Transcend Wireless

10 Industrial Avenue,
Suite 3
Mahwah, NJ 07430

Phone: 201.684.0055
Fax: 201.684.0066

July 25, 2019

Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Notice of Exempt Modification
650 Albany Turnpike Canton CT
Latitude: 41.85055556
Longitude: -72.94872222
T-Mobile site: CTNH413A /L600

Dear Ms. Bachman:

T-Mobile currently maintains (3) antennas at the 100 foot level of the existing 120 -foot monopole located at 650 Albany Turnpike in Canton CT. The monopole is owned by American Tower and the property is owned by Andrew Chellman. T-Mobile now intends to add (3) 600/700 MHz antennas at the 100 foot level of the tower, along with mount modifications that are proposed per the attached mount analysis.

Planned Modifications:

Existing to Remain:
(3) RFS APX16DWV-16DWVS-E-ACU
(3) Ericsson KRY 112 489/2
(3) Ericsson KRY 112 144/1
(12) 1-5/8" coax

Install New:
Antennas/RRUs/coax:
(3) RFS APXVAARR24_43-UNA20 -600/700 MHz antennas
(3) Ericsson Radio 4449 B12, B71
(3) 1-5/8" Hybrid

This facility was approved by Docket No.204 by the Siting Council February 14, 2002, with no record of conditions that would restrict exempt modifications. Therefore, this modification complies with the aforementioned approval. A copy of the approval is attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to The Honorable Leslee Hill, First Selectman And Neil S. Pade, AICP Director of Planning and Community Development.

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

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,

Elizabeth Jamieson

Elizabeth Jamieson
Transcend Wireless
10 Industrial Ave., Suite 3
Mahwah, New Jersey 07430
860-605-7808
EJamieson@TranscendWireless.com

cc:
The Honorable Leslee Hill, First Selectman
Neil S. Pade, AICP Director of Planning and Community Development
American Tower, Tower Owner
Andrew Chellman, Property Owner

Exhibit A

Original Facility Approval

Filing Guides
Meetings & Minutes
Public Participation
Audio Link to New Britain Hearing Rooms
Programs & Services
Telecommunications Database
Publications
Other Resources
Statutes & Regulations
Electric Transmission Upgrade Projects
Frequently Asked Questions

Melanie Bachman,
Executive Director

DOCKET NO. 204 - Crown Atlantic Company LLC and Cellco Partnership d/b/a Verizon Wireless application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a cellular telecommunications facility located at 650 Albany Turnpike (Route 44), Canton; or at 21 Indian Hill Road, Canton, Connecticut.	}	Connecticut Siting Council February 14, 2002

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility at the proposed prime site in Canton, Connecticut, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Crown Atlantic Company LLC and Cellco Partnership d/b/a Verizon Wireless for the construction, maintenance, and operation of a cellular telecommunications facility located at 650 Albany Turnpike (Route 44), in Canton, Connecticut. We deny certification of the proposed alternate site at 21 Indian Hill Road, in Canton, Connecticut.

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

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of Cellco and at least three other telecommunications entities, both public and private, but such tower shall not exceed a height of 110 feet above ground level (AGL), including appurtenances. The tower and foundation may be designed and constructed capable of being extended from 110 feet AGL to 150 feet AGL, with such extension subject to Council approval by petition for a declaratory ruling, pursuant to Sections 16-50j-38 through 16-50j-40 of the Regulations of Connecticut State Agencies.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include: a final site plan(s) for site development to include the location and specifications for the tower foundation, equipment building, antennas, emergency generator and fuel tank, security fence, access road, and utility line; construction plans for site clearing, tree trimming, water drainage, and erosion and sedimentation controls consistent with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended; provisions for landscaping, a tower finish that may include painting, and for the prevention and containment of spills and/or other discharge into surface water and groundwater bodies.

3. The Certificate Holder shall, prior to the commencement of operation, provide the Council with worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall provide a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.
4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

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

6. If the facility does not initially provide, or permanently ceases to provide wireless services following completion of construction, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

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

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

Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The Hartford Courant and the Bristol Press (Farmington Valley Herald).

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

The parties to this proceeding are:

Applicant Crown Atlantic Company LLC and Cellco Partnership d/b/a Verizon Wireless	**Its Representative** Robert Stanford, Project Manager Crown Atlantic Company LLC 703 Hebron Avenue Glastonbury, CT 06033 Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103-3597
Party Heather and Miles Loewe 15 Indian Hill Road Collinsville, CT 06022	
Party Nancy Johnson 3 Buttonwood Hill Road Canton, CT 06019	
Party Connecticut Sand & Stone Corporation	**Its Representative** Joseph P. Derby 7 West Main Street Plainville, CT 06062
Party Town of Canton	**Its Representative** Matthew Ranelli, Esq. Shipman & Goodwin LLP One American Row Hartford, CT 06103-2819

Content Last Modified on 8/12/2002 9:40:22 AM

Exhibit B

Property card

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The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2018.

TOWN OF CANTON CT

Information on the Property Records for the Municipality of Canton was last updated on 7/15/2019.

Parcel Information

Location:	650 ALBANY TURNPIKE	Property Use:	Residential	Primary Use:	Residential
Unique ID:	1010650	Map Block Lot:	21/101/0650	Acres:	10.61
490 Acres:	0.00	Zone:	R-2	Volume / Page:	384/386
Developers Map / Lot:		Census:			

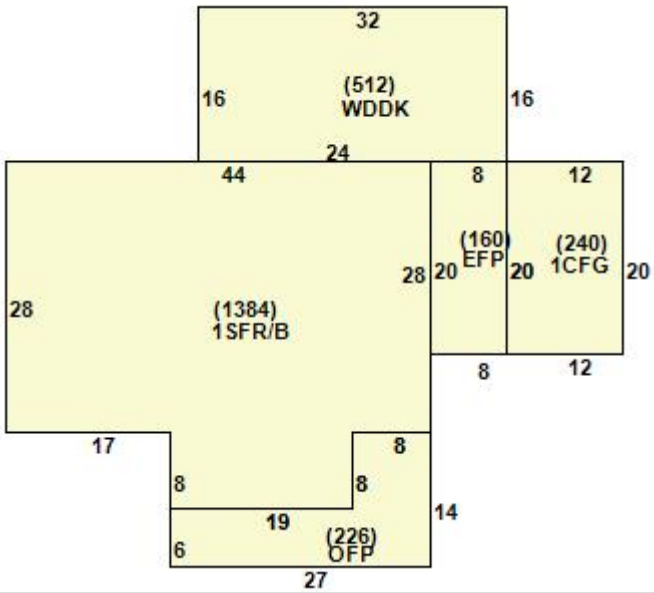
Value Information

	Appraised Value	Assessed Value
Land	119,965	83,980
Buildings	137,846	96,490
Detached Outbuildings	9,664	6,760
Total	267,475	187,230

Owner's Information

Owner's Data
CHELLMAN ANDREW 13 FRANCIS STREET AVON, CT 06001

Building 1



Building Use:	Single Family	Style:	Ranch	Living Area:	1,384
Stories:	1.00	Construction:	Wood Frame	Year Built:	1957
Total Rooms:	6	Bedrooms:	3	Full Baths:	1

Half Baths:	1	Fireplaces:	2	Heating:	Hot Water
Fuel:	Oil	Cooling Percent:	0	Basement Area:	1,384
Basement Finished Area:	640	Basement Garages:	0	Roof Material:	Asphalt
Siding:	Wood Shingles	Units:			

Special Features

Solar Panels	1

Attached Components

Type:	Year Built:	Area:
Wood Deck	1957	512
Frame Garage	1957	240
Enclosed Porch	1957	160
Open Frame Porch	1957	226

Detached Outbuildings

Type:	Year Built:	Length:	Width:	Area:
1 Story Frame	2011	15.00	10.00	150
Frame Shed	1957	12.00	12.00	144
Frame Shed	1957	12.00	12.00	144
Metal Shed	1957	0.00	0.00	720

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price

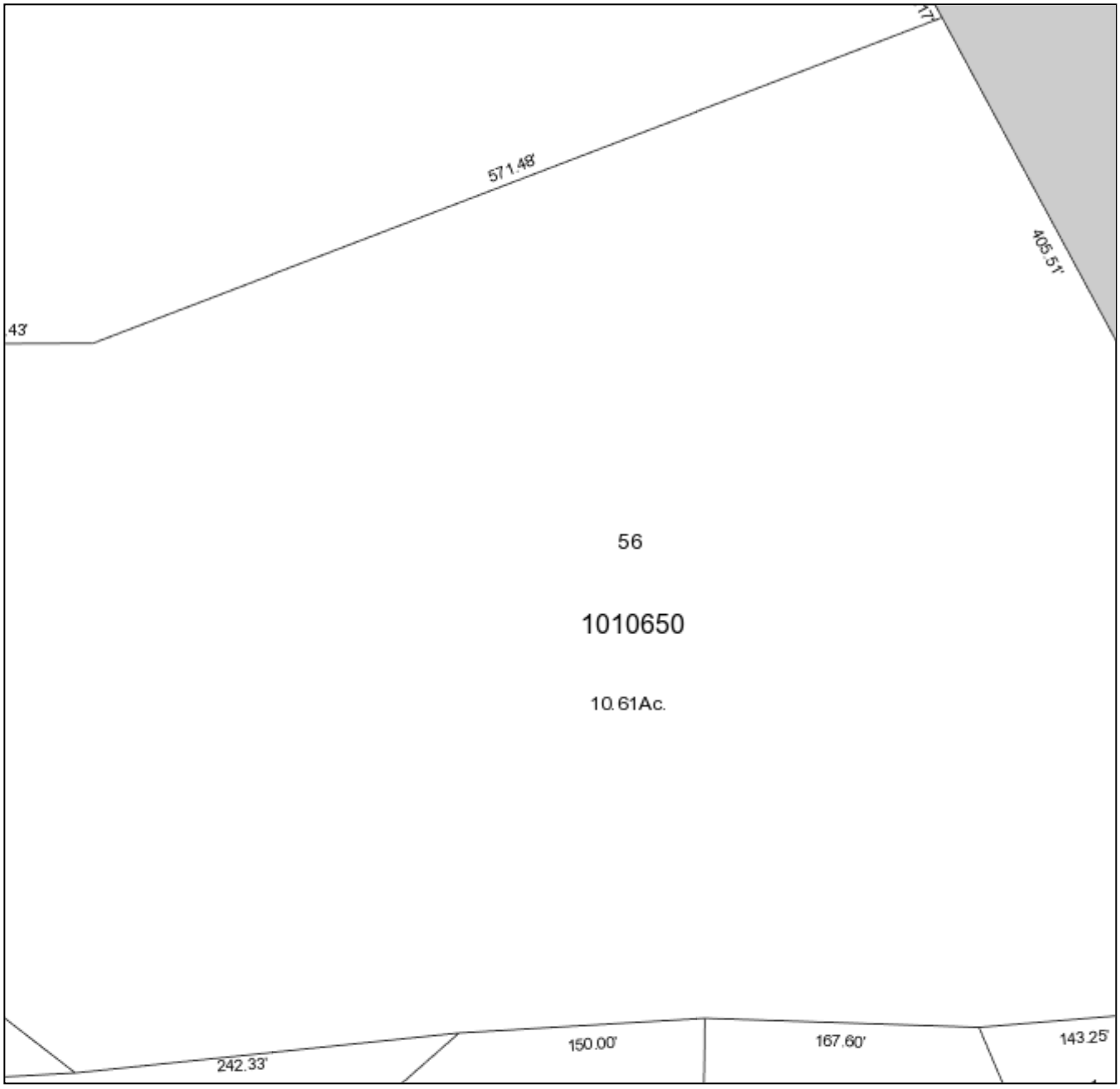
Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
CHELLMAN ANDREW	0379	1112	09/27/2010		No	$325,000
CHELLMAN ANDREW	0384	0386			No	$0
LALLY EDWARD T JR	0163	0559			No	$0

Information Published With Permission From The Assessor

Town of Canton

Geographic Information System (GIS)

Date Printed: 7/16/2019



MAP DISCLAIMER - NOTICE OF LIABILITY

This map is for assessment purposes only. It is not for legal description or conveyances. All information is subject to verification by any user. The Town of Canton and its mapping contractors assume no legal responsibility for the information contained herein.

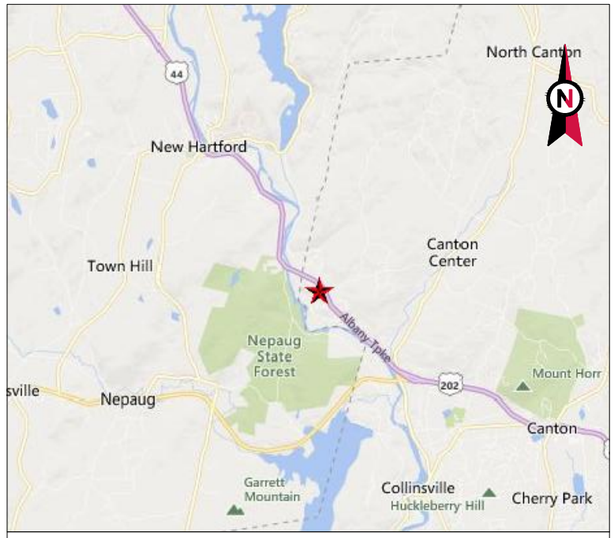
Approximate Scale: 1 inch = 100 feet

0 100 Feet

N W E S

Exhibit C

Construction Drawings



VICINITY MAP

AMERICAN TOWER®

ATC SITE NAME: CT COLLINSVILLE CAC 802816 CT
ATC SITE NUMBER: 411259
T-MOBILE SITE ID: CTNH413A
SITE ADDRESS: 650 ALBANY TURNPIKE COLLINSVILLE, CT 06019

T-MOBILE L600 ANTENNA AMENDMENT 67D04G CONFIGURATION

LOCATION MAP

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: NORTH UTILITY SERVICE
PHONE: (800) 286-2000

TELEPHONE COMPANY: SNET
PHONE: (203) 771-5200

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

PROJECT SUMMARY

SITE ADDRESS:

650 ALBANY TURNPIKE
COLLINSVILLE, CT 06019
COUNTY: HARTFORD

GEOGRAPHIC COORDINATES:

LATITUDE: 41° 51' 2.03" N
LONGITUDE:72° 56' 55.41" W
GROUND ELEVATION: 490' AMSL

PROJECT TEAM

TOWER OWNER:

AMERICAN TOWER
10 PRESIDENTIAL WAY
WOBURN, MA 01801

ENGINEER:

ATC TOWER SERVICES, LLC
3500 REGENCY PKWY STE 100
CARY, NC 27518

PROPERTY OWNER:

ANDREW C CHELLMAN
13 FRANCIS ST
AVON, CT 06001

PROJECT DESCRIPTION

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

REMOVE (6) TTAs

INSTALL (3) NEW PANELS, (6) TTAs, (3) RRUs, (3) 1-5/8" HYBRID CABLES, AND MOUNT MODIFICATIONS

EXISTING (3) PANELS, AND (12) 1-5/8" COAX CABLES TO REMAIN

PROJECT NOTES

1. THE FACILITY IS UNMANNED.
2. A TECHNICIAN WILL VISIT THE SITE APPROXIMATELY ONCE A MONTH FOR ROUTINE INSPECTION AND MAINTENANCE.
3. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT LAND DISTURBANCE OR EFFECT OF STORM WATER DRAINAGE.
4. NO SANITARY SEWER, POTABLE WATER OR TRASH DISPOSAL IS REQUIRED.
5. HANDICAP ACCESS IS NOT REQUIRED.

PROJECT LOCATION DIRECTIONS

FROM EAST HARTFORD, CT:

FROM 99 EAST RIVER DR. I-84 WEST TO US-44 WEST/MAIN ST. (I-91) CONTINUE ON US-44 WEST. US-WEST/US 202 BECOMES US-44 WEST/US-202 SOUTH. CONTINUE ON US-44 WEST. ARRIVE AT 650 ALBANY TPKE, COLLINSVILLE. LOOK FOR MAILBOX WITH 650 ON IT. GO UP THE DRIVEWAY AND SITE IS PAST THE HOUSE.

SHEET INDEX

SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
G-001	TITLE SHEET	1	07/18/19	KC
G-002	GENERAL NOTES	0	05/29/19	KC
C-101	DETAILED SITE PLAN & TOWER ELEVATION	1	07/18/19	KC
C-501	ANTENNA INFORMATION & SCHEDULE	1	07/18/19	KC
E-501	GROUNDING DETAILS	0	05/29/19	KC
R-601	SUPPLEMENTAL			
R-602	SUPPLEMENTAL			
R-603	SUPPLEMENTAL			
R-604	SUPPLEMENTAL			

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

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	KC	05/29/19
1	MOUNT REPLACEMENT	KC	07/18/19

ATC SITE NUMBER:
411259

ATC SITE NAME:
CT COLLINSVILLE CAC
802816 CT

SITE ADDRESS:
650 ALBANY TURNPIKE
COLLINSVILLE, CT 06019

SEAL:

Authorized by "EOR"
Jul 19 2019 9:39 AM

T-Mobile design

DRAWN BY:	KC
APPROVED BY:	PB
DATE DRAWN:	05/29/19
ATC JOB NO:	12951834

TITLE SHEET

SHEET NUMBER:	REVISION:
G-001	1

GENERAL CONSTRUCTION NOTES:

1. ALL WORK SHALL CONFORM TO ALL CURRENT APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING ANSI/EIA/TIA-222, AND COMPLY WITH ATC MASTER SPECIFICATIONS.
2. CONTRACTOR SHALL CONTACT LOCAL 811 FOR IDENTIFICATION OF UNDERGROUND UTILITIES PRIOR TO START OF CONSTRUCTION.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED INSPECTIONS.
4. 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.
5. DO NOT CHANGE SIZE OR SPACING OF STRUCTURAL ELEMENTS.
6. DETAILS SHOWN ARE TYPICAL; SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.
7. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY WHICH SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
8. CONTRACTOR SHALL BRACE STRUCTURES UNTIL ALL STRUCTURAL ELEMENTS NEEDED FOR STABILITY ARE INSTALLED. THESE ELEMENTS ARE AS FOLLOWS: LATERAL BRACING, ANCHOR BOLTS, ETC.
9. CONTRACTOR SHALL DETERMINE EXACT LOCATION OF EXISTING UTILITIES, GROUNDS DRAINS, DRAIN PIPES, VENTS, ETC. BEFORE COMMENCING WORK.
10. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE T-MOBILE WIRELESS REP PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH REMEDIAL ACTION SHALL REQUIRE WRITTEN APPROVAL BY THE T-MOBILE WIRELESS REP PRIOR TO PROCEEDING.
11. EACH CONTRACTOR SHALL COOPERATE WITH THE T-MOBILE WIRELESS REP, AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.
12. CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION OF THIS PROJECT TO MATCH EXISTING PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE T-MOBILE WIRELESS CONSTRUCTION MANAGER.
13. ALL CABLE/CONDUIT ENTRY/EXIT PORTS SHALL BE WEATHERPROOFED DURING INSTALLATION USING A SILICONE SEALANT.
14. WHERE EXISTING CONDITIONS DO NOT MATCH THOSE SHOWN IN THIS PLAN SET, CONTRACTOR SHALL NOTIFY THE T-MOBILE WIRELESS REP IMMEDIATELY.
15. CONTRACTOR SHALL ENSURE ALL SUBCONTRACTORS ARE PROVIDED WITH A COMPLETE AND CURRENT SET OF DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
16. CONTRACTOR SHALL REMOVE ALL RUBBISH AND DEBRIS FROM THE SITE AT THE END OF EACH DAY.
17. CONTRACTOR SHALL COORDINATE WORK SCHEDULE WITH LANDLORD AND TAKE PRECAUTIONS TO MINIMIZE IMPACT AND DISRUPTION OF OTHER OCCUPANTS OF THE FACILITY.
18. CONTRACTOR SHALL FURNISH T-MOBILE WIRELESS WITH A PDF MARKED UP AS-BUILT SET OF DRAWINGS UPON COMPLETION OF WORK.
19. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE WIRELESS 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.
20. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE WIRELESS REP TO DETERMINE IF ANY PERMITS WILL BE OBTAINED BY CONTRACTOR. ALL REQUIRED PERMITS NOT OBTAINED BY T-MOBILE WIRELESS MUST BE OBTAINED, AND PAID FOR, BY THE CONTRACTOR.
21. CONTRACTOR SHALL INSTALL ALL SITE SIGNAGE IN ACCORDANCE WITH T-MOBILE WIRELESS SPECIFICATIONS AND REQUIREMENTS.
22. CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS TO T-MOBILE WIRELESS FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
23. ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND LOCATED ACCORDING TO T-MOBILE WIRELESS SPECIFICATIONS, AND AS SHOWN IN THESE PLANS.
24. 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.
25. CONTRACTOR SHALL NOTIFY T-MOBILE WIRELESS 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.
26. 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.
27. 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.
28. 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 WIRELESS REP. ANY WORK FOUND BY THE T-MOBILE WIRELESS REP TO BE OF INFERIOR QUALITY AND/OR WORKMANSHIP SHALL BE REPLACED AND/OR REWORKED AT CONTRACTOR EXPENSE UNTIL APPROVAL IS OBTAINED.
29. 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.

