



10 INDUSTRIAL AVE,  
SUITE 3  
MAHWAH NJ 07430

PHONE: 201.684.0055  
FAX: 201.684.0066

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June 15, 2016

Melanie A. Bachman  
Acting Executive Director  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051

T-Mobile Northeast LLC – CNH371A  
Tower Share Application  
6 Mountain Road, Washington, CT 06777  
Latitude- 41.66888000  
Longitude- -73.36527000

Dear Ms. Bachman,

This letter and attachments are submitted on behalf of T-Mobile Northeast LLC (“T-Mobile”). T-Mobile plans to install antennas and related equipment at the American Tower site located at 6 Mountain Road in Washington, CT. Please note, T-Mobile was previously approved for a tower-sharing request at this facility, in a Connecticut Siting Council decision dated March 17, 2011.

T-Mobile will install six (6) 700/1900 MHz antennas and six (6) RRHs at the 136’ level of the existing 171’ monopole. One (1) hybrid cable will also be installed inside the existing monopole. T-Mobile’s equipment cabinets will be placed on a 10’ X 20’ concrete pad within the existing fenced equipment compound. Included are plans prepared by Hudson Design Group dated June 1, 2016, depicting the planned changes and attached as **Exhibit A**. Also included is a structural analysis prepared by A.T. Engineering Service, PLLC, dated May 17, 2016, confirming that the existing tower is structurally capable of supporting T-Mobile’s equipment and attached as **Exhibit B**. Please note, this analysis depicts certain T-Mobile equipment as “to be removed”, which is due to T-Mobile having an existing lease in place with the owner, American Tower, and the previously-leased equipment is being depicted as being removed within this analysis. There is no T-Mobile equipment currently on this tower.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of T-Mobile’s intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to Mark E. Lyon, First Selectman of the Town of Washington. American Tower Corporation, the tower owner, and Ray & Carol Underwood, the underlying property owners. Please see the attached letter from American Tower authorizing the proposed shared use of the facility attached as **Exhibit C**.

The planned modifications of the facility fall squarely within those activities explicitly provided for in R.C.S.A. 16-50j-89.

1. The proposed modifications will not result in an increase in the height of the existing structure. The top of the monopole is approximately 171'; T-Mobile's proposed antennas will be located at a center line height of 136'.
2. The proposed modifications will not require the extension of the site boundary as depicted on the attached site plan. T-Mobile's equipment will be located entirely within the existing compound area.
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. The incremental effect of the proposed changes will be negligible.
4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total power density of 26.20% as evidenced by the power density calculations attached as **Exhibit D**.

Sincerely,

*Kyle Richers*

Kyle Richers  
Transcend Wireless  
10 Industrial Ave., Suite 3  
Mahwah, New Jersey  
krichers@transcendwireless.com  
908-447-4716

cc: Mark E. Lyon, First Selectman, Town of Washington  
American Tower, tower owner  
Ray & Carol Underwood, property owner

# SITE NUMBER: CTNH371A

6 MOUNTAIN ROAD  
WASHINGTON, CT 06777  
LITCHFIELD COUNTY

## SITE NAME: MOUNTAIN RD- VERIZON COLO

### RF DESIGN GUIDELINE: 707A

T-MOBILE TECHNICIAN SITE SAFETY NOTES	
LOCATION	SPECIAL RESTRICTIONS
SECTOR A: ANTENNA/TMA/RRH	ACCESS NOT PERMITTED
SECTOR B: ANTENNA/TMA/RRH	ACCESS NOT PERMITTED
SECTOR C: ANTENNA/TMA/RRH	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

#### T-MOBILE NORTHEAST LLC

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

#### Transcend Wireless

TRANSCEND WIRELESS  
10 INDUSTRIAL AVE  
MAHWAH, NJ 07430  
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FAX: (201) 684-0066



1600 OSGOOD STREET  
BUILDING 20 NORTH, SUITE 3090  
N. ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 336-5586



CHECKED BY: DR

APPROVED BY: DPH

#### SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	06/01/16	ISSUED FOR CONSTRUCTION	VP
0	04/29/16	ISSUED FOR REVIEW	MC

SITE NUMBER:  
CTNH371A  
ATC SITE ID:  
413782  
SITE NAME:  
MOUNTAIN RD-  
VERIZON COLO  
SITE ADDRESS:  
6 MOUNTAIN ROAD  
WASHINGTON, CT 06777  
LITCHFIELD COUNTY

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

#### 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.

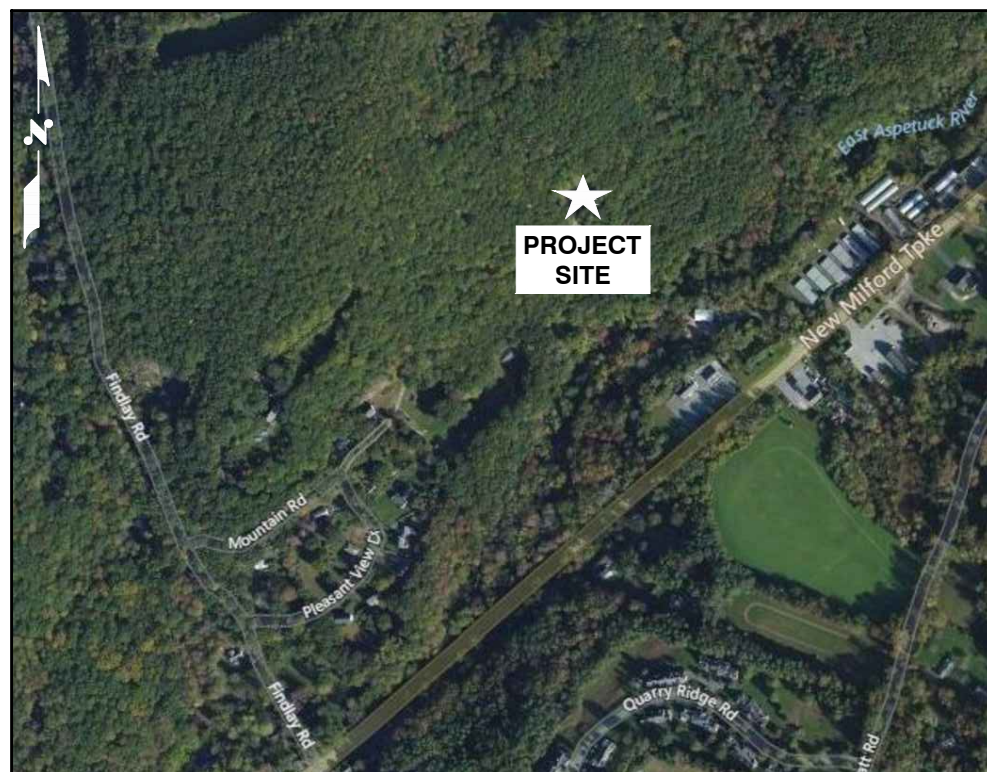
CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE T-MOBILE NORTHEAST, LLC REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

#### SPECIAL STRUCTURAL NOTES

TOWER OWNER SHALL PROVIDE GLOBAL STRUCTURAL STABILITY ANALYSIS OF EXISTING ANTENNA SUPPORT STRUCTURE. GENERAL CONTRACTOR SCOPE OF WORK SHALL INCLUDE ALL REQUIRED STRUCTURAL MODIFICATIONS, RE-BUNDLING OF COAXIAL CABLES OR OTHER SPECIAL MODIFICATIONS AS OUTLINED THEREIN.

STRUCTURAL DESIGNS AND DETAILS FOR ANTENNA MOUNTS COMPLETED BY HUDSON DESIGN ON BEHALF OF T-MOBILE ARE INCLUSIVE OF THE ENTIRE ANTENNA SUPPORT STRUCTURE (GLOBAL STRUCTURAL STABILITY ANALYSIS BY OTHERS), EXISTING TOWER PLATFORM, EXISTING ANTENNA MOUNTS AND ALL OTHER ASPECTS OF THE STRUCTURE THAT WILL SUPPORT THE T-MOBILE MODERNIZATION EQUIPMENT DEPLOYMENT AS DEPICTED HEREIN.

HUDSON DESIGN ASSUMES THAT THE TOWER IS PROPERLY CONSTRUCTED AND MAINTAINED. ALL STRUCTURAL MEMBERS AND THEIR CONNECTION ARE ASSUMED TO BE IN GOOD CONDITION AND ARE FREE FROM DEFECTS WITH NO DETERIORATION TO ITS MEMBER CAPACITIES



#### PROJECT SUMMARY

SCOPE OF WORK: UNMANNED TELECOMMUNICATIONS FACILITY T-MOBILE EQUIPMENT INSTALLATION

ZONING JURISDICTION: WASHINGTON, CT  
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: 6 MOUNTAIN ROAD  
WASHINGTON, CT 06777

LATITUDE: 41° 40' 7.97" N

LONGITUDE: 73° 21' 54.97" W

JURISDICTION: NATIONAL, STATE & LOCAL CODES OR ORDINANCES

CURRENT USE: TELECOMMUNICATIONS FACILITY

PROPOSED USE: TELECOMMUNICATIONS FACILITY

TOWER OWNER: AMERICAN TOWER CORPORATION  
116 HUNTINGTON AVENUE 11TH FLOOR  
BOSTON, MA 02116

ATC SITE ID: 413782

ATC SITE NAME: WASHINGTON NORTH CT

#### APPROVALS

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

#### DRIVING DIRECTIONS:

HEAD NORTHEAST ON GRIFFIN ROAD SOUTH TOWARD WEST NEWBERRY ROAD. TURN LEFT ONTO CT-187 NORTH. TAKE THE CT-189 NORTH RAMP TO TARIFFVILLE/GRANBY. CONTINUE ONTO CT-189 NORTH. TURN RIGHT ONTO SALMON BROOK STREET. SLIGHT LEFT ONTO NORTH GRANBY ROAD. TURN LEFT ONTO CT-20 WEST/WEST GRANBY ROAD (CONTINUE TO FOLLOW CT-20 WEST). TURN LEFT ONTO CT-219 SOUTH. TURN LEFT ONTO CT-179 SOUTH/CT-219 SOUTH (CONTINUE TO FOLLOW CT-219 SOUTH). TURN RIGHT ONTO CT-318 WEST. TURN LEFT ONTO CT-181 SOUTH/CT-318 WEST (CONTINUE TO FOLLOW CT-318 WEST). TURN RIGHT ONTO US-44 WEST/NEW HARTFORD ROAD. TURN LEFT ONTO CT-8 SOUTH (SIGNS FOR CT-8 SOUTH/TORRINGTON/WATERBURY). TAKE EXIT 42 FOR CT-118 TOWARD HARWINTON/LITCHFIELD. SLIGHT RIGHT ONTO EAST STREET. CONTINUE ONTO US-202 WEST/WEST ST (CONTINUE TO FOLLOW US-202 WEST). TURN RIGHT ONTO FINDLAY ROAD. TURN RIGHT ONTO MOUNTAIN ROAD. DESTINATION WILL BE ON THE LEFT. ARRIVE AT 6 MOUNTAIN ROAD, WASHINGTON, CT 06777.



CALL BEFORE YOU DIG  
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UNDERGROUND SERVICE ALERT



#### DRAWING INDEX

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**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 AWS 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 – TRANSCEND WIRELESS  
 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: 2003 IBC WITH 2005 CT SUPPLEMENT, + 2009 & 2013 AMENDMENTS  
 ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS  
 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-F, 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



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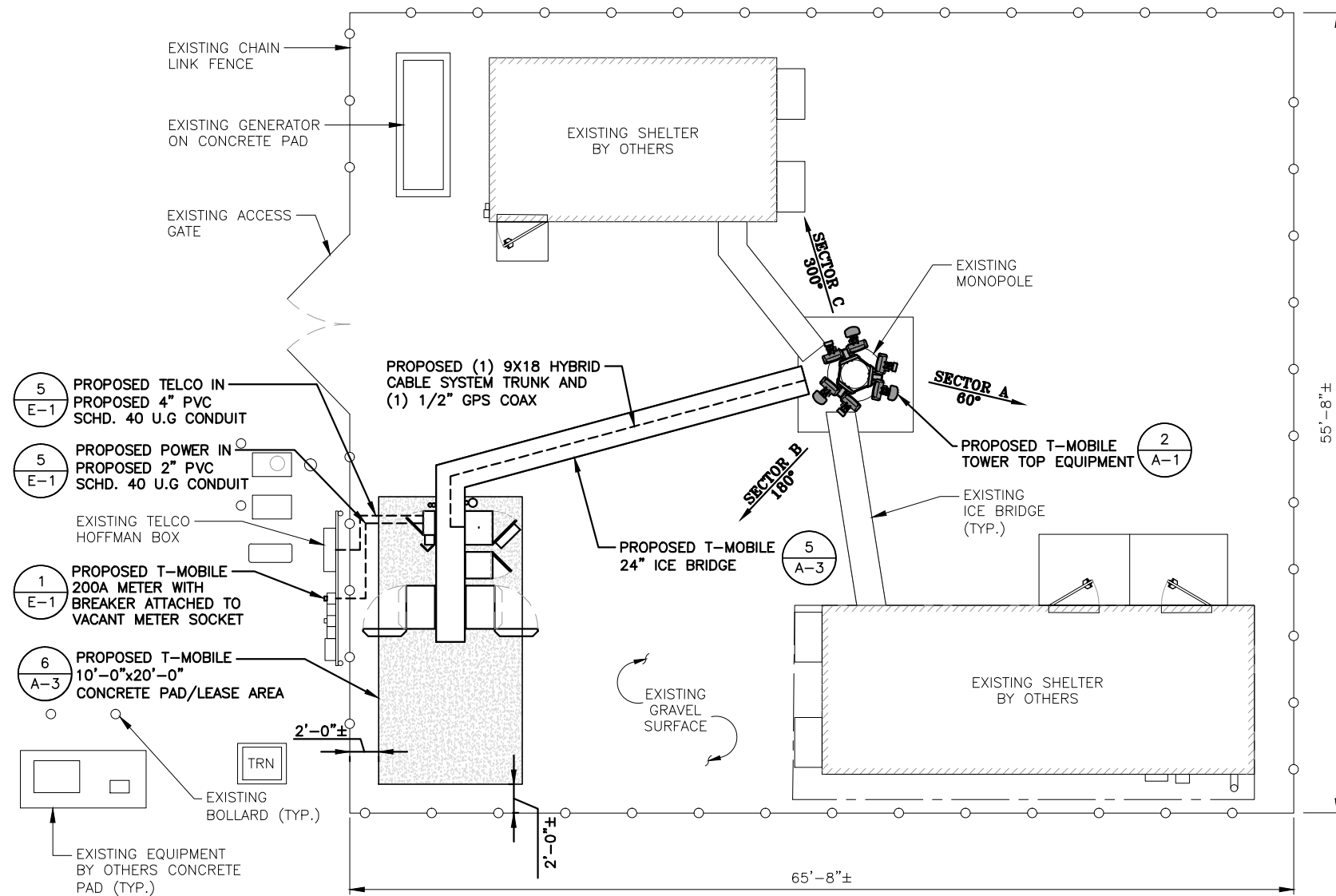
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 GENERAL NOTES

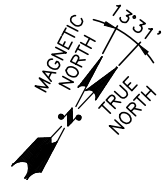
SHEET NUMBER  
 GN-1

**STRUCTURAL NOTES:**  
 PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO STRUCTURAL ANALYSIS PROVIDED BY TOWER OWNER, DATED: MAY 17, 2016 TO DETERMINE IF THERE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS FOR RF EQUIPMENT AND FOR CABLE BUNDLING, SHIELDING, MOUNTING, OR RELOCATION ARRANGEMENTS.

**SPECIAL WORK NOTE:**  
 PAINT-TO-MATCH EXISTING MONOPOLE ALL PROPOSED ANTENNA RADOMES & MOUNTS



- 5 E-1 PROPOSED TELCO IN PROPOSED 4" PVC SCHD. 40 U.G CONDUIT
- 5 E-1 PROPOSED POWER IN PROPOSED 2" PVC SCHD. 40 U.G CONDUIT
- EXISTING TELCO HOFFMAN BOX
- 1 E-1 PROPOSED T-MOBILE 200A METER WITH BREAKER ATTACHED TO VACANT METER SOCKET
- 6 A-3 PROPOSED T-MOBILE 10'-0"x20'-0" CONCRETE PAD/LEASE AREA



**COMPOUND PLAN** 1 A-1  
 22x34 SCALE: 3/16"=1'-0"  
 11x17 SCALE: 3/32"=1'-0"  
 0 2'-8" 5'-4" 10'-8" 16'-0"

- TOP OF HIGHEST APPURTENANCE ELEV. = 171'-0"± A.G.L.
- TOP OF EXISTING MONOPOLE ELEV. = 171'-0"± A.G.L.
- CL OF EXISTING ANTENNAS BY OTHERS ELEV. = 167'-0"± A.G.L.
- CL OF EXISTING ANTENNAS BY OTHERS ELEV. = 157'-0"± A.G.L.
- CL OF EXISTING ANTENNAS BY OTHERS ELEV. = 147'-0"± A.G.L.
- 7 A-2 CL OF PROPOSED T-MOBILE MOUNT ELEV. = 136'-0"± A.G.L.
- 3,4 A-2 PROPOSED T-MOBILE ANTENNA (TYP. OF 2 PER SECTOR, TOTAL OF 6)
- 6 A-2 PROPOSED T-MOBILE RRUS (TYP. OF 2 PER SECTOR, TOTAL OF 6)

PROPOSED (1) 9X18 HYBRID CABLE SYSTEM TRUNK TO BE RUN INSIDE EXISTING MONOPOLE (REFER TO TOWER OWNER PROVIDED STRUCTURAL ANALYSIS FOR SPECIAL INSTALLATION REQUIREMENTS FOR BUNDLING, SHIELDING MOUNTING AND RELOCATION OF EXISTING CABLES)

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

GROUND LEVEL ELEV. = 0'-0"± A.G.L.

**TOWER ELEVATION** 2 A-1  
 22x34 SCALE: 1/16"=1'-0"  
 11x17 SCALE: 1/32"=1'-0"



SOURCE: HDG 04-13-2016

**EQUIPMENT LOCATION PHOTO DETAIL** 3 A-1  
 SCALE: N.T.S

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

**Transcend Wireless**  
 TRANSCEND WIRELESS  
 10 INDUSTRIAL AVE  
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**Hudson Design Group LLC**  
 1600 OSGOOD STREET  
 BUILDING 20 NORTH, SUITE 3090  
 N. ANDOVER, MA 01845  
 TEL: (978) 557-5553  
 FAX: (978) 336-5586

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

*Daniel P. Hamm*

CHECKED BY: DR

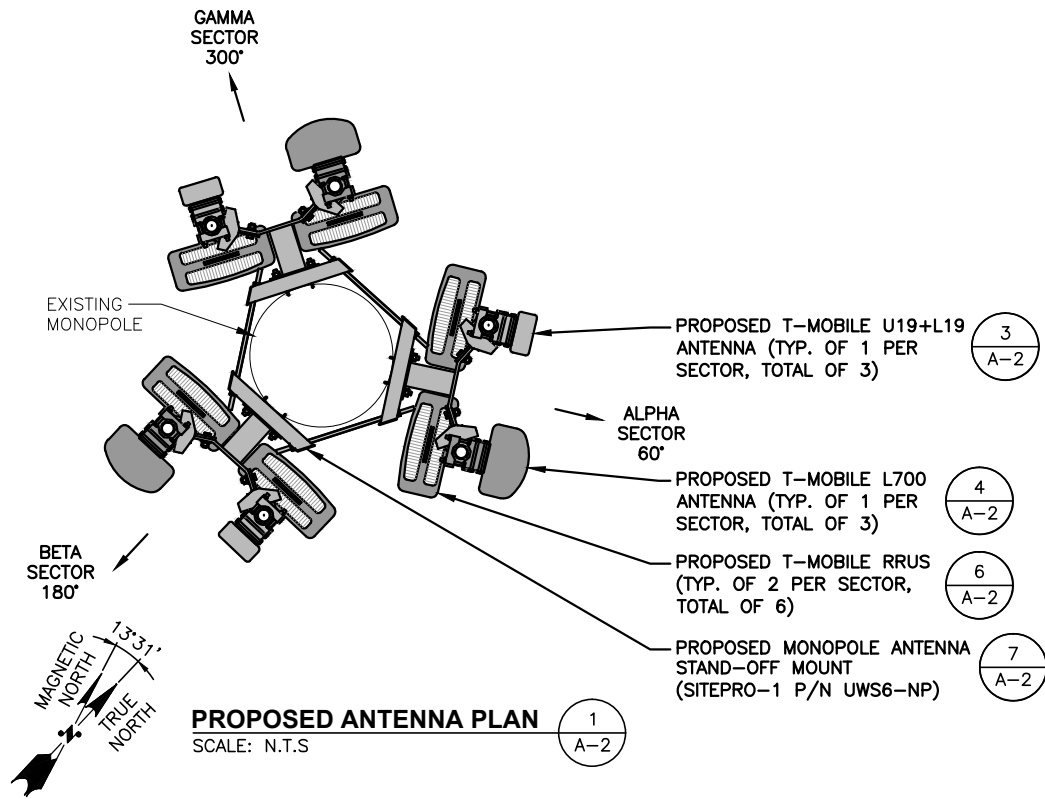
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 LITCHFIELD COUNTY

SHEET TITLE  
 COMPOUND PLAN,  
 EQUIPMENT PLAN &  
 ELEVATION

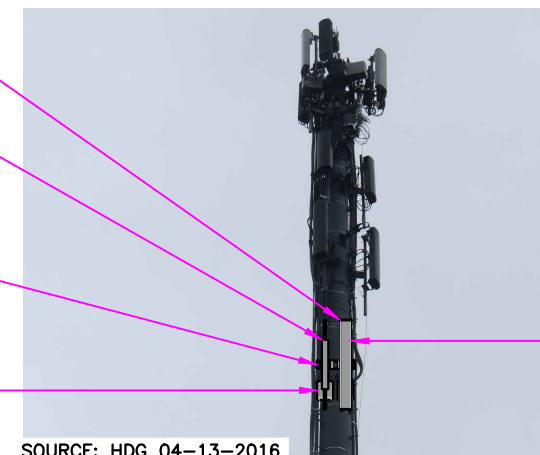
SHEET NUMBER  
**A-1**



**SPECIAL WORK NOTE:**  
PAINT-TO-MATCH EXISTING MONOPOLE ALL PROPOSED ANTENNA RADOMES & MOUNTS

**STRUCTURAL NOTES:**  
PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO STRUCTURAL ANALYSIS PROVIDED BY TOWER OWNER, DATED: MAY 17, 2016 TO DETERMINE IF THERE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS FOR RF EQUIPMENT AND FOR CABLE BUNDLING, SHIELDING, MOUNTING, OR RELOCATION ARRANGEMENTS.

