

September 9, 2020

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

Regarding: Notice of Exempt Modification – T-Mobile Site #: CT11491B_Anchor
Address: 305 West Service Road, Hartford, CT

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennae at the 125-foot level of the existing +/- 147.9-foot monopole tower at the above-referenced address, latitude 41.799500, longitude -72.656700. The tower is operated by American Tower Corporation.

T-Mobile now intends to modify its existing telecommunications facility by adding three (3) antennae, swapping three (3) antennae, adding three (3) remote radio units (RRU), swapping three (3) RRU, two (2) hybrid cables, adding three (3) mounting pipes and mount modifications as more particularly detailed and described in the enclosed Construction Drawings prepared by A.T. Engineering Service, PLLC, last revised September 3, 2020. The centerline height of the existing and proposed antennas is and will remain at 125 feet.

Planned Modifications:

Remove and Replace:

- (3) LNX-6515DS-A1M Antennae – remove; (3) APXVAARR24_43-U-NA20 Antennae – proposed/replace
- (3) Radio 4449 B12-B71 – remove; (3) Radio 4449 B71 B85 – proposed/replace

Add:

- (3) AIR6449B41 Antennae
- (3) RRUS 4415 B25
- (2) 1-1/4" Hybrid Cables
- (3) Mounting Pipes
- Mount modifications

Existing to Remain:

- (6) Antennae
- (3) TMA
- (12) 1-5/8" Coax
- (1) 1-5/8" Hybrid Cable
- (1) 1-1/4" Hybrid Cable

Please accept this letter as notification pursuant to R.C.S.A § 16-50j-73 for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to American Tower Corporation as tower operator, The Honorable Luke Bronin, Mayor of the City of Hartford as chief elected official, Aimee Chambers, AICP, Director of Planning for the City of Hartford and 305 W. Service Road Associates LLC as underlying property owner. Please note, the original tower approval was requested from the City of Hartford Planning Department. The City confirmed that no such records are on file for this site.

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

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require an extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. *Please see the RF emissions calculation for T-Mobile's modified facility dated August 10, 2020 and prepared by EBI Consulting enclosed herewith.*
5. The proposed modifications will not cause an ineligible change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading. *Please see the structural analysis dated September 3, 2020 and prepared by American Tower Corporation enclosed herewith.*

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

Respectfully submitted,



Jennifer Iliades
Site Acquisition Consultant
Centerline Communications, LLC
750 West Center Street, Suite 301
West Bridgewater, MA 02379
jiliades@clinellc.com

Enclosures: Exhibit A – Property Card and GIS
 Exhibit B – Construction Drawings
 Exhibit C – Structural Analysis Report
 Exhibit D – Mount Analysis
 Exhibit E – Power Density/RF Emissions Report

cc: American Tower Corporation, as tower operator
 The Honorable Luke Bronin, Mayor, City of Hartford, as chief elected official
 Aimee Chambers, AICP, Director of Planning, City of Hartford
 305 W. Service Road Associates LLC, underlying property owner

Exhibit A

Property Card

Unofficial Property Record Card - Hartford, CT

General Property Data

Parcel ID 304-074-014 Prior Parcel ID Property Owner 305 W SERVICE RD ASSOC LLC Mailing Address 305 W SERVICE RD City HARTFORD Mailing State CT Zip 06120-9555 ParcelZoning ID-1	Account Number Property Location 305 WEST SERVICE RD Property Use AUTO REPAIR Most Recent Sale Date 5/29/1998 Legal Reference 03960 0282 Grantor Sale Price 280,000 Land Area 85,813.000 acres
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Current Property Assessment

Card 1 Value	Building Value 0	Xtra Features Value 0	Land Value 0	Total Value 0
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Building Description

Building Style AUTO SERVICE # of Living Units 0 Year Built 1960 Building Grade Average Building Condition N/A Finished Area (SF) N/A Number Rooms 0 # of 3/4 Baths 0	Foundation Type Concrete Frame Type Steel Roof Structure FLAT Roof Cover Membrane Siding Conc Block Interior Walls DRYWALL # of Bedrooms 0 # of 1/2 Baths 0	Flooring Type CONCRETE Basement Floor CONCRETE Heating Type Warm Air Heating Fuel Gas Air Conditioning 0% # of Bsmt Garages 0 # of Full Baths 0 # of Other Fixtures 0
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Legal Description

Narrative Description of Property

This property contains 85,813.000 acres of land mainly classified as AUTO REPAIR with a(n) AUTO SERVICE style building, built about 1960 , having Conc Block exterior and Membrane roof cover, with 0 commercial unit(s) and 0 residential unit(s), 0 room(s), 0 bedroom(s), 0 bath(s), 0 half bath(s).

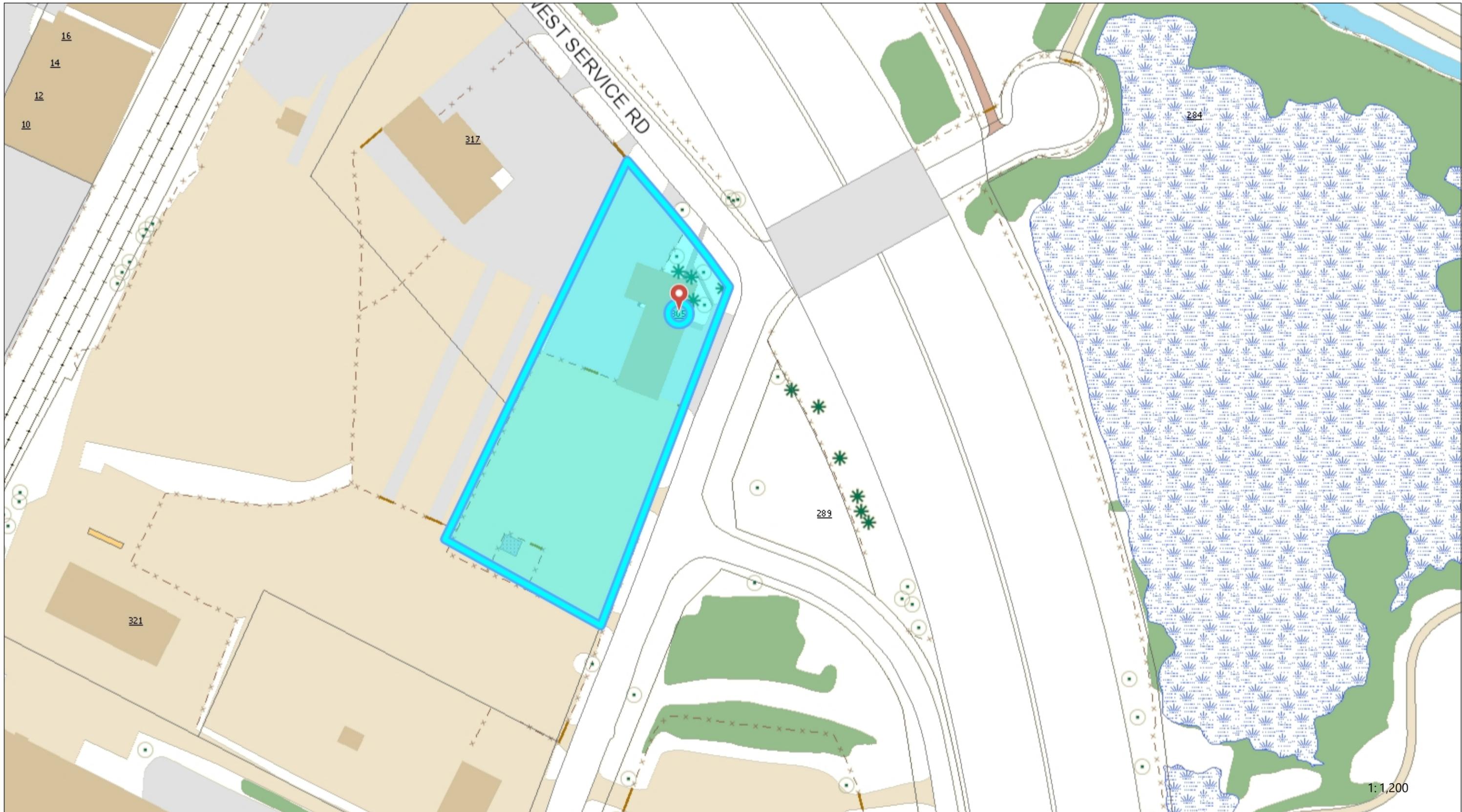
Property Images



Disclaimer: This information is believed to be correct but is subject to change and is not warranted.



City of Hartford - Property Map



1:1,200



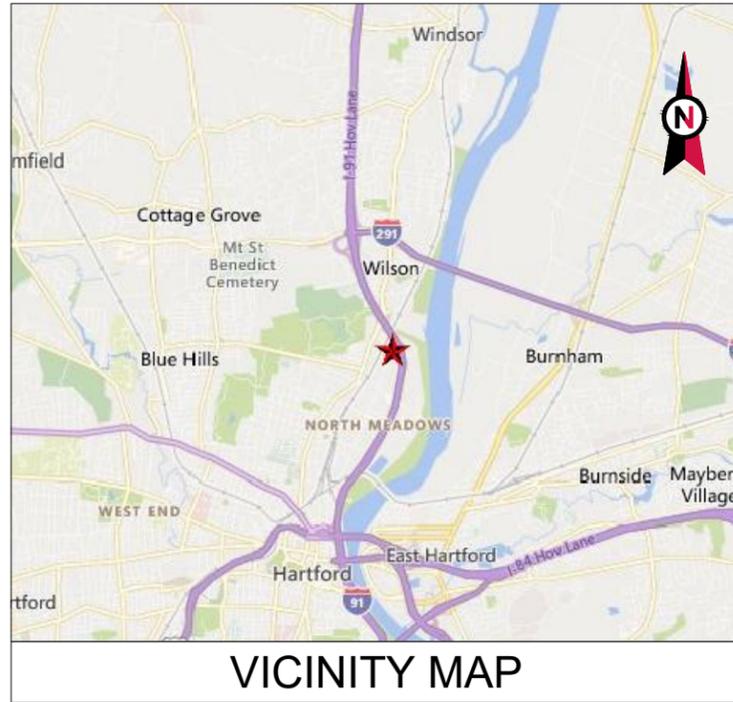
Date Printed: 9/19/2020

The planimetric information depicted on this map was compiled by The Sanborn Map Company and is based on an aerial flight performed in April 2015. In addition, the City's GIS staff has been updating limited planimetric features on a yearly basis. The intent of this map is to depict a graphical representation of real property information relative to the planimetric features for the City of Hartford and is subject to change as a more accurate survey may disclose. The City of Hartford and the mapping company assume no legal responsibility for the information contained in this data. THIS MAP IS NOT TO BE USED FOR THE TRANSFER OF PROPERTY



Exhibit B

Construction Drawings



VICINITY MAP



AMERICAN TOWER®

ATC SITE NAME: WEST SERVICE ROAD
 ATC SITE NUMBER: 302466
 T-MOBILE SITE NAME: CT491/SSITE HARTFORD_MP1
 T-MOBILE SITE NUMBER:CT11491B
 SITE ADDRESS: 305 W. SERVICE RD.
 HARTFORD, CT 06120



LOCATION MAP

**T-MOBILE ANCHOR ANTENNA AMENDMENT PLAN
 67D5A992DB OUTDOOR CONFIGURATION**

COMPLIANCE CODE	PROJECT SUMMARY	PROJECT DESCRIPTION	SHEET INDEX				
ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNMENT AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES. 1. INTERNATIONAL BUILDING CODE (IBC) 2. NATIONAL ELECTRIC CODE (NEC) 3. LOCAL BUILDING CODE 4. CITY/COUNTY ORDINANCES	<u>SITE ADDRESS:</u> 305 W. SERVICE RD. HARTFORD, CT 06120 COUNTY: HARTFORD <u>GEOGRAPHIC COORDINATES:</u> LATITUDE: 41.79953889 LONGITUDE: -72.65669722 GROUND ELEVATION: 20' AMSL	THE PROPOSED PROJECT INCLUDES MODIFYING GROUND BASED AND TOWER MOUNTED EQUIPMENT AS INDICATED PER BELOW: <u>TOWER WORK:</u> REMOVE (3) ANTENNA(s) AND (3) RRH(s) INSTALL MOUNT MODIFICATIONS, (3) MOUNTING PIPES, (6) ANTENNA(s), (6) RRH(s), AND (2) 1-1/4" HYBRID CABLES EXISTING (6) ANTENNA(s), (3) TTA(s), (12) 1-5/8" COAX CABLE(s), (1) 1-5/8" HYBRID CABLE(s), AND (1) 1-1/4" HYBRID CABLE(s) TO REMAIN <u>GROUND WORK:</u> REMOVE (1) CABINET INSTALL (1) 6160 AC CABINET AND (1) ENCLOSURE B160 BATTERY CABINET	SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
	<u>PROJECT TEAM</u> <u>TOWER OWNER:</u> AMERICAN TOWER 10 PRESIDENTIAL WAY WOBURN, MA 01801 <u>ENGINEER:</u> ATC TOWER SERVICES, LLC 3500 REGENCY PKWY STE 100 CARY, NC 27518 <u>PROPERTY OWNER:</u> 305 WEST SERVICES RD ASSOC LLC 79 RYE STREET BROAD BROOK, CT 06016	<u>PROJECT NOTES</u> 1. THE FACILITY IS UNMANNED. 2. A TECHNICIAN WILL VISIT THE SITE APPROXIMATELY ONCE A MONTH FOR ROUTINE INSPECTION AND MAINTENANCE. 3. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT LAND DISTURBANCE OR EFFECT OF STORM WATER DRAINAGE. 4. NO SANITARY SEWER, POTABLE WATER OR TRASH DISPOSAL IS REQUIRED. 5. HANDICAP ACCESS IS NOT REQUIRED.					
<u>UTILITY COMPANIES</u> POWER COMPANY: C. L. & P. PHONE: (800) 286-2000 TELEPHONE COMPANY: AT&T PHONE: (800) 288-2020		<u>PROJECT LOCATION DIRECTIONS</u> DIRECTIONS FROM NEXTEL WHITE PLAINS OAK OFC: 5 BROADWAY (HWY 119) NORTH TO WESTCHESTER AVE. TO I-287 EAST (CROSS WESTCHESTER EXPWAY) TO I-684 NORTH APPROX. 28 MILES TO I-84 EAST. TAKE I-84 EAST 63.6 MILES TO HIGH ST./HARTFORD EXIT) BEAR LEFT ONTO MAIN ST. FOR 1.8 MILES THEN TURN RIGHT ONTO FISHFREY ST. FOR .2 MILES TURN LEFT ON WESTON ST. .5 MILES AND THEN LEFT ONTO WEST SERVICE RD. SITE IS SOUTHWEST CORNER OF LARGER VACANT LOT AT CURVE OF RD ADJACENT TO KOHLER EQUIP. DISTRUBUTOR.					

AMERICAN TOWER®
 A.T. ENGINEERING SERVICE, PLLC
 3500 REGENCY PARKWAY
 SUITE 100
 CARY, NC 27518
 PHONE: (919) 468-0112
 COA: PEC.0001553

THESE DRAWINGS AND/OR THE ACCOMPANYING SPECIFICATION AS INSTRUMENTS OR SERVICE ARE THE EXCLUSIVE PROPERTY OF AMERICAN TOWER. THEIR USE AND PUBLICATION SHALL BE RESTRICTED TO THE ORIGINAL SITE FOR WHICH THEY ARE PREPARED. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO AMERICAN TOWER OR THE SPECIFIED CARRIER IS STRICTLY PROHIBITED. TITLE TO THESE DOCUMENTS SHALL REMAIN THE PROPERTY OF AMERICAN TOWER WHETHER OR NOT THE PROJECT IS EXECUTED. NEITHER THE ARCHITECT NOR THE ENGINEER WILL BE PROVIDING ON-SITE CONSTRUCTION REVIEW OF THIS PROJECT. CONTRACTOR(S) MUST VERIFY ALL DIMENSIONS AND ADVISE AMERICAN TOWER OF ANY DISCREPANCIES. ANY PRIOR ISSUANCE OF THIS DRAWING IS SUPERSEDED BY THE LATEST VERSION ON FILE WITH AMERICAN TOWER.

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	CWB	08/18/20
1	ADDED MOUNT ANALYSIS	CWB	09/03/20

ATC SITE NUMBER:
302466
 ATC SITE NAME:
WEST SERVICE ROAD
 T-MOBILE SITE NAME:
CT491/SSITE HARTFORD_MP1
 SITE ADDRESS:
 305 W. SERVICE RD.
 HARTFORD, CT 06120



DATE DRAWN: 08/18/20
 ATC JOB NO: 13251344_D1
 CUSTOMER ID: CT491/SSITE HARTFORD_MP1
 CUSTOMER #: CT11491B

TITLE SHEET

SHEET NUMBER: **G-001** REVISION: **1**



GENERAL CONSTRUCTION NOTES:

1. OWNER FURNISHED MATERIALS, T-MOBILE "THE COMPANY" WILL PROVIDE AND THE CONTRACTOR WILL INSTALL
 - A. BTS EQUIPMENT FRAME (PLATFORM) AND ICEBRIDGE SHELTER (GROUND BUILD/CO-LOCATE ONLY)
 - B. AC/TELCO INTERFACE BOX (PPC)
 - C. ICE BRIDGE (CABLE TRAY WITH COVER) (GROUND BUILD/CO-LOCATE ONLY, GC TO FURNISH AND INSTALL FOR ROOFTOP INSTALLATION)
 - D. TOWERS, MONOPOLES
 - E. TOWER LIGHTING
 - F. GENERATORS & LIQUID PROPANE TANK
 - G. ANTENNA STANDARD BRACKETS, FRAMES AND PIPES FOR MOUNTING
 - H. ANTENNAS (INSTALLED BY OTHERS)
 - I. TRANSMISSION LINE
 - J. TRANSMISSION LINE JUMPERS
 - K. TRANSMISSION LINE CONNECTORS WITH WEATHERPROOFING KITS
 - L. TRANSMISSION LINE GROUND KITS
 - M. HANGERS
 - N. HOISTING GRIPS
 - O. BTS EQUIPMENT
2. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL OTHER MATERIALS FOR THE COMPLETE INSTALLATION OF THE SITE INCLUDING, BUT NOT LIMITED TO, SUCH MATERIALS AS FENCING, STRUCTURAL STEEL SUPPORTING SUB-FRAME FOR PLATFORM, ROOFING LABOR AND MATERIALS, GROUNDING RINGS, GROUNDING WIRES, COPPER-CLAD OR XIT CHEMICAL GROUND ROD(S), BUSS BARS, TRANSFORMERS AND DISCONNECT SWITCHES WHERE APPLICABLE, TEMPORARY ELECTRICAL POWER, CONDUIT, LANDSCAPING COMPOUND STONE, CRANES, CORE DRILLING, SLEEPERS AND RUBBER MATTING, REBAR, CONCRETE CAISSONS, PADS AND/OR AUGER MOUNTS, MISCELLANEOUS FASTENERS, CABLE TRAYS, NON-STANDARD ANTENNA FRAMES AND ALL OTHER MATERIAL AND LABOR REQUIRED TO COMPLETE THE JOB ACCORDING TO THE DRAWINGS AND SPECIFICATIONS. IT IS THE POSITION OF T-MOBILE TO APPLY FOR PERMITTING AND CONTRACTOR RESPONSIBLE FOR PICKUP AND PAYMENT OF REQUIRED PERMITS.
3. ALL WORK SHALL CONFORM TO ALL CURRENT APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING ANSI/EIA/TIA-222, AND COMPLY WITH ATC CONSTRUCTION SPECIFICATIONS.
4. CONTRACTOR SHALL CONTACT LOCAL 811 FOR IDENTIFICATION OF UNDERGROUND UTILITIES PRIOR TO START OF CONSTRUCTION.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED INSPECTIONS.
6. ALL DIMENSIONS TO, OF, AND ON EXISTING BUILDINGS, DRAINAGE STRUCTURES, AND SITE IMPROVEMENTS SHALL BE VERIFIED IN FIELD BY CONTRACTOR WITH ALL DISCREPANCIES REPORTED TO THE ENGINEER.
7. DO NOT CHANGE SIZE OR SPACING OF STRUCTURAL ELEMENTS.
8. DETAILS SHOWN ARE TYPICAL; SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.
9. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY WHICH SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
10. CONTRACTOR SHALL BRACE STRUCTURES UNTIL ALL STRUCTURAL ELEMENTS NEEDED FOR STABILITY ARE INSTALLED. THESE ELEMENTS ARE AS FOLLOWS: LATERAL BRACING, ANCHOR BOLTS, ETC.
11. CONTRACTOR SHALL DETERMINE EXACT LOCATION OF EXISTING UTILITIES, GROUNDS DRAINS, DRAIN PIPES, VENTS, ETC. BEFORE COMMENCING WORK.
12. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE T-MOBILE REP PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH REMEDIAL ACTION SHALL REQUIRE WRITTEN APPROVAL BY THE T-MOBILE REP PRIOR TO PROCEEDING.
13. EACH CONTRACTOR SHALL COOPERATE WITH THE T-MOBILE REP, AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.
14. CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION OF THIS PROJECT TO MATCH EXISTING PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE T-MOBILE CONSTRUCTION MANAGER.
15. ALL CABLE/CONDUIT ENTRY/EXIT PORTS SHALL BE WEATHERPROOFED DURING INSTALLATION USING A SILICONE SEALANT.
16. WHERE EXISTING CONDITIONS DO NOT MATCH THOSE SHOWN IN THIS PLAN SET, CONTRACTOR SHALL NOTIFY THE T-MOBILE REP AND ENGINEER OF RECORD IMMEDIATELY.
17. CONTRACTOR SHALL ENSURE ALL SUBCONTRACTORS ARE PROVIDED WITH A COMPLETE AND CURRENT SET OF DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
18. CONTRACTOR SHALL REMOVE ALL RUBBISH AND DEBRIS FROM THE SITE AT THE END OF EACH DAY.
19. CONTRACTOR SHALL COORDINATE WORK SCHEDULE WITH AMERICAN TOWER CORPORATION (ATC) AND TAKE PRECAUTIONS TO MINIMIZE IMPACT AND DISRUPTION OF OTHER OCCUPANTS OF THE FACILITY.
20. CONTRACTOR SHALL FURNISH T-MOBILE AND AMERICAN TOWER CORPORATION (ATC) WITH A PDF MARKED UP AS-BUILT SET OF DRAWINGS UPON COMPLETION OF WORK.
21. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE REP TO DETERMINE WHAT, IF ANY, ITEMS WILL BE PROVIDED. ALL ITEMS NOT PROVIDED SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. CONTRACTOR WILL INSTALL ALL ITEMS PROVIDED.

22. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE REP TO DETERMINE IF ANY PERMITS WILL BE OBTAINED BY CONTRACTOR. ALL REQUIRED PERMITS NOT OBTAINED BY T-MOBILE MUST BE OBTAINED, AND PAID FOR, BY THE CONTRACTOR.
23. CONTRACTOR SHALL INSTALL ALL SITE SIGNAGE IN ACCORDANCE WITH T-MOBILE SPECIFICATIONS AND REQUIREMENTS.
24. CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS TO T-MOBILE FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
25. ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND LOCATED ACCORDING TO T-MOBILE SPECIFICATIONS, AND AS SHOWN IN THESE PLANS.
26. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
27. CONTRACTOR SHALL NOTIFY T-MOBILE REP A MINIMUM OF 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACKFILLING ANY UNDERGROUND UTILITIES, FOUNDATIONS OR SEALING ANY WALL, FLOOR OR ROOF PENETRATIONS FOR ENGINEERING REVIEW AND APPROVAL.
28. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY INCLUDING COMPLIANCE WITH ALL APPLICABLE OSHA STANDARDS AND RECOMMENDATIONS AND SHALL PROVIDE ALL NECESSARY SAFETY DEVICES INCLUDING PPE AND PPM AND CONSTRUCTION DEVICES SUCH AS WELDING AND FIRE PREVENTION, TEMPORARY SHORING, SCAFFOLDING, TRENCH BOXES/SLOPING, BARRIERS, ETC.
29. THE CONTRACTOR SHALL PROTECT AT HIS OWN EXPENSE, ALL EXISTING FACILITIES AND SUCH OF HIS NEW WORK LIABLE TO INJURY DURING THE CONSTRUCTION PERIOD. ANY DAMAGE CAUSED BY NEGLIGENCE ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, OR BY THE ELEMENTS DUE TO NEGLIGENCE ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, EITHER TO THE EXISTING WORK, OR TO HIS WORK OR THE WORK OF ANY OTHER CONTRACTOR, SHALL BE REPAIRED AT HIS EXPENSE TO THE OWNER'S SATISFACTION.
30. ALL WORK SHALL BE INSTALLED IN A FIRST CLASS, NEAT AND WORKMANLIKE MANNER BY MECHANICS SKILLED IN THE TRADE INVOLVED. THE QUALITY OF WORKMANSHIP SHALL BE SUBJECT TO THE APPROVAL OF THE T-MOBILE REP. ANY WORK FOUND BY THE T-MOBILE REP TO BE OF INFERIOR QUALITY AND/OR WORKMANSHIP SHALL BE REPLACED AND/OR REWORKED AT CONTRACTOR EXPENSE UNTIL APPROVAL IS OBTAINED.
31. IN ORDER TO ESTABLISH STANDARDS OF QUALITY AND PERFORMANCE, ALL TYPES OF MATERIALS LISTED HEREINAFTER BY MANUFACTURER'S NAMES AND/OR MANUFACTURER'S CATALOG NUMBER SHALL BE PROVIDED BY THESE MANUFACTURERS AS SPECIFIED.
32. T-MOBILE FURNISHED EQUIPMENT SHALL BE PICKED-UP AT THE T-MOBILE WAREHOUSE, NO LATER THAN 48HR AFTER BEING NOTIFIED INSURED, STORED, UNCRATE, PROTECTED AND INSTALLED BY THE CONTRACTOR WITH ALL APPURTENANCES REQUIRED TO PLACE THE EQUIPMENT IN OPERATION, READY FOR USE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EQUIPMENT AFTER PICKING IT UP.
33. T-MOBILE OR HIS ARCHITECT/ENGINEER RESERVES THE RIGHT TO REJECT ANY EQUIPMENT OR MATERIALS WHICH, IN HIS OWN OPINION ARE NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS, EITHER BEFORE OR AFTER INSTALLATION AND THE EQUIPMENT SHALL BE REPLACED WITH EQUIPMENT CONFORMING TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS BY THE CONTRACTOR AT NO COST TO T-MOBILE OR THEIR ARCHITECT/ENGINEER.

COAXIAL CABLE (NOT WITHIN BENDS)

SPECIAL CONSTRUCTION

ANTENNA INSTALLATION NOTES:

1. WORK INCLUDED:
 - A. ANTENNA AND COAXIAL CABLES ARE FURNISHED BY T-MOBILE UNDER A SEPARATE CONTRACT. THE CONTRACTOR SHALL ASSIST ANTENNA INSTALLATION CONTRACTOR IN TERMS OF COORDINATION AND SITE ACCESS. ERECTION SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF PERSONNEL AND
 - B. INSTALL ANTENNA AS INDICATE ON DRAWINGS AND T-MOBILE SPECIFICATIONS.
 - C. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS
 - D. INSTALL FURNISHED GALVANIZED STEEL OR ALUMINUM WAVEGUIDE AND PROVIDE PRINTOUT OF THAT TEST.
 - E. CONTRACTOR SHALL PROVIDE FOUR (4) SETS OF SWEEP TESTS USING ANRITZU-PACKARD 8713B RF SCALAR NETWORK ANALYZER. SUBMIT FREQUENCY DOMAIN REFLECTOMETER(FDR) TESTS RESULTS TO THE PROJECT MANAGER. SWEEP TESTS SHALL BE AS PER ATTACHED RFS "MINIMUM FIELD TESTING RECOMMENDED FOR ANTENNA AND HELIAX COAXIAL CABLE SYSTEMS" DATED 10/5/93. TESTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING SERVICE AND BE BOUND AND SUBMITTED WITHIN ONE WEEK OF WORK COMPLETION.
 - F. INSTALL COAXIAL CABLES AND TERMINATING BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTIONS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS. TERMINATE ALL COAXIAL CABLE THREE (3) FEET IN EXCESS OF ENTRY PORT LOCATION UNLESS OTHERWISE STATED.
 - G. ANTENNA AND COAXIAL CABLE GROUNDING:
2. ALL EXTERIOR #6 GREED GROUND WIRE "DAISY CHAIN" CONNECTIONS ARE TO BE WEATHER SEALED WITH RFS CONNECTORS/SPLICE WEATHERPROOFING KIT #221213 OR EQUAL.
3. ALL COAXIAL CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF

ALL DISCREPANCIES FROM WHAT IS SHOWN ON THESE CONSTRUCTION DRAWINGS SHALL BE COMMUNICATED TO ATC ENGINEERING IMMEDIATELY FOR CORRECTION OR RE-DESIGN. FAILURE TO COMMUNICATE DIRECTLY WITH ATC ENGINEERING OR ANY CHANGES FROM THE DESIGN CONDUCTED WITHOUT PRIOR APPROVAL FROM ATC ENGINEERING SHALL BE THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

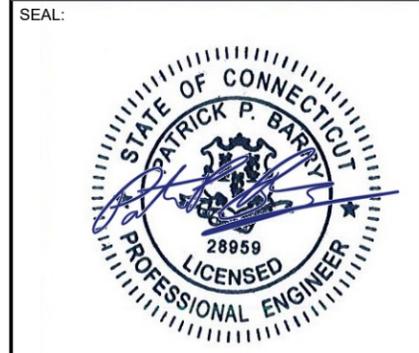


AMERICAN TOWER®
A.T. ENGINEERING SERVICE, PLLC
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 CARY, NC 27518
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 COA: PEC.0001553

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302466
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WEST SERVICE ROAD
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 SITE ADDRESS:
 305 W. SERVICE RD.
 HARTFORD, CT 06120



DATE DRAWN:	08/18/20
ATC JOB NO:	13251344_D1
CUSTOMER ID:	CT491/SITE HARTFORD_MP1
CUSTOMER #:	CT11491B

GENERAL NOTES

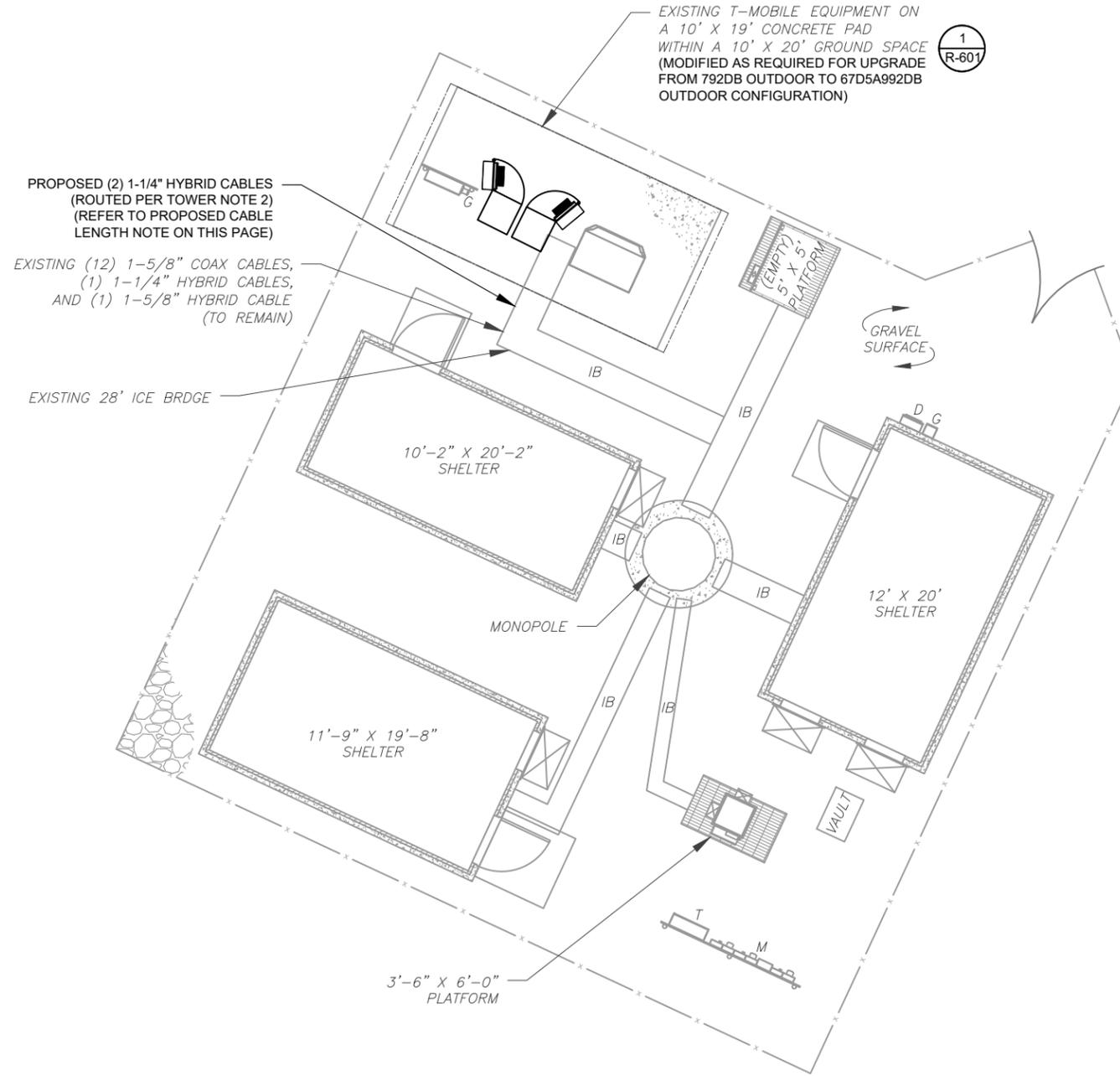
SHEET NUMBER: G-002	REVISION: 0
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SITE PLAN NOTES:

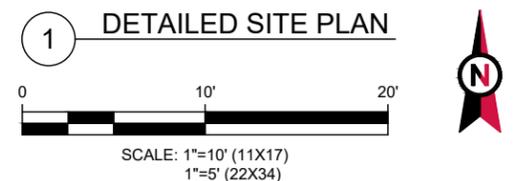
- THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.
- ICE BRIDGE, CABLE LADDER, COAX PORT, AND COAX CABLE ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL CONFIRM THE EXACT LOCATION OF ALL PROPOSED AND EXISTING EQUIPMENT AND STRUCTURES DEPICTED ON THIS PLAN. BEFORE UTILIZING EXISTING CABLE SUPPORTS, COAX PORTS, INSTALLING NEW PORTS OR ANY OTHER EQUIPMENT, CONTRACTOR SHALL VERIFY ALL ASPECTS OF THE COMPONENTS MEET THE ATC SPECIFICATIONS.

