NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Northeast Site Solutions
Victoria Masse
420 Main Street #2, Sturbridge, MA 01566
860-306-2326
victoria@northeastsitesolutions.com

July 20, 2022

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

RE: Notice of Exempt Modification
191 Middle Haddam Road, Portland, CT 06480
Latitude: 41.5622
Longitude: -72.5738
T-Mobile Site#: CT11696E_L600

Dear Ms. Bachman:
T-Mobile currently maintains six (6) antennas at the 137-foot level of the existing 139-foot monopole located at 191 Middle Haddam Road, Portland, CT 06480. The tower is owned by American Tower and property is owned by Verizon Wireless. T-Mobile now intends to remove six (6) existing antenna and replace with three (3) new 600/700/1900/2100 MHz antenna. The new antennas would be installed at the 137-foot level of the monopole. This modification includes B2, B5 hardware that is both 4G (LTE), and 5G capable.

T-Mobile Planned Modifications:
Remove:
(3) RFS APXV18-209014C Antenna
(6) Coax Line
(6) Ericsson KRY 112 20

Remove and Replace:
(3) Andrew LNX-6515DS Antenna (Remove) – (3) RFS APXVAALL24 600/700/1900/2100 MHz Antenna (Replace)

Install New:
(3) RRU 4480 B71
(3) Hybrid Line

Existing to Remain: NONE

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This facility was approved by the Connecticut Siting Council Petition No. 1124 on December 29, 2014. Please see attached.

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

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,

Victoria Masse

Victoria Masse
Mobile: 860-306-2326
Fax: 413-521-0558
Office: 420 Main Street, Unit 2, Sturbridge MA 01566
Email: victoria@northeastsitesolutions.com

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Attachments:

cc: Ryan J. Curley- First Selectman
33 East Main Street
1st Floor
Portland, CT

Dan Bourret, Development Planner
33 East Main Street
1st Floor
Portland, CT

Verizon Wireless – as property owner
PO BOX 2549
Addison, TX 75001

American Tower – as tower owner
10 Presidential Way
Woburn, MA 01801

Exhibit A

Original Facility Approval

Petition No. 1124
T-Mobile
191 Middle Haddam Road, Portland
December 29, 2014

On July 11, 2002, the Connecticut Siting Council (Council) granted a Certificate of Environmental Compatibility (Certificate) and Public Need in Docket No. 206 to Crown Atlantic Company LLC and Cellco Partnership d/b/a Verizon Wireless for a 130-foot monopole at 191 Middle Haddam Road, Portland. On May 1, 2007, the Council approved a Petition from T-Mobile Northeast LLC (T-Mobile) to extend the tower 10 feet to 140 feet above ground level (agl) to co-locate up to nine panel antennas. The site is a 14-acre residential lot and is set back approximately 1,000 feet from Middle Haddam Road.

T-Mobile currently has three panel antennas located at the 139-foot level of the tower. On December 3, 2014, T-Mobile Northeast LLC (T-Mobile) submitted a Petition (Petition) for a declaratory ruling that no Certificate is required for the proposed modifications to this existing telecommunications facility. Specifically, T-Mobile seeks to add three additional antennas at the 139-foot level of the tower to accommodate its 700 MHz wireless spectrum. 700 MHz would be used primarily to improve in-building coverage for voice and E-911 services.

However, these new antennas are taller than the existing antennas. The existing antennas are approximately 53 inches tall. Thus, the tops of the existing antennas are approximately 141-foot 2.5 inches. The proposed antennas are approximately 96.4 inches tall. Thus, the tops of the proposed antennas would reach a height of 143.2 feet. To accommodate this increase in total height with appurtenances, a petition filing was necessary.

T-Mobile would also replace one existing equipment cabinet on an existing concrete pad within the fenced compound, add one cabinet and three remote radio heads to an H-frame on that concrete pad, and add six antenna cables.

A Professional Engineer duly licensed in the State of Connecticut has certified that the tower is structurally adequate to support the proposed loading. The maximum worst-case power density would be 53.9 percent of the applicable limit.

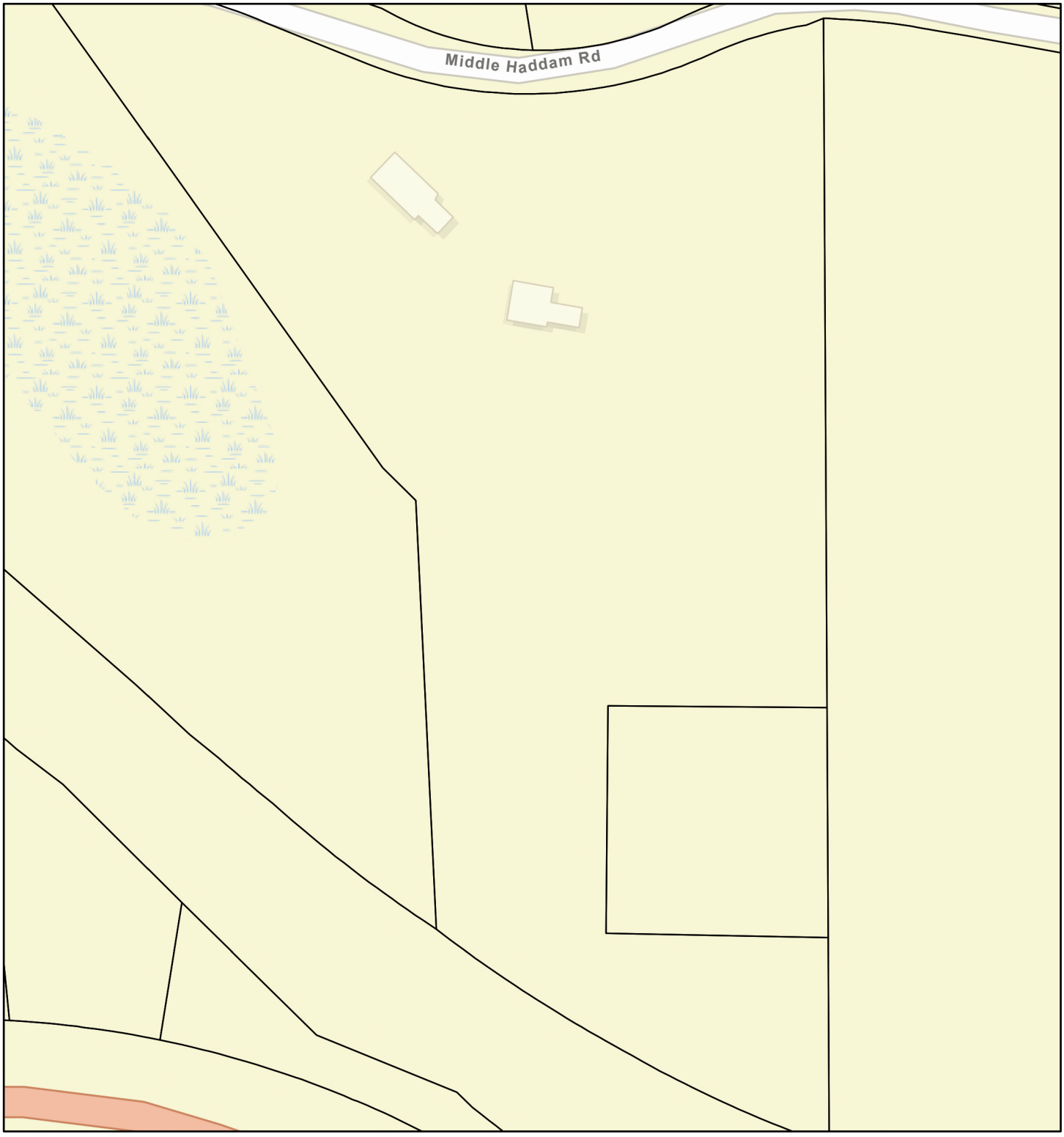
The incremental visual impact associated with this proposal is expected to negligible given that the tower height would not increase, roughly two feet of additional antenna height on three of the antennas would not be easily discerned from ground level, and any new equipment would remain within the existing compound.

On November 25, 2014, notice was provided to the property owners, the Town, abutters, and others as required. No comments have been received to date.

T-Mobile contends that this proposal would not have a significant adverse environmental effect.

Exhibit B

Property Card



September 16, 2021

Parcel Fabric - Public

1:2,257

0 0.01 0.03 0.05 mi

0 0.02 0.04 0.09 km

qPublic.net™ Town of Portland, CT

Summary

Parcel Number	016-0029-1
Alternate ID/Map Block Lot	00048801
Location Address	191 MIDDLE HADDAM RD
Legal Description	(Note: Not to be used on legal documents.)
Zoning	RR
Land Use	(431) Communication Towers
Acres	1
Property Class	300
Neighborhood	300
Tax District	0
Vol/Page	496/315

Map Not Available

Owner

Owner
VERIZON WIRELESS
PO BOX 2549
ADDISON TX 75001

Valuation

	Appraised Values	Assessed Values
Current Land	$80,000	$56,000
Current Building	$172,600	$120,820
Current Total	$252,600	$176,820

Recent Sales In Area

Sale date range:

From:
09/16/2018

To:
09/16/2021

Sales by Neighborhood

Land

Descr	P	LN	CD	Acres	Frontage	Depth	Base Size	Base Rate	Sq ft.	Incr / Decr	Land-Val
PRIMARY	A	1	1	1.0000	0	0	1.00	80,000	43,560	8000 / 16000	80,000

Total Acres:
1.0000
Total Land-Value:
80,000

Commercial

Card	1	**Year Built**	2004
Building No	1	**Effective Year**	0
Structure	TLPHNE EQUIP	**Grade**	A

Interior/Exterior

Card 1

Line	Sect	From	To	Sec	Occupancy	Occ Descr	Class	Yr Built	Eff Year	Size	Area	Perim	Height	Use Type	Phy Cond	UT	Base RCN	Feat RCN	Base Value	Pct Good	Pct Comp	Adj Value
1	1	01	01		0			2004	0	24 x 12	240	65	10	SPRT AREA	3	3	32,410	0	32,410	80	0	25,930

Accessory Information

Card 1

Descr	Full Description	Type	Quantity	Year	Size	Area	Grade	Mods	Cond	F	MD%	Value
FENCE CHAI	FENCE CHAIN	FN1	1	2004	8 x 200	1,600	C -AVERAGE		3	3	0	2,640
TOWER CELL	TOWER CELLULAR	TT4	1	2005	1 x 130	130	C -AVERAGE		4	4	0	104,000

Other Features

Card 1

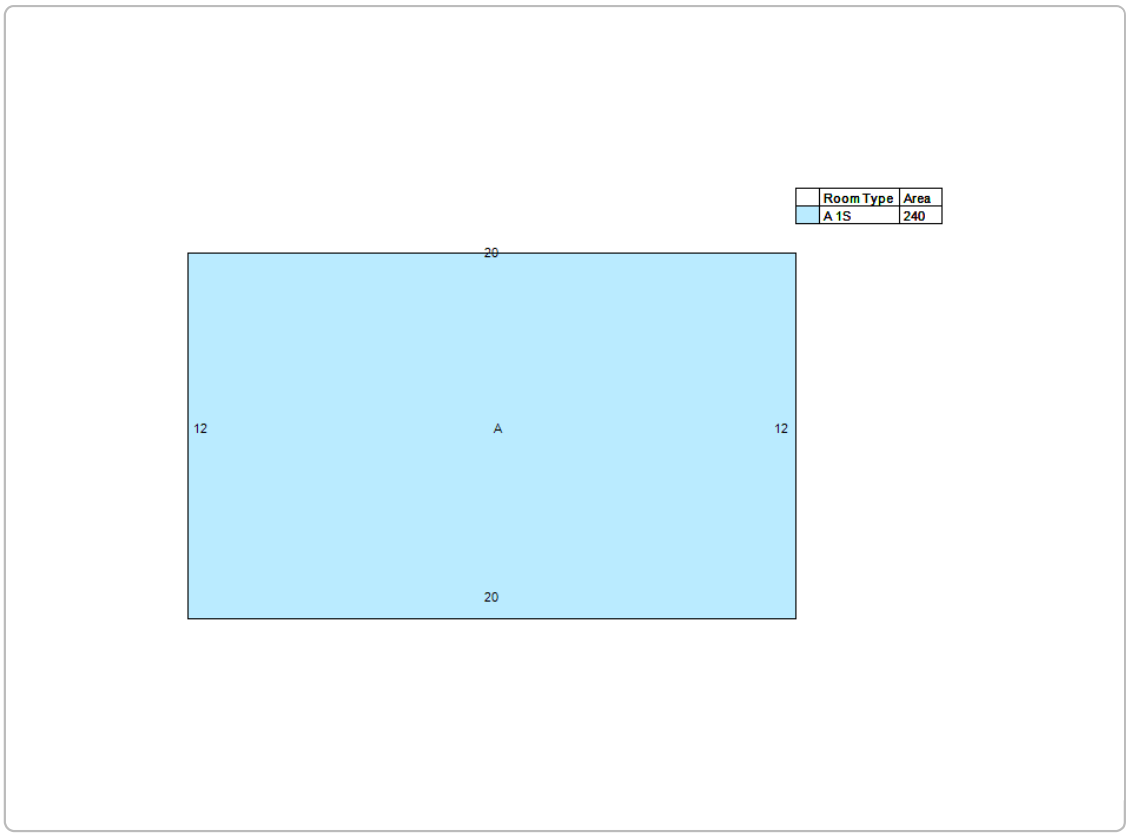
Ln	Code	Descr	Meas 1	Meas 2	Stops	IU	Value
1	VS1	1S	1	240	0	1	0

Permits

Date	Number	Amount	Purpose
5/10/2021	21-252	8,000	74 CRER
12/13/2019	19-593	25,000	OTHER
2/13/2019	19-49	13,500	OTHER
12/22/2017	17-628	60,000	OTHER
2/12/2015	15-62	11,100	BLDG
1/13/2015	15-24	29,000	BLDG
6/22/2012	12-320	25,000	BLDG
10/14/2009	9650	19,000	BLDG
3/11/2009	9447	15,000	BLDG
9/3/2004	7962	50,000	BLDG
6/29/2004	7879	180,000	BLDG

Photos

Sketches



No data available for the following modules: Sales, Residential, Other Dwelling Features, Tax History, Additions.

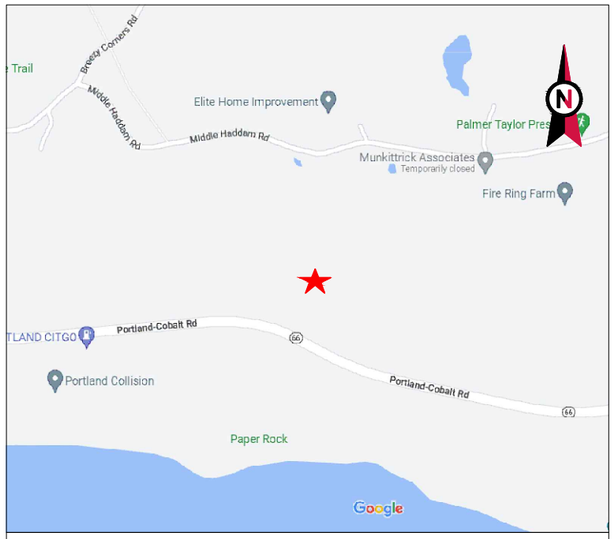
Developed by Schneider GEOSPATIAL

Last Data Upload: 9/16/2021, 1:19:20 AM

Version 2.3.146

Exhibit C

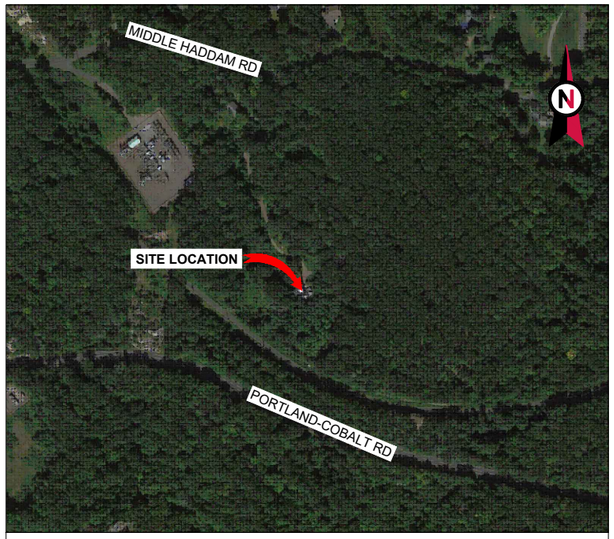
Construction Drawings



VICINITY MAP

AMERICAN TOWER®

ATC SITE NAME: MIDDLE HADDAM ROAD-CROWN CT
ATC SITE NUMBER: 411257
T-MOBILE SITE NAME: CT696/VERIZON PORTLAND_ET
T-MOBILE SITE NUMBER: CT11696E
SITE ADDRESS: 191 MIDDLE HADDAM RD
PORTLAND, CT 06480-1767



LOCATION MAP

T-MOBILE L600 AMENDMENT PLAN
67E05F 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. INTERNATIONAL BUILDING CODE (IBC)
2. NATIONAL ELECTRIC CODE (NEC)
3. LOCAL BUILDING CODE
4. CITY/COUNTY ORDINANCES

UTILITY COMPANIES

POWER COMPANY: UNKNOWN
PHONE: UNKNOWN

TELEPHONE COMPANY: UNKNOWN
PHONE: UNKNWN

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

PROJECT SUMMARY

SITE ADDRESS:

191 MIDDLE HADDAM RD
PORTLAND, CT 06480-1767
COUNTY: MIDDLESEX

GEOGRAPHIC COORDINATES:

LATITUDE: 41.56224171
LONGITUDE: -72.57379761
GROUND ELEVATION: 249' AMSL

PROJECT TEAM

TOWER OWNER:

AMERICAN TOWER
10 PRESIDENTIAL WAY
WOBURN, MA 01801

APPLICANT:

T-MOBILE

ENGINEER:

HUDSON DESIGN GROUP, LLC.
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845

PROPERTY OWNER:

PHILIP B KNOWLTON
191 MIDDLE HADDAM RD
PORTLAND, CT 06480-1767

PROJECT DESCRIPTION

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

REMOVE (6) ANTENNA(s), (6) TMA'S AND (6) 1-5/8" COAX CABLE(s)

INSTALL MOUNT MODIFICATIONS, (3) ANTENNA(s), (3) RRU(s), (3) ERICSSON HYBRID TRUNK 6/24 4AWG CABLE(s)

EXISTING (6) 1-5/8" COAX CABLE(s) TO REMAIN

GROUND WORK:
REMOVE (6) DIPLEXERS

INSTALL PSU 4813 VR4A (KIT) AND (1) BB 6648

EXISTING (2) RBS 6201 ODE CABINET(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.
6. THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. § 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION, REMOVAL, AND/OR REPLACEMENT OF TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR § 1.61000 (B)(7).

PROJECT LOCATION DIRECTIONS

START OUT GOING EAST ON EAST RIVER DR. TOWARD PITKIN ST. MERGE ONTO CT-15 S/WILBUR CROSS HIGHWAY/US-5 S 1.0 MILES. MERGE ONTO I-91 VIA EXIT NUMBER 86 TOWARD NEW HAVEN/NY CITY...MERGE ONTO CT-9 VIA EXIT NUMBER 22S-ON THE LEFT-TOWARD MIDDLETOWN/OLD SAYBROOK....TURN RIGHT ONTO CT-17/ST JOHN'S SQ. CONTINUE TO FOLLOW CT-17...TURN SLIGHT RIGHT ONTO CT -66 E/CT-17 N. MARLBOROUGH ST. CONTINUE TO FOLLOW CT-66E...TURN SLIGHT LEFT ONTO MIDDLE HADDAM RD.....END AT 191 MIDDLE HADDAM RD. PORTLAND CT.

SHEET INDEX

SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
G-001	TITLE SHEET	0	07/13/22	BB
G-002	GENERAL NOTES	0	07/13/22	BB
C-101	DETAILED SITE PLAN	0	07/13/22	BB
C-102	DETAILED EQUIPMENT PLAN	0	07/13/22	BB
C-201	TOWER ELEVATION	0	07/13/22	BB
C-401	ANTENNA INFORMATION & SCHEDULE	0	07/13/22	BB
C-501	CONSTRUCTION DETAILS	0	07/13/22	BB
E-501	GROUNDING DETAILS	0	07/13/22	BB
R-601	SUPPLEMENTAL	0		
R-602	SUPPLEMENTAL	0		
R-603	SUPPLEMENTAL	0		
R-604	SUPPLEMENTAL	0		
R-605	SUPPLEMENTAL	0		
	MOUNT MODIFICATIONS			

AMERICAN TOWER®

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

REV.	DESCRIPTION	BY	DATE
A	PRELIM	SS	06/03/22
0	FINALS	BB	07/13/22

ATC SITE NUMBER:
411257
ATC SITE NAME:
MIDDLE HADDAM ROAD-CROWN CT
T-MOBILE SITE NAME:
CT696/VERIZON PORTLAND_ET
SITE ADDRESS:
191 MIDDLE HADDAM RD
PORTLAND, CT 06480-1767

SEAL:

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

T-Mobile

DATE DRAWN:	05/30/22
ATC JOB NO:	14097396_D1
CUSTOMER ID:	CT696/VERIZON PORTLAND_ET
CUSTOMER #:	CT11696E

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.

STRUCTURAL STEEL NOTES:

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

SPECIAL CONSTRUCTION ANTENNA INSTALLATION NOTES:

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

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®

HUDSON Design Group LLC

45 BEECHWOOD DRIVE
N. ANDOVER, MA 01845

TEL: (978) 557-5553
FAX: (978) 336-5586

REV.	DESCRIPTION	BY	DATE
A	PRELIM	SS	06/03/22
0	FINALS	BB	07/13/22

ATC SITE NUMBER:
411257

ATC SITE NAME:
MIDDLE HADDAM ROAD-CROWN CT

T-MOBILE SITE NAME:
CT696/VERIZON PORTLAND_ET

SITE ADDRESS:
191 MIDDLE HADDAM RD
PORTLAND, CT 06480-1767

SEAL:

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED
PROFESSIONAL ENGINEER

T-Mobile

DATE DRAWN:	05/30/22
ATC JOB NO:	14097396_D1
CUSTOMER ID:	CT696/VERIZON PORTLAND_ET
CUSTOMER #:	CT11696E

GENERAL NOTES

SHEET NUMBER:	REVISION:
G-002	0

SITE PLAN NOTES:

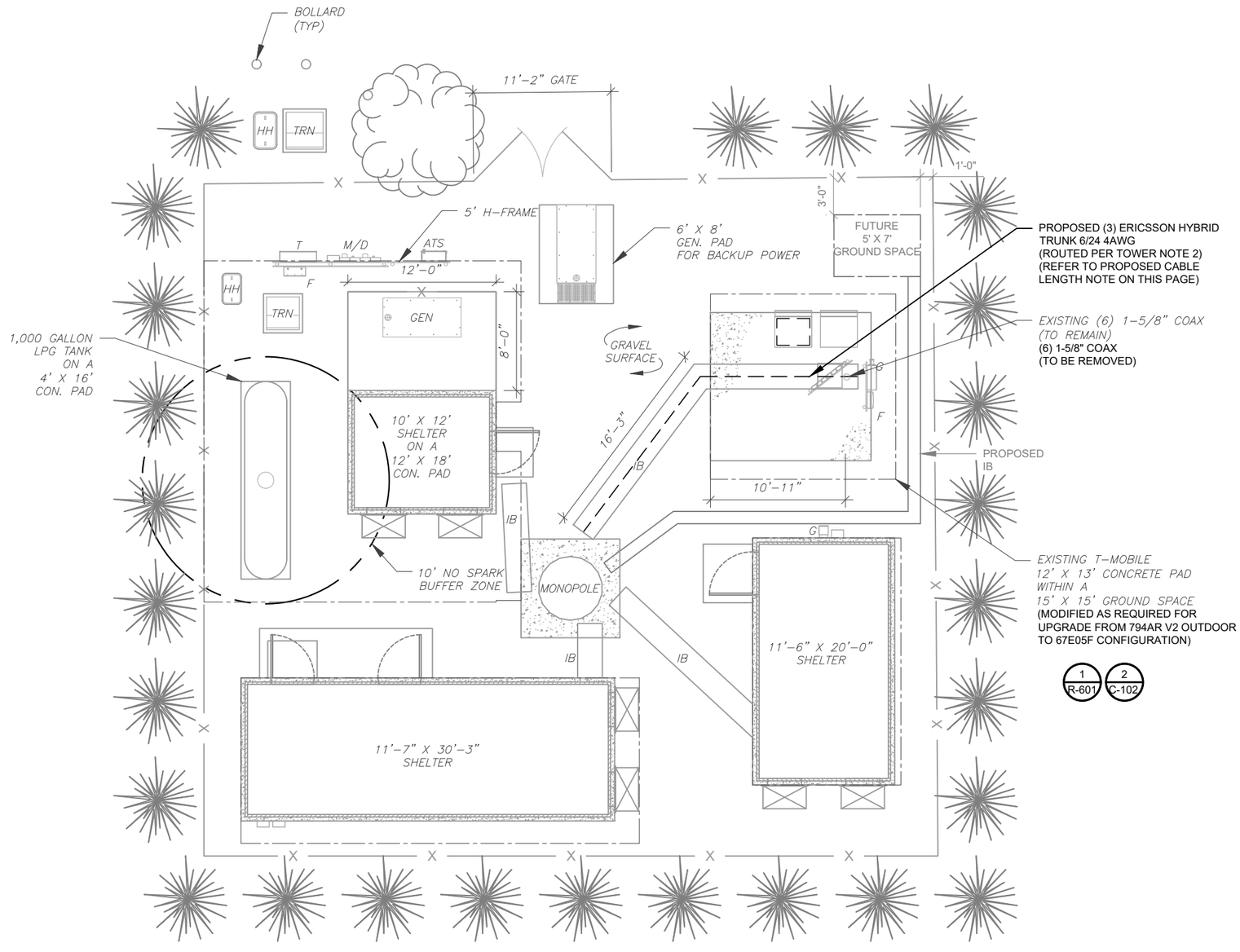
1. THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.

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
———	CHAINLINK FENCE



1 R-601 2 C-102

PROPOSED CABLE LENGTH:

1. ESTIMATED LENGTH OF PROPOSED CABLE IS **210'**. ESTIMATED LENGTH OF CABLE WAS PROVIDED BY CUSTOMER OR CALCULATED BY ADDING THE RAD CENTER AND THE DISTANCE FROM THE SHELTER ENTRY PLATE TO THE TOWER (ALONG THE ICE BRIDGE) AND A SAFETY FACTOR MEASUREMENT OF 15% (OF THE TWO PREVIOUS VALUES), CDS DEFER TO GREATEST CABLE LENGTH.
2. ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. IF ADEQUATE SPACE EXISTS, ROUTE CABLES THROUGH ENTRY PORT HOLE, UP INSIDE OF MONOPOLE, AND THROUGH EXIT PORT HOLE. IF ROUTING OUTSIDE THE MONOPOLE, ATTACH CABLES USING STAND-OFF ADAPTERS MOUNTED TO TOWER USING STAINLESS STEEL BANDING. ADEQUATELY SECURE CABLES USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER.

1 DETAILED SITE PLAN

GRAPHIC SCALE

10 0 5 10

(IN FEET)
1 UNIT = 10 FEET

N

AMERICAN TOWER®

HDG HUDSON Design Group LLC

45 BEECHWOOD DRIVE
N. ANDOVER, MA 01845

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SEAL:

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

T-Mobile

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ATC JOB NO:	14097396_D1
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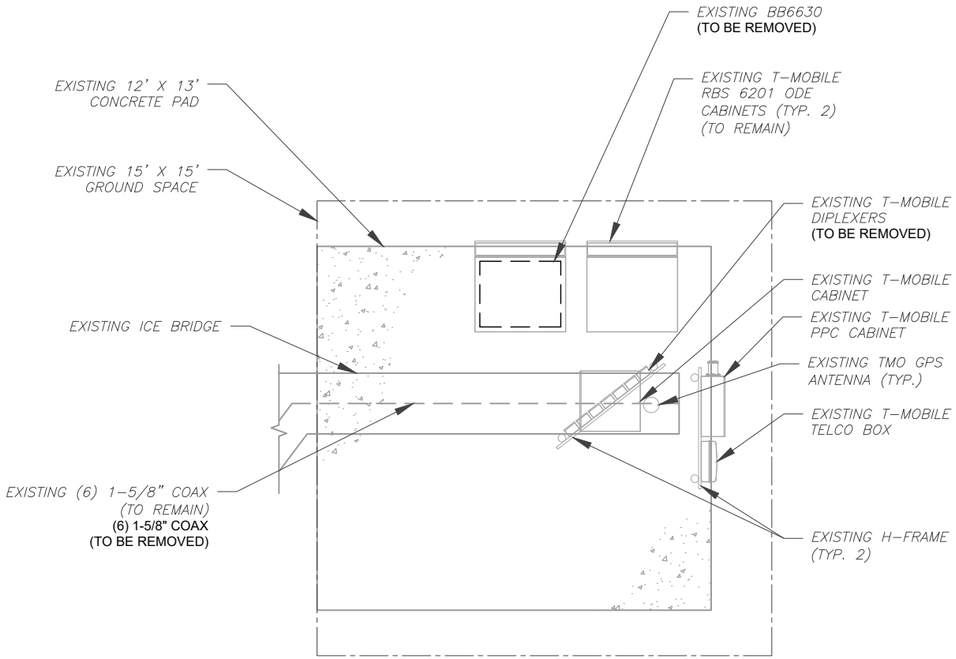
CUSTOMER #:	CT11696E

DETAILED SITE PLAN

SHEET NUMBER:	REVISION:
C-101	0

SITE PLAN NOTES:

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

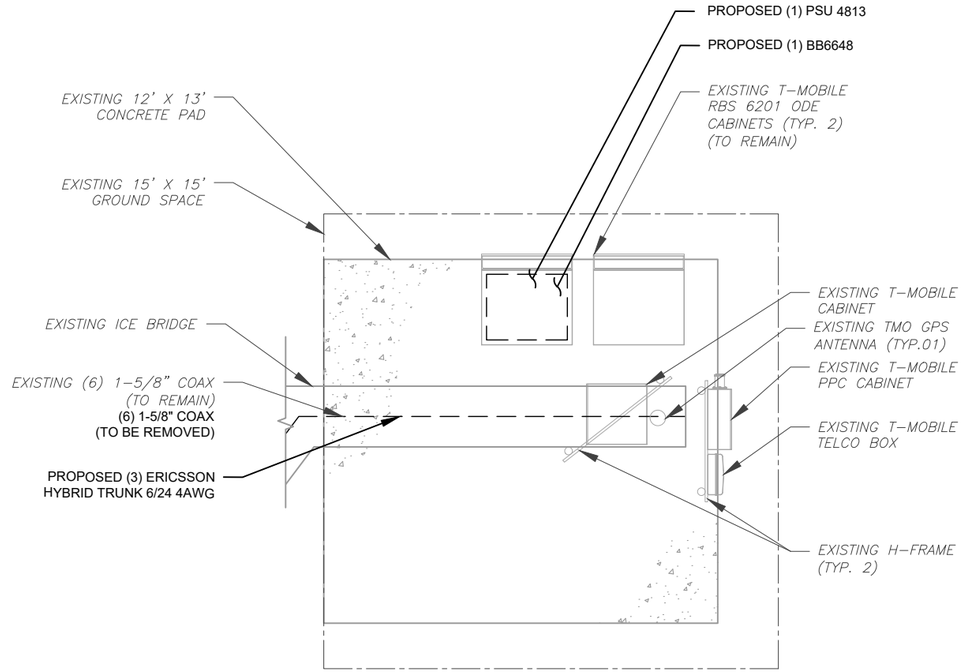


1 EXISTING GROUND EQUIPMENT LAYOUT

GRAPHIC SCALE

5 0 2.5 5

(IN FEET)
1 UNIT = 5 FEET



2 PROPOSED GROUND EQUIPMENT LAYOUT

GRAPHIC SCALE

5 0 2.5 5

(IN FEET)
1 UNIT = 5 FEET

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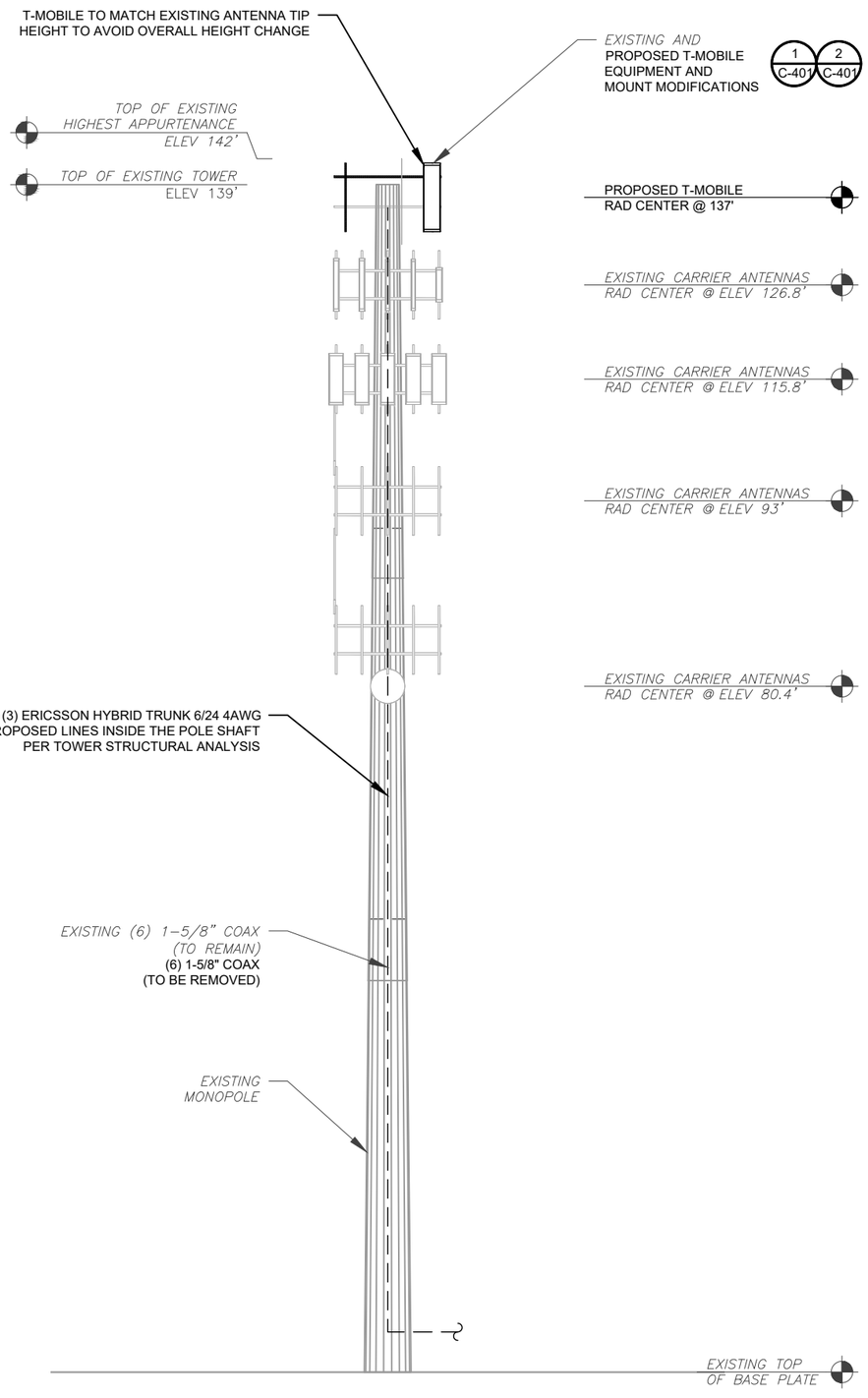
CUSTOMER ID:	CT696/VERIZON PORTLAND_ET
CUSTOMER #:	CT11696E

DETAILED EQUIPMENT PLAN

SHEET NUMBER:	REVISION:
C-102	0



1 TOWER ELEVATION
SCALE: N.T.S.

PER MOUNT ANALYSIS COMPLETED BY TELAMON, DATED 05/04/22, THE EXISTING MOUNT MUST BE MODIFIED TO ADEQUATELY SUPPORT THE PROPOSED LOADING. THE MOUNT MODIFICATION DETAILED AT THE END OF THIS PLAN SET, MUST BE INSTALLED PRIOR TO THE INSTALLATION OF THE PROPOSED ANTENNAS AND OTHER EQUIPMENT.

TOWER NOTE:

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

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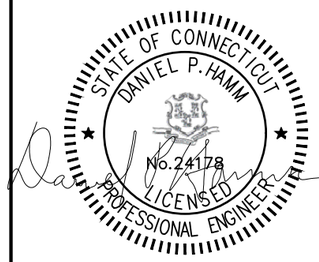
SEAL:



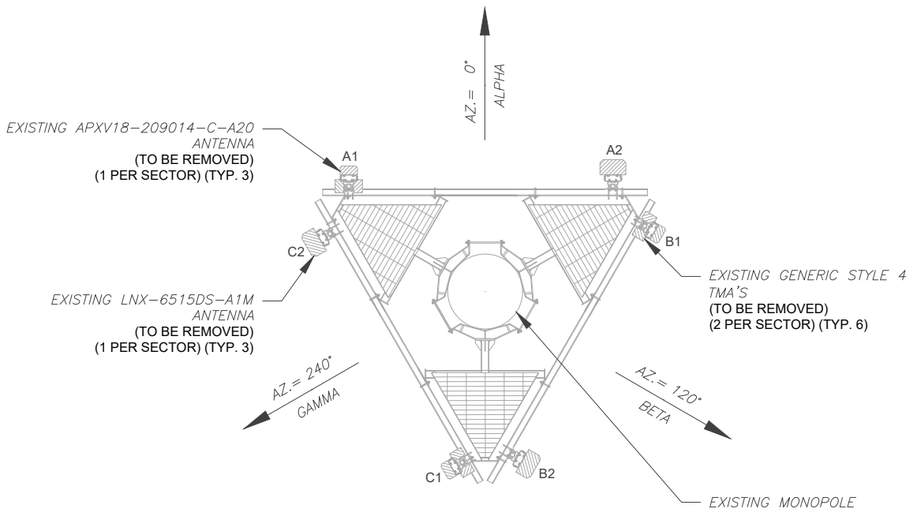
T-Mobile

DATE DRAWN:	05/30/22
ATC JOB NO:	14097396_D1
CUSTOMER ID:	CT696/VERIZON PORTLAND_ET
CUSTOMER #:	CT11696E

TOWER ELEVATION

SHEET NUMBER: C-201

REVISION: 0

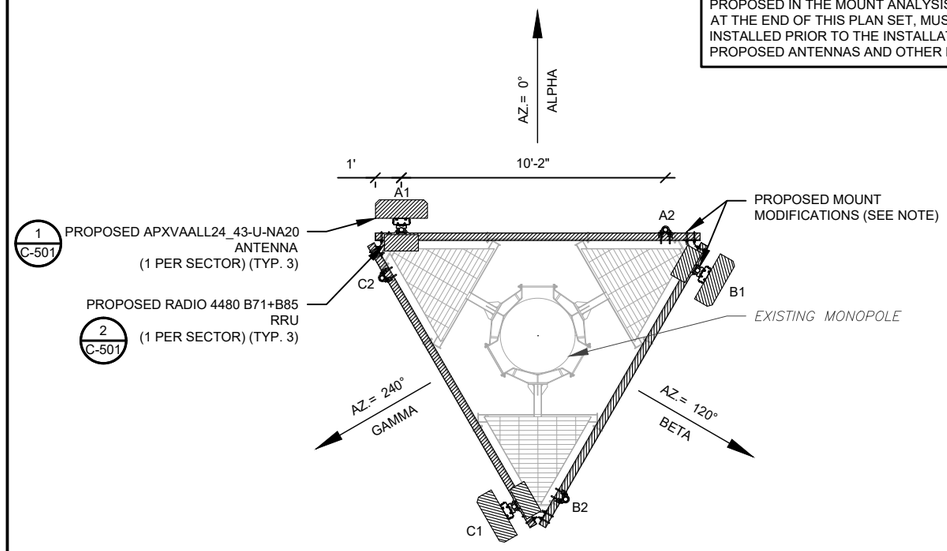


1 EXISTING ANTENNA PLAN

SCALE: N.T.S.

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

PER MOUNT ANALYSIS COMPLETED BY TELAMON, DATED 05/04/22, THE EXISTING MOUNT MUST BE MODIFIED TO ADEQUATELY SUPPORT THE PROPOSED LOADING. THE MOUNT MODIFICATION PROPOSED IN THE MOUNT ANALYSIS, INCLUDED AT THE END OF THIS PLAN SET, MUST BE INSTALLED PRIOR TO THE INSTALLATION OF THE PROPOSED ANTENNAS AND OTHER EQUIPMENT.