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.

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

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	KC	05/29/19

ATC SITE NUMBER:
411259
ATC SITE NAME:
CT COLLINSVILLE CAC
802816 CT
SITE ADDRESS:
650 ALBANY TURNPIKE
COLLINSVILLE, CT 06019

SEAL:

Authorized by "EOR"
Jul 19 2019 9:39 AM

T-Mobile design

DRAWN BY:	KC
APPROVED BY:	PB
DATE DRAWN:	05/29/19
ATC JOB NO:	12951834

GENERAL NOTES

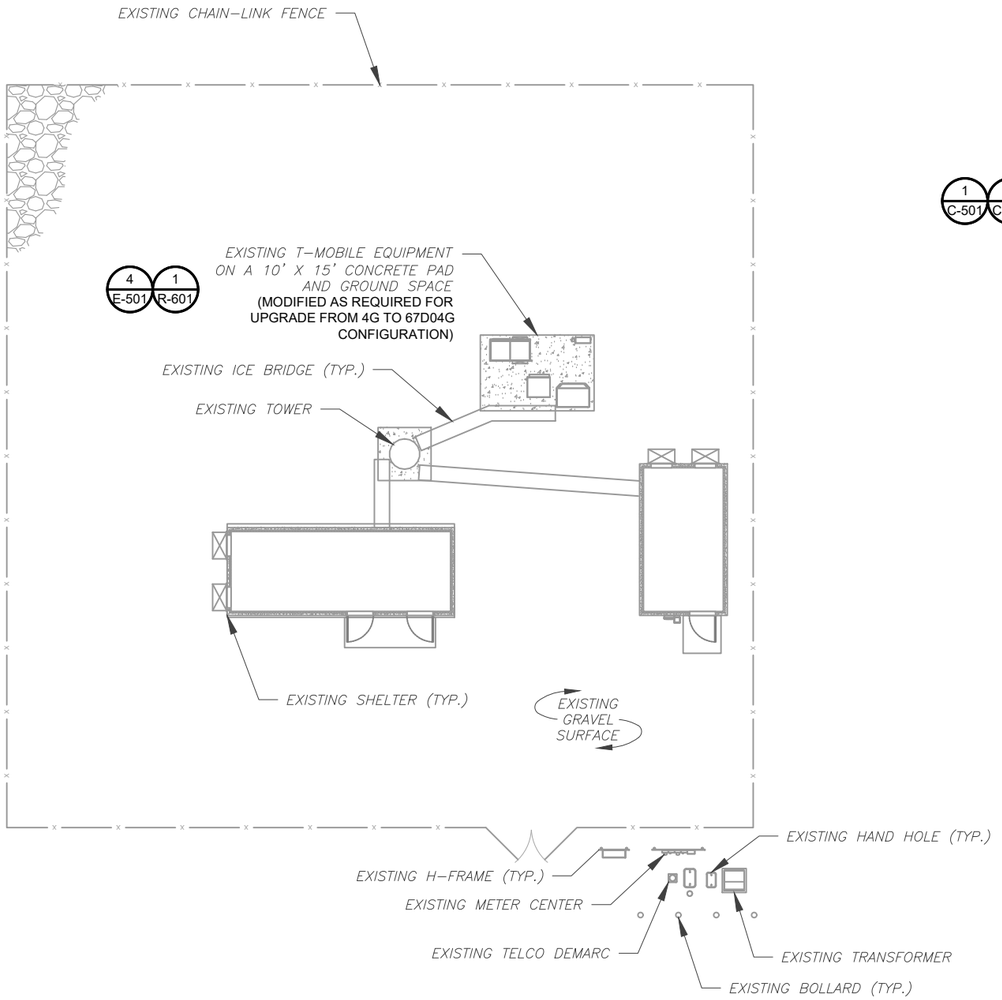
SHEET NUMBER:	REVISION:
G-002	0

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.

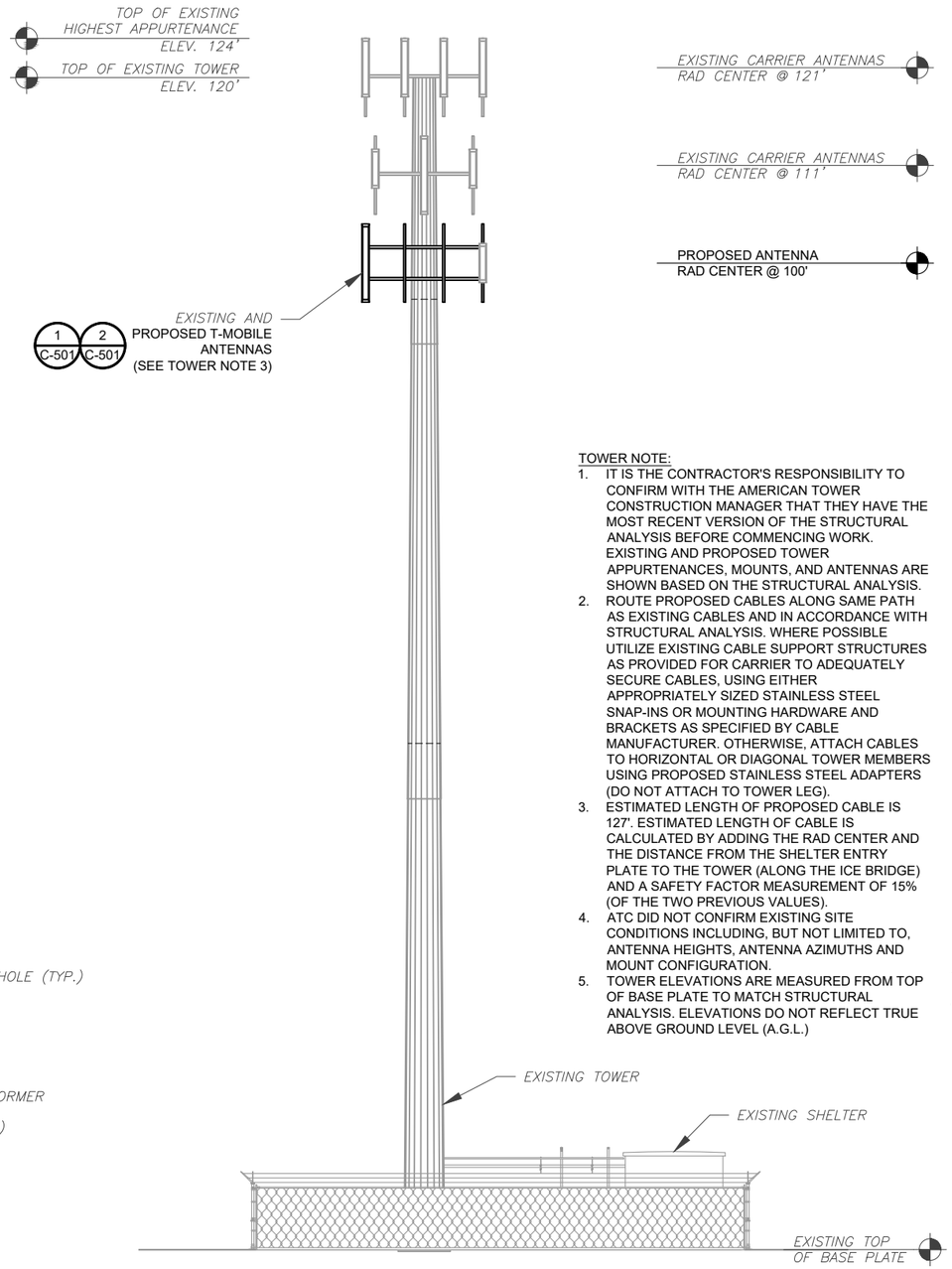
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE T-MOBILE REPRESENTATIVE AND LOCAL UTILITY COMPANY FOR THE INSTALLATION OF CONDUITS, CONDUCTORS, BREAKERS, DISCONNECTS, OR ANY OTHER EQUIPMENT REQUIRED FOR ELECTRICAL SERVICE. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH LATEST EDITION OF THE STATE AND NATIONAL CODES, ORDINANCES AND REGULATIONS APPLICABLE TO THIS PROJECT.



1 DETAILED SITE PLAN

0 20' 40'

SCALE: 1"=20' (11X17)
1"=10' (22X34)



2 TOWER ELEVATION
SCALE: NOT TO SCALE

TOWER NOTE:

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM WITH THE AMERICAN TOWER CONSTRUCTION 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. ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. WHERE POSSIBLE UTILIZE EXISTING CABLE SUPPORT STRUCTURES AS PROVIDED FOR CARRIER TO ADEQUATELY SECURE CABLES, USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER. OTHERWISE, ATTACH CABLES TO HORIZONTAL OR DIAGONAL TOWER MEMBERS USING PROPOSED STAINLESS STEEL ADAPTERS (DO NOT ATTACH TO TOWER LEG).
3. ESTIMATED LENGTH OF PROPOSED CABLE IS 127'. ESTIMATED LENGTH OF CABLE IS 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).
4. ATC DID NOT CONFIRM EXISTING SITE CONDITIONS INCLUDING, BUT NOT LIMITED TO, ANTENNA HEIGHTS, ANTENNA AZIMUTHS AND MOUNT CONFIGURATION.
5. TOWER ELEVATIONS ARE MEASURED FROM TOP OF BASE PLATE TO MATCH STRUCTURAL ANALYSIS. ELEVATIONS DO NOT REFLECT TRUE ABOVE GROUND LEVEL (A.G.L.)

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

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	KC	05/29/19
1	MOUNT REPLACEMENT	KC	07/18/19

ATC SITE NUMBER:
411259

ATC SITE NAME:
CT COLLINSVILLE CAC
802816 CT

SITE ADDRESS:
650 ALBANY TURNPIKE
COLLINSVILLE, CT 06019

SEAL:

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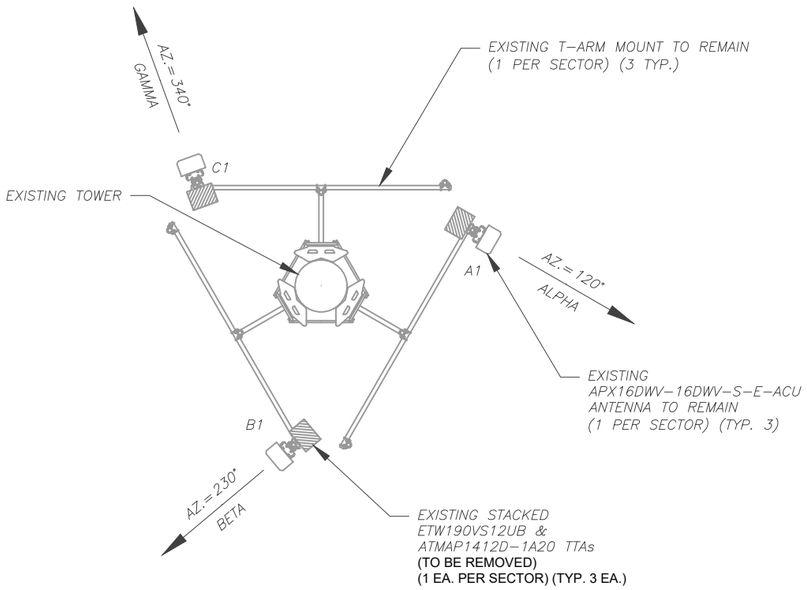
Jul 19 2019 9:39 AM

T-Mobile design

DRAWN BY:	KC
APPROVED BY:	PB
DATE DRAWN:	05/29/19
ATC JOB NO:	12951834

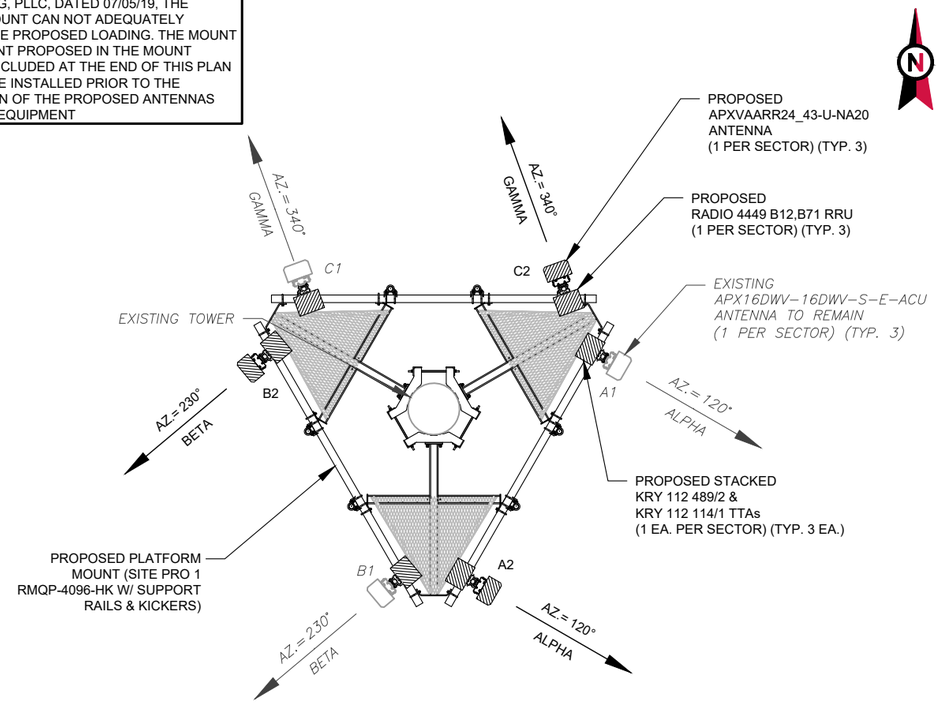
DETAILED SITE PLAN & TOWER ELEVATION

SHEET NUMBER:	REVISION:
C-101	1



1 EXISTING ANTENNA PLAN

PER MOUNT ANALYSIS COMPLETED BY CLS ENGINEERING, PLLC, DATED 07/05/19, THE EXISTING MOUNT CAN NOT ADEQUATELY SUPPORT THE PROPOSED LOADING. THE MOUNT REPLACEMENT 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

EXISTING ANTENNA / EQUIPMENT SCHEDULE

SECTOR	ANT.	MANUFACTURER (MODEL #)	RAD CENTER	AZIMUTH (TN)	MECH. D-TILT	ELEC. D-TILT	ADDITIONAL TOWER MOUNTED EQUIPMENT
ALPHA	A1	APX16DWV-16DWV-S-E-ACU	100'-0"	60°	0°	2°	ETW190VS12UB
							ATMAP1412D-1A20
BETA	B1	APX16DWV-16DWV-S-E-ACU	100'-0"	180°	0°	2°	ETW190VS12UB
							ATMAP1412D-1A20
GAMMA	C1	APX16DWV-16DWV-S-E-ACU	100'-0"	310°	0°	2°	ETW190VS12UB
							ATMAP1412D-1A20

NOTE:
EXISTING GPS (GENERIC E-911 GPS) AND (1) 1/2" COAX CABLE AT EL: 100'-0" TO BE REMOVED.

NOTES

1. BASED ON APPROVED ATC APPLICATION 12927154, DATED 04/02/19. CONFIRM WITH T-MOBILE REP FOR APPLICABLE UPDATES/REVISIONS AND MOST RECENT RFDS FOR NSN CONFIGURATION (CONFIG). GC TO CAP ALL UNUSED PORTS.
2. ATC HAS NOT YET VERIFIED ANY EXISTING ANTENNA CONFIG OR MOUNT CONFIG. CONTRACTOR TO VERIFY MOUNT CONFIG HAS SUFFICIENT SPACE FOR PROPOSED LESSEE EQUIPMENT (EQUIP) (I.E. CLEARANCES, MOUNT PIPE, SUFFICIENT LENGTH, ETC.) ATC DID NOT ANALYZE ANTENNA MOUNT TO DETERMINE ADEQUATE STRUCTURAL CAPACITY FOR ANY LESSEE LOADING.
3. ALL PROPOSED EQUIP INCLUDING ANTENNAS, COAX, ETC. SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS ON FILE WITH ATC'S CM.
4. CONFIRM SPACING OF PROPOSED EQUIP DOES NOT CAUSE TOWER CONFLICTS NOR IMPEDE TOWER CLIMBING PEGS.
5. POSITIONS START WITH FIRST PIPE ON THE LEFT SIDE (AS VIEWED FROM BEHIND THE MOUNT).

FINAL ANTENNA / EQUIPMENT SCHEDULE

SECTOR	ANT.	MANUFACTURER (MODEL #)	RAD CENTER	AZIMUTH (TN)	MECH. D-TILT	ELEC. D-TILT	ADDITIONAL TOWER MOUNTED EQUIPMENT
ALPHA	A1	APX16DWV-16DWV-S-E-ACU	100'-0"	120°	0°	2°	KRY 112 489/2
							KRY 112 114/1
ALPHA	A2	APXVAARR24_43-U-NA20	100'-0"	120°	0°	2°	RADIO 4449 B12,B71
BETA	B1	APX16DWV-16DWV-S-E-ACU	100'-0"	230°	0°	2°	KRY 112 489/2
							KRY 112 114/1
BETA	B2	APXVAARR24_43-U-NA20	100'-0"	230°	0°	2°	RADIO 4449 B12,B71
GAMMA	C1	APX16DWV-16DWV-S-E-ACU	100'-0"	340°	0°	2°	KRY 112 489/2
GAMMA	C2	APXVAARR24_43-U-NA20	100'-0"	340°	0°	2°	RADIO 4449 B12,B71

CURRENT FIBER DISTRIBUTION/OVP BOX		CURRENT CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
–	–	(12) 1-5/8"	–	RMN
–	–	–	–	–

STATUS ABBREVIATIONS
RMV: TO BE REMOVED
RMN: TO REMAIN
REL: TO BE RELOCATED
DSC: TO BE DISCONNECTED & REMAIN
ADD: TO BE ADDED

3 ANTENNA SCHEDULE

CABLE LENGTHS FOR JUMPERS
FIBER DISTRIBUTION/OVP TO RRU: 15'
RRU TO ANTENNA: 10'

PROPOSED FIBER DISTRIBUTION/OVP BOX		PROPOSED CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
-	-	(12) 1-5/8"	–	RMN
-	-	-	(3) 1-5/8"	ADD

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3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
COA: PEC.0001553

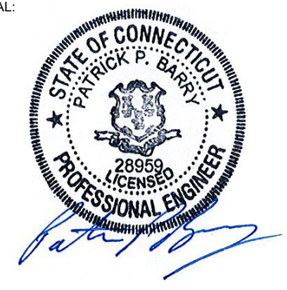
REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	KC	05/29/19
1	MOUNT REPLACEMENT	KC	07/18/19

ATC SITE NUMBER:
411259

ATC SITE NAME:
CT COLLINSVILLE CAC
802816 CT

SITE ADDRESS:
650 ALBANY TURNPIKE
COLLINSVILLE, CT 06019

SEAL:



