



10 INDUSTRIAL AVE,
SUITE 3
MAHWAH NJ 07430

PHONE: 201.684.0055
FAX: 201.684.0066

August 28, 2020

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

RE: Notice of Exempt Modification
320 Old Stagecoach Road, Ridgefield, CT 06877
Latitude: 41.33030800
Longitude: -73.51681900
T-Mobile Site#: CTFF702F – Anchor

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 126-foot level of the existing 149-foot monopole at 320 Old Stagecoach Road, Ridgefield, CT. The 149-foot monopole tower and property are owned by Insite Towers Development LLC. T-Mobile now intends to remove the six (6) existing antennas and add nine (9) new 600/700/1900/2100/2500 MHz antennas. The new antennas will be installed at the same 126-foot level of the tower.

Planned Modifications:

Tower:

Remove

N/A

Remove and Replace:

- (3) Commscope LNX-6515DS antennas for (3) RFS APXVARR24_43 600/700/1900/2100 MHz antennas
- (3) RFS APXV18 antennas for (3) RFS APX16DWV-16DWVS 2100 MHz antennas
- (3) Ericsson RRUS11 for (3) Ericsson Radio 4449 RRU

Install New:

- (3) AIR 6449 B41 2500 MHz
- (3) Ericsson Radio 4415 B25 RRU
- (3) Radio 4415 B66A
- (3) Commscope SDX1926Q-43
- (2) 1-5/8" Hybrid

Existing to Remain:

- (3) RRUS11

(2) 1-5/8" Hybrid

Ground:

Install New: 6160 Cabinet and B160 Battery Cabinet

This tower was originally approved by the Connecticut Siting Council in Docket No. 445 dated September 4, 2014. This approval did not come with conditions that would be violated by the proposed modification. T-Mobile was approved for tower-sharing on July 22, 2016. The proposed modification complies with the previous approvals.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to First Selectman -Rudy Marconi, Elected Official, and Richard Baldelli, Director of Planning and Zoning for the Town of Ridgefield, as well as the owner.

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

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

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

Sincerely,

Kyle Richers

Transcend Wireless

Cell: 908-447-4716

Email: krichers@transcendwireless.com

Attachments

cc: Rudy Marconi – First Selectman of the Town of Ridgefield

Richard Baldelli– Director of Planning and Zoning for Town of Ridgefield

Insite Towers Development LLC – Owner

UPS Internet Shipping: View/Print Label

- 1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.
- 2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**

Customers with a Daily Pickup

Your driver will pickup your shipment(s) as usual.

Customers without a Daily Pickup

Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the 'Find Locations' Quick link at ups.com.

Schedule a same day or future day Pickup to have a UPS driver pickup all of your Internet Shipping packages.

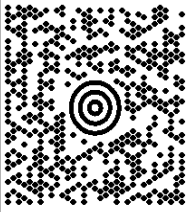
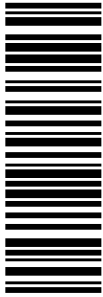
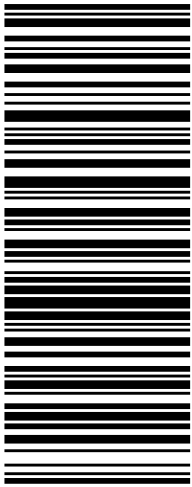

Hand the package to any UPS driver in your area.

UPS Access Point™
MICHAELS STORE # 7773
75 INTERSTATE SHOP CTR
RAMSEY ,NJ 07446

UPS Access Point™
THE UPS STORE
115 FRANKLIN TPKE
MAHWAH ,NJ 07430

UPS Access Point™
THE UPS STORE
120 E MAIN ST
RAMSEY ,NJ 07446

FOLD HERE

SHIP TO: INSITE TOWERS DEVELOPMENT LLC SUITE 700 1199 N. FAIRFAX STREET ALEXANDRIA VA 22314-1437		1 LBS		1 OF 1	
		VA 222 9-30			
UPS GROUND		TRACKING #: 1Z V25 742 42 9226 8003			
BILLING: P/P SIGNATURE REQUIRED		Reference#1: CTFF702F CSC Owner			
		UIS 22.0.12. W/NTNV50 31.0A 07/2020*			

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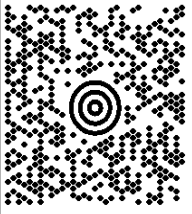

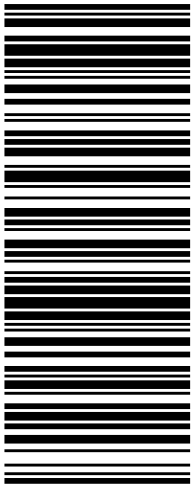

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UPS Access Point™
THE UPS STORE
120 E MAIN ST
RAMSEY ,NJ 07446

FOLD HERE

NEIL GUERRIERO 3473040176 TRANSCEND WIRELESS 10 INDUSTRIAL AVE MAHWAH NJ 07430		SHIP TO: RUDY MARCONI TOWN OF RIDGEFIELD 400 MAIN STREET RIDGEFIELD CT 06877-4610		1 LBS		1 OF 1	
		CT 068 0-02					
UPS GROUND		TRACKING #: 1Z V25 742 42 9447 4018					
BILLING: P/P SIGNATURE REQUIRED		Reference#1: CTFF702F CSC EO		UIS 22.0.12. W/NTNV50 31.0A 07/2020*			

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THE UPS STORE
115 FRANKLIN TPKE
MAHWAH ,NJ 07430

UPS Access Point™
THE UPS STORE
120 E MAIN ST
RAMSEY ,NJ 07446

FOLD HERE

NEIL GUERRIERO
3473040176
TRANSCEND WIRELESS
10 INDUSTRIAL AVE
MAHWAH NJ 07430

SHIP TO:
RICHARD BALDELLI
TOWN OF RIDGEFIELD
SECOND FLOOR
66 PROSPECT STREET
RIDGEFIELD CT 06877-4621

1 LBS

1 OF 1

CT 068 0-02

UPS GROUND

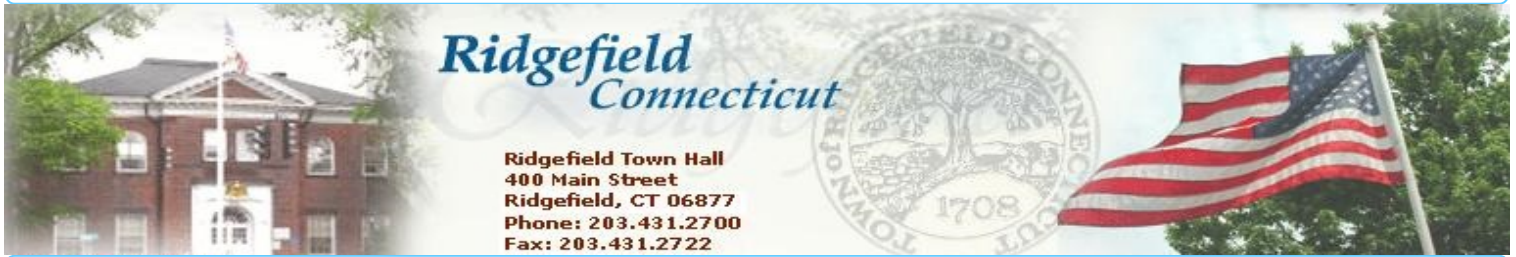
TRACKING #: 1Z V25 742 42 9408 4029

BILLING: P/P
SIGNATURE REQUIRED

Reference#1: CTFF702F CSC ZO

UIS 22.0.12. W/NTNV50 31.0A 07/2020*

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2017.



Information on the Property Records for the Municipality of Ridgefield was last updated on 8/24/2020.

Parcel Information

Location:	320 OLD STAGECOACH RD	Property Use:	Residential	Primary Use:	Residential
Unique ID:	D080124	Map Block Lot:	D08-0124	Acres:	3.18
490 Acres:	0.00	Zone:	RAAA	Volume / Page:	0993/0673
Developers Map / Lot:	9269/D-1	Census:			

Value Information

	Appraised Value	Assessed Value
Land	625,900	438,130
Buildings	0	0
Detached Outbuildings	0	0
Total	625,900	438,130

Owner's Information

Owner's Data

INSITE TOWERS DEVELOPMENT LLC
1199 N FAIRFAX ST STE 700
ALEXANDRIA VA 22314

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
INSITE TOWERS DEVELOPMENT LLC	0993	0673	11/14/2013	Warranty Deed	No	\$10
INSITE TOWERS LLC	0981	0949	05/07/2013	Quit Claim	No	\$265,000
WILTON BANK THE	890	1029	05/04/2009	Foreclosure	No	\$0

Information Published With Permission From The Assessor

Google Maps 320 Old Stagecoach Rd



Imagery ©2020 Maxar Technologies, New York GIS, USDA Farm Service Agency, Map data ©2020 50 ft



320 Old Stagecoach Rd

Ridgefield, CT 06877



Directions



Save



Nearby

Send to your
phone

Share



8FJM+8P Ridgefield, Connecticut

DOCKET NO. 445 - Homeland Towers, LLC and New Cingular	}	Connecticut
Wireless PCS, LLC application for a Certificate of Environmental	}	
Compatibility and Public Need for the construction, maintenance, and	}	Siting
operation of a telecommunications facility located at Ridgefield Town	}	
Assessor Map Parcel #D08-124, southwest of the intersection of Old	}	Council
Stagecoach Road and Aspen Ledges Road, Ridgefield, Connecticut.		September 4, 2014

Decision and Order

Pursuant to Connecticut General Statutes §16-50p and the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, maintenance, and operation of a telecommunications facility, 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 General Statutes § 16-50k, be issued to Homeland Towers, LLC, hereinafter referred to as the Certificate Holder, for a telecommunications facility at Assessor Map Parcel #D08-124, located southwest of the intersection of Old Stagecoach Road and Aspen Ledges Road, Ridgefield, Connecticut.

Unless otherwise approved by the Council, 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 tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of New Cingular Wireless PCS, LLC and other entities, both public and private, but such tower shall not exceed a height of 150 feet above ground level. The height at the top of the uppermost antennas shall not exceed 162 feet above ground level.
2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Ridgefield for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
 - a) a final site plan(s) of site development to include specifications for the tower (including yield point), tower foundation, antennas, equipment compound, radio equipment, access road, utility line, emergency backup generator and landscaping;
 - b) construction plans for site clearing, grading, landscaping, water drainage, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended;
 - c) a box turtle (*Terrapene carolina carolina*) protection plan;
 - d) a diagram showing the tower's two color scheme; and
 - e) provisions for a potential shared generator capable of being used by all facility tenants.

3. Prior to the commencement of operation, the Certificate Holder shall provide the Council worst-case modeling of the electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of the electromagnetic radio frequency power density be submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.
4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
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. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed with at least one fully operational wireless telecommunications carrier providing wireless service within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The Certificate Holder shall provide written notice to the Executive Director of any schedule changes as soon as is practicable.
7. Any request for extension of the time period referred to in Condition 6 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the Town of Ridgefield. Any proposed modifications to this Decision and Order shall likewise be so served.
8. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council within 90 days from the one year period of cessation of service. The Certificate Holder may submit a written request to the Council for an extension of the 90 day period not later than 60 days prior to the expiration of the 90 day period.
9. Any nonfunctioning antenna, and associated antenna mounting equipment, on this facility shall be removed within 60 days of the date the antenna ceased to function.
10. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction, and the commencement of site operation.
11. The Certificate Holder shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v.

12. This Certificate may be transferred in accordance with Conn. Gen. Stat. §16-50k(b), provided both the Certificate Holder/transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under Conn. Gen. Stat. §16-50v. In addition, both the Certificate Holder/transferor and the transferee shall provide the Council a written agreement as to the entity responsible for any quarterly assessment charges under Conn. Gen. Stat. §16-50v(b)(2) that may be associated with this facility.
13. The Certificate Holder shall maintain the facility and associated equipment, including but not limited to, the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line and landscaping in a reasonable physical and operational condition that is consistent with this Decision and Order and a Development and Management Plan to be approved by the Council.
14. If the Certificate Holder is a wholly-owned subsidiary of a corporation or other entity and is sold/transferred to another corporation or other entity, the Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the Certificate Holder within 30 days of the sale and/or transfer.
15. This Certificate may be surrendered by the Certificate Holder upon written notification and approval by the Council.

We hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed in the Service List, dated March 20, 2014, and notice of issuance published in 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 Connecticut State Agencies.

DESIGN BASIS:

1. DESIGN CRITERIA:

- ## SITE NOTES

- ## 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. 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.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. 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 INCLUDING THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
9. 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.
10. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
11. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
12. ANY AND ALL ERRORS, DISCREPANCIES, AND "MISSED" ITEMS, ARE TO BE BROUGHT TO THE ATTENTION OF THE SITE OWNER'S 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.
13. 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.
14. 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.
15. 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.
16. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
17. 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.
18. THE CONTRACTOR SHALL CONTACT "DIG SAFE" (DIAL 811) AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
19. CONTRACTOR SHALL COMPLY WITH 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.
20. THE COUNTY/CITY/TOWN WILL MAKE PERIODIC FIELD OBSERVATION AND INSPECTIONS TO MONITOR THE INSTALLATION, MATERIALS, WORKMANSHIP AND EQUIPMENT INCORPORATED INTO THE PROJECT TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, CONTRACT DOCUMENTS AND APPROVED SHOP DRAWINGS.
21. 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 SURROUND FOUNDATION, CURB AND TOWNSHIP, 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.

DATE: 07/13/20

SCALE: AS NOTED

JOB NO. 20074.44

GENERAL NOTES AND SPECIFICATIONS

N-1

Sheet No. 2 of 9

ANTENNA SCHEDULE								
SECTOR	EXISTING/PROPOSED	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA H HEIGHT	AZIMUTH	(E/P) RRU (QTY)	(E/P) DIPLEXER (QTY)	(E/P) TMA (QTY)
A1	PROPOSED	RFS (APX16DWV-16DW-S-E-A20)	55.9 x 13.0 x 3.15	126"	0°	(P) RADIO 4415 B66A (1)		
A2	PROPOSED	RFS (APXVAARR24_43-U_NA20)	95.9 x 24 x 8.7	126"	0°	(E) RRUS 11 B4 (1), (P) RADIO 4424 B25 (1), (P) RADIO 4449 B71+B85 (1)	(P) COMMSCOPE SDX1926Q-43 (1)	
A3	PROPOSED	ERICSSON (AIR6449 B41)	33.1 x 20.6 x 8.6	126"	0°			
B1	PROPOSED	RFS (APX16DWV-16DW-S-E-A20)	55.9 x 13.0 x 3.15	126"	120°	(P) RADIO 4415 B66A (1)		
B2	PROPOSED	RFS (APXVAARR24_43-U_NA20)	95.9 x 24 x 8.7	126"	120°	(E) RRUS 11 B4 (1), (P) RADIO 4424 B25 (1), (P) RADIO 4449 B71+B85 (1)	(P) COMMSCOPE SDX1926Q-43 (1)	
B3	PROPOSED	ERICSSON (AIR6449 B41)	33.1 x 20.6 x 8.6	126"	120°			
C1	PROPOSED	RFS (APX16DWV-16DW-S-E-A20)	55.9 x 13.0 x 3.15	126"	240°	(P) RADIO 4415 B66A (1)		
C2	PROPOSED	RFS (APXVAARR24_43-U_NA20)	95.9 x 24 x 8.7	126"	240°	(E) RRUS 11 B4 (1), (P) RADIO 4424 B25 (1), (P) RADIO 4449 B71+B85 (1)	(P) COMMSCOPE SDX1926Q-43 (1)	
C3	PROPOSED	ERICSSON (AIR6449 B41)	33.1 x 20.6 x 8.6	126"	240°			

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



PROFESSIONAL ENGINEER SEAL

T-Mobile

Transcend Wireless

CENTEK engineering
Centered on Solutions™

(203) 489-0580
(203) 489-8387 Fax
65-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

T-MOBILE NORTHEAST LLC
WIRELESS COMMUNICATIONS FACILITY
CTFF702F
SITE ID: CTFF702F
320 OLD STAGECOACH RD
RIDGEFIELD, CT 06877

DATE: 07/13/20

SCALE: AS NOTED

JOB NO. 20074.44

SITE LOCATION PLAN

C-1

Sheet No. 3 of 9

CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

TJR

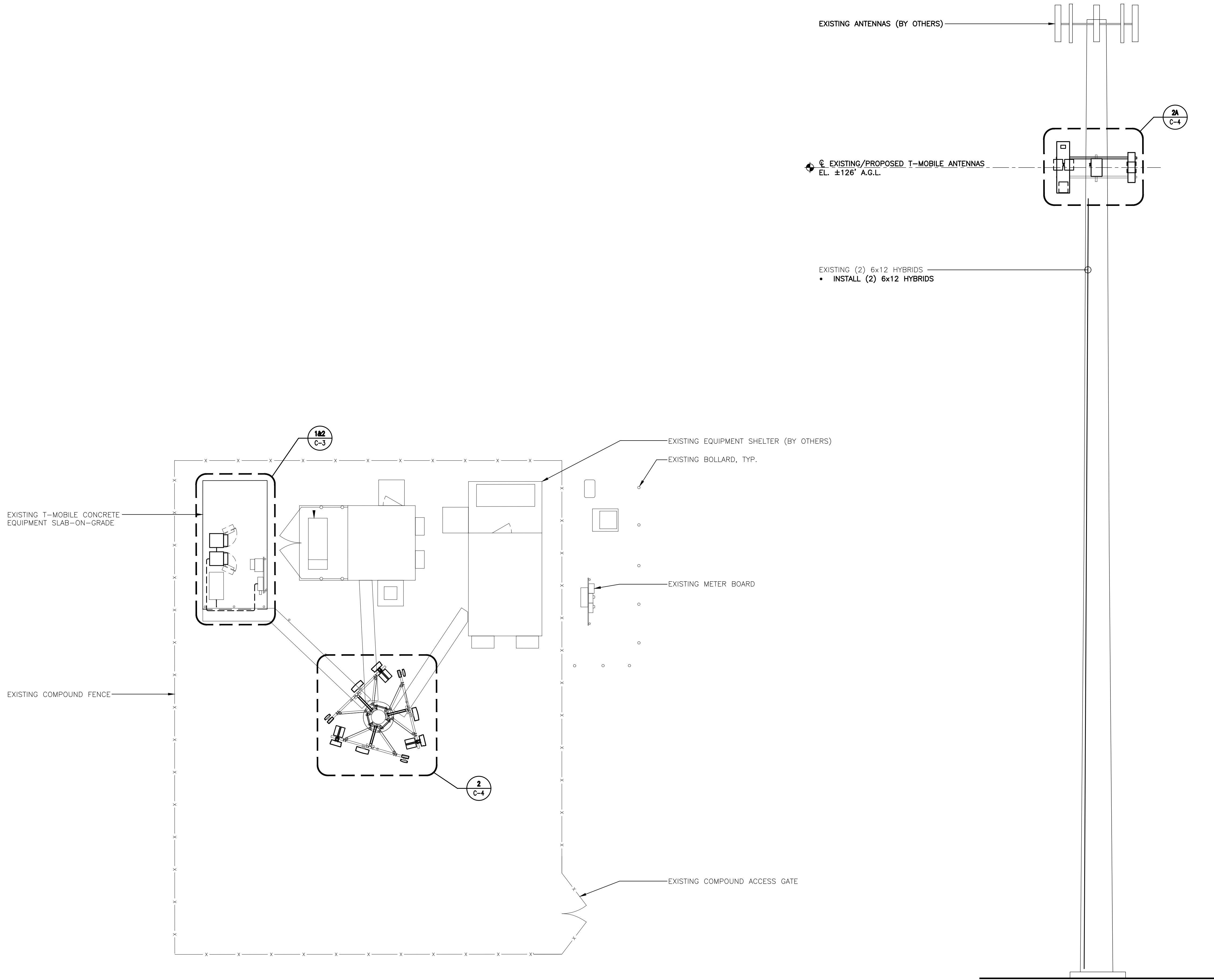
ANC

DATE 08/21/20

REV. 0

DRAWN BY CHK'D BY

DESCRIPTION



STRUCTURAL COMPLIANCE

ANTENNA MOUNTS

A STRUCTURAL ANALYSIS OF THE ANTENNA MOUNTS WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY DEFICIENT AND WARRANTING MODIFICATION PRIOR TO INSTALLATION OF THE PROPOSED EQUIPMENT. FOR REQUIRED STRUCTURAL MODIFICATIONS, SEE SHEET(S) C-5 FOR ADDITIONAL DETAILS.

REFER TO THE ANTENNA MOUNT ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 20074.44) DATED 07/10/20 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.

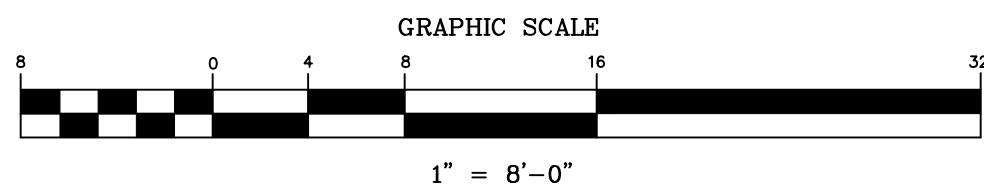
REFER TO THE STRUCTURAL ANALYSIS REPORT PREPARED BY ENGINEERED TOWER SOLUTIONS, PLLC (PROJECT # 201466.ST.02) DATED 08/03/20 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

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.

