

INDUSTRIAL AVE,  
SUITE 3  
MORRIS PLAZA NJ 07430  
PHONE: 201.684.0055  
FAX: 201.684.0066



December 8th, 2023

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

RE: Notice of Exempt Modification  
123 Pine Orchard Road, Branford, CT 06405  
Latitude: 41.27476815  
Longitude: -72.79317788  
T-Mobile Site#: CTNH801B - Anchor

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 122-foot level of the existing 127-foot Monopole at 123 Pine Orchard Road in Branford, CT. The 127-foot monopole is owned by American Tower. The property is owned and operated by Malavasi Investments LLC. T-Mobile now intends to remove and replace six (6) antennas at the 122-foot level of the existing tower. The antennas support 5G services. T-Mobile will be installing the associated ground equipment within their existing ground space.

**Planned Modifications:**

**Tower:**

Install New:

- (3) AIR 6419 B41 Antennas
- (3) VV-65A-R1 Antennas
- (3) Radio 4460 B25 B66
- (3) 6x24 Hybrid Cables

To Be Removed:

- (8) 1 5/8" Coax Cables
- (1) 9x18 HCS Cable
- (3) AIR21 B2A B4P Antennas
- (3) AIR21 B4A B2P Antennas

To Be Relocated:

- (3) APXVAARR24\_43-U-NA20 Antennas
- (3) Radio 4449 B71 B85

(3) 6x24 Hybrid Cables

**Ground:**

Install New:

(1) 6160 Power Enclosure and (1) B160 Battery Cabinet.

This facility was approved by the Connecticut Siting Council in Docket 386 dated February 25, 2010. This project does not violate any of the conditions of this approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to First Selectman James Cosgrove, Elected Official, and Harry Smith, Town Planner, as well as the tower and property owner.

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

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

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

Sincerely,

**Eric Breun**

Transcend Wireless

Cell: 201-658-7728

Email: [ebreun@transcendwireless.com](mailto:ebreun@transcendwireless.com)

Attachments

cc: James Cosgrove - First Selectman of Old Lyme

Harry Smith - Town Planner

American Tower - Tower Owner

Malavasi Investment LLC - Property Owner

**Hello, your package has been delivered.**

**Delivery Date:** Wednesday, 12/06/2023

**Delivery Time:** 12:09 PM

**Left At:** DOCK

**Signed by:** ARIEL

**TRANSCEND WIRELESS**

**Tracking Number:** [1ZV257420397150462](#)  
**Ship To:** AMERICAN TOWER CORPORATION  
10 PRESIDENTIAL WAY  
WOBURN, MA 01801  
US  
**Number of Packages:** 1  
**UPS Service:** UPS Ground  
**Package Weight:** 1.0 LBS  
**Reference Number:** CTNH801B

**Hello, your package has been delivered.**

**Delivery Date:** Wednesday, 12/06/2023

**Delivery Time:** 3:27 PM

**Left At:** OTHER-RELEAS

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[Set Delivery Instructions](#)

[Manage Preferences](#)

**TRANSCEND WIRELESS**

**Tracking Number:** [1ZV257420398100479](#)  
**Ship To:** MALAVASI INVESTMENTS LLC  
35 STONY CREEK ROAD  
BRANFORD, CT 06405  
US  
**Number of Packages:** 1  
**UPS Service:** UPS Ground  
**Package Weight:** 1.0 LBS  
**Reference Number:** CTNH801B

**Hello, your package has been delivered.**

**Delivery Date:** Wednesday, 12/06/2023

**Delivery Time:** 4:21 PM

**Signed by:** MILICI

## TRANSCEND WIRELESS

<b>Tracking Number:</b>	<a href="#"><u>1ZV257420392107036</u></a>
<b>Ship To:</b>	TOWN PLANNER HARRY SMITH 1019 MAIN STREET BRANFORD CENTER, CT 06405 US
<b>Number of Packages:</b>	1
<b>UPS Service:</b>	UPS Ground
<b>Package Weight:</b>	1.0 LBS
<b>Reference Number:</b>	CTNH801B

**Hello, your package has been delivered.**

**Delivery Date:** Wednesday, 12/06/2023

**Delivery Time:** 4:21 PM

**Signed by:** TRISTA

## TRANSCEND WIRELESS

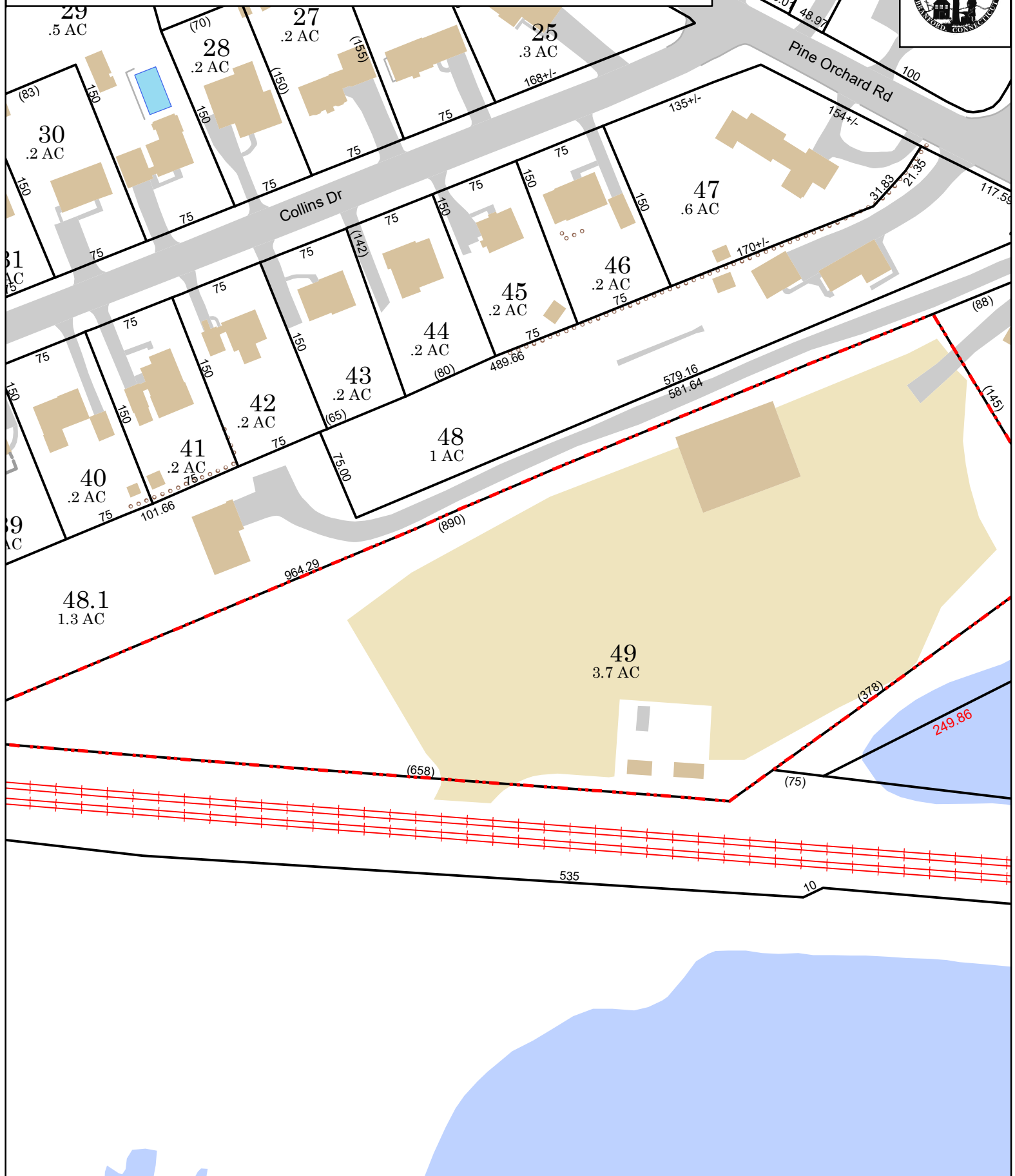
<b>Tracking Number:</b>	<a href="#"><u>1ZV257420394893022</u></a>
<b>Ship To:</b>	FIRST SELECTMAN JAMES COSGROVE 1019 MAIN STREET BRANFORD CENTER, CT 06405 US
<b>Number of Packages:</b>	1
<b>UPS Service:</b>	UPS Ground
<b>Package Weight:</b>	1.0 LBS
<b>Reference Number:</b>	CTNH801B



# Town of Branford, Connecticut - Assessment Parcel Map

Parcel: F08-000-006-00049

Address: 123 PINE ORCHARD RD



Approximate Scale: 1 inch : 100 feet

Grand List Date: June 2023

**Disclaimer:**

This map is for informational purposes only. All information is subject to verification by any user. The Town of Branford and its mapping contractors assume no legal responsibility for the information contained herein.



Property Information

Property Location	123 PINE ORCHARD RD
Owner	MALAVASI INVESTMENTS LLC
Co-Owner	na
Mailing Address	35 STONY CREEK RD BRANFORD CT 06405
Land Use	3160 COMM WHS MDL96
Land Class	C
Zoning Code	R3
Census Tract	

Neighborhood	0070
Acreage	3.76
Utilities	Public Water,Public Sewer
Lot Setting/Desc	Suburban Level
Book / Page	0802/0624

Primary Construction Details

Year Built	1941
Building Desc.	COMM WHS MDL96
Building Style	Service Shop
Building Grade	C
Stories	1
Occupancy	1.00
Exterior Walls	Concr/Cinder
Exterior Walls 2	NA
Roof Style	Flat
Roof Cover	T&G/Rubber
Interior Walls	Minim/Masonry
Interior Walls 2	NA
Interior Floors 1	Concr-Finished
Interior Floors 2	NA

Heating Fuel	Oil
Heating Type	Hot Air-no Duc
AC Type	None
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	NA
Fin Bsmt Area	
Fin Bsmt Quality	
Bsmt Gar	
Fireplaces	

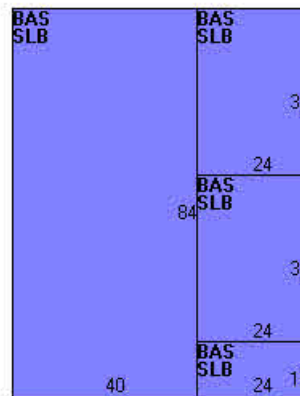
(\*Industrial / Commercial Details)

Building Use	Ind/Comm
Building Condition	G
Sprinkler %	NA
Heat / AC	NONE
Frame Type	MASONRY
Baths / Plumbing	AVERAGE
Ceiling / Wall	CEILING ONLY
Rooms / Prtns	AVERAGE
Wall Height	15.00
First Floor Use	NA
Foundation	NA

Photo



Sketch







**DOCKET NO. 386** – T-Mobile Northeast LLC application for a } Connecticut  
Certificate of Environmental Compatibility and Public Need for }  
the construction, maintenance and management of a } Siting  
telecommunications facility located at 123 Pine Orchard Road, } Council  
Branford, Connecticut. }

February 25, 2010

### Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, maintenance, and management of a telecommunications facility, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to T-Mobile Northeast LLC, hereinafter referred to as the Certificate Holder, for a telecommunications facility at 123 Pine Orchard Road, Branford, Connecticut.

The facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of T-Mobile Northeast LLC and New Cingular Wireless PCS LLC and other entities, both public and private, but such tower shall not exceed a height of 125 feet above ground level. Panel antennas shall be installed in a flush-mount configuration or utilizing t-arm mounts and such panel antennas shall not exceed a height of 125 feet above ground level.
2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Branford for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
  - a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line, and landscaping; and
  - b) construction plans for site clearing, grading, landscaping, water drainage, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.
  - c) correspondence indicating results of discussions with the property owner at 119 Pine Orchard Road regarding continued use of the existing driveway entrance. If an agreement cannot be reached and the driveway is expanded as proposed, a 12-foot spruce tree shall be planted in the front yard of 121 Pine Orchard Road.

3. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of the electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of the electromagnetic radio frequency power density be submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.
4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
6. The Certificate Holder shall provide reasonable space on the tower for no compensation for any Town of Branford public safety services (police, fire and medical services), provided such use can be accommodated and is compatible with the structural integrity of the tower.
7. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed and providing wireless services within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline.
8. At least one wireless telecommunications carrier shall install their equipment and shall become operational not later than 120 days after the tower is erected. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The Certificate Holder shall provide written notice to the Executive Director of any schedule changes as soon as is practicable.
9. Any request for extension of the time period referred to in Condition 7 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the Town of Branford. Any proposed modifications to this Decision and Order shall likewise be so served.
10. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.
11. The Certificate Holder shall remove any nonfunctioning antenna, and associated antenna mounting equipment, within 60 days of the date the antenna ceased to function.

12. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction, and the commencement of site operation.

Pursuant to General Statutes § 16-50p, the Council hereby directs that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in the New Haven Register.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

**Applicant**

T-Mobile Northeast LLC

**Its Representative**

Julie D. Kohler, Esq.  
Monte E. Frank, Esq.  
Jesse A. Langer, Esq.  
Cohen and Wolf, P.C.  
1115 Broad Street  
Bridgeport, CT 06604

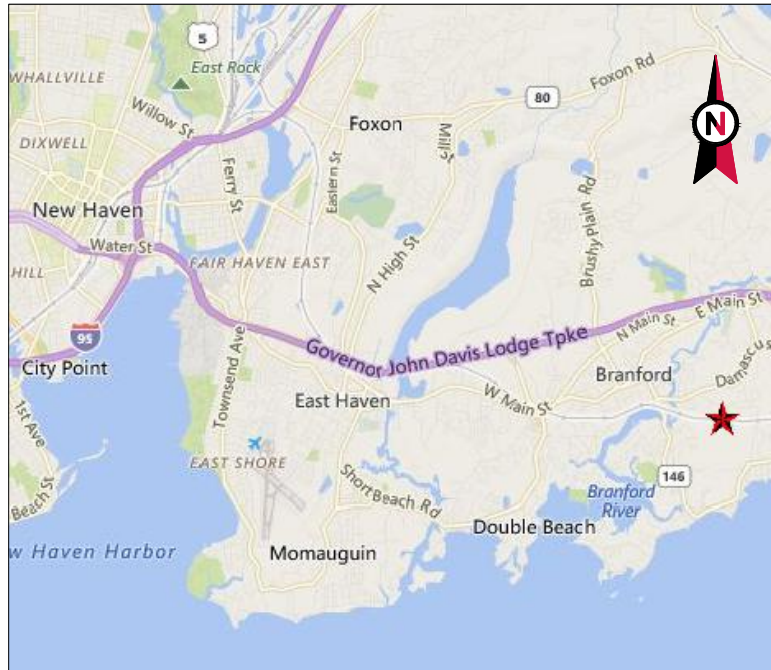
**Intervenor**

New Cingular Wireless PCS, LLC

**Its Representative**

Christopher B. Fisher, Esq.  
Daniel M. Laub, Esq.  
Cuddy & Feder LLP  
445 Hamilton Avenue, 14<sup>th</sup> Floor  
White Plains, NY 10601





VICINITY MAP



**AMERICAN TOWER®**

ATC SITE NAME: PINE ORCHARD BRANFORD CT  
 ATC SITE NUMBER: 283419  
 T-MOBILE SITE NAME: AMTRAK\_BRANFORD  
 T-MOBILE SITE NUMBER: CTNH801B  
 SITE ADDRESS: 123 PINE ORCHARD RD  
 BRANFORD, CT 06405  
 SITE CLASS: MONOPOLE



LOCATION MAP

**BIRD WATCH SITE:**  
 PLEASE CONTACT BIRD.WATCH@AMERICANTOWER.COM OR  
 AMERICAN TOWER NOC AT 877-518-6937 FOR ASSISTANCE

**T-MOBILE ANCHOR AMENDMENT PLAN  
 67D5D998E 6160 CONFIGURATION**

COMPLIANCE CODE	PROJECT SUMMARY	PROJECT DESCRIPTION	SHEET INDEX				
<p>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.</p> <p>1. 2020 NFPA 70, NATIONAL ELECTRIC CODE (NEC)            2. 2022 CONNECTICUT STATE BUILDING CODE            3. 2021 INTERNATIONAL BUILDING CODE (IBC)</p> <p><u>DESIGN CRITERIA FROM TOWER STRUCTURAL ANALYSIS:</u>            BASIC WIND SPEED: 122 MPH            BASIC WIND SPEED W/ ICE: 50 MPH            CODE(S): ANSITIA-222-H / 2021 IBC / 2022 CONNECTICUT STATE BUILDING CODE</p> <p>EXPOSURE CATEGORY: C            RISK CATEGORY: II            TOPO FACTOR PROCEDURE: METHOD 1            TOPOGRAPHIC CATEGORY: 1            FEATURE: -            SPECTRAL RESPONSE: S<sub>s</sub>=0.20x, S<sub>f</sub>=0.05            SITE CLASS: D - STIFF SOIL - DEFAULT</p> <p>INFORMATION TAKEN FROM STRUCTURAL ANALYSIS COMPLETED BY ATC, DATED 09/08/23.</p>	<p><u>SITE ADDRESS:</u>            123 PINE ORCHARD RD            BRANFORD, CT 06405            COUNTY: NEW HAVEN</p> <p><u>GEOGRAPHIC COORDINATES:</u>            LATITUDE: 41.27476815            LONGITUDE: -72.79317788            GROUND ELEVATION: 30' AMSL</p>	<p>THE PROPOSED PROJECT INCLUDES MODIFYING GROUND BASED AND TOWER MOUNTED EQUIPMENT AS INDICATED PER BELOW:</p> <p><u>TOWER WORK:</u>            REMOVE (6) ANTENNA(S), (3) TTA(S), (1) ERICSSON 9X18 HCS &amp; (8) 1-5/8" COAX CABLE(S)            INSTALL (6) ANTENNA(S), (3) RRU(S) AND (3) HYBRID TRUNK 6/24 4AWG CABLE(S)            EXISTING (3) ANTENNA(S), (3) RRU(S) AND (3) ERICSSON 6X12 HCS CABLE(S) TO REMAIN</p> <p><u>GROUND WORK:</u>            REMOVE (1) GENERIC BATTERY CABINET AND (1) 6131 CABINET            INSTALL (1) 6160 CABINET AND (1) B160 BATTERY CABINET            EXISTING (1) RBS 6131 CABINET TO REMAIN</p>	SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
	<p><u>PROJECT TEAM</u></p> <p><u>TOWER OWNER:</u> AMERICAN TOWER            10 PRESIDENTIAL WAY            WOBURN, MA 01801</p> <p><u>ENGINEER:</u>            ATC TOWER SERVICES, LLC            3500 REGENCY PKWY STE 100            CARY, NC 27518</p> <p><u>PROPERTY OWNER:</u>            MALAVASI INVESTMENTS LLC            123 PINE ORCHARD RD            BRANFORD, CT 06405</p> <p><u>APPLICANT:</u> T-MOBILE</p>	<p><b>PROJECT NOTES</b></p> <ol style="list-style-type: none"> <li>THE FACILITY IS UNMANNED.</li> <li>A TECHNICIAN WILL VISIT THE SITE APPROXIMATELY ONCE A MONTH FOR ROUTINE INSPECTION AND MAINTENANCE.</li> <li>THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT LAND DISTURBANCE OR EFFECT OF STORM WATER DRAINAGE.</li> <li>NO SANITARY SEWER, POTABLE WATER OR TRASH DISPOSAL IS REQUIRED.</li> <li>HANDICAP ACCESS IS NOT REQUIRED.</li> <li>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).</li> </ol>	G-001	TITLE SHEET	0	12/01/23	SLL
<p><b>UTILITY COMPANIES</b></p> <p>POWER COMPANY: EVERSOURCE            PHONE: (877) 659-6326</p> <p>TELEPHONE COMPANY: FRONTIER COMMUNICATIONS            PHONE: (800) 376-6843</p>	<p><b>PROJECT LOCATION DIRECTIONS</b></p> <p>FROM NEW HAVEN, CT GO NORTHEAST ON CHURCH ST TOWARD WALL ST. CHURCH ST BECOMES WHITNEY AVE TURN RIGHT ONTO TRUMBULL ST. TURN SLIGHT LEFT TO THE I-91 S/I-91 N RAMP. MERGE ONTO I-91 S TOWARD I-95/NEW LONDON/N.Y. CITY. MERGE ONTO I-95 N/GOVERNOR JOHN DAVIS LODGE TPKE N VIA THE EXIT ON THE LEFT TOWARD NEW LONDON. TAKE EXIT 54, TOWARD BRANFORD. TURN LEFT ONTO MAIN ST/CT-146. TURN SLIGHT RIGHT ONTO S MAIN ST/CT-146. TURN RIGHT ONTO MONTOWESE ST/CT-146. TAKE THE 3RD LEFT ONTO PINE ORCHARD RD. TAKE THE 3RD RIGHT TO STAY ON PINE ORCHARD RD. SITE IS IN THE PROPERTY OF ACE TRANSPORTATION &amp; STORAGE</p>	G-002	GENERAL NOTES	0	12/01/23	SLL	
<p><b>811</b>            Know what's below.            Call before you dig.</p>			C-101	DETAILED SITE PLAN	0	12/01/23	SLL
			C-102	DETAILED EQUIPMENT PLAN	0	12/01/23	SLL
			C-201	TOWER ELEVATION	0	12/01/23	SLL
			C-401	ANTENNA INFORMATION & SCHEDULE	0	12/01/23	SLL
			C-501	CONSTRUCTION DETAILS	0	12/01/23	SLL
			E-501	GROUNDING DETAILS	0	12/01/23	SLL
			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 SERVICES LLC  
 3500 REGENCY PARKWAY  
 SUITE 100  
 CARY, NC 27518  
 PHONE: (919) 468-0112  
 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	SLL	12/01/23

ATC SITE NUMBER:  
**283419**  
 ATC SITE NAME:  
**PINE ORCHARD BRANFORD CT**  
 T-MOBILE SITE NAME:  
**AMTRAK\_BRANFORD**  
 SITE ADDRESS:  
 123 PINE ORCHARD RD  
 BRANFORD, CT 06405

SEAL:

Digitally signed by Scott Wirgau  
 Date: 2023.12.01 15:31:15 -05'00'

**T-Mobile**

ATC PROJ. #: 14529802\_GO  
 CUST. ID: AMTRAK\_BRANFORD  
 CUST. #: CTNH801B

**TITLE SHEET**

SHEET NUMBER: **G-001**  
 REVISION: **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 ANSIEIA/NTIA-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. WHEN THE PROJECT SCOPE REQUIRES THE USE OF THE SAFETY CLIMB, THE GENERAL CONTRACTOR SHALL ENSURE THE SAFETY CLIMB IS FREE OF OBSTRUCTIONS, NOT RUBBING ON OR TRAPPED BY ANY INSTALLED CUSTOMER EQUIPMENT, IS VISUALLY TAUT, MEETS MANUFACTURER INSTALLATION SPECIFICATIONS, AND IS FIRMLY SECURED AT ALL CABLE GUIDE LOCATIONS UPON PROJECT COMPLETION.
29. COMPLETION OF PROJECT SHALL NOT OBSTRUCT, TRAP, LOOSEN, OR OTHERWISE CAUSE FAILURE TO MEET MANUFACTURER INSTALLATION REQUIREMENTS FOR THE SAFETY CLIMB.
30. 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.
31. THE CONTRACTOR SHALL PROTECT AT HIS OWN EXPENSE, ALL EXISTING FACILITIES AND SUCH OF HIS NEW WORK LIABLE TO INJURY DURING THE CONSTRUCTION PERIOD. ANY DAMAGE CAUSED BY NEGLIGENCE ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, OR BY THE ELEMENTS DUE TO NEGLIGENCE ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, EITHER TO THE EXISTING WORK, OR TO HIS WORK OR THE WORK OF ANY OTHER CONTRACTOR, SHALL BE REPAIRED AT HIS EXPENSE TO THE OWNER'S SATISFACTION.
32. 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.
33. 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.
34. 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.
35. 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.

B. ALL COAXIAL/HYBRID CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF COAXIAL/HYBRID CABLE (NOT WITHIN BENDS)

**SPECIAL CONSTRUCTION**

**ANTENNA INSTALLATION NOTES:**

1. WORK INCLUDED:
  - A. ANTENNA AND COAXIAL/HYBRID 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.
  - E. INSTALL COAXIAL/HYBRID 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/HYBRID CABLE THREE (3) FEET IN EXCESS OF ENTRY PORT LOCATION UNLESS OTHERWISE STATED.
2. ANTENNA AND COAXIAL/HYBRID CABLE GROUNDING:
  - A. ALL EXTERIOR #6 GREEN GROUND WIRE "DAISY CHAIN" CONNECTIONS ARE TO BE WEATHER SEALED WITH RFS CONNECTORS/SPLICE WEATHERPROOFING KIT #221213 OR EQUAL.

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.



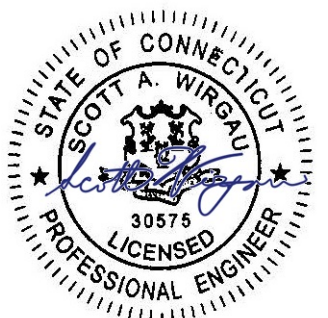
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**A.T. ENGINEERING SERVICES LLC**  
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 SUITE 100  
 CARY, NC 27518  
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REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	SLI	12/01/23

ATC SITE NUMBER:  
**283419**  
 ATC SITE NAME:  
**PINE ORCHARD BRANFORD CT**  
 T-MOBILE SITE NAME:  
**AMTRAK\_BRANFORD**  
 SITE ADDRESS:  
 123 PINE ORCHARD RD  
 BRANFORD, CT 06405

SEAL:



Digitally Signed: 2023-12-01



ATC PROJ. #:	14529802_GO
CUST. ID:	AMTRAK_BRANFORD
CUST. #:	CTNH801B

**GENERAL NOTES**

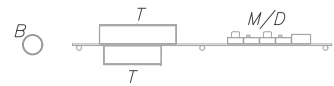
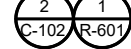
SHEET NUMBER: <b>G-002</b>	REVISION: <b>0</b>
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**SITE PLAN NOTES:**

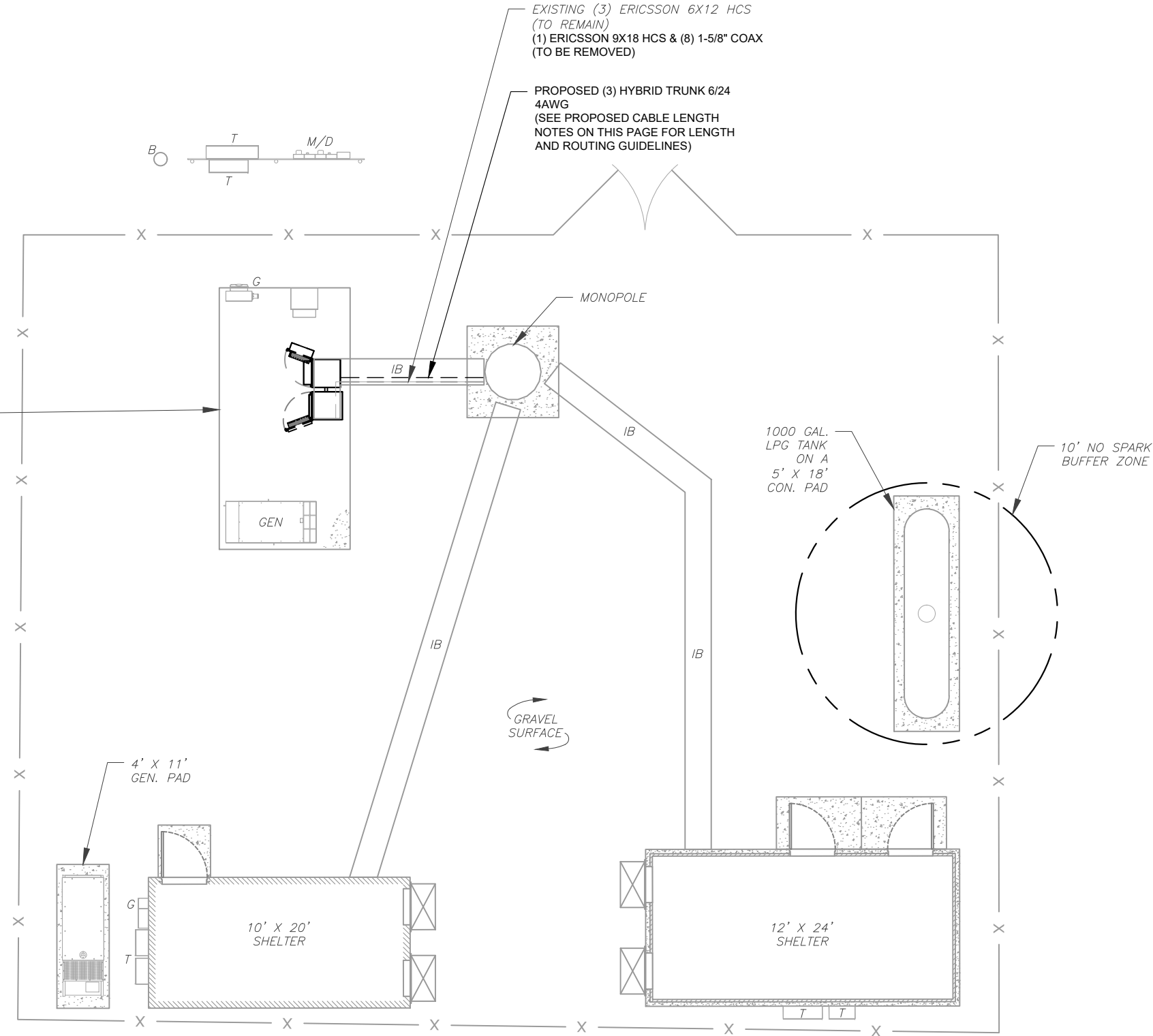
1. THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.
2. ICE BRIDGE, CABLE LADDER, COAX PORT, AND COAX CABLE 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. NO ELECTRICAL SCOPE IS INCLUDED IN THIS PROJECT.

EXISTING T-MOBILE  
10' X 20' CONCRETE PAD  
AND GROUND SPACE  
(MODIFIED AS REQUIRED FOR  
UPGRADE FROM 67D92C TO  
67D5D998E 6160 CONFIGURATION)



EXISTING (3) ERICSSON 6X12 HCS  
(TO REMAIN)  
(1) ERICSSON 9X18 HCS & (8) 1-5/8" COAX  
(TO BE REMOVED)

PROPOSED (3) HYBRID TRUNK 6/24  
4AWG  
(SEE PROPOSED CABLE LENGTH  
NOTES ON THIS PAGE FOR LENGTH  
AND ROUTING GUIDELINES)



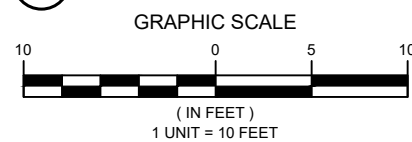
**LEGEND**

- ⊗ GROUNDING TEST WELL
- ATS AUTOMATIC TRANSFER SWITCH
- B BOLLARD
- CSC CELL SITE CABINET
- D DISCONNECT
- E ELECTRICAL
- F FIBER
- GEN GENERATOR
- G GENERATOR RECEPTACLE
- 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 NOTES:**

1. ESTIMATED LENGTH OF PROPOSED CABLE IS **156'**. 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.

**1 DETAILED SITE PLAN**



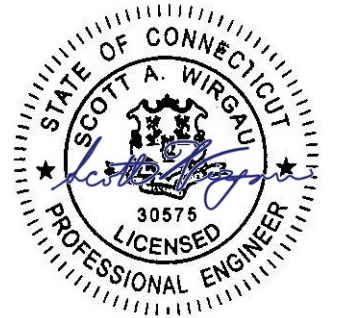
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T-MOBILE SITE NAME:  
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SITE ADDRESS:  
123 PINE ORCHARD RD  
BRANFORD, CT 06405

SEAL:



Digitally Signed: 2023-12-01



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CUST. ID: AMTRAK\_BRANFORD  
CUST. #: CTNH801B

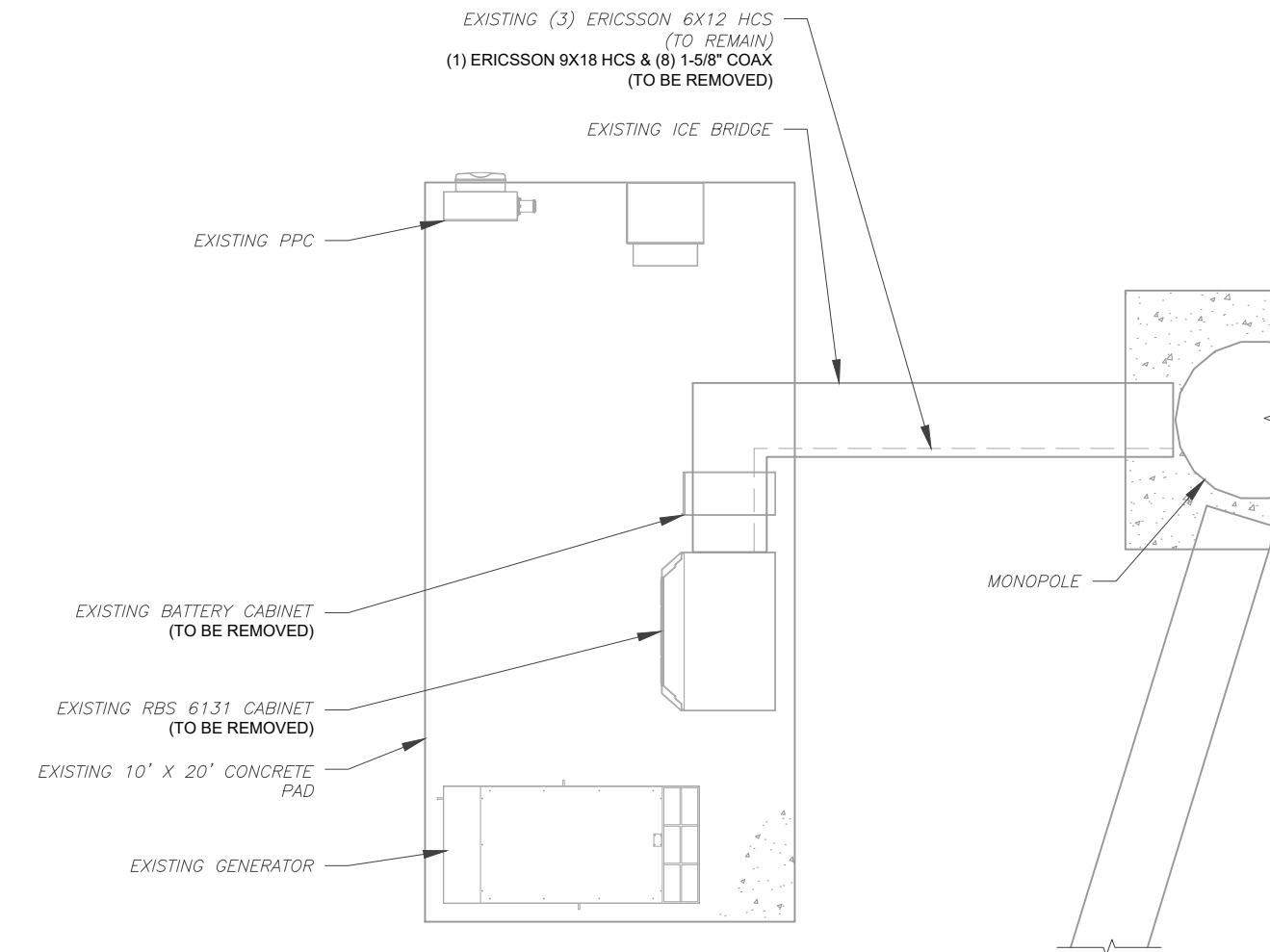
**DETAILED SITE PLAN**

SHEET NUMBER:  
**C-101**  
REVISION:  
**0**

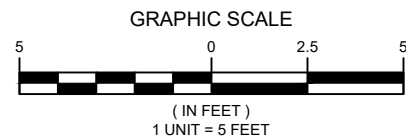
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**SITE PLAN NOTES:**

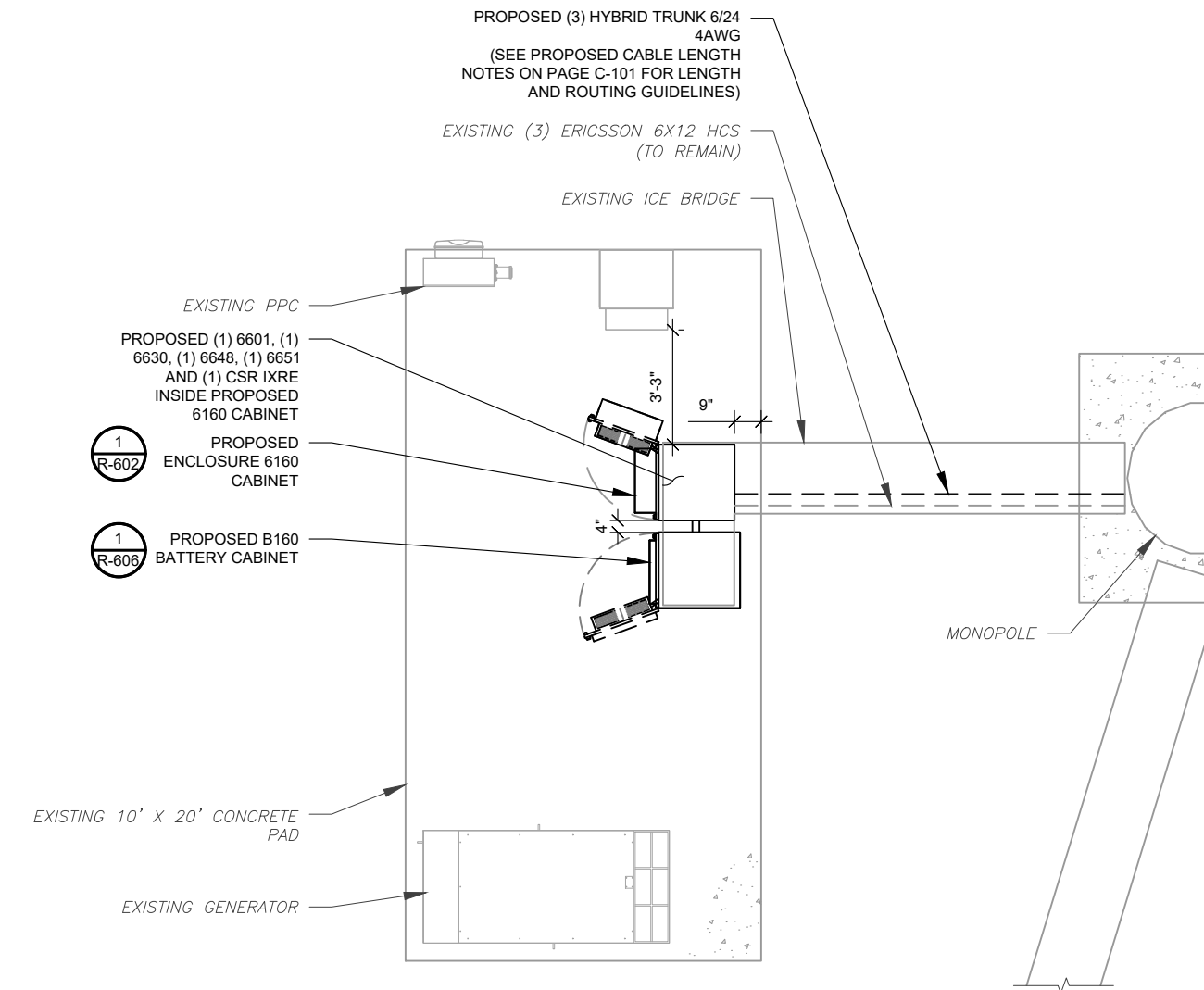
1. CONTRACTOR TO VERIFY THERE IS NO LIVE AAV FIBER RUNNING THROUGH EXISTING DEAD EQUIPMENT. IF SO, THIS WILL NEED TO BE RERUN THROUGH CONDUIT PRIOR TO REMOVING DEAD 2G (6201 CABS) EQUIPMENT.
2. ALL OPEN PORTS NEED TO BE SEALED / WEATHERPROOFED PROPERLY
3. ALL UNNEEDED / EXCESS EQUIPMENT AND GARBAGE TO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



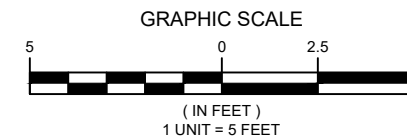
**1** EXISTING GROUND EQUIPMENT LAYOUT



**T-MOBILE CM APPROVAL REQUIRED BEFORE INSTALLING CABINETS.**



**2** PROPOSED GROUND EQUIPMENT LAYOUT



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 T-MOBILE SITE NAME:  
**AMTRAK\_BRANFORD**  
 SITE ADDRESS:  
 123 PINE ORCHARD RD  
 BRANFORD, CT 06405



Digitally Signed: 2023-12-01



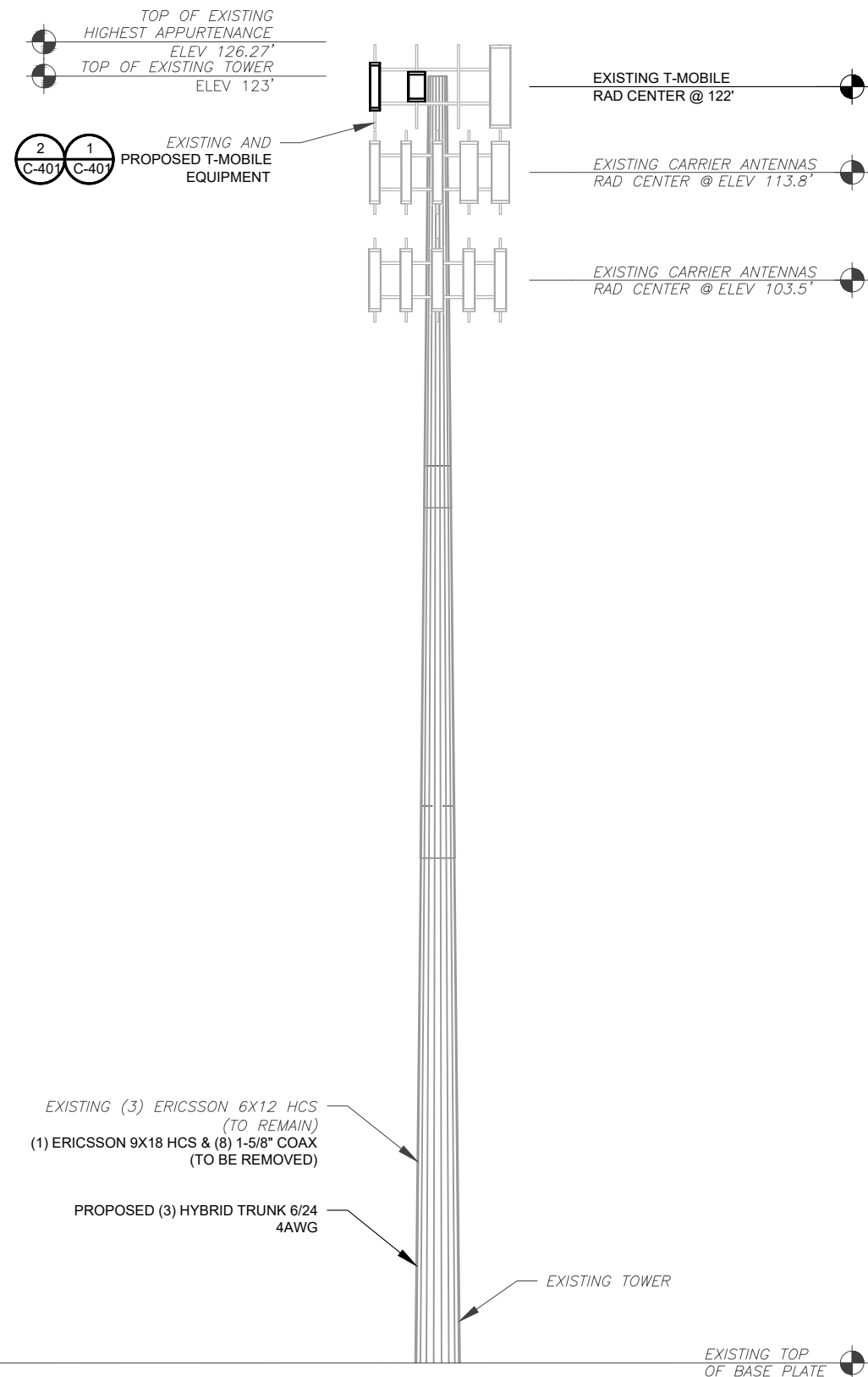
ATC PROJ. #: 14529802\_GO  
 CUST. ID: AMTRAK\_BRANFORD  
 CUST. #: CTNH801B

**DETAILED EQUIPMENT PLAN**

SHEET NUMBER:  
**C-102**  
 REVISION:  
**0**

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PER MOUNT ANALYSIS COMPLETED BY ATC, DATED 09/19/23, THE EXISTING MOUNT CAN ADEQUATELY SUPPORT THE PROPOSED LOADING.