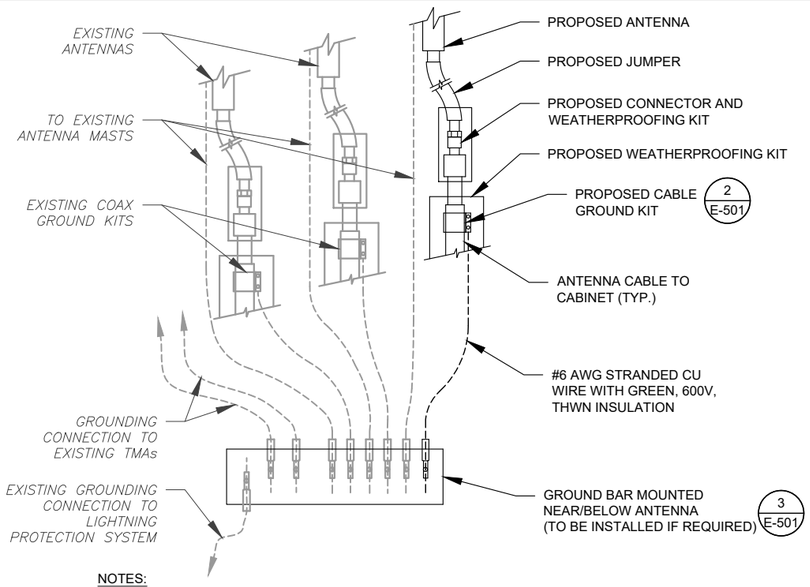
Authorized by "EOR"
Jul 19 2019 9:39 AM

T-Mobile design

DRAWN BY:	KC
APPROVED BY:	PB
DATE DRAWN:	05/29/19
ATC JOB NO:	12951834

ANTENNA INFORMATION & SCHEDULE

SHEET NUMBER:	REVISION:
C-501	1

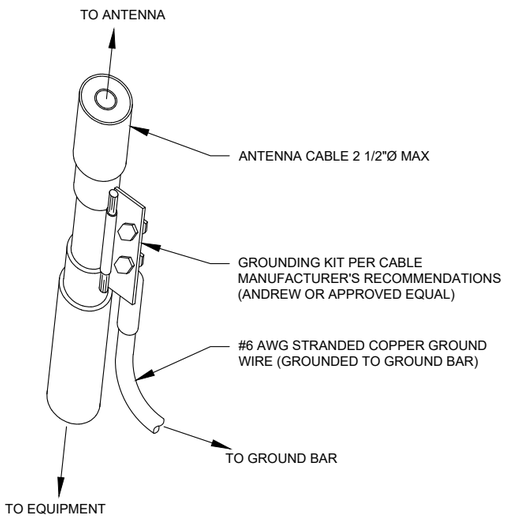


NOTES:

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: NOT TO SCALE

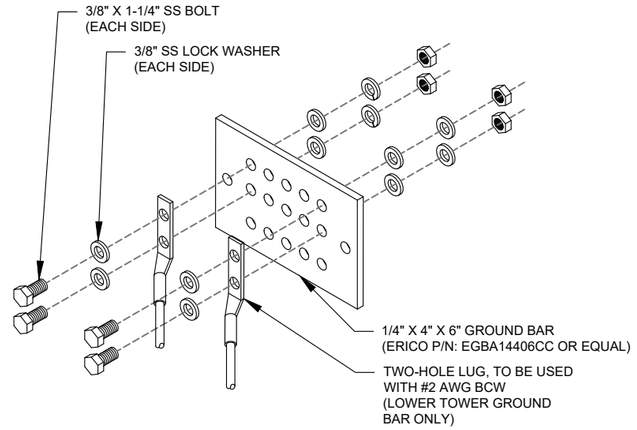


GROUND KIT NOTES:

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: NOT TO SCALE



GROUND BAR NOTES:

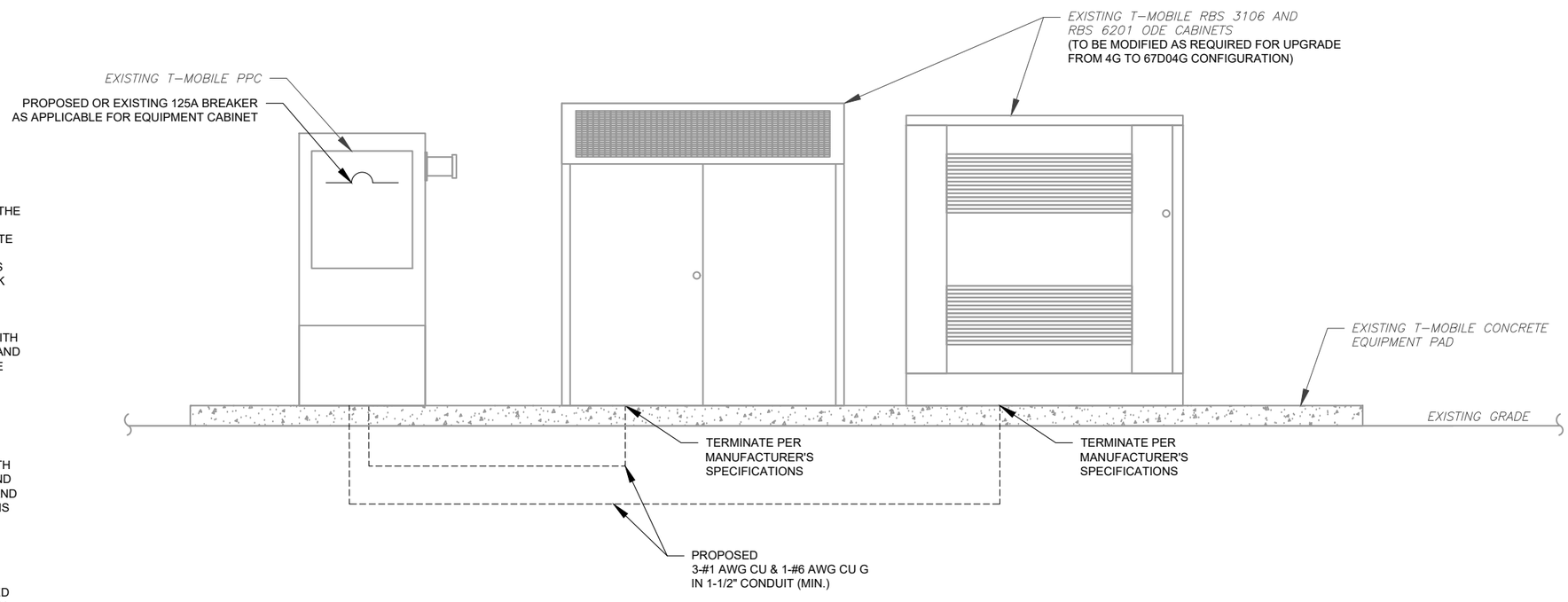
1. GROUND BAR KITS COME WITH ALL HARDWARE, NUTS, BOLTS, WASHERS, ETC. EXCEPT THE STRUCTURAL MOUNTING MEMBER(S).
2. GROUND BAR TO BE BONDED DIRECTLY TO TOWER.

3 TOWER GROUND BAR DETAIL

SCALE: NOT TO SCALE

ELECTRICAL NOTES:

1. THIS DIAGRAM 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. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE T-MOBILE REPRESENTATIVE AND LOCAL UTILITY COMPANY FOR THE INSTALLATION OF CONDUITS, CONDUCTORS, BREAKERS, DISCONNECTS, OR ANY OTHER EQUIPMENT REQUIRED FOR ELECTRICAL SERVICE. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH LATEST EDITION OF THE STATE AND NATIONAL CODES, ORDINANCES AND REGULATIONS APPLICABLE TO THIS PROJECT.
3. ATC HAS NOT YET VERIFIED ANY EXISTING T-MOBILE GROUND EQUIPMENT OR ELECTRICAL LOADING. PROPOSED WORK BASED ON INSTALLATION CONFIGURATION PROVIDED BY T-MOBILE. CONTRACTOR TO VERIFY EXISTING T-MOBILE PANEL HAS SUFFICIENT SPACE FOR PROPOSED BREAKER.



4 ELECTRICAL UPGRADE DIAGRAM

SCALE: NOT TO SCALE

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3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
COA: PEC.0001553

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	KC	05/29/19

ATC SITE NUMBER:
411259

ATC SITE NAME:
CT COLLINSVILLE CAC
802816 CT

SITE ADDRESS:
650 ALBANY TURNPIKE
COLLINSVILLE, CT 06019

SEAL:

Authorized by "EOR"
Jul 19 2019 9:39 AM

T-Mobile design

DRAWN BY:	KC
APPROVED BY:	PB
DATE DRAWN:	05/29/19
ATC JOB NO:	12951834

GROUNDING DETAILS

SHEET NUMBER:	REVISION:
E-501	0

Section 5 - RAN Equipment

Existing RAN Equipment		
Template: 4G		
Enclosure	1	2
Enclosure Type	RBS 3106	RBS 6201 ODE
Baseband	DUW30	DUG20 DUS41
Radio	RUS01 B4 (x6)	RUS01 B2 (x6)

Proposed RAN Equipment		
Template: 67D04G		
Enclosure	1	2
Enclosure Type	RBS 3106	RBS 6201 ODE
Baseband	DUW30 U2100	DUG20 G1900 / BB 6630 L1900 L700 L600 / BB 6630 N600 (DARK)
Hybrid Cable System		Ericsson 6x12 HCS *Select Length & AWG* (x3)
Radio	RUS01 B4 (x6) U2100	RUS01 B2 (x3) L1900 G1900 / RUS01 B2 (x3) L1900

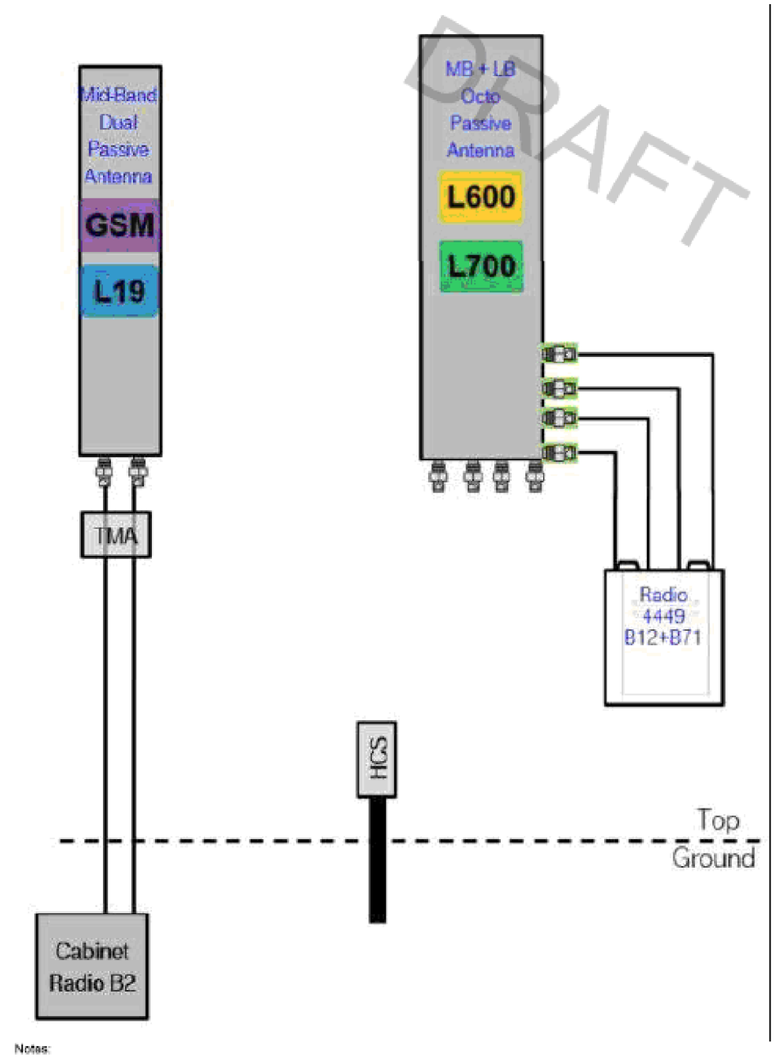
RAN Scope of Work:

Replace (1) DUS41 with (1) BB6630 for L1900, L700, and L600 in RBS6201 ODE.
Install (1) BB6630 for future 5G N600 in RBS6201 ODE,

Add (3) 6X12 HCS.
Existing: (12) 1-5/8 Coaxial Lines. All will stay.

Rad Center: 100 (Third down from the top)

1 CABINET CONFIGURATION
SCALE: NOT TO SCALE



Notes:

2 ANTENNA CONFIGURATION
SCALE: NOT TO SCALE

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

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-601	0

Mount Analysis of Proposed Site Pro 1 RMQP-4096-HK Platform w/ Support Rails and Kickers for American Tower on behalf of T-Mobile
411259 - CT Collinsville CAC 802816 CT
Project #: 12927154

T-Mobile Site ID: CTNH413A
Program: L600

CLS Engineering PLLC Project #41124-12927154-01-MA-R1
July 5, 2019

MOUNT DESCRIPTION	Proposed Site Pro 1 RMQP-4096-HK Platform w/ Support Rails and Kickers at 99 ft AGL
ANTENNA ELEVATION	Nominal Rad. Elevation of 100 ft AGL (Eccentricity of ~1 ft)
SITE DESCRIPTION	120 ft Monopole
SITE ADDRESS	650 Albany Turnpike, Collinsville, CT 06019, Hartford County
GPS COORDINATES	41.850564, -72.948725
ANALYSIS STANDARD	2015 IBC / 2018 Connecticut State Building Code / TIA-222-G
LOADING CRITERIA	125 mph, V_{ult} / 96.8 mph, V_{asd} (3-Second Gust) w/o ice & 50 mph (3-Second Gust) w/ 1" Ice

■ **ANALYSIS RESULT:** **Pass (Replacement)**

MEMBER USAGE	26%	Pass

Existing mounts to be replaced; see conclusion for details.

Prepared by:
Sean Rock, E.I.

Reviewed and Approved by:
Tyler M. Barker, P.E.

STATE OF CONNECTICUT · TYLER M BARKER · No. 32402 · LICENSED PROFESSIONAL ENGINEER

Tyler M. Barker
CLS Engineering, PLLC
Director of Engineering
PE # 32402 Exp. 1/31/2020
COA # PEC.001833 Exp. 8/14/2019

IdenTrust

Digitally signed by Tyler Barker
DN: c=US, o=Telamon Corporation, ou=A01427E0000016A4525ADF800001D17, cn=Tyler Barker
Date: 2019.07.08 09:07:33 -04'00'

■ RESULTS SUMMARY

Existing Mount Usages:

COMPONENT	PEAK USAGE	RESULT
Collar	**135%**	**Fail**
Connections	**118%**	**Fail**
Mount Pipes	97%	Pass
Stand-Off Horizontals	89%	Pass
Face Horizontals	65%	Pass
Vertical Pipe	15%	Pass

Replacement Mount Usages:

COMPONENT	PEAK USAGE	RESULT
Corner Plates	26%	Pass
Collar Reactions	19%	Pass
Mount Pipes	18%	Pass
Reinforcement Members	18%	Pass
Bracing Members	16%	Pass
Stand-Off Horizontals	16%	Pass
Support Rail	16%	Pass
Face Horizontals	9%	Pass

■ CONCLUSION AND RECOMMENDATIONS

According to our structural analysis, the mounts have been found to **PASS PENDING REPLACEMENT.** 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:

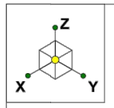
- **Replace existing T-Arm mounts with (1) new Site Pro 1 RMQP-4096-HK Platform w/ Support Rails and Kickers.**
- **All mount pipes are to be installed equidistant from each other as shown in the assembly drawings.**
- **Install existing and proposed antennas such that they are vertically offset 1-ft above the face horizontal member. Install existing and proposed RRUS and TMAs behind the antennas.**

See following Sketches and Site Pro 1 assembly drawing for additional details.

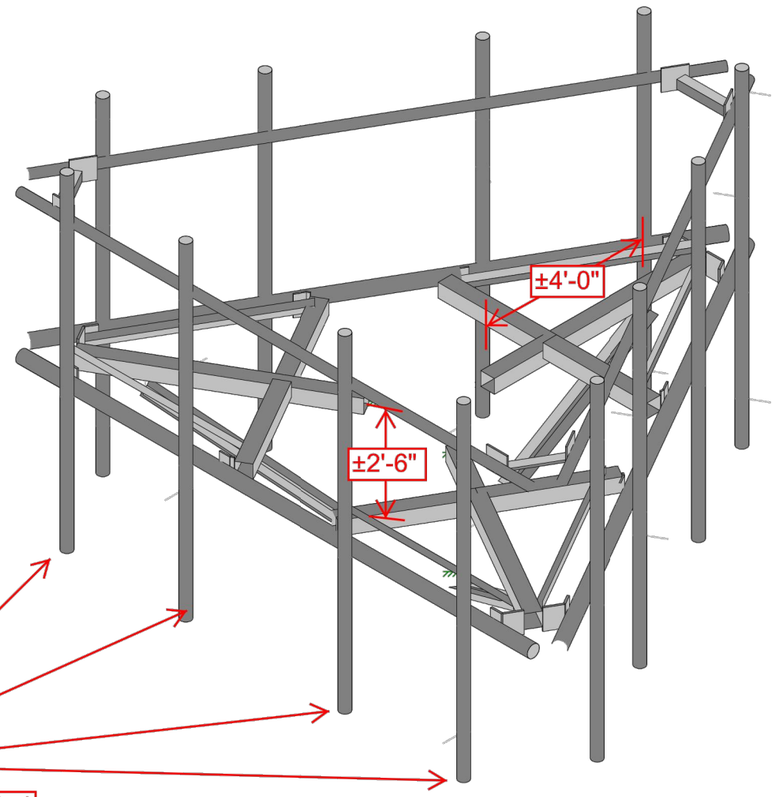
NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-602	1



Replace existing T-Arm mounts with (1) new Site Pro 1 RMQP-4096-HK Platform w/ Support Rails and Kickers.



All mount pipes are to be installed equidistant from each other as shown in the assembly drawings.

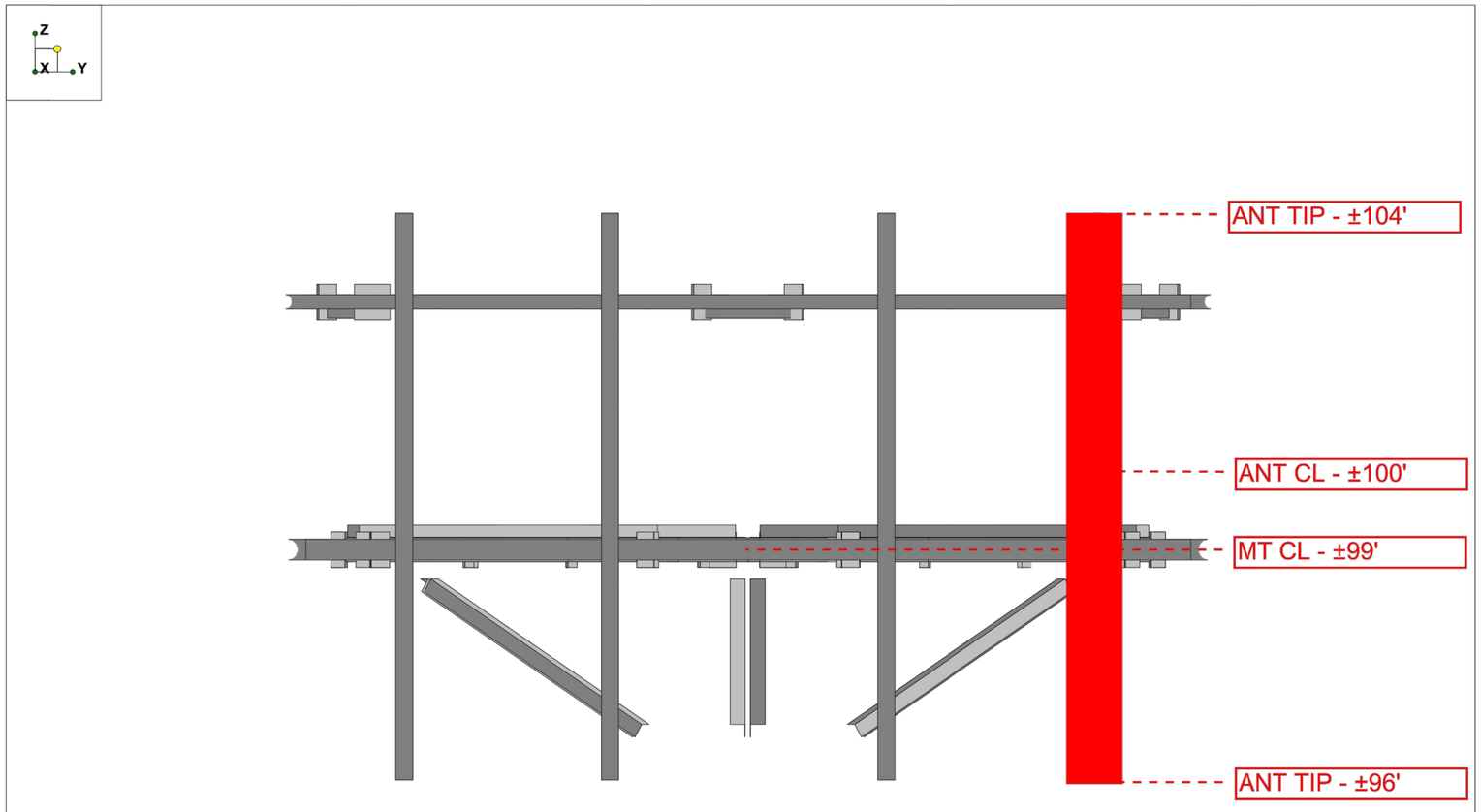
Envelope Only Solution

CLS		SK - 0
SMR	41124-12927154-CT Collinsville CAC 802816 CT	July 5, 2019 at 10:55 AM
41124-12927154-01-MA-R1	Installation Sketch - Isometric View	41124-12927154-01-MA-R1.r3d

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

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-603	1



Install existing and proposed antennas such that they are vertically offset 1-ft above the face horizontal member. Install existing and proposed RRUS and TMAs behind the antennas.

