[redacted] Industrial Ave,
Suite 3
Mahwah NJ 07430

Phone: 201.684.0055
Fax: 201.684.0066

Transcend Wireless

August 5, 2021

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: -72.30122
T-Mobile Site#: CTNL801A - L600

Dear Ms. Bachman:

T-Mobile currently maintains three (3) antennas at the 95' level and three (3) antennas at the 97' level 100' Monopole at the existing facility at 61-1 Buttonball Road in Old Lyme, CT. The property is owned by Ron Swaney LLC. The tower is owned by American Tower. T-Mobile now intends to remove three (3) antennas and replace them with (6) L600/L700/N600/L2100 antennas. The new antennas support 5G services and will be installed at the 96' level of the monopole with a new mount.

Planned Modifications:
Tower:
Install New:
(3) AIR21 B4A/B2P Antennas
(3) APXVAALL24 43-U-NA20 Antennas
(3) Radio 4449 B71/B85
(3) 1 ⅝" Hybrid Cables
(1) Antenna Mount

Existing to Remain:
(3) AIR21 KRC11823 B2A B4P Antennas

To Be Removed:
(3) AIR21 KRC118048/1N Antennas
(6) KRY 11271 TTAs

(3) RRUs11 B12
(2) 1 ¼”Hybrid Cables

Ground Work:
Install (1) BBU and (1) BB6648

This tower was originally approved by the Connecticut Siting Council on September 12, 2001. Documentation on the original approval of the tower is enclosed with the submission. The proposed modification complies with all previous approvals.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for 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 First Selectman Tim Griswold, Elected Official, and Kim Groves, Land Use Administrator, as well as the property and 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).

Sincerely,

Eric Breun
Transcend Wireless
Cell: 201-658-7728
Email: ebreun@transcendwireless.com

Attachments
cc: Tim Griswold - First Selectman of Old Lyme
Kim Groves - Land Use Administrator
Ron Swaney LLC - Property Owner
American Tower - Tower Owner

ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

SHIP TO:
CONTACTS MANAGEMENT
AMERICAN TOWER CORPORATION
10 PRESIDENTIAL WAY
WOBURN MA 01801

MA 018 9-04

UPS GROUND

TRACKING #: 1Z V25 742 03 9626 4887

BILLING: P/P

Reference #1: CTNL801A

XOL 21.07.05 NV45 31.0A 07/2021*

ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

SHIP TO:
FIRST SELECTMAN
TIM GRISWOLD
52 LYME STREET
OLD LYME CT 06371

CT 063 5-02

UPS GROUND

TRACKING #: 1Z V25 742 03 9649 4870

BILLING: P/P

Reference #1: CTNL801A

XOL 21.07.05 NV45 31.0A 07/2021*

ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

SHIP TO:
LAND USE ADMIN
KIM GROVES
52 LYME STREET
OLD LYME CT 06371

CT 063 5-02

UPS GROUND
TRACKING #: 1Z V25 742 03 9674 4868

BILLING: P/P

Reference #1: CTNL801A

XOL 21.07.05 NV45 31.0A 07/2021*

ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

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

CT 063 5-02

UPS GROUND
TRACKING #: 1Z V25 742 03 9605 4890

BILLING: P/P

Reference #1: CTNL801A

XOL 21.07.05 NV45 31.0A 07/2021*

Hello, your package has been delivered.

Delivery Date: Wednesday, 08/04/2021

Delivery Time: 11:10 AM

Left At: RECEIVER

Signed by: DOOR

Set Delivery Instructions | Manage Preferences | View My Packages

TRANSCEND WIRELESS

Tracking Number:	1ZV257420396054890
Ship To:	RON SWANEY LLC 59 BUTTONBALL ROAD OLD LYME, CT 06371 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CTNL801A

Hello, your package has been delivered.

Delivery Date: Wednesday, 08/04/2021

Delivery Time: 11:34 AM

Left At: INSIDE DELIV

Signed by: JOY

TRANSCEND WIRELESS

Tracking Number:	1ZV257420396494870
Ship To:	TIM GRISWOLD 52 LYME STREET OLD LYME, CT 06371 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CTNL801A

Hello, your package has been delivered.

Delivery Date: Wednesday, 08/04/2021

Delivery Time: 11:34 AM

Left At: INSIDE DELIV

Signed by: JOY

TRANSCEND WIRELESS

Tracking Number:	1ZV257420396744868
Ship To:	KIM GROVES 52 LYME STREET OLD LYME, CT 06371 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CTNL801A

Hello, your package has been delivered.

Delivery Date: Wednesday, 08/04/2021

Delivery Time: 11:39 AM

Left At: FRONT DESK

Signed by: ANCRI

TRANSCEND WIRELESS

Tracking Number:	1ZV257420396264887
Ship To:	AMERICAN TOWER CORPORATION 10 PRESIDENTIAL WAY WOBURN, MA 01801 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CTNL801A

61-1 BUTTONBALL RD

Sales | Print | Map It

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
2019	$589,800	$108,600	$698,400

Assessment			
Valuation Year	Improvements	Land	Total
2019	$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		0271/0690	06/15/2001
SWANEY BARBARA	$0		0232/0734	07/01/1996

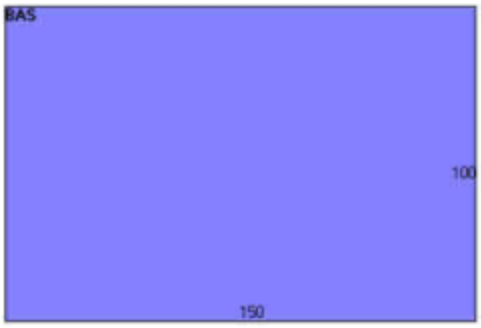
Building 1 : Section 1

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

Building Photo

Building Layout



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

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

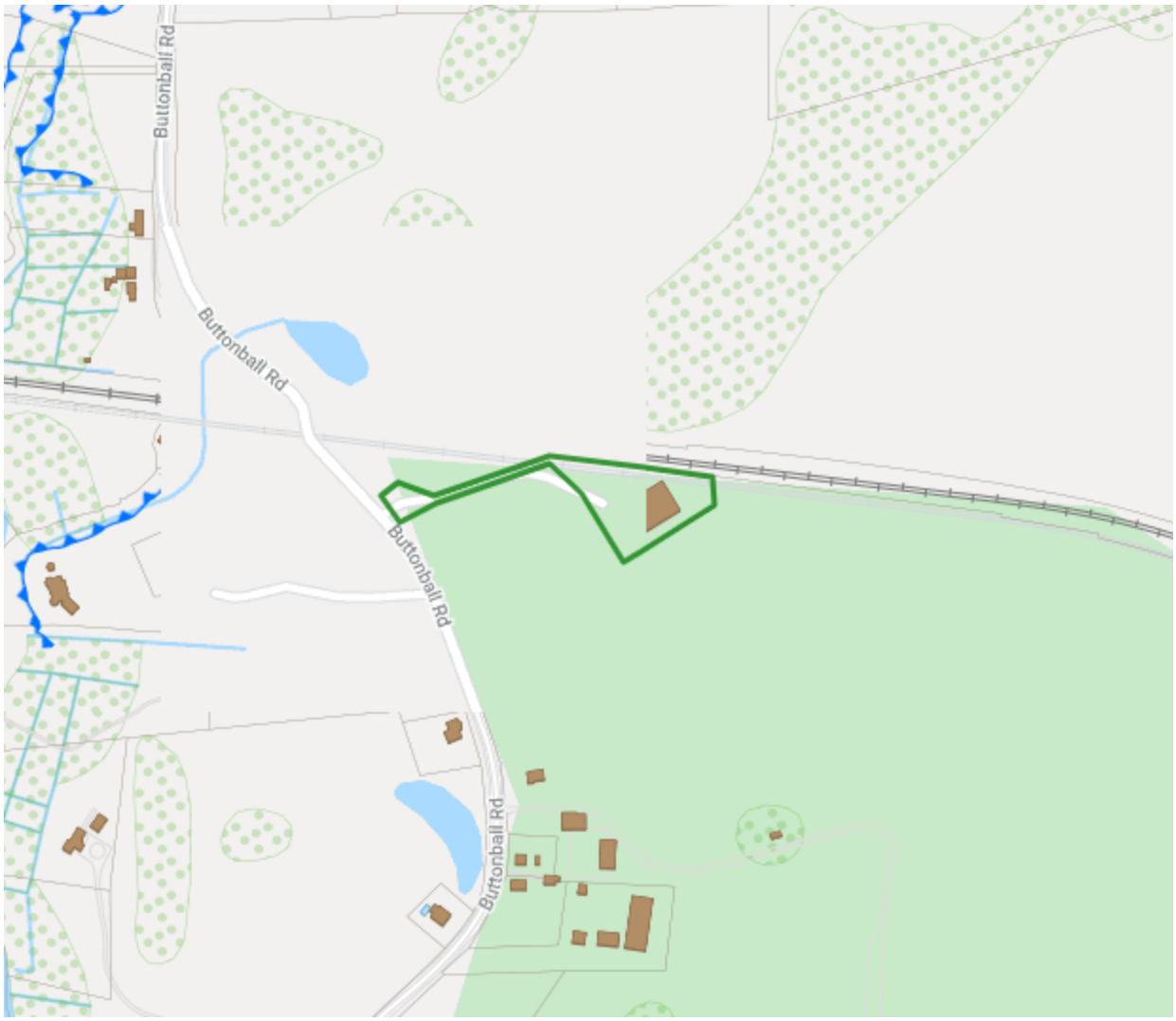
Outbuildings

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
2020	$589,800	$108,600	$698,400
2019	$778,900	$114,300	$893,200
2018	$778,900	$114,300	$893,200

Assessment			
Valuation Year	Improvements	Land	Total
2020	$412,800	$76,000	$488,800
2019	$545,300	$80,100	$625,400
2018	$545,300	$80,100	$625,400


Buttonball Rd
Buttonball Rd
Buttonball Rd
Buttonball Rd

DOCKET NO. 202 - Crown Atlantic Company LLC and Cellco Partnership d/b/a Cellco Wireless application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a cellular telecommunications facility off of Buttonball Road, located approximately 1,000 feet south of the intersection of Buttonball Road and the Amtrak railroad right-of-way, Old Lyme; or at 125 Mile Creek Road, Old Lyme, Connecticut.	} } } }	Connecticut Siting Council September 12, 2001

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, operation, and maintenance of a telecommunications facility at the proposed alternate #1 site in Old Lyme, Connecticut, 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 Crown Atlantic Company

LLC and Cellco Partnership d/b/a Verizon Wireless for the construction, maintenance, and operation of a cellular telecommunications facility located at 125 Mile Creek Road, Old Lyme, Connecticut. We deny certification of the proposed prime site.

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

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of Cellco and at least three other telecommunications entities, both public and private, but such tower shall not exceed a height of 160 feet above ground level (AGL), including appurtenances. The tower and foundation may be designed and constructed capable of being extended from 160 feet AGL to 190 feet AGL, with such extension subject to Council approval by petition for a declaratory ruling, pursuant to Sections 16-50j-38 through 16-50j-40 of the Regulations of Connecticut State Agencies.

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 submitted to and approved by the Council prior to the commencement of facility construction and shall include: a final site plan(s) for site

development to include the location and specifications for the tower foundation, antennas, equipment building, emergency generator and fuel tank, security fence, access road, and utility line; construction plans for site clearing, tree trimming, water drainage, and erosion and sedimentation controls consistent with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended; provisions for a single equipment building to accommodate the telecommunications equipment for at least three other telecommunications providers with provisions for expansion of the building and suitable architectural treatment; landscaping; a tower finish that may include painting; and provisions for the prevention and containment of spills and/or other discharge into surface water and groundwater bodies.

3. 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.

4. The Certificate Holder shall provide the Council with a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels originally calculated and provided in the application.

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.

TOP

6. If the facility does not initially provide, or permanently ceases to provide wireless services following completion of construction, 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.

7. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and cease to function.

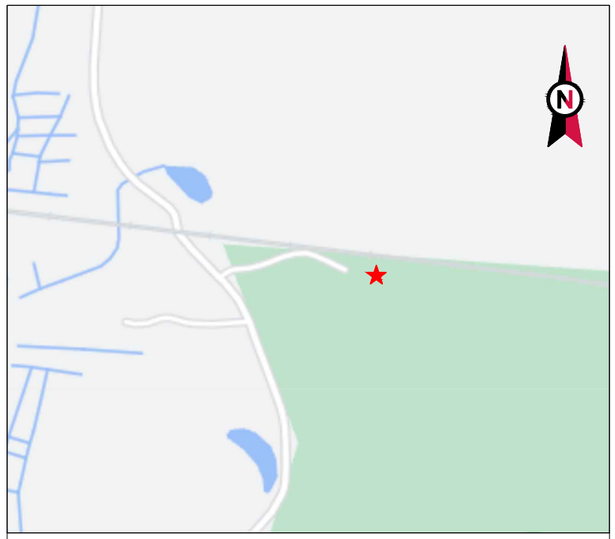
8. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the effective date of this Decision and Order or within three years after all appeals to this Decision and Order have been resolved.

Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The Hartford Courant, The Day, and the Pictorial/Gazette.

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 Crown Atlantic Company LLC and Cellco Partnership d/b/a Verizon Wireless	**Its Representative** Robert Stanford, Project Manager Crown Atlantic Company LLC 703 Hebron Avenue Glastonbury, CT 06033 Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103-3597
Intervenor Town of Old Lyme Zoning Commission	**Its Representative** Eric Knapp, Esq. Branse & Willis, LLC 41-C New London Turnpike Glen Lochen East Glastonbury, CT 06033-2038
Intervenor James B. Blair 38-1 Buttonball Road Old Lyme, CT 06371	
Party John P. McCarthy Judith A. McCarthy 54 Buttonball Road Old Lyme, CT 06371	



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 6371

LOCATION MAP

T-MOBILE L600 ANTENNA AMENDMENT PLAN
67D02C OUTDOOR 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.

1. 2018 CT STATE BUILDING CODE/ 2015 IBC W/ CT AMENDMENTS
2. 2018 CT STATE BUILDING CODE/ 2017 NEC W/ CT AMENDMENTS
3. LOCAL BUILDING CODE
4. CITY/COUNTY ORDINANCES

UTILITY COMPANIES

POWER COMPANY: N/A
PHONE: N/A
TELEPHONE COMPANY: N/A
PHONE: N/A

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

PROJECT SUMMARY

SITE ADDRESS:

61-1 BUTTONBALL ROAD

OLD LYME, CT 6371

COUNTY: NEW LONDON

GEOGRAPHIC COORDINATES:

LATITUDE: 41.296472

LONGITUDE: -72.30122

GROUND ELEVATION: 40' AMSL

PROJECT TEAM

TOWER OWNER:

AMERICAN TOWER
10 PRESIDENTIAL WAY
WOBURN, MA 01801

APPLICANT:

T-MOBILE
6200 OAK TREE BLVD, STE 125
INDEPENDENCE, OH 44131

ENGINEER:

POWER OF DESIGN GROUP, LLC
11490 BLUEGRASS PKWY
LOUISVILLE, KY 40299

PROPERTY OWNER:

LANDMARK INFRASTRUCTURE HOLDING COMPANY 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 EXISTING MOUNT(s), (3) ANTENNA(s), (3) RRH(s), (6) TTA(s), (12) COAX CABLE(s), AND (2) HYBRID CABLE(s)

INSTALL (1) MOUNT(s), (6) ANTENNA(s), (3) RRH(s), AND (3) HYBRID CABLE(s)

EXISTING (3) ANTENNA(s) TO REMAIN

GROUND WORK:

INSTALL (1) BBU(s), (1) BB6648(s)

EXISTING (1) DUW30(s), (1) DUG20(s), (1) BB 6630(s) TO REMAIN

THE PROPOSED PROJECT DOES NOT INCLUDE ELECTRICAL SCOPE

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.

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	07/07/21	AJ
G-002	GENERAL NOTES	0	07/07/21	AJ
C-101	DETAILED SITE PLAN	0	07/07/21	AJ
C-102	DETAILED GROUND PLAN	0	07/07/21	AJ
C-201	TOWER ELEVATION	0	07/07/21	AJ
C-401	ANTENNA INFORMATION & SCHEDULE	0	07/07/21	AJ
C-501	CONSTRUCTION DETAILS	0	07/07/21	AJ
E-501	GROUNDING DETAILS	0	07/07/21	AJ
R-601	SUPPLEMENTAL			
R-602	SUPPLEMENTAL			

AMERICAN TOWER®

POD POWER OF DESIGN
11490 BLUEGRASS PKWY
LOUISVILLE, KY 40299
502-437-5252

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	AJ	07/07/21

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 6371

SEAL:

07/07/2021

T-Mobile

DATE DRAWN:	07/07/21
ATC JOB NO:	13678001
CUSTOMER ID:	AMTRAK_OLDLYME2
CUSTOMER #:	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. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY INCLUDING COMPLIANCE WITH ALL APPLICABLE OSHA STANDARDS AND RECOMMENDATIONS AND SHALL PROVIDE ALL NECESSARY SAFETY DEVICES INCLUDING PPE AND PPM AND CONSTRUCTION DEVICES SUCH AS WELDING AND FIRE PREVENTION, TEMPORARY SHORING, SCAFFOLDING, TRENCH BOXES/SLOPING, BARRIERS, ETC.
29. THE CONTRACTOR SHALL PROTECT AT HIS OWN EXPENSE, ALL EXISTING FACILITIES AND SUCH OF HIS NEW WORK LIABLE TO INJURY DURING THE CONSTRUCTION PERIOD. ANY DAMAGE CAUSED BY NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, OR BY THE ELEMENTS DUE TO NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, EITHER TO THE EXISTING WORK, OR TO HIS WORK OR THE WORK OF ANY OTHER CONTRACTOR, SHALL BE REPAIRED AT HIS EXPENSE TO THE OWNER'S SATISFACTION.
30. ALL WORK SHALL BE INSTALLED IN A FIRST CLASS, NEAT AND WORKMANLIKE MANNER BY MECHANICS SKILLED IN THE TRADE INVOLVED. THE QUALITY OF WORKMANSHIP SHALL BE SUBJECT TO THE APPROVAL OF THE T-MOBILE REP. ANY WORK FOUND BY THE T-MOBILE REP TO BE OF INFERIOR QUALITY AND/OR WORKMANSHIP SHALL BE REPLACED AND/OR REWORKED AT CONTRACTOR EXPENSE UNTIL APPROVAL IS OBTAINED.
31. IN ORDER TO ESTABLISH STANDARDS OF QUALITY AND PERFORMANCE, ALL TYPES OF MATERIALS LISTED HEREINAFTER BY MANUFACTURER'S NAMES AND/OR MANUFACTURER'S CATALOG NUMBER SHALL BE PROVIDED BY THESE MANUFACTURERS AS SPECIFIED.
32. T-MOBILE FURNISHED EQUIPMENT SHALL BE PICKED-UP AT THE T-MOBILE WAREHOUSE, NO LATER THAN 48HR AFTER BEING NOTIFIED INSURED, STORED, UNCRATE, PROTECTED AND INSTALLED BY THE CONTRACTOR WITH ALL APPURTENANCES REQUIRED TO PLACE THE EQUIPMENT IN OPERATION, READY FOR USE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EQUIPMENT AFTER PICKING IT UP.
33. T-MOBILE OR HIS ARCHITECT/ENGINEER RESERVES THE RIGHT TO REJECT ANY EQUIPMENT OR MATERIALS WHICH, IN HIS OWN OPINION ARE NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS, EITHER BEFORE OR AFTER INSTALLATION AND THE EQUIPMENT SHALL BE REPLACED WITH EQUIPMENT CONFORMING TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS BY THE CONTRACTOR AT NO COST TO T-MOBILE OR THEIR ARCHITECT/ENGINEER.

SPECIAL CONSTRUCTION ANTENNA INSTALLATION NOTES:

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

POD
POWER OF DESIGN
11490 BLUEGRASS PKWY
LOUISVILLE, KY 40299
502-437-5252

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	AJ	07/07/21

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 6371

SEAL:

T-Mobile

DATE DRAWN:	07/07/21
ATC JOB NO:	13678001
CUSTOMER ID:	AMTRAK_OLDLYME2
CUSTOMER #:	CTNL801A

GENERAL NOTES

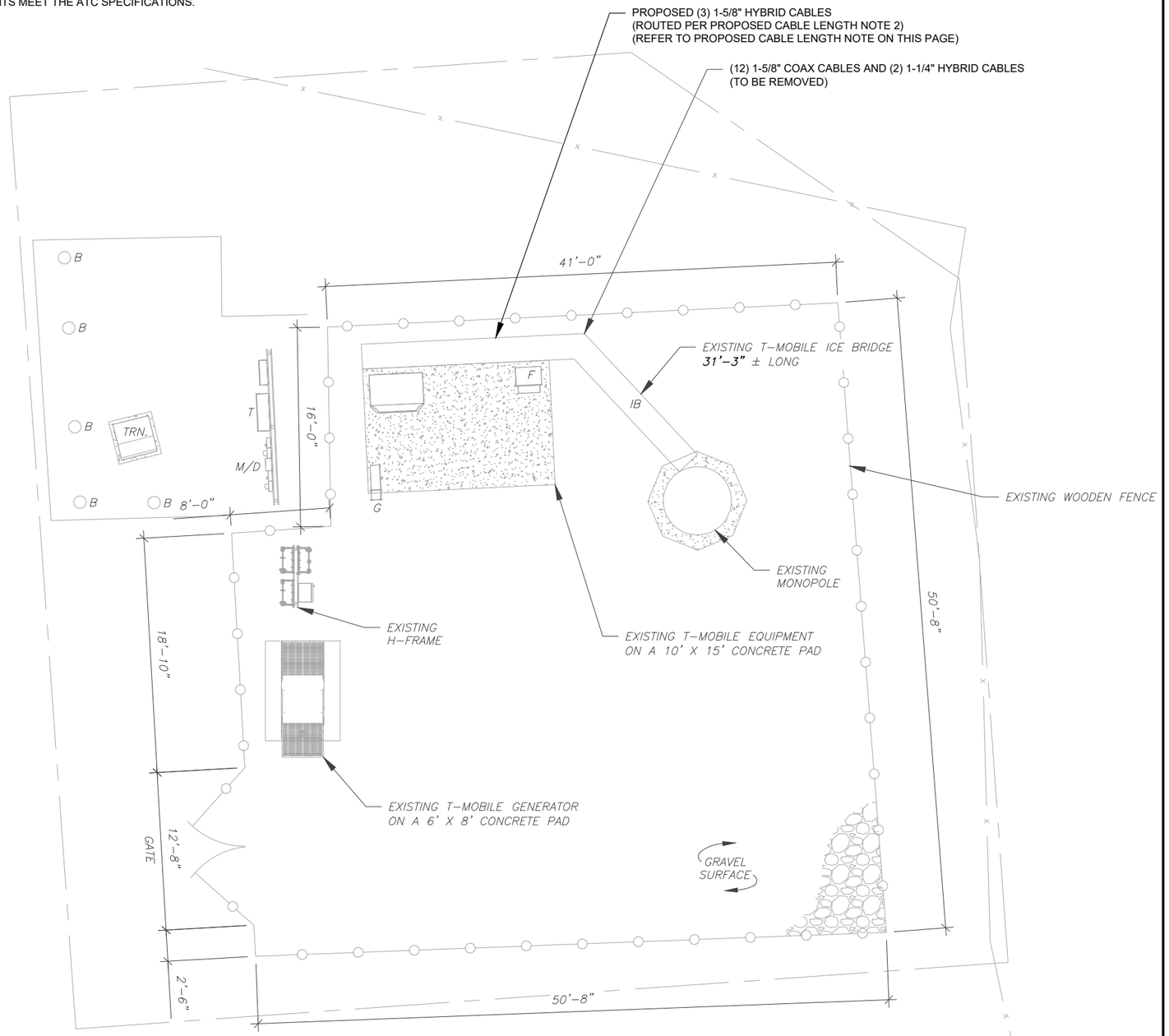
SHEET NUMBER:	REVISION:
G-002	0

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 RECEPTACAL
HH, V	HAND HOLE, VAULT
IB	ICE BRIDGE
K	KENTROX BOX
LC	LIGHTING CONTROL
M	METER
PB	PULL BOX
PP	POWER POLE
T	TELCO
TRN	TRANSFORMER
x	CHAINLINK FENCE



1 DETAILED SITE PLAN

GRAPHIC SCALE

10 0 5 10

(IN FEET)
1 UNIT = 10 FEET

PROPOSED CABLE LENGTH:

1. ESTIMATED LENGTH OF PROPOSED CABLE IS **147'**. ESTIMATED LENGTH OF CABLE WAS PROVIDED BY CUSTOMER OR CALCULATED BY ADDING THE RAD CENTER AND THE DISTANCE FROM THE SHELTER ENTRY PLATE TO THE TOWER (ALONG THE ICE BRIDGE) AND A SAFETY FACTOR MEASUREMENT OF 15% (OF THE TWO PREVIOUS VALUES), CDS DEFER TO GREATEST CABLE LENGTH.
2. ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. IF ADEQUATE SPACE EXISTS, ROUTE CABLES THROUGH ENTRY PORT HOLE, UP INSIDE OF MONOPOLE, AND THROUGH EXIT PORT HOLE. IF ROUTING OUTSIDE THE MONOPOLE, ATTACH CABLES USING STAND-OFF ADAPTERS MOUNTED TO TOWER USING STAINLESS STEEL BANDING. ADEQUATELY SECURE CABLES USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER.

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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 6371

SEAL:

STATE OF CONNECTICUT
MARK E. PATTERSON
No. 31284
LICENSED
PROFESSIONAL ENGINEER
07/07/2021

T-Mobile

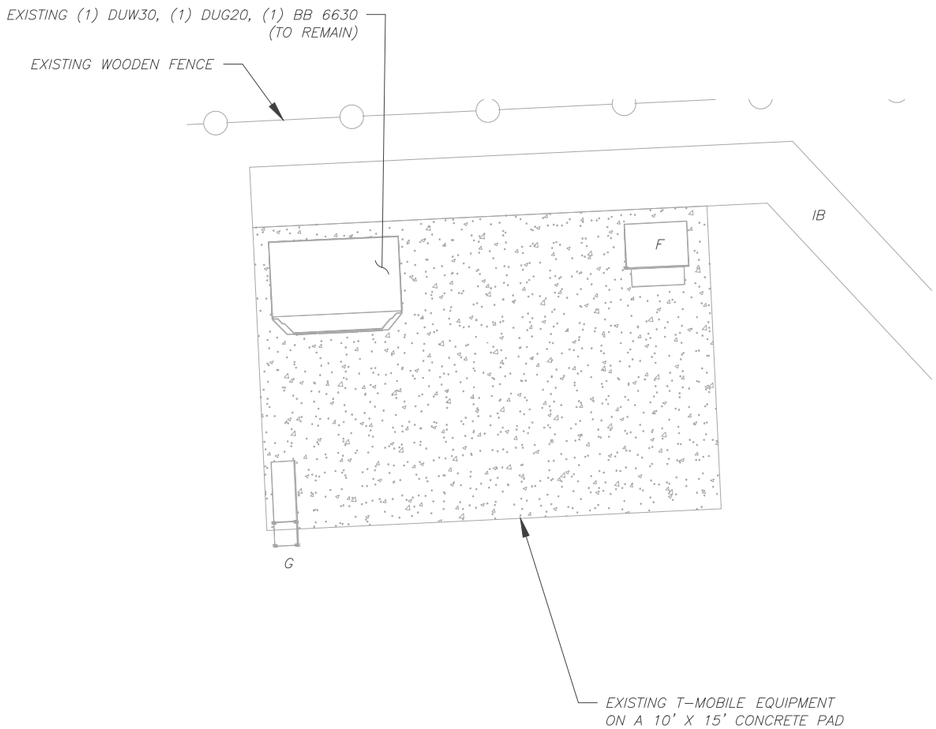
DATE DRAWN:	07/07/21
ATC JOB NO:	13678001
CUSTOMER ID:	AMTRAK_OLDLYME2
CUSTOMER #:	CTNL801A

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. REMOVE EXISTING 2G CABINETS, AND POWER / TELCO WHIPS ASSOCIATED WITH THE DEAD EQUIPMENT IF APPLICABLE.
3. ALL OPEN PORTS NEED TO BE SEALED / WEATHERPROOFED PROPERLY
4. ALL UNNEEDED / EXCESS EQUIPMENT AND GARBAGE TO BE REMOVED FROM EQUIPMENT AREA. DISPOSE OF MATERIALS PROPERLY OFF SITE.

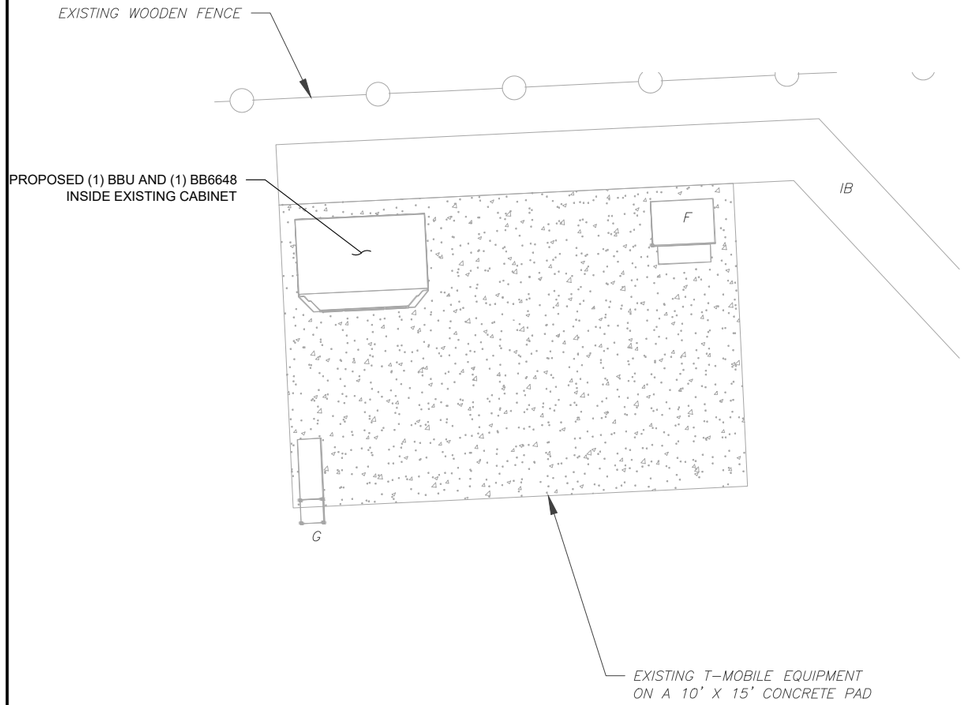


1 EXISTING GROUND EQUIPMENT LAYOUT

0 5' 10'

SCALE: 1"=5' (11X17)
1"=2.5' (22X34)

T-MOBILE CM APPROVAL REQUIRED BEFORE INSTALLING CABINETS



2 PROPOSED GROUND EQUIPMENT LAYOUT

0 5' 10'

SCALE: 1"=5' (11X17)
1"=2.5' (22X34)

AMERICAN TOWER®

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502-437-5252

REV.	DESCRIPTION	BY	DATE
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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 6371

SEAL:

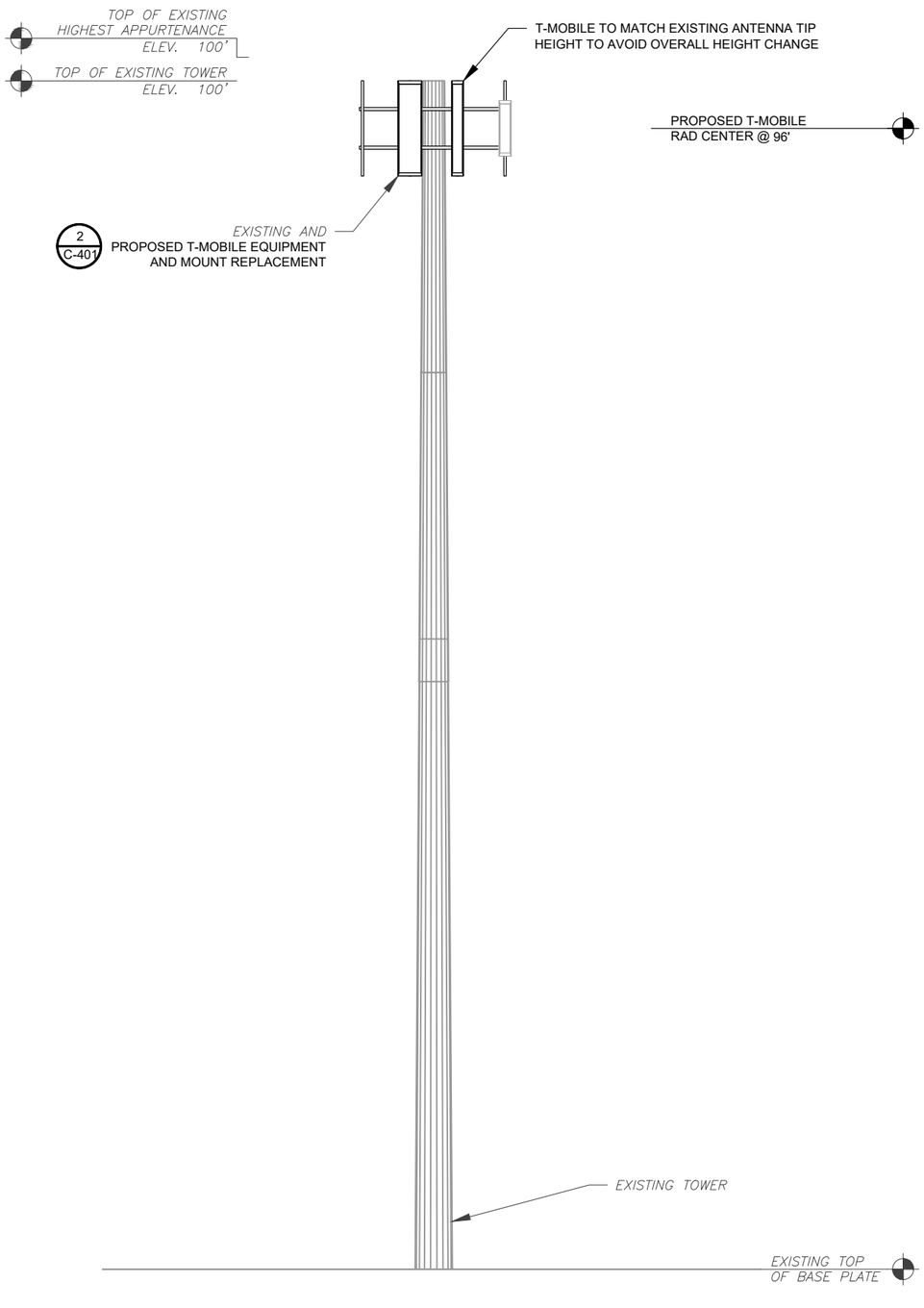
07/07/2021

T-Mobile

DATE DRAWN:	07/07/21
ATC JOB NO:	13678001
CUSTOMER ID:	AMTRAK_OLDLYME2
CUSTOMER #:	CTNL801A

DETAILED GROUND PLAN

SHEET NUMBER:	REVISION:
C-102	0



1 TOWER ELEVATION
SCALE: N.T.S.

ATC IS ANALYZING THE ANTENNA MOUNT UNDER A SEPARATE PROJECT. CONSTRUCTION IS NOT TO PROCEED UNTIL THE MOUNT ANALYSIS IS COMPLETE AND INDICATES THE ADDITIONAL LOADING DOES NOT OVERSTRESS THE MOUNT