LEGEND	
⊗	GROUNDING TEST WELL
ATS	AUTOMATIC TRANSFER SWITCH
B	BOLLARD
CSC	CELL SITE CABINET
D	DISCONNECT
E	ELECTRICAL
F	FIBER
GEN	GENERATOR
G	GENERATOR RECEPTACAL
HH, V	HAND HOLE, VAULT
IB	ICE BRIDGE
K	KENTROX BOX
LC	LIGHTING CONTROL
M	METER
PB	PULL BOX
PP	POWER POLE
T	TELCO
TRN	TRANSFORMER
—x—	CHAINLINK FENCE



PROPOSED CABLE LENGTH:

- ESTIMATED LENGTH OF PROPOSED CABLE IS **150'**. ESTIMATED LENGTH OF CABLE WAS PROVIDED BY CUSTOMER OR CALCULATED BY ADDING THE RAD CENTER AND THE DISTANCE FROM THE SHELTER ENTRY PLATE TO THE TOWER (ALONG THE ICE BRIDGE) AND A SAFETY FACTOR MEASUREMENT OF 15% (OF THE TWO PREVIOUS VALUES). CDS DEFER TO GREATEST CABLE LENGTH.
- ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. WHERE POSSIBLE UTILIZE EXISTING CABLE SUPPORT STRUCTURES AS PROVIDED FOR CARRIER TO ADEQUATELY SECURE CABLES, USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER. OTHERWISE, ATTACH CABLES TO HORIZONTAL OR DIAGONAL TOWER MEMBERS USING PROPOSED STAINLESS STEEL ADAPTERS (DO NOT ATTACH TO TOWER LEG).




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A.T. ENGINEERING SERVICE, PLLC
 3500 REGENCY PARKWAY
 SUITE 100
 CARY, NC 27518
 PHONE: (919) 468-0112
 COA: PEC.0001553

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REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	CWB	08/18/20

ATC SITE NUMBER:
302466
 ATC SITE NAME:
WEST SERVICE ROAD
 T-MOBILE SITE NAME:
CT491/SSITE HARTFORD_MP1
 SITE ADDRESS:
 305 W. SERVICE RD.
 HARTFORD, CT 06120



DATE DRAWN:	08/18/20
ATC JOB NO:	13251344_D1
CUSTOMER ID:	CT491/SSITE HARTFORD_MP1
CUSTOMER #:	CT11491B

DETAILED SITE PLAN

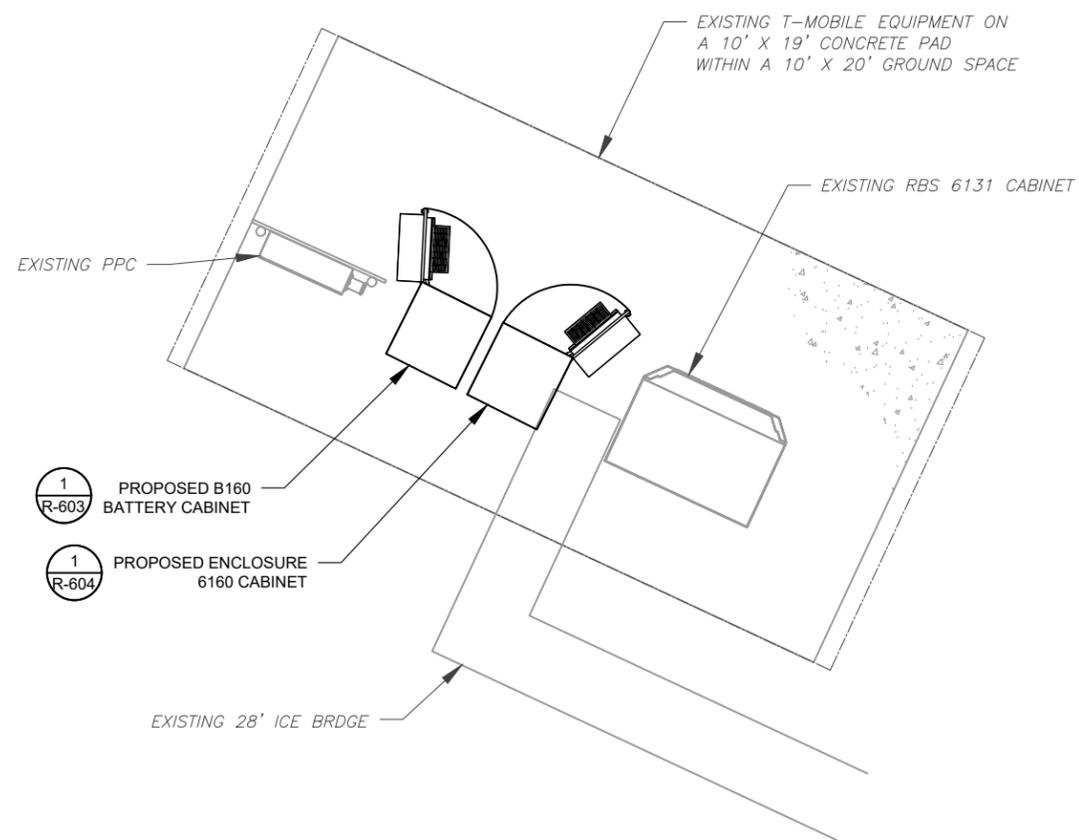
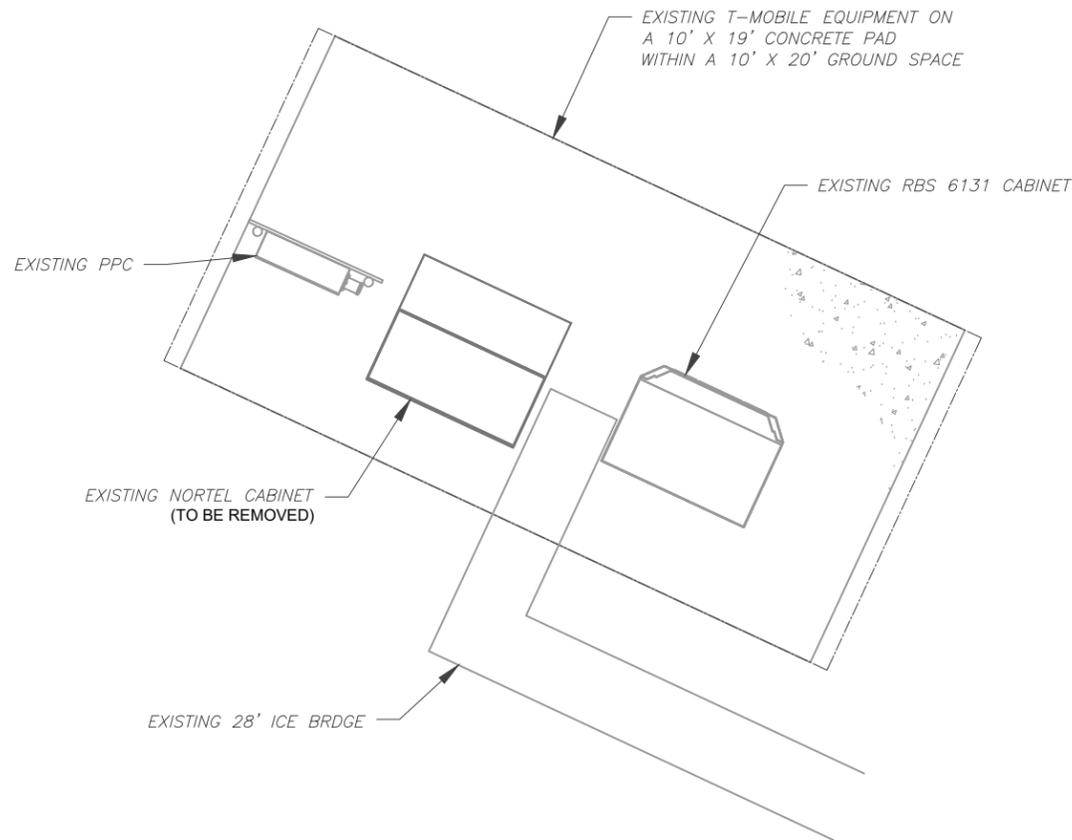
SHEET NUMBER:	REVISION:
C-101	0

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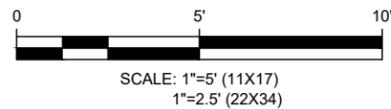
SITE PLAN NOTES:

1. CONTRACTOR TO VERIFY THERE IS NO LIVE AAV FIBER RUNNING THROUGH EXISTING DEAD EQUIPMENT. IF SO, THIS WILL NEED TO BE RERUN THROUGH CONDUIT PRIOR TO REMOVING DEAD 2G (6201 CABS) EQUIPMENT.
2. REMOVE EXISTING 2G CABINETS, AND POWER / TELCO WHIPS ASSOCIATED WITH THE DEAD EQUIPMENT IF APPLICABLE.
3. ALL OPEN PORTS NEED TO BE SEALED / WEATHERPROOFED PROPERLY
4. ALL UNNEEDED / EXCESS EQUIPMENT AND GARBAGE TO BE REMOVED FROM EQUIPMENT AREA. DISPOSE OF MATERIALS PROPERLY OFF SITE.

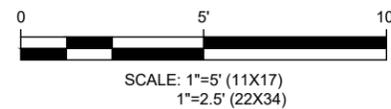
T-MOBILE CM APPROVAL REQUIRED BEFORE INSTALLING CABINETS



1 EXISTING GROUND EQUIPMENT LAYOUT



2 PROPOSED GROUND EQUIPMENT LAYOUT



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 SITE ADDRESS:
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 HARTFORD, CT 06120

SEAL:

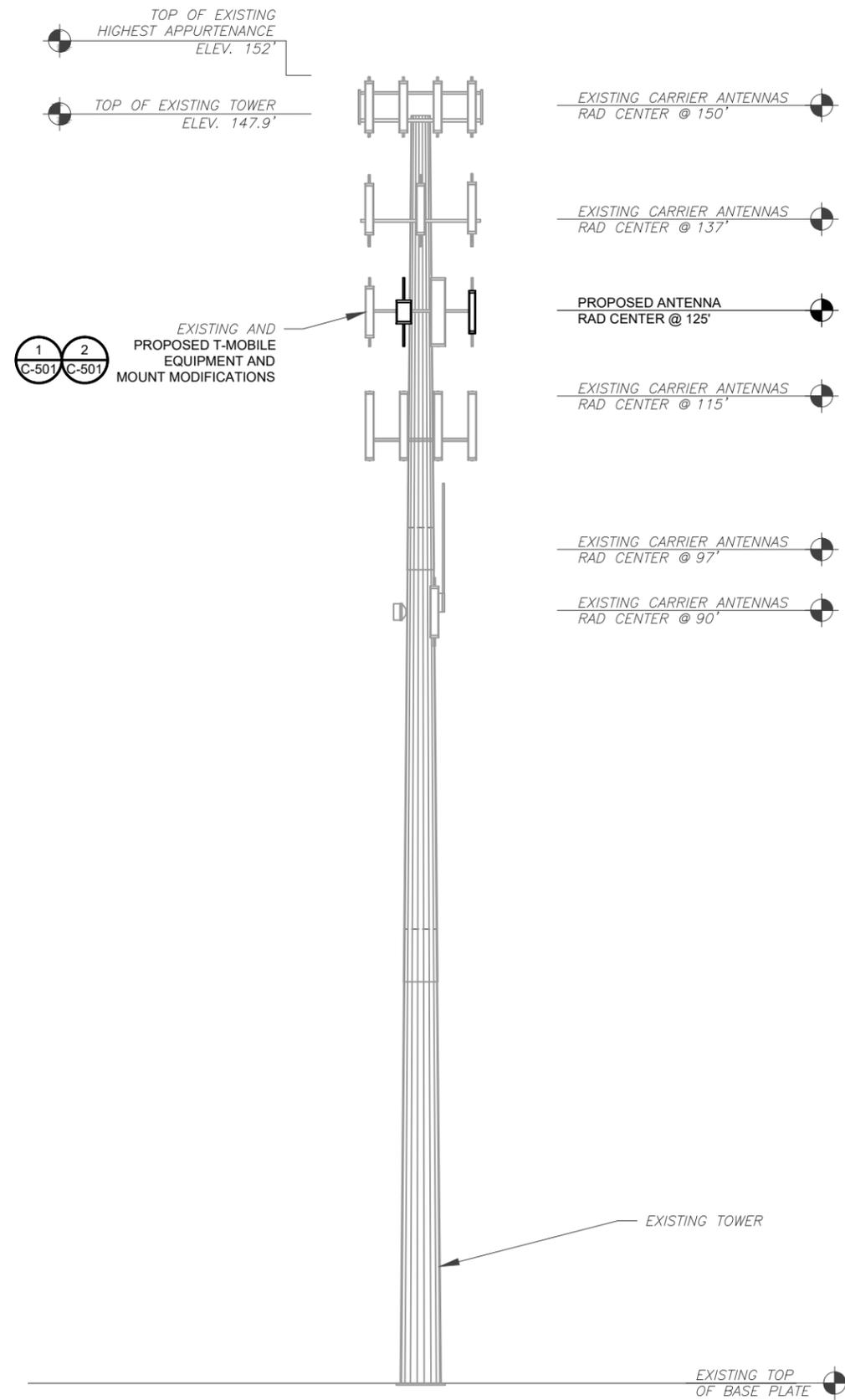


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ATC JOB NO:	13251344_D1
CUSTOMER ID:	CT491/SSITE HARTFORD_MP1
CUSTOMER #:	CT11491B

DETAILED GROUND PLAN

SHEET NUMBER:	REVISION:
C-102	0

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PER MOUNT ANALYSIS COMPLETED BY AMERICAN TOWER CORPORATION, DATED 08/24/20, AND PER MOUNT ANALYSIS COMPLETED BY CLS ENGINEERING, DATED 09/19/18 THE EXISTING MOUNT CAN NOT ADEQUATELY SUPPORT THE PROPOSED LOADING. THE MOUNT MODIFICATION PROPOSED IN THE MOUNT ANALYSIS, INCLUDED AT THE END OF THIS PLAN SET, MUST BE INSTALLED PRIOR TO THE INSTALLATION OF THE PROPOSED ANTENNAS AND OTHER EQUIPMENT

- TOWER NOTE:**
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM WITH THE AMERICAN TOWER CONSTRUCTION MANAGER THAT THEY HAVE THE MOST RECENT VERSION OF THE STRUCTURAL ANALYSIS BEFORE COMMENCING WORK. EXISTING AND PROPOSED TOWER APPURTENANCES, MOUNTS, AND ANTENNAS ARE SHOWN BASED ON THE STRUCTURAL ANALYSIS.
 - ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. IF ADEQUATE SPACE EXISTS, ROUTE CABLES THROUGH ENTRY PORT HOLE, UP INSIDE OF MONOPOLE, AND THROUGH EXIT PORT HOLE. IF ROUTING OUTSIDE THE MONOPOLE, ATTACH CABLES USING STAND-OFF ADAPTERS MOUNTED TO TOWER USING STAINLESS STEEL BANDING. ADEQUATELY SECURE CABLES USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER.
 - TOWER ELEVATIONS ARE MEASURED FROM TOP OF BASE PLATE TO MATCH STRUCTURAL ANALYSIS. ELEVATIONS DO NOT REFLECT TRUE ABOVE GROUND LEVEL (A.G.L.)

1 TOWER ELEVATION
SCALE: N.T.S.

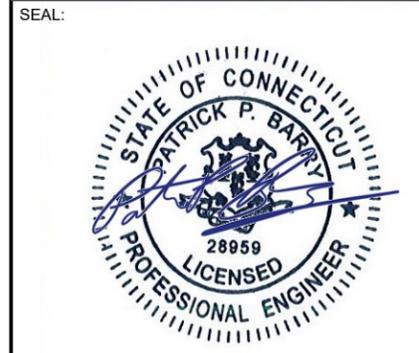


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1	ADDED MOUNT ANALYSIS	CWB	09/03/20

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CUSTOMER #:	CT11491B

TOWER ELEVATION

SHEET NUMBER:	REVISION:
C-201	1

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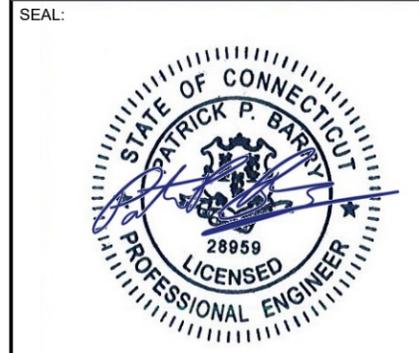


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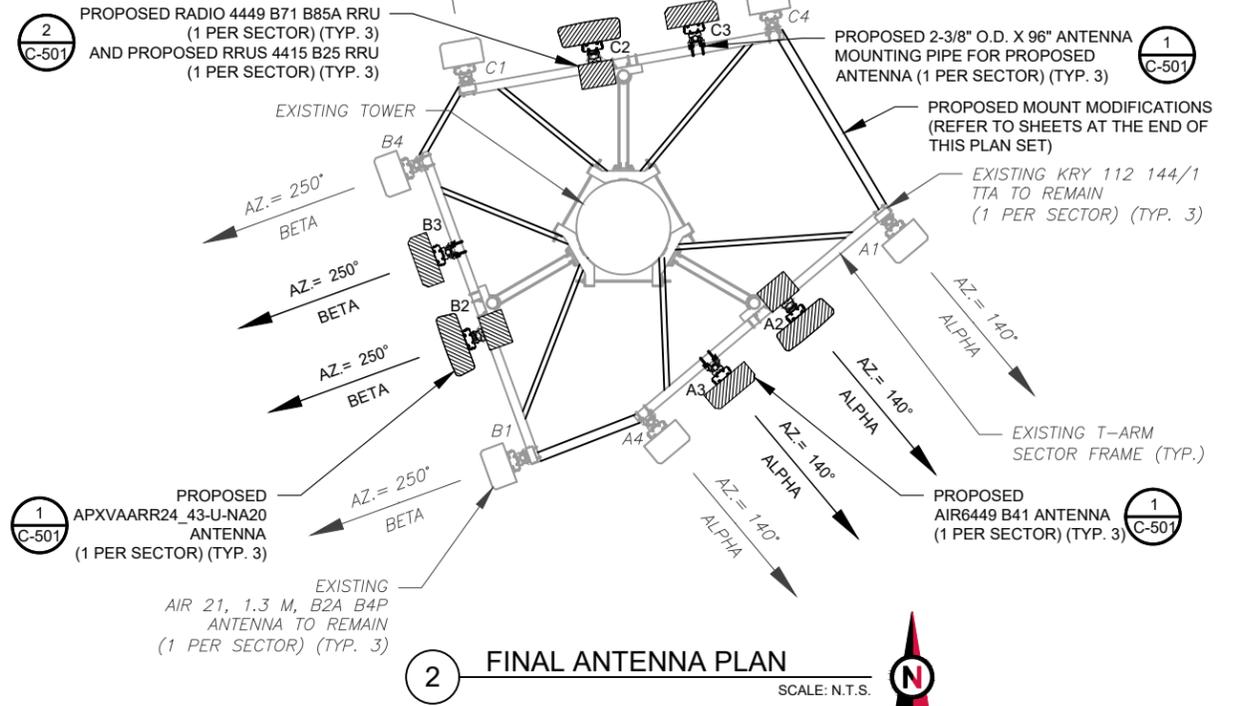
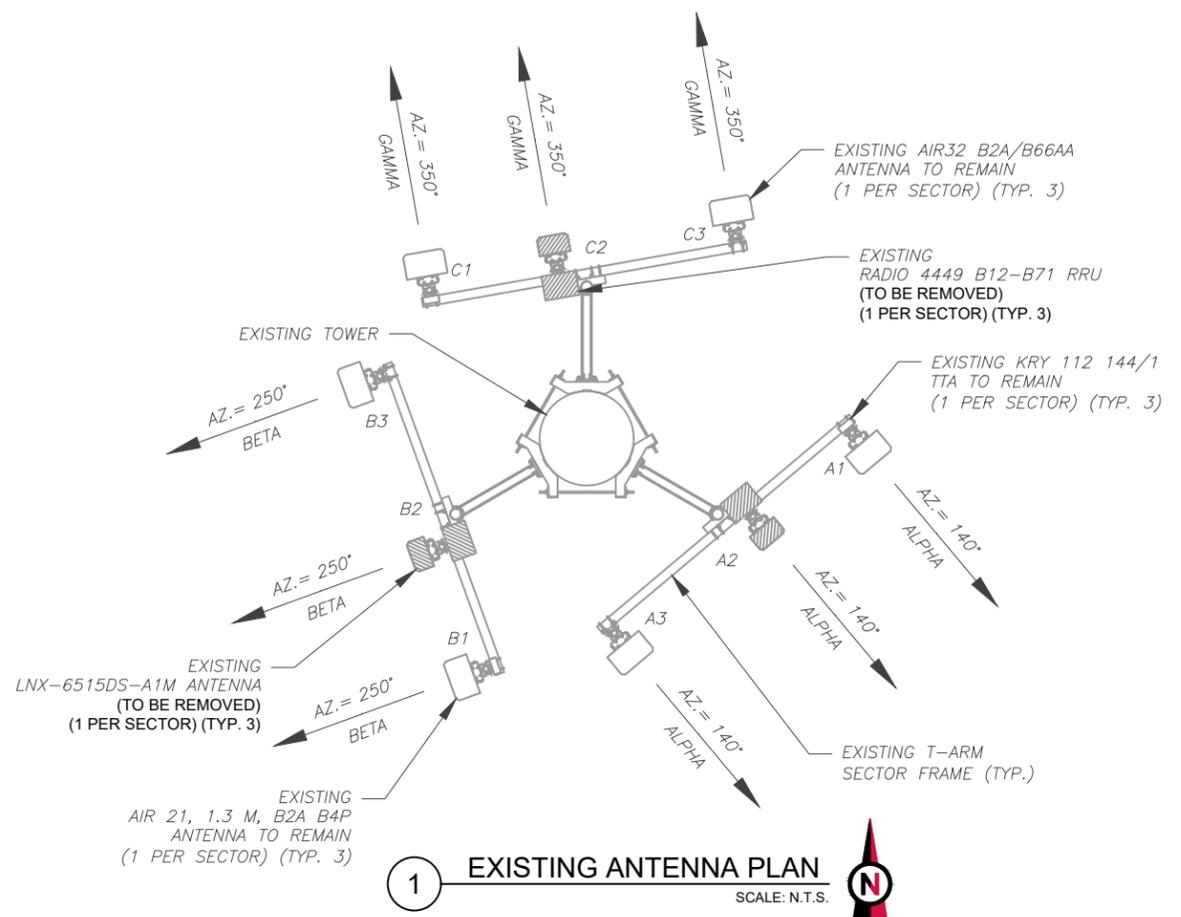


DATE DRAWN:	08/18/20
ATC JOB NO:	13251344_D1
CUSTOMER ID:	CT491/SSITE HARTFORD_MP1
CUSTOMER #:	CT11491B

ANTENNA INFORMATION & SCHEDULE

SHEET NUMBER:
C-401
 REVISION:
1

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EXISTING ANTENNA SCHEDULE									
LOCATION			ANTENNA SUMMARY				NON ANTENNA SUMMARY		
SECTOR	RAD	AZ	POS	ANTENNA	BAND	MECH/ELEC D-TILT	STATUS	ADDITIONAL TOWER MOUNTED EQUIPMENT	STATUS
ALPHA	125'	140°	A1	AIR 21, 1.3M, B2A B4P	-	0°/4°	RMN	KRY 112 144/1	RMN
			A2	LNx-6515DS-A1M	-	0°/4°	RMV	RADIO 4449 B12-B71	RMV
			A3	AIR32 B2A/B66AA	L2100/L1900	0°/4°	RMN	-	-
BETA	125'	250°	B1	AIR 21, 1.3M, B2A B4P	-	0°/2°	RMN	KRY 112 144/1	RMN
			B2	LNx-6515DS-A1M	-	0°/2°	RMV	RADIO 4449 B12-B71	RMV
			B3	AIR32 B2A/B66AA	L2100/L1900	0°/4°	RMN	-	-
GAMMA	125'	350°	C1	AIR 21, 1.3M, B2A B4P	-	0°/2°	RMN	KRY 112 144/1	RMN
			C2	LNx-6515DS-A1M	-	0°/2°	RMV	RADIO 4449 B12-B71	RMV
			C3	AIR32 B2A/B66AA	L2100/L1900	0°/2°	RMN	-	-

NOTES

- CONFIRM WITH T-MOBILE REP FOR APPLICABLE UPDATES/REVISIONS AND MOST RECENT RFDS FOR NSN CONFIGURATION (CONFIG). GC TO CAP ALL UNUSED PORTS.
- CONFIRM SPACING OF PROPOSED EQUIP DOES NOT CAUSE TOWER CONFLICTS NOR IMPEDE TOWER CLIMBING PEGS.

STATUS ABBREVIATIONS

RMV: TO BE REMOVED
 RMN: TO REMAIN
 REL: TO BE RELOCATED
 ADD: TO BE ADDED

CABLE LENGTHS FOR JUMPERS

JUNCTION BOX TO RRU: 15'
 RRU TO ANTENNA: 10'

FINAL ANTENNA SCHEDULE									
LOCATION			ANTENNA SUMMARY				NON ANTENNA SUMMARY		
SECTOR	RAD	AZ	POS	ANTENNA	BAND	MECH/ELEC D-TILT	STATUS	ADDITIONAL TOWER MOUNTED EQUIPMENT	STATUS
ALPHA	125'	140°	A1	AIR 21, 1.3M, B2A B4P	G1900/U2100	0°	RMN	KRY 112 144/1	RMN
			A2	APXVAARR24_43-U-NA20	-	0°/4°	ADD	RADIO 4449 B71 B85A	ADD
			A3	AIR6449 B41	L2500/N2500	0°	ADD	RRUS 4415 B25	ADD
			A4	AIR32 B2A/B66AA	L2100/L1900	0°/4°	RMN	-	-
BETA	125'	250°	B1	AIR 21, 1.3M, B2A B4P	G1900/U2100	0°	RMN	KRY 112 144/1	RMN
			B2	APXVAARR24_43-U-NA20	-	0°/4°	ADD	RADIO 4449 B71 B85A	ADD
			B3	AIR6449 B41	L2500/N2500	0°	ADD	RRUS 4415 B25	ADD
			B4	AIR32 B2A/B66AA	L2100/L1900	0°/4°	RMN	-	-
GAMMA	125'	350°	C1	AIR 21, 1.3M, B2A B4P	G1900/U2100	0°	RMN	KRY 112 144/1	RMN
			C2	APXVAARR24_43-U-NA20	-	0°/4°	ADD	RADIO 4449 B71 B85A	ADD
			C3	AIR6449 B41	L2500/N2500	0°	ADD	RRUS 4415 B25	ADD
			C4	AIR32 B2A/B66AA	L2100/L1900	0°/4°	RMN	-	-

EXISTING FIBER DISTRIBUTION/OVP BOX		EXISTING CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
-	-	(12) 1-5/8"	1-1/4"	RMN
-	-	-	1-5/8"	RMN

3 EQUIPMENT SCHEDULES

FINAL FIBER DISTRIBUTION / OVP BOX		FINAL CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
-	-	(12) 1-5/8"	1-1/4"	RMN
-	-	-	1-5/8"	RMN
-	-	-	(2) 1-1/4"	ADD

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0	FOR CONSTRUCTION	CWB	08/18/20

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302466
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 T-MOBILE SITE NAME:
CT491/SSITE HARTFORD_MP1
 SITE ADDRESS:
 305 W. SERVICE RD.
 HARTFORD, CT 06120

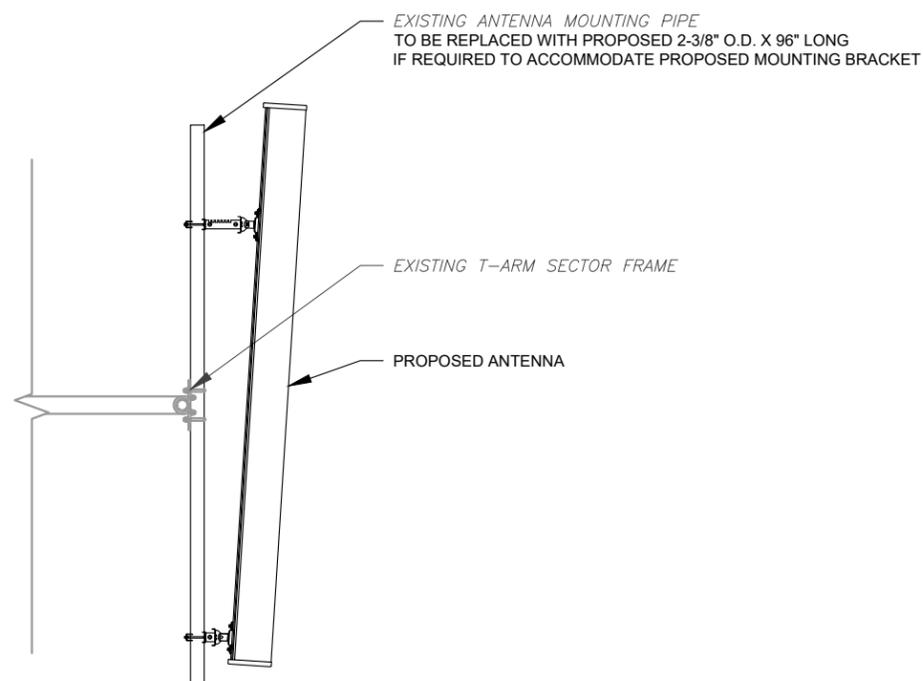
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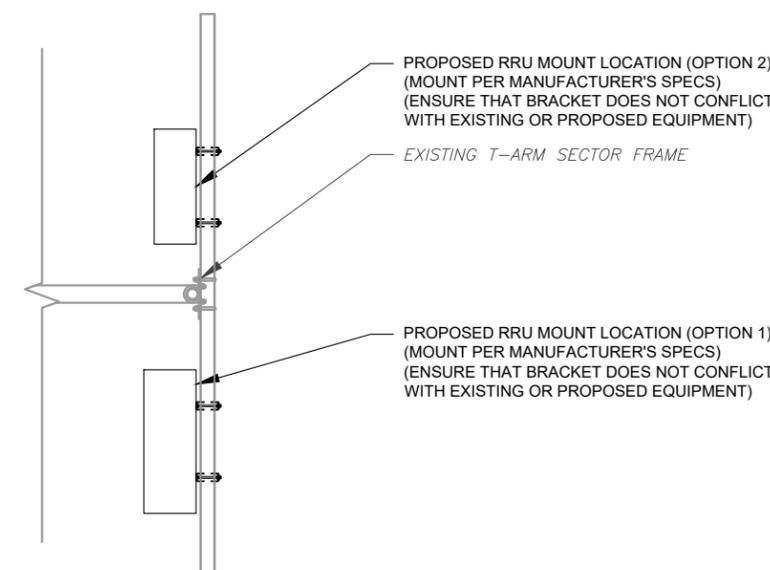
DATE DRAWN:	08/18/20
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CUSTOMER ID:	CT491/SSITE HARTFORD_MP1
CUSTOMER #:	CT11491B

**CONSTRUCTION
 DETAILS**

SHEET NUMBER:	REVISION:
C-501	0

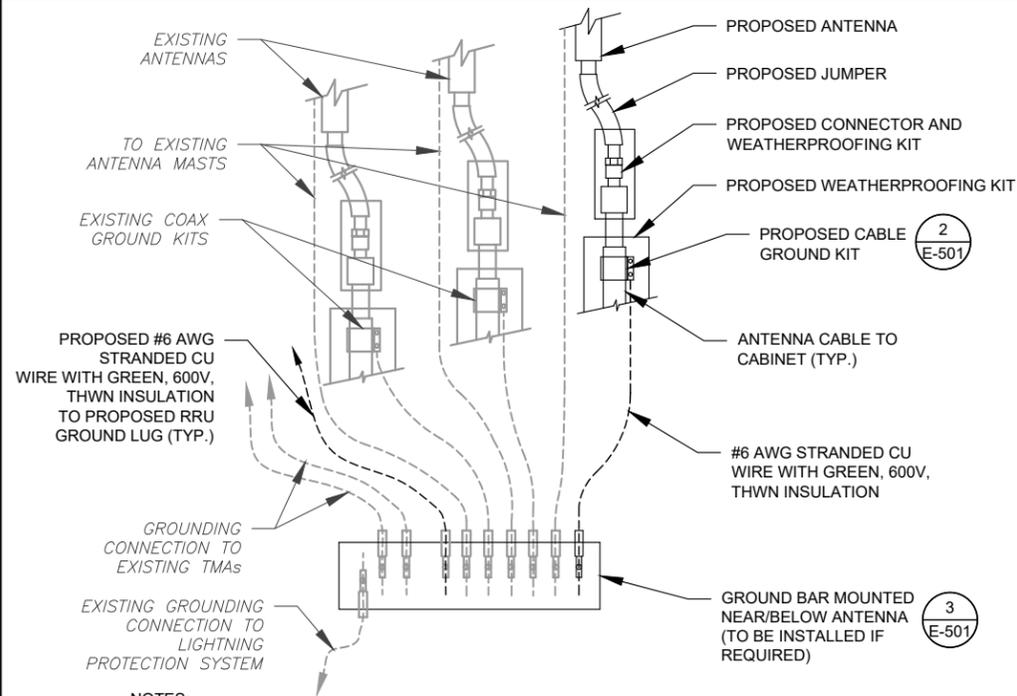


1 PROPOSED ANTENNA MOUNTING DETAIL - TYPICAL
 SCALE: N.T.S.



2 PROPOSED RRU MOUNTING DETAIL - TYPICAL
 SCALE: N.T.S.

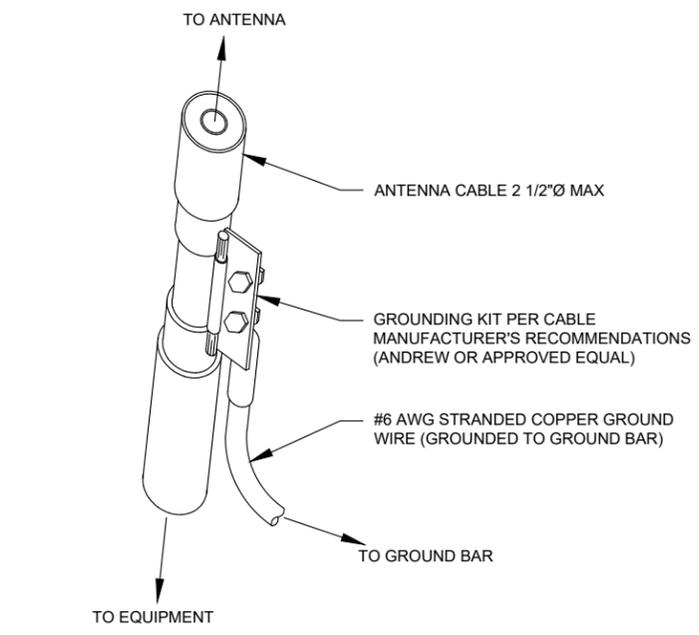
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NOTES:

1. THIS DETAIL IS INTENDED TO SHOW THE GENERAL GROUNDING REQUIREMENTS. SLIGHT ADJUSTMENTS MAY BE REQUIRED BASED ON EXISTING SITE CONDITIONS. THE CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS AS NEEDED AND INFORM THE CONSTRUCTION MANAGER OF ANY CONFLICTS.
2. SITE GROUNDING SHALL COMPLY WITH T-MOBILE GROUNDING STANDARDS, LATEST EDITION, AND COMPLY WITH T-MOBILE GROUNDING CHECKLIST, LATEST VERSION. WHEN NATIONAL AND LOCAL GROUNDING CODES ARE MORE STRINGENT THEY SHALL GOVERN.