Envelope Only Solution

CLS	41124-12927154-CT Collinsville CAC 802816 CT	SK - 0
SMR		July 5, 2019 at 10:57 AM
41124-12927154-01-MA-R1	Installation Sketch - Elevation Sketch	41124-12927154-01-MA-R1.r3d

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

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-604	1

Exhibit D

Structural Analysis Report

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**120 ft Monopole**
ATC Site Name	:	**CT Collinsville CAC 802816 CT, CT**
ATC Site Number	:	**411259**
Engineering Number	:	**12927154_C3_02**
Proposed Carrier	:	**T-MOBILE**
Carrier Site Name	:	**Albany Turnpike Verizon**
Carrier Site Number	:	**CTNH413A**
Site Location	:	**650 Albany Turnpike** **Collinsville, CT 06019-3522** **41.850600,-72.948700**
County	:	**Hartford**
Date	:	**July 17, 2019**
Max Usage	:	**58%**
Result	:	**Pass**

Prepared By:
Hussam Al Tahan, E.I.
Structural Engineer I

Hussam Al Tahan

Reviewed By:

COA: PEC.0001553

AMERICAN TOWER®
CORPORATION

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 120 ft monopole to reflect the change in loading by .

Supporting Documents

Tower Drawings	EEI Project #11936 Rev 3, dated January 29, 2004
Foundation Drawing	EEI Project #11936, dated September 10, 2003
Geotechnical Report	CHA Project #11869.1006.1502, dated November 20, 2002
Mount Analysis	CLS Engineering Project # 12927154, dated July 5, 2019

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:	97 mph (3-Second Gust, V_{asd}) / 125 mph (3-Second Gust, V_{ult})
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1" radial ice concurrent
Code:	ANSI/TIA-222-G / 2015 IBC / 2018 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	Ss = 0.18, S_1 = 0.06
Site Class:	D - Stiff Soil

Conclusion

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

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

Existing and Reserved Equipment

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
121.0	3	Amphenol Antel BXA-171085-12BF-EDIN-X	Low Profile Platform	(18) 1 5/8" Coax	VERIZON WIRELESS
	3	Antel BXA-70063/6CF __ 2°			
	6	Antel LPA-80080/6CF ___			
	1	VZW Unused Reserve: 20687 sq in			
110.0	6	Ericsson RRUS-11 (50 lbs.)	Low Profile Platform	(1) 0.39" (10mm) Fiber Trunk (2) 0.78" (19.7mm) 8 AWG 6 (12) 1 5/8" Coax (1) 3" conduit	AT&T MOBILITY
	6	Powerwave Allgon P65-15-XLH-RR			
	3	Powerwave Allgon P65-17-XLH-RR			
	1	Raycap DC6-48-60-0-8F			
	1	Andrew ABT-DFDM-ADB			
	12	Powerwave Allgon TT19-08BP111-001			
100.0	3	RFS APX16DWV-16DWV-S-E-ACU	-	(12) 1 5/8" Coax	T-MOBILE

Equipment to be Removed

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
100.0	1	E-911 GPS	T-Arms w/ Work Platform	(1) 1/2 “Coax	T-MOBILE
	6	RFS APX16DWV-16DWV-S-E-ACU			
	3	RFS ATMAP1412D-1A20			
	3	Andrew ETW190VS12UB			

Proposed Equipment

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
100.0	3	RFS APXVAARR24_43-U-NA20	Platform w/ Support Rails and Kickers (Site PRO 1 RMQP-4096-HK)	(3) 1 5/8" (1.63"-41.3mm) Fiber	T-MOBILE
	3	Ericsson KRY 112 489/2			
	3	Ericsson Radio 4449 B12,B71			
	3	Ericsson KRY 112 144/1			

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

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	37%	Pass
Shaft	44%	Pass
Base Plate	46%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Moment (Kips-Ft)	3,083.8	4,163.1	2,069.6	50%
Shear (Kips)	27.5	37.1	21.5	58%

***The design reactions are factored by 1.35 per ANSI/TIA-222-G, Sec. 15.5.1**

The structure base reactions resulting from this analysis are acceptable when compared to those shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
100.0	Ericsson KRY 112 144/1	T-MOBILE	0.518	0.559
	Ericsson KRY 112 489/2			
	Ericsson Radio 4449 B12,B71			
	RFS APXVAARR24_43-U-NA20			

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

Standard Conditions

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

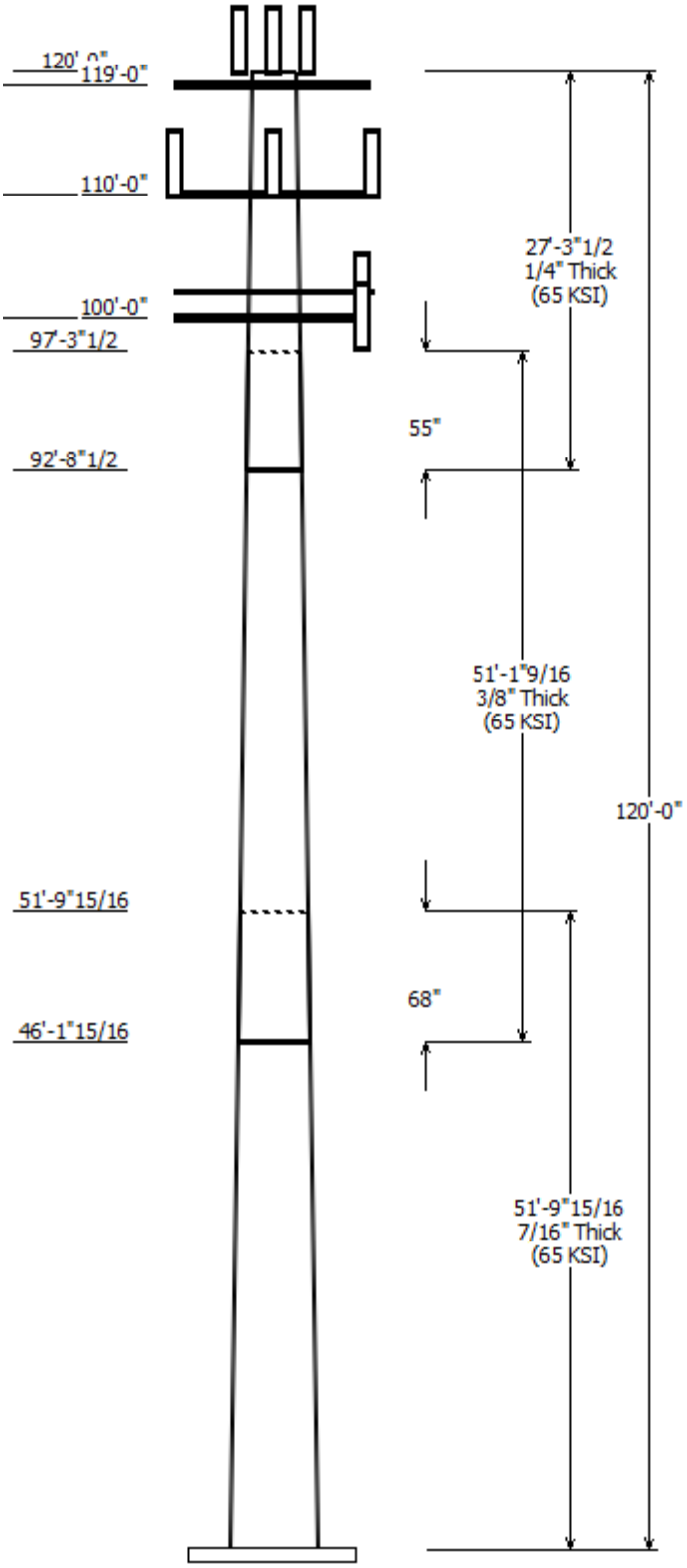
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

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

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

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

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



Job Information

Client :	T-MOBILE		
Pole :	411259	Code:	ANSI/TIA-222-G
Location :	CT Collinsville CAC 802816 CT, CT		
Description :		Struct Class :	II
Shape :	18 Sides	Exposure :	B
Height :	120.00 (ft)	Topo :	1
Base Elev (ft):	0.00		
Taper:	0.194583 (in/ft)		

Sections Properties

Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Steel Grade Shape	(ksi)
1	51.830	38.91	49.00	0.438		0.000	18 Sides	65
2	51.130	30.81	40.76	0.375	Slip Joint	68.000	18 Sides	65
3	27.290	26.90	32.21	0.250	Slip Joint	55.000	18 Sides	65

Discrete Appurtenance

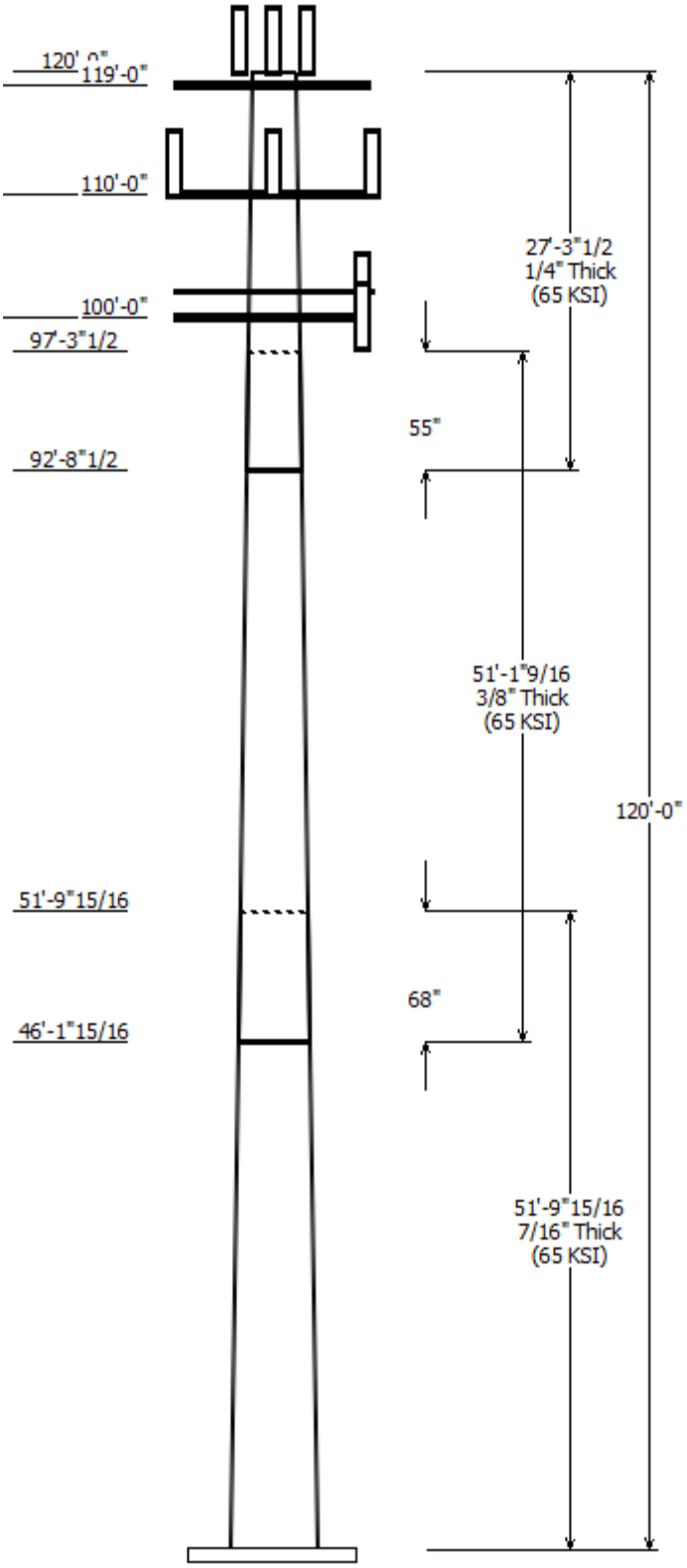
Attach Elev (ft)	Force Elev (ft)	Qty	Description
120.000	121.000	1	VZW Unused Reserve: 20687
120.000	121.000	6	Antel LPA-80080/6CF ___
120.000	121.000	3	Antel BXA-70063/6CF __ 2°
120.000	121.000	3	Amphenol Antel BXA-171085-
119.000	119.000	1	Flat Low Profile Platform
110.000	110.000	1	Round Low Profile Platform
110.000	111.000	3	Powerwave Allgon P65-17-
110.000	111.000	6	Powerwave Allgon P65-15-
110.000	111.000	6	Ericsson RRUS-11 (50 lbs.)
110.000	111.000	1	Raycap DC6-48-60-0-8F
110.000	110.000	12	Powerwave Allgon TT19-
110.000	111.000	1	Andrew ABT-DFDM-ADB
100.000	100.000	1	Site PRO 1 RMQP-4096-HK (Platf
100.000	100.000	3	RFS APXVAARR24_43-U-NA20
100.000	101.000	3	RFS APX16DWV-16DWV-S-E-
100.000	100.000	3	Ericsson Radio 4449 B12,B71
100.000	100.000	3	Ericsson KRY 112 489/2
100.000	100.000	3	Ericsson KRY 112 144/1

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	100.0	1 5/8" (1.63"-	No
0.000	100.0	1 5/8" Coax	No
0.000	110.0	0.39" (10mm)	No
0.000	110.0	0.78" (19.7mm) 8	No
0.000	110.0	1 5/8" Coax	No
0.000	110.0	3" conduit	No
0.000	120.0	1 5/8" Coax	Yes
0.000	121.0	1 5/8" Coax	No

Load Cases

1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

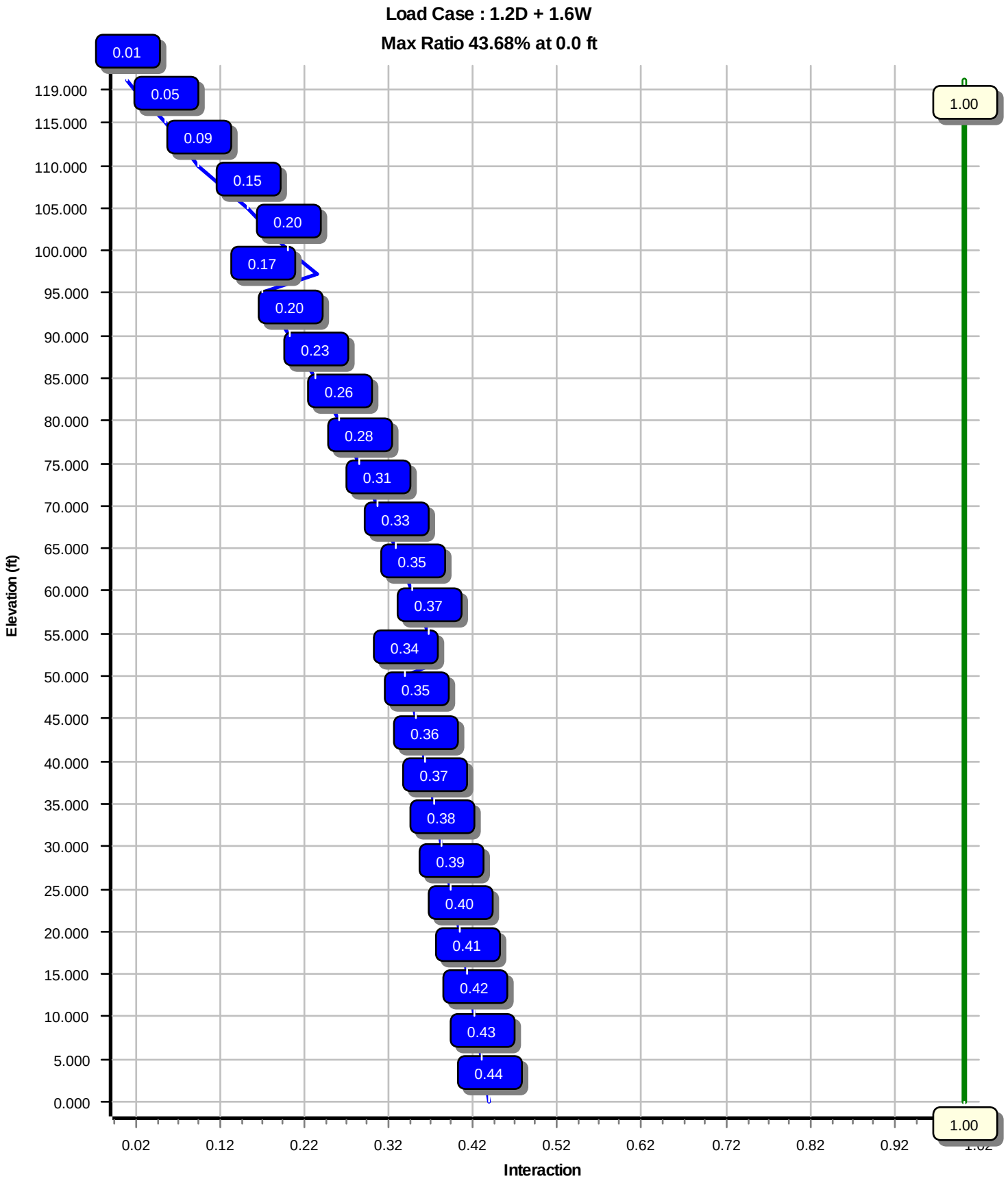


Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	2069.58	21.55	42.38
0.9D + 1.6W	2008.92	21.07	31.78
1.2D + 1.0Di + 1.0Wi	672.06	7.20	68.27
(1.2 + 0.2Sds) * DL + E ELFM	136.63	1.39	42.06
(1.2 + 0.2Sds) * DL + E EMAM	220.07	2.15	42.06
(0.9 - 0.2Sds) * DL + E ELFM	135.35	1.39	29.26
(0.9 - 0.2Sds) * DL + E EMAM	217.88	2.15	29.26
1.0D + 1.0W	431.14	4.51	35.34

Dish Deflections

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


Load Case : 1.2D + 1.6W
Max Ratio 43.68% at 0.0 ft
0.01
0.05
0.09
0.15
0.20
0.17
0.20
0.23
0.26
0.28
0.31
0.33
0.35
0.37
0.34
0.35
0.36
0.37
0.38
0.39
0.40
0.41
0.42
0.43
0.44
1.00
1.00
119.000
115.000
110.000
105.000
100.000
95.000
90.000
85.000
80.000
75.000
70.000
65.000
60.000
55.000
50.000
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
Elevation (ft)
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction

Site Number: 411259 Code: ANSI/TIA-222-G

Site Name: CT Collinsville CAC 802816 CT, CT Engineering Number:12927154_C3_02 7/17/2019 5:56:54 PM

Customer: T-MOBILE

Analysis Parameters

Location :	Hartford County, CT	Height (ft) :	120
Code :	ANSI/TIA-222-G	Base Diameter (in) :	49.00
Shape :	18 Sides	Top Diameter (in) :	26.90
Pole Type :	Taper	Taper (in/ft) :	0.195
Pole Manfacturer :	EEI	Rotation (deg) :	0.00