**1 TOWER ELEVATION**  
SCALE: N.T.S.

- TOWER NOTE:**
- 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. 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.
  - ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. IF ADEQUATE SPACE EXISTS, ROUTE CABLES THROUGH ENTRY PORT HOLE, UP INSIDE OF MONOPOLE, AND THROUGH EXIT PORT HOLE. IF ROUTING OUTSIDE THE MONOPOLE, ATTACH CABLES USING STAND-OFF ADAPTERS MOUNTED TO TOWER USING STAINLESS STEEL BANDING. ADEQUATELY SECURE CABLES USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER.
  - TOWER ELEVATIONS ARE MEASURED FROM TOP OF BASE PLATE TO MATCH STRUCTURAL ANALYSIS. ELEVATIONS DO NOT REFLECT TRUE ABOVE GROUND LEVEL (A.G.L.)
  - TOWER ELEVATION DEPICTION MAY NOT REFLECT ALL EQUIPMENT INCLUDED IN STRUCTURAL ANALYSIS. REFER TO STRUCTURAL ANALYSIS FOR FULL TOWER LOADING.



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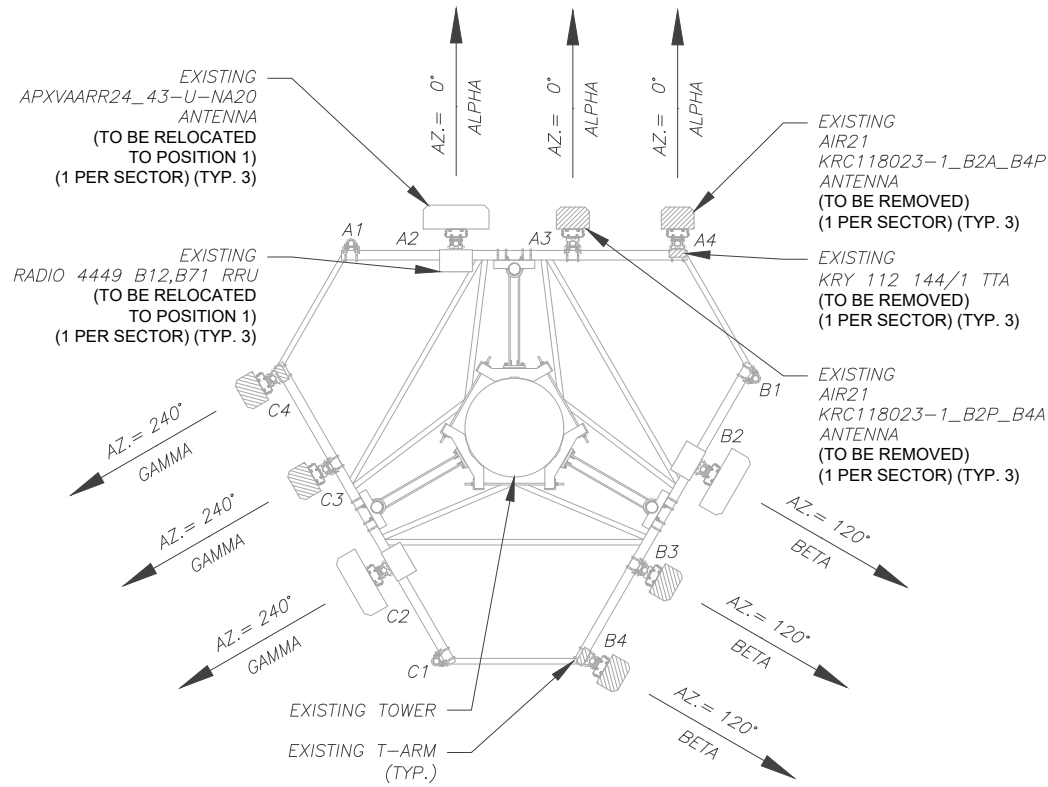


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CUST. ID: AMTRAK\_BRANFORD  
CUST. #: CTNH801B

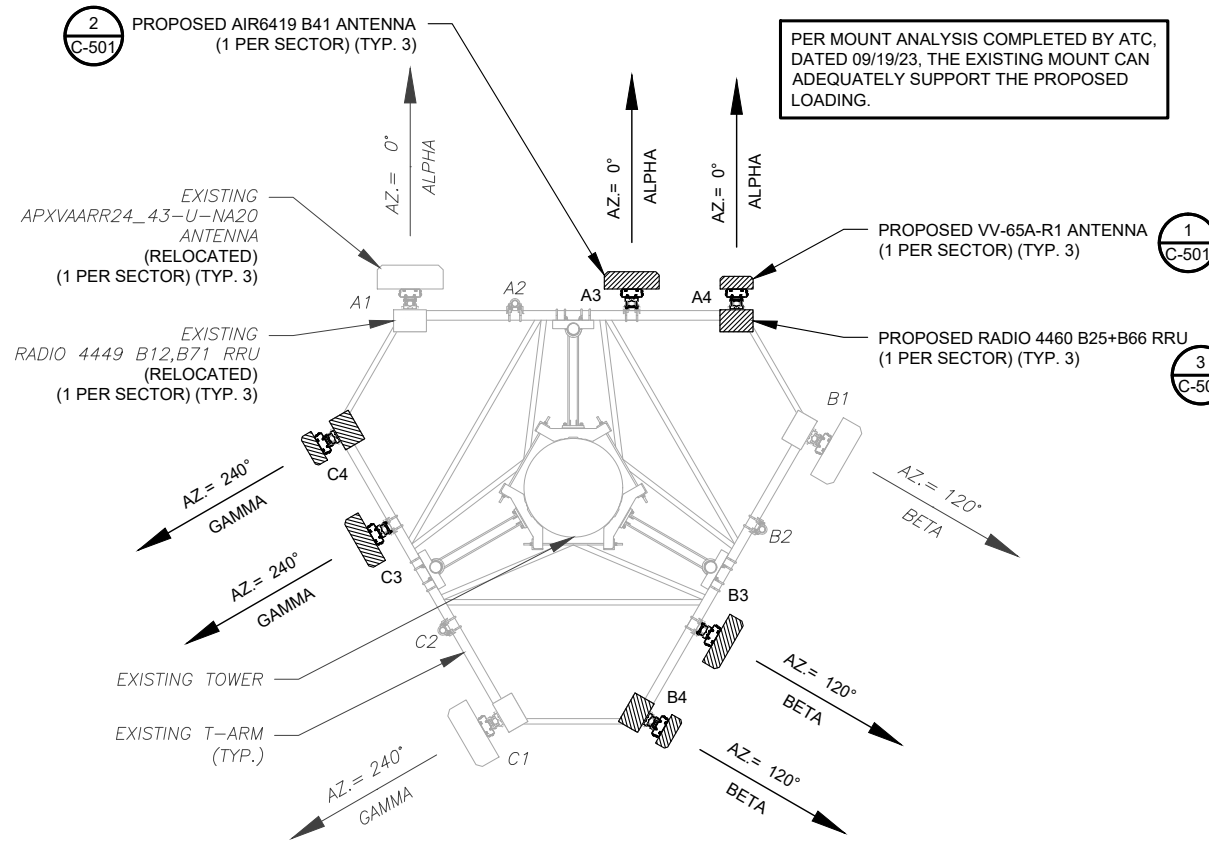
**TOWER ELEVATION**

SHEET NUMBER:  
**C-201**  
REVISION:  
**0**





**1 EXISTING ANTENNA PLAN**  
SCALE: N.T.S.



**2 FINAL ANTENNA PLAN**  
SCALE: N.T.S.

PER MOUNT ANALYSIS COMPLETED BY ATC, DATED 09/19/23, THE EXISTING MOUNT CAN ADEQUATELY SUPPORT THE PROPOSED LOADING.

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ATC PROJ. #:	14529802_GO
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CUST. #:	CTNH801B

**ANTENNA INFORMATION & SCHEDULE**

SHEET NUMBER:	REVISION:
<b>C-401</b>	<b>0</b>

EXISTING ANTENNA SCHEDULE									
LOCATION		ANTENNA SUMMARY					NON ANTENNA SUMMARY		
SECTOR	RAD	AZ	POS	ANTENNA	BAND	MECH/ELEC D-TILT	STATUS	ADDITIONAL TOWER MOUNTED EQUIPMENT	STATUS
ALPHA		0°	A1	-	-	-	-	-	-
			A2	APXVAALL24 43-U-NA20	L600, L700, N600	0°/2°	REL	RADIO 4449 B12,B71	REL
			A3	AIR21 KRC118023-1_B2P_B4 A	L2100	0°/2°	RMV	-	-
			A4	AIR21 KRC118023-1_B2A_B4 P	G1900, L1900	0°/2°	RMV	KRY 112 144/1	RMV
BETA	122'	120°	B1	-	-	-	-	-	-
			B2	APXVAALL24 43-U-NA20	L600, L700, N600	0°/2°	REL	RADIO 4449 B12,B71	REL
			B3	AIR21 KRC118023-1_B2P_B4 A	L2100	0°/2°	RMV	-	-
			B4	AIR21 KRC118023-1_B2A_B4 P	G1900, L1900	0°/2°	RMV	KRY 112 144/1	RMV
GAMMA		240°	C1	-	-	-	-	-	-
			C2	APXVAALL24 43-U-NA20	L600, L700, N600	0°/2°	REL	RADIO 4449 B12,B71	REL
			C3	AIR21 KRC118023-1_B2P_B4 A	L2100	0°/2°	RMV	-	-
			C4	AIR21 KRC118023-1_B2A_B4 P	G1900, L1900	0°/2°	RMV	KRY 112 144/1	RMV

**NOTES**

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

**STATUS ABBREVIATIONS**

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

**CABLE LENGTHS FOR JUMPERS**

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

FINAL ANTENNA SCHEDULE									
LOCATION		ANTENNA SUMMARY					NON ANTENNA SUMMARY		
SECTOR	RAD	AZ	POS	ANTENNA	BAND	MECH/ELEC D-TILT	STATUS	ADDITIONAL TOWER MOUNTED EQUIPMENT	STATUS
ALPHA		0°	A1	APXVAALL24 43-U-NA20	L600, L700, N600	-	REL	RADIO 4449 B12,B71	REL
			A2	-	-	-	-	-	-
			A3	AIR 6419 B41	L2500, N2500	-	ADD	-	-
			A4	VV-65A-R1B	N1900, L1900, L2100, G1900	-	ADD	RADIO 4460 B25+B66	ADD
BETA	122'	120°	B1	APXVAALL24 43-U-NA20	L600, L700, N600	-	REL	RADIO 4449 B12,B71	REL
			B2	-	-	-	-	-	-
			B3	AIR 6419 B41	L2500, N2500	-	ADD	-	-
			B4	VV-65A-R1B	N1900, L1900, L2100, G1900	-	ADD	RADIO 4460 B25+B66	ADD
GAMMA		240°	C1	APXVAALL24 43-U-NA20	L600, L700, N600	-	REL	RADIO 4449 B12,B71	REL
			C2	-	-	-	-	-	-
			C3	AIR 6419 B41	L2500, N2500	-	ADD	-	-
			C4	VV-65A-R1B	N1900, L1900, L2100, G1900	-	ADD	RADIO 4460 B25+B66	ADD

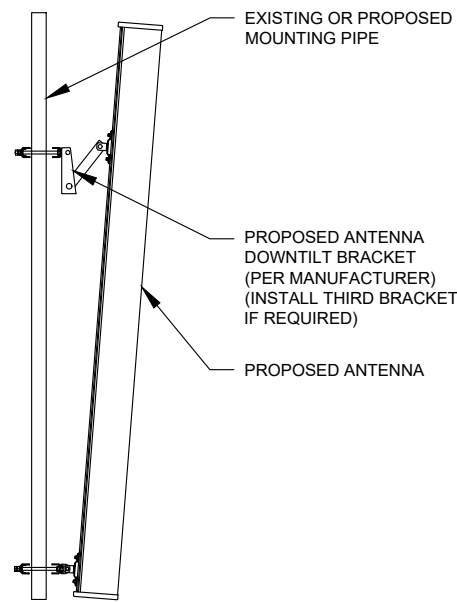
EXISTING FIBER DISTRIBUTION/OVP BOX		EXISTING CABLING SUMMARY	
MODEL NUMBER	STATUS	CABLE QTY, SIZE, TYPE	STATUS
-	RMN	(3) ERICSSON 6X12 HCS	RMN
-	RMV	(1) ERICSSON 9X18 HCS & (8) 1-5/8" COAX	RMV

**3 EQUIPMENT SCHEDULES**

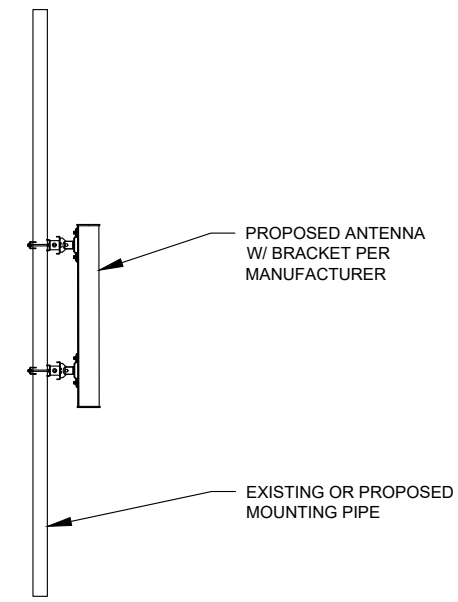
FINAL FIBER DISTRIBUTION / OVP BOX		FINAL CABLING SUMMARY	
MODEL NUMBER	STATUS	CABLE QTY, SIZE, TYPE	STATUS
-	RMN	(3) ERICSSON 6X12 HCS	RMN
-	ADD	(3) HYBRID TRUNK 6/24 4AWG	ADD

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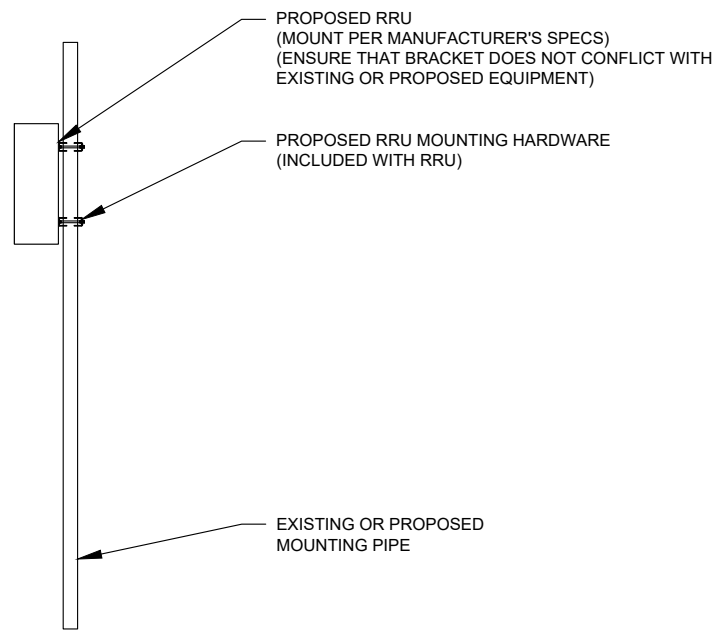
EXISTING/PROPOSED MOUNTS AND/OR MOUNT MODIFICATIONS NOT SHOWN FOR CLARITY. REFER TO ANTENNA PLANS, MOUNT ANALYSES AND/OR MOUNT MODIFICATION DOCUMENTS FOR ADDITIONAL DETAIL.



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



2 PROPOSED 5G ANTENNA MOUNTING DETAIL - TYPICAL  
SCALE: N.T.S.



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



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

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REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	SLL	12/01/23

ATC SITE NUMBER:  
**283419**  
 ATC SITE NAME:  
**PINE ORCHARD BRANFORD CT**  
 T-MOBILE SITE NAME:  
**AMTRAK\_BRANFORD**  
 SITE ADDRESS:  
 123 PINE ORCHARD RD  
 BRANFORD, CT 06405



Digitally Signed: 2023-12-01

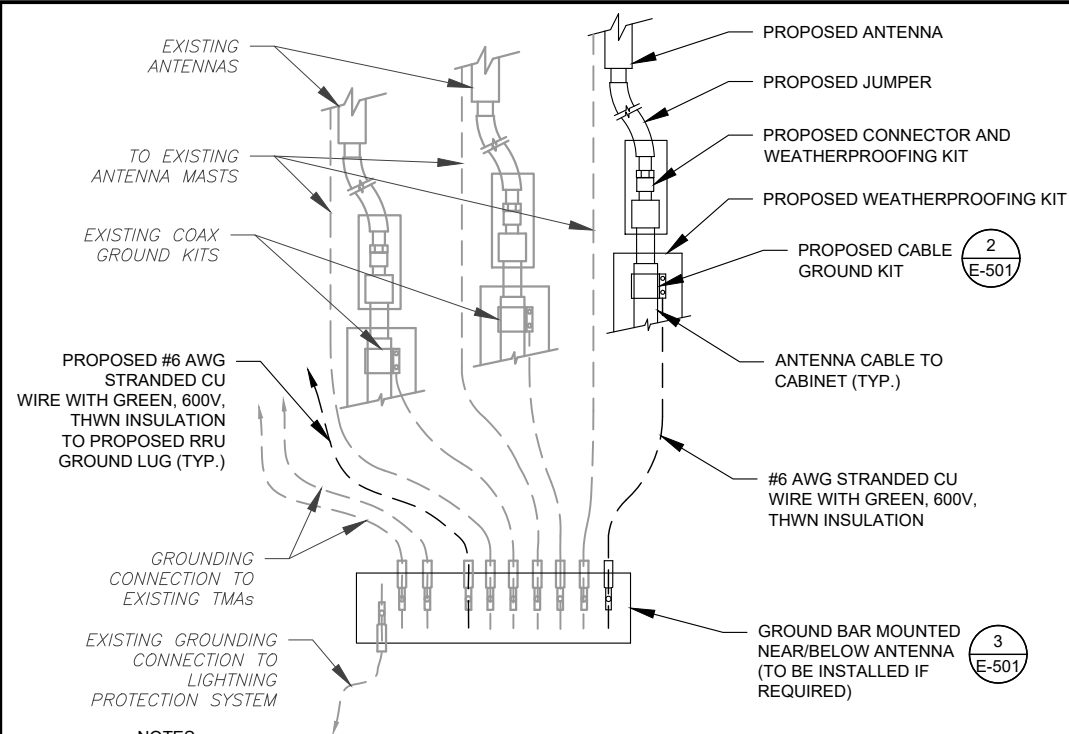


ATC PROJ. #: 14529802\_G0  
 CUST. ID: AMTRAK\_BRANFORD  
 CUST. #: CTNH801B

**CONSTRUCTION  
 DETAILS**

SHEET NUMBER: **C-501**      REVISION: **0**

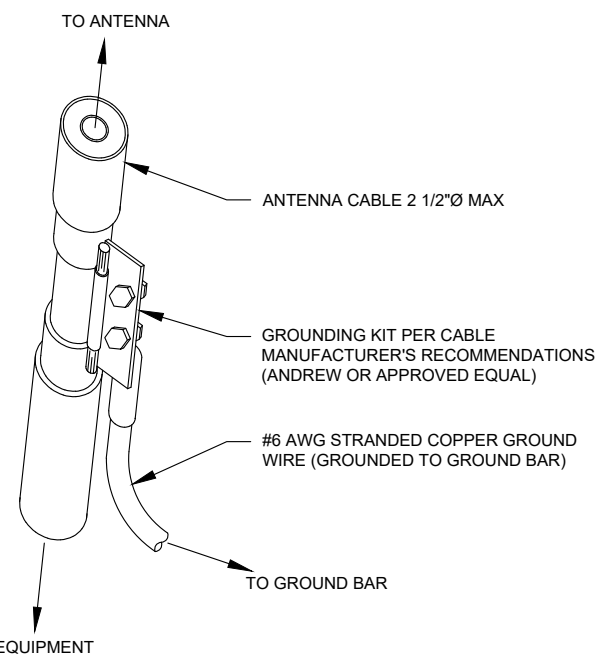
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**NOTES:**

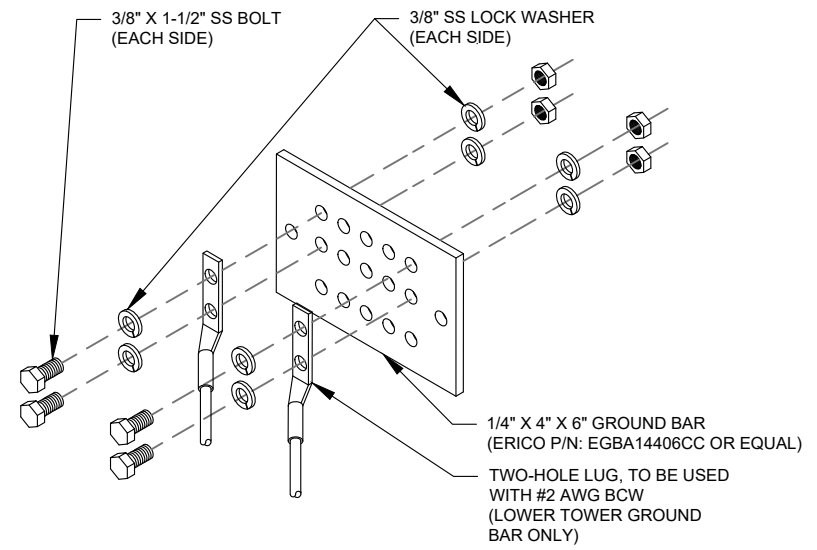
1. THIS DETAIL IS INTENDED TO SHOW THE GENERAL GROUNDING REQUIREMENTS. SLIGHT ADJUSTMENTS MAY BE REQUIRED BASED ON EXISTING SITE CONDITIONS. THE CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS AS NEEDED AND INFORM THE CONSTRUCTION MANAGER OF ANY CONFLICTS.
2. SITE GROUNDING SHALL COMPLY WITH T-MOBILE GROUNDING 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:**

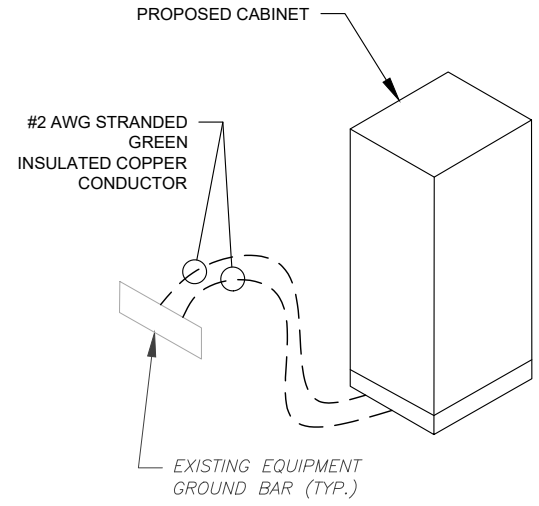
1. GROUND BAR KITS COME WITH ALL HARDWARE, NUTS, BOLTS, WASHERS, ETC. EXCEPT THE STRUCTURAL MOUNTING MEMBER(S).
2. GROUND BAR TO BE BONDED DIRECTLY TO TOWER.

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

**ELECTRICAL NOTES:**

1. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE T-MOBILE REPRESENTATIVE AND LOCAL UTILITY COMPANY FOR THE INSTALLATION OF CONDUITS, CONDUCTORS, BREAKERS, DISCONNECTS, OR ANY OTHER EQUIPMENT REQUIRED FOR ELECTRICAL SERVICE. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH LATEST EDITION OF THE STATE AND NATIONAL CODES, ORDINANCES AND REGULATIONS APPLICABLE TO THIS PROJECT.
2. ATC HAS NOT VERIFIED ANY EXISTING T-MOBILE GROUND EQUIPMENT OR ELECTRICAL LOADING. PROPOSED WORK BASED ON INSTALLATION CONFIGURATION PROVIDED BY T-MOBILE. CONTRACTOR TO VERIFY EXISTING T-MOBILE PANEL HAS SUFFICIENT SPACE FOR PROPOSED BREAKER. PROPOSED CABLE AND CONDUIT SHALL BE MINIMUM SIZE PER BELOW IN CHART.
3. FOR SPECIFIC CABINET / ANCILLARY EQUIPMENT WIRING REQUIREMENTS, THE T-MOBILE CONTRACTOR SHOULD REFERENCE DESIGN DOCUMENTS PROVIDED BY T-MOBILE FOR THIS CURRENT PROJECT CONFIGURATION, IN ACCORDANCE WITH LOCAL JURISDICTION REQUIREMENTS & NEC STANDARDS & PRACTICES.

VOLTS	OCPD SIZE	WIRE SIZE	GROUND	CONDUIT
120/240V OR 120/208V	80A/2P	3-#3 AWG	#8 AWG	1-1/4"
	100/2P	3-#2 AWG	#8 AWG	1-1/4"
	125A/2P	3-#3/0 AWG	#6 AWG	2"
	150A/2P	3-#3/0 AWG	#6 AWG	2"
240V OR 208V	200A/2P	3-#3/0 AWG	#6 AWG	2"
	80A/2P	2-#3 AWG	#8 AWG	1-1/4"
	100/2P	2-#2 AWG	#8 AWG	1-1/4"
	125A/2P	2-#3/0 AWG	#6 AWG	2"
	150A/2P	2-#3/0 AWG	#6 AWG	2"
	200A/2P	2-#3/0 AWG	#6 AWG	2"



**5** CABINET GROUNDING DETAIL  
SCALE: N.T.S.

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 GUIDELINES	ABOVE GROUND	MAY 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

**4** CONDUIT USE TABLES

**6** ELECTRICAL NOTES

**AMERICAN TOWER®**  
**A.T. ENGINEERING SERVICES LLC**  
 3500 REGENCY PARKWAY  
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 CARY, NC 27518  
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REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	SLL	12/01/23

ATC SITE NUMBER:  
**283419**

ATC SITE NAME:  
**PINE ORCHARD BRANFORD CT**

T-MOBILE SITE NAME:  
**AMTRAK\_BRANFORD**

SITE ADDRESS:  
123 PINE ORCHARD RD  
BRANFORD, CT 06405

SEAL:

Digitally Signed: 2023-12-01



ATC PROJ. #: 14529802\_G0  
 CUST. ID: AMTRAK\_BRANFORD  
 CUST. #: CTNH801B

**GROUNDING DETAILS**

SHEET NUMBER:  
**E-501**

REVISION:  
**0**

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Section 5 - RAN Equipment

Existing RAN Equipment

Template: 67D92C Outdoor

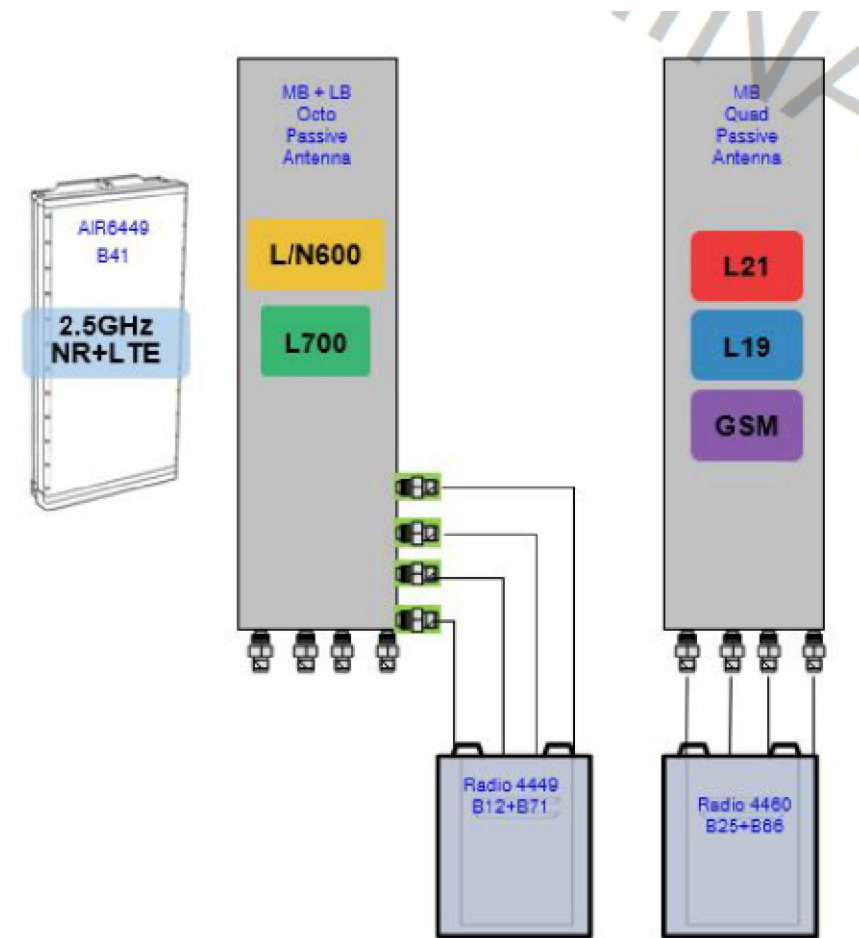
Enclosure	1		
Enclosure Type	RBS 6131		
Radio	RU22 (x6) U2100 (DECOMMISSIONED)		
Baseband	BB 6630 L1900 L2100	BB 6648 N800 L600 L700	DUG20 G1900 DUW30 U2100 (DECOMMISSIONED) DUW30
Hybrid Cable System	Ericsson 6x12 HCS *Select Length & AWG* (x3) Ericsson 9x18 HCS *Select Length*		

Proposed RAN Equipment

Template: 67D5D998E 6160

Enclosure	1	2	3
Enclosure Type	Enclosure 6160 AC V1	RBS 6601	B160
Baseband	BB 6630 N1900 L1900 L2100	BB 6648 N800 L600 L700	RP 6651 N2500 DUG20 G1900
Transport System	CSR IXRe V2 (Gen2)		
Hybrid Cable System	Hybrid Trunk 6/24 4AWG 60m (x3)		

1 CABINET CONFIGURATION



2 ANTENNA CONFIGURATION

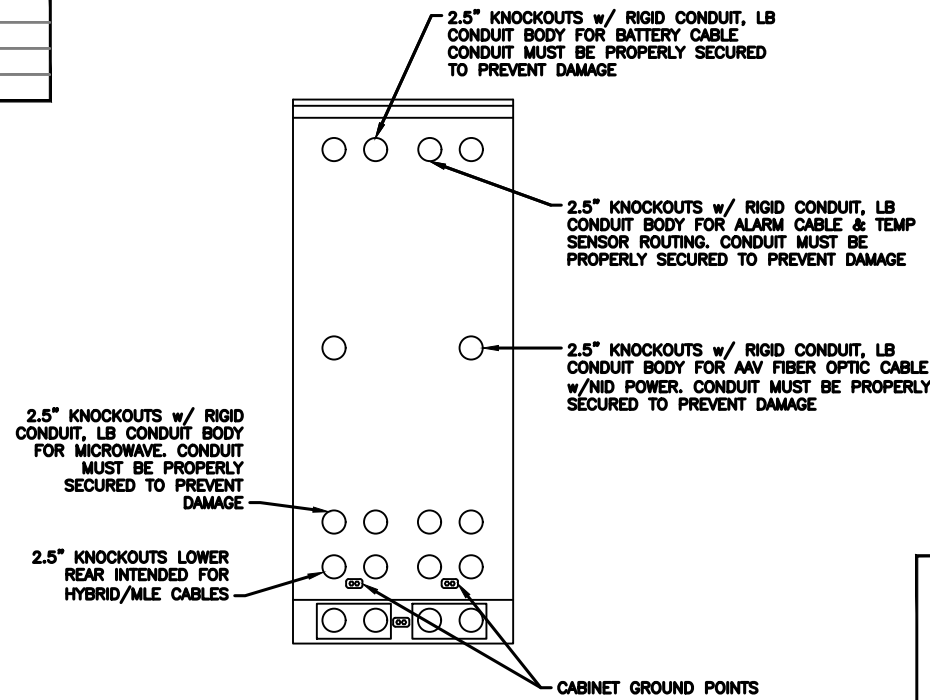
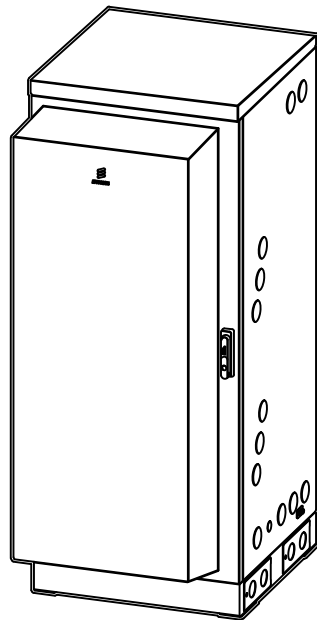
SUPPLEMENTAL

SHEET NUMBER: R-601 REVISION: 0

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



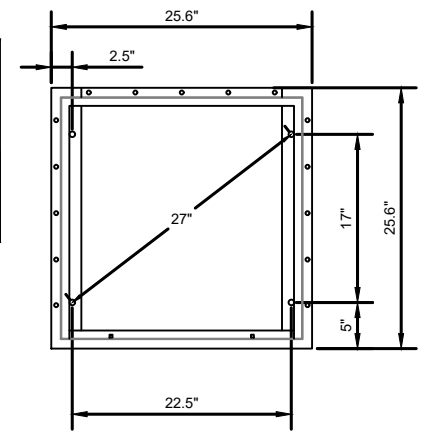
MANUFACTURER:	ERICSSON
MODEL:	6160 SITE SUPPORT CABINET
DIMENSIONS:	63" x 25.6" x 33.6" (H x W x D)
WEIGHT:	373 LBS



REAR VIEW

**NOTE:**

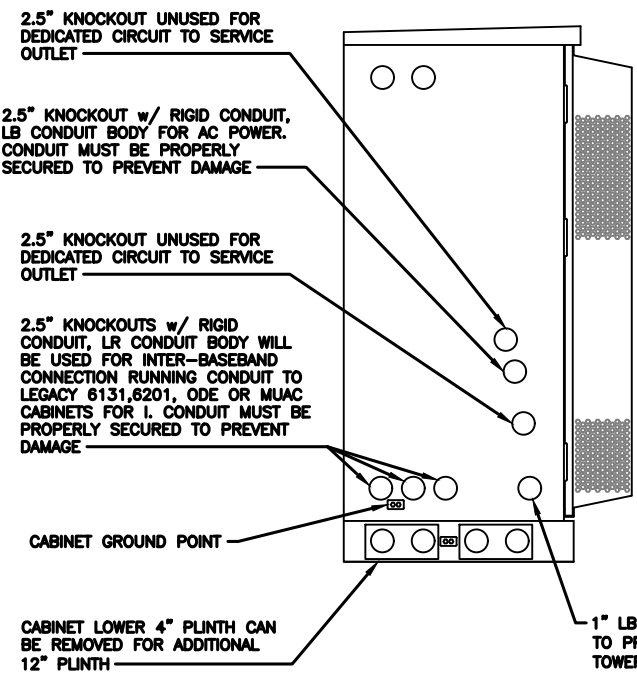
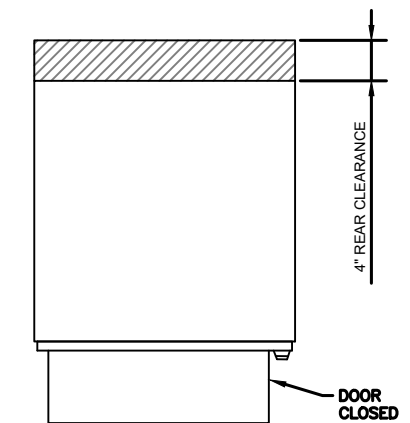
- CORRECT KNOCKOUT TOOL REQUIRED FOR PUNCHING KNOCKOUTS. DO NOT DRILL THROUGH KNOCKOUTS
- CONDUIT MUST BE PROPERLY SECURED TO PREVENT DAMAGE TO CABINETS AND OR CABLING



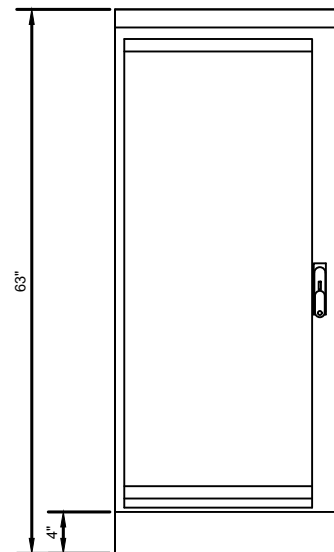
BOLT DOWN PATTERN

**GROUNDING NOTE:**

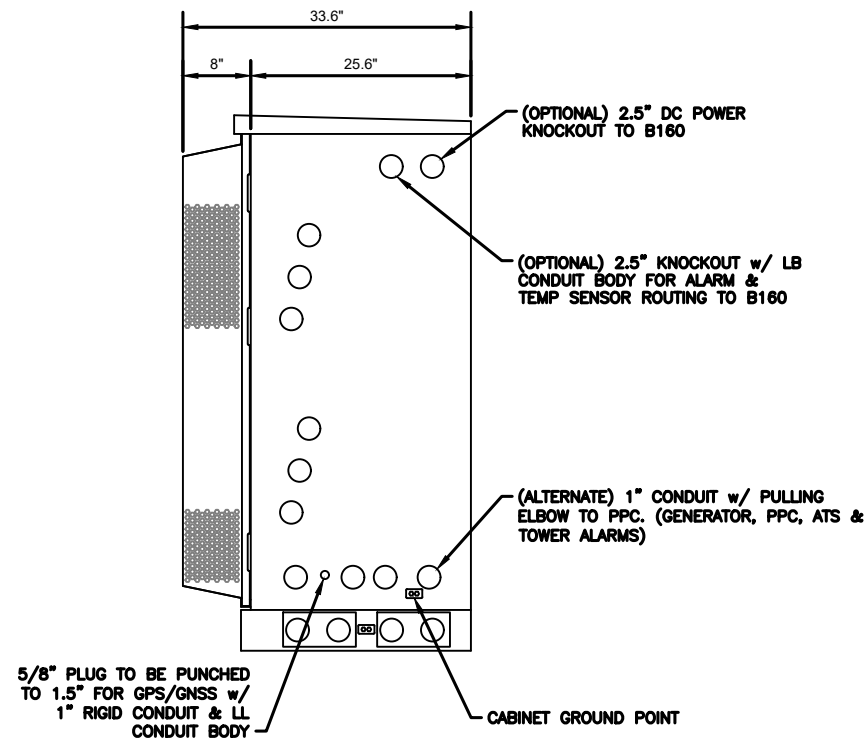
"CABINET GROUNDING TO USE A SINGLE, #2 BTCW CONDUCTOR, W/ 2-HOLE, 1" C-C, LONG BARREL, WINDOW LUG, IN 3/4" LFNC TO GROUND RING. PLINTH GROUNDING IS NOT REQUIRED."