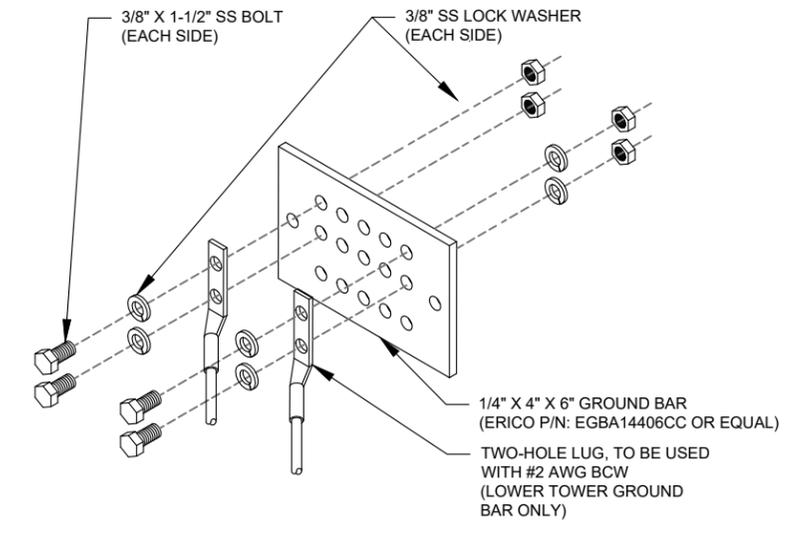
1 TYPICAL ANTENNA GROUNDING DIAGRAM
SCALE: N.T.S.



GROUND KIT NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. CONTRACTOR SHALL PROVIDE WEATHERPROOFING KIT (ANDREW PART NUMBER 221213) AND INSTALL/TAPE PER MANUFACTURER'S SPECIFICATIONS.

2 CABLE GROUND KIT CONNECTION DETAIL
SCALE: N.T.S.



GROUND BAR NOTES:

1. GROUND BAR KITS COME WITH ALL HARDWARE, NUTS, BOLTS, WASHERS, ETC. EXCEPT THE STRUCTURAL MOUNTING MEMBER(S).
2. GROUND BAR TO BE BONDED DIRECTLY TO TOWER.

3 TOWER GROUND BAR DETAIL
SCALE: N.T.S.

ELECTRICAL NOTES:

1. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE T-MOBILE REPRESENTATIVE AND LOCAL UTILITY COMPANY FOR THE INSTALLATION OF CONDUITS, CONDUCTORS, BREAKERS, DISCONNECTS, OR ANY OTHER EQUIPMENT REQUIRED FOR ELECTRICAL SERVICE. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH LATEST EDITION OF THE STATE AND NATIONAL CODES, ORDINANCES AND REGULATIONS APPLICABLE TO THIS PROJECT.
2. ATC HAS NOT VERIFIED ANY EXISTING T-MOBILE GROUND EQUIPMENT OR ELECTRICAL LOADING. PROPOSED WORK BASED ON INSTALLATION CONFIGURATION PROVIDED BY T-MOBILE. CONTRACTOR TO VERIFY EXISTING T-MOBILE PANEL HAS SUFFICIENT SPACE FOR PROPOSED BREAKER. PROPOSED CABLE AND CONDUIT SHALL BE MINIMUM SIZE PER BELOW:

OCPD SIZE	WIRE SIZE	GROUND SIZE	CONDUIT SIZE
80A/2P	2#3 AWG	#8 AWG	1-1/4"
100/2P	2#2 AWG	#8 AWG	1-1/4"
125A/2P	2#1 AWG	#8 AWG	1-1/2"
150A/2P	2#1/0 AWG	#8 AWG	1-1/2"

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GROUNDING DETAILS

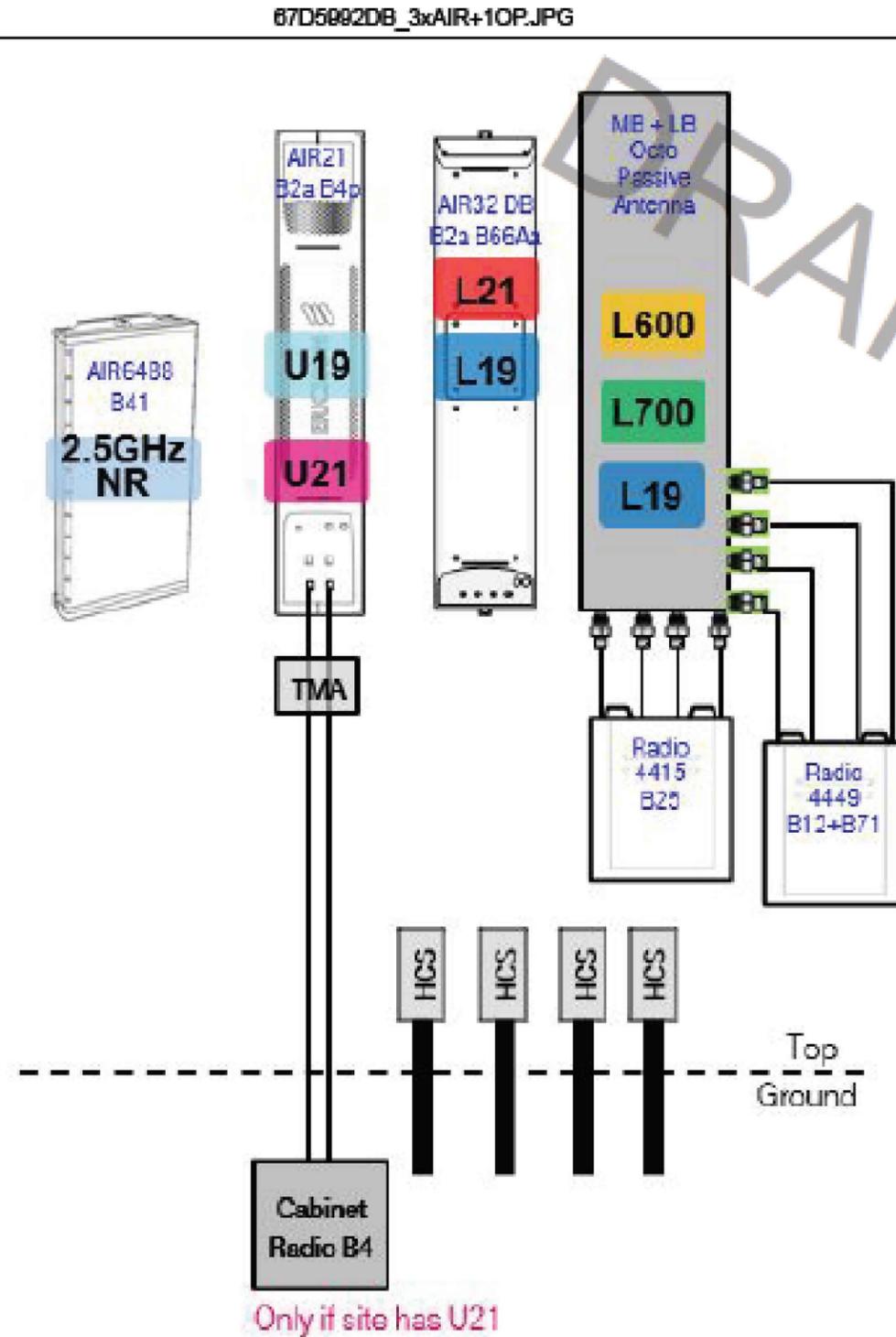
SHEET NUMBER: E-501	REVISION: 0
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Existing RAN Equipment	
Template: 792DB Outdoor	
Enclosure	1 2
Enclosure Type	RBS 6131 Ancillary Equipment (Ericsson)
Baseband	DUW30 (x 2) DUG20 BB 6630 L700 L2100 L1900
Hybrid Cable System	Ericsson 9x18 HCS "Select Length" Ericsson 6x12 HCS "Select Length & AWG"
Radio	RU22 (x 6)

Proposed RAN Equipment				
Template: 67D5A992DB Outdoor				
Enclosure	1	2	3	4
Enclosure Type	RBS 6131	Ancillary Equipment (Ericsson)	Enclosure 6160	B160
Baseband	DUW30 DUW30 DUG20 U2100 G1900 BB 6630 BB 6630 L2100 N800 L700 L800 L1900		BB 6630 (x 3) BB 6648 L2500 N2500	
Hybrid Cable System		Ericsson 9x18 HCS "Select Length" Ericsson 6x12 HCS "Select Length & AWG" Ericsson 6x12 HCS "Select AWG & Length"	Ericsson 6x12 HCS "Select AWG & Length"	
Radio	RU22 (x 6) U2100			

1 CABINET CONFIGURATION
SCALE: NOT TO SCALE



2 ANTENNA CONFIGURATION
SCALE: NOT TO SCALE

NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

SHEET NUMBER: R-601
REVISION: 0

AIR6449 B41

Frequency Range	LTE TDD B41: 2496 – 2690 MHz
Instantaneous BW	DL 194 MHz
Antenna Ports	64T64R
Technology	NR, LTE and NR+LTE MSMM
Antenna Elements	192
Output RF Power	300 W (=64 TRX x 4.6875W)
Data Ports	4 x 25Gb/s CPRI
5G NR Support	YES
DC Feed	-48V DC power connector
Cooling	Passive cooling (vs. active cooling on AIR32 DB)
Dimensions (H x W x D)	33.1" x 20.6" x 8.6" inches (=841 x 524 x 217 mm)
Weight	104 lbs (=47 kg)
Electrical downtilt	-3 to 11 degrees
Horizontal beamwidth	+/- 65 degrees
HW/SW Availability	July 2020
Material SAP #	34105 – AIR 6449 B41



RRUS 4415 B25

- › B25
 - TX = 1930 – 1995 MHz
 - RX = 1850 – 1915 MHz
- › CPRI 2 ports x 2.5/4.9/9.8/10.1 Gbps. Install 2 SFPs and connect 2 fiber pair to the RRUS 4415 during initial install.
- › Only use Ericsson supplied and approved SFPs RDH10265/25
 - Exception: SFP7 RDH 10265/3 for CPRI 1.4km to 10km
 - Exception: SFP7 (pair): RDH 102 70/1 and RDH 102 70/2 for CPRI > 10km
- › 2 external alarm inputs
- › Max wind load @ 50m/sec = 260N
- › Breaker size = 25A, DC Power Consumption = 670 W (for dimensioning)
- › 200mm horizontal separation required for side by side mounting
- › 200mm separation required from antenna backplane to radio
- › 400mm vertical outdoor/indoor separation required between 2 radios
- › 500mm vertical separation below antenna
- › Min, Max DC cable size from squid to radio = 10,8 AWG
 - Adapter is required for 2-wire connection
 - Shielded DC cable is required
- › Ground cable size = 2AWG
- › Dimensions (incl. handles, feet and sunshield, w/o fan unit)
 - Height: 16.5" (420 mm)
 - Width: 13.4" (342 mm)
 - Depth: 5.9" (149 mm)
- › Weight, excl. mounting hardware = 46 lbs (21 kg)

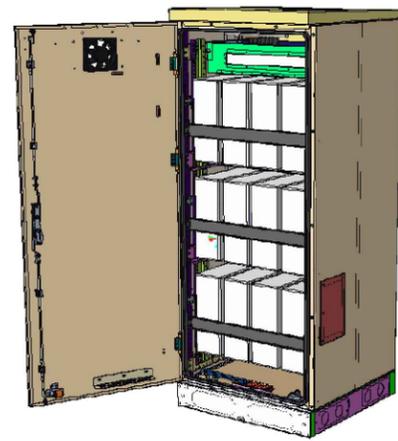


SUPPLEMENTAL

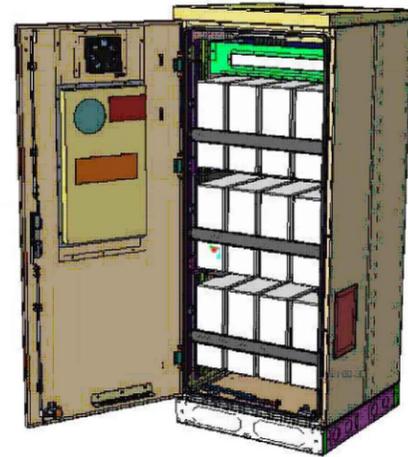
SHEET NUMBER:
R-602

REVISION:
0

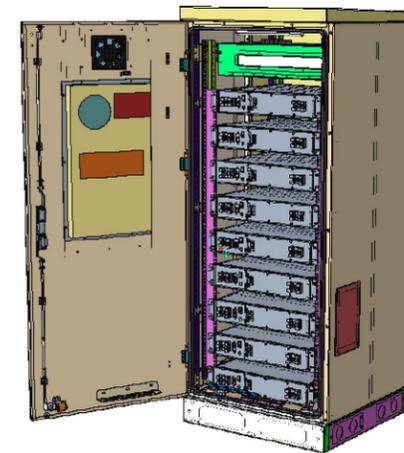
Enclosure B160



Enclosure B160
AirCon + VRLA



Enclosure B160
AirCon + Li-Ion



Enclosure B160
Convection Cooling
+ VRLA

PA1 | 2019-02-03 | Ericsson Confidential | Page 1

Enclosure B160

Capacity

- VRLA 12V: 100Ah / 150Ah / 170Ah / 190Ah / 210Ah
- Li-Ion: 24U 19" / 23"
- Sodium-Nickel: 3x FIAMM

Electrical specification

- DC Output: -48VDC/200A
- Battery breakers: 2x 125/2p
- Alarms: Door open, Climate failure, MCB Connection

Mechanical specification

- Weight: 134kg
- Dimensions: 63 x 26 x 26 in. (incl. Base frame)
- Base frame height: 6 in.
- Material: Galvanized steel (180g/m²)
- Color: Powder paint NCS 2002-B
- Door: Front access
- Locking type: Pad lock / cylinder

Environmental specification

- Ingress protection: VRLA/Sodium IP44
Li-Ion IP55
 - Relative humidity: 15-100%
- ## Climate system
- Air Conditioner
 - Fan type: DC
 - Cooling capacity: 500W @L35/L35
 - Convection cooling
 - Emergency fan

PA1 | 2019-02-03 | Ericsson Confidential | Page 2

SUPPLEMENTAL

SHEET NUMBER:

R-603

REVISION:

0

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Enclosure 6160 AC

The Enclosure 6160 is a multi-purpose site cabinet designed to support a multitude of equipment such as ERS Baseband, Transport, Li-Ion battery and 3PP vendor equipment. It also provides a highly capable power system and battery back-up - all in a streamlined design and minimized footprint to support cost efficient expansion of mobile broadband.

Being an all-in-one enclosure, the Enclosure 6160 is a very fitting choice for all types of sites where the capacity need is large or room for future expansion is needed. It is ideally used for modernizing existing sites or in greenfield scenarios to match both current and future needs.

With a robust design, IP65 compliance and a sealed Heat Exchanger (HEX) climate system the Enclosure 6160 ensures optimal environmental protection of the active equipment - enabling them for a long-lasting service. The complete system is also integrated and verified for the entire Ericsson Radio System and ensures best-in-class service.

The power system offers 31,5kW of power in total and provides 24kW of -48V DC power for both internal and external consumers.

The equipment space allows 19U of rack space ensuring well enough capacity for existing need and future expansion.

One of the main advantages of the Enclosure 6160 is its default integration with ENM - allowing for advanced remote monitoring and control such a fault management (alarms), inventory management and performance measurements. The cabinet also provides an open O&M interface for integration to 3PP O&M systems.



Preliminary technical specification for Enclosure 6160 AC

CAPACITY

Rack space user equipment	19U (19" rack)
Hardware capabilities	Power and CPRI support for multi-standard remote radios (RRU or AIR) ERS Baseband and Transport units Li-Ion batteries 3PP equipment Additional power feed available as option

MECHANICAL SPECIFICATION

Weight	145 kg (excluding active equipment) 320 lbs (excluding active equipment)
Dimension (H x W x D)	1600 x 650 x 650 mm (incl. Base frame) 63 x 26 x 26 in. (incl. Base frame)
Base frame height	150 mm 6 in.
Mounting position	Ground
Enclosure material	Aluminum
Color	Power paint NCS 2002-B
Door	Front access
Rack type	19" (IEC 60297-3-100)
Locking type	Pad lock or Cylinder

POWER SYSTEM

Input voltage	3P+N+PE: 346/200-415/240 VAC 2P+N+PE: 208/120-220/127 VAC 1P+N+PE: 200-250 VAC
Input power	<33kW
Output load (-48VDC)	24kW
Total capacity (-48VDC)	31.5kW
AC SPD	Class 2/Type 2
DC SPD	Class 2/Type 2
PSU Slots	9x
Service outlet	Optional
Priority load	8x Circuit Breaker
LLVD 1	6x Circuit Breaker
LLVD 2	6x Circuit Breaker
CB ratings	3A / 5A / 10A / 15A / 20A / 25A / 30A / 40A / 50A / 60A / 80A / 100A
Battery Interface	2x Circuit Breaker
Battery Circuit Breaker rating	125A 2pol (200A)
PSU capacity	3500W

SUPPLEMENTAL

SHEET NUMBER:

R-604

REVISION:

0

NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT.



Antenna Mount Analysis Report

ATC Site Name : West Service Road, CT
ATC Site Number : 302466
Engineering Number : 13251344_C8_08
Mount Elevation : 124 ft
Carrier : T-Mobile
Carrier Site Name : CT491/SSite Hartford_MP1
Carrier Site Number : CT11491B
Site Location : 305 W. Service Rd.
 Hartford, CT 06120-0001
 41.79953889 , -72.65669722
County : Hartford
Date : August 24, 2020
Max Usage : 60%
Result : Contingent Pass

Prepared By:
Max Carter
Structural Engineer

Reviewed By:



Authorized by "EOR"
24 Aug 2020 09:05:57

COA: PEC.0001553

Introduction

The purpose of this report is to summarize results of the antenna mount analysis performed for T-Mobile at 124 ft.

Supporting Documents

Radio Frequency Data Sheet	RFDS ID #CT11491B, dated May 11, 2020
Reference Photos	Site photos from 2020
Previous Mount Analysis*	CLS Engineering Project #41124-12605178-01-MA, dated September 19, 2018

*Modifications proposed in previous mount analysis could not be verified as installed via the most recently available site photos, however they were considered in this analysis. Should these modifications not be installed as specified, ATC Engineering should be contacted, and the mount analysis revised to reflect the as-build condition(s).

Analysis

This antenna mount was analyzed using American Tower Corporation's Mount Analysis Program and RISA-3D

Basic Wind Speed:	117 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1 1/2" radial ice concurrent
Codes:	ANSI/TIA-222-H
Exposure Category:	C
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.18, S1 = 0.06
Site Class:	D - Stiff Soil
Live Loads:	Lm = 500 lbs, Lv = 250 lbs

Conclusion

Based on the analysis results, the antenna mount does not meet the requirements per the applicable codes listed above. The mount can support the equipment as described in this report after the below listed modifications are completed:

- Install Site Pro 1 P296 antenna mounting pipe – 2-3/8" x 96" (Mount Pipe C, G and K) with Site Pro 1 SCX3-K crossover plate kits.
- Replace existing mount pipe B with Site Pro 1 P30120 antenna mounting pipe – 2-7/8" x 120" (Mount Pipe B, F, and J) with Site Pro 1 SCX3-K crossover plate kits.

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

SUPPLEMENTAL

SHEET NUMBER: **R-605** REVISION: **0**



Mount Analysis of Existing T-Arms for American Tower on behalf of T-Mobile
302466 - West Service Road, CT
Project #: 12605178
T-Mobile Site ID: CT11491B
Program: L700

CLS Engineering PLLC Project #41124-12605178-01-MA
 September 19, 2018

MOUNT DESCRIPTION	Existing T-Arms at 125 ft AGL
ANTENNA ELEVATION	Nominal Rad. Elevation of 125 ft AGL
SITE DESCRIPTION	147.9 ft Monopole
SITE ADDRESS	305 W. Service Rd., Hartford, CT 06120-0001, Hartford County
GPS COORDINATES	41.79953889, -72.65669722
ANALYSIS STANDARD	2012 IBC / 2016 Connecticut State Building Code / TIA-222-G
LOADING CRITERIA	125 mph, V_{ult} / 97 mph, V_{asd} (3-Second Gust) w/o ice & 50 mph (3-Second Gust) w/ 1" Ice

■ ANALYSIS RESULT: **Pass (Conditional)**

MEMBER USAGE	97%	Pass
--------------	-----	------

Modifications are proposed to bring mounts into compliance; see conclusion for details.

Prepared by:
 Bhishan Poudel, E.I.

Reviewed and Approved by:
 Tyler M. Barker, P.E.



Tyler M. Barker
 CLS Engineering, PLLC
 Director of Engineering
 PE # 32402 Exp. 1/31/2019
 COA # PEC.001833 Exp. 8/14/2019

Digitally signed
 by Tyler M.
 Barker
 Date: 2018.09.20
 08:31:20 -04'00'

Mount Analysis for American Tower on behalf of T-Mobile
 302466 - West Service Road, CT

September 19, 2018
 CLS Engineering PLLC Project #41124-12605178-01-MA

■ RESULTS SUMMARY

Existing Mount Usages:

COMPONENT	PEAK USAGE	RESULT
Collar Reactions	141%	Fail
Mount Pipes	118%	Fail
Stand-Off Horizontals	106%	Fail
Face Horizontals	74%	Pass

Mount Usage after Modifications:

COMPONENT	PEAK USAGE	RESULT
Mount Pipes	97%	Pass
Collar Reactions	70%	Pass
Face Horizontals	51%	Pass
Stand-Off Horizontals	41%	Pass
Bracing Members	20%	Pass

■ CONCLUSION AND RECOMMENDATIONS

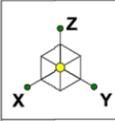
According to our structural analysis, the mounts have been found to **CONDITIONALLY PASS**. The mounting configuration considered in this analysis will be capable of supporting the referenced loading pursuant to referenced standards once the following scope is executed:

- Remove existing pipe and kicker angles assembly connected to outermost mount pipes at each sector.
- Install (1) Site Pro 1 PRK-SFS-L, Handrail Reinforcement Kit (Long), at existing face horizontal member as shown in the following sketches. Collar to be installed flush with existing monopole at a height of ±3 ft. below the centerline of existing T-Arm mount collar.
- Install (3) 5 ft. long Pipe 2 STD, A53 Gr. B, bracing pipes at existing T-Arm mount. Connect to outermost mount pipe at Position 1 and existing face horizontal pipe of adjacent sector with Site Pro 1 PUCK or equal, as shown in the following sketches.

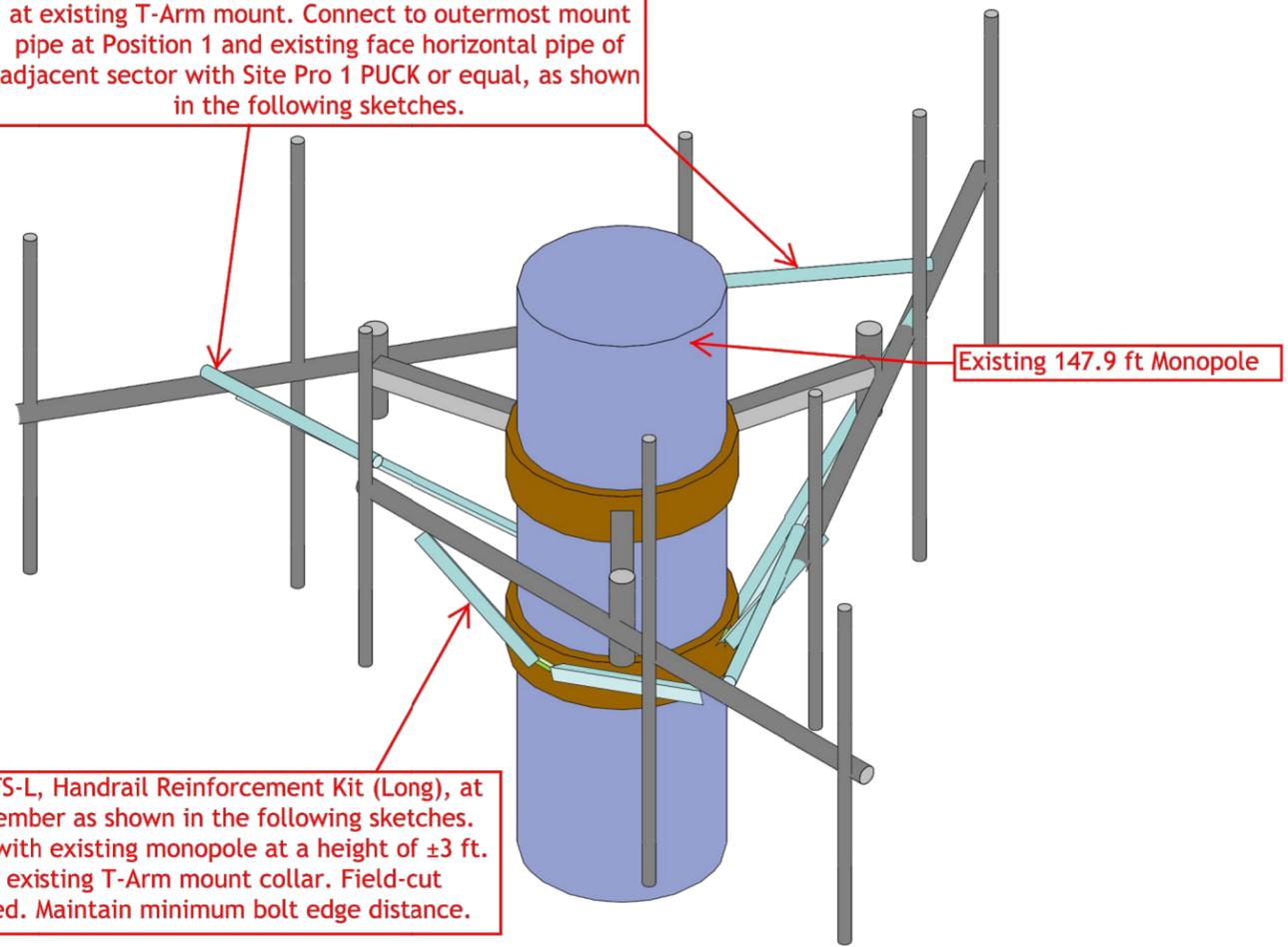
See following sketches and Site Pro 1 assembly drawings for additional details.

SUPPLEMENTAL

SHEET NUMBER: R-606	REVISION: 0
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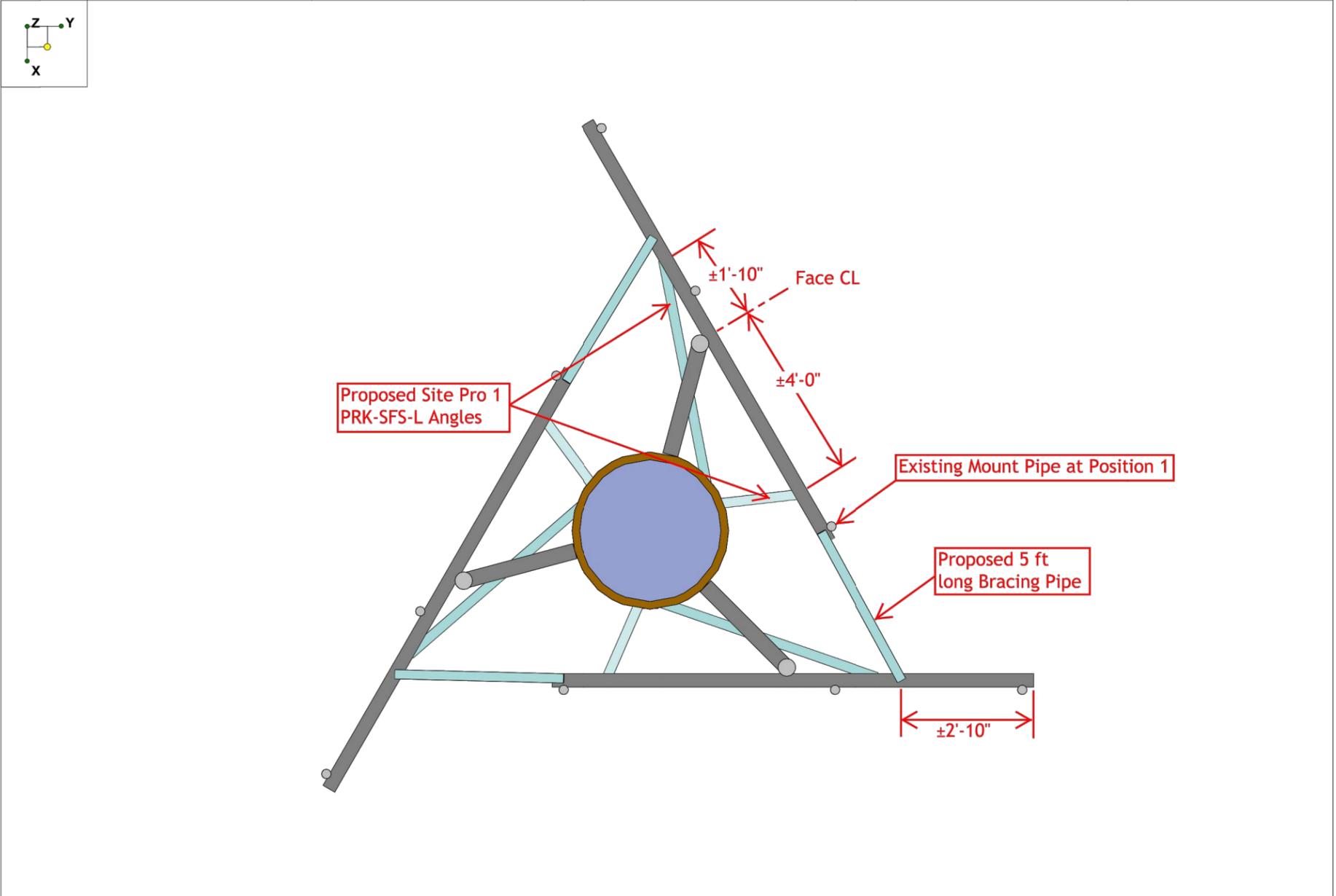
Install (3) 5 ft. long Pipe 2 STD, A53 Gr. B, bracing pipes at existing T-Arm mount. Connect to outermost mount pipe at Position 1 and existing face horizontal pipe of adjacent sector with Site Pro 1 PUCK or equal, as shown in the following sketches.



