T-Mobile
Ryan Clark
Real Estate Consultant
750 W. Center St, Suite 301
W. Bridgewater, MA 02379
Phone: (203) 300-7310
rclark@clinellc.com

June 16, 2022

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

Re: **Request for Tower Share**
T-Mobile Northeast, LLC ("T-Mobile") Request for Approval of the Shared Use of an Existing Tower at 32 Norfolk Road Winsted, Connecticut 06098
T-Mobile site: CTNH392A

Dear Members of the Council:

T-Mobile proposes to share an existing telecommunications tower located at 32 Norfolk Road Winsted, CT 06098 (the facility). The subject parcel is identified by the Town of Winsted, CT as Map 016, Block 152 and lot 026-1. The property is owned by WIN 21, LLC and tower is owned by American Tower Corporation. The property is roughly 56± acres and accommodates an existing telecommunication compound with one shelter and one concrete pad with telecommunications carriers' cabinets as well as the monopine tower within the fenced compound. The facility is and will continue to be owned and operated by American Tower Corporation.

Pursuant to Connecticut General Statues Section 16-50aa (the Statute), T-Mobile requests a finding from the Connecticut Siting Council that the shared use of this facility is technically, legally, environmentally and economically feasible, will meet safety concerns, will avoid the unnecessary proliferation of towers and is in the public interest. It further requests an order approving the shared use of this facility.

The purpose of this request is to use an existing tower to develop T-Mobile's wireless network to provide high speed wireless data and wireless service within the State of Connecticut and in this part of Winsted: avoiding the need for an additional tower in Winsted.

T-Mobile is licensed by the Federal Communications Commission ("FCC") to provide multiple technologies, including LTE, NR, 5G and GSM including (600,700,1900, 2100, 2500 MHz frequencies) in Litchfield County. T-Mobile is building and enhancing its network to take advantage of its licensed spectrum, and improve its broadband high speed wireless voice and data services

Existing Facility & Proposed Modification

The existing facility is and will continue to be a 151' monopine tower located at 32 Norfolk Road Winsted, Connecticut 06098. Site coordinates (NAD83) are 41.94022438 and -73.09588794. Currently there are two other major commercial wireless carriers located on this tower along with other users, whereby T-Mobile now intends to use the vacant space on the lowest part of the tower, beneath Verizon and AT&T. The site plan of the facility is included in the proposed Modifications drawings and Construction drawings, prepared by American Tower Corporation dated May 26, 2022 respectively, and enclosed herewith.

T-Mobile intends to install three (3) RFS- APXVAALL24_43-U-NA20, (3) AIR6419 B41 antennas, one (1) VHLP-11W-2GR DISH, three (3) 4460 B25+B66 and three (3) 4480 B71+B85 RRUs, as shown in the construction drawing, to be attached to the guyed tower at the 127' mount level. T-Mobile will also install three (3) 6x24 hybrid fiber cables on the tower. T-Mobile will add a 10' x 15' leased area with one (1) concrete pad and one (1) ice bridge and one (1) 9' x 4' concrete pad for a 48kw generator. T-Mobile intends use its existing MLA agreement with ATC, at this tower height, in order to license the portion of space within the existing and proposed compound.

Consistent with the requirements of the Statute, it is feasible for T-Mobile to collocate at this facility. T-Mobile is proposing to collocate on the existing monopole tower that will continue to remain in the ownership of American Tower Corporation. Included with this application is a Structural Analysis Report from American Tower Corporation dated April 29, 2022 that shows that the existing tower can support T-Mobile's proposed equipment once modified.

The Proposal is Legally Feasible.

The Council has authority, pursuant to statute, to issue an order approving of the shared use of this tower. By issuing an order approving T-Mobile's shared use of this tower, T-Mobile will be able to proceed with obtaining a building permit for the proposed installation. American Tower Corporation has executed a Letter of Authorization that approved T-Mobile's Request for Tower Share filing, which approval is included with this application. T-Mobile's proposal is legally feasible.

T-Mobile is a telecommunication provider licensed by the FCC to provide service in the State of Connecticut, including but not limited to Litchfield County. T-Mobile will enter into an agreement with the owner of this facility, American Tower Corporation, for the location of this proposed equipment on the existing tower so that it may provide telecommunications services to the surrounding community. Consequently, the proposal is legally feasible.

The Proposal is Environmentally Feasible.

Pursuant to the Statute, the proposal will be environmentally feasible for the following reasons:

- The overall impact on the Winsted area will be decreased with the sharing of a single tower versus the proliferation of multiple towers.

- There will be no material increase in the visibility of the tower with the addition of the

antennas and associated equipment on the tower.

- There will be no increased impact on air quality because no air pollutants will be generated during normal operation of the facility.

- There will only be a brief, slight increase in noise pollution while the site is under construction.

- During construction, the proposed project will generate a small amount of traffic as construction takes place. Upon completion, traffic will be limited to an average of one trip per month for maintenance and inspections.

- There will be no adverse impact to the health and safety of the surrounding community or workers at the facility due to the addition of T-Mobile's new antennas to the tower. T-Mobile has performed an analysis of the radio frequency field emanating from the transmitting antennas on the tower to ensure compliance with the National Council on Radiation Protection and measurements (NCRP) standard for maximum permissible exposure (MPE) adopted by the FCC. The analysis indicates that T-Mobile and other antennas on the tower will cumulatively emit .43% of the NCRP standard for maximum permissible exposure. The report indicates that maximum level of exposure will be well below the FCC's mandated radio frequency exposure limits. The report is enclosed herewith.

- T-Mobile expects to enhance safety in this portion of by improving wireless telecommunications for local residents and travelers. T-Mobile is currently developing its network to provide its customers with quality and reliable coverage to comply with their FCC license, the site is a necessary part of T-Mobile's network development.

- Specifically, this proposal is designed to provide reliable wireless coverage for this section of Coventry.

Conclusions:

For the reasons stated above, the attachment of T-Mobile's antennas and associated equipment to the tower would meet all the requirements set forth in the Statute. The proposal is legally, technically, economically and environmentally feasible and meets all public safety concerns. Therefore, T-Mobile respectfully requests that the Council approve this request for the shared use of this tower located a 32 Norfolk Road Winsted, Connecticut 06098.

Respectfully yours,

Ryan Clark
Real Estate Consultant – Site Acquisition
c/o T-Mobile
Centerline Communications, LLC
750 West Center Street, Floor 3 / Suite 301
West Bridgewater, MA 02379
Mobile: (203) 300-7310
rclark@clinellc.com

cc: American Tower Corporation- tower owner
WIN 21, LLC- property owner
Todd Arcelaschi, chief elected official, Town of Winchester
Pamela Colombie, Land Use, Town of Winchester.

Exhibit A

Letter of Authorization

AMERICAN TOWER®
CORPORATION

LETTER OF AUTHORIZATION

ATC SITE#/NAME/PROJECT: 413849 / Winchester PCS CT / 14099859
SITE ADDRESS: 32 NORFOLK RD WINSTED, CT 06098
ARN: WINC M:016 B:152 L:026-1
LICENSEE: T-MOBILE NORTHEAST LLC DBA T-MOBILE

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

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

Signature:

Print Name: Margaret Robinson
Senior Counsel
American Tower*

NOTARY BLOCK

Commonwealth of MASSACHUSETTS
County of Middlesex

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

WITNESS my hand and official seal, this 31st day of May 2022

NOTARY SEAL

MELISSA ANN METZLER
Notary Public
Commonwealth of Massachusetts
My Commission Expires March 14, 2025

Notary Public
My Commission Expires: March 14, 2025

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

Exhibit B

Original Facility Approval

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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

E-Mail: siting.council@ct.gov

Internet: ct.gov/csc

Daniel F. Caruso
Chairman

CERTIFICATE

OF

ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED

DOCKET NO. 361

Pursuant to General Statutes § 16-50k, as amended, the Connecticut Siting Council hereby issues a Certificate of Environmental Compatibility and Public Need to Cellco Partnership d/b/a Verizon Wireless for the construction, maintenance and operation of a telecommunications facility located off Norfolk Road (Route 44), Winchester, Connecticut.

This Certificate is issued in accordance with and subject to the terms and conditions set forth in the Decision and Order of the Council on September 11, 2008.

By order of the Council,

Daniel F. Caruso, Chairman

September 11, 2008

Exhibit C

Property Card

32 NORFOLK RD

Location	32 NORFOLK RD	**Mblu**	016/ 152/ 026-1/ /
Acct#	005370	**Owner**	WIN 21 LLC
Assessment	$130,000	**Appraisal**	$497,900
PID	4218	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$19,700	$478,200	$497,900
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$13,790	$116,210	$130,000

Owner of Record

Owner	WIN 21 LLC	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	156 ROOSEVELT DR SEYMOUR, CT 06483	**Book & Page**	0417/0888
		Sale Date	04/07/2014
		Instrument	03

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
WIN 21 LLC	$0		0417/0888	03	04/07/2014
WIN 21 LLC	$85,000		00324/0277	00	06/06/2003
HORNE JONATHAN A	$0		00216/0006		06/29/1989

Building Information

Building 1 : Section 1

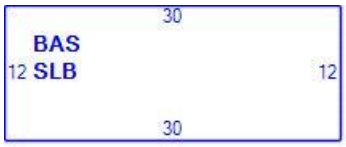
Year Built:	2009
Living Area:	360
Replacement Cost	
Less Depreciation:	$19,700

Building Attributes	
Field	**Description**
Style:	Warehse Prefab
Model	Comm/Ind
Grade	Good
Stories:	1
Occupancy	1.00
Exterior Wall 1	Pre-cast Concr
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Metal/Tin
Interior Wall 1	Minimum
Interior Wall 2	
Interior Floor 1	Concrete Slab
Interior Floor 2	
Heating Fuel	Gas/Oil
Heating Type	Hot Air-no Duc
AC Type	None
Struct Class	
Bldg Use	Tele Tower
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	
Heat/AC	NONE
Frame Type	MASONRY
Baths/Plumbing	NONE
Ceiling/Wall	NONE
Rooms/Prtns	LIGHT
Wall Height	12.00
% Comn Wall	

Building Photo

(http://images.vgsi.com/photos/WinchesterCTPhotos//default.jpg)

Building Layout



(ParcelSketch.ashx?

pid=4218&bid=5192)

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	360	360
SLB	Slab	360	0
		720	360

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 4310

Land Line Valuation

Size (Acres) 56

Description	Tele Tower	**Depth**	
Zone	RR	**Assessed Value**	$116,210
Alt Land Appr	No	**Appraised Value**	$478,200
Category			

Outbuildings

Outbuildings	Legend
No Data for Outbuildings	

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$19,700	$478,200	$497,900
2020	$19,700	$478,200	$497,900
2017	$19,700	$478,200	$497,900

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$13,790	$116,210	$130,000
2020	$13,790	$116,210	$130,000
2017	$13,790	$116,210	$130,000

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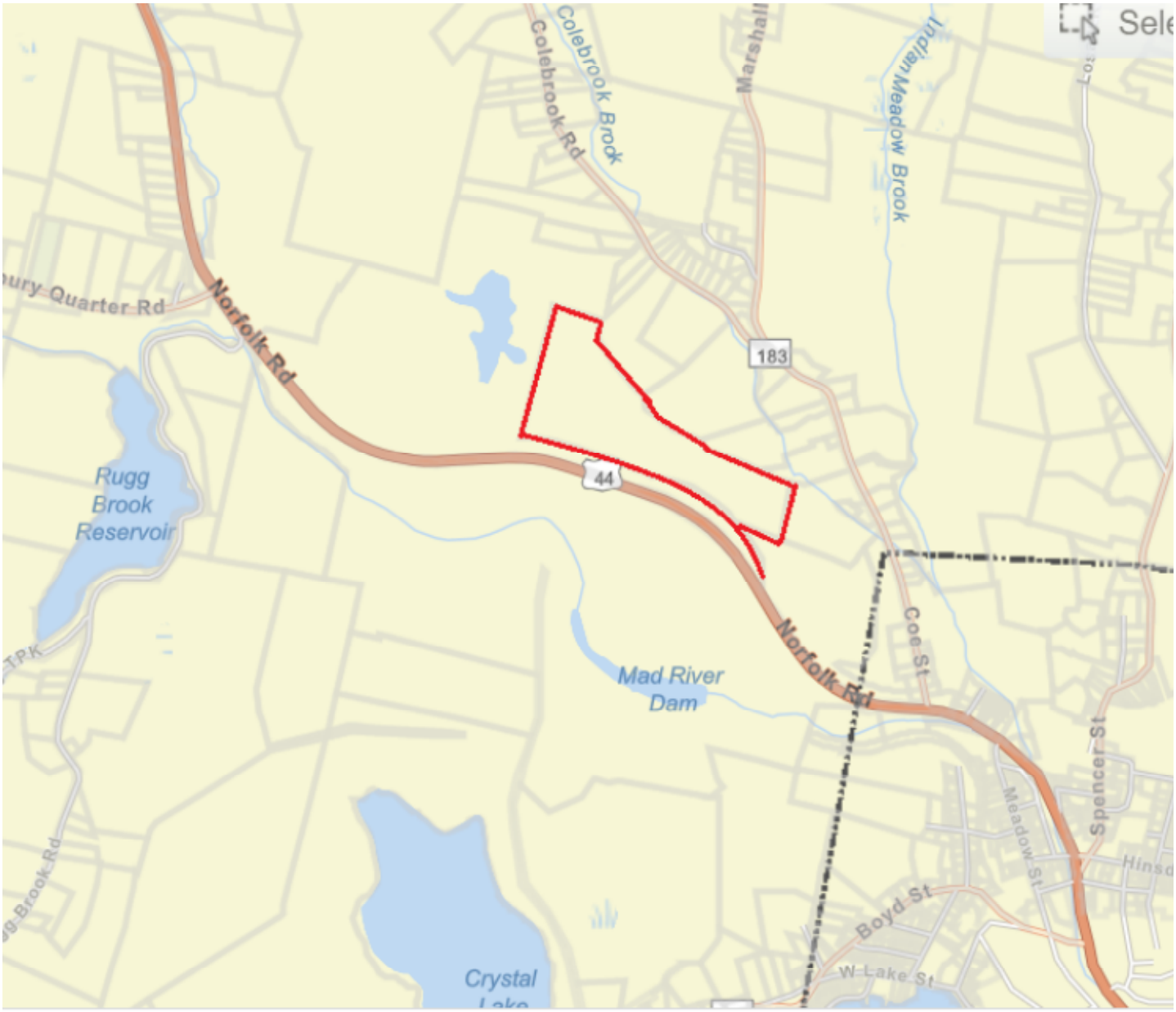

Colebrook Brook
Colebrook Rd
Marshall
Indian Meadow Brook
Norfolk Rd
183
44
Rugg Brook Reservoir
Mad River Dam
Norfolk Rd
Coe St
Spencer St
Meadow St
Boyd St
W Lake St
Crystal

Exhibit D

Construction Drawings

VICINITY MAP

AMERICAN TOWER®

ATC SITE NAME: WINCHESTER PCS CT
ATC SITE NUMBER: 413849
T-MOBILE SITE NAME: CTNH392_ AMERICANTOWER_ MONOPINE_WINSTED
T-MOBILE SITE NUMBER:CTNH392A
SITE ADDRESS: 32 NORFOLK ROAD WINSTED, CT 06098

T-MOBILE COVERAGE STRATEGY COLOCATION PLAN
67E5D998E 6160 CONFIGURATION

LOCATION MAP

COMPLIANCE CODE

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. 2018 INTERNATIONAL BUILDING CODE (IBC)
2. 2017 NATIONAL ELECTRIC CODE (NEC)
3. LOCAL BUILDING CODE
4. CITY/COUNTY ORDINANCES

UTILITY COMPANIES

POWER COMPANY: EVERSOURCE
PHONE: (888) 783-6617

TELEPHONE COMPANY: AT&T
PHONE: (866) 593-1383

811 Know what's below. Call before you dig.

PROJECT SUMMARY

SITE ADDRESS:

32 NORFOLK ROAD
WINSTED, CT 06098
COUNTY: LITCHFIELD

GEOGRAPHIC COORDINATES:

LATITUDE: 41.94022438
LONGITUDE: -73.09588794
GROUND ELEVATION: 1143' AMSL

PROJECT TEAM

TOWER OWNER:

AMERICAN TOWER
10 PRESIDENTIAL WAY
WOBURN, MA 01801

APPLICANT:

T-MOBILE

ENGINEER:

ATC TOWER SERVICES, LLC
3500 REGENCY PKWY STE 100
CARY, NC 27518

PROPERTY OWNER:

A MELTEL LLC
32 NORFOLK ROAD
WINSTED, CT 06098

PROJECT DESCRIPTION

THE PROPOSED PROJECT INCLUDES INSTALLING EQUIPMENT CABINETS ON A PROPOSED CONCRETE PAD INSIDE A 10' X 15' GROUND SPACE WITHIN THE EXISTING COMPOUND, AND INSTALLING NEW EQUIPMENT AND MOUNTS ON THE EXISTING TOWER.

TOWER SCOPE:
INSTALL (3) SECTOR FRAME(s), (6) ANTENNA(S), (6) RRU(S), (1) DISH, (1) ODU, (4) 1/2" COAX CABLE(s), AND (3) 1.99" ERICSSON HYBRID TRUNK 6/24 4AWG

GROUND SCOPE:
INSTALL (1) 6160 CABINET, (1) B160 BATTERY CABINET, (1) RBS 6601, (2) CONCRETE PAD(s), (1) GENERATOR, (1) H-FRAME, (1) ATS, (1) CIENA, (1) PPC, (1) GPS ANTENNA, (1) ICE BRIDGE, AND (1) LED LUMINARE

PROJECT NOTES

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.
6. THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. § 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION, REMOVAL, AND/OR REPLACEMENT OF TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR § 1.61000 (B)(7).

PROJECT LOCATION DIRECTIONS

FROM EAST HARTFORD TAKE 84 WEST MERGE ONTO ROUTE 8 NORTH AND HEAD TO THE END TAKE THE EXIT TOWARDS U.S. 44 W AND MAKE A RIGHT TAKE U.S. 44 WEST FOR ROUGHLY 4 MILES YOU WILL SEE A TALL TREE POLE ON THE RIGHT DRIVEWAY IS RIGHT AFTER RIGHT LANE ENDS 700 FT YELLOW SIGN METAL GATE TO ACCESS ROAD FOLLOW DRIVEWAY UP THE HILL GATE COMBO IS 4667

SHEET INDEX

SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
G-001	TITLE SHEET	0	05/26/22	RS
G-002	GENERAL NOTES	0	05/26/22	RS
C-001	OVERALL SITE PLAN	0	05/26/22	RS
C-101	DETAILED SITE PLAN	0	05/26/22	RS
C-102	DETAILED EQUIPMENT PLAN	0	05/26/22	RS
C-201	TOWER ELEVATION	0	05/26/22	RS
C-401	ANTENNA INFORMATION & SCHEDULE	0	05/26/22	RS
C-501	MOUNT DETAILS	0	05/26/22	RS
C-502	CONSTRUCTION DETAILS	0	05/26/22	RS
C-503	CONSTRUCTION DETAILS	0	05/26/22	RS
C-504	GENERATOR CONSTRUCTION DETAILS	0	05/26/22	RS
E-101	GROUNDING DETAILS	0	05/26/22	RS
E-501	GROUNDING DETAILS	0	05/26/22	RS
E-601	PANEL SCHEDULE & ONE-LINE DIAGRAM	0	05/26/22	RS
R-601	SUPPLEMENTAL			
R-602	SUPPLEMENTAL			
R-603	SUPPLEMENTAL			
R-604	SUPPLEMENTAL			
R-605	SUPPLEMENTAL			
R-606	SUPPLEMENTAL			
R-607	SUPPLEMENTAL			
R-608	SUPPLEMENTAL			
R-609	SUPPLEMENTAL			

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

THE USE AND PUBLICATION OF THESE DRAWINGS 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. 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 OR THE SPECIFIED CARRIER OF ANY DISCREPANCIES. ANY PRIOR ISSUANCE OF THIS DRAWING IS SUPERSEDED BY THE LATEST VERSION.

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	RS	05/26/22

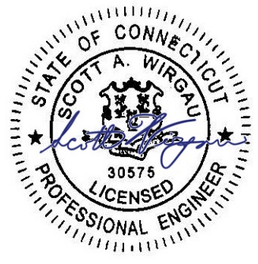
ATC SITE NUMBER:
413849

ATC SITE NAME:
WINCHESTER PCS CT

T-MOBILE SITE NAME:
CTNH392_ AMERICANTOWER_
MONOPINE_WINSTED

SITE ADDRESS:
32 NORFOLK ROAD
WINSTED, CT 06098

SEAL:



T-Mobile

DATE DRAWN:	05/26/22
ATC JOB NO:	14099859_G2
CUSTOMER ID:	CTNH392_ AMERICANTOWER_ MONOPINE_WINSTED
CUSTOMER #:	CTNH392A

TITLE SHEET

SHEET NUMBER:	REVISION:
G-001	0

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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 NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, OR BY THE ELEMENTS DUE TO NEGLECT 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.

STRUCTURAL STEEL NOTES:

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."
2. STRUCTURAL STEEL ROLLED SHAPES, PLATES AND BARS SHALL CONFORM TO THE FOLLOWING ASTM DESIGNATIONS:
   - A. ASTM A-572, GRADE 50 - ALL W SHAPES, UNLESS NOTED OR A992 OTHERWISE
   - B. ASTM A-36 - ALL OTHER ROLLED SHAPES, PLATES AND BARS UNLESS NOTED OTHERWISE.
   - C. ASTM A-500, GRADE B - HSS SECTION (SQUARE, RECTANGULAR, AND ROUND)
   - D. ASTM A-325, TYPE SC OR N - ALL BOLTS FOR CONNECTING STRUCTURAL MEMBERS
   - E. ASTM F-1554 07 - ALL ANCHOR BOLTS, UNLESS NOTED OTHERWISE
3. ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153 OR B695.
4. ALL FIELD CUT SURFACES, FIELD DRILLED HOLES AND GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.
5. DO NOT DRILL HOLES THROUGH STRUCTURAL STEEL MEMBERS EXCEPT AS SHOWN AND DETAILED ON STRUCTURAL DRAWINGS.
6. CONNECTIONS:
   - A. ALL WELDING TO BE PERFORMED BY AWS CERTIFIED WELDERS AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1.
   - B. ALL WELDS SHALL BE INSPECTED VISUALLY. 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. REPAIR ALL WELDS AS NECESSARY.
   - C. INSPECTION SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
   - D. IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE BURNING/WELDING PERMITS AS REQUIRED BY LOCAL GOVERNING AUTHORITY AND IF REQUIRED SHALL HAVE FIRE DEPARTMENT DETAIL FOR ANY WELDING ACTIVITY.
   - E. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNLESS NOTED OTHERWISE.
   - F. MINIMUM WELD SIZE TO BE 0.1875 INCH FILLET WELDS, UNLESS NOTED OTHERWISE.
   - G. PRIOR TO FIELD WELDING GALVANIZING MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING ½" BEYOND ALL FIELD WELD SURFACES. AFTER WELD AND WELD INSPECTION IS COMPLETE, REPAIR ALL GROUND AND WELDED SURFACES WITH ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.
   - H. THE CONTRACTOR SHALL PROVIDE ADEQUATE SHORING AND/OR BRACING WHERE REQUIRED DURING CONSTRUCTION UNTIL ALL CONNECTIONS ARE COMPLETE.
   - I. ANY FIELD CHANGES OR SUBSTITUTIONS SHALL HAVE PRIOR APPROVAL FROM THE ENGINEER, AND T-MOBILE PROJECT MANAGER IN WRITING

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
   - B. INSTALL ANTENNAS AS INDICATED 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 GREEN 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 COAXIAL CABLE (NOT WITHIN BENDS).

CONCRETE AND REINFORCING STEEL NOTES:

1. DESIGN AND CONSTRUCTION OF ALL CONCRETE ELEMENTS SHALL CONFORM TO THE LATEST EDITIONS OF ALL APPLICABLE CODES INCLUDING: ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS", ACI 117 "SPECIFICATIONS FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS", AND ACI 318 "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE."
2. MIX DESIGN SHALL BE APPROVED BY T-MOBILE REP PRIOR TO PLACING CONCRETE.
3. CONCRETE SHALL BE NORMAL WEIGHT, 6 % AIR ENTRAINED (+/- 1.5%) WITH A SLUMP RANGE OF 3-6" AND HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI UNLESS OTHERWISE NOTED.
4. THE FOLLOWING MATERIALS SHALL BE USED:

PORTLAND CEMENT:	ASTM C150, TYPE 2
REINFORCEMENT:	ASTM A185, PLAIN STEEL WELDED WIRE FABRIC
REINFORCEMENT BARS:	ASTM A615, GRADE 60, DEFORMED
NORMAL WEIGHT AGGREGATE:	ASTM C33
WATER:	ASTM C 94/C 94M
WELDED WIRE FABRIC:	ASTM A185
ADMIXTURES:	
-WATER-REDUCING AGENT:	ASTM C 494/C 494M, TYPE A
-AIR-ENTERING AGENT:	ASTM C 260/C 260M
-SUPERPLASTICIZER:	ASTM C494, TYPE F OR TYPE G
-RETARDING:	ASTM C 494/C 494M, TYPE B

5. MINIMUM CONCRETE COVER FOR REINFORCING STEEL SHALL BE NO LESS THAN 3".
6. A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE IN ACCORDANCE WITH ACI 301 SECTION 4.2.4, UNLESS NOTED OTHERWISE.
7. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL, OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR APPROVAL FROM AN ATC ENGINEER WHEN DRILLING HOLES IN CONCRETE.
8. ADMIXTURES SHALL CONFORM TO THE APPROPRIATE ASTM STANDARD AS REFERENCED IN "METHOD 1" OF ACI 301.
9. DO NOT WELD OR TACK WELD REINFORCING STEEL.
10. ALL DOWELS, ANCHOR BOLTS, EMBEDDED STEEL, ELECTRICAL CONDUITS, PIPE SLEEVES, GROUNDS AND ALL OTHER EMBEDDED ITEMS AND FORMED DETAILS SHALL BE IN PLACE BEFORE START OF CONCRETE PLACEMENT.
11. REINFORCEMENT SHALL BE COLD BENT WHENEVER BENDING IS REQUIRED.
12. DO NOT PLACE CONCRETE IN WATER, ICE, OR ON FROZEN GROUND.
13. FOR COLD-WEATHER (ACI 306) AND HOT-WEATHER (ACI 301M) CONCRETE PLACEMENT, CONFORM TO APPLICABLE ACI CODES AND RECOMMENDATIONS. IN EITHER CASE, MATERIALS CONTAINING CHLORIDE, CALCIUM, SALTS, ETC. SHALL NOT BE USED. PROTECT FRESH CONCRETE FROM WEATHER FOR 7 DAYS, MINIMUM.
14. ALL CONCRETE SHALL HAVE A "SMOOTH FORM FINISH."
15. SPLICING OF REINFORCEMENT IS PERMITTED ONLY AT LOCATIONS SHOWN IN THE CONTRACT DRAWINGS OR AS ACCEPTED BY THE ENGINEER. UNLESS OTHERWISE SHOWN OR NOTED REINFORCING STEEL SHALL BE SPLICED TO DEVELOP ITS FULL TENSILE CAPACITY (CLASS A) IN ACCORDANCE WITH ACI 318.
16. DETAILING OF REINFORCING STEEL SHALL CONFORM TO "ACI MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" (ACI 315).
17. ALL SLAB CONSTRUCTION SHALL BE CAST MONOLITHICALLY WITHOUT HORIZONTAL CONSTRUCTION JOINTS, UNLESS SHOWN IN THE CONTRACT DRAWINGS.
18. LOCATION OF ALL CONSTRUCTION JOINTS ARE SUBJECT TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS, CONFORMANCE WITH ACI 318, AND ACCEPTANCE OF THE ENGINEER. DRAWINGS SHOWING LOCATION OF DETAILS OF THE PROPOSED CONSTRUCTION JOINTS SHALL BE SUBMITTED WITH REINFORCING STEEL PLACEMENT DRAWINGS.
19. SPLICES OF WWF, AT ALL SPLICED EDGES, SHALL BE SUCH THAT THE OVERLAP MEASURED BETWEEN OUTERMOST CROSS WIRES OF EACH FABRIC SHEET IS NOT LESS THAN THE SPACING OF THE CROSS WIRE PLUS 2 INCHES, NOR LESS THAN 6".
20. BAR SUPPORTS SHALL BE ALL-GALVANIZED METAL WITH PLASTIC TIPS.
21. ALL REINFORCEMENT SHALL BE SECURELY TIED IN PLACE TO PREVENT DISPLACEMENT BY CONSTRUCTION TRAFFIC OR CONCRETE. TIE WIRE SHALL BE OF SUFFICIENT STRENGTH FOR INTENDED PURPOSE, BUT NOT LESS THAN NO. 18 GAUGE.
22. SLAB ON GROUND: COMPACT STRUCTURAL FILL TO 95% DENSITY AND THEN PLACE 6" GRAVEL BENEATH SLAB.

ELECTRICAL NOTES:

1. ELECTRICAL WORK SHALL BE PERFORMED BY ELECTRICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL ENSURE THAT ALL WORK COMPLIES WITH ALL APPLICABLE LOCAL AND STATE CODES AND NATIONAL ELECTRICAL CODE.
2. ALL SUGGESTED ELECTRICAL ELEMENTS (SUCH AS BREAKER SIZES, WIRE SIZES, CONDUITS SIZES) ARE FOR ZONING PURPOSES ONLY. IT IS THE RESPONSIBILITY TO OF THE ELECTRICAL CONTRACTOR TO CONFIRM COMPLIANCE WITH LOCAL ELECTRICAL CODES AND PASS ALL APPLICABLE AND NECESSARY INSPECTIONS. IN SOME EVENTS, IT MAY BE NECESSARY TO PERFORM AN ELECTRICAL LOAD STUDY TO VERIFY THE CAPACITY OF THE EXISTING SERVICE. THIS IS NOT THE RESPONSIBILITY OF ATC. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
3. CONTRACTOR SHALL FIELD LOCATE ALL BELOW GRADE GROUNDING CABLES AND UTILITY LINES PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR RELOCATION OF ALL UTILITIES AND GROUNDING LINES THAT MAY BECOME DISTURBED OR CONFLICTING IN THE COURSE OF CONSTRUCTION.

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.

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REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	RS	05/26/22

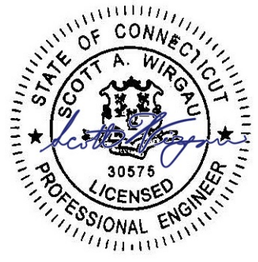
ATC SITE NUMBER:
413849

ATC SITE NAME:
WINCHESTER PCS CT

T-MOBILE SITE NAME:
CTNH392_ AMERICANTOWER_ MONOPINE_WINSTED

SITE ADDRESS:
32 NORFOLK ROAD
WINSTED, CT 06098

SEAL:



T-Mobile

DATE DRAWN:	05/26/22
ATC JOB NO:	14099859_G2
CUSTOMER ID:	CTNH392_ AMERICANTOWER_ MONOPINE_WINSTED
CUSTOMER #:	CTNH392A

GENERAL NOTES

SHEET NUMBER:	REVISION:
G-002	0

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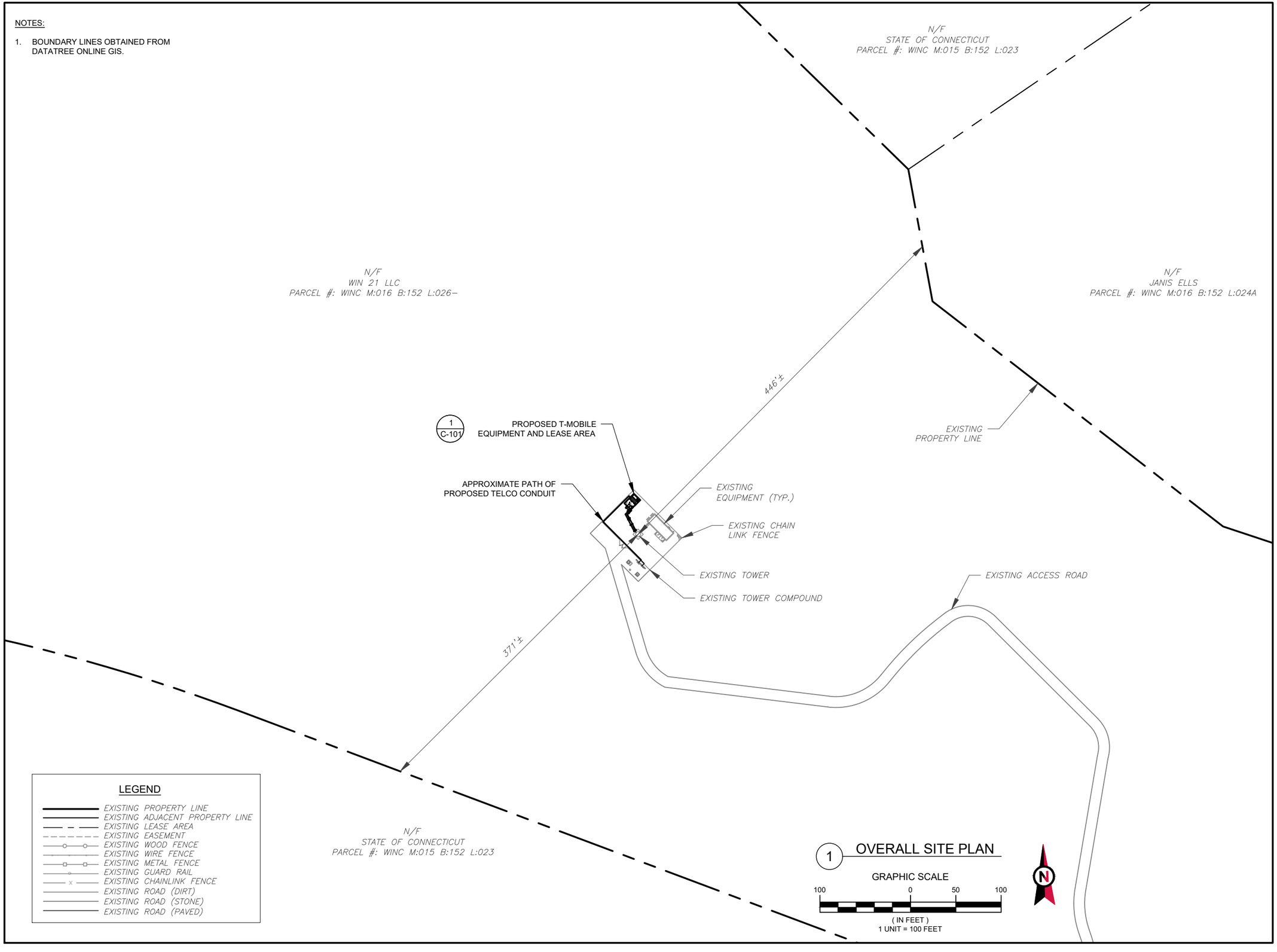
NOTES:

1. BOUNDARY LINES OBTAINED FROM DATATREE ONLINE GIS.



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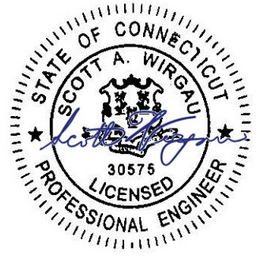

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OVERALL SITE PLAN

SHEET NUMBER:	REVISION:
C-001	0

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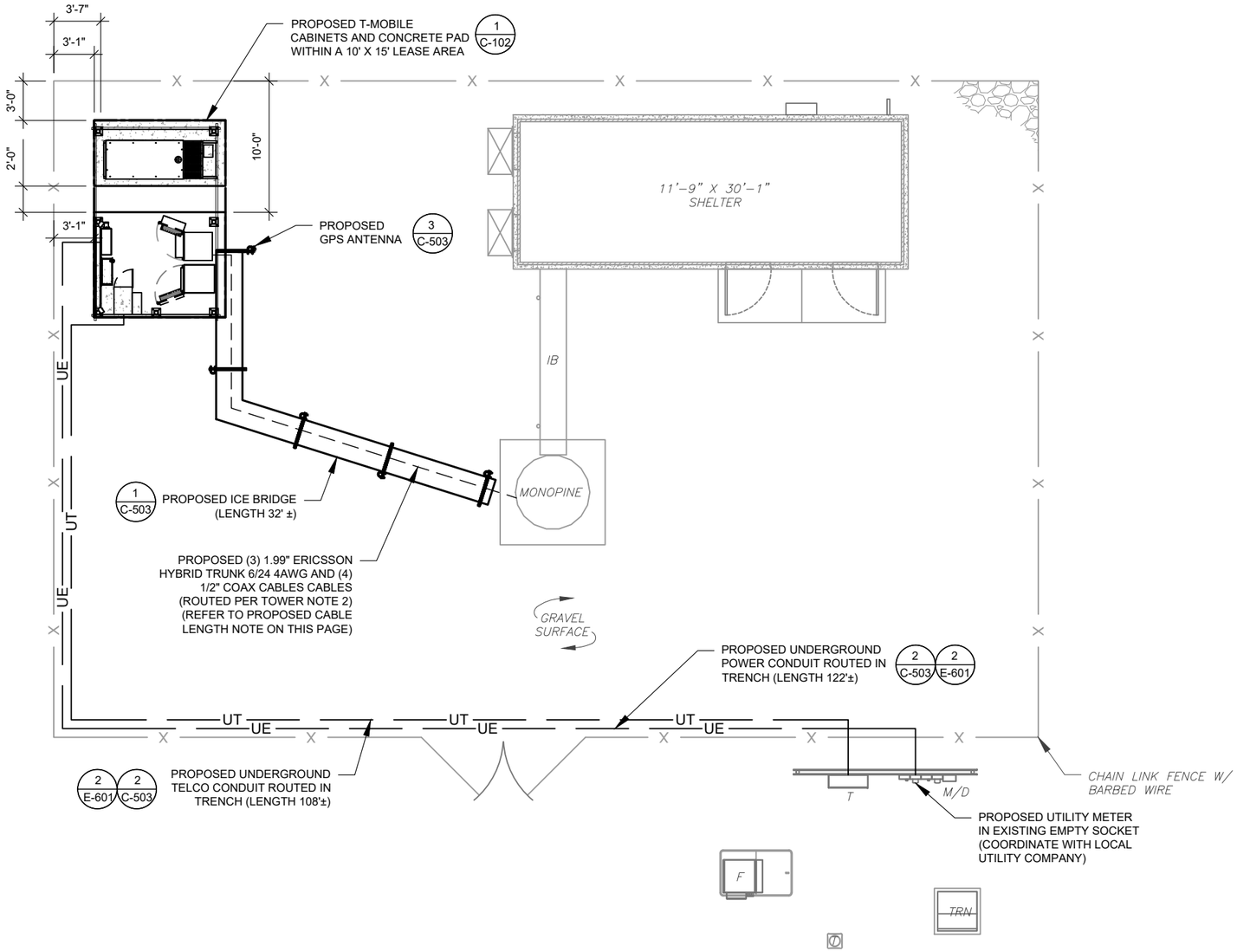
SITE PLAN NOTES:

1. 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.

2. 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.

3. 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.



1 DETAILED SITE PLAN

GRAPHIC SCALE

10 0 5 10

(IN FEET)

1 UNIT = 10 FEET

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
———	CHAINLINK FENCE

PROPOSED CABLE LENGTH:

1. ESTIMATED LENGTH OF PROPOSED CABLE IS **188'**. 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.
2. 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.