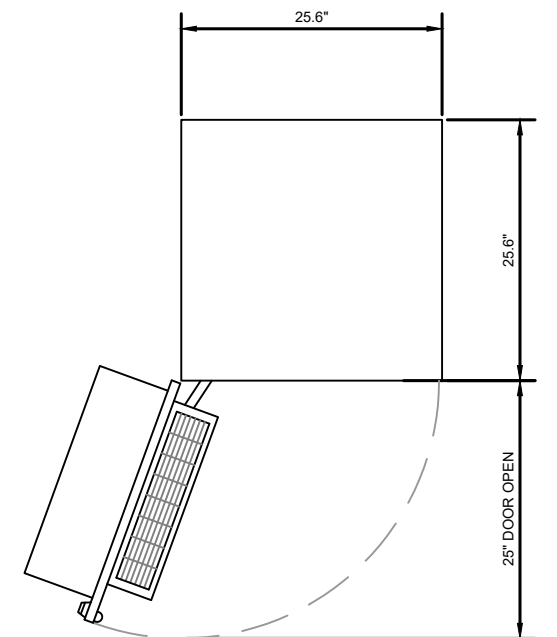
LEFT VIEW



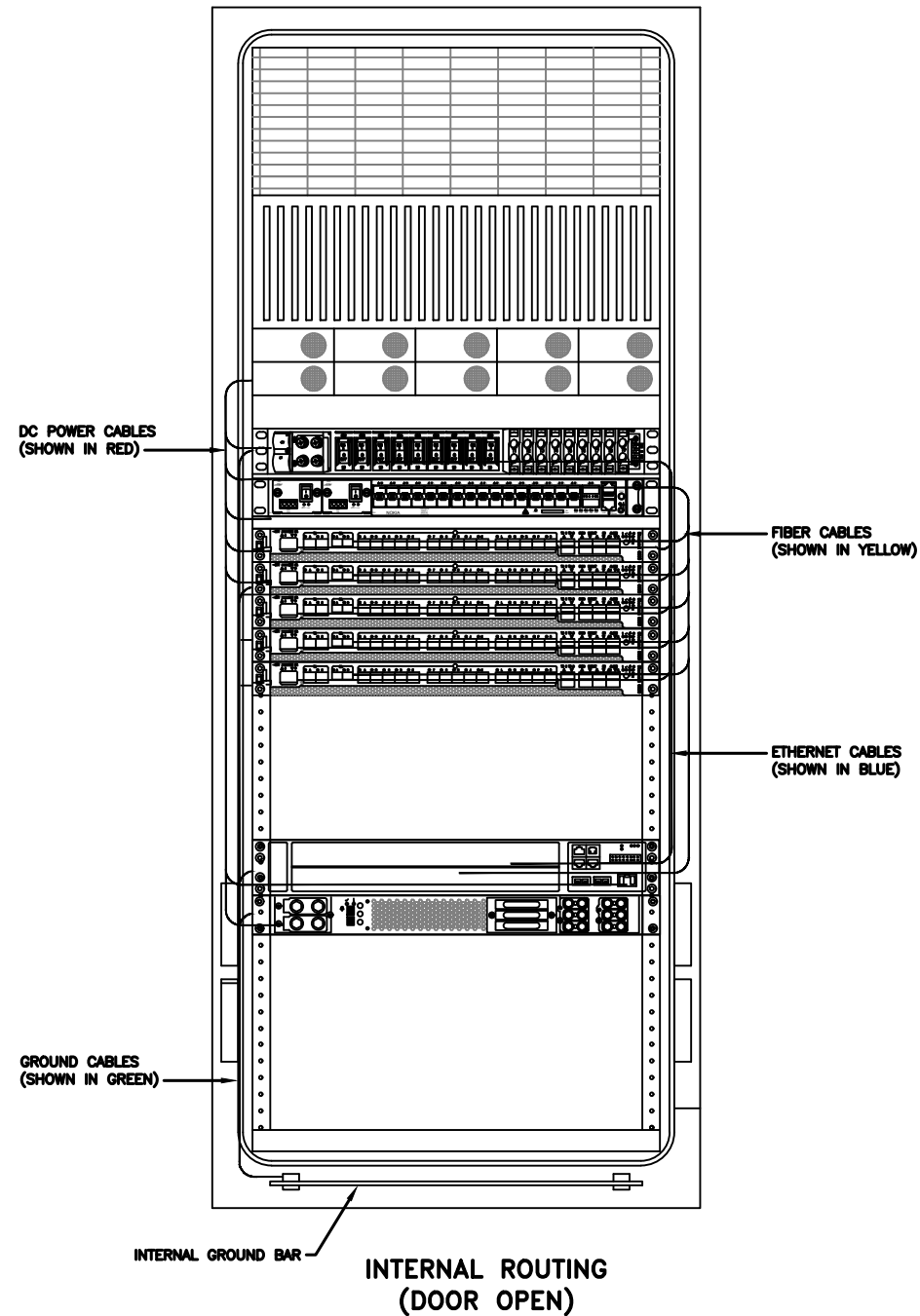
FRONT VIEW



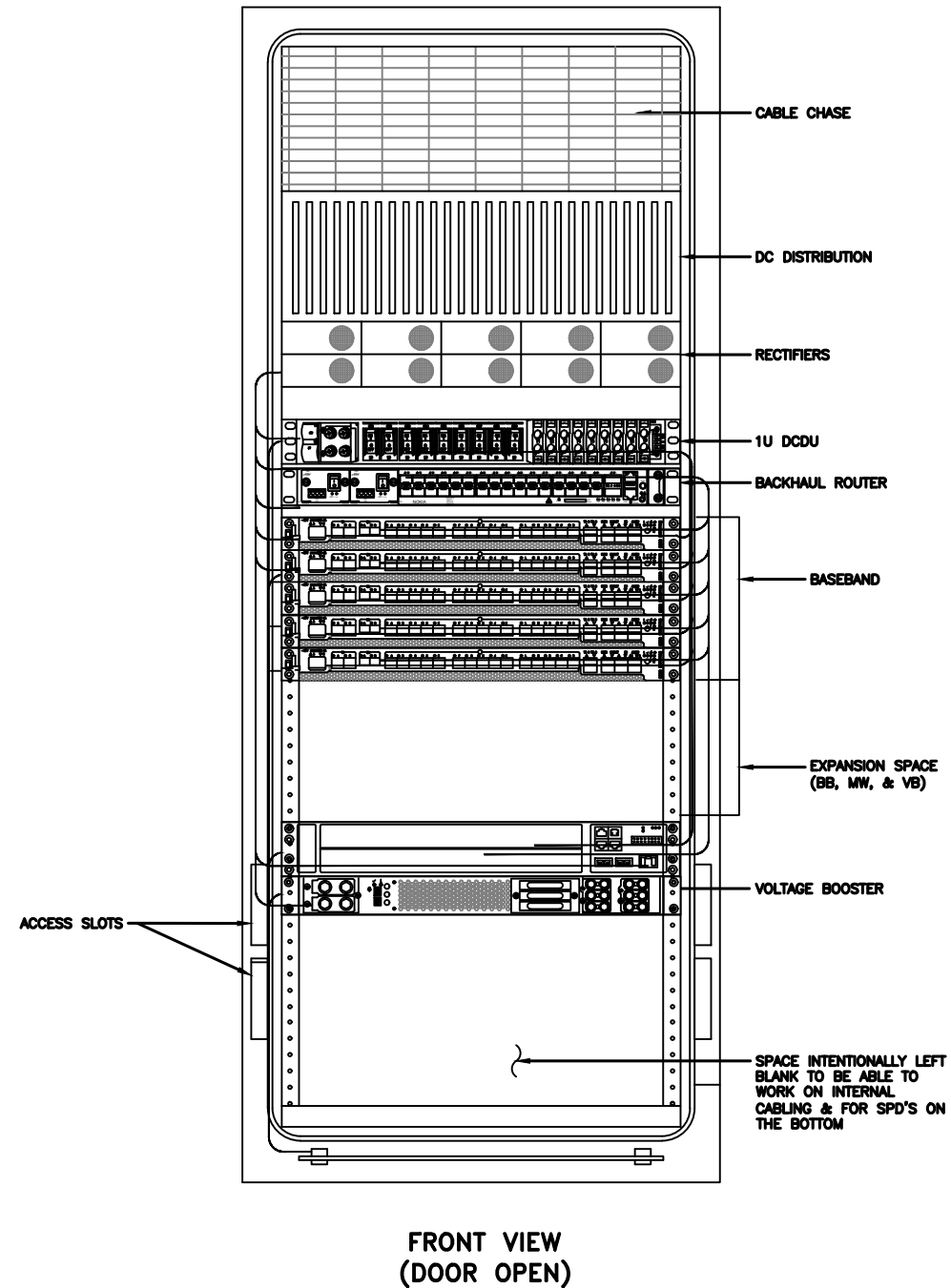
RIGHT VIEW



PLAN VIEW



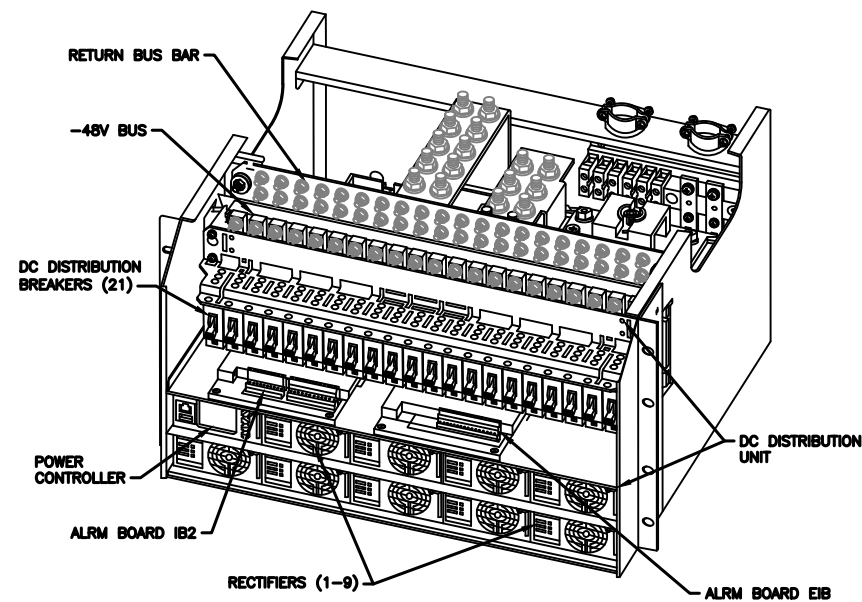
RACK ASSIGNMENTS	
RU SLOTS	DESCRIPTION
1	DC DISTRIBUTION
2	
3	
4	
5	RECTIFIER SHELF
6	
7	FIBER BOX
8	DCDU
9	BACKHAUL ROUTER
10	
11	1ST BASEBAND
12	2ND BASEBAND
13	3RD BASEBAND
14	4TH BASEBAND
15	5TH BASEBAND
16	EXPANSION
17	
18	
19	EXPANSION / LEGACY BASEBAND / VOLTAGE BOOSTER
20	
21	VOLTAGE BOOSTER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



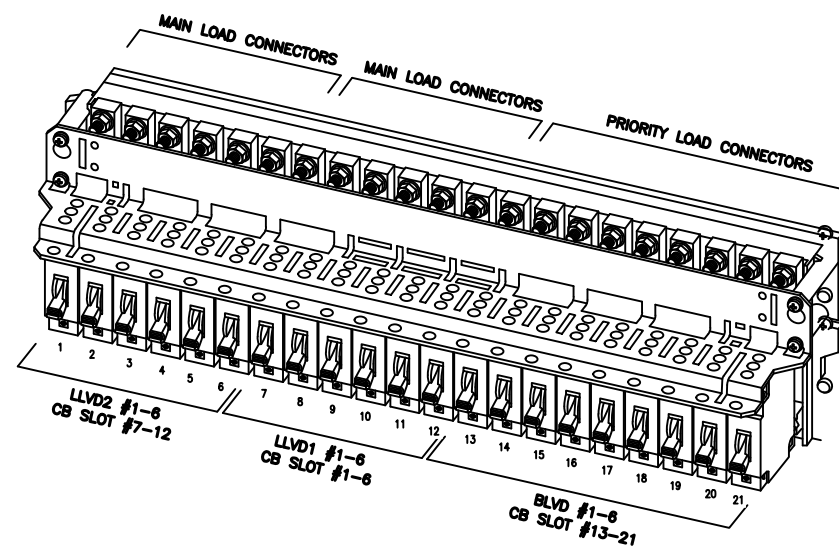
**NOTE:**  
 THIS IS FOR REFERENCE ONLY, CHECK  
 FOR SPECIFIC DETAIL IN T-MOBILE  
 CABINET SPECIFIC INSTALLATION GUIDES

Breaker Allocation for E6160				
CB SLOT	Ckt #	w/ DCU Prior to availability of the 4460 and 4480	w/ DCU Later Design Post-4460 and Post-4480	w/ DCU 4 and 6 Sector designs
1	1	Router PS-2*/Future		Radio 4460 B25/66 ζ-1
2	2	Future		Radio 4460 B25/66 ζ-2
3	LVD1	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	47.0V			
5	5	PSU 4813 feeding B41 α, β and γ (Air 6449s)		
6	6			
7	LVD2	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	45.1V	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	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



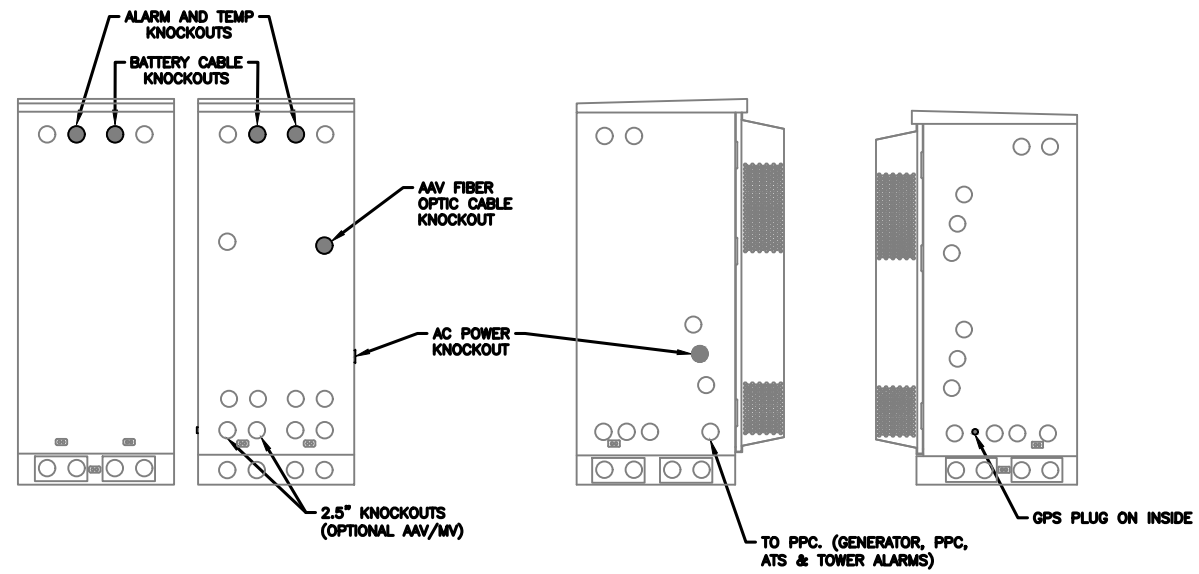
**POWER SUBRACK**



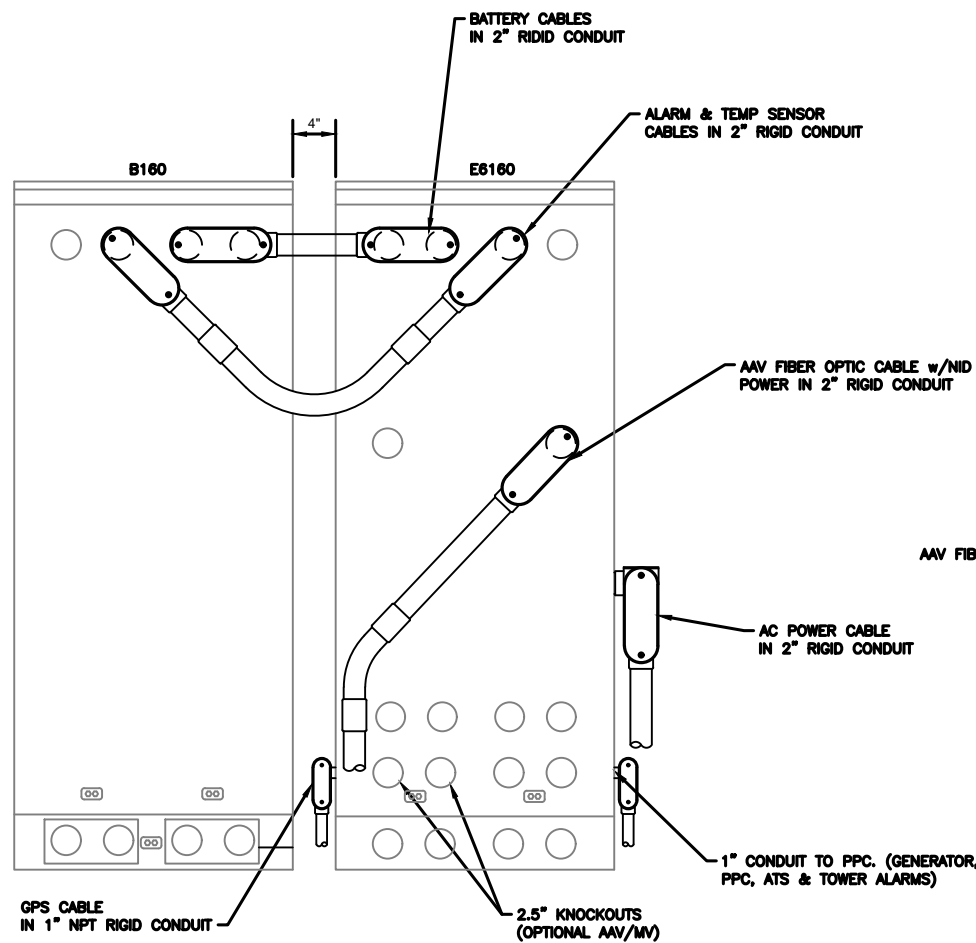
**DC DISTRIBUTION**

**NOTE:**

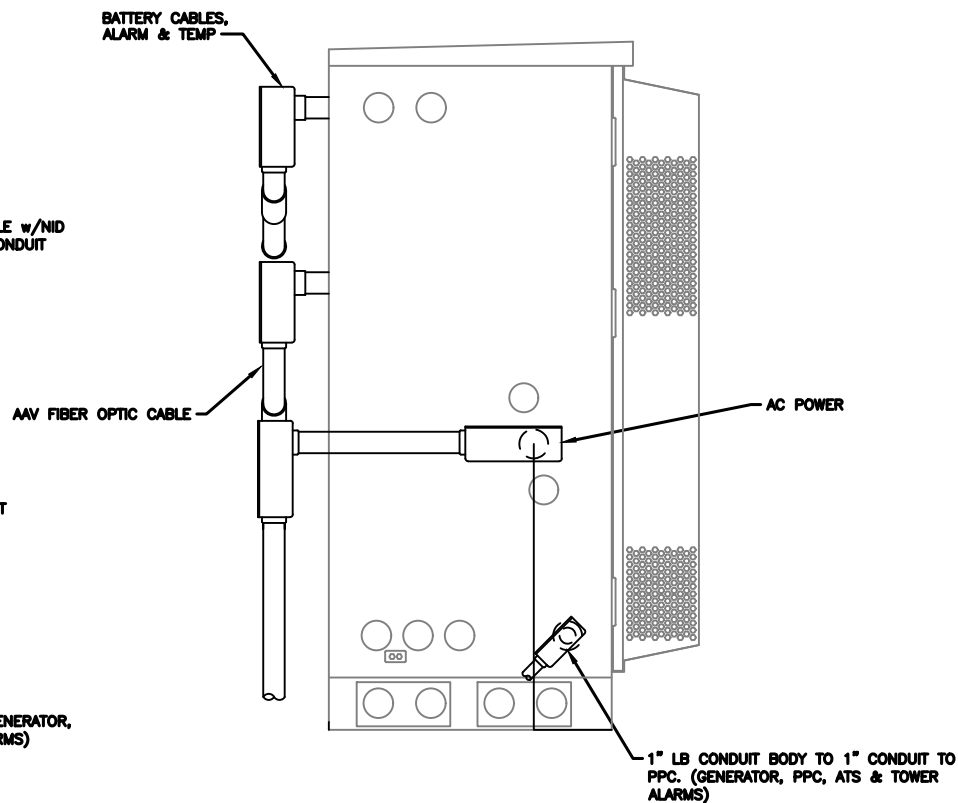
1. ALL CONDUIT AND FITTING ENTRANCES INTO CABINETS AND ENCLOSURES MUST UTILIZE MYERS OR EQUIVALENT HUBS OR SEALING WASHERS TO PREVENT WATER ENTRY/SEEPAGE INTO CABINETS AND ENCLOSURES.
2. (LIQUIDFLEX) FLEXIBLE METALLIC CONDUIT (LFMC) & ASSOCIATED FITTINGS CAN BE USED AS NEEDED BUT ONLY FOR TIGHT CONDUIT 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 TO 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

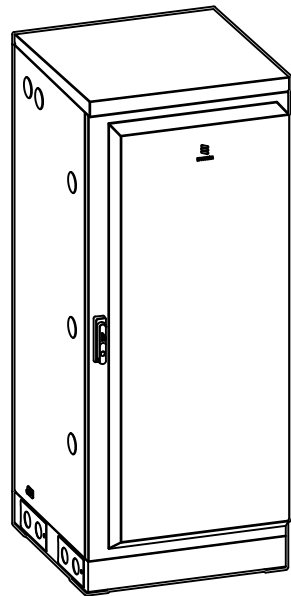


REAR VIEW



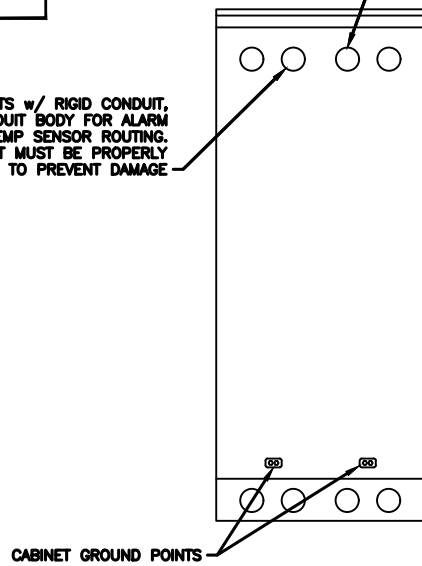
SIDE VIEW

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

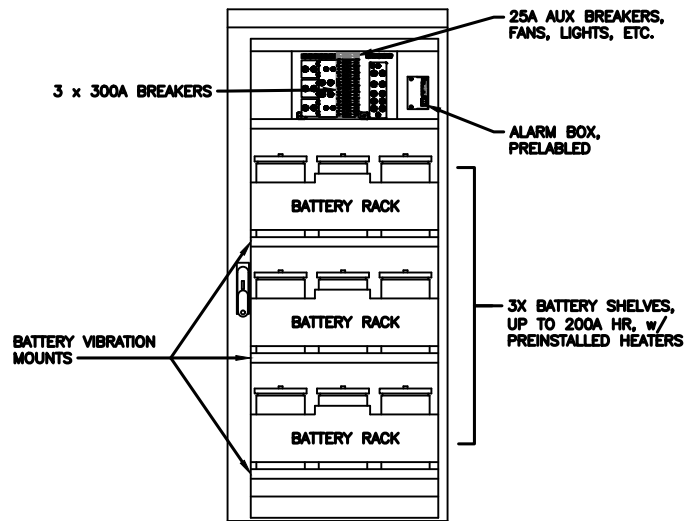


2.5" KNOCKOUTS w/ RIGID CONDUIT, LB CONDUIT BODY FOR ALARM CABLE & TEMP SENSOR ROUTING. CONDUIT MUST BE PROPERLY SECURED TO PREVENT DAMAGE

2.5" KNOCKOUTS w/ RIGID CONDUIT, LB CONDUIT BODY FOR BATTERY CABLE CONDUIT MUST BE PROPERLY SECURED TO PREVENT DAMAGE

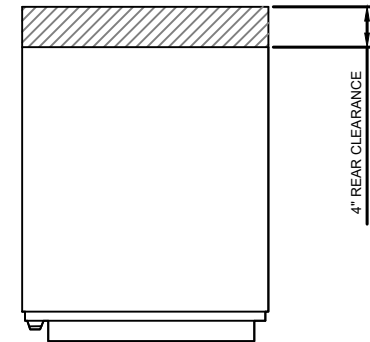


REAR VIEW



FRONT VIEW (DOOR OPEN)

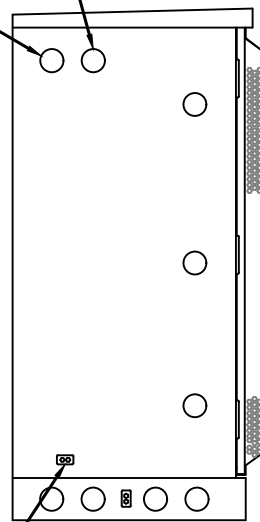
NOTE:  
 • CORRECT KNOCKOUT TOOL REQUIRED FOR PUNCHING KNOCKOUTS. DO NOT DRILL THROUGH KNOCKOUTS  
 • CONDUIT MUST BE PROPERLY SECURED TO PREVENT DAMAGE TO CABINETS AND OR CABLING



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."

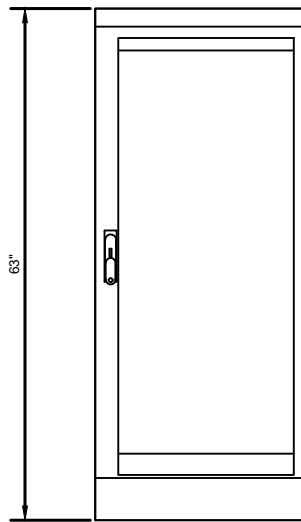
(OPTIONAL) 2.5" KNOCKOUTS FOR ALARM & TEMP SENSOR ROUTING TO 6160

(OPTIONAL) 2.5" DC POWER KNOCKOUTS TO 6160

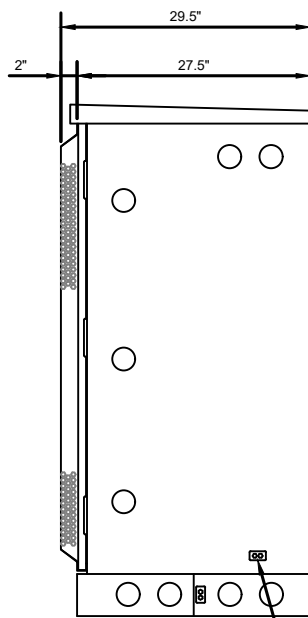


CABINET GROUND POINT

LEFT VIEW

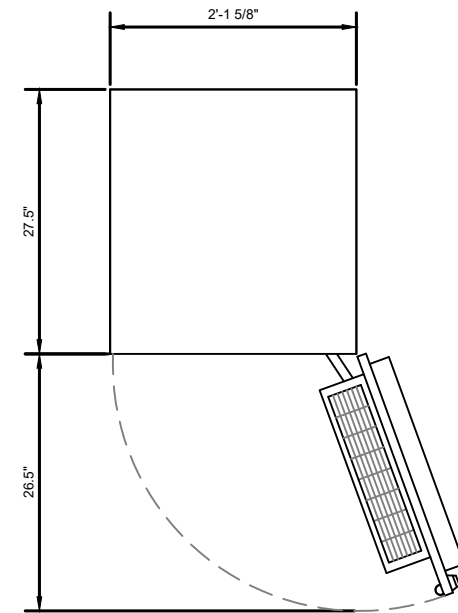


FRONT VIEW



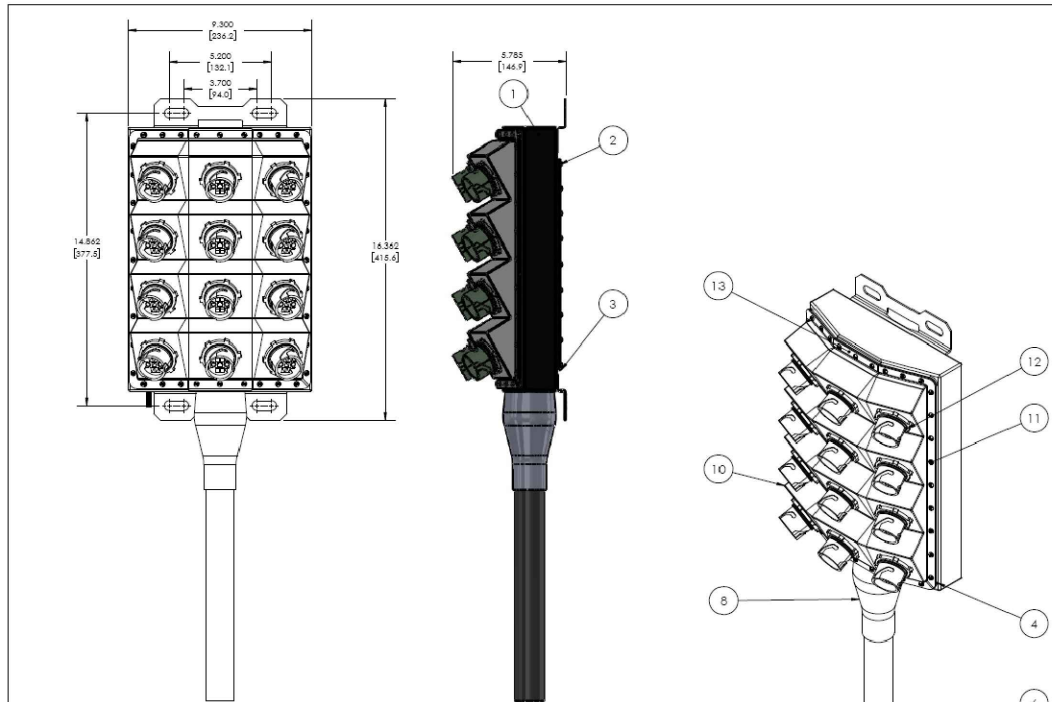
RIGHT VIEW

CABINET GROUND POINT



PLAN VIEW

B160 ERICSSON SITE SUPPORT BATTERY CABINET



REV. NO.	PART NUMBER	DESCRIPTION	QTY.
1	AC-FB05-HICAP-DAP-CRS	BASED BOX SW ASY	1
2	AC-FB05-HICAP-SP	SPRING GASKET FOR BACK PLATE	1
3	AC-FB05-HICAP-24P-BOX-CRS	BACKING PLATE CLOSURE CRS	1
4	AC-FB05-HICAP-TRAY-REV.1	TRAY GASKET MEK	1
5	200668me	CABLE GROUND-TRAY	1
6	TRAY-Cable	HYBRID TRAY CABLE	AJB
7	SOLE	SOCKE TRAY CABLE GROUND	1
8	HEAT SHIELD-AC-FB05-HICAP-FULLASY-CRS	HEAT SHIELD TUBE	1
9	AC-FB05-HICAP-HEATSHIELD-SHW	POLYCARBONATE HEAT SHIELD STABILIZED (SHD) CUTOUT	1
10	BOARD-BOX	TRAY/PROOF BOARD COVER	48
11	IFSC4-ASD	4X11C.2 X 1 BANG ADAPTER ASSEMBLY	12
12	AC-FB05-HICAP-HEATSHIELD-SHW	GASKET O-RING MEK	1
13	WASHER	WASHER	AJB

CUSTOMER APPROVAL

NAME: \_\_\_\_\_  
SIGNATURE: \_\_\_\_\_  
DATE: \_\_\_\_\_

1 RELEASED FOR PRODUCTION, 20180530  
REV. DESCRIPTION DATE

**ALLIANCE CORPORATION**  
THE POWER OF BEING CONNECTED.

SIGNATURE CYCLE DATE  
DRAWN: MLE 20180529  
CHECKED: DOB 20180529  
APPROVED: DOB 20180530

DESCRIPTION:  
**HICAP HYBRID BREAKOUT CRS BOX (FULL ASSEMBLY)**

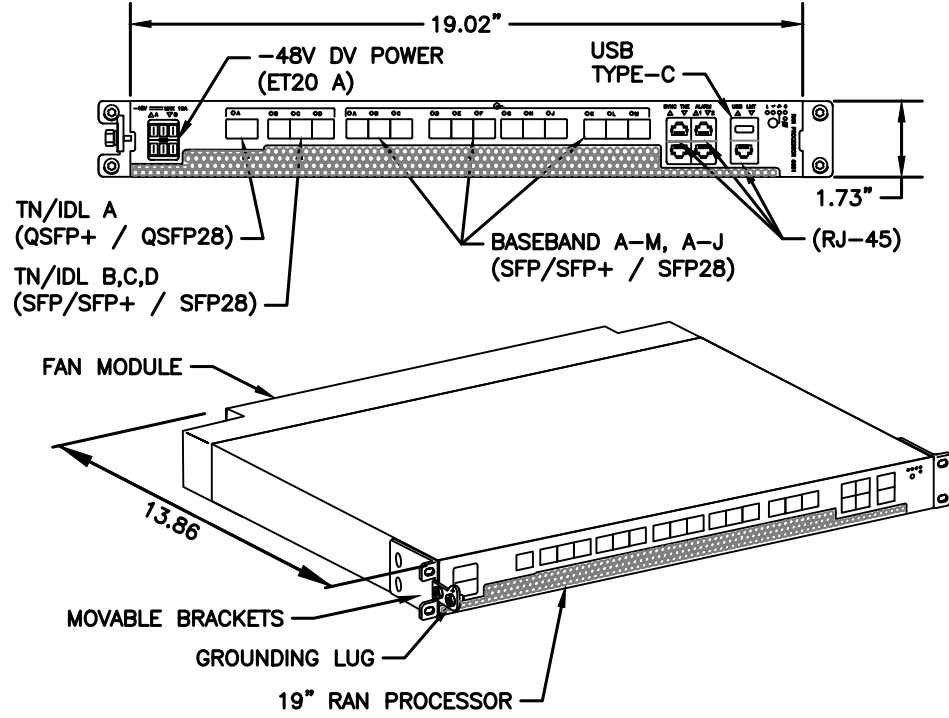
MATERIAL: CR STEEL A1008 C5

WEIGHT: 0.76  
FINISH: POWDER COATED  
COLOUR: BLACK  
SHEET NO: 1 OF 1  
DWG NO: **AC-FB05-HICAP-FULLASY-CRS**

TOLERANCE: X.X ± 0.005"  
X.XX ± 0.010"  
X.XXX ± 0.005"

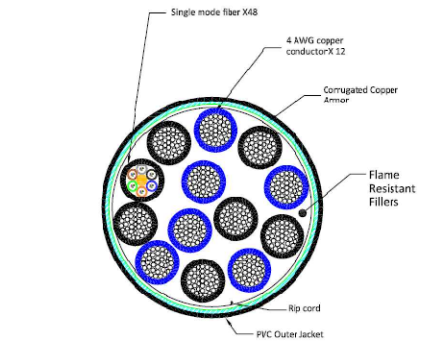
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MANUFACTURER: ERICSSON  
MODEL: 6651 RAN PROCESSOR (KDU1370093/11)  
DIMENSIONS: 1.73" X 19.02" X 13.86" (H" X W" X D")  
WEIGHT: 16.98 LBS



2 34553 - ERICSSON 6651 RAN PROCESSOR  
SCALE: N.T.S.

MECHANICAL	JACKET COLOR	BLACK
	OUTER DIAMETER (IN)	1.8
	MIN BENDING RADIUS(IN), MULTIPLE BENDS, LOADED	36
	MIN BENDING RADIUS(IN), MULTIPLE BENDS, UNLOADED	18
	MIN BENDING RADIUS(IN), SINGLE BEND, UNLOADED	12.6
	MIN BENDING RADIUS(IN), FURCATION	1.2
	ARMOR	CORRUGATED COPPER
	WEIGHT(lb/ft)	2480
	COMPRESSION(lb/IN)	250
	TENSILE LOAD, LONG TERM(lbf)	380
	TENSILE LOAD, SHORT TERM(lbf)	600
ELECTRICAL	CONDUCTOR MATERIAL	COPPER
	CONDUCTOR CONSTRUCTION	STRAND
	CONDUCTOR COLOR	BLUE/BLACK
	RESISTIVITY(nΩ @20°C)	16.78 nΩm-M
	CONDUCTORS, QTY	12
	CONDUCTOR SIZE(AWG)	4
	EMI SHIELD	YES
	UL RATING	UL TC-OF-ER
OPTICAL	FIBER TYPE	SINGLE MODE (G.657.A2)
	FIBERS, QTY	48
	ATTENUATION(dB/km), MAX, 1550/1285-1330 nm	0.5
	DISPERSION, MAX, 1550/1285-1330 nm	18 ps/3.5 ps
	RETURN LOSS(dB)	>50
	INSERTION LOSS(dB), POST ENVIRONMENTAL	REDUCTION <0.65
	RETURN LOSS(dB), POST ENVIRONMENTAL	REDUCTION < 5
	CUTOFF WAVELENGTH(nm)	1260
	PIGTAIL TERMINATION	LC PAIR, STRAIGHT
ENVIRON	OPERATING TEMP(°F)	-40 TO +167
	STORAGE TEMP(°F)	-40 TO +167
	UV	IEC 60068-2-5
	THERMAL CYCLE	IEC 60068-2-14
	VIBRATION	IEC 60068-2-64
	IMPACT(ft lb)	4.4 NM PER ICEA696



NOTE: CABLE CROSS-SECTION NOT DRAWN TO SCALE

PROJECT NO: \_\_\_\_\_  
PROJECT LOCATION: \_\_\_\_\_

REV. DESCRIPTION DATE  
1 REV. 05/2018 05/2018  
2 REV. 05/2018 05/2018

**ALLIANCE CORPORATION**  
THE POWER OF BEING CONNECTED.

CUSTOMER:  
**T-MOBILE**

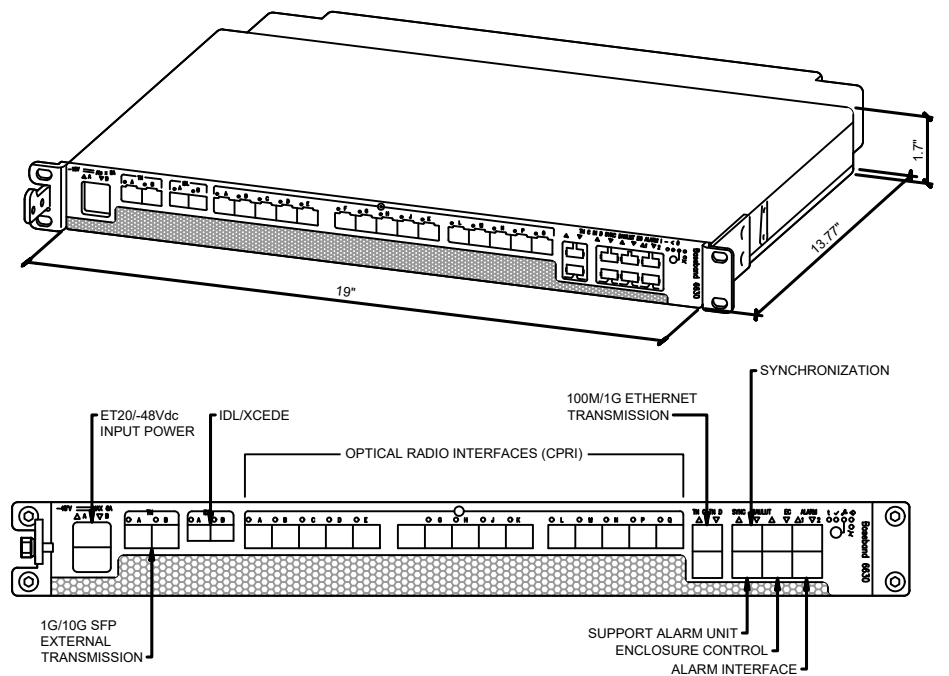
DESCRIPTION:  
**ARMORED TRUNK HYBRID CABLE HIGH-CAPACITY w/ #4 AWG CONDUCTORS**

SHEET NO: 3 OF 3  
DWG NO: **AC-HTC05-24DLC-12C**  
HORIZONTAL SCALE: N.T.S.  
VERTICAL SCALE: N.T.S.

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1 6X24 HCS 4AWG W/ PENDANT  
SCALE: N.T.S.

MANUFACTURER: ERICSSON  
MODEL: BASEBAND 6630  
WEIGHT: 14.3LBS  
DIMENSIONS: 19" x 1.7" x 13.77"



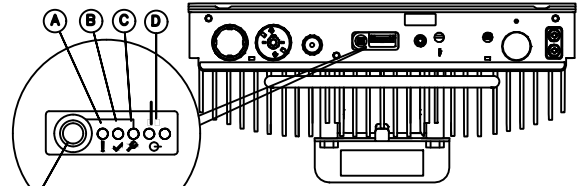
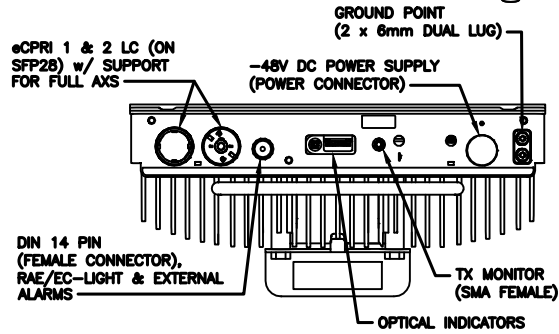
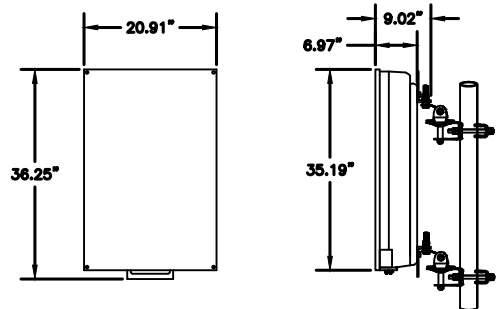
1 33659 - BASEBAND 6630  
SCALE: N.T.S.

