CENTERLINE

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

January 18, 2024

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

RE: NOTICE OF EXEMPT MODIFICATION
61-1 Buttonball Road, Old Lyme, CT 06371
Latitude: 41.296472
Longitude: -72.301222
T-Mobile Site #: CTNL801A

Dear Members of the Siting Council:

T-Mobile currently maintains nine (9) antennas at the 99-foot level of the existing 100-foot monopole tower at 61-1 Buttonball Road, Old Lyme, CT 06371. The 100-foot tower is owned by American Tower Corporation and the property is owned by Ron Swaney LLC. T-Mobile now intends to modify its equipment on the tower. All equipment will remain at the 99-foot level.

Planned Modifications:

Existing to be Removed:
(3) AIR21 KRC118023-1_B2A_B4P Antennas
(3) AIR21 B4A/B12P Antennas
(1) 6x12 Hybrid Cable
(2) 9x18 Hybrid Cables
(1) Tower Top Mount
(1) RBS6131 Cabinet [Ground-Mounted]

Install New:
(3) AIR6419 B41 Antennas
(3) Radio 4460 RRUs
(3) 6/12 Hybrid Cables
(2) Cabinets [Ground-Mounted]

Existing to Remain:
(3) APXVAARR24_43-U-NA20 Antennas
(3) Radio 4449 RRUs

This facility was approved by the CT Siting Council in Docket No. 393 dated September 23, 2010 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.SA. § 16-SOj-73, a copy of this letter is being sent to the Honorable Martha Shoemaker, chief elected official of the Town of Old Lyme, Mary Wayland, Building Official for the Town of Old Lyme, 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,

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

Attachments
cc: The Honorable Martha Shoemaker, First Selectwoman – Town of Old Lyme
Mark Wayland, Building Official – Town of Madison
American Tower Corporation – Tower Owner
Ron Swaney LLC – Property Owner

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EXHIBIT A

Letter of Authorization

AMERICAN TOWER®
CORPORATION

LETTER OF AUTHORIZATION FOR PERMITTING

ATC SITE#/NAME/PROJECT: 284983 / OLD LYME CT / 14561675
SITE ADDRESS: 61-1 Buttonball Road, Old Lyme, CT 06371
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 11th day of January 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.

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EXHIBIT B

Original Facility Approval

DOCKET NO. 393 - T-Mobile Northeast, LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility located 61-1 Buttonball Road, Old Lyme, Connecticut.	Connecticut Siting Council September 23, 2010

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, maintenance, and operation of a telecommunications facility, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to T-Mobile Northeast, LLC (T-Mobile), hereinafter referred to as the Certificate Holder, for a telecommunications facility at the proposed site, located at 61-1 Buttonball Road, Old Lyme, Connecticut.

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

1. The tower shall be constructed as a stealth monopole with flush-mounted antennas consistent with the agreement between T-Mobile and Black Hall Club, and no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of Certificate Holder and other entities, both public and private, but such tower shall not exceed a height of 100 feet above ground level. The height at the top of T-Mobile's antennas shall not exceed 100 feet above ground level.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Old Lyme for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
    a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment compound including cedar fencing, radio equipment, access road, utility line, and landscaping; and
    b) construction plans for site clearing, grading, landscaping, water drainage, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

3. Prior to the commencement of operation, the Certificate Holder shall provide the Council worst-case modeling of the electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of the electromagnetic radio frequency power density be submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

6. The Certificate Holder shall provide reasonable space on the tower for no compensation for any Town of Old Lyme public safety services (police, fire and medical services), provided such use can be accommodated and is compatible with the structural integrity of the tower.

7. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed with at least one fully operational wireless telecommunications carrier providing wireless service within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The Certificate Holder shall provide written notice to the Executive Director of any schedule changes as soon as is practicable.

8. Any request for extension of the time period referred to in Condition 7 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the Town of Old Lyme. Any proposed modifications to this Decision and Order shall likewise be so served.

9. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

10. Any nonfunctioning antenna, and associated antenna mounting equipment, on this facility shall be removed within 60 days of the date the antenna ceased to function.

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

12. The Certificate Holder shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v.

13. This Certificate may be transferred in accordance with Conn. Gen. Stat. §16-50k(b), provided both the Certificate Holder\transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under Conn. Gen. Stat. §16-50v. In addition, both the Certificate Holder\transferor and the transferee shall provide the Council a written agreement as to the

entity responsible for any quarterly assessment charges under Conn. Gen. Stat. §16-50v(b)(2) that may be associated with this facility.

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

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

The parties and intervenors to this proceeding are:

Applicant	**Its Representative**
T-Mobile Northeast, LLC	Julie D. Kohler, Esq. Monte E. Frank, Esq. Jesse A. Langer, Esq. Cohen and Wolf, P.C. 1115 Broad Street Bridgeport, CT 06604

Party	**Its Representative**
Town of Old Lyme	The Honorable Timothy G. Griswold Office of the Selectman Town of Old Lyme 52 Lyme Street Old Lyme, CT 06371

Intervenor	**Its Representative**
Black Hall Club	Keith R. Ainsworth, Esq. Evans Feldman & Ainsworth, LLC 261 Bradley Street P.O. Box 1694 New Haven, CT 06507-1694

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EXHIBIT C

Property Card

61-1 BUTTONBALL RD

Location	61-1 BUTTONBALL RD	**Mblu**	8/ / 11/1 /
Acct#	00017710	**Owner**	RON SWANEY LLC
Assessment	$488,800	**Appraisal**	$698,400
PID	178	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$589,800	$108,600	$698,400

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$412,800	$76,000	$488,800

Owner of Record

Owner	RON SWANEY LLC	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	59 BUTTONBALL RD OLD LYME, CT 06371	**Book & Page**	0344/0975
		Sale Date	05/25/2007

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
RON SWANEY LLC	$0		0344/0975	05/25/2007
SWANEY RONALD A	$0		0271/0890	06/15/2001
SWANEY BARBARA	$0		0232/0734	07/01/1996

Building Information

Building 1 : Section 1

Year Built:	2006
Living Area:	15,000
Replacement Cost:	$610,800
Building Percent Good:	94

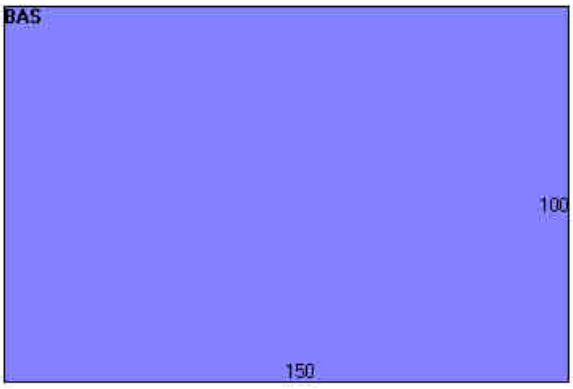
Replacement Cost
Less Depreciation: $574,200

Building Attributes	
Field	**Description**
Style:	Pre-Eng Warehs
Model	Ind/Comm
Grade	Average
Stories:	1
Occupancy	4.00
Exterior Wall 1	Pre-finsh Metl
Exterior Wall 2	
Roof Structure	Gable/Hip
Roof Cover	Metal/Tin
Interior Wall 1	Minim/Masonry
Interior Wall 2	Drywall/Sheet
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Gas
Heating Type	Forced Air-Duc
AC Type	None
Struct Class	
Bldg Use	COM WHS/GAR
Total Rooms	03
Total Bedrms	0
Total Baths	03
1st Floor Use:	
Heat/AC	HEAT/AC PKGS
Frame Type	STEEL
Baths/Plumbing	NONE
Ceiling/Wall	CEIL & MIN WL
Rooms/Prtns	AVERAGE
Wall Height	14.00
% Comn Wall	

Building Photo

(https://images.vgsi.com/photos/OldLymeCTPhotos//\00\00\48\68.jpg)

Building Layout



(https://images.vgsi.com/photos/OldLymeCTPhotos//Sketches/178_178.jp

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	15,000	15,000
		15,000	15,000

Extra Features

Extra Features				Legend
Code	**Description**	**Size**	**Value**	**Bldg #**
GEN	GENERATOR	0.00 UNITS	$0	1

Land

Land Use

Use Code	316I
Description	COM WHS/GAR
Zone	RU80
Neighborhood	0050
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	2.53
Frontage	0
Depth	0
Assessed Value	$76,000
Appraised Value	$108,600

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
LT1	LIGHTS-IN W/PL			1.00 UNITS	$600	1
PAV1	PAVING-ASPHALT			8000.00 S.F.	$15,000	1
MSC1	CELL TOWER			1.00 UNIT	$0	1
MSC1	CELL TOWER			1.00 UNIT	$0	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$589,800	$108,600	$698,400
2020	$589,800	$108,600	$698,400
2019	$778,900	$114,300	$893,200

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$412,800	$76,000	$488,800
2020	$412,800	$76,000	$488,800
2019	$545,300	$80,100	$625,400

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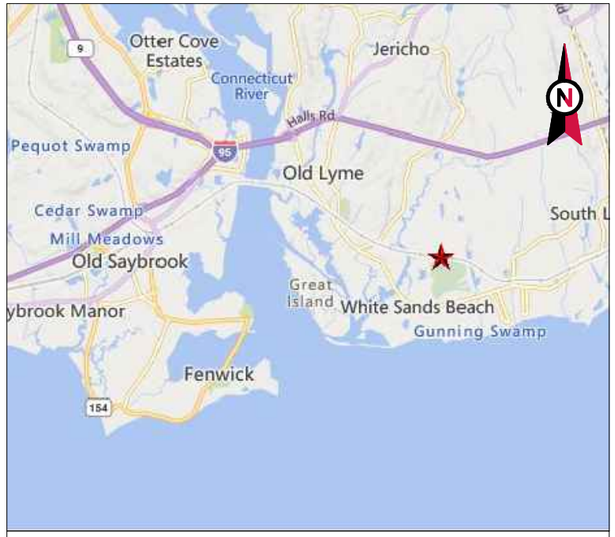
EXHIBIT D

Construction Drawings



VICINITY MAP

AMERICAN TOWER®

ATC SITE NAME: OLD LYME CT
ATC SITE NUMBER: 284983
T-MOBILE SITE NAME: AMTRAK_OLDLYME2
T-MOBILE SITE NUMBER: CTNL801A
SITE ADDRESS: 61-1 BUTTONBALL ROAD
OLD LYME,CT 06371
SITE CLASS: MONOPOLE

LOCATION MAP

T-MOBILE ANCHOR AMENDMENT PLAN
67D5D998E 6160 CONFIGURATION

COMPLIANCE CODE

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNMENT AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

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)

UTILITY COMPANIES

POWER COMPANY: UNKNOWN
PHONE: N/A

TELEPHONE COMPANY: UNKNOWN
PHONE: N/A

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

PROJECT SUMMARY

SITE ADDRESS:

61-1 BUTTONBALL ROAD
OLD LYME,CT 06371
COUNTY: NEW LONDON

GEOGRAPHIC COORDINATES:

LATITUDE: 41.29621757

LONGITUDE: -72.30031962

GROUND ELEVATION: 38' AMSL

PROJECT TEAM

TOWER OWNER:

AMERICAN TOWER
10 PRESIDENTIAL WAY
WOBURN, MA 01801

APPLICANT:

T-MOBILE

ENGINEER:

A.T. ENGINEERING SERVICES LLC
1 FENTON MAIN, STE 300
CARY, NC 27511

PROPERTY OWNER:

LD ACQUISITION
COMPANY 19 LLC
61-1 BUTTONBALL
ROAD
OLD LYME,CT 06371

PROJECT DESCRIPTION

THE PROPOSED PROJECT INCLUDES MODIFYING GROUND BASED AND TOWER MOUNTED EQUIPMENT AS INDICATED PER BELOW:

TOWER WORK:
REMOVE (6) ANTENNA(S), (1) ERICSSON 6X12 HCS 6AWG & (2) ERICSSON 9X18 HCS CABLE(S)
INSTALL (3) ANTENNA(S), (3) RRU(S),AND (3) HYBRID TRUNK 6/24 4AWG CABLE(S)
EXISTING (3) ANTENNA(S) AND (3) RRU(S) TO REMAIN

GROUND WORK:
REMOVE (1) GENERIC BBU, AND (1) RBS 6131
INSTALL (1) ENCLOSURE 6160 AND (1) B160 BATTERY CABINET

PROJECT NOTES

1. THE FACILITY IS UNMANNED.
2. A TECHNICIAN WILL VISIT THE SITE APPROXIMATELY ONCE A MONTH FOR ROUTINE INSPECTION AND MAINTENANCE.
3. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT LAND DISTURBANCE OR EFFECT OF STORM WATER DRAINAGE.
4. NO SANITARY SEWER, POTABLE WATER OR TRASH DISPOSAL IS REQUIRED.
5. HANDICAP ACCESS IS NOT REQUIRED.
6. THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. § 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION, REMOVAL, AND/OR REPLACEMENT OF TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR § 1.61000 (B)(7).

PROJECT LOCATION DIRECTIONS

FROM DOWNTOWN NEW HAVEN START OUT GOING NORTHEAST ON CHURCH ST TOWARD WALL ST. CHURCH ST BECOMES WHITNEY AVE. TURN RIGHT ONTO AUDUBON ST. TAKE THE 2ND LEFT ONTO ORANGE ST. TAKE THE 1ST RIGHT ONTO TRUMBULL ST. TURN SLIGHT LEFT TO TAKE THE I-91 S/I-91 N RAMP. MERGE ONTO I-91 S TOWARD I-95/N.Y.CITY/NEW LONDON. MERGE ONTO I-95 N VIA THE EXIT ON THE LEFT TOWARD NEW LONDON. MERGE ONTO CT-156 E VIA EXIT 70. TURN LEFT ONTO BUTTONBALL RD. 57 BUTTONBALL RD, OLD LYME, CT 06371-1705, 57 BUTTONBALL RD IS ON THE RIGHT. SITE IS BEHIND COMMERCIAL FACILITY

SHEET INDEX

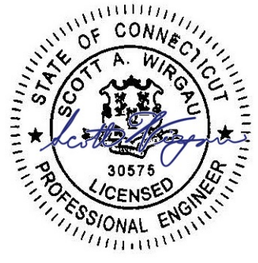
SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
G-001	TITLE SHEET	0	1/9/2024	JBW
G-002	GENERAL NOTES	0	1/9/2024	JBW
C-101	DETAILED SITE PLAN	0	1/9/2024	JBW
C-102	DETAILED EQUIPMENT PLAN	0	1/9/2024	JBW
C-201	TOWER ELEVATION	0	1/9/2024	JBW
C-401	ANTENNA INFORMATION & SCHEDULE	0	1/9/2024	JBW
C-501	CONSTRUCTION DETAILS	0	1/9/2024	JBW
E-501	GROUNDING DETAILS	0	1/9/2024	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

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	JBW	1/9/2024

ATC SITE NUMBER:
284983
ATC SITE NAME:
OLD LYME CT
T-MOBILE SITE NAME:
AMTRAK_OLDLYME2
SITE ADDRESS:
61-1 BUTTONBALL ROAD
OLD LYME,CT 06371

SEAL:



T-Mobile

ATC PROJ. #:	14561675_G0
CUST. ID:	AMTRAK_OLDLYME2
CUST. #:	CTNL801A

TITLE SHEET

SHEET NUMBER:	REVISION:
G-001	0

GENERAL CONSTRUCTION NOTES:

1. OWNER FURNISHED MATERIALS, T-MOBILE "THE COMPANY" WILL PROVIDE AND THE CONTRACTOR WILL INSTALL
   - A. BTS EQUIPMENT FRAME (PLATFORM) AND ICEBRIDGE SHELTER (GROUND BUILD/CO-LOCATE ONLY)
   - B. AC/TELCO INTERFACE BOX (PPC)
   - C. ICE BRIDGE (CABLE TRAY WITH COVER) (GROUND BUILD/CO-LOCATE ONLY, GC TO FURNISH AND INSTALL FOR ROOFTOP INSTALLATION)
   - D. TOWERS, MONOPOLES
   - E. TOWER LIGHTING
   - F. GENERATORS & LIQUID PROPANE TANK
   - G. ANTENNA STANDARD BRACKETS, FRAMES AND PIPES FOR MOUNTING
   - H. ANTENNAS (INSTALLED BY OTHERS)
   - I. TRANSMISSION LINE
   - J. TRANSMISSION LINE JUMPERS
   - K. TRANSMISSION LINE CONNECTORS WITH WEATHERPROOFING KITS
   - L. TRANSMISSION LINE GROUND KITS
   - M. HANGERS
   - N. HOISTING GRIPS
   - O. BTS EQUIPMENT
2. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL OTHER MATERIALS FOR THE COMPLETE INSTALLATION OF THE SITE INCLUDING, BUT NOT LIMITED TO, SUCH MATERIALS AS FENCING, STRUCTURAL STEEL SUPPORTING SUB-FRAME FOR PLATFORM, ROOFING LABOR AND MATERIALS, GROUNDING RINGS, GROUNDING WIRES, COPPER-CLAD OR XIT CHEMICAL GROUND ROD(S), BUSS BARS, TRANSFORMERS AND DISCONNECT SWITCHES WHERE APPLICABLE, TEMPORARY ELECTRICAL POWER, CONDUIT, LANDSCAPING COMPOUND STONE, CRANES, CORE DRILLING, SLEEPERS AND RUBBER MATTING, REBAR, CONCRETE CAISSONS, PADS AND/OR AUGER MOUNTS, MISCELLANEOUS FASTENERS, CABLE TRAYS, NON-STANDARD ANTENNA FRAMES AND ALL OTHER MATERIAL AND LABOR REQUIRED TO COMPLETE THE JOB ACCORDING TO THE DRAWINGS AND SPECIFICATIONS. IT IS THE POSITION OF T-MOBILE TO APPLY FOR PERMITTING AND CONTRACTOR RESPONSIBLE FOR PICKUP AND PAYMENT OF REQUIRED PERMITS.
3. ALL WORK SHALL CONFORM TO ALL CURRENT APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING ANSI/EIA/TIA-222, AND COMPLY WITH ATC CONSTRUCTION SPECIFICATIONS.
4. CONTRACTOR SHALL CONTACT LOCAL 811 FOR IDENTIFICATION OF UNDERGROUND UTILITIES PRIOR TO START OF CONSTRUCTION.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED INSPECTIONS.
6. ALL DIMENSIONS TO, OF, AND ON EXISTING BUILDINGS, DRAINAGE STRUCTURES, AND SITE IMPROVEMENTS SHALL BE VERIFIED IN FIELD BY CONTRACTOR WITH ALL DISCREPANCIES REPORTED TO THE ENGINEER.
7. DO NOT CHANGE SIZE OR SPACING OF STRUCTURAL ELEMENTS.
8. DETAILS SHOWN ARE TYPICAL; SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.
9. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY WHICH SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
10. CONTRACTOR SHALL BRACE STRUCTURES UNTIL ALL STRUCTURAL ELEMENTS NEEDED FOR STABILITY ARE INSTALLED. THESE ELEMENTS ARE AS FOLLOWS: LATERAL BRACING, ANCHOR BOLTS, ETC.
11. CONTRACTOR SHALL DETERMINE EXACT LOCATION OF EXISTING UTILITIES, GROUNDS DRAINS, DRAIN PIPES, VENTS, ETC. BEFORE COMMENCING WORK.
12. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE T-MOBILE REP PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH REMEDIAL ACTION SHALL REQUIRE WRITTEN APPROVAL BY THE T-MOBILE REP PRIOR TO PROCEEDING.
13. EACH CONTRACTOR SHALL COOPERATE WITH THE T-MOBILE REP, AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.
14. CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION OF THIS PROJECT TO MATCH EXISTING PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE T-MOBILE CONSTRUCTION MANAGER.
15. ALL CABLE/CONDUIT ENTRY/EXIT PORTS SHALL BE WEATHERPROOFED DURING INSTALLATION USING A SILICONE SEALANT.
16. WHERE EXISTING CONDITIONS DO NOT MATCH THOSE SHOWN IN THIS PLAN SET, CONTRACTOR SHALL NOTIFY THE T-MOBILE REP AND ENGINEER OF RECORD IMMEDIATELY.
17. CONTRACTOR SHALL ENSURE ALL SUBCONTRACTORS ARE PROVIDED WITH A COMPLETE AND CURRENT SET OF DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
18. CONTRACTOR SHALL REMOVE ALL RUBBISH AND DEBRIS FROM THE SITE AT THE END OF EACH DAY.
19. CONTRACTOR SHALL COORDINATE WORK SCHEDULE WITH AMERICAN TOWER CORPORATION (ATC) AND TAKE PRECAUTIONS TO MINIMIZE IMPACT AND DISRUPTION OF OTHER OCCUPANTS OF THE FACILITY.
20. CONTRACTOR SHALL FURNISH T-MOBILE AND AMERICAN TOWER CORPORATION (ATC) WITH A PDF MARKED UP AS-BUILT SET OF DRAWINGS UPON COMPLETION OF WORK.
21. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE REP TO DETERMINE WHAT, IF ANY, ITEMS WILL BE PROVIDED. ALL ITEMS NOT PROVIDED SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. CONTRACTOR WILL INSTALL ALL ITEMS PROVIDED.
22. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE REP TO DETERMINE IF ANY PERMITS WILL BE OBTAINED BY CONTRACTOR. ALL REQUIRED PERMITS NOT OBTAINED BY T-MOBILE MUST BE OBTAINED, AND PAID FOR, BY THE CONTRACTOR.
23. CONTRACTOR SHALL INSTALL ALL SITE SIGNAGE IN ACCORDANCE WITH T-MOBILE SPECIFICATIONS AND REQUIREMENTS.
24. CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS TO T-MOBILE FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
25. ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND LOCATED ACCORDING TO T-MOBILE SPECIFICATIONS, AND AS SHOWN IN THESE PLANS.
26. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
27. CONTRACTOR SHALL NOTIFY T-MOBILE REP A MINIMUM OF 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACKFILLING ANY UNDERGROUND UTILITIES, FOUNDATIONS OR SEALING ANY WALL, FLOOR OR ROOF PENETRATIONS FOR ENGINEERING REVIEW AND APPROVAL.
28. 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 NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, OR BY THE ELEMENTS DUE TO NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, EITHER TO THE EXISTING WORK, OR TO HIS WORK OR THE WORK OF ANY OTHER CONTRACTOR, SHALL BE REPAIRED AT HIS EXPENSE TO THE OWNER'S SATISFACTION.
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.

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

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

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

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	JBW	1/9/2024

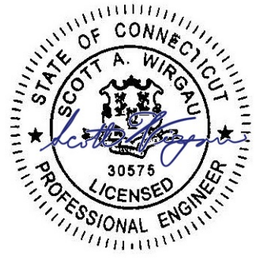
ATC SITE NUMBER:
284983

ATC SITE NAME:
OLD LYME CT

T-MOBILE SITE NAME:
AMTRAK_OLDLYME2

SITE ADDRESS:
61-1 BUTTONBALL ROAD
OLD LYME,CT 06371

SEAL:



Digitally Signed: 2024-01-09

T-Mobile

ATC PROJ. #:	14561675_G0
CUST. ID:	AMTRAK_OLDLYME2
CUST. #:	CTNL801A

GENERAL NOTES

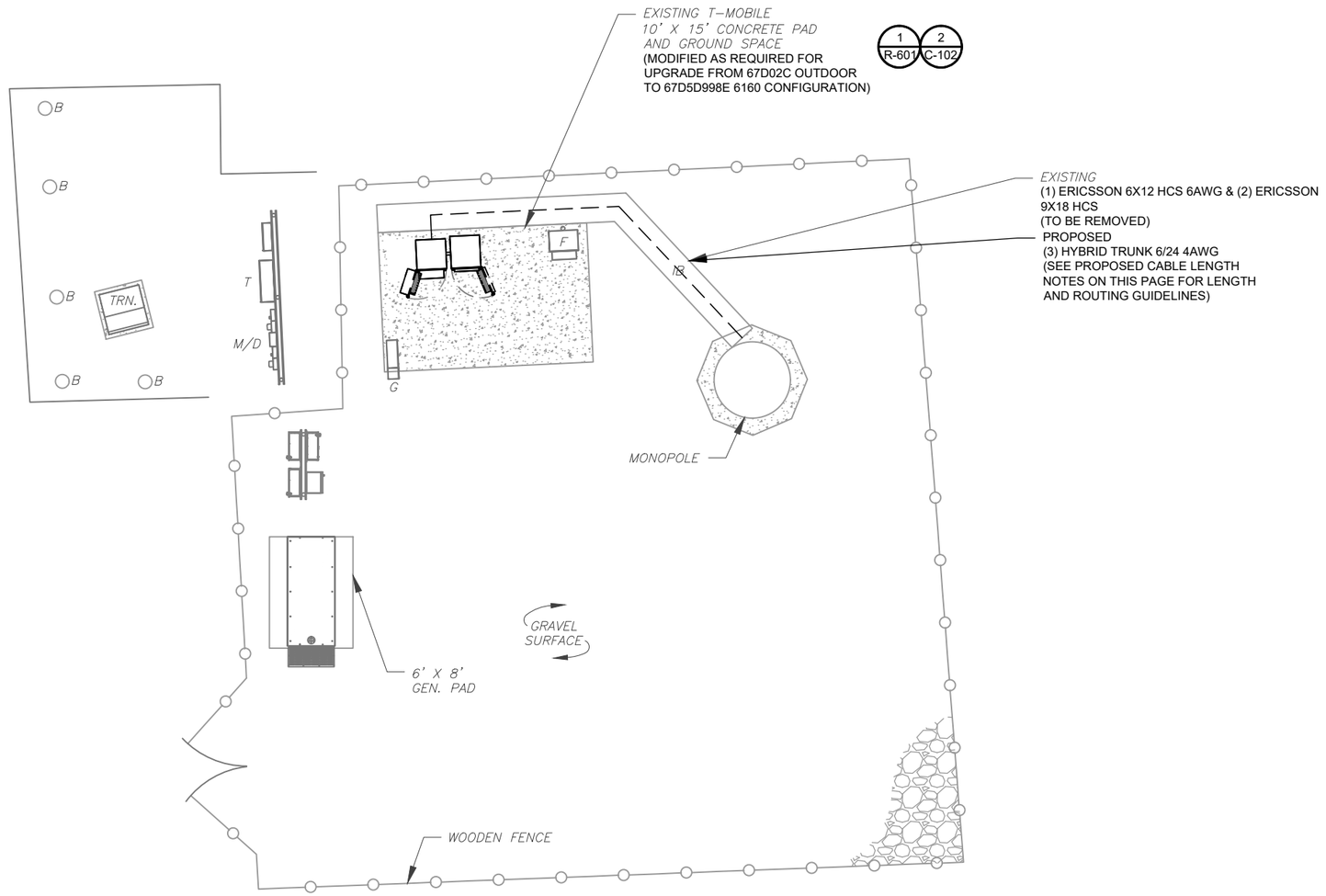
SHEET NUMBER:	REVISION:
G-002	0

SITE PLAN NOTES:

1. THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.

2. ICE BRIDGE, CABLE LADDER, COAX PORT, AND COAX CABLE ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL CONFIRM THE EXACT LOCATION OF ALL PROPOSED AND EXISTING EQUIPMENT AND STRUCTURES DEPICTED ON THIS PLAN. BEFORE UTILIZING EXISTING CABLE SUPPORTS, COAX PORTS, INSTALLING NEW PORTS OR ANY OTHER EQUIPMENT, CONTRACTOR SHALL VERIFY ALL ASPECTS OF THE COMPONENTS MEET THE ATC SPECIFICATIONS.

