

Centerline Communications  
Ryan Clark  
750 West Center Street, Floor 3  
West Bridgewater, MA 02379  
203-300-7310  
[rclark@clinellc.com](mailto:rclark@clinellc.com)

January 29, 2021

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

Notice of Exempt Modification  
83 Windham Street Willimantic, CT 06226  
Latitude: 41.431379N  
Longitude: 72.13606W  
T-Mobile Site#: CT11506A\_Anchor

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 117-foot level of the existing 175-foot monopole tower at 83 Windham Street Willimantic, CT. The 175-foot tower and property is owned by the State of Connecticut and is located at Eastern Connecticut State University. T-Mobile now intends to replace six (6) of its existing antennas with three (3) new L1900/L2100 MHz antennas and three (3) new L2500 antennas. The new antennas would be installed at the 117-foot level of the tower. A new platform reinforcement kit, SitePro1 and a new 3" std horizontal pipe is to be installed as recommended in the attached Mount Analysis. The proposed modifications will make the site available for 5G at some point in the future.

**Planned Modifications:**

Remove

(4) 1-5/8" Coax

Remove and Replace:

(3) AIR21 B2A\_B4P Antennas (**Remove**) - (3) AIR6449 B41 L2500 MHz Antennas (**Replace**)

(3) AIR21 B2P\_B4A (**Remove**) - (3) AIR32 B66A\_B2A (Octo) L1900 Antennas (**Replace**)

Install New:

(3) Radio 4415 B25

(2) Fiber Hybrid Line

(3) Diplexers

Existing to Remain:

(3) Radio 4449 B71 + B85

(6) 1-5/8" Coax

(3) TMA

(2) Fiber Hybrid Line

(3) APXVAARR24 Antennas

Ground:

(1) S8000 Cabinet (**Remove**) – (1) 6160 Cabinet, (1) B160 (**Replace**)

This facility was approved by the CT Siting Council TS-T-MOBILE-163-030913 83 Windham Street Willimantic, CT with conditions. We used the information from the previous filing. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Town Manager James Rivers, Elected Official, as well as the Eastern Connecticut State University which is the property and the tower owner and the Office of the State Building Inspector.

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,

**Ryan Clark**

Mobile: 203-300-7310

Fax: 508-819-3017

Office: 750 West Center Street, Floor 3 West Bridgewater, MA 02379

Email: [rclark@clinellc.com](mailto:rclark@clinellc.com)

Attachments

cc: Town Manager James Rivers, Elected Official,  
Eastern Connecticut State University – property and tower owner  
Office of the State Building Inspector

# Exhibit A

Original Facility Approval

**STATE OF CONNECTICUT****CONNECTICUT SITING COUNCIL**

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: [siting.council@po.state.ct.us](mailto:siting.council@po.state.ct.us)Web Site: [www.state.ct.us/csc/index.htm](http://www.state.ct.us/csc/index.htm)

September 24, 2003

Stephen J. Humes  
LeBoeuf, Lamb, Greene & MacRae  
Goodwin Square  
225 Asylum Street  
Hartford, CT 06103

RE: **TS-T-MOBILE-163-030912** - Omnipoint Communications, Inc., request for an order to approve tower sharing of an existing telecommunications facility located at Eastern Road, Willimantic, Connecticut.

Dear Attorney Humes:

At a public meeting held September 23, 2003, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

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

This decision applies only to this request for tower sharing and is not applicable to any other request or construction.

The proposed shared use is to be implemented as specified in your letter dated September 12, 2003.

Thank you for your attention and cooperation.

Very truly yours,

A handwritten signature in black ink that reads 'Pamela B. Katz' followed by a stylized monogram.

Pamela B. Katz, P.E.  
Chairman

PBK/laf

c: Honorable Michael T. Paulhus, First Selectman, Town of Windham  
James E. Finger, Town Planner, Town of Windham  
Thomas J. Regan, Esq., Brown Rudnick Berlack Israels  
Michele G. Briggs, Southwestern Bell Mobile Systems  
Sandy M. Carter, Verizon Wireless



# STATE OF CONNECTICUT



DEPARTMENT OF PUBLIC SAFETY  
 DIVISION OF FIRE, EMERGENCY & BUILDING SERVICES  
 OFFICE OF THE STATE BUILDING INSPECTOR



## BUILDING PERMIT #09-03

The Agency named below is hereby granted permission to perform work as described herein:

**DATE:** December 30, 2003  
**PROJECT:** Omnipoint Communications (T-Mobile)  
 Telecommunications Antennas and Equipment  
**LOCATION:** Eastern Connecticut State University  
 Willimantic, CT  
**USE GROUP:** U  
**CONSTRUCTION TYPE:** 1B  
**PROJECT #:** CT-11-506A

In accordance with the Application for Building Permit dated December 30, 2003, and related plans dated August 13, 2003 as approved by the Office of the State Building Inspector.

**TYPE OF WORK:** (Permit will be valid only for the item(s) listed below)

Structural  
 Electrical

**AGENCY:** Eastern Connecticut State University

**AGENCY REPRESENTATIVE:** Nancy Tinker

**JOB DESCRIPTION:** Erect telecommunications antenna and associated equipment to existing 175 foot monopole tower.

**STIPULATIONS:** Any changes to the approved plans shall be submitted to the Office of State Building Inspector for review.

**NOTE:** In no way does this permit relieve the designer of the ultimate responsibility for compliance of the entire project with requirements of the 1999 State Building Code and applicable referenced standards. The contractor must give seven (7) days advance notification to the State Building Inspector of the intention to start work and schedule all required on-site inspections during construction as hereafter required.

Christopher R. Laux, AIA  
 State Building Inspector  
 CRL:MG:jlc

cc: Renee-Theroux Keech, ECSU  
 Darren Cooke, OSFM  
 Stephen Carey  
 Karina Fournier, Omnipoint Communication

Post-it® Fax Note	7671	Date	1-6-04	# of pages	1
To	KARINA FOURNIER	From	MEG GOULET		
Co./Dept.	OMNIPONT	Co.	OSBI		
Phone #	860 692 7145	Phone #	860 692 8310		
Fax #	860 692 7159	Fax #	860 692 8365		

Telephone (860)  
 1111 Country Club Road P.O. Box 2794  
 Middletown, CT 06457-9294  
<http://www.state.ct.us/dps/dfebs>  
 An Equal Opportunity Employer

# Exhibit B

Property Card

CURRENT OWNER		TOPO.	UTILITIES	STRT./ROAD	LOCATION	CURRENT ASSESSMENT			
CONNECTICUT STATE OF ECSU HI RISE 83 WINDHAM ST		2	Public Water			Description	Code	Appraised Value	Assessed Value
WILLIMANTIC, CT 06226 Additional Owners:		3	Public Sewer			EX COM BL	22	11,575,500	8,102,850
		0	None						
SUPPLEMENTAL DATA									
Other ID:	12- 3/ 19/ 98X2	LCI	C						
Zoning	R6	ParcelStatus	UO						
Neighborhood	310 - 0	Cost Flag							
Living Units	0	Lot Number	0						
Census	8003	A_D							
District No	2	ASSOC PID#							
GIS ID:	6685								
							Total	11,575,500	8,102,850

6163  
WINDHAM, CT

**VISION**

RECORD OF OWNERSHIP		BK-VOL/PAGE	SALE DATE	q/u	v/i	SALE PRICE	V.C.	PREVIOUS ASSESSMENTS (HISTORY)								
CONNECTICUT STATE OF		149/ 42		U	I	0		Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
								2017	22	8,943,970	2016	22	8,943,970	2015	200	8,943,970
													2015	200	0	
								Total:		8,943,970	Total:		8,943,970	Total:		8,943,970

EXEMPTIONS				OTHER ASSESSMENTS				
Year	Type	Description	Amount	Code	Description	Number	Amount	Comm. Int.
Total:								

*This signature acknowledges a visit by a Data Collector or Assessor*

ASSESSING NEIGHBORHOOD				
NBHD/SUB	NBHD Name	Street Index Name	Tracing	Batch
0001/A			900	E

APPRAISED VALUE SUMMARY	
Appraised Bldg. Value (Card)	11,489,700
Appraised XF (B) Value (Bldg)	85,800
Appraised OB (L) Value (Bldg)	0
Appraised Land Value (Bldg)	0
Special Land Value	0
Total Appraised Parcel Value	11,575,500
Valuation Method:	C
Adjustment:	0
<b>Net Total Appraised Parcel Value</b>	<b>11,575,500</b>

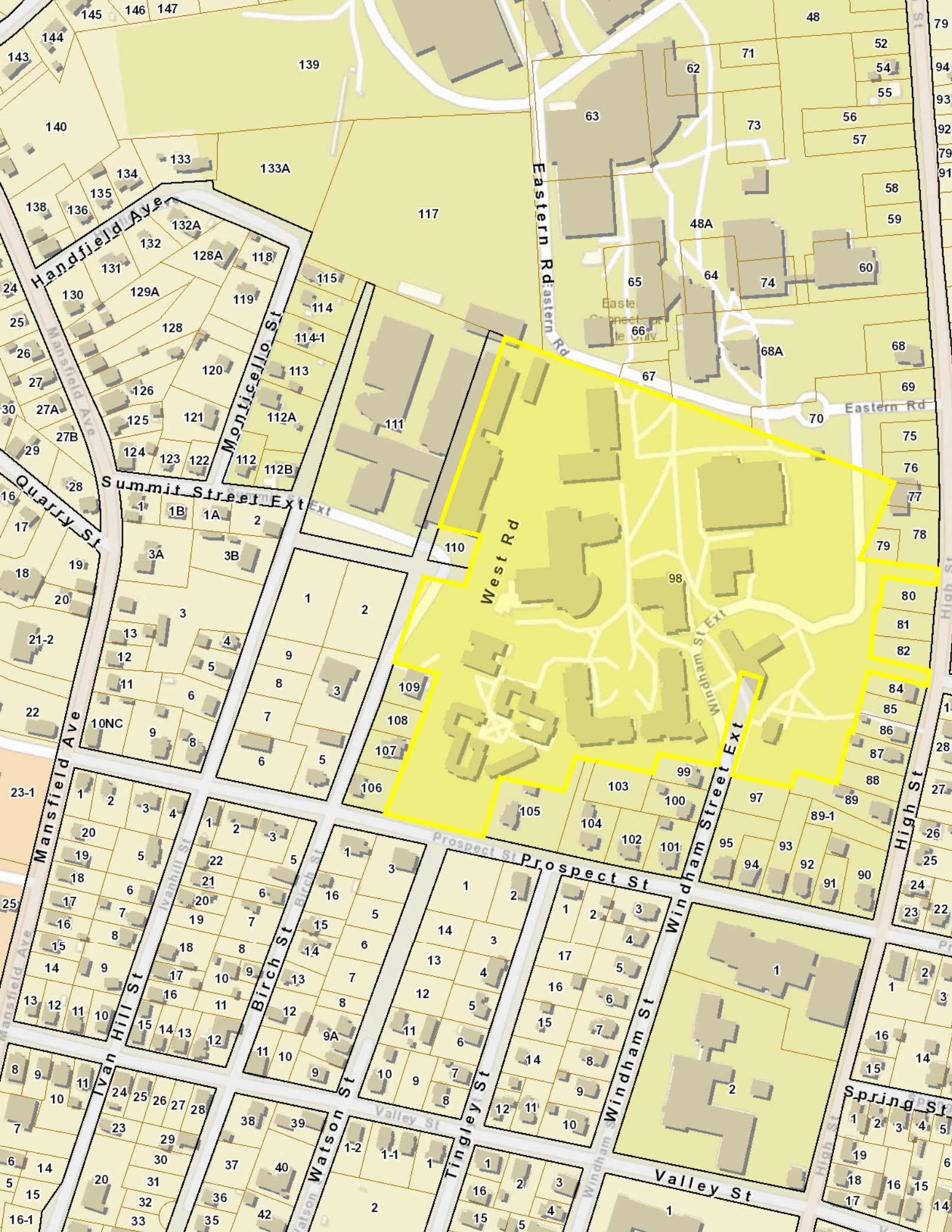
NOTES									

BUILDING PERMIT RECORD									VISIT/ CHANGE HISTORY					
Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date Comp.	Comments	Date	Type	IS	ID	Cd.	Purpose/Result

LAND LINE VALUATION SECTION																			
B #	Use Code	Use Description	Zone	D	Front	Depth	Units	Unit Price	I. Factor	S.A.	Acre Disc	C. Factor	ST. Idx	Adj.	Notes- Adj	Special Pricing	S Adj Fact	Adj. Unit Price	Land Value
1	925	Exempt Comm	R6				0.00	AC	0.00	1.0000	0	1.0000	1.00	310	1.00			.00	0







# Exhibit C

Construction Drawings



# SITE NAME: CT506/WILLIMANTIC ECSU

83 WINDHAM STREET  
WILLIMANTIC, CT 06226  
WINDHAM COUNTY

## SITE NUMBER: CT11506A

### RF DESIGN GUIDELINE: 67D5A997DB OUTDOOR

**T-MOBILE  
NORTHEAST LLC**

35 GRIFFIN ROAD SOUTH  
BLOOMFIELD, CT 06002  
OFFICE: (860) 648-1116



750 WEST CENTER STREET  
SUITE #301  
WEST BRIDGEWATER, MA 02379



45 BEECHWOOD DRIVE TEL: (978) 557-5553  
N. ANDOVER, MA 01845 FAX: (978) 336-5586

#### T-MOBILE TECHNICIAN SITE SAFETY NOTES

LOCATION	SPECIAL RESTRICTIONS
SECTOR A: ANTENNA/TMA/RADIO	ACCESS NOT PERMITTED
SECTOR B: ANTENNA/TMA/RADIO	ACCESS NOT PERMITTED
SECTOR C: ANTENNA/TMA/RADIO	ACCESS NOT PERMITTED
GPS/LMU:	UNRESTRICTED CAUTION: OSHA-APPROVED PORTABLE 8' STEP-LADDER REQUIRED
RADIO CABINETS:	UNRESTRICTED
PPC DISCONNECT:	UNRESTRICTED
MAIN CIRCUIT D/C:	UNRESTRICTED
NIU/T DEMARC:	UNRESTRICTED
OTHER/SPECIAL:	NONE

#### GENERAL NOTES

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

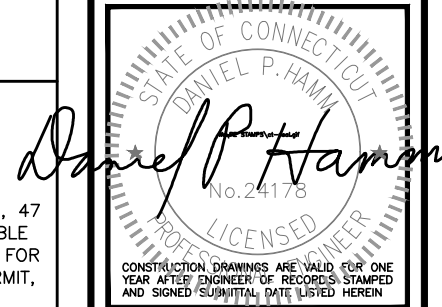
THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.

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



#### PROJECT SUMMARY

SCOPE OF WORK:	UNMANNED TELECOMMUNICATIONS FACILITY T-MOBILE EQUIPMENT MODERNIZATION
ZONING JURISDICTION:	BASED ON INFORMATION PROVIDED BY T-MOBILE, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS AN ELIGIBLE FACILITY UNDER THE TAX RELIEF ACT OF 2012, 47 USC 1455(A), AND IS SUBJECT TO AN EXPEDITED ELIGIBLE FACILITIES REQUEST/REVIEW AND ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW).
SITE ADDRESS:	83 WINDHAM STREET WILLIMANTIC, CT 06226
LATITUDE:	41° 43' 13.79" N
LONGITUDE:	72° 13' 6.06" W
JURISDICTION:	(TOWN OF WINDHAM)
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY



CHECKED BY: RP

APPROVED BY: DPH

#### SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	12/08/20	ISSUED FOR CONSTRUCTION	VP
0	10/26/20	ISSUED FOR REVIEW	TR

#### APPROVALS

PROJECT MANAGER	DATE
CONSTRUCTION	DATE
RF ENGINEERING	DATE
ZONING / SITE ACQ.	DATE
OPERATIONS	DATE
TOWER OWNER	DATE

72 HOURS



CALL  
BEFORE YOU DIG  
CALL TOLL FREE 1-800-922-4455  
OR CALL 811



**UNDERGROUND SERVICE ALERT**

#### DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
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A-2	ANTENNA LAYOUTS & ELEVATION	1
A-3	EQUIPMENT DETAILS	1
A-4	MOUNTING DETAILS	1
SN-1	SPECIAL INSPECTIONS NOTES	1
S-1	MOUNT MODIFICATION STRUCTURAL DETAILS	1
E-1	ONE-LINE DIAGRAM AND GROUNDING DETAILS	1

SITE NUMBER:  
CT11506A

SITE NAME:  
CT506/WILLIMANTIC  
ECSU

SITE ADDRESS:  
83 WINDHAM STREET  
WILLIMANTIC, CT 06226  
WINDHAM COUNTY

SHEET TITLE

TITLE SHEET  
(ANCHOR 2020)

SHEET NUMBER

**T-1**

**GROUNDING NOTES**

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

**GENERAL NOTES**

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
 CONTRACTOR – CENTERLINE COMMUNICATIONS  
 SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)  
 OWNER – T-MOBILE
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF T-MOBILE SITES."
17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. APPLICABLE BUILDING CODES:  
 SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.  
 BUILDING CODE: IBC 2015 WITH 2018 CT STATE BUILDING CODE AMENDMENTS  
 ELECTRICAL CODE: 2017 NATIONAL ELECTRIC CODE (NFPA 70)  
 LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

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

- AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;
- AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;
- TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL
- EQUIPMENT AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

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

ABBREVIATIONS					
AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

**T-MOBILE  
NORTHEAST LLC**

35 GRIFFIN ROAD SOUTH  
 BLOOMFIELD, CT 06002  
 OFFICE: (860) 648-1116



**CENTERLINE  
COMMUNICATIONS**

750 WEST CENTER STREET  
 SUITE #301  
 WEST BRIDGEWATER, MA 02379



**HUDSON  
Design Group LLC**

45 BEECHWOOD DRIVE  
 N. ANDOVER, MA 01845  
 TEL: (978) 557-5553  
 FAX: (978) 336-5586



STATE OF CONNECTICUT  
 DANIEL P. HAMON  
 No. 24178  
 LICENSED PROFESSIONAL ENGINEER

CONSTRUCTION DRAWINGS ARE VALID FOR ONE YEAR AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN

CHECKED BY: **RP**

APPROVED BY: **DPH**

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
1	12/08/20	ISSUED FOR CONSTRUCTION	VP
0	10/26/20	ISSUED FOR REVIEW	TR

SITE NUMBER:  
**CT11506A**

SITE NAME:  
**CT506/WILLIMANTIC  
ECSU**

SITE ADDRESS:  
 83 WINDHAM STREET  
 WILLIMANTIC, CT 06226  
 WINDHAM COUNTY

SHEET TITLE  
**GENERAL NOTES**  
 (ANCHOR 2020)

SHEET NUMBER  
**GN-1**

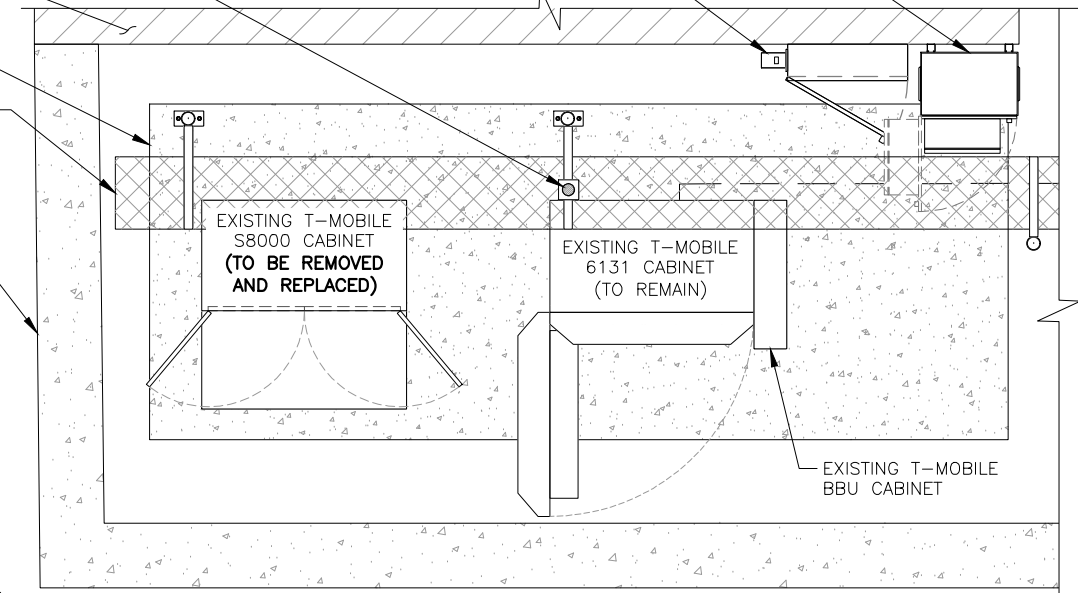
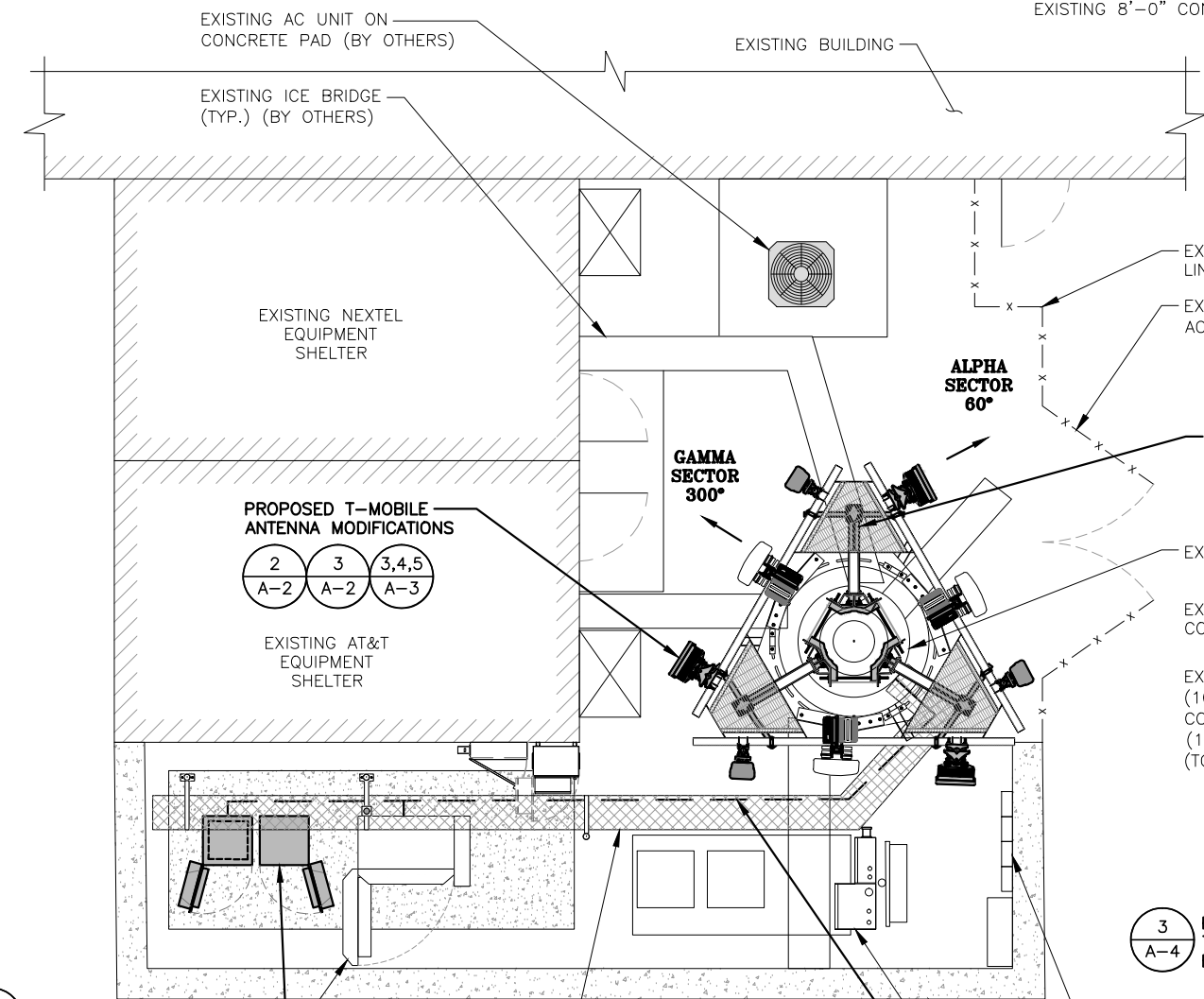


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**NOTE:**  
 REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

EXISTING T-MOBILE GPS ANTENNA MOUNTED ON EXISTING ICE BRIDGE  
 EXISTING EQUIPMENT SHELTER  
 EXISTING T-MOBILE 17'-10" X 7'-0" CONCRETE PAD  
 EXISTING T-MOBILE ICE BRIDGE W/ (10) LINES OF T-MOBILE 1-5/8" COAX (4) COAX (TO BE REMOVED), (1) 6X12, & (1) 9X18 HCS (TO REMAIN)  
 EXISTING 8'-0" CONCRETE WALL

EXISTING T-MOBILE AAV CABINET  
 EXISTING T-MOBILE 200A PPC CABINET



**EXISTING EQUIPMENT PLAN** 2  
 22x34 SCALE: 1/2"=1'-0"  
 11x17 SCALE: 1/4"=1'-0"

3 A-1 PROPOSED T-MOBILE EQUIPMENT MODIFICATIONS  
 2 A-1 EXISTING T-MOBILE EQUIPMENT AREA

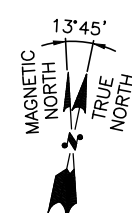
PROPOSED T-MOBILE ANTENNA MODIFICATIONS  
 2 A-2 3 A-2 3,4,5 A-3

EXISTING AT&T EQUIPMENT SHELTER

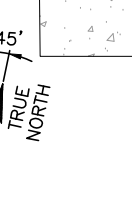
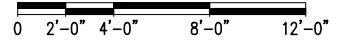
3 A-4 PROPOSED T-MOBILE 6160 EQUIPMENT CABINET

PROPOSED T-MOBILE (2) 6X12 HYBRID FIBER CABLES (TO FOLLOW EXISTING ROUTING)  
 PROPOSED INSTALL (1) BB 6630, (1) BB 6648, AND (1) PSU4813 VOLTAGE BOOSTER INSIDE THE PROPOSED 6160 CABINET

EXISTING T-MOBILE ICE BRIDGE W/ (10) LINES OF T-MOBILE 1-5/8" COAX (4) COAX (TO BE REMOVED), (1) 6X12, & (1) 9X18 HCS (TO REMAIN)



**COMPOUND PLAN** 1  
 22x34 SCALE: 1/4"=1'-0"  
 11x17 SCALE: 1/8"=1'-0"



**PROPOSED EQUIPMENT PLAN** 3  
 22x34 SCALE: 1/2"=1'-0"  
 11x17 SCALE: 1/4"=1'-0"



**T-MOBILE NORTHEAST LLC**  
 35 GRIFFIN ROAD SOUTH  
 BLOOMFIELD, CT 06002  
 OFFICE: (860) 648-1116

**CENTERLINE COMMUNICATIONS**  
 750 WEST CENTER STREET  
 SUITE #301  
 WEST BRIDGEWATER, MA 02379

**HDG HUDSON Design Group LLC**  
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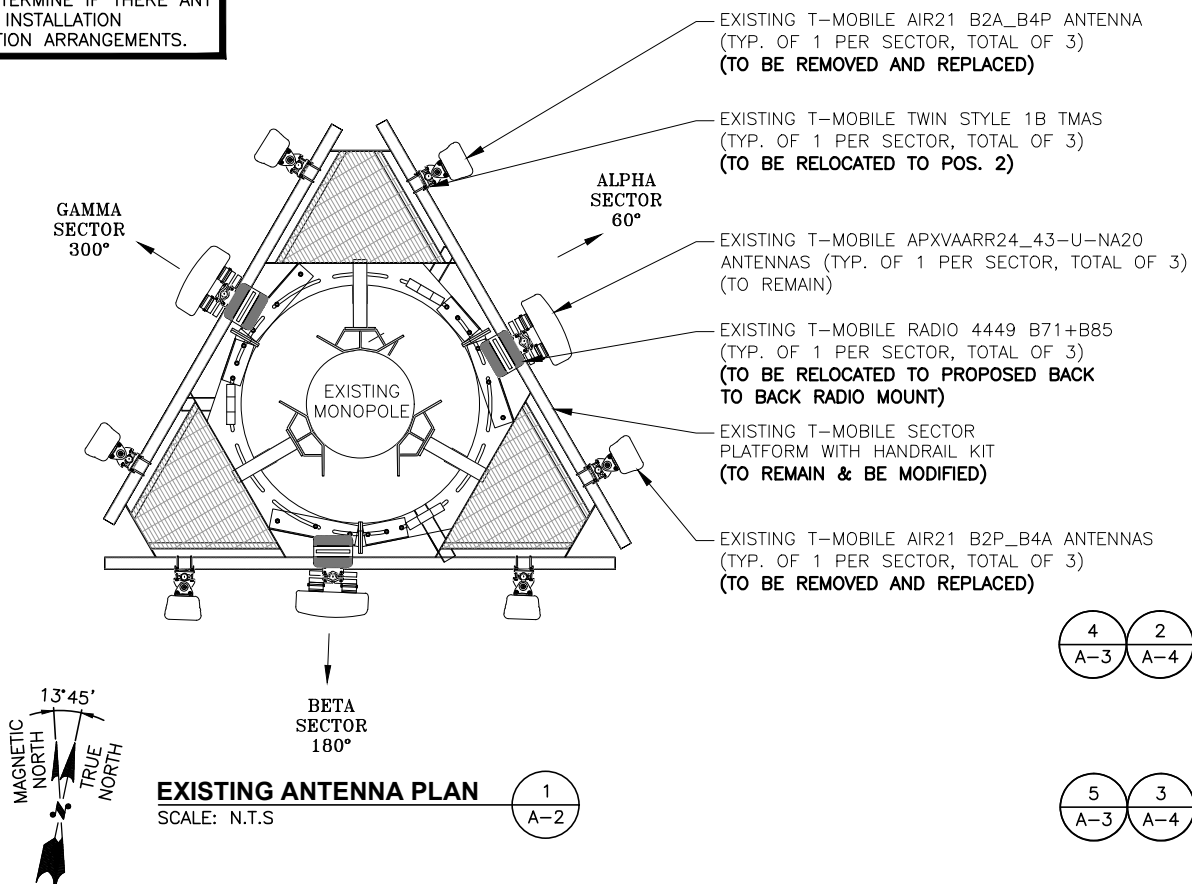
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 WILLIMANTIC, CT 06226  
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SHEET TITLE  
**COMPOUND & EQUIPMENT PLANS**  
 (ANCHOR 2020)

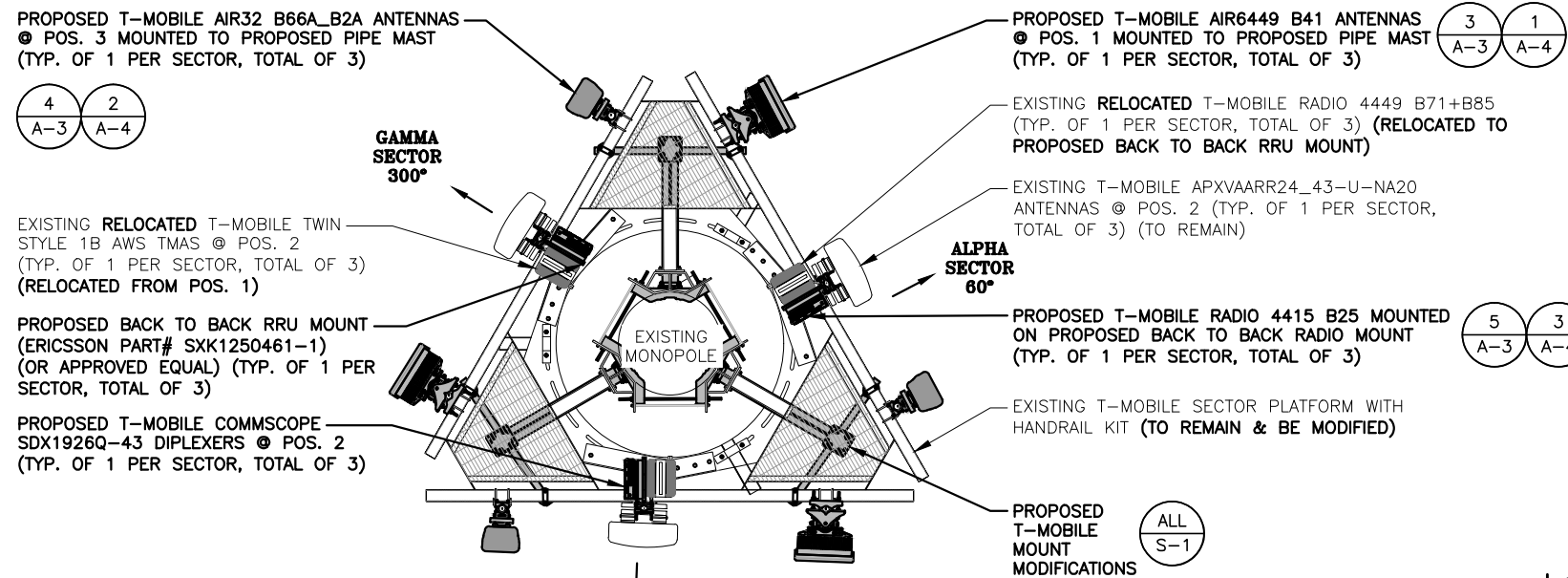
SHEET NUMBER  
**A-1**

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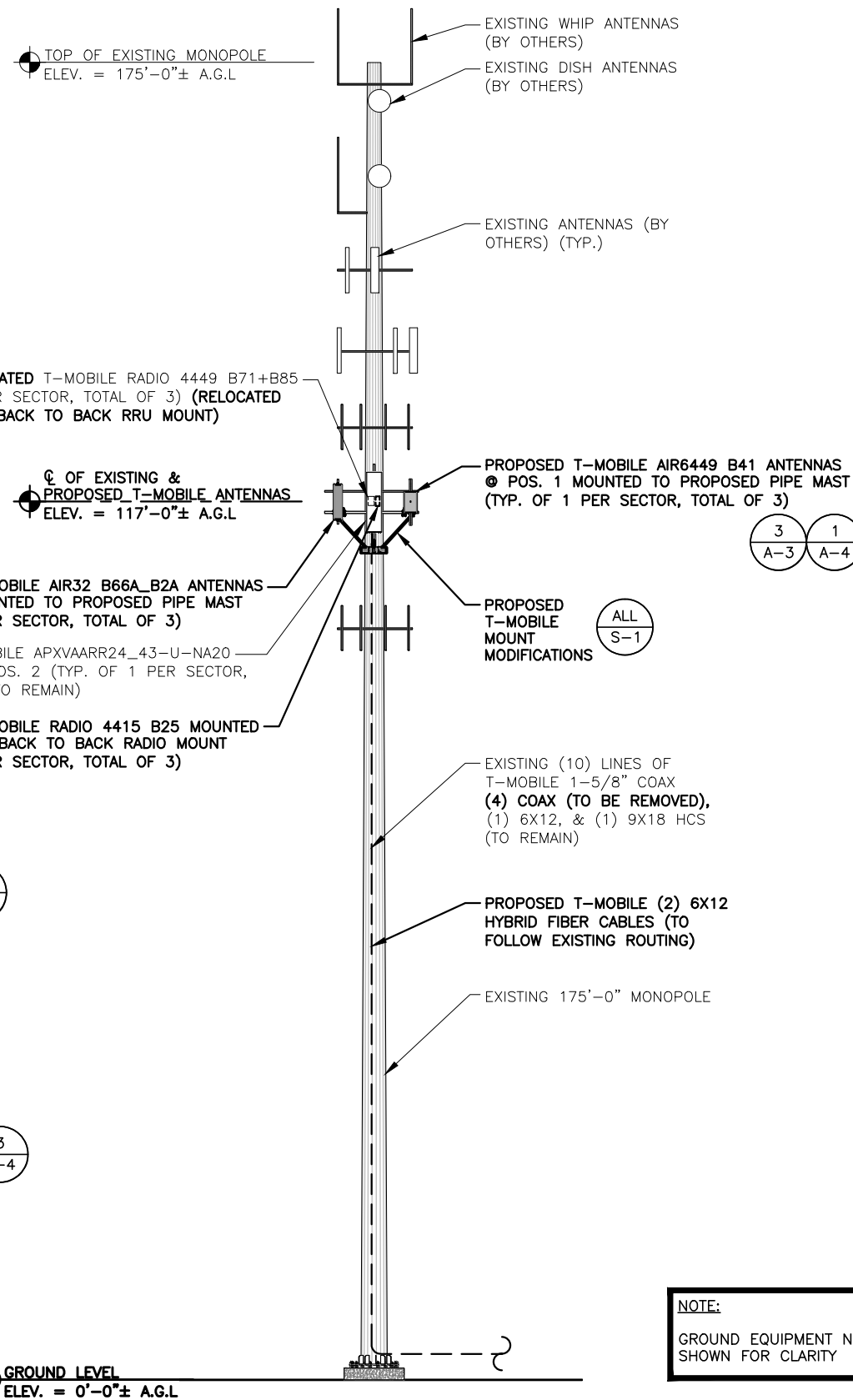
**NOTE:**  
 REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