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

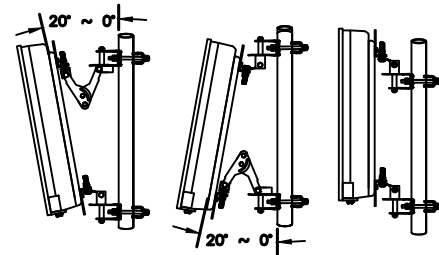
SUPPLEMENTAL

SHEET NUMBER: <b>R-607</b>	REVISION: <b>0</b>
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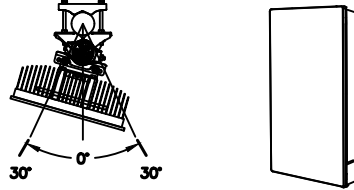
MANUFACTURER:	ERICSSON
MODEL:	AIR 6419 B41 (2.5GHz M-MIMO)
DIMENSIONS:	36.25" x 20.91" x 9.02" NOT TO EXCEED (H x W x D)
WEIGHT:	83 LBS (EXCLUDING MOUNTING KIT)
MOUNT WEIGHT:	13.5 LBS (SXX109 2016/1)



OPTICAL INDICATORS  
 A = FAULT (RED)      D = INTERFACE (GREEN)  
 B = OPERATIONAL (GREEN)      E = FUTURE  
 C = MAINTENANCE (BLUE)

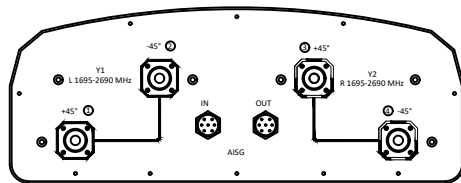
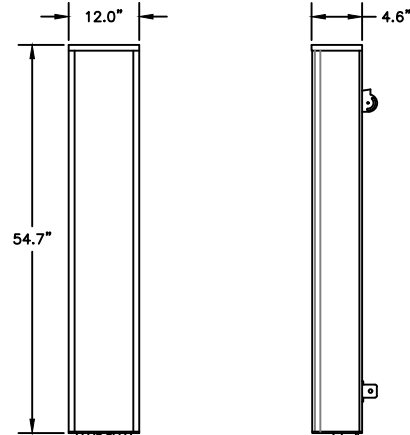


POLE MOUNTING RANGE  
 MINIMUM OUTER DIMENSIONS  
 CIRCULAR 2.99"  
 MAXIMUM OUTER DIMENSIONS  
 CIRCULAR 4.49"

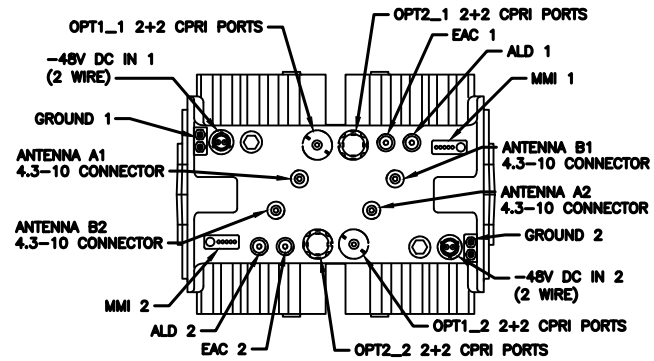
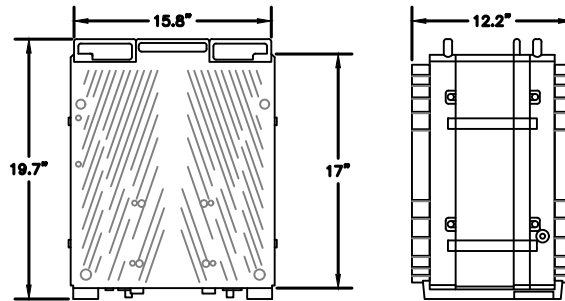


1 34552 - ERICSSON AIR 6419 BAND 41  
SCALE: N.T.S.

MANUFACTURER:	COMMSCOPE
MODEL:	VV-65A-R1
DIMENSIONS:	54.7" x 12.1" x 4.6" (H x W x D)
WEIGHT:	24.7 LB
INTERFACE:	4-PORT 4.3-10 FEMALE
MOUNTING KIT:	800899A-2 (INCLUDED) WEIGHT: 8.6 LB

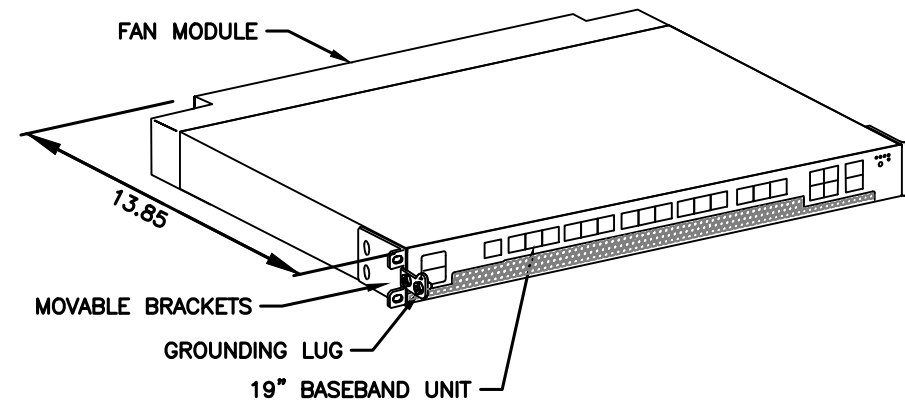
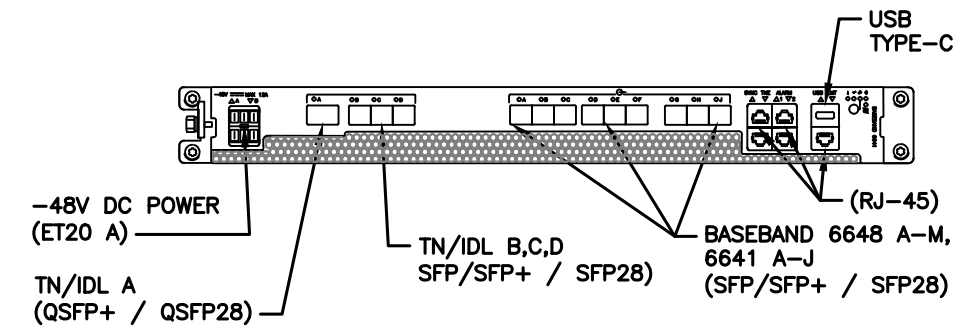
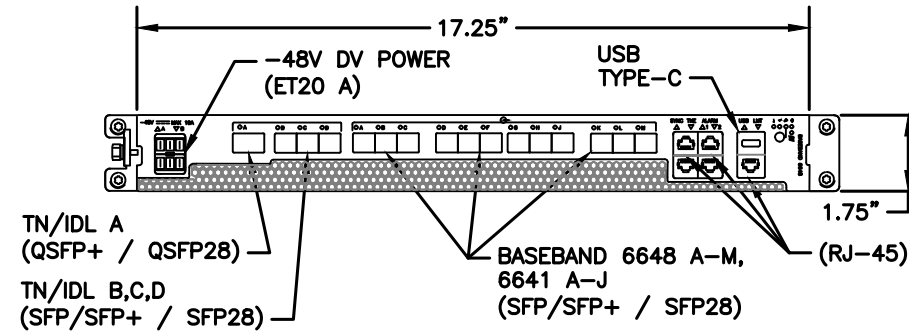


MANUFACTURER:	ERICSSON
MODEL:	4460 RADIO B2/25 B66 (KRC 161 912/3)
DIMENSIONS:	19.7" x 15.8" x 12.2" (H" x W" x D")
WEIGHT:	109 LBS
BRACKET WEIGHT:	4.8 LBS (ERS HEAVY #SXX1255993/1)



3 34373 - ERICSSON 4460 RADIO B2/25 B66  
SCALE: N.T.S.

MANUFACTURER:	ERICSSON
MODEL:	BASEBAND 6648
DIMENSIONS:	1.75" x 17.25" x 13.85" (H" x W" x D")
WEIGHT:	16.54 LBS



4 34111 - ERICSSON BASEBAND 6648 (WITH FAN)  
SCALE: N.T.S.

2 34401 - COMMSCOPE VV-65A-R1  
SCALE: N.T.S.

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

SUPPLEMENTAL

SHEET NUMBER: REVISION:

R-608

0



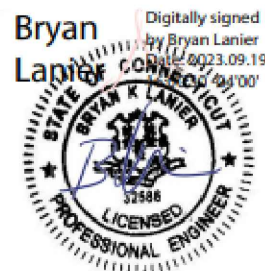


Eng. Number 14529802\_C8\_03  
September 18, 2023  
Page 3

## Mount Analysis Report

**ATC Asset Name** : PINE ORCHARD BRANFORD CT  
**ATC Asset Number** : 283419  
**Engineering Number** : 14529802\_C8\_03  
**Mount Elevation** : 121.5 ft  
**Proposed Carrier** : T-Mobile  
**Carrier Site Name** : Amtrak\_Branford  
**Carrier Site Number** : CTNH801B  
**Site Location** : 123 Pine Orchard Road  
 Branford, CT 06405-3939  
 41.274768, -72.793178  
**County** : New Haven  
**Date** : September 18, 2023  
**Max Usage** : 96%  
**Analysis Result** : Pass

Prepared By:  
Molly Li  
Structural Engineer I



COA: PEC.0001553

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

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

### Introduction

The purpose of this report is to summarize results of the mount analysis performed for T-Mobile at 121.5 ft.

### Supporting Documents

<b>Mount Modification:</b>	CLS Project #12927144_C9_06, dated September 1, 2020
<b>Previous Analysis:</b>	CLS Project #12927144, dated August 20, 2020
<b>Radio Frequency Data Sheet:</b>	RFDS ID #CTNH801B, dated August 3, 2023
<b>Reference Photos:</b>	Site photos from 2022

### Analysis

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

<b>Basic Wind Speed:</b>	122 mph (3-Second Gust)
<b>Basic Wind Speed w/ Ice:</b>	50 mph (3-Second Gust) w/ 1.00" radial ice concurrent
<b>Codes:</b>	ANSI/TIA-222-H / 2021 IBC / 2022 Connecticut State Building Code
<b>Exposure Category:</b>	C
<b>Risk Category:</b>	II
<b>Topographic Factor Procedure:</b>	Method 2
<b>Feature:</b>	Flat
<b>Crest Height (H):</b>	0 ft
<b>Crest Length (L):</b>	0 ft
<b>Spectral Response:</b>	Ss = 0.201, S1 = 0.053
<b>Site Class:</b>	D - Stiff Soil
<b>Live Loads:</b>	Lm = 250 lbs, Lv = 250 lbs

\* Live load(s) have been reduced on the existing structure per ANSI/TIA-222-H Section 16.9

### Conclusion

Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed above. The mount can support the equipment as described in this report.

If you have any questions or require additional information, please reach out to your American Tower contact. If you do not have an American Tower contact and have an Engineering question, please contact MountAnalysis@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.





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CORPORATION

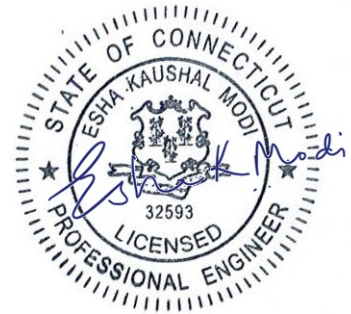
## Structural Analysis Report

**Structure** : 123 ft Monopole  
**ATC Asset Name** : PINE ORCHARD BRANFORD CT  
**ATC Asset Number** : 283419  
**Engineering Number** : 14529802\_C3\_02  
**Proposed Carrier** : T-MOBILE  
**Carrier Site Name** : Amtrak\_Branford  
**Carrier Site Number** : CTNH801B  
**Site Location** : 123 Pine Orchard Road  
Branford, CT 06405-3939  
41.2748° N, 72.7932° W  
**County** : New Haven  
**Date** : September 6, 2023  
**Max Usage** : 65%  
**Analysis Result** : Pass

Created By:

Nathan Lyle  
Structural Engineer I

*Nathan Lyle*



Digitally signed by  
**Esha Modi**  
Esha Modi  
Date: 2023.09.08  
15:09:49 -04'00'

**COA: PEC.0001553**

## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 123 ft Monopole tower to reflect the change in loading by T-MOBILE.

## Supporting Documents

<b>Tower:</b>	Sabre Job #11-05276, dated June 2, 2010
<b>Foundation:</b>	Sabre Job #11-05276, dated June 2, 2010
<b>Geotechnical:</b>	Terracon Project #J2105131, dated April 2, 2010

## Analysis

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

<b>Basic Wind Speed:</b>	122 mph (3-second gust)
<b>Basic Wind Speed w/ Ice:</b>	50 mph (3-second gust) w/ 1.00" radial ice concurrent
<b>Code(s):</b>	ANSI/TIA-222-H / 2021 IBC / 2022 Connecticut State Building Code
<b>Exposure Category:</b>	C
<b>Risk Category:</b>	II
<b>Topographic Factor Procedure:</b>	Method 1
<b>Topographic Category:</b>	1
<b>Spectral Response:</b>	$S_s = 0.20$ , $S_1 = 0.05$
<b>Site Class:</b>	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 Engineering via email at [Engineering@americantower.com](mailto:Engineering@americantower.com). Please include the American Tower asset name, asset number, and engineering number in the subject line for any questions.

### Structure Usages

Structural Component	Usage	Control	Result
Pole Shaft	65.3%	1.2D + 1.0W	Pass
Base Plate @ 0.0 ft	51.5%	Rods	Pass
Mat & Pier	54.0%	Flexure [Steel (Pier)]	Pass

### Maximum Reactions

Foundation	Moment (k-ft)	Axial (k)	Shear (k)
Monopole Base	2,446.2	37.8	27.0

*\*Reactions shown reflect the results from the Load Case with maximum Moment*

Structure base reactions were analyzed using available geotechnical and foundation information.

**T-MOBILE Final Loading**

Elev (ft)	Qty	Equipment	Lines
122.0	3	Commscope VV-65A-R1B	(3) 1 5/8" (1.63"-41.3mm) Fiber (3) 1.99" (50.7mm) Hybrid
	3	Ericsson AIR 6419 B41	
	3	Ericsson Radio 4449 B12,B71	
	3	Ericsson Radio 4460 B25+B66	
	3	RFS APXVAARR24_43-U-NA20	
120.0	3	Mount Reinforcement	(3) 1 5/8" (1.63"-41.3mm) Fiber
	3	T-Arm	
	3	RFS APXVAARR24_43-U-NA20	

Install proposed lines inside the pole shaft.

**Other Existing/Reserved Loading**

Elev (ft)	Qty	Equipment	Lines	Carrier
120.1	3	Ericsson RRUS 4478 B14	-	AT&T MOBILITY
119.1	1	Raycap DC6-48-60-18-8C	-	AT&T MOBILITY
116.4	3	Ericsson RRUS 4449 B5, B12	-	AT&T MOBILITY
112.0	1	Raycap DC6-48-60-18-8F	(1) 0.39" (10mm) Fiber Trunk (3) 0.41" (10.3mm) Fiber (2) 0.92" (23.4mm) Cable (6) 1 5/8" Coax (2) 2" conduit	AT&T MOBILITY
	3	CCI DMP65R-BU6DA		
	3	CCI TPA-65R-BU6DA-K		
	3	Ericsson AIR 6419 B77G		
	3	Ericsson Air 6449 B77D		
	3	Ericsson RRUS 8843 B2, B66A		
	3	T-Arm		
105.0	3	T-Arm	-	VERIZON WIRELESS
102.0	1	Raycap RCMDC-6627-PF-48	(2) 1 5/8" (1.63"-41.3mm) Fiber (12) 1 5/8" Coax	VERIZON WIRELESS
	2	Swedcom SC-E 6016 REV2		
	3	Samsung B2/B66A RRH-BR049		
	3	Samsung B5/B13 RRH-BR04C		
	4	Antel LPA-80063/6CF		
	6	Commscope SBNHH-1D65B		
80.0	1	Commscope RDIDC-9181-PF-48	(1) 1.60" (40.6mm) Hybrid	DISH WIRELESS L.L.C.
	3	Fujitsu TA08025-B604		
	3	Fujitsu TA08025-B605		
	3	T-Arm		
	3	JMA Wireless MX08FRO665-21		

*(If table breaks across pages, please see previous page for data in merged cells)*

## **Standard Conditions**

All engineering services performed by A.T. Engineering Services LLC 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 Services LLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Services LLC 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 Services LLC, 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 Services LLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

**ANALYSIS PARAMETERS**

Nominal Wind:	122 mph	Ice Wind:	50 mph w/ 1" ice	Service Wind:	60 mph
Risk Category:	II	Exposure:	C	S <sub>c</sub> :	0.201
Topo Category:	1	Topo Factor:	Method 1	S <sub>t</sub> :	0.053
Structure Height:	123 ft	Base Elevation:	0.00 ft	Topo Feature:	
Base Diameter:	50.75 in	Base Rotation:	0°	Structure Type:	Taper
				Taper:	0.2500 (in/ft)

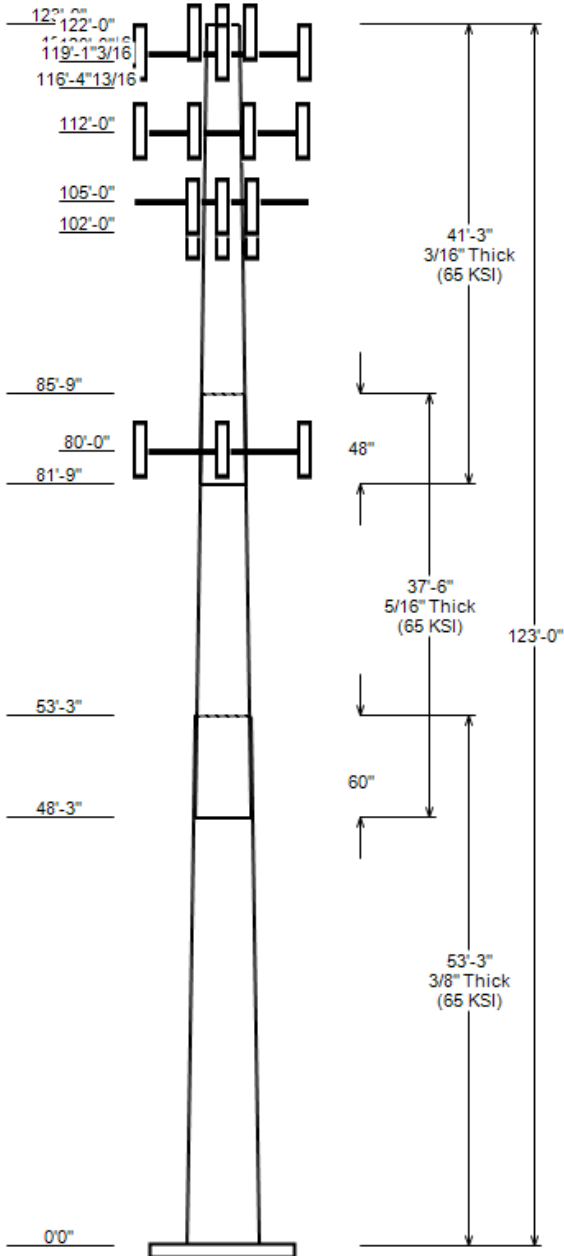
**POLE SECTION PROPERTIES**

Section	Length (ft)	Flat Diameter (in)		Thick (in)	Joint Type	Joint Length (in)	Pole Shape	Yield Strength (ksi)
		Top	Bottom					
1	53.250	37.44	50.75	0.375		0.000	18 Sides	65
2	37.500	29.94	39.31	0.312	Slip Joint	60.000	18 Sides	65
3	41.250	21.00	31.31	0.188	Slip Joint	48.000	18 Sides	65

**DISCRETE APPURTENANCE**

**LINEAR APPURTENANCE**

Elev (ft)	Description	Elev To (ft)	Description
122.0	(3) Ericsson Radio 4449 B12.B71	122.0	(3) 1.99" (50.7mm) Hybrid
122.0	(3) Ericsson Radio 4460 B25+B66	122.0	(1) 1 5/8" (1.63"-41.3mm) Fiber
122.0	(3) Ericsson AIR 6419 B41	122.0	(2) 1 5/8" (1.63"-41.3mm) Fiber
122.0	(3) Commscope VV-65A-R1B	120.0	(3) 1 5/8" (1.63"-41.3mm) Fiber
122.0	(3) RFS APXVAARR24_43-U-NA20	119.0	(4) 0.78" (19.7mm) 8 AWG 6
120.1	(3) Ericsson RRUS 4478 B14	112.0	(2) 2" conduit
120.0	(3) Generic Mount Reinforcement	112.0	(6) 1 5/8" Coax
120.0	(3) Generic Round T-Arm	112.0	(2) 0.92" (23.4mm) Cable
120.0	(3) RFS APXVAARR24_43-U-NA20	112.0	(3) 0.41" (10.3mm) Fiber
119.1	(1) Raycap DC6-48-60-18-8C	112.0	(1) 0.39" (10mm) Fiber Trunk
116.4	(3) Ericsson RRUS 4449 B5, B12	102.0	(12) 1 5/8" Coax
112.0	(1) Raycap DC6-48-60-18-8F	102.0	(2) 1 5/8" (1.63"-41.3mm) Fiber
112.0	(3) Ericsson RRUS 8843 B2, B66A	80.0	(1) 1.60" (40.6mm) Hybrid
112.0	(3) Ericsson AIR 6419 B77G		
112.0	(3) Ericsson Air 6449 B77D		
112.0	(3) Generic Round T-Arm		
112.0	(3) CCI TPA-65R-BU6DA-K		
112.0	(3) CCI DMP65R-BU6DA		
105.0	(3) Generic Round T-Arm		
102.0	(3) Samsung B5/B13 RRH-BR04C		
102.0	(3) Samsung B2/B66A RRH-BR049		
102.0	(1) Raycap RCMD-6627-PF-48		
102.0	(2) Swedcom SC-E 6016 REV2		
102.0	(6) Commscope SBNHH-1D65B		
102.0	(4) Antel LPA-80063/6CF		
80.0	(1) Commscope RDIDC-9181-PF-48		
80.0	(3) Fujitsu TA08025-B605		
80.0	(3) Fujitsu TA08025-B604		
80.0	(3) Generic Round T-Arm		
80.0	(3) JMA Wireless MX08FRO665-21		



**GLOBAL BASE REACTIONS**

Load Case	Moment (kip-ft)	Axial (kip)	Shear (kip)
1.2D + 1.0W	2446.17	37.78	26.99
0.9D + 1.0W	2425.76	28.32	26.97
1.2D + 1.0Di + 1.0Wi	584.25	52.52	6.62
1.2D + 1.0Ev + 1.0Eh	96.58	37.62	0.97
0.9D - 1.0Ev + 1.0Eh	95.58	25.95	0.97
1.0D + 1.0W	526.70	31.51	5.84

ANALYSIS PARAMETERS

<b>Location:</b>	New Haven County,CT	<b>Height:</b>	123 ft
<b>Type and Shape:</b>	Taper, 18 Sides	<b>Base Diameter:</b>	50.75 in
<b>Manufacturer:</b>	Sabre	<b>Top Diameter:</b>	21.00 in
<b>K<sub>d</sub> (non-service):</b>	0.95	<b>Taper:</b>	0.2500 in/ft
<b>K<sub>e</sub>:</b>	1.00	<b>Rotation:</b>	0.000°

ICE & WIND PARAMETERS

<b>Risk Category:</b>	II	<b>Design Wind Speed:</b>	122 mph
<b>Exposure Category:</b>	C	<b>Design Wind Speed w/ Ice:</b>	50 mph
<b>Topo Factor Procedure:</b>	Method 1	<b>Design Ice Thickness:</b>	1.00 in
<b>Topographic Category:</b>	1	<b>Service Wind Speed:</b>	60 mph
<b>Crest Height:</b>	0 ft	<b>HMSL:</b>	30.00 ft

SEISMIC PARAMETERS

<b>Analysis Method:</b>	Equivalent Lateral Force Method		
<b>Site Class:</b>	D - Stiff Soil	<b>Period Based on Rayleigh Method (sec):</b>	1.83
<b>T<sub>L</sub> (sec):</b>	6	<b>P:</b>	1
<b>S<sub>s</sub>:</b>	0.201	<b>S<sub>1</sub>:</b>	0.053
<b>F<sub>a</sub>:</b>	1.600	<b>F<sub>v</sub>:</b>	2.400
<b>S<sub>ds</sub>:</b>	0.214	<b>S<sub>d1</sub>:</b>	0.085
		<b>C<sub>s</sub>:</b>	0.031
		<b>C<sub>s</sub> Max:</b>	0.031
		<b>C<sub>s</sub> Min:</b>	0.030

LOAD CASES

1.2D + 1.0W	122 mph Wind with No Ice
0.9D + 1.0W	122 mph Wind with No Ice (Reduced DL)
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

SHAFT SECTION PROPERTIES

Section	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Joint Len (in)	Weight (lb)	Bottom						Top						
							Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Taper (in/ft)
1-18	53.25	0.3750	65		0.00	9,429	50.75	0.000	59.96	19,223.0	22.10	135.33	37.44	53.25	44.11	7,655.6	15.84	99.83	0.2500
2-18	37.50	0.3125	65	Slip	60.00	4,343	39.31	48.250	38.68	7,433.4	20.42	125.80	29.94	85.75	29.38	3,258.1	15.13	95.80	0.2500
3-18	41.25	0.1875	65	Slip	48.00	2,169	31.31	81.750	18.52	2,267.1	27.68	167.00	21.00	123.00	12.39	677.8	17.99	112.00	0.2500
<b>Total Shaft Weight</b>						<b>15,941</b>													

DISCRETE APPURTENANCE PROPERTIES

Attach Elev (ft)	Description	Qty	Vert Ecc (ft)	No Ice			Ice							
				Weight (lb)	EPAA (sf)	Orientation Factor	Weight (lb)	EPAA (sf)	Orientation Factor					
122.00	Commscope VV-65A-R1B	3	0.80	0.000	24.70	5.887	0.63	101.13	7.271	0.63				
122.00	Ericsson AIR 6419 B41	3	0.80	0.000	68.50	5.600	0.60	147.51	6.636	0.60				
122.00	Ericsson Radio 4460 B25+B66	3	0.80	0.000	109.00	2.564	0.67	166.79	3.253	0.67				
122.00	Ericsson Radio 4449 B12,B71	3	0.80	0.000	74.00	1.639	0.50	110.61	2.191	0.50				
122.00	RFS APXVAARR24_43-U-NA20	3	0.80	0.000	127.90	20.243	0.63	384.60	22.668	0.63				
120.10	Ericsson RRUS 4478 B14	3	0.80	0.000	59.40	2.021	0.67	99.49	2.637	0.67				
120.00	Generic Round T-Arm	3	0.75	0.000	312.50	9.700	0.67	483.11	15.084	0.67				
120.00	RFS APXVAARR24_43-U-NA20	3	0.80	0.000	127.90	20.243	0.63	384.28	22.665	0.63				
120.00	Generic Mount Reinforcement	3	0.75	0.000	200.00	4.980	0.67	326.39	8.227	0.67				
119.10	Raycap DC6-48-60-18-8C	1	0.80	0.000	16.00	2.030	1.00	53.96	2.525	1.00				
116.40	Ericsson RRUS 4449 B5, B12	3	0.80	0.000	71.00	1.969	0.50	112.95	2.576	0.50				
112.00	Generic Round T-Arm	3	0.75	0.000	450.00	9.700	0.67	856.43	15.044	0.67				
112.00	CCI TPA-65R-BU6DA-K	3	0.80	0.000	69.00	12.709	0.60	235.98	14.517	0.60				
112.00	Ericsson Air 6449 B77D	3	0.80	0.000	81.60	4.028	0.65	148.26	4.919	0.65				
112.00	Ericsson AIR 6419 B77G	3	0.80	0.000	66.10	3.797	0.65	128.99	4.651	0.65				
112.00	CCI DMP65R-BU6DA	3	0.80	0.000	79.40	12.709	0.63	246.38	14.517	0.63				
112.00	Ericsson RRUS 8843 B2, B66A	3	0.80	0.000	72.00	1.639	0.50	111.73	2.187	0.50				
112.00	Raycap DC6-48-60-18-8F	1	0.80	2.000	20.00	1.260	1.00	54.13	1.687	1.00				
105.00	Generic Round T-Arm	3	0.75	0.000	450.00	9.700	0.67	853.59	15.007	0.67				
102.00	Antel LPA-80063/6CF	4	0.80	1.000	27.00	9.593	0.76	202.07	10.446	0.76				
102.00	Commscope SBNHH-1D65B	6	0.80	0.000	50.70	8.173	0.69	163.40	9.990	0.69				
102.00	Swedcom SC-E 6016 REV2	2	0.80	1.000	25.00	7.630	0.83	149.77	8.556	0.83				
102.00	Raycap RCMDC-6627-PF-48	1	0.80	0.000	32.00	4.056	1.00	113.61	4.932	1.00				
102.00	Samsung B2/B66A RRH-BR049	3	0.80	0.000	84.40	1.875	0.50	125.36	2.455	0.50				
102.00	Samsung B5/B13 RRH-BR04C	3	0.80	0.000	70.30	1.875	0.50	107.03	2.455	0.50				
80.00	Commscope RDIDC-9181-PF-48	1	0.80	0.000	21.90	1.867	1.00	57.49	2.430	1.00				
80.00	Fujitsu TA08025-B605	3	0.80	0.000	75.00	1.962	0.50	114.18	2.537	0.50				
80.00	Fujitsu TA08025-B604	3	0.80	0.000	63.90	1.962	0.50	100.37	2.537	0.50				
80.00	Generic Round T-Arm	3	0.75	0.000	450.00	9.700	0.67	842.09	14.855	0.67				
80.00	JMA Wireless MX08FRO665-21	3	0.80	0.000	64.50	12.489	0.64	225.23	14.246	0.64				
<b>Totals</b>		<b>Row Count: 30</b>			<b>85</b>			<b>10,305.40</b>			<b>21,604.85</b>			

LINEAR APPURTENANCE PROPERTIES

Load Case Azimuth (deg): 0.00

Elev From (ft)	Elev To (ft)	Qty	Description	Diameter (in)	Weight (lb/ft)	Flat	Max/Row	Distance Between Rows(in)	Distance Between Cols(in)	Azimuth (deg)	Distance From Face (in)	Exposed To Wind	Carrier
0.00	122.00	3	1.99" (50.7mm) Hybrid	1.99	1.9	N	0	0	0	0	0	N	T-MOBILE
0.00	122.00	2	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0	0	0	0	0	N	T-MOBILE
0.00	122.00	1	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0	0	0	0	0	N	T-MOBILE
0.00	120.00	3	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0	0	0	0	0	N	T-MOBILE
0.00	119.00	4	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	112.00	6	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	112.00	3	0.41" (10.3mm) Fiber	0.41	0.09	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	112.00	2	0.92" (23.4mm) Cable	0.92	0.89	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	112.00	2	2" conduit	2.38	3.65	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	112.00	1	0.39" (10mm) Fiber Tr	0.39	0.06	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	102.00	12	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	VERIZON WIRELESS
0.00	102.00	2	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0	0	0	0	0	N	VERIZON WIRELESS
0.00	80.00	1	1.60" (40.6mm) Hybrid	1.6	2.34	N	0	0	0	0	0	N	DISH WIRELESS L.L.C.



SEGMENT PROPERTIES

Seg Top Elev (ft)	Description	(Max Length: 5 ft)	Thick (in)	Flat Dia (in)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	F'y (ksi)	S (in <sup>3</sup> )	Z (in <sup>3</sup> )	Weight (lb)
0.00			0.3750	50.750	59.957	19,223.00	22.10	135.33	75.4	746.0	0.0	0.0
5.00			0.3750	49.500	58.469	17,827.20	21.51	132.00	76.1	709.3	0.0	1,007.4
10.00			0.3750	48.250	56.981	16,500.70	20.92	128.67	76.8	673.6	0.0	982.1
15.00			0.3750	47.000	55.493	15,241.70	20.34	125.33	77.5	638.7	0.0	956.8
20.00			0.3750	45.750	54.006	14,048.40	19.75	122.00	78.2	604.8	0.0	931.5
25.00			0.3750	44.500	52.518	12,919.00	19.16	118.67	78.9	571.8	0.0	906.2
30.00			0.3750	43.250	51.030	11,851.90	18.57	115.33	79.6	539.7	0.0	880.9
35.00			0.3750	42.000	49.542	10,845.20	17.99	112.00	80.2	508.6	0.0	855.6
40.00			0.3750	40.750	48.055	9,897.20	17.40	108.67	80.9	478.4	0.0	830.3
45.00			0.3750	39.500	46.567	9,006.10	16.81	105.33	81.6	449.1	0.0	804.9
48.25	Bot - Section 2		0.3750	38.688	45.600	8,456.60	16.43	103.17	82.1	430.5	0.0	509.6
50.00			0.3750	38.250	45.079	8,170.20	16.22	102.00	82.3	420.7	0.0	499.0
53.25	Top - Section 1		0.3125	38.063	37.442	6,741.30	19.71	121.80	78.2	348.8	0.0	911.7
55.00			0.3125	37.625	37.008	6,509.60	19.47	120.40	78.5	340.8	0.0	221.7
60.00			0.3125	36.375	35.768	5,877.10	18.76	116.40	79.3	318.2	0.0	619.1
65.00			0.3125	35.125	34.528	5,286.90	18.06	112.40	80.2	296.5	0.0	598.0
70.00			0.3125	33.875	33.289	4,737.60	17.35	108.40	81	275.5	0.0	576.9
75.00			0.3125	32.625	32.049	4,227.70	16.65	104.40	81.8	255.2	0.0	555.8
80.00			0.3125	31.375	30.809	3,755.80	15.94	100.40	82.6	235.8	0.0	534.7
81.75	Bot - Section 3		0.3125	30.938	30.375	3,599.30	15.69	99.00	82.6	229.1	0.0	182.2
85.00			0.3125	30.125	29.569	3,320.40	15.23	96.40	82.6	217.1	0.0	533.6
85.75	Top - Section 2		0.1875	30.313	17.927	2,055.50	26.74	161.67	69.9	133.6	0.0	121.1
90.00			0.1875	29.250	17.295	1,845.60	25.74	156.00	71.1	124.3	0.0	254.7
95.00			0.1875	28.000	16.551	1,617.60	24.57	149.33	72.5	113.8	0.0	287.9
100.00			0.1875	26.750	15.807	1,409.10	23.39	142.67	73.9	103.8	0.0	275.3
102.00			0.1875	26.250	15.510	1,331.00	22.92	140.00	74.4	99.9	0.0	106.6
105.00			0.1875	25.500	15.064	1,219.40	22.22	136.00	75.3	94.2	0.0	156.1
110.00			0.1875	24.250	14.320	1,047.50	21.04	129.33	76.7	85.1	0.0	250.0
112.00			0.1875	23.750	14.022	983.60	20.57	126.67	77.2	81.6	0.0	96.4
115.00			0.1875	23.000	13.576	892.60	19.87	122.67	78	76.4	0.0	140.9
116.40			0.1875	22.650	13.368	852.20	19.54	120.80	78.4	74.1	0.0	64.2
119.10			0.1875	21.975	12.966	777.60	18.90	117.20	79.2	69.7	0.0	121.0
120.00			0.1875	21.750	12.832	753.80	18.69	116.00	79.4	68.3	0.0	39.5
120.10			0.1875	21.725	12.817	751.20	18.67	115.87	79.4	68.1	0.0	4.4
122.00			0.1875	21.250	12.534	702.50	18.22	113.33	80	65.1	0.0	82.0
123.00			0.1875	21.000	12.386	677.80	17.99	112.00	80.2	63.6	0.0	42.4
<b>Total:</b>												<b>15,940.5</b>

CALCULATED FORCES

Load Case: 1.2D + 1.0W		122 mph Wind with No Ice										23 Iterations	
Gust Response Factor: 1.10													
Dead load Factor: 1.20													
Wind Load Factor: 1.00													
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	-37.78	-26.99	0.00	-2,446.2	0.00	2,446.17	4,069.07	1,052.24	4,787.63	4,219.32	0	0	0.590
5.00	-36.20	-26.58	0.00	-2,311.2	0.00	2,311.24	4,004.48	1,026.13	4,553.01	4,048.54	0.09	-0.18	0.581
10.00	-34.66	-26.18	0.00	-2,178.4	0.00	2,178.35	3,938.03	1,000.02	4,324.28	3,879.30	0.38	-0.36	0.571
15.00	-33.15	-25.77	0.00	-2,047.5	0.00	2,047.47	3,869.74	973.91	4,101.44	3,711.72	0.85	-0.54	0.561
20.00	-31.67	-25.36	0.00	-1,918.6	0.00	1,918.59	3,799.59	947.80	3,884.50	3,545.95	1.51	-0.72	0.550
25.00	-30.22	-24.92	0.00	-1,791.8	0.00	1,791.82	3,727.59	921.69	3,673.45	3,382.14	2.37	-0.91	0.539
30.00	-28.81	-24.47	0.00	-1,667.2	0.00	1,667.21	3,653.75	895.58	3,468.30	3,220.43	3.42	-1.1	0.526
35.00	-27.42	-24.01	0.00	-1,544.9	0.00	1,544.86	3,578.05	869.47	3,269.04	3,060.96	4.68	-1.29	0.513
40.00	-26.08	-23.55	0.00	-1,424.8	0.00	1,424.79	3,500.49	843.36	3,075.67	2,903.89	6.14	-1.49	0.499
45.00	-24.77	-23.16	0.00	-1,307.0	0.00	1,307.04	3,421.09	817.25	2,888.20	2,749.35	7.8	-1.68	0.483
48.25	-23.94	-22.92	0.00	-1,231.8	0.00	1,231.77	3,368.49	800.28	2,769.51	2,650.32	9	-1.81	0.473
50.00	-23.21	-22.67	0.00	-1,191.7	0.00	1,191.67	3,339.84	791.14	2,706.63	2,597.48	9.67	-1.89	0.467
53.25	-21.91	-22.41	0.00	-1,118.0	0.00	1,117.98	2,635.64	657.11	2,240.55	2,046.33	11	-2.02	0.556

CALCULATED FORCES

55.00	-21.49	-22.11	0.00	-1,078.8	0.00	1,078.77	2,614.77	649.49	2,188.92	2,006.40	11.76	-2.09	0.547
60.00	-20.40	-21.64	0.00	-968.2	0.00	968.24	2,553.87	627.73	2,044.74	1,893.48	14.07	-2.31	0.521
65.00	-19.34	-21.17	0.00	-860.0	0.00	860.05	2,491.13	605.97	1,905.46	1,782.39	16.61	-2.53	0.492
70.00	-18.31	-20.71	0.00	-754.2	0.00	754.19	2,426.53	584.22	1,771.10	1,673.28	19.38	-2.75	0.460
75.00	-17.31	-20.25	0.00	-650.7	0.00	650.66	2,360.09	562.46	1,641.65	1,566.29	22.37	-2.96	0.424
80.00	-14.09	-17.87	0.00	-549.4	0.00	549.43	2,288.96	540.70	1,517.11	1,459.75	25.58	-3.16	0.384
81.75	-13.76	-17.64	0.00	-518.2	0.00	518.16	2,256.72	533.08	1,474.68	1,418.72	26.75	-3.23	0.372
85.00	-12.93	-17.43	0.00	-460.8	0.00	460.82	2,196.84	518.94	1,397.48	1,344.07	29	-3.36	0.350
85.75	-12.73	-17.21	0.00	-447.8	0.00	447.75	1,128.57	314.63	856.05	700.67	29.53	-3.39	0.653
90.00	-12.16	-16.82	0.00	-374.6	0.00	374.60	1,107.06	303.53	796.73	662.92	32.62	-3.54	0.579
95.00	-11.51	-16.39	0.00	-290.5	0.00	290.53	1,080.04	290.48	729.68	618.75	36.47	-3.8	0.483
100.00	-10.89	-16.09	0.00	-208.6	0.00	208.56	1,051.16	277.42	665.57	574.96	40.57	-4.02	0.376
102.00	-9.74	-12.35	0.00	-174.7	0.00	174.69	1,039.10	272.20	640.75	557.59	42.27	-4.09	0.325
105.00	-7.88	-11.17	0.00	-137.6	0.00	137.63	1,020.44	264.37	604.41	531.71	44.87	-4.2	0.268
110.00	-7.39	-10.87	0.00	-81.8	0.00	81.77	987.87	251.31	546.19	489.13	49.34	-4.32	0.177
112.00	-4.51	-6.99	0.00	-59.9	0.00	59.92	974.32	246.09	523.73	472.32	51.15	-4.36	0.132
115.00	-4.29	-6.81	0.00	-39.0	0.00	38.95	953.44	238.26	490.93	447.37	53.91	-4.4	0.092
116.40	-3.95	-6.51	0.00	-29.4	0.00	29.42	943.47	234.60	475.98	435.84	55.2	-4.42	0.072
119.10	-3.74	-6.28	0.00	-11.8	0.00	11.83	923.83	227.55	447.81	413.84	57.7	-4.44	0.033
120.00	-1.60	-3.32	0.00	-6.2	0.00	6.18	917.17	225.20	438.61	406.57	58.54	-4.44	0.017
120.10	-1.40	-3.06	0.00	-5.8	0.00	5.85	916.42	224.94	437.59	405.77	58.63	-4.44	0.016
122.00	-0.05	-0.03	0.00	-0.0	0.00	0.03	902.14	219.98	418.50	390.56	60.4	-4.44	0.000
123.00	0.00	-0.03	0.00	0.0	0.00	0.00	894.51	217.37	408.63	382.62	61.33	-4.44	0.000