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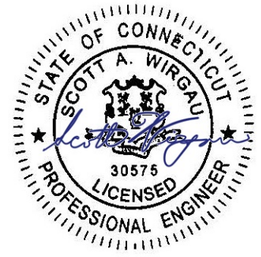

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DETAILED SITE PLAN

SHEET NUMBER:	REVISION:
C-101	0

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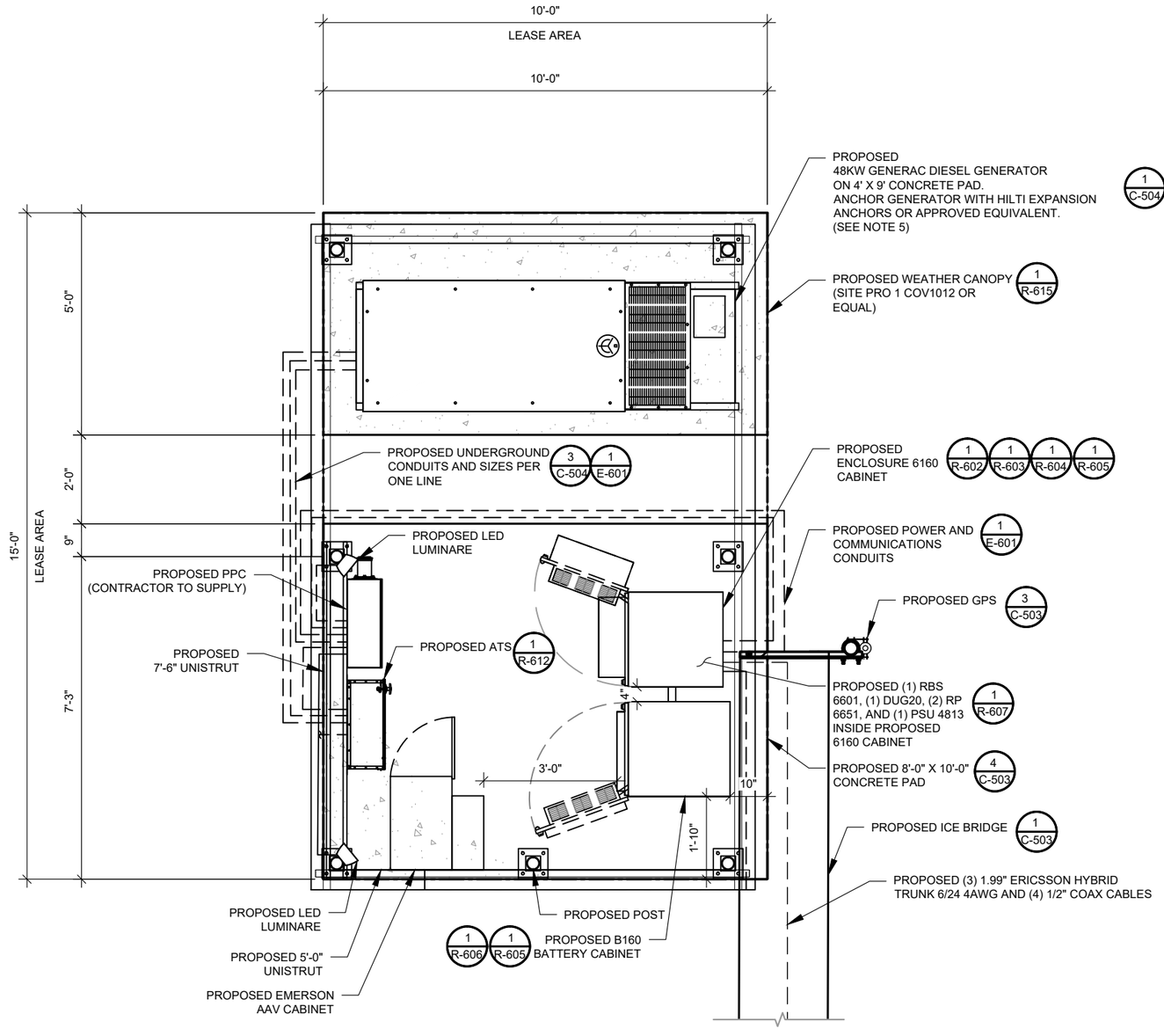

1 PROPOSED GROUND EQUIPMENT LAYOUT

GRAPHIC SCALE

3 0 1.5' 3

(IN FEET)
1 UNIT = 3 FEET

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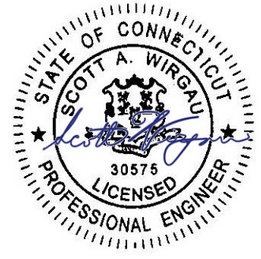

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DETAILED EQUIPMENT PLAN

SHEET NUMBER:	REVISION:
C-102	0

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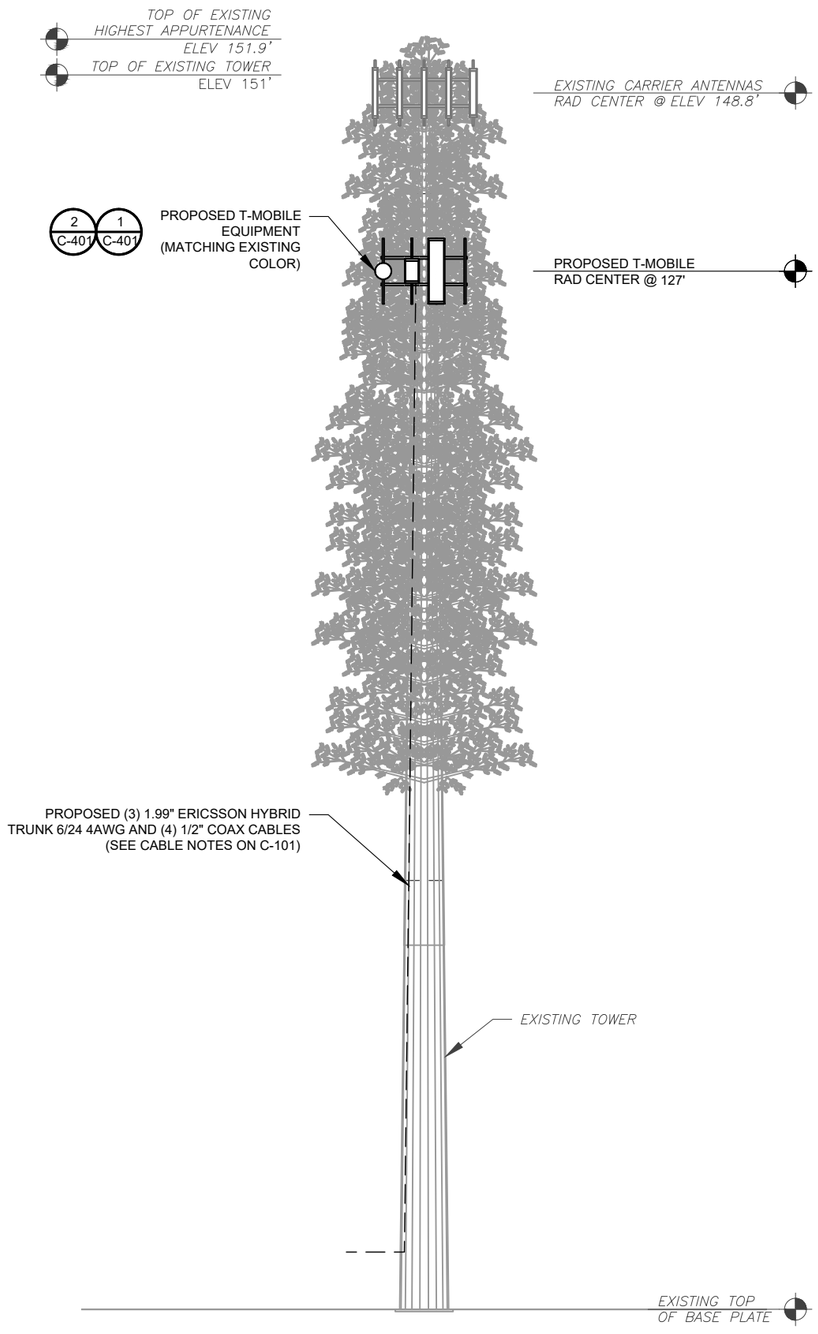
PER MOUNT ANALYSIS COMPLETED BY ATC, DATED 04/22/22, THE EXISTING MOUNT MUST BE MODIFIED TO ADEQUATELY SUPPORT THE PROPOSED LOADING. THE MOUNT MODIFICATION PROPOSED IN THE MOUNT ANALYSIS, INCLUDED AT THE END OF THIS PLAN SET, MUST BE INSTALLED PRIOR TO THE INSTALLATION OF THE PROPOSED ANTENNAS AND OTHER EQUIPMENT.



1 TOWER ELEVATION
SCALE: N.T.S.

TOWER NOTE:

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM WITH THE PROJECT 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.
2. WHERE APPLICABLE, ALL NEW ANTENNAS, EQUIPMENT, MOUNTS, CABLING, ETC. SHALL BE PAINTED/SOCKED TO MATCH EXISTING EQUIPMENT IN ACCORDANCE WITH FAA, JURISDICTION, AND/OR OTHER LOCAL REQUIREMENTS.
3. 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.
4. TOWER ELEVATIONS ARE MEASURED FROM TOP OF BASE PLATE TO MATCH STRUCTURAL ANALYSIS. ELEVATIONS DO NOT REFLECT TRUE ABOVE GROUND LEVEL (A.G.L.)
5. TOWER ELEVATION DEPICTION MAY NOT REFLECT ALL EQUIPMENT INCLUDED IN STRUCTURAL ANALYSIS. REFER TO STRUCTURAL ANALYSIS FOR FULL TOWER LOADING.

AMERICAN TOWER®
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	RS	05/26/22

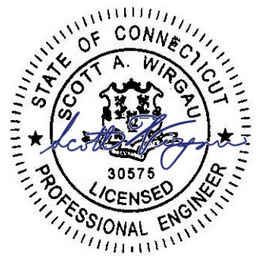
ATC SITE NUMBER:
413849

ATC SITE NAME:
WINCHESTER PCS CT

T-MOBILE SITE NAME:
CTNH392_ AMERICANTOWER_ MONOPINE_WINSTED

SITE ADDRESS:
32 NORFOLK ROAD
WINSTED, CT 06098

SEAL:



T-Mobile

DATE DRAWN:	05/26/22
ATC JOB NO:	14099859_G2
CUSTOMER ID:	CTNH392_ AMERICANTOWER_ MONOPINE_WINSTED
CUSTOMER #:	CTNH392A

TOWER ELEVATION

SHEET NUMBER:	REVISION:
C-201	0

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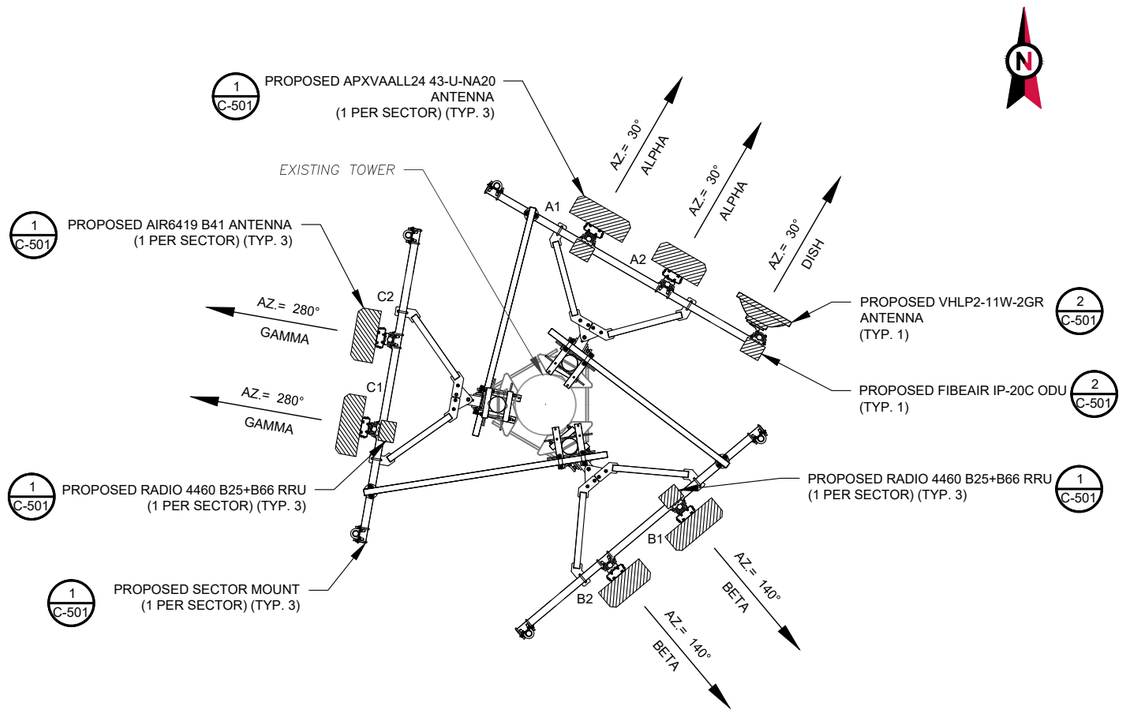

1 FINAL ANTENNA PLAN

SCALE: N.T.S.

PER MOUNT ANALYSIS COMPLETED BY ATC, DATED 04/22/22, THE EXISTING MOUNT MUST BE MODIFIED TO 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.

FINAL ANTENNA/ COAX SCHEDULE						
SECTOR	ANT.	MODEL #	RAD CENTER	AZIMUTH	ADDITIONAL TOWER MOUNTED EQUIPMENT	CABLE DESCRIPTION
ALPHA	A1	APXVAALL24_43-U-NA20	127'	30°	RADIO 4480 B71+B85A RADIO 4460 B25+B66	(3) 1.99" ERICSSON HYBRID TRUNK 6/24 4AWG AND (4) 1/2" COAX CABLES
ALPHA	A2	AIR 6419 B41	127'	30°	-	
ALPHA	DISH	VHLP2-11W-2GR	127'	30°	FIBEAIR IP-20C	
BETA	B1	APXVAALL24_43-U-NA20	127'	140°	RADIO 4480 B71+B85A RADIO 4460 B25+B66	
BETA	B2	AIR 6419 B41	127'	140°	-	
GAMMA	C1	APXVAALL24_43-U-NA20	127'	280°	RADIO 4480 B71+B85A RADIO 4460 B25+B66	
GAMMA	C2	AIR 6419 B41	127'	280°	-	

1. CONFIRM WITH CARRIER REP FOR APPLICABLE UPDATES/REVISIONS AND MOST RECENT RFDS.

2. ALL PROPOSED EQUIPMENT INCLUDING ANTENNAS, COAX, ETC. SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS ON FILE WITH THE ATC CM.

3. SPACING OF PROPOSED EQUIPMENT SHALL BE CONFIRMED FOR TOWER CONFLICTS AND PROPOSED MOUNTS SHALL NOT IMPEDE TOWER CLIMBING PEGS.

2 ANTENNA SCHEDULE

RF JUMPER LENGTH
MONOPOLE = 15'± GUYED / SELF SUPPORT = FACE WITDTH + 15'
REFER TO FINAL RFDS FOR TYPE AND QUANTITY

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COA: PEC.0001553

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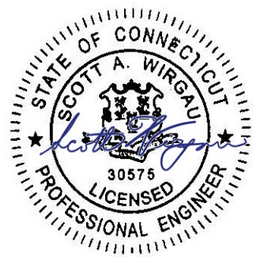
ATC SITE NUMBER:
413849

ATC SITE NAME:
WINCHESTER PCS CT

T-MOBILE SITE NAME:
CTNH392_ AMERICANTOWER_ MONOPINE_WINSTED

SITE ADDRESS:
32 NORFOLK ROAD
WINSTED, CT 06098

SEAL:



T-Mobile

DATE DRAWN:	05/26/22
ATC JOB NO:	14099859_G2
CUSTOMER ID:	CTNH392_ AMERICANTOWER_ MONOPINE_WINSTED
CUSTOMER #:	CTNH392A

ANTENNA INFORMATION & SCHEDULE

SHEET NUMBER:	REVISION:
C-401	0

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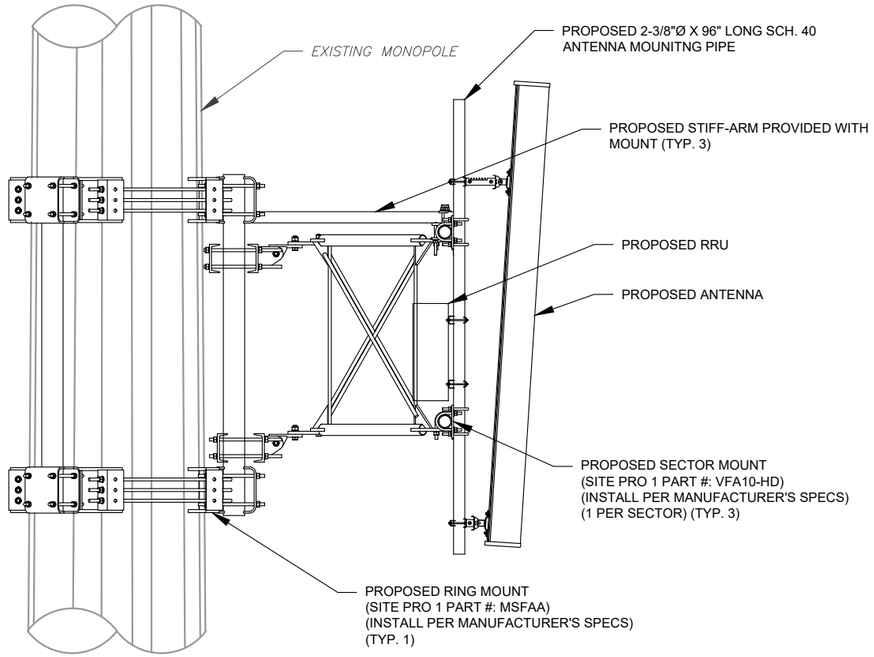
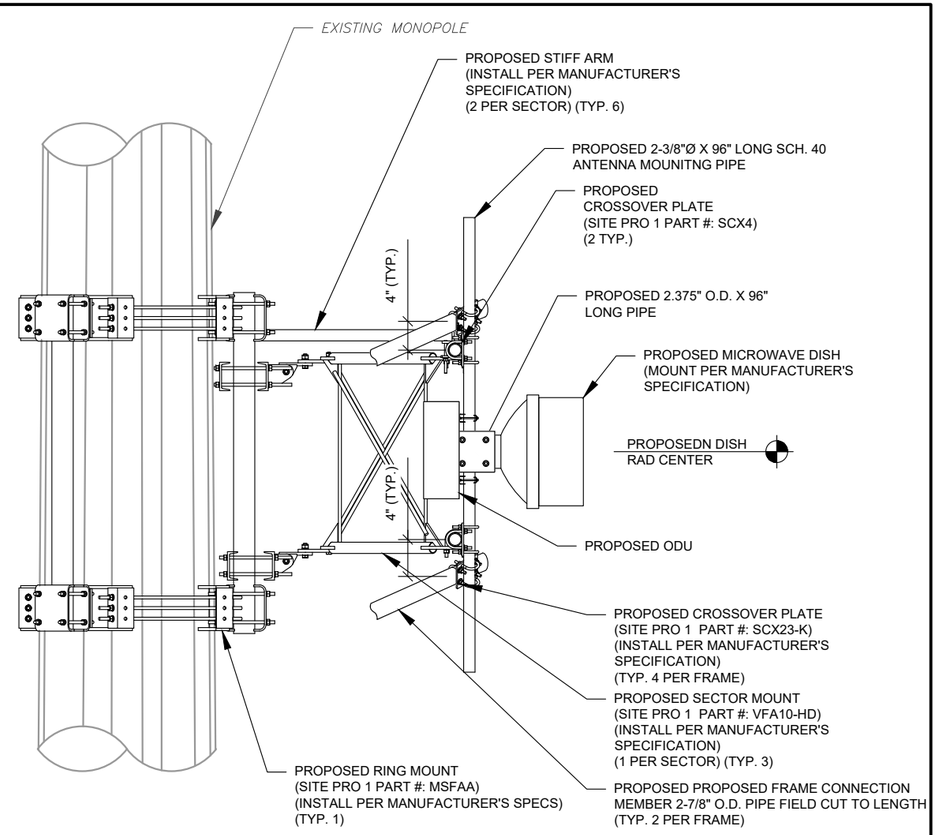


1 PROPOSED ANTENNA MOUNTING DETAIL (ELEVATION)

SCALE: N.T.S.



2 PROPOSED ANTENNA MOUNTING DETAIL (ELEVATION)

SCALE: N.T.S.

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SITE ADDRESS:
32 NORFOLK ROAD
WINSTED, CT 06098

SEAL:

T-Mobile

DATE DRAWN:	05/26/22
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CUSTOMER #:	CTNH392A

MOUNT DETAILS

SHEET NUMBER:	REVISION:
C-501	0

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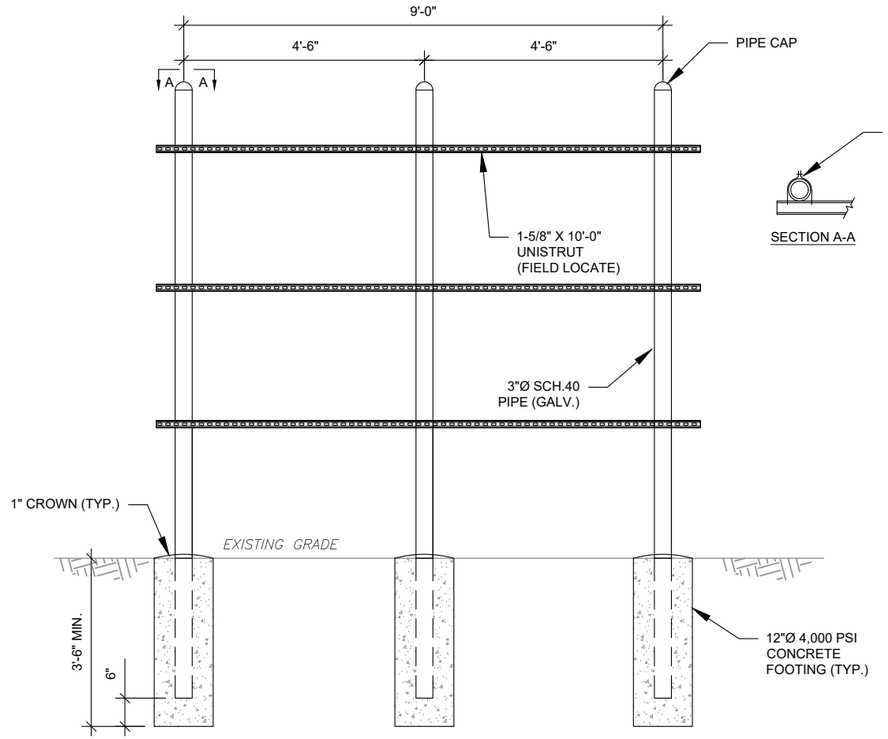
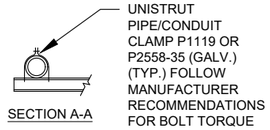
H-FRAME NOTES:

1. IF IT IS NECESSARY TO EXTEND THE H-FRAME, AN ADDITIONAL POST WILL ALWAYS BE REQUIRED.
2. PROPOSED UNISTRUTS TO BE FIELD CUT AND SHOULD NOT EXTEND MORE THAN 6 INCHES BEYOND THE LAST POST.
3. SPRAY ENDS OF UNISTRUT WITH COLD GALVANIZING SPRAY PAINT, ALLOW TO DRY, THEN COVER WITH RUBBER PROTECTIVE CAPS FOR SAFETY.
4. UNISTRUT TO BE CUT FLUSH WITH NO SHARP OR JAGGED EDGES.
5. ALL PROPOSED HARDWARE TO BE MOUNTED PER MANUFACTURERS SPECS.

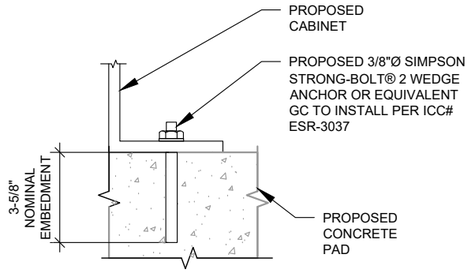




SECTION A-A

1 TYPICAL H-FRAME DETAIL

SCALE: N.T.S.



NOTE:

INSTALL SIMPSON STRONG-TIE® STRONG-BOLT® 2 WEDGE ANCHOR(S) STRICTLY PER INSTALLATION INSTRUCTIONS INCLUDED WITH PRODUCT OR FOUND ONLINE AT WWW.STRONGTIE.COM. PROPER INSTALLATION IS CRITICAL FOR FULL PERFORMANCE.

2 CABINET ATTACHMENT DETAIL

SCALE: N.T.S.

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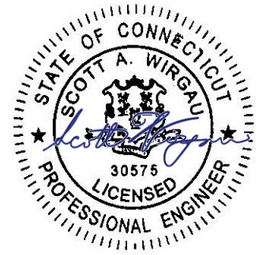

T-Mobile

DATE DRAWN:	05/26/22
ATC JOB NO:	14099859_G2
CUSTOMER ID:	CTNH392_ AMERICANTOWER_ MONOPINE_WINSTED
CUSTOMER #:	CTNH392A

CONSTRUCTION DETAILS

SHEET NUMBER:	REVISION:
C-502	0

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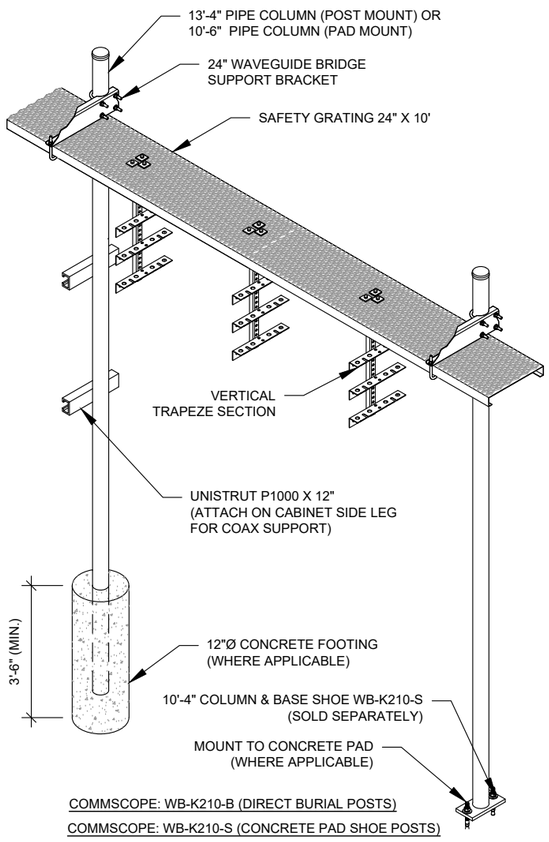


COMMSCOPE: WB-K210-B (DIRECT BURIAL POSTS)

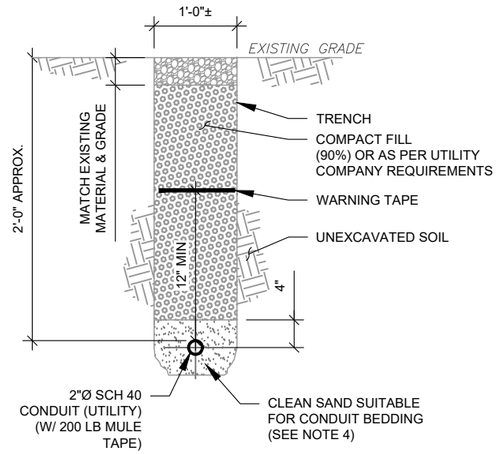
COMMSCOPE: WB-K210-S (CONCRETE PAD SHOE POSTS)

CONSTRUCTION NOTE:

1. INSTALL ICE BRIDGE TO ALLOW 7 FEET CLEARANCE ABOVE GRADE TO LOWEST APPURTENANCE.
2. INSTALL PER MANUFACTURES SPECIFICATION.

1 WAVEGUIDE BRIDGE KIT

SCALE: N.T.S.

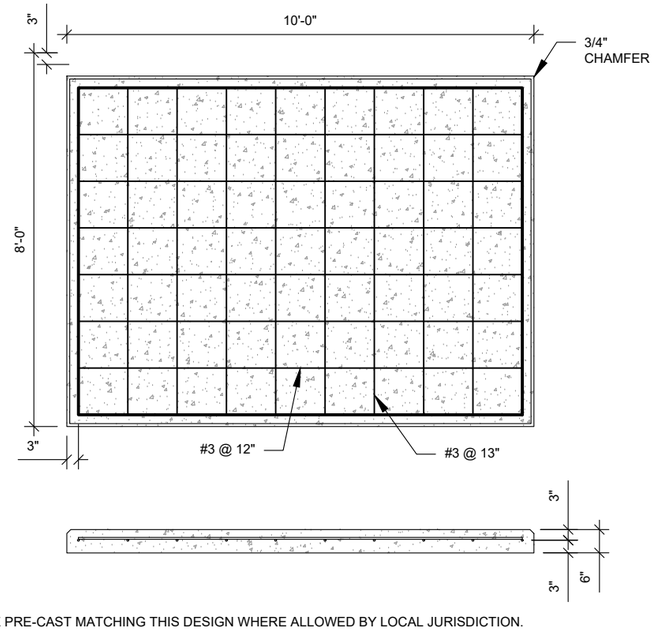


TRENCH NOTES:

1. IF FREE OF ORGANIC OR OTHER DELETERIOUS MATERIAL, EXCAVATED MATERIAL MAY BE USED FOR BACKFILL.
2. IF NOT, PROVIDE CLEAN, COMPACTIBLE MATERIAL. COMPACT IN 8" LIFTS. REMOVE ANY LARGE ROCKS PRIOR TO BACKFILLING. CONTRACTOR TO VERIFY LOCATION OF EXISTING U/G UTILITIES PRIOR TO DIGGING.
3. IF CURRENT AS-BUILT DRAWINGS ARE NOT AVAILABLE CONTRACTOR SHALL HAND DIG U/G TRENCHING.
4. CONCRETE ENCASE CONDUIT WHEN TRENCHING UNDER SITE ACCESS ROAD.

2 SINGLE CONDUIT TRENCH

SCALE: N.T.S.

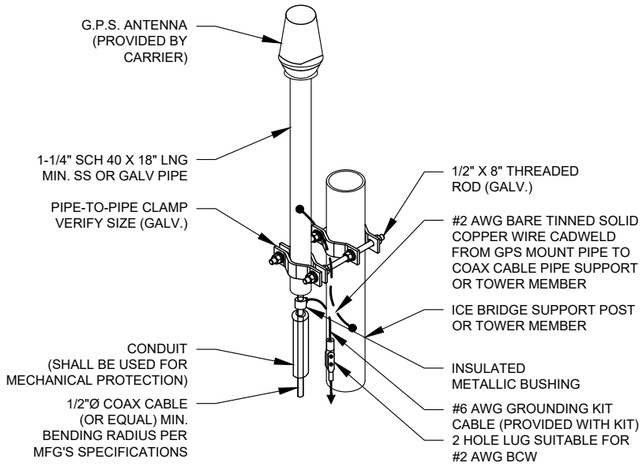


PAD NOTES:

1. PADS SHALL BE PRE-CAST MATCHING THIS DESIGN WHERE ALLOWED BY LOCAL JURISDICTION.
2. REFER TO CONCRETE & REINFORCED STEEL NOTES ON SHEET G-002 & ATC SPEC 033000 FOR CAST-IN-PLACE PADS.

4 REINFORCED PAD LAYOUT

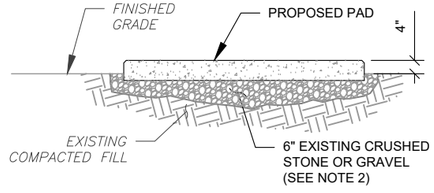
SCALE: N.T.S.



NOTE:
1. GPS SHALL BE PLACED WITH CLEAR SIGHT LINE TO THE SOUTHERN SKY.
2. CONTRACTOR TO SUPPLY COAX FOR GPS UNIT.

3 GPS ANTENNA ATTACHMENT DETAIL

SCALE: N.T.S.



PAD NOTES:

1. SUBGRADE AND FILL SHALL CONSIST OF CLEAN SOIL. DELETRIOUS MATERIAL AND ORGANICS SHALL BE REMOVED.
2. MECHANICALLY COMPACT FOOTPRINT OF PAD PLUS 2' PERIMETER.
3. USE GALVANIZED HILTI EXPANSION ANCHORS OR, APPROVED EQUAL, FOR EQUIPMENT ANCHORAGE.
4. FOR SIZE AND LOCATION OF ANCHORS AND OTHER REQUIREMENT, SEE EQUIPMENT VENDOR DRAWINGS.

5 GRAVEL PREPARATION

SCALE: N.T.S.

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413849

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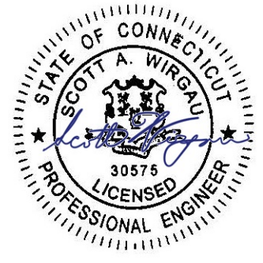
T-MOBILE SITE NAME:
CTNH392_ AMERICANTOWER_
MONOPINE_WINSTED

SITE ADDRESS:
32 NORFOLK ROAD
WINSTED, CT 06098

SEAL:



T-Mobile

DATE DRAWN:	05/26/22
ATC JOB NO:	14099859_G2
CUSTOMER ID:	CTNH392_ AMERICANTOWER_ MONOPINE_WINSTED
CUSTOMER #:	CTNH392A

CONSTRUCTION DETAILS

SHEET NUMBER:	REVISION:
C-503	0

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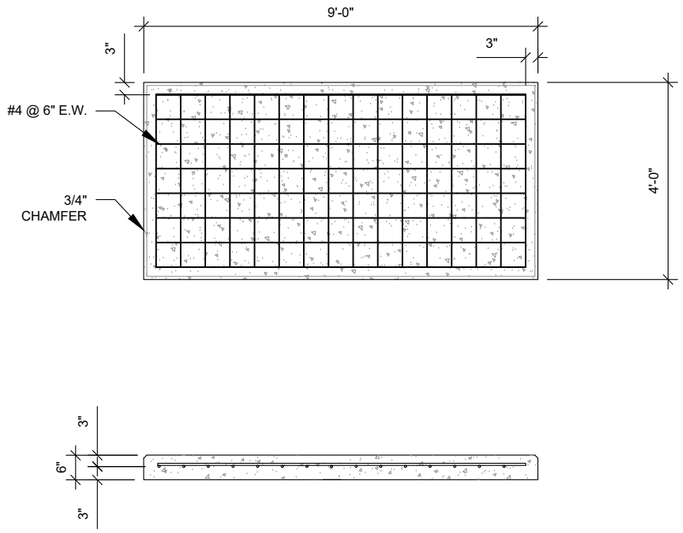
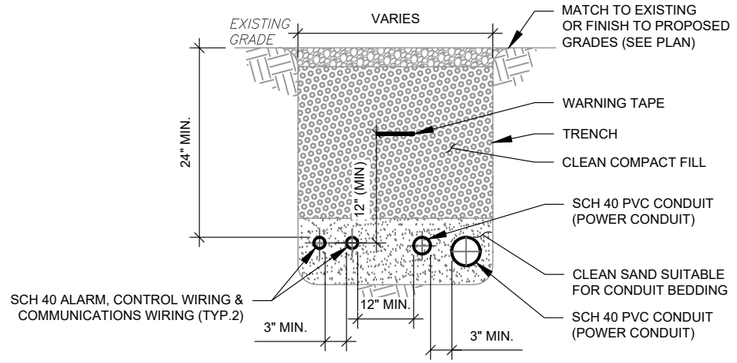


PAD NOTES:

1. SUBGRADE AND FILL SHALL CONSIST OF CLEAN SOIL. DELETERIOUS MATERIAL AND ORGANICS SHALL BE REMOVED.
2. COMPACT SUBGRADE TO 95%.
3. USE GALVANIZED HILTI EXPANSION ANCHORS OR, APPROVED EQUAL, FOR EQUIPMENT ANCHORAGE.
4. FOR SIZE AND LOCATION OF ANCHORS AND OTHER REQUIREMENT, SEE EQUIPMENT VENDOR DRAWINGS.
5. DETAIL FOR ILLUSTRATIVE PURPOSES ONLY. MODIFY PER GENERATOR MANUFACTURER SPECIFICATIONS TO ACCOMMODATE STUB UP.

1 CONCRETE PAD FOR GENERATOR

SCALE: NOT TO SCALE

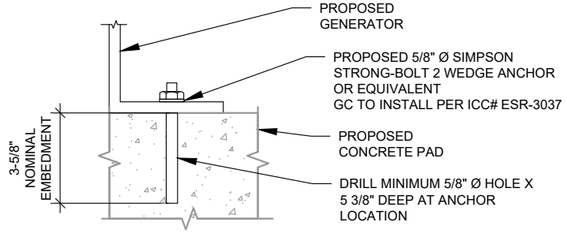


TRENCH NOTES:

1. IF FREE OF ORGANIC OR OTHER DELETERIOUS MATERIAL, EXCAVATED MATERIAL MAY BE USED FOR BACKFILL.
2. IF NOT, PROVIDE CLEAN, COMPACTIBLE MATERIAL. COMPACT IN 8" LIFTS. REMOVE ANY LARGE ROCKS PRIOR TO BACKFILLING. CONTRACTOR TO VERIFY LOCATION OF EXISTING U/G UTILITIES PRIOR TO DIGGING.
3. IF CURRENT AS-BUILT DRAWINGS ARE NOT AVAILABLE CONTRACTOR SHALL HAND DIG U/G TRENCHING.
4. CONFIRM SPACING AND DEPTH WITH NEC OR LOCAL CODE REQUIREMENTS
5. AC POWER CONDUITS MUST BE 3" MINIMUM FROM OTHER AC CONDUITS AND 12' MINIMUM FROM COMMUNICATIONS CONDUITS

2 GENERATOR SERVICE CONDUIT TRENCH

SCALE: NOT TO SCALE



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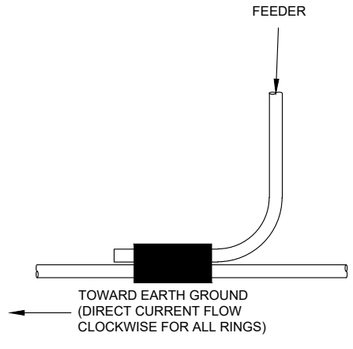
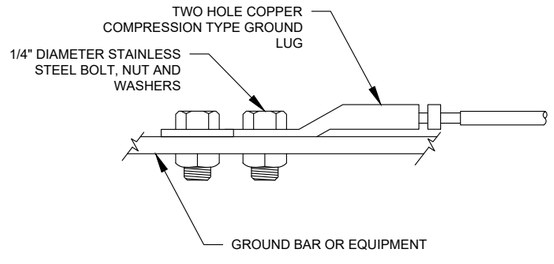
3 GENERATOR ATTACHMENT DETAIL

SCALE: NOT TO SCALE



4 GENERATOR CONDUCTOR CONNECTION

SCALE: NOT TO SCALE



NOTE:

ALL MECHANICAL EXTERNAL TERMINATION SURFACES SHALL BE TREATED WITH T&B KOPR-SHIELD CP8 ANIT-OXIDATION COMPOUND.

5 TWO HOLE LUG CONNECTION DETAIL

SCALE: NOT TO SCALE

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REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	RS	05/26/22

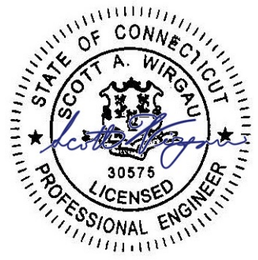
ATC SITE NUMBER:
413849

ATC SITE NAME:
WINCHESTER PCS CT

T-MOBILE SITE NAME:
CTNH392_ AMERICANTOWER_ MONOPINE_WINSTED

SITE ADDRESS:
32 NORFOLK ROAD
WINSTED, CT 06098

SEAL:



T-Mobile

DATE DRAWN:	05/26/22
ATC JOB NO:	14099859_G2
CUSTOMER ID:	CTNH392_ AMERICANTOWER_ MONOPINE_WINSTED
CUSTOMER #:	CTNH392A

GENERATOR CONSTRUCTION DETAILS

SHEET NUMBER:	REVISION:
C-504	0

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GROUNDING NOTES:

1. ALL EQUIPMENT ENCLOSURES, DEVICES AND CONDUITS SHALL BE GROUNDED TO CONFORM WITH THE LATEST REQUIREMENTS OF THE NEC BY THE INSTALLATION OF A SEPARATE, GREEN, INSULATED GROUND CONDUCTOR FOR ALL FEEDER AND BRANCH CIRCUITS. GROUND CONDUCTORS SHALL BE OF THE SIZE INDICATED ON THE DRAWINGS. GROUND CONDUCTORS SHALL BE CONTINUOUS IN LENGTH AND SHALL BE BONDED TO EACH ENCLOSURE THEY PASS THROUGH. CONDUIT SHALL NOT BE USED AS A GROUNDING CONDUCTOR.

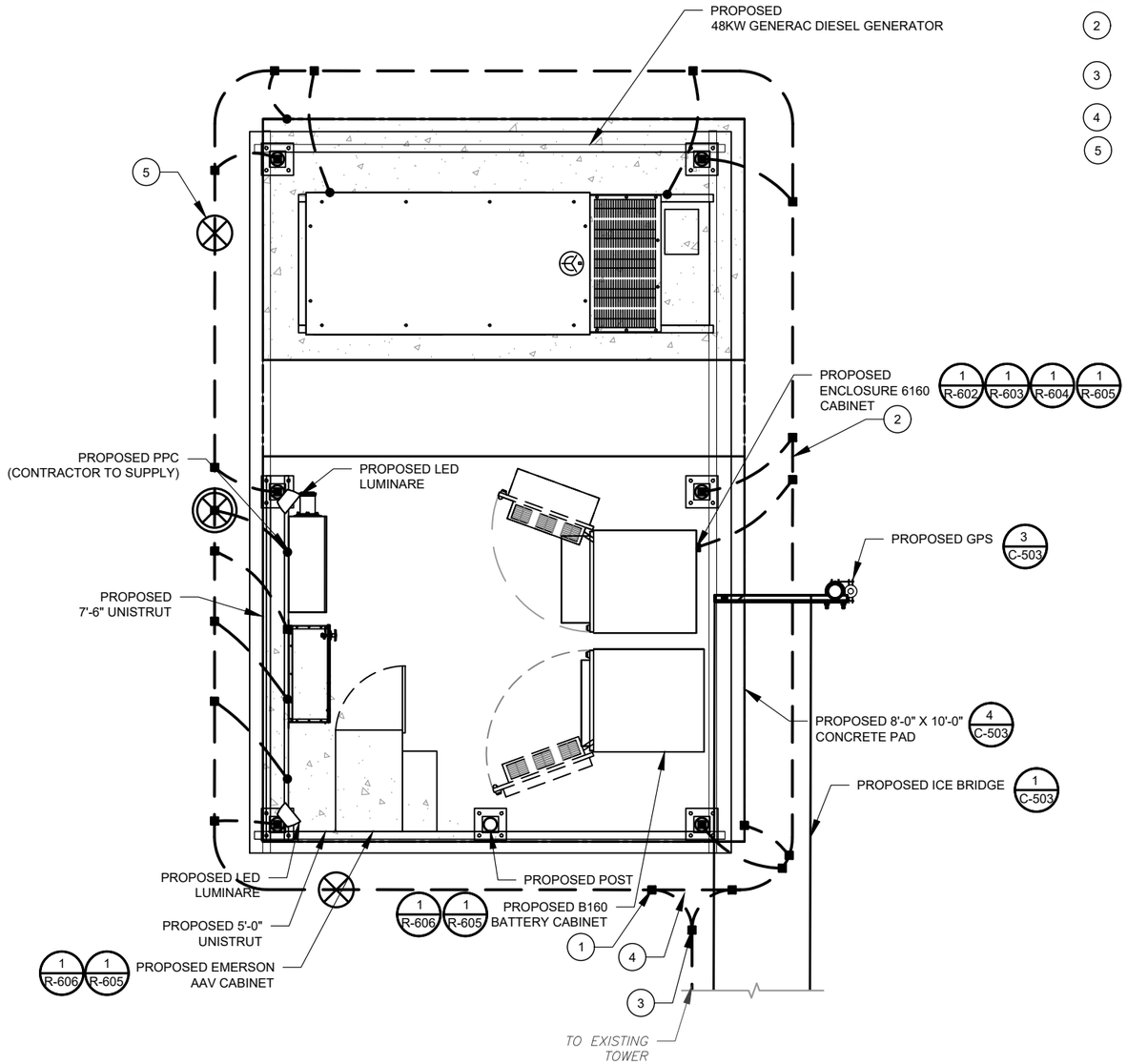
2. GROUNDING CONDUCTORS SHALL:
   - A. BE #2 AWG SOLID BARE TINNED COPPER (SBTC) FOR ALL GROUNDING SYSTEM WIRE UNLESS OTHERWISE NOTED, OR OTHERWISE REQUIRED BY CODE.
   - B. BE MINIMUM 12" BEND RADIUS. KEEP NUMBER OF BENDS TO A MINIMUM.
   - C. AVOID LONG BONDING CONNECTION RUNS. MAKE DIRECT AS POSSIBLE.
   - D. NOT HAVE ANY U-SHAPED RUNS.
   - E. BE IN NON-METALLIC CONDUIT ONLY, IF IN CONDUIT.
   - F. BE PLACED THROUGH NON-METALLIC SLEEVES IN FLOORS, WALLS, CEILINGS, ETC.
   - G. PROTECTED IN NON-METALLIC CONDUIT WHERE EXPOSED ABOVE GRADE.

2. INSTALL ALL GROUNDING RINGS AND RADIALS WITH CONDUCTIVE CEMENT, SANKOSHA AS DISTRIBUTED BY ELECTRIC MOTION COMPANY, INC., WINSTED, CT 06098, OR AS SPECIFICALLY INDICATED. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

3. GROUND RINGS SHALL BE:
   - A. MINIMUM 30" BELOW GRADE, OR BELOW FROST LINE WHICHEVER IS DEEPER.
   - B. MINIMUM 2' FROM FOUNDATIONS, FOOTINGS, OTHER GROUNDING SYSTEMS AND ALL CONDUCTIVE OBJECTS.
   - C. WITH MINIMUM 12" BEND RADII.
   - D. WITH ALL CONNECTIONS IN CONTACT WITH EARTH, BONDED BY EXOTHERMIC WELDING.
   - E. BONDED TO A SINGLE POINT GROUND (SPG) WITH A SINGLE WIRE AS INDICATED ON DRAWINGS.