- 4 A-2 PROPOSED T-MOBILE L700 ANTENNA (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- 3 A-2 PROPOSED T-MOBILE U19+L19 ANTENNA (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- 7 A-2 PROPOSED MONOPOLE ANTENNA STAND-OFF MOUNT (SITEPRO-1 P/N UWS6-NP)
- 6 A-2 PROPOSED T-MOBILE RRUS (TYP. OF 2 PER SECTOR, TOTAL OF 6)



**SPECIAL WORK NOTE:**  
VERTICALLY CENTER THE PIPE MAST AND ANTENNA ON PROPOSED FACE FRAME

**PROPOSED ANTENNA MOUNT PHOTO DETAIL**  
SCALE: N.T.S.

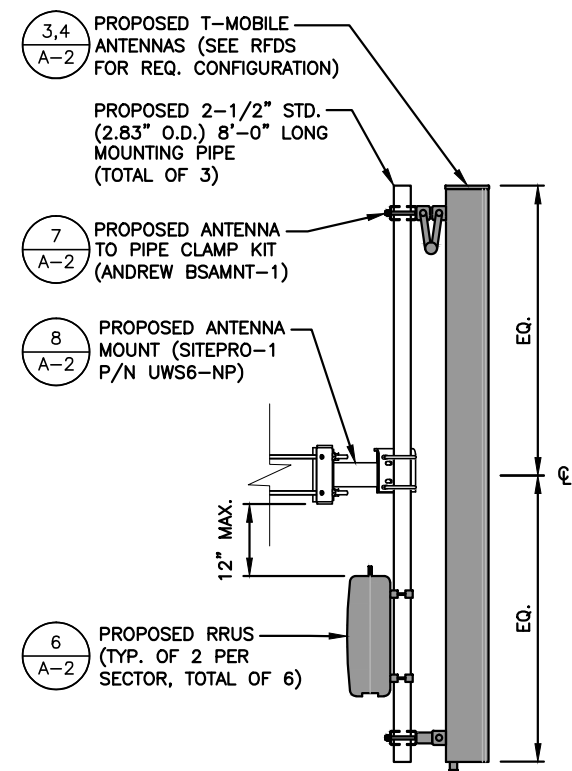
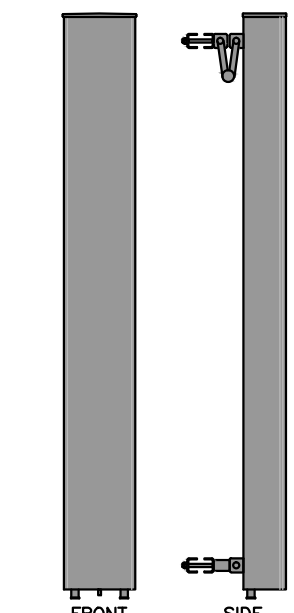
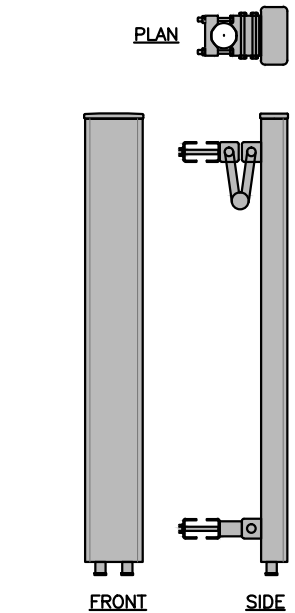
2 A-2

**U19+L19 ANTENNA DIMENSIONS**

MODEL #	APXV18-206516S-A20
MANUF.	RFS
WIDTH	6.9"
DEPTH	3.15"
HEIGHT	53"
WEIGHT	18.7 LBS

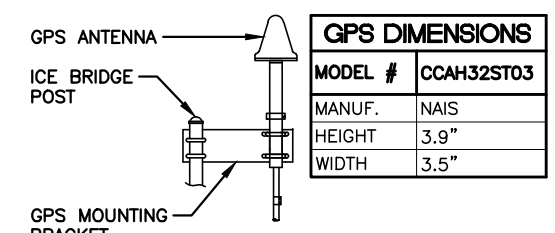
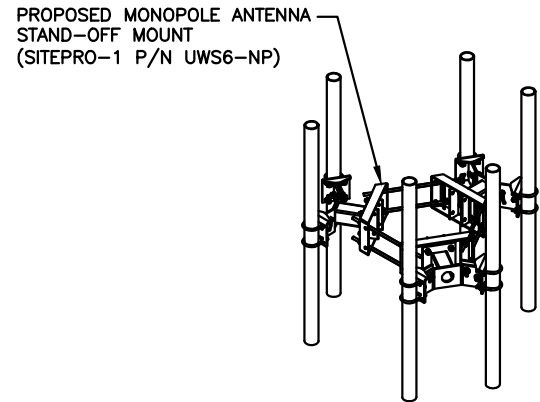
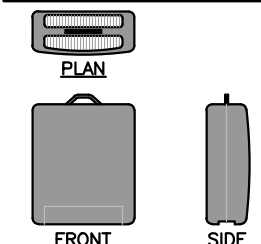
**L700 ANTENNA DIMENSIONS**

MODEL #	LNX6515DS-A1M
MANUF.	COMMSCOPE
WIDTH	11.9"
DEPTH	7.1"
HEIGHT	96.3"
WEIGHT	63 LBS



**RRU DIMENSIONS**

MODEL #	RRUS B2
MODEL #	RRUS B12
MANUF.	ERICSSON
WIDTH	17"
DEPTH	7"
HEIGHT	20"
WEIGHT	50.6 LBS



**GPS DIMENSIONS**

MODEL #	CCAH32ST03
MANUF.	NAIS
HEIGHT	3.9"
WIDTH	3.5"

**T-MOBILE NORTHEAST LLC**

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MAHWAH, NJ 07430  
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**Hudson Design Group LLC**

1600 OSGOOD STREET  
BUILDING 20 NORTH, SUITE 3090  
N. ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 336-5586

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

CHECKED BY: DR

APPROVED BY: DPH

**SUBMITTALS**

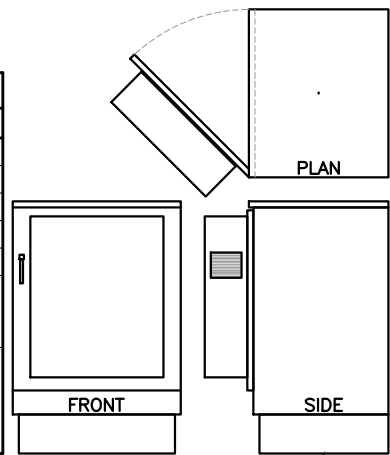
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1	06/01/16	ISSUED FOR CONSTRUCTION	VP
0	04/29/16	ISSUED FOR REVIEW	MC

SITE NUMBER:  
CTNH371A  
ATC SITE ID:  
413782  
SITE NAME:  
MOUNTAIN RD-  
VERIZON COLO  
SITE ADDRESS:  
6 MOUNTAIN ROAD  
WASHINGTON, CT 06777  
LITCHFIELD COUNTY

SHEET TITLE  
TOWER EQUIPMENT  
DETAILS

SHEET NUMBER  
**A-2**

SSC DIMENSIONS	
MODEL #	SXF17-2824
MANUF.	PURCELL
WIDTH	28"
DEPTH	23.5"
HEIGHT	35.5"
PLINTH	6.5"
WEIGHT (BASE CONFIGURATION)	70 LBS

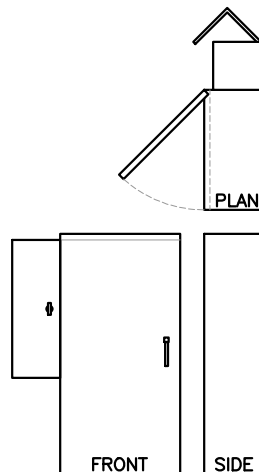


**SITE SUPPORT CABINET (SSC)**

SCALE: N.T.S

1  
A-3

PPC DIMENSIONS	
MODEL #	3799340400
MANUF.	DELTA
WIDTH	20"
DEPTH	10"
HEIGHT	40"
WEIGHT	75 LBS

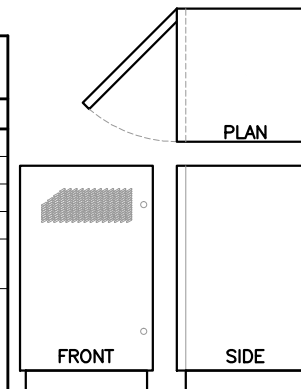


**POWER PROTECTION CABINET (PPC)**

SCALE: N.T.S

2  
A-3

PBC DIMENSIONS	
MODEL #	PBC-05
MANUF.	ERICSSON
WIDTH	22.2"
DEPTH	22.8"
HEIGHT	34.1"
WEIGHT W/O BATTERIES	194 LBS



**POWER AND BATTERY CABINET (PBC)**

SCALE: N.T.S

3  
A-3

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CHECKED BY: DR

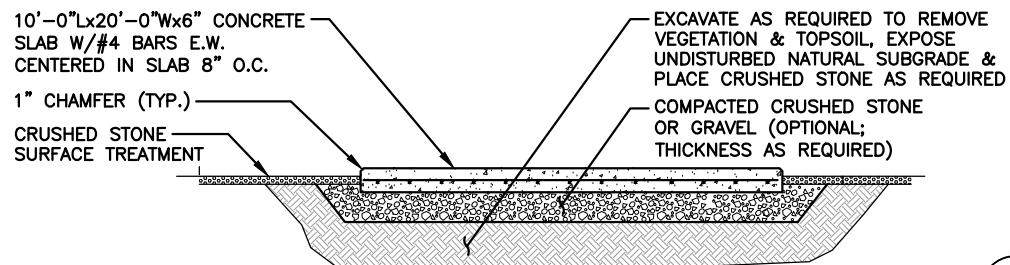
APPROVED BY: DPH

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SHEET TITLE  
GROUND EQUIPMENT  
DETAILS

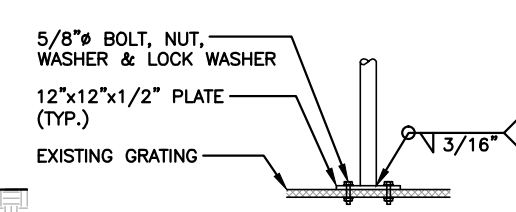
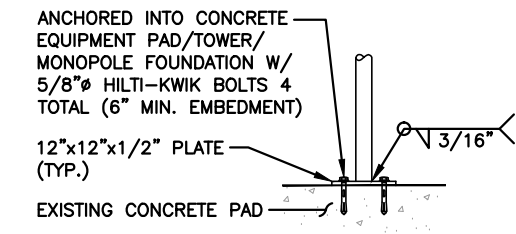
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**A-3**



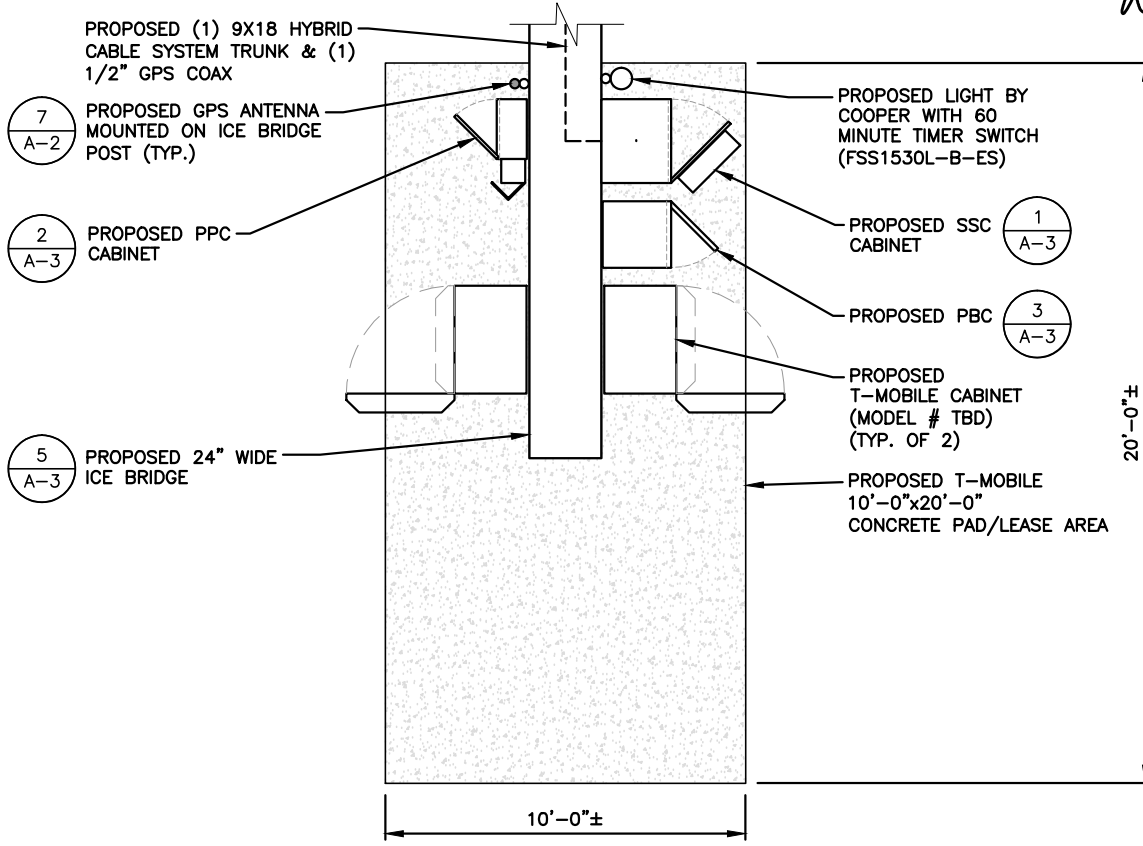
**CONCRETE PAD DETAIL**

SCALE: N.T.S

4  
A-3

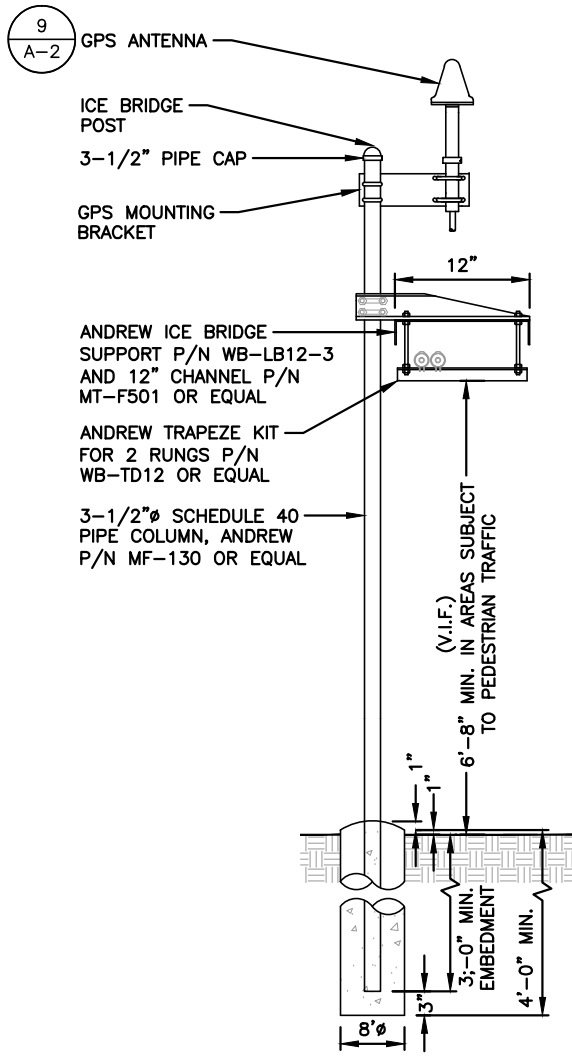
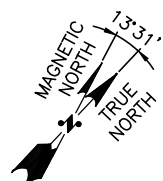
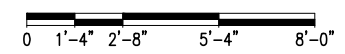


NOTE:  
ALL STEEL IS GALVANIZED. ALL BOLTS TO  
BE FURNISHED W/ WASHERS AND NUTS.



NOTE:  
SEE CONDUIT PLAN 3/E-1

**EQUIPMENT PLAN**  
22x34 SCALE: 3/8"=1'-0"  
11x17 SCALE: 3/16"=1'-0"



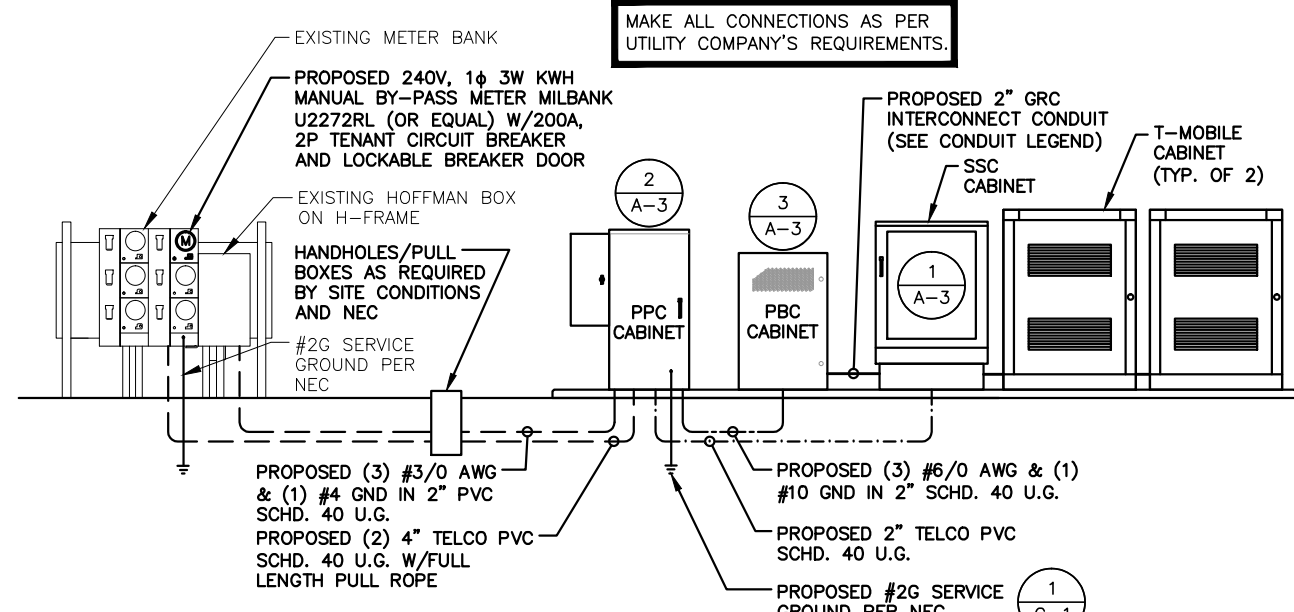
**COAX ICE BRIDGE DETAIL**

SCALE: N.T.S

5  
A-3

**ELECTRICAL NOTES**

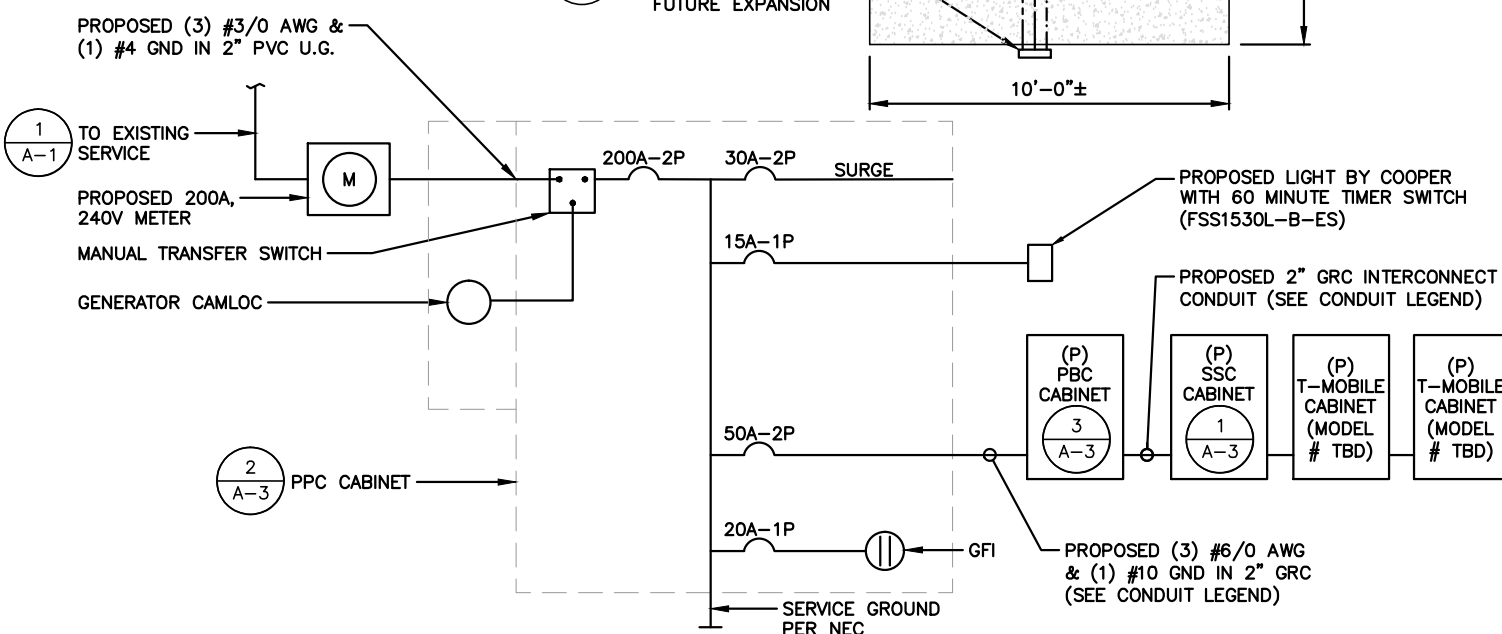
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- RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON DRAWING A-3. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
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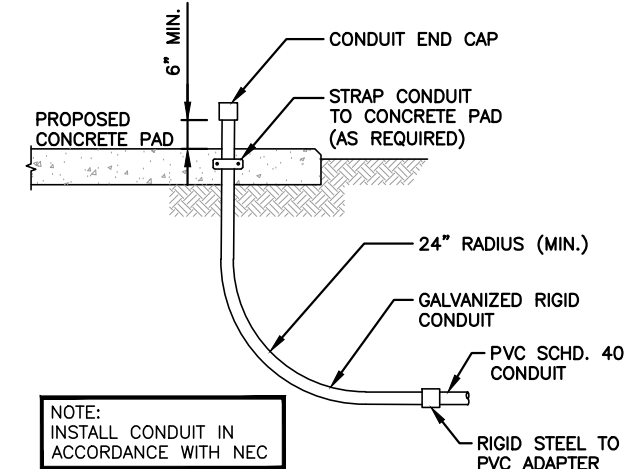
**POWER RISER DIAGRAM**  
 SCALE: N.T.S

CONDUIT LEGEND	
	2" GRC INETRCONNECT KIT, -48V DC, ON CONCRETE PAD, (1) CONDUIT PBC TO SSC AND (1) CONDUIT PBC TO FUTURE BBU, ANCHOR AT 3' INTERVALS, GROUNDING BOND AT EACH END
	2" PVC SCHD. 40 CONDUIT, AC-POWER, BELOW CONCRETE PAD, (1) CONDUIT PPC TO PBC, (2) CONDUIT PPC TO FUTURE PBC
	2" PVC SCHD. 40 CONDUIT, TELCO, BELOW CONCRETE PAD, (1) CONDUIT PPC TO SSC AND (1) CONDUIT SSC FOR DAISY CHAIN TO FUTURE SSC

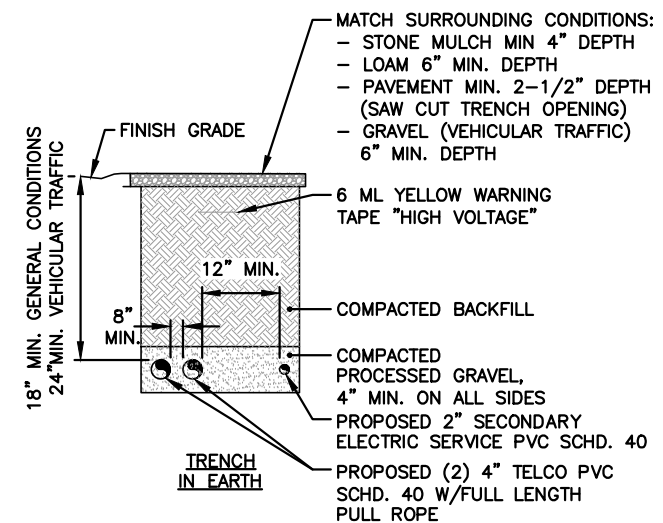
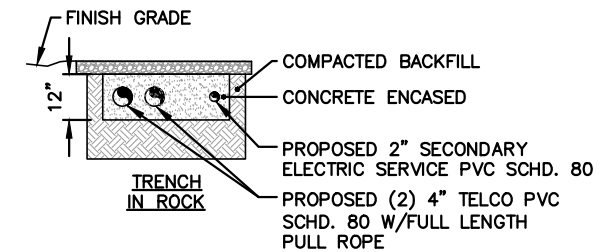
**CONDUIT PLAN**  
 SCALE: N.T.S



**EQUIPMENT ONE LINE DIAGRAM**  
 SCALE: N.T.S



**CONDUIT SWEEP DETAIL**  
 SCALE: N.T.S



**SPECIAL WORK NOTE:**  
 EXISTING UNDERGROUND UTILITY LOCATIONS ARE UNKNOWN. WHERE DIRECTED OR REQUIRED, HAND-EXCAVATE PROPOSED UTILITY TRENCHING

**BURIED CONDUIT DETAIL**  
 SCALE: N.T.S

LEGEND	
A	AMPERE
V	VOLT
KWH	KILOWATT - HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BGR	BURIED GROUND RING
BTCW	BARE TINNED SOLID COPPER WIRE
G	GROUND
⊕	GROUND
MGB	MASTER GROUND BAR
○	MECHANICAL CONNECTION
●	CADWELDED CONNECTION
EGB	EQUIPMENT GROUND BAR
—G—	GROUND COPPER WIRE, SIZE AS NOTED
—	EXPOSED WIRING
—	#6G AWG INSULATED STRANDED
⊙	COAXIAL CABLE/HYBRID CABLE
⊙	5/8"x8" COPPER CLAD STAINLESS STEEL GROUND ROD
⊙	GROUND ROD WITH TEST WELL
⊙	EXOTHERMIC (CAD WELD) OR MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	POWER PROTECTION CABINET
⊗	OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL