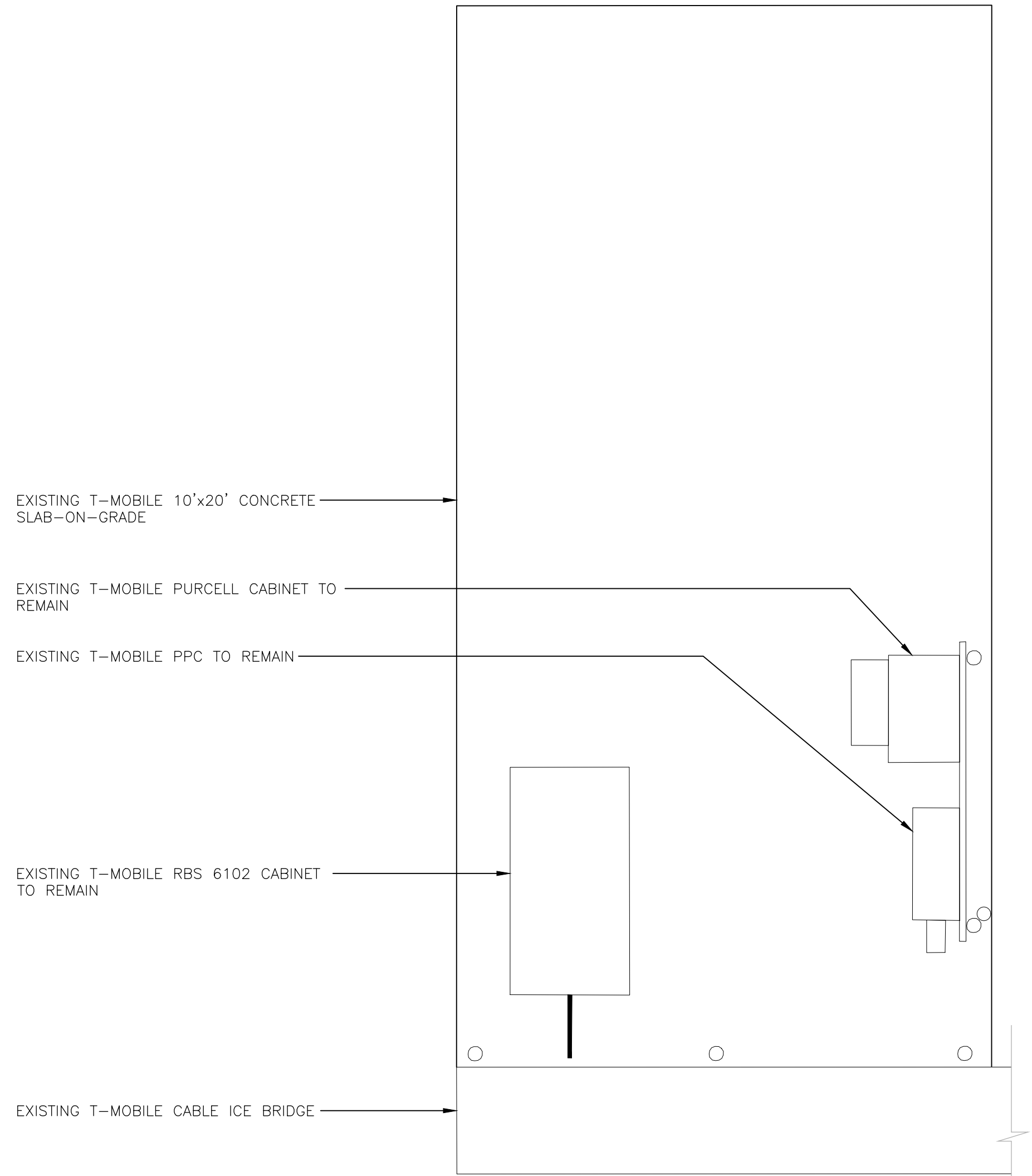
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C-2
PATIAL COMPOUND PLAN - PROPOSED
SCALE: 1" = 8'



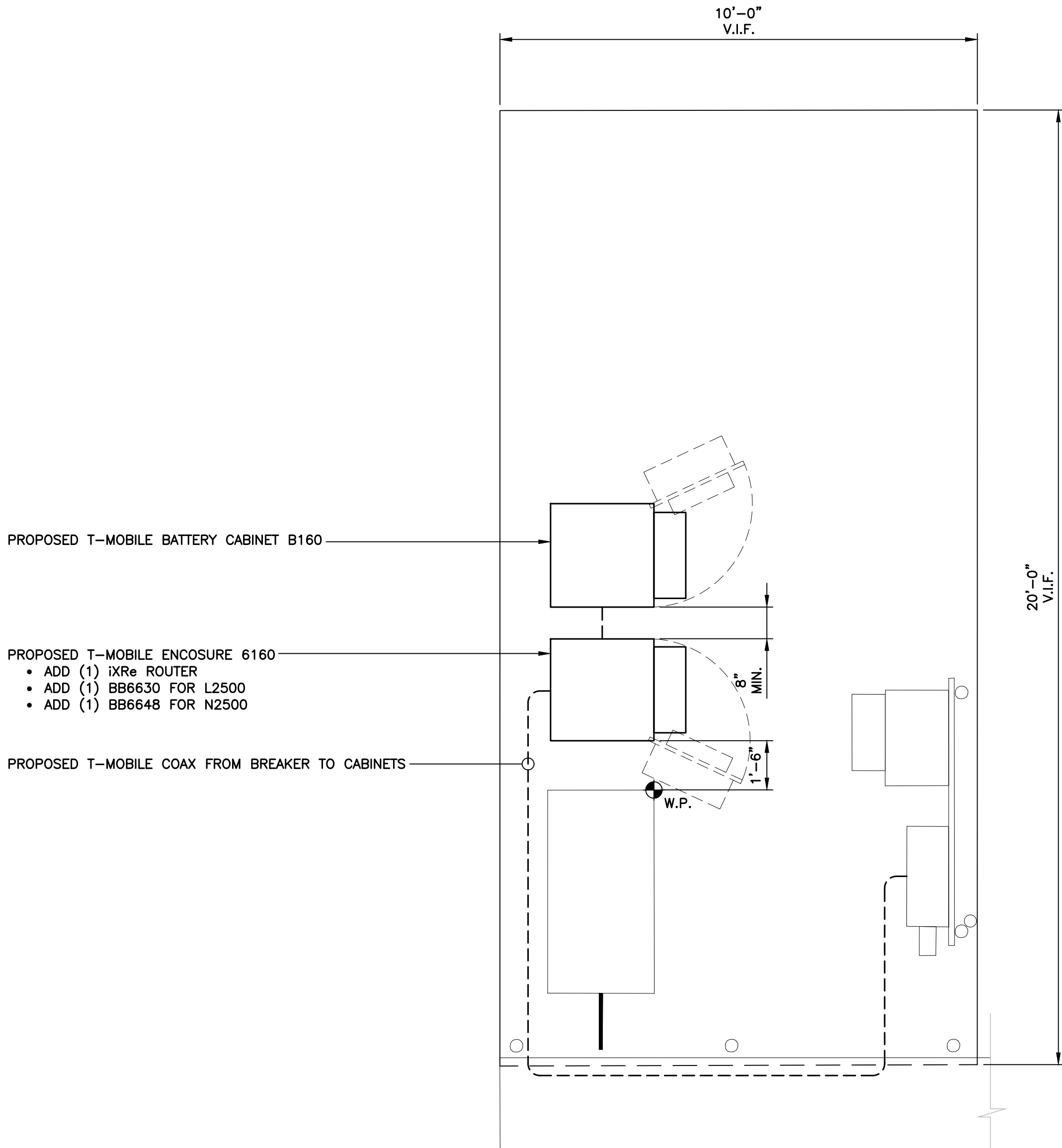
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C-2
TOWER ELEVATION - PROPOSED
SCALE: 1" = 8'



T-MOBILE NORTHEAST LLC		WIRELESS COMMUNICATIONS FACILITY		CTFF702F		SITE ID: CTFF702F		320 OLD STAGECOACH RD		RIDGEFIELD, CT 06877	
DATE:		07/13/20		SCALE:		AS NOTED		JOB NO.		20074.44	
COMPOUND PLAN		AND ELEVATION		C-2		Sheet No. 4		of 9		CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION	



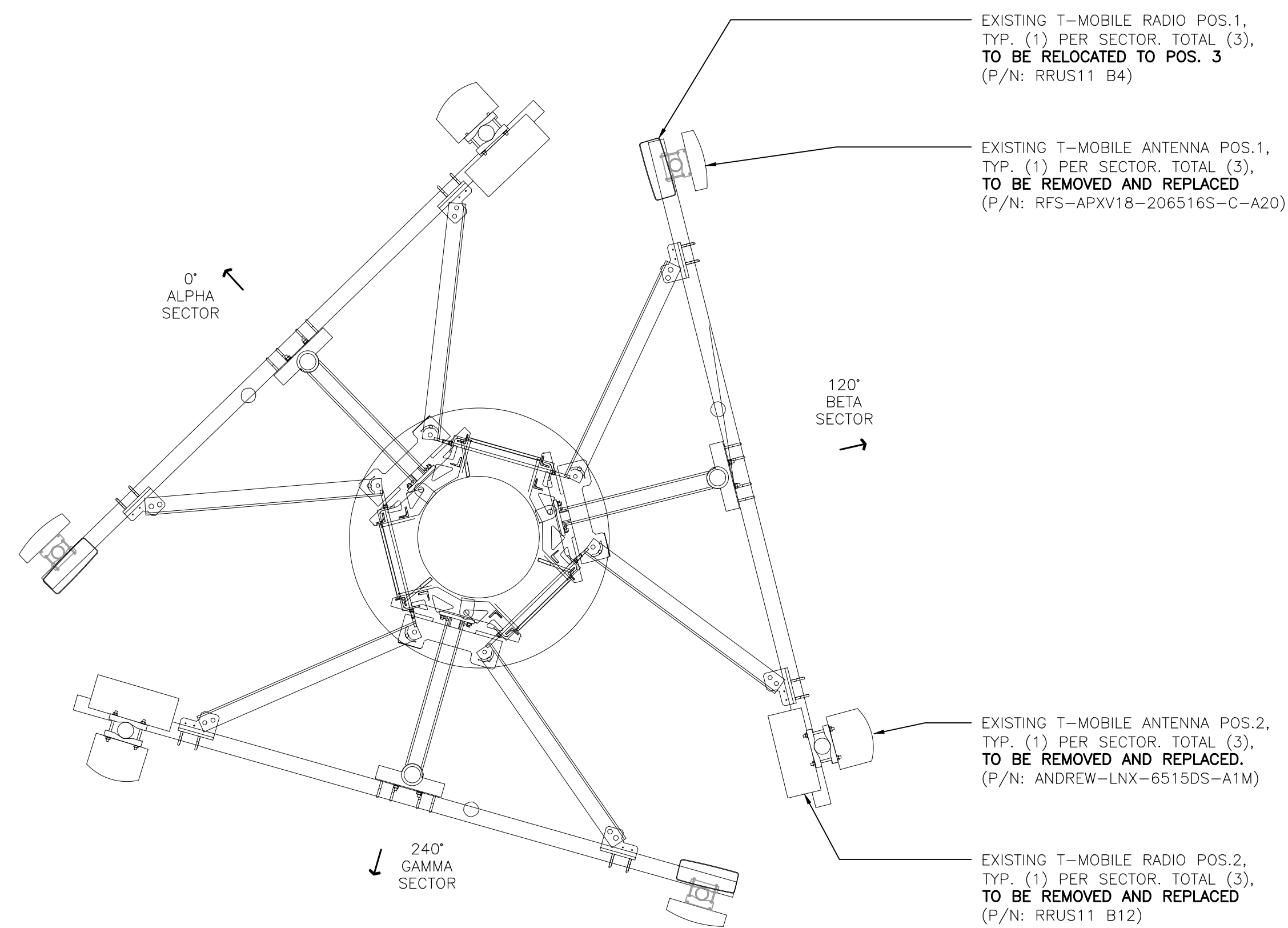
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C-3
EXISTING EQUIPMENT PLAN
SCALE: 1/2" = 1'
APPROXIMATE NORTH

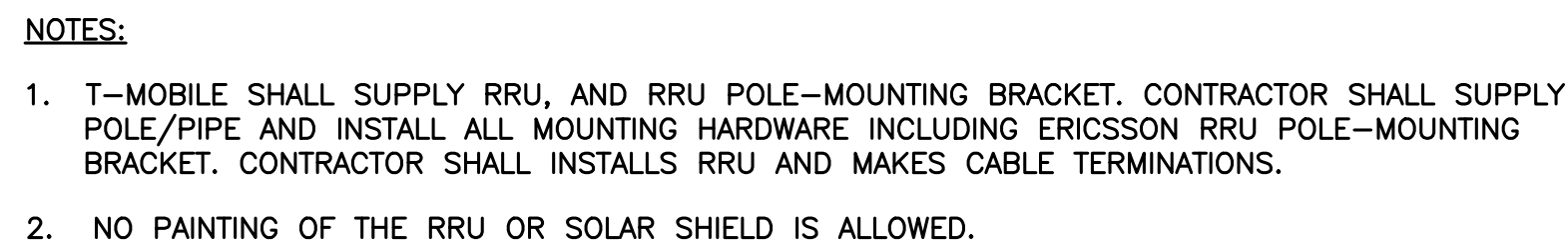


2
C-3
PROPOSED EQUIPMENT PLAN
SCALE: 1/2" = 1'
APPROXIMATE NORTH

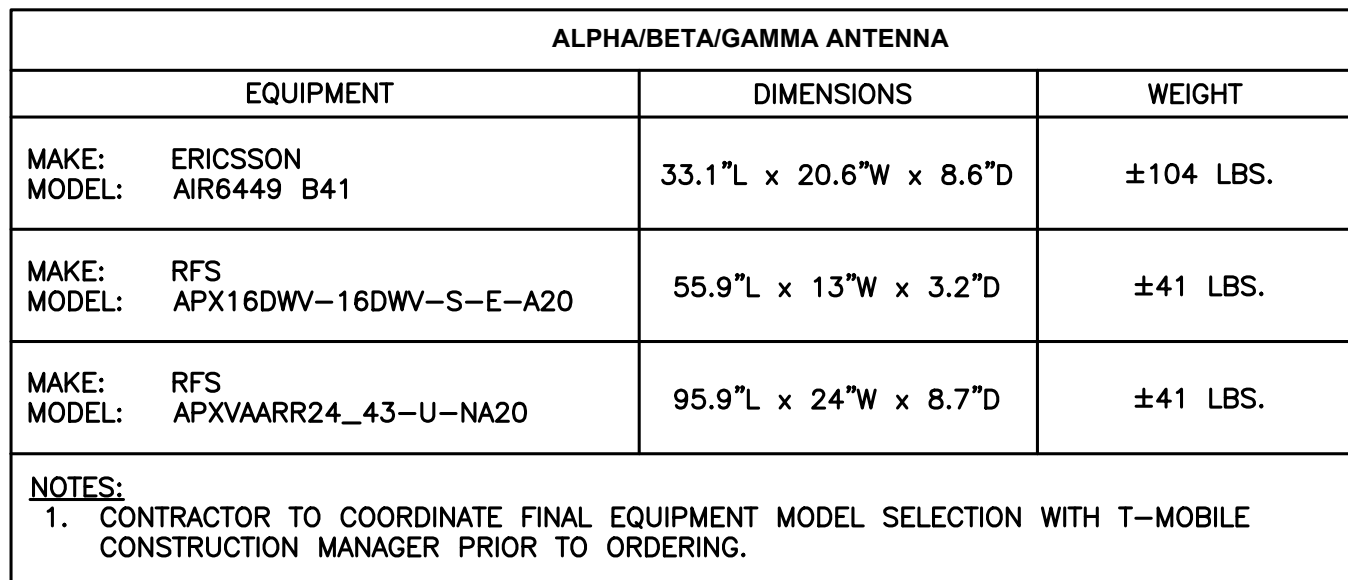
LEGEND
W.P. DENOTES WORKING POINT.

T-MOBILE NORTHEAST LLC WIRELESS COMMUNICATIONS FACILITY CTFF702F SITE ID: CTFF702F 320 OLD STAGECOACH RD RIDGFIELD, CT 06877		CENTEK engineering Centered on Solutions™ (203) 488-0580 (203) 488-8387 Fax 63-2 North Branford Road Branford, CT 06405 www.CentekEng.com		T-Mobile Transcend Wireless		PROFESSIONAL ENGINEER SEAL 		REV.	0	08/21/20	ANC	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION
EQUIPMENT PLAN		DATE: 07/13/20		SCALE: AS NOTED		JOB NO. 20074.44		DRAWN BY		CHK'D BY		DESCRIPTION	
C-3		Sheet No. 5		of 9									

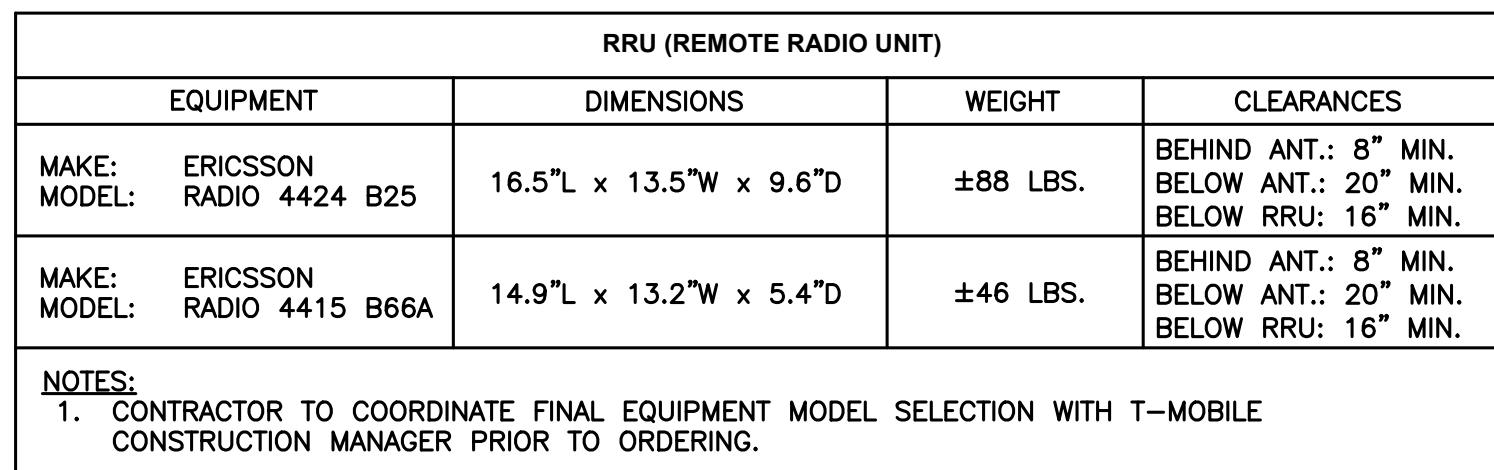




1 TYPICAL RRUS MOUNTING DETAILS



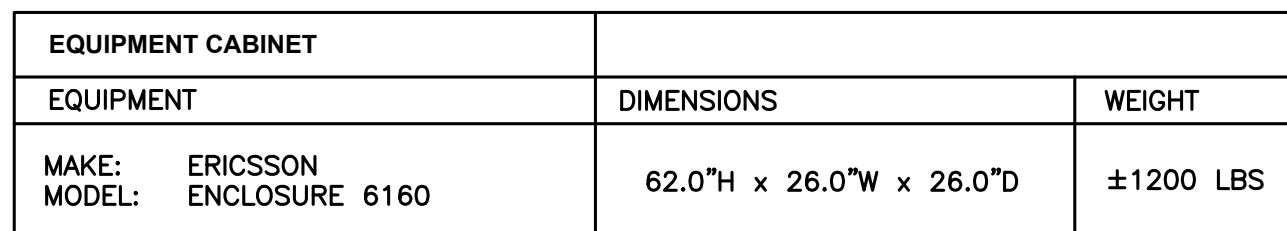
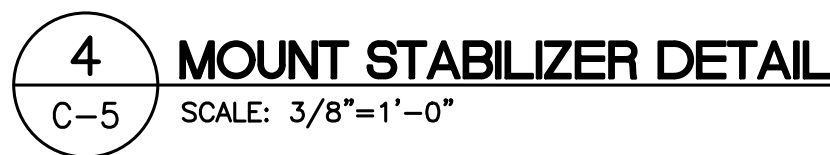
2 PROPOSED ANTENNA DETAIL
C-5 SCALE: NOT TO SCALE



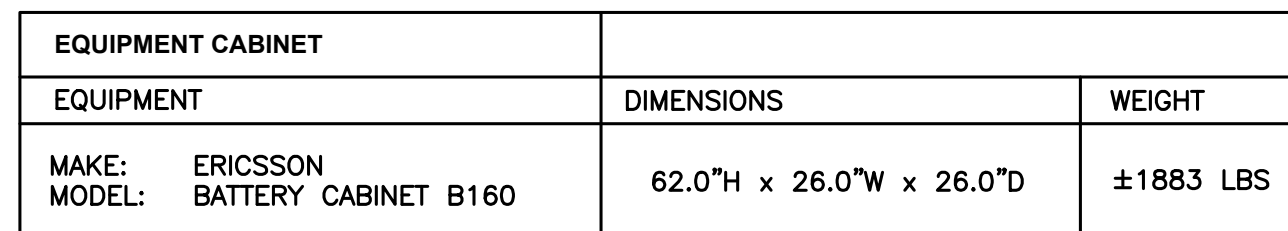
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C-5

PROPOSED RRU DETAIL

SCALE: NOT TO SCALE



5 ENCLOSURE 6160 (OUTDOOR)
C-5 SCALE: NOT TO SCALE



6 BATTERY CABINET DETAIL
C-5 NOT TO SCALE



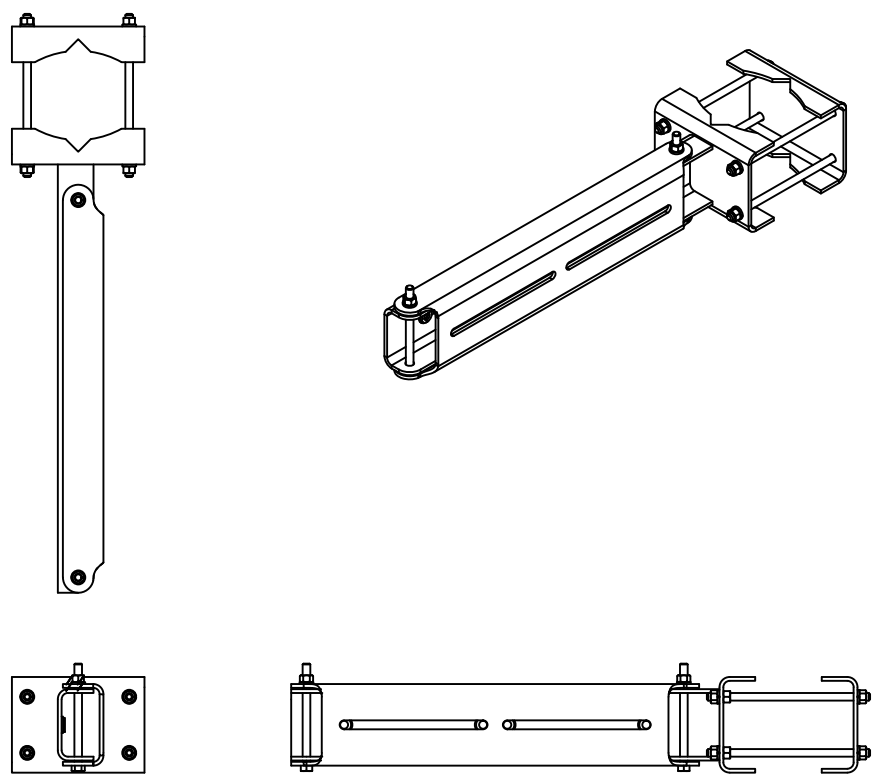
DIPLEXER		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: COMMSCOPE MODEL: SDZ1926Q-43(E14F05P86)	4.2"L x 7.0"W x 3.0"D	-
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T-MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.		

1

C-6

PROPOSED DIPLEXER DETAIL

SCALE: NOT TO SCALE



RRU DUAL SWIVEL MOUNT			
EQUIPMENT		DIMENSIONS	WEIGHT
MAKE: SITE PRO 1 PART NO.: RRUDSM		27.75"L x 6.5"W x 4.7"D	39.4 LBS.