**EXISTING ANTENNA PLAN** 1  
 SCALE: N.T.S. A-2



**PROPOSED ANTENNA PLAN** 2  
 SCALE: N.T.S. A-2



**MONOPOLE ELEVATION** 3  
 22x34 SCALE: 3/32"=1'-0"  
 11x17 SCALE: 3/64"=1'-0"  
 A-2

**NOTE:**  
 GROUND EQUIPMENT NOT SHOWN FOR CLARITY

**T-MOBILE NORTHEAST LLC**

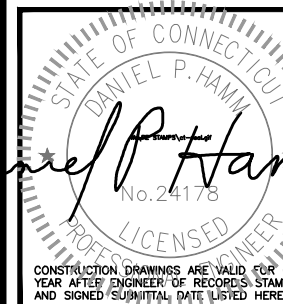
35 GRIFFIN ROAD SOUTH  
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SHEET TITLE  
 ANTENNA LAYOUTS  
 & ELEVATION  
 (ANCHOR 2020)

SHEET NUMBER  
**A-2**

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**T-MOBILE  
NORTHEAST LLC**

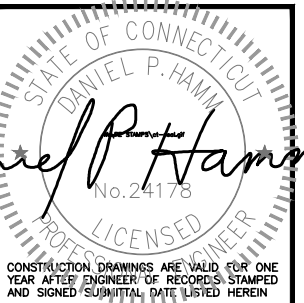
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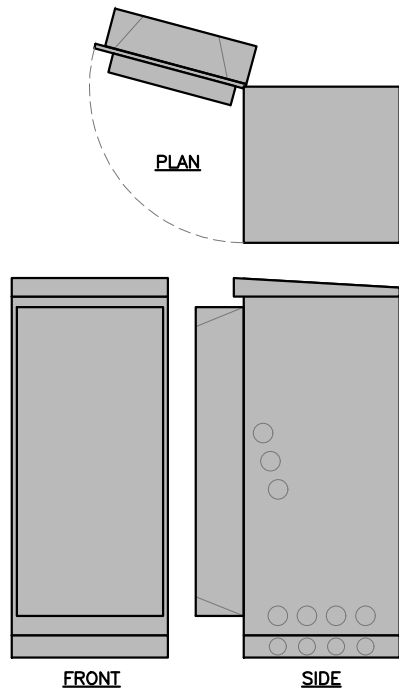
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SHEET TITLE  
EQUIPMENT  
DETAILS  
(ANCHOR 2020)

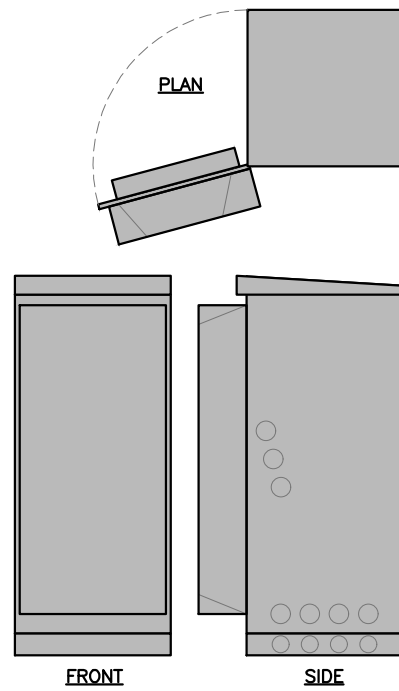
SHEET NUMBER  
**A-3**

CABINET DIMENSIONS	
MODEL #	6160 SITE SUPPORT CABINET
MANUF.	ERICSSON
HEIGHT	63"
WIDTH	26"
BASE DEPTH	26"
DEPTH (W/ DOOR)	34"
WEIGHT	1500 LBS MAX
(INSTALL PER MANUFACTURER'S INSTALLATION GUIDELINES)	

CABINET DIMENSIONS	
MODEL #	B160 BATTERY CABINET
MANUF.	ERICSSON
HEIGHT	63"
WIDTH	26"
BASE DEPTH	26"
DEPTH (W/ DOOR)	34"
WEIGHT	2000 LBS MAX
(INSTALL PER MANUFACTURER'S INSTALLATION GUIDELINES)	

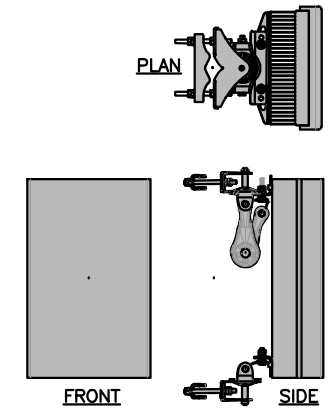


**SITE SUPPORT CABINET DETAIL** 1  
SCALE: N.T.S. A-3



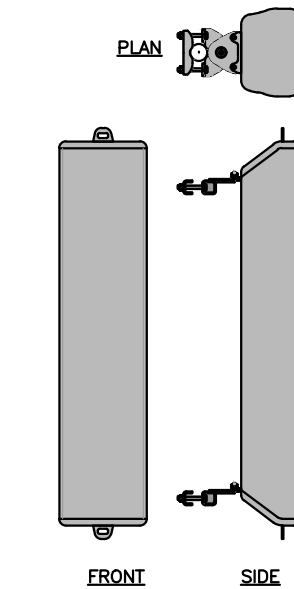
**BATTERY CABINET DETAIL** 2  
SCALE: N.T.S. A-3

L25+N25 ANTENNA DIMENSIONS	
MODEL #	AIR 6449 B41
MANUF.	ERICSSON
HEIGHT	33.1"
WIDTH	20.5"
DEPTH	8.5"
WEIGHT	103 LBS



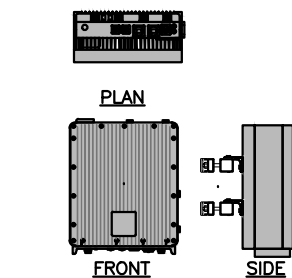
**L25+N25 ANTENNA DETAIL** 3  
SCALE: N.T.S. A-3

L1900 ANTENNA DIMENSIONS	
MODEL #	AIR 32 B66Aa/B2a
MANUF.	ERICSSON
WIDTH	12.9"
DEPTH	8.7"
HEIGHT	56.6"
WEIGHT	132.2 LBS



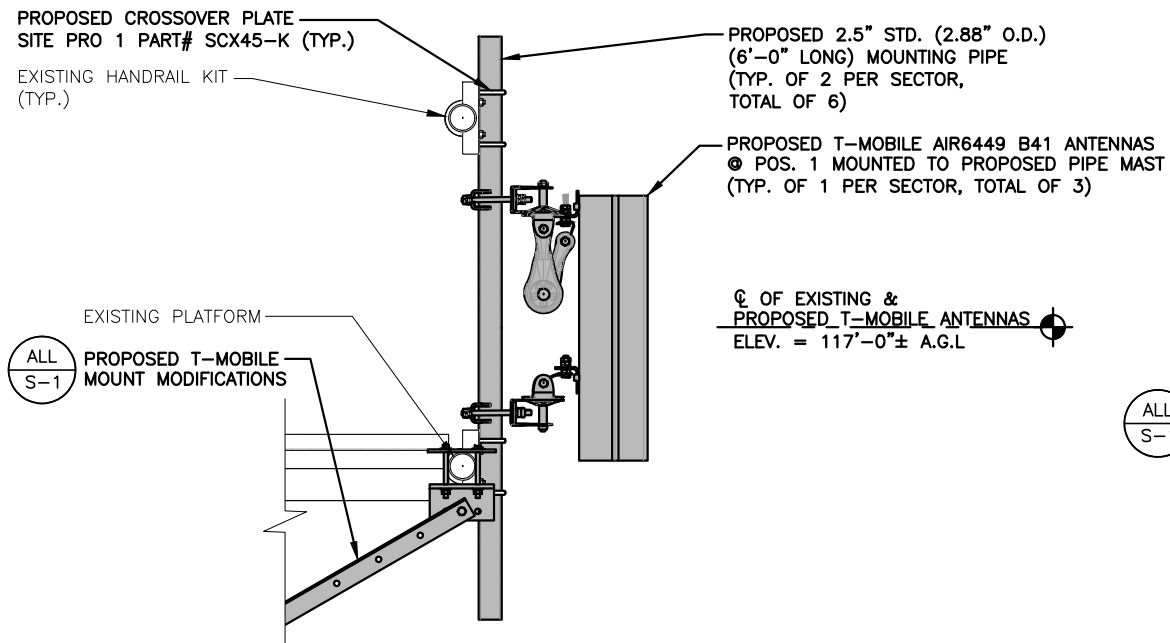
**L1900 ANTENNA DETAIL** 4  
SCALE: N.T.S. A-3

RADIO 4415 DIMENSIONS	
MODEL #	RADIO 4415 B25
MANUF.	ERICSSON
HEIGHT	16.5"
WIDTH	13.4"
DEPTH	5.9"
WEIGHT	46 LBS

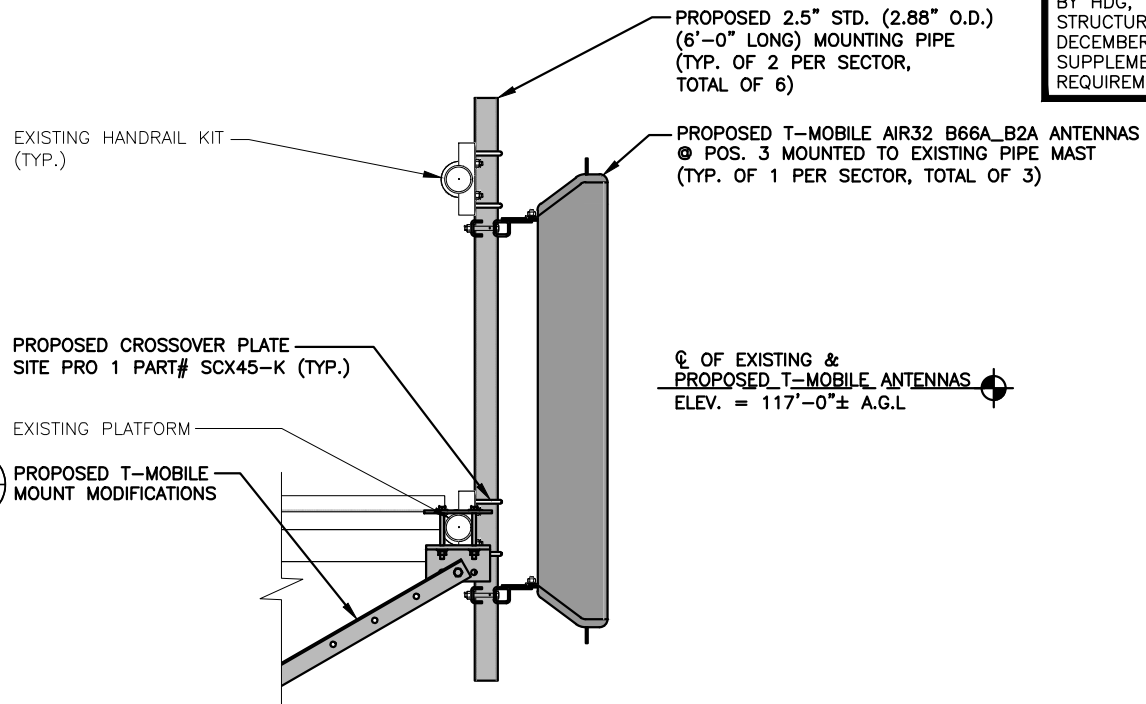


**RADIO DETAIL** 5  
SCALE: N.T.S. A-3





**PROPOSED L25+N25  
ANTENNA MOUNTING DETAIL** 1  
22x34 SCALE: 1"=1'-0"  
11x17 SCALE: 1/2"=1'-0"

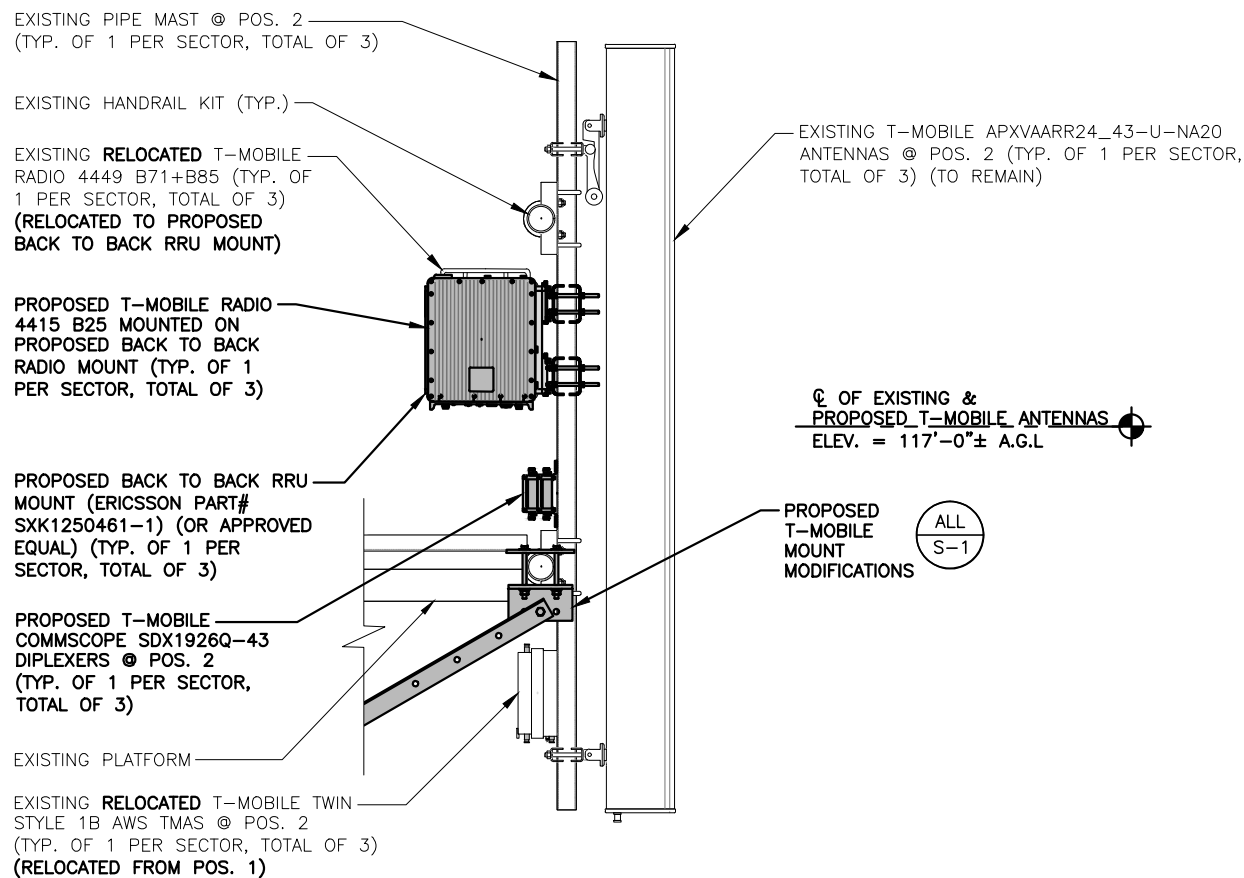


**PROPOSED L19+L21  
ANTENNA MOUNTING DETAIL** 2  
22x34 SCALE: 1"=1'-0"  
11x17 SCALE: 1/2"=1'-0"



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**NOTE:**  
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**PROPOSED RADIO &  
TMA MOUNTING DETAIL** 3  
22x34 SCALE: 1"=1'-0"  
11x17 SCALE: 1/2"=1'-0"



EXISTING T-MOBILE APXVAARR24\_43-U-NA20 ANTENNAS @ POS. 2 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO REMAIN)

PROPOSED T-MOBILE AIR32 B66A\_B2A ANTENNAS @ POS. 3 MOUNTED TO PROPOSED PIPE MAST (TYP. OF 1 PER SECTOR, TOTAL OF 3)

EXISTING RELOCATED T-MOBILE RADIO 4449 B71+B85 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (RELOCATED TO PROPOSED BACK TO BACK RRU MOUNT)

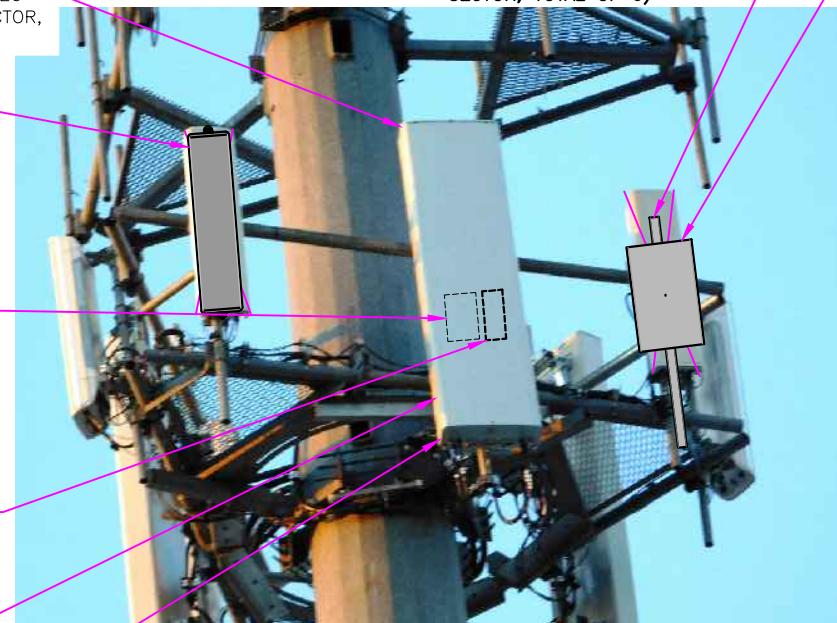
PROPOSED T-MOBILE RADIO 4415 B25 MOUNTED ON PROPOSED BACK TO BACK RADIO MOUNT (TYP. OF 1 PER SECTOR, TOTAL OF 3)

PROPOSED T-MOBILE COMMSCOPE SDX1926Q-43 DIPLEXERS @ POS. 2 (TYP. OF 1 PER SECTOR, TOTAL OF 3)

EXISTING RELOCATED T-MOBILE TWIN STYLE 1B AWS TMAS @ POS. 2 (TYP. OF 1 PER SECTOR, TOTAL OF 3)  
(RELOCATED FROM POS. 1)

PROPOSED T-MOBILE AIR6449 B41 ANTENNAS @ POS. 1 MOUNTED TO PROPOSED PIPE MAST (TYP. OF 1 PER SECTOR, TOTAL OF 3)

PROPOSED 2.5" STD. (2.88" O.D.) (6'-0" LONG) MOUNTING PIPE @ POS. 1 & 3 (TYP. OF 2 PER SECTOR, TOTAL OF 6)



**T-MOBILE ELEVATION PHOTO DETAIL** 4  
SCALE: N.T.S.



**T-MOBILE  
NORTHEAST LLC**

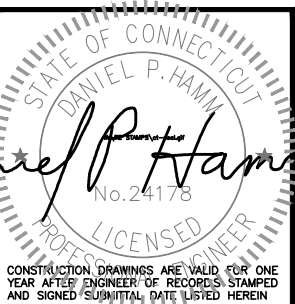
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WINDHAM COUNTY

SHEET TITLE  
MOUNTING  
DETAILS  
(ANCHOR 2020)

SHEET NUMBER  
**A-4**

**STRUCTURAL NOTES:**

- DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
- DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
- STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
- STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
- STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
- ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
- ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
- FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
- CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D.I.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
- INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
- UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
- EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-70 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
- EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
- WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
- ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
- NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
- SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

**SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):**

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

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

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

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

**SPECIAL INSPECTION CHECKLIST**

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

**NOTES:**

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

**NOTES:**

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

**T-MOBILE  
NORTHEAST LLC**

35 GRIFFIN ROAD SOUTH  
BLOOMFIELD, CT 06002  
OFFICE: (860) 648-1116

**CENTERLINE  
COMMUNICATIONS**

750 WEST CENTER STREET  
SUITE #301  
WEST BRIDGEWATER, MA 02379

**HG  
HUDSON  
Design Group LLC**

45 BEECHWOOD DRIVE  
N. ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 336-5586

STATE OF CONNECTICUT  
DANIEL P. HAMM  
No. 24178  
LICENSED PROFESSIONAL ENGINEER

CONSTRUCTION DRAWINGS ARE VALID FOR ONE YEAR AFTER ENGINEER OF RECORDS STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN

CHECKED BY: RP

APPROVED BY: DPH

**SUBMITTALS**

REV.	DATE	DESCRIPTION	BY
1	12/08/20	ISSUED FOR CONSTRUCTION	VP
0	10/26/20	ISSUED FOR REVIEW	TR

SITE NUMBER:  
CT11506A

SITE NAME:  
CT506/WILLIMANTIC  
ECSU

SITE ADDRESS:  
83 WINDHAM STREET  
WILLIMANTIC, CT 06226  
WINDHAM COUNTY

SHEET TITLE  
**SPECIAL  
INSPECTIONS  
NOTES  
(ANCHOR 2020)**

SHEET NUMBER  
**SN-1**



**STRUCTURAL NOTES:**  
 PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO MOUNT STRUCTURAL ANALYSIS PROVIDED BY HDG, DATED: NOVEMBER 10, 2020 AND STRUCTURAL ANALYSIS PROVIDED BY HDG, DATED: DECEMBER 01, 2020 TO DETERMINE IF THERE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS, OR RELOCATION ARRANGEMENTS.

**T-MOBILE  
 NORTHEAST LLC**

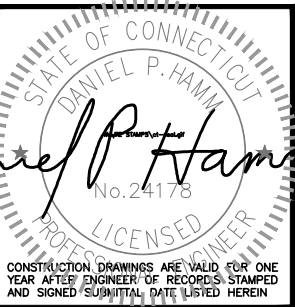
35 GRIFFIN ROAD SOUTH  
 BLOOMFIELD, CT 06002  
 OFFICE: (860) 648-1116



750 WEST CENTER STREET  
 SUITE #301  
 WEST BRIDGEWATER, MA 02379



45 BEECHWOOD DRIVE  
 N. ANDOVER, MA 01845  
 TEL: (978) 557-5553  
 FAX: (978) 336-5586



*Daniel P. Hamm*

CHECKED BY: RP

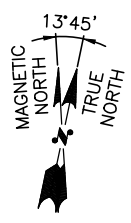
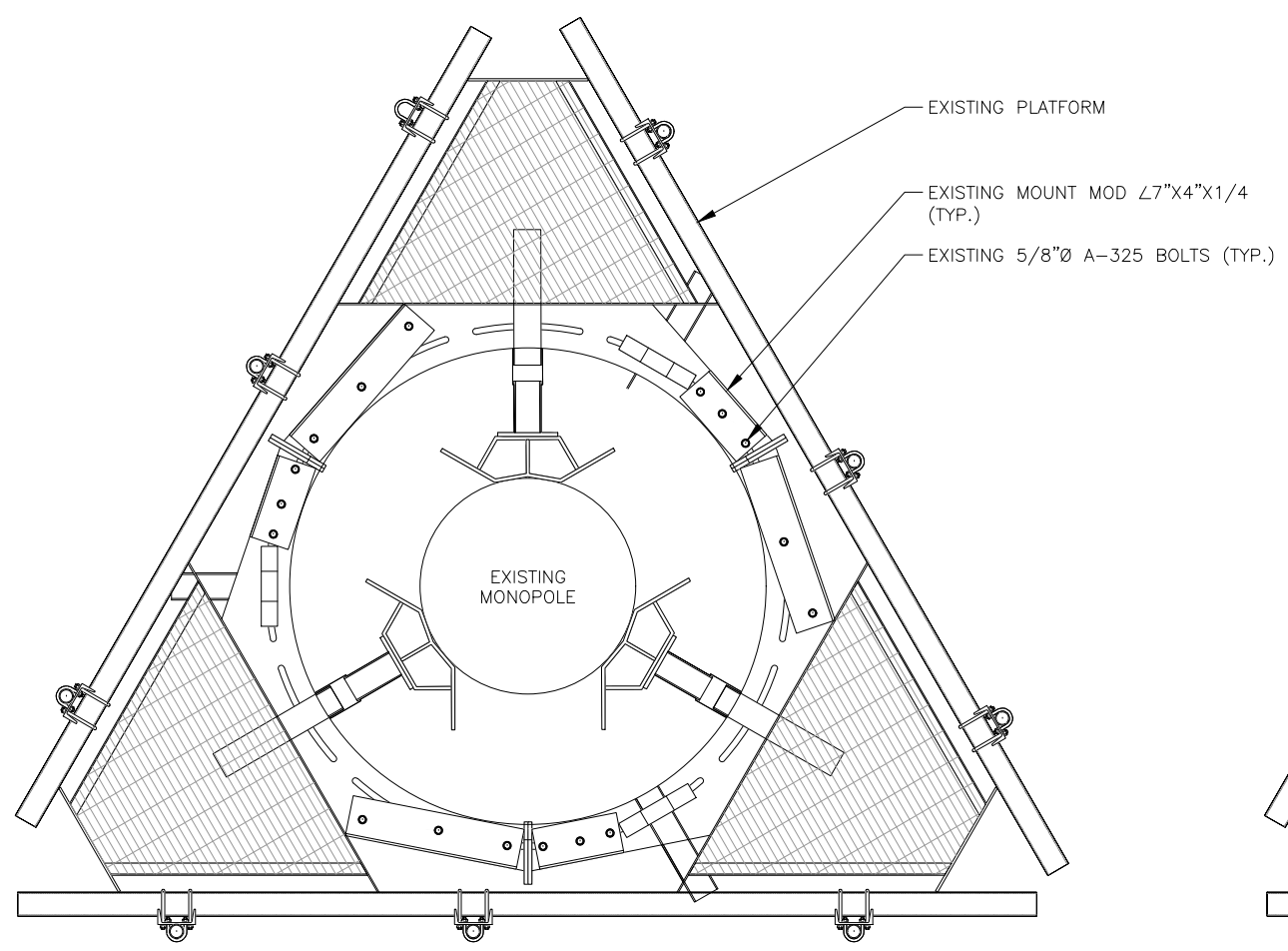
APPROVED BY: DPH

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
1	12/08/20	ISSUED FOR CONSTRUCTION	VP
0	10/26/20	ISSUED FOR REVIEW	TR

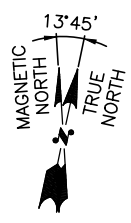
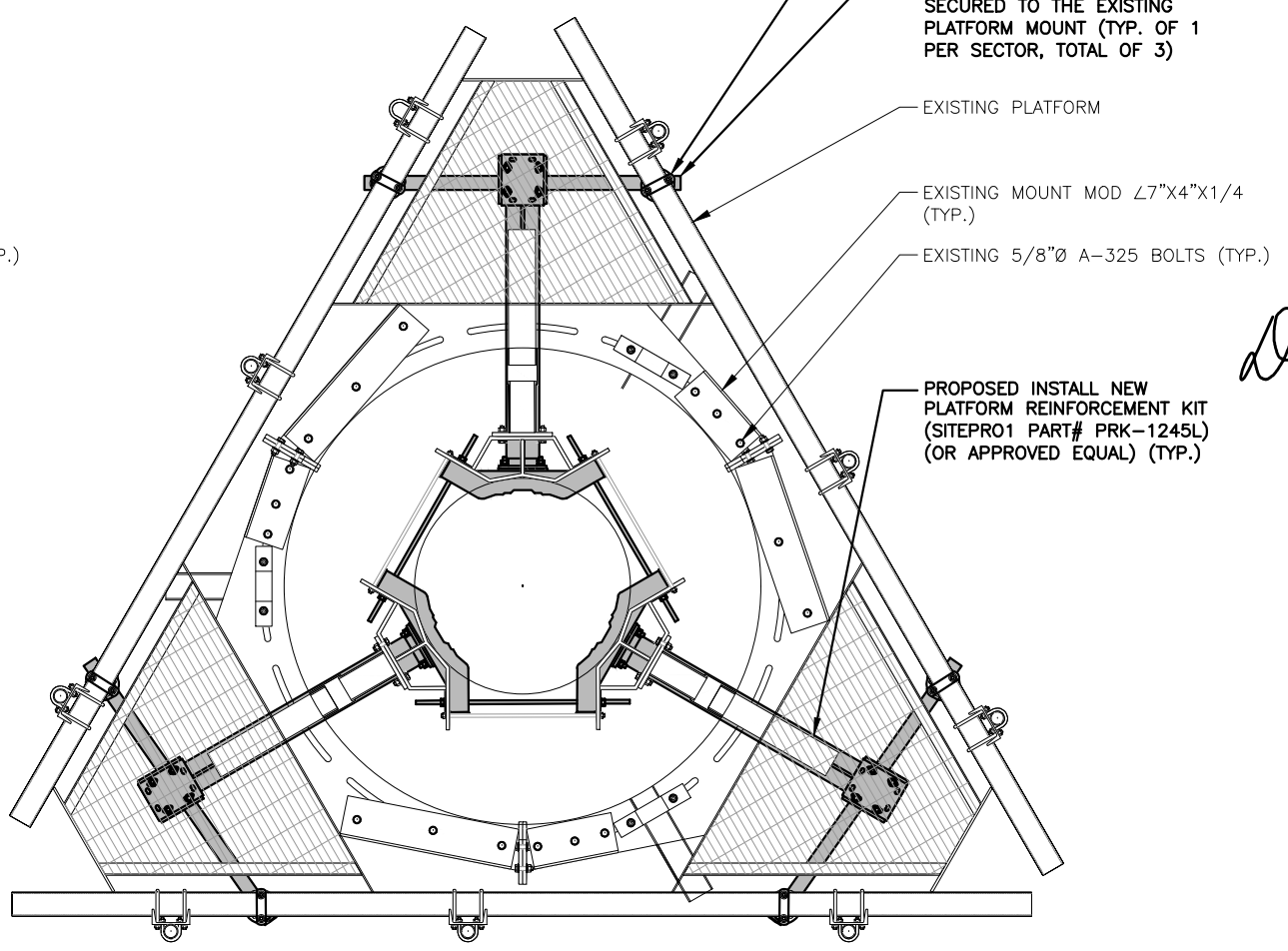
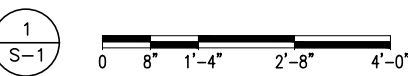
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 CT11506A  
 SITE NAME:  
 CT506/WILLIMANTIC  
 ECSU  
 SITE ADDRESS:  
 83 WINDHAM STREET  
 WILLIMANTIC, CT 06226  
 WINDHAM COUNTY

SHEET TITLE  
 MOUNT MODIFICATION  
 STRUCTURAL DETAILS  
 (ANCHOR 2020)