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

CHECKED BY: DR

APPROVED BY: DPH

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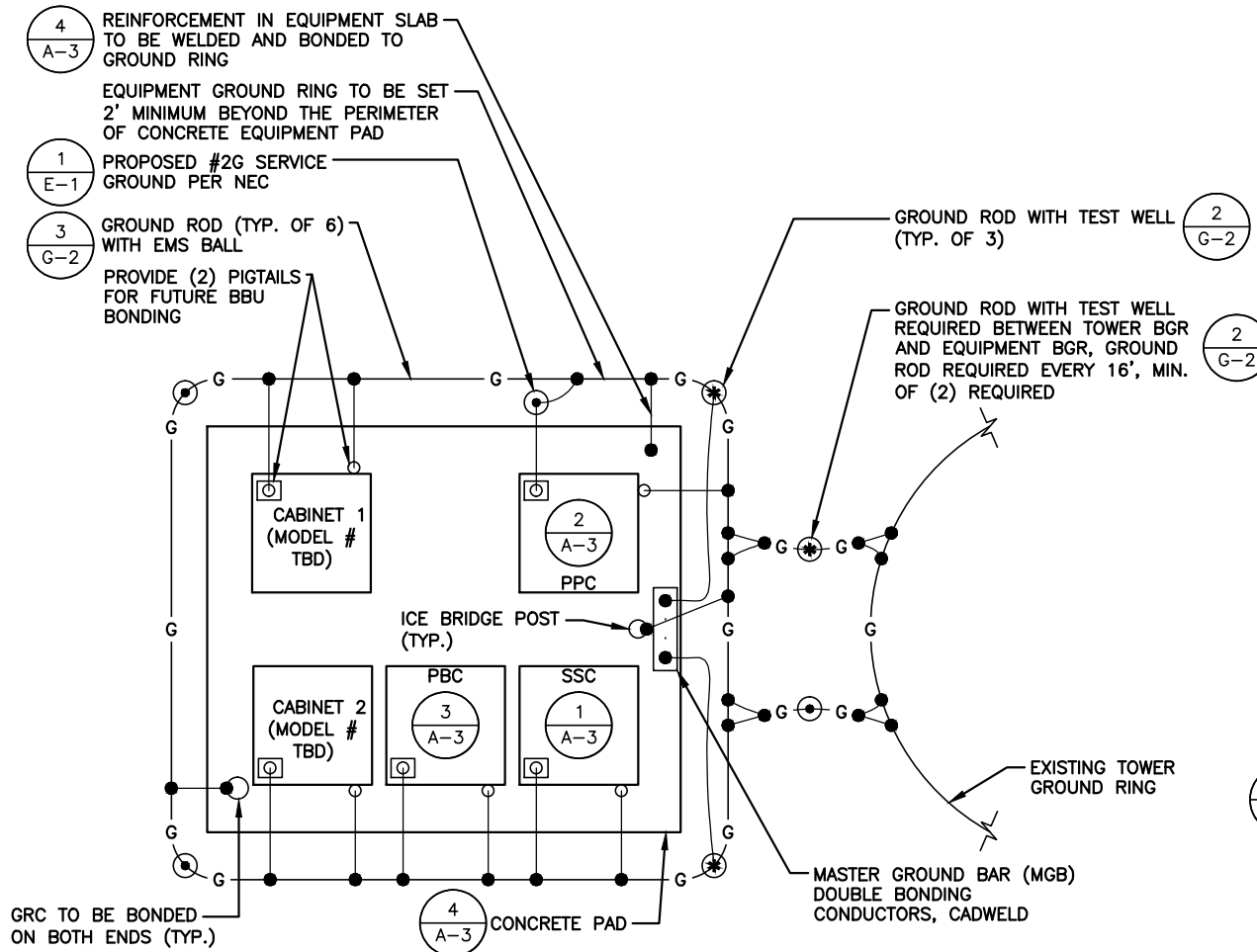
SHEET TITLE  
 ELECTRICAL DETAILS & NOTES

SHEET NUMBER  
**E-1**



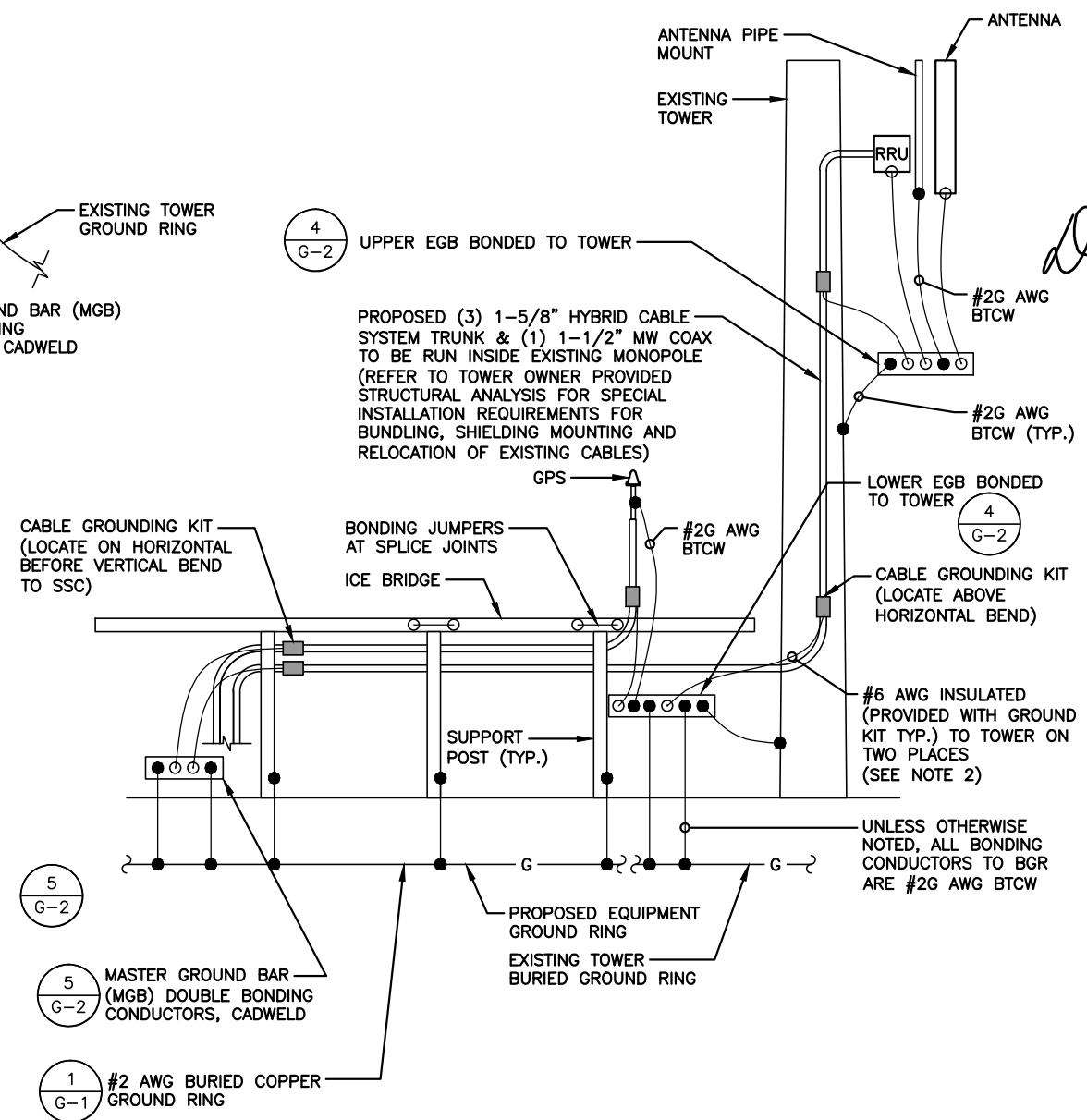
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- ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.



**EQUIPMENT PLAN GROUNDING RING SCHEMATIC**  
SCALE: N.T.S.

- NOTE:**
- BASE BID TO INCLUDE INSTALLATION OF A BURIED GROUND RING AND (6) GROUND RODS OR SINGLE XIT HORIZONTAL CHEMICAL ROD AS DETERMINED BY FIELD CONDITIONS. ADDITIONAL RODS AS REQUIRED TO ACHIEVE 5 OHMS RESISTANCE.
  - MAXIMUM VERTICAL/HORIZONTAL DISTANCE BETWEEN CABLE GROUNDING KITS SHALL NOT EXCEED 100 FEET. INSTALL ADDITIONAL KITS AS REQUIRED BY FIELD CONDITIONS.
  - ALL CONNECTIONS TO EQUIPMENT PER MANUFACTURER'S GUIDELINES.
  - ALL ABOVE-GRADE DOWNLEADS TO BGR SHALL BE INSTALLED IN 1" NON-METALLIC CONDUIT SECURED EVERY 2' WITH NON-METALLIC CLIPS.



**GROUNDING RISER DIAGRAM**  
SCALE: N.T.S.

**LEGEND**

A	AMPERE
V	VOLT
KWH	KILOWATT - HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BGR	BURIED GROUND RING
BTCW	BARE TINNED SOLID COPPER WIRE
G	GROUND
⊕	GROUND
MGB	MASTER GROUND BAR
○	MECHANICAL CONNECTION
●	CADWELD CONNECTION
EGB	EQUIPMENT GROUND BAR
—G—	GROUND COPPER WIRE, SIZE AS NOTED
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*Daniel P. Hamm*

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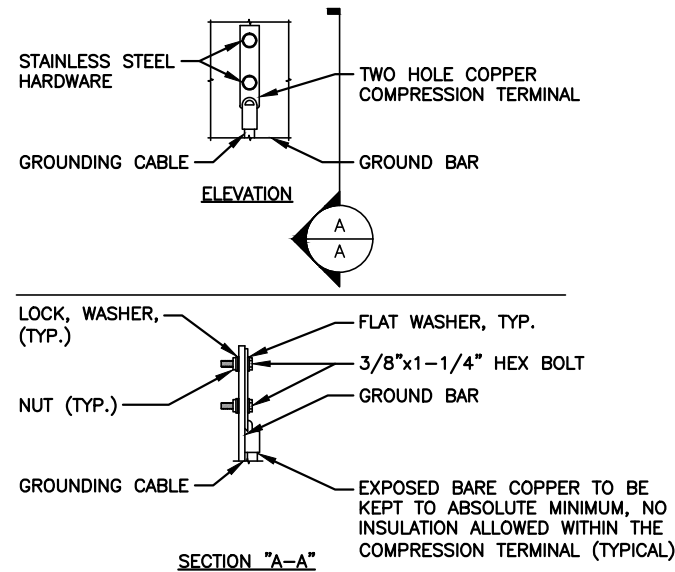
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SHEET TITLE  
**GROUNDING SCHEMATIC & RISER DIAGRAM**

SHEET NUMBER  
**G-1**

**ELECTRICAL NOTES**

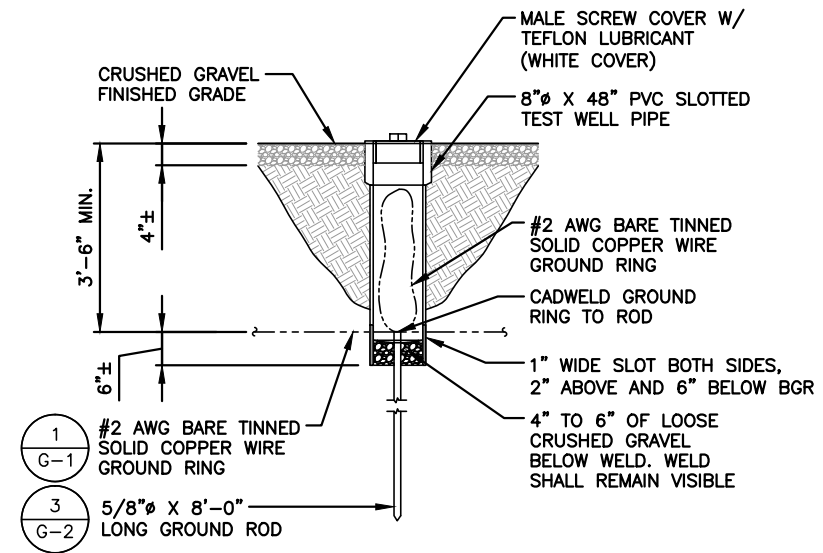
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**TYPICAL GROUND BAR CONNECTION DETAIL**  
SCALE: N.T.S

1  
G-2

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



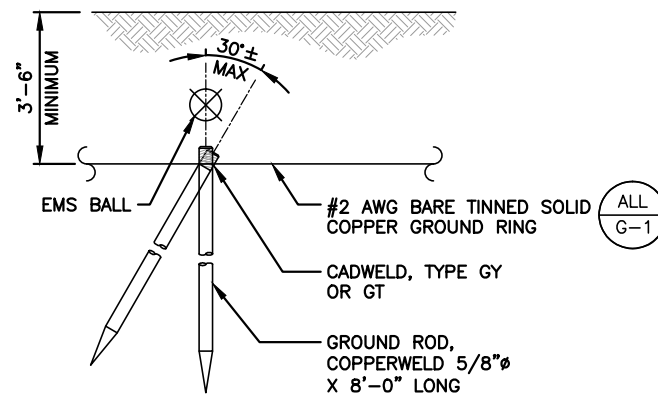
**GROUND ROD TEST WELL DETAIL**  
SCALE: N.T.S

2  
G-2

- NOTE:
1. PROPOSED BGR TO BE INSTALLED 3'-6" MIN. BELOW GRADE OR BELOW LOCAL FROST DEPTH, WHICHEVER IS GREATER.
  2. ONE TEST WELL SHALL BE PROVIDED BETWEEN THE TOWER GROUND LOOP AND TWO ON THE EQUIPMENT GROUND LOOP

**LEGEND**

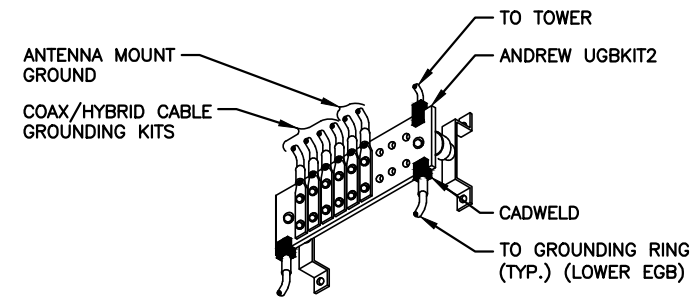
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KWH	KILOWATT - HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BGR	BURIED GROUND RING
BTCW	BARE TINNED SOLID COPPER WIRE
G	GROUND
⊕	GROUND
MGB	MASTER GROUND BAR
○	MECHANICAL CONNECTION
●	CADWELD CONNECTION
EGB	EQUIPMENT GROUND BAR
—G—	GROUND COPPER WIRE, SIZE AS NOTED
—	EXPOSED WIRING
—#6G—	#6G AWG INSULATED STRANDED
—COAX—	COAXIAL CABLE/HYBRID CABLE
⊙	5/8"x8' COPPER CLAD STAINLESS STEEL GROUND ROD
⊕	GROUND ROD WITH TEST WELL
⊙●	EXOTHERMIC (CAD WELD) OR MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	POWER PROTECTION CABINET
⊗	OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL



**GROUND ROD DETAIL**  
SCALE: N.T.S

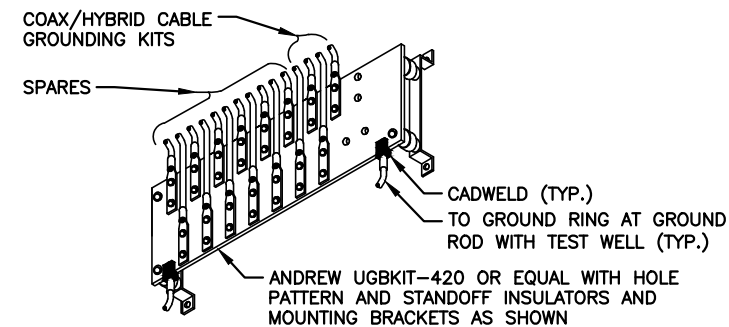
3  
G-2

- NOTE:
1. PROPOSED BGR TO BE INSTALLED 3'-6" MIN. BELOW GRADE OR BELOW LOCAL FROST DEPTH, WHICHEVER IS GREATER.
  2. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 30 DEGREES FROM THE VERTICAL.



**EQUIPMENT GROUND BAR (EGB)**  
SCALE: N.T.S

4  
G-2



**MASTER GROUND BAR (MGB)**  
SCALE: N.T.S

5  
G-2

**T-MOBILE NORTHEAST LLC**

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

**Transcend Wireless**

TRANSCEND WIRELESS  
10 INDUSTRIAL AVE  
MAHWAH, NJ 07430  
TEL: (201) 684-0055  
FAX: (201) 684-0066

**Hudson Design Group, Inc.**

1600 OSGOOD STREET  
BUILDING 20 NORTH, SUITE 3090  
N. ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 336-5586



*Daniel P. Haman*

CHECKED BY: DR

APPROVED BY: DPH

**SUBMITTALS**

REV.	DATE	DESCRIPTION	BY
1	06/01/16	ISSUED FOR CONSTRUCTION	VP
0	04/29/16	ISSUED FOR REVIEW	MC

SITE NUMBER:  
CTNH371A  
ATC SITE ID:  
413782  
SITE NAME:  
MOUNTAIN RD-  
VERIZON COLO  
SITE ADDRESS:  
6 MOUNTAIN ROAD  
WASHINGTON, CT 06777  
LITCHFIELD COUNTY

**SHEET TITLE  
GROUNDING  
DETAILS  
& NOTES**

SHEET NUMBER

**G-2**



**AMERICAN TOWER®**  
CORPORATION

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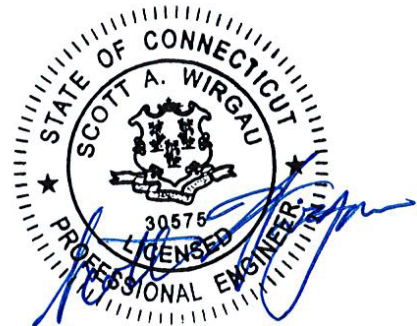
## Structural Analysis Report

**Structure** : 158.6 ft Monopole  
**ATC Site Name** : Washington North CT, CT  
**ATC Site Number** : 413782  
**Engineering Number** : 66417723  
**Proposed Carrier** : T-Mobile  
**Carrier Site Name** : N/A  
**Carrier Site Number** : CTNH371A  
**Site Location** : 6 Mountain Road  
Washington, CT 06777-1518  
41.669147,-73.365281  
**County** : Litchfield  
**Date** : May 16, 2016  
**Max Usage** : 97%  
**Result** : Pass

Reviewed by:  
Scott Wirgau, PE  
Structural Team Leader

Prepared By:  
Charles Dalton Wally, E.I.  
Structural Engineer I

*Charles D. Wally*



May 17 2016 2:50 PM

COA: PEC.0001553



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Calculations ..... Attached



## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 158.6 ft monopole to reflect the change in loading by T-Mobile.

## Supporting Documents

<b>Tower Drawings</b>	EEI Job #15143, dated October 24, 2007
<b>Foundation Drawing</b>	EEI Job #15143, dated October 24, 2007
<b>Geotechnical Report</b>	JGI Project #J2075402, dated October 10, 2007

## Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

<b>Basic Wind Speed:</b>	95 mph (3-Second Gust)
<b>Basic Wind Speed w/ Ice:</b>	40 mph (3-Second Gust) w/ 3/4" radial ice concurrent
<b>Code:</b>	ANSI/TIA-222-G / 2003 IBC w/ 2005 CT Supplement & 2009 CT Amendment
<b>Structure Class:</b>	II
<b>Exposure Category:</b>	B
<b>Topographic Category:</b>	1
<b>Crest Height:</b>	0 ft
<b>Spectral Response:</b>	$S_s = 0.19, S_1 = 0.06$
<b>Site Class:</b>	D - Stiff Soil

## Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at [Engineering@americantower.com](mailto:Engineering@americantower.com). Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



**Existing and Reserved Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
167.0	167.0	12	RCU (Remote Control Unit)	Flush	(12) 1 5/8" Coax (2) 0.78" 8 AWG 6	AT&T Mobility
		6	Powerwave TT08-19DB111-001			
		6	Ericsson RRUS 11 B2			
		1	KMW AM-X-CD-17-65-00T-RET			
		3	Powerwave P90-14-XLH-RR (7.3" Depth)			
		2	Kathrein 800-10864K			
162.0	162.0	1	Raycap DC6-48-60-18-8F ("Squid")	Flush	(1) 0.39" Fiber Trunk	Verizon
157.0	157.0	3	Andrew DBXNH-6565A-VTM	Stand-Offs	(12) 1 5/8" Coax	
146.0	146.0	3	Antel BXA-70063/6CF __ 2°	Stand-Offs	(6) 1 5/8" Coax	
		1	VZW Unused Reserve: 10,801 sq in			
136.0	136.0	1	E-911 GPS	T-Arms	-	T-Mobile

**Equipment to be Removed**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
140.0	140.0	9	RFS APX16DWV-16DWV-S-E-ACU	-	(12) 1 5/8" Coax	T-Mobile
		6	TTA			

**Proposed Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
136.0	136.0	3	Ericsson RRUS 11 B12	T-Arms	(1) 1 5/8" Fiber	T-Mobile
		3	Ericsson RRUS 11 B2			
		3	RFS APXV18-206516S-C-A20			
	134.0	3	Commscope LNX-6515DS-A1M (96.6" Height)			

<sup>1</sup>Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Install proposed coax inside the pole shaft.



**Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	50%	Pass
Shaft	97%	Pass
Base Plate	78%	Pass

**Foundations**

Reaction Component	Analysis Reactions	% of Design
Moment (Kips-Ft)	2,279.8	59%
Axial (Kips)	27.7	16%
Shear (Kips)	19.3	17%

The structure base reactions resulting from this analysis are acceptable when compared to those shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

**Deflection and Sway\***

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
136.0	Ericsson RRUS 11 B12	T-Mobile	2.386	2.190
	Ericsson RRUS 11 B2			
	RFS APXV18-206516S-C-A20			
	Commscope LNX-6515DS-A1M (96.6" Height)			

\*Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-G



## **Standard Conditions**

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

- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

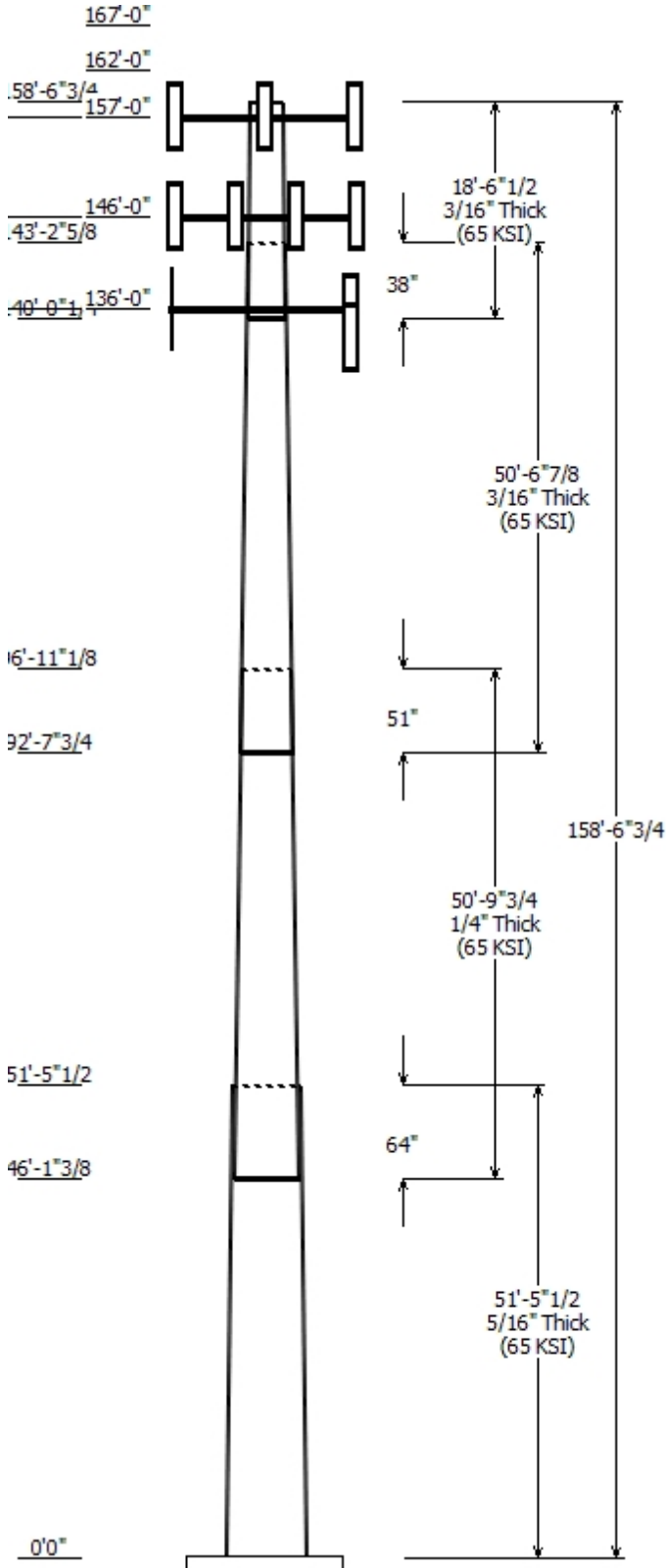
It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.