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	97 mph
Exposure Category:	B	Design Wind Speed With Ice:	50 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0 ft	Design Ice Thickness:	1.00 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods				
Site Class:	D - Stiff Soil				
Period Based on Rayleigh Method (sec):	1.76				
T_L (sec):	6	p:	1	C_s:	0.039
S_s:	0.180	S_1:	0.065	C_s Max:	0.039
F_a:	1.600	F_v:	2.400	C_s Min:	0.030
S_{ds}:	0.192	S_{d1}:	0.104		

Load Cases

1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
(1.2 + 0.2Sds) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2Sds) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Slip Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (ft)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-18	51.830	0.4375	65		0.00	10,658	49.00	0.00	67.43	20092.1	18.34	112.00	38.91	51.83	53.43	9993.9	14.27	88.95	0.194583
2-18	51.130	0.3750	65	Slip	68.00	7,334	40.76	46.16	48.08	9910.0	17.76	108.71	30.81	97.29	36.23	4242.8	13.08	82.18	0.194583
3-18	27.290	0.2500	65	Slip	55.00	2,159	32.21	92.71	25.36	3272.7	21.31	128.84	26.90	120.00	21.15	1897.5	17.56	107.60	0.194583
				Shaft Weight		20,151													

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
120.00	Amphenol Antel BXA-171085-	3	0.80	1.000	15.00	4.730	0.72	138.73	7.786	0.72
120.00	Antel BXA-70063/6CF __ 2°	3	0.80	1.000	17.00	7.570	0.65	201.70	11.172	0.65
120.00	Antel LPA-80080/6CF ___	6	0.80	1.000	21.00	8.630	0.62	290.32	5.912	0.62
120.00	VZW Unused Reserve: 20687 sq	1	0.80	1.000	2,278.00	143.660	0.90	4,350.67	274.371	0.90
119.00	Flat Low Profile Platform	1	1.00	0.000	1,500.00	26.100	1.00	2,344.38	50.982	1.00
110.00	Andrew ABT-DFDM-ADB	1	0.80	1.000	1.10	0.050	1.00	3.98	0.298	1.00
110.00	Powerwave Allgon TT19-	12	0.80	0.000	16.00	0.550	0.50	42.10	1.207	0.50
110.00	Raycap DC6-48-60-0-8F	1	0.80	1.000	32.80	1.360	1.00	107.92	2.217	1.00
110.00	Ericsson RRUS-11 (50 lbs.)	6	0.80	1.000	50.00	2.570	0.67	138.09	3.926	0.67
110.00	Powerwave Allgon P65-15-XLH-	6	0.80	1.000	41.00	5.430	0.66	195.62	7.987	0.66
110.00	Powerwave Allgon P65-17-XLH-	3	0.80	1.000	59.00	11.460	0.67	338.34	15.638	0.67
110.00	Round Low Profile Platform	1	1.00	0.000	1,500.00	21.700	1.00	2,337.26	46.511	1.00
100.00	Ericsson KRY 112 144/1	3	0.75	0.000	11.00	0.350	0.50	24.78	0.869	0.50
100.00	Ericsson KRY 112 489/2	3	0.75	0.000	15.40	0.560	0.50	38.03	1.233	0.50
100.00	Ericsson Radio 4449 B12,B71	3	0.75	0.000	74.00	1.640	0.50	145.73	2.722	0.50
100.00	RFS APX16DWV-16DWV-S-E-ACU	3	0.75	1.000	39.60	6.080	0.60	144.68	8.717	0.60
100.00	RFS APXVAARR24_43-U-NA20	3	0.75	0.000	127.90	20.240	0.63	630.89	24.991	0.63
100.00	Site PRO 1 RMQP-4096-HK	1	1.00	0.000	2,645.84	27.200	1.00	4,842.15	58.519	1.00
Totals	Num Loadings:18	60			9,898.44			23,224.45		

Linear Appurtenance Properties

Load Case Azimuth (deg) : 90

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	121.00	12	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	VERIZON WIRELESS
0.00	120.00	6	1 5/8" Coax	1.98	0.82	N	3	1.00	1.00	0	1.00	Y	VERIZON WIRELESS
0.00	110.00	1	0.39" (10mm) Fiber	0.39	0.06	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	110.00	2	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	110.00	12	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	110.00	1	3" conduit	3.50	7.58	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	100.00	3	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0	0.00	0.00	0	0.00	N	T-MOBILE
0.00	100.00	12	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	T-MOBILE

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)
0.00		0.4375	49.000	67.433	20,092.1	18.34	112.00	79.8	807.6	0.0	0.0
5.00		0.4375	48.027	66.082	18,908.5	17.95	109.78	80.3	775.4	0.0	1,135.8
10.00		0.4375	47.054	64.731	17,772.4	17.55	107.55	80.8	743.9	0.0	1,112.8
15.00		0.4375	46.081	63.380	16,682.7	17.16	105.33	81.2	713.1	0.0	1,089.8
20.00		0.4375	45.108	62.029	15,638.5	16.77	103.10	81.7	682.8	0.0	1,066.8
25.00		0.4375	44.135	60.678	14,638.8	16.38	100.88	82.1	653.3	0.0	1,043.9
30.00		0.4375	43.162	59.327	13,682.6	15.99	98.66	82.6	624.4	0.0	1,020.9
35.00		0.4375	42.190	57.976	12,769.0	15.59	96.43	82.6	596.1	0.0	997.9
40.00		0.4375	41.217	56.625	11,897.0	15.20	94.21	82.6	568.5	0.0	974.9
45.00		0.4375	40.244	55.274	11,065.6	14.81	91.99	82.6	541.6	0.0	951.9
46.16	Bot - Section 2	0.4375	40.017	54.960	10,877.9	14.72	91.47	82.6	535.4	0.0	218.2
50.00		0.4375	39.271	53.923	10,273.9	14.42	89.76	82.6	515.3	0.0	1,332.6
51.83	Top - Section 1	0.3750	39.665	46.763	9,120.4	17.24	105.77	81.1	452.9	0.0	626.8
55.00		0.3750	39.048	46.029	8,697.5	16.95	104.13	81.5	438.7	0.0	500.5
60.00		0.3750	38.075	44.871	8,057.5	16.49	101.53	82.0	416.8	0.0	773.3
65.00		0.3750	37.102	43.713	7,449.6	16.03	98.94	82.5	395.5	0.0	753.6
70.00		0.3750	36.129	42.555	6,873.1	15.58	96.34	82.6	374.7	0.0	733.9
75.00		0.3750	35.156	41.397	6,327.2	15.12	93.75	82.6	354.5	0.0	714.2
80.00		0.3750	34.183	40.239	5,810.9	14.66	91.16	82.6	334.8	0.0	694.5
85.00		0.3750	33.210	39.081	5,323.6	14.21	88.56	82.6	315.7	0.0	674.8
90.00		0.3750	32.237	37.923	4,864.2	13.75	85.97	82.6	297.2	0.0	655.1
92.71	Bot - Section 3	0.3750	31.710	37.295	4,626.7	13.50	84.56	82.6	287.4	0.0	346.8
95.00		0.3750	31.265	36.765	4,432.1	13.29	83.37	82.6	279.2	0.0	484.8
97.29	Top - Section 2	0.2500	31.318	24.652	3,006.3	20.68	125.27	77.1	189.1	0.0	478.6
100.0		0.2500	30.792	24.234	2,856.0	20.31	123.17	77.5	182.7	0.0	225.1
105.0		0.2500	29.819	23.462	2,591.7	19.62	119.27	78.3	171.2	0.0	405.7
110.0		0.2500	28.846	22.690	2,344.2	18.93	115.38	79.1	160.1	0.0	392.6
115.0		0.2500	27.873	21.918	2,113.0	18.25	111.49	79.9	149.3	0.0	379.5
119.0		0.2500	27.095	21.300	1,939.3	17.70	108.38	80.6	141.0	0.0	294.1
120.0		0.2500	26.900	21.146	1,897.5	17.56	107.60	80.7	138.9	0.0	72.2
											20,151.4

Load Case: 1.2D + 1.6W — 97 mph with No Ice — 20 Iterations

Gust Response Factor :1.10 — Wind Importance Factor 1.00
Dead Load Factor :1.20
Wind Load Factor :1.60

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		188.1	0.0					0.0	0.0	188.1	0.0	0.0	0.0
5.00		372.4	1,363.0					0.0	288.5	372.4	1,651.5	0.0	0.0
10.00		364.8	1,335.4					0.0	288.5	364.8	1,623.9	0.0	0.0
15.00		357.3	1,307.8					0.0	288.5	357.3	1,596.3	0.0	0.0
20.00		349.7	1,280.2					0.0	288.5	349.7	1,568.8	0.0	0.0
25.00		342.2	1,252.6					0.0	288.5	342.2	1,541.2	0.0	0.0
30.00		338.6	1,225.0					0.0	288.5	338.6	1,513.6	0.0	0.0
35.00		342.9	1,197.5					0.0	288.5	342.9	1,486.0	0.0	0.0
40.00		350.5	1,169.9					0.0	288.5	350.5	1,458.4	0.0	0.0
45.00		218.6	1,142.3					0.0	288.5	218.6	1,430.8	0.0	0.0
46.16	Bot - Section 2	182.4	261.8					0.0	67.1	182.4	329.0	0.0	0.0
50.00		208.5	1,599.1					0.0	221.4	208.5	1,820.5	0.0	0.0
51.83	Top - Section 1	184.8	752.1					0.0	105.6	184.8	857.7	0.0	0.0
55.00		303.2	600.6					0.0	182.9	303.2	783.5	0.0	0.0
60.00		373.6	927.9					0.0	288.5	373.6	1,216.5	0.0	0.0
65.00		375.9	904.3					0.0	288.5	375.9	1,192.8	0.0	0.0
70.00		377.5	880.6					0.0	288.5	377.5	1,169.2	0.0	0.0
75.00		378.4	857.0					0.0	288.5	378.4	1,145.5	0.0	0.0
80.00		378.8	833.4					0.0	288.5	378.8	1,121.9	0.0	0.0
85.00		378.6	809.7					0.0	288.5	378.6	1,098.3	0.0	0.0
90.00		291.6	786.1					0.0	288.5	291.6	1,074.6	0.0	0.0
92.71	Bot - Section 3	190.1	416.2					0.0	156.4	190.1	572.6	0.0	0.0
95.00		175.5	581.7					0.0	132.2	175.5	713.9	0.0	0.0
97.29	Top - Section 2	190.5	574.3					0.0	132.3	190.5	706.6	0.0	0.0
100.00	Appurtenance(s)	291.8	270.1	2,666.2	0.0	327.6	4,139.4	0.0	156.2	2,958.0	4,565.8	0.0	0.0
105.00		377.2	486.9					0.0	200.5	377.2	687.4	0.0	0.0
110.00	Appurtenance(s)	375.0	471.1	2,841.6	0.0	1,846.1	2,938.7	0.0	200.5	3,216.6	3,610.3	0.0	0.0
115.00		335.5	455.4					0.0	88.6	335.5	543.9	0.0	0.0
119.00	Appurtenance(s)	185.6	353.0	1,091.7	0.0	0.0	1,800.0	0.0	70.8	1,277.3	2,223.8	0.0	0.0
120.00	Appurtenance(s)	37.0	86.7	6,266.3	0.0	6,266.3	3,000.0	0.0	17.7	6,303.3	3,104.4	0.0	0.0
								Totals:		21,682.2	42,408.8	0.00	0.00

Load Case: 1.2D + 1.6W 97 mph with No Ice 20 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00
Dead Load Factor :1.20
Wind Load Factor :1.60

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	-42.38	-21.55	0.00	-2,069.58	0.00	2,069.58	4,844.94	2,422.47	9,656.80	4,835.57	0.00	0.00	0.437
5.00	-40.68	-21.28	0.00	-1,961.84	0.00	1,961.84	4,775.31	2,387.65	9,325.61	4,669.74	0.08	-0.14	0.429
10.00	-39.00	-21.00	0.00	-1,855.47	0.00	1,855.47	4,704.55	2,352.27	8,997.89	4,505.63	0.30	-0.29	0.420
15.00	-37.36	-20.73	0.00	-1,750.46	0.00	1,750.46	4,632.67	2,316.33	8,673.77	4,343.33	0.68	-0.43	0.411
20.00	-35.74	-20.46	0.00	-1,646.81	0.00	1,646.81	4,559.67	2,279.83	8,353.39	4,182.90	1.21	-0.58	0.402
25.00	-34.15	-20.18	0.00	-1,544.53	0.00	1,544.53	4,485.55	2,242.77	8,036.89	4,024.42	1.89	-0.72	0.391
30.00	-32.59	-19.91	0.00	-1,443.62	0.00	1,443.62	4,407.69	2,203.84	7,719.81	3,865.64	2.72	-0.87	0.381
35.00	-31.06	-19.62	0.00	-1,344.09	0.00	1,344.09	4,307.32	2,153.66	7,370.49	3,690.72	3.71	-1.01	0.371
40.00	-29.56	-19.31	0.00	-1,246.00	0.00	1,246.00	4,206.95	2,103.47	7,029.26	3,519.85	4.84	-1.15	0.361
45.00	-28.11	-19.11	0.00	-1,149.43	0.00	1,149.43	4,106.58	2,053.29	6,696.11	3,353.03	6.13	-1.30	0.350
46.16	-27.76	-18.95	0.00	-1,127.21	0.00	1,127.21	4,083.23	2,041.61	6,619.76	3,314.80	6.45	-1.33	0.347
50.00	-25.92	-18.74	0.00	-1,054.49	0.00	1,054.49	4,006.21	2,003.10	6,371.05	3,190.26	7.57	-1.44	0.337
51.83	-25.04	-18.56	0.00	-1,020.20	0.00	1,020.20	3,414.21	1,707.10	5,502.77	2,755.48	8.13	-1.49	0.378
55.00	-24.23	-18.29	0.00	-961.36	0.00	961.36	3,374.74	1,687.37	5,352.96	2,680.46	9.15	-1.58	0.366
60.00	-22.98	-17.94	0.00	-869.93	0.00	869.93	3,311.56	1,655.78	5,119.34	2,563.48	10.89	-1.73	0.346
65.00	-21.75	-17.58	0.00	-780.23	0.00	780.23	3,247.27	1,623.64	4,889.13	2,448.20	12.79	-1.88	0.326
70.00	-20.56	-17.21	0.00	-692.34	0.00	692.34	3,161.61	1,580.81	4,632.79	2,319.84	14.83	-2.02	0.305
75.00	-19.39	-16.84	0.00	-606.28	0.00	606.28	3,075.58	1,537.79	4,382.82	2,194.67	17.02	-2.15	0.283
80.00	-18.24	-16.45	0.00	-522.09	0.00	522.09	2,989.55	1,494.78	4,139.78	2,072.97	19.34	-2.28	0.258
85.00	-17.13	-16.06	0.00	-439.83	0.00	439.83	2,903.52	1,451.76	3,903.67	1,954.74	21.80	-2.40	0.231
90.00	-16.05	-15.75	0.00	-359.51	0.00	359.51	2,817.49	1,408.74	3,674.50	1,839.98	24.37	-2.51	0.201
92.71	-15.47	-15.55	0.00	-316.83	0.00	316.83	2,770.86	1,385.43	3,553.19	1,779.23	25.81	-2.56	0.184
95.00	-14.76	-15.35	0.00	-281.23	0.00	281.23	2,731.46	1,365.73	3,452.26	1,728.70	27.04	-2.60	0.168
97.29	-14.05	-15.14	0.00	-246.03	0.00	246.03	1,710.13	855.06	2,182.75	1,093.00	28.30	-2.64	0.234
100.00	-9.61	-11.98	0.00	-204.73	0.00	204.73	1,690.67	845.33	2,121.04	1,062.09	29.81	-2.68	0.199
105.00	-8.93	-11.58	0.00	-144.83	0.00	144.83	1,653.85	826.93	2,008.22	1,005.60	32.67	-2.77	0.150
110.00	-5.47	-8.20	0.00	-85.07	0.00	85.07	1,615.92	807.96	1,897.05	949.94	35.60	-2.83	0.093
115.00	-4.94	-7.84	0.00	-44.07	0.00	44.07	1,576.86	788.43	1,787.67	895.16	38.59	-2.87	0.052
119.00	-2.78	-6.45	0.00	-12.72	0.00	12.72	1,544.80	772.40	1,701.54	852.03	41.00	-2.89	0.017
120.00	0.00	-6.30	0.00	-6.27	0.00	6.27	1,536.68	768.34	1,680.21	841.35	41.61	-2.89	0.008

Load Case: 0.9D + 1.6W — 97 mph with No Ice (Reduced DL) — 20 Iterations

Gust Response Factor :1.10
Dead Load Factor :0.90
Wind Load Factor :1.60

Wind Importance Factor 1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		188.1	0.0					0.0	0.0	188.1	0.0	0.0	0.0
5.00		372.4	1,022.2					0.0	216.4	372.4	1,238.6	0.0	0.0
10.00		364.8	1,001.5					0.0	216.4	364.8	1,217.9	0.0	0.0
15.00		357.3	980.8					0.0	216.4	357.3	1,197.3	0.0	0.0
20.00		349.7	960.2					0.0	216.4	349.7	1,176.6	0.0	0.0
25.00		342.2	939.5					0.0	216.4	342.2	1,155.9	0.0	0.0
30.00		338.6	918.8					0.0	216.4	338.6	1,135.2	0.0	0.0
35.00		341.9	898.1					0.0	216.4	341.9	1,114.5	0.0	0.0
40.00		347.0	877.4					0.0	216.4	347.0	1,093.8	0.0	0.0
45.00		215.4	856.7					0.0	216.4	215.4	1,073.1	0.0	0.0
46.16	Bot - Section 2	178.4	196.4					0.0	50.4	178.4	246.7	0.0	0.0
50.00		203.4	1,199.3					0.0	166.1	203.4	1,365.4	0.0	0.0
51.83	Top - Section 1	180.0	564.1					0.0	79.2	180.0	643.3	0.0	0.0
55.00		294.3	450.4					0.0	137.2	294.3	587.6	0.0	0.0
60.00		360.0	695.9					0.0	216.4	360.0	912.4	0.0	0.0
65.00		359.0	678.2					0.0	216.4	359.0	894.6	0.0	0.0
70.00		357.0	660.5					0.0	216.4	357.0	876.9	0.0	0.0
75.00		354.3	642.8					0.0	216.4	354.3	859.2	0.0	0.0
80.00		351.0	625.0					0.0	216.4	351.0	841.4	0.0	0.0
85.00		346.9	607.3					0.0	216.4	346.9	823.7	0.0	0.0
90.00		264.8	589.6					0.0	216.4	264.8	806.0	0.0	0.0
92.71	Bot - Section 3	171.2	312.1					0.0	117.3	171.2	429.4	0.0	0.0
95.00		157.0	436.3					0.0	99.1	157.0	535.4	0.0	0.0
97.29	Top - Section 2	169.9	430.7					0.0	99.3	169.9	530.0	0.0	0.0
100.00	Appurtenance(s)	258.7	202.6	2,666.2	0.0	327.6	3,104.6	0.0	117.1	2,924.9	3,424.3	0.0	0.0
105.00		330.9	365.2					0.0	150.4	330.9	515.6	0.0	0.0
110.00	Appurtenance(s)	324.4	353.4	2,841.6	0.0	1,846.1	2,204.0	0.0	150.4	3,166.0	2,707.8	0.0	0.0
115.00		286.4	341.5					0.0	66.4	286.4	407.9	0.0	0.0
119.00	Appurtenance(s)	156.9	264.7	1,091.7	0.0	0.0	1,350.0	0.0	53.1	1,248.6	1,667.8	0.0	0.0
120.00	Appurtenance(s)	31.1	65.0	6,266.3	0.0	6,266.3	2,250.0	0.0	13.3	6,297.4	2,328.3	0.0	0.0
								Totals:		21,218.7	31,806.5	0.00	0.00

Load Case: 0.9D + 1.6W 97 mph with No Ice (Reduced DL) 20 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00
Dead Load Factor :0.90
Wind Load Factor :1.60