TOWER NOTE:

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

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T-MOBILE SITE NAME:
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SITE ADDRESS:
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OLD LYME, CT 6371

SEAL:

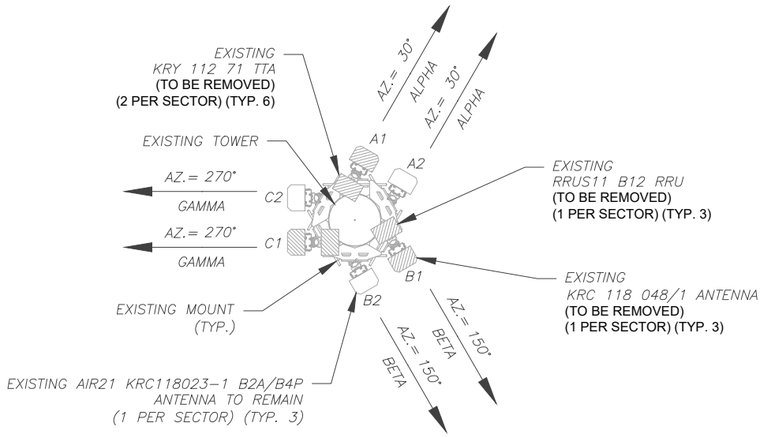
STATE OF CONNECTICUT
MARK E. PATTERSON
No. 31284
LICENSED PROFESSIONAL ENGINEER
07/07/2021

T-Mobile

DATE DRAWN:	07/07/21
ATC JOB NO:	13678001
CUSTOMER ID:	AMTRAK_OLDLYME2
CUSTOMER #:	CTNL801A

TOWER ELEVATION

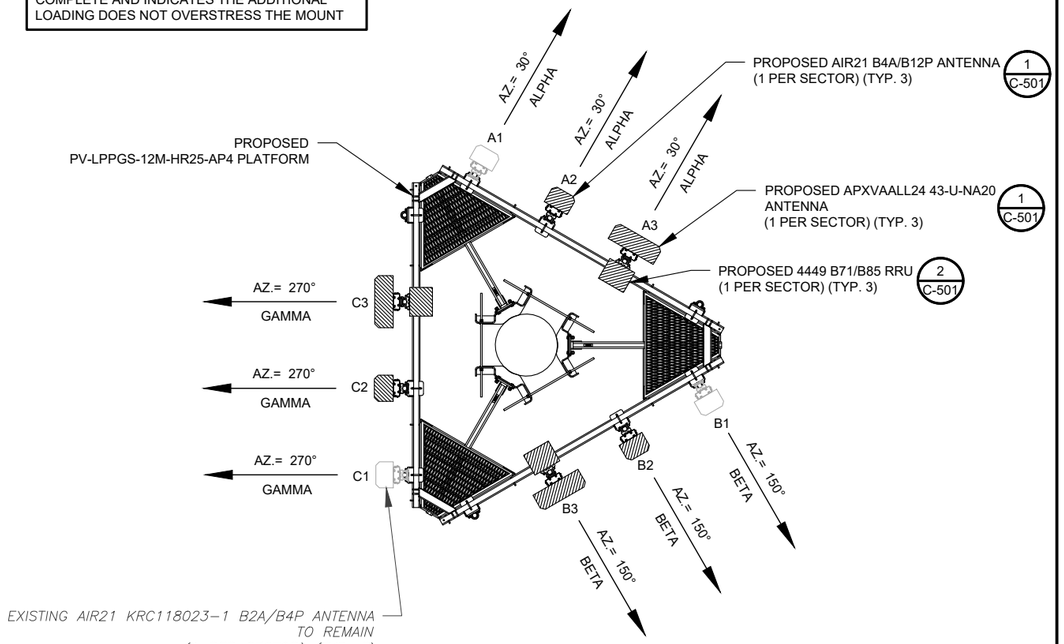
SHEET NUMBER:	REVISION:
C-201	0



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

ATC IS ANALYZING THE ANTENNA MOUNT UNDER A SEPARATE PROJECT. CONSTRUCTION IS NOT TO PROCEED UNTIL THE MOUNT ANALYSIS IS COMPLETE AND INDICATES THE ADDITIONAL LOADING DOES NOT OVERSTRESS THE MOUNT

CONTRACTOR SHALL RE-ORIENT ANTENNA MOUNT(s) AS NECESSARY TO ACHIEVE PROPOSED ANTENNA AZIMUTHS



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

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	97'	30°	A1	AIR21 KRC118023-1 B2A/B4P	–	–	RMN	(2) KRY 112 71	RMV
	95'		A2	KRC 118 048/1N	–	–	RMV	RRUS11 B12	RMV
BETA	97'	150°	B1	AIR21 KRC118023-1 B2A/B4P	–	–	RMN	(2) KRY 112 71	RMV
	95'		B2	KRC 118 048/1N	–	–	RMV	RRUS11 B12	RMV
GAMMA	97'	270°	C1	AIR21 KRC118023-1 B2A/B4P	–	–	RMN	(2) KRY 112 71	RMV
	95'		C2	KRC 118 048/1N	–	–	RMV	RRUS11 B12	RMV

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	96'	30°	A1	AIR21 KRC118023-1 B2A/B4P	1900 UTMS/GSM	0°	RMN	-	-
			A2	AIR21 B4A/B12P	2100 LTE	0°	ADD	-	-
			A3	APXVAALL24 43-U-NA20	600/700 LTE, N600	0°	ADD	4449 B71/B85	ADD
BETA	96'	150°	B1	AIR21 KRC118023-1 B2A/B4P	1900 UTMS/GSM	0°	RMN	-	-
			B2	AIR21 B4A/B12P	2100 LTE	0°	ADD	-	-
			B3	APXVAALL24 43-U-NA20	600/700 LTE, N600	0°	ADD	4449 B71/B85	ADD
GAMMA	96'	270°	C1	AIR21 KRC118023-1 B2A/B4P	1900 UTMS/GSM	0°	RMN	-	-
			C2	AIR21 B4A/B12P	2100 LTE	0°	ADD	-	-
			C3	APXVAALL24 43-U-NA20	600/700 LTE, N600	0°	ADD	4449 B71/B85	ADD

EXISTING FIBER DISTRIBUTION/OVP BOX		EXISTING CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
–	–	(12) 1-5/8"	(2) 1-1/4"	RMV

3 EQUIPMENT SCHEDULES

FINAL FIBER DISTRIBUTION / OVP BOX		FINAL CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
-	-	-	(3) 1-5/8"	ADD

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SITE ADDRESS:
61-1 BUTTONBALL ROAD
OLD LYME, CT 6371

SEAL:

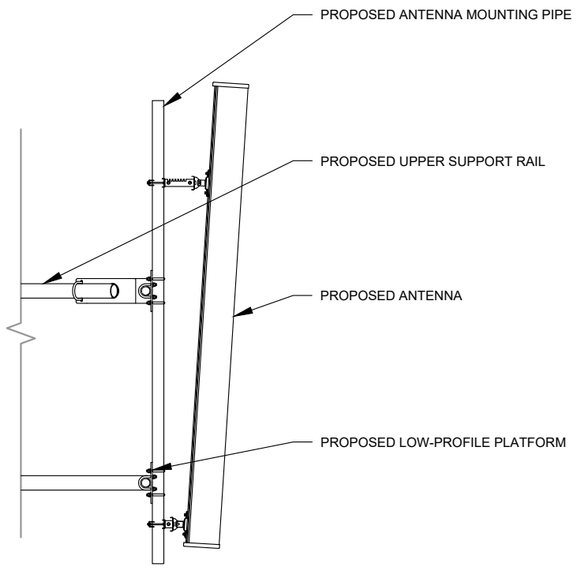
07/07/2021

T-Mobile

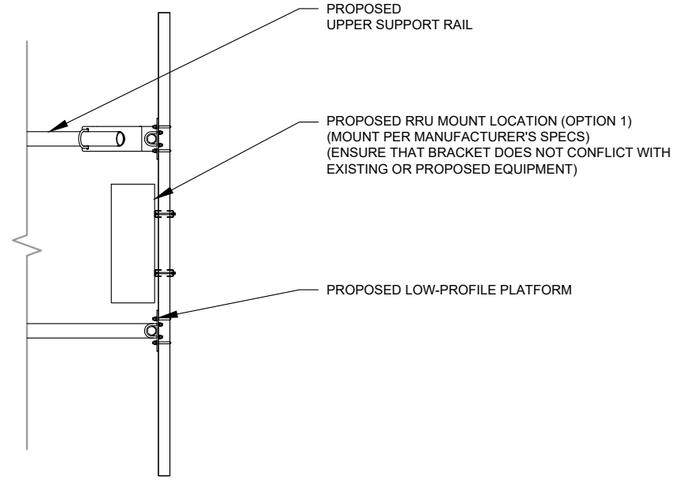
DATE DRAWN:	07/07/21
ATC JOB NO:	13678001
CUSTOMER ID:	AMTRAK_OLDLYME2
CUSTOMER #:	CTNL801A

ANTENNA INFORMATION & SCHEDULE

SHEET NUMBER:	REVISION:
C-401	0



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



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

AMERICAN TOWER®

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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 6371

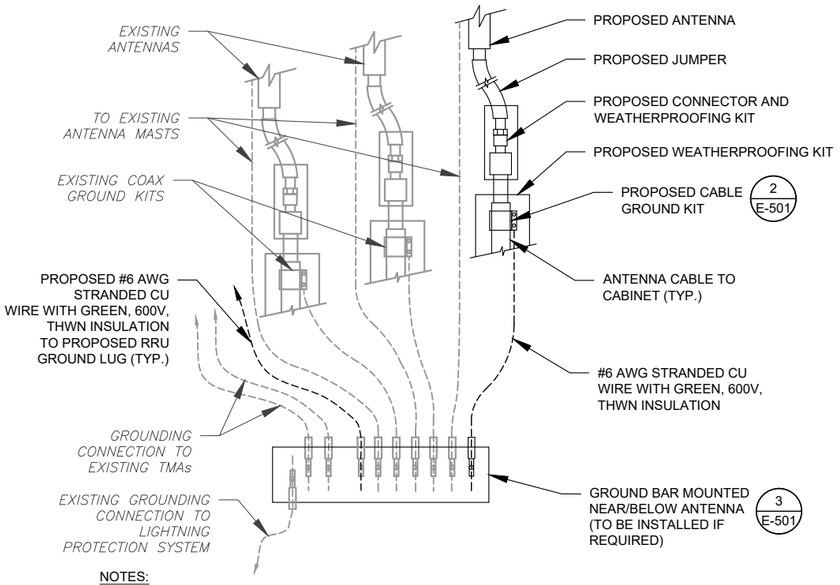
SEAL:

T-Mobile

DATE DRAWN:	07/07/21
ATC JOB NO:	13678001
CUSTOMER ID:	AMTRAK_OLDLYME2
CUSTOMER #:	CTNL801A

CONSTRUCTION DETAILS

SHEET NUMBER:	REVISION:
C-501	0

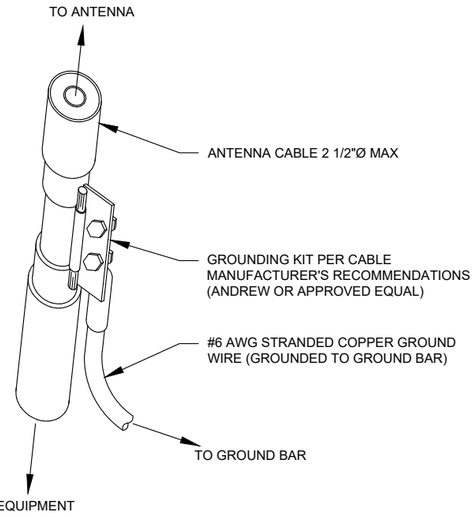


NOTES:

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.

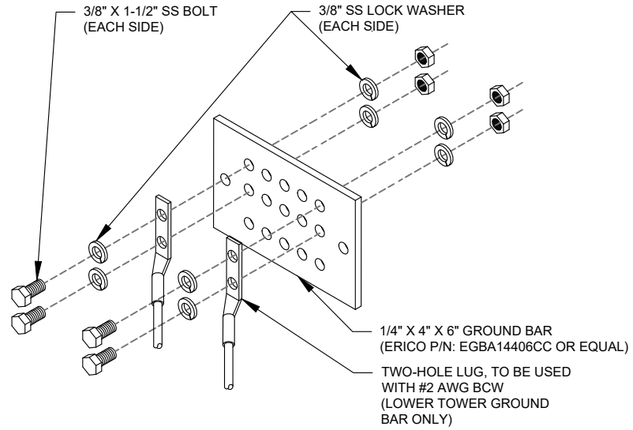


GROUND KIT NOTES:

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.

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.

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

AMERICAN TOWER®

POD
POWER OF DESIGN
11490 BLUEGRASS PKWY
LOUISVILLE, KY 40299
502-437-5252

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	AJ	07/07/21

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 6371

SEAL:

T-Mobile

DATE DRAWN:	07/07/21
ATC JOB NO:	13678001
CUSTOMER ID:	AMTRAK_OLDLYME2
CUSTOMER #:	CTNL801A

GROUNDING DETAILS

SHEET NUMBER:	REVISION:
E-501	0

Proposed RAN Equipment

Template: 67D02C Outdoor

Enclosure	1	2
Enclosure Type	RBS 6131	Tower Top Mount (Ericsson)
Baseband	DUW30 (U1900); DUG20 (G1900); BB 6630 (L2100); BB 6648 (L700, L600, N600)	
Hybrid Cable System		Ericsson 9x18 HCS *Select Length* (x 2)
Functionality Groups		Ericsson Hybrid Trunk 6/24 4AWG *Select Length*

RAN Scope of Work:

Add (1) BB6648 for 600/700.
Add (1) 6X24 HCS.

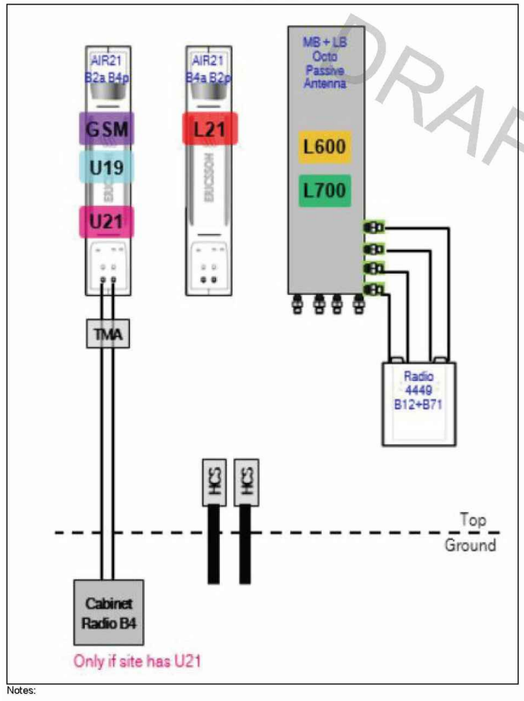
Add BBU.

Existing: (2) 9X18 HCS; 12 Coax (unused). Reuse 9x18 hybrid for Antennae at 97 feet Rad Center.

1 CABINET CONFIGURATION
SCALE: NOT TO SCALE

Section 3 - Proposed Template Images

67D02C.JPG



Notes:

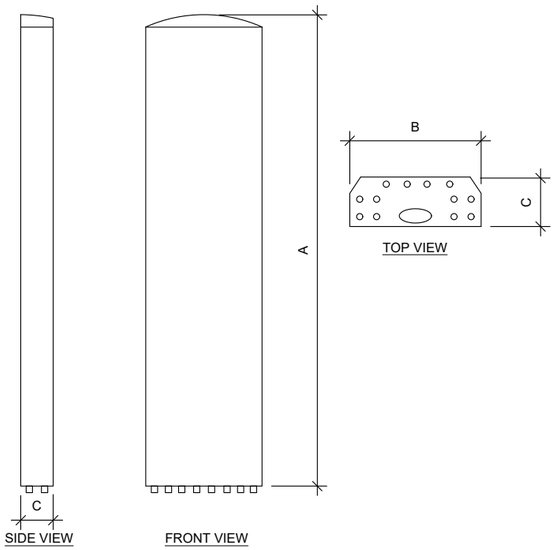
2 ANTENNA CONFIGURATION
SCALE: NOT TO SCALE

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

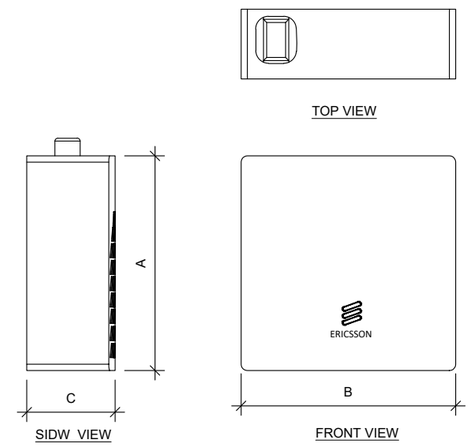
SUPPLEMENTAL

SHEET NUMBER: R-601

REVISION: 0



ANTENNA SPECIFICATIONS				
ANTENNA MODEL	A	B	C	WEIGHT (LBS)
AIR21 B4A/B12P	96"	12.1"	8.7"	121.0
APXVAALL24 43-U-NA20	95.9"	24"	8.5"	122.8



RRU SPECIFICATIONS				
RRU MODEL	A	B	C	WEIGHT (LBS)
4449 B71/B85A	15"	13.2"	10.5"	75.0

1 EQUIPMENT DETAILS

SCALE: NOT TO SCALE

SUPPLEMENTAL

SHEET NUMBER: R-602

REVISION: 0

AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by

TOWER ENGINEERING PROFESSIONALS

Structural Analysis Report

Structure	:	**100 ft Monopole**
ATC Site Name	:	**OLD LYME CT, CT**
ATC Asset Number	:	**284983**
Engineering Number	:	**13678001_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** **41.296500,-72.301200**
County	:	**New London**
Date	:	**June 25, 2021**
Max Usage	:	**86%**
Result	:	**Pass**

Prepared By:
Ayoub Sabor
TEP

Reviewed By:

STATE OF CONNECTICUT
AARON THOMAS RUCKER
32608
LICENSED
PROFESSIONAL ENGINEER

06/25/2021

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 to reflect the change in loading by T-MOBILE.

Supporting Documents

Tower Drawings	Mapping prepared by ETS Project #190401, dated January 29, 2019
Foundation Drawing	Mapping prepared by ETS Project #190401, dated January 29, 2019
Geotechnical Report	Terracon Project #J2105223, dated November 11, 2010
Mount Analysis	EFI Global for American Tower Report #13678001_C8_02, dated June 22, 2021

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" radial ice concurrent
Code:	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	C
Risk Category:	II
Topographic Factor Procedure:	Method 1
Topographic Category:	1
Crest Height (H):	0 ft
Spectral Response:	Ss = 0.20, S_1 = 0.05
Site Class:	D - Stiff Soil

Conclusion

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

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

Existing and Reserved Equipment

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

Equipment to be Removed

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
97.0	3	Ericsson AIR 21, 1.3 M, B2A B4P	-	-	T-MOBILE
	3	Ericsson AIR 21, 1.3M, B4A B2P			
85.0	3	Ericsson Radio 4449 B12,B71	-	(2) 1 1/4" (1.25"-31.8mm) Fiber (1) 1 5/8" (1.63"-41.3mm) Fiber	
	3	RFS APXVAARR24_43-U-NA20			

Proposed Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
96.0	3	Ericsson Radio 4449 B71 B85A	Platform with Handrails	(2) 1 5/8" (1.63"-41.3mm) Fiber (1) 1 5/8" Hybriflex	T-MOBILE
	3	Ericsson AIR 21, 1.3 M, B2A B4P			
	3	Ericsson AIR 21 B4A/B12-B5P 2.4M			
	3	RFS APXVAALL24 43-U-NA20			

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

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	54%	Pass
Shaft	66%	Pass
Base Plate	84%	Pass
Flange	86%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	937.9	52%
Axial (Kips)	20.2	21%
Shear (Kips)	13.2	22%

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

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
96.0	Ericsson Radio 4449 B71 B85A	T-MOBILE	0.724	0.717
	Ericsson AIR 21, 1.3 M, B2A B4P			
	Ericsson AIR 21 B4A/B12-B5P 2.4M			
	RFS APXVAALL24 43-U-NA20			

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

Standard Conditions

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

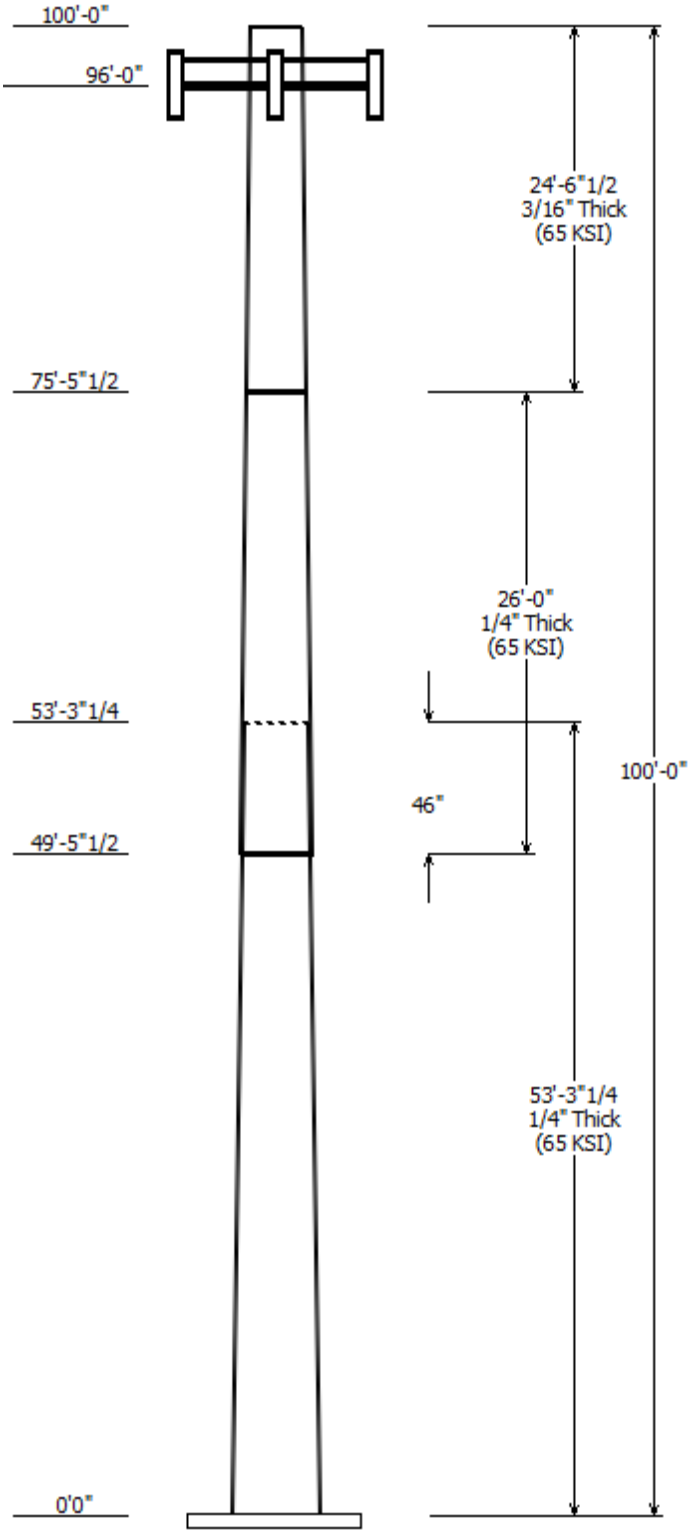
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

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

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

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

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



Job Information

Client :	T-MOBILE		
Pole :	284983	Code:	ANSI/TIA-222-H
Location :	OLD LYME CT, CT		
Description :		Risk Category :	II
Shape :	18 Sides	Exposure :	C
Height :	100.00 (ft)	Topo Method :	Method 1
Base Elev (ft):	0.00	Topographic Category :	1
Taper:	0.160000 (in/ft)		

Sections Properties

Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Steel Grade Shape	(ksi)
1	53.269	28.47	37.00	0.250		0.000	18 Sides	65
2	26.000	25.42	29.58	0.250	Slip Joint	45.728	18 Sides	65
3	24.542	21.50	25.42	0.188	Butt Joint	0.000	18 Sides	65

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
96.000	96.000	1	Generic Flat Platform with Han
96.000	96.000	3	RFS APXVAALL24 43-U-NA20
96.000	96.000	3	Ericsson AIR 21 B4A/B12-B5P 2.
96.000	96.000	3	Ericsson AIR 21, 1.3 M, B2A B4
96.000	96.000	3	Ericsson Radio 4449 B71 B85A

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	96.000	1 5/8" (1.63"-	No
0.000	96.000	1 5/8" Hybriflex	No

Load Cases

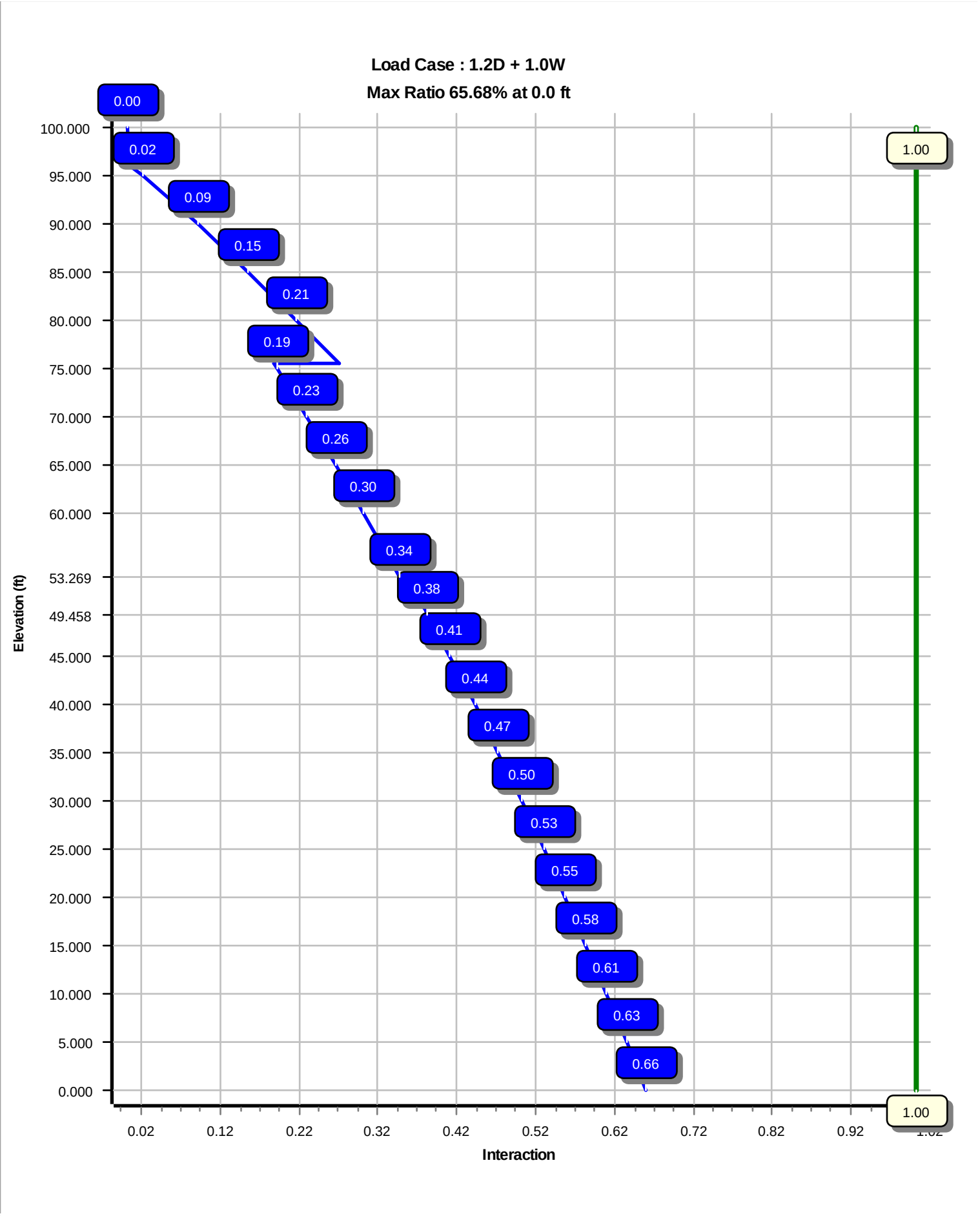
1.2D + 1.0W	126 mph with No Ice
0.9D + 1.0W	126 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	Serviceability 60 mph

Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.0W	937.91	13.22	14.23
0.9D + 1.0W	930.81	13.21	10.66
1.2D + 1.0Di + 1.0Wi	219.50	3.22	20.16
1.2D + 1.0Ev + 1.0Eh	45.01	0.53	14.12
0.9D - 1.0Ev + 1.0Eh	44.58	0.53	9.75
1.0D + 1.0W	189.44	2.68	11.88

Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
	0.00	0.000	0.000


Load Case : 1.2D + 1.0W
Max Ratio 65.68% at 0.0 ft
0.00
0.02
0.09
0.15
0.21
0.19
0.23
0.26
0.30
0.34
0.38
0.41
0.44
0.47
0.50
0.53
0.55
0.58
0.61
0.63
0.66
1.00
1.00
100.000
95.000
90.000
85.000
80.000
75.000
70.000
65.000
60.000
53.269
49.458
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
Elevation (ft)
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction

Site Number: 284983 Code: ANSI/TIA-222-H

Site Name: OLD LYME CT, CT Engineering Number:13678001_C3_03 6/25/2021 12:12:05 PM

Customer: T-MOBILE

Analysis Parameters

Location :	New London County, CT	Height (ft) :	100
Code :	ANSI/TIA-222-H	Base Diameter (in) :	37.00
Shape :	18 Sides	Top Diameter (in) :	21.50
Pole Type :	Custom	Taper (in/ft) :	0.160
Pole Manfacturer :	Mapped	Rotation (deg) :	0.00
Kd (non-service) :	0.95	Ke :	1.00

Ice & Wind Parameters

Exposure Category:	C	Design Wind Speed Without Ice:	126 mph
Risk Category:	II	Design Wind Speed With Ice:	50 mph
Topographic Factor Procedure:	Method 1	Operational Wind Speed:	60 mph
Topographic Category:	1	Design Ice Thickness:	1.00 in
Crest Height:	0 ft	HMSL:	19.00 ft

Seismic Parameters

Analysis Method:	Equivalent Lateral Force Method				
Site Class:	D - Stiff Soil				
Period Based on Rayleigh Method (sec):	1.64				
T_L (sec):	6	p:	1.3	C_s:	0.034
S_s:	0.198	S_1:	0.053	C_s Max:	0.034
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 with No Ice
0.9D + 1.0W	126 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	Serviceability 60 mph

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (ft)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-18	53.269	0.2500	65		0.00	4,673	37.00	0.00	29.16	4975.7	24.33	148.00	28.47	53.27	22.40	2254.6	18.32	113.91	0.160000
2-18	26.000	0.2500	65	Slip	45.73	1,913	29.58	49.46	23.28	2531.1	19.10	118.35	25.42	75.46	19.98	1599.8	16.17	101.71	0.160000
3-18	24.542	0.1875	65	Butt	0.00	1,157	25.42	75.46	15.02	1208.8	22.15	135.61	21.50	100.00	12.68	727.9	18.46	114.67	0.160000
					Shaft Weight	7,743													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor
96.00	Ericsson Radio 4449 B71 B85A	3	0.75	0.000	75.00	1.650	0.50	113.40	2.192	0.50
96.00	Ericsson AIR 21, 1.3 M, B2A B4P	3	0.75	0.000	83.00	6.049	0.71	176.19	7.429	0.71
96.00	Ericsson AIR 21 B4A/B12-B5P	3	0.75	0.000	121.00	11.540	0.72	280.70	13.604	0.72
96.00	RFS APXVAALL24 43-U-NA20	3	0.75	0.000	122.80	20.243	0.63	371.52	22.611	0.63
96.00	Generic Flat Platform with	1	1.00	0.000	2,500.00	42.400	1.00	3,634.36	55.792	1.00
Totals	Num Loadings:5	13			3,705.40			6,459.79		

Linear Appurtenance Properties

Load Case Azimuth (deg) :

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax / Row	Dist Between Rows (in)	Dist Between Cols (in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	96.00	2	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0	0.00	0.00	0	0.00	N	T-MOBILE
0.00	96.00	1	1 5/8" Hybriflex	1.98	1.30	N	0	0.00	0.00	0	0.00	N	T-MOBILE

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)
0.00		0.2500	37.000	29.160	4,975.7	24.33	148.00	72.8	264.9	0.0	0.0
5.00		0.2500	36.200	28.525	4,657.8	23.77	144.80	73.4	253.4	0.0	490.7
10.00		0.2500	35.400	27.891	4,353.7	23.20	141.60	74.1	242.2	0.0	479.9
15.00		0.2500	34.600	27.256	4,063.2	22.64	138.40	74.8	231.3	0.0	469.1
20.00		0.2500	33.800	26.621	3,785.8	22.08	135.20	75.4	220.6	0.0	458.3
25.00		0.2500	33.000	25.986	3,521.4	21.51	132.00	76.1	210.2	0.0	447.5
30.00		0.2500	32.200	25.351	3,269.6	20.95	128.80	76.8	200.0	0.0	436.7
35.00		0.2500	31.400	24.717	3,030.1	20.38	125.60	77.4	190.1	0.0	425.9
40.00		0.2500	30.600	24.082	2,802.6	19.82	122.40	78.1	180.4	0.0	415.1
45.00		0.2500	29.800	23.447	2,586.8	19.25	119.20	78.8	171.0	0.0	404.3
49.46	Bot - Section 2	0.2500	29.087	22.881	2,403.9	18.75	116.35	79.3	162.8	0.0	351.4
50.00		0.2500	29.000	22.812	2,382.3	18.69	116.00	79.4	161.8	0.0	85.0
53.27	Top - Section 1	0.2500	28.977	22.794	2,376.6	18.67	115.91	79.4	161.5	0.0	507.3
55.00		0.2500	28.700	22.574	2,308.5	18.48	114.80	79.7	158.4	0.0	133.6
60.00		0.2500	27.900	21.939	2,119.2	17.91	111.60	80.3	149.6	0.0	378.7
65.00		0.2500	27.100	21.305	1,940.5	17.35	108.40	81.0	141.0	0.0	367.9
70.00		0.2500	26.300	20.670	1,772.2	16.79	105.20	81.7	132.7	0.0	357.1
75.00		0.2500	25.500	20.035	1,613.9	16.22	102.00	82.3	124.7	0.0	346.3
75.46	Top - Section 2	0.2500	25.427	19.977	1,599.8	16.17	101.71	82.4	123.9	0.0	31.2
75.46	Bot - Section 3	0.1875	25.427	15.020	1,208.8	22.15	135.61	75.4	93.6	0.0	
80.00		0.1875	24.700	14.587	1,107.4	21.46	131.73	76.2	88.3	0.0	228.8
85.00		0.1875	23.900	14.111	1,002.5	20.71	127.47	77.0	82.6	0.0	244.1
90.00		0.1875	23.100	13.635	904.4	19.96	123.20	77.9	77.1	0.0	236.0
95.00		0.1875	22.300	13.159	812.9	19.21	118.93	78.8	71.8	0.0	227.9
96.00		0.1875	22.140	13.064	795.4	19.06	118.08	79.0	70.8	0.0	44.6
100.0		0.1875	21.500	12.683	727.9	18.46	114.67	79.7	66.7	0.0	175.2
											7,742.9

