



T-Mobile
Cullen Morgan
Site Acquisition Consultant
750 W Center Street
Suite 301
West Bridgewater, MA 02379
(941)549-7263
cmorgan@clinellc.com

May 2, 2024

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

RE: NOTICE OF EXEMPT MODIFICATION
159 Weingart Road, Harwinton, CT 06791
Latitude: 41.78775173
Longitude: -73.09253958
T-Mobile Site #: CTNH517A

Dear Members of the Siting Council:

T-Mobile currently maintains nine (9) antennas at the 163-foot level of the existing 180-foot monopole tower at 159 Weingart Road, Harwinton, CT 06791. The 181.9-foot tower is owned by American Tower Corporation and the property is owned by SBC Tower Holdings LLC. T-Mobile now intends to make the below-listed equipment modifications to their existing telecommunications facility. All tower-mounted equipment will be installed at the 163-foot level of the tower.

Planned Modifications:

Remove Existing:

- (6) AIR21 Antennas
- (3) LNX-6515DS-A1M Antennas
- (6) 1-5/8" Coax cables
- (1) 1-5/8" Fiber Cables
- (2) Cabinets

Install New:

- (3) AIR6419 B41 Antennas
- (3) APXVAALL24_43-U-NA20 Antennas
- (3) Radio 4460 B25+B66 RRUs

750 W Center St, Suite 301
West Bridgewater, MA 02379
781-713-4725

- (3) Radio 4480 B71+B85 RRUs
- (2) 2.00" Hybrid Cables
- (2) Cabinets

This facility was approved by the CT Siting Council in Docket No.138 dated November 26, 1990, with conditions. We used the information from the previous filing. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16- SOj-73, or 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-SOj-73, a copy of this letter is being sent to Mayor Todd Arcelaschi, chief elected official, Planning and Zoning Director Lance Hansen for the Town of Winchester as well as the property owner and the tower 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).

Respectfully Submitted,



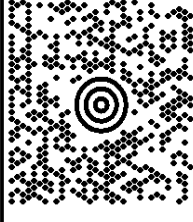
Cullen Morgan
Site Acquisition Consultant
Centerline Communications, LLC (Agent to T-Mobile)
Mobile: (941) 549-7263
cmorgan@clinellc.com

C/O CULLEN MORGAN
941-549-7263
CENTERLINE COMMUNICATIONS LLC
12579 SAGEWOOD DRIVE
VENICE FL 34293

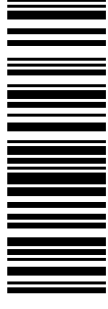
1 OF 1

3 LBS

SHIP TO:
CONNECTICUT SITING COUNCIL
10 FRANKLIN SQUARE
NEW BRITAIN CT 06051-2655

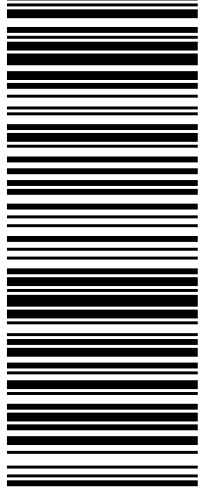


CT 067 9-06



UPS GROUND

TRACKING #: 1Z 9Y4 503 03 0050 4013



BILLING: P/P

Reference # 1: CTNH517A CSC

CS 24.3.00... MACNV50 19.0A 05/2024**



TM

Centerline Communications
750 W Center St #301
WEST BRIDGEWATER, MA 02379
(844) 748-8878

Centerline Disbursement

00045153
Date: 03/15/2024

Pay To
The Order Of **CONNECTICUT SITING COUNCIL**
Six Hundred Twenty Five Dollars

Memo: CTNH517A

***625.00**

CONNECTICUT SITING COUNCIL
United States

De laace

⑈00045153⑈ ⑆011304478⑆

002922009879⑈

Details on Back.
Security Features Included

Centerline Communications
VEN-010420--CONNECTICUT SITING COUNCIL
Print As: CONNECTICUT SITING COUNCIL

00045153
Centerline Disbursement
B-003 9879
Date: 03/15/2024

| Date | Bill # | Reference Number | Amount Due | Term Discount | Amount Paid/Applied |
|-------------|------------|------------------|------------|---------------|---------------------|
| 03/15/2024 | 533654-003 | 00045153 | \$625.00 | \$0.00 | \$625.00 |
| Net Amount: | | | | | \$625.00 |



May 2, 2024

**NOTICE OF EXEMPT MODIFICATION
159 WEINGART ROAD, HARWINTON, CT 06791
CERTIFICATION OF SERVICE**

I hereby certify that a copy of the foregoing Notice of Exempt Modification were sent via UPS Delivery to all relevant parties associated with the above-referenced site including:

The Honorable Michael R. Criss, Mayor
Town of Harwinton
100 Bentley Drive
Harwinton, CT 06791

Jeffrey Neumann, Building Official
Town of Harwinton
100 Bentley Drive
Harwinton, CT 06791

SBC Tower Holdings LLC, Property Owner
c/o American Tower Corporation
10 Presidential Way
Woburn, MA 01801

American Tower Corporation, Tower Owner
10 Presidential Way
Woburn, MA 01801

Regards,

A handwritten signature in black ink, appearing to read 'C Morgan', with a long horizontal flourish extending to the right.

Cullen Morgan
Site Acquisition Consultant
Centerline Communications, LLC (Agent to T-Mobile)
Mobile: (941) 549-7263
cmorgan@clinellc.com

750 W Center St, Suite 301
West Bridgewater, MA 02379
781-713-4725



EXHIBIT A

Letter of Authorization





AMERICAN TOWER®
CORPORATION

LETTER OF AUTHORIZATION FOR PERMITTING

ATC SITE#/NAME/PROJECT: 302502 / Harwinton / 14685654
SITE ADDRESS: 159 Weingart Rd, Harwinton, CT 06791
APN: HARW M:B8 B:05 L:0022
LICENSEE: T-MOBILE d/b/a T-MOBILE NORTHEAST LLC
SITE ACQUISITION VENDOR: CENTERLINE COMMUNICATIONS LLC

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

I understand that these applications may be approved with conditions. The above authorization is limited to the acceptance by Licensee only of conditions related to Licensee's installation and any such conditions of approval or modifications will be Licensee's sole responsibility.

Signature: _____

Margaret Robinson, Vice President, UST Legal
US Tower Division

NOTARY BLOCK

COMMONWEALTH OF MASSACHUSETTS
County of Middlesex

This instrument was acknowledged before me by Margaret Robinson, Vice President, UST Legal for American Tower* (Tower Facility owner and/or operator), personally known to me (or proved to me based on satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same.

WITNESS my hand and official seal, this 26th day of April 2024.

NOTARY SEAL



GERARD T. HEFFRON
Notary Public
Commonwealth of Massachusetts
My Commission Expires
August 9, 2024

Notary Public

My Commission Expires: August 9th, 2024

* American Tower is defined as American Tower Corporation and any of its affiliates or subsidiaries.



EXHIBIT B

Original Facility Approval



DOCKET NO. 138 - An application of SNET Cellular, Inc., for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of cellular facilities in the Towns of Plymouth, Harwinton, Winchester, and New Milford, Connecticut.

Connecticut

Siting

Council

November 26, 1990

DECISION AND ORDER

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council finds that the effects associated with the construction, operation, and maintenance of four cellular telecommunications towers and associated equipment at the proposed Plymouth, Harwinton, New Milford, and alternate Winchester sites 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 need not be in conflict either alone or cumulatively with other effects, 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 (Certificate), as provided by section 16-50k of the Connecticut General Statutes (CGS), be issued to SNET Cellular Inc., for the construction, operation, and maintenance of a cellular telecommunications tower, associated equipment, and building at the proposed Plymouth, Harwinton, New Milford, and alternate Winchester sites.

The facilities 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 facilities shall be constructed in accordance with the State of Connecticut Basic Building Code.
2. The self-supporting monopole towers shall be no taller than necessary to provide the proposed communication service and in no event shall the Plymouth, Harwinton, and Winchester tower structures exceed 192-feet or the New Milford tower structure exceed 162 feet above ground level (AGL), including antennas and appurtenances.
3. The Certificate Holder shall prepare a Development and Management (D&M) Plan, for approval by the Council, for these sites in compliance with sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies (RSA). The D&M Plan shall include detailed plans for the towers, tower pedestals, tower foundations, soil boring reports, antenna structures, equipment buildings, access roads, security fences, erosion and sedimentation control plans

consistent with the Connecticut Guidelines of Soil Erosion and Sedimentation Control, and landscaping plans where necessary to screen the equipment building from adjacent land uses.

At the proposed Harwinton site, the accessway shall be designed to avoid a direct sight-line of the entire tower structure from the adjacent Fowler residence. To further mitigate the visibility of the facility, the tower's site shall be moved as close to the electric transmission line right-of-way as safety clearances allow.

At the alternate Winchester site, the Certificate Holder shall design the accessway to avoid a direct sight-line from the northern end of Oakdale Avenue. Prior to construction, the Certificate Holder shall secure all necessary permits and approvals to construct a crossing of the Tennessee Gas Company's underground gas transmission line. Prior to any necessary blasting activities, the Certificate Holder shall secure all necessary permits and shall conduct such blasting in accordance with State regulations. Copies of all permits and approvals shall be forwarded to the Council immediately upon receipt.

4. The Certificate Holder shall comply with any existing and future radio frequency (RF) standard promulgated by State or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facilities granted in this Decision and Order shall be brought into compliance with such standards.
5. The Certificate Holder shall provide the Council a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power densities above the levels originally calculated and provided in the application.
6. The Certificate Holder shall permit public or private entities to share space on the proposed towers for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
7. If the facilities do not initially provide, or permanently cease to provide cellular service following completion of construction, this Decision and Order shall be void, and the tower(s) and all associated equipment shall be dismantled and removed or reapplication for any new use shall be made to the Council before any such new use is made.
8. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the effective date of this Decision and Order or within three years after all appeals to this Decision and Order have been resolved.

Pursuant to Section 16-50p, we hereby direct 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 Milford Times, The Bristol Press, The Registrar-Citizen, and The Danbury News-Times.

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 State Agencies.

The parties to this proceeding are:

(PARTIES)

SNET Cellular, Inc.

(ITS REPRESENTATIVES)

Peter J. Tyrrell
Senior Attorney
SNET Cellular, Inc.
227 Church Street
Room 1021
New Haven, CT 06506

(INTERVENORS)

Pikeville Cellular Partnership

Charles Wolf, Esq.
Robinson & Cole
One Commercial Plaza
Hartford, CT 06103-3597

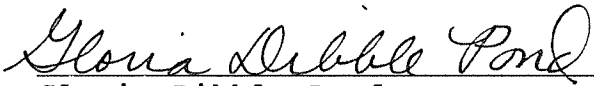
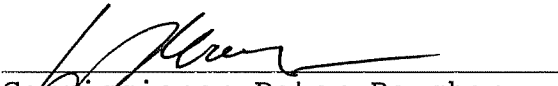


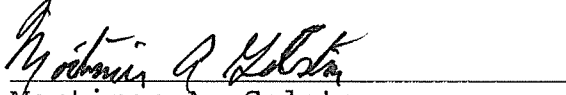
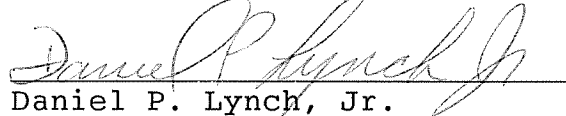
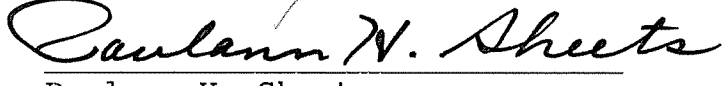
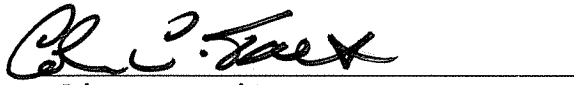
TEF:bw

4886E-1-3

CERTIFICATION

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case in Docket No. 138 or read the record thereof, and that we voted as follows:

Dated at New Britain, Connecticut the 26 day of November, 1990.

| <u>Council Members</u> | <u>Vote Cast</u> |
|--|------------------|
|  Gloria Dibble Pond Chairperson | YES |
|  Commissioner Peter Boucher Designee: Mark Marcus | YES |
|  Commissioner Leslie Carothers Designee: Brian Emerick | YES |
|  Harry E. Covey | YES |
|  Mortimer A. Gelston | YES |
|  Daniel P. Lynch, Jr. | YES |
|  Paulann H. Sheets | YES |
| _____ William H. Smith | ABSENT |
|  Colin C. Tait | YES |

Date: August 22, 1990

Docket No. 138

LIST OF PARTIES AND INTERVENORS - SERVICE LIST

| Status Granted | Status Holder (name, address & phone number) | Representative (name, address & phone number) |
|--|--|---|
| Party <input checked="" type="checkbox"/> Intervenor <input type="checkbox"/> | SNET Cellular, Inc. | Peter J. Tyrrell Senior Attorney SNET Cellular, Inc. 227 Church Street Room 1021 New Haven, CT 06506 |
| Party <input type="checkbox"/> Intervenor <input checked="" type="checkbox"/> | Pikeville Cellular Partnership | Charles Wolf, Esq. Robinson & Cole One Commercial Plaza Hartford, CT 06103-3597 |
| Party <input type="checkbox"/> Intervenor <input type="checkbox"/> | | |



EXHIBIT C

Property Card



Town of Harwinton, CT

Summary

Parcel ID 593
 Account Number 3057
 Property Address 159 WEINGART RD
 Map/Block/Block Cut B8/05/0022/
 Use Class/Description 3-1 IND LAND
 Assessing Neighborhood 0001A
 Census Tract 298300000000
 Acreage 5.35

Owner

SBC TOWER HOLDINGS LLC
 C/O AMERICAN TOWER
 PO BOX 723597
 ATLANTA, GA 31139

Valuation

| Assessed Year | 2022 | 2021 | 2020 |
|------------------------------|---------------------|---------------------|---------------------|
| Appraised Building Value | \$13,860.00 | \$13,860.00 | \$13,860.00 |
| Appraised XF/OB Value | \$29,250.00 | \$29,250.00 | \$29,250.00 |
| Appraised Land Value | \$319,240.00 | \$319,240.00 | \$319,240.00 |
| Appraised Total Value | \$362,350.00 | \$362,350.00 | \$362,350.00 |
| Assessed Building Value | \$9,700.00 | \$9,700.00 | \$9,700.00 |
| Assessed XF/OB Value | \$20,480.00 | \$20,480.00 | \$20,480.00 |
| Assessed Land Value | \$223,460.00 | \$223,460.00 | \$223,460.00 |
| Assessed Total Value | \$253,640.00 | \$253,640.00 | \$253,640.00 |

Land

| Use | Zoning | Area | Value |
|----------------|--------|---------|-----------|
| 3-1 - IND LAND | | 1 UT | \$189,000 |
| 3-1 - IND LAND | TR1.5 | 1.5 AC | \$112,500 |
| 3-1 - IND LAND | | 3.85 AC | \$34,650 |

Building Data

Building # 1
 Style Warehouse
 Actual Year Built 1995
 Living Area 312
 Stories 1
 Grade 03 Average
 Occupancy 1
 Condition A
 Exterior Wall Concr/Cinder
 Interior Wall Drywall/Sheet
 Fireplaces
 Roof Cover Concrete Tile
 Roof Structure Flat
 Floor Type Average
 Heat Type None
 Fuel Type Coal or Wood
 AC None
 Bdrms/Ful Bth/Hlf Bth/Ttl Rm ///1
 Basement Sq. Ft.

| Code | Description | Living Area | Gross Area | Effective Area |
|---------------|-------------|-------------|------------|----------------|
| BAS | First Floor | 312 | 312 | 312 |
| Totals | | 312 | 312 | 312 |

Out Buildings\Extra Features

Description PAVING
 Sub Description
 Area 3900 S.F.
 Year Built 1995
 Value \$10,920

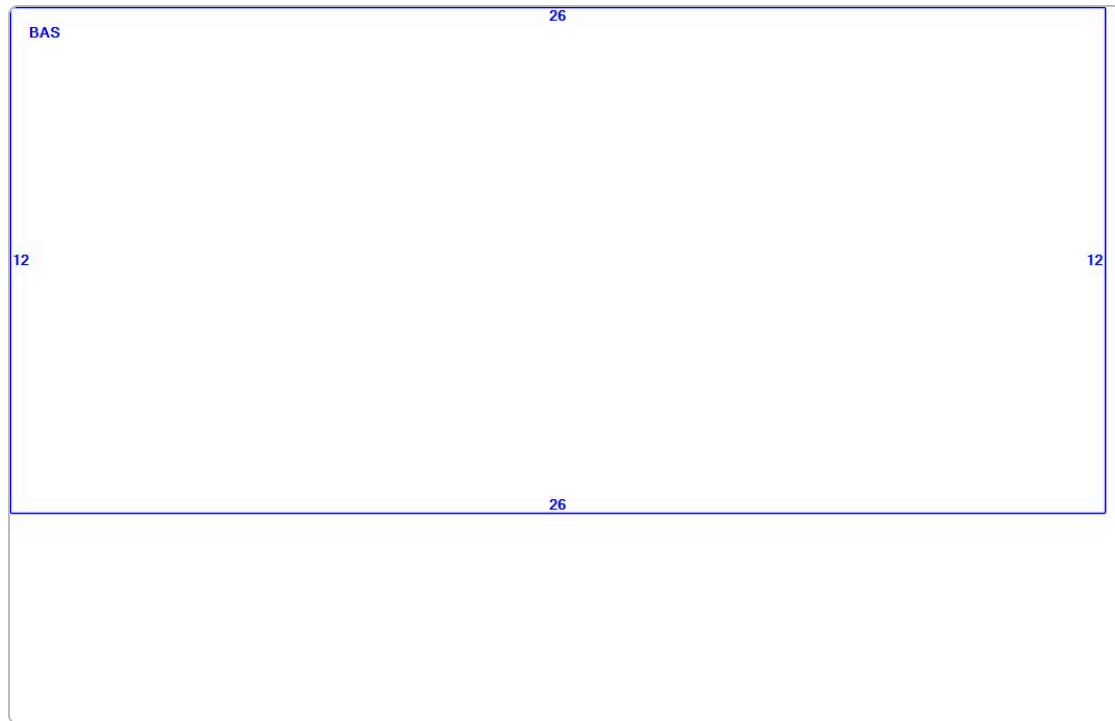
Sales History

| Sales Date | Type of Document | Grantee | Grantor | Book/Page |
|------------|------------------|---|------------------------------------|-----------|
| 8/19/2013 | | SBC TOWER HOLDINGS LLC C/O AMERICAN TOWER | AMERICAN TOWER ASSET SUB II LLC | 0240-1013 |
| 6/26/2013 | | AMERICAN TOWER ASSET SUB II LLC | CLEMENTE JAMIE L + LAURA DOROTHY M | 0240-0205 |
| 6/5/2002 | | CLEMENTE JAMIE L + LAURA DOROTHY M | | 0171-0811 |

Permit Information

| Permit ID | Issue Date | Type | Description | Amount | Inspection Date | % Complete | Date Complete | Comments |
|-----------|------------|------|----------------------|----------|-----------------|------------|---------------|--------------------------|
| | 08-25-2020 | | CO ISSUED FOR 3 ANTE | \$0 | | 0 | | |
| 207CA | 08-25-2020 | | CO ISSUED | \$0 | | 0 | | 3 NEW ANTENNAS |
| 19157B | 11-15-2019 | | 3 NEW ANTENNAS | \$25,000 | | 100 | | |
| CO | 06-17-2019 | | CO ISSUED | \$0 | | 0 | | |
| 18112B | 09-06-2018 | | 6PANEL ANTENNAS | \$20,000 | | 100 | | |
| 1718CA | 08-14-2017 | | CO ISSUED | \$0 | | 0 | | |
| 1737B | 04-06-2017 | | REINFORCEMENT BARS | \$11,000 | | 100 | | |
| 1720B | 02-17-2017 | | 3 ANTENNAS | \$15,000 | | 100 | | |
| 9520 | 04-01-2015 | | ADDING 3 REMOTE RADI | \$4,750 | | 0 | | |
| 9447 | 11-13-2014 | | MODIFICATIONS | \$13,000 | | 0 | | |
| 9035 | 09-20-2013 | | GENERATOR | \$10,000 | | 0 | | |
| 8867 | 04-30-2013 | EL | Electric | \$12,500 | | 0 | | |
| 8815 | 03-21-2013 | | | \$20,000 | | 0 | | CABINETS & CONCRETE SLAB |
| 8709 | 11-21-2012 | | ANTENNAS | \$10,000 | | 0 | | |
| 7995 | 01-25-2011 | | CELLUAR SITE | \$12,000 | | 0 | | |
| 7986 | 12-22-2010 | EL | Electric | \$15,000 | | 0 | | |

Sketch



No data available for the following modules: Photos.



[User Privacy Policy](#) [GDPR Privacy Notice](#)
 Last Data Upload: 3/12/2024, 3:52:35 AM



EXHIBIT D

Construction Drawings





VICINITY MAP



AMERICAN TOWER®

ATC SITE NAME: HARWINTON
 ATC SITE NUMBER: 302502
 T-MOBILE SITE NAME: ATC HARWINTON MONOPOLE
 T-MOBILE SITE NUMBER: CTNH517A
 SITE ADDRESS: 159 WEINGART ROAD
 HARWINTON, CT 06791
 SITE CLASS: MONOPOLE



LOCATION MAP

**T-MOBILE ANCHOR AMENDMENT PLAN
 67E5D998E OUTDOOR CONFIGURATION**

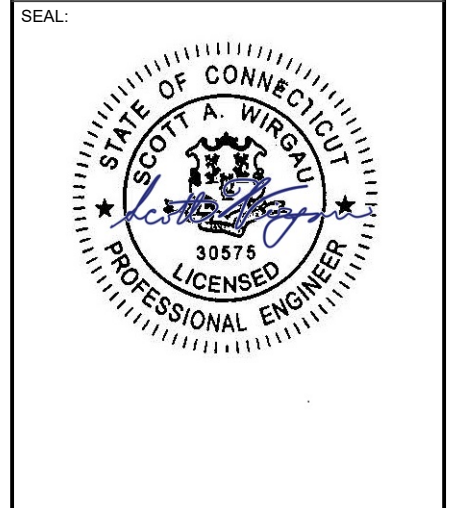
| COMPLIANCE CODE | PROJECT SUMMARY | PROJECT DESCRIPTION | SHEET INDEX | | | | |
|--|--|---|--------------------------------|---------------|-----------|-----------|-----|
| ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNMENT AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES. 2021 IBC NATIONAL ELECTRICAL CODE (NFPA 70, NEC 2020 W/ AMND) 2022 CONNECTICUT STATE BUILDING CODE, IMC PORTION (IMC 2021 W/ AMND) 2022 CONNECTICUT STATE BUILDING CODE, IPC PORTION (IPC 2021 W/ AMND) 2022 CONNECTICUT STATE BUILDING CODE, IECC PORTION (IECC 2021 W/ AMND) PART III OF THE 2022 CT STATE FIRE SAFETY CODE (IFC 2021 W/ AMND) 2022 CONNECTICUT STATE BUILDING CODE, IEBC PORTION (IEBC 2021 W/ AMND) 2022 CONNECTICUT STATE BUILDING CODE 2022 CONNECTICUT STATE BUILDING CODE, IRC PORTION (IRC 2021 W/ AMND) CONNECTICUT STATE FUEL GAS CODE (IFGC 2021 W/ AMND) | <u>SITE ADDRESS:</u> 159 WEINGART ROAD HARWINTON, CT 06791 COUNTY: LITCHFIELD <u>GEOGRAPHIC COORDINATES:</u> LATITUDE: 41° 47' 15.906" N 41.78775173 LONGITUDE: 73° 5' 33.142" W -73.09253958 GROUND ELEVATION: 1051' AMSL | THE PROPOSED PROJECT INCLUDES MODIFYING GROUND BASED AND TOWER MOUNTED EQUIPMENT AS INDICATED PER BELOW: <u>TOWER WORK:</u> REMOVE (9) ANTENNA(S), (6) 1 5/8" COAX & (1) 1 5/8" FIBER CABLE(S) INSTALL (6) ANTENNA(S), (6) RRU(S), AND (2) 2.00" HYBRID TRUNK 6/24 4AWG CABLE(S) <u>GROUND WORK:</u> REMOVE (1) GENERIC CABINET AND (1) BBU INSTALL (1) ENCLOSURE 6160, (1) B160 BATTERY CABINET, (2) RP 6651s, AND (1) CRS IXRe | SHEET NO: | DESCRIPTION: | REV: | DATE: | BY: |
| | <u>PROJECT TEAM</u> <u>TOWER OWNER:</u> AMERICAN TOWER 10 PRESIDENTIAL WAY WOBURN, MA 01801 <u>ENGINEER:</u> A.T. ENGINEERING SERVICES LLC 1 FENTON MAIN, STE 300 CARY, NC 27511 <u>PROPERTY OWNER:</u> AMERICAN TOWER 10 PRESIDENTIAL WAY WOBURN, MA 01801 | <u>PROJECT NOTES</u> 1. THE FACILITY IS UNMANNED. 2. A TECHNICIAN WILL VISIT THE SITE APPROXIMATELY ONCE A MONTH FOR ROUTINE INSPECTION AND MAINTENANCE. 3. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT LAND DISTURBANCE OR EFFECT OF STORM WATER DRAINAGE. 4. NO SANITARY SEWER, POTABLE WATER OR TRASH DISPOSAL IS REQUIRED. 5. HANDICAP ACCESS IS NOT REQUIRED. 6. THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. § 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION, REMOVAL, AND/OR REPLACEMENT OF TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR § 1.61000 (B)(7). | G-001 | TITLE SHEET | 0 | 4/10/2024 | JBW |
| | | | G-002 | GENERAL NOTES | 0 | 4/10/2024 | JBW |
| <u>UTILITY COMPANIES</u> POWER COMPANY: UNKNOWN PHONE: N/A TELEPHONE COMPANY: UNKNOWN PHONE: N/A | <u>PROJECT LOCATION DIRECTIONS</u> FROM HARTFORD TAKE I-84 WEST TO RT 4 WEST. FOLLOW TO HARWINTON, TURN LEFT ON BREEZY HILL RD (JUST PAST JCT W/ RT 183) STAY TO RIGHT AT FORK (WEINGART BEGINS). ACCESS ROAD AHEAD ON LEFT JUST AFTER OVERHEAD POWER LINE EASEMENT. | C-101 | DETAILED SITE PLAN | 0 | 4/10/2024 | JBW | |
| | | C-102 | DETAILED EQUIPMENT PLAN | 0 | 4/10/2024 | JBW | |
| | | C-201 | TOWER ELEVATION | 0 | 4/10/2024 | JBW | |
| | | C-401 | ANTENNA INFORMATION & SCHEDULE | 0 | 4/10/2024 | JBW | |
| | | C-501 | CONSTRUCTION DETAILS | 0 | 4/10/2024 | JBW | |
| | | E-501 | GROUNDING DETAILS | 0 | 4/10/2024 | JBW | |
| | | 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
 1 FENTON MAIN
 SUITE 300
 CARY, NC 27511
 PHONE: (919) 468-0112
 PEC.0001553

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ATC SITE NUMBER:
302502
 ATC SITE NAME:
HARWINTON
 T-MOBILE SITE NAME:
ATC HARWINTON MONOPOLE
 SITE ADDRESS:
 159 WEINGART ROAD
 HARWINTON, CT 06791



ATC PROJ. #: 14685654_G0
 CUST. ID: ATC HARWINTON MONOPOLE
 CUST. #: CTNH517A

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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 SITE ADDRESS:
 159 WEINGART ROAD
 HARWINTON, CT 06791



Digitally Signed: 2024-04-11



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| ATC PROJ. #: | 14685654_GO |
| CUST. ID: | ATC HARWINTON MONOPOLE |
| CUST. #: | CTNH517A |

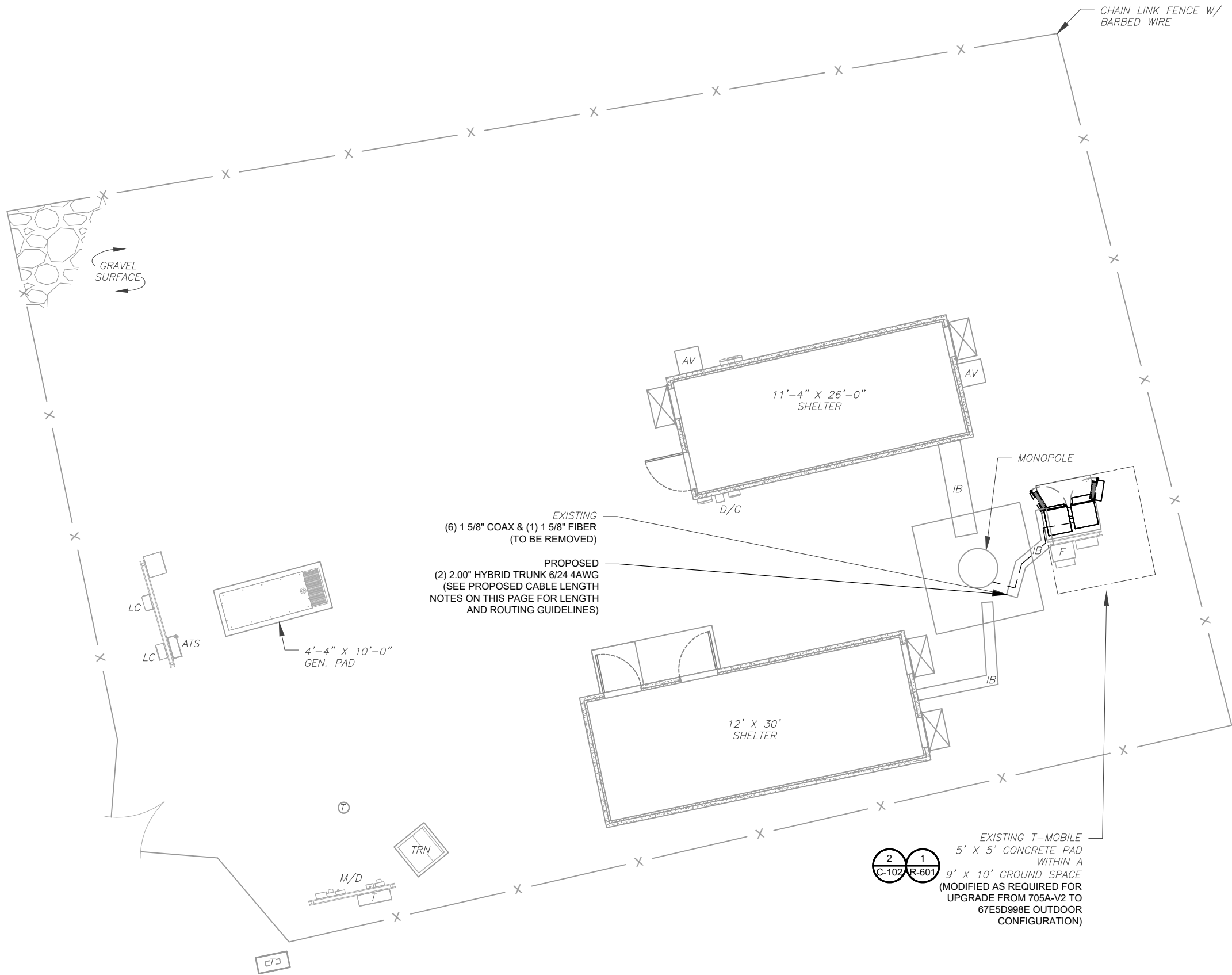
GENERAL NOTES

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

- THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.
- ICE BRIDGE, CABLE LADDER, COAX PORT, AND COAX CABLE ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL CONFIRM THE EXACT LOCATION OF ALL PROPOSED AND EXISTING EQUIPMENT AND STRUCTURES DEPICTED ON THIS PLAN. BEFORE UTILIZING EXISTING CABLE SUPPORTS, COAX PORTS, INSTALLING NEW PORTS OR ANY OTHER EQUIPMENT, CONTRACTOR SHALL VERIFY ALL ASPECTS OF THE COMPONENTS MEET THE ATC SPECIFICATIONS.
- NO ELECTRICAL SCOPE IS INCLUDED IN THIS PROJECT.



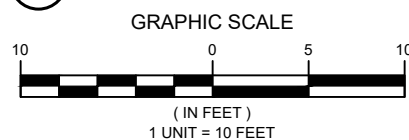

LEGEND

- ⊗ 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:

- ESTIMATED LENGTH OF PROPOSED CABLE IS **201'**. ESTIMATED LENGTH OF CABLE WAS PROVIDED BY CUSTOMER OR CALCULATED BY ADDING THE RAD CENTER AND THE DISTANCE FROM THE SHELTER ENTRY PLATE TO THE TOWER (ALONG THE ICE BRIDGE) AND A SAFETY FACTOR MEASUREMENT OF 15% (OF THE TWO PREVIOUS VALUES). CDS DEFER TO GREATEST CABLE LENGTH.
- ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. 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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 159 WEINGART ROAD
 HARWINTON, CT 06791



Digitally Signed: 2024-04-11



ATC PROJ. #: 14685654_G0
 CUST. ID: ATC HARWINTON MONOPOLE
 CUST. #: CTNH517A

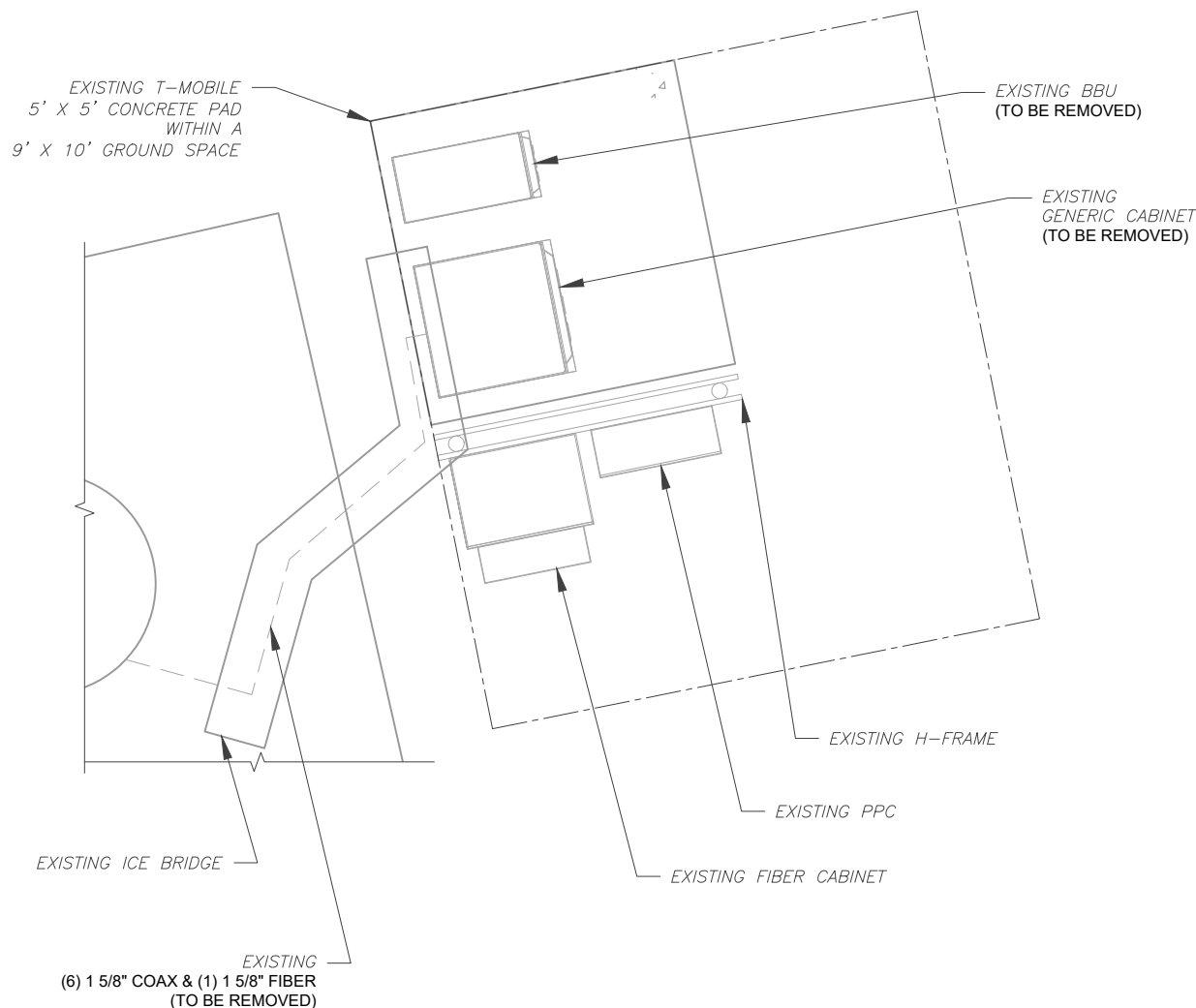
DETAILED SITE PLAN

SHEET NUMBER:
C-101
 REVISION:
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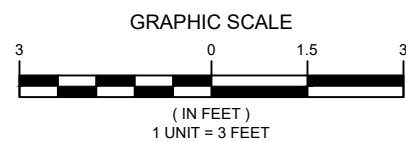
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SITE PLAN NOTES:

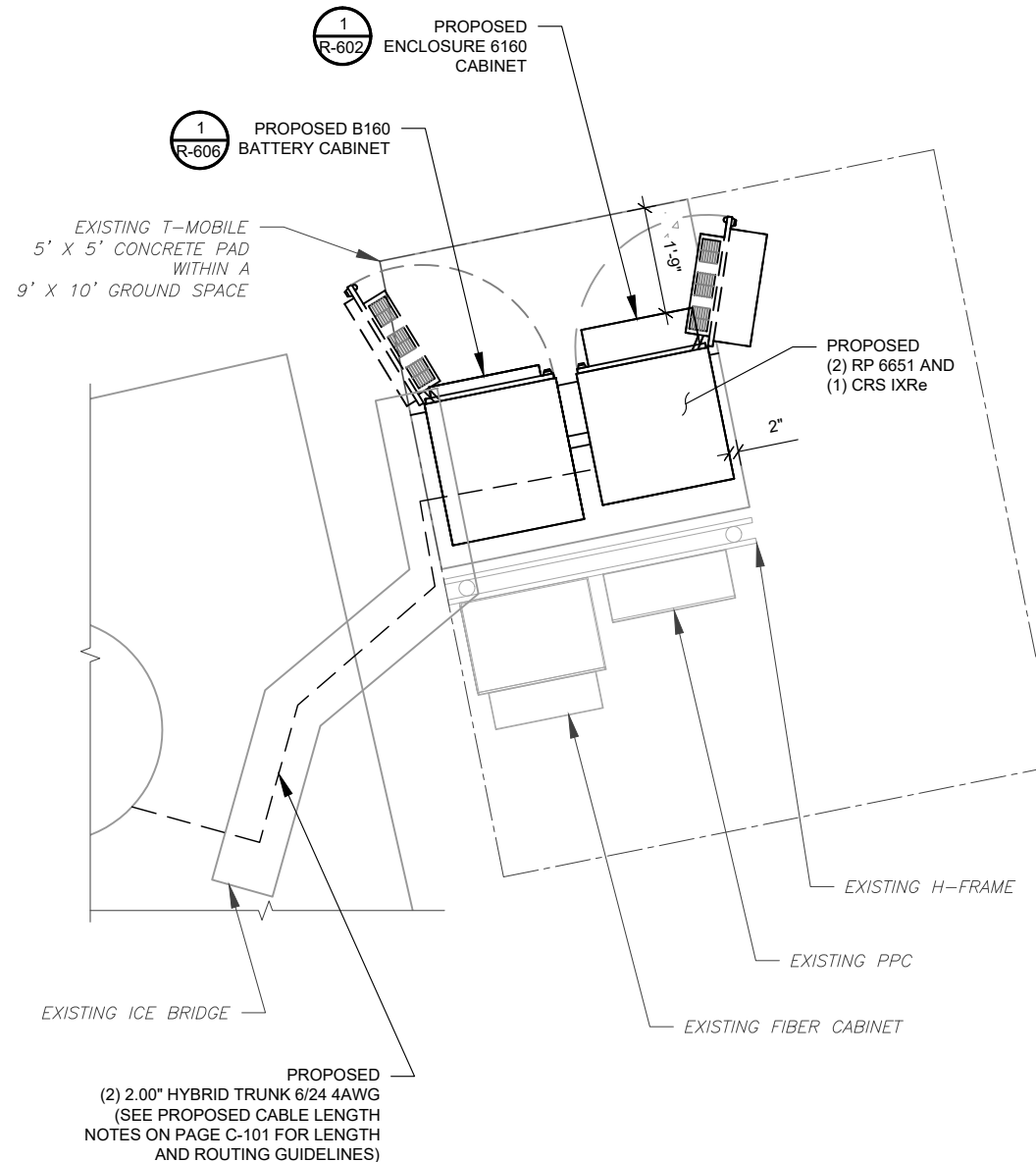
1. CONTRACTOR TO VERIFY THERE IS NO LIVE AAV FIBER RUNNING THROUGH EXISTING DEAD EQUIPMENT. IF SO, THIS WILL NEED TO BE RERUN THROUGH CONDUIT PRIOR TO REMOVING DEAD 2G (6201 CABS) EQUIPMENT.
2. ALL OPEN PORTS NEED TO BE SEALED / WEATHERPROOFED PROPERLY
3. ALL UNNEEDED / EXCESS EQUIPMENT AND GARBAGE TO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



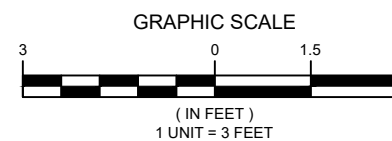
1 EXISTING GROUND EQUIPMENT LAYOUT



T-MOBILE CM APPROVAL REQUIRED BEFORE INSTALLING CABINETS.



2 PROPOSED GROUND EQUIPMENT LAYOUT



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 159 WEINGART ROAD
 HARWINTON, CT 06791

SEAL:



Digitally Signed: 2024-04-11



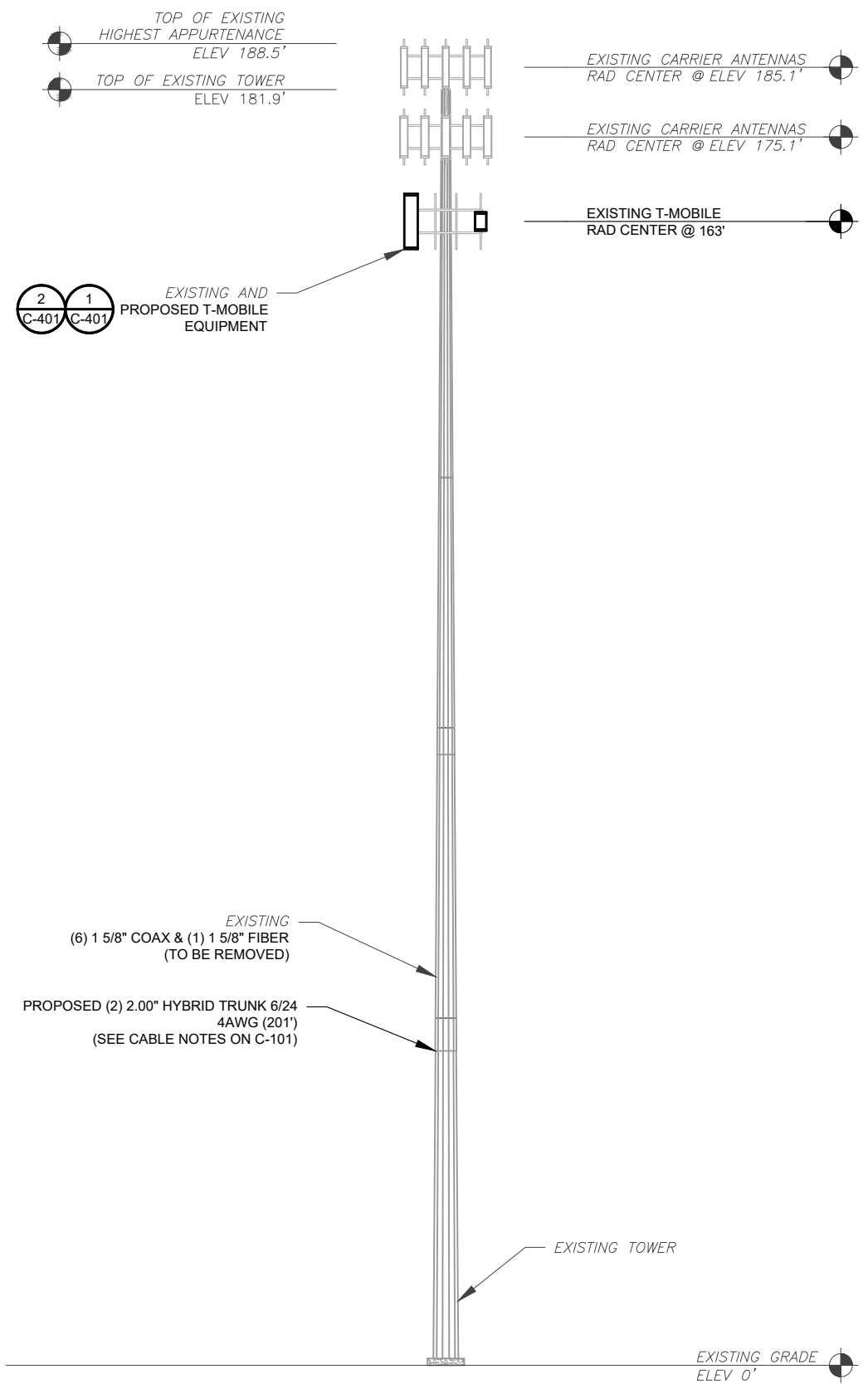
ATC PROJ. #: 14685654_G0
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 CUST. #: CTNH517A

DETAILED EQUIPMENT PLAN

SHEET NUMBER:
C-102
 REVISION:
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PER MOUNT ANALYSIS COMPLETED BY AMERICAN TOWER, DATED 2/23/2024, THE EXISTING MOUNT CAN ADEQUATELY SUPPORT THE PROPOSED LOADING.



1 TOWER ELEVATION
SCALE: N.T.S.

ALL ELEVATIONS REFLECT ABOVE GROUND LEVEL (A.G.L.)

- 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 ELEVATION DEPICTION MAY NOT REFLECT ALL EQUIPMENT INCLUDED IN STRUCTURAL ANALYSIS. REFER TO STRUCTURAL ANALYSIS FOR FULL TOWER LOADING.



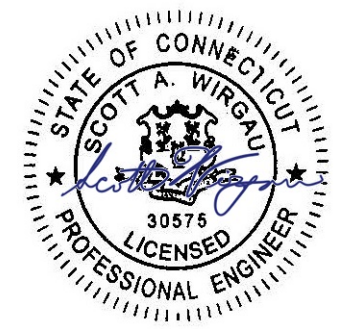
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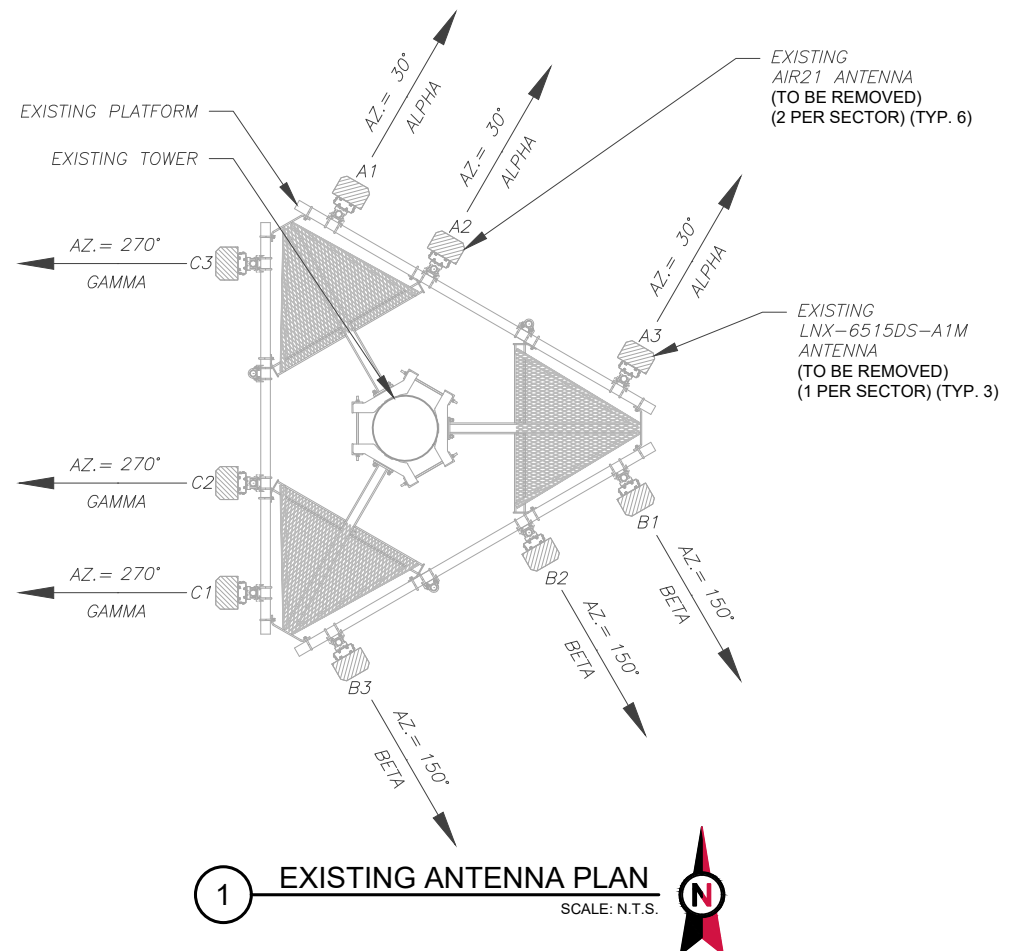


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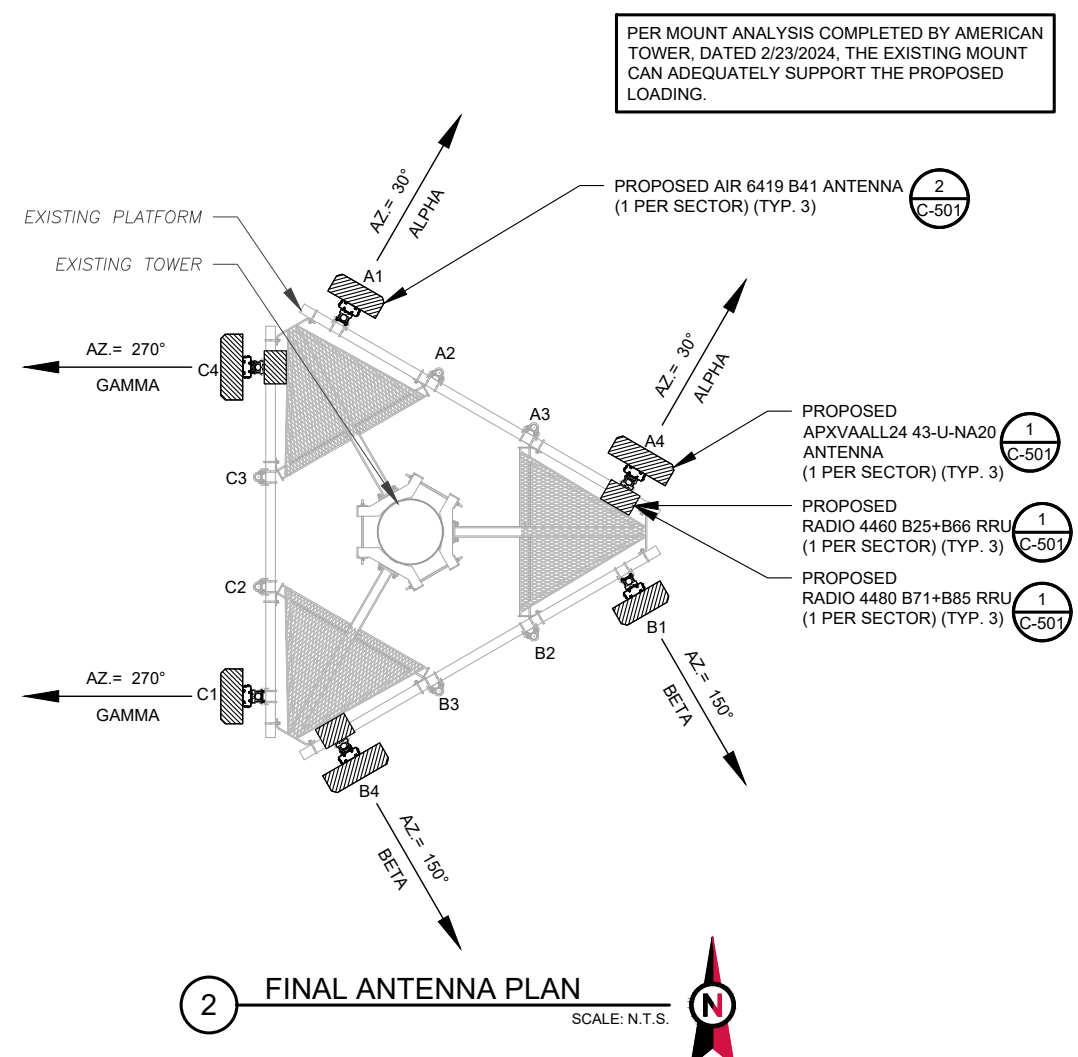
TOWER ELEVATION

SHEET NUMBER:
C-201
REVISION:
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1 EXISTING ANTENNA PLAN
SCALE: N.T.S.