CALCULATED FORCES

Load Case: 0.9D + 1.0W 122 mph Wind with No Ice (Reduced DL) 23 Iterations  
 Gust Response Factor: 1.10  
 Dead load Factor: 0.90  
 Wind Load Factor: 1.00

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	-28.32	-26.97	0.00	-2,425.8	0.00	2,425.76	4,069.07	1,052.24	4,787.63	4,219.32	0	0	0.583
5.00	-27.12	-26.54	0.00	-2,290.9	0.00	2,290.90	4,004.48	1,026.13	4,553.01	4,048.54	0.09	-0.17	0.573
10.00	-25.94	-26.11	0.00	-2,158.2	0.00	2,158.23	3,938.03	1,000.02	4,324.28	3,879.30	0.37	-0.35	0.564
15.00	-24.79	-25.68	0.00	-2,027.7	0.00	2,027.69	3,869.74	973.91	4,101.44	3,711.72	0.84	-0.53	0.553
20.00	-23.66	-25.24	0.00	-1,899.3	0.00	1,899.29	3,799.59	947.80	3,884.50	3,545.95	1.5	-0.72	0.543
25.00	-22.56	-24.78	0.00	-1,773.1	0.00	1,773.10	3,727.59	921.69	3,673.45	3,382.14	2.34	-0.9	0.531
30.00	-21.48	-24.31	0.00	-1,649.2	0.00	1,649.19	3,653.75	895.58	3,468.30	3,220.43	3.39	-1.09	0.519
35.00	-20.43	-23.84	0.00	-1,527.6	0.00	1,527.62	3,578.05	869.47	3,269.04	3,060.96	4.64	-1.28	0.506
40.00	-19.41	-23.36	0.00	-1,408.4	0.00	1,408.43	3,500.49	843.36	3,075.67	2,903.89	6.08	-1.47	0.491
45.00	-18.42	-22.96	0.00	-1,291.6	0.00	1,291.63	3,421.09	817.25	2,888.20	2,749.35	7.73	-1.67	0.476
48.25	-17.79	-22.71	0.00	-1,217.0	0.00	1,217.02	3,368.49	800.28	2,769.51	2,650.32	8.91	-1.8	0.465
50.00	-17.23	-22.46	0.00	-1,177.3	0.00	1,177.28	3,339.84	791.14	2,706.63	2,597.48	9.58	-1.87	0.459
53.25	-16.24	-22.20	0.00	-1,104.3	0.00	1,104.27	2,635.64	657.11	2,240.55	2,046.33	10.9	-2	0.547
55.00	-15.93	-21.88	0.00	-1,065.4	0.00	1,065.43	2,614.77	649.49	2,188.92	2,006.40	11.64	-2.07	0.538
60.00	-15.09	-21.41	0.00	-956.0	0.00	956.00	2,553.87	627.73	2,044.74	1,893.48	13.92	-2.29	0.512
65.00	-14.28	-20.93	0.00	-849.0	0.00	848.97	2,491.13	605.97	1,905.46	1,782.39	16.44	-2.51	0.483
70.00	-13.50	-20.46	0.00	-744.3	0.00	744.32	2,426.53	584.22	1,771.10	1,673.28	19.18	-2.72	0.452
75.00	-12.74	-19.99	0.00	-642.0	0.00	642.03	2,360.09	562.46	1,641.65	1,566.29	22.14	-2.93	0.417
80.00	-10.34	-17.65	0.00	-542.1	0.00	542.07	2,288.96	540.70	1,517.11	1,459.75	25.31	-3.13	0.377
81.75	-10.09	-17.42	0.00	-511.2	0.00	511.18	2,256.72	533.08	1,474.68	1,418.72	26.47	-3.2	0.366
85.00	-9.47	-17.22	0.00	-454.6	0.00	454.55	2,196.84	518.94	1,397.48	1,344.07	28.69	-3.32	0.344
85.75	-9.31	-17.00	0.00	-441.6	0.00	441.64	1,128.57	314.63	856.05	700.67	29.22	-3.35	0.641
90.00	-8.88	-16.60	0.00	-369.4	0.00	369.40	1,107.06	303.53	796.73	662.92	32.27	-3.5	0.568
95.00	-8.38	-16.17	0.00	-286.4	0.00	286.42	1,080.04	290.48	729.68	618.75	36.07	-3.75	0.474
100.00	-7.91	-15.87	0.00	-205.6	0.00	205.56	1,051.16	277.42	665.57	574.96	40.12	-3.97	0.368
102.00	-7.11	-12.16	0.00	-172.1	0.00	172.13	1,039.10	272.20	640.75	557.59	41.8	-4.05	0.318
105.00	-5.72	-11.01	0.00	-135.7	0.00	135.67	1,020.44	264.37	604.41	531.71	44.38	-4.14	0.262
110.00	-5.36	-10.71	0.00	-80.6	0.00	80.64	987.87	251.31	546.19	489.13	48.79	-4.27	0.172
112.00	-3.26	-6.89	0.00	-59.1	0.00	59.11	974.32	246.09	523.73	472.32	50.58	-4.31	0.129
115.00	-3.10	-6.72	0.00	-38.4	0.00	38.44	953.44	238.26	490.93	447.37	53.3	-4.35	0.090
116.40	-2.85	-6.43	0.00	-29.0	0.00	29.04	943.47	234.60	475.98	435.84	54.58	-4.37	0.070
119.10	-2.70	-6.20	0.00	-11.7	0.00	11.69	923.83	227.55	447.81	413.84	57.06	-4.38	0.032
120.00	-1.14	-3.28	0.00	-6.1	0.00	6.11	917.17	225.20	438.61	406.57	57.88	-4.39	0.016
120.10	-0.99	-3.03	0.00	-5.8	0.00	5.78	916.42	224.94	437.59	405.77	57.97	-4.39	0.016
122.00	-0.04	-0.03	0.00	-0.0	0.00	0.03	902.14	219.98	418.50	390.56	59.72	-4.39	0.000
123.00	0.00	-0.03	0.00	0.0	0.00	0.00	894.51	217.37	408.63	382.62	60.64	-4.39	0.000

CALCULATED FORCES

Load Case: 1.2D + 1.0Di + 1.0Wi      50 mph Wind with 1" Radial Ice      22 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

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-52.52	-6.62	0.00	-584.2	0.00	584.25	4,069.07	1,052.24	4,787.63	4,219.32	0	0	0.151
5.00	-50.78	-6.51	0.00	-551.2	0.00	551.15	4,004.48	1,026.13	4,553.01	4,048.54	0.02	-0.04	0.149
10.00	-49.05	-6.40	0.00	-518.6	0.00	518.60	3,938.03	1,000.02	4,324.28	3,879.30	0.09	-0.08	0.146
15.00	-47.34	-6.29	0.00	-486.6	0.00	486.60	3,869.74	973.91	4,101.44	3,711.72	0.2	-0.13	0.143
20.00	-45.66	-6.18	0.00	-455.2	0.00	455.15	3,799.59	947.80	3,884.50	3,545.95	0.36	-0.17	0.140
25.00	-44.00	-6.06	0.00	-424.3	0.00	424.27	3,727.59	921.69	3,673.45	3,382.14	0.56	-0.22	0.137
30.00	-42.39	-5.93	0.00	-394.0	0.00	393.99	3,653.75	895.58	3,468.30	3,220.43	0.81	-0.26	0.134
35.00	-40.80	-5.81	0.00	-364.3	0.00	364.32	3,578.05	869.47	3,269.04	3,060.96	1.11	-0.31	0.130
40.00	-39.25	-5.68	0.00	-335.3	0.00	335.29	3,500.49	843.36	3,075.67	2,903.89	1.46	-0.35	0.127
45.00	-37.74	-5.57	0.00	-306.9	0.00	306.91	3,421.09	817.25	2,888.20	2,749.35	1.85	-0.4	0.123
48.25	-36.77	-5.50	0.00	-288.8	0.00	288.81	3,368.49	800.28	2,769.51	2,650.32	2.14	-0.43	0.120
50.00	-35.98	-5.43	0.00	-279.2	0.00	279.19	3,339.84	791.14	2,706.63	2,597.48	2.3	-0.45	0.118
53.25	-34.54	-5.36	0.00	-261.5	0.00	261.53	2,635.64	657.11	2,240.55	2,046.33	2.61	-0.48	0.141
55.00	-34.08	-5.28	0.00	-252.1	0.00	252.14	2,614.77	649.49	2,188.92	2,006.40	2.79	-0.49	0.139
60.00	-32.80	-5.15	0.00	-225.8	0.00	225.76	2,553.87	627.73	2,044.74	1,893.48	3.34	-0.55	0.132
65.00	-31.55	-5.02	0.00	-200.0	0.00	200.03	2,491.13	605.97	1,905.46	1,782.39	3.94	-0.6	0.125
70.00	-30.34	-4.89	0.00	-174.9	0.00	174.94	2,426.53	584.22	1,771.10	1,673.28	4.59	-0.65	0.117
75.00	-29.16	-4.76	0.00	-150.5	0.00	150.51	2,360.09	562.46	1,641.65	1,566.29	5.29	-0.7	0.109
80.00	-24.15	-4.19	0.00	-126.7	0.00	126.73	2,288.96	540.70	1,517.11	1,459.75	6.05	-0.74	0.097
81.75	-23.76	-4.13	0.00	-119.4	0.00	119.40	2,256.72	533.08	1,474.68	1,418.72	6.32	-0.76	0.095
85.00	-22.80	-4.07	0.00	-106.0	0.00	105.99	2,196.84	518.94	1,397.48	1,344.07	6.85	-0.79	0.089
85.75	-22.59	-4.01	0.00	-102.9	0.00	102.94	1,128.57	314.63	856.05	700.67	6.98	-0.8	0.167
90.00	-21.87	-3.89	0.00	-85.9	0.00	85.91	1,107.06	303.53	796.73	662.92	7.7	-0.83	0.150
95.00	-21.05	-3.77	0.00	-66.5	0.00	66.46	1,080.04	290.48	729.68	618.75	8.6	-0.89	0.127
100.00	-20.25	-3.68	0.00	-47.6	0.00	47.60	1,051.16	277.42	665.57	574.96	9.56	-0.94	0.102
102.00	-17.08	-2.90	0.00	-39.9	0.00	39.92	1,039.10	272.20	640.75	557.59	9.96	-0.96	0.088
105.00	-14.11	-2.56	0.00	-31.2	0.00	31.23	1,020.44	264.37	604.41	531.71	10.57	-0.98	0.073
110.00	-13.44	-2.48	0.00	-18.4	0.00	18.41	987.87	251.31	546.19	489.13	11.61	-1.01	0.051
112.00	-8.07	-1.59	0.00	-13.4	0.00	13.43	974.32	246.09	523.73	472.32	12.04	-1.02	0.037
115.00	-7.74	-1.54	0.00	-8.6	0.00	8.65	953.44	238.26	490.93	447.37	12.68	-1.03	0.028
116.40	-7.23	-1.46	0.00	-6.5	0.00	6.50	943.47	234.60	475.98	435.84	12.98	-1.03	0.023
119.10	-6.89	-1.40	0.00	-2.6	0.00	2.56	923.83	227.55	447.81	413.84	13.57	-1.03	0.014
120.00	-3.21	-0.71	0.00	-1.3	0.00	1.31	917.17	225.20	438.61	406.57	13.76	-1.04	0.007
120.10	-2.90	-0.64	0.00	-1.2	0.00	1.24	916.42	224.94	437.59	405.77	13.78	-1.04	0.006
122.00	-0.08	-0.01	0.00	-0.0	0.00	0.01	902.14	219.98	418.50	390.56	14.2	-1.04	0.000
123.00	0.00	-0.01	0.00	0.0	0.00	0.00	894.51	217.37	408.63	382.62	14.41	-1.04	0.000

CALCULATED FORCES

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

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	-31.51	-5.84	0.00	-526.7	0.00	526.70	4,069.07	1,052.24	4,787.63	4,219.32	0	0	0.133
5.00	-30.26	-5.74	0.00	-497.5	0.00	497.52	4,004.48	1,026.13	4,553.01	4,048.54	0.02	-0.04	0.130
10.00	-29.04	-5.65	0.00	-468.8	0.00	468.80	3,938.03	1,000.02	4,324.28	3,879.30	0.08	-0.08	0.128
15.00	-27.84	-5.56	0.00	-440.5	0.00	440.53	3,869.74	973.91	4,101.44	3,711.72	0.18	-0.12	0.126
20.00	-26.67	-5.47	0.00	-412.7	0.00	412.71	3,799.59	947.80	3,884.50	3,545.95	0.32	-0.16	0.123
25.00	-25.52	-5.37	0.00	-385.4	0.00	385.37	3,727.59	921.69	3,673.45	3,382.14	0.51	-0.2	0.121
30.00	-24.40	-5.27	0.00	-358.5	0.00	358.51	3,653.75	895.58	3,468.30	3,220.43	0.74	-0.24	0.118
35.00	-23.31	-5.17	0.00	-332.1	0.00	332.14	3,578.05	869.47	3,269.04	3,060.96	1.01	-0.28	0.115
40.00	-22.24	-5.07	0.00	-306.3	0.00	306.28	3,500.49	843.36	3,075.67	2,903.89	1.32	-0.32	0.112
45.00	-21.19	-4.98	0.00	-280.9	0.00	280.94	3,421.09	817.25	2,888.20	2,749.35	1.68	-0.36	0.108
48.25	-20.53	-4.93	0.00	-264.7	0.00	264.74	3,368.49	800.28	2,769.51	2,650.32	1.94	-0.39	0.106
50.00	-19.94	-4.88	0.00	-256.1	0.00	256.11	3,339.84	791.14	2,706.63	2,597.48	2.08	-0.41	0.105
53.25	-18.88	-4.82	0.00	-240.3	0.00	240.26	2,635.64	657.11	2,240.55	2,046.33	2.37	-0.43	0.125
55.00	-18.57	-4.75	0.00	-231.8	0.00	231.82	2,614.77	649.49	2,188.92	2,006.40	2.53	-0.45	0.123
60.00	-17.71	-4.65	0.00	-208.0	0.00	208.05	2,553.87	627.73	2,044.74	1,893.48	3.03	-0.5	0.117
65.00	-16.87	-4.55	0.00	-184.8	0.00	184.79	2,491.13	605.97	1,905.46	1,782.39	3.57	-0.54	0.111
70.00	-16.06	-4.45	0.00	-162.0	0.00	162.04	2,426.53	584.22	1,771.10	1,673.28	4.17	-0.59	0.104
75.00	-15.26	-4.35	0.00	-139.8	0.00	139.80	2,360.09	562.46	1,641.65	1,566.29	4.81	-0.64	0.096
80.00	-12.51	-3.84	0.00	-118.0	0.00	118.05	2,288.96	540.70	1,517.11	1,459.75	5.5	-0.68	0.086
81.75	-12.25	-3.79	0.00	-111.3	0.00	111.33	2,256.72	533.08	1,474.68	1,418.72	5.76	-0.7	0.084
85.00	-11.57	-3.75	0.00	-99.0	0.00	99.01	2,196.84	518.94	1,397.48	1,344.07	6.24	-0.72	0.079
85.75	-11.41	-3.70	0.00	-96.2	0.00	96.20	1,128.57	314.63	856.05	700.67	6.35	-0.73	0.148
90.00	-10.96	-3.61	0.00	-80.5	0.00	80.48	1,107.06	303.53	796.73	662.92	7.02	-0.76	0.131
95.00	-10.45	-3.52	0.00	-62.4	0.00	62.41	1,080.04	290.48	729.68	618.75	7.84	-0.82	0.111
100.00	-9.95	-3.46	0.00	-44.8	0.00	44.80	1,051.16	277.42	665.57	574.96	8.73	-0.86	0.088
102.00	-8.80	-2.65	0.00	-37.5	0.00	37.52	1,039.10	272.20	640.75	557.59	9.09	-0.88	0.076
105.00	-7.20	-2.40	0.00	-29.6	0.00	29.57	1,020.44	264.37	604.41	531.71	9.65	-0.9	0.063
110.00	-6.79	-2.34	0.00	-17.6	0.00	17.57	987.87	251.31	546.19	489.13	10.61	-0.93	0.043
112.00	-4.17	-1.50	0.00	-12.9	0.00	12.88	974.32	246.09	523.73	472.32	11	-0.94	0.032
115.00	-3.98	-1.46	0.00	-8.4	0.00	8.38	953.44	238.26	490.93	447.37	11.6	-0.95	0.023
116.40	-3.68	-1.40	0.00	-6.3	0.00	6.33	943.47	234.60	475.98	435.84	11.88	-0.95	0.018
119.10	-3.49	-1.35	0.00	-2.6	0.00	2.55	923.83	227.55	447.81	413.84	12.41	-0.95	0.010
120.00	-1.53	-0.71	0.00	-1.3	0.00	1.33	917.17	225.20	438.61	406.57	12.59	-0.95	0.005
120.10	-1.35	-0.66	0.00	-1.3	0.00	1.26	916.42	224.94	437.59	405.77	12.61	-0.95	0.005
122.00	-0.04	-0.01	0.00	-0.0	0.00	0.01	902.14	219.98	418.50	390.56	12.99	-0.96	0.000
123.00	0.00	-0.01	0.00	0.0	0.00	0.00	894.51	217.37	408.63	382.62	13.19	-0.96	0.000

EQUIVALENT LATERAL FORCES METHOD ANALYSIS

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

Spectral Response Acceleration for Short Period ( $S_S$ ):	0.201
Spectral Response Acceleration at 1.0 Second Period ( $S_1$ ):	0.053
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 ( $S_{ds}$ ):	0.214
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.085
Seismic Response Coefficient ( $C_s$ ):	0.031
Upper Limit $C_s$ :	0.031
Lower Limit $C_s$ :	0.030
Period based on Rayleigh Method (sec):	1.830
Redundancy Factor (p):	1.000
Seismic Force Distribution Exponent (k):	1.670
Total Unfactored Dead Load:	31.520 k
Seismic Base Shear (E):	0.970 k

SEISMIC FORCES

Segment	Seismic	Height Above Base (ft)	Weight (lb)	$W_z$ (lb-ft)	$C_{vx}$	Horizontal Force (lb)	Vertical Force (lb)
35		122.5	42	128	0.003	3	53
34		121.05	102	302	0.007	7	127
33		120.05	5	16	0.000	0	7
32		119.55	53	155	0.004	4	66
31		117.75	169	477	0.011	11	210
30		115.7	89	245	0.006	6	111
29		113.5	194	517	0.012	12	241
28		111	161	412	0.010	9	200
27		107.5	410	998	0.024	23	510
26		103.5	252	576	0.014	13	313
25		101	197	431	0.010	10	245
24		97.5	501	1,035	0.024	24	622
23		92.5	513	972	0.023	22	638
22		87.875	446	776	0.018	18	555
21		85.375	155	257	0.006	6	193
20		83.375	680	1,083	0.026	25	845
19		80.875	261	395	0.009	9	325
18		77.5	772	1,088	0.026	25	959
17		72.5	793	1,000	0.024	23	986
16		67.5	814	912	0.022	21	1,012
15		62.5	835	823	0.019	19	1,038
14		57.5	856	734	0.017	17	1,064
13		54.125	305	236	0.006	5	379
12		51.625	1,066	763	0.018	18	1,325
11		49.125	582	384	0.009	9	723
10		46.625	664	401	0.010	9	825
9		42.5	1,042	540	0.013	12	1,295
8		37.5	1,068	449	0.011	10	1,327
7		32.5	1,093	362	0.009	8	1,358
6		27.5	1,118	280	0.007	6	1,390
5		22.5	1,143	205	0.005	5	1,421
4		17.5	1,169	138	0.003	3	1,453
3		12.5	1,194	80	0.002	2	1,484
2		7.5	1,219	35	0.001	1	1,516
1		2.5	1,245	6	0.000	0	1,547
Ericsson Radio 4449 B12,B71		122	222	667	0.016	15	276
Ericsson Radio 4460 B25+B66		122	327	982	0.023	23	406
Ericsson AIR 6419 B41		122	206	617	0.015	14	255

SEISMIC FORCES

1.2D + 1.0Ev + 1.0Eh	Seismic	Height Above Base (ft)	Weight (lb)	W <sub>z</sub> (lb-ft)	C <sub>vx</sub>	Horizontal Force (lb)	Vertical Force (lb)
Commscope VV-65A-R1B		122	74	223	0.005	5	92
RFS APXVAARR24_43-U-NA20		122	384	1,152	0.027	26	477
RFS APXVAARR24_43-U-NA20		120	384	1,121	0.026	26	477
Ericsson RRUS 4478 B14		120.1	178	521	0.012	12	221
Generic Mount Reinforcement		120	600	1,753	0.041	40	746
Generic Round T-Arm		120	938	2,739	0.065	63	1,165
Generic Round T-Arm		112	1,350	3,515	0.083	81	1,678
Generic Round T-Arm		105	1,350	3,157	0.075	73	1,678
Generic Round T-Arm		80	1,350	2,006	0.047	46	1,678
Raycap DC6-48-60-18-8C		119.1	16	46	0.001	1	20
Ericsson RRUS 4449 B5, B12		116.4	213	591	0.014	14	265
Raycap DC6-48-60-18-8F		112	20	52	0.001	1	25
Ericsson RRUS 8843 B2, B66A		112	216	562	0.013	13	268
Ericsson AIR 6419 B77G		112	198	516	0.012	12	246
Ericsson Air 6449 B77D		112	245	637	0.015	15	304
CCI TPA-65R-BU6DA-K		112	207	539	0.013	12	257
CCI DMP65R-BU6DA		112	238	620	0.015	14	296
Samsung B2/B66A RRH-BR049		102	253	564	0.013	13	315
Samsung B5/B13 RRH-BR04C		102	211	470	0.011	11	262
Raycap RCMDC-6627-PF-48		102	32	71	0.002	2	40
Swedcom SC-E 6016 REV2		102	50	111	0.003	3	62
Commscope SBNHH-1D65B		102	304	678	0.016	16	378
Antel LPA-80063/6CF		102	108	241	0.006	6	134
Commscope RDIDC-9181-PF-48		80	22	33	0.001	1	27
Fujitsu TA08025-B605		80	225	334	0.008	8	280
Fujitsu TA08025-B604		80	192	285	0.007	7	238
JMA Wireless MX08FRO665-21		80	194	288	0.007	7	240
<b>Totals:</b>			<b>31,515</b>	<b>42,303</b>	<b>1.000</b>	<b>972</b>	<b>39,170</b>

SEISMIC FORCES

0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)	Height Above Base (ft)	Weight (lb)	W <sub>z</sub> (lb-ft)	C <sub>vx</sub>	Horizontal Force (lb)	Vertical Force (lb)
35		122.5	42	128	0.003	3	36
34		121.05	102	302	0.007	7	87
33		120.05	5	16	0.000	0	5
32		119.55	53	155	0.004	4	46
31		117.75	169	477	0.011	11	144
30		115.7	89	245	0.006	6	76
29		113.5	194	517	0.012	12	166
28		111	161	412	0.010	9	138
27		107.5	410	998	0.024	23	352
26		103.5	252	576	0.014	13	216
25		101	197	431	0.010	10	169
24		97.5	501	1,035	0.024	24	429
23		92.5	513	972	0.023	22	440
22		87.875	446	776	0.018	18	383
21		85.375	155	257	0.006	6	133
20		83.375	680	1,083	0.026	25	583
19		80.875	261	395	0.009	9	224
18		77.5	772	1,088	0.026	25	662
17		72.5	793	1,000	0.024	23	680
16		67.5	814	912	0.022	21	698
15		62.5	835	823	0.019	19	716
14		57.5	856	734	0.017	17	734
13		54.125	305	236	0.006	5	261
12		51.625	1,066	763	0.018	18	914
11		49.125	582	384	0.009	9	499
10		46.625	664	401	0.010	9	569
9		42.5	1,042	540	0.013	12	893
8		37.5	1,068	449	0.011	10	915

SEISMIC FORCES

0.9D - 1.0Ev + 1.0Eh

Seismic (Reduced DL)

Segment	Height Above Base (ft)	Weight (lb)	W <sub>z</sub> (lb-ft)	C <sub>vx</sub>	Horizontal Force (lb)	Vertical Force (lb)
7	32.5	1,093	362	0.009	8	937
6	27.5	1,118	280	0.007	6	958
5	22.5	1,143	205	0.005	5	980
4	17.5	1,169	138	0.003	3	1,002
3	12.5	1,194	80	0.002	2	1,023
2	7.5	1,219	35	0.001	1	1,045
1	2.5	1,245	6	0.000	0	1,067
Ericsson Radio 4449 B12,B71	122	222	667	0.016	15	190
Ericsson Radio 4460 B25+B66	122	327	982	0.023	23	280
Ericsson AIR 6419 B41	122	206	617	0.015	14	176
Commscope VV-65A-R1B	122	74	223	0.005	5	64
RFS APXVAARR24_43-U-NA20	122	384	1,152	0.027	26	329
RFS APXVAARR24_43-U-NA20	120	384	1,121	0.026	26	329
Ericsson RRUS 4478 B14	120.1	178	521	0.012	12	153
Generic Mount Reinforcement	120	600	1,753	0.041	40	514
Generic Round T-Arm	120	938	2,739	0.065	63	804
Generic Round T-Arm	112	1,350	3,515	0.083	81	1,157
Generic Round T-Arm	105	1,350	3,157	0.075	73	1,157
Generic Round T-Arm	80	1,350	2,006	0.047	46	1,157
Raycap DC6-48-60-18-8C	119.1	16	46	0.001	1	14
Ericsson RRUS 4449 B5, B12	116.4	213	591	0.014	14	183
Raycap DC6-48-60-18-8F	112	20	52	0.001	1	17
Ericsson RRUS 8843 B2, B66A	112	216	562	0.013	13	185
Ericsson AIR 6419 B77G	112	198	516	0.012	12	170
Ericsson Air 6449 B77D	112	245	637	0.015	15	210
CCI TPA-65R-BU6DA-K	112	207	539	0.013	12	177
CCI DMP65R-BU6DA	112	238	620	0.015	14	204
Samsung B2/B66A RRH-BR049	102	253	564	0.013	13	217
Samsung B5/B13 RRH-BR04C	102	211	470	0.011	11	181
Raycap RCMDC-6627-PF-48	102	32	71	0.002	2	27
Swedcom SC-E 6016 REV2	102	50	111	0.003	3	43
Commscope SBNHH-1D65B	102	304	678	0.016	16	261
Antel LPA-80063/6CF	102	108	241	0.006	6	93
Commscope RDIDC-9181-PF-48	80	22	33	0.001	1	19
Fujitsu TA08025-B605	80	225	334	0.008	8	193
Fujitsu TA08025-B604	80	192	285	0.007	7	164
JMA Wireless MX08FRO665-21	80	194	288	0.007	7	166
<b>Totals:</b>		<b>31,515</b>	<b>42,303</b>	<b>1.000</b>	<b>972</b>	<b>27,012</b>

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	-37.62	-0.97	0.00	-96.58	0.00	96.58	4,069.07	1,052.24	4,788	4,219.32	0.00	0.00	0.03
5.00	-36.11	-0.98	0.00	-91.71	0.00	91.71	4,004.48	1,026.13	4,553	4,048.54	0.00	-0.01	0.03
10.00	-34.62	-0.98	0.00	-86.83	0.00	86.83	3,938.03	1,000.02	4,324	3,879.30	0.01	-0.01	0.03
15.00	-33.17	-0.98	0.00	-81.94	0.00	81.94	3,869.74	973.91	4,101	3,711.72	0.03	-0.02	0.03
20.00	-31.75	-0.98	0.00	-77.04	0.00	77.04	3,799.59	947.80	3,884	3,545.95	0.06	-0.03	0.03
25.00	-30.36	-0.98	0.00	-72.15	0.00	72.15	3,727.59	921.69	3,673	3,382.14	0.09	-0.04	0.03
30.00	-29.00	-0.97	0.00	-67.28	0.00	67.28	3,653.75	895.58	3,468	3,220.43	0.14	-0.04	0.03
35.00	-27.67	-0.96	0.00	-62.43	0.00	62.43	3,578.05	869.47	3,269	3,060.96	0.19	-0.05	0.03
40.00	-26.38	-0.95	0.00	-57.62	0.00	57.62	3,500.49	843.36	3,076	2,903.89	0.25	-0.06	0.03
45.00	-25.55	-0.94	0.00	-52.86	0.00	52.86	3,421.09	817.25	2,888	2,749.35	0.31	-0.07	0.03
48.25	-24.83	-0.94	0.00	-49.79	0.00	49.79	3,368.49	800.28	2,770	2,650.32	0.36	-0.07	0.03
50.00	-23.50	-0.92	0.00	-48.15	0.00	48.15	3,339.84	791.14	2,707	2,597.48	0.39	-0.08	0.03
53.25	-23.13	-0.92	0.00	-45.16	0.00	45.16	2,635.64	657.11	2,241	2,046.33	0.44	-0.08	0.03
55.00	-22.06	-0.90	0.00	-43.56	0.00	43.56	2,614.77	649.49	2,189	2,006.40	0.47	-0.08	0.03
60.00	-21.02	-0.88	0.00	-39.06	0.00	39.06	2,553.87	627.73	2,045	1,893.48	0.56	-0.09	0.03
65.00	-20.01	-0.86	0.00	-34.66	0.00	34.66	2,491.13	605.97	1,905	1,782.39	0.67	-0.10	0.03



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
70.00	-19.03	-0.84	0.00	-30.34	0.00	30.34	2,426.53	584.22	1,771	1,673.28	0.78	-0.11	0.03
75.00	-18.07	-0.82	0.00	-26.14	0.00	26.14	2,360.09	562.46	1,642	1,566.29	0.90	-0.12	0.02
80.00	-15.28	-0.73	0.00	-22.06	0.00	22.06	2,288.96	540.70	1,517	1,459.75	1.03	-0.13	0.02
81.75	-14.43	-0.71	0.00	-20.78	0.00	20.78	2,256.72	533.08	1,475	1,418.72	1.07	-0.13	0.02
85.00	-14.24	-0.70	0.00	-18.47	0.00	18.47	2,196.84	518.94	1,397	1,344.07	1.16	-0.14	0.02
85.75	-13.68	-0.69	0.00	-17.95	0.00	17.95	1,128.57	314.63	856	700.67	1.19	-0.14	0.04
90.00	-13.05	-0.66	0.00	-15.03	0.00	15.03	1,107.06	303.53	797	662.92	1.31	-0.14	0.03
95.00	-12.42	-0.64	0.00	-11.72	0.00	11.72	1,080.04	290.48	730	618.75	1.46	-0.15	0.03
100.00	-12.18	-0.63	0.00	-8.52	0.00	8.52	1,051.16	277.42	666	574.96	1.63	-0.16	0.03
102.00	-10.68	-0.56	0.00	-7.26	0.00	7.26	1,039.10	272.20	641	557.59	1.70	-0.16	0.02
105.00	-8.49	-0.46	0.00	-5.56	0.00	5.56	1,020.44	264.37	604	531.71	1.80	-0.17	0.02
110.00	-8.29	-0.45	0.00	-3.24	0.00	3.24	987.87	251.31	546	489.13	1.98	-0.17	0.02
112.00	-4.97	-0.28	0.00	-2.33	0.00	2.33	974.32	246.09	524	472.32	2.06	-0.18	0.01
115.00	-4.86	-0.28	0.00	-1.48	0.00	1.48	953.44	238.26	491	447.37	2.17	-0.18	0.01
116.40	-4.39	-0.25	0.00	-1.09	0.00	1.09	943.47	234.60	476	435.84	2.22	-0.18	0.01
119.10	-4.30	-0.25	0.00	-0.41	0.00	0.41	923.83	227.55	448	413.84	2.32	-0.18	0.01
120.00	-1.91	-0.11	0.00	-0.18	0.00	0.18	917.17	225.20	439	406.57	2.35	-0.18	0.00
120.10	-1.56	-0.09	0.00	-0.17	0.00	0.17	916.42	224.94	438	405.77	2.36	-0.18	0.00
122.00	0.00	0.00	0.00	0.00	0.00	0.00	902.14	219.98	418	390.56	2.43	-0.18	0.00
123.00	0.00	0.00	0.00	0.00	0.00	0.00	894.51	217.37	409	382.62	2.47	-0.18	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	-25.95	-0.97	0.00	-95.58	0.00	95.58	4,069.07	1,052.24	4,788	4,219.32	0.00	0.00	0.03
5.00	-24.90	-0.97	0.00	-90.72	0.00	90.72	4,004.48	1,026.13	4,553	4,048.54	0.00	-0.01	0.03
10.00	-23.88	-0.98	0.00	-85.84	0.00	85.84	3,938.03	1,000.02	4,324	3,879.30	0.01	-0.01	0.03
15.00	-22.87	-0.97	0.00	-80.97	0.00	80.97	3,869.74	973.91	4,101	3,711.72	0.03	-0.02	0.03
20.00	-21.89	-0.97	0.00	-76.09	0.00	76.09	3,799.59	947.80	3,884	3,545.95	0.06	-0.03	0.03
25.00	-20.94	-0.97	0.00	-71.23	0.00	71.23	3,727.59	921.69	3,673	3,382.14	0.09	-0.04	0.03
30.00	-20.00	-0.96	0.00	-66.39	0.00	66.39	3,653.75	895.58	3,468	3,220.43	0.13	-0.04	0.03
35.00	-19.08	-0.95	0.00	-61.58	0.00	61.58	3,578.05	869.47	3,269	3,060.96	0.18	-0.05	0.03
40.00	-18.19	-0.94	0.00	-56.81	0.00	56.81	3,500.49	843.36	3,076	2,903.89	0.24	-0.06	0.03
45.00	-17.62	-0.93	0.00	-52.10	0.00	52.10	3,421.09	817.25	2,888	2,749.35	0.31	-0.07	0.02
48.25	-17.12	-0.93	0.00	-49.06	0.00	49.06	3,368.49	800.28	2,770	2,650.32	0.36	-0.07	0.02
50.00	-16.21	-0.91	0.00	-47.44	0.00	47.44	3,339.84	791.14	2,707	2,597.48	0.38	-0.07	0.02
53.25	-15.95	-0.90	0.00	-44.48	0.00	44.48	2,635.64	657.11	2,241	2,046.33	0.44	-0.08	0.03
55.00	-15.21	-0.89	0.00	-42.90	0.00	42.90	2,614.77	649.49	2,189	2,006.40	0.47	-0.08	0.03
60.00	-14.50	-0.87	0.00	-38.46	0.00	38.46	2,553.87	627.73	2,045	1,893.48	0.56	-0.09	0.03
65.00	-13.80	-0.85	0.00	-34.11	0.00	34.11	2,491.13	605.97	1,905	1,782.39	0.66	-0.10	0.03
70.00	-13.12	-0.83	0.00	-29.86	0.00	29.86	2,426.53	584.22	1,771	1,673.28	0.77	-0.11	0.02
75.00	-12.46	-0.80	0.00	-25.72	0.00	25.72	2,360.09	562.46	1,642	1,566.29	0.89	-0.12	0.02
80.00	-10.54	-0.72	0.00	-21.70	0.00	21.70	2,288.96	540.70	1,517	1,459.75	1.01	-0.13	0.02
81.75	-9.95	-0.70	0.00	-20.43	0.00	20.43	2,256.72	533.08	1,475	1,418.72	1.06	-0.13	0.02
85.00	-9.82	-0.69	0.00	-18.16	0.00	18.16	2,196.84	518.94	1,397	1,344.07	1.15	-0.13	0.02
85.75	-9.44	-0.67	0.00	-17.64	0.00	17.64	1,128.57	314.63	856	700.67	1.17	-0.13	0.03
90.00	-9.00	-0.65	0.00	-14.78	0.00	14.78	1,107.06	303.53	797	662.92	1.29	-0.14	0.03
95.00	-8.57	-0.63	0.00	-11.51	0.00	11.51	1,080.04	290.48	730	618.75	1.45	-0.15	0.03
100.00	-8.40	-0.62	0.00	-8.37	0.00	8.37	1,051.16	277.42	666	574.96	1.61	-0.16	0.02
102.00	-7.36	-0.55	0.00	-7.13	0.00	7.13	1,039.10	272.20	641	557.59	1.68	-0.16	0.02
105.00	-5.85	-0.46	0.00	-5.46	0.00	5.46	1,020.44	264.37	604	531.71	1.78	-0.17	0.02
110.00	-5.72	-0.45	0.00	-3.19	0.00	3.19	987.87	251.31	546	489.13	1.96	-0.17	0.01
112.00	-3.43	-0.28	0.00	-2.29	0.00	2.29	974.32	246.09	524	472.32	2.03	-0.17	0.01
115.00	-3.35	-0.27	0.00	-1.45	0.00	1.45	953.44	238.26	491	447.37	2.14	-0.17	0.01
116.40	-3.03	-0.25	0.00	-1.07	0.00	1.07	943.47	234.60	476	435.84	2.19	-0.18	0.01
119.10	-2.97	-0.24	0.00	-0.40	0.00	0.40	923.83	227.55	448	413.84	2.29	-0.18	0.00
120.00	-1.32	-0.11	0.00	-0.18	0.00	0.18	917.17	225.20	439	406.57	2.32	-0.18	0.00
120.10	-1.08	-0.09	0.00	-0.17	0.00	0.17	916.42	224.94	438	405.77	2.32	-0.18	0.00

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
122.00	0.00	0.00	0.00	0.00	0.00	0.00	902.14	219.98	418	390.56	2.39	-0.18	0.00
123.00	0.00	0.00	0.00	0.00	0.00	0.00	894.51	217.37	409	382.62	2.43	-0.18	0.00

ANALYSIS SUMMARY

Load Case	Base Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.0W	26.99	0.00	37.78	0.00	0.00	2446.17	85.75	0.65
0.9D + 1.0W	26.97	0.00	28.32	0.00	0.00	2425.76	85.75	0.64
1.2D + 1.0Di + 1.0Wi	6.62	0.00	52.52	0.00	0.00	584.25	85.75	0.17
1.2D + 1.0Ev + 1.0Eh	0.98	0.00	37.62	0.00	0.00	96.58	85.75	0.04
0.9D - 1.0Ev + 1.0Eh	0.98	0.00	25.95	0.00	0.00	95.58	85.75	0.03
1.0D + 1.0W	5.84	0.00	31.51	0.00	0.00	526.70	85.75	0.15

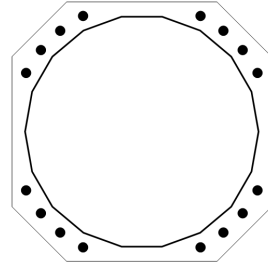
**BASE PLATE ANALYSIS @ 0 FT**

**APPLIED REACTIONS**

Moment (k-ft)	Axial (k)	Shear (k)
2446.17	37.78	26.99

**PLATE PARAMETERS (ID# 26628)**

Width:	57	in
Shape:	Square	
Thickness:	2.75	in
Grade:	A572-50	
Yield Strength:	50	ksi
Tensile Strength:	65	ksi
Clip Length:	12	in
Rod Detail Type:	d	
Clear Distance:	3.75	in
Base Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Plastic	
Neutral Axis:	51	°



**ANCHOR ROD PARAMETERS**

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	F <sub>y</sub> (ksi)	F <sub>u</sub> (ksi)	Spacing (in)	Offset (°)
Original [ID#27326]	Cluster	16	2.25	57	A615-75	75	100	6	-

**COMPONENT PROPERTIES**

Component	ID	Gross Area (in <sup>2</sup> )	Net Area (in <sup>2</sup> )	Individual Inertia (in <sup>4</sup> )	Moment of Inertia (in <sup>4</sup> )	Threads/in
Pole	50.75"ø x 0.375" (18 Sides)	59.0458	-	-	18732.41	-
Bolt Group	Original (16) 2.25"ø	3.9761	3.2477	0.8393	19217.93	4.5

**REACTION DISTRIBUTION**

Component	ID	Moment M <sub>u</sub> (k-ft)	Axial Load P <sub>u</sub> (k)	Shear V <sub>u</sub> (k)	Moment Factor
Pole	50.75"ø x 0.375" (18 Sides)	2446.2	37.78	26.99	1.000
Bolt Group	Original (16) 2.25"ø	2446.2	-	26.99	1.000

**BASE PLATE BEND LINE ANALYSIS @ 0 FT**

**POLE PROPERTIES**

Flat-to-Flat Diameter:	50.88	in	Flat Width:	8.971	in
Point-to-Point Diameter:	51.66	in	Flat Radians:	0.349	rad
Orientation Offset:	-	°			

**PLATE PROPERTIES**

Neutral Axis: 51 °

Bend Line	Chord Length (in)	Additional Length (in)	Section Modulus (in <sup>3</sup> )	Applied Moment M <sub>u</sub> (k-in)	Moment Capacity ΦM <sub>n</sub> (k-in)	Flexure Result M <sub>u</sub> /ΦM <sub>n</sub>
Flats	29.735	0.00	56.218	548.9	2529.8	21.7%
Corners	28.950	0.00	54.734	389.6	2463.0	15.8%