Load Case: 1.2D + 1.0W — 126 mph with No Ice — 22 Iterations

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

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		203.9	0.0					0.0	0.0	203.9	0.0	0.0	0.0
5.00		403.4	588.9					0.0	27.1	403.4	616.0	0.0	0.0
10.00		394.4	575.9					0.0	27.1	394.4	603.0	0.0	0.0
15.00		391.6	563.0					0.0	27.1	391.6	590.1	0.0	0.0
20.00		399.0	550.0					0.0	27.1	399.0	577.1	0.0	0.0
25.00		408.5	537.0					0.0	27.1	408.5	564.2	0.0	0.0
30.00		414.3	524.1					0.0	27.1	414.3	551.2	0.0	0.0
35.00		417.4	511.1					0.0	27.1	417.4	538.2	0.0	0.0
40.00		418.4	498.2					0.0	27.1	418.4	525.3	0.0	0.0
45.00		395.2	485.2					0.0	27.1	395.2	512.3	0.0	0.0
49.46	Bot - Section 2	208.9	421.7					0.0	24.2	208.9	445.9	0.0	0.0
50.00		160.9	101.9					0.0	2.9	160.9	104.9	0.0	0.0
53.27	Top - Section 1	210.8	608.8					0.0	17.7	210.8	626.5	0.0	0.0
55.00		281.7	160.3					0.0	9.4	281.7	169.7	0.0	0.0
60.00		415.6	454.4					0.0	27.1	415.6	481.5	0.0	0.0
65.00		410.5	441.5					0.0	27.1	410.5	468.6	0.0	0.0
70.00		404.7	428.5					0.0	27.1	404.7	455.6	0.0	0.0
75.00		219.0	415.5					0.0	27.1	219.0	442.7	0.0	0.0
75.46	Top - Section 2	197.3	37.4					0.0	2.5	197.3	39.9	0.0	0.0
80.00		372.7	274.5					0.0	24.6	372.7	299.2	0.0	0.0
85.00		383.1	293.0					0.0	27.1	383.1	320.1	0.0	0.0
90.00		374.8	283.2					0.0	27.1	374.8	310.4	0.0	0.0
95.00		221.7	273.5					0.0	27.1	221.7	300.6	0.0	0.0
96.00	Appurtenance(s)	160.9	53.5	5,395.3	0.0	0.0	4,446.5	0.0	5.4	5,556.3	4,505.4	0.0	0.0
100.00		124.4	210.3					0.0	0.0	124.4	210.3	0.0	0.0
								Totals:		13,388.2	14,258.6	0.00	0.00

Load Case: 1.2D + 1.0W 126 mph with No Ice 22 Iterations

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-14.23	-13.22	0.00	-937.91	0.00	937.91	1,910.06	511.76	1,698.66	1,445.82	0.00	0.00	0.657
5.00	-13.56	-12.87	0.00	-871.83	0.00	871.83	1,885.52	500.62	1,625.51	1,395.96	0.14	-0.26	0.632
10.00	-12.90	-12.53	0.00	-807.47	0.00	807.47	1,860.22	489.48	1,553.98	1,346.37	0.55	-0.52	0.607
15.00	-12.26	-12.19	0.00	-744.81	0.00	744.81	1,834.16	478.34	1,484.06	1,297.08	1.22	-0.77	0.582
20.00	-11.64	-11.83	0.00	-683.87	0.00	683.87	1,807.34	467.20	1,415.74	1,248.14	2.16	-1.02	0.555
25.00	-11.03	-11.46	0.00	-624.71	0.00	624.71	1,779.77	456.06	1,349.04	1,199.57	3.36	-1.26	0.528
30.00	-10.45	-11.07	0.00	-567.43	0.00	567.43	1,751.43	444.92	1,283.94	1,151.42	4.82	-1.51	0.499
35.00	-9.88	-10.68	0.00	-512.06	0.00	512.06	1,722.34	433.78	1,220.46	1,103.72	6.52	-1.74	0.470
40.00	-9.33	-10.28	0.00	-458.65	0.00	458.65	1,692.49	422.64	1,158.58	1,056.52	8.46	-1.97	0.440
45.00	-8.79	-9.90	0.00	-407.24	0.00	407.24	1,661.88	411.50	1,098.32	1,009.84	10.64	-2.19	0.409
49.46	-8.34	-9.69	0.00	-363.10	0.00	363.10	1,633.95	401.56	1,045.94	968.70	12.78	-2.38	0.381
50.00	-8.23	-9.54	0.00	-357.85	0.00	357.85	1,630.52	400.36	1,039.66	963.73	13.05	-2.40	0.377
53.27	-7.59	-9.31	0.00	-326.68	0.00	326.68	1,629.60	400.04	1,037.99	962.41	14.74	-2.53	0.345
55.00	-7.42	-9.04	0.00	-310.56	0.00	310.56	1,618.56	396.18	1,018.08	946.60	15.67	-2.60	0.333
60.00	-6.93	-8.62	0.00	-265.37	0.00	265.37	1,586.15	385.04	961.64	901.33	18.49	-2.78	0.299
65.00	-6.46	-8.21	0.00	-222.26	0.00	222.26	1,552.98	373.90	906.80	856.72	21.49	-2.94	0.264
70.00	-6.01	-7.79	0.00	-181.24	0.00	181.24	1,519.06	362.76	853.58	812.81	24.66	-3.09	0.227
75.00	-5.57	-7.56	0.00	-142.28	0.00	142.28	1,484.37	351.62	801.96	769.62	27.97	-3.22	0.189
75.46	-5.53	-7.36	0.00	-138.81	0.00	138.81	1,481.16	350.60	797.31	765.70	28.27	-3.23	0.185
75.46	-5.53	-7.36	0.00	-138.81	0.00	138.81	1,018.58	263.60	600.91	529.19	28.27	-3.23	0.269
80.00	-5.24	-6.98	0.00	-105.38	0.00	105.38	999.81	256.01	566.81	504.37	31.40	-3.33	0.215
85.00	-4.93	-6.59	0.00	-70.46	0.00	70.46	978.41	247.65	530.42	477.35	34.95	-3.44	0.153
90.00	-4.64	-6.20	0.00	-37.52	0.00	37.52	956.26	239.30	495.24	450.68	38.60	-3.52	0.089
95.00	-4.35	-5.96	0.00	-6.51	0.00	6.51	933.36	230.94	461.26	424.40	42.31	-3.56	0.021
96.00	-0.20	-0.14	0.00	-0.55	0.00	0.55	928.68	229.27	454.61	419.19	43.06	-3.56	0.002
100.00	0.00	-0.12	0.00	0.00	0.00	0.00	909.69	222.59	428.50	398.54	46.04	-3.56	0.000

Site Number: 284983 Code: ANSI/TIA-222-H

Site Name: OLD LYME CT, CT Engineering Number:13678001_C3_03 6/25/2021 12:12:06 PM

Customer: T-MOBILE

Load Case: 0.9D + 1.0W 126 mph with No Ice (Reduced DL) 22 Iterations

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

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		203.9	0.0					0.0	0.0	203.9	0.0	0.0	0.0
5.00		403.4	441.7					0.0	20.3	403.4	462.0	0.0	0.0
10.00		394.4	431.9					0.0	20.3	394.4	452.3	0.0	0.0
15.00		391.6	422.2					0.0	20.3	391.6	442.6	0.0	0.0
20.00		399.0	412.5					0.0	20.3	399.0	432.8	0.0	0.0
25.00		408.5	402.8					0.0	20.3	408.5	423.1	0.0	0.0
30.00		414.3	393.1					0.0	20.3	414.3	413.4	0.0	0.0
35.00		417.4	383.3					0.0	20.3	417.4	403.7	0.0	0.0
40.00		418.4	373.6					0.0	20.3	418.4	394.0	0.0	0.0
45.00		395.2	363.9					0.0	20.3	395.2	384.2	0.0	0.0
49.46	Bot - Section 2	208.9	316.3					0.0	18.1	208.9	334.4	0.0	0.0
50.00		160.9	76.5					0.0	2.2	160.9	78.7	0.0	0.0
53.27	Top - Section 1	210.8	456.6					0.0	13.3	210.8	469.9	0.0	0.0
55.00		281.7	120.3					0.0	7.0	281.7	127.3	0.0	0.0
60.00		415.6	340.8					0.0	20.3	415.6	361.1	0.0	0.0
65.00		410.5	331.1					0.0	20.3	410.5	351.4	0.0	0.0
70.00		404.7	321.4					0.0	20.3	404.7	341.7	0.0	0.0
75.00		219.0	311.6					0.0	20.3	219.0	332.0	0.0	0.0
75.46	Top - Section 2	197.3	28.1					0.0	1.9	197.3	29.9	0.0	0.0
80.00		372.7	205.9					0.0	18.5	372.7	224.4	0.0	0.0
85.00		383.1	219.7					0.0	20.3	383.1	240.1	0.0	0.0
90.00		374.8	212.4					0.0	20.3	374.8	232.8	0.0	0.0
95.00		221.7	205.1					0.0	20.3	221.7	225.5	0.0	0.0
96.00	Appurtenance(s)	160.9	40.2	5,395.3	0.0	0.0	3,334.9	0.0	4.1	5,556.3	3,379.1	0.0	0.0
100.00		124.4	157.7					0.0	0.0	124.4	157.7	0.0	0.0
								Totals:		13,388.2	10,693.9	0.00	0.00

Load Case: 0.9D + 1.0W 126 mph with No Ice (Reduced DL) 22 Iterations

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-10.66	-13.21	0.00	-930.81	0.00	930.81	1,910.06	511.76	1,698.66	1,445.82	0.00	0.00	0.650
5.00	-10.15	-12.85	0.00	-864.77	0.00	864.77	1,885.52	500.62	1,625.51	1,395.96	0.14	-0.26	0.626
10.00	-9.64	-12.49	0.00	-800.53	0.00	800.53	1,860.22	489.48	1,553.98	1,346.37	0.54	-0.51	0.600
15.00	-9.15	-12.14	0.00	-738.05	0.00	738.05	1,834.16	478.34	1,484.06	1,297.08	1.21	-0.76	0.575
20.00	-8.67	-11.77	0.00	-677.37	0.00	677.37	1,807.34	467.20	1,415.74	1,248.14	2.15	-1.01	0.548
25.00	-8.21	-11.39	0.00	-618.52	0.00	618.52	1,779.77	456.06	1,349.04	1,199.57	3.33	-1.25	0.521
30.00	-7.76	-11.00	0.00	-561.58	0.00	561.58	1,751.43	444.92	1,283.94	1,151.42	4.78	-1.49	0.493
35.00	-7.33	-10.60	0.00	-506.60	0.00	506.60	1,722.34	433.78	1,220.46	1,103.72	6.46	-1.72	0.464
40.00	-6.91	-10.19	0.00	-453.62	0.00	453.62	1,692.49	422.64	1,158.58	1,056.52	8.39	-1.95	0.434
45.00	-6.50	-9.81	0.00	-402.66	0.00	402.66	1,661.88	411.50	1,098.32	1,009.84	10.55	-2.17	0.403
49.46	-6.16	-9.60	0.00	-358.94	0.00	358.94	1,633.95	401.56	1,045.94	968.70	12.66	-2.35	0.375
50.00	-6.08	-9.44	0.00	-353.74	0.00	353.74	1,630.52	400.36	1,039.66	963.73	12.93	-2.38	0.371
53.27	-5.60	-9.22	0.00	-322.88	0.00	322.88	1,629.60	400.04	1,037.99	962.41	14.60	-2.51	0.339
55.00	-5.47	-8.94	0.00	-306.93	0.00	306.93	1,618.56	396.18	1,018.08	946.60	15.53	-2.58	0.328
60.00	-5.10	-8.53	0.00	-262.21	0.00	262.21	1,586.15	385.04	961.64	901.33	18.32	-2.75	0.295
65.00	-4.75	-8.11	0.00	-219.57	0.00	219.57	1,552.98	373.90	906.80	856.72	21.29	-2.91	0.260
70.00	-4.41	-7.70	0.00	-179.01	0.00	179.01	1,519.06	362.76	853.58	812.81	24.42	-3.06	0.224
75.00	-4.08	-7.47	0.00	-140.50	0.00	140.50	1,484.37	351.62	801.96	769.62	27.70	-3.19	0.186
75.46	-4.05	-7.27	0.00	-137.08	0.00	137.08	1,481.16	350.60	797.31	765.70	28.00	-3.20	0.182
75.46	-4.05	-7.27	0.00	-137.08	0.00	137.08	1,018.58	263.60	600.91	529.19	28.00	-3.20	0.264
80.00	-3.84	-6.90	0.00	-104.04	0.00	104.04	999.81	256.01	566.81	504.37	31.10	-3.30	0.211
85.00	-3.61	-6.51	0.00	-69.56	0.00	69.56	978.41	247.65	530.42	477.35	34.61	-3.41	0.150
90.00	-3.39	-6.12	0.00	-37.03	0.00	37.03	956.26	239.30	495.24	450.68	38.22	-3.48	0.086
95.00	-3.18	-5.89	0.00	-6.42	0.00	6.42	933.36	230.94	461.26	424.40	41.89	-3.52	0.019
96.00	-0.15	-0.13	0.00	-0.54	0.00	0.54	928.68	229.27	454.61	419.19	42.63	-3.52	0.001
100.00	0.00	-0.12	0.00	0.00	0.00	0.00	909.69	222.59	428.50	398.54	45.58	-3.52	0.000

Site Number: 284983 Code: ANSI/TIA-222-H

Site Name: OLD LYME CT, CT Engineering Number:13678001_C3_03 6/25/2021 12:12:06 PM

Customer: T-MOBILE

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 1.00 in Radial Ice 21 Iterations

Gust Response Factor :1.10 Ice Dead Load Factor :1.00

Dead Load Factor :1.20 Ice Importance Factor :1.00

Wind Load Factor :1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		55.0	0.0					0.0	0.0	55.0	0.0	0.0	0.0
5.00		109.1	767.8					0.0	27.1	109.1	794.9	0.0	0.0
10.00		107.1	771.8					0.0	27.1	107.1	798.9	0.0	0.0
15.00		106.7	764.8					0.0	27.1	106.7	791.9	0.0	0.0
20.00		109.0	754.2					0.0	27.1	109.0	781.3	0.0	0.0
25.00		111.9	741.8					0.0	27.1	111.9	768.9	0.0	0.0
30.00		113.7	728.2					0.0	27.1	113.7	755.3	0.0	0.0
35.00		114.9	713.7					0.0	27.1	114.9	740.9	0.0	0.0
40.00		115.4	698.7					0.0	27.1	115.4	725.8	0.0	0.0
45.00		109.3	683.2					0.0	27.1	109.3	710.3	0.0	0.0
49.46	Bot - Section 2	57.8	596.1					0.0	24.2	57.8	620.3	0.0	0.0
50.00		44.6	123.5					0.0	2.9	44.6	126.5	0.0	0.0
53.27	Top - Section 1	58.4	737.3					0.0	17.7	58.4	755.1	0.0	0.0
55.00		78.3	228.1					0.0	9.4	78.3	237.5	0.0	0.0
60.00		115.6	646.1					0.0	27.1	115.6	673.3	0.0	0.0
65.00		114.5	629.5					0.0	27.1	114.5	656.6	0.0	0.0
70.00		113.2	612.7					0.0	27.1	113.2	639.8	0.0	0.0
75.00		61.4	595.6					0.0	27.1	61.4	622.8	0.0	0.0
75.46	Top - Section 2	55.4	54.0					0.0	2.5	55.4	56.5	0.0	0.0
80.00		104.9	434.4					0.0	24.6	104.9	459.0	0.0	0.0
85.00		108.2	464.5					0.0	27.1	108.2	491.6	0.0	0.0
90.00		106.2	450.3					0.0	27.1	106.2	477.5	0.0	0.0
95.00		62.9	436.0					0.0	27.1	62.9	463.2	0.0	0.0
96.00	Appurtenance(s)	48.0	85.9	1,041.7	0.0	0.0	6,581.7	0.0	5.4	1,089.7	6,673.0	0.0	0.0
100.00		37.7	336.6					0.0	0.0	37.7	336.6	0.0	0.0
								Totals:		3,260.79	20,157.3	0.00	0.00

Site Number: 284983 Code: ANSI/TIA-222-H

Site Name: OLD LYME CT, CT Engineering Number:13678001_C3_03 6/25/2021 12:12:06 PM

Customer: T-MOBILE

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 1.00 in Radial Ice 21 Iterations

Gust Response Factor :1.10 Ice Dead Load Factor :1.00

Dead Load Factor :1.20 Ice Importance Factor :1.00

Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-20.16	-3.22	0.00	-219.50	0.00	219.50	1,910.06	511.76	1,698.66	1,445.82	0.00	0.00	0.162
5.00	-19.36	-3.13	0.00	-203.42	0.00	203.42	1,885.52	500.62	1,625.51	1,395.96	0.03	-0.06	0.156
10.00	-18.56	-3.04	0.00	-187.78	0.00	187.78	1,860.22	489.48	1,553.98	1,346.37	0.13	-0.12	0.149
15.00	-17.76	-2.95	0.00	-172.59	0.00	172.59	1,834.16	478.34	1,484.06	1,297.08	0.29	-0.18	0.143
20.00	-16.98	-2.85	0.00	-157.86	0.00	157.86	1,807.34	467.20	1,415.74	1,248.14	0.50	-0.24	0.136
25.00	-16.21	-2.75	0.00	-143.60	0.00	143.60	1,779.77	456.06	1,349.04	1,199.57	0.78	-0.29	0.129
30.00	-15.45	-2.65	0.00	-129.83	0.00	129.83	1,751.43	444.92	1,283.94	1,151.42	1.12	-0.35	0.122
35.00	-14.71	-2.54	0.00	-116.59	0.00	116.59	1,722.34	433.78	1,220.46	1,103.72	1.51	-0.40	0.114
40.00	-13.98	-2.43	0.00	-103.87	0.00	103.87	1,692.49	422.64	1,158.58	1,056.52	1.96	-0.45	0.107
45.00	-13.27	-2.33	0.00	-91.70	0.00	91.70	1,661.88	411.50	1,098.32	1,009.84	2.47	-0.50	0.099
49.46	-12.65	-2.27	0.00	-81.31	0.00	81.31	1,633.95	401.56	1,045.94	968.70	2.96	-0.55	0.092
50.00	-12.52	-2.23	0.00	-80.08	0.00	80.08	1,630.52	400.36	1,039.66	963.73	3.02	-0.55	0.091
53.27	-11.77	-2.17	0.00	-72.79	0.00	72.79	1,629.60	400.04	1,037.99	962.41	3.41	-0.58	0.083
55.00	-11.53	-2.09	0.00	-69.03	0.00	69.03	1,618.56	396.18	1,018.08	946.60	3.62	-0.60	0.080
60.00	-10.85	-1.98	0.00	-58.56	0.00	58.56	1,586.15	385.04	961.64	901.33	4.27	-0.64	0.072
65.00	-10.20	-1.86	0.00	-48.67	0.00	48.67	1,552.98	373.90	906.80	856.72	4.95	-0.67	0.063
70.00	-9.56	-1.75	0.00	-39.36	0.00	39.36	1,519.06	362.76	853.58	812.81	5.67	-0.70	0.055
75.00	-8.94	-1.68	0.00	-30.63	0.00	30.63	1,484.37	351.62	801.96	769.62	6.43	-0.73	0.046
75.46	-8.88	-1.63	0.00	-29.86	0.00	29.86	1,481.16	350.60	797.31	765.70	6.50	-0.73	0.045
75.46	-8.88	-1.63	0.00	-29.86	0.00	29.86	1,018.58	263.60	600.91	529.19	6.50	-0.73	0.065
80.00	-8.42	-1.52	0.00	-22.48	0.00	22.48	999.81	256.01	566.81	504.37	7.21	-0.76	0.053
85.00	-7.93	-1.41	0.00	-14.90	0.00	14.90	978.41	247.65	530.42	477.35	8.01	-0.78	0.039
90.00	-7.46	-1.29	0.00	-7.87	0.00	7.87	956.26	239.30	495.24	450.68	8.84	-0.80	0.025
95.00	-6.99	-1.23	0.00	-1.39	0.00	1.39	933.36	230.94	461.26	424.40	9.68	-0.80	0.011
96.00	-0.34	-0.04	0.00	-0.17	0.00	0.17	928.68	229.27	454.61	419.19	9.85	-0.80	0.001
100.00	0.00	-0.04	0.00	0.00	0.00	0.00	909.69	222.59	428.50	398.54	10.52	-0.80	0.000

Load Case: 1.0D + 1.0W Serviceability 60 mph 21 Iterations

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

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		41.4	0.0					0.0	0.0	41.4	0.0	0.0	0.0
5.00		81.8	490.7					0.0	22.6	81.8	513.3	0.0	0.0
10.00		80.0	479.9					0.0	22.6	80.0	502.5	0.0	0.0
15.00		79.4	469.1					0.0	22.6	79.4	491.7	0.0	0.0
20.00		80.9	458.3					0.0	22.6	80.9	480.9	0.0	0.0
25.00		82.9	447.5					0.0	22.6	82.9	470.1	0.0	0.0
30.00		84.1	436.7					0.0	22.6	84.1	459.3	0.0	0.0
35.00		84.7	425.9					0.0	22.6	84.7	448.5	0.0	0.0
40.00		84.9	415.1					0.0	22.6	84.9	437.7	0.0	0.0
45.00		80.2	404.3					0.0	22.6	80.2	426.9	0.0	0.0
49.46	Bot - Section 2	42.4	351.4					0.0	20.2	42.4	371.6	0.0	0.0
50.00		32.6	85.0					0.0	2.4	32.6	87.4	0.0	0.0
53.27	Top - Section 1	42.8	507.3					0.0	14.8	42.8	522.1	0.0	0.0
55.00		57.2	133.6					0.0	7.8	57.2	141.4	0.0	0.0
60.00		84.3	378.7					0.0	22.6	84.3	401.3	0.0	0.0
65.00		83.3	367.9					0.0	22.6	83.3	390.5	0.0	0.0
70.00		82.1	357.1					0.0	22.6	82.1	379.7	0.0	0.0
75.00		44.4	346.3					0.0	22.6	44.4	368.9	0.0	0.0
75.46	Top - Section 2	40.0	31.2					0.0	2.1	40.0	33.3	0.0	0.0
80.00		75.6	228.8					0.0	20.5	75.6	249.3	0.0	0.0
85.00		77.7	244.1					0.0	22.6	77.7	266.7	0.0	0.0
90.00		76.0	236.0					0.0	22.6	76.0	258.6	0.0	0.0
95.00		45.0	227.9					0.0	22.6	45.0	250.5	0.0	0.0
96.00	Appurtenance(s)	32.7	44.6	1,094.6	0.0	0.0	3,705.4	0.0	4.5	1,127.3	3,754.5	0.0	0.0
100.00		25.2	175.2					0.0	0.0	25.2	175.2	0.0	0.0
								Totals:		2,716.32	11,882.1	0.00	0.00

Load Case: 1.0D + 1.0W Serviceability 60 mph 21 Iterations

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-11.88	-2.68	0.00	-189.44	0.00	189.44	1,910.06	511.76	1,698.66	1,445.82	0.00	0.00	0.137
5.00	-11.37	-2.61	0.00	-176.04	0.00	176.04	1,885.52	500.62	1,625.51	1,395.96	0.03	-0.05	0.132
10.00	-10.86	-2.54	0.00	-163.00	0.00	163.00	1,860.22	489.48	1,553.98	1,346.37	0.11	-0.10	0.127
15.00	-10.37	-2.47	0.00	-150.31	0.00	150.31	1,834.16	478.34	1,484.06	1,297.08	0.25	-0.16	0.122
20.00	-9.88	-2.39	0.00	-137.98	0.00	137.98	1,807.34	467.20	1,415.74	1,248.14	0.44	-0.21	0.116
25.00	-9.41	-2.32	0.00	-126.02	0.00	126.02	1,779.77	456.06	1,349.04	1,199.57	0.68	-0.26	0.110
30.00	-8.95	-2.24	0.00	-114.44	0.00	114.44	1,751.43	444.92	1,283.94	1,151.42	0.97	-0.30	0.105
35.00	-8.50	-2.16	0.00	-103.26	0.00	103.26	1,722.34	433.78	1,220.46	1,103.72	1.32	-0.35	0.099
40.00	-8.06	-2.08	0.00	-92.48	0.00	92.48	1,692.49	422.64	1,158.58	1,056.52	1.71	-0.40	0.092
45.00	-7.64	-2.00	0.00	-82.10	0.00	82.10	1,661.88	411.50	1,098.32	1,009.84	2.15	-0.44	0.086
49.46	-7.26	-1.95	0.00	-73.20	0.00	73.20	1,633.95	401.56	1,045.94	968.70	2.58	-0.48	0.080
50.00	-7.18	-1.92	0.00	-72.14	0.00	72.14	1,630.52	400.36	1,039.66	963.73	2.63	-0.48	0.079
53.27	-6.65	-1.88	0.00	-65.85	0.00	65.85	1,629.60	400.04	1,037.99	962.41	2.98	-0.51	0.073
55.00	-6.51	-1.82	0.00	-62.60	0.00	62.60	1,618.56	396.18	1,018.08	946.60	3.16	-0.53	0.070
60.00	-6.11	-1.74	0.00	-53.49	0.00	53.49	1,586.15	385.04	961.64	901.33	3.73	-0.56	0.063
65.00	-5.72	-1.65	0.00	-44.80	0.00	44.80	1,552.98	373.90	906.80	856.72	4.34	-0.59	0.056
70.00	-5.34	-1.57	0.00	-36.53	0.00	36.53	1,519.06	362.76	853.58	812.81	4.98	-0.62	0.048
75.00	-4.97	-1.52	0.00	-28.67	0.00	28.67	1,484.37	351.62	801.96	769.62	5.64	-0.65	0.041
75.46	-4.94	-1.48	0.00	-27.97	0.00	27.97	1,481.16	350.60	797.31	765.70	5.71	-0.65	0.040
75.46	-4.94	-1.48	0.00	-27.97	0.00	27.97	1,018.58	263.60	600.91	529.19	5.71	-0.65	0.058
80.00	-4.69	-1.41	0.00	-21.23	0.00	21.23	999.81	256.01	566.81	504.37	6.34	-0.67	0.047
85.00	-4.42	-1.33	0.00	-14.20	0.00	14.20	978.41	247.65	530.42	477.35	7.05	-0.69	0.034
90.00	-4.17	-1.25	0.00	-7.56	0.00	7.56	956.26	239.30	495.24	450.68	7.79	-0.71	0.021
95.00	-3.92	-1.20	0.00	-1.31	0.00	1.31	933.36	230.94	461.26	424.40	8.54	-0.72	0.007
96.00	-0.17	-0.03	0.00	-0.11	0.00	0.11	928.68	229.27	454.61	419.19	8.69	-0.72	0.000
100.00	0.00	-0.03	0.00	0.00	0.00	0.00	909.69	222.59	428.50	398.54	9.29	-0.72	0.000

Equivalent Lateral Forces Method Analysis

Spectral Response Acceleration for Short Period (S_s):	0.20
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.05
Long-Period Transition Period (T_L):	6
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.60
Site Coeffiecient F_v:	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.21
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.08
Seismic Response Coefficient (C_s):	0.03
Upper Limit C_s	0.03
Lower Limit C_s	0.03
Period based on Rayleigh Method (sec):	1.64
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	1.57
Total Unfactored Dead Load:	11.88 k
Seismic Base Shear (E):	0.53 k

Load Case 1.2D + 1.0Ev + 1.0Eh Seismic

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
24	98.00	175	237	0.028	15	218
23	95.50	49	64	0.007	4	61
22	92.50	251	309	0.036	19	311
21	87.50	259	292	0.034	18	321
20	82.50	267	275	0.032	17	331
19	77.73	249	234	0.027	15	310
18	75.23	33	30	0.003	2	41
17	72.50	369	310	0.036	19	458
16	67.50	380	285	0.033	18	472
15	62.50	390	260	0.030	16	485
14	57.50	401	234	0.027	15	498
13	54.13	141	75	0.009	5	176
12	51.63	522	258	0.030	16	649
11	49.73	87	41	0.005	3	109
10	47.23	372	159	0.019	10	462
9	42.50	427	155	0.018	10	530
8	37.50	438	131	0.015	8	544
7	32.50	449	107	0.013	7	557
6	27.50	459	84	0.010	5	571
5	22.50	470	63	0.007	4	584
4	17.50	481	43	0.005	3	597
3	12.50	492	26	0.003	2	611
2	7.50	503	12	0.001	1	624
1	2.50	513	2	0.000	0	638
Ericsson Radio 4449	96.00	225	294	0.034	18	280

Ericsson AIR 21, 1.3	96.00	249	326	0.038	20	309
Ericsson AIR 21 B4A/	96.00	363	475	0.056	30	451
RFS APXVAALL24 43-U-	96.00	368	482	0.056	30	458
Generic Flat Platfor	96.00	2,500	3,270	0.383	203	3,106
		11,882	8,534	1.000	531	14,761

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

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
24	98.00	175	237	0.028	15	150
23	95.50	49	64	0.007	4	42
22	92.50	251	309	0.036	19	215
21	87.50	259	292	0.034	18	222
20	82.50	267	275	0.032	17	229
19	77.73	249	234	0.027	15	214
18	75.23	33	30	0.003	2	29
17	72.50	369	310	0.036	19	316
16	67.50	380	285	0.033	18	326
15	62.50	390	260	0.030	16	335
14	57.50	401	234	0.027	15	344
13	54.13	141	75	0.009	5	121
12	51.63	522	258	0.030	16	448
11	49.73	87	41	0.005	3	75
10	47.23	372	159	0.019	10	319
9	42.50	427	155	0.018	10	366
8	37.50	438	131	0.015	8	375
7	32.50	449	107	0.013	7	385
6	27.50	459	84	0.010	5	394
5	22.50	470	63	0.007	4	403
4	17.50	481	43	0.005	3	413
3	12.50	492	26	0.003	2	422
2	7.50	503	12	0.001	1	431
1	2.50	513	2	0.000	0	440
Ericsson Radio 4449	96.00	225	294	0.034	18	193
Ericsson AIR 21, 1.3	96.00	249	326	0.038	20	214
Ericsson AIR 21 B4A/	96.00	363	475	0.056	30	311
RFS APXVAALL24 43-U-	96.00	368	482	0.056	30	316
Generic Flat Platfor	96.00	2,500	3,270	0.383	203	2,144
		11,882	8,534	1.000	531	10,192

Load Case 1.2D + 1.0Ev + 1.0Eh Seismic

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-14.12	-0.53	0.00	-45.01	0.00	45.01	1,910.06	511.76	1,698.66	1,445.82	0.00	0.00	0.039
5.00	-13.50	-0.53	0.00	-42.35	0.00	42.35	1,885.52	500.62	1,625.51	1,395.96	0.01	-0.01	0.037
10.00	-12.89	-0.54	0.00	-39.68	0.00	39.68	1,860.22	489.48	1,553.98	1,346.37	0.03	-0.03	0.036
15.00	-12.29	-0.53	0.00	-37.00	0.00	37.00	1,834.16	478.34	1,484.06	1,297.08	0.06	-0.04	0.035
20.00	-11.71	-0.53	0.00	-34.32	0.00	34.32	1,807.34	467.20	1,415.74	1,248.14	0.11	-0.05	0.034
25.00	-11.14	-0.53	0.00	-31.66	0.00	31.66	1,779.77	456.06	1,349.04	1,199.57	0.16	-0.06	0.033
30.00	-10.58	-0.52	0.00	-29.01	0.00	29.01	1,751.43	444.92	1,283.94	1,151.42	0.24	-0.07	0.031
35.00	-10.03	-0.52	0.00	-26.39	0.00	26.39	1,722.34	433.78	1,220.46	1,103.72	0.32	-0.09	0.030
40.00	-9.50	-0.51	0.00	-23.80	0.00	23.80	1,692.49	422.64	1,158.58	1,056.52	0.42	-0.10	0.028
45.00	-9.04	-0.50	0.00	-21.25	0.00	21.25	1,661.88	411.50	1,098.32	1,009.84	0.53	-0.11	0.026
49.46	-8.93	-0.50	0.00	-19.02	0.00	19.02	1,633.95	401.56	1,045.94	968.70	0.64	-0.12	0.025
50.00	-8.28	-0.48	0.00	-18.75	0.00	18.75	1,630.52	400.36	1,039.66	963.73	0.65	-0.12	0.025
53.27	-8.11	-0.48	0.00	-17.18	0.00	17.18	1,629.60	400.04	1,037.99	962.41	0.73	-0.13	0.023
55.00	-7.61	-0.46	0.00	-16.35	0.00	16.35	1,618.56	396.18	1,018.08	946.60	0.78	-0.13	0.022
60.00	-7.13	-0.45	0.00	-14.04	0.00	14.04	1,586.15	385.04	961.64	901.33	0.92	-0.14	0.020
65.00	-6.65	-0.43	0.00	-11.81	0.00	11.81	1,552.98	373.90	906.80	856.72	1.08	-0.15	0.018
70.00	-6.20	-0.41	0.00	-9.67	0.00	9.67	1,519.06	362.76	853.58	812.81	1.24	-0.16	0.016
75.00	-6.15	-0.41	0.00	-7.63	0.00	7.63	1,484.37	351.62	801.96	769.62	1.41	-0.16	0.014
75.46	-5.84	-0.39	0.00	-7.44	0.00	7.44	1,481.16	350.60	797.31	765.70	1.42	-0.17	0.014
75.46	-5.84	-0.39	0.00	-7.44	0.00	7.44	1,018.58	263.60	600.91	529.19	1.42	-0.17	0.020
80.00	-5.51	-0.37	0.00	-5.66	0.00	5.66	999.81	256.01	566.81	504.37	1.58	-0.17	0.017
85.00	-5.19	-0.36	0.00	-3.79	0.00	3.79	978.41	247.65	530.42	477.35	1.76	-0.18	0.013
90.00	-4.88	-0.34	0.00	-2.01	0.00	2.01	956.26	239.30	495.24	450.68	1.95	-0.18	0.010
95.00	-4.82	-0.33	0.00	-0.33	0.00	0.33	933.36	230.94	461.26	424.40	2.14	-0.18	0.006
96.00	0.00	0.00	0.00	0.00	0.00	0.00	928.68	229.27	454.61	419.19	2.18	-0.18	0.000
100.00	0.00	0.00	0.00	0.00	0.00	0.00	909.69	222.59	428.50	398.54	2.33	-0.18	0.000