PER MOUNT ANALYSIS COMPLETED BY AMERICAN TOWER, DATED 2/23/2024, THE EXISTING MOUNT CAN ADEQUATELY SUPPORT THE PROPOSED LOADING.

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

AMERICAN TOWER®
A.T. ENGINEERING SERVICES LLC
1 FENTON MAIN
SUITE 300
CARY, NC 27511
PHONE: (919) 468-0112
PEC.0001553

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| REV. | DESCRIPTION | BY | DATE |
|------|------------------|-----|-----------|
| 0 | FOR CONSTRUCTION | JBW | 4/10/2024 |
| | | | |
| | | | |
| | | | |
| | | | |

ATC SITE NUMBER:
302502
ATC SITE NAME:
HARWINTON
T-MOBILE SITE NAME:
ATC HARWINTON MONOPOLE
SITE ADDRESS:
159 WEINGART ROAD
HARWINTON, CT 06791

SEAL:

Digitally Signed: 2024-04-11

| 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 | 163' | 30° | A1 | AIR21 | U1900 | 0°/2° | RMV | - | - |
| | | | A2 | AIR21 | L2100 | 0°/2° | RMV | - | - |
| | | | A3 | LNX-6515DS-A1M | L700 | 0°/2° | RMV | - | - |
| BETA | 163' | 150° | B1 | AIR21 | U1900 | 0°/2° | RMV | - | - |
| | | | B2 | AIR21 | L2100 | 0°/2° | RMV | - | - |
| | | | B3 | LNX-6515DS-A1M | L700 | 0°/2° | RMV | - | - |
| GAMMA | 163' | 270° | C1 | AIR21 | U1900 | 0°/2° | RMV | - | - |
| | | | C2 | AIR21 | L2100 | 0°/2° | RMV | - | - |
| | | | C3 | LNX-6515DS-A1M | L700 | 0°/2° | RMV | - | - |

NOTES

- GC TO VERIFY THE FINAL RFDS MATCHES THE FINAL CONSTRUCTION DRAWINGS. GC TO NOTIFY ATC PM OF ANY DISCREPANCY PRIOR TO INSTALLING THE EQUIPMENT.
- GC TO CAP ALL UNUSED PORTS.
- GC TO 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 | 162' | 30° | A1 | AIR 6419 B41 | N2500 | 0° | ADD | - | - |
| | | | A2 | - | - | - | - | - | - |
| | | | A3 | - | - | - | - | - | - |
| | | | A4 | APXVAALL24_ 43-U-NA20 | N600/L600/L700/G1900 /N1900/L2100/L1900 | 0° | ADD | RADIO 4460 B25+B66 RADIO 4480 B71+B85 | ADD ADD |
| BETA | 162' | 150° | B1 | AIR 6419 B41 | N2500 | 0° | ADD | - | - |
| | | | B2 | - | - | - | - | - | - |
| | | | B3 | - | - | - | - | - | - |
| | | | B4 | APXVAALL24_ 43-U-NA20 | N600/L600/L700/G1900 /N1900/L2100/L1900 | 0° | ADD | RADIO 4460 B25+B66 RADIO 4480 B71+B85 | ADD ADD |
| GAMMA | 162' | 270° | C1 | AIR 6419 B41 | N2500 | 0° | ADD | - | - |
| | | | C2 | - | - | - | - | - | - |
| | | | C3 | - | - | - | - | - | - |
| | | | C4 | APXVAALL24_ 43-U-NA20 | N600/L600/L700/G1900 /N1900/L2100/L1900 | 0° | ADD | RADIO 4460 B25+B66 RADIO 4480 B71+B85 | ADD ADD |

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

3 EQUIPMENT SCHEDULES

| FINAL FIBER DISTRIBUTION / OVP BOX | | FINAL CABLING SUMMARY | |
|------------------------------------|--------|----------------------------------|--------|
| MODEL NUMBER | STATUS | CABLE QTY, SIZE, TYPE | STATUS |
| - | RMN | ---- | RMN |
| - | ADD | (2) 2.00" HYBRID TRUNK 6/24 4AWG | ADD |

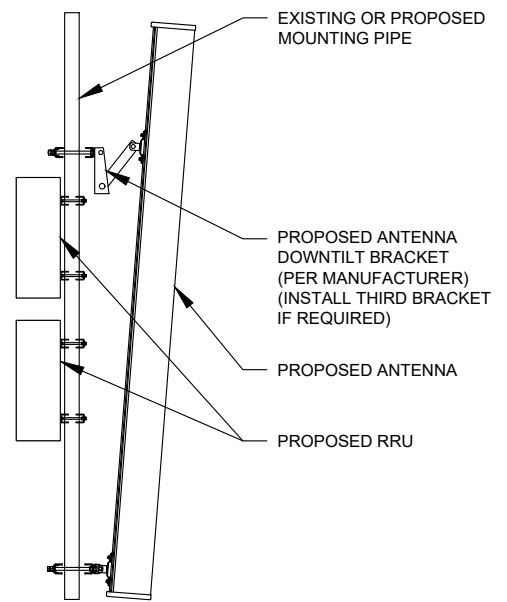
ATC PROJ. #: 14685654_GO
CUST. ID: ATC HARWINTON MONOPOLE
CUST. #: CTNH517A

ANTENNA INFORMATION & SCHEDULE

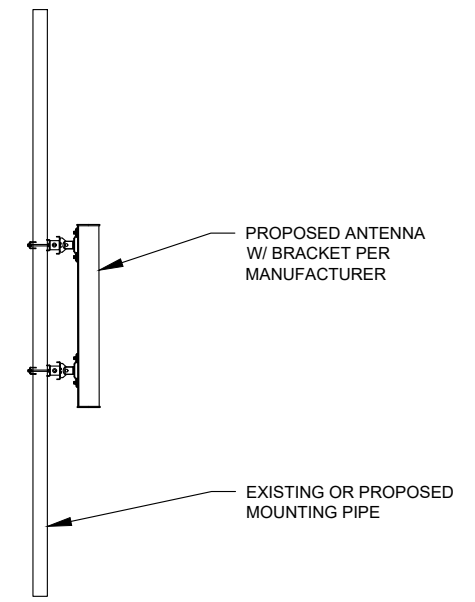
SHEET NUMBER: **C-401**
REVISION: **0**

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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.



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| REV. | DESCRIPTION | BY | DATE |
|------|------------------|-----|-----------|
| 0 | FOR CONSTRUCTION | JBW | 4/10/2024 |
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ATC SITE NUMBER:
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 HARWINTON, CT 06791



Digitally Signed: 2024-04-11

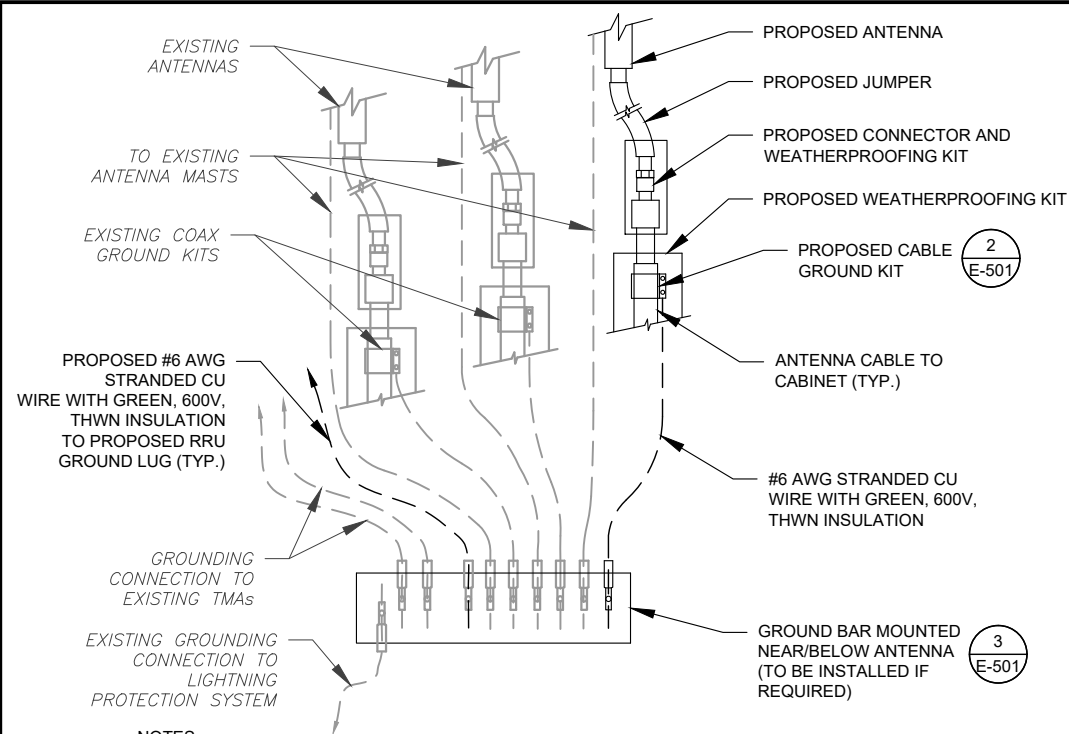


ATC PROJ. #: 14685654_G0
 CUST. ID: ATC HARWINTON MONOPOLE
 CUST. #: CTNH517A

**CONSTRUCTION
 DETAILS**

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

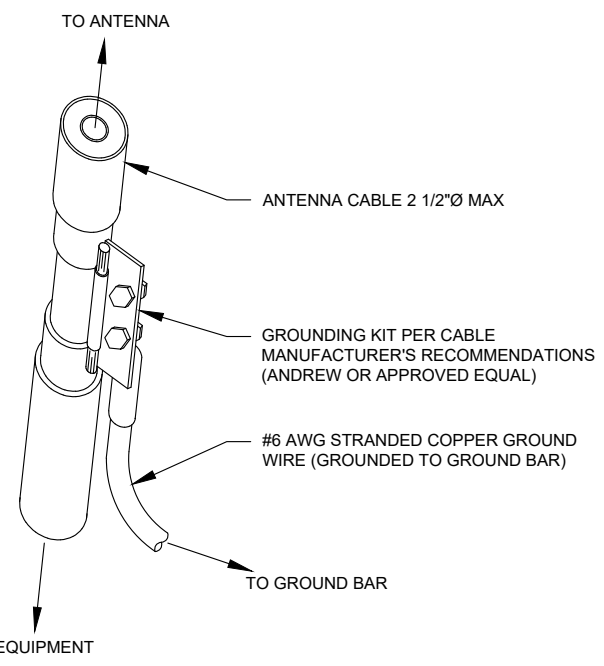
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NOTES:

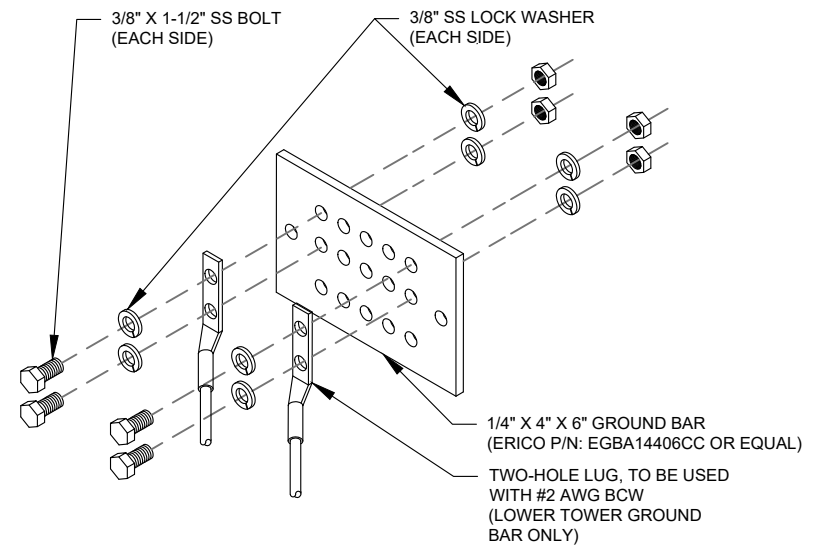
1. THIS DETAIL IS INTENDED TO SHOW THE GENERAL GROUNDING REQUIREMENTS. SLIGHT ADJUSTMENTS MAY BE REQUIRED BASED ON EXISTING SITE CONDITIONS. THE CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS AS NEEDED AND INFORM THE CONSTRUCTION MANAGER OF ANY CONFLICTS.
2. SITE GROUNDING SHALL COMPLY WITH T-MOBILE GROUNDING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

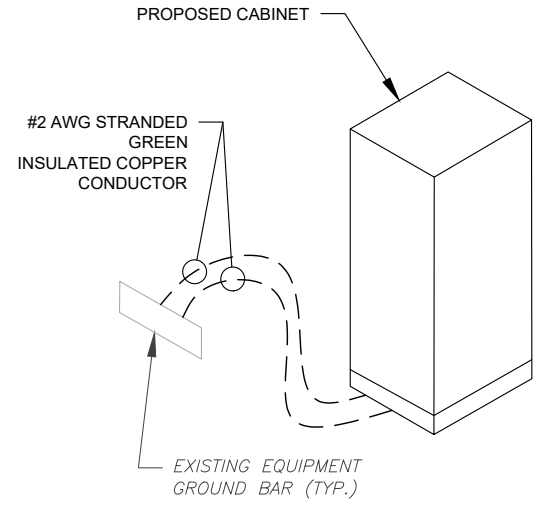
1. GROUND BAR KITS COME WITH ALL HARDWARE, NUTS, BOLTS, WASHERS, ETC. EXCEPT THE STRUCTURAL MOUNTING MEMBER(S).
2. GROUND BAR TO BE BONDED DIRECTLY TO TOWER.

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 GUIDLINES | 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
1 FENTON MAIN
SUITE 300
CARY, NC 27511
PHONE: (919) 468-0112
PEC.0001553

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| REV. | DESCRIPTION | BY | DATE |
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| 0 | FOR CONSTRUCTION | JBW | 4/10/2024 |
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ATC SITE NUMBER:
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159 WEINGART ROAD
HARWINTON, CT 06791

SEAL:

Digitally Signed: 2024-04-11



ATC PROJ. #: 14685654_G0
CUST. ID: ATC HARWINTON MONOPOLE
CUST. #: CTNH517A

GROUNDING DETAILS

SHEET NUMBER:
E-501
REVISION:
0

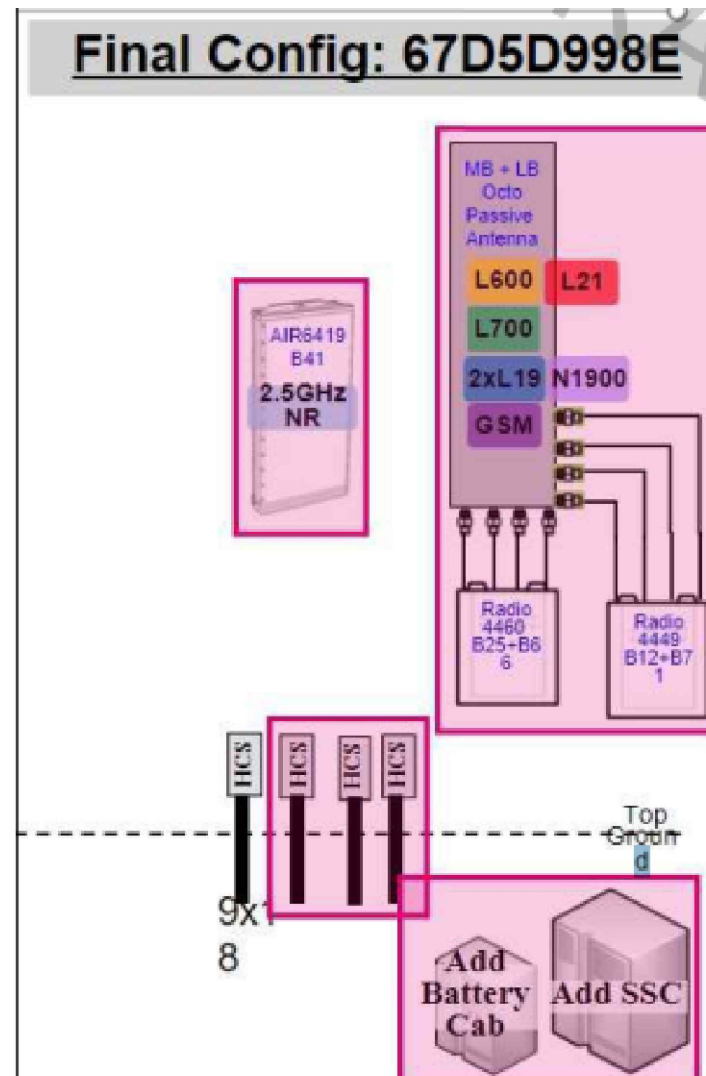
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Proposed RAN Equipment

Template: 67E5D998E Outdoor

| | | |
|----------------------------|--|----------|
| Enclosure | 1 | 2 |
| Enclosure Type | Enclosure 6160_v2 AC | B160 |
| Baseband | <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 2px;">RP 6651</div> <div style="border: 1px solid black; padding: 2px;">RP 6651</div> </div> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 2px;">N600</div> <div style="border: 1px solid black; padding: 2px;">N2500</div> </div> <div style="border: 1px solid black; padding: 2px;">N1900</div> <div style="border: 1px solid black; padding: 2px;">L600</div> <div style="border: 1px solid black; padding: 2px;">L700</div> <div style="border: 1px solid black; padding: 2px;">L1900</div> <div style="border: 1px solid black; padding: 2px;">L2100</div> </div> | |
| Transport System | CSR IXRe V2 (Gen2) | |
| Hybrid Cable System | Hybrid Trunk 6/24 4AWG 60m (x2) | |

① CABINET CONFIGURATION



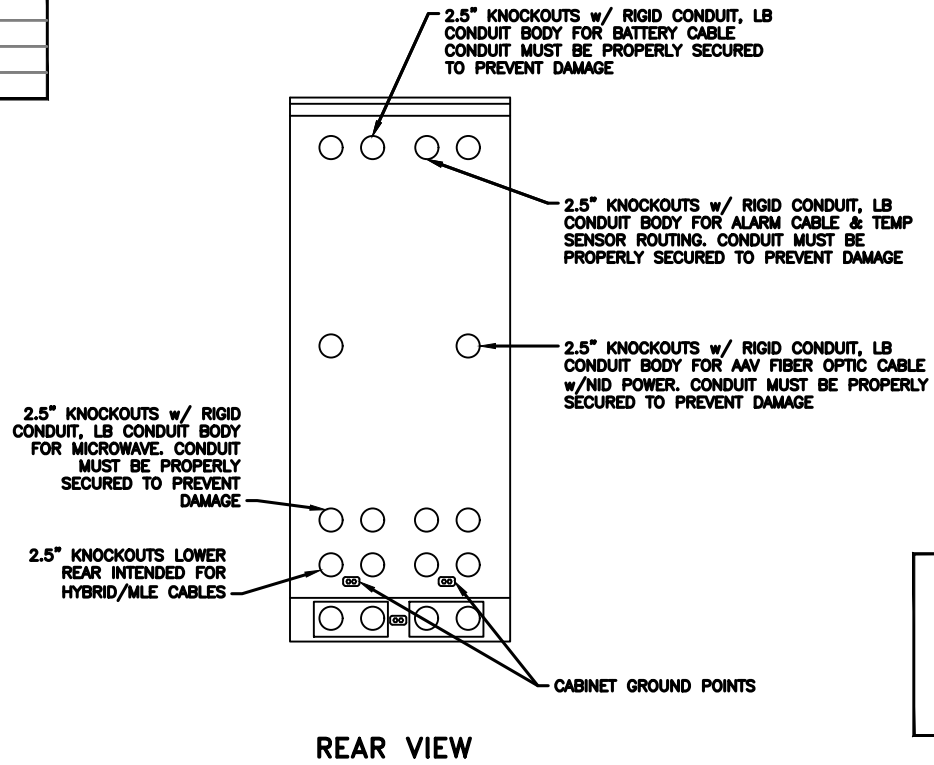
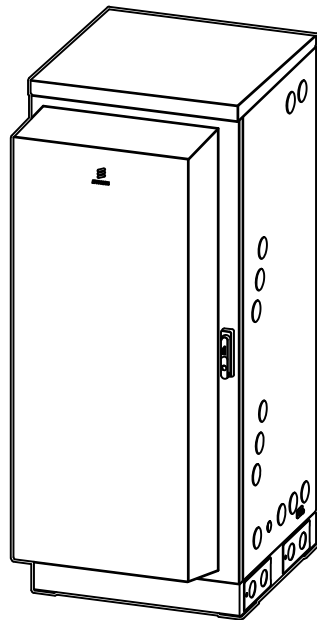
② ANTENNA CONFIGURATION

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

SUPPLEMENTAL

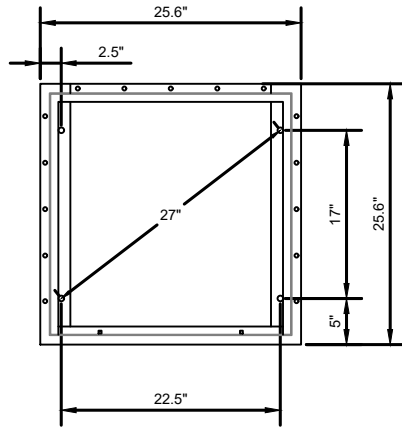
| | |
|-------------------------------|-----------------------|
| SHEET NUMBER: R-601 | REVISION: 0 |
|-------------------------------|-----------------------|

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



NOTE:

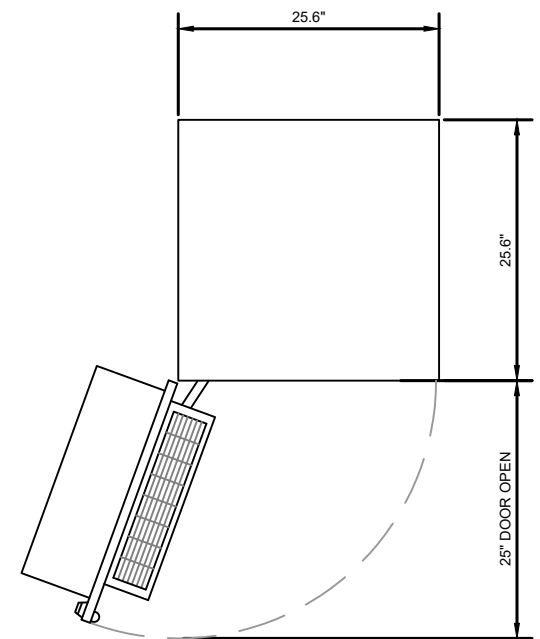
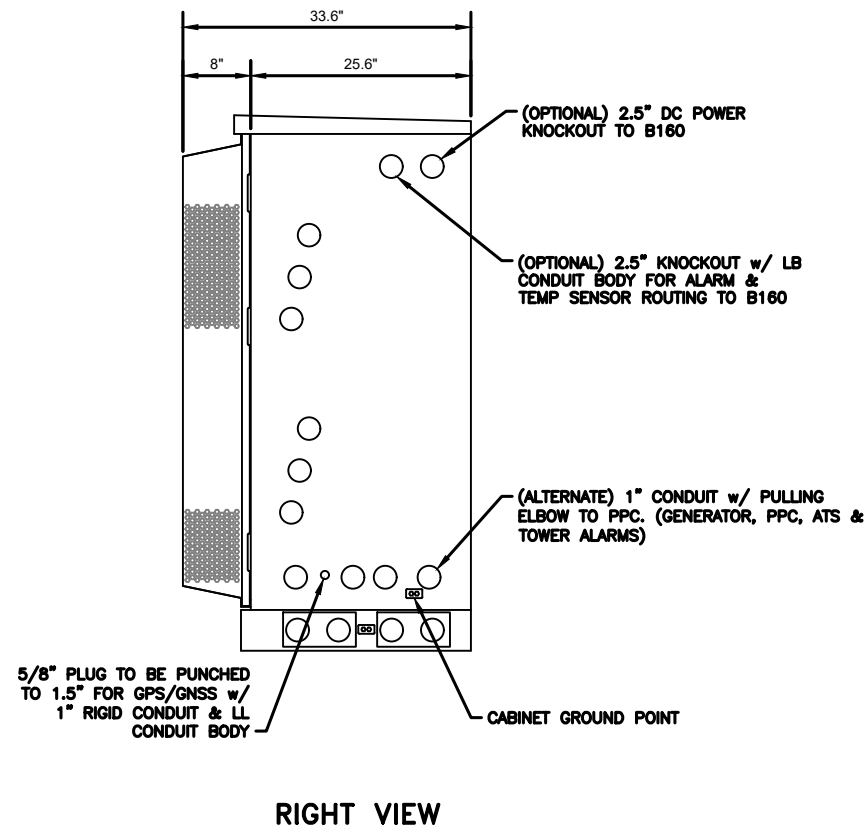
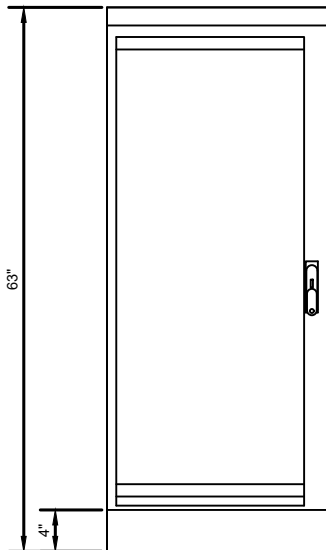
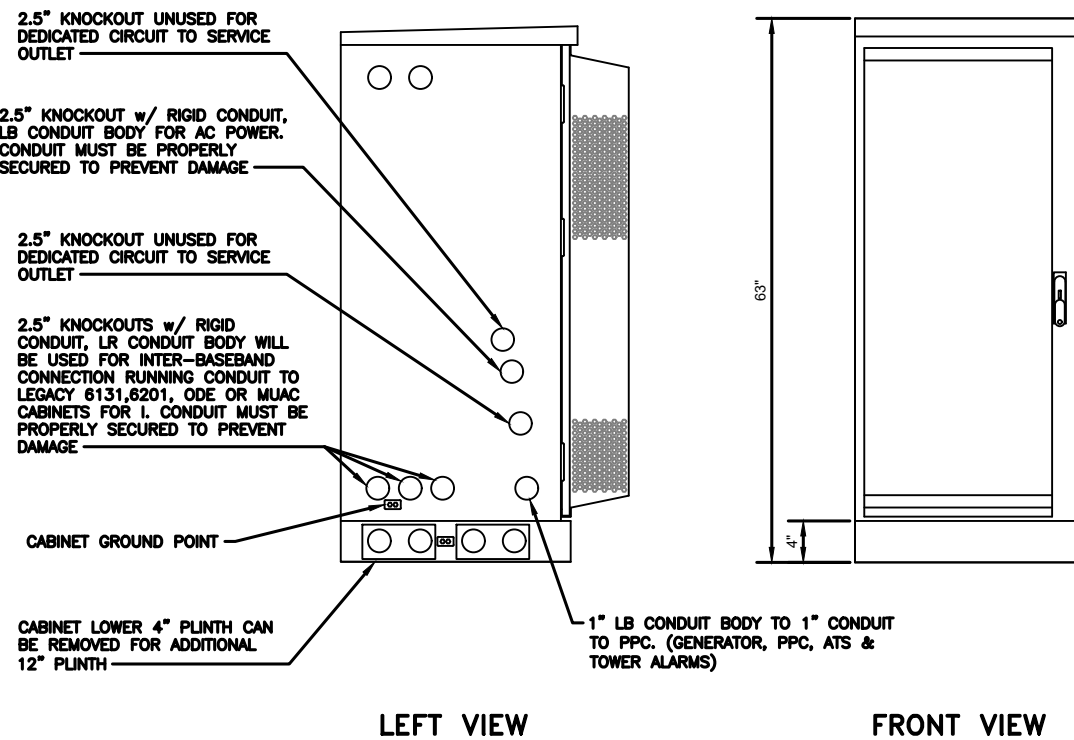
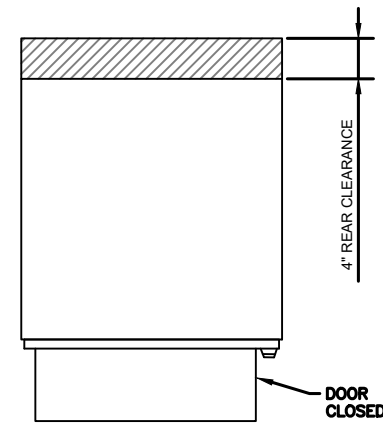
- CORRECT KNOCKOUT TOOL REQUIRED FOR PUNCHING KNOCKOUTS. DO NOT DRILL THROUGH KNOCKOUTS
- CONDUIT MUST BE PROPERLY SECURED TO PREVENT DAMAGE TO CABINETS AND OR CABLING



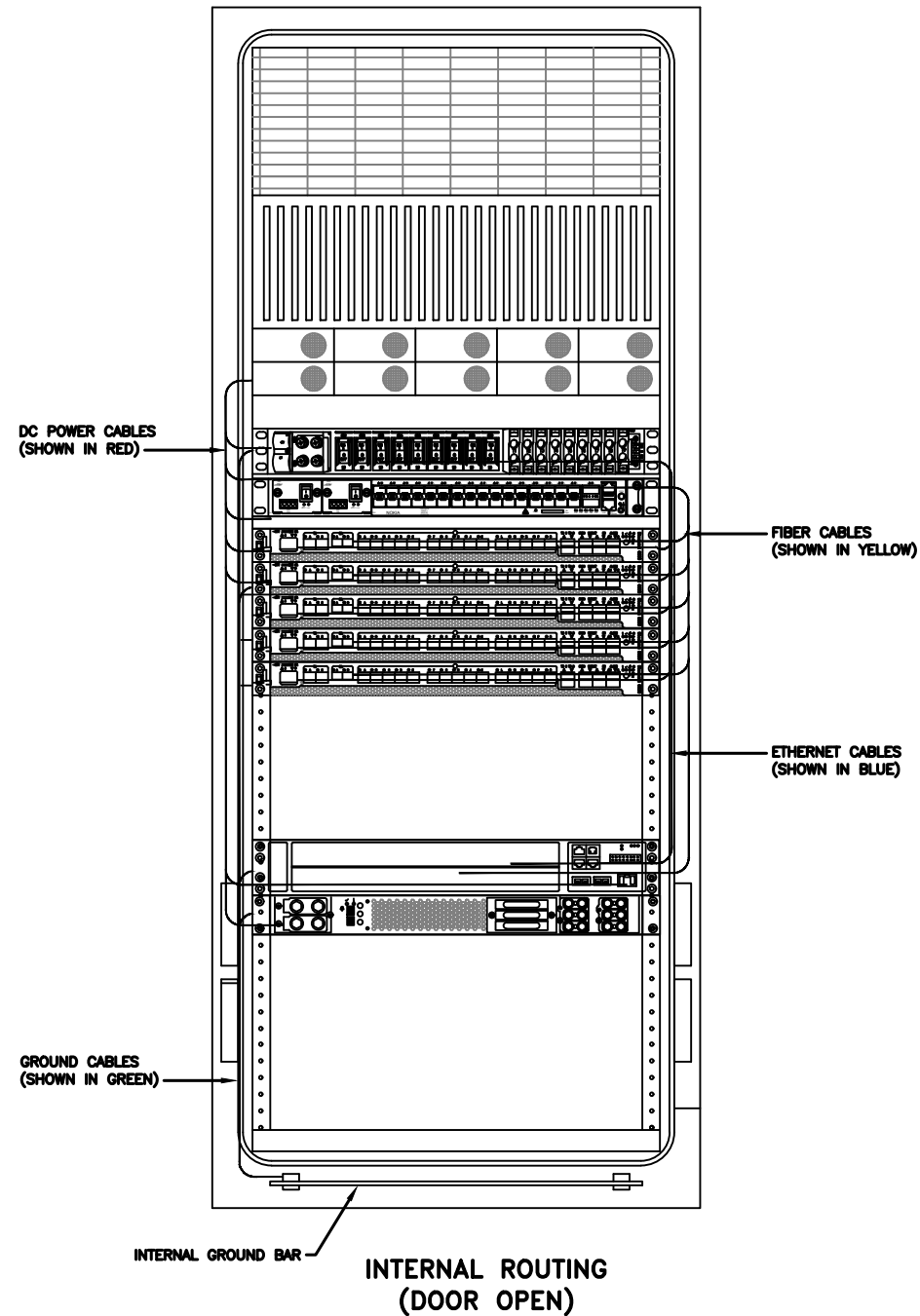
BOLT DOWN PATTERN

GROUNDING NOTE:

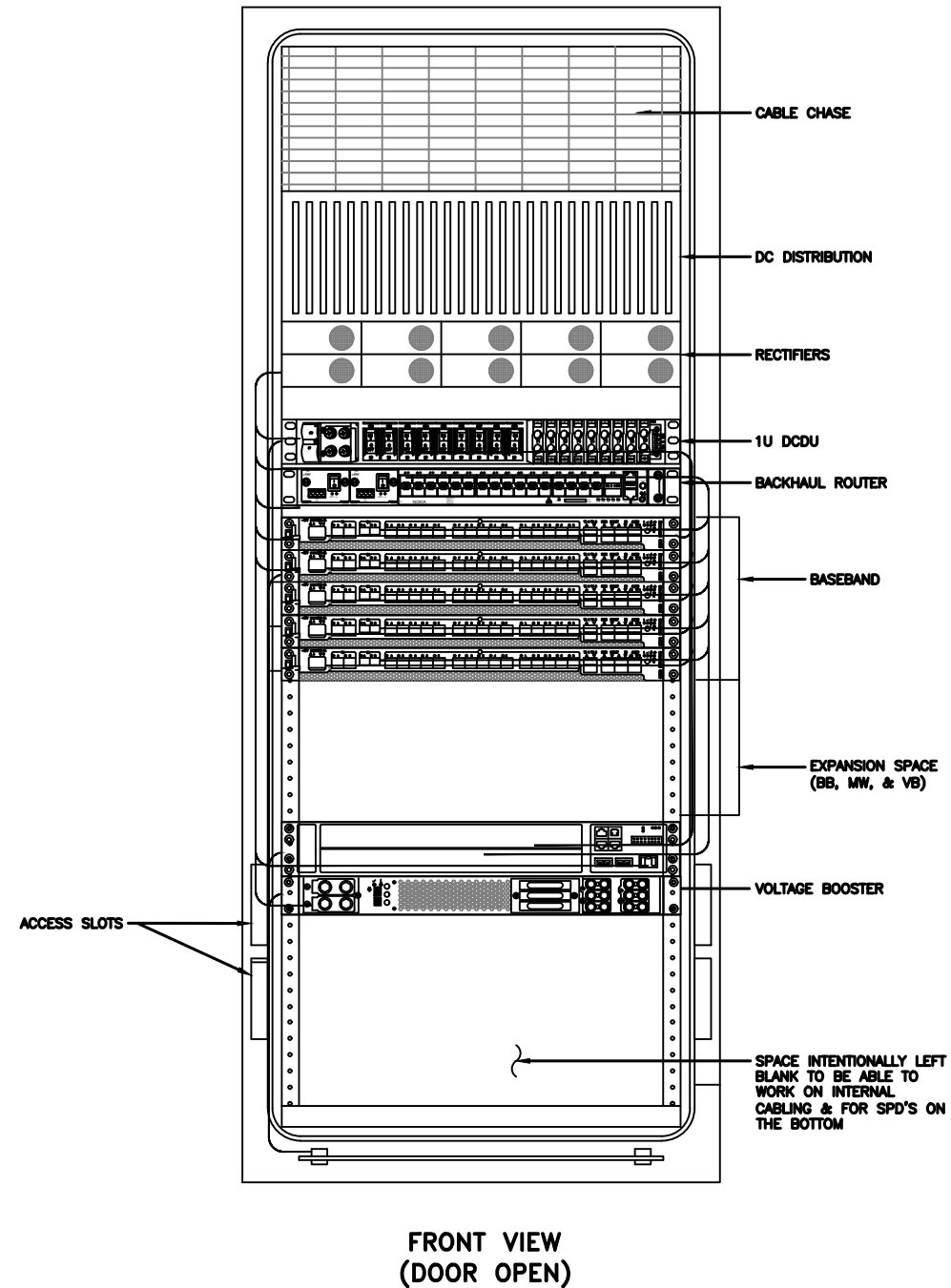
"CABINET GROUNDING TO USE A SINGLE, #2 BTCW CONDUCTOR, W/ 2-HOLE, 1" C-C, LONG BARREL, WINDOW LUG, IN 3/4" LFNC TO GROUND RING. PLINTH GROUNDING IS NOT REQUIRED."



| | |
|-------------------------------|-----------------------|
| SUPPLEMENTAL | |
| SHEET NUMBER: R-602 | REVISION: 0 |



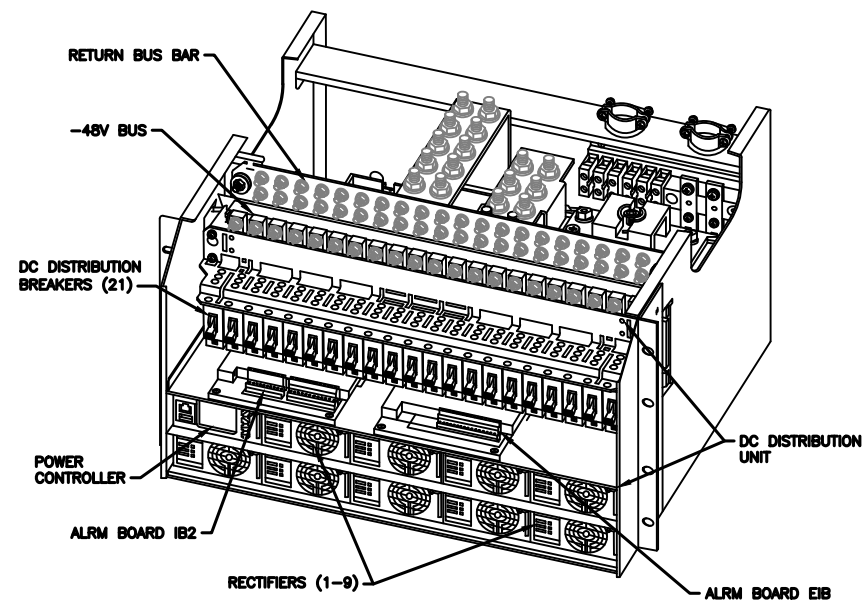
| RACK ASSIGNMENTS | |
|------------------|---|
| RU SLOTS | DESCRIPTION |
| 1 | DC DISTRIBUTION |
| 2 | |
| 3 | |
| 4 | |
| 5 | RECTIFIER SHELF |
| 6 | |
| 7 | FIBER BOX |
| 8 | DCDU |
| 9 | BACKHAUL ROUTER |
| 10 | |
| 11 | 1ST BASEBAND |
| 12 | 2ND BASEBAND |
| 13 | 3RD BASEBAND |
| 14 | 4TH BASEBAND |
| 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 | |



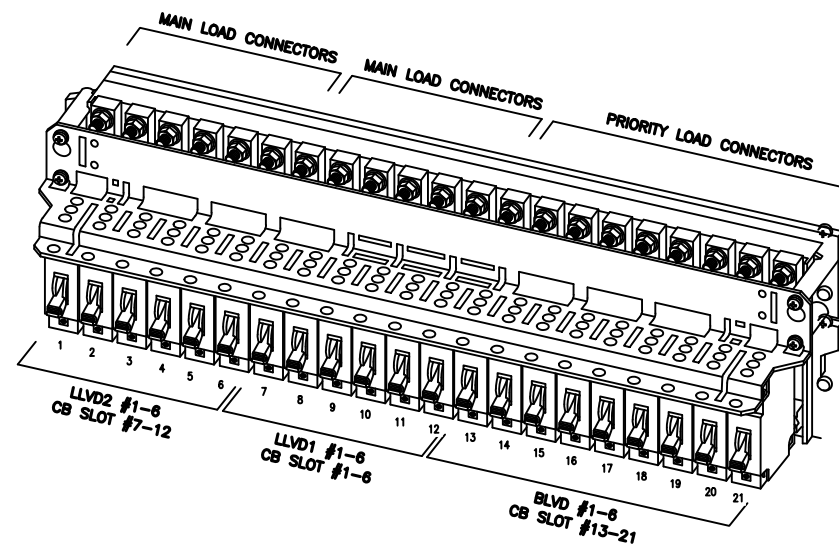
NOTE:
THIS IS FOR REFERENCE ONLY, CHECK
FOR SPECIFIC DETAIL IN T-MOBILE
CABINET SPECIFIC INSTALLATION GUIDES

| 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) | PSU 4813 feeding B41 α, β and γ (Air 6449s) |
| 4 | 4 | | | |
| 5 | 5 | | | |
| 6 | 6 | | | |
| 7 | 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 | LVD2 | Future | | Radio 4460 B25/66 δ-1 |
| 10 | 45.1V | Future | | Radio 4460 B25/66 δ-2 |
| 11 | 4 | Future | | Radio 4460 B25/66 ε-1 |
| 12 | 6 | Future | | Radio 4460 B25/66 ε-2 |
| 13 | 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



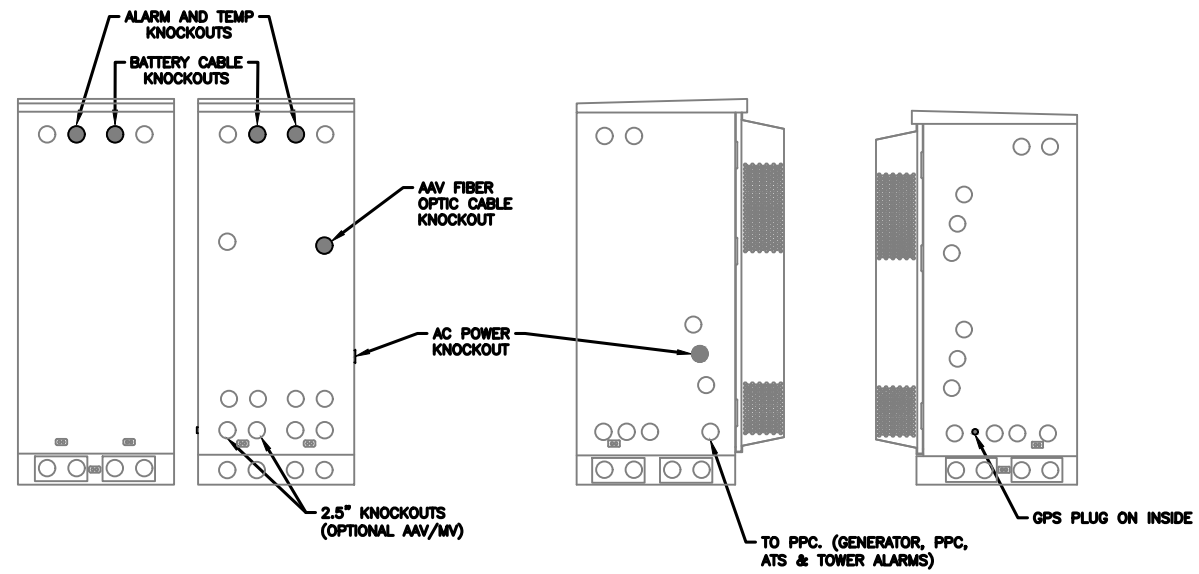
POWER SUBRACK



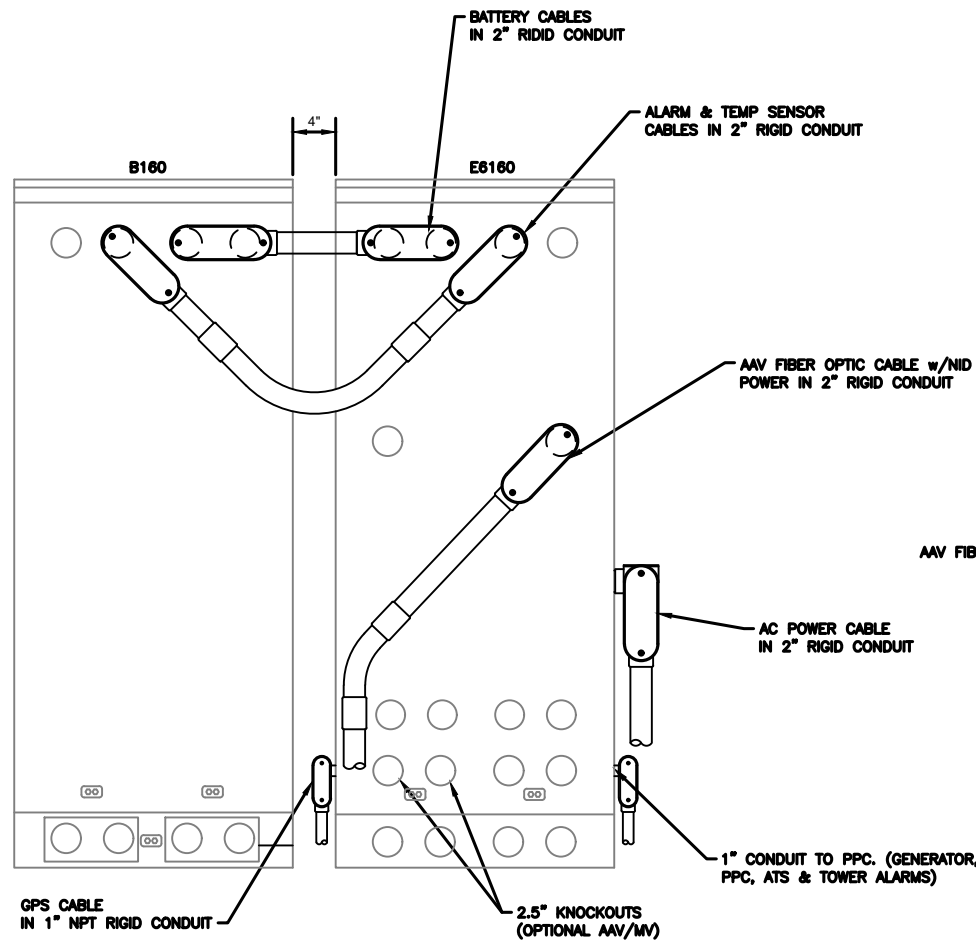
DC DISTRIBUTION

NOTE:

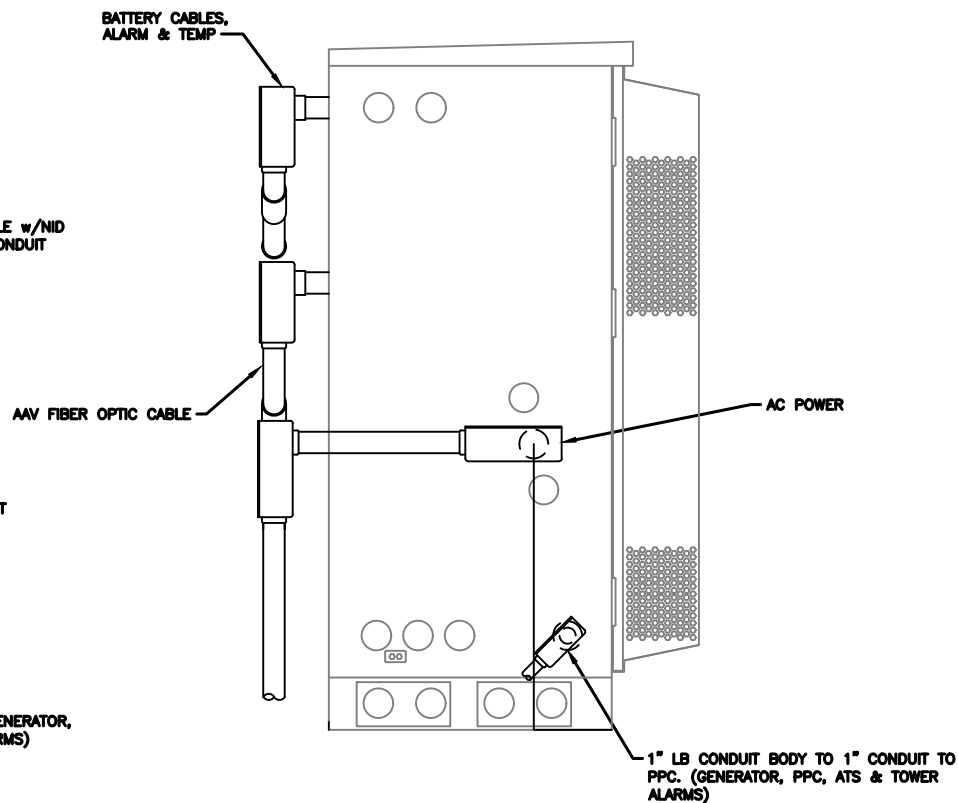
1. ALL CONDUIT AND FITTING ENTRANCES INTO CABINETS AND ENCLOSURES MUST UTILIZE MYERS OR EQUIVALENT HUBS OR SEALING WASHERS TO PREVENT WATER ENTRY/SEEPAGE INTO CABINETS AND ENCLOSURES.
2. (LIQUIDFLEX) FLEXIBLE METALLIC CONDUIT (LFMC) & ASSOCIATED FITTINGS CAN BE USED AS NEEDED BUT ONLY FOR TIGHT CONDUIT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

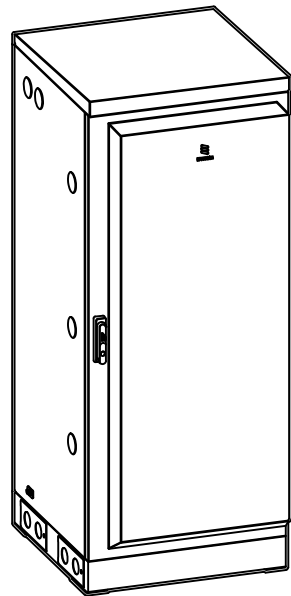


REAR VIEW



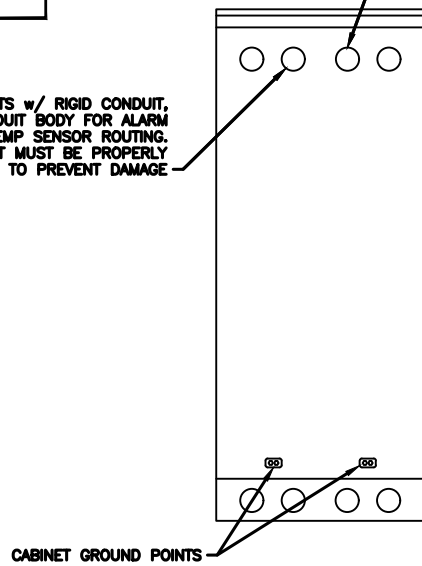
SIDE VIEW

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

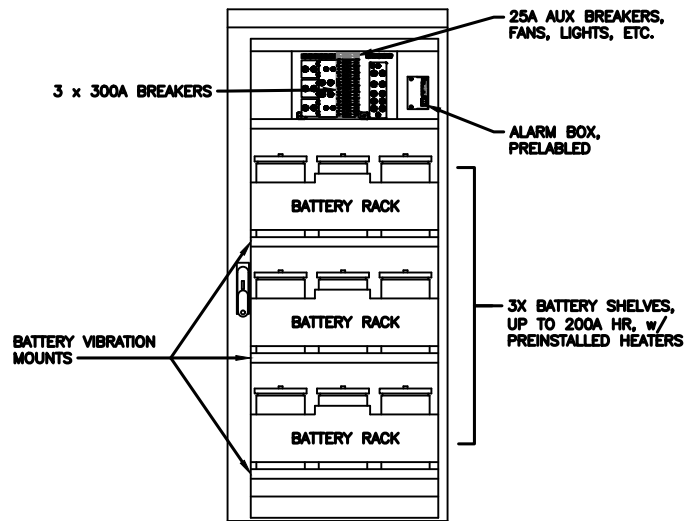


2.5" KNOCKOUTS w/ RIGID CONDUIT, LB CONDUIT BODY FOR ALARM CABLE & TEMP SENSOR ROUTING. CONDUIT MUST BE PROPERLY SECURED TO PREVENT DAMAGE

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

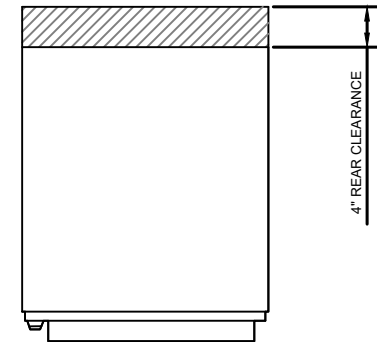


REAR VIEW



FRONT VIEW (DOOR OPEN)

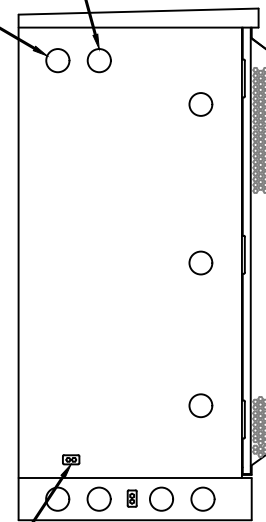
NOTE:
 • CORRECT KNOCKOUT TOOL REQUIRED FOR PUNCHING KNOCKOUTS. DO NOT DRILL THROUGH KNOCKOUTS
 • CONDUIT MUST BE PROPERLY SECURED TO PREVENT DAMAGE TO CABINETS AND OR CABLING



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."

