1 1/4	23.00 - 33.00	0.6000	0.6000
T9	12	1/2	23.00 - 33.00	0.6000	0.6000
T10	1	7/8	20.00 - 23.00	0.6000	0.6000
T10	2	1/2	20.00 - 23.00	0.6000	0.6000
T10	3	EW63	20.00 - 23.00	0.6000	0.6000
T10	4	1/2	20.00 - 23.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T10	5	7/8	20.00 - 23.00	0.6000	0.6000
T10	6	HYBRIFLEX 1-5/8"	6.00 - 23.00	0.6000	0.6000
T10	7	1 5/8	11.00 - 23.00	0.6000	0.6000
T10	8	3" dia Flex Conuit	11.00 - 23.00	0.6000	0.6000
T10	9	Fiber Trunk	11.00 - 23.00	0.6000	0.6000
T10	10	HTF1206-24S26	6.00 - 23.00	0.6000	0.6000
T10	11	1 1/4	6.00 - 23.00	0.6000	0.6000
T10	12	1/2	6.00 - 23.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
10' Dipole	C	From Leg	5.00	0.0000	180.00	No Ice	4.00	4.00	0.05
(-)			0.00			1/2" Ice	6.00	6.00	0.07
			12.50			1" Ice	8.00	8.00	0.10
15' x 2" Dia Omni	B	From Leg	5.00	0.0000	180.00	No Ice	3.00	3.00	0.04
(-)			0.00			1/2" Ice	4.53	4.53	0.06
			10.58			1" Ice	6.07	6.07	0.09
20' x 2" Dia Omni	A	From Leg	5.00	0.0000	173.00	No Ice	4.00	4.00	0.02
(-)			0.00			1/2" Ice	6.03	6.03	0.05
			9.00			1" Ice	8.07	8.07	0.09
5-ft 2" Std. Pipe	C	From Leg	0.00	0.0000	180.00	No Ice	1.19	1.19	0.02
(-)			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.81	1.81	0.04
5-ft 2" Std. Pipe	C	From Leg	0.00	0.0000	180.00	No Ice	1.19	1.19	0.02
(-)			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.81	1.81	0.04
8.5' x 4.5" dia. Pipe Mount	C	From Leg	0.00	0.0000	177.00	No Ice	2.77	2.77	0.09
(-)			0.00			1/2" Ice	4.17	4.17	0.12
			0.00			1" Ice	4.69	4.69	0.15
6'x2" Pipe Mount	A	From Leg	0.00	0.0000	177.00	No Ice	1.20	1.20	0.02
(-)			0.00			1/2" Ice	1.80	1.80	0.03
			0.00			1" Ice	2.17	2.17	0.04
6'x4" Pipe Mount	A	From Leg	0.00	0.0000	177.00	No Ice	1.80	1.80	0.05
(-)			0.00			1/2" Ice	2.46	2.46	0.07
			0.00			1" Ice	2.83	2.83	0.09
12' Dipole	C	From Leg	0.50	0.0000	161.00	No Ice	6.00	6.00	0.07
(-)			0.00			1/2" Ice	8.00	8.00	0.09
			2.00			1" Ice	10.00	10.00	0.11
2-ft Stand Off	C	From Leg	0.50	0.0000	161.00	No Ice	1.07	1.07	0.02
(-)			0.00			1/2" Ice	1.62	1.62	0.03
			0.00			1" Ice	2.17	2.17	0.04
5-ft dipole	A	From Leg	0.50	0.0000	157.00	No Ice	2.70	2.70	0.01
(-)			0.00			1/2" Ice	4.50	4.50	0.03
			4.00			1" Ice	6.30	6.30	0.04
18"x18"x6" Junction box	A	From Leg	0.50	0.0000	157.00	No Ice	2.70	0.92	0.06
(-)			0.00			1/2" Ice	2.90	1.05	0.08
			0.00			1" Ice	3.11	1.19	0.10
5' x 1" dia. Omni	B	From Leg	0.50	0.0000	157.00	No Ice	0.50	0.50	0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(-)			0.00			1/2" Ice	1.02	1.02	0.01
			-4.00			1" Ice	1.43	1.43	0.02
10' Dipole	B	From Leg	0.50	0.0000	133.00	No Ice	4.00	4.00	0.05
(-)			0.00			1/2" Ice	6.00	6.00	0.07
			5.00			1" Ice	8.00	8.00	0.10
3' Pipe Mount Side Arm	B	From Leg	0.50	0.0000	133.00	No Ice	0.30	0.30	0.01
(-)			0.00			1/2" Ice	0.61	0.61	0.05
			0.00			1" Ice	0.81	0.81	0.09
APXVAALL24-43	A	From Leg	3.00	0.0000	150.00	No Ice	20.24	8.89	0.15
(T-Mobile)			-2.00			1/2" Ice	20.89	9.49	0.27
			0.00			1" Ice	21.54	10.09	0.39
APXVAALL24-43	B	From Leg	3.00	0.0000	150.00	No Ice	20.24	8.89	0.15
(T-Mobile)			-2.00			1/2" Ice	20.89	9.49	0.27
			0.00			1" Ice	21.54	10.09	0.39
APXVAALL24-43	C	From Leg	3.00	0.0000	150.00	No Ice	20.24	8.89	0.15
(T-Mobile)			-2.00			1/2" Ice	20.89	9.49	0.27
			0.00			1" Ice	21.54	10.09	0.39
AIR6419	A	From Leg	3.00	0.0000	150.00	No Ice	3.66	1.66	0.07
(T-Mobile)			2.00			1/2" Ice	3.91	1.85	0.09
			0.00			1" Ice	4.16	2.05	0.12
AIR6419	B	From Leg	3.00	0.0000	150.00	No Ice	3.66	1.66	0.07
(T-Mobile)			2.00			1/2" Ice	3.91	1.85	0.09
			0.00			1" Ice	4.16	2.05	0.12
AIR6419	C	From Leg	3.00	0.0000	150.00	No Ice	3.66	1.66	0.07
(T-Mobile)			2.00			1/2" Ice	3.91	1.85	0.09
			0.00			1" Ice	4.16	2.05	0.12
4460 B25+B66	A	From Leg	3.00	0.0000	150.00	No Ice	2.56	1.98	0.11
(T-Mobile)			-2.00			1/2" Ice	2.76	2.16	0.13
			2.00			1" Ice	2.97	2.34	0.16
4460 B25+B66	B	From Leg	3.00	0.0000	150.00	No Ice	2.56	1.98	0.11
(T-Mobile)			-2.00			1/2" Ice	2.76	2.16	0.13
			2.00			1" Ice	2.97	2.34	0.16
4460 B25+B66	C	From Leg	3.00	0.0000	150.00	No Ice	2.56	1.98	0.11
(T-Mobile)			-2.00			1/2" Ice	2.76	2.16	0.13
			2.00			1" Ice	2.97	2.34	0.16
4480 B71+B85	A	From Leg	3.00	0.0000	150.00	No Ice	2.85	1.38	0.08
(T-Mobile)			-2.00			1/2" Ice	3.06	1.54	0.11
			-2.00			1" Ice	3.28	1.71	0.13
4480 B71+B85	B	From Leg	3.00	0.0000	150.00	No Ice	2.85	1.38	0.08
(T-Mobile)			-2.00			1/2" Ice	3.06	1.54	0.11
			-2.00			1" Ice	3.28	1.71	0.13
4480 B71+B85	C	From Leg	3.00	0.0000	150.00	No Ice	2.85	1.38	0.08
(T-Mobile)			-2.00			1/2" Ice	3.06	1.54	0.11
			-2.00			1" Ice	3.28	1.71	0.13
SitePro VFA12-HD	A	From Leg	3.00	0.0000	150.00	No Ice	21.00	21.00	0.75
(T-Mobile)			0.00			1/2" Ice	25.00	25.00	0.90
			0.00			1" Ice	29.00	29.00	1.05
SitePro VFA12-HD	B	From Leg	3.00	0.0000	150.00	No Ice	21.00	21.00	0.75
(T-Mobile)			0.00			1/2" Ice	25.00	25.00	0.90
			0.00			1" Ice	29.00	29.00	1.05
SitePro VFA12-HD	C	From Leg	3.00	0.0000	150.00	No Ice	21.00	21.00	0.75
(T-Mobile)			0.00			1/2" Ice	25.00	25.00	0.90
			0.00			1" Ice	29.00	29.00	1.05
P65-16-XLH-RR	A	From Face	4.00	0.0000	135.00	No Ice	8.13	4.70	0.06
(ATT)			0.00			1/2" Ice	8.59	5.15	0.11
			0.00			1" Ice	9.05	5.60	0.16
P65-16-XLH-RR	B	From Face	4.00	0.0000	135.00	No Ice	8.13	4.70	0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(ATT)			0.00			1/2" Ice	8.59	5.15	0.11
			0.00			1" Ice	9.05	5.60	0.16
P65-16-XLH-RR	C	From Face	4.00	0.0000	135.00	No Ice	8.13	4.70	0.06
(ATT)			0.00			1/2" Ice	8.59	5.15	0.11
			0.00			1" Ice	9.05	5.60	0.16
800-10121	A	From Face	4.00	0.0000	135.00	No Ice	5.16	3.29	0.05
(ATT)			0.00			1/2" Ice	5.51	3.64	0.08
			0.00			1" Ice	5.87	3.99	0.12
800-10121	B	From Face	4.00	0.0000	135.00	No Ice	5.16	3.29	0.05
(ATT)			0.00			1/2" Ice	5.51	3.64	0.08
			0.00			1" Ice	5.87	3.99	0.12
800-10121	C	From Face	4.00	0.0000	135.00	No Ice	5.16	3.29	0.05
(ATT)			0.00			1/2" Ice	5.51	3.64	0.08
			0.00			1" Ice	5.87	3.99	0.12
(2) LPG21401 TMA	A	From Face	3.50	0.0000	135.00	No Ice	0.82	0.35	0.02
(ATT)			0.00			1/2" Ice	0.94	0.44	0.02
			0.00			1" Ice	1.06	0.54	0.03
(2) LPG21401 TMA	B	From Face	3.50	0.0000	135.00	No Ice	0.82	0.35	0.02
(ATT)			0.00			1/2" Ice	0.94	0.44	0.02
			0.00			1" Ice	1.06	0.54	0.03
(2) LPG21401 TMA	C	From Face	3.50	0.0000	135.00	No Ice	0.82	0.35	0.02
(ATT)			0.00			1/2" Ice	0.94	0.44	0.02
			0.00			1" Ice	1.06	0.54	0.03
RRUS-11	A	From Face	3.50	0.0000	135.00	No Ice	2.57	1.07	0.05
(ATT)			0.00			1/2" Ice	2.76	1.21	0.07
			0.00			1" Ice	2.97	1.36	0.09
RRUS-11	B	From Face	3.50	0.0000	135.00	No Ice	2.57	1.07	0.05
(ATT)			0.00			1/2" Ice	2.76	1.21	0.07
			0.00			1" Ice	2.97	1.36	0.09
RRUS-11	C	From Face	3.50	0.0000	135.00	No Ice	2.57	1.07	0.05
(ATT)			0.00			1/2" Ice	2.76	1.21	0.07
			0.00			1" Ice	2.97	1.36	0.09
DC6-48-60-18-8F Surge	C	None		0.0000	135.00	No Ice	1.91	1.91	0.02
Arrestor						1/2" Ice	2.10	2.10	0.04
(ATT)						1" Ice	2.29	2.29	0.06
10-ft T-Frame	A	None		0.0000	135.00	No Ice	13.60	13.60	0.38
(ATT)						1/2" Ice	17.50	17.50	0.53
						1" Ice	21.40	21.40	0.68
10-ft T-Frame	B	None		0.0000	135.00	No Ice	13.60	13.60	0.38
(ATT)						1/2" Ice	17.50	17.50	0.53
						1" Ice	21.40	21.40	0.68
10-ft T-Frame	C	None		0.0000	135.00	No Ice	13.60	13.60	0.38
(ATT)						1/2" Ice	17.50	17.50	0.53
						1" Ice	21.40	21.40	0.68
MX06FRO660	A	From Leg	3.50	0.0000	124.00	No Ice	9.87	7.34	0.06
(Verizon)			-6.00			1/2" Ice	10.34	7.78	0.13
			0.00			1" Ice	10.82	8.24	0.20
MX06FRO660	B	From Leg	3.50	0.0000	124.00	No Ice	9.87	7.34	0.06
(Verizon)			-6.00			1/2" Ice	10.34	7.78	0.13
			0.00			1" Ice	10.82	8.24	0.20
MX06FRO660	C	From Leg	3.50	0.0000	124.00	No Ice	9.87	7.34	0.06
(Verizon)			-6.00			1/2" Ice	10.34	7.78	0.13
			0.00			1" Ice	10.82	8.24	0.20
MX06FRO660	A	From Leg	3.50	0.0000	124.00	No Ice	9.87	7.34	0.06
(Verizon)			0.00			1/2" Ice	10.34	7.78	0.13
			0.00			1" Ice	10.82	8.24	0.20
MX06FRO660	B	From Leg	3.50	0.0000	124.00	No Ice	9.87	7.34	0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(Verizon)			0.00			1/2" Ice	10.34	7.78	0.13
			0.00			1" Ice	10.82	8.24	0.20
MX06FRO660	C	From Leg	3.50	0.0000	124.00	No Ice	9.87	7.34	0.06
(Verizon)			0.00			1/2" Ice	10.34	7.78	0.13
			0.00			1" Ice	10.82	8.24	0.20
MT6407-77A	A	From Leg	3.50	0.0000	124.00	No Ice	4.71	1.84	0.09
(Verizon)			-4.00			1/2" Ice	5.00	2.06	0.12
			0.00			1" Ice	5.29	2.29	0.15
MT6407-77A	B	From Leg	3.50	0.0000	124.00	No Ice	4.71	1.84	0.09
(Verizon)			-4.00			1/2" Ice	5.00	2.06	0.12
			0.00			1" Ice	5.29	2.29	0.15
MT6407-77A	C	From Leg	3.50	0.0000	124.00	No Ice	4.71	1.84	0.09
(Verizon)			-4.00			1/2" Ice	5.00	2.06	0.12
			0.00			1" Ice	5.29	2.29	0.15
RF4439d-25A (B2/B66A	A	From Leg	0.50	0.0000	124.00	No Ice	1.88	1.25	0.08
RRH)			0.00			1/2" Ice	2.05	1.39	0.09
(Verizon)			0.00			1" Ice	2.22	1.54	0.11
RF4439d-25A (B2/B66A	B	From Leg	0.50	0.0000	124.00	No Ice	1.88	1.25	0.08
RRH)			0.00			1/2" Ice	2.05	1.39	0.09
(Verizon)			0.00			1" Ice	2.22	1.54	0.11
RF4439d-25A (B2/B66A	C	From Leg	0.50	0.0000	124.00	No Ice	1.88	1.25	0.08
RRH)			0.00			1/2" Ice	2.05	1.39	0.09
(Verizon)			0.00			1" Ice	2.22	1.54	0.11
RF4440d-13A (B5/B13 RRH)	A	From Leg	0.50	0.0000	124.00	No Ice	1.88	1.13	0.08
(Verizon)			0.00			1/2" Ice	2.05	1.26	0.09
			0.00			1" Ice	2.22	1.41	0.11
RF4440d-13A (B5/B13 RRH)	B	From Leg	0.50	0.0000	124.00	No Ice	1.88	1.13	0.08
(Verizon)			0.00			1/2" Ice	2.05	1.26	0.09
			0.00			1" Ice	2.22	1.41	0.11
RF4440d-13A (B5/B13 RRH)	C	From Leg	0.50	0.0000	124.00	No Ice	1.88	1.13	0.08
(Verizon)			0.00			1/2" Ice	2.05	1.26	0.09
			0.00			1" Ice	2.22	1.41	0.11
RVZDC-6627-PF-48	B	From Leg	3.50	0.0000	124.00	No Ice	3.25	2.15	0.03
(Verizon)			0.00			1/2" Ice	3.48	2.35	0.06
			0.00			1" Ice	3.71	2.55	0.09
12' V-Frame	A	From Leg	1.75	0.0000	124.00	No Ice	9.22	12.97	0.30
(Verizon)			0.00			1/2" Ice	9.22	12.97	0.40
			0.00			1" Ice	9.22	12.97	0.50
12' V-Frame	B	From Leg	1.75	0.0000	124.00	No Ice	9.22	12.97	0.30
(Verizon)			0.00			1/2" Ice	9.22	12.97	0.40
			0.00			1" Ice	9.22	12.97	0.50
12' V-Frame	C	From Leg	1.75	0.0000	124.00	No Ice	9.22	12.97	0.30
(Verizon)			0.00			1/2" Ice	9.22	12.97	0.40
			0.00			1" Ice	9.22	12.97	0.50
P40-16-XLPP-RR-A	A	From Leg	4.00	0.0000	90.00	No Ice	9.07	3.52	0.05
(Sprint)			-3.00			1/2" Ice	9.47	3.87	0.11
			0.00			1" Ice	9.87	4.22	0.16
APXVSPP18-C-A20	B	From Leg	4.00	0.0000	90.00	No Ice	8.02	5.28	0.06
(Sprint)			-3.00			1/2" Ice	8.48	5.74	0.11
			0.00			1" Ice	8.94	6.20	0.16
APXVSPP18-C-A20	C	From Leg	4.00	0.0000	90.00	No Ice	8.02	5.28	0.06
(Sprint)			-3.00			1/2" Ice	8.48	5.74	0.11
			0.00			1" Ice	8.94	6.20	0.16
FD-RRH 4x40 1900	A	From Leg	3.50	0.0000	90.00	No Ice	2.24	2.32	0.06
(Sprint)			0.00			1/2" Ice	2.44	2.53	0.08
			0.00			1" Ice	2.65	2.74	0.11
FD-RRH 4x40 1900	B	From Leg	3.50	0.0000	90.00	No Ice	2.24	2.32	0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(Sprint)			0.00			1/2" Ice	2.44	2.53	0.08
			0.00			1" Ice	2.65	2.74	0.11
FD-RRH 4x40 1900	C	From Leg	3.50	0.0000	90.00	No Ice	2.24	2.32	0.06
(Sprint)			0.00			1/2" Ice	2.44	2.53	0.08
			0.00			1" Ice	2.65	2.74	0.11
FD-RRH 2x50 800	A	From Leg	3.50	0.0000	90.00	No Ice	2.06	1.93	0.06
(Sprint)			0.00			1/2" Ice	2.24	2.11	0.09
			0.00			1" Ice	2.43	2.29	0.11
FD-RRH 2x50 800	B	From Leg	3.50	0.0000	90.00	No Ice	2.06	1.93	0.06
(Sprint)			0.00			1/2" Ice	2.24	2.11	0.09
			0.00			1" Ice	2.43	2.29	0.11
FD-RRH 2x50 800	C	From Leg	3.50	0.0000	90.00	No Ice	2.06	1.93	0.06
(Sprint)			0.00			1/2" Ice	2.24	2.11	0.09
			0.00			1" Ice	2.43	2.29	0.11
10-ft T-Frame	A	From Face	0.50	0.0000	90.00	No Ice	13.60	13.60	0.38
(Sprint)			0.00			1/2" Ice	17.50	17.50	0.53
			0.00			1" Ice	21.40	21.40	0.68
10-ft T-Frame	B	From Face	0.50	0.0000	90.00	No Ice	13.60	13.60	0.38
(Sprint)			0.00			1/2" Ice	17.50	17.50	0.53
			0.00			1" Ice	21.40	21.40	0.68
10-ft T-Frame	C	From Face	0.50	0.0000	90.00	No Ice	13.60	13.60	0.38
(Sprint)			0.00			1/2" Ice	17.50	17.50	0.53
			0.00			1" Ice	21.40	21.40	0.68
GPS	A	From Leg	1.75	0.0000	65.00	No Ice	1.00	1.00	0.01
(Sprint)			0.00			1/2" Ice	1.50	1.50	0.01
			0.00			1" Ice	2.00	2.00	0.02
3' Side Mount Standoff	A	From Leg	1.75	0.0000	65.00	No Ice	2.00	2.00	0.04
(Sprint)			0.00			1/2" Ice	3.69	3.69	0.05
			0.00			1" Ice	4.74	4.74	0.06
5' x 1" dia. Omni	B	From Leg	0.50	0.0000	160.00	No Ice	0.50	0.50	0.01
(-)			0.00			1/2" Ice	1.02	1.02	0.01
			4.00			1" Ice	1.43	1.43	0.02
SitePro USF-4U	C	From Leg	0.00	0.0000	165.00	No Ice	5.75	5.75	0.16
(Eversource)			0.00			1/2" Ice	8.00	8.00	0.21
			0.00			1" Ice	10.25	10.25	0.26
SP2D03P36D-D	C	From Leg	0.00	0.0000	165.00	No Ice	4.75	4.75	0.08
(Eversource)			0.00			1/2" Ice	6.68	6.68	0.11
			0.00			1" Ice	8.63	8.63	0.16

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
6' Dish	A	Paraboloid w/o	From	8.00	0.0000		180.00	6.00	No Ice	28.27	0.08
(-)		Radome	Leg	0.00					1/2" Ice	29.07	0.10
				0.00					1" Ice	29.87	0.12