**PLASTIC ANCHOR ROD ANALYSIS**

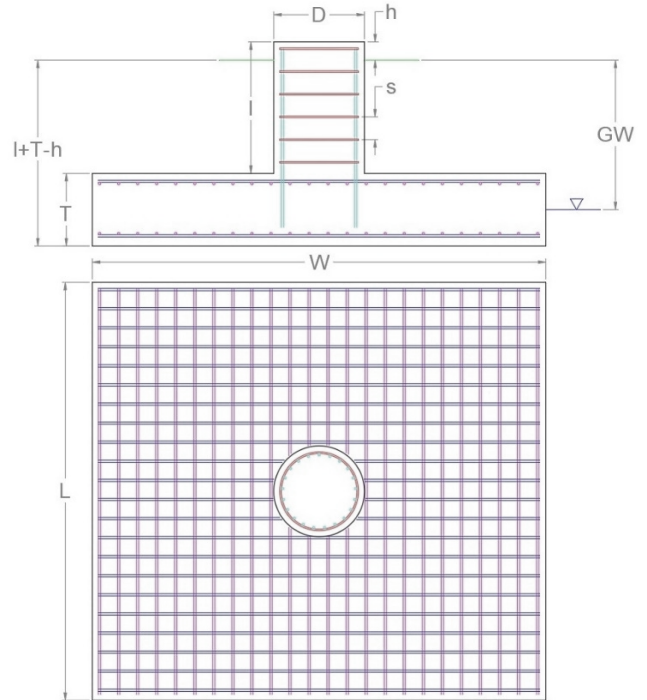
Class	Group Quantity	Rod Diameter (in)	Applied Axial Load P <sub>u</sub> (k)	Applied Shear Load V <sub>u</sub> (k)	Compressive Capacity ΦP <sub>n</sub> (k)	Interaction Result
Original	16	2.25	119.6	2.9	243.6	51.5%

**APPLIED GLOBAL REACTIONS**

Moment (k-ft)	Axial (k)	Shear (k)
2,446.17	37.78	26.99

**FOUNDATION PARAMETERS**

Mat Length:	L	24.5	ft
Mat Width:	W	24.5	ft
Mat Thickness:	T	2	ft
Base Depth:	L+T-h	5.5	ft
Pier Shape:		Round	
Pier Diameter:	D	7	ft
Pier Height above Grade:	h	1	ft
Concrete Compressive Strength:		4,000	psi
Mat Top Rebar:		(35) #8 bars [60 ksi]	
Mat Bottom Rebar:		(35) #8 bars [60 ksi]	
Pier Vertical Rebar:		(36) #8 bars [60 ksi]	
Pier Rebar Ties:	s	#4 bars @ 12.0" c/c [60 ksi]	
Rebar Clear Cover:		3.0	in
Tower Eccentricity:	ecc	0	ft
Tower Leg Count		1	



**SOIL PARAMETERS**

Water Table Depth [BGL]:	GW	6	ft
Soil Unit Weight:		125	pcf
Ultimate Skin Friction:		0	psf
Ultimate Bearing Pressure:		10,000	psf
Bearing Pressure Type:		Net	
Coefficient of Shear Friction:		0.5	

**SOIL STRENGTH ANALYSIS**

Soil Strength Reduction Factor, $\Phi_s$	Uplift Strength Reduction Factor, $\Phi_s$	Asset Dead Load Factor	Dead Load Factor
0.75	0.75	0.9	1.2

**SOIL OVERTURNING ANALYSIS**

Design Moment, $M_{u,Design}$ (k-ft)	Nominal Overturning Capacity, $\Phi_m M_n$ (k-ft)	Soil Overturning Usage, $M_{u,Design} / \Phi_m M_n$
2,621.60	5,581.77	47.0% <span style="float: right;">✔</span>

**SOIL BEARING ANALYSIS**

Net Bearing Pressure, $P_{u,Net}$ (psf)	Nominal Bearing Capacity, $\Phi_b P_n$ (k-ft)	Bearing Pressure Controlling Load Direction	Soil Bearing Usage, $P_{u,net} / \Phi_b P_n$
1,440.00	8,016.00	Diagonal to Pad Edge	18.0% <span style="float: right;">✔</span>

**SOIL SLIDING SHEAR ANALYSIS**

Applied Shear Force, $V_u$ (k)	Friction Resistance (k)	Passive Pressure (psf)	Passive Pressure Resistance (k)	Nominal Shear Capacity, $\Phi_s V_n$ (k)	Soil Sliding Shear Usage, $V_u / \Phi_s V_n$
26.99	0.00	562.5	27.56	201.91	13.0% <span style="float: right;">✔</span>

**MAT REINFORCING STEEL STRENGTH ANALYSIS**

Steel Elastic Modulus, E (ksi)	Strength Bending/Tension Reduction Factor, $\Phi_b$	Strength Shear Reduction Factor, $\Phi_v$	Strength Compression Reduction Factor, $\Phi_c$
29,000	0.9	0.75	0.65

**MAT REINFORCING ONE WAY SHEAR ANALYSIS**

One Way Design Shear, $V_u$ (k)	Nominal One Way Shear Capacity, $\Phi_c V_n$ (k)	One Way Shear Controlling Load Direction	Mat One Way Shear Usage, $V_u / \Phi_c V_n$
111.17	553.61	Diagonal to Pad Edge	20.1%

**MAT REINFORCING PUNCHING SHEAR ANALYSIS**

Punching Shear Design Stress, $v_u$ (psi)	Nominal Punching Shear Capacity, $\Phi_c v_n$ (psi)	Mat Punching Shear Usage, $v_u / \Phi_c v_n$
61.0	189.7	32.1%

**MAT REINFORCING MOMENT TRANSFER ANALYSIS**

Moment Transfer Effective Flexural Width, $w_t$ (in)	Neutral Axis Depth (in)	Pier Moment at Joint, $M_{ut}$ (k-in)	Nominal Moment Transfer Capacity, $\Phi M_{sc,f}$ (k-in)	Mat Moment Transfer Usage, $0.6 M_{ut} / \Phi M_{sc,f}$
13.00	1.74	0.00	15,980.8	0.0%

**MAT REINFORCING FLEXURE ANALYSIS – UPPER STEEL**

Factored Moment, $M_u$ (k-ft)	Nominal Flexural Capacity, $\Phi M_n$ (k-ft)	Flexural Steel Controlling Load Direction	Mat Upper Rebar Flexure Usage, $M_u / \Phi M_n$
691.69	2,400.74	Parallel to Pad Edge	28.8%

**MAT REINFORCING FLEXURE ANALYSIS – LOWER STEEL**

Factored Moment, $M_u$ (k-ft)	Nominal Flexural Capacity, $\Phi M_n$ (k-ft)	Flexural Steel Controlling Load Direction	Mat Lower Rebar Flexure Usage, $M_u / \Phi M_n$
1,009.40	2,400.74	Parallel to Pad Edge	42.0%

**PIER REINFORCING STEEL STRENGTH ANALYSIS**

Rebar Cage Diameter (in)	Steel Elastic Modulus, E (ksi)	Strength Bending/Tension Reduction Factor, $\Phi_b$	Strength Shear Reduction Factor, $\Phi_v$	Strength Compression Reduction Factor, $\Phi_c$
76.00	29,000	0.9	0.75	0.65

**PIER REINFORCING MOMENT ANALYSIS**

Design Moment, $M_u$ (k-ft)	Nominal Moment Capacity, $\Phi_b M_n$ (k-ft)	Bending Reinforcement Ratio	Pier Rebar Flexure Usage, $M_u / \Phi_b M_n$
2,567.62	4,756.50	0.005	54.0%

**PIER REINFORCING COMPRESSION ANALYSIS**

Design Compression, $P_u$ (k)	Nominal Compressive Capacity, $\Phi_p P_n$ (k)	Pier Rebar Compressive Usage, $P_u / \Phi_p P_n$
37.78	9,772.21	0.4%

**PIER REINFORCING SHEAR ANALYSIS**

Design Shear, $V_u$ (k)	Nominal Shear Capacity, $\Phi_v V_n$ (k)	Pier Rebar Shear Usage, $V_u / \Phi_v V_n$
26.99	628.33	4.3%

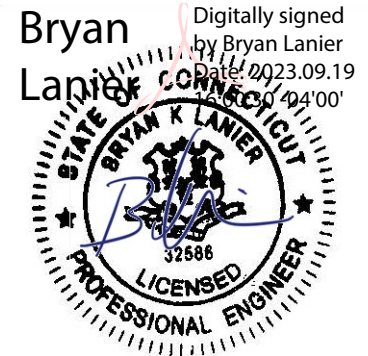


**AMERICAN TOWER®**  
CORPORATION

## Mount Analysis Report

**ATC Asset Name** : PINE ORCHARD BRANFORD CT  
**ATC Asset Number** : 283419  
**Engineering Number** : 14529802\_C8\_03  
**Mount Elevation** : 121.5 ft  
**Proposed Carrier** : T-Mobile  
**Carrier Site Name** : Amtrak\_Branford  
**Carrier Site Number** : CTNH801B  
**Site Location** : 123 Pine Orchard Road  
Branford, CT 06405-3939  
41.274768, -72.793178  
**County** : New Haven  
**Date** : September 18, 2023  
**Max Usage** : 96%  
**Analysis Result** : Pass

Prepared By:  
Molly Li  
Structural Engineer I



**COA: PEC.0001553**

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## Introduction

The purpose of this report is to summarize results of the mount analysis performed for T-Mobile at 121.5 ft.

## Supporting Documents

<b>Mount Modification:</b>	CLS Project #12927144_C9_06, dated September 1, 2020
<b>Previous Analysis:</b>	CLS Project #12927144, dated August 20, 2020
<b>Radio Frequency Data Sheet:</b>	RFDS ID #CTNH801B, dated August 3, 2023
<b>Reference Photos:</b>	Site photos from 2022

## Analysis

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

<b>Basic Wind Speed:</b>	122 mph (3-Second Gust)
<b>Basic Wind Speed w/ Ice:</b>	50 mph (3-Second Gust) w/ 1.00" radial ice concurrent
<b>Codes:</b>	ANSI/TIA-222-H / 2021 IBC / 2022 Connecticut State Building Code
<b>Exposure Category:</b>	C
<b>Risk Category:</b>	II
<b>Topographic Factor Procedure:</b>	Method 2
<b>Feature:</b>	Flat
<b>Crest Height (H):</b>	0 ft
<b>Crest Length (L):</b>	0 ft
<b>Spectral Response:</b>	Ss = 0.201, S1 = 0.053
<b>Site Class:</b>	D - Stiff Soil
<b>Live Loads:</b>	Lm = 250 lbs, Lv = 250 lbs

\* Live load(s) have been reduced on the existing structure per ANSI/TIA-222-H Section 16.9

## Conclusion

Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed above. The mount can support the equipment as described in this report.

If you have any questions or require additional information, please reach out to your American Tower contact. If you do not have an American Tower contact and have an Engineering question, please contact [MountAnalysis@americantower.com](mailto:MountAnalysis@americantower.com). Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

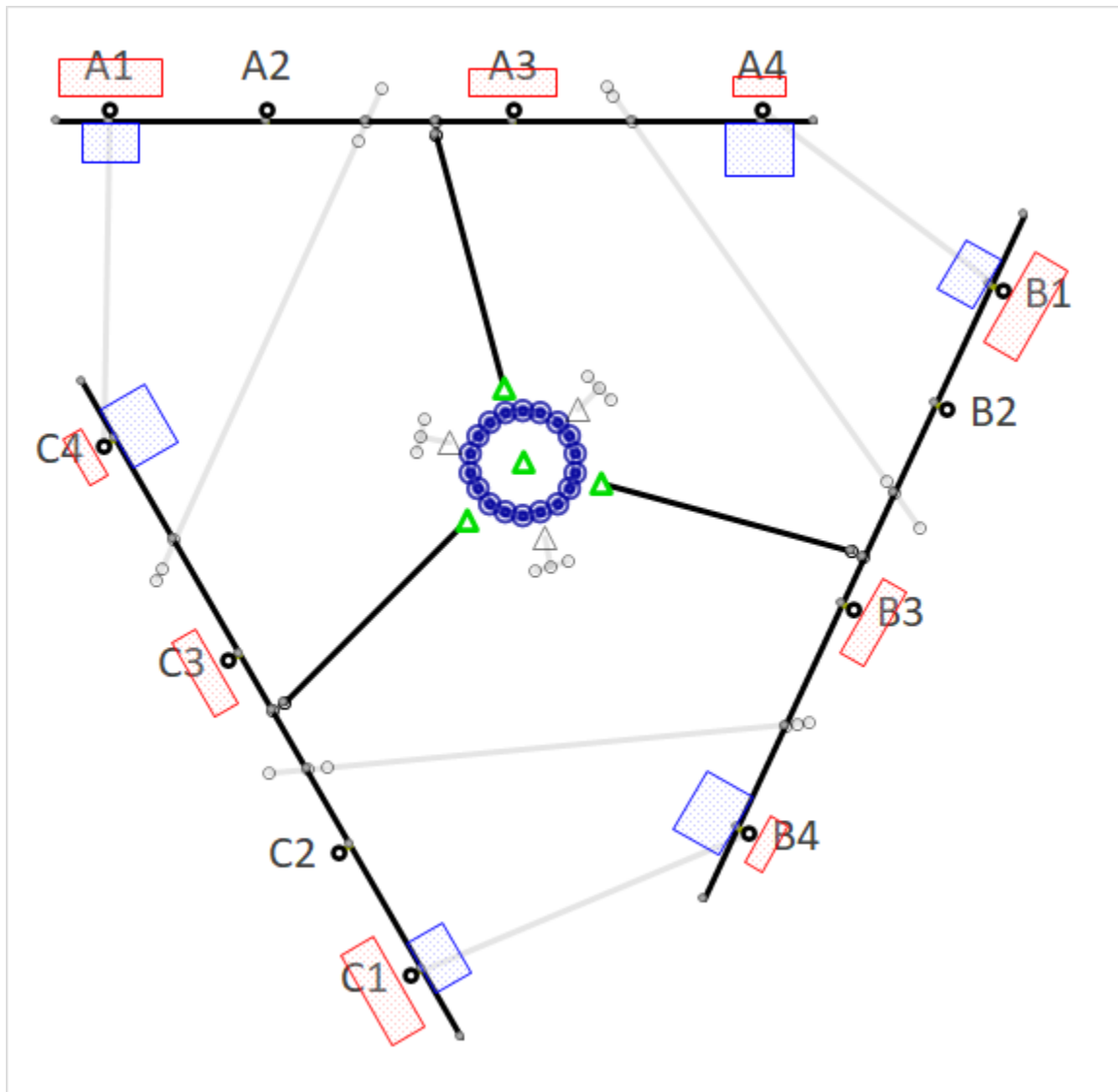
**Application Loading**

Mount Centerline (ft)	Equipment Centerline (ft)	Qty	Equipment Manufacturer & Model
121.5	122.0	3	Commscope VV-65A-R1B
		3	Ericsson AIR 6419 B41
		3	RFS APXVAARR24_43-U-NA20
		3	Ericsson Radio 4460 B25+B66
		3	Ericsson Radio 4449 B12,B71

**Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Horizontals	96%	Pass
Verticals	20%	Pass
Diagonals	31%	Pass
Mount Pipes	69%	Pass
Serviceability	N/A	Pass

**Mount Layout**



**Equipment Position Table**

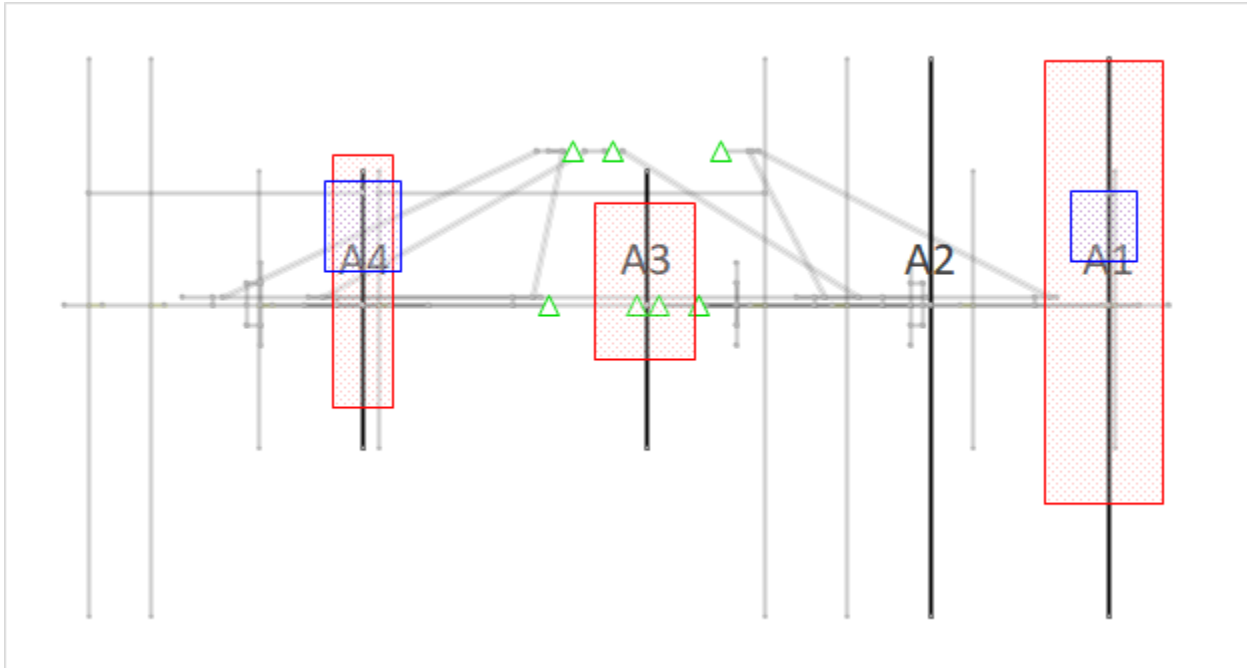
MP	RAD Center (ft)	Qty.	Antenna Model
A1	122.0	1	RFS APXVAARR24_43-U-NA20
	122.0	1	Ericsson Radio 4449 B12,B71
A2	-	-	Empty
A3	122.0	1	Ericsson AIR 6419 B41
A4	122.0	1	Commscope VV-65A-R1B
	122.0	1	Ericsson Radio 4460 B25+B66
B1	122.0	1	RFS APXVAARR24_43-U-NA20
	122.0	1	Ericsson Radio 4449 B12,B71

**Equipment Position Table Cont.**

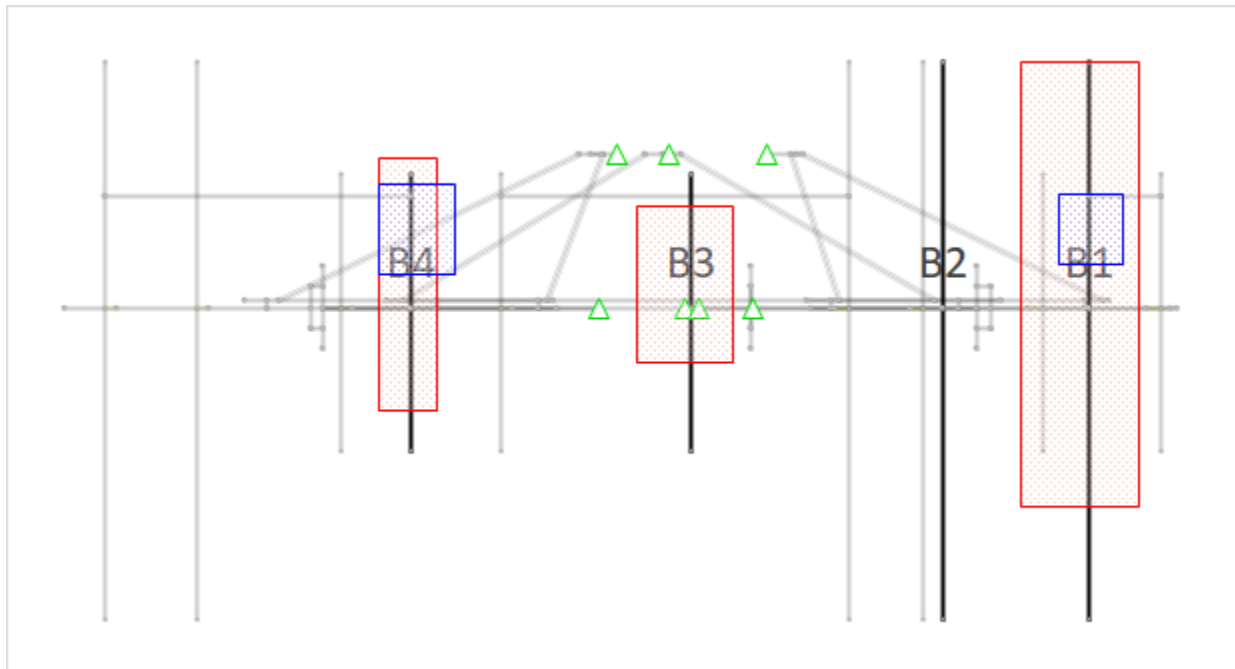
MP	RAD Center (ft)	Qty.	Antenna Model
B2	-	-	Empty
B3	122.0	1	Ericsson AIR 6419 B41
B4	122.0	1	Commscope VV-65A-R1B
	122.0	1	Ericsson Radio 4460 B25+B66
C1	122.0	1	RFS APXVAARR24_43-U-NA20
	122.0	1	Ericsson Radio 4449 B12,B71
C2	-	-	Empty
C3	122.0	1	Ericsson AIR 6419 B41
C4	122.0	1	Commscope VV-65A-R1B
	122.0	1	Ericsson Radio 4460 B25+B66

**Equipment Layout**

**Front View - Alpha**

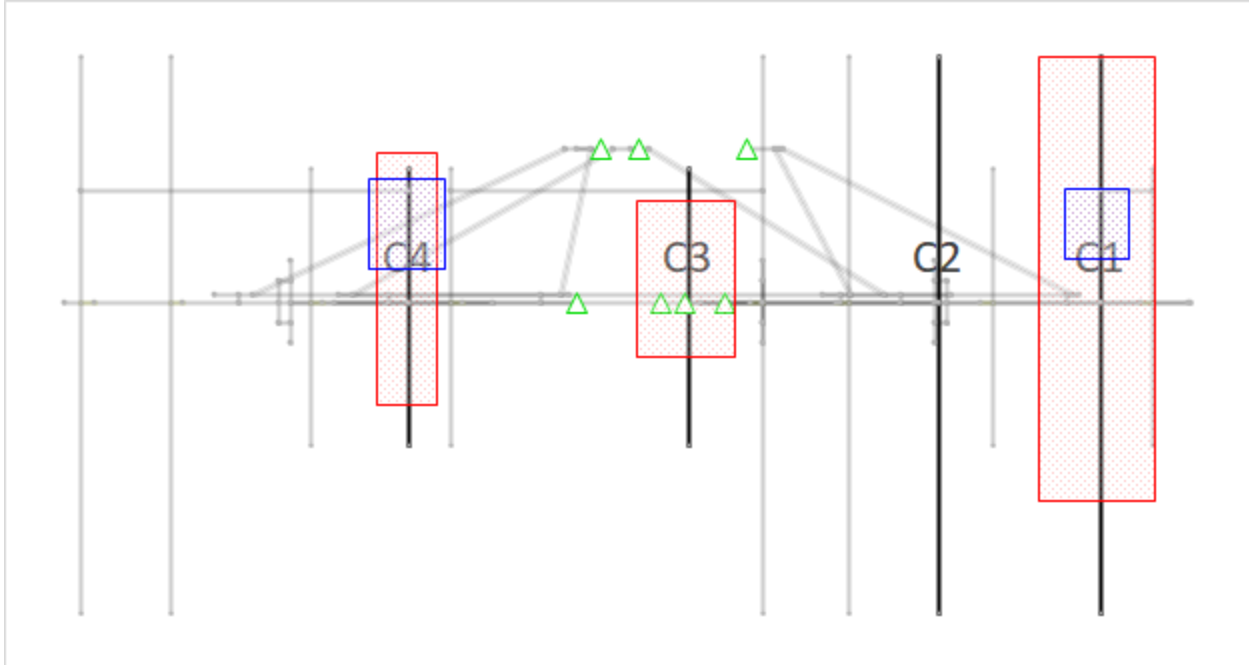


**Front View - Beta**



Equipment Layout Cont.

Front View - Gamma





## **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.



**Site Number:** 283419  
**Project Number:** 14529802\_C8\_03  
**Carrier:** T-Mobile  
**Mount Elevation:** 121.5 ft  
**Date:** 9/18/2023

## Mount Analysis Force Calculations

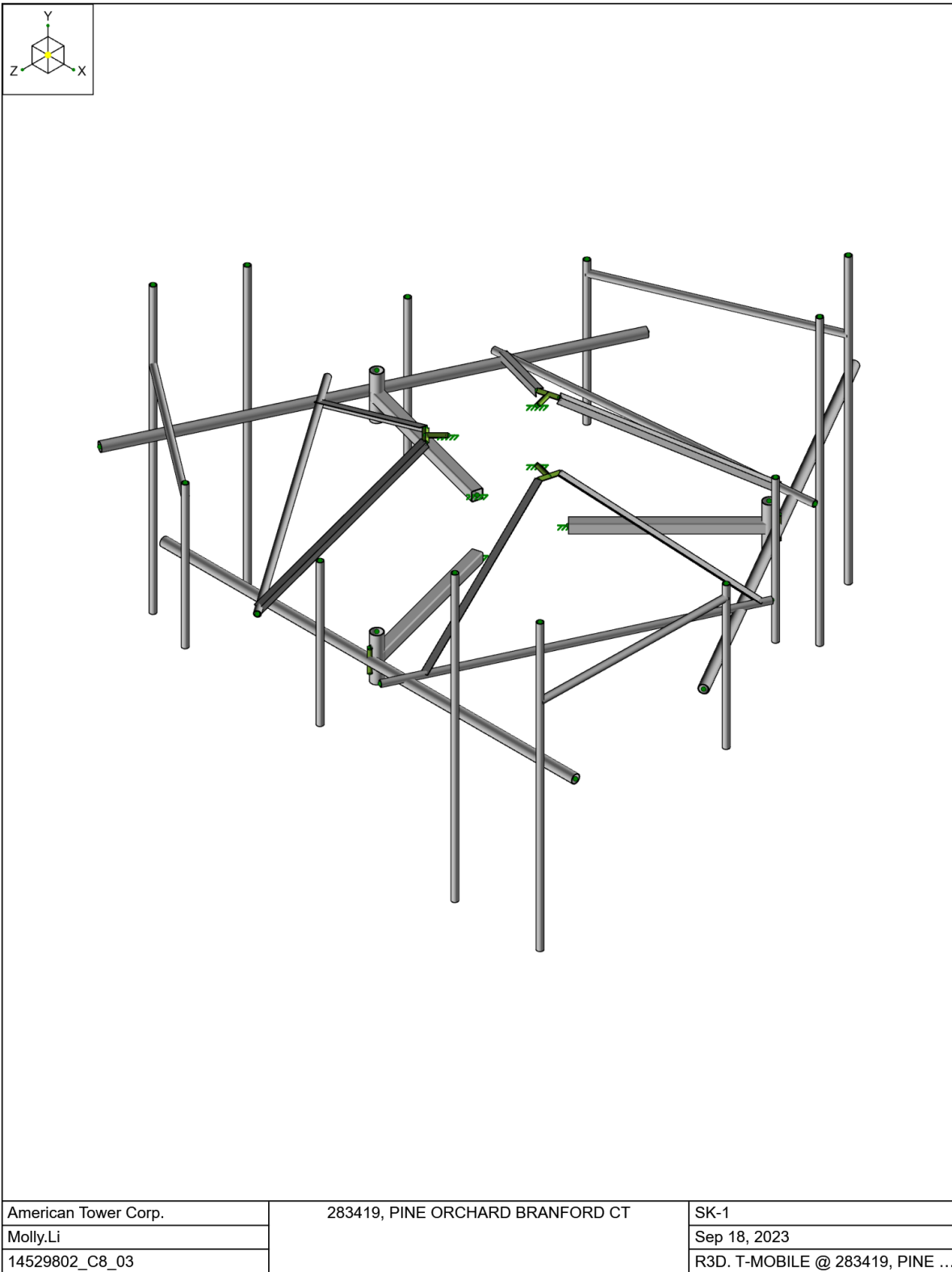
Wind & Ice Load Calculations			
Velocity Pressure Coefficient	$K_z$	1.32	
Topographic Factor	$K_{zt}$	1.00	
Rooftop Wind Speed-up Factor	$K_s$	1.00	
Shielding Factor	$K_a$	0.90	
Ground Elevation Factor	$K_e$	1.00	
Wind Direction Probability Factor	$K_d$	0.95	
Basic Wind Speed	$V$	122	mph
Velocity Pressure	$q_z$	47.7	psf
Height Escalation Factor	$K_{iz}$	1.14	
Thickness of Radial Glaze Ice	$T_{iz}$	1.14	in

Seismic Load Calculations			
Short Period DSRAP	$S_{DS}$	0.214	
1 Second DSRAP	$S_{D1}$	0.085	
Importance Factor	$I$	1.0	
Response Modification Coefficient	$R$	2.0	
Seismic Response Coefficient	$C_s$	0.107	
Amplification Factor	$A$	1.0	
Total Weight	$W$	2405.8	lbs
Total Shear Force	$V_s$	257.9	lbs
Horizontal Seismic Load	$E_h$	257.9	lbs
Vertical Seismic Load	$E_v$	103.2	lbs

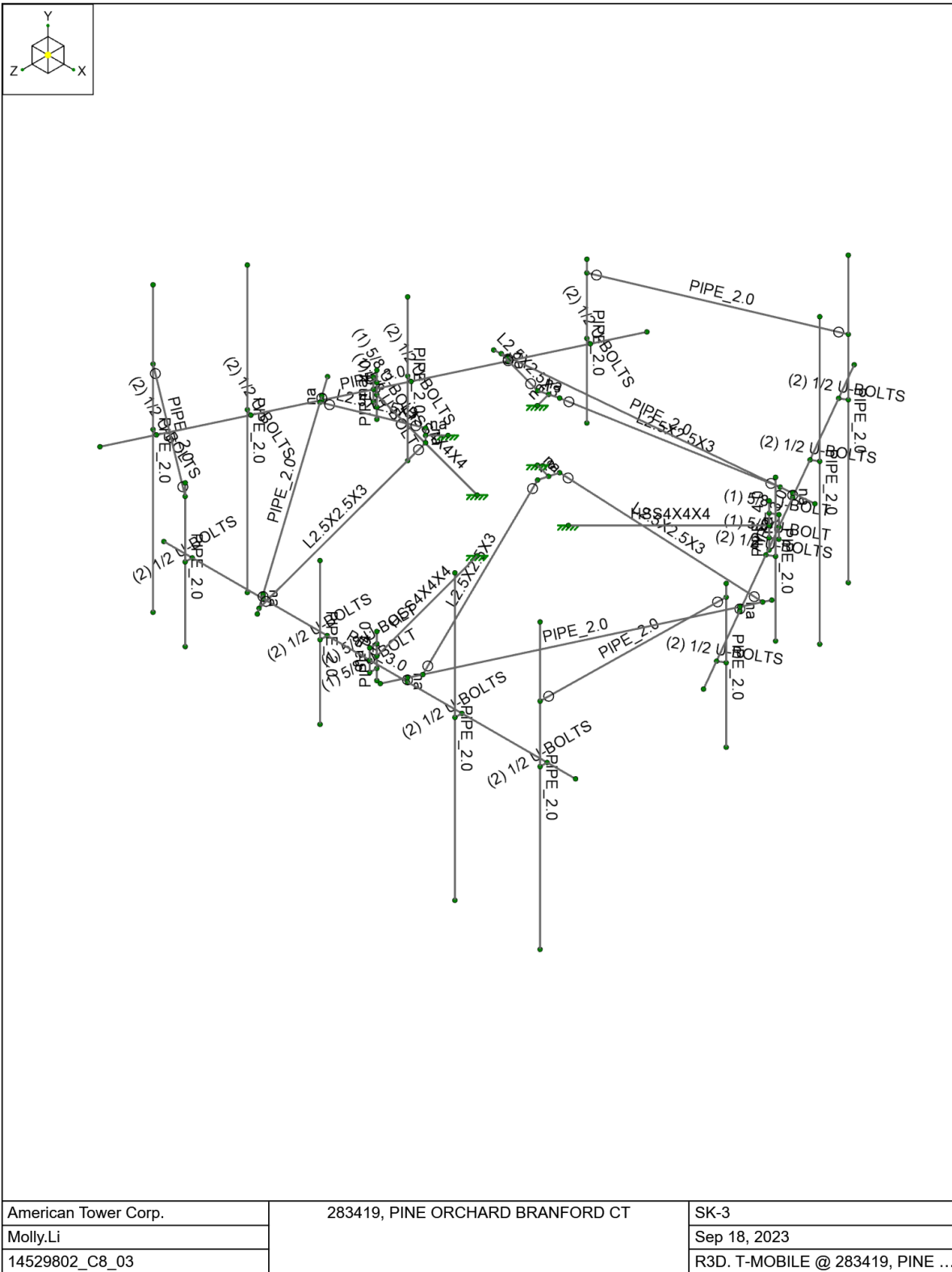
Antenna Calculations (Elevations per Application/RFDS)*								
Equipment	Height	Width	Depth	Weight	$EPA_N$	$EPA_T$	$EPA_{Ni}$	$EPA_{Ti}$
Model #	in	in	in	lbs	sqft	sqft	sqft	sqft
Commscope VV-65A-R1B	54.7	12.0	4.6	24.7	5.89	1.31	7.30	2.03
Ericsson AIR 6419 B41	33.6	20.0	6.3	68.5	5.60	0.85	6.66	1.24
RFS APXVAARR24_43-U-NA20	95.9	24.0	8.7	127.9	20.24	3.48	22.69	4.49
Ericsson Radio 4460 B25+B66	19.6	15.7	12.1	109.0	2.56	1.98	3.28	2.62
Ericsson Radio 4449 B12,B71	14.9	13.2	9.3	74.0	1.64	1.15	2.22	1.66

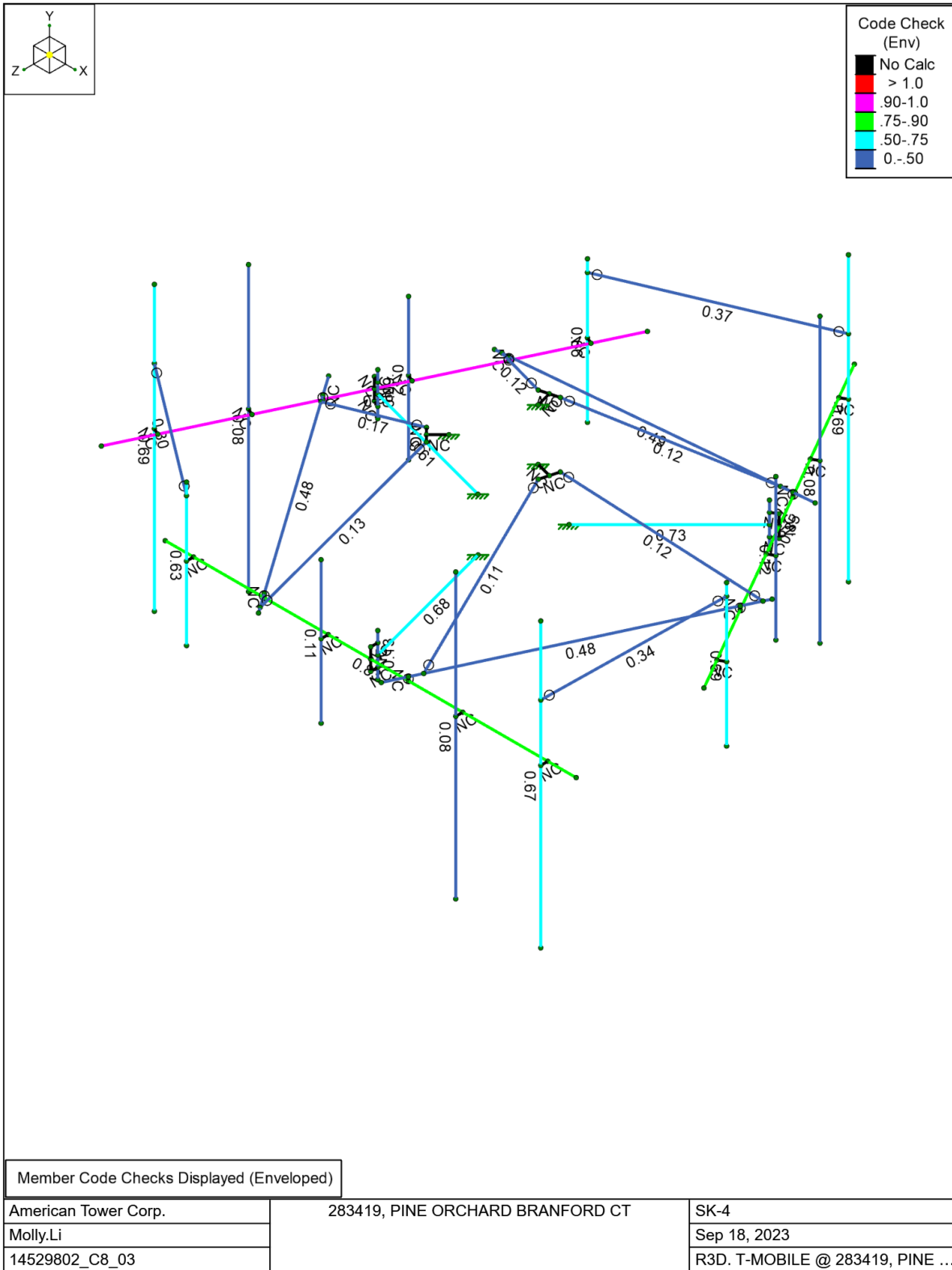
\* Equipment with EPA values N/A were not considered in the mount analysis

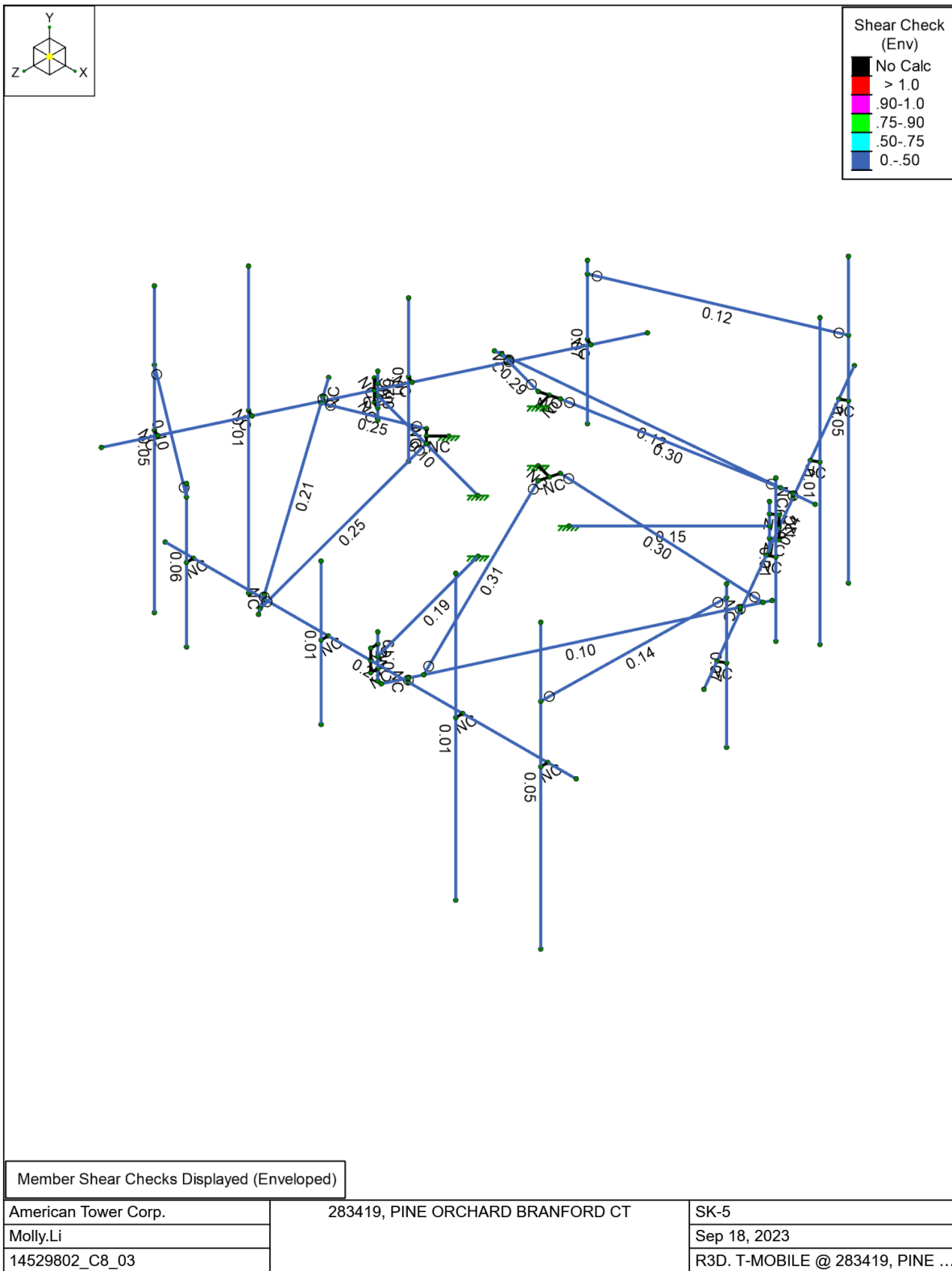














**Basic Load Cases**

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed
1	D	DL		-1			24	
2	Di	IL					24	33
3	W 0	WL					24	57
4	W 30	WL					48	108
5	W 60	WL					48	108
6	W 90	WL					24	54
7	W 120	WL					48	108
8	W 150	WL					48	108
9	W 180	WL					24	57
10	W 210	WL					48	108
11	W 240	WL					48	108
12	W 270	WL					24	54
13	W 300	WL					48	108
14	W 330	WL					48	108
15	Wi 0	WL					24	57
16	Wi 30	WL					48	108
17	Wi 60	WL					48	108
18	Wi 90	WL					24	54
19	Wi 120	WL					48	108
20	Wi 150	WL					48	108
21	Wi 180	WL					24	57
22	Wi 210	WL					48	108
23	Wi 240	WL					48	108
24	Wi 270	WL					24	54
25	Wi 300	WL					48	108
26	Wi 330	WL					48	108
27	Ws 0	WL					24	57
28	Ws 30	WL					48	108
29	Ws 60	WL					48	108
30	Ws 90	WL					24	54
31	Ws 120	WL					48	108
32	Ws 150	WL					48	108
33	Ws 180	WL					24	57
34	Ws 210	WL					48	108
35	Ws 240	WL					48	108
36	Ws 270	WL					24	54
37	Ws 300	WL					48	108
38	Ws 330	WL					48	108
39	Ev -Y	ELY		-0.043			24	
40	Eh -Z	ELZ			-0.107		24	
41	Eh -X	ELX	-0.107				24	
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	Lv (9)	LL					1	
51	Lv (10)	LL					1	
52	Lv (11)	LL					1	
53	Lv (12)	LL					1	
54	Lv (13)	LL				1		
55	Lm (1)	LL				1		