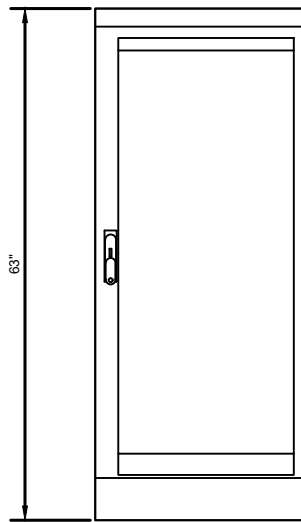
(OPTIONAL) 2.5" KNOCKOUTS FOR ALARM & TEMP SENSOR ROUTING TO 6160

(OPTIONAL) 2.5" DC POWER KNOCKOUTS TO 6160

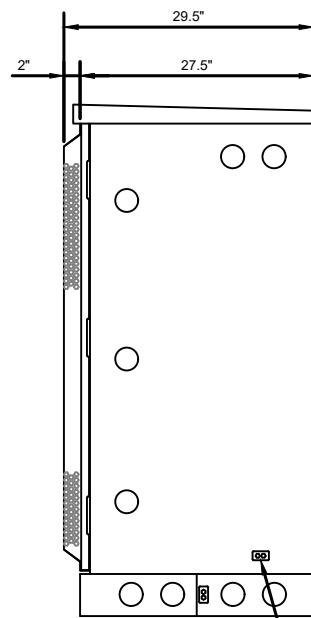


CABINET GROUND POINT

LEFT VIEW

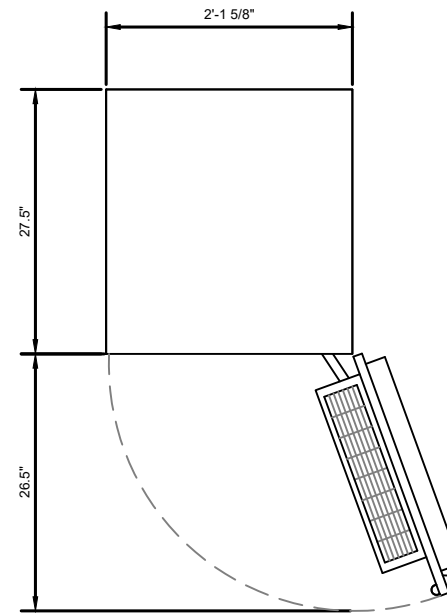


FRONT VIEW



CABINET GROUND POINT

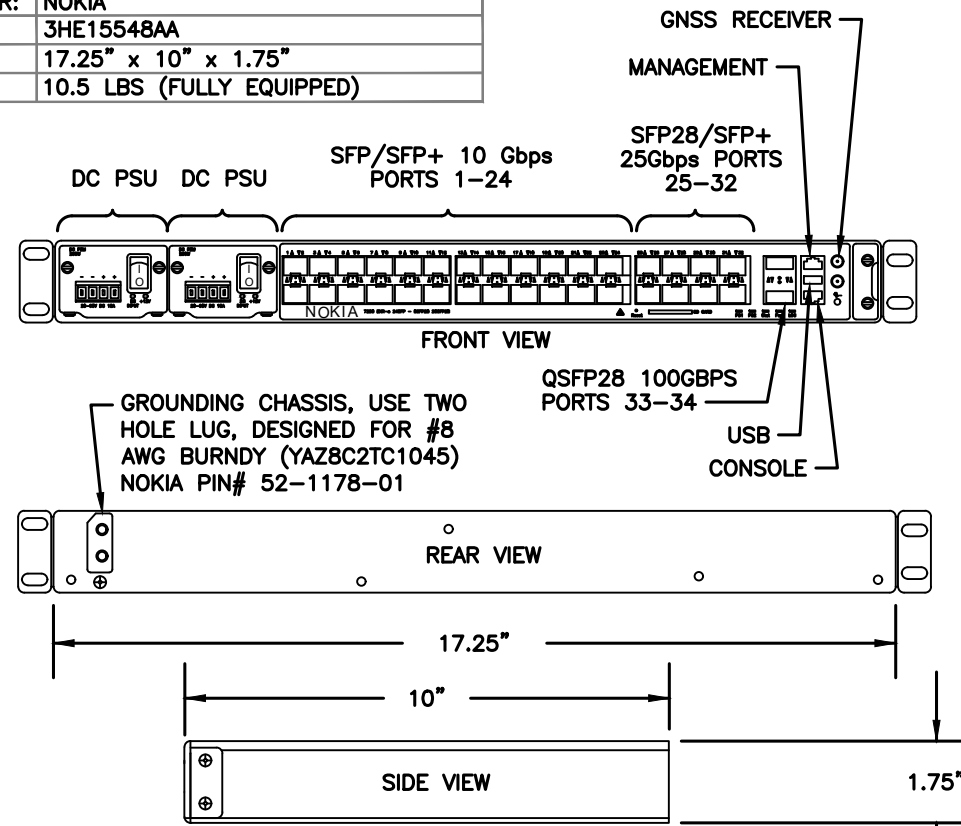
RIGHT VIEW



PLAN VIEW

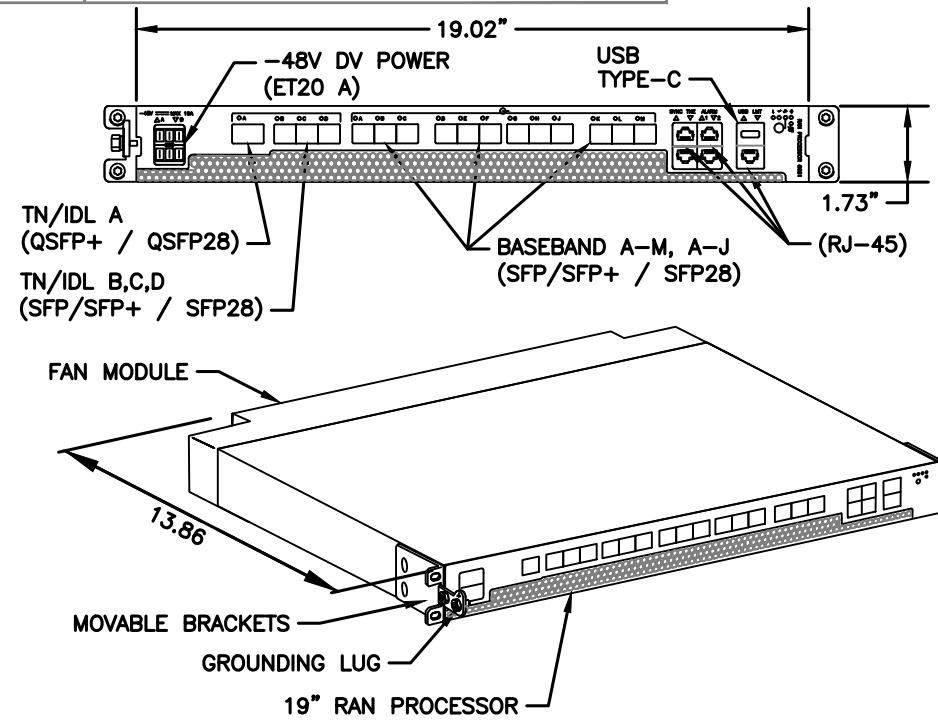
B160 ERICSSON SITE SUPPORT BATTERY CABINET

| | |
|---------------|---------------------------|
| MANUFACTURER: | NOKIA |
| MODEL: | 3HE15548AA |
| DIMENSIONS: | 17.25" x 10" x 1.75" |
| WEIGHT: | 10.5 LBS (FULLY EQUIPPED) |



1 34097 - NOKIA 7250 IXR-e ROUTER w/ GNSS SCALE: N.T.S.

| | |
|---------------|--|
| 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 |



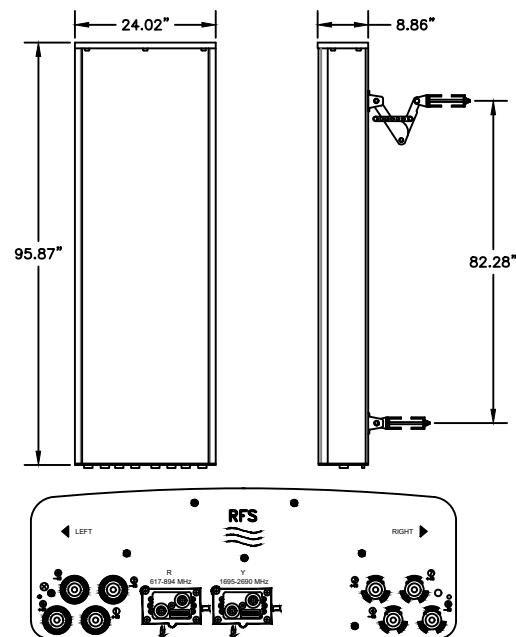
2 34553 - ERICSSON 6651 RAN PROCESSOR SCALE: N.T.S.

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

SUPPLEMENTAL

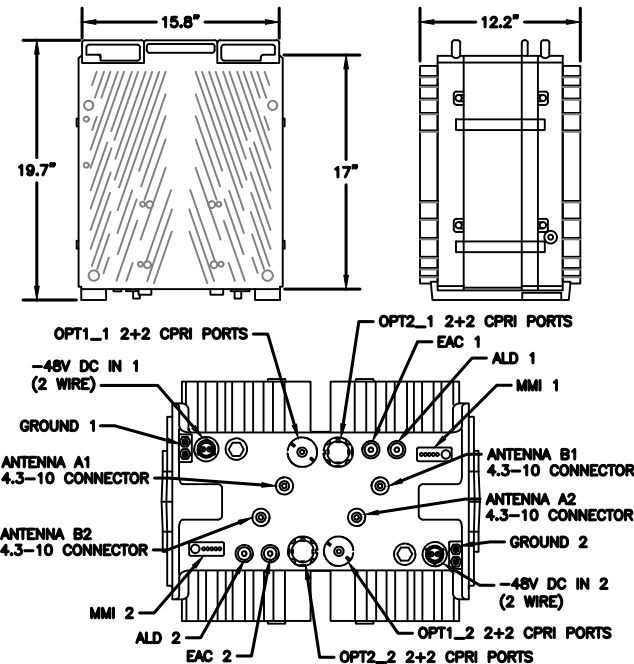
| | |
|---------------|-----------|
| SHEET NUMBER: | REVISION: |
| R-607 | 0 |

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



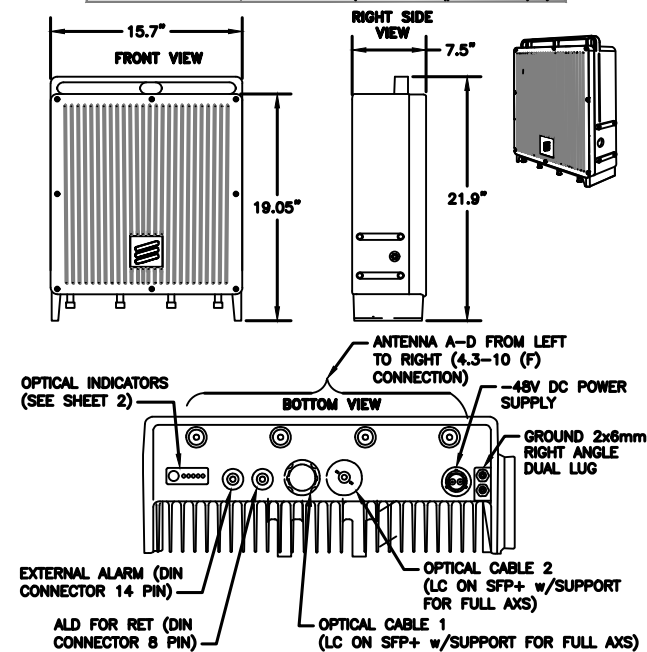
1 34087 - RFS APXVAALL24_43-U-NA20
SCALE: N.T.S.

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



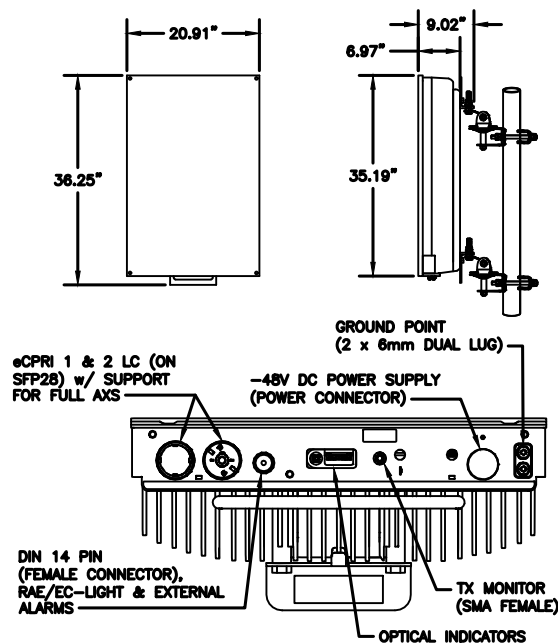
2 34373 - ERICSSON 4460 RADIO B2/25 B66
SCALE: N.T.S.

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

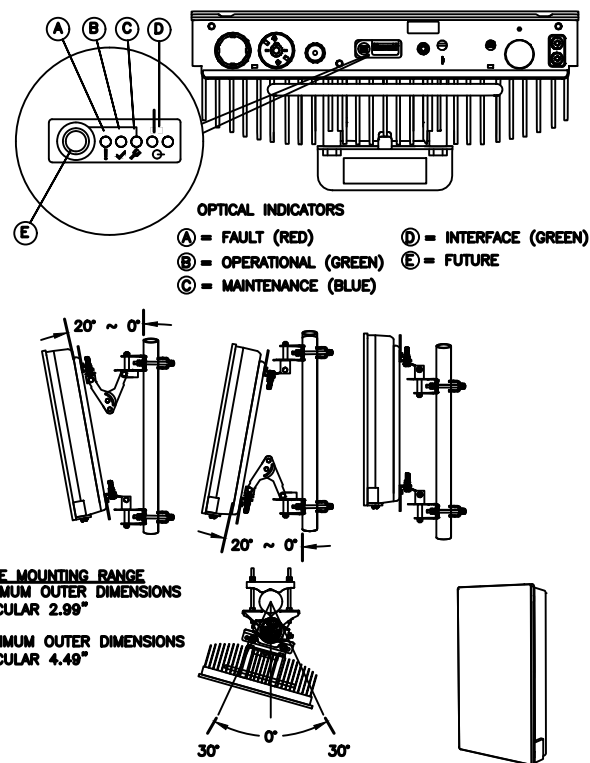


3 34372 - ERICSSON 4480 RADIO
SCALE: N.T.S.

| | |
|---------------|---|
| 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) |



4 34552 - ERICSSON AIR 6419 BAND 41
SCALE: N.T.S.



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

SUPPLEMENTAL

SHEET NUMBER:
R-608

REVISION:
0



Is t

Mount Analysis Report

ATC Asset Name : Harwinton
ATC Asset Number : 302502
Engineering Number : 14685654_C8_01
Mount Elevation : 163 ft
Proposed Carrier : T-Mobile
Carrier Site Name : ATC Harwinton Monopole
Carrier Site Number : CTNH517A
Site Location : 159 Weingart Road
 Harwinton, CT 06791-1109
 41.787752, -73.09254
County : Litchfield
Date : February 23, 2024
Max Usage : 61%
Analysis Result : Pass

Prepared By:
Aviskar Ghansam
Structural Engineer I



Digitally signed by
Esha Modi
 Date: 2024.02.26
 11:17:19 -05'00'

COA: PEC.0001553

A.T. Engineering Service, PLLC - 1 Fenton Main, Suite 300 - Cary, NC 27511 - 919.468.0112 Office - 919.466.5414 Fax - www.americantower.com

A.T. Engineering Service, PLLC - 1 Fenton Main, Suite 300 - Cary, NC 27511 - 919.468.0112 Office - 919.466.5414 Fax - www.americantower.com



Eng. Number 14685654_C8_01
 February 23, 2024
 Page 3

Introduction

The purpose of this report is to summarize results of the mount analysis performed for T-Mobile at 163 ft.

Supporting Documents

| | |
|-----------------------------|--|
| Specifications Sheet: | Site Pro 1 RMQP, dated July 9, 2015 |
| Radio Frequency Data Sheet: | RFDS ID #CTNH517A, dated February 15, 2024 |
| Reference Photos: | Site photos from 2022 |

Analysis

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

| | |
|-------------------------------|--|
| Basic Wind Speed: | 115 mph (3-Second Gust) |
| Basic Wind Speed w/ Ice: | 50 mph (3-Second Gust) w/ 1.00" radial ice concurrent |
| Codes: | ANSI/TIA-222-H / 2021 IBC / 2022 Connecticut State Building Code |
| Exposure Category: | B |
| Risk Category: | II |
| Topographic Factor Procedure: | Method 2 |
| Feature: | Flat |
| Crest Height (H): | 0 ft |
| Crest Length (L): | 0 ft |
| Spectral Response: | S _s = 0.176, S ₁ = 0.054 |
| Site Class: | D - Stiff Soil - Default |
| Live Loads: | L _m = 500 lbs |

* Based on experience, it has been determined that the Lv load cases will not control over Lm load cases in platform mount analyses. Therefore, these load cases have been excluded from this analysis.

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.

SUPPLEMENTAL

SHEET NUMBER:
R-609

REVISION:
0

1 MOUNT ANALYSIS

NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT. PLEASE REFERENCE THE MOUNT ANALYSIS REPORT FOR COMPLETE MOUNT ANALYSIS CALCULATIONS AND DETAILS. SUPPLEMENTAL PAGES INCLUDED IN THE CONSTRUCTION DRAWINGS ARE FOR REFERENCE ONLY. GENERAL CONTRACTOR IS TO VERIFY THEY HAVE THE MOST RECENT MOUNT ANALYSIS PRIOR TO CONSTRUCTION.



EXHIBIT E

Structural Analysis Report





AMERICAN TOWER®
CORPORATION

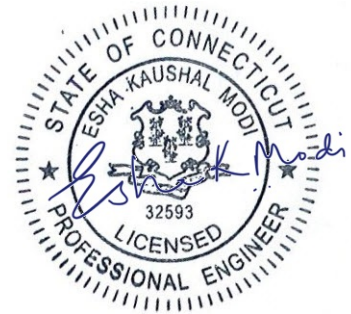
Structural Analysis Report

Structure : 182 ft Monopole
ATC Asset Name : Harwinton
ATC Asset Number : 302502
Engineering Number : 14685654_C3_02
Proposed Carrier : T-MOBILE
Carrier Site Name : ATC Harwinton Monopole
Carrier Site Number : CTNH517A
Site Location : 159 Weingart Road
Harwinton, CT 06791-1109
41.7878° N, 73.0925° W
County : Litchfield
Date : April 1, 2024
Max Usage : 98%
Analysis Result : Pass

Created By:

Nathan Lyle
Structural Engineer I

Nathan Lyle



COA: PEC.0001553



Table of Contents

Introduction3

Supporting Documents.....3

Analysis3

Conclusion3

Structure Usages4

Maximum Reactions4

Tower Loading5

Standard Conditions Attached

Calculations..... Attached

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 182 ft Monopole tower to reflect the change in loading by T-MOBILE.

Supporting Documents

| | |
|----------------------|--|
| Tower: | Mapping by Smith Cullum Site #CT-0038, dated February 13, 2002 |
| Foundation: | Girard & Co. Engineers Job #3C237, dated April 24, 1990 |
| Geotechnical: | Johnson Soils Engineering Co. Report #14974-H, dated January 28, 2002 |
| Modification: | Hutter Trankina Engineering Project #03320B, dated August 4, 2003 ATC Project #42504234, dated February 27, 2009 ATC Job #OAA684307_C6_06, dated November 16, 2016 |
| Inspection: | Inspection by TEP for ATC Site #302502, dated August 19, 2019 No structural deficiencies were found. |

Analysis

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

| | |
|--------------------------------------|--|
| Basic Wind Speed: | 115 mph (3-second gust) |
| Basic Wind Speed w/ Ice: | 50 mph (3-second gust) w/ 1.00" radial ice concurrent |
| Code(s): | ANSI/TIA-222-H / 2021 IBC / 2022 Connecticut State Building Code |
| Exposure Category: | B |
| Risk Category: | II |
| Topographic Factor Procedure: | Method 1 |
| Topographic Category: | 1 |
| Spectral Response: | $S_s = 0.18, S_1 = 0.05$ |
| Site Class: | D - Stiff Soil - Default |

**Wind load and Ice thickness have been reduced by applicable existing structure load modification factors in accordance with TIA-222-H, ANNEX-S*

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 reach out to your American Tower contact. If you do not have an American Tower contact and have an Engineering question, please contact 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 | 66.0% | 1.2D + 1.0W | Pass |
| Reinforcement | 97.6% | 0 ft to 20 ft | Pass |
| Upper Termination | 64.4% | 0 ft to 14.71 ft | Pass |
| Intermediate Connector | 33.5% | 120 ft to 140 ft | Pass |
| Serviceability Usage | 56.3% | 1.0D + 1.0W | Pass |
| Base Plate @ 0.0 ft | 82.5% | Rods | Pass |
| Mat & Pier | 82.3% | Moment [Soil] | Pass |

Maximum Reactions

| Foundation | Moment (k-ft) | Axial (k) | Shear (k) |
|---------------|---------------|-----------|-----------|
| Monopole Base | 3,885.9 | 73.2 | 29.9 |

**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 |
|-----------|-----|-----------------------------|---------------------------|
| 163.0 | 1 | Low Profile Platform | (2) 2.00" (50.8mm) Hybrid |
| | 3 | Ericsson AIR 6419 B41 | |
| | 3 | Ericsson Radio 4460 B25+B66 | |
| | 3 | Ericsson Radio 4480 B71+B85 | |
| | 3 | RFS APXVAALL24 43-U-NA20 | |

Install proposed lines inside the pole shaft.

Other Existing/Reserved Loading

| Elev (ft) | Qty | Equipment | Lines | Carrier |
|-----------|-----|---|--|------------------|
| 185.0 | 1 | Andrew SBNHH-1D65A | (2) 0.39" (10mm) Fiber Trunk (6) 0.78" (19.7mm) 8 AWG 6 (12) 1 1/4" Coax (1) 2" conduit (1) 3" conduit | AT&T MOBILITY |
| | 1 | Raycap DC6-48-60-18-8F ("Squid") | | |
| | 2 | CCI HPA65R-BU6A | | |
| | 2 | Raycap DC6-48-60-0-8F | | |
| | 3 | CCI DMP65R-BU6DA | | |
| | 3 | Ericsson RRUS 32 (50.8 lbs) | | |
| | 3 | Ericsson RRUS 4449 B5, B12 | | |
| | 3 | Ericsson Radio 8843 - B2 + B66A | | |
| | 3 | Kaelus DBC0061F1V51-2 | | |
| | 3 | Powerwave Allgon 7770.00 | | |
| | 3 | Quintel QS66512-2 | | |
| | 6 | Powerwave Allgon LGP21401 | | |
| 184.0 | 1 | Platform with Handrails | - | AT&T MOBILITY |
| | 3 | Mount Reinforcement | | |
| | 3 | Small Side Arms | | |
| 179.5 | 1 | RFS DB-B1-6C-12AB-0Z | - | VERIZON WIRELESS |
| 176.1 | 3 | Alcatel-Lucent B66a RRH4x45 (AWS-3) | - | VERIZON WIRELESS |
| 176.0 | 1 | Platform with Handrails | - | VERIZON WIRELESS |
| | 3 | Alcatel-Lucent B13 RRH4x30-4R | | |
| | 3 | Mount Reinforcement | | |
| 175.0 | 3 | Commscope CBC78T-DS-43-2X | (6) 1 5/8" Coax (1) 1 5/8" Hybriflex | VERIZON WIRELESS |
| | 3 | Samsung B2/B66A RRH ORAN (RF 4439d-25A) | | |
| | 3 | Samsung MT6413-77A | | |
| | 3 | Samsung RF4461d-13A | | |
| | 6 | Antel LPA-80063/6CF | | |
| | 6 | Commscope JAHH-65B-R3B | | |

(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: 112 mph | Ice Wind: 49 mph w/ 0.85" ice | Service Wind: 60 mph |
| Risk Category: II | Exposure: B | S _z : 0.176 S _s : 0.054 |
| Topo Category: 1 | Topo Factor: Method 1 | Topo Feature: |
| Structure Height: 181.9 ft | Base Elevation: 0.00 ft | Structure Type: Taper |
| Base Diameter: 43 in | Base Rotation: 0° | Taper: 0.1640 (in/ft) |

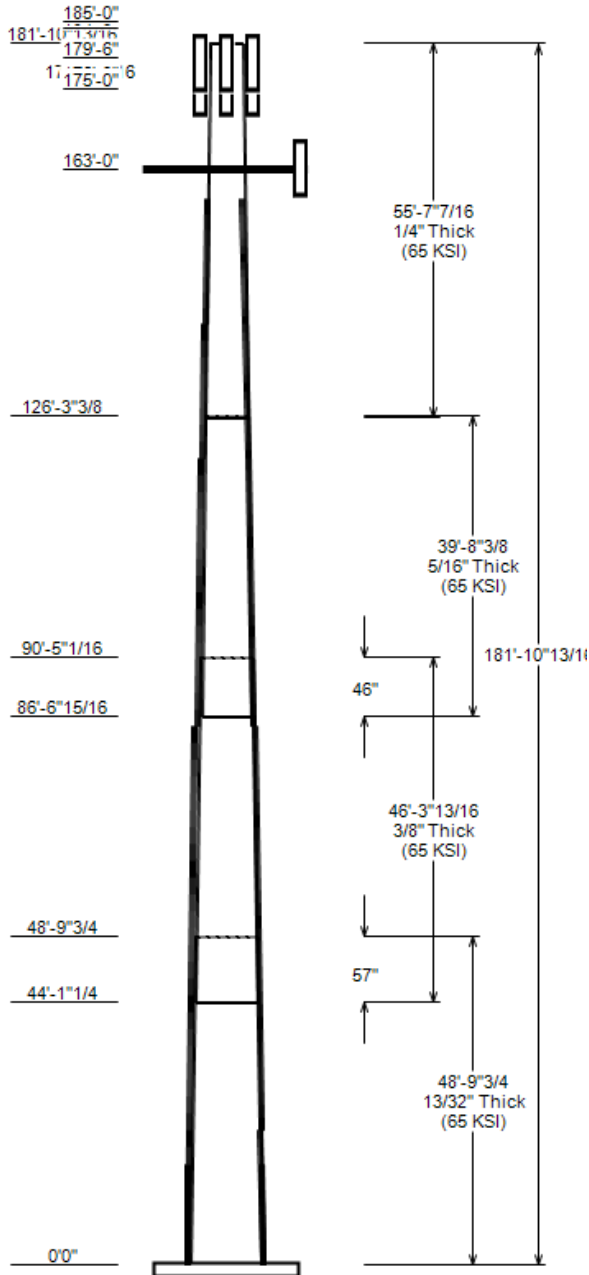
POLE SECTION PROPERTIES

| Section | Length (ft) | Flat Diameter (in) | | Thick (in) | Joint Type | Joint Length (in) | Pole Shape | Yield Strength (ksi) |
|---------|-------------|--------------------|--------|------------|------------|-------------------|------------|----------------------|
| | | Top | Bottom | | | | | |
| 1 | 48.810 | 34.98 | 43.00 | 0.406 | | 0.000 | 12 Sides | 65 |
| 2 | 46.320 | 28.90 | 36.51 | 0.375 | Slip Joint | 56.500 | 12 Sides | 65 |
| 3 | 39.700 | 23.64 | 30.16 | 0.312 | Slip Joint | 46.100 | 12 Sides | 65 |
| 4 | 55.620 | 14.50 | 23.64 | 0.250 | Butt Joint | 0.000 | 12 Sides | 65 |

DISCRETE APPURTENANCE

LINEAR APPURTENANCE

| Elev (ft) | Description | Elev To (ft) | Description |
|-----------|------------------------------------|--------------|------------------------------|
| 185.0 | (3) Kaelus DBC0061F1V51-2 | 185.0 | (1) 3" conduit |
| 185.0 | (6) Powerwave Allgon LGP21401 | 185.0 | (1) 2" conduit |
| 185.0 | (2) Raycap DC6-48-60-0-8F | 185.0 | (12) 1 1/4" Coax |
| 185.0 | (1) Raycap DC6-48-60-18-8F ("Squid | 185.0 | (6) 0.78" (19.7mm) 8 AWG 6 |
| 185.0 | (3) Ericsson Radio 8843 - B2 + B66 | 185.0 | (2) 0.39" (10mm) Fiber Trunk |
| 185.0 | (3) Ericsson RRUS 4449 B5, B12 | 175.0 | (1) 1 5/8" Hybriflex |
| 185.0 | (3) Ericsson RRUS 32 (50.8 lbs) | 175.0 | (6) 1 5/8" Coax |
| 185.0 | (3) Powerwave Allgon 7770.00 | 163.0 | (2) 2.00" (50.8mm) Hybrid |
| 185.0 | (1) Andrew SBNHH-1D65A | 160.0 | (1) 3" Solid Rod |
| 185.0 | (2) CCI HPA65R-BU6A | 160.0 | (1) 3" Solid Rod |
| 185.0 | (3) Quintel QS66512-2 | 160.0 | (1) 3" Solid Rod |
| 185.0 | (3) CCI DMP65R-BU6DA | 140.0 | (1) 3.5" Solid Rod |
| 184.0 | (3) Small Side Arms | 140.0 | (1) 3.5" Solid Rod |
| 184.0 | (3) Generic Mount Reinforcement | 140.0 | (1) 3.5" Solid Rod |
| 184.0 | (1) Generic Flat Platform with Han | 120.0 | (1) 4.0" Solid Rod |
| 179.5 | (1) RFS DB-B1-6C-12AB-0Z | 120.0 | (1) 4.0" Solid Rod |
| 176.1 | (3) Alcatel-Lucent B66a RRH4x45 (A | 120.0 | (1) 4.0" Solid Rod |
| 176.0 | (3) Alcatel-Lucent B13 RRH4x30-4R | 80.0 | (1) 4.25" Solid Rod |
| 176.0 | (3) Generic Mount Reinforcement | 80.0 | (1) 4.25" Solid Rod |
| 176.0 | (1) Flat Platform with Round Handr | 80.0 | (1) 4.25" Solid Rod |
| 175.0 | (3) Commscope CBC78T-DS-43-2X | 19.5 | (1) W5 Brackets for #20 |
| 175.0 | (3) Samsung RF4461d-13A | 19.5 | (1) W5 Brackets for #20 |
| 175.0 | (3) Samsung B2/B66A RRH ORAN (RF 4 | 19.5 | (1) W5 Brackets for #20 |
| 175.0 | (3) Samsung MT6413-77A | 19.5 | (1) #20 w/ W Brackets |
| 175.0 | (6) Commscope JAHH-65B-R3B | 19.5 | (1) #20 w/ W Brackets |
| 175.0 | (6) Antel LPA-80063/6CF | 19.5 | (1) #20 w/ W Brackets |
| 163.0 | (3) Ericsson Radio 4460 B25+B66 | | |
| 163.0 | (3) Ericsson Radio 4480 B71+B85 | | |
| 163.0 | (3) Ericsson AIR 6419 B41 | | |
| 163.0 | (3) RFS APXVAALL24 43-U-NA20 | | |
| 163.0 | (1) Generic Round Low Profile Plat | | |



GLOBAL BASE REACTIONS

| Load Case | Moment (kip-ft) | Axial (kip) | Shear (kip) |
|----------------------|-----------------|-------------|-------------|
| 1.2D + 1.0W | 3885.88 | 73.24 | 29.92 |
| 0.9D + 1.0W | 3797.44 | 54.92 | 29.89 |
| 1.2D + 1.0Di + 1.0Wi | 956.39 | 88.01 | 6.72 |
| 1.2D + 1.0Ev + 1.0Eh | 297.48 | 72.90 | 1.84 |
| 0.9D - 1.0Ev + 1.0Eh | 288.91 | 50.80 | 1.84 |
| 1.0D + 1.0W | 993.97 | 61.07 | 7.77 |

ANALYSIS PARAMETERS

| | | | |
|-------------------------------------|----------------------|-----------------------|--------------|
| Location: | Litchfield County,CT | Height: | 181.9 ft |
| Type and Shape: | Taper, 12 Sides | Base Diameter: | 43.00 in |
| Manufacturer: | Undetermined | Top Diameter: | 14.50 in |
| K_d (non-service): | 0.95 | Taper: | 0.1640 in/ft |
| K_e: | 0.96 | Rotation: | 0.000° |

ICE & WIND PARAMETERS

| | | | |
|-------------------------------|----------|----------------------------------|------------|
| Risk Category: | II | Design Wind Speed: | 112 mph |
| Exposure Category: | B | Design Wind Speed w/ Ice: | 49 mph |
| Topo Factor Procedure: | Method 1 | Design Ice Thickness: | 0.85 in |
| Topographic Category: | 1 | Service Wind Speed: | 60 mph |
| Crest Height: | 0 ft | HMSL: | 1051.00 ft |

SEISMIC PARAMETERS

| | | | |
|-----------------------------|---------------------------------|---|-------|
| Analysis Method: | Equivalent Lateral Force Method | | |
| Site Class: | D - Stiff Soil | Period Based on Rayleigh Method (sec): | 3.61 |
| T_L (sec): | 6 | P: | 1 |
| S_s: | 0.176 | S₁: | 0.054 |
| F_a: | 1.600 | F_v: | 2.400 |
| S_{ds}: | 0.188 | S_{d1}: | 0.086 |
| | | C_s: | 0.030 |
| | | C_s Max: | 0.030 |
| | | C_s Min: | 0.030 |

LOAD CASES

| | |
|----------------------|--|
| 1.2D + 1.0W | 112.09 mph Wind with No Ice |
| 0.9D + 1.0W | 112.09 mph Wind with No Ice (Reduced DL) |
| 1.2D + 1.0Di + 1.0Wi | 48.73 mph Wind with 0.85" 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 ²) | Ix (in ⁴) | W/t Ratio | D/t Ratio | Dia (in) | Elev (ft) | Area (in ²) | Ix (in ⁴) | W/t Ratio | D/t Ratio | Taper (in/ft) |
| 1-12 | 48.81 | 0.4060 | 65 | | 0.00 | 8,378 | 43.00 | 0.000 | 55.68 | 12,894.8 | 25.70 | 105.91 | 34.98 | 48.81 | 45.20 | 6,898.4 | 20.41 | 86.17 | 0.1642 |
| 2-12 | 46.32 | 0.3750 | 65 | Slip | 56.50 | 6,153 | 36.51 | 44.100 | 43.63 | 7,270.1 | 23.41 | 97.35 | 28.90 | 90.42 | 34.44 | 3,576.9 | 17.97 | 77.06 | 0.1642 |
| 3-12 | 39.70 | 0.3125 | 65 | Slip | 46.10 | 3,613 | 30.16 | 86.580 | 30.03 | 3,413.5 | 23.18 | 96.50 | 23.64 | 126.28 | 23.47 | 1,629.3 | 17.59 | 75.63 | 0.1642 |
| 4-12 | 55.62 | 0.2500 | 65 | Butt | 0.00 | 2,867 | 23.64 | 126.280 | 18.82 | 1,314.0 | 22.65 | 94.54 | 14.50 | 181.90 | 11.47 | 297.3 | 12.86 | 58.00 | 0.1642 |
| Total Shaft Weight | | | | | | 21,011 | | | | | | | | | | | | | |

DISCRETE APPURTENANCE PROPERTIES

| Attach Elev (ft) | Description | Qty | Ka | Vert Ecc (ft) | No Ice | | | Ice | | |
|------------------|--------------------------------|-----------|------|---------------|------------------|-----------|--------------------|------------------|-----------|--------------------|
| | | | | | Weight (lb) | EPAA (sf) | Orientation Factor | Weight (lb) | EPAA (sf) | Orientation Factor |
| 185.00 | Quintel QS66512-2 | 3 | 0.75 | 0.300 | 111.00 | 8.133 | 0.74 | 226.30 | 9.746 | 0.74 |
| 185.00 | CCI DMP65R-BU6DA | 3 | 0.75 | 0.500 | 79.40 | 12.709 | 0.63 | 228.44 | 14.323 | 0.63 |
| 185.00 | Andrew SBNHH-1D65A | 1 | 0.75 | 1.100 | 40.90 | 5.883 | 1.00 | 119.32 | 7.118 | 1.00 |
| 185.00 | Powerwave Allgon 7770.00 | 3 | 0.75 | 0.900 | 35.00 | 5.508 | 0.65 | 100.77 | 6.738 | 0.65 |
| 185.00 | Ericsson RRUS 32 (50.8 lbs) | 3 | 0.75 | 2.900 | 50.80 | 2.692 | 0.50 | 92.18 | 3.360 | 0.50 |
| 185.00 | Ericsson RRUS 4449 B5, B12 | 3 | 0.75 | 0.000 | 71.00 | 1.969 | 0.50 | 108.29 | 2.509 | 0.50 |
| 185.00 | Ericsson Radio 8843 - B2 + B66 | 3 | 0.75 | 0.000 | 71.90 | 1.650 | 0.50 | 107.55 | 2.140 | 0.50 |
| 185.00 | Raycap DC6-48-60-18-8F ("Squid | 1 | 0.75 | 0.000 | 18.90 | 1.470 | 0.50 | 54.61 | 1.874 | 0.50 |
| 185.00 | Raycap DC6-48-60-0-8F | 2 | 0.75 | 0.000 | 32.80 | 1.360 | 0.50 | 66.43 | 1.744 | 0.50 |
| 185.00 | Powerwave Allgon LGP21401 | 6 | 0.75 | 1.400 | 14.10 | 1.104 | 0.50 | 28.54 | 1.517 | 0.50 |
| 185.00 | Kaelus DBC0061F1V51-2 | 3 | 0.75 | 0.000 | 25.50 | 0.433 | 0.50 | 36.19 | 0.693 | 0.50 |
| 185.00 | CCI HPA65R-BU6A | 2 | 0.75 | 0.100 | 41.90 | 7.864 | 0.78 | 143.30 | 9.462 | 0.78 |
| 184.00 | Generic Mount Reinforcement | 3 | 0.75 | 0.000 | 200.00 | 4.980 | 0.67 | 311.97 | 7.856 | 0.67 |
| 184.00 | Small Side Arms | 3 | 1.00 | 0.000 | 100.00 | 1.700 | 0.67 | 140.31 | 2.385 | 0.67 |
| 184.00 | Generic Flat Platform with Han | 1 | 1.00 | 0.000 | 2500.00 | 42.400 | 1.00 | 3527.84 | 54.534 | 1.00 |
| 179.50 | RFS DB-B1-6C-12AB-0Z | 1 | 0.75 | 1.000 | 21.40 | 2.512 | 0.50 | 67.50 | 3.113 | 0.50 |
| 176.10 | Alcatel-Lucent B66a RRH4x45 (A | 3 | 0.75 | 0.000 | 67.00 | 2.660 | 0.50 | 107.91 | 3.323 | 0.50 |
| 176.00 | Generic Mount Reinforcement | 3 | 0.75 | 0.000 | 200.00 | 4.980 | 0.67 | 311.63 | 7.848 | 0.67 |
| 176.00 | Flat Platform with Round Handr | 1 | 1.00 | 0.000 | 2500.00 | 34.800 | 1.00 | 3504.60 | 48.784 | 1.00 |
| 176.00 | Alcatel-Lucent B13 RRH4x30-4R | 3 | 0.75 | 0.000 | 57.80 | 2.140 | 0.50 | 97.59 | 2.716 | 0.50 |
| 175.00 | Commscope CBC78T-DS-43-2X | 3 | 0.75 | 0.000 | 20.70 | 0.552 | 0.50 | 33.42 | 0.845 | 0.50 |
| 175.00 | Samsung RF4461d-13A | 3 | 0.75 | 0.000 | 79.10 | 1.875 | 0.50 | 116.23 | 2.395 | 0.50 |
| 175.00 | Samsung MT6413-77A | 3 | 0.75 | 0.000 | 57.30 | 3.805 | 0.61 | 106.19 | 4.570 | 0.61 |
| 175.00 | Commscope JAHH-65B-R3B | 6 | 0.75 | 1.000 | 60.60 | 9.113 | 0.67 | 177.09 | 10.711 | 0.67 |
| 175.00 | Antel LPA-80063/6CF | 6 | 0.75 | 1.000 | 27.00 | 9.593 | 0.67 | 182.44 | 10.355 | 0.67 |
| 175.00 | Samsung B2/B66A RRH ORAN (RF 4 | 3 | 0.75 | 0.000 | 74.70 | 1.875 | 0.50 | 111.50 | 2.393 | 0.50 |
| 163.00 | RFS APXVAALL24 43-U-NA20 | 3 | 0.80 | 0.000 | 122.80 | 20.243 | 0.63 | 345.61 | 22.365 | 0.63 |
| 163.00 | Ericsson AIR 6419 B41 | 3 | 0.80 | 0.000 | 68.50 | 5.600 | 0.60 | 137.62 | 6.506 | 0.60 |
| 163.00 | Ericsson Radio 4480 B71+B85 | 3 | 0.80 | 0.000 | 93.00 | 2.798 | 0.50 | 135.66 | 3.432 | 0.50 |
| 163.00 | Ericsson Radio 4460 B25+B66 | 3 | 0.80 | 0.000 | 109.00 | 2.564 | 0.50 | 159.56 | 3.167 | 0.50 |
| 163.00 | Generic Round Low Profile Plat | 1 | 1.00 | 0.000 | 1875.00 | 21.700 | 1.00 | 2338.27 | 32.683 | 1.00 |
| Totals | Row Count: 31 | 88 | | | 12,799.30 | | | 21,404.78 | | |

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 | 185.00 | 12 | 1 1/4" Coax | 1.55 | 0.63 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 185.00 | 6 | 0.78" (19.7mm) 8 AWG | 0.78 | 0.59 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 185.00 | 2 | 0.39" (10mm) Fiber Tr | 0.39 | 0.06 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 185.00 | 1 | 2" conduit | 2.38 | 3.65 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 185.00 | 1 | 3" conduit | 3.5 | 7.58 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 175.00 | 6 | 1 5/8" Coax | 1.98 | 0.82 | N | 0 | 0 | 0 | 0 | 0 | N | VERIZON WIRELESS |
| 0.00 | 175.00 | 1 | 1 5/8" Hybriflex | 1.98 | 1.3 | N | 0 | 0 | 0 | 0 | 0 | N | VERIZON WIRELESS |
| 0.00 | 163.00 | 2 | 2.00" (50.8mm) Hybrid | 2 | 3.09 | N | 0 | 0 | 0 | 0 | 0 | N | T-MOBILE |
| 140.00 | 160.00 | 1 | 3" Solid Rod | 4.3 | 0 | N | 1 | 0 | 0 | 120 | 1.38 | Y | |
| 140.00 | 160.00 | 1 | 3" Solid Rod | 4.3 | 0 | N | 1 | 0 | 0 | 240 | 1.38 | Y | |
| 140.00 | 160.00 | 1 | 3" Solid Rod | 4.3 | 0 | N | 1 | 0 | 0 | 0 | 1.38 | Y | |

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 |
|----------------|--------------|-----|---------------------|---------------|----------------|------|---------|---------------------------|---------------------------|---------------|-------------------------|-----------------|---------|
| 120.00 | 140.00 | 1 | 3.5" Solid Rod | 4.8 | 0 | N | 1 | 0 | 0 | 0 | 1.1 | Y | |
| 120.00 | 140.00 | 1 | 3.5" Solid Rod | 4.8 | 0 | N | 1 | 0 | 0 | 240 | 1.1 | Y | |
| 120.00 | 140.00 | 1 | 3.5" Solid Rod | 4.8 | 0 | N | 1 | 0 | 0 | 120 | 1.1 | Y | |
| 80.00 | 120.00 | 1 | 4.0" Solid Rod | 5.3 | 0 | N | 1 | 0 | 0 | 240 | 0.88 | Y | |
| 80.00 | 120.00 | 1 | 4.0" Solid Rod | 5.3 | 0 | N | 1 | 0 | 0 | 120 | 0.88 | Y | |
| 80.00 | 120.00 | 1 | 4.0" Solid Rod | 5.3 | 0 | N | 1 | 0 | 0 | 0 | 0.88 | Y | |
| 0.00 | 80.00 | 1 | 4.25" Solid Rod | 5.5 | 0 | N | 1 | 0 | 0 | 240 | 1 | Y | |
| 0.00 | 80.00 | 1 | 4.25" Solid Rod | 5.5 | 0 | N | 1 | 0 | 0 | 120 | 1 | Y | |
| 0.00 | 80.00 | 1 | 4.25" Solid Rod | 5.5 | 0 | N | 1 | 0 | 0 | 0 | 1 | Y | |
| 0.00 | 19.50 | 1 | #20 w/ W Brackets | 2.5 | 0 | N | 1 | 0 | 0 | 300 | 5.15 | Y | |
| 0.00 | 19.50 | 1 | #20 w/ W Brackets | 2.5 | 0 | N | 1 | 0 | 0 | 180 | 5.15 | Y | |
| 0.00 | 19.50 | 1 | W5 Brackets for #20 | 1.55 | 5.7 | Y | 1 | 0 | 0 | 60 | 1.8 | Y | |
| 0.00 | 19.50 | 1 | W5 Brackets for #20 | 1.55 | 5.7 | Y | 1 | 0 | 0 | 180 | 1.8 | Y | |
| 0.00 | 19.50 | 1 | W5 Brackets for #20 | 1.55 | 5.7 | Y | 1 | 0 | 0 | 300 | 1.8 | Y | |
| 0.00 | 19.50 | 1 | #20 w/ W Brackets | 2.5 | 0 | N | 1 | 0 | 0 | 60 | 5.15 | Y | |

ADDITIONAL STEEL

Intermediate Connectors

| Elev From (ft) | Elev To (ft) | Qty | Description | Fy (ksi) | Offset (in) | Bracket Type | Spacing (in) | Length (in) | Connectors | Continuation? |
|----------------|--------------|-----|------------------------|----------|-------------|--------------------|--------------|-------------|-----------------|---------------|
| 0.00 | 14.71 | 3 | SOL #20 All Thread Bar | 80 | 5.15 | 6" T Bracket | 30.00 | 3.31 | 5/8" Hollo Bolt | N |
| 20.00 | 80.00 | 3 | SOL 4 1/4" SOLID | 50 | 1.00 | AJAX M20 Class 8.8 | 22.00 | 3.50 | 5/8" Hollo Bolt | Y |
| 80.00 | 120.00 | 3 | SOL 4" SOLID | 50 | 0.88 | AJAX M20 Class 8.8 | 22.00 | 3.50 | 5/8" Hollo Bolt | Y |
| 120.00 | 140.00 | 3 | SOL 3 1/2" SOLID | 50 | 1.13 | AJAX M20 Class 8.8 | 22.00 | 3.50 | 5/8" Hollo Bolt | Y |
| 140.00 | 158.50 | 3 | SOL 3" SOLID | 50 | 1.38 | AJAX M20 Class 8.8 | 22.00 | 3.50 | 5/8" Hollo Bolt | Y |
| 0.00 | 20.00 | 3 | SOL 4 1/4" SOLID | 50 | 1.00 | AJAX M20 Class 8.8 | 16.50 | 3.50 | 5/8" A36 U-Bolt | Y |