Install (1) Site Pro 1 PRK-SFS-L, Handrail Reinforcement Kit (Long), at existing face horizontal member as shown in the following sketches. Collar to be installed flush with existing monopole at a height of ± 3 ft. below the centerline of existing T-Arm mount collar. Field-cut proposed angles as required. Maintain minimum bolt edge distance.

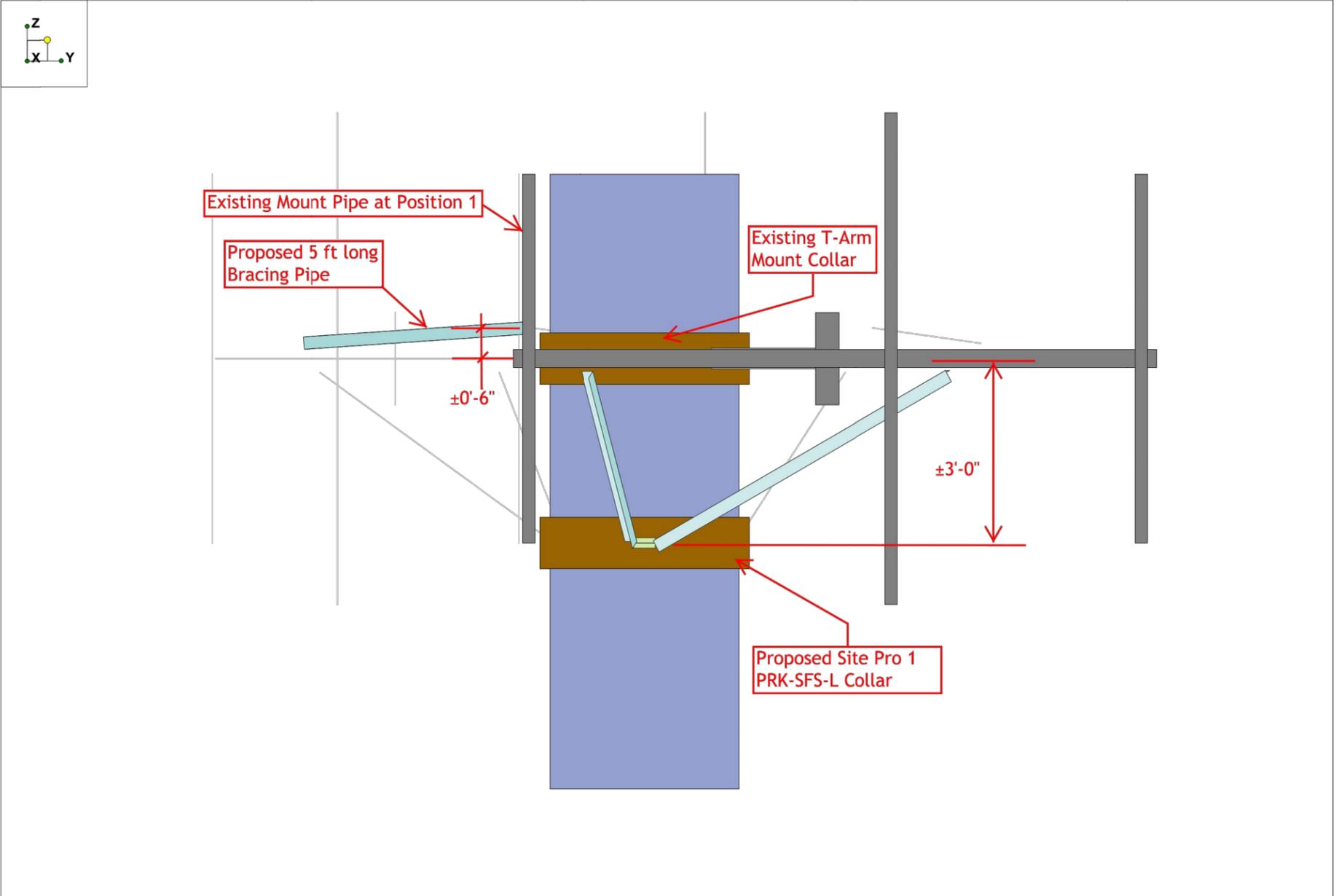
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BP		Sept 19, 2018 at 6:26 PM
41124-12605178-01-MA		41124-12605178-01-MA.r3d

SUPPLEMENTAL	
SHEET NUMBER: R-607	REVISION: 0



CLS	41124-12605178-West Service Road, CT Proposed Modification - Plan	IN - 2
BP		Sept 19, 2018 at 6:26 PM
41124-12605178-01-MA		41124-12605178-01-MA.r3d

SUPPLEMENTAL	
SHEET NUMBER: R-608	REVISION: 0



CLS	41124-12605178-West Service Road, CT Proposed Modification - Front Elevation	IN - 3
BP		Sept 19, 2018 at 6:27 PM
41124-12605178-01-MA		41124-12605178-01-MA.r3d

SUPPLEMENTAL	
SHEET NUMBER: R-609	REVISION: 0

Exhibit C

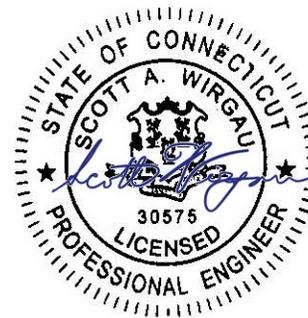
Structural Analysis Report



AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure : 147.9 ft Monopole
ATC Site Name : West Service Road, CT
ATC Asset Number : 302466
Engineering Number : 13251344_C3_09
Proposed Carrier : T-MOBILE
Carrier Site Name : CT491/SSite Hartford_MP1
Carrier Site Number : CT11491B
Site Location : 305 W. Service Rd.
Hartford, CT 06120-0001
41.799500,-72.656700
County : Hartford
Date : September 3, 2020
Max Usage : 83%
Result : Pass



Prepared By:
Lucas Tait
Structural Engineer I

Reviewed By:

COA: PEC.0001553



Table of Contents

Introduction	1
Supporting Documents	1
Analysis	1
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Existing and Reserved Equipment.....	2
Equipment to be Removed.....	2
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Foundations	3
Deflection and Sway	3
Standard Conditions	4
Calculations	Attached



Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 147.9 ft monopole to reflect the change in loading by T-MOBILE.

Supporting Documents

Tower Drawings	FWT Job #18053, dated September 10, 1998
Foundation Drawing	FWT Job #18054, dated September 10, 1998
Geotechnical Report	Gibble Norden Champion Project #98134.09, dated September 8, 1998
Mount Analysis	ATC Engineering #13251344_C8_08, dated August 24, 2020

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.

Basic Wind Speed:	117 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1 1/2" radial ice concurrent
Code:	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	C
Risk Category:	II
Topographic Factor Procedure:	Method 1
Topographic Category:	1
Crest Height (H):	0 ft
Spectral Response:	$S_s = 0.19, S_1 = 0.05$
Site Class:	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. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



Existing and Reserved Equipment

Elev. ¹ (ft)	Qty	Antenna	Mount Type	Lines	Carrier
151.0	4	Andrew 844G65VTZASX	Platform with Handrails	(12) 1 1/4" Coax	SPRINT NEXTEL
	8	Andrew DB844H90E-XY			
138.0	9	Generic 48" x 4" Panel	Low Profile Platform	(9) 1 5/8" Coax	AT&T MOBILITY
125.0	3	RFS APXVAARR24_43-U-NA20	T-Arm	(3) 1 1/4" (1.25"-31.8mm) Fiber (1) 1 5/8" (1.63"-41.3mm) Fiber (9) 1 5/8" Coax	T-MOBILE
	3	Ericsson KRY 112 144/1			
115.0	6	Amphenol Antel BXA-70063-6CF-EDIN-X	Low Profile Platform	(2) 1 5/8" (1.63"-41.3mm) Fiber (6) 1 5/8" Coax	VERIZON WIRELESS
	1	RFS DB-T1-6Z-8AB-OZ			
	1	Raycap RVZDC-6627-PF-48			
	3	Samsung 700/850MHz Dual Band RRH			
	3	Samsung PCS/AWS Dual Band RRH			
	6	Commscope SBNHH-1D65B			
107.0	1	Antel BCD-87010 ___ 25	Stand-Off	(1) 7/8" Coax	SENSUS USA INC.
100.0	3	Commscope NNVV-65B-R4	T-Arm	(3) 1 1/4" Hybriflex Cable	CLEARWIRE CORPORATION
	3	Alcatel-Lucent 1900MHz RRH (65MHz) w/ solar shield			
	6	Alcatel-Lucent RRH2x50-08			
90.0	2	Andrew VHLP2-18	T-Arm	(1) 1.7" (43.2mm) Hybrid (2) 1/2" Coax (2) 2" conduit (6) 5/16" (0.31"-7.9mm) Coax	CLEARWIRE CORPORATION
	3	Nokia 2.5G MAA - AAHC(64T64R)			
	1	Generic 18" x 18" x 4" Junction Box			
	3	NextNet BTS-2500			
	2	DragonWave A-ANT-18G-3-C			
	2	DragonWave Horizon Compact			

Equipment to be Removed

Elev. ¹ (ft)	Qty	Antenna	Mount Type	Lines	Carrier
125.0	3	Ericsson Radio 4449 B12,B71	-	-	T-MOBILE
	3	Ericsson Air 3246 B66			
	3	Ericsson AIR-32 B2A/B66Aa			

Proposed Equipment

Elev. ¹ (ft)	Qty	Antenna	Mount Type	Lines	Carrier
125.0	3	Ericsson Radio 4449 B71 B85A	T-Arm w/ Mount Analysis Modifications	(3) 1 5/8" Coax	T-MOBILE
	3	Ericsson RRUS 4415 B25			
	3	Ericsson Air6449 B41			
	3	Ericsson AIR 21, 1.3M, B2A B4P (91.5 lbs)			
	3	Ericsson AIR32 B66Aa/B2a			

¹ Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed coax inside the pole shaft.



Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	83%	Pass
Shaft	80%	Pass
Base Plate	22%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	3,947.4	81%
Axial (Kips)	52.0	5%
Shear (Kips)	39.8	61%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
125.0	Ericsson Radio 4449 B71 B85A	T-MOBILE	1.215	0.968
	Ericsson RRUS 4415 B25			
	Ericsson Air6449 B41			
	Ericsson AIR 21, 1.3M, B2A B4P (91.5 lbs)			
90.0	Ericsson AIR32 B66Aa/B2a	CLEARWIRE CORPORATION	0.667	0.803
	Andrew VHLP2-18			
	DragonWave A-ANT-18G-3-C			

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



Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

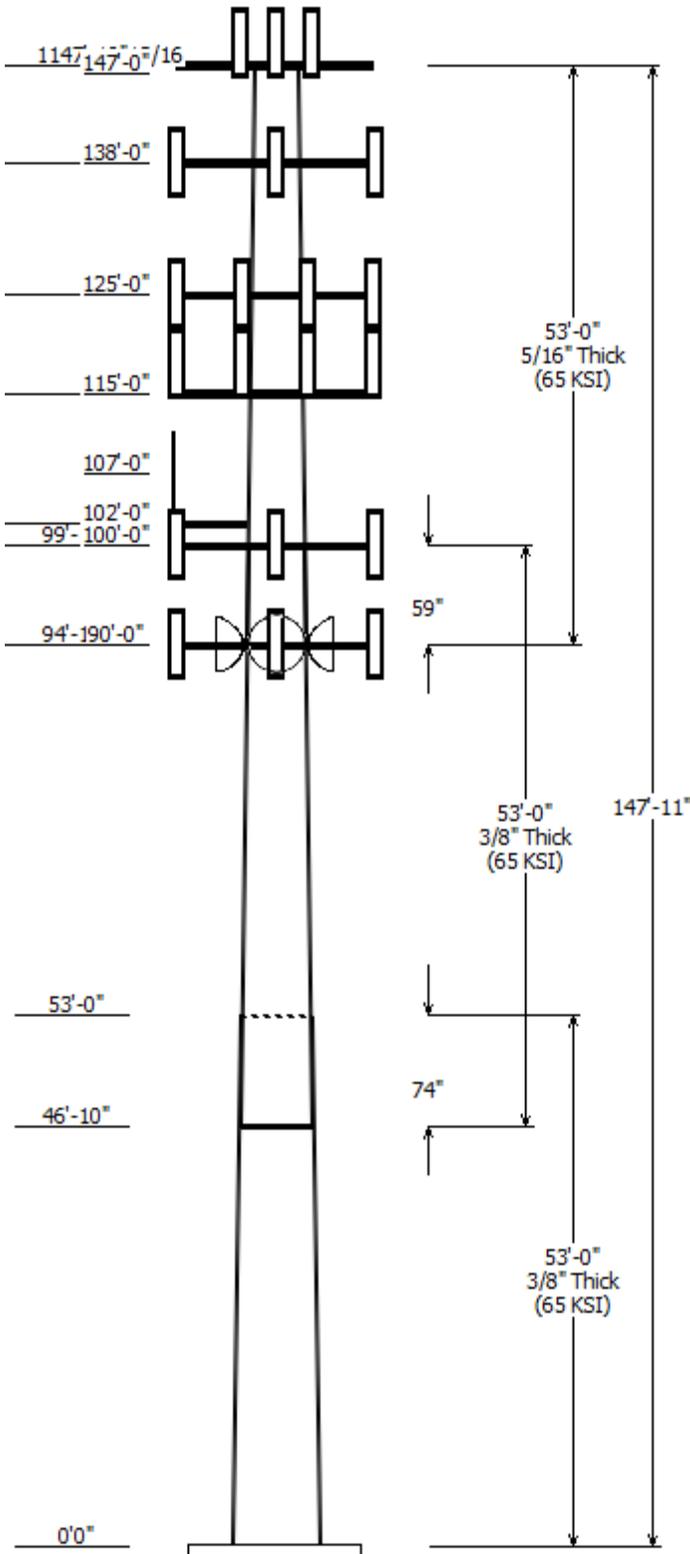
It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

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 supplied herein.

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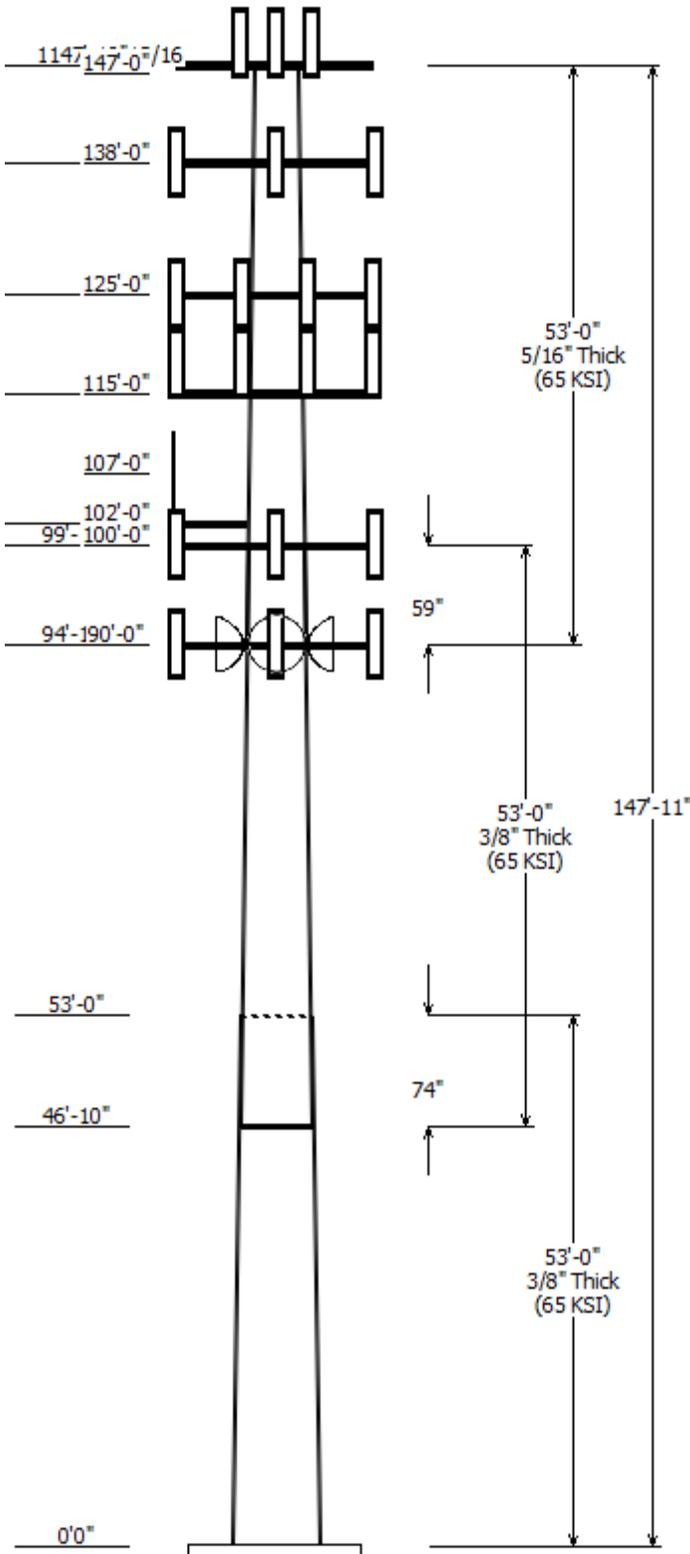


Job Information		
Client : T-MOBILE	Code: ANSI/TIA-222-H	
Pole : 302466	Location : West Service Road, CT	
Description :	Risk Category : II	
Shape : 18 Sides	Exposure : C	
Height : 147.92 (ft)	Topo Method : Method 1	
Base Elev (ft): 0.00	Topographic Category : 1	
Taper: 0.214564(in/ft)		

Sections Properties						
Shaft Section	Length (ft)	Diameter (in)		Thick Joint (in)	Overlap Length (in)	Steel Grade
		Accross Top	Flats Bottom			
1	53.000	45.20	56.58	0.375	0.000	18 Sides 65
2	53.000	35.90	47.28	0.375	74.000	18 Sides 65
3	53.000	26.21	37.58	0.313	59.000	18 Sides 65

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
147.900	147.900	1	Flat Platform w/ Handrails
147.000	151.000	4	Andrew 844G65VTZASX
147.000	151.000	8	Andrew DB844H90E-XY
138.000	138.000	1	Flat Low Profile Platform
138.000	138.000	9	Generic 48" x 4" Panel
125.000	125.000	3	Round T-Arm
125.000	125.000	3	RFS APXVAARR24_43-U-NA20
125.000	125.000	3	Ericsson AIR32 B66Aa/B2a
125.000	125.000	3	Ericsson AIR 21, 1.3M, B2A B4P
125.000	125.000	3	Ericsson Air6449 B41
125.000	125.000	3	Ericsson RRUS 4415 B25
125.000	125.000	3	Ericsson Radio 4449 B71 B85A
125.000	126.000	3	Ericsson KRY 112 144/1
115.000	115.000	1	Flat Low Profile Platform
115.000	116.000	6	Commscope SBNHH-1D65B
115.000	116.000	6	Amphenol Antel BXA-70063-
115.000	116.000	1	RFS DB-T1-6Z-8AB-0Z
115.000	115.000	1	Raycap RVZDC-6627-PF-48
115.000	115.000	3	Samsung 700/850MHz Dual
115.000	115.000	3	Samsung PCS/AWS Dual Band
107.000	107.000	1	Antel BCD-87010 __ 25
102.000	102.000	1	Stand-Off
100.000	100.000	3	Generic Round T-Arm
100.000	100.000	3	Commscope NNVV-65B-R4
100.000	100.000	3	Alcatel-Lucent 1900MHz RRR
100.000	100.000	6	Alcatel-Lucent RRR2x50-08
90.000	90.000	2	DragonWave A-ANT-18G-3-C
90.000	90.000	2	Andrew VHLP2-18
90.000	90.000	3	Nokia 2.5G MAA -
90.000	90.000	1	Generic 18" x 18" x 4" Junctio
90.000	90.000	3	NextNet BTS-2500
90.000	90.000	2	DragonWave Horizon Compact
90.000	90.000	3	Generic Round T-Arm

Linear Appurtenance			
Elev (ft)		Description	Exposed To Wind
From	To		
5.000	90.000	1.7" (43.2mm)	No
5.000	90.000	1/2" Coax	Yes
5.000	90.000	2" conduit	Yes
5.000	90.000	5/16" (0.31"-	No
5.000	100.0	1 1/4" Hybriflex	Yes



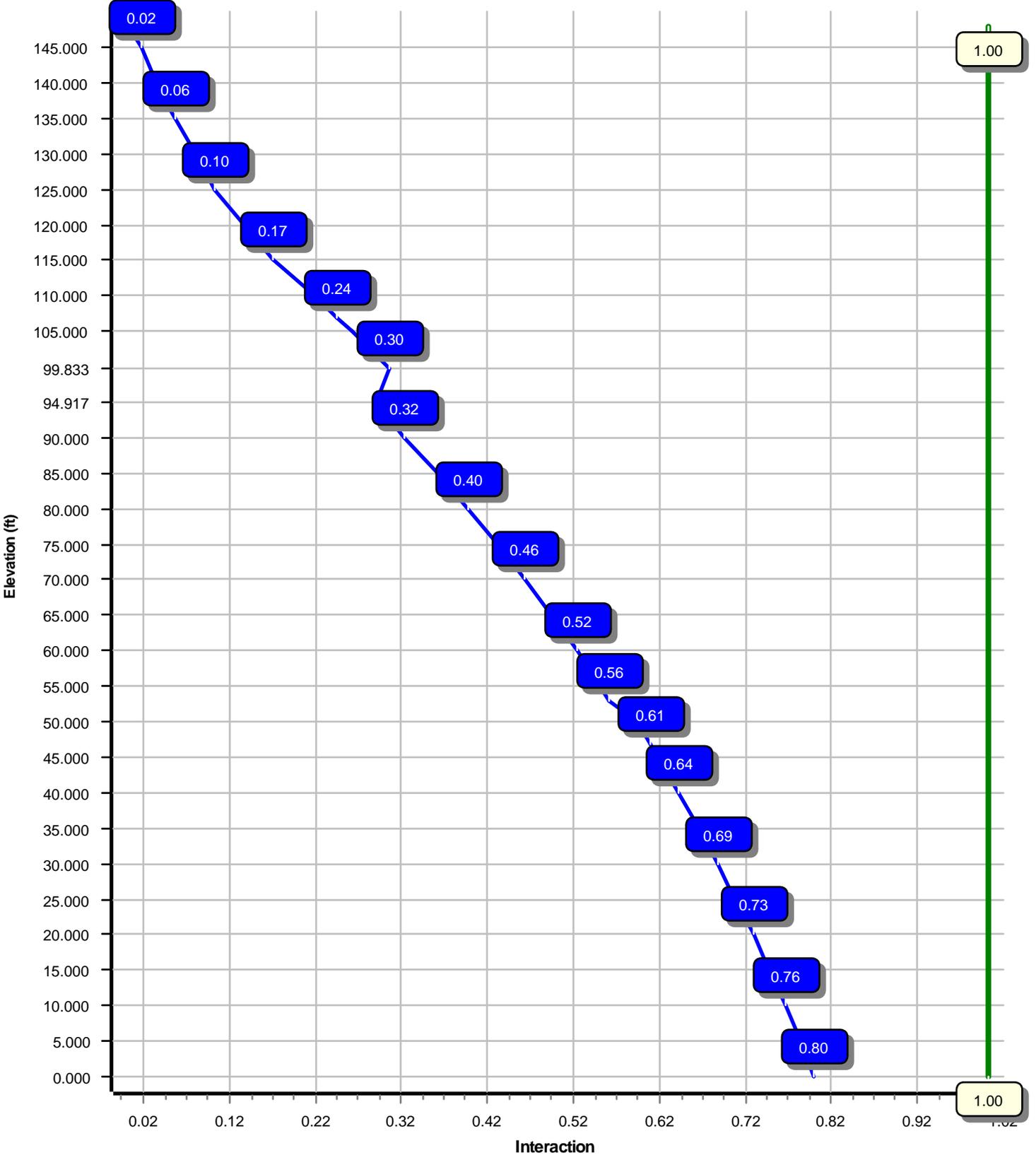
5.000	107.0	7/8" Coax	No
5.000	115.0	1 5/8" (1.63"-	No
5.000	115.0	1 5/8" Coax	Yes
5.000	115.0	1 5/8" Fiber	Yes
5.000	125.0	1 1/4" (1.25"-	No
5.000	125.0	1 5/8" (1.63"-	Yes
5.000	125.0	1 5/8" Coax	Yes
5.000	125.0	1 5/8" Coax	No
5.000	138.0	1 5/8" Coax	No
5.000	151.0	1 1/4" Coax	No
0.000	125.0	1 1/4" Fiber	No
0.000	125.0	1 5/8" Coax	No

Load Cases	
1.2D + 1.0W	117 mph with No Ice
0.9D + 1.0W	117 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.50 in Radial Ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	Serviceability 60 mph

Reactions			
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.0W	3947.41	39.81	51.97
0.9D + 1.0W	3909.63	39.78	38.96
1.2D + 1.0Di + 1.0Wi	1003.54	9.74	83.15
1.2D + 1.0Ev + 1.0Eh	150.70	1.30	52.34
0.9D - 1.0Ev + 1.0Eh	148.87	1.30	36.33
1.0D + 1.0W	923.62	9.36	43.36

Dish Deflections			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	90.00	8.001	0.803
1.0D + 1.0W	90.00	8.001	0.803

Load Case : 1.2D + 1.0W
Max Ratio 79.76% at 0.0 ft



Site Number: 302466

Code: ANSI/TIA-222-H

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Site Name: West Service Road, CT

Engineering Number: 13251344_C3_09

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Customer: T-MOBILE

Analysis Parameters

Location :	Hartford County, CT	Height (ft) :	147.9167
Code :	ANSI/TIA-222-H	Base Diameter (in) :	56.58
Shape :	18 Sides	Top Diameter (in) :	26.22
Pole Type :	Taper	Taper (in/ft) :	0.215
Pole Manufacturer :	FWT	Rotation (deg) :	0.00
Kd (non-service) :	0.95	Ke :	1.00

Ice & Wind Parameters

Exposure Category:	C	Design Wind Speed Without Ice:	117 mph
Risk Category:	II	Design Wind Speed With Ice:	50 mph
Topographic Factor Procedure:	Method 1	Operational Wind Speed:	60 mph
Topographic Category:	1	Design Ice Thickness:	1.50 in
Crest Height:	0 ft	HMSL:	18.00 ft

Seismic Parameters

Analysis Method:	Equivalent Lateral Force Method		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	2.12		
T _L (sec):	6	p:	1
S _s :	0.186	S ₁ :	0.055
F _a :	1.600	F _v :	2.400
S _{ds} :	0.198	S _{d1} :	0.088
		C _s :	0.030
		C _s Max:	0.030
		C _s Min:	0.030

Load Cases

1.2D + 1.0W	117 mph with No Ice
0.9D + 1.0W	117 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.50 in Radial Ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	Serviceability 60 mph

Site Number: 302466

Code: ANSI/TIA-222-H

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Site Name: West Service Road, CT

Engineering Number: 13251344_C3_09

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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 ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Taper (in/ft)	
1-18	53.000	0.3750	65		0.00	10,844	56.58	0.00	66.90	26698.9	24.84	150.88	45.20	53.00	53.36	13550.7	19.49	120.55	0.214564	
2-18	53.000	0.3750	65	Slip	74.00	8,848	47.28	46.83	55.83	15518.8	20.47	126.08	35.90	99.83	42.29	6747.0	15.12	95.76	0.214564	
3-18	53.000	0.3125	65	Slip	59.00	5,651	37.58	94.92	36.97	6490.8	19.45	120.28	26.21	147.92	25.69	2178.3	13.03	83.89	0.214564	
Shaft Weight						25,343														

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	Weight (lb)	No Ice EPAa (sf)	Orientation Factor	Weight (lb)	Ice EPAa (sf)	Orientation Factor
147.90	Flat Platform w/ Handrails	1	1.00	0.000	2,000.00	42.400	1.00	3,421.66	63.379	1.00
147.00	Andrew DB844H90E-XY	8	0.75	4.000	14.00	3.615	0.73	124.29	3.920	0.73
147.00	Andrew 844G65VTZASX	4	0.75	4.000	16.00	5.310	0.71	171.54	6.310	0.71
138.00	Generic 48" x 4" Panel	9	0.80	0.000	20.00	2.080	0.67	59.33	3.636	0.67
138.00	Flat Low Profile Platform	1	1.00	0.000	1,500.00	26.100	1.00	2,143.13	45.051	1.00
125.00	Ericsson KRY 112 144/1	3	0.80	1.000	11.00	0.351	0.50	21.57	0.750	0.50
125.00	Ericsson Radio 4449 B71 B85A	3	0.80	0.000	75.00	1.650	0.50	134.05	2.484	0.50
125.00	Ericsson RRUS 4415 B25	3	0.80	0.000	46.00	1.842	0.50	94.15	2.723	0.50
125.00	Ericsson Air6449 B41	3	0.80	0.000	104.00	5.682	0.63	237.82	7.241	0.63
125.00	Ericsson AIR 21, 1.3M, B2A B4P	3	0.80	0.000	91.50	6.037	0.70	234.47	8.143	0.70
125.00	Ericsson AIR32 B66Aa/B2a	3	0.80	0.000	132.20	6.510	0.71	288.93	8.661	0.71
125.00	Round T-Arm	3	0.75	0.000	250.00	9.700	0.67	455.23	17.796	0.67
125.00	RFS APXVAARR24_43-U-NA20	3	0.80	0.000	127.90	20.243	0.63	513.40	23.885	0.63
115.00	Samsung PCS/AWS Dual Band	3	0.80	0.000	84.40	1.875	0.75	146.63	2.751	0.75
115.00	Samsung 700/850MHz Dual Band	3	0.80	0.000	70.30	1.875	0.50	126.04	2.751	0.50
115.00	Raycap RVZDC-6627-PF-48	1	0.80	0.000	32.00	3.781	1.00	138.77	5.068	1.00
115.00	RFS DB-T1-6Z-8AB-OZ	1	0.80	1.000	44.00	4.800	1.00	166.54	6.184	1.00
115.00	Amphenol Antel BXA-70063-6CF-	6	0.80	1.000	17.00	7.569	0.66	161.09	10.254	0.66
115.00	Commscope SBNHH-1D65B	6	0.80	1.000	50.70	8.173	0.69	221.58	10.928	0.69
115.00	Flat Low Profile Platform	1	1.00	0.000	1,500.00	26.100	1.00	2,130.81	44.689	1.00
107.00	Antel BCD-87010 ___ 25	1	1.00	0.000	26.50	2.900	1.00	155.88	6.583	1.00
102.00	Stand-Off	1	1.00	0.000	100.00	3.000	1.00	146.97	4.510	1.00
100.00	Alcatel-Lucent RRH2x50-08	6	0.80	0.000	52.90	1.701	0.50	109.92	2.531	0.50
100.00	Alcatel-Lucent 1900MHz RRH	3	0.80	0.000	60.00	2.583	0.50	148.72	3.655	0.50
100.00	Generic Round T-Arm	3	0.75	0.000	312.50	9.700	0.67	563.86	17.632	0.67
100.00	Commscope NNVV-65B-R4	3	0.80	0.000	77.40	12.271	0.64	319.16	14.969	0.64
90.00	DragonWave Horizon Compact	2	0.80	0.000	10.60	0.721	0.50	31.95	1.261	0.50
90.00	NextNet BTS-2500	3	0.80	0.000	35.00	1.817	0.50	79.03	2.687	0.50
90.00	Generic 18" x 18" x 4" Junction	1	0.80	0.000	21.00	2.700	0.50	75.55	3.720	0.50
90.00	Nokia 2.5G MAA - AAHC(64T64R)	3	0.80	0.000	103.60	4.203	0.64	210.64	5.476	0.64
90.00	Andrew VHLP2-18	2	1.00	0.000	27.00	4.680	1.00	119.73	5.887	1.00
90.00	DragonWave A-ANT-18G-3-C	2	1.00	0.000	49.60	9.018	1.00	224.80	10.688	1.00
90.00	Generic Round T-Arm	3	0.75	0.000	312.50	9.700	0.67	560.55	17.528	0.67
Totals	Num Loadings:33				101			12,157.40		26,705.02

Linear Appurtenance Properties

Load Case Azimuth (deg) : 90

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Max Coax / Flat Row	Dist Between Rows (in)	Dist Between Azimuth Cols (in)	Dist Exposed From Face (in)	Exposed To Wind Carrier
5.00	151.00	12	1 1/4" Coax	1.55	0.63	N	0	0.00	0	N SPRINT NEXTEL
5.00	138.00	9	1 5/8" Coax	1.98	0.82	N	0	0.00	0	N AT&T MOBILITY
0.00	125.00	1	1 1/4" Fiber	1.25	1.05	N	0	0.00	0	N T-MOBILE
0.00	125.00	3	1 5/8" Coax	1.98	0.82	N	0	0.00	0	N T-MOBILE
5.00	125.00	2	1 1/4" (1.25" - 31.8mm)	1.25	1.05	N	0	0.00	0	N T-MOBILE

Site Number: 302466

Code: ANSI/TIA-222-H

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Site Name: West Service Road, CT