3. NO ELECTRICAL SCOPE IS INCLUDED IN THIS PROJECT.



LEGEND

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

PROPOSED CABLE NOTES:

1. ESTIMATED LENGTH OF PROPOSED CABLE IS **148'**. ESTIMATED LENGTH OF CABLE WAS PROVIDED BY CUSTOMER OR CALCULATED BY ADDING THE RAD CENTER AND THE DISTANCE FROM THE SHELTER ENTRY PLATE TO THE TOWER (ALONG THE ICE BRIDGE) AND A SAFETY FACTOR MEASUREMENT OF 15% (OF THE TWO PREVIOUS VALUES), CDS DEFER TO GREATEST CABLE LENGTH.
2. ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. IF ADEQUATE SPACE EXISTS, ROUTE CABLES THROUGH ENTRY PORT HOLE, UP INSIDE OF MONOPOLE, AND THROUGH EXIT PORT HOLE. IF ROUTING OUTSIDE THE MONOPOLE, ATTACH CABLES USING STAND-OFF ADAPTERS MOUNTED TO TOWER USING STAINLESS STEEL BANDING. ADEQUATELY SECURE CABLES USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER.

1 DETAILED SITE PLAN

GRAPHIC SCALE

10 0 5 10

(IN FEET)
1 UNIT = 10 FEET

N

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0	FOR CONSTRUCTION	JBW	1/9/2024

ATC SITE NUMBER:
284983

ATC SITE NAME:
OLD LYME CT

T-MOBILE SITE NAME:
AMTRAK_OLDLYME2

SITE ADDRESS:
61-1 BUTTONBALL ROAD
OLD LYME,CT 06371

SEAL:

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

Digitally Signed: 2024-01-09

T-Mobile

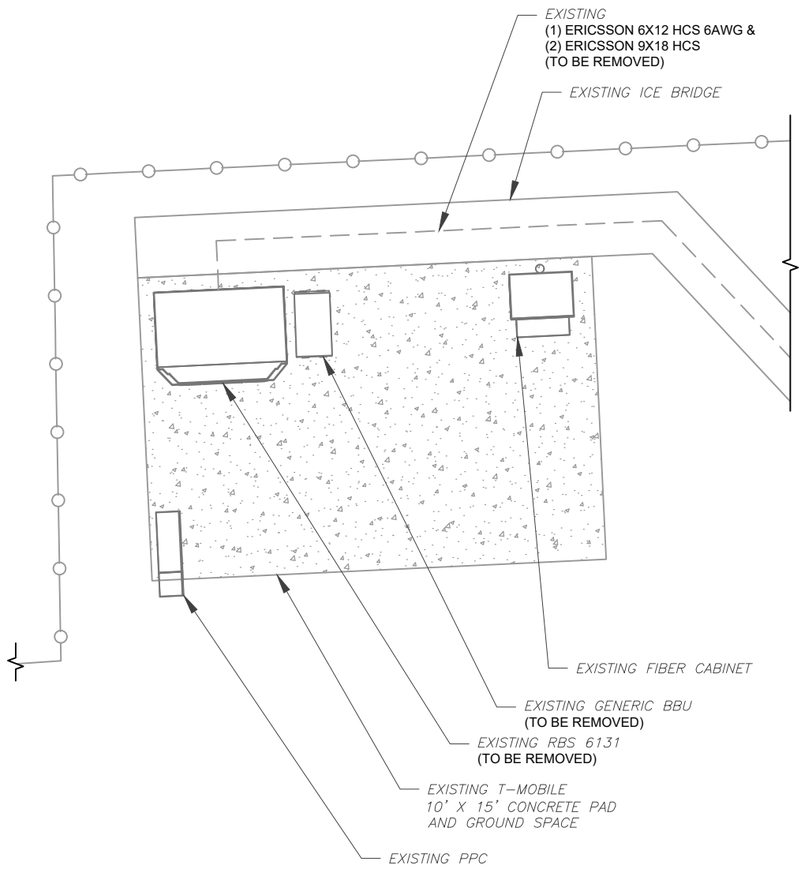
ATC PROJ. #:	14561675_G0
CUST. ID:	AMTRAK_OLDLYME2
CUST. #:	CTNL801A

DETAILED SITE PLAN

SHEET NUMBER:	REVISION:
C-101	0

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

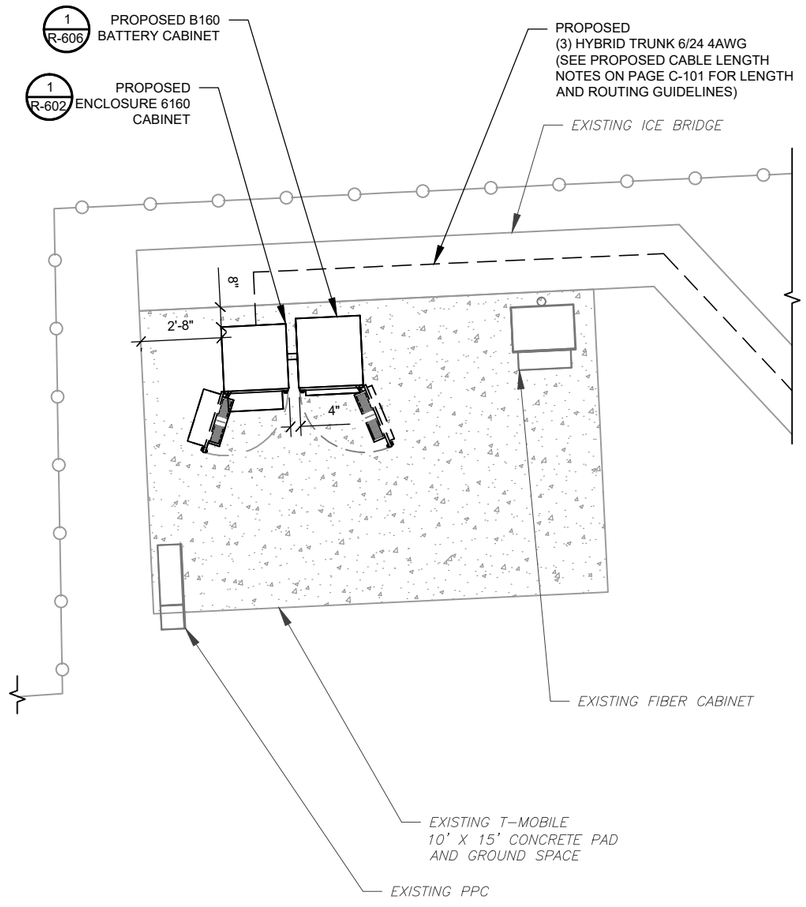
GRAPHIC SCALE

5 0 2.5 5

(IN FEET)
1 UNIT = 5 FEET

N

T-MOBILE CM APPROVAL REQUIRED BEFORE INSTALLING CABINETS.



2 PROPOSED GROUND EQUIPMENT LAYOUT

GRAPHIC SCALE

5 0 2.5 5

(IN FEET)
1 UNIT = 5 FEET

N

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REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	JBW	1/9/2024

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T-MOBILE SITE NAME:
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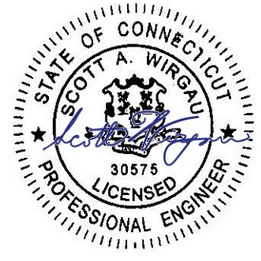
SITE ADDRESS:
61-1 BUTTONBALL ROAD
OLD LYME,CT 06371

SEAL:



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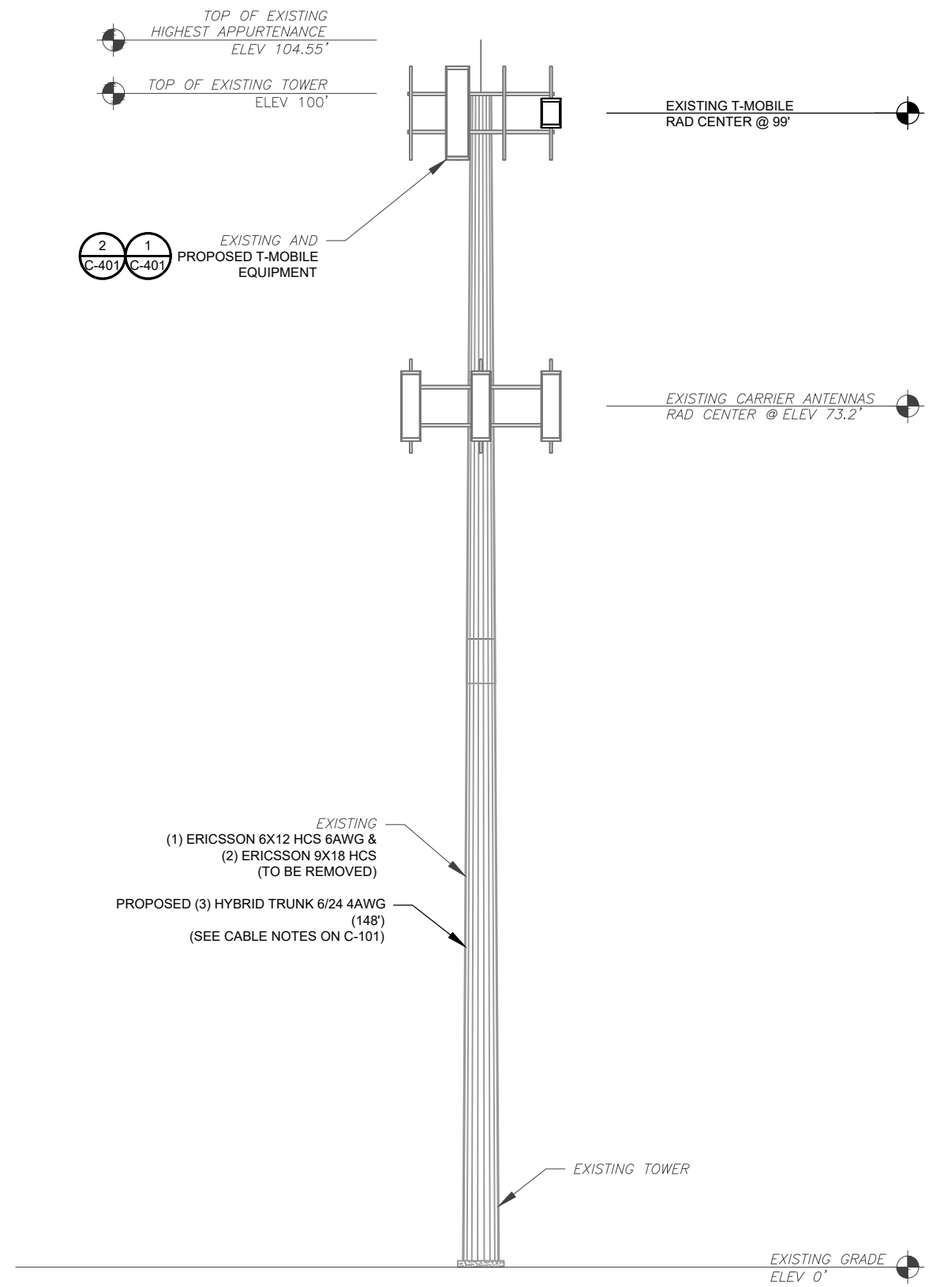
ATC PROJ. #:	14561675_G0
CUST. ID:	AMTRAK_OLDLYME2
CUST. #:	CTNL801A

DETAILED EQUIPMENT PLAN

SHEET NUMBER:	REVISION:
C-102	0

PER MOUNT ANALYSIS COMPLETED BY AMERICAN TOWER, DATED 12/15/2023, 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.)

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

TOWER NOTE:

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM WITH THE PROJECT MANAGER THAT THEY HAVE THE MOST RECENT VERSION OF THE STRUCTURAL ANALYSIS BEFORE COMMENCING WORK. EXISTING AND PROPOSED TOWER APPURTENANCES, MOUNTS, AND ANTENNAS ARE SHOWN BASED ON THE STRUCTURAL ANALYSIS.
2. WHERE APPLICABLE, ALL NEW ANTENNAS, EQUIPMENT, MOUNTS, CABLING, ETC. SHALL BE PAINTED/SOCKED TO MATCH EXISTING EQUIPMENT IN ACCORDANCE WITH FAA, JURISDICTION, AND/OR OTHER LOCAL REQUIREMENTS.
3. ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. IF ADEQUATE SPACE EXISTS, ROUTE CABLES THROUGH ENTRY PORT HOLE, UP INSIDE OF MONOPOLE, AND THROUGH EXIT PORT HOLE. IF ROUTING OUTSIDE THE MONOPOLE, ATTACH CABLES USING STAND-OFF ADAPTERS MOUNTED TO TOWER USING STAINLESS STEEL BANDING. ADEQUATELY SECURE CABLES USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER.
4. TOWER ELEVATION DEPICTION MAY NOT REFLECT ALL EQUIPMENT INCLUDED IN STRUCTURAL ANALYSIS. REFER TO STRUCTURAL ANALYSIS FOR FULL TOWER LOADING.

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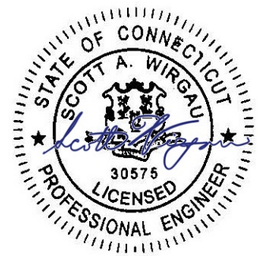
SITE ADDRESS:
61-1 BUTTONBALL ROAD
OLD LYME,CT 06371

SEAL:



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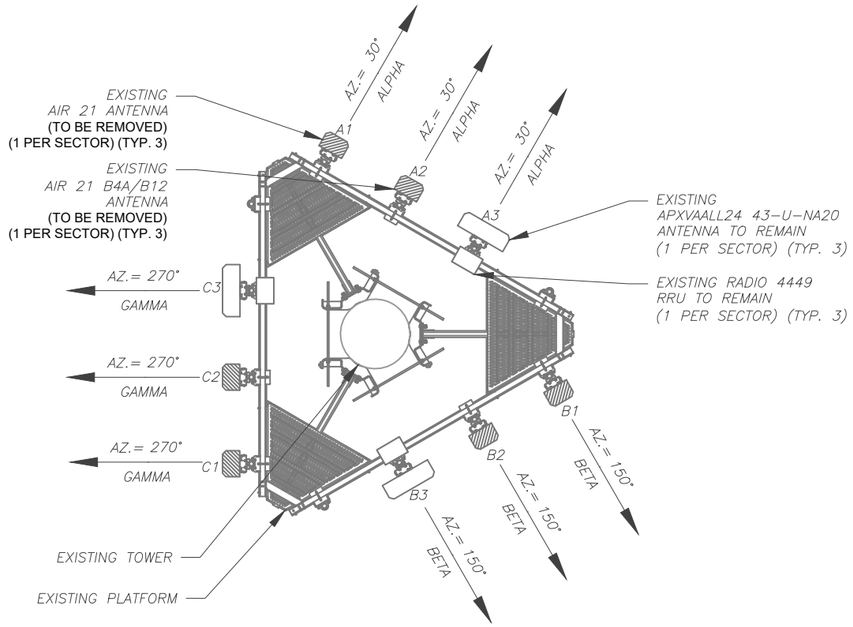
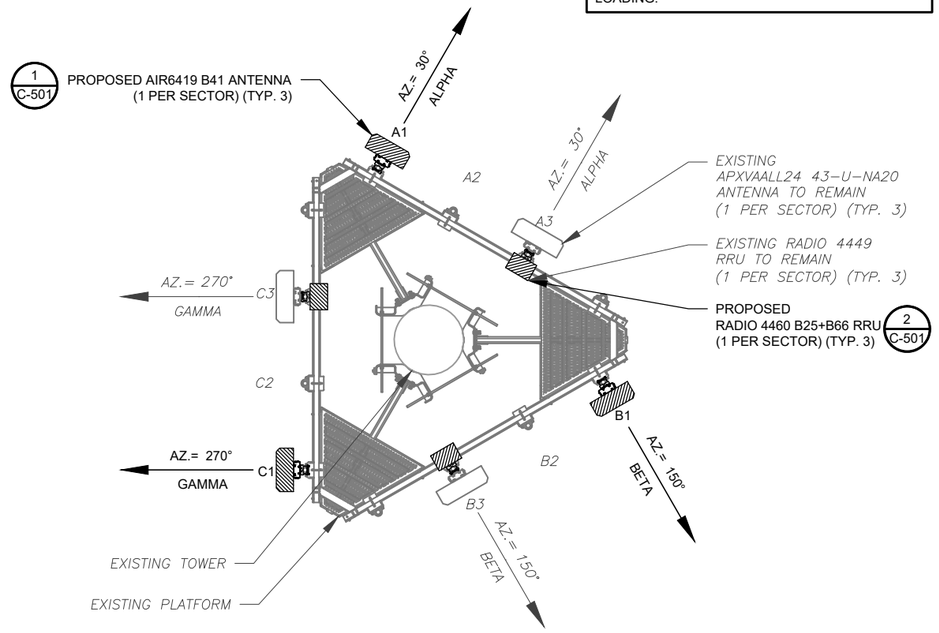
CUST. ID:	AMTRAK_OLDLYME2
CUST. #:	CTNL801A

TOWER ELEVATION

SHEET NUMBER:	REVISION:
C-201	0



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



PER MOUNT ANALYSIS COMPLETED BY AMERICAN TOWER, DATED 12/15/2023, THE EXISTING MOUNT CAN ADEQUATELY SUPPORT THE PROPOSED LOADING.

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

3 EQUIPMENT SCHEDULES

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	99'	30°	A1	AIR 21	G1990/U1900	0°/2°	RMV	–	–
			A2	AIR 21 B4A/B12	L2100	0°/2°	RMV	–	–
			A3	APXVAALL24 43-U-NA20	L700/L600/N600	0°/2°	RMN	RADIO 4449	RMN
BETA		150°	B1	AIR 21	G1990/U1900	0°/2°	RMV	–	–
			B2	AIR 21 B4A/B12	L2100	0°/2°	RMV	–	–
			B3	APXVAALL24 43-U-NA20	L700/L600/N600	0°/2°	RMN	RADIO 4449	RMN
GAMMA		270°	C1	AIR 21	G1990/U1900	0°/2°	RMV	–	–
			C2	AIR 21 B4A/B12	L2100	0°/2°	RMV	–	–
			C3	APXVAALL24 43-U-NA20	L700/L600/N600	0°/2°	RMN	RADIO 4449	RMN

NOTES

1. CONFIRM WITH T-MOBILE REP FOR APPLICABLE UPDATES/REVISIONS AND MOST RECENT RFDS FOR NSN CONFIGURATION (CONFIG). GC TO CAP ALL UNUSED PORTS.
2. 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	99'	30°	A1	AIR 6419 B41	N2500	0°	ADD	-	-
			A2	-	-	-	-	-	-
			A3	APXVAALL24 43-U-NA20	N600/L600/L700/N1900 /L1900/L2100/G1900	0°	RMN	RADIO 4449 RADIO 4460	RMN ADD
BETA		150°	B1	AIR 6419 B41	N2500	0°	ADD	-	-
			B2	-	-	-	-	-	-
			B3	APXVAALL24 43-U-NA20	N600/L600/L700/N1900 /L1900/L2100/G1900	0°	RMN	RADIO 4449 RADIO 4460	RMN ADD
GAMMA		270°	C1	AIR 6419 B41	N2500	0°	ADD	-	-
			C2	-	-	-	-	-	-
			C3	APXVAALL24 43-U-NA20	N600/L600/L700/N1900 /L1900/L2100/G1900	0°	RMN	RADIO 4449 RADIO 4460	RMN ADD

EXISTING FIBER DISTRIBUTION / OVP BOX		EXISTING CABLING SUMMARY	
MODEL NUMBER	STATUS	CABLE QTY, SIZE, TYPE	STATUS
–	RMN	----	RMN
–	RMV	(1) ERICSSON 6X12 HCS 6AWG & (2) ERICSSON 9X18 HCS	RMV

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

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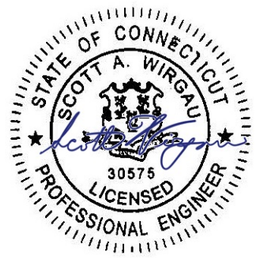

Digitally Signed: 2024-01-09

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ATC PROJ. #:	14561675_G0
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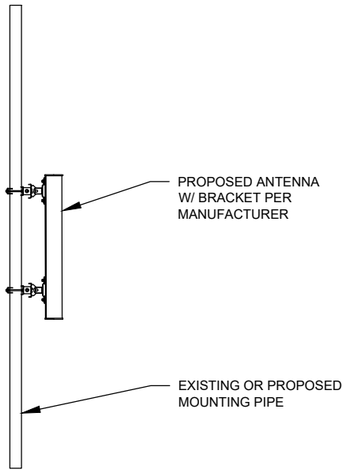
CUST. #:	CTNL801A

ANTENNA INFORMATION & SCHEDULE

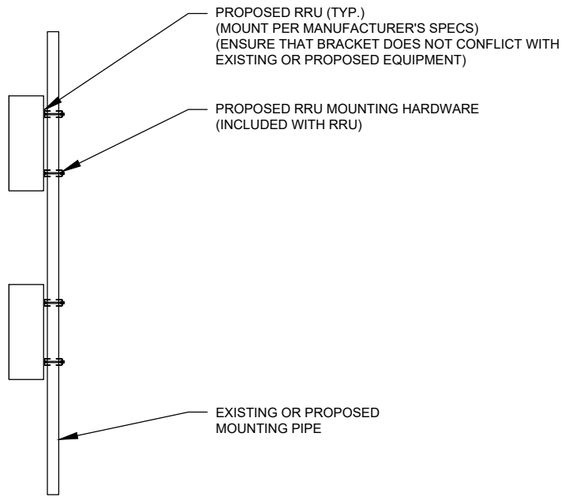
SHEET NUMBER:	REVISION:
C-401	0

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 5G ANTENNA MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.



2 PROPOSED RRU MOUNTING DETAIL - TYPICAL

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

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	JBW	1/9/2024

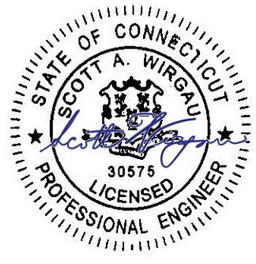
ATC SITE NUMBER:
284983

ATC SITE NAME:
OLD LYME CT

T-MOBILE SITE NAME:
AMTRAK_OLDLYME2

SITE ADDRESS:
61-1 BUTTONBALL ROAD
OLD LYME,CT 06371

SEAL:



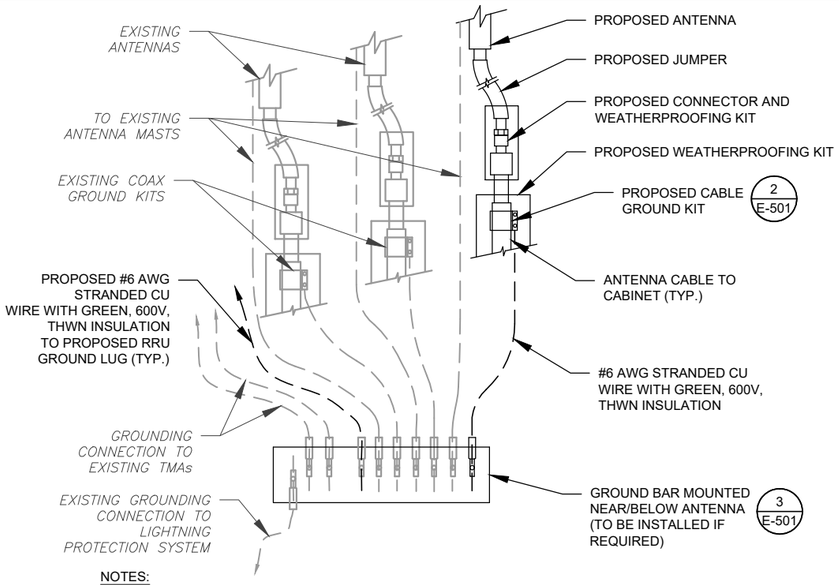
Digitally Signed: 2024-01-09

T-Mobile

ATC PROJ. #:	14561675_G0
CUST. ID:	AMTRAK_OLDLYME2
CUST. #:	CTNL801A

CONSTRUCTION DETAILS

SHEET NUMBER:	REVISION:
C-501	0

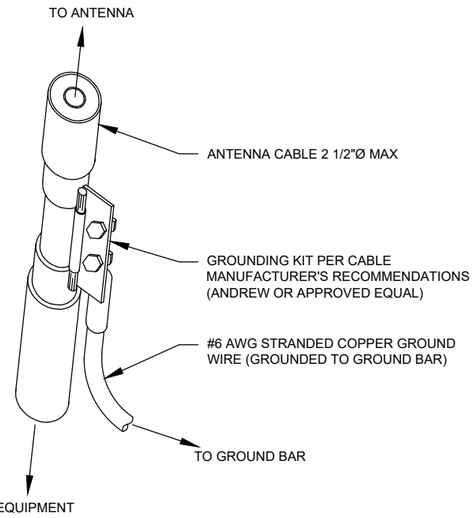


NOTES:

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.

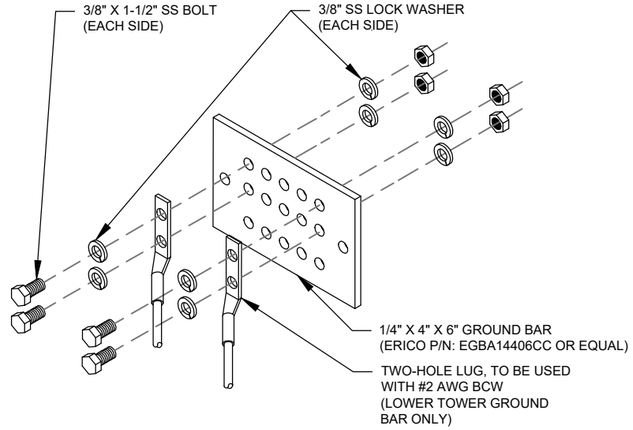


GROUND KIT NOTES:

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.