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	-31.78	-21.07	0.00	-2,008.92	0.00	2,008.92	4,844.94	2,422.47	9,656.80	4,835.57	0.00	0.00	0.422
5.00	-30.49	-20.77	0.00	-1,903.57	0.00	1,903.57	4,775.31	2,387.65	9,325.61	4,669.74	0.07	-0.14	0.414
10.00	-29.23	-20.47	0.00	-1,799.72	0.00	1,799.72	4,704.55	2,352.27	8,997.89	4,505.63	0.29	-0.28	0.406
15.00	-27.98	-20.18	0.00	-1,697.36	0.00	1,697.36	4,632.67	2,316.33	8,673.77	4,343.33	0.66	-0.42	0.397
20.00	-26.76	-19.88	0.00	-1,596.48	0.00	1,596.48	4,559.67	2,279.83	8,353.39	4,182.90	1.17	-0.56	0.388
25.00	-25.56	-19.59	0.00	-1,497.08	0.00	1,497.08	4,485.55	2,242.77	8,036.89	4,024.42	1.83	-0.70	0.378
30.00	-24.38	-19.30	0.00	-1,399.13	0.00	1,399.13	4,407.69	2,203.84	7,719.81	3,865.64	2.64	-0.84	0.368
35.00	-23.23	-18.99	0.00	-1,302.65	0.00	1,302.65	4,307.32	2,153.66	7,370.49	3,690.72	3.60	-0.98	0.358
40.00	-22.09	-18.68	0.00	-1,207.69	0.00	1,207.69	4,206.95	2,103.47	7,029.26	3,519.85	4.70	-1.12	0.348
45.00	-21.00	-18.47	0.00	-1,114.29	0.00	1,114.29	4,106.58	2,053.29	6,696.11	3,353.03	5.95	-1.26	0.338
46.16	-20.73	-18.32	0.00	-1,092.80	0.00	1,092.80	4,083.23	2,041.61	6,619.76	3,314.80	6.26	-1.29	0.335
50.00	-19.35	-18.11	0.00	-1,022.53	0.00	1,022.53	4,006.21	2,003.10	6,371.05	3,190.26	7.34	-1.40	0.325
51.83	-18.69	-17.93	0.00	-989.40	0.00	989.40	3,414.21	1,707.10	5,502.77	2,755.48	7.89	-1.45	0.365
55.00	-18.07	-17.66	0.00	-932.55	0.00	932.55	3,374.74	1,687.37	5,352.96	2,680.46	8.88	-1.54	0.353
60.00	-17.13	-17.32	0.00	-844.25	0.00	844.25	3,311.56	1,655.78	5,119.34	2,563.48	10.56	-1.68	0.335
65.00	-16.20	-16.97	0.00	-757.67	0.00	757.67	3,247.27	1,623.64	4,889.13	2,448.20	12.40	-1.82	0.315
70.00	-15.30	-16.62	0.00	-672.81	0.00	672.81	3,161.61	1,580.81	4,632.79	2,319.84	14.38	-1.96	0.295
75.00	-14.42	-16.27	0.00	-589.71	0.00	589.71	3,075.58	1,537.79	4,382.82	2,194.67	16.51	-2.09	0.274
80.00	-13.56	-15.91	0.00	-508.37	0.00	508.37	2,989.55	1,494.78	4,139.78	2,072.97	18.76	-2.21	0.250
85.00	-12.72	-15.56	0.00	-428.80	0.00	428.80	2,903.52	1,451.76	3,903.67	1,954.74	21.14	-2.33	0.224
90.00	-11.90	-15.28	0.00	-351.01	0.00	351.01	2,817.49	1,408.74	3,674.50	1,839.98	23.64	-2.43	0.195
92.71	-11.47	-15.10	0.00	-309.61	0.00	309.61	2,770.86	1,385.43	3,553.19	1,779.23	25.03	-2.48	0.178
95.00	-10.93	-14.92	0.00	-275.04	0.00	275.04	2,731.46	1,365.73	3,452.26	1,728.70	26.23	-2.53	0.163
97.29	-10.40	-14.74	0.00	-240.81	0.00	240.81	1,710.13	855.06	2,182.75	1,093.00	27.46	-2.56	0.227
100.00	-7.10	-11.67	0.00	-200.59	0.00	200.59	1,690.67	845.33	2,121.04	1,062.09	28.92	-2.60	0.193
105.00	-6.58	-11.32	0.00	-142.24	0.00	142.24	1,653.85	826.93	2,008.22	1,005.60	31.70	-2.69	0.146
110.00	-4.02	-8.04	0.00	-83.78	0.00	83.78	1,615.92	807.96	1,897.05	949.94	34.55	-2.75	0.091
115.00	-3.62	-7.73	0.00	-43.60	0.00	43.60	1,576.86	788.43	1,787.67	895.16	37.45	-2.79	0.051
119.00	-2.02	-6.40	0.00	-12.67	0.00	12.67	1,544.80	772.40	1,701.54	852.03	39.80	-2.81	0.016
120.00	0.00	-6.30	0.00	-6.27	0.00	6.27	1,536.68	768.34	1,680.21	841.35	40.38	-2.81	0.008

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 1.00 in Radial Ice 19 Iterations

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

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		61.3	0.0					0.0	0.0	61.3	0.0	0.0	0.0
5.00		121.8	1,842.7					23.6	392.1	145.4	2,234.9	0.0	0.0
10.00		120.1	1,862.3					24.6	400.7	144.7	2,262.9	0.0	0.0
15.00		118.2	1,852.2					25.1	405.0	143.3	2,257.3	0.0	0.0
20.00		116.1	1,832.6					25.5	408.1	141.6	2,240.6	0.0	0.0
25.00		114.0	1,807.9					25.8	410.4	139.8	2,218.3	0.0	0.0
30.00		113.2	1,780.0					26.0	412.4	139.2	2,192.4	0.0	0.0
35.00		114.7	1,750.0					26.8	414.1	141.5	2,164.1	0.0	0.0
40.00		116.8	1,718.4					28.1	415.5	144.9	2,133.9	0.0	0.0
45.00		72.6	1,685.6					29.3	416.8	101.9	2,102.4	0.0	0.0
46.16	Bot - Section 2	60.2	388.5					7.0	97.1	67.2	485.6	0.0	0.0
50.00		68.7	2,019.2					23.4	320.8	92.2	2,340.0	0.0	0.0
51.83	Top - Section 1	60.9	952.0					11.4	153.2	72.3	1,105.2	0.0	0.0
55.00		99.9	943.4					20.0	265.8	119.9	1,209.2	0.0	0.0
60.00		122.5	1,460.0					32.4	420.0	154.9	1,880.0	0.0	0.0
65.00		122.6	1,428.0					33.3	420.9	155.9	1,848.9	0.0	0.0
70.00		122.3	1,395.5					34.2	421.8	156.5	1,817.3	0.0	0.0
75.00		121.9	1,362.6					35.0	422.5	156.8	1,785.2	0.0	0.0
80.00		121.1	1,329.3					35.8	423.3	156.9	1,752.6	0.0	0.0
85.00		120.2	1,295.6					36.5	424.0	156.8	1,719.6	0.0	0.0
90.00		92.1	1,261.5					37.3	424.7	129.3	1,686.2	0.0	0.0
92.71	Bot - Section 3	59.6	671.1					20.5	230.4	80.1	901.5	0.0	0.0
95.00		54.8	798.1					17.5	194.9	72.2	993.0	0.0	0.0
97.29	Top - Section 2	59.4	788.7					17.6	195.3	77.0	984.0	0.0	0.0
100.00	Appurtenance(s)	90.7	519.9	734.8	0.0	78.0	7,626.2	21.0	230.6	846.5	8,376.7	0.0	0.0
105.00		116.5	936.4					39.3	338.5	155.8	1,274.9	0.0	0.0
110.00	Appurtenance(s)	114.8	909.3	798.4	0.0	443.2	5,560.2	39.9	339.0	953.1	6,808.5	0.0	0.0
115.00		101.8	881.8					40.5	227.6	142.3	1,109.5	0.0	0.0
119.00	Appurtenance(s)	56.0	686.7	354.1	0.0	0.0	2,344.4	32.8	182.5	442.9	3,213.6	0.0	0.0
120.00	Appurtenance(s)	11.1	169.7	1,717.0	0.0	1,717.0	6,954.9	8.3	45.7	1,736.4	7,170.3	0.0	0.0
									Totals:	7,228.78	68,268.3	0.00	0.00

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 1.00 in Radial Ice 19 Iterations

Gust Response Factor :1.10 Ice Dead Load Factor :1.00 Wind Importance 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	-68.27	-7.20	0.00	-672.06	0.00	672.06	4,844.94	2,422.47	9,656.80	4,835.57	0.00	0.00	0.153
5.00	-66.02	-7.10	0.00	-636.09	0.00	636.09	4,775.31	2,387.65	9,325.61	4,669.74	0.02	-0.05	0.150
10.00	-63.76	-7.01	0.00	-600.58	0.00	600.58	4,704.55	2,352.27	8,997.89	4,505.63	0.10	-0.09	0.147
15.00	-61.49	-6.91	0.00	-565.54	0.00	565.54	4,632.67	2,316.33	8,673.77	4,343.33	0.22	-0.14	0.143
20.00	-59.25	-6.81	0.00	-531.00	0.00	531.00	4,559.67	2,279.83	8,353.39	4,182.90	0.39	-0.19	0.140
25.00	-57.02	-6.71	0.00	-496.95	0.00	496.95	4,485.55	2,242.77	8,036.89	4,024.42	0.61	-0.23	0.136
30.00	-54.83	-6.60	0.00	-463.41	0.00	463.41	4,407.69	2,203.84	7,719.81	3,865.64	0.88	-0.28	0.132
35.00	-52.66	-6.49	0.00	-430.40	0.00	430.40	4,307.32	2,153.66	7,370.49	3,690.72	1.20	-0.33	0.129
40.00	-50.52	-6.38	0.00	-397.93	0.00	397.93	4,206.95	2,103.47	7,029.26	3,519.85	1.57	-0.37	0.125
45.00	-48.42	-6.28	0.00	-366.06	0.00	366.06	4,106.58	2,053.29	6,696.11	3,353.03	1.98	-0.42	0.121
46.16	-47.93	-6.23	0.00	-358.75	0.00	358.75	4,083.23	2,041.61	6,619.76	3,314.80	2.08	-0.43	0.120
50.00	-45.59	-6.14	0.00	-334.84	0.00	334.84	4,006.21	2,003.10	6,371.05	3,190.26	2.44	-0.46	0.116
51.83	-44.48	-6.08	0.00	-323.60	0.00	323.60	3,414.21	1,707.10	5,502.77	2,755.48	2.62	-0.48	0.130
55.00	-43.27	-5.98	0.00	-304.34	0.00	304.34	3,374.74	1,687.37	5,352.96	2,680.46	2.95	-0.51	0.126
60.00	-41.38	-5.84	0.00	-274.46	0.00	274.46	3,311.56	1,655.78	5,119.34	2,563.48	3.51	-0.56	0.120
65.00	-39.53	-5.69	0.00	-245.27	0.00	245.27	3,247.27	1,623.64	4,889.13	2,448.20	4.12	-0.60	0.112
70.00	-37.71	-5.55	0.00	-216.80	0.00	216.80	3,161.61	1,580.81	4,632.79	2,319.84	4.77	-0.65	0.105
75.00	-35.93	-5.39	0.00	-189.08	0.00	189.08	3,075.58	1,537.79	4,382.82	2,194.67	5.47	-0.69	0.098
80.00	-34.17	-5.24	0.00	-162.11	0.00	162.11	2,989.55	1,494.78	4,139.78	2,072.97	6.21	-0.73	0.090
85.00	-32.45	-5.08	0.00	-135.92	0.00	135.92	2,903.52	1,451.76	3,903.67	1,954.74	7.00	-0.76	0.081
90.00	-30.77	-4.94	0.00	-110.53	0.00	110.53	2,817.49	1,408.74	3,674.50	1,839.98	7.81	-0.80	0.071
92.71	-29.86	-4.85	0.00	-97.14	0.00	97.14	2,770.86	1,385.43	3,553.19	1,779.23	8.27	-0.81	0.065
95.00	-28.87	-4.77	0.00	-86.03	0.00	86.03	2,731.46	1,365.73	3,452.26	1,728.70	8.66	-0.83	0.060
97.29	-27.89	-4.69	0.00	-75.08	0.00	75.08	1,710.13	855.06	2,182.75	1,093.00	9.06	-0.84	0.085
100.00	-19.52	-3.73	0.00	-62.31	0.00	62.31	1,690.67	845.33	2,121.04	1,062.09	9.54	-0.85	0.070
105.00	-18.25	-3.56	0.00	-43.69	0.00	43.69	1,653.85	826.93	2,008.22	1,005.60	10.45	-0.88	0.054
110.00	-11.46	-2.50	0.00	-25.45	0.00	25.45	1,615.92	807.96	1,897.05	949.94	11.38	-0.90	0.034
115.00	-10.35	-2.34	0.00	-12.94	0.00	12.94	1,576.86	788.43	1,787.67	895.16	12.32	-0.91	0.021
119.00	-7.14	-1.85	0.00	-3.57	0.00	3.57	1,544.80	772.40	1,701.54	852.03	13.09	-0.91	0.009
120.00	0.00	-1.74	0.00	-1.72	0.00	1.72	1,536.68	768.34	1,680.21	841.35	13.28	-0.91	0.002

Load Case: 1.0D + 1.0W Serviceability 60 mph 19 Iterations

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

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		40.2	0.0					0.0	0.0	40.2	0.0	0.0	0.0
5.00		79.7	1,135.8					0.0	240.5	79.7	1,376.2	0.0	0.0
10.00		78.1	1,112.8					0.0	240.5	78.1	1,353.3	0.0	0.0
15.00		76.4	1,089.8					0.0	240.5	76.4	1,330.3	0.0	0.0
20.00		74.8	1,066.8					0.0	240.5	74.8	1,307.3	0.0	0.0
25.00		73.2	1,043.9					0.0	240.5	73.2	1,284.3	0.0	0.0
30.00		72.4	1,020.9					0.0	240.5	72.4	1,261.3	0.0	0.0
35.00		73.1	997.9					0.0	240.5	73.1	1,238.3	0.0	0.0
40.00		74.2	974.9					0.0	240.5	74.2	1,215.4	0.0	0.0
45.00		46.1	951.9					0.0	240.5	46.1	1,192.4	0.0	0.0
46.16	Bot - Section 2	38.2	218.2					0.0	55.9	38.2	274.1	0.0	0.0
50.00		43.5	1,332.6					0.0	184.5	43.5	1,517.1	0.0	0.0
51.83	Top - Section 1	38.5	626.8					0.0	88.0	38.5	714.8	0.0	0.0
55.00		63.0	500.5					0.0	152.4	63.0	652.9	0.0	0.0
60.00		77.0	773.3					0.0	240.5	77.0	1,013.7	0.0	0.0
65.00		76.8	753.6					0.0	240.5	76.8	994.0	0.0	0.0
70.00		76.4	733.9					0.0	240.5	76.4	974.3	0.0	0.0
75.00		75.8	714.2					0.0	240.5	75.8	954.6	0.0	0.0
80.00		75.1	694.5					0.0	240.5	75.1	934.9	0.0	0.0
85.00		74.2	674.8					0.0	240.5	74.2	915.2	0.0	0.0
90.00		56.7	655.1					0.0	240.5	56.7	895.5	0.0	0.0
92.71	Bot - Section 3	36.6	346.8					0.0	130.3	36.6	477.1	0.0	0.0
95.00		33.6	484.8					0.0	110.1	33.6	594.9	0.0	0.0
97.29	Top - Section 2	36.4	478.6					0.0	110.3	36.4	588.9	0.0	0.0
100.00	Appurtenance(s)	55.3	225.1	570.5	0.0	70.1	3,449.5	0.0	130.2	625.8	3,804.8	0.0	0.0
105.00		70.8	405.7					0.0	167.1	70.8	572.8	0.0	0.0
110.00	Appurtenance(s)	69.4	392.6	608.0	0.0	395.0	2,448.9	0.0	167.1	677.4	3,008.6	0.0	0.0
115.00		61.3	379.5					0.0	73.8	61.3	453.3	0.0	0.0
119.00	Appurtenance(s)	33.6	294.1	233.6	0.0	0.0	1,500.0	0.0	59.0	267.2	1,853.2	0.0	0.0
120.00	Appurtenance(s)	6.7	72.2	1,340.7	0.0	1,340.7	2,500.0	0.0	14.8	1,347.4	2,587.0	0.0	0.0
								Totals:		4,539.97	35,340.6	0.00	0.00

Load Case: 1.0D + 1.0W Serviceability 60 mph 19 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00
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	-35.34	-4.51	0.00	-431.14	0.00	431.14	4,844.94	2,422.47	9,656.80	4,835.57	0.00	0.00	0.096
5.00	-33.96	-4.45	0.00	-408.60	0.00	408.60	4,775.31	2,387.65	9,325.61	4,669.74	0.02	-0.03	0.095
10.00	-32.61	-4.38	0.00	-386.37	0.00	386.37	4,704.55	2,352.27	8,997.89	4,505.63	0.06	-0.06	0.093
15.00	-31.27	-4.32	0.00	-364.45	0.00	364.45	4,632.67	2,316.33	8,673.77	4,343.33	0.14	-0.09	0.091
20.00	-29.96	-4.26	0.00	-342.83	0.00	342.83	4,559.67	2,279.83	8,353.39	4,182.90	0.25	-0.12	0.089
25.00	-28.68	-4.20	0.00	-321.53	0.00	321.53	4,485.55	2,242.77	8,036.89	4,024.42	0.39	-0.15	0.086
30.00	-27.41	-4.14	0.00	-300.53	0.00	300.53	4,407.69	2,203.84	7,719.81	3,865.64	0.57	-0.18	0.084
35.00	-26.17	-4.07	0.00	-279.84	0.00	279.84	4,307.32	2,153.66	7,370.49	3,690.72	0.77	-0.21	0.082
40.00	-24.96	-4.01	0.00	-259.46	0.00	259.46	4,206.95	2,103.47	7,029.26	3,519.85	1.01	-0.24	0.080
45.00	-23.76	-3.97	0.00	-239.42	0.00	239.42	4,106.58	2,053.29	6,696.11	3,353.03	1.28	-0.27	0.077
46.16	-23.49	-3.93	0.00	-234.81	0.00	234.81	4,083.23	2,041.61	6,619.76	3,314.80	1.34	-0.28	0.077
50.00	-21.97	-3.89	0.00	-219.72	0.00	219.72	4,006.21	2,003.10	6,371.05	3,190.26	1.58	-0.30	0.074
51.83	-21.25	-3.85	0.00	-212.61	0.00	212.61	3,414.21	1,707.10	5,502.77	2,755.48	1.69	-0.31	0.083
55.00	-20.60	-3.79	0.00	-200.40	0.00	200.40	3,374.74	1,687.37	5,352.96	2,680.46	1.91	-0.33	0.081
60.00	-19.59	-3.72	0.00	-181.44	0.00	181.44	3,311.56	1,655.78	5,119.34	2,563.48	2.27	-0.36	0.077
65.00	-18.59	-3.65	0.00	-162.84	0.00	162.84	3,247.27	1,623.64	4,889.13	2,448.20	2.66	-0.39	0.072
70.00	-17.61	-3.57	0.00	-144.61	0.00	144.61	3,161.61	1,580.81	4,632.79	2,319.84	3.09	-0.42	0.068
75.00	-16.66	-3.50	0.00	-126.75	0.00	126.75	3,075.58	1,537.79	4,382.82	2,194.67	3.54	-0.45	0.063
80.00	-15.72	-3.42	0.00	-109.27	0.00	109.27	2,989.55	1,494.78	4,139.78	2,072.97	4.03	-0.48	0.058
85.00	-14.81	-3.35	0.00	-92.16	0.00	92.16	2,903.52	1,451.76	3,903.67	1,954.74	4.54	-0.50	0.052
90.00	-13.91	-3.28	0.00	-75.43	0.00	75.43	2,817.49	1,408.74	3,674.50	1,839.98	5.08	-0.52	0.046
92.71	-13.43	-3.25	0.00	-66.53	0.00	66.53	2,770.86	1,385.43	3,553.19	1,779.23	5.38	-0.53	0.042
95.00	-12.84	-3.21	0.00	-59.10	0.00	59.10	2,731.46	1,365.73	3,452.26	1,728.70	5.64	-0.54	0.039
97.29	-12.25	-3.17	0.00	-51.74	0.00	51.74	1,710.13	855.06	2,182.75	1,093.00	5.90	-0.55	0.055
100.00	-8.45	-2.51	0.00	-43.10	0.00	43.10	1,690.67	845.33	2,121.04	1,062.09	6.21	-0.56	0.046
105.00	-7.88	-2.43	0.00	-30.56	0.00	30.56	1,653.85	826.93	2,008.22	1,005.60	6.81	-0.58	0.035
110.00	-4.88	-1.73	0.00	-17.99	0.00	17.99	1,615.92	807.96	1,897.05	949.94	7.42	-0.59	0.022
115.00	-4.42	-1.66	0.00	-9.36	0.00	9.36	1,576.86	788.43	1,787.67	895.16	8.05	-0.60	0.013
119.00	-2.57	-1.37	0.00	-2.72	0.00	2.72	1,544.80	772.40	1,701.54	852.03	8.55	-0.60	0.005
120.00	0.00	-1.35	0.00	-1.34	0.00	1.34	1,536.68	768.34	1,680.21	841.35	8.68	-0.60	0.002