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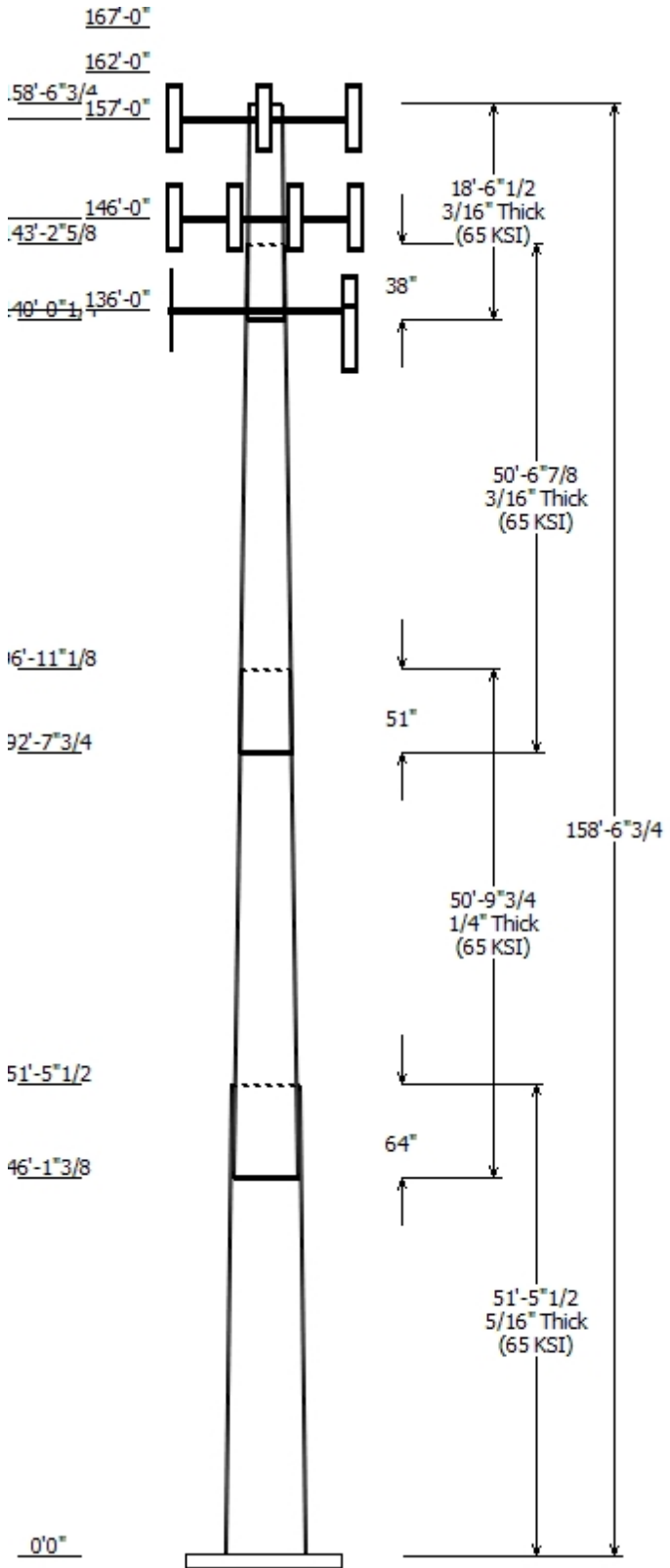
Job Information	
Pole :	413782
Code :	ANSI/TIA-222-G
Description :	159 ft EEI Monopole
Client :	T- Mobile
Struct Class :	II
Location :	Washington North CT, CT
Shape :	18 Sides
Exposure :	B
Height :	158.56 (ft)
Topo :	1
Base Elev (ft):	0.00
Taper:	0.19077(in/ft)

Sections Properties								
Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap		Steel Grade (ksi)
		Top	Bottom			Length (in)	Taper (in/ft)	
1	51.458	37.18	47.00	0.313		0.000	0.190800	65
2	50.810	29.00	38.70	0.250	Slip Joint	64.094	0.190800	65
3	50.573	20.55	30.20	0.188	Slip Joint	51.375	0.190800	65
4	18.542	18.00	21.53	0.188	Slip Joint	38.375	0.190800	65

Discrete Appurtenance				
Attach Elev (ft)	Force Elev (ft)	Qty	Description	
167.000	167.000	1	KMW AM-X-CD-17-65-00T-RET	
167.000	167.000	2	Kathrein Scala 800-10864K	
167.000	167.000	3	Powerwave Allgon P90-14-	
167.000	167.000	12	RCU (Remote Control Unit)	
167.000	167.000	6	Ericsson RRUS 11 B2	
167.000	167.000	6	Powerwave Allgon TT08-	
162.000	162.000	1	Raycap DC6-48-60-18-8F	
157.000	157.000	3	Stand-Off	
157.000	157.000	3	Andrew DBXNH-6565A-VTM	
146.000	146.000	1	VZW Unused Reserve: 10,801	
146.000	146.000	3	Stand-Off	
146.000	146.000	3	Antel BXA-70063/6CF __ 2°	
136.000	136.000	3	Flat T-Arm	
136.000	136.000	1	E-911 GPS	
136.000	136.000	3	Ericsson RRUS 11 B2	
136.000	136.000	3	Ericsson RRUS 11 B12	
136.000	136.000	3	RFS APXV18-206516S-C-A20	
136.000	134.000	3	Commscope LNX-6515DS-A1M	

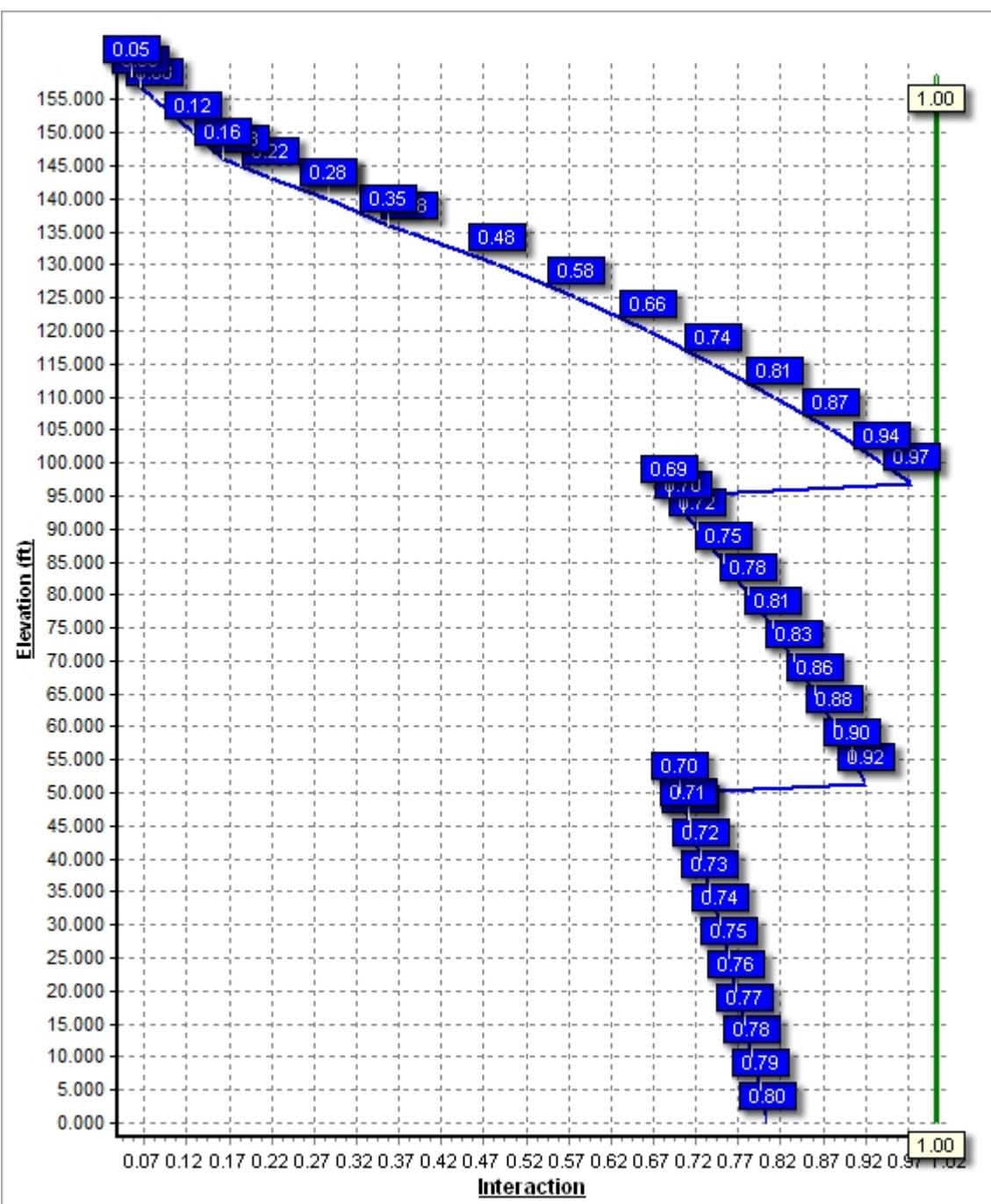
Linear Appurtenance			
Elev (ft)		Description	Exposed To Wind
From	To		
0.000	136.0	1 5/8" Fiber	No
0.000	146.0	1 5/8" Coax	No
0.000	157.0	1 5/8" Coax	No
0.000	162.0	0.39" Fiber Trunk	Yes
0.000	167.0	0.78" 8 AWG 6	Yes
0.000	167.0	1 5/8" Coax	Yes

Load Cases	
1.2D + 1.6W	95 mph with No Ice
0.9D + 1.6W	95 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	40 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph



Reactions			
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	2279.81	19.28	27.65
0.9D + 1.6W	2166.03	18.58	20.73
1.2D + 1.0Di + 1.0Wi	428.95	3.64	46.88
(1.2 + 0.2Sds) * DL + E ELFM	101.73	0.81	26.61
(1.2 + 0.2Sds) * DL + E EMAM	124.41	1.15	26.61
(0.9 - 0.2Sds) * DL + E ELFM	100.21	0.81	18.43
(0.9 - 0.2Sds) * DL + E EMAM	122.46	1.15	18.43
1.0D + 1.0W	544.49	4.63	23.07

Dish Deflections			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
	0.00	0.000	0.000



Site Number: 413782

Code: ANSI/TIA-222-G

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Site Name: Washington North CT, CT

Engineering Number: 66417723

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Customer: T- Mobile

**Analysis Parameters**

Location:	Litchfield County, CT		
Code:	ANSI/TIA-222-G	Height (ft):	158.
Shape:	18 Sides	Base Diameter (in):	47.00
Pole Type:	Taper	Top Diameter (in):	18.00
Pole Manufacturer:	EE	Taper (in/ft) :	0.191

**Ice & Wind Parameters**

Structure Class:	II	Design Wind Speed Without Ice:	95 mph
Exposure Category:	B	Design Wind Speed With Ice:	40 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0.0 ft	Design Ice Thickness:	0.75 in

**Seismic Parameters**

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	2.63		
T <sub>L</sub> (sec):	6	p:	1.3
S <sub>s</sub> :	0.191	S <sub>1</sub> :	0.065
F <sub>a</sub> :	1.600	F <sub>v</sub> :	2.400
S <sub>ds</sub> :	0.204	S <sub>d1</sub> :	0.104
		C <sub>s</sub> :	0.030
		C <sub>s</sub> Max:	0.030
		C <sub>s</sub> Min:	0.030

**Load Cases**

1.2D + 1.6W	95 mph with No Ice
0.9D + 1.6W	95 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	40 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2Sds) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

Site Number: 413782

Code: ANSI/TIA-222-G

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Site Name: Washington North CT, CT

Engineering Number: 66417723

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Customer: T-Mobile

**Shaft Section Properties**

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom						Top						
							Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Taper (in/ft)
1-18	51.458	0.3125	65		0.00	7,256	47.00	0.00	46.31	12752.5	25.11	150.40	37.18	51.46	36.57	6281.0	19.57	118.99	0.190776
2-18	50.810	0.2500	65	Slip	64.09	4,610	38.70	46.12	30.51	5699.5	25.89	154.81	29.00	96.93	22.82	2384.4	19.05	116.03	0.190776
3-18	50.573	0.1875	65	Slip	51.38	2,580	30.20	92.65	17.86	2032.7	26.99	161.07	20.55	143.22	12.12	635.0	17.92	109.61	0.190776
4-18	18.542	0.1875	65	Slip	38.38	735	21.53	140.02	12.71	731.7	18.84	114.87	18.00	158.56	10.60	424.9	15.52	96.00	0.190776
Shaft Weight						15,181													

**Discrete Appurtenance Properties**

Attach Elev (ft)	Description	Qty	No Ice			Ice			Distance From Face (ft)	Vert Ecc (ft)
			Weight (lb)	EPAA (sf)	Orientation Factor	Weight (lb)	EPAA (sf)	Orientation Factor		
167.00	Ericsson RRUS 11 B2	6	50.70	2.790	0.67	123.62	3.894	0.67	0.000	0.000
167.00	Kathrein Scala 800-10864K	2	55.10	7.120	0.73	210.12	9.293	0.73	0.000	0.000
167.00	KMW AM-X-CD-17-65-00T-	1	30.80	4.990	0.76	143.37	6.870	0.76	0.000	0.000
167.00	Powerwave Allgon P90-14-	3	30.00	5.070	0.67	153.05	6.955	0.67	0.000	0.000
167.00	Powerwave Allgon TT08-	6	22.00	0.920	0.50	48.75	1.663	0.50	0.000	0.000
167.00	RCU (Remote Control Unit)	12	1.00	0.160	0.50	6.57	0.546	0.50	0.000	0.000
162.00	Raycap DC6-48-60-18-8F	1	31.80	1.280	1.00	93.94	1.893	1.00	0.000	0.000
157.00	Andrew DBXNH-6565A-VTM	3	34.20	5.370	0.80	161.45	7.353	0.80	0.000	0.000
157.00	Stand-Off	3	75.00	2.500	0.67	111.79	3.814	0.67	0.000	0.000
146.00	Antel BXA-70063/6CF __ 2°	3	17.00	7.570	0.74	158.28	10.325	0.74	0.000	0.000
146.00	Stand-Off	3	75.00	2.500	0.67	111.54	3.805	0.67	0.000	0.000
146.00	VZW Unused Reserve:	1	1096.40	75.070	1.00	1,859.45	127.316	1.00	0.000	0.000
136.00	Commscope LNX-6515DS-	3	43.70	11.470	0.70	271.72	14.688	0.70	0.000	-2.000
136.00	E-911 GPS	1	5.00	0.580	0.50	26.37	1.019	0.50	0.000	0.000
136.00	Ericsson RRUS 11 B12	3	50.70	2.790	0.50	122.52	3.877	0.50	0.000	0.000
136.00	Ericsson RRUS 11 B2	3	50.70	2.790	0.50	122.52	3.877	0.50	0.000	0.000
136.00	Flat T-Arm	3	250.00	12.900	0.67	457.31	21.012	0.67	0.000	0.000
136.00	RFS APXV18-206516S-C-A20	3	18.70	3.620	0.67	88.07	5.464	0.67	0.000	0.000
Totals		60	3657.40			8,931.22			Number of Loadings : 18	

**Linear Appurtenance Properties**

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Flat	Projected Width (in)	Exposed To Wind	Carrier
0.00	167.00	2	0.78" 8 AWG6	0.78	0.59	N	0.00	Y	AT&T Mobility
0.00	167.00	12	1 5/8" Coax	1.98	0.82	N	3.96	Y	AT&T Mobility
0.00	162.00	1	0.39" Fiber Trunk	0.39	0.06	N	0.00	Y	AT&T Mobility
0.00	157.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	Verizon
0.00	146.00	6	1 5/8" Coax	1.98	0.82	N	0.00	N	Verizon
0.00	136.00	1	1 5/8" Fiber	1.63	1.61	N	0.00	N	T-Mobile

Site Number: 413782

Code: ANSI/TIA-222-G

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Site Name: Washington North CT, CT

Engineering Number: 66417723

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Customer: T- Mobile

**Segment Properties** (Max Len : 5.ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Fy (ksi)	S (in <sup>3</sup> )	Z (in <sup>3</sup> )	Weight (lb)
0.00		0.3125	47.000	46.306	12,752.5	25.11	150.40	71.9	534.4	0.0	0.0
5.00		0.3125	46.046	45.360	11,986.7	24.57	147.35	72.5	512.7	0.0	779.8
10.00		0.3125	45.092	44.414	11,252.2	24.03	144.30	73.1	491.5	0.0	763.7
15.00		0.3125	44.138	43.468	10,548.4	23.49	141.24	73.8	470.7	0.0	747.6
20.00		0.3125	43.184	42.522	9,874.5	22.96	138.19	74.4	450.4	0.0	731.5
25.00		0.3125	42.231	41.576	9,229.9	22.42	135.14	75.0	430.5	0.0	715.4
30.00		0.3125	41.277	40.630	8,614.1	21.88	132.09	75.7	411.0	0.0	699.3
35.00		0.3125	40.323	39.684	8,026.2	21.34	129.03	76.3	392.0	0.0	683.2
40.00		0.3125	39.369	38.738	7,465.7	20.80	125.98	76.9	373.5	0.0	667.1
45.00		0.3125	38.415	37.792	6,932.0	20.26	122.93	77.6	355.4	0.0	651.0
46.12	Bot - Section 2	0.3125	38.202	37.580	6,816.3	20.14	122.25	77.7	351.4	0.0	143.3
50.00		0.3125	37.461	36.846	6,424.3	19.73	119.88	78.2	337.8	0.0	890.9
51.46	Top - Section 1	0.2500	37.683	29.702	5,258.3	25.17	150.73	71.8	274.8	0.0	330.1
55.00		0.2500	37.007	29.166	4,978.7	24.69	148.03	72.4	265.0	0.0	354.7
60.00		0.2500	36.053	28.409	4,601.1	24.02	144.21	73.2	251.4	0.0	489.8
65.00		0.2500	35.100	27.652	4,243.0	23.35	140.40	73.9	238.1	0.0	476.9
70.00		0.2500	34.146	26.895	3,904.1	22.67	136.58	74.7	225.2	0.0	464.0
75.00		0.2500	33.192	26.138	3,583.6	22.00	132.77	75.5	212.7	0.0	451.2
80.00		0.2500	32.238	25.381	3,281.3	21.33	128.95	76.3	200.5	0.0	438.3
85.00		0.2500	31.284	24.625	2,996.4	20.65	125.14	77.1	188.6	0.0	425.4
90.00		0.2500	30.330	23.868	2,728.5	19.98	121.32	77.9	177.2	0.0	412.5
92.65	Bot - Section 3	0.2500	29.825	23.467	2,593.4	19.63	119.30	78.3	171.3	0.0	213.1
95.00		0.2500	29.376	23.111	2,477.1	19.31	117.50	78.7	166.1	0.0	328.6
96.93	Top - Section 2	0.1875	29.384	17.375	1,871.2	26.22	156.71	70.6	125.4	0.0	265.2
100.0		0.1875	28.797	17.026	1,760.7	25.67	153.59	71.2	120.4	0.0	179.9
105.0		0.1875	27.843	16.458	1,590.4	24.77	148.50	72.3	112.5	0.0	284.8
110.0		0.1875	26.890	15.891	1,431.5	23.88	143.41	73.3	104.9	0.0	275.2
115.0		0.1875	25.936	15.323	1,283.5	22.98	138.32	74.4	97.5	0.0	265.5
120.0		0.1875	24.982	14.755	1,146.0	22.08	133.24	75.4	90.4	0.0	255.9
125.0		0.1875	24.028	14.188	1,018.8	21.19	128.15	76.5	83.5	0.0	246.2
130.0		0.1875	23.074	13.620	901.3	20.29	123.06	77.5	76.9	0.0	236.6
135.0		0.1875	22.120	13.052	793.3	19.39	117.97	78.6	70.6	0.0	226.9
136.0		0.1875	21.929	12.939	772.7	19.21	116.96	78.8	69.4	0.0	44.2
140.0		0.1875	21.166	12.485	694.2	18.49	112.89	79.6	64.6	0.0	173.0
140.0	Bot - Section 4	0.1875	21.162	12.482	693.8	18.49	112.87	79.7	64.6	0.0	0.9
143.2	Top - Section 3	0.1875	20.927	12.342	670.7	18.27	111.61	79.9	63.1	0.0	270.1
145.0		0.1875	20.587	12.140	638.3	17.95	109.80	80.3	61.1	0.0	74.2
146.0		0.1875	20.397	12.027	620.6	17.77	108.78	80.5	59.9	0.0	41.1
150.0		0.1875	19.634	11.572	552.9	17.05	104.71	81.3	55.5	0.0	160.6
155.0		0.1875	18.680	11.005	475.5	16.16	99.62	82.4	50.1	0.0	192.1
157.0		0.1875	18.298	10.778	446.6	15.80	97.59	82.6	48.1	0.0	74.1
158.5		0.1875	18.000	10.600	424.9	15.52	96.00	82.6	46.5	0.0	56.8
15,180.9											

Site Number: 413782

Code: ANSI/TIA-222-G

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Site Name: Washington North CT, CT

Engineering Number: 66417723

5/16/2016 1:47:49 PM

Customer: T- Mobile

<b>Load Case:</b> 1.2D + 1.6W	95 mph with No Ice	30 Iterations
Gust Response Factor : 1.10		Wind Importance Factor : 1.00
Dead Load Factor : 1.20		
Wind Load Factor : 1.60		

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		173.0	0.0					0.0	0.0	173.0	0.0	0.0	0.0
5.00		342.4	935.8					0.0	164.7	342.4	1,100.5	0.0	0.0
10.00		335.3	916.5					0.0	164.7	335.3	1,081.2	0.0	0.0
15.00		328.2	897.1					0.0	164.7	328.2	1,061.8	0.0	0.0
20.00		321.1	877.8					0.0	164.7	321.1	1,042.5	0.0	0.0
25.00		314.1	858.5					0.0	164.7	314.1	1,023.2	0.0	0.0
30.00		310.6	839.2					0.0	164.7	310.6	1,003.9	0.0	0.0
35.00		313.4	819.9					0.0	164.7	313.4	984.6	0.0	0.0
40.00		318.1	800.6					0.0	164.7	318.1	965.3	0.0	0.0
45.00		196.1	781.2					0.0	164.7	196.1	945.9	0.0	0.0
46.12	Bot - Section 2	164.0	171.9					0.0	36.8	164.0	208.7	0.0	0.0
50.00		176.3	1,069.1					0.0	127.9	176.3	1,197.0	0.0	0.0
51.46	Top - Section 1	165.8	396.1					0.0	48.0	165.8	444.2	0.0	0.0
55.00		284.5	425.7					0.0	116.7	284.5	542.3	0.0	0.0
60.00		335.0	587.7					0.0	164.7	335.0	752.4	0.0	0.0
65.00		336.6	572.3					0.0	164.7	336.6	737.0	0.0	0.0
70.00		337.5	556.8					0.0	164.7	337.5	721.5	0.0	0.0
75.00		337.7	541.4					0.0	164.7	337.7	706.1	0.0	0.0
80.00		337.5	525.9					0.0	164.7	337.5	690.6	0.0	0.0
85.00		336.7	510.5					0.0	164.7	336.7	675.2	0.0	0.0
90.00		256.7	495.0					0.0	164.7	256.7	659.7	0.0	0.0
92.65	Bot - Section 3	168.3	255.7					0.0	87.2	168.3	342.9	0.0	0.0
95.00		144.8	394.3					0.0	77.5	144.8	471.8	0.0	0.0
96.93	Top - Section 2	168.1	318.3					0.0	63.5	168.1	381.8	0.0	0.0
100.00		269.6	215.8					0.0	101.2	269.6	317.0	0.0	0.0
105.00		332.0	341.8					0.0	164.7	332.0	506.5	0.0	0.0
110.00		329.2	330.2					0.0	164.7	329.2	494.9	0.0	0.0
115.00		326.2	318.6					0.0	164.7	326.2	483.3	0.0	0.0
120.00		322.8	307.0					0.0	164.7	322.8	471.7	0.0	0.0
125.00		319.1	295.5					0.0	164.7	319.1	460.2	0.0	0.0
130.00		315.1	283.9					0.0	164.7	315.1	448.6	0.0	0.0
135.00		187.6	272.3					0.0	164.7	187.6	437.0	0.0	0.0
136.00	Appertunance(s)	154.4	53.1	2,055.3	0.0	-1,599.6	1,495.7	0.0	32.9	2,209.6	1,581.7	0.0	0.0
140.00		124.0	207.6					0.0	124.0	124.0	331.7	0.0	0.0
140.02	Bot - Section 4	99.9	1.1					0.0	0.6	99.9	1.7	0.0	0.0
143.22	Top - Section 3	153.7	324.2					0.0	99.2	153.7	423.3	0.0	0.0
145.00		84.9	89.0					0.0	55.2	84.9	144.3	0.0	0.0
146.00	Appertunance(s)	151.2	49.3	4,121.6	0.0	0.0	1,646.9	0.0	31.0	4,272.8	1,727.2	0.0	0.0
150.00		330.2	192.7					0.0	100.4	330.2	293.1	0.0	0.0
155.00		290.8	230.5					82.4	125.5	373.3	356.0	0.0	0.0
157.00	Appertunance(s)	144.0	88.9	777.9	0.0	0.0	393.1	33.1	50.2	955.0	532.3	0.0	0.0
158.56		62.6	68.2					25.9	20.8	88.5	89.0	0.0	0.0
<b>Totals:</b>										17,595.2	26,839.5	0.00	0.00

Site Number: 413782

Code: ANSI/TIA-222-G

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Site Name: Washington North CT, CT