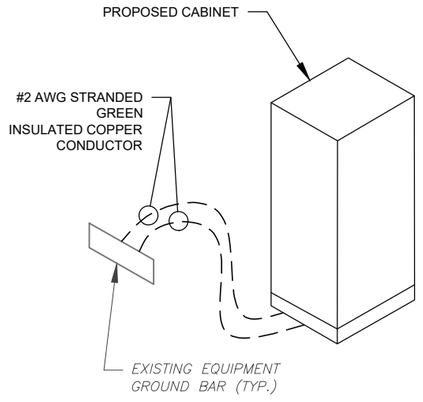
3 TOWER GROUND BAR DETAIL

SCALE: N.T.S.

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

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

4 CONDUIT USE TABLES



5 CABINET GROUNDING 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"
	200A/2P	3-#3/0 AWG	#6 AWG	2"
240V OR 208V	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"

6 ELECTRICAL NOTES

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

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	JBW	1/9/2024

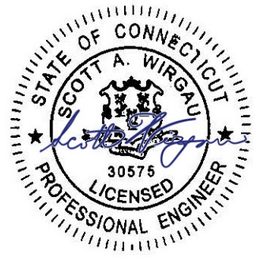
ATC SITE NUMBER:
284983

ATC SITE NAME:
OLD LYME CT

T-MOBILE SITE NAME:
AMTRAK_OLDLYME2

SITE ADDRESS:
61-1 BUTTONBALL ROAD
OLD LYME,CT 06371

SEAL:



Digitally Signed: 2024-01-09

T-Mobile

ATC PROJ. #:	14561675_G0
CUST. ID:	AMTRAK_OLDLYME2
CUST. #:	CTNL801A

GROUNDING DETAILS

SHEET NUMBER:	REVISION:
E-501	0

Proposed RAN Equipment

Template: 67D5D998E 6160

Enclosure	1	2
Enclosure Type	Enclosure 6160_v2 AC	B160
Baseband	BB 6630: N1900, L1900, L2100 / BB 6648: N600, L600, L700 / RP 6651: N2500	
Transport System	CSR IXRe V2 (Gen2)	
Hybrid Cable System	Hybrid Trunk 6/24 4AWG 50m **(x 3)**	

RAN Scope of Work:

RF NOTES:
11/28/2023 - As per our Scoping discussion, we need to reduce the number of antennas to 6, which has been approved by TMO RF (Justin) as the current structural passing is at 100%.

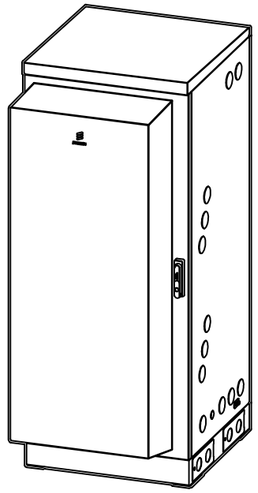
1 CABINET CONFIGURATION

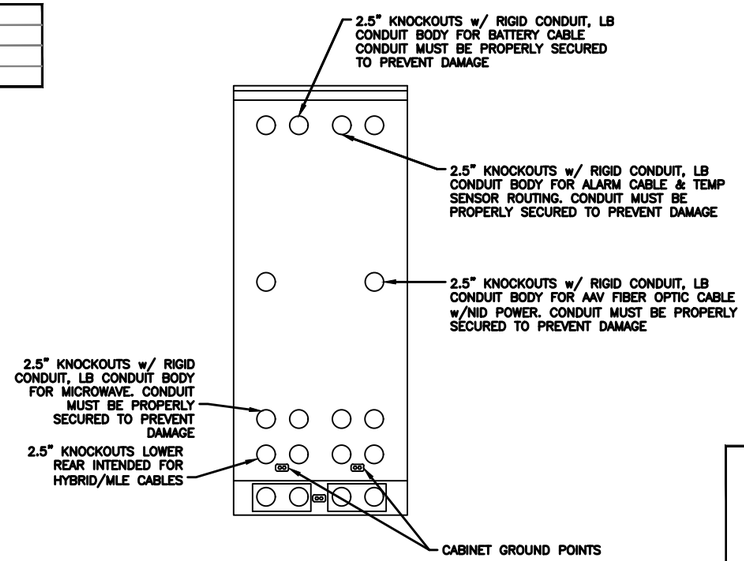
NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-601	0

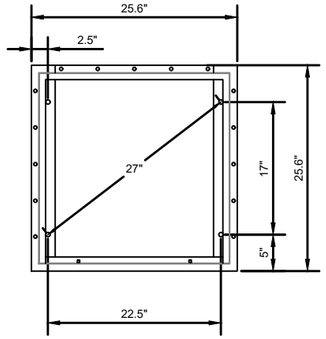
MANUFACTURER:	ERICSSON
MODEL:	6160 SITE SUPPORT CABINET
DIMENSIONS:	63" x 25.6" x 33.6" (H x W x D)
WEIGHT:	373 LBS





REAR VIEW

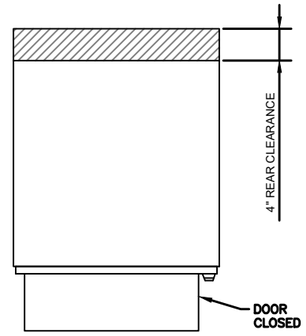
NOTE:
- CORRECT KNOCKOUT TOOL REQUIRED FOR PUNCHING KNOCKOUTS. DO NOT DRILL THROUGH KNOCKOUTS
- CONDUIT MUST BE PROPERLY SECURED TO PREVENT DAMAGE TO CABINETS AND OR CABLING

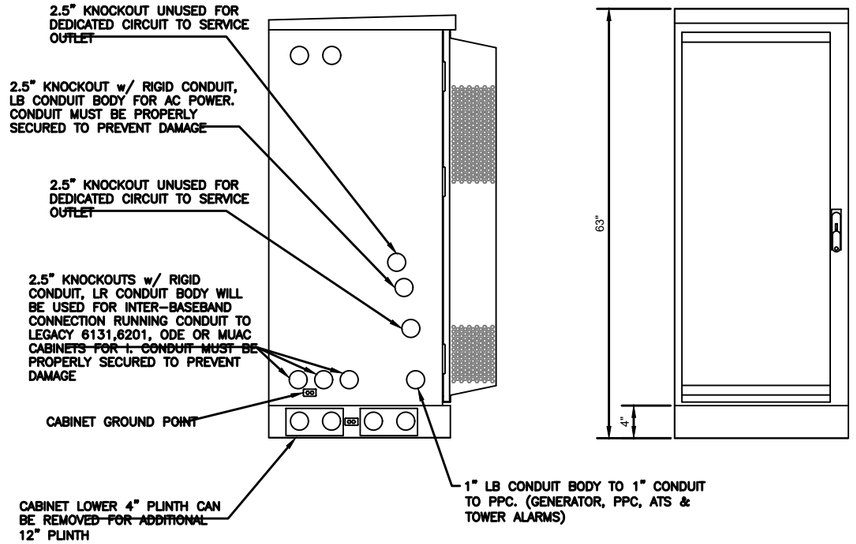


BOLT DOWN PATTERN

GROUNDING NOTE:

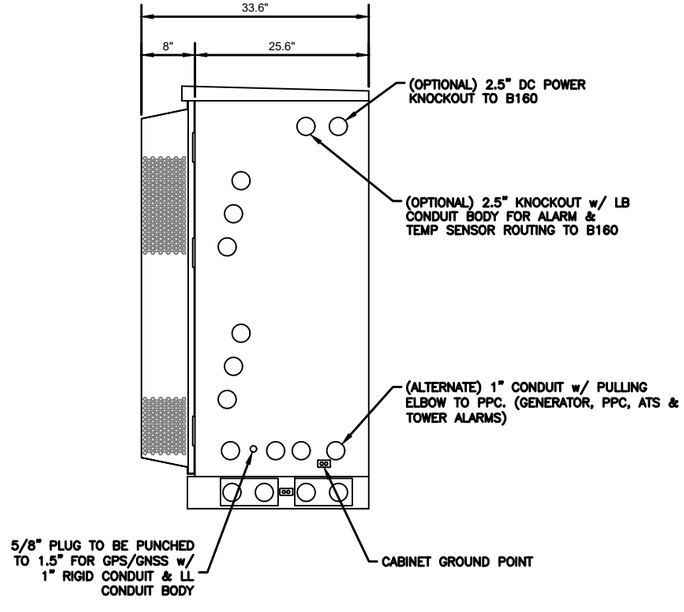
"CABINET GROUNDING TO USE A SINGLE, #2 BTCW CONDUCTOR, W/ 2-HOLE, 1" C-C, LONG BARREL, WINDOW LUG, IN 3/4" LFNC TO GROUND RING. PLINTH GROUNDING IS NOT REQUIRED."



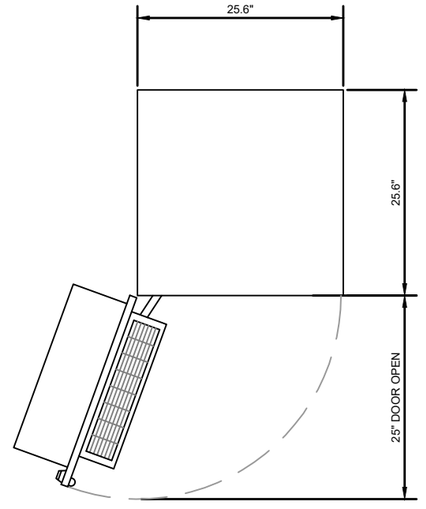


LEFT VIEW

FRONT VIEW



RIGHT VIEW



PLAN VIEW

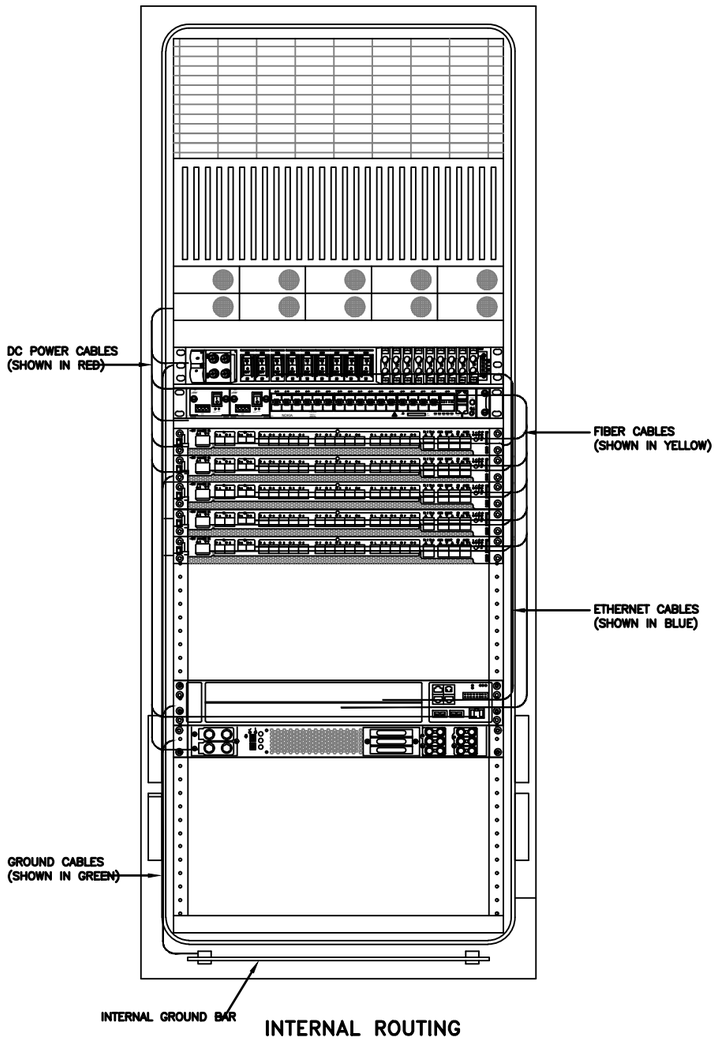
1 ERICSSON 6160 SITE SUPPORT CABINET SPECIFICATIONS

SCALE: N.T.S.

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

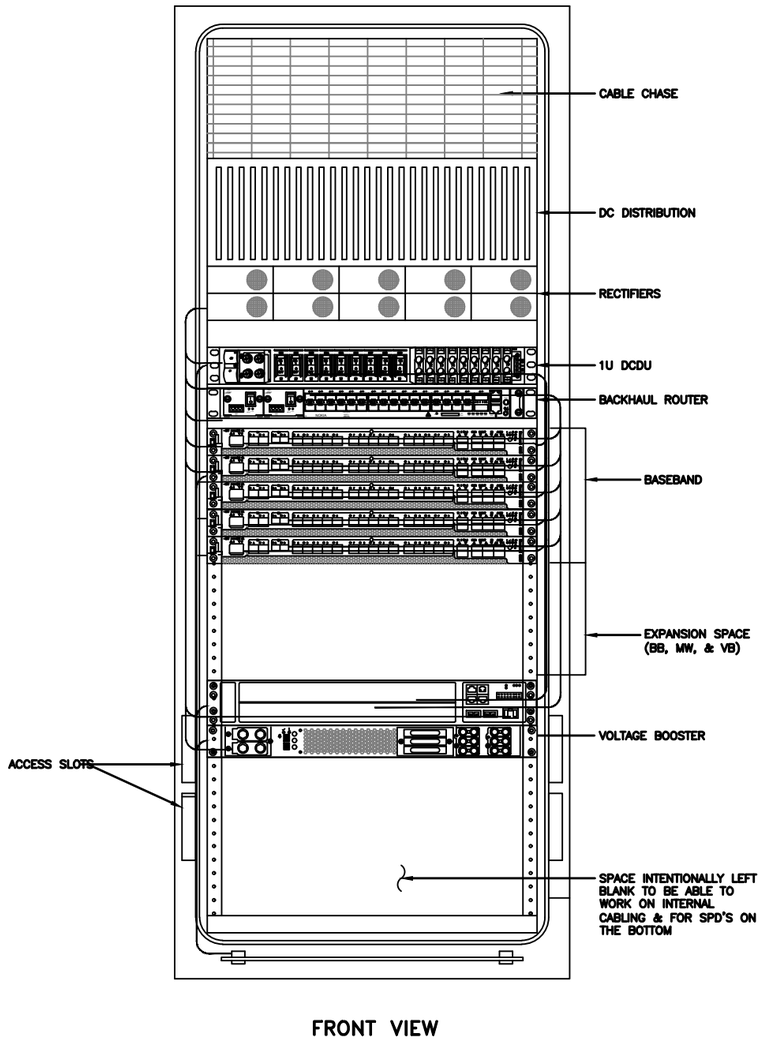
SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-602	0



INTERNAL ROUTING
(DOOR OPEN)

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



FRONT VIEW
(DOOR OPEN)

1 ERICSSON 6160 CABINET DETAILS

SCALE: N.T.S.

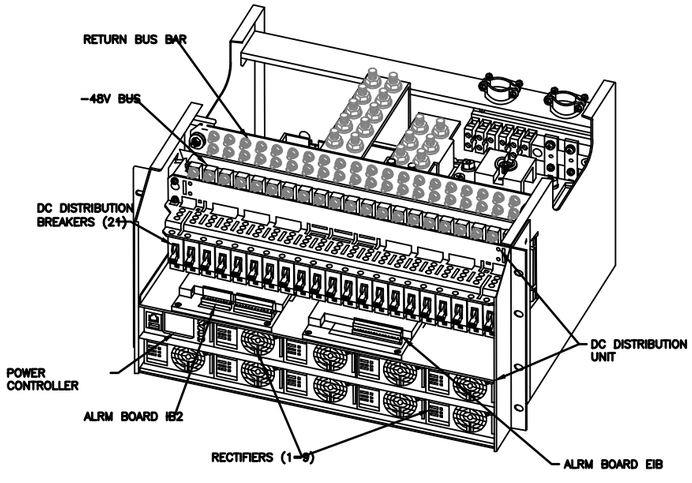
NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

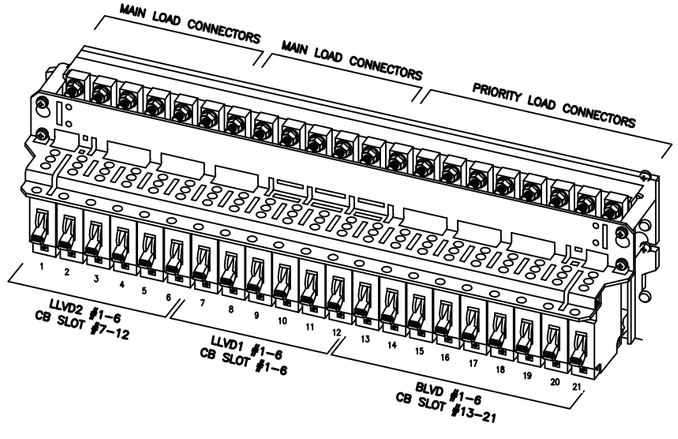
SHEET NUMBER:	REVISION:
R-603	0

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

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



POWER SUBRACK



DC DISTRIBUTION

1 ERICSSON 6160 ELECTRICAL DETAILS

SCALE: N.T.S.

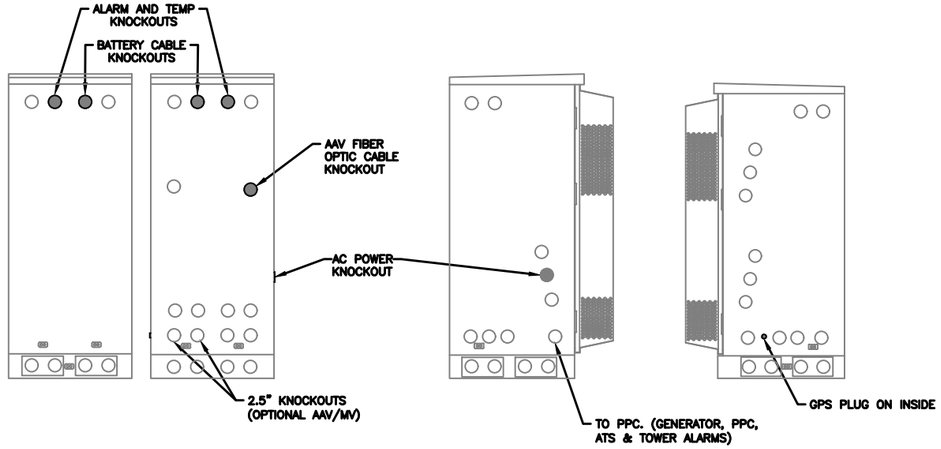
NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

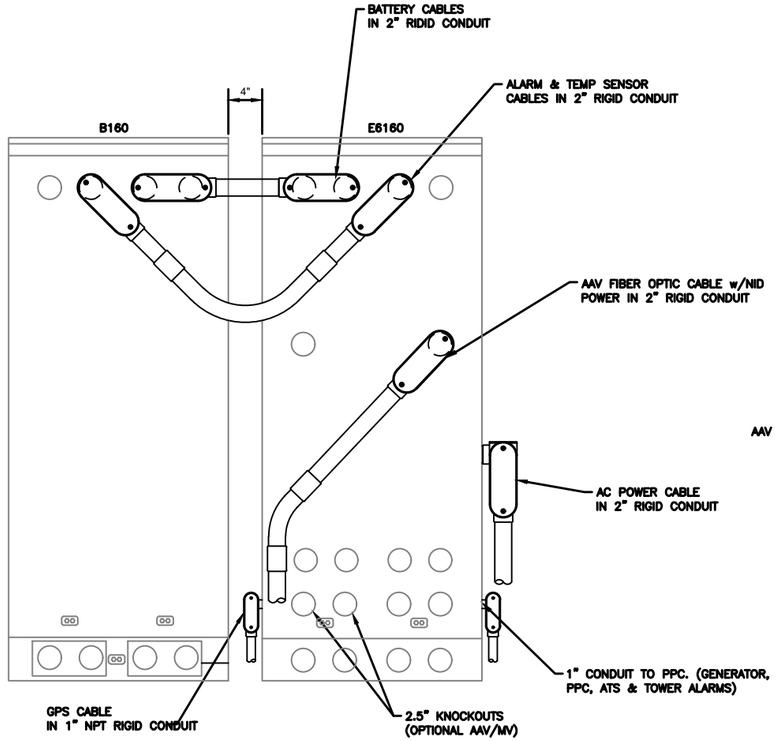
SHEET NUMBER:	REVISION:
R-604	0

NOTE:

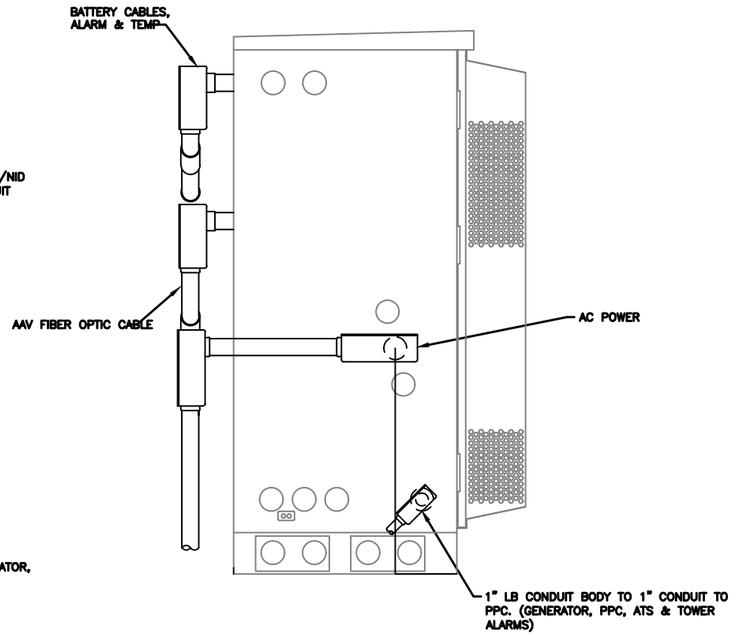
1. ALL CONDUIT AND FITTING ENTRANCES INTO CABINETS AND ENCLOSURES MUST UTILIZE MYERS OR EQUIVALENT HUBS OR SEALING WASHERS TO PREVENT WATER ENTRY/SEEPAGE INTO CABINETS AND ENCLOSURES.
2. (LIQUIDFLEX) FLEXIBLE METALLIC CONDUIT (LFMC) & ASSOCIATED FITTINGS CAN BE USED AS NEEDED BUT ONLY FOR TIGHT CONDUIT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



CONDUIT LOCATIONS



REAR VIEW



SIDE VIEW

1 ERICSSON 6160/B160 CONDUIT ROUTING DETAILS

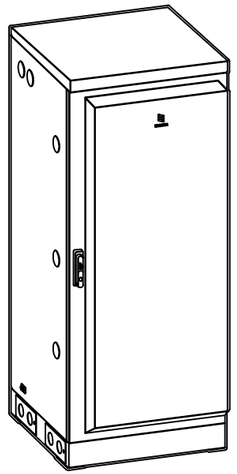
SCALE: N.T.S.

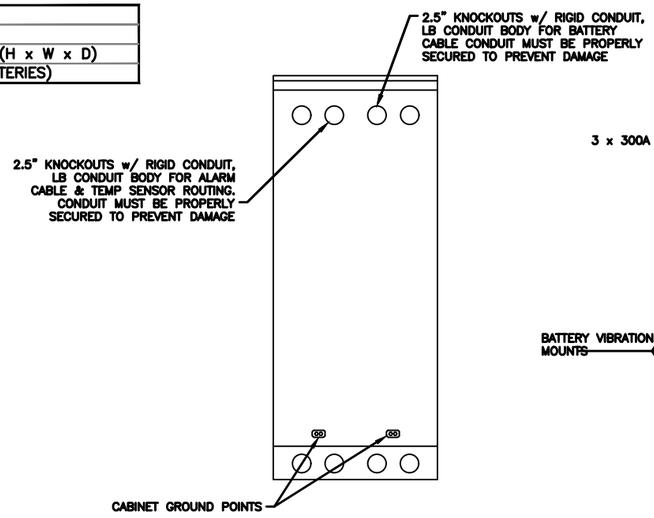
NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

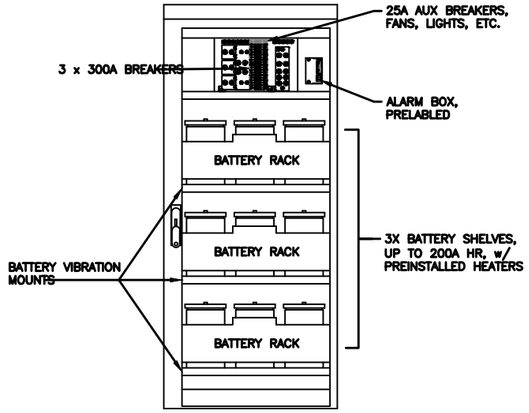
SHEET NUMBER:	REVISION:
R-605	0

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



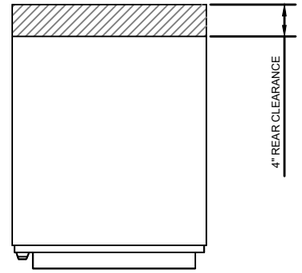


REAR VIEW



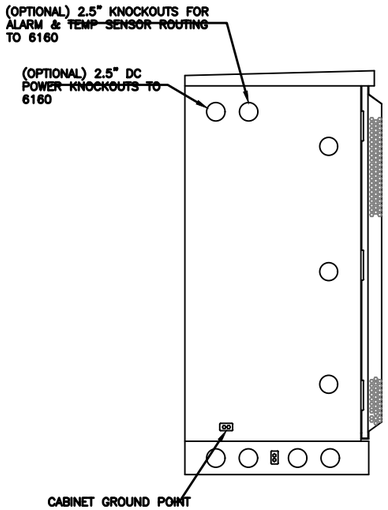
FRONT VIEW
(DOOR OPEN)

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

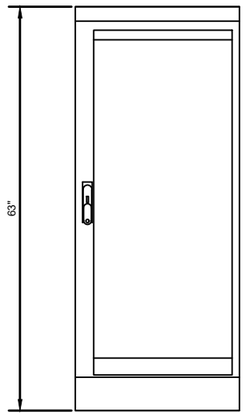


GROUNDING NOTE:

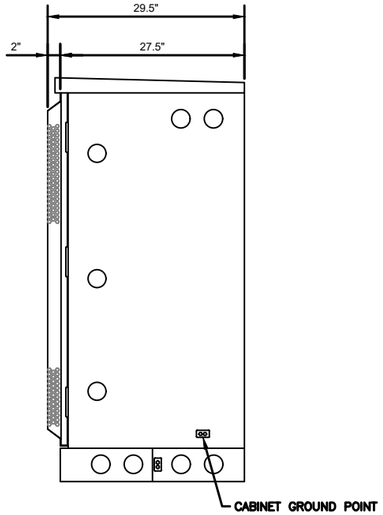
"CABINET GROUNDING TO USE A SINGLE, #2 BTCW CONDUCTOR, W/ 2-HOLE, 1" C-C, LONG BARREL, WINDOW LUG, IN 3/4" LFNC TO GROUND RING. PLINTH GROUNDING IS NOT REQUIRED."