Tower Pressures - No Ice

G_H = 0.850

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	173.00	1.156	43	175.992	A	12.975	9.583	9.583	42.48	0.000	0.000
183.00-163.00					B	12.975	9.583		42.48	8.276	0.000
					C	12.975	9.583		42.48	0.000	0.000
T2	153.00	1.116	41	196.398	A	11.385	9.600	9.600	45.75	4.158	0.000
163.00-143.00					B	11.385	9.600		45.75	8.748	0.000
					C	11.385	9.600		45.75	0.000	0.000
T3	133.00	1.072	39	238.641	A	16.353	11.688	11.688	41.68	11.880	0.000
143.00-123.00					B	16.353	11.688		41.68	10.426	0.000
					C	16.353	11.688		41.68	15.680	0.000
T4	113.00	1.023	38	282.010	A	18.556	15.027	15.027	44.75	11.880	0.000
123.00-103.00					B	18.556	15.027		44.75	17.454	0.000
					C	18.556	15.027		44.75	31.360	0.000
T5	93.00	0.968	36	324.683	A	20.020	18.574	18.574	48.13	11.880	0.000
103.00-83.00					B	20.020	18.574		48.13	21.228	0.000
					C	20.020	18.574		48.13	34.615	0.000
T6 83.00-63.00	73.00	0.903	33	364.683	A	23.172	18.574	18.574	44.49	11.880	0.000
					B	23.172	18.574		44.49	21.228	0.000
					C	23.172	18.574		44.49	40.776	0.000
T7 63.00-43.00	53.00	0.824	30	405.584	A	36.573	18.577	18.577	33.68	11.880	0.000
					B	36.573	18.577		33.68	21.228	0.000
					C	36.573	18.577		33.68	41.820	0.000
T8 43.00-33.00	38.00	0.75	28	219.128	A	15.318	11.060	11.060	41.93	5.940	0.000
					B	15.318	11.060		41.93	10.614	0.000
					C	15.318	11.060		41.93	20.910	0.000
T9 33.00-23.00	28.00	0.7	26	229.128	A	15.927	11.060	11.060	40.98	5.940	0.000
					B	15.927	11.060		40.98	10.614	0.000
					C	15.927	11.060		40.98	20.910	0.000
T10 23.00-3.00	13.00	0.7	26	488.255	A	49.231	22.120	22.120	31.00	10.098	0.000
					B	49.231	22.120		31.00	7.188	0.000
					C	49.231	22.120		31.00	27.707	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 ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	173.00	1.156	6	1.3572	180.516	A	12.975	37.951	18.631	36.59	0.000	0.000
183.00-163.00						B	12.975	37.951		36.59	31.761	0.000
						C	12.975	37.951		36.59	0.000	0.000
T2	153.00	1.116	6	1.3407	200.873	A	11.385	33.816	18.553	41.05	11.740	0.000
163.00-143.00						B	11.385	33.816		41.05	32.801	0.000
						C	11.385	33.816		41.05	0.000	0.000
T3	133.00	1.072	6	1.3220	243.054	A	16.353	37.811	20.517	37.88	33.423	0.000
143.00-123.00						B	16.353	37.811		37.88	41.691	0.000
						C	16.353	37.811		37.88	30.773	0.000
T4	113.00	1.023	6	1.3006	286.352	A	18.556	43.021	23.714	38.51	33.286	0.000
123.00-103.00						B	18.556	43.021		38.51	68.244	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						C	18.556	43.021		38.51	61.162	0.000
T5 103.00-83.00	93.00	0.968	5	1.2755	328.940	A	30.297	27.092	27.092	47.21	33.125	0.000
						B	30.297	27.092		47.21	82.218	0.000
						C	30.297	27.092		47.21	70.413	0.000
T6 83.00-63.00	73.00	0.903	5	1.2450	368.839	A	23.172	43.374	26.888	40.41	32.929	0.000
						B	23.172	43.374		40.41	81.132	0.000
						C	23.172	43.374		40.41	88.297	0.000
T7 63.00-43.00	53.00	0.824	4	1.2058	409.609	A	36.573	51.830	26.630	30.12	32.678	0.000
						B	36.573	51.830		30.12	79.737	0.000
						C	36.573	51.830		30.12	92.708	0.000
T8 43.00-33.00	38.00	0.75	4	1.1663	221.074	A	15.318	23.887	14.954	38.14	16.213	0.000
						B	15.318	23.887		38.14	39.167	0.000
						C	15.318	23.887		38.14	45.793	0.000
T9 33.00-23.00	28.00	0.7	4	1.1313	231.016	A	15.927	23.846	14.837	37.30	16.102	0.000
						B	15.927	23.846		37.30	38.544	0.000
						C	15.927	23.846		37.30	45.295	0.000
T10 23.00-3.00	13.00	0.7	4	1.0477	491.752	A	49.231	54.906	29.116	27.96	26.921	0.000
						B	49.231	54.906		27.96	23.883	0.000
						C	49.231	54.906		27.96	60.830	0.000

Tower Pressure - Service

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	173.00	1.156	26	175.992	A	12.975	9.583	9.583	42.48	0.000	0.000
183.00-163.00					B	12.975	9.583		42.48	8.276	0.000
					C	12.975	9.583		42.48	0.000	0.000
T2	153.00	1.116	25	196.398	A	11.385	9.600	9.600	45.75	4.158	0.000
163.00-143.00					B	11.385	9.600		45.75	8.748	0.000
					C	11.385	9.600		45.75	0.000	0.000
T3	133.00	1.072	24	238.641	A	16.353	11.688	11.688	41.68	11.880	0.000
143.00-123.00					B	16.353	11.688		41.68	10.426	0.000
					C	16.353	11.688		41.68	15.680	0.000
T4	113.00	1.023	23	282.010	A	18.556	15.027	15.027	44.75	11.880	0.000
123.00-103.00					B	18.556	15.027		44.75	17.454	0.000
					C	18.556	15.027		44.75	31.360	0.000
T5	93.00	0.968	21	324.683	A	20.020	18.574	18.574	48.13	11.880	0.000
103.00-83.00					B	20.020	18.574		48.13	21.228	0.000
					C	20.020	18.574		48.13	34.615	0.000
T6 83.00-63.00	73.00	0.903	20	364.683	A	23.172	18.574	18.574	44.49	11.880	0.000
					B	23.172	18.574		44.49	21.228	0.000
					C	23.172	18.574		44.49	40.776	0.000
T7 63.00-43.00	53.00	0.824	18	405.584	A	36.573	18.577	18.577	33.68	11.880	0.000
					B	36.573	18.577		33.68	21.228	0.000
					C	36.573	18.577		33.68	41.820	0.000
T8 43.00-33.00	38.00	0.75	17	219.128	A	15.318	11.060	11.060	41.93	5.940	0.000
					B	15.318	11.060		41.93	10.614	0.000
					C	15.318	11.060		41.93	20.910	0.000
T9 33.00-23.00	28.00	0.7	16	229.128	A	15.927	11.060	11.060	40.98	5.940	0.000
					B	15.927	11.060		40.98	10.614	0.000
					C	15.927	11.060		40.98	20.910	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T10 23.00-3.00	13.00	0.7	16	488.255	A	49.231	22.120	22.120	31.00	10.098	0.000
					B	49.231	22.120		31.00	7.188	0.000
					C	49.231	22.120		31.00	27.707	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.04	0.93	A	0.128	2.853	43	1	1	18.396	2.08	103.79	C
183.00-163.00			B	0.128	2.853		1	1	18.396			
			C	0.128	2.853		1	1	18.396			
T2	0.08	1.13	A	0.107	2.937	41	1	1	16.805	1.99	99.57	C
163.00-143.00			B	0.107	2.937		1	1	16.805			
			C	0.107	2.937		1	1	16.805			
T3	0.29	1.20	A	0.117	2.895	39	1	1	22.944	2.99	149.48	C
143.00-123.00			B	0.117	2.895		1	1	22.944			
			C	0.117	2.895		1	1	22.944			
T4	0.49	2.27	A	0.119	2.889	38	1	1	26.406	3.60	180.24	C
123.00-103.00			B	0.119	2.889		1	1	26.406			
			C	0.119	2.889		1	1	26.406			
T5	0.53	3.33	A	0.119	2.889	36	1	1	28.955	3.76	188.04	C
103.00-83.00			B	0.119	2.889		1	1	28.955			
			C	0.119	2.889		1	1	28.955			
T6	0.55	2.99	A	0.114	2.907	33	1	1	32.243	3.90	194.88	C
83.00-63.00			B	0.114	2.907		1	1	32.243			
			C	0.114	2.907		1	1	32.243			
T7	0.56	4.18	A	0.136	2.824	30	1	1	45.935	4.50	225.02	C
63.00-43.00			B	0.136	2.824		1	1	45.935			
			C	0.136	2.824		1	1	45.935			
T8	0.28	2.24	A	0.12	2.883	28	1	1	20.513	1.91	191.25	C
43.00-33.00			B	0.12	2.883		1	1	20.513			
			C	0.12	2.883		1	1	20.513			
T9	0.28	2.29	A	0.118	2.894	26	1	1	21.210	1.83	183.47	C
33.00-23.00			B	0.118	2.894		1	1	21.210			
			C	0.118	2.894		1	1	21.210			
T10	0.36	5.69	A	0.146	2.786	26	1	1	59.981	4.25	212.34	C
23.00-3.00			B	0.146	2.786		1	1	59.981			
			C	0.146	2.786		1	1	59.981			
Sum Weight:	3.45	26.24						OTM	2428.38 kip-ft	30.81		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.04	0.93	A	0.128	2.853	43	0.8	1	15.801	1.81	90.41	C
183.00-163.00			B	0.128	2.853		0.8	1	15.801			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
			C	0.128	2.853		0.8	1	15.801			
T2	0.08	1.13	A	0.107	2.937	41	0.8	1	14.528	1.76	87.91	C
163.00-143.00			B	0.107	2.937		0.8	1	14.528			
			C	0.107	2.937		0.8	1	14.528			
T3	0.29	1.20	A	0.117	2.895	39	0.8	1	19.673	2.67	133.62	C
143.00-123.00			B	0.117	2.895		0.8	1	19.673			
			C	0.117	2.895		0.8	1	19.673			
T4	0.49	2.27	A	0.119	2.889	38	0.8	1	22.695	3.26	163.09	C
123.00-103.00			B	0.119	2.889		0.8	1	22.695			
			C	0.119	2.889		0.8	1	22.695			
T5	0.53	3.33	A	0.119	2.889	36	0.8	1	24.951	3.41	170.53	C
103.00-83.00			B	0.119	2.889		0.8	1	24.951			
			C	0.119	2.889		0.8	1	24.951			
T6	0.55	2.99	A	0.114	2.907	33	0.8	1	27.608	3.52	175.86	C
83.00-63.00			B	0.114	2.907		0.8	1	27.608			
			C	0.114	2.907		0.8	1	27.608			
T7	0.56	4.18	A	0.136	2.824	30	0.8	1	38.621	3.97	198.41	C
63.00-43.00			B	0.136	2.824		0.8	1	38.621			
			C	0.136	2.824		0.8	1	38.621			
T8	0.28	2.24	A	0.12	2.883	28	0.8	1	17.450	1.71	170.55	C
43.00-33.00			B	0.12	2.883		0.8	1	17.450			
			C	0.12	2.883		0.8	1	17.450			
T9	0.28	2.29	A	0.118	2.894	26	0.8	1	18.024	1.63	163.30	C
33.00-23.00			B	0.118	2.894		0.8	1	18.024			
			C	0.118	2.894		0.8	1	18.024			
T10	0.36	5.69	A	0.146	2.786	26	0.8	1	50.135	3.65	182.33	C
23.00-3.00			B	0.146	2.786		0.8	1	50.135			
			C	0.146	2.786		0.8	1	50.135			
Sum Weight:	3.45	26.24						OTM	2165.92 kip-ft	27.38		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.04	0.93	A	0.128	2.853	43	0.85	1	16.450	1.88	93.76	C
183.00-163.00			B	0.128	2.853		0.85	1	16.450			
			C	0.128	2.853		0.85	1	16.450			
T2	0.08	1.13	A	0.107	2.937	41	0.85	1	15.097	1.82	90.83	C
163.00-143.00			B	0.107	2.937		0.85	1	15.097			
			C	0.107	2.937		0.85	1	15.097			
T3	0.29	1.20	A	0.117	2.895	39	0.85	1	20.491	2.75	137.58	C
143.00-123.00			B	0.117	2.895		0.85	1	20.491			
			C	0.117	2.895		0.85	1	20.491			
T4	0.49	2.27	A	0.119	2.889	38	0.85	1	23.623	3.35	167.38	C
123.00-103.00			B	0.119	2.889		0.85	1	23.623			
			C	0.119	2.889		0.85	1	23.623			
T5	0.53	3.33	A	0.119	2.889	36	0.85	1	25.952	3.50	174.91	C
103.00-83.00			B	0.119	2.889		0.85	1	25.952			
			C	0.119	2.889		0.85	1	25.952			
T6	0.55	2.99	A	0.114	2.907	33	0.85	1	28.767	3.61	180.62	C
83.00-63.00			B	0.114	2.907		0.85	1	28.767			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
			C	0.114	2.907		0.85	1	28.767			
T7	0.56	4.18	A	0.136	2.824	30	0.85	1	40.449	4.10	205.07	C
63.00-43.00			B	0.136	2.824		0.85	1	40.449			
			C	0.136	2.824		0.85	1	40.449			
T8	0.28	2.24	A	0.12	2.883	28	0.85	1	18.215	1.76	175.73	C
43.00-33.00			B	0.12	2.883		0.85	1	18.215			
			C	0.12	2.883		0.85	1	18.215			
T9	0.28	2.29	A	0.118	2.894	26	0.85	1	18.821	1.68	168.35	C
33.00-23.00			B	0.118	2.894		0.85	1	18.821			
			C	0.118	2.894		0.85	1	18.821			
T10	0.36	5.69	A	0.146	2.786	26	0.85	1	52.596	3.80	189.83	C
23.00-3.00			B	0.146	2.786		0.85	1	52.596			
			C	0.146	2.786		0.85	1	52.596			
Sum Weight:	3.45	26.24						OTM	2231.54 kip-ft	28.24		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.35	3.07	A	0.282	2.345	6	1	1	35.501	0.55	27.33	C
183.00-163.00			B	0.282	2.345		1	1	35.501			
			C	0.282	2.345		1	1	35.501			
T2	0.52	2.98	A	0.225	2.515	6	1	1	30.975	0.54	26.99	C
163.00-143.00			B	0.225	2.515		1	1	30.975			
			C	0.225	2.515		1	1	30.975			
T3	1.47	3.56	A	0.223	2.521	6	1	1	38.240	0.79	39.65	C
143.00-123.00			B	0.223	2.521		1	1	38.240			
			C	0.223	2.521		1	1	38.240			
T4	2.30	4.93	A	0.215	2.547	6	1	1	43.391	0.98	49.24	C
123.00-103.00			B	0.215	2.547		1	1	43.391			
			C	0.215	2.547		1	1	43.391			
T5	2.50	5.94	A	0.174	2.684	5	1	1	45.752	1.05	52.42	C
103.00-83.00			B	0.174	2.684		1	1	45.752			
			C	0.174	2.684		1	1	45.752			
T6	2.64	5.92	A	0.18	2.663	5	1	1	47.953	1.04	52.02	C
83.00-63.00			B	0.18	2.663		1	1	47.953			
			C	0.18	2.663		1	1	47.953			
T7	2.63	8.27	A	0.216	2.544	4	1	1	66.501	1.11	55.70	C
63.00-43.00			B	0.216	2.544		1	1	66.501			
			C	0.216	2.544		1	1	66.501			
T8	1.28	3.95	A	0.177	2.673	4	1	1	28.955	0.48	47.87	C
43.00-33.00			B	0.177	2.673		1	1	28.955			
			C	0.177	2.673		1	1	28.955			
T9	1.25	3.99	A	0.172	2.692	4	1	1	29.524	0.45	45.13	C
33.00-23.00			B	0.172	2.692		1	1	29.524			
			C	0.172	2.692		1	1	29.524			
T10	1.43	10.17	A	0.212	2.557	4	1	1	80.892	0.89	44.32	C
23.00-3.00			B	0.212	2.557		1	1	80.892			
			C	0.212	2.557		1	1	80.892			
Sum Weight:	16.35	52.78						OTM	645.10 kip-ft	7.88		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.35	3.07	A	0.282	2.345	6	0.8	1	32.906	0.51	25.71	C
183.00-163.00			B	0.282	2.345		0.8	1	32.906			
			C	0.282	2.345		0.8	1	32.906			
T2	0.52	2.98	A	0.225	2.515	6	0.8	1	28.698	0.51	25.51	C
163.00-143.00			B	0.225	2.515		0.8	1	28.698			
			C	0.225	2.515		0.8	1	28.698			
T3	1.47	3.56	A	0.223	2.521	6	0.8	1	34.969	0.75	37.60	C
143.00-123.00			B	0.223	2.521		0.8	1	34.969			
			C	0.223	2.521		0.8	1	34.969			
T4	2.30	4.93	A	0.215	2.547	6	0.8	1	39.680	0.94	47.00	C
123.00-103.00			B	0.215	2.547		0.8	1	39.680			
			C	0.215	2.547		0.8	1	39.680			
T5	2.50	5.94	A	0.174	2.684	5	0.8	1	39.693	0.98	48.78	C
103.00-83.00			B	0.174	2.684		0.8	1	39.693			
			C	0.174	2.684		0.8	1	39.693			
T6	2.64	5.92	A	0.18	2.663	5	0.8	1	43.319	0.99	49.44	C
83.00-63.00			B	0.18	2.663		0.8	1	43.319			
			C	0.18	2.663		0.8	1	43.319			
T7	2.63	8.27	A	0.216	2.544	4	0.8	1	59.186	1.04	52.15	C
63.00-43.00			B	0.216	2.544		0.8	1	59.186			
			C	0.216	2.544		0.8	1	59.186			
T8	1.28	3.95	A	0.177	2.673	4	0.8	1	25.891	0.45	45.03	C
43.00-33.00			B	0.177	2.673		0.8	1	25.891			
			C	0.177	2.673		0.8	1	25.891			
T9	1.25	3.99	A	0.172	2.692	4	0.8	1	26.338	0.42	42.36	C
33.00-23.00			B	0.172	2.692		0.8	1	26.338			
			C	0.172	2.692		0.8	1	26.338			
T10	1.43	10.17	A	0.212	2.557	4	0.8	1	71.046	0.80	40.24	C
23.00-3.00			B	0.212	2.557		0.8	1	71.046			
			C	0.212	2.557		0.8	1	71.046			
Sum Weight:	16.35	52.78						OTM	608.70 kip-ft	7.40		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.35	3.07	A	0.282	2.345	6	0.85	1	33.555	0.52	26.12	C
183.00-163.00			B	0.282	2.345		0.85	1	33.555			
			C	0.282	2.345		0.85	1	33.555			
T2	0.52	2.98	A	0.225	2.515	6	0.85	1	29.267	0.52	25.88	C
163.00-143.00			B	0.225	2.515		0.85	1	29.267			
			C	0.225	2.515		0.85	1	29.267			
T3	1.47	3.56	A	0.223	2.521	6	0.85	1	35.787	0.76	38.12	C

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
143.00-123.00			B	0.223	2.521		0.85	1	35.787			
			C	0.223	2.521		0.85	1	35.787			
T4	2.30	4.93	A	0.215	2.547	6	0.85	1	40.608	0.95	47.56	C
123.00-103.00			B	0.215	2.547		0.85	1	40.608			
			C	0.215	2.547		0.85	1	40.608			
T5	2.50	5.94	A	0.174	2.684	5	0.85	1	41.208	0.99	49.69	C
103.00-83.00			B	0.174	2.684		0.85	1	41.208			
			C	0.174	2.684		0.85	1	41.208			
T6	2.64	5.92	A	0.18	2.663	5	0.85	1	44.477	1.00	50.09	C
83.00-63.00			B	0.18	2.663		0.85	1	44.477			
			C	0.18	2.663		0.85	1	44.477			
T7	2.63	8.27	A	0.216	2.544	4	0.85	1	61.015	1.06	53.04	C
63.00-43.00			B	0.216	2.544		0.85	1	61.015			
			C	0.216	2.544		0.85	1	61.015			
T8	1.28	3.95	A	0.177	2.673	4	0.85	1	26.657	0.46	45.74	C
43.00-33.00			B	0.177	2.673		0.85	1	26.657			
			C	0.177	2.673		0.85	1	26.657			
T9	1.25	3.99	A	0.172	2.692	4	0.85	1	27.135	0.43	43.05	C
33.00-23.00			B	0.172	2.692		0.85	1	27.135			
			C	0.172	2.692		0.85	1	27.135			
T10	1.43	10.17	A	0.212	2.557	4	0.85	1	73.508	0.83	41.26	C
23.00-3.00			B	0.212	2.557		0.85	1	73.508			
			C	0.212	2.557		0.85	1	73.508			
Sum Weight:	16.35	52.78						OTM	617.80 kip-ft	7.52		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.04	0.93	A	0.128	2.853	26	1	1	18.396	1.25	62.65	C
183.00-163.00			B	0.128	2.853		1	1	18.396			
			C	0.128	2.853		1	1	18.396			
T2	0.08	1.13	A	0.107	2.937	25	1	1	16.805	1.20	60.10	C
163.00-143.00			B	0.107	2.937		1	1	16.805			
			C	0.107	2.937		1	1	16.805			
T3	0.29	1.20	A	0.117	2.895	24	1	1	22.956	1.81	90.26	C
143.00-123.00			B	0.117	2.895		1	1	22.956			
			C	0.117	2.895		1	1	22.956			
T4	0.49	2.27	A	0.119	2.889	23	1	1	27.048	2.21	110.58	C
123.00-103.00			B	0.119	2.889		1	1	27.048			
			C	0.119	2.889		1	1	27.048			
T5	0.53	3.33	A	0.119	2.889	21	1	1	29.973	2.32	116.19	C
103.00-83.00			B	0.119	2.889		1	1	29.973			
			C	0.119	2.889		1	1	29.973			
T6	0.55	2.99	A	0.114	2.907	20	1	1	33.237	2.40	120.09	C
83.00-63.00			B	0.114	2.907		1	1	33.237			
			C	0.114	2.907		1	1	33.237			
T7	0.56	4.18	A	0.136	2.824	18	1	1	46.834	2.76	137.80	C
63.00-43.00			B	0.136	2.824		1	1	46.834			
			C	0.136	2.824		1	1	46.834			
T8	0.28	2.24	A	0.12	2.883	17	1	1	21.146	1.18	118.02	C