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	137'	0°	A1	APXV18-209014-C-A20	L2100, L1900, G1900	0/2	RMV	GENERIC STYLE 4-PCS+AWS	RMV
			A2	LNX-6515DS-A1M	L700	0/2	RMV	–	–
BETA	137'	120°	B1	APXV18-209014-C-A20	L2100, L1900, G1900	0/2	RMV	GENERIC STYLE 4-PCS+AWS	RMV
			B2	LNX-6515DS-A1M	L700	0/2	RMV	–	–
GAMMA	137'	240°	C1	APXV18-209014-C-A20	L2100, L1900, G1900	0/2	RMV	GENERIC STYLE 4-PCS+AWS	RMV
			C2	LNX-6515DS-A1M	L700	0/2	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	137'	0°	A1	APXVAALL24_43-U-NA20	L600, N600, L700, L2100, L1900, G1900	0/2	ADD	RADIO 4480 B71+B85	ADD
			A2	-	-	-	EMPTY	-	-
BETA	137'	120°	B1	APXVAALL24_43-U-NA20	L600, N600, L700, L2100, L1900, G1900	0/2	ADD	RADIO 4480 B71+B85	ADD
			B2	-	-	-	EMPTY	-	-
GAMMA	137'	240°	C1	APXVAALL24_43-U-NA20	L600, N600, L700, L2100, L1900, G1900	0/2	ADD	RADIO 4480 B71+B85	ADD
			C2	-	-	-	EMPTY	-	-

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

3 EQUIPMENT SCHEDULES

FINAL FIBER DISTRIBUTION / OVP BOX		FINAL CABLING SUMMARY	
MODEL NUMBER	STATUS	CABLE QTY, SIZE, TYPE	STATUS
–	–	(6) 1-5/8" COAX	RMN
–	–	(3) ERICSSON HYBRID TRUNK 6/24 4AWG	ADD

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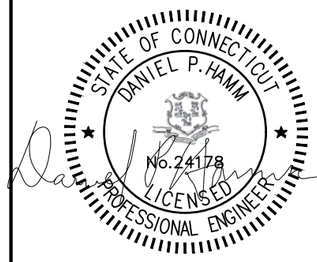

T-Mobile

DATE DRAWN:	05/30/22
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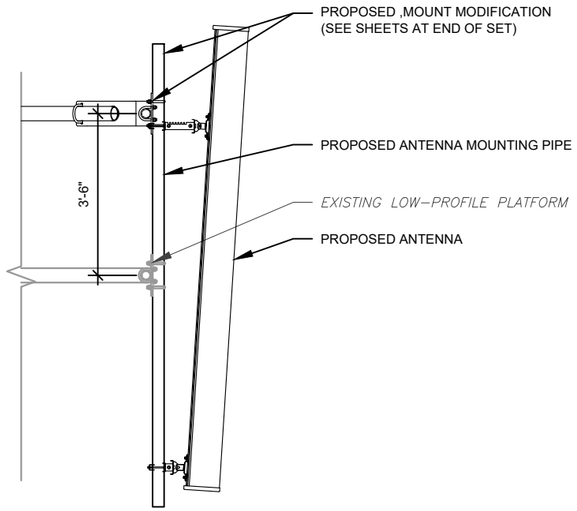
CUSTOMER ID:	CT696/VERIZON PORTLAND_ET
CUSTOMER #:	CT11696E

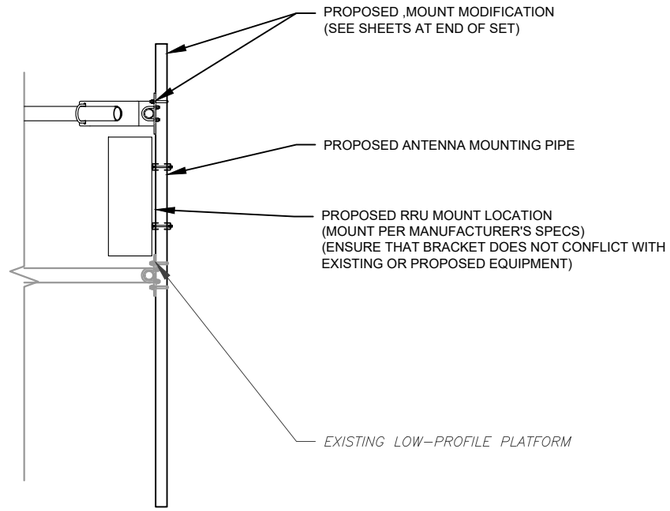
ANTENNA INFORMATION & SCHEDULE

SHEET NUMBER:	REVISION:
C-401	0



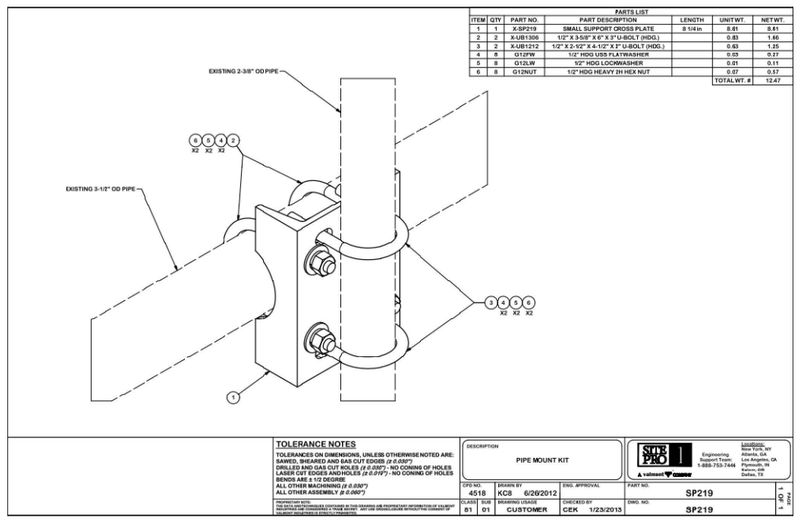
1 PROPOSED ANTENNA MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.



2 PROPOSED RRU MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.



PARTS LIST

ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	1	X-SP219	SMALL SUPPORT CROSS PLATE	8 1/4 in	8.81	8.81
2	2	X-UB1308	1/2" X 3-5/8" X 6" X 7" U-BOLT (HDG.)		0.83	1.66
3	2	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 7" U-BOLT (HDG.)		0.63	1.25
4	8	G12FW	1/2" HDG USS FLATWASHER		0.03	0.27
5	8	G12LW	1/2" HDG LOCKWASHER		0.01	0.11
6	8	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	0.57
					TOTAL WT. #	12.47

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")*
DRILLED AND GAS CUT HOLES *(± 0.030")* - NO COINING OF HOLES
LASER CUT EDGES AND HOLES *(± 0.010")* - NO COINING OF HOLES
BEND ANGLES ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

PROPRIETARY NOTE:
THIS DRAWING AND SPECIFICATIONS CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT SITE PRO 1 AND THEREFORE IS TO BE HELD IN STRICT CONFIDENCE. ANY USE BEYOND LICENSE WITHOUT THE CONSENT OF VALMONT SITE PRO 1 IS STRICTLY PROHIBITED.

DESCRIPTION: PIPE MOUNT KIT

SITE PRO 1 — A Valmont Company

Engineering Support Team: 1-888-753-7446

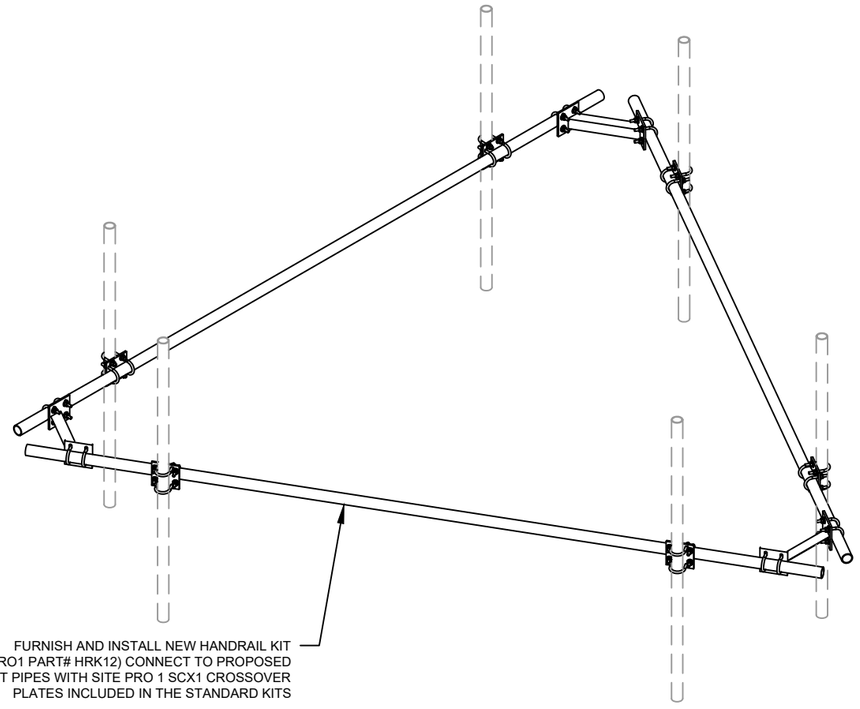
Locations: Minneapolis, MN; Atlanta, GA; Los Angeles, CA; Phoenix, AZ; Tulsa, OK; Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.	REV.
4518	KCS 6/29/2012		SP219	C

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.	SHEET
81	01	CUSTOMER	CEK 1/23/2013	SP219	1 OF 1

3 ISOMETRIC MOUNT DETAIL

SCALE: N.T.S.



FURNISH AND INSTALL NEW HANDRAIL KIT
(SITEPRO1 PART# HRK12) CONNECT TO PROPOSED
MOUNT PIPES WITH SITE PRO 1 SCX1 CROSSOVER
PLATES INCLUDED IN THE STANDARD KITS

4 ISOMETRIC MOUNT DETAIL

SCALE: N.T.S.

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A	PRELIM	SS	06/03/22
0	FINALS	BB	07/13/22

ATC SITE NUMBER:
411257

ATC SITE NAME:
MIDDLE HADDAM ROAD-CROWN CT

T-MOBILE SITE NAME:
CT696/VERIZON PORTLAND_ET

SITE ADDRESS:
191 MIDDLE HADDAM RD
PORTLAND, CT 06480-1767

SEAL:

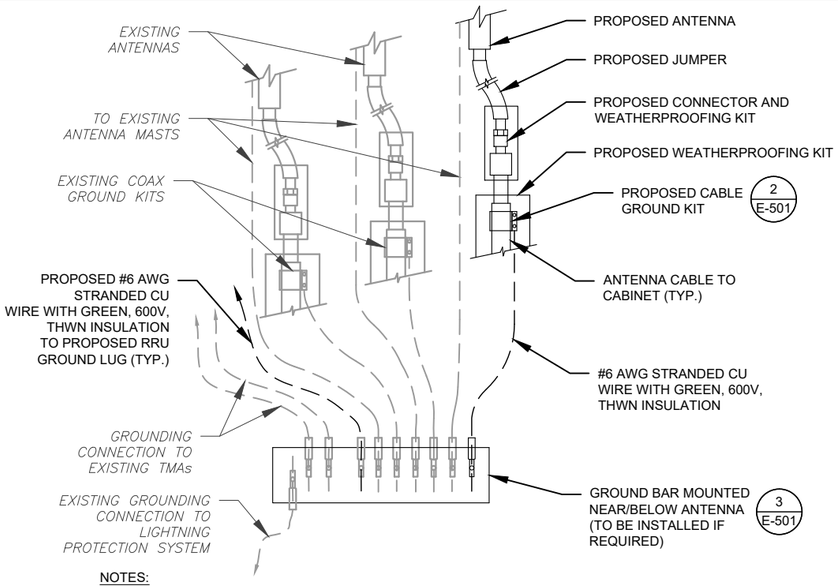
STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

T-Mobile

DATE DRAWN:	05/30/22
ATC JOB NO:	14097396_D1
CUSTOMER ID:	CT696/VERIZON PORTLAND_ET
CUSTOMER #:	CT11696E

CONSTRUCTION DETAILS

SHEET NUMBER:	REVISION:
C-501	0

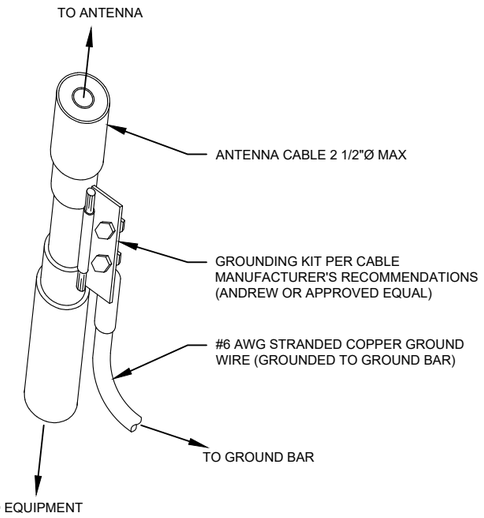


NOTES:

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.

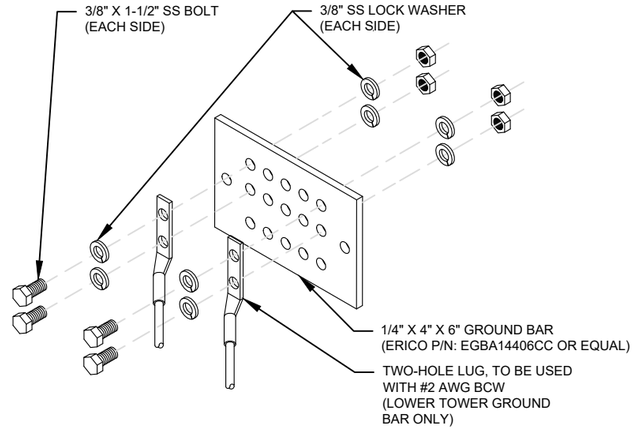


GROUND KIT NOTES:

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.

AMERICAN TOWER®

HUDSON Design Group LLC

45 BEECHWOOD DRIVE
N. ANDOVER, MA 01845

TEL: (978) 557-5553
FAX: (978) 336-5586

REV.	DESCRIPTION	BY	DATE
A	PRELIM	SS	06/03/22
0	FINALS	BB	07/13/22

ATC SITE NUMBER:
411257

ATC SITE NAME:
MIDDLE HADDAM ROAD-CROWN CT

T-MOBILE SITE NAME:
CT696/VERIZON PORTLAND_ET

SITE ADDRESS:
191 MIDDLE HADDAM RD
PORTLAND, CT 06480-1767

SEAL:

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

T-Mobile

DATE DRAWN:	05/30/22
ATC JOB NO:	14097396_D1
CUSTOMER ID:	CT696/VERIZON PORTLAND_ET
CUSTOMER #:	CT11696E

GROUNDING DETAILS

SHEET NUMBER:	REVISION:
E-501	0

RAN Template:	A&L Template:
67E05F	67E05F_1DP+1OP

CT11696E_L600_5

Print Name: Standard
PORs: L600_L600 Coverage

Section 1 - Site Information

Site ID: CT11696E
Status: Final
Version: 5
Project Type: L600
Approved: 3/9/2022 3:33:34 PM
Approved By: ANKITJAISWAL20@T-Mobile.com
Last Modified: 3/9/2022 3:33:34 PM
Last Modified By: ANKITJAISWAL20@T-Mobile.com

Site Name: CT696/Verizon Portland_ET
Site Class: Monopole
Site Type: Structure Non Building
Plan Year: 2022
Market: CONNECTICUT CT
Vendor: Ericsson
Landlord: Verizon Wireless

Latitude: 41.56443601
Longitude: -72.57361050
Address: 191 Middle Haddam Rd
City, State: Portland, CT
Region: NORTHEAST

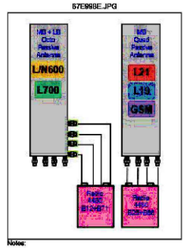
RAN Template: 67E05F	A&L Template: 67E05F_1DP+1OP			
Sector Count: 3	Antenna Count: 3	Coax Line Count: 12	TMA Count: 3	RRU Count: 3

Section 2 - Existing Template Images

—— This section is intentionally blank. ——

Section 3 - Proposed Template Images

57E998E.JPG



Notes:

Section 4 - Siteplan Images

—— This section is intentionally blank. ——

RAN Template: 67E05F	A&L Template: 67E05F_1DP+1OP

CT11696E_L600_5

Print Name: Standard
PORs: L600_L600 Coverage

Section 5 - RAN Equipment

Existing RAN Equipment
Template: 7944R V2 Outdoor

Enclosure	1	2
Enclosure Type	RBS 6201 ODE	RBS 6201 ODE
Baseband	BB 6630 (DUG20, L2100, L1900, G1900)	BB 6630 (L700)
Radio	RUS01 B2 (x 3) (L1900, G1900); RUS01 B4 (x 6) (L2100)	RUS01 B12 (x 6) (L700)

Proposed RAN Equipment
Template: 67E05F

Enclosure	1	2
Enclosure Type	RBS 6201 ODE	RBS 6201 ODE
Baseband	BB 6630 (DUG20, L2100, L1900, G1900)	BB 6648 (N600, L600, L700)
Hybrid Cable System		PSU 4613 vR4A (KIT); Ericsson Hybrid Trunk 6G/4 4AWG 60m (x 3)
Radio	RUS01 B2 (x 3) (L1900, G1900); RUS01 B4 (x 6) (L2100)	

RAN Scope of Work:

CT11696E
Use existing cabinet 6201.
Replacing BB6630 used for L7 with BB6648 for low band(L7/L5/N6).
Add PSU 4613
Add Coax to P3 and P4 Port.
Add three (3) 60m meter Hybrid.
Adding RFS - APXVAALL24_43-U-NA20 and moving Low and Mid Band here
Adding 4480e Radio at the antenna for low band.
Edeting BB 6630 with L2100 / L1900 remains
Height and azimuth of site remain same.

RAN Template: 67E05F	A&L Template: 67E05F_1DP+1OP

CT11696E_L600_5

Print Name: Standard
PORs: L600_L600 Coverage

Section 6 - A&I. Equipment

Existing Template: 794A_1HP+1DP U19 Shutdown
Proposed Template: 67E05F_1DP+1OP

Sector 1 (Existing) view from behind

Coverage Type	A - Outdoor Macro	
Antenna	1	2
Antenna Model	RFS - APXV18-209014-C-A20 (Dual)	Andrew - LNX-8515DS-A1M (Dual)
Azimuth	0	0
M. Tilt	0	0
Height	137	137
Ports	P1	P2
Active Tech.	L2100, L1900, G1900	L700
Dark Tech.		
Restricted Tech.		
Decomm. Tech.		
E. Tilt	2	2
Cables	1-5/8" Coax - 210 ft. (x2)	1-5/8" Coax - 210 ft. (x2)
TMAs	Generic Style 4 - PCS+AWS (AllAntenna)	
Diplexers / Combiners	Generic AWS/PCS Diplexer (AllAntenna)	
Radio		
Sector Equipment		

Unconnected Equipment:

Scope of Work:

Add LTE 700 passive antenna. Add coax. Add smart Bias-T

RAN Template: 67E05F	A&L Template: 67E05F_1DP+1OP

CT11696E_L600_5

Print Name: Standard
PORs: L600_L600 Coverage

Sector 1 (Proposed) view from behind

Coverage Type	A - Outdoor Macro			
Antenna	1			
Antenna Model	RFS - APXVAALL24_43-U-NA20 (Octo)			
Azimuth	0			
M. Tilt	0			
Height	137			
Ports	P1	P2	P3	P4
Active Tech.	N600, L600, L700	N600, L600, L700	L2100, L1900, G1900	L2100, L1900, G1900
Dark Tech.				
Restricted Tech.				
Decomm. Tech.				
E. Tilt	2			
Cables			1-5/8" Coax - 210 ft. (x2)	SHARED 1-5/8" Coax - 210 ft. (x2)
TMAs				
Diplexers / Combiners				
Radio	Radio 4480 B71+B85 (At Antenna)	SHARED Radio 4480 B71+B85 (At Antenna)		
Sector Equipment				

Unconnected Equipment:

Cable: 1-5/8" Coax - 210 ft. | Cable: 1-5/8" Coax - 210 ft. | TMA: Generic Style 4 - PCS+AWS | Diplexer/Combiner: Generic AWS/PCS Diplexer

Scope of Work:

CT11696E
Use existing cabinet 6201.
Replacing BB6630 used for L7 with BB6648 for low band(L7/L5/N6).
Add PSU 4613
Add Coax to P3 and P4 Port.
Add three (3) 60m meter Hybrid.
Adding RFS - APXVAALL24_43-U-NA20 and moving Low and Mid Band here
Adding 4480e Radio at the antenna for low band.
Edeting BB 6630 with L2100 / L1900 remains
Height and azimuth of site remain same.

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

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

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-601	0

RAN Template: 67E05F	A&L Template: 67E05F_1DP+1OP

CT11696E_L600_5
Print Name: Standard
PORs: L600_L600 Coverage

Sector 2 (Existing) view from behind

Coverage Type	A - Outdoor Macro	
Antenna	1	2
Antenna Model	RFS - APXV18-289014-C-A20 (Dual)	Andrew - LNX-6515DS-A1M (Dual)
Azimuth	126	120
M. Tilt	0	0
Height	137	137
Ports	P1	P2
Active Tech.	L2100 L1900 G1900	L700
Dark Tech.		
Restricted Tech.		
Decomm. Tech.		
E. Tilt	2	2
Cables	1-5/8" Coax - 210 ft. (x2)	1-5/8" Coax - 210 ft. (x2)
TMAs	Generic Style 4 - PCS+AWS (AtAntenna)	
Diplexers / Combiners	Generic AWS/PCS Diplexer (AtAntenna)	
Radio		
Sector Equipment		

Unconnected Equipment

Scope of Work:

Add LTE 700 passive antenna. Add coax. Add smart Bias-T

RAN Template: 67E05F	A&L Template: 67E05F_1DP+1OP

CT11696E_L600_5
Print Name: Standard
PORs: L600_L600 Coverage

Sector 2 (Proposed) view from behind

Coverage Type	A - Outdoor Macro			
Antenna	1			
Antenna Model	RFS - APXVAALL24_43-U-NA20 (Octo)			
Azimuth	129			
M. Tilt	0			
Height	137			
Ports	P1	P2	P3	P4
Active Tech.	L600 N600 L700	L600 N600 L700	L2100 L1900 G1900	L2106 L1900 G1900
Dark Tech.				
Restricted Tech.				
Decomm. Tech.				
E. Tilt	2			
Cables			1-5/8" Coax - 210 ft. (x2)	SHARED 1-5/8" Coax - 210 ft. (x2)
TMAs				
Diplexers / Combiners				
Radio	Radio 4480 B71+B85 (At Antenna)	SHARED Radio 4480 B71+B85 (At Antenna)		
Sector Equipment				

Unconnected Equipment

Cable: 1-5/8" Coax - 210 ft. | Cable: 1-5/8" Coax - 210 ft. | TMA: Generic Style 4 - PCS+AWS | Diplexer/Combiner: Generic AWS/PCS Diplexer

Scope of Work:

CT11696E
Use existing cabinet 6201.
Replacing BB6630 used for L7 with BB9648 for low band(L7/L6/N6).
Add PSU 4813
Add Coax to P3 and P4 Port.
Add three (3) 60m meter Hybrid.
Adding RFS - APXVAALL24_43-U-NA20 and moving Low and Mid Band here
Adding 4480s Radio at the antenna for low band.
Existing BB 6630 with L2100 /L1900 remains
Height and azimuth of site remain same.

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

RAN Template: 67E05F	A&L Template: 67E05F_1DP+1OP

CT11696E_L600_5
Print Name: Standard
PORs: L600_L600 Coverage

Sector 3 (Existing) view from behind

Coverage Type	A - Outdoor Macro	
Antenna	1	2
Antenna Model	RFS - APXV18-289014-C-A20 (Dual)	Andrew - LNX-6515DS-A1M (Dual)
Azimuth	249	240
M. Tilt	0	0
Height	137	137
Ports	P1	P2
Active Tech.	L2100 L1900 G1900	L700
Dark Tech.		
Restricted Tech.		
Decomm. Tech.		
E. Tilt	2	2
Cables	1-5/8" Coax - 210 ft. (x2)	1-5/8" Coax - 210 ft. (x2)
TMAs	Generic Style 4 - PCS+AWS (AtAntenna)	
Diplexers / Combiners	Generic AWS/PCS Diplexer (AtAntenna)	
Radio		
Sector Equipment		

Unconnected Equipment

Scope of Work:

Add LTE 700 passive antenna. Add coax. Add smart Bias-T

RAN Template: 67E05F	A&L Template: 67E05F_1DP+1OP

CT11696E_L600_5
Print Name: Standard
PORs: L600_L600 Coverage

Sector 3 (Proposed) view from behind

Coverage Type	A - Outdoor Macro			
Antenna	1			
Antenna Model	RFS - APXVAALL24_43-U-NA20 (Octo)			
Azimuth	249			
M. Tilt	0			
Height	137			
Ports	P1	P2	P3	P4
Active Tech.	L600 N600 L700	L600 N600 L700	L2100 L1900 G1900	L2106 L1900 G1900
Dark Tech.				
Restricted Tech.				
Decomm. Tech.				
E. Tilt	2			
Cables			1-5/8" Coax - 210 ft. (x2)	SHARED 1-5/8" Coax - 210 ft. (x2)
TMAs				
Diplexers / Combiners				
Radio	Radio 4480 B71+B85 (At Antenna)	SHARED Radio 4480 B71+B85 (At Antenna)		
Sector Equipment				

Unconnected Equipment

Cable: 1-5/8" Coax - 210 ft. | Cable: 1-5/8" Coax - 210 ft. | TMA: Generic Style 4 - PCS+AWS | Diplexer/Combiner: Generic AWS/PCS Diplexer

Scope of Work:

CT11696E
Use existing cabinet 6201.
Replacing BB6630 used for L7 with BB9648 for low band(L7/L6/N6).
Add PSU 4813
Add Coax to P3 and P4 Port.
Add three (3) 60m meter Hybrid.
Adding RFS - APXVAALL24_43-U-NA20 and moving Low and Mid Band here
Adding 4480s Radio at the antenna for low band.
Existing BB 6630 with L2100 /L1900 remains
Height and azimuth of site remain same.

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

RAN Template: 67E05F	A&L Template: 67E05F_1DP+1OP

CT11696E_L600_5
Print Name: Standard
PORs: L600_L600 Coverage

Section 7 - Power Systems Equipment

Existing Power Systems Equipment

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

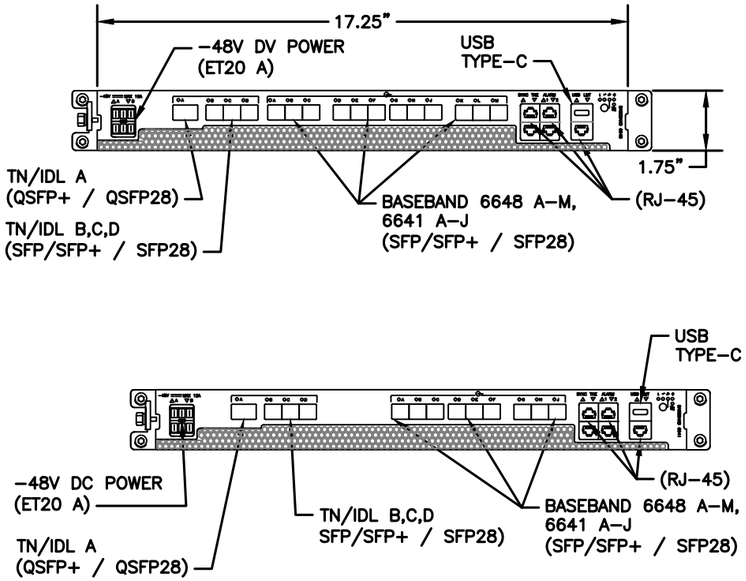
Proposed Power Systems Equipment

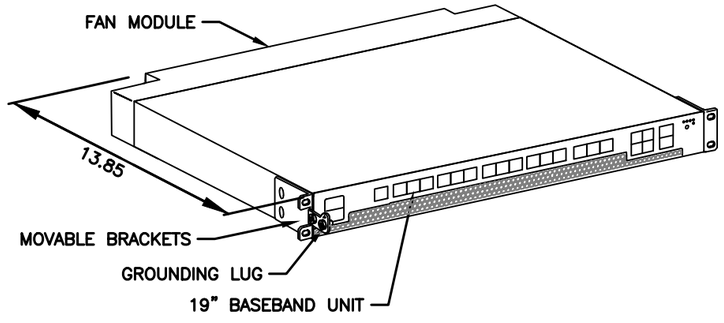
NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-602	0

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



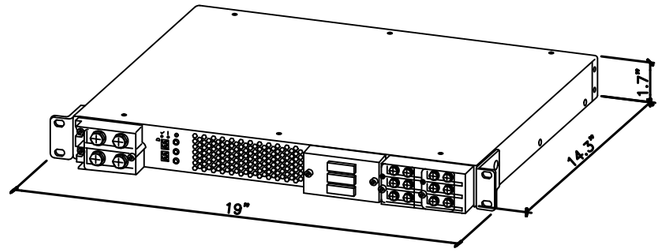


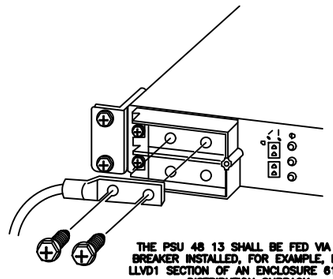
1 34111 - ERICSSON BASEBAND 6648 (WITH FAN)

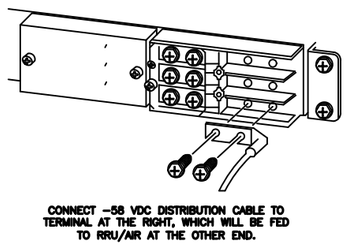
SCALE: N.T.S.

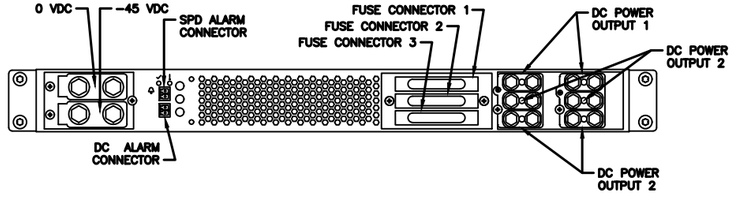
MANUFACTURER:	ERICSSON
MODEL:	PSU 48 13
WEIGHT:	17.1 LBS
DIMENSIONS:	19"x 1.7"x 14.3"

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









2 SKU# 34132 - PSU 48 13

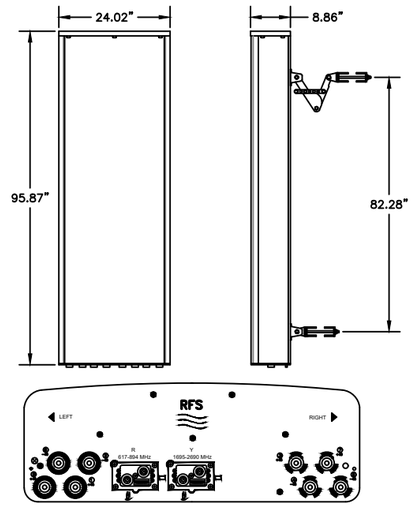
SCALE: N.T.S.

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

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-603	0

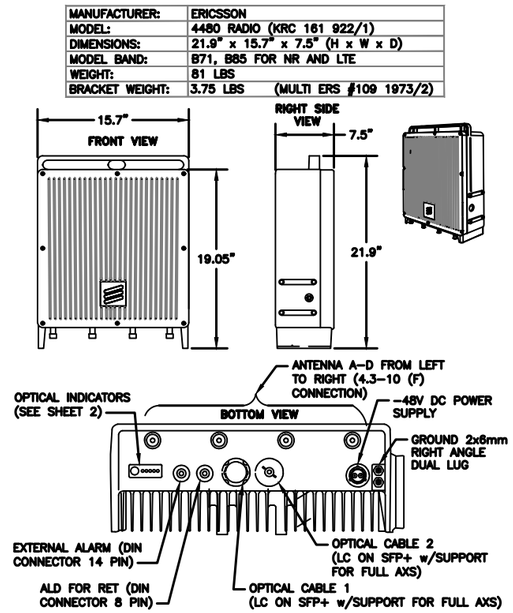
MANUFACTURER:	RFS
MODEL:	APXVAALL24_43-U-NA20
DIMENSIONS:	95.87" x 24.02" x 8.86"
WEIGHT:	119 LB
BAND:	QUAD BAND (8 PORT)
MOUNTING KIT & WEIGHT:	APM40-10E BEAM TILT KIT (INCLUDED) (16.53 LBS)



1 34087 - RFS APXVAALL24_43-U-NA20

SCALE: N.T.S.

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



1 34372 - ERICSSON 4480 RADIO

SCALE: N.T.S.

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

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-604	0

AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by
telamon
Tower Engineering PLLC

Antenna Mount Analysis Report

ATC Site Name	:	Middle Haddam Road-CROWN CT
ATC Asset Number	:	411257
Engineering Number	:	14097396_C8_01
Mount Elevation	:	136 ft
Carrier	:	T-Mobile
Carrier Site Name	:	CT696Nerizon Portland_ET
Carrier Site Number	:	CT11696E
Site Location	:	191 Middle Haddam Rd Portland, CT 06480-1767 41.56225, -72.573778
County	:	Middlesex
Date	:	May 4, 2022
Max Usage	:	56%
Result	:	Contingent Pass* *See conclusion for requirements

Prepared By:
Nagabharana Nayak
Telamon Tower Engineering, PLLC

Reviewed By:

STATE OF CONNECTICUT · DAVID CHICKERING · No. 35683 · LICENSED PROFESSIONAL ENGINEER

David Chickering
Telamon Tower Engineering PLLC
PE # 35683 Exp. 01/31/2023

Digitally signed by David W Chickering
Date: 2022.05.04 15:42:17 -04'00'

Conclusion

Based on the analysis, the antenna mount meets the requirements per the applicable codes listed above. The mounting configuration considered in this analysis will be capable of supporting the referenced loading pursuant to referenced standards once the following scope is executed:

- **Replace existing mount pipes at position 1 and position 2 with (2) 8 ft. long proposed Pipe 2 STD, A53 Gr. B, at each sector (6 total) as shown. Connect to platform base horizontal members using Site Pro 1 SP219 crossover plate kits (6 total).**
- **Install (1) proposed Site Pro 1 HRK12 support rail kit. Connect to proposed mount pipes with Site Pro 1 SCX1 crossover plates included in the standard kits.**

A handrail kit was modeled due to the Carrier's proposed Mount Type. The mount geometry before this addition was not assessed.

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.

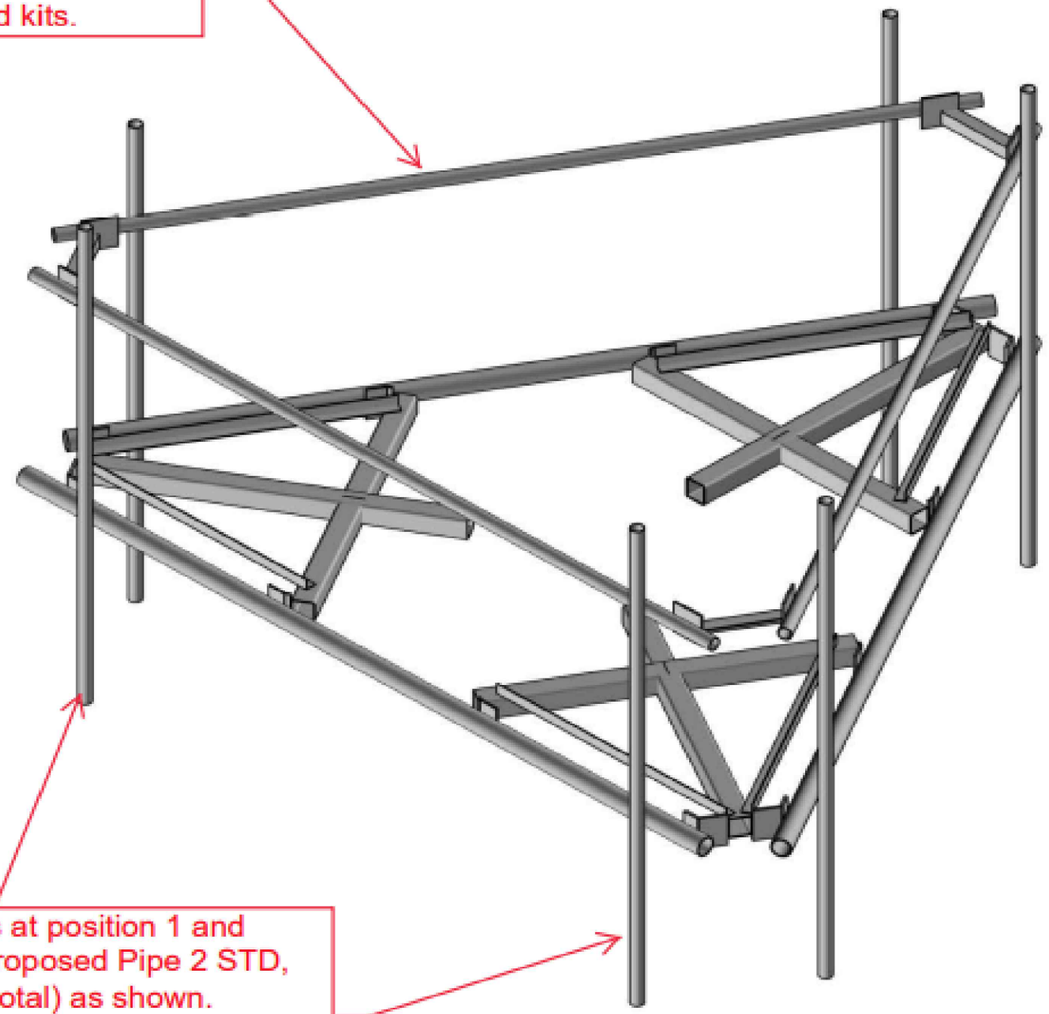
1 MOUNT ANALYSIS

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

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-605	0

Install (1) proposed Site Pro 1 HRK12 support rail kit. Connect to proposed mount pipes with Site Pro 1 SCX1 crossover plates included in the standard kits.



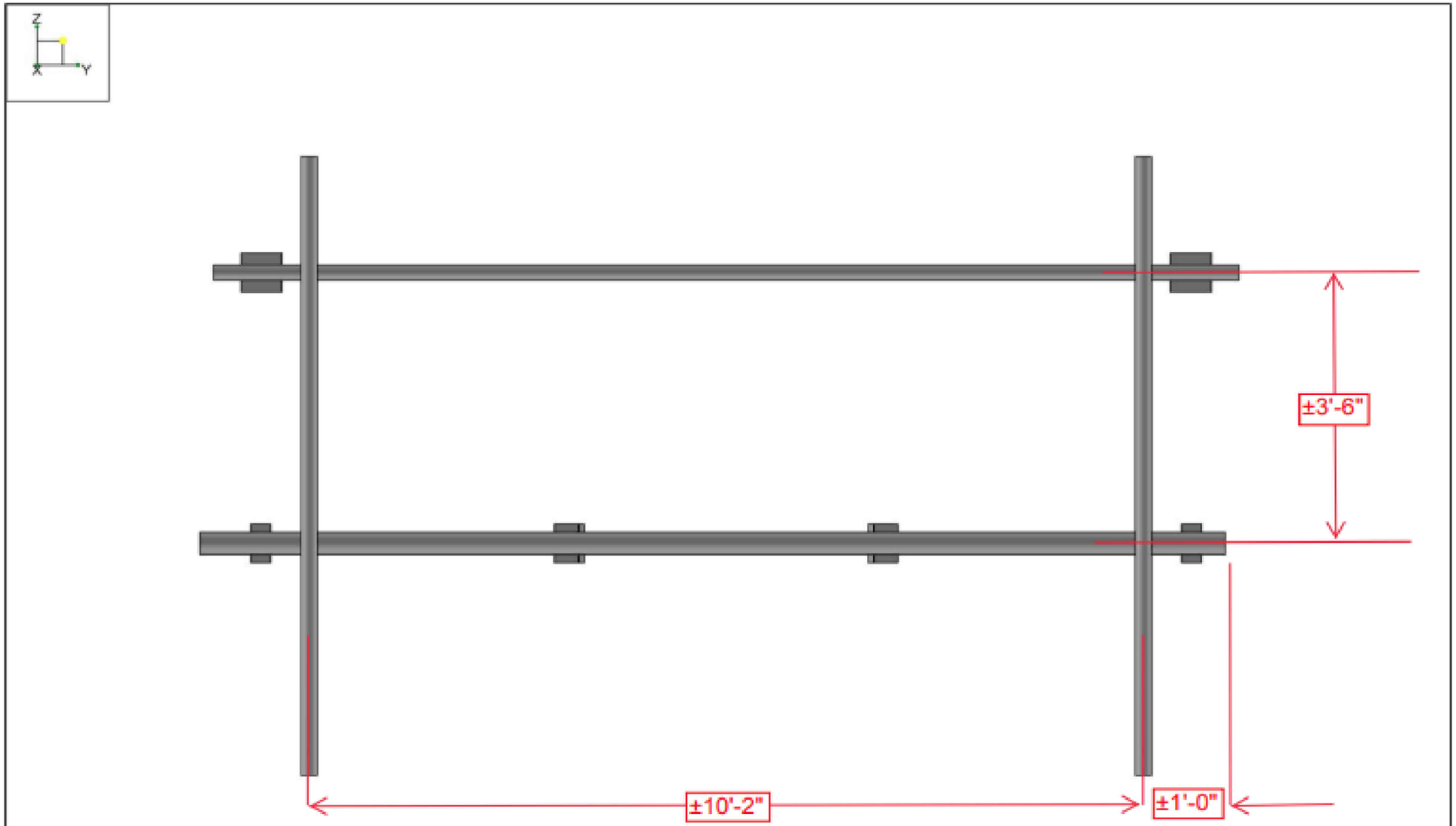
Replace existing mount pipes at position 1 and position 2 with (2) 8 ft. long proposed Pipe 2 STD, A53 Gr. B, at each sector (6 total) as shown. Connect to platform base horizontal members using Site Pro 1 SP219 crossover plate kits (6 total).