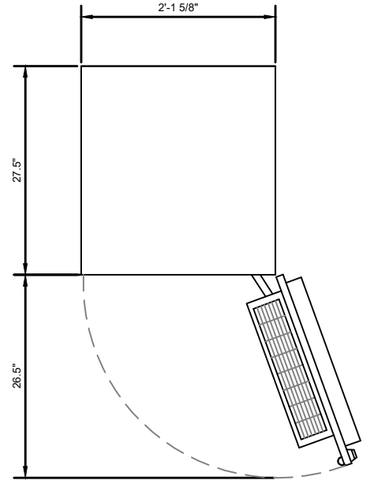
LEFT VIEW



FRONT VIEW



RIGHT VIEW



PLAN VIEW

B160 ERICSSON SITE SUPPORT BATTERY CABINET

1 ERICSSON B160 BATTERY CABINET SPECIFICATIONS

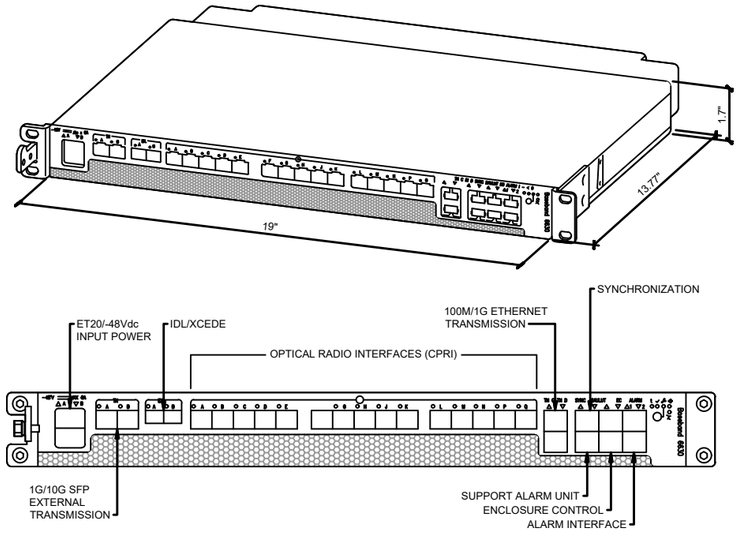
SCALE: N.T.S.

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

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-606	0

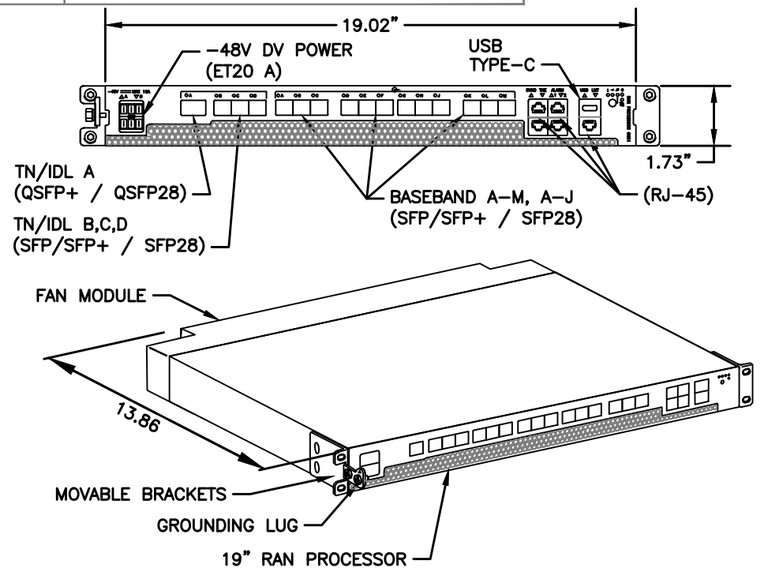
MANUFACTURER:	ERICSSON
MODEL:	BASEBAND 6630
WEIGHT:	14.3LBS
DIMENSIONS:	19" x 1.7" x 13.77"



1 33659 - BASEBAND 6630

SCALE: N.T.S.

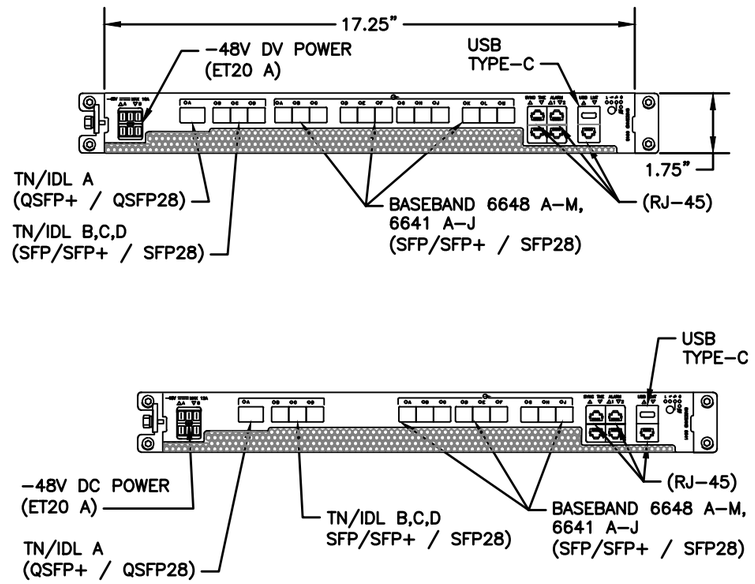
MANUFACTURER:	ERICSSON
MODEL:	6651 RAN PROCESSOR (KDU1370093/11)
DIMENSIONS:	1.73" X 19.02" X 13.86" (H" X W" X D")
WEIGHT:	16.98 LBS

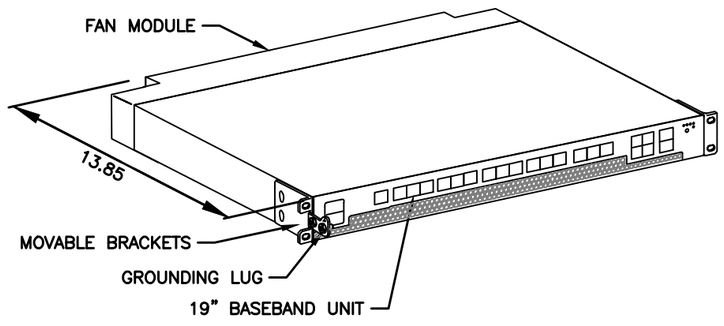


2 34553 - ERICSSON 6651 RAN PROCESSOR

SCALE: N.T.S.

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





3 34111 - ERICSSON BASEBAND 6648 (WITH FAN)

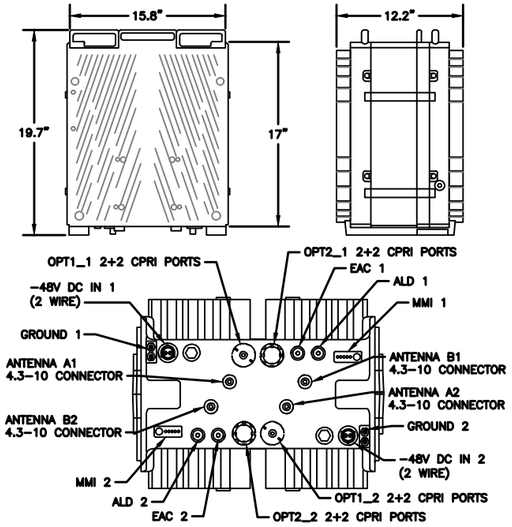
SCALE: N.T.S.

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

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-607	0

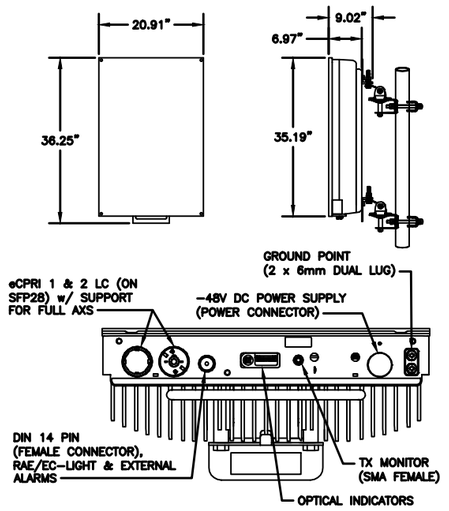
MANUFACTURER:	ERICSSON
MODEL:	4460 RADIO B2/25 B66 (KRC 161 912/3)
DIMENSIONS:	19.7" x 15.8" x 12.2" (H" x W" x D")
WEIGHT:	109 LBS
BRACKET WEIGHT:	4.8 LBS (ERS HEAVY #SXK1255993/1)

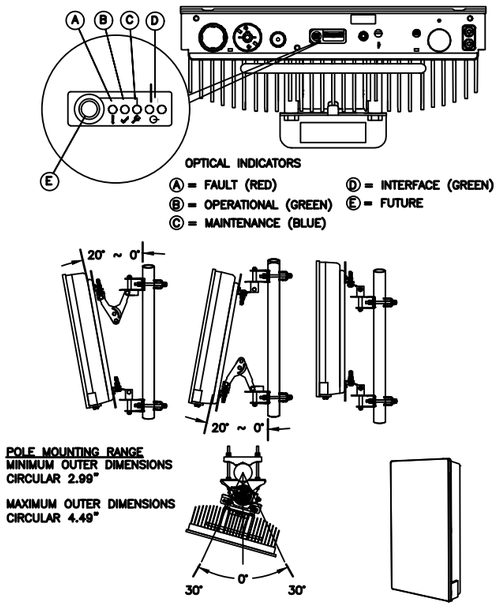


1 34373 - ERICSSON 4460 RADIO B2/25 B66

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 (SXK109 2016/1)





2 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:	REVISION:
R-608	0

Mount Analysis Report

ATC Asset Name	:	OLD LYME CT
ATC Asset Number	:	284983
Engineering Number	:	14561675_C8_01
Mount Elevation	:	99.5 ft
Proposed Carrier	:	T-Mobile
Carrier Site Name	:	Amtrak_OldLyme2
Carrier Site Number	:	CTNL801A
Site Location	:	61-1 Buttonball Road Old Lyme, CT 6371 41.296218, -72.30032
County	:	New London
Date	:	December 15, 2023
Max Usage	:	35%
Analysis Result	:	Pass

Prepared By:
Max Carter
Structural Engineer II

Max Carter

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
32593
LICENSED
PROFESSIONAL ENGINEER

Esha Modi

Digitally signed by Esha Modi
Date: 2023.12.18 19:34:52 -05'00'

COA: PEC.0001553

Introduction

The purpose of this report is to summarize results of the mount analysis performed for T-Mobile at 99.5 ft.

Supporting Documents

Specifications Sheet:	Perfect Vision PV-LPPGS-12M-HR25, dated November 1, 2019
Radio Frequency Data Sheet:	RFDS ID #CTNL801A, dated November 28, 2023
Reference Photos:	Site photos from 2023

Analysis

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

Basic Wind Speed:	126 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:	C
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.198, S1 = 0.053
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.

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

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 VERYIFY THEY HAVE THE MOST RECENT MOUNT ANALYSIS PRIOR TO CONTRUCTION.

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-609	0

CENTERLINE

EXHIBIT E

Structural Analysis Report

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	100 ft Monopole
ATC Asset Name	:	OLD LYME CT
ATC Asset Number	:	284983
Engineering Number	:	14561675_C3_03
Proposed Carrier	:	T-MOBILE
Carrier Site Name	:	Amtrak_OldLyme2
Carrier Site Number	:	CTNL801A
Site Location	:	61-1 Buttonball Road Old Lyme, CT 06371 41.2962° N, 72.3003° W
County	:	New London
Date	:	December 19, 2023
Max Usage	:	68%
Analysis Result	:	Pass

Created By:

Aviskar Ghansam
Structural Engineer I

Aviskar Ghansam

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
32593
LICENSED
PROFESSIONAL ENGINEER

COA: PEC.0001553

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 100 ft Monopole tower to reflect the change in loading by T-MOBILE.

Supporting Documents

Tower:	Mapping by ETS Project #190401, dated January 29, 2019
Foundation:	Mapping by ETS Project #190401, dated January 29, 2019
Geotechnical:	Terracon Project #J2105223, dated November 11, 2010

Analysis

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

Basic Wind Speed:	126 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:	C
Risk Category:	II
Topographic Factor Procedure:	Method 1
Topographic Category:	1
Spectral Response:	Ss = 0.20, S_1 = 0.05
Site Class:	D - Stiff Soil - Default

Conclusion

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

If you have any questions or require additional information, please 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	68.3%	1.2D + 1.0W	Pass
Serviceability Usage	27.6%	1.0D + 1.0W	Pass
Upper Flange Plate @ 75.5 ft	60.9%	Bolts	Pass
Base Plate @ 0.0 ft	57.4%	Rods	Pass
Mat & Pier	52.5%	Moment [Soil]	Pass

Maximum Reactions

Foundation	Moment (k-ft)	Axial (k)	Shear (k)
Monopole Base	972.8	17.8	13.9

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
99.0	3	Ericsson AIR 6419 B41	(3) 1.99" (50.7mm) Hybrid
	3	Ericsson Radio 4449 B71 B85A	
	3	Ericsson Radio 4460 B25+B66	
	3	RFS APXVAALL24 43-U-NA20	
97.0	1	Platform with Handrails	-

Install proposed lines inside the pole shaft.

Other Existing/Reserved Loading

Elev (ft)	Qty	Equipment	Lines	Carrier
74.0	1	Platform with Handrails	-	-
	1	Commscope RDIDC-9181-PF-48	(1) 1.60" (40.6mm) Hybrid	DISH WIRELESS L.L.C.
	3	Fujitsu TA08025-B604		
	3	Fujitsu TA08025-B605		
	3	JMA Wireless MX08FRO665-21		

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

Standard Conditions

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

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

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

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

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

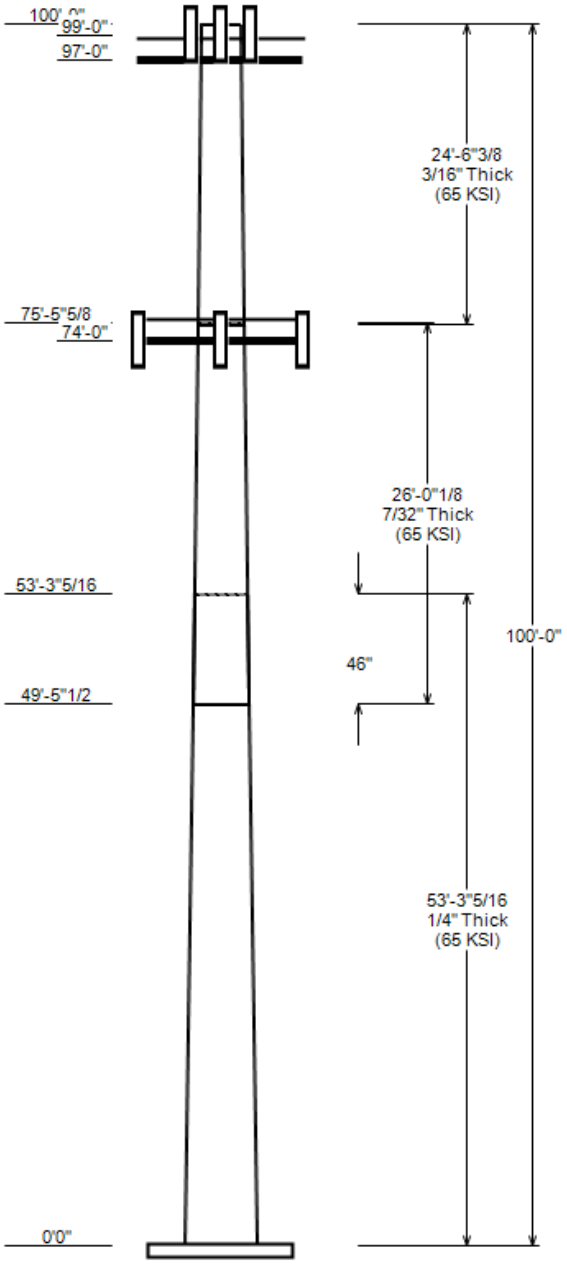
All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Services LLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

ANALYSIS PARAMETERS

Nominal Wind:	126 mph	**Ice Wind:**	50 mph w/ 1" ice	**Service Wind:**	60 mph
Risk Category:	II	**Exposure:**	C	**S_s:** 0.198	**S_1:** 0.053
Topo Category:	1	**Topo Factor:**	Method 1	**Topo Feature:**	
Structure Height:	100 ft	**Base Elevation:**	0.00 ft	**Structure Type:**	Custom
Base Diameter:	37 in	**Base Rotation:**	0°	**Taper:**	0.1770 (in/ft)

POLE SECTION PROPERTIES

Section	Length (ft)	Flat Diameter (in) Top	Flat Diameter (in) Bottom	Thick (in)	Joint Type	Joint Length (in)	Pole Shape	Yield Strength (ksi)
1	53.277	27.57	37.00	0.250		0.000	18 Sides	65
2	26.012	24.08	28.68	0.219	Slip Joint	45.830	18 Sides	65
3	24.530	21.00	24.08	0.188	Butt Joint	0.000	18 Sides	65



DISCRETE APPURTENANCE

Elev (ft)	Description
99.0	(3) Ericsson Radio 4449 B71 B85A
99.0	(3) Ericsson Radio 4460 B25+B66
99.0	(3) Ericsson AIR 6419 B41
99.0	(3) RFS APXVAALL24 43-U-NA20
97.0	(1) Generic Round Platform with Ha
74.0	(1) Commscope RDIDC-9181-PF-48
74.0	(3) Fujitsu TA08025-B604
74.0	(3) Fujitsu TA08025-B605
74.0	(3) JMA Wireless MX08FRO665-21
74.0	(1) Generic Round Platform with Ha

LINEAR APPURTENANCE

Elev To (ft)	Description
99.0	(3) 1.99" (50.7mm) Hybrid
74.0	(1) 1.60" (40.6mm) Hybrid

GLOBAL BASE REACTIONS

Load Case	Moment (kip-ft)	Axial (kip)	Shear (kip)
1.2D + 1.0W	972.81	17.75	13.91
0.9D + 1.0W	962.92	13.31	13.90
1.2D + 1.0Di + 1.0Wi	236.59	24.58	3.45
1.2D + 1.0Ev + 1.0Eh	37.93	17.75	0.45
0.9D - 1.0Ev + 1.0Eh	37.43	12.26	0.44
1.0D + 1.0W	196.15	14.82	2.82

ANALYSIS PARAMETERS

Location:	New London County,CT	**Height:**	100 ft
Type and Shape:	Custom, 18 Sides	**Base Diameter:**	37.00 in
Manufacturer:	Undetermined	**Top Diameter:**	21.00 in
K_d (non-service):	0.95	**Taper:**	0.1770 in/ft
K_e:	1.00	**Rotation:**	0.000°

ICE & WIND PARAMETERS

Risk Category:	II	**Design Wind Speed:**	126 mph
Exposure Category:	C	**Design Wind Speed w/ Ice:**	50 mph
Topo Factor Procedure:	Method 1	**Design Ice Thickness:**	1.00 in
Topographic Category:	1	**Service Wind Speed:**	60 mph
Crest Height:	0 ft	**HMSL:**	38.00 ft

SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method				
Site Class:	D - Stiff Soil		**Period Based on Rayleigh Method (sec):**		1.89
T_L (sec):	6	**P:**	1	**C_s:**	0.030
S_s:	0.198	**S_1:**	0.053	**C_s Max:**	0.030
F_a:	1.600	**F_v:**	2.400	**C_s Min:**	0.030
S_{ds}:	0.211	**S_{d1}:**	0.085		

LOAD CASES

1.2D + 1.0W	126 mph Wind with No Ice
0.9D + 1.0W	126 mph Wind with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph Wind with 1" Radial Ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	60 mph Wind with No Ice

SHAFT SECTION PROPERTIES

							Bottom						Top						
Section	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Joint Len (in)	Weight (lb)	Dia (in)	Elev (ft)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Taper (in/ft)
1-18	53.28	0.2500	65		0.00	4,608	37.00	0.003	29.16	4,975.7	24.33	148.00	27.57	53.28	21.68	2,044.2	17.68	110.28	0.1770
2-18	26.01	0.2188	65	Slip	45.83	1,608	28.68	49.458	19.77	2,023.5	21.35	131.10	24.08	75.47	16.57	1,191.9	17.64	110.05	0.1770
3-18	24.53	0.1875	65	Butt	0.00	1,110	24.08	75.470	14.22	1,025.5	20.88	128.43	21.00	100.00	12.39	677.7	17.98	111.99	0.1256
			Total Shaft Weight			**7,326**													

DISCRETE APPURTENANCE PROPERTIES

					No Ice			Ice		
Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	Weight (lb)	EPAa (sf)	Orientation Factor	Weight (lb)	EPAa (sf)	Orientation Factor
99.00	Ericsson AIR 6419 B41	3	0.75	0.000	68.50	5.600	0.60	145.85	6.614	0.60
99.00	Ericsson Radio 4460 B25+B66	3	0.75	0.000	109.00	2.564	0.67	165.59	3.239	0.67
99.00	Ericsson Radio 4449 B71 B85A	3	0.75	0.000	75.00	1.650	0.50	113.50	2.194	0.50
99.00	RFS APXVAALL24 43-U-NA20	3	0.75	0.000	122.80	20.243	0.63	372.16	22.617	0.63
97.00	Generic Round Platform with Ha	1	1.00	0.000	2500.00	27.200	1.00	3534.81	42.817	1.00
74.00	JMA Wireless MX08FRO665-21	3	0.75	0.000	64.50	12.489	0.64	224.05	14.234	0.64
74.00	Fujitsu TA08025-B604	3	0.75	0.000	63.90	1.962	0.50	100.10	2.533	0.50
74.00	Fujitsu TA08025-B605	3	0.75	0.000	75.00	1.962	0.50	113.89	2.533	0.50
74.00	Commscope RDIDC-9181-PF-48	1	0.75	0.000	21.90	1.867	1.00	57.23	2.426	1.00
74.00	Generic Round Platform with Ha	1	1.00	0.000	2500.00	27.200	1.00	3505.46	42.374	1.00
Totals	**Row Count: 10**	**24**			**6,758.00**			**10,802.92**		

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	99.00	3	1.99" (50.7mm) Hybrid	1.99	1.9	N	0	0	0	0	0	N	T-MOBILE
0.00	74.00	1	1.60" (40.6mm) Hybrid	1.6	2.34	N	0	0	0	0	0	N	DISH WIRELESS L.L.C.

SEGMENT PROPERTIES

Seg Top Elev (ft)	Description *(Max Length: 5 ft)*	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)
0.00		0.2500	37.000	29.160	4,975.70	24.33	148.00	72.8	264.9	0.0	0.0
5.00		0.2500	36.115	28.458	4,624.80	23.71	144.46	73.5	252.2	0.0	490.2
10.00		0.2500	35.230	27.756	4,290.90	23.08	140.92	74.2	239.9	0.0	478.2
15.00		0.2500	34.345	27.053	3,973.30	22.46	137.38	75	227.9	0.0	466.3
20.00		0.2500	33.460	26.351	3,671.90	21.84	133.84	75.7	216.1	0.0	454.3
25.00		0.2500	32.575	25.649	3,386.10	21.21	130.30	76.5	204.7	0.0	442.4
30.00		0.2500	31.690	24.947	3,115.50	20.59	126.76	77.2	193.6	0.0	430.4
35.00		0.2500	30.805	24.245	2,859.80	19.96	123.22	77.9	182.8	0.0	418.5
40.00		0.2500	29.920	23.542	2,618.40	19.34	119.68	78.7	172.4	0.0	406.5
45.00		0.2500	29.035	22.840	2,391.00	18.72	116.14	79.4	162.2	0.0	394.6
49.46	Bot - Section 2	0.2500	28.246	22.214	2,199.70	18.16	112.98	80	153.4	0.0	341.7
50.00		0.2500	28.150	22.138	2,177.20	18.09	112.60	80.1	152.3	0.0	77.3
53.28	Top - Section 1	0.2188	28.008	19.298	1,882.80	20.81	128.01	76.9	132.4	0.0	461.7
55.00		0.2188	27.703	19.086	1,821.50	20.56	126.61	77.2	129.5	0.0	112.5
60.00		0.2188	26.818	18.471	1,651.10	19.85	122.57	78.1	121.3	0.0	319.5
65.00		0.2188	25.933	17.857	1,491.70	19.14	118.52	78.9	113.3	0.0	309.0
70.00		0.2188	25.048	17.242	1,342.90	18.42	114.48	79.7	105.6	0.0	298.6
74.00		0.2188	24.340	16.751	1,231.30	17.85	111.24	80.4	99.6	0.0	231.3
75.00		0.2188	24.163	16.628	1,204.40	17.71	110.43	80.6	98.2	0.0	56.8
75.47	Top - Section 2	0.2188	24.079	16.570	1,191.90	17.64	110.05	80.7	97.5	0.0	26.5
75.47	Bot - Section 3	0.1875	24.080	14.219	1,025.50	20.88	128.43	76.8	83.9	0.0	
80.00		0.1875	23.511	13.880	954.00	20.35	125.39	77.5	79.9	0.0	216.6
85.00		0.1875	22.883	13.506	879.00	19.76	122.04	78.2	75.7	0.0	233.0
90.00		0.1875	22.255	13.132	808.00	19.17	118.69	78.9	71.5	0.0	226.6
95.00		0.1875	21.627	12.759	741.00	18.58	115.34	79.6	67.5	0.0	220.3

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)
97.00			0.1875	21.376	12.609	715.20	18.34	114.00	79.8	65.9	0.0	86.3
99.00			0.1875	21.125	12.460	690.10	18.10	112.66	80.1	64.3	0.0	85.3
100.00			0.1875	20.999	12.385	677.70	17.98	111.99	80.2	63.6	0.0	42.3
											Total:	**7,326.7**