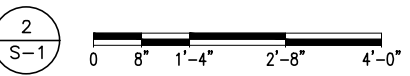
SHEET NUMBER  
**S-1**

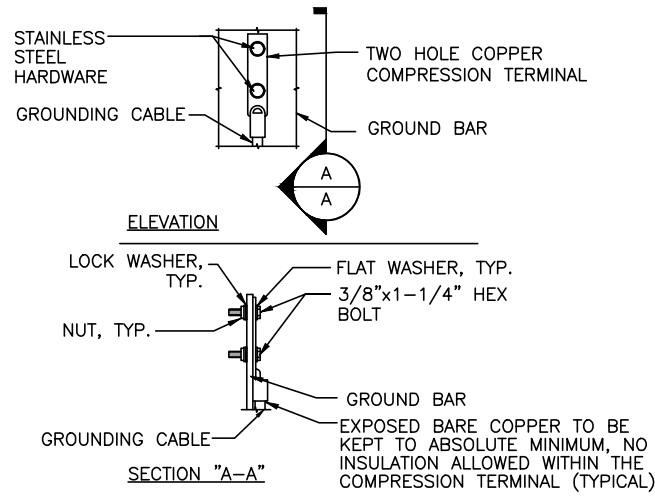


**EXISTING MOUNT MOD PLAN DETAIL 1**  
 22x34 SCALE: 3/4"=1'-0"  
 11x17 SCALE: 3/8"=1'-0"



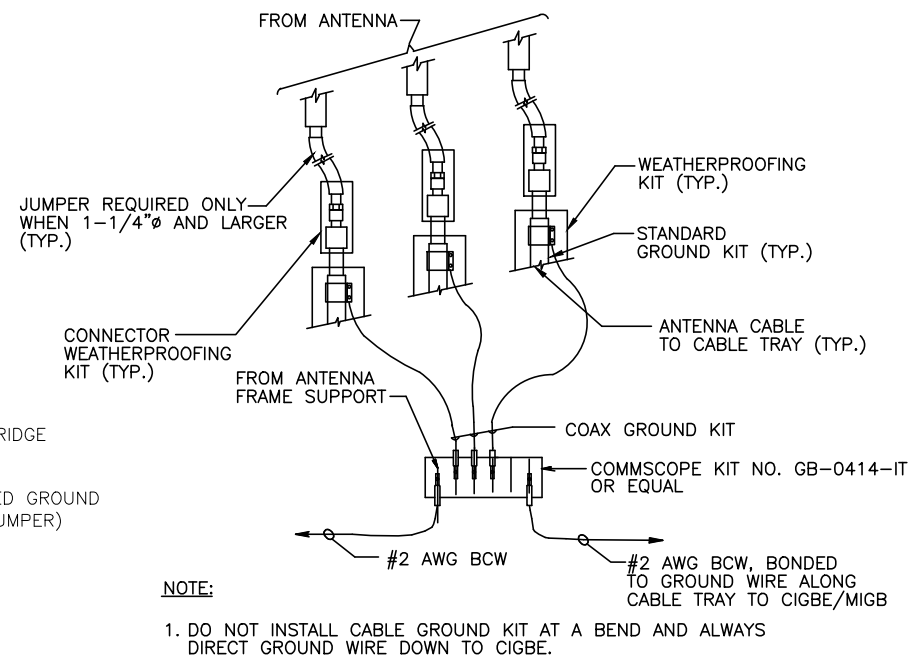
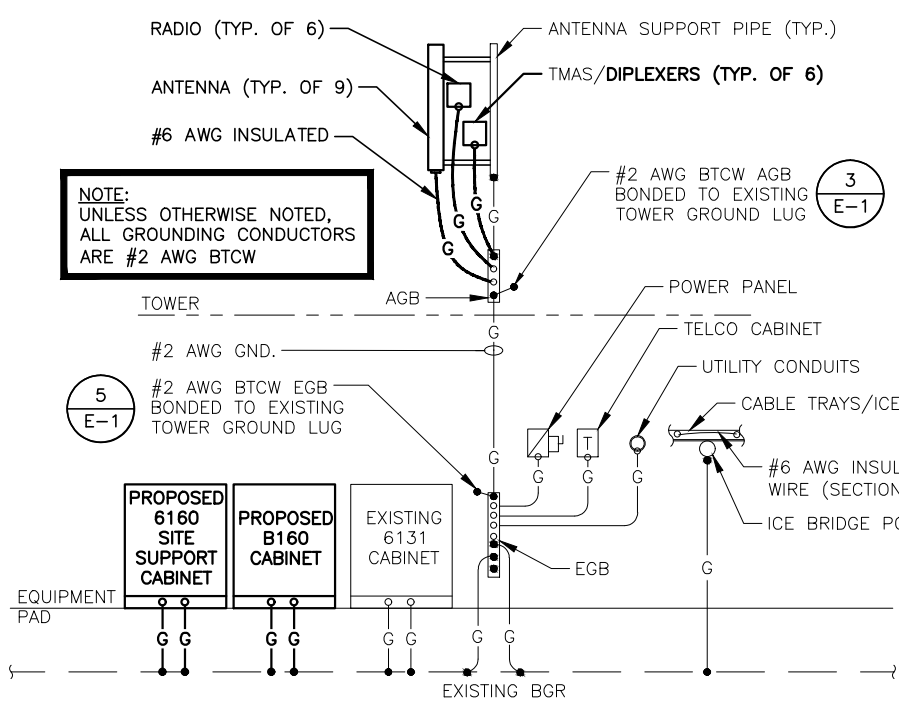
**PROPOSED MOUNT MOD PLAN DETAIL 2**  
 22x34 SCALE: 3/4"=1'-0"  
 11x17 SCALE: 3/8"=1'-0"



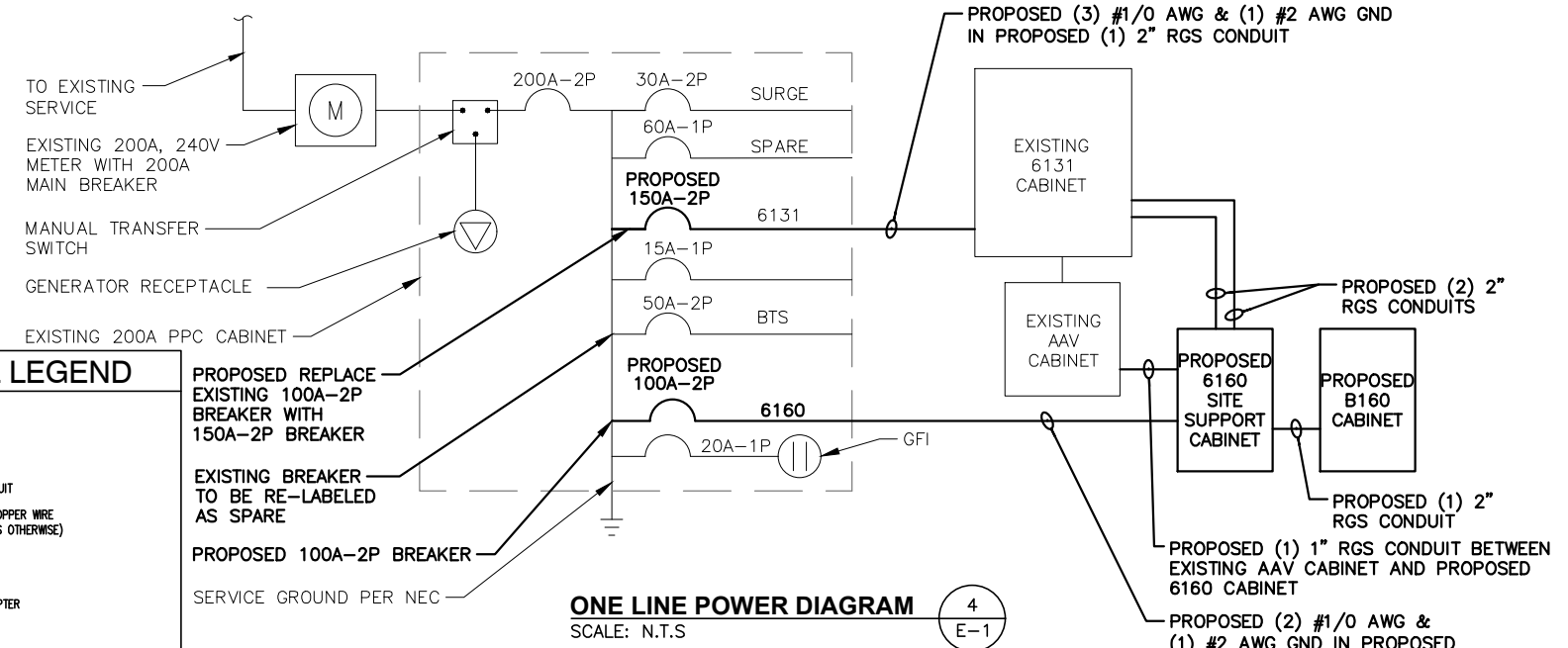


- NOTES:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
  2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATION.
  3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB

**NOTE:**  
G.C. TO VERIFY THAT THE EXISTING CONDUITS AND WIRE SIZES ARE ADEQUATE FOR THE PROPOSED LOADING AND INCLUDE ELECTRICAL UPGRADES IN THE SCOPE OF WORK AS REQUIRED.



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



**ELECTRICAL LEGEND**

A	AMPERE
V	VOLT
KWH	KILOWATT - HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BTW	BARE TINNED (SOLID) COPPER WIRE (#2 AWG, UNLESS NOTES OTHERWISE)
GND	GROUND
⊕	GROUND
GFI	GROUND FAULT INTERRUPTER
H.P.	HORSE POWER
MGB	MECHANICAL CONNECTION
○●	MECHANICAL CONNECTION
○●	CADWELD CONNECTION
○●	EQUIPMENT GROUND BAR/ANTENNA GROUND BAR
○●	GROUND COPPER WIRE, SIZE AS NOTED
—	EXPOSED WIRING
—	INSULATED GROUNDING CONDUCTOR (#6 AWG STRANDED, UNLESS NOTED OTHERWISE)
○●	5/8"Ø COPPER CLAD STAINLESS STEEL GROUND ROD
○●	EXOTHERMIC (CAD WELD) OR MECHANICAL (COMPRESSION TYPE) CONNECTION
NEC	NATIONAL ELECTRIC CODE
#	PHASE
PPC	POWER PROTECTION CABINET
P	POLE
PVC	POLYVINYL CHLORIDE
UL	UNDERWRITER LABORATORIES
⊗	OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL

- ELECTRICAL & GROUNDING NOTES**
1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
  2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
  3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
  4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
  5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
  6. RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
  7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
  8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL ROOM AND PROPOSED CELL SITE POWER PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
  9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON DRAWING A-1. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
  10. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
  11. GROUNDING SHALL COMPLY WITH NEC ART. 250.
  12. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.

13. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
14. ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
15. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
16. CONNECTIONS TO MGB SHALL BE ARRANGED IN THREE MAIN GROUPS: SURGE PRODUCERS (COAXIAL CABLE GROUND KITS, TELCO AND POWER PANEL GROUND); GROUNDING ELECTRODE RING OR BUILDING STEEL); NON-SURGING OBJECTS (EGB GROUND IN BTS UNIT).
17. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
18. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
19. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.
20. BOND ANTENNA EGB'S AND MGB TO WATER MAIN.
21. TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION.
22. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
23. VERIFY PROPOSED SERVICE UPGRADE WITH LOCAL UTILITY COMPANY PRIOR TO CONSTRUCTION.

**T-MOBILE NORTHEAST LLC**  
35 GRIFFIN ROAD SOUTH  
BLOOMFIELD, CT 06002  
OFFICE: (860) 648-1116

**CENTERLINE COMMUNICATIONS**  
750 WEST CENTER STREET  
SUITE #301  
WEST BRIDGEWATER, MA 02379

**HG HUDSON Design Group LLC**  
45 BEECHWOOD DRIVE  
N. ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 336-5586

STATE OF CONNECTICUT  
DANIEL P. HAMM  
No. 24178  
LICENSED PROFESSIONAL ENGINEER  
CONSTRUCTION DRAWINGS ARE VALID FOR ONE YEAR AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN

CHECKED BY: RP  
APPROVED BY: DPH

**SUBMITTALS**

REV.	DATE	DESCRIPTION	BY
1	12/08/20	ISSUED FOR CONSTRUCTION	VP
0	10/26/20	ISSUED FOR REVIEW	TR

SITE NUMBER:  
CT11506A  
SITE NAME:  
CT506/WILLIMANTIC ECSU  
SITE ADDRESS:  
83 WINDHAM STREET  
WILLIMANTIC, CT 06226  
WINDHAM COUNTY

SHEET TITLE  
**ONE-LINE DIAGRAM & GROUNDING DETAILS (ANCHOR 2020)**

SHEET NUMBER  
**E-1**

# Exhibit D

Structural Analysis Report



# vemSTRUCTURAL ANALYSIS REPORT

For

**SITE NUMBER: CT11506A (ANCHOR)**  
**SITE NAME: CT506/WILLIMATIC ESCU**

83 Windham Street  
Willimantic, CT 06226

**Antennas Mounted on the Tower**



Prepared for:



Dated: December 1, 2020

Prepared by:



45 Beechwood Drive  
North Andover, MA 01845  
(P) 978.557.5553 (F) 978.336.5586  
[www.hudsondesigngroupllc.com](http://www.hudsondesigngroupllc.com)



**HUDSON**  
Design Group LLC

### **SCOPE OF WORK:**

Hudson Design Group, LLC (HDG) has been authorized by T-Mobile to conduct a structural evaluation of the 175' monopole supporting the proposed T-Mobile's antennas located at elevation 117' above the ground level.

This report represents this office's findings, conclusions and recommendations pertaining to the support of T-Mobile's existing and proposed antennas listed below.

Record drawings of the existing monopole were not available for our use. Tower mapping report prepared by ProVertic LLC, dated October 5, 2020, was provided to this office.

### **CONCLUSION SUMMARY:**

Based on our evaluation, we have determined that the existing monopole and foundation **are in conformance** with the ANSI/TIA-222-G Standard for the loading considered under the criteria listed in this report. The tower structure is rated at **95.7 %** - (Base Plate at EL. 0' Controlling).



**APPURTENANCES CONFIGURATION:**

Tenant	Appurtenances	Elev.	Mount
	(1) Lighting Rod	178'	Top of Monopole
	(1) Omni	179'	Low Profile Platform
	(1) 8' Dipole	178'	Low Profile Platform
	(1) 6' Whip	176'	Low Profile Platform
	(1) 8' Dish	170'	Side Mount Standoff
	(1) 20' Omni	165.5'	Side Mount Standoff
	(1) 7' Dish	162.5'	Side Mount Standoff
	(1) 3' Dish	155.5'	Side Mount Standoff
	(3) APXVTM14 Antennas	150'	Low Profile Platform
	(3) APXVSP18-C Antennas	150'	Low Profile Platform
	(3) RRH8x20-25-FEU RRH's	150'	Low Profile Platform
	(3) RRH2x50-800 RRH's	150'	Low Profile Platform
	(3) RRH1900-4x45 RRH's	150'	Low Profile Platform
	(3) OPA65R-BU8BA Antennas	139'	Low Profile Platform
	(3) 800-10966 Antennas	139'	Low Profile Platform
	(3) AM-X-CD-17-65-00T-RET Antennas	139'	Low Profile Platform
	(3) 7770 Antennas	139'	Low Profile Platform
	(3) RRU-11 B12 RRH's	139'	Low Profile Platform
	(3) 4478 RRH's	139'	Low Profile Platform
	(3) 4415 RRH's	139'	Low Profile Platform
	(3) RRUS-32 RRH's	139'	Low Profile Platform
	(3) DBC0037F1V2-1	139'	Low Profile Platform
	(3) DBC0061F1V51-2	139'	Low Profile Platform
	(1) DC6-48-60-18-8F	139'	Ring Mount
	(1) Empty Mount	128'	Low Profile Platform
<b>T-Mobile</b>	<b>(3) APXVAARR24_43-U-NA20 Antennas</b>	117'	Low Profile Platform
<b>T-Mobile</b>	<b>(3) 4449 B71+B85 RRH's</b>	117'	Low Profile Platform
<b>T-Mobile</b>	<b>(3) Twin Style 1B - AWS TMA's</b>	117'	Low Profile Platform
<b>T-Mobile</b>	<b>(3) AIR 32 B66A B2A Antennas</b>	117'	Low Profile Platform
<b>T-Mobile</b>	<b>(3) AIR6449 B41 Antennas</b>	117'	Low Profile Platform
<b>T-Mobile</b>	<b>(3) 4415 B25 RRH's</b>	117'	Low Profile Platform
<b>T-Mobile</b>	<b>(3) SDX1926Q-43 Diplexers</b>	117'	Low Profile Platform
	(1) 5' Yagi	106'	Low Profile Platform
	(1) Antenna	102'	Low Profile Platform
	GPS	77'	Side Mount Standoff

\*Proposed T-Mobile Appurtenances shown in Bold.



**T-MOBILE EXISTING/PROPOSED COAX CABLES:**

Tenant	Coax Cables	Elev.	Mount
T-Mobile	(6) 1-5/8 Cables	117'	Inside Monopole
T-Mobile	(2) Fiber Cable	117'	Inside Monopole
T-Mobile	<b>(2) Fiber Cable</b>	117'	Inside Monopole

\*Proposed T-Mobile Coax Cables shown in Bold.

**ANALYSIS RESULTS SUMMARY:**

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
<b>Pole Section - L1</b>	35.3 %	175 - 130.5	PASS	
<b>Pole Section - L2</b>	60.8 %	130.5 - 86.75	PASS	
<b>Pole Section - L3</b>	65.3 %	86.75 - 43.5	PASS	
<b>Pole Section - L4</b>	61.0%	43.5 - 0	PASS	
<b>Base Plate</b>	<b>95.7 %</b>	-	PASS	<b>Controlling</b>

**FOUNDATION ANALYSIS RESULTS SUMMARY:**

	Design Reactions	Proposed Reactions	Pass/Fail	Comments
<b>MOMENT</b>	<b>5471 ft-k</b>	4934 ft-k	PASS	
<b>SHEAR</b>	<b>470 k</b>	40.9 k	PASS	



**HUDSON**  
Design Group LLC

### **DESIGN CRITERIA:**

1. EIA/TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

City/Town: Windham  
Nominal Wind Speed: 101 mph  
Structural Class: II  
Exposure Category: B  
Topographic Category: 1  
Nominal Ice Thickness: 1.0 inch

2. Approximate height above grade to proposed antennas: 117'

**\*Calculations and referenced documents are attached.**

### **ASSUMPTIONS:**

1. The appurtenances configuration is as stated in this report. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
2. The monopole and foundation are properly constructed and maintained. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. The support mounts and platforms are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.
4. All prior structural modification, if any, are assumed to be as per the data supplied (if available) and installed properly.

### **SUPPORT RECOMMENDATIONS:**

HDG recommends that the proposed antennas, diplexers and RRHs be mounted on the existing steel platform supported by the monopole.



**HUDSON**  
Design Group LLC



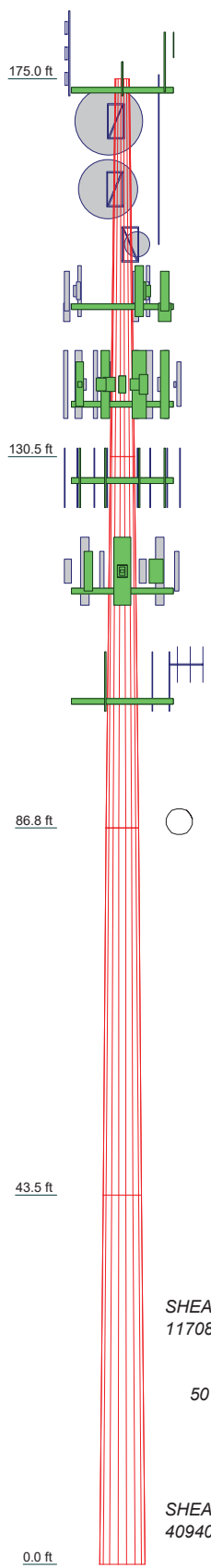
**Photo 1:** Photo illustrating the Monopole with Appurtenances shown.



**HUDSON**  
Design Group LLC

## CALCULATIONS

Section	1	2	3	4	
Length (ft)	44.50	43.75	43.25	43.50	
Number of Sides	18	18	18	18	
Thickness (in)	0.2688	0.3293	0.4017	0.4805	
Top Dia (in)	20.0500	34.3800	45.8400	54.4300	
Bot Dia (in)	34.3800	45.8400	54.4300	63.0300	
Grade	A572-65				
Weight (lb)	3481.2	6189.9	9332.1	13149.7	32152.9



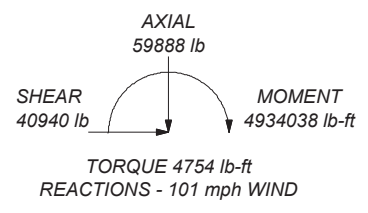
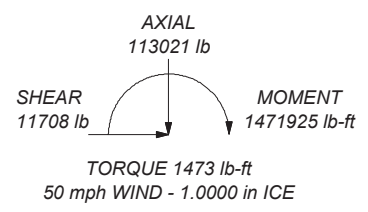
### MATERIAL STRENGTH

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

### TOWER DESIGN NOTES

1. Tower is located in Windham County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 101 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. Weld together tower sections have flange connections.
9. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
10. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
11. Welds are fabricated with ER-70S-6 electrodes.
12. TOWER RATING: 79%

ALL REACTIONS ARE FACTORED



<b>Hudson Design Group LLC</b>		Job: <b>CT11506A</b>	
45 Beechwood Drive			
North Andover, MA 01845			
Phone: (978) 557-5553			
FAX: (978) 336-5586			
Project: <b>175 ft Monopole</b>	Client: T-Mobile	Drawn by: RL	App'd:
Code: TIA-222-G	Date: 12/02/20	Scale: NTS	
Path:		Dwg No. E-1	

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## DESIGNED APPURTENANCE LOADING

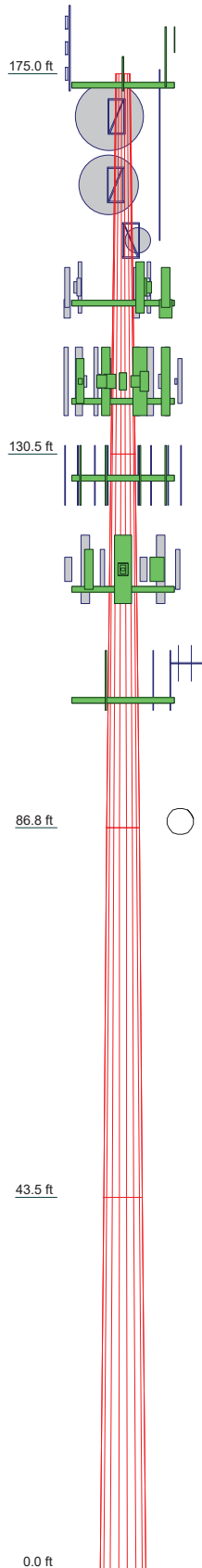
TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	175	Ericsson 4415 RRH	139
Pirot 13' Low Profile Platform	174	Ericsson 4415 RRH	139
6' Whip	174	Ericsson 4415 RRH	139
8' Dipole	174	Ericsson RRUS-32	139
7'x2" Antenna Mount Pipe	174	Ericsson RRUS-32	139
Omni 1"x3'	174	Ericsson RRUS-32	139
2' Side Mount Stanoff	170	DC6-48-60-18F	139
8' Dish	170	OPA65R-BU8BA w/ mount pipe	139
2' Side Mount Stanoff	162	OPA65R-BU8BA w/ mount pipe	139
7 Dish	162	Pirot 13' Low Profile Platform	137
Omni 3"x20'	155.5	7'x2" Antenna Mount Pipe	128
Pirot 4' Side Mount Standoff (1)	155.5	7'x2" Antenna Mount Pipe	128
3' Dish	155.5	7'x2" Antenna Mount Pipe	128
APXVSP18-C w/mount pipe	150	7'x2" Antenna Mount Pipe	128
APXVTM14 w/mount pipe	150	7'x2" Antenna Mount Pipe	128
APXVTM14 w/mount pipe	150	7'x2" Antenna Mount Pipe	128
APXVTM14 w/mount pipe	150	7'x2" Antenna Mount Pipe	128
RRH-800	150	7'x2" Antenna Mount Pipe	128
RRH-800	150	7'x2" Antenna Mount Pipe	128
RRH-800	150	7'x2" Antenna Mount Pipe	128
RRH-1900	150	Pirot 13' Low Profile Platform	128
RRH-1900	150	7'x2" Antenna Mount Pipe	128
RRH-1900	150	7'x2" Antenna Mount Pipe	128
TD-RRH8x20-25	150	AIR 32 B66A/B2A w/Mount Pipe	117
TD-RRH8x20-25	150	AIR 6449 B41 w/Mount Pipe	117
TD-RRH8x20-25	150	AIR 6449 B41 w/Mount Pipe	117
APXVSP18-C w/mount pipe	150	AIR 6449 B41 w/Mount Pipe	117
APXVSP18-C w/mount pipe	150	APXVARR24-43-C-NA20 w/Mount Pipe	117
Pirot 13' Low Profile Platform	148.5		
OPA65R-BU8BA w/ mount pipe	139	APXVARR24-43-C-NA20 w/Mount Pipe	117
800-10966 w/ mount pipe	139	APXVARR24-43-C-NA20 w/Mount Pipe	117
800-10966 w/ mount pipe	139		
800-10966 w/ mount pipe	139	Ericsson 4449 RRH	117
AM-X-CD-17-65-00T-RET w/mount pipe	139	Ericsson 4449 RRH	117
AM-X-CD-17-65-00T-RET w/mount pipe	139	Ericsson 4415 RRH	117
AM-X-CD-17-65-00T-RET w/mount pipe	139	Ericsson 4415 RRH	117
Powerwave 7770 w/mount pipe	139	Commscope Twin Style 1B - AWS	117
Powerwave 7770 w/mount pipe	139	Commscope Twin Style 1B - AWS	117
Powerwave 7770 w/mount pipe	139	Commscope Twin Style 1B - AWS	117
DBC0037F1V2-1	139	SDX1926Q-43	117
DBC0037F1V2-1	139	SDX1926Q-43	117
DBC0037F1V2-1	139	SDX1926Q-43	117
DBC0061F1V51-2	139	AIR 32 B66A/B2A w/Mount Pipe	117
DBC0061F1V51-2	139	AIR 32 B66A/B2A w/Mount Pipe	117
DBC0061F1V51-2	139	Pirot 13' Low Profile Platform	115
Ericsson RRU-11 B12	139	5' Yagi	106
Ericsson RRU-11 B12	139	7'x2" Antenna Mount Pipe	104
Ericsson RRU-11 B12	139	7'x2" Antenna Mount Pipe	104
Ericsson 4478 RRH	139	7'x2" Antenna Mount Pipe	104
Ericsson 4478 RRH	139	Pirot 13' Low Profile Platform	102
Ericsson 4478 RRH	139		

### MATERIAL STRENGTH

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

### TOWER DESIGN NOTES

1. Tower is located in Windham County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 101 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. Weld together tower sections have flange connections.
9. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
10. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
11. Welds are fabricated with ER-70S-6 electrodes.



Section	Length (ft)	Number of Sides	Thickness (in)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	44.50	18	0.2688	20.0500	34.3800	A572-65	3481.2
2	43.75	18	0.3293	34.3800	45.8400	A572-65	6189.9
3	43.25	18	0.4017	45.8400	54.4300	A572-65	9332.1
4	43.50	18	0.4805	54.4300	63.0300	A572-65	13149.7
							32152.9

<b>Hudson Design Group LLC</b>		Job: <b>CT11506A</b>	
45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586			
Project: <b>175 ft Monopole</b>		Client: T-Mobile	Drawn by: RL
Code: TIA-222-G		Date: 12/02/20	App'd:
Path:		Scale: NTS	Dwg No. E-1

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	<b>Project</b>	175 ft Monopole	<b>Date</b>	12:21:36 12/02/20
	<b>Client</b>	T-Mobile	<b>Designed by</b>	RL

## Tower Input Data

The tower is a monopole.

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

The following design criteria apply:

Tower is located in Windham County, Connecticut.

Basic wind speed of 101 mph.

Structure Class II.

Exposure Category B.

Topographic Category 1.

Crest Height 0.00 ft.

Nominal ice thickness of 1.0000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

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

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

Weld together tower sections have flange connections..

Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..

Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..

Welds are fabricated with ER-70S-6 electrodes..

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

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

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

## Tapered Pole Section Geometry

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	175.00-130.50	44.50	0.00	18	20.0500	34.3800	0.2688	1.0752	A572-65 (65 ksi)
L2	130.50-86.75	43.75	0.00	18	34.3800	45.8400	0.3293	1.3172	A572-65 (65 ksi)
L3	86.75-43.50	43.25	0.00	18	45.8400	54.4300	0.4017	1.6068	A572-65 (65 ksi)
L4	43.50-0.00	43.50		18	54.4300	63.0300	0.4805	1.9220	A572-65 (65 ksi)

## Monopole Base Plate Data

### Base Plate Data

Base plate is square

Base plate is grouted

Anchor bolt grade

Anchor bolt size

A615-75

2.2500 in

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Base Plate Data	
Number of bolts	18
Embedment length	60.0000 in
$f_c$	3 ksi
Grout space	4.5000 in
Base plate grade	A572-60
Base plate thickness	2.0000 in
Bolt circle diameter	72.0000 in
Outer diameter	78.5000 in
Inner diameter	60.0000 in
Base plate type	Stiffened Plate
Bolts per stiffener	1
Stiffener thickness	0.7500 in
Stiffener height	12.0000 in

### 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 <sup>2</sup> /ft	Weight plf
1 1/4	A	No	Yes	Inside Pole	174.00 - 8.00	1	No Ice	0.00	0.66
							1/2" Ice	0.00	0.66
							1" Ice	0.00	0.66
1 1/4	C	No	Yes	Inside Pole	174.00 - 8.00	1	No Ice	0.00	0.66
							1/2" Ice	0.00	0.66
							1" Ice	0.00	0.66
1 5/8	C	No	Yes	Inside Pole	174.00 - 8.00	1	No Ice	0.00	1.04
							1/2" Ice	0.00	1.04
							1" Ice	0.00	1.04
2	A	No	Yes	Inside Pole	170.00 - 8.00	1	No Ice	0.00	1.16
							1/2" Ice	0.00	1.16
							1" Ice	0.00	1.16
1/2	A	No	Yes	Inside Pole	163.00 - 8.00	1	No Ice	0.00	0.25
							1/2" Ice	0.00	0.25
							1" Ice	0.00	0.25
1 1/4	C	No	Yes	Inside Pole	156.00 - 8.00	2	No Ice	0.00	0.66
							1/2" Ice	0.00	0.66
							1" Ice	0.00	0.66
1 1/4	C	No	Yes	Inside Pole	150.00 - 8.00	3	No Ice	0.00	0.66
							1/2" Ice	0.00	0.66
							1" Ice	0.00	0.66
Hybrid Cable	C	No	Yes	Inside Pole	150.00 - 8.00	1	No Ice	0.00	1.70
							1/2" Ice	0.00	1.70
							1" Ice	0.00	1.70
1 5/8	C	No	Yes	Inside Pole	139.00 - 8.00	12	No Ice	0.00	1.04
							1/2" Ice	0.00	1.04
							1" Ice	0.00	1.04
2	C	No	Yes	Inside Pole	139.00 - 8.00	1	No Ice	0.00	1.16
							1/2" Ice	0.00	1.16
							1" Ice	0.00	1.16
1 5/8	B	No	Yes	Inside Pole	117.00 - 8.00	6	No Ice	0.00	1.04
							1/2" Ice	0.00	1.04
							1" Ice	0.00	1.04
Fiber Cable	B	No	Yes	Inside Pole	117.00 - 8.00	2	No Ice	0.00	0.48
							1/2" Ice	0.00	0.48
							1" Ice	0.00	0.48
Fiber Cable	B	No	Yes	Inside Pole	117.00 - 8.00	2	No Ice	0.00	0.48
							1/2" Ice	0.00	0.48
							1" Ice	0.00	0.48
1/2	A	No	Yes	Inside Pole	77.00 - 8.00	1	No Ice	0.00	0.25
							No Ice	0.00	0.25

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	<b>Client</b>	T-Mobile	<b>Designed by</b>	RL

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C <sub>AA</sub> ft <sup>2</sup> /ft	Weight plf
							1/2" Ice	0.00	0.25
							1" Ice	0.00	0.25
1/2	A	No	Yes	Inside Pole	102.00 - 8.00	1	No Ice	0.00	0.25
							1/2" Ice	0.00	0.25
							1" Ice	0.00	0.25
DC Cable	C	No	Yes	Inside Pole	139.00 - 8.00	2	No Ice	0.00	0.88
							1/2" Ice	0.00	0.88
							1" Ice	0.00	0.88
Fiber Cable	C	No	Yes	Inside Pole	139.00 - 8.00	1	No Ice	0.00	0.48
							1/2" Ice	0.00	0.48
							1" Ice	0.00	0.48

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment °	Placement ft		C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight lb
Lightning Rod	B	None		0.0000	175.00	No Ice	0.75	0.75	10.00
						1/2" Ice	1.25	1.25	40.00
						1" Ice	1.75	1.75	70.00
Pirol 13' Low Profile Platform	C	None		0.0000	174.00	No Ice	15.70	15.70	1300.00
						1/2" Ice	20.10	20.10	1690.00
						1" Ice	24.50	24.50	2080.00
6' Whip	B	From Face	3.50	0.0000	174.00	No Ice	1.43	1.43	0.00
			5.00			1/2" Ice	1.93	1.93	0.00
			3.00			1" Ice	2.31	2.31	0.00
8' Dipole	A	From Face	3.50	0.0000	174.00	No Ice	2.40	2.40	25.00
			-5.00			1/2" Ice	3.19	3.19	42.51
			4.00			1" Ice	3.67	3.67	65.37
7x2" Antenna Mount Pipe	C	From Face	3.50	0.0000	174.00	No Ice	1.66	1.66	26.00
			-5.00			1/2" Ice	2.39	2.39	38.58
			3.00			1" Ice	2.83	2.83	55.84
Omni 1"x3'	C	From Face	3.50	0.0000	174.00	No Ice	0.30	0.30	10.00
			-6.00			1/2" Ice	0.54	0.54	12.85
			5.00			1" Ice	0.73	0.73	17.79
2' Side Mount Stanoff	A	From Face	0.00	0.0000	170.00	No Ice	1.00	1.00	30.00
			0.00			1/2" Ice	1.50	1.50	50.00
			0.00			1" Ice	2.00	2.00	70.00
2' Side Mount Stanoff	A	From Face	0.00	0.0000	162.00	No Ice	1.00	1.00	30.00
			0.00			1/2" Ice	1.50	1.50	50.00
			0.00			1" Ice	2.00	2.00	70.00
Omni 3"x20'	B	From Face	5.00	0.0000	155.50	No Ice	6.00	6.00	50.00
			-2.00			1/2" Ice	8.03	8.03	93.17
			10.00			1" Ice	10.08	10.08	149.01
Pirol 4' Side Mount Standoff (1)	B	From Face	0.00	0.0000	155.50	No Ice	2.72	2.72	50.00
			0.00			1/2" Ice	4.91	4.91	89.00
			0.00			1" Ice	7.10	7.10	128.00
*****									
Pirol 13' Low Profile Platform	C	None		0.0000	148.50	No Ice	15.70	15.70	1300.00
						1/2" Ice	20.10	20.10	1690.00
						1" Ice	24.50	24.50	2080.00
APXVSP18-C w/mount pipe	A	From Face	3.50	0.0000	150.00	No Ice	8.02	7.23	83.90
			-2.00			1/2" Ice	8.48	8.19	151.78

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	<b>Client</b>	T-Mobile	<b>Designed by</b>	RL