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
43.00-33.00			B	0.12	2.883		1	1	21.146			
			C	0.12	2.883		1	1	21.146			
T9	0.28	2.29	A	0.118	2.894	16	1	1	21.825	1.13	113.10	C
33.00-23.00			B	0.118	2.894		1	1	21.825			
			C	0.118	2.894		1	1	21.825			
T10	0.36	5.69	A	0.146	2.786	16	1	1	61.124	2.61	130.27	C
23.00-3.00			B	0.146	2.786		1	1	61.124			
			C	0.146	2.786		1	1	61.124			
Sum Weight:	3.45	26.24						OTM	1481.99 kip-ft	18.87		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.04	0.93	A	0.128	2.853	26	0.8	1	15.801	1.09	54.58	C
183.00-163.00			B	0.128	2.853		0.8	1	15.801			
			C	0.128	2.853		0.8	1	15.801			
T2	0.08	1.13	A	0.107	2.937	25	0.8	1	14.528	1.06	53.06	C
163.00-143.00			B	0.107	2.937		0.8	1	14.528			
			C	0.107	2.937		0.8	1	14.528			
T3	0.29	1.20	A	0.117	2.895	24	0.8	1	19.686	1.61	80.69	C
143.00-123.00			B	0.117	2.895		0.8	1	19.686			
			C	0.117	2.895		0.8	1	19.686			
T4	0.49	2.27	A	0.119	2.889	23	0.8	1	23.337	2.00	100.23	C
123.00-103.00			B	0.119	2.889		0.8	1	23.337			
			C	0.119	2.889		0.8	1	23.337			
T5	0.53	3.33	A	0.119	2.889	21	0.8	1	25.969	2.11	105.62	C
103.00-83.00			B	0.119	2.889		0.8	1	25.969			
			C	0.119	2.889		0.8	1	25.969			
T6	0.55	2.99	A	0.114	2.907	20	0.8	1	28.602	2.17	108.61	C
83.00-63.00			B	0.114	2.907		0.8	1	28.602			
			C	0.114	2.907		0.8	1	28.602			
T7	0.56	4.18	A	0.136	2.824	18	0.8	1	39.519	2.43	121.74	C
63.00-43.00			B	0.136	2.824		0.8	1	39.519			
			C	0.136	2.824		0.8	1	39.519			
T8	0.28	2.24	A	0.12	2.883	17	0.8	1	18.082	1.06	105.53	C
43.00-33.00			B	0.12	2.883		0.8	1	18.082			
			C	0.12	2.883		0.8	1	18.082			
T9	0.28	2.29	A	0.118	2.894	16	0.8	1	18.640	1.01	100.92	C
33.00-23.00			B	0.118	2.894		0.8	1	18.640			
			C	0.118	2.894		0.8	1	18.640			
T10	0.36	5.69	A	0.146	2.786	16	0.8	1	51.278	2.24	112.16	C
23.00-3.00			B	0.146	2.786		0.8	1	51.278			
			C	0.146	2.786		0.8	1	51.278			
Sum Weight:	3.45	26.24						OTM	1323.57 kip-ft	16.80		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.04	0.93	A	0.128	2.853	26	0.85	1	16.450	1.13	56.59	C
183.00-163.00			B	0.128	2.853		0.85	1	16.450			
			C	0.128	2.853		0.85	1	16.450			
T2	0.08	1.13	A	0.107	2.937	25	0.85	1	15.097	1.10	54.82	C
163.00-143.00			B	0.107	2.937		0.85	1	15.097			
			C	0.107	2.937		0.85	1	15.097			
T3	0.29	1.20	A	0.117	2.895	24	0.85	1	20.504	1.66	83.08	C
143.00-123.00			B	0.117	2.895		0.85	1	20.504			
			C	0.117	2.895		0.85	1	20.504			
T4	0.49	2.27	A	0.119	2.889	23	0.85	1	24.265	2.06	102.82	C
123.00-103.00			B	0.119	2.889		0.85	1	24.265			
			C	0.119	2.889		0.85	1	24.265			
T5	0.53	3.33	A	0.119	2.889	21	0.85	1	26.970	2.17	108.26	C
103.00-83.00			B	0.119	2.889		0.85	1	26.970			
			C	0.119	2.889		0.85	1	26.970			
T6	0.55	2.99	A	0.114	2.907	20	0.85	1	29.761	2.23	111.48	C
83.00-63.00			B	0.114	2.907		0.85	1	29.761			
			C	0.114	2.907		0.85	1	29.761			
T7	0.56	4.18	A	0.136	2.824	18	0.85	1	41.348	2.52	125.75	C
63.00-43.00			B	0.136	2.824		0.85	1	41.348			
			C	0.136	2.824		0.85	1	41.348			
T8	0.28	2.24	A	0.12	2.883	17	0.85	1	18.848	1.09	108.65	C
43.00-33.00			B	0.12	2.883		0.85	1	18.848			
			C	0.12	2.883		0.85	1	18.848			
T9	0.28	2.29	A	0.118	2.894	16	0.85	1	19.436	1.04	103.97	C
33.00-23.00			B	0.118	2.894		0.85	1	19.436			
			C	0.118	2.894		0.85	1	19.436			
T10	0.36	5.69	A	0.146	2.786	16	0.85	1	53.739	2.33	116.69	C
23.00-3.00			B	0.146	2.786		0.85	1	53.739			
			C	0.146	2.786		0.85	1	53.739			
Sum Weight:	3.45	26.24						OTM	1363.18 kip-ft	17.32		

Force Totals

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
Leg Weight	8.98					
Bracing Weight	17.26					
Total Member Self-Weight	26.24			3.46	10.86	
Total Weight	39.55			3.46	10.86	
Wind 0 deg - No Ice		-0.01	-43.77	-4180.93	12.37	-20.62
Wind 30 deg - No Ice		20.39	-35.53	-3423.51	-1949.73	-18.66
Wind 60 deg - No Ice		34.36	-20.09	-1943.34	-3289.53	-8.49
Wind 90 deg - No Ice		40.35	0.00	2.83	-3832.95	4.77
Wind 120 deg - No Ice		37.12	23.06	2301.93	-3479.05	16.43
Wind 150 deg - No Ice		19.98	36.35	3574.78	-1875.22	23.63
Wind 180 deg - No Ice		0.01	40.85	4016.09	9.34	20.62
Wind 210 deg - No Ice		-19.95	36.34	3573.27	1894.31	12.09

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 240 deg - No Ice		-37.11	23.03	2299.31	3499.25	4.19
Wind 270 deg - No Ice		-40.35	-0.02	-0.20	3854.66	-4.77
Wind 300 deg - No Ice		-34.37	-20.11	-1945.97	3312.75	-12.13
Wind 330 deg - No Ice		-20.41	-35.54	-3425.03	1974.06	-17.05
Member Ice	26.55					
Total Weight Ice	89.96			17.22	37.75	
Wind 0 deg - Ice		-0.00	-10.60	-998.22	37.99	-3.17
Wind 30 deg - Ice		5.09	-8.84	-834.38	-451.06	-2.84
Wind 60 deg - Ice		8.67	-5.05	-470.06	-794.92	-1.24
Wind 90 deg - Ice		10.10	0.00	17.12	-927.67	0.82
Wind 120 deg - Ice		9.05	5.48	557.51	-820.49	2.61
Wind 150 deg - Ice		5.02	8.97	891.61	-439.30	3.69
Wind 180 deg - Ice		0.00	10.20	1010.59	37.51	3.17
Wind 210 deg - Ice		-5.02	8.97	891.37	514.39	1.80
Wind 240 deg - Ice		-9.05	5.48	557.09	895.75	0.56
Wind 270 deg - Ice		-10.10	-0.00	16.64	1003.17	-0.82
Wind 300 deg - Ice		-8.67	-5.05	-470.48	870.66	-1.94
Wind 330 deg - Ice		-5.09	-8.84	-834.62	526.98	-2.66
Total Weight	39.55			3.46	10.86	
Wind 0 deg - Service		-0.01	-26.72	-2546.31	2.23	-12.52
Wind 30 deg - Service		12.45	-21.70	-2086.44	-1192.17	-11.32
Wind 60 deg - Service		20.99	-12.27	-1185.63	-2008.25	-5.15
Wind 90 deg - Service		24.65	0.00	-0.84	-2338.96	2.89
Wind 120 deg - Service		22.66	14.06	1396.98	-2122.65	9.96
Wind 150 deg - Service		12.20	22.19	2172.65	-1147.19	14.33
Wind 180 deg - Service		0.01	24.95	2441.73	0.41	12.52
Wind 210 deg - Service		-12.19	22.19	2171.74	1148.25	7.35
Wind 240 deg - Service		-22.65	14.05	1395.40	2124.37	2.56
Wind 270 deg - Service		-24.65	-0.01	-2.67	2341.60	-2.89
Wind 300 deg - Service		-21.00	-12.28	-1187.21	2011.80	-7.36
Wind 330 deg - Service		-12.47	-21.71	-2087.35	1196.39	-10.36

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	183 - 163	Leg	Max Tension	15	6.13	0.02	-0.06
			Max. Compression	18	-6.58	0.16	-0.11
			Max. Mx	6	-0.55	0.59	0.13
			Max. My	12	-0.21	-0.09	0.68
			Max. Vy	6	0.50	-0.40	0.13
			Max. Vx	12	0.56	-0.09	-0.43
		Diagonal	Max Tension	7	1.87	0.00	0.00
			Max. Compression	18	-2.00	0.00	0.00
			Max. Mx	38	-0.02	0.03	-0.00
			Max. My	20	-0.68	0.01	-0.00
			Max. Vy	38	-0.02	0.03	-0.00
			Max. Vx	20	0.00	0.01	-0.00
		Top Girt	Max Tension	11	0.04	0.00	0.00
			Max. Compression	18	-0.11	0.00	0.00
			Max. Mx	26	-0.09	-0.11	0.00
			Max. My	4	-0.03	0.00	-0.00
			Max. Vy	26	0.05	0.00	0.00
			Max. Vx	4	0.00	0.00	0.00
T2	163 - 143	Leg	Max Tension	15	16.81	-0.29	0.01
			Max. Compression	2	-20.29	-0.13	0.01
			Max. Mx	18	-20.18	0.30	-0.00
			Max. My	24	-0.91	-0.02	-0.33
			Max. Vy	14	1.24	-0.29	0.01

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	8	-1.11	0.00	0.05
		Diagonal	Max Tension	4	3.72	0.00	0.00
			Max. Compression	4	-3.80	0.00	0.00
			Max. Mx	28	-0.08	0.04	0.01
			Max. My	4	-3.75	0.01	0.01
			Max. Vy	38	0.04	0.04	-0.01
			Max. Vx	4	-0.00	0.00	0.00
T3	143 - 123	Leg	Max Tension	15	35.60	-0.31	0.02
			Max. Compression	2	-42.61	0.69	0.01
			Max. Mx	10	-42.10	0.69	-0.00
			Max. My	16	-7.81	-0.05	0.66
			Max. Vy	22	0.93	-0.67	-0.00
			Max. Vx	16	-0.78	0.02	0.29
		Diagonal	Max Tension	4	4.82	0.00	0.00
			Max. Compression	4	-4.84	0.00	0.00
			Max. Mx	38	0.52	0.07	-0.01
			Max. My	4	-4.44	0.01	0.02
			Max. Vy	35	0.05	0.07	0.01
			Max. Vx	4	-0.00	0.00	0.00
T4	123 - 103	Leg	Max Tension	15	58.76	-0.26	-0.01
			Max. Compression	2	-68.74	0.21	0.03
			Max. Mx	10	-50.13	0.69	-0.00
			Max. My	12	-9.61	-0.03	-0.41
			Max. Vy	10	0.18	0.69	-0.00
			Max. Vx	12	-0.15	-0.03	-0.41
		Diagonal	Max Tension	4	5.89	0.00	0.00
			Max. Compression	4	-5.97	0.00	0.00
			Max. Mx	34	1.14	0.10	0.01
			Max. My	4	-5.78	0.02	0.02
			Max. Vy	34	0.06	0.10	-0.01
			Max. Vx	29	0.00	0.00	0.00
T5	103 - 83	Leg	Max Tension	15	79.67	-0.85	-0.04
			Max. Compression	18	-93.56	0.63	0.01
			Max. Mx	14	78.07	-0.87	-0.04
			Max. My	13	-10.19	-0.02	-0.92
			Max. Vy	14	-0.54	-0.87	-0.04
			Max. Vx	12	-0.56	-0.04	-0.92
		Diagonal	Max Tension	4	7.46	0.00	0.00
			Max. Compression	4	-7.60	0.00	0.00
			Max. Mx	33	1.49	-0.22	-0.03
			Max. My	4	-6.81	-0.07	-0.03
			Max. Vy	33	-0.11	-0.22	-0.03
			Max. Vx	28	-0.01	0.00	0.00
T6	83 - 63	Leg	Max Tension	15	103.46	-0.39	-0.05
			Max. Compression	2	-121.54	0.07	0.04
			Max. Mx	14	89.64	-0.65	-0.04
			Max. My	24	-8.16	-0.03	0.63
			Max. Vy	11	0.13	0.39	-0.01
			Max. Vx	12	0.15	-0.03	-0.58
		Diagonal	Max Tension	4	7.89	0.00	0.00
			Max. Compression	4	-8.13	0.00	0.00
			Max. Mx	33	1.17	0.22	-0.03
			Max. My	27	0.12	0.20	0.03
			Max. Vy	33	0.10	0.21	0.03
			Max. Vx	35	-0.01	0.00	0.00
T7	63 - 43	Leg	Max Tension	15	125.98	0.64	-0.02
			Max. Compression	18	-148.75	-0.14	-0.03
			Max. Mx	35	-58.98	-1.43	-0.00
			Max. My	12	-16.77	-0.23	-0.96
			Max. Vy	2	-0.53	1.40	-0.00
			Max. Vx	12	0.29	-0.23	-0.96

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Diagonal	Max Tension	4	8.26	0.00	0.00
			Max. Compression	4	-8.69	0.00	0.00
			Max. Mx	33	0.78	0.29	-0.03
			Max. My	32	2.69	0.25	-0.03
			Max. Vy	33	0.12	0.26	0.03
			Max. Vx	32	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	12	0.55	0.09	0.01
			Max. Compression	13	-0.52	0.07	0.02
			Max. Mx	29	-0.03	0.21	0.03
			Max. My	32	-0.06	0.21	0.03
			Max. Vy	31	0.10	0.18	0.03
			Max. Vx	34	-0.01	0.00	0.00
T8	43 - 33	Leg	Max Tension	15	137.53	0.07	-0.03
			Max. Compression	18	-163.05	0.76	-0.04
			Max. Mx	27	-61.08	1.97	0.00
			Max. My	12	-19.27	-0.03	-0.73
			Max. Vy	27	-0.35	1.97	0.00
			Max. Vx	24	-0.13	-0.06	0.72
		Diagonal	Max Tension	4	8.87	0.00	0.00
			Max. Compression	4	-8.86	0.00	0.00
			Max. Mx	33	0.59	0.42	-0.05
			Max. My	32	-1.63	0.38	-0.05
			Max. Vy	33	0.15	0.42	-0.05
			Max. Vx	32	-0.01	0.00	0.00
T9	33 - 23	Leg	Max Tension	15	148.44	-0.79	-0.04
			Max. Compression	18	-176.43	-0.03	-0.02
			Max. Mx	35	-70.11	-2.20	-0.00
			Max. My	12	-19.96	-0.03	-0.73
			Max. Vy	27	0.42	1.97	0.00
			Max. Vx	12	-0.14	-0.03	-0.73
		Diagonal	Max Tension	4	9.05	0.00	0.00
			Max. Compression	4	-9.31	0.00	0.00
			Max. Mx	33	2.75	0.30	0.04
			Max. My	33	2.75	0.30	0.04
			Max. Vy	33	0.14	0.30	0.04
			Max. Vx	33	0.01	0.00	0.00
T10	23 - 3	Leg	Max Tension	15	169.68	1.06	-0.02
			Max. Compression	18	-203.54	0.00	-0.00
			Max. Mx	33	14.58	3.15	-0.02
			Max. My	12	-21.71	-0.38	-1.77
			Max. Vy	2	-0.80	2.02	-0.00
			Max. Vx	12	0.46	-0.38	-1.77
		Diagonal	Max Tension	4	9.36	0.00	0.00
			Max. Compression	2	-10.18	0.00	0.00
			Max. Mx	33	-0.49	0.50	-0.05
			Max. My	34	-4.58	0.47	-0.05
			Max. Vy	33	0.16	0.50	-0.05
			Max. Vx	34	-0.01	0.00	0.00
		Secondary Horizontal	Max Tension	12	0.83	0.12	0.01
			Max. Compression	13	-0.76	0.11	0.02
			Max. Mx	34	-0.33	0.36	0.04
			Max. My	34	-0.33	0.36	0.04
			Max. Vy	34	-0.13	0.36	0.04
			Max. Vx	32	0.01	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	210.67	23.36	-13.62
	Max. H_x	18	210.67	23.36	-13.62
	Max. H_z	5	-146.48	-15.87	11.61
	Min. Vert	7	-166.04	-19.04	11.22
	Min. H_x	7	-166.04	-19.04	11.22
	Min. H_z	18	210.67	23.36	-13.62
Leg B	Max. Vert	10	209.74	-23.60	-13.20
	Max. H_x	23	-166.95	19.30	10.83
	Max. H_z	25	-147.41	16.30	10.90
	Min. Vert	23	-166.95	19.30	10.83
	Min. H_x	10	209.74	-23.60	-13.20
	Min. H_z	10	209.74	-23.60	-13.20
Leg A	Max. Vert	2	210.57	-0.49	27.10
	Max. H_x	21	11.89	3.23	1.17
	Max. H_z	2	210.57	-0.49	27.10
	Min. Vert	15	-175.09	0.47	-22.80
	Min. H_x	8	15.66	-3.25	1.55
	Min. H_z	15	-175.09	0.47	-22.80

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	39.55	0.00	0.00	3.46	10.86	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	47.46	-0.01	-43.77	-4192.92	14.63	-20.67
0.9 Dead+1.0 Wind 0 deg - No Ice	35.60	-0.01	-43.77	-4190.78	11.35	-20.66
1.2 Dead+1.0 Wind 30 deg - No Ice	47.46	20.39	-35.53	-3433.26	-1953.43	-18.69
0.9 Dead+1.0 Wind 30 deg - No Ice	35.60	20.39	-35.53	-3431.68	-1955.21	-18.69
1.2 Dead+1.0 Wind 60 deg - No Ice	47.46	34.36	-20.09	-1948.60	-3297.29	-8.51
0.9 Dead+1.0 Wind 60 deg - No Ice	35.60	34.36	-20.09	-1948.15	-3298.05	-8.50
1.2 Dead+1.0 Wind 90 deg - No Ice	47.46	40.35	0.00	3.52	-3842.31	4.77
0.9 Dead+1.0 Wind 90 deg - No Ice	35.60	40.35	0.00	2.48	-3842.68	4.78
1.2 Dead+1.0 Wind 120 deg - No Ice	47.46	37.12	23.06	2309.85	-3487.28	16.46
0.9 Dead+1.0 Wind 120 deg - No Ice	35.60	37.12	23.06	2307.00	-3487.93	16.45
1.2 Dead+1.0 Wind 150 deg - No Ice	47.46	19.98	36.35	3586.51	-1878.61	23.68
0.9 Dead+1.0 Wind 150 deg - No Ice	35.60	19.98	36.35	3582.70	-1880.47	23.66
1.2 Dead+1.0 Wind 180 deg - No Ice	47.46	0.01	40.85	4029.14	11.59	20.67
0.9 Dead+1.0 Wind 180 deg - No Ice	35.60	0.01	40.85	4024.99	8.31	20.66
1.2 Dead+1.0 Wind 210 deg -	47.46	-19.95	36.34	3584.96	1902.17	12.13

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
No Ice						
0.9 Dead+1.0 Wind 210 deg - No Ice	35.60	-19.95	36.34	3581.15	1897.48	12.12
1.2 Dead+1.0 Wind 240 deg - No Ice	47.46	-37.11	23.03	2307.19	3511.92	4.22
0.9 Dead+1.0 Wind 240 deg - No Ice	35.60	-37.11	23.03	2304.34	3506.02	4.21
1.2 Dead+1.0 Wind 270 deg - No Ice	47.46	-40.35	-0.02	0.49	3868.45	-4.77
0.9 Dead+1.0 Wind 270 deg - No Ice	35.60	-40.35	-0.02	-0.56	3862.27	-4.78
1.2 Dead+1.0 Wind 300 deg - No Ice	47.46	-34.37	-20.11	-1951.20	3324.96	-12.16
0.9 Dead+1.0 Wind 300 deg - No Ice	35.60	-34.37	-20.11	-1950.75	3319.17	-12.15
1.2 Dead+1.0 Wind 330 deg - No Ice	47.46	-20.41	-35.54	-3434.74	1982.25	-17.11
0.9 Dead+1.0 Wind 330 deg - No Ice	35.60	-20.41	-35.54	-3433.16	1977.48	-17.09
1.2 Dead+1.0 Ice+1.0 Temp	97.87	0.00	-0.00	17.97	40.16	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	97.87	-0.00	-10.60	-1003.95	40.38	-3.20
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	97.87	5.09	-8.84	-839.04	-451.77	-2.86
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	97.87	8.67	-5.05	-472.41	-797.80	-1.24
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	97.87	10.10	0.00	17.88	-931.37	0.83
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	97.87	9.05	5.48	561.79	-823.53	2.64
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	97.87	5.02	8.97	897.99	-439.91	3.72
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	97.87	0.00	10.20	1017.72	39.91	3.20
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	97.87	-5.02	8.97	897.75	519.78	1.82
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	97.87	-9.05	5.48	561.37	903.57	0.57
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	97.87	-10.10	-0.00	17.40	1011.66	-0.83
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	97.87	-8.67	-5.05	-472.82	878.34	-1.96
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	97.87	-5.09	-8.84	-839.28	532.48	-2.69
Dead+Wind 0 deg - Service	39.55	-0.01	-26.72	-2548.83	11.82	-12.54
Dead+Wind 30 deg - Service	39.55	12.45	-21.70	-2087.80	-1185.60	-11.34
Dead+Wind 60 deg - Service	39.55	20.99	-12.27	-1184.72	-2003.74	-5.16
Dead+Wind 90 deg - Service	39.55	24.65	0.00	3.08	-2335.26	2.89
Dead+Wind 120 deg - Service	39.55	22.66	14.06	1404.56	-2118.38	9.98
Dead+Wind 150 deg - Service	39.55	12.20	22.19	2182.16	-1140.47	14.36
Dead+Wind 180 deg - Service	39.55	0.01	24.95	2451.91	9.98	12.54
Dead+Wind 210 deg - Service	39.55	-12.19	22.19	2181.23	1160.68	7.37
Dead+Wind 240 deg - Service	39.55	-22.65	14.05	1402.96	2139.24	2.57
Dead+Wind 270 deg - Service	39.55	-24.65	-0.01	1.25	2357.03	-2.89
Dead+Wind 300 deg - Service	39.55	-21.00	-12.28	-1186.30	2026.43	-7.38
Dead+Wind 330 deg - Service	39.55	-12.47	-21.71	-2088.71	1208.98	-10.38