CALCULATED FORCES

Load Case: 1.2D + 1.0W — 126 mph Wind with No Ice — 23 Iterations

Gust Response Factor: 1.10
Dead load Factor: 1.20
Wind Load Factor: 1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-17.75	-13.91	0.00	-972.8	0.00	972.81	1,910.06	511.76	1,698.66	1,445.82	0	0	0.683
5.00	-17.05	-13.59	0.00	-903.3	0.00	903.27	1,882.87	499.44	1,617.84	1,390.68	0.14	-0.27	0.659
10.00	-16.37	-13.27	0.00	-835.3	0.00	835.34	1,854.74	487.11	1,538.99	1,335.87	0.57	-0.54	0.635
15.00	-15.71	-12.94	0.00	-769.0	0.00	769.01	1,825.69	474.79	1,462.11	1,281.44	1.27	-0.8	0.609
20.00	-15.07	-12.61	0.00	-704.3	0.00	704.30	1,795.72	462.46	1,387.20	1,227.45	2.25	-1.07	0.583
25.00	-14.44	-12.26	0.00	-641.3	0.00	641.26	1,764.81	450.14	1,314.26	1,173.93	3.51	-1.33	0.555
30.00	-13.83	-11.90	0.00	-580.0	0.00	579.97	1,732.98	437.82	1,243.29	1,120.96	5.04	-1.58	0.526
35.00	-13.25	-11.53	0.00	-520.5	0.00	520.49	1,700.21	425.49	1,174.29	1,068.56	6.83	-1.83	0.496
40.00	-12.68	-11.16	0.00	-462.8	0.00	462.84	1,666.52	413.17	1,107.25	1,016.81	8.88	-2.08	0.464
45.00	-12.13	-10.80	0.00	-407.1	0.00	407.06	1,631.90	400.84	1,042.19	965.74	11.19	-2.31	0.430
49.46	-11.66	-10.60	0.00	-358.9	0.00	358.92	1,600.26	389.86	985.85	920.82	13.44	-2.52	0.398
50.00	-11.56	-10.46	0.00	-353.2	0.00	353.18	1,596.36	388.52	979.10	915.41	13.73	-2.54	0.394
53.28	-10.96	-10.25	0.00	-318.9	0.00	318.91	1,336.07	338.68	850.06	763.92	15.53	-2.69	0.427
55.00	-10.80	-10.00	0.00	-301.3	0.00	301.26	1,326.38	334.96	831.51	749.99	16.51	-2.76	0.411
60.00	-10.35	-9.61	0.00	-251.3	0.00	251.27	1,297.61	324.17	778.83	709.91	19.52	-2.98	0.363
65.00	-9.93	-9.23	0.00	-203.2	0.00	203.21	1,267.92	313.39	727.87	670.40	22.74	-3.17	0.312
70.00	-9.52	-8.89	0.00	-157.0	0.00	157.05	1,237.30	302.60	678.63	631.50	26.16	-3.34	0.257
74.00	-5.61	-5.89	0.00	-121.5	0.00	121.51	1,212.13	293.97	640.49	600.86	29.01	-3.46	0.207
75.00	-5.53	-5.84	0.00	-115.6	0.00	115.62	1,205.75	291.82	631.12	593.27	29.74	-3.49	0.200
75.47	-5.50	-5.65	0.00	-112.9	0.00	112.87	1,202.73	290.80	626.75	589.71	30.08	-3.5	0.196
75.47	-5.50	-5.65	0.00	-112.9	0.00	112.87	983.29	249.53	538.50	483.40	30.08	-3.5	0.240
80.00	-5.23	-5.29	0.00	-87.3	0.00	87.26	967.74	243.59	513.17	464.33	33.46	-3.61	0.194
85.00	-4.93	-4.91	0.00	-60.8	0.00	60.80	950.13	237.03	485.91	443.51	37.3	-3.72	0.143
90.00	-4.64	-4.54	0.00	-36.2	0.00	36.23	932.05	230.47	459.39	422.93	41.24	-3.8	0.091
95.00	-4.36	-4.27	0.00	-13.5	0.00	13.53	913.50	223.92	433.62	402.62	45.24	-3.84	0.039
97.00	-1.35	-2.48	0.00	-5.0	0.00	4.98	905.95	221.29	423.52	394.57	46.85	-3.85	0.014
99.00	-0.05	-0.03	0.00	-0.0	0.00	0.03	898.32	218.67	413.54	386.57	48.47	-3.85	0.000
100.00	0.00	-0.03	0.00	0.0	0.00	0.00	894.48	217.36	408.59	382.59	49.27	-3.85	0.000

CALCULATED FORCES

Load Case: 0.9D + 1.0W — 126 mph Wind with No Ice (Reduced DL) — 23 Iterations

Gust Response Factor: 1.10
Dead load Factor: 0.90
Wind Load Factor: 1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-13.31	-13.90	0.00	-962.9	0.00	962.92	1,910.06	511.76	1,698.66	1,445.82	0	0	0.674
5.00	-12.77	-13.55	0.00	-893.4	0.00	893.42	1,882.87	499.44	1,617.84	1,390.68	0.14	-0.27	0.650
10.00	-12.24	-13.22	0.00	-825.6	0.00	825.65	1,854.74	487.11	1,538.99	1,335.87	0.56	-0.53	0.625
15.00	-11.73	-12.88	0.00	-759.6	0.00	759.57	1,825.69	474.79	1,462.11	1,281.44	1.26	-0.79	0.600
20.00	-11.24	-12.52	0.00	-695.2	0.00	695.20	1,795.72	462.46	1,387.20	1,227.45	2.23	-1.05	0.573
25.00	-10.76	-12.16	0.00	-632.6	0.00	632.58	1,764.81	450.14	1,314.26	1,173.93	3.47	-1.31	0.546
30.00	-10.29	-11.79	0.00	-571.8	0.00	571.77	1,732.98	437.82	1,243.29	1,120.96	4.98	-1.56	0.517
35.00	-9.84	-11.41	0.00	-512.8	0.00	512.83	1,700.21	425.49	1,174.29	1,068.56	6.75	-1.81	0.486
40.00	-9.41	-11.03	0.00	-455.8	0.00	455.79	1,666.52	413.17	1,107.25	1,016.81	8.78	-2.05	0.455
45.00	-8.99	-10.66	0.00	-400.7	0.00	400.66	1,631.90	400.84	1,042.19	965.74	11.05	-2.28	0.421
49.46	-8.64	-10.46	0.00	-353.1	0.00	353.14	1,600.26	389.86	985.85	920.82	13.28	-2.48	0.390
50.00	-8.56	-10.31	0.00	-347.5	0.00	347.47	1,596.36	388.52	979.10	915.41	13.56	-2.51	0.386
53.28	-8.11	-10.11	0.00	-313.7	0.00	313.67	1,336.07	338.68	850.06	763.92	15.33	-2.65	0.418
55.00	-7.99	-9.85	0.00	-296.3	0.00	296.26	1,326.38	334.96	831.51	749.99	16.3	-2.72	0.402
60.00	-7.65	-9.46	0.00	-247.0	0.00	247.01	1,297.61	324.17	778.83	709.91	19.27	-2.94	0.355
65.00	-7.33	-9.08	0.00	-199.7	0.00	199.70	1,267.92	313.39	727.87	670.40	22.45	-3.13	0.304
70.00	-7.02	-8.73	0.00	-154.3	0.00	154.31	1,237.30	302.60	678.63	631.50	25.82	-3.3	0.251
74.00	-4.13	-5.80	0.00	-119.4	0.00	119.39	1,212.13	293.97	640.49	600.86	28.63	-3.41	0.202
75.00	-4.07	-5.74	0.00	-113.6	0.00	113.59	1,205.75	291.82	631.12	593.27	29.35	-3.44	0.195
75.47	-4.05	-5.56	0.00	-110.9	0.00	110.89	1,202.73	290.80	626.75	589.71	29.69	-3.45	0.192
75.47	-4.05	-5.56	0.00	-110.9	0.00	110.89	983.29	249.53	538.50	483.40	29.69	-3.45	0.234
80.00	-3.84	-5.20	0.00	-85.7	0.00	85.71	967.74	243.59	513.17	464.33	33.01	-3.56	0.189
85.00	-3.63	-4.83	0.00	-59.7	0.00	59.71	950.13	237.03	485.91	443.51	36.8	-3.67	0.139
90.00	-3.41	-4.45	0.00	-35.6	0.00	35.58	932.05	230.47	459.39	422.93	40.68	-3.74	0.088
95.00	-3.21	-4.19	0.00	-13.3	0.00	13.31	913.50	223.92	433.62	402.62	44.63	-3.79	0.037
97.00	-0.98	-2.45	0.00	-4.9	0.00	4.93	905.95	221.29	423.52	394.57	46.22	-3.79	0.014
99.00	-0.04	-0.03	0.00	-0.0	0.00	0.03	898.32	218.67	413.54	386.57	47.8	-3.8	0.000
100.00	0.00	-0.03	0.00	0.0	0.00	0.00	894.48	217.36	408.59	382.59	48.6	-3.8	0.000

CALCULATED FORCES

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

Gust Response Factor: 1.10
Dead load Factor: 1.20
Wind Load Factor: 1.00

Ice Dead 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	-24.58	-3.45	0.00	-236.6	0.00	236.59	1,910.06	511.76	1,698.66	1,445.82	0	0	0.177
5.00	-23.76	-3.37	0.00	-219.3	0.00	219.33	1,882.87	499.44	1,617.84	1,390.68	0.04	-0.07	0.170
10.00	-22.94	-3.29	0.00	-202.5	0.00	202.49	1,854.74	487.11	1,538.99	1,335.87	0.14	-0.13	0.164
15.00	-22.13	-3.20	0.00	-186.0	0.00	186.05	1,825.69	474.79	1,462.11	1,281.44	0.31	-0.19	0.157
20.00	-21.33	-3.12	0.00	-170.0	0.00	170.03	1,795.72	462.46	1,387.20	1,227.45	0.55	-0.26	0.150
25.00	-20.54	-3.02	0.00	-154.4	0.00	154.45	1,764.81	450.14	1,314.26	1,173.93	0.85	-0.32	0.143
30.00	-19.78	-2.93	0.00	-139.3	0.00	139.33	1,732.98	437.82	1,243.29	1,120.96	1.22	-0.38	0.136
35.00	-19.02	-2.83	0.00	-124.7	0.00	124.68	1,700.21	425.49	1,174.29	1,068.56	1.65	-0.44	0.128
40.00	-18.29	-2.73	0.00	-110.5	0.00	110.53	1,666.52	413.17	1,107.25	1,016.81	2.15	-0.5	0.120
45.00	-17.57	-2.63	0.00	-96.9	0.00	96.88	1,631.90	400.84	1,042.19	965.74	2.71	-0.56	0.111
49.46	-16.95	-2.58	0.00	-85.1	0.00	85.14	1,600.26	389.86	985.85	920.82	3.25	-0.61	0.103
50.00	-16.83	-2.54	0.00	-83.8	0.00	83.75	1,596.36	388.52	979.10	915.41	3.32	-0.61	0.102
53.28	-16.12	-2.48	0.00	-75.4	0.00	75.43	1,336.07	338.68	850.06	763.92	3.75	-0.65	0.111
55.00	-15.90	-2.41	0.00	-71.2	0.00	71.15	1,326.38	334.96	831.51	749.99	3.99	-0.66	0.107
60.00	-15.29	-2.31	0.00	-59.1	0.00	59.08	1,297.61	324.17	778.83	709.91	4.71	-0.71	0.095
65.00	-14.69	-2.20	0.00	-47.5	0.00	47.54	1,267.92	313.39	727.87	670.40	5.48	-0.76	0.083
70.00	-14.11	-2.10	0.00	-36.5	0.00	36.53	1,237.30	302.60	678.63	631.50	6.3	-0.8	0.069
74.00	-8.56	-1.42	0.00	-28.1	0.00	28.11	1,212.13	293.97	640.49	600.86	6.99	-0.83	0.054
75.00	-8.45	-1.40	0.00	-26.7	0.00	26.70	1,205.75	291.82	631.12	593.27	7.16	-0.83	0.052
75.47	-8.40	-1.35	0.00	-26.0	0.00	26.04	1,202.73	290.80	626.75	589.71	7.24	-0.84	0.051
75.47	-8.40	-1.35	0.00	-26.0	0.00	26.04	983.29	249.53	538.50	483.40	7.24	-0.84	0.062
80.00	-7.96	-1.24	0.00	-19.9	0.00	19.93	967.74	243.59	513.17	464.33	8.05	-0.86	0.051
85.00	-7.48	-1.14	0.00	-13.7	0.00	13.71	950.13	237.03	485.91	443.51	8.97	-0.89	0.039
90.00	-7.02	-1.03	0.00	-8.0	0.00	8.03	932.05	230.47	459.39	422.93	9.91	-0.9	0.027
95.00	-6.56	-0.95	0.00	-2.9	0.00	2.89	913.50	223.92	433.62	402.62	10.86	-0.91	0.014
97.00	-2.59	-0.49	0.00	-1.0	0.00	0.99	905.95	221.29	423.52	394.57	11.24	-0.92	0.005
99.00	-0.08	-0.01	0.00	-0.0	0.00	0.01	898.32	218.67	413.54	386.57	11.63	-0.92	0.000
100.00	0.00	-0.01	0.00	0.0	0.00	0.00	894.48	217.36	408.59	382.59	11.82	-0.92	0.000

CALCULATED FORCES

Load Case: 1.0D + 1.0W — 60 mph Wind with No Ice — 22 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	-14.82	-2.82	0.00	-196.2	0.00	196.15	1,910.06	511.76	1,698.66	1,445.82	0	0	0.143
5.00	-14.29	-2.75	0.00	-182.0	0.00	182.05	1,882.87	499.44	1,617.84	1,390.68	0.03	-0.05	0.139
10.00	-13.77	-2.68	0.00	-168.3	0.00	168.29	1,854.74	487.11	1,538.99	1,335.87	0.11	-0.11	0.133
15.00	-13.26	-2.62	0.00	-154.9	0.00	154.87	1,825.69	474.79	1,462.11	1,281.44	0.26	-0.16	0.128
20.00	-12.76	-2.55	0.00	-141.8	0.00	141.78	1,795.72	462.46	1,387.20	1,227.45	0.45	-0.21	0.123
25.00	-12.28	-2.47	0.00	-129.0	0.00	129.05	1,764.81	450.14	1,314.26	1,173.93	0.71	-0.27	0.117
30.00	-11.80	-2.40	0.00	-116.7	0.00	116.68	1,732.98	437.82	1,243.29	1,120.96	1.01	-0.32	0.111
35.00	-11.34	-2.32	0.00	-104.7	0.00	104.68	1,700.21	425.49	1,174.29	1,068.56	1.38	-0.37	0.105
40.00	-10.90	-2.25	0.00	-93.1	0.00	93.06	1,666.52	413.17	1,107.25	1,016.81	1.79	-0.42	0.098
45.00	-10.46	-2.17	0.00	-81.8	0.00	81.83	1,631.90	400.84	1,042.19	965.74	2.25	-0.47	0.091
49.46	-10.08	-2.13	0.00	-72.1	0.00	72.14	1,600.26	389.86	985.85	920.82	2.71	-0.51	0.085
50.00	-10.00	-2.10	0.00	-71.0	0.00	70.98	1,596.36	388.52	979.10	915.41	2.77	-0.51	0.084
53.28	-9.51	-2.06	0.00	-64.1	0.00	64.09	1,336.07	338.68	850.06	763.92	3.13	-0.54	0.091
55.00	-9.39	-2.01	0.00	-60.5	0.00	60.53	1,326.38	334.96	831.51	749.99	3.33	-0.56	0.088
60.00	-9.03	-1.93	0.00	-50.5	0.00	50.48	1,297.61	324.17	778.83	709.91	3.93	-0.6	0.078
65.00	-8.68	-1.85	0.00	-40.8	0.00	40.82	1,267.92	313.39	727.87	670.40	4.58	-0.64	0.068
70.00	-8.34	-1.78	0.00	-31.6	0.00	31.55	1,237.30	302.60	678.63	631.50	5.27	-0.67	0.057
74.00	-4.95	-1.19	0.00	-24.4	0.00	24.41	1,212.13	293.97	640.49	600.86	5.84	-0.7	0.045
75.00	-4.89	-1.17	0.00	-23.2	0.00	23.22	1,205.75	291.82	631.12	593.27	5.99	-0.7	0.043
75.47	-4.86	-1.14	0.00	-22.7	0.00	22.67	1,202.73	290.80	626.75	589.71	6.06	-0.7	0.043
75.47	-4.86	-1.14	0.00	-22.7	0.00	22.67	983.29	249.53	538.50	483.40	6.06	-0.7	0.052
80.00	-4.61	-1.06	0.00	-17.5	0.00	17.53	967.74	243.59	513.17	464.33	6.74	-0.73	0.043
85.00	-4.35	-0.99	0.00	-12.2	0.00	12.21	950.13	237.03	485.91	443.51	7.51	-0.75	0.032
90.00	-4.10	-0.91	0.00	-7.3	0.00	7.28	932.05	230.47	459.39	422.93	8.3	-0.76	0.022
95.00	-3.85	-0.86	0.00	-2.7	0.00	2.72	913.50	223.92	433.62	402.62	9.11	-0.77	0.011
97.00	-1.26	-0.50	0.00	-1.0	0.00	1.01	905.95	221.29	423.52	394.57	9.43	-0.77	0.004
99.00	-0.04	-0.01	0.00	-0.0	0.00	0.01	898.32	218.67	413.54	386.57	9.76	-0.77	0.000
100.00	0.00	-0.01	0.00	0.0	0.00	0.00	894.48	217.36	408.59	382.59	9.92	-0.77	0.000

EQUIVALENT LATERAL FORCES METHOD ANALYSIS

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

Spectral Response Acceleration for Short Period (S_S):	0.198
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.053
Long-Period Transition Period (T_L – Seconds):	6
Importance Factor (I_e):	1.000
Site Coefficient F_a:	1.600
Site Coefficient F_v:	2.400
Response Modification Coefficient (R):	1.500
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.211
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.085
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):	1.890
Redundancy Factor (p):	1.000
Seismic Force Distribution Exponent (k):	1.690
Total Unfactored Dead Load:	14.820 k
Seismic Base Shear (E):	0.440 k

SEISMIC FORCES

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

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
26	99.5	42	102	0.005	2	53
25	98	97	227	0.012	5	120
24	96	98	222	0.012	5	121
23	92.5	249	530	0.028	12	309
22	87.5	255	495	0.026	12	317
21	82.5	261	459	0.024	11	325
20	77.735	242	385	0.020	9	301
19	75.235	29	44	0.002	1	36
18	74.5	62	92	0.005	2	78
17	72	264	367	0.020	9	327
16	67.5	339	424	0.022	10	421
15	62.5	349	383	0.020	9	434
14	57.5	360	343	0.018	8	447
13	54.1385	126	109	0.006	3	157
12	51.6385	488	388	0.020	9	606
11	49.729	82	61	0.003	1	101
10	47.229	378	258	0.014	6	469
9	42.5	435	248	0.013	6	540
8	37.5	447	206	0.011	5	555
7	32.5	459	166	0.009	4	570
6	27.5	471	129	0.007	3	585
5	22.5	483	94	0.005	2	599
4	17.5	495	63	0.003	1	614
3	12.5	506	36	0.002	1	629
2	7.5	518	16	0.001	0	644
1	2.5	530	3	0.000	0	659
Ericsson Radio 4449 B71 B85A	99	225	538	0.028	13	280
Ericsson Radio 4460 B25+B66	99	327	782	0.041	18	406
Ericsson AIR 6419 B41	99	206	491	0.026	12	255
RFS APXVAALL24 43-U-NA20	99	368	881	0.047	21	458
Generic Round Platform with Handrails	97	2,500	5,774	0.306	136	3,106
Generic Round Platform with Handrails	74	2,500	3,652	0.193	86	3,106
Commscope RDIDC-9181-PF-48	74	22	32	0.002	1	27
Fujitsu TA08025-B605	74	225	329	0.017	8	280
Fujitsu TA08025-B604	74	192	280	0.015	7	238
JMA Wireless MX08FRO665-21	74	194	283	0.015	7	240
	Totals:	**14,822**	**18,890**	**1.000**	**445**	**18,413**

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)
26	99.5	42	102	0.005	2	36
25	98	97	227	0.012	5	83
24	96	98	222	0.012	5	84
23	92.5	249	530	0.028	12	213
22	87.5	255	495	0.026	12	219
21	82.5	261	459	0.024	11	224
20	77.735	242	385	0.020	9	208
19	75.235	29	44	0.002	1	25
18	74.5	62	92	0.005	2	54
17	72	264	367	0.020	9	226
16	67.5	339	424	0.022	10	291
15	62.5	349	383	0.020	9	300
14	57.5	360	343	0.018	8	309
13	54.1385	126	109	0.006	3	108
12	51.6385	488	388	0.020	9	419
11	49.729	82	61	0.003	1	70
10	47.229	378	258	0.014	6	324
9	42.5	435	248	0.013	6	373
8	37.5	447	206	0.011	5	383
7	32.5	459	166	0.009	4	393
6	27.5	471	129	0.007	3	404
5	22.5	483	94	0.005	2	414
4	17.5	495	63	0.003	1	424
3	12.5	506	36	0.002	1	434
2	7.5	518	16	0.001	0	445
1	2.5	530	3	0.000	0	455
Ericsson Radio 4449 B71 B85A	99	225	538	0.028	13	193
Ericsson Radio 4460 B25+B66	99	327	782	0.041	18	280
Ericsson AIR 6419 B41	99	206	491	0.026	12	176
RFS APXVAALL24 43-U-NA20	99	368	881	0.047	21	316
Generic Round Platform with Handrails	97	2,500	5,774	0.306	136	2,144
Generic Round Platform with Handrails	74	2,500	3,652	0.193	86	2,144
Commscope RDIDC-9181-PF-48	74	22	32	0.002	1	19
Fujitsu TA08025-B605	74	225	329	0.017	8	193
Fujitsu TA08025-B604	74	192	280	0.015	7	164
JMA Wireless MX08FRO665-21	74	194	283	0.015	7	166
	Totals:	**14,822**	**18,890**	**1.000**	**445**	**12,714**

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	-17.75	-0.45	0.00	-37.93	0.00	37.93	1,910.06	511.76	1,699	1,445.82	0.00	0.00	0.04
5.00	-17.11	-0.45	0.00	-35.70	0.00	35.70	1,882.87	499.44	1,618	1,390.68	0.01	-0.01	0.04
10.00	-16.48	-0.45	0.00	-33.46	0.00	33.46	1,854.74	487.11	1,539	1,335.87	0.02	-0.02	0.03
15.00	-15.87	-0.45	0.00	-31.21	0.00	31.21	1,825.69	474.79	1,462	1,281.44	0.05	-0.03	0.03
20.00	-15.27	-0.45	0.00	-28.96	0.00	28.96	1,795.72	462.46	1,387	1,227.45	0.09	-0.04	0.03
25.00	-14.68	-0.45	0.00	-26.70	0.00	26.70	1,764.81	450.14	1,314	1,173.93	0.14	-0.05	0.03
30.00	-14.11	-0.45	0.00	-24.45	0.00	24.45	1,732.98	437.82	1,243	1,120.96	0.20	-0.06	0.03
35.00	-13.56	-0.45	0.00	-22.20	0.00	22.20	1,700.21	425.49	1,174	1,068.56	0.27	-0.07	0.03
40.00	-13.02	-0.44	0.00	-19.97	0.00	19.97	1,666.52	413.17	1,107	1,016.81	0.36	-0.09	0.03
45.00	-12.55	-0.44	0.00	-17.76	0.00	17.76	1,631.90	400.84	1,042	965.74	0.45	-0.10	0.03
49.46	-12.45	-0.44	0.00	-15.81	0.00	15.81	1,600.26	389.86	986	920.82	0.55	-0.10	0.03
50.00	-11.84	-0.43	0.00	-15.58	0.00	15.58	1,596.36	388.52	979	915.41	0.56	-0.11	0.02
53.28	-11.68	-0.43	0.00	-14.18	0.00	14.18	1,336.07	338.68	850	763.92	0.63	-0.11	0.03
55.00	-11.24	-0.42	0.00	-13.45	0.00	13.45	1,326.38	334.96	832	749.99	0.67	-0.12	0.03
60.00	-10.80	-0.41	0.00	-11.36	0.00	11.36	1,297.61	324.17	779	709.91	0.80	-0.12	0.02
65.00	-10.38	-0.40	0.00	-9.31	0.00	9.31	1,267.92	313.39	728	670.40	0.94	-0.13	0.02