4. GROUND RODS SHALL BE:
   - A. MINIMUM 5/8" DIAMETER.
   - B. MINIMUM 10' LONG.
   - C. COPPER-CLAD GALVANIZED STEEL OR STAINLESS STEEL.
   - D. PLACED IN UNDISTURBED SOIL AND BELOW THE FROST LINE.
   - E. INSTALLED WITH MINIMUM SEPARATION DISTANCE OF TWICE THE DEPTH OF THE ROD(S), OR AS INDICATED ON DRAWINGS.
   - F. MINIMUM TWO (2) RODS ON THE TOWER RING OR ONE (1) PER LEG WHICHEVER IS LARGER, MINIMUM FOUR (4) RODS ON EVERY EQUIPMENT BUILDING RING WITH ONE AT EACH CORNER OR AS INDICATED, MINIMUM ONE (1) ROD FOR POWER SERVICE GROUNDING ELECTRODE, AND MINIMUM ONE (1) ROD AT END OF EACH RADIAL.

5. CONDUCTIVE OBJECTS, SUCH AS FENCES, SHALL BE BONDED TO THE GROUNDING SYSTEM IF WITHIN 20' OF THE TOWER GROUNDING SYSTEM, OR 5' OF ANY OTHER GROUNDED COMPONENT.



1 DETAILED GROUNDING PLAN

SCALE: N.T.S.

GROUNDING PLAN LEGEND:

- EXISTING GROUND WIRE
- GROUND WIRE
- EXOTHERMIC WELD
- MECHANICAL WELD
- COPPER GROUND ROD
- TEST WELL

GROUNDING KEYED NOTES:

1. BOND TO TOWER GROUND RING
2. #2 AWG BOND FROM VERTICAL H-FRAME AND ICE BRIDGE POST TO EXTERNAL GROUND RING (TYP. EVERY POST).
3. #2 AWG SBTC BOND FROM TOWER GROUND RING TO EQUIPMENT.
4. EQUIPMENT BOND TO GROUND RING (TYP.)
5. 5/8Ø" X 10 FT GROUND ROD.

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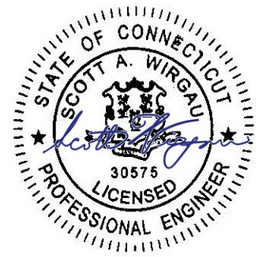

T-Mobile

DATE DRAWN:	05/26/22
ATC JOB NO:	14099859_G2
CUSTOMER ID:	CTNH392_ AMERICANTOWER_ MONOPINE_WINSTED
CUSTOMER #:	CTNH392A

GROUNDING DETAILS

SHEET NUMBER:	REVISION:
E-101	0

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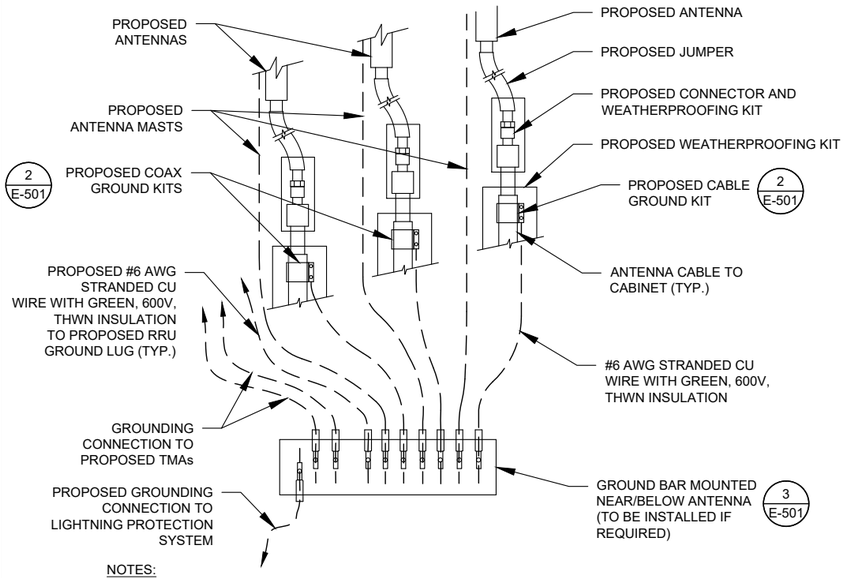
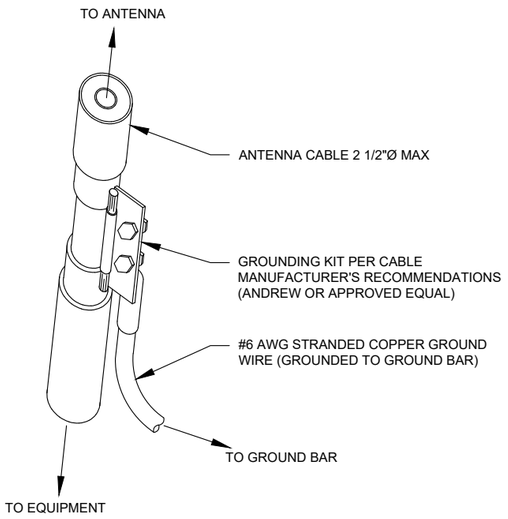


NOTES:

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.

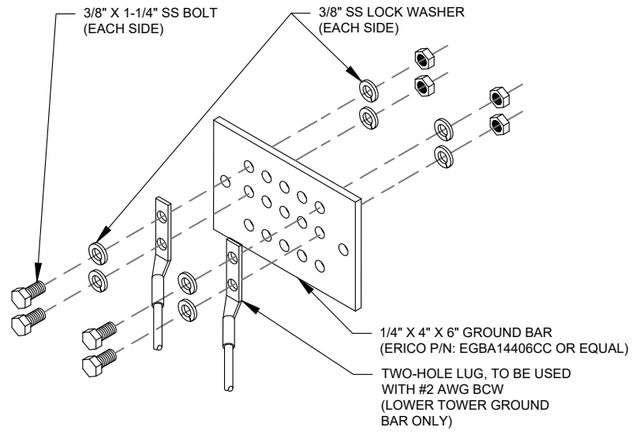


GROUND KIT NOTES:

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.

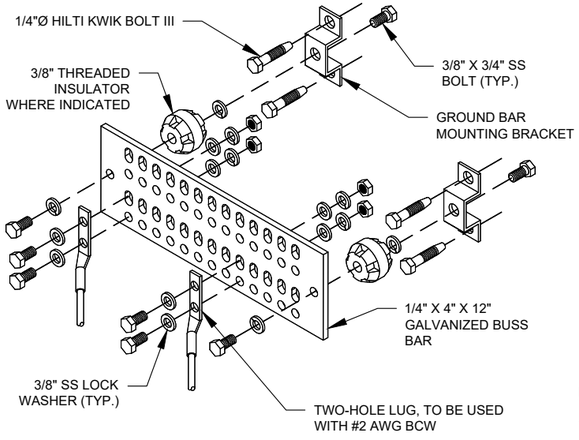


GROUND BAR NOTES:

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.

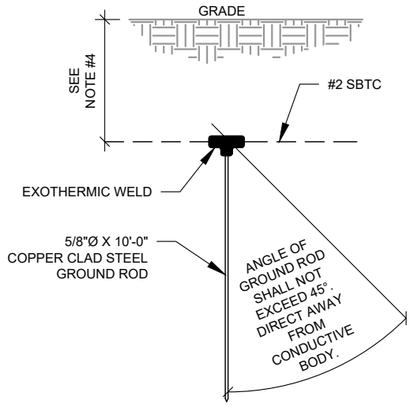


GROUND BAR NOTES

1. GROUND KITS COME WITH ALL HARDWARE, NUTS, BOLTS, WASHERS, ETC. EXCEPT THE STRUCTURAL MOUNTING MEMBER(S).
2. GROUND BAR SHALL BE BOLTED TO STRUCTURAL MEMBER OR ANCHORED TO CONCRETE SLAB W/ HILTI KWIK BOLT III.

4 MAIN GROUND BAR DETAIL

SCALE: N.T.S.

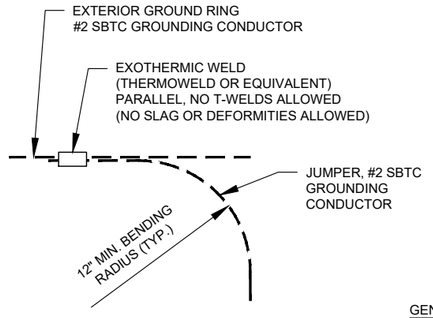


NOTES:

1. SEPARATION DIMENSION TO BE VERIFIED WITH LOCAL UTILITY COMPANY REQUIREMENTS.
2. COORDINATE UTILITY, LOCATE BEFORE DIGGING.
3. CONDUIT TRENCHING DEPTHS AT 36" OR 6" BELOW FROST LINE, WHICHEVER IS GREATER.
4. ALL RING AND RADIAL DEPTHS AT 30" OR 6" BELOW FROST LINE, WHICHEVER IS GREATER.

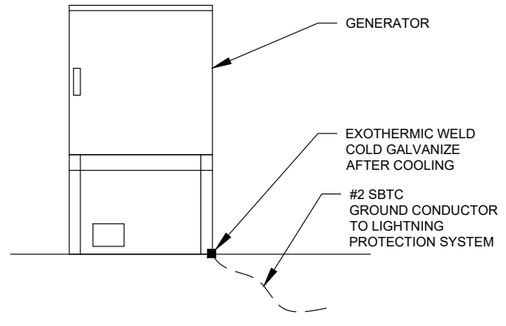
5 GROUND ROD DETAIL

SCALE: N.T.S.



6 TIE CONNECTION DETAIL

SCALE: N.T.S.



GENERATOR INSTALLATION NOTE:

INSTALL GENERATOR AND TRANSFER SWITCH WITH ALL SUPPLIED ACCESSORIES PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND SPECIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, ACCESSORIES FOR THE EXHAUST SYSTEM, FUEL SYSTEM, ENCLOSURE INTEGRITY (CAPS, PLUGS, COVERS, ETC.), ELECTRICAL CONNECTIONS, AND GROUNDING CONNECTIONS.

7 GENERATOR GROUNDING

SCALE: N.T.S.

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WINSTED, CT 06098

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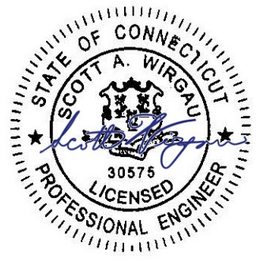

T-Mobile

DATE DRAWN:	05/26/22
ATC JOB NO:	14099859_G2
CUSTOMER ID:	CTNH392_ AMERICANTOWER_ MONOPINE_WINSTED
CUSTOMER #:	CTNH392A

GROUNDING DETAILS

SHEET NUMBER:	REVISION:
E-501	0

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PANEL DESIGNATION: **TMO**

TYPE: LIGHTING & APPLIANCE
MOUNTING: SURFACE
ENCLOSURE: NEMA 3R

SYSTEM: 120/240V, 1Ø, 3W, 24 CKT
MAIN BREAKER (MB): 200A
MAIN BUS RATING: 200A
MIN. A.I.C. RATING: N/A

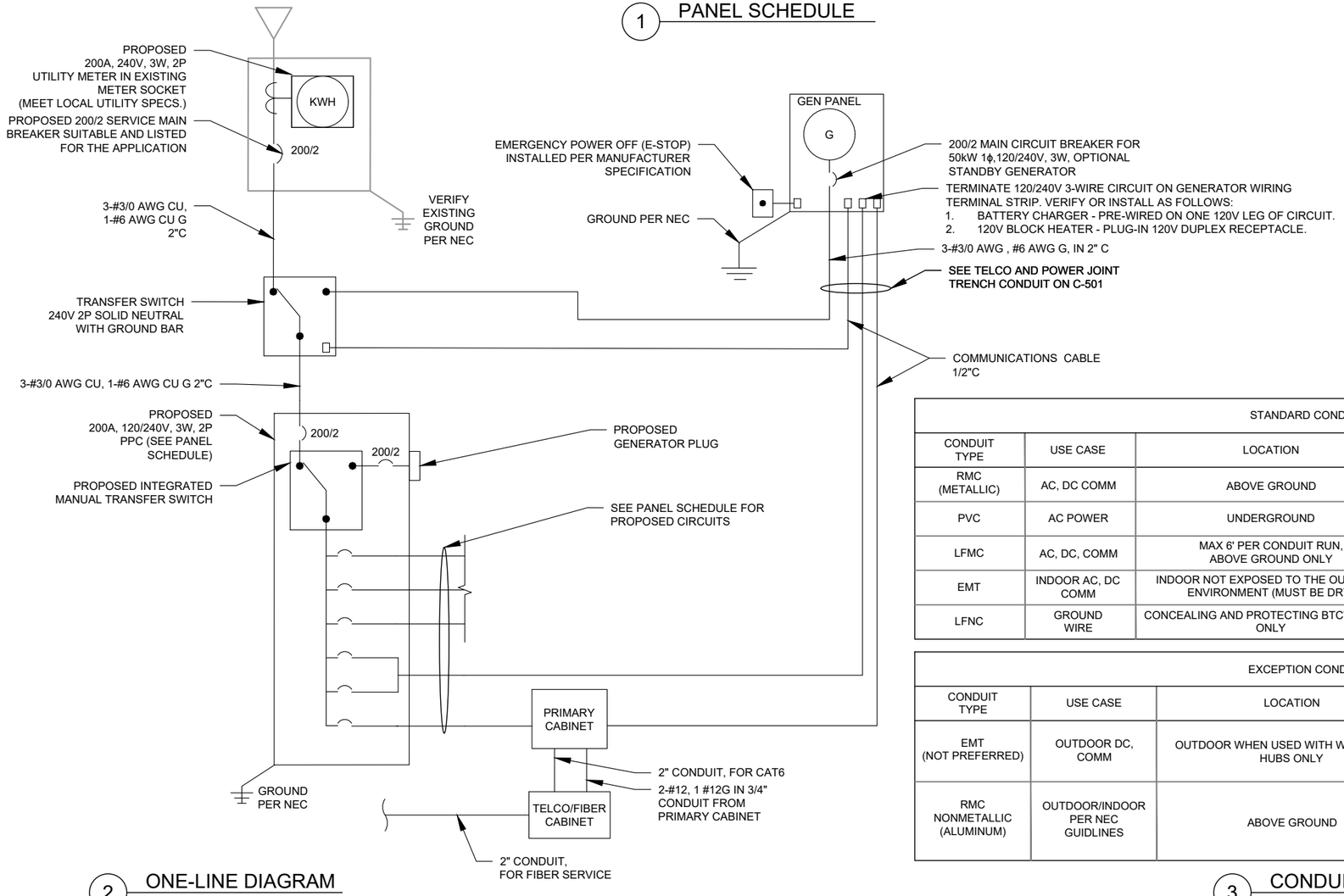
LOCATION: TMO LEASE EQUIPMENT AREA
PANEL NOTES: PROPOSED

CONNECTED LOAD (kVA) A	CONNECTED LOAD (kVA) B	BRIEF DESCRIPTION	FEEDER OR BRANCH CIRCUIT BREAKER AMPS	BREAKER POLES	CIRCUIT WIRE	CIRCUIT GND	CIRCUIT COND.	POLE NO.	CIRC. NOTES		CIRC. NOTES	POLE NO.	CIRCUIT COND.	CIRCUIT GND	CIRCUIT WIRE	BREAKER POLES	BREAKER AMPS	BRIEF DESCRIPTION	CONNECTED LOAD (kVA) A	CONNECTED LOAD (kVA) B
0.01		SURGE	60	2	3-#6	#10	1"	1				2	1/2"	#12	2-#12	1	20	GFI	0.18	
	0.01							3				4	1/2"	#12	2-#12	1	20	LIGHT		0.50
7.50		ENCLOSURE 6160	150	2	2-#3/0	#6	2"	5				6	1/2"	#12	2-#12	1	20	AAV GFI	0.15	
	7.50							7				8	3/4"	#12	2-#12	1	20	GEN BLOCK HEATER		1.50
0.18		6160 GFI	20	1	2-#12	#12		9				10		#12	2-#12	1	20	GEN BATTERY CHARGER	0.50	
	0.00							11				12								0.00
0.00								13				14							0.00	
	0.00							15				16								0.00
0.00								17				18							0.00	
	0.00							19				20								0.00
0.00								21				22							0.00	
	0.00							23				24								0.00
7.7	7.5								A	B	TOTAL								0.8	2.0
									8.5	9.5	18.0	CONNECTED LOAD (kVA)								
									8.5	9.5	18.0	DEMAND LOAD (kVA)								

DERATING FACTOR (80%)
DEMANDLOAD SIZING: *94 AMPS*

NOTE:
1. ALL EQUIPMENTS' SHORT-CIRCUIT CURRENT RATING SHALL EXCEED AVAILABLE FAULT CURRENT PER UTILITY
2. CONTRACTOR TO INSTALL HANDHOLES AT EVERY 3RD 90° TURN

1 PANEL SCHEDULE



2 ONE-LINE DIAGRAM

STANDARD CONDUIT USE TABLE			
CONDUIT TYPE	USE CASE	LOCATION	USE CASE EXAMPLE
RMC (METALLIC)	AC, DC COMM	ABOVE GROUND	ABOVE GROUND PPC TO SSC
PVC	AC POWER	UNDERGROUND	UNDERGROUND PPC TO SSC OR BACKHAUL TRANSPORT HUB TO SSC
LFMC	AC, DC, COMM	MAX 6' PER CONDUIT RUN, ABOVE GROUND ONLY	TIGHT LOCATIONS BETWEEN HUB AND CONDUIT BUT NOT TO BE USED WHERE IT CAN BE STEPPED ON
EMT	INDOOR AC, DC COMM	INDOOR NOT EXPOSED TO THE OUTDOOR ENVIRONMENT (MUST BE DRY)	CIRCUIT PANEL TO JUNCTION BOX
LFNC	GROUND WIRE	CONCEALING AND PROTECTING BTCW RISERS ONLY	GROUND RING TO MGB OR SSC

EXCEPTION CONDUIT USE TABLE			
CONDUIT TYPE	USE CASE	LOCATION	USE CASE EXAMPLE
EMT (NOT PREFERRED)	OUTDOOR DC, COMM	OUTDOOR WHEN USED WITH WATERTIGHT HUBS ONLY	BETWEEN EQUIPMENT AND BATTERY CABINET OR EQUIPMENT TO EQUIPMENT CABINETS FOR INTER CABINET CONNECTION
RMC NONMETALLIC (ALUMINUM)	OUTDOOR/INDOOR PER NEC GUIDLINES	ABOVE GROUND	MAT BE USED AS A LOWER COST ALTERNATIVE TO METALLIC RMC, MUST MEET OR EXCEED FEDERAL SPEC: WW-C-540C, UL-6A, ANSI C80.5, NEC 344.10 (A) ALLOWS THE USE OF EITHER ALUMINUM OR GALVANIZED FITTINGS

3 CONDUIT USE TABLES

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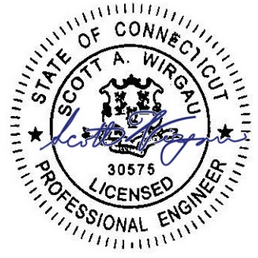

T-Mobile

DATE DRAWN:	05/26/22
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PANEL SCHEDULE & ONE-LINE DIAGRAM

SHEET NUMBER:	REVISION:
E-601	0

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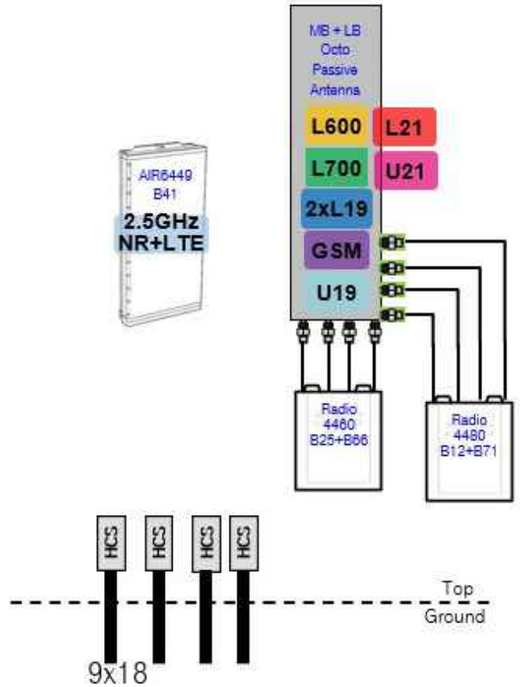
Proposed RAN Equipment			
Template: 67E5D998E 6160			
Enclosure	**1**	**2**	**3**
Enclosure Type	Enclosure 6160 AC V1	B160	RBS 6601
Baseband	RP 6651: L2500, N2500 RP 6651: L700, L600, N600, L2100, L1900		DUG20: G1900
Hybrid Cable System	Ericsson Hybrid Trunk 6/24 4AWG 100m **(x 3)** PSU 4813 vR4A (Kit)		
Transport System	CSR IXRe V2 (Gen2)		
RAN Scope of Work:			

1 CABINET CONFIGURATION

Final Config: 67E5A998E



2 ANTENNA CONFIGURATION

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

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-601	0

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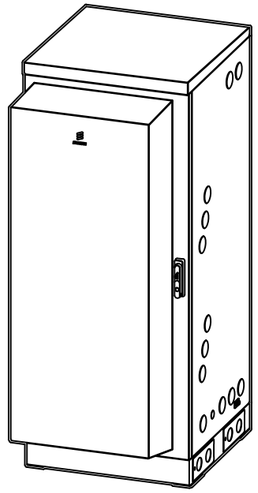
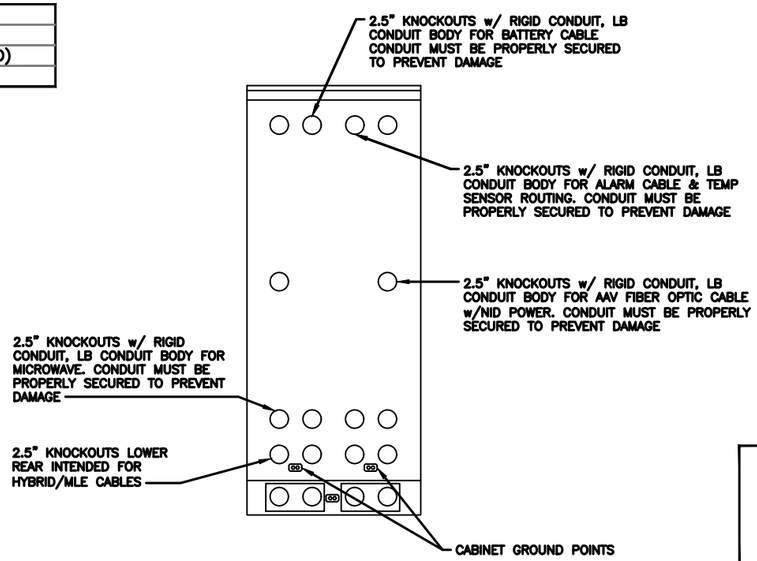
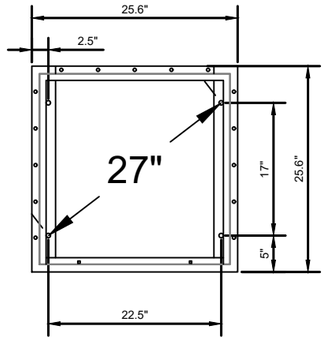
MANUFACTURER:	ERICSSON
MODEL:	6160 SITE SUPPORT CABINET
DIMENSIONS:	63" x 25.6" x 33.6" (H x W x D)
WEIGHT:	373 LBS





REAR VIEW

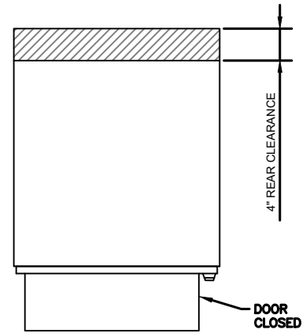
NOTE:
- CORRECT KNOCKOUT TOOL REQUIRED FOR PUNCHING KNOCKOUTS. DO NOT DRILL THROUGH KNOCKOUTS
- CONDUIT MUST BE PROPERLY SECURED TO PREVENT DAMAGE TO CABINETS AND OR CABLING

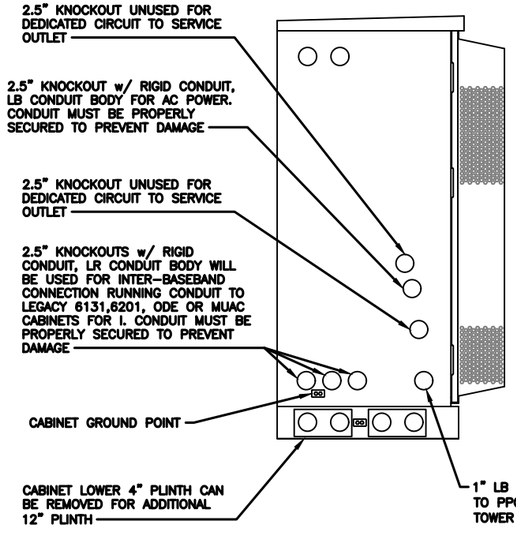


BOLT DOWN PATTERN

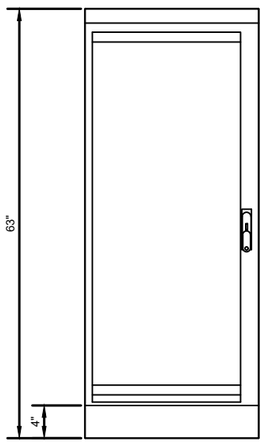
GROUNDING NOTE:

"CABINET GROUNDING TO USE A SINGLE, #2 BTCW CONDUCTOR, W/ 2-HOLE, 1" C-C, LONG BARREL, WINDOW LUG, IN 3/4" LFNC TO GROUND RING. PLINTH GROUNDING IS NOT REQUIRED."

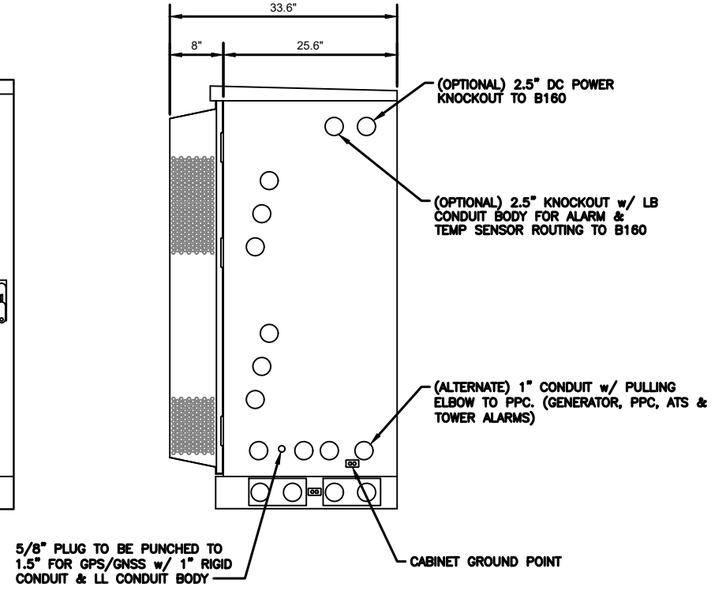




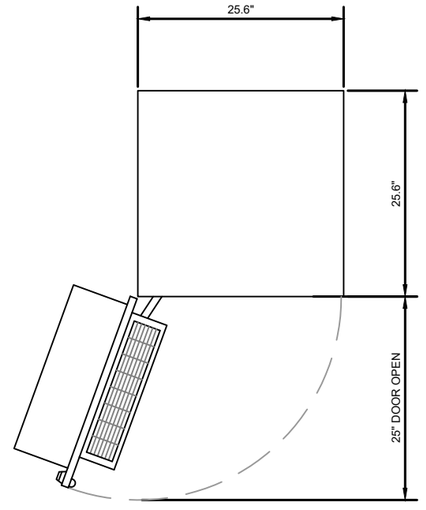
LEFT VIEW



FRONT VIEW



RIGHT VIEW



PLAN VIEW

1 ERICSSON 6160 SITE SUPPORT CABINET SPECIFICATIONS

SCALE: N.T.S.

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

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-602	0

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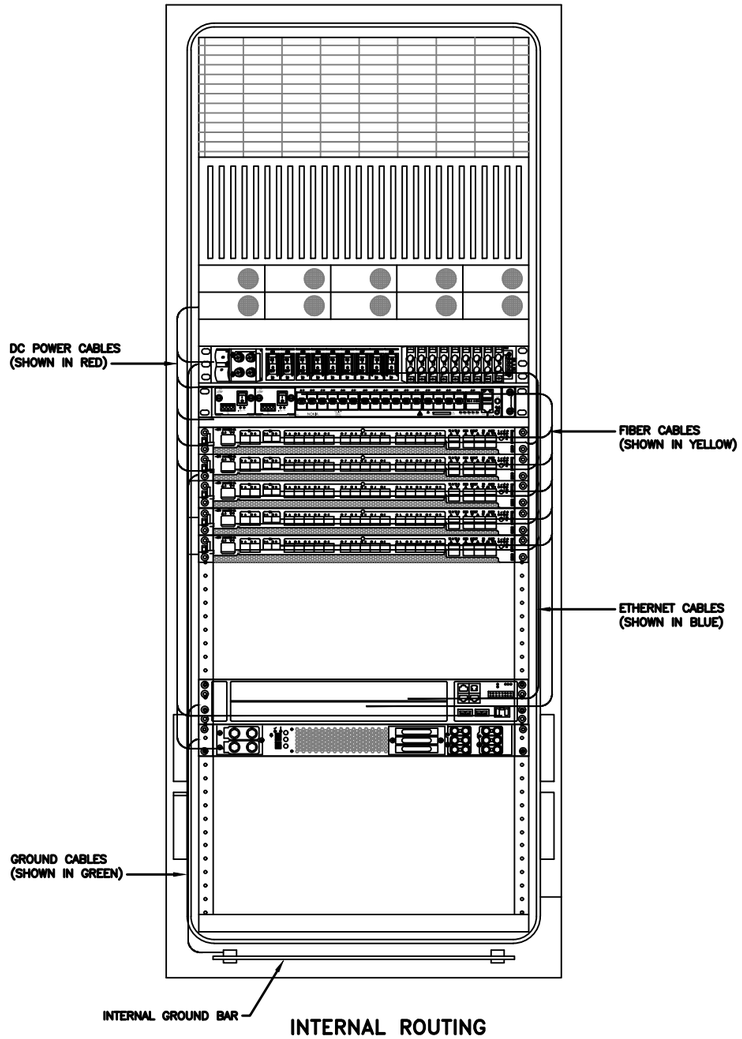
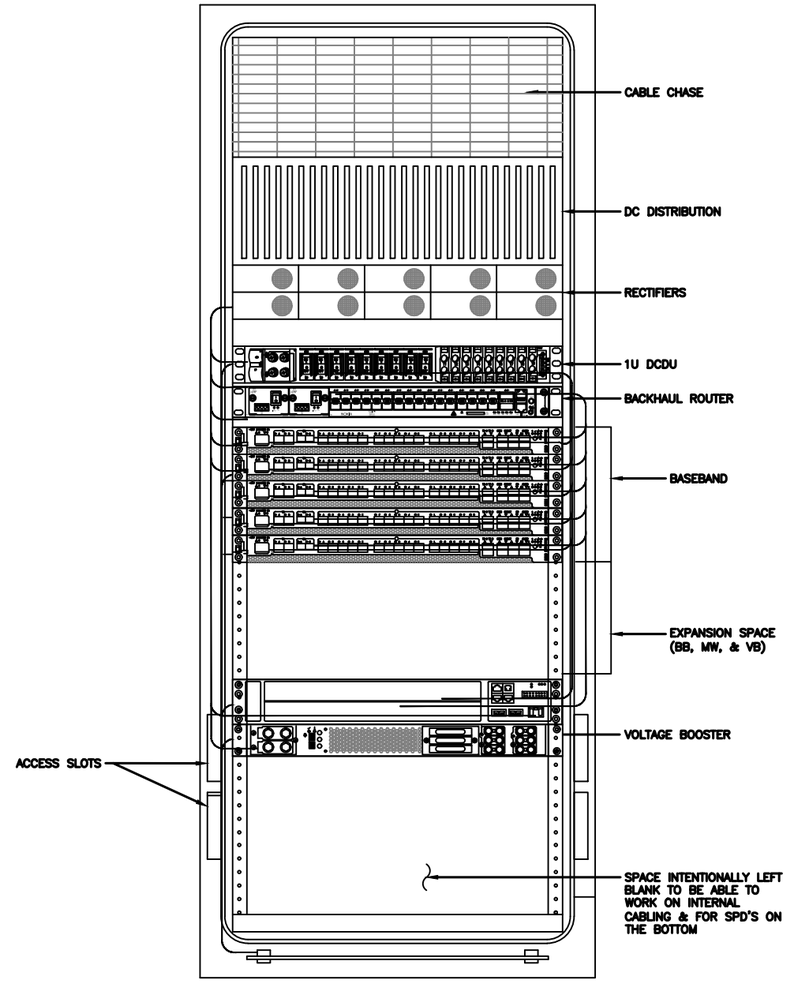


INTERNAL ROUTING
(DOOR OPEN)

RACK ASSIGNMENTS	
RU SLOTS	DESCRIPTION
1	DC DISTRIBUTION
2	
3	
4	
5	RECTIFIER SHELF
6	
7	FIBER BOX
8	DCDU
9	BACKHAUL ROUTER
10	
11	1ST BASEBAND
12	2ND BASEBAND
13	3RD BASEBAND
14	4TH BASEBAND
15	5TH BASEBAND
16	EXPANSION
17	
18	
19	
20	EXPANSION / LEGACY BASEBAND / VOLTAGE BOOSTER
21	
22	VOLTAGE BOOSTER
23	OPEN SPACE FOR SPD ACCESS
24	
25	



FRONT VIEW
(DOOR OPEN)

1 ERICSSON 6160 CABINET DETAILS

SCALE: N.T.S.

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

SUPPLEMENTAL

SHEET NUMBER: R-603

REVISION: 0

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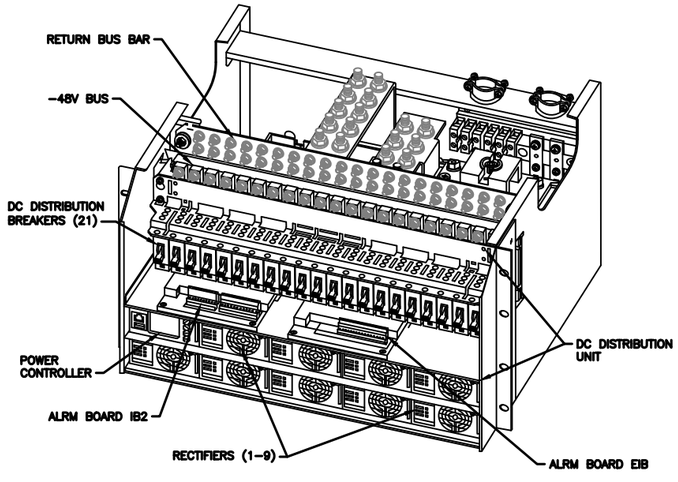
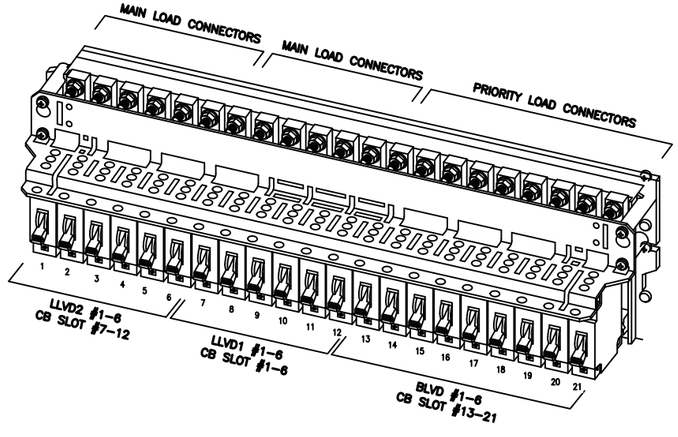
NOTE:
THIS IS FOR REFERENCE ONLY, CHECK FOR SPECIFIC DETAIL IN T–MOBILE CABINET SPECIFIC INSTALLATION GUIDES

Breaker Allocation for E6160					
CB SLOT	Ckt #		w/ DCDU Prior to availability of the 4460 and 4480	w/ DCDU Later Design Post-4460 and Post-4480	w/ DCDU 4 and 6 Sector designs
1	LVD1 47.0V	1	Router PS-2*/Future		Radio 4460 B25/66 ζ-1
2		2	Future		Radio 4460 B25/66 ζ-2
3		3	PSU 4813 feeding B25/66 α, β and γ (AIR 1641s)		PSU 4813 feeding B41-δ & B71/12-δ (Air 6449s and Radio 4480s)
4		4			
5		5	PSU 4813 feeding B41 α, β and γ (Air 6449s)		
6		6			
7	LVD2 45.1V	1	PSU 4813 feeding B71/12 α, β and γ (Radio 4449s)	PSU 4813 feeding B71/12 α, β and γ (Radio 4480s)	
8		2			
9		3	Future		Radio 4460 B25/66 δ-1
10		4	Future		Radio 4460 B25/66 δ-2
11		5	Future		Radio 4460 B25/66 ε-1
12		6	Future		Radio 4460 B25/66 ε-2
13	BLVD 43.2V	1	Router PS-1		
14		2	Radio 4415 B25/66 α	Radio 4460 B25/66 α-1	
15		3	Radio 4415 B25/66 β	Radio 4460 B25/66 α-2	
16		4	Radio 4415 B25/66 γ	Radio 4460 B25/66 β-1	
17		5	PSU 4813 feeding B2/25 α, β and γ (Radio 4424s)	Radio 4460 B25/66 β-2	
18		6		Radio 4460 B25/66 γ-1	
19		7	Future	Radio 4460 B25/66 γ-2	
20		8	DCDU		
21		9	AAV		
Sector Identification α = Alpha, β = Beta, γ = Gamma, δ = Delta, ε = Epsilon, ζ = Zeta					



POWER SUBRACK



DC DISTRIBUTION

1 ERICSSON 6160 ELECTRICAL DETAILS

SCALE: N.T.S.

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

SUPPLEMENTAL

SHEET NUMBER: R-604

REVISION: 0

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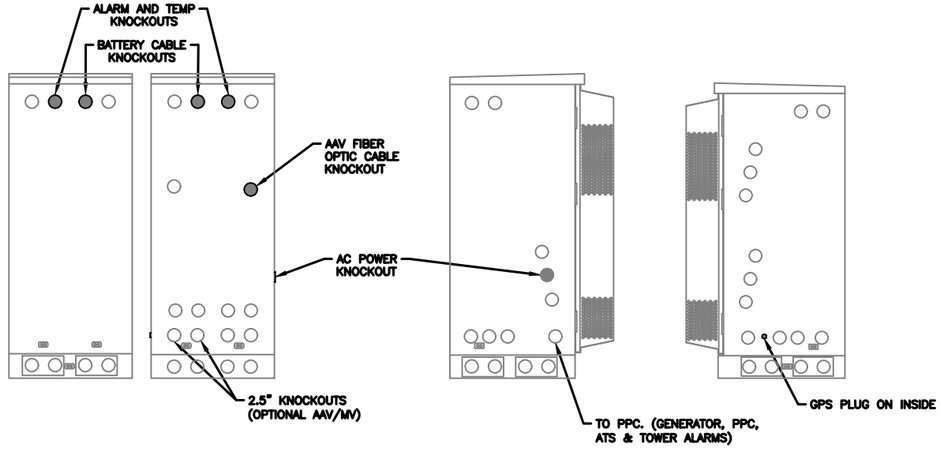
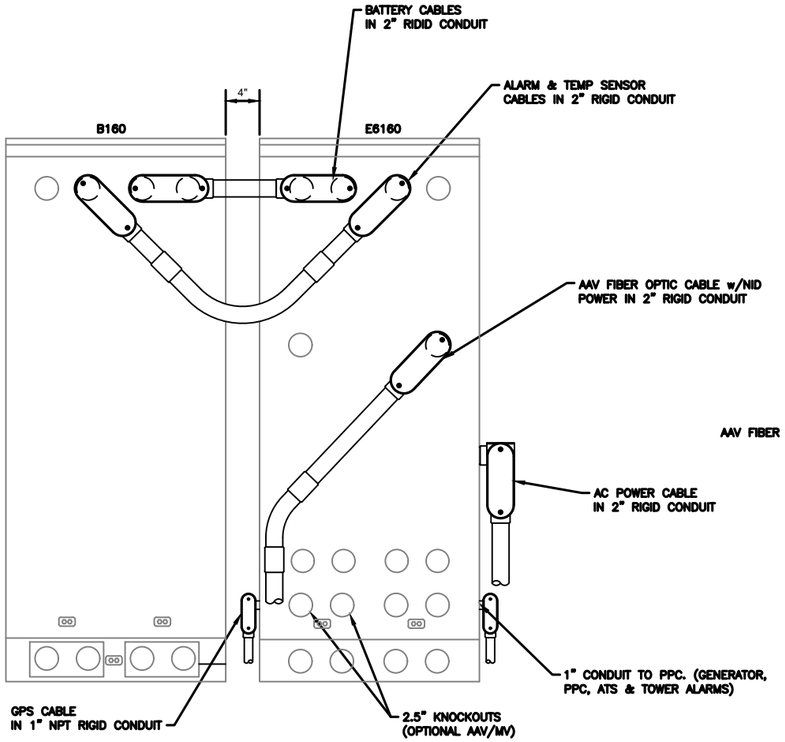
NOTE:

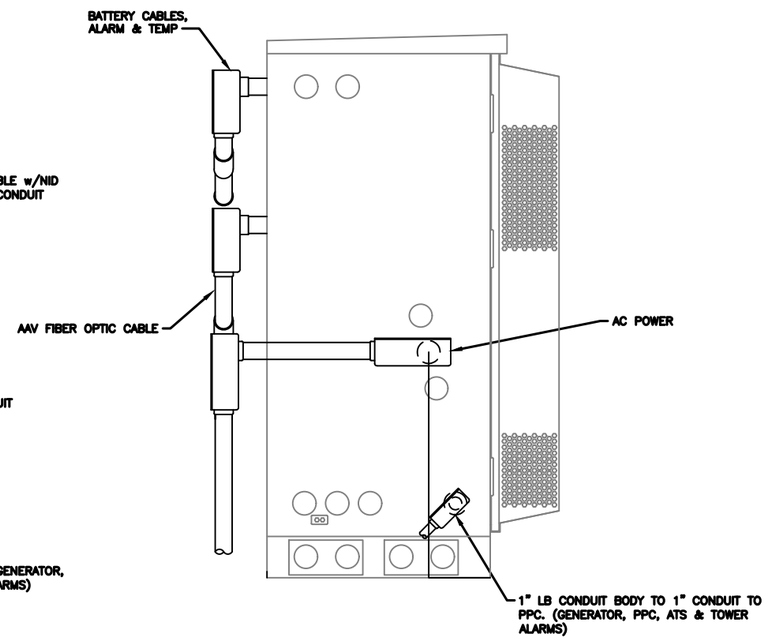
1. ALL CONDUIT AND FITTING ENTRANCES INTO CABINETS AND ENCLOSURES MUST UTILIZE MYERS OR EQUIVALENT HUBS OR SEALING WASHERS TO PREVENT WATER ENTRY/SEEPAGE INTO CABINETS AND ENCLOSURES.
2. (LIQUIDFLEX) FLEXIBLE METALLIC CONDUIT (LFMC) & ASSOCIATED FITTINGS CAN BE USED AS NEEDED BUT ONLY FOR TIGHT CONDUIT BENDS AND RUNS SUBJECT TO UL AND NEC LIMITATIONS. 6' MAX PER CONDUIT RUN.
3. POWER CONDUIT BODY ATTACHED WITH SHORT NIPPLE AND SEALING WASHER INSIDE & OUT. (FOR DOOR HOOD CLEARANCE)
4. PULLING ELBOWS MAY BE USED IN LIEU OF A CONDUIT BODIES WHEN CLEARANCE IS LIMITED.
5. ALL EXTERNAL ALARM CONDUITS ARE TOO TERMINATE AT THE PPC WITH A SINGLE 1" ALARM CONDUIT TO THE 6160.
6. (DO NOT USE CHASE NIPPLES) CONDUIT SHOULD HAVE SEALING WASHERS INSIDE AND OUT w/ LOCK NUT AND CAP.