CLS	41124-14097396_C8_01-Middle Haddam Road-CROWN CT	IN-1
NGN		May 04, 2022
41124-14097396_C8_01-01-MA	Proposed Modifications-ISO	411257_14097396_C8_01_T-MOBILE.r3d

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

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-606	0



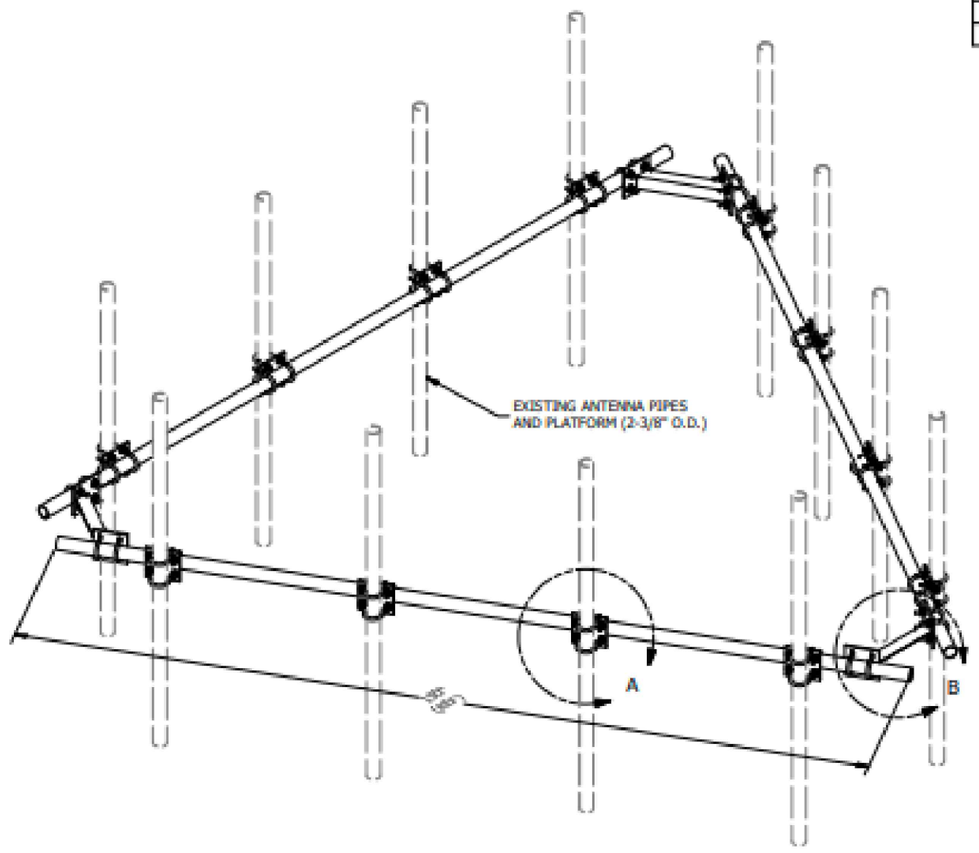
CLS	41124-14097396_C8_01-Middle Haddam Road-CROWN CT	IN-2
NGN		May 04, 2022
41124-14097396_C8_01-01-MA	Proposed Modifications- Front View	411257_14097396_C8_01_T-MOBILE.r3d

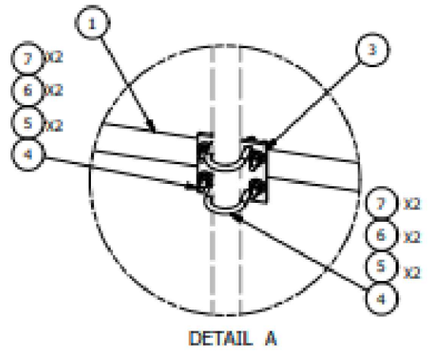
NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT. PLEASE REFERENCE THE MOUNT ANALYSIS REPORT FOR COMPLETE MOUNT ANALYSIS CALCULATIONS AND DETAILS. SUPPLEMENTAL PAGES INCLUDED IN THE CONSTRUCTION DRAWINGS ARE FOR REFERENCE ONLY. GENERAL CONTRACTOR IS TO VERYIFY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

SUPPLEMENTAL

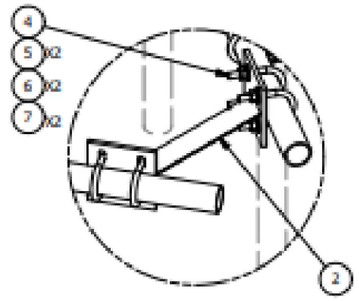
SHEET NUMBER:	REVISION:
R-607	0

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2150	2-3/8" O.D. X 150" SCH 40 GALVANIZED PIPE	150 in	45.77	137.31
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	12	SCX1	CROSSOVER PLATE 2-3/8" X 2-3/8"	6 in	3.71	44.50
4	60	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	37.51
5	120	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	4.09
6	120	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	1.67
7	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
					TOTAL WT. #	272.43





DETAIL A



DETAIL B

REV	DESCRIPTION OF REVISIONS	CPD	CEK BY	DATE
A	REPLACED HCP WITH X-AHCP		CEK	7/10/2014

REVISION HISTORY

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES (± 0.060")
DRILLED AND GAS CUT HOLES (± 0.030") - NO CONING OF HOLES
LASER CUT EDGES AND HOLES (± 0.010") - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING (± 0.030")
ALL OTHER ASSEMBLY (± 0.060")

DESCRIPTION	HANDRAIL KIT FOR 12'-6" FACE		
CPD NO.	DRAWN BY: KC8 5/30/2012	ENG. APPROVAL	PART NO.: HRK12
CLASS: 81 / SUB: 01	DRAWING USAGE: CUSTOMER	CHECKED BY: BMC 7/13/2014	DWG. NO.: HRK12

SITE PRO 1 — A valmont company

Engineering Support Team: 1-888-753-7446

Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

PAGE 1 OF 1

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SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-608	0

Exhibit D

Structural Analysis Report

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**139 ft Monopole**
ATC Site Name	:	**Middle Haddam Road-CROWN CT,CT**
ATC Site Number	:	**411257**
Engineering Number	:	**14097396_C3_02**
Proposed Carrier	:	**T-MOBILE**
Carrier Site Name	:	**CT696/Verizon Portland_ET**
Carrier Site Number	:	**CT11696E**
Site Location	:	**191 Middle Haddam Rd** **Portland, CT 06480-1767** **41.5622, -72.5738**
County	:	**Middlesex**
Date	:	**May 16, 2022**
Max Usage	:	**58%**
Result	:	**Pass**

Prepared By:

Daniel K. Sheek
Structural Engineer I

Reviewed By:

COA : PEC.0001553

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 139 ft Monopole to reflect the change in loading by T-MOBILE.

Supporting Documents

Tower Drawings	EEI Job #12477 Revision II, dated May 13, 2004 Mapping by HTS, ATC Site #411257, dated March 24, 2016
Foundation Drawing	Mapping by TPS Report #TPS-CT-257, dated October 22, 2015
Geotechnical Report	CHA Project #11869.1011.1502, dated September 23, 2002

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:	120 mph (3-second gust)
Basic Wind Speed w/ Ice:	50 mph (3-second gust) w/ 1.00" radial ice concurrent
Code:	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 1
Topographic Category:	1
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.21, S_1 = 0.06
Site Class:	D - Stiff Soil - Default

Conclusion

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

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

Existing and Reserved Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
138.0	1	Generic 10' Omni	Triangular Low Profile Platform	-	VERIZON WIRELESS
137.0	-	-		(6) 1 5/8" Coax	T-MOBILE
134.8	1	Generic 10' Omni		-	VERIZON WIRELESS
128.0	3	Samsung MT6407-77A	Triangular Low Profile Platform	(34) 1 5/8" Coax (2) 1 5/8" Hybriflex	VERIZON WIRELESS
	3	Commscope CBC78T-DS-43-2X			
	3	Samsung B2/B66A RRH-BR049			
	3	Samsung B5/B13 RRH-BR04C			
	2	RFS APL866513-44T0			
	6	Commscope JAHH-65B-R3B			
	4	Decibel DB846H80E-SX			
	1	VZW Unused Reserve (16760.40 sqin)			
	1	Raycap RCMDC-6627-PF-48			
127.2	1	Antel BXA-70063/4CF			
127.1	2	Generic 46" x 6" Panel			
127.0	2	Antel BXA-70063/6CF_			
126.9	4	Antel LPA-185080/12CF ___			
	2	Decibel DB846H80E-SX			
126.8	2	Amphenol Antel LPA-171063-12CF-EDIN-X			
119.0	6	Powerwave Allgon LGP21401	Triangular Platform with Handrails	(2) 0.39" (10mm) Fiber Trunk (4) 0.78" (19.7mm) 8 AWG 6 (12) 1 5/8" Coax (1) 1/2" Coax (4) 3" conduit	AT&T MOBILITY
	3	Ericsson Radio 8843 - B2 + B66A			
	3	Ericsson RRUS 4449 B5, B12			
	3	Powerwave Allgon 7770.00			
	3	Commscope NNH4-65B-R6			
	3	CCI DMP65R-BU6DA			
113.6	2	Raycap DC6-48-60-18-8F			
104.0	1	RFI Antennas CC807-08	Side Arm	(2) 1/2" Coax (1) 7/8" Coax (1) 7/8" Coax	CITY OF MIDDLETOWN, CT
100.0	1	Bird DS428E83I01T			
87.0	1	RFI Antennas CC807-08			
80.0	1	RFI Antennas OA20-41-DIN	Pole Mount	(1) 7/8" Coax (2) EW90	
	2	Radio Waves HP3-11			
69.0	1	Commscope RDIDC-9181-PF-48	Triangular Platform with Handrails	(1) 1.60" (40.6mm) Hybrid	DISH WIRELESS L.L.C.
	3	Fujitsu TA08025-B605			
	3	Fujitsu TA08025-B604			
	3	JMA Wireless MX08FRO665-21			

Equipment to be Removed

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
137.0	3	RFS APXV18-209014-C	-	(6) 1 5/8" Coax	T-MOBILE
	3	Andrew LNX-6515DS-A1M			
	6	Ericsson KRY 112 20			

Proposed Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
137.0	3	Ericsson 4480 BAND 71	Triangular Low Profile Platform	(3) 1.99" (50.7mm) Hybrid	T-MOBILE
	3	RFS APXVAALL24 43-U-NA20			

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

Install proposed lines inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	43%	Pass
Shaft	58%	Pass
Base Plate	25%	Pass
Flanges	3%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	3430.3	10%
Axial (Kips)	62.0	2%

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) (°)
137.0	Ericsson 4480 BAND 71 RFS APXVAALL24 43-U-NA20	T-MOBILE	0.795	0.550
80.0	Radio Waves HP3-11	CITY OF MIDDLETOWN, CT	0.298	0.410

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

Standard Conditions

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

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

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

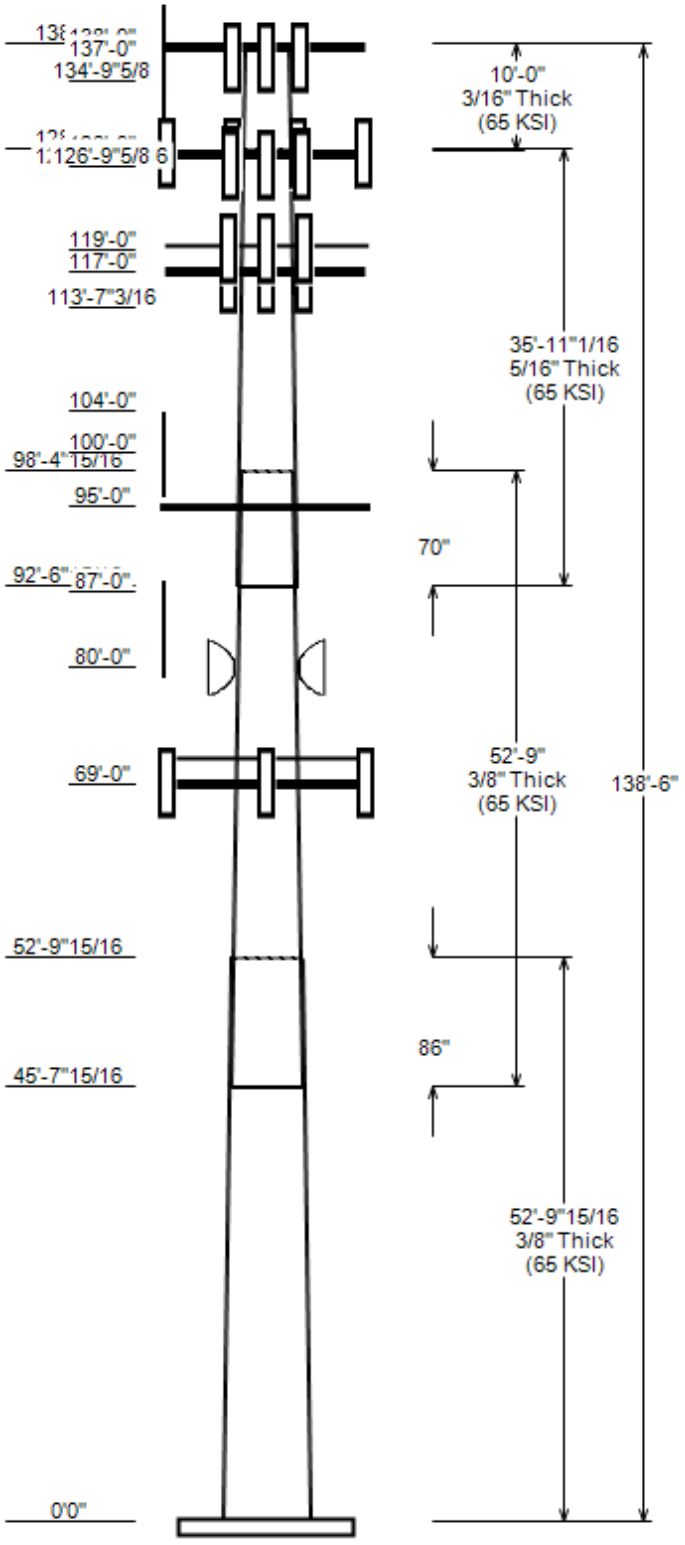
All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with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

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

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

JOB INFORMATION

Asset :	411257, Middle Haddam Road-CROWN CT	Height :	138.5 ft
Client :	T-MOBILE	Base Width :	64.38
Code :	ANSI/TIA-222-H	Shape :	18 Sides



SITE PARAMETERS

Nominal Wind: 120 mph wind with no ice **Topo Category:** 1

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

Base Elev (ft): 0.00 **Taper :** 0.24600(In/ft) **Topo Feature:**

Structure Class: II **Exposure :** B **S_s :** 0.21 **S_1** : 0.056

SECTION PROPERTIES

Shaft Section	Length (ft)	Diameter (in) Across Flats Top	Diameter (in) Across Flats Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	52.830	51.41	64.38	0.375		0.000	18 Sides	65
2	52.750	40.97	53.92	0.375	Slip Joint	86.000	18 Sides	65
3	35.920	34.20	43.02	0.312	Slip Joint	70.000	18 Sides	65
4	10.000	31.75	34.20	0.188	Butt Joint	0.000	18 Sides	65

DISCRETE APPURTENANCE

Attach Elev (ft)	Force Elev (ft)	Qty	Description
138.0	138.0	1	Generic 10' Omni
138.0	138.0	1	Generic Round Low Profile Plat
137.0	137.0	3	Ericsson 4480 BAND 71
137.0	137.0	3	RFS APXVAALL24 43-U-NA20
134.8	134.8	1	Generic 10' Omni
128.0	128.0	3	Commscope CBC78T-DS-43-2X
128.0	128.0	3	Samsung B5/B13 RRH-BR04C
128.0	128.0	3	Samsung B2/B66A RRH-BR049
128.0	128.0	2	RFS APL866513-44T0
128.0	128.0	1	Raycap RCMDC-6627-PF-48
128.0	128.0	3	Samsung MT6407-77A
128.0	128.0	4	Decibel DB846H80E-SX
128.0	128.0	6	Commscope JAHH-65B-R3B
128.0	128.0	1	Generic Flat Low Profile Platf
128.0	128.0	1	VZW Unused Reserve (16760.40 s
127.2	127.2	1	Antel BXA-70063/4CF
127.1	127.1	2	Generic 46" x 6" Panel
127.0	127.0	2	Antel BXA-70063/6CF_
126.9	126.9	4	Antel LPA-185080/12CF ___
126.9	126.9	2	Decibel DB846H80E-SX
126.8	126.8	2	Amphenol Antel LPA-171063-12CF
119.0	117.0	6	Powerwave Allgon LGP21401
119.0	119.0	3	Ericsson Radio 8843 - B2 + B66
119.0	119.0	3	Ericsson RRUS 4449 B5, B12
119.0	117.0	3	Powerwave Allgon 7770.00
119.0	119.0	3	Commscope NNH4-65B-R6
119.0	119.0	3	CCI DMP65R-BU6DA
117.0	117.0	1	Generic Round Platform with Ha
113.6	111.6	2	Raycap DC6-48-60-18-8F
104.0	102.0	1	RFI Antennas CC807-08
100.0	100.0	1	Bird DS428E83I01T
95.0	95.0	3	Flat Side Arm
87.0	86.0	1	RFI Antennas CC807-08
80.0	82.0	1	RFI Antennas OA20-41-DIN
80.0	80.0	2	Radio Waves HP3-11
69.0	69.0	1	Commscope RDIDC-9181-PF-48
69.0	69.0	3	Fujitsu TA08025-B605
69.0	69.0	3	Fujitsu TA08025-B604
69.0	69.0	3	JMA Wireless MX08FRO665-21
69.0	69.0	1	Generic Flat Platform with Han

JOB INFORMATION

Asset :	411257, Middle Haddam Road-CROWN CT	Height :	138.5 ft
Client :	T-MOBILE	Base Width :	64.38
Code :	ANSI/TIA-222-H	Shape :	18 Sides

LINEAR APPURTENANCE

Elev From (ft)	Elev To (ft)	Description	Exp To Wind
0.0	137.0	1.99" (50.7mm) Hybrid	No
0.0	137.0	1 5/8" Coax	No
0.0	128.0	1 5/8" Hybriflex	No
0.0	128.0	1 5/8" Coax	Yes
0.0	128.0	1 5/8" Coax	No
0.0	119.0	3" conduit	No
0.0	119.0	3" conduit	No
0.0	119.0	3" conduit	No
0.0	119.0	1/2" Coax	No
0.0	119.0	1 5/8" Coax	No
0.0	119.0	0.78" (19.7mm) 8 AWG 6	No
0.0	119.0	0.39" (10mm) Fiber Trunk	No
0.0	104.0	1/2" Coax	No
0.0	100.0	7/8" Coax	No
0.0	100.0	1/2" Coax	No
0.0	87.0	7/8" Coax	No
0.0	80.0	EW90	No
0.0	80.0	7/8" Coax	No
0.0	69.0	1.60" (40.6mm) Hybrid	No

LOAD CASES

1.2D + 1.0W Normal	120 mph wind with no ice
0.9D + 1.0W Normal	120 mph wind with no ice
1.2D + 1.0Di + 1.0Wi Nor	50 mph wind with 1" radial ice
1.2D + 1.0Ev + 1.0Eh Nor	Seismic
0.9D - 1.0Ev + 1.0Eh Nor	Seismic (Reduced DL)
1.0D + 1.0W Service Norm	60 mph Wind with No Ice

REACTIONS

Load Case	Moment (kip-ft)	Shear (Kip)	Axial (Kip)
1.2D + 1.0W Normal	3430.34	35.07	62.05
0.9D + 1.0W Normal	3407.65	35.06	46.53
1.2D + 1.0Di + 1.0Wi Normal	789.22	8.11	82.04
1.2D + 1.0Ev + 1.0Eh Normal	192.49	1.84	62.26
0.9D - 1.0Ev + 1.0Eh Normal	190.91	1.84	42.77
1.0D + 1.0W Service Normal	764.06	7.84	51.74

DISH DEFLECTIONS

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W Service Normal	80.00	3.572	0.410

ANALYSIS PARAMETERS

Location:	Middlesex County,CT	**Height:**	138.5 ft
Type and Shape:	Taper, 18 Sides	**Base Diameter:**	64.38 in
Manufacturer:	EEI	**Top Diameter:**	31.75 in
K_d (non-service):	0.95	**Taper:**	0.2460 in/ft
K_e:	0.99	**Rotation:**	0.000°

ICE & WIND PARAMETERS

Exposure Category:	B	**Design Wind Speed w/o Ice:**	120 mph
Risk Category:	II	**Design Wind Speed w/Ice:**	50 mph
Topo Factor Procedure:	Method 1	**Operational Wind Speed:**	60 mph
Topographic Category:	1	**Design Ice Thickness:**	1.00 in
Crest Height:	0 ft	**HMSL:**	249.00 ft

SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method				
Site Class:	D - Stiff Soil			**Period Based on Rayleigh Method (sec):**	1.68
T_L (sec):	6	**P:**	1	**C_s:**	0.035
S_s:	0.210	**S_1:**	0.056	**C_s Max:**	0.035
F_a:	1.600	**F_v:**	2.400	**C_s Min:**	0.030
S_{ds}:	0.224	**S_{d1}:**	0.090		

LOAD CASES

1.2D + 1.0W Normal	120 mph wind with no ice
0.9D + 1.0W Normal	120 mph wind with no ice
1.2D + 1.0Di + 1.0Wi Normal	50 mph wind with 1" radial ice
1.2D + 1.0Ev + 1.0Eh Normal	Seismic
0.9D - 1.0Ev + 1.0Eh Normal	Seismic (Reduced DL)
1.0D + 1.0W Service Normal	60 mph Wind with No Ice

SHAFT SECTION PROPERTIES

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (in)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-18	52.83	0.3750	65		0.00	12,307	64.38	0.000	76.18	39,429.1	28.86	171.68	51.41	52.83	60.74	19,987.3	22.76	137.09	0.2455
2-18	52.75	0.3750	65	Slip	86.00	10,055	53.92	45.660	63.73	23,083.3	23.94	143.78	40.97	98.41	48.31	10,057.8	17.85	109.25	0.2455
3-18	35.92	0.3125	65	Slip	70.00	4,643	43.02	92.580	42.36	9,764.3	22.87	137.68	34.20	128.50	33.62	4,878.8	17.89	109.46	0.2455
								128.50								2,364.1			
4-18	10.00	0.1875	65	Butt	0.00	664	34.20	0	20.24	2,959.8	30.76	182.43	31.75	138.50	18.78		28.45	169.33	0.2455

Shaft Weight 27,669

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
138.00	Generic Round Low Profile Plat	1	1.00	0.000	1875.00	21.700	1.00	2411.33	34.415	1.00
138.00	Generic 10' Omni	1	1.00	0.000	25.00	3.000	1.00	75.27	5.383	1.00
137.00	Ericsson 4480 BAND 71	3	0.80	0.000	81.00	2.878	0.67	131.36	3.621	0.67
137.00	RFS APXVAALL24 43-U-NA20	3	0.80	0.000	122.80	20.243	0.63	380.47	22.697	0.63
134.80	Generic 10' Omni	1	0.90	0.000	25.00	3.000	1.00	75.08	5.374	1.00
128.00	Raycap RCMDC-6627-PF-48	1	0.80	0.000	32.00	4.056	1.00	115.54	4.953	1.00
128.00	Commscope JAHH-65B-R3B	6	0.80	0.000	60.60	9.113	0.69	193.58	10.937	0.69
128.00	Decibel DB846H80E-SX	4	0.80	0.000	16.00	5.867	0.73	112.41	5.776	0.73
128.00	Samsung MT6407-77A	3	0.80	0.000	81.60	4.709	0.61	148.60	5.707	0.61
128.00	VZW Unused Reserve (16760.40 s	1	0.80	0.000	0.00	116.392	0.90	0.00	169.691	0.90
128.00	Generic Flat Low Profile Platf	1	1.00	0.000	1875.00	26.100	1.00	2407.34	38.649	1.00
128.00	RFS APL866513-44T0	2	0.80	0.000	15.70	4.050	0.82	93.89	4.637	0.82
128.00	Samsung B5/B13 RRH-BR04C	3	0.80	0.000	70.30	1.875	0.50	107.90	2.468	0.50
128.00	Samsung B2/B66A RRH-BR049	3	0.80	0.000	84.40	1.875	0.50	126.33	2.468	0.50
128.00	Commscope CBC78T-DS-43-2X	3	0.80	0.000	20.70	0.552	0.50	35.22	0.886	0.50
127.20	Antel BXA-70063/4CF	1	0.80	0.000	9.90	4.708	1.00	75.80	5.917	1.00
127.10	Generic 46" x 6" Panel	2	0.80	0.000	20.00	2.720	0.67	56.20	3.799	0.67
127.00	Antel BXA-70063/6CF_	2	0.80	0.000	17.00	7.569	0.73	109.91	9.381	0.73
126.90	Decibel DB846H80E-SX	2	0.80	0.000	16.00	5.867	0.80	112.34	5.776	0.80
126.90	Antel LPA-185080/12CF ___	4	0.80	0.000	10.50	4.569	0.70	79.17	4.245	0.70
126.80	Amphenol Antel LPA-171063-12CF	2	0.80	0.000	11.50	6.050	0.84	109.98	7.663	0.84
119.00	CCI DMP65R-BU6DA	3	0.75	0.000	79.40	12.709	0.63	247.41	14.528	0.63
119.00	Commscope NNH4-65B-R6	3	0.75	0.000	89.70	12.271	0.64	253.58	14.100	0.64
119.00	Powerwave Allgon 7770.00	3	0.75	-2.000	35.00	5.508	0.65	109.14	6.894	0.65
119.00	Ericsson RRUS 4449 B5, B12	3	0.75	0.000	71.00	1.969	0.50	113.03	2.577	0.50
119.00	Powerwave Allgon LGP21401	6	0.75	-2.000	14.10	1.104	0.50	30.37	1.569	0.50
119.00	Ericsson Radio 8843 - B2 + B66	3	0.75	0.000	71.90	1.650	0.50	112.08	2.203	0.50
117.00	Generic Round Platform with Ha	1	1.00	0.000	2500.00	27.200	1.00	3554.57	43.115	1.00
113.60	Raycap DC6-48-60-18-8F	2	0.75	-2.000	20.00	1.260	1.00	54.16	1.687	1.00
104.00	RFI Antennas CC807-08	1	1.00	-2.000	24.30	2.855	1.00	71.25	5.039	1.00
100.00	Bird DS428E83I01T	1	1.00	0.000	8.90	0.465	1.00	20.09	0.769	1.00
95.00	Flat Side Arm	3	1.00	0.000	150.00	6.300	0.67	196.62	7.867	0.67
87.00	RFI Antennas CC807-08	1	1.00	-1.000	24.30	2.855	1.00	70.46	5.002	1.00
80.00	Radio Waves HP3-11	2	1.00	0.000	50.00	8.918	1.00	163.86	10.014	1.00
80.00	RFI Antennas OA20-41-DIN	1	1.00	2.000	28.00	4.410	1.00	104.23	8.408	1.00
69.00	Generic Flat Platform with Han	1	1.00	0.000	2500.00	42.400	1.00	3594.85	55.325	1.00
69.00	Fujitsu TA08025-B604	3	0.75	0.000	63.90	1.962	0.50	99.84	2.529	0.50
69.00	Fujitsu TA08025-B605	3	0.75	0.000	75.00	1.962	0.50	113.61	2.529	0.50
69.00	Commscope RDIDC-9181-PF-48	1	0.75	0.000	21.90	1.867	1.00	56.97	2.422	1.00
69.00	JMA Wireless MX08FRO665-21	3	0.75	0.000	64.50	12.489	0.64	222.91	14.221	0.64
Totals	Num Loadings: 40	93			13,287.50			23,337.78		

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	137.00	6	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	T-MOBILE
0.00	137.00	3	1.99" (50.7mm) Hybrid	1.99	1.9	N	0	0	0	0	0	N	T-MOBILE
0.00	128.00	18	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	VERIZON WIREL

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	128.00	16	1 5/8" Coax	1.98	0.82	N	6	0.5	0.5	90	0.5	Y	VERIZON WIREL
0.00	128.00	2	1 5/8" Hybriflex	1.98	1.3	N	0	0	0	0	0	N	VERIZON WIREL
0.00	119.00	12	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	119.00	4	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	119.00	2	0.39" (10mm) Fiber Tr	0.39	0.06	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	119.00	2	3" conduit	3.5	7.58	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	119.00	1	3" conduit	3.5	7.58	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	119.00	1	1/2" Coax	0.63	0.15	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	119.00	1	3" conduit	3.5	7.58	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	104.00	1	1/2" Coax	0.63	0.15	N	0	0	0	0	0	N	CITY OF MIDDL
0.00	100.00	1	7/8" Coax	1.09	0.33	N	0	0	0	0	0	N	CITY OF MIDDL
0.00	100.00	1	1/2" Coax	0.63	0.15	N	0	0	0	0	0	N	CITY OF MIDDL
0.00	87.00	1	7/8" Coax	1.09	0.33	N	0	0	0	0	0	N	CITY OF MIDDL
0.00	80.00	2	EW90	1.32	0.32	N	0	0	0	0	0	N	CITY OF MIDDL
0.00	80.00	1	7/8" Coax	1.09	0.33	N	0	0	0	0	0	N	CITY OF MIDDL
0.00	69.00	1	1.60" (40.6mm) Hybrid	1.6	2.34	N	0	0	0	0	0	N	DISH WIRELESS

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		0.3750	64.380	76.179	39,429.10	28.86	171.68	67.5	1206.3	0.0	0.0
5.00		0.3750	63.152	74.718	37,203.60	28.28	168.41	68.1	1160.3	0.0	1,283.7
10.00		0.3750	61.925	73.257	35,063.50	27.71	165.13	68.8	1115.2	0.0	1,258.8
15.00		0.3750	60.697	71.796	33,007.00	27.13	161.86	69.5	1071.1	0.0	1,234.0
20.00		0.3750	59.470	70.335	31,032.60	26.55	158.59	70.2	1027.8	0.0	1,209.1
25.00		0.3750	58.242	68.874	29,138.50	25.98	155.31	70.8	985.4	0.0	1,184.2
30.00		0.3750	57.014	67.412	27,323.10	25.40	152.04	71.5	943.9	0.0	1,159.4
35.00		0.3750	55.787	65.951	25,584.70	24.82	148.76	72.2	903.3	0.0	1,134.5
40.00		0.3750	54.559	64.490	23,921.60	24.24	145.49	72.9	863.6	0.0	1,109.7
45.00		0.3750	53.331	63.029	22,332.20	23.67	142.22	73.6	824.8	0.0	1,084.8
45.66	Bot - Section 2	0.3750	53.169	62.835	22,126.80	23.59	141.78	73.7	819.7	0.0	142.0
50.00		0.3750	52.104	61.568	20,814.90	23.09	138.94	74.2	786.8	0.0	1,849.0
52.83	Top - Section 1	0.3750	52.159	61.634	20,881.50	23.11	139.09	74.2	788.5	0.0	1,186.4
55.00		0.3750	51.626	61.000	20,243.60	22.86	137.67	74.5	772.3	0.0	452.8
60.00		0.3750	50.399	59.538	18,823.50	22.29	134.40	75.2	735.6	0.0	1,025.4
65.00		0.3750	49.171	58.077	17,471.40	21.71	131.12	75.9	699.8	0.0	1,000.6
69.00		0.3750	48.189	56.908	16,437.60	21.25	128.50	76.4	671.8	0.0	782.5
70.00		0.3750	47.943	56.616	16,185.60	21.13	127.85	76.5	664.9	0.0	193.1
75.00		0.3750	46.716	55.155	14,964.60	20.56	124.58	77.2	630.9	0.0	950.8
80.00		0.3750	45.488	53.694	13,806.50	19.98	121.30	77.9	597.8	0.0	926.0
85.00		0.3750	44.261	52.233	12,709.80	19.40	118.03	78.6	565.6	0.0	901.1
87.00		0.3750	43.769	51.648	12,287.90	19.17	116.72	78.9	553.0	0.0	353.5
90.00		0.3750	43.033	50.772	11,672.80	18.82	114.75	79.3	534.3	0.0	522.8
92.58	Bot - Section 3	0.3750	42.399	50.018	11,160.40	18.53	113.07	79.6	518.4	0.0	442.4
95.00		0.3750	41.805	49.311	10,693.70	18.25	111.48	79.9	503.8	0.0	755.4
98.41	Top - Section 2	0.3125	41.592	40.943	8,814.60	22.06	133.10	75.5	417.4	0.0	1,047.3
100.00		0.3125	41.203	40.556	8,567.40	21.84	131.85	75.7	409.5	0.0	220.0
104.00		0.3125	40.221	39.582	7,964.80	21.28	128.71	76.4	390.0	0.0	545.4
105.00		0.3125	39.975	39.339	7,818.70	21.15	127.92	76.5	385.2	0.0	134.3
110.00		0.3125	38.747	38.121	7,115.00	20.45	123.99	77.3	361.7	0.0	658.9
113.60		0.3125	37.864	37.245	6,635.30	19.95	121.16	77.9	345.2	0.0	461.6
115.00		0.3125	37.520	36.904	6,454.70	19.76	120.06	78.2	338.8	0.0	176.6
117.00		0.3125	37.029	36.417	6,202.50	19.48	118.49	78.5	329.9	0.0	249.5
119.00		0.3125	36.538	35.930	5,957.00	19.21	116.92	78.8	321.1	0.0	246.2
120.00		0.3125	36.292	35.686	5,836.70	19.07	116.13	79	316.8	0.0	121.8
125.00		0.3125	35.065	34.468	5,259.40	18.37	112.21	79.8	295.4	0.0	596.8
126.80		0.3125	34.623	34.030	5,061.30	18.13	110.79	80.1	287.9	0.0	209.8
126.90		0.3125	34.598	34.006	5,050.40	18.11	110.71	80.1	287.5	0.0	11.6
127.00		0.3125	34.574	33.981	5,039.60	18.10	110.64	80.1	287.1	0.0	11.6
127.10		0.3125	34.549	33.957	5,028.80	18.08	110.56	80.1	286.7	0.0	11.6
127.20		0.3125	34.524	33.933	5,018.00	18.07	110.48	80.1	286.3	0.0	11.6
128.00		0.3125	34.328	33.738	4,932.00	17.96	109.85	80.3	283.0	0.0	92.1
128.50	Top - Section 3	0.3125	34.205	33.616	4,878.80	17.89	109.46	80.4	280.9	0.0	57.3
128.50	Bot - Section 4	0.1875	34.205	20.244	2,959.80	30.76	182.43	65.2	170.4	0.0	
130.00		0.1875	33.837	20.025	2,864.70	30.41	180.46	65.6	166.8	0.0	102.8
134.80		0.1875	32.658	19.324	2,574.10	29.30	174.18	66.9	155.2	0.0	321.3
135.00		0.1875	32.609	19.294	2,562.50	29.26	173.92	67	154.8	0.0	13.1
137.00		0.1875	32.118	19.002	2,447.80	28.79	171.30	67.5	150.1	0.0	130.3
138.00		0.1875	31.873	18.856	2,391.80	28.56	169.99	67.8	147.8	0.0	64.4
138.50		0.1875	31.750	18.783	2,364.10	28.45	169.33	67.9	146.7	0.0	32.0
									Totals:		27,669.9

Load Case: 1.2D + 1.0W Normal 120 mph wind with no ice 22 Iterations
Gust Response Factor: 1.10
Dead load Factor: 1.20
Wind Load Factor: 1.00