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-39.55	0.00	0.00	39.55	0.00	0.000%
2	-0.01	-47.46	-43.77	0.01	47.46	43.77	0.001%
3	-0.01	-35.60	-43.77	0.01	35.60	43.77	0.000%
4	20.39	-47.46	-35.53	-20.39	47.46	35.53	0.000%
5	20.39	-35.60	-35.53	-20.39	35.60	35.53	0.000%
6	34.36	-47.46	-20.09	-34.36	47.46	20.09	0.000%
7	34.36	-35.60	-20.09	-34.36	35.60	20.09	0.000%
8	40.35	-47.46	0.00	-40.35	47.46	-0.00	0.000%
9	40.35	-35.60	0.00	-40.35	35.60	-0.00	0.000%
10	37.12	-47.46	23.06	-37.12	47.46	-23.06	0.001%
11	37.12	-35.60	23.06	-37.12	35.60	-23.06	0.000%
12	19.98	-47.46	36.35	-19.98	47.46	-36.35	0.000%
13	19.98	-35.60	36.35	-19.98	35.60	-36.35	0.000%
14	0.01	-47.46	40.85	-0.01	47.46	-40.85	0.000%
15	0.01	-35.60	40.85	-0.01	35.60	-40.85	0.000%
16	-19.95	-47.46	36.34	19.95	47.46	-36.34	0.000%
17	-19.95	-35.60	36.34	19.95	35.60	-36.34	0.000%
18	-37.11	-47.46	23.03	37.11	47.46	-23.03	0.000%
19	-37.11	-35.60	23.03	37.11	35.60	-23.03	0.000%
20	-40.35	-47.46	-0.02	40.35	47.46	0.02	0.000%
21	-40.35	-35.60	-0.02	40.35	35.60	0.02	0.000%
22	-34.37	-47.46	-20.11	34.37	47.46	20.11	0.000%
23	-34.37	-35.60	-20.11	34.37	35.60	20.11	0.000%
24	-20.41	-47.46	-35.54	20.41	47.46	35.54	0.000%
25	-20.41	-35.60	-35.54	20.41	35.60	35.54	0.000%
26	0.00	-97.87	0.00	-0.00	97.87	0.00	0.000%
27	-0.00	-97.87	-10.60	0.00	97.87	10.60	0.000%
28	5.09	-97.87	-8.84	-5.09	97.87	8.84	0.000%
29	8.67	-97.87	-5.05	-8.67	97.87	5.05	0.000%
30	10.10	-97.87	0.00	-10.10	97.87	-0.00	0.000%
31	9.05	-97.87	5.48	-9.05	97.87	-5.48	0.000%
32	5.02	-97.87	8.97	-5.02	97.87	-8.97	0.000%
33	0.00	-97.87	10.20	-0.00	97.87	-10.20	0.000%
34	-5.02	-97.87	8.97	5.02	97.87	-8.97	0.000%
35	-9.05	-97.87	5.48	9.05	97.87	-5.48	0.000%
36	-10.10	-97.87	-0.00	10.10	97.87	0.00	0.000%
37	-8.67	-97.87	-5.05	8.67	97.87	5.05	0.000%
38	-5.09	-97.87	-8.84	5.09	97.87	8.84	0.000%
39	-0.01	-39.55	-26.72	0.01	39.55	26.72	0.000%
40	12.45	-39.55	-21.70	-12.45	39.55	21.70	0.000%
41	20.99	-39.55	-12.27	-20.99	39.55	12.27	0.000%
42	24.65	-39.55	0.00	-24.65	39.55	-0.00	0.000%
43	22.66	-39.55	14.06	-22.66	39.55	-14.06	0.000%
44	12.20	-39.55	22.19	-12.20	39.55	-22.19	0.000%
45	0.01	-39.55	24.95	-0.01	39.55	-24.95	0.000%
46	-12.19	-39.55	22.19	12.19	39.55	-22.19	0.000%
47	-22.65	-39.55	14.05	22.65	39.55	-14.05	0.000%
48	-24.65	-39.55	-0.01	24.65	39.55	0.01	0.000%
49	-21.00	-39.55	-12.28	21.00	39.55	12.28	0.000%
50	-12.47	-39.55	-21.71	12.47	39.55	21.71	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	0.00000116
3	Yes	4	0.00000001	0.00000001
4	Yes	4	0.00000001	0.00000001
5	Yes	4	0.00000001	0.00000001
6	Yes	4	0.00000001	0.00000117
7	Yes	4	0.00000001	0.00000001
8	Yes	4	0.00000001	0.00000001
9	Yes	4	0.00000001	0.00000001
10	Yes	4	0.00000001	0.00000121
11	Yes	4	0.00000001	0.00000001
12	Yes	4	0.00000001	0.00000112
13	Yes	4	0.00000001	0.00000001
14	Yes	4	0.00000001	0.00000150
15	Yes	4	0.00000001	0.00000131
16	Yes	4	0.00000001	0.00000114
17	Yes	4	0.00000001	0.00000001
18	Yes	4	0.00000001	0.00000127
19	Yes	4	0.00000001	0.00000001
20	Yes	4	0.00000001	0.00000001
21	Yes	4	0.00000001	0.00000001
22	Yes	4	0.00000001	0.00000119
23	Yes	4	0.00000001	0.00000001
24	Yes	4	0.00000001	0.00000001
25	Yes	4	0.00000001	0.00000001
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00000001
28	Yes	4	0.00000001	0.00000001
29	Yes	4	0.00000001	0.00000001
30	Yes	4	0.00000001	0.00000001
31	Yes	4	0.00000001	0.00000001
32	Yes	4	0.00000001	0.00000001
33	Yes	4	0.00000001	0.00000001
34	Yes	4	0.00000001	0.00000001
35	Yes	4	0.00000001	0.00000001
36	Yes	4	0.00000001	0.00000001
37	Yes	4	0.00000001	0.00000341
38	Yes	4	0.00000001	0.00000001
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00000001
41	Yes	4	0.00000001	0.00000001
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00000001
44	Yes	4	0.00000001	0.00000001
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00000001
47	Yes	4	0.00000001	0.00000001
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000001
50	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No.	*Elevation* ft	*Horz. Deflection* in	*Gov. Load Comb.*	*Tilt* °	*Twist* °
T1	183 - 163	7.015	47	0.3219	0.0505
T2	163 - 143	5.662	47	0.3132	0.0349
T3	143 - 123	4.365	47	0.2878	0.0225
T4	123 - 103	3.208	47	0.2405	0.0134

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T5	103 - 83	2.219	47	0.2044	0.0090
T6	83 - 63	1.440	47	0.1560	0.0079
T7	63 - 43	0.825	47	0.1164	0.0058
T8	43 - 33	0.390	47	0.0720	0.0039
T9	33 - 23	0.237	47	0.0548	0.0029
T10	23 - 3	0.122	47	0.0371	0.0020

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	6' Dish	47	6.811	0.3210	0.0481	397379
177.00	8.5' x 4.5" dia. Pipe Mount	47	6.607	0.3200	0.0456	331149
173.00	20' x 2" Dia Omni	47	6.336	0.3185	0.0425	198689
165.00	SitePro USF-4U	47	5.796	0.3145	0.0364	108842
161.00	12' Dipole	47	5.528	0.3117	0.0335	79200
160.00	5' x 1" dia. Omni	47	5.462	0.3109	0.0328	72717
157.00	5-ft dipole	47	5.263	0.3082	0.0308	57597
150.00	APXVAALL24-43	47	4.806	0.2998	0.0265	38649
135.00	P65-16-XLH-RR	47	3.883	0.2693	0.0184	29853
133.00	10' Dipole	47	3.767	0.2643	0.0175	30052
124.00	MX06FRO660	47	3.262	0.2426	0.0138	30593
90.00	P40-16-XLPP-RR-A	47	1.691	0.1730	0.0084	27364
65.00	GPS	47	0.879	0.1205	0.0061	25962

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	183 - 163	11.545	18	0.5297	0.0829
T2	163 - 143	9.318	18	0.5154	0.0573
T3	143 - 123	7.183	18	0.4739	0.0370
T4	123 - 103	5.277	18	0.3960	0.0221
T5	103 - 83	3.650	18	0.3365	0.0149
T6	83 - 63	2.366	18	0.2567	0.0131
T7	63 - 43	1.356	18	0.1914	0.0096
T8	43 - 33	0.641	18	0.1183	0.0064
T9	33 - 23	0.389	18	0.0900	0.0049
T10	23 - 3	0.200	2	0.0609	0.0033

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	6' Dish	18	11.209	0.5282	0.0789	241320
177.00	8.5' x 4.5" dia. Pipe Mount	18	10.874	0.5265	0.0749	201100

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
173.00	20' x 2" Dia Omni	18	10.427	0.5241	0.0697	120660
165.00	SitePro USF-4U	18	9.539	0.5175	0.0597	66089
161.00	12' Dipole	18	9.098	0.5130	0.0550	48044
160.00	5' x 1" dia. Omni	18	8.989	0.5117	0.0539	44097
157.00	5-ft dipole	18	8.661	0.5073	0.0506	34901
150.00	APXVAALL24-43	18	7.910	0.4936	0.0435	23396
135.00	P65-16-XLH-RR	18	6.390	0.4435	0.0302	18079
133.00	10' Dipole	18	6.198	0.4353	0.0287	18209
124.00	MX06FRO660	18	5.366	0.3995	0.0226	18577
90.00	P40-16-XLPP-RR-A	18	2.781	0.2847	0.0138	16585
65.00	GPS	18	1.445	0.1982	0.0100	15763

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	183	Leg	A325N	0.6250	4	1.53	20.34	0.075 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	1.87	6.20	0.301 ✔	1	Member Bearing
		Top Girt	A325N	0.5000	1	0.11	8.84	0.012 ✔	1	Bolt Shear
T2	163	Leg	A325N	0.7500	4	4.20	30.10	0.140 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	3.72	8.27	0.450 ✔	1	Member Bearing
T3	143	Leg	A325N	0.8750	4	8.90	41.56	0.214 ✔	1	Bolt Tension
		Diagonal	A325X	0.5000	1	4.82	6.20	0.778 ✔	1	Member Bearing
T4	123	Leg	A325N	1.0000	4	14.69	54.52	0.269 ✔	1	Bolt Tension
		Diagonal	A325X	0.5000	1	5.89	10.33	0.570 ✔	1	Member Bearing
T5	103	Leg	A325N	1.0000	4	19.92	54.52	0.365 ✔	1	Bolt Tension
		Diagonal	A325N	0.7500	1	7.60	19.88	0.382 ✔	1	Bolt Shear
T6	83	Leg	A325N	1.0000	4	25.86	54.52	0.474 ✔	1	Bolt Tension
		Diagonal	A325N	0.7500	1	7.89	15.77	0.500 ✔	1	Member Bearing
T7	63	Leg	A325N	1.0000	6	20.97	54.52	0.385 ✔	1	Bolt Tension
		Diagonal	A325N	0.7500	1	8.69	19.88	0.437 ✔	1	Bolt Shear
T8	43	Diagonal	A325X	0.7500	1	8.87	18.92	0.469 ✔	1	Member Bearing
T9	33	Leg	A325N	1.0000	6	24.74	54.52	0.454 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	1	9.05	22.18	0.408 ✔	1	Member Bearing
T10	23	Leg	A449	1.0000	6	28.24	54.52	0.518 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	1	9.36	22.18	0.422 ✔	1	Member Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	183 - 163	P2.5x.203	20.00	5.00	63.3 K=1.00	1.7040	-6.58	57.19	0.115 [1] ✔
T2	163 - 143	P2.5x.276	20.03	6.68	86.7 K=1.00	2.2535	-20.29	58.51	0.347 [1] ✔
T3	143 - 123	P3x.216	20.04	6.68	68.9 K=1.00	2.2285	-42.61	70.89	0.601 [1] ✔
T4	123 - 103	P4x.337	20.04	6.68	54.3 K=1.00	4.4074	-68.74	159.90	0.430 [1] ✔
T5	103 - 83	P5x.258	20.03	10.02	64.0 K=1.00	4.2999	-93.56	143.40	0.652 [1] ✔
T6	83 - 63	P5x.375	20.03	10.02	65.4 K=1.00	6.1120	-121.54	201.25	0.604 [1] ✔
T7	63 - 43	P5x.375	20.04	5.14	33.6 K=1.00	6.1120	-148.75	253.28	0.587 [1] ✔
T8	43 - 33	P6x.432	10.02	10.02	54.8 K=1.00	8.4049	-163.05	303.75	0.537 [1] ✔
T9	33 - 23	P6x.432	10.02	10.02	54.8 K=1.00	8.4049	-176.43	303.75	0.581 [1] ✔
T10	23 - 3	P6x.432	20.03	5.12	28.0 K=1.00	8.4049	-203.54	357.20	0.570 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	183 - 163	L1 3/4x1 3/4x3/16	9.91	4.71	164.7 K=1.00	0.6211	-2.00	6.55	0.306 [1] ✔
T2	163 - 143	L2x2x1/4	12.24	6.07	186.4 K=1.00	0.9380	-3.80	7.72	0.492 [1] ✔
T3	143 - 123	L2 1/2x2 1/2x3/16	14.02	6.94	168.2 K=1.00	0.9020	-4.84	9.13	0.531 [1] ✔
T4	123 - 103	L2 1/2x2 1/2x5/16	15.89	7.83	192.0 K=1.00	1.4600	-5.97	11.33	0.527 [1] ✔
T5	103 - 83	L3X3X3/16 Reinf w/L2.5X2.5X3/16	19.10	9.57	143.2 K=1.00	3.2137	-7.60	35.40	0.215 [1] ✔
T6	83 - 63	L3 1/2x3 1/2x5/16	20.83	10.30	179.1 K=1.00	2.0900	-8.13	18.64	0.436 [1] ✔
T7	63 - 43	L3 1/2x3 1/2x3/8	22.67	11.23	196.2 K=1.00	2.4800	-8.69	18.45	0.471 [1] ✔
T8	43 - 33	L4x4x3/8	23.59	11.63	177.1 K=1.00	2.8600	-8.86	26.10	0.339 [1] ✔
T9	33 - 23	L4x4x3/8	24.50	12.07	183.8 K=1.00	2.8600	-9.31	24.24	0.384 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T10	23 - 3	L4x4x3/8	26.33	12.99	197.8 K=1.00	2.8600	-10.18	20.93	0.487 [1] ✔

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T7	63 - 43	L3 1/2x3 1/2x1/4	20.32	19.86	218.6 K=1.00	1.6900	-2.58	10.12	0.255 [1] ✔
T10	23 - 3	L4x4x1/4	24.35	23.80	228.5 K=1.00	1.9400	-3.53	10.64	0.332 [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	183 - 163	L2 1/2x2 1/2x3/16	8.56	8.11	196.7 K=1.00	0.9020	-0.11	6.68	0.016 [1] ✔

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	183 - 163	P2.5x.203	20.00	5.00	63.3	1.7040	6.13	76.68	0.080 [1] ✔
T2	163 - 143	P2.5x.276	20.03	6.68	86.7	2.2535	16.81	101.41	0.166 [1] ✔
T3	143 - 123	P3x.216	20.04	6.68	68.9	2.2285	35.60	100.28	0.355 [1] ✔
T4	123 - 103	P4x.337	20.04	6.68	54.3	4.4074	58.76	198.34	0.296 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T5	103 - 83	P5x.258	20.03	10.02	64.0	4.2999	79.67	193.49	0.412 [1] ✔
T6	83 - 63	P5x.375	20.03	10.02	65.4	6.1120	103.46	275.04	0.376 [1] ✔
T7	63 - 43	P5x.375	20.04	5.14	33.6	6.1120	125.98	275.04	0.458 [1] ✔
T8	43 - 33	P6x.432	10.02	10.02	54.8	8.4049	137.53	378.22	0.364 [1] ✔
T9	33 - 23	P6x.432	10.02	10.02	54.8	8.4049	148.44	378.22	0.392 [1] ✔
T10	23 - 3	P6x.432	20.03	5.12	28.0	8.4049	169.68	378.22	0.449 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	183 - 163	L1 3/4x1 3/4x3/16	9.91	4.71	107.7	0.3779	1.87	16.44	0.114 [1] ✔
T2	163 - 143	L2x2x1/4	12.24	6.07	121.7	0.5863	3.72	25.50	0.146 [1] ✔
T3	143 - 123	L2 1/2x2 1/2x3/16	14.02	6.94	108.6	0.5886	4.82	25.60	0.188 [1] ✔
T4	123 - 103	L2 1/2x2 1/2x5/16	15.26	7.51	120.1	0.9485	5.89	41.26	0.143 [1] ✔
T5	103 - 83	L3X3X3/16 Reinf w/L2.5X2.5X3/16	19.10	9.57	143.2	3.2137	7.46	104.12	0.072 [1] ✔
T6	83 - 63	L3 1/2x3 1/2x5/16	20.83	10.30	116.0	1.3624	7.89	59.27	0.133 [1] ✔
T7	63 - 43	L3 1/2x3 1/2x3/8	22.67	11.23	127.5	1.6139	8.26	70.20	0.118 [1] ✔
T8	43 - 33	L4x4x3/8	23.59	11.63	114.8	1.8989	8.87	82.60	0.107 [1] ✔
T9	33 - 23	L4x4x3/8	24.50	12.07	119.2	1.8637	9.05	81.07	0.112 [1] ✔
T10	23 - 3	L4x4x3/8	26.33	12.99	128.2	1.8637	9.36	81.07	0.116 [1] ✔

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T7	63 - 43	L3 1/2x3 1/2x1/4	20.32	19.86	218.6	1.6900	2.58	54.76	0.047 [1] ✔
T10	23 - 3	L4x4x1/4	24.35	23.80	228.5	1.9400	3.53	62.86	0.056 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	183 - 163	L2 1/2x2 1/2x3/16	8.56	8.11	128.3	0.5886	0.04	25.60	0.002 [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	183 - 163	Leg	P2.5x.203	1	-6.58	57.19	11.5	Pass
T2	163 - 143	Leg	P2.5x.276	33	-20.29	58.51	34.7	Pass
T3	143 - 123	Leg	P3x.216	54	-42.61	70.89	60.1	Pass
T4	123 - 103	Leg	P4x.337	75	-68.74	159.90	43.0	Pass
T5	103 - 83	Leg	P5x.258	94	-93.56	143.40	65.2	Pass
T6	83 - 63	Leg	P5x.375	111	-121.54	201.25	60.4	Pass
T7	63 - 43	Leg	P5x.375	124	-148.75	253.28	58.7	Pass
T8	43 - 33	Leg	P6x.432	145	-163.05	303.75	53.7	Pass
T9	33 - 23	Leg	P6x.432	154	-176.43	303.75	58.1	Pass
T10	23 - 3	Leg	P6x.432	163	-203.54	357.20	57.0	Pass
T1	183 - 163	Diagonal	L1 3/4x1 3/4x3/16	12	-2.00	6.55	30.6	Pass
T2	163 - 143	Diagonal	L2x2x1/4	38	-3.80	7.72	49.2	Pass
T3	143 - 123	Diagonal	L2 1/2x2 1/2x3/16	59	-4.84	9.13	53.1 77.8 (b)	Pass
T4	123 - 103	Diagonal	L2 1/2x2 1/2x5/16	80	-5.97	11.33	52.7 57.0 (b)	Pass
T5	103 - 83	Diagonal	L3X3X3/16 Reinf w/L2.5X2.5X3/16	101	-7.60	35.40	21.5 38.2 (b)	Pass
T6	83 - 63	Diagonal	L3 1/2x3 1/2x5/16	116	-8.13	18.64	43.6 50.0 (b)	Pass
T7	63 - 43	Diagonal	L3 1/2x3 1/2x3/8	131	-8.69	18.45	47.1	Pass
T8	43 - 33	Diagonal	L4x4x3/8	152	-8.86	26.10	33.9 46.9 (b)	Pass
T9	33 - 23	Diagonal	L4x4x3/8	161	-9.31	24.24	38.4 40.8 (b)	Pass
T10	23 - 3	Diagonal	L4x4x3/8	170	-10.18	20.93	48.7	Pass
T7	63 - 43	Secondary Horizontal	L3 1/2x3 1/2x1/4	135	-2.58	10.12	25.5	Pass
T10	23 - 3	Secondary Horizontal	L4x4x1/4	174	-3.53	10.64	33.2	Pass
T1	183 - 163	Top Girt	L2 1/2x2 1/2x3/16	6	-0.11	6.68	1.6	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
						Summary		
						Leg (T5)	65.2	Pass
						Diagonal (T3)	77.8	Pass
						Secondary Horizontal (T10)	33.2	Pass
						Top Girt (T1)	1.6	Pass
						Bolt Checks	77.8	Pass
						RATING =	**77.8**	**Pass**

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Subject:	Anchor Bolt Analysis
Location:	180-ft Lattice Tower Newtown, CT
Rev. 0: 4/13/22	Prepared by: T.J.L. Checked by: C.F.C. Job No. 22006.07

Anchor Bolt Analysis:

Input Data:

Tower Reactions:

Tension Force =	Tension := 175·kips	(Input From tnxTower)
Compression Force =	Compression := 211·kips	(Input From tnxTower)
Shear Force =	Shear := 27·kips	(Input From tnxTower)

Anchor Bolt Data:

ASTMA449

Number of Anchor Bolts =	N := 6	(User Input)
Bolt Ultimate Strength =	F_u := 120·ksi	(User Input)
Bolt Yield Strength =	F_y := 90·ksi	(User Input)
Bolt Modulus =	E := 29000·ksi	(User Input)
Diameter of Anchor Bolts =	D := 1.0·in	(User Input)
Threads per Inch =	n := 8	(User Input)
Length from Top of Pier to Bottom of Leveling Nut =	L_{ar} := 0·in	(User Input)

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Anchor Bolt Analysis:

Calculated Anchor Bolt Properties:

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 0.785 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n} \right)^2 = 0.606 \cdot in^2$

Net Diameter = $D_n := \frac{2 \cdot \sqrt{A_n}}{\sqrt{\pi}} = 0.878 \cdot in$

Radius of Gyration of Bolt = $r := \frac{D_n}{4} = 0.22 \cdot in$

Elastic Section Modulus of Bolt = $S_x := \frac{\pi \cdot D_n^3}{32} = 0.066 \cdot in^3$

Plastic Section Modulus of Bolt = $Z_x := \frac{D_n^3}{6} = 0.113 \cdot in^3$

Anchor Bolt Design Strength:

Resistance Factor for Flexure = $\phi_f := 0.9$

Resistance Factor for Compression = $\phi_c := 0.9$

Resistance Factor for Tension = $\phi_t := 0.75$

Resistance Factor for Shear = $\phi_v := 0.75$

Design Tensile Strength = $\Phi R_{nt} := \phi_t \cdot F_u \cdot A_n = 54.5 \cdot k$

Design Compression Strength = $\Phi R_{nc} := \phi_c \cdot F_y \cdot A_g = 63.6 \cdot k$

Design Shear Strength (Tension) = $\Phi R_{nv} := \phi_v \cdot 0.5 F_u \cdot A_g = 35.3 \cdot k$

Design Shear Strength (Compression) = $\Phi R_{nvc} := \phi_c \cdot 0.6 F_y \cdot A_g \cdot 0.75 = 28.6 \cdot k$

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Check Anchor Bolt Tension Force:

Maximum Tensile Force = $P_{ut} := \frac{Tension}{N} = 29.2 \cdot kips$

Maximum Compressive Force = $P_{uc} := \frac{Compression}{N} = 35.2 \cdot kips$

Maximum Shear Force = $V_u := \frac{Shear}{N} = 4.5 \cdot kips$

Condition1 = $Condition1 := if\left[\left[\left(\frac{P_{ut}}{\Phi R_{nt}}\right)^2 + \left(\frac{V_u}{\Phi R_{nv}}\right)^2\right] \le 1.00, "OK", "Overstressed"\right]$

Condition1 = "OK"

Condition2 = $Condition2 := if\left[\left[\left(\frac{P_{uc}}{\Phi R_{nc}}\right) + \left(\frac{V_u}{\Phi R_{nvc}}\right)^2\right] \le 1.00, "OK", "Overstressed"\right]$

Condition2 = "OK"

Bolt % of Capacity = $\max\left[\left(\frac{P_{ut}}{\Phi R_{nt}}\right)^2 + \left(\frac{V_u}{\Phi R_{nv}}\right)^2, \left(\frac{P_{uc}}{\Phi R_{nc}}\right) + \left(\frac{V_u}{\Phi R_{nvc}}\right)^2\right] = 57.7 \cdot \%$

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Subject:	Lattice Tower Foundation Anaylsis
Location:	Newtown, CT
Rev. 0: 4/13/22	Prepared by: T.J.L. Checked by: C.F.C. Job No. 22006.07

Pad and Pier Foundation:

Input Data:

Tower Data

Max Uplift Force =	$Uplift := 175 \cdot kips$	(User Input from tnxTower)	(Leg)
Max Shear Force =	$Shear := 27 \cdot kips$	(User Input from tnxTower)	(Leg)
Max Compressive Force =	$Compression := 211 \cdot kips$	(User Input from tnxTower)	(Leg)
Base Shear =	$Shear_{tot} := 44 \cdot kips$	(User Input from tnxTower)	(Tower)
Base Compression =	$Comp_{tot} := 47 \cdot kips$	(User Input from tnxTower)	(Tower)
Base Moment =	$Moment := 4202 \cdot ft \cdot kips$	(User Input from tnxTower)	(Tower)
Tower Height =	$H_t := 180 \cdot ft$	(User Input)	

Original Foundation Data (Foundation #1): (North East Leg):

Overall Depth of Footing =	$D_{f1} := 7.1 \cdot ft$	(User Input)	Foundation #1. Refer to Sketch SKRAD101498 Sheet 1 of 3 prepared for Connecticut Light and Power Company, dated 10/14/98
Length of Pier =	$L_{p1} := 10.0 \cdot ft$	(User Input)	
Pier Projection Above Grade =	$P_{P1} := 4.9 \cdot ft$	(User Input)	
Width of Pier =	$d_{p1} := 2.5 \cdot ft$	(User Input)	
Pad Width =	$PD_{w1} := 10.0 \cdot ft$	(User Input)	
Pad Thickness =	$PD_{t1} := 2.0 \cdot ft$	(User Input)	

Original Foundation Data (Foundation #2): (South West Leg):

Overall Depth of Footing =	$D_{f2} := 8.5 \cdot ft$	(User Input)	Foundation #2. Refer to Sketch SKRAD101498 Sheet 1 of 3 prepared for Connecticut Light and Power Company, dated 10/14/98
Length of Pier =	$L_{p2} := 10.0 \cdot ft$	(User Input)	
Pier Projection Above Grade =	$P_{P2} := 3.5 \cdot ft$	(User Input)	
Width of Pier =	$d_{p2} := 2.5 \cdot ft$	(User Input)	
Pad Width =	$PD_{w2} := 10.0 \cdot ft$	(User Input)	
Pad Thickness =	$PD_{t2} := 2.0 \cdot ft$	(User Input)	

Original Foundation Data (Foundation #3): (South East Leg):

Overall Depth of Footing =	$D_{f3} := 10.75 \cdot ft$	(User Input)	Foundation #3. Refer to Sketch SKRAD101498 Sheet 1 of 3 prepared for Connecticut Light and Power Company, dated 10/14/98
Length of Pier =	$L_{p3} := 10.0 \cdot ft$	(User Input)	
Pier Projection Above Grade =	$P_{P3} := 1.25 \cdot ft$	(User Input)	
Width of Pier =	$d_{p3} := 2.5 \cdot ft$	(User Input)	
Pad Width =	$PD_{w3} := 10.0 \cdot ft$	(User Input)	
Pad Thickness =	$PD_{t3} := 2.0 \cdot ft$	(User Input)	

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Subject:	Lattice Tower Foundation Anaylsis
Location:	Newtown, CT
Rev. 0: 4/13/22	Prepared by: T.J.L. Checked by: C.F.C. Job No. 22006.07

Material Properties:

Internal Friction Angle of Soil =	$\Phi_s := 34 \cdot deg$	(User Input)	Based on Geotech Report prepared by Clarence Welti & Assoc., INC., dated October 19, 2011
Allowable Soil Bearing Capacity =	$q_s := 6000 \cdot psf$	(User Input)	
Allowable Soil Bearing Capacity =	$q_{suse} := 3000 \cdot psf$	(User Input)	Note: 3000psf used for evaluation of existing concrete at grade and proposed concrete infill for soil bearing condition.
Unit Weight of Soil =	$\gamma_s := 125 \cdot pcf$	(User Input)	
Unit Weight of Concrete =	$\gamma_c := 150 \cdot pcf$	(User Input)	
Foundation Bouyancy =	$Bouyancy := 0$	(User Input)	(Yes=1 / No=0)
Depth to Neglect =	$n := 0 \cdot ft$	(User Input)	
Cohesion of Clay Type Soil =	$c := 0 \cdot ksf$	(User Input)	(Use 0 for Sandy Soil)
Seismic Zone Factor =	$Z := 2$	(User Input)	(UBC-1997 Fig 23-2)
Coefficient of Friction Between Concrete =	$\mu := 0.45$	(User Input)	

Calculated Factors:

Load Factor =

$$LF := \begin{cases} 1.333 & \text{if } H_t \le 700 \cdot ft \\ 1.7 & \text{if } H_t \ge 1200 \cdot ft \\ 1.333 + \left(\frac{H_t - 700ft}{1200ft - 700ft} \right) \cdot 0.4 & \text{otherwise} \end{cases} = 1.333$$

Calculated Data:

Active Pressure =

$$K_a := \frac{\left(1 - \sin\left(\Phi_s\right)\right)}{\left(1 + \sin\left(\Phi_s\right)\right)} = 0.283$$

$$P_a := \frac{1}{2} \cdot \left(PD_{t1}\right)^2 \cdot PD_{w1} \cdot \gamma_s \cdot K_a = 0.71 \cdot kips$$

Coefficient of Lateral Soil Pressure =

$$K_p := \frac{1 + \sin\left(\Phi_s\right)}{1 - \sin\left(\Phi_s\right)} = 3.537$$

$$P_p := \frac{1}{2} \cdot \left(PD_{t1}\right)^2 \cdot PD_{w1} \cdot \gamma_s \cdot K_p = 8.84 \cdot kips$$

Stability of Footing:

Adjusted Concrete Unit Weight =

$$\gamma_c := if\left(Bouyancy = 1, \gamma_c - 62.4pcf, \gamma_c\right) = 150 \cdot pcf$$

Adjusted Soil Unit Weight =

$$\gamma_s := if\left(Bouyancy = 1, \gamma_s - 62.4pcf, \gamma_s\right) = 125 \cdot pcf$$

Cross Sectional Area 1 of Resisting Pyramid =

$$B_1 := PD_{w1}^{\ 2} = 100ft^2$$

Cross Sectional Area 2 of Resisting Pyramid =

$$B_2 := \left[2\left(L_{p1} - P_{P1} - n\right) \cdot \tan\left(\Phi_s\right) + PD_{w1}\right]^2 = 284.9ft^2$$

Volume and Weight of Original Tower Foundation

Foundation #1:

Volume of Concrete = $V_{origconc1} := \left[\left(PD_{w1}^{2} \cdot PD_{t1}\right) + d_{p1}^{2} L_{p1}\right] = 262.5 \cdot ft^3$

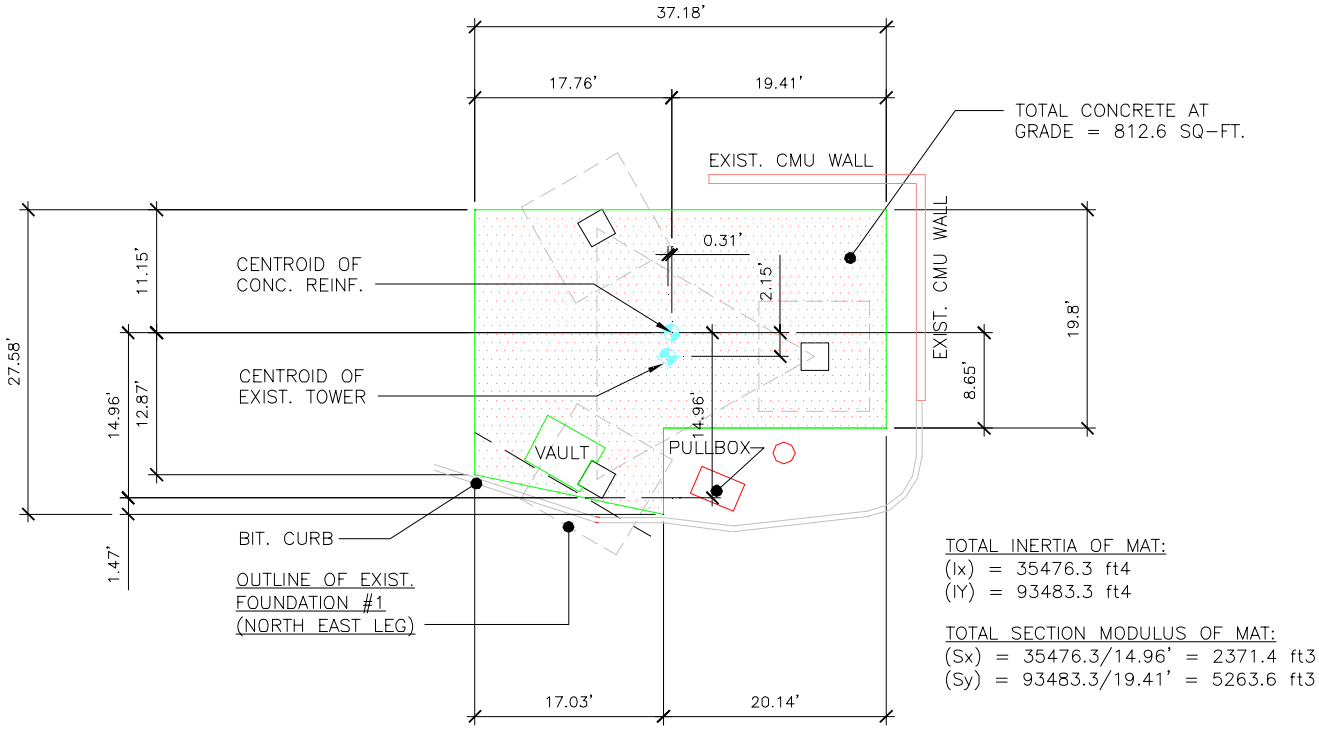
Foundation #2:

Volume of Concrete = $V_{origconc2} := \left[\left(PD_{w2}^{2} \cdot PD_{t2}\right) + d_{p2}^{2} L_{p2}\right] = 262.5 \cdot ft^3$

Foundation #3:

Volume of Concrete = $V_{origconc3} := \left[\left(PD_{w3}^{2} \cdot PD_{t3}\right) + d_{p3}^{2} L_{p3}\right] = 262.5 \cdot ft^3$

Total Weight of Original Concrete = $WT_{origconc} := \left(V_{origconc1} + V_{origconc2} + V_{origconc3}\right) \cdot \gamma_c = 118.1 \cdot kip$



TOTAL INERTIA OF MAT:
(Ix) = 35476.3 ft4
(IY) = 93483.3 ft4

TOTAL SECTION MODULUS OF MAT:
(Sx) = 35476.3/14.96' = 2371.4 ft3
(Sy) = 93483.3/19.41' = 5263.6 ft3

Volume and Weight of Soil Above Original Footing to Underside of Previous Reinforcement

Foundation #1:

Volume of Soil Above Footing = $V_{soilfnd1} := \left(PD_{w1}^{2} - d_{p1}^{2}\right)\left(L_{p1} - P_{P1}\right) = 478.12 \cdot ft^{3}$

Foundation #2:

Volume of Soil Above Footing = $V_{soilfnd2} := \left(PD_{w2}^{2} - d_{p2}^{2}\right)\left(L_{p2} - P_{P2}\right) = 609.38 \cdot ft^{3}$

Foundation #3:

Volume of Soil Above Footing = $V_{soilfnd3} := \left(PD_{w3}^{2} - d_{p3}^{2}\right)\left(L_{p3} - P_{P3}\right) = 820.31 \cdot ft^{3}$

Total Weight of Soil = $WT_{S} := \left(V_{soilfnd1} + V_{soilfnd2} + V_{soilfnd3}\right) \cdot \gamma_{s} = 238.5 \cdot kip$

Volume and Weight of Previous Concrete Reinforcement and Proposed Infill

Foundation #1:

Contact Area of Concrete At Grade = $A_{concfnd1} := \left(102.87ft^{2} - 6.25ft^{2}\right) = 96.62\,ft^{2}$

Volume of Concrete At Grade = $V_{concfnd1} := \left(A_{concfnd1} \cdot 6.0ft\right) = 579.72 \cdot ft^{3}$

Foundation #2:

Contact Area of Concrete At Grade = $A_{concfnd2} := \left(260ft^{2} - 6.25ft^{2}\right) = 253.75\,ft^{2}$

Volume of Concrete At Grade = $V_{concfnd2} := \left[\left(A_{concfnd2}\right)4.0ft\right] = 1015 \cdot ft^{3}$ (Minus pier area)

Foundation #3:

Contact Area of Concrete At Grade = $A_{concfnd3} := \left(169ft^{2} - 6.25ft^{2}\right) = 162.75\,ft^{2}$

Volume of Concrete At Grade = $V_{concfnd3} := \left[\left(A_{concfnd3}\right)4.5ft\right] = 732.38 \cdot ft^{3}$

Area of Existing Reinforced Concrete At Grade = $A_{origreinf} := \left(A_{concfnd1} + A_{concfnd2} + A_{concfnd3}\right) = 513.1 \cdot ft^{2}$

Area of Proposed Reinforced Concrete Infill = $A_{reinfprop} := 255ft^{2}$

Average Depth of Mat (Existing and Proposed Infill) = $Mat_{t} := 4.0ft$

Area of Proposed Reinforced Concrete Infill = $A_{mattot} := A_{origreinf} + A_{reinfprop} = 768.1\,ft^{2}$

Weight of Concrete At Grade (Proposed Infill) = $WT_{concgrade} := \left(V_{concfnd1} + V_{concfnd2} + V_{concfnd3}\right) \cdot \gamma_{c} = 349.1 \cdot kip$

Weight of Concrete At Grade (Proposed Infill) = $WT_{concgradeinfill} := \left[\left(A_{reinfprop}\right)Mat_{t}\right] \cdot \gamma_{c} = 153 \cdot kip$

Total Weight of Concrete At Grade = $WT_{concgradetot} := \left(WT_{concgrade} + WT_{concgradeinfill}\right) = 502.1 \cdot kip$

Total Weight of Original Concrete Foundation System (x3), Soil, Previous Concrete Reinforcement and Proposed R.C. Infill

Total Weight = $WT_{tot} := WT_{origconc} + WT_s + WT_{concgradetot} = 858.7 \cdot kip$

Soil Bearing Pressure:

Section Modulus of Mat = $S := 2274.5 ft^3$ (Calculated external of program)

Minimum Distance From Tower Centroid to Edge of Mat at Foundation #1 (North East leg) = $y1 := 14.62 ft$ (Calculated external of program)

Minimum Distance From Reinforced Mat Centroid to Edge of Mat at Foundation #1 (North East leg) = $y2 := 16.83 ft$ (Shortest Lever Arm Calculated external of program)

Maximum Pressure Under Mat = $P_{max} := \frac{WT_{tot} - WT_{origconc} - WT_s + Comp_{tot}}{A_{mattot}} + \frac{Shear_{tot} \cdot (Mat_t)}{S} = 0.79 \cdot ksf$

$Max\_Pressure\_Check := if(P_{max} < q_{suse}, "Okay", "No Good")$

$Max\_Pressure\_Check = "Okay"$

Minimum Pressure Under Mat = $P_{min} := \frac{WT_{tot} - WT_{origconc} - WT_s + Comp_{tot}}{A_{mattot}} - \frac{Shear_{tot} \cdot (Mat_t)}{S} = 0.64 \cdot ksf$

$Min\_Pressure\_Check := if[(P_{min} \geq 0) \cdot (P_{min} < q_{suse}), "Okay", "No Good"]$

$Min\_Pressure\_Check = "Okay"$

Overturning Moment Check:

Overturning Moment = $M_{ot} := Moment + Shear_{tot} \cdot (Mat_t) = 4378 \cdot kip \cdot ft$

Resisting Moment = $M_r := (0.9WT_{origconc} + 0.75WT_s) \cdot y1 + (0.9WT_{concgradetot} \cdot y2) = 11774 ft \cdot kips$

Factor of Safety = $\frac{M_r}{M_{ot}} = 2.69$

$Overturning\_Moment := if\left(\frac{M_r}{M_{ot}} > 1, "OK", "NG"\right)$

$Overturning\_Moment = "OK"$

RAN Template:	A&L Template:
67E5D998E Hybrid	67E5998E_1xAIR+1OP

CT11111A_Anchor_5

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_5G POPs
Radio Upgrade_4460

Section 1 - Site Information

Site ID: CT11111A
Status: Final
Version: 5
Project Type: Anchor
Approved: 1/21/2022 11:34:17 AM
Approved By: Pratik.Patil30@T-Mobile.com
Last Modified: 1/21/2022 11:34:17 AM
Last Modified By: Pratik.Patil30@T-Mobile.com

Site Name: Newtown/ I-84 X9
Site Class: Self Support Tower
Site Type: Structure Non Building
Plan Year: 2021
Market: CONNECTICUT CT
Vendor: Ericsson
Landlord: Northeast Utilities/ CL&P

Latitude: 41.42762905
Longitude: -73.34360000
Address: Newtown Service Center. 20 Barnabus Rd.
City, State: Newtown, CT
Region: NORTHEAST

RAN Template: 67E5D998E Hybrid		**AL Template:** 67E5998E_1xAIR+1OP		
Sector Count: 3	**Antenna Count:** 6	**Coax Line Count:** 0	**TMA Count:** 0	**RRU Count:** 6

Section 2 - Existing Template Images

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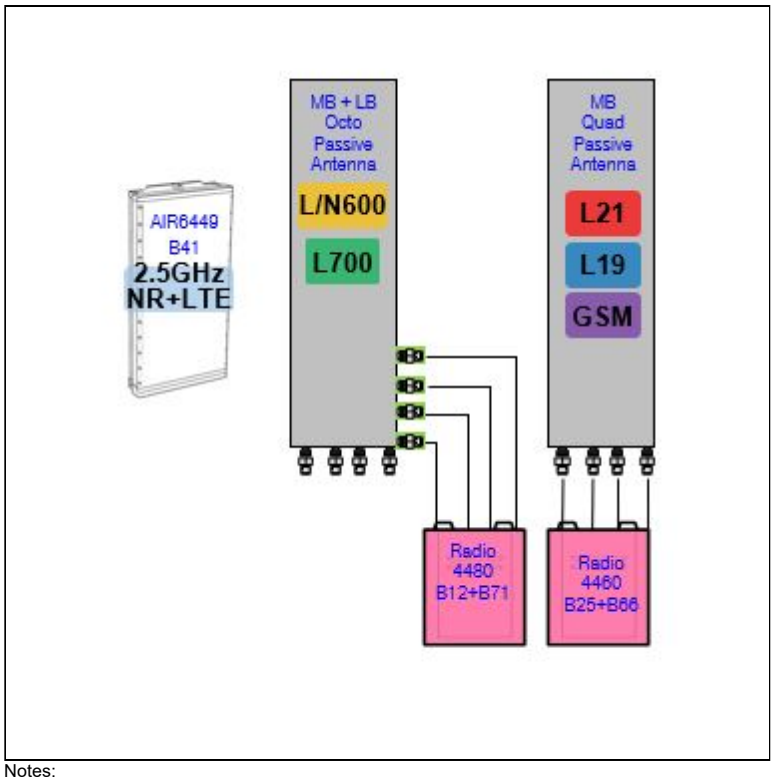
Section 3 - Proposed Template Images

67E5A998E.JPG



Notes:

Section 4 - Siteplan Images

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

RAN Template:	A&L Template:
67E5D998E Hybrid	67E5998E_1xAIR+1OP

CT11111A_Anchor_5

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_5G POPs
Radio Upgrade_4460

Section 5 - RAN Equipment

Existing RAN Equipment

Template: 792DB Outdoor

Enclosure	1	2
Enclosure Type	RBS 6102	S8000 Outdoor
Baseband	DUW30 (U2100); DUG20 (G1900); BB 6630 (L1900, L2100, L700)	
Radio	RUS01 B4 **(x 3)** (U2100); RUS01 B4 **(x 3)** (L2100)	

Proposed RAN Equipment

Template: 67E5D998E Hybrid

Enclosure	1	2	3
Enclosure Type	RBS 6102	Enclosure 6160 AC V1	B160
Baseband	DUW30 (U2100); DUG20 (G1900); BB 6630 (L2100, L1900); BB 6648 (L700, L600, N600)	RP 6651 (N2500); RP 6651 (L2500)	
Hybrid Cable System	Ericsson Hybrid Trunk 6/24 4AWG 70m **(x 2)**; PSU 4813 vR4A (Kit)	Ericsson Hybrid Trunk 6/24 4AWG 70m; PSU 4813 vR4A (Kit)	
Transport System		CSR IXRe V2 (Gen2)	

RAN Scope of Work:

Cabinet radios will become unused. Remove all cabinet radios.

Remove the Nortel.

Add (1) BB6648 for L600, L700, and N600 (MMBB - Mixed Mode Baseband) to existing RBS6102 Base Station Cabinet.

Add (1) Enclosure 6160.

Add (1) Battery Cabinet B160.

Add (1) iXRe Router to new Enclosure 6160.

Add (1) BB6648 for L2500 and N2500 (MMBB - Mixed Mode Baseband) to new Enclosure 6160.

Add (1) RP 6651 for N2500 to new Enclosure 6160.

Add (1) RP 6651 for L2500 to new Enclosure 6160.

Add (1) PSU4813 Voltage Booster to new Enclosure 6160.

Add (1) PSU4813 Voltage Booster to 6102.

Add (3) 6X24 HCS as follows: (2) 6X24 HCS terminating at the RBS6102; (1) 6X24 HCS terminating at the Enclosure 6160 (Connect DC for the AIR6449 B41 to the PSU4813 Voltage Booster).

RAN Template:	A&L Template:
67E5D998E Hybrid	67E5998E_1xAIR+1OP

CT11111A_Anchor_5

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_5G POPs
Radio Upgrade_4460

Section 6 - A&L Equipment

Existing Template:
Proposed Template: 67E5998E_1xAIR+1OP

Sector 1 (Existing) view from behind			
Coverage Type	A - Outdoor Macro		
Antenna	**1**		**2**
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Andrew - LNX-6513DS-A1M (Dual)
Azimuth	90		90
M. Tilt			0
Height	150		150
Ports	**P1**	**P2**	**P3**
Active Tech.	L1900 G1900	U2100 L2100	L700
Dark Tech.			
Restricted Tech.			
Decomm. Tech.			
E. Tilt	2	2	2
Cables	Fiber Jumper - 15 ft. **(x2)**	1-5/8" Coax - 220 ft. **(x2)**	1-5/8" Coax - 220 ft. **(x2)**
TMAs			
Diplexers / Combiners			
Radio			
Sector Equipment			

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67E5D998E Hybrid	67E5998E_1xAIR+1OP

CT11111A_Anchor_5

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_5G POPs
Radio Upgrade_4460

Sector 1 (Proposed) view from behind

Coverage Type	A - Outdoor Macro					
Antenna	1				2	
Antenna Model	RFS - APXVAALL24_43-U-NA20 (Octo)				AIR 6419 B41 (Active Antenna - Massive MIMO)	
Azimuth	90				90	
M. Tilt	0				0	
Height	149				149	
Ports	P1	P2	P3	P4	P5	P6
Active Tech.	L700 L600 N600	L700 L600 N600	U2100 L2100 L1900 G1900	U2100 L2100 L1900 G1900	L2500 N2500	L2500 N2500
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt	2	2			2	2
Cables	Coax Jumper **(x2)** Fiber Jumper	Coax Jumper **(x2)** Fiber Jumper	Coax Jumper **(x2)** Fiber Jumper	Coax Jumper **(x2)** Fiber Jumper	Fiber Jumper **(x2)**	Fiber Jumper **(x2)**
TMAs						
Diplexers / Combiners						
Radio	Radio 4480 B71+B85 (At Antenna)	SHARED Radio 4480 B71+B85 (At Antenna)	Radio 4460 B25+B66 (At Antenna)	SHARED Radio 4460 B25+B66 (At Antenna)		
Sector Equipment						

Unconnected Equipment:

Scope of Work:

**RAD 149

There will be two antennae per sector.