CONDUIT LOCATIONS



REAR VIEW



SIDE VIEW

1 ERICSSON 6160/B160 CONDUIT ROUTING DETAILS

SCALE: N.T.S.

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SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-605	0

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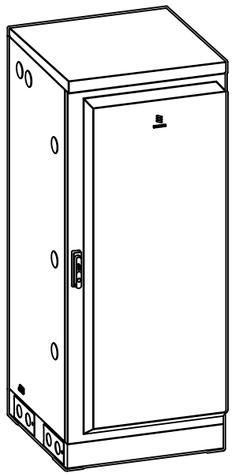
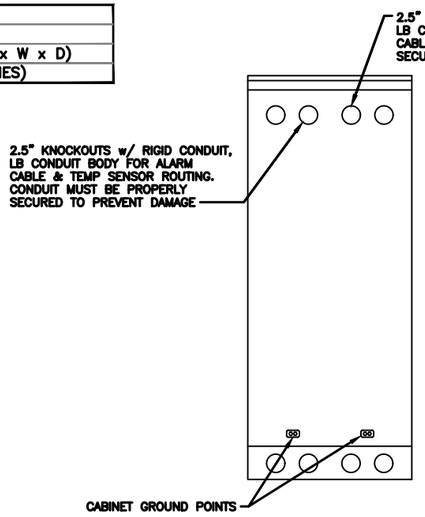
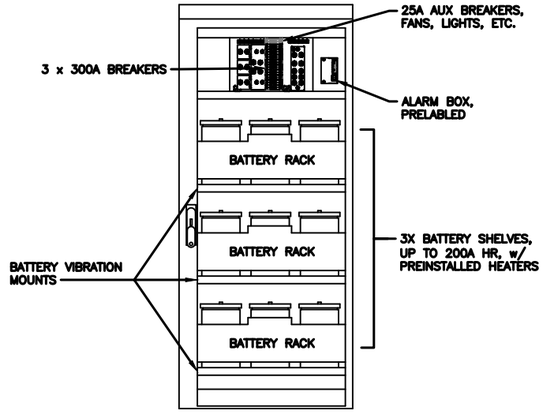
MANUFACTURER:	ERICSSON
MODEL:	B160 BATTERY CABINET
DIMENSIONS:	63" x 25.6" x 29.5" (H x W x D)
WEIGHT:	295 LBS (WITHOUT BATTERIES)



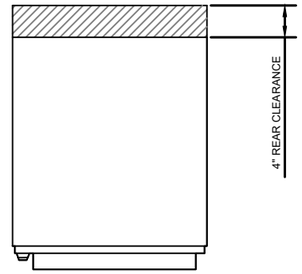


REAR VIEW



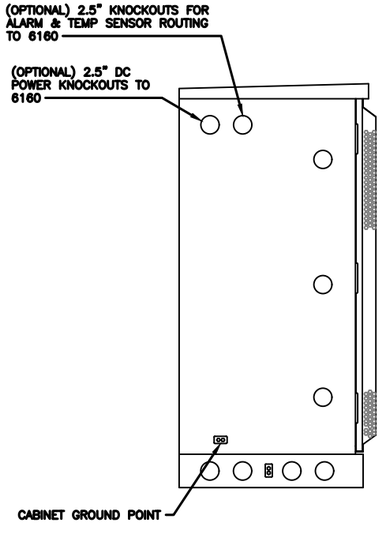
FRONT VIEW
(DOOR OPEN)

NOTE:
- CORRECT KNOCKOUT TOOL REQUIRED FOR PUNCHING KNOCKOUTS. DO NOT DRILL THROUGH KNOCKOUTS
- CONDUIT MUST BE PROPERLY SECURED TO PREVENT DAMAGE TO CABINETS AND OR CABLING

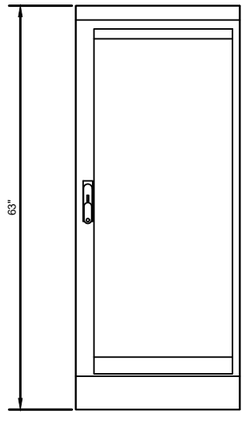


GROUNDING NOTE:

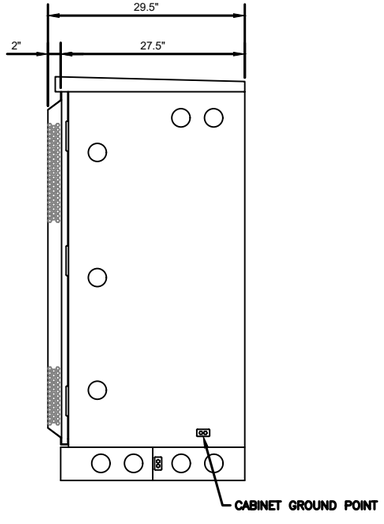
"CABINET GROUNDING TO USE A SINGLE, #2 BTCW CONDUCTOR, W/ 2-HOLE, 1" C-C, LONG BARREL, WINDOW LUG, IN 3/4" LFNC TO GROUND RING. PLINTH GROUNDING IS NOT REQUIRED."



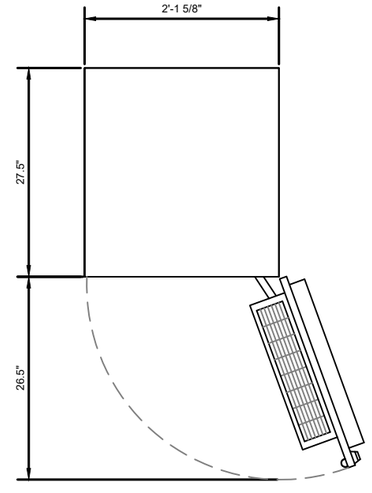
LEFT VIEW



FRONT VIEW



RIGHT VIEW



PLAN VIEW

B160 ERICSSON SITE SUPPORT BATTERY CABINET

1 ERICSSON B160 BATTERY CABINET SPECIFICATIONS

SCALE: N.T.S.

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SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-606	0

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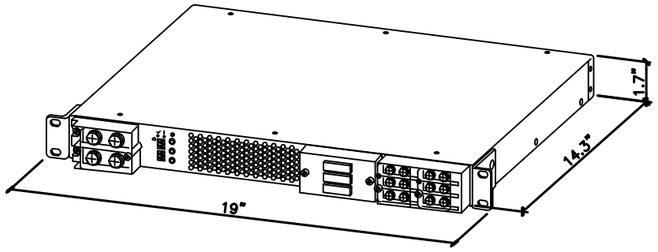
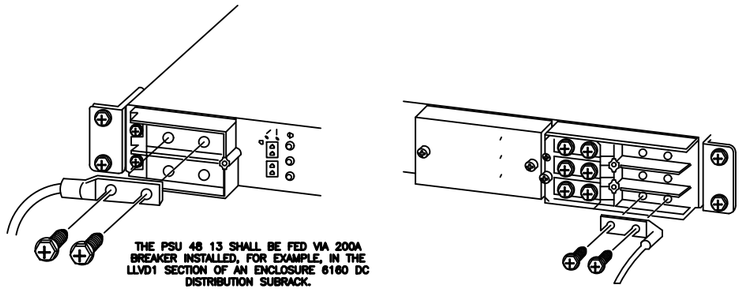
MANUFACTURER:	ERICSSON
MODEL:	PSU 48 13
WEIGHT:	17.1 LBS
DIMENSIONS:	19"x 1.7"x 14.3"

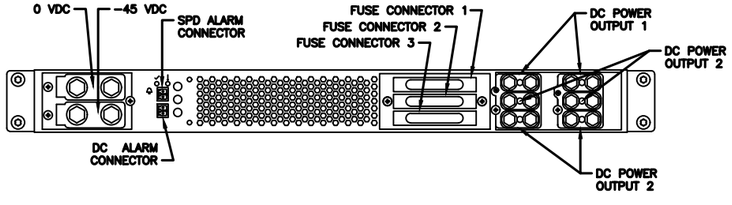
NEEDED INSTALL KIT (PICK 1)
34133 PSU4813 INSTALL KIT FOR RBS61XX
34134 PSU4813 INSTALL KIT FOR PBC6200
34135 PSU4813 INSTALL KIT FOR 6X60/RBS6230





THE PSU 48 13 SHALL BE FED VIA 200A BREAKER INSTALLED, FOR EXAMPLE, IN THE LLVD1 SECTION OF AN ENCLOSURE 6160 DC DISTRIBUTION SUBRACK.

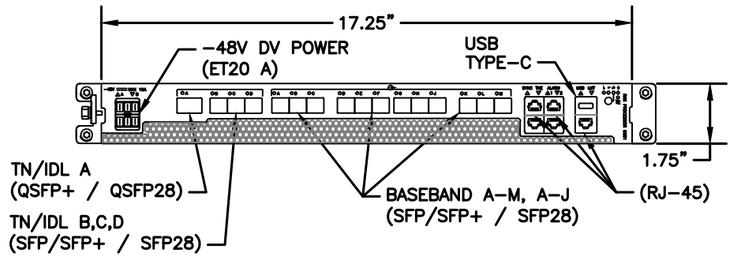
CONNECT –58 VDC DISTRIBUTION CABLE TO TERMINAL AT THE RIGHT, WHICH WILL BE FED TO RRU/AIR AT THE OTHER END.

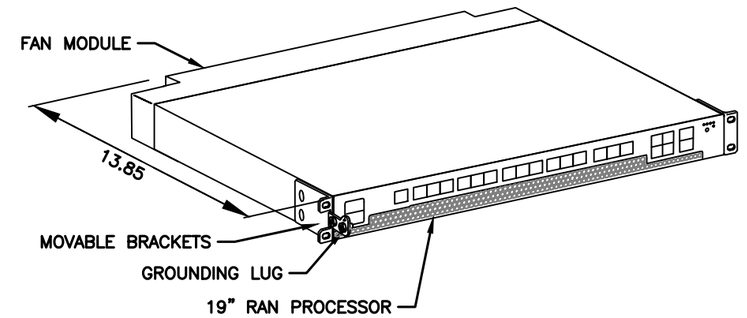


1 SKU# 34132 - PSU 48 13

SCALE: N.T.S.

MANUFACTURER:	ERICSSON
MODEL:	6651 RAN PROCESSOR (KDU1370093/11)
DIMENSIONS:	1.75" x 17.25" x 13.85" (H" x W" x D")
WEIGHT:	16.53 LBS





2 34553 - ERICSSON 6651 RAN PROCESSOR

SCALE: N.T.S.

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SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-607	0

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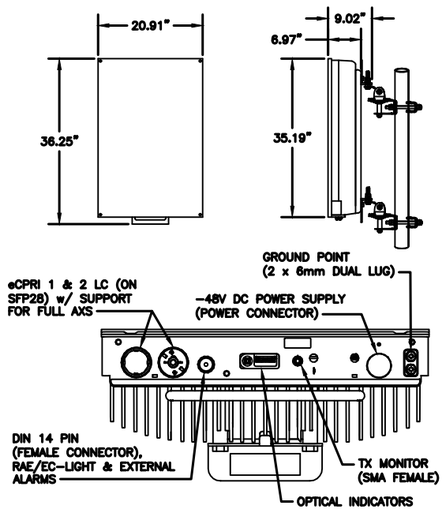
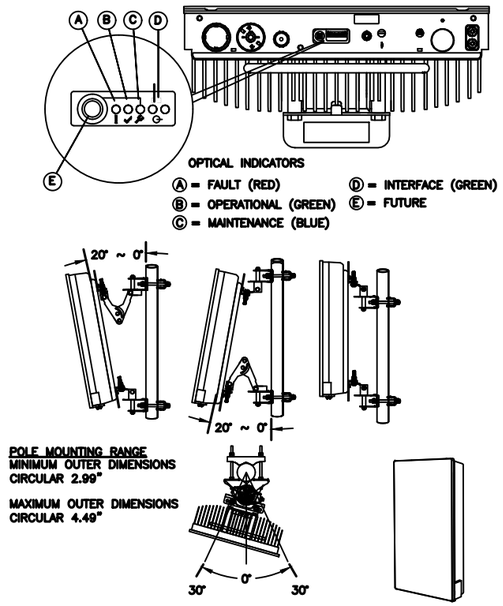
MANUFACTURER:	ERICSSON
MODEL:	AIR 6419 B41 (2.5GHz M-MIMO)
DIMENSIONS:	36.25" x 20.91" x 9.02" NOT TO EXCEED (H x W x D)
WEIGHT:	83 LBS (EXCLUDING MOUNTING KIT)
MOUNT WEIGHT:	13.5 LBS (SXK109 2016/1)

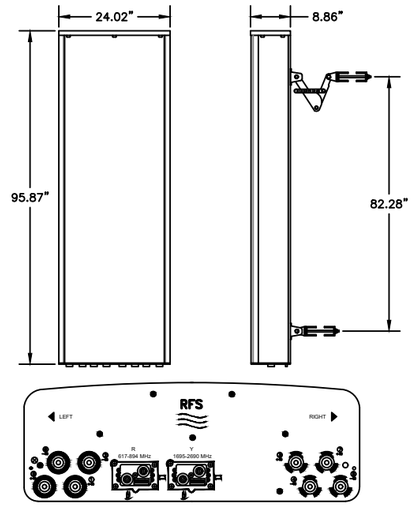


1 34552 - ERICSSON AIR 6419 BAND 41

SCALE: N.T.S.



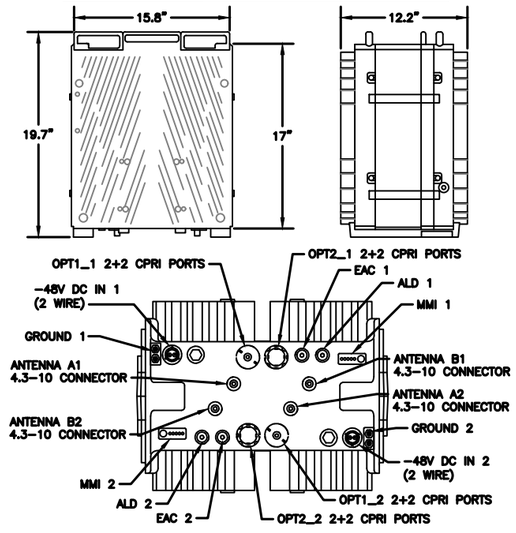
MANUFACTURER:	RFS
MODEL:	APXVAALL24_43-U-NA20
DIMENSIONS:	95.87" x 24.02" x 8.86"
WEIGHT:	119 LB
BAND:	QUAD BAND (8 PORT)
MOUNTING KIT & WEIGHT:	APM40-10E BEAM TILT KIT (INCLUDED) (16.53 LBS)



2 34087 - RFS APXVAALL24_43-U-NA20

SCALE: N.T.S.

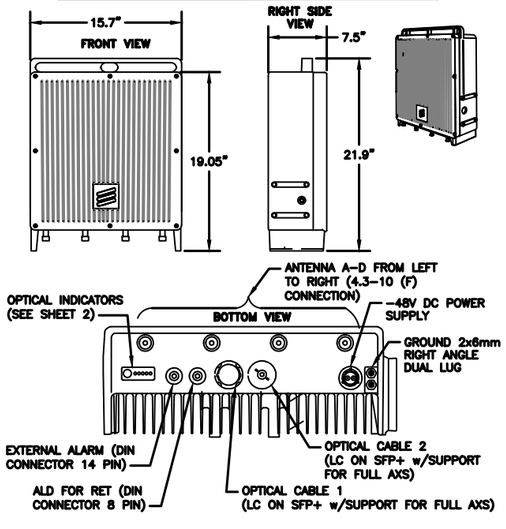
MANUFACTURER:	ERICSSON
MODEL:	4460 RADIO B2/25 B66 (KRC 161 912/3)
DIMENSIONS:	19.7" x 15.8" x 12.2" (H" x W" x D")
WEIGHT:	109 LBS
BRACKET WEIGHT:	4.8 LBS (ERS HEAVY #SXK1255993/1)



3 34373 - ERICSSON 4460 RADIO B2/25 B66

SCALE: N.T.S.

MANUFACTURER:	ERICSSON
MODEL:	4480 RADIO (KRC 161 922/1)
DIMENSIONS:	21.9" x 15.7" x 7.5" (H x W x D)
MODEL BAND:	B71, B85 FOR NR AND LTE
WEIGHT:	81 LBS
BRACKET WEIGHT:	3.75 LBS (MULTI ERS #109 1973/2)



4 34372 - ERICSSON 4480 RADIO

SCALE: N.T.S.

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SUPPLEMENTAL

SHEET NUMBER: R-608

REVISION: 0

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Product Specifications

COMMSCOPE®

on the go

VHLP2-11W-2GR

0.6 m | 2 ft ValuLine® High Performance Low Profile Antenna, single-polarized, 10.125–11.700 GHz, PBR100, gray antenna, polymer gray radome without flash, standard pack—one-piece reflector

- ValuLine Vision™ VHLP2 and VHLPX2 antennas will be available from Andrew manufacturing plants globally in the coming weeks

General Specifications

Packing	Compact pack
Radome Color	Gray
Radome Material	Polymer
Reflector Construction	One-piece reflector
Antenna Input	PBR100
Antenna Color	Gray
Antenna Type	VHLP - ValuLine® High Performance Low Profile Antenna, single-polarized
Diameter, nominal	0.6 m | 2 ft
Flash Included	No
Polarization	Single

Electrical Specifications

Beamwidth, Horizontal	3.3 °
Beamwidth, Vertical	3.3 °
Cross Polarization Discrimination (XPD)	30 dB
Electrical Compliance	Brazil Anatel Class 2 | ETSI 302 217 Class 3 | US FCC Part 101A @ 10.55–10.7 GHz | US FCC Part 101B @ 10.7–11.7 GHz
Front-to-Back Ratio	60 dB
Gain, Low Band	33.8 dBi
Gain, Mid Band	34.5 dBi
Gain, Top Band	35.2 dBi
Operating Frequency Band	10.125 – 11.700 GHz
Radiation Pattern Envelope Reference (RPE)	7200 | 7201
Return Loss	17.7 dB
VSWR	1.30

Mechanical Specifications

Fine Azimuth Adjustment	±15°
Fine Elevation Adjustment	±15°
Mounting Pipe Diameter	48 mm–115 mm | 1.9 in–4.5 in
Net Weight	11 kg | 25 lb
Side Struts, Included	0
Side Struts, Optional	0
Wind Velocity Operational	180 km/h | 112 mph

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Product Specifications

COMMSCOPE®

on the go

VHLP2-11W-2GR

Wind Forces At Wind Velocity Survival Rating Image

Packed Dimensions

Gross Weight, Packed Antenna	16.0 kg | 35.3 lb
Height	330.0 mm | 13.0 in
Length	706.0 mm | 27.8 in
Volume	0.2 m³
Width	798.0 mm | 31.4 in

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All specifications are subject to change without notice. See www.commscope.com for the most current information. Revised: January 26, 2011

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SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-609	0

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Radio

Supported Frequency Range

5.7-38 GHz

Radio Configurations

1+0 to 4+0, 1+1/2+2, E/W

Multiband (with IP-20E)

Radio Features

Multi-Carrier Adaptive Bandwidth Control (up to 2+0)

Protection: 1+1 HSB/2+2 HSB, 1+1 HSB-SD

High spectral utilization: QPSK to 2048 QAM w/ACM

XPIC

2x2/4x4 LoS MIMO

Advanced Frequency Reuse (AFR)

Ethernet

Ethernet Interfaces

Traffic Interfaces – 1 or 2 x 10/100/1000Base-T (RJ-45) and 2x1000Base-X (Optical SFP) or 1000Base-T (Electrical SFP)*

Management Interface - 1 x 10/100 Base-T (RJ-45)

SFP Types - Optical 1000Base-LX (1310 nm) or SX (850 nm)

Note: SFP devices must be of industrial grade (-40°F to +185°F)

Ethernet Features

MTU – 9600 Bytes

Quality of Service

- Multiple Classification criteria (VLAN ID, P-bits, IPv4 DSCP, IPv6 TC, MPLS EXP)
- 8 priority queues per port
- Deep buffering (configurable up to 64 Mbit per queue)
- WRED
- P-bit marking/remarking

4K VLANs

VLAN add/remove/translate

Frame Cut Through – controlled latency and PDV for delay sensitive applications

Header DeDuplication – Capacity boosting by eliminating inefficiency in all layers (L2,MPLS, L3,L4, Tunneling – GTP for LTE, GRE)

Y.1731 Ethernet OAM

* The hardware variant with two RJ-45 ports (four Ethernet traffic ports total) is planned for future release.

Adaptive Bandwidth Notification (ABN, also known as EOAM)

Synchronization

Synchronization Distribution

Sync Distribution over any traffic interface (GE/FE)

SyncE (ITU-T G.8261, G.8262)

SSM/ESMC Support for ring/mesh applications (ITU-T G.8264)

SyncE Regenerator mode, providing PRC grade (ITU-T G.811) performance for smart pipe applications.

IEEE-1588

Optimized Transport for reduced PDV

IEEE-1588 TC

Standards

MEF

Carrier Ethernet 2.0 (CE 2.0)

Supported Ethernet Standards

10/100/1000base-T/X (IEEE 802.3)

Ethernet VLANs (IEEE 802.3ac)

Virtual LAN (VLAN, IEEE 802.1Q)

Class of service (IEEE 802.1p)

Provider bridges (QinQ – IEEE 802.1ad)

Link aggregation (IEEE 802.3ad)

Auto MDI/MDIX for 1000baseT

RFC 1349: IPv4 TOS

RFC 2474: IPv4 DSCP

RFC 2460: IPv6 Traffic Classes

Security

Radio Encryption – AES 256

Secured protocols:

- HTTPS
- SNMPv3
- SSH
- SFTP

RADIUS authentication and authorization

Standards Compliance

Radio Spectral Efficiency: EN 302 217-2-2

EMC: EN 301 489-1, EN 301 489-4, Class B (Europe), FCC 47 CFR, part 15, class B (US), ICES-003, Class B (Canada), TEC/EMI/TEL-001/01, Class B (India)

Surge: EN61000-4-5, Class 4 (for PWR and ETH1/PoE ports)

Safety: EN 60950-1, IEC 60950-1, UL 60950-1, CSA-C22.2 No.60950-1, EN 60950-22, UL 60950-22, CSA C22.2.60950-22

Storage: ETSI EN 300 019-1-1 Class 1.2

Transportation: ETSI EN 300 019-1-2 Class 2.

Technical Specifications

Mechanical Specifications

Dimensions – 9.05”(H), 9.07”(W), 3.86”(D), 14.33 lbs.

Pole Diameter Range (for Remote Mount Installation) – 3.5” – 4.5”

Environmental Specifications

-27°F to +131°F (-49°F to +140°F extended)

Power Input Specifications

Standard Input: -48 VDC

DC Input range: -40 to -60 VDC

Power Consumption Specifications

Maximum Power Consumption (Multi-Core Operation) – 5.7-6 GHz: 65W; 7-8 GHz: 75W;
11 GHz: 65W; 13-15 GHz: 55W; 18-24 GHz: 48W;
26-38 GHz: 55W

Maximum Power Consumption (1+0 Operation) –5.7-6 GHz: 40W; 7-8 GHz: 50W;
11 GHz: 53W; 13-15 GHz: 41W; 18-24 GHz: 39W;
26-38 GHz: 41W

PoE Injector Mechanical Specifications

Dimensions – 5.28”(H), 7.48”(W), 2.44”(D), 2.2 lbs.

PoE Injector Environmental Specifications

-27°F to +131°F (-49°F to +140°F extended)

PoE Injector Power Input Specifications

Standard Input: -48 VDC

DC Input range: -(18/40.5 to 60) VDC

PoE Injector Interfaces

GbE Data Port supporting 10/100/1000Base-T

Power-Over-Ethernet (PoE) Port

DC Power Port –40V to -60V (a PoE supporting two redundant DC feeds each supporting -(18-60)V is available)

Product Images

IP-20C

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SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-610	0

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RD048 | 3.4L | **48kW**

INDUSTRIAL DIESEL GENERATOR SET

EPA Certified Stationary Emergency

GENERAC | INDUSTRIAL POWER

Model Number
48kW: G0071940

Standby Power Rating
48 kW, 60 Hz

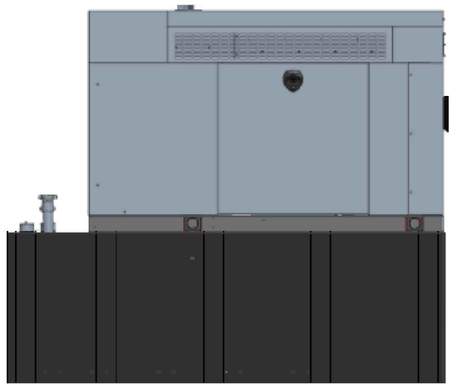


Image used for illustration purposes only

CODES AND STANDARDS

Not all codes and standards apply to all configurations.
Contact factory for details.

- UL2200, UL508, UL489, UL142
- CSA C22.2
- BS5514 and DIN 6271
- SAE J1349
- NFPA 37, 70, 99
- ISO 3046, 8528, 9001
- NEMA ICS1, ICS10, MG1, 250, ICS6, AB1
- ANSI/IEEE C62.41

POWERING AHEAD

For over 50 years, Generac has led the industry with innovative design and superior manufacturing. Generac ensures superior quality by designing and manufacturing most of its generator components, including alternators, enclosures and base tanks, control systems and communications software.

Generac's gensets utilize a wide variety of options, configurations and arrangements, allowing us to meet the standby power needs of practically every application. Generac searched globally to ensure the most reliable engines power our generators. We choose only engines that have already been proven in heavy-duty industrial application under adverse conditions.

Generac is committed to ensuring our customers' service support continues after their generator purchase.

SPEC SHEET

1 OF 5

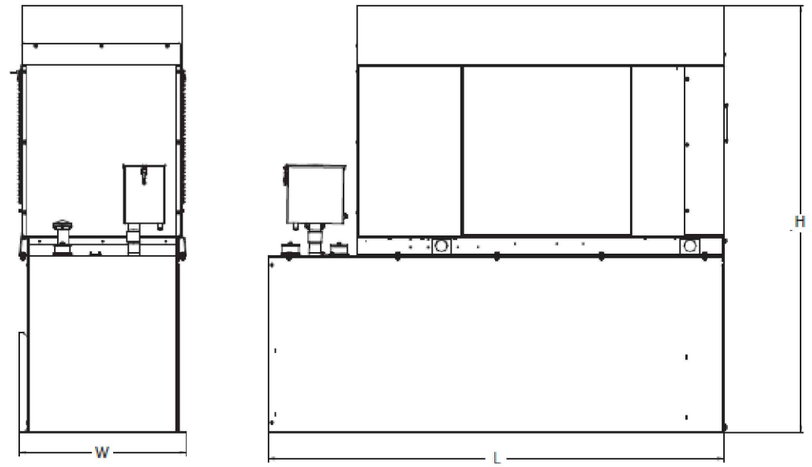
RD048 | 3.4L | **48kW**

INDUSTRIAL DIESEL GENERATOR SET

EPA Certified Stationary Emergency

GENERAC | INDUSTRIAL POWER

DIMENSIONS AND WEIGHTS*



Weights and Dimensions

Unit Weight - lbs	Unit Weight with Skid - lbs	Dimensions (L x W x H) - in
2,915	2,954	103.4 (2,625) x 35.0 (888) x 90.0 (2,286)

48kW Fuel Consumption	
Fuel Tank Gross Total Capacity	240
Fuel Tank Gross Usable Capacity	229
Fuel Tank Net Usable Capacity (Run Hours Based on Net Usable Capacity)	206
Run Hours 100% Load	52
Run Hours 75% Load	67
Run Hours 50% Load	96

Sound Emission Data	
Rated Load Sound Output at 23ft - dB(A)	65

* All measurements are approximate and for estimation purposes only.

YOUR FACTORY RECOGNIZED GENERAC INDUSTRIAL DEALER

SPEC SHEET

5 OF 5

Specification characteristics may change without notice. Dimensions and weights are for preliminary purposes only. Please consult a Generac Power Systems Industrial Dealer for detailed installation drawings.

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P: (262) 544-4811 ©2018Generac Power Systems, Inc. All rights reserved. All specifications are subject to change without notice.

Part No. 1000052700
Rev. 5 08/30/18

1 PROPOSED GENERATOR
SCALE: NOT TO SCALE

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SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-611	0

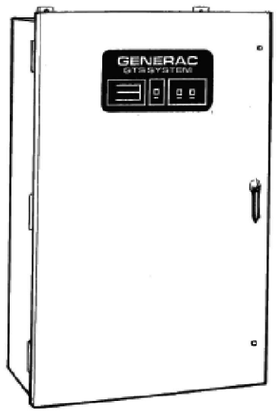
100 - 400 Amps, 600 VAC

GENERAC | INDUSTRIAL POWER

Automatic Transfer Switches

100 - 400 Amps, 600 VAC 1 of 2

100 - 400 Amps, 600 VAC 2 of 2



- Standard time delay neutral will reduce switchover problems.
- Logic control with inphase monitor regulates switch functions and allows adjustable switch settings with LED indicators.
- Control switches located on the front of the door for ease of operation.
- All switches are UL 1008 listed and CSA certified.
- Electrically-operated, mechanically-held and interlocked main contacts with break before make design for fast, positive connections.
- Rated for all classes of load, 100% equipment rated, both inductive and resistive with no derations.
- 2, 3, and 4 Pole 600 VAC contactors.
- 160 millisecond transfer time.

Standard Features

- Single coil design, electrically operated and mechanically held
- Programmable exerciser
- Main contacts are silver alloy to resist welding and sticking
- Conformal coating protects all printed circuit boards
- Indicating LED's for switch position—Normal, Emergency, and Standby Operating
- NEMA 1 enclosure with hinged door and key-locking handle
- Three-position switch—Fast Test, Auto, Normal Test
- Arc chutes on main contacts

Optional Accessories

- NEMA 12 enclosure
- NEMA 3R enclosure
- NEMA 4 & 4X enclosure
- Exterior AC meter package
- Controls accessible through door in door design on NEMA type 3R and 4 enclosures – key lock provided on access door
- 4-pole design for neutral isolation
- Single or double sets of auxiliary contacts
- Preferred source selector switch
- Manual 3 position selector switch
- Remote automatic control circuit
- Signal before transfer contacts
- Return to normal timer bypass

GENERAC | INDUSTRIAL POWER

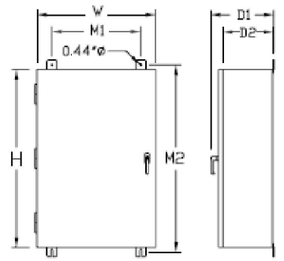
GTS Control Systems

	LOGIC CONTROL w / Inphase Monitor
Utility Voltage	
Dropout	75-95% (Adj.)
Pickup	85-95% (Adj.)
Line Interrupt	0.1-10 Sec. (Adj.)
Engine Minimum Run	5-30 Min. (Adj.)
Engine Warmup	5 Sec.-3 Min. (Adj.)
Return to Utility	1-30 Min. (Adj.)
Engine Cooldown	1-30 Min. (Adj.)
Standby Voltage	85-95% (Adj.)
Standby Frequency	80-90% (Adj.)
Time Delay Neutral	0.1-10 Sec. (Adj.)
Transfer on Exercise	On/Off Switch
Warmup Timer Bypass	On/Off Switch
Time Delay Neutral Bypass	On/Off Switch
Inphase Monitor	On/Off Switch

Withstand Current - 600 Volt GTS Series

GTS Rated Amps	100	150	200	300	400
FUSE PROTECTED					
Maximum RMS Symmetrical Fault Current – Amps	200,000	200,000	200,000	200,000	200,000
Maximum Fuse Size – Amps	200	400	400	600	600
Fuse Class	J,T	J,T	J,T	J,T	J,T
CIRCUIT BREAKER PROTECTED (See separate sheet for specific circuit breakers)					
Maximum RMS Symmetrical Fault Current – Amps	14,000	25,000	25,000	35,000	35,000
Protective Device Continuous Rating (Max) – Amps	150	300	300	600	600

- Tested in accordance with the withstand and closing requirements of UL 1008 and CSA Standards
- Current ratings are listed @ 480 VAC



Unit Dimensions

GTS Rated Amps	Voltage	Enclosure Height H	Enclosure Width W	Wall Mount Bolt Pattern M1	Wall Mount Bolt Pattern M2	Enclsoure Depth D1	Enclsoure Depth D2	Weight (lbs.)
100	All	36	24	18	37.5	12.7	10	180
150-200	120/240	36	24	18	37.5	12.7	10	185
150-200	120/208	36	24	18	37.5	12.7	10	185
150-200	277/480	48*	30*	24	49.5	14.8	12	265
150-200	600	48*	30*	24	49.5	14.8	12	265
300-400	120/240	36	24	18	37.5	12.7	10	245
300-400	120/208	36	24	18	37.5	12.7	10	245
300-400	277/480	48*	30*	24	49.5	14.8	12	325
300-400	600	48*	30*	24	49.5	14.8	12	325

* Note: On NEMA 1 enclosures only, door overlaps enclosure – door dimensions are 48.8 H X 30.8 W. All dimensions in inches.

Terminal Lug Wire Ranges

GTS RATED AMPS	CONTACTOR TERMINALS (1 LUG PER POLE) LUG WIRE RANGE	NEUTRAL BAR* # LUGS	NEUTRAL BAR* LUG WIRE RANGE	GROUND LUG (1 PROVIDED) LUG WIRE RANGE
100	2/0 – 14 AWG	4	2/0 – 14 AWG	2/0 – 14 AWG
150	400MCM – 4 AWG	4	350MCM – 6 AWG	350MCM – 6 AWG
200	400MCM – 4 AWG	4	350MCM – 6 AWG	350MCM – 6 AWG
300	600MCM – 4 AWG or 2 – [250MCM – 1/0 AWG]	4	600MCM – 4 AWG [250MCM – 1/0 AWG]**	350MCM – 6 AWG 350MCM – 6 AWG
400	600MCM – 4 AWG or 2 – [250MCM – 1/0 AWG]	4	600MCM – 4 AWG [250MCM – 1/0 AWG]**	350MCM – 6 AWG

* Not included in GTS with switched neutral. ** Allowable wire range in brackets is for 2 wires per lug.

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1 PROPOSED ATS
SCALE: NOT TO SCALE

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SUPPLEMENTAL

SHEET NUMBER: R-612

REVISION: 0

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NOTICE

DISCONNECT FOR UTILITY POWER TO GENERATOR IS LOCATED INSIDE THIS ENCLOSURE

CAUTION: TWO SOURCES OF SUPPLY. STANDBY GENERATOR LOCATED OUTDOOR.

WARNING

SHOCK HAZARD EXISTS IF GROUNDING ELECTRODE CONDUCTOR OR BONDING JUMPER CONNECTION IN THIS EQUIPMENT IS REMOVED WHILE ALTERNATE SOURCE(S) IS ENERGIZED

1 REQUIRED SIGNS
SCALE: N.T.S.

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SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-613	0

1 REQUIRED SIGNS

SCALE: N.T.S.

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SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-614	0

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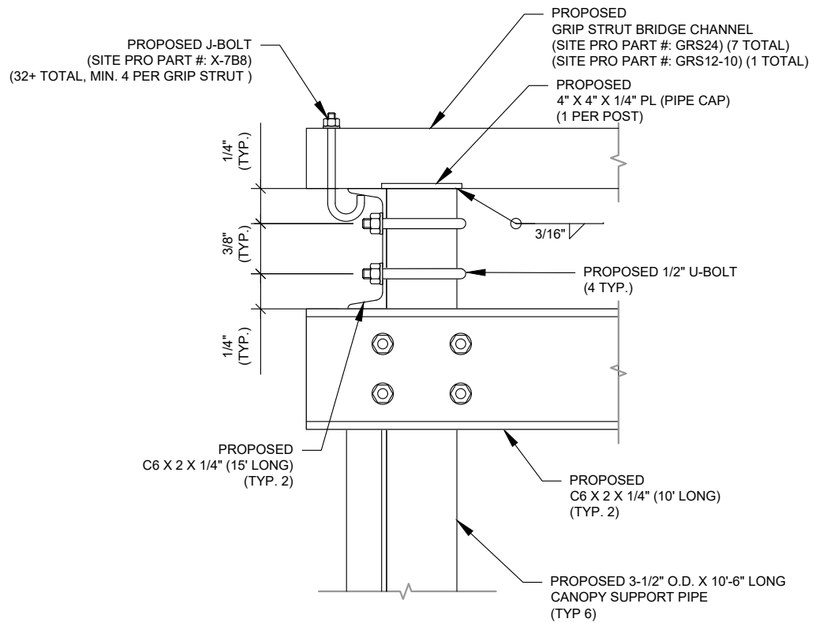
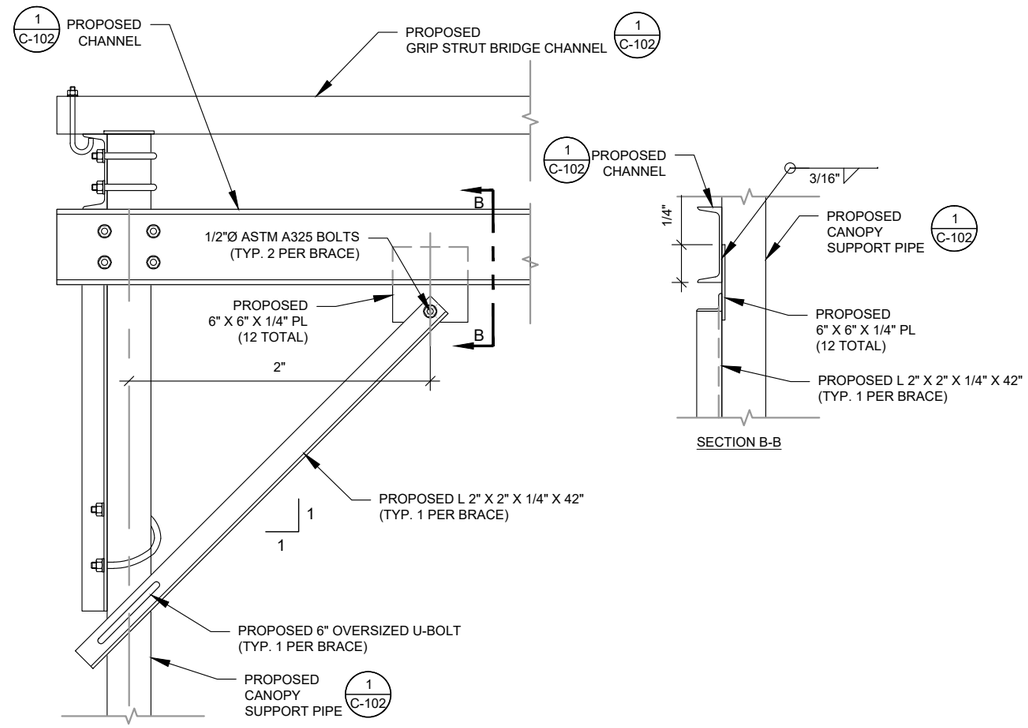


1 CANOPY SUPPORT DETIAL A-A

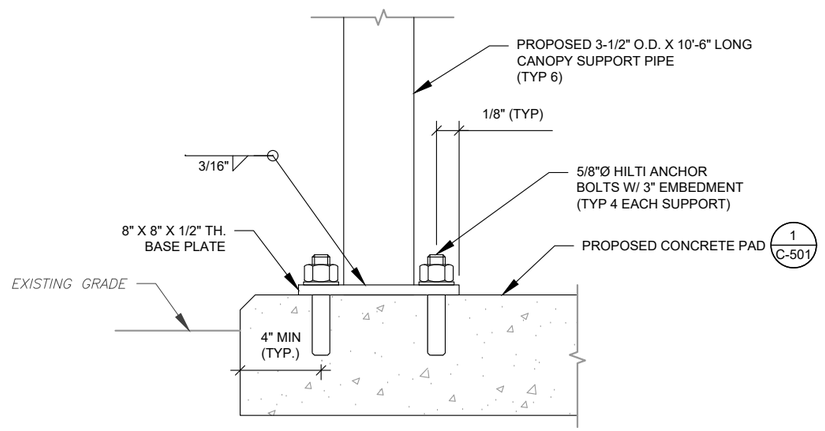
SCALE: N.T.S.



NOTE: EACH CANOPY POST SHALL HAVE (2) BRACES PER POST

2 CANOPY BRACING DETAIL

SCALE: N.T.S.



3 CANOPY SUPPORT/ANCHOR DETAIL

SCALE: N.T.S.

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SUPPLEMENTAL

SHEET NUMBER: R-615

REVISION: 0

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AMERICAN TOWER®
CORPORATION

Mount Analysis Report

ATC Site Name	:	**Winchester PCS CT, CT**
ATC Site Number	:	**413849**
Engineering Number	:	**14099859_C8_01**
Mount Elevation	:	**127 ft**
Carrier	:	**T-Mobile**
Carrier Site Name	:	**CTNH392_AmericanTower_Monopine_Winsted**
Carrier Site Number	:	**CTNH392A**
Site Location	:	**32 Norfolk Road** **WINSTED, CT 06098-2227** **41.94022438 , -73.09588794**
County	:	**Litchfield**
Date	:	**April 21, 2022**
Max Usage	:	**46%**
Result	:	**Contingent Pass**

Prepared By:
Molly Li
Structural Engineer

Reviewed By:

STATE OF CONNECTICUT
SIDRA KAUSHAL REDDY
32593
LICENSED
PROFESSIONAL ENGINEER

Authorized by "EOR"
22 Apr 2022 09:44:59 cosign

COA: PEC.0001553

Introduction

The purpose of this report is to summarize results of the mount analysis performed for T-Mobile at 127 ft.

Supporting Documents

Specifications Sheet	Site Pro 1 VFA10-HD, dated June 29, 2018
Radio Frequency Data Sheet	RFDS ID #CTNH392A, dated March 2, 2022

Analysis

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

Basic Wind Speed:	114 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1.00'' radial ice concurrent
Codes:	ANSI/TIA-222-H
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.167, S1 = 0.054
Site Class:	D - Stiff Soil
Live Loads:	Lm = 500 lbs, Lv = 250 lbs

Conclusion

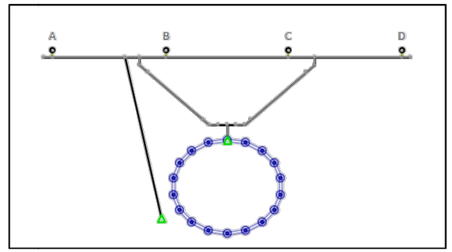
Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed above provided the modifications listed below are completed:

- Analysis based on new Site Pro 1 VFA10-HD sector frames (or approved equivalent).
- Install (4) P2 (2.375" x 126") antenna mounting pipes (Mount Pipe A, B, C, D) on the mount face about 40" apart with Site Pro 1 SCX7-U (or approved equivalent) 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.