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
70.00	-10.05	-0.39	0.00	-7.31	0.00	7.31	1,237.30	302.60	679	631.50	1.08	-0.14	0.02
74.00	-6.09	-0.27	0.00	-5.74	0.00	5.74	1,212.13	293.97	640	600.86	1.20	-0.15	0.02
75.00	-6.05	-0.27	0.00	-5.47	0.00	5.47	1,205.75	291.82	631	593.27	1.23	-0.15	0.01
75.47	-5.75	-0.26	0.00	-5.34	0.00	5.34	983.29	249.53	538	483.40	1.25	-0.15	0.02
75.47	-5.75	-0.26	0.00	-5.34	0.00	5.34	1,202.73	290.80	627	589.71	1.25	-0.15	0.01
80.00	-5.42	-0.25	0.00	-4.16	0.00	4.16	967.74	243.59	513	464.33	1.39	-0.15	0.02
85.00	-5.11	-0.24	0.00	-2.90	0.00	2.90	950.13	237.03	486	443.51	1.56	-0.16	0.01
90.00	-4.80	-0.23	0.00	-1.71	0.00	1.71	932.05	230.47	459	422.93	1.73	-0.16	0.01
95.00	-4.68	-0.22	0.00	-0.58	0.00	0.58	913.50	223.92	434	402.62	1.90	-0.17	0.01
97.00	-1.45	-0.07	0.00	-0.14	0.00	0.14	905.95	221.29	424	394.57	1.97	-0.17	0.00
99.00	0.00	0.00	0.00	0.00	0.00	0.00	898.32	218.67	414	386.57	2.04	-0.17	0.00
100.00	0.00	0.00	0.00	0.00	0.00	0.00	894.48	217.36	409	382.59	2.07	-0.17	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	-12.26	-0.44	0.00	-37.43	0.00	37.43	1,910.06	511.76	1,699	1,445.82	0.00	0.00	0.03
5.00	-11.81	-0.45	0.00	-35.21	0.00	35.21	1,882.87	499.44	1,618	1,390.68	0.01	-0.01	0.03
10.00	-11.38	-0.45	0.00	-32.97	0.00	32.97	1,854.74	487.11	1,539	1,335.87	0.02	-0.02	0.03
15.00	-10.96	-0.45	0.00	-30.73	0.00	30.73	1,825.69	474.79	1,462	1,281.44	0.05	-0.03	0.03
20.00	-10.54	-0.45	0.00	-28.49	0.00	28.49	1,795.72	462.46	1,387	1,227.45	0.09	-0.04	0.03
25.00	-10.14	-0.45	0.00	-26.26	0.00	26.26	1,764.81	450.14	1,314	1,173.93	0.14	-0.05	0.03
30.00	-9.74	-0.44	0.00	-24.03	0.00	24.03	1,732.98	437.82	1,243	1,120.96	0.20	-0.06	0.03
35.00	-9.36	-0.44	0.00	-21.81	0.00	21.81	1,700.21	425.49	1,174	1,068.56	0.27	-0.07	0.03
40.00	-8.99	-0.44	0.00	-19.61	0.00	19.61	1,666.52	413.17	1,107	1,016.81	0.35	-0.08	0.03
45.00	-8.66	-0.43	0.00	-17.43	0.00	17.43	1,631.90	400.84	1,042	965.74	0.45	-0.09	0.02
49.46	-8.59	-0.43	0.00	-15.52	0.00	15.52	1,600.26	389.86	986	920.82	0.54	-0.10	0.02
50.00	-8.18	-0.42	0.00	-15.28	0.00	15.28	1,596.36	388.52	979	915.41	0.55	-0.10	0.02
53.28	-8.07	-0.42	0.00	-13.91	0.00	13.91	1,336.07	338.68	850	763.92	0.62	-0.11	0.02
55.00	-7.76	-0.41	0.00	-13.19	0.00	13.19	1,326.38	334.96	832	749.99	0.66	-0.11	0.02
60.00	-7.46	-0.40	0.00	-11.14	0.00	11.14	1,297.61	324.17	779	709.91	0.79	-0.12	0.02
65.00	-7.17	-0.39	0.00	-9.13	0.00	9.13	1,267.92	313.39	728	670.40	0.92	-0.13	0.02
70.00	-6.94	-0.38	0.00	-7.17	0.00	7.17	1,237.30	302.60	679	631.50	1.06	-0.14	0.02
74.00	-4.20	-0.27	0.00	-5.63	0.00	5.63	1,212.13	293.97	640	600.86	1.18	-0.14	0.01
75.00	-4.18	-0.27	0.00	-5.37	0.00	5.37	1,205.75	291.82	631	593.27	1.21	-0.15	0.01
75.47	-3.97	-0.26	0.00	-5.24	0.00	5.24	983.29	249.53	538	483.40	1.23	-0.15	0.02
75.47	-3.97	-0.26	0.00	-5.24	0.00	5.24	1,202.73	290.80	627	589.71	1.23	-0.15	0.01
80.00	-3.74	-0.25	0.00	-4.08	0.00	4.08	967.74	243.59	513	464.33	1.37	-0.15	0.01
85.00	-3.53	-0.23	0.00	-2.85	0.00	2.85	950.13	237.03	486	443.51	1.53	-0.16	0.01
90.00	-3.31	-0.22	0.00	-1.68	0.00	1.68	932.05	230.47	459	422.93	1.70	-0.16	0.01
95.00	-3.23	-0.22	0.00	-0.57	0.00	0.57	913.50	223.92	434	402.62	1.87	-0.16	0.01
97.00	-1.00	-0.07	0.00	-0.14	0.00	0.14	905.95	221.29	424	394.57	1.93	-0.16	0.00
99.00	0.00	0.00	0.00	0.00	0.00	0.00	898.32	218.67	414	386.57	2.00	-0.16	0.00
100.00	0.00	0.00	0.00	0.00	0.00	0.00	894.48	217.36	409	382.59	2.04	-0.16	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	13.91	0.00	17.75	0.00	0.00	972.81	0.00	0.68
0.9D + 1.0W	13.90	0.00	13.31	0.00	0.00	962.92	0.00	0.67
1.2D + 1.0Di + 1.0Wi	3.45	0.00	24.58	0.00	0.00	236.59	0.00	0.18
1.2D + 1.0Ev + 1.0Eh	0.45	0.00	17.75	0.00	0.00	37.93	0.00	0.04
0.9D - 1.0Ev + 1.0Eh	0.45	0.00	12.26	0.00	0.00	37.43	0.00	0.03
1.0D + 1.0W	2.82	0.00	14.82	0.00	0.00	196.15	0.00	0.14

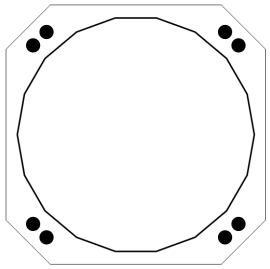
BASE PLATE ANALYSIS @ 0 FT

APPLIED REACTIONS

Moment (k-ft)	Axial (k)	Shear (k)
972.81	17.75	13.91

PLATE PARAMETERS (ID# 27612)

Width:	41	in
Shape:	Square	
Thickness:	2.25	in
Grade:	A36	
Yield Strength:	36	ksi
Tensile Strength:	58	ksi
Clip Length:	7	in
Rod Detail Type:	d	
Clear Distance	6.25	in
Base Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Plastic	
Neutral Axis:	45	°



ANCHOR ROD PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	F_y (ksi)	F_u (ksi)	Spacing (in)	Offset (°)
Original [ID#28331]	Cluster	8	2.25	43	A615-75	75	100	3	-

COMPONENT PROPERTIES

Component	ID	Gross Area (in^2)	Net Area (in^2)	Individual Inertia (in^4)	Moment of Inertia (in^4)	Threads/in
Pole	37"ø x 0.25" (18 Sides)	28.7171	-	-	4848.62	-
Bolt Group	Original (8) 2.25"ø	3.9761	3.2477	0.8393	5300.91	4.5

REACTION DISTRIBUTION

Component	ID	Moment M_u (k-ft)	Axial Load P_u (k)	Shear V_u (k)	Moment Factor
Pole	37"ø x 0.25" (18 Sides)	972.8	17.75	13.91	1.000
Bolt Group	Original (8) 2.25"ø	972.8	-	13.91	1.000

BASE PLATE BEND LINE ANALYSIS @ 0 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	37.12	in	Flat Width:	6.546	in	Neutral Axis:	45	°
Point-to-Point Diameter:	37.70	in	Flat Radians:	0.349	rad			
Orientation Offset:	-	°						

PLATE PROPERTIES

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 $M_u/\Phi M_n$
Flats	20.858	0.00	26.398	460.9	855.3	53.9%
Corners	20.285	0.00	25.673	377.2	831.8	45.3%

PLASTIC 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)	Plastic Result
Original	8	2.25	139.8	3.3	243.6	57.4%

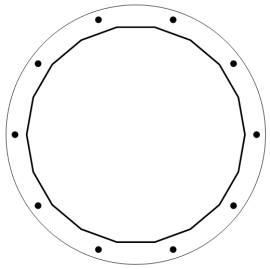
UPPER FLANGE PLATE ANALYSIS @ 75.47 FT

APPLIED REACTIONS

Moment (k-ft)	Axial (k)	Shear (k)
112.87	5.5	5.65

PLATE PARAMETERS (ID# 27613)

Width:	29	in
Shape:	Round	
Thickness:	0.75	in
Grade:	A36	
Yield Strength:	36	ksi
Tensile Strength:	58	ksi
Base Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Plastic	
Neutral Axis:	162	°



FLANGE BOLT PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	F_y (ksi)	F_u (ksi)	Spacing (in)	Offset (°)
Original [ID#28332]	Radial	10	0.75	27	A325	92	120	-	-

COMPONENT PROPERTIES

Component	ID	Gross Area (in^2)	Net Area (in^2)	Individual Inertia (in^4)	Moment of Inertia (in^4)	Threads/in
Pole	24.08"ø x 0.1875" (18 Sides)	14.0025	-	-	999.33	-
Bolt Group	Original (10) 0.75"ø	0.4418	0.3345	0.0089	284.07	10.0

REACTION DISTRIBUTION

Component	ID	Moment M_u (k-ft)	Axial Load P_u (k)	Shear V_u (k)	Moment Factor
Pole	24.08"ø x 0.1875" (18 Sides)	112.9	5.50	5.65	1.000
Bolt Group	Original (10) 0.75"ø	112.9	-	5.65	1.000

UPPER FLANGE PLATE BEND LINE ANALYSIS @ 75.47 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	24.20	in	Flat Width:	4.268	in	Neutral Axis:	162	°
Point-to-Point Diameter:	24.58	in	Flat Radians:	0.349	rad	Bend Line Limits:	3.892 to 4.905	rad
Orientation Offset:	-	°						

PLATE PROPERTIES

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 $M_u/\Phi M_n$	
Flats	14.493	0.00	2.038	19.8	66.0	30.0%	✓
Corners	13.850	0.00	1.948	15.8	63.1	25.1%	✓
Circumferential	18.228	0.00	2.563	15.8	83.1	19.1%	✓

PLASTIC FLANGE BOLT ANALYSIS

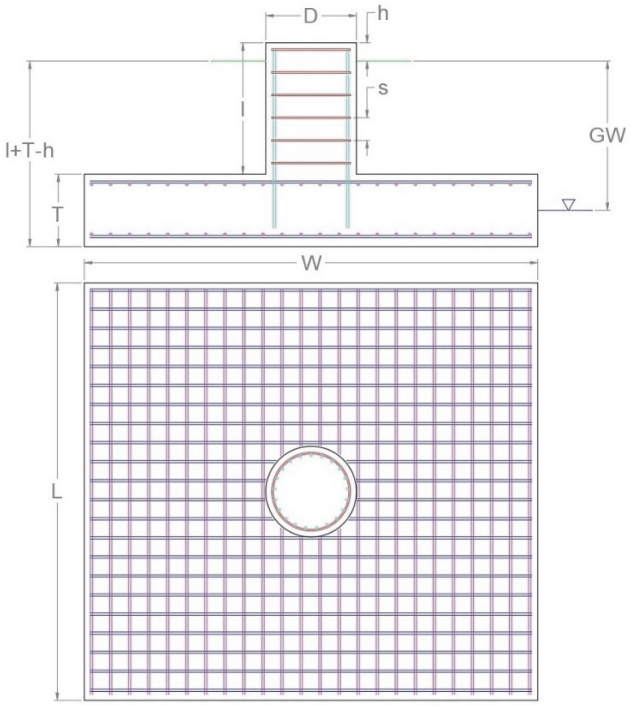
Class	Group Quantity	Bolt Diameter (in)	Applied Axial Load P_u (k)	Applied Shear Load V_u (k)	Compressive Capacity ΦP_n (k)	Interaction Result	
Original	10	0.75	17.2	0.8	30.1	60.9%	✓

APPLIED GLOBAL REACTIONS

Moment (k-ft)	Axial (k)	Shear (k)
972.81	17.75	13.91

FOUNDATION PARAMETERS

Mat Length:	L	17	ft
Mat Width:	W	17	ft
Mat Thickness:	T	1.5	ft
Base Depth:	L+T-h	5.81	ft
Pier Shape:		Round	
Pier Diameter:	D	5.5	ft
Pier Height above Grade:	h	0.75	ft
Tower Eccentricity:	ecc	0	ft
Tower Leg Count		1	



SOIL PARAMETERS

Water Table Depth [BGL]:	GW		ft
Soil Unit Weight:		130	pcf
Ultimate Skin Friction:		0	psf
Ultimate Bearing Pressure:		8,000	psf
Bearing Pressure Type:		Net	
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, $M_{u,Design} / \Phi_m M_n$	
1,064.06	2,026.21	**52.5%**	✓

SOIL BEARING ANALYSIS

Net Bearing Pressure, $P_{u,Net}$ (psf)	Nominal Bearing Capacity, $\Phi_b P_n$ (k-ft)	Bearing Pressure Controlling Load Direction	Soil Bearing Usage, $P_{u,net} / \Phi_b P_n$	
1,729.00	6,566.00	Diagonal to Pad Edge	**26.3%**	✓

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, $V_u / \Phi_s V_n$	
13.91	0.00	657.8	16.77	105.00	**13.0%**	✓

CENTERLINE

EXHIBIT F

Mount Analysis Report

AMERICAN TOWER®
CORPORATION

Mount Analysis Report

ATC Asset Name	:	OLD LYME CT
ATC Asset Number	:	284983
Engineering Number	:	14561675_C8_01
Mount Elevation	:	99.5 ft
Proposed Carrier	:	T-Mobile
Carrier Site Name	:	Amtrak_OldLyme2
Carrier Site Number	:	CTNL801A
Site Location	:	61-1 Buttonball Road Old Lyme, CT 6371 41.296218, -72.30032
County	:	New London
Date	:	December 15, 2023
Max Usage	:	35%
Analysis Result	:	Pass

Prepared By:
Max Carter
Structural Engineer II

Max Carter

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
32593
LICENSED
PROFESSIONAL ENGINEER

COA: PEC.0001553

Table of Contents

Introduction

The purpose of this report is to summarize results of the mount analysis performed for T-Mobile at 99.5 ft.

Supporting Documents

Specifications Sheet:	Perfect Vision PV-LPPGS-12M-HR25, dated November 1, 2019
Radio Frequency Data Sheet:	RFDS ID #CTNL801A, dated November 28, 2023
Reference Photos:	Site photos from 2023

Analysis

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

Basic Wind Speed:	126 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:	C
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.198, S1 = 0.053
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.

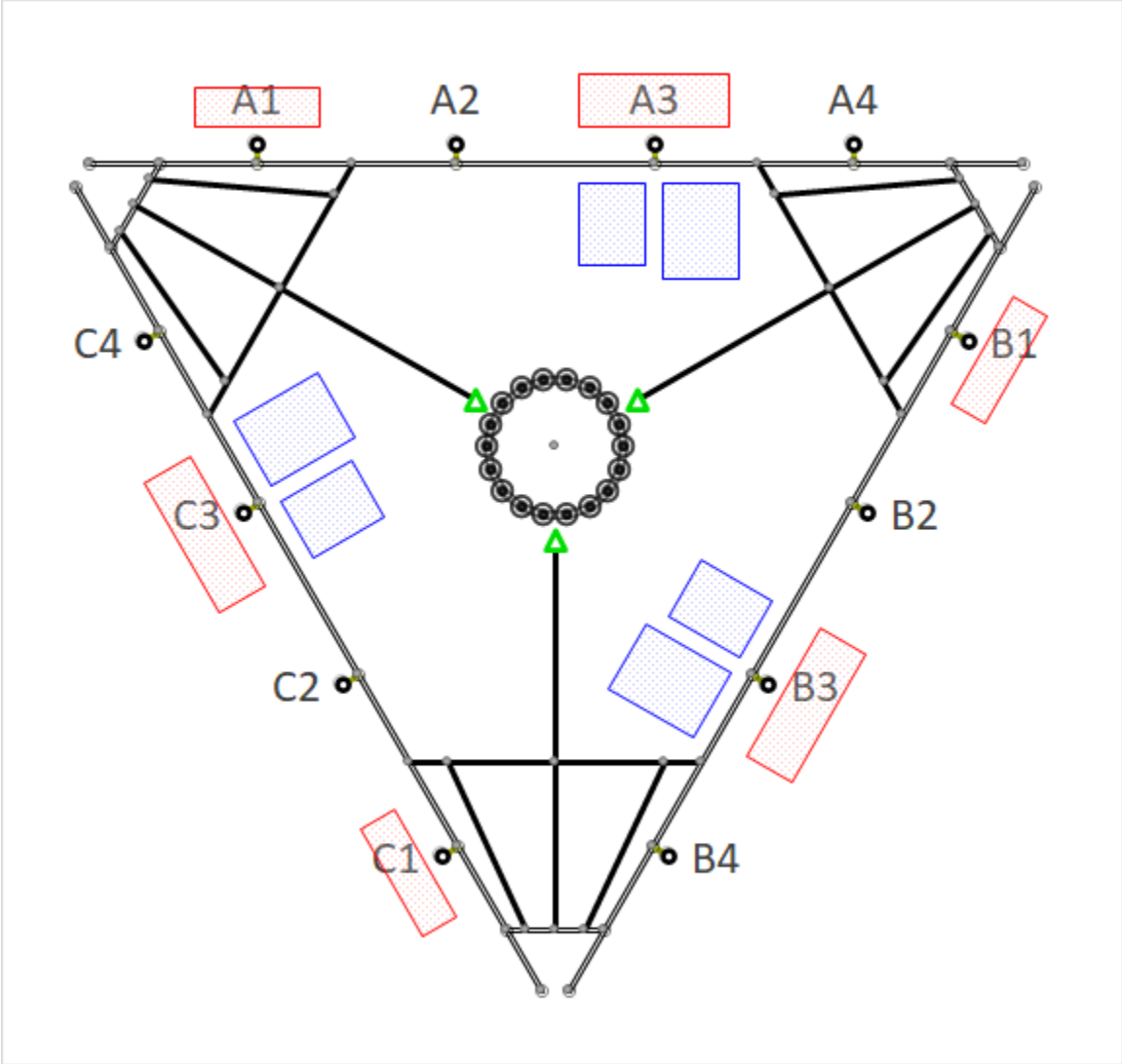
Application Loading

Mount Centerline (ft)	Equipment Centerline (ft)	Qty	Equipment Manufacturer & Model
99.5	99.0	3	RFS APXVAALL24 43-U-NA20
		3	Ericsson AIR 6419 B41
		3	Ericsson Radio 4449 B71 B85A
		3	Ericsson Radio 4460 B25+B66

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Horizontals	35%	Pass
Mount Pipes	33%	Pass

Mount Layout



Equipment Position Table

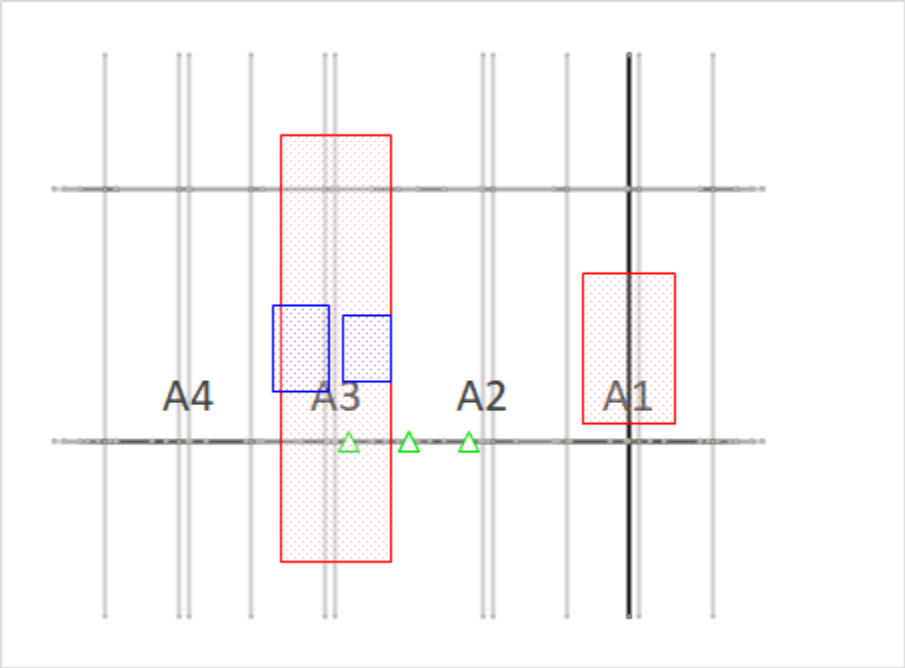
MP	RAD Center (ft)	Qty.	Antenna Model
A1	99.0	1	Ericsson AIR 6419 B41
A2	-	-	Empty
A3	99.0	1	RFS APXVAALL24 43-U-NA20
	99.0	1	Ericsson Radio 4449 B71 B85A
	99.0	1	Ericsson Radio 4460 B25+B66
A4	-	-	Empty
B1	99.0	1	Ericsson AIR 6419 B41
B2	-	-	Empty
B3	99.0	1	RFS APXVAALL24 43-U-NA20

Equipment Position Table Cont.

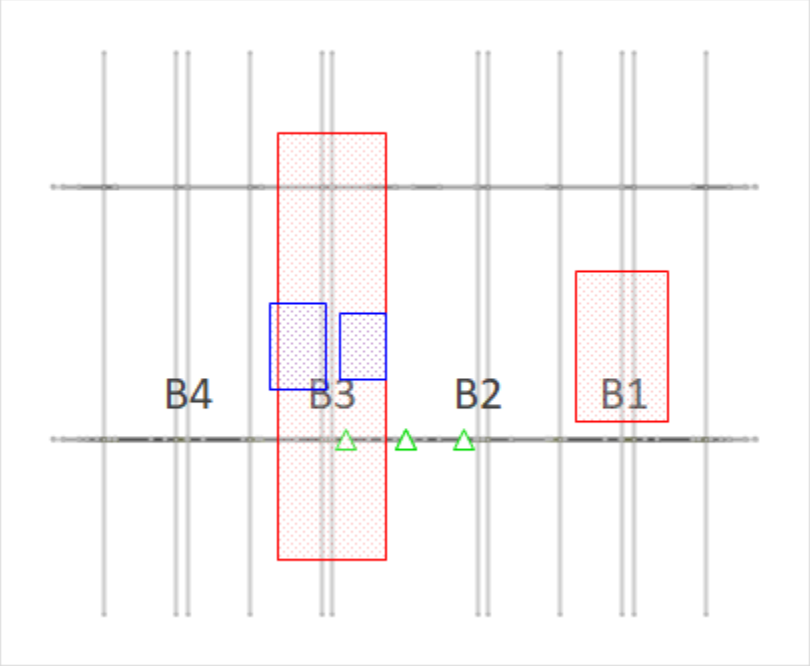
MP	RAD Center (ft)	Qty.	Antenna Model
B3	99.0	1	Ericsson Radio 4449 B71 B85A
	99.0	1	Ericsson Radio 4460 B25+B66
B4	-	-	Empty
C1	99.0	1	Ericsson AIR 6419 B41
C2	-	-	Empty
C3	99.0	1	RFS APXVAALL24 43-U-NA20
	99.0	1	Ericsson Radio 4449 B71 B85A
	99.0	1	Ericsson Radio 4460 B25+B66
C4	-	-	Empty

Equipment Layout

Front View - Alpha

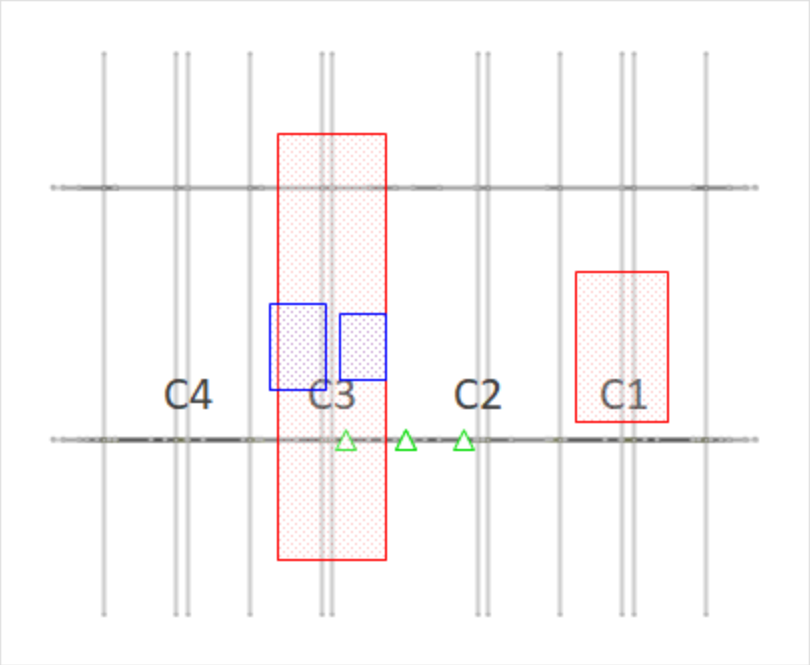


Front View - Beta



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.