SEGMENT PROPERTIES

| Seg Top Elev (ft) | Description | (Max Length: 5 ft) | Thick (in) | Flat Dia (in) | Area (in ²) | Ix (in ⁴) | W/t Ratio | D/t Ratio | F'y (ksi) | S (in ³) | Z (in ³) | Weight (lb) | Additional Reinforcing | | |
|-------------------|-------------------------|--------------------|------------|---------------|-------------------------|-----------------------|-----------|-----------|-----------|----------------------|----------------------|-------------|-------------------------|-----------------------|-------------|
| | | | | | | | | | | | | | Area (in ²) | Ix (in ⁴) | Weight (lb) |
| 0.00 | | | 0.4060 | 43.000 | 55.684 | 12,894.8 | 25.70 | 105.91 | 76.7 | 579.3 | 0.0 | 0.0 | 57.288 | 18,690.20 | 0.0 |
| 5.00 | | | 0.4060 | 42.179 | 54.610 | 12,163.2 | 25.16 | 103.89 | 77.3 | 557.1 | 0.0 | 938.3 | 57.288 | 18,096.00 | 974.5 |
| 10.00 | | | 0.4060 | 41.358 | 53.537 | 11,459.9 | 24.62 | 101.87 | 77.9 | 535.3 | 0.0 | 920.0 | 57.288 | 17,511.40 | 974.5 |
| 14.71 | Reinf. Top | | 0.4060 | 40.584 | 52.526 | 10,822.7 | 24.10 | 99.96 | 78.4 | 515.2 | 0.0 | 849.9 | 57.288 | 16,969.60 | 918.0 |
| 15.00 | | | 0.4060 | 40.536 | 52.463 | 10,784.2 | 24.07 | 99.84 | 78.5 | 513.9 | 0.0 | 51.8 | 42.558 | 11,692.80 | 42.0 |
| 20.00 | Reinf. Top Reinf Bottom | | 0.4060 | 39.715 | 51.390 | 10,135.6 | 23.53 | 97.82 | 79.1 | 493.0 | 0.0 | 883.5 | 42.558 | 11,287.60 | 724.1 |
| 25.00 | | | 0.4060 | 38.894 | 50.316 | 9,513.60 | 22.99 | 95.80 | 79.6 | 472.5 | 0.0 | 865.2 | 42.558 | 10,889.60 | 724.1 |
| 30.00 | | | 0.4060 | 38.073 | 49.243 | 8,917.50 | 22.45 | 93.78 | 80.2 | 452.5 | 0.0 | 846.9 | 42.558 | 10,498.70 | 724.1 |
| 35.00 | | | 0.4060 | 37.252 | 48.169 | 8,346.90 | 21.91 | 91.75 | 80.8 | 432.9 | 0.0 | 828.7 | 42.558 | 10,115.10 | 724.1 |
| 40.00 | | | 0.4060 | 36.430 | 47.095 | 7,801.10 | 21.36 | 89.73 | 81.4 | 413.7 | 0.0 | 810.4 | 42.558 | 9,738.60 | 724.1 |
| 44.10 | Bot - Section 2 | | 0.4060 | 35.757 | 46.215 | 7,371.60 | 20.92 | 88.07 | 81.9 | 398.3 | 0.0 | 651.2 | 42.558 | 9,435.10 | 594.0 |
| 45.00 | | | 0.4060 | 35.609 | 46.022 | 7,279.70 | 20.82 | 87.71 | 81.9 | 394.9 | 0.0 | 274.1 | 42.558 | 9,706.30 | 130.1 |
| 48.81 | Top - Section 1 | | 0.3750 | 35.733 | 42.695 | 6,813.20 | 22.85 | 95.29 | 79.8 | 368.3 | 0.0 | 1,149.8 | 42.558 | 9,424.70 | 551.7 |
| 50.00 | | | 0.3750 | 35.538 | 42.459 | 6,700.90 | 22.71 | 94.77 | 79.9 | 364.3 | 0.0 | 172.4 | 42.558 | 9,337.60 | 172.3 |
| 55.00 | | | 0.3750 | 34.717 | 41.468 | 6,242.30 | 22.13 | 92.58 | 80.6 | 347.4 | 0.0 | 714.0 | 42.558 | 8,976.10 | 724.1 |
| 60.00 | | | 0.3750 | 33.896 | 40.476 | 5,805.10 | 21.54 | 90.39 | 81.2 | 330.9 | 0.0 | 697.1 | 42.558 | 8,621.70 | 724.1 |
| 65.00 | | | 0.3750 | 33.074 | 39.485 | 5,388.80 | 20.95 | 88.20 | 81.9 | 314.8 | 0.0 | 680.2 | 42.558 | 8,274.60 | 724.1 |
| 70.00 | | | 0.3750 | 32.253 | 38.493 | 4,992.90 | 20.37 | 86.01 | 81.9 | 299.1 | 0.0 | 663.3 | 42.558 | 7,934.60 | 724.1 |
| 75.00 | | | 0.3750 | 31.432 | 37.501 | 4,616.90 | 19.78 | 83.82 | 81.9 | 283.8 | 0.0 | 646.5 | 42.558 | 7,601.70 | 724.1 |
| 80.00 | Reinf. Top Reinf Bottom | | 0.3750 | 30.611 | 36.510 | 4,260.30 | 19.19 | 81.63 | 81.9 | 268.9 | 0.0 | 629.6 | 42.558 | 7,276.10 | 724.1 |
| 85.00 | | | 0.3750 | 29.790 | 35.518 | 3,922.50 | 18.61 | 79.44 | 81.9 | 254.4 | 0.0 | 612.7 | 37.698 | 5,989.60 | 641.4 |
| 86.58 | Bot - Section 3 | | 0.3750 | 29.530 | 35.205 | 3,819.60 | 18.42 | 78.75 | 81.9 | 249.9 | 0.0 | 190.1 | 37.698 | 5,903.00 | 202.7 |
| 90.00 | | | 0.3750 | 28.968 | 34.527 | 3,603.10 | 18.02 | 77.25 | 81.9 | 240.3 | 0.0 | 751.9 | 37.698 | 5,924.00 | 438.7 |
| 90.42 | Top - Section 2 | | 0.3125 | 29.524 | 29.394 | 3,201.50 | 22.64 | 94.48 | 80 | 209.5 | 0.0 | 91.7 | 37.698 | 5,901.00 | 54.1 |
| 95.00 | | | 0.3125 | 28.772 | 28.638 | 2,960.60 | 21.99 | 92.07 | 80.7 | 198.8 | 0.0 | 452.0 | 37.698 | 5,653.70 | 587.3 |
| 100.00 | | | 0.3125 | 27.951 | 27.811 | 2,711.70 | 21.29 | 89.44 | 81.5 | 187.4 | 0.0 | 480.2 | 37.698 | 5,389.70 | 641.4 |
| 105.00 | | | 0.3125 | 27.130 | 26.985 | 2,477.10 | 20.58 | 86.82 | 81.9 | 176.4 | 0.0 | 466.1 | 37.698 | 5,132.00 | 641.4 |

SEGMENT PROPERTIES

| Seg Top Elev (ft) | Description | Thick (in) | Flat Dia (in) | Area (in ²) | Ix (in ⁴) | W/t Ratio | D/t Ratio | F'y (ksi) | S (in ³) | Z (in ³) | Weight (lb) | Additional Reinforcing | | |
|-------------------|-------------------------|------------|---------------|-------------------------|-----------------------|-----------|-----------|-----------|----------------------|----------------------|-----------------|-------------------------|-----------------------|-------------|
| | | | | | | | | | | | | Area (in ²) | Ix (in ⁴) | Weight (lb) |
| 110.00 | | 0.3125 | 26.309 | 26.159 | 2,256.40 | 19.88 | 84.19 | 81.9 | 165.7 | 0.0 | 452.1 | 37.698 | 4,880.70 | 641.4 |
| 115.00 | | 0.3125 | 25.487 | 25.332 | 2,049.30 | 19.17 | 81.56 | 81.9 | 155.3 | 0.0 | 438.0 | 37.698 | 4,635.80 | 641.4 |
| 120.00 | Reinf. Top Reinf Bottom | 0.3125 | 24.666 | 24.506 | 1,855.20 | 18.47 | 78.93 | 81.9 | 145.3 | 0.0 | 424.0 | 37.698 | 4,397.20 | 641.4 |
| 125.00 | | 0.3125 | 23.845 | 23.680 | 1,673.80 | 17.77 | 76.30 | 81.9 | 135.6 | 0.0 | 409.9 | 28.863 | 3,182.10 | 491.1 |
| 126.28 | Top - Section 3 | 0.3125 | 23.635 | 23.468 | 1,629.30 | 17.59 | 75.63 | 81.9 | 133.2 | 0.0 | 102.7 | 28.863 | 3,137.40 | 125.7 |
| 126.28 | Bot - Section 4 | 0.2500 | 23.635 | 18.825 | 1,314.00 | 22.65 | 94.54 | 80 | 107.4 | 0.0 | | 28.863 | 3,137.40 | |
| 130.00 | | 0.2500 | 23.024 | 18.333 | 1,213.60 | 22.00 | 92.10 | 80.7 | 101.8 | 0.0 | 235.2 | 28.863 | 3,009.20 | 365.4 |
| 135.00 | | 0.2500 | 22.203 | 17.672 | 1,087.00 | 21.12 | 88.81 | 81.7 | 94.6 | 0.0 | 306.3 | 28.863 | 2,841.10 | 491.1 |
| 140.00 | Reinf. Top Reinf Bottom | 0.2500 | 21.381 | 17.011 | 969.50 | 20.24 | 85.53 | 81.9 | 87.6 | 0.0 | 295.0 | 28.863 | 2,677.90 | 491.1 |
| 145.00 | | 0.2500 | 20.560 | 16.350 | 860.80 | 19.36 | 82.24 | 81.9 | 80.9 | 0.0 | 283.8 | 21.207 | 1,846.90 | 360.8 |
| 150.00 | | 0.2500 | 19.739 | 15.689 | 760.60 | 18.48 | 78.96 | 81.9 | 74.4 | 0.0 | 272.5 | 21.207 | 1,734.20 | 360.8 |
| 155.00 | | 0.2500 | 18.918 | 15.028 | 668.40 | 17.60 | 75.67 | 81.9 | 68.3 | 0.0 | 261.3 | 21.207 | 1,625.00 | 360.8 |
| 158.50 | Reinf. Top | 0.2500 | 18.343 | 14.565 | 608.60 | 16.98 | 73.37 | 81.9 | 64.1 | 0.0 | 176.2 | 21.207 | 1,550.70 | 252.5 |
| 160.00 | | 0.2500 | 18.097 | 14.367 | 584.00 | 16.72 | 72.39 | 81.9 | 62.3 | 0.0 | 73.8 | | | |
| 163.00 | | 0.2500 | 17.604 | 13.970 | 537.00 | 16.19 | 70.42 | 81.9 | 58.9 | 0.0 | 144.6 | | | |
| 165.00 | | 0.2500 | 17.275 | 13.705 | 507.10 | 15.84 | 69.10 | 81.9 | 56.7 | 0.0 | 94.2 | | | |
| 170.00 | | 0.2500 | 16.454 | 13.044 | 437.20 | 14.96 | 65.82 | 81.9 | 51.3 | 0.0 | 227.6 | | | |
| 175.00 | | 0.2500 | 15.633 | 12.383 | 374.00 | 14.08 | 62.53 | 81.9 | 46.2 | 0.0 | 216.3 | | | |
| 176.00 | | 0.2500 | 15.469 | 12.251 | 362.20 | 13.90 | 61.88 | 81.9 | 45.2 | 0.0 | 41.9 | | | |
| 176.10 | | 0.2500 | 15.452 | 12.238 | 361.00 | 13.88 | 61.81 | 81.9 | 45.1 | 0.0 | 4.2 | | | |
| 179.50 | | 0.2500 | 14.894 | 11.788 | 322.70 | 13.28 | 59.58 | 81.9 | 41.9 | 0.0 | 139.0 | | | |
| 180.00 | | 0.2500 | 14.812 | 11.722 | 317.30 | 13.20 | 59.25 | 81.9 | 41.4 | 0.0 | 20.0 | | | |
| 181.90 | | 0.2500 | 14.500 | 11.471 | 297.30 | 12.86 | 58.00 | 81.9 | 39.6 | 0.0 | 75.0 | | | |
| Totals: | | | | | | | | | | | 21,011.2 | 20,752.7 | | |

CALCULATED FORCES

Load Case: 1.2D + 1.0W 112.09 mph Wind with No Ice 29 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 | -73.24 | -29.92 | 0.00 | -3,885.9 | 0.00 | 3,885.88 | 3,843.15 | 977.25 | 3,926.90 | 3,331.92 | 0 | 0 | 0.486 |
| 5.00 | -70.55 | -29.54 | 0.00 | -3,736.3 | 0.00 | 3,736.27 | 3,798.11 | 958.41 | 3,776.99 | 3,228.78 | 0.09 | -0.17 | 0.475 |
| 10.00 | -67.88 | -29.14 | 0.00 | -3,588.6 | 0.00 | 3,588.59 | 3,751.92 | 939.57 | 3,630.00 | 3,126.22 | 0.37 | -0.34 | 0.464 |
| 14.71 | -65.43 | -28.92 | 0.00 | -3,451.3 | 0.00 | 3,451.34 | 3,707.37 | 921.82 | 3,494.20 | 3,030.17 | 0.79 | -0.51 | 0.453 |
| 14.71 | -65.43 | -28.92 | 0.00 | -3,451.3 | 0.00 | 3,451.34 | 3,707.37 | 921.82 | 3,494.20 | 3,030.17 | 0.79 | -0.51 | 0.558 |
| 15.00 | -65.24 | -28.73 | 0.00 | -3,443.0 | 0.00 | 3,442.96 | 3,704.60 | 920.73 | 3,485.92 | 3,024.27 | 0.82 | -0.52 | 0.557 |
| 20.00 | -62.91 | -28.38 | 0.00 | -3,299.3 | 0.00 | 3,299.32 | 3,656.13 | 901.89 | 3,344.76 | 2,923.02 | 1.47 | -0.73 | 0.544 |
| 25.00 | -60.70 | -28.07 | 0.00 | -3,157.4 | 0.00 | 3,157.40 | 3,606.52 | 883.05 | 3,206.52 | 2,822.50 | 2.35 | -0.94 | 0.532 |
| 30.00 | -58.51 | -27.72 | 0.00 | -3,017.1 | 0.00 | 3,017.07 | 3,555.76 | 864.21 | 3,071.20 | 2,722.79 | 3.46 | -1.16 | 0.519 |
| 35.00 | -56.35 | -27.34 | 0.00 | -2,878.4 | 0.00 | 2,878.45 | 3,503.87 | 845.37 | 2,938.79 | 2,623.93 | 4.79 | -1.38 | 0.506 |
| 40.00 | -54.22 | -26.96 | 0.00 | -2,741.7 | 0.00 | 2,741.73 | 3,450.83 | 826.52 | 2,809.30 | 2,525.99 | 6.35 | -1.59 | 0.492 |
| 44.10 | -52.51 | -26.71 | 0.00 | -2,631.2 | 0.00 | 2,631.17 | 3,406.49 | 811.07 | 2,705.26 | 2,446.38 | 7.79 | -1.77 | 0.481 |
| 45.00 | -51.95 | -26.50 | 0.00 | -2,607.2 | 0.00 | 2,607.17 | 3,392.27 | 807.68 | 2,682.73 | 2,425.89 | 8.13 | -1.81 | 0.470 |
| 48.81 | -49.71 | -26.21 | 0.00 | -2,506.2 | 0.00 | 2,506.22 | 3,065.99 | 749.30 | 2,499.64 | 2,204.25 | 9.64 | -1.97 | 0.486 |
| 50.00 | -49.20 | -25.92 | 0.00 | -2,475.0 | 0.00 | 2,475.03 | 3,054.87 | 745.16 | 2,472.09 | 2,183.98 | 10.14 | -2.03 | 0.483 |
| 55.00 | -47.20 | -25.48 | 0.00 | -2,345.4 | 0.00 | 2,345.41 | 3,007.41 | 727.76 | 2,358.01 | 2,099.31 | 12.38 | -2.24 | 0.467 |
| 60.00 | -45.21 | -25.00 | 0.00 | -2,218.0 | 0.00 | 2,218.04 | 2,958.80 | 710.36 | 2,246.63 | 2,015.46 | 14.84 | -2.45 | 0.452 |
| 65.00 | -43.26 | -24.50 | 0.00 | -2,093.0 | 0.00 | 2,093.05 | 2,910.40 | 692.95 | 2,137.94 | 1,933.39 | 17.52 | -2.67 | 0.435 |
| 70.00 | -41.33 | -24.00 | 0.00 | -1,970.5 | 0.00 | 1,970.53 | 2,837.31 | 675.55 | 2,031.95 | 1,836.96 | 20.43 | -2.88 | 0.422 |
| 75.00 | -39.42 | -23.48 | 0.00 | -1,850.6 | 0.00 | 1,850.55 | 2,764.22 | 658.15 | 1,928.65 | 1,743.00 | 23.55 | -3.09 | 0.409 |
| 80.00 | -37.54 | -22.94 | 0.00 | -1,733.2 | 0.00 | 1,733.17 | 2,691.13 | 640.75 | 1,828.04 | 1,651.51 | 26.89 | -3.3 | 0.395 |
| 80.00 | -37.54 | -22.94 | 0.00 | -1,733.2 | 0.00 | 1,733.17 | 2,691.13 | 640.75 | 1,828.04 | 1,651.51 | 26.89 | -3.3 | 0.433 |
| 85.00 | -35.79 | -22.53 | 0.00 | -1,618.5 | 0.00 | 1,618.46 | 2,618.04 | 623.34 | 1,730.13 | 1,562.49 | 30.46 | -3.5 | 0.418 |
| 86.58 | -35.23 | -22.30 | 0.00 | -1,582.9 | 0.00 | 1,582.86 | 2,594.94 | 617.84 | 1,699.75 | 1,534.87 | 31.63 | -3.57 | 0.413 |
| 90.00 | -33.64 | -22.00 | 0.00 | -1,506.6 | 0.00 | 1,506.61 | 2,544.95 | 605.94 | 1,634.92 | 1,475.93 | 34.24 | -3.73 | 0.394 |
| 90.42 | -33.43 | -21.81 | 0.00 | -1,497.3 | 0.00 | 1,497.33 | 2,117.10 | 515.87 | 1,421.75 | 1,257.35 | 34.57 | -3.75 | 0.428 |
| 95.00 | -31.95 | -21.30 | 0.00 | -1,397.5 | 0.00 | 1,397.48 | 2,080.73 | 502.59 | 1,349.52 | 1,203.60 | 38.26 | -3.95 | 0.407 |
| 100.00 | -30.36 | -20.75 | 0.00 | -1,291.0 | 0.00 | 1,290.99 | 2,039.91 | 488.09 | 1,272.80 | 1,145.57 | 42.51 | -4.17 | 0.385 |

CALCULATED FORCES

| | | | | | | | | | | | | | |
|--------|--------|--------|------|----------|------|----------|----------|--------|----------|----------|--------|-------|-------|
| 105.00 | -28.79 | -20.19 | 0.00 | -1,187.3 | 0.00 | 1,187.26 | 1,989.06 | 473.59 | 1,198.31 | 1,083.45 | 46.99 | -4.39 | 0.365 |
| 110.00 | -27.24 | -19.62 | 0.00 | -1,086.3 | 0.00 | 1,086.32 | 1,928.15 | 459.08 | 1,126.08 | 1,017.74 | 51.7 | -4.6 | 0.345 |
| 115.00 | -25.72 | -19.05 | 0.00 | -988.2 | 0.00 | 988.22 | 1,867.24 | 444.58 | 1,056.08 | 954.09 | 56.62 | -4.81 | 0.325 |
| 120.00 | -24.22 | -18.47 | 0.00 | -893.0 | 0.00 | 892.97 | 1,806.33 | 430.08 | 988.34 | 892.49 | 61.76 | -5.01 | 0.304 |
| 120.00 | -24.22 | -18.47 | 0.00 | -893.0 | 0.00 | 892.97 | 1,806.33 | 430.08 | 988.34 | 892.49 | 61.76 | -5.01 | 0.364 |
| 125.00 | -22.93 | -18.03 | 0.00 | -800.6 | 0.00 | 800.61 | 1,745.42 | 415.58 | 922.84 | 832.95 | 67.1 | -5.2 | 0.339 |
| 126.28 | -22.59 | -17.81 | 0.00 | -777.5 | 0.00 | 777.52 | 1,729.83 | 411.86 | 906.43 | 818.04 | 68.5 | -5.26 | 0.333 |
| 126.28 | -22.59 | -17.81 | 0.00 | -777.5 | 0.00 | 777.52 | 1,355.54 | 330.37 | 728.90 | 644.47 | 68.5 | -5.26 | 0.366 |
| 130.00 | -21.70 | -17.37 | 0.00 | -711.3 | 0.00 | 711.26 | 1,331.91 | 321.74 | 691.32 | 616.52 | 72.66 | -5.42 | 0.341 |
| 135.00 | -20.53 | -16.82 | 0.00 | -624.4 | 0.00 | 624.43 | 1,299.15 | 310.14 | 642.38 | 579.43 | 78.45 | -5.65 | 0.307 |
| 140.00 | -19.37 | -16.27 | 0.00 | -540.3 | 0.00 | 540.34 | 1,253.86 | 298.54 | 595.24 | 538.08 | 84.48 | -5.86 | 0.276 |
| 140.00 | -19.37 | -16.27 | 0.00 | -540.3 | 0.00 | 540.34 | 1,253.86 | 298.54 | 595.24 | 538.08 | 84.48 | -5.86 | 0.342 |
| 145.00 | -18.39 | -15.73 | 0.00 | -459.0 | 0.00 | 459.00 | 1,205.14 | 286.94 | 549.89 | 496.84 | 90.71 | -6.05 | 0.303 |
| 150.00 | -17.43 | -15.20 | 0.00 | -380.3 | 0.00 | 380.34 | 1,156.41 | 275.34 | 506.34 | 457.24 | 97.16 | -6.27 | 0.263 |
| 155.00 | -16.48 | -14.71 | 0.00 | -304.3 | 0.00 | 304.34 | 1,107.68 | 263.73 | 464.59 | 419.29 | 103.83 | -6.47 | 0.221 |
| 158.50 | -15.84 | -14.39 | 0.00 | -252.9 | 0.00 | 252.87 | 1,073.57 | 255.61 | 436.43 | 393.70 | 108.61 | -6.59 | 0.190 |
| 158.50 | -15.84 | -14.39 | 0.00 | -252.9 | 0.00 | 252.87 | 1,073.57 | 255.61 | 436.43 | 393.70 | 108.61 | -6.59 | 0.660 |
| 160.00 | -15.66 | -14.25 | 0.00 | -231.3 | 0.00 | 231.28 | 1,058.96 | 252.13 | 424.63 | 382.97 | 110.68 | -6.64 | 0.622 |
| 163.00 | -11.98 | -11.26 | 0.00 | -188.5 | 0.00 | 188.53 | 1,029.72 | 245.17 | 401.52 | 361.98 | 114.94 | -6.95 | 0.535 |
| 165.00 | -11.77 | -11.12 | 0.00 | -166.0 | 0.00 | 166.01 | 1,010.23 | 240.53 | 386.47 | 348.31 | 117.89 | -7.13 | 0.490 |
| 170.00 | -11.30 | -10.88 | 0.00 | -110.4 | 0.00 | 110.41 | 961.50 | 228.93 | 350.10 | 315.29 | 125.56 | -7.52 | 0.364 |
| 175.00 | -9.75 | -8.03 | 0.00 | -53.9 | 0.00 | 53.89 | 912.77 | 217.33 | 315.54 | 283.91 | 133.57 | -7.79 | 0.202 |
| 176.00 | -6.01 | -5.80 | 0.00 | -45.9 | 0.00 | 45.86 | 903.03 | 215.01 | 308.84 | 277.83 | 135.2 | -7.83 | 0.172 |
| 176.10 | -5.79 | -5.58 | 0.00 | -45.3 | 0.00 | 45.28 | 902.05 | 214.77 | 308.17 | 277.23 | 135.36 | -7.83 | 0.170 |
| 179.50 | -5.52 | -5.42 | 0.00 | -26.3 | 0.00 | 26.29 | 868.92 | 206.89 | 285.96 | 257.08 | 140.96 | -7.93 | 0.109 |
| 180.00 | -5.49 | -5.36 | 0.00 | -23.6 | 0.00 | 23.58 | 864.05 | 205.73 | 282.76 | 254.18 | 141.79 | -7.94 | 0.100 |
| 181.90 | 0.00 | -4.55 | 0.00 | -13.4 | 0.00 | 13.40 | 845.53 | 201.32 | 270.78 | 243.31 | 144.95 | -7.97 | 0.056 |

CALCULATED FORCES

Load Case: 0.9D + 1.0W

112.09 mph Wind with No Ice (Reduced DL)

28 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 | -54.92 | -29.89 | 0.00 | -3,797.4 | 0.00 | 3,797.44 | 3,843.15 | 977.25 | 3,926.90 | 3,331.92 | 0 | 0 | 0.473 |
| 5.00 | -52.88 | -29.45 | 0.00 | -3,648.0 | 0.00 | 3,647.99 | 3,798.11 | 958.41 | 3,776.99 | 3,228.78 | 0.09 | -0.17 | 0.462 |
| 10.00 | -50.86 | -29.00 | 0.00 | -3,500.7 | 0.00 | 3,500.74 | 3,751.92 | 939.57 | 3,630.00 | 3,126.22 | 0.36 | -0.34 | 0.450 |
| 14.71 | -49.01 | -28.76 | 0.00 | -3,364.1 | 0.00 | 3,364.13 | 3,707.37 | 921.82 | 3,494.20 | 3,030.17 | 0.77 | -0.49 | 0.440 |
| 14.71 | -49.01 | -28.76 | 0.00 | -3,364.1 | 0.00 | 3,364.13 | 3,707.37 | 921.82 | 3,494.20 | 3,030.17 | 0.77 | -0.49 | 0.541 |
| 15.00 | -48.86 | -28.54 | 0.00 | -3,355.8 | 0.00 | 3,355.79 | 3,704.60 | 920.73 | 3,485.92 | 3,024.27 | 0.8 | -0.5 | 0.541 |
| 20.00 | -47.09 | -28.13 | 0.00 | -3,213.1 | 0.00 | 3,213.11 | 3,656.13 | 901.89 | 3,344.76 | 2,923.02 | 1.44 | -0.71 | 0.528 |
| 25.00 | -45.41 | -27.76 | 0.00 | -3,072.4 | 0.00 | 3,072.45 | 3,606.52 | 883.05 | 3,206.52 | 2,822.50 | 2.3 | -0.92 | 0.515 |
| 30.00 | -43.75 | -27.37 | 0.00 | -2,933.6 | 0.00 | 2,933.63 | 3,555.76 | 864.21 | 3,071.20 | 2,722.79 | 3.37 | -1.13 | 0.502 |
| 35.00 | -42.11 | -26.94 | 0.00 | -2,796.8 | 0.00 | 2,796.77 | 3,503.87 | 845.37 | 2,938.79 | 2,623.93 | 4.67 | -1.34 | 0.489 |
| 40.00 | -40.50 | -26.52 | 0.00 | -2,662.0 | 0.00 | 2,662.05 | 3,450.83 | 826.52 | 2,809.30 | 2,525.99 | 6.19 | -1.55 | 0.476 |
| 44.10 | -39.21 | -26.26 | 0.00 | -2,553.3 | 0.00 | 2,553.28 | 3,406.49 | 811.07 | 2,705.26 | 2,446.38 | 7.6 | -1.72 | 0.465 |
| 45.00 | -38.78 | -26.03 | 0.00 | -2,529.7 | 0.00 | 2,529.69 | 3,392.27 | 807.68 | 2,682.73 | 2,425.89 | 7.93 | -1.76 | 0.454 |
| 48.81 | -37.10 | -25.73 | 0.00 | -2,430.5 | 0.00 | 2,430.53 | 3,065.99 | 749.30 | 2,499.64 | 2,204.25 | 9.4 | -1.92 | 0.470 |
| 50.00 | -36.70 | -25.42 | 0.00 | -2,399.9 | 0.00 | 2,399.90 | 3,054.87 | 745.16 | 2,472.09 | 2,183.98 | 9.88 | -1.97 | 0.466 |
| 55.00 | -35.18 | -24.94 | 0.00 | -2,272.8 | 0.00 | 2,272.81 | 3,007.41 | 727.76 | 2,358.01 | 2,099.31 | 12.06 | -2.18 | 0.451 |
| 60.00 | -33.68 | -24.44 | 0.00 | -2,148.1 | 0.00 | 2,148.10 | 2,958.80 | 710.36 | 2,246.63 | 2,015.46 | 14.45 | -2.38 | 0.436 |
| 65.00 | -32.20 | -23.92 | 0.00 | -2,025.9 | 0.00 | 2,025.92 | 2,910.40 | 692.95 | 2,137.94 | 1,933.39 | 17.06 | -2.59 | 0.420 |
| 70.00 | -30.74 | -23.40 | 0.00 | -1,906.3 | 0.00 | 1,906.31 | 2,837.31 | 675.55 | 2,031.95 | 1,836.96 | 19.88 | -2.8 | 0.407 |
| 75.00 | -29.30 | -22.86 | 0.00 | -1,789.3 | 0.00 | 1,789.32 | 2,764.22 | 658.15 | 1,928.65 | 1,743.00 | 22.92 | -3 | 0.394 |
| 80.00 | -27.88 | -22.32 | 0.00 | -1,675.0 | 0.00 | 1,675.02 | 2,691.13 | 640.75 | 1,828.04 | 1,651.51 | 26.16 | -3.2 | 0.381 |
| 80.00 | -27.88 | -22.32 | 0.00 | -1,675.0 | 0.00 | 1,675.02 | 2,691.13 | 640.75 | 1,828.04 | 1,651.51 | 26.16 | -3.2 | 0.417 |
| 85.00 | -26.57 | -21.91 | 0.00 | -1,563.4 | 0.00 | 1,563.42 | 2,618.04 | 623.34 | 1,730.13 | 1,562.49 | 29.62 | -3.4 | 0.402 |
| 86.58 | -26.14 | -21.67 | 0.00 | -1,528.8 | 0.00 | 1,528.81 | 2,594.94 | 617.84 | 1,699.75 | 1,534.87 | 30.76 | -3.47 | 0.397 |
| 90.00 | -24.95 | -21.38 | 0.00 | -1,454.7 | 0.00 | 1,454.72 | 2,544.95 | 605.94 | 1,634.92 | 1,475.93 | 33.3 | -3.62 | 0.379 |
| 90.42 | -24.78 | -21.18 | 0.00 | -1,445.7 | 0.00 | 1,445.70 | 2,117.10 | 515.87 | 1,421.75 | 1,257.35 | 33.62 | -3.64 | 0.411 |
| 95.00 | -23.67 | -20.66 | 0.00 | -1,348.8 | 0.00 | 1,348.75 | 2,080.73 | 502.59 | 1,349.52 | 1,203.60 | 37.2 | -3.83 | 0.392 |
| 100.00 | -22.47 | -20.10 | 0.00 | -1,245.5 | 0.00 | 1,245.48 | 2,039.91 | 488.09 | 1,272.80 | 1,145.57 | 41.32 | -4.04 | 0.370 |
| 105.00 | -21.29 | -19.54 | 0.00 | -1,145.0 | 0.00 | 1,144.97 | 1,989.06 | 473.59 | 1,198.31 | 1,083.45 | 45.67 | -4.25 | 0.350 |
| 110.00 | -20.13 | -18.98 | 0.00 | -1,047.3 | 0.00 | 1,047.26 | 1,928.15 | 459.08 | 1,126.08 | 1,017.74 | 50.23 | -4.46 | 0.331 |
| 115.00 | -18.98 | -18.42 | 0.00 | -952.4 | 0.00 | 952.36 | 1,867.24 | 444.58 | 1,056.08 | 954.09 | 55 | -4.66 | 0.312 |
| 120.00 | -17.85 | -17.85 | 0.00 | -860.3 | 0.00 | 860.28 | 1,806.33 | 430.08 | 988.34 | 892.49 | 59.98 | -4.85 | 0.292 |
| 120.00 | -17.85 | -17.85 | 0.00 | -860.3 | 0.00 | 860.28 | 1,806.33 | 430.08 | 988.34 | 892.49 | 59.98 | -4.85 | 0.349 |
| 125.00 | -16.89 | -17.43 | 0.00 | -771.0 | 0.00 | 771.04 | 1,745.42 | 415.58 | 922.84 | 832.95 | 65.16 | -5.04 | 0.325 |
| 126.28 | -16.63 | -17.20 | 0.00 | -748.7 | 0.00 | 748.73 | 1,729.83 | 411.86 | 906.43 | 818.04 | 66.51 | -5.09 | 0.319 |
| 126.28 | -16.63 | -17.20 | 0.00 | -748.7 | 0.00 | 748.73 | 1,355.54 | 330.37 | 728.90 | 644.47 | 66.51 | -5.09 | 0.350 |
| 130.00 | -15.96 | -16.76 | 0.00 | -684.8 | 0.00 | 684.75 | 1,331.91 | 321.74 | 691.32 | 616.52 | 70.54 | -5.25 | 0.327 |
| 135.00 | -15.08 | -16.22 | 0.00 | -601.0 | 0.00 | 600.97 | 1,299.15 | 310.14 | 642.38 | 579.43 | 76.15 | -5.47 | 0.294 |
| 140.00 | -14.21 | -15.68 | 0.00 | -519.9 | 0.00 | 519.89 | 1,253.86 | 298.54 | 595.24 | 538.08 | 81.99 | -5.67 | 0.264 |
| 140.00 | -14.21 | -15.68 | 0.00 | -519.9 | 0.00 | 519.89 | 1,253.86 | 298.54 | 595.24 | 538.08 | 81.99 | -5.67 | 0.327 |
| 145.00 | -13.48 | -15.15 | 0.00 | -441.5 | 0.00 | 441.51 | 1,205.14 | 286.94 | 549.89 | 496.84 | 88.02 | -5.86 | 0.290 |
| 150.00 | -12.76 | -14.63 | 0.00 | -365.8 | 0.00 | 365.77 | 1,156.41 | 275.34 | 506.34 | 457.24 | 94.26 | -6.07 | 0.251 |
| 155.00 | -12.05 | -14.15 | 0.00 | -292.6 | 0.00 | 292.65 | 1,107.68 | 263.73 | 464.59 | 419.29 | 100.71 | -6.26 | 0.211 |
| 158.50 | -11.57 | -13.84 | 0.00 | -243.1 | 0.00 | 243.13 | 1,073.57 | 255.61 | 436.43 | 393.70 | 105.34 | -6.38 | 0.181 |
| 158.50 | -11.57 | -13.84 | 0.00 | -243.1 | 0.00 | 243.13 | 1,073.57 | 255.61 | 436.43 | 393.70 | 105.34 | -6.38 | 0.631 |
| 160.00 | -11.44 | -13.70 | 0.00 | -222.4 | 0.00 | 222.36 | 1,058.96 | 252.13 | 424.63 | 382.97 | 107.35 | -6.42 | 0.594 |
| 163.00 | -8.73 | -10.82 | 0.00 | -181.3 | 0.00 | 181.28 | 1,029.72 | 245.17 | 401.52 | 361.98 | 111.47 | -6.72 | 0.511 |
| 165.00 | -8.57 | -10.67 | 0.00 | -159.6 | 0.00 | 159.64 | 1,010.23 | 240.53 | 386.47 | 348.31 | 114.32 | -6.9 | 0.469 |
| 170.00 | -8.21 | -10.42 | 0.00 | -106.3 | 0.00 | 106.31 | 961.50 | 228.93 | 350.10 | 315.29 | 121.73 | -7.27 | 0.348 |
| 175.00 | -7.12 | -7.63 | 0.00 | -52.1 | 0.00 | 52.09 | 912.77 | 217.33 | 315.54 | 283.91 | 129.48 | -7.53 | 0.193 |
| 176.00 | -4.37 | -5.55 | 0.00 | -44.5 | 0.00 | 44.46 | 903.03 | 215.01 | 308.84 | 277.83 | 131.06 | -7.57 | 0.166 |
| 176.10 | -4.20 | -5.33 | 0.00 | -43.9 | 0.00 | 43.90 | 902.05 | 214.77 | 308.17 | 277.23 | 131.21 | -7.57 | 0.164 |
| 179.50 | -4.00 | -5.18 | 0.00 | -25.7 | 0.00 | 25.73 | 868.92 | 206.89 | 285.96 | 257.08 | 136.63 | -7.66 | 0.105 |
| 180.00 | -3.98 | -5.13 | 0.00 | -23.1 | 0.00 | 23.14 | 864.05 | 205.73 | 282.76 | 254.18 | 137.43 | -7.68 | 0.096 |
| 181.90 | 0.00 | -4.55 | 0.00 | -13.4 | 0.00 | 13.40 | 845.53 | 201.32 | 270.78 | 243.31 | 140.48 | -7.71 | 0.056 |

CALCULATED FORCES

Load Case: 1.2D + 1.0Di + 1.0Wi 48.73 mph Wind with 0.85" Radial Ice 28 Iterations
 Gust Response Factor: 1.10 Ice Dead Load Factor: 1.00
 Dead load Factor: 1.20
 Wind Load Factor: 1.00 Ice Importance 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 | -88.01 | -6.72 | 0.00 | -956.4 | 0.00 | 956.39 | 3,843.15 | 977.25 | 3,926.90 | 3,331.92 | 0 | 0 | 0.129 |
| 5.00 | -85.11 | -6.69 | 0.00 | -922.8 | 0.00 | 922.79 | 3,798.11 | 958.41 | 3,776.99 | 3,228.78 | 0.02 | -0.04 | 0.126 |
| 10.00 | -82.21 | -6.65 | 0.00 | -889.4 | 0.00 | 889.35 | 3,751.92 | 939.57 | 3,630.00 | 3,126.22 | 0.09 | -0.08 | 0.123 |
| 14.71 | -79.48 | -6.63 | 0.00 | -858.0 | 0.00 | 858.03 | 3,707.37 | 921.82 | 3,494.20 | 3,030.17 | 0.19 | -0.13 | 0.121 |
| 14.71 | -79.48 | -6.63 | 0.00 | -858.0 | 0.00 | 858.03 | 3,707.37 | 921.82 | 3,494.20 | 3,030.17 | 0.19 | -0.13 | 0.148 |
| 15.00 | -79.33 | -6.62 | 0.00 | -856.1 | 0.00 | 856.11 | 3,704.60 | 920.73 | 3,485.92 | 3,024.27 | 0.2 | -0.13 | 0.148 |
| 20.00 | -76.77 | -6.58 | 0.00 | -823.0 | 0.00 | 823.02 | 3,656.13 | 901.89 | 3,344.76 | 2,923.02 | 0.36 | -0.18 | 0.145 |
| 25.00 | -74.39 | -6.56 | 0.00 | -790.1 | 0.00 | 790.09 | 3,606.52 | 883.05 | 3,206.52 | 2,822.50 | 0.58 | -0.23 | 0.142 |
| 30.00 | -72.04 | -6.52 | 0.00 | -757.3 | 0.00 | 757.31 | 3,555.76 | 864.21 | 3,071.20 | 2,722.79 | 0.86 | -0.29 | 0.139 |
| 35.00 | -69.70 | -6.49 | 0.00 | -724.7 | 0.00 | 724.69 | 3,503.87 | 845.37 | 2,938.79 | 2,623.93 | 1.19 | -0.34 | 0.135 |
| 40.00 | -67.39 | -6.45 | 0.00 | -692.2 | 0.00 | 692.25 | 3,450.83 | 826.52 | 2,809.30 | 2,525.99 | 1.58 | -0.4 | 0.132 |
| 44.10 | -65.52 | -6.42 | 0.00 | -665.8 | 0.00 | 665.80 | 3,406.49 | 811.07 | 2,705.26 | 2,446.38 | 1.94 | -0.44 | 0.129 |
| 45.00 | -64.94 | -6.40 | 0.00 | -660.0 | 0.00 | 660.03 | 3,392.27 | 807.68 | 2,682.73 | 2,425.89 | 2.02 | -0.45 | 0.127 |
| 48.81 | -62.55 | -6.36 | 0.00 | -635.6 | 0.00 | 635.65 | 3,065.99 | 749.30 | 2,499.64 | 2,204.25 | 2.4 | -0.49 | 0.131 |
| 50.00 | -62.02 | -6.33 | 0.00 | -628.1 | 0.00 | 628.09 | 3,054.87 | 745.16 | 2,472.09 | 2,183.98 | 2.53 | -0.51 | 0.130 |
| 55.00 | -59.82 | -6.26 | 0.00 | -596.4 | 0.00 | 596.45 | 3,007.41 | 727.76 | 2,358.01 | 2,099.31 | 3.09 | -0.56 | 0.126 |
| 60.00 | -57.65 | -6.18 | 0.00 | -565.2 | 0.00 | 565.15 | 2,958.80 | 710.36 | 2,246.63 | 2,015.46 | 3.7 | -0.62 | 0.122 |
| 65.00 | -55.51 | -6.09 | 0.00 | -534.3 | 0.00 | 534.26 | 2,910.40 | 692.95 | 2,137.94 | 1,933.39 | 4.38 | -0.67 | 0.118 |
| 70.00 | -53.38 | -5.99 | 0.00 | -503.8 | 0.00 | 503.83 | 2,837.31 | 675.55 | 2,031.95 | 1,836.96 | 5.11 | -0.72 | 0.115 |
| 75.00 | -51.28 | -5.88 | 0.00 | -473.9 | 0.00 | 473.88 | 2,764.22 | 658.15 | 1,928.65 | 1,743.00 | 5.89 | -0.78 | 0.111 |
| 80.00 | -49.21 | -5.77 | 0.00 | -444.4 | 0.00 | 444.45 | 2,691.13 | 640.75 | 1,828.04 | 1,651.51 | 6.74 | -0.83 | 0.108 |
| 80.00 | -49.21 | -5.77 | 0.00 | -444.4 | 0.00 | 444.45 | 2,691.13 | 640.75 | 1,828.04 | 1,651.51 | 6.74 | -0.83 | 0.118 |
| 85.00 | -47.26 | -5.68 | 0.00 | -415.6 | 0.00 | 415.59 | 2,618.04 | 623.34 | 1,730.13 | 1,562.49 | 7.64 | -0.88 | 0.114 |
| 86.58 | -46.64 | -5.64 | 0.00 | -406.6 | 0.00 | 406.62 | 2,594.94 | 617.84 | 1,699.75 | 1,534.87 | 7.93 | -0.9 | 0.113 |
| 90.00 | -44.91 | -5.57 | 0.00 | -387.3 | 0.00 | 387.34 | 2,544.95 | 605.94 | 1,634.92 | 1,475.93 | 8.59 | -0.94 | 0.108 |
| 90.42 | -44.69 | -5.53 | 0.00 | -385.0 | 0.00 | 385.00 | 2,117.10 | 515.87 | 1,421.75 | 1,257.35 | 8.68 | -0.95 | 0.117 |
| 95.00 | -43.04 | -5.42 | 0.00 | -359.7 | 0.00 | 359.67 | 2,080.73 | 502.59 | 1,349.52 | 1,203.60 | 9.61 | -1 | 0.112 |
| 100.00 | -41.26 | -5.30 | 0.00 | -332.6 | 0.00 | 332.57 | 2,039.91 | 488.09 | 1,272.80 | 1,145.57 | 10.69 | -1.06 | 0.106 |
| 105.00 | -39.49 | -5.17 | 0.00 | -306.1 | 0.00 | 306.09 | 1,989.06 | 473.59 | 1,198.31 | 1,083.45 | 11.82 | -1.11 | 0.100 |
| 110.00 | -37.75 | -5.03 | 0.00 | -280.3 | 0.00 | 280.26 | 1,928.15 | 459.08 | 1,126.08 | 1,017.74 | 13.02 | -1.17 | 0.095 |
| 115.00 | -36.03 | -4.89 | 0.00 | -255.1 | 0.00 | 255.11 | 1,867.24 | 444.58 | 1,056.08 | 954.09 | 14.27 | -1.22 | 0.090 |
| 120.00 | -34.33 | -4.75 | 0.00 | -230.7 | 0.00 | 230.66 | 1,806.33 | 430.08 | 988.34 | 892.49 | 15.58 | -1.27 | 0.084 |
| 120.00 | -34.33 | -4.75 | 0.00 | -230.7 | 0.00 | 230.66 | 1,806.33 | 430.08 | 988.34 | 892.49 | 15.58 | -1.27 | 0.101 |
| 125.00 | -32.84 | -4.63 | 0.00 | -206.9 | 0.00 | 206.93 | 1,745.42 | 415.58 | 922.84 | 832.95 | 16.93 | -1.32 | 0.094 |
| 126.28 | -32.46 | -4.58 | 0.00 | -201.0 | 0.00 | 201.00 | 1,729.83 | 411.86 | 906.43 | 818.04 | 17.29 | -1.34 | 0.093 |
| 126.28 | -32.46 | -4.58 | 0.00 | -201.0 | 0.00 | 201.00 | 1,355.54 | 330.37 | 728.90 | 644.47 | 17.29 | -1.34 | 0.102 |
| 130.00 | -31.43 | -4.48 | 0.00 | -184.0 | 0.00 | 183.95 | 1,331.91 | 321.74 | 691.32 | 616.52 | 18.35 | -1.38 | 0.095 |
| 135.00 | -30.07 | -4.34 | 0.00 | -161.6 | 0.00 | 161.58 | 1,299.15 | 310.14 | 642.38 | 579.43 | 19.83 | -1.44 | 0.086 |
| 140.00 | -28.73 | -4.20 | 0.00 | -139.9 | 0.00 | 139.88 | 1,253.86 | 298.54 | 595.24 | 538.08 | 21.36 | -1.49 | 0.078 |
| 140.00 | -28.73 | -4.20 | 0.00 | -139.9 | 0.00 | 139.88 | 1,253.86 | 298.54 | 595.24 | 538.08 | 21.36 | -1.49 | 0.096 |
| 145.00 | -27.57 | -4.07 | 0.00 | -118.9 | 0.00 | 118.88 | 1,205.14 | 286.94 | 549.89 | 496.84 | 22.95 | -1.54 | 0.086 |
| 150.00 | -26.42 | -3.94 | 0.00 | -98.5 | 0.00 | 98.54 | 1,156.41 | 275.34 | 506.34 | 457.24 | 24.6 | -1.6 | 0.076 |
| 155.00 | -25.30 | -3.81 | 0.00 | -78.9 | 0.00 | 78.87 | 1,107.68 | 263.73 | 464.59 | 419.29 | 26.3 | -1.65 | 0.065 |
| 158.50 | -24.52 | -3.72 | 0.00 | -65.5 | 0.00 | 65.54 | 1,073.57 | 255.61 | 436.43 | 393.70 | 27.53 | -1.68 | 0.056 |
| 158.50 | -24.52 | -3.72 | 0.00 | -65.5 | 0.00 | 65.54 | 1,073.57 | 255.61 | 436.43 | 393.70 | 27.53 | -1.68 | 0.190 |
| 160.00 | -24.32 | -3.69 | 0.00 | -60.0 | 0.00 | 59.95 | 1,058.96 | 252.13 | 424.63 | 382.97 | 28.06 | -1.69 | 0.180 |
| 163.00 | -19.08 | -2.94 | 0.00 | -48.9 | 0.00 | 48.88 | 1,029.72 | 245.17 | 401.52 | 361.98 | 29.15 | -1.77 | 0.154 |
| 165.00 | -18.85 | -2.91 | 0.00 | -43.0 | 0.00 | 43.00 | 1,010.23 | 240.53 | 386.47 | 348.31 | 29.9 | -1.82 | 0.142 |
| 170.00 | -18.29 | -2.85 | 0.00 | -28.5 | 0.00 | 28.47 | 961.50 | 228.93 | 350.10 | 315.29 | 31.87 | -1.92 | 0.109 |
| 175.00 | -14.55 | -2.15 | 0.00 | -13.8 | 0.00 | 13.77 | 912.77 | 217.33 | 315.54 | 283.91 | 33.92 | -1.99 | 0.065 |
| 176.00 | -9.44 | -1.51 | 0.00 | -11.6 | 0.00 | 11.62 | 903.03 | 215.01 | 308.84 | 277.83 | 34.34 | -2 | 0.052 |
| 176.10 | -9.10 | -1.45 | 0.00 | -11.5 | 0.00 | 11.47 | 902.05 | 214.77 | 308.17 | 277.23 | 34.38 | -2 | 0.051 |
| 179.50 | -8.71 | -1.41 | 0.00 | -6.5 | 0.00 | 6.51 | 868.92 | 206.89 | 285.96 | 257.08 | 35.81 | -2.03 | 0.035 |
| 180.00 | -8.67 | -1.39 | 0.00 | -5.8 | 0.00 | 5.81 | 864.05 | 205.73 | 282.76 | 254.18 | 36.03 | -2.03 | 0.033 |
| 181.90 | 0.00 | -1.09 | 0.00 | -3.2 | 0.00 | 3.16 | 845.53 | 201.32 | 270.78 | 243.31 | 36.84 | -2.04 | 0.013 |