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb	
APXVSPP18-C w/mount pipe	B	From Face	0.00		0.0000	150.00	1" Ice	8.94	9.02	227.47
			3.50				No Ice	8.02	7.23	83.90
			-2.00				1/2" Ice	8.48	8.19	151.78
APXVSPP18-C w/mount pipe	C	From Face	0.00		0.0000	150.00	1" Ice	8.94	9.02	227.47
			3.50				No Ice	8.02	7.23	83.90
			-2.00				1/2" Ice	8.48	8.19	151.78
APXVTM14 w/mount pipe	A	From Face	0.00		0.0000	150.00	1" Ice	8.94	9.02	227.47
			3.50				No Ice	6.65	7.43	89.90
			-5.00				1/2" Ice	7.14	8.30	157.77
APXVTM14 w/mount pipe	B	From Face	0.00		0.0000	150.00	1" Ice	7.60	9.04	232.75
			3.50				No Ice	6.65	7.43	89.90
			-5.00				1/2" Ice	7.14	8.30	157.77
APXVTM14 w/mount pipe	C	From Face	0.00		0.0000	150.00	1" Ice	7.60	9.04	232.75
			3.50				No Ice	6.65	7.43	89.90
			-5.00				1/2" Ice	7.14	8.30	157.77
RRH-800	A	From Face	0.00		0.0000	150.00	1" Ice	7.60	9.04	232.75
			3.50				No Ice	1.84	1.71	64.00
			-2.75				1/2" Ice	2.01	1.88	85.14
RRH-800	B	From Face	0.00		0.0000	150.00	1" Ice	2.19	2.05	109.25
			3.50				No Ice	1.84	1.71	64.00
			-2.75				1/2" Ice	2.01	1.88	85.14
RRH-800	C	From Face	0.00		0.0000	150.00	1" Ice	2.19	2.05	109.25
			3.50				No Ice	1.84	1.71	64.00
			-2.75				1/2" Ice	2.01	1.88	85.14
RRH-1900	A	From Face	0.00		0.0000	150.00	1" Ice	2.19	2.05	109.25
			3.50				No Ice	2.38	2.31	60.00
			-2.25				1/2" Ice	2.58	2.52	83.90
RRH-1900	B	From Face	0.00		0.0000	150.00	1" Ice	2.79	2.73	111.08
			3.50				No Ice	2.38	2.31	60.00
			-2.25				1/2" Ice	2.58	2.52	83.90
RRH-1900	C	From Face	0.00		0.0000	150.00	1" Ice	2.79	2.73	111.08
			3.50				No Ice	2.38	2.31	60.00
			-2.25				1/2" Ice	2.58	2.52	83.90
TD-RRH8x20-25	A	From Face	0.00		0.0000	150.00	1" Ice	2.79	2.73	111.08
			3.50				No Ice	3.70	1.29	70.00
			-5.00				1/2" Ice	3.95	1.46	93.94
TD-RRH8x20-25	B	From Face	-2.50		0.0000	150.00	1" Ice	4.20	1.64	121.22
			3.50				No Ice	3.70	1.29	70.00
			-5.00				1/2" Ice	3.95	1.46	93.94
TD-RRH8x20-25	C	From Face	-2.50		0.0000	150.00	1" Ice	4.20	1.64	121.22
			3.50				No Ice	3.70	1.29	70.00
			-5.00				1/2" Ice	3.95	1.46	93.94
*****										
Pirod 13' Low Profile Platform	C	None			0.0000	137.00	No Ice	15.70	15.70	1300.00
							1/2" Ice	20.10	20.10	1690.00
							1" Ice	24.50	24.50	2080.00
OPA65R-BU8BA w/ mount pipe	A	From Face	3.50		0.0000	139.00	No Ice	11.22	10.56	98.20
			-5.00				1/2" Ice	11.84	11.98	188.74
			0.00				1" Ice	12.46	13.26	289.08
OPA65R-BU8BA w/ mount pipe	B	From Face	3.50		0.0000	139.00	No Ice	11.22	10.56	98.20
			-5.00				1/2" Ice	11.84	11.98	188.74
			0.00				1" Ice	12.46	13.26	289.08
OPA65R-BU8BA w/ mount pipe	C	From Face	3.50		0.0000	139.00	No Ice	11.22	10.56	98.20
			-5.00				1/2" Ice	11.84	11.98	188.74
			0.00				1" Ice	12.46	13.26	289.08
800-10966 w/ mount pipe	A	From Face	3.50		0.0000	139.00	No Ice	17.36	9.40	144.20

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb	
				-2.00			1/2" Ice	17.99	10.82	257.48
				0.00			1" Ice	18.63	12.09	380.99
800-10966 w/ mount pipe	B	From Face	3.50	0.0000	139.00	No Ice	17.36	9.40	144.20	
			-2.00			1/2" Ice	17.99	10.82	257.48	
			0.00			1" Ice	18.63	12.09	380.99	
800-10966 w/ mount pipe	C	From Face	3.50	0.0000	139.00	No Ice	17.36	9.40	144.20	
			-2.00			1/2" Ice	17.99	10.82	257.48	
			0.00			1" Ice	18.63	12.09	380.99	
AM-X-CD-17-65-00T-RET w/mount pipe	A	From Face	3.50	0.0000	139.00	No Ice	11.31	8.70	89.20	
			2.00			1/2" Ice	11.93	10.11	171.69	
			0.00			1" Ice	12.55	11.38	263.83	
AM-X-CD-17-65-00T-RET w/mount pipe	B	From Face	3.50	0.0000	139.00	No Ice	11.31	8.70	89.20	
			2.00			1/2" Ice	11.93	10.11	171.69	
			0.00			1" Ice	12.55	11.38	263.83	
AM-X-CD-17-65-00T-RET w/mount pipe	C	From Face	3.50	0.0000	139.00	No Ice	11.31	8.70	89.20	
			2.00			1/2" Ice	11.93	10.11	171.69	
			0.00			1" Ice	12.55	11.38	263.83	
Powerwave 7770 w/mount pipe	A	From Face	3.50	0.0000	139.00	No Ice	6.64	4.90	49.90	
			5.00			1/2" Ice	7.11	5.79	102.83	
			0.00			1" Ice	7.56	6.55	162.75	
Powerwave 7770 w/mount pipe	B	From Face	3.50	0.0000	139.00	No Ice	6.64	4.90	49.90	
			5.00			1/2" Ice	7.11	5.79	102.83	
			0.00			1" Ice	7.56	6.55	162.75	
Powerwave 7770 w/mount pipe	C	From Face	3.00	0.0000	139.00	No Ice	6.64	4.90	49.90	
			5.00			1/2" Ice	7.11	5.79	102.83	
			0.00			1" Ice	7.56	6.55	162.75	
DBC0037F1V2-1	A	From Face	3.00	0.0000	139.00	No Ice	0.13	0.32	6.40	
			-2.00			1/2" Ice	0.19	0.40	9.15	
			0.00			1" Ice	0.25	0.48	13.06	
DBC0037F1V2-1	B	From Face	3.00	0.0000	139.00	No Ice	0.13	0.32	6.40	
			-2.00			1/2" Ice	0.19	0.40	9.15	
			0.00			1" Ice	0.25	0.48	13.06	
DBC0037F1V2-1	C	From Face	3.00	0.0000	139.00	No Ice	0.13	0.32	6.40	
			-2.00			1/2" Ice	0.19	0.40	9.15	
			0.00			1" Ice	0.25	0.48	13.06	
DBC0061F1V51-2	A	From Face	3.00	0.0000	139.00	No Ice	0.41	0.43	26.00	
			5.00			1/2" Ice	0.50	0.52	31.30	
			0.00			1" Ice	0.59	0.61	38.14	
DBC0061F1V51-2	B	From Face	3.00	0.0000	139.00	No Ice	0.41	0.43	26.00	
			5.00			1/2" Ice	0.50	0.52	31.30	
			0.00			1" Ice	0.59	0.61	38.14	
DBC0061F1V51-2	C	From Face	3.00	0.0000	139.00	No Ice	0.41	0.43	26.00	
			5.00			1/2" Ice	0.50	0.52	31.30	
			0.00			1" Ice	0.59	0.61	38.14	
Ericsson RRU-11 B12	A	From Face	3.00	0.0000	139.00	No Ice	2.79	1.19	51.00	
			1.50			1/2" Ice	3.00	1.34	71.87	
			0.00			1" Ice	3.21	1.50	95.78	
Ericsson RRU-11 B12	B	From Face	3.00	0.0000	139.00	No Ice	2.79	1.19	51.00	
			1.50			1/2" Ice	3.00	1.34	71.87	
			0.00			1" Ice	3.21	1.50	95.78	
Ericsson RRU-11 B12	C	From Face	3.00	0.0000	139.00	No Ice	2.79	1.19	51.00	
			1.50			1/2" Ice	3.00	1.34	71.87	
			0.00			1" Ice	3.21	1.50	95.78	
Ericsson 4478 RRH	A	From Face	3.00	0.0000	139.00	No Ice	2.02	1.25	60.00	
			2.50			1/2" Ice	2.20	1.40	77.66	
			0.00			1" Ice	2.39	1.56	98.08	
Ericsson 4478 RRH	B	From Face	3.00	0.0000	139.00	No Ice	2.02	1.25	60.00	

<b>tnxTower</b>  <b>Hudson Design Group LLC</b> 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	<b>Job</b>		CT11506A				<b>Page</b>		6 of 12
	<b>Project</b>		175 ft Monopole				<b>Date</b>		12:21:36 12/02/20
	<b>Client</b>		T-Mobile				<b>Designed by</b>		RL

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight	
			ft ft ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb	
			2.50			1/2" Ice	2.20	1.40	77.66
			0.00			1" Ice	2.39	1.56	98.08
Ericsson 4478 RRH	C	From Face	3.00	0.0000	139.00	No Ice	2.02	1.25	60.00
			2.50			1/2" Ice	2.20	1.40	77.66
			0.00			1" Ice	2.39	1.56	98.08
Ericsson 4415 RRH	A	From Face	3.00	0.0000	139.00	No Ice	1.86	0.87	50.00
			-1.50			1/2" Ice	2.03	1.00	64.55
			0.00			1" Ice	2.20	1.13	81.65
Ericsson 4415 RRH	B	From Face	3.00	0.0000	139.00	No Ice	1.86	0.87	50.00
			-1.50			1/2" Ice	2.03	1.00	64.55
			0.00			1" Ice	2.20	1.13	81.65
Ericsson 4415 RRH	C	From Face	3.00	0.0000	139.00	No Ice	1.86	0.87	50.00
			-1.50			1/2" Ice	2.03	1.00	64.55
			0.00			1" Ice	2.20	1.13	81.65
Ericsson RRUS-32	A	From Face	3.00	0.0000	139.00	No Ice	2.74	1.67	60.00
			-2.50			1/2" Ice	2.96	1.86	81.11
			0.00			1" Ice	3.19	2.05	105.42
Ericsson RRUS-32	B	From Face	3.00	0.0000	139.00	No Ice	2.74	1.67	60.00
			-2.50			1/2" Ice	2.96	1.86	81.11
			0.00			1" Ice	3.19	2.05	105.42
Ericsson RRUS-32	C	From Face	3.00	0.0000	139.00	No Ice	2.74	1.67	60.00
			-2.50			1/2" Ice	2.96	1.86	81.11
			0.00			1" Ice	3.19	2.05	105.42
DC6-48-60-18F	C	None		0.0000	139.00	No Ice	0.81	0.81	33.00
						1/2" Ice	1.30	1.30	48.38
						1" Ice	1.48	1.48	66.11
*****									
Pirod 13' Low Profile Platform	C	None		0.0000	128.00	No Ice	15.70	15.70	1300.00
						1/2" Ice	20.10	20.10	1690.00
						1" Ice	24.50	24.50	2080.00
7'x2" Antenna Mount Pipe	A	From Face	3.50	0.0000	128.00	No Ice	1.66	1.66	26.00
			-5.00			1/2" Ice	2.39	2.39	38.58
			0.00			1" Ice	2.83	2.83	55.84
7'x2" Antenna Mount Pipe	A	From Face	3.50	0.0000	128.00	No Ice	1.66	1.66	26.00
			-2.00			1/2" Ice	2.39	2.39	38.58
			0.00			1" Ice	2.83	2.83	55.84
7'x2" Antenna Mount Pipe	A	From Face	3.50	0.0000	128.00	No Ice	1.66	1.66	26.00
			2.00			1/2" Ice	2.39	2.39	38.58
			0.00			1" Ice	2.83	2.83	55.84
7'x2" Antenna Mount Pipe	A	From Face	3.50	0.0000	128.00	No Ice	1.66	1.66	26.00
			5.00			1/2" Ice	2.39	2.39	38.58
			0.00			1" Ice	2.83	2.83	55.84
7'x2" Antenna Mount Pipe	B	From Face	3.50	0.0000	128.00	No Ice	1.66	1.66	26.00
			-5.00			1/2" Ice	2.39	2.39	38.58
			0.00			1" Ice	2.83	2.83	55.84
7'x2" Antenna Mount Pipe	B	From Face	3.50	0.0000	128.00	No Ice	1.66	1.66	26.00
			-2.00			1/2" Ice	2.39	2.39	38.58
			0.00			1" Ice	2.83	2.83	55.84
7'x2" Antenna Mount Pipe	B	From Face	3.50	0.0000	128.00	No Ice	1.66	1.66	26.00
			2.00			1/2" Ice	2.39	2.39	38.58
			0.00			1" Ice	2.83	2.83	55.84
7'x2" Antenna Mount Pipe	B	From Face	3.50	0.0000	128.00	No Ice	1.66	1.66	26.00
			5.00			1/2" Ice	2.39	2.39	38.58
			0.00			1" Ice	2.83	2.83	55.84
7'x2" Antenna Mount Pipe	C	From Face	3.50	0.0000	128.00	No Ice	1.66	1.66	26.00
			-5.00			1/2" Ice	2.39	2.39	38.58
			0.00			1" Ice	2.83	2.83	55.84

<b>tnxTower</b>  <b>Hudson Design Group LLC</b> 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	<b>Job</b>	CT11506A	<b>Page</b>	7 of 12
	<b>Project</b>	175 ft Monopole	<b>Date</b>	12:21:36 12/02/20
	<b>Client</b>	T-Mobile	<b>Designed by</b>	RL

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb
7'x2" Antenna Mount Pipe	C	From Face	3.50	0.0000	128.00	No Ice	1.66	1.66	26.00
			-2.00			1/2" Ice	2.39	2.39	38.58
			0.00			1" Ice	2.83	2.83	55.84
7'x2" Antenna Mount Pipe	C	From Face	3.50	0.0000	128.00	No Ice	1.66	1.66	26.00
			2.00			1/2" Ice	2.39	2.39	38.58
			0.00			1" Ice	2.83	2.83	55.84
7'x2" Antenna Mount Pipe	C	From Face	3.50	0.0000	128.00	No Ice	1.66	1.66	26.00
			5.00			1/2" Ice	2.39	2.39	38.58
			0.00			1" Ice	2.83	2.83	55.84
*****									
Pirod 13' Low Profile Platform	C	None		0.0000	115.00	No Ice	15.70	15.70	1300.00
						1/2" Ice	20.10	20.10	1690.00
						1" Ice	24.50	24.50	2080.00
AIR 32 B66A/B2A w/Mount Pipe	C	From Face	3.50	0.0000	117.00	No Ice	6.81	6.14	154.10
			4.00			1/2" Ice	7.30	6.99	215.81
			0.00			1" Ice	7.76	7.73	284.46
AIR 32 B66A/B2A w/Mount Pipe	A	From Face	3.50	0.0000	117.00	No Ice	6.81	6.14	154.10
			4.00			1/2" Ice	7.30	6.99	215.81
			0.00			1" Ice	7.76	7.73	284.46
AIR 32 B66A/B2A w/Mount Pipe	B	From Face	3.50	0.0000	117.00	No Ice	6.81	6.14	154.10
			4.00			1/2" Ice	7.30	6.99	215.81
			0.00			1" Ice	7.76	7.73	284.46
AIR 6449 B41 w/Mount Pipe	C	From Face	3.50	0.0000	117.00	No Ice	6.42	3.89	124.90
			-4.00			1/2" Ice	7.00	4.62	179.59
			0.00			1" Ice	7.50	5.22	240.17
AIR 6449 B41 w/Mount Pipe	A	From Face	3.50	0.0000	117.00	No Ice	6.42	3.89	124.90
			-4.00			1/2" Ice	7.00	4.62	179.59
			0.00			1" Ice	7.50	5.22	240.17
AIR 6449 B41 w/Mount Pipe	B	From Face	3.50	0.0000	117.00	No Ice	6.42	3.89	124.90
			-4.00			1/2" Ice	7.00	4.62	179.59
			0.00			1" Ice	7.50	5.22	240.17
APXVARR24-43-C-NA20 w/Mount Pipe	C	From Face	3.50	0.0000	117.00	No Ice	20.18	10.75	157.20
			0.00			1/2" Ice	20.83	12.18	290.57
			0.00			1" Ice	21.48	13.46	434.52
APXVARR24-43-C-NA20 w/Mount Pipe	A	From Face	3.50	0.0000	117.00	No Ice	20.18	10.75	157.20
			0.00			1/2" Ice	20.83	12.18	290.57
			0.00			1" Ice	21.48	13.46	434.52
APXVARR24-43-C-NA20 w/Mount Pipe	B	From Face	3.50	0.0000	117.00	No Ice	20.18	10.75	157.20
			0.00			1/2" Ice	20.83	12.18	290.57
			0.00			1" Ice	21.48	13.46	434.52
Ericsson 4449 RRH	C	From Face	3.00	0.0000	117.00	No Ice	1.97	1.55	73.00
			0.00			1/2" Ice	2.15	1.71	92.52
			0.00			1" Ice	2.33	1.88	114.92
Ericsson 4449 RRH	A	From Face	3.00	0.0000	117.00	No Ice	1.97	1.55	73.00
			0.00			1/2" Ice	2.15	1.71	92.52
			0.00			1" Ice	2.33	1.88	114.92
Ericsson 4449 RRH	B	From Face	3.00	0.0000	117.00	No Ice	1.97	1.55	73.00
			0.00			1/2" Ice	2.15	1.71	92.52
			0.00			1" Ice	2.33	1.88	114.92
Ericsson 4415 RRH	C	From Face	3.00	0.0000	117.00	No Ice	1.86	0.87	50.00
			0.00			1/2" Ice	2.03	1.00	64.55
			0.00			1" Ice	2.20	1.13	81.65
Ericsson 4415 RRH	A	From Face	3.00	0.0000	117.00	No Ice	1.86	0.87	50.00
			0.00			1/2" Ice	2.03	1.00	64.55
			0.00			1" Ice	2.20	1.13	81.65
Ericsson 4415 RRH	B	From Face	3.00	0.0000	117.00	No Ice	1.86	0.87	50.00
			0.00			1/2" Ice	2.03	1.00	64.55
			0.00			1" Ice	2.20	1.13	81.65



<b>tnxTower</b>  <b>Hudson Design Group LLC</b> 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	<b>Job</b>	CT11506A	<b>Page</b>	8 of 12
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	<b>Client</b>	T-Mobile	<b>Designed by</b>	RL

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	Ice	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			ft	°	ft		ft <sup>2</sup>	ft <sup>2</sup>	lb
Commscope Twin Style 1B - AWS	C	From Face	0.00	-2.0000	117.00	1" Ice	2.20	1.13	81.65
			3.00			No Ice	0.75	0.46	16.00
			0.00			1/2" Ice	0.86	0.55	22.77
Commscope Twin Style 1B - AWS	A	From Face	0.00	-2.0000	117.00	1" Ice	0.97	0.65	31.29
			3.00			No Ice	0.75	0.46	16.00
			0.00			1/2" Ice	0.86	0.55	22.77
Commscope Twin Style 1B - AWS	B	From Face	0.00	-2.0000	117.00	1" Ice	0.97	0.65	31.29
			3.00			No Ice	0.75	0.46	16.00
			0.00			1/2" Ice	0.86	0.55	22.77
SDX1926Q-43	C	From Face	0.00	-3.0000	117.00	1" Ice	0.97	0.65	31.29
			3.00			No Ice	0.24	0.10	6.00
			0.00			1/2" Ice	0.31	0.14	8.47
SDX1926Q-43	A	From Face	0.00	-3.0000	117.00	1" Ice	0.38	0.20	12.04
			3.00			No Ice	0.24	0.10	6.00
			0.00			1/2" Ice	0.31	0.14	8.47
SDX1926Q-43	B	From Face	0.00	-3.0000	117.00	1" Ice	0.38	0.20	12.04
			3.00			No Ice	0.24	0.10	6.00
			0.00			1/2" Ice	0.31	0.14	8.47
*****									
Pirod 13' Low Profile Platform	C	None		0.0000	102.00	No Ice	15.70	15.70	1300.00
						1/2" Ice	20.10	20.10	1690.00
						1" Ice	24.50	24.50	2080.00
5' Yagi	B	From Face	3.50	0.0000	106.00	No Ice	4.00	4.00	30.00
			2.00			1/2" Ice	5.50	5.50	50.00
			0.00			1" Ice	7.00	7.00	70.00
7'x2" Antenna Mount Pipe	B	From Face	3.50	0.0000	104.00	No Ice	1.66	1.66	26.00
			2.00			1/2" Ice	2.39	2.39	38.58
			0.00			1" Ice	2.83	2.83	55.84
7'x2" Antenna Mount Pipe	B	From Face	3.50	0.0000	104.00	No Ice	1.66	1.66	26.00
			-2.00			1/2" Ice	2.39	2.39	38.58
			0.00			1" Ice	2.83	2.83	55.84
7'x2" Antenna Mount Pipe	C	From Face	3.50	0.0000	104.00	No Ice	1.66	1.66	26.00
			2.00			1/2" Ice	2.39	2.39	38.58
			0.00			1" Ice	2.83	2.83	55.84

## Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight	
				ft	°	°	ft	ft	ft <sup>2</sup>	lb	
8' Dish	A	Grid	From Face	1.00	0.0000		170.00	8.00	No Ice	50.27	113.00
				0.00					1/2" Ice	51.32	376.44
				0.00					1" Ice	52.37	639.89
7' Dish	A	Paraboloid w/Shroud (HP)	From Face	1.00	0.0000		162.00	7.00	No Ice	38.48	41.00
				0.00					1/2" Ice	39.41	243.30
				0.00					1" Ice	40.33	445.61
3' Dish	B	Grid	From Face	1.00	0.0000		155.50	3.00	No Ice	7.07	16.00
				0.00					1/2" Ice	7.47	53.35
				0.00					1" Ice	7.86	91.69

<p><b>tnxTower</b></p> <p><b>Hudson Design Group LLC</b>  45 Beechwood Drive  North Andover, MA 01845  Phone: (978) 557-5553  FAX: (978) 336-5586</p>	<b>Job</b> CT11506A	<b>Page</b> 9 of 12
	<b>Project</b> 175 ft Monopole	<b>Date</b> 12:21:36 12/02/20
	<b>Client</b> T-Mobile	<b>Designed by</b> RL

## Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 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

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	<b>Project</b>	175 ft Monopole	<b>Date</b>	12:21:36 12/02/20
	<b>Client</b>	T-Mobile	<b>Designed by</b>	RL

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	26	113021.03	-0.18	-0.79
	Max. H <sub>x</sub>	21	44916.20	40278.29	768.56
	Max. H <sub>z</sub>	3	44916.20	955.47	39525.22
	Max. M <sub>x</sub>	2	4693232.02	955.46	39524.96
	Max. M <sub>z</sub>	8	4901928.54	-40751.62	-823.33
	Max. Torsion	5	3417.36	-19245.11	33963.59
	Min. Vert	9	44916.00	-40749.38	-823.25
	Min. H <sub>x</sub>	8	59888.18	-40751.62	-823.33
	Min. H <sub>z</sub>	15	44916.15	-1346.02	-39596.32
	Min. M <sub>x</sub>	14	-4704114.03	-1345.98	-39595.60
	Min. M <sub>z</sub>	20	-4821493.01	40278.01	768.56
	Min. Torsion	18	-4754.31	34772.24	-18935.96

### Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear <sub>x</sub> lb	Shear <sub>z</sub> lb	Overturning Moment, M <sub>x</sub> lb-ft	Overturning Moment, M <sub>z</sub> lb-ft	Torque lb-ft
Dead Only	49906.92	0.00	-0.00	-301.15	-364.94	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	59888.26	-955.46	-39524.96	-4693232.02	162476.33	-2170.86
0.9 Dead+1.6 Wind 0 deg - No Ice	44916.20	-955.47	-39525.22	-4654220.87	160977.03	-2171.70
1.2 Dead+1.6 Wind 30 deg - No Ice	59888.29	19245.07	-33963.51	-4017773.75	-2257280.27	-3417.20
0.9 Dead+1.6 Wind 30 deg - No Ice	44916.22	19245.11	-33963.59	-3984427.01	-2238587.31	-3417.36
1.2 Dead+1.6 Wind 60 deg - No Ice	59888.30	35046.40	-18654.78	-2158812.36	-4201942.78	-2983.32
0.9 Dead+1.6 Wind 60 deg - No Ice	44916.22	35046.32	-18654.74	-2141104.71	-4166721.43	-2982.96
1.2 Dead+1.6 Wind 90 deg - No Ice	59888.18	40751.62	823.33	138967.50	-4901928.54	-3191.45
0.9 Dead+1.6 Wind 90 deg - No Ice	44916.00	40749.38	823.25	137668.91	-4860482.06	-3190.40
1.2 Dead+1.6 Wind 120 deg - No Ice	59888.30	35470.93	20442.64	2462126.33	-4275823.57	-2580.91
0.9 Dead+1.6 Wind 120 deg - No Ice	44916.22	35470.84	20442.59	2441590.28	-4239870.22	-2579.23
1.2 Dead+1.6 Wind 150 deg - No Ice	59888.30	21076.91	34781.13	4158761.17	-2569934.08	-1245.62
0.9 Dead+1.6 Wind 150 deg - No Ice	44916.22	21076.93	34781.16	4124188.17	-2548131.68	-1243.79
1.2 Dead+1.6 Wind 180 deg - No Ice	59888.19	1345.98	39595.60	4704114.03	-228435.31	396.87
0.9 Dead+1.6 Wind 180 deg - No Ice	44916.15	1346.02	39596.32	4665261.22	-226057.87	398.28
1.2 Dead+1.6 Wind 210 deg - No Ice	59888.30	-19818.79	33632.53	3960202.29	2354819.82	3397.58
0.9 Dead+1.6 Wind 210 deg - No Ice	44916.22	-19818.75	33632.45	3927596.16	2335376.82	3397.66
1.2 Dead+1.6 Wind 240 deg - No Ice	59888.29	-34772.24	18935.96	2205084.33	4155573.90	4754.31
0.9 Dead+1.6 Wind 240 deg - No Ice	44916.22	-34772.32	18936.00	2187114.64	4121064.88	4753.41

<p style="text-align: center;"><b>tnxTower</b></p> <p style="text-align: center;"><b>Hudson Design Group LLC</b> 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586</p>	Job	CT11506A	Page	11 of 12
	Project	175 ft Monopole	Date	12:21:36 12/02/20
	Client	T-Mobile	Designed by	RL

Load Combination	Vertical lb	Shear <sub>x</sub> lb	Shear <sub>z</sub> lb	Overturning Moment, M <sub>x</sub> lb-ft	Overturning Moment, M <sub>z</sub> lb-ft	Torque lb-ft
No Ice						
1.2 Dead+1.6 Wind 270 deg - No Ice	59888.26	-40278.01	-768.56	-131079.14	4821493.01	4386.43
0.9 Dead+1.6 Wind 270 deg - No Ice	44916.20	-40278.29	-768.56	-129686.26	4781417.83	4384.94
1.2 Dead+1.6 Wind 300 deg - No Ice	59888.30	-35184.16	-20288.67	-2437616.20	4227940.85	2584.17
0.9 Dead+1.6 Wind 300 deg - No Ice	44916.22	-35184.08	-20288.62	-2417129.26	4192674.99	2582.56
1.2 Dead+1.6 Wind 330 deg - No Ice	59888.30	-20751.92	-34420.00	-4098473.47	2515237.70	71.62
0.9 Dead+1.6 Wind 330 deg - No Ice	44916.22	-20751.87	-34419.92	-4064285.17	2494187.26	70.21
1.2 Dead+1.0 Ice+1.0 Temp	113021.03	0.18	0.79	-4139.88	133.15	-0.01
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	113021.02	-188.74	-11143.01	-1374331.27	34653.05	-60.41
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	113021.02	5469.98	-9548.77	-1171662.32	-665875.30	-420.54
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	113021.01	10222.14	-5022.90	-587592.25	-1292121.02	141.59
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	113021.01	11599.30	469.10	82495.29	-1453800.49	-348.27
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	113021.01	10144.80	5844.18	730941.51	-1277610.54	-1056.93
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	113021.01	6191.94	9778.52	1205552.57	-799833.96	-1473.08
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	113021.02	673.67	11362.70	1405846.34	-126121.71	-1122.63
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	113021.02	-5599.50	9509.98	1155506.90	688983.48	510.63
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	113021.02	-9803.80	5429.37	654076.68	1213784.24	1117.15
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	113021.02	-11351.78	-72.67	-18170.96	1407819.32	1333.02
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	113021.01	-9954.99	-5646.55	-704200.24	1241849.78	979.50
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	113021.02	-5751.75	-9710.86	-1202529.45	717978.76	397.34
Dead+Wind 0 deg - Service	49906.91	-188.52	-7799.34	-921946.58	31594.48	-428.49
Dead+Wind 30 deg - Service	49906.91	3797.53	-6701.83	-789257.82	-443584.56	-678.52
Dead+Wind 60 deg - Service	49906.91	6915.46	-3681.05	-424240.63	-825479.65	-599.68
Dead+Wind 90 deg - Service	49906.91	8041.68	162.46	27029.71	-963090.49	-638.81
Dead+Wind 120 deg - Service	49906.91	6999.22	4033.80	483319.19	-840065.75	-512.73
Dead+Wind 150 deg - Service	49906.91	4158.94	6863.12	816538.45	-505001.86	-242.58
Dead+Wind 180 deg - Service	49906.91	265.59	7813.58	923647.55	-45118.65	86.06
Dead+Wind 210 deg - Service	49906.91	-3910.71	6636.50	777468.61	462145.35	674.45
Dead+Wind 240 deg - Service	49906.91	-6861.40	3736.54	432827.23	815800.13	941.26
Dead+Wind 270 deg - Service	49906.91	-7947.93	-151.64	-25970.64	946639.60	868.88
Dead+Wind 300 deg - Service	49906.91	-6942.64	-4003.42	-478984.88	830062.28	513.53
Dead+Wind 330 deg - Service	49906.91	-4094.82	-6791.86	-805160.43	493665.93	16.59

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	175 - 130.5	19.786	43	0.9446	0.0083
L2	130.5 - 86.75	11.314	43	0.8320	0.0032

<b>tnxTower</b>  <b>Hudson Design Group LLC</b> 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	<b>Job</b>	CT11506A	<b>Page</b>	12 of 12
	<b>Project</b>	175 ft Monopole	<b>Date</b>	12:21:36 12/02/20
	<b>Client</b>	T-Mobile	<b>Designed by</b>	RL

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L3	86.75 - 43.5	4.870	43	0.5520	0.0012
L4	43.5 - 0	1.173	43	0.2583	0.0004

### Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
175.00	Lightning Rod	43	19.786	0.9446	0.0083	96358
174.00	Pirod 13' Low Profile Platform	43	19.587	0.9431	0.0081	96358
170.00	8' Dish	43	18.793	0.9369	0.0076	96358
162.00	7' Dish	43	17.213	0.9236	0.0066	37061
155.50	3' Dish	43	15.944	0.9110	0.0058	24707
150.00	APXVSP18-C w/mount pipe	43	14.885	0.8985	0.0051	19271
148.50	Pirod 13' Low Profile Platform	43	14.600	0.8947	0.0049	18180
139.00	OPA65R-BU8BA w/ mount pipe	43	12.829	0.8660	0.0039	13382
137.00	Pirod 13' Low Profile Platform	43	12.466	0.8587	0.0037	12678
128.00	Pirod 13' Low Profile Platform	43	10.882	0.8202	0.0030	10662
117.00	AIR 32 B66A/B2A w/Mount Pipe	43	9.069	0.7599	0.0023	9916
115.00	Pirod 13' Low Profile Platform	43	8.755	0.7476	0.0021	9794
106.00	5' Yagi	43	7.403	0.6887	0.0017	9280
104.00	7'x2" Antenna Mount Pipe	43	7.117	0.6750	0.0017	9173
102.00	Pirod 13' Low Profile Platform	43	6.836	0.6611	0.0016	9069

### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$\phi P_{allow}$ lb	% Capacity	Pass Fail
L1	175 - 130.5	Pole	TP34.38x20.05x0.2688	1	-11921.80	218618.00	35.3	Pass
L2	130.5 - 86.75	Pole	TP45.84x34.38x0.3293	2	-28129.20	636059.00	60.8	Pass
L3	86.75 - 43.5	Pole	TP54.43x45.84x0.4017	3	-41811.70	1298170.00	65.3	Pass
L4	43.5 - 0	Pole	TP63.03x54.43x0.4805	4	-59865.10	2409520.00	61.0	Pass
Summary								
Pole (L3)							65.3	Pass
Base Plate							79.0	Pass
<b>RATING =</b>							<b>79.0</b>	<b>Pass</b>

## Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

**Assumption:** Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)\*(Rod Diameter)

Site Data	
BU#:	CT11506A
Site Name:	CT506/WILLIMATIC ESCU
App #:	0
Pole Manufacturer:	Other

Reactions		
Mu:	4934	ft-kips
Axial, Pu:	60	kips
Shear, Vu:	41	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

Anchor Rod Data		
Qty:	18	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	72	in

If No stiffeners, Criteria: AISC LRFD <-Only Applicable to Unstiffened Cases

<b>Anchor Rod Results</b>		<span style="border: 1px solid black; padding: 2px;">Stiffened</span>
Max Rod (Cu+ Vu/η):	190.6 Kips	<span style="border: 1px solid black; padding: 2px;">AISC LRFD</span>
Allowable Axial, Φ*Fu*Anet:	260.0 Kips	<span style="border: 1px solid black; padding: 2px;">φ*Fy</span>
Anchor Rod Stress Ratio:	73.3% <span style="color: green;">Pass</span>	

Plate Data		
Diam:	78.5	in
Thick:	2	in
Grade:	60	ksi
Single-Rod B-eff:	11.11	in

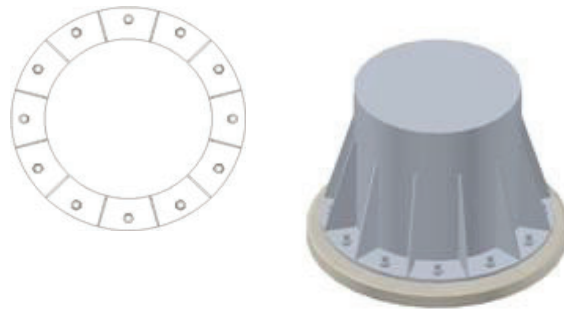
<b>Base Plate Results</b>		<span style="border: 1px solid black; padding: 2px;">Stiffened</span>
Base Plate Stress:	#NAME? ksi	<span style="border: 1px solid black; padding: 2px;">AISC LRFD</span>
Allowable Plate Stress:	54.0 ksi	<span style="border: 1px solid black; padding: 2px;">φ*Fy</span>
Base Plate Stress Ratio:	#NAME? #NAME?	<span style="border: 1px solid black; padding: 2px;">Y.L. Length: N/A, Roark</span>

Stiffener Data (Welding at both sides)		
Config:	1	*
Weld Type:	Fillet	
Groove Depth:	0.25	<-- Disregard
Groove Angle:	45	<-- Disregard
Fillet H. Weld:	0.375	in
Fillet V. Weld:	0.375	in
Width:	7	in
Height:	14.25	in
Thick:	0.75	in
Notch:	0	in
Grade:	60	ksi
Weld str.:	70	ksi

<b>Stiffener Results</b>	
Horizontal Weld :	95.7% <span style="color: green;">Pass</span>
Vertical Weld:	54.8% <span style="color: green;">Pass</span>
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	22.6% <span style="color: green;">Pass</span>
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	42.2% <span style="color: green;">Pass</span>
Plate Comp. (AISC Bracket):	63.2% <span style="color: green;">Pass</span>

<b>Pole Results</b>	
Pole Punching Shear Check:	16.1% <span style="color: green;">Pass</span>

Pole Data		
Diam:	63.03	in
Thick:	0.4805	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None



\* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

\*\* Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes



# Exhibit E

Mount Analysis

November 10, 2020



Centerline Communications  
750 West Center Street, Suite #301  
West Bridgewater, MA 02379

RE:      Site Number:                    CT11506A (ANCHOR)  
          Site Name:                        CT506/WILLIMANTIC ECSU  
          Site Address:                      83 Windham Street  
   Willimantic, CT 06226

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by Centerline Communications to perform a mount analysis on the existing T-Mobile antenna/RRH mounts to determine their capability of supporting the following additional loading:

- (3) APXVAARR24\_43-U-NA20 Antennas (95.9"x24.0"x8.7" – Wt. = 128 lbs. /each)
- (3) 4449 B71+B85 RRH's (17.9"x13.2"x9.4" – Wt. = 71 lbs. /each)
- (3) Twin Style 1B - AWS TMA's (11.2"x8.0"x4.9" – Wt. = 16 lbs. /each)
- **(3) AIR 32 B66A B2A Antennas (56.6"x12.9"x8.7" – Wt. = 133 lbs. /each)**
- **(3) AIR6449 B41 Antennas (33.1"x20.6"x8.6" – Wt. = 104 lbs. /each)**
- **(3) 4415 B25 RRH's (13.5"x6.3"x16.5" – Wt. = 50 lbs. /each)**
- **(3) SDX1926Q-43 Diplexers (4.2"x6.9"x2.9" – Wt. = 6 lbs. /each)**

*\*Proposed equipment shown in bold*

No original structural design documents or fabrication drawings were available for the existing mounts. HDG's subconsultant, ProVertic LLC, conducted a survey climb and mapping of the existing T-Mobile mounts on May 15, 2019. ProVertic LLC conducted a survey climb on November 5, 2020.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, and the International Building Code 2015 with 2018 Connecticut State Building Code.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 130 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.13 in was used for this analysis.
- HDG considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- HDG considers this site to have a spectral response acceleration parameter at short periods,  $S_s$ , of 0.174 and a spectral response acceleration parameter at a period of 1 second,  $S_1$ , of 0.062.
- The mount has been analyzed with load combinations consisting of 250 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 3.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mount is secured to the existing monopole with ring mount. The connection is considered OK by visual inspection.