**Basic Load Cases (Continued)**

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed
56	Lm (2)	LL				1		
57	Lm (3)	LL				1		
58	Lm (4)	LL				1		
59	Lm (5)	LL				1		
60	Lm (6)	LL				1		
61	Lm (7)	LL				1		
62	Lm (8)	LL				1		
63	Lm (9)	LL				1		
64	Lm (10)	LL				1		
65	Lm (11)	LL				1		
66	Lm (12)	LL				1		

**Load Combinations**

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4D	Yes	Y	DL	1.4						
2	1.2D + 1.0W [0°]	Yes	Y	DL	1.2	3	1				
3	1.2D + 1.0W [30°]	Yes	Y	DL	1.2	4	1				
4	1.2D + 1.0W [60°]	Yes	Y	DL	1.2	5	1				
5	1.2D + 1.0W [90°]	Yes	Y	DL	1.2	6	1				
6	1.2D + 1.0W [120°]	Yes	Y	DL	1.2	7	1				
7	1.2D + 1.0W [150°]	Yes	Y	DL	1.2	8	1				
8	1.2D + 1.0W [180°]	Yes	Y	DL	1.2	9	1				
9	1.2D + 1.0W [210°]	Yes	Y	DL	1.2	10	1				
10	1.2D + 1.0W [240°]	Yes	Y	DL	1.2	11	1				
11	1.2D + 1.0W [270°]	Yes	Y	DL	1.2	12	1				
12	1.2D + 1.0W [300°]	Yes	Y	DL	1.2	13	1				
13	1.2D + 1.0W [330°]	Yes	Y	DL	1.2	14	1				
14	0.9D + 1.0W [0°]	Yes	Y	DL	0.9	3	1				
15	0.9D + 1.0W [30°]	Yes	Y	DL	0.9	4	1				
16	0.9D + 1.0W [60°]	Yes	Y	DL	0.9	5	1				
17	0.9D + 1.0W [90°]	Yes	Y	DL	0.9	6	1				
18	0.9D + 1.0W [120°]	Yes	Y	DL	0.9	7	1				
19	0.9D + 1.0W [150°]	Yes	Y	DL	0.9	8	1				
20	0.9D + 1.0W [180°]	Yes	Y	DL	0.9	9	1				
21	0.9D + 1.0W [210°]	Yes	Y	DL	0.9	10	1				
22	0.9D + 1.0W [240°]	Yes	Y	DL	0.9	11	1				
23	0.9D + 1.0W [270°]	Yes	Y	DL	0.9	12	1				
24	0.9D + 1.0W [300°]	Yes	Y	DL	0.9	13	1				
25	0.9D + 1.0W [330°]	Yes	Y	DL	0.9	14	1				
26	1.2D + 1.0Di + 1.0Wi [0°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	15	1		
27	1.2D + 1.0Di + 1.0Wi [30°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	16	1		
28	1.2D + 1.0Di + 1.0Wi [60°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	17	1		
29	1.2D + 1.0Di + 1.0Wi [90°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	18	1		
30	1.2D + 1.0Di + 1.0Wi [120°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	19	1		
31	1.2D + 1.0Di + 1.0Wi [150°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	20	1		
32	1.2D + 1.0Di + 1.0Wi [180°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	21	1		
33	1.2D + 1.0Di + 1.0Wi [210°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	22	1		
34	1.2D + 1.0Di + 1.0Wi [240°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	23	1		
35	1.2D + 1.0Di + 1.0Wi [270°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	24	1		
36	1.2D + 1.0Di + 1.0Wi [300°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	25	1		
37	1.2D + 1.0Di + 1.0Wi [330°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	26	1		
38	1.2D + 1.0Ev + 1.0Eh [0°]	Yes	Y	DL	1.2	ELY	1	ELZ	1	ELX	0.001
39	1.2D + 1.0Ev + 1.0Eh [30°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.866	ELX	0.5
40	1.2D + 1.0Ev + 1.0Eh [60°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.5	ELX	0.866
41	1.2D + 1.0Ev + 1.0Eh [90°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.001	ELX	1



**Load Combinations (Continued)**

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
42	1.2D + 1.0Ev + 1.0Eh [120°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.5	ELX	0.866
43	1.2D + 1.0Ev + 1.0Eh [150°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.866	ELX	0.5
44	1.2D + 1.0Ev + 1.0Eh [180°]	Yes	Y	DL	1.2	ELY	1	ELZ	-1	ELX	0.001
45	1.2D + 1.0Ev + 1.0Eh [210°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.866	ELX	-0.5
46	1.2D + 1.0Ev + 1.0Eh [240°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.5	ELX	-0.866
47	1.2D + 1.0Ev + 1.0Eh [270°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.001	ELX	-1
48	1.2D + 1.0Ev + 1.0Eh [300°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.5	ELX	-0.866
49	1.2D + 1.0Ev + 1.0Eh [330°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.866	ELX	-0.5
50	0.9D + 1.0Ev + 1.0Eh [0°]	Yes	Y	DL	0.9	ELY	1	ELZ	1	ELX	0.001
51	0.9D + 1.0Ev + 1.0Eh [30°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.866	ELX	0.5
52	0.9D + 1.0Ev + 1.0Eh [60°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.5	ELX	0.866
53	0.9D + 1.0Ev + 1.0Eh [90°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.001	ELX	1
54	0.9D + 1.0Ev + 1.0Eh [120°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.5	ELX	0.866
55	0.9D + 1.0Ev + 1.0Eh [150°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.866	ELX	0.5
56	0.9D + 1.0Ev + 1.0Eh [180°]	Yes	Y	DL	0.9	ELY	1	ELZ	-1	ELX	0.001
57	0.9D + 1.0Ev + 1.0Eh [210°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.866	ELX	-0.5
58	0.9D + 1.0Ev + 1.0Eh [240°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.5	ELX	-0.866
59	0.9D + 1.0Ev + 1.0Eh [270°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.001	ELX	-1
60	0.9D + 1.0Ev + 1.0Eh [300°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.5	ELX	-0.866
61	0.9D + 1.0Ev + 1.0Eh [330°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.866	ELX	-0.5
62	1.2D + 1.5Lv(1)	Yes	Y	DL	1.2	42	1.5				
63	1.2D + 1.5Lv(2)	Yes	Y	DL	1.2	43	1.5				
64	1.2D + 1.5Lv(3)	Yes	Y	DL	1.2	44	1.5				
65	1.2D + 1.5Lv(4)	Yes	Y	DL	1.2	45	1.5				
66	1.2D + 1.5Lv(5)	Yes	Y	DL	1.2	46	1.5				
67	1.2D + 1.5Lv(6)	Yes	Y	DL	1.2	47	1.5				
68	1.2D + 1.5Lv(7)	Yes	Y	DL	1.2	48	1.5				
69	1.2D + 1.5Lv(8)	Yes	Y	DL	1.2	49	1.5				
70	1.2D + 1.5Lv(9)	Yes	Y	DL	1.2	50	1.5				
71	1.2D + 1.5Lv(10)	Yes	Y	DL	1.2	51	1.5				
72	1.2D + 1.5Lv(11)	Yes	Y	DL	1.2	52	1.5				
73	1.2D + 1.5Lv(12)	Yes	Y	DL	1.2	53	1.5				
74	1.2D + 1.5Lv(13)	Yes	Y	DL	1.2	54	1.5				
75	1.2D + 1.5Lm(1) + 1.0Wm [0°]	Yes	Y	DL	1.2	55	1.5	27	1		
76	1.2D + 1.5Lm(1) + 1.0Wm [30°]	Yes	Y	DL	1.2	55	1.5	28	1		
77	1.2D + 1.5Lm(1) + 1.0Wm [60°]	Yes	Y	DL	1.2	55	1.5	29	1		
78	1.2D + 1.5Lm(1) + 1.0Wm [90°]	Yes	Y	DL	1.2	55	1.5	30	1		
79	1.2D + 1.5Lm(1) + 1.0Wm [120°]	Yes	Y	DL	1.2	55	1.5	31	1		
80	1.2D + 1.5Lm(1) + 1.0Wm [150°]	Yes	Y	DL	1.2	55	1.5	32	1		
81	1.2D + 1.5Lm(1) + 1.0Wm [180°]	Yes	Y	DL	1.2	55	1.5	33	1		
82	1.2D + 1.5Lm(1) + 1.0Wm [210°]	Yes	Y	DL	1.2	55	1.5	34	1		
83	1.2D + 1.5Lm(1) + 1.0Wm [240°]	Yes	Y	DL	1.2	55	1.5	35	1		
84	1.2D + 1.5Lm(1) + 1.0Wm [270°]	Yes	Y	DL	1.2	55	1.5	36	1		
85	1.2D + 1.5Lm(1) + 1.0Wm [300°]	Yes	Y	DL	1.2	55	1.5	37	1		
86	1.2D + 1.5Lm(1) + 1.0Wm [330°]	Yes	Y	DL	1.2	55	1.5	38	1		
87	1.2D + 1.5Lm(2) + 1.0Wm [0°]	Yes	Y	DL	1.2	56	1.5	27	1		
88	1.2D + 1.5Lm(2) + 1.0Wm [30°]	Yes	Y	DL	1.2	56	1.5	28	1		
89	1.2D + 1.5Lm(2) + 1.0Wm [60°]	Yes	Y	DL	1.2	56	1.5	29	1		
90	1.2D + 1.5Lm(2) + 1.0Wm [90°]	Yes	Y	DL	1.2	56	1.5	30	1		
91	1.2D + 1.5Lm(2) + 1.0Wm [120°]	Yes	Y	DL	1.2	56	1.5	31	1		
92	1.2D + 1.5Lm(2) + 1.0Wm [150°]	Yes	Y	DL	1.2	56	1.5	32	1		
93	1.2D + 1.5Lm(2) + 1.0Wm [180°]	Yes	Y	DL	1.2	56	1.5	33	1		
94	1.2D + 1.5Lm(2) + 1.0Wm [210°]	Yes	Y	DL	1.2	56	1.5	34	1		
95	1.2D + 1.5Lm(2) + 1.0Wm [240°]	Yes	Y	DL	1.2	56	1.5	35	1		
96	1.2D + 1.5Lm(2) + 1.0Wm [270°]	Yes	Y	DL	1.2	56	1.5	36	1		





**Load Combinations (Continued)**

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
97	1.2D + 1.5Lm(2) + 1.0Wm [300°]	Yes	Y	DL	1.2	56	1.5	37	1		
98	1.2D + 1.5Lm(2) + 1.0Wm [330°]	Yes	Y	DL	1.2	56	1.5	38	1		
99	1.2D + 1.5Lm(3) + 1.0Wm [0°]	Yes	Y	DL	1.2	57	1.5	27	1		
100	1.2D + 1.5Lm(3) + 1.0Wm [30°]	Yes	Y	DL	1.2	57	1.5	28	1		
101	1.2D + 1.5Lm(3) + 1.0Wm [60°]	Yes	Y	DL	1.2	57	1.5	29	1		
102	1.2D + 1.5Lm(3) + 1.0Wm [90°]	Yes	Y	DL	1.2	57	1.5	30	1		
103	1.2D + 1.5Lm(3) + 1.0Wm [120°]	Yes	Y	DL	1.2	57	1.5	31	1		
104	1.2D + 1.5Lm(3) + 1.0Wm [150°]	Yes	Y	DL	1.2	57	1.5	32	1		
105	1.2D + 1.5Lm(3) + 1.0Wm [180°]	Yes	Y	DL	1.2	57	1.5	33	1		
106	1.2D + 1.5Lm(3) + 1.0Wm [210°]	Yes	Y	DL	1.2	57	1.5	34	1		
107	1.2D + 1.5Lm(3) + 1.0Wm [240°]	Yes	Y	DL	1.2	57	1.5	35	1		
108	1.2D + 1.5Lm(3) + 1.0Wm [270°]	Yes	Y	DL	1.2	57	1.5	36	1		
109	1.2D + 1.5Lm(3) + 1.0Wm [300°]	Yes	Y	DL	1.2	57	1.5	37	1		
110	1.2D + 1.5Lm(3) + 1.0Wm [330°]	Yes	Y	DL	1.2	57	1.5	38	1		
111	1.2D + 1.5Lm(4) + 1.0Wm [0°]	Yes	Y	DL	1.2	58	1.5	27	1		
112	1.2D + 1.5Lm(4) + 1.0Wm [30°]	Yes	Y	DL	1.2	58	1.5	28	1		
113	1.2D + 1.5Lm(4) + 1.0Wm [60°]	Yes	Y	DL	1.2	58	1.5	29	1		
114	1.2D + 1.5Lm(4) + 1.0Wm [90°]	Yes	Y	DL	1.2	58	1.5	30	1		
115	1.2D + 1.5Lm(4) + 1.0Wm [120°]	Yes	Y	DL	1.2	58	1.5	31	1		
116	1.2D + 1.5Lm(4) + 1.0Wm [150°]	Yes	Y	DL	1.2	58	1.5	32	1		
117	1.2D + 1.5Lm(4) + 1.0Wm [180°]	Yes	Y	DL	1.2	58	1.5	33	1		
118	1.2D + 1.5Lm(4) + 1.0Wm [210°]	Yes	Y	DL	1.2	58	1.5	34	1		
119	1.2D + 1.5Lm(4) + 1.0Wm [240°]	Yes	Y	DL	1.2	58	1.5	35	1		
120	1.2D + 1.5Lm(4) + 1.0Wm [270°]	Yes	Y	DL	1.2	58	1.5	36	1		
121	1.2D + 1.5Lm(4) + 1.0Wm [300°]	Yes	Y	DL	1.2	58	1.5	37	1		
122	1.2D + 1.5Lm(4) + 1.0Wm [330°]	Yes	Y	DL	1.2	58	1.5	38	1		
123	1.2D + 1.5Lm(5) + 1.0Wm [0°]	Yes	Y	DL	1.2	59	1.5	27	1		
124	1.2D + 1.5Lm(5) + 1.0Wm [30°]	Yes	Y	DL	1.2	59	1.5	28	1		
125	1.2D + 1.5Lm(5) + 1.0Wm [60°]	Yes	Y	DL	1.2	59	1.5	29	1		
126	1.2D + 1.5Lm(5) + 1.0Wm [90°]	Yes	Y	DL	1.2	59	1.5	30	1		
127	1.2D + 1.5Lm(5) + 1.0Wm [120°]	Yes	Y	DL	1.2	59	1.5	31	1		
128	1.2D + 1.5Lm(5) + 1.0Wm [150°]	Yes	Y	DL	1.2	59	1.5	32	1		
129	1.2D + 1.5Lm(5) + 1.0Wm [180°]	Yes	Y	DL	1.2	59	1.5	33	1		
130	1.2D + 1.5Lm(5) + 1.0Wm [210°]	Yes	Y	DL	1.2	59	1.5	34	1		
131	1.2D + 1.5Lm(5) + 1.0Wm [240°]	Yes	Y	DL	1.2	59	1.5	35	1		
132	1.2D + 1.5Lm(5) + 1.0Wm [270°]	Yes	Y	DL	1.2	59	1.5	36	1		
133	1.2D + 1.5Lm(5) + 1.0Wm [300°]	Yes	Y	DL	1.2	59	1.5	37	1		
134	1.2D + 1.5Lm(5) + 1.0Wm [330°]	Yes	Y	DL	1.2	59	1.5	38	1		
135	1.2D + 1.5Lm(6) + 1.0Wm [0°]	Yes	Y	DL	1.2	60	1.5	27	1		
136	1.2D + 1.5Lm(6) + 1.0Wm [30°]	Yes	Y	DL	1.2	60	1.5	28	1		
137	1.2D + 1.5Lm(6) + 1.0Wm [60°]	Yes	Y	DL	1.2	60	1.5	29	1		
138	1.2D + 1.5Lm(6) + 1.0Wm [90°]	Yes	Y	DL	1.2	60	1.5	30	1		
139	1.2D + 1.5Lm(6) + 1.0Wm [120°]	Yes	Y	DL	1.2	60	1.5	31	1		
140	1.2D + 1.5Lm(6) + 1.0Wm [150°]	Yes	Y	DL	1.2	60	1.5	32	1		
141	1.2D + 1.5Lm(6) + 1.0Wm [180°]	Yes	Y	DL	1.2	60	1.5	33	1		
142	1.2D + 1.5Lm(6) + 1.0Wm [210°]	Yes	Y	DL	1.2	60	1.5	34	1		
143	1.2D + 1.5Lm(6) + 1.0Wm [240°]	Yes	Y	DL	1.2	60	1.5	35	1		
144	1.2D + 1.5Lm(6) + 1.0Wm [270°]	Yes	Y	DL	1.2	60	1.5	36	1		
145	1.2D + 1.5Lm(6) + 1.0Wm [300°]	Yes	Y	DL	1.2	60	1.5	37	1		
146	1.2D + 1.5Lm(6) + 1.0Wm [330°]	Yes	Y	DL	1.2	60	1.5	38	1		
147	1.2D + 1.5Lm(7) + 1.0Wm [0°]	Yes	Y	DL	1.2	61	1.5	27	1		
148	1.2D + 1.5Lm(7) + 1.0Wm [30°]	Yes	Y	DL	1.2	61	1.5	28	1		
149	1.2D + 1.5Lm(7) + 1.0Wm [60°]	Yes	Y	DL	1.2	61	1.5	29	1		
150	1.2D + 1.5Lm(7) + 1.0Wm [90°]	Yes	Y	DL	1.2	61	1.5	30	1		
151	1.2D + 1.5Lm(7) + 1.0Wm [120°]	Yes	Y	DL	1.2	61	1.5	31	1		



**Load Combinations (Continued)**

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
152	1.2D + 1.5Lm(7) + 1.0Wm [150°]	Yes	Y	DL	1.2	61	1.5	32	1		
153	1.2D + 1.5Lm(7) + 1.0Wm [180°]	Yes	Y	DL	1.2	61	1.5	33	1		
154	1.2D + 1.5Lm(7) + 1.0Wm [210°]	Yes	Y	DL	1.2	61	1.5	34	1		
155	1.2D + 1.5Lm(7) + 1.0Wm [240°]	Yes	Y	DL	1.2	61	1.5	35	1		
156	1.2D + 1.5Lm(7) + 1.0Wm [270°]	Yes	Y	DL	1.2	61	1.5	36	1		
157	1.2D + 1.5Lm(7) + 1.0Wm [300°]	Yes	Y	DL	1.2	61	1.5	37	1		
158	1.2D + 1.5Lm(7) + 1.0Wm [330°]	Yes	Y	DL	1.2	61	1.5	38	1		
159	1.2D + 1.5Lm(8) + 1.0Wm [0°]	Yes	Y	DL	1.2	62	1.5	27	1		
160	1.2D + 1.5Lm(8) + 1.0Wm [30°]	Yes	Y	DL	1.2	62	1.5	28	1		
161	1.2D + 1.5Lm(8) + 1.0Wm [60°]	Yes	Y	DL	1.2	62	1.5	29	1		
162	1.2D + 1.5Lm(8) + 1.0Wm [90°]	Yes	Y	DL	1.2	62	1.5	30	1		
163	1.2D + 1.5Lm(8) + 1.0Wm [120°]	Yes	Y	DL	1.2	62	1.5	31	1		
164	1.2D + 1.5Lm(8) + 1.0Wm [150°]	Yes	Y	DL	1.2	62	1.5	32	1		
165	1.2D + 1.5Lm(8) + 1.0Wm [180°]	Yes	Y	DL	1.2	62	1.5	33	1		
166	1.2D + 1.5Lm(8) + 1.0Wm [210°]	Yes	Y	DL	1.2	62	1.5	34	1		
167	1.2D + 1.5Lm(8) + 1.0Wm [240°]	Yes	Y	DL	1.2	62	1.5	35	1		
168	1.2D + 1.5Lm(8) + 1.0Wm [270°]	Yes	Y	DL	1.2	62	1.5	36	1		
169	1.2D + 1.5Lm(8) + 1.0Wm [300°]	Yes	Y	DL	1.2	62	1.5	37	1		
170	1.2D + 1.5Lm(8) + 1.0Wm [330°]	Yes	Y	DL	1.2	62	1.5	38	1		
171	1.2D + 1.5Lm(9) + 1.0Wm [0°]	Yes	Y	DL	1.2	63	1.5	27	1		
172	1.2D + 1.5Lm(9) + 1.0Wm [30°]	Yes	Y	DL	1.2	63	1.5	28	1		
173	1.2D + 1.5Lm(9) + 1.0Wm [60°]	Yes	Y	DL	1.2	63	1.5	29	1		
174	1.2D + 1.5Lm(9) + 1.0Wm [90°]	Yes	Y	DL	1.2	63	1.5	30	1		
175	1.2D + 1.5Lm(9) + 1.0Wm [120°]	Yes	Y	DL	1.2	63	1.5	31	1		
176	1.2D + 1.5Lm(9) + 1.0Wm [150°]	Yes	Y	DL	1.2	63	1.5	32	1		
177	1.2D + 1.5Lm(9) + 1.0Wm [180°]	Yes	Y	DL	1.2	63	1.5	33	1		
178	1.2D + 1.5Lm(9) + 1.0Wm [210°]	Yes	Y	DL	1.2	63	1.5	34	1		
179	1.2D + 1.5Lm(9) + 1.0Wm [240°]	Yes	Y	DL	1.2	63	1.5	35	1		
180	1.2D + 1.5Lm(9) + 1.0Wm [270°]	Yes	Y	DL	1.2	63	1.5	36	1		
181	1.2D + 1.5Lm(9) + 1.0Wm [300°]	Yes	Y	DL	1.2	63	1.5	37	1		
182	1.2D + 1.5Lm(9) + 1.0Wm [330°]	Yes	Y	DL	1.2	63	1.5	38	1		
183	1.2D + 1.5Lm(10) + 1.0Wm [0°]	Yes	Y	DL	1.2	64	1.5	27	1		
184	1.2D + 1.5Lm(10) + 1.0Wm [30°]	Yes	Y	DL	1.2	64	1.5	28	1		
185	1.2D + 1.5Lm(10) + 1.0Wm [60°]	Yes	Y	DL	1.2	64	1.5	29	1		
186	1.2D + 1.5Lm(10) + 1.0Wm [90°]	Yes	Y	DL	1.2	64	1.5	30	1		
187	1.2D + 1.5Lm(10) + 1.0Wm [120°]	Yes	Y	DL	1.2	64	1.5	31	1		
188	1.2D + 1.5Lm(10) + 1.0Wm [150°]	Yes	Y	DL	1.2	64	1.5	32	1		
189	1.2D + 1.5Lm(10) + 1.0Wm [180°]	Yes	Y	DL	1.2	64	1.5	33	1		
190	1.2D + 1.5Lm(10) + 1.0Wm [210°]	Yes	Y	DL	1.2	64	1.5	34	1		
191	1.2D + 1.5Lm(10) + 1.0Wm [240°]	Yes	Y	DL	1.2	64	1.5	35	1		
192	1.2D + 1.5Lm(10) + 1.0Wm [270°]	Yes	Y	DL	1.2	64	1.5	36	1		
193	1.2D + 1.5Lm(10) + 1.0Wm [300°]	Yes	Y	DL	1.2	64	1.5	37	1		
194	1.2D + 1.5Lm(10) + 1.0Wm [330°]	Yes	Y	DL	1.2	64	1.5	38	1		
195	1.2D + 1.5Lm(11) + 1.0Wm [0°]	Yes	Y	DL	1.2	65	1.5	27	1		
196	1.2D + 1.5Lm(11) + 1.0Wm [30°]	Yes	Y	DL	1.2	65	1.5	28	1		
197	1.2D + 1.5Lm(11) + 1.0Wm [60°]	Yes	Y	DL	1.2	65	1.5	29	1		
198	1.2D + 1.5Lm(11) + 1.0Wm [90°]	Yes	Y	DL	1.2	65	1.5	30	1		
199	1.2D + 1.5Lm(11) + 1.0Wm [120°]	Yes	Y	DL	1.2	65	1.5	31	1		
200	1.2D + 1.5Lm(11) + 1.0Wm [150°]	Yes	Y	DL	1.2	65	1.5	32	1		
201	1.2D + 1.5Lm(11) + 1.0Wm [180°]	Yes	Y	DL	1.2	65	1.5	33	1		
202	1.2D + 1.5Lm(11) + 1.0Wm [210°]	Yes	Y	DL	1.2	65	1.5	34	1		
203	1.2D + 1.5Lm(11) + 1.0Wm [240°]	Yes	Y	DL	1.2	65	1.5	35	1		
204	1.2D + 1.5Lm(11) + 1.0Wm [270°]	Yes	Y	DL	1.2	65	1.5	36	1		
205	1.2D + 1.5Lm(11) + 1.0Wm [300°]	Yes	Y	DL	1.2	65	1.5	37	1		
206	1.2D + 1.5Lm(11) + 1.0Wm [330°]	Yes	Y	DL	1.2	65	1.5	38	1		



**Load Combinations (Continued)**

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
207	1.2D + 1.5Lm(12) + 1.0Wm [0°]	Yes	Y	DL	1.2	66	1.5	27	1		
208	1.2D + 1.5Lm(12) + 1.0Wm [30°]	Yes	Y	DL	1.2	66	1.5	28	1		
209	1.2D + 1.5Lm(12) + 1.0Wm [60°]	Yes	Y	DL	1.2	66	1.5	29	1		
210	1.2D + 1.5Lm(12) + 1.0Wm [90°]	Yes	Y	DL	1.2	66	1.5	30	1		
211	1.2D + 1.5Lm(12) + 1.0Wm [120°]	Yes	Y	DL	1.2	66	1.5	31	1		
212	1.2D + 1.5Lm(12) + 1.0Wm [150°]	Yes	Y	DL	1.2	66	1.5	32	1		
213	1.2D + 1.5Lm(12) + 1.0Wm [180°]	Yes	Y	DL	1.2	66	1.5	33	1		
214	1.2D + 1.5Lm(12) + 1.0Wm [210°]	Yes	Y	DL	1.2	66	1.5	34	1		
215	1.2D + 1.5Lm(12) + 1.0Wm [240°]	Yes	Y	DL	1.2	66	1.5	35	1		
216	1.2D + 1.5Lm(12) + 1.0Wm [270°]	Yes	Y	DL	1.2	66	1.5	36	1		
217	1.2D + 1.5Lm(12) + 1.0Wm [300°]	Yes	Y	DL	1.2	66	1.5	37	1		
218	1.2D + 1.5Lm(12) + 1.0Wm [330°]	Yes	Y	DL	1.2	66	1.5	38	1		

**Member Primary Data**

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	H001	N003	N004		PIPE 3.0	Beam	None	A53 Gr. B	Typical
2	H002	N012	N002		HSS4X4X4	Beam	None	A500 Gr. B [SQR]	Typical
3	V003	N006	N005		PIPE 4.0	Column	None	A53 Gr. B	Typical
4	H004	N007	N008		(1) 5/8 U-BOLT	Beam	None	SAE J429 Gr. 2	Typical
5	H005	N009	N010		(1) 5/8 U-BOLT	Beam	None	SAE J429 Gr. 2	Typical
6	V006	N010	N008		RIGID	None	None	RIGID	Typical
7	H007	N016	N017		PIPE 3.0	Beam	None	A53 Gr. B	Typical
8	H008	N014	N015		HSS4X4X4	Beam	None	A500 Gr. B [SQR]	Typical
9	V009	N019	N018		PIPE 4.0	Column	None	A53 Gr. B	Typical
10	H010	N020	N021		(1) 5/8 U-BOLT	Beam	None	SAE J429 Gr. 2	Typical
11	H011	N022	N023		(1) 5/8 U-BOLT	Beam	None	SAE J429 Gr. 2	Typical
12	V012	N023	N021		RIGID	None	None	RIGID	Typical
13	H013	N026	N027		PIPE 3.0	Beam	None	A53 Gr. B	Typical
14	H014	N013	N025		HSS4X4X4	Beam	None	A500 Gr. B [SQR]	Typical
15	V015	N029	N028		PIPE 4.0	Column	None	A53 Gr. B	Typical
16	H016	N030	N031		(1) 5/8 U-BOLT	Beam	None	SAE J429 Gr. 2	Typical
17	H017	N032	N033		(1) 5/8 U-BOLT	Beam	None	SAE J429 Gr. 2	Typical
18	V018	N033	N031		RIGID	None	None	RIGID	Typical
19	H019	N037	N036		PIPE 2.0	Beam	None	A53 Gr. B	Typical
20	H020	N040	N038		PIPE 2.0	Beam	None	A53 Gr. B	Typical
21	H021	N041	N039		PIPE 2.0	Beam	None	A53 Gr. B	Typical
22	V022	N046	N051		RIGID	None	None	RIGID	Typical
23	V023	N047	N050		RIGID	None	None	RIGID	Typical
24	V024	N042	N049		RIGID	None	None	RIGID	Typical
25	V025	N043	N048		RIGID	None	None	RIGID	Typical
26	V026	N045	N052		RIGID	None	None	RIGID	Typical
27	V027	N053	N044		RIGID	None	None	RIGID	Typical
28	H028	N054	N035		RIGID	None	None	RIGID	Typical
29	D029	N057	N056	90	L2.5X2.5X3	Column	None	A36	Typical
30	D030	N058	N055	180	L2.5X2.5X3	Column	None	A36	Typical
31	H031	N055	N056		RIGID	None	None	RIGID	Typical
32	H032	N065	N061		RIGID	None	None	RIGID	Typical
33	H033	N066	N062		RIGID	None	None	RIGID	Typical
34	H034	N063	N059		RIGID	None	None	RIGID	Typical
35	H035	N064	N060		RIGID	None	None	RIGID	Typical
36	D036	N070	N062	180	L2.5X2.5X3	Column	None	A36	Typical
37	D037	N069	N066	90	L2.5X2.5X3	Column	None	A36	Typical
38	D038	N068	N061	180	L2.5X2.5X3	Column	None	A36	Typical
39	D039	N067	N065	90	L2.5X2.5X3	Column	None	A36	Typical
40	U040	N071	N083		(2) 1/2 U-BOLTS	Beam	None	A36	Typical



**Member Primary Data (Continued)**

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
41	MP041	N084	N085		PIPE 2.0	Column	None	A53 Gr. B	Typical
42	U042	N072	N086		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
43	MP043	N087	N088		PIPE 2.0	Column	None	A53 Gr. B	Typical
44	U044	N082	N089		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
45	MP045	N090	N091		PIPE 2.0	Column	None	A53 Gr. B	Typical
46	U046	N073	N092		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
47	MP047	N093	N094		PIPE 2.0	Column	None	A53 Gr. B	Typical
48	U048	N078	N095		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
49	MP049	N096	N097		PIPE 2.0	Column	None	A53 Gr. B	Typical
50	U050	N079	N098		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
51	MP051	N099	N100		PIPE 2.0	Column	None	A53 Gr. B	Typical
52	U052	N080	N101		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
53	MP053	N102	N103		PIPE 2.0	Column	None	A53 Gr. B	Typical
54	U054	N081	N104		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
55	MP055	N105	N106		PIPE 2.0	Column	None	A53 Gr. B	Typical
56	U056	N074	N107		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
57	MP057	N108	N109		PIPE 2.0	Column	None	A53 Gr. B	Typical
58	U058	N075	N110		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
59	MP059	N111	N112		PIPE 2.0	Column	None	A53 Gr. B	Typical
60	U060	N076	N113		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
61	MP061	N114	N115		PIPE 2.0	Column	None	A53 Gr. B	Typical
62	U062	N077	N116		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
63	MP063	N117	N118		PIPE 2.0	Column	None	A53 Gr. B	Typical
64	H064	N119	N120		PIPE 2.0	Beam	None	A53 Gr. B	Typical
65	H065	N121	N122		PIPE 2.0	Beam	None	A53 Gr. B	Typical
66	H066	N123	N124		PIPE 2.0	Beam	None	A53 Gr. B	Typical

**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 3.0	174			Lbyy		1	1	Lateral
2	H002	HSS4X4X4	60			Lbyy		1	1	Lateral
3	V003	PIPE 4.0	18			Lbyy		1	1	Lateral
4	H004	(1) 5/8 U-BOLT	3			Lbyy		0.65	0.65	Lateral
5	H005	(1) 5/8 U-BOLT	3			Lbyy		0.65	0.65	Lateral
6	H007	PIPE 3.0	174			Lbyy		1	1	Lateral
7	H008	HSS4X4X4	60			Lbyy		1	1	Lateral
8	V009	PIPE 4.0	18			Lbyy		1	1	Lateral
9	H010	(1) 5/8 U-BOLT	3			Lbyy		0.65	0.65	Lateral
10	H011	(1) 5/8 U-BOLT	3			Lbyy		0.65	0.65	Lateral
11	H013	PIPE 3.0	174			Lbyy		1	1	Lateral
12	H014	HSS4X4X4	60			Lbyy		1	1	Lateral
13	V015	PIPE 4.0	18			Lbyy		1	1	Lateral
14	H016	(1) 5/8 U-BOLT	3			Lbyy		0.65	0.65	Lateral
15	H017	(1) 5/8 U-BOLT	3			Lbyy		0.65	0.65	Lateral
16	H019	PIPE 2.0	124.78			Lbyy		0.65	0.65	Lateral
17	H020	PIPE 2.0	124.78			Lbyy		0.65	0.65	Lateral
18	H021	PIPE 2.0	124.78			Lbyy		0.65	0.65	Lateral
19	D029	L2.5X2.5X3	73.051			Lbyy		1	1	Lateral
20	D030	L2.5X2.5X3	71.958			Lbyy		1	1	Lateral
21	D036	L2.5X2.5X3	71.958			Lbyy		1	1	Lateral
22	D037	L2.5X2.5X3	73.051			Lbyy		1	1	Lateral
23	D038	L2.5X2.5X3	71.958			Lbyy		1	1	Lateral
24	D039	L2.5X2.5X3	73.051			Lbyy		1	1	Lateral
25	U040	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
26	MP041	PIPE 2.0	120	Segment	Segment	Lbyy	Segment	2.1	2.1	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
27	U042	(2) 1/2 U-BOLTS	3			Lbyy	0.5	0.5	Lateral
28	MP043	PIPE 2.0	120	Segment	Segment	Lbyy	2.1	2.1	Lateral
29	U044	(2) 1/2 U-BOLTS	3			Lbyy	0.5	0.5	Lateral
30	MP045	PIPE 2.0	60	Segment	Segment	Lbyy	2.1	2.1	Lateral
31	U046	(2) 1/2 U-BOLTS	3			Lbyy	0.5	0.5	Lateral
32	MP047	PIPE 2.0	60	Segment	Segment	Lbyy	2.1	2.1	Lateral
33	U048	(2) 1/2 U-BOLTS	3			Lbyy	0.5	0.5	Lateral
34	MP049	PIPE 2.0	120	Segment	Segment	Lbyy	2.1	2.1	Lateral
35	U050	(2) 1/2 U-BOLTS	3			Lbyy	0.5	0.5	Lateral
36	MP051	PIPE 2.0	120	Segment	Segment	Lbyy	2.1	2.1	Lateral
37	U052	(2) 1/2 U-BOLTS	3			Lbyy	0.5	0.5	Lateral
38	MP053	PIPE 2.0	60	Segment	Segment	Lbyy	2.1	2.1	Lateral
39	U054	(2) 1/2 U-BOLTS	3			Lbyy	0.5	0.5	Lateral
40	MP055	PIPE 2.0	60	Segment	Segment	Lbyy	2.1	2.1	Lateral
41	U056	(2) 1/2 U-BOLTS	3			Lbyy	0.5	0.5	Lateral
42	MP057	PIPE 2.0	120	Segment	Segment	Lbyy	2.1	2.1	Lateral
43	U058	(2) 1/2 U-BOLTS	3			Lbyy	0.5	0.5	Lateral
44	MP059	PIPE 2.0	120	Segment	Segment	Lbyy	2.1	2.1	Lateral
45	U060	(2) 1/2 U-BOLTS	3			Lbyy	0.5	0.5	Lateral
46	MP061	PIPE 2.0	60	Segment	Segment	Lbyy	2.1	2.1	Lateral
47	U062	(2) 1/2 U-BOLTS	3			Lbyy	0.5	0.5	Lateral
48	MP063	PIPE 2.0	60	Segment	Segment	Lbyy	2.1	2.1	Lateral
49	H064	PIPE 2.0	69.338			Lbyy	1	1	Lateral
50	H065	PIPE 2.0	84.388			Lbyy	1	1	Lateral
51	H066	PIPE 2.0	77.462			Lbyy	1	1	Lateral

**Node Boundary Conditions**

Node Label	X [lb/in]	Y [lb/in]	Z [lb/in]	X Rot [k-in/rad]	Y Rot [k-in/rad]	Z Rot [k-in/rad]
1	N012	Reaction	Reaction	Reaction	Reaction	Reaction
2	N013	Reaction	Reaction	Reaction	Reaction	Reaction
3	N014	Reaction	Reaction	Reaction	Reaction	Reaction
4	N035	Reaction	Reaction	Reaction	Reaction	Reaction
5	N059	Reaction	Reaction	Reaction	Reaction	Reaction
6	N060	Reaction	Reaction	Reaction	Reaction	Reaction

**Member Advanced Data**

Label	I Release	J Release	Physical	Deflection Ratio Options	Activation	Seismic DR
1	H001		Yes	N/A		None
2	H002		Yes	N/A		None
3	V003		Yes	** NA **		None
4	H004		Yes	N/A	Exclude	None
5	H005		Yes	N/A	Exclude	None
6	V006		Yes	** NA **		None
7	H007		Yes	N/A		None
8	H008		Yes	N/A		None
9	V009		Yes	** NA **		None
10	H010		Yes	N/A	Exclude	None
11	H011		Yes	N/A	Exclude	None
12	V012		Yes	** NA **		None
13	H013		Yes	N/A		None
14	H014		Yes	N/A		None
15	V015		Yes	** NA **		None
16	H016		Yes	N/A	Exclude	None





**Member Advanced Data (Continued)**

	Label	I Release	J Release	Physical	Deflection Ratio Options	Activation	Seismic DR
17	H017			Yes	N/A	Exclude	None
18	V018			Yes	** NA **		None
19	H019			Yes	N/A		None
20	H020			Yes	N/A		None
21	H021			Yes	N/A		None
22	V022		BenPIN	Yes	** NA **		None
23	V023		BenPIN	Yes	** NA **		None
24	V024		BenPIN	Yes	** NA **		None
25	V025		BenPIN	Yes	** NA **		None
26	V026		BenPIN	Yes	** NA **		None
27	V027		BenPIN	Yes	** NA **		None
28	H028			Yes	** NA **		None
29	D029	BenPIN	BenPIN	Yes	** NA **		None
30	D030	BenPIN	BenPIN	Yes	** NA **		None
31	H031			Yes	** NA **		None
32	H032			Yes	** NA **		None
33	H033			Yes	** NA **		None
34	H034			Yes	** NA **		None
35	H035			Yes	** NA **		None
36	D036	BenPIN	BenPIN	Yes	** NA **		None
37	D037	BenPIN	BenPIN	Yes	** NA **		None
38	D038	BenPIN	BenPIN	Yes	** NA **		None
39	D039	BenPIN	BenPIN	Yes	** NA **		None
40	U040			Yes	N/A	Exclude	None
41	MP041			Yes	** NA **		None
42	U042			Yes	N/A	Exclude	None
43	MP043			Yes	** NA **		None
44	U044			Yes	N/A	Exclude	None
45	MP045			Yes	** NA **		None
46	U046			Yes	N/A	Exclude	None
47	MP047			Yes	** NA **		None
48	U048			Yes	N/A	Exclude	None
49	MP049			Yes	** NA **		None
50	U050			Yes	N/A	Exclude	None
51	MP051			Yes	** NA **		None
52	U052			Yes	N/A	Exclude	None
53	MP053			Yes	** NA **		None
54	U054			Yes	N/A	Exclude	None
55	MP055			Yes	** NA **		None
56	U056			Yes	N/A	Exclude	None
57	MP057			Yes	** NA **		None
58	U058			Yes	N/A	Exclude	None
59	MP059			Yes	** NA **		None
60	U060			Yes	N/A	Exclude	None
61	MP061			Yes	** NA **		None
62	U062			Yes	N/A	Exclude	None
63	MP063			Yes	** NA **		None
64	H064	BenPIN	BenPIN	Yes	N/A		None
65	H065	BenPIN	BenPIN	Yes	N/A		None
66	H066	BenPIN	BenPIN	Yes	N/A		None

**Hot Rolled Steel Properties**

	Label	E [psi]	G [psi]	Nu	Therm. Coeff. [1e <sup>5</sup> °F <sup>-1</sup> ]	Density [lb/ft <sup>3</sup> ]	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	A500 Gr. B [SQR]	2.9e+07	1.115e+07	0.3	0.65	490	46000	1.4	58000	1.3



Company : American Tower Corp.  
 Designer : Molly.Li  
 Job Number : 14529802\_C8\_03  
 Model Name : 283419, PINE ORCHARD BRANF...