Engineering Number: 13251344_C3_09

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Customer: T-MOBILE

5.00	125.00	1	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	1	0.00	0.00	25	0.50	Y	T-MOBILE
5.00	125.00	6	1 5/8" Coax	1.98	0.82	N	3	0.50	0.50	10	0.50	Y	T-MOBILE
5.00	125.00	3	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	T-MOBILE
5.00	115.00	1	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0	0.00	0.00	0	0.00	N	VERIZON WIRELESS
5.00	115.00	6	1 5/8" Coax	1.98	0.82	N	3	0.50	0.50	150	0.50	Y	VERIZON WIRELESS
5.00	115.00	1	1 5/8" Fiber	1.63	1.61	N	1	0.00	0.00	170	0.50	Y	VERIZON WIRELESS
5.00	107.00	1	7/8" Coax	1.09	0.33	N	1	0.00	0.00	0	0.00	N	SENSUS USA INC.
5.00	100.00	3	1 1/4" Hybriflex Cable	1.54	1.00	N	3	0.00	0.50	235	0.50	Y	CLEARWIRE
5.00	90.00	1	1.7" (43.2mm) Hybrid	1.70	1.78	N	0	0.00	0.00	0	0.00	N	CLEARWIRE
5.00	90.00	2	1/2" Coax	0.63	0.15	N	2	0.00	0.50	200	0.50	Y	CLEARWIRE
5.00	90.00	2	2" conduit	2.38	3.65	N	2	0.00	0.50	215	0.50	Y	CLEARWIRE
5.00	90.00	6	5/16" (0.31"-7.9mm)	0.31	0.05	N	0	0.00	0.00	0	0.00	N	CLEARWIRE

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in ³)	Z (in ³)	Weight (lb)
0.00		0.3750	56.580	66.895	26,698.9	24.84	150.88	72.2	929.4	0.0	0.0
5.00		0.3750	55.507	65.618	25,199.0	24.34	148.02	72.8	894.2	0.0	1,127.3
10.00		0.3750	54.434	64.341	23,756.4	23.83	145.16	73.4	859.6	0.0	1,105.6
15.00		0.3750	53.361	63.065	22,369.9	23.33	142.30	74.0	825.7	0.0	1,083.8
20.00		0.3750	52.288	61.788	21,038.5	22.82	139.44	74.6	792.5	0.0	1,062.1
25.00		0.3750	51.216	60.511	19,760.9	22.32	136.57	75.2	760.0	0.0	1,040.4
30.00		0.3750	50.143	59.234	18,536.2	21.81	133.71	75.7	728.1	0.0	1,018.7
35.00		0.3750	49.070	57.957	17,363.1	21.31	130.85	76.3	696.9	0.0	996.9
40.00		0.3750	47.997	56.680	16,240.6	20.81	127.99	76.9	666.5	0.0	975.2
45.00		0.3750	46.924	55.403	15,167.5	20.30	125.13	77.5	636.6	0.0	953.5
46.83	Bot - Section 2	0.3750	46.531	54.935	14,786.3	20.12	124.08	77.7	625.9	0.0	344.2
50.00		0.3750	45.851	54.126	14,142.8	19.80	122.27	78.1	607.5	0.0	1,184.8
53.00	Top - Section 1	0.3750	45.958	54.253	14,242.2	19.85	122.55	78.1	610.4	0.0	1,106.4
55.00		0.3750	45.529	53.742	13,843.8	19.64	121.41	78.3	598.9	0.0	367.5
60.00		0.3750	44.456	52.465	12,880.3	19.14	118.55	78.9	570.7	0.0	903.5
65.00		0.3750	43.383	51.188	11,962.6	18.64	115.69	79.5	543.1	0.0	881.8
70.00		0.3750	42.310	49.912	11,089.5	18.13	112.83	80.1	516.2	0.0	860.1
75.00		0.3750	41.237	48.635	10,260.0	17.63	109.97	80.7	490.0	0.0	838.3
80.00		0.3750	40.165	47.358	9,472.9	17.12	107.11	81.3	464.5	0.0	816.6
85.00		0.3750	39.092	46.081	8,727.1	16.62	104.24	81.9	439.7	0.0	794.9
90.00		0.3750	38.019	44.804	8,021.6	16.11	101.38	82.4	415.6	0.0	773.2
94.92	Bot - Section 3	0.3750	36.964	43.548	7,365.9	15.62	98.57	82.6	392.5	0.0	739.1
95.00		0.3750	36.946	43.527	7,355.1	15.61	98.52	82.6	392.1	0.0	22.8
99.83	Top - Section 2	0.3125	36.534	35.926	5,955.2	18.85	116.91	79.2	321.1	0.0	1,305.1
100.0		0.3125	36.498	35.890	5,937.6	18.83	116.79	79.3	320.4	0.0	20.4
102.0		0.3125	36.069	35.465	5,728.8	18.59	115.42	79.5	312.8	0.0	242.8
105.0		0.3125	35.425	34.826	5,425.0	18.23	113.36	80.0	301.6	0.0	358.8
107.0		0.3125	34.996	34.401	5,228.5	17.98	111.99	80.2	294.3	0.0	235.6
110.0		0.3125	34.353	33.762	4,942.7	17.62	109.93	80.7	283.4	0.0	347.9
115.0		0.3125	33.280	32.698	4,490.0	17.01	106.50	81.4	265.7	0.0	565.4
120.0		0.3125	32.207	31.634	4,065.8	16.41	103.06	82.1	248.6	0.0	547.3
125.0		0.3125	31.134	30.570	3,669.1	15.80	99.63	82.6	232.1	0.0	529.2
130.0		0.3125	30.061	29.506	3,299.2	15.20	96.20	82.6	216.2	0.0	511.1
135.0		0.3125	28.989	28.442	2,955.0	14.59	92.76	82.6	200.8	0.0	493.0
138.0		0.3125	28.345	27.804	2,760.4	14.23	90.70	82.6	191.8	0.0	287.1
140.0		0.3125	27.916	27.378	2,635.6	13.99	89.33	82.6	186.0	0.0	187.8
145.0		0.3125	26.843	26.314	2,340.0	13.38	85.90	82.6	171.7	0.0	456.8
147.0		0.3125	26.414	25.888	2,228.3	13.14	84.52	82.6	166.2	0.0	177.6
147.9		0.3125	26.221	25.697	2,179.2	13.03	83.91	82.6	163.7	0.0	79.0
147.9		0.3125	26.217	25.693	2,178.3	13.03	83.89	82.6	163.7	0.0	1.5
25,342.5											

Load Case: 1.2D + 1.0W	117 mph with No Ice	23 Iterations
Gust Response Factor :1.10		
Dead Load Factor :1.20		
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		269.2	0.0					0.0	0.0	269.2	0.0	0.0	0.0
5.00		564.6	1,352.7					0.0	21.1	564.6	1,373.8	0.0	0.0
10.00		591.4	1,326.7					0.0	304.1	591.4	1,630.8	0.0	0.0
15.00		601.8	1,300.6					0.0	304.1	601.8	1,604.7	0.0	0.0
20.00		629.1	1,274.5					0.0	304.1	629.1	1,578.7	0.0	0.0
25.00		661.2	1,248.5					0.0	304.1	661.2	1,552.6	0.0	0.0
30.00		689.0	1,222.4					0.0	304.1	689.0	1,526.5	0.0	0.0
35.00		713.9	1,196.3					0.0	304.1	713.9	1,500.5	0.0	0.0
40.00		736.6	1,170.3					0.0	304.1	736.6	1,474.4	0.0	0.0
45.00		513.4	1,144.2					0.0	304.1	513.4	1,448.3	0.0	0.0
46.83	Bot - Section 2	387.9	413.0					0.0	111.5	387.9	524.5	0.0	0.0
50.00		487.2	1,421.8					0.0	192.6	487.2	1,614.4	0.0	0.0
53.00	Top - Section 1	397.1	1,327.6					0.0	182.5	397.1	1,510.1	0.0	0.0
55.00		559.9	441.0					0.0	121.7	559.9	562.6	0.0	0.0
60.00		812.5	1,084.2					0.0	304.1	812.5	1,388.3	0.0	0.0
65.00		830.1	1,058.1					0.0	304.1	830.1	1,362.3	0.0	0.0
70.00		847.3	1,032.1					0.0	304.1	847.3	1,336.2	0.0	0.0
75.00		864.4	1,006.0					0.0	304.1	864.4	1,310.1	0.0	0.0
80.00		881.3	979.9					0.0	304.1	881.3	1,284.1	0.0	0.0
85.00		898.2	953.9					0.0	304.1	898.2	1,258.0	0.0	0.0
90.00	Appurtenance(s)	879.7	927.8	2,369.8	0.0	0.0	1,858.4	176.4	304.1	3,425.9	3,090.4	0.0	0.0
94.92	Bot - Section 3	433.7	886.9					177.2	242.0	610.8	1,128.9	0.0	0.0
95.00		426.1	27.4					3.0	4.1	429.1	31.5	0.0	0.0
99.83	Top - Section 2	433.1	1,566.1					177.7	237.9	610.9	1,803.9	0.0	0.0
100.00	Appurtenance(s)	185.3	24.4	1,883.0	0.0	0.0	2,000.5	6.2	8.2	2,074.4	2,033.2	0.0	0.0
102.00	Appurtenance(s)	425.0	291.4	139.5	0.0	0.0	120.0	74.2	91.2	638.8	502.6	0.0	0.0
105.00		421.7	430.5					112.4	136.8	534.1	567.4	0.0	0.0
107.00	Appurtenance(s)	416.5	282.7	136.2	0.0	0.0	31.8	75.7	91.2	628.4	405.7	0.0	0.0
110.00		656.5	417.5					114.6	135.6	771.0	553.1	0.0	0.0
115.00	Appurtenance(s)	725.2	678.5	4,280.6	0.0	2,623.0	2,935.6	193.8	226.1	5,199.5	3,840.1	0.0	0.0
120.00		635.8	656.7					0.0	177.2	635.8	834.0	0.0	0.0
125.00	Appurtenance(s)	548.6	635.0	3,867.6	0.0	20.5	3,015.4	0.0	177.2	4,416.2	3,827.6	0.0	0.0
130.00		454.4	613.3					0.0	89.6	454.4	702.9	0.0	0.0
135.00		355.4	591.6					0.0	89.6	355.4	681.2	0.0	0.0
138.00	Appurtenance(s)	217.6	344.5	1,791.1	0.0	0.0	2,016.0	0.0	53.8	2,008.7	2,414.3	0.0	0.0
140.00		297.3	225.3					0.0	18.1	297.3	243.5	0.0	0.0
145.00		293.5	548.1					0.0	45.4	293.5	593.5	0.0	0.0
147.00	Appurtenance(s)	119.3	213.2	1,371.2	0.0	5,484.8	211.2	0.0	18.1	1,490.5	442.5	0.0	0.0
147.90		37.5	94.8					0.0	8.2	37.5	103.0	0.0	0.0
147.92		0.7	1.8					0.0	0.2	0.7	1.9	0.0	0.0
Totals:										37,849.1	49,642.0	0.00	0.00

Load Case: 1.2D + 1.0W

117 mph with No Ice

23 Iterations

Gust Response Factor :1.10
 Dead Load Factor :1.20
 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	-51.97	-39.81	0.00	-3,947.41	0.00	3,947.41	4,345.86	1,174.01	5,959.72	5,031.69	0.00	0.00	0.798
5.00	-50.45	-39.42	0.00	-3,748.38	0.00	3,748.38	4,297.95	1,151.60	5,734.40	4,880.60	0.11	-0.21	0.781
10.00	-48.69	-39.00	0.00	-3,551.28	0.00	3,551.28	4,248.67	1,129.19	5,513.42	4,730.12	0.44	-0.41	0.763
15.00	-46.95	-38.55	0.00	-3,356.30	0.00	3,356.30	4,198.03	1,106.78	5,296.78	4,580.35	0.98	-0.62	0.745
20.00	-45.24	-38.07	0.00	-3,163.55	0.00	3,163.55	4,146.02	1,084.37	5,084.48	4,431.38	1.74	-0.83	0.726
25.00	-43.56	-37.54	0.00	-2,973.23	0.00	2,973.23	4,092.65	1,061.97	4,876.53	4,283.29	2.71	-1.03	0.706
30.00	-41.92	-36.97	0.00	-2,785.55	0.00	2,785.55	4,037.92	1,039.56	4,672.92	4,136.18	3.91	-1.24	0.685
35.00	-40.30	-36.37	0.00	-2,600.71	0.00	2,600.71	3,981.83	1,017.15	4,473.65	3,990.14	5.32	-1.45	0.663
40.00	-38.72	-35.73	0.00	-2,418.88	0.00	2,418.88	3,924.37	994.74	4,278.72	3,845.25	6.94	-1.65	0.640
45.00	-37.20	-35.26	0.00	-2,240.24	0.00	2,240.24	3,865.54	972.33	4,088.13	3,701.62	8.79	-1.86	0.616
46.83	-36.63	-34.92	0.00	-2,175.60	0.00	2,175.60	3,843.63	964.11	4,019.34	3,649.29	9.51	-1.93	0.607
50.00	-34.96	-34.46	0.00	-2,065.02	0.00	2,065.02	3,805.35	949.92	3,901.89	3,559.34	10.84	-2.06	0.591
53.00	-33.40	-34.06	0.00	-1,961.65	0.00	1,961.65	3,811.38	952.14	3,920.15	3,573.37	12.17	-2.18	0.559
55.00	-32.79	-33.56	0.00	-1,893.53	0.00	1,893.53	3,786.98	943.18	3,846.70	3,516.80	13.11	-2.26	0.548
60.00	-31.33	-32.79	0.00	-1,725.75	0.00	1,725.75	3,725.02	920.77	3,666.10	3,376.39	15.58	-2.45	0.521
65.00	-29.90	-31.99	0.00	-1,561.81	0.00	1,561.81	3,661.69	898.36	3,489.85	3,237.53	18.24	-2.63	0.492
70.00	-28.51	-31.17	0.00	-1,401.85	0.00	1,401.85	3,597.00	875.95	3,317.94	3,100.32	21.09	-2.81	0.461
75.00	-27.16	-30.32	0.00	-1,246.01	0.00	1,246.01	3,530.95	853.54	3,150.37	2,964.84	24.12	-2.98	0.429
80.00	-25.85	-29.44	0.00	-1,094.42	0.00	1,094.42	3,463.54	831.13	2,987.14	2,831.19	27.33	-3.14	0.395
85.00	-24.57	-28.54	0.00	-947.22	0.00	947.22	3,394.76	808.72	2,828.25	2,699.44	30.70	-3.29	0.359
90.00	-21.62	-24.99	0.00	-804.53	0.00	804.53	3,324.61	786.31	2,673.70	2,569.71	34.23	-3.44	0.321
94.92	-20.51	-24.33	0.00	-681.68	0.00	681.68	3,235.43	764.28	2,525.97	2,430.01	37.83	-3.57	0.288
95.00	-20.48	-23.92	0.00	-679.65	0.00	679.65	3,233.85	763.90	2,523.50	2,427.62	37.89	-3.57	0.287
99.83	-18.69	-23.22	0.00	-564.03	0.00	564.03	2,561.72	630.50	2,062.81	1,907.75	41.57	-3.68	0.304
100.00	-16.79	-21.03	0.00	-560.16	0.00	560.16	2,559.96	629.88	2,058.74	1,904.54	41.70	-3.69	0.302
102.00	-16.30	-20.37	0.00	-518.11	0.00	518.11	2,538.69	622.41	2,010.20	1,866.13	43.25	-3.74	0.285
105.00	-15.75	-19.82	0.00	-456.99	0.00	456.99	2,506.38	611.20	1,938.49	1,808.92	45.62	-3.81	0.260
107.00	-15.37	-19.18	0.00	-417.35	0.00	417.35	2,484.57	603.73	1,891.40	1,771.07	47.23	-3.86	0.243
110.00	-14.85	-18.39	0.00	-359.81	0.00	359.81	2,451.44	592.53	1,821.86	1,714.73	49.67	-3.92	0.217
115.00	-11.36	-12.96	0.00	-265.22	0.00	265.22	2,395.13	573.85	1,708.85	1,622.06	53.83	-4.01	0.169
120.00	-10.56	-12.28	0.00	-200.44	0.00	200.44	2,337.45	555.18	1,599.45	1,531.01	58.07	-4.09	0.136
125.00	-7.05	-7.60	0.00	-139.04	0.00	139.04	2,271.21	536.51	1,493.68	1,437.09	62.38	-4.14	0.100
130.00	-6.38	-7.10	0.00	-101.03	0.00	101.03	2,192.15	517.83	1,391.52	1,338.31	66.74	-4.19	0.079
135.00	-5.72	-6.70	0.00	-65.52	0.00	65.52	2,113.10	499.16	1,292.98	1,243.04	71.15	-4.23	0.056
138.00	-3.46	-4.52	0.00	-45.41	0.00	45.41	2,065.67	487.95	1,235.60	1,187.57	73.80	-4.24	0.040
140.00	-3.24	-4.21	0.00	-36.37	0.00	36.37	2,034.04	480.48	1,198.06	1,151.29	75.58	-4.25	0.033
145.00	-2.67	-3.87	0.00	-15.34	0.00	15.34	1,954.99	461.81	1,106.76	1,063.05	80.04	-4.27	0.016
147.00	-2.34	-2.35	0.00	-2.12	0.00	2.12	1,923.37	454.34	1,071.25	1,028.75	81.83	-4.27	0.003
147.90	0.00	0.00	0.00	0.00	0.00	0.00	1,909.14	450.98	1,055.46	1,013.49	82.63	-4.27	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	1,908.87	450.91	1,055.17	1,013.21	82.64	-4.27	0.000

Load Case: 0.9D + 1.0W

117 mph with No Ice (Reduced DL)

23 Iterations

Gust Response Factor :1.10

Dead Load Factor :0.90

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		269.2	0.0					0.0	0.0	269.2	0.0	0.0	0.0
5.00		564.6	1,014.6					0.0	15.8	564.6	1,030.4	0.0	0.0
10.00		591.4	995.0					0.0	228.1	591.4	1,223.1	0.0	0.0
15.00		601.8	975.5					0.0	228.1	601.8	1,203.6	0.0	0.0
20.00		629.1	955.9					0.0	228.1	629.1	1,184.0	0.0	0.0
25.00		661.2	936.3					0.0	228.1	661.2	1,164.5	0.0	0.0
30.00		689.0	916.8					0.0	228.1	689.0	1,144.9	0.0	0.0
35.00		713.9	897.2					0.0	228.1	713.9	1,125.3	0.0	0.0
40.00		736.6	877.7					0.0	228.1	736.6	1,105.8	0.0	0.0
45.00		513.4	858.1					0.0	228.1	513.4	1,086.2	0.0	0.0
46.83	Bot - Section 2	387.9	309.8					0.0	83.6	387.9	393.4	0.0	0.0
50.00		487.2	1,066.3					0.0	144.5	487.2	1,210.8	0.0	0.0
53.00	Top - Section 1	397.1	995.7					0.0	136.9	397.1	1,132.6	0.0	0.0
55.00		559.9	330.7					0.0	91.2	559.9	422.0	0.0	0.0
60.00		812.5	813.2					0.0	228.1	812.5	1,041.3	0.0	0.0
65.00		830.1	793.6					0.0	228.1	830.1	1,021.7	0.0	0.0
70.00		847.3	774.0					0.0	228.1	847.3	1,002.2	0.0	0.0
75.00		864.4	754.5					0.0	228.1	864.4	982.6	0.0	0.0
80.00		881.3	734.9					0.0	228.1	881.3	963.0	0.0	0.0
85.00		898.2	715.4					0.0	228.1	898.2	943.5	0.0	0.0
90.00	Appurtenance(s)	879.7	695.8	2,369.8	0.0	0.0	1,393.8	176.4	228.1	3,425.9	2,317.8	0.0	0.0
94.92	Bot - Section 3	433.7	665.2					177.2	181.5	610.8	846.6	0.0	0.0
95.00		426.1	20.5					3.0	3.1	429.1	23.6	0.0	0.0
99.83	Top - Section 2	433.1	1,174.5					177.7	178.4	610.9	1,352.9	0.0	0.0
100.00	Appurtenance(s)	185.3	18.3	1,883.0	0.0	0.0	1,500.4	6.2	6.2	2,074.4	1,524.9	0.0	0.0
102.00	Appurtenance(s)	425.0	218.5	139.5	0.0	0.0	90.0	74.2	68.4	638.8	376.9	0.0	0.0
105.00		421.7	322.9					112.4	102.6	534.1	425.5	0.0	0.0
107.00	Appurtenance(s)	416.5	212.0	136.2	0.0	0.0	23.8	75.7	68.4	628.4	304.3	0.0	0.0
110.00		656.5	313.1					114.6	101.7	771.0	414.9	0.0	0.0
115.00	Appurtenance(s)	725.2	508.8	4,280.6	0.0	2,623.0	2,201.7	193.8	169.6	5,199.5	2,880.1	0.0	0.0
120.00		635.8	492.5					0.0	132.9	635.8	625.5	0.0	0.0
125.00	Appurtenance(s)	548.6	476.3	3,867.6	0.0	20.5	2,261.5	0.0	132.9	4,416.2	2,870.7	0.0	0.0
130.00		454.4	460.0					0.0	67.2	454.4	527.2	0.0	0.0
135.00		355.4	443.7					0.0	67.2	355.4	510.9	0.0	0.0
138.00	Appurtenance(s)	217.6	258.4	1,791.1	0.0	0.0	1,512.0	0.0	40.3	2,008.7	1,810.7	0.0	0.0
140.00		297.3	169.0					0.0	13.6	297.3	182.6	0.0	0.0
145.00		293.5	411.1					0.0	34.0	293.5	445.1	0.0	0.0
147.00	Appurtenance(s)	119.3	159.9	1,371.2	0.0	5,484.8	158.4	0.0	13.6	1,490.5	331.9	0.0	0.0
147.90		37.5	71.1					0.0	6.1	37.5	77.2	0.0	0.0
147.92		0.7	1.3					0.0	0.1	0.7	1.4	0.0	0.0
Totals:										37,849.1	37,231.5	0.00	0.00

Load Case: 0.9D + 1.0W

117 mph with No Ice (Reduced DL)

23 Iterations

Gust Response Factor :1.10

Dead Load Factor :0.90

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	-38.96	-39.78	0.00	-3,909.63	0.00	3,909.63	4,345.86	1,174.01	5,959.72	5,031.69	0.00	0.00	0.787
5.00	-37.79	-39.35	0.00	-3,710.72	0.00	3,710.72	4,297.95	1,151.60	5,734.40	4,880.60	0.11	-0.20	0.770
10.00	-36.43	-38.88	0.00	-3,513.98	0.00	3,513.98	4,248.67	1,129.19	5,513.42	4,730.12	0.43	-0.41	0.753
15.00	-35.10	-38.40	0.00	-3,319.57	0.00	3,319.57	4,198.03	1,106.78	5,296.78	4,580.35	0.97	-0.61	0.734
20.00	-33.79	-37.87	0.00	-3,127.59	0.00	3,127.59	4,146.02	1,084.37	5,084.48	4,431.38	1.72	-0.82	0.715
25.00	-32.50	-37.31	0.00	-2,938.23	0.00	2,938.23	4,092.65	1,061.97	4,876.53	4,283.29	2.69	-1.02	0.695
30.00	-31.24	-36.71	0.00	-2,751.68	0.00	2,751.68	4,037.92	1,039.56	4,672.92	4,136.18	3.87	-1.23	0.674
35.00	-30.00	-36.08	0.00	-2,568.13	0.00	2,568.13	3,981.83	1,017.15	4,473.65	3,990.14	5.26	-1.43	0.652
40.00	-28.79	-35.41	0.00	-2,387.75	0.00	2,387.75	3,924.37	994.74	4,278.72	3,845.25	6.87	-1.63	0.630
45.00	-27.64	-34.93	0.00	-2,210.69	0.00	2,210.69	3,865.54	972.33	4,088.13	3,701.62	8.69	-1.83	0.606
46.83	-27.19	-34.58	0.00	-2,146.64	0.00	2,146.64	3,843.63	964.11	4,019.34	3,649.29	9.41	-1.91	0.597
50.00	-25.93	-34.11	0.00	-2,037.14	0.00	2,037.14	3,805.35	949.92	3,901.89	3,559.34	10.72	-2.04	0.580
53.00	-24.75	-33.71	0.00	-1,934.82	0.00	1,934.82	3,811.38	952.14	3,920.15	3,573.37	12.04	-2.16	0.549
55.00	-24.27	-33.19	0.00	-1,867.39	0.00	1,867.39	3,786.98	943.18	3,846.70	3,516.80	12.96	-2.24	0.539
60.00	-23.16	-32.41	0.00	-1,701.43	0.00	1,701.43	3,725.02	920.77	3,666.10	3,376.39	15.40	-2.42	0.511
65.00	-22.08	-31.61	0.00	-1,539.37	0.00	1,539.37	3,661.69	898.36	3,489.85	3,237.53	18.03	-2.60	0.483
70.00	-21.03	-30.78	0.00	-1,381.33	0.00	1,381.33	3,597.00	875.95	3,317.94	3,100.32	20.85	-2.77	0.453
75.00	-20.01	-29.92	0.00	-1,227.45	0.00	1,227.45	3,530.95	853.54	3,150.37	2,964.84	23.84	-2.94	0.421
80.00	-19.01	-29.04	0.00	-1,077.85	0.00	1,077.85	3,463.54	831.13	2,987.14	2,831.19	27.01	-3.10	0.387
85.00	-18.05	-28.14	0.00	-932.64	0.00	932.64	3,394.76	808.72	2,828.25	2,699.44	30.34	-3.25	0.352
90.00	-15.88	-24.62	0.00	-791.95	0.00	791.95	3,324.61	786.31	2,673.70	2,569.71	33.82	-3.39	0.314
94.92	-15.04	-23.98	0.00	-670.89	0.00	670.89	3,235.43	764.28	2,525.97	2,430.01	37.38	-3.52	0.282
95.00	-15.02	-23.56	0.00	-668.90	0.00	668.90	3,233.85	763.90	2,523.50	2,427.62	37.44	-3.52	0.281
99.83	-13.68	-22.88	0.00	-555.01	0.00	555.01	2,561.72	630.50	2,062.81	1,907.75	41.06	-3.64	0.298
100.00	-12.28	-20.72	0.00	-551.19	0.00	551.19	2,559.96	629.88	2,058.74	1,904.54	41.19	-3.64	0.295
102.00	-11.93	-20.07	0.00	-509.75	0.00	509.75	2,538.69	622.41	2,010.20	1,866.13	42.73	-3.69	0.279
105.00	-11.52	-19.52	0.00	-449.53	0.00	449.53	2,506.38	611.20	1,938.49	1,808.92	45.07	-3.76	0.254
107.00	-11.24	-18.89	0.00	-410.49	0.00	410.49	2,484.57	603.73	1,891.40	1,771.07	46.65	-3.81	0.237
110.00	-10.85	-18.11	0.00	-353.82	0.00	353.82	2,451.44	592.53	1,821.86	1,714.73	49.06	-3.87	0.212
115.00	-8.32	-12.73	0.00	-260.68	0.00	260.68	2,395.13	573.85	1,708.85	1,622.06	53.16	-3.96	0.165
120.00	-7.72	-12.06	0.00	-197.01	0.00	197.01	2,337.45	555.18	1,599.45	1,531.01	57.35	-4.03	0.132
125.00	-5.17	-7.46	0.00	-136.68	0.00	136.68	2,271.21	536.51	1,493.68	1,437.09	61.60	-4.09	0.098
130.00	-4.67	-6.97	0.00	-99.38	0.00	99.38	2,192.15	517.83	1,391.52	1,338.31	65.90	-4.13	0.077
135.00	-4.18	-6.58	0.00	-64.52	0.00	64.52	2,113.10	499.16	1,292.98	1,243.04	70.25	-4.17	0.054
138.00	-2.52	-4.45	0.00	-44.77	0.00	44.77	2,065.67	487.95	1,235.60	1,187.57	72.87	-4.19	0.039
140.00	-2.36	-4.14	0.00	-35.88	0.00	35.88	2,034.04	480.48	1,198.06	1,151.29	74.63	-4.19	0.032
145.00	-1.94	-3.81	0.00	-15.18	0.00	15.18	1,954.99	461.81	1,106.76	1,063.05	79.02	-4.21	0.015
147.00	-1.71	-2.30	0.00	-2.07	0.00	2.07	1,923.37	454.34	1,071.25	1,028.75	80.79	-4.21	0.003
147.90	0.00	0.00	0.00	0.00	0.00	0.00	1,909.14	450.98	1,055.46	1,013.49	81.58	-4.21	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	1,908.87	450.91	1,055.17	1,013.21	81.59	-4.21	0.000

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.50 in Radial Ice

23 Iterations

Gust Response Factor :1.10

Ice Dead Load 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		84.1	0.0					0.0	0.0	84.1	0.0	0.0	0.0
5.00		167.1	1,764.1					0.0	21.1	167.1	1,785.2	0.0	0.0
10.00		164.5	1,778.2					0.0	551.6	164.5	2,329.8	0.0	0.0
15.00		164.3	1,767.2					0.0	563.4	164.3	2,330.6	0.0	0.0
20.00		168.4	1,748.1					0.0	571.6	168.4	2,319.6	0.0	0.0
25.00		173.3	1,724.7					0.0	577.9	173.3	2,302.6	0.0	0.0
30.00		176.8	1,698.6					0.0	583.2	176.8	2,281.8	0.0	0.0
35.00		179.1	1,670.7					0.0	587.7	179.1	2,258.4	0.0	0.0
40.00		180.6	1,641.5					0.0	591.6	180.6	2,233.1	0.0	0.0
45.00		123.8	1,611.2					0.0	595.1	123.8	2,206.3	0.0	0.0
46.83	Bot - Section 2	91.7	584.2					0.0	219.0	91.7	803.2	0.0	0.0
50.00		113.7	1,719.5					0.0	379.2	113.7	2,098.8	0.0	0.0
53.00	Top - Section 1	92.2	1,607.8					0.0	360.4	92.2	1,968.1	0.0	0.0
55.00		128.8	626.9					0.0	240.8	128.8	867.7	0.0	0.0
60.00		183.5	1,541.5					0.0	603.8	183.5	2,145.3	0.0	0.0
65.00		182.5	1,508.6					0.0	606.3	182.5	2,114.9	0.0	0.0
70.00		181.2	1,475.3					0.0	608.6	181.2	2,083.9	0.0	0.0
75.00		179.6	1,441.6					0.0	610.7	179.6	2,052.3	0.0	0.0
80.00		177.8	1,407.6					0.0	612.8	177.8	2,020.3	0.0	0.0
85.00		175.7	1,373.3					0.0	614.7	175.7	1,987.9	0.0	0.0
90.00	Appurtenance(s)	172.6	1,338.6	609.8	0.0	0.0	3,412.2	0.0	616.5	782.4	5,367.3	0.0	0.0
94.92	Bot - Section 3	86.8	1,282.4					0.0	480.4	86.8	1,762.8	0.0	0.0
95.00		86.1	34.2					0.0	8.2	86.1	42.4	0.0	0.0
99.83	Top - Section 2	87.5	1,952.7					0.0	473.4	87.5	2,426.0	0.0	0.0
100.00	Appurtenance(s)	37.5	37.8	507.8	0.0	0.0	3,776.7	0.0	16.3	545.4	3,830.8	0.0	0.0
102.00	Appurtenance(s)	86.4	450.0	38.3	0.0	0.0	117.0	0.0	170.9	124.7	737.9	0.0	0.0
105.00		86.1	665.0					0.0	256.6	86.1	921.6	0.0	0.0
107.00	Appurtenance(s)	85.7	437.6	56.5	0.0	0.0	161.2	0.0	171.2	142.2	770.0	0.0	0.0
110.00		136.2	646.3					0.0	255.9	136.2	902.2	0.0	0.0
115.00	Appurtenance(s)	165.1	1,049.8	1,139.1	0.0	642.6	5,581.8	0.0	427.2	1,304.2	7,058.9	0.0	0.0
120.00		158.7	1,018.4					1.8	278.2	160.5	1,296.6	0.0	0.0
125.00	Appurtenance(s)	155.3	986.7	970.6	0.0	8.0	5,940.6	3.0	278.6	1,128.9	7,205.9	0.0	0.0
130.00		151.8	954.9					0.0	89.6	151.8	1,044.6	0.0	0.0
135.00		119.1	923.0					0.0	89.6	119.1	1,012.7	0.0	0.0
138.00	Appurtenance(s)	73.2	539.8	566.6	0.0	0.0	2,868.9	0.0	53.8	639.8	3,462.6	0.0	0.0
140.00		100.3	353.9					0.0	18.1	100.3	372.1	0.0	0.0
145.00		99.2	858.8					0.0	45.4	99.2	904.1	0.0	0.0
147.00	Appurtenance(s)	40.4	335.9	282.4	0.0	1,129.6	1,715.7	0.0	18.1	322.8	2,069.7	0.0	0.0
147.90		12.7	149.7					0.0	8.2	12.7	157.9	0.0	0.0
147.92		0.2	2.8					0.0	0.2	0.2	2.9	0.0	0.0
Totals:										9,205.56	79,538.6	0.00	0.00

Site Number: 302466

Code: ANSI/TIA-222-H

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Site Name: West Service Road, CT