CALCULATED FORCES

Load Case: 1.0D + 1.0W

60 mph Wind with No Ice

27 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 | -61.07 | -7.77 | 0.00 | -994.0 | 0.00 | 993.97 | 3,843.15 | 977.25 | 3,926.90 | 3,331.92 | 0 | 0 | 0.130 |
| 5.00 | -58.89 | -7.66 | 0.00 | -955.2 | 0.00 | 955.15 | 3,798.11 | 958.41 | 3,776.99 | 3,228.78 | 0.02 | -0.04 | 0.127 |
| 10.00 | -56.73 | -7.55 | 0.00 | -916.9 | 0.00 | 916.86 | 3,751.92 | 939.57 | 3,630.00 | 3,126.22 | 0.09 | -0.09 | 0.123 |
| 14.71 | -54.72 | -7.49 | 0.00 | -881.3 | 0.00 | 881.31 | 3,707.37 | 921.82 | 3,494.20 | 3,030.17 | 0.2 | -0.13 | 0.120 |
| 14.71 | -54.72 | -7.49 | 0.00 | -881.3 | 0.00 | 881.31 | 3,707.37 | 921.82 | 3,494.20 | 3,030.17 | 0.2 | -0.13 | 0.148 |
| 15.00 | -54.61 | -7.43 | 0.00 | -879.1 | 0.00 | 879.14 | 3,704.60 | 920.73 | 3,485.92 | 3,024.27 | 0.21 | -0.13 | 0.148 |
| 20.00 | -52.74 | -7.34 | 0.00 | -842.0 | 0.00 | 841.98 | 3,656.13 | 901.89 | 3,344.76 | 2,923.02 | 0.38 | -0.19 | 0.144 |
| 25.00 | -50.97 | -7.25 | 0.00 | -805.3 | 0.00 | 805.30 | 3,606.52 | 883.05 | 3,206.52 | 2,822.50 | 0.6 | -0.24 | 0.141 |
| 30.00 | -49.22 | -7.15 | 0.00 | -769.1 | 0.00 | 769.07 | 3,555.76 | 864.21 | 3,071.20 | 2,722.79 | 0.88 | -0.3 | 0.137 |
| 35.00 | -47.49 | -7.05 | 0.00 | -733.3 | 0.00 | 733.31 | 3,503.87 | 845.37 | 2,938.79 | 2,623.93 | 1.22 | -0.35 | 0.134 |
| 40.00 | -45.77 | -6.94 | 0.00 | -698.1 | 0.00 | 698.08 | 3,450.83 | 826.52 | 2,809.30 | 2,525.99 | 1.62 | -0.41 | 0.130 |
| 44.10 | -44.38 | -6.88 | 0.00 | -669.6 | 0.00 | 669.61 | 3,406.49 | 811.07 | 2,705.26 | 2,446.38 | 1.99 | -0.45 | 0.127 |
| 45.00 | -43.94 | -6.82 | 0.00 | -663.4 | 0.00 | 663.44 | 3,392.27 | 807.68 | 2,682.73 | 2,425.89 | 2.08 | -0.46 | 0.124 |
| 48.81 | -42.11 | -6.74 | 0.00 | -637.5 | 0.00 | 637.46 | 3,065.99 | 749.30 | 2,499.64 | 2,204.25 | 2.46 | -0.5 | 0.128 |
| 50.00 | -41.72 | -6.67 | 0.00 | -629.4 | 0.00 | 629.43 | 3,054.87 | 745.16 | 2,472.09 | 2,183.98 | 2.59 | -0.52 | 0.127 |
| 55.00 | -40.10 | -6.55 | 0.00 | -596.1 | 0.00 | 596.10 | 3,007.41 | 727.76 | 2,358.01 | 2,099.31 | 3.16 | -0.57 | 0.123 |
| 60.00 | -38.50 | -6.42 | 0.00 | -563.4 | 0.00 | 563.36 | 2,958.80 | 710.36 | 2,246.63 | 2,015.46 | 3.79 | -0.63 | 0.119 |
| 65.00 | -36.92 | -6.28 | 0.00 | -531.3 | 0.00 | 531.27 | 2,910.40 | 692.95 | 2,137.94 | 1,933.39 | 4.47 | -0.68 | 0.115 |
| 70.00 | -35.35 | -6.15 | 0.00 | -499.8 | 0.00 | 499.85 | 2,837.31 | 675.55 | 2,031.95 | 1,836.96 | 5.21 | -0.73 | 0.111 |
| 75.00 | -33.81 | -6.01 | 0.00 | -469.1 | 0.00 | 469.11 | 2,764.22 | 658.15 | 1,928.65 | 1,743.00 | 6.01 | -0.79 | 0.108 |
| 80.00 | -32.27 | -5.86 | 0.00 | -439.1 | 0.00 | 439.08 | 2,691.13 | 640.75 | 1,828.04 | 1,651.51 | 6.86 | -0.84 | 0.104 |
| 80.00 | -32.27 | -5.86 | 0.00 | -439.1 | 0.00 | 439.08 | 2,691.13 | 640.75 | 1,828.04 | 1,651.51 | 6.86 | -0.84 | 0.114 |
| 85.00 | -30.84 | -5.75 | 0.00 | -409.8 | 0.00 | 409.76 | 2,618.04 | 623.34 | 1,730.13 | 1,562.49 | 7.77 | -0.89 | 0.110 |
| 86.58 | -30.40 | -5.69 | 0.00 | -400.7 | 0.00 | 400.67 | 2,594.94 | 617.84 | 1,699.75 | 1,534.87 | 8.06 | -0.91 | 0.108 |
| 90.00 | -29.08 | -5.61 | 0.00 | -381.2 | 0.00 | 381.21 | 2,544.95 | 605.94 | 1,634.92 | 1,475.93 | 8.73 | -0.95 | 0.103 |
| 90.42 | -28.92 | -5.56 | 0.00 | -378.8 | 0.00 | 378.84 | 2,117.10 | 515.87 | 1,421.75 | 1,257.35 | 8.81 | -0.95 | 0.112 |
| 95.00 | -27.72 | -5.43 | 0.00 | -353.4 | 0.00 | 353.37 | 2,080.73 | 502.59 | 1,349.52 | 1,203.60 | 9.75 | -1 | 0.107 |
| 100.00 | -26.42 | -5.28 | 0.00 | -326.2 | 0.00 | 326.24 | 2,039.91 | 488.09 | 1,272.80 | 1,145.57 | 10.84 | -1.06 | 0.101 |
| 105.00 | -25.14 | -5.13 | 0.00 | -299.8 | 0.00 | 299.84 | 1,989.06 | 473.59 | 1,198.31 | 1,083.45 | 11.98 | -1.11 | 0.095 |
| 110.00 | -23.87 | -4.98 | 0.00 | -274.2 | 0.00 | 274.19 | 1,928.15 | 459.08 | 1,126.08 | 1,017.74 | 13.17 | -1.17 | 0.090 |
| 115.00 | -22.62 | -4.83 | 0.00 | -249.3 | 0.00 | 249.29 | 1,867.24 | 444.58 | 1,056.08 | 954.09 | 14.42 | -1.22 | 0.085 |
| 120.00 | -21.38 | -4.68 | 0.00 | -225.1 | 0.00 | 225.14 | 1,806.33 | 430.08 | 988.34 | 892.49 | 15.73 | -1.27 | 0.080 |
| 120.00 | -21.38 | -4.68 | 0.00 | -225.1 | 0.00 | 225.14 | 1,806.33 | 430.08 | 988.34 | 892.49 | 15.73 | -1.27 | 0.095 |
| 125.00 | -20.30 | -4.56 | 0.00 | -201.8 | 0.00 | 201.76 | 1,745.42 | 415.58 | 922.84 | 832.95 | 17.09 | -1.32 | 0.089 |
| 126.28 | -20.03 | -4.50 | 0.00 | -195.9 | 0.00 | 195.92 | 1,729.83 | 411.86 | 906.43 | 818.04 | 17.44 | -1.33 | 0.087 |
| 126.28 | -20.03 | -4.50 | 0.00 | -195.9 | 0.00 | 195.92 | 1,355.54 | 330.37 | 728.90 | 644.47 | 17.44 | -1.33 | 0.096 |
| 130.00 | -19.30 | -4.39 | 0.00 | -179.2 | 0.00 | 179.17 | 1,331.91 | 321.74 | 691.32 | 616.52 | 18.5 | -1.38 | 0.089 |
| 135.00 | -18.32 | -4.24 | 0.00 | -157.2 | 0.00 | 157.23 | 1,299.15 | 310.14 | 642.38 | 579.43 | 19.97 | -1.43 | 0.081 |
| 140.00 | -17.36 | -4.10 | 0.00 | -136.0 | 0.00 | 136.01 | 1,253.86 | 298.54 | 595.24 | 538.08 | 21.5 | -1.49 | 0.073 |
| 140.00 | -17.36 | -4.10 | 0.00 | -136.0 | 0.00 | 136.01 | 1,253.86 | 298.54 | 595.24 | 538.08 | 21.5 | -1.49 | 0.090 |
| 145.00 | -16.54 | -3.96 | 0.00 | -115.5 | 0.00 | 115.51 | 1,205.14 | 286.94 | 549.89 | 496.84 | 23.09 | -1.54 | 0.080 |
| 150.00 | -15.74 | -3.83 | 0.00 | -95.7 | 0.00 | 95.70 | 1,156.41 | 275.34 | 506.34 | 457.24 | 24.72 | -1.59 | 0.070 |
| 155.00 | -14.94 | -3.70 | 0.00 | -76.6 | 0.00 | 76.57 | 1,107.68 | 263.73 | 464.59 | 419.29 | 26.42 | -1.64 | 0.059 |
| 158.50 | -14.39 | -3.62 | 0.00 | -63.6 | 0.00 | 63.62 | 1,073.57 | 255.61 | 436.43 | 393.70 | 27.63 | -1.67 | 0.051 |
| 158.50 | -14.39 | -3.62 | 0.00 | -63.6 | 0.00 | 63.62 | 1,073.57 | 255.61 | 436.43 | 393.70 | 27.63 | -1.67 | 0.175 |
| 160.00 | -14.26 | -3.58 | 0.00 | -58.2 | 0.00 | 58.19 | 1,058.96 | 252.13 | 424.63 | 382.97 | 28.16 | -1.68 | 0.166 |
| 163.00 | -10.98 | -2.83 | 0.00 | -47.4 | 0.00 | 47.44 | 1,029.72 | 245.17 | 401.52 | 361.98 | 29.24 | -1.76 | 0.142 |
| 165.00 | -10.82 | -2.79 | 0.00 | -41.8 | 0.00 | 41.78 | 1,010.23 | 240.53 | 386.47 | 348.31 | 29.99 | -1.81 | 0.131 |
| 170.00 | -10.45 | -2.73 | 0.00 | -27.8 | 0.00 | 27.81 | 961.50 | 228.93 | 350.10 | 315.29 | 31.94 | -1.9 | 0.099 |
| 175.00 | -8.89 | -2.01 | 0.00 | -13.6 | 0.00 | 13.60 | 912.77 | 217.33 | 315.54 | 283.91 | 33.97 | -1.97 | 0.058 |
| 176.00 | -5.57 | -1.46 | 0.00 | -11.6 | 0.00 | 11.59 | 903.03 | 215.01 | 308.84 | 277.83 | 34.38 | -1.98 | 0.048 |
| 176.10 | -5.37 | -1.40 | 0.00 | -11.4 | 0.00 | 11.44 | 902.05 | 214.77 | 308.17 | 277.23 | 34.43 | -1.98 | 0.047 |
| 179.50 | -5.13 | -1.36 | 0.00 | -6.7 | 0.00 | 6.67 | 868.92 | 206.89 | 285.96 | 257.08 | 35.85 | -2.01 | 0.032 |
| 180.00 | -5.10 | -1.35 | 0.00 | -6.0 | 0.00 | 5.99 | 864.05 | 205.73 | 282.76 | 254.18 | 36.06 | -2.01 | 0.030 |
| 181.90 | 0.00 | -1.17 | 0.00 | -3.4 | 0.00 | 3.44 | 845.53 | 201.32 | 270.78 | 243.31 | 36.86 | -2.02 | 0.014 |

EQUIVALENT LATERAL FORCES METHOD ANALYSIS

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

| | |
|--|----------|
| Spectral Response Acceleration for Short Period (S_S): | 0.176 |
| Spectral Response Acceleration at 1.0 Second Period (S_1): | 0.054 |
| Long-Period Transition Period (T_L – Seconds): | 6 |
| Importance Factor (I_e): | 1.000 |
| Site Coefficient F_a : | 1.600 |
| Site Coefficient F_v : | 2.400 |
| Response Modification Coefficient (R): | 1.500 |
| Design Spectral Response Acceleration at Short Period (S_{DS}): | 0.188 |
| Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}): | 0.086 |
| Seismic Response Coefficient (C_S): | 0.030 |
| Upper Limit C_S : | 0.030 |
| Lower Limit C_S : | 0.030 |
| Period based on Rayleigh Method (sec): | 3.610 |
| Redundancy Factor (p): | 1.000 |
| Seismic Force Distribution Exponent (k): | 2.000 |
| Total Unfactored Dead Load: | 61.080 k |
| Seismic Base Shear (E): | 1.830 k |

SEISMIC FORCES

| Segment | 1.2D + 1.0Ev + 1.0Eh | Seismic | Height Above Base (ft) | Weight (lb) | W_z (lb-ft) | C_{vx} | Horizontal Force (lb) | Vertical Force (lb) |
|---------|----------------------|---------|------------------------|-------------|---------------|----------|-----------------------|---------------------|
| 48 | | | 180.95 | 118 | 3,852 | 0.005 | 10 | 146 |
| 47 | | | 179.75 | 31 | 1,009 | 0.001 | 2 | 39 |
| 46 | | | 177.8 | 215 | 6,807 | 0.009 | 17 | 266 |
| 45 | | | 176.05 | 6 | 199 | 0.000 | 0 | 8 |
| 44 | | | 175.5 | 64 | 1,982 | 0.003 | 5 | 80 |
| 43 | | | 172.5 | 360 | 10,702 | 0.014 | 26 | 445 |
| 42 | | | 167.5 | 371 | 10,406 | 0.014 | 26 | 459 |
| 41 | | | 164 | 152 | 4,075 | 0.006 | 10 | 188 |
| 40 | | | 161.5 | 249 | 6,499 | 0.009 | 16 | 308 |
| 39 | | | 159.25 | 126 | 3,198 | 0.004 | 8 | 156 |
| 38 | | | 156.75 | 551 | 13,531 | 0.018 | 33 | 682 |
| 37 | | | 152.5 | 796 | 18,519 | 0.025 | 46 | 985 |
| 36 | | | 147.5 | 808 | 17,569 | 0.024 | 43 | 999 |
| 35 | | | 142.5 | 819 | 16,627 | 0.022 | 41 | 1,013 |
| 34 | | | 137.5 | 960 | 18,157 | 0.024 | 45 | 1,189 |
| 33 | | | 132.5 | 972 | 17,058 | 0.023 | 42 | 1,202 |
| 32 | | | 128.14 | 730 | 11,990 | 0.016 | 30 | 904 |
| 31 | | | 125.64 | 273 | 4,310 | 0.006 | 11 | 338 |
| 30 | | | 122.5 | 1,075 | 16,136 | 0.022 | 40 | 1,331 |
| 29 | | | 117.5 | 1,240 | 17,115 | 0.023 | 42 | 1,534 |
| 28 | | | 112.5 | 1,254 | 15,867 | 0.021 | 39 | 1,551 |
| 27 | | | 107.5 | 1,268 | 14,650 | 0.020 | 36 | 1,569 |
| 26 | | | 102.5 | 1,282 | 13,467 | 0.018 | 33 | 1,586 |
| 25 | | | 97.5 | 1,296 | 12,319 | 0.017 | 30 | 1,604 |
| 24 | | | 92.7108 | 1,199 | 10,305 | 0.014 | 26 | 1,484 |
| 23 | | | 90.2108 | 160 | 1,306 | 0.002 | 3 | 199 |
| 22 | | | 88.29 | 1,310 | 10,210 | 0.014 | 25 | 1,621 |
| 21 | | | 85.79 | 448 | 3,296 | 0.004 | 8 | 554 |
| 20 | | | 82.5 | 1,428 | 9,722 | 0.013 | 24 | 1,768 |
| 19 | | | 77.5 | 1,528 | 9,177 | 0.012 | 23 | 1,891 |
| 18 | | | 72.5 | 1,545 | 8,120 | 0.011 | 20 | 1,912 |
| 17 | | | 67.5 | 1,562 | 7,115 | 0.010 | 18 | 1,933 |
| 16 | | | 62.5 | 1,579 | 6,166 | 0.008 | 15 | 1,953 |
| 15 | | | 57.5 | 1,595 | 5,275 | 0.007 | 13 | 1,974 |
| 14 | | | 52.5 | 1,612 | 4,444 | 0.006 | 11 | 1,995 |
| 13 | | | 49.405 | 386 | 943 | 0.001 | 2 | 478 |
| 12 | | | 46.905 | 1,834 | 4,036 | 0.006 | 10 | 2,270 |
| 11 | | | 44.5508 | 435 | 864 | 0.001 | 2 | 539 |

SEISMIC FORCES

| 1.2D + 1.0Ev + 1.0Eh | Seismic | Height Above Base (ft) | Weight (lb) | W _z (lb-ft) | C _{vx} | Horizontal Force (lb) | Vertical Force (lb) |
|---|---------|------------------------|---------------|------------------------|-----------------|-----------------------|---------------------|
| 10 | | 42.0508 | 1,388 | 2,454 | 0.003 | 6 | 1,718 |
| 9 | | 37.5 | 1,709 | 2,403 | 0.003 | 6 | 2,115 |
| 8 | | 32.5 | 1,727 | 1,824 | 0.002 | 5 | 2,137 |
| 7 | | 27.5 | 1,745 | 1,320 | 0.002 | 3 | 2,160 |
| 6 | | 22.5 | 1,764 | 893 | 0.001 | 2 | 2,182 |
| 5 | | 17.5 | 1,859 | 569 | 0.001 | 1 | 2,300 |
| 4 | | 14.855 | 109 | 24 | 0.000 | 0 | 135 |
| 3 | | 12.355 | 2,013 | 307 | 0.000 | 1 | 2,491 |
| 2 | | 7.5 | 2,154 | 121 | 0.000 | 0 | 2,666 |
| 1 | | 2.5 | 2,173 | 14 | 0.000 | 0 | 2,689 |
| Kaelus DBC0061F1V51-2 | | 181.9 | 76 | 2,531 | 0.003 | 6 | 95 |
| Powerwave Allgon LGP21401 | | 181.9 | 85 | 2,799 | 0.004 | 7 | 105 |
| Raycap DC6-48-60-0-8F | | 181.9 | 66 | 2,171 | 0.003 | 5 | 81 |
| Raycap DC6-48-60-18-8F ("Squid") | | 181.9 | 19 | 625 | 0.001 | 2 | 23 |
| Ericsson Radio 8843 - B2 + B66A | | 181.9 | 216 | 7,137 | 0.010 | 18 | 267 |
| Ericsson RRUS 4449 B5, B12 | | 181.9 | 213 | 7,048 | 0.010 | 17 | 264 |
| Ericsson RRUS 32 (50.8 lbs) | | 181.9 | 152 | 5,043 | 0.007 | 12 | 189 |
| Powerwave Allgon 7770.00 | | 181.9 | 105 | 3,474 | 0.005 | 9 | 130 |
| Andrew SBNHH-1D65A | | 181.9 | 41 | 1,353 | 0.002 | 3 | 51 |
| CCI HPA65R-BU6A | | 181.9 | 84 | 2,773 | 0.004 | 7 | 104 |
| Quintel QS66512-2 | | 181.9 | 333 | 11,018 | 0.015 | 27 | 412 |
| CCI DMP65R-BU6DA | | 181.9 | 238 | 7,881 | 0.011 | 20 | 295 |
| Small Side Arms | | 181.9 | 300 | 9,926 | 0.013 | 25 | 371 |
| Generic Mount Reinforcement | | 181.9 | 600 | 19,853 | 0.027 | 49 | 743 |
| Generic Mount Reinforcement | | 176 | 600 | 18,586 | 0.025 | 46 | 743 |
| Generic Flat Platform with Handrails | | 181.9 | 2,500 | 82,719 | 0.112 | 205 | 3,094 |
| RFS DB-B1-6C-12AB-OZ | | 179.5 | 21 | 690 | 0.001 | 2 | 26 |
| Alcatel-Lucent B66a RRH4x45 (AWS-3) | | 176.1 | 201 | 6,233 | 0.008 | 15 | 249 |
| Alcatel-Lucent B13 RRH4x30-4R | | 176 | 173 | 5,371 | 0.007 | 13 | 215 |
| Flat Platform with Round Handrails | | 176 | 2,500 | 77,440 | 0.105 | 192 | 3,094 |
| Commscope CBC78T-DS-43-2X | | 175 | 62 | 1,902 | 0.003 | 5 | 77 |
| Samsung B2/B66A RRH ORAN (RF 4439d-25A) | | 175 | 224 | 6,863 | 0.009 | 17 | 277 |
| Samsung RF4461d-13A | | 175 | 237 | 7,267 | 0.010 | 18 | 294 |
| Samsung MT6413-77A | | 175 | 172 | 5,264 | 0.007 | 13 | 213 |
| Commscope JAHH-65B-R3B | | 175 | 364 | 11,135 | 0.015 | 28 | 450 |
| Antel LPA-80063/6CF | | 175 | 162 | 4,961 | 0.007 | 12 | 200 |
| Ericsson Radio 4460 B25+B66 | | 163 | 327 | 8,688 | 0.012 | 22 | 405 |
| Ericsson Radio 4480 B71+B85 | | 163 | 279 | 7,413 | 0.010 | 18 | 345 |
| Ericsson AIR 6419 B41 | | 163 | 206 | 5,460 | 0.007 | 14 | 254 |
| RFS APXVAALL24 43-U-NA20 | | 163 | 368 | 9,788 | 0.013 | 24 | 456 |
| Generic Round Low Profile Platform | | 163 | 1,875 | 49,817 | 0.067 | 123 | 2,320 |
| Totals: | | | 61,076 | 740,181 | 1.000 | 1,832 | 75,584 |

SEISMIC FORCES

| 0.9D - 1.0Ev + 1.0Eh | Seismic (Reduced DL) | Height Above Base (ft) | Weight (lb) | W _z (lb-ft) | C _{vx} | Horizontal Force (lb) | Vertical Force (lb) |
|----------------------|----------------------|------------------------|-------------|------------------------|-----------------|-----------------------|---------------------|
| 48 | | 180.95 | 118 | 3,852 | 0.005 | 10 | 101 |
| 47 | | 179.75 | 31 | 1,009 | 0.001 | 2 | 27 |
| 46 | | 177.8 | 215 | 6,807 | 0.009 | 17 | 186 |
| 45 | | 176.05 | 6 | 199 | 0.000 | 0 | 6 |
| 44 | | 175.5 | 64 | 1,982 | 0.003 | 5 | 56 |
| 43 | | 172.5 | 360 | 10,702 | 0.014 | 26 | 310 |
| 42 | | 167.5 | 371 | 10,406 | 0.014 | 26 | 320 |
| 41 | | 164 | 152 | 4,075 | 0.006 | 10 | 131 |
| 40 | | 161.5 | 249 | 6,499 | 0.009 | 16 | 215 |
| 39 | | 159.25 | 126 | 3,198 | 0.004 | 8 | 109 |
| 38 | | 156.75 | 551 | 13,531 | 0.018 | 33 | 475 |
| 37 | | 152.5 | 796 | 18,519 | 0.025 | 46 | 687 |
| 36 | | 147.5 | 808 | 17,569 | 0.024 | 43 | 696 |
| 35 | | 142.5 | 819 | 16,627 | 0.022 | 41 | 706 |

SEISMIC FORCES

0.9D - 1.0Ev + 1.0Eh

Seismic (Reduced DL)

| Segment | Height Above Base (ft) | Weight (lb) | W _z (lb-ft) | C _{vx} | Horizontal Force (lb) | Vertical Force (lb) |
|---|------------------------|-------------|------------------------|-----------------|-----------------------|---------------------|
| 34 | 137.5 | 960 | 18,157 | 0.024 | 45 | 828 |
| 33 | 132.5 | 972 | 17,058 | 0.023 | 42 | 838 |
| 32 | 128.14 | 730 | 11,990 | 0.016 | 30 | 630 |
| 31 | 125.64 | 273 | 4,310 | 0.006 | 11 | 235 |
| 30 | 122.5 | 1,075 | 16,136 | 0.022 | 40 | 927 |
| 29 | 117.5 | 1,240 | 17,115 | 0.023 | 42 | 1,069 |
| 28 | 112.5 | 1,254 | 15,867 | 0.021 | 39 | 1,081 |
| 27 | 107.5 | 1,268 | 14,650 | 0.020 | 36 | 1,093 |
| 26 | 102.5 | 1,282 | 13,467 | 0.018 | 33 | 1,105 |
| 25 | 97.5 | 1,296 | 12,319 | 0.017 | 30 | 1,118 |
| 24 | 92.7108 | 1,199 | 10,305 | 0.014 | 26 | 1,034 |
| 23 | 90.2108 | 160 | 1,306 | 0.002 | 3 | 138 |
| 22 | 88.29 | 1,310 | 10,210 | 0.014 | 25 | 1,130 |
| 21 | 85.79 | 448 | 3,296 | 0.004 | 8 | 386 |
| 20 | 82.5 | 1,428 | 9,722 | 0.013 | 24 | 1,232 |
| 19 | 77.5 | 1,528 | 9,177 | 0.012 | 23 | 1,318 |
| 18 | 72.5 | 1,545 | 8,120 | 0.011 | 20 | 1,332 |
| 17 | 67.5 | 1,562 | 7,115 | 0.010 | 18 | 1,347 |
| 16 | 62.5 | 1,579 | 6,166 | 0.008 | 15 | 1,361 |
| 15 | 57.5 | 1,595 | 5,275 | 0.007 | 13 | 1,376 |
| 14 | 52.5 | 1,612 | 4,444 | 0.006 | 11 | 1,391 |
| 13 | 49.405 | 386 | 943 | 0.001 | 2 | 333 |
| 12 | 46.905 | 1,834 | 4,036 | 0.006 | 10 | 1,582 |
| 11 | 44.5508 | 435 | 864 | 0.001 | 2 | 376 |
| 10 | 42.0508 | 1,388 | 2,454 | 0.003 | 6 | 1,197 |
| 9 | 37.5 | 1,709 | 2,403 | 0.003 | 6 | 1,474 |
| 8 | 32.5 | 1,727 | 1,824 | 0.002 | 5 | 1,489 |
| 7 | 27.5 | 1,745 | 1,320 | 0.002 | 3 | 1,505 |
| 6 | 22.5 | 1,764 | 893 | 0.001 | 2 | 1,521 |
| 5 | 17.5 | 1,859 | 569 | 0.001 | 1 | 1,603 |
| 4 | 14.855 | 109 | 24 | 0.000 | 0 | 94 |
| 3 | 12.355 | 2,013 | 307 | 0.000 | 1 | 1,736 |
| 2 | 7.5 | 2,154 | 121 | 0.000 | 0 | 1,858 |
| 1 | 2.5 | 2,173 | 14 | 0.000 | 0 | 1,874 |
| Kaelus DBC0061F1V51-2 | 181.9 | 76 | 2,531 | 0.003 | 6 | 66 |
| Powerwave Allgon LGP21401 | 181.9 | 85 | 2,799 | 0.004 | 7 | 73 |
| Raycap DC6-48-60-0-8F | 181.9 | 66 | 2,171 | 0.003 | 5 | 57 |
| Raycap DC6-48-60-18-8F ("Squid") | 181.9 | 19 | 625 | 0.001 | 2 | 16 |
| Ericsson Radio 8843 - B2 + B66A | 181.9 | 216 | 7,137 | 0.010 | 18 | 186 |
| Ericsson RRUS 4449 B5, B12 | 181.9 | 213 | 7,048 | 0.010 | 17 | 184 |
| Ericsson RRUS 32 (50.8 lbs) | 181.9 | 152 | 5,043 | 0.007 | 12 | 131 |
| Powerwave Allgon 7770.00 | 181.9 | 105 | 3,474 | 0.005 | 9 | 91 |
| Andrew SBNHH-1D65A | 181.9 | 41 | 1,353 | 0.002 | 3 | 35 |
| CCI HPA65R-BU6A | 181.9 | 84 | 2,773 | 0.004 | 7 | 72 |
| Quintel QS66512-2 | 181.9 | 333 | 11,018 | 0.015 | 27 | 287 |
| CCI DMP65R-BU6DA | 181.9 | 238 | 7,881 | 0.011 | 20 | 205 |
| Small Side Arms | 181.9 | 300 | 9,926 | 0.013 | 25 | 259 |
| Generic Mount Reinforcement | 181.9 | 600 | 19,853 | 0.027 | 49 | 517 |
| Generic Mount Reinforcement | 176 | 600 | 18,586 | 0.025 | 46 | 517 |
| Generic Flat Platform with Handrails | 181.9 | 2,500 | 82,719 | 0.112 | 205 | 2,156 |
| RFS DB-B1-6C-12AB-0Z | 179.5 | 21 | 690 | 0.001 | 2 | 18 |
| Alcatel-Lucent B66a RRH4x45 (AWS-3) | 176.1 | 201 | 6,233 | 0.008 | 15 | 173 |
| Alcatel-Lucent B13 RRH4x30-4R | 176 | 173 | 5,371 | 0.007 | 13 | 150 |
| Flat Platform with Round Handrails | 176 | 2,500 | 77,440 | 0.105 | 192 | 2,156 |
| Commscope CBC78T-DS-43-2X | 175 | 62 | 1,902 | 0.003 | 5 | 54 |
| Samsung B2/B66A RRH ORAN (RF 4439d-25A) | 175 | 224 | 6,863 | 0.009 | 17 | 193 |
| Samsung RF4461d-13A | 175 | 237 | 7,267 | 0.010 | 18 | 205 |
| Samsung MT6413-77A | 175 | 172 | 5,264 | 0.007 | 13 | 148 |
| Commscope JAHH-65B-R3B | 175 | 364 | 11,135 | 0.015 | 28 | 314 |
| Antel LPA-80063/6CF | 175 | 162 | 4,961 | 0.007 | 12 | 140 |
| Ericsson Radio 4460 B25+B66 | 163 | 327 | 8,688 | 0.012 | 22 | 282 |

SEISMIC FORCES

0.9D - 1.0Ev + 1.0Eh

Seismic (Reduced DL)

| Segment | Height Above Base (ft) | Weight (lb) | W _z (lb-ft) | C _{vx} | Horizontal Force (lb) | Vertical Force (lb) |
|------------------------------------|------------------------|---------------|------------------------|-----------------|-----------------------|---------------------|
| Ericsson Radio 4480 B71+B85 | 163 | 279 | 7,413 | 0.010 | 18 | 241 |
| Ericsson AIR 6419 B41 | 163 | 206 | 5,460 | 0.007 | 14 | 177 |
| RFS APXVAALL24 43-U-NA20 | 163 | 368 | 9,788 | 0.013 | 24 | 318 |
| Generic Round Low Profile Platform | 163 | 1,875 | 49,817 | 0.067 | 123 | 1,617 |
| Totals: | | 61,076 | 740,181 | 1.000 | 1,832 | 52,675 |

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 | -72.90 | -1.84 | 0.00 | -297.48 | 0.00 | 297.48 | 3,843.15 | 977.25 | 3,927 | 3,331.92 | 0.00 | 0.00 | 0.05 |
| 5.00 | -70.23 | -1.86 | 0.00 | -288.28 | 0.00 | 288.28 | 3,798.11 | 958.41 | 3,777 | 3,228.78 | 0.01 | -0.01 | 0.05 |
| 10.00 | -67.74 | -1.87 | 0.00 | -279.00 | 0.00 | 279.00 | 3,751.92 | 939.57 | 3,630 | 3,126.22 | 0.03 | -0.03 | 0.04 |
| 14.71 | -67.60 | -1.88 | 0.00 | -270.19 | 0.00 | 270.19 | 3,707.37 | 921.82 | 3,494 | 3,030.17 | 0.06 | -0.04 | 0.04 |
| 14.71 | -67.60 | -1.88 | 0.00 | -270.19 | 0.00 | 270.19 | 3,707.37 | 921.82 | 3,494 | 3,030.17 | 0.06 | -0.04 | 0.05 |
| 15.00 | -65.30 | -1.88 | 0.00 | -269.65 | 0.00 | 269.65 | 3,704.60 | 920.73 | 3,486 | 3,024.27 | 0.06 | -0.04 | 0.05 |
| 20.00 | -63.12 | -1.90 | 0.00 | -260.23 | 0.00 | 260.23 | 3,656.13 | 901.89 | 3,345 | 2,923.02 | 0.11 | -0.06 | 0.05 |
| 20.00 | -63.12 | -1.90 | 0.00 | -260.23 | 0.00 | 260.23 | 3,656.13 | 901.89 | 3,345 | 2,923.02 | 0.11 | -0.06 | 0.05 |
| 25.00 | -60.96 | -1.91 | 0.00 | -250.73 | 0.00 | 250.73 | 3,606.52 | 883.05 | 3,207 | 2,822.50 | 0.18 | -0.07 | 0.05 |
| 30.00 | -58.82 | -1.92 | 0.00 | -241.18 | 0.00 | 241.18 | 3,555.76 | 864.21 | 3,071 | 2,722.79 | 0.27 | -0.09 | 0.05 |
| 35.00 | -56.71 | -1.93 | 0.00 | -231.57 | 0.00 | 231.57 | 3,503.87 | 845.37 | 2,939 | 2,623.93 | 0.37 | -0.11 | 0.05 |
| 40.00 | -54.99 | -1.93 | 0.00 | -221.93 | 0.00 | 221.93 | 3,450.83 | 826.52 | 2,809 | 2,525.99 | 0.50 | -0.13 | 0.05 |
| 44.10 | -54.45 | -1.94 | 0.00 | -213.99 | 0.00 | 213.99 | 3,406.49 | 811.07 | 2,705 | 2,446.38 | 0.61 | -0.14 | 0.05 |
| 45.00 | -52.18 | -1.93 | 0.00 | -212.25 | 0.00 | 212.25 | 3,392.27 | 807.68 | 2,683 | 2,425.89 | 0.64 | -0.14 | 0.05 |
| 48.81 | -51.70 | -1.94 | 0.00 | -204.89 | 0.00 | 204.89 | 3,065.99 | 749.30 | 2,500 | 2,204.25 | 0.76 | -0.16 | 0.05 |
| 50.00 | -49.70 | -1.93 | 0.00 | -202.58 | 0.00 | 202.58 | 3,054.87 | 745.16 | 2,472 | 2,183.98 | 0.80 | -0.16 | 0.05 |
| 55.00 | -47.73 | -1.92 | 0.00 | -192.94 | 0.00 | 192.94 | 3,007.41 | 727.76 | 2,358 | 2,099.31 | 0.97 | -0.18 | 0.05 |
| 60.00 | -45.78 | -1.92 | 0.00 | -183.32 | 0.00 | 183.32 | 2,958.80 | 710.36 | 2,247 | 2,015.46 | 1.17 | -0.20 | 0.04 |
| 65.00 | -43.84 | -1.91 | 0.00 | -173.73 | 0.00 | 173.73 | 2,910.40 | 692.95 | 2,138 | 1,933.39 | 1.39 | -0.21 | 0.04 |
| 70.00 | -41.93 | -1.89 | 0.00 | -164.20 | 0.00 | 164.20 | 2,837.31 | 675.55 | 2,032 | 1,836.96 | 1.62 | -0.23 | 0.04 |
| 75.00 | -40.04 | -1.87 | 0.00 | -154.74 | 0.00 | 154.74 | 2,764.22 | 658.15 | 1,929 | 1,743.00 | 1.87 | -0.25 | 0.04 |
| 80.00 | -38.27 | -1.85 | 0.00 | -145.38 | 0.00 | 145.38 | 2,691.13 | 640.75 | 1,828 | 1,651.51 | 2.14 | -0.27 | 0.04 |
| 80.00 | -38.27 | -1.85 | 0.00 | -145.38 | 0.00 | 145.38 | 2,691.13 | 640.75 | 1,828 | 1,651.51 | 2.14 | -0.27 | 0.04 |
| 85.00 | -37.72 | -1.85 | 0.00 | -136.12 | 0.00 | 136.12 | 2,618.04 | 623.34 | 1,730 | 1,562.49 | 2.43 | -0.28 | 0.04 |
| 86.58 | -36.09 | -1.82 | 0.00 | -133.19 | 0.00 | 133.19 | 2,594.94 | 617.84 | 1,700 | 1,534.87 | 2.52 | -0.29 | 0.04 |
| 90.00 | -35.90 | -1.82 | 0.00 | -126.96 | 0.00 | 126.96 | 2,544.95 | 605.94 | 1,635 | 1,475.93 | 2.74 | -0.30 | 0.04 |
| 90.42 | -34.41 | -1.79 | 0.00 | -126.19 | 0.00 | 126.19 | 2,117.10 | 515.87 | 1,422 | 1,257.35 | 2.76 | -0.30 | 0.04 |
| 95.00 | -32.81 | -1.77 | 0.00 | -117.98 | 0.00 | 117.98 | 2,080.73 | 502.59 | 1,350 | 1,203.60 | 3.06 | -0.32 | 0.04 |
| 100.00 | -31.22 | -1.73 | 0.00 | -109.15 | 0.00 | 109.15 | 2,039.91 | 488.09 | 1,273 | 1,145.57 | 3.41 | -0.34 | 0.04 |
| 105.00 | -29.65 | -1.70 | 0.00 | -100.48 | 0.00 | 100.48 | 1,989.06 | 473.59 | 1,198 | 1,083.45 | 3.78 | -0.36 | 0.04 |
| 110.00 | -28.10 | -1.66 | 0.00 | -92.00 | 0.00 | 92.00 | 1,928.15 | 459.08 | 1,126 | 1,017.74 | 4.16 | -0.38 | 0.04 |
| 115.00 | -26.57 | -1.61 | 0.00 | -83.72 | 0.00 | 83.72 | 1,867.24 | 444.58 | 1,056 | 954.09 | 4.56 | -0.39 | 0.03 |
| 120.00 | -25.24 | -1.57 | 0.00 | -75.66 | 0.00 | 75.66 | 1,806.33 | 430.08 | 988 | 892.49 | 4.99 | -0.41 | 0.03 |
| 120.00 | -25.24 | -1.57 | 0.00 | -75.66 | 0.00 | 75.66 | 1,806.33 | 430.08 | 988 | 892.49 | 4.99 | -0.41 | 0.04 |
| 125.00 | -24.90 | -1.56 | 0.00 | -67.81 | 0.00 | 67.81 | 1,745.42 | 415.58 | 923 | 832.95 | 5.43 | -0.43 | 0.04 |
| 126.28 | -23.99 | -1.53 | 0.00 | -65.81 | 0.00 | 65.81 | 1,729.83 | 411.86 | 906 | 818.04 | 5.54 | -0.43 | 0.03 |
| 126.28 | -23.99 | -1.53 | 0.00 | -65.81 | 0.00 | 65.81 | 1,355.54 | 330.37 | 729 | 644.47 | 5.54 | -0.43 | 0.04 |
| 130.00 | -22.79 | -1.48 | 0.00 | -60.13 | 0.00 | 60.13 | 1,331.91 | 321.74 | 691 | 616.52 | 5.88 | -0.45 | 0.04 |
| 135.00 | -21.60 | -1.44 | 0.00 | -52.71 | 0.00 | 52.71 | 1,299.15 | 310.14 | 642 | 579.43 | 6.36 | -0.47 | 0.03 |
| 140.00 | -20.59 | -1.39 | 0.00 | -45.52 | 0.00 | 45.52 | 1,253.86 | 298.54 | 595 | 538.08 | 6.86 | -0.48 | 0.03 |
| 140.00 | -20.59 | -1.39 | 0.00 | -45.52 | 0.00 | 45.52 | 1,253.86 | 298.54 | 595 | 538.08 | 6.86 | -0.48 | 0.04 |
| 145.00 | -19.59 | -1.35 | 0.00 | -38.56 | 0.00 | 38.56 | 1,205.14 | 286.94 | 550 | 496.84 | 7.37 | -0.50 | 0.03 |
| 150.00 | -18.60 | -1.30 | 0.00 | -31.82 | 0.00 | 31.82 | 1,156.41 | 275.34 | 506 | 457.24 | 7.91 | -0.52 | 0.03 |
| 155.00 | -17.92 | -1.26 | 0.00 | -25.33 | 0.00 | 25.33 | 1,107.68 | 263.73 | 465 | 419.29 | 8.46 | -0.53 | 0.02 |
| 158.50 | -17.77 | -1.26 | 0.00 | -20.92 | 0.00 | 20.92 | 1,073.57 | 255.61 | 436 | 393.70 | 8.85 | -0.54 | 0.02 |
| 158.50 | -17.77 | -1.26 | 0.00 | -20.92 | 0.00 | 20.92 | 1,073.57 | 255.61 | 436 | 393.70 | 8.85 | -0.54 | 0.07 |
| 160.00 | -17.46 | -1.24 | 0.00 | -19.03 | 0.00 | 19.03 | 1,058.96 | 252.13 | 425 | 382.97 | 9.02 | -0.55 | 0.07 |
| 163.00 | -13.49 | -1.00 | 0.00 | -15.31 | 0.00 | 15.31 | 1,029.72 | 245.17 | 402 | 361.98 | 9.38 | -0.57 | 0.06 |
| 165.00 | -13.03 | -0.97 | 0.00 | -13.32 | 0.00 | 13.32 | 1,010.23 | 240.53 | 386 | 348.31 | 9.62 | -0.59 | 0.05 |

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 |
|---------------|------------------|------------------|-----------------|-----------------|-----------------|----------------------------|---------------|---------------|---------------|---------------|--------------------|----------------|-------|
| 170.00 | -12.59 | -0.95 | 0.00 | -8.47 | 0.00 | 8.47 | 961.50 | 228.93 | 350 | 315.29 | 10.25 | -0.62 | 0.04 |
| 175.00 | -11.00 | -0.83 | 0.00 | -3.74 | 0.00 | 3.74 | 912.77 | 217.33 | 316 | 283.91 | 10.91 | -0.64 | 0.03 |
| 176.00 | -6.94 | -0.54 | 0.00 | -2.91 | 0.00 | 2.91 | 903.03 | 215.01 | 309 | 277.83 | 11.05 | -0.64 | 0.02 |
| 176.10 | -6.43 | -0.50 | 0.00 | -2.85 | 0.00 | 2.85 | 902.05 | 214.77 | 308 | 277.23 | 11.06 | -0.64 | 0.02 |
| 179.50 | -6.36 | -0.49 | 0.00 | -1.16 | 0.00 | 1.16 | 868.92 | 206.89 | 286 | 257.08 | 11.52 | -0.65 | 0.01 |
| 180.00 | -6.22 | -0.48 | 0.00 | -0.92 | 0.00 | 0.92 | 864.05 | 205.73 | 283 | 254.18 | 11.59 | -0.65 | 0.01 |
| 181.90 | 0.00 | -0.41 | 0.00 | 0.00 | 0.00 | 0.00 | 845.53 | 201.32 | 271 | 243.31 | 11.85 | -0.65 | 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 | -50.80 | -1.84 | 0.00 | -288.91 | 0.00 | 288.91 | 3,843.15 | 977.25 | 3,927 | 3,331.92 | 0.00 | 0.00 | 0.04 |
| 5.00 | -48.94 | -1.85 | 0.00 | -279.72 | 0.00 | 279.72 | 3,798.11 | 958.41 | 3,777 | 3,228.78 | 0.01 | -0.01 | 0.04 |
| 10.00 | -47.21 | -1.86 | 0.00 | -270.48 | 0.00 | 270.48 | 3,751.92 | 939.57 | 3,630 | 3,126.22 | 0.03 | -0.03 | 0.04 |
| 14.71 | -47.11 | -1.86 | 0.00 | -261.73 | 0.00 | 261.73 | 3,707.37 | 921.82 | 3,494 | 3,030.17 | 0.06 | -0.04 | 0.04 |
| 14.71 | -47.11 | -1.86 | 0.00 | -261.73 | 0.00 | 261.73 | 3,707.37 | 921.82 | 3,494 | 3,030.17 | 0.06 | -0.04 | 0.05 |
| 15.00 | -45.51 | -1.87 | 0.00 | -261.19 | 0.00 | 261.19 | 3,704.60 | 920.73 | 3,486 | 3,024.27 | 0.06 | -0.04 | 0.05 |
| 20.00 | -43.99 | -1.88 | 0.00 | -251.86 | 0.00 | 251.86 | 3,656.13 | 901.89 | 3,345 | 2,923.02 | 0.11 | -0.06 | 0.05 |
| 20.00 | -43.99 | -1.88 | 0.00 | -251.86 | 0.00 | 251.86 | 3,656.13 | 901.89 | 3,345 | 2,923.02 | 0.11 | -0.06 | 0.05 |
| 25.00 | -42.48 | -1.88 | 0.00 | -242.48 | 0.00 | 242.48 | 3,606.52 | 883.05 | 3,207 | 2,822.50 | 0.18 | -0.07 | 0.05 |
| 30.00 | -40.99 | -1.89 | 0.00 | -233.07 | 0.00 | 233.07 | 3,555.76 | 864.21 | 3,071 | 2,722.79 | 0.26 | -0.09 | 0.05 |
| 35.00 | -39.52 | -1.89 | 0.00 | -223.63 | 0.00 | 223.63 | 3,503.87 | 845.37 | 2,939 | 2,623.93 | 0.36 | -0.10 | 0.05 |
| 40.00 | -38.32 | -1.89 | 0.00 | -214.17 | 0.00 | 214.17 | 3,450.83 | 826.52 | 2,809 | 2,525.99 | 0.48 | -0.12 | 0.04 |
| 44.10 | -37.94 | -1.90 | 0.00 | -206.41 | 0.00 | 206.41 | 3,406.49 | 811.07 | 2,705 | 2,446.38 | 0.59 | -0.14 | 0.04 |
| 45.00 | -36.36 | -1.89 | 0.00 | -204.70 | 0.00 | 204.70 | 3,392.27 | 807.68 | 2,683 | 2,425.89 | 0.62 | -0.14 | 0.04 |
| 48.81 | -36.03 | -1.89 | 0.00 | -197.51 | 0.00 | 197.51 | 3,065.99 | 749.30 | 2,500 | 2,204.25 | 0.73 | -0.15 | 0.04 |
| 50.00 | -34.64 | -1.88 | 0.00 | -195.26 | 0.00 | 195.26 | 3,054.87 | 745.16 | 2,472 | 2,183.98 | 0.77 | -0.16 | 0.04 |
| 55.00 | -33.26 | -1.87 | 0.00 | -185.86 | 0.00 | 185.86 | 3,007.41 | 727.76 | 2,358 | 2,099.31 | 0.94 | -0.17 | 0.04 |
| 60.00 | -31.90 | -1.86 | 0.00 | -176.49 | 0.00 | 176.49 | 2,958.80 | 710.36 | 2,247 | 2,015.46 | 1.13 | -0.19 | 0.04 |
| 65.00 | -30.55 | -1.85 | 0.00 | -167.17 | 0.00 | 167.17 | 2,910.40 | 692.95 | 2,138 | 1,933.39 | 1.34 | -0.21 | 0.04 |
| 70.00 | -29.22 | -1.83 | 0.00 | -157.92 | 0.00 | 157.92 | 2,837.31 | 675.55 | 2,032 | 1,836.96 | 1.57 | -0.22 | 0.04 |
| 75.00 | -27.90 | -1.81 | 0.00 | -148.75 | 0.00 | 148.75 | 2,764.22 | 658.15 | 1,929 | 1,743.00 | 1.81 | -0.24 | 0.04 |
| 80.00 | -26.67 | -1.79 | 0.00 | -139.68 | 0.00 | 139.68 | 2,691.13 | 640.75 | 1,828 | 1,651.51 | 2.07 | -0.26 | 0.04 |
| 80.00 | -26.67 | -1.79 | 0.00 | -139.68 | 0.00 | 139.68 | 2,691.13 | 640.75 | 1,828 | 1,651.51 | 2.07 | -0.26 | 0.04 |
| 85.00 | -26.28 | -1.79 | 0.00 | -130.72 | 0.00 | 130.72 | 2,618.04 | 623.34 | 1,730 | 1,562.49 | 2.35 | -0.27 | 0.04 |
| 86.58 | -25.15 | -1.76 | 0.00 | -127.89 | 0.00 | 127.89 | 2,594.94 | 617.84 | 1,700 | 1,534.87 | 2.44 | -0.28 | 0.04 |
| 90.00 | -25.01 | -1.76 | 0.00 | -121.87 | 0.00 | 121.87 | 2,544.95 | 605.94 | 1,635 | 1,475.93 | 2.64 | -0.29 | 0.04 |
| 90.42 | -23.98 | -1.73 | 0.00 | -121.13 | 0.00 | 121.13 | 2,117.10 | 515.87 | 1,422 | 1,257.35 | 2.67 | -0.29 | 0.04 |
| 95.00 | -22.86 | -1.70 | 0.00 | -113.19 | 0.00 | 113.19 | 2,080.73 | 502.59 | 1,350 | 1,203.60 | 2.96 | -0.31 | 0.04 |
| 100.00 | -21.76 | -1.67 | 0.00 | -104.67 | 0.00 | 104.67 | 2,039.91 | 488.09 | 1,273 | 1,145.57 | 3.29 | -0.33 | 0.04 |
| 105.00 | -20.66 | -1.63 | 0.00 | -96.32 | 0.00 | 96.32 | 1,989.06 | 473.59 | 1,198 | 1,083.45 | 3.65 | -0.35 | 0.03 |
| 110.00 | -19.58 | -1.59 | 0.00 | -88.15 | 0.00 | 88.15 | 1,928.15 | 459.08 | 1,126 | 1,017.74 | 4.02 | -0.36 | 0.03 |
| 115.00 | -18.51 | -1.55 | 0.00 | -80.18 | 0.00 | 80.18 | 1,867.24 | 444.58 | 1,056 | 954.09 | 4.41 | -0.38 | 0.03 |
| 120.00 | -17.58 | -1.51 | 0.00 | -72.43 | 0.00 | 72.43 | 1,806.33 | 430.08 | 988 | 892.49 | 4.81 | -0.40 | 0.03 |
| 120.00 | -17.58 | -1.51 | 0.00 | -72.43 | 0.00 | 72.43 | 1,806.33 | 430.08 | 988 | 892.49 | 4.81 | -0.40 | 0.03 |
| 125.00 | -17.35 | -1.50 | 0.00 | -64.88 | 0.00 | 64.88 | 1,745.42 | 415.58 | 923 | 832.95 | 5.24 | -0.41 | 0.03 |
| 126.28 | -16.72 | -1.47 | 0.00 | -62.96 | 0.00 | 62.96 | 1,729.83 | 411.86 | 906 | 818.04 | 5.35 | -0.42 | 0.03 |
| 126.28 | -16.72 | -1.47 | 0.00 | -62.96 | 0.00 | 62.96 | 1,355.54 | 330.37 | 729 | 644.47 | 5.35 | -0.42 | 0.03 |
| 130.00 | -15.88 | -1.42 | 0.00 | -57.50 | 0.00 | 57.50 | 1,331.91 | 321.74 | 691 | 616.52 | 5.68 | -0.43 | 0.03 |
| 135.00 | -15.05 | -1.38 | 0.00 | -50.38 | 0.00 | 50.38 | 1,299.15 | 310.14 | 642 | 579.43 | 6.14 | -0.45 | 0.03 |
| 140.00 | -14.35 | -1.33 | 0.00 | -43.49 | 0.00 | 43.49 | 1,253.86 | 298.54 | 595 | 538.08 | 6.61 | -0.46 | 0.03 |
| 140.00 | -14.35 | -1.33 | 0.00 | -43.49 | 0.00 | 43.49 | 1,253.86 | 298.54 | 595 | 538.08 | 6.61 | -0.46 | 0.03 |
| 145.00 | -13.65 | -1.29 | 0.00 | -36.81 | 0.00 | 36.81 | 1,205.14 | 286.94 | 550 | 496.84 | 7.11 | -0.48 | 0.03 |
| 150.00 | -12.96 | -1.24 | 0.00 | -30.37 | 0.00 | 30.37 | 1,156.41 | 275.34 | 506 | 457.24 | 7.62 | -0.50 | 0.03 |
| 155.00 | -12.49 | -1.21 | 0.00 | -24.16 | 0.00 | 24.16 | 1,107.68 | 263.73 | 465 | 419.29 | 8.15 | -0.51 | 0.02 |
| 158.50 | -12.38 | -1.20 | 0.00 | -19.93 | 0.00 | 19.93 | 1,073.57 | 255.61 | 436 | 393.70 | 8.53 | -0.52 | 0.02 |
| 158.50 | -12.38 | -1.20 | 0.00 | -19.93 | 0.00 | 19.93 | 1,073.57 | 255.61 | 436 | 393.70 | 8.53 | -0.52 | 0.06 |
| 160.00 | -12.16 | -1.18 | 0.00 | -18.14 | 0.00 | 18.14 | 1,058.96 | 252.13 | 425 | 382.97 | 8.70 | -0.53 | 0.06 |