2

C-6

RRH DUAL SWIVEL MOUNT DETAIL

SCALE: NOT TO SCALE

T-MOBILE NORTHEAST LLC

WIRELESS COMMUNICATIONS FACILITY

CTFF702F

SITE ID: CTFF702F

320 OLD STAGECOACH RD

RIDGEFIELD, CT 06877

DATE: 07/13/20

SCALE: AS NOTED

JOB NO. 20074.44

TYPICAL EQUIPMENT DETAILS

C-6

Sheet No. 8 of 9

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REV. 0

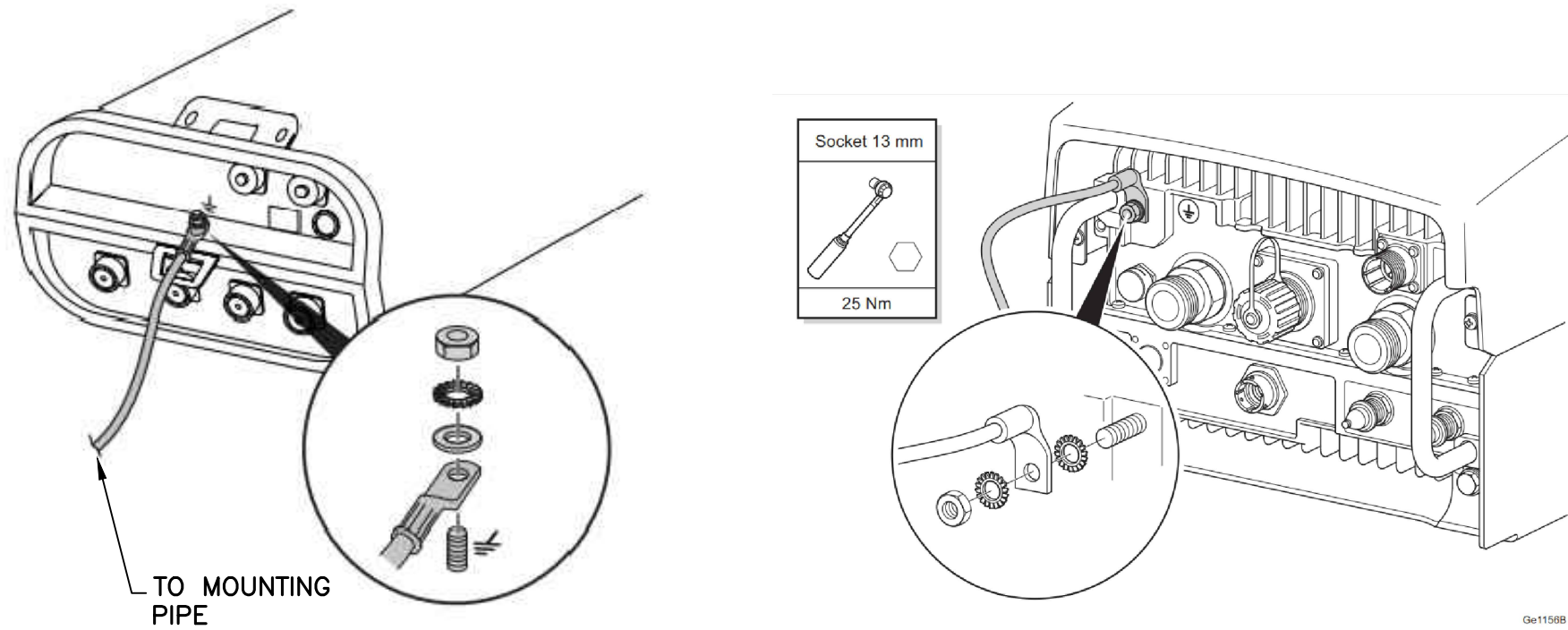
DATE 08/21/20

ANCD

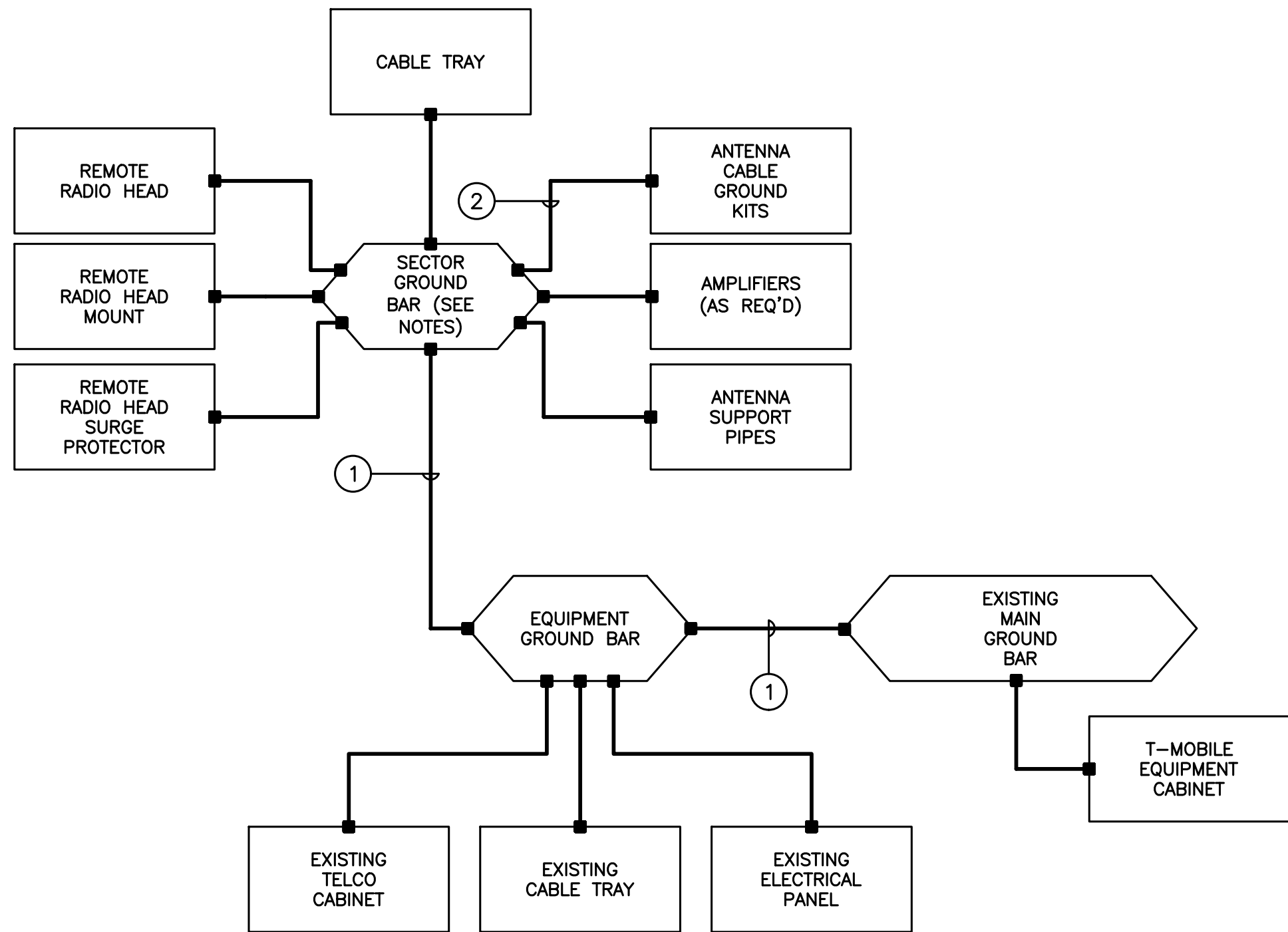
TJR

DESCRIPTION

CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION



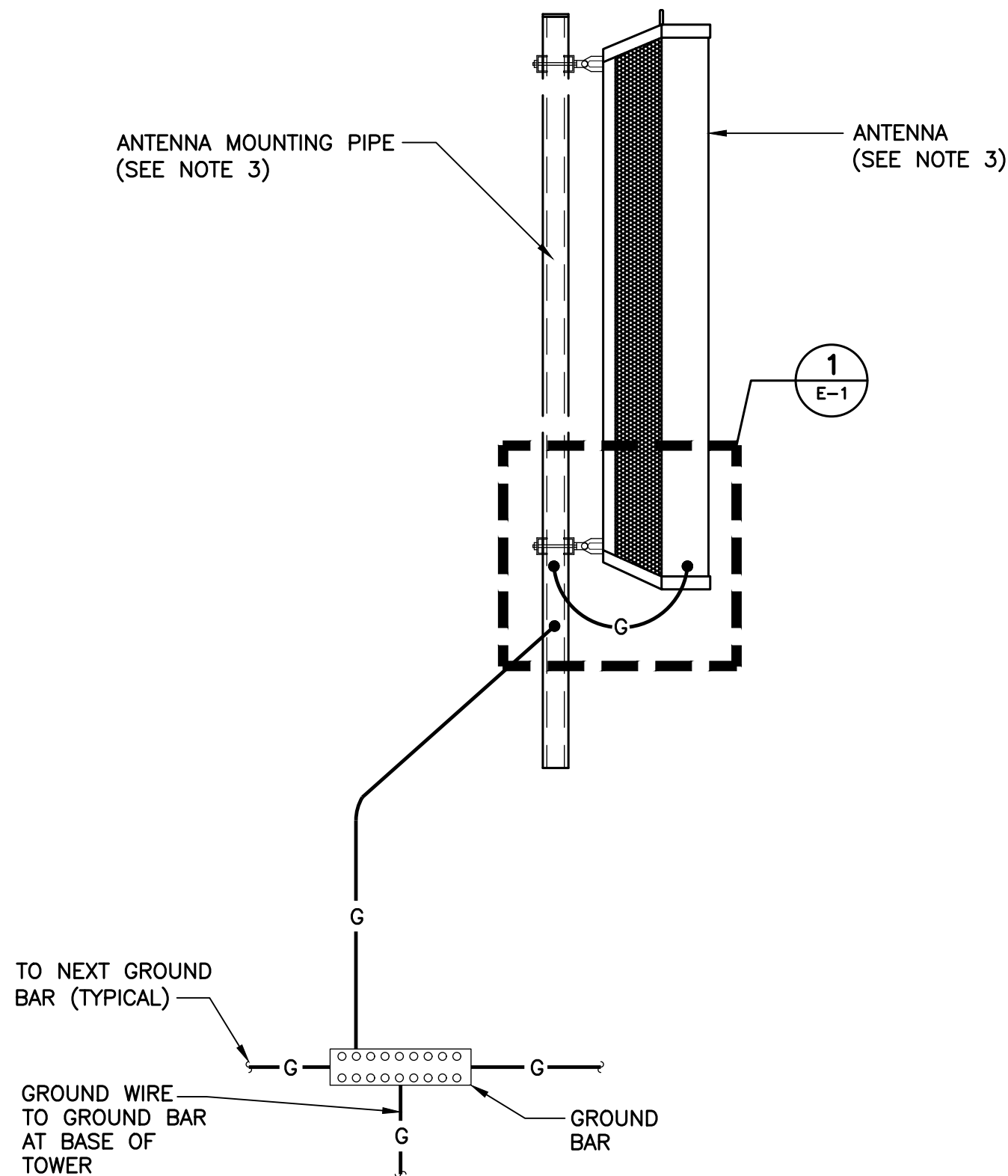
1
E-1
TYPICAL ANTENNA/RRU GROUNDING DETAILS
SCALE: NOT TO SCALE



GROUNDING SCHEMATIC NOTES

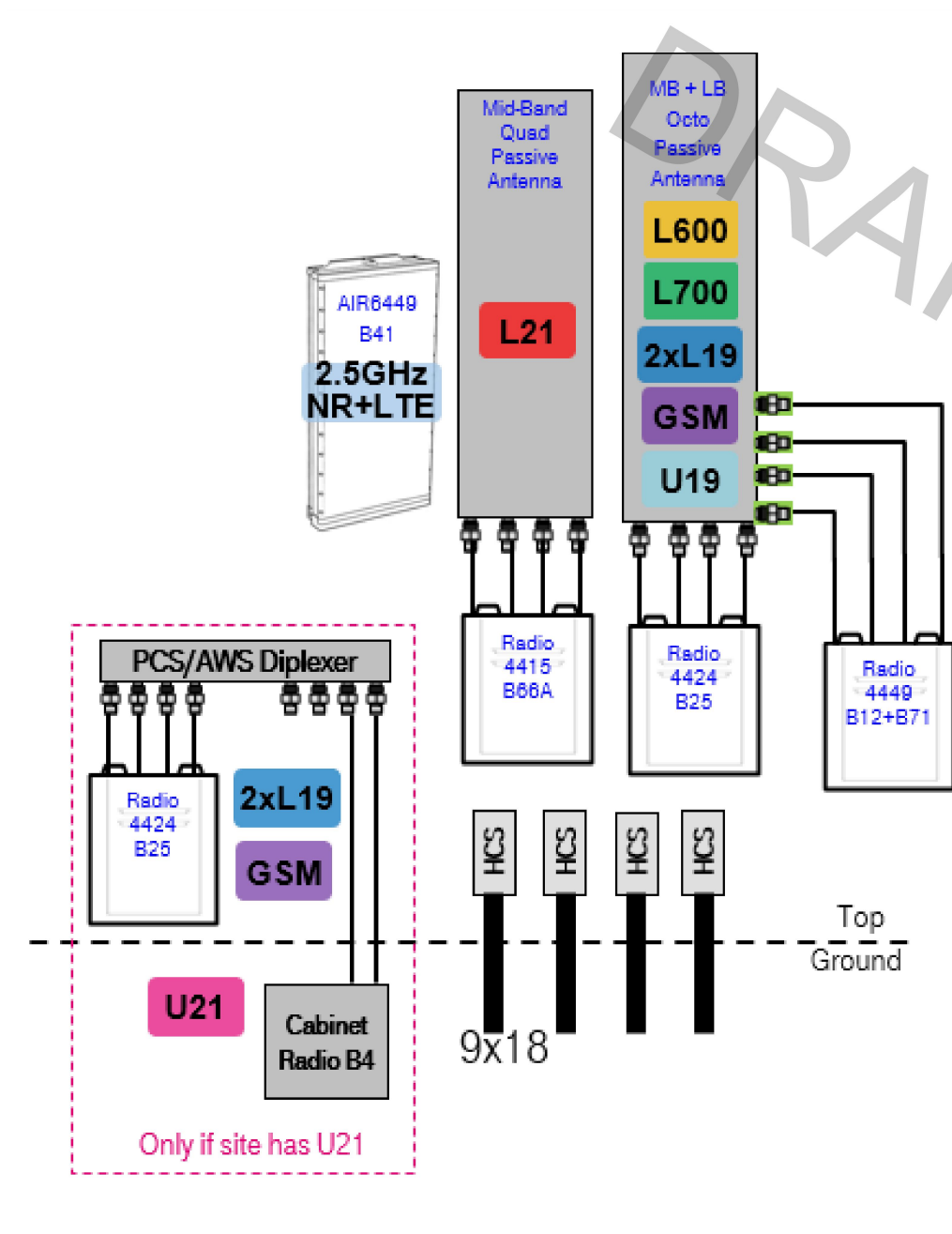
- 1 #2 AWG
2 #6 AWG
- GENERAL NOTES:**
- ALL SURGE SUPPRESSION EQUIPMENT SHALL BE BONDED TO GROUND PER MANUFACTURER'S SPECIFICATIONS
 - UNLESS OTHERWISE NOTED OR REQUIRED BY CODE, GROUND CONDUCTORS SHOWN SHALL BE #2 AWG (SOLID TINNED BCW - EXTERIOR; STRANDED GREEN INSULATED - INTERIOR).
 - ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
 - BOND ALL EQUIPMENT CABINETS AND BATTERY CABINETS TO GROUND PER MANUFACTURER'S SPECIFICATIONS.
 - COORDINATE ALL ROOF MOUNTED EQUIPMENT WITH OWNER.
 - ALL ROOF MOUNTED AMPLIFIERS AND ASSOCIATED EQUIPMENT SHALL BE BONDED TO THE SECTOR GROUND BAR PER MANUFACTURER'S SPECIFICATIONS.
 - ALL GROUNDING SHALL BE IN ACCORDANCE WITH NEC AND OWNER'S REQUIREMENTS.

4
E-1
TYPICAL GROUNDING SCHEMATIC DETAIL
SCALE: NOT TO SCALE



- NOTES:**
- BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
 - BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
 - DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

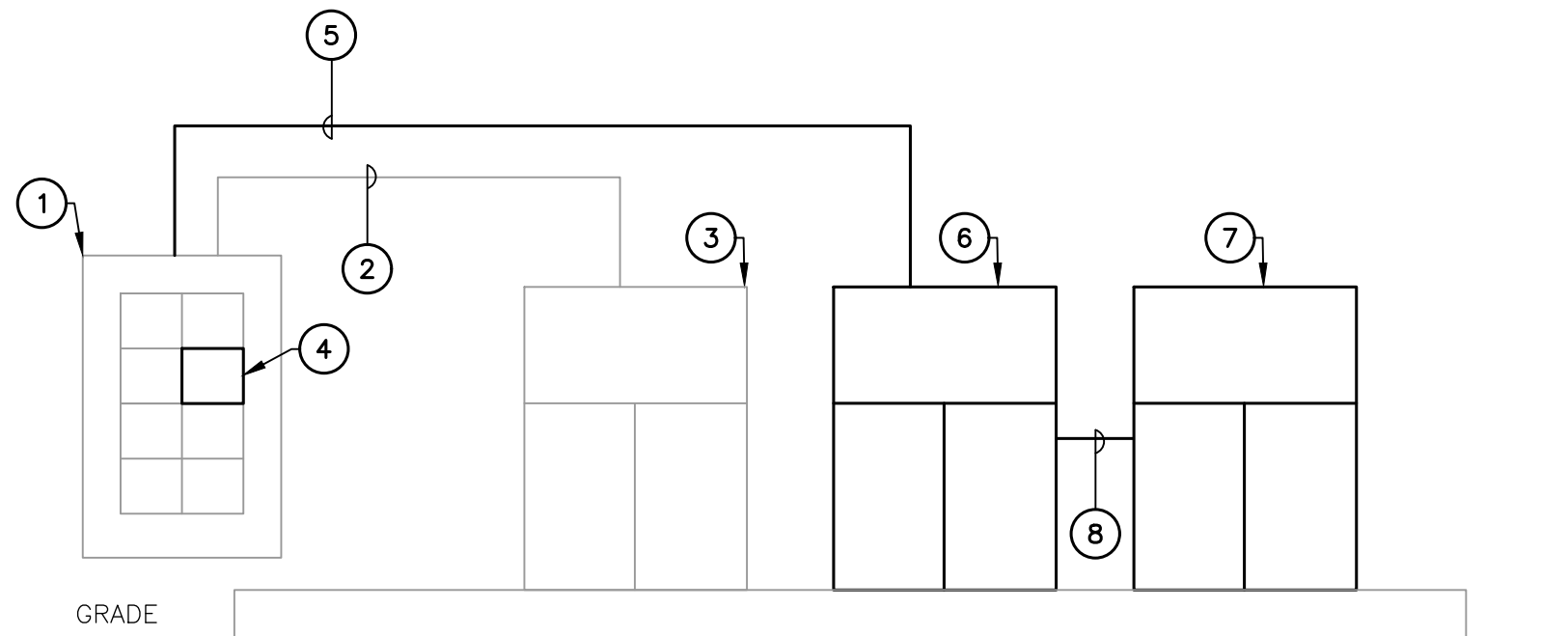
2
E-1
TYPICAL ANTENNA GROUNDING DETAIL
SCALE: NOT TO SCALE



3
E-1
PROPOSED PLUMBING DIAGRAM
SCALE: NOT TO SCALE

RISER DIAGRAM NOTES

- EXISTING 200A, PPC CABINET TO REMAIN.
- EXISTING CONDUITS AND CONDUCTORS TO REMAIN.
- EXISTING EQUIPMENT CABINET TO REMAIN.
- NEW 100A/2P CIRCUIT BREAKER TO SERVE NEW EQUIPMENT CABINET.
- (3) #1 AWG, (1) #8 AWG GROUND, 1-1/4" CONDUIT.
- NEW RADIO EQUIPMENT CABINET.
- NEW BATTERY CABINET.
- DC CONDUIT AND CONDUCTORS FOR BATTERY CABINET CONNECTION PER MANUFACTURERS SPECIFICATIONS.



5
E-1
ELECTRICAL POWER RISER DIAGRAM
SCALE: NOT TO SCALE



Date: **August 3, 2020**

Mikala Charron
InSite Wireless
1199 North Fairfax Street, Suite 700
Alexandria, VA 22314

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

Subject: **Structural Analysis Report**

Carrier Designation: **T-Mobile Co-Locate**
Carrier Site Number: CTFF702F
Carrier Site Name: -

Insite Wireless Designation: **Insite Wireless Site Number:** CT897
Insite Wireless Site Name: Ridgefield

Engineering Firm Designation: **ETS Project Number:** 201466.ST.02

Site Data: **320 Old Stagecoach Rd, Ridgefield, Fairfield County, CT 06877**
Latitude 41° 19' 49.1", Longitude -73° 31' 0.6"
149 Foot - Monopole Tower

Dear Mikala Charron,

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

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

Existing + Proposed Equipment Configuration	Tower: 59.9%	Sufficient Capacity
	Foundation: 44.1%	Sufficient Capacity

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

Structural analysis prepared by:

Tomas Martin Sosa
Structural Engineer I

Respectfully submitted by:

Frederic G. Bost, PE, GC, CWI
President/Owner

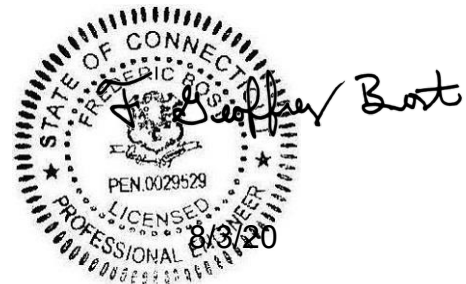


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tnxTower Output

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Additional Calculations

1) INTRODUCTION

This tower is a 149 ft Monopole tower designed by Valmont in November of 2014. The tower was originally designed for a wind speed of 100 mph per ANSI/TIA-222-G.

2) ANALYSIS CRITERIA

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

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
126.0	129.0	1	Perfect10	VSK-M Stabilizer Kit	4	1-5/8 Hybrid
	126.0	3	RFS	APX16DWV-16DWV-S-E-A20		
		3	RFS	APXVAARR24_43-U-NA20		
		3	Ericsson	AIR 6449 B41		
		3	Ericsson	Radio 4415 B66A		
		3	Ericsson	Radio 4449 B71+B85		
		3	Ericsson	Radio 4424 B25		
		3	Ericsson	RRUS11 B4		
		3	Commscope	SDX1926Q-43		
		3	Tower Mounts	12' T-Arm Mounts		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
148.0	153.0	1	RFI	BA40-41	1	7/8
	148.0	1	Tower Mounts	2' Side Arm Mount		
146.0	146.0	12	CCI	HPA-65R-BUU-H8	2 8 3	1/2 5/8 3/8
		6	Ericsson	RRUS 11		
		3	Ericsson	RRUS 32		
		3	Ericsson	RRUS 4478 B14		
		3	Ericsson	RRUS 4478 B5		
		3	Ericsson	RRUS 8843 B2/B66A		
		6	Ericsson	RRUS A2 MODULE		
		3	Ericsson	RRUS-E2		
		3	Kaelus	DBCT108F1V92-1		
		4	Raycap	DC6-48-60-18-8F		
		1	Tower Mounts	12' Platform Mount (Commscope P/N MTC3607)		
136.0	136.0	3	Commscope	CBC78T-DS-43-2X	2	1-5/8
		9	Commscope	JAHH-1D65B		
		1	RFS	DB-C1-12C-24AB-OZ		
		3	Samsung	B2/B66 RRH BR049		
		3	Samsung	B5/B13 RRH BR04C		
		1	Site Pro 1	RMQP-496-HK		
72.0	72.0	1	Tower Mount	3.5" Ø x 4' Pipe Mount	1	EW90
	71.5	1	Commscope	VHLP3-11W-6GR		
65.5	67.5	1	Sinclair	SD210R-SF2P90LDF	1	7/8
	65.5	1	Tower Mount	3' Side Arm		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Tower Design Drawings	Valmont	11/18/2014	InSite
Tower Erection Drawings	Valmont	11/25/2014	InSite
Foundation Design Drawings	Valmont	11/19/2014	InSite
Geotechnical Report	Terracon Consultants, Inc	10/07/2014	InSite
Tower Mapping Report	Structural Components	09/26/2019	InSite
Mount Analysis Report	Centek Engineering	07/10/2020	InSite

3.1) Analysis Method

tnxTower (version 8.0.7.4), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were built and have been maintained in accordance with the manufacturer's specifications.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	149 - 116.67	Pole	TP28.81x20.5x0.219	1	-14.78	1173.23	53.0	Pass
L2	116.67 - 89.25	Pole	TP35.43x27.259x0.313	2	-19.40	2060.51	59.9	Pass
L3	89.25 - 46.25	Pole	TP45.86x33.4529x0.438	3	-294.65	3470.04	55.4	Pass
L4	46.25 - 0	Pole	TP56.88x43.3331x0.5	4	-51.62	5496.00	49.2	Pass
							Summary	
						Pole (L2)	59.9	Pass
						RATING =	59.9	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	45.7	Pass
1	Base Plate	0	24.6	Pass
1	Base Foundation Structural	0	44.1	Pass
1	Base Foundation Soil Interaction	0	43.9	Pass

Structure Rating (max from all components) =	59.9%
-----------------------------------------------------	--------------

Notes:

- 1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4	
Length (ft)	32.330	31.750	48.250	52.670	
Number of Sides	18	18	18	18	
Thickness (in)	0.2190	0.3130	0.4380	0.5000	
Socket Length (ft)	4.330	5.250	6.420		
Top Dia (in)	20.5000	27.2590	33.4529	43.3331	
Bot Dia (in)	28.8100	35.4300	45.8600	56.8800	
Grade			A572-65		
Weight (K)	1.9	3.3	9.0	14.1	28.3

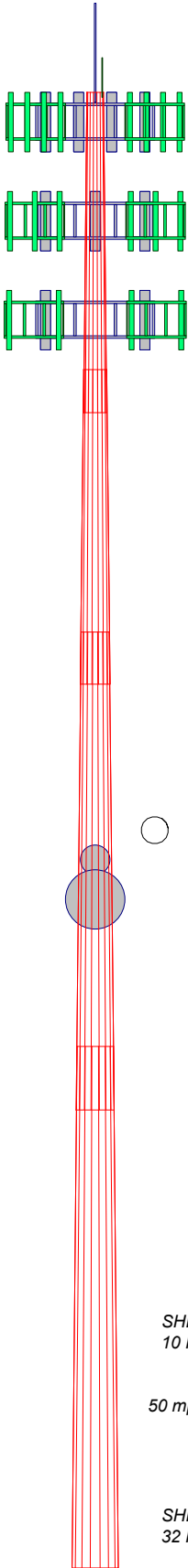
149.0 ft

116.7 ft

89.3 ft

46.3 ft

0.0 ft



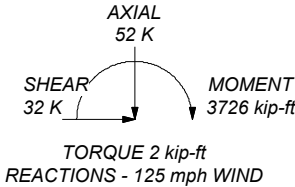
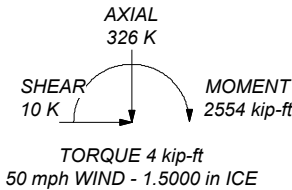
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-H Standard.
2. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category III.
6. Topographic Category 1 with Crest Height of 0.000 ft
7. TOWER RATING: 59.9%

ALL REACTIONS
ARE FACTORED



Engineered Tower Solutions, PLLC

3227 Wellington Court
Raleigh, NC 27615
Phone: (919) 782-2710
FAX:

Job: CT897 Ridgefield

Project: ETS Job No. 201466.ST.02

Client: InSite Wireless

Drawn by: Tomas Martin Sosa

App'd:

Code: TIA-222-H

Date: 08/03/20

Scale: NTS

Path: C:\Users\Tomas.Sosa\Desktop\Towers\2020\1466\02_Tower_Reanalysis\Analysis\Tower\Ridgefield.et Dwg No. E-1

<i>tnxTower</i> Engineered Tower Solutions, PLLC 3227 Wellington Court Raleigh, NC 27615 Phone: (919) 782-2710 FAX:	Job CT897 Ridgefield	Page 1 of 18
	Project ETS Job No. 201466.ST.02	Date 11:29:02 08/03/20
	Client InSite Wireless	Designed by Tomas Martin Sosa

Tower Input Data

The tower is a monopole.