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-9.75	-0.53	0.00	-44.58	0.00	44.58	1,910.06	511.76	1,698.66	1,445.82	0.00	0.00	0.036
5.00	-9.32	-0.53	0.00	-41.92	0.00	41.92	1,885.52	500.62	1,625.51	1,395.96	0.01	-0.01	0.035
10.00	-8.90	-0.53	0.00	-39.25	0.00	39.25	1,860.22	489.48	1,553.98	1,346.37	0.03	-0.02	0.034
15.00	-8.49	-0.53	0.00	-36.59	0.00	36.59	1,834.16	478.34	1,484.06	1,297.08	0.06	-0.04	0.033
20.00	-8.08	-0.53	0.00	-33.93	0.00	33.93	1,807.34	467.20	1,415.74	1,248.14	0.10	-0.05	0.032
25.00	-7.69	-0.53	0.00	-31.28	0.00	31.28	1,779.77	456.06	1,349.04	1,199.57	0.16	-0.06	0.030
30.00	-7.30	-0.52	0.00	-28.65	0.00	28.65	1,751.43	444.92	1,283.94	1,151.42	0.23	-0.07	0.029
35.00	-6.93	-0.51	0.00	-26.05	0.00	26.05	1,722.34	433.78	1,220.46	1,103.72	0.32	-0.09	0.028
40.00	-6.56	-0.50	0.00	-23.49	0.00	23.49	1,692.49	422.64	1,158.58	1,056.52	0.41	-0.10	0.026
45.00	-6.24	-0.49	0.00	-20.97	0.00	20.97	1,661.88	411.50	1,098.32	1,009.84	0.52	-0.11	0.025
49.46	-6.17	-0.49	0.00	-18.77	0.00	18.77	1,633.95	401.56	1,045.94	968.70	0.63	-0.12	0.023
50.00	-5.72	-0.48	0.00	-18.50	0.00	18.50	1,630.52	400.36	1,039.66	963.73	0.64	-0.12	0.023
53.27	-5.60	-0.47	0.00	-16.95	0.00	16.95	1,629.60	400.04	1,037.99	962.41	0.73	-0.13	0.021
55.00	-5.25	-0.46	0.00	-16.13	0.00	16.13	1,618.56	396.18	1,018.08	946.60	0.77	-0.13	0.020
60.00	-4.92	-0.44	0.00	-13.85	0.00	13.85	1,586.15	385.04	961.64	901.33	0.91	-0.14	0.018
65.00	-4.59	-0.42	0.00	-11.64	0.00	11.64	1,552.98	373.90	906.80	856.72	1.06	-0.15	0.017
70.00	-4.28	-0.40	0.00	-9.53	0.00	9.53	1,519.06	362.76	853.58	812.81	1.22	-0.16	0.015
75.00	-4.25	-0.40	0.00	-7.52	0.00	7.52	1,484.37	351.62	801.96	769.62	1.39	-0.16	0.013
75.46	-4.04	-0.39	0.00	-7.33	0.00	7.33	1,481.16	350.60	797.31	765.70	1.41	-0.16	0.012
75.46	-4.04	-0.39	0.00	-7.33	0.00	7.33	1,018.58	263.60	600.91	529.19	1.41	-0.16	0.018
80.00	-3.81	-0.37	0.00	-5.58	0.00	5.58	999.81	256.01	566.81	504.37	1.56	-0.17	0.015
85.00	-3.58	-0.35	0.00	-3.73	0.00	3.73	978.41	247.65	530.42	477.35	1.74	-0.17	0.011
90.00	-3.37	-0.33	0.00	-1.98	0.00	1.98	956.26	239.30	495.24	450.68	1.93	-0.18	0.008
95.00	-3.33	-0.33	0.00	-0.33	0.00	0.33	933.36	230.94	461.26	424.40	2.12	-0.18	0.004
96.00	0.00	0.00	0.00	0.00	0.00	0.00	928.68	229.27	454.61	419.19	2.15	-0.18	0.000
100.00	0.00	0.00	0.00	0.00	0.00	0.00	909.69	222.59	428.50	398.54	2.31	-0.18	0.000

Analysis Summary

	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.0W	13.22	0.00	14.23	0.00	0.00	937.91	0.00	0.66
0.9D + 1.0W	13.21	0.00	10.66	0.00	0.00	930.81	0.00	0.65
1.2D + 1.0Di + 1.0Wi	3.22	0.00	20.16	0.00	0.00	219.50	0.00	0.16
1.2D + 1.0Ev + 1.0Eh	0.53	0.00	14.12	0.00	0.00	45.01	0.00	0.04
0.9D - 1.0Ev + 1.0Eh	0.53	0.00	9.75	0.00	0.00	44.58	0.00	0.04
1.0D + 1.0W	2.68	0.00	11.88	0.00	0.00	189.44	0.00	0.14

Base Plate & Anchor Rod Analysis

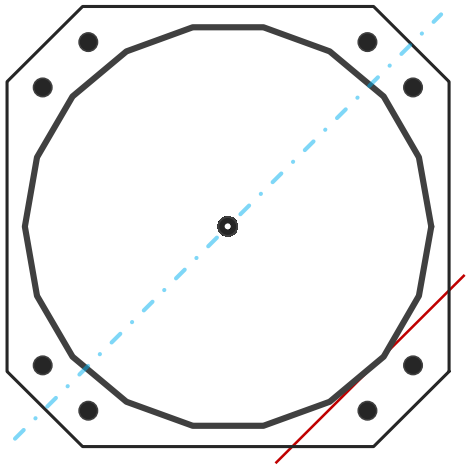
Pole Dimensions		
Number of Sides	18	-
Diameter	37	in
Thickness	1/4	in
Orientation Offset		°

Base Reactions		
Moment, Mu	937.9	k-ft
Axial, Pu	14.2	k
Shear, Vu	13.2	k
Neutral Axis	225	°

Report Capacities		
Component	Capacity	Result
Base Plate	84%	Pass
Anchor Rods	54%	Pass
Dwyidag	-	-

Base Plate		
Shape	Square	-
Width	41	in
Thickness	2 1/4	in
Grade	A36	
Yield Strength, Fy	36	ksi
Tensile Strength, Fu	58	ksi
Clip	7	in
Orientation Offset	0	°
Anchor Rod Detail	d	η=0.5
Clear Distance	6	in
Applied Moment, Mu	716.1	k
Bending Stress, ϕMn	855.3	k

Original Anchor Rods		
Arrangement	Cluster	-
Quantity	8	-
Diameter, ø	2 1/4	in
Bolt Circle	43	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	6.0	in
Orientation Offset	0	°
Applied Force, Pu	131.2	k
Anchor Rods, ϕPn	243.6	k



Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	13.2	937.9	1.00
Anchor Rod Forces	13.2	937.9	1.00
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	0.0	0.00
Stiffener Forces	0.0	0.0	0.00

Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in^2	in^2	in^4	#	in^4
Pole	28.7171	1.5954	0.0334		4848.62
Bolt	3.9761	3.2477	0.8393	4.5	6011.69
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	0.0000	0.0000	0.0000		0.00
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate		
Shape	Square	-
Width, W	41	in
Thickness, t	2.25	in
Yield Strength, Fy	36	ksi
Tensile Strength, Fu	58	ksi
Base Plate Chord	17.664	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	6	-

Anchor Rods		
Anchor Rod Quantity, N	8	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	43	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	131.2	k
Applied Shear, Vu	0.4	k
Compressive Capacity, ϕPn	243.6	k
Tensile Capacity, ϕRnt	0.539	OK
Interaction Capacity	0.302	OK

External Base Plate		
Chord Length AA	20.858	in
Additional AA	0.000	in
Section Modulus, Z	26.398	in^3
Applied Moment, Mu	716.1	k-ft
Bending Capacity, ϕMn	855.3	k-ft
Capacity, Mu/ϕMn	0.837	OK
Chord Length AB	20.285	in
Additional AB	0.000	in
Section Modulus, Z	25.673	in^3
Applied Moment, Mu	641.0	k-ft
Bending Capacity, ϕMn	831.8	k-ft
Capacity, Mu/ϕMn	0.771	OK
Bend Line Length	0.000	in
Additional Bend Line	0.000	in
Section Modulus, Z	0.000	in^3
Applied Moment, Mu	0.0	k-ft
Bending Capacity, ϕMn	0.0	k-ft
Capacity, Mu/ϕMn		

Internal Base Plate		
Arc Length	0.000	in
Section Modulus, Z	0.000	in^3
Moment Arm	0.000	in
Applied Moment, Mu	0.0	k-ft
Bending Capacity, ϕMn	0.0	k-ft
Capacity, Mu/ϕMn		

Flange Plate Analysis

Flange Plate

Plate Type	***Flange***	***@ 76 ft***
Pole Diameter	25	in
Pole Thickness	0.1875	in
Plate Diameter	29	in
Plate Thickness	3/4	in
Plate Fy	36	ksi
Weld Length	0	in
f_s Resistance	15.78	k-in
Applied	13.57	k-in

Code Rev.	***H***
Moment	138.8 k-ft
Axial	5.5 k

Required Flange Thickness:
0.70 in OK

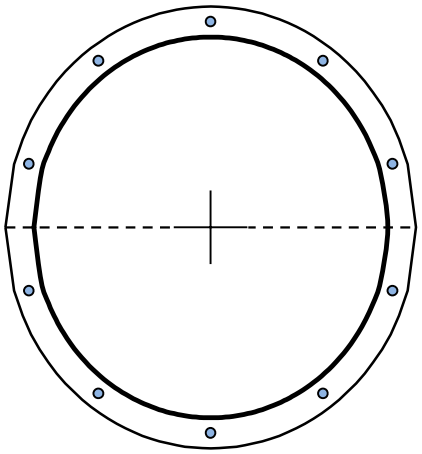
Date	6/24/2021
Engineer	AS
Site #	284983
Carrier	T-MOBILE

Stiffeners

#	

Bolts

#	***10***	
Bolt Circle	27	in
(R)adial / (S)quare	R	
Diameter	3/4	in
Hole Diameter	7/8	in
Type	A325	
Fy	92	ksi
Fu	120	ksi
f_s Resistance	30.10	k
Applied	24.12	k



Reinforcement

#	

Plate Stress Ratio:
86% Pass

Bolt Stress Ratio:
80% Pass

Extra Bolts O

#	

Site Name: OLD LYME CT, CT
Site Number: 284983
Tower Type: MP
Design Loads (Factored) - Analysis per TIA-222-H Standards

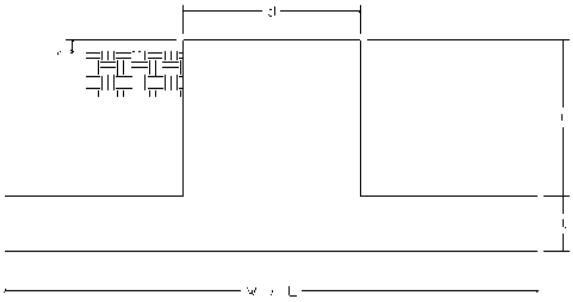
Monolithic Mat & Pier Foundation Analysis

Foundation Analysis Parameters		
Design / Analysis / Mapping:	Mapping	-
Compression/Leg:	14.2	k
Uplift/Leg:	0.0	k
Total Shear:	13.2	k
Moment:	937.9	k-ft
Tower + Appurtenance Weight:	14.2	k
Depth to Base of Foundation (l + t - h):	5.82	ft
Diameter of Pier (d):	5.5	ft
Length of Pier (l):	5.07	ft
Height of Pier above Ground (h):	0.75	ft
Width of Pad (W):	17	ft
Length of Pad (L):	17	ft
Thickness of Pad (t):	1.5	ft
Tower Leg Center to Center:	0	ft
Number of Tower Legs:	1	-
Tower Center from Mat Center:	0	ft
Depth Below Ground Surface to Water Table:	99	ft
Unit Weight of Concrete:	150	pcf
Unit Weight of Soil Above Water Table:	130	pcf
Unit Weight of Water:	62.4	pcf
Unit Weight of Soil Below Water Table:	67.6	pcf
Friction Angle of Uplift:	15	°
Coefficient of Shear Friction:	0.33	-
Ultimate Compressive Bearing Pressure:	8,000	psf
Ultimate Passive Pressure on Pad Face:	0	psf
$f_{Soil\ and\ Concrete\ Weight}$:	0.9	-
f_{Soil}:	0.75	-

Overturning Moment Usage		
Design OTM:	1024.8	k-ft
OTM Resistance:	1988.6	k-ft
Design OTM / OTM Resistance:	52%	Pass

Soil Bearing Pressure Usage		
Net Bearing Pressure:	1242	psf
Factored Nominal Bearing Pressure:	6000	psf
Factored Nominal (Net) Bearing Pressure:	21%	Pass
Load Direction Controling Design Bearing Pressure:	*Diagonal to Pad Edge*	

Sliding Factor of Safety		
Ultimate Friction Resistance:	80.5	k
Ultimate Passive Pressure Resistance:	0.0	k
Total Factored Sliding Resistance:	60.4	k
Sliding Design / Sliding Resistance:	22%	Pass



AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by

efi global

Antenna Mount Analysis Report

ATC Site Name	:	**OLD LYME CT**
ATC Site Number	:	**284983**
Engineering Number	:	**13678001_C8_02**
Mount Elevation	:	**96 ft**
Carrier	:	**T-Mobile**
Carrier Site Name	:	**Amtrak_OldLyme2**
Carrier Site Number	:	**CTNL801A**
Site Location	:	**61-1 Buttonball Road** **Old Lyme, CT 06371** **41.29647200, -72.30122000**
County	:	**New London**
Date	:	**June 22, 2021**
Max Usage	:	**43%**
Result	:	**Replacement (Pass)**

STATE OF CONNECTICUT
AHMET COLAKOGLU
PEN. 27057
LICENSED PROFESSIONAL ENGINEER

6/22/2021

Prepared By:
Dundar Ustun
EFI Global, Inc.

Reviewed By:
Ahmet Colakoglu, P.E.
EFI Global, Inc.

COA#: 000807

AMERICAN TOWER®
CORPORATION

Table of Contents

Introduction

The purpose of this report is to summarize results of the antenna mount analysis performed for T-Mobile at 96 ft.

Supporting Documents

RFDS	RFDS dated June 11, 2021
Spec. Sheet	Perfect Vision (P/N: PV-LPPGS-12M-HR25-AP4) dated February 16, 2021

Analysis

This antenna mount was analyzed using RISA-3D analysis software

Basic Wind Speed:	126 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1.0" radial ice concurrent
Codes:	ANSI/TIA-222-H
Risk Category:	II
Exposure Category:	C
Topographic Factor Procedure:	Method 2
Feature:	Flat
Spectral Response:	Ss = 0.198, S_1 = 0.053
Seismic Design Category:	B
Site Class:	D – Stiff Soil
Live Loads:	Lm = 500 lbs, Lv = 250 lbs

Conclusion

Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed. The mount can support the equipment as described in this report. Analysis is based on a new Perfect Vision PV-LPPGS Monopole Guardian Mount (P/N: PV-LPPGS-12M-HR25-AP4). The analysis also assumes the followings:

1. The platform base is installed at 96'-0'' A.G.L. (above grade level).
2. The support rail is installed at 3-6'' above the platform base.
3. (4) 126'' long 2.5 STD mount pipes are installed at each side.

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

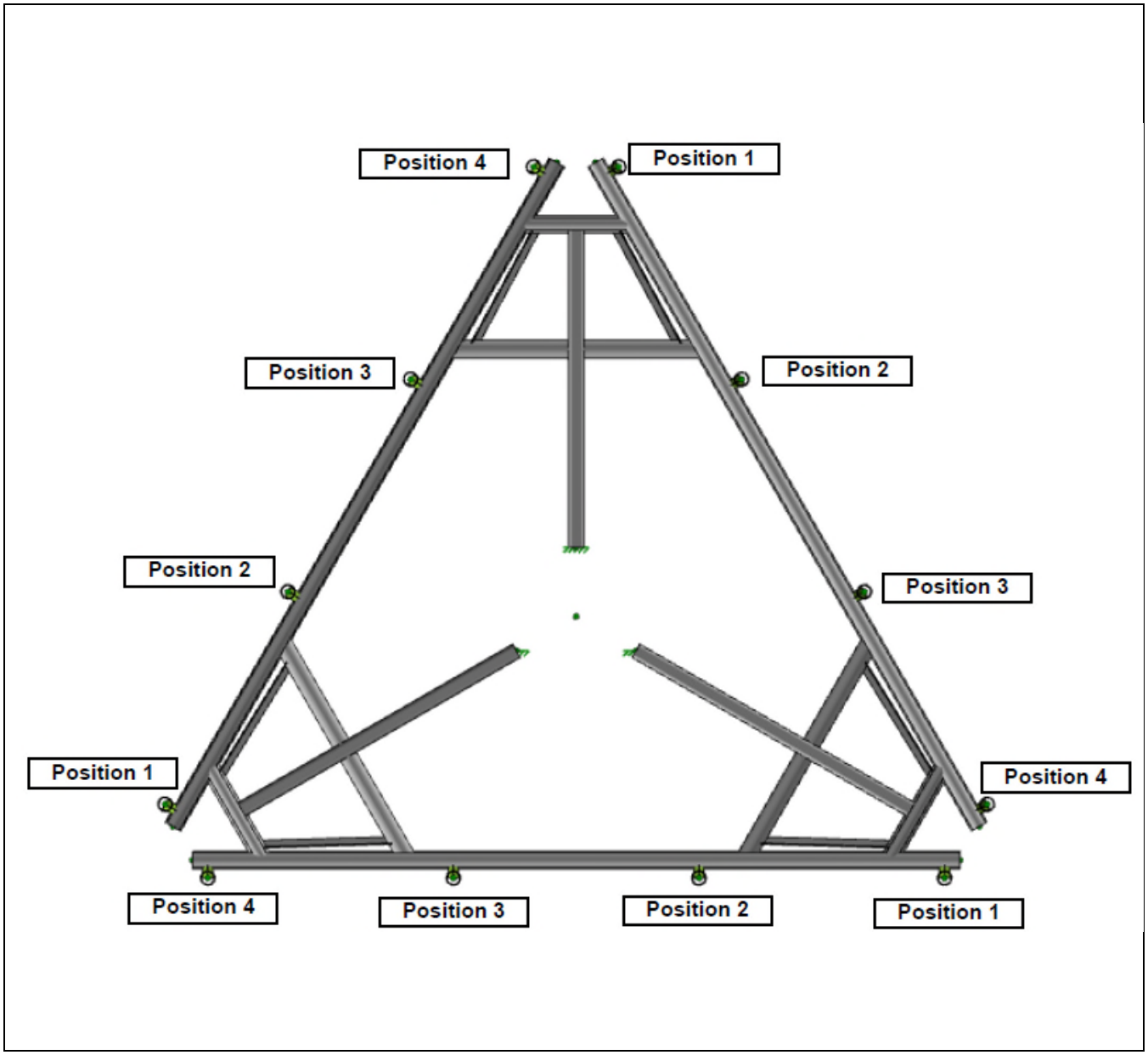
Antenna Loading

Mount Centerline (ft)	Antenna Centerline (ft)	Qty	Antenna Model
96.0	96.0	3	RFS APXVAALL24 43-U-NA20
		3	Ericsson AIR 21, 1.3 M, B2A B4P
		3	Ericsson AIR 21 B4A/B12-B5P 2.4M
		3	Ericsson Radio 4449 B71 B85A

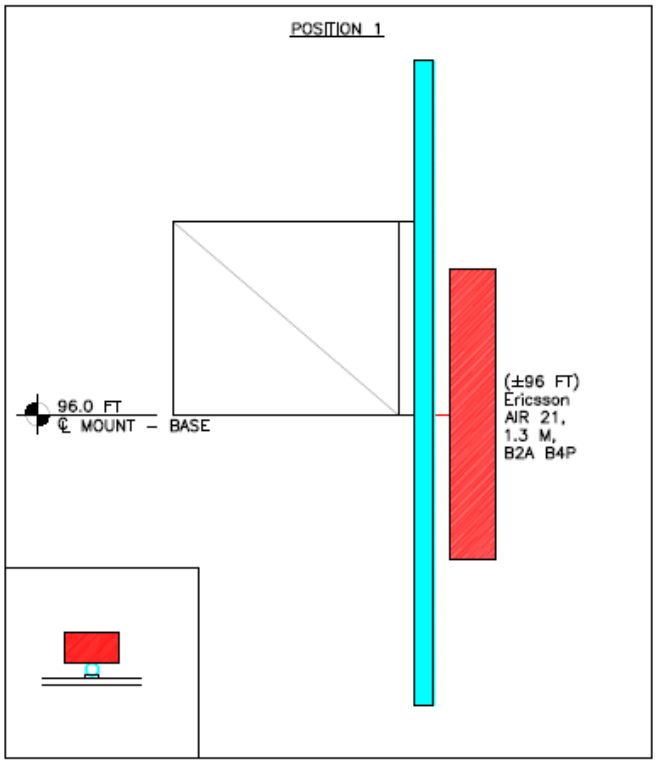
Structure Usages

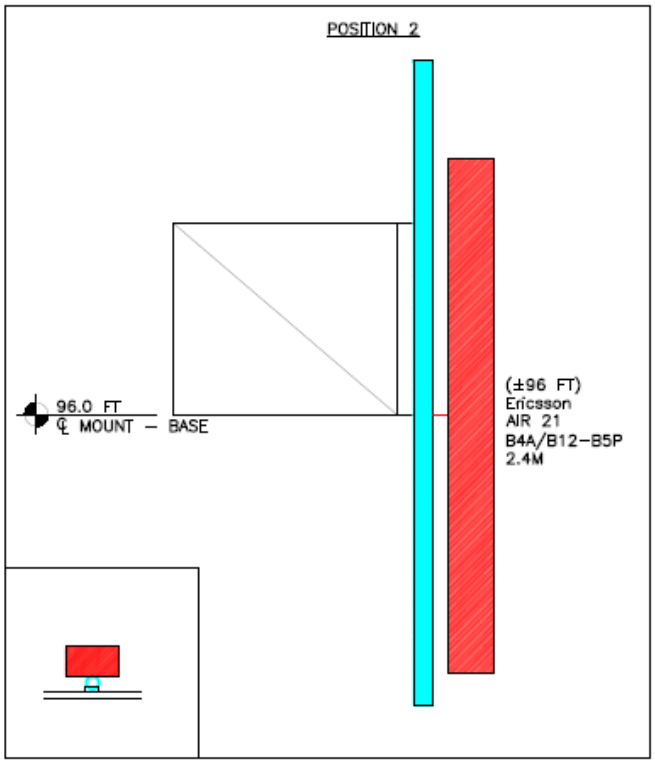
Structural Component	Controlling Usage	Pass/Fail
Horizontal Face Pipe	<20%	Pass
Standoff Tube	30%	Pass
Bracing Pipe	21%	Pass
Grating Angle	<20%	Pass
Platform Base Corner Pipe	<20%	Pass
Support Rail Pipe	<20%	Pass
Antenna Mount Pipe	43%	Pass

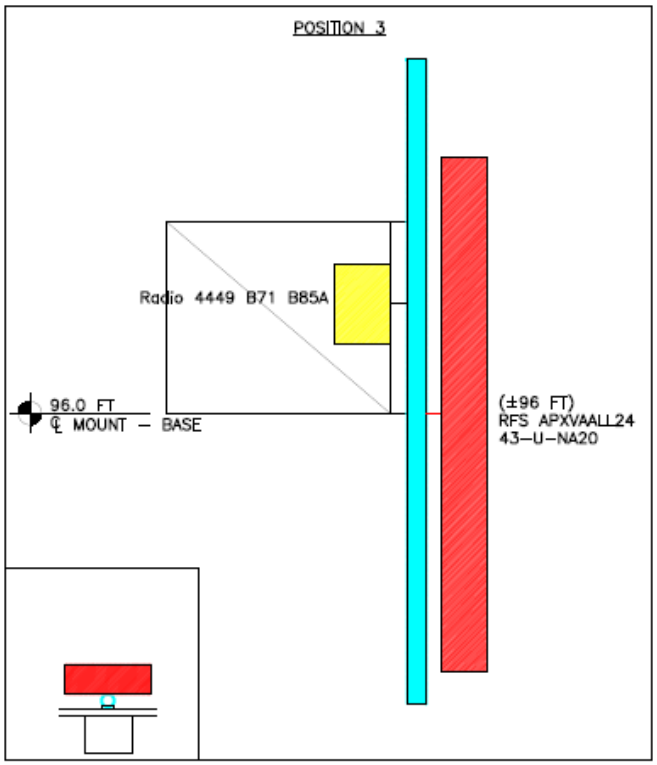
Mount Layout

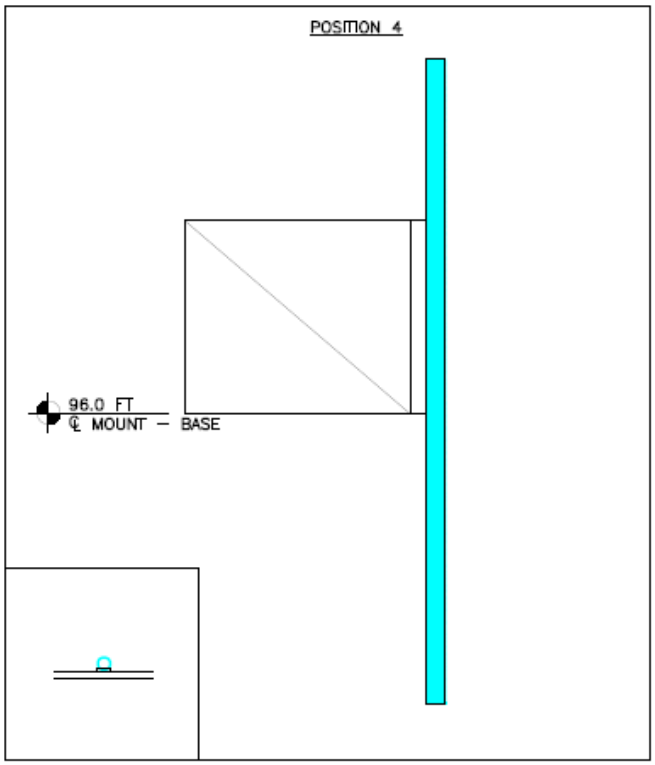


Equipment Layout









Standard Conditions

All engineering services performed by EFI Global, Inc. (EFI) 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 EFI

It is the responsibility of the client to ensure that the information provided to EFI and used in the performance of our engineering services is correct and complete.

EFI 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 EFI, 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. EFI is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

CLIENT: ATC

PROJECT: 284983_13678001_T-Mobile

SUBJECT: Antenna Loads - TIA 222 H Standard

Tower Height	100.00	ft	Type of Mount: Platform
Basic Wind Speed, V	126	mph	
Basic Wind Speed w/ Ice, V_i	50	mph	
Maintanence Load Factor, L_{FM}	0.0567	Load Factor for Maint. Load Cases (Basic Wind Speed=30 mph)	
Ultimate Ice Thickness, t_i	1	inches	

Table 2-3 Importance Factors

Structure Classification	Wind Load Without Ice	Wind Load With Ice	Ice Thickness	Earthquake
II	1	1	1	1

Table 2-4 Exposure Category Coefficients

Exposure Category	Zg	α	Kzmin	Ke	m
C	900	9.5	0.85	1	0.6

Ground elevation factor, Ke

Zs 20 **ft**

Ke 1.00

Table 2-5 Topographic Categories

Kzt 1.000

Table 2-2 Wind Directionality Factor, Kd

Structure Type	Kd	
Monopole	0.95	DOES NOT CHANGE

Gust Effect Factor Gh

Structure Type	Gh	
Monopole	1.00	DOES NOT CHANGE

Shielding Factor, Ka

Structure Type	Ka	
Monopole	0.90	DOES NOT CHANGE

Seismic Factors

Ss	0.198	
S1	0.053	
Fa	1.6	
Fv	2.4	
R	2	Truss or Pole

Wind & Ice Load Calculations			
Velocity Pressure Coefficient	K_z	1.25	
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	48.4	psf
Height Escalation Factor	K_{iz}	1.11	
Thickness of Radial Glaze Ice	T_{iz}	1.11	in

Seismic Load Calculations			
Short Period DSRAP	S_{DS}	0.21	
1 Second DSRAP	S_{D1}	0.08	
Importance Factor	I	1.00	
Response Modification Coefficient	R	2.00	
Seismic Response Coefficient	C_S	0.07	
Amplification Factor	A	1.00	
Seismic Design Category	SDC	B	

CLIENT: ATC

PROJECT: 284983_13678001_T-Mobile

SUBJECT: Antenna Loads - TIA 222 H Standard

Rad Center **96.00** ft

Antenna AND Mount Without Ice

Mounting Pole	Height (ft)	Model Number	#	Weight (lbs)	H (in)	*W (in)	D (in)	Ka	**A_N (ft2)	***A_T (ft2)	Aspect (FRONT)	Aspect (SIDE)	Ca (FRONT)	Ca (SIDE)	K_z	q_z (psf)	Pounds: Wind Load (Front)	Wind Load (Side)	Dead Load	Total Wind Load (Front)	Total Wind Load (Side)	Total Dead Load	Lateral Load (Seismic)	Vertical Load (Seismic)
Pos. 1	**96.00**	Ericsson AIR 21, 1.3 M, B2A B4P	1	83.0	56.0	12.0	8.0	0.90	4.67	3.11	4.67	7.00	1.30	1.40	1.255	48.4	263.6	189.8	83	264	190	83	6	4
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
																				132	**95**	**42**	**3**	**2**
Pos. 2	**96.00**	Ericsson AIR 21 B4A/B12-B5P 2.4M	1	121.0	96.0	12.1	8.7	0.90	8.07	5.80	7.93	11.03	1.43	1.53	1.255	48.4	503.0	387.8	121	503	388	121	8	5
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
																				252	**194**	**61**	**4**	**3**
Pos. 3	**96.00**	RFS APXVAALL24 43-U-NA20	1	122.8	95.9	24.0	8.5	0.90	15.98	5.66	4.00	11.28	1.27	1.54	1.255	48.4	882.0	380.5	122.8	882	438	198	13	8
	96.00	Ericsson Radio 4449 B71 B85A	1	75.0	15.0	N/A	10.5	0.90	-	1.09	-	1.43	-	1.20	1.255	48.4	0.0	57.2	75					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
																				441	**219**	**99**	**7**	**4**

* Enter N/A in the W column for front sheilded apurtanances.

** A_N is the product of H and W

*** A_T is the product of H and D

DL #REF!