Equivalent Lateral Forces Method Analysis

(Based on ASCE7-10 Chapters 11, 12, 15)

Spectral Response Acceleration for Short Period (S_s):	0.18	
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06	
Long-Period Transition Period (T_L):	6	
Importance Factor (I_E):	1.00	
Site Coefficient F_a:	1.60	
Site Coeffiecient F_v:	2.40	
Response Modification Coefficient (R):	1.50	
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.19	
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10	
Seismic Response Coefficient (C_s):	0.04	
Upper Limit C_s	0.04	
Lower Limit C_s	0.03	
Period based on Rayleigh Method (sec):	1.76	
Redundancy Factor (p):	1.00	
Seismic Force Distribution Exponent (k):	1.63	
Total Unfactored Dead Load:	35.34	k
Seismic Base Shear (E):	1.39	k

Load Case (1.2 + 0.2Sds) * DL + E ELFM Seismic Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
29	119.50	87	212	0.005	7	108
28	117.00	353	831	0.021	29	437
27	112.50	453	1,000	0.025	35	561
26	107.50	560	1,147	0.029	40	693
25	102.50	573	1,086	0.027	38	709
24	98.65	355	633	0.016	22	440
23	96.15	589	1,006	0.025	35	729
22	93.85	595	977	0.024	34	737
21	91.35	477	750	0.019	26	591
20	87.50	896	1,312	0.033	46	1,109
19	82.50	915	1,218	0.030	42	1,133
18	77.50	935	1,124	0.028	39	1,158
17	72.50	955	1,029	0.026	36	1,182
16	67.50	974	935	0.023	33	1,207
15	62.50	994	841	0.021	29	1,231
14	57.50	1,014	749	0.019	26	1,255
13	53.42	653	428	0.011	15	809
12	50.92	715	433	0.011	15	885
11	48.08	1,517	837	0.021	29	1,879
10	45.58	274	139	0.003	5	339
9	42.50	1,192	538	0.013	19	1,477
8	37.50	1,215	447	0.011	16	1,505
7	32.50	1,238	361	0.009	13	1,534

6	27.50	1,261	280	0.007	10	1,562
5	22.50	1,284	206	0.005	7	1,590
4	17.50	1,307	139	0.003	5	1,619
3	12.50	1,330	82	0.002	3	1,647
2	7.50	1,353	36	0.001	1	1,676
1	2.50	1,376	6	0.000	0	1,704
Amphenol Antel BXA-1	120.00	45	110	0.003	4	56
Antel BXA-70063/6CF	120.00	51	125	0.003	4	63
Antel LPA-80080/6CF	120.00	126	309	0.008	11	156
VZW Unused Reserve:	120.00	2,278	5,584	0.140	194	2,821
Flat Low Profile Pla	119.00	1,500	3,627	0.091	126	1,858
Andrew ABT-DFDM-ADB	110.00	1	2	0.000	0	1
Powerwave Allgon TT1	110.00	192	408	0.010	14	238
Raycap DC6-48-60-0-8	110.00	33	70	0.002	2	41
Ericsson RRUS-11 (50	110.00	300	638	0.016	22	372
Powerwave Allgon P65	110.00	246	523	0.013	18	305
Powerwave Allgon P65	110.00	177	376	0.009	13	219
Round Low Profile Pl	110.00	1,500	3,190	0.080	111	1,858
Ericsson KRY 112 144	100.00	33	60	0.002	2	41
Ericsson KRY 112 489	100.00	46	84	0.002	3	57
Ericsson Radio 4449	100.00	222	404	0.010	14	275
RFS APX16DWV-16DWV-S	100.00	119	216	0.005	8	147
RFS APXVAARR24_43-U-	100.00	384	699	0.017	24	475
Site PRO 1 RMQP-4096	100.00	2,646	4,818	0.120	168	3,277
		35,341	40,024	1.000	1,392	43,766

Load Case (0.9 - 0.2Sds) * DL + E ELFM Seismic (Reduced DL) Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
29	119.50	87	212	0.005	7	75
28	117.00	353	831	0.021	29	304
27	112.50	453	1,000	0.025	35	391
26	107.50	560	1,147	0.029	40	482
25	102.50	573	1,086	0.027	38	494
24	98.65	355	633	0.016	22	306
23	96.15	589	1,006	0.025	35	507
22	93.85	595	977	0.024	34	513
21	91.35	477	750	0.019	26	411
20	87.50	896	1,312	0.033	46	772
19	82.50	915	1,218	0.030	42	789
18	77.50	935	1,124	0.028	39	806
17	72.50	955	1,029	0.026	36	823
16	67.50	974	935	0.023	33	839
15	62.50	994	841	0.021	29	856
14	57.50	1,014	749	0.019	26	873
13	53.42	653	428	0.011	15	563
12	50.92	715	433	0.011	15	616
11	48.08	1,517	837	0.021	29	1,307
10	45.58	274	139	0.003	5	236
9	42.50	1,192	538	0.013	19	1,027
8	37.50	1,215	447	0.011	16	1,047
7	32.50	1,238	361	0.009	13	1,067
6	27.50	1,261	280	0.007	10	1,087
5	22.50	1,284	206	0.005	7	1,107
4	17.50	1,307	139	0.003	5	1,126
3	12.50	1,330	82	0.002	3	1,146
2	7.50	1,353	36	0.001	1	1,166
1	2.50	1,376	6	0.000	0	1,186
Amphenol Antel BXA-1	120.00	45	110	0.003	4	39

Antel BXA-70063/6CF	120.00	51	125	0.003	4	44
Antel LPA-80080/6CF	120.00	126	309	0.008	11	109
VZW Unused Reserve:	120.00	2,278	5,584	0.140	194	1,963
Flat Low Profile Pla	119.00	1,500	3,627	0.091	126	1,292
Andrew ABT-DFDM-ADB	110.00	1	2	0.000	0	1
Powerwave Allgon TT1	110.00	192	408	0.010	14	165
Raycap DC6-48-60-0-8	110.00	33	70	0.002	2	28
Ericsson RRUS-11 (50	110.00	300	638	0.016	22	258
Powerwave Allgon P65	110.00	246	523	0.013	18	212
Powerwave Allgon P65	110.00	177	376	0.009	13	153
Round Low Profile Pl	110.00	1,500	3,190	0.080	111	1,292
Ericsson KRY 112 144	100.00	33	60	0.002	2	28
Ericsson KRY 112 489	100.00	46	84	0.002	3	40
Ericsson Radio 4449	100.00	222	404	0.010	14	191
RFS APX16DWV-16DWV-S	100.00	119	216	0.005	8	102
RFS APXVAARR24_43-U-	100.00	384	699	0.017	24	331
Site PRO 1 RMQP-4096	100.00	2,646	4,818	0.120	168	2,280
		35,341	40,024	1.000	1,392	30,450

Load Case (1.2 + 0.2Sds) * DL + E ELFM Seismic Equivalent Lateral Forces Method

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	-42.06	-1.39	0.00	-136.63	0.00	136.63	4,844.94	2,422.47	9,656.80	4,835.57	0.00	0.00	0.037
5.00	-40.39	-1.40	0.00	-129.66	0.00	129.66	4,775.31	2,387.65	9,325.61	4,669.74	0.01	-0.01	0.036
10.00	-38.74	-1.40	0.00	-122.66	0.00	122.66	4,704.55	2,352.27	8,997.89	4,505.63	0.02	-0.02	0.035
15.00	-37.12	-1.40	0.00	-115.64	0.00	115.64	4,632.67	2,316.33	8,673.77	4,343.33	0.04	-0.03	0.035
20.00	-35.53	-1.40	0.00	-108.62	0.00	108.62	4,559.67	2,279.83	8,353.39	4,182.90	0.08	-0.04	0.034
25.00	-33.97	-1.40	0.00	-101.61	0.00	101.61	4,485.55	2,242.77	8,036.89	4,024.42	0.12	-0.05	0.033
30.00	-32.43	-1.39	0.00	-94.63	0.00	94.63	4,407.69	2,203.84	7,719.81	3,865.64	0.18	-0.06	0.032
35.00	-30.93	-1.38	0.00	-87.69	0.00	87.69	4,307.32	2,153.66	7,370.49	3,690.72	0.24	-0.07	0.031
40.00	-29.45	-1.36	0.00	-80.81	0.00	80.81	4,206.95	2,103.47	7,029.26	3,519.85	0.32	-0.08	0.030
45.00	-29.11	-1.36	0.00	-74.01	0.00	74.01	4,106.58	2,053.29	6,696.11	3,353.03	0.40	-0.09	0.029
46.16	-27.23	-1.33	0.00	-72.43	0.00	72.43	4,083.23	2,041.61	6,619.76	3,314.80	0.43	-0.09	0.029
50.00	-26.35	-1.31	0.00	-67.34	0.00	67.34	4,006.21	2,003.10	6,371.05	3,190.26	0.50	-0.09	0.028
51.83	-25.54	-1.30	0.00	-64.93	0.00	64.93	3,414.21	1,707.10	5,502.77	2,755.48	0.54	-0.10	0.031
55.00	-24.28	-1.27	0.00	-60.81	0.00	60.81	3,374.74	1,687.37	5,352.96	2,680.46	0.60	-0.10	0.030
60.00	-23.05	-1.25	0.00	-54.44	0.00	54.44	3,311.56	1,655.78	5,119.34	2,563.48	0.72	-0.11	0.028
65.00	-21.84	-1.22	0.00	-48.20	0.00	48.20	3,247.27	1,623.64	4,889.13	2,448.20	0.84	-0.12	0.026
70.00	-20.66	-1.18	0.00	-42.13	0.00	42.13	3,161.61	1,580.81	4,632.79	2,319.84	0.97	-0.13	0.025
75.00	-19.50	-1.14	0.00	-36.23	0.00	36.23	3,075.58	1,537.79	4,382.82	2,194.67	1.11	-0.14	0.023
80.00	-18.37	-1.10	0.00	-30.52	0.00	30.52	2,989.55	1,494.78	4,139.78	2,072.97	1.26	-0.15	0.021
85.00	-17.26	-1.05	0.00	-25.03	0.00	25.03	2,903.52	1,451.76	3,903.67	1,954.74	1.42	-0.15	0.019
90.00	-16.67	-1.02	0.00	-19.78	0.00	19.78	2,817.49	1,408.74	3,674.50	1,839.98	1.58	-0.16	0.017
92.71	-15.93	-0.99	0.00	-17.00	0.00	17.00	2,770.86	1,385.43	3,553.19	1,779.23	1.67	-0.16	0.015
95.00	-15.20	-0.95	0.00	-14.73	0.00	14.73	2,731.46	1,365.73	3,452.26	1,728.70	1.75	-0.16	0.014
97.29	-14.76	-0.93	0.00	-12.55	0.00	12.55	1,710.13	855.06	2,182.75	1,093.00	1.83	-0.17	0.020
100.00	-9.78	-0.66	0.00	-10.03	0.00	10.03	1,690.67	845.33	2,121.04	1,062.09	1.93	-0.17	0.015
105.00	-9.09	-0.62	0.00	-6.73	0.00	6.73	1,653.85	826.93	2,008.22	1,005.60	2.10	-0.17	0.012
110.00	-5.50	-0.39	0.00	-3.63	0.00	3.63	1,615.92	807.96	1,897.05	949.94	2.29	-0.18	0.007
115.00	-5.06	-0.36	0.00	-1.67	0.00	1.67	1,576.86	788.43	1,787.67	895.16	2.47	-0.18	0.005
119.00	-3.10	-0.22	0.00	-0.22	0.00	0.22	1,544.80	772.40	1,701.54	852.03	2.62	-0.18	0.002
120.00	0.00	-0.21	0.00	0.00	0.00	0.00	1,536.68	768.34	1,680.21	841.35	2.66	-0.18	0.000

Load Case (0.9 - 0.2Sds) * DL + E ELFM Seismic (Reduced DL) Equivalent Lateral Forces Method

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	-29.26	-1.39	0.00	-135.35	0.00	135.35	4,844.94	2,422.47	9,656.80	4,835.57	0.00	0.00	0.034
5.00	-28.10	-1.40	0.00	-128.38	0.00	128.38	4,775.31	2,387.65	9,325.61	4,669.74	0.01	-0.01	0.033
10.00	-26.95	-1.40	0.00	-121.40	0.00	121.40	4,704.55	2,352.27	8,997.89	4,505.63	0.02	-0.02	0.033
15.00	-25.82	-1.40	0.00	-114.41	0.00	114.41	4,632.67	2,316.33	8,673.77	4,343.33	0.04	-0.03	0.032
20.00	-24.72	-1.39	0.00	-107.42	0.00	107.42	4,559.67	2,279.83	8,353.39	4,182.90	0.08	-0.04	0.031
25.00	-23.63	-1.39	0.00	-100.45	0.00	100.45	4,485.55	2,242.77	8,036.89	4,024.42	0.12	-0.05	0.030
30.00	-22.56	-1.38	0.00	-93.52	0.00	93.52	4,407.69	2,203.84	7,719.81	3,865.64	0.18	-0.06	0.029
35.00	-21.52	-1.36	0.00	-86.63	0.00	86.63	4,307.32	2,153.66	7,370.49	3,690.72	0.24	-0.07	0.028
40.00	-20.49	-1.35	0.00	-79.81	0.00	79.81	4,206.95	2,103.47	7,029.26	3,519.85	0.32	-0.08	0.028
45.00	-20.25	-1.34	0.00	-73.07	0.00	73.07	4,106.58	2,053.29	6,696.11	3,353.03	0.40	-0.08	0.027
46.16	-18.95	-1.31	0.00	-71.51	0.00	71.51	4,083.23	2,041.61	6,619.76	3,314.80	0.42	-0.09	0.026
50.00	-18.33	-1.30	0.00	-66.47	0.00	66.47	4,006.21	2,003.10	6,371.05	3,190.26	0.49	-0.09	0.025
51.83	-17.77	-1.29	0.00	-64.09	0.00	64.09	3,414.21	1,707.10	5,502.77	2,755.48	0.53	-0.10	0.028
55.00	-16.89	-1.26	0.00	-60.01	0.00	60.01	3,374.74	1,687.37	5,352.96	2,680.46	0.60	-0.10	0.027
60.00	-16.04	-1.23	0.00	-53.71	0.00	53.71	3,311.56	1,655.78	5,119.34	2,563.48	0.71	-0.11	0.026
65.00	-15.20	-1.20	0.00	-47.55	0.00	47.55	3,247.27	1,623.64	4,889.13	2,448.20	0.83	-0.12	0.024
70.00	-14.37	-1.16	0.00	-41.55	0.00	41.55	3,161.61	1,580.81	4,632.79	2,319.84	0.96	-0.13	0.022
75.00	-13.57	-1.13	0.00	-35.73	0.00	35.73	3,075.58	1,537.79	4,382.82	2,194.67	1.10	-0.14	0.021
80.00	-12.78	-1.08	0.00	-30.10	0.00	30.10	2,989.55	1,494.78	4,139.78	2,072.97	1.25	-0.14	0.019
85.00	-12.01	-1.04	0.00	-24.68	0.00	24.68	2,903.52	1,451.76	3,903.67	1,954.74	1.40	-0.15	0.017
90.00	-11.60	-1.01	0.00	-19.50	0.00	19.50	2,817.49	1,408.74	3,674.50	1,839.98	1.56	-0.16	0.015
92.71	-11.08	-0.98	0.00	-16.76	0.00	16.76	2,770.86	1,385.43	3,553.19	1,779.23	1.65	-0.16	0.013
95.00	-10.58	-0.94	0.00	-14.53	0.00	14.53	2,731.46	1,365.73	3,452.26	1,728.70	1.73	-0.16	0.012
97.29	-10.27	-0.92	0.00	-12.37	0.00	12.37	1,710.13	855.06	2,182.75	1,093.00	1.81	-0.16	0.017
100.00	-6.81	-0.65	0.00	-9.89	0.00	9.89	1,690.67	845.33	2,121.04	1,062.09	1.90	-0.17	0.013
105.00	-6.32	-0.61	0.00	-6.64	0.00	6.64	1,653.85	826.93	2,008.22	1,005.60	2.08	-0.17	0.010
110.00	-3.82	-0.39	0.00	-3.58	0.00	3.58	1,615.92	807.96	1,897.05	949.94	2.26	-0.17	0.006
115.00	-3.52	-0.36	0.00	-1.65	0.00	1.65	1,576.86	788.43	1,787.67	895.16	2.44	-0.17	0.004
119.00	-2.15	-0.22	0.00	-0.22	0.00	0.22	1,544.80	772.40	1,701.54	852.03	2.59	-0.18	0.002
120.00	0.00	-0.21	0.00	0.00	0.00	0.00	1,536.68	768.34	1,680.21	841.35	2.63	-0.18	0.000

Equivalent Modal Analysis Method

(Based on ASCE7-10 Chapters 11, 12 & 15 and ANSI/TIA-G, section 2.7)

Spectral Response Acceleration for Short Period (S_s):	0.18
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.60
Site Coefficient F_v	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.19
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	1.76
Redundancy Factor (p):	1.00

Load Case (1.2 + 0.2Sds) * DL + E EMAM Seismic Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
29	119.50	87	1.874	1.898	1.110	0.363	21	108
28	117.00	353	1.797	1.523	0.972	0.315	74	437
27	112.50	453	1.661	0.980	0.756	0.237	72	561
26	107.50	560	1.517	0.543	0.563	0.163	61	693
25	102.50	573	1.379	0.245	0.410	0.102	39	709
24	98.65	355	1.277	0.090	0.316	0.063	15	440
23	96.15	589	1.213	0.018	0.265	0.042	17	729
22	93.85	595	1.156	-0.033	0.223	0.026	10	737
21	91.35	477	1.095	-0.072	0.184	0.011	4	591
20	87.50	896	1.005	-0.109	0.134	-0.005	-3	1,109
19	82.50	915	0.893	-0.122	0.085	-0.017	-10	1,133
18	77.50	935	0.788	-0.110	0.051	-0.018	-11	1,158
17	72.50	955	0.690	-0.084	0.028	-0.010	-6	1,182
16	67.50	974	0.598	-0.052	0.014	0.003	2	1,207
15	62.50	994	0.513	-0.021	0.008	0.017	11	1,231
14	57.50	1,014	0.434	0.007	0.006	0.029	20	1,255
13	53.42	653	0.374	0.026	0.007	0.037	16	809
12	50.92	715	0.340	0.035	0.009	0.040	19	885
11	48.08	1,517	0.303	0.045	0.012	0.043	44	1,879
10	45.58	274	0.273	0.051	0.015	0.045	8	339
9	42.50	1,192	0.237	0.057	0.019	0.046	36	1,477
8	37.50	1,215	0.185	0.065	0.025	0.045	37	1,505
7	32.50	1,238	0.139	0.069	0.032	0.044	37	1,534
6	27.50	1,261	0.099	0.071	0.037	0.042	36	1,562
5	22.50	1,284	0.066	0.072	0.041	0.041	35	1,590
4	17.50	1,307	0.040	0.070	0.042	0.038	34	1,619
3	12.50	1,330	0.021	0.064	0.038	0.035	31	1,647
2	7.50	1,353	0.007	0.050	0.029	0.028	25	1,676
1	2.50	1,376	0.001	0.022	0.012	0.013	12	1,704
Amphenol Antel BXA-1	120.00	45	1.890	1.980	1.140	0.373	11	56
Antel BXA-70063/6CF	120.00	51	1.890	1.980	1.140	0.373	13	63
Antel LPA-80080/6CF	120.00	126	1.890	1.980	1.140	0.373	31	156
VZW Unused Reserve:	120.00	2,278	1.890	1.980	1.140	0.373	567	2,821
Flat Low Profile Pla	119.00	1,500	1.859	1.819	1.081	0.353	353	1,858