Based on our evaluation, we have determined that the existing mounts **ARE NOT CAPABLE** of supporting the proposed installation. HDG recommends the following modifications:

- **Install new platform reinforcement kit, SitePro1 P/N PRK-1245L (or approved equal).**
- **Install new 3" std (3.50" O.D.) horizontal pipe secured to existing platform mount (typ. of 1 per sector, total of 3)**

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
<b>Existing (ANCHOR) Mount Rating</b>	7	LC10	139%	<b>FAIL</b>
<b>Modified (ANCHOR) Mount Rating</b>	42	2	71%	<b>PASS</b>

Reference Documents:

- Mount mapping report prepared by ProVertic LLC.

This determination was based on the following limitations and assumptions:

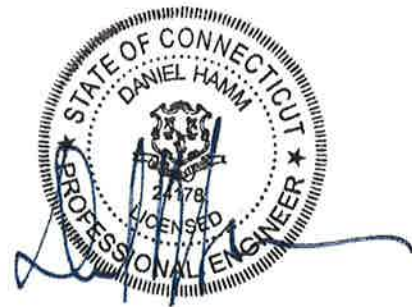
1. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The existing mount has been adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to T-Mobile's mounts must be tightened and re-plumbed prior to the installation of new appurtenances.
6. HDG performed a localized analysis on the mount itself and not on the supporting tower structure.

Please feel free to contact our office should you have any questions.

Respectfully Submitted,  
Hudson Design Group LLC



Michael Cabral  
Vice President



Daniel P. Hamm, PE  
Principal

FIELD PHOTOS:





FIELD PHOTOS:





**HUDSON**  
Design Group LLC

## Wind & Ice Calculations

Date: 11/11/2020  
 Project Name: CT506/WILLIMANTIC ECSU  
 Project No.: CT11506A  
 Designed By: CL Checked By: MSC



**2.6.5.2 Velocity Pressure Coeff:**

$K_z = 2.01 (z/z_g)^{2/\alpha}$

$K_z = 1.034$

$z = 117$  (ft)  
 $z_g = 1200$  (ft)  
 $\alpha = 7.0$

$K_{zmin} \leq K_z \leq 2.01$

**Table 2-4**

Exposure	$Z_g$	$\alpha$	$K_{zmin}$	$K_c$
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

**2.6.6.2 Topographic Factor:**

**Table 2-5**

Topo. Category	$K_t$	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1 + (K_c K_t / K_h)]^2$

$K_h = e^{(fz/H)}$

$K_{zt} = 1$

*(If Category 1 then  $K_{zt} = 1.0$ )*

Category = 1

$K_h = 1$   
 $K_c = 0.9$  (from Table 2-4)  
 $K_t = 0$  (from Table 2-5)  
 $f = 0$  (from Table 2-5)  
 $z = 117$   
 $z_s = 352$  (Mean elevation of base of structure above sea level)  
 $H = 0$  (Ht. of the crest above surrounding terrain)  
 $K_{zt} = 1.00$  (from 2.6.6.2.1)  
 $K_e = 0.99$  (from 2.6.8)

**2.6.10 Design Ice Thickness**

Max Ice Thickness =  
 Importance Factor =

$t_i = 1.00$  in  
 $I = 1.0$  (from Table 2-3)  
 $K_{iz} = 1.13$  (from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$

$t_{iz} = 1.13$  in

Date: 11/11/2020  
 Project Name: CT506/WILLIMANTIC ECSU  
 Project No.: CT11506A  
 Designed By: CL Checked By: MSC



**2.6.9 Gust Effect Factor**

2.6.9.1 Self Supporting Lattice Structures

$G_h = 1.0$  Latticed Structures > 600 ft

$G_h = 0.85$  Latticed Structures 450 ft or less

$G_h = 0.85 + 0.15 [h/150 - 3.0]$

h= ht. of structure

h= 175

$G_h = 0.85$

2.6.9.2 Guyed Masts

$G_h = 0.85$

2.6.9.3 Pole Structures

$G_h = 1.1$

2.6.9 Appurtenances

$G_h = 1.0$

2.6.9.4 Structures Supported on Other Structures

(Cantilevered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

$G_h = 1.35$

**$G_h = 1.00$**

**2.6.11.2 Design Wind Force on Appurtenances**

$F = q_z * G_h * (EPA)_A$

$q_z = 0.00256 * K_z * K_{zt} * K_s * K_e * K_d * V_{max}^2$

$q_z =$	<b>41.94</b>
$q_z (ice) =$	<b>6.20</b>
$q_z (30) =$	<b>2.23</b>

$K_z =$	1.034 (from 2.6.5.2)
$K_{zt} =$	1.0 (from 2.6.6.2.1)
$K_s =$	1.0 (from 2.6.7)
$K_e =$	0.99 (from 2.6.8)
$K_d =$	<b>0.95</b> (from Table 2-2)
$V_{max} =$	130 mph (Ultimate Wind Speed)
$V_{max (ice)} =$	50 mph
$V_{30} =$	30 mph

**Table 2-2**

Structure Type	Wind Direction Probability Factor, $K_d$
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95
Tubular pole structures supporting antennas enclosed within a cylindrical shroud	1.00

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 Designed By: CL Checked By: MSC



**Determine Ca:**

**Table 2-9**

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Square/Rectangular HSS		1.2 - 2.8(r <sub>s</sub> ) ≥ 0.85	1.4 - 4.0(r <sub>s</sub> ) ≥ 0.90	2.0 - 6.0(r <sub>s</sub> ) ≥ 1.25
Round	C < 39 (Subcritical)	0.7	0.8	1.2
	39 ≤ C ≤ 78 (Transitional)	4.14/(C <sup>0.485</sup> )	3.66/(C <sup>0.415</sup> )	46.8/(C <sup>1.0</sup> )
	C > 78 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.  
 (Aspect ratio is independent of the spacing between support points of a linear appurtenance.)

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = 1.13 in      Angle = 0 (deg)      Equivalent Angle = 180 (deg)

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
APXVAARR24_43-U-NA20 Antenna	95.9	24.0	8.7	15.98	4.00	1.27	849	141	45
AIR 32 B66A B2A Antenna	56.6	12.9	8.7	5.07	4.39	1.28	273	49	15
AIR6449 B41 Antenna	33.1	20.6	8.6	4.74	1.61	1.20	238	42	13
4449 B71+B85 RRH	17.9	9.4	13.2	1.17	1.90	1.20	59	12	3
4449 B71+B85 RRH (Side)	17.9	13.2	9.4	1.64	1.36	1.20	83	16	4
4449 B71+B85 RRH (Shielded)	17.9	4.7	13.2	0.58	3.81	1.26	31	8	2
4415 B25 RRH	16.5	6.3	13.5	0.72	2.62	1.21	36	8	2
4415 B25 RRH (Side)	16.5	13.5	6.3	1.55	1.22	1.20	78	15	4
4415 B25 RRH (Shielded)	16.5	3.2	13.5	0.36	5.24	1.32	20	6	1
Twin Style 1B - AWS TMA	11.2	8.0	4.9	0.62	1.40	1.20	31	7	2
Twin Style 1B - AWS TMA (Shielded)	11.2	2.0	4.9	0.16	5.60	1.34	9	3	0
SDX1926Q-43 Diplexer	4.2	6.9	2.9	0.20	0.61	1.20	10	3	1
SDX1926Q-43 Diplexer (Shielded)	4.2	1.7	2.9	0.05	2.43	1.20	3	1	0
L 2x2 Angle	2.0	12.0		0.17	0.17	1.20	8	3	0
T2L 2-1/2x2-1/2 Angle	5.0	12.0		0.42	0.42	1.20	21	5	1
LU 7x4 Angle	4.0	12.0		0.33	0.33	1.20	17	5	1
T2LU 7x4 Angle	8.0	12.0		0.67	0.67	1.20	34	8	2
PL 4x3/8 Plate	4.0	12.0		0.33	0.33	1.20	17	5	1
2" Pipe	2.4	12.0		0.20	0.20	1.20	10	3	1
3" Pipe	3.5	12.0		0.29	0.29	1.20	15	4	1
4x4 HSS	4.0	12.0		0.33	0.33	1.20	17	5	1



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WIND LOADS

Angle = 30 (deg) Ice Thickness = 1.13 in. Equivalent Angle = 210 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
APXVAARR24_43-U-NA20 Antenna	95.9	24.0	8.7	15.98	5.79	4.00	11.02	1.27	1.53	849	373	730
AIR 32 B66A B2A Antenna	56.6	12.9	8.7	5.07	3.42	4.39	6.51	1.28	1.38	273	198	254
AIR6449 B41 Antenna	33.1	20.6	8.6	4.74	1.98	1.61	3.85	1.20	1.26	238	104	205
4449 B71+B85 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	59	83	65
4449 B71+B85 RRH (Side)	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	83	59	77
4449 B71+B85 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	31	83	44
4415 B25 RRH	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	36	78	47
4415 B25 RRH (Side)	16.5	13.5	6.3	1.55	0.72	1.22	2.62	1.20	1.21	78	36	68
4415 B25 RRH (Shielded)	16.5	3.2	13.5	0.36	1.55	5.24	1.22	1.32	1.20	20	78	34
Twin Style 1B - AWS TMA	11.2	8.0	4.9	0.62	0.38	1.40	2.29	1.20	1.20	31	19	28
Twin Style 1B - AWS TMA (Shielded)	11.2	4.0	4.9	0.31	0.38	2.80	2.29	1.21	1.20	16	19	17
SDX1926Q-43 Diplexer	4.2	6.9	2.9	0.20	0.08	0.61	1.45	1.20	1.20	10	4	9
SDX1926Q-43 Diplexer (Shielded)	4.2	3.5	2.9	0.10	0.08	1.22	1.45	1.20	1.20	5	4	5

WIND LOADS WITH ICE:

APXVAARR24_43-U-NA20 Antenna	98.2	26.3	11.0	17.91	7.48	3.74	8.95	1.25	1.46	139	68	122
AIR 32 B66A B2A Antenna	58.9	15.2	11.0	6.20	4.48	3.88	5.37	1.26	1.33	49	37	46
AIR6449 B41 Antenna	35.4	22.9	10.9	5.62	2.67	1.55	3.25	1.20	1.23	42	20	36
4449 B71+B85 RRH	20.2	11.7	15.5	1.63	2.17	1.73	1.30	1.20	1.20	12	16	13
4449 B71+B85 RRH (Side)	20.2	15.5	11.7	2.17	1.63	1.30	1.73	1.20	1.20	16	12	15
4449 B71+B85 RRH (Shielded)	20.2	7.0	15.5	0.98	2.17	2.89	1.30	1.22	1.20	7	16	10
4415 B25 RRH	18.8	8.6	15.8	1.12	2.06	2.19	1.19	1.20	1.20	8	15	10
4415 B25 RRH (Side)	18.8	15.8	8.6	2.06	1.12	1.19	2.19	1.20	1.20	15	8	14
4415 B25 RRH (Shielded)	18.8	4.3	15.8	0.56	2.06	4.38	1.19	1.28	1.20	4	15	7
Twin Style 1B - AWS TMA	13.5	10.3	7.2	0.96	0.67	1.31	1.88	1.20	1.20	7	5	7
Twin Style 1B - AWS TMA (Shielded)	13.5	5.1	7.2	0.48	0.67	2.62	1.88	1.21	1.20	4	5	4
SDX1926Q-43 Diplexer	6.5	9.2	5.2	0.41	0.23	0.71	1.25	1.20	1.20	3	2	3
SDX1926Q-43 Diplexer (Shielded)	6.5	4.6	5.2	0.21	0.23	1.41	1.25	1.20	1.20	2	2	2

WIND LOADS AT 30 MPH:

APXVAARR24_43-U-NA20 Antenna	95.9	24.0	8.7	15.98	5.79	4.00	11.02	1.27	1.53	45	20	39
AIR 32 B66A B2A Antenna	56.6	12.9	8.7	5.07	3.42	4.39	6.51	1.28	1.38	15	11	14
AIR6449 B41 Antenna	33.1	20.6	8.6	4.74	1.98	1.61	3.85	1.20	1.26	13	6	11
4449 B71+B85 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	3
4449 B71+B85 RRH (Side)	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	4	3	4
4449 B71+B85 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	4	2
4415 B25 RRH	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	2	4	2
4415 B25 RRH (Side)	16.5	13.5	6.3	1.55	0.72	1.22	2.62	1.20	1.21	4	2	4
4415 B25 RRH (Shielded)	16.5	3.2	13.5	0.36	1.55	5.24	1.22	1.32	1.20	1	4	2
Twin Style 1B - AWS TMA	11.2	8.0	4.9	0.62	0.38	1.40	2.29	1.20	1.20	2	1	2
Twin Style 1B - AWS TMA (Shielded)	11.2	4.0	4.9	0.31	0.38	2.80	2.29	1.21	1.20	1	1	1
SDX1926Q-43 Diplexer	4.2	6.9	2.9	0.20	0.08	0.61	1.45	1.20	1.20	1	0	0
SDX1926Q-43 Diplexer (Shielded)	4.2	3.5	2.9	0.10	0.08	1.22	1.45	1.20	1.20	0	0	0

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 Designed By: CL Checked By: MSC



WIND LOADS

Angle = 60 (deg)      Ice Thickness = 1.13 in.      Equivalent Angle = 240 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
APXVAARR24_43-U-NA20 Antenna	95.9	24.0	8.7	15.98	5.79	4.00	11.02	1.27	1.53	849	373	492
AIR 32 B66A B2A Antenna	56.6	12.9	8.7	5.07	3.42	4.39	6.51	1.28	1.38	273	198	216
AIR6449 B41 Antenna	33.1	20.6	8.6	4.74	1.98	1.61	3.85	1.20	1.26	238	104	138
4449 B71+B85 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	59	83	77
4449 B71+B85 RRH (Side)	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	83	59	65
4449 B71+B85 RRH (Shielded)	17.9	7.1	13.2	0.88	1.64	2.54	1.36	1.20	1.20	44	83	73
4415 B25 RRH	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	36	78	68
4415 B25 RRH (Side)	16.5	13.5	6.3	1.55	0.72	1.22	2.62	1.20	1.21	78	36	47
4415 B25 RRH (Shielded)	16.5	4.7	13.5	0.54	1.55	3.49	1.22	1.24	1.20	28	78	65
Twin Style 1B - AWS TMA	11.2	8.0	4.9	0.62	0.38	1.40	2.29	1.20	1.20	31	19	22
Twin Style 1B - AWS TMA (Shielded)	11.2	6.0	4.9	0.47	0.38	1.87	2.29	1.20	1.20	23	19	20
SDX1926Q-43 Diplexer	4.2	6.9	2.9	0.20	0.08	0.61	1.45	1.20	1.20	10	4	6
SDX1926Q-43 Diplexer (Shielded)	4.2	5.2	2.9	0.15	0.08	0.81	1.45	1.20	1.20	8	4	5

WIND LOADS WITH ICE:

APXVAARR24_43-U-NA20 Antenna	98.2	26.3	11.0	17.91	7.48	3.74	8.95	1.25	1.46	139	68	86
AIR 32 B66A B2A Antenna	58.9	15.2	11.0	6.20	4.48	3.88	5.37	1.26	1.33	49	37	40
AIR6449 B41 Antenna	35.4	22.9	10.9	5.62	2.67	1.55	3.25	1.20	1.23	42	20	26
4449 B71+B85 RRH	20.2	11.7	15.5	1.63	2.17	1.73	1.30	1.20	1.20	12	16	15
4449 B71+B85 RRH (Side)	20.2	15.5	11.7	2.17	1.63	1.30	1.73	1.20	1.20	16	12	13
4449 B71+B85 RRH (Shielded)	20.2	7.0	15.5	0.98	2.17	2.89	1.30	1.22	1.20	7	16	14
4415 B25 RRH	18.8	8.6	15.8	1.12	2.06	2.19	1.19	1.20	1.20	8	15	14
4415 B25 RRH (Side)	18.8	15.8	8.6	2.06	1.12	1.19	2.19	1.20	1.20	15	8	10
4415 B25 RRH (Shielded)	18.8	6.4	15.8	0.84	2.06	2.92	1.19	1.22	1.20	6	15	13
Twin Style 1B - AWS TMA	13.5	10.3	7.2	0.96	0.67	1.31	1.88	1.20	1.20	7	5	6
Twin Style 1B - AWS TMA (Shielded)	13.5	7.7	7.2	0.72	0.67	1.75	1.88	1.20	1.20	5	5	5
SDX1926Q-43 Diplexer	6.5	9.2	5.2	0.41	0.23	0.71	1.25	1.20	1.20	3	2	2
SDX1926Q-43 Diplexer (Shielded)	6.5	6.9	5.2	0.31	0.23	0.94	1.25	1.20	1.20	2	2	2

WIND LOADS AT 30 MPH:

APXVAARR24_43-U-NA20 Antenna	95.9	24.0	8.7	15.98	5.79	4.00	11.02	1.27	1.53	45	20	26
AIR 32 B66A B2A Antenna	56.6	12.9	8.7	5.07	3.42	4.39	6.51	1.28	1.38	15	11	12
AIR6449 B41 Antenna	33.1	20.6	8.6	4.74	1.98	1.61	3.85	1.20	1.26	13	6	7
4449 B71+B85 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	4
4449 B71+B85 RRH (Side)	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	4	3	3
4449 B71+B85 RRH (Shielded)	17.9	7.1	13.2	0.88	1.64	2.54	1.36	1.20	1.20	2	4	4
4415 B25 RRH	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	2	4	4
4415 B25 RRH (Side)	16.5	13.5	6.3	1.55	0.72	1.22	2.62	1.20	1.21	4	2	2
4415 B25 RRH (Shielded)	16.5	4.7	13.5	0.54	1.55	3.49	1.22	1.24	1.20	2	4	3
Twin Style 1B - AWS TMA	11.2	8.0	4.9	0.62	0.38	1.40	2.29	1.20	1.20	2	1	1
Twin Style 1B - AWS TMA (Shielded)	11.2	6.0	4.9	0.47	0.38	1.87	2.29	1.20	1.20	1	1	1
SDX1926Q-43 Diplexer	4.2	6.9	2.9	0.20	0.08	0.61	1.45	1.20	1.20	1	0	0
SDX1926Q-43 Diplexer (Shielded)	4.2	5.2	2.9	0.15	0.08	0.81	1.45	1.20	1.20	0	0	0

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 Designed By: CL Checked By: MSC



WIND LOADS

Angle = 90 (deg)      Ice Thickness = 1.13 in.      Equivalent Angle = 270 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
APXVAARR24_43-U-NA20 Antenna	95.9	24.0	8.7	15.98	5.79	4.00	11.02	1.27	1.53	849	373	373
AIR 32 B66A B2A Antenna	56.6	12.9	8.7	5.07	3.42	4.39	6.51	1.28	1.38	273	198	198
AIR6449 B41 Antenna	33.1	20.6	8.6	4.74	1.98	1.61	3.85	1.20	1.26	238	104	104
4449 B71+B85 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	59	83	83
4449 B71+B85 RRH (Side)	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	83	59	59
4449 B71+B85 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	31	83	83
4415 B25 RRH	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	36	78	78
4415 B25 RRH (Side)	16.5	13.5	6.3	1.55	0.72	1.22	2.62	1.20	1.21	78	36	36
4415 B25 RRH (Shielded)	16.5	3.2	13.5	0.36	1.55	5.24	1.22	1.32	1.20	20	78	78
Twin Style 1B - AWS TMA	11.2	8.0	4.9	0.62	0.38	1.40	2.29	1.20	1.20	31	19	19
Twin Style 1B - AWS TMA (Shielded)	11.2	2.0	4.9	0.16	0.38	5.60	2.29	1.34	1.20	9	19	19
SDX1926Q-43 Diplexer	4.2	6.9	2.9	0.20	0.08	0.61	1.45	1.20	1.20	10	4	4
SDX1926Q-43 Diplexer (Shielded)	4.2	1.7	2.9	0.05	0.08	2.43	1.45	1.20	1.20	3	4	4

WIND LOADS WITH ICE:

APXVAARR24_43-U-NA20 Antenna	98.2	26.3	11.0	17.91	7.48	3.74	8.95	1.25	1.46	139	68	68
AIR 32 B66A B2A Antenna	58.9	15.2	11.0	6.20	4.48	3.88	5.37	1.26	1.33	49	37	37
AIR6449 B41 Antenna	35.4	22.9	10.9	5.62	2.67	1.55	3.25	1.20	1.23	42	20	20
4449 B71+B85 RRH	20.2	11.7	15.5	1.63	2.17	1.73	1.30	1.20	1.20	12	16	16
4449 B71+B85 RRH (Side)	20.2	15.5	11.7	2.17	1.63	1.30	1.73	1.20	1.20	16	12	12
4449 B71+B85 RRH (Shielded)	20.2	7.0	15.5	0.98	2.17	2.89	1.30	1.22	1.20	7	16	16
4415 B25 RRH	18.8	8.6	15.8	1.12	2.06	2.19	1.19	1.20	1.20	8	15	15
4415 B25 RRH (Side)	18.8	15.8	8.6	2.06	1.12	1.19	2.19	1.20	1.20	15	8	8
4415 B25 RRH (Shielded)	18.8	5.4	15.8	0.71	2.06	3.46	1.19	1.24	1.20	5	15	15
Twin Style 1B - AWS TMA	13.5	10.3	7.2	0.96	0.67	1.31	1.88	1.20	1.20	7	5	5
Twin Style 1B - AWS TMA (Shielded)	13.5	4.3	7.2	0.40	0.67	3.15	1.88	1.23	1.20	3	5	5
SDX1926Q-43 Diplexer	6.5	9.2	5.2	0.41	0.23	0.71	1.25	1.20	1.20	3	2	2
SDX1926Q-43 Diplexer (Shielded)	6.5	4.0	5.2	0.18	0.23	1.62	1.25	1.20	1.20	1	2	2

WIND LOADS AT 30 MPH:

APXVAARR24_43-U-NA20 Antenna	95.9	24.0	8.7	15.98	5.79	4.00	11.02	1.27	1.53	45	20	20
AIR 32 B66A B2A Antenna	56.6	12.9	8.7	5.07	3.42	4.39	6.51	1.28	1.38	15	11	11
AIR6449 B41 Antenna	33.1	20.6	8.6	4.74	1.98	1.61	3.85	1.20	1.26	13	6	6
4449 B71+B85 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	4
4449 B71+B85 RRH (Side)	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	4	3	3
4449 B71+B85 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	4	4
4415 B25 RRH	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	2	4	4
4415 B25 RRH (Side)	16.5	13.5	6.3	1.55	0.72	1.22	2.62	1.20	1.21	4	2	2
4415 B25 RRH (Shielded)	16.5	3.2	13.5	0.36	1.55	5.24	1.22	1.32	1.20	1	4	4
Twin Style 1B - AWS TMA	11.2	8.0	4.9	0.62	0.38	1.40	2.29	1.20	1.20	2	1	1
Twin Style 1B - AWS TMA (Shielded)	11.2	2.0	4.9	0.16	0.38	5.60	2.29	1.34	1.20	0	1	1
SDX1926Q-43 Diplexer	4.2	6.9	2.9	0.20	0.08	0.61	1.45	1.20	1.20	1	0	0
SDX1926Q-43 Diplexer (Shielded)	4.2	1.7	2.9	0.05	0.08	2.43	1.45	1.20	1.20	0	0	0

Date: 11/11/2020  
 Project Name: CT506/WILLIMANTIC ECSU  
 Project No.: CT11506A  
 Designed By: CL Checked By: MSC



**WIND LOADS**

Angle = **120** (deg)      Ice Thickness = **1.13** in.      Equivalent Angle = **300** (deg)

**WIND LOADS WITH NO ICE:**

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
APXVAARR24_43-U-NA20 Antenna	95.9	24.0	8.7	15.98	5.79	4.00	11.02	1.27	1.53	849	373	492
AIR 32 B66A B2A Antenna	56.6	12.9	8.7	5.07	3.42	4.39	6.51	1.28	1.38	273	198	216
AIR6449 B41 Antenna	33.1	20.6	8.6	4.74	1.98	1.61	3.85	1.20	1.26	238	104	138
4449 B71+B85 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	59	83	77
4449 B71+B85 RRH (Side)	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	83	59	65
4449 B71+B85 RRH (Shielded)	17.9	7.1	13.2	0.88	1.64	2.54	1.36	1.20	1.20	44	83	73
4415 B25 RRH	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	36	78	68
4415 B25 RRH (Side)	16.5	13.5	6.3	1.55	0.72	1.22	2.62	1.20	1.21	78	36	47
4415 B25 RRH (Shielded)	16.5	4.7	13.5	0.54	1.55	3.49	1.22	1.24	1.20	28	78	65
Twin Style 1B - AWS TMA	11.2	8.0	4.9	0.62	0.38	1.40	2.29	1.20	1.20	31	19	22
Twin Style 1B - AWS TMA (Shielded)	11.2	6.0	4.9	0.47	0.38	1.87	2.29	1.20	1.20	23	19	20
SDX1926Q-43 Diplexer	4.2	6.9	2.9	0.20	0.08	0.61	1.45	1.20	1.20	10	4	6
SDX1926Q-43 Diplexer (Shielded)	4.2	5.2	2.9	0.15	0.08	0.81	1.45	1.20	1.20	8	4	5

**WIND LOADS WITH ICE:**

APXVAARR24_43-U-NA20 Antenna	98.2	26.3	11.0	17.91	7.48	3.74	8.95	1.25	1.46	139	68	86
AIR 32 B66A B2A Antenna	58.9	15.2	11.0	6.20	4.48	3.88	5.37	1.26	1.33	49	37	40
AIR6449 B41 Antenna	35.4	22.9	10.9	5.62	2.67	1.55	3.25	1.20	1.23	42	20	26
4449 B71+B85 RRH	20.2	11.7	15.5	1.63	2.17	1.73	1.30	1.20	1.20	12	16	15
4449 B71+B85 RRH (Side)	20.2	15.5	11.7	2.17	1.63	1.30	1.73	1.20	1.20	16	12	13
4449 B71+B85 RRH (Shielded)	20.2	7.0	15.5	0.98	2.17	2.89	1.30	1.22	1.20	7	16	14
4415 B25 RRH	18.8	8.6	15.8	1.12	2.06	2.19	1.19	1.20	1.20	8	15	14
4415 B25 RRH (Side)	18.8	15.8	8.6	2.06	1.12	1.19	2.19	1.20	1.20	15	8	10
4415 B25 RRH (Shielded)	18.8	6.4	15.8	0.84	2.06	2.92	1.19	1.22	1.20	6	15	13
Twin Style 1B - AWS TMA	13.5	10.3	7.2	0.96	0.67	1.31	1.88	1.20	1.20	7	5	6
Twin Style 1B - AWS TMA (Shielded)	13.5	7.7	7.2	0.72	0.67	1.75	1.88	1.20	1.20	5	5	5
SDX1926Q-43 Diplexer	6.5	9.2	5.2	0.41	0.23	0.71	1.25	1.20	1.20	3	2	2
SDX1926Q-43 Diplexer (Shielded)	6.5	6.9	5.2	0.31	0.23	0.94	1.25	1.20	1.20	2	2	2

**WIND LOADS AT 30 MPH:**

APXVAARR24_43-U-NA20 Antenna	95.9	24.0	8.7	15.98	5.79	4.00	11.02	1.27	1.53	45	20	26
AIR 32 B66A B2A Antenna	56.6	12.9	8.7	5.07	3.42	4.39	6.51	1.28	1.38	15	11	12
AIR6449 B41 Antenna	33.1	20.6	8.6	4.74	1.98	1.61	3.85	1.20	1.26	13	6	7
4449 B71+B85 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	4
4449 B71+B85 RRH (Side)	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	4	3	3
4449 B71+B85 RRH (Shielded)	17.9	7.1	13.2	0.88	1.64	2.54	1.36	1.20	1.20	2	4	4
4415 B25 RRH	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	2	4	4
4415 B25 RRH (Side)	16.5	13.5	6.3	1.55	0.72	1.22	2.62	1.20	1.21	4	2	2
4415 B25 RRH (Shielded)	16.5	4.7	13.5	0.54	1.55	3.49	1.22	1.24	1.20	2	4	3
Twin Style 1B - AWS TMA	11.2	8.0	4.9	0.62	0.38	1.40	2.29	1.20	1.20	2	1	1
Twin Style 1B - AWS TMA (Shielded)	11.2	6.0	4.9	0.47	0.38	1.87	2.29	1.20	1.20	1	1	1
SDX1926Q-43 Diplexer	4.2	6.9	2.9	0.20	0.08	0.61	1.45	1.20	1.20	1	0	0
SDX1926Q-43 Diplexer (Shielded)	4.2	5.2	2.9	0.15	0.08	0.81	1.45	1.20	1.20	0	0	0

Date: 11/11/2020  
 Project Name: CT506/WILLIMANTIC ECSU  
 Project No.: CT11506A  
 Designed By: CL Checked By: MSC



**WIND LOADS**

Angle = **150** (deg)      Ice Thickness = **1.13** in.      Equivalent Angle = **330** (deg)

**WIND LOADS WITH NO ICE:**

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
APXVAARR24_43-U-NA20 Antenna	95.9	24.0	8.7	15.98	5.79	4.00	11.02	1.27	1.53	849	373	730
AIR 32 B66A B2A Antenna	56.6	12.9	8.7	5.07	3.42	4.39	6.51	1.28	1.38	273	198	254
AIR6449 B41 Antenna	33.1	20.6	8.6	4.74	1.98	1.61	3.85	1.20	1.26	238	104	205
4449 B71+B85 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	59	83	65
4449 B71+B85 RRH (Side)	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	83	59	77
4449 B71+B85 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	31	83	44
4415 B25 RRH	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	36	78	47
4415 B25 RRH (Side)	16.5	13.5	6.3	1.55	0.72	1.22	2.62	1.20	1.21	78	36	68
4415 B25 RRH (Shielded)	16.5	3.2	13.5	0.36	1.55	5.24	1.22	1.32	1.20	20	78	34
Twin Style 1B - AWS TMA	11.2	8.0	4.9	0.62	0.38	1.40	2.29	1.20	1.20	31	19	28
Twin Style 1B - AWS TMA (Shielded)	11.2	4.0	4.9	0.31	0.38	2.80	2.29	1.21	1.20	16	19	17
SDX1926Q-43 Diplexer	4.2	6.9	2.9	0.20	0.08	0.61	1.45	1.20	1.20	10	4	9
SDX1926Q-43 Diplexer (Shielded)	4.2	3.5	2.9	0.10	0.08	1.22	1.45	1.20	1.20	5	4	5

**WIND LOADS WITH ICE:**

APXVAARR24_43-U-NA20 Antenna	98.2	26.3	11.0	17.91	7.48	3.74	8.95	1.25	1.46	139	68	122
AIR 32 B66A B2A Antenna	58.9	15.2	11.0	6.20	4.48	3.88	5.37	1.26	1.33	49	37	46
AIR6449 B41 Antenna	35.4	22.9	10.9	5.62	2.67	1.55	3.25	1.20	1.23	42	20	36
4449 B71+B85 RRH	20.2	11.7	15.5	1.63	2.17	1.73	1.30	1.20	1.20	12	16	13
4449 B71+B85 RRH (Side)	20.2	15.5	11.7	2.17	1.63	1.30	1.73	1.20	1.20	16	12	15
4449 B71+B85 RRH (Shielded)	20.2	7.0	15.5	0.98	2.17	2.89	1.30	1.22	1.20	7	16	10
4415 B25 RRH	18.8	8.6	15.8	1.12	2.06	2.19	1.19	1.20	1.20	8	15	10
4415 B25 RRH (Side)	18.8	15.8	8.6	2.06	1.12	1.19	2.19	1.20	1.20	15	8	14
4415 B25 RRH (Shielded)	18.8	4.3	15.8	0.56	2.06	4.38	1.19	1.28	1.20	4	15	7
Twin Style 1B - AWS TMA	13.5	10.3	7.2	0.96	0.67	1.31	1.88	1.20	1.20	7	5	7
Twin Style 1B - AWS TMA (Shielded)	13.5	5.1	7.2	0.48	0.67	2.62	1.88	1.21	1.20	4	5	4
SDX1926Q-43 Diplexer	6.5	9.2	5.2	0.41	0.23	0.71	1.25	1.20	1.20	3	2	3
SDX1926Q-43 Diplexer (Shielded)	6.5	4.6	5.2	0.21	0.23	1.41	1.25	1.20	1.20	2	2	2

**WIND LOADS AT 30 MPH:**

APXVAARR24_43-U-NA20 Antenna	95.9	24.0	8.7	15.98	5.79	4.00	11.02	1.27	1.53	45	20	39
AIR 32 B66A B2A Antenna	56.6	12.9	8.7	5.07	3.42	4.39	6.51	1.28	1.38	15	11	14
AIR6449 B41 Antenna	33.1	20.6	8.6	4.74	1.98	1.61	3.85	1.20	1.26	13	6	11
4449 B71+B85 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	3
4449 B71+B85 RRH (Side)	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	4	3	4
4449 B71+B85 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	4	2
4415 B25 RRH	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	2	4	2
4415 B25 RRH (Side)	16.5	13.5	6.3	1.55	0.72	1.22	2.62	1.20	1.21	4	2	4
4415 B25 RRH (Shielded)	16.5	3.2	13.5	0.36	1.55	5.24	1.22	1.32	1.20	1	4	2
Twin Style 1B - AWS TMA	11.2	8.0	4.9	0.62	0.38	1.40	2.29	1.20	1.20	2	1	2
Twin Style 1B - AWS TMA (Shielded)	11.2	4.0	4.9	0.31	0.38	2.80	2.29	1.21	1.20	1	1	1
SDX1926Q-43 Diplexer	4.2	6.9	2.9	0.20	0.08	0.61	1.45	1.20	1.20	1	0	0
SDX1926Q-43 Diplexer (Shielded)	4.2	3.5	2.9	0.10	0.08	1.22	1.45	1.20	1.20	0	0	0



Date: 11/11/2020

Project Name: CT506/WILLIMANTIC ECSU

Project No.: CT11506A

Designed By: CL Checked By: MSC



**HUDSON**  
Design Group LLC

### ICE WEIGHT CALCULATIONS

Thickness of ice: 1.13 in.