Mount	Height (ft)	Member	*L (in)	**W (in)	D (in)	Weight (lb/ft)	*** Ca	K_z	q_z (psf)	Wind Load (PLF)	Lateral Load (Seismic)	Vertical Load (Seismic)
	96.00	3.0 STD Pipe	12.00	3.50	0.00		1.20	1.255	43.6	15	-	-
	96.00	2.5 ST Pipe	12.00	2.88	0.00		1.20	1.255	43.6	13	-	-
	96.00	2.0 STD Pipe	12.00	2.38	0.00		1.20	1.255	43.6	10	-	-
	96.00	7/8" SR	0.00	0.88	0.00		-	-	-	-	-	-
	96.00	(L4x4)	0.00	4.00	4.00		-	-	-	-	-	-
	96.00	(L1.5x1.5)	12.00	1.50	1.50		2.00	1.255	43.6	11	-	-
	96.00	Angle Diagonal	0.00	0.00	0.00		-	-	-	-	-	-
	96.00	Plate (PL 9x1/2)	0.00	0.50	9.00		-	-	-	-	-	-
	96.00	Plate (PL3x3/8)	0.00	3.00	0.38		-	-	-	-	-	-
	96.00	Plate (PL2x1/2)	0.00	0.50	2.00		-	-	-	-	-	-
	96.00	HSS5x3	12.00	5.00	3.00		2.00	1.255	43.6	36	-	-
	96.00	HSS3x3	0.00	5.00	3.00		-	-	-	-	-	-
	96.00	HSS2X2	0.00	2.00	2.00		-	-	-	-	-	-
	96.00	Double Angle (LL2.5x2.5x3x3)	0.00	2.50	5.00		-	-	-	-	-	-
	96.00	Channel (C5x6.7)	0.00	5.00	1.80		-	-	-	-	-	-
	96.00	Channel (2x1)	0.00	2.00	1.00		-	-	-	-	-	-

* The dimension L is the longest dimension of the member

** The dimension W is the height or width of the member that resists wind load

*** Ca will equal 1.2 for round members and 2.0 for flat members

CLIENT: ATC

PROJECT: 284983_13678001_T-Mobile

SUBJECT: Antenna Loads - TIA 222 H Standard

ti (in) 1.112694 Kiz 1.112694 reduction 0.15747

Antenna AND Mount With Ice

Mounting Pole	Height (ft)	Model Number	#	H (in)	W (in)	D (in)	Ka	*A_N (ft2)	*A_T (ft2)	*Volume Ice (ft3)	*Weight Ice (lbs)	**Ca (FRONT)	**Ca (SIDE)	Kz	q_z (psf)	Pounds: Ice Wind Load (Front)	Ice Wind Load (Side)	Combined Wind Load (Front)	Combined Wind Load (Side)	Ice Dead Load	**Total Wind Load (Front)	**Total Wind Load (Side)	Total Ice Load
Pos. 1	**96.00**	Ericsson AIR 21, 1.3 M, B2A B4P	1	56.0	12.0	8.0	0.90	1.09	1.02	1.79	100.25	0.74	0.77	1.255	7.6	5.5	5.4	47.0	35.3	100	47	35	100
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
																					24	**18**	**51**
Pos. 2	**96.00**	Ericsson AIR 21 B4A/B12-B5P 2.4M	1	96.0	12.1	8.7	0.90	1.70	1.65	3.05	170.70	0.80	0.84	1.255	7.6	9.3	9.6	88.5	70.6	171	89	71	171
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
																					45	**36**	**86**
Pos. 3	**96.00**	RFS APXVAALL24 43-U-NA20	1	95.9	24.0	8.5	0.90	1.89	1.65	4.65	260.45	0.73	0.85	1.255	7.6	9.4	9.6	148.3	69.5	260	148	81	303
	96.00	Ericsson Radio 4449 B71 B85A	1	15.0	13.2	10.5	0.90	-	0.43	0.75	42.20	0.70	0.70	1.255	7.6	0.0	2.1	0.0	11.1	42			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
																					75	**41**	**152**

* A_N ,A_T, Volume Ice and Weight Ice are calculated per unit

** Ca will equal 1.2 for all ice load calculations

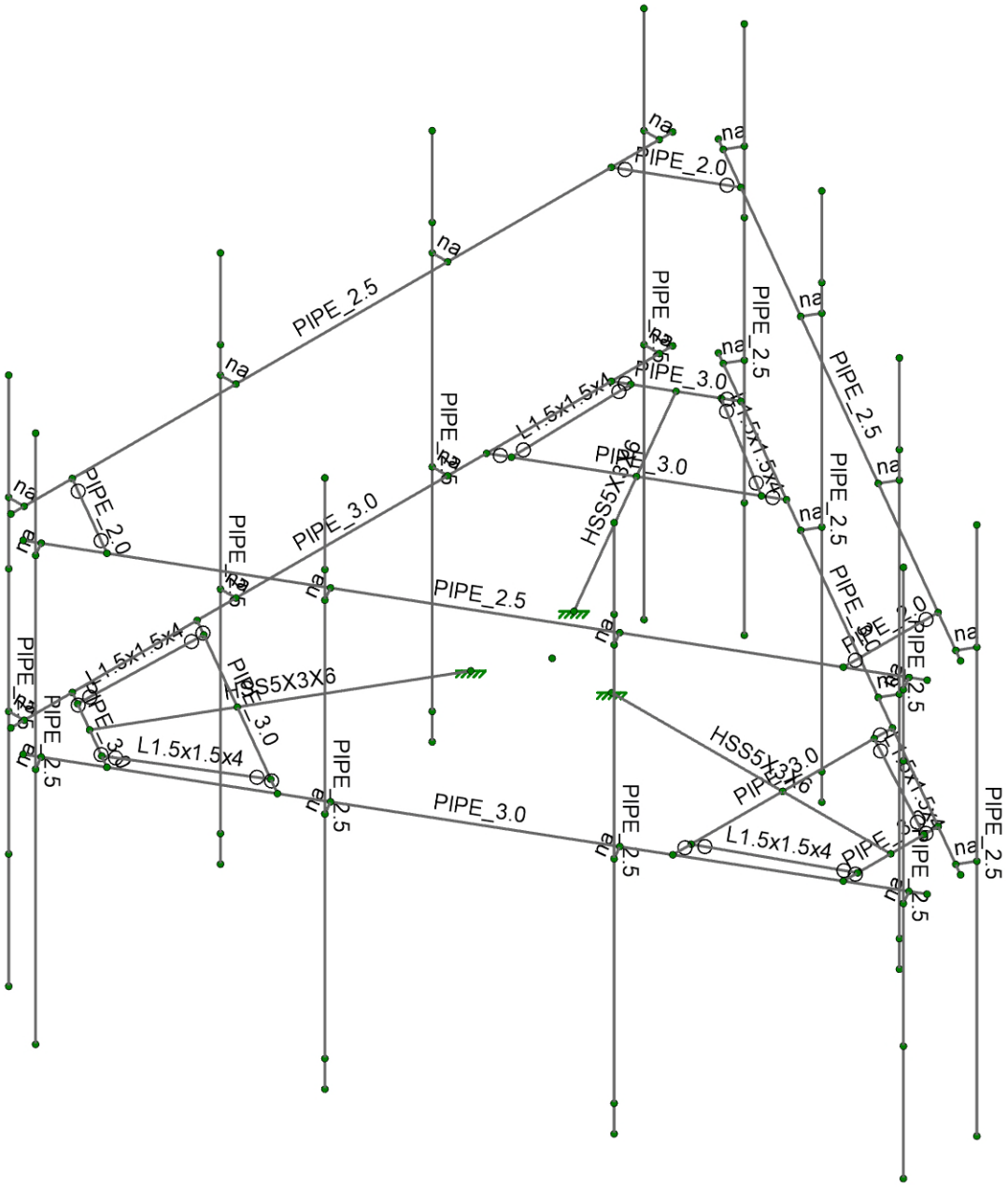
Mount	Height (ft)	Member	*L (in)	**W (in)	D (in)	***A_N (ft2)	Volume Ice (ft3)	Weight Ice (lbs)	****Ca (FRONT)	Kz	q_z (psf)	PLF: Ice Wind Load (Front)	Combined Wind Load (Front)	Ice Dead Load
	96.00	3.0 STD Pipe	12.00	3.50	0.00	0.27	0.11	6.27	1.20	1.255	6.9	2.3	4.7	6
	96.00	2.5 ST Pipe	12.00	2.88	0.00	0.26	0.10	5.42	1.20	1.255	6.9	2.2	4.1	5
	96.00	2.0 STD Pipe	12.00	2.38	0.00	0.26	0.08	4.74	1.20	1.255	6.9	2.1	3.7	5
	96.00	7/8" SR	0.00	0.88	0.00	-	-	-	-	-	-	-	-	-
	96.00	(L4x4)	0.00	4.00	4.00	-	-	-	-	-	-	-	-	-
	96.00	(L1.5x1.5)	12.00	1.50	1.50	0.24	0.05	2.60	1.20	1.255	6.9	2.0	3.7	3
	96.00	Angle Diagonal	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-
	96.00	Plate (PL 9x1/2)	0.00	0.50	9.00	-	-	-	-	-	-	-	-	-
	96.00	Plate (PL3x3/8)	0.00	3.00	0.38	-	-	-	-	-	-	-	-	-
	96.00	Plate (PL2x1/2)	0.00	0.50	2.00	-	-	-	-	-	-	-	-	-
	96.00	HSS5x3	12.00	5.00	3.00	0.30	0.21	11.57	1.20	1.255	6.9	2.4	8.2	12
	96.00	HSS3x3	0.00	5.00	3.00	-	-	-	-	-	-	-	-	-
	96.00	HSS2X2	0.00	2.00	2.00	-	-	-	-	-	-	-	-	-
	96.00	Double Angle (LL2.5x2.5x3x3)	0.00	2.50	5.00	-	-	-	-	-	-	-	-	-
	96.00	Channel (C5x6.7)	0.00	5.00	1.80	-	-	-	-	-	-	-	-	-
	96.00	Channel (2x1)	0.00	2.00	1.00	-	-	-	-	-	-	-	-	-

* The dimension L is the longest dimension of the member

** The dimension W is the height or width of the member that resists wind load

*** A_N is the area of ice built up on the LW plane

**** Ca will equal 1.2 for all ice load calculations



Envelope Only Solution

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DU		Jun 22, 2021
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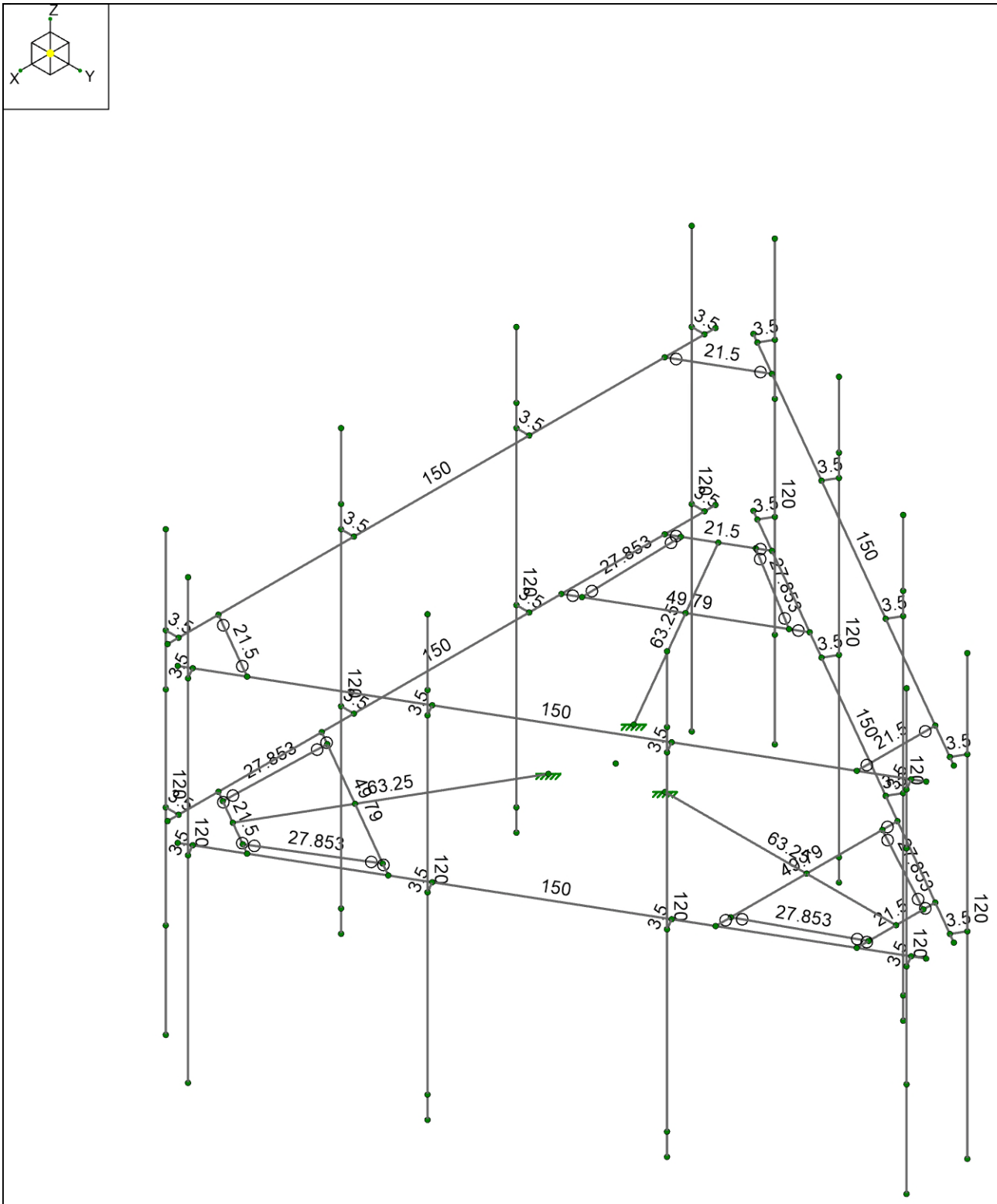

Member Length (in) Displayed
Envelope Only Solution

ATC/EFI	284983_13678001_T-Mobile	SK-2
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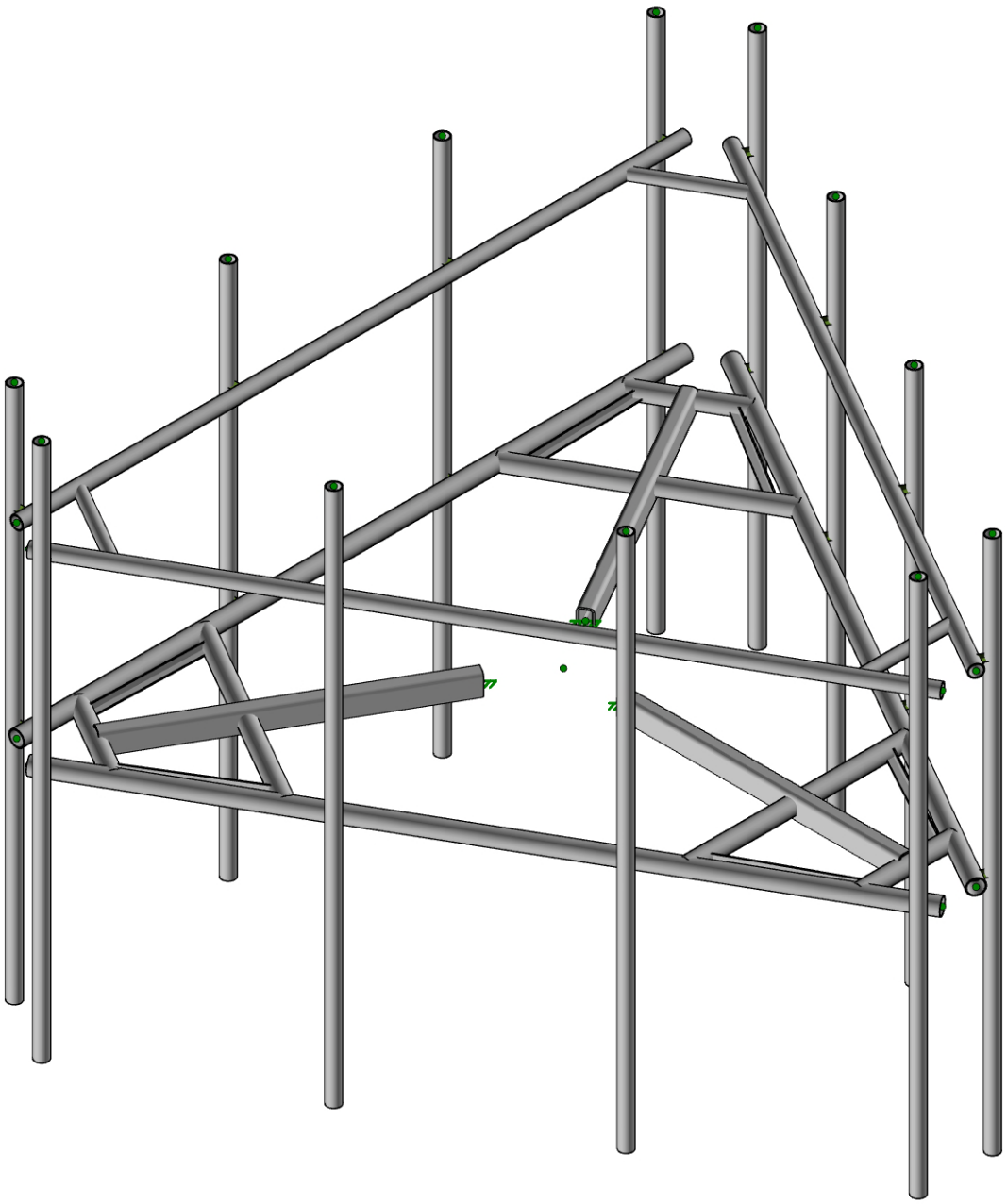

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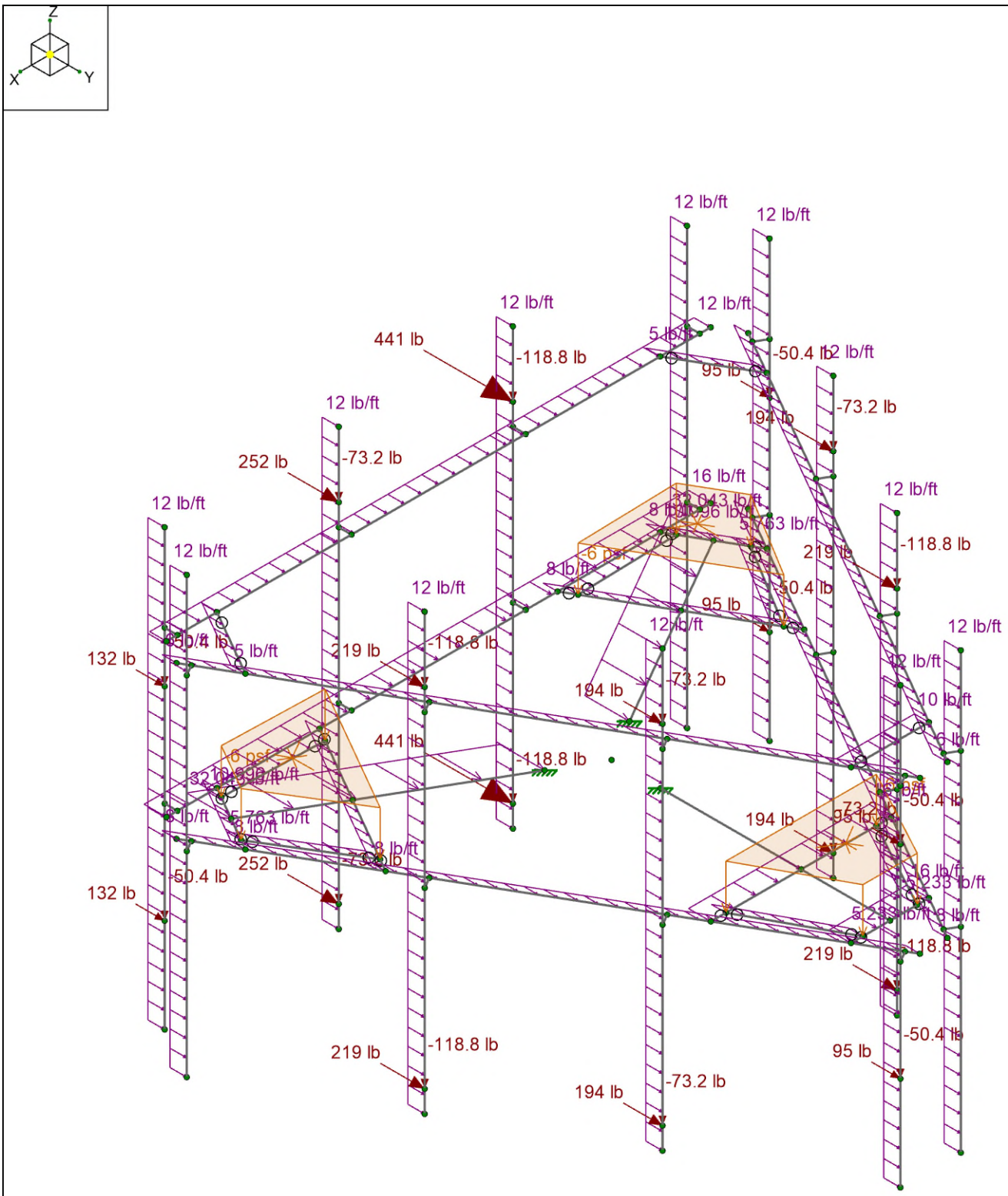

Loads: LC 1, DL + WL (NO ICE) 0 Degree
Envelope Only Solution

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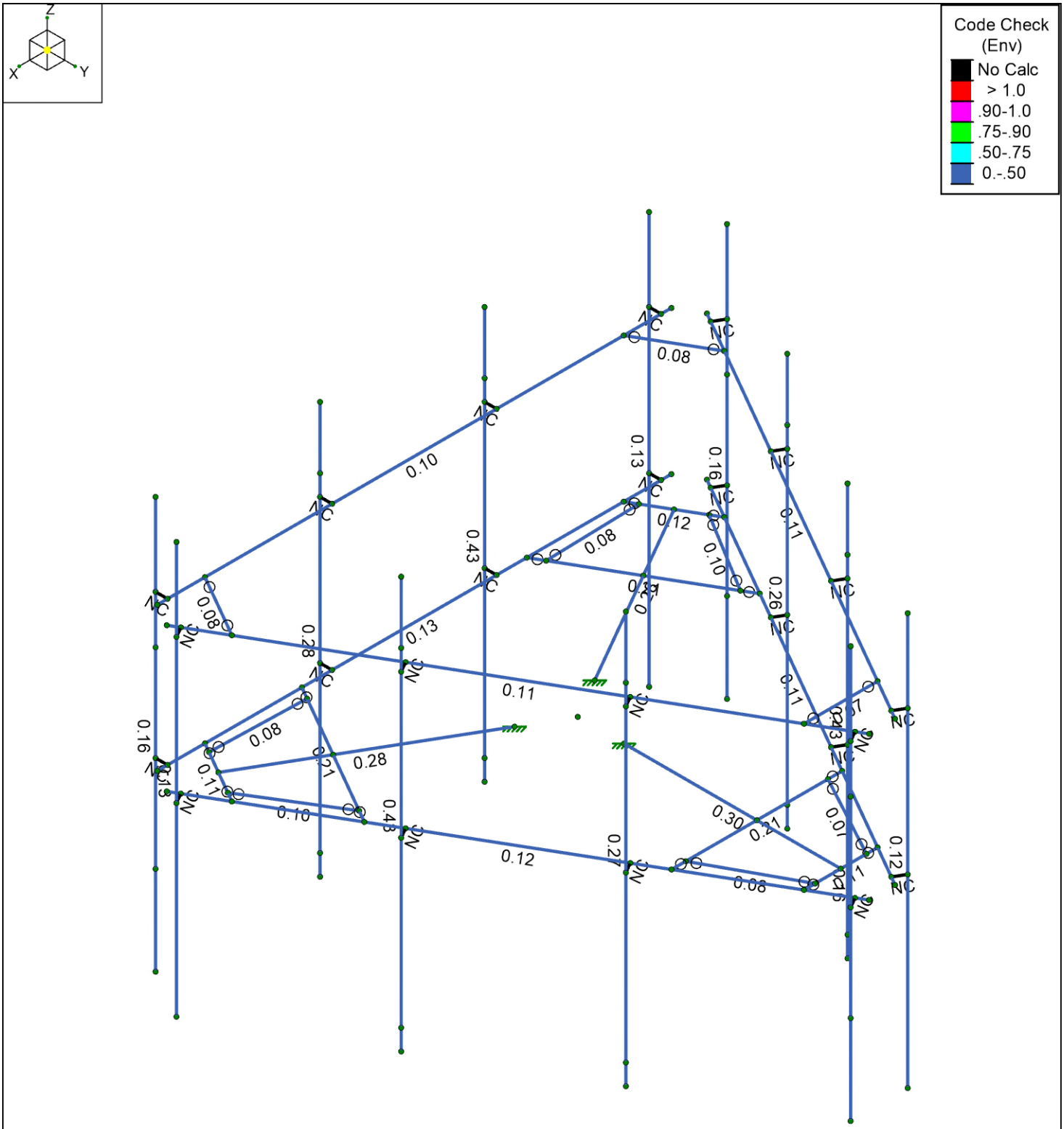

Member Code Checks Displayed (Enveloped)
Envelope Only Solution

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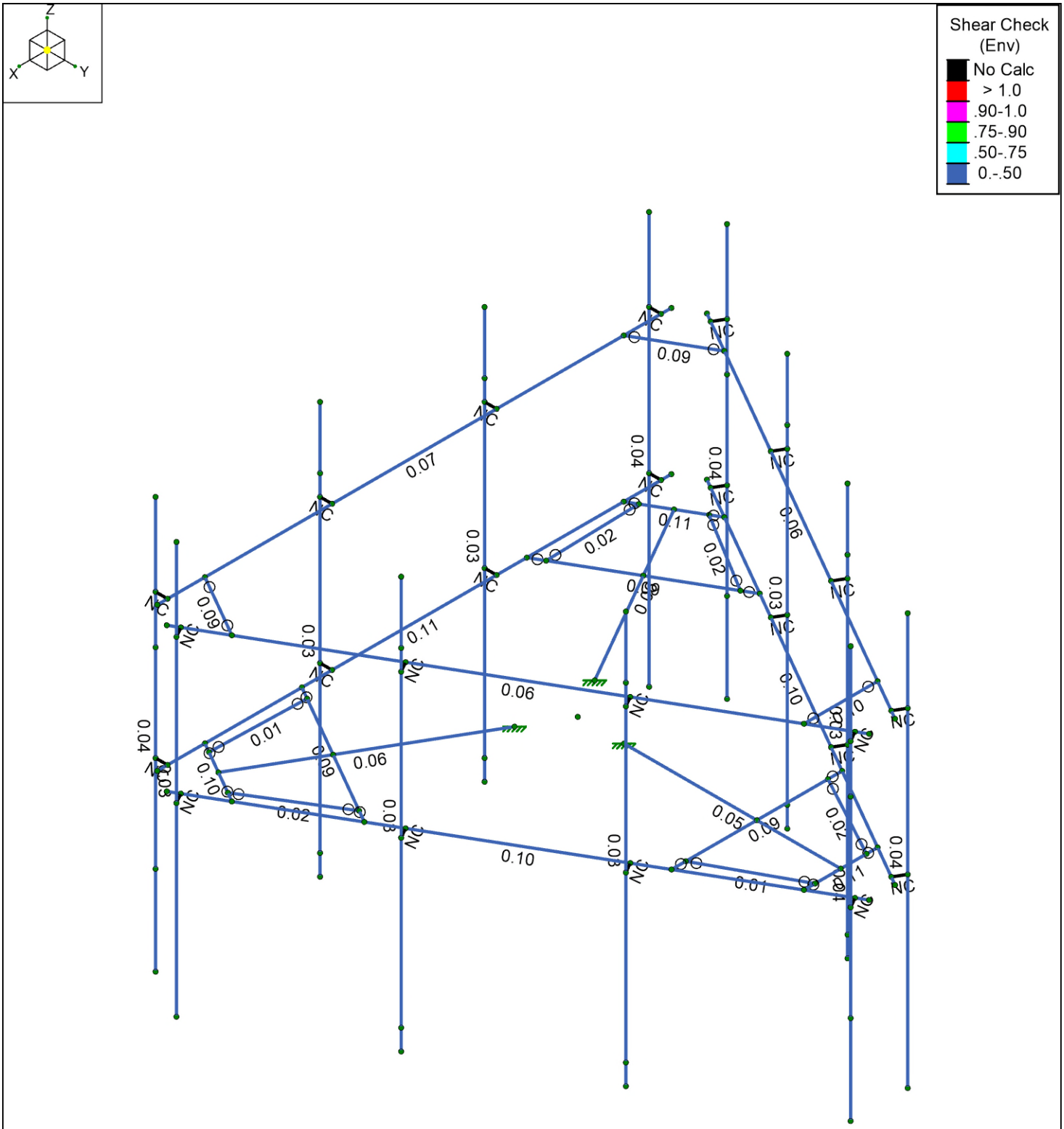

Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

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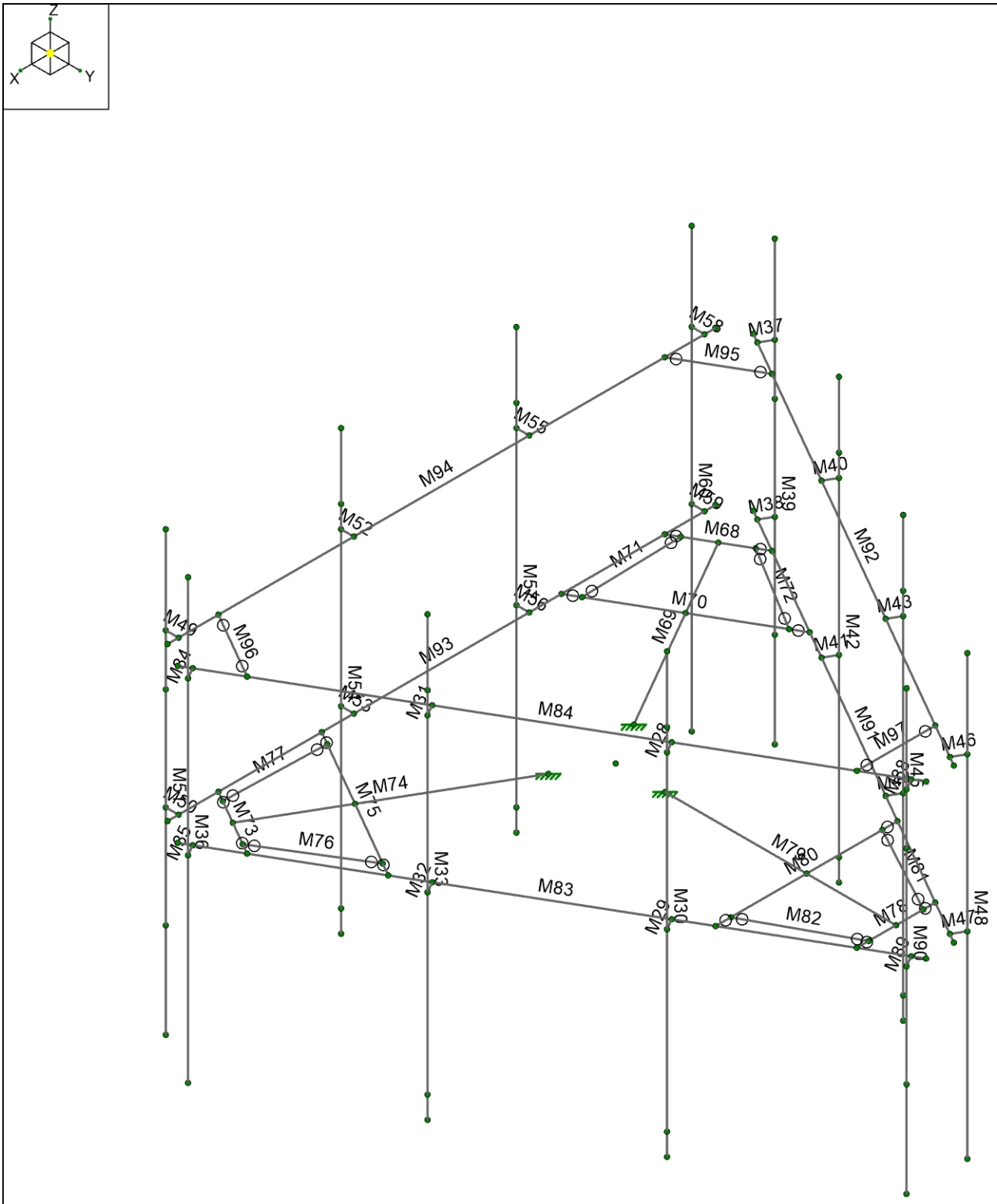

Envelope Only Solution

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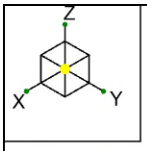
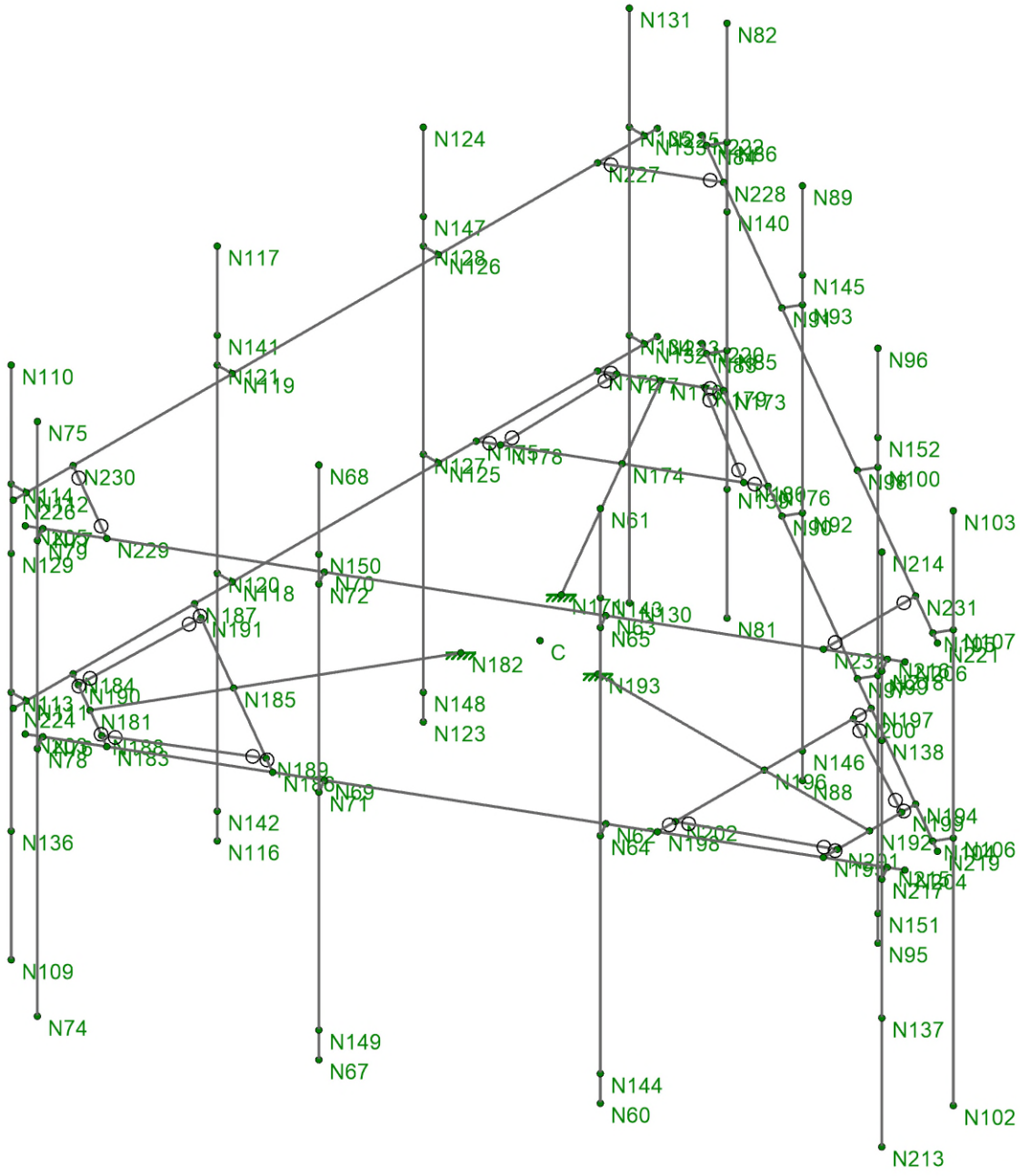




Envelope Only Solution

ATC/EFI	284983_13678001_T-Mobile	SK-8
DU		Jun 22, 2021
049.01679 - 2110163		284983_13678001_T-Mobile.r3d

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
2	A53 Gr. B	29000	11154	0.3	0.65	0.49	35	1.5	60	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
5	A500 Gr. B 42	29000	11154	0.3	0.65	0.49	42	1.4	58	1.3
6	A500 Gr. B 46	29000	11154	0.3	0.65	0.49	46	1.4	58	1.3
7	A500 Gr. C 50	29000	11154	0.3	0.65	0.49	50	1.5	61.6	1.3
8	A500 GR. B RND	29000	11154	0.3	0.65	0.49	42	1.4	58	1.3
9	A500 GR. B RECT	29000	11154	0.3	0.65	0.49	46	1.4	58	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	Upper Rail Rail	PIPE_2.5	Beam	Pipe	A500 GR. B RND	Typical	1.61	1.45	1.45	2.89
2	Upper Rail Connector	PIPE_2.0	Beam	Pipe	A500 Gr. C 50	Typical	1.02	0.627	0.627	1.25
3	Toe Plate	PIPE_3.0	Beam	Pipe	A500 Gr. C 50	Typical	2.07	2.85	2.85	5.69
4	Standoff Horizontal	HSS5X3X6	Beam	Tube	A500 GR. B RECT	Typical	4.78	6.25	14.1	14.9
5	Mount Pipe	PIPE_2.5	Column	Pipe	A500 GR. B RND	Typical	1.61	1.45	1.45	2.89
6	Grating Support	L1.5x1.5x4	Beam	Single Angle	A36 Gr.36	Typical	0.688	0.139	0.139	0.013
7	Face Horizontal	PIPE_3.0	Beam	Pipe	A500 GR. B RND	Typical	2.07	2.85	2.85	5.69
8	Cross Brace	PIPE_3.0	Beam	Pipe	A500 Gr. C 50	Typical	2.07	2.85	2.85	5.69