Remove all existing antennae.

Remove all TMAs.

Remove all Coaxial Lines.

Install (1) Low-Band/Mid-Band Octo in Position 1.

Add (1) Radio 4480 B71+B85 for L600, L700, and N600 in Position 1 at antenna, and connect its ports to the Low-Band ports of the Octo Antenna.

Add (1) Radio 4460 B25+B66 for L2100, L1900, U2100, and GSM to Position 1 at antenna, and connect its ports to the Mid-Band ports of the Octo Antenna.

Install (1) AIR6449 B41 for L2500 and N2500 in Position 2.

Ensure RET control is enabled for all technology layers according to the Design Documents.

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67E5D998E Hybrid	67E5998E_1xAIR+1OP

CT11111A_Anchor_5

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_5G POPs
Radio Upgrade_4460

Sector 2 (Existing) view from behind			
Coverage Type	A - Outdoor Macro		
Antenna	**1**		**2**
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Andrew - LNX-6513DS-A1M (Dual)
Azimuth	190		190
M. Tilt			0
Height	150		150
Ports	**P1**	**P2**	**P3**
Active Tech.	L1900 G1900	U2100 L2100	L700
Dark Tech.			
Restricted Tech.			
Decomm. Tech.			
E. Tilt	2	2	2
Cables	Fiber Jumper - 15 ft. **(x2)**	1-5/8" Coax - 220 ft. **(x2)**	1-5/8" Coax - 220 ft. **(x2)**
TMAs			
Diplexers / Combiners			
Radio			
Sector Equipment			

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67E5D998E Hybrid	67E5998E_1xAIR+1OP

CT11111A_Anchor_5

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_5G POPs
Radio Upgrade_4460

Sector 2 (Proposed) view from behind

Coverage Type	A - Outdoor Macro					
Antenna	1				2	
Antenna Model	RFS - APXVAALL24_43-U-NA20 (Octo)				AIR 6419 B41 (Active Antenna - Massive MIMO)	
Azimuth	190				190	
M. Tilt	0				0	
Height	149				149	
Ports	P1	P2	P3	P4	P5	P6
Active Tech.	L700 L600 N600	L700 L600 N600	U2100 L2100 L1900 G1900	U2100 L2100 L1900 G1900	L2500 N2500	L2500 N2500
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt	2	2			2	2
Cables	Coax Jumper **(x2)** Fiber Jumper	Coax Jumper **(x2)** Fiber Jumper	Coax Jumper **(x2)** Fiber Jumper	Coax Jumper **(x2)** Fiber Jumper	Fiber Jumper **(x2)**	Fiber Jumper **(x2)**
TMAs						
Diplexers / Combiners						
Radio	Radio 4480 B71+B85 (At Antenna)	SHARED Radio 4480 B71+B85 (At Antenna)	Radio 4460 B25+B66 (At Antenna)	SHARED Radio 4460 B25+B66 (At Antenna)		
Sector Equipment						

Unconnected Equipment:

Scope of Work:

There will be two antennae per sector.

Remove all existing antennae.

Remove all TMAs.

Remove all Coaxial Lines.

Install (1) Low-Band/Mid-Band Octo in Position 1.

Add (1) Radio 4480 B71+B85 for L600, L700, and N600 in Position 1 at antenna, and connect its ports to the Low-Band ports of the Octo Antenna.

Add (1) Radio 4460 B25+B66 for L2100, L1900, U2100, and GSM to Position 1 at antenna, and connect its ports to the Mid-Band ports of the Octo Antenna.

Install (1) AIR6449 B41 for L2500 and N2500 in Position 2.

Ensure RET control is enabled for all technology layers according to the Design Documents.

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67E5D998E Hybrid	67E5998E_1xAIR+1OP

CT11111A_Anchor_5

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_5G POPs
Radio Upgrade_4460

Sector 3 (Existing) view from behind			
Coverage Type	A - Outdoor Macro		
Antenna	**1**		**2**
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Andrew - LNX-6513DS-A1M (Dual)
Azimuth	290		290
M. Tilt			0
Height	150		150
Ports	**P1**	**P2**	**P3**
Active Tech.	L1900 G1900	U2100 L2100	L700
Dark Tech.			
Restricted Tech.			
Decomm. Tech.			
E. Tilt	2	2	2
Cables	Fiber Jumper - 15 ft. **(x2)**	1-5/8" Coax - 220 ft. **(x2)**	1-5/8" Coax - 220 ft. **(x2)**
TMAs			
Diplexers / Combiners			
Radio			
Sector Equipment			

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67E5D998E Hybrid	67E5998E_1xAIR+1OP

CT11111A_Anchor_5

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_5G POPs
Radio Upgrade_4460

Sector 3 (Proposed) view from behind

Coverage Type	A - Outdoor Macro					
Antenna	1				2	
Antenna Model	RFS - APXVAALL24_43-U-NA20 (Octo)				AIR 6419 B41 (Active Antenna - Massive MIMO)	
Azimuth	290				290	
M. Tilt	0				0	
Height	149				149	
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Active Tech.	L700 L600 N600	L700 L600 N600	U2100 L2100 L1900 G1900	U2100 L2100 L1900 G1900	L2500 N2500	L2500 N2500
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt	2	2			2	2
Cables	Coax Jumper **(x2)** Fiber Jumper	Coax Jumper **(x2)** Fiber Jumper	Coax Jumper **(x2)** Fiber Jumper	Coax Jumper **(x2)** Fiber Jumper	Fiber Jumper **(x2)**	Fiber Jumper **(x2)**
TMAs						
Diplexers / Combiners						
Radio	Radio 4480 B71+B85 (At Antenna)	SHARED Radio 4480 B71+B85 (At Antenna)	Radio 4460 B25+B66 (At Antenna)	SHARED Radio 4460 B25+B66 (At Antenna)		
Sector Equipment						

Unconnected Equipment:

Scope of Work:

There will be two antennae per sector.

Remove all existing antennae.

Remove all TMAs.

Remove all Coaxial Lines.

Install (1) Low-Band/Mid-Band Octo in Position 1.

Add (1) Radio 4480 B71+B85 for L600, L700, and N600 in Position 1 at antenna, and connect its ports to the Low-Band ports of the Octo Antenna.

Add (1) Radio 4460 B25+B66 for L2100, L1900, U2100, and GSM to Position 1 at antenna, and connect its ports to the Mid-Band ports of the Octo Antenna.

Install (1) AIR6449 B41 for L2500 and N2500 in Position 2.

Ensure RET control is enabled for all technology layers according to the Design Documents.

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67E5D998E Hybrid	67E5998E_1xAIR+1OP

CT11111A_Anchor_5

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_5G POPs
Radio Upgrade_4460

Section 7 - Power Systems Equipment

Existing Power Systems Equipment
----- This section is intentionally blank. -----

	Proposed Power Systems Equipment
Enclosure	1
Enclosure Type	Enclosure 6160 AC V1

Exhibit E

Mount Analysis

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

Antenna Mount Analysis

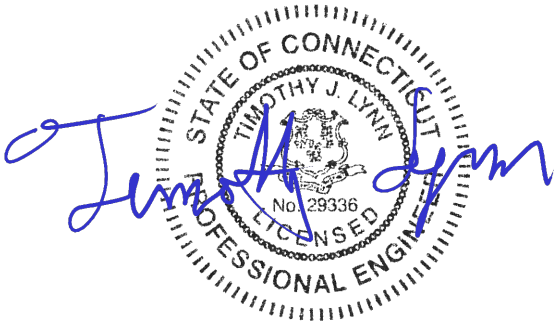
T-Mobile Site #: CT11111A

20 Barnabas Road
Newtown, CT

Centek Project No. 22006.07

Date: April 13, 2022

Max Stress Ratio = 53%



Prepared for:

T-Mobile USA
35 Griffin Road
Bloomfield, CT 06002

Table of Contents

CENTEK engineering

Centered on Solutions℠

April 13, 2022

Mr. Derek Waite
Northeast Site Solutions
199 Brickyard Road
Farmington, CT 06032

Re: Structural Letter ~ Antenna Mount
T-Mobile – Site Ref: CT11111A
20 Barnabas Road
Newtown, CT

Centek Project No. 22006.07

Dear Mr. Waite,

Centek Engineering, Inc. has reviewed the T-Mobile antenna installation at the above referenced site. The purpose of the review is to determine the structural adequacy of the **proposed mount, consisting of three (3) V-frame sector mounts (SitePro P/N: VFA12-HD)** to support the proposed equipment configuration. The review considered the effects of wind load, dead load and ice load in accordance with the 2015 International Building Code as modified by the 2018 Connecticut State Building Code (CTBC) including ASCE 7-10 and ANSI/TIA-222-G *Structural Standards for Steel Antenna Towers and Supporting Structures*.

The loads considered in this analysis consist of the following:

- **T-Mobile:**
  V-Frames: Three (3) Ericsson AIR6419 panel antennas, three (3) RFS APXVAALL24_43-U-NA20 panel antennas, three (3) Ericsson 4480 B71+B85 remote radio heads and three (3) Ericsson 4460 B25+B66 remote radio heads mounted on three (3) V-Frames with a RAD center elevation of 150-ft +/- AGL.

The antenna mount was analyzed per the requirements of the 2015 International Building Code as modified by the 2018 Connecticut State Building Code considering a nominal design wind speed of 93 mph for Newtown as required in Appendix N of the 2018 Connecticut State Building Code.

A structural analysis of tower and foundation needs to be completed prior to any work.

Based on our review of the installation, it is our opinion that the **subject antenna mount has sufficient capacity** to support the aforementioned antenna configuration. If there are any questions regarding this matter, please feel free to call.

Respectfully Submitted by:

Timothy J. Lynn, PE
Structural Engineer

STATE OF CONNECTICUT
TIMOTHY J. LYNN
No. 29336
LICENSED
PROFESSIONAL ENGINEER

Section 2 - Calculations

CENTEK engineering
Centered on Solutions℠ www.centekeng.com
63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject: TIA-222-G Loads

Location: Newtown, CT

Rev. 0: 4/13/22

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 22006.07

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

Wind Speeds

Basic Wind Speed: $V := 93$ mph (User Input - 2018 CSBC Appendix N)

Basic Wind Speed with Ice: $V_i := 50$ 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 := B (User Input)

Structure Height = $h := 180$ ft (User Input)

Height to Center of Antennas = $z_{Ant} := 150$ ft (User Input)

Radial Ice Thickness = $t_i := 0.75$ in (User Input per Annex B of TIA-222-G)

Radial Ice Density = $Id := 56.00$ pcf (User Input)

Topograpic Factor = $K_{zt} := 1.0$ (User Input)

$K_a := 1.0$ (User Input)

Gust Response Factor = $G_H = 0.85$ (User Input)

Output

Wind Direction Probability Factor =

$$K_d := \begin{cases} 0.95 & \text{if Structure\_Type = Pole} \\ 0.85 & \text{if Structure\_Type = Lattice} \end{cases} = 0.85$$

(Per Table 2-2 of TIA-222-G)

Importance Factors =

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

(Per Table 2-3 of TIA-222-G)

$$I_{Wind\_w\_Ice} := \begin{cases} 0 & \text{if SC = 1} \\ 1.00 & \text{if SC = 2} \\ 1.00 & \text{if SC = 3} \end{cases} = 1$$

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

$$K_{iz} := \left(\frac{z_{Ant}}{33}\right)^{0.1} = 1.163$$

$$t_{iz} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 1.745$$

Velocity Pressure Coefficient Antennas =

$$Kz_{Ant} := 2.01\left(\left(\frac{z_{Ant}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.11$$

Velocity Pressure w/o Ice Antennas =

$$qz_{Ant} := 0.00256 \cdot K_d \cdot Kz_{Ant} \cdot V^2 \cdot I_{Wind} = 20.883$$

Velocity Pressure with Ice Antennas =

$$qz_{ice.Ant} := 0.00256 \cdot K_d \cdot Kz_{Ant} \cdot V_i^2 \cdot I_{Wind} = 6.036$$

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	RFS APXVAALL24-43		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 95.9$	in	(User Input)
Antenna Width =	$W_{ant} := 24$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.5$	in	(User Input)
Antenna Weight =	$WT_{ant} := 150$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.0$		
Antenna Force Coefficient =	$Ca_{ant} = 1.27$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 16$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 359$	lbs
Surface Area for One Antenna =	$SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 5.7$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 127$	lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 19$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 123$	lbs
Surface Area for One Antenna w/ Ice =	$SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 8.3$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 54$	lbs

Gravity Load (without ice)

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

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2 \times 10^4$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 1 \times 10^4$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 428$	lbs
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 428$	lbs

CENTEK engineering
Centered on Solutions℠ www.centekeng.com
63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject:	TIA-222-G Loads
Location:	Newtown, CT
Rev. 0: 4/13/22	Prepared by: T.J.L. Checked by: C.F.C. Job No. 22006.07

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Ericsson AIR6419		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 36.3$	in	(User Input)
Antenna Width =	$W_{ant} := 20.9$	in	(User Input)
Antenna Thickness =	$T_{ant} := 9.0$	in	(User Input)
Antenna Weight =	$WT_{ant} := 83$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 1.7$		
Antenna Force Coefficient =	$Ca_{ant} = 1.2$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 5.3$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 112$	lbs
Surface Area for One Antenna =	$SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 2.3$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 48$	lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 6.7$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 41$	lbs
Surface Area for One Antenna w/ Ice =	$SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 3.5$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 21$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 83$	lbs

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 6828$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 5294$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 172$	lbs
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 172$	lbs

Development of Wind & Ice Load on RRUS

RRUS Data:

RRUS Model = Ericsson 4460

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 = $N_{RRUS} := 1$ (User Input)

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 = $F_{RRUS} := qz_{Ant} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUSF} = 46$ lbs

Surface Area for One RRUS = $SA_{RRUSS} := \frac{L_{RRUS} \cdot T_{RRUS}}{144} = 1.6$ sf

Total RRUS Wind Force = $F_{RRUS} := qz_{Ant} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUSS} = 35$ lbs

Wind Load (with ice)

Surface Area for One RRUS w/ Ice = $SA_{ICERRUSF} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (W_{RRUS} + 2 \cdot t_{iz})}{144} = 3.1$ sf

Total RRUS Wind Force w/ Ice = $Fi_{RRUS} := qz_{ice.Ant} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUSF} = 19$ lbs

Surface Area for One RRUS w/ Ice = $SA_{ICERRUSS} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz})}{144} = 2.5$ sf

Total RRUS Wind Force w/ Ice = $Fi_{RRUS} := qz_{ice.Ant} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUSS} = 15$ lbs

Gravity Load (without ice)

Weight of All RRUSs = $WT_{RRUS} \cdot N_{RRUS} = 109$ lbs

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 = $V_{ice} := (L_{RRUS} + 2 \cdot t_{iz})(W_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz}) - V_{RRUS} = 3186$ cu in

Weight of Ice on Each RRUS = $W_{ICERRUS} := \frac{V_{ice}}{1728} \cdot Id = 103$ lbs

Weight of Ice on All RRUSs = $W_{ICERRUS} \cdot N_{RRUS} = 103$ lbs

Development of Wind & Ice Load on RRUS

RRUS Data:

RRUS Model =	Ericsson 4480		
RRUS Shape =	Flat		(User Input)
RRUS Height =	$L_{RRUS} := 21.8$	in	(User Input)
RRUS Width =	$W_{RRUS} := 15.7$	in	(User Input)
RRUS Thickness =	$T_{RRUS} := 7.5$	in	(User Input)
RRUS Weight =	$WT_{RRUS} := 84$	lbs	(User Input)
Number of RRUS's =	$N_{RRUS} := 1$		(User Input)
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 =	$SA_{RRUSF} := \frac{L_{RRUS} \cdot W_{RRUS}}{144} = 2.4$	sf
Total RRUS Wind Force =	$F_{RRUS} := qz_{Ant} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUSF} = 51$	lbs
Surface Area for One RRUS =	$SA_{RRUSS} := \frac{L_{RRUS} \cdot T_{RRUS}}{144} = 1.1$	sf
Total RRUS Wind Force =	$F_{RRUS} := qz_{Ant} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUSS} = 24$	lbs

Wind Load (with ice)

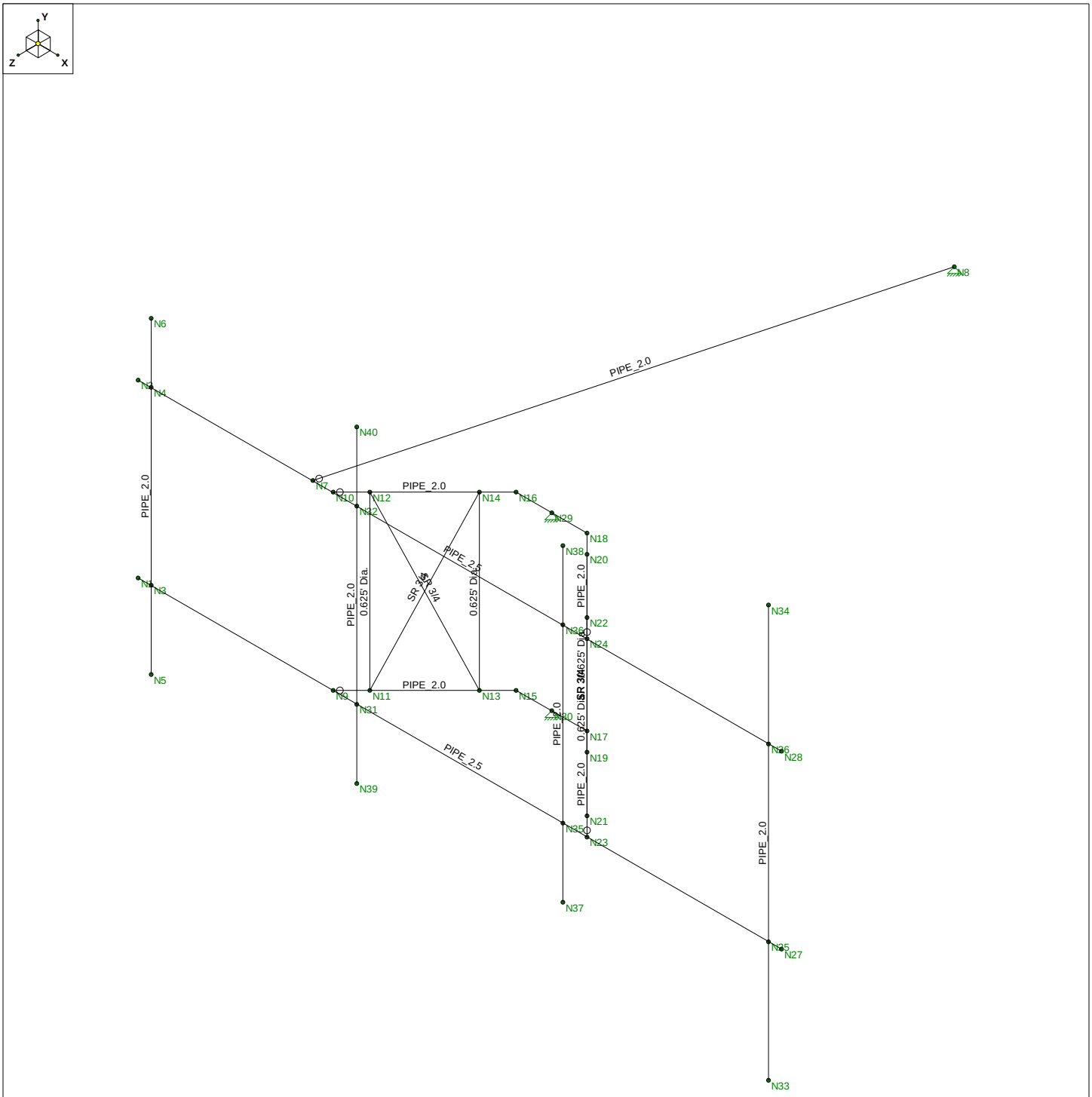
Surface Area for One RRUS w/ Ice =	$SA_{ICERRUSF} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (W_{RRUS} + 2 \cdot t_{iz})}{144} = 3.4$	sf
Total RRUS Wind Force w/ Ice =	$Fi_{RRUS} := qz_{ice.Ant} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUSF} = 21$	lbs
Surface Area for One RRUS w/ Ice =	$SA_{ICERRUSS} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz})}{144} = 1.9$	sf
Total RRUS Wind Force w/ Ice =	$Fi_{RRUS} := qz_{ice.Ant} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUSS} = 12$	lbs

Gravity Load (without ice)

Weight of All RRUSs =	$WT_{RRUS} \cdot N_{RRUS} = 84$	lbs

Gravity Loads (ice only)

Volume of Each RRUS =	$V_{RRUS} := L_{RRUS} \cdot W_{RRUS} \cdot T_{RRUS} = 2567$	cu in
Volume of Ice on Each RRUS =	$V_{ice} := (L_{RRUS} + 2 \cdot t_{iz})(W_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz}) - V_{RRUS} = 2767$	cu in
Weight of Ice on Each RRUS =	$W_{ICERRUS} := \frac{V_{ice}}{1728} \cdot Id = 90$	lbs
Weight of Ice on All RRUSs =	$W_{ICERRUS} \cdot N_{RRUS} = 90$	lbs



Envelope Only Solution

Centek Engineering		
TJL	CT11111A	Apr 13, 2022 at 2:01 PM
22006.07	Member Framing	Mount.R3D

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 15th(360-16): LRFD
Cold Formed Steel Code	AISI S100-10: ASD
Wood Code	AWC NDS-12: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-11
Masonry Code	ACI 530-11: ASD
Aluminum Code	AA ADM1-10: ASD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

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

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	1
Cd X	1
Rho Z	1
Rho X	1
Footing Overturning Safety Factor	1
Optimize for OTM/Sliding	No
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	150.001
Footing Concrete f'c (ksi)	4
Footing Concrete Ec (ksi)	3644
Lambda	1
Footing Steel fy (ksi)	60
Minimum Steel	0.0018
Maximum Steel	0.0075
Footing Top Bar	#3
Footing Top Bar Cover (in)	2
Footing Bottom Bar	#3
Footing Bottom Bar Cover (in)	3.5
Pedestal Bar	#3
Pedestal Bar Cover (in)	1.5
Pedestal Ties	#3