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

The following design criteria apply:

Tower base elevation above sea level: 802.130 ft.

Basic wind speed of 125 mph.

Risk Category III.

Exposure Category B.

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

Topographic Category: 1.

Crest Height: 0.000 ft.

Nominal ice thickness of 1.5000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

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

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

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

Pressures are calculated at each section.

Stress ratio used in pole design is 1.05.

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

Options

Consider Moments - Legs

Consider Moments - Horizontals

Consider Moments - Diagonals

Use Moment Magnification

Use Code Stress Ratios

Use Code Safety Factors - Guys

Escalate Ice

Always Use Max Kz

Use Special Wind Profile

Include Bolts In Member Capacity

Leg Bolts Are At Top Of Section

Secondary Horizontal Braces Leg

Use Diamond Inner Bracing (4 Sided)

SR Members Have Cut Ends

SR Members Are Concentric

Distribute Leg Loads As Uniform

Assume Legs Pinned

✓ Assume Rigid Index Plate

✓ Use Clear Spans For Wind Area

Use Clear Spans For KL/r

Retension Guys To Initial Tension

✓ Bypass Mast Stability Checks

✓ Use Azimuth Dish Coefficients

✓ Project Wind Area of Appurt.

Autocalc Torque Arm Areas

Add IBC .6D+W Combination

✓ Sort Capacity Reports By Component

Triangulate Diamond Inner Bracing

Treat Feed Line Bundles As Cylinder

Ignore KL/ry For 60 Deg. Angle Legs

Use ASCE 10 X-Brace Ly Rules

Calculate Redundant Bracing Forces

Ignore Redundant Members in FEA

SR Leg Bolts Resist Compression

All Leg Panels Have Same Allowable

Offset Girt At Foundation

✓ Consider Feed Line Torque

Include Angle Block Shear Check

Use TIA-222-H Bracing Resist. Exemption

Use TIA-222-H Tension Splice Exemption

Poles

✓ Include Shear-Torsion Interaction

Always Use Sub-Critical Flow

Use Top Mounted Sockets

✓ Pole Without Linear Attachments

Pole With Shroud Or No Appurtenances

Outside and Inside Corner Radii Are

Known

Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	

tnxTower Engineered Tower Solutions, PLLC 3227 Wellington Court Raleigh, NC 27615 Phone: (919) 782-2710 FAX:	Job CT897 Ridgefield	Page 2 of 18
	Project ETS Job No. 201466.ST.02	Date 11:29:02 08/03/20
	Client InSite Wireless	Designed by Tomas Martin Sosa

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	149.000-116.670	32.330	4.330	18	20.5000	28.8100	0.2190	0.8760	A572-65 (65 ksi)
L2	116.670-89.250	31.750	5.250	18	27.2590	35.4300	0.3130	1.2520	A572-65 (65 ksi)
L3	89.250-46.250	48.250	6.420	18	33.4529	45.8600	0.4380	1.7520	A572-65 (65 ksi)
L4	46.250-0.000	52.670		18	43.3331	56.8800	0.5000	2.0000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	20.7825	14.0974	732.5826	7.1998	10.4140	70.3459	1466.1291	7.0501	3.2226	14.715
	29.2207	19.8738	2052.4686	10.1498	14.6355	140.2392	4107.6379	9.9388	4.6851	21.393
L2	28.7628	26.7699	2455.6876	9.5658	13.8476	177.3369	4914.6065	13.3875	4.2467	13.568
	35.9283	34.8874	5435.5179	12.4665	17.9984	301.9994	10878.1881	17.4470	5.6848	18.162
L3	35.2722	45.8977	6320.4536	11.7203	16.9941	371.9211	12649.2237	22.9532	5.1168	11.682
	46.4999	63.1462	16459.5229	16.1248	23.2969	706.5119	32940.7036	31.5791	7.3005	16.668
L4	45.6012	67.9762	15756.3043	15.2058	22.0132	715.7649	31533.3411	33.9946	6.7466	13.493
	57.6803	89.4751	35932.6785	20.0149	28.8950	1243.5587	71912.6381	44.7460	9.1309	18.262

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft ²	in							
L1 149.000-116.670				1	1	1			
L2 116.670-89.250				1	1	1			
L3 89.250-46.250				1	1	1			
L4 46.250-0.000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf
Town of Ridgefield 7/8	A	No	No	Inside Pole	149.000 - 5.000	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.60 0.60 0.60 0.60
7/8	A	No	No	Inside Pole	65.500 - 5.000	1	No Ice 1/2" Ice	0.000 0.000	0.60 0.60

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Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight plf
EW90	A	No	No	Inside Pole	72.000 - 5.000	1	1" Ice	0.000	0.60
							2" Ice	0.000	0.60
							No Ice	0.000	0.32
							1/2" Ice	0.000	0.32
							1" Ice	0.000	0.32
							2" Ice	0.000	0.32
AT&T									
FSJ4-50B(1/2")	A	No	No	Inside Pole	146.000 - 5.000	2	No Ice	0.000	0.14
							1/2" Ice	0.000	0.14
							1" Ice	0.000	0.14
FSJ2-50 (3/8" RET)	A	No	No	Inside Pole	146.000 - 5.000	3	2" Ice	0.000	0.14
							No Ice	0.000	0.08
							1/2" Ice	0.000	0.08
							1" Ice	0.000	0.08
							2" Ice	0.000	0.08
5/8	A	No	No	Inside Pole	146.000 - 5.000	8	No Ice	0.000	0.40
							1/2" Ice	0.000	0.40
							1" Ice	0.000	0.40
							2" Ice	0.000	0.40
							T-Mobile		
942-98888-1FXXX(1-5/8)	A	No	No	Inside Pole	126.000 - 5.000	4	No Ice	0.000	2.33
							1/2" Ice	0.000	2.33
							1" Ice	0.000	2.33
							2" Ice	0.000	2.33
Verizon									
942-98888-1FXXX(1-5/8)	A	No	No	Inside Pole	136.000 - 5.000	2	No Ice	0.000	2.33
							1/2" Ice	0.000	2.33
							1" Ice	0.000	2.33
							2" Ice	0.000	2.33

Safety Line 3/8	C	No	No	CaAa (Out Of Face)	149.000 - 0.000	1	No Ice	0.037	0.22
							1/2" Ice	0.137	0.75
							1" Ice	0.238	1.28
							2" Ice	0.437	2.34
Step Pegs (5/8" SR) 7-in. w/ 30" Step	C	No	No	CaAa (Out Of Face)	149.000 - 0.000	2	No Ice	0.035	0.49
							1/2" Ice	0.135	1.01
							1" Ice	0.235	2.14
							2" Ice	0.435	6.23

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	149.000-116.670	A	0.000	0.000	0.000	0.000	0.31
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.476	0.04
L2	116.670-89.250	A	0.000	0.000	0.000	0.000	0.50
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.948	0.03
L3	89.250-46.250	A	0.000	0.000	0.000	0.000	0.81
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	4.623	0.05
L4	46.250-0.000	A	0.000	0.000	0.000	0.000	0.79

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Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	4.972	0.06

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	149.000-116.670	A	1.982	0.000	0.000	0.000	0.000	0.31
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	41.915	0.47
L2	116.670-89.250	A	1.932	0.000	0.000	0.000	0.000	0.50
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	35.549	0.40
L3	89.250-46.250	A	1.852	0.000	0.000	0.000	0.000	0.81
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	54.466	0.61
L4	46.250-0.000	A	1.660	0.000	0.000	0.000	0.000	0.79
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	56.373	0.62

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L1	149.000-116.670	-0.8082	0.4666	-3.5026	2.0223
L2	116.670-89.250	-0.8224	0.4748	-3.8801	2.2402
L3	89.250-46.250	-0.8329	0.4809	-4.1316	2.3854
L4	46.250-0.000	-0.8411	0.4856	-4.2963	2.4805

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

Discrete Tower Loads

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

1/2-in x 3-ft Lightning Rod	B	From Leg	0.000	0.0000	149.000	No Ice	0.150	0.00
			0.000			1/2" Ice	0.460	0.00
			1.500			1" Ice	0.648	0.01
						2" Ice	1.052	0.02
5' x 2" Pipe Mount	B	From Leg	0.000	0.0000	149.000	No Ice	1.188	0.02

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			0.000			1/2" Ice	1.496	1.496	0.03
			2.500			1" Ice	1.807	1.807	0.04
						2" Ice	2.458	2.458	0.08

BA40-41	A	From Leg	2.000	0.0000	148.000	No Ice	4.147	4.147	0.03
			0.000			1/2" Ice	5.792	5.792	0.06
			5.000			1" Ice	6.784	6.784	0.10
						2" Ice	8.196	8.196	0.21
Side Arm Mount [SO 301-1]	A	From Leg	1.000	0.0000	148.000	No Ice	0.460	0.910	0.02
			0.000			1/2" Ice	0.650	1.300	0.03
			0.000			1" Ice	0.870	1.710	0.05
						2" Ice	1.410	2.620	0.09
AT&T									
Platform Mount [LP 1301-1]	C	None		0.0000	146.000	No Ice	51.700	51.700	2.26
						1/2" Ice	62.700	62.700	2.94
						1" Ice	73.700	73.700	3.61
						2" Ice	95.700	95.700	4.95
(4) HPA-65R-BUU-H8 w/ 7.5' MP	A	From Leg	4.000	0.0000	146.000	No Ice	12.976	9.297	0.10
			0.000			1/2" Ice	13.558	10.647	0.19
			0.000			1" Ice	14.147	11.773	0.29
						2" Ice	15.346	13.891	0.53
(4) HPA-65R-BUU-H8 w/ 7.5' MP	B	From Leg	4.000	0.0000	146.000	No Ice	12.976	9.297	0.10
			0.000			1/2" Ice	13.558	10.647	0.19
			0.000			1" Ice	14.147	11.773	0.29
						2" Ice	15.346	13.891	0.53
(4) HPA-65R-BUU-H8 w/ 7.5' MP	C	From Leg	4.000	0.0000	146.000	No Ice	12.976	9.297	0.10
			0.000			1/2" Ice	13.558	10.647	0.19
			0.000			1" Ice	14.147	11.773	0.29
						2" Ice	15.346	13.891	0.53
RRUS-E2	A	From Leg	4.000	0.0000	146.000	No Ice	3.143	1.282	0.05
			0.000			1/2" Ice	3.363	1.434	0.08
			0.000			1" Ice	3.590	1.595	0.10
						2" Ice	4.067	1.950	0.17
RRUS-E2	B	From Leg	4.000	0.0000	146.000	No Ice	3.143	1.282	0.05
			0.000			1/2" Ice	3.363	1.434	0.08
			0.000			1" Ice	3.590	1.595	0.10
						2" Ice	4.067	1.950	0.17
RRUS-E2	C	From Leg	4.000	0.0000	146.000	No Ice	3.143	1.282	0.05
			0.000			1/2" Ice	3.363	1.434	0.08
			0.000			1" Ice	3.590	1.595	0.10
						2" Ice	4.067	1.950	0.17
(2) RRUS 11	A	From Leg	4.000	0.0000	146.000	No Ice	2.784	1.187	0.05
			0.000			1/2" Ice	2.992	1.334	0.07
			0.000			1" Ice	3.207	1.490	0.09
						2" Ice	3.658	1.833	0.15
(2) RRUS 11	B	From Leg	4.000	0.0000	146.000	No Ice	2.784	1.187	0.05
			0.000			1/2" Ice	2.992	1.334	0.07
			0.000			1" Ice	3.207	1.490	0.09
						2" Ice	3.658	1.833	0.15
(2) RRUS 11	C	From Leg	4.000	0.0000	146.000	No Ice	2.784	1.187	0.05
			0.000			1/2" Ice	2.992	1.334	0.07
			0.000			1" Ice	3.207	1.490	0.09
						2" Ice	3.658	1.833	0.15
(2) RRUS A2 MODULE	A	From Leg	4.000	0.0000	146.000	No Ice	1.843	1.059	0.06
			0.000			1/2" Ice	2.012	1.197	0.08
			0.000			1" Ice	2.190	1.342	0.09
						2" Ice	2.566	1.656	0.14

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<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>		<i>C_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight K</i>
(2) RRUS A2 MODULE	B	From Leg	4.000 0.000 0.000	0.0000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.843 2.012 2.190 2.566	1.059 1.197 1.342 1.656	0.06 0.08 0.09 0.14
(2) RRUS A2 MODULE	C	From Leg	4.000 0.000 0.000	0.0000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.843 2.012 2.190 2.566	1.059 1.197 1.342 1.656	0.06 0.08 0.09 0.14
RRUS 32	A	From Leg	4.000 0.000 0.000	0.0000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.857 3.083 3.316 3.805	1.777 1.968 2.166 2.583	0.06 0.08 0.10 0.16
RRUS 32	B	From Leg	4.000 0.000 0.000	0.0000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.857 3.083 3.316 3.805	1.777 1.968 2.166 2.583	0.06 0.08 0.10 0.16
RRUS 32	C	From Leg	4.000 0.000 0.000	0.0000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.857 3.083 3.316 3.805	1.777 1.968 2.166 2.583	0.06 0.08 0.10 0.16
RRUS 4478 B5	A	From Leg	4.000 0.000 0.000	0.0000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.843 2.012 2.190 2.566	1.059 1.197 1.342 1.656	0.06 0.08 0.09 0.14
RRUS 4478 B5	B	From Leg	4.000 0.000 0.000	0.0000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.843 2.012 2.190 2.566	1.059 1.197 1.342 1.656	0.06 0.08 0.09 0.14
RRUS 4478 B5	C	From Leg	4.000 0.000 0.000	0.0000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.843 2.012 2.190 2.566	1.059 1.197 1.342 1.656	0.06 0.08 0.09 0.14
RRUS 8843 B2/B66A	A	From Leg	4.000 0.000 0.000	0.0000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.639 1.799 1.966 2.323	1.353 1.500 1.655 1.986	0.07 0.09 0.11 0.16
RRUS 8843 B2/B66A	B	From Leg	4.000 0.000 0.000	0.0000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.639 1.799 1.966 2.323	1.353 1.500 1.655 1.986	0.07 0.09 0.11 0.16
RRUS 8843 B2/B66A	C	From Leg	4.000 0.000 0.000	0.0000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.639 1.799 1.966 2.323	1.353 1.500 1.655 1.986	0.07 0.09 0.11 0.16
RRUS 4478 B14	A	From Leg	4.000 0.000 0.000	0.0000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.843 2.012 2.190 2.566	1.059 1.197 1.342 1.656	0.06 0.08 0.09 0.14
RRUS 4478 B14	B	From Leg	4.000 0.000 0.000	0.0000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.843 2.012 2.190 2.566	1.059 1.197 1.342 1.656	0.06 0.08 0.09 0.14
RRUS 4478 B14	C	From Leg	4.000 0.000 0.000	0.0000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.843 2.012 2.190 2.566	1.059 1.197 1.342 1.656	0.06 0.08 0.09 0.14
DBCT108F1V92-1	A	From Leg	4.000	0.0000	146.000	No Ice	0.606	0.642	0.03

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			0.000			1/2" Ice	0.707	0.745	0.04
			0.000			1" Ice	0.816	0.856	0.05
						2" Ice	1.054	1.099	0.07
DBCT108F1V92-1	B	From Leg	4.000	0.0000	146.000	No Ice	0.606	0.642	0.03
			0.000			1/2" Ice	0.707	0.745	0.04
			0.000			1" Ice	0.816	0.856	0.05
						2" Ice	1.054	1.099	0.07
DBCT108F1V92-1	C	From Leg	4.000	0.0000	146.000	No Ice	0.606	0.642	0.03
			0.000			1/2" Ice	0.707	0.745	0.04
			0.000			1" Ice	0.816	0.856	0.05
						2" Ice	1.054	1.099	0.07
(2) DC6-48-60-18-8F	A	From Leg	4.000	0.0000	146.000	No Ice	1.212	1.212	0.03
			0.000			1/2" Ice	1.892	1.892	0.05
			0.000			1" Ice	2.105	2.105	0.08
						2" Ice	2.570	2.570	0.14
DC6-48-60-18-8F	B	From Leg	4.000	0.0000	146.000	No Ice	1.212	1.212	0.03
			0.000			1/2" Ice	1.892	1.892	0.05
			0.000			1" Ice	2.105	2.105	0.08
						2" Ice	2.570	2.570	0.14
DC6-48-60-18-8F	C	From Leg	4.000	0.0000	146.000	No Ice	1.212	1.212	0.03
			0.000			1/2" Ice	1.892	1.892	0.05
			0.000			1" Ice	2.105	2.105	0.08
						2" Ice	2.570	2.570	0.14

4' x 3.5" Mount Pipe	A	From Leg	0.500	0.0000	72.000	No Ice	1.107	1.107	0.03
			0.000			1/2" Ice	1.357	1.357	0.04
			0.000			1" Ice	1.617	1.617	0.05
						2" Ice	2.163	2.163	0.09

SD210R-SF2P90LDF	A	From Leg	3.000	0.0000	65.500	No Ice	3.720	3.720	0.04
			0.000			1/2" Ice	6.950	6.950	91.00
			2.000			1" Ice	10.180	10.180	144.00
						2" Ice	16.640	16.640	250.00
Side Arm Mount [SO 305-1]	A	From Leg	1.500	0.0000	65.500	No Ice	0.530	1.520	0.03
			0.000			1/2" Ice	0.780	2.070	0.04
			0.000			1" Ice	1.060	2.660	0.06
						2" Ice	1.730	3.910	0.13
T-Mobile									
T-Arm Mount [TA 601-3]	C	None		0.0000	126.000	No Ice	12.560	12.560	0.73
						1/2" Ice	15.360	15.360	0.94
						1" Ice	18.040	18.040	1.21
						2" Ice	23.690	23.690	1.92
(2) Miscellaneous [NA 509-3]	C	None		0.0000	129.000	No Ice	11.840	11.840	0.28
						1/2" Ice	16.960	16.960	0.30
						1" Ice	22.080	22.080	0.32
						2" Ice	32.320	32.320	0.36
Miscellaneous [NA 507-1]	C	None		0.0000	129.000	No Ice	4.560	4.560	0.25
						1/2" Ice	6.390	6.390	0.31
						1" Ice	8.180	8.180	0.40
						2" Ice	11.660	11.660	0.66
APX16DWV-16DWVS-E-A	A	From Leg	4.000	0.0000	126.000	No Ice	6.824	3.494	0.06
20_TIA w/ Mount Pipe			0.000			1/2" Ice	7.275	4.263	0.11
			0.000			1" Ice	7.719	4.960	0.16
						2" Ice	8.633	6.403	0.30
APX16DWV-16DWVS-E-A	B	From Leg	4.000	0.0000	126.000	No Ice	6.824	3.494	0.06
20_TIA w/ Mount Pipe			0.000			1/2" Ice	7.275	4.263	0.11
			0.000			1" Ice	7.719	4.960	0.16

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	Client	InSite Wireless	Designed by	Tomas Martin Sosa

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>	<i>C_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight K</i>
APX16DWV-16DWVS-E-A 20_TIA w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.0000	126.000	2" Ice 8.633 No Ice 6.824 1/2" Ice 7.275 1" Ice 7.719 2" Ice 8.633	6.403 3.494 4.263 4.960 6.403	0.30 0.06 0.11 0.16 0.30
APXVAARR24_43-U-NA20 _TIA w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.0000	126.000	No Ice 20.480 1/2" Ice 21.231 1" Ice 21.990 2" Ice 23.444	11.024 12.550 14.099 16.451	0.19 0.32 0.47 0.80
APXVAARR24_43-U-NA20 _TIA w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.0000	126.000	No Ice 20.480 1/2" Ice 21.231 1" Ice 21.990 2" Ice 23.444	11.024 12.550 14.099 16.451	0.19 0.32 0.47 0.80
APXVAARR24_43-U-NA20 _TIA w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.0000	126.000	No Ice 20.480 1/2" Ice 21.231 1" Ice 21.990 2" Ice 23.444	11.024 12.550 14.099 16.451	0.19 0.32 0.47 0.80
AIR 6449 B41 w/MP	A	From Leg	4.000 0.000 0.000	0.0000	126.000	No Ice 6.927 1/2" Ice 7.772 1" Ice 8.522 2" Ice 9.815	4.391 5.446 6.353 7.838	0.13 0.19 0.26 0.42
AIR 6449 B41 w/MP	B	From Leg	4.000 0.000 0.000	0.0000	126.000	No Ice 6.927 1/2" Ice 7.772 1" Ice 8.522 2" Ice 9.815	4.391 5.446 6.353 7.838	0.13 0.19 0.26 0.42
AIR 6449 B41 w/MP	C	From Leg	4.000 0.000 0.000	0.0000	126.000	No Ice 6.927 1/2" Ice 7.772 1" Ice 8.522 2" Ice 9.815	4.391 5.446 6.353 7.838	0.13 0.19 0.26 0.42
RADIO 4415 B66A	A	From Leg	4.000 0.000 0.000	0.0000	126.000	No Ice 1.856 1/2" Ice 2.027 1" Ice 2.204 2" Ice 2.582	0.870 0.997 1.134 1.432	0.05 0.06 0.08 0.12
RADIO 4415 B66A	B	From Leg	4.000 0.000 0.000	0.0000	126.000	No Ice 1.856 1/2" Ice 2.027 1" Ice 2.204 2" Ice 2.582	0.870 0.997 1.134 1.432	0.05 0.06 0.08 0.12
RADIO 4415 B66A	C	From Leg	4.000 0.000 0.000	0.0000	126.000	No Ice 1.856 1/2" Ice 2.027 1" Ice 2.204 2" Ice 2.582	0.870 0.997 1.134 1.432	0.05 0.06 0.08 0.12
RADIO 4449 B71/B85A	A	From Leg	4.000 0.000 0.000	0.0000	126.000	No Ice 1.644 1/2" Ice 1.804 1" Ice 1.972 2" Ice 2.329	1.310 1.455 1.608 1.936	0.07 0.09 0.11 0.16
RADIO 4449 B71/B85A	B	From Leg	4.000 0.000 0.000	0.0000	126.000	No Ice 1.644 1/2" Ice 1.804 1" Ice 1.972 2" Ice 2.329	1.310 1.455 1.608 1.936	0.07 0.09 0.11 0.16
RADIO 4449 B71/B85A	C	From Leg	4.000 0.000 0.000	0.0000	126.000	No Ice 1.644 1/2" Ice 1.804 1" Ice 1.972 2" Ice 2.329	1.310 1.455 1.608 1.936	0.07 0.09 0.11 0.16
RADIO 4424	A	From Leg	4.000 0.000 0.000	0.0000	126.000	No Ice 1.856 1/2" Ice 2.027 1" Ice 2.204 2" Ice 2.582	1.320 1.469 1.625 1.959	0.09 0.11 0.13 0.18

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	Client InSite Wireless	Designed by Tomas Martin Sosa