AMERICAN TOWER®
CORPORATION

Site Number:	*284983*
Project Number:	*14561675_C8_01*
Carrier:	*T-Mobile*
Mount Elevation:	*99.5 ft*
Date:	12/15/2023

Mount Analysis Force Calculations

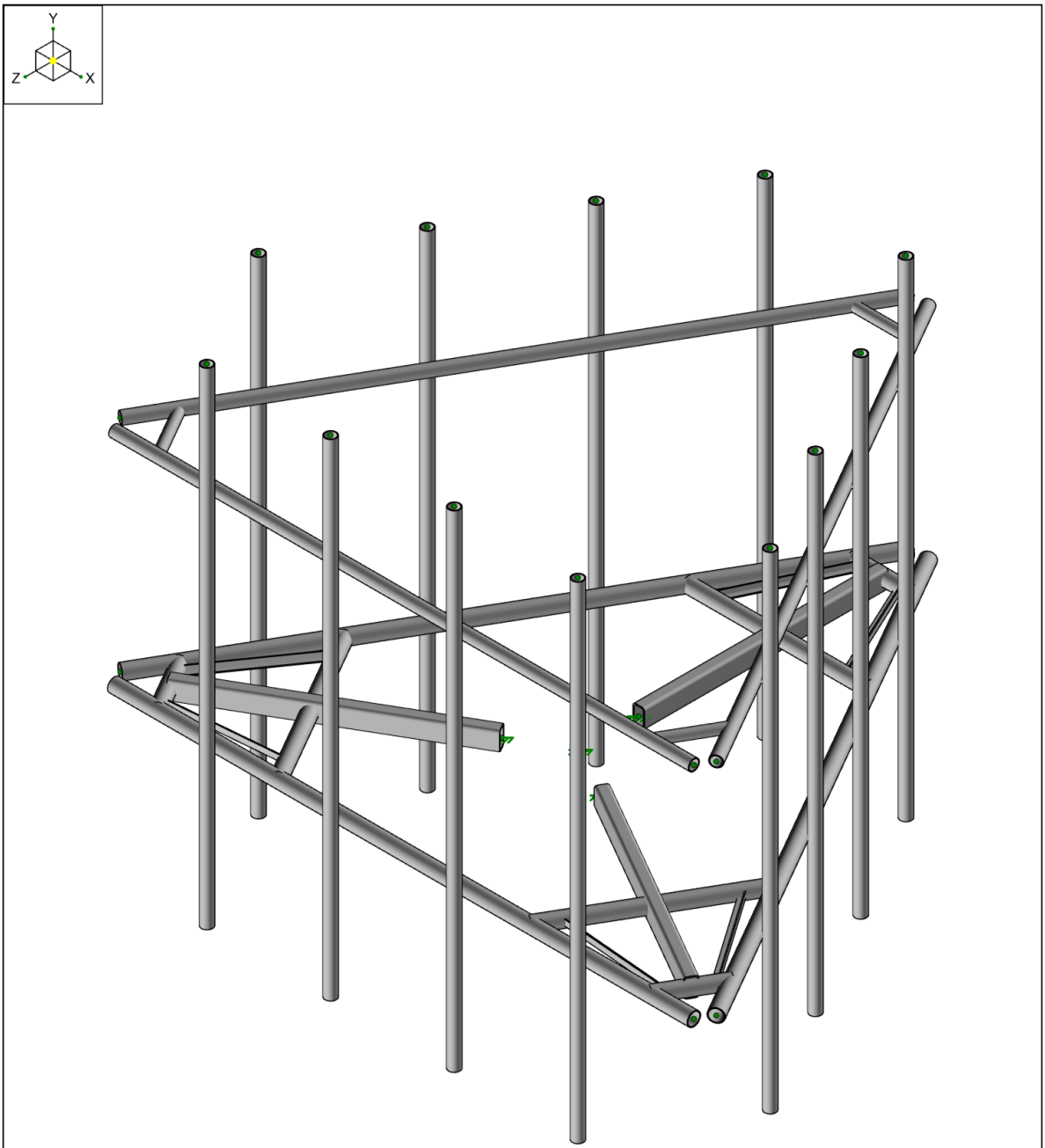
Wind & Ice Load Calculations			
Velocity Pressure Coefficient	K_z	1.26	
Topographic Factor	K_{zt}	1.00	
Rooftop Wind Speed-up Factor	K_s	1.00	
Shielding Factor	K_a	0.90	
Ground Elevation Factor	K_e	1.00	
Wind Direction Probability Factor	K_d	0.95	
Basic Wind Speed	V	126	mph
Velocity Pressure	q_z	48.7	psf
Height Escalation Factor	K_{iz}	1.12	
Thickness of Radial Glaze Ice	T_{iz}	1.12	in

Seismic Load Calculations			
Short Period DSRAP	S_{DS}	0.158	
1 Second DSRAP	S_{D1}	0.085	
Importance Factor	I	1.0	
Response Modification Coefficient	R	2.0	
Seismic Response Coefficient	C_S	0.079	
Amplification Factor	A	1.0	
Total Weight	W	2806.5	lbs
Total Shear Force	V_S	222.3	lbs
Horizontal Seismic Load	Eh	222.3	lbs
Vertical Seismic Load	Ev	88.9	lbs

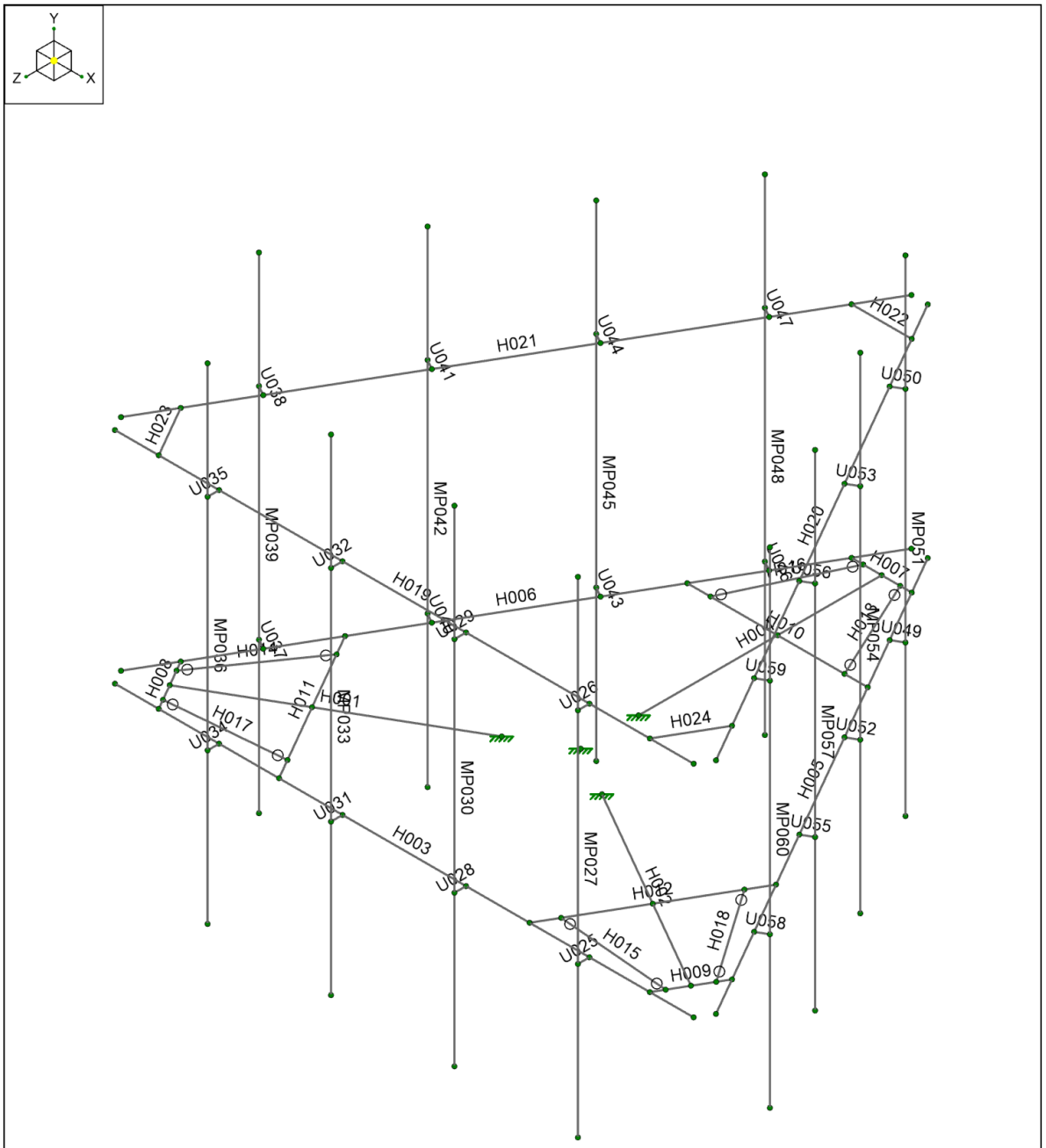
Antenna Calculations (Elevations per Application/RFDS)*

Equipment	Height	Width	Depth	Weight	EPA_N	EPA_T	EPA_{Ni}	EPA_{Ti}
Model #	in	in	in	lbs	sqft	sqft	sqft	sqft
RFS APXVAALL24 43-U-NA20	95.9	24.0	8.5	122.8	20.24	3.40	22.64	4.39
Ericsson AIR 6419 B41	33.6	20.0	6.3	68.5	5.60	0.85	6.64	1.22
Ericsson Radio 4449 B71 B85A	15.0	13.2	10.5	75.0	1.65	1.31	2.22	1.83
Ericsson Radio 4460 B25+B66	19.6	15.7	12.1	109.0	2.56	1.98	3.26	2.61

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



American Tower Corp.	284983, OLD LYME CT	SK-1
Max.Carter		Dec 15, 2023
14561675_C8_01		R3D. T-MOBILE @ 284983, OLD …



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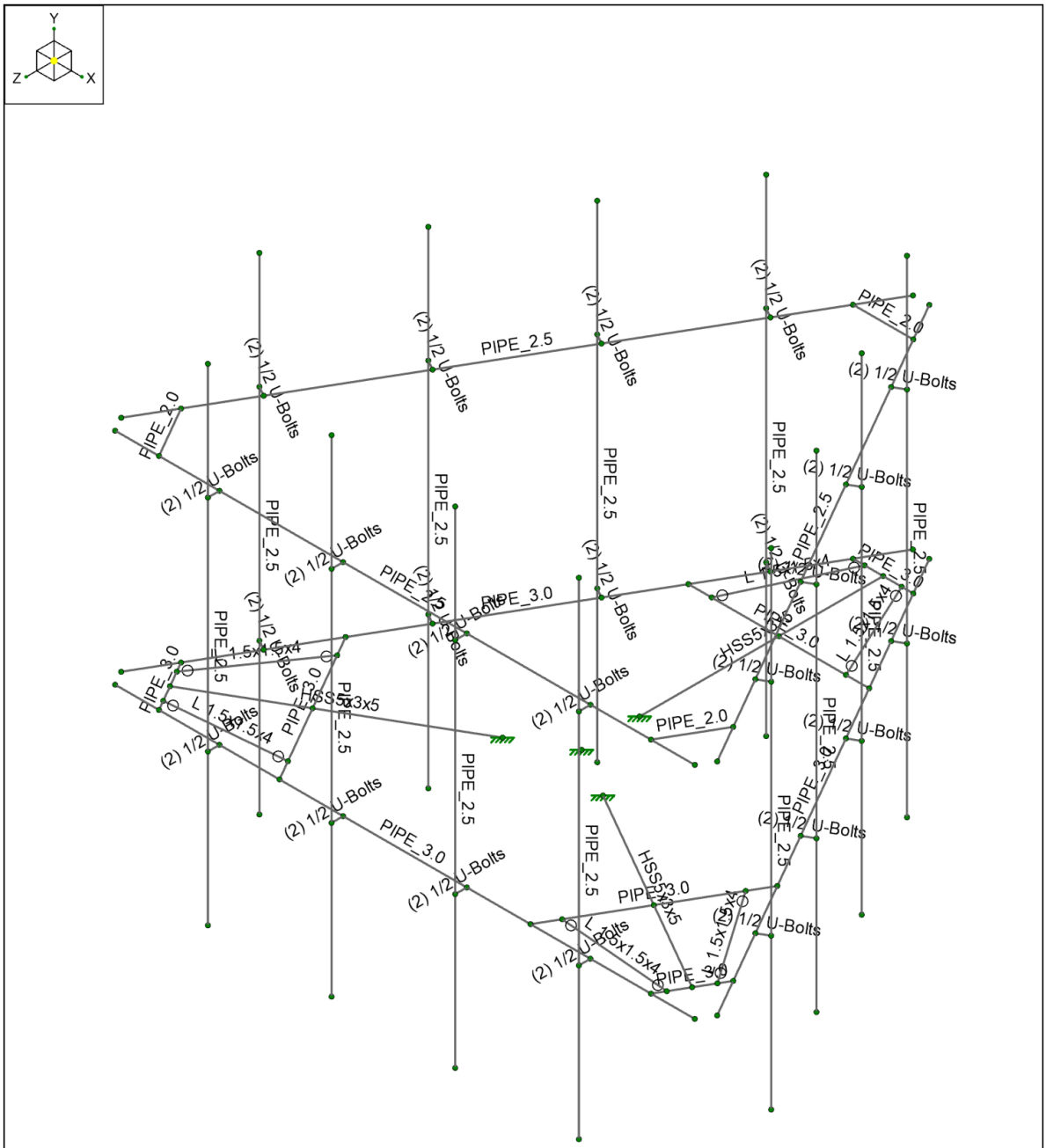

American Tower Corp.	284983, OLD LYME CT	SK-3
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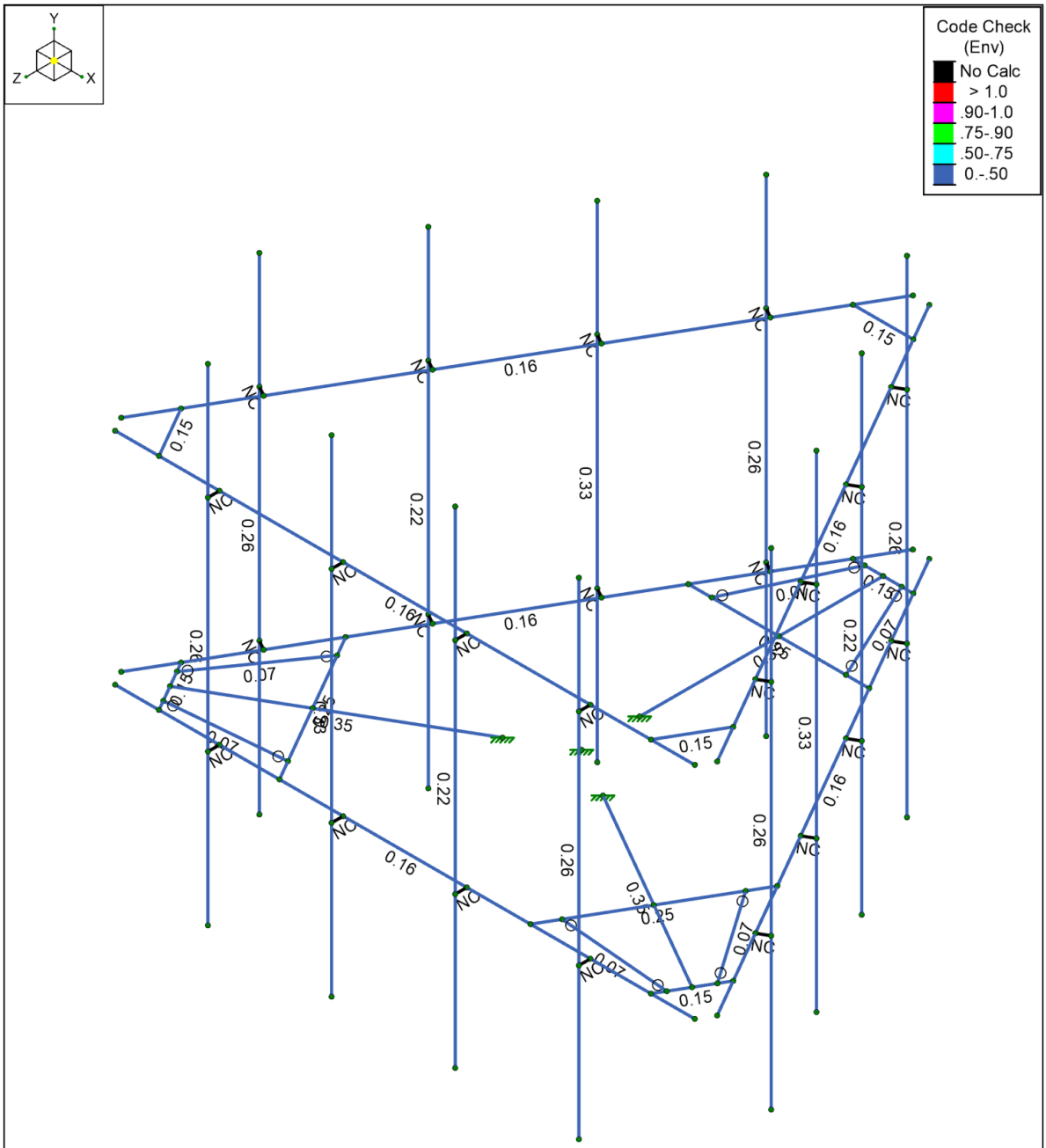

American Tower Corp.	284983, OLD LYME CT	SK-4
Max.Carter		Dec 15, 2023
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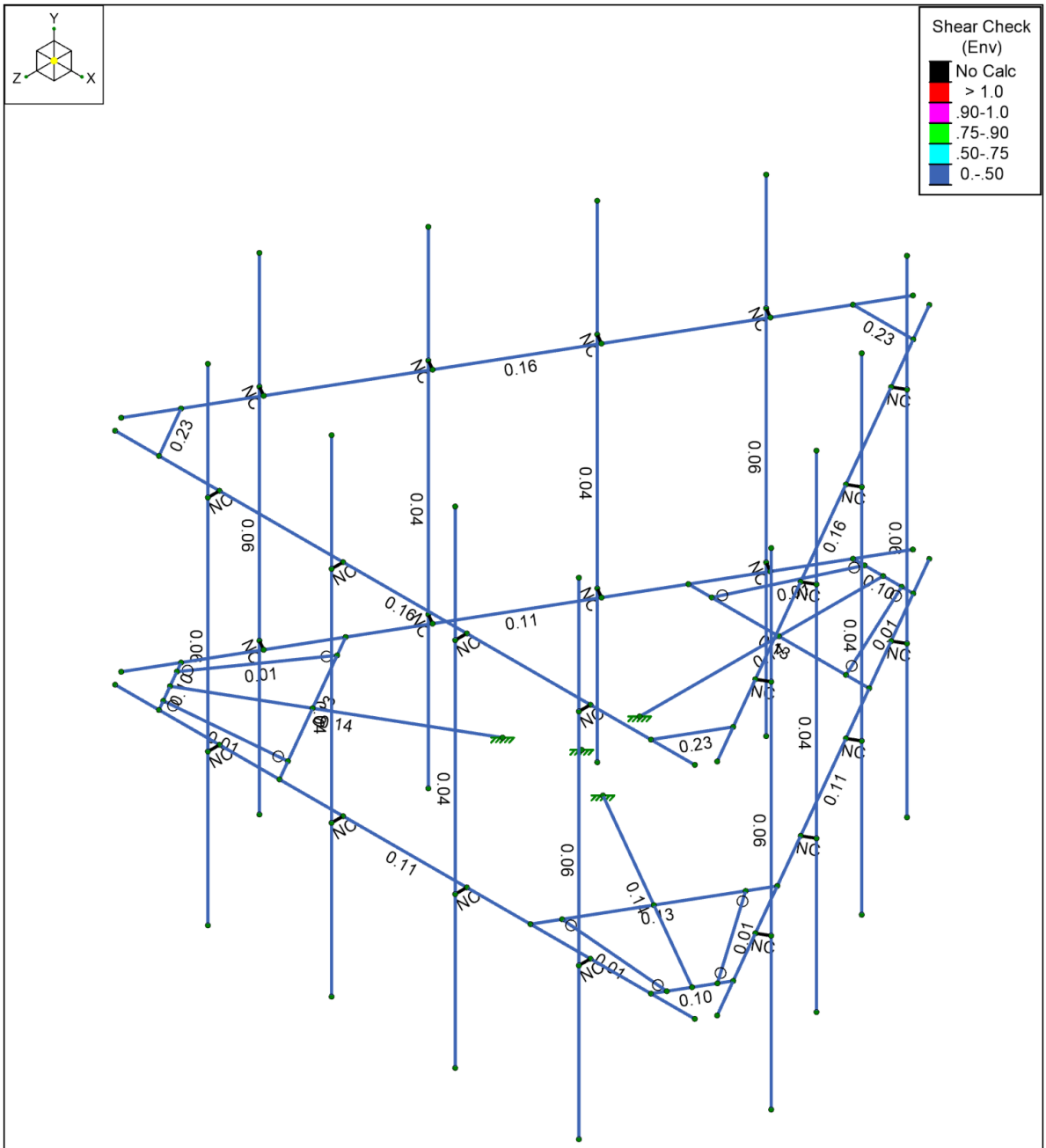

American Tower Corp.	284983, OLD LYME CT	SK-5
Max.Carter		Dec 15, 2023
14561675_C8_01		R3D. T-MOBILE @ 284983, OLD …

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	36	3
3	W 0	WL					18	60	
4	W 30	WL					36	120	
5	W 60	WL					36	120	
6	W 90	WL					18	66	
7	W 120	WL					36	120	
8	W 150	WL					36	120	
9	W 180	WL					18	60	
10	W 210	WL					36	120	
11	W 240	WL					36	120	
12	W 270	WL					18	66	
13	W 300	WL					36	120	
14	W 330	WL					36	120	
15	Wi 0	WL					18	60	
16	Wi 30	WL					36	120	
17	Wi 60	WL					36	120	
18	Wi 90	WL					18	66	
19	Wi 120	WL					36	120	
20	Wi 150	WL					36	120	
21	Wi 180	WL					18	60	
22	Wi 210	WL					36	120	
23	Wi 240	WL					36	120	
24	Wi 270	WL					18	66	
25	Wi 300	WL					36	120	
26	Wi 330	WL					36	120	
27	Ws 0	WL					18	60	
28	Ws 30	WL					36	120	
29	Ws 60	WL					36	120	
30	Ws 90	WL					18	66	
31	Ws 120	WL					36	120	
32	Ws 150	WL					36	120	
33	Ws 180	WL					18	60	
34	Ws 210	WL					36	120	
35	Ws 240	WL					36	120	
36	Ws 270	WL					18	66	
37	Ws 300	WL					36	120	
38	Ws 330	WL					36	120	
39	Ev -Y	ELY		-0.032			18		3
40	Eh -Z	ELZ			-0.079		18		3
41	Eh -X	ELX	-0.079				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						66	
55	BLC 2 Transient Area Loads	None						66	

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						66	
57	BLC 40 Transient Area Loads	None						66	
58	BLC 41 Transient Area Loads	None						66	

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		

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	N003	N005		HSS5x3x5	Beam	None	A500 Gr. B [SQR]	Typical
2	H002	N004	N006		HSS5x3x5	Beam	None	A500 Gr. B [SQR]	Typical
3	H003	N009	N010		PIPE_3.0	Beam	None	A500 Gr. B [RND]	Typical
4	H004	N002	N015		HSS5x3x5	Beam	None	A500 Gr. B [SQR]	Typical
5	H005	N011	N013		PIPE_3.0	Beam	None	A500 Gr. B [RND]	Typical
6	H006	N012	N014		PIPE_3.0	Beam	None	A500 Gr. B [RND]	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
7	H007	N019	N017		PIPE_3.0	Beam	None	A500 Gr. B [RND]	Typical
8	H008	N021	N023		PIPE_3.0	Beam	None	A500 Gr. B [RND]	Typical
9	H009	N022	N024		PIPE_3.0	Beam	None	A500 Gr. B [RND]	Typical
10	H010	N018	N020		PIPE_3.0	Beam	None	A500 Gr. B [RND]	Typical
11	H011	N025	N027		PIPE_3.0	Beam	None	A500 Gr. B [RND]	Typical
12	H012	N026	N028		PIPE_3.0	Beam	None	A500 Gr. B [RND]	Typical
13	H013	N037	N029	270	L 1.5x1.5x4	Beam	None	A36	Typical
14	H014	N038	N030	270	L 1.5x1.5x4	Beam	None	A36	Typical
15	H015	N039	N040	270	L 1.5x1.5x4	Beam	None	A36	Typical
16	H016	N034	N031		L 1.5x1.5x4	Beam	None	A36	Typical
17	H017	N035	N032		L 1.5x1.5x4	Beam	None	A36	Typical
18	H018	N036	N033		L 1.5x1.5x4	Beam	None	A36	Typical
19	H019	N041	N042		PIPE_2.5	Beam	None	A53 Gr. B	Typical
20	H020	N043	N045		PIPE_2.5	Beam	None	A53 Gr. B	Typical
21	H021	N044	N046		PIPE_2.5	Beam	None	A53 Gr. B	Typical
22	H022	N048	N047		PIPE_2.0	Beam	None	A500 Gr. B [RND]	Typical
23	H023	N049	N051		PIPE_2.0	Beam	None	A500 Gr. B [RND]	Typical
24	H024	N050	N052		PIPE_2.0	Beam	None	A500 Gr. B [RND]	Typical
25	U025	N053	N065		(2) 1/2 U-Bolts	Beam	None	A36	Typical
26	U026	N066	N067		(2) 1/2 U-Bolts	Beam	None	A36	Typical
27	MP027	N068	N069		PIPE_2.5	Column	None	A53 Gr. B	Typical
28	U028	N055	N070		(2) 1/2 U-Bolts	Beam	None	A36	Typical
29	U029	N071	N072		(2) 1/2 U-Bolts	Beam	None	A36	Typical
30	MP030	N073	N074		PIPE_2.5	Column	None	A53 Gr. B	Typical
31	U031	N056	N075		(2) 1/2 U-Bolts	Beam	None	A36	Typical
32	U032	N076	N077		(2) 1/2 U-Bolts	Beam	None	A36	Typical
33	MP033	N078	N079		PIPE_2.5	Column	None	A53 Gr. B	Typical
34	U034	N054	N080		(2) 1/2 U-Bolts	Beam	None	A36	Typical
35	U035	N081	N082		(2) 1/2 U-Bolts	Beam	None	A36	Typical
36	MP036	N083	N084		PIPE_2.5	Column	None	A53 Gr. B	Typical
37	U037	N058	N085		(2) 1/2 U-Bolts	Beam	None	A36	Typical
38	U038	N086	N087		(2) 1/2 U-Bolts	Beam	None	A36	Typical
39	MP039	N088	N089		PIPE_2.5	Column	None	A53 Gr. B	Typical
40	U040	N060	N090		(2) 1/2 U-Bolts	Beam	None	A36	Typical
41	U041	N091	N092		(2) 1/2 U-Bolts	Beam	None	A36	Typical
42	MP042	N093	N094		PIPE_2.5	Column	None	A53 Gr. B	Typical
43	U043	N062	N095		(2) 1/2 U-Bolts	Beam	None	A36	Typical
44	U044	N096	N097		(2) 1/2 U-Bolts	Beam	None	A36	Typical
45	MP045	N098	N099		PIPE_2.5	Column	None	A53 Gr. B	Typical
46	U046	N064	N100		(2) 1/2 U-Bolts	Beam	None	A36	Typical
47	U047	N101	N102		(2) 1/2 U-Bolts	Beam	None	A36	Typical
48	MP048	N103	N104		PIPE_2.5	Column	None	A53 Gr. B	Typical
49	U049	N057	N105		(2) 1/2 U-Bolts	Beam	None	A36	Typical
50	U050	N106	N107		(2) 1/2 U-Bolts	Beam	None	A36	Typical
51	MP051	N108	N109		PIPE_2.5	Column	None	A53 Gr. B	Typical
52	U052	N059	N110		(2) 1/2 U-Bolts	Beam	None	A36	Typical
53	U053	N111	N112		(2) 1/2 U-Bolts	Beam	None	A36	Typical
54	MP054	N113	N114		PIPE_2.5	Column	None	A53 Gr. B	Typical
55	U055	N061	N115		(2) 1/2 U-Bolts	Beam	None	A36	Typical
56	U056	N116	N117		(2) 1/2 U-Bolts	Beam	None	A36	Typical
57	MP057	N118	N119		PIPE_2.5	Column	None	A53 Gr. B	Typical
58	U058	N063	N120		(2) 1/2 U-Bolts	Beam	None	A36	Typical
59	U059	N121	N122		(2) 1/2 U-Bolts	Beam	None	A36	Typical
60	MP060	N123	N124		PIPE_2.5	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	HSS5x3x5	63			Lbyy		1	1	Lateral
2	H002	HSS5x3x5	63			Lbyy		1	1	Lateral
3	H003	PIPE_3.0	150.004			Lbyy		1	1	Lateral
4	H004	HSS5x3x5	63			Lbyy		1	1	Lateral
5	H005	PIPE_3.0	150.004			Lbyy		1	1	Lateral
6	H006	PIPE_3.0	150.004			Lbyy		1	1	Lateral
7	H007	PIPE_3.0	15.588			Lbyy		0.65	0.65	Lateral
8	H008	PIPE_3.0	15.588			Lbyy		0.65	0.65	Lateral
9	H009	PIPE_3.0	15.588			Lbyy		0.65	0.65	Lateral
10	H010	PIPE_3.0	46.765			Lbyy		0.65	0.65	Lateral
11	H011	PIPE_3.0	46.765			Lbyy		0.65	0.65	Lateral
12	H012	PIPE_3.0	46.765			Lbyy		0.65	0.65	Lateral
13	H013	L 1.5x1.5x4	29.79			Lbyy		1	1	Lateral
14	H014	L 1.5x1.5x4	29.79			Lbyy		1	1	Lateral
15	H015	L 1.5x1.5x4	29.79			Lbyy		1	1	Lateral
16	H016	L 1.5x1.5x4	29.79			Lbyy		1	1	Lateral
17	H017	L 1.5x1.5x4	29.79			Lbyy		1	1	Lateral
18	H018	L 1.5x1.5x4	29.79			Lbyy		1	1	Lateral
19	H019	PIPE_2.5	150.004			Lbyy		1	1	Lateral
20	H020	PIPE_2.5	150.004			Lbyy		1	1	Lateral
21	H021	PIPE_2.5	150.004			Lbyy		1	1	Lateral
22	H022	PIPE_2.0	15.588			Lbyy		0.65	0.65	Lateral
23	H023	PIPE_2.0	15.588			Lbyy		0.65	0.65	Lateral
24	H024	PIPE_2.0	15.588			Lbyy		0.65	0.65	Lateral
25	U025	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
26	U026	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
27	MP027	PIPE_2.5	126	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
28	U028	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
29	U029	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
30	MP030	PIPE_2.5	126	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
31	U031	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
32	U032	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
33	MP033	PIPE_2.5	126	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
34	U034	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
35	U035	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
36	MP036	PIPE_2.5	126	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
37	U037	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
38	U038	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
39	MP039	PIPE_2.5	126	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
40	U040	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
41	U041	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
42	MP042	PIPE_2.5	126	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
43	U043	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
44	U044	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
45	MP045	PIPE_2.5	126	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
46	U046	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
47	U047	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
48	MP048	PIPE_2.5	126	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
49	U049	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
50	U050	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
51	MP051	PIPE_2.5	126	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
52	U052	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
53	U053	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
54	MP054	PIPE_2.5	126	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
55	U055	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	L-Torque [in]	K y-y	K z-z	Function
56	U056	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
57	MP057	PIPE_2.5	126	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
58	U058	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
59	U059	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
60	MP060	PIPE_2.5	126	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	N001	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N002	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N003	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N004	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			Yes	N/A		None
11	H011			Yes	N/A		None
12	H012			Yes	N/A		None
13	H013	BenPIN	BenPIN	Yes	N/A		None
14	H014	BenPIN	BenPIN	Yes	N/A		None
15	H015	BenPIN	BenPIN	Yes	N/A		None
16	H016	BenPIN	BenPIN	Yes	N/A		None
17	H017	BenPIN	BenPIN	Yes	N/A		None
18	H018	BenPIN	BenPIN	Yes	N/A		None
19	H019			Yes	N/A		None
20	H020			Yes	N/A		None
21	H021			Yes	N/A		None
22	H022			Yes	N/A		None
23	H023			Yes	N/A		None
24	H024			Yes	N/A		None
25	U025			Yes	N/A	Exclude	None
26	U026			Yes	N/A	Exclude	None
27	MP027			Yes	** NA **		None
28	U028			Yes	N/A	Exclude	None
29	U029			Yes	N/A	Exclude	None
30	MP030			Yes	** NA **		None
31	U031			Yes	N/A	Exclude	None
32	U032			Yes	N/A	Exclude	None
33	MP033			Yes	** NA **		None
34	U034			Yes	N/A	Exclude	None
35	U035			Yes	N/A	Exclude	None
36	MP036			Yes	** NA **		None
37	U037			Yes	N/A	Exclude	None
38	U038			Yes	N/A	Exclude	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Activation	Seismic DR
39	MP039			Yes	** NA **		None
40	U040			Yes	N/A	Exclude	None
41	U041			Yes	N/A	Exclude	None
42	MP042			Yes	** NA **		None
43	U043			Yes	N/A	Exclude	None
44	U044			Yes	N/A	Exclude	None
45	MP045			Yes	** NA **		None
46	U046			Yes	N/A	Exclude	None
47	U047			Yes	N/A	Exclude	None
48	MP048			Yes	** NA **		None
49	U049			Yes	N/A	Exclude	None
50	U050			Yes	N/A	Exclude	None
51	MP051			Yes	** NA **		None
52	U052			Yes	N/A	Exclude	None
53	U053			Yes	N/A	Exclude	None
54	MP054			Yes	** NA **		None
55	U055			Yes	N/A	Exclude	None
56	U056			Yes	N/A	Exclude	None
57	MP057			Yes	** NA **		None
58	U058			Yes	N/A	Exclude	None
59	U059			Yes	N/A	Exclude	None
60	MP060			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	A500 Gr. B [RND]	2.9e+07	1.115e+07	0.3	0.65	490	42000	1.4	58000	1.3
3	A36	2.9e+07	1.115e+07	0.3	0.65	490	36000	1.5	58000	1.2
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	N001	max	0	205	0	205	0	205	0	205	0	205	0	205
2		min	0	1	0	1	0	1	0	1	0	1	0	1
3	N002	max	1784.623	17	2316.598	26	2747.868	2	7253.543	2	3034.821	23	1186.115	23
4		min	-1785.604	11	-346.2	20	-2750.511	8	-2330.911	20	-3036.591	5	-1256.084	5
5	N003	max	2321.175	6	2316.554	30	1787.024	2	1203.27	25	3034.766	15	2026.407	24
6		min	-2322.789	12	-346.179	24	-1784.499	20	-3726.922	7	-3036.536	9	-6255.012	6
7	N004	max	2441.142	4	2316.557	34	1591.966	14	1238.823	15	3034.77	19	6308.337	10
8		min	-2438.297	22	-346.179	16	-1592.014	8	-3642.771	9	-3036.54	13	-2010.694	16
9	Totals:	max	5809.195	17	6141.771	33	6126.677	14						
10		min	-5809.195	11	2431.538	14	-6126.677	8						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	H001	HSS5x3x5	0.347	0	6	0.14	0	z	9	139602.037	169740	15456	22149	2.376	H1-1b
2	H002	HSS5x3x5	0.347	0	10	0.14	0	z	13	139602.037	169740	15456	22149	2.376	H1-1b
3	H003	PIPE_3.0	0.158	43.751	11	0.11	43.751		2	28614.088	78246	6898.5	6898.5	2.164	H1-1b
4	H004	HSS5x3x5	0.347	0	2	0.14	0	z	5	139602.037	169740	15456	22149	2.376	H1-1b
5	H005	PIPE_3.0	0.158	43.751	3	0.11	43.751		6	28614.088	78246	6898.5	6898.5	2.164	H1-1b
6	H006	PIPE_3.0	0.158	43.751	7	0.11	43.751		10	28614.088	78246	6898.5	6898.5	2.164	H1-1b
7	H007	PIPE_3.0	0.152	7.794	2	0.103	7.794		4	77888.459	78246	6898.5	6898.5	1.062	H1-1b