Density of ice: 56 pcf

#### APXVAARR24\_43-U-NA20 Antenna

Weight of ice based on total radial SF area:

Height (in): 95.9

Width (in): 24.0

Depth (in): 8.7

Total weight of ice on object: 294 lbs

Weight of object: 128.0 lbs

Combined weight of ice and object: 422 lbs

#### AIR 32 B66A B2A Antenna

Weight of ice based on total radial SF area:

Height (in): 56.6

Width (in): 12.9

Depth (in): 8.7

Total weight of ice on object: 109 lbs

Weight of object: 133.0 lbs

Combined weight of ice and object: 242 lbs

#### AIR6449 B41 Antenna

Weight of ice based on total radial SF area:

Height (in): 33.1

Width (in): 20.6

Depth (in): 8.6

Total weight of ice on object: 89 lbs

Weight of object: 104.0 lbs

Combined weight of ice and object: 193 lbs

#### 4449 B71+B85 RRH

Weight of ice based on total radial SF area:

Height (in): 17.9

Width (in): 13.2

Depth (in): 9.4

Total weight of ice on object: 36 lbs

Weight of object: 71.0 lbs

Combined weight of ice and object: 107 lbs

#### 4415 B25 RRH

Weight of ice based on total radial SF area:

Height (in): 13.5

Width (in): 16.5

Depth (in): 6.3

Total weight of ice on object: 29 lbs

Weight of object: 46.0 lbs

Combined weight of ice and object: 75 lbs

#### Twin Style 1B - AWS TMA

Weight of ice based on total radial SF area:

Height (in): 11.2

Width (in): 8.0

Depth (in): 4.9

Total weight of ice on object: 14 lbs

Weight of object: 16.0 lbs

Combined weight of ice and object: 30 lbs

#### SDX1926Q-43 Diplexer

Weight of ice based on total radial SF area:

Height (in): 4.2

Width (in): 6.9

Depth (in): 2.9

Total weight of ice on object: 4 lbs

Weight of object: 6.0 lbs

Combined weight of ice and object: 10 lbs

Date: 11/11/2020

Project Name: CT506/WILLIMANTIC ECSU

Project No.: CT11506A

Designed By: CL Checked By: MSC



**HUDSON**  
Design Group LLC

### ICE WEIGHT CALCULATIONS

Thickness of ice: 1.13 in.

Density of ice: 56 pcf

#### L 2x2 Angles

Weight of ice based on total radial SF area:

Height (in): 2

Width (in): 2

Per foot weight of ice on object: 5 plf

#### T2L 2-1/2x2-1/2Angles

Weight of ice based on total radial SF area:

Height (in): 2.5

Width (in): 2.5

Per foot weight of ice on object: 13 plf

#### L 7x4 Angles

Weight of ice based on total radial SF area:

Height (in): 4

Width (in): 7

Per foot weight of ice on object: 13 plf

#### T2LU 7x4 Angles

Weight of ice based on total radial SF area:

Height (in): 4

Width (in): 7

Per foot weight of ice on object: 25 plf

#### PL 4x3/8

Weight of ice based on total radial SF area:

Height (in): 4

Width (in): 0.375

Per foot weight of ice on object: 7 plf

#### 2" Pipe

Per foot weight of ice:

diameter (in): 2.38

Per foot weight of ice on object: 5 plf

#### 3" Pipe

Per foot weight of ice:

diameter (in): 3.5

Per foot weight of ice on object: 6 plf

#### HSS 4x4

Weight of ice based on total radial SF area:

Height (in): 4

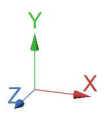
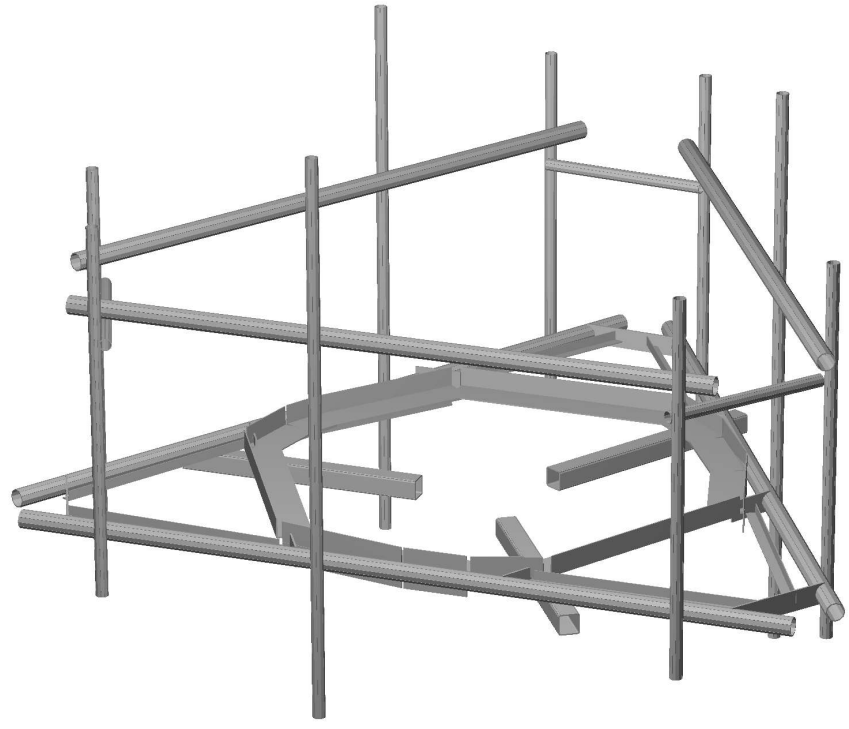
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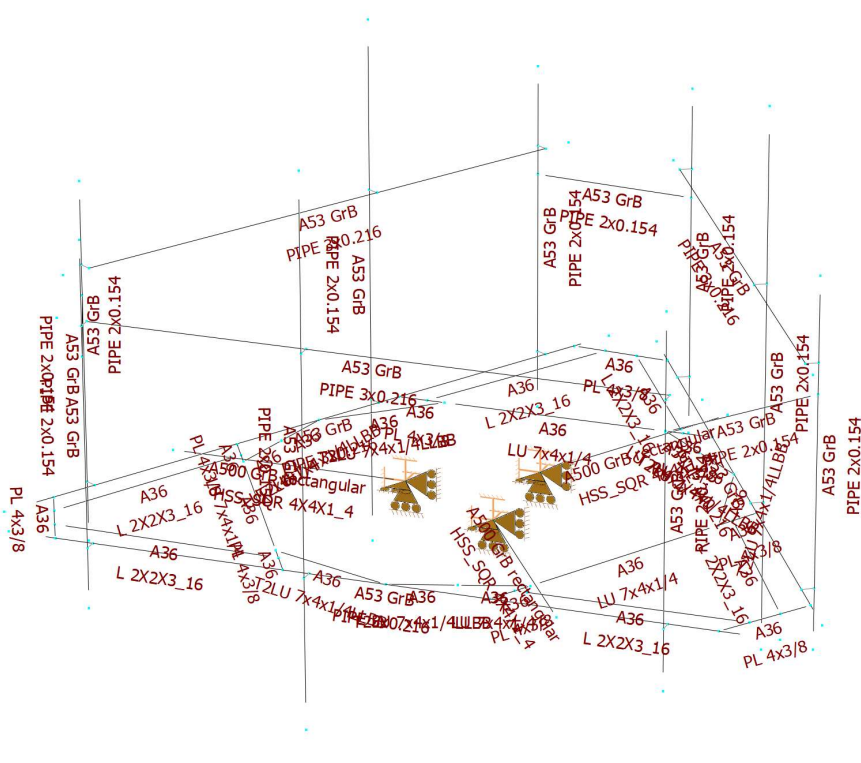
Per foot weight of ice on object: 9 plf



**HUDSON**  
Design Group LLC

**Mount Calculations  
(Existing Conditions)**

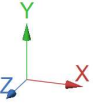
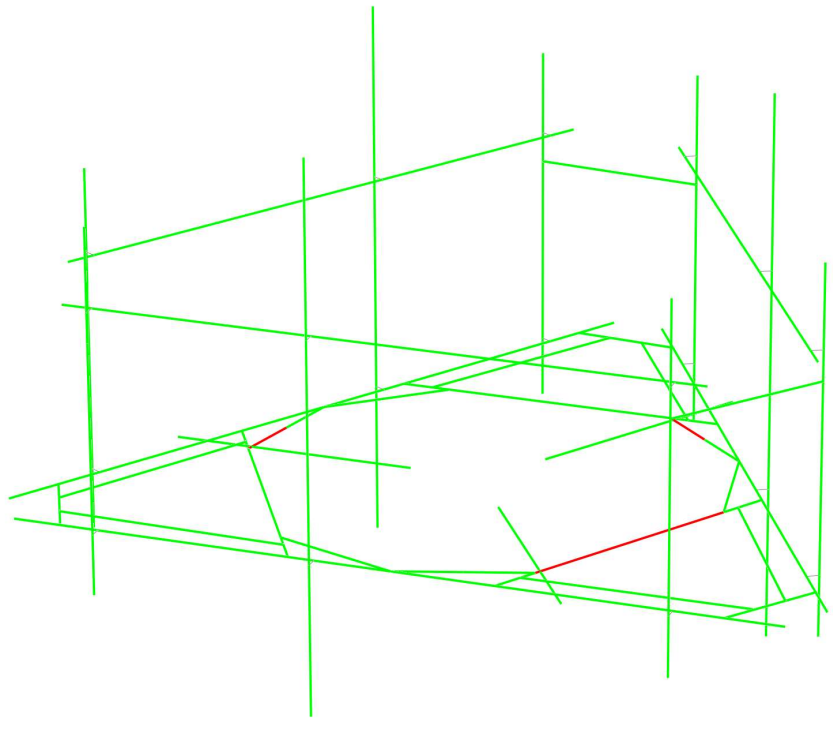


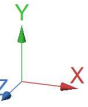
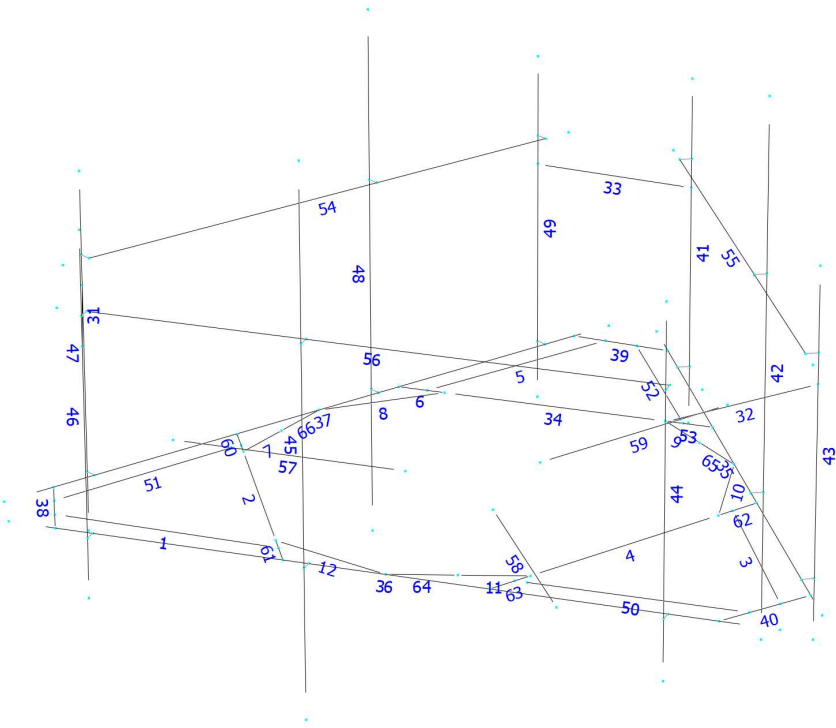




Design status

- Not designed
- Error on design
- Design O.K.
- With warnings





Current Date: 11/11/2020 5:08 PM

Units system: English

File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\T-MOBILE\CT\CT11506A\ANCHOR 2020\CT11506A (ANCHOR) (Rev.0).retx

## Load data

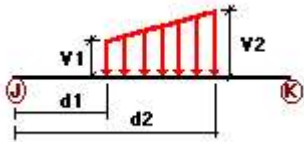
### GLOSSARY

Comb : Indicates if load condition is a load combination

### Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
W0	Wind Load 0/60/120 deg	No	WIND
W30	Wind Load 30/90/150 deg	No	WIND
Di	Ice Load	No	LL
Wi0	Ice Wind Load 0/60/120 deg	No	WIND
Wi30	Ice Wind Load 30/90/150 deg	No	WIND
WL0	WL 30 mph 0/60/120 deg	No	WIND
WL30	WL 30 mph 30/90/150 deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load End of Mount	No	LL
LLa1	250 lb Live Load Antenna 1	No	LL
LLa2	250 lb Live Load Antenna 2	No	LL
LLa3	250 lb Live Load Antenna 3	No	LL

### Distributed force on members

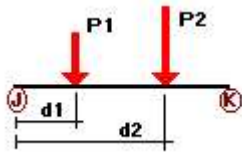


Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
W0	1	z	-0.008	-0.008	0.00	No	100.00	Yes
	3	z	-0.008	-0.008	0.00	No	100.00	Yes
	5	z	-0.008	-0.008	0.00	No	100.00	Yes
	6	z	-0.017	-0.017	0.00	No	100.00	Yes
	31	z	-0.01	-0.01	0.00	No	100.00	Yes
	32	z	-0.01	-0.01	0.00	No	100.00	Yes
	33	z	-0.01	-0.01	0.00	No	100.00	Yes
	35	z	-0.015	-0.015	0.00	No	100.00	Yes
	36	z	-0.015	-0.015	0.00	No	100.00	Yes
	37	z	-0.015	-0.015	0.00	No	100.00	Yes
	38	z	-0.017	-0.017	0.00	No	100.00	Yes
	39	z	-0.017	-0.017	0.00	No	100.00	Yes
	40	z	-0.017	-0.017	0.00	No	100.00	Yes
	50	z	-0.008	-0.008	0.00	No	100.00	Yes
	51	z	-0.008	-0.008	0.00	No	100.00	Yes

		52	z	-0.008	-0.008	0.00	No	100.00	Yes
		53	z	-0.017	-0.017	0.00	No	100.00	Yes
		54	z	-0.015	-0.015	0.00	No	100.00	Yes
		55	z	-0.015	-0.015	0.00	No	100.00	Yes
		56	z	-0.015	-0.015	0.00	No	100.00	Yes
		57	z	-0.017	-0.017	0.00	No	100.00	Yes
		58	z	-0.017	-0.017	0.00	No	100.00	Yes
		59	z	-0.017	-0.017	0.00	No	100.00	Yes
		60	z	-0.017	-0.017	0.00	No	100.00	Yes
		61	z	-0.017	-0.017	0.00	No	100.00	Yes
		62	z	-0.017	-0.017	0.00	No	100.00	Yes
		63	z	-0.017	-0.017	0.00	No	100.00	Yes
W30		1	x	-0.008	-0.008	0.00	No	100.00	Yes
		3	x	-0.008	-0.008	0.00	No	100.00	Yes
		5	x	-0.008	-0.008	0.00	No	100.00	Yes
		6	x	-0.017	-0.017	0.00	No	100.00	Yes
		31	x	-0.01	-0.01	0.00	No	100.00	Yes
		32	x	-0.01	-0.01	0.00	No	100.00	Yes
		33	x	-0.01	-0.01	0.00	No	100.00	Yes
		35	x	-0.015	-0.015	0.00	No	100.00	Yes
		36	x	-0.015	-0.015	0.00	No	100.00	Yes
		37	x	-0.015	-0.015	0.00	No	100.00	Yes
		38	x	-0.017	-0.017	0.00	No	100.00	Yes
		39	x	-0.017	-0.017	0.00	No	100.00	Yes
		40	x	-0.017	-0.017	0.00	No	100.00	Yes
		41	x	-0.01	-0.01	0.00	No	100.00	Yes
		42	x	-0.01	-0.01	0.00	No	100.00	Yes
		43	x	-0.01	-0.01	0.00	No	100.00	Yes
		44	x	-0.01	-0.01	0.00	No	100.00	Yes
		45	x	-0.01	-0.01	0.00	No	100.00	Yes
		46	x	-0.01	-0.01	0.00	No	100.00	Yes
		47	x	-0.01	-0.01	0.00	No	100.00	Yes
		48	x	-0.01	-0.01	0.00	No	100.00	Yes
		49	x	-0.01	-0.01	0.00	No	100.00	Yes
		50	x	-0.008	-0.008	0.00	No	100.00	Yes
		51	x	-0.008	-0.008	0.00	No	100.00	Yes
		52	x	-0.008	-0.008	0.00	No	100.00	Yes
		53	x	-0.017	-0.017	0.00	No	100.00	Yes
		54	x	-0.015	-0.015	0.00	No	100.00	Yes
		55	x	-0.015	-0.015	0.00	No	100.00	Yes
		56	x	-0.015	-0.015	0.00	No	100.00	Yes
		57	x	-0.017	-0.017	0.00	No	100.00	Yes
		58	x	-0.017	-0.017	0.00	No	100.00	Yes
		59	x	-0.017	-0.017	0.00	No	100.00	Yes
		60	x	-0.017	-0.017	0.00	No	100.00	Yes
		61	x	-0.017	-0.017	0.00	No	100.00	Yes
		62	x	-0.017	-0.017	0.00	No	100.00	Yes
		63	x	-0.017	-0.017	0.00	No	100.00	Yes
Di		1	y	-0.005	-0.005	0.00	No	100.00	Yes
		2	y	-0.013	-0.013	0.00	No	100.00	Yes
		3	y	-0.005	-0.005	0.00	No	100.00	Yes
		4	y	-0.013	-0.013	0.00	No	100.00	Yes
		5	y	-0.005	-0.005	0.00	No	100.00	Yes
		6	y	-0.007	-0.007	0.00	No	100.00	Yes
		7	y	-0.013	-0.013	0.00	No	100.00	Yes
		8	y	-0.025	-0.025	0.00	No	100.00	Yes
		9	y	-0.013	-0.013	0.00	No	100.00	Yes
		10	y	-0.025	-0.025	0.00	No	100.00	Yes
		11	y	-0.013	-0.013	0.00	No	100.00	Yes
		12	y	-0.025	-0.025	0.00	No	100.00	Yes

31	y	-0.005	-0.005	0.00	No	100.00	Yes
32	y	-0.005	-0.005	0.00	No	100.00	Yes
33	y	-0.005	-0.005	0.00	No	100.00	Yes
34	y	-0.013	-0.013	0.00	No	100.00	Yes
35	y	-0.006	-0.006	0.00	No	100.00	Yes
36	y	-0.006	-0.006	0.00	No	100.00	Yes
37	y	-0.006	-0.006	0.00	No	100.00	Yes
38	y	-0.007	-0.007	0.00	No	100.00	Yes
39	y	-0.007	-0.007	0.00	No	100.00	Yes
40	y	-0.007	-0.007	0.00	No	100.00	Yes
41	y	-0.005	-0.005	0.00	No	100.00	Yes
42	y	-0.005	-0.005	0.00	No	100.00	Yes
43	y	-0.005	-0.005	0.00	No	100.00	Yes
44	y	-0.005	-0.005	0.00	No	100.00	Yes
45	y	-0.005	-0.005	0.00	No	100.00	Yes
46	y	-0.005	-0.005	0.00	No	100.00	Yes
47	y	-0.005	-0.005	0.00	No	100.00	Yes
48	y	-0.005	-0.005	0.00	No	100.00	Yes
49	y	-0.005	-0.005	0.00	No	100.00	Yes
50	y	-0.005	-0.005	0.00	No	100.00	Yes
51	y	-0.005	-0.005	0.00	No	100.00	Yes
52	y	-0.005	-0.005	0.00	No	100.00	Yes
53	y	-0.007	-0.007	0.00	No	100.00	Yes
54	y	-0.006	-0.006	0.00	No	100.00	Yes
55	y	-0.006	-0.006	0.00	No	100.00	Yes
56	y	-0.006	-0.006	0.00	No	100.00	Yes
57	y	-0.009	-0.009	0.00	No	100.00	Yes
58	y	-0.009	-0.009	0.00	No	100.00	Yes
59	y	-0.009	-0.009	0.00	No	100.00	Yes
60	y	-0.007	-0.007	0.00	No	100.00	Yes
61	y	-0.007	-0.007	0.00	No	100.00	Yes
62	y	-0.007	-0.007	0.00	No	100.00	Yes
63	y	-0.007	-0.007	0.00	No	100.00	Yes
64	y	-0.025	-0.025	0.00	No	100.00	Yes
65	y	-0.025	-0.025	0.00	No	100.00	Yes
66	y	-0.025	-0.025	0.00	No	100.00	Yes

### Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	41	y	-0.052	2.25	No
		y	-0.052	4.25	No
	42	y	-0.064	1.50	No
		y	-0.064	8.50	No
		y	-0.071	4.00	No
		y	-0.046	4.00	No
		y	-0.006	5.50	No
		y	-0.016	8.00	No
	43	y	-0.067	1.50	No

		y	-0.067	5.50	No
	44	y	-0.052	2.25	No
		y	-0.052	4.25	No
	45	y	-0.064	1.50	No
		y	-0.064	8.50	No
		y	-0.071	4.00	No
		y	-0.046	4.00	No
		y	-0.006	5.50	No
		y	-0.016	8.00	No
	46	y	-0.067	1.50	No
		y	-0.067	5.50	No
	47	y	-0.052	2.25	No
		y	-0.052	4.25	No
	48	y	-0.064	1.50	No
		y	-0.064	8.50	No
		y	-0.071	4.00	No
		y	-0.046	4.00	No
		y	-0.006	5.50	No
		y	-0.016	8.00	No
	49	y	-0.067	1.50	No
		y	-0.067	5.50	No
W0	41	z	-0.069	2.25	No
		z	-0.069	4.25	No
	42	z	-0.246	1.50	No
		z	-0.246	8.50	No
		z	-0.073	4.00	No
		z	-0.065	4.00	No
		z	-0.005	6.00	No
		z	-0.02	8.00	No
	43	z	-0.108	1.50	No
		z	-0.108	5.50	No
	44	z	-0.119	2.25	No
		z	-0.119	4.25	No
	45	z	-0.425	1.50	No
		z	-0.425	8.50	No
		z	-0.031	4.00	No
		z	-0.02	4.00	No
		z	-0.003	6.00	No
		z	-0.009	8.00	No
	46	z	-0.137	1.50	No
		z	-0.137	5.50	No
	47	z	-0.069	2.25	No
		z	-0.069	4.25	No
	48	z	-0.246	1.50	No
		z	-0.246	8.50	No
		z	-0.073	4.00	No
		z	-0.065	4.00	No
		z	-0.005	6.00	No
		z	-0.02	8.00	No
	49	z	-0.108	1.50	No
		z	-0.108	5.50	No
W30	41	x	-0.103	2.25	No
		x	-0.103	4.25	No
	42	x	-0.365	1.50	No
		x	-0.365	8.50	No
		x	-0.077	4.00	No
		x	-0.068	4.00	No
		x	-0.009	6.00	No
		x	-0.028	8.00	No
	43	x	-0.127	1.50	No



		x	-0.127	5.50	No
	44	x	-0.052	2.25	No
		x	-0.052	4.25	No
	45	x	-0.187	1.50	No
		x	-0.187	8.50	No
		x	-0.083	4.00	No
		x	-0.078	4.00	No
		x	-0.004	6.00	No
		x	-0.019	8.00	No
	46	x	-0.099	1.50	No
		x	-0.099	5.50	No
	47	x	-0.103	2.25	No
		x	-0.103	4.25	No
	48	x	-0.365	1.50	No
		x	-0.365	8.50	No
		x	-0.077	4.00	No
		x	-0.068	4.00	No
		x	-0.009	6.00	No
		x	-0.028	8.00	No
	49	x	-0.127	1.50	No
		x	-0.127	5.50	No
Di	41	y	-0.045	2.25	No
		y	-0.045	4.25	No
	42	y	-0.147	1.50	No
		y	-0.147	8.50	No
		y	-0.036	4.00	No
		y	-0.029	4.00	No
		y	-0.004	5.50	No
		y	-0.014	8.00	No
	43	y	-0.055	1.50	No
		y	-0.055	5.50	No
	44	y	-0.045	2.25	No
		y	-0.045	4.25	No
	45	y	-0.147	1.50	No
		y	-0.147	8.50	No
		y	-0.036	4.00	No
		y	-0.029	4.00	No
		y	-0.004	5.50	No
		y	-0.014	8.00	No
	46	y	-0.055	1.50	No
		y	-0.055	5.50	No
	47	y	-0.045	2.25	No
		y	-0.045	4.25	No
	48	y	-0.147	1.50	No
		y	-0.147	8.50	No
		y	-0.036	4.00	No
		y	-0.029	4.00	No
		y	-0.004	5.50	No
		y	-0.014	8.00	No
	49	y	-0.055	1.50	No
		y	-0.055	5.50	No
Wi0	41	z	-0.013	2.25	No
		z	-0.013	4.25	No
	42	z	-0.043	1.50	No
		z	-0.043	8.50	No
		z	-0.014	4.00	No
		z	-0.013	4.00	No
		z	-0.002	6.00	No
		z	-0.005	8.00	No
	43	z	-0.02	1.50	No

		z	-0.02	5.50	No
	44	z	-0.021	2.25	No
		z	-0.021	4.25	No
	45	z	-0.071	1.50	No
		z	-0.071	8.50	No
		z	-0.008	4.00	No
		z	-0.006	4.00	No
		z	-0.001	6.00	No
		z	-0.003	8.00	No
	46	z	-0.025	1.50	No
		z	-0.025	5.50	No
	47	z	-0.013	2.25	No
		z	-0.013	4.25	No
	48	z	-0.043	1.50	No
		z	-0.043	8.50	No
		z	-0.014	4.00	No
		z	-0.013	4.00	No
		z	-0.002	6.00	No
		z	-0.005	8.00	No
	49	z	-0.02	1.50	No
		z	-0.02	5.50	No
Wi30	41	x	-0.018	2.25	No
		x	-0.018	4.25	No
	42	x	-0.061	1.50	No
		x	-0.061	8.50	No
		x	-0.015	4.00	No
		x	-0.014	4.00	No
		x	-0.003	6.00	No
		x	-0.007	8.00	No
	43	x	-0.023	1.50	No
		x	-0.023	5.50	No
	44	x	-0.01	2.25	No
		x	-0.01	4.25	No
	45	x	-0.034	1.50	No
		x	-0.034	8.50	No
		x	-0.016	4.00	No
		x	-0.015	4.00	No
		x	-0.002	6.00	No
		x	-0.005	8.00	No
	46	x	-0.019	1.50	No
		x	-0.019	5.50	No
	47	x	-0.018	2.25	No
		x	-0.018	4.25	No
	48	x	-0.061	1.50	No
		x	-0.061	8.50	No
		x	-0.015	4.00	No
		x	-0.014	4.00	No
		x	-0.003	6.00	No
		x	-0.007	8.00	No
	49	x	-0.023	1.50	No
		x	-0.023	5.50	No
WLO	41	z	-0.004	2.25	No
		z	-0.004	4.25	No
	42	z	-0.013	1.50	No
		z	-0.013	8.50	No
		z	-0.004	4.00	No
		z	-0.003	4.00	No
		z	-0.001	6.00	No
		z	-0.001	8.00	No
	43	z	-0.006	1.50	No

		z	-0.006	5.50	No
	44	z	-0.007	2.25	No
		z	-0.007	4.25	No
	45	z	-0.023	1.50	No
		z	-0.023	8.50	No
		z	-0.002	4.00	No
		z	-0.001	4.00	No
		z	-0.001	6.00	No
		z	-0.001	8.00	No
	46	z	-0.008	1.50	No
		z	-0.008	5.50	No
	47	z	-0.004	2.25	No
		z	-0.004	4.25	No
	48	z	-0.013	1.50	No
		z	-0.013	8.50	No
		z	-0.004	4.00	No
		z	-0.003	4.00	No
		z	-0.001	6.00	No
		z	-0.001	8.00	No
	49	z	-0.006	1.50	No
		z	-0.006	5.50	No
WL30	41	x	-0.006	2.25	No
		x	-0.006	4.25	No
	42	x	-0.02	1.50	No
		x	-0.02	8.50	No
		x	-0.004	4.00	No
		x	-0.004	4.00	No
		x	-0.001	6.00	No
		x	-0.002	8.00	No
	43	x	-0.007	1.50	No
		x	-0.007	5.50	No
	44	x	-0.003	2.25	No
		x	-0.003	4.25	No
	45	x	-0.01	1.50	No
		x	-0.01	8.50	No
		x	-0.004	4.00	No
		x	-0.004	4.00	No
		x	-0.001	6.00	No
		x	-0.001	8.00	No
	46	x	-0.006	1.50	No
		x	-0.006	5.50	No
	47	x	-0.006	2.25	No
		x	-0.006	4.25	No
	48	x	-0.02	1.50	No
		x	-0.02	8.50	No
		x	-0.004	4.00	No
		x	-0.004	4.00	No
		x	-0.001	6.00	No
		x	-0.002	8.00	No
	49	x	-0.007	1.50	No
		x	-0.007	5.50	No
LL1	36	y	-0.25	50.00	Yes
LL2	36	y	-0.25	100.00	Yes
LLa1	44	y	-0.25	50.00	Yes
LLa2	45	y	-0.25	50.00	Yes
LLa3	46	y	-0.25	50.00	Yes

## Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
W0	Wind Load 0/60/120 deg	No	0.00	0.00	0.00
W30	Wind Load 30/90/150 deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
Wi0	Ice Wind Load 0/60/120 deg	No	0.00	0.00	0.00
Wi30	Ice Wind Load 30/90/150 deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0/60/120 deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30/90/150 deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load End of Mount	No	0.00	0.00	0.00
LLa1	250 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	250 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	250 lb Live Load Antenna 3	No	0.00	0.00	0.00

## Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
W0	0.00	0.00	0.00
W30	0.00	0.00	0.00
Di	0.00	0.00	0.00
Wi0	0.00	0.00	0.00
Wi30	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00



Current Date: 11/11/2020 5:08 PM

Units system: English

File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\T-MOBILE\CT\CT11506A\ANCHOR 2020\CT11506A (ANCHOR) (Rev.0).retx

## Steel Code Check

Report: Summary - Group by member

**Load conditions to be included in design :**

- LC1=1.2DL+W0
- LC2=1.2DL+W30
- LC3=1.2DL-W0
- LC4=1.2DL-W30
- LC5=0.9DL+W0
- LC6=0.9DL+W30
- LC7=0.9DL-W0
- LC8=0.9DL-W30
- LC9=1.2DL+Di+Wi0
- LC10=1.2DL+Di+Wi30
- LC11=1.2DL+Di-Wi0
- LC12=1.2DL+Di-Wi30
- LC13=1.2DL
- LC14=1.2DL+1.6LL1
- LC15=1.2DL+1.6LL2
- LC16=1.2DL+W0+1.6LLa1
- LC17=1.2DL+W30+1.6LLa1
- LC18=1.2DL-W0+1.6LLa1
- LC19=1.2DL-W30+1.6LLa1
- LC20=1.2DL+W0+1.6LLa2
- LC21=1.2DL+W30+1.6LLa2
- LC22=1.2DL-W0+1.6LLa2
- LC23=1.2DL-W30+1.6LLa2
- LC24=1.2DL+W0+1.6LLa3
- LC25=1.2DL+W30+1.6LLa3
- LC26=1.2DL-W0+1.6LLa3
- LC27=1.2DL-W30+1.6LLa3

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	<b>HSS_SQR 4X4X1_4</b>	<b>57</b>	LC2 at 100.00%	0.42	OK	Eq. H1-1b
		<b>58</b>	LC3 at 100.00%	0.38	OK	Eq. H1-1b
		<b>59</b>	LC4 at 100.00%	<b>0.42</b>	<b>OK</b>	Eq. H1-1b
	<b>L 2X2X3_16</b>	<b>1</b>	LC1 at 93.75%	0.10	OK	Eq. H2-1
		<b>3</b>	LC2 at 93.75%	0.08	OK	Eq. H2-1
		<b>5</b>	LC4 at 100.00%	0.12	OK	Eq. H2-1
		<b>50</b>	LC4 at 4.17%	<b>0.29</b>	<b>OK</b>	Eq. H3-8
		<b>51</b>	LC2 at 6.25%	0.22	OK	Sec. F1
		<b>52</b>	LC1 at 6.25%	0.22	OK	Sec. F1
	<b>LU 7x4x1/4</b>	<b>2</b>	LC10 at 0.00%	0.64	OK	Eq. H2-1
		<b>4</b>	LC11 at 0.00%	<b>1.16</b>	<b>N.G.</b>	Eq. H3-8
		<b>7</b>	LC10 at 93.75%	<b>1.39</b>	<b>N.G.</b>	Eq. H3-8
		<b>9</b>	LC9 at 93.75%	<b>1.24</b>	<b>N.G.</b>	Eq. H3-8
		<b>11</b>	LC9 at 100.00%	0.40	OK	Eq. H2-1
		<b>34</b>	LC9 at 0.00%	0.57	OK	Eq. H2-1
	<b>PIPE 2x0.154</b>	<b>31</b>	LC1 at 100.00%	0.41	OK	Eq. H1-1b
		<b>32</b>	LC3 at 0.00%	0.37	OK	Eq. H1-1b
		<b>33</b>	LC4 at 100.00%	0.49	OK	Eq. H1-1b