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
RADIO 4424	B	From Leg	4.000 0.000 0.000	0.0000	126.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.856 2.027 2.204 2.582	1.320 1.469 1.625 1.959	0.09 0.11 0.13 0.18
RADIO 4424	C	From Leg	4.000 0.000 0.000	0.0000	126.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.856 2.027 2.204 2.582	1.320 1.469 1.625 1.959	0.09 0.11 0.13 0.18
RRUS 11 B4	A	From Leg	4.000 0.000 0.000	0.0000	126.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.833 3.043 3.259 3.715	1.182 1.330 1.485 1.826	0.05 0.07 0.10 0.15
RRUS 11 B4	B	From Leg	4.000 0.000 0.000	0.0000	126.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.833 3.043 3.259 3.715	1.182 1.330 1.485 1.826	0.05 0.07 0.10 0.15
RRUS 11 B4	C	From Leg	4.000 0.000 0.000	0.0000	126.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.833 3.043 3.259 3.715	1.182 1.330 1.485 1.826	0.05 0.07 0.10 0.15
SDX1926Q-43	A	From Leg	4.000 0.000 0.000	0.0000	126.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.241 0.306 0.379 0.547	0.101 0.144 0.195 0.318	0.01 0.01 0.01 0.02
SDX1926Q-43	B	From Leg	4.000 0.000 0.000	0.0000	126.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.241 0.306 0.379 0.547	0.101 0.144 0.195 0.318	0.01 0.01 0.01 0.02
SDX1926Q-43	C	From Leg	4.000 0.000 0.000	0.0000	126.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.241 0.306 0.379 0.547	0.101 0.144 0.195 0.318	0.01 0.01 0.01 0.02
Verizon									
Platform Mount [LP 1301-1]	C	None		0.0000	136.000	No Ice 1/2" Ice 1" Ice 2" Ice	51.700 62.700 73.700 95.700	51.700 62.700 73.700 95.700	2.26 2.94 3.61 4.95
(3) JAHH-1D65B	A	From Leg	4.000 0.000 0.000	0.0000	136.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.200 8.661 9.129 10.086	5.424 5.882 6.348 7.301	0.05 0.10 0.15 0.29
(3) JAHH-1D65B	B	From Leg	4.000 0.000 0.000	0.0000	136.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.200 8.661 9.129 10.086	5.424 5.882 6.348 7.301	0.05 0.10 0.15 0.29
(3) JAHH-1D65B	C	From Leg	4.000 0.000 0.000	0.0000	136.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.200 8.661 9.129 10.086	5.424 5.882 6.348 7.301	0.05 0.10 0.15 0.29
B2/B66 RRH BR049	A	From Leg	4.000 0.000 0.000	0.0000	136.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.875 2.045 2.223 2.601	1.250 1.393 1.543 1.865	0.08 0.10 0.12 0.18
B2/B66 RRH BR049	B	From Leg	4.000 0.000 0.000	0.0000	136.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.875 2.045 2.223 2.601	1.250 1.393 1.543 1.865	0.08 0.10 0.12 0.18

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<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>		<i>C_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight K</i>
B2/B66 RRH BR049	C	From Leg	4.000 0.000 0.000	0.0000	136.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.875 2.045 2.223 2.601	1.250 1.393 1.543 1.865	0.08 0.10 0.12 0.18
B5/B13 RRH BR04C	A	From Leg	4.000 0.000 0.000	0.0000	136.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.875 2.045 2.223 2.601	1.013 1.145 1.284 1.585	0.07 0.09 0.11 0.15
B5/B13 RRH BR04C	B	From Leg	4.000 0.000 0.000	0.0000	136.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.875 2.045 2.223 2.601	1.013 1.145 1.284 1.585	0.07 0.09 0.11 0.15
B5/B13 RRH BR04C	C	From Leg	4.000 0.000 0.000	0.0000	136.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.875 2.045 2.223 2.601	1.013 1.145 1.284 1.585	0.07 0.09 0.11 0.15
CBC78T-DS-43-2X	A	From Leg	4.000 0.000 0.000	0.0000	136.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.368 0.446 0.531 0.723	0.512 0.605 0.705 0.927	0.02 0.03 0.04 0.06
CBC78T-DS-43-2X	B	From Leg	4.000 0.000 0.000	0.0000	136.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.368 0.446 0.531 0.723	0.512 0.605 0.705 0.927	0.02 0.03 0.04 0.06
CBC78T-DS-43-2X	C	From Leg	4.000 0.000 0.000	0.0000	136.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.368 0.446 0.531 0.723	0.512 0.605 0.705 0.927	0.02 0.03 0.04 0.06
DB-C1-12C-24AB-OZ	C	From Leg	4.000 0.000 0.000	0.0000	136.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.056 4.316 4.582 5.138	3.098 3.335 3.580 4.092	0.03 0.07 0.11 0.20

Dishes

<i>Description</i>	<i>Face or Leg</i>	<i>Dish Type</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft</i>	<i>Azimuth Adjustment °</i>	<i>3 dB Beam Width °</i>	<i>Elevation ft</i>	<i>Outside Diameter ft</i>	<i>Aperture Area ft²</i>	<i>Weight K</i>
VHLP3-11W-6GR	A	Paraboloid w/Shroud (HP)	From Leg	1.000 0.000 -0.500	0.0000		72.000	3.000	No Ice 1/2" Ice 1" Ice 2" Ice	7.069 7.467 7.865 8.661
										0.07 0.11 0.14 0.22

Load Combinations

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<i>Comb. No.</i>	<i>Description</i>
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
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

<i>Section No.</i>	<i>Elevation ft</i>	<i>Component Type</i>	<i>Condition</i>	<i>Gov. Load Comb.</i>	<i>Axial K</i>	<i>Major Axis Moment kip-ft</i>	<i>Minor Axis Moment kip-ft</i>
L1	149 - 116.67	Pole	Max Tension	14	0.00	-0.00	0.00
			Max. Compression	26	-41.92	1.32	15.60
			Max. Mx	20	-14.78	399.04	-0.03

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L2	116.67 - 89.25	Pole	Max. My	2	-14.78	-0.08	398.26
			Max. Vy	20	-23.02	399.04	-0.03
			Max. Vx	2	-22.99	-0.08	398.26
			Max. Torque	8			0.80
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	33	-48.89	2.02	-267.63
			Max. Mx	20	-19.40	1032.70	-0.41
			Max. My	2	-19.40	-0.42	1030.84
			Max. Vy	20	-24.79	1032.70	-0.41
			Max. Vx	14	24.75	0.85	-1030.46
L3	89.25 - 46.25	Pole	Max. Torque	16			-0.77
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	33	-299.61	3.28	557.46
			Max. Mx	20	-31.08	2141.05	0.07
			Max. My	2	-31.08	-0.96	2139.55
			Max. Vy	20	-28.22	2141.05	0.07
			Max. Vx	14	28.32	1.59	-2139.22
			Max. Torque	36			3.85
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	33	-326.25	5.05	116.91
L4	46.25 - 0	Pole	Max. Mx	20	-51.62	3720.03	0.71
			Max. My	14	-51.62	2.51	-3723.00
			Max. Vy	20	-31.64	3720.03	0.71
			Max. Vx	14	31.73	2.51	-3723.00
			Max. Torque	37			4.38

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	33	326.25	0.00	-9.56
	Max. H _x	21	38.73	31.61	0.01
	Max. H _z	3	38.73	-0.01	31.64
	Max. M _x	2	3719.81	-0.01	31.63
	Max. M _z	8	3719.12	-31.61	0.04
	Max. Torsion	37	4.38	8.26	4.78
	Min. Vert	21	38.73	31.61	0.01
	Min. H _x	9	38.73	-31.61	0.04
	Min. H _z	15	38.73	0.01	-31.70
	Min. M _x	14	-3723.00	0.01	-31.70
	Min. M _z	20	-3720.03	31.61	0.01
	Min. Torsion	31	-4.37	-8.26	-4.79

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	43.03	-0.00	-0.00	-0.57	0.36	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	51.64	0.01	-31.63	-3719.81	-1.61	-1.19
0.9 Dead+1.0 Wind 0 deg - No	38.73	0.01	-31.64	-3683.53	-1.70	-1.19

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Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Ice						
1.2 Dead+1.0 Wind 30 deg - No Ice	51.64	15.78	-27.43	-3224.33	-1858.73	-1.68
0.9 Dead+1.0 Wind 30 deg - No Ice	38.73	15.78	-27.43	-3192.76	-1840.72	-1.68
1.2 Dead+1.0 Wind 60 deg - No Ice	51.64	27.35	-15.88	-1866.03	-3220.18	-1.80
0.9 Dead+1.0 Wind 60 deg - No Ice	38.73	27.35	-15.88	-1847.70	-3188.90	-1.80
1.2 Dead+1.0 Wind 90 deg - No Ice	51.64	31.61	-0.04	-4.83	-3719.12	-1.46
0.9 Dead+1.0 Wind 90 deg - No Ice	38.73	31.61	-0.04	-4.61	-3683.12	-1.46
1.2 Dead+1.0 Wind 120 deg - No Ice	51.64	27.32	15.92	1865.45	-3216.80	-0.48
0.9 Dead+1.0 Wind 120 deg - No Ice	38.73	27.32	15.92	1847.50	-3185.55	-0.48
1.2 Dead+1.0 Wind 150 deg - No Ice	51.64	15.77	27.48	3225.61	-1856.27	0.43
0.9 Dead+1.0 Wind 150 deg - No Ice	38.73	15.77	27.48	3194.41	-1838.28	0.43
1.2 Dead+1.0 Wind 180 deg - No Ice	51.64	-0.01	31.70	3723.00	2.51	1.19
0.9 Dead+1.0 Wind 180 deg - No Ice	38.73	-0.01	31.70	3687.07	2.37	1.19
1.2 Dead+1.0 Wind 210 deg - No Ice	51.64	-15.80	27.49	3227.67	1860.72	1.63
0.9 Dead+1.0 Wind 210 deg - No Ice	38.73	-15.80	27.49	3196.44	1842.47	1.63
1.2 Dead+1.0 Wind 240 deg - No Ice	51.64	-27.34	15.94	1869.01	3219.76	1.67
0.9 Dead+1.0 Wind 240 deg - No Ice	38.73	-27.34	15.94	1851.03	3188.25	1.67
1.2 Dead+1.0 Wind 270 deg - No Ice	51.64	-31.61	-0.01	-0.71	3720.03	1.46
0.9 Dead+1.0 Wind 270 deg - No Ice	38.73	-31.61	-0.01	-0.54	3683.79	1.46
1.2 Dead+1.0 Wind 300 deg - No Ice	51.64	-27.34	-15.86	-1862.48	3219.03	0.61
0.9 Dead+1.0 Wind 300 deg - No Ice	38.73	-27.34	-15.86	-1844.18	3187.54	0.61
1.2 Dead+1.0 Wind 330 deg - No Ice	51.64	-15.76	-27.41	-3222.28	1856.07	-0.38
0.9 Dead+1.0 Wind 330 deg - No Ice	38.73	-15.76	-27.41	-3190.73	1837.86	-0.39
1.2 Dead+1.0 Ice+1.0 Temp	326.25	0.00	0.00	-1336.26	4.64	-0.02
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	326.25	0.00	-9.54	-2553.55	4.21	-1.55
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	326.25	4.77	-8.27	-2391.24	-604.90	0.74
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	326.25	8.27	-4.78	-1946.27	-1051.31	2.81
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	326.25	9.55	-0.01	-1336.96	-1214.91	4.12
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	326.25	8.26	4.79	-725.81	-1050.77	4.37
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	326.25	4.77	8.28	-280.19	-604.60	3.41
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	326.25	-0.00	9.56	-116.91	5.05	1.52
1.2 Dead+1.0 Wind 210	326.25	-4.77	8.29	-279.77	614.61	-0.79

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<i>Load Combination</i>	<i>Vertical</i>	<i>Shear_x</i>	<i>Shear_z</i>	<i>Overturning Moment, M_x</i>	<i>Overturning Moment, M_z</i>	<i>Torque</i>
	<i>K</i>	<i>K</i>	<i>K</i>	<i>kip-ft</i>	<i>kip-ft</i>	<i>kip-ft</i>
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 240	326.25	-8.26	4.80	-725.08	1060.47	-2.87
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 270	326.25	-9.55	-0.00	-1336.13	1224.19	-4.16
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 300	326.25	-8.26	-4.78	-1945.56	1060.16	-4.38
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 330	326.25	-4.77	-8.27	-2390.83	613.43	-3.43
deg+1.0 Ice+1.0 Temp						
Dead+Wind 0 deg - Service	43.03	0.00	-6.52	-763.13	-0.04	-0.25
Dead+Wind 30 deg - Service	43.03	3.25	-5.65	-661.48	-380.78	-0.35
Dead+Wind 60 deg - Service	43.03	5.64	-3.27	-383.01	-659.89	-0.37
Dead+Wind 90 deg - Service	43.03	6.51	-0.01	-1.44	-762.25	-0.30
Dead+Wind 120 deg - Service	43.03	5.63	3.28	381.99	-659.20	-0.10
Dead+Wind 150 deg - Service	43.03	3.25	5.66	660.84	-380.27	0.09
Dead+Wind 180 deg - Service	43.03	-0.00	6.53	762.88	0.80	0.25
Dead+Wind 210 deg - Service	43.03	-3.26	5.67	661.27	381.76	0.34
Dead+Wind 240 deg - Service	43.03	-5.63	3.29	382.72	660.37	0.35
Dead+Wind 270 deg - Service	43.03	-6.51	-0.00	-0.60	763.01	0.30
Dead+Wind 300 deg - Service	43.03	-5.64	-3.27	-382.28	660.22	0.13
Dead+Wind 330 deg - Service	43.03	-3.25	-5.65	-661.06	380.80	-0.08

Solution Summary

<i>Load Comb.</i>	<i>Sum of Applied Forces</i>			<i>Sum of Reactions</i>			<i>% Error</i>
	<i>PX</i>	<i>PY</i>	<i>PZ</i>	<i>PX</i>	<i>PY</i>	<i>PZ</i>	
	<i>K</i>	<i>K</i>	<i>K</i>	<i>K</i>	<i>K</i>	<i>K</i>	
1	0.00	-43.03	0.00	0.00	43.03	0.00	0.000%
2	0.01	-51.64	-31.64	-0.01	51.64	31.63	0.005%
3	0.01	-38.73	-31.64	-0.01	38.73	31.64	0.004%
4	15.78	-51.64	-27.43	-15.78	51.64	27.43	0.000%
5	15.78	-38.73	-27.43	-15.78	38.73	27.43	0.000%
6	27.35	-51.64	-15.88	-27.35	51.64	15.88	0.000%
7	27.35	-38.73	-15.88	-27.35	38.73	15.88	0.000%
8	31.61	-51.64	-0.04	-31.61	51.64	0.04	0.005%
9	31.61	-38.73	-0.04	-31.61	38.73	0.04	0.004%
10	27.32	-51.64	15.92	-27.32	51.64	-15.92	0.000%
11	27.32	-38.73	15.92	-27.32	38.73	-15.92	0.000%
12	15.77	-51.64	27.48	-15.77	51.64	-27.48	0.000%
13	15.77	-38.73	27.48	-15.77	38.73	-27.48	0.000%
14	-0.01	-51.64	31.70	0.01	51.64	-31.70	0.005%
15	-0.01	-38.73	31.70	0.01	38.73	-31.70	0.004%
16	-15.80	-51.64	27.49	15.80	51.64	-27.49	0.000%
17	-15.80	-38.73	27.49	15.80	38.73	-27.49	0.000%
18	-27.34	-51.64	15.94	27.34	51.64	-15.94	0.000%
19	-27.34	-38.73	15.94	27.34	38.73	-15.94	0.000%
20	-31.61	-51.64	-0.01	31.61	51.64	0.01	0.005%
21	-31.61	-38.73	-0.01	31.61	38.73	0.01	0.004%
22	-27.34	-51.64	-15.86	27.34	51.64	15.86	0.000%
23	-27.34	-38.73	-15.86	27.34	38.73	15.86	0.000%
24	-15.76	-51.64	-27.41	15.76	51.64	27.41	0.000%
25	-15.76	-38.73	-27.41	15.76	38.73	27.41	0.000%
26	0.00	-326.25	0.00	-0.00	326.25	-0.00	0.000%
27	0.00	-326.25	-9.55	-0.00	326.25	9.54	0.001%
28	4.77	-326.25	-8.27	-4.77	326.25	8.27	0.000%
29	8.27	-326.25	-4.79	-8.27	326.25	4.78	0.000%
30	9.55	-326.25	-0.01	-9.55	326.25	0.01	0.000%
31	8.26	-326.25	4.79	-8.26	326.25	-4.79	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
32	4.77	-326.25	8.28	-4.77	326.25	-8.28	0.000%
33	-0.00	-326.25	9.56	0.00	326.25	-9.56	0.000%
34	-4.77	-326.25	8.28	4.77	326.25	-8.29	0.000%
35	-8.26	-326.25	4.80	8.26	326.25	-4.80	0.000%
36	-9.55	-326.25	-0.00	9.55	326.25	0.00	0.000%
37	-8.27	-326.25	-4.78	8.26	326.25	4.78	0.000%
38	-4.77	-326.25	-8.27	4.77	326.25	8.27	0.000%
39	0.00	-43.03	-6.52	-0.00	43.03	6.52	0.003%
40	3.25	-43.03	-5.65	-3.25	43.03	5.65	0.003%
41	5.64	-43.03	-3.27	-5.64	43.03	3.27	0.003%
42	6.52	-43.03	-0.01	-6.51	43.03	0.01	0.003%
43	5.63	-43.03	3.28	-5.63	43.03	-3.28	0.003%
44	3.25	-43.03	5.66	-3.25	43.03	-5.66	0.003%
45	-0.00	-43.03	6.54	0.00	43.03	-6.53	0.003%
46	-3.26	-43.03	5.67	3.26	43.03	-5.67	0.003%
47	-5.64	-43.03	3.29	5.63	43.03	-3.29	0.003%
48	-6.52	-43.03	-0.00	6.51	43.03	0.00	0.003%
49	-5.64	-43.03	-3.27	5.64	43.03	3.27	0.003%
50	-3.25	-43.03	-5.65	3.25	43.03	5.65	0.003%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	13	0.00005976	0.00010900
3	Yes	13	0.00003991	0.00009027
4	Yes	17	0.00000001	0.00006564
5	Yes	16	0.00000001	0.00013477
6	Yes	17	0.00000001	0.00006784
7	Yes	16	0.00000001	0.00013941
8	Yes	13	0.00005975	0.00012204
9	Yes	13	0.00003991	0.00010015
10	Yes	17	0.00000001	0.00006629
11	Yes	16	0.00000001	0.00013620
12	Yes	17	0.00000001	0.00006611
13	Yes	16	0.00000001	0.00013581
14	Yes	13	0.00005975	0.00011466
15	Yes	13	0.00003991	0.00009456
16	Yes	17	0.00000001	0.00006766
17	Yes	16	0.00000001	0.00013904
18	Yes	17	0.00000001	0.00006583
19	Yes	16	0.00000001	0.00013516
20	Yes	13	0.00005975	0.00011597
21	Yes	13	0.00003991	0.00009552
22	Yes	17	0.00000001	0.00006692
23	Yes	16	0.00000001	0.00013747
24	Yes	17	0.00000001	0.00006674
25	Yes	16	0.00000001	0.00013709
26	Yes	15	0.00010603	0.00004760
27	Yes	15	0.00010467	0.00009052
28	Yes	16	0.00004466	0.00006899
29	Yes	16	0.00000001	0.00008545
30	Yes	15	0.00010499	0.00013920
31	Yes	15	0.00010539	0.00006648
32	Yes	15	0.00000001	0.00002475

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33	Yes	13	0.00000001	0.00001978
34	Yes	15	0.00000001	0.00002558
35	Yes	15	0.00010538	0.00006820
36	Yes	15	0.00010498	0.00014054
37	Yes	16	0.00000001	0.00008765
38	Yes	16	0.00004466	0.00007423
39	Yes	12	0.00013177	0.00006180
40	Yes	12	0.00013166	0.00007475
41	Yes	12	0.00013166	0.00008762
42	Yes	12	0.00013178	0.00006194
43	Yes	12	0.00013165	0.00007845
44	Yes	12	0.00013164	0.00007815
45	Yes	12	0.00013175	0.00006172
46	Yes	12	0.00013164	0.00008702
47	Yes	12	0.00013166	0.00007492
48	Yes	12	0.00013179	0.00006200
49	Yes	12	0.00013167	0.00008247
50	Yes	12	0.00013166	0.00008204

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	149 - 116.67	17.798	48	1.1628	0.0020
L2	121 - 89.25	11.301	48	0.9887	0.0009
L3	94.5 - 46.25	6.533	40	0.7019	0.0006
L4	52.67 - 0	1.912	40	0.3418	0.0003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.000	1/2-in x 3-ft Lightning Rod	48	17.798	1.1628	0.0021	28256
148.000	BA40-41	48	17.555	1.1579	0.0020	28256
146.000	Platform Mount [LP 1301-1]	48	17.069	1.1481	0.0019	28256
136.000	Platform Mount [LP 1301-1]	48	14.668	1.0956	0.0015	10867
129.000	(2) Miscellaneous [NA 509-3]	48	13.048	1.0516	0.0012	7063
126.000	T-Arm Mount [TA 601-3]	48	12.378	1.0299	0.0011	6142
72.000	4' x 3.5" Mount Pipe	40	3.622	0.4892	0.0004	6140
71.500	VHLP3-11W-6GR	40	3.569	0.4850	0.0004	6144
65.500	SD210R-SF2P90LDF	40	2.966	0.4370	0.0004	6187

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	149 - 116.67	86.791	20	5.6743	0.0134
L2	121 - 89.25	55.127	20	4.8275	0.0080

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L3	94.5 - 46.25	31.879	16	3.4275	0.0026
L4	52.67 - 0	9.333	16	1.6687	0.0036

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.000	1/2-in x 3-ft Lightning Rod	20	86.791	5.6743	0.0134	5899
148.000	BA40-41	20	85.606	5.6506	0.0133	5899
146.000	Platform Mount [LP 1301-1]	20	83.238	5.6030	0.0129	5899
136.000	Platform Mount [LP 1301-1]	20	71.540	5.3482	0.0113	2267
129.000	(2) Miscellaneous [NA 509-3]	20	63.646	5.1339	0.0099	1472
126.000	T-Arm Mount [TA 601-3]	20	60.378	5.0280	0.0092	1279
72.000	4' x 3.5" Mount Pipe	16	17.678	2.3882	0.0025	1262
71.500	VHLP3-11W-6GR	16	17.418	2.3681	0.0026	1263
65.500	SD210R-SF2P90LDF	16	14.478	2.1335	0.0026	1271

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L1	149 - 116.67 (1)	TP28.81x20.5x0.219	32.330	0.000	0.0	19.1001	-14.78	1117.36	0.013
L2	116.67 - 89.25 (2)	TP35.43x27.259x0.313	31.750	0.000	0.0	33.5451	-19.40	1962.39	0.010
L3	89.25 - 46.25 (3)	TP45.86x33.4529x0.438	48.250	0.000	0.0	56.4923	-294.65	3304.80	0.089
L4	46.25 - 0 (4)	TP56.88x43.3331x0.5	52.670	0.000	0.0	89.4751	-51.62	5234.29	0.010

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{ux} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M _{uy} kip-ft	φM _{uy} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
L1	149 - 116.67 (1)	TP28.81x20.5x0.219	399.04	740.59	0.539	0.00	740.59	0.000
L2	116.67 - 89.25 (2)	TP35.43x27.259x0.313	1032.75	1672.50	0.617	0.00	1672.50	0.000
L3	89.25 - 46.25 (3)	TP45.86x33.4529x0.438	1720.36	3496.98	0.492	0.00	3496.98	0.000
L4	46.25 - 0 (4)	TP56.88x43.3331x0.5	3725.61	7357.50	0.506	0.00	7357.50	0.000

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Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	149 - 116.67 (1)	TP28.81x20.5x0.219	23.02	335.21	0.069	0.47	806.64	0.001
L2	116.67 - 89.25 (2)	TP35.43x27.259x0.313	24.79	588.72	0.042	0.67	1740.87	0.000
L3	89.25 - 46.25 (3)	TP45.86x33.4529x0.438	16.95	991.44	0.017	0.87	3528.21	0.000
L4	46.25 - 0 (4)	TP56.88x43.3331x0.5	31.74	1570.29	0.020	1.63	7753.26	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u	Ratio M_{ux}	Ratio M_{uy}	Ratio V_u	Ratio T_u	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	149 - 116.67 (1)	ϕP_n 0.013	ϕM_{nx} 0.539	ϕM_{ny} 0.000	ϕV_n 0.069	ϕT_n 0.001	0.557	1.050	4.8.2
L2	116.67 - 89.25 (2)	0.010	0.617	0.000	0.042	0.000	0.629	1.050	4.8.2
L3	89.25 - 46.25 (3)	0.089	0.492	0.000	0.017	0.000	0.581	1.050	4.8.2
L4	46.25 - 0 (4)	0.010	0.506	0.000	0.020	0.000	0.517	1.050	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	149 - 116.67	Pole	TP28.81x20.5x0.219	1	-14.78	1173.23	53.0	Pass
L2	116.67 - 89.25	Pole	TP35.43x27.259x0.313	2	-19.40	2060.51	59.9	Pass
L3	89.25 - 46.25	Pole	TP45.86x33.4529x0.438	3	-294.65	3470.04	55.4	Pass
L4	46.25 - 0	Pole	TP56.88x43.3331x0.5	4	-51.62	5496.00	49.2	Pass
							Summary	
							Pole (L2)	59.9
							RATING =	59.9
								Pass
								Pass