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 |
|------------------|------------------------|------------------------|-----------------------|-----------------------|-----------------------|----------------------------------|---------------------|---------------------|---------------------|---------------------|--------------------------|-------------------|-------|
| 163.00 | -9.40 | -0.95 | 0.00 | -14.58 | 0.00 | 14.58 | 1,029.72 | 245.17 | 402 | 361.98 | 9.04 | -0.55 | 0.05 |
| 165.00 | -9.08 | -0.93 | 0.00 | -12.68 | 0.00 | 12.68 | 1,010.23 | 240.53 | 386 | 348.31 | 9.27 | -0.57 | 0.05 |
| 170.00 | -8.77 | -0.90 | 0.00 | -8.06 | 0.00 | 8.06 | 961.50 | 228.93 | 350 | 315.29 | 9.88 | -0.59 | 0.04 |
| 175.00 | -7.66 | -0.79 | 0.00 | -3.56 | 0.00 | 3.56 | 912.77 | 217.33 | 316 | 283.91 | 10.51 | -0.61 | 0.02 |
| 176.00 | -4.84 | -0.51 | 0.00 | -2.77 | 0.00 | 2.77 | 903.03 | 215.01 | 309 | 277.83 | 10.64 | -0.62 | 0.02 |
| 176.10 | -4.48 | -0.47 | 0.00 | -2.72 | 0.00 | 2.72 | 902.05 | 214.77 | 308 | 277.23 | 10.65 | -0.62 | 0.02 |
| 179.50 | -4.43 | -0.47 | 0.00 | -1.11 | 0.00 | 1.11 | 868.92 | 206.89 | 286 | 257.08 | 11.09 | -0.62 | 0.01 |
| 180.00 | -4.33 | -0.46 | 0.00 | -0.87 | 0.00 | 0.87 | 864.05 | 205.73 | 283 | 254.18 | 11.16 | -0.62 | 0.01 |
| 181.90 | 0.00 | -0.41 | 0.00 | 0.00 | 0.00 | 0.00 | 845.53 | 201.32 | 271 | 243.31 | 11.41 | -0.62 | 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 | 29.92 | 0.00 | 73.24 | 0.00 | 0.00 | 3885.88 | 158.50 | 0.66 |
| 0.9D + 1.0W | 29.89 | 0.00 | 54.92 | 0.00 | 0.00 | 3797.44 | 158.50 | 0.63 |
| 1.2D + 1.0Di + 1.0Wi | 6.72 | 0.00 | 88.01 | 0.00 | 0.00 | 956.39 | 158.50 | 0.19 |
| 1.2D + 1.0Ev + 1.0Eh | 1.94 | 0.00 | 72.90 | 0.00 | 0.00 | 297.48 | 158.50 | 0.07 |
| 0.9D - 1.0Ev + 1.0Eh | 1.90 | 0.00 | 50.80 | 0.00 | 0.00 | 288.91 | 158.50 | 0.06 |
| 1.0D + 1.0W | 7.77 | 0.00 | 61.07 | 0.00 | 0.00 | 993.97 | 158.50 | 0.18 |

ADDITIONAL STEEL SUMMARY

| Elev From (ft) | Elev To (ft) | Member | Intermediate Connectors | | | | Max Member | | |
|----------------|--------------|------------------------|-------------------------|----------------------|--------------|--------|------------|-------------|-------|
| | | | VQ/I (k/in) | Shear Applied (kips) | phiVn (kips) | Ratio | Pu (kip) | phiPn (kip) | Ratio |
| 0.00 | 14.71 | SOL #20 All Thread Bar | 136.4 | 4.1 | 16.8 | 0.2434 | 205.4 | 330.5 | |
| 0.00 | 20.00 | SOL 4 1/4" SOLID | 432.0 | 7.1 | 38.3 | 0.1862 | 620.2 | 635.6 | |
| 20.00 | 80.00 | SOL 4 1/4" SOLID | 520.0 | 11.4 | 38.3 | 0.2989 | 612.0 | 633.4 | |
| 80.00 | 120.00 | SOL 4" SOLID | 564.6 | 12.4 | 38.3 | 0.3246 | 457.7 | 560.5 | |
| 120.00 | 140.00 | SOL 3 1/2" SOLID | 582.1 | 12.8 | 38.3 | 0.3346 | 305.0 | 428.0 | |
| 140.00 | 158.50 | SOL 3" SOLID | 567.5 | 12.5 | 38.3 | 0.3262 | 215.6 | 313.1 | |

| Elev From (ft) | Elev To (ft) | Member | Upper Termination Connectors | | | | | Lower Termination Connectors | | | | |
|----------------|--------------|------------------------|------------------------------|--------------|-----------------|---------------|--------|------------------------------|-------------|-----------------|---------------|--------|
| | | | MQ/I (kips) | phiVn (kips) | Number Required | Number Actual | Ratio | MQ/I (kips) | phiVn (kip) | Number Required | Number Actual | Ratio |
| 0.00 | 14.71 | SOL #20 All Thread Bar | 195.3029 | 25.27 | 8 | 12 | 0.6441 | 0 | 25.27 | 0 | 0 | 0.0000 |
| 0.00 | 20.00 | SOL 4 1/4" SOLID | 0 | 12 | 0 | 8 | 0.0000 | 0 | 12 | 0 | 0 | 0.0000 |
| 20.00 | 80.00 | SOL 4 1/4" SOLID | 0 | 25.27 | 0 | 6 | 0.0000 | 0 | 25.27 | 0 | 8 | 0.0000 |
| 80.00 | 120.00 | SOL 4" SOLID | 0 | 25.27 | 0 | 6 | 0.0000 | 0 | 25.27 | 0 | 6 | 0.0000 |
| 120.00 | 140.00 | SOL 3 1/2" SOLID | 0 | 25.27 | 0 | 6 | 0.0000 | 0 | 25.27 | 0 | 6 | 0.0000 |
| 140.00 | 158.50 | SOL 3" SOLID | 119.6704 | 25.27 | 5 | 12 | 0.3946 | 0 | 25.27 | 0 | 6 | 0.0000 |

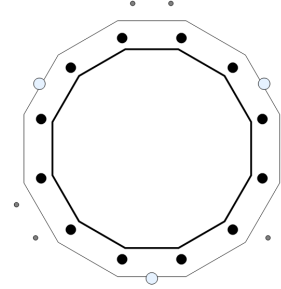
BASE PLATE ANALYSIS @ 0 FT

APPLIED REACTIONS

| Moment (k-ft) | Axial (k) | Shear (k) |
|---------------|-----------|-----------|
| 3885.88 | 73.24 | 29.92 |

PLATE PARAMETERS (ID# 28043)

| | | |
|---------------------|---------|-----|
| Width: | 55 | in |
| Shape: | 12 | |
| Thickness: | 2.5 | in |
| Grade: | A572-50 | |
| Yield Strength: | 50 | ksi |
| Tensile Strength: | 65 | ksi |
| Rod Detail Type: | d | |
| Clear Distance | 3.75 | in |
| Base Weld Size: | 0.125 | in |
| Orientation Offset: | 15 | ° |
| Analysis Type: | Elastic | |
| Neutral Axis: | 13 | ° |



ANCHOR ROD PARAMETERS

| Class | Arrangement | Quantity | Diameter (in) | Circle (in) | Grade | F _y (ksi) | F _u (ksi) | Spacing (in) | Offset (°) |
|---------------------|-------------|----------|---------------|-------------|-------------|----------------------|----------------------|--------------|------------|
| Original [ID#28777] | Radial | 12 | 2.25 | 49.25 | A615-75 | 75 | 100 | - | 15 |
| Bypass [ID#28778] | Cluster | 6 | 1 | 63 | A354 Gr. BC | 109 | 125 | - | - |

DYWIDAG BAR PARAMETERS

| Quantity | Bar Size | Bar Diameter (in) | F _y (ksi) | F _u (ksi) | Bracket Type | Bracket Offset (in) | Circle (in) | Offset (°) |
|--------------|----------|-------------------|----------------------|----------------------|--------------|---------------------|-------------|------------|
| 3 [ID# 2521] | #20 | 2.5 | 80 | 100 | W5x19 | 5.15 | 55.80 | 30 |

COMPONENT PROPERTIES

| Component | ID | Gross Area (in ²) | Net Area (in ²) | Individual Inertia (in ⁴) | Moment of Inertia (in ⁴) | Threads/in |
|---------------|--------------------------|-------------------------------|-----------------------------|---------------------------------------|--------------------------------------|------------|
| Pole | 43"ø x 0.406" (12 Sides) | 53.7096 | - | - | 12183.29 | - |
| Bolt Group | Original (12) 2.25"ø | 3.9761 | 3.2477 | 0.8393 | 10600.25 | 4.5 |
| Bolt Group | Bypass (6) 1"ø | 0.7854 | 0.6057 | 0.0292 | 1803.33 | 8.0 |
| Dywidag Group | (3) #20 | 4.9087 | 4.9087 | 1.9175 | 5737.27 | - |

REACTION DISTRIBUTION

| Component | ID | Moment M _u (k-ft) | Axial Load P _u (k) | Shear V _u (k) | Moment Factor |
|---------------|--------------------------|------------------------------|-------------------------------|--------------------------|---------------|
| Pole | 43"ø x 0.406" (12 Sides) | 2301.2 | 73.24 | 29.92 | 0.592 |
| Bolt Group | Original (12) 2.25"ø | 2301.2 | - | 29.92 | 0.592 |
| Bolt Group | Bypass (6) 1"ø | 340.6 | - | 0.00 | 0.088 |
| Dywidag Group | (3) #20 | 1244.1 | - | - | 0.320 |

ASSET: 302502, Harwinton
 CUSTOMER: T-MOBILE

CODE: ANSI/TIA-222-H
 PROJECT: 14685654

BASE PLATE BEND LINE ANALYSIS @ 0 FT

POLE PROPERTIES

Flat-to-Flat Diameter: 43.12 in
 Point-to-Point Diameter: 44.65 in
 Orientation Offset: 15 °

Flat Width: 11.555 in
 Flat Radians: 0.524 rad

PLATE PROPERTIES

Neutral Axis: 13 °
 Bend Line Limits: 1.455 to 2.210 rad

| Bend Line | Chord Length (in) | Additional Length (in) | Section Modulus (in ³) | Applied Moment M _u (k-in) | Moment Capacity ΦM _n (k-in) | Flexure Result M _u /ΦM _n | |
|-----------------|-------------------|------------------------|------------------------------------|--------------------------------------|--|--|---|
| Flats | 30.186 | 0.00 | 47.166 | 348.4 | 2122.5 | 16.4% | ✓ |
| Corners | 27.887 | 0.00 | 43.573 | 195.7 | 1960.8 | 10.0% | ✓ |
| Circumferential | 30.283 | 0.00 | 47.317 | 198.6 | 2129.3 | 9.3% | ✓ |

ELASTIC ANCHOR ROD ANALYSIS

| Class | Group Quantity | Rod Diameter (in) | Applied Axial Load P _u (k) | Applied Shear Load V _u (k) | Compressive Capacity ΦP _n (k) | Compressive Result | Interaction Result | |
|----------|----------------|-------------------|---------------------------------------|---------------------------------------|--|--------------------|--------------------|---|
| Original | 12 | 2.25 | 200.7 | 0.1 | 243.6 | 0.824 | 82.5% | ✓ |
| Bypass | 6 | 1 | 44.1 | 0.0 | 56.8 | 0.777 | 77.7% | ✓ |

DYWIDAG BAR ANALYSIS

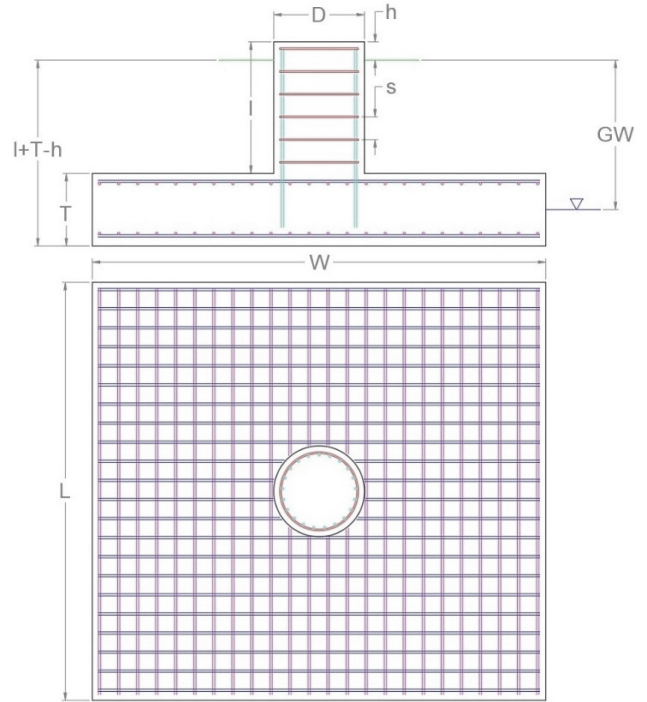
| Group Quantity | Bar Size | Bar Circle (in) | Applied Axial Load P _u (k) | Compressive Capacity ΦP _n (k) | Compressive Result P _u / ΦP _n | |
|----------------|----------|-----------------|---------------------------------------|--|---|---|
| 3 | #20 | 55.80 | 250.9 | 368.2 | 68.1% | ✓ |

APPLIED GLOBAL REACTIONS

| Moment (k-ft) | Axial (k) | Shear (k) |
|---------------|-----------|-----------|
| 3,885.88 | 73.24 | 29.92 |

FOUNDATION PARAMETERS

| | | | |
|--------------------------------|-------|------------------------------|-----|
| Mat Length: | L | 20 | ft |
| Mat Width: | W | 20 | ft |
| Mat Thickness: | T | 3 | ft |
| Base Depth: | L+T-h | 8 | ft |
| Pier Shape: | | Square | |
| Pier Width: | D | 6 | ft |
| Pier Height above Grade: | h | 0.5 | ft |
| Concrete Compressive Strength: | | 3,000 | psi |
| Mat Top Rebar: | | (40) #5 bars [60 ksi] | |
| Mat Bottom Rebar: | | (40) #10 bars [60 ksi] | |
| Pier Vertical Rebar: | | (52) #11 bars [60 ksi] | |
| Pier Rebar Ties: | s | #4 bars @ 12.0" c/c [40 ksi] | |
| Rebar Clear Cover: | | 2.0 | in |
| Tower Eccentricity: | ecc | 0 | ft |
| Tower Leg Count | | 1 | |



SOIL PARAMETERS

| | | | |
|--------------------------------|----|---------|-----|
| Water Table Depth [BGL]: | GW | - | ft |
| Soil Unit Weight: | | 133 | pcf |
| Ultimate Skin Friction: | | 850 | psf |
| Ultimate Bearing Pressure: | | 150,000 | psf |
| Bearing Pressure Type: | | Gross | |
| Coefficient of Shear Friction: | | 0.5 | |

SOIL STRENGTH ANALYSIS

| Soil Strength Reduction Factor, Φ_s | Uplift Strength Reduction Factor, Φ_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, $M_{u,Design} / \Phi_m M_n$ |
|--------------------------------------|---|---|
| 4,140.20 | 5,027.83 | 82.3% ✔ |

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, $P_{u,net} / \Phi_b P_n$ |
|---|---|---|--|
| 5,924.00 | 112,500.00 | Diagonal to Pad Edge | 5.3% ✔ |

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, $V_u / \Phi_s V_n$ |
|--------------------------------|-------------------------|------------------------|---------------------------------|--|--|
| 29.92 | 204.00 | 864.5 | 51.87 | 231.20 | 13.0% ✔ |

MAT REINFORCING STEEL STRENGTH ANALYSIS

| Steel Elastic Modulus, E (ksi) | Strength Bending/Tension Reduction Factor, Φ_b | Strength Shear Reduction Factor, Φ_v | Strength Compression Reduction Factor, Φ_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, $V_u / \Phi_c V_n$ |
|---------------------------------|--|--|---|
| 343.96 | 543.28 | Diagonal to Pad Edge | 63.3% |

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, $v_u / \Phi_c v_n$ |
|---|---|--|
| 47.2 | 164.3 | 28.8% |

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, $0.6 M_{ut} / \Phi M_{sc,f}$ |
|--|-------------------------|---------------------------------------|--|---|
| 15.00 | 5.12 | 0.00 | 64,634.7 | 0.0% |

MAT REINFORCING FLEXURE ANALYSIS – UPPER STEEL

| Factored Moment, M_u (k-ft) | Nominal Flexural Capacity, ΦM_n (k-ft) | Flexural Steel Controlling Load Direction | Mat Upper Rebar Flexure Usage, $M_u / \Phi M_n$ |
|-------------------------------|--|---|---|
| 546.35 | 1,798.62 | Parallel to Pad Edge | 30.4% |

MAT REINFORCING FLEXURE ANALYSIS – LOWER STEEL

| Factored Moment, M_u (k-ft) | Nominal Flexural Capacity, ΦM_n (k-ft) | Flexural Steel Controlling Load Direction | Mat Lower Rebar Flexure Usage, $M_u / \Phi M_n$ |
|-------------------------------|--|---|---|
| 2,544.60 | 7,718.57 | Diagonal to Pad Edge | 33.0% |

PIER REINFORCING STEEL STRENGTH ANALYSIS

| Rebar Cage Diameter (in) | Steel Elastic Modulus, E (ksi) | Strength Bending/Tension Reduction Factor, Φ_b | Strength Shear Reduction Factor, Φ_v | Strength Compression Reduction Factor, Φ_c |
|--------------------------|--------------------------------|---|---|---|
| 65.62 | 29,000 | 0.9 | 0.75 | 0.65 |

PIER REINFORCING MOMENT ANALYSIS

| Design Moment, M_u (k-ft) | Nominal Moment Capacity, $\Phi_u M_n$ (k-ft) | Bending Reinforcement Ratio | Pier Rebar Flexure Usage, $M_u / \Phi_u M_n$ |
|-----------------------------|--|-----------------------------|--|
| 4,050.44 | 11,713.28 | 0.016 | 34.6% |

PIER REINFORCING COMPRESSION ANALYSIS

| Design Compression, P_u (k) | Nominal Compressive Capacity, $\Phi_p P_n$ (k) | Pier Rebar Compressive Usage, $P_u / \Phi_p P_n$ |
|-------------------------------|--|--|
| 73.24 | 6,815.09 | 1.1% |

PIER REINFORCING SHEAR ANALYSIS

| Design Shear, V_u (k) | Nominal Shear Capacity, $\Phi_v V_n$ (k) | Pier Rebar Shear Usage, $V_u / \Phi_v V_n$ |
|-------------------------|--|--|
| 29.92 | 486.52 | 6.1% |

EXHIBIT F

Mount Analysis Report





AMERICAN TOWER®
CORPORATION

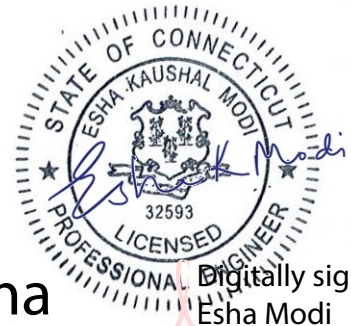
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Mount Analysis Report

ATC Asset Name : Harwinton
ATC Asset Number : 302502
Engineering Number : 14685654_C8_01
Mount Elevation : 163 ft
Proposed Carrier : T-Mobile
Carrier Site Name : ATC Harwinton Monopole
Carrier Site Number : CTNH517A
Site Location : 159 Weingart Road
Harwinton, CT 06791-1109
41.787752, -73.09254
County : Litchfield
Date : February 23, 2024
Max Usage : 61%
Analysis Result : Pass

Prepared By:
Aviskar Ghansam
Structural Engineer I

Aviskar Ghansam



Esha
Modi

Digitally signed by
Esha Modi
Date: 2024.02.26
11:17:19 -05'00'

COA: PEC.0001553



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Standard Conditions Attached

Calculations..... Attached

Introduction

The purpose of this report is to summarize results of the mount analysis performed for T-Mobile at 163 ft.

Supporting Documents

| | |
|------------------------------------|--|
| Specifications Sheet: | Site Pro 1 RMQP, dated July 9, 2015 |
| Radio Frequency Data Sheet: | RFDS ID #CTNH517A, dated February 15, 2024 |
| Reference Photos: | Site photos from 2022 |

Analysis

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

| | |
|--------------------------------------|--|
| Basic Wind Speed: | 115 mph (3-Second Gust) |
| Basic Wind Speed w/ Ice: | 50 mph (3-Second Gust) w/ 1.00" radial ice concurrent |
| Codes: | ANSI/TIA-222-H / 2021 IBC / 2022 Connecticut State Building Code |
| Exposure Category: | B |
| Risk Category: | II |
| Topographic Factor Procedure: | Method 2 |
| Feature: | Flat |
| Crest Height (H): | 0 ft |
| Crest Length (L): | 0 ft |
| Spectral Response: | Ss = 0.176, S1 = 0.054 |
| Site Class: | D - Stiff Soil - Default |
| Live Loads: | Lm = 500 lbs |

* Based on experience, it has been determined that the Lv load cases will not control over Lm load cases in platform mount analyses. Therefore, these load cases have been excluded from this analysis.

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.

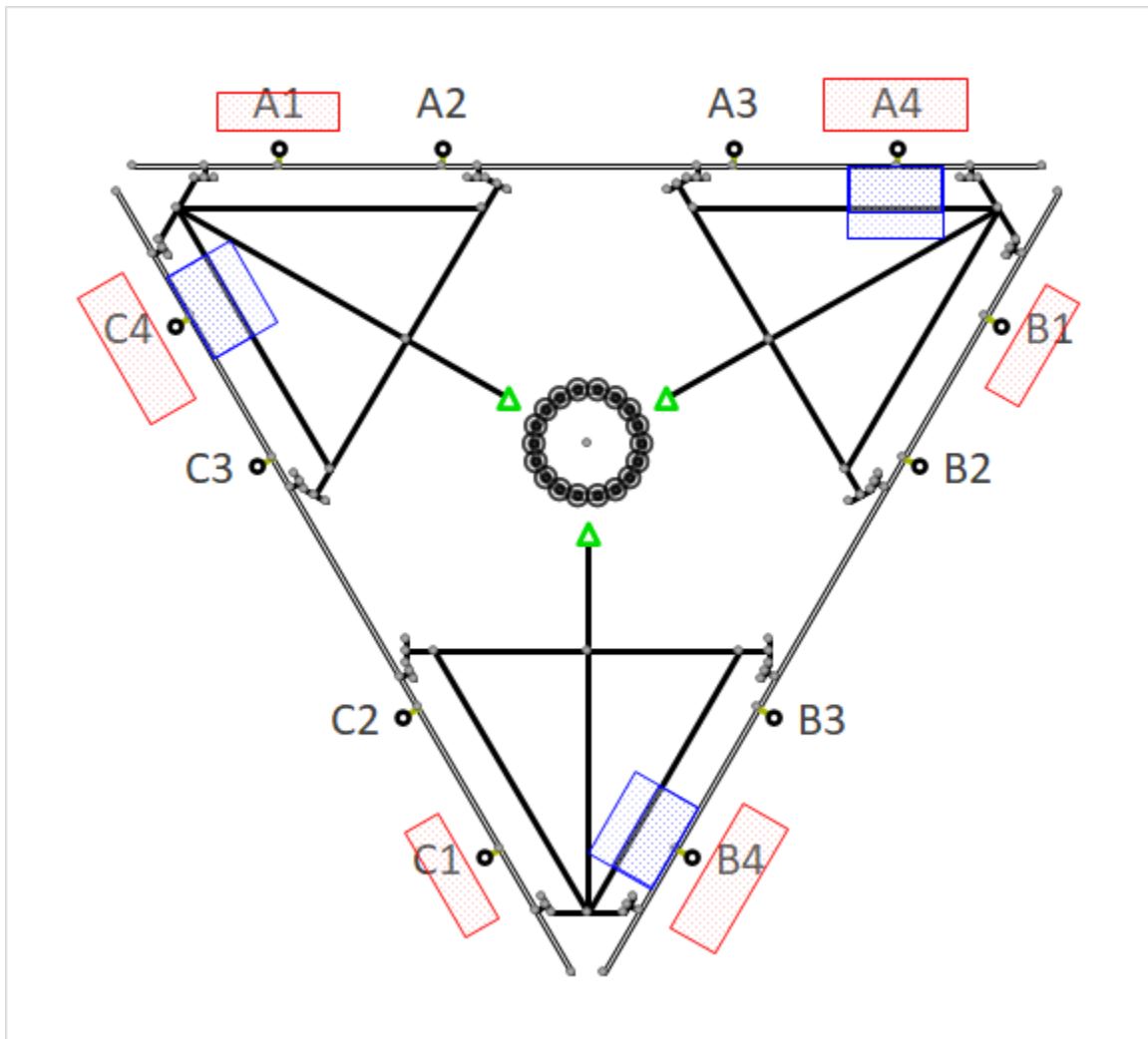
Application Loading

| Mount Centerline (ft) | Equipment Centerline (ft) | Qty | Equipment Manufacturer & Model |
|-----------------------|---------------------------|-----|--------------------------------|
| 163.0 | 163.0 | 3 | Ericsson AIR 6419 B41 |
| | | 3 | RFS APXVAALL24 43-U-NA20 |
| | | 3 | Ericsson Radio 4460 B25+B66 |
| | | 3 | Ericsson Radio 4480 B71+B85 |

Structure Usages

| Structural Component | Controlling Usage | Pass/Fail |
|----------------------|-------------------|-----------|
| Horizontals | 36% | Pass |
| Mount Pipes | 61% | Pass |
| Plate Conn Check | 26% | Pass |
| Collar Check | 47% | Pass |

Mount Layout



Equipment Position Table

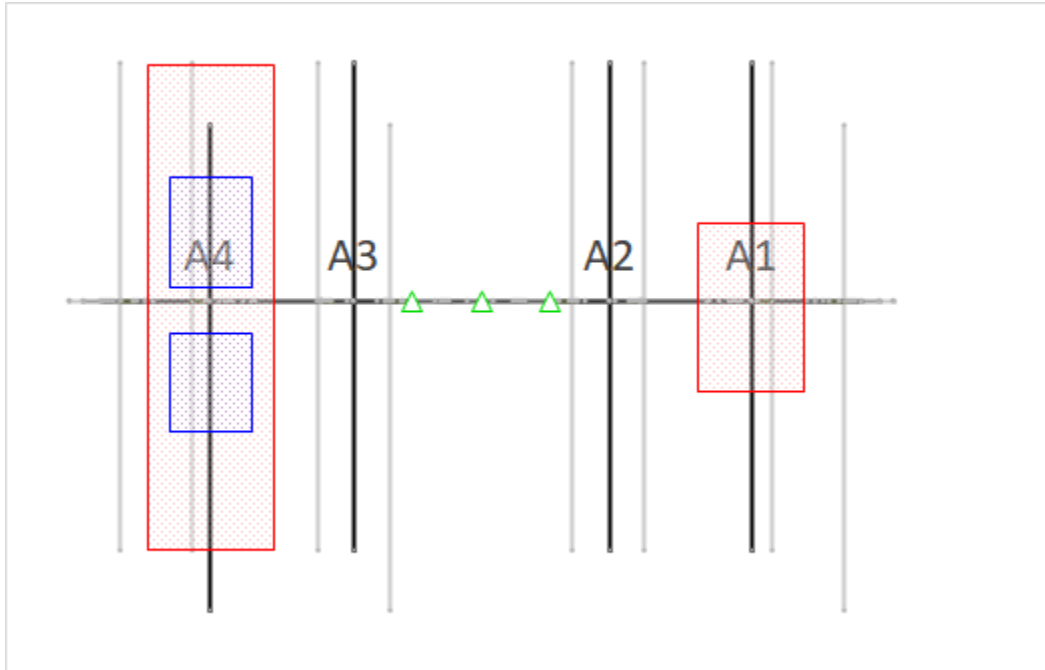
| MP | RAD Center (ft) | Qty. | Antenna Model |
|----|-----------------|------|-----------------------------|
| A1 | 163.0 | 1 | Ericsson AIR 6419 B41 |
| A2 | - | - | Empty |
| A3 | - | - | Empty |
| A4 | 163.0 | 1 | RFS APXVAALL24 43-U-NA20 |
| | 163.0 | 1 | Ericsson Radio 4460 B25+B66 |
| | 163.0 | 1 | Ericsson Radio 4480 B71+B85 |
| B1 | 163.0 | 1 | Ericsson AIR 6419 B41 |
| B2 | - | - | Empty |
| B3 | - | - | Empty |
| B4 | 163.0 | 1 | RFS APXVAALL24 43-U-NA20 |

Equipment Position Table Cont.

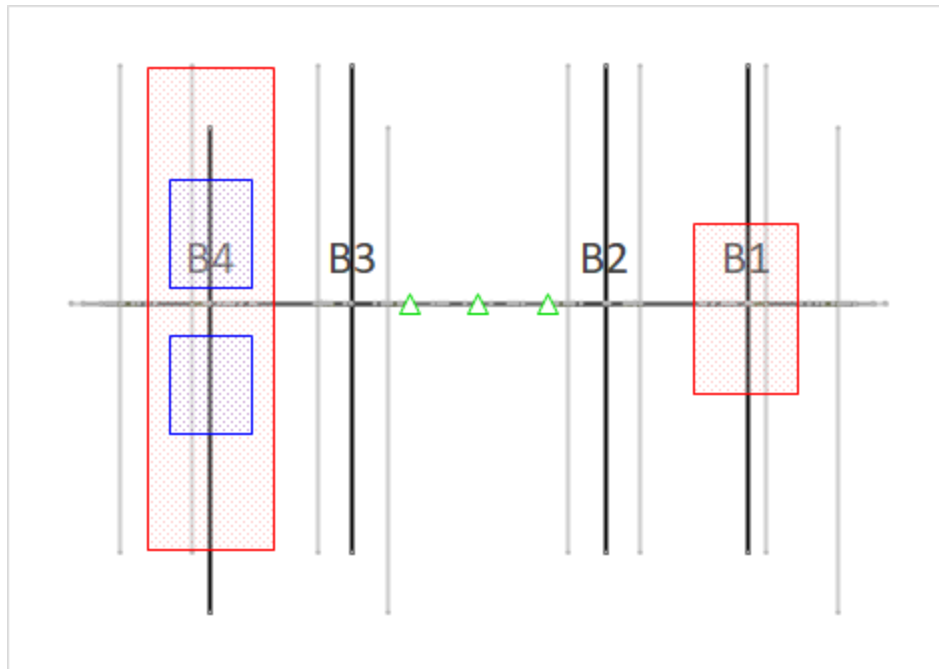
| MP | RAD Center (ft) | Qty. | Antenna Model |
|----|-----------------|------|-----------------------------|
| B4 | 163.0 | 1 | Ericsson Radio 4460 B25+B66 |
| | 163.0 | 1 | Ericsson Radio 4480 B71+B85 |
| C1 | 163.0 | 1 | Ericsson AIR 6419 B41 |
| C2 | - | - | Empty |
| C3 | - | - | Empty |
| C4 | 163.0 | 1 | RFS APXVAALL24 43-U-NA20 |
| | 163.0 | 1 | Ericsson Radio 4460 B25+B66 |
| | 163.0 | 1 | Ericsson Radio 4480 B71+B85 |

Equipment Layout

Front View - Alpha

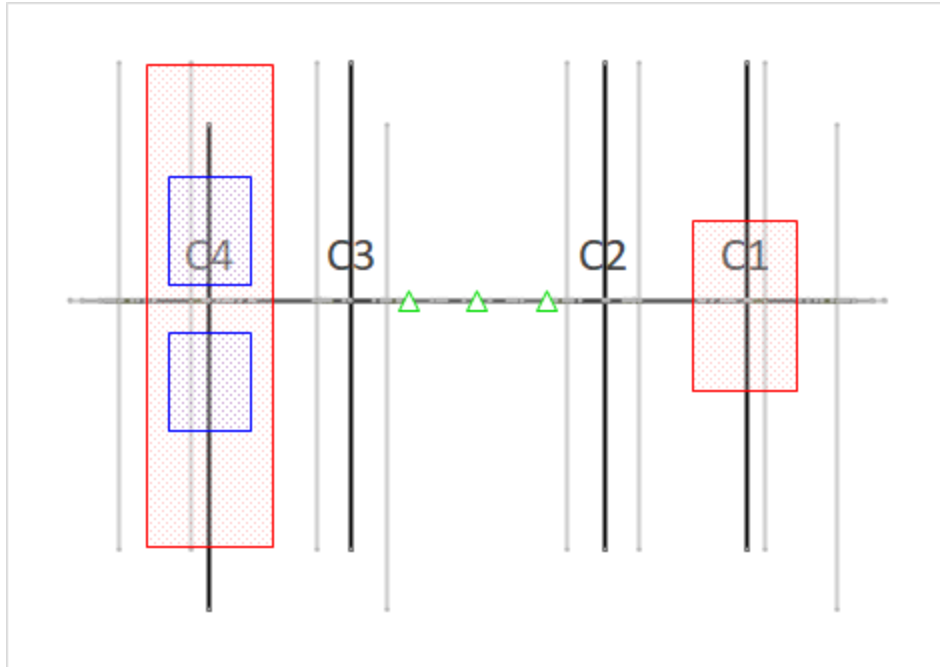


Front View - Beta



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: 302502
Project Number: 14685654_C8_01
Carrier: T-Mobile
Mount Elevation: 163 ft
Date: 2/23/2024

Mount Analysis Force Calculations

| Wind & Ice Load Calculations | | | |
|-----------------------------------|----------|------|-----|
| Velocity Pressure Coefficient | K_z | 1.14 | |
| Topographic Factor | K_{zt} | 1.00 | |
| Rooftop Wind Speed-up Factor | K_s | 1.00 | |
| Shielding Factor | K_a | 0.90 | |
| Ground Elevation Factor | K_e | 0.96 | |
| Wind Direction Probability Factor | K_d | 0.95 | |
| Basic Wind Speed | V | 115 | mph |
| Velocity Pressure | q_z | 35.2 | psf |
| Height Escalation Factor | K_{iz} | 1.17 | |
| Thickness of Radial Glaze Ice | T_{iz} | 1.17 | in |

| Seismic Load Calculations | | | |
|-----------------------------------|----------|--------|-----|
| Short Period DSRAP | S_{DS} | 0.141 | |
| 1 Second DSRAP | S_{D1} | 0.086 | |
| Importance Factor | I | 1.0 | |
| Response Modification Coefficient | R | 2.0 | |
| Seismic Response Coefficient | C_s | 0.070 | |
| Amplification Factor | A | 1.0 | |
| Total Weight | W | 2373.7 | lbs |
| Total Shear Force | V_s | 167.1 | lbs |
| Horizontal Seismic Load | E_h | 167.1 | lbs |
| Vertical Seismic Load | E_v | 66.8 | lbs |

| Antenna Calculations (Elevations per Application/RFDS)* | | | | | | | | |
|---|--------|-------|-------|--------|---------|---------|------------|------------|
| Equipment | Height | Width | Depth | Weight | EPA_N | EPA_T | EPA_{Ni} | EPA_{Ti} |
| Model # | in | in | in | lbs | sqft | sqft | sqft | sqft |
| Ericsson AIR 6419 B41 | 33.6 | 20.0 | 6.3 | 68.5 | 5.60 | 0.91 | 6.69 | 1.33 |
| RFS APXVAALL24 43-U-NA20 | 95.9 | 24.0 | 8.5 | 122.8 | 20.24 | 3.40 | 22.77 | 4.44 |
| Ericsson Radio 4460 B25+B66 | 19.6 | 15.7 | 12.1 | 109.0 | 2.56 | 1.98 | 3.30 | 2.64 |
| Ericsson Radio 4480 B71+B85 | 21.8 | 15.4 | 7.5 | 93.0 | 2.80 | 1.38 | 3.57 | 2.01 |

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

**Equipment EPA has been adjusted per wind tunnel and CFD testing

Mount-to-Tower Connection Analysis

Applied Loads from RISA 3D

| | | | |
|-----------------------------------|-------|---------|-------|
| Controlling Load Combination | | 123 | |
| Node Label/ Orientation (Degrees) | | N006 | 60 |
| Force in X | F_x | 1586.4 | lbs |
| Force in Y | F_y | 735.3 | lbs |
| Force in Z | F_z | -896.3 | lbs |
| Moment about X | M_x | 218.4 | lb-ft |
| Moment about Y | M_y | 24.4 | lb-ft |
| Moment about Z | M_z | -1256.3 | lb-ft |

Bolt Shear and Tensile Capacity

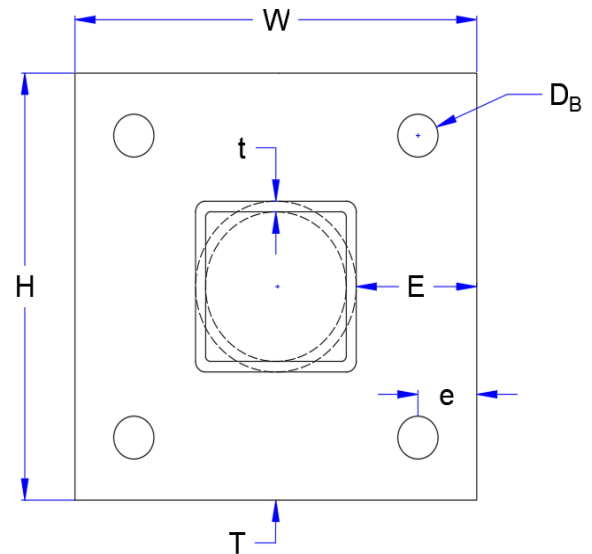
| | | | |
|---------------------------|---------------------------------------|------|------|
| Bolt Quantity | n | 4 | |
| Bolt Diameter | D_B | 5/8 | in |
| Bolt Horiz. Edge Distance | e_h | 1 | in |
| Bolt Vert. Edge Distance | e_v | 1 | in |
| Bolt Grade | | A325 | |
| Bolt F_y | F_{y_B} | 92 | ksi |
| Bolt F_u | F_{u_B} | 120 | ksi |
| Applied Shear | V_u | 0.22 | k |
| Applied Tension | T_u | 1.42 | k |
| Tensile Strength | ϕT_n | 20.3 | k |
| Shear Strength | ϕV_n | 13.8 | k |
| Interaction Capacity | $(V_u/\phi V_n)^2 + (T_u/\phi T_n)^2$ | 1% | Pass |

Plate Flexural Capacity

| | | | |
|-------------------|----------------|------|------|
| Plate Height | H | 8 | in |
| Plate Width | W | 8 | in |
| Plate Thickness | T | 1/2 | in |
| Plate Grade | | A36 | |
| Plate F_y | F_{y_p} | 36 | ksi |
| Plate F_u | F_{u_p} | 58 | ksi |
| Shear Capacity | ϕV_n | 28.8 | k |
| Applied Moment | M_u | 1.5 | k-in |
| Flexural Strength | ϕM_n | 5.9 | k-in |
| Flexural Capacity | $M_u/\phi M_n$ | 26% | Pass |

Base Metal Checks

| | | |
|----------------------------------|-------|----|
| Minimum Base Metal Thickness | 0.155 | in |
| Controlling Base Metal Thickness | 0.250 | in |



Weld Capacity

| | | |
|----------------------|--------------------------|---------------------|
| Standoff Type | | Tube |
| Standoff Member | | HSS4x4x4 |
| Member Edge Distance | E | 2 in |
| Member Height | h | 4 in |
| Member Width | w | 4 in |
| Member Thickness | t | 0.250 in |
| Member Grade | | A53 Gr. B |
| Member F_y | F_{y_M} | 35 ksi |
| Member F_u | F_{u_M} | 60 ksi |
| Weld Size | a | 3/16 in |
| Weld Section Modulus | S | 2.9 in ³ |
| Applied Weld Stress | σ_u | 5.7 ksi |
| Capacity Weld Stress | $\phi \sigma_n$ | 31.5 ksi |
| Weld Utilization | $\sigma_u/\phi \sigma_n$ | 18% Pass |

Prying Action Considerations

| | | |
|-----------------------------|-----------|-----------|
| Moment Arm | b | 1.07 in |
| Effective Moment Arm | b' | 0.76 in |
| Tributary Length | p | 2.90 in |
| Effective Edge Distance | a' | 1.31 in |
| Minimum Thickness | t_{min} | 0.13 in |
| No Prying Thickness | t_{np} | 0.17 in |
| Min Bolt Strength Thickness | t_c | 0.64 k-in |



Site Number: 302502
Project Number: 14685654_C8_01
Carrier: T-Mobile
Mount Elevation: 163 ft
Date: 2/23/2024

Monopole Connection Capacity Check

Applied Loads from RISA 3D

| | | | |
|------------------------------------|----------------|--------|-------|
| Controlling Load Combination | | 201 | |
| Node Label / Orientation (Degrees) | | N006 | 60 |
| Force in X | F _x | -13.3 | lbs |
| Force in Y | F _y | 1811.7 | lbs |
| Force in Z | F _z | -113.9 | lbs |
| Moment about X | M _x | 5511.4 | lb-ft |
| Moment about Y | M _y | -12.2 | lb-ft |
| Moment about Z | M _z | -676.4 | lb-ft |

Monopole Properties

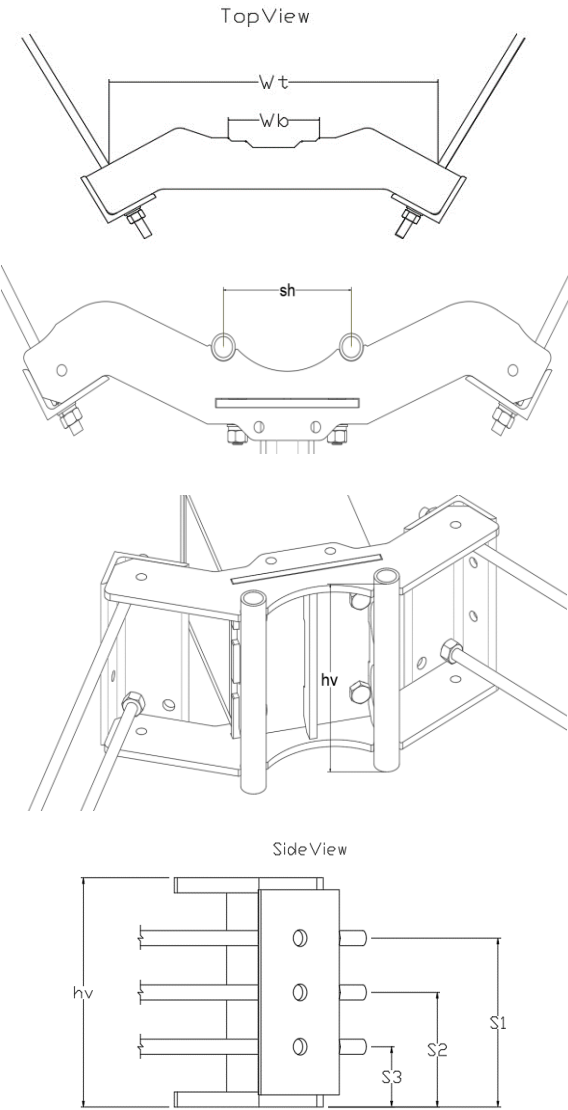
| | | | |
|-------------------------|----------------|--------|-----|
| Monopole Yield Strength | F _y | 65 | ksi |
| Pole Thickness | t | 0.188 | in |
| Pole Diameter | D | 17.58 | in |
| Pole D/t Ratio | D/t | 93.760 | |

Collar Properties

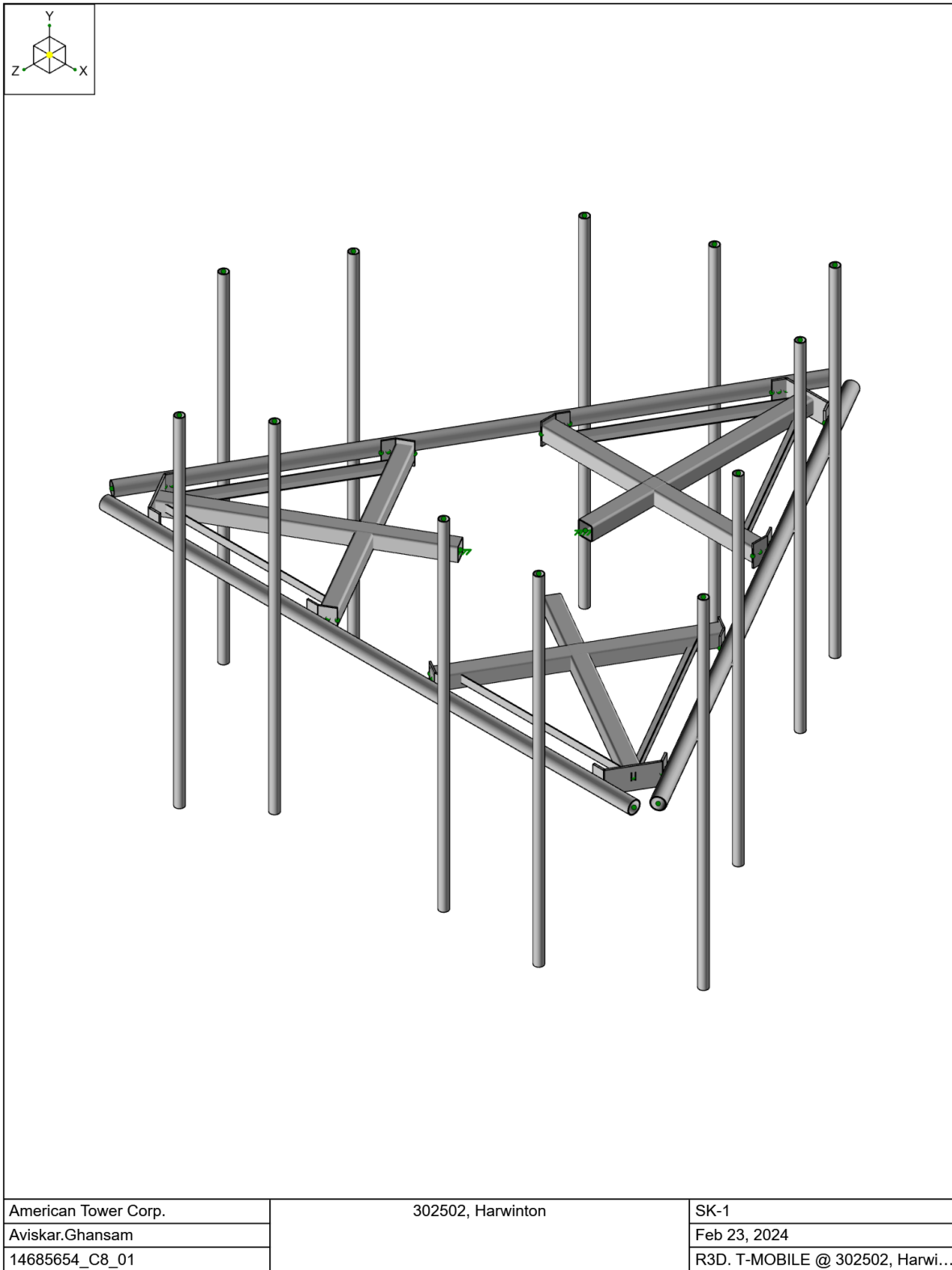
| | | | |
|-------------------------|--|------------|------|
| Collar | | MDFCC | |
| Bearing Zone Type | | Horizontal | |
| Bearing Point Width | B _p / S _h / W _b | 4.00 | in |
| Threaded Rod Width | W _t | 24 | in |
| Collar Height | h _v | 9.5 | in |
| Aspect Ratio | AR | 0.42 | |
| | C _v | 1.625 | |
| Applied Force | R _u | 6.54 | k |
| Collar / Shaft Capacity | φR _n | 13.9 | k |
| Utilization Ratio | R _u /φR _n | 47% | Pass |

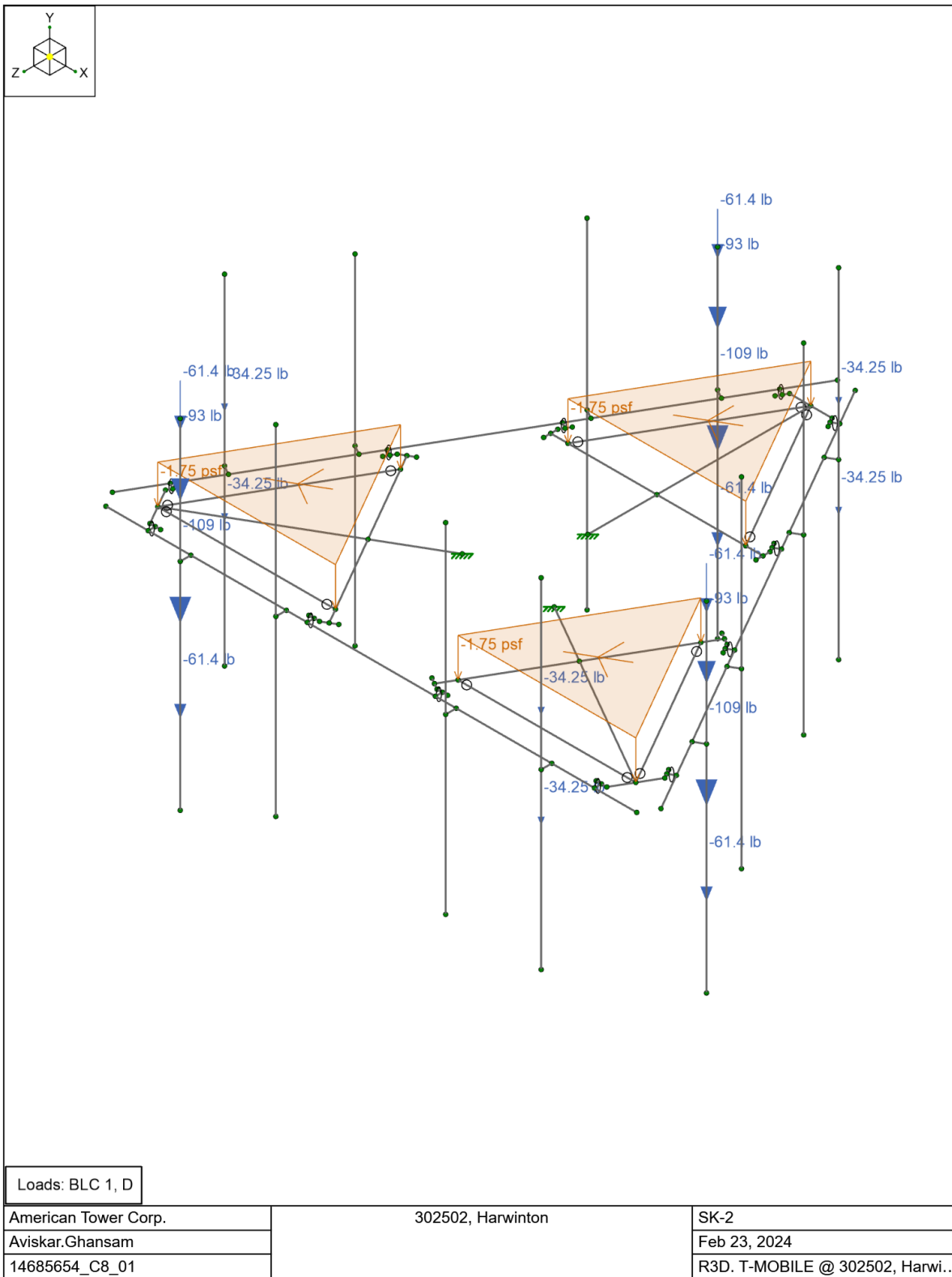
Threaded Rod Properties

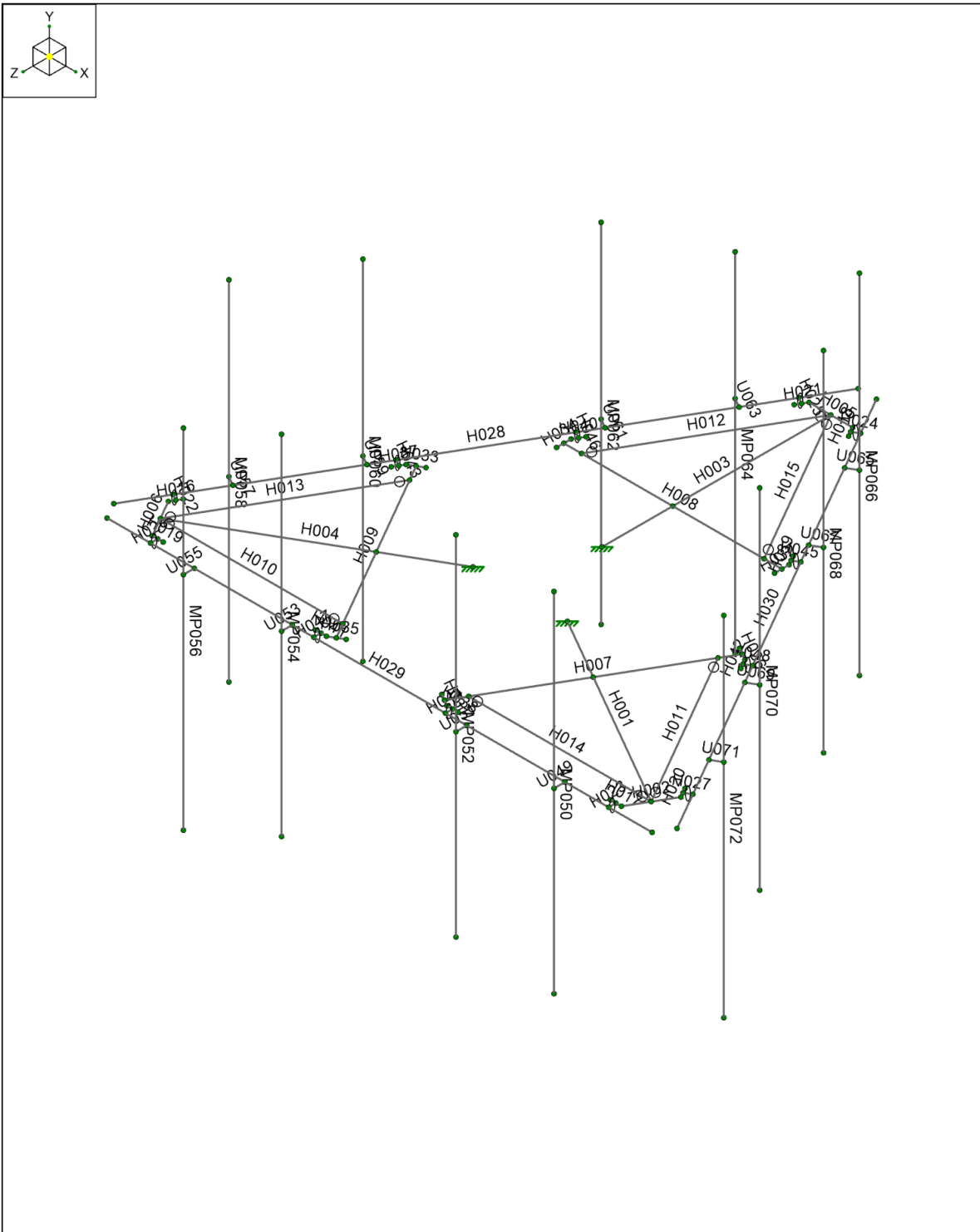
| | | | |
|------------------------|----------------|--------|----|
| Quantity | n | 3 | |
| Rod Diameter | D _B | 5/8 | in |
| Vertical Rod 1 Spacing | S ₁ | 7 | in |
| Vertical Rod 2 Spacing | S ₂ | 4 3/4 | in |
| Vertical Rod 3 Spacing | S ₃ | 2 1/2 | in |
| Rod Grade | | J429-2 | |