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	M94	N225	N226		Upper Rail Rail	Beam	Pipe	A500 GR. B RND	Typical
2	M84	N205	N206		Upper Rail Rail	Beam	Pipe	A500 GR. B RND	Typical
3	M92	N221	N222		Upper Rail Rail	Beam	Pipe	A500 GR. B RND	Typical
4	M95	N227	N228		Upper Rail Connector	Beam	Pipe	A500 Gr. C 50	Typical
5	M96	N229	N230		Upper Rail Connector	Beam	Pipe	A500 Gr. C 50	Typical
6	M97	N231	N232		Upper Rail Connector	Beam	Pipe	A500 Gr. C 50	Typical
7	M78	N194	N195		Toe Plate	Beam	Pipe	A500 Gr. C 50	Typical
8	M68	N172	N173		Toe Plate	Beam	Pipe	A500 Gr. C 50	Typical
9	M73	N183	N184		Toe Plate	Beam	Pipe	A500 Gr. C 50	Typical
10	M69	N170	N171		Standoff Horizontal	Beam	Tube	A500 GR. B RECT	Typical
11	M79	N192	N193		Standoff Horizontal	Beam	Tube	A500 GR. B RECT	Typical
12	M74	N181	N182		Standoff Horizontal	Beam	Tube	A500 GR. B RECT	Typical
13	M58	N135	N133		RIGID	None	None	RIGID	Typical
14	M89	N217	N215		RIGID	None	None	RIGID	Typical
15	M88	N218	N216		RIGID	None	None	RIGID	Typical
16	M49	N114	N112		RIGID	None	None	RIGID	Typical
17	M50	N113	N111		RIGID	None	None	RIGID	Typical
18	M41	N92	N90		RIGID	None	None	RIGID	Typical
19	M52	N121	N119		RIGID	None	None	RIGID	Typical
20	M53	N120	N118		RIGID	None	None	RIGID	Typical
21	M55	N128	N126		RIGID	None	None	RIGID	Typical
22	M56	N127	N125		RIGID	None	None	RIGID	Typical
23	M40	N93	N91		RIGID	None	None	RIGID	Typical
24	M46	N107	N105		RIGID	None	None	RIGID	Typical
25	M44	N99	N97		RIGID	None	None	RIGID	Typical
26	M35	N78	N76		RIGID	None	None	RIGID	Typical
27	M34	N79	N77		RIGID	None	None	RIGID	Typical
28	M32	N71	N69		RIGID	None	None	RIGID	Typical
29	M59	N134	N132		RIGID	None	None	RIGID	Typical
30	M29	N64	N62		RIGID	None	None	RIGID	Typical
31	M31	N72	N70		RIGID	None	None	RIGID	Typical
32	M37	N86	N84		RIGID	None	None	RIGID	Typical
33	M28	N65	N63		RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
34	M38	N85	N83		RIGID	None	None	RIGID	Typical
35	M43	N100	N98		RIGID	None	None	RIGID	Typical
36	M47	N106	N104		RIGID	None	None	RIGID	Typical
37	M39	N82	N81		Mount Pipe	Column	Pipe	A500 GR. B RND	Typical
38	M33	N68	N67		Mount Pipe	Column	Pipe	A500 GR. B RND	Typical
39	M60	N131	N130		Mount Pipe	Column	Pipe	A500 GR. B RND	Typical
40	M90	N214	N213		Mount Pipe	Column	Pipe	A500 GR. B RND	Typical
41	M42	N89	N88		Mount Pipe	Column	Pipe	A500 GR. B RND	Typical
42	M36	N75	N74		Mount Pipe	Column	Pipe	A500 GR. B RND	Typical
43	M30	N61	N60		Mount Pipe	Column	Pipe	A500 GR. B RND	Typical
44	M51	N110	N109		Mount Pipe	Column	Pipe	A500 GR. B RND	Typical
45	M48	N103	N102		Mount Pipe	Column	Pipe	A500 GR. B RND	Typical
46	M57	N124	N123		Mount Pipe	Column	Pipe	A500 GR. B RND	Typical
47	M54	N117	N116		Mount Pipe	Column	Pipe	A500 GR. B RND	Typical
48	M45	N96	N95		Mount Pipe	Column	Pipe	A500 GR. B RND	Typical
49	M81	N199	N200	270	Grating Support	Beam	Single Angle	A36 Gr.36	Typical
50	M71	N177	N178	270	Grating Support	Beam	Single Angle	A36 Gr.36	Typical
51	M72	N179	N180		Grating Support	Beam	Single Angle	A36 Gr.36	Typical
52	M77	N190	N191		Grating Support	Beam	Single Angle	A36 Gr.36	Typical
53	M82	N201	N202		Grating Support	Beam	Single Angle	A36 Gr.36	Typical
54	M76	N188	N189	270	Grating Support	Beam	Single Angle	A36 Gr.36	Typical
55	M91	N219	N220		Face Horizontal	Beam	Pipe	A500 GR. B RND	Typical
56	M83	N203	N204		Face Horizontal	Beam	Pipe	A500 GR. B RND	Typical
57	M93	N223	N224		Face Horizontal	Beam	Pipe	A500 GR. B RND	Typical
58	M75	N186	N187		Cross Brace	Beam	Pipe	A500 Gr. C 50	Typical
59	M80	N197	N198		Cross Brace	Beam	Pipe	A500 Gr. C 50	Typical
60	M70	N175	N176		Cross Brace	Beam	Pipe	A500 Gr. C 50	Typical

Member Advanced Data

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
1	M94			Yes	Default	None
2	M84			Yes	Default	None
3	M92			Yes	Default	None
4	M95	OOOOOX	OOOOOX	Yes		None
5	M96	OOOOOX	OOOOOX	Yes		None
6	M97	OOOOOX	OOOOOX	Yes		None
7	M78	OOOOOX	OOOOOX	Yes	Default	None
8	M68	OOOOOX	OOOOOX	Yes	Default	None
9	M73	OOOOOX	OOOOOX	Yes	Default	None
10	M69			Yes	Default	None
11	M79			Yes	Default	None
12	M74			Yes	Default	None
13	M58			Yes	** NA **	None
14	M89			Yes	** NA **	None
15	M88			Yes	** NA **	None
16	M49			Yes	** NA **	None
17	M50			Yes	** NA **	None
18	M41			Yes	** NA **	None
19	M52			Yes	** NA **	None
20	M53			Yes	** NA **	None
21	M55			Yes	** NA **	None
22	M56			Yes	** NA **	None
23	M40			Yes	** NA **	None
24	M46			Yes	** NA **	None
25	M44			Yes	** NA **	None
26	M35			Yes	** NA **	None
27	M34			Yes	** NA **	None
28	M32			Yes	** NA **	None
29	M59			Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
30	M29			Yes	** NA **	None
31	M31			Yes	** NA **	None
32	M37			Yes	** NA **	None
33	M28			Yes	** NA **	None
34	M38			Yes	** NA **	None
35	M43			Yes	** NA **	None
36	M47			Yes	** NA **	None
37	M39			Yes	** NA **	None
38	M33			Yes	** NA **	None
39	M60			Yes	** NA **	None
40	M90			Yes	** NA **	None
41	M42			Yes	** NA **	None
42	M36			Yes	** NA **	None
43	M30			Yes	** NA **	None
44	M51			Yes	** NA **	None
45	M48			Yes	** NA **	None
46	M57			Yes	** NA **	None
47	M54			Yes	** NA **	None
48	M45			Yes	** NA **	None
49	M81	OOOOOX	OOOOOX	Yes	Default	None
50	M71	OOOOOX	OOOOOX	Yes	Default	None
51	M72	OOOOOX	OOOOOX	Yes	Default	None
52	M77	OOOOOX	OOOOOX	Yes	Default	None
53	M82	OOOOOX	OOOOOX	Yes	Default	None
54	M76	OOOOOX	OOOOOX	Yes	Default	None
55	M91			Yes	Default	None
56	M83			Yes	Default	None
57	M93			Yes	Default	None
58	M75	OOOOOX	OOOOOX	Yes	Default	None
59	M80	OOOOOX	OOOOOX	Yes	Default	None
60	M70	OOOOOX	OOOOOX	Yes	Default	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	Lcomp bot [in]	Function
1	M94	Upper Rail Rail	150			Lbyy		Lateral
2	M84	Upper Rail Rail	150			Lbyy		Lateral
3	M92	Upper Rail Rail	150			Lbyy		Lateral
4	M95	Upper Rail Connector	21.5			Lbyy		Lateral
5	M96	Upper Rail Connector	21.5			Lbyy		Lateral
6	M97	Upper Rail Connector	21.5			Lbyy		Lateral
7	M78	Toe Plate	21.5			Lbyy		Lateral
8	M68	Toe Plate	21.5			Lbyy		Lateral
9	M73	Toe Plate	21.5			Lbyy		Lateral
10	M69	Standoff Horizontal	63.25	38.75	38.75	38.75	38.75	Lateral
11	M79	Standoff Horizontal	63.25	38.75	38.75	38.75	38.75	Lateral
12	M74	Standoff Horizontal	63.25	38.75	38.75	38.75	38.75	Lateral
13	M39	Mount Pipe	120					Lateral
14	M33	Mount Pipe	120					Lateral
15	M60	Mount Pipe	120					Lateral
16	M90	Mount Pipe	120					Lateral
17	M42	Mount Pipe	120					Lateral
18	M36	Mount Pipe	120					Lateral
19	M30	Mount Pipe	120					Lateral
20	M51	Mount Pipe	120					Lateral
21	M48	Mount Pipe	120					Lateral
22	M57	Mount Pipe	120					Lateral
23	M54	Mount Pipe	120					Lateral
24	M45	Mount Pipe	120					Lateral
25	M81	Grating Support	27.853			Lbyy		Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	Lcomp bot [in]	Function
26	M71	Grating Support	27.853			Lbyy		Lateral
27	M72	Grating Support	27.853			Lbyy		Lateral
28	M77	Grating Support	27.853			Lbyy		Lateral
29	M82	Grating Support	27.853			Lbyy		Lateral
30	M76	Grating Support	27.853			Lbyy		Lateral
31	M91	Face Horizontal	150			Lbyy		Lateral
32	M83	Face Horizontal	150			Lbyy		Lateral
33	M93	Face Horizontal	150			Lbyy		Lateral
34	M75	Cross Brace	49.79			Lbyy		Lateral
35	M80	Cross Brace	49.79			Lbyy		Lateral
36	M70	Cross Brace	49.79			Lbyy		Lateral

Node Coordinates

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
1	C	0	0	0	
2	N170	-66.46745	-38.375	0	
3	N171	-11.691343	-6.75	0	
4	N172	-61.09245	-47.684773	0	
5	N173	-71.84245	-29.065227	0	
6	N174	-45.249827	-26.125	0	
7	N175	-32.802287	-47.684773	0	
8	N176	-57.697368	-4.565227	0	
9	N177	-62.71745	-44.870191	0	
10	N178	-34.874827	-44.095027	0	
11	N179	-70.21745	-31.879809	0	
12	N180	-55.624827	-8.154973	0	
13	N181	66.46745	-38.375	0	
14	N182	11.691343	-6.75	0	
15	N183	71.84245	-29.065227	0	
16	N184	61.09245	-47.684773	0	
17	N185	45.249827	-26.125	0	
18	N186	57.697368	-4.565227	0	
19	N187	32.802287	-47.684773	0	
20	N188	70.21745	-31.879809	0	
21	N189	55.624827	-8.154973	0	
22	N190	62.71745	-44.870191	0	
23	N191	34.874827	-44.095027	0	
24	N192	0	76.75	0	
25	N193	0	13.5	0	
26	N194	-10.75	76.75	0	
27	N195	10.75	76.75	0	
28	N196	0	52.25	0	
29	N197	-24.895082	52.25	0	
30	N198	24.895082	52.25	0	
31	N199	-7.5	76.75	0	
32	N200	-20.75	52.25	0	
33	N201	7.5	76.75	0	
34	N202	20.75	52.25	0	
35	N203	78.7962	-41.109475	0	
36	N204	3.7962	88.794335	0	
37	N205	78.7962	-41.109475	42	
38	N206	3.7962	88.794335	42	
39	N213	8.327789	87.945393	-54	
40	N214	8.327789	87.945393	66	
41	N215	5.2967	86.195393	0	
42	N216	5.2967	86.195393	42	
43	N217	8.327789	87.945393	0	
44	N218	8.327789	87.945393	42	
45	N219	-3.79625	88.794248	0	

Node Coordinates (Continued)

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
46	N220	-78.79625	-41.109562	0	
47	N221	-3.79625	88.794248	42	
48	N222	-78.79625	-41.109562	42	
49	N223	-74.99995	-47.684773	0	
50	N224	75.00005	-47.684773	0	
51	N225	-74.99995	-47.684773	42	
52	N226	75.00005	-47.684773	42	
53	N227	-61.09245	-47.684773	42	
54	N228	-71.84245	-29.065227	42	
55	N229	71.84245	-29.065227	42	
56	N230	61.09245	-47.684773	42	
57	N231	-10.75	76.75	42	
58	N232	10.75	76.75	42	
59	N60	32.327789	46.376174	-54	
60	N61	32.327789	46.376174	66	
61	N62	29.2967	44.626174	0	
62	N63	29.2967	44.626174	42	
63	N64	32.327789	46.376174	0	
64	N65	32.327789	46.376174	42	
65	N67	56.327789	4.806954	-54	
66	N68	56.327789	4.806954	66	
67	N69	53.2967	3.056954	0	
68	N70	53.2967	3.056954	42	
69	N71	56.327789	4.806954	0	
70	N72	56.327789	4.806954	42	
71	N74	80.327789	-36.762265	-54	
72	N75	80.327789	-36.762265	66	
73	N76	77.2967	-38.512265	0	
74	N77	77.2967	-38.512265	42	
75	N78	80.327789	-36.762265	0	
76	N79	80.327789	-36.762265	42	
77	N81	-80.326839	-36.76062	-54	
78	N82	-80.326839	-36.76062	66	
79	N83	-77.29575	-38.51062	0	
80	N84	-77.29575	-38.51062	42	
81	N85	-80.326839	-36.76062	0	
82	N86	-80.326839	-36.76062	42	
83	N88	-56.326839	4.808599	-54	
84	N89	-56.326839	4.808599	66	
85	N90	-53.29575	3.058599	0	
86	N91	-53.29575	3.058599	42	
87	N92	-56.326839	4.808599	0	
88	N93	-56.326839	4.808599	42	
89	N95	-32.326839	46.377819	-54	
90	N96	-32.326839	46.377819	66	
91	N97	-29.29575	44.627819	0	
92	N98	-29.29575	44.627819	42	
93	N99	-32.326839	46.377819	0	
94	N100	-32.326839	46.377819	42	
95	N102	-8.326839	87.947038	-54	
96	N103	-8.326839	87.947038	66	
97	N104	-5.29575	86.197038	0	
98	N105	-5.29575	86.197038	42	
99	N106	-8.326839	87.947038	0	
100	N107	-8.326839	87.947038	42	
101	N109	71.99905	-51.184773	-54	
102	N110	71.99905	-51.184773	66	
103	N111	71.99905	-47.684773	0	
104	N112	71.99905	-47.684773	42	

Node Coordinates (Continued)

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
105	N113	71.99905	-51.184773	0	
106	N114	71.99905	-51.184773	42	
107	N116	23.99905	-51.184773	-54	
108	N117	23.99905	-51.184773	66	
109	N118	23.99905	-47.684773	0	
110	N119	23.99905	-47.684773	42	
111	N120	23.99905	-51.184773	0	
112	N121	23.99905	-51.184773	42	
113	N123	-24.00095	-51.184773	-54	
114	N124	-24.00095	-51.184773	66	
115	N125	-24.00095	-47.684773	0	
116	N126	-24.00095	-47.684773	42	
117	N127	-24.00095	-51.184773	0	
118	N128	-24.00095	-51.184773	42	
119	N130	-72.00095	-51.184773	-54	
120	N131	-72.00095	-51.184773	66	
121	N132	-72.00095	-47.684773	0	
122	N133	-72.00095	-47.684773	42	
123	N134	-72.00095	-51.184773	0	
124	N135	-72.00095	-51.184773	42	
125	N129	71.99905	-51.184773	28	
126	N136	71.99905	-51.184773	-28	
127	N137	8.327789	87.945393	-28	
128	N138	8.327789	87.945393	28	
129	N139	-80.326839	-36.76062	-28	
130	N140	-80.326839	-36.76062	28	
131	N141	23.99905	-51.184773	48	
132	N142	23.99905	-51.184773	-48	
133	N143	32.327789	46.376174	48	
134	N144	32.327789	46.376174	-48	
135	N145	-56.326839	4.808599	48	
136	N146	-56.326839	4.808599	-48	
137	N147	-24.00095	-51.184773	48	
138	N148	-24.00095	-51.184773	-48	
139	N149	56.327789	4.806954	-48	
140	N150	56.327789	4.806954	48	
141	N151	-32.326839	46.377819	-48	
142	N152	-32.326839	46.377819	48	

Node Boundary Conditions

	Y [k/in]	X Rot [k-ft/rad]	X [k/in]	Z Rot [k-ft/rad]	Z [k/in]	Node Label	Y Rot [k-ft/rad]
1	Reaction	Reaction	Reaction	Reaction	Reaction	N171	Reaction
2	Reaction	Reaction	Reaction	Reaction	Reaction	N182	Reaction
3	Reaction	Reaction	Reaction	Reaction	Reaction	N193	Reaction

Basic Load Cases

	BLC Description	Category	Z Gravity	Nodal	Distributed	Area(Member)
1	DEAD LOAD	None	-1	18		3
2	DEAD LOAD ICE	None		18	36	3
3	WIND LOAD (NO ICE) FRONT	None		18	36	
4	WIND LOAD (NO ICE) SIDE	None		18	36	
5	WIND LOAD (ICE) FRONT	None		18	36	
6	WIND LOAD (ICE) SIDE	None		18	36	
7	LIVE LOAD1	None		1		
8	LIVE LOAD2	None		1		
9	LIVE LOAD3	None		1		
10	MAINTENANCE LOAD 1	None		1		

Basic Load Cases (Continued)

	BLC Description	Category	Z Gravity	Nodal	Distributed	Area(Member)
11	MAINTENANCE LOAD 2	None		1		
12	MAINTENANCE LOAD 3	None		1		
13	MAINTENANCE LOAD 4	None		1		
14	BLC 1 Transient Area Loads	None			12	
15	BLC 2 Transient Area Loads	None			12	

Node Loads and Enforced Displacements (BLC 1 : DEAD LOAD)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N129	L	Z	-42
2	N136	L	Z	-42
3	N137	L	Z	-42
4	N138	L	Z	-42
5	N139	L	Z	-42
6	N140	L	Z	-42
7	N141	L	Z	-61
8	N142	L	Z	-61
9	N143	L	Z	-61
10	N144	L	Z	-61
11	N145	L	Z	-61
12	N146	L	Z	-61
13	N147	L	Z	-99
14	N148	L	Z	-99
15	N149	L	Z	-99
16	N150	L	Z	-99
17	N151	L	Z	-99
18	N152	L	Z	-99

Node Loads and Enforced Displacements (BLC 2 : DEAD LOAD ICE)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N129	L	Z	-51
2	N136	L	Z	-51
3	N137	L	Z	-51
4	N138	L	Z	-51
5	N139	L	Z	-51
6	N140	L	Z	-51
7	N141	L	Z	-86
8	N142	L	Z	-86
9	N143	L	Z	-86
10	N144	L	Z	-86
11	N145	L	Z	-86
12	N146	L	Z	-86
13	N147	L	Z	-152
14	N148	L	Z	-152
15	N149	L	Z	-152
16	N150	L	Z	-152
17	N151	L	Z	-152
18	N152	L	Z	-152

Node Loads and Enforced Displacements (BLC 3 : WIND LOAD (NO ICE) FRONT)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N129	L	Y	132
2	N136	L	Y	132
3	N137	L	Y	95
4	N138	L	Y	95
5	N139	L	Y	95
6	N140	L	Y	95

Node Loads and Enforced Displacements (BLC 3 : WIND LOAD (NO ICE) FRONT) (Continued)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
7	N141	L	Y	252
8	N142	L	Y	252
9	N143	L	Y	194
10	N144	L	Y	194
11	N145	L	Y	194
12	N146	L	Y	194
13	N147	L	Y	441
14	N148	L	Y	441
15	N149	L	Y	219
16	N150	L	Y	219
17	N151	L	Y	219
18	N152	L	Y	219

Node Loads and Enforced Displacements (BLC 4 : WIND LOAD (NO ICE) SIDE)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N129	L	X	95
2	N136	L	X	95
3	N137	L	X	132
4	N138	L	X	132
5	N139	L	X	132
6	N140	L	X	132
7	N141	L	X	194
8	N142	L	X	194
9	N143	L	X	252
10	N144	L	X	252
11	N145	L	X	252
12	N146	L	X	252
13	N147	L	X	219
14	N148	L	X	219
15	N149	L	X	441
16	N150	L	X	441
17	N151	L	X	441
18	N152	L	X	441

Node Loads and Enforced Displacements (BLC 5 : WIND LOAD (ICE) FRONT)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N129	L	Y	24
2	N136	L	Y	24
3	N137	L	Y	18
4	N138	L	Y	18
5	N139	L	Y	18
6	N140	L	Y	18
7	N141	L	Y	45
8	N142	L	Y	45
9	N143	L	Y	36
10	N144	L	Y	36
11	N145	L	Y	36
12	N146	L	Y	36
13	N147	L	Y	75
14	N148	L	Y	75
15	N149	L	Y	41
16	N150	L	Y	41
17	N151	L	Y	41
18	N152	L	Y	41

Node Loads and Enforced Displacements (BLC 6 : WIND LOAD (ICE) SIDE)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N129	L	X	18
2	N136	L	X	18
3	N137	L	X	24
4	N138	L	X	24
5	N139	L	X	24
6	N140	L	X	24
7	N141	L	X	36
8	N142	L	X	36
9	N143	L	X	45
10	N144	L	X	45
11	N145	L	X	45
12	N146	L	X	45
13	N147	L	X	41
14	N148	L	X	41
15	N149	L	X	75
16	N150	L	X	75
17	N151	L	X	75
18	N152	L	X	75

Node Loads and Enforced Displacements (BLC 7 : LIVE LOAD1)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N219	L	Z	-250

Node Loads and Enforced Displacements (BLC 8 : LIVE LOAD2)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N223	L	Z	-250

Node Loads and Enforced Displacements (BLC 9 : LIVE LOAD3)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N203	L	Z	-250

Node Loads and Enforced Displacements (BLC 10 : MAINTENANCE LOAD 1)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N109	L	Z	-500

Node Loads and Enforced Displacements (BLC 11 : MAINTENANCE LOAD 2)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N116	L	Z	-500

Node Loads and Enforced Displacements (BLC 12 : MAINTENANCE LOAD 3)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N123	L	Z	-500

Node Loads and Enforced Displacements (BLC 13 : MAINTENANCE LOAD 4)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N130	L	Z	-500

Member Point Loads

No Data to Print...

Member Distributed Loads (BLC 2 : DEAD LOAD ICE)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M94	Z	-5	-5	0	%100
2	M84	Z	-5	-5	0	%100
3	M92	Z	-5	-5	0	%100
4	M95	Z	-5	-5	0	%100
5	M96	Z	-5	-5	0	%100
6	M97	Z	-5	-5	0	%100
7	M78	Z	-6	-6	0	%100
8	M68	Z	-6	-6	0	%100
9	M73	Z	-6	-6	0	%100
10	M69	Z	-12	-12	0	%100
11	M79	Z	-12	-12	0	%100
12	M74	Z	-12	-12	0	%100
13	M39	Z	-5	-5	0	%100
14	M33	Z	-5	-5	0	%100
15	M60	Z	-5	-5	0	%100
16	M90	Z	-5	-5	0	%100
17	M42	Z	-5	-5	0	%100
18	M36	Z	-5	-5	0	%100
19	M30	Z	-5	-5	0	%100
20	M51	Z	-5	-5	0	%100
21	M48	Z	-5	-5	0	%100
22	M57	Z	-5	-5	0	%100
23	M54	Z	-5	-5	0	%100
24	M45	Z	-5	-5	0	%100
25	M81	Z	-3	-3	0	%100
26	M71	Z	-3	-3	0	%100
27	M72	Z	-3	-3	0	%100
28	M77	Z	-3	-3	0	%100
29	M82	Z	-3	-3	0	%100
30	M76	Z	-3	-3	0	%100
31	M91	Z	-6	-6	0	%100
32	M83	Z	-6	-6	0	%100
33	M93	Z	-6	-6	0	%100
34	M75	Z	-6	-6	0	%100
35	M80	Z	-6	-6	0	%100
36	M70	Z	-6	-6	0	%100

Member Distributed Loads (BLC 3 : WIND LOAD (NO ICE) FRONT)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M94	PY	12	12	0	%100
2	M84	PY	12	12	0	%100
3	M92	PY	12	12	0	%100
4	M95	PY	10	10	0	%100
5	M96	PY	10	10	0	%100
6	M97	PY	10	10	0	%100
7	M78	PY	16	16	0	%100
8	M68	PY	16	16	0	%100
9	M73	PY	16	16	0	%100
10	M69	PY	37	37	0	%100
11	M79	PY	37	37	0	%100
12	M74	PY	37	37	0	%100
13	M39	PY	12	12	0	%100
14	M33	PY	12	12	0	%100
15	M60	PY	12	12	0	%100

Member Distributed Loads (BLC 3 : WIND LOAD (NO ICE) FRONT) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
16	M90	PY	12	12	0	%100
17	M42	PY	12	12	0	%100
18	M36	PY	12	12	0	%100
19	M30	PY	12	12	0	%100
20	M51	PY	12	12	0	%100
21	M48	PY	12	12	0	%100
22	M57	PY	12	12	0	%100
23	M54	PY	12	12	0	%100
24	M45	PY	12	12	0	%100
25	M81	PY	11	11	0	%100
26	M71	PY	11	11	0	%100
27	M72	PY	11	11	0	%100
28	M77	PY	11	11	0	%100
29	M82	PY	11	11	0	%100
30	M76	PY	11	11	0	%100
31	M91	PY	16	16	0	%100
32	M83	PY	16	16	0	%100
33	M93	PY	16	16	0	%100
34	M75	PY	16	16	0	%100
35	M80	PY	16	16	0	%100
36	M70	PY	16	16	0	%100

Member Distributed Loads (BLC 4 : WIND LOAD (NO ICE) SIDE)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M94	PX	12	12	0	%100
2	M84	PX	12	12	0	%100
3	M92	PX	12	12	0	%100
4	M95	PX	10	10	0	%100
5	M96	PX	10	10	0	%100
6	M97	PX	10	10	0	%100
7	M78	PX	16	16	0	%100
8	M68	PX	16	16	0	%100
9	M73	PX	16	16	0	%100
10	M69	PX	37	37	0	%100
11	M79	PX	37	37	0	%100
12	M74	PX	37	37	0	%100
13	M39	PX	12	12	0	%100
14	M33	PX	12	12	0	%100
15	M60	PX	12	12	0	%100
16	M90	PX	12	12	0	%100
17	M42	PX	12	12	0	%100
18	M36	PX	12	12	0	%100
19	M30	PX	12	12	0	%100
20	M51	PX	12	12	0	%100
21	M48	PX	12	12	0	%100
22	M57	PX	12	12	0	%100
23	M54	PX	12	12	0	%100
24	M45	PX	12	12	0	%100
25	M81	PX	11	11	0	%100
26	M71	PX	11	11	0	%100
27	M72	PX	11	11	0	%100
28	M77	PX	11	11	0	%100
29	M82	PX	11	11	0	%100
30	M76	PX	11	11	0	%100
31	M91	PX	16	16	0	%100
32	M83	PX	16	16	0	%100
33	M93	PX	16	16	0	%100
34	M75	PX	16	16	0	%100
35	M80	PX	16	16	0	%100

Member Distributed Loads (BLC 4 : WIND LOAD (NO ICE) SIDE) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
36	M70	PX	16	16	0	%100

Member Distributed Loads (BLC 5 : WIND LOAD (ICE) FRONT)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M94	PY	4.1	4.1	0	%100
2	M84	PY	4.1	4.1	0	%100
3	M92	PY	4.1	4.1	0	%100
4	M95	PY	3.7	3.7	0	%100
5	M96	PY	3.7	3.7	0	%100
6	M97	PY	3.7	3.7	0	%100
7	M78	PY	4.7	4.7	0	%100
8	M68	PY	4.7	4.7	0	%100
9	M73	PY	4.7	4.7	0	%100
10	M69	PY	8.2	8.2	0	%100
11	M79	PY	8.2	8.2	0	%100
12	M74	PY	8.2	8.2	0	%100
13	M39	PY	4.1	4.1	0	%100
14	M33	PY	4.1	4.1	0	%100
15	M60	PY	4.1	4.1	0	%100
16	M90	PY	4.1	4.1	0	%100
17	M42	PY	4.1	4.1	0	%100
18	M36	PY	4.1	4.1	0	%100
19	M30	PY	4.1	4.1	0	%100
20	M51	PY	4.1	4.1	0	%100
21	M48	PY	4.1	4.1	0	%100
22	M57	PY	4.1	4.1	0	%100
23	M54	PY	4.1	4.1	0	%100
24	M45	PY	4.1	4.1	0	%100
25	M81	PY	3.7	3.7	0	%100
26	M71	PY	3.7	3.7	0	%100
27	M72	PY	3.7	3.7	0	%100
28	M77	PY	3.7	3.7	0	%100
29	M82	PY	3.7	3.7	0	%100
30	M76	PY	3.7	3.7	0	%100
31	M91	PY	4.7	4.7	0	%100
32	M83	PY	4.7	4.7	0	%100
33	M93	PY	4.7	4.7	0	%100
34	M75	PY	4.7	4.7	0	%100
35	M80	PY	4.7	4.7	0	%100
36	M70	PY	4.7	4.7	0	%100

Member Distributed Loads (BLC 6 : WIND LOAD (ICE) SIDE)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M94	PX	4.1	4.1	0	%100
2	M84	PX	4.1	4.1	0	%100
3	M92	PX	4.1	4.1	0	%100
4	M95	PX	3.7	3.7	0	%100
5	M96	PX	3.7	3.7	0	%100
6	M97	PX	3.7	3.7	0	%100
7	M78	PX	4.7	4.7	0	%100
8	M68	PX	4.7	4.7	0	%100
9	M73	PX	4.7	4.7	0	%100
10	M69	PX	8.2	8.2	0	%100
11	M79	PX	8.2	8.2	0	%100
12	M74	PX	8.2	8.2	0	%100
13	M39	PX	4.1	4.1	0	%100
14	M33	PX	4.1	4.1	0	%100

Member Distributed Loads (BLC 6 : WIND LOAD (ICE) SIDE) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
15	M60	PX	4.1	4.1	0	%100
16	M90	PX	4.1	4.1	0	%100
17	M42	PX	4.1	4.1	0	%100
18	M36	PX	4.1	4.1	0	%100
19	M30	PX	4.1	4.1	0	%100
20	M51	PX	4.1	4.1	0	%100
21	M48	PX	4.1	4.1	0	%100
22	M57	PX	4.1	4.1	0	%100
23	M54	PX	4.1	4.1	0	%100
24	M45	PX	4.1	4.1	0	%100
25	M81	PX	3.7	3.7	0	%100
26	M71	PX	3.7	3.7	0	%100
27	M72	PX	3.7	3.7	0	%100
28	M77	PX	3.7	3.7	0	%100
29	M82	PX	3.7	3.7	0	%100
30	M76	PX	3.7	3.7	0	%100
31	M91	PX	4.7	4.7	0	%100
32	M83	PX	4.7	4.7	0	%100
33	M93	PX	4.7	4.7	0	%100
34	M75	PX	4.7	4.7	0	%100
35	M80	PX	4.7	4.7	0	%100
36	M70	PX	4.7	4.7	0	%100

Member Distributed Loads (BLC 14 : BLC 1 Transient Area Loads)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M74	Z	-3.332	-3.332	0	25.3
2	M77	Z	-0.455	-3.332	0	22.283
3	M76	Z	-0.455	-3.332	0	22.283
4	M75	Z	-3.242	-3.242	6.427	43.363
5	M79	Z	-3.422	-3.242	0	25.3
6	M81	Z	-0.544	-3.242	0	22.283
7	M82	Z	-0.544	-3.242	0	22.283
8	M80	Z	-3.242	-3.242	6.427	43.363
9	M69	Z	-3.422	-3.242	0	25.3
10	M71	Z	-0.544	-3.242	0	22.283
11	M72	Z	-0.544	-3.242	0	22.283
12	M70	Z	-3.242	-3.242	6.427	43.363

Member Distributed Loads (BLC 15 : BLC 2 Transient Area Loads)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M74	Z	-3.452	-3.452	0	25.3
2	M77	Z	-0.471	-3.452	0	22.283
3	M76	Z	-0.471	-3.452	0	22.283
4	M75	Z	-3.358	-3.358	6.427	43.363
5	M79	Z	-3.545	-3.358	0	25.3
6	M81	Z	-0.564	-3.358	0	22.283
7	M82	Z	-0.564	-3.358	0	22.283
8	M80	Z	-3.358	-3.358	6.427	43.363
9	M69	Z	-3.545	-3.358	0	25.3
10	M71	Z	-0.564	-3.358	0	22.283
11	M72	Z	-0.564	-3.358	0	22.283
12	M70	Z	-3.358	-3.358	6.427	43.363

Member Area Loads (BLC 1 : DEAD LOAD)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [psf]
1	N190	N191	N189	N188	Z	Two Way	-5
2	N200	N199	N201	N202	Z	Two Way	-5
3	N178	N177	N179	N180	Z	Two Way	-5

Member Area Loads (BLC 2 : DEAD LOAD ICE)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [psf]
1	N190	N191	N189	N188	Z	Two Way	-5.18
2	N200	N199	N201	N202	Z	Two Way	-5.18
3	N178	N177	N179	N180	Z	Two Way	-5.18

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	DL + WL (NO ICE) 0 Degree	Yes	Y	1	1.2			3	1		
2	DL + WL (NO ICE) 30 Degree	Yes	Y	1	1.2			3	0.866	4	0.5
3	DL + WL (NO ICE) 60 Degree	Yes	Y	1	1.2			3	0.5	4	0.866
4	DL + WL (NO ICE) 90 Degree	Yes	Y	1	1.2					4	1
5	DL + WL (NO ICE) 120 Degree	Yes	Y	1	1.2			3	-0.5	4	0.866
6	DL + WL (NO ICE) 150 Degree	Yes	Y	1	1.2			3	-0.866	4	0.5
7	DL + WL (NO ICE) 180 Degree	Yes	Y	1	1.2			3	-1		
8	DL + WL (NO ICE) 210 Degree	Yes	Y	1	1.2			3	-0.866	4	-0.5
9	DL + WL (NO ICE) 240 Degree	Yes	Y	1	1.2			3	-0.5	4	-0.866
10	DL + WL (NO ICE) 270 Degree	Yes	Y	1	1.2					4	-1
11	DL + WL (NO ICE) 300 Degree	Yes	Y	1	1.2			3	0.5	4	-0.866
12	DL + WL (NO ICE) 330 Degree	Yes	Y	1	1.2			3	0.866	4	-0.5
13	DL + DL ICE + WL (ICE) 0 Degree	Yes	Y	1	1.2	2	1	5	1		
14	DL + DL ICE + WL (ICE) 30 Degree	Yes	Y	1	1.2	2	1	5	0.866	6	0.5
15	DL + DL ICE + WL (ICE) 60 Degree	Yes	Y	1	1.2	2	1	5	0.5	6	0.866
16	DL + DL ICE + WL (ICE) 90 Degree	Yes	Y	1	1.2	2	1			6	1
17	DL + DL ICE + WL (ICE) 120 Degree	Yes	Y	1	1.2	2	1	5	-0.5	6	0.866
18	DL + DL ICE + WL (ICE) 150 Degree	Yes	Y	1	1.2	2	1	5	-0.866	6	0.5
19	DL + DL ICE + WL (ICE) 180 Degree	Yes	Y	1	1.2	2	1	5	-1		
20	DL + DL ICE + WL (ICE) 210 Degree	Yes	Y	1	1.2	2	1	5	-0.866	6	-0.5
21	DL + DL ICE + WL (ICE) 240 Degree	Yes	Y	1	1.2	2	1	5	-0.5	6	-0.866
22	DL + DL ICE + WL (ICE) 270 Degree	Yes	Y	1	1.2	2	1			6	-1
23	DL + DL ICE + WL (ICE) 300 Degree	Yes	Y	1	1.2	2	1	5	0.5	6	-0.866
24	DL + DL ICE + WL (ICE) 330 Degree	Yes	Y	1	1.2	2	1	5	0.866	6	-0.5
25	DEAD LOAD + LIVE LOAD1	Yes	Y	1	1.2					7	1.5
26	DEAD LOAD + LIVE LOAD2	Yes	Y	1	1.2					8	1.5
27	DEAD LOAD + LIVE LOAD3	Yes	Y	1	1.2					9	1.5
28	DL + MAIN L1+30MPH WL FRONT	Yes	Y	1	1.2	10	1.5	3	0.049		
29	DL + MAIN L2+30MPH WL FRONT	Yes	Y	1	1.2	11	1.5	3	0.049		
30	DL + MAIN L3+30MPH WL FRONT	Yes	Y	1	1.2	12	1.5	3	0.049		
31	DL + MAIN L4+30MPH WL FRONT	Yes	Y	1	1.2	13	1.5	3	0.049		
32	DL + MAIN L1+30MPH WL SIDE	Yes	Y	1	1.2	10	1.5	4	0.049		
33	DL + MAIN L2+30MPH WL SIDE	Yes	Y	1	1.2	11	1.5	4	0.049		
34	DL + MAIN L3+30MPH WL SIDE	Yes	Y	1	1.2	12	1.5	4	0.049		
35	DL + MAIN L4+30MPH WL SIDE	Yes	Y	1	1.2	13	1.5	4	0.049		
36	DL + MAIN L1+30MPH WL FRONT (REVERSED)	Yes	Y	1	1.2	10	1.5	3	-0.049		
37	DL + MAIN L2+30MPH WL FRONT (REVERSED)	Yes	Y	1	1.2	11	1.5	3	-0.049		
38	DL + MAIN L3+30MPH WL FRONT (REVERSED)	Yes	Y	1	1.2	12	1.5	3	-0.049		
39	DL + MAIN L4+30MPH WL FRONT (REVERSED)	Yes	Y	1	1.2	13	1.5	3	-0.049		
40	DL + MAIN L1+30MPH WL SIDE (REVERSED)	Yes	Y	1	1.2	10	1.5	4	-0.049		
41	DL + MAIN L2+30MPH WL SIDE (REVERSED)	Yes	Y	1	1.2	11	1.5	4	-0.049		
42	DL + MAIN L3+30MPH WL SIDE (REVERSED)	Yes	Y	1	1.2	12	1.5	4	-0.049		
43	DL + MAIN L4+30MPH WL SIDE (REVERSED)	Yes	Y	1	1.2	13	1.5	4	-0.049		

Node Reactions

No Data to Print...