A.T. Engineering Service, PLLC - 3500 Regency Parkway, Suite 100 - Cary, NC 27518 - 919.468.0112 Office - 919.466.5414 Fax - www.americantower.com

Mount Layout



A.T. Engineering Service, PLLC - 3500 Regency Parkway, Suite 100 - Cary, NC 27518 - 919.468.0112 Office - 919.466.5414 Fax - www.americantower.com

1 MOUNT ANALYSIS

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SUPPLEMENTAL

SHEET NUMBER: R-616

REVISION: 0

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Exhibit E

Structural Analysis Report

AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by

telamon
Tower Engineering PLLC

Structural Analysis Report

Structure	:	**151 ft Monopine**
ATC Site Name	:	**Winchester PCS CT,CT**
ATC Site Number	:	**413849**
Engineering Number	:	**14099859_C3_04**
Proposed Carrier	:	**T-MOBILE**
Carrier Site Name	:	**CTNH392_AmericanTower_Monopine_Winsted**
Carrier Site Number	:	**CTNH392A**
Site Location	:	**32 Norfolk Road** **WINSTED, CT 06098-2227** **41.94022438, -73.09588794**
County	:	**Litchfield**
Date	:	**April 29, 2022**
Max Usage	:	**65%**
Result	:	**Pass**

Prepared By:

Josh Stone
CLS

Reviewed By:

STATE OF CONNECTICUT
WILLIAM HOLT
PEN.35568
LICENSED PROFESSIONAL ENGINEER

William Holt, PE
Director of Engineering
License No. 35568 Expires: 01/31/2023

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 151 ft Monopine to reflect the change in loading by T-MOBILE.

Supporting Documents

Tower Drawings	EEI Project #15692, dated November 19, 2008
Foundation Drawing	EEI Project #15692, dated November 19, 2008
Geotechnical Report	Terracon Project #J2085192, dated October 31, 2008
Mount Analysis	ATC Project #14099859_C8_01, dated April 21, 2022

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:	114 mph (3-second gust)
Basic Wind Speed w/ Ice:	50 mph (3-second gust) w/ 1.00" radial ice concurrent
Code:	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 1
Topographic Category:	1
Spectral Response:	Ss = 0.17, S_1 = 0.05
Site Class:	D - Stiff Soil - Default

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	Equipment	Mount Type	Lines	Carrier
148.0	1	VZW Unused Reserve (24990 sqin)	T-Arm	(18) 1 5/8" Coax	VERIZON WIRELESS
	6	Amphenol Antel LPA-171063-12CF-EDIN-X			
	3	Antel BXA-70063/6CF_			
	2	Antel LPA-80063/6CF			
	4	Antel LPA-80080/6CF ___			
137.0	3	CCI TPA65R-BU8D	T-Arm	(1) 0.39" (10mm) Fiber Trunk (3) 0.92" (23.4mm) Cable (2) 2 1/2" conduit	AT&T MOBILITY
	1	Raycap DC9-48-60-24-8C-EV			
	3	Ericsson RRUS 4449 B5, B12			
	3	Ericsson RRUS 4478 B14			
	3	Ericsson RRUS 8843 B2, B66A			
	3	CCI DMP65R-BU8D			

Equipment to be Removed

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
No loading was considered as removed as part of this analysis.					

Proposed Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
127.0	1	Ceragon FibeAir IP-20C	Sector Frame	(3) 1.99" (50.7mm) Hybrid (4) 1/2" Coax	T-MOBILE
	3	Ericsson 4460 BAND 2/25			
	3	Ericsson 4480 BAND 71			
	1	Andrew VHLP2-11W-2GR			
	3	Ericsson AIR 6419 B41			
	3	RFS APXVAALL24 43-U-NA20			

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

Install proposed lines inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	37%	Pass
Shaft	56%	Pass
Base Plate	20%	Pass

Foundations

Reaction Component	Original Design Reactions	Analysis Reactions	% of Design
Moment (Kips-Ft)	9136.4	5963.1	65%
Shear (Kips)	82.1	52.1	63%

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

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
127.0	Ceragon FibeAir IP-20C	T-MOBILE	0.921	0.850
	Ericsson 4460 BAND 2/25			
	RFS APXVAALL24 43-U-NA20			
	Andrew VHLP2-11W-2GR			
	Ericsson AIR 6419 B41			
	Ericsson 4480 BAND 71			

***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.

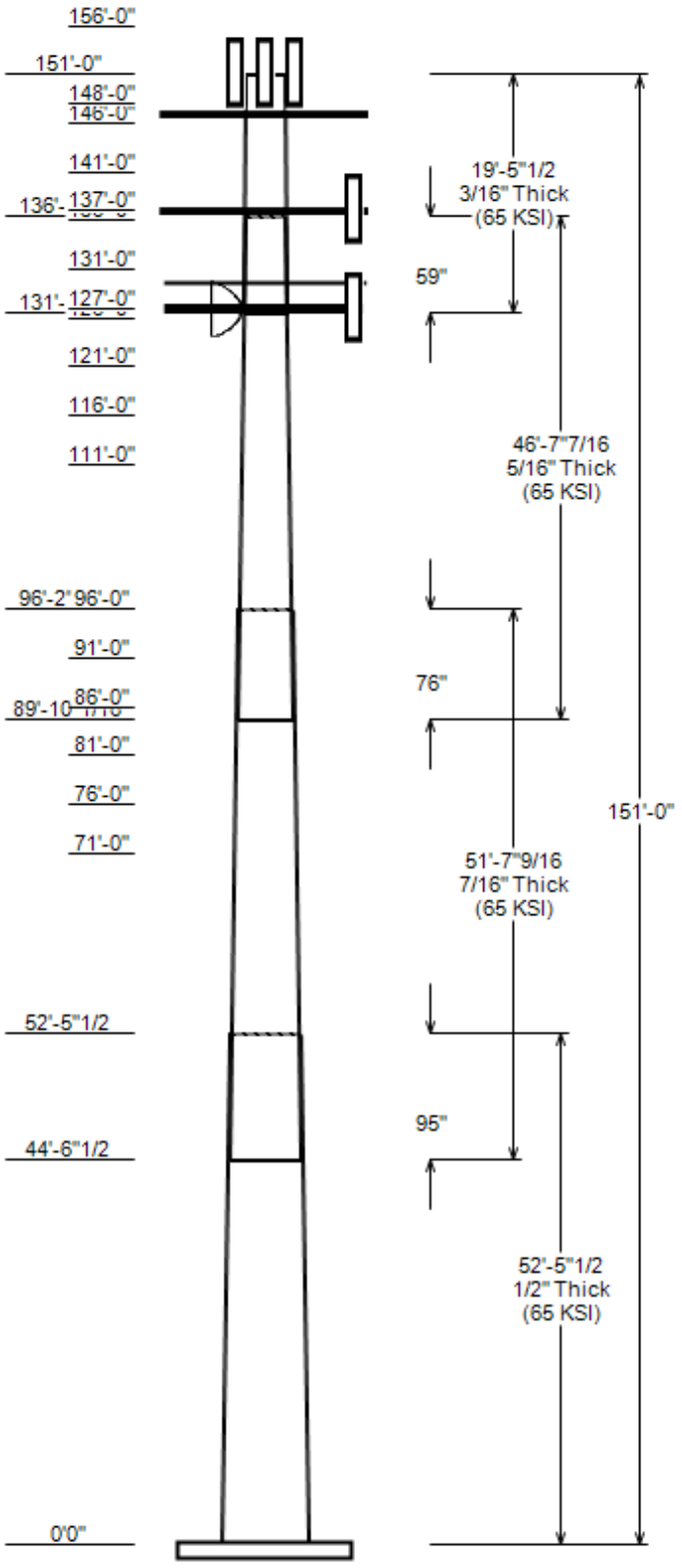
All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with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

JOB INFORMATION

Asset :	413849, Winchester PCS CT	Height :	151 ft
Client :	T-MOBILE	Base Width :	71
Code :	ANSI/TIA-222-H	Shape :	18 Sides



SITE PARAMETERS

Nominal Wind: 114 mph wind with no ice **Topo Category:** 1

Ice Wind: 50 mph wind with 1" radial **Topo Method:** Method 1

Base Elev (ft): 0.00 **Taper :** 0.29100(In/ft) **Topo Feature:**

Structure Class: II **Exposure :** B **S_s :** 0.167 **S_1** : 0.054

SECTION PROPERTIES

Shaft Section	Length (ft)	Diameter (in) Across Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	52.460	55.76	71.00	0.500		0.000	18 Sides	65
2	51.630	43.93	58.93	0.438	Slip Joint	95.000	18 Sides	65
3	46.620	32.85	46.40	0.312	Slip Joint	76.000	18 Sides	65
4	19.457	29.00	34.65	0.188	Slip Joint	59.000	18 Sides	65

DISCRETE APPURTENANCE

Attach Elev (ft)	Force Elev (ft)	Qty	Description
156.0	156.0	1	Pine Branches
151.0	151.0	1	Pine Branches
148.0	149.0	6	Amphenol Antel LPA-171063-12CF
148.0	149.0	3	Antel BXA-70063/6CF_
148.0	149.0	4	Antel LPA-80080/6CF ___
148.0	149.0	2	Antel LPA-80063/6CF
148.0	148.0	1	VZW Unused Reserve (24990 sqin
147.0	147.0	3	Generic Flat T-Arm
146.0	146.0	1	Pine Branches
141.0	141.0	1	Pine Branches
137.0	137.0	3	Ericsson RRUS 8843 B2, B66A
137.0	137.0	3	Ericsson RRUS 4478 B14
137.0	137.0	3	Ericsson RRUS 4449 B5, B12
137.0	137.0	1	Raycap DC9-48-60-24-8C-EV
137.0	137.0	3	Generic Round T-Arm
137.0	137.0	3	CCI DMP65R-BU8D
137.0	137.0	3	CCI TPA65R-BU8D
136.0	136.0	1	Pine Branches
131.0	131.0	1	Pine Branches
127.0	127.0	1	Ceragon FibeAir IP-20C
127.0	127.0	3	Ericsson 4460 BAND 2/25
127.0	127.0	3	Ericsson 4480 BAND 71
127.0	127.0	1	Andrew VHLP2-11W-2GR
127.0	127.0	3	Ericsson AIR 6419 B41
127.0	127.0	3	Generic Round Sector Frame
127.0	127.0	3	RFS APXVAALL24 43-U-NA20
126.0	126.0	1	Pine Branches
121.0	121.0	1	Pine Branches
116.0	116.0	1	Pine Branches
111.0	111.0	1	Pine Branches
96.0	96.0	1	Pine Branches
91.0	91.0	1	Pine Branches
86.0	86.0	1	Pine Branches
81.0	81.0	1	Pine Branches
76.0	76.0	1	Pine Branches
71.0	71.0	1	Pine Branches

LINEAR APPURTENANCE

Elev From (ft)	Elev To (ft)	Description	Exp To Wind
0.0	148.0	1 5/8" Coax	No
0.0	137.0	2 1/2" conduit	No

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JOB INFORMATION

Asset :	413849, Winchester PCS CT	Height :	151 ft
Client :	T-MOBILE	Base Width :	71
Code :	ANSI/TIA-222-H	Shape :	18 Sides

LINEAR APPURTENANCE

Elev From (ft)	Elev To (ft)	Description	Exp To Wind
0.0	137.0	0.92" (23.4mm) Cable	No
0.0	137.0	0.39" (10mm) Fiber Trunk	No
0.0	127.0	1/2" Coax	No
0.0	127.0	1.99" (50.7mm) Hybrid	No

LOAD CASES

1.2D + 1.0W	114 mph wind with no ice
0.9D + 1.0W	114 mph wind with no ice
1.2D + 1.0Di + 1.0Wi	50 mph wind with 1" radial ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	60 mph Wind with No Ice

REACTIONS

Load Case	Moment (kip-ft)	Shear (Kip)	Axial (Kip)
1.2D + 1.0W	5963.10	52.10	71.62
0.9D + 1.0W	5928.09	52.08	53.70
1.2D + 1.0Di + 1.0Wi	1681.96	14.86	91.21
1.2D + 1.0Ev + 1.0Eh	238.76	2.06	71.26
0.9D - 1.0Ev + 1.0Eh	237.12	2.06	49.85
1.0D + 1.0W	1472.89	12.91	59.73

DISH DEFLECTIONS

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	127.00	11.054	0.850

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ANALYSIS PARAMETERS

Location:	Litchfield County,CT	**Height:**	151 ft
Type and Shape:	Taper, 18 Sides	**Base Diameter:**	71.00 in
Manufacturer:	EEI	**Top Diameter:**	29.00 in
K_d (non-service):	0.95	**Taper:**	0.2910 in/ft
K_e:	0.96	**Rotation:**	0.000°

ICE & WIND PARAMETERS

Exposure Category:	B	**Design Wind Speed w/o Ice:**	114 mph
Risk Category:	II	**Design Wind Speed w/Ice:**	50 mph
Topo Factor Procedure:	Method 1	**Operational Wind Speed:**	60 mph
Topographic Category:	1	**Design Ice Thickness:**	1.00 in
Crest Height:	0 ft	**HMSL:**	1143.00 ft

SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method				
Site Class:	D - Stiff Soil			**Period Based on Rayleigh Method (sec):**	1.67
T_L (sec):	6	**P:**	1	**C_s:**	0.035
S_s:	0.167	**S_1:**	0.054	**C_s Max:**	0.035
F_a:	1.600	**F_v:**	2.400	**C_s Min:**	0.030
S_{ds}:	0.178	**S_{d1}:**	0.086		

LOAD CASES

1.2D + 1.0W	114 mph wind with no ice
0.9D + 1.0W	114 mph wind with no ice
1.2D + 1.0Di + 1.0Wi	50 mph wind with 1" radial ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	60 mph Wind with No Ice

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SHAFT SECTION PROPERTIES

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (in)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
									111.8							33,828.4			
1-18	52.46	0.5000	65		0.00	17,813	71.00	0.000	8	70,255.7	23.28	142.00	55.76	52.46	87.69		17.90	111.51	0.2906
2-18	51.63	0.4375	65	Slip	95.00	12,440	58.93	44.540	81.22	35,113.8	21.99	134.70	43.93	96.17	60.39	14,434.2	15.94	100.41	0.2906
3-18	46.62	0.3125	65	Slip	76.00	6,185	46.40	89.840	45.71	12,264.0	24.42	148.47	32.85	136.46	32.27	4,316.7	16.77	105.12	0.2906
								131.54								1,798.5			
4-18	19.46	0.1875	65	Slip	59.00	1,247	34.65	3	20.51	3,078.4	30.83	184.82	29.00	151.00	17.15		25.51	154.67	0.2906
				Shaft Weight		37,685													

DISCRETE APPURTENANCE PROPERTIES

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor
156.00	Pine Branches	1	1.00	0.000	600.00	46.800	1.00	879.33	68.588	1.00
151.00	Pine Branches	1	1.00	0.000	600.00	46.800	1.00	879.33	68.588	1.00
148.00	VZW Unused Reserve (24990 sqin	1	0.80	0.000	2082.50	173.542	0.90	3050.05	254.171	0.90
148.00	Antel LPA-80080/6CF ___	4	0.80	1.000	21.00	8.628	0.74	142.36	5.087	0.74
148.00	Antel LPA-80063/6CF	2	0.80	1.000	27.00	9.593	0.95	209.50	10.480	0.95
148.00	Antel BXA-70063/6CF_	3	0.80	1.000	17.00	7.569	0.74	111.31	9.408	0.74
148.00	Amphenol Antel LPA-171063-12CF	6	0.80	1.000	11.50	6.050	0.74	111.55	7.689	0.74
147.00	Generic Flat T-Arm	3	0.75	0.000	312.50	12.900	0.67	486.61	18.350	0.67
146.00	Pine Branches	1	1.00	0.000	600.00	46.800	1.00	878.39	68.514	1.00
141.00	Pine Branches	1	1.00	0.000	600.00	46.800	1.00	877.41	68.438	1.00
137.00	CCI DMP65R-BU8D	3	0.80	0.000	95.70	17.871	0.63	320.66	20.310	0.63
137.00	CCI TPA65R-BU8D	3	0.80	0.000	82.50	18.089	0.63	310.71	20.533	0.63
137.00	Ericsson RRUS 4449 B5, B12	3	0.80	0.000	71.00	1.969	0.50	113.66	2.586	0.50
137.00	Ericsson RRUS 8843 B2, B66A	3	0.80	0.000	72.00	1.639	0.50	112.57	2.198	0.50
137.00	Raycap DC9-48-60-24-8C-EV	1	0.80	0.000	16.00	4.788	0.50	101.45	5.762	0.50
137.00	Generic Round T-Arm	3	0.75	0.000	312.50	9.700	0.67	485.41	15.157	0.67
137.00	Ericsson RRUS 4478 B14	3	0.80	0.000	59.90	1.842	0.50	96.50	2.436	0.50
136.00	Pine Branches	1	1.00	0.000	600.00	46.800	1.00	876.41	68.360	1.00
131.00	Pine Branches	1	1.00	0.000	600.00	46.800	1.00	875.37	68.279	1.00
127.00	RFS APXVAALL24 43-U-NA20	3	0.80	0.000	122.80	20.243	0.63	378.61	22.679	0.63
127.00	Andrew VHLP2-11W-2GR	1	1.00	0.000	25.00	4.610	1.00	88.20	5.441	1.00
127.00	Ericsson AIR 6419 B41	3	0.80	0.000	83.30	6.322	0.63	182.70	7.433	0.63
127.00	Generic Round Sector Frame	3	0.75	0.000	300.00	14.400	0.75	541.57	25.271	0.75
127.00	Ericsson 4480 BAND 71	3	0.80	0.000	81.00	2.878	0.50	130.99	3.615	0.50
127.00	Ericsson 4460 BAND 2/25	3	0.80	0.000	109.00	2.564	0.50	167.05	3.256	0.50
127.00	Ceragon FibeAir IP-20C	1	0.80	0.000	14.30	0.690	0.50	27.25	1.058	0.50
126.00	Pine Branches	1	1.00	0.000	600.00	46.800	1.00	874.30	68.195	1.00
121.00	Pine Branches	1	1.00	0.000	600.00	46.800	1.00	873.19	68.109	1.00
116.00	Pine Branches	1	1.00	0.000	600.00	46.800	1.00	872.03	68.018	1.00
111.00	Pine Branches	1	1.00	0.000	600.00	46.800	1.00	870.83	67.925	1.00
96.00	Pine Branches	1	1.00	0.000	600.00	46.800	1.00	866.91	67.619	1.00
91.00	Pine Branches	1	1.00	0.000	600.00	46.800	1.00	865.48	67.507	1.00
86.00	Pine Branches	1	1.00	0.000	600.00	46.800	1.00	863.97	67.390	1.00
81.00	Pine Branches	1	1.00	0.000	600.00	46.800	1.00	862.39	67.266	1.00
76.00	Pine Branches	1	1.00	0.000	600.00	46.800	1.00	860.71	67.135	1.00
71.00	Pine Branches	1	1.00	0.000	600.00	46.800	1.00	858.93	66.996	1.00
Totals	Num Loadings: 36	71			17,102.40			29,174.72		

LINEAR APPURTENANCE PROPERTIES

Load Case Azimuth (deg) : _

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax/ Row	Dist Between Rows(in)	Dist Between Cols(in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	148.00	18	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	VERIZON WIREL
0.00	137.00	3	0.92" (23.4mm) Cable	0.92	0.89	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	137.00	2	2 1/2" conduit	2.88	5.79	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	137.00	1	0.39" (10mm) Fiber Tr	0.39	0.06	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	127.00	4	1/2" Coax	0.63	0.15	N	0	0	0	0	0	N	T-MOBILE
0.00	127.00	3	1.99" (50.7mm) Hybrid	1.99	1.9	N	0	0	0	0	0	N	T-MOBILE

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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		0.5000	71.000	111.879	70,255.70	23.28	142.00	74	1949.0	0.0	0.0
5.00		0.5000	69.547	109.574	66,001.30	22.76	139.09	74.6	1869.2	0.0	1,883.9
10.00		0.5000	68.094	107.268	61,922.20	22.25	136.19	75.2	1791.1	0.0	1,844.7
15.00		0.5000	66.642	104.963	58,014.80	21.74	133.28	75.8	1714.6	0.0	1,805.4
20.00		0.5000	65.189	102.657	54,275.20	21.23	130.38	76.4	1639.9	0.0	1,766.2
25.00		0.5000	63.736	100.352	50,700.00	20.71	127.47	77	1566.8	0.0	1,727.0
30.00		0.5000	62.283	98.046	47,285.20	20.20	124.57	77.6	1495.3	0.0	1,687.8
35.00		0.5000	60.830	95.741	44,027.40	19.69	121.66	78.2	1425.6	0.0	1,648.5
40.00		0.5000	59.378	93.435	40,922.70	19.18	118.76	78.8	1357.4	0.0	1,609.3
44.54	Bot - Section 2	0.5000	58.057	91.340	38,231.40	18.71	116.11	79.4	1297.0	0.0	1,428.3
45.00		0.5000	57.925	91.130	37,967.60	18.66	115.85	79.4	1291.0	0.0	267.8
50.00		0.5000	56.472	88.824	35,158.20	18.15	112.94	80.1	1226.2	0.0	2,892.5
52.46	Top - Section 1	0.4375	56.632	78.031	31,132.10	21.06	129.45	76.6	1082.7	0.0	1,396.1
55.00		0.4375	55.894	77.006	29,921.60	20.76	127.76	77	1054.4	0.0	670.0
60.00		0.4375	54.441	74.988	27,631.10	20.18	124.44	77.7	999.7	0.0	1,293.0
65.00		0.4375	52.989	72.971	25,460.60	19.59	121.12	78.4	946.4	0.0	1,258.7
70.00		0.4375	51.536	70.954	23,406.80	19.01	117.80	79	894.6	0.0	1,224.4
71.00		0.4375	51.245	70.550	23,009.80	18.89	117.13	79.2	884.4	0.0	240.8
75.00		0.4375	50.083	68.936	21,466.50	18.42	114.48	79.7	844.2	0.0	949.3
76.00		0.4375	49.792	68.533	21,091.80	18.30	113.81	79.9	834.3	0.0	233.9
80.00		0.4375	48.630	66.919	19,636.60	17.84	111.15	80.4	795.3	0.0	921.8
81.00		0.4375	48.340	66.516	19,283.60	17.72	110.49	80.6	785.7	0.0	227.0
85.00		0.4375	47.177	64.902	17,913.70	17.25	107.83	81.1	747.9	0.0	894.4
86.00		0.4375	46.887	64.498	17,581.70	17.13	107.17	81.2	738.6	0.0	220.2
89.84	Bot - Section 3	0.4375	45.771	62.949	16,344.90	16.68	104.62	81.8	703.4	0.0	832.7
90.00		0.4375	45.725	62.885	16,294.70	16.67	104.51	81.8	701.9	0.0	59.1
91.00		0.4375	45.434	62.481	15,983.10	16.55	103.85	81.9	692.9	0.0	368.2
95.00		0.4375	44.272	60.867	14,776.30	16.08	101.19	82.5	657.4	0.0	1,449.2
96.00		0.4375	43.981	60.464	14,484.40	15.96	100.53	82.6	648.7	0.0	356.4
96.17	Top - Section 2	0.3125	44.556	43.882	10,852.70	23.38	142.58	73.9	479.8	0.0	61.5
100.00		0.3125	43.444	42.780	10,054.90	22.75	139.02	74.6	455.9	0.0	564.2
105.00		0.3125	41.991	41.339	9,072.70	21.93	134.37	75.6	425.6	0.0	715.6
110.00		0.3125	40.538	39.898	8,156.60	21.11	129.72	76.6	396.3	0.0	691.1
111.00		0.3125	40.248	39.609	7,981.20	20.95	128.79	76.8	390.6	0.0	135.3
115.00		0.3125	39.086	38.457	7,304.40	20.29	125.07	77.5	368.1	0.0	531.3
116.00		0.3125	38.795	38.168	7,141.40	20.13	124.14	77.7	362.6	0.0	130.4
120.00		0.3125	37.633	37.016	6,513.70	19.47	120.42	78.5	340.9	0.0	511.7
121.00		0.3125	37.342	36.728	6,362.80	19.31	119.50	78.7	335.6	0.0	125.5
125.00		0.3125	36.180	35.575	5,782.30	18.65	115.78	79.5	314.8	0.0	492.1
126.00		0.3125	35.889	35.287	5,642.90	18.49	114.85	79.7	309.7	0.0	120.6
127.00		0.3125	35.599	34.998	5,505.70	18.32	113.92	79.8	304.6	0.0	119.6
130.00		0.3125	34.727	34.134	5,107.70	17.83	111.13	80.4	289.7	0.0	352.9
131.00		0.3125	34.437	33.846	4,979.40	17.67	110.20	80.6	284.8	0.0	115.7
131.54	Bot - Section 4	0.3125	34.279	33.689	4,910.60	17.58	109.69	80.7	282.2	0.0	62.4
135.00		0.3125	33.274	32.693	4,487.80	17.01	106.48	81.4	265.6	0.0	628.1
136.00		0.3125	32.984	32.405	4,370.10	16.85	105.55	81.6	261.0	0.0	178.2
136.46	Top - Section 3	0.1875	33.225	19.661	2,711.30	29.48	177.20	66.7	160.7	0.0	81.5
137.00		0.1875	33.068	19.567	2,672.80	29.33	176.36	66.9	159.2	0.0	36.0
140.00		0.1875	32.197	19.049	2,465.80	28.51	171.72	67.9	150.8	0.0	197.1
141.00		0.1875	31.906	18.876	2,399.30	28.24	170.17	68.2	148.1	0.0	64.5
145.00		0.1875	30.744	18.184	2,145.10	27.15	163.97	69.5	137.4	0.0	252.2
146.00		0.1875	30.453	18.011	2,084.50	26.88	162.42	69.8	134.8	0.0	61.6
147.00		0.1875	30.163	17.838	2,025.00	26.60	160.87	70.1	132.2	0.0	61.0
148.00		0.1875	29.872	17.665	1,966.70	26.33	159.32	70.4	129.7	0.0	60.4
150.00		0.1875	29.291	17.320	1,853.50	25.78	156.22	71.1	124.6	0.0	119.0
151.00		0.1875	29.000	17.147	1,798.50	25.51	154.67	71.4	122.1	0.0	58.6
									Totals:		37,684.7

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Load Case: 1.2D + 1.0W 114 mph wind with no ice 22 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	-71.62	-52.10	0.00	-5,963.1	0.00	5,963.10	7,453.69	1,963.48	12,502.68	10,820.43	0	0	0.561
5.00	-69.04	-51.74	0.00	-5,702.6	0.00	5,702.62	7,359.51	1,923.02	11,992.75	10,462.01	0.06	-0.12	0.555
10.00	-66.51	-51.38	0.00	-5,444.0	0.00	5,443.95	7,262.84	1,882.56	11,493.44	10,105.78	0.25	-0.24	0.549
15.00	-64.02	-51.02	0.00	-5,187.1	0.00	5,187.07	7,163.66	1,842.10	11,004.75	9,751.97	0.57	-0.36	0.542
20.00	-61.59	-50.67	0.00	-4,932.0	0.00	4,931.97	7,061.99	1,801.64	10,526.68	9,400.81	1.01	-0.48	0.534
25.00	-59.19	-50.32	0.00	-4,678.6	0.00	4,678.63	6,957.81	1,761.18	10,059.22	9,052.53	1.59	-0.61	0.526
30.00	-56.85	-49.97	0.00	-4,427.0	0.00	4,427.04	6,851.13	1,720.71	9,602.38	8,707.34	2.3	-0.74	0.518
35.00	-54.55	-49.60	0.00	-4,177.2	0.00	4,177.22	6,741.95	1,680.25	9,156.15	8,365.48	3.14	-0.87	0.508
40.00	-52.31	-49.24	0.00	-3,929.2	0.00	3,929.22	6,630.28	1,639.79	8,720.54	8,027.17	4.12	-1	0.498
44.54	-50.35	-49.03	0.00	-3,705.5	0.00	3,705.52	6,526.63	1,603.02	8,333.92	7,723.03	5.13	-1.12	0.488
45.00	-49.95	-48.82	0.00	-3,683.1	0.00	3,683.13	6,516.10	1,599.33	8,295.55	7,692.64	5.24	-1.13	0.487
50.00	-46.19	-48.47	0.00	-3,439.0	0.00	3,439.03	6,399.42	1,558.87	7,881.17	7,362.11	6.5	-1.27	0.475
52.46	-44.36	-48.24	0.00	-3,319.8	0.00	3,319.80	5,381.44	1,369.44	6,950.77	6,222.71	7.17	-1.33	0.543
55.00	-43.37	-47.94	0.00	-3,197.3	0.00	3,197.26	5,335.01	1,351.45	6,769.42	6,087.38	7.9	-1.4	0.535
60.00	-41.50	-47.52	0.00	-2,957.6	0.00	2,957.56	5,241.73	1,316.05	6,419.43	5,823.03	9.44	-1.55	0.517
65.00	-39.67	-47.10	0.00	-2,720.0	0.00	2,719.95	5,145.95	1,280.64	6,078.73	5,561.60	11.15	-1.69	0.498
70.00	-37.93	-46.82	0.00	-2,484.5	0.00	2,484.46	5,047.66	1,245.24	5,747.32	5,303.31	13	-1.84	0.477
71.00	-36.87	-45.20	0.00	-2,437.6	0.00	2,437.64	5,027.70	1,238.16	5,682.15	5,252.05	13.39	-1.87	0.473
75.00	-35.51	-44.96	0.00	-2,256.8	0.00	2,256.85	4,946.88	1,209.84	5,425.19	5,048.40	15.01	-1.99	0.456
76.00	-34.47	-43.31	0.00	-2,211.9	0.00	2,211.89	4,926.42	1,202.75	5,361.88	4,997.84	15.42	-2.02	0.451
80.00	-33.15	-43.07	0.00	-2,038.6	0.00	2,038.64	4,843.59	1,174.43	5,112.36	4,797.08	17.16	-2.13	0.433
81.00	-32.13	-41.39	0.00	-1,995.6	0.00	1,995.57	4,822.63	1,167.35	5,050.91	4,747.27	17.61	-2.16	0.428
85.00	-30.85	-41.15	0.00	-1,830.0	0.00	1,830.00	4,737.80	1,139.03	4,808.82	4,549.58	19.47	-2.27	0.410
86.00	-29.84	-39.45	0.00	-1,788.8	0.00	1,788.85	4,716.34	1,131.95	4,749.22	4,500.56	19.95	-2.3	0.405
89.84	-28.65	-39.25	0.00	-1,637.4	0.00	1,637.36	4,633.02	1,104.76	4,523.84	4,313.86	21.85	-2.41	0.387
90.00	-28.56	-39.20	0.00	-1,631.1	0.00	1,631.08	4,629.51	1,103.62	4,514.56	4,306.14	21.93	-2.41	0.386
91.00	-27.39	-37.46	0.00	-1,591.9	0.00	1,591.88	4,607.56	1,096.54	4,456.83	4,257.95	22.44	-2.44	0.381
95.00	-25.45	-37.18	0.00	-1,442.1	0.00	1,442.06	4,518.73	1,068.22	4,229.60	4,066.96	24.53	-2.55	0.361
96.00	-24.32	-35.55	0.00	-1,404.9	0.00	1,404.88	4,492.15	1,061.14	4,173.72	4,015.98	25.06	-2.58	0.356
96.17	-24.21	-35.39	0.00	-1,398.7	0.00	1,398.72	2,918.81	770.13	3,077.52	2,659.20	25.16	-2.58	0.536
100.00	-23.31	-35.02	0.00	-1,263.3	0.00	1,263.28	2,873.87	750.78	2,924.80	2,551.99	27.27	-2.68	0.505
105.00	-22.16	-34.60	0.00	-1,088.2	0.00	1,088.17	2,812.94	725.49	2,731.11	2,413.14	30.17	-2.85	0.461
110.00	-21.08	-34.32	0.00	-915.2	0.00	915.18	2,749.50	700.20	2,544.05	2,275.90	33.23	-3	0.412
111.00	-20.21	-32.51	0.00	-880.8	0.00	880.85	2,736.52	695.15	2,507.43	2,248.66	33.87	-3.04	0.401
115.00	-19.38	-32.28	0.00	-750.8	0.00	750.84	2,683.57	674.91	2,363.62	2,140.48	36.46	-3.15	0.360
116.00	-18.52	-30.44	0.00	-718.6	0.00	718.56	2,670.09	669.86	2,328.34	2,113.63	37.12	-3.18	0.349
120.00	-17.72	-30.21	0.00	-596.8	0.00	596.81	2,615.14	649.63	2,189.84	2,007.11	39.83	-3.29	0.306
121.00	-16.88	-28.35	0.00	-566.6	0.00	566.60	2,601.15	644.57	2,155.88	1,980.71	40.53	-3.31	0.294
125.00	-16.11	-28.12	0.00	-453.2	0.00	453.20	2,544.21	624.34	2,022.69	1,876.03	43.34	-3.4	0.250
126.00	-15.30	-26.35	0.00	-425.1	0.00	425.08	2,529.72	619.28	1,990.05	1,850.11	44.05	-3.42	0.238
127.00	-12.72	-23.37	0.00	-398.7	0.00	398.73	2,515.13	614.22	1,957.68	1,824.28	44.77	-3.44	0.225
130.00	-12.18	-23.19	0.00	-328.6	0.00	328.63	2,470.77	599.05	1,862.17	1,747.45	46.96	-3.5	0.194
131.00	-11.39	-21.42	0.00	-305.4	0.00	305.44	2,455.79	593.99	1,830.86	1,722.05	47.69	-3.52	0.183
131.54	-11.30	-21.27	0.00	-293.8	0.00	293.80	2,447.60	591.24	1,813.96	1,708.30	48.09	-3.53	0.178
135.00	-10.42	-21.05	0.00	-220.3	0.00	220.29	2,394.84	573.76	1,708.29	1,621.60	50.67	-3.58	0.142
136.00	-9.56	-19.26	0.00	-199.2	0.00	199.24	2,379.35	568.70	1,678.31	1,596.78	51.42	-3.59	0.130
136.46	-9.45	-19.21	0.00	-190.4	0.00	190.38	1,180.68	345.05	1,029.57	804.33	51.76	-3.6	0.248
137.00	-7.05	-16.14	0.00	-180.0	0.00	180.00	1,178.13	343.41	1,019.82	798.76	52.17	-3.6	0.234
140.00	-6.76	-15.98	0.00	-131.6	0.00	131.59	1,163.42	334.31	966.47	767.76	54.45	-3.65	0.179
141.00	-6.06	-14.05	0.00	-115.6	0.00	115.61	1,158.32	331.27	949.00	757.42	55.22	-3.67	0.160
145.00	-5.69	-13.86	0.00	-59.4	0.00	59.39	1,136.92	319.13	880.73	716.02	58.31	-3.71	0.090
146.00	-5.00	-12.02	0.00	-45.5	0.00	45.54	1,131.32	316.10	864.07	705.68	59.09	-3.72	0.070
147.00	-3.83	-11.16	0.00	-33.5	0.00	33.52	1,125.61	313.06	847.56	695.34	59.87	-3.72	0.053
148.00	-1.42	-3.70	0.00	-19.8	0.00	19.77	1,119.81	310.03	831.21	685.01	60.65	-3.73	0.030
150.00	-1.28	-3.61	0.00	-12.4	0.00	12.37	1,107.91	303.96	798.98	664.38	62.21	-3.73	0.020
151.00	0.00	-3.52	0.00	-8.8	0.00	8.76	1,101.81	300.92	783.11	654.08	62.99	-3.73	0.014

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Load Case: 0.9D + 1.0W 114 mph wind with no ice 22 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	-53.70	-52.08	0.00	-5,928.1	0.00	5,928.09	7,453.69	1,963.48	12,502.68	10,820.43	0	0	0.556
5.00	-51.74	-51.68	0.00	-5,667.7	0.00	5,667.72	7,359.51	1,923.02	11,992.75	10,462.01	0.06	-0.12	0.549
10.00	-49.82	-51.29	0.00	-5,409.3	0.00	5,409.32	7,262.84	1,882.56	11,493.44	10,105.78	0.25	-0.24	0.543
15.00	-47.93	-50.90	0.00	-5,152.9	0.00	5,152.89	7,163.66	1,842.10	11,004.75	9,751.97	0.57	-0.36	0.536
20.00	-46.07	-50.52	0.00	-4,898.4	0.00	4,898.39	7,061.99	1,801.64	10,526.68	9,400.81	1.01	-0.48	0.528
25.00	-44.25	-50.14	0.00	-4,645.8	0.00	4,645.80	6,957.81	1,761.18	10,059.22	9,052.53	1.58	-0.61	0.520
30.00	-42.47	-49.76	0.00	-4,395.1	0.00	4,395.11	6,851.13	1,720.71	9,602.38	8,707.34	2.28	-0.73	0.512
35.00	-40.72	-49.37	0.00	-4,146.3	0.00	4,146.32	6,741.95	1,680.25	9,156.15	8,365.48	3.12	-0.86	0.503
40.00	-39.02	-48.99	0.00	-3,899.5	0.00	3,899.47	6,630.28	1,639.79	8,720.54	8,027.17	4.09	-0.99	0.493
44.54	-37.53	-48.77	0.00	-3,676.9	0.00	3,676.92	6,526.63	1,603.02	8,333.92	7,723.03	5.1	-1.11	0.483
45.00	-37.22	-48.55	0.00	-3,654.6	0.00	3,654.65	6,516.10	1,599.33	8,295.55	7,692.64	5.21	-1.12	0.482
50.00	-34.38	-48.20	0.00	-3,411.9	0.00	3,411.90	6,399.42	1,558.87	7,881.17	7,362.11	6.45	-1.26	0.470
52.46	-33.00	-47.96	0.00	-3,293.3	0.00	3,293.34	5,381.44	1,369.44	6,950.77	6,222.71	7.12	-1.32	0.537
55.00	-32.23	-47.65	0.00	-3,171.5	0.00	3,171.52	5,335.01	1,351.45	6,769.42	6,087.38	7.84	-1.39	0.528
60.00	-30.80	-47.21	0.00	-2,933.3	0.00	2,933.28	5,241.73	1,316.05	6,419.43	5,823.03	9.38	-1.54	0.511
65.00	-29.41	-46.77	0.00	-2,697.2	0.00	2,697.22	5,145.95	1,280.64	6,078.73	5,561.60	11.07	-1.68	0.492
70.00	-28.09	-46.49	0.00	-2,463.4	0.00	2,463.35	5,047.66	1,245.24	5,747.32	5,303.31	12.91	-1.83	0.471
71.00	-27.29	-44.87	0.00	-2,416.8	0.00	2,416.85	5,027.70	1,238.16	5,682.15	5,252.05	13.3	-1.86	0.467
75.00	-26.26	-44.63	0.00	-2,237.4	0.00	2,237.38	4,946.88	1,209.84	5,425.19	5,048.40	14.9	-1.97	0.450
76.00	-25.49	-42.98	0.00	-2,192.8	0.00	2,192.75	4,926.42	1,202.75	5,361.88	4,997.84	15.32	-2	0.445
80.00	-24.49	-42.74	0.00	-2,020.8	0.00	2,020.84	4,843.59	1,174.43	5,112.36	4,797.08	17.04	-2.11	0.428
81.00	-23.72	-41.06	0.00	-1,978.1	0.00	1,978.09	4,822.63	1,167.35	5,050.91	4,747.27	17.49	-2.14	0.423
85.00	-22.75	-40.82	0.00	-1,813.9	0.00	1,813.86	4,737.80	1,139.03	4,808.82	4,549.58	19.33	-2.25	0.405
86.00	-22.00	-39.12	0.00	-1,773.0	0.00	1,773.03	4,716.34	1,131.95	4,749.22	4,500.56	19.81	-2.28	0.400
89.84	-21.10	-38.92	0.00	-1,622.8	0.00	1,622.81	4,633.02	1,104.76	4,523.84	4,313.86	21.69	-2.39	0.382
90.00	-21.03	-38.87	0.00	-1,616.6	0.00	1,616.58	4,629.51	1,103.62	4,514.56	4,306.14	21.77	-2.39	0.381
91.00	-20.16	-37.13	0.00	-1,577.7	0.00	1,577.71	4,607.56	1,096.54	4,456.83	4,257.95	22.27	-2.42	0.376
95.00	-18.70	-36.87	0.00	-1,429.2	0.00	1,429.18	4,518.73	1,068.22	4,229.60	4,066.96	24.35	-2.53	0.357
96.00	-17.87	-35.26	0.00	-1,392.3	0.00	1,392.31	4,492.15	1,061.14	4,173.72	4,015.98	24.88	-2.56	0.352
96.17	-17.78	-35.09	0.00	-1,386.2	0.00	1,386.20	2,918.81	770.13	3,077.52	2,659.20	24.98	-2.56	0.529
100.00	-17.09	-34.71	0.00	-1,251.9	0.00	1,251.92	2,873.87	750.78	2,924.80	2,551.99	27.07	-2.66	0.499
105.00	-16.21	-34.29	0.00	-1,078.4	0.00	1,078.36	2,812.94	725.49	2,731.11	2,413.14	29.94	-2.82	0.455
110.00	-15.39	-34.02	0.00	-906.9	0.00	906.92	2,749.50	700.20	2,544.05	2,275.90	32.99	-2.98	0.406
111.00	-14.75	-32.20	0.00	-872.9	0.00	872.90	2,736.52	695.15	2,507.43	2,248.66	33.62	-3.01	0.396
115.00	-14.12	-31.98	0.00	-744.1	0.00	744.10	2,683.57	674.91	2,363.62	2,140.48	36.19	-3.13	0.355
116.00	-13.49	-30.15	0.00	-712.1	0.00	712.12	2,670.09	669.86	2,328.34	2,113.63	36.85	-3.15	0.344
120.00	-12.88	-29.92	0.00	-591.5	0.00	591.53	2,615.14	649.63	2,189.84	2,007.11	39.54	-3.26	0.302
121.00	-12.27	-28.07	0.00	-561.6	0.00	561.61	2,601.15	644.57	2,155.88	1,980.71	40.22	-3.28	0.290
125.00	-11.69	-27.85	0.00	-449.3	0.00	449.32	2,544.21	624.34	2,022.69	1,876.03	43.01	-3.37	0.246
126.00	-11.10	-26.09	0.00	-421.5	0.00	421.47	2,529.72	619.28	1,990.05	1,850.11	43.72	-3.4	0.234
127.00	-9.21	-23.15	0.00	-395.4	0.00	395.38	2,515.13	614.22	1,957.68	1,824.28	44.44	-3.42	0.222
130.00	-8.81	-22.98	0.00	-325.9	0.00	325.93	2,470.77	599.05	1,862.17	1,747.45	46.6	-3.47	0.192
131.00	-8.24	-21.22	0.00	-303.0	0.00	302.95	2,455.79	593.99	1,830.86	1,722.05	47.33	-3.49	0.181
131.54	-8.16	-21.07	0.00	-291.4	0.00	291.42	2,447.60	591.24	1,813.96	1,708.30	47.73	-3.5	0.175
135.00	-7.51	-20.86	0.00	-218.6	0.00	218.60	2,394.84	573.76	1,708.29	1,621.60	50.28	-3.55	0.139
136.00	-6.89	-19.08	0.00	-197.7	0.00	197.73	2,379.35	568.70	1,678.31	1,596.78	51.03	-3.56	0.128
136.46	-6.80	-19.04	0.00	-189.0	0.00	188.95	1,180.68	345.05	1,029.57	804.33	51.37	-3.57	0.244
137.00	-5.05	-16.01	0.00	-178.7	0.00	178.67	1,178.13	343.41	1,019.82	798.76	51.77	-3.58	0.230
140.00	-4.83	-15.85	0.00	-130.6	0.00	130.65	1,163.42	334.31	966.47	767.76	54.04	-3.62	0.177
141.00	-4.33	-13.94	0.00	-114.8	0.00	114.79	1,158.32	331.27	949.00	757.42	54.8	-3.64	0.157
145.00	-4.06	-13.75	0.00	-59.0	0.00	59.03	1,136.92	319.13	880.73	716.02	57.87	-3.68	0.088
146.00	-3.57	-11.93	0.00	-45.3	0.00	45.29	1,131.32	316.10	864.07	705.68	58.64	-3.69	0.069
147.00	-2.70	-11.08	0.00	-33.4	0.00	33.36	1,125.61	313.06	847.56	695.34	59.41	-3.69	0.052
148.00	-1.00	-3.68	0.00	-19.7	0.00	19.69	1,119.81	310.03	831.21	685.01	60.18	-3.7	0.030
150.00	-0.90	-3.58	0.00	-12.3	0.00	12.34	1,107.91	303.96	798.98	664.38	61.73	-3.7	0.020
151.00	0.00	-3.52	0.00	-8.8	0.00	8.76	1,101.81	300.92	783.11	654.08	62.51	-3.7	0.014