Engineering Number: 66417723

5/16/2016 1:47:50 PM

Customer: T- Mobile

**Load Case: 1.2D + 1.6W**

95 mph with No Ice

30 Iterations

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 1.20

Wind Load Factor : 1.60

**Calculated Forces**

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-27.65	-19.28	0.00	-2,279.81	0.00	2,279.81	2,995.17	1,497.58	5,752.58	2,880.56	0.00	0.00	0.801
5.00	-26.47	-19.05	0.00	-2,183.43	0.00	2,183.43	2,959.81	1,479.91	5,567.76	2,788.02	0.13	-0.25	0.792
10.00	-25.30	-18.82	0.00	-2,088.19	0.00	2,088.19	2,923.38	1,461.69	5,383.76	2,695.88	0.53	-0.50	0.783
15.00	-24.16	-18.59	0.00	-1,994.10	0.00	1,994.10	2,885.88	1,442.94	5,200.69	2,604.21	1.19	-0.76	0.774
20.00	-23.04	-18.36	0.00	-1,901.16	0.00	1,901.16	2,847.29	1,423.65	5,018.68	2,513.07	2.13	-1.02	0.765
25.00	-21.94	-18.13	0.00	-1,809.37	0.00	1,809.37	2,807.63	1,403.81	4,837.86	2,422.53	3.34	-1.29	0.755
30.00	-20.86	-17.89	0.00	-1,718.74	0.00	1,718.74	2,766.89	1,383.44	4,658.36	2,332.64	4.84	-1.56	0.745
35.00	-19.80	-17.65	0.00	-1,629.28	0.00	1,629.28	2,725.06	1,362.53	4,480.31	2,243.49	6.62	-1.84	0.734
40.00	-18.76	-17.39	0.00	-1,541.06	0.00	1,541.06	2,682.17	1,341.08	4,303.83	2,155.12	8.70	-2.12	0.722
45.00	-17.77	-17.21	0.00	-1,454.12	0.00	1,454.12	2,638.19	1,319.10	4,129.06	2,067.60	11.07	-2.40	0.710
46.12	-17.52	-17.08	0.00	-1,434.90	0.00	1,434.90	2,628.22	1,314.11	4,090.25	2,048.17	11.64	-2.47	0.707
50.00	-16.29	-16.89	0.00	-1,368.58	0.00	1,368.58	2,593.14	1,296.57	3,956.11	1,981.00	13.75	-2.70	0.697
51.46	-15.81	-16.75	0.00	-1,343.94	0.00	1,343.94	1,919.32	959.66	2,955.63	1,480.01	14.58	-2.79	0.917
55.00	-15.20	-16.51	0.00	-1,284.62	0.00	1,284.62	1,899.39	949.70	2,871.79	1,438.03	16.73	-3.00	0.902
60.00	-14.37	-16.23	0.00	-1,202.06	0.00	1,202.06	1,870.33	935.17	2,753.97	1,379.03	20.06	-3.35	0.880
65.00	-13.55	-15.93	0.00	-1,120.92	0.00	1,120.92	1,840.20	920.10	2,636.91	1,320.41	23.76	-3.71	0.857
70.00	-12.76	-15.63	0.00	-1,041.27	0.00	1,041.27	1,808.98	904.49	2,520.72	1,262.23	27.83	-4.07	0.832
75.00	-11.98	-15.31	0.00	-963.14	0.00	963.14	1,776.69	888.34	2,405.54	1,204.56	32.29	-4.44	0.807
80.00	-11.22	-14.99	0.00	-886.56	0.00	886.56	1,743.32	871.66	2,291.50	1,147.45	37.13	-4.81	0.779
85.00	-10.48	-14.67	0.00	-811.59	0.00	811.59	1,708.87	854.43	2,178.71	1,090.98	42.36	-5.17	0.750
90.00	-9.78	-14.40	0.00	-738.25	0.00	738.25	1,673.34	836.67	2,067.32	1,035.20	47.96	-5.54	0.719
92.65	-9.41	-14.23	0.00	-700.15	0.00	700.15	1,654.10	827.05	2,008.98	1,005.98	51.09	-5.74	0.702
95.00	-8.92	-14.06	0.00	-666.65	0.00	666.65	1,636.74	818.37	1,957.44	980.18	53.96	-5.92	0.686
96.93	-8.51	-13.88	0.00	-639.56	0.00	639.56	1,103.35	551.67	1,325.55	663.76	56.37	-6.06	0.972
100.00	-8.14	-13.63	0.00	-596.90	0.00	596.90	1,091.13	545.56	1,284.38	643.14	60.34	-6.29	0.936
105.00	-7.57	-13.30	0.00	-528.75	0.00	528.75	1,070.38	535.19	1,217.67	609.74	67.16	-6.74	0.875
110.00	-7.02	-12.97	0.00	-462.24	0.00	462.24	1,048.55	524.27	1,151.42	576.56	74.44	-7.19	0.809
115.00	-6.49	-12.63	0.00	-397.39	0.00	397.39	1,025.64	512.82	1,085.75	543.68	82.17	-7.61	0.738
120.00	-5.98	-12.29	0.00	-334.24	0.00	334.24	1,001.65	500.83	1,020.79	511.15	90.34	-8.02	0.660
125.00	-5.50	-11.94	0.00	-272.80	0.00	272.80	976.59	488.30	956.67	479.05	98.92	-8.40	0.576
130.00	-5.04	-11.59	0.00	-213.09	0.00	213.09	950.45	475.22	893.52	447.42	107.86	-8.73	0.482
135.00	-4.60	-11.35	0.00	-155.14	0.00	155.14	923.23	461.61	831.46	416.35	117.14	-9.03	0.378
136.00	-3.37	-8.93	0.00	-143.79	0.00	143.79	917.66	458.83	819.19	410.21	119.03	-9.08	0.355
140.00	-3.05	-8.76	0.00	-108.08	0.00	108.08	894.93	447.47	770.63	385.89	126.68	-9.26	0.284
140.02	-3.05	-8.66	0.00	-107.90	0.00	107.90	894.81	447.41	770.38	385.76	126.72	-9.27	0.283
143.22	-2.65	-8.45	0.00	-80.20	0.00	80.20	887.67	443.84	755.59	378.35	132.95	-9.39	0.215
145.00	-2.51	-8.34	0.00	-65.16	0.00	65.16	877.23	438.62	734.36	367.72	136.44	-9.45	0.180
146.00	-1.51	-3.84	0.00	-56.82	0.00	56.82	871.31	435.66	722.52	361.80	138.42	-9.47	0.159
150.00	-1.27	-3.47	0.00	-41.44	0.00	41.44	847.20	423.60	675.75	338.38	146.36	-9.56	0.124
155.00	-0.98	-3.04	0.00	-24.09	0.00	24.09	816.09	408.05	618.71	309.81	156.37	-9.65	0.079
157.00	-0.61	-2.01	0.00	-18.00	0.00	18.00	800.73	400.36	594.40	297.64	160.40	-9.67	0.061
158.56	0.00	-1.88	0.00	-14.85	0.00	14.85	787.55	393.77	574.90	287.88	163.56	-9.69	0.052



Site Number: 413782

Code: ANSI/TIA-222-G

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Site Name: Washington North CT, CT

Engineering Number: 66417723

5/16/2016 1:47:50 PM

Customer: T- Mobile

<b>Load Case:</b> 0.9D + 1.6W	95 mph with No Ice (Reduced DL)	30 Iterations
Gust Response Factor : 1.10		Wind Importance Factor : 1.00
Dead Load Factor : 0.90		
Wind Load Factor : 1.60		

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		173.0	0.0					0.0	0.0	173.0	0.0	0.0	0.0
5.00		342.4	701.8					0.0	123.5	342.4	825.3	0.0	0.0
10.00		335.3	687.3					0.0	123.5	335.3	810.9	0.0	0.0
15.00		328.2	672.9					0.0	123.5	328.2	796.4	0.0	0.0
20.00		321.1	658.4					0.0	123.5	321.1	781.9	0.0	0.0
25.00		314.1	643.9					0.0	123.5	314.1	767.4	0.0	0.0
30.00		310.6	629.4					0.0	123.5	310.6	752.9	0.0	0.0
35.00		313.4	614.9					0.0	123.5	313.4	738.4	0.0	0.0
40.00		317.9	600.4					0.0	123.5	317.9	723.9	0.0	0.0
45.00		195.8	585.9					0.0	123.5	195.8	709.5	0.0	0.0
46.12	Bot - Section 2	162.6	128.9					0.0	27.6	162.6	156.5	0.0	0.0
50.00		174.4	801.8					0.0	95.9	174.4	897.7	0.0	0.0
51.46	Top - Section 1	163.7	297.1					0.0	36.0	163.7	333.1	0.0	0.0
55.00		279.7	319.3					0.0	87.5	279.7	406.7	0.0	0.0
60.00		327.0	440.8					0.0	123.5	327.0	564.3	0.0	0.0
65.00		325.7	429.2					0.0	123.5	325.7	552.7	0.0	0.0
70.00		323.7	417.6					0.0	123.5	323.7	541.2	0.0	0.0
75.00		320.9	406.0					0.0	123.5	320.9	529.6	0.0	0.0
80.00		317.5	394.4					0.0	123.5	317.5	518.0	0.0	0.0
85.00		313.5	382.9					0.0	123.5	313.5	506.4	0.0	0.0
90.00		237.1	371.3					0.0	123.5	237.1	494.8	0.0	0.0
92.65	Bot - Section 3	154.2	191.8					0.0	65.4	154.2	257.1	0.0	0.0
95.00		131.9	295.7					0.0	58.2	131.9	353.9	0.0	0.0
96.93	Top - Section 2	152.6	238.7					0.0	47.6	152.6	286.3	0.0	0.0
100.00		243.2	161.9					0.0	75.9	243.2	237.8	0.0	0.0
105.00		296.4	256.4					0.0	123.5	296.4	379.9	0.0	0.0
110.00		290.0	247.7					0.0	123.5	290.0	371.2	0.0	0.0
115.00		283.3	239.0					0.0	123.5	283.3	362.5	0.0	0.0
120.00		276.3	230.3					0.0	123.5	276.3	353.8	0.0	0.0
125.00		268.8	221.6					0.0	123.5	268.8	345.1	0.0	0.0
130.00		261.1	212.9					0.0	123.5	261.1	336.4	0.0	0.0
135.00		153.8	204.2					0.0	123.5	153.8	327.7	0.0	0.0
136.00	Appertunance(s)	124.4	39.8	2,055.3	0.0	-1,599.6	1,121.8	0.0	24.7	2,179.7	1,186.3	0.0	0.0
140.00		99.7	155.7					0.0	93.0	99.7	248.7	0.0	0.0
140.02	Bot - Section 4	79.2	0.8					0.0	0.5	79.2	1.3	0.0	0.0
143.22	Top - Section 3	121.8	243.1					0.0	74.4	121.8	317.5	0.0	0.0
145.00		67.0	66.8					0.0	41.4	67.0	108.2	0.0	0.0
146.00	Appertunance(s)	118.0	37.0	4,121.6	0.0	0.0	1,235.2	0.0	23.3	4,239.6	1,295.4	0.0	0.0
150.00		303.5	144.5					0.0	75.3	303.5	219.9	0.0	0.0
155.00		290.8	172.9					82.4	94.1	373.3	267.0	0.0	0.0
157.00	Appertunance(s)	144.0	66.7	777.9	0.0	0.0	294.8	33.1	37.7	955.0	399.2	0.0	0.0
158.56		62.6	51.1					25.9	15.6	88.5	66.7	0.0	0.0
<b>Totals:</b>										16,916.2	20,129.6	0.00	0.00

Site Number: 413782

Code: ANSI/TIA-222-G

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Site Name: Washington North CT, CT

Engineering Number: 66417723

5/16/2016 1:47:51 PM

Customer: T- Mobile

**Load Case:** 0.9D + 1.6W

95 mph with No Ice (Reduced DL)

30 Iterations

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 0.90

Wind Load Factor : 1.60

**Calculated Forces**

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-20.73	-18.58	0.00	-2,166.03	0.00	2,166.03	2,995.17	1,497.58	5,752.58	2,880.56	0.00	0.00	0.759
5.00	-19.83	-18.32	0.00	-2,073.13	0.00	2,073.13	2,959.81	1,479.91	5,567.76	2,788.02	0.13	-0.24	0.750
10.00	-18.94	-18.06	0.00	-1,981.54	0.00	1,981.54	2,923.38	1,461.69	5,383.76	2,695.88	0.50	-0.48	0.742
15.00	-18.08	-17.80	0.00	-1,891.24	0.00	1,891.24	2,885.88	1,442.94	5,200.69	2,604.21	1.13	-0.72	0.733
20.00	-17.22	-17.54	0.00	-1,802.25	0.00	1,802.25	2,847.29	1,423.65	5,018.68	2,513.07	2.02	-0.97	0.723
25.00	-16.38	-17.29	0.00	-1,714.53	0.00	1,714.53	2,807.63	1,403.81	4,837.86	2,422.53	3.17	-1.22	0.714
30.00	-15.56	-17.03	0.00	-1,628.10	0.00	1,628.10	2,766.89	1,383.44	4,658.36	2,332.64	4.59	-1.48	0.704
35.00	-14.75	-16.76	0.00	-1,542.95	0.00	1,542.95	2,725.06	1,362.53	4,480.31	2,243.49	6.29	-1.74	0.693
40.00	-13.96	-16.49	0.00	-1,459.13	0.00	1,459.13	2,682.17	1,341.08	4,303.83	2,155.12	8.25	-2.01	0.682
45.00	-13.22	-16.30	0.00	-1,376.69	0.00	1,376.69	2,638.19	1,319.10	4,129.06	2,067.60	10.50	-2.28	0.671
46.12	-13.03	-16.17	0.00	-1,358.47	0.00	1,358.47	2,628.22	1,314.11	4,090.25	2,048.17	11.04	-2.34	0.668
50.00	-12.10	-15.99	0.00	-1,295.70	0.00	1,295.70	2,593.14	1,296.57	3,956.11	1,981.00	13.04	-2.56	0.659
51.46	-11.73	-15.84	0.00	-1,272.39	0.00	1,272.39	1,919.32	959.66	2,955.63	1,480.01	13.83	-2.64	0.866
55.00	-11.27	-15.59	0.00	-1,216.30	0.00	1,216.30	1,899.39	949.70	2,871.79	1,438.03	15.86	-2.84	0.852
60.00	-10.63	-15.30	0.00	-1,138.35	0.00	1,138.35	1,870.33	935.17	2,753.97	1,379.03	19.02	-3.18	0.831
65.00	-10.01	-15.00	0.00	-1,061.87	0.00	1,061.87	1,840.20	920.10	2,636.91	1,320.41	22.52	-3.52	0.810
70.00	-9.40	-14.70	0.00	-986.87	0.00	986.87	1,808.98	904.49	2,520.72	1,262.23	26.39	-3.86	0.787
75.00	-8.81	-14.40	0.00	-913.37	0.00	913.37	1,776.69	888.34	2,405.54	1,204.56	30.61	-4.21	0.763
80.00	-8.23	-14.09	0.00	-841.40	0.00	841.40	1,743.32	871.66	2,291.50	1,147.45	35.20	-4.55	0.738
85.00	-7.67	-13.78	0.00	-770.95	0.00	770.95	1,708.87	854.43	2,178.71	1,090.98	40.15	-4.90	0.711
90.00	-7.13	-13.54	0.00	-702.04	0.00	702.04	1,673.34	836.67	2,067.32	1,035.20	45.47	-5.25	0.683
92.65	-6.85	-13.38	0.00	-666.23	0.00	666.23	1,654.10	827.05	2,008.98	1,005.98	48.43	-5.44	0.667
95.00	-6.47	-13.23	0.00	-634.73	0.00	634.73	1,636.74	818.37	1,957.44	980.18	51.15	-5.61	0.652
96.93	-6.16	-13.07	0.00	-609.23	0.00	609.23	1,103.35	551.67	1,325.55	663.76	53.44	-5.75	0.924
100.00	-5.88	-12.84	0.00	-569.07	0.00	569.07	1,091.13	545.56	1,284.38	643.14	57.21	-5.96	0.891
105.00	-5.44	-12.54	0.00	-504.88	0.00	504.88	1,070.38	535.19	1,217.67	609.74	63.67	-6.40	0.834
110.00	-5.01	-12.25	0.00	-442.16	0.00	442.16	1,048.55	524.27	1,151.42	576.56	70.59	-6.82	0.772
115.00	-4.61	-11.96	0.00	-380.91	0.00	380.91	1,025.64	512.82	1,085.75	543.68	77.93	-7.23	0.706
120.00	-4.21	-11.66	0.00	-321.13	0.00	321.13	1,001.65	500.83	1,020.79	511.15	85.70	-7.62	0.633
125.00	-3.84	-11.38	0.00	-262.80	0.00	262.80	976.59	488.30	956.67	479.05	93.85	-7.98	0.553
130.00	-3.48	-11.09	0.00	-205.93	0.00	205.93	950.45	475.22	893.52	447.42	102.36	-8.31	0.464
135.00	-3.15	-10.90	0.00	-150.49	0.00	150.49	923.23	461.61	831.46	416.35	111.19	-8.59	0.365
136.00	-2.29	-8.57	0.00	-139.59	0.00	139.59	917.66	458.83	819.19	410.21	112.99	-8.64	0.343
140.00	-2.05	-8.43	0.00	-105.32	0.00	105.32	894.93	447.47	770.63	385.89	120.28	-8.82	0.276
140.02	-2.05	-8.36	0.00	-105.15	0.00	105.15	894.81	447.41	770.38	385.76	120.32	-8.82	0.275
143.22	-1.74	-8.19	0.00	-78.41	0.00	78.41	887.67	443.84	755.59	378.35	126.25	-8.94	0.210
145.00	-1.64	-8.11	0.00	-63.82	0.00	63.82	877.23	438.62	734.36	367.72	129.58	-9.00	0.176
146.00	-1.02	-3.72	0.00	-55.71	0.00	55.71	871.31	435.66	722.52	361.80	131.46	-9.03	0.155
150.00	-0.84	-3.39	0.00	-40.83	0.00	40.83	847.20	423.60	675.75	338.38	139.04	-9.12	0.122
155.00	-0.64	-2.98	0.00	-23.89	0.00	23.89	816.09	408.05	618.71	309.81	148.59	-9.20	0.078
157.00	-0.40	-1.97	0.00	-17.93	0.00	17.93	800.73	400.36	594.40	297.64	152.43	-9.22	0.061
158.56	0.00	-1.88	0.00	-14.85	0.00	14.85	787.55	393.77	574.90	287.88	155.44	-9.24	0.052

Site Number: 413782

Code: ANSI/TIA-222-G

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Site Name: Washington North CT, CT

Engineering Number: 66417723

5/16/2016 1:47:51 PM

Customer: T- Mobile

<b>Load Case:</b> 1.2D + 1.0Di + 1.0Wi	40 mph with 0.75 in Radial Ice	29 Iterations
Gust Response Factor : 1.10	Ice Dead Load Factor : 1.00	Wind Importance Factor : 1.00
Dead Load Factor : 1.20		Ice Importance Factor : 1.00
Wind Load Factor : 1.00		

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		37.1	0.0					0.0	0.0	37.1	0.0	0.0	0.0
5.00		73.7	1,278.5					0.0	325.4	73.7	1,603.8	0.0	0.0
10.00		72.6	1,292.3					0.0	344.9	72.6	1,637.2	0.0	0.0
15.00		71.3	1,285.1					0.0	355.0	71.3	1,640.0	0.0	0.0
20.00		70.0	1,271.0					0.0	362.0	70.0	1,633.0	0.0	0.0
25.00		68.6	1,253.4					0.0	367.4	68.6	1,620.8	0.0	0.0
30.00		68.0	1,233.6					0.0	371.9	68.0	1,605.5	0.0	0.0
35.00		68.8	1,212.2					0.0	375.8	68.8	1,587.9	0.0	0.0
40.00		70.0	1,189.6					0.0	379.1	70.0	1,568.7	0.0	0.0
45.00		43.2	1,166.2					0.0	382.1	43.2	1,548.3	0.0	0.0
46.12	Bot - Section 2	35.9	258.1					0.0	85.7	35.9	343.8	0.0	0.0
50.00		38.6	1,368.4					0.0	299.0	38.6	1,667.5	0.0	0.0
51.46	Top - Section 1	36.2	508.4					0.0	112.7	36.2	621.1	0.0	0.0
55.00		62.0	965.0					0.0	274.5	62.0	969.5	0.0	0.0
60.00		72.7	961.5					0.0	389.5	72.7	1,351.0	0.0	0.0
65.00		72.6	939.8					0.0	391.6	72.6	1,331.4	0.0	0.0
70.00		72.4	917.6					0.0	393.6	72.4	1,311.2	0.0	0.0
75.00		72.0	895.2					0.0	395.4	72.0	1,290.6	0.0	0.0
80.00		71.4	872.4					0.0	397.2	71.4	1,269.6	0.0	0.0
85.00		70.8	849.4					0.0	398.8	70.8	1,248.2	0.0	0.0
90.00		53.7	826.2					0.0	400.4	53.7	1,226.6	0.0	0.0
92.65	Bot - Section 3	35.0	429.0					0.0	212.5	35.0	641.4	0.0	0.0
95.00		29.9	548.5					0.0	189.4	29.9	737.9	0.0	0.0
96.93	Top - Section 2	34.7	443.4					0.0	155.3	34.7	598.6	0.0	0.0
100.00		55.5	412.0					0.0	248.0	55.5	660.0	0.0	0.0
105.00		67.8	652.4					0.0	404.6	67.8	1,057.0	0.0	0.0
110.00		66.7	632.3					0.0	405.9	66.7	1,038.2	0.0	0.0
115.00		65.4	612.0					0.0	407.1	65.4	1,019.1	0.0	0.0
120.00		64.1	591.6					0.0	408.3	64.1	999.9	0.0	0.0
125.00		62.7	571.0					0.0	409.5	62.7	980.5	0.0	0.0
130.00		61.2	550.3					0.0	410.6	61.2	961.0	0.0	0.0
135.00		36.2	529.6					0.0	411.7	36.2	941.2	0.0	0.0
136.00	Appertunance(s)	29.5	104.2	329.6	0.0	-227.0	2,881.8	0.0	82.5	359.1	3,068.5	0.0	0.0
140.00		23.6	406.1					0.0	322.5	23.6	728.6	0.0	0.0
140.02	Bot - Section 4	18.8	2.1					0.0	1.7	18.8	3.8	0.0	0.0
143.22	Top - Section 3	29.0	481.6					0.0	258.3	29.0	739.9	0.0	0.0
145.00		16.0	175.6					0.0	144.1	16.0	319.6	0.0	0.0
146.00	Appertunance(s)	28.2	97.6	744.1	0.0	0.0	568.0	0.0	80.9	772.4	746.5	0.0	0.0
150.00		49.9	379.3					0.0	300.5	49.9	679.8	0.0	0.0
155.00		38.1	454.0					17.8	376.5	55.9	830.5	0.0	0.0
157.00	Appertunance(s)	19.0	176.9	121.8	0.0	0.0	551.3	7.2	150.9	147.9	879.1	0.0	0.0
158.56		8.3	136.0					5.6	99.5	13.9	235.5	0.0	0.0
<b>Totals:</b>										<b>3,367.52</b>	<b>44,942.4</b>	<b>0.00</b>	<b>0.00</b>

Site Number: 413782

Code: ANSI/TIA-222-G

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Site Name: Washington North CT, CT

Engineering Number: 66417723

5/16/2016 1:47:52 PM

Customer: T- Mobile

Load Case: 1.2D + 1.0Di + 1.0Wi

40 mph with 0.75 in Radial Ice

29 Iterations

Gust Response Factor : 1.10

Ice Dead Load Factor : 1.00

Wind Importance Factor : 1.00

Dead Load Factor : 1.20

Ice Importance Factor : 1.00

Wind Load Factor : 1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-46.88	-3.64	0.00	-428.95	0.00	428.95	2,995.17	1,497.58	5,752.58	2,880.56	0.00	0.00	0.165
5.00	-45.28	-3.60	0.00	-410.77	0.00	410.77	2,959.81	1,479.91	5,567.76	2,788.02	0.03	-0.05	0.163
10.00	-43.64	-3.56	0.00	-392.77	0.00	392.77	2,923.38	1,461.69	5,383.76	2,695.88	0.10	-0.09	0.161
15.00	-41.99	-3.52	0.00	-374.97	0.00	374.97	2,885.88	1,442.94	5,200.69	2,604.21	0.22	-0.14	0.159
20.00	-40.36	-3.48	0.00	-357.36	0.00	357.36	2,847.29	1,423.65	5,018.68	2,513.07	0.40	-0.19	0.156
25.00	-38.73	-3.44	0.00	-339.94	0.00	339.94	2,807.63	1,403.81	4,837.86	2,422.53	0.63	-0.24	0.154
30.00	-37.12	-3.40	0.00	-322.73	0.00	322.73	2,766.89	1,383.44	4,658.36	2,332.64	0.91	-0.29	0.152
35.00	-35.53	-3.35	0.00	-305.73	0.00	305.73	2,725.06	1,362.53	4,480.31	2,243.49	1.25	-0.35	0.149
40.00	-33.96	-3.31	0.00	-288.96	0.00	288.96	2,682.17	1,341.08	4,303.83	2,155.12	1.64	-0.40	0.147
45.00	-32.41	-3.27	0.00	-272.43	0.00	272.43	2,638.19	1,319.10	4,129.06	2,067.60	2.08	-0.45	0.144
46.12	-32.07	-3.25	0.00	-268.78	0.00	268.78	2,628.22	1,314.11	4,090.25	2,048.17	2.19	-0.46	0.143
50.00	-30.40	-3.21	0.00	-256.17	0.00	256.17	2,593.14	1,296.57	3,956.11	1,981.00	2.58	-0.51	0.141
51.46	-29.78	-3.18	0.00	-251.49	0.00	251.49	1,919.32	959.66	2,955.63	1,480.01	2.74	-0.52	0.185
55.00	-28.81	-3.14	0.00	-240.22	0.00	240.22	1,899.39	949.70	2,871.79	1,438.03	3.14	-0.56	0.182
60.00	-27.45	-3.08	0.00	-224.53	0.00	224.53	1,870.33	935.17	2,753.97	1,379.03	3.77	-0.63	0.178
65.00	-26.12	-3.03	0.00	-209.12	0.00	209.12	1,840.20	920.10	2,636.91	1,320.41	4.46	-0.70	0.173
70.00	-24.80	-2.97	0.00	-193.99	0.00	193.99	1,808.98	904.49	2,520.72	1,262.23	5.23	-0.76	0.167
75.00	-23.51	-2.90	0.00	-179.16	0.00	179.16	1,776.69	888.34	2,405.54	1,204.56	6.06	-0.83	0.162
80.00	-22.24	-2.84	0.00	-164.64	0.00	164.64	1,743.32	871.66	2,291.50	1,147.45	6.97	-0.90	0.156
85.00	-20.99	-2.77	0.00	-150.44	0.00	150.44	1,708.87	854.43	2,178.71	1,090.98	7.95	-0.97	0.150
90.00	-19.76	-2.72	0.00	-136.58	0.00	136.58	1,673.34	836.67	2,067.32	1,035.20	9.00	-1.04	0.144
92.65	-19.12	-2.68	0.00	-129.39	0.00	129.39	1,654.10	827.05	2,008.98	1,005.98	9.59	-1.07	0.140
95.00	-18.38	-2.65	0.00	-123.08	0.00	123.08	1,636.74	818.37	1,957.44	980.18	10.12	-1.11	0.137
96.93	-17.78	-2.61	0.00	-117.98	0.00	117.98	1,103.35	551.67	1,325.55	663.76	10.58	-1.13	0.194
100.00	-17.12	-2.56	0.00	-109.95	0.00	109.95	1,091.13	545.56	1,284.38	643.14	11.32	-1.17	0.187
105.00	-16.06	-2.49	0.00	-97.15	0.00	97.15	1,070.38	535.19	1,217.67	609.74	12.59	-1.26	0.174
110.00	-15.02	-2.42	0.00	-84.68	0.00	84.68	1,048.55	524.27	1,151.42	576.56	13.95	-1.34	0.161
115.00	-14.00	-2.35	0.00	-72.55	0.00	72.55	1,025.64	512.82	1,085.75	543.68	15.40	-1.42	0.147
120.00	-13.00	-2.28	0.00	-60.78	0.00	60.78	1,001.65	500.83	1,020.79	511.15	16.92	-1.49	0.132
125.00	-12.02	-2.21	0.00	-49.38	0.00	49.38	976.59	488.30	956.67	479.05	18.52	-1.56	0.115
130.00	-11.06	-2.13	0.00	-38.36	0.00	38.36	950.45	475.22	893.52	447.42	20.19	-1.62	0.097
135.00	-10.12	-2.07	0.00	-27.72	0.00	27.72	923.23	461.61	831.46	416.35	21.91	-1.67	0.078
136.00	-7.06	-1.62	0.00	-25.65	0.00	25.65	917.66	458.83	819.19	410.21	22.27	-1.68	0.070
140.00	-6.33	-1.58	0.00	-19.15	0.00	19.15	894.93	447.47	770.63	385.89	23.69	-1.72	0.057
140.02	-6.33	-1.56	0.00	-19.12	0.00	19.12	894.81	447.41	770.38	385.76	23.70	-1.72	0.057
143.22	-5.59	-1.51	0.00	-14.12	0.00	14.12	887.67	443.84	755.59	378.35	24.85	-1.74	0.044
145.00	-5.27	-1.49	0.00	-11.43	0.00	11.43	877.23	438.62	734.36	367.72	25.50	-1.75	0.037
146.00	-4.55	-0.69	0.00	-9.94	0.00	9.94	871.31	435.66	722.52	361.80	25.87	-1.75	0.033
150.00	-3.87	-0.62	0.00	-7.16	0.00	7.16	847.20	423.60	675.75	338.38	27.34	-1.77	0.026
155.00	-3.04	-0.54	0.00	-4.04	0.00	4.04	816.09	408.05	618.71	309.81	29.20	-1.78	0.017
157.00	-2.17	-0.37	0.00	-2.95	0.00	2.95	800.73	400.36	594.40	297.64	29.95	-1.79	0.013
158.56	0.00	-0.30	0.00	-2.37	0.00	2.37	787.55	393.77	574.90	287.88	30.54	-1.79	0.008