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N171	max	2571.956	9	2091.194	8	2274.337	21	-1.104	3	5.743	43	1.8	1
2		min	-2723.846	3	-2176.794	2	923.494	3	-3.801	43	1.984	3	-1.797	7
3	N182	max	2819.934	11	1957.129	6	2274.91	17	-1.166	11	-1.975	11	1.663	7
4		min	-2667.626	5	-2041.745	12	919.366	11	-3.827	32	-5.726	32	-1.667	1
5	N193	max	1733.487	10	3101.297	7	2279.78	13	6.505	13	0.199	25	3.108	4
6		min	-1733.999	4	-2927.178	1	905.17	7	2.141	7	-0.072	27	-3.108	10
7	Totals:	max	7037.781	10	6487.81	7	6600.569	19						
8		min	-7037.779	4	-6487.811	1	3414.053	1						

Envelope Node Displacements

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
1	C	max	0	43	0	43	0	43	0	43	0	43	0	43
2		min	0	1	0	1	0	1	0	1	0	1	0	1
3	N170	max	0.025	9	0.047	3	-0.06	3	4.674e-3	43	-7.534e-4	3	1.856e-3	11
4		min	-0.025	3	-0.048	9	-0.26	43	8.651e-5	4	-3.386e-3	21	-1.852e-3	5
5	N171	max	0	3	0	2	0	3	0	43	0	3	0	7
6		min	0	9	0	8	0	21	0	3	0	43	0	1
7	N172	max	0.034	10	0.045	3	-0.057	3	2.875e-3	38	7.31e-4	32	1.534e-3	11
8		min	-0.034	4	-0.045	9	-0.291	43	2.892e-4	25	-4.007e-3	43	-1.554e-3	5
9	N173	max	0.017	7	0.056	3	-0.062	3	1.639e-3	8	1.768e-4	32	1.836e-3	10
10		min	-0.017	1	-0.056	9	-0.234	43	-1.06e-3	2	-4.164e-3	43	-1.805e-3	4
11	N174	max	0.019	8	0.035	2	-0.037	3	3.55e-3	43	-9.644e-4	32	1.208e-3	10
12		min	-0.019	2	-0.035	8	-0.131	43	4.87e-4	3	-3.8e-3	43	-1.203e-3	4
13	N175	max	0.033	10	0.046	1	-0.066	3	3.351e-3	30	1.117e-3	32	1.494e-3	12
14		min	-0.033	4	-0.045	7	-0.201	43	1.707e-4	7	-2.473e-3	43	-1.465e-3	6
15	N176	max	0.044	5	0.042	3	-0.059	32	4.974e-4	9	1.875e-4	40	1.904e-3	11
16		min	-0.044	11	-0.042	9	-0.175	21	-1.211e-3	3	-3.733e-3	35	-1.919e-3	5
17	N177	max	0.031	10	0.046	3	-0.058	3	5.049e-3	43	-4.238e-4	3	1.578e-3	11
18		min	-0.031	4	-0.045	9	-0.281	43	-2.158e-4	4	-2.747e-3	43	-1.574e-3	5
19	N178	max	0.03	10	0.043	1	-0.059	3	5.048e-3	42	9.297e-4	32	1.618e-3	12
20		min	-0.029	4	-0.043	7	-0.186	43	1.575e-3	25	-1.557e-3	43	-1.597e-3	6
21	N179	max	0.018	8	0.053	3	-0.062	3	4.368e-3	43	-5.444e-4	2	2.044e-3	10
22		min	-0.018	2	-0.053	9	-0.242	43	-7.848e-5	4	-3.027e-3	21	-2.043e-3	4
23	N180	max	0.038	6	0.04	3	-0.054	32	3.366e-4	39	-7.739e-4	32	2.029e-3	11
24		min	-0.038	12	-0.04	9	-0.16	21	-1.989e-3	14	-4.082e-3	43	-2.039e-3	5
25	N181	max	0.025	11	0.048	11	-0.062	11	4.968e-3	32	3.589e-3	27	1.87e-3	9
26		min	-0.025	5	-0.047	5	-0.26	32	4.915e-4	10	5.641e-4	11	-1.866e-3	3
27	N182	max	0	5	0	12	0	11	0	32	0	32	0	1
28		min	0	11	0	6	0	17	0	11	0	11	0	7
29	N183	max	0.017	1	0.057	11	-0.059	11	1.631e-3	6	4.186e-3	32	1.994e-3	10
30		min	-0.017	7	-0.056	5	-0.23	32	-1.51e-3	12	-1.571e-4	43	-2.014e-3	4
31	N184	max	0.034	10	0.044	11	-0.064	11	2.739e-3	37	4.184e-3	32	1.452e-3	9
32		min	-0.034	4	-0.044	5	-0.295	32	3.36e-4	25	-5.344e-4	43	-1.421e-3	3
33	N185	max	0.018	1	0.032	12	-0.037	11	3.623e-3	32	3.752e-3	32	1.252e-3	10
34		min	-0.018	7	-0.032	6	-0.131	32	6.498e-4	11	9.209e-4	43	-1.246e-3	4
35	N186	max	0.046	3	0.041	11	-0.059	43	4.076e-4	5	3.804e-3	40	2.057e-3	10
36		min	-0.046	9	-0.041	5	-0.177	17	-1.395e-3	11	-1.842e-4	35	-2.03e-3	4
37	N187	max	0.033	10	0.042	1	-0.069	11	3.214e-3	29	2.574e-3	32	1.408e-3	9
38		min	-0.033	4	-0.042	7	-0.201	32	5.565e-4	25	-1.021e-3	43	-1.425e-3	3
39	N188	max	0.018	12	0.054	11	-0.06	11	4.684e-3	32	3.453e-3	27	2.182e-3	10
40		min	-0.018	6	-0.054	5	-0.239	32	2.648e-4	27	1.705e-4	12	-2.178e-3	4
41	N189	max	0.038	3	0.038	11	-0.054	43	2.938e-4	36	4.064e-3	40	2.127e-3	9
42		min	-0.039	9	-0.038	5	-0.161	17	-2.131e-3	13	7.731e-4	31	-2.107e-3	3
43	N190	max	0.031	10	0.045	11	-0.063	11	5.43e-3	32	3.183e-3	27	1.495e-3	9

Envelope Node Displacements (Continued)

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
44		min	-0.031	4	-0.045	5	-0.284	32	3.111e-4	10	3.013e-4	11	-1.494e-3	3
45	N191	max	0.029	10	0.04	1	-0.061	11	5.032e-3	33	1.599e-3	32	1.566e-3	9
46		min	-0.029	4	-0.039	7	-0.186	32	1.696e-3	25	-8.892e-4	43	-1.577e-3	3
47	N192	max	0.094	4	0.002	1	-0.053	7	-5.879e-4	7	4.983e-4	10	7.979e-5	11
48		min	-0.094	10	-0.002	7	-0.214	13	-3.777e-3	13	-1.154e-3	25	-7.419e-5	4
49	N193	max	0	4	0	1	0	7	0	7	0	27	0	10
50		min	0	10	0	7	0	13	0	13	0	25	0	4
51	N194	max	0.094	4	0.007	1	-0.051	7	6.211e-5	8	7.019e-4	32	4.218e-4	8
52		min	-0.094	10	-0.007	7	-0.212	13	-2.967e-3	25	-1.942e-3	43	-4.459e-4	2
53	N195	max	0.094	4	0.007	1	-0.056	7	-1.703e-4	7	1.726e-3	32	5.752e-4	11
54		min	-0.094	10	-0.007	7	-0.219	13	-2.993e-3	13	-9.048e-4	43	-5.406e-4	5
55	N196	max	0.083	4	0.001	1	-0.033	7	-1.007e-3	7	2.014e-4	27	1.197e-3	10
56		min	-0.083	10	-0.001	7	-0.115	13	-4.096e-3	13	-5.567e-4	25	-1.192e-3	4
57	N197	max	0.083	4	0.01	2	-0.062	6	-1.568e-4	36	2.86e-4	40	4.868e-4	7
58		min	-0.083	10	-0.01	8	-0.178	13	-2.159e-3	25	-2.419e-3	35	-4.596e-4	1
59	N198	max	0.083	4	0.011	12	-0.062	8	-1.894e-4	39	2.247e-3	36	4.527e-4	1
60		min	-0.083	10	-0.011	6	-0.176	13	-2.231e-3	25	-3.903e-4	31	-4.677e-4	7
61	N199	max	0.094	4	0.005	1	-0.052	7	-1.372e-4	7	5.433e-4	10	4.772e-4	7
62		min	-0.094	10	-0.005	7	-0.212	13	-3.123e-3	25	-1.497e-3	25	-4.734e-4	1
63	N200	max	0.083	4	0.008	3	-0.055	7	-3.482e-4	8	-1.246e-3	32	4.426e-4	7
64		min	-0.083	10	-0.009	9	-0.162	13	-2.391e-3	25	-3.669e-3	23	-4.234e-4	1
65	N201	max	0.094	4	0.005	1	-0.055	7	-2.946e-4	7	7.191e-4	10	5.729e-4	12
66		min	-0.094	10	-0.006	7	-0.217	13	-3.231e-3	13	-1.109e-3	25	-5.673e-4	6
67	N202	max	0.083	4	0.01	11	-0.056	7	-3.98e-4	39	3.525e-3	15	4.37e-4	1
68		min	-0.083	10	-0.01	5	-0.161	13	-2.446e-3	25	1.212e-3	43	-4.462e-4	7
69	N203	max	0.029	11	0.068	10	-0.045	11	1.868e-3	6	3.431e-3	32	2.071e-3	10
70		min	-0.03	5	-0.068	4	-0.267	32	-1.867e-3	12	-6.978e-4	43	-2.137e-3	4
71	N204	max	0.101	4	0.005	2	-0.05	7	3.189e-4	7	1.687e-3	32	8.409e-4	11
72		min	-0.102	10	-0.006	8	-0.246	13	-2.336e-3	13	-1.116e-3	43	-7.538e-4	5
73	N205	max	0.082	32	0.15	12	-0.05	12	2.651e-3	8	3.56e-3	3	3.264e-3	9
74		min	-0.084	43	-0.146	6	-0.271	36	-2.22e-3	2	-4.018e-3	9	-3.559e-3	3
75	N206	max	0.229	4	0.106	1	-0.051	6	2.717e-3	8	3.623e-3	4	1.259e-3	3
76		min	-0.24	10	-0.108	7	-0.251	24	-2.597e-3	2	-4.577e-3	10	-8.172e-4	9
77	N213	max	0.135	4	-0.014	31	-0.053	7	-2.488e-4	31	1.717e-3	10	8.408e-4	11
78		min	-0.17	10	-0.123	25	-0.247	13	-2.265e-3	25	-1.14e-3	35	-7.538e-4	5
79	N214	max	0.318	4	0.166	2	-0.053	7	2.776e-3	8	3.692e-3	4	1.259e-3	3
80		min	-0.352	10	-0.169	8	-0.247	13	-2.656e-3	2	-4.646e-3	10	-8.173e-4	9
81	N215	max	0.1	4	0.005	2	-0.051	7	3.189e-4	7	1.687e-3	32	8.408e-4	11
82		min	-0.101	10	-0.006	8	-0.241	13	-2.336e-3	13	-1.116e-3	43	-7.538e-4	5
83	N216	max	0.231	4	0.107	1	-0.056	6	2.717e-3	8	3.623e-3	4	1.259e-3	3
84		min	-0.242	10	-0.108	7	-0.249	24	-2.596e-3	2	-4.577e-3	10	-8.173e-4	9
85	N217	max	0.101	4	0.006	1	-0.053	7	3.189e-4	7	1.687e-3	32	8.408e-4	11
86		min	-0.102	10	-0.007	7	-0.247	13	-2.336e-3	13	-1.116e-3	43	-7.538e-4	5
87	N218	max	0.229	4	0.11	1	-0.053	7	2.717e-3	8	3.623e-3	4	1.259e-3	3
88		min	-0.241	10	-0.109	7	-0.247	13	-2.596e-3	2	-4.577e-3	10	-8.173e-4	9
89	N219	max	0.098	4	0.004	12	-0.039	7	7.859e-4	7	9.473e-4	32	4.559e-4	8
90		min	-0.097	10	-0.005	6	-0.233	13	-2.616e-3	25	-1.899e-3	43	-5.243e-4	2
91	N220	max	0.028	9	0.066	4	-0.055	3	1.74e-3	8	6.602e-4	32	1.831e-3	10
92		min	-0.027	3	-0.066	10	-0.275	43	-1.278e-3	2	-3.432e-3	43	-1.748e-3	4
93	N221	max	0.228	4	0.105	1	-0.039	8	2.886e-3	6	4.476e-3	4	1.243e-3	5
94		min	-0.231	10	-0.108	7	-0.239	14	-2.703e-3	12	-3.875e-3	10	-1.537e-3	11
95	N222	max	0.088	5	0.144	2	-0.061	2	2.827e-3	7	3.941e-3	5	3.227e-3	11
96		min	-0.081	11	-0.153	8	-0.278	39	-2.058e-3	1	-3.363e-3	11	-2.784e-3	5
97	N223	max	0.034	10	0.053	4	-0.046	4	2.325e-3	39	1.256e-3	32	1.486e-3	11
98		min	-0.034	4	-0.052	10	-0.346	43	-1.07e-4	25	-3.703e-3	43	-1.552e-3	5
99	N224	max	0.034	10	0.055	11	-0.059	11	2.211e-3	36	3.891e-3	32	1.273e-3	9
100		min	-0.034	4	-0.054	5	-0.353	32	6.82e-6	25	-1.029e-3	43	-1.189e-3	3
101	N225	max	0.087	32	0.135	2	-0.048	4	4.162e-3	7	1.721e-3	32	2.846e-3	12
102		min	-0.084	43	-0.137	8	-0.349	43	-4.77e-3	1	-2.279e-3	43	-3.138e-3	6

Envelope Node Displacements (Continued)

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
103	N226	max	0.088	32	0.143	12	-0.062	43	3.776e-3	7	2.392e-3	32	2.75e-3	8
104		min	-0.083	43	-0.132	6	-0.356	32	-4.656e-3	1	-1.605e-3	43	-2.309e-3	2
105	N227	max	0.087	32	0.161	1	-0.066	4	4.714e-3	7	1.093e-3	32	3.118e-3	12
106		min	-0.083	43	-0.167	7	-0.313	43	-5.245e-3	1	-3.11e-3	43	-3.5e-3	6
107	N228	max	0.123	5	0.144	2	-0.078	2	2.892e-3	6	3.995e-3	5	3.664e-3	11
108		min	-0.121	11	-0.15	8	-0.246	39	-1.55e-3	12	-3.847e-3	11	-3.112e-3	5
109	N229	max	0.126	3	0.148	12	-0.069	12	2.804e-3	8	4.096e-3	3	3.577e-3	9
110		min	-0.123	9	-0.142	6	-0.241	36	-1.872e-3	2	-4.175e-3	9	-3.963e-3	3
111	N230	max	0.088	32	0.163	1	-0.078	10	4.242e-3	7	3.266e-3	32	3.185e-3	8
112		min	-0.083	43	-0.158	7	-0.318	32	-5.038e-3	1	-9.32e-4	43	-2.638e-3	2
113	N231	max	0.243	4	0.11	1	-0.057	8	2.59e-3	5	4.643e-3	5	1.514e-3	5
114		min	-0.25	10	-0.111	7	-0.228	14	-2.987e-3	11	-3.801e-3	11	-1.899e-3	11
115	N232	max	0.244	4	0.112	1	-0.068	6	2.251e-3	8	3.502e-3	3	1.692e-3	3
116		min	-0.25	10	-0.11	7	-0.236	24	-2.791e-3	2	-4.735e-3	9	-1.144e-3	9
117	N60	max	0.399	4	0.242	1	-0.061	39	6.352e-3	1	1.061e-2	10	9.042e-4	1
118		min	-0.511	10	-0.313	7	-0.183	14	-7.655e-3	7	-8.545e-3	4	-9.124e-4	7
119	N61	max	0.423	4	0.241	2	-0.061	39	3.727e-3	8	5.868e-3	3	1.498e-3	1
120		min	-0.42	10	-0.213	8	-0.183	14	-4.05e-3	2	-6.581e-3	9	-7.823e-4	7
121	N62	max	0.085	4	0.013	12	-0.062	39	1.105e-4	39	2.449e-3	40	9.042e-4	1
122		min	-0.085	10	-0.013	6	-0.173	14	-1.704e-3	25	-3.981e-4	35	-9.124e-4	7
123	N63	max	0.285	4	0.14	1	-0.069	35	3.634e-3	9	5.691e-3	3	1.498e-3	1
124		min	-0.263	10	-0.122	7	-0.182	24	-3.961e-3	3	-6.405e-3	9	-7.823e-4	7
125	N64	max	0.084	4	0.016	12	-0.061	39	1.105e-4	39	2.449e-3	40	9.042e-4	1
126		min	-0.085	10	-0.016	6	-0.182	14	-1.704e-3	25	-3.981e-4	35	-9.124e-4	7
127	N65	max	0.284	4	0.144	1	-0.061	39	3.634e-3	9	5.691e-3	3	1.498e-3	1
128		min	-0.263	10	-0.124	7	-0.183	14	-3.961e-3	3	-6.405e-3	9	-7.823e-4	7
129	N67	max	0.683	4	0.295	1	-0.058	43	7.341e-3	1	1.846e-2	10	2.102e-3	10
130		min	-0.806	10	-0.365	7	-0.185	16	-8.652e-3	7	-1.621e-2	4	-2.08e-3	4
131	N68	max	0.412	3	0.219	1	-0.058	43	3.897e-3	8	6.816e-3	3	2.353e-3	10
132		min	-0.385	9	-0.215	7	-0.185	16	-3.313e-3	2	-6.854e-3	9	-2.922e-3	4
133	N69	max	0.062	3	0.035	12	-0.059	43	1.53e-4	35	3.28e-3	40	2.102e-3	10
134		min	-0.062	9	-0.035	6	-0.176	16	-1.531e-3	13	-4.701e-4	35	-2.08e-3	4
135	N70	max	0.245	3	0.159	1	-0.066	31	3.735e-3	8	6.551e-3	3	2.353e-3	10
136		min	-0.218	9	-0.139	7	-0.183	18	-3.152e-3	2	-6.589e-3	9	-2.922e-3	4
137	N71	max	0.065	3	0.039	11	-0.058	43	1.53e-4	35	3.28e-3	40	2.102e-3	10
138		min	-0.065	9	-0.039	5	-0.185	16	-1.531e-3	13	-4.701e-4	35	-2.08e-3	4
139	N72	max	0.249	3	0.158	1	-0.058	43	3.735e-3	8	6.551e-3	3	2.353e-3	10
140		min	-0.221	9	-0.14	7	-0.185	16	-3.152e-3	2	-6.589e-3	9	-2.922e-3	4
141	N74	max	0.036	43	0.08	27	-0.052	11	1.487e-3	27	3.39e-3	32	2.071e-3	10
142		min	-0.185	32	-0.055	2	-0.269	32	-1.19e-3	12	-6.588e-4	43	-2.137e-3	4
143	N75	max	0.183	3	0.189	12	-0.052	11	2.711e-3	8	3.62e-3	3	3.264e-3	9
144		min	-0.194	9	-0.196	6	-0.269	32	-2.28e-3	2	-4.077e-3	9	-3.559e-3	3
145	N76	max	0.025	11	0.065	10	-0.049	11	1.868e-3	6	3.431e-3	32	2.071e-3	10
146		min	-0.025	5	-0.065	4	-0.26	32	-1.867e-3	12	-6.978e-4	43	-2.137e-3	4
147	N77	max	0.091	3	0.15	12	-0.055	12	2.651e-3	8	3.56e-3	3	3.264e-3	9
148		min	-0.09	9	-0.146	6	-0.266	36	-2.22e-3	2	-4.018e-3	9	-3.559e-3	3
149	N78	max	0.022	11	0.071	10	-0.052	11	1.868e-3	6	3.431e-3	32	2.071e-3	10
150		min	-0.022	5	-0.072	4	-0.269	32	-1.867e-3	12	-6.978e-4	43	-2.137e-3	4
151	N79	max	0.097	3	0.151	12	-0.052	11	2.651e-3	8	3.56e-3	3	3.264e-3	9
152		min	-0.096	9	-0.147	6	-0.269	32	-2.22e-3	2	-4.018e-3	9	-3.559e-3	3
153	N81	max	0.187	35	0.061	32	-0.06	3	1.18e-3	11	7.404e-4	10	1.831e-3	10
154		min	-0.036	40	-0.04	25	-0.275	43	-7.452e-4	25	-3.489e-3	35	-1.748e-3	4
155	N82	max	0.195	5	0.18	2	-0.06	3	2.896e-3	7	4.e-3	5	3.228e-3	11
156		min	-0.176	11	-0.209	8	-0.275	43	-2.127e-3	1	-3.423e-3	11	-2.784e-3	5
157	N83	max	0.025	9	0.063	4	-0.057	3	1.74e-3	8	6.603e-4	32	1.831e-3	10
158		min	-0.024	3	-0.064	10	-0.267	43	-1.278e-3	2	-3.432e-3	43	-1.748e-3	4
159	N84	max	0.095	5	0.144	2	-0.066	2	2.827e-3	7	3.941e-3	5	3.228e-3	11
160		min	-0.089	11	-0.153	8	-0.272	39	-2.058e-3	1	-3.363e-3	11	-2.784e-3	5
161	N85	max	0.022	9	0.068	4	-0.06	3	1.74e-3	8	6.603e-4	32	1.831e-3	10

Envelope Node Displacements (Continued)

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
162		min	-0.021	3	-0.069	10	-0.275	43	-1.278e-3	2	-3.432e-3	43	-1.748e-3	4
163	N86	max	0.1	5	0.144	2	-0.06	3	2.827e-3	7	3.941e-3	5	3.228e-3	11
164		min	-0.095	11	-0.154	8	-0.275	43	-2.058e-3	1	-3.363e-3	11	-2.784e-3	5
165	N88	max	0.495	4	0.261	1	-0.057	32	6.466e-3	1	8.757e-3	10	1.976e-3	10
166		min	-0.378	10	-0.323	7	-0.181	22	-7.599e-3	7	-1.093e-2	4	-1.984e-3	4
167	N89	max	0.358	5	0.209	1	-0.057	32	3.747e-3	6	6.199e-3	5	3.056e-3	10
168		min	-0.385	11	-0.22	7	-0.181	22	-2.961e-3	12	-6.126e-3	11	-2.336e-3	4
169	N90	max	0.059	5	0.037	2	-0.059	32	2.42e-4	40	4.631e-4	40	1.976e-3	10
170		min	-0.059	11	-0.037	8	-0.172	22	-1.477e-3	25	-3.184e-3	35	-1.984e-3	4
171	N91	max	0.207	5	0.155	1	-0.065	40	3.597e-3	6	6.022e-3	5	3.056e-3	10
172		min	-0.234	11	-0.144	7	-0.18	20	-2.812e-3	12	-5.949e-3	11	-2.336e-3	4
173	N92	max	0.062	5	0.041	3	-0.057	32	2.42e-4	40	4.631e-4	40	1.976e-3	10
174		min	-0.062	11	-0.041	9	-0.181	22	-1.477e-3	25	-3.184e-3	35	-1.984e-3	4
175	N93	max	0.21	5	0.153	1	-0.057	32	3.597e-3	6	6.022e-3	5	3.056e-3	10
176		min	-0.238	11	-0.145	7	-0.181	22	-2.812e-3	12	-5.949e-3	11	-2.336e-3	4
177	N95	max	0.826	4	0.281	1	-0.062	36	7.331e-3	1	1.606e-2	10	9.809e-4	7
178		min	-0.703	10	-0.351	7	-0.186	24	-8.621e-3	7	-1.833e-2	4	-9.585e-4	1
179	N96	max	0.436	4	0.241	12	-0.062	36	3.869e-3	6	7.183e-3	4	9.09e-4	7
180		min	-0.453	10	-0.221	6	-0.186	24	-4.124e-3	12	-6.659e-3	10	-1.476e-3	1
181	N97	max	0.085	4	0.012	2	-0.063	36	1.182e-4	40	3.549e-4	40	9.809e-4	7
182		min	-0.085	10	-0.013	8	-0.176	24	-1.745e-3	25	-2.609e-3	35	-9.585e-4	1
183	N98	max	0.263	4	0.139	12	-0.065	9	3.758e-3	5	6.878e-3	4	9.09e-4	7
184		min	-0.294	10	-0.126	6	-0.186	14	-4.016e-3	11	-6.353e-3	10	-1.476e-3	1
185	N99	max	0.085	4	0.015	2	-0.062	36	1.182e-4	40	3.549e-4	40	9.809e-4	7
186		min	-0.085	10	-0.015	8	-0.186	24	-1.745e-3	25	-2.609e-3	35	-9.585e-4	1
187	N100	max	0.264	4	0.143	12	-0.062	36	3.758e-3	5	6.878e-3	4	9.09e-4	7
188		min	-0.294	10	-0.128	6	-0.186	24	-4.016e-3	11	-6.353e-3	10	-1.476e-3	1
189	N102	max	0.101	35	0.01	8	-0.044	7	1.089e-4	8	9.081e-4	32	4.559e-4	8
190		min	-0.05	40	-0.14	25	-0.236	13	-2.592e-3	25	-1.859e-3	43	-5.243e-4	2
191	N103	max	0.338	4	0.167	12	-0.043	7	2.945e-3	6	4.545e-3	4	1.243e-3	5
192		min	-0.327	10	-0.173	6	-0.236	13	-2.762e-3	12	-3.944e-3	10	-1.537e-3	11
193	N104	max	0.097	4	0.004	1	-0.043	7	7.859e-4	7	9.472e-4	32	4.559e-4	8
194		min	-0.097	10	-0.005	7	-0.229	13	-2.594e-3	25	-1.899e-3	43	-5.243e-4	2
195	N105	max	0.231	4	0.106	1	-0.045	8	2.886e-3	6	4.476e-3	4	1.243e-3	5
196		min	-0.235	10	-0.108	7	-0.237	14	-2.703e-3	12	-3.875e-3	10	-1.537e-3	11
197	N106	max	0.098	4	0.006	1	-0.044	7	7.859e-4	7	9.472e-4	32	4.559e-4	8
198		min	-0.097	10	-0.006	7	-0.236	13	-2.594e-3	25	-1.899e-3	43	-5.243e-4	2
199	N107	max	0.229	4	0.108	1	-0.043	7	2.886e-3	6	4.476e-3	4	1.243e-3	5
200		min	-0.233	10	-0.109	7	-0.236	13	-2.703e-3	12	-3.875e-3	10	-1.537e-3	11
201	N109	max	0.053	43	0.159	12	-0.063	11	2.795e-3	1	3.73e-3	40	1.273e-3	9
202		min	-0.204	32	-0.074	6	-0.35	32	-1.252e-3	7	-9.926e-4	35	-1.189e-3	3
203	N110	max	0.146	32	0.255	1	-0.063	11	3.845e-3	7	2.395e-3	32	2.75e-3	8
204		min	-0.12	43	-0.225	7	-0.349	32	-4.725e-3	1	-1.622e-3	10	-2.309e-3	2
205	N111	max	0.034	10	0.053	11	-0.061	11	2.211e-3	36	3.891e-3	32	1.273e-3	9
206		min	-0.034	4	-0.052	5	-0.341	32	6.82e-6	25	-1.029e-3	43	-1.189e-3	3
207	N112	max	0.088	32	0.145	12	-0.067	43	3.776e-3	7	2.392e-3	32	2.75e-3	8
208		min	-0.083	43	-0.136	6	-0.349	32	-4.656e-3	1	-1.605e-3	43	-2.309e-3	2
209	N113	max	0.038	10	0.053	11	-0.063	11	2.211e-3	36	3.891e-3	32	1.273e-3	9
210		min	-0.038	4	-0.052	5	-0.349	32	6.82e-6	25	-1.029e-3	43	-1.189e-3	3
211	N114	max	0.089	32	0.145	12	-0.063	11	3.776e-3	7	2.392e-3	32	2.75e-3	8
212		min	-0.082	43	-0.136	6	-0.349	32	-4.656e-3	1	-1.605e-3	43	-2.309e-3	2
213	N116	max	0.229	4	0.518	1	-0.077	25	1.134e-2	1	7.109e-3	10	1.174e-3	7
214		min	-0.235	10	-0.385	7	-0.196	33	-8.881e-3	7	-7.011e-3	4	-1.184e-3	1
215	N117	max	0.152	32	0.411	1	-0.077	25	7.101e-3	7	2.622e-3	32	2.082e-3	7
216		min	-0.114	43	-0.429	7	-0.195	33	-7.555e-3	1	-1.373e-3	43	-1.362e-3	1
217	N118	max	0.033	10	0.053	1	-0.071	12	3.101e-3	29	1.983e-3	32	1.174e-3	7
218		min	-0.033	4	-0.052	7	-0.184	37	4.222e-4	25	-1.517e-3	43	-1.184e-3	1
219	N119	max	0.087	32	0.23	1	-0.072	8	6.897e-3	7	2.614e-3	32	2.082e-3	7
220		min	-0.083	43	-0.259	7	-0.193	29	-7.351e-3	1	-1.365e-3	43	-1.362e-3	1

Envelope Node Displacements (Continued)