	<b>41</b>	LC4 at 82.81%	0.49	OK	Eq. H1-1b
	<b>42</b>	LC2 at 70.83%	0.74	OK	Eq. H1-1b
	<b>43</b>	LC1 at 82.81%	0.45	OK	Eq. H1-1b
	<b>44</b>	LC2 at 17.19%	0.42	OK	Eq. H1-1b
	<b>45</b>	LC4 at 70.83%	0.73	OK	Eq. H1-1b
	<b>46</b>	LC4 at 23.44%	0.48	OK	Eq. H1-1b
	<b>47</b>	LC1 at 82.81%	0.47	OK	Eq. H1-1b
	<b>48</b>	LC4 at 70.83%	<b>0.76</b>	<b>OK</b>	Eq. H1-1b
	<b>49</b>	LC2 at 23.44%	0.49	OK	Eq. H1-1b
<hr/>					
<b>PIPE 3x0.216</b>	<b>35</b>	LC1 at 30.63%	0.27	OK	Eq. H1-1b
	<b>36</b>	LC3 at 36.88%	0.27	OK	Eq. H1-1b
	<b>37</b>	LC2 at 69.38%	<b>0.32</b>	<b>OK</b>	Eq. H1-1b
	<b>54</b>	LC2 at 60.94%	0.29	OK	Eq. H1-1b
	<b>55</b>	LC4 at 59.38%	0.24	OK	Eq. H1-1b
	<b>56</b>	LC3 at 60.94%	0.23	OK	Eq. H1-1b
<hr/>					
<b>PL 4x3/8</b>	<b>6</b>	LC4 at 59.38%	0.23	OK	Eq. H1-1b
	<b>38</b>	LC1 at 33.33%	0.23	OK	Eq. H1-1b
	<b>39</b>	LC4 at 33.33%	0.23	OK	Eq. H1-1b
	<b>40</b>	LC2 at 64.58%	0.19	OK	Eq. H1-1b
	<b>53</b>	LC9 at 100.00%	0.40	OK	Eq. H1-1b
	<b>60</b>	LC10 at 100.00%	<b>0.45</b>	<b>OK</b>	Eq. H1-1b
	<b>61</b>	LC1 at 40.63%	0.20	OK	Eq. H1-1b
	<b>62</b>	LC3 at 100.00%	0.20	OK	Eq. H1-1b
	<b>63</b>	LC11 at 100.00%	0.39	OK	Eq. H1-1b
<hr/>					
<b>T2LU 7x4x1/4LLBB</b>	<b>8</b>	LC3 at 0.00%	0.08	OK	Eq. H2-1
	<b>10</b>	LC2 at 0.00%	0.10	OK	Eq. H2-1
	<b>12</b>	LC1 at 0.00%	0.09	OK	Eq. H2-1
	<b>64</b>	LC12 at 100.00%	0.08	OK	Eq. H2-1
	<b>65</b>	LC9 at 100.00%	0.12	OK	Eq. H2-1
	<b>66</b>	LC10 at 100.00%	<b>0.14</b>	<b>OK</b>	Eq. H2-1





Current Date: 11/11/2020 5:09 PM

Units system: English

File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\T-MOBILE\CT\CT11506A\ANCHOR 2020\CT11506A (ANCHOR) (Rev.0).retx

## Geometry data

### GLOSSARY

- Cb22, Cb33 : Moment gradient coefficients
- Cm22, Cm33 : Coefficients applied to bending term in interaction formula
- d0 : Tapered member section depth at J end of member
- DJX : Rigid end offset distance measured from J node in axis X
- DJY : Rigid end offset distance measured from J node in axis Y
- DJZ : Rigid end offset distance measured from J node in axis Z
- DKX : Rigid end offset distance measured from K node in axis X
- DKY : Rigid end offset distance measured from K node in axis Y
- DKZ : Rigid end offset distance measured from K node in axis Z
- dL : Tapered member section depth at K end of member
- Ig factor : Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
- K22 : Effective length factor about axis 2
- K33 : Effective length factor about axis 3
- L22 : Member length for calculation of axial capacity
- L33 : Member length for calculation of axial capacity
- LB pos : Lateral unbraced length of the compression flange in the positive side of local axis 2
- LB neg : Lateral unbraced length of the compression flange in the negative side of local axis 2
- RX : Rotation about X
- RY : Rotation about Y
- RZ : Rotation about Z
- TO : 1 = Tension only member 0 = Normal member
- TX : Translation in X
- TY : Translation in Y
- TZ : Translation in Z

### Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	-1.25	0.00	1.25	0
3	-1.6766	0.00	5.3461	0
4	-4.3856	0.00	0.6539	0
7	-4.1371	0.00	1.0844	0
8	-1.9251	0.00	4.9156	0
13	3.5473	0.00	-0.798	0
14	-3.5473	0.00	-0.798	0
15	0.00	0.00	5.3461	0
16	-5.25	0.00	1.25	0
17	-2.0751	0.00	4.6558	0
18	-3.9871	0.00	1.3442	0
19	0.625	0.00	2.3325	0
20	2.85	0.00	5.6621	0
21	4.1371	0.00	1.0844	0
22	3.9871	0.00	1.3442	0
23	1.9251	0.00	4.9156	0
24	2.0751	0.00	4.6558	0
25	4.3856	0.00	0.6539	0
26	1.6766	0.00	5.3461	0
28	0.625	0.00	0.1675	0
29	2.6295	0.00	-3.2983	0

30	-2.212	0.00	-2.25	0
31	-1.912	0.00	-2.25	0
32	2.212	0.00	-2.25	0
33	1.912	0.00	-2.25	0
34	-2.709	0.00	-2.25	0
35	2.709	0.00	-2.25	0
37	6.673	0.00	4.6119	0
38	0.425	0.00	-6.2099	0
39	-0.425	0.00	-6.2099	0
40	-6.673	0.00	4.6119	0
41	-6.248	0.00	5.348	0
42	6.248	0.00	5.348	0
43	-1.25	0.00	5.5461	0
44	-1.25	0.00	5.3461	0
45	-4.832	0.00	5.348	0
46	-4.832	0.00	5.548	0
47	4.498	0.00	5.348	0
48	4.498	0.00	5.548	0
49	5.965	0.00	3.3856	0
50	4.1723	0.00	0.2845	0
51	1.30	0.00	-4.6944	0
52	-5.798	0.00	3.0963	0
53	-2.9223	0.00	-1.8806	0
54	-1.133	0.00	-4.9836	0
55	-1.3062	0.00	-5.0836	0
56	-3.0955	0.00	-1.9806	0
57	-5.9712	0.00	2.9963	0
58	6.1382	0.00	3.2856	0
59	4.3455	0.00	0.1845	0
60	1.4732	0.00	-4.7944	0
61	-4.832	5.00	5.548	0
62	-4.832	-1.00	5.548	0
63	-1.25	6.50	5.5461	0
64	-1.25	-2.50	5.5461	0
65	4.498	5.00	5.548	0
66	4.498	-1.00	5.548	0
67	6.1382	-1.00	3.2856	0
68	6.1382	5.00	3.2856	0
69	4.3455	-2.50	0.1845	0
70	4.3455	6.50	0.1845	0
71	1.4732	-1.00	-4.7944	0
72	1.4732	5.00	-4.7944	0
73	-1.3062	-1.00	-5.0836	0
74	-1.3062	5.00	-5.0836	0
75	-3.0955	-2.50	-1.9806	0
76	-3.0955	6.50	-1.9806	0
77	-5.9712	-1.00	2.9963	0
78	-5.9712	5.00	2.9963	0
79	-1.25	3.625	5.5461	0
80	-4.832	3.625	5.548	0
81	4.498	3.625	5.548	0
82	6.1382	3.625	3.2856	0
83	4.3455	3.625	0.1845	0
84	1.4732	3.625	-4.7944	0
85	-1.3062	3.625	-5.0836	0
86	-3.0955	3.625	-1.9806	0
87	-5.9712	3.625	2.9963	0
88	-4.832	3.125	5.548	0
89	4.498	3.125	5.548	0
90	-5.9712	3.125	2.9963	0

91	6.1382	3.125	3.2856	0
92	-4.832	3.625	5.348	0
93	-1.25	3.625	5.3461	0
94	4.498	3.625	5.348	0
95	4.998	3.625	5.348	0
96	-5.332	3.625	5.348	0
97	5.965	3.625	3.3856	0
98	4.1723	3.625	0.2845	0
99	1.30	3.625	-4.6944	0
100	1.05	3.625	-5.1274	0
101	6.215	3.625	3.8186	0
102	-1.133	3.625	-4.9836	0
103	-2.9223	3.625	-1.8806	0
104	-5.798	3.625	3.0963	0
105	-0.883	3.625	-5.4166	0
106	-6.048	3.625	3.5294	0
107	-1.3062	3.125	-5.0836	0
108	1.4732	3.125	-4.7944	0
109	-4.2327	0.00	1.25	0
110	2.1163	0.00	4.9156	0
111	2.1163	0.00	-2.4156	0
112	1.0375	0.00	5.001	0
113	2.7296	0.00	-1.524	0
114	-3.7672	0.00	0.2731	0
115	6.2815	0.00	3.9338	0
116	5.298	0.00	5.348	0
117	5.6258	0.00	4.8766	0
118	5.9536	0.00	4.4052	0
119	-6.198	0.00	3.7892	0
120	-5.465	0.00	5.348	0
121	-5.9536	0.00	4.3088	0
122	-5.7093	0.00	4.8284	0
123	0.90	0.00	-5.3872	0
124	-0.8165	0.00	-5.5318	0
125	0.3278	0.00	-5.4354	0
126	-0.2443	0.00	-5.4836	0

---

## Restraints

---

Node	TX	TY	TZ	RX	RY	RZ
1	1	1	1	1	1	1
19	1	1	1	1	1	1
28	1	1	1	1	1	1

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## Members

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Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	Ig factor
1	8	122		L 2X2X3_16	A36	0.00	0.00	0.00
2	18	17		LU 7x4x1/4	A36	0.00	0.00	0.00
3	21	118		L 2X2X3_16	A36	0.00	0.00	0.00
4	24	22		LU 7x4x1/4	A36	0.00	0.00	0.00
5	30	126		L 2X2X3_16	A36	0.00	0.00	0.00
6	34	31		PL 4x3/8	A36	0.00	0.00	0.00
7	114	18		LU 7x4x1/4	A36	0.00	0.00	0.00
8	31	14		T2LU 7x4x1/4LLBB	A36	0.00	0.00	0.00
9	113	33		LU 7x4x1/4	A36	0.00	0.00	0.00
10	22	13		T2LU 7x4x1/4LLBB	A36	0.00	0.00	0.00
11	112	24		LU 7x4x1/4	A36	0.00	0.00	0.00
12	17	15		T2LU 7x4x1/4LLBB	A36	0.00	0.00	0.00
31	90	88		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
32	89	91		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
33	108	107		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
34	33	31		LU 7x4x1/4	A36	0.00	0.00	0.00
35	38	37		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
36	42	41		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
37	39	40		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
38	119	120		PL 4x3/8	A36	0.00	0.00	0.00
39	124	123		PL 4x3/8	A36	0.00	0.00	0.00
40	115	116		PL 4x3/8	A36	0.00	0.00	0.00
41	72	71		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
42	70	69		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
43	68	67		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
44	66	65		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
45	63	64		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
46	61	62		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
47	78	77		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
48	76	75		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
49	74	73		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
50	23	117		L 2X2X3_16	A36	0.00	0.00	0.00
51	7	121		L 2X2X3_16	A36	0.00	0.00	0.00
52	32	125		L 2X2X3_16	A36	0.00	0.00	0.00
53	35	33		PL 4x3/8	A36	0.00	0.00	0.00
54	106	105		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
55	100	101		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
56	95	96		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
57	16	1		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
58	20	19		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
59	29	28		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
60	4	18		PL 4x3/8	A36	0.00	0.00	0.00
61	17	3		PL 4x3/8	A36	0.00	0.00	0.00
62	22	25		PL 4x3/8	A36	0.00	0.00	0.00
63	26	24		PL 4x3/8	A36	0.00	0.00	0.00
64	15	112		T2LU 7x4x1/4LLBB	A36	0.00	0.00	0.00
65	13	113		T2LU 7x4x1/4LLBB	A36	0.00	0.00	0.00
66	14	114		T2LU 7x4x1/4LLBB	A36	0.00	0.00	0.00

### Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
2	270.00	0	0.00	0.00	0.00
4	270.00	0	0.00	0.00	0.00
7	270.00	0	0.00	0.00	0.00
8	90.00	0	0.00	0.00	0.00
9	270.00	0	0.00	0.00	0.00
10	90.00	0	0.00	0.00	0.00
11	270.00	0	0.00	0.00	0.00
12	90.00	0	0.00	0.00	0.00
34	270.00	0	0.00	0.00	0.00
41	315.00	0	0.00	0.00	0.00
42	315.00	0	0.00	0.00	0.00
43	315.00	0	0.00	0.00	0.00
44	315.00	0	0.00	0.00	0.00
45	315.00	0	0.00	0.00	0.00
46	315.00	0	0.00	0.00	0.00
47	315.00	0	0.00	0.00	0.00
48	315.00	0	0.00	0.00	0.00
49	315.00	0	0.00	0.00	0.00
64	90.00	0	0.00	0.00	0.00
65	90.00	0	0.00	0.00	0.00
66	90.00	0	0.00	0.00	0.00

### Rigid end offsets

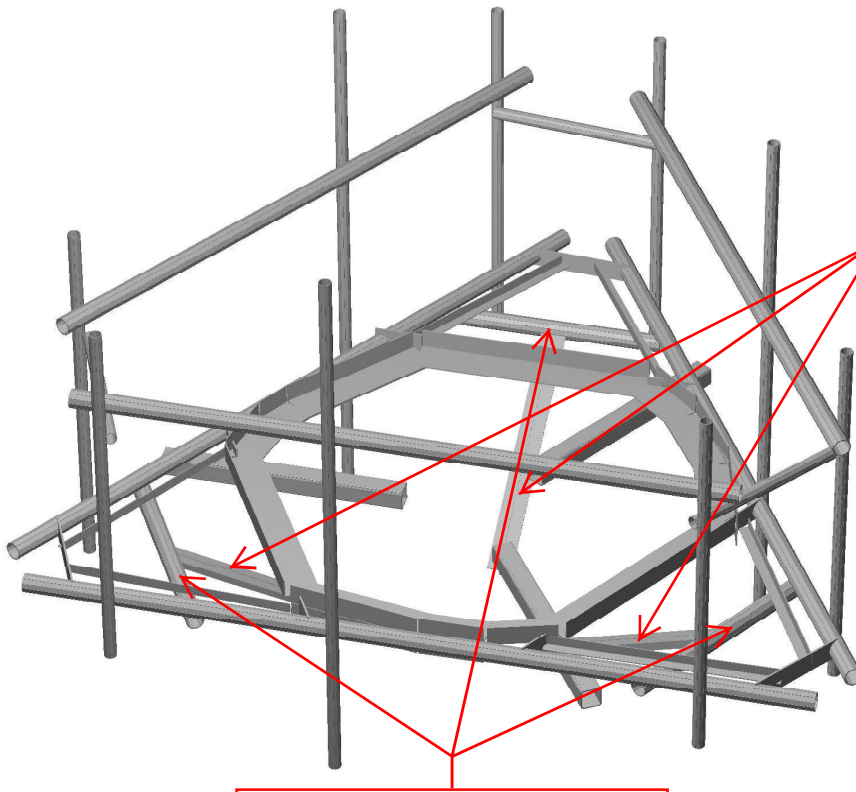
Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
1	-1.7321	0.00	1.00	0.00	0.00	0.00
2	0.00	0.80	0.00	0.00	0.80	0.00
3	1.7321	0.00	1.00	0.00	0.00	0.00
4	0.00	0.80	0.00	0.00	0.80	0.00
5	0.00	0.00	-2.00	0.00	0.00	0.00
6	0.00	1.00	-2.00	0.00	1.00	-2.00
7	0.00	0.80	0.00	0.00	0.80	0.00
8	0.00	0.00	0.00	0.75	0.00	6.50
9	0.00	0.80	0.00	0.00	0.80	0.00
10	0.00	0.00	0.00	-0.50	0.00	6.00
11	0.00	0.80	0.00	0.00	0.80	0.00
12	0.00	0.00	0.00	0.25	0.00	-4.00
31	2.00	0.00	0.00	2.00	0.00	0.00
32	-2.00	0.00	0.00	-2.00	0.00	0.00
33	0.00	0.00	2.00	0.00	0.00	2.00
34	0.00	0.80	0.00	0.00	0.80	0.00
57	0.00	-4.00	0.00	0.00	-4.00	0.00
58	0.00	-4.00	0.00	0.00	-4.00	0.00
59	0.00	-4.00	0.00	0.00	-4.00	0.00
64	0.25	0.00	-4.00	0.00	0.00	0.00
65	-0.50	0.00	6.00	0.00	0.00	0.00
66	0.75	0.00	6.50	0.00	0.00	0.00



**HUDSON**  
Design Group LLC

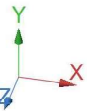
**Mount Calculations  
(Modified Conditions)**

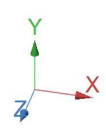
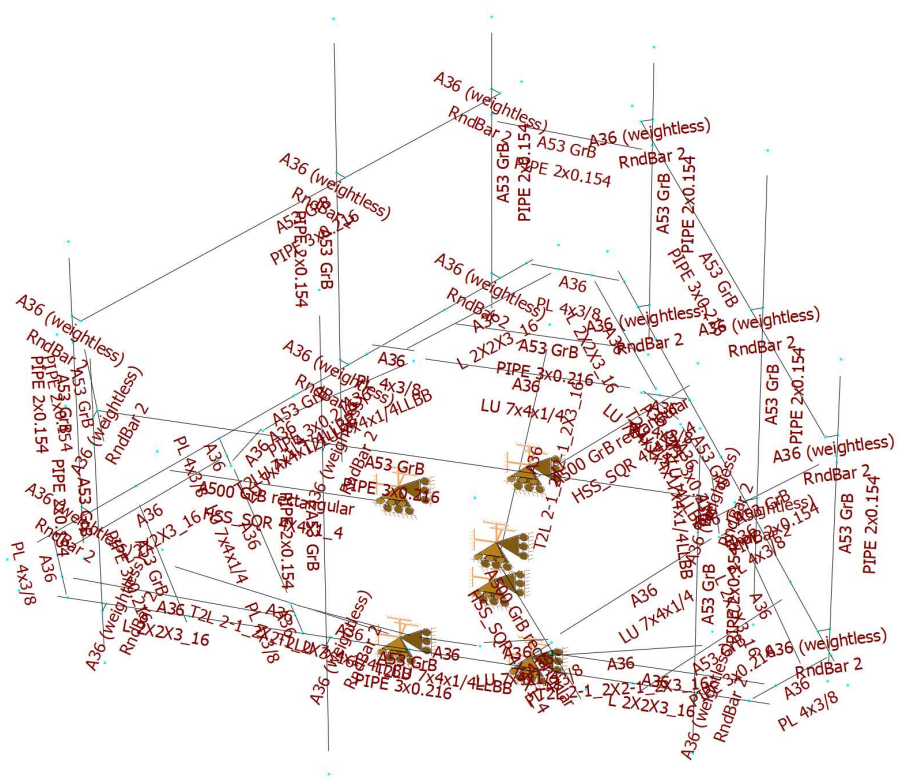








Install new platform reinforcement kit, SitePro1 P/N PRK-1245L (or approved equal).

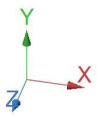
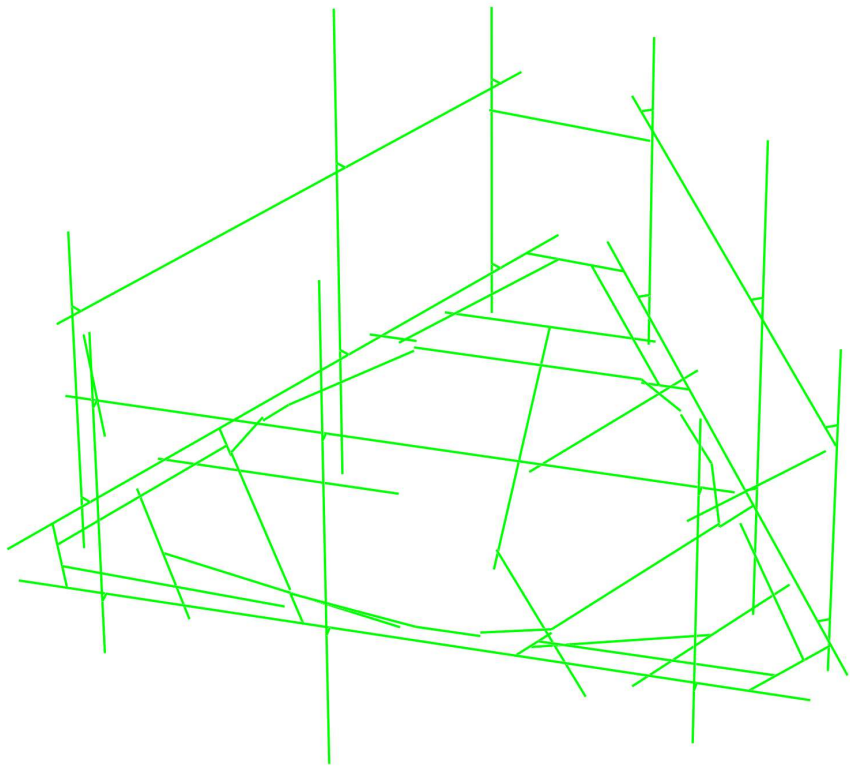
Install new 3" std (3.50" O.D.) horizontal pipe secured to existing platform mount (typ. of 1 per sector, total of 3)

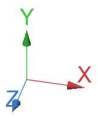
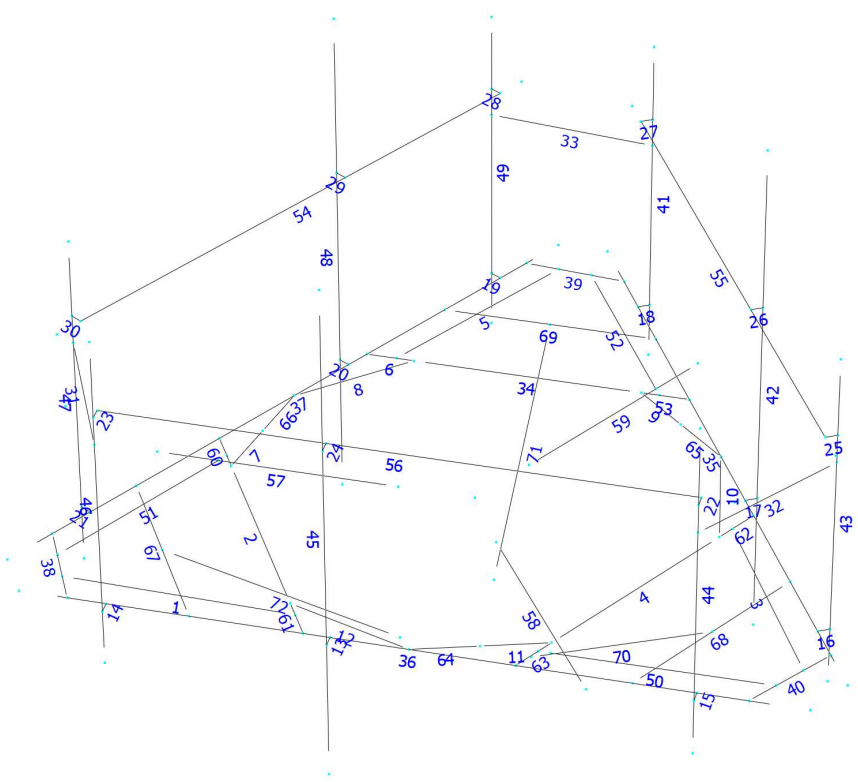




Design status

-  Not designed
-  Error on design
-  Design O.K.
-  With warnings





Current Date: 11/11/2020 5:17 PM

Units system: English

File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\T-MOBILE\CT\CT11506A\ANCHOR 2020\CT11506A (ANCHOR) (Rev.0) (MOD).retx

## Load data

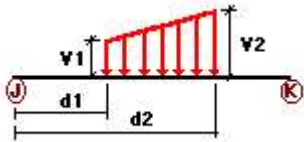
### GLOSSARY

Comb : Indicates if load condition is a load combination

### Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
W0	Wind Load 0/60/120 deg	No	WIND
W30	Wind Load 30/90/150 deg	No	WIND
Di	Ice Load	No	LL
Wi0	Ice Wind Load 0/60/120 deg	No	WIND
Wi30	Ice Wind Load 30/90/150 deg	No	WIND
WL0	WL 30 mph 0/60/120 deg	No	WIND
WL30	WL 30 mph 30/90/150 deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load End of Mount	No	LL
LLa1	250 lb Live Load Antenna 1	No	LL
LLa2	250 lb Live Load Antenna 2	No	LL
LLa3	250 lb Live Load Antenna 3	No	LL

### Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
W0	1	z	-0.008	-0.008	0.00	No	100.00	Yes
	3	z	-0.008	-0.008	0.00	No	100.00	Yes
	5	z	-0.008	-0.008	0.00	No	100.00	Yes
	6	z	-0.017	-0.017	0.00	No	100.00	Yes
	31	z	-0.01	-0.01	0.00	No	100.00	Yes
	32	z	-0.01	-0.01	0.00	No	100.00	Yes
	33	z	-0.01	-0.01	0.00	No	100.00	Yes
	35	z	-0.015	-0.015	0.00	No	100.00	Yes
	36	z	-0.015	-0.015	0.00	No	100.00	Yes
	37	z	-0.015	-0.015	0.00	No	100.00	Yes
	38	z	-0.017	-0.017	0.00	No	100.00	Yes
	39	z	-0.017	-0.017	0.00	No	100.00	Yes
	40	z	-0.017	-0.017	0.00	No	100.00	Yes
	50	z	-0.008	-0.008	0.00	No	100.00	Yes
	51	z	-0.008	-0.008	0.00	No	100.00	Yes

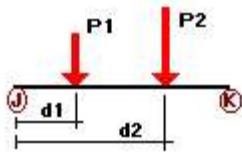
	52	z	-0.008	-0.008	0.00	No	100.00	Yes
	53	z	-0.017	-0.017	0.00	No	100.00	Yes
	54	z	-0.015	-0.015	0.00	No	100.00	Yes
	55	z	-0.015	-0.015	0.00	No	100.00	Yes
	56	z	-0.015	-0.015	0.00	No	100.00	Yes
	57	z	-0.017	-0.017	0.00	No	100.00	Yes
	58	z	-0.017	-0.017	0.00	No	100.00	Yes
	59	z	-0.017	-0.017	0.00	No	100.00	Yes
	60	z	-0.017	-0.017	0.00	No	100.00	Yes
	61	z	-0.017	-0.017	0.00	No	100.00	Yes
	62	z	-0.017	-0.017	0.00	No	100.00	Yes
	63	z	-0.017	-0.017	0.00	No	100.00	Yes
	67	z	-0.015	-0.015	0.00	No	100.00	Yes
	68	z	-0.015	-0.015	0.00	No	100.00	Yes
	69	z	-0.015	-0.015	0.00	No	100.00	Yes
	70	z	-0.021	-0.021	0.00	No	100.00	Yes
	71	z	-0.021	-0.021	0.00	No	100.00	Yes
	72	z	-0.021	-0.021	0.00	No	100.00	Yes
W30	1	x	-0.008	-0.008	0.00	No	100.00	Yes
	3	x	-0.008	-0.008	0.00	No	100.00	Yes
	5	x	-0.008	-0.008	0.00	No	100.00	Yes
	6	x	-0.017	-0.017	0.00	No	100.00	Yes
	31	x	-0.01	-0.01	0.00	No	100.00	Yes
	32	x	-0.01	-0.01	0.00	No	100.00	Yes
	33	x	-0.01	-0.01	0.00	No	100.00	Yes
	35	x	-0.015	-0.015	0.00	No	100.00	Yes
	36	x	-0.015	-0.015	0.00	No	100.00	Yes
	37	x	-0.015	-0.015	0.00	No	100.00	Yes
	38	x	-0.017	-0.017	0.00	No	100.00	Yes
	39	x	-0.017	-0.017	0.00	No	100.00	Yes
	40	x	-0.017	-0.017	0.00	No	100.00	Yes
	41	x	-0.01	-0.01	0.00	No	100.00	Yes
	42	x	-0.01	-0.01	0.00	No	100.00	Yes
	43	x	-0.01	-0.01	0.00	No	100.00	Yes
	44	x	-0.01	-0.01	0.00	No	100.00	Yes
	45	x	-0.01	-0.01	0.00	No	100.00	Yes
	46	x	-0.01	-0.01	0.00	No	100.00	Yes
	47	x	-0.01	-0.01	0.00	No	100.00	Yes
	48	x	-0.01	-0.01	0.00	No	100.00	Yes
	49	x	-0.01	-0.01	0.00	No	100.00	Yes
	50	x	-0.008	-0.008	0.00	No	100.00	Yes
	51	x	-0.008	-0.008	0.00	No	100.00	Yes
	52	x	-0.008	-0.008	0.00	No	100.00	Yes
	53	x	-0.017	-0.017	0.00	No	100.00	Yes
	54	x	-0.015	-0.015	0.00	No	100.00	Yes
	55	x	-0.015	-0.015	0.00	No	100.00	Yes
	56	x	-0.015	-0.015	0.00	No	100.00	Yes
	57	x	-0.017	-0.017	0.00	No	100.00	Yes
	58	x	-0.017	-0.017	0.00	No	100.00	Yes
	59	x	-0.017	-0.017	0.00	No	100.00	Yes
	60	x	-0.017	-0.017	0.00	No	100.00	Yes
	61	x	-0.017	-0.017	0.00	No	100.00	Yes
	62	x	-0.017	-0.017	0.00	No	100.00	Yes
	63	x	-0.017	-0.017	0.00	No	100.00	Yes
	67	x	-0.015	-0.015	0.00	No	100.00	Yes
	68	x	-0.015	-0.015	0.00	No	100.00	Yes
	70	x	-0.021	-0.021	0.00	No	100.00	Yes
	71	x	-0.021	-0.021	0.00	No	100.00	Yes
	72	x	-0.021	-0.021	0.00	No	100.00	Yes
Di	1	y	-0.005	-0.005	0.00	No	100.00	Yes



2	y	-0.013	-0.013	0.00	No	100.00	Yes
3	y	-0.005	-0.005	0.00	No	100.00	Yes
4	y	-0.013	-0.013	0.00	No	100.00	Yes
5	y	-0.005	-0.005	0.00	No	100.00	Yes
6	y	-0.007	-0.007	0.00	No	100.00	Yes
7	y	-0.013	-0.013	0.00	No	100.00	Yes
8	y	-0.025	-0.025	0.00	No	100.00	Yes
9	y	-0.013	-0.013	0.00	No	100.00	Yes
10	y	-0.025	-0.025	0.00	No	100.00	Yes
11	y	-0.013	-0.013	0.00	No	100.00	Yes
12	y	-0.025	-0.025	0.00	No	100.00	Yes
31	y	-0.005	-0.005	0.00	No	100.00	Yes
32	y	-0.005	-0.005	0.00	No	100.00	Yes
33	y	-0.005	-0.005	0.00	No	100.00	Yes
34	y	-0.013	-0.013	0.00	No	100.00	Yes
35	y	-0.006	-0.006	0.00	No	100.00	Yes
36	y	-0.006	-0.006	0.00	No	100.00	Yes
37	y	-0.006	-0.006	0.00	No	100.00	Yes
38	y	-0.007	-0.007	0.00	No	100.00	Yes
39	y	-0.007	-0.007	0.00	No	100.00	Yes
40	y	-0.007	-0.007	0.00	No	100.00	Yes
41	y	-0.005	-0.005	0.00	No	100.00	Yes
42	y	-0.005	-0.005	0.00	No	100.00	Yes
43	y	-0.005	-0.005	0.00	No	100.00	Yes
44	y	-0.005	-0.005	0.00	No	100.00	Yes
45	y	-0.005	-0.005	0.00	No	100.00	Yes
46	y	-0.005	-0.005	0.00	No	100.00	Yes
47	y	-0.005	-0.005	0.00	No	100.00	Yes
48	y	-0.005	-0.005	0.00	No	100.00	Yes
49	y	-0.005	-0.005	0.00	No	100.00	Yes
50	y	-0.005	-0.005	0.00	No	100.00	Yes
51	y	-0.005	-0.005	0.00	No	100.00	Yes
52	y	-0.005	-0.005	0.00	No	100.00	Yes
53	y	-0.007	-0.007	0.00	No	100.00	Yes
54	y	-0.006	-0.006	0.00	No	100.00	Yes
55	y	-0.006	-0.006	0.00	No	100.00	Yes
56	y	-0.006	-0.006	0.00	No	100.00	Yes
57	y	-0.009	-0.009	0.00	No	100.00	Yes
58	y	-0.009	-0.009	0.00	No	100.00	Yes
59	y	-0.009	-0.009	0.00	No	100.00	Yes
60	y	-0.007	-0.007	0.00	No	100.00	Yes
61	y	-0.007	-0.007	0.00	No	100.00	Yes
62	y	-0.007	-0.007	0.00	No	100.00	Yes
63	y	-0.007	-0.007	0.00	No	100.00	Yes
64	y	-0.025	-0.025	0.00	No	100.00	Yes
65	y	-0.025	-0.025	0.00	No	100.00	Yes
66	y	-0.025	-0.025	0.00	No	100.00	Yes
67	y	-0.006	-0.006	0.00	No	100.00	Yes
68	y	-0.006	-0.006	0.00	No	100.00	Yes
69	y	-0.006	-0.006	0.00	No	100.00	Yes
70	y	-0.013	-0.013	0.00	No	100.00	Yes
71	y	-0.013	-0.013	0.00	No	100.00	Yes
72	y	-0.013	-0.013	0.00	No	100.00	Yes