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-62.05	-35.07	0.00	-3,430.3	0.00	3,430.34	4,624.80	1,336.95	7,728.54	6,102.72	0	0	0.576
5.00	-59.90	-34.64	0.00	-3,255.0	0.00	3,254.98	4,581.75	1,311.30	7,434.94	5,929.27	0.07	-0.12	0.563
10.00	-57.79	-34.21	0.00	-3,081.8	0.00	3,081.77	4,536.92	1,285.66	7,147.03	5,755.76	0.26	-0.24	0.549
15.00	-55.72	-33.77	0.00	-2,910.7	0.00	2,910.74	4,490.29	1,260.02	6,864.80	5,582.30	0.58	-0.36	0.535
20.00	-53.67	-33.33	0.00	-2,741.9	0.00	2,741.90	4,441.89	1,234.37	6,588.26	5,409.05	1.02	-0.49	0.520
25.00	-51.65	-32.88	0.00	-2,575.3	0.00	2,575.28	4,391.70	1,208.73	6,317.40	5,236.13	1.6	-0.61	0.504
30.00	-49.67	-32.42	0.00	-2,410.9	0.00	2,410.90	4,339.72	1,183.09	6,052.23	5,063.69	2.3	-0.73	0.488
35.00	-47.72	-31.94	0.00	-2,248.8	0.00	2,248.82	4,285.96	1,157.45	5,792.74	4,891.85	3.13	-0.85	0.472
40.00	-45.81	-31.43	0.00	-2,089.2	0.00	2,089.15	4,230.41	1,131.80	5,538.94	4,720.76	4.09	-0.97	0.454
45.00	-43.94	-31.11	0.00	-1,932.0	0.00	1,932.02	4,173.07	1,106.16	5,290.83	4,550.55	5.17	-1.09	0.436
45.66	-43.68	-30.85	0.00	-1,911.4	0.00	1,911.38	4,165.33	1,102.76	5,258.34	4,528.04	5.32	-1.11	0.433
50.00	-40.96	-30.42	0.00	-1,777.6	0.00	1,777.59	4,113.95	1,080.52	5,048.40	4,381.36	6.37	-1.21	0.416
52.83	-39.22	-30.11	0.00	-1,691.5	0.00	1,691.50	4,116.65	1,081.67	5,059.17	4,388.93	7.11	-1.28	0.396
55.00	-38.41	-29.70	0.00	-1,626.2	0.00	1,626.15	4,090.47	1,070.54	4,955.61	4,315.83	7.7	-1.33	0.387
60.00	-36.62	-29.10	0.00	-1,477.6	0.00	1,477.64	4,028.87	1,044.90	4,721.08	4,148.28	9.15	-1.44	0.366
65.00	-34.85	-28.53	0.00	-1,332.2	0.00	1,332.16	3,965.49	1,019.26	4,492.23	3,982.07	10.72	-1.54	0.344
69.00	-29.78	-25.85	0.00	-1,218.0	0.00	1,218.03	3,913.49	998.74	4,313.24	3,850.16	12.05	-1.63	0.325
70.00	-29.43	-25.47	0.00	-1,192.2	0.00	1,192.18	3,900.32	993.61	4,269.06	3,817.34	12.39	-1.65	0.321
75.00	-27.76	-24.81	0.00	-1,064.8	0.00	1,064.82	3,833.36	967.97	4,051.59	3,654.23	14.17	-1.75	0.299
80.00	-25.98	-23.34	0.00	-940.5	0.00	940.46	3,764.62	942.33	3,839.79	3,492.87	16.05	-1.84	0.277
85.00	-24.39	-22.84	0.00	-823.8	0.00	823.78	3,694.09	916.69	3,633.69	3,333.39	18.03	-1.93	0.254
87.00	-23.73	-22.39	0.00	-778.1	0.00	778.11	3,665.38	906.43	3,552.83	3,270.16	18.84	-1.97	0.245
90.00	-22.79	-21.99	0.00	-711.0	0.00	710.95	3,621.78	891.04	3,433.26	3,175.95	20.1	-2.02	0.231
92.58	-22.00	-21.63	0.00	-654.2	0.00	654.21	3,583.76	877.81	3,332.07	3,095.54	21.2	-2.06	0.218
95.00	-20.32	-20.70	0.00	-601.9	0.00	601.87	3,547.68	865.40	3,238.53	3,020.66	22.26	-2.1	0.206
98.41	-18.72	-20.30	0.00	-531.2	0.00	531.21	2,780.48	718.55	2,679.07	2,362.30	23.78	-2.15	0.232
100.00	-18.28	-19.89	0.00	-499.0	0.00	499.01	2,763.68	711.77	2,628.75	2,325.70	24.5	-2.18	0.222
104.00	-17.20	-19.39	0.00	-419.5	0.00	419.47	2,720.52	694.67	2,504.01	2,233.97	26.35	-2.24	0.195
105.00	-16.95	-18.97	0.00	-400.1	0.00	400.07	2,709.55	690.40	2,473.30	2,211.17	26.82	-2.25	0.188
110.00	-15.66	-18.31	0.00	-305.2	0.00	305.25	2,653.64	669.03	2,322.58	2,097.99	29.21	-2.32	0.152
113.60	-14.71	-17.84	0.00	-239.3	0.00	239.32	2,612.27	653.64	2,217.00	2,017.41	30.98	-2.35	0.125
115.00	-14.36	-17.59	0.00	-214.3	0.00	214.34	2,595.94	647.66	2,176.60	1,986.29	31.67	-2.37	0.114
117.00	-10.91	-16.08	0.00	-179.2	0.00	179.17	2,572.36	639.11	2,119.53	1,942.06	32.67	-2.39	0.097
119.00	-9.16	-13.80	0.00	-147.0	0.00	147.01	2,548.49	630.56	2,063.23	1,898.09	33.67	-2.4	0.082
120.00	-8.98	-13.36	0.00	-133.2	0.00	133.21	2,536.45	626.29	2,035.36	1,876.21	34.17	-2.41	0.075
125.00	-8.03	-12.83	0.00	-66.4	0.00	66.41	2,475.18	604.92	1,898.85	1,767.88	36.71	-2.43	0.041
126.80	-7.68	-12.35	0.00	-43.3	0.00	43.32	2,452.69	597.23	1,850.87	1,729.34	37.63	-2.44	0.029
126.90	-7.61	-11.62	0.00	-42.1	0.00	42.08	2,451.43	596.80	1,848.22	1,727.21	37.68	-2.44	0.028
127.00	-7.56	-11.24	0.00	-40.9	0.00	40.92	2,450.17	596.37	1,845.58	1,725.07	37.73	-2.44	0.027
127.10	-7.50	-11.11	0.00	-39.8	0.00	39.80	2,448.92	595.95	1,842.93	1,722.94	37.78	-2.44	0.027
127.20	-7.48	-10.89	0.00	-38.7	0.00	38.69	2,447.66	595.52	1,840.29	1,720.81	37.83	-2.44	0.026
128.00	-3.87	-3.59	0.00	-30.0	0.00	29.97	2,437.56	592.10	1,819.22	1,703.78	38.24	-2.44	0.019
128.50	-3.80	-3.51	0.00	-28.2	0.00	28.17	2,431.23	589.96	1,806.12	1,693.17	38.5	-2.44	0.018
128.50	-3.80	-3.51	0.00	-28.2	0.00	28.17	1,188.40	355.28	1,091.56	833.74	38.5	-2.44	0.037
130.00	-3.67	-3.23	0.00	-22.9	0.00	22.92	1,182.87	351.44	1,068.05	820.83	39.26	-2.44	0.031
134.80	-3.21	-2.89	0.00	-7.4	0.00	7.39	1,164.11	339.13	994.55	779.37	41.72	-2.45	0.012
135.00	-3.19	-2.80	0.00	-6.8	0.00	6.81	1,163.30	338.62	991.55	777.64	41.82	-2.45	0.012
137.00	-2.35	-1.19	0.00	-1.2	0.00	1.20	1,154.97	333.49	961.74	760.31	42.85	-2.45	0.004
138.00	-0.04	-0.02	0.00	-0.0	0.00	0.01	1,150.69	330.92	947.01	751.64	43.36	-2.45	0.000
138.50	0.00	-0.02	0.00	0.0	0.00	0.00	1,148.53	329.64	939.69	747.30	43.62	-2.45	0.000

Load Case: 0.9D + 1.0W Normal 120 mph wind with no ice 22 Iterations
Gust Response Factor: 1.10
Dead load Factor: 0.90
Wind Load Factor: 1.00

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-46.53	-35.06	0.00	-3,407.6	0.00	3,407.65	4,624.80	1,336.95	7,728.54	6,102.72	0	0	0.569
5.00	-44.90	-34.59	0.00	-3,232.4	0.00	3,232.37	4,581.75	1,311.30	7,434.94	5,929.27	0.07	-0.12	0.556
10.00	-43.30	-34.13	0.00	-3,059.4	0.00	3,059.41	4,536.92	1,285.66	7,147.03	5,755.76	0.26	-0.24	0.542
15.00	-41.73	-33.66	0.00	-2,888.8	0.00	2,888.77	4,490.29	1,260.02	6,864.80	5,582.30	0.57	-0.36	0.527
20.00	-40.18	-33.19	0.00	-2,720.5	0.00	2,720.46	4,441.89	1,234.37	6,588.26	5,409.05	1.02	-0.48	0.513
25.00	-38.65	-32.72	0.00	-2,554.5	0.00	2,554.50	4,391.70	1,208.73	6,317.40	5,236.13	1.59	-0.6	0.497
30.00	-37.15	-32.24	0.00	-2,390.9	0.00	2,390.89	4,339.72	1,183.09	6,052.23	5,063.69	2.28	-0.72	0.481
35.00	-35.67	-31.74	0.00	-2,229.7	0.00	2,229.70	4,285.96	1,157.45	5,792.74	4,891.85	3.11	-0.84	0.465
40.00	-34.22	-31.21	0.00	-2,071.0	0.00	2,071.01	4,230.41	1,131.80	5,538.94	4,720.76	4.06	-0.96	0.448
45.00	-32.82	-30.90	0.00	-1,915.0	0.00	1,914.95	4,173.07	1,106.16	5,290.83	4,550.55	5.13	-1.08	0.429
45.66	-32.61	-30.62	0.00	-1,894.4	0.00	1,894.45	4,165.33	1,102.76	5,258.34	4,528.04	5.28	-1.1	0.427
50.00	-30.57	-30.19	0.00	-1,761.6	0.00	1,761.65	4,113.95	1,080.52	5,048.40	4,381.36	6.33	-1.2	0.410
52.83	-29.25	-29.88	0.00	-1,676.2	0.00	1,676.22	4,116.65	1,081.67	5,059.17	4,388.93	7.06	-1.27	0.390
55.00	-28.64	-29.46	0.00	-1,611.4	0.00	1,611.38	4,090.47	1,070.54	4,955.61	4,315.83	7.65	-1.32	0.381
60.00	-27.28	-28.85	0.00	-1,464.1	0.00	1,464.07	4,028.87	1,044.90	4,721.08	4,148.28	9.08	-1.42	0.360
65.00	-25.96	-28.28	0.00	-1,319.8	0.00	1,319.83	3,965.49	1,019.26	4,492.23	3,982.07	10.63	-1.53	0.339
69.00	-22.17	-25.62	0.00	-1,206.7	0.00	1,206.72	3,913.49	998.74	4,313.24	3,850.16	11.95	-1.61	0.320
70.00	-21.90	-25.25	0.00	-1,181.1	0.00	1,181.10	3,900.32	993.61	4,269.06	3,817.34	12.29	-1.63	0.316
75.00	-20.64	-24.58	0.00	-1,054.9	0.00	1,054.87	3,833.36	967.97	4,051.59	3,654.23	14.06	-1.73	0.295
80.00	-19.31	-23.11	0.00	-931.7	0.00	931.66	3,764.62	942.33	3,839.79	3,492.87	15.92	-1.83	0.272
85.00	-18.11	-22.62	0.00	-816.1	0.00	816.10	3,694.09	916.69	3,633.69	3,333.39	17.88	-1.92	0.250
87.00	-17.61	-22.17	0.00	-770.9	0.00	770.87	3,665.38	906.43	3,552.83	3,270.16	18.69	-1.95	0.241
90.00	-16.91	-21.77	0.00	-704.4	0.00	704.37	3,621.78	891.04	3,433.26	3,175.95	19.94	-2	0.227
92.58	-16.31	-21.42	0.00	-648.2	0.00	648.19	3,583.76	877.81	3,332.07	3,095.54	21.03	-2.05	0.215
95.00	-15.06	-20.50	0.00	-596.4	0.00	596.36	3,547.68	865.40	3,238.53	3,020.66	22.08	-2.08	0.202
98.41	-13.86	-20.11	0.00	-526.4	0.00	526.39	2,780.48	718.55	2,679.07	2,362.30	23.59	-2.13	0.229
100.00	-13.54	-19.70	0.00	-494.5	0.00	494.48	2,763.68	711.77	2,628.75	2,325.70	24.3	-2.16	0.218
104.00	-12.73	-19.21	0.00	-415.7	0.00	415.69	2,720.52	694.67	2,504.01	2,233.97	26.14	-2.22	0.192
105.00	-12.53	-18.79	0.00	-396.5	0.00	396.47	2,709.55	690.40	2,473.30	2,211.17	26.6	-2.23	0.185
110.00	-11.57	-18.14	0.00	-302.6	0.00	302.55	2,653.64	669.03	2,322.58	2,097.99	28.98	-2.3	0.149
113.60	-10.86	-17.68	0.00	-237.2	0.00	237.24	2,612.27	653.64	2,217.00	2,017.41	30.72	-2.33	0.122
115.00	-10.60	-17.43	0.00	-212.5	0.00	212.49	2,595.94	647.66	2,176.60	1,986.29	31.41	-2.35	0.112
117.00	-8.03	-15.96	0.00	-177.6	0.00	177.64	2,572.36	639.11	2,119.53	1,942.06	32.4	-2.37	0.095
119.00	-6.73	-13.69	0.00	-145.7	0.00	145.72	2,548.49	630.56	2,063.23	1,898.09	33.39	-2.38	0.080
120.00	-6.60	-13.26	0.00	-132.0	0.00	132.03	2,536.45	626.29	2,035.36	1,876.21	33.89	-2.39	0.073
125.00	-5.90	-12.74	0.00	-65.8	0.00	65.75	2,475.18	604.92	1,898.85	1,767.88	36.41	-2.41	0.040
126.80	-5.64	-12.26	0.00	-42.8	0.00	42.82	2,452.69	597.23	1,850.87	1,729.34	37.32	-2.42	0.027
126.90	-5.59	-11.53	0.00	-41.6	0.00	41.60	2,451.43	596.80	1,848.22	1,727.21	37.37	-2.42	0.027
127.00	-5.56	-11.16	0.00	-40.4	0.00	40.44	2,450.17	596.37	1,845.58	1,725.07	37.42	-2.42	0.026
127.10	-5.52	-11.02	0.00	-39.3	0.00	39.33	2,448.92	595.95	1,842.93	1,722.94	37.47	-2.42	0.025
127.20	-5.50	-10.81	0.00	-38.2	0.00	38.22	2,447.66	595.52	1,840.29	1,720.81	37.52	-2.42	0.025
128.00	-2.87	-3.55	0.00	-29.6	0.00	29.58	2,437.56	592.10	1,819.22	1,703.78	37.92	-2.42	0.019
128.50	-2.82	-3.46	0.00	-27.8	0.00	27.80	2,431.23	589.96	1,806.12	1,693.17	38.18	-2.42	0.018
128.50	-2.82	-3.46	0.00	-27.8	0.00	27.80	1,188.40	355.28	1,091.56	833.74	38.18	-2.42	0.036
130.00	-2.72	-3.19	0.00	-22.6	0.00	22.61	1,182.87	351.44	1,068.05	820.83	38.94	-2.42	0.030
134.80	-2.38	-2.86	0.00	-7.3	0.00	7.28	1,164.11	339.13	994.55	779.37	41.38	-2.43	0.011
135.00	-2.37	-2.77	0.00	-6.7	0.00	6.71	1,163.30	338.62	991.55	777.64	41.48	-2.43	0.011
137.00	-1.75	-1.17	0.00	-1.2	0.00	1.18	1,154.97	333.49	961.74	760.31	42.5	-2.43	0.003
138.00	-0.03	-0.02	0.00	-0.0	0.00	0.01	1,150.69	330.92	947.01	751.64	43	-2.43	0.000
138.50	0.00	-0.02	0.00	0.0	0.00	0.00	1,148.53	329.64	939.69	747.30	43.26	-2.43	0.000

Load Case: 1.2D + 1.0Di + 1.0Wi Normal 50 mph wind with 1" radial ice 21 Iterations
Gust Response Factor: 1.10 Ice Dead Load Factor 1.00
Dead load Factor: 1.20 Ice Importance Factor 1.00
Wind Load Factor: 1.00

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-82.04	-8.11	0.00	-789.2	0.00	789.22	4,624.80	1,336.95	7,728.54	6,102.72	0	0	0.147
5.00	-79.55	-7.99	0.00	-748.7	0.00	748.68	4,581.75	1,311.30	7,434.94	5,929.27	0.02	-0.03	0.144
10.00	-77.06	-7.88	0.00	-708.7	0.00	708.71	4,536.92	1,285.66	7,147.03	5,755.76	0.06	-0.06	0.140
15.00	-74.58	-7.77	0.00	-669.3	0.00	669.32	4,490.29	1,260.02	6,864.80	5,582.30	0.13	-0.08	0.137
20.00	-72.12	-7.65	0.00	-630.5	0.00	630.49	4,441.89	1,234.37	6,588.26	5,409.05	0.24	-0.11	0.133
25.00	-69.69	-7.54	0.00	-592.2	0.00	592.23	4,391.70	1,208.73	6,317.40	5,236.13	0.37	-0.14	0.129
30.00	-67.29	-7.43	0.00	-554.5	0.00	554.53	4,339.72	1,183.09	6,052.23	5,063.69	0.53	-0.17	0.125
35.00	-64.92	-7.31	0.00	-517.4	0.00	517.41	4,285.96	1,157.45	5,792.74	4,891.85	0.72	-0.2	0.121
40.00	-62.58	-7.18	0.00	-480.9	0.00	480.87	4,230.41	1,131.80	5,538.94	4,720.76	0.94	-0.22	0.117
45.00	-60.27	-7.11	0.00	-445.0	0.00	444.96	4,173.07	1,106.16	5,290.83	4,550.55	1.19	-0.25	0.112
45.66	-59.97	-7.05	0.00	-440.2	0.00	440.24	4,165.33	1,102.76	5,258.34	4,528.04	1.22	-0.25	0.112
50.00	-56.88	-6.94	0.00	-409.7	0.00	409.68	4,113.95	1,080.52	5,048.40	4,381.36	1.47	-0.28	0.107
52.83	-54.89	-6.87	0.00	-390.0	0.00	390.03	4,116.65	1,081.67	5,059.17	4,388.93	1.64	-0.29	0.102
55.00	-53.91	-6.78	0.00	-375.1	0.00	375.12	4,090.47	1,070.54	4,955.61	4,315.83	1.77	-0.31	0.100
60.00	-51.68	-6.64	0.00	-341.2	0.00	341.23	4,028.87	1,044.90	4,721.08	4,148.28	2.11	-0.33	0.095
65.00	-49.49	-6.51	0.00	-308.0	0.00	308.05	3,965.49	1,019.26	4,492.23	3,982.07	2.47	-0.36	0.090
69.00	-42.60	-5.91	0.00	-282.0	0.00	282.03	3,913.49	998.74	4,313.24	3,850.16	2.77	-0.37	0.084
70.00	-42.17	-5.82	0.00	-276.1	0.00	276.12	3,900.32	993.61	4,269.06	3,817.34	2.85	-0.38	0.083
75.00	-40.06	-5.67	0.00	-247.0	0.00	247.01	3,833.36	967.97	4,051.59	3,654.23	3.26	-0.4	0.078
80.00	-37.60	-5.35	0.00	-218.5	0.00	218.54	3,764.62	942.33	3,839.79	3,492.87	3.69	-0.42	0.073
85.00	-35.57	-5.24	0.00	-191.8	0.00	191.80	3,694.09	916.69	3,633.69	3,333.39	4.15	-0.45	0.067
87.00	-34.71	-5.13	0.00	-181.3	0.00	181.33	3,665.38	906.43	3,552.83	3,270.16	4.34	-0.45	0.065
90.00	-33.51	-5.05	0.00	-165.9	0.00	165.93	3,621.78	891.04	3,433.26	3,175.95	4.63	-0.47	0.062
92.58	-32.50	-4.97	0.00	-152.9	0.00	152.91	3,583.76	877.81	3,332.07	3,095.54	4.88	-0.48	0.058
95.00	-30.49	-4.77	0.00	-140.9	0.00	140.88	3,547.68	865.40	3,238.53	3,020.66	5.13	-0.48	0.055
98.41	-28.60	-4.69	0.00	-124.6	0.00	124.59	2,780.48	718.55	2,679.07	2,362.30	5.48	-0.5	0.063
100.00	-28.02	-4.60	0.00	-117.2	0.00	117.15	2,763.68	711.77	2,628.75	2,325.70	5.64	-0.5	0.061
104.00	-26.56	-4.49	0.00	-98.7	0.00	98.74	2,720.52	694.67	2,504.01	2,233.97	6.07	-0.52	0.054
105.00	-26.21	-4.40	0.00	-94.2	0.00	94.25	2,709.55	690.40	2,473.30	2,211.17	6.18	-0.52	0.052
110.00	-24.51	-4.27	0.00	-72.2	0.00	72.23	2,653.64	669.03	2,322.58	2,097.99	6.73	-0.54	0.044
113.60	-23.20	-4.17	0.00	-56.9	0.00	56.86	2,612.27	653.64	2,217.00	2,017.41	7.14	-0.54	0.037
115.00	-22.73	-4.12	0.00	-51.0	0.00	51.02	2,595.94	647.66	2,176.60	1,986.29	7.3	-0.55	0.034
117.00	-18.25	-3.73	0.00	-42.8	0.00	42.78	2,572.36	639.11	2,119.53	1,942.06	7.53	-0.55	0.029
119.00	-15.03	-3.24	0.00	-35.3	0.00	35.32	2,548.49	630.56	2,063.23	1,898.09	7.76	-0.56	0.025
120.00	-14.76	-3.16	0.00	-32.1	0.00	32.08	2,536.45	626.29	2,035.36	1,876.21	7.88	-0.56	0.023
125.00	-13.41	-3.05	0.00	-16.3	0.00	16.28	2,475.18	604.92	1,898.85	1,767.88	8.47	-0.56	0.015
126.80	-12.75	-2.94	0.00	-10.8	0.00	10.79	2,452.69	597.23	1,850.87	1,729.34	8.68	-0.56	0.011
126.90	-12.16	-2.82	0.00	-10.5	0.00	10.50	2,451.43	596.80	1,848.22	1,727.21	8.69	-0.56	0.011
127.00	-11.95	-2.74	0.00	-10.2	0.00	10.21	2,450.17	596.37	1,845.58	1,725.07	8.7	-0.56	0.011
127.10	-11.82	-2.70	0.00	-9.9	0.00	9.94	2,448.92	595.95	1,842.93	1,722.94	8.72	-0.56	0.011
127.20	-11.73	-2.66	0.00	-9.7	0.00	9.67	2,447.66	595.52	1,840.29	1,720.81	8.73	-0.56	0.010
128.00	-5.75	-0.92	0.00	-7.5	0.00	7.54	2,437.56	592.10	1,819.22	1,703.78	8.82	-0.57	0.007
128.50	-5.65	-0.90	0.00	-7.1	0.00	7.08	2,431.23	589.96	1,806.12	1,693.17	8.88	-0.57	0.007
128.50	-5.65	-0.90	0.00	-7.1	0.00	7.08	1,188.40	355.28	1,091.56	833.74	8.88	-0.57	0.013
130.00	-5.43	-0.81	0.00	-5.7	0.00	5.74	1,182.87	351.44	1,068.05	820.83	9.06	-0.57	0.012
134.80	-4.68	-0.71	0.00	-1.8	0.00	1.84	1,164.11	339.13	994.55	779.37	9.63	-0.57	0.006
135.00	-4.66	-0.68	0.00	-1.7	0.00	1.70	1,163.30	338.62	991.55	777.64	9.65	-0.57	0.006
137.00	-2.92	-0.34	0.00	-0.3	0.00	0.34	1,154.97	333.49	961.74	760.31	9.89	-0.57	0.003
138.00	-0.06	-0.01	0.00	0.0	0.00	0.00	1,150.69	330.92	947.01	751.64	10.01	-0.57	0.000
138.50	0.00	-0.01	0.00	0.0	0.00	0.00	1,148.53	329.64	939.69	747.30	10.07	-0.57	0.000

Load Case: 1.0D + 1.0W Service Normal 60 mph Wind with No Ice 21 Iterations
Gust Response Factor: 1.10
Dead load Factor: 1.00
Wind Load Factor: 1.00

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-51.74	-7.84	0.00	-764.1	0.00	764.06	4,624.80	1,336.95	7,728.54	6,102.72	0	0	0.136
5.00	-50.01	-7.74	0.00	-724.8	0.00	724.85	4,581.75	1,311.30	7,434.94	5,929.27	0.01	-0.03	0.133
10.00	-48.30	-7.64	0.00	-686.1	0.00	686.14	4,536.92	1,285.66	7,147.03	5,755.76	0.06	-0.05	0.130
15.00	-46.63	-7.54	0.00	-648.0	0.00	647.95	4,490.29	1,260.02	6,864.80	5,582.30	0.13	-0.08	0.126
20.00	-44.97	-7.43	0.00	-610.3	0.00	610.26	4,441.89	1,234.37	6,588.26	5,409.05	0.23	-0.11	0.123
25.00	-43.34	-7.33	0.00	-573.1	0.00	573.10	4,391.70	1,208.73	6,317.40	5,236.13	0.36	-0.14	0.119
30.00	-41.74	-7.22	0.00	-536.4	0.00	536.44	4,339.72	1,183.09	6,052.23	5,063.69	0.51	-0.16	0.116
35.00	-40.16	-7.11	0.00	-500.3	0.00	500.32	4,285.96	1,157.45	5,792.74	4,891.85	0.7	-0.19	0.112
40.00	-38.61	-7.00	0.00	-464.8	0.00	464.75	4,230.41	1,131.80	5,538.94	4,720.76	0.91	-0.22	0.108
45.00	-37.08	-6.93	0.00	-429.8	0.00	429.76	4,173.07	1,106.16	5,290.83	4,550.55	1.15	-0.24	0.103
45.66	-36.88	-6.87	0.00	-425.2	0.00	425.17	4,165.33	1,102.76	5,258.34	4,528.04	1.18	-0.25	0.103
50.00	-34.65	-6.77	0.00	-395.4	0.00	395.39	4,113.95	1,080.52	5,048.40	4,381.36	1.42	-0.27	0.099
52.83	-33.21	-6.70	0.00	-376.2	0.00	376.23	4,116.65	1,081.67	5,059.17	4,388.93	1.58	-0.28	0.094
55.00	-32.56	-6.61	0.00	-361.7	0.00	361.68	4,090.47	1,070.54	4,955.61	4,315.83	1.72	-0.3	0.092
60.00	-31.10	-6.47	0.00	-328.6	0.00	328.64	4,028.87	1,044.90	4,721.08	4,148.28	2.04	-0.32	0.087
65.00	-29.65	-6.35	0.00	-296.3	0.00	296.28	3,965.49	1,019.26	4,492.23	3,982.07	2.39	-0.34	0.082
69.00	-25.39	-5.75	0.00	-270.9	0.00	270.89	3,913.49	998.74	4,313.24	3,850.16	2.68	-0.36	0.077
70.00	-25.11	-5.67	0.00	-265.1	0.00	265.14	3,900.32	993.61	4,269.06	3,817.34	2.76	-0.37	0.076
75.00	-23.73	-5.52	0.00	-236.8	0.00	236.82	3,833.36	967.97	4,051.59	3,654.23	3.15	-0.39	0.071
80.00	-22.25	-5.19	0.00	-209.2	0.00	209.16	3,764.62	942.33	3,839.79	3,492.87	3.57	-0.41	0.066
85.00	-20.92	-5.08	0.00	-183.2	0.00	183.22	3,694.09	916.69	3,633.69	3,333.39	4.01	-0.43	0.061
87.00	-20.37	-4.98	0.00	-173.1	0.00	173.07	3,665.38	906.43	3,552.83	3,270.16	4.19	-0.44	0.059
90.00	-19.60	-4.89	0.00	-158.1	0.00	158.14	3,621.78	891.04	3,433.26	3,175.95	4.47	-0.45	0.055
92.58	-18.94	-4.81	0.00	-145.5	0.00	145.52	3,583.76	877.81	3,332.07	3,095.54	4.72	-0.46	0.052
95.00	-17.53	-4.60	0.00	-133.9	0.00	133.89	3,547.68	865.40	3,238.53	3,020.66	4.95	-0.47	0.049
98.41	-16.19	-4.52	0.00	-118.2	0.00	118.18	2,780.48	718.55	2,679.07	2,362.30	5.29	-0.48	0.056
100.00	-15.83	-4.42	0.00	-111.0	0.00	111.01	2,763.68	711.77	2,628.75	2,325.70	5.45	-0.48	0.053
104.00	-14.92	-4.31	0.00	-93.3	0.00	93.32	2,720.52	694.67	2,504.01	2,233.97	5.86	-0.5	0.047
105.00	-14.70	-4.22	0.00	-89.0	0.00	89.01	2,709.55	690.40	2,473.30	2,211.17	5.97	-0.5	0.046
110.00	-13.63	-4.07	0.00	-67.9	0.00	67.92	2,653.64	669.03	2,322.58	2,097.99	6.5	-0.52	0.038
113.60	-12.82	-3.97	0.00	-53.3	0.00	53.26	2,612.27	653.64	2,217.00	2,017.41	6.89	-0.52	0.031
115.00	-12.53	-3.91	0.00	-47.7	0.00	47.70	2,595.94	647.66	2,176.60	1,986.29	7.05	-0.53	0.029
117.00	-9.61	-3.58	0.00	-39.9	0.00	39.87	2,572.36	639.11	2,119.53	1,942.06	7.27	-0.53	0.024
119.00	-8.08	-3.07	0.00	-32.7	0.00	32.71	2,548.49	630.56	2,063.23	1,898.09	7.49	-0.53	0.020
120.00	-7.92	-2.97	0.00	-29.6	0.00	29.64	2,536.45	626.29	2,035.36	1,876.21	7.61	-0.54	0.019
125.00	-7.12	-2.86	0.00	-14.8	0.00	14.77	2,475.18	604.92	1,898.85	1,767.88	8.17	-0.54	0.011
126.80	-6.81	-2.75	0.00	-9.6	0.00	9.62	2,452.69	597.23	1,850.87	1,729.34	8.37	-0.54	0.008
126.90	-6.72	-2.59	0.00	-9.4	0.00	9.35	2,451.43	596.80	1,848.22	1,727.21	8.39	-0.54	0.008
127.00	-6.67	-2.50	0.00	-9.1	0.00	9.09	2,450.17	596.37	1,845.58	1,725.07	8.4	-0.54	0.008
127.10	-6.62	-2.47	0.00	-8.8	0.00	8.84	2,448.92	595.95	1,842.93	1,722.94	8.41	-0.54	0.008
127.20	-6.59	-2.43	0.00	-8.6	0.00	8.59	2,447.66	595.52	1,840.29	1,720.81	8.42	-0.54	0.008
128.00	-3.35	-0.80	0.00	-6.6	0.00	6.65	2,437.56	592.10	1,819.22	1,703.78	8.51	-0.54	0.005
128.50	-3.28	-0.78	0.00	-6.2	0.00	6.25	2,431.23	589.96	1,806.12	1,693.17	8.57	-0.54	0.005
128.50	-3.28	-0.78	0.00	-6.2	0.00	6.25	1,188.40	355.28	1,091.56	833.74	8.57	-0.54	0.010
130.00	-3.17	-0.72	0.00	-5.1	0.00	5.08	1,182.87	351.44	1,068.05	820.83	8.74	-0.54	0.009
134.80	-2.77	-0.64	0.00	-1.6	0.00	1.64	1,164.11	339.13	994.55	779.37	9.29	-0.55	0.004
135.00	-2.75	-0.62	0.00	-1.5	0.00	1.51	1,163.30	338.62	991.55	777.64	9.31	-0.55	0.004
137.00	-1.99	-0.26	0.00	-0.3	0.00	0.27	1,154.97	333.49	961.74	760.31	9.54	-0.55	0.002
138.00	-0.03	0.00	0.00	0.0	0.00	0.00	1,150.69	330.92	947.01	751.64	9.65	-0.55	0.000
138.50	0.00	0.00	0.00	0.0	0.00	0.00	1,148.53	329.64	939.69	747.30	9.71	-0.55	0.000

EQUIVALENT LATERAL FORCES METHOD ANALYSIS

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

Spectral Response Acceleration for Short Period (S_S):	0.210
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.056
Long-Period Transition Period (T_L – Seconds):	6
Importance Factor (I_e):	1.000
Site Coefficient F_a:	1.600
Site Coefficient F_v:	2.400
Response Modification Coefficient (R):	1.500
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.224
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.090
Seismic Response Coefficient (C_s):	0.035
Upper Limit C_S:	0.035
Lower Limit C_S:	0.030
Period based on Rayleigh Method (sec):	1.680
Redundancy Factor (p):	1.000
Seismic Force Distribution Exponent (k):	1.590
Total Unfactored Dead Load:	51.740 k
Seismic Base Shear (E):	1.840 k

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

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
48	138.25	32	82	0.002	3	40
47	137.5	64	163	0.003	5	80
46	136	152	377	0.007	13	189
45	134.9	15	37	0.001	1	19
44	132.4	372	887	0.016	30	463
43	129.25	119	272	0.005	9	148
42	128.25	63	142	0.003	5	78
41	127.6	125	281	0.005	9	156
40	127.15	16	35	0.001	1	19
39	127.05	16	35	0.001	1	20
38	126.95	16	35	0.001	1	20
37	126.85	16	35	0.001	1	20
36	125.9	284	624	0.011	21	353
35	122.5	802	1,690	0.031	56	999
34	119.5	163	330	0.006	11	203
33	118	414	821	0.015	27	515
32	116	417	806	0.015	27	519
31	114.3	294	555	0.010	19	366
30	111.8	764	1,390	0.025	46	951
29	107.5	1,078	1,845	0.034	62	1,342
28	104.5	218	357	0.006	12	272
27	102	882	1,387	0.025	46	1,097
26	99.2067	354	533	0.010	18	441
25	96.7067	1,336	1,931	0.035	65	1,663
24	93.79	960	1,322	0.024	44	1,195
23	91.29	660	871	0.016	29	822
22	88.5	776	974	0.018	33	966
21	86	523	627	0.011	21	651
20	82.5	1,325	1,488	0.027	50	1,650
19	77.5	1,355	1,377	0.025	46	1,687
18	72.5	1,380	1,261	0.023	42	1,718
17	69.5	279	238	0.004	8	347
16	67	1,135	915	0.017	31	1,413
15	62.5	1,441	1,040	0.019	35	1,794

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
14	57.5	1,466	927	0.017	31	1,825
13	53.915	644	367	0.007	12	802
12	51.415	1,436	759	0.014	25	1,787
11	47.8317	2,231	1,052	0.019	35	2,777
10	45.3317	201	87	0.002	3	250
9	42.5	1,526	596	0.011	20	1,899
8	37.5	1,550	496	0.009	17	1,930
7	32.5	1,575	401	0.007	13	1,961
6	27.5	1,600	313	0.006	10	1,992
5	22.5	1,625	231	0.004	8	2,023
4	17.5	1,650	157	0.003	5	2,054
3	12.5	1,675	93	0.002	3	2,085
2	7.5	1,700	42	0.001	1	2,116
1	2.5	1,724	7	0.000	0	2,147
Generic 10' Omni	138	25	64	0.001	2	31
Generic 10' Omni	134.8	25	61	0.001	2	31
Generic Round Low Profile Platform	138	1,875	4,773	0.087	159	2,334
Ericsson 4480 BAND 71	137	243	611	0.011	20	302
RFS APXVAALL24 43-U-NA20	137	368	927	0.017	31	459
Commscope CBC78T-DS-43-2X	128	62	140	0.003	5	77
Samsung B2/B66A RRH-BR049	128	253	572	0.010	19	315
Samsung B5/B13 RRH-BR04C	128	211	476	0.009	16	263
RFS APL866513-44T0	128	31	71	0.001	2	39
Raycap RCMDC-6627-PF-48	128	32	72	0.001	2	40
Samsung MT6407-77A	128	245	553	0.010	18	305
Decibel DB846H80E-SX	128	64	145	0.003	5	80
Decibel DB846H80E-SX	126.9	32	71	0.001	2	40
Commscope JAHH-65B-R3B	128	364	821	0.015	27	453
Generic Flat Low Profile Platform	128	1,875	4,234	0.077	142	2,334
VZW Unused Reserve (16760.40 sqin)	128	0	0	0.000	0	0
Antel BXA-70063/4CF	127.2	10	22	0.000	1	12
Generic 46" x 6" Panel	127.1	40	89	0.002	3	50
Antel BXA-70063/6CF_	127	34	76	0.001	3	42
Antel LPA-185080/12CF ___	126.9	42	94	0.002	3	52
Amphenol Antel LPA-171063-12CF-EDIN-X	126.8	23	51	0.001	2	29
Powerwave Allgon LGP21401	119	85	170	0.003	6	105
Ericsson Radio 8843 - B2 + B66A	119	216	434	0.008	14	269
Ericsson RRUS 4449 B5, B12	119	213	428	0.008	14	265
Powerwave Allgon 7770.00	119	105	211	0.004	7	131
Commscope NNH4-65B-R6	119	269	541	0.010	18	335
CCI DMP65R-BU6DA	119	238	479	0.009	16	297
Generic Round Platform with Handrails	117	2,500	4,894	0.089	164	3,112
Raycap DC6-48-60-18-8F	113.6	40	75	0.001	2	50
RFI Antennas CC807-08	104	24	39	0.001	1	30
RFI Antennas CC807-08	87	24	30	0.000	1	30
Bird DS428E83I01T	100	9	14	0.000	0	11
Flat Side Arm	95	450	632	0.012	21	560
RFI Antennas OA20-41-DIN	80	28	30	0.000	1	35
Radio Waves HP3-11	80	100	107	0.002	4	124
Commscope RDIDC-9181-PF-48	69	22	18	0.000	1	27
Fujitsu TA08025-B605	69	225	190	0.004	6	280
Fujitsu TA08025-B604	69	192	162	0.003	5	239
JMA Wireless MX08FRO665-21	69	194	163	0.003	5	241
Generic Flat Platform with Handrails	69	2,500	2,112	0.038	71	3,112
		51,737	54,944	1.000	1,836	64,402

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

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
48	138.25	32	82	0.002	3	27
47	137.5	64	163	0.003	5	55
46	136	152	377	0.007	13	130

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
45	134.9	15	37	0.001	1	13
44	132.4	372	887	0.016	30	318
43	129.25	119	272	0.005	9	102
42	128.25	63	142	0.003	5	54
41	127.6	125	281	0.005	9	107
40	127.15	16	35	0.001	1	13
39	127.05	16	35	0.001	1	13
38	126.95	16	35	0.001	1	13
37	126.85	16	35	0.001	1	13
36	125.9	284	624	0.011	21	243
35	122.5	802	1,690	0.031	56	686
34	119.5	163	330	0.006	11	139
33	118	414	821	0.015	27	354
32	116	417	806	0.015	27	357
31	114.3	294	555	0.010	19	251
30	111.8	764	1,390	0.025	46	653
29	107.5	1,078	1,845	0.034	62	922
28	104.5	218	357	0.006	12	187
27	102	882	1,387	0.025	46	754
26	99.2067	354	533	0.010	18	303
25	96.7067	1,336	1,931	0.035	65	1,142
24	93.79	960	1,322	0.024	44	821
23	91.29	660	871	0.016	29	565
22	88.5	776	974	0.018	33	664
21	86	523	627	0.011	21	447
20	82.5	1,325	1,488	0.027	50	1,133
19	77.5	1,355	1,377	0.025	46	1,159
18	72.5	1,380	1,261	0.023	42	1,180
17	69.5	279	238	0.004	8	239
16	67	1,135	915	0.017	31	971
15	62.5	1,441	1,040	0.019	35	1,233
14	57.5	1,466	927	0.017	31	1,254
13	53.915	644	367	0.007	12	551
12	51.415	1,436	759	0.014	25	1,228
11	47.8317	2,231	1,052	0.019	35	1,908
10	45.3317	201	87	0.002	3	171
9	42.5	1,526	596	0.011	20	1,305
8	37.5	1,550	496	0.009	17	1,326
7	32.5	1,575	401	0.007	13	1,347
6	27.5	1,600	313	0.006	10	1,368
5	22.5	1,625	231	0.004	8	1,390
4	17.5	1,650	157	0.003	5	1,411
3	12.5	1,675	93	0.002	3	1,432
2	7.5	1,700	42	0.001	1	1,454
1	2.5	1,724	7	0.000	0	1,475
Generic 10' Omni	138	25	64	0.001	2	21
Generic 10' Omni	134.8	25	61	0.001	2	21
Generic Round Low Profile Platform	138	1,875	4,773	0.087	159	1,604
Ericsson 4480 BAND 71	137	243	611	0.011	20	208
RFS APXVAALL24 43-U-NA20	137	368	927	0.017	31	315
Commscope CBC78T-DS-43-2X	128	62	140	0.003	5	53
Samsung B2/B66A RRH-BR049	128	253	572	0.010	19	217
Samsung B5/B13 RRH-BR04C	128	211	476	0.009	16	180
RFS APL866513-44T0	128	31	71	0.001	2	27
Raycap RCMDC-6627-PF-48	128	32	72	0.001	2	27
Samsung MT6407-77A	128	245	553	0.010	18	209
Decibel DB846H80E-SX	128	64	145	0.003	5	55
Decibel DB846H80E-SX	126.9	32	71	0.001	2	27
Commscope JAHH-65B-R3B	128	364	821	0.015	27	311
Generic Flat Low Profile Platform	128	1,875	4,234	0.077	142	1,604
VZW Unused Reserve (16760.40 sqin)	128	0	0	0.000	0	0
Antel BXA-70063/4CF	127.2	10	22	0.000	1	8
Generic 46" x 6" Panel	127.1	40	89	0.002	3	34
Antel BXA-70063/6CF_	127	34	76	0.001	3	29
Antel LPA-185080/12CF ___	126.9	42	94	0.002	3	36
Amphenol Antel LPA-171063-12CF-EDIN-X	126.8	23	51	0.001	2	20
Powerwave Allgon LGP21401	119	85	170	0.003	6	72
Ericsson Radio 8843 - B2 + B66A	119	216	434	0.008	14	184
Ericsson RRUS 4449 B5, B12	119	213	428	0.008	14	182
Powerwave Allgon 7770.00	119	105	211	0.004	7	90

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
Commscope NNH4-65B-R6	119	269	541	0.010	18	230
CCI DMP65R-BU6DA	119	238	479	0.009	16	204
Generic Round Platform with Handrails	117	2,500	4,894	0.089	164	2,138
Raycap DC6-48-60-18-8F	113.6	40	75	0.001	2	34
RFI Antennas CC807-08	104	24	39	0.001	1	21
RFI Antennas CC807-08	87	24	30	0.000	1	21
Bird DS428E83I01T	100	9	14	0.000	0	8
Flat Side Arm	95	450	632	0.012	21	385
RFI Antennas OA20-41-DIN	80	28	30	0.000	1	24
Radio Waves HP3-11	80	100	107	0.002	4	86
Commscope RDIDC-9181-PF-48	69	22	18	0.000	1	19
Fujitsu TA08025-B605	69	225	190	0.004	6	192
Fujitsu TA08025-B604	69	192	162	0.003	5	164
JMA Wireless MX08FRO665-21	69	194	163	0.003	5	165
Generic Flat Platform with Handrails	69	2,500	2,112	0.038	71	2,138
		51,737	54,944	1.000	1,836	44,246