9/18/2023  
 3:58:00 PM  
 Checked By : -

**Hot Rolled Steel Properties (Continued)**

	Label	E [psi]	G [psi]	Nu	Therm. Coeff. [1e <sup>5</sup> F <sup>-1</sup> ]	Density [lb/ft <sup>3</sup> ]	Yield [psi]	Ry	Fu [psi]	Rt
3	SAE J429 Gr. 2	2.9e+07	1.115e+07	0.3	0.65	490	57000	1.1	74000	1.1
4	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 N012 max	1126.946	16	1470.526	37	1828.507	2	-733.885	19	3792.562	19	3838.11	37
2 min	-1234.854	10	146.682	19	-1578.805	20	-7521.413	37	-5212.426	13	626.751	16
3 N013 max	1727.19	6	1650.568	29	1853.088	14	6953.022	29	3807.505	23	5778.76	29
4 min	-1325.855	24	77.749	23	-1984.139	8	651.589	23	-5202.163	5	231.795	23
5 N014 max	851.881	17	1040.949	10	1140.637	15	2066.437	11	4108.932	15	1968.168	15
6 min	-2703.019	11	-460.852	16	-1545.72	9	-1132.548	17	-4910.659	9	-4752.832	10
7 N035 max	849.02	17	479.293	2	658.247	2	222.452	26	367.754	11	153.664	23
8 min	-989.723	11	-128.393	20	-239.401	20	-48.439	20	-253.178	17	-169.307	150
9 N059 max	2596.963	28	1563.299	29	417.068	3	60.608	23	852.806	28	56.439	22
10 min	-200.329	22	-100.259	22	-341.145	103	-368.146	30	-73.937	22	-829.275	28
11 N060 max	381.732	16	495.548	34	481.894	25	98.99	206	287.199	7	233.003	10
12 min	-687.928	10	-117.078	16	-786.063	7	-154.823	74	-172.489	25	-83.342	16
13 Totals: max	5848.979	5	5818.595	27	5715.494	2						
14 min	-5848.962	23	2111.105	22	-5715.468	20						

**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 3.0	0.829	87	26	0.226	87		9	21266.02	65205	5748.75	5748.75	1.499	H1-1b
2 H002	HSS4X4X4	0.683	0	37	0.194	0	y	74	125658.283	139518	16180.5	16180.5	1.537	H1-1b
3 V003	PIPE 4.0	0.126	9	74	0.186	9		74	92571.332	93240	10631.25	10631.25	1.899	H1-1b
4 H007	PIPE 3.0	0.957	87	11	0.254	87		11	21266.02	65205	5748.75	5748.75	1.553	H1-1b
5 H008	HSS4X4X4	0.613	0	9	0.1	0	y	11	125658.283	139518	16180.5	16180.5	1.638	H1-1b
6 V009	PIPE 4.0	0.091	9	11	0.197	9		11	92571.332	93240	10631.25	10631.25	1.829	H1-1b
7 H013	PIPE 3.0	0.847	87	7	0.237	87		13	21266.02	65205	5748.75	5748.75	1.495	H1-1b
8 H014	HSS4X4X4	0.729	0	5	0.147	0	y	170	125658.283	139518	16180.5	16180.5	1.611	H1-1b
9 V015	PIPE 4.0	0.122	9	13	0.189	9		2	92571.332	93240	10631.25	10631.25	1.601	H1-1b
10 H019	PIPE 2.0	0.487	62.39	68	0.122	111.782		11	18579.538	32130	1871.625	1871.625	1.354	H1-1b
11 H020	PIPE 2.0	0.477	114.381	3	0.206	111.782		28	18579.538	32130	1871.625	1871.625	2.075	H1-1b
12 H021	PIPE 2.0	0.483	115.681	13	0.104	111.782		7	18579.538	32130	1871.625	1871.625	1.24	H1-1b
13 D029	L2.5X2.5X3	0.123	36.525	16	0.301	73.051	z	26	8861.573	29192.4	872.574	1523.63	1.136	H2-1
14 D030	L2.5X2.5X3	0.118	35.979	13	0.292	71.958	y	26	9132.65	29192.4	872.574	1531.137	1.136	H2-1
15 D036	L2.5X2.5X3	0.12	35.979	9	0.304	71.958	y	32	9132.65	29192.4	872.574	1531.137	1.136	H2-1
16 D037	L2.5X2.5X3	0.115	36.525	11	0.313	73.051	z	32	8861.573	29192.4	872.574	1523.63	1.136	H2-1
17 D038	L2.5X2.5X3	0.129	35.979	5	0.255	71.958	y	105	9132.65	29192.4	872.574	1531.137	1.136	H2-1
18 D039	L2.5X2.5X3	0.166	36.525	7	0.253	73.051	z	105	8861.573	29192.4	872.574	1523.63	1.136	H2-1
19 MP041	PIPE 2.0	0.665	53.75	8	0.047	85		20	7155.157	32130	1871.625	1871.625	1.895	H1-1b
20 MP043	PIPE 2.0	0.084	53.75	10	0.006	53.75		10	7155.157	32130	1871.625	1871.625	1.78	H1-1b
21 MP045	PIPE 2.0	0.11	28.75	8	0.014	36.25		8	23593.813	32130	1871.625	1871.625	1.339	H1-1b
22 MP047	PIPE 2.0	0.632	28.75	10	0.065	28.75		10	26005.018	32130	1871.625	1871.625	2.983	H1-1b
23 MP049	PIPE 2.0	0.691	53.75	12	0.05	53.75		24	7155.157	32130	1871.625	1871.625	1.654	H1-1b
24 MP051	PIPE 2.0	0.084	53.75	2	0.006	53.75		2	7155.157	32130	1871.625	1871.625	1.646	H1-1b
25 MP053	PIPE 2.0	0.116	28.75	12	0.015	29.375		12	23593.813	32130	1871.625	1871.625	2.385	H1-1b
26 MP055	PIPE 2.0	0.693	28.75	8	0.07	28.75		8	26005.018	32130	1871.625	1871.625	2.467	H1-1b
27 MP057	PIPE 2.0	0.69	53.75	16	0.05	53.75		16	7155.157	32130	1871.625	1871.625	3	H1-1b
28 MP059	PIPE 2.0	0.084	53.75	6	0.006	53.75		6	7155.157	32130	1871.625	1871.625	2.289	H1-1b
29 MP061	PIPE 2.0	0.116	28.75	4	0.015	29.375		4	23593.813	32130	1871.625	1871.625	2.366	H1-1b
30 MP063	PIPE 2.0	0.664	28.75	12	0.068	28.75		12	26005.018	32130	1871.625	1871.625	3	H1-1b
31 H064	PIPE 2.0	0.301	34.669	71	0.099	69.338		5	21530.65	32130	1871.625	1871.625	1.309	H1-1b



Company : American Tower Corp.  
 Designer : Molly.Li  
 Job Number : 14529802\_C8\_03  
 Model Name : 283419, PINE ORCHARD BRANF...

9/18/2023  
 3:58:00 PM  
 Checked By : -

**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
32	H065	PIPE_2.0	0.367	42.194	72	0.121	84.387	5			17758.46	32130	1871.625	1871.625	1.308	H1-1b
33	H066	PIPE_2.0	0.335	38.731	73	0.14	77.462	74			19495.436	32130	1871.625	1871.625	1.309	H1-1b



<b>RAN Template:</b> 67D5D998E 6160	<b>A&amp;L Template:</b> 67D5998E_1xAIR+1OP+1QP
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Section 1 - Site Information

<b>Site ID:</b> CTNH801B	<b>Site Name:</b> Amtrak_Branford	<b>Latitude:</b> 41.27454042
<b>Status:</b> Final	<b>Site Class:</b> Monopole	<b>Longitude:</b> -72.793184
<b>Version:</b> 8	<b>Site Type:</b> Structure Non Building	<b>Address:</b> 123 Pine Orchard Rd
<b>Project Type:</b> Anchor	<b>Plan Year:</b> 2023	<b>City, State:</b> Branford, CT
<b>Approved:</b> 11/21/2023 10:16:16 AM	<b>Market:</b> CONNECTICUT CT	<b>Region:</b> NORTHEAST
<b>Approved By:</b> SHERAZ.SOOF1@T-MOBILE.COM	<b>Vendor:</b> Ericsson	
<b>Last Modified:</b> 11/21/2023 10:16:21 AM	<b>Landlord:</b> American Tower	
<b>Last Modified By:</b> SHERAZ.SOOF1@T-MOBILE.COM		

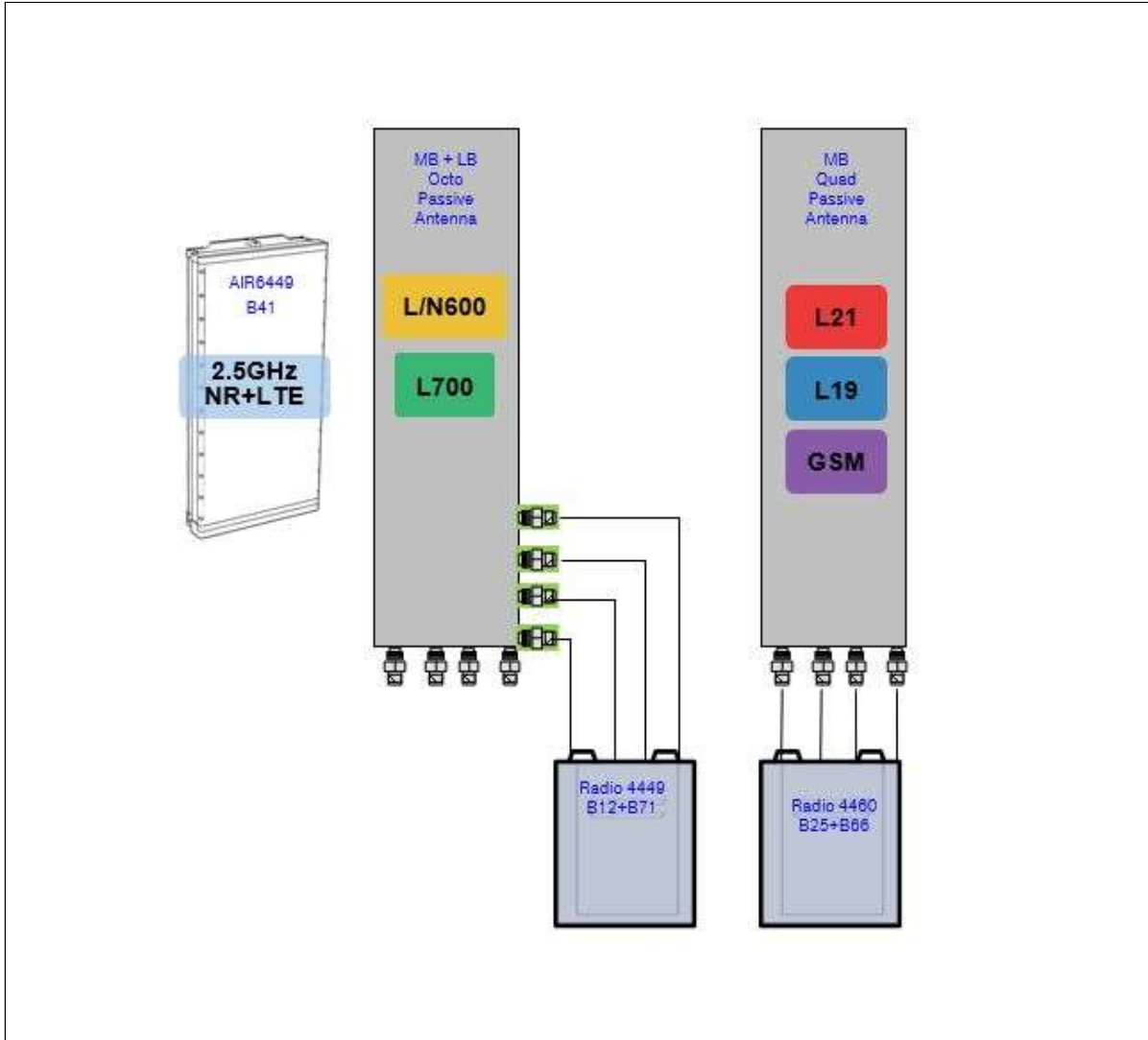
<b>RAN Template:</b> 67D5D998E 6160		<b>AL Template:</b> 67D5998E_1xAIR+1OP+1QP		
<b>Sector Count:</b> 3	<b>Antenna Count:</b> 9	<b>Coax Line Count:</b> 0	<b>TMA Count:</b> 0	<b>RRU Count:</b> 6

Section 2 - Existing Template Images

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Section 3 - Proposed Template Images

67D5998E\_1xAIR+1OP+1QP.JPG



Notes:

Section 4 - Siteplan Images

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

<b>RAN Template:</b> 67D5D998E 6160	<b>A&amp;L Template:</b> 67D5998E_1xAIR+1OP+1QP
--	--

Section 5 - RAN Equipment

Existing RAN Equipment

Template: 67D92C Outdoor

<b>Enclosure</b>	1	
<b>Enclosure Type</b>	RBS 6131	
<b>Radio</b>	RU22 (x 6) U2100 (DECOMMISSIONED)	
<b>Baseband</b>	BB 6630 (L1900, L2100)                    BB 6648 (N600, L600, L700)                    DUG20 (G1900)                    DUW30 (U2100 (DECOMMISSIONED))                    DUW30	
<b>Hybrid Cable System</b>	Ericsson 6x12 HCS *Select Length & AWG* (x 3)    Ericsson 9x18 HCS *Select Length*	

Proposed RAN Equipment

Template: 67D5D998E 6160

	1	2	3
<b>Enclosure</b>	1	2	3
<b>Enclosure Type</b>	Enclosure 6160 AC V1	RBS 6601	B160
<b>Baseband</b>	BB 6630 (N1900, L1900, L2100)                    BB 6648 (N600, L600, L700)                    RP 6651 (N2500)	DUG20 (G1900)	
<b>Transport System</b>	CSR IXRe V2 (Gen2)		
<b>Hybrid Cable System</b>	Hybrid Trunk 6/24 4AWG 60m (x 3)		

RAN Scope of Work:

Remove all unused equipment's from RAN section.

Add (1) 6160 and (1) B160 cabinets.  
 Add (1) RP6651 for NR2500/L2500  
 Add (1) IXRe router to 6160.  
 Keep existing HCS and Add (3) Hybrid Trunk 6/24 4AWG 60m confirmed

Scoping notes:  
 Only Ericsson (3) 6x12 HCS is existing.  
 relocate the existing battery cabinet.

RAN Template: 67D5D998E 6160	A&L Template: 67D5998E_1xAIR+1OP+1QP
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Section 6 - A&L Equipment

Existing Template: 67D92C\_2xAIR+1OP  
Proposed Template: 67D5998E\_1xAIR+1OP+1QP

Sector 1 (Existing) view from behind

Coverage Type	A - Outdoor Macro								
Antenna	1	2			3		4		
Antenna Model	Empty Antenna Mount (Empty mount)	RFS - APXVAARR24_43-U-NA20 (Octo)			Ericsson - AIR21 KRC118023-1_B2P_B4A (Quad)		Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		
Azimuth		0			0		0		
M. Tilt		0			0		0		
Height (ft)		120			122		122		
Ports		P1	P2	P3	P4	P5	P6	P7	P8
Active Tech		L700 L600 N600	L700 L600 N600			L2100		G1900 L1900	
Dark Tech									
Restricted Tech									
Decomm. Tech									U2100
E. Tilt		2	2			2		2	2
Cables		Coax Jumper (x2) Fiber Jumper - 15 ft.	Coax Jumper (x2)			Fiber Jumper - 15 ft. (x2)		Fiber Jumper - 15 ft. (x2)	1-5/8" Coax - 175 ft. (x2)
TMA's									Generic Twin Style 1B - AWS (At Antenna)
Diplexer / Combiners									
Radio		Radio 4449 B71+B85 (At Antenna)	Radio 4449 B71+B85 (At Antenna)						
Sector Equipment									

Unconnected Equipment:

Scope of Work:

Replace LB Dual in Position 1 with (1) LB/MB Octo in newly made Position 2.  
Replace RRUS11 B12 in Position 1 with (1) Radio 4449 B71+B85 for L600 and L700 in Position 2.  
Position 1 will be left empty.  
Leave other AIR21 antennae where they are unchanged.

\*A dashed border indicates shared connected equipment. Any shared equipment, besides the first, is denoted with the SHARED keyword.

RAN Template: 67D5D998E 6160	A&L Template: 67D5998E_1xAIR+1OP+1QP
---------------------------------	---

Print Name: Standard  
PORs: Anchor\_Phase 3

Sector 1 (Proposed) view from behind									
Coverage Type	A - Outdoor Macro								
Antenna	1		2		3		4		
Antenna Model	RFS - APXVAARR24_43-U-NA20 (Octo)		Empty Antenna Mount (Empty mount)		AIR 6419 B41 (Active Antenna - Massive MIMO)		Commscope_VV-65A-R1 (Quad)		
Azimuth	0		0		0		0		
M. Tilt	0		0		0		0		
Height (ft)	122		122		122		122		
Ports	P1	P2	P3	P4		P5	P6	P7	P8
Active Tech	N600 L700 L600	N600 L700 L600				N2500	N2500	G1900 L2100 N1900 L1900	G1900 L2100 N1900 L1900
Dark Tech									
Restricted Tech									
Decomm. Tech									
E. Tilt									
Cables	Coax Jumper (x2) Fiber Jumper (x2)	Coax Jumper (x2)				Fiber Jumper (x4)	Fiber Jumper (x4)	Coax Jumper (x2) Fiber Jumper (x2)	Fiber Jumper (x2) Coax Jumper (x2)
TMA's									
Diplexer / Combiners									
Radio	Radio 4449 B71 +B85 (At Antenna)	Radio 4449 B71 +B85 (At Antenna)						Radio 4460 B25+B66 (At Antenna)	Radio 4460 B25+B66 (At Antenna)
Sector Equipment									

**Unconnected Equipment:**

**Scope of Work:**

Replace AIR21 KRC118023-1\_B2P\_B4P with AIR6419 at P3.  
 Replace AIR21 KRC118023-1\_B2A\_B4P with VV-65A-R1 at P4.  
 Add (1) 4460 Radio and connect it to quad antenna at P4.  
 Remove all unused material.  
 Scoping notes:  
 Rad center 122'

\*A dashed border indicates shared connected equipment. Any shared equipment, besides the first, is denoted with the SHARED keyword.

RAN Template: 67D5D998E 6160	A&L Template: 67D5998E_1xAIR+1OP+1QP
---------------------------------	---

Print Name: Standard  
PORs: Anchor\_Phase 3

Sector 2 (Existing) view from behind										
Coverage Type	A - Outdoor Macro									
Antenna	1		2			3		4		
Antenna Model	Empty Antenna Mount (Empty mount)		RFS - APXVAARR24_43-U-NA20 (Octo)			Ericsson - AIR21 KRC118023-1_B2P_B4A (Quad)		Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		
Azimuth			120			120		120		
M. Tilt			0			0		0		
Height (ft)			120			122		122		
Ports			P1	P2	P3	P4	P5	P6	P7	P8
Active Tech			L700 L600 N600	L700 L600 N600			L2100		G1900 L1900	
Dark Tech										
Restricted Tech										
Decomm. Tech										U2100
E. Tilt			2	2			2		2	2
Cables			Coax Jumper (x2) Fiber Jumper - 15 ft.	Coax Jumper (x2)			Fiber Jumper - 15 ft. (x2)		Fiber Jumper - 15 ft. (x2)	1-5/8" Coax - 175 ft. (x2)
TMA's										Generic Twin Style 1B - AWS (At Antenna)
Diplexer / Combiners										
Radio			Radio 4449 B71+B85 (At Antenna)	Radio 4449 B71+B85 (At Antenna)						
Sector Equipment										

**Unconnected Equipment:**

**Scope of Work:**

Replace LB Dual in Position 1 with (1) LB/MB Octo in newly made Position 2.  
 Replace RRUS11 B12 in Position 1 with (1) Radio 4449 B71+B85 for L600 and L700 in Position 2.  
 Position 1 will be left empty.  
 Leave other AIR21 antennae where they are unchanged.

\*A dashed border indicates shared connected equipment. Any shared equipment, besides the first, is denoted with the SHARED keyword.

RAN Template: 67D5D998E 6160	A&L Template: 67D5998E_1xAIR+1OP+1QP
---------------------------------	---

Print Name: Standard  
PORs: Anchor\_Phase 3

Sector 2 (Proposed) view from behind									
Coverage Type	A - Outdoor Macro								
Antenna	1		2		3		4		
Antenna Model	RFS - APXVAARR24_43-U-NA20 (Octo)		Empty Antenna Mount (Empty mount)		AIR 6419 B41 (Active Antenna - Massive MIMO)		Commscope_VV-65A-R1 (Quad)		
Azimuth	120		120		120		120		
M. Tilt	0		0		0		0		
Height (ft)	122		122		122		122		
Ports	P1	P2	P3	P4		P5	P6	P7	P8
Active Tech	L700 N600 L600	L700 N600 L600				N2500	N2500	L1900 G1900 L2100 N1900	L1900 G1900 L2100 N1900
Dark Tech									
Restricted Tech									
Decomm. Tech									
E. Tilt									
Cables	Coax Jumper (x2) Fiber Jumper (x2)	Coax Jumper (x2)				Fiber Jumper (x4)	Fiber Jumper (x4)	Coax Jumper (x2) Fiber Jumper (x2)	Fiber Jumper (x2) Coax Jumper (x2)
TMA's									
Diplexer / Combiners									
Radio	Radio 4449 B71 +B85 (At Antenna)	Radio 4449 B71 +B85 (At Antenna)						Radio 4460 B25+B66 (At Antenna)	Radio 4460 B25+B66 (At Antenna)
Sector Equipment									

**Unconnected Equipment:**

**Scope of Work:**

Replace AIR21 KRC118023-1\_B2P\_B4P with AIR6419 at P3.  
 Replace AIR21 KRC118023-1\_B2A\_B4P with VV-65A-R1 at P4.  
 Add (1) 4460 Radio and connect it to quad antenna at P4.  
 Remove all unused material.  
 Scoping notes:  
 Rad center 122'

\*A dashed border indicates shared connected equipment. Any shared equipment, besides the first, is denoted with the SHARED keyword.



RAN Template: 67D5D998E 6160	A&L Template: 67D5998E_1xAIR+1OP+1QP
---------------------------------	---

Print Name: Standard  
PORs: Anchor\_Phase 3

Sector 3 (Existing) view from behind										
Coverage Type	A - Outdoor Macro									
Antenna	1		2			3		4		
Antenna Model	Empty Antenna Mount (Empty mount)		RFS - APXVAARR24_43-U-NA20 (Octo)			Ericsson - AIR21 KRC118023-1_B2P_B4A (Quad)		Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		
Azimuth			240			240		240		
M. Tilt			0			0		0		
Height (ft)			120			122		122		
Ports			P1	P2	P3	P4	P5	P6	P7	P8
Active Tech			L700 L600 N600	L700 L600 N600			L2100		G1900 L1900	
Dark Tech										
Restricted Tech										
Decomm. Tech										U2100
E. Tilt			2	2			2		2	2
Cables			Coax Jumper (x2) Fiber Jumper - 15 ft.	Coax Jumper (x2)			Fiber Jumper - 15 ft. (x2)		Fiber Jumper - 15 ft. (x2)	1-5/8" Coax - 175 ft. (x2)
TMA's										Generic Twin Style 1B - AWS (At Antenna)
Diplexer / Combiners										
Radio			Radio 4449 B71+B85 (At Antenna)	Radio 4449 B71+B85 (At Antenna)						
Sector Equipment										

**Unconnected Equipment:**

**Scope of Work:**

Replace LB Dual in Position 1 with (1) LB/MB Octo in newly made Position 2.  
 Replace RRUS11 B12 in Position 1 with (1) Radio 4449 B71+B85 for L600 and L700 in Position 2.  
 Position 1 will be left empty.  
 Leave other AIR21 antennae where they are unchanged.

\*A dashed border indicates shared connected equipment. Any shared equipment, besides the first, is denoted with the SHARED keyword.

RAN Template: 67D5D998E 6160	A&L Template: 67D5998E_1xAIR+1OP+1QP
---------------------------------	---

Print Name: Standard  
PORs: Anchor\_Phase 3

Sector 3 (Proposed) view from behind									
Coverage Type	A - Outdoor Macro								
Antenna	1		2		3		4		
Antenna Model	RFS - APXVAARR24_43-U-NA20 (Octo)		Empty Antenna Mount (Empty mount)		AIR 6419 B41 (Active Antenna - Massive MIMO)		Commscope_VV-65A-R1 (Quad)		
Azimuth	240		240		240		240		
M. Tilt	0		0		0		0		
Height (ft)	122		122		122		122		
Ports	P1	P2	P3	P4		P5	P6	P7	P8
Active Tech	N600 L700 L600	N600 L700 L600				N2500	N2500	L2100 G1900 L1900 N1900	L2100 G1900 L1900 N1900
Dark Tech									
Restricted Tech									
Decomm. Tech									
E. Tilt									
Cables	Coax Jumper (x2) Fiber Jumper (x2)	Coax Jumper (x2)				Fiber Jumper (x4)	Fiber Jumper (x4)	Coax Jumper (x2) Fiber Jumper (x2)	Fiber Jumper (x2) Coax Jumper (x2)
TMA's									
Diplexer / Combiners									
Radio	Radio 4449 B71 +B85 (At Antenna)	Radio 4449 B71 +B85 (At Antenna)						Radio 4460 B25+B66 (At Antenna)	Radio 4460 B25+B66 (At Antenna)
Sector Equipment									

**Unconnected Equipment:**

**Scope of Work:**

Replace AIR21 KRC118023-1\_B2P\_B4P with AIR6419 at P3.  
 Replace AIR21 KRC118023-1\_B2A\_B4P with VV-65A-R1 at P4.  
 Add (1) 4460 Radio and connect it to quad antenna at P4.  
 Remove all unused material.  
 Scoping notes:  
 Rad center 122'

\*A dashed border indicates shared connected equipment. Any shared equipment, besides the first, is denoted with the SHARED keyword.

# Radio Frequency Exposure Analysis Report

November 29, 2023

T-Mobile

Site Name: Amtrak\_Branford

Site Number: CTNH801B

Site Address: 123 Pine Orchard Road, Branford, CT 06405-3939



**Michael Fischer, P.E.**  
**Registered Professional Engineer (Electrical)**  
**Connecticut License Number 33928**  
**Expires January 31, 2024**

Signed 30 November 2023

## Site Compliance Summary

<b>T-Mobile Compliance Status:</b>	Compliant
<b>Cumulative Calculated Power Density (Ground Level):</b>	29.63442 $\mu\text{W}/\text{cm}^2$
<b>Cumulative General Population % MPE (Ground Level):</b>	2.96377%



November 29, 2023

Attn: Peter Fales, Vice President - Site Acquisition

RF Exposure Analysis for Site: **Amtrak\_Branford**

Centerline was contracted to analyze the proposed T-Mobile facility at **123 Pine Orchard Road, Branford, CT 06405-3939** 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 ( $\text{mW}/\text{cm}^2$ ) or microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The exposure limits vary depending upon the frequencies being utilized. The General Population/Uncontrolled MPE limit (in  $\text{mW}/\text{cm}^2$ ) for frequencies between 300 and 1500 is defined as frequency (in MHz) divided by 1500 ( $f_{\text{MHz}}/1500$ ). Frequencies between 1500 and 100,000 MHz have a General Population/Uncontrolled MPE limit of  $1 \text{ mW}/\text{cm}^2$  ( $1000 \mu\text{W}/\text{cm}^2$ ). 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 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 ground level.

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(s) below. The cumulative power density and cumulative % MPE are displayed at the bottom of the table(s) below.



**Maximum Calculated Cumulative Power Density (Location: approximately 341' southwest 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 ( $\mu\text{W}/\text{cm}^2$ )	General Population MPE Limit ( $\mu\text{W}/\text{cm}^2$ )	General Population % MPE
T-Mobile A 1	RFS APXVAARR24_43-U-NA20	600	13.09	122.00	4.00	40.00	3259.27	0.00000	400.00	0.00000
T-Mobile A 1	RFS APXVAARR24_43-U-NA20	600	13.09	122.00	4.00	30.00	2444.45	0.00000	400.00	0.00000
T-Mobile A 1	RFS APXVAARR24_43-U-NA20	700	13.17	122.00	4.00	40.00	3319.86	0.00000	466.67	0.00000
T-Mobile A 2	ERICSSON SON_AIR6419	2500	15.55	122.00	1.00	30.00	1076.77	0.00000	1000.00	0.00000
T-Mobile A 2	ERICSSON SON_AIR6419	2500	15.55	122.00	1.00	30.00	1076.77	0.00000	1000.00	0.00000
T-Mobile A 2	ERICSSON SON_AIR6419	2500	22.05	122.00	1.00	90.00	14429.21	0.31142	1000.00	0.03114
T-Mobile A 2	ERICSSON SON_AIR6419	2500	22.05	122.00	1.00	90.00	14429.21	0.31142	1000.00	0.03114
T-Mobile A 3	COMMSCOPE VV-65A-R1B	1900	15.15	122.00	4.00	35.00	4582.77	0.00000	1000.00	0.00000
T-Mobile A 3	COMMSCOPE VV-65A-R1B	1900	15.15	122.00	4.00	40.00	5237.45	0.00000	1000.00	0.00000
T-Mobile A 3	COMMSCOPE VV-65A-R1B	1900	15.15	122.00	2.00	10.00	654.68	0.00000	1000.00	0.00000
T-Mobile A 3	COMMSCOPE VV-65A-R1B	2100	15.80	122.00	4.00	60.00	9124.55	0.00000	1000.00	0.00000
T-Mobile B 4	RFS APXVAARR24_43-U-NA20	600	13.09	122.00	4.00	40.00	3259.27	0.00000	400.00	0.00000
T-Mobile B 4	RFS APXVAARR24_43-U-NA20	600	13.09	122.00	4.00	30.00	2444.45	0.00000	400.00	0.00000
T-Mobile B 4	RFS APXVAARR24_43-U-NA20	700	13.17	122.00	4.00	40.00	3319.86	0.00000	466.67	0.00000
T-Mobile B 5	ERICSSON SON_AIR6419	2500	15.55	122.00	1.00	30.00	1076.77	0.00000	1000.00	0.00000
T-Mobile B 5	ERICSSON SON_AIR6419	2500	15.55	122.00	1.00	30.00	1076.77	0.00000	1000.00	0.00000
T-Mobile B 5	ERICSSON SON_AIR6419	2500	22.05	122.00	1.00	90.00	14429.21	0.06892	1000.00	0.00689
T-Mobile B 5	ERICSSON SON_AIR6419	2500	22.05	122.00	1.00	90.00	14429.21	0.06892	1000.00	0.00689
T-Mobile B 6	COMMSCOPE VV-65A-R1B	1900	15.15	122.00	4.00	35.00	4582.77	0.00000	1000.00	0.00000
T-Mobile B 6	COMMSCOPE VV-65A-R1B	1900	15.15	122.00	4.00	40.00	5237.45	0.00000	1000.00	0.00000
T-Mobile B 6	COMMSCOPE VV-65A-R1B	1900	15.15	122.00	2.00	10.00	654.68	0.00000	1000.00	0.00000
T-Mobile B 6	COMMSCOPE VV-65A-R1B	2100	15.80	122.00	4.00	60.00	2281.14	0.00000	1000.00	0.00000
T-Mobile C 7	RFS APXVAARR24_43-U-NA20	600	13.09	122.00	4.00	40.00	814.82	0.00016	400.00	0.00004
T-Mobile C 7	RFS APXVAARR24_43-U-NA20	600	13.09	122.00	4.00	30.00	611.11	0.00012	400.00	0.00003
T-Mobile C 7	RFS APXVAARR24_43-U-NA20	700	13.17	122.00	4.00	40.00	829.97	0.00020	466.67	0.00004
T-Mobile C 8	ERICSSON SON_AIR6419	2500	15.55	122.00	1.00	30.00	1076.77	0.00019	1000.00	0.00002
T-Mobile C 8	ERICSSON SON_AIR6419	2500	15.55	122.00	1.00	30.00	1076.77	0.00019	1000.00	0.00002
T-Mobile C 8	ERICSSON SON_AIR6419	2500	22.05	122.00	1.00	90.00	14429.21	14.43245	1000.00	1.44325
T-Mobile C 8	ERICSSON SON_AIR6419	2500	22.05	122.00	1.00	90.00	14429.21	14.43245	1000.00	1.44325
T-Mobile C 9	COMMSCOPE VV-65A-R1B	1900	15.15	122.00	4.00	35.00	1145.69	0.00015	1000.00	0.00002
T-Mobile C 9	COMMSCOPE VV-65A-R1B	1900	15.15	122.00	4.00	40.00	1309.36	0.00017	1000.00	0.00002
T-Mobile C 9	COMMSCOPE VV-65A-R1B	1900	15.15	122.00	2.00	10.00	327.34	0.00002	1000.00	0.00000
T-Mobile C 9	COMMSCOPE VV-65A-R1B	2100	15.80	122.00	4.00	60.00	2281.14	0.00024	1000.00	0.00002
AT&T A 10	CCI DMP65R-BU6D	700	11.75	112.00	4.00	40.00	598.49	0.00000	466.67	0.00000
AT&T A 10	CCI DMP65R-BU6D	1900	14.05	112.00	4.00	40.00	1016.39	0.00000	1000.00	0.00000
AT&T A 10	CCI DMP65R-BU6D	2100	14.75	112.00	4.00	40.00	1194.15	0.00000	1000.00	0.00000



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AT&T A 11	ERICSSON SON_AIR6449	3700	23.55	110.50	1.00	86.75	19645.79	0.00003	1000.00	0.00000
AT&T A 12	ERICSSON SON_AIR6419	3450	23.55	113.50	1.00	54.22	12278.90	0.00002	1000.00	0.00000
AT&T A 13	CCI TPA65R-BU6D	700	11.75	112.00	4.00	40.00	598.49	0.00000	466.67	0.00000
AT&T A 13	CCI TPA65R-BU6D	850	12.45	112.00	4.00	40.00	703.17	0.00000	566.67	0.00000
AT&T B 14	CCI DMP65R-BU6D	700	11.75	112.00	4.00	40.00	598.49	0.00000	466.67	0.00000
AT&T B 14	CCI DMP65R-BU6D	1900	14.05	112.00	4.00	40.00	1016.39	0.00000	1000.00	0.00000
AT&T B 14	CCI DMP65R-BU6D	2100	14.75	112.00	4.00	40.00	1194.15	0.00000	1000.00	0.00000
AT&T B 15	ERICSSON SON_AIR6449	3700	23.55	110.50	1.00	86.75	19645.79	0.00001	1000.00	0.00000
AT&T B 16	ERICSSON SON_AIR6419	3450	23.55	113.50	1.00	54.22	12278.90	0.00000	1000.00	0.00000
AT&T B 17	CCI TPA65R-BU6D	700	11.75	112.00	4.00	40.00	598.49	0.00000	466.67	0.00000
AT&T B 17	CCI TPA65R-BU6D	850	12.45	112.00	4.00	40.00	703.17	0.00000	566.67	0.00000
AT&T C 18	CCI DMP65R-BU6D	700	11.75	112.00	4.00	40.00	598.49	0.00029	466.67	0.00006
AT&T C 18	CCI DMP65R-BU6D	1900	14.05	112.00	4.00	40.00	1016.39	0.00023	1000.00	0.00002
AT&T C 18	CCI DMP65R-BU6D	2100	14.75	112.00	4.00	40.00	1194.15	0.00020	1000.00	0.00002
AT&T C 19	ERICSSON SON_AIR6449	3700	23.55	110.50	1.00	86.75	19645.79	0.00176	1000.00	0.00018
AT&T C 20	ERICSSON SON_AIR6419	3450	23.55	113.50	1.00	54.22	12278.90	0.00101	1000.00	0.00010
AT&T C 21	CCI TPA65R-BU6D	700	11.75	112.00	4.00	40.00	598.49	0.00025	466.67	0.00005
AT&T C 21	CCI TPA65R-BU6D	850	12.45	112.00	4.00	40.00	703.17	0.00024	566.67	0.00004
Verizon A 22	AMPHENOL LPA-80063-6CF	850	14.50	102.00	1.00	0.00	0.00 (Not in Use)	0.00000	566.67	0.00000
Verizon A 23	COMMSCOPE SBNHH-1D65B	700	12.38	102.00	2.00	40.00	691.93	0.00000	466.67	0.00000
Verizon A 23	COMMSCOPE SBNHH-1D65B	850	12.67	102.00	2.00	40.00	739.71	0.00000	566.67	0.00000
Verizon A 23	COMMSCOPE SBNHH-1D65B	1900	15.89	102.00	4.00	40.00	1552.60	0.00000	1000.00	0.00000
Verizon A 24	COMMSCOPE SBNHH-1D65B	700	12.67	102.00	2.00	40.00	739.71	0.00000	466.67	0.00000
Verizon A 24	COMMSCOPE SBNHH-1D65B	850	12.67	102.00	2.00	40.00	739.71	0.00000	566.67	0.00000
Verizon A 24	COMMSCOPE SBNHH-1D65B	2100	16.44	102.00	4.00	40.00	1762.22	0.00000	1000.00	0.00000
Verizon B 25	AMPHENOL LPA-80063-6CF	850	14.50	102.00	1.00	0.00	0.00 (Not in Use)	0.00000	566.67	0.00000
Verizon B 26	COMMSCOPE SBNHH-1D65B	700	12.38	102.00	2.00	40.00	691.93	0.00000	466.67	0.00000
Verizon B 26	COMMSCOPE SBNHH-1D65B	850	12.67	102.00	2.00	40.00	739.71	0.00000	566.67	0.00000
Verizon B 26	COMMSCOPE SBNHH-1D65B	1900	15.89	102.00	4.00	40.00	1552.60	0.00000	1000.00	0.00000
Verizon B 27	COMMSCOPE SBNHH-1D65B	700	12.67	102.00	2.00	40.00	739.71	0.00000	466.67	0.00000
Verizon B 27	COMMSCOPE SBNHH-1D65B	850	12.67	102.00	2.00	40.00	739.71	0.00000	566.67	0.00000
Verizon B 27	COMMSCOPE SBNHH-1D65B	2100	16.44	102.00	4.00	40.00	1762.22	0.00000	1000.00	0.00000
Verizon B 28	AMPHENOL LPA-80063-6CF	850	14.50	102.00	1.00	0.00	0.00 (Not in Use)	0.00000	566.67	0.00000
Verizon C 29	AMPHENOL LPA-80063-6CF	850	14.50	102.00	1.00	0.00	0.00 (Not in Use))	0.00000	566.67	0.00000
Verizon C 30	COMMSCOPE SBNHH-1D65B	700	12.38	102.00	2.00	40.00	691.93	0.00014	466.67	0.00003
Verizon C 30	COMMSCOPE SBNHH-1D65B	850	12.67	102.00	2.00	40.00	739.71	0.00014	566.67	0.00002





Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/ Channel (watts)	ERP (watts)	Calculated Power Density ( $\mu\text{W}/\text{cm}^2$ )	General Population MPE Limit ( $\mu\text{W}/\text{cm}^2$ )	General Population % MPE
Verizon C 30	COMMSCOPE SBNHH-1D65B	1900	15.89	102.00	4.00	40.00	1552.60	0.00029	1000.00	0.00003
Verizon C 31	COMMSCOPE SBNHH-1D65B	700	12.67	102.00	2.00	40.00	739.71	0.00014	466.67	0.00003
Verizon C 31	COMMSCOPE SBNHH-1D65B	850	12.67	102.00	2.00	40.00	739.71	0.00014	566.67	0.00002
Verizon C 31	COMMSCOPE SBNHH-1D65B	2100	16.44	102.00	4.00	40.00	1762.22	0.00027	1000.00	0.00003
Dish A 32	JMA MX08FRO665-21	700	12.05	80.00	4.00	30.00	480.97	0.00000	466.67	0.00000
Dish A 32	JMA MX08FRO665-21	600	11.35	80.00	4.00	30.00	409.37	0.00000	400.00	0.00000
Dish A 32	JMA MX08FRO665-21	2007	15.75	80.00	4.00	40.00	1503.35	0.00000	1000.00	0.00000
Dish A 32	JMA MX08FRO665-21	2100	16.75	80.00	4.00	40.00	1892.61	0.00000	1000.00	0.00000
Dish B 33	JMA MX08FRO665-21	700	12.05	80.00	4.00	30.00	480.97	0.00000	466.67	0.00000
Dish B 33	JMA MX08FRO665-21	600	11.35	80.00	4.00	30.00	409.37	0.00000	400.00	0.00000
Dish B 33	JMA MX08FRO665-21	2007	15.75	80.00	4.00	40.00	1503.35	0.00000	1000.00	0.00000
Dish B 33	JMA MX08FRO665-21	2100	16.75	80.00	4.00	40.00	1892.61	0.00000	1000.00	0.00000
Dish C 34	JMA MX08FRO665-21	700	12.05	80.00	4.00	30.00	480.97	0.00054	466.67	0.00012
Dish C 34	JMA MX08FRO665-21	600	11.35	80.00	4.00	30.00	409.37	0.00052	400.00	0.00013
Dish C 34	JMA MX08FRO665-21	2007	15.75	80.00	4.00	40.00	1503.35	0.00058	1000.00	0.00006
Dish C 34	JMA MX08FRO665-21	2100	16.75	80.00	4.00	40.00	1892.61	0.00060	1000.00	0.00006
							<b>Cumulative Power Density:</b>	<b>29.63442 <math>\mu\text{W}/\text{cm}^2</math></b>	<b>Cumulative % MPE:</b>	<b>2.96377%</b>



## Summary

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

A handwritten signature in black ink, appearing to read "Katrina Styx".

Katrina Styx  
RF EME Technical Writer  
Centerline