APPENDIX B
BASE LEVEL DRAWING

Feed Line Plan
46'3"

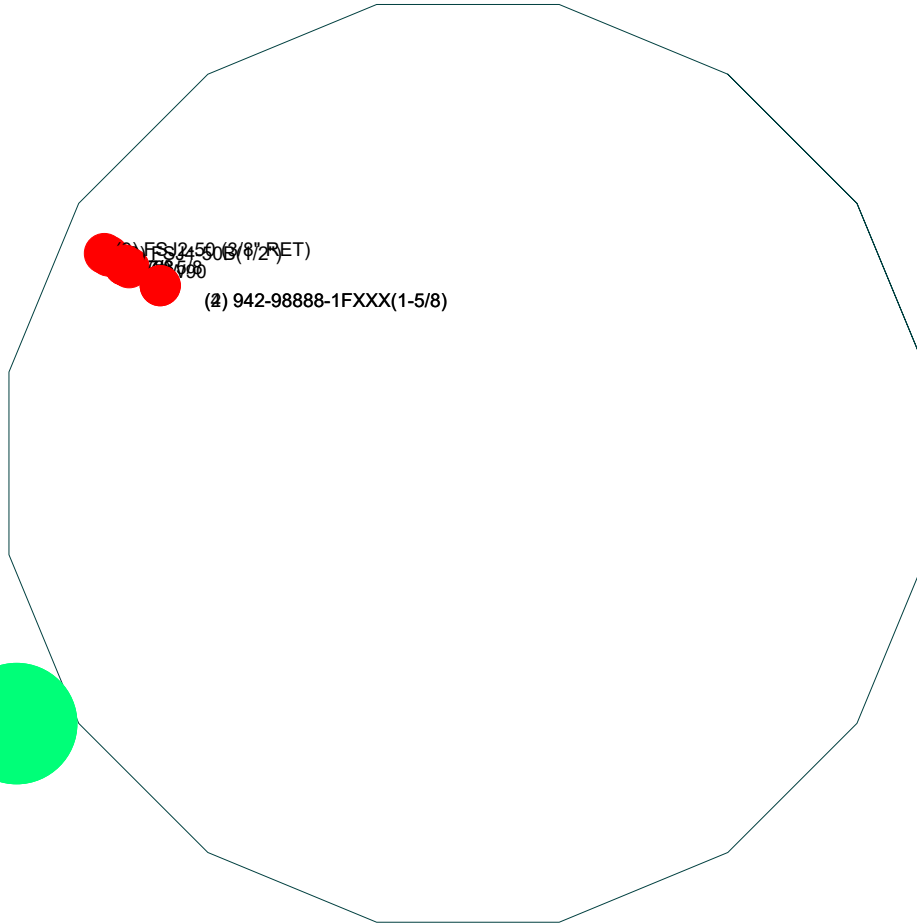
Round

Flat

App In Face

App Out Face

Section @ 46'3"



Step Pegs (5/8" SR) 7-Safety Stop

Engineered Tower Solutions, PLLC

3227 Wellington Court
Raleigh, NC 27615
Phone: (919) 782-2710
FAX:

Job: **CT897 Ridgefield**

Project: **ETS Job No. 201466.ST.02**

Client: InSite Wireless

Drawn by: Tomas Martin Sosa

App'd:

Code: TIA-222-H

Date: 08/03/20

Scale: NTS

Path: C:\Users\Tomas.Sosa\Desktop\Towers\2020\1466\02_Tower Reanalysis\Analysis\Tower\Ridgefield.et

Dwg No. E-7

APPENDIX C

ADDITIONAL CALCULATIONS

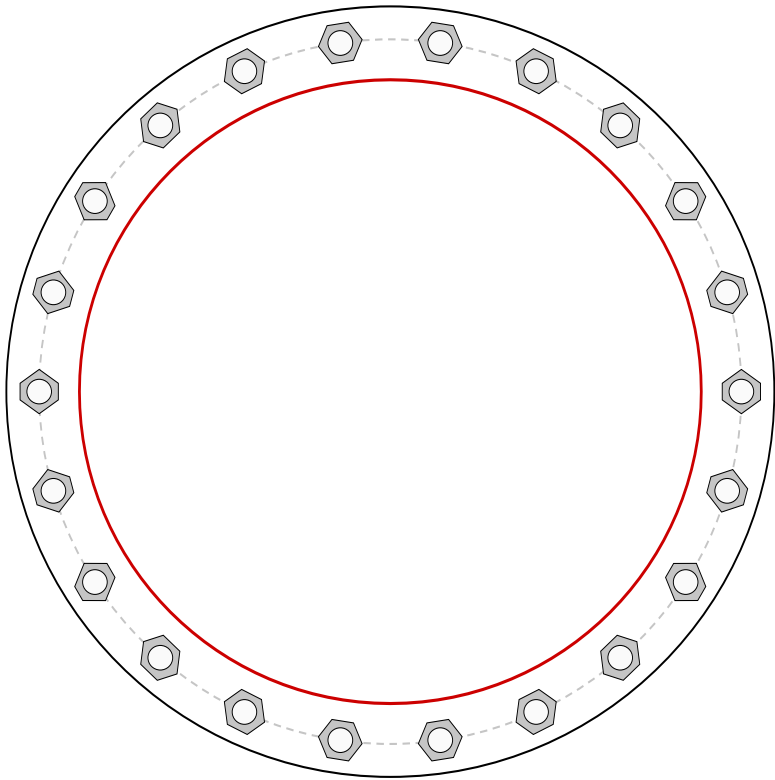
Monopole Base Plate Connection

Site Info	
Site #	CT897
Site Name	Ridgefield

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l _{ar} (in)	0.5

Applied Loads	
Moment (kip-ft)	3725.60
Axial Force (kips)	51.62
Shear Force (kips)	31.74

*TIA-222-H Section 15.5 Applied



Connection Properties		Analysis Results	
Anchor Rod Data		Anchor Rod Summary <i>(units of kips, kip-in)</i>	
(22) 2-1/4" \varnothing bolts (A615-75 N; F _y =75 ksi, F _u =100 ksi) on 64.25" BC		Pu_c = 128.8	ϕ Pn_c = 268.39 Stress Rating
Base Plate Data		Vu = 1.44	ϕ Vn = 120.77 45.7%
70.25" OD x 3.5" Plate (A572-50; F _y =50 ksi, F _u =65 ksi)		Mu = n/a	ϕ Mn = n/a Pass
Stiffener Data		Base Plate Summary	
N/A		Max Stress (ksi):	11.63 (Flexural)
Pole Data		Allowable Stress (ksi):	45
56.88" x 0.5" 18-sided pole (A572-65; F _y =65 ksi, F _u =80 ksi)		Stress Rating:	24.6% Pass

Pier and Pad Foundation

Site # : CT897
Site Name: Ridgefield

TIA-222 Revision: H
Tower Type: Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp} :	52	kips
Base Shear, V_{u_comp} :	32	kips
Moment, M_u :	3726	ft-kips
Tower Height, H :	149	ft
BP Dist. Above Fdn, bp_{dist} :	2.75	in

Pier Properties		
Pier Shape:	Circular	
Pier Diameter, $dpier$:	8	ft
Ext. Above Grade, E :	0.5	ft
Pier Rebar Size, Sc :	11	
Pier Rebar Quantity, mc :	57	
Pier Tie/Spiral Size, St :	4	
Pier Tie/Spiral Quantity, mt :	8	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	6	in

Pad Properties		
Depth, D :	6.5	ft
Pad Width, W :	27.5	ft
Pad Thickness, T :	2.75	ft
Pad Rebar Size (Bottom), Sp :	9	
Pad Rebar Quantity (Bottom), mp :	35	
Pad Clear Cover, cc_{pad} :	3	in

Material Properties		
Rebar Grade, F_y :	60	ksi
Concrete Compressive Strength, F'_c :	3	ksi
Dry Concrete Density, δ_c :	150	pcf

Soil Properties		
Total Soil Unit Weight, γ :	125	pcf
Ultimate Net Bearing, Q_{net} :	16.000	ksf
Cohesion, C_u :	0.000	ksf
Friction Angle, ϕ :	36	degrees
SPT Blow Count, N_{blows} :	81	
Base Friction, μ :	0.5	
Neglected Depth, N :	4.00	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	N/A	ft

Foundation Analysis Checks				
	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	372.75	32.00	8.2%	Pass
Bearing Pressure (ksf)	12.61	1.94	14.7%	Pass
Overturing (kip*ft)	9022.02	3957.33	43.9%	Pass
Pier Flexure (Comp.) (kip*ft)	14341.20	3862.00	25.6%	Pass
Pier Compression (kip)	23994.73	90.45	0.4%	Pass
Pad Flexure (kip*ft)	4261.99	1267.23	28.3%	Pass
Pad Shear - 1-way (kips)	767.49	188.92	23.4%	Pass
Pad Shear - 2-way (Comp) (ksi)	0.164	0.038	22.3%	Pass
Flexural 2-way (Comp) (kip*ft)	5002.65	2317.20	44.1%	Pass

*Rating per TIA-222-H Section 15.5

Soil Rating*:	43.9%
Structural Rating*:	44.1%

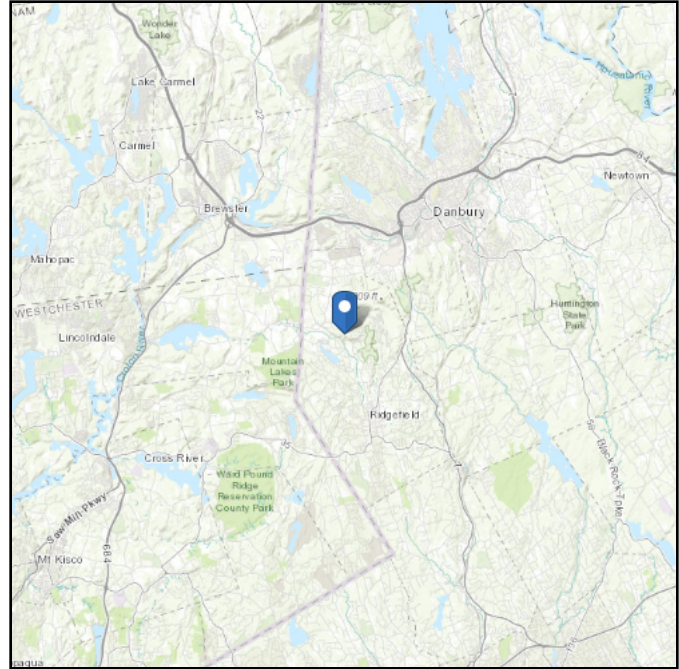
<--Toggle between Gross and Net

ASCE 7 Hazards Report

Address:
No Address at This
Location

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

Elevation: 802.13 ft (NAVD 88)
Latitude: 41.330308
Longitude: -73.516819



Wind

Results:

Wind Speed:	125 Vmph
10-year MRI	76 Vmph
25-year MRI	85 Vmph
50-year MRI	90 Vmph
100-year MRI	96 Vmph

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

Date Accessed: Tue Jul 16 2019

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 3% probability of exceedance in 50 years (annual exceedance probability = 0.000588, MRI = 1,700 years).

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

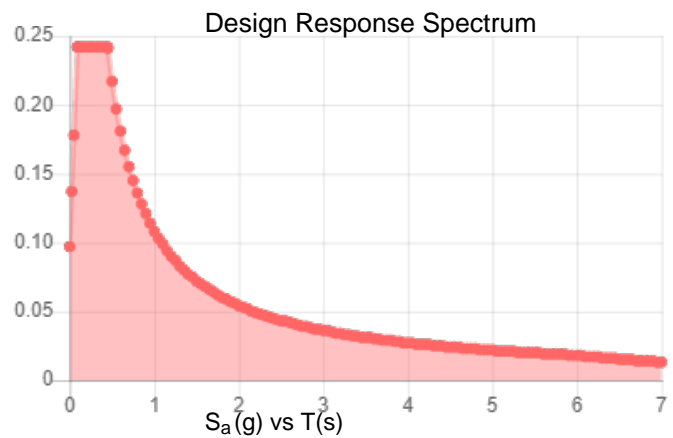
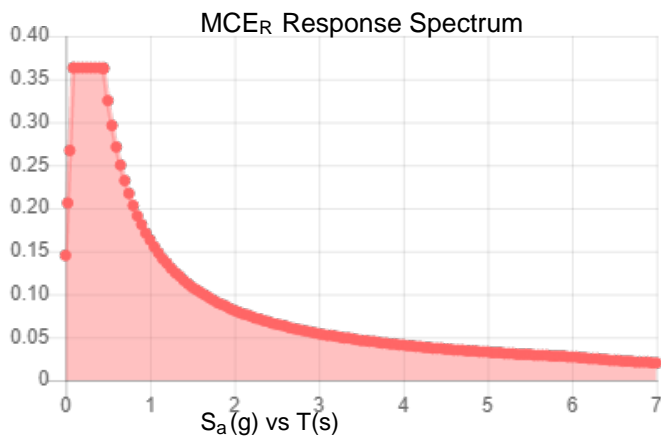
Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

Site Soil Class: D - Stiff Soil

Results:

S_S :	0.227	S_{DS} :	0.242
S_1 :	0.068	S_{D1} :	0.108
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.126
S_{MS} :	0.363	PGA_M :	0.196
S_{M1} :	0.163	F_{PGA} :	1.547
		I_e :	1.25

Seismic Design Category B



Data Accessed:

Tue Jul 16 2019

Date Source:

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

Results:

Ice Thickness: 0.75 in.

Concurrent Temperature: 15 F

Gust Speed: 50 mph

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

Date Accessed: Tue Jul 16 2019

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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

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Structural Analysis Report

Antenna Mount Analysis

T-Mobile Site #: CTFF702F

*320 Old Stagecoach Road
Ridgefield, CT*

Centek Project No. 20074.44

Date: July 10, 2020

Max Stress Ratio = 65.4 %

Prepared for:

*T-Mobile USA
35 Griffin Road
Bloomfield, CT 06002*

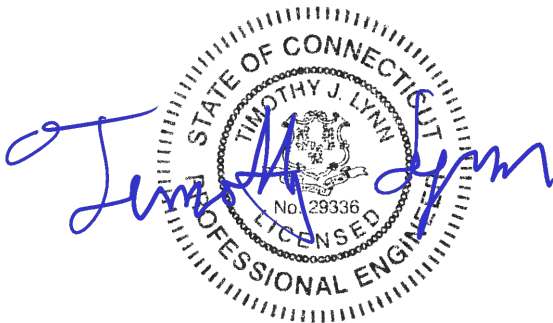


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SECTION 1 – REPORT

- ANTENNA AND APPURTENANCE SUMMARY
- STRUCTURE LOADING
- CONCLUSION

SECTION 2 – CALCULATIONS

- WIND LOAD ON APPURTENANCES
- RISA3D OUTPUT REPORT

SECTION 3 – REFERENCE MATERIALS

- RF DATA SHEET, DATED 06/30/2020

July 10, 2020

Mr. Dan Reid
Transcend Wireless
10 Industrial Ave
Mahwah, NJ 07430

Re: *Structural Letter ~ Antenna Mount*
T-Mobile – Site Ref: CTFF702F
320 Old Stagecoach Road
Ridgefield, CT 06877

Centek Project No. 20074.44

Dear Mr. Reid,

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 existing three (3) 12-ft T-frames. 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:

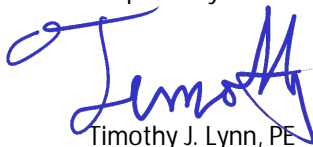
- T-Mobile:
T-Arms: Three (3) Ericsson AIR6449 B41 panel antennas, three (3) RFS APX16DWV-16DWVS-E-A20 panel antennas, three (3) RFS APXVAARR24_43-U-NA20 panel antennas, (3) Ericsson 4449 B71+B85 remote radio units, (3) Ericsson 4424 B25 remote radio units, three (3) Ericsson 4415 B66a remote radio units, three (3) Ericsson RRUS 11 remote radio units and three (3) Commscope SDX1926Q-43 diplexers mounted on three (3) T-Arms with a RAD center elevation of 126 ft +/- AGL.

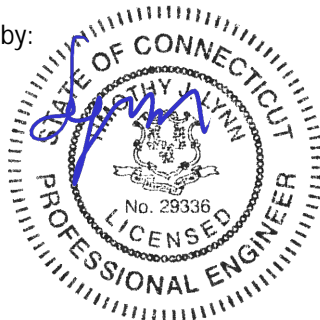
The antenna mount was analyzed per the requirements of the 2015 International Building Code as modified by the 2018 Connecticut State Building Code considering a nominal design wind speed of 93 mph for Ridgefield as required in Appendix N.

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 with the installation of one (1) stabilizer kit (Perfect10 p/n: VSK-M) 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



Prepared by:


Fernando J. Palacios
Engineer

CEN TEK Engineering, Inc.
Structural Analysis – Mount Analysis
T-Mobile Site Ref. ~ CTFF702F
Ridgefield, CT
July 10, 2020

Section 2 - Calculations

**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 := Pole	(User Input)
Structure Category =	SC := II	(User Input)
Exposure Category =	Exp := C	(User Input)
Structure Height =	$h := 149$	ft (User Input)
Height to Center of Antennas =	$z := 126$	ft (User Input)
Radial Ice Thickness =	$t_i := 0.75$	in (User Input per Annex B of TIA-222-G)
Radial Ice Density =	$I_d := 56.00$	pcf (User Input)
Topographic Factor =	$K_{zt} := 1.0$	(User Input)
	$K_a := 1.0$	(User Input)
Gust Response Factor =	$G_H := 1.1$	(User Input)

Output

Wind Direction Probability Factor =	$K_d := \begin{cases} \text{if Structure_Type} = \text{Pole} \\ 0.95 \\ \text{if Structure_Type} = \text{Lattice} \\ 0.85 \end{cases} = 0.95$	(Per Table 2-2 of TIA-222-G)
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Importance Factors =	$I_{Wind} := \begin{cases} \text{if SC} = 1 \\ 0.87 \\ \text{if SC} = 2 \\ 1.00 \\ \text{if SC} = 3 \\ 1.15 \end{cases} = 1$	(Per Table 2-3 of TIA-222-G)
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	$I_{Wind_w_Ice} := \begin{cases} \text{if SC} = 1 \\ 0 \\ \text{if SC} = 2 \\ 1.00 \\ \text{if SC} = 3 \\ 1.00 \end{cases} = 1$	
	$I_{Ice} := \begin{cases} \text{if SC} = 1 \\ 0 \\ \text{if SC} = 2 \\ 1.00 \\ \text{if SC} = 3 \\ 1.25 \end{cases} = 1$	

$$K_{iz} := \left(\frac{z}{33} \right)^{0.1} = 1.143$$

Velocity Pressure Coefficient Antennas =	$t_{iz} := 2.0 \cdot t_i \cdot I_{Ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 2$
	$K_z := 2.01 \cdot \left(\left(\frac{z}{zg} \right) \right)^{\alpha} = 1.329$

Velocity Pressure w/o Ice Antennas = $q_z := 0.00256 \cdot K_d \cdot K_z \cdot V^2 \cdot I_{Wind} = 28$ psf

Velocity Pressure with Ice Antennas = $q_{z_{Ice}} := 0.00256 \cdot K_d \cdot K_z \cdot V_i^2 \cdot I_{Wind} = 8$ psf

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

Antenna Model =	Ericsson AIR6449 B41	
Antenna Shape =	Flat	(User Input)
Antenna Height =	$L_{ant} := 33.1$	in (User Input)
Antenna Width =	$W_{ant} := 20.5$	in (User Input)
Antenna Thickness =	$T_{ant} := 8.3$	in (User Input)
Antenna Weight =	$WT_{ant} := 103$	lbs (User Input)
Number of Antennas =	$N_{ant} := 1$	(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 1.6$	

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

Wind Load (without ice)

Surface Area for One Antenna = $SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.7$ sf

Total Antenna Wind Force Front = $F_{ant} := qz \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 174$ lbs

Surface Area for One Antenna = $SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 1.9$ sf

Total Antenna Wind Force Side = $F_{ant} := qz \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 70$ lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice = $SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 6.1$ sf

Total Antenna Wind Force w/ Ice Front = $F_{ant} := qz_{ice} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 65$ lbs

Surface Area for One Antenna w/ Ice = $SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 3$ sf

Total Antenna Wind Force w/ Ice Side = $F_{ant} := qz_{ice} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 32$ lbs

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 103$ lbs

Gravity Loads (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 5632$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 4622$

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 150$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 150$ lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	RFS - APXVAARR24_43-U-NA20
Antenna Shape =	Flat (User Input)
Antenna Height =	$L_{ant} := 95.9$ in (User Input)
Antenna Width =	$W_{ant} := 24$ in (User Input)
Antenna Thickness =	$T_{ant} := 8.7$ in (User Input)
Antenna Weight =	$WT_{ant} := 153.3$ 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 Front = $F_{ant} := qz \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 622$ lbs

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

Total Antenna Wind Force Side = $F_{ant} := qz \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 226$ lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice = $SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 18.9$ sf

Total Antenna Wind Force w/ Ice Front = $Fi_{ant} := qz_{ice} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 213$ lbs

Surface Area for One Antenna w/ Ice = $SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 8.4$ sf

Total Antenna Wind Force w/ Ice Side = $Fi_{ant} := qz_{ice} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 94$ lbs

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 153$ lbs

Gravity Loads (ice only)

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

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 1 \cdot 10^4$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 422$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 422$ lbs

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

Antenna Model =	RFS - APX16DWV-16DWVS-E-A20
Antenna Shape =	Flat (User Input)
Antenna Height =	$L_{ant} := 55.9$ in (User Input)
Antenna Width =	$W_{ant} := 13$ in (User Input)
Antenna Thickness =	$T_{ant} := 3.15$ in (User Input)
Antenna Weight =	$WT_{ant} := 42$ lbs (User Input)
Number of Antennas =	$N_{ant} := 1$ (User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.3$

Antenna Force Coefficient = $Ca_{ant} = 1.28$

Wind Load (without ice)

Surface Area for One Antenna = $SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 5$ sf

Total Antenna Wind Force Front = $F_{ant} := qz \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 199$ lbs

Surface Area for One Antenna = $SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 1.2$ sf

Total Antenna Wind Force Side = $F_{ant} := qz \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 48$ lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice = $SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 6.8$ sf

Total Antenna Wind Force w/ Ice Front = $Fi_{ant} := qz_{ice} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 77$ lbs

Surface Area for One Antenna w/ Ice = $SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 2.7$ sf

Total Antenna Wind Force w/ Ice Side = $Fi_{ant} := qz_{ice} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 31$ lbs

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 42$ lbs

Gravity Loads (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2289$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 4125$

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 134$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 134$ lbs

Development of Wind & Ice Load on RRUS's**RRUS Data:**

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

Wind Load (without ice)

$$\text{Surface Area for One RRUS} = SA_{RRUSF} := \frac{L_{RRUS} \cdot W_{RRUS}}{144} = 1.6 \quad \text{sf}$$

$$\text{Total RRUS Wind Force} = F_{RRUS} := qz \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUSF} = 61 \quad \text{lbs}$$

$$\text{Surface Area for One RRUS} = SA_{RRUS} := \frac{L_{RRUS} \cdot T_{RRUS}}{144} = 1.2 \quad \text{sf}$$

$$\text{Total RRUS Wind Force} = F_{RRUS} := qz \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUS} = 44 \quad \text{lbs}$$

Wind Load (with ice)

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

$$\text{Total RRUS Wind Force w/ Ice} = F_{IRRUS} := qz_{ice} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUSF} = 26 \quad \text{lbs}$$

$$\text{Surface Area for One RRUS w/ Ice} = SA_{ICERRUS} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz})}{144} = 1.9 \quad \text{sf}$$

$$\text{Total RRUS Wind Force w/ Ice} = F_{IRRUS} := qz_{ice} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUS} = 20 \quad \text{lbs}$$

Gravity Load (without ice)

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

Gravity Loads (ice only)

$$\text{Volume of Each RRUS} = V_{RRUS} := L_{RRUS} \cdot W_{RRUS} \cdot T_{RRUS} = 2245 \quad \text{cu in}$$

$$\text{Volume of Ice on Each RRUS} = V_{ice} := (L_{RRUS} + 2 \cdot t_{iz}) \cdot (W_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz}) - V_{RRUS} = 2342 \quad \text{cu in}$$

$$\text{Weight of Ice on Each RRUS} = W_{ICERRUS} := \frac{V_{ice}}{1728} \cdot Id = 76 \quad \text{lbs}$$

$$\text{Weight of Ice on All RRUSs} = W_{ICERRUS} \cdot N_{RRUS} = 76 \quad \text{lbs}$$