Site Number: 413782

Code: ANSI/TIA-222-G

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Site Name: Washington North CT, CT

Engineering Number: 66417723

5/16/2016 1:47:52 PM

Customer: T- Mobile

**Load Case:** 1.0D + 1.0W

Serviceability 60 mph

28 Iterations

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 1.00

Wind Load Factor : 1.00

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces					
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)	
0.00		43.1	0.0					0.0	0.0	43.1	0.0	0.0	0.0	
5.00		85.4	779.8					0.0	137.3	85.4	917.1	0.0	0.0	
10.00		83.6	763.7					0.0	137.3	83.6	901.0	0.0	0.0	
15.00		81.8	747.6					0.0	137.3	81.8	884.9	0.0	0.0	
20.00		80.1	731.5					0.0	137.3	80.1	868.8	0.0	0.0	
25.00		78.3	715.4					0.0	137.3	78.3	852.7	0.0	0.0	
30.00		77.4	699.3					0.0	137.3	77.4	836.6	0.0	0.0	
35.00		78.1	683.2					0.0	137.3	78.1	820.5	0.0	0.0	
40.00		79.3	667.1					0.0	137.3	79.3	804.4	0.0	0.0	
45.00		48.8	651.0					0.0	137.3	48.8	788.3	0.0	0.0	
46.12	Bot - Section 2	40.5	143.3					0.0	30.7	40.5	173.9	0.0	0.0	
50.00		43.5	890.9					0.0	106.6	43.5	997.5	0.0	0.0	
51.46	Top - Section 1	40.8	330.1					0.0	40.0	40.8	370.1	0.0	0.0	
55.00		69.7	354.7					0.0	97.2	69.7	451.9	0.0	0.0	
60.00		81.5	489.8					0.0	137.3	81.5	627.0	0.0	0.0	
65.00		81.2	476.9					0.0	137.3	81.2	614.2	0.0	0.0	
70.00		80.7	464.0					0.0	137.3	80.7	601.3	0.0	0.0	
75.00		80.0	451.2					0.0	137.3	80.0	588.4	0.0	0.0	
80.00		79.1	438.3					0.0	137.3	79.1	575.5	0.0	0.0	
85.00		78.2	425.4					0.0	137.3	78.2	562.6	0.0	0.0	
90.00		59.1	412.5					0.0	137.3	59.1	549.8	0.0	0.0	
92.65	Bot - Section 3	38.4	213.1					0.0	72.6	38.4	285.7	0.0	0.0	
95.00		32.9	328.6					0.0	64.6	32.9	393.2	0.0	0.0	
96.93	Top - Section 2	38.0	265.2					0.0	52.9	38.0	318.1	0.0	0.0	
100.00		60.6	179.9					0.0	84.4	60.6	264.2	0.0	0.0	
105.00		73.9	284.8					0.0	137.3	73.9	422.1	0.0	0.0	
110.00		72.3	275.2					0.0	137.3	72.3	412.4	0.0	0.0	
115.00		70.6	265.5					0.0	137.3	70.6	402.8	0.0	0.0	
120.00		68.9	255.9					0.0	137.3	68.9	393.1	0.0	0.0	
125.00		67.0	246.2					0.0	137.3	67.0	383.5	0.0	0.0	
130.00		65.1	236.6					0.0	137.3	65.1	373.8	0.0	0.0	
135.00		38.3	226.9					0.0	137.3	38.3	364.1	0.0	0.0	
136.00	Appertunance(s)	31.0	44.2	512.4	0.0	-398.8	1,246.4	0.0	27.5	543.4	1,318.1	0.0	0.0	
140.00		24.9	173.0					0.0	103.4	24.9	276.4	0.0	0.0	
140.02	Bot - Section 4	19.8	0.9					0.0	0.5	19.8	1.4	0.0	0.0	
143.22	Top - Section 3	30.4	270.1					0.0	82.6	30.4	352.8	0.0	0.0	
145.00		16.7	74.2					0.0	46.0	16.7	120.2	0.0	0.0	
146.00	Appertunance(s)	29.4	41.1	1,027.5	0.0	0.0	1,372.4	0.0	25.8	1,057.0	1,439.4	0.0	0.0	
150.00		75.7	160.6					0.0	83.7	75.7	244.3	0.0	0.0	
155.00		72.5	192.1					21.3	104.6	93.8	296.7	0.0	0.0	
157.00	Appertunance(s)	35.9	74.1	193.9	0.0	0.0	327.6	8.6	41.8	238.4	443.6	0.0	0.0	
158.56		15.6	56.8					6.7	17.3	22.3	74.1	0.0	0.0	
							<b>Totals:</b>				<b>4,218.62</b>	<b>22,366.3</b>	<b>0.00</b>	<b>0.00</b>

Site Number: 413782

Code: ANSI/TIA-222-G

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Site Name: Washington North CT, CT

Engineering Number: 66417723

5/16/2016 1:47:53 PM

Customer: T- Mobile

**Load Case:** 1.0D + 1.0W

Serviceability 60 mph

28 Iterations

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 1.00

Wind Load Factor : 1.00

**Calculated Forces**

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-23.07	-4.63	0.00	-544.49	0.00	544.49	2,995.17	1,497.58	5,752.58	2,880.56	0.00	0.00	0.197
5.00	-22.15	-4.57	0.00	-521.32	0.00	521.32	2,959.81	1,479.91	5,567.76	2,788.02	0.03	-0.06	0.194
10.00	-21.25	-4.51	0.00	-498.47	0.00	498.47	2,923.38	1,461.69	5,383.76	2,695.88	0.13	-0.12	0.192
15.00	-20.36	-4.45	0.00	-475.92	0.00	475.92	2,885.88	1,442.94	5,200.69	2,604.21	0.28	-0.18	0.190
20.00	-19.48	-4.38	0.00	-453.69	0.00	453.69	2,847.29	1,423.65	5,018.68	2,513.07	0.51	-0.24	0.187
25.00	-18.63	-4.32	0.00	-431.77	0.00	431.77	2,807.63	1,403.81	4,837.86	2,422.53	0.80	-0.31	0.185
30.00	-17.79	-4.26	0.00	-410.15	0.00	410.15	2,766.89	1,383.44	4,658.36	2,332.64	1.16	-0.37	0.182
35.00	-16.96	-4.20	0.00	-388.85	0.00	388.85	2,725.06	1,362.53	4,480.31	2,243.49	1.58	-0.44	0.180
40.00	-16.15	-4.13	0.00	-367.87	0.00	367.87	2,682.17	1,341.08	4,303.83	2,155.12	2.08	-0.51	0.177
45.00	-15.36	-4.08	0.00	-347.22	0.00	347.22	2,638.19	1,319.10	4,129.06	2,067.60	2.64	-0.57	0.174
46.12	-15.19	-4.05	0.00	-342.65	0.00	342.65	2,628.22	1,314.11	4,090.25	2,048.17	2.78	-0.59	0.173
50.00	-14.19	-4.01	0.00	-326.92	0.00	326.92	2,593.14	1,296.57	3,956.11	1,981.00	3.28	-0.64	0.171
51.46	-13.81	-3.97	0.00	-321.08	0.00	321.08	1,919.32	959.66	2,955.63	1,480.01	3.48	-0.67	0.224
55.00	-13.36	-3.91	0.00	-307.01	0.00	307.01	1,899.39	949.70	2,871.79	1,438.03	3.99	-0.72	0.221
60.00	-12.73	-3.84	0.00	-287.46	0.00	287.46	1,870.33	935.17	2,753.97	1,379.03	4.79	-0.80	0.215
65.00	-12.11	-3.77	0.00	-268.26	0.00	268.26	1,840.20	920.10	2,636.91	1,320.41	5.67	-0.89	0.210
70.00	-11.50	-3.70	0.00	-249.41	0.00	249.41	1,808.98	904.49	2,520.72	1,262.23	6.65	-0.97	0.204
75.00	-10.91	-3.62	0.00	-230.94	0.00	230.94	1,776.69	888.34	2,405.54	1,204.56	7.71	-1.06	0.198
80.00	-10.33	-3.55	0.00	-212.83	0.00	212.83	1,743.32	871.66	2,291.50	1,147.45	8.87	-1.15	0.191
85.00	-9.77	-3.47	0.00	-195.09	0.00	195.09	1,708.87	854.43	2,178.71	1,090.98	10.12	-1.24	0.185
90.00	-9.21	-3.41	0.00	-177.72	0.00	177.72	1,673.34	836.67	2,067.32	1,035.20	11.46	-1.33	0.177
92.65	-8.93	-3.37	0.00	-168.70	0.00	168.70	1,654.10	827.05	2,008.98	1,005.98	12.21	-1.37	0.173
95.00	-8.53	-3.34	0.00	-160.75	0.00	160.75	1,636.74	818.37	1,957.44	980.18	12.90	-1.42	0.169
96.93	-8.21	-3.30	0.00	-154.32	0.00	154.32	1,103.35	551.67	1,325.55	663.76	13.48	-1.45	0.240
100.00	-7.94	-3.24	0.00	-144.19	0.00	144.19	1,091.13	545.56	1,284.38	643.14	14.43	-1.51	0.232
105.00	-7.52	-3.17	0.00	-127.97	0.00	127.97	1,070.38	535.19	1,217.67	609.74	16.07	-1.62	0.217
110.00	-7.10	-3.10	0.00	-112.12	0.00	112.12	1,048.55	524.27	1,151.42	576.56	17.82	-1.72	0.201
115.00	-6.70	-3.03	0.00	-96.62	0.00	96.62	1,025.64	512.82	1,085.75	543.68	19.68	-1.83	0.184
120.00	-6.30	-2.96	0.00	-81.48	0.00	81.48	1,001.65	500.83	1,020.79	511.15	21.64	-1.93	0.166
125.00	-5.92	-2.89	0.00	-66.69	0.00	66.69	976.59	488.30	956.67	479.05	23.71	-2.02	0.145
130.00	-5.54	-2.82	0.00	-52.25	0.00	52.25	950.45	475.22	893.52	447.42	25.87	-2.10	0.123
135.00	-5.18	-2.77	0.00	-38.18	0.00	38.18	923.23	461.61	831.46	416.35	28.11	-2.17	0.097
136.00	-3.88	-2.18	0.00	-35.41	0.00	35.41	917.66	458.83	819.19	410.21	28.56	-2.18	0.091
140.00	-3.60	-2.14	0.00	-26.70	0.00	26.70	894.93	447.47	770.63	385.89	30.41	-2.23	0.073
140.02	-3.60	-2.12	0.00	-26.66	0.00	26.66	894.81	447.41	770.38	385.76	30.42	-2.23	0.073
143.22	-3.25	-2.08	0.00	-19.87	0.00	19.87	887.67	443.84	755.59	378.35	31.93	-2.26	0.056
145.00	-3.13	-2.06	0.00	-16.16	0.00	16.16	877.23	438.62	734.36	367.72	32.77	-2.28	0.048
146.00	-1.73	-0.95	0.00	-14.10	0.00	14.10	871.31	435.66	722.52	361.80	33.25	-2.28	0.041
150.00	-1.49	-0.86	0.00	-10.31	0.00	10.31	847.20	423.60	675.75	338.38	35.17	-2.30	0.032
155.00	-1.20	-0.76	0.00	-6.00	0.00	6.00	816.09	408.05	618.71	309.81	37.60	-2.33	0.021
157.00	-0.77	-0.50	0.00	-4.49	0.00	4.49	800.73	400.36	594.40	297.64	38.57	-2.33	0.016
158.56	0.00	-0.47	0.00	-3.70	0.00	3.70	787.55	393.77	574.90	287.88	39.34	-2.34	0.013

Site Number: 413782

Code: ANSI/TIA-222-G

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Site Name: Washington North CT, CT

Engineering Number: 66417723

5/16/2016 1:47:54 PM

Customer: T- Mobile

**Equivalent Lateral Forces Method Analysis**

(Based on ASCE7-10 Chapters 11, 12, 15)

Spectral Response Acceleration for Short Period ( $S_s$ ):	0.19
Spectral Response Acceleration at 1.0 Second Period ( $S_1$ ):	0.06
Long-Period Transition Period ( $T_L$ ):	6
Importance Factor ( $I_E$ ):	1.00
Site Coefficient $F_a$ :	1.60
Site Coefficient $F_v$ :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period ( $S_{ds}$ ):	0.20
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.10
Seismic Response Coefficient ( $C_s$ ):	0.03
Upper Limit $C_s$	0.03
Lower Limit $C_s$	0.03
Period based on Rayleigh Method (sec):	2.63
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	2.00
Total Unfactored Dead Load:	23.08 k
Seismic Base Shear (E):	0.90 k

**Load Case (1.2 + 0.2Sds) \* DL + E ELFM**

**Seismic Equivalent Lateral Forces Method**

Segment	Height Above Base (ft)	Weight (lb)	$W_z$ (lb-ft)	$C_{vx}$	Horizontal Force (lb)	Vertical Force (lb)
41	157.78	74	1,846	0.009	8	92
40	156.00	116	2,822	0.014	13	144
39	152.50	297	6,899	0.035	32	368
38	148.00	244	5,351	0.027	25	303
37	145.50	67	1,417	0.007	7	83
36	144.11	120	2,497	0.013	11	149
35	141.62	353	7,075	0.036	33	438
34	140.01	1	28	0.000	0	2
33	138.00	276	5,263	0.027	24	343
32	135.50	72	1,316	0.007	6	89
31	132.50	364	6,393	0.033	29	452
30	127.50	374	6,077	0.031	28	464
29	122.50	383	5,754	0.029	26	476
28	117.50	393	5,428	0.028	25	488
27	112.50	403	5,098	0.026	23	500
26	107.50	412	4,766	0.024	22	512
25	102.50	422	4,435	0.023	20	524
24	98.46	264	2,561	0.013	12	328
23	95.96	318	2,930	0.015	13	395
22	93.82	393	3,461	0.018	16	488
21	91.32	286	2,383	0.012	11	354
20	87.50	550	4,209	0.022	19	682
19	82.50	563	3,830	0.020	18	698

Site Number: 413782

Code: ANSI/TIA-222-G

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Site Name: Washington North CT, CT

Engineering Number: 66417723

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Customer: T- Mobile

18	77.50	576	3,457	0.018	16	714
17	72.50	588	3,093	0.016	14	730
16	67.50	601	2,740	0.014	13	746
15	62.50	614	2,399	0.012	11	762
14	57.50	627	2,073	0.011	10	778
13	53.23	452	1,281	0.007	6	561
12	50.73	370	953	0.005	4	459
11	48.06	997	2,304	0.012	11	1,238
10	45.56	174	361	0.002	2	216
9	42.50	788	1,424	0.007	7	978
8	37.50	804	1,131	0.006	5	998
7	32.50	820	867	0.004	4	1,018
6	27.50	837	633	0.003	3	1,038
5	22.50	853	432	0.002	2	1,058
4	17.50	869	266	0.001	1	1,078
3	12.50	885	138	0.001	1	1,098
2	7.50	901	51	0.000	0	1,118
1	2.50	917	6	0.000	0	1,138
RCU (Remote Control	167.00	12	335	0.002	2	15
Powerwave Allgon TT0	167.00	132	3,681	0.019	17	164
Ericsson RRUS 11 B2	167.00	304	8,484	0.043	39	377
KMW AM-X-CD-17-65-00	167.00	31	859	0.004	4	38
Powerwave Allgon P90	167.00	90	2,510	0.013	12	112
Kathrein Scala 800-1	167.00	110	3,073	0.016	14	137
Raycap DC6-48-60-18-	162.00	32	835	0.004	4	39
Stand-Off	157.00	225	5,546	0.028	26	279
Andrew DBXNH-6565A-V	157.00	103	2,529	0.013	12	127
Stand-Off	146.00	225	4,796	0.025	22	279
Antel BXA-70063/6CF	146.00	51	1,087	0.006	5	63
VZW Unused Reserve:	146.00	1,096	23,371	0.119	108	1,360
E-911 GPS	136.00	5	92	0.000	0	6
Ericsson RRUS 11 B12	136.00	152	2,813	0.014	13	189
Ericsson RRUS 11 B2	136.00	152	2,813	0.014	13	189
RFS APXV18-206516S-C	136.00	56	1,038	0.005	5	70
Commscope LNX-6515DS	136.00	131	2,425	0.012	11	163
Flat T-Arm	136.00	750	13,872	0.071	64	931
		23,077	195,604	1.000	900	28,633

**Load Case (0.9 - 0.2Sds) \* DL + E ELFM**

**Seismic (Reduced DL) Equivalent Lateral Forces Method**

Segment	Height Above Base (ft)	Weight (lb)	W <sub>z</sub> (lb-ft)	C <sub>vx</sub>	Horizontal Force (lb)	Vertical Force (lb)
41	157.78	74	1,846	0.009	8	64
40	156.00	116	2,822	0.014	13	100
39	152.50	297	6,899	0.035	32	255
38	148.00	244	5,351	0.027	25	210
37	145.50	67	1,417	0.007	7	58
36	144.11	120	2,497	0.013	11	103
35	141.62	353	7,075	0.036	33	303
34	140.01	1	28	0.000	0	1
33	138.00	276	5,263	0.027	24	237
32	135.50	72	1,316	0.007	6	62
31	132.50	364	6,393	0.033	29	313
30	127.50	374	6,077	0.031	28	321
29	122.50	383	5,754	0.029	26	329
28	117.50	393	5,428	0.028	25	338
27	112.50	403	5,098	0.026	23	346
26	107.50	412	4,766	0.024	22	354
25	102.50	422	4,435	0.023	20	363
24	98.46	264	2,561	0.013	12	227



Site Number: 413782

Code: ANSI/TIA-222-G

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Site Name: Washington North CT, CT

Engineering Number: 66417723

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Customer: T- Mobile

23	95.96	318	2,930	0.015	13	273
22	93.82	393	3,461	0.018	16	338
21	91.32	286	2,383	0.012	11	245
20	87.50	550	4,209	0.022	19	472
19	82.50	563	3,830	0.020	18	483
18	77.50	576	3,457	0.018	16	495
17	72.50	588	3,093	0.016	14	506
16	67.50	601	2,740	0.014	13	517
15	62.50	614	2,399	0.012	11	528
14	57.50	627	2,073	0.011	10	539
13	53.23	452	1,281	0.007	6	388
12	50.73	370	953	0.005	4	318
11	48.06	997	2,304	0.012	11	857
10	45.56	174	361	0.002	2	149
9	42.50	788	1,424	0.007	7	677
8	37.50	804	1,131	0.006	5	691
7	32.50	820	867	0.004	4	705
6	27.50	837	633	0.003	3	719
5	22.50	853	432	0.002	2	733
4	17.50	869	266	0.001	1	746
3	12.50	885	138	0.001	1	760
2	7.50	901	51	0.000	0	774
1	2.50	917	6	0.000	0	788
RCU (Remote Control	167.00	12	335	0.002	2	10
Powerwave Allgon TT0	167.00	132	3,681	0.019	17	113
Ericsson RRUS 11 B2	167.00	304	8,484	0.043	39	261
KMW AM-X-CD-17-65-00	167.00	31	859	0.004	4	26
Powerwave Allgon P90	167.00	90	2,510	0.013	12	77
Kathrein Scala 800-1	167.00	110	3,073	0.016	14	95
Raycap DC6-48-60-18-	162.00	32	835	0.004	4	27
Stand-Off	157.00	225	5,546	0.028	26	193
Andrew DBXNH-6565A-V	157.00	103	2,529	0.013	12	88
Stand-Off	146.00	225	4,796	0.025	22	193
Antel BXA-70063/6CF	146.00	51	1,087	0.006	5	44
VZW Unused Reserve:	146.00	1,096	23,371	0.119	108	942
E-911 GPS	136.00	5	92	0.000	0	4
Ericsson RRUS 11 B12	136.00	152	2,813	0.014	13	131
Ericsson RRUS 11 B2	136.00	152	2,813	0.014	13	131
RFS APXV18-206516S-C	136.00	56	1,038	0.005	5	48
Commscope LNX-6515DS	136.00	131	2,425	0.012	11	113
Flat T-Arm	136.00	750	13,872	0.071	64	644
		23,077	195,604	1.000	900	19,829

Site Number: 413782

Code: ANSI/TIA-222-G

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Site Name: Washington North CT, CT