Engineering Number: 13251344_C3_09

9/3/2020 12:39:17 PM

Customer: T-MOBILE

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.50 in Radial Ice

23 Iterations

Gust Response Factor :1.10

Ice Dead Load 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	-83.15	-9.74	0.00	-1,003.54	0.00	1,003.54	4,345.86	1,174.01	5,959.72	5,031.69	0.00	0.00	0.219
5.00	-81.36	-9.65	0.00	-954.84	0.00	954.84	4,297.95	1,151.60	5,734.40	4,880.60	0.03	-0.05	0.215
10.00	-79.02	-9.55	0.00	-906.59	0.00	906.59	4,248.67	1,129.19	5,513.42	4,730.12	0.11	-0.10	0.210
15.00	-76.68	-9.45	0.00	-858.83	0.00	858.83	4,198.03	1,106.78	5,296.78	4,580.35	0.25	-0.16	0.206
20.00	-74.35	-9.35	0.00	-811.56	0.00	811.56	4,146.02	1,084.37	5,084.48	4,431.38	0.44	-0.21	0.201
25.00	-72.04	-9.23	0.00	-764.82	0.00	764.82	4,092.65	1,061.97	4,876.53	4,283.29	0.69	-0.26	0.196
30.00	-69.75	-9.11	0.00	-718.66	0.00	718.66	4,037.92	1,039.56	4,672.92	4,136.18	1.00	-0.32	0.191
35.00	-67.49	-8.98	0.00	-673.11	0.00	673.11	3,981.83	1,017.15	4,473.65	3,990.14	1.36	-0.37	0.186
40.00	-65.25	-8.84	0.00	-628.22	0.00	628.22	3,924.37	994.74	4,278.72	3,845.25	1.78	-0.42	0.180
45.00	-63.04	-8.74	0.00	-584.00	0.00	584.00	3,865.54	972.33	4,088.13	3,701.62	2.25	-0.48	0.174
46.83	-62.23	-8.67	0.00	-567.98	0.00	567.98	3,843.63	964.11	4,019.34	3,649.29	2.44	-0.50	0.172
50.00	-60.13	-8.57	0.00	-540.51	0.00	540.51	3,805.35	949.92	3,901.89	3,559.34	2.78	-0.53	0.168
53.00	-58.16	-8.49	0.00	-514.79	0.00	514.79	3,811.38	952.14	3,920.15	3,573.37	3.12	-0.56	0.159
55.00	-57.29	-8.39	0.00	-497.81	0.00	497.81	3,786.98	943.18	3,846.70	3,516.80	3.36	-0.58	0.157
60.00	-55.14	-8.23	0.00	-455.87	0.00	455.87	3,725.02	920.77	3,666.10	3,376.39	4.00	-0.63	0.150
65.00	-53.02	-8.07	0.00	-414.72	0.00	414.72	3,661.69	898.36	3,489.85	3,237.53	4.69	-0.68	0.143
70.00	-50.93	-7.90	0.00	-374.39	0.00	374.39	3,597.00	875.95	3,317.94	3,100.32	5.43	-0.73	0.135
75.00	-48.87	-7.73	0.00	-334.89	0.00	334.89	3,530.95	853.54	3,150.37	2,964.84	6.21	-0.77	0.127
80.00	-46.85	-7.56	0.00	-296.23	0.00	296.23	3,463.54	831.13	2,987.14	2,831.19	7.05	-0.82	0.118
85.00	-44.86	-7.39	0.00	-258.42	0.00	258.42	3,394.76	808.72	2,828.25	2,699.44	7.93	-0.86	0.109
90.00	-39.50	-6.55	0.00	-221.48	0.00	221.48	3,324.61	786.31	2,673.70	2,569.71	8.85	-0.90	0.098
94.92	-37.74	-6.45	0.00	-189.29	0.00	189.29	3,235.43	764.28	2,525.97	2,430.01	9.79	-0.93	0.090
95.00	-37.69	-6.37	0.00	-188.75	0.00	188.75	3,233.85	763.90	2,523.50	2,427.62	9.81	-0.93	0.089
99.83	-35.27	-6.25	0.00	-157.96	0.00	157.96	2,561.72	630.50	2,062.81	1,907.75	10.77	-0.97	0.097
100.00	-31.45	-5.65	0.00	-156.92	0.00	156.92	2,559.96	629.88	2,058.74	1,904.54	10.80	-0.97	0.095
102.00	-30.71	-5.52	0.00	-145.62	0.00	145.62	2,538.69	622.41	2,010.20	1,866.13	11.21	-0.98	0.090
105.00	-29.79	-5.43	0.00	-129.07	0.00	129.07	2,506.38	611.20	1,938.49	1,808.92	11.84	-1.00	0.083
107.00	-29.02	-5.28	0.00	-118.22	0.00	118.22	2,484.57	603.73	1,891.40	1,771.07	12.26	-1.02	0.079
110.00	-28.12	-5.14	0.00	-102.38	0.00	102.38	2,451.44	592.53	1,821.86	1,714.73	12.90	-1.03	0.071
115.00	-21.08	-3.71	0.00	-76.06	0.00	76.06	2,395.13	573.85	1,708.85	1,622.06	14.00	-1.06	0.056
120.00	-19.79	-3.53	0.00	-57.50	0.00	57.50	2,337.45	555.18	1,599.45	1,531.01	15.12	-1.08	0.046
125.00	-12.60	-2.27	0.00	-39.82	0.00	39.82	2,271.21	536.51	1,493.68	1,437.09	16.27	-1.10	0.033
130.00	-11.56	-2.10	0.00	-28.46	0.00	28.46	2,192.15	517.83	1,391.52	1,338.31	17.42	-1.11	0.027
135.00	-10.55	-1.96	0.00	-17.96	0.00	17.96	2,113.10	499.16	1,292.98	1,243.04	18.59	-1.12	0.019
138.00	-7.10	-1.26	0.00	-12.06	0.00	12.06	2,065.67	487.95	1,235.60	1,187.57	19.30	-1.13	0.014
140.00	-6.73	-1.15	0.00	-9.55	0.00	9.55	2,034.04	480.48	1,198.06	1,151.29	19.77	-1.13	0.012
145.00	-5.83	-1.03	0.00	-3.80	0.00	3.80	1,954.99	461.81	1,106.76	1,063.05	20.95	-1.13	0.007
147.00	-3.77	-0.67	0.00	-0.60	0.00	0.60	1,923.37	454.34	1,071.25	1,028.75	21.43	-1.13	0.003
147.90	0.00	0.00	0.00	0.00	0.00	0.00	1,909.14	450.98	1,055.46	1,013.49	21.64	-1.13	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	1,908.87	450.91	1,055.17	1,013.21	21.64	-1.13	0.000

Load Case: 1.0D + 1.0W	Serviceability 60 mph	22 Iterations
Gust Response Factor :1.10		
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		63.3	0.0					0.0	0.0	63.3	0.0	0.0	0.0
5.00		132.9	1,127.3					0.0	17.6	132.9	1,144.8	0.0	0.0
10.00		139.1	1,105.6					0.0	253.5	139.1	1,359.0	0.0	0.0
15.00		141.6	1,083.8					0.0	253.5	141.6	1,337.3	0.0	0.0
20.00		148.0	1,062.1					0.0	253.5	148.0	1,315.6	0.0	0.0
25.00		155.6	1,040.4					0.0	253.5	155.6	1,293.8	0.0	0.0
30.00		162.1	1,018.7					0.0	253.5	162.1	1,272.1	0.0	0.0
35.00		168.0	996.9					0.0	253.5	168.0	1,250.4	0.0	0.0
40.00		173.3	975.2					0.0	253.5	173.3	1,228.7	0.0	0.0
45.00		120.8	953.5					0.0	253.5	120.8	1,206.9	0.0	0.0
46.83	Bot - Section 2	91.3	344.2					0.0	92.9	91.3	437.1	0.0	0.0
50.00		114.6	1,184.8					0.0	160.5	114.6	1,345.3	0.0	0.0
53.00	Top - Section 1	93.4	1,106.4					0.0	152.1	93.4	1,258.4	0.0	0.0
55.00		131.8	367.5					0.0	101.4	131.8	468.9	0.0	0.0
60.00		191.2	903.5					0.0	253.5	191.2	1,157.0	0.0	0.0
65.00		195.3	881.8					0.0	253.5	195.3	1,135.2	0.0	0.0
70.00		199.4	860.1					0.0	253.5	199.4	1,113.5	0.0	0.0
75.00		203.4	838.3					0.0	253.5	203.4	1,091.8	0.0	0.0
80.00		207.4	816.6					0.0	253.5	207.4	1,070.1	0.0	0.0
85.00		211.4	794.9					0.0	253.5	211.4	1,048.3	0.0	0.0
90.00	Appurtenance(s)	207.0	773.2	557.6	0.0	0.0	1,548.7	41.5	253.5	806.1	2,575.3	0.0	0.0
94.92	Bot - Section 3	102.0	739.1					41.7	201.6	143.7	940.7	0.0	0.0
95.00		100.3	22.8					0.7	3.4	101.0	26.2	0.0	0.0
99.83	Top - Section 2	101.9	1,305.1					41.8	198.2	143.7	1,503.3	0.0	0.0
100.00	Appurtenance(s)	43.6	20.4	443.1	0.0	0.0	1,667.1	1.4	6.8	488.1	1,694.3	0.0	0.0
102.00	Appurtenance(s)	100.0	242.8	32.8	0.0	0.0	100.0	17.5	76.0	150.3	418.8	0.0	0.0
105.00		99.2	358.8					26.4	114.0	125.7	472.8	0.0	0.0
107.00	Appurtenance(s)	98.0	235.6	32.1	0.0	0.0	26.5	17.8	76.0	147.9	338.1	0.0	0.0
110.00		154.5	347.9					27.0	113.0	181.4	461.0	0.0	0.0
115.00	Appurtenance(s)	170.6	565.4	1,007.2	0.0	617.2	2,446.3	45.6	188.4	1,223.5	3,200.1	0.0	0.0
120.00		149.6	547.3					0.0	147.7	149.6	695.0	0.0	0.0
125.00	Appurtenance(s)	129.1	529.2	910.0	0.0	4.8	2,512.8	0.0	147.7	1,039.1	3,189.7	0.0	0.0
130.00		106.9	511.1					0.0	74.7	106.9	585.8	0.0	0.0
135.00		83.6	493.0					0.0	74.7	83.6	567.7	0.0	0.0
138.00	Appurtenance(s)	51.2	287.1	421.4	0.0	0.0	1,680.0	0.0	44.8	472.6	2,011.9	0.0	0.0
140.00		69.9	187.8					0.0	15.1	69.9	202.9	0.0	0.0
145.00		69.1	456.8					0.0	37.8	69.1	494.6	0.0	0.0
147.00	Appurtenance(s)	28.1	177.6	322.6	0.0	1,290.6	176.0	0.0	15.1	350.7	368.8	0.0	0.0
147.90		8.8	79.0					0.0	6.8	8.8	85.8	0.0	0.0
147.92		0.2	1.5					0.0	0.1	0.2	1.6	0.0	0.0
Totals:										8,905.99	41,368.3	0.00	0.00

Site Number: 302466

Code: ANSI/TIA-222-H

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Site Name: West Service Road, CT

Engineering Number: 13251344_C3_09

9/3/2020 12:39:21 PM

Customer: T-MOBILE

Load Case: 1.0D + 1.0W

Serviceability 60 mph

22 Iterations

Gust Response Factor :1.10

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	-43.36	-9.36	0.00	-923.62	0.00	923.62	4,345.86	1,174.01	5,959.72	5,031.69	0.00	0.00	0.194
5.00	-42.21	-9.26	0.00	-876.81	0.00	876.81	4,297.95	1,151.60	5,734.40	4,880.60	0.03	-0.05	0.190
10.00	-40.85	-9.16	0.00	-830.49	0.00	830.49	4,248.67	1,129.19	5,513.42	4,730.12	0.10	-0.10	0.185
15.00	-39.50	-9.05	0.00	-784.70	0.00	784.70	4,198.03	1,106.78	5,296.78	4,580.35	0.23	-0.14	0.181
20.00	-38.18	-8.93	0.00	-739.47	0.00	739.47	4,146.02	1,084.37	5,084.48	4,431.38	0.41	-0.19	0.176
25.00	-36.88	-8.80	0.00	-694.83	0.00	694.83	4,092.65	1,061.97	4,876.53	4,283.29	0.63	-0.24	0.171
30.00	-35.60	-8.66	0.00	-650.84	0.00	650.84	4,037.92	1,039.56	4,672.92	4,136.18	0.91	-0.29	0.166
35.00	-34.34	-8.51	0.00	-607.54	0.00	607.54	3,981.83	1,017.15	4,473.65	3,990.14	1.24	-0.34	0.161
40.00	-33.11	-8.36	0.00	-564.98	0.00	564.98	3,924.37	994.74	4,278.72	3,845.25	1.62	-0.39	0.155
45.00	-31.90	-8.25	0.00	-523.17	0.00	523.17	3,865.54	972.33	4,088.13	3,701.62	2.05	-0.43	0.150
46.83	-31.46	-8.17	0.00	-508.05	0.00	508.05	3,843.63	964.11	4,019.34	3,649.29	2.22	-0.45	0.147
50.00	-30.11	-8.06	0.00	-482.19	0.00	482.19	3,805.35	949.92	3,901.89	3,559.34	2.53	-0.48	0.143
53.00	-28.85	-7.96	0.00	-458.02	0.00	458.02	3,811.38	952.14	3,920.15	3,573.37	2.85	-0.51	0.136
55.00	-28.38	-7.84	0.00	-442.09	0.00	442.09	3,786.98	943.18	3,846.70	3,516.80	3.06	-0.53	0.133
60.00	-27.21	-7.66	0.00	-402.86	0.00	402.86	3,725.02	920.77	3,666.10	3,376.39	3.64	-0.57	0.127
65.00	-26.08	-7.47	0.00	-364.55	0.00	364.55	3,661.69	898.36	3,489.85	3,237.53	4.26	-0.61	0.120
70.00	-24.96	-7.28	0.00	-327.18	0.00	327.18	3,597.00	875.95	3,317.94	3,100.32	4.93	-0.66	0.113
75.00	-23.87	-7.08	0.00	-290.78	0.00	290.78	3,530.95	853.54	3,150.37	2,964.84	5.64	-0.70	0.105
80.00	-22.79	-6.87	0.00	-255.38	0.00	255.38	3,463.54	831.13	2,987.14	2,831.19	6.39	-0.73	0.097
85.00	-21.74	-6.66	0.00	-221.01	0.00	221.01	3,394.76	808.72	2,828.25	2,699.44	7.18	-0.77	0.088
90.00	-19.18	-5.83	0.00	-187.70	0.00	187.70	3,324.61	786.31	2,673.70	2,569.71	8.00	-0.80	0.079
94.92	-18.24	-5.68	0.00	-159.03	0.00	159.03	3,235.43	764.28	2,525.97	2,430.01	8.84	-0.83	0.071
95.00	-18.21	-5.58	0.00	-158.55	0.00	158.55	3,233.85	763.90	2,523.50	2,427.62	8.86	-0.83	0.071
99.83	-16.71	-5.42	0.00	-131.57	0.00	131.57	2,561.72	630.50	2,062.81	1,907.75	9.72	-0.86	0.076
100.00	-15.02	-4.91	0.00	-130.67	0.00	130.67	2,559.96	629.88	2,058.74	1,904.54	9.75	-0.86	0.075
102.00	-14.60	-4.76	0.00	-120.85	0.00	120.85	2,538.69	622.41	2,010.20	1,866.13	10.11	-0.87	0.071
105.00	-14.13	-4.63	0.00	-106.58	0.00	106.58	2,506.38	611.20	1,938.49	1,808.92	10.66	-0.89	0.065
107.00	-13.80	-4.48	0.00	-97.33	0.00	97.33	2,484.57	603.73	1,891.40	1,771.07	11.04	-0.90	0.061
110.00	-13.34	-4.29	0.00	-83.90	0.00	83.90	2,451.44	592.53	1,821.86	1,714.73	11.61	-0.92	0.054
115.00	-10.16	-3.02	0.00	-61.83	0.00	61.83	2,395.13	573.85	1,708.85	1,622.06	12.58	-0.94	0.042
120.00	-9.46	-2.86	0.00	-46.73	0.00	46.73	2,337.45	555.18	1,599.45	1,531.01	13.57	-0.95	0.035
125.00	-6.29	-1.77	0.00	-32.42	0.00	32.42	2,271.21	536.51	1,493.68	1,437.09	14.58	-0.97	0.025
130.00	-5.71	-1.65	0.00	-23.56	0.00	23.56	2,192.15	517.83	1,391.52	1,338.31	15.60	-0.98	0.020
135.00	-5.14	-1.56	0.00	-15.29	0.00	15.29	2,113.10	499.16	1,292.98	1,243.04	16.63	-0.99	0.015
138.00	-3.14	-1.05	0.00	-10.61	0.00	10.61	2,065.67	487.95	1,235.60	1,187.57	17.25	-0.99	0.010
140.00	-2.93	-0.98	0.00	-8.50	0.00	8.50	2,034.04	480.48	1,198.06	1,151.29	17.67	-0.99	0.009
145.00	-2.44	-0.90	0.00	-3.59	0.00	3.59	1,954.99	461.81	1,106.76	1,063.05	18.71	-1.00	0.005
147.00	-2.08	-0.55	0.00	-0.49	0.00	0.49	1,923.37	454.34	1,071.25	1,028.75	19.13	-1.00	0.002
147.90	0.00	0.00	0.00	0.00	0.00	0.00	1,909.14	450.98	1,055.46	1,013.49	19.31	-1.00	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	1,908.87	450.91	1,055.17	1,013.21	19.32	-1.00	0.000

Equivalent Lateral Forces Method Analysis

Spectral Response Acceleration for Short Period (S_s):	0.19
Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.05
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}):	0.09
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):	2.12
Redundancy Factor (ρ):	1.00
Seismic Force Distribution Exponent (k):	1.81
Total Unfactored Dead Load:	43.37 k
Seismic Base Shear (E):	1.30 k

Load Case 1.2D + 1.0Ev + 1.0Eh

Seismic

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
39	147.91	2	14	0.000	0	2
38	147.45	86	730	0.005	6	106
37	146.00	193	1,612	0.011	14	239
36	142.50	495	3,958	0.027	35	613
35	139.00	203	1,552	0.011	14	252
34	136.50	332	2,457	0.017	22	411
33	132.50	568	3,982	0.027	35	704
32	127.50	586	3,832	0.026	34	726
31	122.50	677	4,119	0.028	37	839
30	117.50	695	3,921	0.027	35	862
29	112.50	754	3,931	0.027	35	934
28	108.50	461	2,251	0.015	20	571
27	106.00	312	1,459	0.010	13	386
26	103.50	473	2,120	0.014	19	586
25	101.00	319	1,367	0.009	12	395
24	99.92	27	114	0.001	1	34
23	97.42	1,503	6,039	0.041	54	1,864
22	94.96	26	101	0.001	1	33
21	92.46	941	3,438	0.023	31	1,166
20	87.50	1,027	3,395	0.023	30	1,273
19	82.50	1,048	3,116	0.021	28	1,300
18	77.50	1,070	2,840	0.019	25	1,327
17	72.50	1,092	2,568	0.018	23	1,353
16	67.50	1,114	2,301	0.016	20	1,380
15	62.50	1,135	2,040	0.014	18	1,407

14	57.50	1,157	1,788	0.012	16	1,434
13	54.00	469	647	0.004	6	581
12	51.50	1,258	1,592	0.011	14	1,560
11	48.42	1,345	1,522	0.010	14	1,668
10	45.92	437	449	0.003	4	542
9	42.50	1,207	1,078	0.007	10	1,496
8	37.50	1,229	875	0.006	8	1,523
7	32.50	1,250	687	0.005	6	1,550
6	27.50	1,272	516	0.004	5	1,577
5	22.50	1,294	365	0.002	3	1,604
4	17.50	1,316	235	0.002	2	1,631
3	12.50	1,337	130	0.001	1	1,658
2	7.50	1,359	52	0.000	0	1,685
1	2.50	1,145	6	0.000	0	1,419
Flat Platform w/ Han	147.90	2,000	17,123	0.117	152	2,479
Andrew DB844H90E-XY	147.00	112	948	0.006	8	139
Andrew 844G65VTZASX	147.00	64	542	0.004	5	79
Generic 48" x 4" Pan	138.00	180	1,359	0.009	12	223
Flat Low Profile Pla	138.00	1,500	11,327	0.077	101	1,860
Ericsson KRY 112 144	125.00	33	208	0.001	2	41
Ericsson Radio 4449	125.00	225	1,420	0.010	13	279
Ericsson RRUS 4415 B	125.00	138	871	0.006	8	171
Ericsson Air6449 B41	125.00	312	1,969	0.013	17	387
Ericsson AIR 21, 1.3	125.00	275	1,733	0.012	15	340
Ericsson AIR32 B66Aa	125.00	397	2,503	0.017	22	492
Round T-Arm	125.00	750	4,734	0.032	42	930
RFS APXVAARR24_43-U-	125.00	384	2,422	0.017	21	476
Samsung PCS/AWS Dual	115.00	253	1,374	0.009	12	314
Samsung 700/850MHz D	115.00	211	1,144	0.008	10	261
Raycap RVZDC-6627-PF	115.00	32	174	0.001	2	40
RFS DB-T1-6Z-8AB-0Z	115.00	44	239	0.002	2	55
Amphenol Antel BXA-7	115.00	102	553	0.004	5	126
Commscope SBNHH-1D65	115.00	304	1,651	0.011	15	377
Flat Low Profile Pla	115.00	1,500	8,140	0.056	72	1,860
Antel BCD-87010 ____	107.00	26	126	0.001	1	33
Stand-Off	102.00	100	437	0.003	4	124
Alcatel-Lucent RRH2x	100.00	317	1,337	0.009	12	393
Alcatel-Lucent 1900M	100.00	180	758	0.005	7	223
Generic Round T-Arm	100.00	938	3,949	0.027	35	1,162
Commscope NNVV-65B-R	100.00	232	978	0.007	9	288
DragonWave Horizon C	90.00	21	74	0.001	1	26
NextNet BTS-2500	90.00	105	365	0.002	3	130
Generic 18" x 18" x	90.00	21	73	0.000	1	26
Nokia 2.5G MAA - AAH	90.00	311	1,082	0.007	10	385
Andrew VHLP2-18	90.00	54	188	0.001	2	67
DragonWave A-ANT-18G	90.00	99	345	0.002	3	123
Generic Round T-Arm	90.00	938	3,263	0.022	29	1,162
		43,368	146,607	1.000	1,301	53,763

Load Case 0.9D - 1.0Ev + 1.0Eh

Seismic (Reduced DL)

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
39	147.91	2	14	0.000	0	1
38	147.45	86	730	0.005	6	74
37	146.00	193	1,612	0.011	14	166
36	142.50	495	3,958	0.027	35	425
35	139.00	203	1,552	0.011	14	175
34	136.50	332	2,457	0.017	22	286
33	132.50	568	3,982	0.027	35	488
32	127.50	586	3,832	0.026	34	504

Site Number: 302466

Code: ANSI/TIA-222-H

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Site Name: West Service Road, CT

Engineering Number: 13251344_C3_09

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Customer: T-MOBILE

31	122.50	677	4,119	0.028	37	582
30	117.50	695	3,921	0.027	35	598
29	112.50	754	3,931	0.027	35	648
28	108.50	461	2,251	0.015	20	397
27	106.00	312	1,459	0.010	13	268
26	103.50	473	2,120	0.014	19	407
25	101.00	319	1,367	0.009	12	274
24	99.92	27	114	0.001	1	23
23	97.42	1,503	6,039	0.041	54	1,293
22	94.96	26	101	0.001	1	23
21	92.46	941	3,438	0.023	31	809
20	87.50	1,027	3,395	0.023	30	883
19	82.50	1,048	3,116	0.021	28	902
18	77.50	1,070	2,840	0.019	25	921
17	72.50	1,092	2,568	0.018	23	939
16	67.50	1,114	2,301	0.016	20	958
15	62.50	1,135	2,040	0.014	18	977
14	57.50	1,157	1,788	0.012	16	995
13	54.00	469	647	0.004	6	403
12	51.50	1,258	1,592	0.011	14	1,083
11	48.42	1,345	1,522	0.010	14	1,157
10	45.92	437	449	0.003	4	376
9	42.50	1,207	1,078	0.007	10	1,038
8	37.50	1,229	875	0.006	8	1,057
7	32.50	1,250	687	0.005	6	1,076
6	27.50	1,272	516	0.004	5	1,094
5	22.50	1,294	365	0.002	3	1,113
4	17.50	1,316	235	0.002	2	1,132
3	12.50	1,337	130	0.001	1	1,150
2	7.50	1,359	52	0.000	0	1,169
1	2.50	1,145	6	0.000	0	985
Flat Platform w/ Han	147.90	2,000	17,123	0.117	152	1,721
Andrew DB844H90E-XY	147.00	112	948	0.006	8	96
Andrew 844G65VTZASX	147.00	64	542	0.004	5	55
Generic 48" x 4" Pan	138.00	180	1,359	0.009	12	155
Flat Low Profile Pla	138.00	1,500	11,327	0.077	101	1,290
Ericsson KRY 112 144	125.00	33	208	0.001	2	28
Ericsson Radio 4449	125.00	225	1,420	0.010	13	194
Ericsson RRUS 4415 B	125.00	138	871	0.006	8	119
Ericsson Air6449 B41	125.00	312	1,969	0.013	17	268
Ericsson AIR 21, 1.3	125.00	275	1,733	0.012	15	236
Ericsson AIR32 B66Aa	125.00	397	2,503	0.017	22	341
Round T-Arm	125.00	750	4,734	0.032	42	645
RFS APXVAARR24_43-U-	125.00	384	2,422	0.017	21	330
Samsung PCS/AWS Dual	115.00	253	1,374	0.009	12	218
Samsung 700/850MHz D	115.00	211	1,144	0.008	10	181
Raycap RVZDC-6627-PF	115.00	32	174	0.001	2	28
RFS DB-T1-6Z-8AB-0Z	115.00	44	239	0.002	2	38
Amphenol Antel BXA-7	115.00	102	553	0.004	5	88
Commscope SBNHH-1D65	115.00	304	1,651	0.011	15	262
Flat Low Profile Pla	115.00	1,500	8,140	0.056	72	1,290
Antel BCD-87010 ____	107.00	26	126	0.001	1	23
Stand-Off	102.00	100	437	0.003	4	86
Alcatel-Lucent RRH2x	100.00	317	1,337	0.009	12	273
Alcatel-Lucent 1900M	100.00	180	758	0.005	7	155
Generic Round T-Arm	100.00	938	3,949	0.027	35	807
Commscope NNVV-65B-R	100.00	232	978	0.007	9	200
DragonWave Horizon C	90.00	21	74	0.001	1	18
NextNet BTS-2500	90.00	105	365	0.002	3	90
Generic 18" x 18" x	90.00	21	73	0.000	1	18
Nokia 2.5G MAA - AAH	90.00	311	1,082	0.007	10	267
Andrew VHLP2-18	90.00	54	188	0.001	2	46
DragonWave A-ANT-18G	90.00	99	345	0.002	3	85
Generic Round T-Arm	90.00	938	3,263	0.022	29	807

Site Number: 302466

Code: ANSI/TIA-222-H

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Site Name: West Service Road, CT

Engineering Number: 13251344_C3_09

9/3/2020 12:39:21 PM

Customer: T-MOBILE

43,368

146,607

1.000

1,301

37,311

Load Case 1.2D + 1.0Ev + 1.0Eh

Seismic

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	-52.34	-1.30	0.00	-150.70	0.00	150.70	4,345.86	1,174.01	5,959.72	5,031.69	0.00	0.00	0.042
5.00	-50.66	-1.31	0.00	-144.18	0.00	144.18	4,297.95	1,151.60	5,734.40	4,880.60	0.00	-0.01	0.041
10.00	-49.00	-1.32	0.00	-137.63	0.00	137.63	4,248.67	1,129.19	5,513.42	4,730.12	0.02	-0.02	0.041
15.00	-47.37	-1.32	0.00	-131.05	0.00	131.05	4,198.03	1,106.78	5,296.78	4,580.35	0.04	-0.02	0.040
20.00	-45.77	-1.32	0.00	-124.45	0.00	124.45	4,146.02	1,084.37	5,084.48	4,431.38	0.07	-0.03	0.039
25.00	-44.19	-1.32	0.00	-117.84	0.00	117.84	4,092.65	1,061.97	4,876.53	4,283.29	0.10	-0.04	0.038
30.00	-42.64	-1.32	0.00	-111.22	0.00	111.22	4,037.92	1,039.56	4,672.92	4,136.18	0.15	-0.05	0.037
35.00	-41.11	-1.32	0.00	-104.61	0.00	104.61	3,981.83	1,017.15	4,473.65	3,990.14	0.21	-0.06	0.037
40.00	-39.62	-1.31	0.00	-98.02	0.00	98.02	3,924.37	994.74	4,278.72	3,845.25	0.27	-0.06	0.036
45.00	-39.08	-1.31	0.00	-91.45	0.00	91.45	3,865.54	972.33	4,088.13	3,701.62	0.34	-0.07	0.035
46.83	-37.41	-1.30	0.00	-89.05	0.00	89.05	3,843.63	964.11	4,019.34	3,649.29	0.37	-0.08	0.034
50.00	-35.85	-1.29	0.00	-84.93	0.00	84.93	3,805.35	949.92	3,901.89	3,559.34	0.42	-0.08	0.033
53.00	-35.27	-1.28	0.00	-81.07	0.00	81.07	3,811.38	952.14	3,920.15	3,573.37	0.48	-0.09	0.032
55.00	-33.83	-1.27	0.00	-78.51	0.00	78.51	3,786.98	943.18	3,846.70	3,516.80	0.51	-0.09	0.031
60.00	-32.43	-1.25	0.00	-72.17	0.00	72.17	3,725.02	920.77	3,666.10	3,376.39	0.61	-0.10	0.030
65.00	-31.04	-1.23	0.00	-65.91	0.00	65.91	3,661.69	898.36	3,489.85	3,237.53	0.72	-0.11	0.029
70.00	-29.69	-1.21	0.00	-59.74	0.00	59.74	3,597.00	875.95	3,317.94	3,100.32	0.83	-0.11	0.028
75.00	-28.36	-1.19	0.00	-53.69	0.00	53.69	3,530.95	853.54	3,150.37	2,964.84	0.96	-0.12	0.026
80.00	-27.06	-1.16	0.00	-47.75	0.00	47.75	3,463.54	831.13	2,987.14	2,831.19	1.09	-0.13	0.025
85.00	-25.79	-1.13	0.00	-41.95	0.00	41.95	3,394.76	808.72	2,828.25	2,699.44	1.22	-0.13	0.023
90.00	-22.71	-1.05	0.00	-36.30	0.00	36.30	3,324.61	786.31	2,673.70	2,569.71	1.37	-0.14	0.021
94.92	-22.67	-1.05	0.00	-31.16	0.00	31.16	3,235.43	764.28	2,525.97	2,430.01	1.51	-0.15	0.020
95.00	-20.81	-0.99	0.00	-31.07	0.00	31.07	3,233.85	763.90	2,523.50	2,427.62	1.52	-0.15	0.019
99.83	-20.78	-0.99	0.00	-26.29	0.00	26.29	2,561.72	630.50	2,062.81	1,907.75	1.67	-0.15	0.022
100.00	-18.31	-0.91	0.00	-26.12	0.00	26.12	2,559.96	629.88	2,058.74	1,904.54	1.67	-0.15	0.021
102.00	-17.60	-0.89	0.00	-24.31	0.00	24.31	2,538.69	622.41	2,010.20	1,866.13	1.74	-0.15	0.020
105.00	-17.22	-0.87	0.00	-21.65	0.00	21.65	2,506.38	611.20	1,938.49	1,808.92	1.84	-0.16	0.019
107.00	-16.61	-0.85	0.00	-19.91	0.00	19.91	2,484.57	603.73	1,891.40	1,771.07	1.90	-0.16	0.018
110.00	-15.68	-0.81	0.00	-17.36	0.00	17.36	2,451.44	592.53	1,821.86	1,714.73	2.00	-0.16	0.017
115.00	-11.79	-0.65	0.00	-13.29	0.00	13.29	2,395.13	573.85	1,708.85	1,622.06	2.18	-0.17	0.013
120.00	-10.95	-0.61	0.00	-10.04	0.00	10.04	2,337.45	555.18	1,599.45	1,531.01	2.35	-0.17	0.011
125.00	-7.11	-0.43	0.00	-6.98	0.00	6.98	2,271.21	536.51	1,493.68	1,437.09	2.53	-0.17	0.008
130.00	-6.40	-0.39	0.00	-4.85	0.00	4.85	2,192.15	517.83	1,391.52	1,338.31	2.72	-0.18	0.007
135.00	-5.99	-0.37	0.00	-2.90	0.00	2.90	2,113.10	499.16	1,292.98	1,243.04	2.90	-0.18	0.005
138.00	-3.66	-0.23	0.00	-1.80	0.00	1.80	2,065.67	487.95	1,235.60	1,187.57	3.02	-0.18	0.003
140.00	-3.04	-0.20	0.00	-1.34	0.00	1.34	2,034.04	480.48	1,198.06	1,151.29	3.09	-0.18	0.003
145.00	-2.81	-0.18	0.00	-0.36	0.00	0.36	1,954.99	461.81	1,106.76	1,063.05	3.28	-0.18	0.002
147.00	0.00	0.00	0.00	0.00	0.00	0.00	1,923.37	454.34	1,071.25	1,028.75	3.35	-0.18	0.000
147.90	0.00	0.00	0.00	0.00	0.00	0.00	1,909.14	450.98	1,055.46	1,013.49	3.39	-0.18	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	1,908.87	450.91	1,055.17	1,013.21	3.39	-0.18	0.000

Load Case 0.9D - 1.0Ev + 1.0Eh

Seismic (Reduced DL)