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
221	N120	max	0.034	10	0.053	1	-0.076	25	3.101e-3	29	1.983e-3	32	1.174e-3	7
222		min	-0.034	4	-0.052	7	-0.195	33	4.222e-4	25	-1.517e-3	43	-1.184e-3	1
223	N121	max	0.089	32	0.23	1	-0.077	25	6.897e-3	7	2.614e-3	32	2.082e-3	7
224		min	-0.081	43	-0.259	7	-0.195	33	-7.351e-3	1	-1.365e-3	43	-1.362e-3	1
225	N123	max	0.271	4	0.835	1	-0.074	25	1.901e-2	1	8.04e-3	10	1.206e-3	1
226		min	-0.272	10	-0.693	7	-0.197	42	-1.639e-2	7	-8.028e-3	4	-1.182e-3	7
227	N124	max	0.121	32	0.441	1	-0.074	25	8.023e-3	7	1.475e-3	4	1.231e-3	1
228		min	-0.146	43	-0.467	7	-0.196	42	-8.345e-3	1	-2.55e-3	43	-1.801e-3	7
229	N125	max	0.033	10	0.058	1	-0.069	3	3.236e-3	30	1.565e-3	32	1.206e-3	1
230		min	-0.033	4	-0.057	7	-0.185	42	-5.569e-4	7	-1.921e-3	43	-1.182e-3	7
231	N126	max	0.087	32	0.242	1	-0.066	6	7.717e-3	7	1.447e-3	32	1.231e-3	1
232		min	-0.083	43	-0.275	7	-0.194	30	-8.039e-3	1	-2.541e-3	43	-1.801e-3	7
233	N127	max	0.033	10	0.058	1	-0.074	25	3.236e-3	30	1.565e-3	32	1.206e-3	1
234		min	-0.033	4	-0.057	7	-0.196	42	-5.569e-4	7	-1.921e-3	43	-1.182e-3	7
235	N128	max	0.086	32	0.242	1	-0.074	25	7.717e-3	7	1.447e-3	32	1.231e-3	1
236		min	-0.085	43	-0.275	7	-0.196	42	-8.039e-3	1	-2.541e-3	43	-1.801e-3	7
237	N130	max	0.196	43	0.127	34	-0.051	3	2.291e-3	30	1.217e-3	32	1.486e-3	11
238		min	-0.07	4	-0.005	25	-0.344	43	-1.069e-4	25	-3.546e-3	43	-1.552e-3	5
239	N131	max	0.127	32	0.249	1	-0.051	3	4.23e-3	7	1.773e-3	4	2.846e-3	12
240		min	-0.139	43	-0.237	7	-0.343	43	-4.838e-3	1	-2.283e-3	43	-3.138e-3	6
241	N132	max	0.034	10	0.051	3	-0.05	4	2.325e-3	39	1.256e-3	32	1.486e-3	11
242		min	-0.034	4	-0.051	9	-0.335	43	-1.07e-4	25	-3.703e-3	43	-1.552e-3	5
243	N133	max	0.087	32	0.139	2	-0.053	4	4.162e-3	7	1.721e-3	32	2.846e-3	12
244		min	-0.084	43	-0.141	8	-0.343	43	-4.77e-3	1	-2.279e-3	43	-3.138e-3	6
245	N134	max	0.038	10	0.051	3	-0.051	3	2.325e-3	39	1.256e-3	32	1.486e-3	11
246		min	-0.038	4	-0.051	9	-0.343	43	-1.07e-4	25	-3.703e-3	43	-1.552e-3	5
247	N135	max	0.086	32	0.139	2	-0.051	3	4.162e-3	7	1.721e-3	32	2.846e-3	12
248		min	-0.085	43	-0.141	8	-0.343	43	-4.77e-3	1	-2.279e-3	43	-3.138e-3	6
249	N129	max	0.063	32	0.093	12	-0.063	11	3.115e-3	7	2.427e-3	4	2.198e-3	9
250		min	-0.053	43	-0.096	6	-0.349	32	-3.874e-3	1	-2.686e-3	10	-1.877e-3	3
251	N136	max	0.029	43	0.094	12	-0.063	11	2.708e-3	1	3.754e-3	40	1.273e-3	9
252		min	-0.108	32	-0.049	6	-0.349	32	-1.165e-3	7	-9.883e-4	35	-1.189e-3	3
253	N137	max	0.107	4	-0.008	35	-0.053	7	-2.532e-4	31	1.706e-3	40	8.408e-4	11
254		min	-0.126	10	-0.064	25	-0.247	13	-2.265e-3	25	-1.136e-3	35	-7.538e-4	5
255	N138	max	0.179	4	0.077	1	-0.053	7	3.053e-3	7	3.592e-3	4	7.89e-4	2
256		min	-0.18	10	-0.07	7	-0.247	13	-2.446e-3	1	-4.126e-3	10	-4.684e-4	8
257	N139	max	0.096	39	0.054	4	-0.06	3	1.148e-3	40	7.152e-4	40	1.831e-3	10
258		min	-0.018	28	-0.042	10	-0.275	43	-7.452e-4	25	-3.485e-3	35	-1.748e-3	4
259	N140	max	0.051	32	0.115	2	-0.06	3	3.054e-3	7	3.572e-3	4	2.729e-3	11
260		min	-0.059	43	-0.119	8	-0.275	43	-2.892e-3	1	-2.784e-3	10	-2.405e-3	5
261	N141	max	0.105	32	0.275	1	-0.077	25	7.072e-3	7	2.621e-3	32	2.082e-3	7
262		min	-0.089	43	-0.301	7	-0.195	33	-7.526e-3	1	-1.372e-3	43	-1.362e-3	1
263	N142	max	0.187	4	0.45	1	-0.077	25	1.133e-2	1	7.108e-3	10	1.174e-3	7
264		min	-0.192	10	-0.332	7	-0.196	33	-8.88e-3	7	-7.01e-3	4	-1.184e-3	1
265	N143	max	0.319	4	0.168	2	-0.061	39	3.706e-3	9	5.843e-3	3	1.498e-3	1
266		min	-0.302	10	-0.146	8	-0.183	14	-4.033e-3	3	-6.556e-3	9	-7.823e-4	7
267	N144	max	0.348	4	0.204	1	-0.061	39	6.351e-3	1	1.061e-2	10	9.042e-4	1
268		min	-0.447	10	-0.267	7	-0.183	14	-7.654e-3	7	-8.544e-3	4	-9.124e-4	7
269	N145	max	0.247	5	0.167	1	-0.057	32	3.722e-3	6	6.173e-3	5	3.056e-3	10
270		min	-0.275	11	-0.164	7	-0.181	22	-2.936e-3	12	-6.1e-3	11	-2.336e-3	4
271	N146	max	0.43	4	0.223	1	-0.057	32	6.465e-3	1	8.756e-3	10	1.976e-3	10
272		min	-0.325	10	-0.277	7	-0.181	22	-7.598e-3	7	-1.093e-2	4	-1.984e-3	4
273	N147	max	0.094	32	0.291	1	-0.074	25	7.994e-3	7	1.454e-3	32	1.231e-3	1
274		min	-0.1	43	-0.322	7	-0.196	42	-8.316e-3	1	-2.549e-3	43	-1.801e-3	7
275	N148	max	0.223	4	0.721	1	-0.074	25	1.901e-2	1	8.039e-3	10	1.206e-3	1
276		min	-0.224	10	-0.595	7	-0.197	42	-1.639e-2	7	-8.027e-3	4	-1.182e-3	7
277	N149	max	0.586	4	0.251	1	-0.058	43	7.34e-3	1	1.846e-2	10	2.102e-3	10
278		min	-0.695	10	-0.313	7	-0.185	16	-8.651e-3	7	-1.621e-2	4	-2.08e-3	4
279	N150	max	0.29	3	0.173	1	-0.058	43	3.872e-3	8	6.79e-3	3	2.353e-3	10

Envelope Node Displacements (Continued)

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
280		min	-0.262	9	-0.159	7	-0.185	16	-3.288e-3	2	-6.829e-3	9	-2.922e-3	4
281	N151	max	0.716	4	0.237	1	-0.062	36	7.33e-3	1	1.606e-2	10	9.809e-4	7
282		min	-0.607	10	-0.3	7	-0.186	24	-8.62e-3	7	-1.833e-2	4	-9.585e-4	1
283	N152	max	0.307	4	0.167	12	-0.062	36	3.844e-3	6	7.154e-3	4	9.09e-4	7
284		min	-0.333	10	-0.151	6	-0.186	24	-4.099e-3	12	-6.63e-3	10	-1.476e-3	1

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 [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	M93	PIPE_3.0	0.134	106.25	5	0.113	43.75		7	28615.556	78246	6.899	6.899	2.779	H1-1b
2	M68	PIPE_3.0	0.12	10.75	9	0.109	10.75		4	90891.16	93150	8.213	8.213	1.403	H1-1b
3	M78	PIPE_3.0	0.11	10.75	7	0.108	10.75		8	90891.16	93150	8.213	8.213	1.455	H1-1b
4	M91	PIPE_3.0	0.112	42.187	12	0.105	43.75		11	28615.556	78246	6.899	6.899	2.712	H1-1b
5	M97	PIPE_2.0	0.066	21.5	11	0.1	21.5		4	43444.401	45900	2.674	2.674	1.136	H1-1b
6	M73	PIPE_3.0	0.115	10.75	11	0.099	10.75		12	90891.16	93150	8.213	8.213	1.362	H1-1b
7	M83	PIPE_3.0	0.116	43.75	5	0.097	43.75		4	28615.556	78246	6.899	6.899	2.872	H1-1b
8	M75	PIPE_3.0	0.21	24.895	14	0.093	3.631		16	81659.45	93150	8.213	8.213	1.347	H1-1b
9	M95	PIPE_2.0	0.08	21.5	7	0.092	0		12	43444.401	45900	2.674	2.674	1.136	H1-1b
10	M70	PIPE_3.0	0.209	24.895	19	0.091	24.895		20	81659.45	93150	8.213	8.213	1.347	H1-1b
11	M80	PIPE_3.0	0.21	24.895	23	0.09	24.895		24	81659.45	93150	8.213	8.213	1.347	H1-1b
12	M96	PIPE_2.0	0.081	21.5	3	0.089	21.5		8	43444.401	45900	2.674	2.674	1.136	H1-1b
13	M94	PIPE_2.5	0.098	50	6	0.068	14.062		7	14558.792	60858	4.316	4.316	2.852	H1-1b
14	M84	PIPE_2.5	0.109	51.563	5	0.062	14.063		3	14558.792	60858	4.316	4.316	2.917	H1-1b
15	M92	PIPE_2.5	0.108	50	9	0.062	14.062		11	14558.792	60858	4.316	4.316	2.951	H1-1b
16	M74	HSS5X3X6	0.275	63.25	36	0.059	24.378	y	28	183180.375	197892	17.595	25.323	1	H1-1b
17	M69	HSS5X3X6	0.276	63.25	39	0.056	63.25	y	42	183180.375	197892	17.595	25.323	1	H1-1b
18	M79	HSS5X3X6	0.304	63.25	11	0.054	63.25	z	4	183180.375	197892	17.595	25.323	1	H1-1b
19	M90	PIPE_2.5	0.158	65	9	0.042	65		4	22748.112	60858	4.316	4.316	1.974	H1-1b
20	M51	PIPE_2.5	0.162	65	1	0.04	65		8	22748.112	60858	4.316	4.316	1.79	H1-1b
21	M48	PIPE_2.5	0.125	65	5	0.037	65		10	22748.112	60858	4.316	4.316	1.831	H1-1b
22	M39	PIPE_2.5	0.161	65	4	0.037	65		12	22748.112	60858	4.316	4.316	2.409	H1-1b
23	M60	PIPE_2.5	0.133	65	31	0.036	65		6	22748.112	60858	4.316	4.316	2.05	H1-1b
24	M42	PIPE_2.5	0.261	66.25	10	0.035	65		9	22748.112	60858	4.316	4.316	1.719	H1-1b
25	M33	PIPE_2.5	0.434	66.25	4	0.034	65		4	22748.112	60858	4.316	4.316	1.537	H1-1b
26	M45	PIPE_2.5	0.434	66.25	10	0.033	65		3	22748.112	60858	4.316	4.316	2.084	H1-1b
27	M36	PIPE_2.5	0.125	65	10	0.032	65		2	22748.112	60858	4.316	4.316	2.4	H1-1b
28	M54	PIPE_2.5	0.282	65	1	0.032	65		8	22748.112	60858	4.316	4.316	1.593	H1-1b
29	M57	PIPE_2.5	0.434	66.25	7	0.031	65		7	22748.112	60858	4.316	4.316	1.987	H1-1b
30	M30	PIPE_2.5	0.275	65	10	0.029	65		4	22748.112	60858	4.316	4.316	1.459	H1-1b
31	M76	L1.5x1.5x4	0.103	27.853	4	0.017	0	z	28	13797.566	22275	0.36	0.834	1.122	H2-1
32	M81	L1.5x1.5x4	0.074	27.853	1	0.016	27.853	z	22	13797.566	22275	0.36	0.834	1.159	H2-1
33	M71	L1.5x1.5x4	0.084	27.853	8	0.015	27.853	z	18	13797.566	22275	0.36	0.834	1.126	H2-1
34	M72	L1.5x1.5x4	0.099	27.853	9	0.015	0	y	31	13797.566	22275	0.36	0.834	1.273	H2-1
35	M82	L1.5x1.5x4	0.082	27.853	1	0.013	27.853	y	16	13797.566	22275	0.36	0.834	1.159	H2-1
36	M77	L1.5x1.5x4	0.079	27.853	5	0.013	27.853	y	20	13797.566	22275	0.36	0.834	1.244	H2-1

CALCULATION SHEET

MOUNT TO TOWER CONNECTION CHECK:

FORCES FROM ANALYSIS RESULTS:

$V_x := 10.162\,lbf$ Horizontal shear per connection

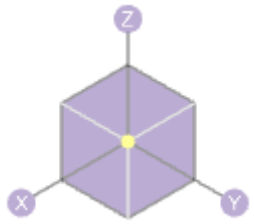
$V_y := 2927.178\,lbf$ Tension per connection

$V_z := 1371.945\,lbf$ Vertical shear per connection

$M_x := 4.218\,kip \cdot ft$ Moment about X-axis

$M_y := 0.016\,kip \cdot ft$ Moment about Y-axis

$M_z := 0.021\,kip \cdot ft$ Moment about Z-axis



DIMENSIONS OF PLATE:

$H := 8in$ Height of Plate

$W := 8in$ Width of Plate

$T := 0.625in$ Thickness of Plate

$e := 1in$ Edge Distance of bolt

CONNECTION CHECK OF MOUNT TO TOWER:

Number of bolts per connection $n_{bolts} := 4$

Vertical shear per connection $V_z = 1.372 \times 10^3\,lbf$

Horizontal shear per connection $V_x = 10.2\,lbf$

Total resultant shear per bolt $V_{max} := \frac{\sqrt{V_z^2 + V_x^2}}{n_{bolts}} = 0.34 \cdot kip$

Maximum tension per connection $T_{max} := \frac{V_y}{n_{bolts}} + \frac{M_z}{2(W - 2e)} + \frac{M_x}{2(W - 2e)} = 4970.8 \cdot lbf$

CALCULATION SHEET

CHECK BOLTS: MOUNT CONNECTION - Four bolts per support

Diameter of bolt : $d_b := \frac{3}{4}in$

Nominal unthreaded body area: $A_b := \frac{\pi}{4} \cdot d_b^{\,2} = 0.442 \cdot in^2$

Yiled Stress: $F_y := 92ksi$

Tensile Stress: $F_u := 120ksi$

Nominal tensile stress for A325 threaded rod: $F_{nt} := 0.75 \cdot F_u = 90 \cdot ksi$

Nominal shear stress for A325 threaded rod: $F_{nv} := 0.45 \cdot F_u = 54 \cdot ksi$

Resistance factor for mechanical connections : $\phi := 0.75$

Allowable tensile capacity per bolt : $T_n := (\phi \cdot F_{nt} \cdot A_b) = 29.8 \cdot kip$

Allowable shear capacity per bolt : $V_n := (\phi \cdot F_{nv} \cdot A_b) = 17.9 \cdot kip$

Actual tensile force per bolt : $T_{actual} := T_{max} = 4.971 \cdot kip$

Actual shear force per bolt : $V_{actual} := V_{max} = 0.343 \cdot kip$

Usage : $\frac{T_{actual}}{T_n} = 16.7 \cdot \%$ <100%...OK!

$\frac{V_{actual}}{V_n} = 1.9 \cdot \%$ <100%...OK!

CALCULATION SHEET

efi global

COMBINED TENSION AND SHEAR CHECK FOR BOLTS:

(Can be ignored when required stress, in either shear or tension, is less than or equal to 30% of the correspoding available stress)

$$f_v := \frac{V_{actual}}{A_b} = 0.776 \cdot ksi$$ Required Shear Stress

$$f_t := \frac{T_{actual}}{A_b} = 11.252 \cdot ksi$$ Required Tensile Stress

$$F_{nt1} := \min\left[1.3F_{nt} - \frac{(F_{nt}) \cdot f_v}{\phi \cdot F_{nv}}, F_{nt}\right] = 90 \cdot ksi$$ Equation J3.3a Section 16.1-125

$$T_n := F_{nt1} \cdot A_b \cdot \phi = 29.821 \cdot kip$$

$$F_{nv1} := \min\left[1.3F_{nv} - \frac{(F_{nv}) \cdot f_t}{\phi \cdot F_{nv}}, F_{nt}\right] = 55.198 \cdot ksi$$ Equation J3.3a Section 16.1-125

$$V_n := F_{nv1} \cdot A_b \cdot \phi = 18.289 \cdot kip$$

$$\frac{T_{actual} + V_{actual}}{T_n} = 17.8 \cdot \%$$ <100%...OK!

$$\frac{T_{actual} + V_{actual}}{V_n} = 29.1 \cdot \%$$ <100%...OK!

CALCULATION SHEET

WELD CONNECTION:

Weld Properties

$b := 0.3125in$ Width of Plate

$d := 7in$ Depth of Plate

$S := 2 \cdot b \cdot d + \frac{d^2}{3} = 20.708 \cdot in^2$ Section Modulus of Weld Config

$l_{weld} := 4(b + d) = 29.25 \cdot in$

Weld Sizing

$P_{wx} := \frac{V_x}{l_{weld}} = 3.474 \times 10^{-4} \cdot \frac{kip}{in}$ $P_{wy} := \frac{V_y}{l_{weld}} = 0.1 \cdot \frac{kip}{in}$

$P_{wz} := \frac{V_z}{l_{weld}} = 0.047 \cdot \frac{kip}{in}$

$P_{wm} := \frac{M_y}{S} + \frac{\frac{M_x}{0.5d}}{0.75 \cdot l_{weld}} + \frac{\frac{M_z}{0.5b}}{0.75 \cdot l_{weld}} = 0.742 \cdot \frac{kip}{in}$

$P_{wR} := \sqrt{P_{wx}^2 + P_{wy}^2 + P_{wz}^2 + P_{wm}^2} = 0.75 \cdot \frac{kip}{in}$ Resultant weld force per inch

Weld Sizing

Length of weld $l_{weld} = 29.25 \cdot in$

Electrode Strength $F_{EXX} := 70 \cdot ksi$

Vertical fillet weld size - jump plate to leg (in sixteenths of an inch): $D_{vplate} := 3$ (Assumed)

$Weldsizemax := T - \frac{1 \cdot in}{16} = 0.563 \cdot in >$ $Weldsize := \frac{D_{vplate} \cdot in}{16} = 0.187 \cdot in$ Acceptable

Weld Capacity

Design Strength

$\phi_w := 0.75$

$\phi R_w := \phi_w \cdot (0.707 \cdot Weldsize) \cdot (0.6 \cdot F_{EXX}) = 4.176 \cdot \frac{kip}{in}$

Interaction Capacity : $\frac{P_{wR}}{\phi R_w} = 18 \cdot \%$ <100%...OK!

CALCULATION SHEET

PLATE CHECK:

Dimensions of Plate

$H := 8in$

$W := 8in$

$T := 0.625in$

$E_s := 29000ksi$

$F_y := 36ksi$

$\phi_n := 0.9$

$A_g := H \cdot T = 5 \cdot in^2$

$A_n := \left[H - 2 \cdot \left(d_b + \frac{1 \cdot in}{16}\right)\right] \cdot T = 3.984 \cdot in^2$ Net Section

$Z_p := H \cdot \frac{T^2}{4} = 0.781 \cdot in^3$

Moment Capacity

$\phi M_n := \phi_n \cdot F_y \cdot Z_p = 25.313 \cdot kip \cdot in$

Shear Capacity

$\phi := 1$ Yielding

$\phi R_{g1} := \phi \cdot 0.6 F_y \cdot A_g = 108 \cdot kip$

$\phi := 0.75$ Rupture

$\phi R_{n1} := \phi \cdot 0.6 F_u \cdot A_n = 215.156 \cdot kip$

$\phi R_n := \min\left(\phi R_{g1}, \phi R_{n1}\right) = 108 \cdot kip$

Moment Capacity : $\frac{\sqrt{M_y^2 + M_z^2}}{\phi M_n} = 1.3 \cdot \%$ <100%...OK!

Shear Capacity : $\frac{V_y}{\phi R_n} = 2.7 \cdot \%$ <100%...OK!

CALCULATION SHEET

PRYING ACTION:

$T := \frac{V_y}{4} = 731.794\,lbf$ Tensile Force On Bolt

$b_1 := \frac{H}{2} - e - \frac{b}{2} = 2.844 \cdot in$ Effective Moment Arm

$p := H - 2e = 6 \cdot in$ Tributary Length

$F_u := 58ksi$

$t_{min} := \sqrt{\frac{4.44T \cdot b_1}{p \cdot F_u}} = 0.163 \cdot in$ < T=1in

No prying action. No further calculation required

EBI Consulting

environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CTNL801A

Amtrak_OldLyme2
61-1 Buttonball Road
Old Lyme, Connecticut 06371

July 8, 2021

EBI Project Number: 6221003457

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**7.77%**

July 8, 2021

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

Emissions Analysis for Site: CTNL801A - Amtrak_OldLyme2

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **61-1 Buttonball Road** in **Old Lyme, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 61-1 Buttonball Road in Old Lyme, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 2 UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

5) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated

value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

7) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antennas used in this modeling are the Ericsson AIR 21 for the 1900 MHz / 1900 MHz channel(s), the Ericsson AIR 21 for the 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz channel(s) in Sector A, the Ericsson AIR 21 for the 1900 MHz / 1900 MHz channel(s), the Ericsson AIR 21 for the 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz channel(s) in Sector B, the Ericsson AIR 21 for the 1900 MHz / 1900 MHz channel(s), the Ericsson AIR 21 for the 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antenna mounting height centerline of the proposed antennas is 97 feet above ground level (AGL).

10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

11) Emissions from additional carriers were not included because emissions data for the site location are not available.

12) All calculations were done with respect to uncontrolled / general population threshold limits.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR 21	Make / Model:	Ericsson AIR 21	Make / Model:	Ericsson AIR 21
Frequency Bands:	1900 MHz / 1900 MHz	Frequency Bands:	1900 MHz / 1900 MHz	Frequency Bands:	1900 MHz / 1900 MHz
Gain:	15.35 dBd / 15.35 dBd	Gain:	15.35 dBd / 15.35 dBd	Gain:	15.35 dBd / 15.35 dBd
Height (AGL):	97 feet	Height (AGL):	97 feet	Height (AGL):	97 feet
Channel Count:	6	Channel Count:	6	Channel Count:	6
Total TX Power (W):	180 Watts	Total TX Power (W):	180 Watts	Total TX Power (W):	180 Watts
ERP (W):	6,169.82	ERP (W):	6,169.82	ERP (W):	6,169.82
Antenna A1 MPE %:	**2.68%**	Antenna B1 MPE %:	**2.68%**	Antenna C1 MPE %:	**2.68%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Ericsson AIR 21	Make / Model:	Ericsson AIR 21	Make / Model:	Ericsson AIR 21
Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz
Gain:	15.35 dBd	Gain:	15.35 dBd	Gain:	15.35 dBd
Height (AGL):	97 feet	Height (AGL):	97 feet	Height (AGL):	97 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts
ERP (W):	4,113.21	ERP (W):	4,113.21	ERP (W):	4,113.21
Antenna A2 MPE %:	**1.79%**	Antenna B2 MPE %:	**1.79%**	Antenna C2 MPE %:	**1.79%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 700 MHz	Frequency Bands:	600 MHz / 700 MHz	Frequency Bands:	600 MHz / 700 MHz
Gain:	12.95 dBd / 13.35 dBd	Gain:	12.95 dBd / 13.35 dBd	Gain:	12.95 dBd / 13.35 dBd
Height (AGL):	85 feet	Height (AGL):	85 feet	Height (AGL):	85 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts
ERP (W):	2,481.08	ERP (W):	2,481.08	ERP (W):	2,481.08
Antenna A3 MPE %:	**3.30%**	Antenna B3 MPE %:	**3.30%**	Antenna C3 MPE %:	**3.30%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	7.77%
no additional carriers	N/A
Site Total MPE % :	7.77%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	7.77%
T-Mobile Sector B Total:	7.77%
T-Mobile Sector C Total:	7.77%
Site Total MPE % :	7.77%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 1900 MHz GSM	4	1028.30	97.0	17.86	1900 MHz GSM	1000	1.79%
T-Mobile 1900 MHz UMTS	2	1028.30	97.0	8.93	1900 MHz UMTS	1000	0.89%
T-Mobile 2100 MHz LTE	2	2056.61	97.0	17.86	2100 MHz LTE	1000	1.79%
T-Mobile 600 MHz LTE	2	591.73	85.0	6.82	600 MHz LTE	400	1.70%
T-Mobile 700 MHz LTE	2	648.82	85.0	7.48	700 MHz LTE	467	1.60%
						Total:	**7.77%**

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

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	7.77%
Sector B:	7.77%
Sector C:	7.77%
T-Mobile Maximum MPE % (Sector A):	7.77%
Site Total:	7.77%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **7.77%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

RAN Template:	A&L Template:
67D02C Outdoor	67D02C_2xAIR+1OP

CTNL801A_L600_7_draft

Print Name: Standard (3)

Section 1 - Site Information

Site ID: CTNL801A
Status: Draft
Version: 7
Project Type: L600
Approved: Not Approved
Approved By: Not Approved
Last Modified: 6/10/2021 4:28:46 PM
Last Modified By: Michael.Low1@T-Mobile.com

Site Name: Amtrak_OldLyme2
Site Class: Monopole
Site Type: Structure Non Building
Plan Year:
Market: CONNECTICUT CT
Vendor: Ericsson
Landlord: T-Mobile USA Inc

Latitude: 41.29647200
Longitude: -72.30122200
Address: 61-1 Buttonball Road
City, State: Old Lyme, CT
Region: NORTHEAST

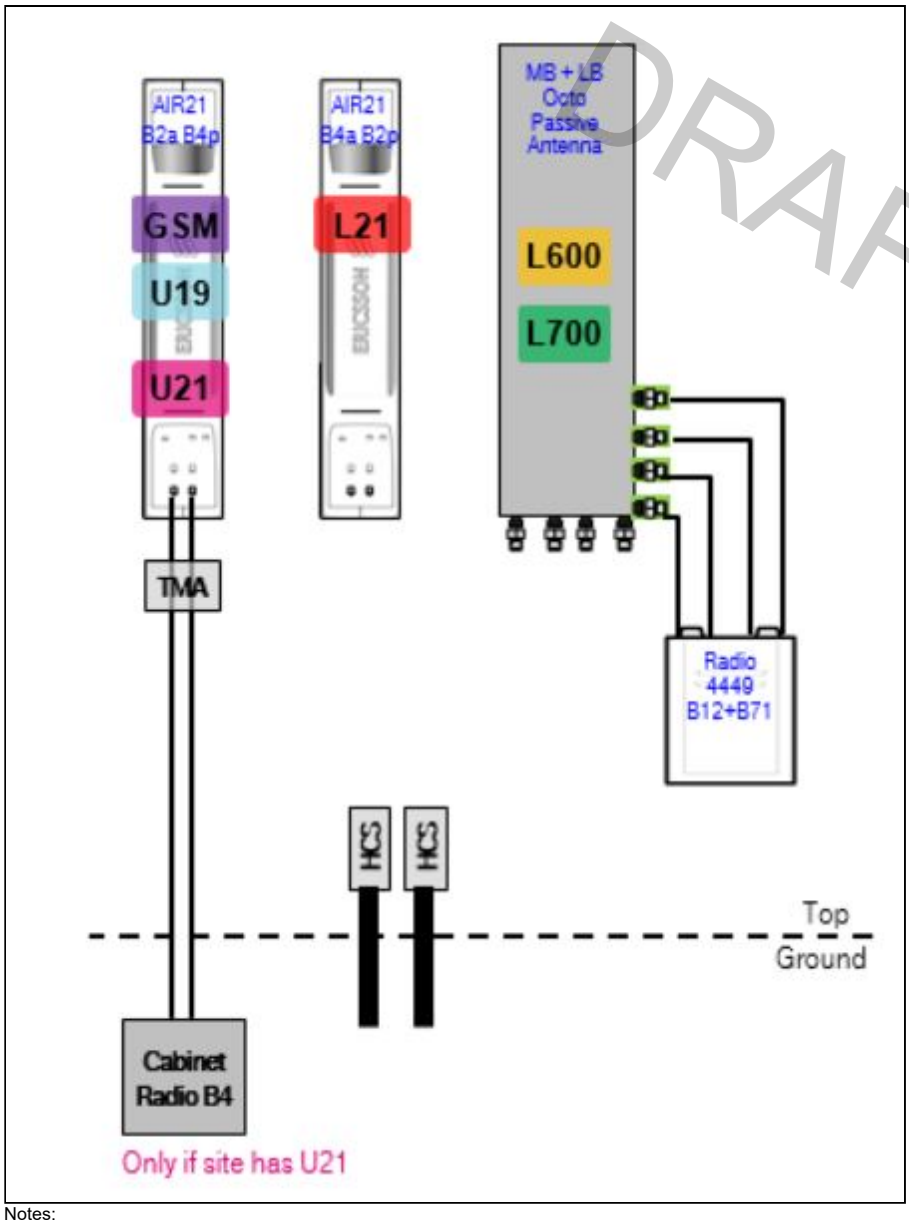
RAN Template: 67D02C Outdoor			**AL Template:** 67D02C_2xAIR+1OP	
Sector Count: 3	**Antenna Count:** 9	**Coax Line Count:** 0	**TMA Count:** 0	**RRU Count:** 3

Section 2 - Existing Template Images

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

Section 3 - Proposed Template Images

67D02C.JPG



Notes:

Section 4 - Siteplan Images

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

RAN Template:	A&L Template:
67D02C Outdoor	67D02C_2xAIR+1OP

CTNL801A_L600_7_draft

Print Name: Standard (3)

Section 5 - RAN Equipment

Existing RAN Equipment

Template: 702Cc Outdoor

Enclosure	1	2
Enclosure Type	RBS 6131	Tower Top Mount (Ericsson)
Baseband	DUW30 [U1900] DUG20 [G1900] BB 6630 [L2100] [L700]	
Hybrid Cable System		Ericsson 9x18 HCS *Select Length* **(x 2)**

Proposed RAN Equipment

Template: 67D02C Outdoor

Enclosure	1	2
Enclosure Type	RBS 6131	Tower Top Mount (Ericsson)
Baseband	DUW30 [U1900] DUG20 [G1900] BB 6630 [L2100] BB 6648 [L700] [L600] [N600]	
Hybrid Cable System		Ericsson 9x18 HCS *Select Length* **(x 2)**
Functionality Groups		Ericsson Hybrid Trunk 6/24 4AWG *Select Length*

RAN Scope of Work:

Add (1) BB6648 for 600/700.
Add (1) 6X24 HCS.

Add BBU.

Existing: (2) 9X18 HCS; 12 Coax (unused). Reuse 9x18 hybrid for Antennae at 97 feet Rad Center.

RAN Template:	A&L Template:
67D02C Outdoor	67D02C_2xAIR+1OP

CTNL801A_L600_7_draft

Print Name: Standard (3)

Section 6 - A&L Equipment

Existing Template: 702Cc
Proposed Template: 67D02C_2xAIR+1OP

Sector 1 (Existing) view from behind

Coverage Type	A - Outdoor Macro			
Antenna	**1**		**2**	
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Ericsson - AIR21 B4A/B12P 8ft (Quad)	
Azimuth	30		30	
M. Tilt	0		0	
Height	97		95	
Ports	**P1**	**P2**	**P3**	**P4**
Active Tech.	U1900, G1900		L2100	L700
Dark Tech.				
Restricted Tech.				
Decomm. Tech.				
E. Tilt	2		2	2
Cables				
TMAs				
Diplexers / Combiners				
Radio				RRUS11 B12 (At Antenna)
Sector Equipment				

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67D02C Outdoor	67D02C_2xAIR+1OP

CTNL801A_L600_7_draft

Print Name: Standard (3)

Sector 1 (Proposed) view from behind

Coverage Type	A - Outdoor Macro							
Antenna	1		2		3			
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Ericsson - AIR21 B4A/B12P 8ft (Quad)		RFS - APXVAALL24_43-U-NA20 (Octo)			
Azimuth	30		30		30			
M. Tilt	0		0		0			
Height	97		97		97			
Ports	P1	P2	P3	P4	P5	P6	P7	P8
Active Tech.	U1900 G1900		L2100		L700 L600 N600	L700 L600 N600		
Dark Tech.								
Restricted Tech.								
Decomm. Tech.								
E. Tilt	2		2		2	2		
Cables	Fiber Jumper **(x2)**		Fiber Jumper **(x2)**		Coax Jumper **(x2)** Fiber Jumper	Coax Jumper **(x2)**		
TMAs								
Diplexers / Combiners								
Radio					Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)		
Sector Equipment								

Unconnected Equipment:

Scope of Work:

Replace AIR21 B4A/B12P in Position 2 with (1) AIR21 B2P/B4A at 97 feet (new Position 2).
Remove RRUS11 B12.
Add (1) LB/MB Octo at 85 feet (new Position 3)
Add (1) Radio 4449 B71+B12 to Position 3 for L600 and L700.

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

RAN Template:	A&L Template:
67D02C Outdoor	67D02C_2xAIR+1OP

CTNL801A_L600_7_draft

Print Name: Standard (3)

Sector 2 (Existing) view from behind				
Coverage Type	A - Outdoor Macro			
Antenna	**1**		**2**	
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Ericsson - AIR21 B4A/B12P 8ft (Quad)	
Azimuth	150		150	
M. Tilt	0		0	
Height	97		95	
Ports	**P1**	**P2**	**P3**	**P4**
Active Tech.	U1900 G1900		L2100	L700
Dark Tech.				
Restricted Tech.				
Decomm. Tech.				
E. Tilt	2		2	2
Cables				
TMAs				
Diplexers / Combiners				
Radio				RRUS11 B12 (At Antenna)
Sector Equipment				

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67D02C Outdoor	67D02C_2xAIR+1OP

CTNL801A_L600_7_draft

Print Name: Standard (3)

Sector 2 (Proposed) view from behind

Coverage Type	A - Outdoor Macro							
Antenna	1		2		3			
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Ericsson - AIR21 B4A/B12P 8ft (Quad)		RFS - APXVAALL24_43-U-NA20 (Octo)			
Azimuth	150		150		150			
M. Tilt	0		0		0			
Height	97		97		97			
Ports	P1	P2	P3	P4	P5	P6	P7	P8
Active Tech.	U1900 G1900		L2100		L700 L600 N600	L700 L600 N600		
Dark Tech.								
Restricted Tech.								
Decomm. Tech.								
E. Tilt	2		2		2	2		
Cables	Fiber Jumper **(x2)**		Fiber Jumper **(x2)**		Coax Jumper **(x2)** Fiber Jumper	Coax Jumper **(x2)**		
TMAs								
Diplexers / Combiners								
Radio					Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)		
Sector Equipment								

Unconnected Equipment:

Scope of Work:

Replace AIR21 B4A/B12P in Position 2 with (1) AIR21 B2P/B4A at 97 feet (new Position 2).
Remove RRUS11 B12.
Add (1) LB/MB Octo at 85 feet (new Position 3)
Add (1) Radio 4449 B71+B12 to Position 3 for L600 and L700.

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

RAN Template:	A&L Template:
67D02C Outdoor	67D02C_2xAIR+1OP

CTNL801A_L600_7_draft

Print Name: Standard (3)

Sector 3 (Existing) view from behind				
Coverage Type	A - Outdoor Macro			
Antenna	**1**		**2**	
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Ericsson - AIR21 B4A/B12P 8ft (Quad)	
Azimuth	270		270	
M. Tilt	0		0	
Height	97		95	
Ports	**P1**	**P2**	**P3**	**P4**
Active Tech.	U1900 G1900		L2100	L700
Dark Tech.				
Restricted Tech.				
Decomm. Tech.				
E. Tilt	2		2	2
Cables				
TMAs				
Diplexers / Combiners				
Radio				RRUS11 B12 (At Antenna)
Sector Equipment				

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67D02C Outdoor	67D02C_2xAIR+1OP

CTNL801A_L600_7_draft

Print Name: Standard (3)

Sector 3 (Proposed) view from behind

Coverage Type	A - Outdoor Macro							
Antenna	1		2		3			
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Ericsson - AIR21 B4A/B12P 8ft (Quad)		RFS - APXVAALL24_43-U-NA20 (Octo)			
Azimuth	270		270		270			
M. Tilt	0		0		0			
Height	97		97		97			
Ports	P1	P2	P3	P4	P5	P6	P7	P8
Active Tech.	U1900 G1900		L2100		L700 L600 N600	L700 L600 N600		
Dark Tech.								
Restricted Tech.								
Decomm. Tech.								
E. Tilt	2		2		2	2		
Cables	Fiber Jumper **(x2)**		Fiber Jumper **(x2)**		Coax Jumper **(x2)** Fiber Jumper	Coax Jumper **(x2)**		
TMAs								
Diplexers / Combiners								
Radio					Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)		
Sector Equipment								

Unconnected Equipment:

Scope of Work:

Replace AIR21 B4A/B12P in Position 2 with (1) AIR21 B2P/B4A at 97 feet (new Position 2).
Remove RRUS11 B12.
Add (1) LB/MB Octo at 85 feet (new Position 3)
Add (1) Radio 4449 B71+B12 to Position 3 for L600 and L700.

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

RAN Template:	A&L Template:
67D02C Outdoor	67D02C_2xAIR+1OP

CTNL801A_L600_7_draft

Print Name: Standard (3)

Section 7 - Power Systems Equipment

Existing Power Systems Equipment

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

Proposed Power Systems Equipment