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

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-62.26	-1.84	0.00	-192.49	0.00	192.49	4,624.80	1,336.95	7,729	6,102.72	0.00	0.00	0.05
5.00	-60.14	-1.84	0.00	-183.30	0.00	183.30	4,581.75	1,311.30	7,435	5,929.27	0.00	-0.01	0.04
10.00	-58.05	-1.85	0.00	-174.08	0.00	174.08	4,536.92	1,285.66	7,147	5,755.76	0.01	-0.01	0.04
15.00	-56.00	-1.85	0.00	-164.84	0.00	164.84	4,490.29	1,260.02	6,865	5,582.30	0.03	-0.02	0.04
20.00	-53.98	-1.85	0.00	-155.59	0.00	155.59	4,441.89	1,234.37	6,588	5,409.05	0.06	-0.03	0.04
25.00	-51.99	-1.84	0.00	-146.36	0.00	146.36	4,391.70	1,208.73	6,317	5,236.13	0.09	-0.03	0.04
30.00	-50.02	-1.83	0.00	-137.16	0.00	137.16	4,339.72	1,183.09	6,052	5,063.69	0.13	-0.04	0.04
35.00	-48.09	-1.82	0.00	-127.99	0.00	127.99	4,285.96	1,157.45	5,793	4,891.85	0.18	-0.05	0.04
40.00	-46.19	-1.80	0.00	-118.89	0.00	118.89	4,230.41	1,131.80	5,539	4,720.76	0.23	-0.05	0.04
45.00	-45.95	-1.80	0.00	-109.87	0.00	109.87	4,173.07	1,106.16	5,291	4,550.55	0.29	-0.06	0.04
45.66	-43.17	-1.77	0.00	-108.67	0.00	108.67	4,165.33	1,102.76	5,258	4,528.04	0.30	-0.06	0.03
50.00	-41.38	-1.74	0.00	-101.00	0.00	101.00	4,113.95	1,080.52	5,048	4,381.36	0.36	-0.07	0.03
52.83	-40.58	-1.73	0.00	-96.07	0.00	96.07	4,116.65	1,081.67	5,059	4,388.93	0.40	-0.07	0.03
55.00	-38.75	-1.70	0.00	-92.31	0.00	92.31	4,090.47	1,070.54	4,956	4,315.83	0.44	-0.08	0.03
60.00	-36.96	-1.67	0.00	-83.79	0.00	83.79	4,028.87	1,044.90	4,721	4,148.28	0.52	-0.08	0.03
65.00	-35.55	-1.64	0.00	-75.44	0.00	75.44	3,965.49	1,019.26	4,492	3,982.07	0.61	-0.09	0.03
69.00	-31.30	-1.54	0.00	-68.87	0.00	68.87	3,913.49	998.74	4,313	3,850.16	0.68	-0.09	0.03
70.00	-29.58	-1.50	0.00	-67.33	0.00	67.33	3,900.32	993.61	4,269	3,817.34	0.70	-0.09	0.03
75.00	-27.89	-1.45	0.00	-59.85	0.00	59.85	3,833.36	967.97	4,052	3,654.23	0.80	-0.10	0.02
80.00	-26.09	-1.40	0.00	-52.60	0.00	52.60	3,764.62	942.33	3,840	3,492.87	0.91	-0.10	0.02
85.00	-25.43	-1.37	0.00	-45.63	0.00	45.63	3,694.09	916.69	3,634	3,333.39	1.02	-0.11	0.02
87.00	-24.44	-1.34	0.00	-42.88	0.00	42.88	3,665.38	906.43	3,553	3,270.16	1.07	-0.11	0.02
90.00	-23.62	-1.31	0.00	-38.86	0.00	38.86	3,621.78	891.04	3,433	3,175.95	1.14	-0.11	0.02
92.58	-22.42	-1.26	0.00	-35.48	0.00	35.48	3,583.76	877.81	3,332	3,095.54	1.20	-0.12	0.02
95.00	-20.20	-1.18	0.00	-32.42	0.00	32.42	3,547.68	865.40	3,239	3,020.66	1.26	-0.12	0.02
98.41	-19.76	-1.16	0.00	-28.41	0.00	28.41	2,780.48	718.55	2,679	2,362.30	1.35	-0.12	0.02
100.00	-18.65	-1.11	0.00	-26.57	0.00	26.57	2,763.68	711.77	2,629	2,325.70	1.39	-0.12	0.02
104.00	-18.35	-1.10	0.00	-22.13	0.00	22.13	2,720.52	694.67	2,504	2,233.97	1.49	-0.13	0.02
105.00	-17.00	-1.03	0.00	-21.04	0.00	21.04	2,709.55	690.40	2,473	2,211.17	1.52	-0.13	0.02
110.00	-16.05	-0.98	0.00	-15.88	0.00	15.88	2,653.64	669.03	2,323	2,097.99	1.65	-0.13	0.01
113.60	-15.64	-0.96	0.00	-12.34	0.00	12.34	2,612.27	653.64	2,217	2,017.41	1.75	-0.13	0.01
115.00	-15.12	-0.93	0.00	-10.99	0.00	10.99	2,595.94	647.66	2,177	1,986.29	1.79	-0.13	0.01
117.00	-11.49	-0.74	0.00	-9.12	0.00	9.12	2,572.36	639.11	2,120	1,942.06	1.85	-0.13	0.01
119.00	-9.89	-0.64	0.00	-7.65	0.00	7.65	2,548.49	630.56	2,063	1,898.09	1.90	-0.13	0.01
120.00	-8.89	-0.59	0.00	-7.01	0.00	7.01	2,536.45	626.29	2,035	1,876.21	1.93	-0.13	0.01
125.00	-8.54	-0.56	0.00	-4.08	0.00	4.08	2,475.18	604.92	1,899	1,767.88	2.07	-0.14	0.01
126.80	-8.49	-0.56	0.00	-3.06	0.00	3.06	2,452.69	597.23	1,851	1,729.34	2.12	-0.14	0.01
126.90	-8.38	-0.55	0.00	-3.00	0.00	3.00	2,451.43	596.80	1,848	1,727.21	2.13	-0.14	0.01
127.00	-8.32	-0.55	0.00	-2.95	0.00	2.95	2,450.17	596.37	1,846	1,725.07	2.13	-0.14	0.01
127.10	-8.25	-0.55	0.00	-2.89	0.00	2.89	2,448.92	595.95	1,843	1,722.94	2.13	-0.14	0.01
127.20	-8.08	-0.54	0.00	-2.84	0.00	2.84	2,447.66	595.52	1,840	1,720.81	2.13	-0.14	0.01
128.00	-4.10	-0.29	0.00	-2.41	0.00	2.41	2,437.56	592.10	1,819	1,703.78	2.16	-0.14	0.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
128.50	-3.95	-0.28	0.00	-2.27	0.00	2.27	2,431.23	589.96	1,806	1,693.17	2.17	-0.14	0.00
128.50	-3.95	-0.28	0.00	-2.27	0.00	2.27	1,188.40	355.28	1,092	833.74	2.17	-0.14	0.01
130.00	-3.48	-0.25	0.00	-1.85	0.00	1.85	1,182.87	351.44	1,068	820.83	2.22	-0.14	0.01
134.80	-3.43	-0.24	0.00	-0.68	0.00	0.68	1,164.11	339.13	995	779.37	2.35	-0.14	0.00
135.00	-3.25	-0.23	0.00	-0.63	0.00	0.63	1,163.30	338.62	992	777.64	2.36	-0.14	0.00
137.00	-2.40	-0.17	0.00	-0.17	0.00	0.17	1,154.97	333.49	962	760.31	2.42	-0.14	0.00
138.00	0.00	0.00	0.00	0.00	0.00	0.00	1,150.69	330.92	947	751.64	2.45	-0.14	0.00
138.50	0.00	0.00	0.00	0.00	0.00	0.00	1,148.53	329.64	940	747.30	2.46	-0.14	0.00

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

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-42.77	-1.84	0.00	-190.91	0.00	190.91	4,624.80	1,336.95	7,729	6,102.72	0.00	0.00	0.04
5.00	-41.32	-1.84	0.00	-181.72	0.00	181.72	4,581.75	1,311.30	7,435	5,929.27	0.00	-0.01	0.04
10.00	-39.88	-1.84	0.00	-172.52	0.00	172.52	4,536.92	1,285.66	7,147	5,755.76	0.01	-0.01	0.04
15.00	-38.47	-1.84	0.00	-163.31	0.00	163.31	4,490.29	1,260.02	6,865	5,582.30	0.03	-0.02	0.04
20.00	-37.08	-1.84	0.00	-154.10	0.00	154.10	4,441.89	1,234.37	6,588	5,409.05	0.06	-0.03	0.04
25.00	-35.71	-1.83	0.00	-144.92	0.00	144.92	4,391.70	1,208.73	6,317	5,236.13	0.09	-0.03	0.04
30.00	-34.37	-1.82	0.00	-135.76	0.00	135.76	4,339.72	1,183.09	6,052	5,063.69	0.13	-0.04	0.04
35.00	-33.04	-1.81	0.00	-126.66	0.00	126.66	4,285.96	1,157.45	5,793	4,891.85	0.18	-0.05	0.03
40.00	-31.74	-1.79	0.00	-117.63	0.00	117.63	4,230.41	1,131.80	5,539	4,720.76	0.23	-0.05	0.03
45.00	-31.56	-1.79	0.00	-108.69	0.00	108.69	4,173.07	1,106.16	5,291	4,550.55	0.29	-0.06	0.03
45.66	-29.66	-1.75	0.00	-107.50	0.00	107.50	4,165.33	1,102.76	5,258	4,528.04	0.30	-0.06	0.03
50.00	-28.43	-1.73	0.00	-99.90	0.00	99.90	4,113.95	1,080.52	5,048	4,381.36	0.36	-0.07	0.03
52.83	-27.88	-1.72	0.00	-95.01	0.00	95.01	4,116.65	1,081.67	5,059	4,388.93	0.40	-0.07	0.03
55.00	-26.62	-1.69	0.00	-91.28	0.00	91.28	4,090.47	1,070.54	4,956	4,315.83	0.43	-0.07	0.03
60.00	-25.39	-1.65	0.00	-82.85	0.00	82.85	4,028.87	1,044.90	4,721	4,148.28	0.51	-0.08	0.03
65.00	-24.42	-1.62	0.00	-74.58	0.00	74.58	3,965.49	1,019.26	4,492	3,982.07	0.60	-0.09	0.03
69.00	-21.50	-1.52	0.00	-68.09	0.00	68.09	3,913.49	998.74	4,313	3,850.16	0.68	-0.09	0.02
70.00	-20.32	-1.48	0.00	-66.57	0.00	66.57	3,900.32	993.61	4,269	3,817.34	0.70	-0.09	0.02
75.00	-19.16	-1.43	0.00	-59.17	0.00	59.17	3,833.36	967.97	4,052	3,654.23	0.79	-0.10	0.02
80.00	-17.92	-1.38	0.00	-52.00	0.00	52.00	3,764.62	942.33	3,840	3,492.87	0.90	-0.10	0.02
85.00	-17.47	-1.36	0.00	-45.10	0.00	45.10	3,694.09	916.69	3,634	3,333.39	1.01	-0.11	0.02
87.00	-16.79	-1.32	0.00	-42.38	0.00	42.38	3,665.38	906.43	3,553	3,270.16	1.06	-0.11	0.02
90.00	-16.22	-1.30	0.00	-38.41	0.00	38.41	3,621.78	891.04	3,433	3,175.95	1.13	-0.11	0.02
92.58	-15.40	-1.25	0.00	-35.07	0.00	35.07	3,583.76	877.81	3,332	3,095.54	1.19	-0.12	0.02
95.00	-13.88	-1.16	0.00	-32.04	0.00	32.04	3,547.68	865.40	3,239	3,020.66	1.25	-0.12	0.02
98.41	-13.57	-1.14	0.00	-28.08	0.00	28.08	2,780.48	718.55	2,679	2,362.30	1.33	-0.12	0.02
100.00	-12.81	-1.10	0.00	-26.26	0.00	26.26	2,763.68	711.77	2,629	2,325.70	1.37	-0.12	0.02
104.00	-12.60	-1.08	0.00	-21.88	0.00	21.88	2,720.52	694.67	2,504	2,233.97	1.48	-0.12	0.01
105.00	-11.68	-1.02	0.00	-20.79	0.00	20.79	2,709.55	690.40	2,473	2,211.17	1.50	-0.13	0.01
110.00	-11.03	-0.97	0.00	-15.70	0.00	15.70	2,653.64	669.03	2,323	2,097.99	1.64	-0.13	0.01
113.60	-10.74	-0.95	0.00	-12.20	0.00	12.20	2,612.27	653.64	2,217	2,017.41	1.73	-0.13	0.01
115.00	-10.39	-0.92	0.00	-10.87	0.00	10.87	2,595.94	647.66	2,177	1,986.29	1.77	-0.13	0.01
117.00	-7.89	-0.73	0.00	-9.02	0.00	9.02	2,572.36	639.11	2,120	1,942.06	1.83	-0.13	0.01
119.00	-6.79	-0.64	0.00	-7.57	0.00	7.57	2,548.49	630.56	2,063	1,898.09	1.88	-0.13	0.01
120.00	-6.11	-0.58	0.00	-6.93	0.00	6.93	2,536.45	626.29	2,035	1,876.21	1.91	-0.13	0.01
125.00	-5.86	-0.56	0.00	-4.03	0.00	4.03	2,475.18	604.92	1,899	1,767.88	2.05	-0.13	0.01
126.80	-5.83	-0.56	0.00	-3.03	0.00	3.03	2,452.69	597.23	1,851	1,729.34	2.10	-0.13	0.00
126.90	-5.75	-0.55	0.00	-2.97	0.00	2.97	2,451.43	596.80	1,848	1,727.21	2.10	-0.13	0.00
127.00	-5.71	-0.54	0.00	-2.92	0.00	2.92	2,450.17	596.37	1,846	1,725.07	2.11	-0.14	0.00
127.10	-5.66	-0.54	0.00	-2.86	0.00	2.86	2,448.92	595.95	1,843	1,722.94	2.11	-0.14	0.00
127.20	-5.55	-0.53	0.00	-2.81	0.00	2.81	2,447.66	595.52	1,840	1,720.81	2.11	-0.14	0.00
128.00	-2.81	-0.28	0.00	-2.38	0.00	2.38	2,437.56	592.10	1,819	1,703.78	2.14	-0.14	0.00
128.50	-2.71	-0.27	0.00	-2.24	0.00	2.24	2,431.23	589.96	1,806	1,693.17	2.15	-0.14	0.00
128.50	-2.71	-0.27	0.00	-2.24	0.00	2.24	1,188.40	355.28	1,092	833.74	2.15	-0.14	0.01
130.00	-2.39	-0.24	0.00	-1.83	0.00	1.83	1,182.87	351.44	1,068	820.83	2.19	-0.14	0.00
134.80	-2.36	-0.24	0.00	-0.67	0.00	0.67	1,164.11	339.13	995	779.37	2.33	-0.14	0.00
135.00	-2.23	-0.23	0.00	-0.62	0.00	0.62	1,163.30	338.62	992	777.64	2.33	-0.14	0.00
137.00	-1.65	-0.17	0.00	-0.17	0.00	0.17	1,154.97	333.49	962	760.31	2.39	-0.14	0.00
138.00	0.00	0.00	0.00	0.00	0.00	0.00	1,150.69	330.92	947	751.64	2.42	-0.14	0.00
138.50	0.00	0.00	0.00	0.00	0.00	0.00	1,148.53	329.64	940	747.30	2.43	-0.14	0.00

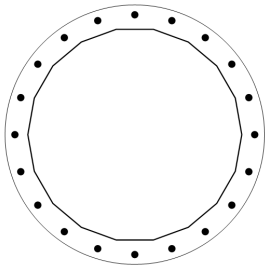
ANALYSIS SUMMARY

	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 Normal	35.07	0.00	62.05	0.00	0.00	3430.34	0.00	0.58
0.9D + 1.0W Normal	35.06	0.00	46.53	0.00	0.00	3407.65	0.00	0.57
1.2D + 1.0Di + 1.0Wi Normal	8.11	0.00	82.04	0.00	0.00	789.22	0.00	0.15
1.2D + 1.0Ev + 1.0Eh Normal	1.85	0.00	62.26	0.00	0.00	192.49	0.00	0.05
0.9D - 1.0Ev + 1.0Eh Normal	1.84	0.00	42.77	0.00	0.00	190.91	0.00	0.04
1.0D + 1.0W Service Normal	7.84	0.00	51.74	0.00	0.00	764.06	0.00	0.14

BASE PLATE ANALYSIS @ 0 FT

PLATE PARAMETERS (ID# 3727)

Diameter:	79	in
Shape:	Round	
Thickness:	2.25	in
Grade:	A572-60	
Yield Strength:	60	ksi
Tensile Strength:	75	ksi
Rod Detail Type:	d	
Clear Distance	4	in
Base Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Plastic	
Neutral Axis:	252	°



ANCHOR ROD PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	Fy (ksi)	Fu (ksi)	Spacing (in)	Offset (°)
Original [ID# 8078]	Radial	20	2.25	73	A615-75	75	100	-	-

ANCHOR ROD GEOMETRY AND APPLIED LOADS --- ORIGINAL (20) 2.25"ø [ID 8078]

Position	Radians	X (in)	Y (in)	Moment Arm (in)	Inertia (in^4)	Axial Load (k)	Shear Load (k)
1	0.314	34.71	11.28	28.467	2632.724	98.85	1.63
2	0.628	29.53	21.45	20.683	1390.114	98.85	2.25
3	0.942	21.45	29.53	10.874	384.825	98.85	2.64
4	1.257	11.28	34.71	0.000	0.839	98.85	2.78
5	1.571	0.00	36.50	-10.874	384.825	-86.44	2.64
6	1.885	-11.28	34.71	-20.683	1390.117	-86.44	2.25
7	2.199	-21.45	29.53	-28.467	2632.723	-86.44	1.63
8	2.513	-29.53	21.45	-33.465	3638.012	-86.44	0.86
9	2.827	-34.71	11.28	-35.188	4021.999	-86.44	0.00
10	3.142	-36.50	0.00	-33.465	3638.012	-86.44	0.86
11	3.456	-34.71	-11.28	-28.467	2632.722	-86.44	1.63
12	3.770	-29.53	-21.45	-20.683	1390.117	-86.44	2.25
13	4.084	-21.45	-29.53	-10.874	384.827	-86.44	2.64
14	4.398	-11.28	-34.71	0.000	0.839	98.85	2.78
15	4.712	0.00	-36.50	10.874	384.826	98.85	2.64
16	5.027	11.28	-34.71	20.683	1390.115	98.85	2.25
17	5.341	21.45	-29.53	28.467	2632.724	98.85	1.63
18	5.655	29.53	-21.45	33.465	3638.013	98.85	0.86
19	5.969	34.71	-11.28	35.188	4021.999	98.85	0.00
20	6.283	36.50	0.00	33.465	3638.013	98.85	0.86

REACTION DISTRIBUTION

Component	ID	Moment Mu (k-ft)	Axial Load Pu (k)	Shear Vu (k)	Moment Factor
Pole	64.38"ø x 0.375" (18 Sides)	3430.3	62.05	35.07	1.000
Bolt Group	Original (20) 2.25"ø	3430.3	-	35.07	1.000
	TOTALS	**3430.34**	**62.05**	**35.07**	

COMPONENT PROPERTIES

Component	ID	Gross Area (in^2)	Net Area (in^2)	Individual Inertia (in^4)	Moment of Inertia (in^4)	Threads/in
Pole	64.38"ø x 0.375" (18 Sides)	75.0219	-	-	38420.73	-
Bolt Group	Original (20) 2.25"ø	3.9761	3.2477	0.8393	40228.39	4.5

EXTERNAL BASE PLATE BEND LINE ANALYSIS @ 0 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	64.50	in
Point-to-Point Diameter:	65.50	in
Flat Width:	11.374	in
Flat Radians:	0.349	rad

PLATE PROPERTIES

Neutral Axis:	252	°
Bend Line Lower Limit:	5.475	rad
Bend Line Upper Limit:	0.179	rad

Bend Line	Chord Length (in)	Additional Length (in)	Section Modulus (in^3)	Applied Moment Mu (k-in)	Moment Capacity ϕMn (k-in)	Ratio
Flat	40.921	0.00	51.791	629.6	2796.7	0.225
Corner	39.309	0.00	49.750	456.1	2686.5	0.170
Circumferential	49.153	0.00	62.209	849.9	3359.3	0.253

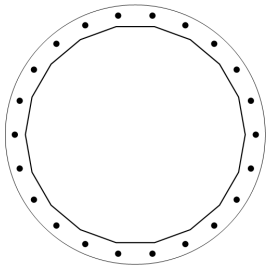
PLASTIC ANCHOR ROD ANALYSIS

Class	Group Quantity	Rod Diameter (in)	Applied Axial Load Pu (k)	Applied Shear Load Vu (k)	Compressive Capacity ϕPn (k)	Ratio
Original	20	2.25	98.9	2.8	243.6	0.429

UPPER FLANGE PLATE ANALYSIS @ 128.5 FT

PLATE PARAMETERS (ID# 2224)

Diameter:	41	in
Shape:	Round	
Thickness:	1	in
Grade:	A572-60	
Yield Strength:	60	ksi
Tensile Strength:	75	ksi
Pole Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Plastic	
Neutral Axis:	90	°



FLANGE BOLT PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	Fy (ksi)	Fu (ksi)	Spacing (in)	Offset (°)
Original [ID# 8079]	Radial	22	1	38	A325	92	120	-	-

FLANGE BOLT GEOMETRY AND APPLIED LOADS --- ORIGINAL (22) 1"ø [ID 8079]

Position	Radians	X (in)	Y (in)	Moment Arm (in)	Inertia (in^4)	Axial Load (k)	Shear Load (k)
1	0.286	18.23	5.35	-17.631	188.320	-0.96	0.07
2	0.571	15.98	10.27	-15.458	144.772	-0.96	0.14
3	0.857	12.44	14.36	-12.033	87.738	-0.96	0.19
4	1.142	7.89	17.28	-7.633	35.324	-0.96	0.23
5	1.428	2.70	18.81	-2.615	4.172	-0.96	0.25
6	1.714	-2.70	18.81	2.615	4.172	1.66	0.25
7	1.999	-7.89	17.28	7.633	35.324	1.66	0.23
8	2.285	-12.44	14.36	12.033	87.738	1.66	0.19
9	2.570	-15.98	10.27	15.458	144.773	1.66	0.14
10	2.856	-18.23	5.35	17.631	188.320	1.66	0.07
11	3.142	-19.00	0.00	18.375	204.553	1.66	0.00
12	3.427	-18.23	-5.35	17.631	188.320	1.66	0.07
13	3.713	-15.98	-10.27	15.458	144.773	1.66	0.14
14	3.998	-12.44	-14.36	12.033	87.738	1.66	0.19
15	4.284	-7.89	-17.28	7.633	35.324	1.66	0.23
16	4.570	-2.70	-18.81	2.615	4.172	1.66	0.25
17	4.855	2.70	-18.81	-2.615	4.172	-0.96	0.25
18	5.141	7.89	-17.28	-7.633	35.324	-0.96	0.23
19	5.426	12.44	-14.36	-12.033	87.738	-0.96	0.19
20	5.712	15.98	-10.27	-15.458	144.773	-0.96	0.14
21	5.998	18.23	-5.35	-17.631	188.320	-0.96	0.07
22	6.283	19.00	0.00	-18.375	204.553	-0.96	0.00

REACTION DISTRIBUTION

Component	ID	Moment Mu (k-ft)	Axial Load Pu (k)	Shear Vu (k)	Moment Factor
Pole	34.2052"ø x 0.1875" (18 Sides)	28.2	3.80	3.51	1.000
Bolt Group	Original (22) 1"ø	28.2	-	3.51	1.000
	TOTALS	**28.17**	**3.8**	**3.51**	

COMPONENT PROPERTIES

Component	ID	Gross Area (in^2)	Net Area (in^2)	Individual Inertia (in^4)	Moment of Inertia (in^4)	Threads/in
Pole	34.2052"ø x 0.1875" (18 Sides)	19.9365	-	-	2884.06	-
Bolt Group	Original (22) 1"ø	0.7854	0.6057	0.0292	2250.41	8.0

EXTERNAL UPPER FLANGE PLATE BEND LINE ANALYSIS @ 128.5 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	34.33	in
Point-to-Point Diameter:	34.86	in
Flat Width:	6.053	in
Flat Radians:	0.349	rad

PLATE PROPERTIES

Neutral Axis:	90	°
Bend Line Lower Limit:	2.682	rad
Bend Line Upper Limit:	3.601	rad

Bend Line	Chord Length (in)	Additional Length (in)	Section Modulus (in^3)	Applied Moment Mu (k-in)	Moment Capacity ϕMn (k-in)	Ratio
Flat	19.688	0.00	4.922	3.9	265.8	0.015
Corner	18.734	0.00	4.684	2.5	252.9	0.010
Circumferential	23.541	0.00	5.885	5.1	317.8	0.016

PLASTIC FLANGE BOLT ANALYSIS

Class	Group Quantity	Bolt Diameter (in)	Applied Axial Load Pu (k)	Applied Shear Load Vu (k)	Compressive Capacity ϕPn (k)	Ratio
Original	22	1	1.6	0.2	54.5	0.030

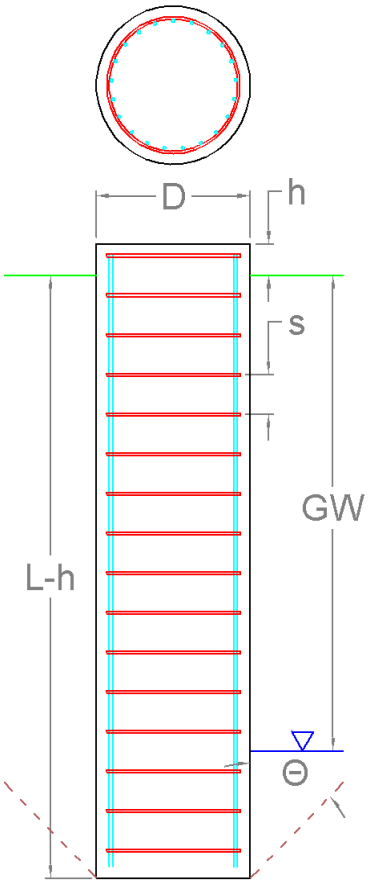
Pier Foundation Analysis (ANSI/TIA-222-H)

Foundation Analysis Parameters			
Pier Diameter	*D*	8.00	ft
Pier Embedment	*L-h*	18.5	ft
Pier Height above Ground	*H*	0.50	ft
Water Table Depth [BGL]	*GW*	99	ft
Pullout Angle	Θ	30	°
Unit Weight of Concrete		150	pcf
Uplift Skin Friction Factor		1.000	

Reactions		
Moment, M_u	3,430.3	k-ft
Shear, V_u	35.1	k
Axial, P_u	62.0	k
Uplift, T_u	0.0	k

Soil Properties

Layer Depth (ft)		Unit Weight	Cohesion	Friction Angle	Ultimate Skin Friction	Ultimate Bearing Pressure
TOP	BTM	pcf	psf	°	psf	psf
0.0	2.0	105	0	0	0	0
2.0	4.0	140	11,323	0	0	0
4.0	9.0	140	13,483	0	6,067	0
9.0	19.5	140	16,171	0	7,277	44,429



Soil Strength Capacities		
Volume of Concrete	955.0	ft^3
Weight of Concrete [Buoyancy Considered]	143.3	k
Average Soil Unit Weight	136.2	pcf
Skin Friction Resistance	2,499.9	k
Compressive Bearing Resistance	2,233.2	k
Pullout Weight [Minus Concrete Weight]	639.3	k
Compressive Force, P_u	77.4	k
Nominal Compressive Capacity, $\phi_s P_n$	3,549.8	k
$P_u / \phi_s P_n$	2.2%	
Total Lateral Resistance	13,306.5	k
Inflection Point [BGL]	10.8	ft
Moment at Inflection Point, M_D	3,826.3	k-ft
Nominal Moment Capacity, $\phi_s M_n$	38,592.2	k-ft
$M_D / \phi_s M_n$	9.9%	

Exhibit E

Mount Analysis

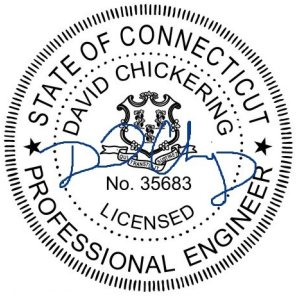
AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by

telamon
Tower Engineering PLLC

Antenna Mount Analysis Report

ATC Site Name	:	**Middle Haddam Road-CROWN CT**
ATC Asset Number	:	**411257**
Engineering Number	:	**14097396_C8_01**
Mount Elevation	:	**136 ft**
Carrier	:	**T-Mobile**
Carrier Site Name	:	**CT696Nerizon Portland_ET**
Carrier Site Number	:	**CT11696E**
Site Location	:	**191 Middle Haddam Rd** **Portland, CT 06480-1767** **41.56225, -72.573778**
County	:	**Middlesex**
Date	:	**May 4, 2022**
Max Usage	:	**56%**
Result	:	**Contingent Pass*** ***See conclusion for requirements**



David Chickering
Telamon Tower Engineering PLLC
PE # 35683 Exp. 01/31/2023

Prepared By:
Nagabharana Nayak
Telamon Tower Engineering, PLLC

Reviewed By:

Table of Contents

Introduction

The proposed equipment is to be mounted to the existing Low Profile Platform w/ proposed Site Pro 1 HRK12 Support Rails. This proposed mounting configuration was analyzed using RISA-3D, a commercially available finite element analysis software package. A selection of input and output from our analysis is attached to the end of this report.

Supporting Documents

Structural Data	Site Photos, dated February 12, 2021 Spec Sheet by Andrew, Part #MT-196 Spec Sheet by Site Pro 1, Part #HRK12, Rev. A, dated July 10, 2014
Previous Analyses	Structural Analysis by ATC, Eng. #13701319_C3_02, dated August 6, 2021
Loading Data	ATC Application, Project #14097396, dated May 02, 2022 T-Mobile RFDS, Site ID #CT11696E, Version:5, dated March 09, 2022

Analysis

Codes	2018 IBC / 2018 Connecticut State Building Code / TIA-222-H
Basic Wind Speed	120 mph, V_{ult} (3-Second Gust)
Basic Wind Speed w/ Ice	50 mph (3-Second Gust) w/ 1" Radial Ice (Escalating)
Exposure Category	B
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Risk Category	II
Maintenance Live Load	L_M: 500 lb
Spectral Response	S_s: 0.21; S_1: 0.06; Site Class: D

Conclusion

Based on the analysis, the antenna mount meets the requirements per the applicable codes listed above. The mounting configuration considered in this analysis will be capable of supporting the referenced loading pursuant to referenced standards once the following scope is executed:

- **Replace existing mount pipes at position 1 and position 2 with (2) 8 ft. long proposed Pipe 2 STD, A53 Gr. B, at each sector (6 total) as shown. Connect to platform base horizontal members using Site Pro 1 SP219 crossover plate kits (6 total).**
- **Install (1) proposed Site Pro 1 HRK12 support rail kit. Connect to proposed mount pipes with Site Pro 1 SCX1 crossover plates included in the standard kits.**

A handrail kit was modeled due to the Carrier's proposed Mount Type. The mount geometry before this addition was not assessed.

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.

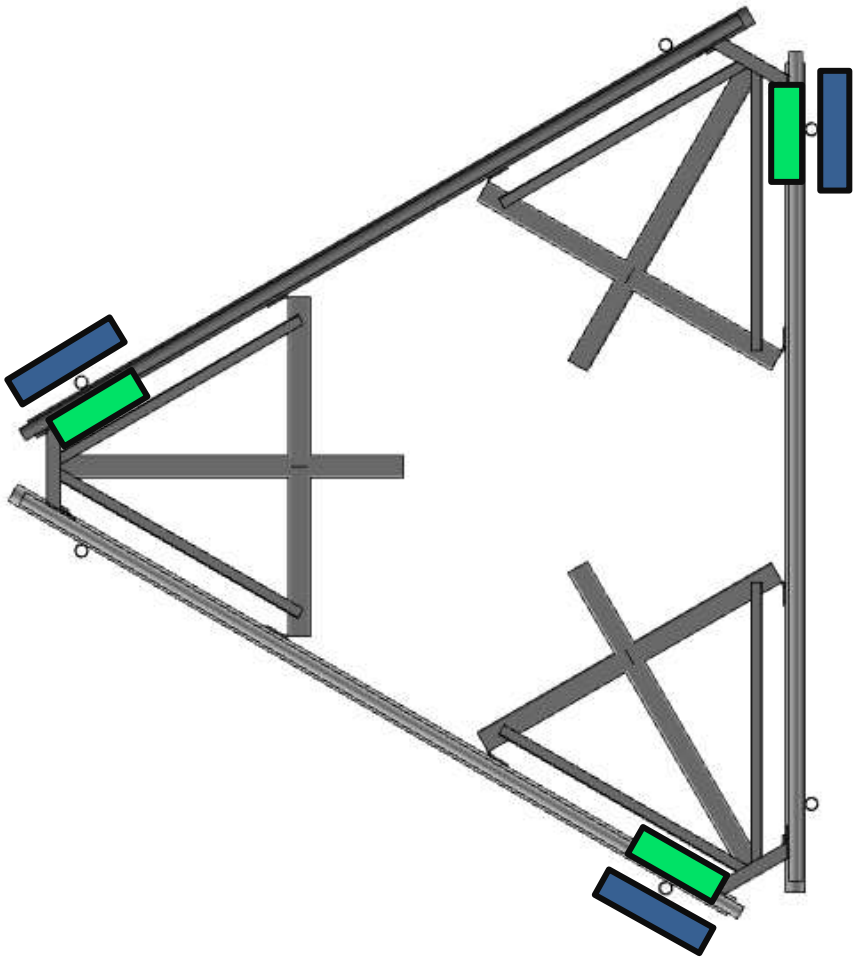
Antenna Loading

Elevation (ft)		Antennas	
Mount	Rad.	#	Name
136.0	137.0	3	RFS Celwave APXVAALL24_43-U-NA20
		3	Ericsson 4480 BAND 71

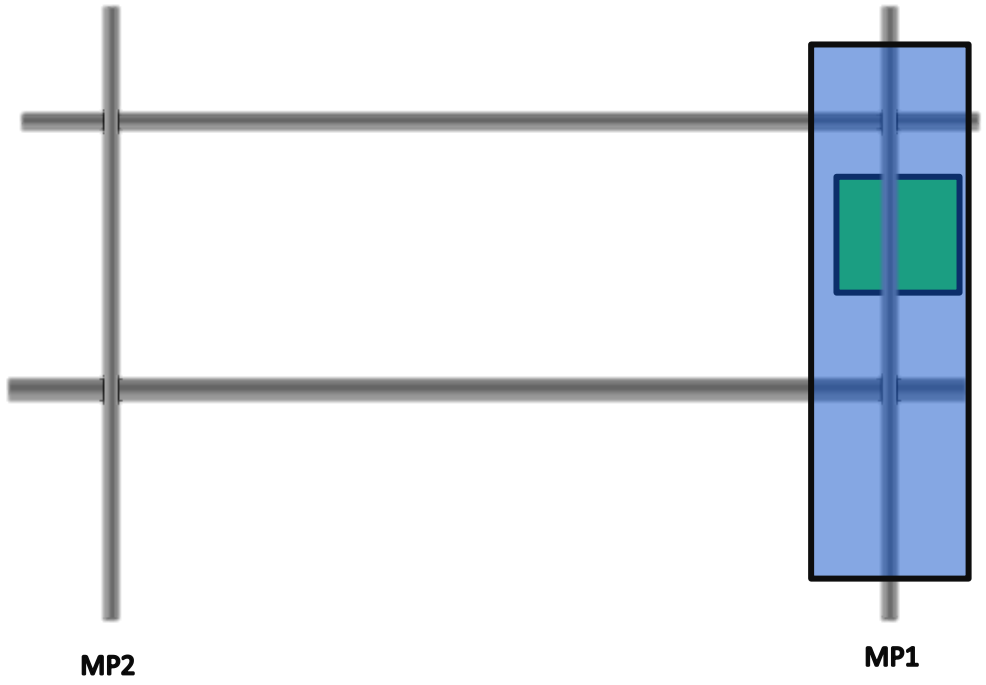
Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Tower to Mount Connection Plates	56%	Pass
Mount Pipes	38%	Pass
Corner Plates	34%	Pass
Stand-Off Horizontals	31%	Pass
Support Rail	18%	Pass
Platform Base	14%	Pass

Equipment Layout Plan View



Equipment Layout Front Elevation View



Total #	Equipment	Mount Pipe Position
3	Rfs Celwave APXVAALL24_43-U-NA20	P1
3	Ericsson 4480 BAND 71	P1

Standard Conditions

This analysis is inclusive of the antenna supporting frames/mounts and all recorded connections that will support the equipment listed in this report. It considers only the theoretical capacity of structural components and it is not a condition assessment. The validity of the analysis may be dependent on the accuracy of structural information supplied by others. The client is responsible for verifying this information. If any provided information is revised after completion of this analysis, Telamon Tower Engineering, PLLC should be notified immediately to revise results.

This analysis assumes the following:

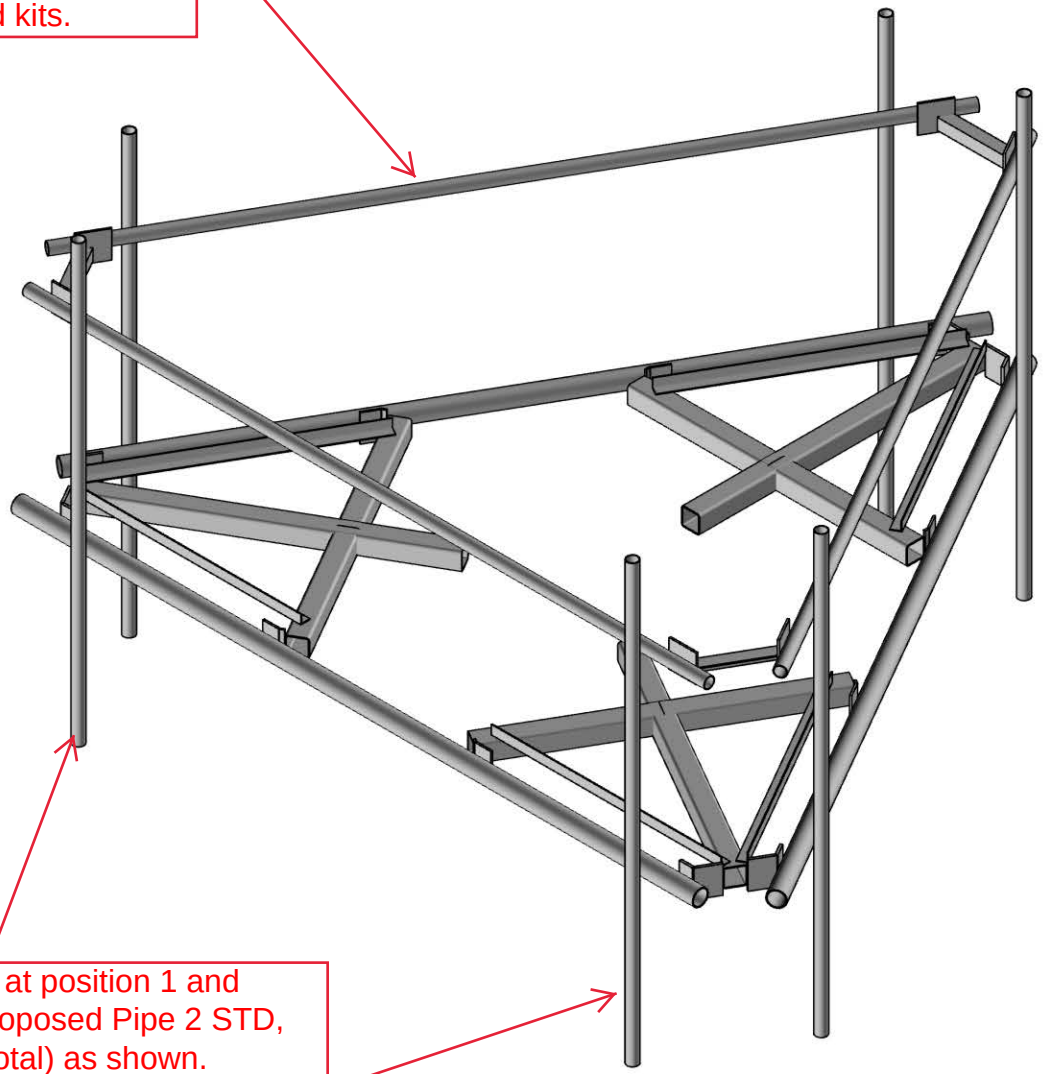
1. The tower or other superstructure and mounts (if existing) were properly constructed as per the original design and have been properly maintained in accordance with applicable code standards.
2. Member sizes and strengths are accurate as supplied or are assumed as stated in the calculations.
3. In the absence of sufficient design information, all welds and connections are assumed to develop at least the capacity of the connected member, unless otherwise stated in this analysis.
4. All prior structural modifications, if any, are assumed to be correctly installed and fully effective.
5. The loading configuration is complete and accurate as supplied and/or as modeled in the previous analysis. All appurtenances are assumed to be properly installed and supported as per manufacturer requirements.
6. Some conservative assumptions may be used regarding appurtenances and their projected areas based on careful interpretation of data supplied, previous experience and standard industry practice.
7. Installation of all equipment and steel should be confirmed not to cause tower conflicts nor impede the tower climbing pegs.