Engineering Number: 66417723

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Customer: T-Mobile

**Load Case (1.2 + 0.2Sds) \* DL + E ELFM**

**Seismic Equivalent Lateral Forces Method**

**Calculated Forces**

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-26.61	-0.81	0.00	-101.73	0.00	101.73	2,995.17	1,497.58	5,752.58	2,880.56	0.00	0.00	0.044
5.00	-25.49	-0.81	0.00	-97.68	0.00	97.68	2,959.81	1,479.91	5,567.76	2,788.02	0.01	-0.01	0.044
10.00	-24.40	-0.82	0.00	-93.61	0.00	93.61	2,923.38	1,461.69	5,383.76	2,695.88	0.02	-0.02	0.043
15.00	-23.32	-0.82	0.00	-89.52	0.00	89.52	2,885.88	1,442.94	5,200.69	2,604.21	0.05	-0.03	0.042
20.00	-22.26	-0.82	0.00	-85.41	0.00	85.41	2,847.29	1,423.65	5,018.68	2,513.07	0.10	-0.05	0.042
25.00	-21.22	-0.82	0.00	-81.29	0.00	81.29	2,807.63	1,403.81	4,837.86	2,422.53	0.15	-0.06	0.041
30.00	-20.20	-0.82	0.00	-77.17	0.00	77.17	2,766.89	1,383.44	4,658.36	2,332.64	0.22	-0.07	0.040
35.00	-19.21	-0.82	0.00	-73.05	0.00	73.05	2,725.06	1,362.53	4,480.31	2,243.49	0.30	-0.08	0.040
40.00	-18.23	-0.82	0.00	-68.94	0.00	68.94	2,682.17	1,341.08	4,303.83	2,155.12	0.39	-0.10	0.039
45.00	-18.01	-0.82	0.00	-64.86	0.00	64.86	2,638.19	1,319.10	4,129.06	2,067.60	0.50	-0.11	0.038
46.12	-16.77	-0.81	0.00	-63.94	0.00	63.94	2,628.22	1,314.11	4,090.25	2,048.17	0.52	-0.11	0.038
50.00	-16.32	-0.80	0.00	-60.81	0.00	60.81	2,593.14	1,296.57	3,956.11	1,981.00	0.62	-0.12	0.037
51.46	-15.75	-0.80	0.00	-59.64	0.00	59.64	1,919.32	959.66	2,955.63	1,480.01	0.65	-0.12	0.049
55.00	-14.98	-0.79	0.00	-56.82	0.00	56.82	1,899.39	949.70	2,871.79	1,438.03	0.75	-0.13	0.047
60.00	-14.21	-0.78	0.00	-52.87	0.00	52.87	1,870.33	935.17	2,753.97	1,379.03	0.90	-0.15	0.046
65.00	-13.47	-0.77	0.00	-48.96	0.00	48.96	1,840.20	920.10	2,636.91	1,320.41	1.06	-0.17	0.044
70.00	-12.74	-0.76	0.00	-45.11	0.00	45.11	1,808.98	904.49	2,520.72	1,262.23	1.25	-0.18	0.043
75.00	-12.02	-0.74	0.00	-41.33	0.00	41.33	1,776.69	888.34	2,405.54	1,204.56	1.44	-0.20	0.041
80.00	-11.32	-0.73	0.00	-37.62	0.00	37.62	1,743.32	871.66	2,291.50	1,147.45	1.66	-0.21	0.039
85.00	-10.64	-0.71	0.00	-33.99	0.00	33.99	1,708.87	854.43	2,178.71	1,090.98	1.89	-0.23	0.037
90.00	-10.29	-0.70	0.00	-30.46	0.00	30.46	1,673.34	836.67	2,067.32	1,035.20	2.14	-0.24	0.036
92.65	-9.80	-0.68	0.00	-28.62	0.00	28.62	1,654.10	827.05	2,008.98	1,005.98	2.27	-0.25	0.034
95.00	-9.41	-0.66	0.00	-27.02	0.00	27.02	1,636.74	818.37	1,957.44	980.18	2.40	-0.26	0.033
96.93	-9.08	-0.65	0.00	-25.74	0.00	25.74	1,103.35	551.67	1,325.55	663.76	2.51	-0.26	0.047
100.00	-8.55	-0.63	0.00	-23.73	0.00	23.73	1,091.13	545.56	1,284.38	643.14	2.68	-0.27	0.045
105.00	-8.04	-0.61	0.00	-20.57	0.00	20.57	1,070.38	535.19	1,217.67	609.74	2.98	-0.29	0.041
110.00	-7.54	-0.59	0.00	-17.52	0.00	17.52	1,048.55	524.27	1,151.42	576.56	3.29	-0.31	0.038
115.00	-7.05	-0.56	0.00	-14.59	0.00	14.59	1,025.64	512.82	1,085.75	543.68	3.62	-0.32	0.034
120.00	-6.58	-0.53	0.00	-11.79	0.00	11.79	1,001.65	500.83	1,020.79	511.15	3.97	-0.34	0.030
125.00	-6.12	-0.50	0.00	-9.13	0.00	9.13	976.59	488.30	956.67	479.05	4.33	-0.35	0.025
130.00	-5.66	-0.47	0.00	-6.61	0.00	6.61	950.45	475.22	893.52	447.42	4.71	-0.36	0.021
135.00	-5.57	-0.47	0.00	-4.25	0.00	4.25	923.23	461.61	831.46	416.35	5.09	-0.37	0.016
136.00	-3.69	-0.32	0.00	-3.78	0.00	3.78	917.66	458.83	819.19	410.21	5.17	-0.37	0.013
140.00	-3.68	-0.32	0.00	-2.49	0.00	2.49	894.93	447.47	770.63	385.89	5.49	-0.38	0.011
140.02	-3.25	-0.29	0.00	-2.48	0.00	2.48	894.81	447.41	770.38	385.76	5.49	-0.38	0.010
143.22	-3.10	-0.28	0.00	-1.56	0.00	1.56	887.67	443.84	755.59	378.35	5.74	-0.38	0.008
145.00	-3.01	-0.27	0.00	-1.07	0.00	1.07	877.23	438.62	734.36	367.72	5.88	-0.38	0.006
146.00	-1.01	-0.10	0.00	-0.80	0.00	0.80	871.31	435.66	722.52	361.80	5.96	-0.38	0.003
150.00	-0.64	-0.06	0.00	-0.41	0.00	0.41	847.20	423.60	675.75	338.38	6.28	-0.38	0.002
155.00	-0.50	-0.05	0.00	-0.10	0.00	0.10	816.09	408.05	618.71	309.81	6.69	-0.38	0.001
157.00	0.00	0.00	0.00	0.00	0.00	0.00	800.73	400.36	594.40	297.64	6.85	-0.38	0.000
158.56	0.00	0.00	0.00	0.00	0.00	0.00	787.55	393.77	574.90	287.88	6.97	-0.38	0.000

Site Number: 413782

Code: ANSI/TIA-222-G

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Site Name: Washington North CT, CT

Engineering Number: 66417723

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Customer: T- Mobile

**Load Case (0.9 - 0.2Sds) \* DL + E ELFM**

**Seismic (Reduced DL) Equivalent Lateral Forces Method**

**Calculated Forces**

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-18.43	-0.81	0.00	-100.21	0.00	100.21	2,995.17	1,497.58	5,752.58	2,880.56	0.00	0.00	0.041
5.00	-17.66	-0.81	0.00	-96.16	0.00	96.16	2,959.81	1,479.91	5,567.76	2,788.02	0.01	-0.01	0.040
10.00	-16.90	-0.82	0.00	-92.10	0.00	92.10	2,923.38	1,461.69	5,383.76	2,695.88	0.02	-0.02	0.040
15.00	-16.15	-0.82	0.00	-88.02	0.00	88.02	2,885.88	1,442.94	5,200.69	2,604.21	0.05	-0.03	0.039
20.00	-15.42	-0.82	0.00	-83.94	0.00	83.94	2,847.29	1,423.65	5,018.68	2,513.07	0.09	-0.05	0.039
25.00	-14.70	-0.82	0.00	-79.85	0.00	79.85	2,807.63	1,403.81	4,837.86	2,422.53	0.15	-0.06	0.038
30.00	-13.99	-0.82	0.00	-75.77	0.00	75.77	2,766.89	1,383.44	4,658.36	2,332.64	0.21	-0.07	0.038
35.00	-13.30	-0.81	0.00	-71.69	0.00	71.69	2,725.06	1,362.53	4,480.31	2,243.49	0.29	-0.08	0.037
40.00	-12.62	-0.81	0.00	-67.64	0.00	67.64	2,682.17	1,341.08	4,303.83	2,155.12	0.38	-0.09	0.036
45.00	-12.47	-0.81	0.00	-63.60	0.00	63.60	2,638.19	1,319.10	4,129.06	2,067.60	0.49	-0.11	0.035
46.12	-11.62	-0.80	0.00	-62.70	0.00	62.70	2,628.22	1,314.11	4,090.25	2,048.17	0.51	-0.11	0.035
50.00	-11.30	-0.79	0.00	-59.61	0.00	59.61	2,593.14	1,296.57	3,956.11	1,981.00	0.61	-0.12	0.034
51.46	-10.91	-0.79	0.00	-58.45	0.00	58.45	1,919.32	959.66	2,955.63	1,480.01	0.64	-0.12	0.045
55.00	-10.37	-0.78	0.00	-55.67	0.00	55.67	1,899.39	949.70	2,871.79	1,438.03	0.74	-0.13	0.044
60.00	-9.84	-0.77	0.00	-51.78	0.00	51.78	1,870.33	935.17	2,753.97	1,379.03	0.88	-0.15	0.043
65.00	-9.33	-0.76	0.00	-47.93	0.00	47.93	1,840.20	920.10	2,636.91	1,320.41	1.05	-0.16	0.041
70.00	-8.82	-0.74	0.00	-44.15	0.00	44.15	1,808.98	904.49	2,520.72	1,262.23	1.22	-0.18	0.040
75.00	-8.33	-0.73	0.00	-40.43	0.00	40.43	1,776.69	888.34	2,405.54	1,204.56	1.42	-0.19	0.038
80.00	-7.84	-0.71	0.00	-36.79	0.00	36.79	1,743.32	871.66	2,291.50	1,147.45	1.63	-0.21	0.037
85.00	-7.37	-0.69	0.00	-33.23	0.00	33.23	1,708.87	854.43	2,178.71	1,090.98	1.86	-0.22	0.035
90.00	-7.12	-0.68	0.00	-29.77	0.00	29.77	1,673.34	836.67	2,067.32	1,035.20	2.10	-0.24	0.033
92.65	-6.79	-0.67	0.00	-27.97	0.00	27.97	1,654.10	827.05	2,008.98	1,005.98	2.23	-0.25	0.032
95.00	-6.51	-0.65	0.00	-26.40	0.00	26.40	1,636.74	818.37	1,957.44	980.18	2.36	-0.25	0.031
96.93	-6.29	-0.64	0.00	-25.15	0.00	25.15	1,103.35	551.67	1,325.55	663.76	2.46	-0.26	0.044
100.00	-5.92	-0.62	0.00	-23.18	0.00	23.18	1,091.13	545.56	1,284.38	643.14	2.63	-0.27	0.041
105.00	-5.57	-0.60	0.00	-20.09	0.00	20.09	1,070.38	535.19	1,217.67	609.74	2.92	-0.29	0.038
110.00	-5.22	-0.57	0.00	-17.11	0.00	17.11	1,048.55	524.27	1,151.42	576.56	3.23	-0.30	0.035
115.00	-4.88	-0.55	0.00	-14.25	0.00	14.25	1,025.64	512.82	1,085.75	543.68	3.55	-0.32	0.031
120.00	-4.56	-0.52	0.00	-11.51	0.00	11.51	1,001.65	500.83	1,020.79	511.15	3.89	-0.33	0.027
125.00	-4.23	-0.49	0.00	-8.91	0.00	8.91	976.59	488.30	956.67	479.05	4.25	-0.34	0.023
130.00	-3.92	-0.46	0.00	-6.45	0.00	6.45	950.45	475.22	893.52	447.42	4.62	-0.36	0.019
135.00	-3.86	-0.45	0.00	-4.15	0.00	4.15	923.23	461.61	831.46	416.35	4.99	-0.36	0.014
136.00	-2.55	-0.32	0.00	-3.70	0.00	3.70	917.66	458.83	819.19	410.21	5.07	-0.37	0.012
140.00	-2.55	-0.32	0.00	-2.43	0.00	2.43	894.93	447.47	770.63	385.89	5.38	-0.37	0.009
140.02	-2.25	-0.28	0.00	-2.42	0.00	2.42	894.81	447.41	770.38	385.76	5.38	-0.37	0.009
143.22	-2.14	-0.27	0.00	-1.52	0.00	1.52	887.67	443.84	755.59	378.35	5.63	-0.37	0.006
145.00	-2.09	-0.26	0.00	-1.04	0.00	1.04	877.23	438.62	734.36	367.72	5.77	-0.37	0.005
146.00	-0.70	-0.09	0.00	-0.78	0.00	0.78	871.31	435.66	722.52	361.80	5.85	-0.37	0.003
150.00	-0.44	-0.06	0.00	-0.40	0.00	0.40	847.20	423.60	675.75	338.38	6.16	-0.38	0.002
155.00	-0.34	-0.05	0.00	-0.10	0.00	0.10	816.09	408.05	618.71	309.81	6.55	-0.38	0.001
157.00	0.00	0.00	0.00	0.00	0.00	0.00	800.73	400.36	594.40	297.64	6.71	-0.38	0.000
158.56	0.00	0.00	0.00	0.00	0.00	0.00	787.55	393.77	574.90	287.88	6.83	-0.38	0.000

Site Number: 413782

Code: ANSI/TIA-222-G

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Site Name: Washington North CT, CT

Engineering Number: 66417723

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Customer: T-Mobile

### Equivalent Modal Forces Analysis

(Based on ASCE7-10 Chapters 11, 12 & 15 and ANSI/TIA-G, section 2.7)

Spectral Response Acceleration for Short Period ( $S_s$ ):	0.19
Spectral Response Acceleration at 1.0 Second Period ( $S_1$ ):	0.06
Importance Factor ( $I_E$ ):	1.00
Site Coefficient $F_a$ :	1.60
Site Coefficient $F_v$ :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period ( $S_{ds}$ ):	0.20
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.10
Period Based on Rayleigh Method (sec):	2.63
Redundancy Factor ( $\rho$ ):	1.30

#### Load Case (1.2 + 0.2Sds) \* DL + E EMAM

#### Seismic Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
41	157.78	74	1.871	1.883	1.105	0.372	24	92
40	156.00	116	1.829	1.676	1.029	0.344	35	144
39	152.50	297	1.748	1.314	0.891	0.292	75	368
38	148.00	244	1.647	0.930	0.735	0.230	49	303
37	145.50	67	1.591	0.752	0.658	0.198	12	83
36	144.11	120	1.561	0.663	0.619	0.182	19	149
35	141.62	353	1.508	0.520	0.552	0.153	47	438
34	140.01	1	1.474	0.438	0.512	0.136	0	2
33	138.00	276	1.432	0.346	0.465	0.115	28	343
32	135.50	72	1.380	0.247	0.412	0.091	6	89
31	132.50	364	1.320	0.149	0.354	0.065	20	452
30	127.50	374	1.222	0.026	0.272	0.027	9	464
29	122.50	383	1.128	-0.053	0.205	-0.004	-1	476
28	117.50	393	1.038	-0.098	0.151	-0.028	-10	488
27	112.50	403	0.951	-0.119	0.109	-0.044	-15	500
26	107.50	412	0.869	-0.121	0.076	-0.053	-19	512
25	102.50	422	0.790	-0.110	0.051	-0.055	-20	524
24	98.46	264	0.729	-0.095	0.036	-0.051	-12	328
23	95.96	318	0.692	-0.084	0.028	-0.046	-13	395
22	93.82	393	0.662	-0.075	0.023	-0.041	-14	488
21	91.32	286	0.627	-0.063	0.018	-0.034	-8	354
20	87.50	550	0.576	-0.044	0.012	-0.020	-10	682
19	82.50	563	0.512	-0.020	0.008	-0.001	-1	698
18	77.50	576	0.452	0.001	0.006	0.018	9	714
17	72.50	588	0.395	0.020	0.007	0.033	17	730
16	67.50	601	0.343	0.035	0.009	0.045	23	746
15	62.50	614	0.294	0.047	0.013	0.052	28	762
14	57.50	627	0.249	0.056	0.017	0.056	31	778
13	53.23	452	0.213	0.061	0.022	0.058	23	561
12	50.73	370	0.193	0.064	0.024	0.058	19	459
11	48.06	997	0.174	0.066	0.027	0.058	50	1,238
10	45.56	174	0.156	0.067	0.029	0.058	9	216
9	42.50	788	0.136	0.069	0.032	0.057	39	978
8	37.50	804	0.106	0.071	0.036	0.056	39	998

Site Number: 413782

Code: ANSI/TIA-222-G

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Site Name: Washington North CT, CT

Engineering Number: 66417723

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Customer: T-Mobile

7	32.50	820	0.079	0.072	0.040	0.055	39	1,018
6	27.50	837	0.057	0.071	0.042	0.053	39	1,038
5	22.50	853	0.038	0.070	0.041	0.052	38	1,058
4	17.50	869	0.023	0.066	0.039	0.049	37	1,078
3	12.50	885	0.012	0.057	0.033	0.044	34	1,098
2	7.50	901	0.004	0.042	0.024	0.035	27	1,118
1	2.50	917	0.000	0.017	0.009	0.016	13	1,138
RCU (Remote Control	167.00	12	2.096	3.257	1.576	0.535	6	15
Powerwave Allgon TT0	167.00	132	2.096	3.257	1.576	0.535	61	164
Ericsson RRUS 11 B2	167.00	304	2.096	3.257	1.576	0.535	141	377
KMW AM-X-CD-17-65-00	167.00	31	2.096	3.257	1.576	0.535	14	38
Powerwave Allgon P90	167.00	90	2.096	3.257	1.576	0.535	42	112
Kathrein Scala 800-1	167.00	110	2.096	3.257	1.576	0.535	51	137
Raycap DC6-48-60-18-	162.00	32	1.973	2.446	1.304	0.443	12	39
Stand-Off	157.00	225	1.853	1.790	1.071	0.360	70	279
Andrew DBXNH-6565A-	157.00	103	1.853	1.790	1.071	0.360	32	127
Stand-Off	146.00	225	1.602	0.786	0.673	0.204	40	279
Antel BXA-70063/6CF	146.00	51	1.602	0.786	0.673	0.204	9	63
VZW Unused Reserve:	146.00	1,096	1.602	0.786	0.673	0.204	194	1,360
E-911 GPS	136.00	5	1.390	0.266	0.422	0.096	0	6
Ericsson RRUS 11 B12	136.00	152	1.390	0.266	0.422	0.096	13	189
Ericsson RRUS 11 B2	136.00	152	1.390	0.266	0.422	0.096	13	189
RFS APXV18-206516S-C	136.00	56	1.390	0.266	0.422	0.096	5	70
Commscope LNX-	136.00	131	1.390	0.266	0.422	0.096	11	163
Flat T-Arm	136.00	750	1.390	0.266	0.422	0.096	62	931
		23,077	61.486	38.533	26.219	8.239	1,487	28,633

**Load Case (0.9 - 0.2Sds) \* DL + E EMAM**

**Seismic (Reduced DL) Equivalent Modal Analysis Method**

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
41	157.78	74	1.871	1.883	1.105	0.372	24	64
40	156.00	116	1.829	1.676	1.029	0.344	35	100
39	152.50	297	1.748	1.314	0.891	0.292	75	255
38	148.00	244	1.647	0.930	0.735	0.230	49	210
37	145.50	67	1.591	0.752	0.658	0.198	12	58
36	144.11	120	1.561	0.663	0.619	0.182	19	103
35	141.62	353	1.508	0.520	0.552	0.153	47	303
34	140.01	1	1.474	0.438	0.512	0.136	0	1
33	138.00	276	1.432	0.346	0.465	0.115	28	237
32	135.50	72	1.380	0.247	0.412	0.091	6	62
31	132.50	364	1.320	0.149	0.354	0.065	20	313
30	127.50	374	1.222	0.026	0.272	0.027	9	321
29	122.50	383	1.128	-0.053	0.205	-0.004	-1	329
28	117.50	393	1.038	-0.098	0.151	-0.028	-10	338
27	112.50	403	0.951	-0.119	0.109	-0.044	-15	346
26	107.50	412	0.869	-0.121	0.076	-0.053	-19	354
25	102.50	422	0.790	-0.110	0.051	-0.055	-20	363
24	98.46	264	0.729	-0.095	0.036	-0.051	-12	227
23	95.96	318	0.692	-0.084	0.028	-0.046	-13	273
22	93.82	393	0.662	-0.075	0.023	-0.041	-14	338
21	91.32	286	0.627	-0.063	0.018	-0.034	-8	245
20	87.50	550	0.576	-0.044	0.012	-0.020	-10	472
19	82.50	563	0.512	-0.020	0.008	-0.001	-1	483
18	77.50	576	0.452	0.001	0.006	0.018	9	495
17	72.50	588	0.395	0.020	0.007	0.033	17	506
16	67.50	601	0.343	0.035	0.009	0.045	23	517
15	62.50	614	0.294	0.047	0.013	0.052	28	528
14	57.50	627	0.249	0.056	0.017	0.056	31	539

Site Number: 413782

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Site Name: Washington North CT, CT

Engineering Number: 66417723

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Customer: T- Mobile

13	53.23	452	0.213	0.061	0.022	0.058	23	388
12	50.73	370	0.193	0.064	0.024	0.058	19	318
11	48.06	997	0.174	0.066	0.027	0.058	50	857
10	45.56	174	0.156	0.067	0.029	0.058	9	149
9	42.50	788	0.136	0.069	0.032	0.057	39	677
8	37.50	804	0.106	0.071	0.036	0.056	39	691
7	32.50	820	0.079	0.072	0.040	0.055	39	705
6	27.50	837	0.057	0.071	0.042	0.053	39	719
5	22.50	853	0.038	0.070	0.041	0.052	38	733
4	17.50	869	0.023	0.066	0.039	0.049	37	746
3	12.50	885	0.012	0.057	0.033	0.044	34	760
2	7.50	901	0.004	0.042	0.024	0.035	27	774
1	2.50	917	0.000	0.017	0.009	0.016	13	788
RCU (Remote Control	167.00	12	2.096	3.257	1.576	0.535	6	10
Powerwave Allgon TT0	167.00	132	2.096	3.257	1.576	0.535	61	113
Ericsson RRUS 11 B2	167.00	304	2.096	3.257	1.576	0.535	141	261
KMW AM-X-CD-17-65-00	167.00	31	2.096	3.257	1.576	0.535	14	26
Powerwave Allgon P90	167.00	90	2.096	3.257	1.576	0.535	42	77
Kathrein Scala 800-1	167.00	110	2.096	3.257	1.576	0.535	51	95
Raycap DC6-48-60-18-	162.00	32	1.973	2.446	1.304	0.443	12	27
Stand-Off	157.00	225	1.853	1.790	1.071	0.360	70	193
Andrew DBXNH-6565A-	157.00	103	1.853	1.790	1.071	0.360	32	88
Stand-Off	146.00	225	1.602	0.786	0.673	0.204	40	193
Antel BXA-70063/6CF	146.00	51	1.602	0.786	0.673	0.204	9	44
VZW Unused Reserve:	146.00	1,096	1.602	0.786	0.673	0.204	194	942
E-911 GPS	136.00	5	1.390	0.266	0.422	0.096	0	4
Ericsson RRUS 11 B12	136.00	152	1.390	0.266	0.422	0.096	13	131
Ericsson RRUS 11 B2	136.00	152	1.390	0.266	0.422	0.096	13	131
RFS APXV18-206516S-C	136.00	56	1.390	0.266	0.422	0.096	5	48
Commscope LNX-	136.00	131	1.390	0.266	0.422	0.096	11	113
Flat T-Arm	136.00	750	1.390	0.266	0.422	0.096	62	644
		23,077	61.486	38.533	26.219	8.239	1,487	19,829

Site Number: 413782

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Site Name: Washington North CT, CT

Engineering Number: 66417723

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Customer: T- Mobile

**Load Case (1.2 + 0.2Sds) \* DL + E EMAM**

**Seismic Equivalent Modal Analysis Method**

**Calculated Forces**

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-26.61	-1.15	0.00	-124.41	0.00	124.41	2,995.17	1,497.58	5,752.58	2,880.56	0.00	0.00	0.052
5.00	-25.49	-1.13	0.00	-118.67	0.00	118.67	2,959.81	1,479.91	5,567.76	2,788.02	0.01	-0.01	0.051
10.00	-24.40	-1.10	0.00	-113.02	0.00	113.02	2,923.38	1,461.69	5,383.76	2,695.88	0.03	-0.03	0.050
15.00	-23.32	-1.07	0.00	-107.52	0.00	107.52	2,885.88	1,442.94	5,200.69	2,604.21	0.06	-0.04	0.049
20.00	-22.26	-1.03	0.00	-102.18	0.00	102.18	2,847.29	1,423.65	5,018.68	2,513.07	0.12	-0.06	0.048
25.00	-21.22	-1.00	0.00	-97.01	0.00	97.01	2,807.63	1,403.81	4,837.86	2,422.53	0.18	-0.07	0.048
30.00	-20.20	-0.97	0.00	-92.00	0.00	92.00	2,766.89	1,383.44	4,658.36	2,332.64	0.26	-0.08	0.047
35.00	-19.21	-0.93	0.00	-87.18	0.00	87.18	2,725.06	1,362.53	4,480.31	2,243.49	0.36	-0.10	0.046
40.00	-18.23	-0.89	0.00	-82.53	0.00	82.53	2,682.17	1,341.08	4,303.83	2,155.12	0.47	-0.11	0.045
45.00	-18.01	-0.89	0.00	-78.06	0.00	78.06	2,638.19	1,319.10	4,129.06	2,067.60	0.60	-0.13	0.045
46.12	-16.77	-0.84	0.00	-77.07	0.00	77.07	2,628.22	1,314.11	4,090.25	2,048.17	0.63	-0.13	0.044
50.00	-16.31	-0.82	0.00	-73.82	0.00	73.82	2,593.14	1,296.57	3,956.11	1,981.00	0.74	-0.15	0.044
51.46	-15.75	-0.80	0.00	-72.62	0.00	72.62	1,919.32	959.66	2,955.63	1,480.01	0.79	-0.15	0.057
55.00	-14.98	-0.77	0.00	-69.80	0.00	69.80	1,899.39	949.70	2,871.79	1,438.03	0.90	-0.16	0.056
60.00	-14.21	-0.74	0.00	-65.96	0.00	65.96	1,870.33	935.17	2,753.97	1,379.03	1.08	-0.18	0.055
65.00	-13.47	-0.72	0.00	-62.24	0.00	62.24	1,840.20	920.10	2,636.91	1,320.41	1.28	-0.20	0.054
70.00	-12.74	-0.71	0.00	-58.63	0.00	58.63	1,808.98	904.49	2,520.72	1,262.23	1.50	-0.22	0.053
75.00	-12.02	-0.70	0.00	-55.09	0.00	55.09	1,776.69	888.34	2,405.54	1,204.56	1.74	-0.24	0.053
80.00	-11.32	-0.70	0.00	-51.59	0.00	51.59	1,743.32	871.66	2,291.50	1,147.45	2.01	-0.26	0.051
85.00	-10.64	-0.71	0.00	-48.08	0.00	48.08	1,708.87	854.43	2,178.71	1,090.98	2.30	-0.28	0.050
90.00	-10.29	-0.72	0.00	-44.52	0.00	44.52	1,673.34	836.67	2,067.32	1,035.20	2.61	-0.31	0.049
92.65	-9.80	-0.74	0.00	-42.61	0.00	42.61	1,654.10	827.05	2,008.98	1,005.98	2.78	-0.32	0.048
95.00	-9.40	-0.75	0.00	-40.88	0.00	40.88	1,636.74	818.37	1,957.44	980.18	2.94	-0.33	0.047
96.93	-9.08	-0.76	0.00	-39.44	0.00	39.44	1,103.35	551.67	1,325.55	663.76	3.07	-0.34	0.068
100.00	-8.55	-0.78	0.00	-37.11	0.00	37.11	1,091.13	545.56	1,284.38	643.14	3.30	-0.35	0.066
105.00	-8.04	-0.80	0.00	-33.21	0.00	33.21	1,070.38	535.19	1,217.67	609.74	3.68	-0.38	0.062
110.00	-7.54	-0.81	0.00	-29.22	0.00	29.22	1,048.55	524.27	1,151.42	576.56	4.09	-0.41	0.058
115.00	-7.05	-0.82	0.00	-25.15	0.00	25.15	1,025.64	512.82	1,085.75	543.68	4.53	-0.44	0.053
120.00	-6.58	-0.82	0.00	-21.03	0.00	21.03	1,001.65	500.83	1,020.79	511.15	5.00	-0.46	0.048
125.00	-6.11	-0.81	0.00	-16.91	0.00	16.91	976.59	488.30	956.67	479.05	5.50	-0.48	0.042
130.00	-5.66	-0.79	0.00	-12.84	0.00	12.84	950.45	475.22	893.52	447.42	6.02	-0.51	0.035
135.00	-5.57	-0.79	0.00	-8.88	0.00	8.88	923.23	461.61	831.46	416.35	6.56	-0.52	0.027
136.00	-3.68	-0.64	0.00	-8.09	0.00	8.09	917.66	458.83	819.19	410.21	6.67	-0.53	0.024
140.00	-3.68	-0.64	0.00	-5.54	0.00	5.54	894.93	447.47	770.63	385.89	7.11	-0.54	0.018
140.02	-3.24	-0.59	0.00	-5.52	0.00	5.52	894.81	447.41	770.38	385.76	7.12	-0.54	0.018
143.22	-3.09	-0.57	0.00	-3.64	0.00	3.64	887.67	443.84	755.59	378.35	7.48	-0.54	0.013
145.00	-3.01	-0.56	0.00	-2.63	0.00	2.63	877.23	438.62	734.36	367.72	7.68	-0.54	0.011
146.00	-1.01	-0.25	0.00	-2.08	0.00	2.08	871.31	435.66	722.52	361.80	7.79	-0.55	0.007
150.00	-0.64	-0.17	0.00	-1.09	0.00	1.09	847.20	423.60	675.75	338.38	8.25	-0.55	0.004
155.00	-0.50	-0.13	0.00	-0.26	0.00	0.26	816.09	408.05	618.71	309.81	8.83	-0.55	0.001
157.00	0.00	0.00	0.00	0.00	0.00	0.00	800.73	400.36	594.40	297.64	9.06	-0.55	0.000
158.56	0.00	0.00	0.00	0.00	0.00	0.00	787.55	393.77	574.90	287.88	9.24	-0.55	0.000