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Load Case: 1.2D + 1.0Di + 1.0Wi		50 mph wind with 1" radial ice			21 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	-91.21	-14.86	0.00	-1,682.0	0.00	1,681.96	7,453.69	1,963.48	12,502.68	10,820.43	0	0	0.168
5.00	-88.39	-14.74	0.00	-1,607.7	0.00	1,607.68	7,359.51	1,923.02	11,992.75	10,462.01	0.02	-0.03	0.166
10.00	-85.59	-14.63	0.00	-1,534.0	0.00	1,533.96	7,262.84	1,882.56	11,493.44	10,105.78	0.07	-0.07	0.164
15.00	-82.81	-14.52	0.00	-1,460.8	0.00	1,460.79	7,163.66	1,842.10	11,004.75	9,751.97	0.16	-0.1	0.161
20.00	-80.08	-14.41	0.00	-1,388.2	0.00	1,388.17	7,061.99	1,801.64	10,526.68	9,400.81	0.29	-0.14	0.159
25.00	-77.40	-14.31	0.00	-1,316.1	0.00	1,316.10	6,957.81	1,761.18	10,059.22	9,052.53	0.45	-0.17	0.157
30.00	-74.77	-14.20	0.00	-1,244.6	0.00	1,244.57	6,851.13	1,720.71	9,602.38	8,707.34	0.65	-0.21	0.154
35.00	-72.18	-14.08	0.00	-1,173.6	0.00	1,173.59	6,741.95	1,680.25	9,156.15	8,365.48	0.89	-0.24	0.151
40.00	-69.65	-13.97	0.00	-1,103.2	0.00	1,103.18	6,630.28	1,639.79	8,720.54	8,027.17	1.16	-0.28	0.148
44.54	-67.39	-13.90	0.00	-1,039.7	0.00	1,039.72	6,526.63	1,603.02	8,333.92	7,723.03	1.45	-0.31	0.145
45.00	-67.01	-13.84	0.00	-1,033.4	0.00	1,033.37	6,516.10	1,599.33	8,295.55	7,692.64	1.48	-0.32	0.145
50.00	-62.94	-13.73	0.00	-964.2	0.00	964.18	6,399.42	1,558.87	7,881.17	7,362.11	1.83	-0.36	0.141
52.46	-60.97	-13.66	0.00	-930.4	0.00	930.41	5,381.44	1,369.44	6,950.77	6,222.71	2.02	-0.37	0.161
55.00	-59.86	-13.56	0.00	-895.7	0.00	895.72	5,335.01	1,351.45	6,769.42	6,087.38	2.22	-0.39	0.158
60.00	-57.72	-13.43	0.00	-827.9	0.00	827.90	5,241.73	1,316.05	6,419.43	5,823.03	2.66	-0.44	0.153
65.00	-55.63	-13.30	0.00	-760.7	0.00	760.74	5,145.95	1,280.64	6,078.73	5,561.60	3.14	-0.48	0.148
70.00	-53.59	-13.21	0.00	-694.2	0.00	694.25	5,047.66	1,245.24	5,747.32	5,303.31	3.66	-0.52	0.142
71.00	-52.27	-12.75	0.00	-681.0	0.00	681.04	5,027.70	1,238.16	5,682.15	5,252.05	3.77	-0.53	0.140
75.00	-50.68	-12.68	0.00	-630.0	0.00	630.02	4,946.88	1,209.84	5,425.19	5,048.40	4.22	-0.56	0.135
76.00	-49.37	-12.21	0.00	-617.3	0.00	617.34	4,926.42	1,202.75	5,361.88	4,997.84	4.34	-0.57	0.134
80.00	-47.82	-12.14	0.00	-568.5	0.00	568.49	4,843.59	1,174.43	5,112.36	4,797.08	4.83	-0.6	0.128
81.00	-46.51	-11.66	0.00	-556.4	0.00	556.36	4,822.63	1,167.35	5,050.91	4,747.27	4.95	-0.61	0.127
85.00	-45.00	-11.58	0.00	-509.7	0.00	509.71	4,737.80	1,139.03	4,808.82	4,549.58	5.47	-0.64	0.122
86.00	-43.71	-11.10	0.00	-498.1	0.00	498.13	4,716.34	1,131.95	4,749.22	4,500.56	5.61	-0.65	0.120
89.84	-42.29	-11.04	0.00	-455.5	0.00	455.50	4,633.02	1,104.76	4,523.84	4,313.86	6.14	-0.67	0.115
90.00	-42.20	-11.02	0.00	-453.7	0.00	453.73	4,629.51	1,103.62	4,514.56	4,306.14	6.16	-0.68	0.115
91.00	-40.73	-10.53	0.00	-442.7	0.00	442.71	4,607.56	1,096.54	4,456.83	4,257.95	6.31	-0.68	0.113
95.00	-38.57	-10.44	0.00	-400.6	0.00	400.61	4,518.73	1,068.22	4,229.60	4,066.96	6.89	-0.71	0.107
96.00	-37.11	-9.98	0.00	-390.2	0.00	390.17	4,492.15	1,061.14	4,173.72	4,015.98	7.04	-0.72	0.106
96.17	-37.02	-9.93	0.00	-388.4	0.00	388.44	2,918.81	770.13	3,077.52	2,659.20	7.07	-0.72	0.159
100.00	-35.93	-9.81	0.00	-350.4	0.00	350.45	2,873.87	750.78	2,924.80	2,551.99	7.66	-0.75	0.150
105.00	-34.55	-9.67	0.00	-301.4	0.00	301.40	2,812.94	725.49	2,731.11	2,413.14	8.47	-0.8	0.137
110.00	-33.22	-9.58	0.00	-253.0	0.00	253.03	2,749.50	700.20	2,544.05	2,275.90	9.33	-0.84	0.123
111.00	-32.03	-9.06	0.00	-243.4	0.00	243.45	2,736.52	695.15	2,507.43	2,248.66	9.51	-0.85	0.120
115.00	-30.99	-8.99	0.00	-207.2	0.00	207.19	2,683.57	674.91	2,363.62	2,140.48	10.23	-0.88	0.109
116.00	-29.81	-8.46	0.00	-198.2	0.00	198.20	2,670.09	669.86	2,328.34	2,113.63	10.42	-0.89	0.105
120.00	-28.80	-8.39	0.00	-164.4	0.00	164.35	2,615.14	649.63	2,189.84	2,007.11	11.18	-0.92	0.093
121.00	-27.63	-7.85	0.00	-156.0	0.00	155.97	2,601.15	644.57	2,155.88	1,980.71	11.37	-0.92	0.090
125.00	-26.65	-7.78	0.00	-124.6	0.00	124.55	2,544.21	624.34	2,022.69	1,876.03	12.16	-0.95	0.077
126.00	-25.48	-7.27	0.00	-116.8	0.00	116.77	2,529.72	619.28	1,990.05	1,850.11	12.36	-0.96	0.073
127.00	-20.99	-6.46	0.00	-109.5	0.00	109.50	2,515.13	614.22	1,957.68	1,824.28	12.56	-0.96	0.068
130.00	-20.31	-6.40	0.00	-90.1	0.00	90.14	2,470.77	599.05	1,862.17	1,747.45	13.17	-0.98	0.060
131.00	-19.16	-5.89	0.00	-83.7	0.00	83.74	2,455.79	593.99	1,830.86	1,722.05	13.37	-0.98	0.057
131.54	-19.04	-5.84	0.00	-80.5	0.00	80.54	2,447.60	591.24	1,813.96	1,708.30	13.48	-0.98	0.055
135.00	-17.99	-5.77	0.00	-60.4	0.00	60.35	2,394.84	573.76	1,708.29	1,621.60	14.2	-1	0.045
136.00	-16.76	-5.26	0.00	-54.6	0.00	54.59	2,379.35	568.70	1,678.31	1,596.78	14.41	-1	0.041
136.46	-16.63	-5.24	0.00	-52.2	0.00	52.17	1,180.68	345.05	1,029.57	804.33	14.51	-1	0.079
137.00	-12.21	-4.46	0.00	-49.3	0.00	49.34	1,178.13	343.41	1,019.82	798.76	14.62	-1.01	0.072
140.00	-11.78	-4.40	0.00	-36.0	0.00	35.96	1,163.42	334.31	966.47	767.76	15.26	-1.02	0.057
141.00	-10.71	-3.85	0.00	-31.6	0.00	31.56	1,158.32	331.27	949.00	757.42	15.47	-1.02	0.051
145.00	-10.15	-3.78	0.00	-16.2	0.00	16.17	1,136.92	319.13	880.73	716.02	16.34	-1.03	0.032
146.00	-9.09	-3.25	0.00	-12.4	0.00	12.39	1,131.32	316.10	864.07	705.68	16.55	-1.04	0.026
147.00	-7.42	-3.00	0.00	-9.1	0.00	9.14	1,125.61	313.06	847.56	695.34	16.77	-1.04	0.020
148.00	-2.21	-1.07	0.00	-5.6	0.00	5.63	1,119.81	310.03	831.21	685.01	16.99	-1.04	0.010
150.00	-1.97	-1.03	0.00	-3.5	0.00	3.50	1,107.91	303.96	798.98	664.38	17.42	-1.04	0.007
151.00	0.00	-0.99	0.00	-2.5	0.00	2.47	1,101.81	300.92	783.11	654.08	17.64	-1.04	0.004

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Load Case: 1.0D + 1.0W 60 mph Wind with No Ice 21 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	-59.73	-12.91	0.00	-1,472.9	0.00	1,472.89	7,453.69	1,963.48	12,502.68	10,820.43	0	0	0.144
5.00	-57.66	-12.81	0.00	-1,408.4	0.00	1,408.35	7,359.51	1,923.02	11,992.75	10,462.01	0.02	-0.03	0.142
10.00	-55.63	-12.72	0.00	-1,344.3	0.00	1,344.29	7,262.84	1,882.56	11,493.44	10,105.78	0.06	-0.06	0.141
15.00	-53.64	-12.63	0.00	-1,280.7	0.00	1,280.70	7,163.66	1,842.10	11,004.75	9,751.97	0.14	-0.09	0.139
20.00	-51.69	-12.53	0.00	-1,217.6	0.00	1,217.57	7,061.99	1,801.64	10,526.68	9,400.81	0.25	-0.12	0.137
25.00	-49.78	-12.44	0.00	-1,154.9	0.00	1,154.91	6,957.81	1,761.18	10,059.22	9,052.53	0.39	-0.15	0.135
30.00	-47.91	-12.35	0.00	-1,092.7	0.00	1,092.70	6,851.13	1,720.71	9,602.38	8,707.34	0.57	-0.18	0.133
35.00	-46.08	-12.26	0.00	-1,031.0	0.00	1,030.95	6,741.95	1,680.25	9,156.15	8,365.48	0.78	-0.21	0.130
40.00	-44.29	-12.16	0.00	-969.7	0.00	969.67	6,630.28	1,639.79	8,720.54	8,027.17	1.02	-0.25	0.128
44.54	-42.70	-12.11	0.00	-914.4	0.00	914.40	6,526.63	1,603.02	8,333.92	7,723.03	1.27	-0.28	0.125
45.00	-42.41	-12.06	0.00	-908.9	0.00	908.87	6,516.10	1,599.33	8,295.55	7,692.64	1.29	-0.28	0.125
50.00	-39.34	-11.97	0.00	-848.6	0.00	848.59	6,399.42	1,558.87	7,881.17	7,362.11	1.6	-0.31	0.121
52.46	-37.85	-11.91	0.00	-819.1	0.00	819.14	5,381.44	1,369.44	6,950.77	6,222.71	1.77	-0.33	0.139
55.00	-37.08	-11.84	0.00	-788.9	0.00	788.88	5,335.01	1,351.45	6,769.42	6,087.38	1.95	-0.35	0.137
60.00	-35.61	-11.73	0.00	-729.7	0.00	729.70	5,241.73	1,316.05	6,419.43	5,823.03	2.33	-0.38	0.132
65.00	-34.17	-11.62	0.00	-671.0	0.00	671.05	5,145.95	1,280.64	6,078.73	5,561.60	2.75	-0.42	0.127
70.00	-32.76	-11.56	0.00	-612.9	0.00	612.92	5,047.66	1,245.24	5,747.32	5,303.31	3.21	-0.45	0.122
71.00	-31.88	-11.15	0.00	-601.4	0.00	601.37	5,027.70	1,238.16	5,682.15	5,252.05	3.31	-0.46	0.121
75.00	-30.79	-11.10	0.00	-556.8	0.00	556.76	4,946.88	1,209.84	5,425.19	5,048.40	3.7	-0.49	0.117
76.00	-29.92	-10.69	0.00	-545.7	0.00	545.66	4,926.42	1,202.75	5,361.88	4,997.84	3.81	-0.5	0.115
80.00	-28.86	-10.63	0.00	-502.9	0.00	502.92	4,843.59	1,174.43	5,112.36	4,797.08	4.24	-0.53	0.111
81.00	-27.99	-10.21	0.00	-492.3	0.00	492.29	4,822.63	1,167.35	5,050.91	4,747.27	4.35	-0.53	0.110
85.00	-26.96	-10.15	0.00	-451.4	0.00	451.45	4,737.80	1,139.03	4,808.82	4,549.58	4.81	-0.56	0.105
86.00	-26.10	-9.73	0.00	-441.3	0.00	441.30	4,716.34	1,131.95	4,749.22	4,500.56	4.93	-0.57	0.104
89.84	-25.13	-9.68	0.00	-403.9	0.00	403.93	4,633.02	1,104.76	4,523.84	4,313.86	5.39	-0.59	0.099
90.00	-25.07	-9.67	0.00	-402.4	0.00	402.38	4,629.51	1,103.62	4,514.56	4,306.14	5.41	-0.6	0.099
91.00	-24.06	-9.24	0.00	-392.7	0.00	392.72	4,607.56	1,096.54	4,456.83	4,257.95	5.54	-0.6	0.098
95.00	-22.47	-9.17	0.00	-355.8	0.00	355.77	4,518.73	1,068.22	4,229.60	4,066.96	6.05	-0.63	0.093
96.00	-21.48	-8.77	0.00	-346.6	0.00	346.60	4,492.15	1,061.14	4,173.72	4,015.98	6.19	-0.64	0.091
96.17	-21.41	-8.73	0.00	-345.1	0.00	345.08	2,918.81	770.13	3,077.52	2,659.20	6.21	-0.64	0.137
100.00	-20.71	-8.64	0.00	-311.7	0.00	311.67	2,873.87	750.78	2,924.80	2,551.99	6.73	-0.66	0.129
105.00	-19.81	-8.53	0.00	-268.5	0.00	268.48	2,812.94	725.49	2,731.11	2,413.14	7.45	-0.7	0.118
110.00	-18.94	-8.47	0.00	-225.8	0.00	225.81	2,749.50	700.20	2,544.05	2,275.90	8.2	-0.74	0.106
111.00	-18.18	-8.02	0.00	-217.3	0.00	217.34	2,736.52	695.15	2,507.43	2,248.66	8.36	-0.75	0.103
115.00	-17.50	-7.96	0.00	-185.3	0.00	185.28	2,683.57	674.91	2,363.62	2,140.48	9	-0.78	0.093
116.00	-16.74	-7.51	0.00	-177.3	0.00	177.32	2,670.09	669.86	2,328.34	2,113.63	9.16	-0.78	0.090
120.00	-16.09	-7.45	0.00	-147.3	0.00	147.29	2,615.14	649.63	2,189.84	2,007.11	9.83	-0.81	0.080
121.00	-15.33	-6.99	0.00	-139.8	0.00	139.84	2,601.15	644.57	2,155.88	1,980.71	10	-0.82	0.077
125.00	-14.70	-6.94	0.00	-111.9	0.00	111.87	2,544.21	624.34	2,022.69	1,876.03	10.7	-0.84	0.066
126.00	-13.95	-6.50	0.00	-104.9	0.00	104.94	2,529.72	619.28	1,990.05	1,850.11	10.88	-0.84	0.062
127.00	-11.67	-5.77	0.00	-98.4	0.00	98.44	2,515.13	614.22	1,957.68	1,824.28	11.05	-0.85	0.059
130.00	-11.23	-5.72	0.00	-81.1	0.00	81.14	2,470.77	599.05	1,862.17	1,747.45	11.59	-0.86	0.051
131.00	-10.49	-5.28	0.00	-75.4	0.00	75.42	2,455.79	593.99	1,830.86	1,722.05	11.77	-0.87	0.048
131.54	-10.41	-5.25	0.00	-72.6	0.00	72.55	2,447.60	591.24	1,813.96	1,708.30	11.87	-0.87	0.047
135.00	-9.69	-5.20	0.00	-54.4	0.00	54.41	2,394.84	573.76	1,708.29	1,621.60	12.51	-0.88	0.038
136.00	-8.89	-4.75	0.00	-49.2	0.00	49.22	2,379.35	568.70	1,678.31	1,596.78	12.69	-0.89	0.035
136.46	-8.79	-4.74	0.00	-47.0	0.00	47.03	1,180.68	345.05	1,029.57	804.33	12.78	-0.89	0.066
137.00	-6.65	-3.99	0.00	-44.5	0.00	44.47	1,178.13	343.41	1,019.82	798.76	12.88	-0.89	0.061
140.00	-6.41	-3.95	0.00	-32.5	0.00	32.51	1,163.42	334.31	966.47	767.76	13.44	-0.9	0.048
141.00	-5.74	-3.47	0.00	-28.6	0.00	28.57	1,158.32	331.27	949.00	757.42	13.63	-0.91	0.043
145.00	-5.43	-3.42	0.00	-14.7	0.00	14.68	1,136.92	319.13	880.73	716.02	14.4	-0.92	0.025
146.00	-4.76	-2.97	0.00	-11.3	0.00	11.26	1,131.32	316.10	864.07	705.68	14.59	-0.92	0.020
147.00	-3.75	-2.76	0.00	-8.3	0.00	8.29	1,125.61	313.06	847.56	695.34	14.78	-0.92	0.015
148.00	-1.36	-0.91	0.00	-4.9	0.00	4.89	1,119.81	310.03	831.21	685.01	14.97	-0.92	0.008
150.00	-1.24	-0.89	0.00	-3.1	0.00	3.06	1,107.91	303.96	798.98	664.38	15.36	-0.92	0.006
151.00	0.00	-0.87	0.00	-2.2	0.00	2.17	1,101.81	300.92	783.11	654.08	15.55	-0.92	0.003

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EQUIVALENT LATERAL FORCES METHOD ANALYSIS

(Based on ASCE7-16 Chapters 11, 12 and 15)

Spectral Response Acceleration for Short Period (S_S):	0.167
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.054
Long-Period Transition Period (T_L – Seconds):	6
Importance Factor (I_e):	1.000
Site Coefficient F_a:	1.600
Site Coefficient F_v:	2.400
Response Modification Coefficient (R):	1.500
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.178
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.086
Seismic Response Coefficient (C_s):	0.035
Upper Limit C_S:	0.035
Lower Limit C_S:	0.030
Period based on Rayleigh Method (sec):	1.670
Redundancy Factor (p):	1.000
Seismic Force Distribution Exponent (k):	1.580
Total Unfactored Dead Load:	59.730 k
Seismic Base Shear (E):	2.060 k

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)
55	150.5	59	165	0.002	5	72
54	149	119	330	0.005	10	147
53	147.5	75	205	0.003	6	93
52	146.5	76	204	0.003	6	94
51	145.5	76	204	0.003	6	94
50	143	311	808	0.012	24	385
49	140.5	79	200	0.003	6	98
48	138.5	241	595	0.009	18	298
47	136.73	52	125	0.002	4	64
46	136.23	95	228	0.003	7	117
45	135.5	207	494	0.007	15	256
44	133.2717	729	1,691	0.024	50	900
43	131.2717	78	177	0.003	5	97
42	130.5	145	325	0.005	10	179
41	128.5	440	964	0.014	29	544
40	126.5	155	331	0.005	10	191
39	125.5	156	329	0.005	10	193
38	123	634	1,295	0.019	39	783
37	120.5	161	318	0.005	9	199
36	118	653	1,250	0.018	37	807
35	115.5	166	307	0.004	9	205
34	113	673	1,202	0.017	36	831
33	110.5	171	294	0.004	9	211
32	107.5	868	1,433	0.021	43	1,072
31	102.5	892	1,366	0.020	41	1,103
30	98.0867	700	999	0.014	30	864
29	96.0867	68	94	0.001	3	84
28	95.5	392	536	0.008	16	484
27	93	1,591	2,088	0.030	62	1,965
26	90.5	404	507	0.007	15	499
25	89.92	65	81	0.001	2	80
24	87.92	968	1,163	0.017	35	1,197
23	85.5	256	294	0.004	9	316
22	83	1,036	1,135	0.016	34	1,280

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Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
21	80.5	262	274	0.004	8	324
20	78	1,063	1,056	0.015	31	1,314
19	75.5	269	254	0.004	8	333
18	73	1,091	976	0.014	29	1,348
17	70.5	276	234	0.003	7	341
16	67.5	1,401	1,107	0.016	33	1,731
15	62.5	1,436	1,004	0.014	30	1,774
14	57.5	1,470	901	0.013	27	1,816
13	53.73	760	418	0.006	12	939
12	51.23	1,483	757	0.011	23	1,833
11	47.5	3,069	1,390	0.020	41	3,793
10	44.7717	284	117	0.002	3	351
9	42.2717	1,589	598	0.009	18	1,963
8	37.5	1,786	556	0.008	17	2,207
7	32.5	1,825	453	0.006	13	2,255
6	27.5	1,865	355	0.005	11	2,304
5	22.5	1,904	264	0.004	8	2,352
4	17.5	1,943	181	0.003	5	2,401
3	12.5	1,982	108	0.002	3	2,449
2	7.5	2,022	49	0.001	1	2,498
1	2.5	2,061	9	0.000	0	2,546
Pine Branches	151	600	1,697	0.024	50	741
Pine Branches	151	600	1,697	0.024	50	741
Pine Branches	146	600	1,609	0.023	48	741
Pine Branches	141	600	1,522	0.022	45	741
Pine Branches	136	600	1,438	0.021	43	741
Pine Branches	131	600	1,355	0.020	40	741
Pine Branches	126	600	1,274	0.018	38	741
Pine Branches	121	600	1,195	0.017	36	741
Pine Branches	116	600	1,118	0.016	33	741
Pine Branches	111	600	1,042	0.015	31	741
Pine Branches	96	600	828	0.012	25	741
Pine Branches	91	600	761	0.011	23	741
Pine Branches	86	600	696	0.010	21	741
Pine Branches	81	600	633	0.009	19	741
Pine Branches	76	600	572	0.008	17	741
Pine Branches	71	600	514	0.007	15	741
Amphenol Antel LPA-171063-12CF-EDIN-X	148	69	189	0.003	6	85
Antel BXA-70063/6CF_	148	51	140	0.002	4	63
Antel LPA-80080/6CF ___	148	84	230	0.003	7	104
Antel LPA-80063/6CF	148	54	148	0.002	4	67
VZW Unused Reserve (24990 sqin)	148	2,082	5,706	0.082	170	2,573
Generic Flat T-Arm	147	938	2,541	0.037	76	1,158
Ericsson RRUS 8843 B2, B66A	137	216	524	0.008	16	267
Ericsson RRUS 4478 B14	137	180	436	0.006	13	222
Ericsson RRUS 4449 B5, B12	137	213	516	0.007	15	263
Raycap DC9-48-60-24-8C-EV	137	16	39	0.001	1	20
Generic Round T-Arm	137	938	2,273	0.033	68	1,158
CCI DMP65R-BU8D	137	287	696	0.010	21	355
CCI TPA65R-BU8D	137	248	600	0.009	18	306
Ceragon FibeAir IP-20C	127	14	31	0.000	1	18
Ericsson 4460 BAND 2/25	127	327	703	0.010	21	404
Ericsson 4480 BAND 71	127	243	522	0.008	16	300
Andrew VHLP2-11W-2GR	127	25	54	0.001	2	31
Ericsson AIR 6419 B41	127	250	537	0.008	16	309
Generic Round Sector Frame	127	900	1,935	0.028	58	1,112
RFS APXVAALL24 43-U-NA20	127	368	792	0.011	24	455
		59,732	69,359	1.000	2,063	73,806

0.9D - 1.0Ev + 1.0Eh **Seismic (Reduced DL)**

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Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
55	150.5	59	165	0.002	5	51
54	149	119	330	0.005	10	103
53	147.5	75	205	0.003	6	65
52	146.5	76	204	0.003	6	65
51	145.5	76	204	0.003	6	66
50	143	311	808	0.012	24	269
49	140.5	79	200	0.003	6	69
48	138.5	241	595	0.009	18	209
47	136.73	52	125	0.002	4	45
46	136.23	95	228	0.003	7	82
45	135.5	207	494	0.007	15	179
44	133.2717	729	1,691	0.024	50	630
43	131.2717	78	177	0.003	5	68
42	130.5	145	325	0.005	10	125
41	128.5	440	964	0.014	29	380
40	126.5	155	331	0.005	10	134
39	125.5	156	329	0.005	10	135
38	123	634	1,295	0.019	39	548
37	120.5	161	318	0.005	9	139
36	118	653	1,250	0.018	37	565
35	115.5	166	307	0.004	9	143
34	113	673	1,202	0.017	36	582
33	110.5	171	294	0.004	9	147
32	107.5	868	1,433	0.021	43	750
31	102.5	892	1,366	0.020	41	771
30	98.0867	700	999	0.014	30	605
29	96.0867	68	94	0.001	3	58
28	95.5	392	536	0.008	16	339
27	93	1,591	2,088	0.030	62	1,375
26	90.5	404	507	0.007	15	349
25	89.92	65	81	0.001	2	56
24	87.92	968	1,163	0.017	35	837
23	85.5	256	294	0.004	9	221
22	83	1,036	1,135	0.016	34	895
21	80.5	262	274	0.004	8	227
20	78	1,063	1,056	0.015	31	919
19	75.5	269	254	0.004	8	233
18	73	1,091	976	0.014	29	943
17	70.5	276	234	0.003	7	239
16	67.5	1,401	1,107	0.016	33	1,211
15	62.5	1,436	1,004	0.014	30	1,241
14	57.5	1,470	901	0.013	27	1,271
13	53.73	760	418	0.006	12	657
12	51.23	1,483	757	0.011	23	1,282
11	47.5	3,069	1,390	0.020	41	2,653
10	44.7717	284	117	0.002	3	245
9	42.2717	1,589	598	0.009	18	1,373
8	37.5	1,786	556	0.008	17	1,544
7	32.5	1,825	453	0.006	13	1,578
6	27.5	1,865	355	0.005	11	1,612
5	22.5	1,904	264	0.004	8	1,646
4	17.5	1,943	181	0.003	5	1,680
3	12.5	1,982	108	0.002	3	1,713
2	7.5	2,022	49	0.001	1	1,747
1	2.5	2,061	9	0.000	0	1,781
Pine Branches	151	600	1,697	0.024	50	519
Pine Branches	151	600	1,697	0.024	50	519
Pine Branches	146	600	1,609	0.023	48	519
Pine Branches	141	600	1,522	0.022	45	519
Pine Branches	136	600	1,438	0.021	43	519
Pine Branches	131	600	1,355	0.020	40	519
Pine Branches	126	600	1,274	0.018	38	519
Pine Branches	121	600	1,195	0.017	36	519
Pine Branches	116	600	1,118	0.016	33	519
Pine Branches	111	600	1,042	0.015	31	519
Pine Branches	96	600	828	0.012	25	519
Pine Branches	91	600	761	0.011	23	519
Pine Branches	86	600	696	0.010	21	519
Pine Branches	81	600	633	0.009	19	519
Pine Branches	76	600	572	0.008	17	519

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Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
Pine Branches	71	600	514	0.007	15	519
Amphenol Antel LPA-171063-12CF-EDIN-X	148	69	189	0.003	6	60
Antel BXA-70063/6CF_	148	51	140	0.002	4	44
Antel LPA-80080/6CF ___	148	84	230	0.003	7	73
Antel LPA-80063/6CF	148	54	148	0.002	4	47
VZW Unused Reserve (24990 sqin)	148	2,082	5,706	0.082	170	1,800
Generic Flat T-Arm	147	938	2,541	0.037	76	810
Ericsson RRUS 8843 B2, B66A	137	216	524	0.008	16	187
Ericsson RRUS 4478 B14	137	180	436	0.006	13	155
Ericsson RRUS 4449 B5, B12	137	213	516	0.007	15	184
Raycap DC9-48-60-24-8C-EV	137	16	39	0.001	1	14
Generic Round T-Arm	137	938	2,273	0.033	68	810
CCI DMP65R-BU8D	137	287	696	0.010	21	248
CCI TPA65R-BU8D	137	248	600	0.009	18	214
Ceragon FibeAir IP-20C	127	14	31	0.000	1	12
Ericsson 4460 BAND 2/25	127	327	703	0.010	21	283
Ericsson 4480 BAND 71	127	243	522	0.008	16	210
Andrew VHLP2-11W-2GR	127	25	54	0.001	2	22
Ericsson AIR 6419 B41	127	250	537	0.008	16	216
Generic Round Sector Frame	127	900	1,935	0.028	58	778
RFS APXVAALL24 43-U-NA20	127	368	792	0.011	24	318
		59,732	69,359	1.000	2,063	51,631

1.2D + 1.0Ev + 1.0Eh **Seismic**

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-71.26	-2.06	0.00	-238.76	0.00	238.76	7,453.69	1,963.48	12,503	10,820.43	0.00	0.00	0.03
5.00	-68.76	-2.07	0.00	-228.45	0.00	228.45	7,359.51	1,923.02	11,993	10,462.01	0.00	0.00	0.03
10.00	-66.31	-2.07	0.00	-218.11	0.00	218.11	7,262.84	1,882.56	11,493	10,105.78	0.01	-0.01	0.03
15.00	-63.91	-2.07	0.00	-207.76	0.00	207.76	7,163.66	1,842.10	11,005	9,751.97	0.02	-0.01	0.03
20.00	-61.56	-2.07	0.00	-197.41	0.00	197.41	7,061.99	1,801.64	10,527	9,400.81	0.04	-0.02	0.03
25.00	-59.25	-2.06	0.00	-187.08	0.00	187.08	6,957.81	1,761.18	10,059	9,052.53	0.06	-0.02	0.03
30.00	-57.00	-2.05	0.00	-176.78	0.00	176.78	6,851.13	1,720.71	9,602	8,707.34	0.09	-0.03	0.03
35.00	-54.79	-2.04	0.00	-166.52	0.00	166.52	6,741.95	1,680.25	9,156	8,365.48	0.13	-0.03	0.03
40.00	-52.83	-2.02	0.00	-156.34	0.00	156.34	6,630.28	1,639.79	8,721	8,027.17	0.16	-0.04	0.03
44.54	-52.48	-2.02	0.00	-147.14	0.00	147.14	6,526.63	1,603.02	8,334	7,723.03	0.21	-0.04	0.03
45.00	-48.68	-1.98	0.00	-146.22	0.00	146.22	6,516.10	1,599.33	8,296	7,692.64	0.21	-0.05	0.03
50.00	-46.85	-1.96	0.00	-136.32	0.00	136.32	6,399.42	1,558.87	7,881	7,362.11	0.26	-0.05	0.03
52.46	-45.91	-1.95	0.00	-131.50	0.00	131.50	5,381.44	1,369.44	6,951	6,222.71	0.29	-0.05	0.03
55.00	-44.10	-1.92	0.00	-126.55	0.00	126.55	5,335.01	1,351.45	6,769	6,087.38	0.32	-0.06	0.03
60.00	-42.32	-1.90	0.00	-116.93	0.00	116.93	5,241.73	1,316.05	6,419	5,823.03	0.38	-0.06	0.03
65.00	-40.59	-1.87	0.00	-107.45	0.00	107.45	5,145.95	1,280.64	6,079	5,561.60	0.45	-0.07	0.03
70.00	-40.25	-1.86	0.00	-98.13	0.00	98.13	5,047.66	1,245.24	5,747	5,303.31	0.52	-0.07	0.03
71.00	-38.16	-1.82	0.00	-96.27	0.00	96.27	5,027.70	1,238.16	5,682	5,252.05	0.53	-0.07	0.03
75.00	-37.83	-1.81	0.00	-89.01	0.00	89.01	4,946.88	1,209.84	5,425	5,048.40	0.60	-0.08	0.03
76.00	-35.77	-1.76	0.00	-87.20	0.00	87.20	4,926.42	1,202.75	5,362	4,997.84	0.62	-0.08	0.03
80.00	-35.45	-1.75	0.00	-80.16	0.00	80.16	4,843.59	1,174.43	5,112	4,797.08	0.68	-0.08	0.02
81.00	-33.43	-1.70	0.00	-78.41	0.00	78.41	4,822.63	1,167.35	5,051	4,747.27	0.70	-0.09	0.02
85.00	-33.11	-1.69	0.00	-71.62	0.00	71.62	4,737.80	1,139.03	4,809	4,549.58	0.78	-0.09	0.02
86.00	-31.17	-1.63	0.00	-69.92	0.00	69.92	4,716.34	1,131.95	4,749	4,500.56	0.80	-0.09	0.02
89.84	-31.09	-1.63	0.00	-63.65	0.00	63.65	4,633.02	1,104.76	4,524	4,313.86	0.87	-0.10	0.02
90.00	-30.59	-1.62	0.00	-63.39	0.00	63.39	4,629.51	1,103.62	4,515	4,306.14	0.87	-0.10	0.02
91.00	-27.89	-1.53	0.00	-61.77	0.00	61.77	4,607.56	1,096.54	4,457	4,257.95	0.89	-0.10	0.02
95.00	-27.40	-1.51	0.00	-55.65	0.00	55.65	4,518.73	1,068.22	4,230	4,066.96	0.98	-0.10	0.02
96.00	-26.58	-1.49	0.00	-54.14	0.00	54.14	4,492.15	1,061.14	4,174	4,015.98	1.00	-0.10	0.02
96.17	-25.71	-1.45	0.00	-53.88	0.00	53.88	2,918.81	770.13	3,078	2,659.20	1.00	-0.10	0.03
100.00	-24.61	-1.41	0.00	-48.31	0.00	48.31	2,873.87	750.78	2,925	2,551.99	1.09	-0.11	0.03
105.00	-23.54	-1.37	0.00	-41.24	0.00	41.24	2,812.94	725.49	2,731	2,413.14	1.20	-0.11	0.03
110.00	-23.33	-1.36	0.00	-34.38	0.00	34.38	2,749.50	700.20	2,544	2,275.90	1.32	-0.12	0.02
111.00	-21.76	-1.30	0.00	-33.01	0.00	33.01	2,736.52	695.15	2,507	2,248.66	1.35	-0.12	0.02
115.00	-21.55	-1.29	0.00	-27.83	0.00	27.83	2,683.57	674.91	2,364	2,140.48	1.45	-0.12	0.02
116.00	-20.00	-1.21	0.00	-26.54	0.00	26.54	2,670.09	669.86	2,328	2,113.63	1.47	-0.12	0.02

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Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
120.00	-19.80	-1.21	0.00	-21.69	0.00	21.69	2,615.14	649.63	2,190	2,007.11	1.58	-0.13	0.02
121.00	-18.28	-1.13	0.00	-20.48	0.00	20.48	2,601.15	644.57	2,156	1,980.71	1.61	-0.13	0.02
125.00	-18.09	-1.12	0.00	-15.97	0.00	15.97	2,544.21	624.34	2,023	1,876.03	1.72	-0.13	0.02
126.00	-17.15	-1.07	0.00	-14.85	0.00	14.85	2,529.72	619.28	1,990	1,850.11	1.75	-0.13	0.02
127.00	-13.98	-0.90	0.00	-13.78	0.00	13.78	2,515.13	614.22	1,958	1,824.28	1.77	-0.13	0.01
130.00	-13.80	-0.89	0.00	-11.09	0.00	11.09	2,470.77	599.05	1,862	1,747.45	1.86	-0.14	0.01
131.00	-12.96	-0.84	0.00	-10.20	0.00	10.20	2,455.79	593.99	1,831	1,722.05	1.89	-0.14	0.01
131.54	-12.06	-0.79	0.00	-9.74	0.00	9.74	2,447.60	591.24	1,814	1,708.30	1.90	-0.14	0.01
135.00	-11.81	-0.77	0.00	-7.02	0.00	7.02	2,394.84	573.76	1,708	1,621.60	2.00	-0.14	0.01
136.00	-10.95	-0.72	0.00	-6.24	0.00	6.24	2,379.35	568.70	1,678	1,596.78	2.03	-0.14	0.01
136.46	-10.89	-0.72	0.00	-5.91	0.00	5.91	1,180.68	345.05	1,030	804.33	2.05	-0.14	0.02
137.00	-8.00	-0.54	0.00	-5.52	0.00	5.52	1,178.13	343.41	1,020	798.76	2.06	-0.14	0.01
140.00	-7.90	-0.54	0.00	-3.90	0.00	3.90	1,163.42	334.31	966	767.76	2.15	-0.14	0.01
141.00	-6.77	-0.46	0.00	-3.36	0.00	3.36	1,158.32	331.27	949	757.42	2.18	-0.14	0.01
145.00	-6.68	-0.46	0.00	-1.50	0.00	1.50	1,136.92	319.13	881	716.02	2.30	-0.14	0.01
146.00	-5.84	-0.40	0.00	-1.04	0.00	1.04	1,131.32	316.10	864	705.68	2.33	-0.14	0.01
147.00	-4.59	-0.32	0.00	-0.64	0.00	0.64	1,125.61	313.06	848	695.34	2.36	-0.14	0.01
148.00	-1.55	-0.11	0.00	-0.32	0.00	0.32	1,119.81	310.03	831	685.01	2.39	-0.14	0.00
150.00	-1.48	-0.10	0.00	-0.10	0.00	0.10	1,107.91	303.96	799	664.38	2.45	-0.14	0.00
151.00	0.00	-0.10	0.00	0.00	0.00	0.00	1,101.81	300.92	783	654.08	2.48	-0.14	0.00

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 (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-49.85	-2.06	0.00	-237.12	0.00	237.12	7,453.69	1,963.48	12,503	10,820.43	0.00	0.00	0.03
5.00	-48.10	-2.07	0.00	-226.81	0.00	226.81	7,359.51	1,923.02	11,993	10,462.01	0.00	0.00	0.03
10.00	-46.39	-2.07	0.00	-216.48	0.00	216.48	7,262.84	1,882.56	11,493	10,105.78	0.01	-0.01	0.03
15.00	-44.71	-2.06	0.00	-206.15	0.00	206.15	7,163.66	1,842.10	11,005	9,751.97	0.02	-0.01	0.03
20.00	-43.06	-2.06	0.00	-195.83	0.00	195.83	7,061.99	1,801.64	10,527	9,400.81	0.04	-0.02	0.03
25.00	-41.45	-2.05	0.00	-185.54	0.00	185.54	6,957.81	1,761.18	10,059	9,052.53	0.06	-0.02	0.03
30.00	-39.87	-2.04	0.00	-175.28	0.00	175.28	6,851.13	1,720.71	9,602	8,707.34	0.09	-0.03	0.03
35.00	-38.33	-2.03	0.00	-165.07	0.00	165.07	6,741.95	1,680.25	9,156	8,365.48	0.12	-0.03	0.03
40.00	-36.96	-2.01	0.00	-154.94	0.00	154.94	6,630.28	1,639.79	8,721	8,027.17	0.16	-0.04	0.03
44.54	-36.71	-2.01	0.00	-145.80	0.00	145.80	6,526.63	1,603.02	8,334	7,723.03	0.20	-0.04	0.03
45.00	-34.06	-1.97	0.00	-144.88	0.00	144.88	6,516.10	1,599.33	8,296	7,692.64	0.21	-0.04	0.02
50.00	-32.77	-1.95	0.00	-135.04	0.00	135.04	6,399.42	1,558.87	7,881	7,362.11	0.26	-0.05	0.02
52.46	-32.12	-1.94	0.00	-130.26	0.00	130.26	5,381.44	1,369.44	6,951	6,222.71	0.28	-0.05	0.03
55.00	-30.85	-1.91	0.00	-125.34	0.00	125.34	5,335.01	1,351.45	6,769	6,087.38	0.31	-0.06	0.03
60.00	-29.61	-1.88	0.00	-115.79	0.00	115.79	5,241.73	1,316.05	6,419	5,823.03	0.37	-0.06	0.03
65.00	-28.39	-1.85	0.00	-106.39	0.00	106.39	5,145.95	1,280.64	6,079	5,561.60	0.44	-0.07	0.03
70.00	-28.16	-1.84	0.00	-97.14	0.00	97.14	5,047.66	1,245.24	5,747	5,303.31	0.51	-0.07	0.02
71.00	-26.69	-1.80	0.00	-95.29	0.00	95.29	5,027.70	1,238.16	5,682	5,252.05	0.53	-0.07	0.02
75.00	-26.46	-1.79	0.00	-88.10	0.00	88.10	4,946.88	1,209.84	5,425	5,048.40	0.59	-0.08	0.02
76.00	-25.02	-1.74	0.00	-86.30	0.00	86.30	4,926.42	1,202.75	5,362	4,997.84	0.61	-0.08	0.02
80.00	-24.80	-1.74	0.00	-79.33	0.00	79.33	4,843.59	1,174.43	5,112	4,797.08	0.68	-0.08	0.02
81.00	-23.38	-1.68	0.00	-77.59	0.00	77.59	4,822.63	1,167.35	5,051	4,747.27	0.70	-0.09	0.02
85.00	-23.16	-1.68	0.00	-70.86	0.00	70.86	4,737.80	1,139.03	4,809	4,549.58	0.77	-0.09	0.02
86.00	-21.81	-1.62	0.00	-69.19	0.00	69.19	4,716.34	1,131.95	4,749	4,500.56	0.79	-0.09	0.02
89.84	-21.75	-1.62	0.00	-62.97	0.00	62.97	4,633.02	1,104.76	4,524	4,313.86	0.86	-0.09	0.02
90.00	-21.40	-1.60	0.00	-62.71	0.00	62.71	4,629.51	1,103.62	4,515	4,306.14	0.87	-0.09	0.02
91.00	-19.51	-1.51	0.00	-61.11	0.00	61.11	4,607.56	1,096.54	4,457	4,257.95	0.89	-0.10	0.02
95.00	-19.17	-1.50	0.00	-55.05	0.00	55.05	4,518.73	1,068.22	4,230	4,066.96	0.97	-0.10	0.02
96.00	-18.59	-1.47	0.00	-53.55	0.00	53.55	4,492.15	1,061.14	4,174	4,015.98	0.99	-0.10	0.02
96.17	-17.99	-1.44	0.00	-53.30	0.00	53.30	2,918.81	770.13	3,078	2,659.20	0.99	-0.10	0.03
100.00	-17.22	-1.40	0.00	-47.79	0.00	47.79	2,873.87	750.78	2,925	2,551.99	1.08	-0.11	0.03
105.00	-16.47	-1.36	0.00	-40.78	0.00	40.78	2,812.94	725.49	2,731	2,413.14	1.19	-0.11	0.02
110.00	-16.32	-1.35	0.00	-33.99	0.00	33.99	2,749.50	700.20	2,544	2,275.90	1.31	-0.12	0.02
111.00	-15.22	-1.28	0.00	-32.65	0.00	32.65	2,736.52	695.15	2,507	2,248.66	1.33	-0.12	0.02
115.00	-15.07	-1.27	0.00	-27.52	0.00	27.52	2,683.57	674.91	2,364	2,140.48	1.44	-0.12	0.02
116.00	-13.99	-1.20	0.00	-26.25	0.00	26.25	2,670.09	669.86	2,328	2,113.63	1.46	-0.12	0.02
120.00	-13.85	-1.19	0.00	-21.44	0.00	21.44	2,615.14	649.63	2,190	2,007.11	1.57	-0.13	0.02
121.00	-12.79	-1.12	0.00	-20.25	0.00	20.25	2,601.15	644.57	2,156	1,980.71	1.59	-0.13	0.02
125.00	-12.65	-1.11	0.00	-15.79	0.00	15.79	2,544.21	624.34	2,023	1,876.03	1.70	-0.13	0.01
126.00	-12.00	-1.06	0.00	-14.68	0.00	14.68	2,529.72	619.28	1,990	1,850.11	1.73	-0.13	0.01
127.00	-9.78	-0.89	0.00	-13.62	0.00	13.62	2,515.13	614.22	1,958	1,824.28	1.76	-0.13	0.01
130.00	-9.66	-0.88	0.00	-10.96	0.00	10.96	2,470.77	599.05	1,862	1,747.45	1.84	-0.14	0.01