Development of Wind & Ice Load on RRUS's

RRUS Data:

RRUS Model =	Ericsson 4415	
RRUS Shape =	Flat	(User Input)
RRUS Height =	$L_{RRUS} := 14.9$	in (User Input)
RRUS Width =	$W_{RRUS} := 13.2$	in (User Input)
RRUS Thickness =	$T_{RRUS} := 5.4$	in (User Input)
RRUS Weight =	$WT_{RRUS} := 46.3$	lbs (User Input)
Number of RRUS's =	$N_{RRUS} := 1$	
RRUS Aspect Ratio =	$Ar_{RRUS} := \frac{L_{RRUS}}{W_{RRUS}} = 1.1$	
RRUS Force Coefficient =	$Ca_{RRUS} = 1.2$	

Wind Load (without ice)

Surface Area for One RRUS = $SA_{RRUSF} := \frac{L_{RRUS} \cdot W_{RRUS}}{144} = 1.4$ sf

Total RRUS Wind Force = $F_{RRUS} := qz \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUSF} = 50$ lbs

Surface Area for One RRUS = $SA_{RRUS} := \frac{L_{RRUS} \cdot T_{RRUS}}{144} = 0.6$ sf

Total RRUS Wind Force = $F_{RRUS} := qz \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUS} = 21$ lbs

Wind Load (with ice)

Surface Area for One RRUS w/ Ice = $SA_{ICERRUSF} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (W_{RRUS} + 2 \cdot t_{iz})}{144} = 2.1$ sf

Total RRUS Wind Force w/ Ice = $F_{IRRUS} := qz_{ice} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUSF} = 23$ lbs

Surface Area for One RRUS w/ Ice = $SA_{ICERRUS} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz})}{144} = 1.1$ sf

Total RRUS Wind Force w/ Ice = $F_{IRRUS} := qz_{ice} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUS} = 12$ lbs

Gravity Load (without ice)

Weight of All RRUSs = $WT_{RRUS} \cdot N_{RRUS} = 46$ lbs

Gravity Loads (ice only)

Volume of Each RRUS = $V_{RRUS} := L_{RRUS} \cdot W_{RRUS} \cdot T_{RRUS} = 1062$ cu in

Volume of Ice on Each RRUS = $V_{ice} := (L_{RRUS} + 2 \cdot t_{iz}) \cdot (W_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz}) - V_{RRUS} = 1630$ cu in

Weight of Ice on Each RRUS = $W_{ICERRUS} := \frac{V_{ice}}{1728} \cdot Id = 53$ lbs

Weight of Ice on All RRUSs = $W_{ICERRUS} \cdot N_{RRUS} = 53$ lbs

Development of Wind & Ice Load on RRUS's

RRUS Data:

RRUS Model =	Ericsson 4424 B25	
RRUS Shape =	Flat	(User Input)
RRUS Height =	$L_{RRUS} := 16.5$	in (User Input)
RRUS Width =	$W_{RRUS} := 13.5$	in (User Input)
RRUS Thickness =	$T_{RRUS} := 9.6$	in (User Input)
RRUS Weight =	$WT_{RRUS} := 88$	lbs (User Input)
Number of RRUS's =	$N_{RRUS} := 1$	
RRUS Aspect Ratio =	$Ar_{RRUS} := \frac{L_{RRUS}}{W_{RRUS}} = 1.2$	
RRUS Force Coefficient =	$Ca_{RRUS} = 1.2$	

Wind Load (without ice)

Surface Area for One RRUS =	$SA_{RRUSF} := \frac{L_{RRUS} \cdot W_{RRUS}}{144} = 1.5$	sf
Total RRUS Wind Force =	$F_{RRUS} := qz \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUSF} = 57$	lbs

Surface Area for One RRUS =	$SA_{RRUS} := \frac{L_{RRUS} \cdot T_{RRUS}}{144} = 1.1$	sf
Total RRUS Wind Force =	$F_{RRUS} := qz \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUS} = 41$	lbs

Wind Load (with ice)

Surface Area for One RRUS w/ Ice =	$SA_{ICERRUSF} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (W_{RRUS} + 2 \cdot t_{iz})}{144} = 2.3$	sf
Total RRUS Wind Force w/ Ice =	$F_{IRRUS} := qz_{ice} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUSF} = 25$	lbs

Surface Area for One RRUS w/ Ice =	$SA_{ICERRUS} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz})}{144} = 1.8$	sf
Total RRUS Wind Force w/ Ice =	$F_{IRRUS} := qz_{ice} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUS} = 19$	lbs

Gravity Load (without ice)

Weight of All RRUSs =	$WT_{RRUS} \cdot N_{RRUS} = 88$	lbs
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Gravity Loads (ice only)

Volume of Each RRUS =	$V_{RRUS} := L_{RRUS} \cdot W_{RRUS} \cdot T_{RRUS} = 2138$	cu in
Volume of Ice on Each RRUS =	$V_{ice} := (L_{RRUS} + 2 \cdot t_{iz}) \cdot (W_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz}) - V_{RRUS} = 2258$	cu in
Weight of Ice on Each RRUS =	$W_{ICERRUS} := \frac{V_{ice}}{1728} \cdot Id = 73$	lbs
Weight of Ice on All RRUSs =	$W_{ICERRUS} \cdot N_{RRUS} = 73$	lbs

Development of Wind & Ice Load on RRUS's

RRUS Data:

RRUS Model =	Ericsson RRUS-11	
RRUS Shape =	Flat	(User Input)
RRUS Height =	$L_{RRUS} := 19.7$	in (User Input)
RRUS Width =	$W_{RRUS} := 17$	in (User Input)
RRUS Thickness =	$T_{RRUS} := 7.2$	in (User Input)
RRUS Weight =	$WT_{RRUS} := 50.7$	lbs (User Input)
Number of RRUS's =	$N_{RRUS} := 1$	
RRUS Aspect Ratio =	$Ar_{RRUS} := \frac{L_{RRUS}}{W_{RRUS}} = 1.2$	
RRUS Force Coefficient =	$Ca_{RRUS} = 1.2$	

Wind Load (without ice)

Surface Area for One RRUS = $SA_{RRUSF} := \frac{L_{RRUS} \cdot W_{RRUS}}{144} = 2.3$ sf

Total RRUS Wind Force = $F_{RRUS} := qz \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUSF} = 86$ lbs

Surface Area for One RRUS = $SA_{RRUS} := \frac{L_{RRUS} \cdot T_{RRUS}}{144} = 1$ sf

Total RRUS Wind Force = $F_{RRUS} := qz \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUS} = 36$ lbs

Wind Load (with ice)

Surface Area for One RRUS w/ Ice = $SA_{ICERRUSF} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (W_{RRUS} + 2 \cdot t_{iz})}{144} = 3.3$ sf

Total RRUS Wind Force w/ Ice = $F_{IRRUS} := qz_{ice} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUSF} = 35$ lbs

Surface Area for One RRUS w/ Ice = $SA_{ICERRUS} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz})}{144} = 1.7$ sf

Total RRUS Wind Force w/ Ice = $F_{IRRUS} := qz_{ice} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUS} = 18$ lbs

Gravity Load (without ice)

Weight of All RRUSs = $WT_{RRUS} \cdot N_{RRUS} = 51$ lbs

Gravity Loads (ice only)

Volume of Each RRUS = $V_{RRUS} := L_{RRUS} \cdot W_{RRUS} \cdot T_{RRUS} = 2411$ cu in

Volume of Ice on Each RRUS = $V_{ice} := (L_{RRUS} + 2 \cdot t_{iz}) \cdot (W_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz}) - V_{RRUS} = 2612$ cu in

Weight of Ice on Each RRUS = $W_{ICERRUS} := \frac{V_{ice}}{1728} \cdot Id = 85$ lbs

Weight of Ice on All RRUSs = $W_{ICERRUS} \cdot N_{RRUS} = 85$ lbs

Development of Wind & Ice Load on TMA's

TMA Data:

TMA Model =	Ericsson KRY112 TMA	
TMA Shape =	Flat	in (User Input)
TMA Height =	$L_{TMA} := 7.7$	in (User Input)
TMA Width =	$W_{TMA} := 7.5$	in (User Input)
TMA Thickness =	$T_{TMA} := 3.4$	lbs (User Input)
TMA Weight =	$WT_{TMA} := 11$	(User Input)
Number of TMA's =	$N_{TMA} := 1$	(User Input)
TMA Aspect Ratio =	$Ar_{TMA} := \frac{L_{TMA}}{W_{TMA}} = 1$	
TMA Force Coefficient =	$Ca_{TMA} = 1.2$	

Wind Load (without ice)

Surface Area for One TMA =	$SA_{TMAF} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.4$	sf
Total TMA Wind Force =	$F_{TMA} := qz \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot SA_{TMAF} = 15$	lbs
Surface Area for One TMA =	$SA_{TMAIS} := \frac{L_{TMA} \cdot T_{TMA}}{144} = 0.2$	sf
Total TMA Wind Force =	$F_{TMA} := qz \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot SA_{TMAIS} = 7$	lbs

Wind Load (with ice)

Surface Area for One TMA w/ Ice =	$SA_{ICETMAF} := \frac{(L_{TMA} + 2 \cdot t_{iz}) \cdot (W_{TMA} + 2 \cdot t_{iz})}{144} = 0.8$	sf
Total TMA Wind Force w/ Ice =	$Fi_{TMA} := qz_{ice} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot SA_{ICETMAF} = 9$	lbs
Surface Area for One TMA w/ Ice =	$SA_{ICETMAS} := \frac{(L_{TMA} + 2 \cdot t_{iz}) \cdot (T_{TMA} + 2 \cdot t_{iz})}{144} = 0.5$	sf
Total TMA Wind Force w/ Ice =	$Fi_{TMA} := qz_{ice} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot SA_{ICETMAS} = 6$	lbs

Gravity Load (without ice)

Weight of All TMAs =	$WT_{TMA} \cdot N_{TMA} = 11$	lbs
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Gravity Loads (ice only)

Volume of Each TMA =	$V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 196$	cu in
Volume of Ice on Each TMA =	$V_{ice} := (L_{TMA} + 2 \cdot t_{iz}) \cdot (W_{TMA} + 2 \cdot t_{iz}) \cdot (T_{TMA} + 2 \cdot t_{iz}) - V_{TMA} = 635$	cu in
Weight of Ice on Each TMA =	$W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 21$	lbs
Weight of Ice on All TMAs =	$W_{ICETMA} \cdot N_{TMA} = 21$	lbs

Development of Wind & Ice Load on Dipl's**Dipl Data:**

Dipl Model =	Commscope SDX1926Q-43 Diplexer
Dipl Shape =	Flat (User Input)
Dipl Height =	$L_{Dipl} := 8$ in (User Input)
Dipl Width =	$W_{Dipl} := 6.45$ in (User Input)
Dipl Thickness =	$T_{Dipl} := 6.2$ in (User Input)
Dipl Weight =	$WT_{Dipl} := 18.3$ lbs (User Input)
Number of Dipl's =	$N_{Dipl} := 1$ (User Input)
Dipl Aspect Ratio =	$Ar_{Dipl} := \frac{L_{Dipl}}{W_{Dipl}} = 1.2$
Dipl Force Coefficient =	$Ca_{Dipl} = 1.2$

Wind Load (without ice)

$$\text{Surface Area for One Dipl} = SA_{DiplF} := \frac{L_{Dipl} \cdot W_{Dipl}}{144} = 0.4 \quad \text{sf}$$

$$\text{Total Dipl Wind Force} = F_{Dipl} := qz \cdot G_H \cdot Ca_{Dipl} \cdot K_a \cdot SA_{DiplF} = 13 \quad \text{lbs}$$

$$\text{Surface Area for One Dipl} = SA_{DiplS} := \frac{L_{Dipl} \cdot T_{Dipl}}{144} = 0.3 \quad \text{sf}$$

$$\text{Total Dipl Wind Force} = F_{Dipl} := qz \cdot G_H \cdot Ca_{Dipl} \cdot K_a \cdot SA_{DiplS} = 13 \quad \text{lbs}$$

Wind Load (with ice)

$$\text{Surface Area for One Dipl w/ Ice} = SA_{ICEDiplF} := \frac{(L_{Dipl} + 2 \cdot t_{iz}) \cdot (W_{Dipl} + 2 \cdot t_{iz})}{144} = 0.8 \quad \text{sf}$$

$$\text{Total Dipl Wind Force w/ Ice} = F_{Dipl} := qz_{ice} \cdot G_H \cdot Ca_{Dipl} \cdot K_a \cdot SA_{ICEDiplF} = 8 \quad \text{lbs}$$

$$\text{Surface Area for One Dipl w/ Ice} = SA_{ICEDiplS} := \frac{(L_{Dipl} + 2 \cdot t_{iz}) \cdot (T_{Dipl} + 2 \cdot t_{iz})}{144} = 0.8 \quad \text{sf}$$

$$\text{Total Dipl Wind Force w/ Ice} = F_{Dipl} := qz_{ice} \cdot G_H \cdot Ca_{Dipl} \cdot K_a \cdot SA_{ICEDiplS} = 8 \quad \text{lbs}$$

Gravity Load (without ice)

$$\text{Weight of All Dipls} = WT_{Dipl} \cdot N_{Dipl} = 18 \quad \text{lbs}$$

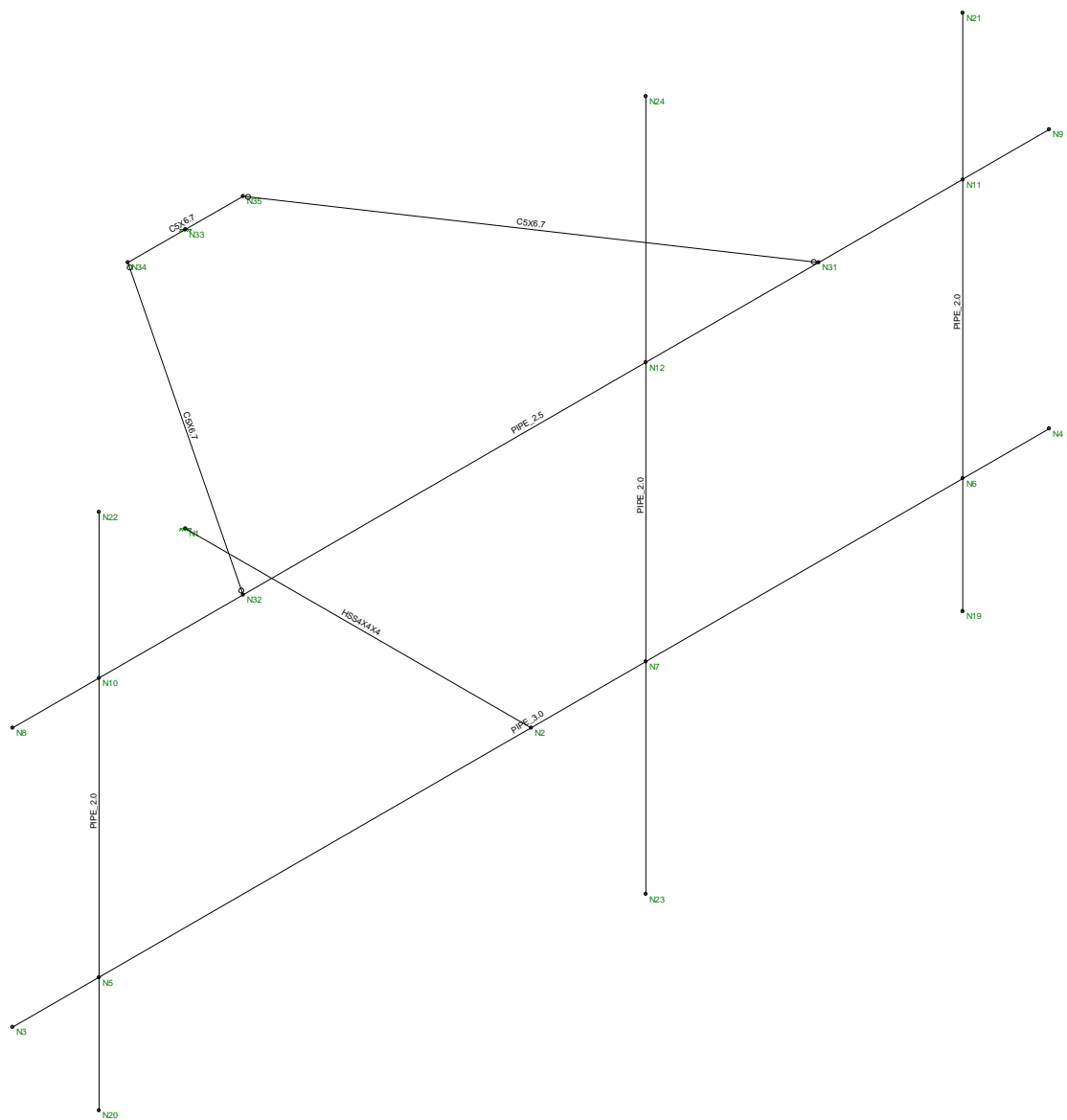
Gravity Loads (ice only)

$$\text{Volume of Each Dipl} = V_{Dipl} := L_{Dipl} \cdot W_{Dipl} \cdot T_{Dipl} = 320 \quad \text{cu in}$$

$$\text{Volume of Ice on Each Dipl} = V_{ice} := (L_{Dipl} + 2 \cdot t_{iz}) \cdot (W_{Dipl} + 2 \cdot t_{iz}) \cdot (T_{Dipl} + 2 \cdot t_{iz}) - V_{Dipl} = 768$$

$$\text{Weight of Ice on Each Dipl} = W_{ICEDipl} := \frac{V_{ice}}{1728} \cdot Id = 25 \quad \text{lbs} \quad \text{cu in}$$

$$\text{Weight of Ice on All Dipls} = W_{ICEDipl} \cdot N_{Dipl} = 25 \quad \text{lbs}$$



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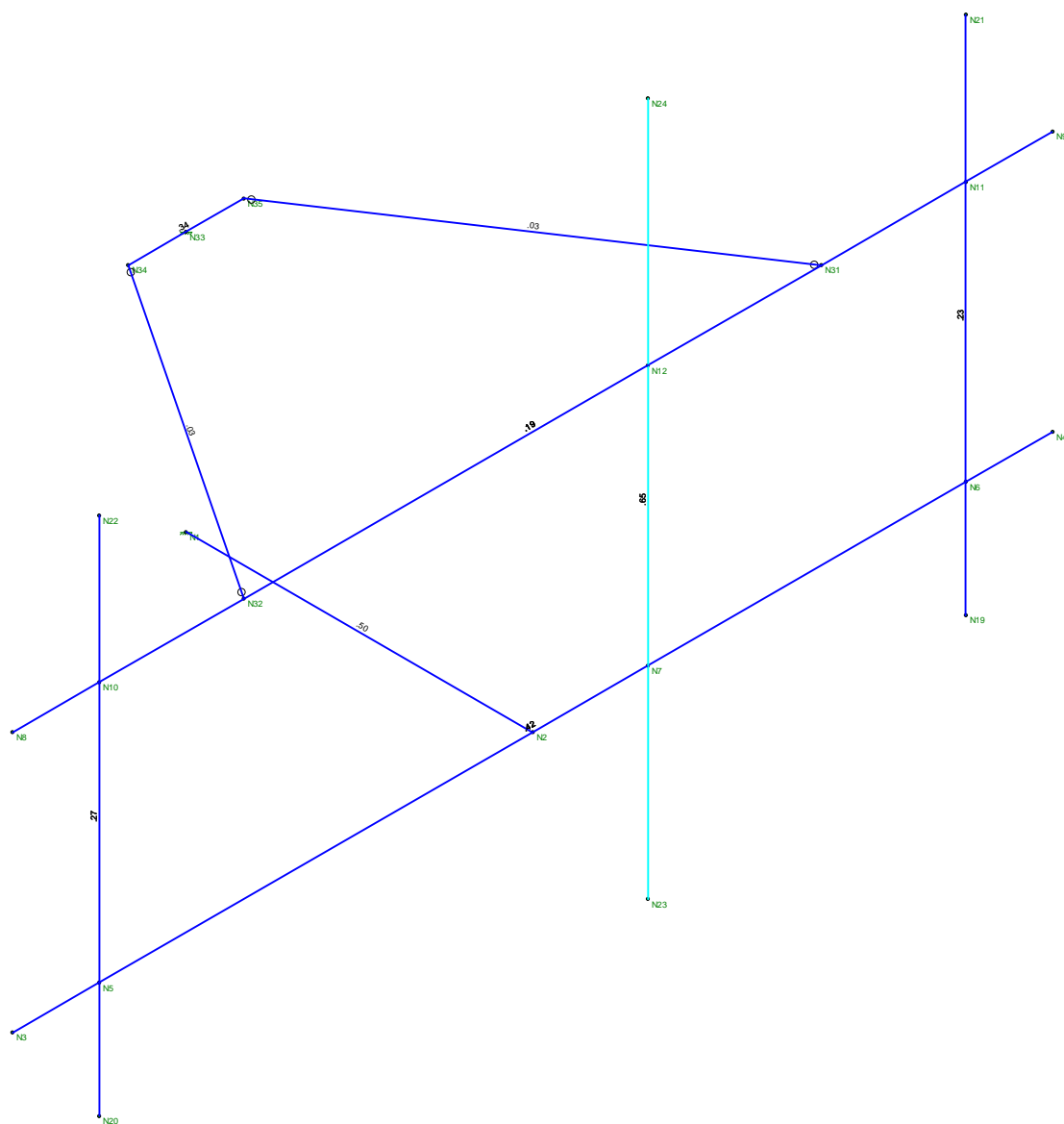
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AE			Ɔ	€Í		Í	€€Í		Í	€JÍ		Í	G€Í^€H		Í	Í€G^€H		F	€€FÍ^€H		Í	€€FÍ^€H		Í	€€FÍ^€H		Í
AF			Ɔ	€H		Í	€€Í		Í	€F		Í	F€JJ^€G		Í	I€ÍH^€H		F	G€€^€G		F	G€€^€G		Í	G€€^€G		F
AG			{ ȁ	€€ÍH		F	€€ÍÍ		H	€€ÍG		F	€€€H^€H		H	€€€Í^€H		Í	€€€F^€H		Í	€€€F^€H		Í	€€€F^€H		Í
AH			Ɔ	€JÍ		Í	€ÍG		Í	€JÍ		Í	Í€H^€H		Í	Í€J^€H		H	Í€Í^€H		F	Í€Í^€H		Í	Í€Í^€H		F
AI			{ ȁ	€€€		F	€€GH		H	€€GJF		F	€€ÍÍ^€H		H	€€JÍ^€H		Í	€€JÍ^€H		Í	€€JÍ^€H		Í	€€JÍ^€H		Í
AJ			Ɔ	€ÍF		F	€€ÍJ		G	€JÍ		Í	Í€H^€H		Í	G€ÍÍ^€H		F	G€HF^€H		G	G€HF^€H		Í	G€HF^€H		G
AK			{ ȁ	€€ÍJ		Í	€€G		I	€€G		F	€€€H^€H		F	€€€H^€H		Í	€€€Í^€H		Í	€€€Í^€H		Í	€€€Í^€H		Í

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I G	ɾ	ɨ	ɨ	ɛ	ɨ	ɨ	ɛ	ɨ	ɛ	ɨ	ɨ	ɛ	ɨ	ɛ	ɨ	ɨ	ɛ	ɨ	ɛ	ɨ	ɨ	ɛ	ɨ	ɛ	ɨ	ɨ	ɛ	ɨ
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9bjYcdY5=G7`%hfl*!%\$L`@F:8`GhY7cXY7\YWg

[illegible]



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek	CTFF702F - Mount Member Unity Check	
FJP		July 10, 2020 at 10:20 AM
20074.44		CTFF702F_AMA.r3d

Section 1 - Site Information

Site ID: CTFF702F

Status: Draft

Version: 4

Project Type: Anchor

Approved: Not Approved

Approved By: Not Approved

Last Modified: 6/30/2020 4:58:33 PM

Last Modified By: Dominic.Kallas2@T-Mobile.com

Site Name: CTFF702F

Site Class: Monopole

Site Type: Structure Non Building

Plan Year: 2020

Market: CONNECTICUT CT

Vendor: Ericsson

Landlord: Homeland Towers Inc.