Site Number: 413782

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Site Name: Washington North CT, CT

Engineering Number: 66417723

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Customer: T- Mobile

**Load Case (0.9 - 0.2Sds) \* DL + E EMAM**

**Seismic (Reduced DL) Equivalent Modal Analysis Method**

**Calculated Forces**

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-18.43	-1.15	0.00	-122.46	0.00	122.46	2,995.17	1,497.58	5,752.58	2,880.56	0.00	0.00	0.049
5.00	-17.66	-1.13	0.00	-116.72	0.00	116.72	2,959.81	1,479.91	5,567.76	2,788.02	0.01	-0.01	0.048
10.00	-16.90	-1.10	0.00	-111.09	0.00	111.09	2,923.38	1,461.69	5,383.76	2,695.88	0.03	-0.03	0.047
15.00	-16.15	-1.06	0.00	-105.61	0.00	105.61	2,885.88	1,442.94	5,200.69	2,604.21	0.06	-0.04	0.046
20.00	-15.42	-1.03	0.00	-100.30	0.00	100.30	2,847.29	1,423.65	5,018.68	2,513.07	0.11	-0.05	0.045
25.00	-14.70	-0.99	0.00	-95.16	0.00	95.16	2,807.63	1,403.81	4,837.86	2,422.53	0.18	-0.07	0.045
30.00	-13.99	-0.96	0.00	-90.21	0.00	90.21	2,766.89	1,383.44	4,658.36	2,332.64	0.26	-0.08	0.044
35.00	-13.30	-0.92	0.00	-85.43	0.00	85.43	2,725.06	1,362.53	4,480.31	2,243.49	0.35	-0.10	0.043
40.00	-12.62	-0.88	0.00	-80.84	0.00	80.84	2,682.17	1,341.08	4,303.83	2,155.12	0.46	-0.11	0.042
45.00	-12.47	-0.87	0.00	-76.43	0.00	76.43	2,638.19	1,319.10	4,129.06	2,067.60	0.59	-0.13	0.042
46.12	-11.62	-0.82	0.00	-75.46	0.00	75.46	2,628.22	1,314.11	4,090.25	2,048.17	0.62	-0.13	0.041
50.00	-11.30	-0.81	0.00	-72.26	0.00	72.26	2,593.14	1,296.57	3,956.11	1,981.00	0.73	-0.14	0.041
51.46	-10.91	-0.78	0.00	-71.08	0.00	71.08	1,919.32	959.66	2,955.63	1,480.01	0.77	-0.15	0.054
55.00	-10.37	-0.75	0.00	-68.30	0.00	68.30	1,899.39	949.70	2,871.79	1,438.03	0.89	-0.16	0.053
60.00	-9.84	-0.73	0.00	-64.53	0.00	64.53	1,870.33	935.17	2,753.97	1,379.03	1.06	-0.18	0.052
65.00	-9.33	-0.71	0.00	-60.89	0.00	60.89	1,840.20	920.10	2,636.91	1,320.41	1.26	-0.20	0.051
70.00	-8.82	-0.69	0.00	-57.36	0.00	57.36	1,808.98	904.49	2,520.72	1,262.23	1.47	-0.22	0.050
75.00	-8.33	-0.68	0.00	-53.90	0.00	53.90	1,776.69	888.34	2,405.54	1,204.56	1.71	-0.24	0.049
80.00	-7.84	-0.68	0.00	-50.49	0.00	50.49	1,743.32	871.66	2,291.50	1,147.45	1.97	-0.26	0.049
85.00	-7.37	-0.69	0.00	-47.07	0.00	47.07	1,708.87	854.43	2,178.71	1,090.98	2.25	-0.28	0.047
90.00	-7.12	-0.70	0.00	-43.59	0.00	43.59	1,673.34	836.67	2,067.32	1,035.20	2.56	-0.30	0.046
92.65	-6.79	-0.72	0.00	-41.73	0.00	41.73	1,654.10	827.05	2,008.98	1,005.98	2.72	-0.31	0.046
95.00	-6.51	-0.73	0.00	-40.04	0.00	40.04	1,636.74	818.37	1,957.44	980.18	2.88	-0.32	0.045
96.93	-6.28	-0.74	0.00	-38.64	0.00	38.64	1,103.35	551.67	1,325.55	663.76	3.01	-0.33	0.064
100.00	-5.92	-0.76	0.00	-36.36	0.00	36.36	1,091.13	545.56	1,284.38	643.14	3.23	-0.34	0.062
105.00	-5.57	-0.78	0.00	-32.55	0.00	32.55	1,070.38	535.19	1,217.67	609.74	3.61	-0.37	0.059
110.00	-5.22	-0.80	0.00	-28.65	0.00	28.65	1,048.55	524.27	1,151.42	576.56	4.01	-0.40	0.055
115.00	-4.88	-0.81	0.00	-24.66	0.00	24.66	1,025.64	512.82	1,085.75	543.68	4.45	-0.43	0.050
120.00	-4.55	-0.81	0.00	-20.63	0.00	20.63	1,001.65	500.83	1,020.79	511.15	4.91	-0.45	0.045
125.00	-4.23	-0.80	0.00	-16.60	0.00	16.60	976.59	488.30	956.67	479.05	5.39	-0.47	0.039
130.00	-3.92	-0.78	0.00	-12.61	0.00	12.61	950.45	475.22	893.52	447.42	5.90	-0.50	0.032
135.00	-3.86	-0.77	0.00	-8.74	0.00	8.74	923.23	461.61	831.46	416.35	6.43	-0.51	0.025
136.00	-2.55	-0.63	0.00	-7.97	0.00	7.97	917.66	458.83	819.19	410.21	6.54	-0.52	0.022
140.00	-2.55	-0.63	0.00	-5.45	0.00	5.45	894.93	447.47	770.63	385.89	6.97	-0.52	0.017
140.02	-2.24	-0.58	0.00	-5.44	0.00	5.44	894.81	447.41	770.38	385.76	6.97	-0.52	0.017
143.22	-2.14	-0.56	0.00	-3.59	0.00	3.59	887.67	443.84	755.59	378.35	7.33	-0.53	0.012
145.00	-2.08	-0.55	0.00	-2.60	0.00	2.60	877.23	438.62	734.36	367.72	7.53	-0.53	0.009
146.00	-0.70	-0.24	0.00	-2.05	0.00	2.05	871.31	435.66	722.52	361.80	7.64	-0.53	0.006
150.00	-0.44	-0.16	0.00	-1.08	0.00	1.08	847.20	423.60	675.75	338.38	8.09	-0.54	0.004
155.00	-0.34	-0.13	0.00	-0.26	0.00	0.26	816.09	408.05	618.71	309.81	8.65	-0.54	0.001
157.00	0.00	0.00	0.00	0.00	0.00	0.00	800.73	400.36	594.40	297.64	8.88	-0.54	0.000
158.56	0.00	0.00	0.00	0.00	0.00	0.00	787.55	393.77	574.90	287.88	9.05	-0.54	0.000



Site Number: 413782

Code: ANSI/TIA-222-G

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Site Name: Washington North CT, CT

Engineering Number: 66417723

5/16/2016 1:47:54 PM

Customer: T-Mobile

### Analysis Summary

Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	19.28	0.00	27.65	0.00	0.00	2279.81	96.93	0.97
0.9D + 1.6W	18.58	0.00	20.73	0.00	0.00	2166.03	96.93	0.92
1.2D + 1.0Di + 1.0Wi	3.64	0.00	46.88	0.00	0.00	428.95	96.93	0.19
(1.2 + 0.2Sds) * DL + E ELFM	0.81	0.00	26.61	0.00	0.00	101.73	51.46	0.05
(1.2 + 0.2Sds) * DL + E EMAM	1.15	0.00	26.61	0.00	0.00	124.41	96.93	0.07
(0.9 - 0.2Sds) * DL + E ELFM	0.81	0.00	18.43	0.00	0.00	100.21	51.46	0.05
(0.9 - 0.2Sds) * DL + E EMAM	1.15	0.00	18.43	0.00	0.00	122.46	96.93	0.06
1.0D + 1.0W	4.63	0.00	23.07	0.00	0.00	544.49	96.93	0.24

Site Number: 413782

Code: ANSI/TIA-222-G

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Site Name: Washington North CT, CT

Engineering Number: 66417723

5/16/2016 1:47:54 PM

Customer: T- Mobile

**Base Summary**

**Reactions**

Original Design			Analysis			
Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment Design %
2,398.50	23.00	23.60	2,279.81	46.88	19.28	95.05

**Base Plate**

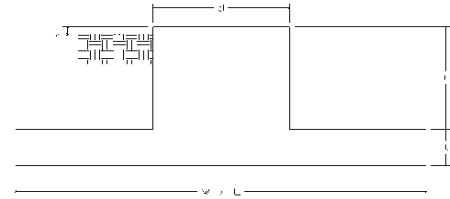
Yield (ksi)	Thick (in)	Width (in)	Style	Poly Sides	Clip Len (in)	Effective Len (in)	Mu (kip-in)	Phi Mn (kip-in)	Ratio
50.0	2.500	61.000	Round	0	0.00	9.323	509.13	655.54	0.78

**Anchor Bolts**

Bolt Circle	Num Bolts	Bolt Type	Bolt Dia (in)	Yield (ksi)	Ultimate (ksi)	Arrange	Cluster Dist (in)	Start Angle (deg)	Compression			Tension		
									Force (kip)	Allow (kip)	Ratio	Force (kip)	Allow (kip)	Ratio
55.00	16	2.25" 18J	2.25	75.00	100.00	Radial	0.00	0.0	127.28	260.00	0.50	121.42	260.00	0.48

Site Name: Washington North CT, CT  
 Site Number: 413782  
 Engineering Number: 66417723  
 Engineer: D. Wally  
 Date: 05/16/16  
 Tower Type: MP

Program Last Updated: #REF!



**Design Loads (Factored) - Analysis per TIA-222-G Standards**

Design / Analysis / Mapping:	Analysis		
Compression/Leg:	27.7 k	Concrete Strength ( $f'_c$ ):	4000 psi
Uplift/Leg:	0.0 k	Pad Tension Steel Depth:	32.00 in
Total Shear:	19.3 k	$\phi_{\text{Shear}}$ :	0.75
Moment:	2279.8 k-ft	$\phi_{\text{Flexure / Tension}}$ :	0.90
Tower + Appurtenance Weight:	27.7 k	$\phi_{\text{Compression}}$ :	0.65
Depth to Base of Foundation (l + t - h):	5.00 ft	$\beta$ :	0.85
Diameter of Pier (d):	7.00 ft	Bottom Pad Rebar Size #:	8
Height of Pier above Ground (h):	1.00	# of Bottom Pad Rebar:	40
Width of Pad (W):	23.00 ft	Pad Bottom Steel Area:	31.60 in <sup>2</sup>
Length of Pad (L):	23.00 ft	Pad Steel $F_y$ :	60000 psi
Thickness of Pad (t):	3.00 ft	Top Pad Rebar Size #:	8
Tower Leg Center to Center:	0.00 ft	# of Top Pad Rebar:	24
Number of Tower Legs:	1.0 (1 if MP or GT)	Pad Top Steel Area:	18.96 in <sup>2</sup>
Tower Center from Mat Center:	0.00 ft	Pier Rebar Size #:	8
Depth Below Ground Surface to Water Table:	99.00 ft	Pier Steel Area (Single Bar):	0.79 in <sup>2</sup>
Unit Weight of Concrete:	150.0 pcf	# of Pier Rebar:	30
Unit Weight of Soil Above Water Table:	120.0 pcf	Pier Steel $F_y$ :	60000 psi
Unit Weight of Water:	62.4 pcf	Pier Cage Diameter:	76.0 in
Unit Weight of Soil Below Water Table:	55.0 pcf	Rebar Strain Limit:	0.008
Friction Angle of Uplift:	15.0 Degrees	Steel Elastic Modulus:	29000 ksi
Ultimate Coefficient of Shear Friction:	0.50	Tie Rebar Size #:	4
Ultimate Compressive Bearing Pressure:	16000.0 psf	Tie Steel Area (Single Bar):	0.20 in <sup>2</sup>
Ultimate Passive Pressure on Pad Face:	0.0 psf	Tie Spacing:	6 in
$\phi_{\text{Soil and Concrete Weight}}$ :	0.9	Tie Steel $F_y$ :	60000 psi
$\phi_{\text{Soil}}$ :	0.75		

**Overturning Moment Usage**

Design OTM:	2395.6 k-ft
OTM Resistance:	4295.1 k-ft
Design OTM / OTM Resistance:	0.56 Result: OK

**Soil Bearing Pressure Usage**

Net Bearing Pressure:	1928 psf
Factored Nominal Bearing Pressure:	12000 psf
Net Bearing Pressure/Factored Nominal Bearing Pressure:	0.16 Result: OK
Load Direction Controlling Design Bearing Pressure:	Diagonal to Pad Edge

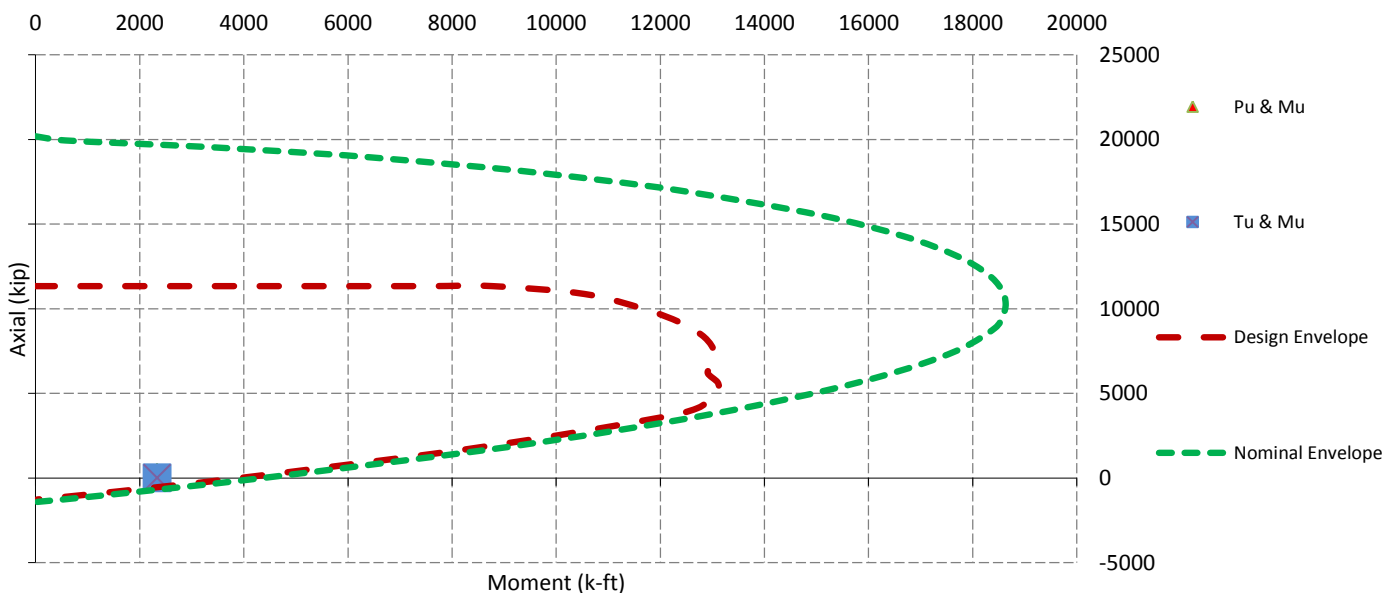
**Sliding Factor of Safety**

Total Factored Sliding Resistance:	148.6 k
Sliding Design / Sliding Resistance:	0.13 Result: OK

## One Way Shear, Flexural Capacity, and Punching Shear

Factored One Way Shear ( $V_u$ ):	124.9 k
One Way Shear Capacity ( $\phi V_c$ ):	735.6 k - ACI11.3.1.1
$V_u / \phi V_c$ :	0.17 Result: OK
Load Direction Controlling Shear Capacity:	Diagonal to Pad Edge
Lower Steel Pad Factored Moment ( $M_u$ ):	824.7 k-ft
Lower Steel Pad Moment Capacity ( $\phi M_n$ ):	4428.3 k-ft - ACI10.3
$M_u / \phi M_n$ :	0.19 Result: OK
Load Direction Controlling Flexural Capacity:	Parallel to Pad Edge
Upper Steel Pad Factored Moment ( $M_u$ ):	580.2 k-ft
Upper Steel Pad Moment Capacity ( $\phi M_n$ ):	2686.3 k-ft
$M_u / \phi M_n$ :	0.22 Result: OK
Lower Pad Flexural Reinforcement Ratio:	0.0036 OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Upper Pad Flexural Reinforcement Ratio:	0.0021 OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Lower Pad Reinforcement Spacing:	7 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Reinforcement Spacing:	12 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Factored Punching Shear ( $V_u$ ):	0.0 k
Nominal Punching Shear Capacity ( $\phi_c V_n$ ):	2212.6 k - ACI11.12.2.1
$V_u / \phi V_c$ :	0.00 Result: OK
Factored Moment in Pier ( $M_u$ ):	2337.7 k-ft
Pier Moment Capacity ( $\phi M_n$ ):	3966.6 k-ft
$M_u / \phi M_n$ :	0.59 Result: OK
Factored Shear in Pier ( $V_u$ ):	19.3 k
Pier Shear Capacity ( $\phi V_n$ ):	527.0 k
$V_u / \phi V_c$ :	0.04 Result: OK
Pier Shear Reinforcement Ratio:	0.0004 No Ties Necessary for Shear - ACI11.5.6.1
Factored Tension in Pier ( $T_u$ ):	0.0 k
Pier Tension Capacity ( $\phi T_n$ ):	1279.8 k
$T_u / \phi T_n$ :	0.00 Result: OK
Factored Compression in Pier ( $P_u$ ):	27.7 k
Pier Compression Capacity ( $\phi P_n$ ):	9755.9 k - ACI10.3.6.2
$P_u / \phi P_n$ :	0.00 Result: OK
$M_u / \phi_B M_n + T_u / \phi_T T_n$ :	0.59 Result: OK

Nominal and Design Moment Capacity and Factored Design Loads





**AMERICAN TOWER®**  
CORPORATION

**LETTER OF AUTHORIZATION**

**ATC SITE # / NAME: 413782/ Washington North CT**  
**SITE ADDRESS: 6 Mountain Road, New Preston, CT**  
**LICENSEE: T-Mobile Northeast LLC**

I, Margaret Robinson, Senior Counsel for American Tower\*, operator of the tower facility located at the address identified above (the "Tower Facility"), do hereby authorize **T-Mobile Northeast LLC**, successors and assigns, and/or its agent, (collectively, the "Licensee") to act as American Tower's non-exclusive agent for the sole purpose of filing and consummating any land-use or building permit application(s) as may be required by the applicable permitting authorities for Licensee's telecommunications' installation.

We understand that this application may be denied, modified or approved with conditions. The above authorization is limited to the acceptance by Licensee only of conditions related to Licensee's installation and any such conditions of approval or modifications will be Licensee's sole responsibility.

Signature:

Print Name: Margaret Robinson  
Senior Counsel  
American Tower\*

**NOTARY BLOCK**

Commonwealth of MASSACHUSETTS  
County of Middlesex

This instrument was acknowledged before me by Margaret Robinson, Senior Counsel for American Tower\*, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same.

WITNESS my hand and official seal, this 3<sup>rd</sup> day of June, 2016.

NOTARY SEAL



**SUSANA P. RIBEIRO**  
Notary Public  
Commonwealth of Massachusetts  
My Commission Expires  
March 16, 2018

Notary Public Susana Ribeiro  
My Commission Expires: March 16, 2018

\*American Tower includes all affiliates and subsidiaries of American Tower Corporation.

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

T-Mobile Existing Facility

Site ID: CTNH371A

MountainRd- Verizon Colo  
6 Mountain Road  
Washington, CT 06777

**June 6, 2016**

**EBI Project Number: 6216002714**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general public allowable limit:	<b>26.20 %</b>

June 6, 2016

T-Mobile USA  
Attn: Jason Overbey, RF Manager  
35 Griffin Road South  
Bloomfield, CT 06002

Emissions Analysis for Site: **CTNH371A – MountainRd- Verizon Colo**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **6 Mountain Road, Washington, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 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 public 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 public 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 limit for the 700 MHz Band is approximately 467  $\mu\text{W}/\text{cm}^2$ , and the general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) 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 **6 Mountain Road, Washington, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, 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 UMTS 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.
- 2) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 3) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.
- 4) 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.



- 5) For the following calculations the sample point was the top of a six-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB 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.
- 6) The antennas used in this modeling are the **RFS APXV18-206516S-C-A20** for 1900 MHz (PCS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **RFS APXV18-206516S-C-A20** has a maximum gain of **16.3 dBd** at its main lobe at 1900 MHz. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe at 700 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, 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.
- 7) The antenna mounting height centerlines of the proposed antennas are **134 & 136 feet** above ground level (AGL).
- 8) 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.

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

### T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APXV18-206516S-C-A20	Make / Model:	RFS APXV18-206516S-C-A20	Make / Model:	RFS APXV18-206516S-C-A20
Gain:	16.3 dBd	Gain:	16.3 dBd	Gain:	16.3 dBd
Height (AGL):	136	Height (AGL):	136	Height (AGL):	136
Frequency Bands	1900 MHz(PCS)	Frequency Bands	1900 MHz(PCS)	Frequency Bands	1900 MHz(PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	7,678.43	ERP (W):	7,678.43	ERP (W):	7,678.43
Antenna A1 MPE%	1.63	Antenna B1 MPE%	1.63	Antenna C1 MPE%	1.63
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	134	Height (AGL):	134	Height (AGL):	134
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A2 MPE%	0.41	Antenna B2 MPE%	0.41	Antenna C2 MPE%	0.41

Site Composite MPE%	
Carrier	MPE%
T-Mobile (Per Sector Max)	2.04 %
Verizon Wireless	16.13 %
AT&T	8.03 %
<b>Site Total MPE %:</b>	<b>26.20 %</b>

T-Mobile Sector 1 Total:	2.04 %
T-Mobile Sector 2 Total:	2.04 %
T-Mobile Sector 3 Total:	2.04 %
<b>Site Total:</b>	<b>26.20 %</b>

T-Mobile _Max per sector	# 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 1900 MHz (PCS) LTE	2	2559.48	136	10.89	1900	1000	1.09 %
T-Mobile 1900 MHz (PCS) UMTS	2	1279.74	136	5.44	1900	1000	0.54 %
T-Mobile 700 MHz LTE	1	865.21	134	1.90	700	467	0.41 %
						<b>Total:</b>	<b>2.04 %</b>

## Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public 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 public exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector 1:	2.04 %
Sector 2:	2.04 %
Sector 3:	2.04 %
T-Mobile Per Sector Maximum:	2.04 %
Site Total:	26.20 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **26.20%** of the allowable FCC established general public 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.