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Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
131.00	-9.07	-0.83	0.00	-10.08	0.00	10.08	2,455.79	593.99	1,831	1,722.05	1.87	-0.14	0.01
131.54	-8.44	-0.78	0.00	-9.63	0.00	9.63	2,447.60	591.24	1,814	1,708.30	1.89	-0.14	0.01
135.00	-8.26	-0.76	0.00	-6.94	0.00	6.94	2,394.84	573.76	1,708	1,621.60	1.99	-0.14	0.01
136.00	-7.66	-0.71	0.00	-6.17	0.00	6.17	2,379.35	568.70	1,678	1,596.78	2.01	-0.14	0.01
136.46	-7.61	-0.71	0.00	-5.84	0.00	5.84	1,180.68	345.05	1,030	804.33	2.03	-0.14	0.01
137.00	-5.59	-0.54	0.00	-5.46	0.00	5.46	1,178.13	343.41	1,020	798.76	2.04	-0.14	0.01
140.00	-5.53	-0.53	0.00	-3.85	0.00	3.85	1,163.42	334.31	966	767.76	2.13	-0.14	0.01
141.00	-4.74	-0.46	0.00	-3.32	0.00	3.32	1,158.32	331.27	949	757.42	2.16	-0.14	0.01
145.00	-4.67	-0.45	0.00	-1.49	0.00	1.49	1,136.92	319.13	881	716.02	2.28	-0.14	0.01
146.00	-4.09	-0.40	0.00	-1.03	0.00	1.03	1,131.32	316.10	864	705.68	2.31	-0.14	0.01
147.00	-3.21	-0.31	0.00	-0.63	0.00	0.63	1,125.61	313.06	848	695.34	2.34	-0.14	0.00
148.00	-1.09	-0.11	0.00	-0.32	0.00	0.32	1,119.81	310.03	831	685.01	2.37	-0.14	0.00
150.00	-1.04	-0.10	0.00	-0.10	0.00	0.10	1,107.91	303.96	799	664.38	2.43	-0.14	0.00
151.00	0.00	-0.10	0.00	0.00	0.00	0.00	1,101.81	300.92	783	654.08	2.46	-0.14	0.00

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ANALYSIS SUMMARY

	Reactions						Max Usage	
Load Case	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	52.10	0.00	71.62	0.00	0.00	5963.10	0.00	0.56
0.9D + 1.0W	52.08	0.00	53.70	0.00	0.00	5928.09	0.00	0.56
1.2D + 1.0Di + 1.0Wi	14.86	0.00	91.21	0.00	0.00	1681.96	0.00	0.17
1.2D + 1.0Ev + 1.0Eh	2.07	0.00	71.26	0.00	0.00	238.76	0.00	0.03
0.9D - 1.0Ev + 1.0Eh	2.07	0.00	49.85	0.00	0.00	237.12	0.00	0.03
1.0D + 1.0W	12.91	0.00	59.73	0.00	0.00	1472.89	0.00	0.14

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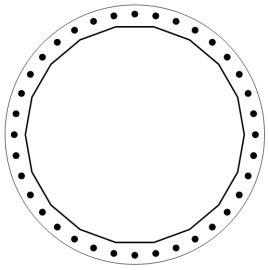
BASE PLATE ANALYSIS @ 0 FT

PLATE PARAMETERS (ID# 18082)

Diameter:	85	in
Shape:	Round	
Thickness:	3.25	in
Grade:	A572-50	
Yield Strength:	50	ksi
Tensile Strength:	65	ksi
Rod Detail Type:	d	
Clear Distance	3	in
Base Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Plastic	
Neutral Axis:	240	°



ANCHOR ROD PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	Fy (ksi)	Fu (ksi)	Spacing (in)	Offset (°)
Original [ID# 18535]	Radial	36	2.25	79	A615-75	75	100	-	-

ANCHOR ROD GEOMETRY AND APPLIED LOADS --- ORIGINAL (36) 2.25"ø [ID 18535]

Position	Radians	X (in)	Y (in)	Moment Arm (in)	Inertia (in^4)	Axial Load (k)	Shear Load (k)
1	0.175	38.90	6.86	29.253	2780.072	85.95	1.46
2	0.349	37.12	13.51	24.546	1957.663	85.95	1.75
3	0.524	34.21	19.75	19.094	1184.853	85.95	1.97
4	0.698	30.26	25.39	13.061	554.852	85.95	2.14
5	0.873	25.39	30.26	6.631	143.648	85.95	2.24
6	1.047	19.75	34.21	0.000	0.839	-77.99	2.28
7	1.222	13.51	37.12	-6.631	143.648	-77.99	2.24
8	1.396	6.86	38.90	-13.061	554.852	-77.99	2.14
9	1.571	0.00	39.50	-19.094	1184.852	-77.99	1.97
10	1.745	-6.86	38.90	-24.546	1957.663	-77.99	1.75
11	1.920	-13.51	37.12	-29.253	2780.071	-77.99	1.46
12	2.094	-19.75	34.21	-33.071	3552.882	-77.99	1.14
13	2.269	-25.39	30.26	-35.885	4182.883	-77.99	0.78
14	2.443	-30.26	25.39	-37.607	4594.087	-77.99	0.40
15	2.618	-34.21	19.75	-38.188	4736.897	-77.99	0.00
16	2.793	-37.12	13.51	-37.607	4594.087	-77.99	0.40
17	2.967	-38.90	6.86	-35.885	4182.882	-77.99	0.78
18	3.142	-39.50	0.00	-33.071	3552.881	-77.99	1.14
19	3.316	-38.90	-6.86	-29.253	2780.070	-77.99	1.46
20	3.491	-37.12	-13.51	-24.546	1957.662	-77.99	1.75
21	3.665	-34.21	-19.75	-19.094	1184.855	-77.99	1.97
22	3.840	-30.26	-25.39	-13.061	554.854	-77.99	2.14
23	4.014	-25.39	-30.26	-6.631	143.649	-77.99	2.24
24	4.189	-19.75	-34.21	0.000	0.839	-77.99	2.28
25	4.363	-13.51	-37.12	6.631	143.649	85.95	2.24
26	4.538	-6.86	-38.90	13.061	554.853	85.95	2.14
27	4.712	0.00	-39.50	19.094	1184.854	85.95	1.97
28	4.887	6.86	-38.90	24.546	1957.665	85.95	1.75
29	5.061	13.51	-37.12	29.253	2780.073	85.95	1.46
30	5.236	19.75	-34.21	33.071	3552.883	85.95	1.14
31	5.411	25.39	-30.26	35.885	4182.884	85.95	0.78
32	5.585	30.26	-25.39	37.607	4594.088	85.95	0.40
33	5.760	34.21	-19.75	38.188	4736.897	85.95	0.00
34	5.934	37.12	-13.51	37.607	4594.088	85.95	0.40
35	6.109	38.90	-6.86	35.885	4182.884	85.95	0.78
36	6.283	39.50	0.00	33.071	3552.884	85.95	1.14

REACTION DISTRIBUTION

Component	ID	Moment Mu (k-ft)	Axial Load Pu (k)	Shear Vu (k)	Moment Factor
Pole	71"ø x 0.5" (18 Sides)	5963.1	71.62	52.10	1.000
Bolt Group	Original (36) 2.25"ø	5963.1	-	52.10	1.000
	TOTALS	**5963.1**	**71.62**	**52.1**	

COMPONENT PROPERTIES

Component	ID	Gross Area (in^2)	Net Area (in^2)	Individual Inertia (in^4)	Moment of Inertia (in^4)	Threads/in
Pole	71"ø x 0.5" (18 Sides)	110.1798	-	-	68461.84	-
Bolt Group	Original (36) 2.25"ø	3.9761	3.2477	0.8393	85279.24	4.5

EXTERNAL BASE PLATE BEND LINE ANALYSIS @ 0 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	71.12	in
Point-to-Point Diameter:	72.22	in
Flat Width:	12.541	in
Flat Radians:	0.349	rad

PLATE PROPERTIES

Neutral Axis:	240	°
Bend Line Lower Limit:	5.349	rad
Bend Line Upper Limit:	6.170	rad

Bend Line	Chord Length (in)	Additional Length (in)	Section Modulus (in^3)	Applied Moment Mu (k-in)	Moment Capacity ϕMn (k-in)	Ratio
Flat	41.585	0.00	109.812	769.9	4941.5	0.156
Corner	39.649	0.00	104.699	532.8	4711.4	0.113
Circumferential	45.601	0.00	120.415	1068.4	5418.7	0.197

PLASTIC ANCHOR ROD ANALYSIS

Class	Group Quantity	Rod Diameter (in)	Applied Axial Load Pu (k)	Applied Shear Load Vu (k)	Compressive Capacity ϕPn (k)	Ratio
Original	36	2.25	86.0	2.3	243.6	0.372

Exhibit F

Mount Analysis Report

AMERICAN TOWER®
CORPORATION

Mount Analysis Report

ATC Site Name	:	**Winchester PCS CT, CT**
ATC Site Number	:	**413849**
Engineering Number	:	**14099859_C8_01**
Mount Elevation	:	**127 ft**
Carrier	:	**T-Mobile**
Carrier Site Name	:	**CTNH392_AmericanTower_Monopine_Winsted**
Carrier Site Number	:	**CTNH392A**
Site Location	:	**32 Norfolk Road** **WINSTED, CT 06098-2227** **41.94022438 , -73.09588794**
County	:	**Litchfield**
Date	:	**April 21, 2022**
Max Usage	:	**46%**
Result	:	**Contingent Pass**

Prepared By:
Molly Li
Structural Engineer

Molly Li

Reviewed By:

COA: PEC.0001553

AMERICAN TOWER®
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Table of Contents

Introduction

The purpose of this report is to summarize results of the mount analysis performed for T-Mobile at 127 ft.

Supporting Documents

Specifications Sheet	Site Pro 1 VFA10-HD, dated June 29, 2018
Radio Frequency Data Sheet	RFDS ID #CTNH392A, dated March 2, 2022

Analysis

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

Basic Wind Speed:	114 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1.00'' radial ice concurrent
Codes:	ANSI/TIA-222-H
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.167, S1 = 0.054
Site Class:	D - Stiff Soil
Live Loads:	Lm = 500 lbs, Lv = 250 lbs

Conclusion

Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed above provided the modifications listed below are completed:

- Analysis based on new Site Pro 1 VFA10-HD sector frames (or approved equivalent).
- Install (4) P2 (2.375" x 126") antenna mounting pipes (Mount Pipe A, B, C, D) on the mount face about 40" apart with Site Pro 1 SCX7-U (or approved equivalent) 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.

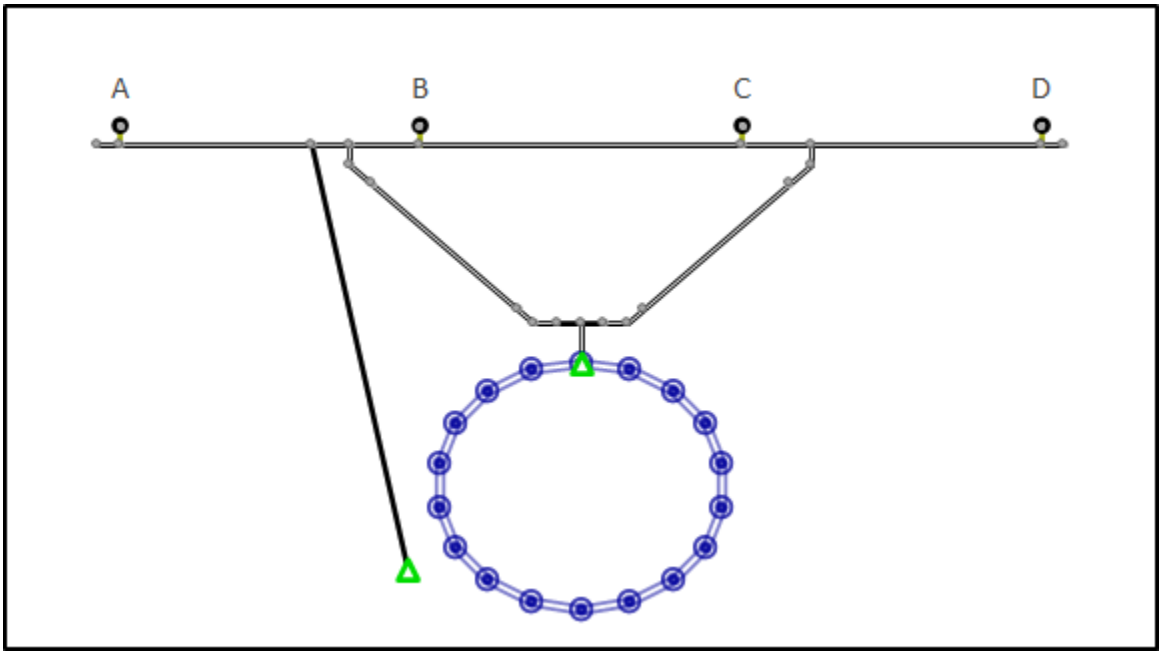
Application Loading

Mount Centerline (ft)	Equipment Centerline (ft)	Qty	Equipment Manufacturer & Model
127.0	127.0	3	Ericsson AIR 6419 B41
		3	RFS APXVAALL24 43-U-NA20
		1	Andrew VHLP2-11W-2GR
		1	Ceragon FibeAir IP-20C
		3	Ericsson 4480 BAND 71
		3	Ericsson 4460 BAND 2/25

Structure Usages

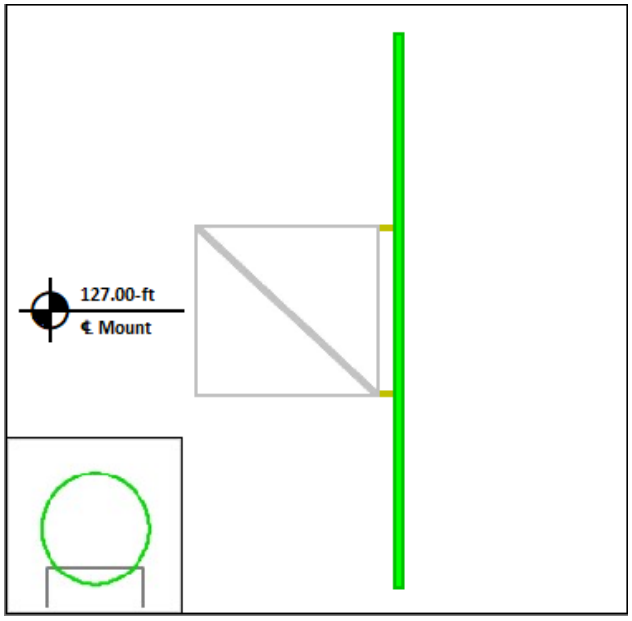
Structural Component	Controlling Usage	Pass/Fail
Horizontals	35%	Pass
Verticals	46%	Pass
Diagonals	18%	Pass
Tie-Backs	4%	Pass
Mount Pipes	32%	Pass

Mount Layout

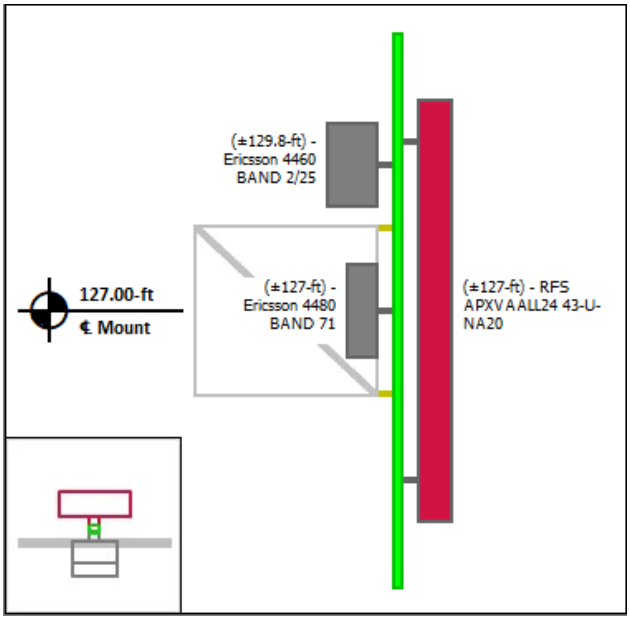


Equipment Layout

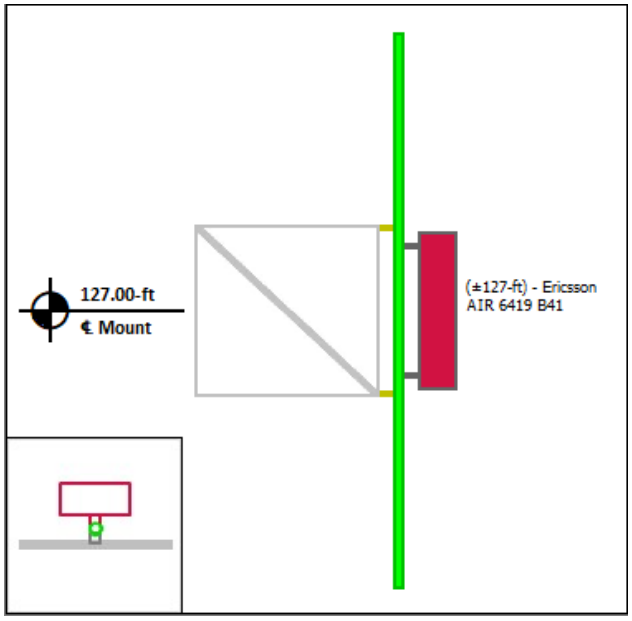
Mount Pipe A



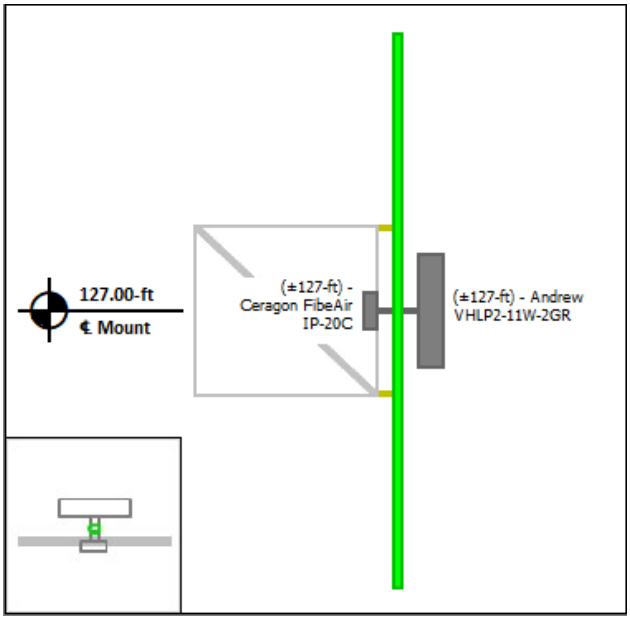
Mount Pipe B



Mount Pipe C



Mount Pipe D



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 equipment, 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.

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.

Installation of all equipment and steel should be confirmed not to cause tower conflicts nor impede the tower climbing pegs.

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.

AMERICAN TOWER®
CORPORATION

Site Number:	*413849*
Project Number:	*14099859_C8_01*
Carrier:	*T-Mobile*
Mount Elevation:	*127 ft*
Date:	4/21/2022

Mount Analysis Force Calculations

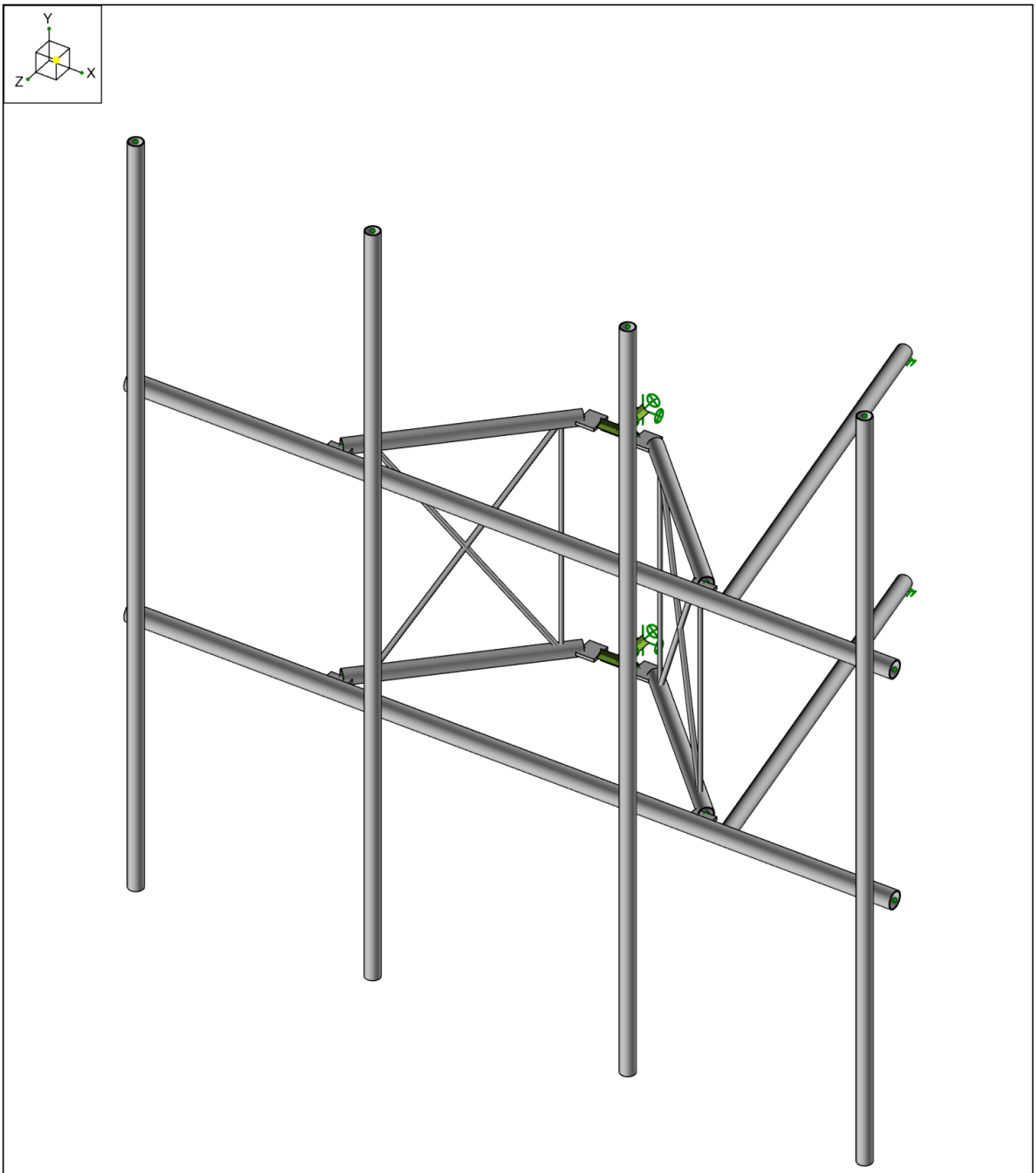
Wind & Ice Load Calculations			
Velocity Pressure Coefficient	K_z	1.06	
Topographic Factor	K_{zt}	1.00	
Rooftop Wind Speed-up Factor	K_s	1.00	
Shielding Factor	K_a	0.90	
Ground Elevation Factor	K_e	0.96	
Wind Direction Probability Factor	K_d	0.95	
Basic Wind Speed	V	114	mph
Velocity Pressure	q_z	32.1	psf
Height Escalation Factor	K_{iz}	1.14	
Thickness of Radial Glaze Ice	T_{iz}	1.14	in

Seismic Load Calculations			
Short Period DSRAP	S_{DS}	0.178	
1 Second DSRAP	S_{D1}	0.086	
Importance Factor	I	1.0	
Response Modification Coefficient	R	2.0	
Seismic Response Coefficient	C_S	0.089	
Amplification Factor	A	1.0	
Total Weight	W	963.4	lbs
Total Shear Force	V_S	85.8	lbs
Horizontal Seismic Load	Eh	85.8	lbs
Vertical Seismic Load	Ev	34.3	lbs

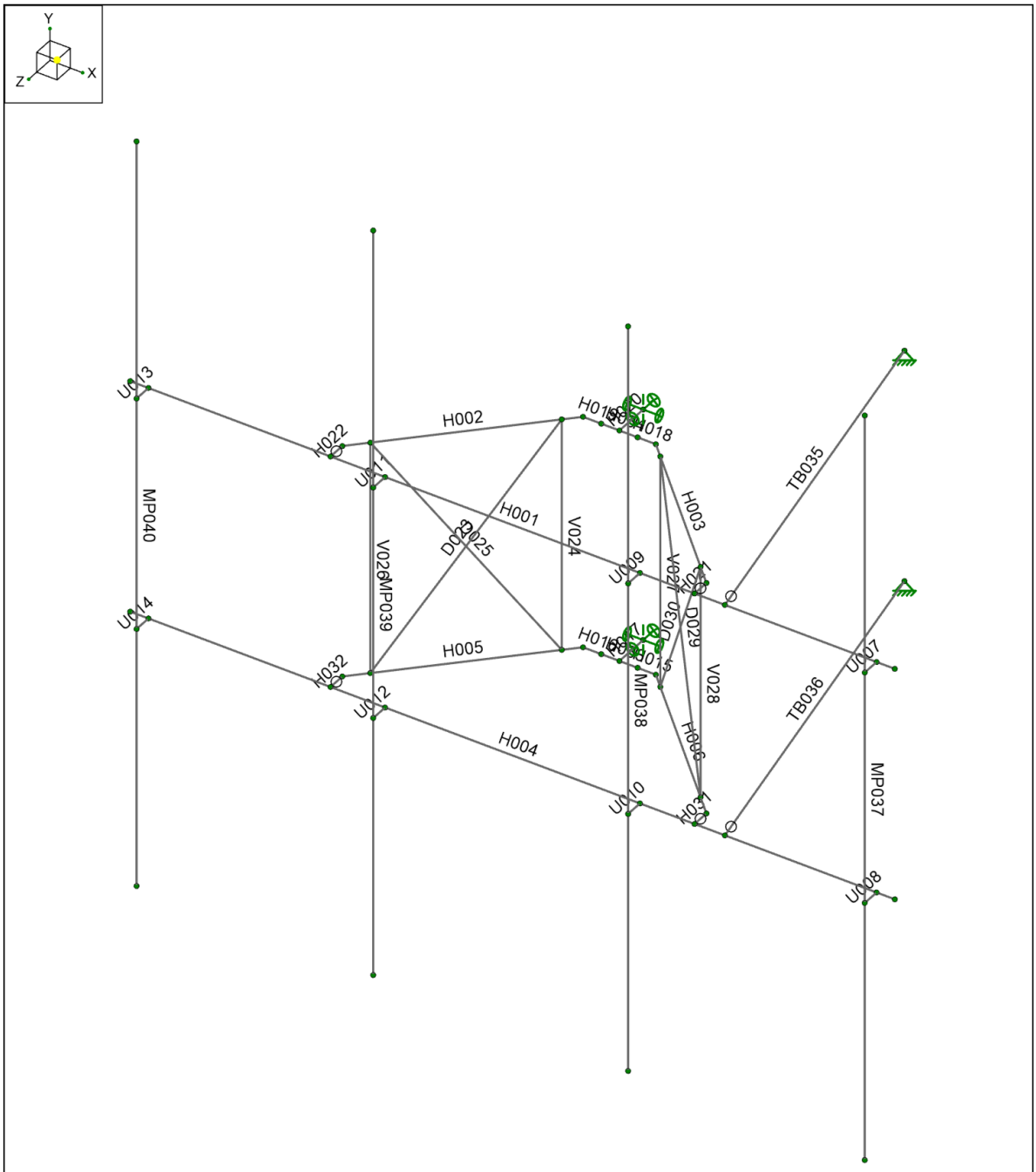
Antenna Calculations (Elevations per Application/RFDS)*

Equipment	Height	Width	Depth	Weight	EPA_N	EPA_T	EPA_{Ni}	EPA_{Ti}
Model #	in	in	in	lbs	sqft	sqft	sqft	sqft
Ericsson AIR 6419 B41	36.3	20.9	9.0	83.3	6.32	1.82	7.46	2.43
RFS APXVAALL24 43-U-NA20	95.9	24.0	8.5	122.8	20.24	3.40	22.70	4.41
Andrew VHLP2-11W-2GR	25.9	25.9	6.5	25.0	2.33	0.69	2.76	1.02
Ceragon FibeAir IP-20C	9.1	9.1	3.9	14.3	0.69	0.30	1.08	0.59
Ericsson 4480 BAND 71	22.0	15.7	7.5	81.0	2.88	1.40	3.64	2.01
Ericsson 4460 BAND 2/25	19.6	15.7	12.1	109.0	2.56	1.98	3.28	2.62

**** Equipment with EPA values N/A were not considered in the mount analysis***



American Tower Corp.	413849, Winchester PCS CT	SK-1
Molly.Li		Apr 21, 2022
14099859_C8_01		R3D. T-MOBILE @ 413849, Winc…



American Tower Corp.	413849, Winchester PCS CT	SK-2
Molly.Li		Apr 21, 2022
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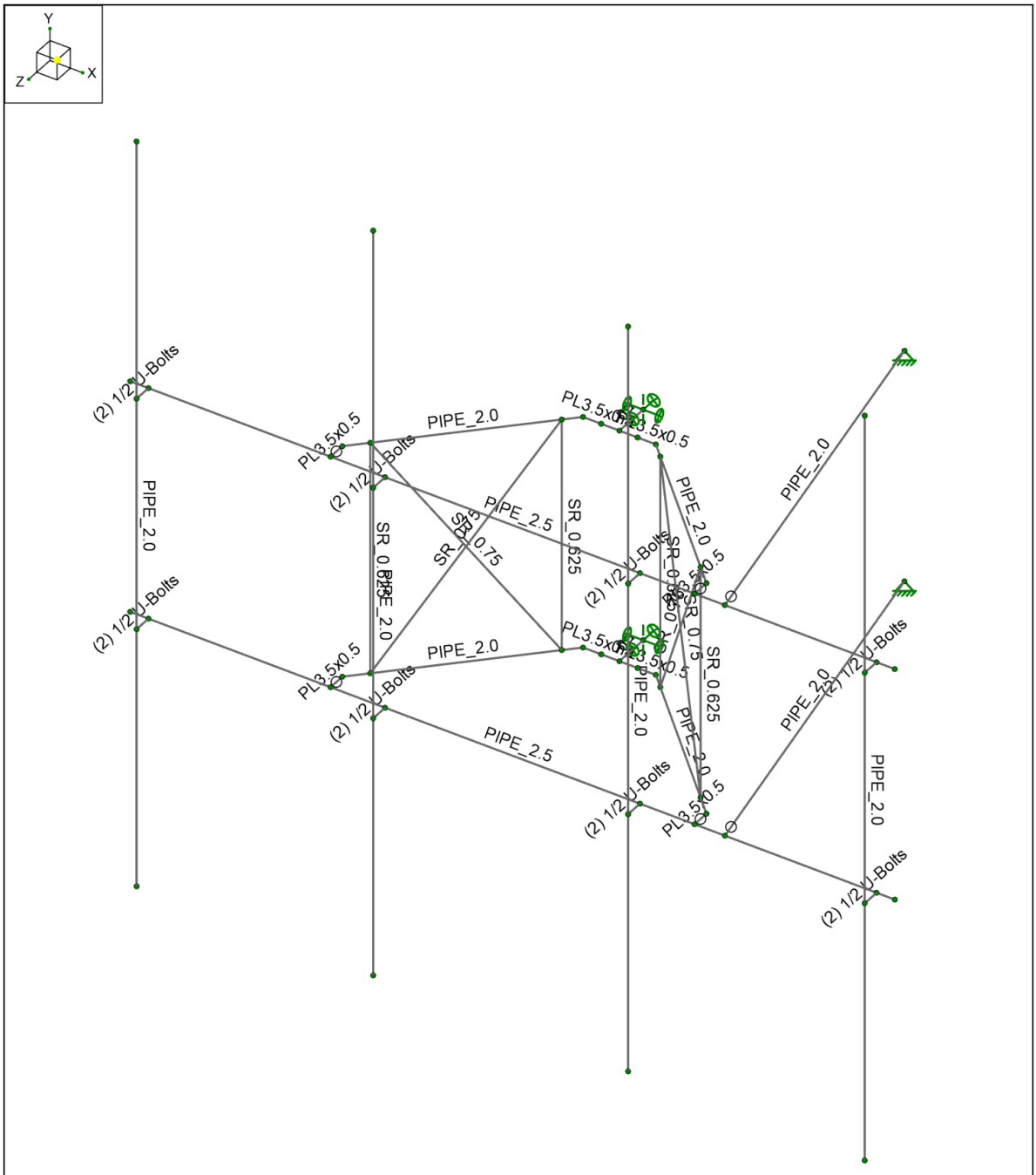
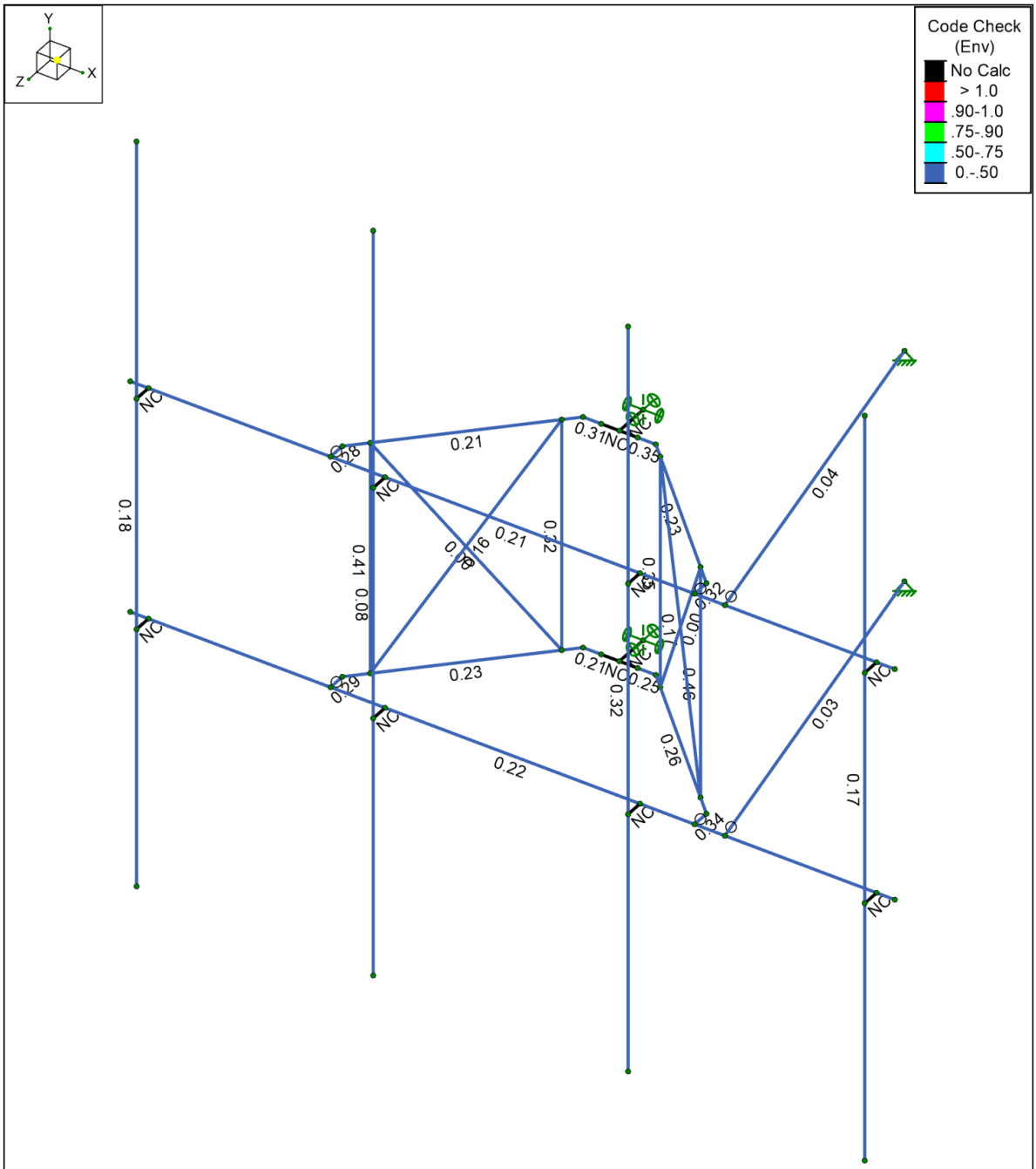
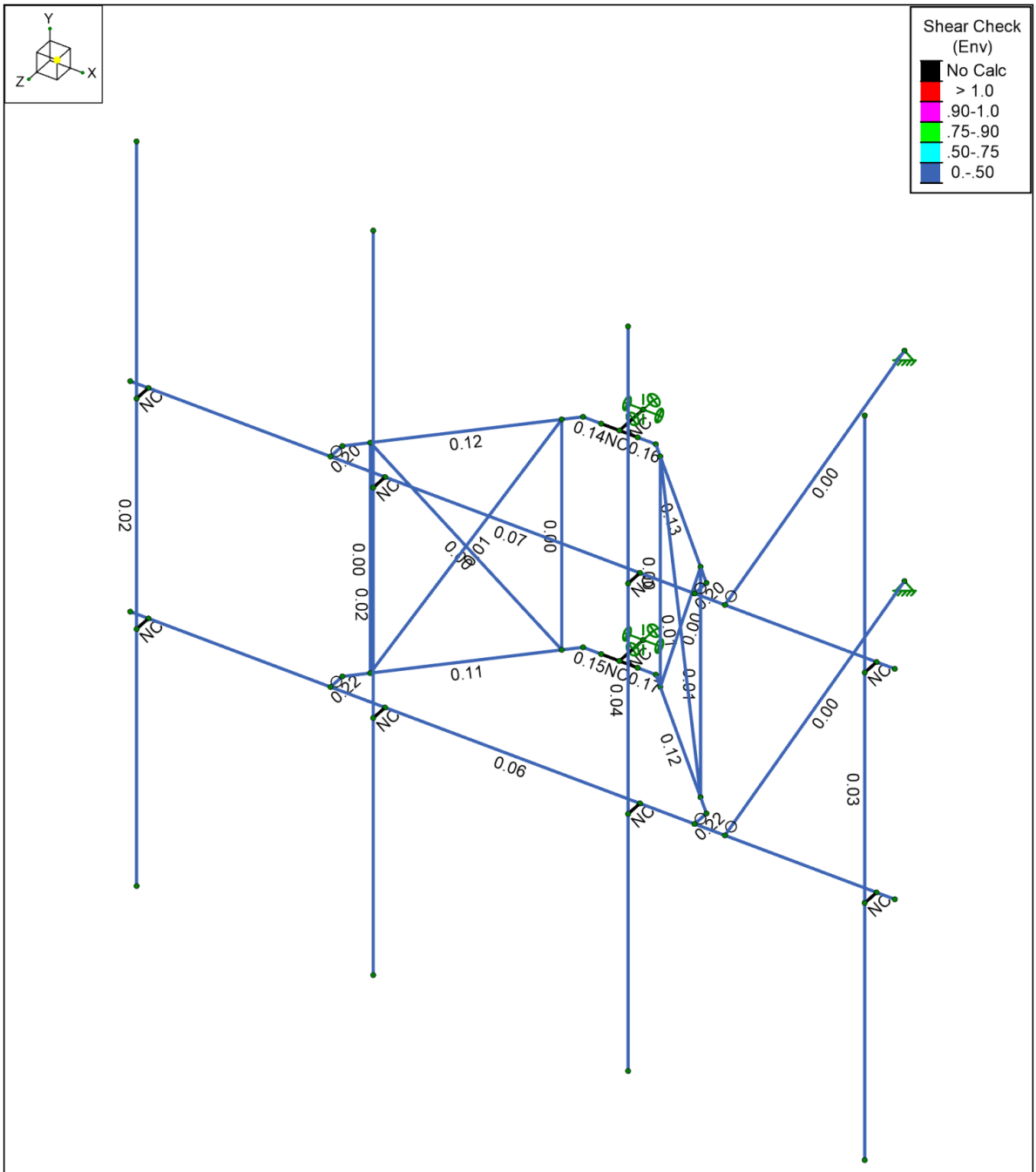


American Tower Corp.	413849, Winchester PCS CT	SK-3
Molly.Li		Apr 21, 2022
14099859_C8_01		R3D. T-MOBILE @ 413849, Winc...



American Tower Corp.	413849, Winchester PCS CT	SK-4
Molly.Li		Apr 21, 2022
14099859_C8_01		R3D. T-MOBILE @ 413849, Winc...