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of the report. All opinions and conclusions contained herein are subject to revision based upon receipt of new or updated information. All services are provided exercising a level of care and diligence equivalent to the standard of our profession. No warranty or guarantee, either expressed or implied, is offered. All services are confidential in nature and this report will not be released to any other party without the client's consent. The use of this analysis is limited to the expressed purpose for which it was commissioned and it may not be reused, copied or disseminated for any other purpose without consent from Telamon Tower Engineering, PLLC.

All services were performed, results obtained and recommendations made in accordance with generally accepted engineering principles and practices. Telamon Tower Engineering, PLLC is not responsible for the conclusions, opinions or recommendations made by others based on the information supplied in this analysis.

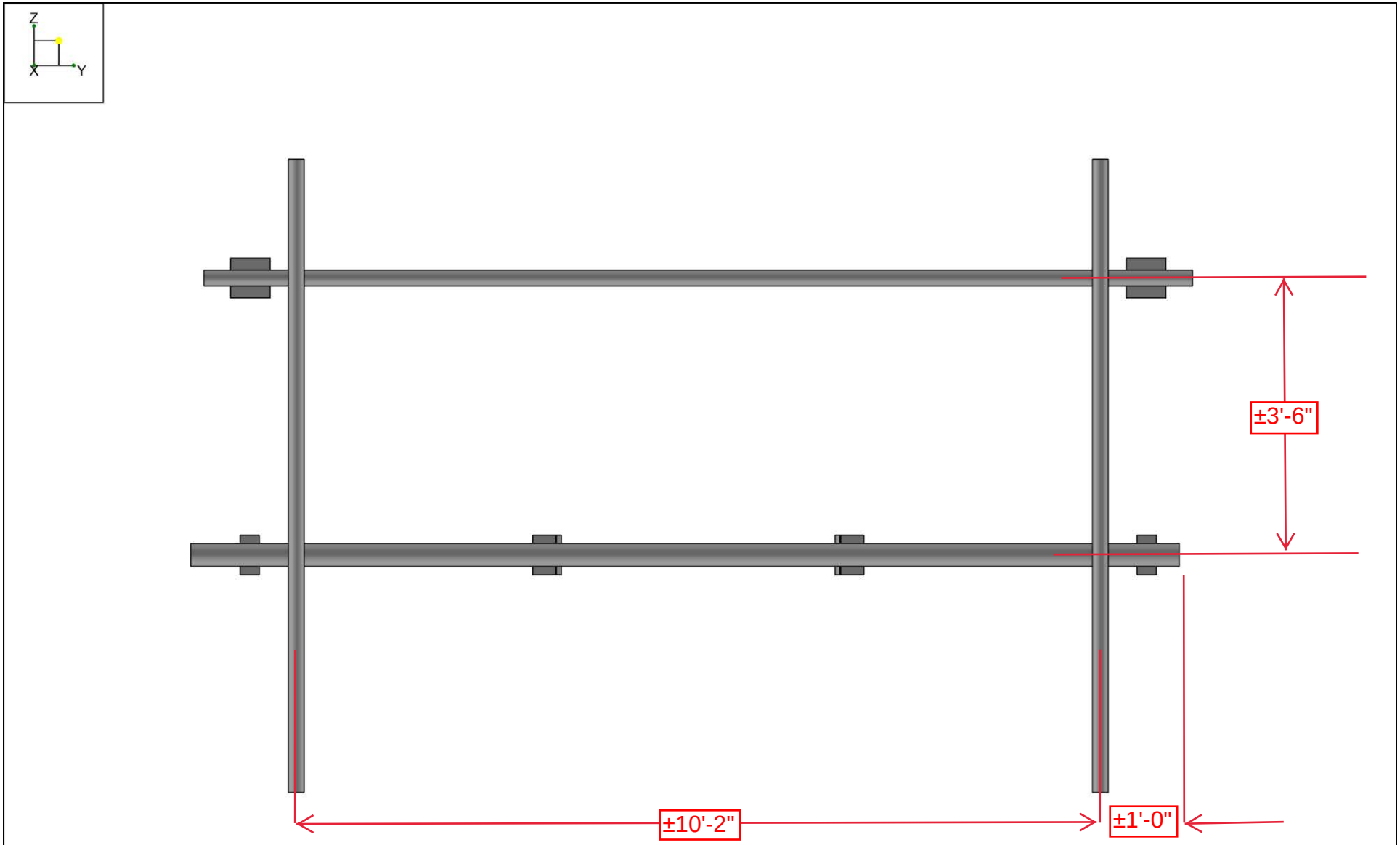
It is not possible to have the fully detailed information necessary to perform a complete and thorough analysis of every structural sub-component of an existing structure. The structural analysis by Telamon Tower Engineering, PLLC verifies the adequacy of the primary members of the structure. Telamon Tower Engineering, PLLC provides a limited scope of service in that we cannot verify the adequacy of every weld, bolt, gusset, etc.

Install (1) proposed Site Pro 1 HRK12 support rail kit. Connect to proposed mount pipes with Site Pro 1 SCX1 crossover plates included in the standard kits.



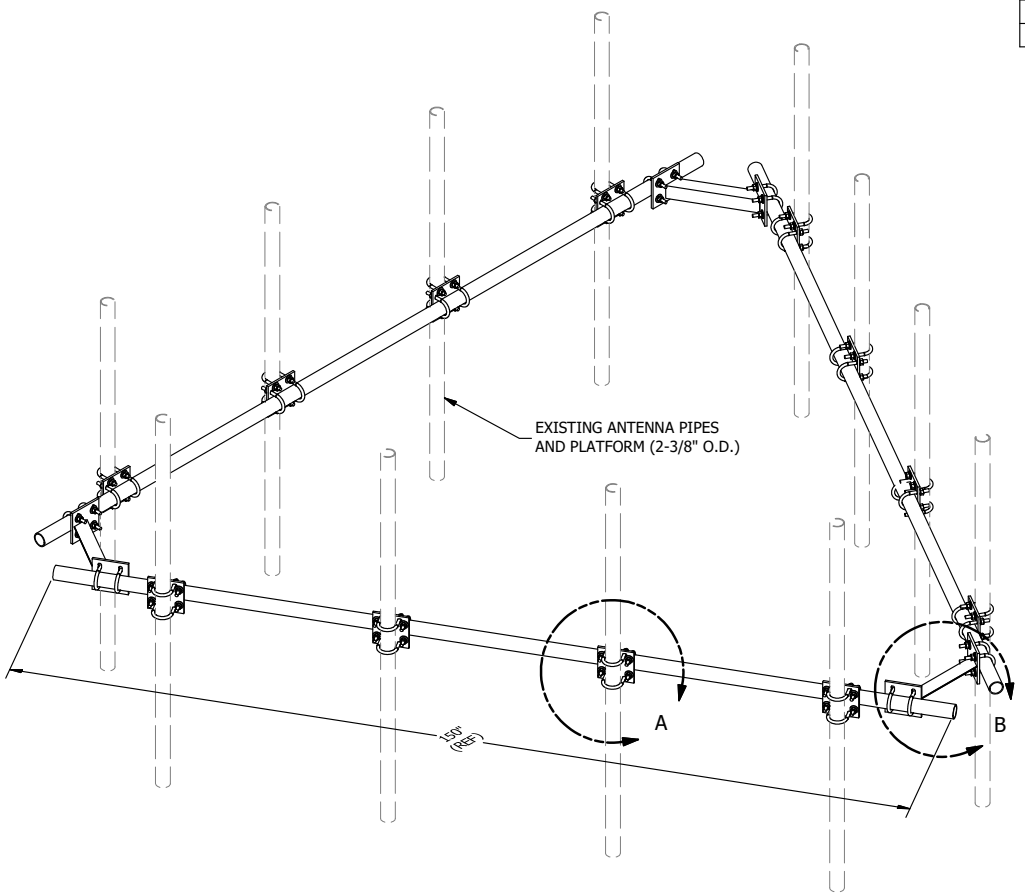
Replace existing mount pipes at position 1 and position 2 with (2) 8 ft. long proposed Pipe 2 STD, A53 Gr. B, at each sector (6 total) as shown. Connect to platform base horizontal members using Site Pro 1 SP219 crossover plate kits (6 total).

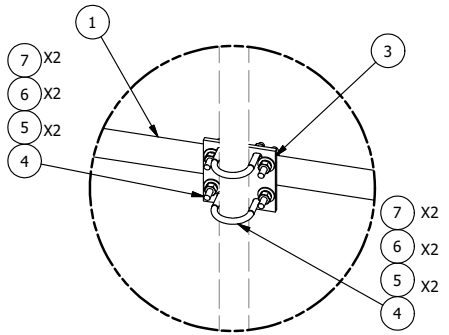
CLS	41124-14097396_C8_01-Middle Haddam Road-CROWN CT	IN-1
NGN		May 04, 2022
41124-14097396_C8_01-01-MA	Proposed Modifications-ISO	411257_14097396_C8_01_T-MOBILE.r3d



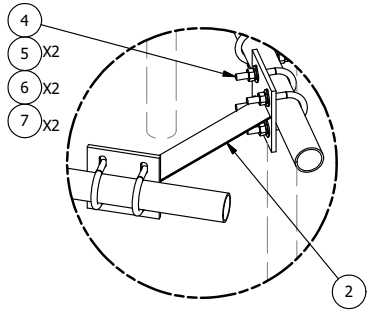
CLS	41124-14097396_C8_01-Middle Haddam Road-CROWN CT	IN-2
NGN		May 04, 2022
41124-14097396_C8_01-01-MA	Proposed Modifications- Front View	411257_14097396_C8_01_T-MOBILE.r3d

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2150	2-3/8" O.D. X 150" SCH 40 GALVANIZED PIPE	150 in	45.77	137.31
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	12	SCX1	CROSSOVER PLATE 2-3/8" X 2-3/8"	6 in	3.71	44.50
4	60	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	37.51
5	120	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	4.09
6	120	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	1.67
7	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
					TOTAL WT. #	272.43





DETAIL A



DETAIL B

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REPLACED HCP WITH X-AHCP		CEK	7/10/2014

REVISION HISTORY

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")*
DRILLED AND GAS CUT HOLES *(± 0.030")* - NO CONING OF HOLES
LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

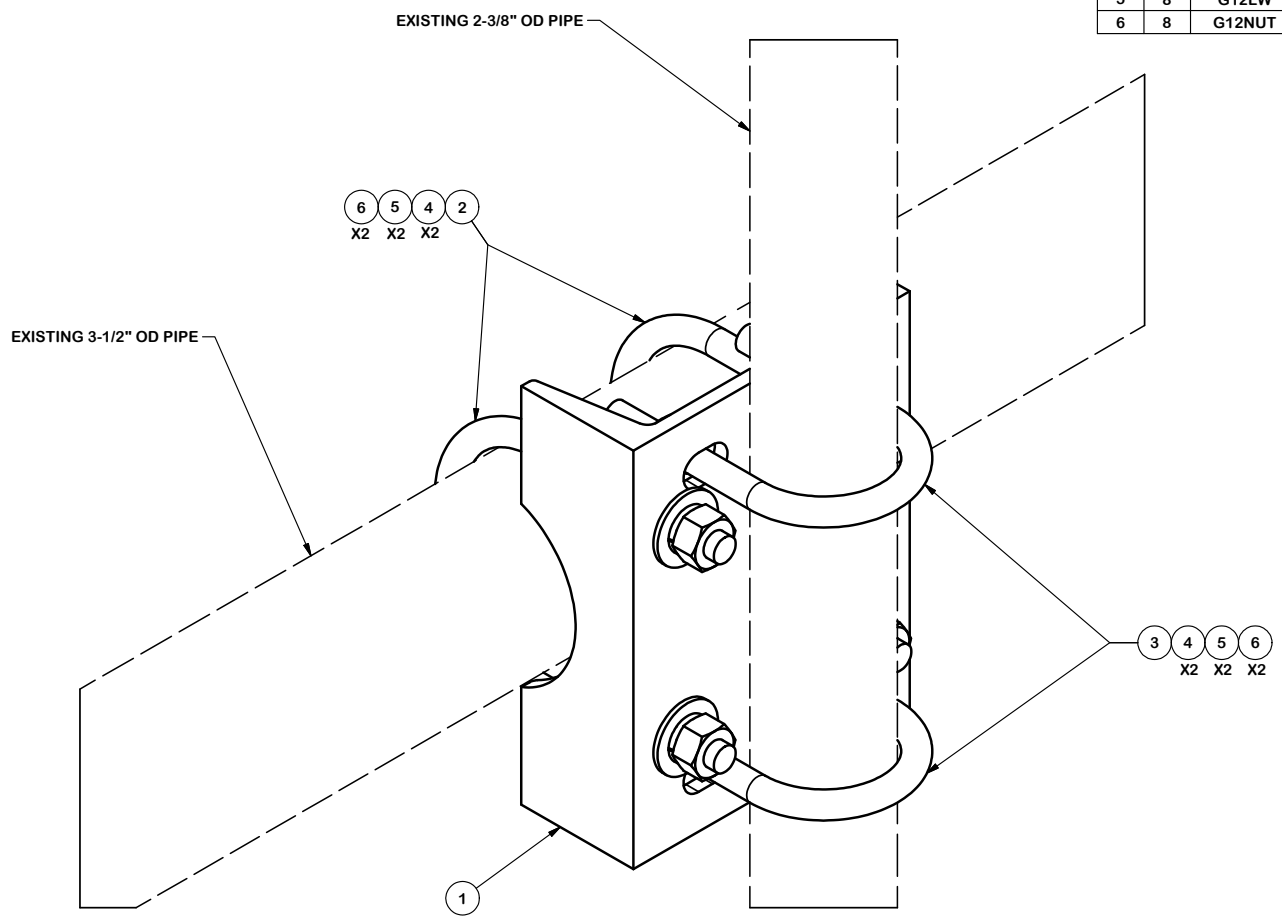
DESCRIPTION: **HANDRAIL KIT FOR 12'-6" FACE**

SITE PRO 1
A valmont COMPANY
Engineering Support Team: 1-888-753-7446
Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	KC8 5/30/2012		HRK12

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	BMC 7/13/2014	HRK12

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	1	X-SP219	SMALL SUPPORT CROSS PLATE	8 1/4 in	8.61	8.61
2	2	X-UB1306	1/2" X 3-5/8" X 6" X 3" U-BOLT (HDG.)		0.83	1.66
3	2	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	1.25
4	8	G12FW	1/2" HDG USS FLATWASHER		0.03	0.27
5	8	G12LW	1/2" HDG LOCKWASHER		0.01	0.11
6	8	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	0.57
					TOTAL WT. #	12.47



TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")*
DRILLED AND GAS CUT HOLES *(± 0.030")* - NO CONING OF HOLES
LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

DESCRIPTION: PIPE MOUNT KIT

SITE PRO 1 — A valmont COMPANY

Engineering Support Team: 1-888-753-7446

Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.	PAGE
4518	KC8 6/26/2012		SP219	1 OF 1
CLASS / SUB: 81 / 01	DRAWING USAGE: CUSTOMER	CHECKED BY: CEK 1/23/2013	DWG. NO.: SP219	

Wind & Ice Loading

Nominal Mount Elevation (AGL), z_{mount}	136 ft	K_a	0.90
Nominal Rad Elevation (AGL), z_{rad}	137 ft	K_d	0.95
Elevation AMSL (ft)	251 ft	K_e	0.99
TIA Standard	H	K_z	1.08
Basic Wind Speed, V_{ult} (bare)	120 mph	K_{zt}	1.00
Basic Wind Speed, V (ice)	50 mph	K_s	1.00
Design Ice Thickness, t_i	1 in	t_{iz}	1.15 in
Exposure Category	B	G_h	1.00
Risk Category	II	q_z (bare)	37.4 psf
Seismic Response Coeff., C_s	0.11	q_z (ice)	6.5 psf

Live Loading

At Mount Pipes, L_M	500 lb
Joint Labels Considered	1_M1
	1_M2

Member Distributed Loading

Section Set Label	Shape Label	F_A (lb/ft)		Ice Wt. (lb/ft)
		Bare	Ice	
Platform Horizontal Pipe	PIPE_3.0	11.80	3.40	6.55
Offsett Tube	HSS4X4X4	22.47	1.64	8.79
Offset End Plate	0.5 x 6 Plate	33.70	4.87	7.45
Offset Side Plate	0.38 X 6 Plate	33.70	4.87	7.34
Grating Angle	L2x2x3	11.23	1.49	5.10
MOD MOUNT_PIPE_2.0	PIPE_2.0	8.00	2.74	4.96
MOD Support Rail	PIPE_2.0	8.00	2.74	4.96
MOD SR Conn Plate	PL6x0.375	33.70	4.87	7.33
MOD SR Conn Angle	L2.5x2.5x4	14.04	1.53	5.99

Appurtenances

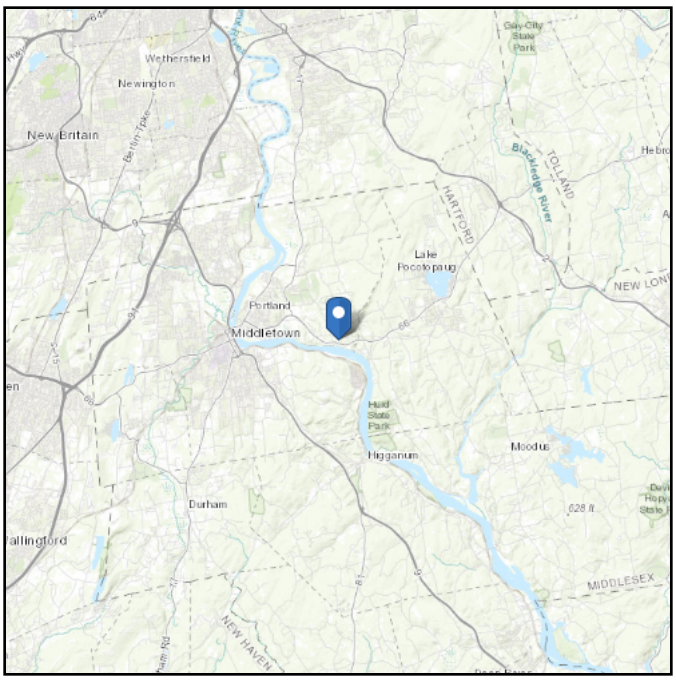
Appurtenance Model	Status	Azimuth Offset (°, ↻)	Rad Elev. Override (ft)	Swap Width & Depth	Area Factor		Qty. per Azimuth			Total Qty. Override	0° Joints		120° Joints		240° Joints		Height (in)	Width (in)	Depth (in)	Weight (Bare) (lb)	Shape	Weight of Ice (lb)	EPA_A (Bare) (ft^2)		EPA_A (Ice) (ft^2)		F_A (Bare) (lb)		F_A (Ice) (lb)	
					Front	Side	0°	120°	240°		1	2	1	2	1	2							N	T	N	T	N	T	N	T
APXVAALL24_43-U-NA20				☐			1	1	1		1_A1T	1_A1B	2_A1T	2_A1B	3_A1T	3_A1B	95.9	24	8.5	149.9	Generic	257.83	14.67	5.32	16.42	6.86	495.43	179.66	96.29	40.25
4480 BAND 71				☐			1	1	1		1_R1TN		2_R1TN		3_R1TN		22	15.7	7.5	81	Flat	55.13	2.88	1.40	3.65	1.99	97.21	47.18	21.38	11.65

ASCE 7 Hazards Report

Address:
Town of Portland, Connecticut

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Elevation: 250.62 ft (NAVD 88)
Latitude: 41.56225
Longitude: -72.573778



Wind

Results:

Wind Speed	120 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	92 Vmph
100-year MRI	99 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Wed May 04 2022

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

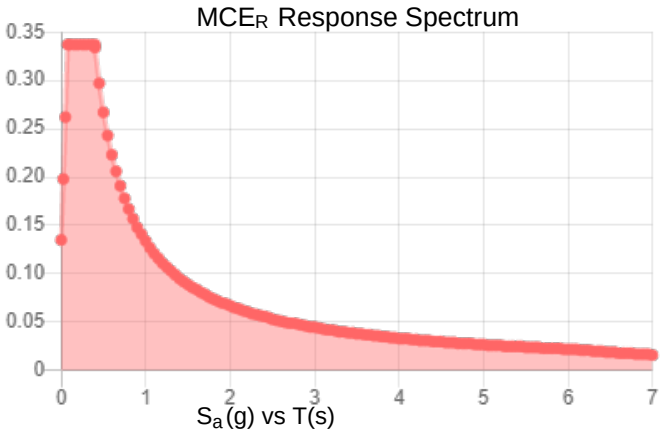
Seismic

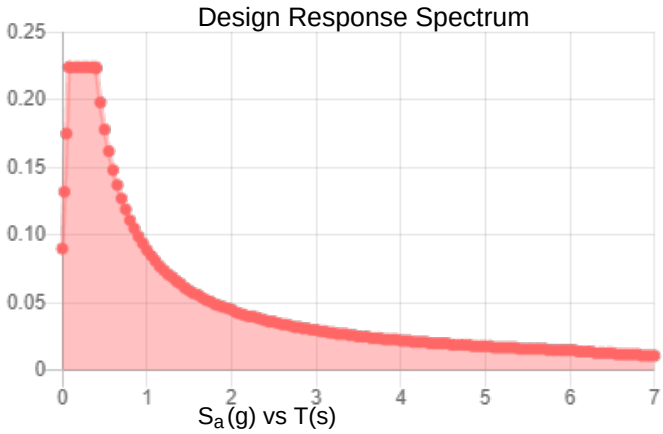
Site Soil Class: D - Default (see Section 11.4.3)

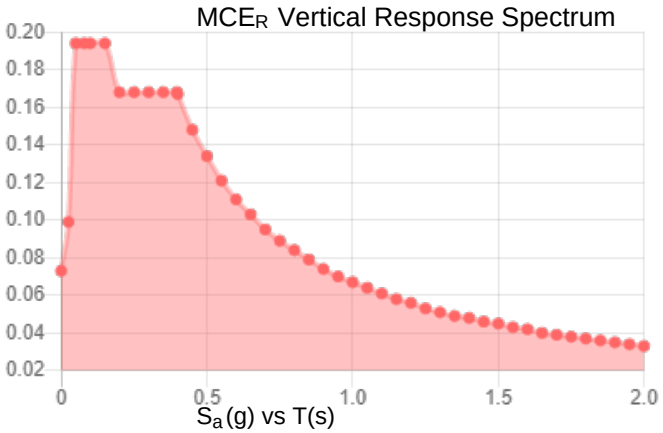
Results:

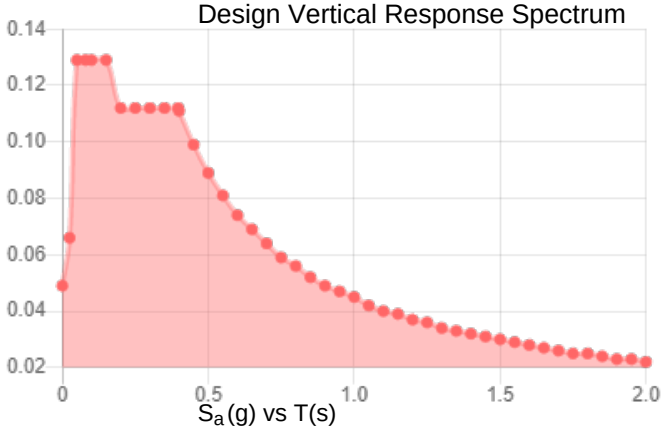
S_S :	0.21	S_{D1} :	0.089
S_1 :	0.056	T_L :	6
F_a :	1.6	PGA :	0.117
F_v :	2.4	PGA_M :	0.184
S_{MS} :	0.337	F_{PGA} :	1.566
S_{M1} :	0.134	I_e :	1
S_{DS} :	0.224	C_v :	0.721

Seismic Design Category B









Data Accessed: **Wed May 04 2022**

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

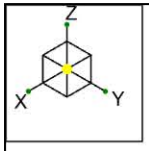
Ice

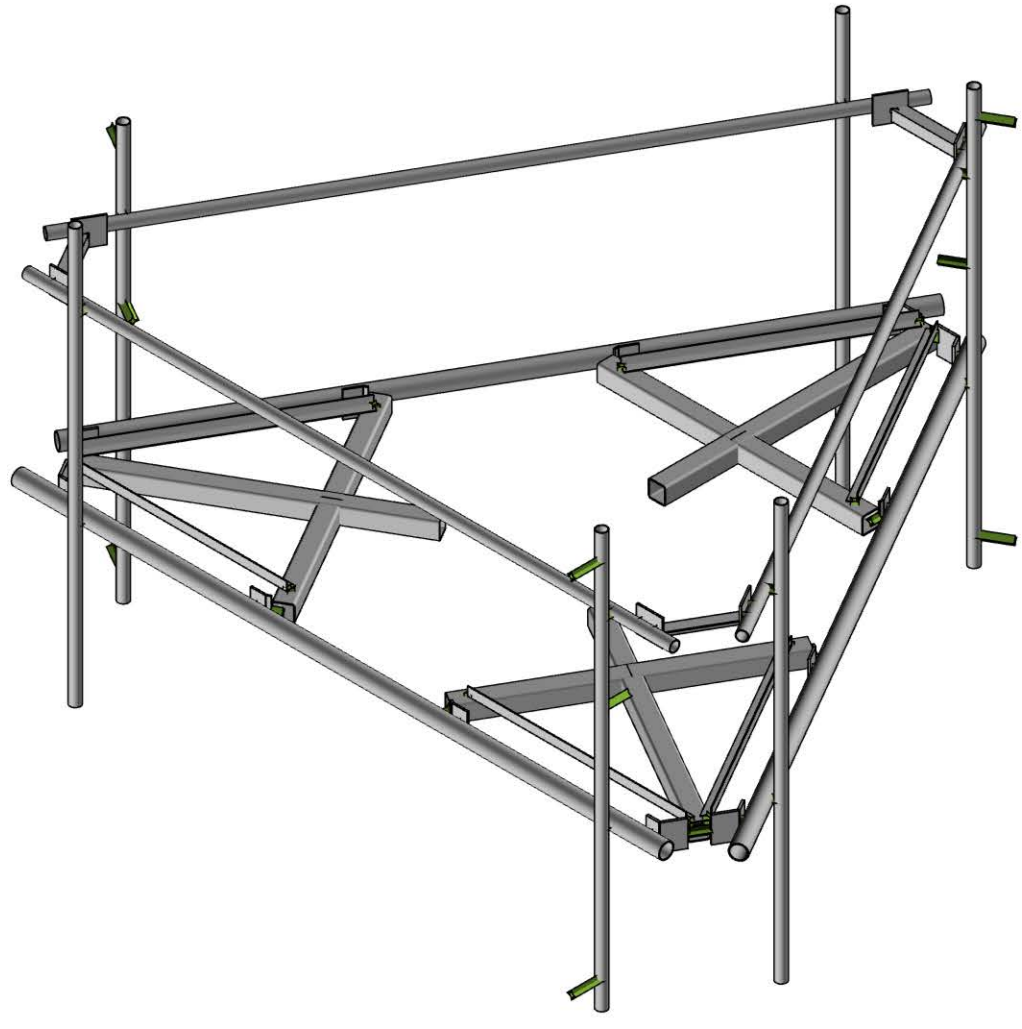
Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Wed May 04 2022

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.





Envelope Only Solution

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NGN		May 04, 2022
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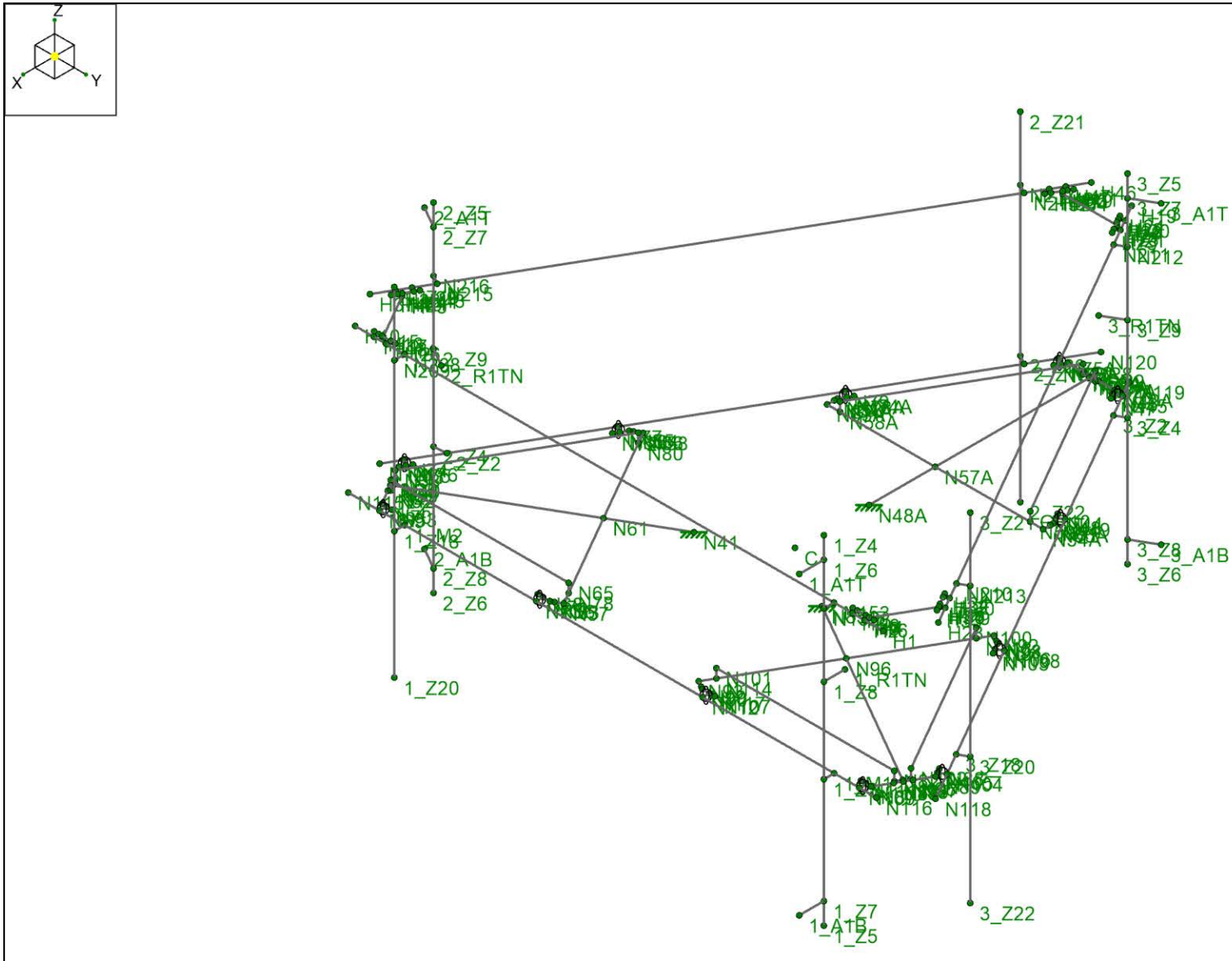
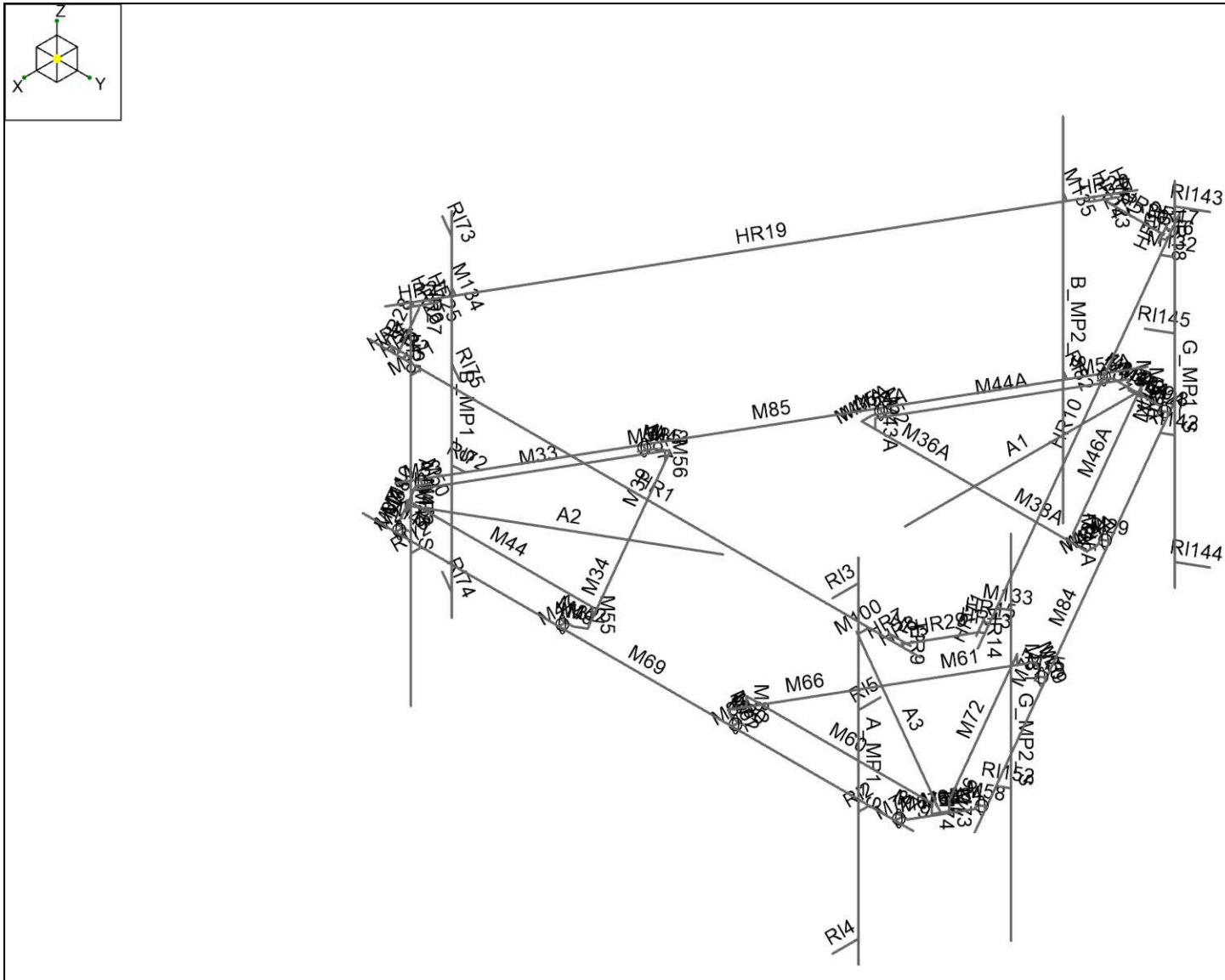


Envelope Only Solution

CLS	41124-14097396_C8_01-Middle Haddam Road-CROWN CT	SK-2
NGN		May 04, 2022
41124-14097396_C8_01-01-MA	Joint Labels	411257_14097396_C8_01_T-MOBILE.r3d



Envelope Only Solution

CLS	41124-14097396_C8_01-Middle Haddam Road-CROWN CT	SK-3
NGN		May 04, 2022
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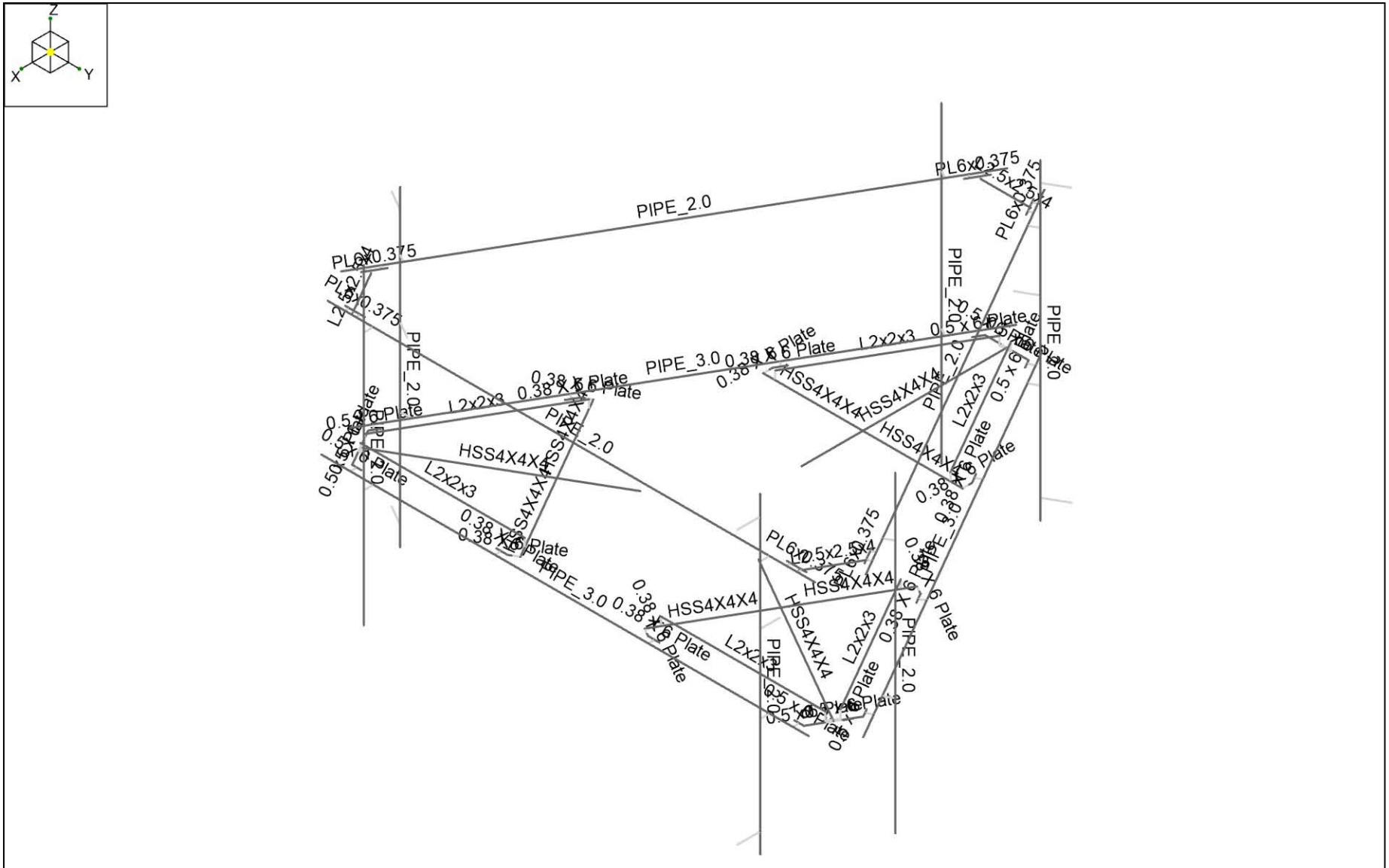