Latitude: 41.33030800

Longitude: -73.51681900

Address: 320 Old Stagecoach Rd

City, State: Ridgefield, CT

Region: NORTHEAST

RAN Template: 67D5A998C Hybrid

AL Template: 67D5998C_1xAIR+1QP+1OP (U21 Market)

Sector Count: 3

Antenna Count: 9

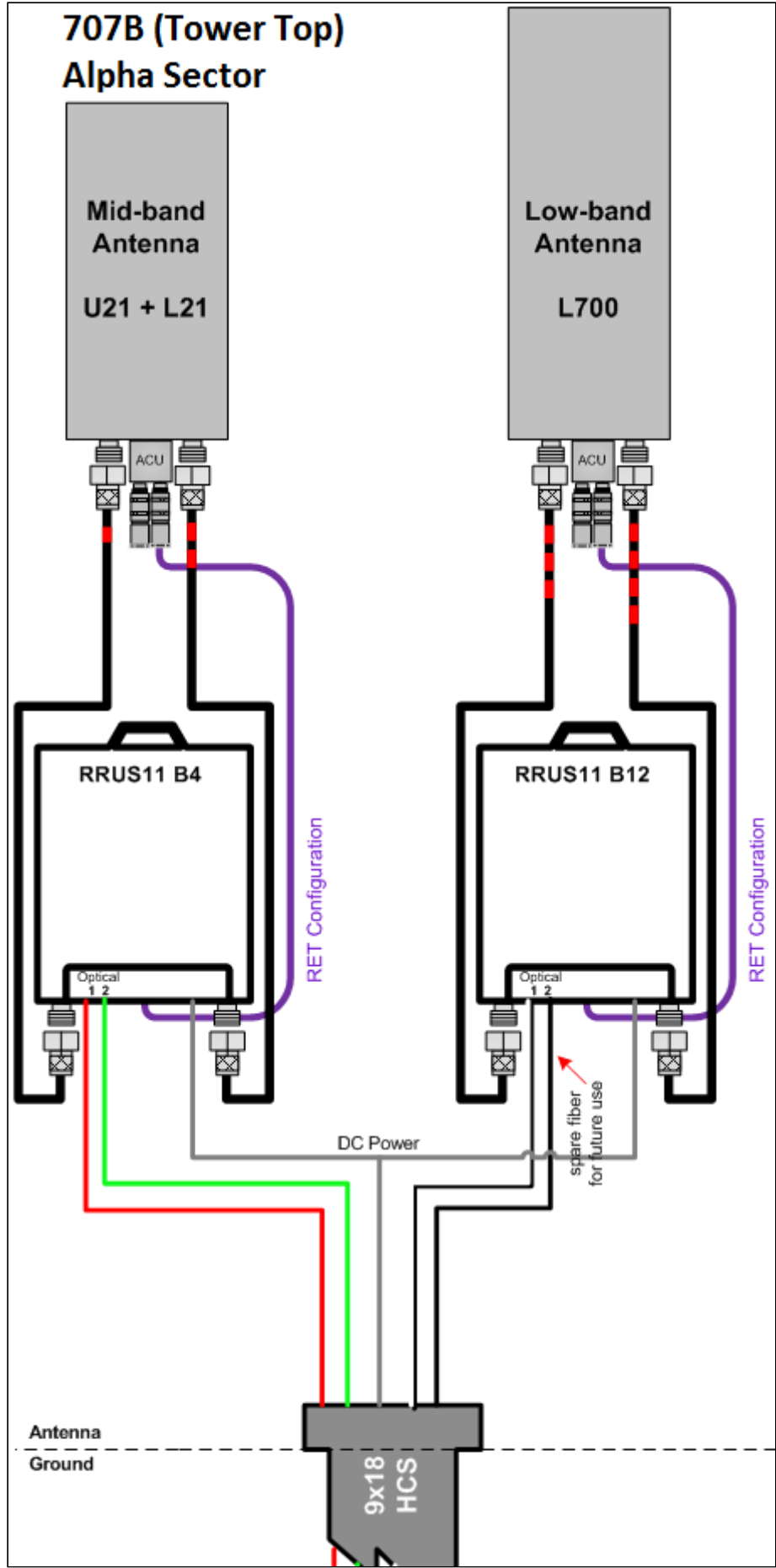
Coax Line Count: 0

TMA Count: 0

RRU Count: 12

Section 2 - Existing Template Images

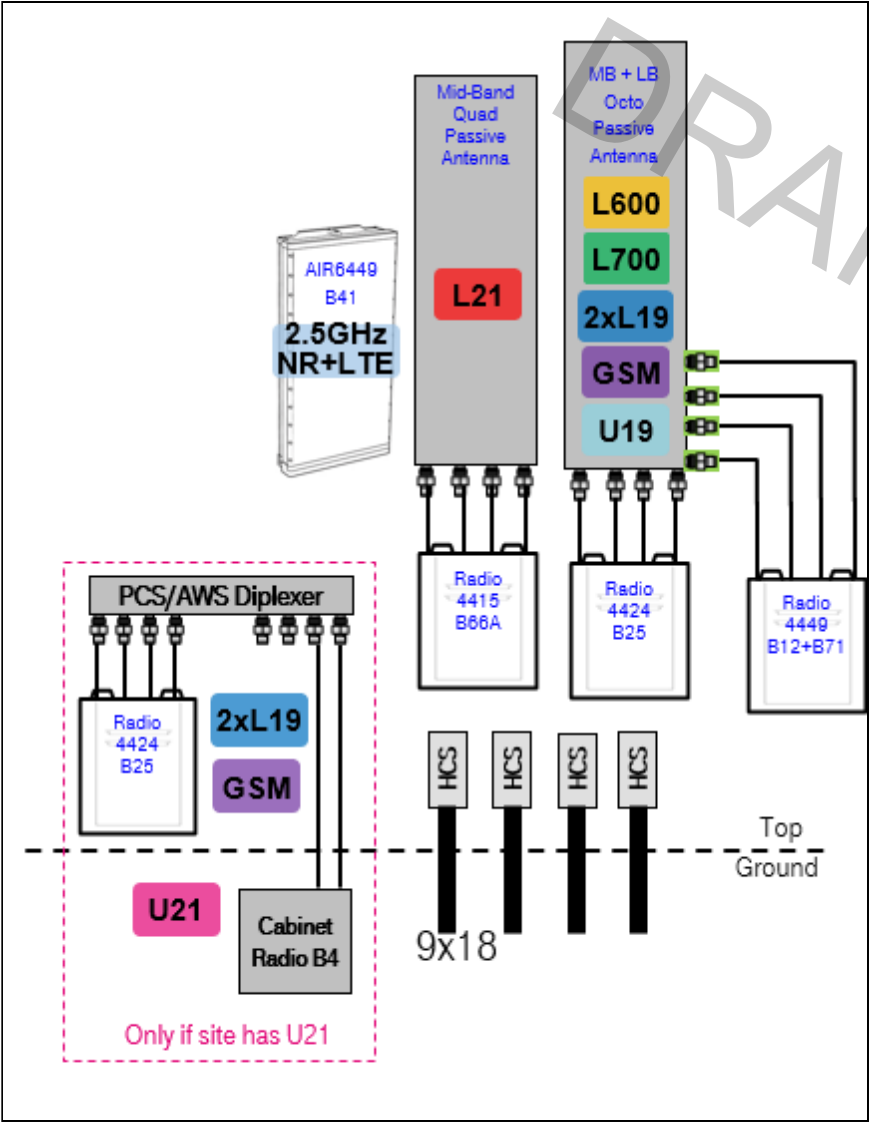
AL_707B_TowerTop.png



Notes:

Section 3 - Proposed Template Images

67D5998C_1xAIR+1QP+1OP.PNG



Notes:

Section 4 - Siteplan Images

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

DRAFT

Section 5 - RAN Equipment

Existing RAN Equipment

Template: 707B Tower 6102 MUAC

Enclosure	1		
Enclosure Type	RBS 6102		
Baseband	<div>DUW30 U2100</div> <div>DUS41 L2100 L700</div>		
Hybrid Cable System	Ericsson 6x12 HCS *Select Length & AWG* (x 2)		

Proposed RAN Equipment

Template: 67D5A998C Hybrid

Enclosure	1	2	3
Enclosure Type	RBS 6102	Enclosure 6160	B160
Baseband	<div>DUW30 U2100</div> <div>BB 6630 N600</div> <div>BB 6630 L1900 L2100 L700 L600</div>	<div>BB 6630 L2500</div> <div>BB 6648 N2500</div>	
Hybrid Cable System	Ericsson 6x12 HCS *Select Length & AWG* (x 2)	Ericsson 6x12 HCS *Select AWG & Length* (x 2)	

RAN Scope of Work:

Add (1) Enclosure 6160.

Add (1) Battery Cabinet B160.

Add (1) iXRe Router to new Enclosure 6160.

Add (1) BB6630 for L2500 to new Enclosure 6160.

Add (1) BB6648 for N2500 to new Enclosure 6160.

Existing: (0) Coaxial Lines; 2-6X12 HCS

Add (2) 6X12 HCS ([1] for new Radio 4449 and Radio 4424; [1] for Anchor A&L Equipment.) Length of new HCS will match that of existing HCS.

Section 6 - A&L Equipment

Existing Template: 707B_Tower_2DP

Proposed Template: 67D5998C_1xAIR+1QP+1OP (U21 Market)

Sector 1 (Existing) view from behind

Coverage Type	A - Outdoor Macro	
Antenna	1	2
Antenna Model	RFS - APXV18-206516S-C-A20 (Dual)	Andrew - LNX-6515DS-A1M (Dual)
Azimuth	0	0
M. Tilt	0	0
Height	126	126
Ports	P1	P2
Active Tech.	U2100 L2100	L700
Dark Tech.		
Restricted Tech.		
Decomm. Tech.		
E. Tilt	2	2
Cables	Coax Jumper (x2)	Coax Jumper (x2)
TMA's		
Diplexers / Combiners		
Radio	RRUS11 B4 (At Antenna)	RRUS11 B12 (At Antenna)
Sector Equipment		

Unconnected Equipment:

Scope of Work:

RAN Template: 67D5A998C Hybrid	A&L Template: 67D5998C_1xAIR+1QP+1OP (U21 Market)
------------------------------------------	-----------------------------------------------------------------

CTFF702F_Anchor_4_draft

Print Name: Standard (RFDS_for_Scoping)
PORs: Anchor_Phase 3
L1900 Capacity_Regional Capacity
L600_5G POPs

Sector 1 (Proposed) view from behind

Coverage Type	A - Outdoor Macro							
Antenna	1		2			3		
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)		RFS - APXVAARR24_43-U-NA20 (Octo)			Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)		
Azimuth	0		0			0		
M. Tilt	0		0			0		
Height	126		126			126		
Ports	P1	P2	P3	P4	P5	P6	P7	P8
Active Tech.	L2100	L2100	L700 L600 N600	L700 L600 N600	L1900	L1900 U2100	L2500 N2500	L2500 N2500
Dark Tech.								
Restricted Tech.								
Decomm. Tech.								
E. Tilt	2	2	2	2	2	2	2	2
Cables	Coax Jumper (x2)	Coax Jumper (x2)	Coax Jumper (x2)	Coax Jumper (x2)	Coax Jumper (x2)	Coax Jumper (x2)		
TMA's								
Diplexers / Combiners					Comms cope - SDX192 6Q-43 (E14F0 5P86) (AtAntenna)	SHARED Comms cope - SDX192 6Q-43 (E14F0 5P86) (AtAntenna)		
Radio	Radio 4415 B66A (At Antenna)	SHARED Radio 4415 B66A (At Antenna)	Radio 4449 B71+B8 5 (At Antenna)	SHARED Radio 4449 B71+B8 5 (At Antenna)	Radio 4424 B25 (At Antenna)	SHARED Radio 4424 B25 (At Antenna) RRUS11 B4 (At Antenna)		
Sector Equipment								

Unconnected Equipment:

Scope of Work:

Add handrail kit.

Replace Mid-Band Dual in Position 1 with (1) Mid-Band Quad.

Add (1) Radio 4415 B66A for L2100 to Position 1 at antenna, and connect its ports to the new Quad antenna.
Add new mount between Existing Positions 1 and 2 for new Position 2.

*** Add L600 Scope of Work: Octo and Radio 4449 ***

Add (1) PCS/AWS 8:4 diplexer to new Position 2 at antenna, and connect its four output ports to the Mid-Band ports of the Octo antenna.

Add (1) Radio 4424 B25 for L1900 (both carriers) to new Position 2 near antenna, and connect its ports to the four PCS input ports of the diplexer.

Move RRUS11 B4 for U2100 from Position 1 to new Position 2 near antenna, and connect its ports to two AWS input ports of the diplexer.

Make sure to install metal caps on all empty ports of AWS/PCS diplexer for load balancing.

Install (1) AIR6449 B41 for L2500 and N2500 in new Position 3.

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: 67D5A998C Hybrid	A&L Template: 67D5998C_1xAIR+1QP+1OP (U21 Market)
------------------------------------------	-----------------------------------------------------------------

CTFF702F_Anchor_4_draft

Print Name: Standard (RFDS_for_Scoping)

PORs: Anchor_Phase 3

L1900 Capacity_Regional Capacity

L600_5G POPs

Sector 2 (Existing) view from behind		
Coverage Type	A - Outdoor Macro	
Antenna	1	2
Antenna Model	RFS - APXV18-206516S-C-A20 (Dual)	Andrew - LNX-6515DS-A1M (Dual)
Azimuth	120	120
M. Tilt	0	0
Height	126	126
Ports	P1	P2
Active Tech.	U2100 L2100	L700
Dark Tech.		
Restricted Tech.		
Decomm. Tech.		
E. Tilt	2	2
Cables	Coax Jumper (x2)	Coax Jumper (x2)
TMA's		
Diplexers / Combiners		
Radio	RRUS11 B4 (At Antenna)	RRUS11 B12 (At Antenna)
Sector Equipment		
Unconnected Equipment:		
Scope of Work:		
<div></div>		

RAN Template: 67D5A998C Hybrid	A&L Template: 67D5998C_1xAIR+1QP+1OP (U21 Market)
------------------------------------------	-----------------------------------------------------------------

CTFF702F_Anchor_4_draft

Print Name: Standard (RFDS_for_Scoping)
PORs: Anchor_Phase 3
L1900 Capacity_Regional Capacity
L600_5G POPs

Sector 2 (Proposed) view from behind

Coverage Type	A - Outdoor Macro							
Antenna	1		2			3		
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)		RFS - APXVAARR24_43-U-NA20 (Octo)			Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)		
Azimuth	120		120			120		
M. Tilt	0		0			0		
Height	126		126			126		
Ports	P1	P2	P3	P4	P5	P6	P7	P8
Active Tech.	L2100	L2100	L700 L600 N600	L700 L600 N600	L1900	L1900 U2100	L2500 N2500	L2500 N2500
Dark Tech.								
Restricted Tech.								
Decomm. Tech.								
E. Tilt	2	2	2	2	2	2	2	2
Cables	Coax Jumper (x2)	Coax Jumper (x2)	Coax Jumper (x2)	Coax Jumper (x2)	Coax Jumper (x2)	Coax Jumper (x2)		
TMA's								
Diplexers / Combiners					Comms cope - SDX192 6Q-43 (E14F0 5P86) (AtAntenna)	SHARED Comms cope - SDX192 6Q-43 (E14F0 5P86) (AtAntenna)		
Radio	Radio 4415 B66A (At Antenna)	SHARED Radio 4415 B66A (At Antenna)	Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)	Radio 4424 B25 (At Antenna)	SHARED Radio 4424 B25 (At Antenna) RRUS11 B4 (At Antenna)		
Sector Equipment								

Unconnected Equipment:

Scope of Work:

Add handrail kit.

Replace Mid-Band Dual in Position 1 with (1) Mid-Band Quad.

Add (1) Radio 4415 B66A for L2100 to Position 1 at antenna, and connect its ports to the new Quad antenna.
Add new mount between Existing Positions 1 and 2 for new Position 2.

*** Add L600 Scope of Work: Octo and Radio 4449 ***

Add (1) PCS/AWS 8:4 diplexer to new Position 2 at antenna, and connect its four output ports to the Mid-Band ports of the Octo antenna.

Add (1) Radio 4424 B25 for L1900 (both carriers) to new Position 2 near antenna, and connect its ports to the four PCS input ports of the diplexer.

Move RRUS11 B4 for U2100 from Position 1 to new Position 2 near antenna, and connect its ports to two AWS input ports of the diplexer.

Make sure to install metal caps on all empty ports of AWS/PCS diplexer for load balancing.

Install (1) AIR6449 B41 for L2500 and N2500 in new Position 3.

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: 67D5A998C Hybrid	A&L Template: 67D5998C_1xAIR+1QP+1OP (U21 Market)
------------------------------------------	-----------------------------------------------------------------

CTFF702F_Anchor_4_draft

Print Name: Standard (RFDS_for_Scoping)

PORs: Anchor_Phase 3

L1900 Capacity_Regional Capacity

L600_5G POPs

Sector 3 (Existing) view from behind		
Coverage Type	A - Outdoor Macro	
Antenna	1	2
Antenna Model	RFS - APXV18-206516S-C-A20 (Dual)	Andrew - LNX-6515DS-A1M (Dual)
Azimuth	240	240
M. Tilt	0	0
Height	126	126
Ports	P1	P2
Active Tech.	U2100 L2100	L700
Dark Tech.		
Restricted Tech.		
Decomm. Tech.		
E. Tilt	2	2
Cables	Coax Jumper (x2)	Coax Jumper (x2)
TMA's		
Diplexers / Combiners		
Radio	RRUS11 B4 (At Antenna)	RRUS11 B12 (At Antenna)
Sector Equipment		
Unconnected Equipment:		
Scope of Work:		
<div></div>		

RAN Template: 67D5A998C Hybrid	A&L Template: 67D5998C_1xAIR+1QP+1OP (U21 Market)
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CTFF702F_Anchor_4_draft

Print Name: Standard (RFDS_for_Scoping)
PORs: Anchor_Phase 3
L1900 Capacity_Regional Capacity
L600_5G POPs

Sector 3 (Proposed) view from behind

Coverage Type	A - Outdoor Macro							
Antenna	1		2			3		
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)		RFS - APXVAARR24_43-U-NA20 (Octo)			Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)		
Azimuth	240		240			240		
M. Tilt	0		0			0		
Height	126		126			126		
Ports	P1	P2	P3	P4	P5	P6	P7	P8
Active Tech.	L2100	L2100	L700 L600 N600	L700 L600 N600	L1900	L1900 U2100	L2500 N2500	L2500 N2500
Dark Tech.								
Restricted Tech.								
Decomm. Tech.								
E. Tilt	2	2	2	2	2	2	2	2
Cables	Coax Jumper (x2)	Coax Jumper (x2)	Coax Jumper (x2)	Coax Jumper (x2)	Coax Jumper (x2)	Coax Jumper (x2)		
TMA's								
Diplexers / Combiners					Comms cope - SDX192 6Q-43 (E14F0 5P86) (AtAntenna)	SHARED Comms cope - SDX192 6Q-43 (E14F0 5P86) (AtAntenna)		
Radio	Radio 4415 B66A (At Antenna)	SHARED Radio 4415 B66A (At Antenna)	Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)	Radio 4424 B25 (At Antenna)	SHARED Radio 4424 B25 (At Antenna) RRUS11 B4 (At Antenna)		
Sector Equipment								

Unconnected Equipment:

Scope of Work:

Add handrail kit.

Replace Mid-Band Dual in Position 1 with (1) Mid-Band Quad.

Add (1) Radio 4415 B66A for L2100 to Position 1 at antenna, and connect its ports to the new Quad antenna.
Add new mount between Existing Positions 1 and 2 for new Position 2.

*** Add L600 Scope of Work: Octo and Radio 4449 ***

Add (1) PCS/AWS 8:4 diplexer to new Position 2 at antenna, and connect its four output ports to the Mid-Band ports of the Octo antenna.

Add (1) Radio 4424 B25 for L1900 (both carriers) to new Position 2 near antenna, and connect its ports to the four PCS input ports of the diplexer.

Move RRUS11 B4 for U2100 from Position 1 to new Position 2 near antenna, and connect its ports to two AWS input ports of the diplexer.

Make sure to install metal caps on all empty ports of AWS/PCS diplexer for load balancing.

Install (1) AIR6449 B41 for L2500 and N2500 in new Position 3.

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: 67D5A998C Hybrid	A&L Template: 67D5998C_1xAIR+1QP+1OP (U21 Market)
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CTFF702F_Anchor_4_draft
Print Name: Standard (RFDS_for_Scoping)
PORs: Anchor_Phase 3
L1900 Capacity_Regional Capacity
L600_5G POPs

Section 7 - Power Systems Equipment
Existing Power Systems Equipment
----- This section is intentionally blank. -----
Proposed Power Systems Equipment



EBI Consulting

environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CTFF702F

320 Old Stagecoach Road
Ridgefield, Connecticut 06877

August 27, 2020

EBI Project Number: 6220004379

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	22.08%



August 27, 2020

T-Mobile

Attn: Jason Overbey, RF Manager

35 Griffin Road South

Bloomfield, Connecticut 06002

Emissions Analysis for Site: CTFF702F -

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **320 Old Stagecoach Road in Ridgefield, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately $400 \mu\text{W}/\text{cm}^2$ and $467 \mu\text{W}/\text{cm}^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 1.1 GHz frequency bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 320 Old Stagecoach Road in Ridgefield, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.
- 3) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 2 UMTS channels (AWS Band - 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.



- 6) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 7) 2 LTE channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 8) 2 NR channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 9) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 10) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 11) The antennas used in this modeling are the RFS APX16DWV-16DWV-S-E-A20 for the 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector A, the RFS APX16DWV-16DWV-S-E-A20 for the 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector B, the RFS APX16DWV-16DWV-S-E-A20 for the 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.



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- 12) The antenna mounting height centerline of the proposed antennas is 126 feet above ground level (AGL).
- 13) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 14) All calculations were done with respect to uncontrolled / general population threshold limits.



T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APX16DWV-16DWV-S-E-A20	Make / Model:	RFS APX16DWV-16DWV-S-E-A20	Make / Model:	RFS APX16DWV-16DWV-S-E-A20
Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	126 feet	Height (AGL):	126 feet	Height (AGL):	126 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A1 MPE %:	1.06%	Antenna B1 MPE %:	1.06%	Antenna C1 MPE %:	1.06%
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd
Height (AGL):	126 feet	Height (AGL):	126 feet	Height (AGL):	126 feet
Channel Count:	9	Channel Count:	9	Channel Count:	9
Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts
ERP (W):	11,055.53	ERP (W):	11,055.53	ERP (W):	11,055.53
Antenna A2 MPE %:	3.78%	Antenna B2 MPE %:	3.78%	Antenna C2 MPE %:	3.78%
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd
Height (AGL):	126 feet	Height (AGL):	126 feet	Height (AGL):	126 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts
ERP (W):	25,651.93	ERP (W):	25,651.93	ERP (W):	25,651.93
Antenna A3 MPE %:	5.81%	Antenna B3 MPE %:	5.81%	Antenna C3 MPE %:	5.81%

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	10.64%
Police	0.1%
Fire	0.6%
Microwave	8.77978894281569E-06%
Verizon	5.27%
AT&T	5.47%
Site Total MPE % :	22.08%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	10.64%
T-Mobile Sector B Total:	10.64%
T-Mobile Sector C Total:	10.64%
Site Total MPE % :	22.08%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile 2100 MHz LTE	2	2334.27	126.0	10.57	2100 MHz LTE	1000	1.06%
T-Mobile 600 MHz LTE	2	591.73	126.0	2.68	600 MHz LTE	400	0.67%
T-Mobile 600 MHz NR	1	1577.94	126.0	3.57	600 MHz NR	400	0.89%
T-Mobile 700 MHz LTE	2	648.82	126.0	2.94	700 MHz LTE	467	0.63%
T-Mobile 1900 MHz LTE	2	2203.69	126.0	9.98	1900 MHz LTE	1000	1.00%
T-Mobile 2100 MHz UMTS	2	1294.56	126.0	5.86	2100 MHz UMTS	1000	0.59%
T-Mobile 2500 MHz LTE	2	6412.98	126.0	29.04	2500 MHz LTE	1000	2.90%
T-Mobile 2500 MHz NR	2	6412.98	126.0	29.04	2500 MHz NR	1000	2.90%
						Total:	10.64%

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



Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	10.64%
Sector B:	10.64%
Sector C:	10.64%
T-Mobile Maximum MPE % (Sector A):	10.64%
Site Total:	22.08%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **22.08%** 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.