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
8	H008	PIPE_3.0	0.152	7.794	6	0.103	7.794		8	77888.459	78246	6898.5	6898.5	1.062	H1-1b
9	H009	PIPE_3.0	0.152	7.794	10	0.103	7.794		12	77888.459	78246	6898.5	6898.5	1.062	H1-1b
10	H010	PIPE_3.0	0.252	23.383	3	0.126	23.383		5	75086.325	78246	6898.5	6898.5	1.335	H1-1b
11	H011	PIPE_3.0	0.252	23.383	7	0.126	23.383		9	75086.325	78246	6898.5	6898.5	1.335	H1-1b
12	H012	PIPE_3.0	0.252	23.383	11	0.126	23.383		13	75086.325	78246	6898.5	6898.5	1.335	H1-1b
13	H013	L 1.5x1.5x4	0.068	15.206	17	0.008	29.79	z	26	8987.293	22469.4	217.337	862.522	1.137	H2-1
14	H014	L 1.5x1.5x4	0.068	15.206	21	0.008	29.79	z	30	8987.293	22469.4	217.337	862.522	1.137	H2-1
15	H015	L 1.5x1.5x4	0.068	15.206	25	0.008	29.79	z	34	8987.293	22469.4	217.337	862.522	1.137	H2-1
16	H016	L 1.5x1.5x4	0.072	15.206	23	0.009	29.79	y	26	8987.293	22469.4	217.337	862.522	1.137	H2-1
17	H017	L 1.5x1.5x4	0.072	15.206	15	0.009	29.79	y	30	8987.293	22469.4	217.337	862.522	1.137	H2-1
18	H018	L 1.5x1.5x4	0.072	15.206	19	0.009	29.79	y	34	8987.293	22469.4	217.337	862.522	1.137	H2-1
19	H019	PIPE_2.5	0.161	90.627	9	0.164	137.504		2	14558.045	50715	3596.25	3596.25	2.491	H1-1b
20	H020	PIPE_2.5	0.161	90.627	13	0.164	137.504		6	14558.045	50715	3596.25	3596.25	2.491	H1-1b
21	H021	PIPE_2.5	0.161	90.627	5	0.164	137.504		10	14558.045	50715	3596.25	3596.25	2.491	H1-1b
22	H022	PIPE_2.0	0.153	0	3	0.226	0		11	38162.512	38556	2245.95	2245.95	1.278	H1-1b
23	H023	PIPE_2.0	0.153	0	7	0.226	0		3	38162.512	38556	2245.95	2245.95	1.278	H1-1b
24	H024	PIPE_2.0	0.153	0	11	0.226	0		7	38162.512	38556	2245.95	2245.95	1.278	H1-1b
25	MP027	PIPE_2.5	0.263	86.625	2	0.062	86.625		9	22465.026	50715	3596.25	3596.25	1.605	H1-1b
26	MP030	PIPE_2.5	0.224	86.625	13	0.041	86.625		9	22465.026	50715	3596.25	3596.25	2.161	H1-1b
27	MP033	PIPE_2.5	0.333	86.625	3	0.044	86.625		7	22465.026	50715	3596.25	3596.25	2.631	H1-1b
28	MP036	PIPE_2.5	0.257	86.625	2	0.062	86.625		7	22465.026	50715	3596.25	3596.25	2.207	H1-1b
29	MP039	PIPE_2.5	0.263	86.625	10	0.062	86.625		5	22465.026	50715	3596.25	3596.25	2.745	H1-1b
30	MP042	PIPE_2.5	0.224	86.625	9	0.041	86.625		5	22465.026	50715	3596.25	3596.25	2.209	H1-1b
31	MP045	PIPE_2.5	0.333	86.625	11	0.044	86.625		3	22465.026	50715	3596.25	3596.25	2.502	H1-1b
32	MP048	PIPE_2.5	0.257	86.625	10	0.062	86.625		3	22465.026	50715	3596.25	3596.25	2.394	H1-1b
33	MP051	PIPE_2.5	0.263	86.625	6	0.062	86.625		13	22465.026	50715	3596.25	3596.25	2.524	H1-1b
34	MP054	PIPE_2.5	0.224	86.625	5	0.041	86.625		13	22465.026	50715	3596.25	3596.25	2.173	H1-1b
35	MP057	PIPE_2.5	0.333	86.625	7	0.044	86.625		11	22465.026	50715	3596.25	3596.25	1.945	H1-1b
36	MP060	PIPE_2.5	0.257	86.625	6	0.062	86.625		11	22465.026	50715	3596.25	3596.25	2.205	H1-1b

CENTERLINE

EXHIBIT G

Power Density/RF Emissions Report

Radio Frequency Exposure Analysis Report

January 17, 2024

T-Mobile

Site Name: Amtrak_OldLyme2
Site ID: CTNL801A
Site Address: 61-1 Buttonball Road, Old Lyme, CT 6371

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

Signed 17 January 2024

Site Compliance Summary

T-Mobile Compliance Status:	Compliant
Cumulative Calculated Power Density (Ground Level):	45.24316 µW/cm^2
Cumulative General Population % MPE (Ground Level):	4.52454%
Cumulative Calculated Power Density (30' Adjacent Building Level):	93.92432 µW/cm^2
Cumulative General Population % MPE (30' Adjacent Building Level):	9.39389%

January 17, 2024

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

RF Exposure Analysis for Site: **Amtrak_OldLyme2**

Centerline was contracted to analyze the proposed T-Mobile facility at **61-1 Buttonball Road, Old Lyme, CT 6371** for the purpose of determining whether the predictive exposure from the proposed facility is within specified federal limits.

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

All results were compared to the FCC radio frequency exposure rules as detailed in 47 CFR § 1.1307(b) to determine compliance with the MPE limits for General Population/Uncontrolled environments as defined below.

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

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/ controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits, as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means. Additional details can be found in FCC OET 65.

Calculation Methodology

Centerline 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 and on the adjacent 30' rooftop.

The theoretical calculations performed in Roofmaster® determine the cumulative exposure at all sample points at ground level and on the adjacent rooftop (0-6' spatial average) and the 30' adjacent building level (30-36' spatial average). The results from highest cumulative sample point at ground level surrounding the site and on the adjacent rooftop west of the site are displayed in the tables 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.

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Maximum Calculated Cumulative Power Density @ Ground Level
(Location: approximately 278' west 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 ($\mu W/cm^2$)	General Population MPE Limit ($\mu W/cm^2$)	General Population % MPE
T-Mobile A 1	ERICSSON SON_AIR6419	2500	15.55	99.00	2.00	30.00	2153.53	0.00000	1000.00	0.00000
T-Mobile A 1	ERICSSON SON_AIR6419	2500	22.05	99.00	2.00	90.00	28858.42	0.95103	1000.00	0.09510
T-Mobile A 2	RFS APXVAALL24 43-U-NA20	700	13.65	99.00	4.00	40.00	3707.83	0.00000	466.67	0.00000
T-Mobile A 2	RFS APXVAALL24 43-U-NA20	600	12.95	99.00	2.00	40.00	1577.94	0.00000	400.00	0.00000
T-Mobile A 2	RFS APXVAALL24 43-U-NA20	600	12.95	99.00	2.00	30.00	1183.45	0.00000	400.00	0.00000
T-Mobile A 2	RFS APXVAALL24 43-U-NA20	1900	15.45	99.00	4.00	35.00	4910.53	0.00000	1000.00	0.00000
T-Mobile A 2	RFS APXVAALL24 43-U-NA20	1900	15.45	99.00	4.00	40.00	5612.03	0.00000	1000.00	0.00000
T-Mobile A 2	RFS APXVAALL24 43-U-NA20	2100	16.45	99.00	4.00	60.00	10597.69	0.00000	1000.00	0.00000
T-Mobile B 3	ERICSSON SON_AIR6419	2500	15.55	99.00	2.00	30.00	2153.53	0.00000	1000.00	0.00000
T-Mobile B 3	ERICSSON SON_AIR6419	2500	22.05	99.00	2.00	90.00	28858.42	0.21047	1000.00	0.02105
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	700	13.65	99.00	4.00	40.00	3707.83	0.00000	466.67	0.00000
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	600	12.95	99.00	2.00	40.00	1577.94	0.00000	400.00	0.00000
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	600	12.95	99.00	2.00	30.00	1183.45	0.00000	400.00	0.00000
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	1900	15.45	99.00	4.00	35.00	4910.53	0.00000	1000.00	0.00000
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	1900	15.45	99.00	4.00	40.00	5612.03	0.00000	1000.00	0.00000
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	2100	16.45	99.00	4.00	60.00	10597.69	0.00000	1000.00	0.00000
T-Mobile C 5	ERICSSON SON_AIR6419	2500	15.55	99.00	2.00	30.00	2153.53	0.00087	1000.00	0.00009
T-Mobile C 5	ERICSSON SON_AIR6419	2500	22.05	99.00	2.00	90.00	28858.42	44.07520	1000.00	4.40752
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	700	13.65	99.00	4.00	40.00	3707.83	0.00048	466.67	0.00010
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	600	12.95	99.00	2.00	40.00	1577.94	0.00020	400.00	0.00005
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	600	12.95	99.00	2.00	30.00	1183.45	0.00014	400.00	0.00004
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	1900	15.45	99.00	4.00	35.00	1227.63	0.00044	1000.00	0.00004
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	1900	15.45	99.00	4.00	40.00	1403.01	0.00050	1000.00	0.00005
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	2100	16.45	99.00	4.00	60.00	2649.42	0.00066	1000.00	0.00007
Dish A 7	JMA MX08FRO665-21	700	12.05	73.20	4.00	30.00	480.97	0.00001	466.67	0.00000
Dish A 7	JMA MX08FRO665-21	2007	15.75	73.20	4.00	40.00	1503.35	0.00000	1000.00	0.00000
Dish A 7	JMA MX08FRO665-21	2100	16.75	73.20	4.00	40.00	1892.61	0.00000	1000.00	0.00000
Dish B 8	JMA MX08FRO665-21	700	12.05	73.20	4.00	30.00	480.97	0.00000	466.67	0.00000
Dish B 8	JMA MX08FRO665-21	2007	15.75	73.20	4.00	40.00	1503.35	0.00000	1000.00	0.00000
Dish B 8	JMA MX08FRO665-21	2100	16.75	73.20	4.00	40.00	1892.61	0.00000	1000.00	0.00000
Dish C 9	JMA MX08FRO665-21	700	12.05	73.20	4.00	30.00	480.97	0.00099	466.67	0.00021

Dish C 9	JMA MX08FRO665-21	2007	15.75	73.20	4.00	40.00	1503.35	0.00106	1000.00	0.00011
Dish C 9	JMA MX08FRO665-21	2100	16.75	73.20	4.00	40.00	1892.61	0.00111	1000.00	0.00011
							Cumulative Power Density:	**45.24316 µW/cm²**	**Cumulative % MPE:**	**4.52454%**

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Maximum Calculated Cumulative Power Density @ 30' Adjacent Building
(Location: approximately 200' southwest of site)

Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/ Channel (watts)	ERP (watts)	Calculated Power Density ($\mu W/cm^2$)	General Population MPE Limit ($\mu W/cm^2$)	General Population % MPE
T-Mobile A 1	ERICSSON SON_AIR6419	2500	15.55	99.00	2.00	30.00	2153.53	0.00001	1000.00	0.00000
T-Mobile A 1	ERICSSON SON_AIR6419	2500	22.05	99.00	2.00	90.00	28858.42	0.29678	1000.00	0.02968
T-Mobile A 2	RFS APXVAALL24 43-U-NA20	700	13.65	99.00	4.00	40.00	3707.83	0.00000	466.67	0.00000
T-Mobile A 2	RFS APXVAALL24 43-U-NA20	600	12.95	99.00	2.00	40.00	1577.94	0.00000	400.00	0.00000
T-Mobile A 2	RFS APXVAALL24 43-U-NA20	600	12.95	99.00	2.00	30.00	1183.45	0.00000	400.00	0.00000
T-Mobile A 2	RFS APXVAALL24 43-U-NA20	1900	15.45	99.00	4.00	35.00	4910.53	0.00001	1000.00	0.00000
T-Mobile A 2	RFS APXVAALL24 43-U-NA20	1900	15.45	99.00	4.00	40.00	5612.03	0.00001	1000.00	0.00000
T-Mobile A 2	RFS APXVAALL24 43-U-NA20	2100	16.45	99.00	4.00	60.00	10597.69	0.00002	1000.00	0.00000
T-Mobile B 3	ERICSSON SON_AIR6419	2500	15.55	99.00	2.00	30.00	2153.53	0.00002	1000.00	0.00000
T-Mobile B 3	ERICSSON SON_AIR6419	2500	22.05	99.00	2.00	90.00	28858.42	2.29314	1000.00	0.22931
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	700	13.65	99.00	4.00	40.00	3707.83	0.00002	466.67	0.00000
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	600	12.95	99.00	2.00	40.00	1577.94	0.00001	400.00	0.00000
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	600	12.95	99.00	2.00	30.00	1183.45	0.00000	400.00	0.00000
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	1900	15.45	99.00	4.00	35.00	4910.53	0.00000	1000.00	0.00000
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	1900	15.45	99.00	4.00	40.00	5612.03	0.00000	1000.00	0.00000
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	2100	16.45	99.00	4.00	60.00	10597.69	0.00002	1000.00	0.00000
T-Mobile C 5	ERICSSON SON_AIR6419	2500	15.55	99.00	2.00	30.00	2153.53	0.00355	1000.00	0.00036
T-Mobile C 5	ERICSSON SON_AIR6419	2500	22.05	99.00	2.00	90.00	28858.42	91.29143	1000.00	9.12914
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	700	13.65	99.00	4.00	40.00	3707.83	0.00205	466.67	0.00044
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	600	12.95	99.00	2.00	40.00	1577.94	0.00108	400.00	0.00027
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	600	12.95	99.00	2.00	30.00	1183.45	0.00081	400.00	0.00020
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	1900	15.45	99.00	4.00	35.00	1227.63	0.00169	1000.00	0.00017
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	1900	15.45	99.00	4.00	40.00	1403.01	0.00194	1000.00	0.00019
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	2100	16.45	99.00	4.00	60.00	2649.42	0.00345	1000.00	0.00035
Dish A 7	JMA MX08FRO665-21	700	12.05	73.20	4.00	30.00	480.97	0.00001	466.67	0.00000
Dish A 7	JMA MX08FRO665-21	2007	15.75	73.20	4.00	40.00	1503.35	0.00000	1000.00	0.00000
Dish A 7	JMA MX08FRO665-21	2100	16.75	73.20	4.00	40.00	1892.61	0.00000	1000.00	0.00000
Dish B 8	JMA MX08FRO665-21	700	12.05	73.20	4.00	30.00	480.97	0.00003	466.67	0.00001
Dish B 8	JMA MX08FRO665-21	2007	15.75	73.20	4.00	40.00	1503.35	0.00000	1000.00	0.00000
Dish B 8	JMA MX08FRO665-21	2100	16.75	73.20	4.00	40.00	1892.61	0.00001	1000.00	0.00000
Dish C 9	JMA MX08FRO665-21	700	12.05	73.20	4.00	30.00	480.97	0.00811	466.67	0.00174
Dish C 9	JMA MX08FRO665-21	2007	15.75	73.20	4.00	40.00	1503.35	0.01041	1000.00	0.00104
Dish C 9	JMA MX08FRO665-21	2100	16.75	73.20	4.00	40.00	1892.61	0.00971	1000.00	0.00097

Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/ Channel (watts)	ERP (watts)	Calculated Power Density ($\mu W/cm^2$)	General Population MPE Limit ($\mu W/cm^2$)	General Population % MPE
							Cumulative Power Density:	93.92432 $\mu W/cm^2$	Cumulative % MPE:	9.39389%

Summary

The theoretical calculations performed for this analysis yielded cumulative power density totals in all areas at ground level and on the 30' adjacent building level that are within the allowable federal limits for public exposure to RF energy. Therefore, the site is **compliant** with FCC rules and regulations.

Katrina Styx
RF EME Technical Writer
Centerline

CENTERLINE

EXHIBIT H

Mailing Receipts/Proof of Notice

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

2 LBS **1 OF 1**

SHIP TO:
ATTN: CHRISTOPHER SANDOR
8082238587
AMERICAN TOWER CORPORATION
10 PRESIDENTIAL WAY
WOBURN MA 01801-1053

MA 018 9-04

UPS GROUND
TRACKING #: 1Z 9Y4 503 03 1650 6465

BILLING: P/P

Reference # 1: CTNL801A CC

CS 24.1.00. MACNV50 3.0A 01/2024*

TM

Subject: UPS Delivery Notification, Tracking Number 1Z9Y45030316506465
Date: Wednesday, January 24, 2024 at 11:45:59 AM Eastern Standard Time
From: UPS <pkginfo@ups.com>
To: Cullen Morgan <cmorgan@clinellc.com>

Hello, your package has been delivered.

Delivery Date: Wednesday, 01/24/2024
Delivery Time: 11:44 AM
Left At: INSIDE DELIV
Signed by: DONNA

CENTERLINE SITE ACQUISITION

Tracking Number:	1Z9Y45030316506465
Ship To:	AMERICAN TOWER CORPORATION 10 PRESIDENTIAL WAY WOBURN, MA 018011053 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.5 LBS
Reference Number:	CTNL801A CC

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

2 LBS **1 OF 1**

SHIP TO:
RON SWANEY LLC
59 BUTTONBALL ROAD
OLD LYME CT 06371-1705

CT 063 5-02

UPS GROUND
TRACKING #: 1Z 9Y4 503 03 1780 1474

BILLING: P/P

Reference # 1: CTNL801A CC

CS 24.1.00. MACNV50 3.0A 01/2024*

TM

Subject: UPS Delivery Notification, Tracking Number 1Z9Y45030317801474
Date: Tuesday, January 23, 2024 at 12:23:08 PM Eastern Standard Time
From: UPS <pkginfo@ups.com>
To: Cullen Morgan <cmorgan@clinellc.com>

Hello, your package has been delivered.

Delivery Date: Tuesday, 01/23/2024
Delivery Time: 12:21 PM
Left At: OTHER-RELEAS

CENTERLINE SITE ACQUISITION

Tracking Number:	1Z9Y45030317801474
Ship To:	RON SWANEY LLC 59 BUTTONBALL ROAD OLD LYME, CT 063711705 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.5 LBS
Reference Number:	CTNL801A CC

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

2 LBS **1 OF 1**

SHIP TO:
MARTHA SHOEMAKER, FIRST SELECTWOMAN
TOWN OF OLD LYME
52 LYME STREET
OLD LYME CT 06371-2331

CT 063 5-02

UPS GROUND
TRACKING #: 1Z 9Y4 503 03 1809 8484

BILLING: P/P

Reference # 1: CTNL801A CC

CS 24.1.00. MACNV50 3.0A 01/2024*

TM

Subject: UPS Delivery Notification, Tracking Number 1Z9Y45030318098484
Date: Tuesday, January 23, 2024 at 11:51:31 AM Eastern Standard Time
From: UPS <pkginfo@ups.com>
To: Cullen Morgan <cmorgan@clinellc.com>

Hello, your package has been delivered.

Delivery Date: Tuesday, 01/23/2024
Delivery Time: 11:50 AM
Signed by: CLERK

CENTERLINE SITE ACQUISITION

Tracking Number:	1Z9Y45030318098484
Ship To:	TOWN OF OLD LYME 52 LYME STREET OLD LYME, CT 063712331 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.5 LBS
Reference Number:	CTNL801A CC

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

2 LBS **1 OF 1**

SHIP TO:
MARK WAYLAND, BLDG OFFICIAL
TOWN OF OLD LYME
52 LYME STREET
OLD LYME CT 06371-2331

CT 063 5-02

UPS GROUND
TRACKING #: 1Z 9Y4 503 03 1779 7499

BILLING: P/P

Reference # 1: CTNL801A CC

CS 24.1.00. MACNV50 3.0A 01/2024*

TM

Cullen Morgan **Tuesday, January 23, 2024 at 12:07:18 Eastern Standard Time**

Subject: UPS Delivery Notification, Tracking Number 1Z9Y45030317797499
Date: Tuesday, January 23, 2024 at 11:51:35 AM Eastern Standard Time
From: UPS <pkginfo@ups.com>
To: Cullen Morgan <cmorgan@clinellc.com>

Hello, your package has been delivered.

Delivery Date: Tuesday, 01/23/2024
Delivery Time: 11:50 AM
Signed by: CLERK

CENTERLINE SITE ACQUISITION

Tracking Number:	1Z9Y45030317797499
Ship To:	TOWN OF OLD LYME 52 LYME STREET OLD LYME, CT 063712331 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.5 LBS
Reference Number:	CTNL801A CC

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

3 LBS **1 OF 1**

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

CT 067 9-06

UPS GROUND
TRACKING #: 1Z 9Y4 503 03 0582 6729

BILLING: P/P

Reference # 1: CTNL801A ZAP

CS 24.1.00. MACNV50 4.0A 01/2024*

TM