Envelope Only Solution

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NGN		May 04, 2022
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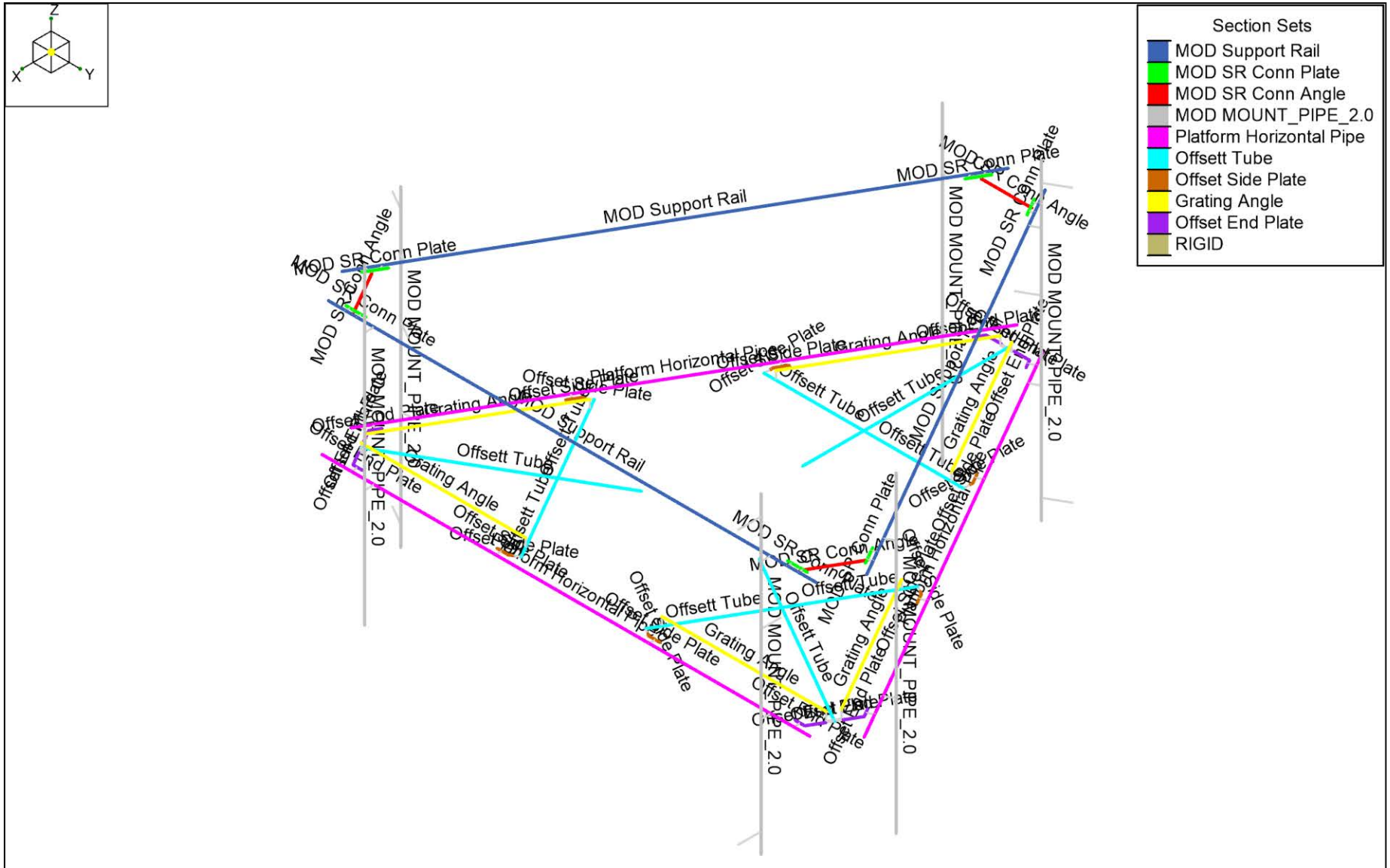
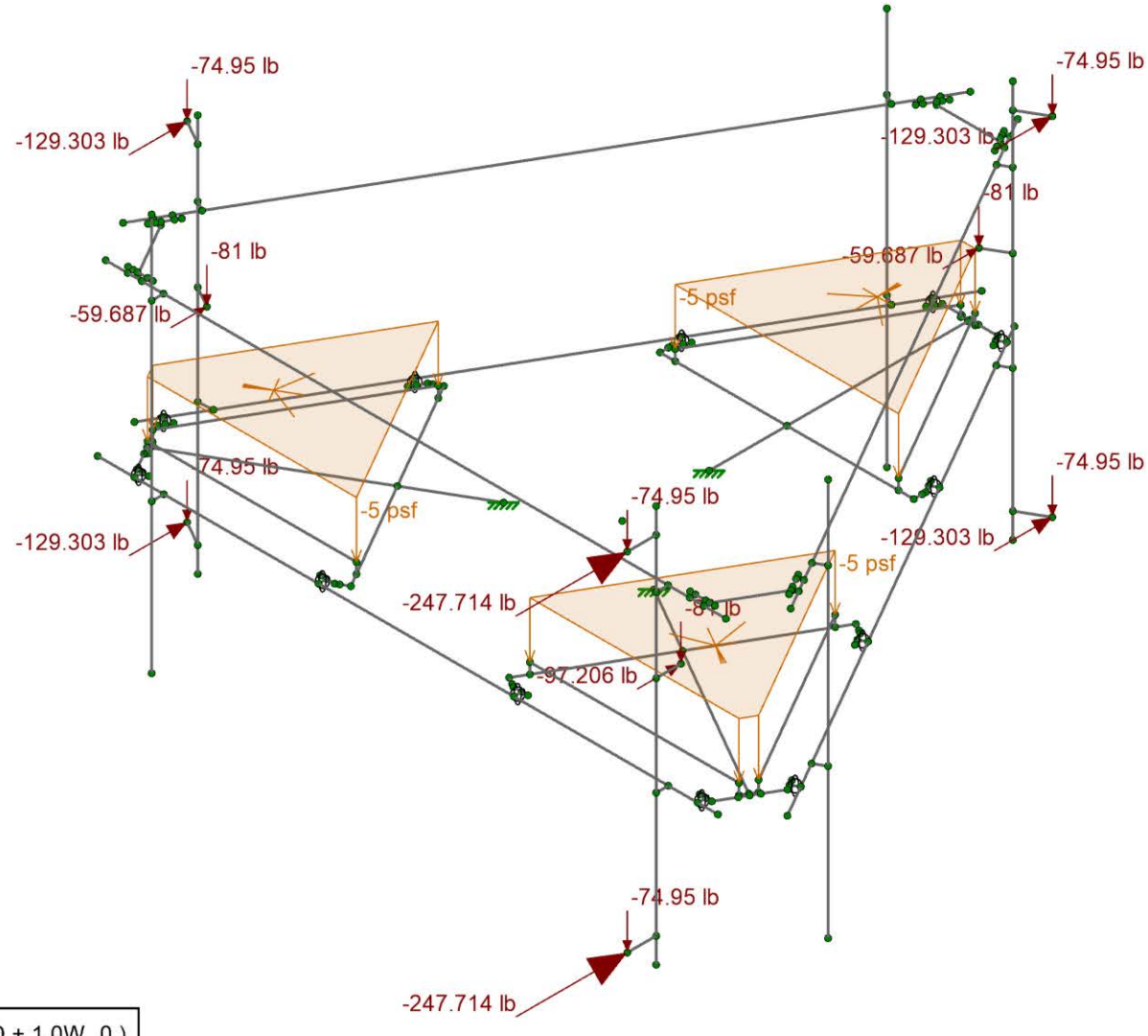


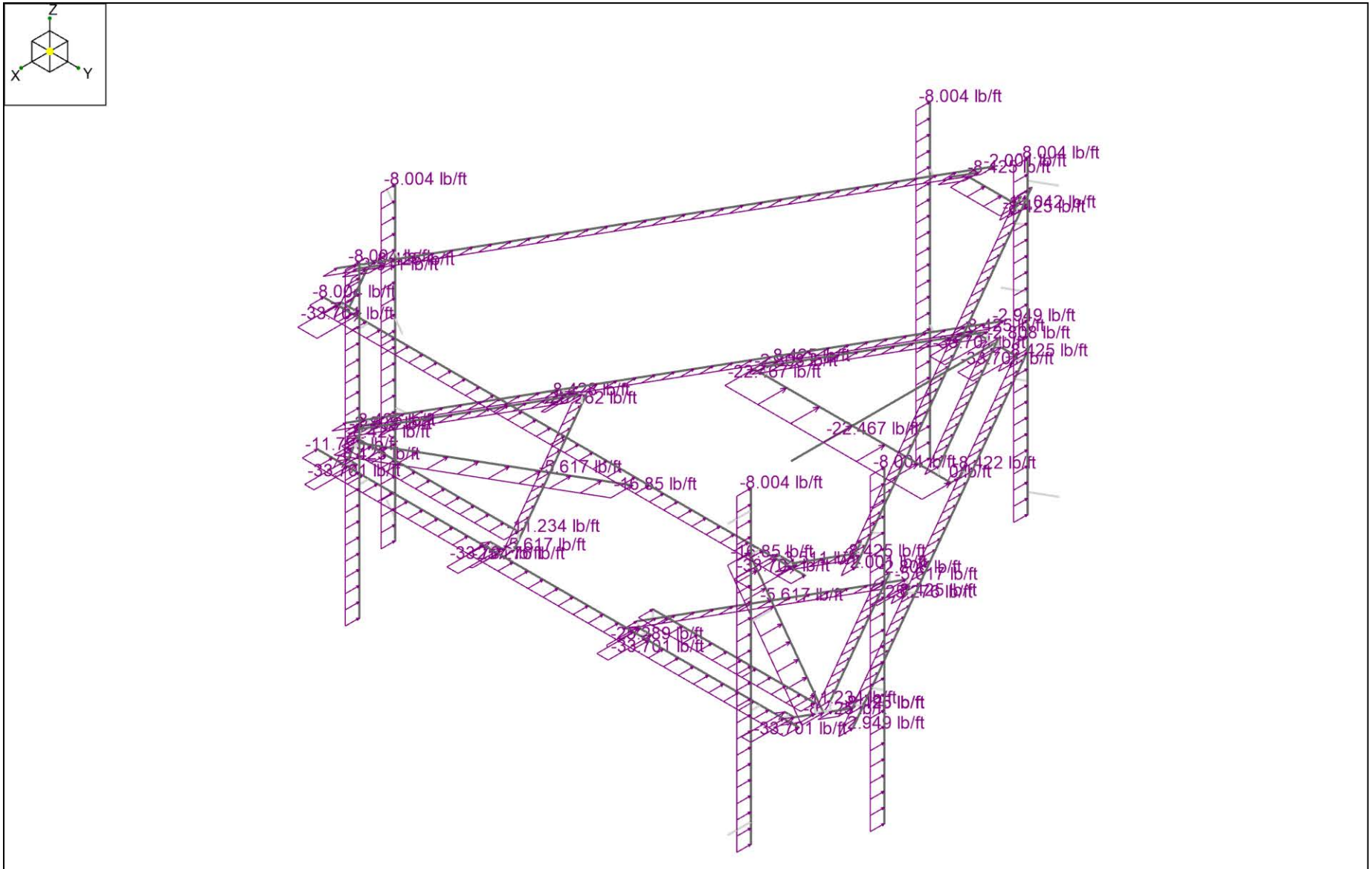
Envelope Only Solution

CLS	41124-14097396_C8_01-Middle Haddam Road-CROWN CT	SK-4
NGN		May 04, 2022
41124-14097396_C8_01-01-MA	Section Sets	411257_14097396_C8_01_T-MOBILE.r3d



Loads: LC 1, DISPLAY (1.0D + 1.0W_0)
Envelope Only Solution

CLS	41124-14097396_C8_01-Middle Haddam Road-CROWN CT	SK-5
NGN		May 04, 2022
41124-14097396_C8_01-01-MA	Joint Loads - Dead and Normal Wind	411257_14097396_C8_01_T-MOBILE.r3d



Loads: BLC 5, Structure Wind 0
Envelope Only Solution

CLS	41124-14097396_C8_01-Middle Haddam Road-CROWN CT	SK-6
NGN		May 04, 2022
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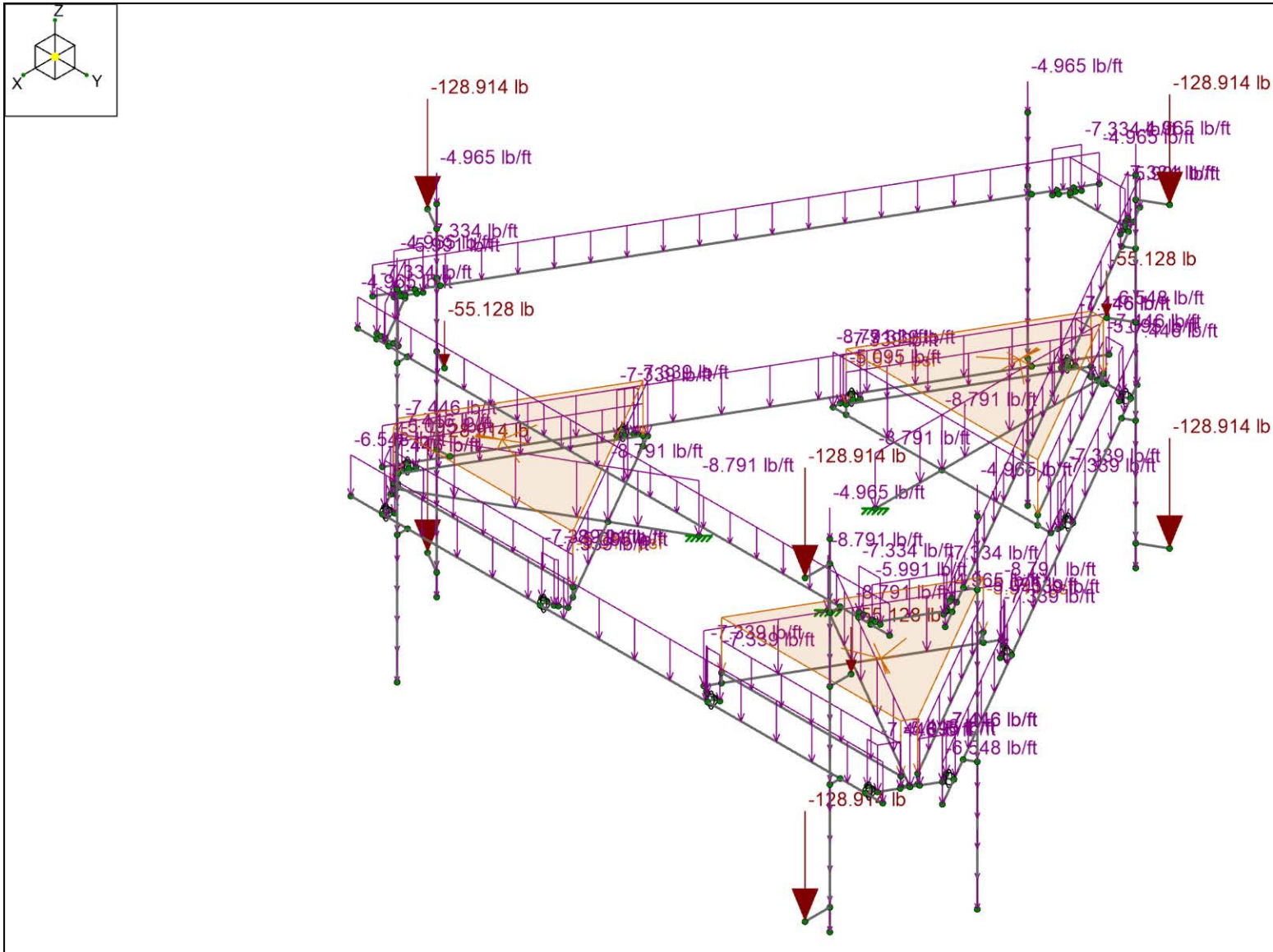
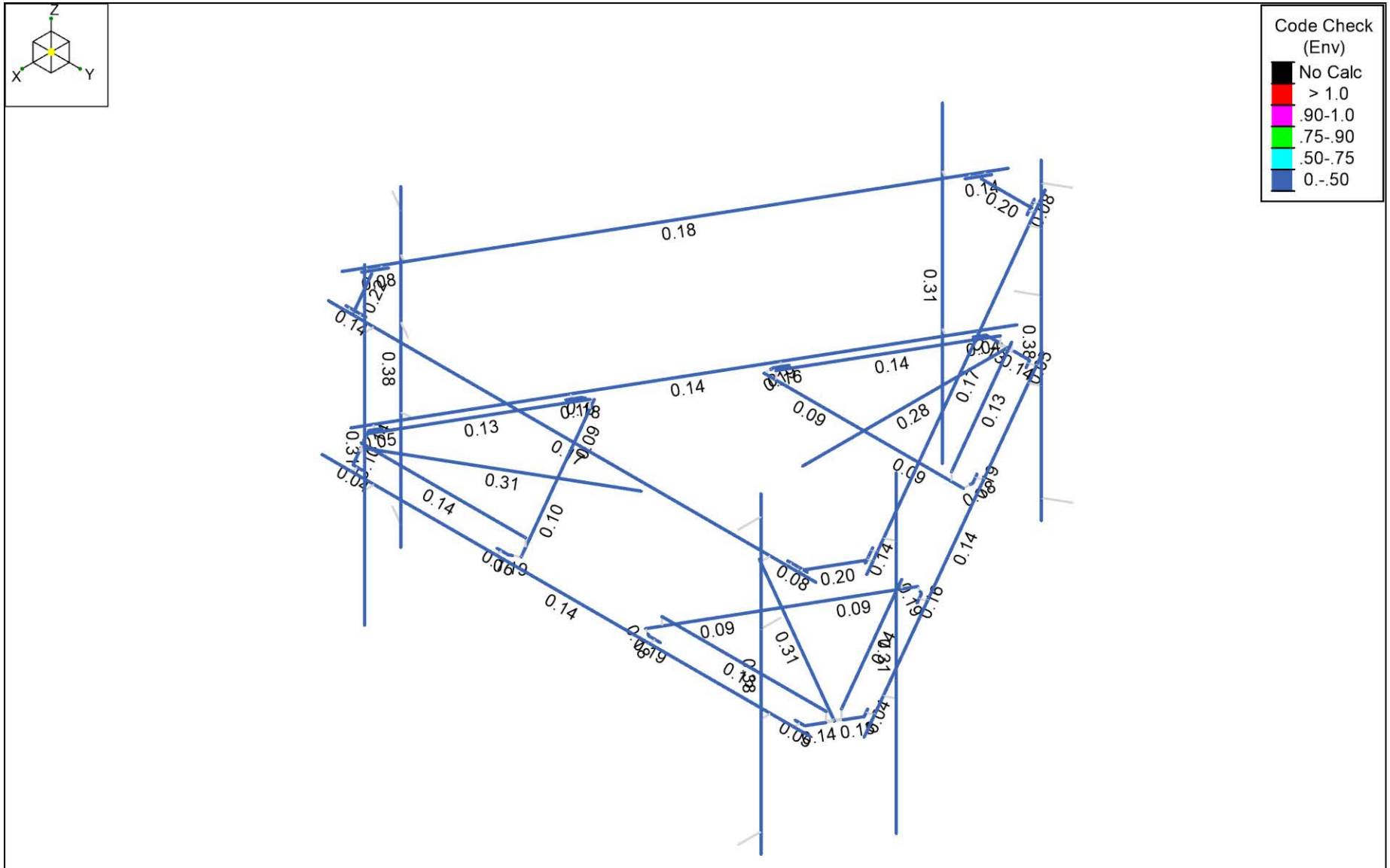


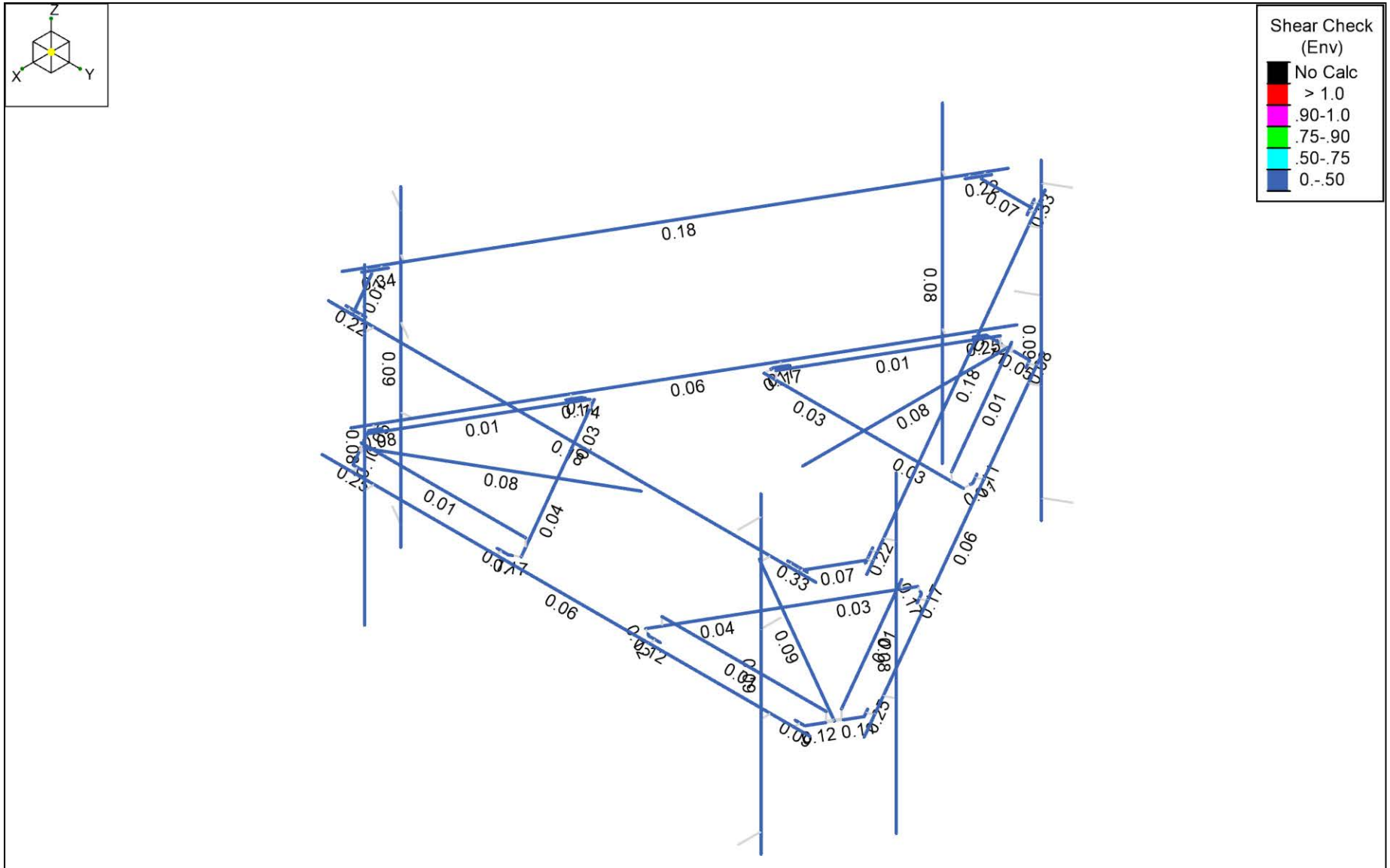
Loads: BLC 2, Ice Dead
Envelope Only Solution

CLS	41124-14097396_C8_01-Middle Haddam Road-CROWN CT	SK-7
NGN		May 04, 2022
41124-14097396_C8_01-01-MA	Ice Dead Loads	411257_14097396_C8_01_T-MOBILE.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

CLS	41124-14097396_C8_01-Middle Haddam Road-CROWN CT	SK-8
NGN		May 04, 2022
41124-14097396_C8_01-01-MA	Envelope Member Unity Check Results - Bending	411257_14097396_C8_01_T-MOBILE.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

CLS	41124-14097396_C8_01-Middle Haddam Road-CROWN CT	SK-9
NGN		May 04, 2022
41124-14097396_C8_01-01-MA	Envelope Member Check Results - Shear	411257_14097396_C8_01_T-MOBILE.r3d

Basic Load Cases

	BLC Description	Category	Z Gravity	Nodal	Distributed	Area(Member)
1	Dead	DL	-1	9		3
2	Ice Dead	RL		9	60	3
3	BLC 1 Transient Area Loads	None			30	
4	BLC 2 Transient Area Loads	None			30	
5	Structure Wind 0°	None			58	
6	Structure Wind 30°	None			90	
7	Structure Wind 45°	None			120	
8	Structure Wind 60°	None			116	
9	Structure Wind 90°	None			45	
10	Structure Wind 120°	None			116	
11	Structure Wind 135°	None			120	
12	Structure Wind 150°	None			90	
13	Structure Wind 180°	None			58	
14	Structure Wind 210°	None			90	
15	Structure Wind 225°	None			120	
16	Structure Wind 240°	None			116	
17	Structure Wind 270°	None			45	
18	Structure Wind 300°	None			116	
19	Structure Wind 315°	None			120	
20	Structure Wind 330°	None			90	
21	Structure Wind w/ Ice 0°	None			58	
22	Structure Wind w/ Ice 30°	None			94	
23	Structure Wind w/ Ice 45°	None			120	
24	Structure Wind w/ Ice 60°	None			116	
25	Structure Wind w/ Ice 90°	None			47	
26	Structure Wind w/ Ice 120°	None			116	
27	Structure Wind w/ Ice 135°	None			120	
28	Structure Wind w/ Ice 150°	None			94	
29	Structure Wind w/ Ice 180°	None			58	
30	Structure Wind w/ Ice 210°	None			94	
31	Structure Wind w/ Ice 225°	None			120	
32	Structure Wind w/ Ice 240°	None			116	
33	Structure Wind w/ Ice 270°	None			47	
34	Structure Wind w/ Ice 300°	None			116	
35	Structure Wind w/ Ice 315°	None			120	
36	Structure Wind w/ Ice 330°	None			94	
37	Antenna Wind 0°	None		9		
38	Antenna Wind 30°	None		18		
39	Antenna Wind 45°	None		18		
40	Antenna Wind 60°	None		18		
41	Antenna Wind 90°	None		9		
42	Antenna Wind 120°	None		18		
43	Antenna Wind 135°	None		18		
44	Antenna Wind 150°	None		18		
45	Antenna Wind 180°	None		9		
46	Antenna Wind 210°	None		18		
47	Antenna Wind 225°	None		18		
48	Antenna Wind 240°	None		18		
49	Antenna Wind 270°	None		9		
50	Antenna Wind 300°	None		18		
51	Antenna Wind 315°	None		18		
52	Antenna Wind 330°	None		18		
53	Antenna Wind w/ Ice 0°	None		9		
54	Antenna Wind w/ Ice 30°	None		18		
55	Antenna Wind w/ Ice 45°	None		18		

Basic Load Cases (Continued)

	BLC Description	Category	Z Gravity	Nodal	Distributed	Area(Member)
56	Antenna Wind w/ Ice 60°	None		18		
57	Antenna Wind w/ Ice 90°	None		9		
58	Antenna Wind w/ Ice 120°	None		18		
59	Antenna Wind w/ Ice 135°	None		18		
60	Antenna Wind w/ Ice 150°	None		18		
61	Antenna Wind w/ Ice 180°	None		9		
62	Antenna Wind w/ Ice 210°	None		18		
63	Antenna Wind w/ Ice 225°	None		18		
64	Antenna Wind w/ Ice 240°	None		18		
65	Antenna Wind w/ Ice 270°	None		9		
66	Antenna Wind w/ Ice 300°	None		18		
67	Antenna Wind w/ Ice 315°	None		18		
68	Antenna Wind w/ Ice 330°	None		18		
69	Seismic X	ELX		9	60	
70	Seismic Y	ELY		9	60	
71	Seismic Z	ELZ		9	60	
72	Maintenance Live 500 (1)	OL1		1		
73	Maintenance Live 500 (2)	OL2		1		

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	DISPLAY (1.0D + 1.0W_0°)	Yes	Y	DL	1	37	1				
2	1.4D	Yes	Y	DL	1.4						
3	1.2D + 1.0W_0°	Yes	Y	DL	1.2	5	1	37	1		
4	1.2D + 1.0W_30°	Yes	Y	DL	1.2	6	1	38	1		
5	1.2D + 1.0W_45°	Yes	Y	DL	1.2	7	1	39	1		
6	1.2D + 1.0W_60°	Yes	Y	DL	1.2	8	1	40	1		
7	1.2D + 1.0W_90°	Yes	Y	DL	1.2	9	1	41	1		
8	1.2D + 1.0W_120°	Yes	Y	DL	1.2	10	1	42	1		
9	1.2D + 1.0W_135°	Yes	Y	DL	1.2	11	1	43	1		
10	1.2D + 1.0W_150°	Yes	Y	DL	1.2	12	1	44	1		
11	1.2D + 1.0W_180°	Yes	Y	DL	1.2	13	-1	45	-1		
12	1.2D + 1.0W_210°	Yes	Y	DL	1.2	14	-1	46	-1		
13	1.2D + 1.0W_225°	Yes	Y	DL	1.2	15	-1	47	-1		
14	1.2D + 1.0W_240°	Yes	Y	DL	1.2	16	-1	48	-1		
15	1.2D + 1.0W_270°	Yes	Y	DL	1.2	17	-1	49	-1		
16	1.2D + 1.0W_300°	Yes	Y	DL	1.2	18	-1	50	-1		
17	1.2D + 1.0W_315°	Yes	Y	DL	1.2	19	-1	51	-1		
18	1.2D + 1.0W_330°	Yes	Y	DL	1.2	20	-1	52	-1		
19	1.2D + 1.0Di + 1.0Wi_0°	Yes	Y	DL	1.2	21	1	53	1	RL	1
20	1.2D + 1.0Di + 1.0Wi_30°	Yes	Y	DL	1.2	22	1	54	1	RL	1
21	1.2D + 1.0Di + 1.0Wi_45°	Yes	Y	DL	1.2	23	1	55	1	RL	1
22	1.2D + 1.0Di + 1.0Wi_60°	Yes	Y	DL	1.2	24	1	56	1	RL	1
23	1.2D + 1.0Di + 1.0Wi_90°	Yes	Y	DL	1.2	25	1	57	1	RL	1
24	1.2D + 1.0Di + 1.0Wi_120°	Yes	Y	DL	1.2	26	1	58	1	RL	1
25	1.2D + 1.0Di + 1.0Wi_135°	Yes	Y	DL	1.2	27	1	59	1	RL	1
26	1.2D + 1.0Di + 1.0Wi_150°	Yes	Y	DL	1.2	28	1	60	1	RL	1
27	1.2D + 1.0Di + 1.0Wi_180°	Yes	Y	DL	1.2	29	-1	61	-1	RL	1
28	1.2D + 1.0Di + 1.0Wi_210°	Yes	Y	DL	1.2	30	-1	62	-1	RL	1
29	1.2D + 1.0Di + 1.0Wi_225°	Yes	Y	DL	1.2	31	-1	63	-1	RL	1
30	1.2D + 1.0Di + 1.0Wi_240°	Yes	Y	DL	1.2	32	-1	64	-1	RL	1
31	1.2D + 1.0Di + 1.0Wi_270°	Yes	Y	DL	1.2	33	-1	65	-1	RL	1
32	1.2D + 1.0Di + 1.0Wi_300°	Yes	Y	DL	1.2	34	-1	66	-1	RL	1
33	1.2D + 1.0Di + 1.0Wi_315°	Yes	Y	DL	1.2	35	-1	67	-1	RL	1
34	1.2D + 1.0Di + 1.0Wi_330°	Yes	Y	DL	1.2	36	-1	68	-1	RL	1

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
35	1.2D + 1.0Ev + 1.0Eh_0°	Yes	Y	DL	1.245	ELX	-1	ELY			
36	1.2D + 1.0Ev + 1.0Eh_30°	Yes	Y	DL	1.245	ELX	-0.866	ELY	0.5		
37	1.2D + 1.0Ev + 1.0Eh_45°	Yes	Y	DL	1.245	ELX	-0.707	ELY	0.707		
38	1.2D + 1.0Ev + 1.0Eh_60°	Yes	Y	DL	1.245	ELX	-0.5	ELY	0.866		
39	1.2D + 1.0Ev + 1.0Eh_90°	Yes	Y	DL	1.245	ELX		ELY	1		
40	1.2D + 1.0Ev + 1.0Eh_120°	Yes	Y	DL	1.245	ELX	0.5	ELY	0.866		
41	1.2D + 1.0Ev + 1.0Eh_135°	Yes	Y	DL	1.245	ELX	0.707	ELY	0.707		
42	1.2D + 1.0Ev + 1.0Eh_150°	Yes	Y	DL	1.245	ELX	0.866	ELY	0.5		
43	1.2D + 1.0Ev + 1.0Eh_180°	Yes	Y	DL	1.245	ELX	1	ELY			
44	1.2D + 1.0Ev + 1.0Eh_210°	Yes	Y	DL	1.245	ELX	0.866	ELY	-0.5		
45	1.2D + 1.0Ev + 1.0Eh_225°	Yes	Y	DL	1.245	ELX	0.707	ELY	-0.707		
46	1.2D + 1.0Ev + 1.0Eh_240°	Yes	Y	DL	1.245	ELX	0.5	ELY	-0.866		
47	1.2D + 1.0Ev + 1.0Eh_270°	Yes	Y	DL	1.245	ELX		ELY	-1		
48	1.2D + 1.0Ev + 1.0Eh_300°	Yes	Y	DL	1.245	ELX	-0.5	ELY	-0.866		
49	1.2D + 1.0Ev + 1.0Eh_315°	Yes	Y	DL	1.245	ELX	-0.707	ELY	-0.707		
50	1.2D + 1.0Ev + 1.0Eh_330°	Yes	Y	DL	1.245	ELX	-0.866	ELY	-0.5		
51	0.9D - 1.0Ev + 1.0Eh_0°	Yes	Y	DL	0.855	ELX	-1	ELY			
52	0.9D - 1.0Ev + 1.0Eh_30°	Yes	Y	DL	0.855	ELX	-0.866	ELY	0.5		
53	0.9D - 1.0Ev + 1.0Eh_45°	Yes	Y	DL	0.855	ELX	-0.707	ELY	0.707		
54	0.9D - 1.0Ev + 1.0Eh_60°	Yes	Y	DL	0.855	ELX	-0.5	ELY	0.866		
55	0.9D - 1.0Ev + 1.0Eh_90°	Yes	Y	DL	0.855	ELX		ELY	1		
56	0.9D - 1.0Ev + 1.0Eh_120°	Yes	Y	DL	0.855	ELX	0.5	ELY	0.866		
57	0.9D - 1.0Ev + 1.0Eh_135°	Yes	Y	DL	0.855	ELX	0.707	ELY	0.707		
58	0.9D - 1.0Ev + 1.0Eh_150°	Yes	Y	DL	0.855	ELX	0.866	ELY	0.5		
59	0.9D - 1.0Ev + 1.0Eh_180°	Yes	Y	DL	0.855	ELX	1	ELY			
60	0.9D - 1.0Ev + 1.0Eh_210°	Yes	Y	DL	0.855	ELX	0.866	ELY	-0.5		
61	0.9D - 1.0Ev + 1.0Eh_225°	Yes	Y	DL	0.855	ELX	0.707	ELY	-0.707		
62	0.9D - 1.0Ev + 1.0Eh_240°	Yes	Y	DL	0.855	ELX	0.5	ELY	-0.866		
63	0.9D - 1.0Ev + 1.0Eh_270°	Yes	Y	DL	0.855	ELX		ELY	-1		
64	0.9D - 1.0Ev + 1.0Eh_300°	Yes	Y	DL	0.855	ELX	-0.5	ELY	-0.866		
65	0.9D - 1.0Ev + 1.0Eh_315°	Yes	Y	DL	0.855	ELX	-0.707	ELY	-0.707		
66	0.9D - 1.0Ev + 1.0Eh_330°	Yes	Y	DL	0.855	ELX	-0.866	ELY	-0.5		
67	1.2D + 1.5Lm_1 + 1.0Wm_0°	Yes	Y	DL	1.2	5	0.066	37	0.066	OL1	1.5
68	1.2D + 1.5Lm_1 + 1.0Wm_30°	Yes	Y	DL	1.2	6	0.066	38	0.066	OL1	1.5
69	1.2D + 1.5Lm_1 + 1.0Wm_45°	Yes	Y	DL	1.2	7	0.066	39	0.066	OL1	1.5
70	1.2D + 1.5Lm_1 + 1.0Wm_60°	Yes	Y	DL	1.2	8	0.066	40	0.066	OL1	1.5
71	1.2D + 1.5Lm_1 + 1.0Wm_90°	Yes	Y	DL	1.2	9	0.066	41	0.066	OL1	1.5
72	1.2D + 1.5Lm_1 + 1.0Wm_120°	Yes	Y	DL	1.2	10	0.066	42	0.066	OL1	1.5
73	1.2D + 1.5Lm_1 + 1.0Wm_135°	Yes	Y	DL	1.2	11	0.066	43	0.066	OL1	1.5
74	1.2D + 1.5Lm_1 + 1.0Wm_150°	Yes	Y	DL	1.2	12	0.066	44	0.066	OL1	1.5
75	1.2D + 1.5Lm_1 + 1.0Wm_180°	Yes	Y	DL	1.2	13	-0.066	45	-0.066	OL1	1.5
76	1.2D + 1.5Lm_1 + 1.0Wm_210°	Yes	Y	DL	1.2	14	-0.066	46	-0.066	OL1	1.5
77	1.2D + 1.5Lm_1 + 1.0Wm_225°	Yes	Y	DL	1.2	15	-0.066	47	-0.066	OL1	1.5
78	1.2D + 1.5Lm_1 + 1.0Wm_240°	Yes	Y	DL	1.2	16	-0.066	48	-0.066	OL1	1.5
79	1.2D + 1.5Lm_1 + 1.0Wm_270°	Yes	Y	DL	1.2	17	-0.066	49	-0.066	OL1	1.5
80	1.2D + 1.5Lm_1 + 1.0Wm_300°	Yes	Y	DL	1.2	18	-0.066	50	-0.066	OL1	1.5
81	1.2D + 1.5Lm_1 + 1.0Wm_315°	Yes	Y	DL	1.2	19	-0.066	51	-0.066	OL1	1.5
82	1.2D + 1.5Lm_1 + 1.0Wm_330°	Yes	Y	DL	1.2	20	-0.066	52	-0.066	OL1	1.5
83	1.2D + 1.5Lm_2 + 1.0Wm_0°	Yes	Y	DL	1.2	5	0.066	37	0.066	OL2	1.5
84	1.2D + 1.5Lm_2 + 1.0Wm_30°	Yes	Y	DL	1.2	6	0.066	38	0.066	OL2	1.5
85	1.2D + 1.5Lm_2 + 1.0Wm_45°	Yes	Y	DL	1.2	7	0.066	39	0.066	OL2	1.5
86	1.2D + 1.5Lm_2 + 1.0Wm_60°	Yes	Y	DL	1.2	8	0.066	40	0.066	OL2	1.5
87	1.2D + 1.5Lm_2 + 1.0Wm_90°	Yes	Y	DL	1.2	9	0.066	41	0.066	OL2	1.5
88	1.2D + 1.5Lm_2 + 1.0Wm_120°	Yes	Y	DL	1.2	10	0.066	42	0.066	OL2	1.5
89	1.2D + 1.5Lm_2 + 1.0Wm_135°	Yes	Y	DL	1.2	11	0.066	43	0.066	OL2	1.5

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
90	1.2D + 1.5Lm_2 + 1.0Wm_150°	Yes	Y	DL	1.2	12	0.066	44	0.066	OL2	1.5
91	1.2D + 1.5Lm_2 + 1.0Wm_180°	Yes	Y	DL	1.2	13	-0.066	45	-0.066	OL2	1.5
92	1.2D + 1.5Lm_2 + 1.0Wm_210°	Yes	Y	DL	1.2	14	-0.066	46	-0.066	OL2	1.5
93	1.2D + 1.5Lm_2 + 1.0Wm_225°	Yes	Y	DL	1.2	15	-0.066	47	-0.066	OL2	1.5
94	1.2D + 1.5Lm_2 + 1.0Wm_240°	Yes	Y	DL	1.2	16	-0.066	48	-0.066	OL2	1.5
95	1.2D + 1.5Lm_2 + 1.0Wm_270°	Yes	Y	DL	1.2	17	-0.066	49	-0.066	OL2	1.5
96	1.2D + 1.5Lm_2 + 1.0Wm_300°	Yes	Y	DL	1.2	18	-0.066	50	-0.066	OL2	1.5
97	1.2D + 1.5Lm_2 + 1.0Wm_315°	Yes	Y	DL	1.2	19	-0.066	51	-0.066	OL2	1.5
98	1.2D + 1.5Lm_2 + 1.0Wm_330°	Yes	Y	DL	1.2	20	-0.066	52	-0.066	OL2	1.5

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	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
3	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	MOD Support Rail	PIPE_2.0	Beam	None	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
2	MOD SR Conn Plate	PL6x0.375	Beam	None	A36 Gr.36	Typical	2.25	0.026	6.75	0.101
3	MOD SR Conn Angle	L2.5x2.5x4	Beam	None	A36 Gr.36	Typical	1.19	0.692	0.692	0.026
4	MOD MOUNT_PIPE_2.0	PIPE_2.0	None	None	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
5	Platform Horizontal Pipe	PIPE_3.0	Beam	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
6	Offsett Tube	HSS4X4X4	Beam	None	A500 Gr.B Rect	Typical	3.37	7.8	7.8	12.8
7	Offset Side Plate	0.38 X 6 Plate	Beam	None	A36 Gr.36	Typical	2.28	0.027	6.84	0.105
8	Grating Angle	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	0.722	0.271	0.271	0.009
9	Offset End Plate	0.5 x 6 Plate	Beam	None	A36 Gr.36	Typical	3	0.063	9	0.237