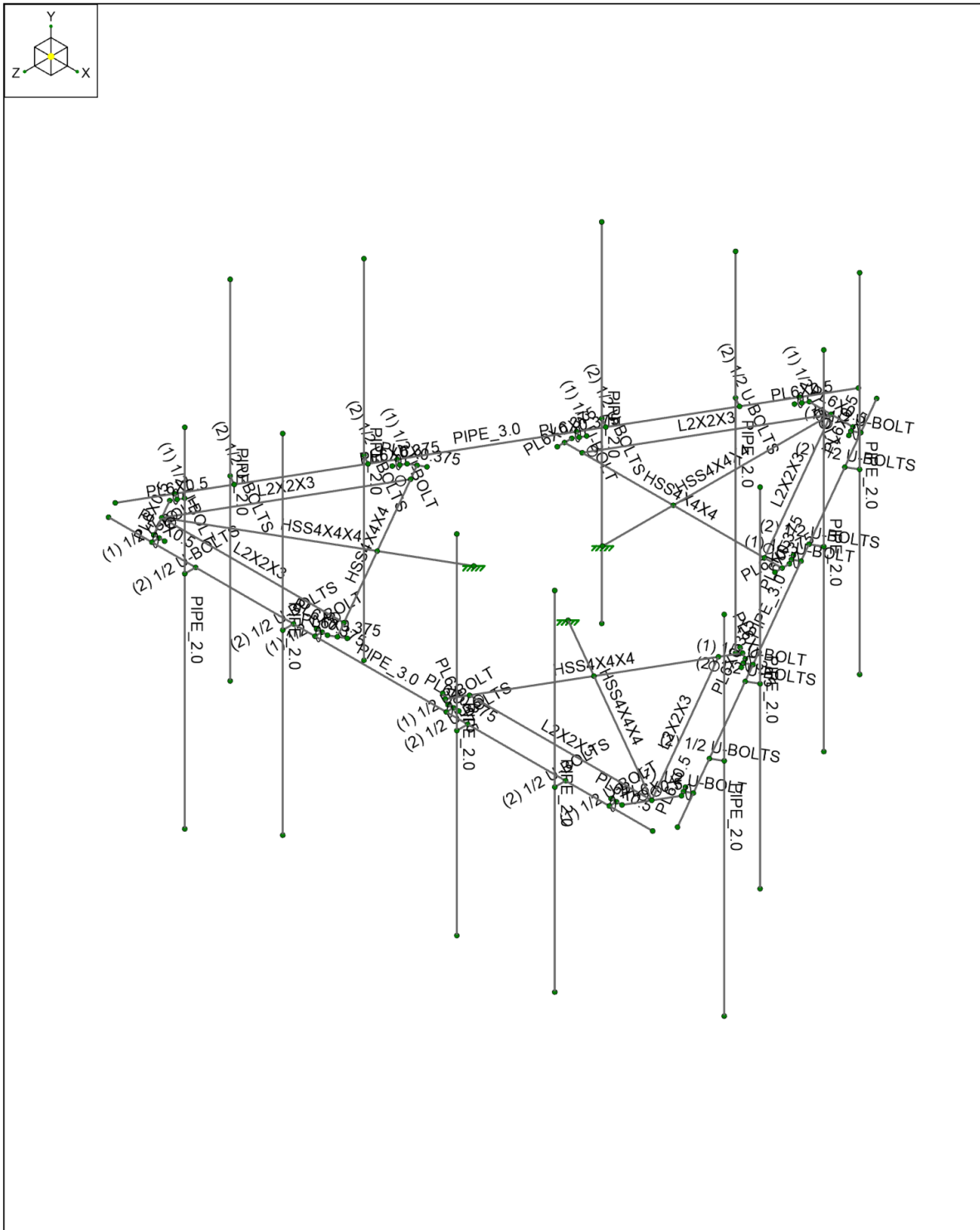
| | | | |
|---------------------|---------------------------------|------|------|
| Rod F _y | F _{yB} | 57 | ksi |
| Rod F _u | F _{uB} | 74 | ksi |
| Max Applied Tension | T _u | 2.13 | k |
| Tensile Strength | φT _n | 12.5 | k |
| Utilization Ratio | T _u /φT _n | 17% | Pass |



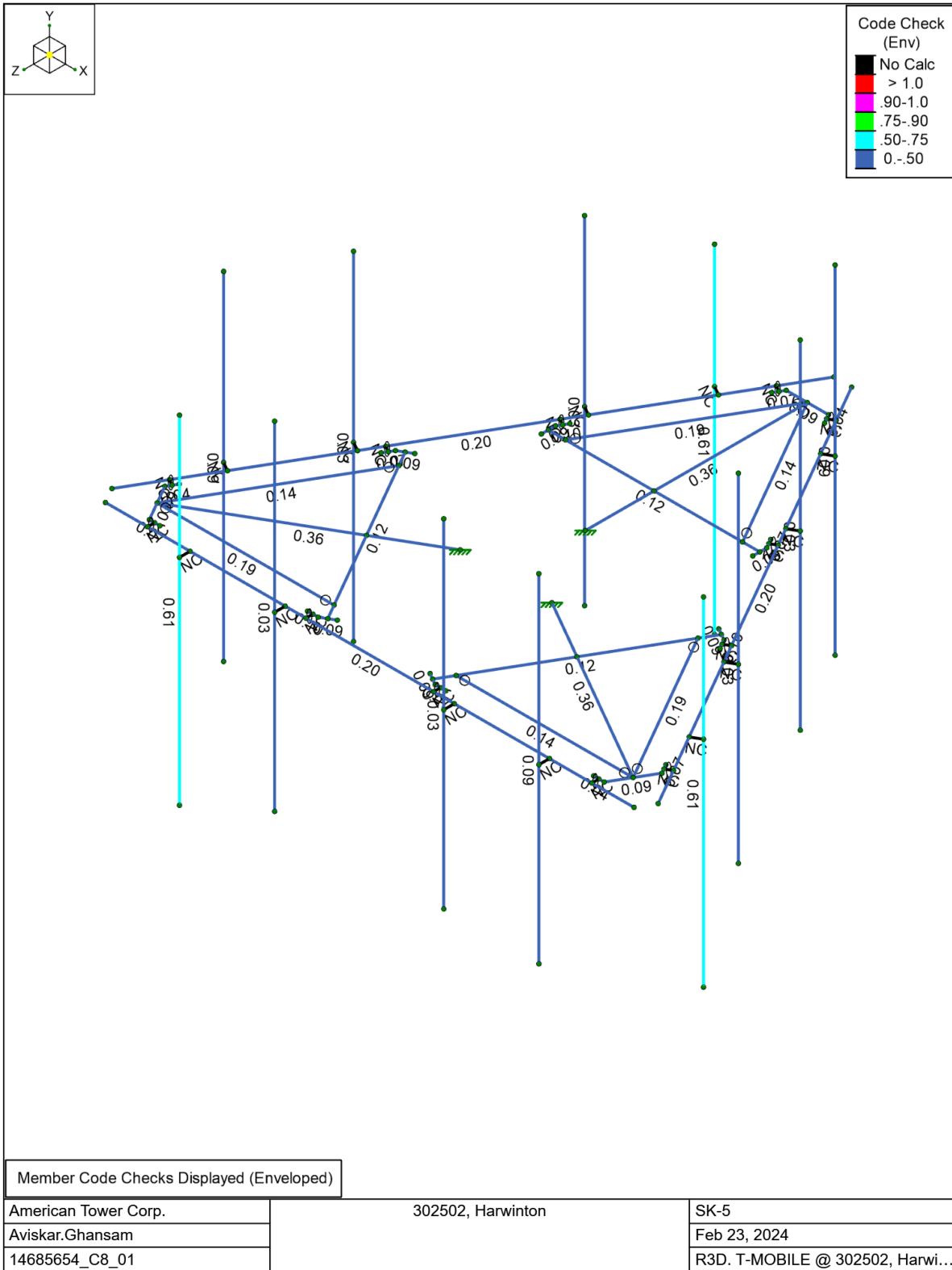


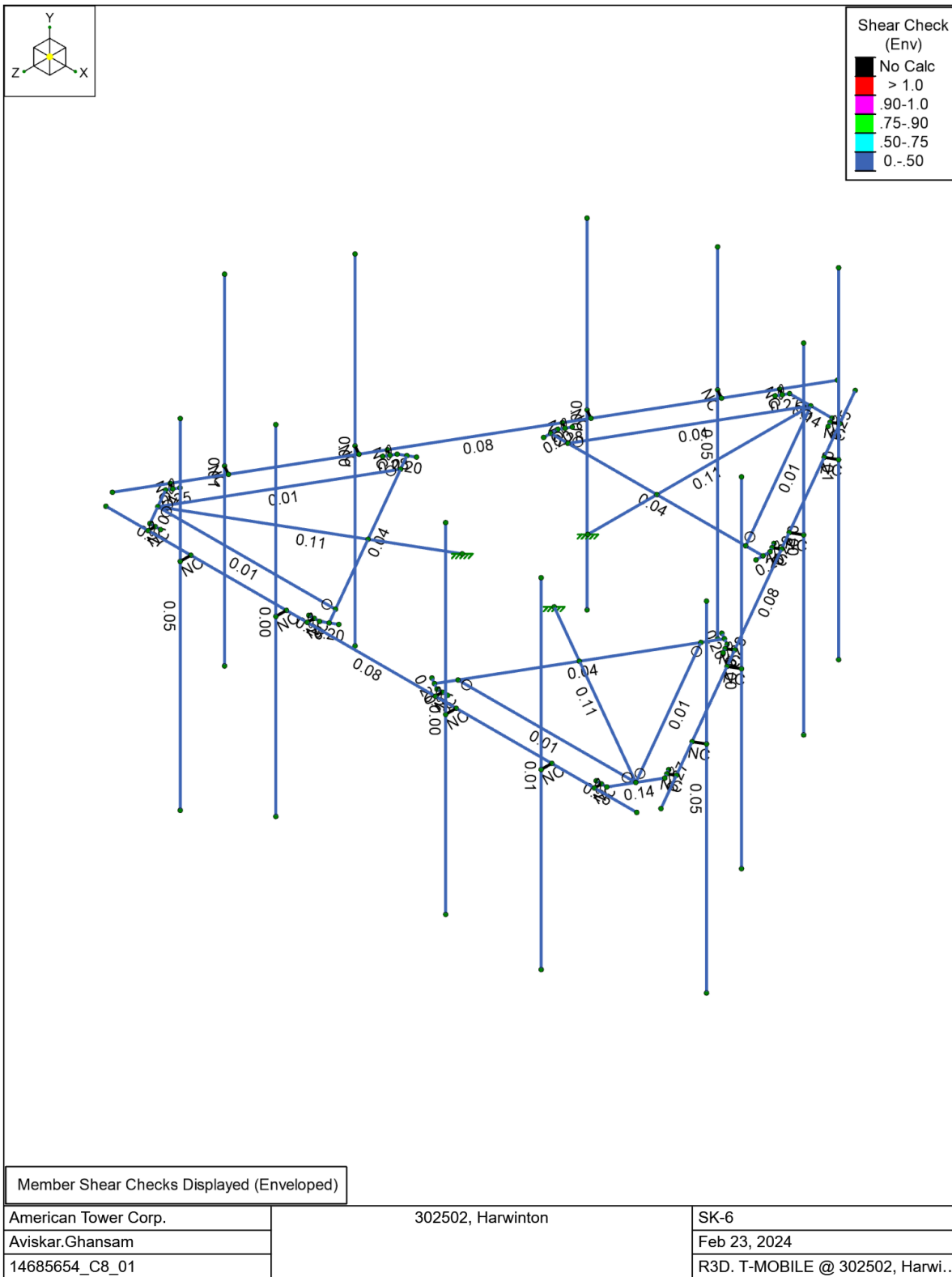


| | | |
|----------------------|-------------------|----------------------------------|
| American Tower Corp. | 302502, Harwinton | SK-3 |
| Aviskar.Ghansam | | Feb 23, 2024 |
| 14685654_C8_01 | | R3D. T-MOBILE @ 302502, Harwi... |



| | | |
|----------------------|-------------------|----------------------------------|
| American Tower Corp. | 302502, Harwinton | SK-4 |
| Aviskar.Ghansam | | Feb 23, 2024 |
| 14685654_C8_01 | | R3D. T-MOBILE @ 302502, Harwi... |







Basic Load Cases

| | BLC Description | Category | X Gravity | Y Gravity | Z Gravity | Nodal | Point | Distributed | Area(Member) |
|----|----------------------------|----------|-----------|-----------|-----------|-------|-------|-------------|--------------|
| 1 | D | DL | | -1 | | | 18 | | 3 |
| 2 | Di | IL | | | | | 18 | 48 | 3 |
| 3 | W 0 | WL | | | | | 18 | 72 | |
| 4 | W 30 | WL | | | | | 36 | 144 | |
| 5 | W 60 | WL | | | | | 36 | 144 | |
| 6 | W 90 | WL | | | | | 18 | 78 | |
| 7 | W 120 | WL | | | | | 36 | 144 | |
| 8 | W 150 | WL | | | | | 36 | 144 | |
| 9 | W 180 | WL | | | | | 18 | 72 | |
| 10 | W 210 | WL | | | | | 36 | 144 | |
| 11 | W 240 | WL | | | | | 36 | 144 | |
| 12 | W 270 | WL | | | | | 18 | 78 | |
| 13 | W 300 | WL | | | | | 36 | 144 | |
| 14 | W 330 | WL | | | | | 36 | 144 | |
| 15 | Wi 0 | WL | | | | | 18 | 72 | |
| 16 | Wi 30 | WL | | | | | 36 | 144 | |
| 17 | Wi 60 | WL | | | | | 36 | 144 | |
| 18 | Wi 90 | WL | | | | | 18 | 78 | |
| 19 | Wi 120 | WL | | | | | 36 | 144 | |
| 20 | Wi 150 | WL | | | | | 36 | 144 | |
| 21 | Wi 180 | WL | | | | | 18 | 72 | |
| 22 | Wi 210 | WL | | | | | 36 | 144 | |
| 23 | Wi 240 | WL | | | | | 36 | 144 | |
| 24 | Wi 270 | WL | | | | | 18 | 78 | |
| 25 | Wi 300 | WL | | | | | 36 | 144 | |
| 26 | Wi 330 | WL | | | | | 36 | 144 | |
| 27 | Ws 0 | WL | | | | | 18 | 72 | |
| 28 | Ws 30 | WL | | | | | 36 | 144 | |
| 29 | Ws 60 | WL | | | | | 36 | 144 | |
| 30 | Ws 90 | WL | | | | | 18 | 78 | |
| 31 | Ws 120 | WL | | | | | 36 | 144 | |
| 32 | Ws 150 | WL | | | | | 36 | 144 | |
| 33 | Ws 180 | WL | | | | | 18 | 72 | |
| 34 | Ws 210 | WL | | | | | 36 | 144 | |
| 35 | Ws 240 | WL | | | | | 36 | 144 | |
| 36 | Ws 270 | WL | | | | | 18 | 78 | |
| 37 | Ws 300 | WL | | | | | 36 | 144 | |
| 38 | Ws 330 | WL | | | | | 36 | 144 | |
| 39 | Ev -Y | ELY | | -0.028 | | | 18 | | 3 |
| 40 | Eh -Z | ELZ | | | -0.07 | | 18 | | 3 |
| 41 | Eh -X | ELX | -0.07 | | | | 18 | | 3 |
| 42 | Lm (1) | LL | | | | 1 | | | |
| 43 | Lm (2) | LL | | | | 1 | | | |
| 44 | Lm (3) | LL | | | | 1 | | | |
| 45 | Lm (4) | LL | | | | 1 | | | |
| 46 | Lm (5) | LL | | | | 1 | | | |
| 47 | Lm (6) | LL | | | | 1 | | | |
| 48 | Lm (7) | LL | | | | 1 | | | |
| 49 | Lm (8) | LL | | | | 1 | | | |
| 50 | Lm (9) | LL | | | | 1 | | | |
| 51 | Lm (10) | LL | | | | 1 | | | |
| 52 | Lm (11) | LL | | | | 1 | | | |
| 53 | Lm (12) | LL | | | | 1 | | | |
| 54 | BLC 1 Transient Area Loads | None | | | | | | 97 | |
| 55 | BLC 2 Transient Area Loads | None | | | | | | 97 | |



Company : American Tower Corp.
 Designer : Aviskar.Ghansam
 Job Number : 14685654_C8_01
 Model Name : 302502, Harwinton

2/23/2024
 11:40:09 AM
 Checked By : -

Basic Load Cases (Continued)

| | BLC Description | Category | X Gravity | Y Gravity | Z Gravity | Nodal | Point | Distributed | Area(Member) |
|----|-----------------------------|----------|-----------|-----------|-----------|-------|-------|-------------|--------------|
| 56 | BLC 39 Transient Area Loads | None | | | | | | 97 | |
| 57 | BLC 40 Transient Area Loads | None | | | | | | 97 | |
| 58 | BLC 41 Transient Area Loads | None | | | | | | 97 | |

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 |
| 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 |



Load Combinations (Continued)

| | Description | Solve | P-Delta | BLC | Factor | BLC | Factor | BLC | Factor | BLC | Factor |
|-----|--------------------------------|-------|---------|-----|--------|-----|--------|-----|--------|-----|--------|
| 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 + 1.5Lm(1) + 1.0Wm [0°] | Yes | Y | DL | 1.2 | 42 | 1.5 | 27 | 1 | | |
| 63 | 1.2D + 1.5Lm(1) + 1.0Wm [30°] | Yes | Y | DL | 1.2 | 42 | 1.5 | 28 | 1 | | |
| 64 | 1.2D + 1.5Lm(1) + 1.0Wm [60°] | Yes | Y | DL | 1.2 | 42 | 1.5 | 29 | 1 | | |
| 65 | 1.2D + 1.5Lm(1) + 1.0Wm [90°] | Yes | Y | DL | 1.2 | 42 | 1.5 | 30 | 1 | | |
| 66 | 1.2D + 1.5Lm(1) + 1.0Wm [120°] | Yes | Y | DL | 1.2 | 42 | 1.5 | 31 | 1 | | |
| 67 | 1.2D + 1.5Lm(1) + 1.0Wm [150°] | Yes | Y | DL | 1.2 | 42 | 1.5 | 32 | 1 | | |
| 68 | 1.2D + 1.5Lm(1) + 1.0Wm [180°] | Yes | Y | DL | 1.2 | 42 | 1.5 | 33 | 1 | | |
| 69 | 1.2D + 1.5Lm(1) + 1.0Wm [210°] | Yes | Y | DL | 1.2 | 42 | 1.5 | 34 | 1 | | |
| 70 | 1.2D + 1.5Lm(1) + 1.0Wm [240°] | Yes | Y | DL | 1.2 | 42 | 1.5 | 35 | 1 | | |
| 71 | 1.2D + 1.5Lm(1) + 1.0Wm [270°] | Yes | Y | DL | 1.2 | 42 | 1.5 | 36 | 1 | | |
| 72 | 1.2D + 1.5Lm(1) + 1.0Wm [300°] | Yes | Y | DL | 1.2 | 42 | 1.5 | 37 | 1 | | |
| 73 | 1.2D + 1.5Lm(1) + 1.0Wm [330°] | Yes | Y | DL | 1.2 | 42 | 1.5 | 38 | 1 | | |
| 74 | 1.2D + 1.5Lm(2) + 1.0Wm [0°] | Yes | Y | DL | 1.2 | 43 | 1.5 | 27 | 1 | | |
| 75 | 1.2D + 1.5Lm(2) + 1.0Wm [30°] | Yes | Y | DL | 1.2 | 43 | 1.5 | 28 | 1 | | |
| 76 | 1.2D + 1.5Lm(2) + 1.0Wm [60°] | Yes | Y | DL | 1.2 | 43 | 1.5 | 29 | 1 | | |
| 77 | 1.2D + 1.5Lm(2) + 1.0Wm [90°] | Yes | Y | DL | 1.2 | 43 | 1.5 | 30 | 1 | | |
| 78 | 1.2D + 1.5Lm(2) + 1.0Wm [120°] | Yes | Y | DL | 1.2 | 43 | 1.5 | 31 | 1 | | |
| 79 | 1.2D + 1.5Lm(2) + 1.0Wm [150°] | Yes | Y | DL | 1.2 | 43 | 1.5 | 32 | 1 | | |
| 80 | 1.2D + 1.5Lm(2) + 1.0Wm [180°] | Yes | Y | DL | 1.2 | 43 | 1.5 | 33 | 1 | | |
| 81 | 1.2D + 1.5Lm(2) + 1.0Wm [210°] | Yes | Y | DL | 1.2 | 43 | 1.5 | 34 | 1 | | |
| 82 | 1.2D + 1.5Lm(2) + 1.0Wm [240°] | Yes | Y | DL | 1.2 | 43 | 1.5 | 35 | 1 | | |
| 83 | 1.2D + 1.5Lm(2) + 1.0Wm [270°] | Yes | Y | DL | 1.2 | 43 | 1.5 | 36 | 1 | | |
| 84 | 1.2D + 1.5Lm(2) + 1.0Wm [300°] | Yes | Y | DL | 1.2 | 43 | 1.5 | 37 | 1 | | |
| 85 | 1.2D + 1.5Lm(2) + 1.0Wm [330°] | Yes | Y | DL | 1.2 | 43 | 1.5 | 38 | 1 | | |
| 86 | 1.2D + 1.5Lm(3) + 1.0Wm [0°] | Yes | Y | DL | 1.2 | 44 | 1.5 | 27 | 1 | | |
| 87 | 1.2D + 1.5Lm(3) + 1.0Wm [30°] | Yes | Y | DL | 1.2 | 44 | 1.5 | 28 | 1 | | |
| 88 | 1.2D + 1.5Lm(3) + 1.0Wm [60°] | Yes | Y | DL | 1.2 | 44 | 1.5 | 29 | 1 | | |
| 89 | 1.2D + 1.5Lm(3) + 1.0Wm [90°] | Yes | Y | DL | 1.2 | 44 | 1.5 | 30 | 1 | | |
| 90 | 1.2D + 1.5Lm(3) + 1.0Wm [120°] | Yes | Y | DL | 1.2 | 44 | 1.5 | 31 | 1 | | |
| 91 | 1.2D + 1.5Lm(3) + 1.0Wm [150°] | Yes | Y | DL | 1.2 | 44 | 1.5 | 32 | 1 | | |
| 92 | 1.2D + 1.5Lm(3) + 1.0Wm [180°] | Yes | Y | DL | 1.2 | 44 | 1.5 | 33 | 1 | | |
| 93 | 1.2D + 1.5Lm(3) + 1.0Wm [210°] | Yes | Y | DL | 1.2 | 44 | 1.5 | 34 | 1 | | |
| 94 | 1.2D + 1.5Lm(3) + 1.0Wm [240°] | Yes | Y | DL | 1.2 | 44 | 1.5 | 35 | 1 | | |
| 95 | 1.2D + 1.5Lm(3) + 1.0Wm [270°] | Yes | Y | DL | 1.2 | 44 | 1.5 | 36 | 1 | | |
| 96 | 1.2D + 1.5Lm(3) + 1.0Wm [300°] | Yes | Y | DL | 1.2 | 44 | 1.5 | 37 | 1 | | |
| 97 | 1.2D + 1.5Lm(3) + 1.0Wm [330°] | Yes | Y | DL | 1.2 | 44 | 1.5 | 38 | 1 | | |
| 98 | 1.2D + 1.5Lm(4) + 1.0Wm [0°] | Yes | Y | DL | 1.2 | 45 | 1.5 | 27 | 1 | | |
| 99 | 1.2D + 1.5Lm(4) + 1.0Wm [30°] | Yes | Y | DL | 1.2 | 45 | 1.5 | 28 | 1 | | |
| 100 | 1.2D + 1.5Lm(4) + 1.0Wm [60°] | Yes | Y | DL | 1.2 | 45 | 1.5 | 29 | 1 | | |
| 101 | 1.2D + 1.5Lm(4) + 1.0Wm [90°] | Yes | Y | DL | 1.2 | 45 | 1.5 | 30 | 1 | | |
| 102 | 1.2D + 1.5Lm(4) + 1.0Wm [120°] | Yes | Y | DL | 1.2 | 45 | 1.5 | 31 | 1 | | |
| 103 | 1.2D + 1.5Lm(4) + 1.0Wm [150°] | Yes | Y | DL | 1.2 | 45 | 1.5 | 32 | 1 | | |
| 104 | 1.2D + 1.5Lm(4) + 1.0Wm [180°] | Yes | Y | DL | 1.2 | 45 | 1.5 | 33 | 1 | | |



Company : American Tower Corp.
 Designer : Aviskar.Ghansam
 Job Number : 14685654_C8_01
 Model Name : 302502, Harwinton

2/23/2024
 11:40:09 AM
 Checked By : -

Load Combinations (Continued)

| | Description | Solve | P-Delta | BLC | Factor | BLC | Factor | BLC | Factor | BLC | Factor |
|-----|--------------------------------|-------|---------|-----|--------|-----|--------|-----|--------|-----|--------|
| 105 | 1.2D + 1.5Lm(4) + 1.0Wm [210°] | Yes | Y | DL | 1.2 | 45 | 1.5 | 34 | 1 | | |
| 106 | 1.2D + 1.5Lm(4) + 1.0Wm [240°] | Yes | Y | DL | 1.2 | 45 | 1.5 | 35 | 1 | | |
| 107 | 1.2D + 1.5Lm(4) + 1.0Wm [270°] | Yes | Y | DL | 1.2 | 45 | 1.5 | 36 | 1 | | |
| 108 | 1.2D + 1.5Lm(4) + 1.0Wm [300°] | Yes | Y | DL | 1.2 | 45 | 1.5 | 37 | 1 | | |
| 109 | 1.2D + 1.5Lm(4) + 1.0Wm [330°] | Yes | Y | DL | 1.2 | 45 | 1.5 | 38 | 1 | | |
| 110 | 1.2D + 1.5Lm(5) + 1.0Wm [0°] | Yes | Y | DL | 1.2 | 46 | 1.5 | 27 | 1 | | |
| 111 | 1.2D + 1.5Lm(5) + 1.0Wm [30°] | Yes | Y | DL | 1.2 | 46 | 1.5 | 28 | 1 | | |
| 112 | 1.2D + 1.5Lm(5) + 1.0Wm [60°] | Yes | Y | DL | 1.2 | 46 | 1.5 | 29 | 1 | | |
| 113 | 1.2D + 1.5Lm(5) + 1.0Wm [90°] | Yes | Y | DL | 1.2 | 46 | 1.5 | 30 | 1 | | |
| 114 | 1.2D + 1.5Lm(5) + 1.0Wm [120°] | Yes | Y | DL | 1.2 | 46 | 1.5 | 31 | 1 | | |
| 115 | 1.2D + 1.5Lm(5) + 1.0Wm [150°] | Yes | Y | DL | 1.2 | 46 | 1.5 | 32 | 1 | | |
| 116 | 1.2D + 1.5Lm(5) + 1.0Wm [180°] | Yes | Y | DL | 1.2 | 46 | 1.5 | 33 | 1 | | |
| 117 | 1.2D + 1.5Lm(5) + 1.0Wm [210°] | Yes | Y | DL | 1.2 | 46 | 1.5 | 34 | 1 | | |
| 118 | 1.2D + 1.5Lm(5) + 1.0Wm [240°] | Yes | Y | DL | 1.2 | 46 | 1.5 | 35 | 1 | | |
| 119 | 1.2D + 1.5Lm(5) + 1.0Wm [270°] | Yes | Y | DL | 1.2 | 46 | 1.5 | 36 | 1 | | |
| 120 | 1.2D + 1.5Lm(5) + 1.0Wm [300°] | Yes | Y | DL | 1.2 | 46 | 1.5 | 37 | 1 | | |
| 121 | 1.2D + 1.5Lm(5) + 1.0Wm [330°] | Yes | Y | DL | 1.2 | 46 | 1.5 | 38 | 1 | | |
| 122 | 1.2D + 1.5Lm(6) + 1.0Wm [0°] | Yes | Y | DL | 1.2 | 47 | 1.5 | 27 | 1 | | |
| 123 | 1.2D + 1.5Lm(6) + 1.0Wm [30°] | Yes | Y | DL | 1.2 | 47 | 1.5 | 28 | 1 | | |
| 124 | 1.2D + 1.5Lm(6) + 1.0Wm [60°] | Yes | Y | DL | 1.2 | 47 | 1.5 | 29 | 1 | | |
| 125 | 1.2D + 1.5Lm(6) + 1.0Wm [90°] | Yes | Y | DL | 1.2 | 47 | 1.5 | 30 | 1 | | |
| 126 | 1.2D + 1.5Lm(6) + 1.0Wm [120°] | Yes | Y | DL | 1.2 | 47 | 1.5 | 31 | 1 | | |
| 127 | 1.2D + 1.5Lm(6) + 1.0Wm [150°] | Yes | Y | DL | 1.2 | 47 | 1.5 | 32 | 1 | | |
| 128 | 1.2D + 1.5Lm(6) + 1.0Wm [180°] | Yes | Y | DL | 1.2 | 47 | 1.5 | 33 | 1 | | |
| 129 | 1.2D + 1.5Lm(6) + 1.0Wm [210°] | Yes | Y | DL | 1.2 | 47 | 1.5 | 34 | 1 | | |
| 130 | 1.2D + 1.5Lm(6) + 1.0Wm [240°] | Yes | Y | DL | 1.2 | 47 | 1.5 | 35 | 1 | | |
| 131 | 1.2D + 1.5Lm(6) + 1.0Wm [270°] | Yes | Y | DL | 1.2 | 47 | 1.5 | 36 | 1 | | |
| 132 | 1.2D + 1.5Lm(6) + 1.0Wm [300°] | Yes | Y | DL | 1.2 | 47 | 1.5 | 37 | 1 | | |
| 133 | 1.2D + 1.5Lm(6) + 1.0Wm [330°] | Yes | Y | DL | 1.2 | 47 | 1.5 | 38 | 1 | | |
| 134 | 1.2D + 1.5Lm(7) + 1.0Wm [0°] | Yes | Y | DL | 1.2 | 48 | 1.5 | 27 | 1 | | |
| 135 | 1.2D + 1.5Lm(7) + 1.0Wm [30°] | Yes | Y | DL | 1.2 | 48 | 1.5 | 28 | 1 | | |
| 136 | 1.2D + 1.5Lm(7) + 1.0Wm [60°] | Yes | Y | DL | 1.2 | 48 | 1.5 | 29 | 1 | | |
| 137 | 1.2D + 1.5Lm(7) + 1.0Wm [90°] | Yes | Y | DL | 1.2 | 48 | 1.5 | 30 | 1 | | |
| 138 | 1.2D + 1.5Lm(7) + 1.0Wm [120°] | Yes | Y | DL | 1.2 | 48 | 1.5 | 31 | 1 | | |
| 139 | 1.2D + 1.5Lm(7) + 1.0Wm [150°] | Yes | Y | DL | 1.2 | 48 | 1.5 | 32 | 1 | | |
| 140 | 1.2D + 1.5Lm(7) + 1.0Wm [180°] | Yes | Y | DL | 1.2 | 48 | 1.5 | 33 | 1 | | |
| 141 | 1.2D + 1.5Lm(7) + 1.0Wm [210°] | Yes | Y | DL | 1.2 | 48 | 1.5 | 34 | 1 | | |
| 142 | 1.2D + 1.5Lm(7) + 1.0Wm [240°] | Yes | Y | DL | 1.2 | 48 | 1.5 | 35 | 1 | | |
| 143 | 1.2D + 1.5Lm(7) + 1.0Wm [270°] | Yes | Y | DL | 1.2 | 48 | 1.5 | 36 | 1 | | |
| 144 | 1.2D + 1.5Lm(7) + 1.0Wm [300°] | Yes | Y | DL | 1.2 | 48 | 1.5 | 37 | 1 | | |
| 145 | 1.2D + 1.5Lm(7) + 1.0Wm [330°] | Yes | Y | DL | 1.2 | 48 | 1.5 | 38 | 1 | | |
| 146 | 1.2D + 1.5Lm(8) + 1.0Wm [0°] | Yes | Y | DL | 1.2 | 49 | 1.5 | 27 | 1 | | |
| 147 | 1.2D + 1.5Lm(8) + 1.0Wm [30°] | Yes | Y | DL | 1.2 | 49 | 1.5 | 28 | 1 | | |
| 148 | 1.2D + 1.5Lm(8) + 1.0Wm [60°] | Yes | Y | DL | 1.2 | 49 | 1.5 | 29 | 1 | | |
| 149 | 1.2D + 1.5Lm(8) + 1.0Wm [90°] | Yes | Y | DL | 1.2 | 49 | 1.5 | 30 | 1 | | |
| 150 | 1.2D + 1.5Lm(8) + 1.0Wm [120°] | Yes | Y | DL | 1.2 | 49 | 1.5 | 31 | 1 | | |
| 151 | 1.2D + 1.5Lm(8) + 1.0Wm [150°] | Yes | Y | DL | 1.2 | 49 | 1.5 | 32 | 1 | | |
| 152 | 1.2D + 1.5Lm(8) + 1.0Wm [180°] | Yes | Y | DL | 1.2 | 49 | 1.5 | 33 | 1 | | |
| 153 | 1.2D + 1.5Lm(8) + 1.0Wm [210°] | Yes | Y | DL | 1.2 | 49 | 1.5 | 34 | 1 | | |
| 154 | 1.2D + 1.5Lm(8) + 1.0Wm [240°] | Yes | Y | DL | 1.2 | 49 | 1.5 | 35 | 1 | | |
| 155 | 1.2D + 1.5Lm(8) + 1.0Wm [270°] | Yes | Y | DL | 1.2 | 49 | 1.5 | 36 | 1 | | |
| 156 | 1.2D + 1.5Lm(8) + 1.0Wm [300°] | Yes | Y | DL | 1.2 | 49 | 1.5 | 37 | 1 | | |
| 157 | 1.2D + 1.5Lm(8) + 1.0Wm [330°] | Yes | Y | DL | 1.2 | 49 | 1.5 | 38 | 1 | | |
| 158 | 1.2D + 1.5Lm(9) + 1.0Wm [0°] | Yes | Y | DL | 1.2 | 50 | 1.5 | 27 | 1 | | |
| 159 | 1.2D + 1.5Lm(9) + 1.0Wm [30°] | Yes | Y | DL | 1.2 | 50 | 1.5 | 28 | 1 | | |



Load Combinations (Continued)

| | Description | Solve | P-Delta | BLC | Factor | BLC | Factor | BLC | Factor | BLC | Factor |
|-----|---------------------------------|-------|---------|-----|--------|-----|--------|-----|--------|-----|--------|
| 160 | 1.2D + 1.5Lm(9) + 1.0Wm [60°] | Yes | Y | DL | 1.2 | 50 | 1.5 | 29 | 1 | | |
| 161 | 1.2D + 1.5Lm(9) + 1.0Wm [90°] | Yes | Y | DL | 1.2 | 50 | 1.5 | 30 | 1 | | |
| 162 | 1.2D + 1.5Lm(9) + 1.0Wm [120°] | Yes | Y | DL | 1.2 | 50 | 1.5 | 31 | 1 | | |
| 163 | 1.2D + 1.5Lm(9) + 1.0Wm [150°] | Yes | Y | DL | 1.2 | 50 | 1.5 | 32 | 1 | | |
| 164 | 1.2D + 1.5Lm(9) + 1.0Wm [180°] | Yes | Y | DL | 1.2 | 50 | 1.5 | 33 | 1 | | |
| 165 | 1.2D + 1.5Lm(9) + 1.0Wm [210°] | Yes | Y | DL | 1.2 | 50 | 1.5 | 34 | 1 | | |
| 166 | 1.2D + 1.5Lm(9) + 1.0Wm [240°] | Yes | Y | DL | 1.2 | 50 | 1.5 | 35 | 1 | | |
| 167 | 1.2D + 1.5Lm(9) + 1.0Wm [270°] | Yes | Y | DL | 1.2 | 50 | 1.5 | 36 | 1 | | |
| 168 | 1.2D + 1.5Lm(9) + 1.0Wm [300°] | Yes | Y | DL | 1.2 | 50 | 1.5 | 37 | 1 | | |
| 169 | 1.2D + 1.5Lm(9) + 1.0Wm [330°] | Yes | Y | DL | 1.2 | 50 | 1.5 | 38 | 1 | | |
| 170 | 1.2D + 1.5Lm(10) + 1.0Wm [0°] | Yes | Y | DL | 1.2 | 51 | 1.5 | 27 | 1 | | |
| 171 | 1.2D + 1.5Lm(10) + 1.0Wm [30°] | Yes | Y | DL | 1.2 | 51 | 1.5 | 28 | 1 | | |
| 172 | 1.2D + 1.5Lm(10) + 1.0Wm [60°] | Yes | Y | DL | 1.2 | 51 | 1.5 | 29 | 1 | | |
| 173 | 1.2D + 1.5Lm(10) + 1.0Wm [90°] | Yes | Y | DL | 1.2 | 51 | 1.5 | 30 | 1 | | |
| 174 | 1.2D + 1.5Lm(10) + 1.0Wm [120°] | Yes | Y | DL | 1.2 | 51 | 1.5 | 31 | 1 | | |
| 175 | 1.2D + 1.5Lm(10) + 1.0Wm [150°] | Yes | Y | DL | 1.2 | 51 | 1.5 | 32 | 1 | | |
| 176 | 1.2D + 1.5Lm(10) + 1.0Wm [180°] | Yes | Y | DL | 1.2 | 51 | 1.5 | 33 | 1 | | |
| 177 | 1.2D + 1.5Lm(10) + 1.0Wm [210°] | Yes | Y | DL | 1.2 | 51 | 1.5 | 34 | 1 | | |
| 178 | 1.2D + 1.5Lm(10) + 1.0Wm [240°] | Yes | Y | DL | 1.2 | 51 | 1.5 | 35 | 1 | | |
| 179 | 1.2D + 1.5Lm(10) + 1.0Wm [270°] | Yes | Y | DL | 1.2 | 51 | 1.5 | 36 | 1 | | |
| 180 | 1.2D + 1.5Lm(10) + 1.0Wm [300°] | Yes | Y | DL | 1.2 | 51 | 1.5 | 37 | 1 | | |
| 181 | 1.2D + 1.5Lm(10) + 1.0Wm [330°] | Yes | Y | DL | 1.2 | 51 | 1.5 | 38 | 1 | | |
| 182 | 1.2D + 1.5Lm(11) + 1.0Wm [0°] | Yes | Y | DL | 1.2 | 52 | 1.5 | 27 | 1 | | |
| 183 | 1.2D + 1.5Lm(11) + 1.0Wm [30°] | Yes | Y | DL | 1.2 | 52 | 1.5 | 28 | 1 | | |
| 184 | 1.2D + 1.5Lm(11) + 1.0Wm [60°] | Yes | Y | DL | 1.2 | 52 | 1.5 | 29 | 1 | | |
| 185 | 1.2D + 1.5Lm(11) + 1.0Wm [90°] | Yes | Y | DL | 1.2 | 52 | 1.5 | 30 | 1 | | |
| 186 | 1.2D + 1.5Lm(11) + 1.0Wm [120°] | Yes | Y | DL | 1.2 | 52 | 1.5 | 31 | 1 | | |
| 187 | 1.2D + 1.5Lm(11) + 1.0Wm [150°] | Yes | Y | DL | 1.2 | 52 | 1.5 | 32 | 1 | | |
| 188 | 1.2D + 1.5Lm(11) + 1.0Wm [180°] | Yes | Y | DL | 1.2 | 52 | 1.5 | 33 | 1 | | |
| 189 | 1.2D + 1.5Lm(11) + 1.0Wm [210°] | Yes | Y | DL | 1.2 | 52 | 1.5 | 34 | 1 | | |
| 190 | 1.2D + 1.5Lm(11) + 1.0Wm [240°] | Yes | Y | DL | 1.2 | 52 | 1.5 | 35 | 1 | | |
| 191 | 1.2D + 1.5Lm(11) + 1.0Wm [270°] | Yes | Y | DL | 1.2 | 52 | 1.5 | 36 | 1 | | |
| 192 | 1.2D + 1.5Lm(11) + 1.0Wm [300°] | Yes | Y | DL | 1.2 | 52 | 1.5 | 37 | 1 | | |
| 193 | 1.2D + 1.5Lm(11) + 1.0Wm [330°] | Yes | Y | DL | 1.2 | 52 | 1.5 | 38 | 1 | | |
| 194 | 1.2D + 1.5Lm(12) + 1.0Wm [0°] | Yes | Y | DL | 1.2 | 53 | 1.5 | 27 | 1 | | |
| 195 | 1.2D + 1.5Lm(12) + 1.0Wm [30°] | Yes | Y | DL | 1.2 | 53 | 1.5 | 28 | 1 | | |
| 196 | 1.2D + 1.5Lm(12) + 1.0Wm [60°] | Yes | Y | DL | 1.2 | 53 | 1.5 | 29 | 1 | | |
| 197 | 1.2D + 1.5Lm(12) + 1.0Wm [90°] | Yes | Y | DL | 1.2 | 53 | 1.5 | 30 | 1 | | |
| 198 | 1.2D + 1.5Lm(12) + 1.0Wm [120°] | Yes | Y | DL | 1.2 | 53 | 1.5 | 31 | 1 | | |
| 199 | 1.2D + 1.5Lm(12) + 1.0Wm [150°] | Yes | Y | DL | 1.2 | 53 | 1.5 | 32 | 1 | | |
| 200 | 1.2D + 1.5Lm(12) + 1.0Wm [180°] | Yes | Y | DL | 1.2 | 53 | 1.5 | 33 | 1 | | |
| 201 | 1.2D + 1.5Lm(12) + 1.0Wm [210°] | Yes | Y | DL | 1.2 | 53 | 1.5 | 34 | 1 | | |
| 202 | 1.2D + 1.5Lm(12) + 1.0Wm [240°] | Yes | Y | DL | 1.2 | 53 | 1.5 | 35 | 1 | | |
| 203 | 1.2D + 1.5Lm(12) + 1.0Wm [270°] | Yes | Y | DL | 1.2 | 53 | 1.5 | 36 | 1 | | |
| 204 | 1.2D + 1.5Lm(12) + 1.0Wm [300°] | Yes | Y | DL | 1.2 | 53 | 1.5 | 37 | 1 | | |
| 205 | 1.2D + 1.5Lm(12) + 1.0Wm [330°] | Yes | Y | DL | 1.2 | 53 | 1.5 | 38 | 1 | | |

Member Primary Data

| | Label | I Node | J Node | Rotate(deg) | Section/Shape | Type | Design List | Material | Design Rule |
|---|-------|--------|--------|-------------|---------------|------|-------------|------------------|-------------|
| 1 | H001 | N002 | N003 | | HSS4X4X4 | Beam | None | A500 Gr. B [SQR] | Typical |
| 2 | H002 | N004 | N005 | | PL6X0.5 | Beam | None | A36 | Typical |
| 3 | H003 | N006 | N012 | | HSS4X4X4 | Beam | None | A500 Gr. B [SQR] | Typical |
| 4 | H004 | N007 | N013 | | HSS4X4X4 | Beam | None | A500 Gr. B [SQR] | Typical |
| 5 | H005 | N008 | N010 | | PL6X0.5 | Beam | None | A36 | Typical |
| 6 | H006 | N009 | N011 | | PL6X0.5 | Beam | None | A36 | Typical |



Company : American Tower Corp.
 Designer : Aviskar.Ghansam
 Job Number : 14685654_C8_01
 Model Name : 302502, Harwinton