Hot Rolled Steel Properties

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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Antenna Mast_2.0 STD...	PIPE_2.0	Column	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25
2	Horizontal_2.5 STD Pipe	PIPE_2.5	Beam	Pipe	A53 Grade B	Typical	1.61	1.45	1.45	2.89
3	Outrigger_2.0 STD Pipe	PIPE_2.0	Beam	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25
4	Stabilizer_2.0 STD Pipe	PIPE_2.0	Beam	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25
5	0.625" Dia. Bar	0.625' Dia.	Column	BAR	A36 Gr.36	Typical	.307	.007	.007	.015
6	0.75"Dia. Bar	SR 3/4	Column	BAR	A36 Gr.36	Typical	.442	.016	.016	.031

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[...	Lcomp bot[...	L-torq...	Kyy	Kzz	Cb	Functi...
1	M1	Horizontal_2.5 STD...	12.5	Segment		Lbyy						Lateral
2	M2	Horizontal_2.5 STD...	12.5	Segment		Lbyy						Lateral
3	M3	Stabilizer_2.0 STD ...	10.18			Lbyy						Lateral
4	M4	Outrigger_2.0 STD ...	2.521	Segment	Segment	Lbyy						Lateral
5	M5	Outrigger_2.0 STD ...	2.521	Segment	Segment	Lbyy						Lateral
6	M6	Outrigger_2.0 STD ...	2.521	Segment	Segment	Lbyy						Lateral
7	M7	Outrigger_2.0 STD ...	2.521	Segment	Segment	Lbyy						Lateral
8	M8	0.625" Dia. Bar	3.333									Lateral
9	M9	0.625" Dia. Bar	3.333									Lateral
10	M10	0.75"Dia. Bar	3.659	1.83	1.83	Lbyy						Lateral
11	M11	0.625" Dia. Bar	3.333									Lateral
12	M12	0.75"Dia. Bar	3.659	1.83	1.83	Lbyy						Lateral
13	M13	0.625" Dia. Bar	3.333									Lateral
14	M14	0.75"Dia. Bar	3.659	1.83	1.83	Lbyy						Lateral
15	M15	0.75"Dia. Bar	3.659	1.83	1.83	Lbyy						Lateral
16	M16	Antenna Mast_2.0 ...	6			Lbyy						Lateral
17	M17	Antenna Mast_2.0 ...	8			Lbyy						Lateral
18	M18	Antenna Mast_2.0 ...	6			Lbyy						Lateral
19	M21	Antenna Mast_2.0 ...	6			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design ...
1	M1	N2	N28			Horizontal_2.5 STD Pipe	Beam	Pipe	A53 Grade B	Typical
2	M2	N1	N27			Horizontal_2.5 STD Pipe	Beam	Pipe	A53 Grade B	Typical
3	M3	N7	N8			Stabilizer_2.0 STD Pipe	Beam	Pipe	A53 Grade B	Typical
4	M4	N10	N16			Outrigger_2.0 STD Pipe	Beam	Pipe	A53 Grade B	Typical
5	M5	N9	N15			Outrigger_2.0 STD Pipe	Beam	Pipe	A53 Grade B	Typical
6	M6	N24	N18			Outrigger_2.0 STD Pipe	Beam	Pipe	A53 Grade B	Typical
7	M7	N23	N17			Outrigger_2.0 STD Pipe	Beam	Pipe	A53 Grade B	Typical
8	M8	N12	N11			0.625" Dia. Bar	Column	BAR	A36 Gr.36	Typical
9	M9	N14	N13			0.625" Dia. Bar	Column	BAR	A36 Gr.36	Typical
10	M10	N12	N13			0.75"Dia. Bar	Column	BAR	A36 Gr.36	Typical
11	M11	N22	N21			0.625" Dia. Bar	Column	BAR	A36 Gr.36	Typical
12	M12	N14	N11			0.75"Dia. Bar	Column	BAR	A36 Gr.36	Typical
13	M13	N20	N19			0.625" Dia. Bar	Column	BAR	A36 Gr.36	Typical
14	M14	N22	N19			0.75"Dia. Bar	Column	BAR	A36 Gr.36	Typical
15	M15	N20	N21			0.75"Dia. Bar	Column	BAR	A36 Gr.36	Typical
16	M16	N6	N5			Antenna Mast_2.0 STD Pi...	Column	Pipe	A53 Grade B	Typical
17	M17	N34	N33			Antenna Mast_2.0 STD Pi...	Column	Pipe	A53 Grade B	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design ...
18	M18	N37	N38			Antenna Mast_2.0 STD Pi...	Column	Pipe	A53 Grade B	Typical
19	M19	N15	N17			RIGID	None	None	RIGID	Typical
20	M20	N16	N18			RIGID	None	None	RIGID	Typical
21	M21	N39	N40			Antenna Mast_2.0 STD Pi...	Column	Pipe	A53 Grade B	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N1	0	0.	-0.	0	
2	N2	0	3.333334	-0.	0	
3	N3	.25	0.	-0.	0	
4	N4	.25	3.333334	-0.	0	
5	N5	.25	-1.5	0	0	
6	N6	.25	4.5	0	0	
7	N7	3.390625	3.333334	-0.	0	
8	N8	6.025403	3.333334	-9.833125	0	
9	N9	3.78125	0.	-0.	0	
10	N10	3.78125	3.333334	-0.	0	
11	N11	4.138628	0.	-0.357378	0	
12	N12	4.138628	3.333334	-0.357378	0	
13	N13	5.206335	0.	-1.425085	0	
14	N14	5.206335	3.333334	-1.425085	0	
15	N15	5.563713	0.	-1.782463	0	
16	N16	5.563713	3.333334	-1.782463	0	
17	N17	6.936287	0.	-1.782463	0	
18	N18	6.936287	3.333334	-1.782463	0	
19	N19	7.293665	0.	-1.425085	0	
20	N20	7.293665	3.333334	-1.425085	0	
21	N21	8.361372	0.	-0.357378	0	
22	N22	8.361372	3.333334	-0.357378	0	
23	N23	8.71875	0.	-0.	0	
24	N24	8.71875	3.333334	-0.	0	
25	N25	12.25	0.	-0.	0	
26	N26	12.25	3.333334	-0.	0	
27	N27	12.5	0.	-0.	0	
28	N28	12.5	3.333334	-0.	0	
29	N29	6.25	3.333334	-1.782463	0	
30	N30	6.25	0.	-1.782463	0	
31	N31	4.25	0.	-0.	0	
32	N32	4.25	3.333334	-0.	0	
33	N33	12.25	-2.333333	0	0	
34	N34	12.25	5.666667	0	0	
35	N35	8.25	0.	-0.	0	
36	N36	8.25	3.333334	-0.	0	
37	N37	8.25	-1.333333	-0.	0	
38	N38	8.25	4.666667	-0.	0	
39	N39	4.25	-1.333333	-0.	0	
40	N40	4.25	4.666667	-0.	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N8	Reaction	Reaction	Reaction			
2	N15						
3	N16						
4	N13						
5	N14						
6	N17						
7	N18						
8	N19						
9	N20						
10	N29	Reaction	Reaction	Reaction			
11	N30	Reaction	Reaction	Reaction			

Member Point Loads (BLC 2 : Equipment Weight)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M17	Y	-.075	.5
2	M17	Y	-.075	7.5
3	M16	Y	-.042	.5
4	M16	Y	-.042	3.5
5	M17	Y	-.109	1.5
6	M17	Y	-.084	5

Member Point Loads (BLC 3 : Ice Weight)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M17	Y	-.214	.5
2	M17	Y	-.214	7.5
3	M16	Y	-.086	.5
4	M16	Y	-.086	3.5
5	M17	Y	-.103	1.5
6	M17	Y	-.09	5

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M17	X	.027	.5
2	M17	X	.027	7.5
3	M16	X	.011	.5
4	M16	X	.011	3.5
5	M17	X	.019	1.5
6	M17	X	.021	5

Member Point Loads (BLC 5 : Wind X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M17	X	.064	.5
2	M17	X	.064	7.5
3	M16	X	.024	.5
4	M16	X	.024	3.5
5	M17	X	.046	1.5
6	M17	X	.051	5

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M17	Z	.062	.5
2	M17	Z	.062	7.5
3	M16	Z	.021	.5
4	M16	Z	.021	3.5

Member Point Loads (BLC 7 : Wind Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M17	Z	.18	.5
2	M17	Z	.18	7.5
3	M16	Z	.056	.5
4	M16	Z	.056	3.5

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

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,k...	Start Location[ft..	End Location[ft,...
1	M3	X	.002	.002	0	0
2	M4	X	.002	.002	0	0
3	M5	X	.002	.002	0	0
4	M6	X	.002	.002	0	0
5	M7	X	.002	.002	0	0
6	M8	X	.002	.002	0	0
7	M9	X	.002	.002	0	0
8	M10	X	.002	.002	0	0
9	M11	X	.002	.002	0	0
10	M12	X	.002	.002	0	0
11	M13	X	.002	.002	0	0
12	M14	X	.002	.002	0	0
13	M15	X	.002	.002	0	0
14	M16	X	.002	.002	0	0
15	M17	X	.002	.002	0	0
16	M18	X	.002	.002	0	0
17	M21	X	.002	.002	0	0

Member Distributed Loads (BLC 5 : Wind X)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,k...	Start Location[ft..	End Location[ft,...
1	M3	X	.008	.008	0	0
2	M4	X	.008	.008	0	0
3	M5	X	.008	.008	0	0
4	M6	X	.008	.008	0	0
5	M7	X	.008	.008	0	0
6	M8	X	.008	.008	0	0
7	M9	X	.008	.008	0	0
8	M10	X	.008	.008	0	0
9	M11	X	.008	.008	0	0
10	M12	X	.008	.008	0	0
11	M13	X	.008	.008	0	0
12	M14	X	.008	.008	0	0
13	M15	X	.008	.008	0	0
14	M16	X	.008	.008	0	0
15	M17	X	.008	.008	0	0

Member Distributed Loads (BLC 5 : Wind X) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,k...	Start Location[ft..	End Location[ft,...
16	M18	X	.008	.008	0	0
17	M21	X	.008	.008	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,k...	Start Location[ft..	End Location[ft,...
1	M1	Z	.002	.002	0	0
2	M2	Z	.002	.002	0	0
3	M4	Z	.002	.002	0	0
4	M5	Z	.002	.002	0	0
5	M6	Z	.002	.002	0	0
6	M7	Z	.002	.002	0	0
7	M8	Z	.002	.002	0	0
8	M9	Z	.002	.002	0	0
9	M10	Z	.002	.002	0	0
10	M11	Z	.002	.002	0	0
11	M12	Z	.002	.002	0	0
12	M13	Z	.002	.002	0	0
13	M14	Z	.002	.002	0	0
14	M15	Z	.002	.002	0	0
15	M18	Z	.002	.002	0	0
16	M21	Z	.002	.002	0	0

Member Distributed Loads (BLC 7 : Wind Z)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,k...	Start Location[ft..	End Location[ft,...
1	M1	Z	.008	.008	0	0
2	M2	Z	.008	.008	0	0
3	M4	Z	.008	.008	0	0
4	M5	Z	.008	.008	0	0
5	M6	Z	.008	.008	0	0
6	M7	Z	.008	.008	0	0
7	M8	Z	.008	.008	0	0
8	M9	Z	.008	.008	0	0
9	M10	Z	.008	.008	0	0
10	M11	Z	.008	.008	0	0
11	M12	Z	.008	.008	0	0
12	M13	Z	.008	.008	0	0
13	M14	Z	.008	.008	0	0
14	M15	Z	.008	.008	0	0
15	M18	Z	.008	.008	0	0
16	M21	Z	.008	.008	0	0

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distrib..	Area(...	Surfa...
1	Self Weight	None		-1						
2	Equipment Weight	None					6			
3	Ice Weight	None					6			
4	Wind w/ Ice X	None					6	17		
5	Wind X	None					6	17		
6	Wind w/ Ice Z	None					4	16		

Basic Load Cases (Continued)

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distrib...	Area(...	Surfa...
7	Wind Z	None					4	16		

Load Combinations

	Description	Sol...	PD...	SR...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
1	1.2D + 1.6..	Yes	Y		1	1.2	2	1.2	5	1.6														
2	0.9D + 1.6..	Yes	Y		1	.9	2	.9	5	1.6														
3	1.2D + 1.0..	Yes	Y		1	1.2	2	1.2	3	1	4	1												
4	1.2D + 1.6..	Yes	Y		1	1.2	2	1.2	7	1.6														
5	0.9D + 1.6..	Yes	Y		1	.9	2	.9	7	1.6														
6	1.2D + 1.0..	Yes	Y		1	1.2	2	1.2	3	1	6	1												

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N8	max	.151	1	.021	4	.997	4	0	6	0	6	0	6
2		min	-.267	4	.016	2	-.807	1	0	1	0	1	0	1
3	N29	max	-.149	5	.844	3	.467	2	0	6	0	6	0	6
4		min	-1.552	3	.318	2	-2.356	4	0	1	0	1	0	1
5	N30	max	1.364	6	.842	6	.878	3	0	6	0	6	0	6
6		min	-.166	2	.331	5	-.471	5	0	1	0	1	0	1
7	Totals:	max	0	6	1.706	6	0	1						
8		min	-1.387	1	.684	2	-1.716	5						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
1	N1	max	.032	2	.043	6	.12	5	4.053e-03	4	7.038e-03	5	4.603e-04	2
2		min	-.11	4	-.008	2	-.083	3	-1.11e-03	2	-8.313e-04	3	-9.963e-04	4
3	N2	max	.029	1	.043	6	.306	5	4.461e-03	4	8.112e-03	5	4.453e-04	2
4		min	-.034	5	-.008	2	-.016	3	-1.185e-03	2	-6.761e-04	3	-1.046e-03	4
5	N3	max	.032	2	.041	6	.099	5	4.053e-03	4	7.038e-03	5	4.603e-04	2
6		min	-.11	4	-.007	2	-.08	3	-1.11e-03	2	-8.313e-04	3	-9.964e-04	4
7	N4	max	.029	1	.041	6	.281	5	4.461e-03	4	8.111e-03	5	4.452e-04	2
8		min	-.034	5	-.007	2	-.014	3	-1.185e-03	2	-6.761e-04	3	-1.046e-03	4
9	N5	max	.041	2	.041	6	.07	2	4.053e-03	4	7.038e-03	5	5.315e-04	2
10		min	-.128	4	-.007	2	-.114	6	-1.11e-03	2	-8.313e-04	3	-9.964e-04	4
11	N6	max	.028	3	.041	6	.345	4	4.659e-03	4	8.111e-03	5	3.273e-04	2
12		min	-.019	5	-.007	2	-.023	2	-1.185e-03	2	-6.761e-04	3	-1.046e-03	4
13	N7	max	.029	1	.055	6	.012	1	2.754e-03	4	7.028e-03	5	3.954e-04	1
14		min	-.034	5	.015	2	-.015	5	-5.295e-04	2	-9.45e-04	1	-3.059e-04	5
15	N8	max	0	6	0	6	0	6	1.819e-03	4	5.639e-03	1	8.882e-04	1
16		min	0	1	0	1	0	1	1.069e-03	2	-2.989e-04	5	-6.205e-04	5
17	N9	max	.032	2	.055	3	.044	2	1.698e-03	4	2.745e-03	5	1.258e-04	2
18		min	-.11	4	.017	2	-.143	4	-3.019e-04	2	-1.187e-03	3	-4.859e-04	4
19	N10	max	.029	1	.055	3	.017	1	2.541e-03	4	6.315e-03	5	1.631e-04	2
20		min	-.034	5	.016	5	-.047	5	-4.48e-04	2	-8.401e-04	1	-3.931e-04	4
21	N11	max	.026	2	.06	6	.038	2	1.853e-03	6	1.344e-03	2	-1.012e-04	2
22		min	-.085	4	.017	2	-.118	4	-1.043e-04	2	-5.657e-03	4	-8.737e-04	6
23	N12	max	.019	1	.06	6	.007	2	1.999e-03	4	2.364e-03	3	1.468e-04	2

Envelope Joint Displacements (Continued)

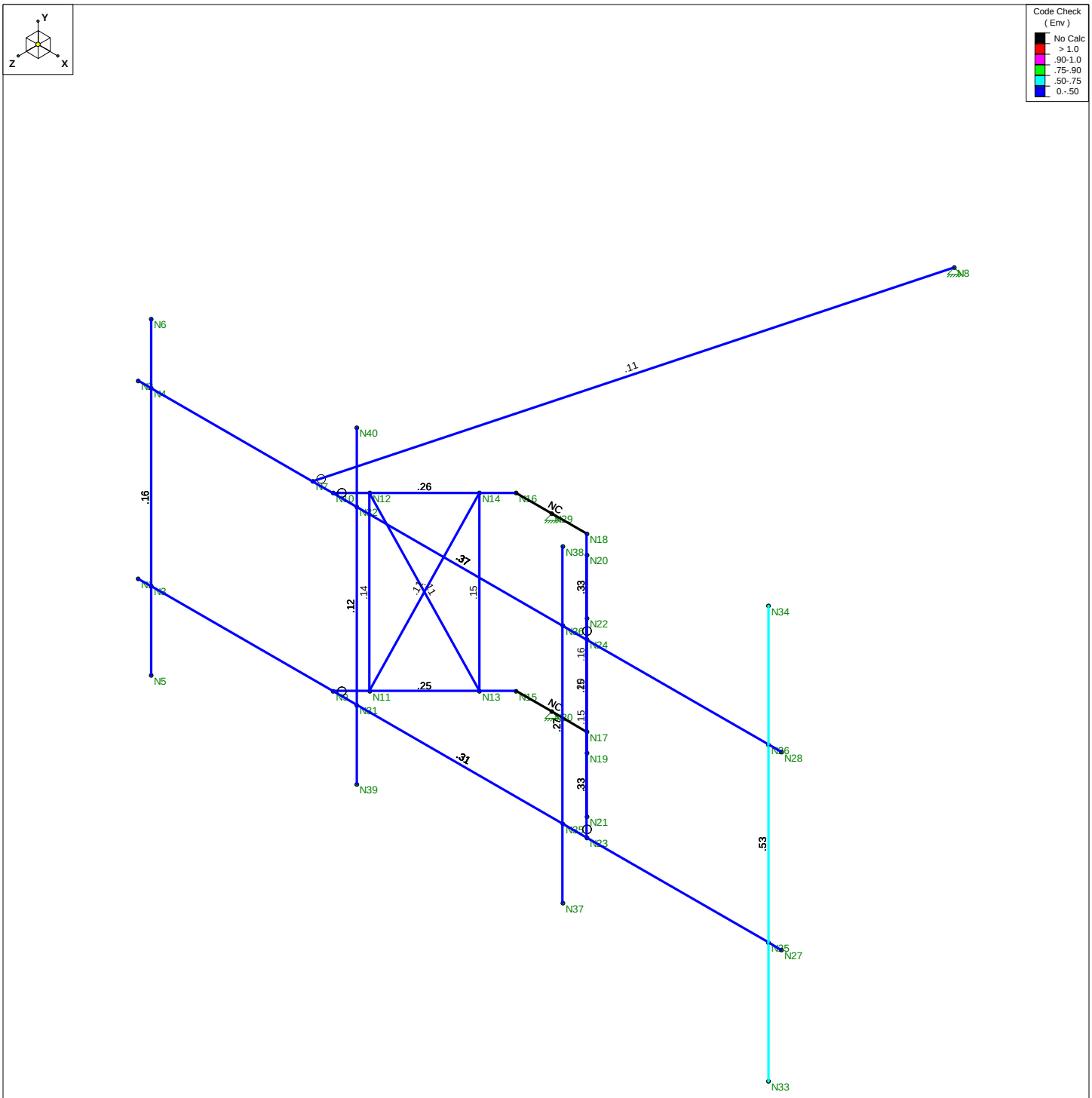
	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
24		min	-.027	5	.017	2	-.041	4	-2.501e-04	2	-1.471e-03	5	-9.097e-04	6
25	N13	max	.007	2	.056	6	.02	2	1.299e-03	6	1.583e-03	2	-7.878e-04	2
26		min	-.019	4	.01	2	-.052	4	2.031e-04	2	-4.569e-03	4	-3.624e-03	6
27	N14	max	-.001	2	.056	6	-.01	2	1.296e-03	6	2.688e-04	2	-6.316e-04	2
28		min	-.008	4	.01	2	-.024	4	8.889e-05	2	-1.627e-03	4	-3.636e-03	6
29	N15	max	0	6	.042	6	.013	1	6.392e-04	6	1.585e-03	1	-9.717e-04	2
30		min	0	1	.008	2	-.034	5	2.747e-04	2	-4.096e-03	5	-5.124e-03	6
31	N16	max	0	6	.042	6	-.009	2	6.67e-04	6	-1.033e-03	2	-9.789e-04	2
32		min	0	1	.008	2	-.017	4	2.988e-04	2	-2.047e-03	4	-5.12e-03	6
33	N17	max	0	6	-.008	2	.034	5	6.392e-04	6	1.585e-03	1	-9.717e-04	2
34		min	0	1	-.042	6	-.013	1	2.747e-04	2	-4.096e-03	5	-5.124e-03	6
35	N18	max	0	6	-.008	2	.017	4	6.67e-04	6	-1.033e-03	2	-9.789e-04	2
36		min	0	1	-.042	6	.009	2	2.988e-04	2	-2.047e-03	4	-5.12e-03	6
37	N19	max	.007	2	-.013	2	.053	4	2.331e-05	2	1.581e-03	2	-9.735e-04	2
38		min	-.019	4	-.063	6	-.02	2	-8.045e-04	6	-4.771e-03	4	-4.165e-03	6
39	N20	max	-.001	2	-.013	2	.026	4	2.167e-04	2	3.155e-04	2	-7.824e-04	2
40		min	-.008	4	-.063	6	.01	2	-7.336e-04	6	-1.871e-03	4	-4.089e-03	6
41	N21	max	.026	2	-.022	2	.121	4	-1.121e-04	2	1.357e-03	2	-1.377e-03	2
42		min	-.087	4	-.074	6	-.039	2	-2.684e-03	6	-5.563e-03	4	-4.227e-03	6
43	N22	max	.019	1	-.022	2	.046	4	2.981e-05	2	2.376e-03	3	-8.137e-04	2
44		min	-.029	5	-.074	6	-.009	2	-2.375e-03	6	-1.517e-03	5	-3.927e-03	6
45	N23	max	.031	2	-.029	2	.145	4	5.17e-04	2	1.767e-03	2	-2.127e-03	2
46		min	-.111	4	-.085	3	-.044	2	-3.255e-03	4	-1.362e-02	4	-6.524e-03	6
47	N24	max	.03	1	-.026	2	.053	5	7.002e-04	5	1.404e-03	2	-1.629e-03	2
48		min	-.035	5	-.085	6	-.019	1	-4.058e-04	3	-1.192e-02	4	-6.562e-03	6
49	N25	max	.031	2	-.141	2	.929	4	7.057e-04	2	1.586e-03	2	-1.059e-03	2
50		min	-.111	4	-.483	6	-.114	2	-7.635e-03	4	-2.087e-02	4	-7.265e-03	6
51	N26	max	.031	1	-.141	2	.818	4	3.031e-03	5	1.567e-03	2	-2.703e-03	2
52		min	-.035	5	-.483	6	-.083	2	-1.142e-03	3	-2.104e-02	4	-7.271e-03	6
53	N27	max	.031	2	-.144	2	.991	4	7.057e-04	2	1.586e-03	2	-1.059e-03	2
54		min	-.111	4	-.505	6	-.119	2	-7.635e-03	4	-2.087e-02	4	-7.265e-03	6
55	N28	max	.031	1	-.15	2	.881	4	3.031e-03	5	1.567e-03	2	-2.703e-03	2
56		min	-.035	5	-.505	6	-.088	2	-1.142e-03	3	-2.104e-02	4	-7.271e-03	6
57	N29	max	0	6	0	6	0	6	6.67e-04	6	-1.033e-03	2	-9.789e-04	2
58		min	0	1	0	1	0	1	2.988e-04	2	-2.047e-03	4	-5.12e-03	6
59	N30	max	0	6	0	6	0	6	6.392e-04	6	1.585e-03	1	-9.717e-04	2
60		min	0	1	0	1	0	1	2.747e-04	2	-4.096e-03	5	-5.124e-03	6
61	N31	max	.032	2	.052	3	.04	2	1.381e-03	6	1.621e-03	5	-3.124e-05	2
62		min	-.11	4	.014	5	-.154	4	-2.798e-04	2	-1.257e-03	3	-8.589e-04	6
63	N32	max	.029	1	.052	3	.021	1	2.293e-03	4	4.987e-03	5	-4.282e-05	2
64		min	-.034	5	.014	5	-.079	5	-3.932e-04	2	-4.174e-04	1	-8.278e-04	6
65	N33	max	.043	2	-.141	2	1.242	4	7.05e-04	2	1.586e-03	2	9.126e-04	2
66		min	-.276	6	-.483	6	-.134	2	-1.241e-02	4	-2.087e-02	4	-7.234e-03	6
67	N34	max	.242	3	-.142	2	1.001	5	7.837e-03	5	1.567e-03	2	-3.176e-03	5
68		min	.054	5	-.483	6	-.063	1	-1.151e-03	3	-2.104e-02	4	-7.832e-03	3
69	N35	max	.031	2	-.017	5	.074	4	4.678e-04	2	1.794e-03	2	-1.449e-03	2
70		min	-.111	4	-.054	3	-.034	2	-2.861e-03	4	-1.167e-02	4	-4.683e-03	6
71	N36	max	.03	1	-.017	5	-.007	6	5.114e-04	2	1.353e-03	2	-1.116e-03	2
72		min	-.035	5	-.054	3	-.012	1	-4.47e-04	3	-9.584e-03	5	-4.709e-03	6
73	N37	max	.009	2	-.017	5	.12	4	4.677e-04	2	1.794e-03	2	-1.399e-03	2
74		min	-.148	6	-.054	3	-.042	2	-2.911e-03	4	-1.167e-02	4	-4.683e-03	6
75	N38	max	.099	3	-.017	5	0	5	5.114e-04	2	1.353e-03	2	-1.166e-03	2