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lcomp top [in]	K y-y	K z-z	Function
1	M69	Platform Horizontal Pipe	150				Lateral
2	A1	Offsett Tube	63.125				Lateral
3	M33A	Offset End Plate	4.688				Lateral
4	M34A	Offset Side Plate	0.875				Lateral
5	M35A	Offset Side Plate	0.875				Lateral
6	M36A	Offsett Tube	30.688				Lateral
7	M38A	Offsett Tube	30.687				Lateral
8	M39A	Offset End Plate	4.688				Lateral
9	M44A	Grating Angle	50.542		0.65	0.65	Lateral
10	M46A	Grating Angle	50.542		0.65	0.65	Lateral
11	M53A	Offset End Plate	2.91				Lateral
12	M54A	Offset Side Plate	3.5				Lateral
13	M30	Offset End Plate	2.91				Lateral
14	M31	Offset Side Plate	3.5				Lateral
15	M32	Offset Side Plate	0.875				Lateral
16	M33	Grating Angle	50.542		0.65	0.65	Lateral
17	M34	Offsett Tube	30.688				Lateral
18	M35	Offset Side Plate	0.875				Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [in]	Lcomp top [in]	K y-y	K z-z	Function
19	A2	Offsett Tube	63.125				Lateral
20	M37	Offset End Plate	4.688				Lateral
21	M39	Offsett Tube	30.687				Lateral
22	M40	Offset End Plate	4.688				Lateral
23	M44	Grating Angle	50.542		0.65	0.65	Lateral
24	M48	Offset End Plate	2.91				Lateral
25	M49	Offset Side Plate	3.5				Lateral
26	M53	Offset End Plate	2.91				Lateral
27	M54	Offset Side Plate	3.5				Lateral
28	M59	Offset Side Plate	0.875				Lateral
29	M60	Grating Angle	50.542		0.65	0.65	Lateral
30	M61	Offsett Tube	30.688				Lateral
31	M62	Offset Side Plate	0.875				Lateral
32	A3	Offsett Tube	63.125				Lateral
33	M64	Offset End Plate	4.688				Lateral
34	M66	Offsett Tube	30.687				Lateral
35	M67	Offset End Plate	4.688				Lateral
36	M72	Grating Angle	50.542		0.65	0.65	Lateral
37	M76	Offset End Plate	2.91				Lateral
38	M77	Offset Side Plate	3.5				Lateral
39	M79	Offset End Plate	2.91				Lateral
40	M80	Offset Side Plate	3.5				Lateral
41	M84	Platform Horizontal Pipe	150				Lateral
42	M85	Platform Horizontal Pipe	150				Lateral
43	A_MP1_S	MOD MOUNT_PIPE_2.0	96	Lbyy			Lateral
44	A_MP2_S	MOD MOUNT_PIPE_2.0	96	Lbyy			Lateral
45	B_MP1_S	MOD MOUNT_PIPE_2.0	96	Lbyy			Lateral
46	B_MP2_S	MOD MOUNT_PIPE_2.0	96	Lbyy			Lateral
47	G_MP1_S	MOD MOUNT_PIPE_2.0	96	Lbyy			Lateral
48	G_MP2_S	MOD MOUNT_PIPE_2.0	96	Lbyy			Lateral
49	HR1	MOD Support Rail	150				Lateral
50	HR2	MOD SR Conn Plate	6	Lbyy			Lateral
51	HR3	MOD SR Conn Plate	6	Lbyy			Lateral
52	HR10	MOD Support Rail	150				Lateral
53	HR11	MOD SR Conn Plate	6	Lbyy			Lateral
54	HR12	MOD SR Conn Plate	6	Lbyy			Lateral
55	HR19	MOD Support Rail	150				Lateral
56	HR20	MOD SR Conn Plate	6	Lbyy			Lateral
57	HR21	MOD SR Conn Plate	6	Lbyy			Lateral
58	HR28	MOD SR Conn Angle	15.408	Lbyy			Lateral
59	HR29	MOD SR Conn Angle	15.408	Lbyy			Lateral
60	HR30	MOD SR Conn Angle	15.408	Lbyy			Lateral

Member Advanced Data

	Label	J Release	Physical	Deflection Ratio Options	Seismic DR
1	M69		Yes	Default	None
2	A1		Yes	N/A	None
3	M33A		Yes	N/A	None
4	M34A		Yes	N/A	None
5	M35A		Yes	N/A	None
6	M36A		Yes	N/A	None
7	M37A		Yes	** NA **	None
8	M38A		Yes	N/A	None
9	M39A		Yes	N/A	None
10	M40A		Yes	** NA **	None

Member Advanced Data (Continued)

	Label	J Release	Physical	Deflection Ratio Options	Seismic DR
11	M41A		Yes	** NA **	None
12	M42A		Yes	** NA **	None
13	M43A		Yes	** NA **	None
14	M44A		Yes	N/A	None
15	M45A		Yes	** NA **	None
16	M46A		Yes	N/A	None
17	M47A		Yes	** NA **	None
18	M48A		Yes	** NA **	None
19	M51	OOOXXO	Yes	** NA **	None
20	M52	OOOXXO	Yes	** NA **	None
21	M53A		Yes	N/A	None
22	M54A		Yes	N/A	None
23	M28	OOOXXO	Yes	** NA **	None
24	M29	OOOXXO	Yes	** NA **	None
25	M30		Yes	N/A	None
26	M31		Yes	N/A	None
27	M27	OOOXXO	Yes	** NA **	None
28	M32		Yes	N/A	None
29	M33		Yes	N/A	None
30	M34		Yes	N/A	None
31	M35		Yes	N/A	None
32	A2		Yes	N/A	None
33	M37		Yes	N/A	None
34	M38		Yes	** NA **	None
35	M39		Yes	N/A	None
36	M40		Yes	N/A	None
37	M41		Yes	** NA **	None
38	M42		Yes	** NA **	None
39	M43		Yes	** NA **	None
40	M44		Yes	N/A	None
41	M45		Yes	** NA **	None
42	M46		Yes	** NA **	None
43	M47	OOOXXO	Yes	** NA **	None
44	M48		Yes	N/A	None
45	M49		Yes	N/A	None
46	M50	OOOXXO	Yes	** NA **	None
47	M53		Yes	N/A	None
48	M54		Yes	N/A	None
49	M55		Yes	** NA **	None
50	M56		Yes	** NA **	None
51	M57	OOOXXO	Yes	** NA **	None
52	M58	OOOXXO	Yes	** NA **	None
53	M59		Yes	N/A	None
54	M60		Yes	N/A	None
55	M61		Yes	N/A	None
56	M62		Yes	N/A	None
57	A3		Yes	N/A	None
58	M64		Yes	N/A	None
59	M65		Yes	** NA **	None
60	M66		Yes	N/A	None
61	M67		Yes	N/A	None
62	M68		Yes	** NA **	None
63	M70		Yes	** NA **	None
64	M71		Yes	** NA **	None
65	M72		Yes	N/A	None

Member Advanced Data (Continued)

	Label	J Release	Physical	Deflection Ratio Options	Seismic DR
66	M73		Yes	** NA **	None
67	M74		Yes	** NA **	None
68	M75	OOOXXO	Yes	** NA **	None
69	M76		Yes	N/A	None
70	M77		Yes	N/A	None
71	M78	OOOXXO	Yes	** NA **	None
72	M79		Yes	N/A	None
73	M80		Yes	N/A	None
74	M81		Yes	** NA **	None
75	M82		Yes	** NA **	None
76	M83	OOOXXO	Yes	** NA **	None
77	M84		Yes	Default	None
78	M85		Yes	Default	None
79	RI2		Yes	** NA **	None
80	A_MP1_S		Yes	** NA **	None
81	RI3		Yes	** NA **	None
82	RI4		Yes	** NA **	None
83	RI5		Yes	** NA **	None
84	RI12		Yes	** NA **	None
85	A_MP2_S		Yes	** NA **	None
86	RI72		Yes	** NA **	None
87	B_MP1_S		Yes	** NA **	None
88	RI73		Yes	** NA **	None
89	RI74		Yes	** NA **	None
90	RI75		Yes	** NA **	None
91	RI82		Yes	** NA **	None
92	B_MP2_S		Yes	** NA **	None
93	RI142		Yes	** NA **	None
94	G_MP1_S		Yes	** NA **	None
95	RI143		Yes	** NA **	None
96	RI144		Yes	** NA **	None
97	RI145		Yes	** NA **	None
98	RI152		Yes	** NA **	None
99	G_MP2_S		Yes	** NA **	None
100	M100		Yes	** NA **	None
101	HR1		Yes	Default	None
102	HR2		Yes	N/A	None
103	HR3		Yes	N/A	None
104	HR4		Yes	** NA **	None
105	HR5		Yes	** NA **	None
106	HR6		Yes	** NA **	None
107	HR7		Yes	** NA **	None
108	HR8		Yes	** NA **	None
109	HR9		Yes	** NA **	None
110	HR10		Yes	Default	None
111	HR11		Yes	N/A	None
112	HR12		Yes	N/A	None
113	HR13		Yes	** NA **	None
114	HR14		Yes	** NA **	None
115	HR15		Yes	** NA **	None
116	HR16		Yes	** NA **	None
117	HR17		Yes	** NA **	None
118	HR18		Yes	** NA **	None
119	HR19		Yes	Default	None
120	HR20		Yes	N/A	None

Member Advanced Data (Continued)

	Label	J Release	Physical	Deflection Ratio Options	Seismic DR
121	HR21		Yes	N/A	None
122	HR22		Yes	** NA **	None
123	HR23		Yes	** NA **	None
124	HR24		Yes	** NA **	None
125	HR25		Yes	** NA **	None
126	HR26		Yes	** NA **	None
127	HR27		Yes	** NA **	None
128	HR28		Yes	N/A	None
129	HR29		Yes	N/A	None
130	HR30		Yes	N/A	None
131	M131		Yes	** NA **	None
132	M132		Yes	** NA **	None
133	M133		Yes	** NA **	None
134	M134		Yes	** NA **	None
135	M135		Yes	** NA **	None

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	N48A	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N41	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N85	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N48A	max	1084.561	3	680.934	15	1581.603	19	798.358	7	4430.902	19	1225.936	7
2		min	-1367.69	11	-672.396	7	532.197	59	-548.831	15	1363.453	11	-1209.046	15
3	N85	max	995.106	3	1181.916	16	1677.67	72	4002.105	71	-378.819	3	1226.844	12
4		min	-845.786	11	-940.936	8	532.147	64	1122.913	15	-2952.393	75	-1209.58	4
5	N41	max	679.722	6	983.372	15	1677.309	94	-1133.341	7	-400.129	3	1257.892	17
6		min	-545.827	14	-1233.551	7	532.045	54	-4134.993	95	-2713.617	91	-1242.681	9
7	Totals:	max	2654.776	3	2654.75	15	4555.155	24						
8		min	-2654.778	11	-2654.742	7	1646.222	64						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	B_MP1_S	PIPE_2.0	0.378	60.126	8	0.091	59.621		16	14916.096	32130	1871.625	1871.625	1.72	H1-1b
2	A_MP1_S	PIPE_2.0	0.378	60.126	3	0.089	59.621		11	14916.096	32130	1871.625	1871.625	1.548	H1-1b
3	G_MP1_S	PIPE_2.0	0.378	60.126	14	0.089	59.621		6	14916.096	32130	1871.625	1871.625	1.792	H1-1b
4	A2	HSS4X4X4	0.31	0	97	0.082	0	y	17	124260.85	139518	16180.5	16180.5	2.314	H1-1b
5	A3	HSS4X4X4	0.308	0	76	0.086	0	y	75	124260.85	139518	16180.5	16180.5	2.314	H1-1b
6	B_MP2_S	PIPE_2.0	0.308	59.621	14	0.078	59.621		14	14916.096	32130	1871.625	1871.625	1.935	H1-1b
7	A_MP2_S	PIPE_2.0	0.308	59.621	8	0.079	59.621		9	14916.096	32130	1871.625	1871.625	2.072	H1-1b
8	G_MP2_S	PIPE_2.0	0.308	59.621	3	0.078	59.621		3	14916.096	32130	1871.625	1871.625	2.354	H1-1b
9	A1	HSS4X4X4	0.282	0	22	0.08	0	y	6	124260.85	139518	16180.5	16180.5	2.393	H1-1b
10	HR28	L2.5x2.5x4	0.217	0	17	0.07	0	z	16	36536.53	38556	1113.554	2537.388	1.5	H2-1
11	HR29	L2.5x2.5x4	0.204	0	11	0.07	0	z	11	36536.53	38556	1113.554	2537.388	1.5	H2-1
12	HR30	L2.5x2.5x4	0.203	0	6	0.07	0	z	6	36536.53	38556	1113.554	2537.388	1.5	H2-1
13	M31	0.38 X 6 Plate	0.193	1.51	13	0.115	3.5	y	4	70017.672	73872	584.82	9234	2.666	H1-1b
14	M54	0.38 X 6 Plate	0.191	1.51	7	0.114	3.5	y	15	70017.672	73872	584.82	9234	2.664	H1-1b
15	M80	0.38 X 6 Plate	0.191	1.51	18	0.115	3.5	y	10	70017.672	73872	584.82	9234	2.664	H1-1b
16	M35A	0.38 X 6 Plate	0.188	0.875	10	0.166	0.875	y	7	73624.978	73872	584.82	9234	1.98	H1-1b
17	M59	0.38 X 6 Plate	0.188	0.875	15	0.166	0.875	y	12	73624.978	73872	584.82	9234	1.95	H1-1b

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
18	M32	0.38 X 6 Plate	0.188	0.875	4	0.165	0.875	y	18	73624.978	73872	584.82	9234	2.014	H1-1b
19	HR19	PIPE_2.0	0.177	136.579	17	0.185	140.526		9	6295.422	32130	1871.625	1871.625	3	H1-1b
20	M34A	0.38 X 6 Plate	0.177	0.875	12	0.114	0.875	y	15	73624.978	73872	584.82	9234	1.578	H1-1b
21	M35	0.38 X 6 Plate	0.177	0.875	7	0.142	0.875	y	90	73624.978	73872	584.82	9234	1.619	H1-1b
22	M62	0.38 X 6 Plate	0.177	0.875	18	0.12	0.875	y	68	73624.978	73872	584.82	9234	1.589	H1-1b
23	HR1	PIPE_2.0	0.167	136.579	11	0.176	140.526		4	6295.422	32130	1871.625	1871.625	3	H1-1b
24	HR10	PIPE_2.0	0.167	136.579	6	0.176	140.526		15	6295.422	32130	1871.625	1871.625	3	H1-1b
25	M54A	0.38 X 6 Plate	0.157	3.5	10	0.171	3.5	y	15	70017.243	73872	584.82	9234	2.667	H1-1b
26	M77	0.38 X 6 Plate	0.157	3.5	15	0.171	3.5	y	4	70017.243	73872	584.82	9234	2.667	H1-1b
27	M49	0.38 X 6 Plate	0.157	3.5	4	0.172	3.5	y	10	70017.243	73872	584.82	9234	2.667	H1-1b
28	M72	L2x2x3	0.144	50.542	28	0.009	50.542	y	28	16069.976	23392.8	557.717	1137.587	1.5	H2-1
29	HR20	PL6x0.375	0.144	2.305	5	0.22	2.274	y	15	61872.819	72900	569.7	9112.5	1.559	H1-1b
30	M44A	L2x2x3	0.144	50.542	23	0.009	50.542	y	23	16069.976	23392.8	557.717	1137.587	1.5	H2-1
31	M44	L2x2x3	0.144	50.542	34	0.009	50.542	y	34	16069.976	23392.8	557.717	1137.587	1.5	H2-1
32	M84	PIPE_3.0	0.141	53.684	24	0.056	52.895		28	28250.554	65205	5748.75	5748.75	1.579	H1-1b
33	M69	PIPE_3.0	0.141	53.684	30	0.06	144.474		75	28250.554	65205	5748.75	5748.75	1.579	H1-1b
34	M85	PIPE_3.0	0.141	53.684	19	0.056	52.895		23	28250.554	65205	5748.75	5748.75	1.585	H1-1b
35	M67	0.5 x 6 Plate	0.14	0	10	0.123	0	y	80	91950.093	97200	1012.5	12150	1.361	H1-1b
36	M40	0.5 x 6 Plate	0.14	0	15	0.049	0	y	22	91950.093	97200	1012.5	12150	1.36	H1-1b
37	M39A	0.5 x 6 Plate	0.14	0	4	0.05	0	y	27	91950.093	97200	1012.5	12150	1.362	H1-1b
38	HR11	PL6x0.375	0.137	2.305	10	0.22	2.274	y	4	61872.819	72900	569.7	9112.5	1.577	H1-1b
39	HR2	PL6x0.375	0.137	2.305	15	0.22	2.274	y	10	61872.819	72900	569.7	9112.5	1.578	H1-1b
40	M33A	0.5 x 6 Plate	0.128	4.688	18	0.107	4.688	y	15	91950.093	97200	1012.5	12150	1.07	H1-1b
41	M64	0.5 x 6 Plate	0.128	4.688	7	0.107	4.688	y	4	91950.093	97200	1012.5	12150	1.07	H1-1b
42	M37	0.5 x 6 Plate	0.128	4.688	12	0.107	4.688	y	10	91950.093	97200	1012.5	12150	1.07	H1-1b
43	M60	L2x2x3	0.127	50.542	11	0.009	50.542	y	28	16070.024	23392.8	557.717	1137.588	1.5	H2-1
44	M46A	L2x2x3	0.127	50.542	6	0.009	50.542	y	23	16070.024	23392.8	557.717	1137.588	1.5	H2-1
45	M33	L2x2x3	0.127	50.542	16	0.009	50.542	y	34	16070.024	23392.8	557.717	1137.588	1.5	H2-1
46	M34	HSS4X4X4	0.097	30.688	92	0.035	30.688	y	87	135751.245	139518	16180.5	16180.5	1.789	H1-1b
47	M66	HSS4X4X4	0.095	0	73	0.036	0	y	68	135751.342	139518	16180.5	16180.5	1.784	H1-1b
48	M61	HSS4X4X4	0.094	30.688	71	0.032	30.688	y	82	135751.245	139518	16180.5	16180.5	1.797	H1-1b
49	M36A	HSS4X4X4	0.093	30.688	34	0.032	30.688	y	30	135751.245	139518	16180.5	16180.5	1.771	H1-1b
50	M39	HSS4X4X4	0.093	0	95	0.033	0	y	25	135751.342	139518	16180.5	16180.5	1.79	H1-1b
51	M38A	HSS4X4X4	0.089	0	20	0.033	0	y	31	135751.342	139518	16180.5	16180.5	1.767	H1-1b
52	HR21	PL6x0.375	0.084	3.695	11	0.344	4.705	y	9	61872.819	72900	569.7	9112.5	1.499	H1-1b
53	HR3	PL6x0.375	0.084	3.695	6	0.326	4.705	y	4	61872.819	72900	569.7	9112.5	1.499	H1-1b
54	HR12	PL6x0.375	0.084	3.695	16	0.327	4.705	y	15	61872.819	72900	569.7	9112.5	1.499	H1-1b
55	M30	0.5 x 6 Plate	0.049	0	12	0.083	0	y	7	95141.644	97200	1012.5	12150	3	H1-1b
56	M79	0.5 x 6 Plate	0.049	0	18	0.09	0	y	93	95141.644	97200	1012.5	12150	3	H1-1b
57	M53	0.5 x 6 Plate	0.049	0	7	0.083	0	y	18	95141.644	97200	1012.5	12150	3	H1-1b
58	M53A	0.5 x 6 Plate	0.041	0	18	0.249	1.409	y	7	95141.644	97200	1012.5	12150	3	H1-1b
59	M76	0.5 x 6 Plate	0.041	0	7	0.25	1.409	y	12	95141.644	97200	1012.5	12150	3	H1-1b
60	M48	0.5 x 6 Plate	0.041	0	12	0.248	1.409	y	18	95141.644	97200	1012.5	12150	3	H1-1b

TOWER-MOUNT CONNECTION ANALYSIS

v.1.0.0

319 Chapanoke Road, Suite 118
Raleigh, NC 27603
Office: (405) 348-5460
Fax: (405) 341-6334

SITE INFORMATION	
Site ID	411257
Site Name	Middle Haddam Road-CROWN CT
Project ID	41124-14097396_C8_01-01-MA

ANALYSIS PARAMETERS	
TIA Revision	H

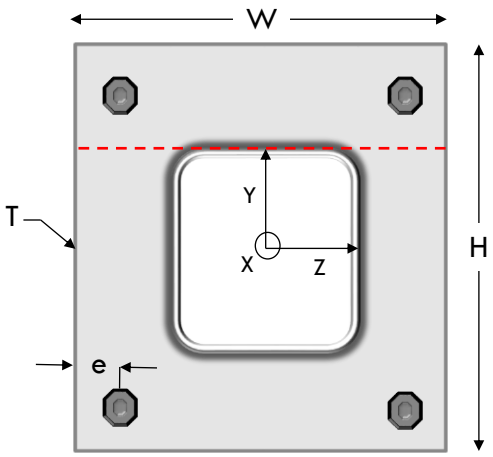
APPLIED FORCES FROM R3D		
Member Label		A3-LC72
Member End Label		I
Force-X	Fx, lbs	153.1
Force-Y	Fy, lbs	1678.1
Force-Z	Fz, lbs	16.3
Moment X-X	Mx, lbs-ft	-538.4
Moment Y-Y	My, lbs-ft	-10.0
Moment Z-Z	Mz, lbs-ft	4928.8

STANDOFF MEMBER PROPERTIES	
Standoff Member Type	Square/Rect. HSS
Standoff Member Shape	HSS4X4X1/4
Standoff Member Grade	A500-46 Gr.B Rect.
Member to Plate Weld Size, in	3/16

BOLT & PLATE PROPERTIES	
Bolt Quantity	4
Bolt Edge Distance (e), in	1.50
Nominal Bolt Diameter (ØDb), in	0.625
Bolt Grade	A325
Plate Height (H), in	10.00
Plate Width (W), in	10.00
Plate Thickness (T), in	0.63
Plate Grade	A36

BOLT ANALYSIS		
Shear Demand (Vu), k	0.50	
Shear Capacity (ΦRnv), k	13.81	
Tension Demand (Tu), k	5.94	
Tension Capacity (ΦRnt), k	20.34	
Shear Utilization	3.6%	
Tension Utilization	29.2%	PASS
Interaction Utilization	8.6%	

PLATE ANALYSIS		
Moment Demand (Mu), k-in	17.81	
Flexural Capacity (ΦMn), k-in	31.64	
Plate Utilization	56.3%	PASS



MATERIAL PROPERTIES	
Standoff Member - Yield Strength (Fy), ksi	46
Standoff Member - Ultimate Strength (Fu), ksi	58
Bolt - Yield Strength (Fy), ksi	92
Bolt - Tensile Strength (Fu), ksi	120
Plate - Yield Strength (Fy), ksi	36
Plate - Ultimate Strength (Fu), ksi	58

Exhibit F

Power Density/RF Emissions Report

Fox Hill Telecom

Radio Frequency Emissions Analysis Report

T-Mobile

Site ID: CT11696E

CT696/Verizon Portland_ET
191 Middle Haddam Rd
Portland, CT 06480

July 14, 2022

Fox Hill Telecom Project Number: 221457

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**27.45 %**

Fox Hill Telecom

July 14, 2022

T-MOBILE
Attn: RF Manager
35 Griffin Road South
Bloomfield, CT 06009

Emissions Analysis for Site: **CT11696E – CT696/Verizon Portland_ET**

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed upgrades to the T-MOBILE facility located at **191 Middle Haddam Rd, Portland, CT**, 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 (μW/cm2). 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.

General population 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 & 700 MHz 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 2500 MHz (BRS) 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 performed for the proposed upgrades to the T-MOBILE antenna facility located at **191 Middle Haddam Rd, Portland, CT**, 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 manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

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. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20
LTE	1900 MHz (PCS)	4	40
GSM	1900 MHz (PCS)	1	15
LTE	2100 MHz (AWS)	4	40

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz, 700 MHz, 1900 MHz (PCS) and 2100 MHz (AWS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	RFS APXVAALL24_43-U-NA20	137
B	1	RFS APXVAALL24_43-U-NA20	137
C	1	RFS APXVAALL24_43-U-NA20	137

Table 2: Antenna Data

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

Cable losses were factored in the calculations for this site. Since all **1900 MHz** and **2100 MHz** radios are ground mounted the following cable loss values were used. For each ground mounted **1900 MHz (PCS)** radio there was **2.16 dB** of cable loss calculated into the system gains / losses for this site. For each ground mounted **2100 MHz (AWS)** radio there was **2.23 dB** of cable loss calculated into the system gains / losses for this site. These values were calculated based upon the manufacturer's specifications for **210 feet** of **1-5/8"** coax.

RESULTS

Per the calculations completed for the proposed T-MOBILE configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	13.65 / 13.85 / 16.65 / 16.95	13	455	12,489.12	3.43
						Sector A Composite MPE%	**3.43**
Antenna B1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	13.65 / 13.85 / 16.65 / 16.95	13	455	12,489.12	3.43
						Sector B Composite MPE%	**3.43**
Antenna C1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	13.65 / 13.85 / 16.65 / 16.95	13	455	12,489.12	3.43
						Sector C Composite MPE%	**3.43**

Table 3: T-MOBILE Emissions Levels

The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum T-MOBILE MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each T-MOBILE Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	**MPE%**
T-MOBILE – Max Per Sector Value	**3.43 %**
Dish	5.97 %
Verizon Wireless	12.01 %
AT&T	6.04 %
Site Total MPE %:	**27.45 %**

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	3.43 %
T-MOBILE Sector B Total:	3.43 %
T-MOBILE Sector C Total:	3.43 %
Site Total:	27.45 %

Table 5: Site MPE Summary

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated T-MOBILE sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

T-MOBILE _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 600 MHz LTE / 5G NR	2	926.96	137	3.88	600 MHz	400	0.97%
T-Mobile 700 MHz LTE	2	485.32	137	2.03	700 MHz	467	0.44%
T-Mobile 1900 MHz (PCS) LTE	4	1,124.76	137	9.43	1900 MHz (PCS)	1000	0.94%
T-Mobile 1900 MHz (PCS) GSM	1	421.79	137	0.88	1900 MHz (PCS)	1000	0.09%
T-Mobile 2100 MHz (AWS) LTE	4	1,185.93	137	9.94	2100 MHz (AWS)	1000	0.99%
						Total:	**3.43%**

Table 6: T-MOBILE Maximum Sector MPE Power Values

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:	3.43 %
Sector B:	3.43 %
Sector C:	3.43 %
T-MOBILE Maximum Total (per sector):	3.43 %
Site Total:	27.45 %
Site Compliance Status:	**COMPLIANT**

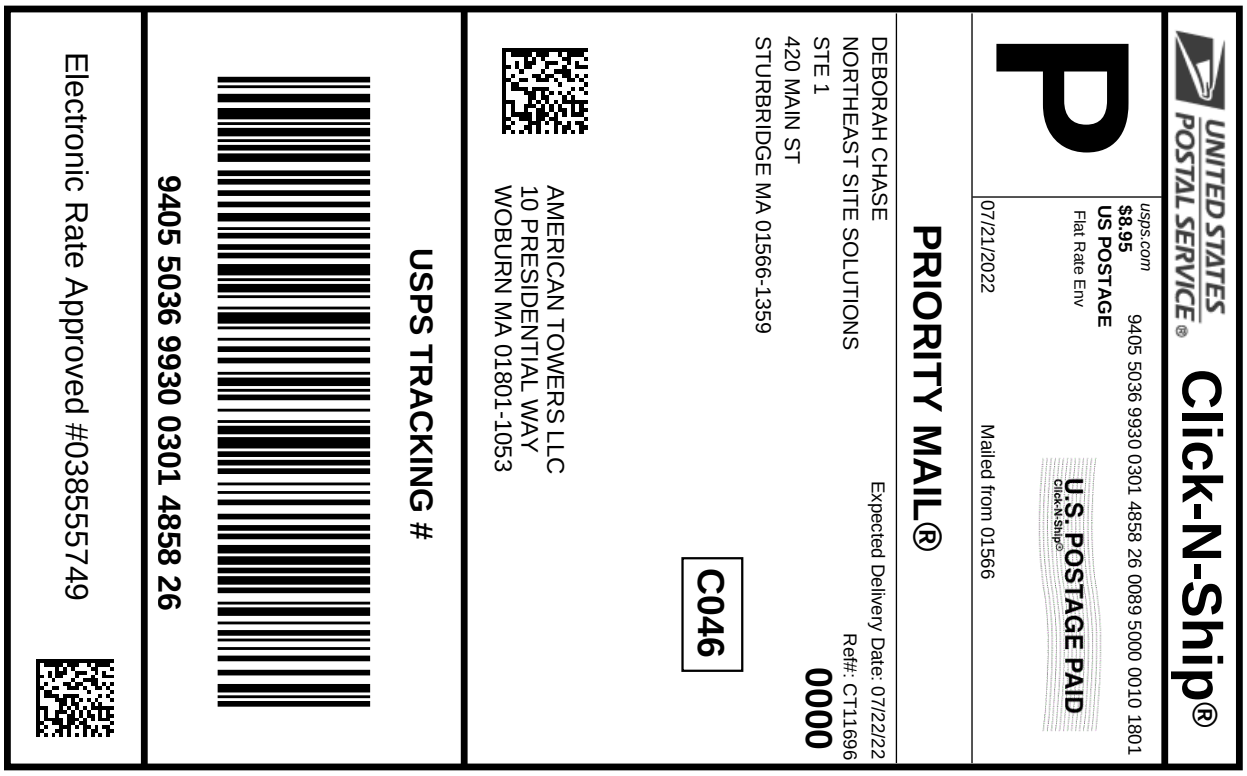
The anticipated composite MPE value for this site assuming all carriers present is **27.45 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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.

Scott Heffernan
Principal RF Engineer
Fox Hill Telecom, Inc
Holden, MA 01520
(978)660-3998

Exhibit G

Recipient Mailings



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Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0301 4858 26

Trans. #:	568030672
Print Date:	07/21/2022
Ship Date:	07/21/2022
Expected Delivery Date:	07/22/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

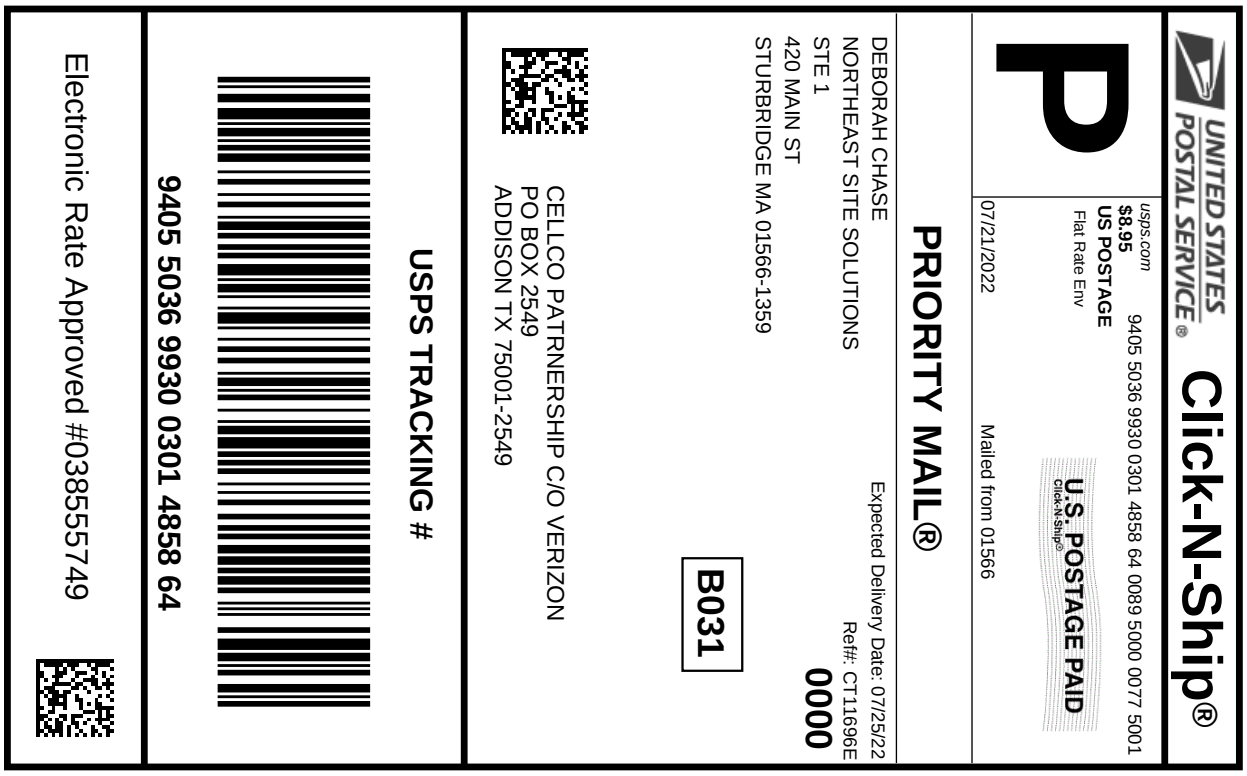
From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
STE 1
420 MAIN ST
STURBRIDGE MA 01566-1359

Ref#: CT11696

To: AMERICAN TOWERS LLC
10 PRESIDENTIAL WAY
WOBURN MA 01801-1053

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0301 4858 64

Trans. #:	568030672
Print Date:	07/21/2022
Ship Date:	07/21/2022
Expected Delivery Date:	07/25/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

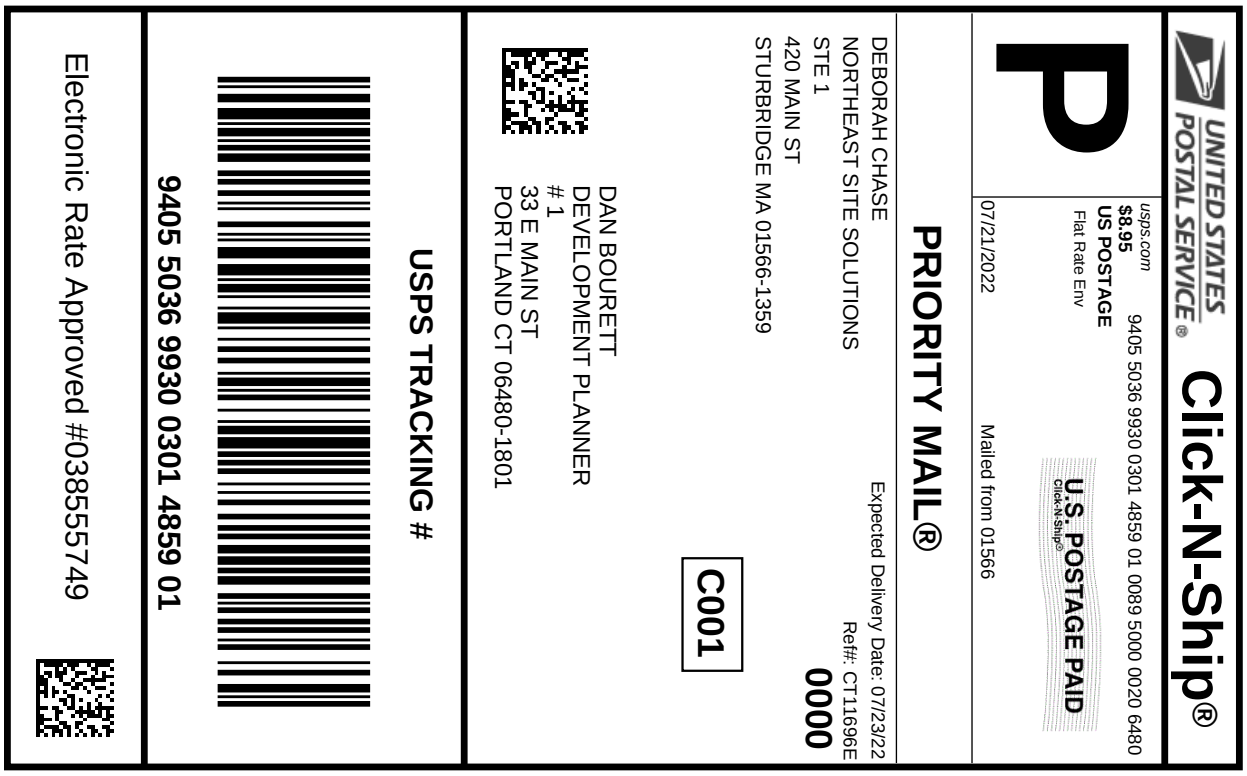
From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
STE 1
420 MAIN ST
STURBRIDGE MA 01566-1359

Ref#: CT11696E

To: CELLCO PATRNERSHIP C/O VERIZON WIRELESS
PO BOX 2549
ADDISON TX 75001-2549

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0301 4859 01

Trans. #:	568030672
Print Date:	07/21/2022
Ship Date:	07/21/2022
Expected Delivery Date:	07/23/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
STE 1
420 MAIN ST
STURBRIDGE MA 01566-1359

Ref#: CT11696E

To: DAN BOURETT
DEVELOPMENT PLANNER
1
33 E MAIN ST
PORTLAND CT 06480-1801

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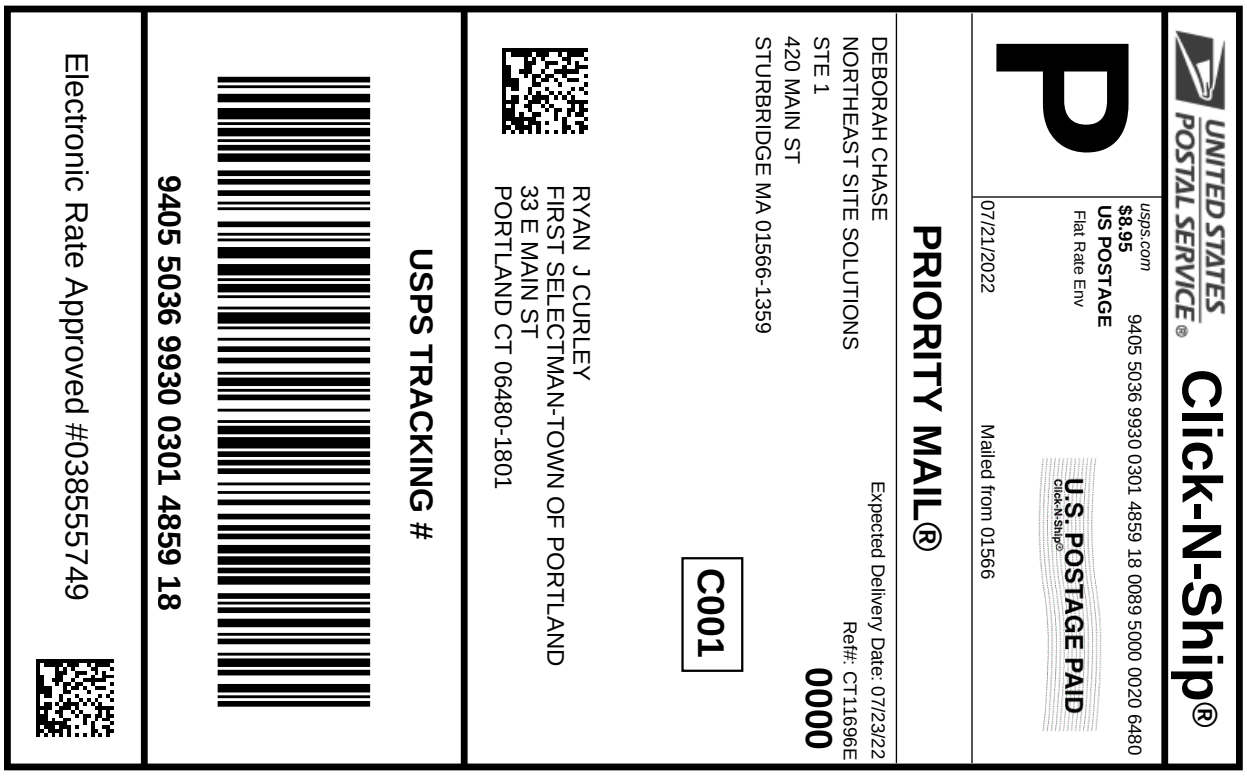

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Instructions

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5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0301 4859 18

Trans. #:	568030672
Print Date:	07/21/2022
Ship Date:	07/21/2022
Expected Delivery Date:	07/23/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
STE 1
420 MAIN ST
STURBRIDGE MA 01566-1359

Ref#: CT11696E

To: RYAN J CURLEY
FIRST SELECTMAN-TOWN OF PORTLAND
33 E MAIN ST
PORTLAND CT 06480-1801

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com

CT1169L6E - TMD

UNITED STATES POSTAL SERVICE.

LINCOLN MALL
560 LINCOLN ST STE 8
WORCESTER, MA 01605-1925
(800)275-8777

07/21/2022 03:44 PM

Product	Qty	Unit Price	Price
Prepaid Mail Woburn, MA 01801 Weight: 0 lb 2.00 oz Acceptance Date: Thu 07/21/2022 Tracking #: 9405 5036 9930 0301 4858 26	1		$0.00
Prepaid Mail Addison, TX 75001 Weight: 0 lb 14.20 oz Acceptance Date: Thu 07/21/2022 Tracking #: 9405 5036 9930 0301 4858 64	1		$0.00
Prepaid Mail Portland, CT 06480 Weight: 0 lb 14.20 oz Acceptance Date: Thu 07/21/2022 Tracking #: 9405 5036 9930 0301 4859 01	1		$0.00
Prepaid Mail Portland, CT 06480 Weight: 0 lb 14.10 oz Acceptance Date: Thu 07/21/2022 Tracking #: 9405 5036 9930 0301 4859 18	1		$0.00