2/23/2024
 11:40:09 AM
 Checked By : -

Member Primary Data (Continued)

| Label | I Node | J Node | Rotate(deg) | Section/Shape | Type | Design List | Material | Design Rule | |
|-------|--------|--------|-------------|---------------|-----------------|-------------|----------|------------------|---------|
| 7 | H007 | N015 | N016 | | HSS4X4X4 | Beam | None | A500 Gr. B [SQR] | Typical |
| 8 | H008 | N021 | N023 | | HSS4X4X4 | Beam | None | A500 Gr. B [SQR] | Typical |
| 9 | H009 | N022 | N024 | | HSS4X4X4 | Beam | None | A500 Gr. B [SQR] | Typical |
| 10 | H010 | N033 | N013 | | L2X2X3 | Beam | None | A36 | Typical |
| 11 | H011 | N034 | N003 | | L2X2X3 | Beam | None | A36 | Typical |
| 12 | H012 | N029 | N012 | | L2X2X3 | Beam | None | A36 | Typical |
| 13 | H013 | N030 | N013 | 270 | L2X2X3 | Beam | None | A36 | Typical |
| 14 | H014 | N031 | N003 | 270 | L2X2X3 | Beam | None | A36 | Typical |
| 15 | H015 | N032 | N012 | 270 | L2X2X3 | Beam | None | A36 | Typical |
| 16 | H016 | N009 | N036 | | PL6X0.5 | Beam | None | A36 | Typical |
| 17 | H017 | N004 | N042 | | PL6X0.5 | Beam | None | A36 | Typical |
| 18 | H018 | N008 | N043 | | PL6X0.5 | Beam | None | A36 | Typical |
| 19 | H019 | N011 | N048 | | PL6X0.5 | Beam | None | A36 | Typical |
| 20 | H020 | N005 | N049 | | PL6X0.5 | Beam | None | A36 | Typical |
| 21 | H021 | N010 | N037 | | PL6X0.5 | Beam | None | A36 | Typical |
| 22 | H022 | N038 | N040 | | (1) 1/2 U-BOLT | Beam | None | SAE J429 Gr. 2 | Typical |
| 23 | H023 | N044 | N050 | | (1) 1/2 U-BOLT | Beam | None | SAE J429 Gr. 2 | Typical |
| 24 | H024 | N045 | N051 | | (1) 1/2 U-BOLT | Beam | None | SAE J429 Gr. 2 | Typical |
| 25 | H025 | N039 | N041 | | (1) 1/2 U-BOLT | Beam | None | SAE J429 Gr. 2 | Typical |
| 26 | H026 | N046 | N052 | | (1) 1/2 U-BOLT | Beam | None | SAE J429 Gr. 2 | Typical |
| 27 | H027 | N047 | N053 | | (1) 1/2 U-BOLT | Beam | None | SAE J429 Gr. 2 | Typical |
| 28 | H028 | N017 | N018 | | PIPE 3.0 | Beam | None | A53 Gr. B | Typical |
| 29 | H029 | N025 | N027 | | PIPE 3.0 | Beam | None | A53 Gr. B | Typical |
| 30 | H030 | N026 | N028 | | PIPE 3.0 | Beam | None | A53 Gr. B | Typical |
| 31 | H031 | N054 | N055 | | PL6X0.375 | Beam | None | A36 | Typical |
| 32 | H032 | N056 | N058 | | PL6X0.375 | Beam | None | A36 | Typical |
| 33 | H033 | N057 | N059 | | PL6X0.375 | Beam | None | A36 | Typical |
| 34 | H034 | N060 | N062 | | PL6X0.375 | Beam | None | A36 | Typical |
| 35 | H035 | N061 | N063 | | PL6X0.375 | Beam | None | A36 | Typical |
| 36 | H036 | N064 | N035 | | PL6X0.375 | Beam | None | A36 | Typical |
| 37 | H037 | N059 | N065 | | PL6X0.375 | Beam | None | A36 | Typical |
| 38 | H038 | N055 | N071 | | PL6X0.375 | Beam | None | A36 | Typical |
| 39 | H039 | N058 | N072 | | PL6X0.375 | Beam | None | A36 | Typical |
| 40 | H040 | N062 | N066 | | PL6X0.375 | Beam | None | A36 | Typical |
| 41 | H041 | N063 | N073 | | PL6X0.375 | Beam | None | A36 | Typical |
| 42 | H042 | N035 | N074 | | PL6X0.375 | Beam | None | A36 | Typical |
| 43 | H043 | N067 | N069 | | (1) 1/2 U-BOLT | Beam | None | SAE J429 Gr. 2 | Typical |
| 44 | H044 | N075 | N079 | | (1) 1/2 U-BOLT | Beam | None | SAE J429 Gr. 2 | Typical |
| 45 | H045 | N076 | N080 | | (1) 1/2 U-BOLT | Beam | None | SAE J429 Gr. 2 | Typical |
| 46 | H046 | N068 | N070 | | (1) 1/2 U-BOLT | Beam | None | SAE J429 Gr. 2 | Typical |
| 47 | H047 | N077 | N081 | | (1) 1/2 U-BOLT | Beam | None | SAE J429 Gr. 2 | Typical |
| 48 | H048 | N078 | N082 | | (1) 1/2 U-BOLT | Beam | None | SAE J429 Gr. 2 | Typical |
| 49 | U049 | N083 | N087 | | (2) 1/2 U-BOLTS | Beam | None | A36 | Typical |
| 50 | MP050 | N088 | N089 | | PIPE 2.0 | Column | None | A53 Gr. B | Typical |
| 51 | U051 | N084 | N090 | | (2) 1/2 U-BOLTS | Beam | None | A36 | Typical |
| 52 | MP052 | N091 | N092 | | PIPE 2.0 | Column | None | A53 Gr. B | Typical |
| 53 | U053 | N085 | N093 | | (2) 1/2 U-BOLTS | Beam | None | A36 | Typical |
| 54 | MP054 | N094 | N095 | | PIPE 2.0 | Column | None | A53 Gr. B | Typical |
| 55 | U055 | N086 | N096 | | (2) 1/2 U-BOLTS | Beam | None | A36 | Typical |
| 56 | MP056 | N097 | N098 | | PIPE 2.0 | Column | None | A53 Gr. B | Typical |
| 57 | U057 | N100 | N107 | | (2) 1/2 U-BOLTS | Beam | None | A36 | Typical |
| 58 | MP058 | N108 | N109 | | PIPE 2.0 | Column | None | A53 Gr. B | Typical |
| 59 | U059 | N102 | N110 | | (2) 1/2 U-BOLTS | Beam | None | A36 | Typical |
| 60 | MP060 | N111 | N112 | | PIPE 2.0 | Column | None | A53 Gr. B | Typical |
| 61 | U061 | N104 | N113 | | (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 |
|----|-------|--------|--------|-------------|-----------------|--------|-------------|-----------|-------------|
| 62 | MP062 | N114 | N115 | | PIPE 2.0 | Column | None | A53 Gr. B | Typical |
| 63 | U063 | N106 | N116 | | (2) 1/2 U-BOLTS | Beam | None | A36 | Typical |
| 64 | MP064 | N117 | N118 | | PIPE 2.0 | Column | None | A53 Gr. B | Typical |
| 65 | U065 | N099 | N119 | | (2) 1/2 U-BOLTS | Beam | None | A36 | Typical |
| 66 | MP066 | N120 | N121 | | PIPE 2.0 | Column | None | A53 Gr. B | Typical |
| 67 | U067 | N101 | N122 | | (2) 1/2 U-BOLTS | Beam | None | A36 | Typical |
| 68 | MP068 | N123 | N124 | | PIPE 2.0 | Column | None | A53 Gr. B | Typical |
| 69 | U069 | N103 | N125 | | (2) 1/2 U-BOLTS | Beam | None | A36 | Typical |
| 70 | MP070 | N126 | N127 | | PIPE 2.0 | Column | None | A53 Gr. B | Typical |
| 71 | U071 | N105 | N128 | | (2) 1/2 U-BOLTS | Beam | None | A36 | Typical |
| 72 | MP072 | N129 | N130 | | PIPE 2.0 | Column | 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 | HSS4X4X4 | 63 | | | | Lbyy | 1 | 1 | Lateral |
| 2 | H002 | PL6X0.5 | 12 | | | | Lbyy | 0.65 | 0.65 | Lateral |
| 3 | H003 | HSS4X4X4 | 63 | | | | Lbyy | 1 | 1 | Lateral |
| 4 | H004 | HSS4X4X4 | 63 | | | | Lbyy | 1 | 1 | Lateral |
| 5 | H005 | PL6X0.5 | 12 | | | | Lbyy | 0.65 | 0.65 | Lateral |
| 6 | H006 | PL6X0.5 | 12 | | | | Lbyy | 0.65 | 0.65 | Lateral |
| 7 | H007 | HSS4X4X4 | 60 | | | | Lbyy | 0.65 | 0.65 | Lateral |
| 8 | H008 | HSS4X4X4 | 60 | | | | Lbyy | 0.65 | 0.65 | Lateral |
| 9 | H009 | HSS4X4X4 | 60 | | | | Lbyy | 0.65 | 0.65 | Lateral |
| 10 | H010 | L2X2X3 | 50.229 | | | | Lbyy | 1 | 1 | Lateral |
| 11 | H011 | L2X2X3 | 50.229 | | | | Lbyy | 1 | 1 | Lateral |
| 12 | H012 | L2X2X3 | 50.229 | | | | Lbyy | 1 | 1 | Lateral |
| 13 | H013 | L2X2X3 | 50.229 | | | | Lbyy | 1 | 1 | Lateral |
| 14 | H014 | L2X2X3 | 50.229 | | | | Lbyy | 1 | 1 | Lateral |
| 15 | H015 | L2X2X3 | 50.229 | | | | Lbyy | 1 | 1 | Lateral |
| 16 | H016 | PL6X0.5 | 3 | | | | Lbyy | 1 | 1 | Lateral |
| 17 | H017 | PL6X0.5 | 3 | | | | Lbyy | 1 | 1 | Lateral |
| 18 | H018 | PL6X0.5 | 3 | | | | Lbyy | 1 | 1 | Lateral |
| 19 | H019 | PL6X0.5 | 3 | | | | Lbyy | 1 | 1 | Lateral |
| 20 | H020 | PL6X0.5 | 3 | | | | Lbyy | 1 | 1 | Lateral |
| 21 | H021 | PL6X0.5 | 3 | | | | Lbyy | 1 | 1 | Lateral |
| 22 | H022 | (1) 1/2 U-BOLT | 2 | | | | Lbyy | 0.65 | 0.65 | Lateral |
| 23 | H023 | (1) 1/2 U-BOLT | 2 | | | | Lbyy | 0.65 | 0.65 | Lateral |
| 24 | H024 | (1) 1/2 U-BOLT | 2 | | | | Lbyy | 0.65 | 0.65 | Lateral |
| 25 | H025 | (1) 1/2 U-BOLT | 2 | | | | Lbyy | 0.65 | 0.65 | Lateral |
| 26 | H026 | (1) 1/2 U-BOLT | 2 | | | | Lbyy | 0.65 | 0.65 | Lateral |
| 27 | H027 | (1) 1/2 U-BOLT | 2 | | | | Lbyy | 0.65 | 0.65 | Lateral |
| 28 | H028 | PIPE 3.0 | 150.002 | | | | Lbyy | 1 | 1 | Lateral |
| 29 | H029 | PIPE 3.0 | 150.002 | | | | Lbyy | 1 | 1 | Lateral |
| 30 | H030 | PIPE 3.0 | 150.002 | | | | Lbyy | 1 | 1 | Lateral |
| 31 | H031 | PL6X0.375 | 4 | | | | Lbyy | 0.65 | 0.65 | Lateral |
| 32 | H032 | PL6X0.375 | 4 | | | | Lbyy | 0.65 | 0.65 | Lateral |
| 33 | H033 | PL6X0.375 | 4 | | | | Lbyy | 0.65 | 0.65 | Lateral |
| 34 | H034 | PL6X0.375 | 4 | | | | Lbyy | 0.65 | 0.65 | Lateral |
| 35 | H035 | PL6X0.375 | 4 | | | | Lbyy | 0.65 | 0.65 | Lateral |
| 36 | H036 | PL6X0.375 | 4 | | | | Lbyy | 0.65 | 0.65 | Lateral |
| 37 | H037 | PL6X0.375 | 3 | | | | Lbyy | 1 | 1 | Lateral |
| 38 | H038 | PL6X0.375 | 3 | | | | Lbyy | 1 | 1 | Lateral |
| 39 | H039 | PL6X0.375 | 3 | | | | Lbyy | 1 | 1 | Lateral |
| 40 | H040 | PL6X0.375 | 3 | | | | Lbyy | 1 | 1 | Lateral |
| 41 | H041 | PL6X0.375 | 3 | | | | Lbyy | 1 | 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 |
|----|-------|-----------------|-------------|-------------|-------------|----------------|---------------|-------|-------|----------|
| 42 | H042 | PL6X0.375 | 3 | | | Lbyy | | 1 | 1 | Lateral |
| 43 | H043 | (1) 1/2 U-BOLT | 1.965 | | | Lbyy | | 0.65 | 0.65 | Lateral |
| 44 | H044 | (1) 1/2 U-BOLT | 1.965 | | | Lbyy | | 0.65 | 0.65 | Lateral |
| 45 | H045 | (1) 1/2 U-BOLT | 1.965 | | | Lbyy | | 0.65 | 0.65 | Lateral |
| 46 | H046 | (1) 1/2 U-BOLT | 1.965 | | | Lbyy | | 0.65 | 0.65 | Lateral |
| 47 | H047 | (1) 1/2 U-BOLT | 1.965 | | | Lbyy | | 0.65 | 0.65 | Lateral |
| 48 | H048 | (1) 1/2 U-BOLT | 1.965 | | | Lbyy | | 0.65 | 0.65 | Lateral |
| 49 | U049 | (2) 1/2 U-BOLTS | 3 | | | Lbyy | | 0.5 | 0.5 | Lateral |
| 50 | MP050 | PIPE 2.0 | 96 | Segment | Segment | Lbyy | Segment | 2.1 | 2.1 | Lateral |
| 51 | U051 | (2) 1/2 U-BOLTS | 3 | | | Lbyy | | 0.5 | 0.5 | Lateral |
| 52 | MP052 | PIPE 2.0 | 96 | Segment | Segment | Lbyy | Segment | 2.1 | 2.1 | Lateral |
| 53 | U053 | (2) 1/2 U-BOLTS | 3 | | | Lbyy | | 0.5 | 0.5 | Lateral |
| 54 | MP054 | PIPE 2.0 | 96 | Segment | Segment | Lbyy | Segment | 2.1 | 2.1 | Lateral |
| 55 | U055 | (2) 1/2 U-BOLTS | 3 | | | Lbyy | | 0.5 | 0.5 | Lateral |
| 56 | MP056 | PIPE 2.0 | 96 | Segment | Segment | Lbyy | Segment | 2.1 | 2.1 | Lateral |
| 57 | U057 | (2) 1/2 U-BOLTS | 3 | | | Lbyy | | 0.5 | 0.5 | Lateral |
| 58 | MP058 | PIPE 2.0 | 96 | Segment | Segment | Lbyy | Segment | 2.1 | 2.1 | Lateral |
| 59 | U059 | (2) 1/2 U-BOLTS | 3 | | | Lbyy | | 0.5 | 0.5 | Lateral |
| 60 | MP060 | PIPE 2.0 | 96 | Segment | Segment | Lbyy | Segment | 2.1 | 2.1 | Lateral |
| 61 | U061 | (2) 1/2 U-BOLTS | 3 | | | Lbyy | | 0.5 | 0.5 | Lateral |
| 62 | MP062 | PIPE 2.0 | 96 | Segment | Segment | Lbyy | Segment | 2.1 | 2.1 | Lateral |
| 63 | U063 | (2) 1/2 U-BOLTS | 3 | | | Lbyy | | 0.5 | 0.5 | Lateral |
| 64 | MP064 | PIPE 2.0 | 96 | Segment | Segment | Lbyy | Segment | 2.1 | 2.1 | Lateral |
| 65 | U065 | (2) 1/2 U-BOLTS | 3 | | | Lbyy | | 0.5 | 0.5 | Lateral |
| 66 | MP066 | PIPE 2.0 | 96 | Segment | Segment | Lbyy | Segment | 2.1 | 2.1 | Lateral |
| 67 | U067 | (2) 1/2 U-BOLTS | 3 | | | Lbyy | | 0.5 | 0.5 | Lateral |
| 68 | MP068 | PIPE 2.0 | 96 | Segment | Segment | Lbyy | Segment | 2.1 | 2.1 | Lateral |
| 69 | U069 | (2) 1/2 U-BOLTS | 3 | | | Lbyy | | 0.5 | 0.5 | Lateral |
| 70 | MP070 | PIPE 2.0 | 96 | Segment | Segment | Lbyy | Segment | 2.1 | 2.1 | Lateral |
| 71 | U071 | (2) 1/2 U-BOLTS | 3 | | | Lbyy | | 0.5 | 0.5 | Lateral |
| 72 | MP072 | PIPE 2.0 | 96 | Segment | Segment | Lbyy | Segment | 2.1 | 2.1 | 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 | N002 | Reaction | Reaction | Reaction | Reaction | Reaction | Reaction |
| 2 | N006 | Reaction | Reaction | Reaction | Reaction | Reaction | Reaction |
| 3 | N007 | Reaction | 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 | H003 | | | Yes | N/A | | None |
| 4 | H004 | | | Yes | N/A | | None |
| 5 | H005 | | | Yes | N/A | | None |
| 6 | H006 | | | Yes | N/A | | None |
| 7 | H007 | | | Yes | N/A | | None |
| 8 | H008 | | | Yes | N/A | | None |
| 9 | H009 | | | Yes | N/A | | None |
| 10 | H010 | BenPIN | BenPIN | Yes | N/A | | None |
| 11 | H011 | BenPIN | BenPIN | Yes | N/A | | None |
| 12 | H012 | BenPIN | BenPIN | Yes | N/A | | None |
| 13 | H013 | BenPIN | BenPIN | Yes | N/A | | None |



Company : American Tower Corp.
 Designer : Aviskar.Ghansam
 Job Number : 14685654_C8_01
 Model Name : 302502, Harwinton

2/23/2024
 11:40:09 AM
 Checked By : -

Member Advanced Data (Continued)

| | Label | I Release | J Release | Physical | Deflection Ratio Options | Activation | Seismic DR |
|----|-------|-----------|-----------|----------|--------------------------|------------|------------|
| 14 | H014 | BenPIN | BenPIN | Yes | N/A | | None |
| 15 | H015 | BenPIN | BenPIN | Yes | N/A | | None |
| 16 | H016 | | | Yes | N/A | | None |
| 17 | H017 | | | Yes | N/A | | None |
| 18 | H018 | | | Yes | N/A | | None |
| 19 | H019 | | | Yes | N/A | | None |
| 20 | H020 | | | Yes | N/A | | None |
| 21 | H021 | | | Yes | N/A | | None |
| 22 | H022 | | OOOXOO | Yes | N/A | Exclude | None |
| 23 | H023 | | OOOXOO | Yes | N/A | Exclude | None |
| 24 | H024 | | OOOXOO | Yes | N/A | Exclude | None |
| 25 | H025 | | OOOXOO | Yes | N/A | Exclude | None |
| 26 | H026 | | OOOXOO | Yes | N/A | Exclude | None |
| 27 | H027 | | OOOXOO | Yes | N/A | Exclude | None |
| 28 | H028 | | | Yes | N/A | | None |
| 29 | H029 | | | Yes | N/A | | None |
| 30 | H030 | | | Yes | N/A | | None |
| 31 | H031 | | | Yes | N/A | | None |
| 32 | H032 | | | Yes | N/A | | None |
| 33 | H033 | | | Yes | N/A | | None |
| 34 | H034 | | | Yes | N/A | | None |
| 35 | H035 | | | Yes | N/A | | None |
| 36 | H036 | | | Yes | N/A | | None |
| 37 | H037 | | | Yes | N/A | | None |
| 38 | H038 | | | Yes | N/A | | None |
| 39 | H039 | | | Yes | N/A | | None |
| 40 | H040 | | | Yes | N/A | | None |
| 41 | H041 | | | Yes | N/A | | None |
| 42 | H042 | | | Yes | N/A | | None |
| 43 | H043 | | OOOXOO | Yes | N/A | Exclude | None |
| 44 | H044 | | OOOXOO | Yes | N/A | Exclude | None |
| 45 | H045 | | OOOXOO | Yes | N/A | Exclude | None |
| 46 | H046 | | OOOXOO | Yes | N/A | Exclude | None |
| 47 | H047 | | OOOXOO | Yes | N/A | Exclude | None |
| 48 | H048 | | OOOXOO | Yes | N/A | Exclude | None |
| 49 | U049 | | | Yes | N/A | Exclude | None |
| 50 | MP050 | | | Yes | ** NA ** | | None |
| 51 | U051 | | | Yes | N/A | Exclude | None |
| 52 | MP052 | | | Yes | ** NA ** | | None |
| 53 | U053 | | | Yes | N/A | Exclude | None |
| 54 | MP054 | | | Yes | ** NA ** | | None |
| 55 | U055 | | | Yes | N/A | Exclude | None |
| 56 | MP056 | | | Yes | ** NA ** | | None |
| 57 | U057 | | | Yes | N/A | Exclude | None |
| 58 | MP058 | | | Yes | ** NA ** | | None |
| 59 | U059 | | | Yes | N/A | Exclude | None |
| 60 | MP060 | | | Yes | ** NA ** | | None |
| 61 | U061 | | | Yes | N/A | Exclude | None |
| 62 | MP062 | | | Yes | ** NA ** | | None |
| 63 | U063 | | | Yes | N/A | Exclude | None |
| 64 | MP064 | | | Yes | ** NA ** | | None |
| 65 | U065 | | | Yes | N/A | Exclude | None |
| 66 | MP066 | | | Yes | ** NA ** | | None |
| 67 | U067 | | | Yes | N/A | Exclude | None |
| 68 | MP068 | | | Yes | ** NA ** | | None |



Company : American Tower Corp.
 Designer : Aviskar.Ghansam
 Job Number : 14685654_C8_01
 Model Name : 302502, Harwinton

2/23/2024
 11:40:09 AM
 Checked By : -

Member Advanced Data (Continued)

| | Label | I Release | J Release | Physical | Deflection Ratio Options | Activation | Seismic DR |
|----|-------|-----------|-----------|----------|--------------------------|------------|------------|
| 69 | U069 | | | Yes | N/A | Exclude | None |
| 70 | MP070 | | | Yes | ** NA ** | | None |
| 71 | U071 | | | Yes | N/A | Exclude | None |
| 72 | MP072 | | | Yes | ** NA ** | | None |

Hot Rolled Steel Properties

| | Label | E [psi] | G [psi] | Nu | Therm. Coeff. [1e ⁵ F ⁻¹] | Density [lb/ft ³] | Yield [psi] | Ry | Fu [psi] | Rt |
|---|------------------|---------|-----------|-----|--|-------------------------------|-------------|-----|----------|-----|
| 1 | A500 Gr. B [SQR] | 2.9e+07 | 1.115e+07 | 0.3 | 0.65 | 490 | 46000 | 1.4 | 58000 | 1.3 |
| 2 | A36 | 2.9e+07 | 1.115e+07 | 0.3 | 0.65 | 490 | 36000 | 1.5 | 58000 | 1.2 |
| 3 | SAE J429 Gr. 2 | 2.9e+07 | 1.115e+07 | 0.3 | 0.65 | 490 | 57000 | 1.1 | 74000 | 1.1 |
| 4 | A53 Gr. B | 2.9e+07 | 1.115e+07 | 0.3 | 0.65 | 490 | 35000 | 1.6 | 60000 | 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 | N002 | max | 1757.95 | 4 | 1903.658 | 28 | 904.905 | 25 | -814.427 | 21 | 1570.971 | 7 | 5111.846 | 184 |
| 2 | | min | -1758.244 | 10 | 666.554 | 22 | -904.857 | 19 | -3130.635 | 63 | -1571.327 | 13 | 1661.534 | 22 |
| 3 | N006 | max | 1150.737 | 5 | 1903.691 | 32 | 1967.75 | 14 | 5513.506 | 116 | 1570.992 | 11 | 696.004 | 137 |
| 4 | | min | -1150.365 | 11 | 666.558 | 14 | -1967.422 | 8 | 1855.745 | 14 | -1571.349 | 5 | -941.968 | 179 |
| 5 | N007 | max | 1649.935 | 18 | 1903.657 | 36 | 1317.344 | 14 | -1010.094 | 19 | 1570.959 | 3 | -1546.019 | 17 |
| 6 | | min | -1649.661 | 24 | 666.554 | 18 | -1317.591 | 20 | -3341.479 | 109 | -1571.316 | 9 | -4990.271 | 131 |
| 7 | Totals: | max | 3876.418 | 17 | 5682.315 | 36 | 4145.708 | 14 | | | | | | |
| 8 | | min | -3876.418 | 11 | 2083.228 | 18 | -4145.708 | 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 | HSS4X4X4 | 0.359 | 0 | 37 | 0.112 | 0 | y | 163 | 124317.885 | 139518 | 16180.5 | 16180.5 | 2.231 | H1-1b | |
| 2 | H002 | PL6X0.5 | 0.093 | 6 | 4 | 0.135 | 6 | y | 99 | 83348.625 | 97200 | 1012.5 | 12150 | 1.297 | H1-1b | |
| 3 | H003 | HSS4X4X4 | 0.359 | 0 | 29 | 0.112 | 0 | y | 179 | 124317.885 | 139518 | 16180.5 | 16180.5 | 2.231 | H1-1b | |
| 4 | H004 | HSS4X4X4 | 0.359 | 0 | 33 | 0.112 | 0 | y | 87 | 124317.885 | 139518 | 16180.5 | 16180.5 | 2.231 | H1-1b | |
| 5 | H005 | PL6X0.5 | 0.093 | 6 | 8 | 0.135 | 6 | y | 187 | 83348.625 | 97200 | 1012.5 | 12150 | 1.297 | H1-1b | |
| 6 | H006 | PL6X0.5 | 0.093 | 6 | 12 | 0.135 | 6 | y | 203 | 83348.625 | 97200 | 1012.5 | 12150 | 1.297 | H1-1b | |
| 7 | H007 | HSS4X4X4 | 0.121 | 30 | 77 | 0.039 | 55.625 | z | 5 | 133484.923 | 139518 | 16180.5 | 16180.5 | 1.388 | H1-1b | |
| 8 | H008 | HSS4X4X4 | 0.121 | 30 | 141 | 0.039 | 55.625 | z | 9 | 133484.923 | 139518 | 16180.5 | 16180.5 | 1.388 | H1-1b | |
| 9 | H009 | HSS4X4X4 | 0.121 | 30 | 157 | 0.039 | 55.625 | z | 13 | 133484.923 | 139518 | 16180.5 | 16180.5 | 1.388 | H1-1b | |
| 10 | H010 | L2X2X3 | 0.193 | 25.115 | 7 | 0.005 | 0 | y | 37 | 9724.796 | 23392.8 | 557.717 | 1071.164 | 1.131 | H2-1 | |
| 11 | H011 | L2X2X3 | 0.193 | 25.115 | 11 | 0.005 | 0 | y | 29 | 9724.796 | 23392.8 | 557.717 | 1071.164 | 1.131 | H2-1 | |
| 12 | H012 | L2X2X3 | 0.193 | 25.115 | 3 | 0.005 | 0 | y | 33 | 9724.796 | 23392.8 | 557.717 | 1071.164 | 1.131 | H2-1 | |
| 13 | H013 | L2X2X3 | 0.139 | 25.115 | 4 | 0.006 | 0 | z | 26 | 9724.796 | 23392.8 | 557.717 | 1071.609 | 1.133 | H2-1 | |
| 14 | H014 | L2X2X3 | 0.139 | 25.115 | 8 | 0.006 | 0 | z | 30 | 9724.796 | 23392.8 | 557.717 | 1071.609 | 1.133 | H2-1 | |
| 15 | H015 | L2X2X3 | 0.139 | 25.115 | 12 | 0.006 | 0 | z | 34 | 9724.796 | 23392.8 | 557.717 | 1071.609 | 1.133 | H2-1 | |
| 16 | H016 | PL6X0.5 | 0.044 | 1.5 | 4 | 0.248 | 0 | y | 131 | 95014.386 | 97200 | 1012.5 | 12150 | 3 | H1-1b | |
| 17 | H017 | PL6X0.5 | 0.044 | 1.5 | 8 | 0.248 | 0 | y | 63 | 95014.386 | 97200 | 1012.5 | 12150 | 3 | H1-1b | |
| 18 | H018 | PL6X0.5 | 0.044 | 1.5 | 12 | 0.248 | 0 | y | 115 | 95014.386 | 97200 | 1012.5 | 12150 | 3 | H1-1b | |
| 19 | H019 | PL6X0.5 | 0.066 | 1.5 | 2 | 0.271 | 0 | y | 26 | 95014.386 | 97200 | 1012.5 | 12150 | 3 | H1-1b | |
| 20 | H020 | PL6X0.5 | 0.066 | 1.5 | 6 | 0.271 | 0 | y | 30 | 95014.386 | 97200 | 1012.5 | 12150 | 3 | H1-1b | |
| 21 | H021 | PL6X0.5 | 0.066 | 1.5 | 10 | 0.271 | 0 | y | 34 | 95014.386 | 97200 | 1012.5 | 12150 | 3 | H1-1b | |
| 22 | H028 | PIPE 3.0 | 0.199 | 57.813 | 27 | 0.08 | 93.751 | | 179 | 28250.068 | 65205 | 5748.75 | 5748.75 | 1.628 | H1-1b | |
| 23 | H029 | PIPE 3.0 | 0.199 | 57.813 | 31 | 0.08 | 93.751 | | 87 | 28250.068 | 65205 | 5748.75 | 5748.75 | 1.628 | H1-1b | |
| 24 | H030 | PIPE 3.0 | 0.199 | 57.813 | 35 | 0.08 | 93.751 | | 163 | 28250.068 | 65205 | 5748.75 | 5748.75 | 1.628 | H1-1b | |
| 25 | H031 | PL6X0.375 | 0.086 | 2 | 3 | 0.197 | 2 | y | 109 | 70719.442 | 72900 | 569.531 | 9112.5 | 1.414 | H1-1b | |
| 26 | H032 | PL6X0.375 | 0.086 | 2 | 7 | 0.197 | 2 | y | 185 | 70719.442 | 72900 | 569.531 | 9112.5 | 1.414 | H1-1b | |
| 27 | H033 | PL6X0.375 | 0.086 | 2 | 11 | 0.197 | 2 | y | 201 | 70719.442 | 72900 | 569.531 | 9112.5 | 1.414 | H1-1b | |



Company : American Tower Corp.
 Designer : Aviskar.Ghansam
 Job Number : 14685654_C8_01
 Model Name : 302502, Harwinton

2/23/2024
 11:40:09 AM
 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 |
|--------|-------|-----------|-------|---------|----|-------|-------|---------|-----|-----------|--------------|--------------|--------------------|--------------------|-------|-----|
| 28 | H034 | PL6X0.375 | 0.094 | 4 | 9 | 0.2 | 2 | y | 130 | 70719.442 | 72900 | 569.531 | 9112.5 | 1.409 | H1-1b | |
| 29 | H035 | PL6X0.375 | 0.094 | 4 | 13 | 0.2 | 2 | y | 62 | 70719.442 | 72900 | 569.531 | 9112.5 | 1.409 | H1-1b | |
| 30 | H036 | PL6X0.375 | 0.094 | 4 | 5 | 0.2 | 2 | y | 114 | 70719.442 | 72900 | 569.531 | 9112.5 | 1.409 | H1-1b | |
| 31 | H037 | PL6X0.375 | 0.07 | 1.5 | 9 | 0.281 | 0 | y | 177 | 70011.374 | 72900 | 569.531 | 9112.5 | 3 | H1-1b | |
| 32 | H038 | PL6X0.375 | 0.07 | 1.5 | 13 | 0.281 | 0 | y | 97 | 70011.374 | 72900 | 569.531 | 9112.5 | 3 | H1-1b | |
| 33 | H039 | PL6X0.375 | 0.07 | 1.5 | 5 | 0.281 | 0 | y | 161 | 70011.374 | 72900 | 569.531 | 9112.5 | 3 | H1-1b | |
| 34 | H040 | PL6X0.375 | 0.103 | 1.5 | 11 | 0.283 | 0 | y | 130 | 70011.374 | 72900 | 569.531 | 9112.5 | 3 | H1-1b | |
| 35 | H041 | PL6X0.375 | 0.103 | 1.5 | 3 | 0.283 | 0 | y | 62 | 70011.374 | 72900 | 569.531 | 9112.5 | 3 | H1-1b | |
| 36 | H042 | PL6X0.375 | 0.103 | 1.5 | 7 | 0.283 | 0 | y | 114 | 70011.374 | 72900 | 569.531 | 9112.5 | 3 | H1-1b | |
| 37 | MP050 | PIPE 2.0 | 0.089 | 47 | 8 | 0.012 | 47 | | 8 | 14277.295 | 32130 | 1871.625 | 1871.625 | 1.338 | H1-1b | |
| 38 | MP052 | PIPE 2.0 | 0.034 | 47 | 9 | 0.003 | 47 | | 9 | 14277.295 | 32130 | 1871.625 | 1871.625 | 1.607 | H1-1b | |
| 39 | MP054 | PIPE 2.0 | 0.034 | 47 | 7 | 0.003 | 47 | | 7 | 14277.295 | 32130 | 1871.625 | 1871.625 | 2.466 | H1-1b | |
| 40 | MP056 | PIPE 2.0 | 0.611 | 35 | 8 | 0.048 | 35 | | 8 | 20490.966 | 32130 | 1871.625 | 1871.625 | 2.519 | H1-1b | |
| 41 | MP058 | PIPE 2.0 | 0.089 | 47 | 4 | 0.012 | 47 | | 4 | 14277.295 | 32130 | 1871.625 | 1871.625 | 3 | H1-1b | |
| 42 | MP060 | PIPE 2.0 | 0.034 | 47 | 5 | 0.003 | 47 | | 5 | 14277.295 | 32130 | 1871.625 | 1871.625 | 2.467 | H1-1b | |
| 43 | MP062 | PIPE 2.0 | 0.034 | 47 | 3 | 0.003 | 47 | | 3 | 14277.295 | 32130 | 1871.625 | 1871.625 | 2.467 | H1-1b | |
| 44 | MP064 | PIPE 2.0 | 0.611 | 35 | 4 | 0.048 | 35 | | 4 | 20490.966 | 32130 | 1871.625 | 1871.625 | 1.992 | H1-1b | |
| 45 | MP066 | PIPE 2.0 | 0.089 | 47 | 12 | 0.012 | 47 | | 12 | 14277.295 | 32130 | 1871.625 | 1871.625 | 1.836 | H1-1b | |
| 46 | MP068 | PIPE 2.0 | 0.034 | 47 | 13 | 0.003 | 47 | | 13 | 14277.295 | 32130 | 1871.625 | 1871.625 | 1.607 | H1-1b | |
| 47 | MP070 | PIPE 2.0 | 0.034 | 47 | 11 | 0.003 | 47 | | 11 | 14277.295 | 32130 | 1871.625 | 1871.625 | 1.607 | H1-1b | |
| 48 | MP072 | PIPE 2.0 | 0.611 | 35 | 12 | 0.048 | 35 | | 12 | 20490.966 | 32130 | 1871.625 | 1871.625 | 1.835 | H1-1b | |



EXHIBIT G

Power Density/RF Emissions Report



Radio Frequency Exposure Analysis Report

April 15, 2024

T-Mobile

Site Name: ATC Harwinton Monopole

Site Number: CTNH517A

Site Address: 159 Weingart Rd, Harwinton, CT 06791



Michael Fischer, P.E.

Registered Professional Engineer (Electrical)

Connecticut License Number 33928

Expires January 31, 2025

Signed 15 April 2024

Site Compliance Summary

| | |
|--|-------------------------------------|
| T-Mobile Compliance Status: | Compliant |
| Cumulative Calculated Power Density (Ground Level): | 153.27637 $\mu\text{W}/\text{cm}^2$ |
| Cumulative General Population % MPE (Ground Level): | 15.32778% |



April 15, 2024

Centerline
Attn: Peter Fales, Vice President SAC
750 W Center St, Suite 301
West Bridgewater, MA 02379

RF Exposure Analysis for Site: **ATC Harwinton Monopole**

Centerline Communications, LLC (“Centerline”) was contracted to analyze the proposed T-Mobile facility at **159 Weingart Rd, Harwinton, CT 06791** for the purpose of determining whether the predictive exposure from the proposed facility is within specified federal limits.

All information used in this report was analyzed as a percentage of the Maximum Permissible Exposure (% MPE) limits as detailed in 47 CFR § 1.1310 as well as Federal Communications Commission (FCC) OET Bulletin 65 Edition 97-01. The FCC MPE limits are typically expressed in units of milliwatts per square centimeter (mW/cm^2) or microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The exposure limits vary depending upon the frequencies being utilized. The General Population/Uncontrolled MPE limit (in mW/cm^2) for frequencies between 300 and 1500 is defined as frequency (in MHz) divided by 1500 ($f_{\text{MHz}}/1500$). 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 Communications, LLC has performed theoretical modeling of the site using a software tool, RoofMaster®, which incorporates calculation methodologies detailed in FCC OET 65. RoofMaster® uses a cylindrical model for conservative power density predictions within the near field of the antenna where the antenna pattern has not truly formed yet. Within this area power density values tend to decrease based upon an inverse distance function. At the point where it is appropriate for modeling to change from near-field calculations to far-field calculations, the power decreases inversely with the square of the distance. The modeling is based on worst-case assumptions in terms of transmitter power and duty cycle. No losses were included in the power calculations unless they were specifically provided for the project.

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



Data & Results

The following table details the antennas and operating parameters for the T-Mobile antenna system as well as any other antenna systems at the site. This is based on antenna information provided by the client and data compiled from other sources where necessary. The data below was input into Roofmaster® to perform the theoretical exposure calculations at 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 @ Ground Level
(Location: approximately 450' NE 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 | ERICSSON SON_AIR6419 | 2500 | 15.55 | 163.00 | 1.00 | 30.00 | 1076.77 | 0.00043 | 1000.00 | 0.00004 |
| T-Mobile A 1 | ERICSSON SON_AIR6419 | 2500 | 15.55 | 163.00 | 1.00 | 30.00 | 1076.77 | 0.00043 | 1000.00 | 0.00004 |
| T-Mobile A 1 | ERICSSON SON_AIR6419 | 2500 | 22.05 | 163.00 | 1.00 | 90.00 | 14429.21 | 74.20717 | 1000.00 | 7.42072 |
| T-Mobile A 1 | ERICSSON SON_AIR6419 | 2500 | 22.05 | 163.00 | 1.00 | 90.00 | 14429.21 | 74.20717 | 1000.00 | 7.42072 |
| T-Mobile A 2 | RFS APXVAALL24 43-U-NA20 | 700 | 13.65 | 163.00 | 4.00 | 20.00 | 1853.92 | 0.00011 | 466.67 | 0.00002 |
| T-Mobile A 2 | RFS APXVAALL24 43-U-NA20 | 600 | 12.95 | 163.00 | 4.00 | 60.00 | 4733.81 | 0.00022 | 400.00 | 0.00006 |
| T-Mobile A 2 | RFS APXVAALL24 43-U-NA20 | 1900 | 15.45 | 163.00 | 4.00 | 35.00 | 4910.53 | 0.00046 | 1000.00 | 0.00005 |
| T-Mobile A 2 | RFS APXVAALL24 43-U-NA20 | 1900 | 15.45 | 163.00 | 4.00 | 40.00 | 5612.03 | 0.00052 | 1000.00 | 0.00005 |
| T-Mobile A 2 | RFS APXVAALL24 43-U-NA20 | 1900 | 15.45 | 163.00 | 2.00 | 10.00 | 701.50 | 0.00007 | 1000.00 | 0.00001 |
| T-Mobile A 2 | RFS APXVAALL24 43-U-NA20 | 2100 | 16.45 | 163.00 | 4.00 | 60.00 | 10597.69 | 0.00084 | 1000.00 | 0.00008 |
| T-Mobile B 3 | ERICSSON SON_AIR6419 | 2500 | 15.55 | 163.00 | 1.00 | 30.00 | 1076.77 | 0.00000 | 1000.00 | 0.00000 |
| T-Mobile B 3 | ERICSSON SON_AIR6419 | 2500 | 15.55 | 163.00 | 1.00 | 30.00 | 1076.77 | 0.00000 | 1000.00 | 0.00000 |
| T-Mobile B 3 | ERICSSON SON_AIR6419 | 2500 | 22.05 | 163.00 | 1.00 | 90.00 | 14429.21 | 2.25655 | 1000.00 | 0.22566 |
| T-Mobile B 3 | ERICSSON SON_AIR6419 | 2500 | 22.05 | 163.00 | 1.00 | 90.00 | 14429.21 | 2.25655 | 1000.00 | 0.22566 |
| T-Mobile B 4 | RFS APXVAALL24 43-U-NA20 | 700 | 13.65 | 163.00 | 4.00 | 20.00 | 1853.92 | 0.00000 | 466.67 | 0.00000 |
| T-Mobile B 4 | RFS APXVAALL24 43-U-NA20 | 600 | 12.95 | 163.00 | 4.00 | 60.00 | 4733.81 | 0.00000 | 400.00 | 0.00000 |
| T-Mobile B 4 | RFS APXVAALL24 43-U-NA20 | 1900 | 15.45 | 163.00 | 4.00 | 35.00 | 4910.53 | 0.00000 | 1000.00 | 0.00000 |
| T-Mobile B 4 | RFS APXVAALL24 43-U-NA20 | 1900 | 15.45 | 163.00 | 4.00 | 40.00 | 5612.03 | 0.00000 | 1000.00 | 0.00000 |
| T-Mobile B 4 | RFS APXVAALL24 43-U-NA20 | 1900 | 15.45 | 163.00 | 2.00 | 10.00 | 701.50 | 0.00000 | 1000.00 | 0.00000 |
| T-Mobile B 4 | RFS APXVAALL24 43-U-NA20 | 2100 | 16.45 | 163.00 | 4.00 | 60.00 | 10597.69 | 0.00001 | 1000.00 | 0.00000 |
| T-Mobile C 5 | ERICSSON SON_AIR6419 | 2500 | 15.55 | 163.00 | 1.00 | 30.00 | 1076.77 | 0.00000 | 1000.00 | 0.00000 |
| T-Mobile C 5 | ERICSSON SON_AIR6419 | 2500 | 15.55 | 163.00 | 1.00 | 30.00 | 1076.77 | 0.00000 | 1000.00 | 0.00000 |
| T-Mobile C 5 | ERICSSON SON_AIR6419 | 2500 | 22.05 | 163.00 | 1.00 | 90.00 | 14429.21 | 0.15047 | 1000.00 | 0.01505 |
| T-Mobile C 5 | ERICSSON SON_AIR6419 | 2500 | 22.05 | 163.00 | 1.00 | 90.00 | 14429.21 | 0.15047 | 1000.00 | 0.01505 |
| T-Mobile C 6 | RFS APXVAALL24 43-U-NA20 | 700 | 13.65 | 163.00 | 4.00 | 20.00 | 463.48 | 0.00000 | 466.67 | 0.00000 |
| T-Mobile C 6 | RFS APXVAALL24 43-U-NA20 | 600 | 12.95 | 163.00 | 4.00 | 60.00 | 1183.45 | 0.00000 | 400.00 | 0.00000 |
| T-Mobile C 6 | RFS APXVAALL24 43-U-NA20 | 1900 | 15.45 | 163.00 | 4.00 | 35.00 | 1227.63 | 0.00000 | 1000.00 | 0.00000 |
| T-Mobile C 6 | RFS APXVAALL24 43-U-NA20 | 1900 | 15.45 | 163.00 | 4.00 | 40.00 | 1403.01 | 0.00000 | 1000.00 | 0.00000 |
| T-Mobile C 6 | RFS APXVAALL24 43-U-NA20 | 1900 | 15.45 | 163.00 | 2.00 | 10.00 | 350.75 | 0.00000 | 1000.00 | 0.00000 |
| T-Mobile C 6 | RFS APXVAALL24 43-U-NA20 | 2100 | 16.45 | 163.00 | 4.00 | 60.00 | 2649.42 | 0.00000 | 1000.00 | 0.00000 |
| AT&T A 7 | COMMSCOPE SBNHH-1D65A | 700 | 11.21 | 185.00 | 4.00 | 40.00 | 528.52 | 0.00018 | 466.67 | 0.00004 |
| AT&T A 7 | COMMSCOPE SBNHH-1D65A | 2300 | 14.79 | 185.00 | 4.00 | 25.00 | 753.25 | 0.00028 | 1000.00 | 0.00003 |
| AT&T A 8 | CCI HPA65R-BU6A | 1900 | 15.45 | 185.00 | 4.00 | 40.00 | 1403.01 | 0.00033 | 1000.00 | 0.00003 |
| AT&T A 9 | CCI DMP65R-BU6D | 2100 | 14.75 | 185.00 | 4.00 | 40.00 | 1194.15 | 0.00033 | 1000.00 | 0.00003 |
| AT&T A 10 | POWERWAVE 7770 00 | 850 | 11.35 | 185.00 | 4.00 | 40.00 | 545.83 | 0.00017 | 566.67 | 0.00003 |



| 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 |
|--------------|------------------------|----------------------|--------------------|-------------------------|---------------|---------------------------|----------------------------------|--|--|--------------------------|
| AT&T B 11 | CCI DMP65R-BU6D | 2100 | 14.75 | 185.00 | 4.00 | 40.00 | 1194.15 | 0.00000 | 1000.00 | 0.00000 |
| AT&T B 12 | CCI HPA65R-BU6A | 1900 | 15.45 | 185.00 | 4.00 | 40.00 | 1403.01 | 0.00000 | 1000.00 | 0.00000 |
| AT&T B 13 | POWERWAVE 7770 00 | 850 | 11.35 | 185.00 | 4.00 | 40.00 | 545.83 | 0.00001 | 566.67 | 0.00000 |
| AT&T B 14 | QUINTEL QS66512-2 | 700 | 11.45 | 185.00 | 4.00 | 40.00 | 558.55 | 0.00000 | 466.67 | 0.00000 |
| AT&T B 14 | QUINTEL QS66512-2 | 2300 | 14.55 | 185.00 | 4.00 | 25.00 | 712.75 | 0.00000 | 1000.00 | 0.00000 |
| AT&T C 15 | CCI DMP65R-BU6D | 2100 | 14.75 | 185.00 | 4.00 | 40.00 | 1194.15 | 0.00000 | 1000.00 | 0.00000 |
| AT&T C 15 | CCI DMP65R-BU6D | 1900 | 14.05 | 185.00 | 4.00 | 40.00 | 1016.39 | 0.00000 | 1000.00 | 0.00000 |
| AT&T C 16 | POWERWAVE 7770 00 | 850 | 11.35 | 185.00 | 4.00 | 40.00 | 545.83 | 0.00000 | 566.67 | 0.00000 |
| AT&T C 17 | QUINTEL QS66512-2 | 2300 | 14.55 | 185.00 | 4.00 | 25.00 | 712.75 | 0.00000 | 1000.00 | 0.00000 |
| AT&T C 18 | QUINTEL QS66512-2 | 700 | 11.45 | 185.00 | 4.00 | 40.00 | 558.55 | 0.00000 | 466.67 | 0.00000 |
| Verizon A 19 | SAMSUNG SON_MT6413-77A | 3700 | 23.35 | 175.00 | 2.00 | 100.00 | 21627.19 | 0.04045 | 1000.00 | 0.00405 |
| Verizon A 20 | COMMSCOPE JAHH-65B-R3B | 700 | 12.11 | 175.00 | 4.00 | 30.00 | 487.66 | 0.00018 | 466.67 | 0.00004 |
| Verizon A 20 | COMMSCOPE JAHH-65B-R3B | 850 | 12.81 | 175.00 | 4.00 | 40.00 | 763.94 | 0.00028 | 566.67 | 0.00005 |
| Verizon A 20 | COMMSCOPE JAHH-65B-R3B | 1900 | 15.72 | 175.00 | 4.00 | 40.00 | 1493.00 | 0.00039 | 1000.00 | 0.00004 |
| Verizon A 20 | COMMSCOPE JAHH-65B-R3B | 2100 | 15.71 | 175.00 | 4.00 | 45.00 | 1675.76 | 0.00044 | 1000.00 | 0.00004 |
| Verizon A 21 | AMPHENOL LPA-80063-6CF | 850 | 14.50 | 175.00 | 0.00 | 0.00 | 0.00 (Not in Use) | 0.00000 | 566.67 | 0.00000 |
| Verizon B 22 | SAMSUNG SON_MT6413-77A | 3700 | 23.35 | 175.00 | 2.00 | 100.00 | 21627.19 | 0.00119 | 1000.00 | 0.00012 |
| Verizon B 23 | COMMSCOPE JAHH-65B-R3B | 700 | 12.11 | 175.00 | 4.00 | 30.00 | 487.66 | 0.00000 | 466.67 | 0.00000 |
| Verizon B 23 | COMMSCOPE JAHH-65B-R3B | 850 | 12.81 | 175.00 | 4.00 | 40.00 | 763.94 | 0.00000 | 566.67 | 0.00000 |
| Verizon B 23 | COMMSCOPE JAHH-65B-R3B | 1900 | 15.72 | 175.00 | 4.00 | 40.00 | 1493.00 | 0.00000 | 1000.00 | 0.00000 |
| Verizon B 23 | COMMSCOPE JAHH-65B-R3B | 2100 | 15.71 | 175.00 | 4.00 | 45.00 | 1675.76 | 0.00000 | 1000.00 | 0.00000 |
| Verizon B 24 | AMPHENOL LPA-80063-6CF | 850 | 14.50 | 175.00 | 0.00 | 0.00 | 0.00 (Not in Use) | 0.00000 | 566.67 | 0.00000 |
| Verizon C 25 | SAMSUNG SON_MT6413-77A | 3700 | 23.35 | 175.00 | 2.00 | 100.00 | 21627.19 | 0.00067 | 1000.00 | 0.00007 |
| Verizon C 26 | COMMSCOPE JAHH-65B-R3B | 700 | 12.11 | 175.00 | 4.00 | 30.00 | 487.66 | 0.00000 | 466.67 | 0.00000 |
| Verizon C 26 | COMMSCOPE JAHH-65B-R3B | 850 | 12.81 | 175.00 | 4.00 | 40.00 | 763.94 | 0.00000 | 566.67 | 0.00000 |
| Verizon C 26 | COMMSCOPE JAHH-65B-R3B | 1900 | 15.72 | 175.00 | 4.00 | 40.00 | 1493.00 | 0.00000 | 1000.00 | 0.00000 |
| Verizon C 26 | COMMSCOPE JAHH-65B-R3B | 2100 | 15.71 | 175.00 | 4.00 | 45.00 | 1675.76 | 0.00000 | 1000.00 | 0.00000 |
| Verizon C 27 | AMPHENOL LPA-80063-6CF | 850 | 14.50 | 175.00 | 0.00 | 0.00 | 0.00 (Not in Use) | 0.00000 | 566.67 | 0.00000 |
| | | | | | | | Cumulative Power Density: | 153.27637 $\mu\text{W}/\text{cm}^2$ | Cumulative % MPE: | 15.32778% |



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.

Michelle Stone
RF EME Technical Writer II
Centerline Communications, LLC



EXHIBIT H

Mailing Receipts/Proof of Notice

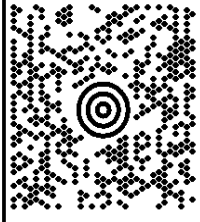


C/O CULLEN MORGAN
941-349-7263
CENTERLINE COMMUNICATIONS LLC
12579 SAGEWOOD DRIVE
VENICE FL 34293

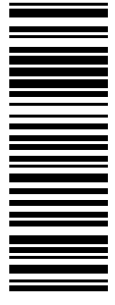
2 LBS

1 OF 1

SHIP TO:
AMERICAN TOWER CORPORATION
10 PRESIDENTIAL WAY
WOBURN MA 01801-1053

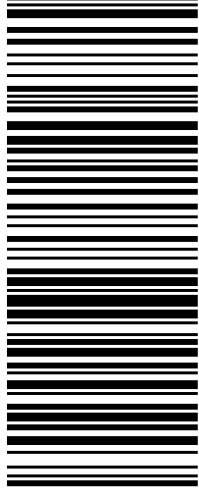


MA 018 9-04



UPS GROUND

TRACKING #: 1Z 9Y4 503 03 0213 5936



BILLING: P/P



TM

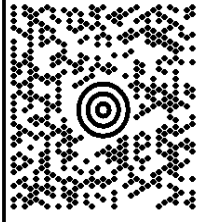
CS 24.3.00... MACNV50 18.0A 04/2024**

C/O CULLEN MORGAN
941-349-7263
CENTERLINE COMMUNICATIONS LLC
12579 SAGEWOOD DRIVE
VENICE FL 34293

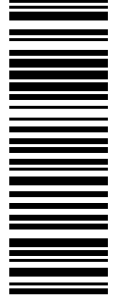
2 LBS

1 OF 1

SHIP TO:
C/O AMERICAN TOWER CORP
SBC TOWER HOLDINGS LLC
10 PRESIDENTIAL WAY
WOBURN MA 01801-1053

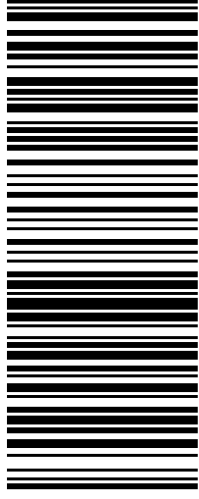


MA 018 9-04



UPS GROUND

TRACKING #: 1Z 9Y4 503 03 0932 4942



BILLING: P/P



TM

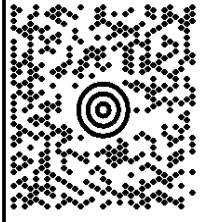
CS 24.3.00... MACNV50 18.0A 04/2024**

C/O CULLEN MORGAN
941-349-7263
CENTERLINE COMMUNICATIONS LLC
12579 SAGEWOOD DRIVE
VENICE FL 34293

2 LBS

1 OF 1

SHIP TO:
ATTN: MICHAEL CRISS, MAYOR
TOWN OF HARWINTON
100 BENTLEY DRIVE
HARWINTON CT 06791-2200

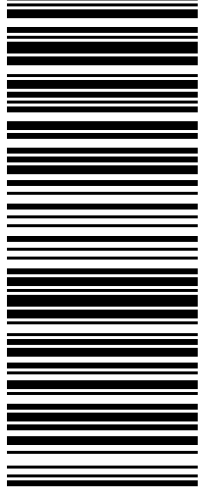


CT 067 9-02



UPS GROUND

TRACKING #: 1Z 9Y4 503 03 1431 5951



BILLING: P/P



TM

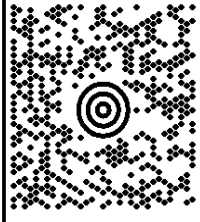
CS 24.3.00... MACNV50 18.0A 04/2024**

C/O CULLEN MORGAN
9415497263
CENTERLINE COMMUNICATIONS LLC
12579 SAGEWOOD DRIVE
VENICE FL 34293

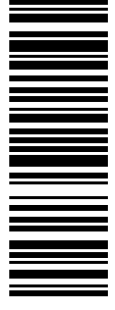
2 LBS

1 OF 1

SHIP TO:
ATTN: JEFFREY NEUMANN, BLDG OFFCL
TOWN OF HARWINTON
100 BENTLEY DRIVE
HARWINTON CT 06791-2200

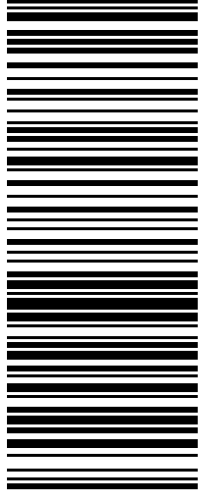


CT 067 9-02



UPS GROUND

TRACKING #: 1Z 9Y4 503 03 3826 3936



BILLING: P/P



TM

CS 24.3.00... MACNV50 18.0A 04/2024**