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### Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	41	y	-0.052	2.25	No
		y	-0.052	4.25	No
	42	y	-0.064	1.50	No
		y	-0.064	8.50	No
		y	-0.071	4.00	No
		y	-0.046	4.00	No
		y	-0.006	5.50	No
		y	-0.016	8.00	No
	43	y	-0.067	1.50	No
		y	-0.067	5.50	No
	44	y	-0.052	2.25	No
		y	-0.052	4.25	No
	45	y	-0.064	1.50	No
		y	-0.064	8.50	No
		y	-0.071	4.00	No
		y	-0.046	4.00	No
		y	-0.006	5.50	No
		y	-0.016	8.00	No
	46	y	-0.067	1.50	No
		y	-0.067	5.50	No
	47	y	-0.052	2.25	No
		y	-0.052	4.25	No
	48	y	-0.064	1.50	No
		y	-0.064	8.50	No
y		-0.071	4.00	No	
y		-0.046	4.00	No	
y		-0.006	5.50	No	
y		-0.016	8.00	No	
49	y	-0.067	1.50	No	
	y	-0.067	5.50	No	
W0	41	z	-0.069	2.25	No
		z	-0.069	4.25	No
	42	z	-0.246	1.50	No
		z	-0.246	8.50	No
		z	-0.073	4.00	No
		z	-0.065	4.00	No
		z	-0.005	6.00	No
		z	-0.02	8.00	No
	43	z	-0.108	1.50	No
		z	-0.108	5.50	No
	44	z	-0.119	2.25	No
		z	-0.119	4.25	No
	45	z	-0.425	1.50	No
		z	-0.425	8.50	No
		z	-0.031	4.00	No
		z	-0.02	4.00	No
		z	-0.003	6.00	No
		z	-0.009	8.00	No
	46	z	-0.137	1.50	No
		z	-0.137	5.50	No
	47	z	-0.069	2.25	No
		z	-0.069	4.25	No
	48	z	-0.246	1.50	No
		z	-0.246	8.50	No

		z	-0.073	4.00	No
		z	-0.065	4.00	No
		z	-0.005	6.00	No
		z	-0.02	8.00	No
	49	z	-0.108	1.50	No
		z	-0.108	5.50	No
W30	41	x	-0.103	2.25	No
		x	-0.103	4.25	No
	42	x	-0.365	1.50	No
		x	-0.365	8.50	No
		x	-0.077	4.00	No
		x	-0.068	4.00	No
		x	-0.009	6.00	No
		x	-0.028	8.00	No
	43	x	-0.127	1.50	No
		x	-0.127	5.50	No
	44	x	-0.052	2.25	No
		x	-0.052	4.25	No
	45	x	-0.187	1.50	No
		x	-0.187	8.50	No
		x	-0.083	4.00	No
		x	-0.078	4.00	No
		x	-0.004	6.00	No
		x	-0.019	8.00	No
	46	x	-0.099	1.50	No
		x	-0.099	5.50	No
	47	x	-0.103	2.25	No
		x	-0.103	4.25	No
	48	x	-0.365	1.50	No
		x	-0.365	8.50	No
		x	-0.077	4.00	No
		x	-0.068	4.00	No
		x	-0.009	6.00	No
		x	-0.028	8.00	No
	49	x	-0.127	1.50	No
		x	-0.127	5.50	No
Di	41	y	-0.045	2.25	No
		y	-0.045	4.25	No
	42	y	-0.147	1.50	No
		y	-0.147	8.50	No
		y	-0.036	4.00	No
		y	-0.029	4.00	No
		y	-0.004	5.50	No
		y	-0.014	8.00	No
	43	y	-0.055	1.50	No
		y	-0.055	5.50	No
	44	y	-0.045	2.25	No
		y	-0.045	4.25	No
	45	y	-0.147	1.50	No
		y	-0.147	8.50	No
		y	-0.036	4.00	No
		y	-0.029	4.00	No
		y	-0.004	5.50	No
		y	-0.014	8.00	No
	46	y	-0.055	1.50	No
		y	-0.055	5.50	No
	47	y	-0.045	2.25	No
		y	-0.045	4.25	No
	48	y	-0.147	1.50	No
		y	-0.147	8.50	No

		y	-0.036	4.00	No
		y	-0.029	4.00	No
		y	-0.004	5.50	No
		y	-0.014	8.00	No
	49	y	-0.055	1.50	No
		y	-0.055	5.50	No
Wi0	41	z	-0.013	2.25	No
		z	-0.013	4.25	No
	42	z	-0.043	1.50	No
		z	-0.043	8.50	No
		z	-0.014	4.00	No
		z	-0.013	4.00	No
		z	-0.002	6.00	No
		z	-0.005	8.00	No
	43	z	-0.02	1.50	No
		z	-0.02	5.50	No
	44	z	-0.021	2.25	No
		z	-0.021	4.25	No
	45	z	-0.071	1.50	No
		z	-0.071	8.50	No
		z	-0.008	4.00	No
		z	-0.006	4.00	No
		z	-0.001	6.00	No
		z	-0.003	8.00	No
	46	z	-0.025	1.50	No
		z	-0.025	5.50	No
	47	z	-0.013	2.25	No
		z	-0.013	4.25	No
	48	z	-0.043	1.50	No
		z	-0.043	8.50	No
		z	-0.014	4.00	No
		z	-0.013	4.00	No
		z	-0.002	6.00	No
		z	-0.005	8.00	No
	49	z	-0.02	1.50	No
		z	-0.02	5.50	No
Wi30	41	x	-0.018	2.25	No
		x	-0.018	4.25	No
	42	x	-0.061	1.50	No
		x	-0.061	8.50	No
		x	-0.015	4.00	No
		x	-0.014	4.00	No
		x	-0.003	6.00	No
		x	-0.007	8.00	No
	43	x	-0.023	1.50	No
		x	-0.023	5.50	No
	44	x	-0.01	2.25	No
		x	-0.01	4.25	No
	45	x	-0.034	1.50	No
		x	-0.034	8.50	No
		x	-0.016	4.00	No
		x	-0.015	4.00	No
		x	-0.002	6.00	No
		x	-0.005	8.00	No
	46	x	-0.019	1.50	No
		x	-0.019	5.50	No
	47	x	-0.018	2.25	No
		x	-0.018	4.25	No
	48	x	-0.061	1.50	No
		x	-0.061	8.50	No

		x	-0.015	4.00	No
		x	-0.014	4.00	No
		x	-0.003	6.00	No
		x	-0.007	8.00	No
	49	x	-0.023	1.50	No
		x	-0.023	5.50	No
WLO	41	z	-0.004	2.25	No
		z	-0.004	4.25	No
	42	z	-0.013	1.50	No
		z	-0.013	8.50	No
		z	-0.004	4.00	No
		z	-0.003	4.00	No
		z	-0.001	6.00	No
		z	-0.001	8.00	No
	43	z	-0.006	1.50	No
		z	-0.006	5.50	No
	44	z	-0.007	2.25	No
		z	-0.007	4.25	No
	45	z	-0.023	1.50	No
		z	-0.023	8.50	No
		z	-0.002	4.00	No
		z	-0.001	4.00	No
		z	-0.001	6.00	No
		z	-0.001	8.00	No
	46	z	-0.008	1.50	No
		z	-0.008	5.50	No
	47	z	-0.004	2.25	No
		z	-0.004	4.25	No
	48	z	-0.013	1.50	No
		z	-0.013	8.50	No
		z	-0.004	4.00	No
		z	-0.003	4.00	No
		z	-0.001	6.00	No
		z	-0.001	8.00	No
	49	z	-0.006	1.50	No
		z	-0.006	5.50	No
WL30	41	x	-0.006	2.25	No
		x	-0.006	4.25	No
	42	x	-0.02	1.50	No
		x	-0.02	8.50	No
		x	-0.004	4.00	No
		x	-0.004	4.00	No
		x	-0.001	6.00	No
		x	-0.002	8.00	No
	43	x	-0.007	1.50	No
		x	-0.007	5.50	No
	44	x	-0.003	2.25	No
		x	-0.003	4.25	No
	45	x	-0.01	1.50	No
		x	-0.01	8.50	No
		x	-0.004	4.00	No
		x	-0.004	4.00	No
		x	-0.001	6.00	No
		x	-0.001	8.00	No
	46	x	-0.006	1.50	No
		x	-0.006	5.50	No
	47	x	-0.006	2.25	No
		x	-0.006	4.25	No
	48	x	-0.02	1.50	No
		x	-0.02	8.50	No

		x	-0.004	4.00	No
		x	-0.004	4.00	No
		x	-0.001	6.00	No
		x	-0.002	8.00	No
	49	x	-0.007	1.50	No
		x	-0.007	5.50	No
LL1	36	y	-0.25	50.00	Yes
LL2	36	y	-0.25	100.00	Yes
LLa1	44	y	-0.25	50.00	Yes
LLa2	45	y	-0.25	50.00	Yes
LLa3	46	y	-0.25	50.00	Yes

### Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
W0	Wind Load 0/60/120 deg	No	0.00	0.00	0.00
W30	Wind Load 30/90/150 deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
Wi0	Ice Wind Load 0/60/120 deg	No	0.00	0.00	0.00
Wi30	Ice Wind Load 30/90/150 deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0/60/120 deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30/90/150 deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load End of Mount	No	0.00	0.00	0.00
LLa1	250 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	250 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	250 lb Live Load Antenna 3	No	0.00	0.00	0.00

### Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
W0	0.00	0.00	0.00
W30	0.00	0.00	0.00
Di	0.00	0.00	0.00
Wi0	0.00	0.00	0.00
Wi30	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00



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## Steel Code Check

Report: Summary - Group by member

**Load conditions to be included in design :**

- LC1=1.2DL+W0
- LC2=1.2DL+W30
- LC3=1.2DL-W0
- LC4=1.2DL-W30
- LC5=0.9DL+W0
- LC6=0.9DL+W30
- LC7=0.9DL-W0
- LC8=0.9DL-W30
- LC9=1.2DL+Di+Wi0
- LC10=1.2DL+Di+Wi30
- LC11=1.2DL+Di-Wi0
- LC12=1.2DL+Di-Wi30
- LC13=1.2DL
- LC14=1.2DL+1.6LL1
- LC15=1.2DL+1.6LL2
- LC16=1.2DL+W0+1.6LLa1
- LC17=1.2DL+W30+1.6LLa1
- LC18=1.2DL-W0+1.6LLa1
- LC19=1.2DL-W30+1.6LLa1
- LC20=1.2DL+W0+1.6LLa2
- LC21=1.2DL+W30+1.6LLa2
- LC22=1.2DL-W0+1.6LLa2
- LC23=1.2DL-W30+1.6LLa2
- LC24=1.2DL+W0+1.6LLa3
- LC25=1.2DL+W30+1.6LLa3
- LC26=1.2DL-W0+1.6LLa3
- LC27=1.2DL-W30+1.6LLa3

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	<b>HSS_SQR 4X4X1_4</b>	<b>57</b>	LC1 at 100.00%	0.24	OK	Eq. H1-1b
		<b>58</b>	LC3 at 100.00%	0.22	OK	Eq. H1-1b
		<b>59</b>	LC4 at 100.00%	<b>0.32</b>	<b>OK</b>	Eq. H1-1b
	<b>L 2X2X3_16</b>	<b>1</b>	LC2 at 50.00%	0.27	OK	Sec. F1
		<b>3</b>	LC4 at 50.00%	0.23	OK	Sec. F1
		<b>5</b>	LC1 at 50.00%	0.25	OK	Sec. F1
		<b>50</b>	LC4 at 4.69%	0.28	OK	Eq. H3-8
		<b>51</b>	LC2 at 4.17%	0.31	OK	Eq. H3-8
		<b>52</b>	LC1 at 4.17%	<b>0.33</b>	<b>OK</b>	Eq. H3-8
	<b>LU 7x4x1/4</b>	<b>2</b>	LC9 at 0.00%	0.31	OK	Eq. H2-1
		<b>4</b>	LC12 at 0.00%	0.55	OK	Eq. H3-8
		<b>7</b>	LC9 at 93.75%	<b>0.63</b>	<b>OK</b>	Eq. H3-8
		<b>9</b>	LC12 at 93.75%	0.61	OK	Eq. H3-8
		<b>11</b>	LC1 at 100.00%	0.29	OK	Eq. H2-1
		<b>34</b>	LC3 at 0.00%	0.33	OK	Eq. H2-1
	<b>PIPE 2x0.154</b>	<b>31</b>	LC1 at 100.00%	0.38	OK	Eq. H1-1b
		<b>32</b>	LC3 at 0.00%	0.33	OK	Eq. H1-1b
		<b>33</b>	LC4 at 100.00%	0.46	OK	Eq. H1-1b



41	LC2 at 82.81%	0.49	OK	Eq. H1-1b
42	LC2 at 70.83%	<b>0.71</b>	<b>OK</b>	Eq. H1-1b
43	LC3 at 82.81%	0.37	OK	Eq. H1-1b
44	LC2 at 17.19%	0.42	OK	Eq. H1-1b
45	LC1 at 72.92%	0.63	OK	Eq. H1-1b
46	LC1 at 29.69%	0.37	OK	Eq. H1-1b
47	LC1 at 82.81%	0.43	OK	Eq. H1-1b
48	LC4 at 70.83%	0.70	OK	Eq. H1-1b
49	LC4 at 82.81%	0.42	OK	Eq. H1-1b

**PIPE 3x0.216**

35	LC4 at 78.13%	0.20	OK	Eq. H1-1b
36	LC4 at 21.88%	0.23	OK	Eq. H1-1b
37	LC2 at 69.27%	0.21	OK	Eq. H1-1b
54	LC2 at 60.94%	0.19	OK	Eq. H1-1b
55	LC4 at 59.38%	0.18	OK	Eq. H1-1b
56	LC3 at 60.94%	0.15	OK	Eq. H1-1b
67	LC2 at 50.00%	0.35	OK	Eq. H1-1b
68	LC4 at 50.00%	<b>0.37</b>	<b>OK</b>	Eq. H1-1b
69	LC9 at 50.00%	0.34	OK	Eq. H1-1b

**PL 4x3/8**

6	LC4 at 100.00%	0.19	OK	Eq. H1-1b
38	LC3 at 33.33%	0.19	OK	Eq. H1-1b
39	LC2 at 64.58%	0.19	OK	Eq. H1-1b
40	LC4 at 64.58%	0.18	OK	Eq. H1-1b
53	LC12 at 100.00%	0.19	OK	Eq. H1-1b
60	LC9 at 100.00%	<b>0.20</b>	<b>OK</b>	Eq. H1-1b
61	LC1 at 0.00%	0.18	OK	Eq. H1-1b
62	LC2 at 0.00%	0.18	OK	Eq. H1-1b
63	LC12 at 100.00%	0.17	OK	Eq. H1-1b

**RndBar 2**

13	LC3 at 100.00%	0.06	OK	Eq. H1-1b
14	LC1 at 0.00%	0.12	OK	Eq. H1-1b
15	LC1 at 0.00%	0.17	OK	Eq. H1-1b
16	LC2 at 0.00%	0.12	OK	Eq. H1-1b
17	LC1 at 0.00%	0.07	OK	Eq. H1-1b
18	LC2 at 100.00%	0.19	OK	Eq. H1-1b
19	LC4 at 100.00%	0.15	OK	Eq. H1-1b
20	LC1 at 0.00%	0.07	OK	Eq. H1-1b
21	LC4 at 0.00%	0.15	OK	Eq. H1-1b
22	LC3 at 0.00%	0.10	OK	Eq. H1-1b
23	LC1 at 0.00%	0.12	OK	Eq. H1-1b
24	LC3 at 0.00%	<b>0.19</b>	<b>OK</b>	Eq. H1-1b
25	LC2 at 100.00%	0.11	OK	Eq. H1-1b
26	LC4 at 0.00%	0.16	OK	Eq. H1-1b
27	LC2 at 0.00%	0.09	OK	Eq. H1-1b
28	LC4 at 0.00%	0.11	OK	Eq. H1-1b
29	LC2 at 0.00%	0.16	OK	Eq. H1-1b
30	LC2 at 0.00%	0.11	OK	Eq. H1-1b

**T2L 2-1\_2X2-1\_2X3\_16**

70	LC4 at 100.00%	<b>0.25</b>	<b>OK</b>	Eq. H2-1
71	LC1 at 100.00%	0.25	OK	Eq. H2-1
72	LC2 at 0.00%	0.25	OK	Eq. H2-1

**T2LU 7x4x1/4LLBB**

8	LC5 at 0.00%	0.09	OK	Eq. H2-1
10	LC8 at 0.00%	<b>0.13</b>	<b>OK</b>	Eq. H2-1
12	LC7 at 0.00%	0.09	OK	Eq. H2-1
64	LC1 at 0.00%	0.04	OK	Eq. H2-1
65	LC2 at 100.00%	0.09	OK	Eq. H2-1
66	LC3 at 100.00%	0.07	OK	Eq. H2-1



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## Geometry data

### GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member    0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

### Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	-1.25	0.00	1.25	0
3	-1.6766	0.00	5.3461	0
4	-4.3856	0.00	0.6539	0
7	-4.1371	0.00	1.0844	0
8	-1.9251	0.00	4.9156	0
13	3.5473	0.00	-0.798	0
14	-3.5473	0.00	-0.798	0
15	0.00	0.00	5.3461	0
16	-5.25	0.00	1.25	0
17	-2.0751	0.00	4.6558	0
18	-3.9871	0.00	1.3442	0
19	0.625	0.00	2.3325	0
20	2.85	0.00	5.6621	0
21	4.1371	0.00	1.0844	0
22	3.9871	0.00	1.3442	0
23	1.9251	0.00	4.9156	0
24	2.0751	0.00	4.6558	0
25	4.3856	0.00	0.6539	0
26	1.6766	0.00	5.3461	0
28	0.625	0.00	0.1675	0
29	2.6295	0.00	-3.2983	0

30	-2.212	0.00	-2.25	0
31	-1.912	0.00	-2.25	0
32	2.212	0.00	-2.25	0
33	1.912	0.00	-2.25	0
34	-2.709	0.00	-2.25	0
35	2.709	0.00	-2.25	0
37	6.673	0.00	4.6119	0
38	0.425	0.00	-6.2099	0
39	-0.425	0.00	-6.2099	0
40	-6.673	0.00	4.6119	0
41	-6.248	0.00	5.348	0
42	6.248	0.00	5.348	0
43	-1.25	0.00	5.5461	0
44	-1.25	0.00	5.3461	0
45	-4.832	0.00	5.348	0
46	-4.832	0.00	5.548	0
47	4.498	0.00	5.348	0
48	4.498	0.00	5.548	0
49	5.965	0.00	3.3856	0
50	4.1723	0.00	0.2845	0
51	1.30	0.00	-4.6944	0
52	-5.798	0.00	3.0963	0
53	-2.9223	0.00	-1.8806	0
54	-1.133	0.00	-4.9836	0
55	-1.3062	0.00	-5.0836	0
56	-3.0955	0.00	-1.9806	0
57	-5.9712	0.00	2.9963	0
58	6.1382	0.00	3.2856	0
59	4.3455	0.00	0.1845	0
60	1.4732	0.00	-4.7944	0
61	-4.832	5.00	5.548	0
62	-4.832	-1.00	5.548	0
63	-1.25	6.50	5.5461	0
64	-1.25	-2.50	5.5461	0
65	4.498	5.00	5.548	0
66	4.498	-1.00	5.548	0
67	6.1382	-1.00	3.2856	0
68	6.1382	5.00	3.2856	0
69	4.3455	-2.50	0.1845	0
70	4.3455	6.50	0.1845	0
71	1.4732	-1.00	-4.7944	0
72	1.4732	5.00	-4.7944	0
73	-1.3062	-1.00	-5.0836	0
74	-1.3062	5.00	-5.0836	0
75	-3.0955	-2.50	-1.9806	0
76	-3.0955	6.50	-1.9806	0
77	-5.9712	-1.00	2.9963	0
78	-5.9712	5.00	2.9963	0
79	-1.25	3.625	5.5461	0
80	-4.832	3.625	5.548	0
81	4.498	3.625	5.548	0
82	6.1382	3.625	3.2856	0
83	4.3455	3.625	0.1845	0
84	1.4732	3.625	-4.7944	0
85	-1.3062	3.625	-5.0836	0
86	-3.0955	3.625	-1.9806	0
87	-5.9712	3.625	2.9963	0
88	-4.832	3.125	5.548	0
89	4.498	3.125	5.548	0
90	-5.9712	3.125	2.9963	0

91	6.1382	3.125	3.2856	0
92	-4.832	3.625	5.348	0
93	-1.25	3.625	5.3461	0
94	4.498	3.625	5.348	0
95	4.998	3.625	5.348	0
96	-5.332	3.625	5.348	0
97	5.965	3.625	3.3856	0
98	4.1723	3.625	0.2845	0
99	1.30	3.625	-4.6944	0
100	1.05	3.625	-5.1274	0
101	6.215	3.625	3.8186	0
102	-1.133	3.625	-4.9836	0
103	-2.9223	3.625	-1.8806	0
104	-5.798	3.625	3.0963	0
105	-0.883	3.625	-5.4166	0
106	-6.048	3.625	3.5294	0
107	-1.3062	3.125	-5.0836	0
108	1.4732	3.125	-4.7944	0
109	-4.2327	0.00	1.25	0
110	2.1163	0.00	4.9156	0
111	2.1163	0.00	-2.4156	0
112	1.0375	0.00	5.001	0
113	2.7296	0.00	-1.524	0
114	-3.7672	0.00	0.2731	0
115	6.2815	0.00	3.9338	0
116	5.298	0.00	5.348	0
117	5.6258	0.00	4.8766	0
118	5.9536	0.00	4.4052	0
119	-6.198	0.00	3.7892	0
120	-5.465	0.00	5.348	0
121	-5.9536	0.00	4.3088	0
122	-5.7093	0.00	4.8284	0
123	0.90	0.00	-5.3872	0
124	-0.8165	0.00	-5.5318	0
125	0.3278	0.00	-5.4354	0
126	-0.2443	0.00	-5.4836	0
127	1.7981	0.00	-3.8296	0
129	5.2981	0.00	2.2326	0
130	0.00	0.00	1.25	0
131	-5.2981	0.00	2.2326	0
132	-1.7981	0.00	-3.8296	0
133	3.50	0.00	5.347	0
134	-3.50	0.00	5.347	0
138	-1.0825	-2.50	1.875	0
139	-1.23E-07	-2.50	-2.12E-07	0
140	1.0825	-2.50	1.875	0
141	-4.3991	0.00	3.7898	0
142	-9.70E-07	0.00	-3.8296	0
143	4.3991	0.00	3.7898	0

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## Restraints

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Node	TX	TY	TZ	RX	RY	RZ
1	1	1	1	1	1	1
19	1	1	1	1	1	1
28	1	1	1	1	1	1
138	1	1	1	1	1	1
139	1	1	1	1	1	1
140	1	1	1	1	1	1

## Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	Ig factor
1	8	122		L 2X2X3_16	A36	0.00	0.00	0.00
2	18	17		LU 7x4x1/4	A36	0.00	0.00	0.00
3	21	118		L 2X2X3_16	A36	0.00	0.00	0.00
4	24	22		LU 7x4x1/4	A36	0.00	0.00	0.00
5	30	126		L 2X2X3_16	A36	0.00	0.00	0.00
6	34	31		PL 4x3/8	A36	0.00	0.00	0.00
7	114	18		LU 7x4x1/4	A36	0.00	0.00	0.00
8	31	14		T2LU 7x4x1/4LLBB	A36	0.00	0.00	0.00
9	113	33		LU 7x4x1/4	A36	0.00	0.00	0.00
10	22	13		T2LU 7x4x1/4LLBB	A36	0.00	0.00	0.00
11	112	24		LU 7x4x1/4	A36	0.00	0.00	0.00
12	17	15		T2LU 7x4x1/4LLBB	A36	0.00	0.00	0.00
13	44	43		RndBar 2	A36 (weightless)	0.00	0.00	0.00
14	45	46		RndBar 2	A36 (weightless)	0.00	0.00	0.00
15	47	48		RndBar 2	A36 (weightless)	0.00	0.00	0.00
16	49	58		RndBar 2	A36 (weightless)	0.00	0.00	0.00
17	50	59		RndBar 2	A36 (weightless)	0.00	0.00	0.00
18	51	60		RndBar 2	A36 (weightless)	0.00	0.00	0.00
19	54	55		RndBar 2	A36 (weightless)	0.00	0.00	0.00
20	53	56		RndBar 2	A36 (weightless)	0.00	0.00	0.00
21	52	57		RndBar 2	A36 (weightless)	0.00	0.00	0.00
22	81	94		RndBar 2	A36 (weightless)	0.00	0.00	0.00
23	80	92		RndBar 2	A36 (weightless)	0.00	0.00	0.00
24	79	93		RndBar 2	A36 (weightless)	0.00	0.00	0.00
25	82	97		RndBar 2	A36 (weightless)	0.00	0.00	0.00
26	83	98		RndBar 2	A36 (weightless)	0.00	0.00	0.00
27	84	99		RndBar 2	A36 (weightless)	0.00	0.00	0.00
28	85	102		RndBar 2	A36 (weightless)	0.00	0.00	0.00
29	86	103		RndBar 2	A36 (weightless)	0.00	0.00	0.00
30	104	87		RndBar 2	A36 (weightless)	0.00	0.00	0.00
31	90	88		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
32	89	91		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
33	108	107		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
34	33	31		LU 7x4x1/4	A36	0.00	0.00	0.00
35	38	37		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
36	42	41		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
37	39	40		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
38	119	120		PL 4x3/8	A36	0.00	0.00	0.00
39	124	123		PL 4x3/8	A36	0.00	0.00	0.00
40	115	116		PL 4x3/8	A36	0.00	0.00	0.00
41	72	71		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
42	70	69		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
43	68	67		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
44	66	65		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
45	63	64		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

46	61	62	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
47	78	77	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
48	76	75	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
49	74	73	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
50	23	117	L 2X2X3_16	A36	0.00	0.00	0.00
51	7	121	L 2X2X3_16	A36	0.00	0.00	0.00
52	32	125	L 2X2X3_16	A36	0.00	0.00	0.00
53	35	33	PL 4x3/8	A36	0.00	0.00	0.00
54	106	105	PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
55	100	101	PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
56	95	96	PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
57	16	1	HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
58	20	19	HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
59	29	28	HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
60	4	18	PL 4x3/8	A36	0.00	0.00	0.00
61	17	3	PL 4x3/8	A36	0.00	0.00	0.00
62	22	25	PL 4x3/8	A36	0.00	0.00	0.00
63	26	24	PL 4x3/8	A36	0.00	0.00	0.00
64	15	112	T2LU 7x4x1/4LLBB	A36	0.00	0.00	0.00
65	13	113	T2LU 7x4x1/4LLBB	A36	0.00	0.00	0.00
66	14	114	T2LU 7x4x1/4LLBB	A36	0.00	0.00	0.00
67	134	131	PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
68	133	129	PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
69	127	132	PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
70	143	140	T2L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
71	142	139	T2L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
72	138	141	T2L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00

### Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
2	270.00	0	0.00	0.00	0.00
4	270.00	0	0.00	0.00	0.00
7	270.00	0	0.00	0.00	0.00
8	90.00	0	0.00	0.00	0.00
9	270.00	0	0.00	0.00	0.00
10	90.00	0	0.00	0.00	0.00
11	270.00	0	0.00	0.00	0.00
12	90.00	0	0.00	0.00	0.00
34	270.00	0	0.00	0.00	0.00
41	315.00	0	0.00	0.00	0.00
42	315.00	0	0.00	0.00	0.00
43	315.00	0	0.00	0.00	0.00
44	315.00	0	0.00	0.00	0.00
45	315.00	0	0.00	0.00	0.00
46	315.00	0	0.00	0.00	0.00
47	315.00	0	0.00	0.00	0.00
48	315.00	0	0.00	0.00	0.00
49	315.00	0	0.00	0.00	0.00
64	90.00	0	0.00	0.00	0.00
65	90.00	0	0.00	0.00	0.00
66	90.00	0	0.00	0.00	0.00

## Rigid end offsets

---

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
1	-1.7321	0.00	1.00	0.00	0.00	0.00
2	0.00	0.80	0.00	0.00	0.80	0.00
3	1.7321	0.00	1.00	0.00	0.00	0.00
4	0.00	0.80	0.00	0.00	0.80	0.00
5	0.00	0.00	-2.00	0.00	0.00	0.00
6	0.00	1.00	-2.00	0.00	1.00	-2.00
7	0.00	0.80	0.00	0.00	0.80	0.00
8	0.00	0.00	0.00	0.75	0.00	6.50
9	0.00	0.80	0.00	0.00	0.80	0.00
10	0.00	0.00	0.00	-0.50	0.00	6.00
11	0.00	0.80	0.00	0.00	0.80	0.00
12	0.00	0.00	0.00	0.25	0.00	-4.00
31	2.00	0.00	0.00	2.00	0.00	0.00
32	-2.00	0.00	0.00	-2.00	0.00	0.00
33	0.00	0.00	2.00	0.00	0.00	2.00
34	0.00	0.80	0.00	0.00	0.80	0.00
57	0.00	-4.00	0.00	0.00	-4.00	0.00
58	0.00	-4.00	0.00	0.00	-4.00	0.00
59	0.00	-4.00	0.00	0.00	-4.00	0.00
64	0.25	0.00	-4.00	0.00	0.00	0.00
65	-0.50	0.00	6.00	0.00	0.00	0.00
66	0.75	0.00	6.50	0.00	0.00	0.00
67	0.00	-3.00	0.00	0.00	-3.00	0.00
68	0.00	-3.00	0.00	0.00	-3.00	0.00
69	0.00	-3.00	0.00	0.00	-3.00	0.00
70	0.00	-3.00	0.00	0.00	0.00	0.00
71	0.00	-3.00	0.00	0.00	0.00	0.00
72	0.00	0.00	0.00	0.00	-3.00	0.00

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# Exhibit F

Power Density/RF Emissions Report

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

T-Mobile Existing Facility

Site ID: CT11506A

CT506/Willimantic ECSU  
83 Windham Street  
Willimantic, Connecticut 06226

**December 21, 2020**

**EBI Project Number: 6220005984**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>33.00%</b>

December 21, 2020

T-Mobile

Attn: Jason Overbey, RF Manager  
35 Griffin Road South  
Bloomfield, Connecticut 06002

Emissions Analysis for Site: CT11506A - CT506/Willimantic ECSU

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **83 Windham Street in Willimantic, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

## **CALCULATIONS**

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 83 Windham Street in Willimantic, 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) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 5) 4 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.

- 6) 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.
- 7) 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.
- 8) 1 LTE channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.
- 9) 1 NR channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.
- 10) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 11) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 12) The antennas used in this modeling are the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24\_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector A, the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24\_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector B, the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24\_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a

very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

- 13) The antenna mounting height centerline of the proposed antennas is 117 feet above ground level (AGL).
- 14) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 15) All calculations were done with respect to uncontrolled / general population threshold limits.

## T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR 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):	117 feet	Height (AGL):	117 feet	Height (AGL):	117 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	38,477.89	ERP (W):	38,477.89	ERP (W):	38,477.89
Antenna A1 MPE %:	10.11%	Antenna B1 MPE %:	10.11%	Antenna C1 MPE %:	10.11%
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):	117 feet	Height (AGL):	117 feet	Height (AGL):	117 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 %:	4.38%	Antenna B2 MPE %:	4.38%	Antenna C2 MPE %:	4.38%
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32
Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd
Height (AGL):	117 feet	Height (AGL):	117 feet	Height (AGL):	117 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts
ERP (W):	12,841.53	ERP (W):	12,841.53	ERP (W):	12,841.53
Antenna A3 MPE %:	3.37%	Antenna B3 MPE %:	3.37%	Antenna C3 MPE %:	3.37%



Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	17.86%
FM Broadcast	5.28%
UHP Whip	0.02%
Parabolic dish	0.01%
VHF Whip	0.05%
CPTV Microwave	0.09%
Sprint	0.75%
AT&T	8.42%
Nextel	0.52%
<b>Site Total MPE % :</b>	<b>33.00%</b>

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	17.86%
T-Mobile Sector B Total:	17.86%
T-Mobile Sector C Total:	17.86%
Site Total MPE % :	33.00%

### T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
T-Mobile 2500 MHz LTE	1	19238.94	117.0	50.53	2500 MHz LTE	1000	5.05%
T-Mobile 2500 MHz NR	1	19238.94	117.0	50.53	2500 MHz NR	1000	5.05%
T-Mobile 600 MHz LTE	2	591.73	117.0	3.11	600 MHz LTE	400	0.78%
T-Mobile 600 MHz NR	1	1577.94	117.0	4.14	600 MHz NR	400	1.04%
T-Mobile 700 MHz LTE	2	648.82	117.0	3.41	700 MHz LTE	467	0.73%
T-Mobile 1900 MHz LTE	2	2203.69	117.0	11.58	1900 MHz LTE	1000	1.16%
T-Mobile 2100 MHz UMTS	2	1294.56	117.0	6.80	2100 MHz UMTS	1000	0.68%
T-Mobile 1900 MHz GSM	4	1028.30	117.0	10.80	1900 MHz GSM	1000	1.08%
T-Mobile 1900 MHz LTE	2	2056.61	117.0	10.80	1900 MHz LTE	1000	1.08%
T-Mobile 2100 MHz LTE	2	2307.55	117.0	12.12	2100 MHz LTE	1000	1.21%
						<b>Total:</b>	<b>17.86%</b>

• 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:	17.86%
Sector B:	17.86%
Sector C:	17.86%
T-Mobile Maximum MPE % (Sector A):	17.86%
Site Total:	33.00%
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **33.00%** 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.

# Exhibit G

Mailing Receipts/Proof of Notice

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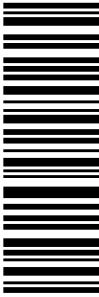
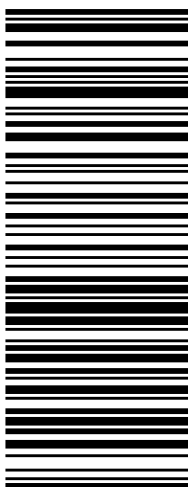

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<p style="text-align: right;"><b>1 OF 1</b></p> <p><b>1 LBS</b>      DWT: 12.9,1</p> <p>CENTERLINE COMMUNICATIONS 2093007310 117 CAROL STREET DANBURY CT 06810</p> <p><b>SHIP TO:</b> TOWN MANAGER TOWN OF WINDHAM 979 MAIN STREET <b>WILLIMANTIC CT 06226-2217</b></p>	<p style="font-size: 2em;"><b>CT 063 0-01</b></p> 	<p style="font-size: 1.5em;"><b>UPS GROUND</b></p> <p>TRACKING #: 1Z 9Y4 503 03 3663 2979</p> 	<p style="text-align: right;"><b>BILLING: P/P</b></p> <div style="text-align: right;">  </div> <p style="font-size: 0.8em;">CS 22.0.12.      WNTNV50 42.0A 01/2021*</p>
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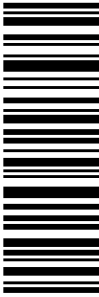
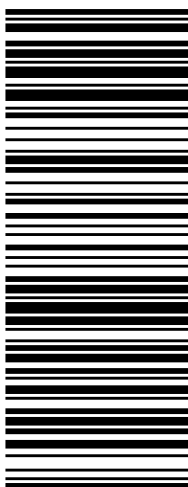

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<p style="text-align: right;"><b>1 OF 1</b></p> <p><b>1 LBS</b>      DWT: 12.9,1</p> <p>CENTERLINE COMMUNICATIONS 2093007310 117 CAROL STREET DANBURY CT 06810</p> <p><b>SHIP TO:</b> JAMES HOWARTH EASTERN CT STATE UNIVERSITY 83 WINDHAM STREET <b>WILLIMANTIC CT 06226-2211</b></p>	<p style="font-size: 2em;"><b>CT 063 0-01</b></p> 	<p style="font-size: 1.5em;"><b>UPS GROUND</b></p> <p>TRACKING #: 1Z 9Y4 503 03 3951 3584</p> 	<p style="text-align: right;"><b>BILLING: P/P</b></p>  <p style="font-size: 0.8em;">CS 22.0.12.    WNTNV50 42.0A 01/2021*</p>
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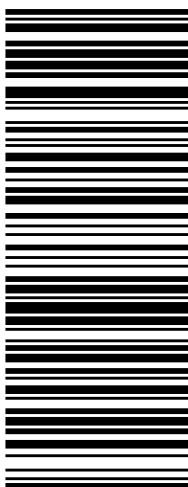

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BETHEL ,CT 06801

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<p style="text-align: right;"><b>1 OF 1</b></p> <p><b>1 LBS</b>      DWT: 12.9,1</p> <p>CENTERLINE COMMUNICATIONS 2093007310 117 CAROL STREET DANBURY CT 06810</p> <p><b>SHIP TO:</b> 860-713-5900 OFFICE OF STATE BUILDING INSPECTOR SUITE 1303 450 COLUMBUS BLVD <b>HARTFORD CT 06103-1801</b></p>	<p style="font-size: 2em;"><b>CT 061 9-03</b></p> 	<p style="font-size: 1.5em;"><b>UPS GROUND</b></p> <p>TRACKING #: 1Z 9Y4 503 03 2718 7192</p> 	<p style="text-align: center;"><b>BILLING: P/P</b></p> <div style="text-align: right;">  <p style="font-size: 0.8em;">CS 22.0.12.    WNTNV50 42.0A 01/2021*</p> </div>
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