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	-36.33	-1.30	0.00	-148.87	0.00	148.87	4,345.86	1,174.01	5,959.72	5,031.69	0.00	0.00	0.038
5.00	-35.16	-1.31	0.00	-142.36	0.00	142.36	4,297.95	1,151.60	5,734.40	4,880.60	0.00	-0.01	0.037
10.00	-34.01	-1.31	0.00	-135.82	0.00	135.82	4,248.67	1,129.19	5,513.42	4,730.12	0.02	-0.02	0.037
15.00	-32.87	-1.31	0.00	-129.27	0.00	129.27	4,198.03	1,106.78	5,296.78	4,580.35	0.04	-0.02	0.036
20.00	-31.76	-1.31	0.00	-122.70	0.00	122.70	4,146.02	1,084.37	5,084.48	4,431.38	0.07	-0.03	0.035
25.00	-30.67	-1.31	0.00	-116.14	0.00	116.14	4,092.65	1,061.97	4,876.53	4,283.29	0.10	-0.04	0.035
30.00	-29.59	-1.31	0.00	-109.58	0.00	109.58	4,037.92	1,039.56	4,672.92	4,136.18	0.15	-0.05	0.034
35.00	-28.53	-1.31	0.00	-103.03	0.00	103.03	3,981.83	1,017.15	4,473.65	3,990.14	0.20	-0.06	0.033
40.00	-27.49	-1.30	0.00	-96.50	0.00	96.50	3,924.37	994.74	4,278.72	3,845.25	0.27	-0.06	0.032
45.00	-27.12	-1.30	0.00	-90.01	0.00	90.01	3,865.54	972.33	4,088.13	3,701.62	0.34	-0.07	0.031
46.83	-25.96	-1.28	0.00	-87.64	0.00	87.64	3,843.63	964.11	4,019.34	3,649.29	0.37	-0.08	0.031
50.00	-24.88	-1.27	0.00	-83.57	0.00	83.57	3,805.35	949.92	3,901.89	3,559.34	0.42	-0.08	0.030
53.00	-24.47	-1.27	0.00	-79.76	0.00	79.76	3,811.38	952.14	3,920.15	3,573.37	0.47	-0.09	0.029
55.00	-23.48	-1.25	0.00	-77.23	0.00	77.23	3,786.98	943.18	3,846.70	3,516.80	0.51	-0.09	0.028
60.00	-22.50	-1.23	0.00	-70.98	0.00	70.98	3,725.02	920.77	3,666.10	3,376.39	0.60	-0.10	0.027
65.00	-21.54	-1.21	0.00	-64.81	0.00	64.81	3,661.69	898.36	3,489.85	3,237.53	0.71	-0.10	0.026
70.00	-20.60	-1.19	0.00	-58.74	0.00	58.74	3,597.00	875.95	3,317.94	3,100.32	0.82	-0.11	0.025
75.00	-19.68	-1.17	0.00	-52.78	0.00	52.78	3,530.95	853.54	3,150.37	2,964.84	0.94	-0.12	0.023
80.00	-18.78	-1.14	0.00	-46.94	0.00	46.94	3,463.54	831.13	2,987.14	2,831.19	1.07	-0.13	0.022
85.00	-17.90	-1.11	0.00	-41.24	0.00	41.24	3,394.76	808.72	2,828.25	2,699.44	1.20	-0.13	0.021
90.00	-15.76	-1.03	0.00	-35.69	0.00	35.69	3,324.61	786.31	2,673.70	2,569.71	1.35	-0.14	0.019
94.92	-15.73	-1.03	0.00	-30.63	0.00	30.63	3,235.43	764.28	2,525.97	2,430.01	1.49	-0.14	0.017
95.00	-14.44	-0.97	0.00	-30.54	0.00	30.54	3,233.85	763.90	2,523.50	2,427.62	1.49	-0.14	0.017
99.83	-14.42	-0.97	0.00	-25.85	0.00	25.85	2,561.72	630.50	2,062.81	1,907.75	1.64	-0.15	0.019
100.00	-12.71	-0.89	0.00	-25.68	0.00	25.68	2,559.96	629.88	2,058.74	1,904.54	1.65	-0.15	0.018
102.00	-12.22	-0.87	0.00	-23.90	0.00	23.90	2,538.69	622.41	2,010.20	1,866.13	1.71	-0.15	0.018
105.00	-11.95	-0.86	0.00	-21.29	0.00	21.29	2,506.38	611.20	1,938.49	1,808.92	1.81	-0.16	0.017
107.00	-11.53	-0.84	0.00	-19.57	0.00	19.57	2,484.57	603.73	1,891.40	1,771.07	1.87	-0.16	0.016
110.00	-10.88	-0.80	0.00	-17.07	0.00	17.07	2,451.44	592.53	1,821.86	1,714.73	1.97	-0.16	0.014
115.00	-8.18	-0.64	0.00	-13.07	0.00	13.07	2,395.13	573.85	1,708.85	1,622.06	2.14	-0.16	0.011
120.00	-7.60	-0.60	0.00	-9.87	0.00	9.87	2,337.45	555.18	1,599.45	1,531.01	2.32	-0.17	0.010
125.00	-4.93	-0.42	0.00	-6.87	0.00	6.87	2,271.21	536.51	1,493.68	1,437.09	2.50	-0.17	0.007
130.00	-4.44	-0.38	0.00	-4.77	0.00	4.77	2,192.15	517.83	1,391.52	1,338.31	2.68	-0.17	0.006
135.00	-4.16	-0.36	0.00	-2.86	0.00	2.86	2,113.10	499.16	1,292.98	1,243.04	2.86	-0.18	0.004
138.00	-2.54	-0.23	0.00	-1.78	0.00	1.78	2,065.67	487.95	1,235.60	1,187.57	2.97	-0.18	0.003
140.00	-2.11	-0.19	0.00	-1.32	0.00	1.32	2,034.04	480.48	1,198.06	1,151.29	3.04	-0.18	0.002
145.00	-1.95	-0.18	0.00	-0.36	0.00	0.36	1,954.99	461.81	1,106.76	1,063.05	3.23	-0.18	0.001
147.00	0.00	0.00	0.00	0.00	0.00	0.00	1,923.37	454.34	1,071.25	1,028.75	3.30	-0.18	0.000
147.90	0.00	0.00	0.00	0.00	0.00	0.00	1,909.14	450.98	1,055.46	1,013.49	3.34	-0.18	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	1,908.87	450.91	1,055.17	1,013.21	3.34	-0.18	0.000

Site Number: 302466

Code: ANSI/TIA-222-H

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Site Name: West Service Road, CT

Engineering Number: 13251344_C3_09

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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 + 1.0W	39.81	0.00	51.97	0.00	0.00	3947.41	0.00	0.80
0.9D + 1.0W	39.78	0.00	38.96	0.00	0.00	3909.63	0.00	0.79
1.2D + 1.0Di + 1.0Wi	9.74	0.00	83.15	0.00	0.00	1003.54	0.00	0.22
1.2D + 1.0Ev + 1.0Eh	1.30	0.00	52.34	0.00	0.00	150.70	0.00	0.04
0.9D - 1.0Ev + 1.0Eh	1.30	0.00	36.33	0.00	0.00	148.87	0.00	0.04
1.0D + 1.0W	9.36	0.00	43.36	0.00	0.00	923.62	0.00	0.19



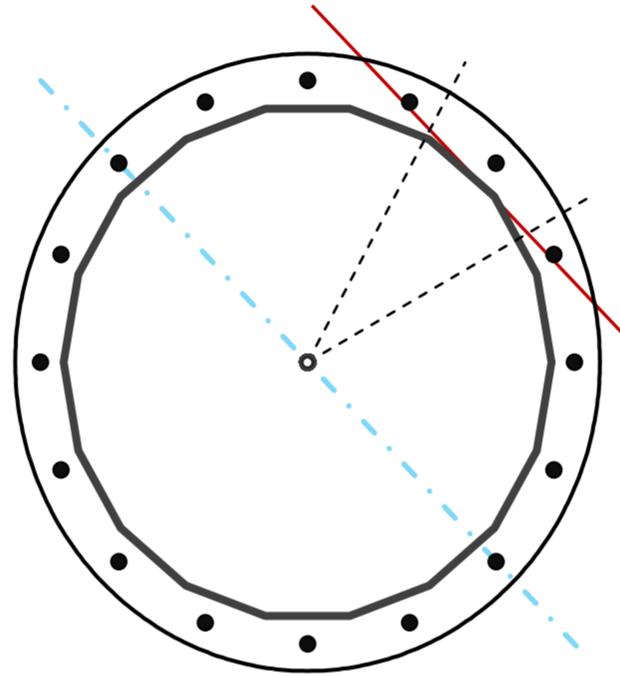
Base Plate & Anchor Rod Analysis

Pole Dimensions		
Number of Sides	18	-
Diameter	56.58	in
Thickness	3/8	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	3947.4	k-ft
Axial, Pu	52.0	k
Shear, Vu	39.8	k
Neutral Axis	315	°

Report Capacities		
Component	Capacity	Result
Base Plate	22%	Pass
Anchor Rods	83%	Pass
Dwyidag	-	-

Base Plate		
Shape	Round	-
Diameter, ϕ	69	in
Thickness	2 1/2	in
Grade	A633 Gr. E	
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	80	ksi
Clip	N/A	in
Orientation Offset	0	°
Anchor Rod Detail	d	$\eta=0.5$
Clear Distance	3	in
Applied Moment, Mu	389.0	k
Bending Stress, ϕMn	1730.4	k



Original Anchor Rods		
Arrangement	Radial	-
Quantity	16	-
Diameter, ϕ	2 1/4	in
Bolt Circle	63	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	12.4	in
Orientation Offset	0	°
Applied Force, Pu	198.5	k
Anchor Rods, ϕPn	243.6	k

Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	39.8	3947.4	1.00
Anchor Rod Forces	39.8	3947.4	1.00
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	0.0	0.00
Stiffener Forces	0.0	0.0	0.00

Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in ²	in ²	in ⁴	#	in ⁴
Pole	65.8793	3.6600	0.1721		26017.20
Bolt	3.9761	3.2477	0.8393	4.5	23886.48
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	0.0000	0.0000	0.0000		0.00
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate

Shape	Round	-
Diameter, D	69	in
Thickness, t	2.5	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	80	ksi
Base Plate Chord	39.493	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3	-

Anchor Rods

Anchor Rod Quantity, N	16	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	63	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	198.5	k
Applied Shear, Vu	1.5	k
Compressive Capacity, ϕP_n	243.6	k
Tensile Capacity, ϕR_n	0.815	OK
Interaction Capacity	0.827	OK

External Base Plate

Chord Length AA	32.784	in
Additional AA	5.000	in
Section Modulus, Z	59.038	in ³
Applied Moment, Mu	389.0	k-ft
Bending Capacity, ϕM_n	3188.0	k-ft
Capacity, Mu/ ϕM_n	0.122	OK
Chord Length AB	31.222	in
Additional AB	5.000	in
Section Modulus, Z	56.597	in ³
Applied Moment, Mu	302.2	k-ft
Bending Capacity, ϕM_n	3056.2	k-ft
Capacity, Mu/ ϕM_n	0.099	OK
Bend Line Length	20.509	in
Additional Bend Line	0.000	in
Section Modulus, Z	32.045	in ³
Applied Moment, Mu	389.0	k-ft
Bending Capacity, ϕM_n	1730.4	k-ft
Capacity, Mu/ ϕM_n	0.225	OK

Internal Base Plate

Arc Length	0.000	in
Section Modulus, Z	0.000	in ³
Moment Arm	0.000	in
Applied Moment, Mu	0.0	k-ft
Bending Capacity, ϕM_n	0.0	k-ft
Capacity, Mu/ ϕM_n		

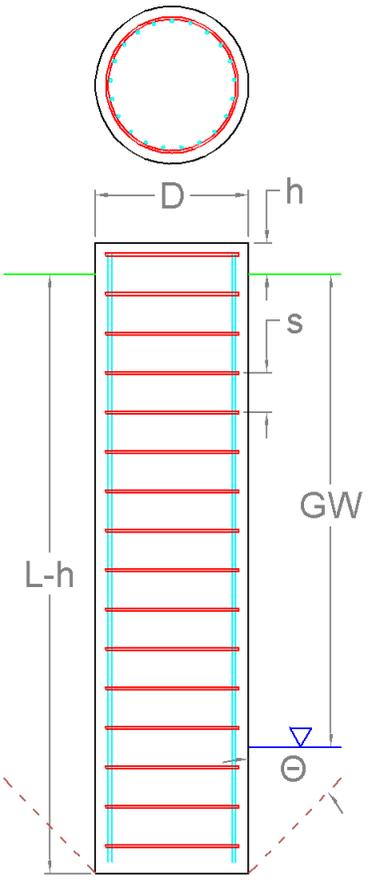
Pier Foundation Analysis (ANSI/TIA-222-H)

Foundation Analysis Parameters			
Pier Diameter	<i>D</i>	7.00	ft
Pier Embedment	<i>L-h</i>	33.5	ft
Pier Height above Ground	<i>H</i>	0.50	ft
Water Table Depth [BGL]	<i>GW</i>	7	ft
Pullout Angle	Θ	30	°
Unit Weight of Concrete		150	pcf
Uplift Skin Friction Factor		0.750	

Reactions		
Moment, M_u	3,947.4	k-ft
Shear, V_u	39.8	k
Axial, P_u	52.0	k
Uplift, T_u	0.0	k

Soil Properties						
Layer Depth (ft)		Unit Weight	Cohesion	Friction Angle	Ultimate Skin Friction	Ultimate Bearing Pressure
TOP	BTM	pcf	psf	°	psf	psf
0.0	4.0	105	0	0	0	0
4.0	7.5	105	0	28	151	0
7.5	14.0	106	0	29	412	0
14.0	17.0	120	0	33	1,180	0
17.0	19.5	134	0	40	1,276	0
19.5	27.0	133	0	40	1,534	0
27.0	34.5	140	0	40	1,738	58,590

Soil Strength Capacities		
Volume of Concrete	1,308.5	ft ³
Weight of Concrete [Buoyancy Considered]	132.6	k
Average Soil Unit Weight	72.4	pcf
Skin Friction Resistance	720.0	k
Compressive Bearing Resistance	2,254.8	k
Pullout Weight [Minus Concrete Weight]	1,465.9	k
Compressive Force, P_u	95.7	k
Nominal Compressive Capacity, $\phi_s P_n$	2,231.1	k
$P_u / \phi_s P_n$	4.3%	
Total Lateral Resistance	3,182.0	k
Inflection Point [BGL]	24.9	ft
Moment at Inflection Point, M_D	4,956.7	k-ft
Nominal Moment Capacity, $\phi_s M_n$	14,735.6	k-ft
$M_D / \phi_s M_n$	33.6%	



Pier Strength Capacities

Concrete Compressive Strength, f'_c	3,000	psi
Rebar Size #	11	
Rebar Area (Single)	1.56	in ²
Rebar Quantity	21	
Rebar Yield Strength, F_y	60	ksi
Vertical Rebar Clear Cover	3	in
Tie Rebar Size #	5	
Tie Rebar Area (Single)	0.31	in ²
Tie Rebar Spacing	18.0	in
Tie Rebar Yield Strength, F_y	40	ksi
Rebar Cage Diameter	75.34	in
Strength Bending/Tension Reduction Factor, ϕ_B	0.90	
Strength Shear Reduction Factor, ϕ_V	0.75	
Strength Compression Reduction Factor, ϕ_C	0.65	
Steel Elastic Modulus	29,000	ksi
Design Moment, M_u	3,971.2	k-ft
Moment Capacity, $\phi_B M_n$	4,920.3	k-ft
$M_u / \phi_B M_n$	80.7%	
Design Shear, V_u	320.3	k
Shear Capacity, $\phi_V V_n$	526.9	k
$V_u / \phi_V V_n$	60.8%	
Design Compression, P_u	95.7	k
Compression Capacity, $\phi_P P_n$	8,327.1	k
$P_u / \phi_P P_n$	1.1%	
Bending Reinforcement Ratio	0.006	



Exhibit D

Mount Analysis



AMERICAN TOWER®
CORPORATION

Antenna Mount Analysis Report

ATC Site Name : West Service Road, CT
ATC Site Number : 302466
Engineering Number : 13251344_C8_08
Mount Elevation : 124 ft
Carrier : T-Mobile
Carrier Site Name : CT491/SSite Hartford_MP1
Carrier Site Number : CT11491B
Site Location : 305 W. Service Rd.
Hartford, CT 06120-0001
41.79953889 , -72.65669722
County : Hartford
Date : August 24, 2020
Max Usage : 60%
Result : Contingent Pass

Prepared By:
Max Carter
Structural Engineer

Max Carter

Reviewed By:



COA: PEC.0001553



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Calculations Attached



Introduction

The purpose of this report is to summarize results of the antenna mount analysis performed for T-Mobile at 124 ft.

Supporting Documents

Radio Frequency Data Sheet	RFDS ID #CT11491B, dated May 11, 2020
Reference Photos	Site photos from 2020
Previous Mount Analysis*	CLS Engineering Project #41124-12605178-01-MA, dated September 19, 2018

*Modifications proposed in previous mount analysis could not be verified as installed via the most recently available site photos, however they were considered in this analysis. Should these modifications not be installed as specified, ATC Engineering should be contacted, and the mount analysis revised to reflect the as-build condition(s).

Analysis

This antenna mount was analyzed using American Tower Corporation's Mount Analysis Program and RISA-3D

Basic Wind Speed:	117 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1 1/2" radial ice concurrent
Codes:	ANSI/TIA-222-H
Exposure Category:	C
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.18, S1 = 0.06
Site Class:	D - Stiff Soil
Live Loads:	Lm = 500 lbs, Lv = 250 lbs

Conclusion

Based on the analysis results, the antenna mount does not meet the requirements per the applicable codes listed above. The mount can support the equipment as described in this report after the below listed modifications are completed:

- Install Site Pro 1 P296 antenna mounting pipe – 2-3/8" x 96" (Mount Pipe C, G and K) with Site Pro 1 SCX3-K crossover plate kits.
- Replace existing mount pipe B with Site Pro 1 P30120 antenna mounting pipe – 2-7/8" x 120" (Mount Pipe B, F, and J) with Site Pro 1 SCX3-K crossover plate kits.

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



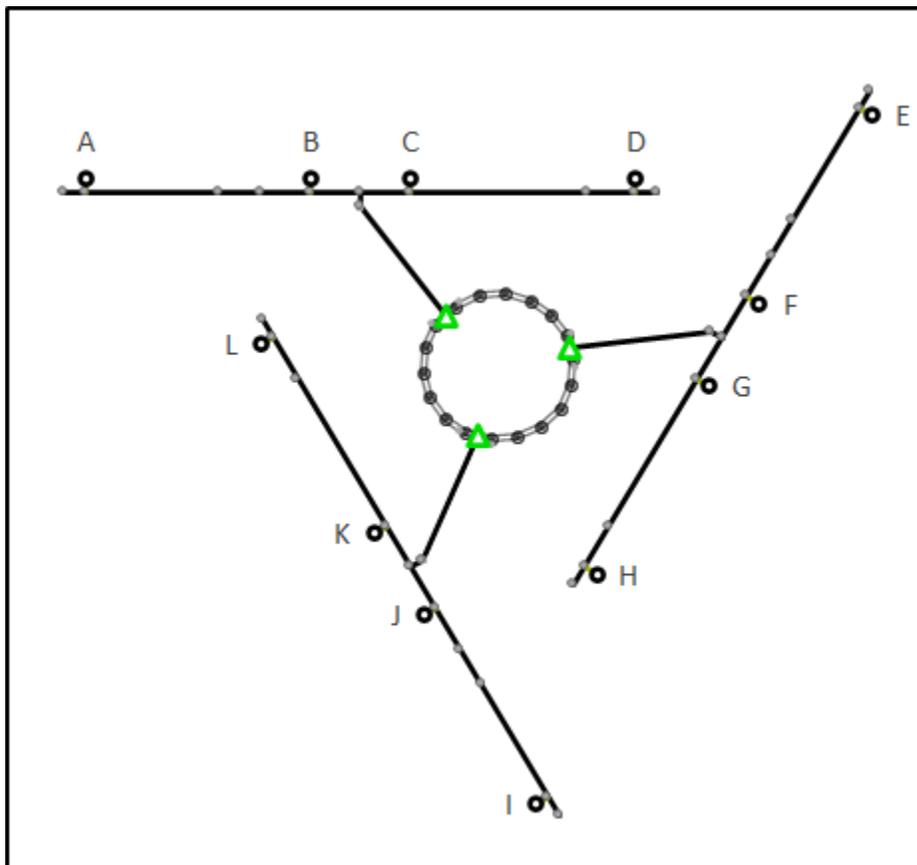
Application Loading

Mount Centerline (ft)	Antenna Centerline (ft)	Qty	Antenna Model
124.0	125.0	3	Ericsson AIR 21, 1.3M, B2A B4P (91.5 lbs)
		3	Ericsson AIR32 B66Aa/B2a
		3	Ericsson Air6449 B41
		3	RFS APXVAARR24_43-U-NA20
		3	Ericsson KRY 112 144/1
		3	Ericsson Radio 4449 B71 B85A
		3	Ericsson RRUS 4415 B25

Structure Usages

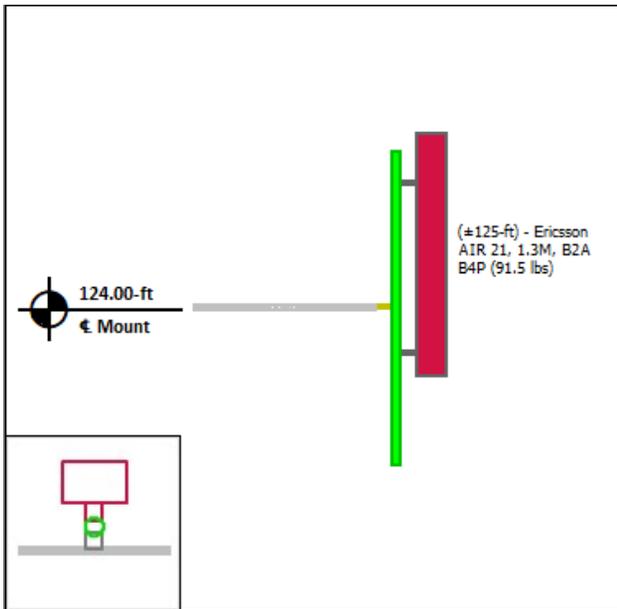
Structural Component	Controlling Usage	Pass/Fail
Horizontals	60%	Pass
Mount Pipes	55%	Pass

Mount Layout

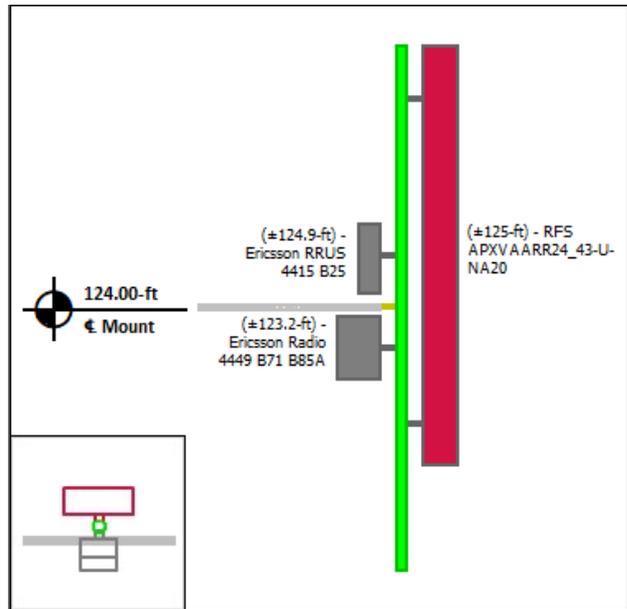


Equipment Layout

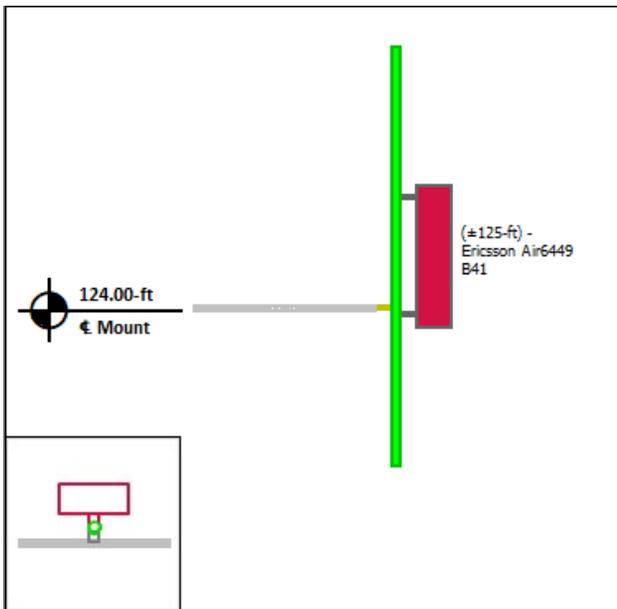
Mount Pipe A



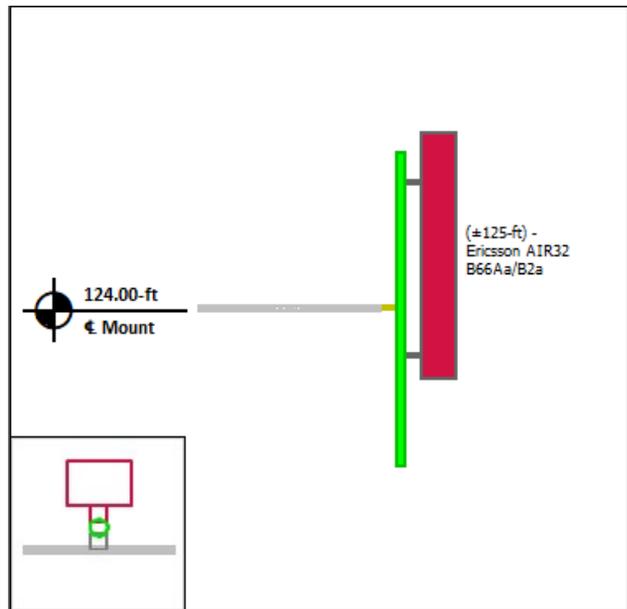
Mount Pipe B



Mount Pipe C

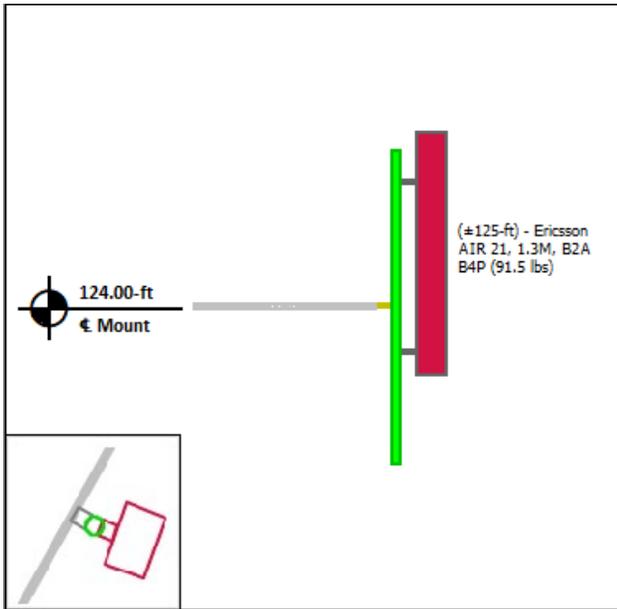


Mount Pipe D

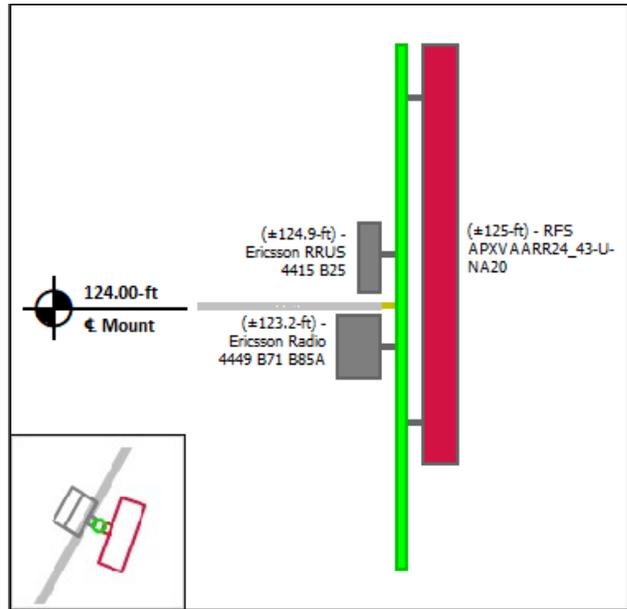


Equipment Layout Cont'd.

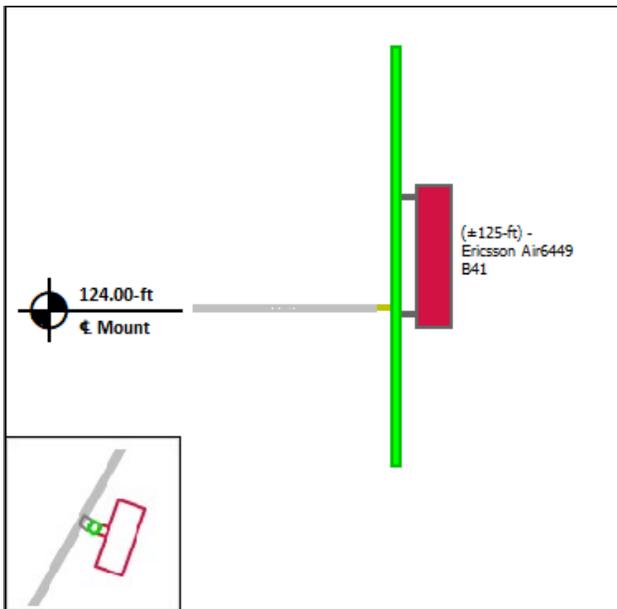
Mount Pipe E



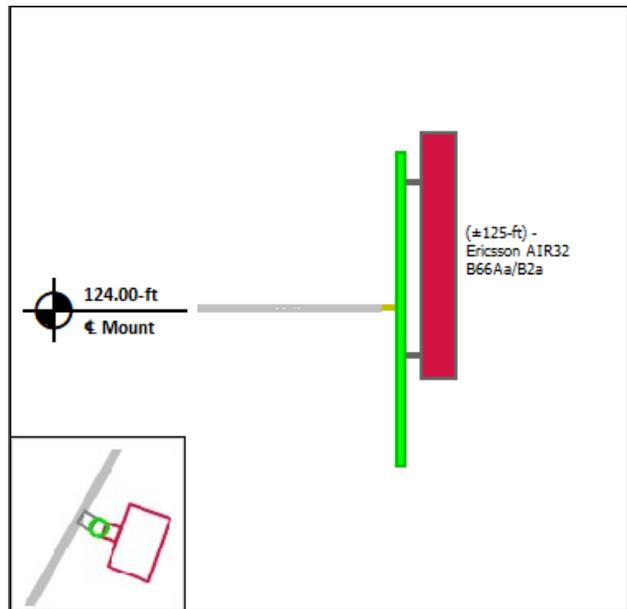
Mount Pipe F



Mount Pipe G

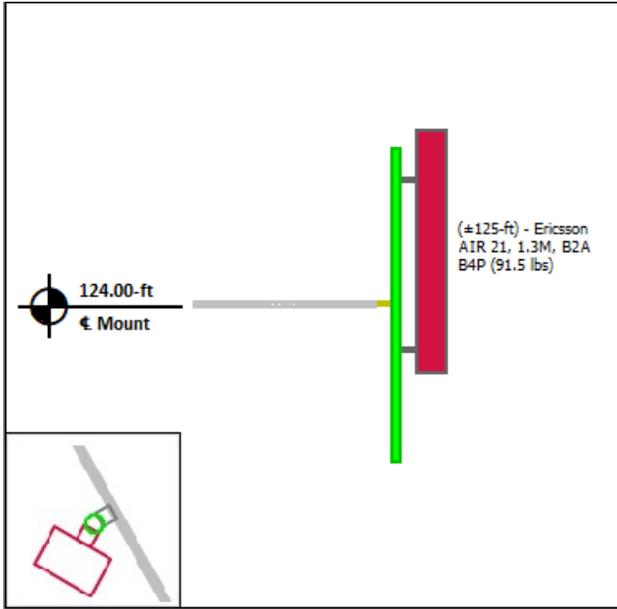


Mount Pipe H

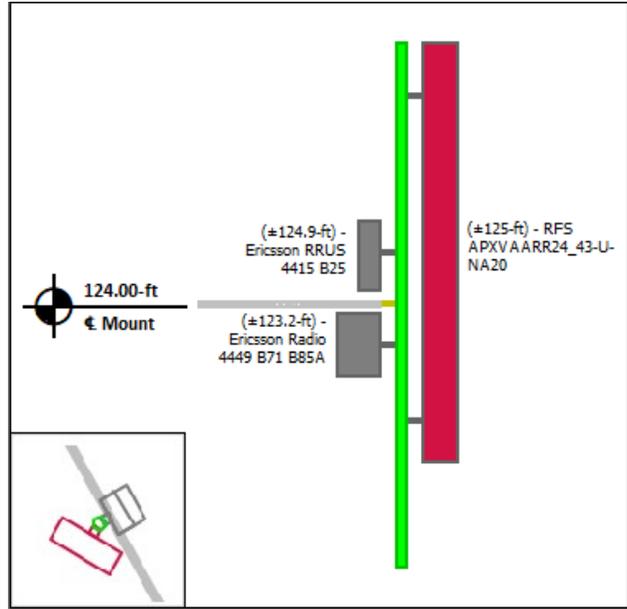


Equipment Layout Cont'd.