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
76		min	-.005	5	-.054	3	-.015	3	-4.47e-04	3	-9.584e-03	5	-4.709e-03	6
77	N39	max	.032	2	.052	3	.044	2	1.373e-03	6	1.621e-03	5	1.882e-05	2
78		min	-.121	4	.014	5	-.175	4	-2.798e-04	2	-1.257e-03	3	-8.589e-04	6
79	N40	max	.037	3	.052	3	.027	3	2.344e-03	4	4.987e-03	5	-9.288e-05	2
80		min	-.025	5	.014	5	-.043	5	-3.932e-04	2	-4.174e-04	1	-8.279e-04	6

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

	Memb...	Shape	Code Check	L...	LC	Sh...	L...	Dir	...	phi*P...	phi*Pn...	phi*Mn y-y [k-ft]	phi*...	Cb	Eqn
1	M1	PIPE_2.5	.374	8....	4	.111	3....		4	14.559	50.715	3.596	3.596	2....	H1...
2	M2	PIPE_2.5	.313	8....	4	.113	8....		4	14.559	50.715	3.596	3.596	2....	H1...
3	M3	PIPE_2.0	.109	0	4	.007	1...		1	9.492	32.13	1.872	1.872	1....	H1...
4	M4	PIPE_2.0	.262	2....	3	.099	2....		3	32.032	32.13	1.872	1.872	1....	H1...
5	M5	PIPE_2.0	.255	2....	6	.093	2....		3	32.032	32.13	1.872	1.872	1....	H1...
6	M6	PIPE_2.0	.332	2....	6	.126	.4...		3	32.032	32.13	1.872	1.872	1....	H1...
7	M7	PIPE_2.0	.328	2....	6	.139	.4...		6	32.032	32.13	1.872	1.872	1....	H1...
8	M8	0.625' Dia.	.136	3....	5	.028	0		6	1.058	9.94	.104	.104	2....	H1...
9	M9	0.625' Dia.	.148	0	4	.018	0		4	1.058	9.94	.104	.104	2....	H1...
10	M10	SR 3/4	.107	0	1	.021	0		6	6.954	14.314	.179	.179	1	H1...
11	M11	0.625' Dia.	.149	0	1	.028	3....		6	1.058	9.94	.104	.104	2.6	H1...
12	M12	SR 3/4	.113	0	1	.022	0		4	6.954	14.314	.179	.179	2....	H1...
13	M13	0.625' Dia.	.160	0	1	.018	0		4	1.058	9.94	.104	.104	2....	H1...
14	M14	SR 3/4	.201	0	3	.020	0		4	6.954	14.314	.179	.179	2....	H1...
15	M15	SR 3/4	.151	3....	6	.016	3....		4	6.954	14.314	.179	.179	2.4	H1...
16	M16	PIPE_2.0	.161	4.5	6	.036	3....		4	20.867	32.13	1.872	1.872	1....	H1...
17	M17	PIPE_2.0	.526	2....	3	.062	2....		3	14.916	32.13	1.872	1.872	4....	H1...
18	M18	PIPE_2.0	.269	1....	3	.062	4....		6	20.867	32.13	1.872	1.872	1....	H1...
19	M21	PIPE_2.0	.124	1....	4	.076	1....		4	20.867	32.13	1.872	1.872	1....	H1...



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek Engineering		
TJL	CT11111A	Apr 13, 2022 at 2:01 PM
22006.07	Unity Check	Mount.R3D

CENTEK engineering
Centered on Solutions℠ www.centekeng.com
63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject:	Connection to Host Building
Location:	Newtown, CT
Rev. 0: 4/13/22	Prepared by: T.J.L. Checked by: C.F.C. Job No. 22006.07

Antenna Mount Connection:

Anchor Data:

A307 Thru-Bolt =

Number of Anchor Bolts = $N := 4$ (User Input)

Diameter of Bolts = $D := 0.625in$ (User Input)

Design Tension = $T_{design} := 10.4 \cdot kips$ (User Input)

Design Shear = $V_{design} := 6.23 \cdot kips$ (User Input)

Design Reactions:

Shear X = $F_x := 1.6 \cdot kips$ (User Input)

Shear Y = $F_y := 0.9 \cdot kips$ (User Input)

Shear Z = $F_z := 2.4 \cdot kips$ (User Input)

Anchor Check:

Max Tension Force = $T_{Max} := \frac{F_z}{N} = 600lb$

Max Shear Force = $V_{Max} := \frac{F_y + F_x}{N} = 625lb$

Condition 1 = $Condition1 := if\left(\frac{T_{Max}}{T_{design}} + \frac{V_{Max}}{V_{design}} \le 1.0, "OK", "NG"\right) = "OK"$

% of Capacity = $\max\left[\frac{T_{Max}}{T_{design}}, \frac{V_{Max}}{V_{design}}, \left(\frac{\frac{T_{Max}}{T_{design}} + \frac{V_{Max}}{V_{design}}}{1.0}\right)\right] = 15.8 \cdot \%$

Exhibit F

Power Density/RF Emissions Report

Fox Hill Telecom

Radio Frequency Emissions Analysis Report

T-Mobile

Site ID: CT11111A

Newtown / I-84 X9
20 Barnabas Road (Newtown Service Center)
Newtown, CT 06470

September 1, 2022

Fox Hill Telecom Project Number: 221291

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**17.14 %**

Fox Hill Telecom

September 1, 2022

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

Emissions Analysis for Site: **CT11111A – Newtown / I-84 X9**

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed upgrades to the T-MOBILE facility located at **20 Barnabas Road (Newtown Service Center), Newtown, CT**, for the purpose of determining whether the emissions from the Proposed T-MOBILE Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz & 700 MHz bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2500 MHz (BRS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **20 Barnabas Road (Newtown Service Center), Newtown, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-MOBILE is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

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

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

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

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz, 700 MHz, 1900 MHz (PCS), 2100 MHz (AWS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	RFS APXVAALL24_43-U-NA20	149
A	2	Ericsson AIR6419 B41	149
B	1	RFS APXVAALL24_43-U-NA20	149
B	2	Ericsson AIR6419 B41	149
C	1	RFS APXVAALL24_43-U-NA20	149
C	2	Ericsson AIR6419 B41	149

Table 2: Antenna Data

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

RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	13.65 / 13.85 / 16.65 / 16.95	14	495	20,825.23	4.34
Antenna A2	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	3.97
						Sector A Composite MPE%	**8.31**
Antenna B1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	13.65 / 13.85 / 16.65 / 16.95	14	495	20,825.23	4.34
Antenna B2	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	3.97
						Sector B Composite MPE%	**8.31**
Antenna C1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	13.65 / 13.85 / 16.65 / 16.95	14	495	20,825.23	4.34
Antenna C2	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	3.97
						Sector C Composite MPE%	**8.31**

Table 3: T-MOBILE Emissions Levels

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

Site Composite MPE%	
Carrier	**MPE%**
T-MOBILE – Max Per Sector Value	**8.31 %**
6755 MHz system	0.00 %
37.48, 37.74, 48.34, 154.46375 MHz systems	0.10 %
Sprint	1.03 %
AT&T	3.65 %
Verizon Wireless	4.05 %
Site Total MPE %:	**17.14 %**

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	8.31 %
T-MOBILE Sector B Total:	8.31 %
T-MOBILE Sector C Total:	8.31 %
Site Total:	17.14 %

Table 5: Site MPE Summary

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

T-MOBILE _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 600 MHz LTE / 5G NR	2	926.96	149	3.26	600 MHz	400	0.81%
T-Mobile 700 MHz LTE	2	485.32	149	1.71	700 MHz	467	0.37%
T-Mobile 1900 MHz (PCS) LTE	4	1,849.52	149	13.01	1900 MHz (PCS)	1000	1.30%
T-Mobile 1900 MHz (PCS) GSM	1	693.57	149	1.22	1900 MHz (PCS)	1000	0.12%
T-Mobile 2100 MHz (AWS) LTE	4	1,981.80	149	13.94	2100 MHz (AWS)	1000	1.39%
T-Mobile 2100 MHz (AWS) UMTS	1	1,981.80	149	3.48	2100 MHz (AWS)	1000	0.35%
T-Mobile 2500 MHz (BRS) LTE / 5G NR	8	2,825.08	149	39.73	2500 MHz (BRS)	1000	3.97%
						Total:	**8.31%**

Table 6: T-MOBILE Maximum Sector MPE Power Values

Summary

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

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

T-MOBILE Sector	Power Density Value (%)
Sector A:	8.31 %
Sector B:	8.31 %
Sector C:	8.31 %
T-MOBILE Maximum Total (per sector):	8.31 %
Site Total:	17.14 %
Site Compliance Status:	**COMPLIANT**

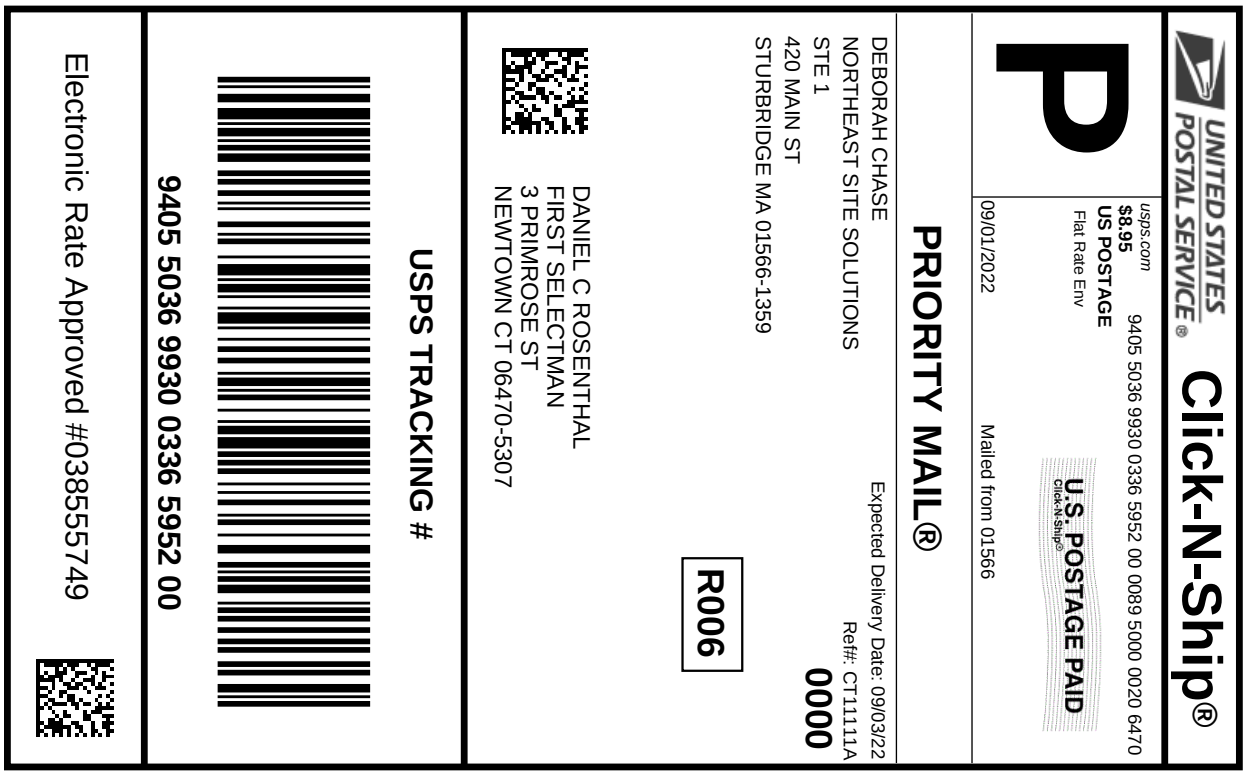
The anticipated composite MPE value for this site assuming all carriers present is **17.14 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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.

Scott Heffernan
Principal RF Engineer
Fox Hill Telecom, Inc
Holden, MA 01520
(978)660-3998

Exhibit G

Recipient Mailings



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4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
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9405 5036 9930 0336 5952 00

Trans. #:	570969516
Print Date:	09/01/2022
Ship Date:	09/01/2022
Expected Delivery Date:	09/03/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

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

Ref#: CT11111A

To: DANIEL C ROSENTHAL
FIRST SELECTMAN
3 PRIMROSE ST
NEWTOWN CT 06470-5307

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

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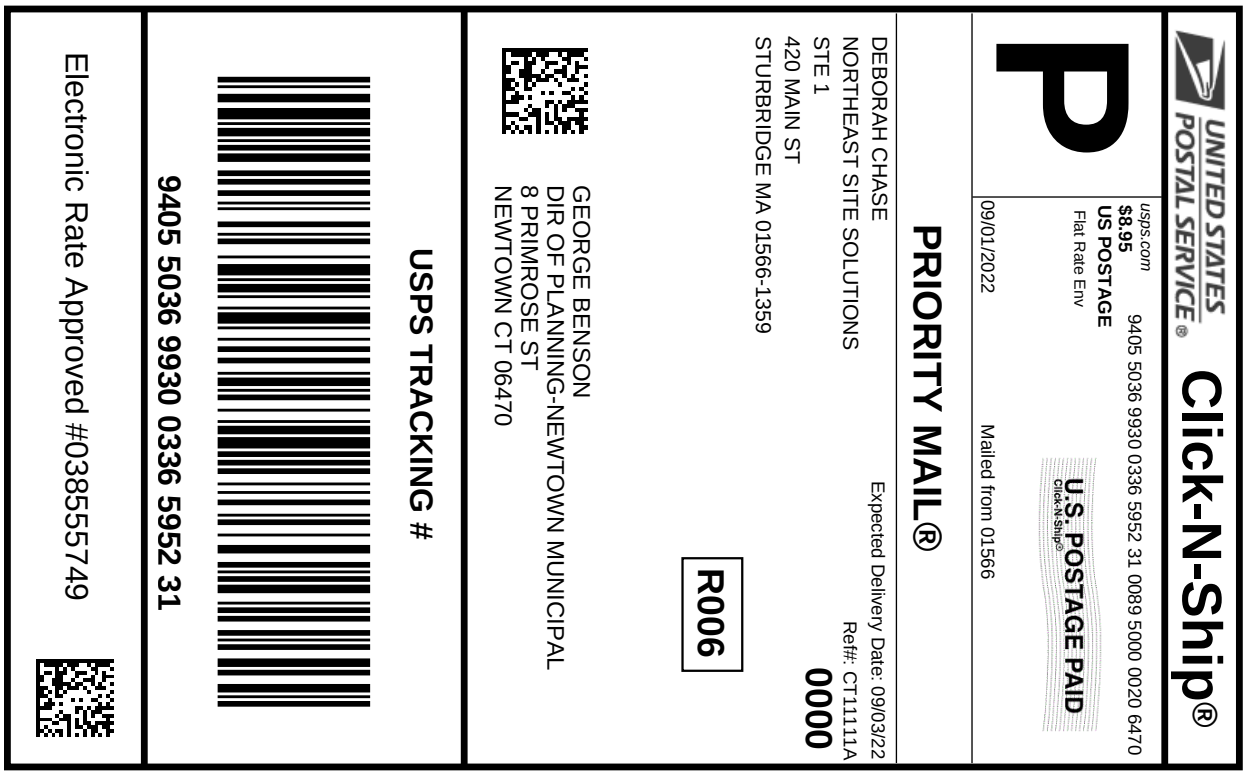

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9405 5036 9930 0336 5952 31

Trans. #:	570969516
Print Date:	09/01/2022
Ship Date:	09/01/2022
Expected Delivery Date:	09/03/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

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

Ref#: CT11111A

To: GEORGE BENSON
DIR OF PLANNING-NEWTOWN MUNICIPAL BLDG
8 PRIMROSE ST
NEWTOWN CT 06470

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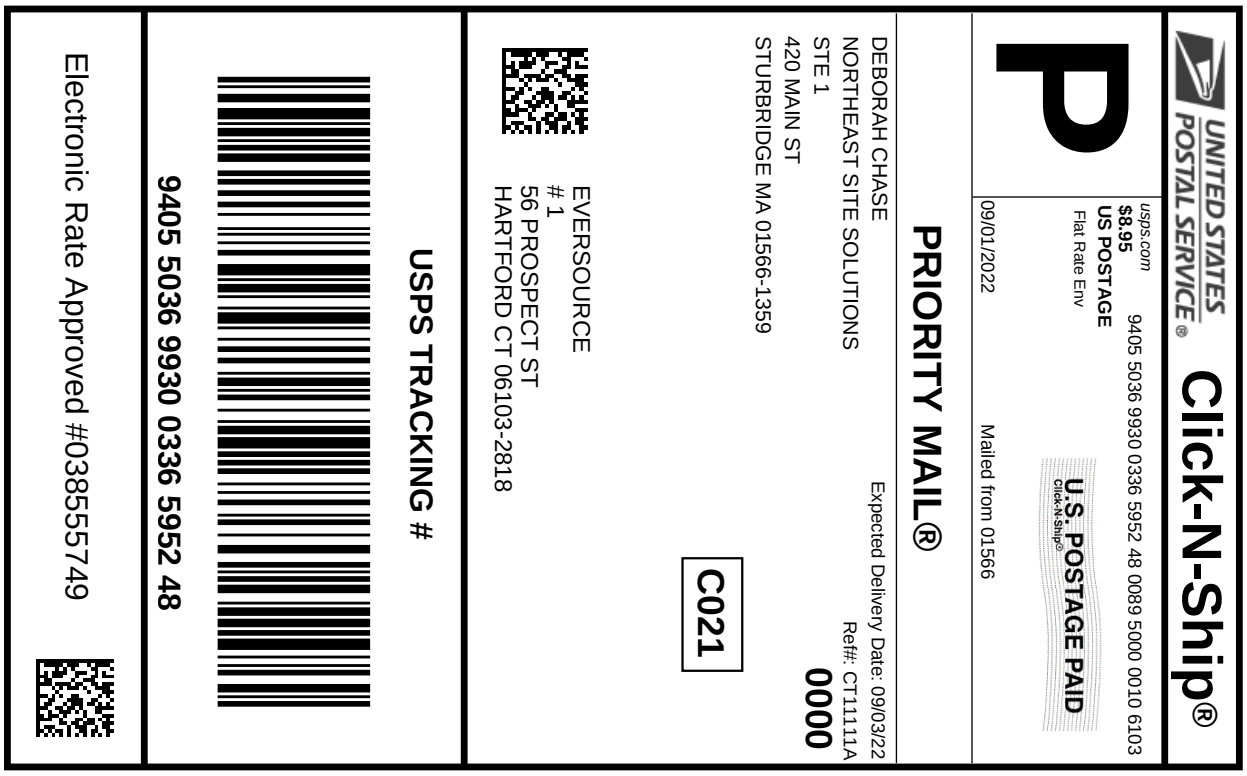

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5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0336 5952 48

Trans. #:	570969516
Print Date:	09/01/2022
Ship Date:	09/01/2022
Expected Delivery Date:	09/03/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

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

Ref#: CT11111A

To: EVERSOURCE
1
56 PROSPECT ST
HARTFORD CT 06103-2818

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CT111.11A Tmo Anchor L6000 Radio Upgrade

UNITED STATES POSTAL SERVICE.

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FARMINGTON, CT 06032-9998
(800)275-8777

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Product	Qty	Unit Price	Price
Prepaid Mail Newtown, CT 06470 Weight: 0 lb 8.30 oz Acceptance Date: Wed 09/07/2022 Tracking #: 9405 5036 9930 0336 5952 31	1		$0.00
Prepaid Mail Hartford, CT 06103 Weight: 0 lb 8.30 oz Acceptance Date: Wed 09/07/2022 Tracking #: 9405 5036 9930 0336 5952 48	1		$0.00
Prepaid Mail Newtown, CT 06470 Weight: 0 lb 8.40 oz Acceptance Date: Wed 09/07/2022 Tracking #: 9405 5036 9930 0336 5952 00	1		$0.00
Grand Total:			$0.00

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