American Tower Corp.	413849, Winchester PCS CT	SK-5
Molly.Li		Apr 21, 2022
14099859_C8_01		R3D. T-MOBILE @ 413849, Winc...

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed
1	D	DL	-1		8	
2	Di	IL			8	28
3	W 0	WL			8	38
4	W 30	WL			16	74
5	W 60	WL			16	74
6	W 90	WL			8	37
7	W 120	WL			16	74
8	W 150	WL			16	74
9	W 180	WL			8	38
10	W 210	WL			16	74
11	W 240	WL			16	74
12	W 270	WL			8	37
13	W 300	WL			16	74
14	W 330	WL			16	74
15	Wi 0	WL			8	38
16	Wi 30	WL			16	74
17	Wi 60	WL			16	74
18	Wi 90	WL			8	37
19	Wi 120	WL			16	74
20	Wi 150	WL			16	74
21	Wi 180	WL			8	38
22	Wi 210	WL			16	74
23	Wi 240	WL			16	74
24	Wi 270	WL			8	37
25	Wi 300	WL			16	74
26	Wi 330	WL			16	74
27	Ws 0	WL			8	38
28	Ws 30	WL			16	74
29	Ws 60	WL			16	74
30	Ws 90	WL			8	37
31	Ws 120	WL			16	74
32	Ws 150	WL			16	74
33	Ws 180	WL			8	38
34	Ws 210	WL			16	74
35	Ws 240	WL			16	74
36	Ws 270	WL			8	37
37	Ws 300	WL			16	74
38	Ws 330	WL			16	74
39	Ev -Y	ELY				28
40	Eh -Z	ELZ				28
41	Eh -X	ELX				28
42	Lv (1)	LL			1	
43	Lv (2)	LL			1	
44	Lv (3)	LL			1	
45	Lv (4)	LL			1	
46	Lv (5)	LL			1	
47	Lv (6)	LL			1	
48	Lv (7)	LL		1		
49	Lv (8)	LL		1		
50	Lm (1)	LL		1		
51	Lm (2)	LL		1		
52	Lm (3)	LL		1		
53	Lm (4)	LL		1		

Node Boundary Conditions

	Node Label	X [lb/in]	Y [lb/in]	Z [lb/in]	X Rot [k-in/rad]	Z Rot [k-in/rad]
1	N001	Reaction	Reaction	Reaction	Reaction	Reaction
2	N006	Reaction	Reaction	Reaction	Reaction	Reaction
3	N050	Reaction	Reaction	Reaction		
4	N051	Reaction	Reaction	Reaction		

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	H001	N003	N002		PIPE_2.5	Beam	None	A53 Gr. B	Typical
2	H002	N032	N004		PIPE_2.0	Beam	None	A53 Gr. B	Typical
3	H003	N031	N005		PIPE_2.0	Beam	None	A53 Gr. B	Typical
4	H004	N008	N007		PIPE_2.5	Beam	None	A53 Gr. B	Typical
5	H005	N029	N009		PIPE_2.0	Beam	None	A53 Gr. B	Typical
6	H006	N028	N010		PIPE_2.0	Beam	None	A53 Gr. B	Typical
7	U007	N011	N015		(2) 1/2 U-Bolts	Beam	None	SAE J429 Gr. 2	Typical
8	U008	N016	N017		(2) 1/2 U-Bolts	Beam	None	SAE J429 Gr. 2	Typical
9	U009	N012	N018		(2) 1/2 U-Bolts	Beam	None	SAE J429 Gr. 2	Typical
10	U010	N019	N020		(2) 1/2 U-Bolts	Beam	None	SAE J429 Gr. 2	Typical
11	U011	N013	N021		(2) 1/2 U-Bolts	Beam	None	SAE J429 Gr. 2	Typical
12	U012	N022	N023		(2) 1/2 U-Bolts	Beam	None	SAE J429 Gr. 2	Typical
13	U013	N014	N024		(2) 1/2 U-Bolts	Beam	None	SAE J429 Gr. 2	Typical
14	U014	N025	N026		(2) 1/2 U-Bolts	Beam	None	SAE J429 Gr. 2	Typical
15	H015	N047	N028	90	PL3.5x0.5	Beam	None	A36	Typical
16	H016	N048	N029	90	PL3.5x0.5	Beam	None	A36	Typical
17	H017	N006	N027		RIGID	None	None	RIGID	Typical
18	H018	N045	N031	90	PL3.5x0.5	Beam	None	A36	Typical
19	H019	N046	N032	90	PL3.5x0.5	Beam	None	A36	Typical
20	H020	N001	N030		RIGID	None	None	RIGID	Typical
21	H021	N005	N034	90	PL3.5x0.5	Beam	None	A36	Typical
22	H022	N004	N033	90	PL3.5x0.5	Beam	None	A36	Typical
23	D023	N038	N035		SR_0.75	Column	None	A36	Typical
24	V024	N035	N036		SR_0.625	Column	None	A36	Typical
25	D025	N036	N037		SR_0.75	Column	None	A36	Typical
26	V026	N037	N038		SR_0.625	Column	None	A36	Typical
27	V027	N039	N040		SR_0.625	Column	None	A36	Typical
28	V028	N041	N042		SR_0.625	Column	None	A36	Typical
29	D029	N042	N039		SR_0.75	Column	None	A36	Typical
30	D030	N040	N041		SR_0.75	Column	None	A36	Typical
31	H031	N010	N044	90	PL3.5x0.5	Beam	None	A36	Typical
32	H032	N009	N043	90	PL3.5x0.5	Beam	None	A36	Typical
33	H033	N047	N048		RIGID	None	None	RIGID	Typical
34	H034	N045	N046		RIGID	None	None	RIGID	Typical
35	TB035	N050	N049		PIPE_2.0	Beam	None	A53 Gr. B	Typical
36	TB036	N051	N052		PIPE_2.0	Beam	None	A53 Gr. B	Typical
37	MP037	N053	N054		PIPE_2.0	Column	None	A53 Gr. B	Typical
38	MP038	N055	N056		PIPE_2.0	Column	None	A53 Gr. B	Typical
39	MP039	N057	N058		PIPE_2.0	Column	None	A53 Gr. B	Typical
40	MP040	N059	N060		PIPE_2.0	Column	None	A53 Gr. B	Typical

Member Advanced Data

	Label	J Release	T/C Only	Physical	Deflection Ratio Options	Activation	Seismic DR
1	H001			Yes	N/A		None
2	H002			Yes	N/A		None

Member Advanced Data (Continued)

	Label	J Release	T/C Only	Physical	Deflection Ratio Options	Activation	Seismic DR
3	H003			Yes	N/A		None
4	H004			Yes	N/A		None
5	H005			Yes	N/A		None
6	H006			Yes	N/A		None
7	U007			Yes	N/A	Exclude	None
8	U008			Yes	N/A	Exclude	None
9	U009			Yes	N/A	Exclude	None
10	U010			Yes	N/A	Exclude	None
11	U011			Yes	N/A	Exclude	None
12	U012			Yes	N/A	Exclude	None
13	U013			Yes	N/A	Exclude	None
14	U014			Yes	N/A	Exclude	None
15	H015			Yes	N/A		None
16	H016			Yes	N/A		None
17	H017			Yes	** NA **		None
18	H018			Yes	N/A		None
19	H019			Yes	N/A		None
20	H020			Yes	** NA **		None
21	H021	BenPIN		Yes	N/A		None
22	H022	BenPIN		Yes	N/A		None
23	D023		Tension Only	Yes	** NA **		None
24	V024			Yes	** NA **		None
25	D025		Tension Only	Yes	** NA **		None
26	V026			Yes	** NA **		None
27	V027			Yes	** NA **		None
28	V028			Yes	** NA **		None
29	D029		Tension Only	Yes	** NA **		None
30	D030		Tension Only	Yes	** NA **		None
31	H031	BenPIN		Yes	N/A		None
32	H032	BenPIN		Yes	N/A		None
33	H033			Yes	** NA **		None
34	H034			Yes	** NA **		None
35	TB035	BenPIN		Yes	N/A		None
36	TB036	BenPIN		Yes	N/A		None
37	MP037			Yes	** NA **		None
38	MP038			Yes	** NA **		None
39	MP039			Yes	** NA **		None
40	MP040			Yes	** NA **		None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	L-Torque [in]	K y-y	K z-z	Function
1	H001	PIPE_2.5	126			Lbyy		1	1	Lateral
2	H002	PIPE_2.0	33.941			Lbyy		0.8	1	Lateral
3	H003	PIPE_2.0	33.941			Lbyy		0.8	1	Lateral
4	H004	PIPE_2.5	126			Lbyy		1	1	Lateral
5	H005	PIPE_2.0	33.941			Lbyy		0.8	1	Lateral
6	H006	PIPE_2.0	33.941			Lbyy		0.8	1	Lateral
7	U007	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
8	U008	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
9	U009	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
10	U010	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
11	U011	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
12	U012	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
13	U013	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
14	U014	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	L-Torque [in]	K y-y	K z-z	Function
15	H015	PL3.5x0.5	3			Lbyy		2.1	2.1	Lateral
16	H016	PL3.5x0.5	3			Lbyy		2.1	2.1	Lateral
17	H018	PL3.5x0.5	3			Lbyy		2.1	2.1	Lateral
18	H019	PL3.5x0.5	3			Lbyy		2.1	2.1	Lateral
19	H021	PL3.5x0.5	3			Lbyy		2.1	2.1	Lateral
20	H022	PL3.5x0.5	3			Lbyy		2.1	2.1	Lateral
21	D023	SR_0.75	47.434			Lbyy		0.65	0.65	Lateral
22	V024	SR_0.625	39			Lbyy		0.65	0.65	Lateral
23	D025	SR_0.75	47.434			Lbyy		0.65	0.65	Lateral
24	V026	SR_0.625	39			Lbyy		0.65	0.65	Lateral
25	V027	SR_0.625	39			Lbyy		0.65	0.65	Lateral
26	V028	SR_0.625	39			Lbyy		0.65	0.65	Lateral
27	D029	SR_0.75	47.434			Lbyy		0.65	0.65	Lateral
28	D030	SR_0.75	47.434			Lbyy		0.65	0.65	Lateral
29	H031	PL3.5x0.5	3			Lbyy		2.1	2.1	Lateral
30	H032	PL3.5x0.5	3			Lbyy		2.1	2.1	Lateral
31	TB035	PIPE_2.0	65.7			Lbyy		1	1	Lateral
32	TB036	PIPE_2.0	65.7			Lbyy		1	1	Lateral
33	MP037	PIPE_2.0	126	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
34	MP038	PIPE_2.0	126	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
35	MP039	PIPE_2.0	126	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
36	MP040	PIPE_2.0	126	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral

Hot Rolled Steel Properties

	Label	E [psi]	G [psi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [lb/ft^{3}]	Yield [psi]	Ry	Fu [psi]	Rt
1	A53 Gr. B	2.9e+07	1.115e+07	0.3	0.65	490	35000	1.6	60000	1.2
2	SAE J429 Gr. 2	2.9e+07	1.115e+07	0.3	0.65	490	57000	1.1	74000	1.1
3	A36	2.9e+07	1.115e+07	0.3	0.65	490	36000	1.5	58000	1.2

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N001	max	1020.054	110	1238.441	26	641.617	15	-159.944	20	0	117	327.544	81
2		min	-1161.594	80	311.257	20	-1748.907	9	-700.729	26	0	1	-259.419	111
3	N006	max	1149.917	74	879.845	32	1592.677	27	-100.598	14	0	117	209.36	76
4		min	-1008.609	116	183.856	14	-468.882	21	-525.627	32	0	1	-166.867	106
5	N050	max	134.649	24	25.068	30	781.491	24	0	117	0	117	0	117
6		min	-143.953	6	8.293	24	-832.59	6	0	1	0	1	0	1
7	N051	max	108.121	12	24.943	30	645.166	12	0	117	0	117	0	117
8		min	-98.051	18	8.394	22	-595.101	18	0	1	0	1	0	1
9	Totals:	max	1115.972	18	2107.625	30	1517.726	14						
10		min	-1115.972	12	745.238	25	-1517.726	8						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	H001	PIPE_2.5	0.209	93.188	107	0.074	42		2	20573.263	50715	3596.25	3596.25	1.955	H1-1b
2	H002	PIPE_2.0	0.206	30.052	106	0.117	0		107	29191.323	32130	1871.625	1871.625	1.967	H1-1b
3	H003	PIPE_2.0	0.232	30.052	81	0.134	0		70	29191.323	32130	1871.625	1871.625	1.965	H1-1b
4	H004	PIPE_2.5	0.216	93.188	113	0.062	42		8	20573.263	50715	3596.25	3596.25	1.962	H1-1b
5	H005	PIPE_2.0	0.231	29.698	111	0.107	30.052		99	29191.323	32130	1871.625	1871.625	1.988	H1-1b
6	H006	PIPE_2.0	0.259	29.698	75	0.125	30.052		88	29191.323	32130	1871.625	1871.625	1.987	H1-1b
7	H015	PL3.5x0.5	0.245	0	72	0.166	3	y	86	51289.202	56700	590.625	4134.375	1.644	H1-1b
8	H016	PL3.5x0.5	0.212	0	107	0.145	3	y	102	51289.202	56700	590.625	4134.375	1.716	H1-1b

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
9	H018	PL3.5x0.5	0.35	0	78	0.16	3	y	92	51289.202	56700	590.625	4134.375	1.65	H1-1b
10	H019	PL3.5x0.5	0.307	0	113	0.14	3	y	96	51289.202	56700	590.625	4134.375	1.723	H1-1b
11	H021	PL3.5x0.5	0.321	0	81	0.204	0	y	80	51289.202	56700	590.625	4134.375	1.667	H1-1b
12	H022	PL3.5x0.5	0.278	0	110	0.201	0.062	y	111	51289.202	56700	590.625	4134.375	1.667	H1-1b
13	D023	SR_0.75	0.158	47.434	110	0.007	0		114	3691.013	14313.882	178.924	178.924	2.527	H1-1b*
14	V024	SR_0.625	0.32	0	112	0.002	39		26	2633.14	9940.196	103.544	103.544	2.209	H1-1a
15	D025	SR_0.75	0	47.434	117	0	47.434		117	3691.013	14313.882	178.924	178.924	1	H1-1a
16	V026	SR_0.625	0.411	39	106	0.004	0		110	2633.14	9940.196	103.544	103.544	2.259	H1-1a
17	V027	SR_0.625	0.354	0	76	0.001	0		8	2633.14	9940.196	103.544	103.544	2.196	H1-1a
18	V028	SR_0.625	0.46	39	70	0.006	0		78	2633.14	9940.196	103.544	103.544	2.257	H1-1a
19	D029	SR_0.75	0.175	47.434	80	0.01	47.434		7	3691.013	14313.882	178.924	178.924	2.503	H1-1b*
20	D030	SR_0.75	0	47.434	117	0	47.434		117	3691.013	14313.882	178.924	178.924	1	H1-1a
21	H031	PL3.5x0.5	0.338	0	75	0.224	0	y	74	51289.202	56700	590.625	4134.375	1.667	H1-1b
22	H032	PL3.5x0.5	0.293	0	110	0.22	0.062	y	117	51289.202	56700	590.625	4134.375	1.667	H1-1b
23	TB035	PIPE_2.0	0.035	0	24	0.003	65.7		35	22429.714	32130	1871.625	1871.625	1.136	H1-1b*
24	TB036	PIPE_2.0	0.029	0	12	0.003	65.7		35	22429.714	32130	1871.625	1871.625	1.136	H1-1b*
25	MP037	PIPE_2.0	0.171	44.625	77	0.026	44.625		78	18380.609	32130	1871.625	1871.625	3	H1-1b
26	MP038	PIPE_2.0	0.323	43.312	9	0.04	43.312		9	16038.266	32130	1871.625	1871.625	2.154	H1-1b
27	MP039	PIPE_2.0	0.076	44.625	8	0.015	44.625		7	18380.609	32130	1871.625	1871.625	2.981	H1-1b
28	MP040	PIPE_2.0	0.181	81.375	116	0.024	81.375		116	18380.609	32130	1871.625	1871.625	3	H1-1b

Exhibit G

Power Density/RF Emissions Report

Radio Frequency Exposure Analysis Report

May 16, 2022

Centerline on behalf of T-Mobile

T-Mobile Site Name: CTNH392_American Tower_Monopine_Winsted
Site Number: CTNH392A

Site Address: 32 Norfolk Road, Winsted, CT 06898-2227

Site Compliance Summary

T-Mobile Compliance Status:	Compliant
Cumulative Calculated Power Density (Ground Level):	3.63069 µW/cm^2
Cumulative General Population % MPE (Ground Level):	0.427483%

May 16, 2022

Centerline
Attn: Ryan Clark, Site Acquisition Consultant
750 W Center St, Suite 301
West Bridgewater, MA 02379

RF Exposure Analysis for Site: **CTNH392_American Tower_Monopine_Winsted**

Centerline Communications, LLC ("Centerline") was contracted to analyze the proposed T-Mobile facility at **32 Norfolk Road, Winsted, CT 06898-2227** for the purpose of determining whether the predictive exposure from the proposed facility is within specified federal limits.

All information used in this report was analyzed as a percentage of the Maximum Permissible Exposure (% MPE) limits as detailed in 47 CFR § 1.1310 as well as Federal Communications Commission (FCC) OET Bulletin 65 Edition 97-01. The FCC MPE limits are typically expressed in units of milliwatts per square centimeter (mW/cm^2) or microwatts per square centimeter ($\mu W/cm^2$). The exposure limits vary depending upon the frequencies being utilized. The General Population/Uncontrolled MPE limit (in mW/cm^2) for frequencies between 300 and 1500 is defined as frequency (in MHz) divided by 1500 ($f_{MHz}/1500$). Frequencies between 1500 and 100,000 MHz have a General Population/Uncontrolled MPE limit of 1 mW/cm^2 (1000 $\mu W/cm^2$). The calculated power density at each sample point divided by the limit at each calculated frequency provides a result in % MPE. Summing the calculated % MPE from all contributors provides a cumulative % MPE at a particular sample point. Wireless carriers use different frequency bands with varying MPE limits; therefore, it is useful to report results in terms of % MPE as opposed to power density.

All results were compared to the FCC radio frequency exposure rules as detailed in 47 CFR § 1.1307(b) to determine compliance with the 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.

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, 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.

Calculation Methodology

Centerline Communications, LLC has performed theoretical modeling of the site using a software tool, RoofMaster®, which incorporates calculation methodologies detailed in FCC OET 65. RoofMaster® uses a cylindrical model for conservative power density predictions within the near field of the antenna where the antenna pattern has not truly formed yet. Within this area power density values tend to decrease based upon an inverse distance function. At the point where it is appropriate for modeling to change from near-field calculations to far-field calculations, the power decreases inversely with the square of the distance. The modeling is based on worst-case assumptions in terms of transmitter power and duty cycle. No losses were included in the power calculations unless they were specifically provided for the project.

In OET 65, a far field model is presented to calculate the spatial peak power density. The RoofMaster® implementation of this model incorporates antenna manufacturer's horizontal and vertical pattern data to determine the power density in all directions. This model yields the power density at a single point in space. In order to determine the spatial power density for comparison to the FCC limits, the average of several points calculated within the human profile (0-6') must be conducted. RoofMaster® calculates seven power density values between 0-6' above the specified study plane and performs a linear spatial average.

Data & Results

The following table details the antennas and operating parameters for the T-Mobile antenna system as well as any other antenna systems at the site. This is based on antenna information provided by the client and data compiled from other sources where necessary. The data below was input into Roofmaster® to perform the theoretical exposure calculations at the Ground.

The theoretical calculations performed in Roofmaster® determine the cumulative exposure at all sample points at ground level (0-6' spatial average). The results from highest cumulative sample point at ground level surrounding the site are displayed in the table below. The contribution from directional antennas to the maximum cumulative totals varies greatly depending on location; therefore, the contribution from one antenna sector at the highest calculated exposure point may be greater or less than other sectors since sectorized directional antennas are pointed in different directions and there is not much overlapping exposure.

The contribution to the cumulative power density and % MPE for each antenna/frequency band is listed in the table. The cumulative power density and cumulative % MPE are displayed at the bottom of the table.

Maximum Calculated Cumulative Power Density (Location: approximately 5' SE of site)

Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/ Channel (watts)	ERP (watts)	Calculated Power Density (μW/cm²)	General Population MPE Limit (μW/cm²)	General Population % MPE
T-Mobile A 1	RFS APXVAARR24 43-U-NA20	700	13.20	127.00	2.00	40.00	1671.44	0.00033	466.67	0.00007
T-Mobile A 1	RFS APXVAARR24 43-U-NA20	600	13.14	127.00	4.00	60.00	4945.51	0.00048	400.00	0.00012
T-Mobile A 1	RFS APXVAARR24 43-U-NA20	600	13.14	127.00	2.00	40.00	1648.50	0.00016	400.00	0.00004
T-Mobile A 1	RFS APXVAARR24_43-U-NA20	2100	17.32	127.00	2.00	140.00	15106.30	0.00033	1000.00	0.00003
T-Mobile A 1	RFS APXVAARR24_43-U-NA20	1900	15.29	127.00	2.00	140.00	9465.82	0.00039	1000.00	0.00004
T-Mobile A 1	RFS APXVAARR24_43-U-NA20	1900	15.29	127.00	1.00	15.00	507.10	0.00002	1000.00	0.00000
T-Mobile A 1	RFS APXVAARR24_43-U-NA20	2100	17.32	127.00	1.00	40.00	2158.04	0.00005	1000.00	0.00001
T-Mobile A 2	*AIR6419 2500 LTE	2500	22.35	127.00	2.00	80.00	27486.53	0.02260	1000.00	0.00226
T-Mobile A 2	*AIR6419 2500 NR	2500	22.35	127.00	2.00	80.00	27486.53	0.02260	1000.00	0.00226
T-Mobile B 3	RFS APXVAARR24 43-U-NA20	700	13.20	127.00	2.00	40.00	1671.44	0.04278	466.67	0.00917
T-Mobile B 3	RFS APXVAARR24 43-U-NA20	600	13.14	127.00	4.00	60.00	4945.51	0.11278	400.00	0.02820
T-Mobile B 3	RFS APXVAARR24 43-U-NA20	600	13.14	127.00	2.00	40.00	1648.50	0.03760	400.00	0.00940
T-Mobile B 3	RFS APXVAARR24_43-U-NA20	2100	17.32	127.00	2.00	140.00	15106.30	0.16734	1000.00	0.01673
T-Mobile B 3	RFS APXVAARR24_43-U-NA20	1900	15.29	127.00	2.00	140.00	9465.82	0.15804	1000.00	0.01580
T-Mobile B 3	RFS APXVAARR24_43-U-NA20	1900	15.29	127.00	1.00	15.00	507.10	0.00847	1000.00	0.00085
T-Mobile B 3	RFS APXVAARR24_43-U-NA20	2100	17.32	127.00	1.00	40.00	2158.04	0.02390	1000.00	0.00239
T-Mobile B 4	*AIR6419 2500 LTE	2500	22.35	127.00	2.00	80.00	27486.53	1.14840	1000.00	0.11484
T-Mobile B 4	*AIR6419 2500 NR	2500	22.35	127.00	2.00	80.00	27486.53	1.14840	1000.00	0.11484
T-Mobile C 5	RFS APXVAARR24 43-U-NA20	700	13.20	127.00	2.00	40.00	1671.44	0.00003	466.67	0.00001
T-Mobile C 5	RFS APXVAARR24 43-U-NA20	600	13.14	127.00	4.00	60.00	4945.51	0.00017	400.00	0.00004
T-Mobile C 5	RFS APXVAARR24 43-U-NA20	600	13.14	127.00	2.00	40.00	1648.50	0.00006	400.00	0.00001
T-Mobile C 5	RFS APXVAARR24_43-U-NA20	2100	17.32	127.00	2.00	140.00	15106.30	0.00039	1000.00	0.00004
T-Mobile C 5	RFS APXVAARR24_43-U-NA20	1900	15.29	127.00	2.00	140.00	9465.82	0.00012	1000.00	0.00001
T-Mobile C 5	RFS APXVAARR24_43-U-NA20	1900	15.29	127.00	1.00	15.00	507.10	0.00001	1000.00	0.00000
T-Mobile C 5	RFS APXVAARR24_43-U-NA20	2100	17.32	127.00	1.00	40.00	2158.04	0.00006	1000.00	0.00001
T-Mobile C 6	*AIR6419 2500 LTE	2500	22.35	127.00	2.00	80.00	27486.53	0.00157	1000.00	0.00016
T-Mobile C 6	*AIR6419 2500 NR	2500	22.35	127.00	2.00	80.00	27486.53	0.00157	1000.00	0.00016
Verizon A 7	AMPHENOL LPA-80063-6CF-EDIN	850	14.50	148.00	7.00	20.00	3945.74	0.00035	566.67	0.00006
Verizon A 8	ANTEL BXA-70063-6CF-EDIN-0	700	14.00	148.00	4.00	40.00	4019.02	0.00006	466.67	0.00001
Verizon A 8	ANTEL BXA-70063-6CF-EDIN-0	850	14.50	148.00	4.00	40.00	4509.41	0.00005	566.67	0.00001
Verizon A 9	AMPHENOL LPA-171063-12CF-EDIN-0	1900	16.90	148.00	4.00	40.00	7836.46	0.00020	1000.00	0.00002
Verizon A 9	AMPHENOL LPA-171063-12CF-EDIN-0	2100	16.40	148.00	4.00	40.00	6984.25	0.00021	1000.00	0.00002
Verizon A 10	AMPHENOL LPA-80063-6CF-EDIN	850	14.50	148.00	7.00	20.00	3945.74	0.00035	566.67	0.00006
Verizon B 11	AMPHENOL LPA-80063-6CF-EDIN	850	14.00	148.00	7.00	20.00	3516.64	0.05509	566.67	0.00972

Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/ Channel (watts)	ERP (watts)	Calculated Power Density (µW/cm²)	General Population MPE Limit (µW/cm²)	General Population % MPE
Verizon B 12	ANTEL BXA-70063-6CF-EDIN	700	14.00	148.00	4.00	40.00	4019.02	0.07738	466.67	0.01658
Verizon B 12	ANTEL BXA-70063-6CF-EDIN	850	14.50	148.00	4.00	40.00	4509.41	0.07983	566.67	0.01409
Verizon B 13	AMPHENOL LPA-171063-12CF-EDIN-0	1900	16.90	148.00	4.00	40.00	7836.46	0.07247	1000.00	0.00725
Verizon B 13	AMPHENOL LPA-171063-12CF-EDIN-0	2100	16.40	148.00	4.00	40.00	6984.25	0.06865	1000.00	0.00687
Verizon B 14	AMPHENOL LPA-80080-6CF-EDIN	850	14.00	148.00	7.00	20.00	3516.64	0.05509	566.67	0.00972
Verizon C 15	AMPHENOL LPA-80080-6CF-EDIN	850	14.00	148.00	7.00	20.00	3516.64	0.00005	566.67	0.00001
Verizon C 16	ANTEL BXA-70063-6CF-EDIN-0	700	14.00	148.00	4.00	40.00	4019.02	0.00001	466.67	0.00000
Verizon C 16	ANTEL BXA-70063-6CF-EDIN-0	850	14.50	148.00	4.00	40.00	4509.41	0.00001	566.67	0.00000
Verizon C 17	AMPHENOL LPA-171063-12CF-EDIN-0	1900	16.90	148.00	4.00	40.00	7836.46	0.00002	1000.00	0.00000
Verizon C 17	AMPHENOL LPA-171063-12CF-EDIN-0	2100	16.40	148.00	4.00	40.00	6984.25	0.00002	1000.00	0.00000
Verizon C 18	AMPHENOL LPA-80080-6CF-EDIN	850	14.00	148.00	7.00	20.00	3516.64	0.00005	566.67	0.00001
AT&T A 19	CCI TPA65R-BU8D	700	13.05	137.00	4.00	40.00	3229.39	0.00011	466.67	0.00002
AT&T A 19	CCI TPA65R-BU8D	850	13.15	137.00	4.00	40.00	3304.61	0.00001	566.67	0.00000
AT&T A 20	CCI DMP65R-BU8D	1900	14.15	137.00	4.00	40.00	4160.26	0.00003	1000.00	0.00000
AT&T A 20	CCI DMP65R-BU8D	2100	15.15	137.00	4.00	40.00	5237.45	0.00002	1000.00	0.00000
AT&T A 20	CCI DMP65R-BU8D	2300	14.25	137.00	4.00	25.00	2660.73	0.00000	1000.00	0.00000
AT&T B 21	CCI TPA65R-BU8D	700	13.05	137.00	4.00	40.00	3229.39	0.07300	466.67	0.01564
AT&T B 21	CCI TPA65R-BU8D	850	13.15	137.00	4.00	40.00	3304.61	0.06511	566.67	0.01149
AT&T B 22	CCI DMP65R-BU8D	1900	14.15	137.00	4.00	40.00	4160.26	0.06655	1000.00	0.00666
AT&T B 22	CCI DMP65R-BU8D	2100	15.15	137.00	4.00	40.00	5237.45	0.06549	1000.00	0.00655
AT&T B 22	CCI DMP65R-BU8D	2300	14.25	137.00	4.00	25.00	2660.73	0.05172	1000.00	0.00517
AT&T C 23	CCI TPA65R-BU8D	700	13.05	137.00	4.00	40.00	3229.39	0.00004	466.67	0.00001
AT&T C 23	CCI TPA65R-BU8D	850	13.15	137.00	4.00	40.00	3304.61	0.00002	566.67	0.00000
AT&T C 24	CCI DMP65R-BU8D	1900	14.15	137.00	4.00	40.00	4160.26	0.00000	1000.00	0.00000
AT&T C 24	CCI DMP65R-BU8D	2100	15.15	137.00	4.00	40.00	5237.45	0.00001	1000.00	0.00000
AT&T C 24	CCI DMP65R-BU8D	2300	14.25	137.00	4.00	25.00	2660.73	0.00004	1000.00	0.00000
*AIR6419 not available, AIR6449 used in its place.							**Cumulative Power Density:**	**3.63069 µW/cm²**	**Cumulative % MPE:**	**0.42748%**

Summary

The theoretical calculations performed for this analysis yielded cumulative power density totals in all areas at Ground that are within the allowable federal limits for public exposure to RF energy. Therefore, the site is **Compliant** with FCC rules and regulations.

Michelle Stone

Michelle Stone
RF EME Technical Writer II
Centerline Communications, LLC

Exhibit H

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
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SOUTH EASTON ,MA 02375

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

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

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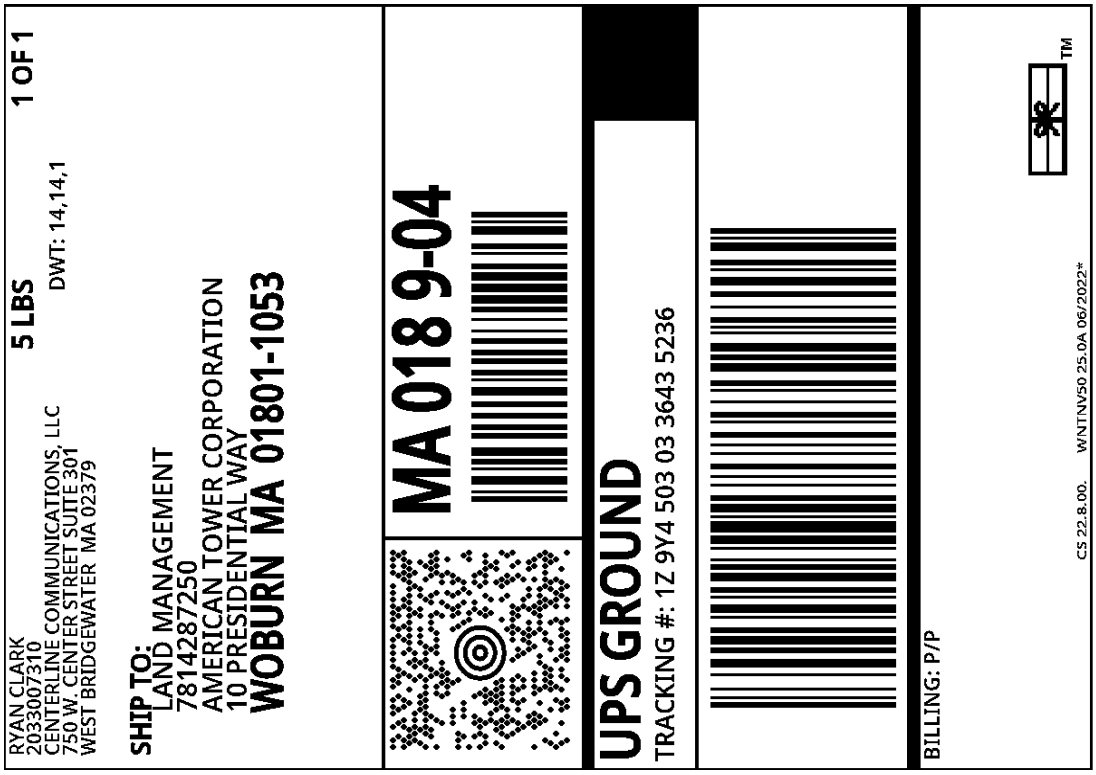

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3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

   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.

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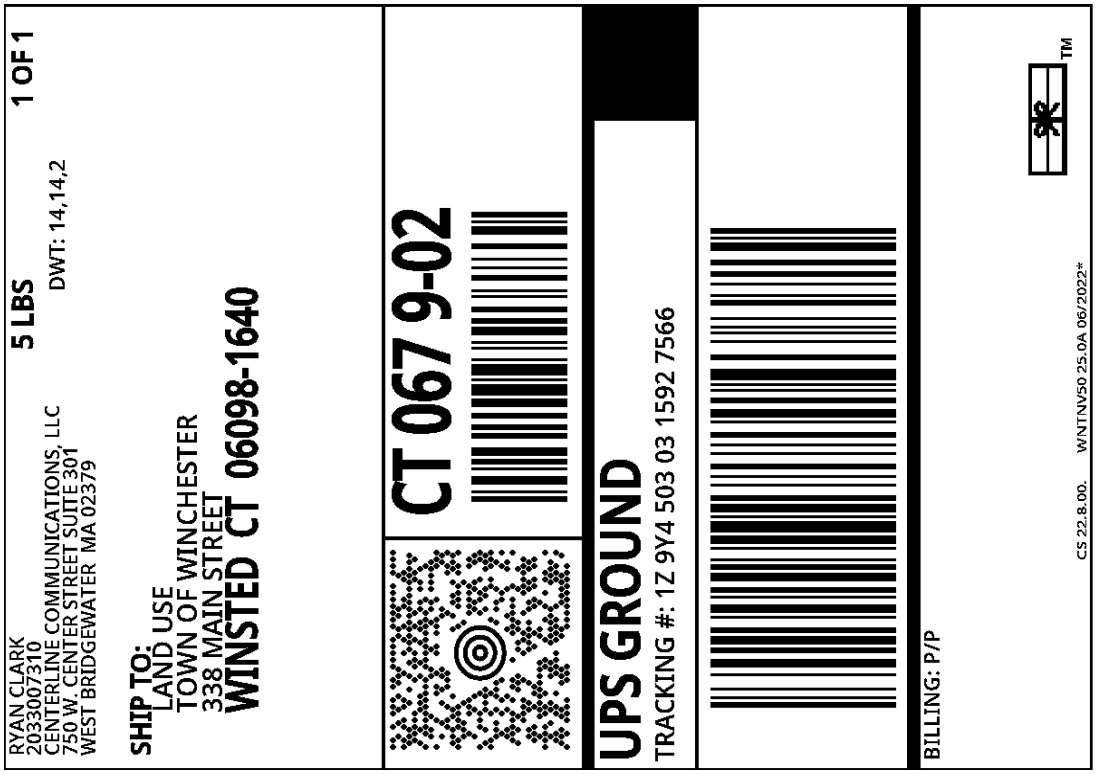

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   Customers with a Daily Pickup
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   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® 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.

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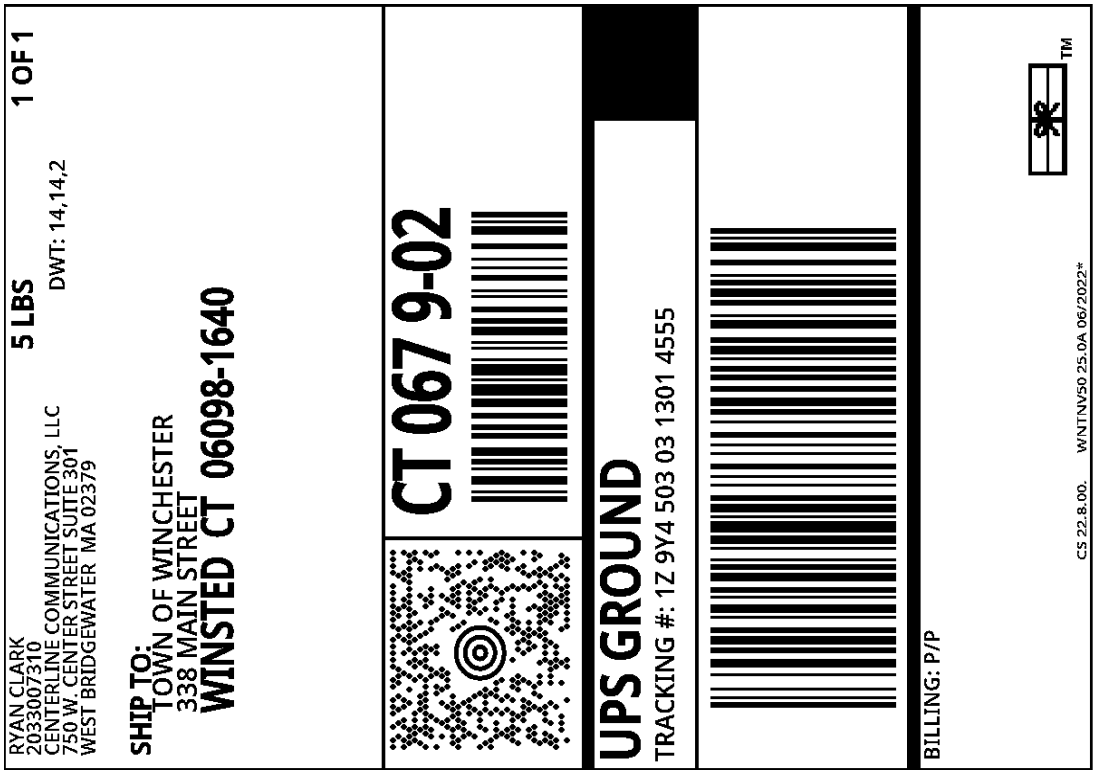


UPS CampusShip: View/Print Label

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.

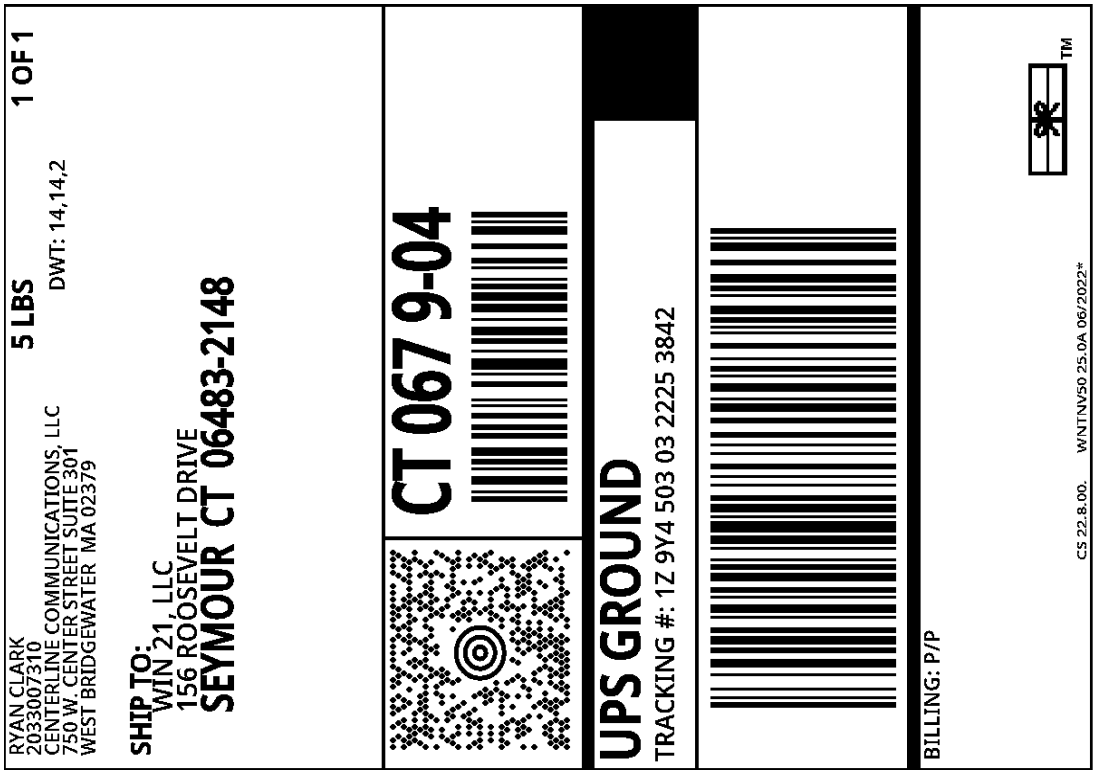
   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To 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™
TOWNLINE GENERAL STORE
450 E CENTER ST
WEST BRIDGEWATER ,MA 02379

FOLD HERE



〈 Back to Shipping History

Your shipment from
CENTERLINE SITE ACQUISITION

Estimated delivery
The delivery date will be provided as soon as possible.

Label Created

On the Way

Out for Delivery

Delivery

Ship To
WIN 21, LLC
156 ROOSEVELT DRIVE
SEYMOUR, CT 064832148 US

Get Updates >

Change My Delivery

View Details

UPS Freight Less-than-Truckload (“LTL”) transportation services are offered by TFI International Inc., its affiliates or divisions (including without limitation TForce Freight), which are not affiliated with United Parcel Service, Inc. or any of its affiliates, subsidiaries or related entities (“UPS”). UPS assumes no liability in connection with UPS

Ask UPS

〈 Back to Shipping History

☆

Your shipment from
CENTERLINE SITE ACQUISITION

Estimated delivery
The delivery date will be provided as soon as possible.

Label Created

On the Way

Out for Delivery

Delivery

Ship To
TOWN OF WINCHESTER
338 MAIN STREET
WINSTED, CT 060981640 US

Get Updates ›

Change My Delivery

View Details

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Ask UPS

〈 Back to Shipping History

Your shipment from
CENTERLINE SITE ACQUISITION

Estimated delivery
The delivery date will be provided as soon as possible.

Label Created

On the Way

Out for Delivery

Delivery

Ship To
AMERICAN TOWER CORPORATION
LAND MANAGEMENT
10 PRESIDENTIAL WAY
WOBURN, MA 018011053 US

Get Updates ›

Change My Delivery

View Details

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〈 Back to Shipping History

☆

Your shipment from
CENTERLINE SITE ACQUISITION

Estimated delivery
The delivery date will be provided as soon as possible.

Label Created

On the Way

Out for Delivery

Delivery

Ship To
TOWN OF WINCHESTER
LAND USE
338 MAIN STREET
WINSTED, CT 060981640 US

Get Updates ›

Change My Delivery

View Details

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