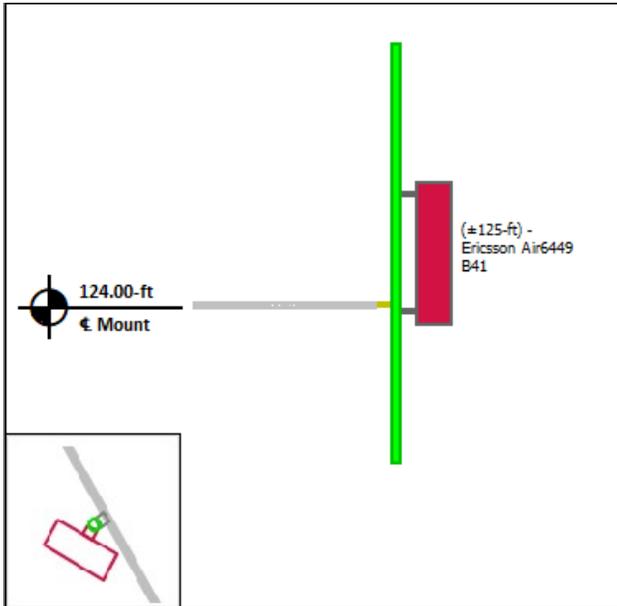
Mount Pipe I



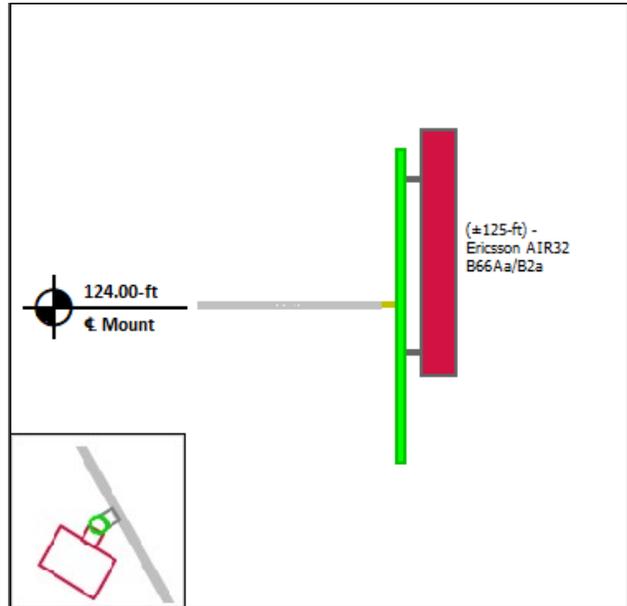
Mount Pipe J



Mount Pipe K



Mount Pipe L





Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

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.

All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

All connections are to be verified for condition and tightness by the installation contractor preceding any changes to the appurtenance mounting system and/or equipment attached to it.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

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 supplied herein.



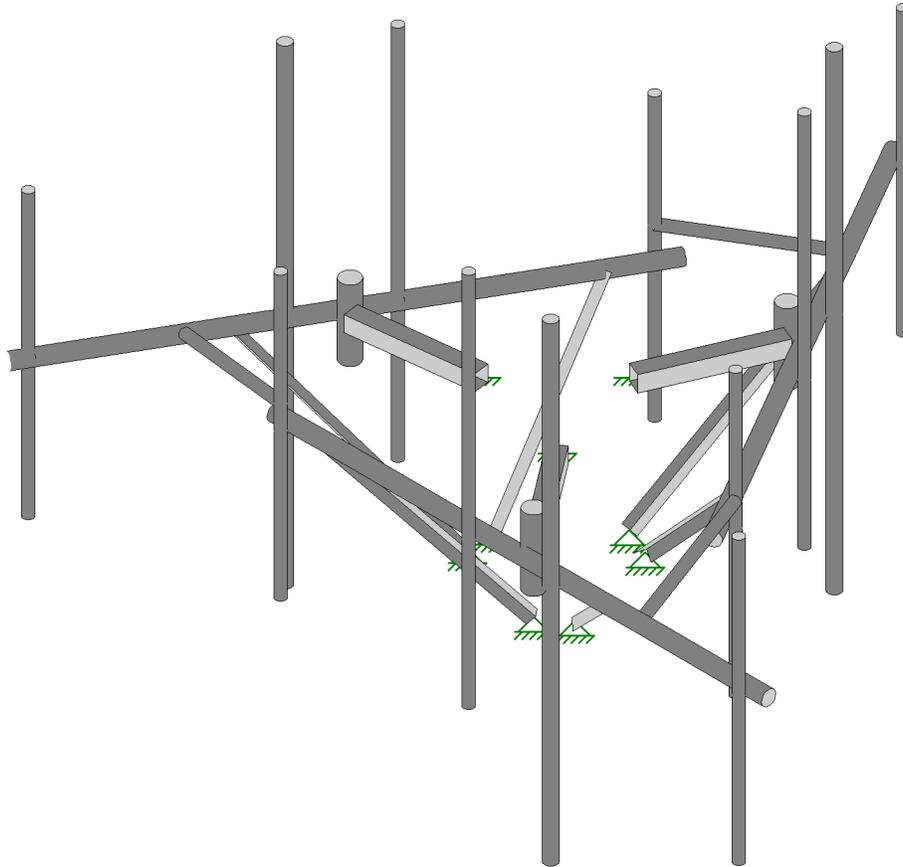
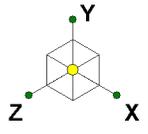
Site Number: 302466
 Project Number: 13251344_C8_08
 Carrier: T-Mobile
 Mount Elevation: 124 ft
 Date: 8/24/2020

Mount Analysis Force Calculations

Wind & Ice Load Calculations			
Velocity Pressure Coefficient	K_z	1.32	
Topographic Factor	K_{zt}	1.00	
Rooftop Wind Speed-up Factor	K_s	1.00	
Shielding Factor	K_a	0.90	
Ground Elevation Factor	K_e	1.00	
Wind Direction Probability Factor	K_d	0.95	
Basic Wind Speed	V	117	mph
Velocity Pressure	q_z	44.1	psf
Height Escalation Factor	K_{iz}	1.14	
Thickness of Radial Glaze Ice	T_{iz}	1.71	in

Seismic Load Calculations			
Short Period DSRAP	S_{DS}	0.192	
1 Second DSRAP	S_{D1}	0.096	
Importance Factor	I	1.0	
Response Modification Coefficient	R	2.0	
Seismic Response Coefficient	C_s	0.096	
Amplification Factor	A	1.0	
Total Weight	W	2657.2	lbs
Total Shear Force	V_s	255.1	lbs
Horizontal Seismic Load	E_h	255.1	lbs
Vertical Seismic Load	E_v	102.0	lbs

Antenna Calculations								
Equipment	Height	Width	Depth	Weight	EPA_N	EPA_T	EPA_{Ni}	EPA_{Ti}
Model #	in	in	in	lbs	sqft	sqft	sqft	sqft
Ericsson AIR 21, 1.3M, B2A B4P (91.5 lbs)	55.9	12.0	7.8	91.5	6.04	1.82	8.24	2.77
Ericsson AIR32 B66Aa/B2a	56.6	12.9	8.7	132.2	6.51	3.31	8.74	4.89
Ericsson Air6449 B41	33.1	20.6	8.6	104.0	5.68	1.56	7.31	2.41
RFS APXVAARR24_43-U-NA20	95.9	24.0	8.7	127.9	20.24	3.48	23.96	5.02
Ericsson KRY 112 144/1	6.9	6.1	2.7	11.0	0.35	0.09	0.82	0.31
Ericsson Radio 4449 B71 B85A	15.0	13.2	10.5	75.0	1.65	1.31	2.55	2.14
Ericsson RRUS 4415 B25	16.5	13.4	5.9	46.0	1.84	0.82	2.79	1.57



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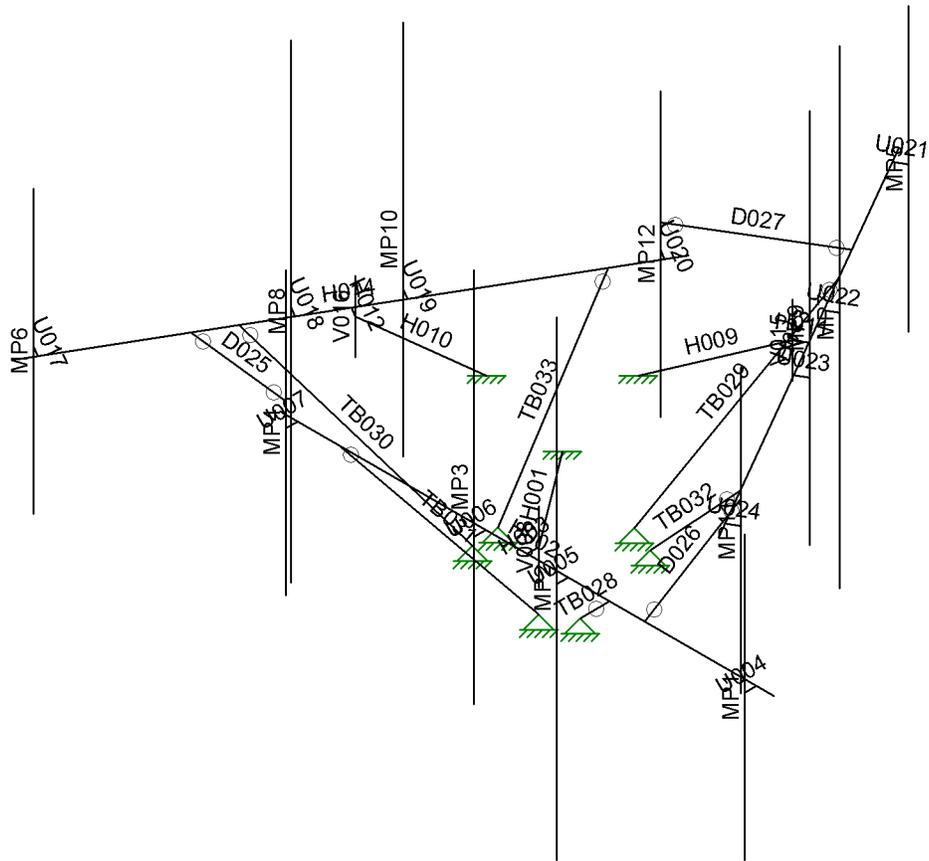
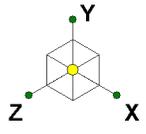
302466, West Service Road

3D Rendering

SK - 1

Aug 24, 2020 at 1:56 PM

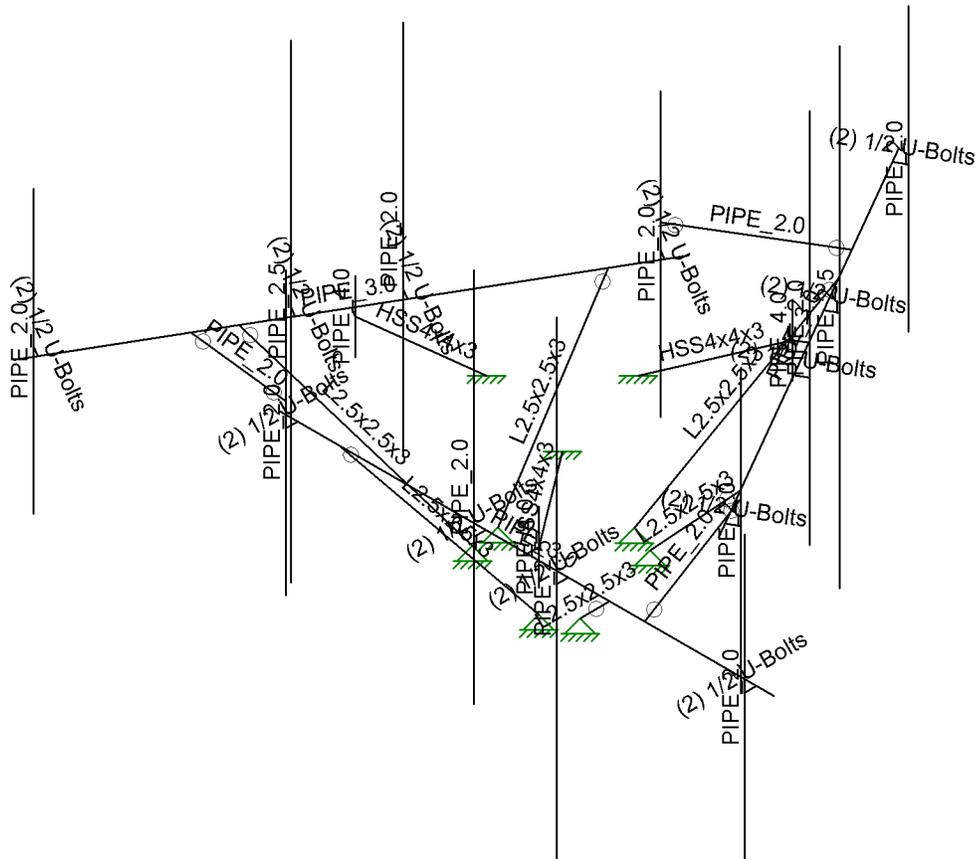
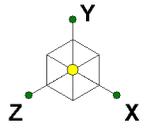
R3D. T-MOBILE @ 302466, West S...



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 13251344_C8_08

302466, West Service Road
 Member Labels

SK - 2
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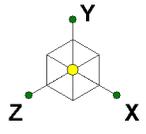
302466, West Service Road

Member Shapes

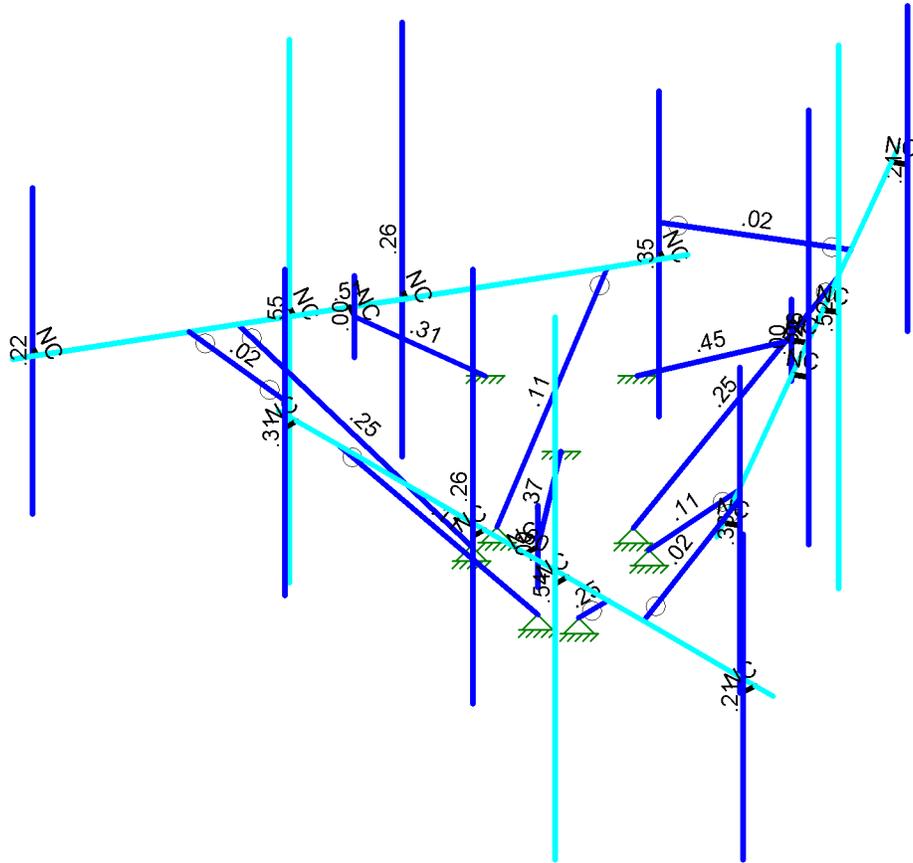
SK - 3

Aug 24, 2020 at 1:57 PM

R3D. T-MOBILE @ 302466, West S...



Code Check (Env)	
Black	No Calc
Red	> 1.0
Magenta	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0-.50



Member Code Checks Displayed (Enveloped)
Results for LC 1, 1.4D

American Tower Corp.	302466, West Service Road Unity Bending Checks	SK - 4
Max.Carter		Aug 24, 2020 at 1:57 PM
13251344_C8_08		R3D. T-MOBILE @ 302466, West S...



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I i	b e i	H i E i e e G	J i	F i e i i H e i	e	
I J	b e J	E G F	F e G	F i e	e	
I e	b e e	i i E H i i	F e G	F H E e i i H	e	
I F	b e F	i E F i G	F e G	i G e H e J	e	
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I H	b e H	G e E e e	i e	J F e i i i i	e	
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I G	b e G	i J E J e i i	J i	F e E F H i i	e	
I H	b e H	H e i J J H	J i	i H e G H G	e	
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I i	T U G a	i i E	H i	F i e	e	
I i	T U H c	i i E	F i i	F i e	e	
I J	T U H a	i i E	i J	F i e	e	
I e	T U i c	E G F	F H	F i e	e	
I F	T U i a	E G F	i J	F i e	e	
I G	T U i c	F J E H i i	F H	F G e F i F	e	
I H	T U i a	F J E H i i	i J	F G e F i F	e	
I i	T U i c	E G e J F H i	F H	F i i E i J e F	e	
I i	T U i a	E G e J F H i	i J	F i i E i J e F	e	
I i	T U i c	i H e H i i	F i i	i H e i e	e	
I i	T U i a	i H e H i i	H i	i H e i e	e	
I i	T U i c	E G e J F H i	F i i	F G e i J i F G	e	
I J	T U i a	E G e J F H i	H i	F G e i J i F G	e	
I e	T U J c	i H e H i i	F i i	i G e i H i	e	
I F	T U J a	i H e H i i	i J	i G e i H i	e	
I G	T U F c	E F i E J F H i	F i i	F e E e G J	e	
I H	T U F a	E F i E J F H i	i J	F e E e G J	e	
I i	T U F F c	i i E H i i	F H	F H E e i i H	e	
I i	T U F F a	i i E H i i	i J	F H E e i i H	e	
I i	T U F G c	i E F i G	F H	i G e H e J	e	
I i	T U F G a	i E F i G	i J	i G e H e J	e	
I i	P O S F	E i E J F H i	F i J	F J H e i F i i	e	
I J	P O S G	E i E J F H i	G J	F J H e i F i i	e	
J e	P O S H	F G E	F i J	F J H e i F i i	e	
J F	P O S i	F G E	G J	F J H e i F i i	e	
J G	P O S i	F G E	F i J	E F i E F i H i	e	
J H	P O S i	F G E	G J	E F i E F i H i	e	



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F	T U I c	S	Y	I I E E



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FI	O E G	Y	E E I I	E E I I	E	A F E E
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F I	V O E G	Y	E E H H	E E H H	E	A F E E
F I	V O E G J	Y	E E H H	E E H H	E	A F E E
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G	T U I	Y	E E I I	E E I I	E	A F E E
G	T U I	Y	E E I I	E E I I	E	A F E E
G	T U I	Y	E E H H	E E H H	E	A F E E
G J	T U I	Y	E E H H	E E H H	E	A F E E
H E	T U J	Y	E E I I	E E I I	E	A F E E
H F	T U F E	Y	E E I I	E E I I	E	A F E E
H G	T U F F	Y	E E I I	E E I I	E	A F E E
H H	T U F G	Y	E E I I	E E I I	E	A F E E

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F	P E E F	Z	E E H F	E E H F	E	A F E E
G	P E E G	Z	E E H F	E E H F	E	A F E E
H	P E E H	Z	E E H F	E E H F	E	A F E E
I	X E E	Z	E E H F	E E H F	E	A F E E
I	P E E J	Z	E E H F	E E H F	E	A F E E
I	P E E E	Z	E E H F	E E H F	E	A F E E
I	P E F F	Z	E E H F	E E H F	E	A F E E
I	P E F G	Z	E E H F	E E H F	E	A F E E
J	P E F H	Z	E E H F	E E H F	E	A F E E
F E	P E F I	Z	E E H F	E E H F	E	A F E E
FF	X E F I	Z	E E H F	E E H F	E	A F E E
FG	X E F I	Z	E E H F	E E H F	E	A F E E
FH	O E G	Z	E E H F	E E H F	E	A F E E
FI	O E G	Z	E E H F	E E H F	E	A F E E



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G	T U H	Y	E E I F	E E I F	E	A F E E	
Q	T U I	Y	E E I F	E E I F	E	A F E E	
Q	T U I	Y	E E I F	E E I F	E	A F E E	
Q	T U I	Y	E E I F	E E I F	E	A F E E	
Q	T U I	Y	E E I F	E E I F	E	A F E E	
Q	T U I	Y	E E I F	E E I F	E	A F E E	
GJ	T U I	Y	E E I F	E E I F	E	A F E E	
H E	T U J	Y	E E I F	E E I F	E	A F E E	
H F	T U F E	Y	E E I F	E E I F	E	A F E E	
H G	T U F F	Y	E E I F	E E I F	E	A F E E	
H H	T U F G	Y	E E I F	E E I F	E	A F E E	

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F	P E E F	Z	E I E H E G	E I E H E G	E	H E	
G	P E E G	Z	E G E F I	E G E F I	E	F G	
H	X E E	Z	E G E J G	E G E J G	E	F I	
I	P E E J	Z	E E E F J	E E E F J	E	H E	
I	P E E E	Z	E G E G F	E G E G F	E	H E	
I	P E F F	Z	E	E	E	H	
I	P E F G	Z	E	E	E	H	
I	P E F H	Z	E F E I I	E F E I I	E	F G	
J	P E F I	Z	E F E I I	E F E I I	E	F G	
F E	X E F I	Z	E G E J G	E G E J G	E	F I	
F F	X E F I	Z	E G E J G	E G E J G	E	F I	
F G	W E F I	Z	E E E G G	E E E G G	E	H	
F H	W E F I	Z	E E E G G	E E E G G	E	H	
F I	W E F J	Z	E E E G G	E E E G G	E	H	
F I	W E G E	Z	E E E G G	E E E G G	E	H	
F I	W E G F	Z	E E E G G	E E E G G	E	H	
F I	W E G G	Z	E E E G G	E E E G G	E	H	
F I	W E G H	Z	E E E G G	E E E G G	E	H	
F J	W E G I	Z	E E E G G	E E E G G	E	H	
G E	O E G I	Z	E I E H H	E I E H H	E	H I E I	
G F	O E G I	Z	E E E G F	E E E G F	E	H I E I	
G G	O E G I	Z	E E E I I	E E E I I	E	H I E I	
G H	V O E G I	Z	E F E J I	E F E J I	E	I I E I I	
G	V O E G J	Z	E F E G I	E F E G I	E	I I E I I	
G	V O E H E	Z	E I E I H	E I E I H	E	I I E I I	
G	V O E H F	Z	E F E J F I	E F E J F I	E	I F	
G	V O E H G	Z	E I E I H	E I E I H	E	I F	
G	V O E H H	Z	E I E H I	E I E H I	E	I F	
G J	T U F	Z	E I E I H	E I E I H	E	I G	
H E	T U G	Z	E I E H F	E I E H F	E	F G E	
H F	T U H	Z	E I E I H	E I E I H	E	J I	
H G	T U I	Z	E I E I H	E I E I H	E	I G	
H H	T U I	Z	E I E I H	E I E I H	E	I G	
H I	T U I	Z	E I E I H	E I E I H	E	I G	
H I	T U I	Z	E I E H F	E I E H F	E	F G E	
H I	T U I	Z	E I E H F	E I E H F	E	F G E	
H I	T U J	Z	E I E I H	E I E I H	E	J I	
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Exhibit E

Power Density/RF Emissions Report

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

T-Mobile Existing Facility

Site ID: CT11491B

CT491/SSite Hartford_MPI
305 W. Service Road
Hartford, Connecticut 06120

August 10, 2020

EBI Project Number: 6220003792

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	30.35%

August 10, 2020

T-Mobile

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

Emissions Analysis for Site: CT11491B - CT491/SSite Hartford_MPI

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **305 W. Service Road in Hartford, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 305 W. Service Road in Hartford, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

- 6) 2 UMTS channels (AWS Band - 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 7) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 8) 2 LTE channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 9) 2 NR channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 10) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 11) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 12) The antennas used in this modeling are the Ericsson AIR 21 for the 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-UNA20 for the 700 MHz / 600 MHz / 600 MHz / 1900 MHz channel(s), the Ericsson AIR6449 B41 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32 for the 2100 MHz / 1900 MHz channel(s) in Sector A, the Ericsson AIR 21 for the 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-UNA20 for the 700 MHz / 600 MHz / 600 MHz / 1900 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 B41 for the 2500 MHz / 2500 MHz channel(s) in Sector B, the Ericsson AIR 21 for the 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-UNA20 for the 700 MHz / 600 MHz / 600 MHz / 1900 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 2100 MHz channel(s), the Ericsson AIR6449 B41 for the 2500 MHz / 2500 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for

directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

- 13) The antenna mounting height centerline of the proposed antennas is 125 feet above ground level (AGL).
- 14) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 15) All calculations were done with respect to uncontrolled / general population threshold limits.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR 21	Make / Model:	Ericsson AIR 21	Make / Model:	Ericsson AIR 21
Frequency Bands:	1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.35 dBd	Gain:	15.35 dBd / 15.35 dBd	Gain:	15.35 dBd / 15.35 dBd
Height (AGL):	125 feet	Height (AGL):	125 feet	Height (AGL):	125 feet
Channel Count:	6	Channel Count:	6	Channel Count:	6
Total TX Power (W):	180 Watts	Total TX Power (W):	180 Watts	Total TX Power (W):	180 Watts
ERP (W):	6,169.82	ERP (W):	6,169.82	ERP (W):	6,169.82
Antenna A1 MPE %:	1.42%	Antenna B1 MPE %:	1.42%	Antenna C1 MPE %:	1.42%
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVAARR24_43-UNA20	Make / Model:	RFS APXVAARR24_43-UNA20	Make / Model:	RFS APXVAARR24_43-UNA20
Frequency Bands:	700 MHz / 600 MHz / 600 MHz / 1900 MHz	Frequency Bands:	700 MHz / 600 MHz / 600 MHz / 1900 MHz	Frequency Bands:	700 MHz / 600 MHz / 600 MHz / 1900 MHz
Gain:	13.35 dBd / 12.95 dBd / 12.95 dBd / 15.65 dBd	Gain:	13.35 dBd / 12.95 dBd / 12.95 dBd / 15.65 dBd	Gain:	13.35 dBd / 12.95 dBd / 12.95 dBd / 15.65 dBd
Height (AGL):	125 feet	Height (AGL):	125 feet	Height (AGL):	125 feet
Channel Count:	7	Channel Count:	7	Channel Count:	7
Total TX Power (W):	320 Watts	Total TX Power (W):	320 Watts	Total TX Power (W):	320 Watts
ERP (W):	8,466.41	ERP (W):	8,466.41	ERP (W):	8,466.41
Antenna A2 MPE %:	3.24%	Antenna B2 MPE %:	3.24%	Antenna C2 MPE %:	3.24%
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Ericsson AIR6449 B41	Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32
Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 2100 MHz
Gain:	22.05 dBd / 22.05 dBd	Gain:	15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.85 dBd
Height (AGL):	125 feet	Height (AGL):	125 feet	Height (AGL):	125 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	160 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	25,651.93	ERP (W):	8,728.31	ERP (W):	8,728.31
Antenna A3 MPE %:	5.90%	Antenna B3 MPE %:	2.01%	Antenna C3 MPE %:	2.01%
Antenna #:	4	Antenna #:	4	Antenna #:	4
Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR6449 B41	Make / Model:	Ericsson AIR6449 B41
Frequency Bands:	2100 MHz / 1900 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	15.85 dBd / 15.35 dBd	Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd
Height (AGL):	125 feet	Height (AGL):	125 feet	Height (AGL):	125 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	240 Watts	Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts
ERP (W):	8,728.31	ERP (W):	25,651.93	ERP (W):	25,651.93
Antenna A4 MPE %:	2.01%	Antenna B4 MPE %:	5.90%	Antenna C4 MPE %:	5.90%

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	12.57%
Northcoast	0.2%
Nextel	0.28%
Clearwire	9.72%
Sensus (CL&P)	0.14%
Verizon	7.44%
Site Total MPE % :	30.35%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	12.57%
T-Mobile Sector B Total:	12.57%
T-Mobile Sector C Total:	12.57%
Site Total MPE % :	30.35%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile 1900 MHz GSM	4	1028.30	125.0	9.46	1900 MHz GSM	1000	0.95%
T-Mobile 2100 MHz UMTS	2	1028.30	125.0	4.73	2100 MHz UMTS	1000	0.47%
T-Mobile 700 MHz LTE	2	648.82	125.0	2.99	700 MHz LTE	467	0.64%
T-Mobile 600 MHz LTE	2	591.73	125.0	2.72	600 MHz LTE	400	0.68%
T-Mobile 600 MHz NR	1	1577.94	125.0	3.63	600 MHz NR	400	0.91%
T-Mobile 1900 MHz LTE	2	2203.69	125.0	10.14	1900 MHz LTE	1000	1.01%
T-Mobile 2500 MHz LTE	2	6412.98	125.0	29.51	2500 MHz LTE	1000	2.95%
T-Mobile 2500 MHz NR	2	6412.98	125.0	29.51	2500 MHz NR	1000	2.95%
T-Mobile 2100 MHz LTE	2	2307.55	125.0	10.62	2100 MHz LTE	1000	1.06%
T-Mobile 1900 MHz LTE	2	2056.61	125.0	9.46	1900 MHz LTE	1000	0.95%
						Total:	12.57%

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

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	12.57%
Sector B:	12.57%
Sector C:	12.57%
T-Mobile Maximum MPE % (Sector A):	12.57%
Site Total:	30.35%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **30.35%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Exhibit F

Mailing Receipts/Proof of Notice

UPS CampusShip: View/Print Label

- 1. Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.
- 2. Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.
- 3. GETTING YOUR SHIPMENT TO UPS**
Customers with a Daily Pickup
 Your driver will pickup your shipment(s) as usual.

Customers without a Daily Pickup

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

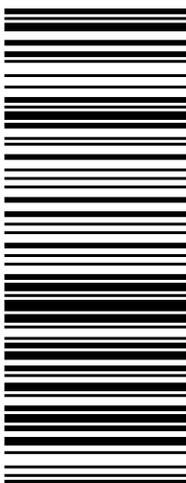
Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages. Hand the package to any UPS driver in your area.

UPS Access Point™
CVS STORE # 972
555 WASHINGTON ST
SOUTH EASTON ,MA 02375

UPS Access Point™
CVS STORE # 7232
689 DEPOT ST
NORTH EASTON ,MA 02356

UPS Access Point™
TOWN LINE GENERAL STORE
450 E CENTER ST
WEST BRIDGEWATER ,MA 02379

FOLD HERE

<p style="text-align: right;">1 OF 1</p> <p>1 LBS</p> <p>CENTERLINE COMMUNICATIONS 5082655599 CENTERLINE CORPORATE 95 RYAN DR. RAYNHAM MA 02767</p> <p>SHIP TO: PATRICK MASSEY, PM, SITE DEVT. AMERICAN TOWER CORP 10 PRESIDENTIAL WAY WOBURN MA 01801-1053</p>	<p style="font-size: 2em;">MA 018 9-04</p> 	<p style="font-size: 1.5em;">UPS GROUND</p> <p>TRACKING #: 1Z 9Y4 503 03 1 138 4436</p> 	<p style="text-align: center;">BILLING: P/P</p> <p>Reference # 1: CT11491B - CSC to ATC</p> <p style="font-size: 0.8em;">CS 22.0.12. WNTNV50 31.0A 07/2020*</p> 
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UPS CampusShip: View/Print Label

- 1. Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.
- 2. Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.
- 3. GETTING YOUR SHIPMENT TO UPS**
Customers with a Daily Pickup
 Your driver will pickup your shipment(s) as usual.

Customers without a Daily Pickup

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

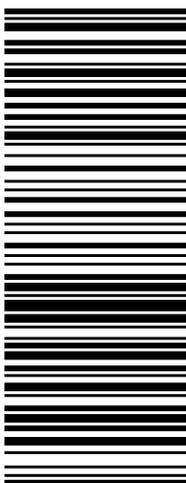
Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages. Hand the package to any UPS driver in your area.

UPS Access Point™
CVS STORE # 972
555 WASHINGTON ST
SOUTH EASTON ,MA 02375

UPS Access Point™
CVS STORE # 7232
689 DEPOT ST
NORTH EASTON ,MA 02356

UPS Access Point™
TOWN LINE GENERAL STORE
450 E CENTER ST
WEST BRIDGEWATER ,MA 02379

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<p style="text-align: right;">1 OF 1</p> <p>1 LBS</p> <p>CENTERLINE COMMUNICATIONS 5082655599 CENTERLINE CORPORATE 95 RYAN DR. RAYNHAM MA 02767</p> <p>SHIP TO: HON. LUKE BRONIN, MAYOR 860-757-9500 CITY OF HARTFORD HARTFORD CITY HALL 550 MAIN STREET HARTFORD CT 06103-2911</p>	<p style="font-size: 2em;">CT 061 9-03</p> 	<p style="font-size: 1.5em;">UPS GROUND</p> <p>TRACKING #: 1Z 9Y4 503 03 0941 2418</p> 	<p style="text-align: right;">BILLING: P/P</p> <p>Reference # 1: CT11491B - CSC to City</p> <p style="font-size: 0.8em;">CS 22.0.12. WNTNV50 31.0A 07/2020*</p> 
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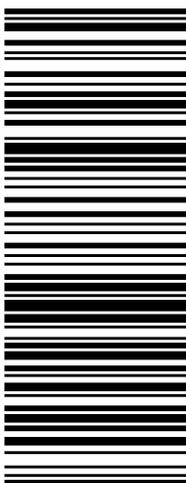
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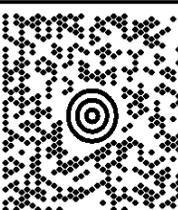
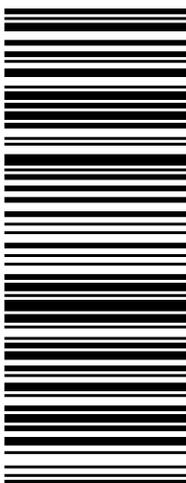
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