Andrew ABT-DFDM-ADB	110.00	1	1.588	0.742	0.654	0.198	0	1
Powerwave Allgon TT1	110.00	192	1.588	0.742	0.654	0.198	25	238
Raycap DC6-48-60-0-8	110.00	33	1.588	0.742	0.654	0.198	4	41
Ericsson RRUS-11 (50	110.00	300	1.588	0.742	0.654	0.198	40	372
Powerwave Allgon P65	110.00	246	1.588	0.742	0.654	0.198	32	305
Powerwave Allgon P65	110.00	177	1.588	0.742	0.654	0.198	23	219
Round Low Profile Pl	110.00	1,500	1.588	0.742	0.654	0.198	198	1,858
Ericsson KRY 112 144	100.00	33	1.312	0.138	0.347	0.076	2	41
Ericsson KRY 112 489	100.00	46	1.312	0.138	0.347	0.076	2	57
Ericsson Radio 4449	100.00	222	1.312	0.138	0.347	0.076	11	275
RFS APX16DWV-16DWV-	100.00	119	1.312	0.138	0.347	0.076	6	147
RFS APXVAARR24_43-U-	100.00	384	1.312	0.138	0.347	0.076	19	475
Site PRO 1 RMQP-4096	100.00	2,646	1.312	0.138	0.347	0.076	134	3,277
		35,341	48.387	21.164	17.746	5.505	2,155	43,766

Load Case (0.9 - 0.2Sds) * DL + E EMAM Seismic (Reduced DL) Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
29	119.50	87	1.874	1.898	1.110	0.363	21	75
28	117.00	353	1.797	1.523	0.972	0.315	74	304
27	112.50	453	1.661	0.980	0.756	0.237	72	391
26	107.50	560	1.517	0.543	0.563	0.163	61	482
25	102.50	573	1.379	0.245	0.410	0.102	39	494
24	98.65	355	1.277	0.090	0.316	0.063	15	306
23	96.15	589	1.213	0.018	0.265	0.042	17	507
22	93.85	595	1.156	-0.033	0.223	0.026	10	513
21	91.35	477	1.095	-0.072	0.184	0.011	4	411
20	87.50	896	1.005	-0.109	0.134	-0.005	-3	772
19	82.50	915	0.893	-0.122	0.085	-0.017	-10	789
18	77.50	935	0.788	-0.110	0.051	-0.018	-11	806
17	72.50	955	0.690	-0.084	0.028	-0.010	-6	823
16	67.50	974	0.598	-0.052	0.014	0.003	2	839
15	62.50	994	0.513	-0.021	0.008	0.017	11	856
14	57.50	1,014	0.434	0.007	0.006	0.029	20	873
13	53.42	653	0.374	0.026	0.007	0.037	16	563
12	50.92	715	0.340	0.035	0.009	0.040	19	616
11	48.08	1,517	0.303	0.045	0.012	0.043	44	1,307
10	45.58	274	0.273	0.051	0.015	0.045	8	236
9	42.50	1,192	0.237	0.057	0.019	0.046	36	1,027
8	37.50	1,215	0.185	0.065	0.025	0.045	37	1,047
7	32.50	1,238	0.139	0.069	0.032	0.044	37	1,067
6	27.50	1,261	0.099	0.071	0.037	0.042	36	1,087
5	22.50	1,284	0.066	0.072	0.041	0.041	35	1,107
4	17.50	1,307	0.040	0.070	0.042	0.038	34	1,126
3	12.50	1,330	0.021	0.064	0.038	0.035	31	1,146
2	7.50	1,353	0.007	0.050	0.029	0.028	25	1,166
1	2.50	1,376	0.001	0.022	0.012	0.013	12	1,186
Amphenol Antel BXA-1	120.00	45	1.890	1.980	1.140	0.373	11	39
Antel BXA-70063/6CF	120.00	51	1.890	1.980	1.140	0.373	13	44
Antel LPA-80080/6CF	120.00	126	1.890	1.980	1.140	0.373	31	109
VZW Unused Reserve:	120.00	2,278	1.890	1.980	1.140	0.373	567	1,963
Flat Low Profile Pla	119.00	1,500	1.859	1.819	1.081	0.353	353	1,292
Andrew ABT-DFDM-ADB	110.00	1	1.588	0.742	0.654	0.198	0	1
Powerwave Allgon TT1	110.00	192	1.588	0.742	0.654	0.198	25	165
Raycap DC6-48-60-0-8	110.00	33	1.588	0.742	0.654	0.198	4	28
Ericsson RRUS-11 (50	110.00	300	1.588	0.742	0.654	0.198	40	258
Powerwave Allgon P65	110.00	246	1.588	0.742	0.654	0.198	32	212
Powerwave Allgon P65	110.00	177	1.588	0.742	0.654	0.198	23	153

Round Low Profile Pl	110.00	1,500	1.588	0.742	0.654	0.198	198	1,292
Ericsson KRY 112 144	100.00	33	1.312	0.138	0.347	0.076	2	28
Ericsson KRY 112 489	100.00	46	1.312	0.138	0.347	0.076	2	40
Ericsson Radio 4449	100.00	222	1.312	0.138	0.347	0.076	11	191
RFS APX16DWV-16DWV-	100.00	119	1.312	0.138	0.347	0.076	6	102
RFS APXVAARR24_43-U-	100.00	384	1.312	0.138	0.347	0.076	19	331
Site PRO 1 RMQP-4096	100.00	2,646	1.312	0.138	0.347	0.076	134	2,280
		35,341	48.387	21.164	17.746	5.505	2,155	30,450

Load Case (1.2 + 0.2Sds) * DL + E EMAM Seismic Equivalent Modal Analysis Method

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	-42.06	-2.15	0.00	-220.07	0.00	220.07	4,844.94	2,422.47	9,656.80	4,835.57	0.00	0.00	0.054
5.00	-40.38	-2.13	0.00	-209.33	0.00	209.33	4,775.31	2,387.65	9,325.61	4,669.74	0.01	-0.02	0.053
10.00	-38.74	-2.11	0.00	-198.67	0.00	198.67	4,704.55	2,352.27	8,997.89	4,505.63	0.03	-0.03	0.052
15.00	-37.12	-2.09	0.00	-188.11	0.00	188.11	4,632.67	2,316.33	8,673.77	4,343.33	0.07	-0.05	0.051
20.00	-35.53	-2.06	0.00	-177.68	0.00	177.68	4,559.67	2,279.83	8,353.39	4,182.90	0.13	-0.06	0.050
25.00	-33.96	-2.03	0.00	-167.37	0.00	167.37	4,485.55	2,242.77	8,036.89	4,024.42	0.20	-0.08	0.049
30.00	-32.43	-2.00	0.00	-157.21	0.00	157.21	4,407.69	2,203.84	7,719.81	3,865.64	0.29	-0.09	0.048
35.00	-30.92	-1.97	0.00	-147.20	0.00	147.20	4,307.32	2,153.66	7,370.49	3,690.72	0.40	-0.11	0.047
40.00	-29.45	-1.94	0.00	-137.34	0.00	137.34	4,206.95	2,103.47	7,029.26	3,519.85	0.52	-0.12	0.046
45.00	-29.11	-1.94	0.00	-127.64	0.00	127.64	4,106.58	2,053.29	6,696.11	3,353.03	0.66	-0.14	0.045
46.16	-27.23	-1.89	0.00	-125.39	0.00	125.39	4,083.23	2,041.61	6,619.76	3,314.80	0.69	-0.14	0.044
50.00	-26.34	-1.87	0.00	-118.13	0.00	118.13	4,006.21	2,003.10	6,371.05	3,190.26	0.82	-0.16	0.044
51.83	-25.53	-1.86	0.00	-114.70	0.00	114.70	3,414.21	1,707.10	5,502.77	2,755.48	0.88	-0.16	0.049
55.00	-24.28	-1.84	0.00	-108.80	0.00	108.80	3,374.74	1,687.37	5,352.96	2,680.46	0.99	-0.17	0.048
60.00	-23.05	-1.83	0.00	-99.59	0.00	99.59	3,311.56	1,655.78	5,119.34	2,563.48	1.18	-0.19	0.046
65.00	-21.84	-1.83	0.00	-90.42	0.00	90.42	3,247.27	1,623.64	4,889.13	2,448.20	1.39	-0.21	0.044
70.00	-20.66	-1.84	0.00	-81.25	0.00	81.25	3,161.61	1,580.81	4,632.79	2,319.84	1.61	-0.22	0.042
75.00	-19.50	-1.85	0.00	-72.04	0.00	72.04	3,075.58	1,537.79	4,382.82	2,194.67	1.85	-0.24	0.039
80.00	-18.36	-1.86	0.00	-62.77	0.00	62.77	2,989.55	1,494.78	4,139.78	2,072.97	2.11	-0.25	0.036
85.00	-17.26	-1.87	0.00	-53.44	0.00	53.44	2,903.52	1,451.76	3,903.67	1,954.74	2.38	-0.27	0.033
90.00	-16.66	-1.86	0.00	-44.11	0.00	44.11	2,817.49	1,408.74	3,674.50	1,839.98	2.67	-0.28	0.030
92.71	-15.93	-1.85	0.00	-39.06	0.00	39.06	2,770.86	1,385.43	3,553.19	1,779.23	2.83	-0.29	0.028
95.00	-15.20	-1.83	0.00	-34.82	0.00	34.82	2,731.46	1,365.73	3,452.26	1,728.70	2.97	-0.29	0.026
97.29	-14.76	-1.82	0.00	-30.62	0.00	30.62	1,710.13	855.06	2,182.75	1,093.00	3.11	-0.30	0.037
100.00	-9.78	-1.58	0.00	-25.71	0.00	25.71	1,690.67	845.33	2,121.04	1,062.09	3.29	-0.30	0.030
105.00	-9.08	-1.52	0.00	-17.82	0.00	17.82	1,653.85	826.93	2,008.22	1,005.60	3.61	-0.31	0.023
110.00	-5.49	-1.10	0.00	-10.24	0.00	10.24	1,615.92	807.96	1,897.05	949.94	3.94	-0.32	0.014
115.00	-5.06	-1.02	0.00	-4.74	0.00	4.74	1,576.86	788.43	1,787.67	895.16	4.28	-0.33	0.009
119.00	-3.09	-0.64	0.00	-0.64	0.00	0.64	1,544.80	772.40	1,701.54	852.03	4.56	-0.33	0.003
120.00	0.00	-0.62	0.00	0.00	0.00	0.00	1,536.68	768.34	1,680.21	841.35	4.62	-0.33	0.000

Load Case (0.9 - 0.2Sds) * DL + E EMAM Seismic (Reduced DL) Equivalent Modal Analysis Method

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	-29.26	-2.15	0.00	-217.88	0.00	217.88	4,844.94	2,422.47	9,656.80	4,835.57	0.00	0.00	0.051
5.00	-28.10	-2.13	0.00	-207.15	0.00	207.15	4,775.31	2,387.65	9,325.61	4,669.74	0.01	-0.02	0.050
10.00	-26.95	-2.10	0.00	-196.51	0.00	196.51	4,704.55	2,352.27	8,997.89	4,505.63	0.03	-0.03	0.049
15.00	-25.82	-2.08	0.00	-186.00	0.00	186.00	4,632.67	2,316.33	8,673.77	4,343.33	0.07	-0.05	0.048
20.00	-24.72	-2.05	0.00	-175.61	0.00	175.61	4,559.67	2,279.83	8,353.39	4,182.90	0.13	-0.06	0.047
25.00	-23.63	-2.02	0.00	-165.38	0.00	165.38	4,485.55	2,242.77	8,036.89	4,024.42	0.20	-0.08	0.046
30.00	-22.56	-1.98	0.00	-155.30	0.00	155.30	4,407.69	2,203.84	7,719.81	3,865.64	0.29	-0.09	0.045
35.00	-21.51	-1.95	0.00	-145.37	0.00	145.37	4,307.32	2,153.66	7,370.49	3,690.72	0.39	-0.11	0.044
40.00	-20.49	-1.92	0.00	-135.62	0.00	135.62	4,206.95	2,103.47	7,029.26	3,519.85	0.51	-0.12	0.043
45.00	-20.25	-1.91	0.00	-126.02	0.00	126.02	4,106.58	2,053.29	6,696.11	3,353.03	0.65	-0.14	0.043
46.16	-18.94	-1.87	0.00	-123.79	0.00	123.79	4,083.23	2,041.61	6,619.76	3,314.80	0.69	-0.14	0.042
50.00	-18.33	-1.85	0.00	-116.62	0.00	116.62	4,006.21	2,003.10	6,371.05	3,190.26	0.81	-0.15	0.041
51.83	-17.76	-1.84	0.00	-113.23	0.00	113.23	3,414.21	1,707.10	5,502.77	2,755.48	0.87	-0.16	0.046
55.00	-16.89	-1.82	0.00	-107.41	0.00	107.41	3,374.74	1,687.37	5,352.96	2,680.46	0.98	-0.17	0.045
60.00	-16.03	-1.81	0.00	-98.32	0.00	98.32	3,311.56	1,655.78	5,119.34	2,563.48	1.16	-0.19	0.043
65.00	-15.19	-1.81	0.00	-89.27	0.00	89.27	3,247.27	1,623.64	4,889.13	2,448.20	1.37	-0.20	0.041
70.00	-14.37	-1.82	0.00	-80.23	0.00	80.23	3,161.61	1,580.81	4,632.79	2,319.84	1.59	-0.22	0.039
75.00	-13.56	-1.83	0.00	-71.14	0.00	71.14	3,075.58	1,537.79	4,382.82	2,194.67	1.83	-0.24	0.037
80.00	-12.77	-1.84	0.00	-62.00	0.00	62.00	2,989.55	1,494.78	4,139.78	2,072.97	2.09	-0.25	0.034
85.00	-12.00	-1.84	0.00	-52.81	0.00	52.81	2,903.52	1,451.76	3,903.67	1,954.74	2.36	-0.26	0.031
90.00	-11.59	-1.84	0.00	-43.61	0.00	43.61	2,817.49	1,408.74	3,674.50	1,839.98	2.64	-0.28	0.028
92.71	-11.08	-1.83	0.00	-38.63	0.00	38.63	2,770.86	1,385.43	3,553.19	1,779.23	2.80	-0.28	0.026
95.00	-10.57	-1.81	0.00	-34.45	0.00	34.45	2,731.46	1,365.73	3,452.26	1,728.70	2.94	-0.29	0.024
97.29	-10.26	-1.79	0.00	-30.31	0.00	30.31	1,710.13	855.06	2,182.75	1,093.00	3.08	-0.29	0.034
100.00	-6.80	-1.56	0.00	-25.46	0.00	25.46	1,690.67	845.33	2,121.04	1,062.09	3.25	-0.30	0.028
105.00	-6.32	-1.50	0.00	-17.65	0.00	17.65	1,653.85	826.93	2,008.22	1,005.60	3.57	-0.31	0.021
110.00	-3.82	-1.09	0.00	-10.15	0.00	10.15	1,615.92	807.96	1,897.05	949.94	3.90	-0.32	0.013
115.00	-3.52	-1.02	0.00	-4.70	0.00	4.70	1,576.86	788.43	1,787.67	895.16	4.23	-0.32	0.007
119.00	-2.15	-0.63	0.00	-0.63	0.00	0.63	1,544.80	772.40	1,701.54	852.03	4.50	-0.32	0.002
120.00	0.00	-0.62	0.00	0.00	0.00	0.00	1,536.68	768.34	1,680.21	841.35	4.57	-0.32	0.000

Analysis Summary

	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	21.55	0.00	42.38	0.00	0.00	2069.58	0.00	0.44
0.9D + 1.6W	21.07	0.00	31.78	0.00	0.00	2008.92	0.00	0.42
1.2D + 1.0Di + 1.0Wi	7.20	0.00	68.27	0.00	0.00	672.06	0.00	0.15
(1.2 + 0.2Sds) * DL + E ELFM	1.39	0.00	42.06	0.00	0.00	136.63	0.00	0.04
(1.2 + 0.2Sds) * DL + E EMAM	2.15	0.00	42.06	0.00	0.00	220.07	0.00	0.05
(0.9 - 0.2Sds) * DL + E ELFM	1.39	0.00	29.26	0.00	0.00	135.35	0.00	0.03
(0.9 - 0.2Sds) * DL + E EMAM	2.15	0.00	29.26	0.00	0.00	217.88	0.00	0.05
1.0D + 1.0W	4.51	0.00	35.34	0.00	0.00	431.14	0.00	0.10

Base Plate & Anchor Rod Analysis

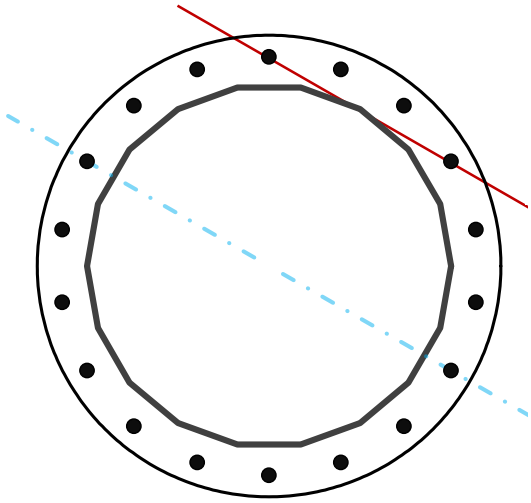
Pole Dimensions		
Number of Sides	18	-
Diameter	49	in
Thickness	0.4375	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	2069.6	k-ft
Axial, Pu	42.4	k
Shear, Vu	21.6	k
Neutral Axis	330	°

Report Capacities		
Component	Capacity	Result
Base Plate	46%	Pass
Anchor Rods	37%	Pass
Dwyidag	-	-

Base Plate		
Shape	Round	-
Diameter, ø	64	in
Thickness	2 1/4	in
Grade	A572-60	-
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Clip	N/A	in
Orientation Offset	0	°
Anchor Rod Detail	d	η=0.5
Clear Distance	3	in
Applied Moment, Mu	731.4	k
Bending Stress, ϕMn	1589.6	k

Original Anchor Rods		
Arrangement	Radial	-
Quantity	18	-
Diameter, ø	2 1/4	in
Bolt Circle	58	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	10.1	in
Orientation Offset	10	°
Applied Force, Pu	96.0	k
Anchor Rods, ϕPn	259.8	k



Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	21.6	2069.6	1.00
Anchor Rod Forces	21.6	2069.6	1.00
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	0.0	0.00
Stiffener Forces	0.0	0.0	0.00

Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in^2	in^2	in^4	#	in^4
Pole	66.4082	3.6893	0.2364		19580.70
Bolt	3.9761	3.2477	0.8393	4.5	24596.87
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	0.0000	0.0000	0.0000		0.00
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate		
Shape	Round	-
Diameter, D	64	in
Thickness, t	2.25	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Base Plate Chord	41.170	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3	-

Anchor Rods		
Anchor Rod Quantity, N	18	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	58	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	96.0	k
Applied Shear, Vu	0.6	k
Compressive Capacity, ϕPn	259.8	k
Tensile Capacity, ϕRnt	0.370	OK
Interaction Capacity	0.375	OK

External Base Plate		
Chord Length AA	34.785	in
Additional AA	4.500	in
Section Modulus, Z	49.720	in^3
Applied Moment, Mu	793.2	k-ft
Bending Capacity, ϕMn	2684.9	k-ft
Capacity, Mu/ϕMn	0.295	OK
Chord Length AB	33.672	in
Additional AB	4.500	in
Section Modulus, Z	48.312	in^3
Applied Moment, Mu	658.1	k-ft
Bending Capacity, ϕMn	2608.8	k-ft
Capacity, Mu/ϕMn	0.252	OK
Bend Line Length	23.259	in
Additional Bend Line	0.000	in
Section Modulus, Z	29.438	in^3
Applied Moment, Mu	731.4	k-ft
Bending Capacity, ϕMn	1589.6	k-ft
Capacity, Mu/ϕMn	0.460	OK

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

Exhibit E

Mount Analysis

Mount Analysis of Proposed Site Pro 1 RMQP-4096-HK Platform w/ Support Rails and Kickers for American Tower on behalf of T-Mobile
411259 - CT Collinsville CAC 802816 CT
Project #: 12927154

T-Mobile Site ID: CTNH413A

Program: L600

CLS Engineering PLLC Project #41124-12927154-01-MA-R1

July 5, 2019

MOUNT DESCRIPTION	Proposed Site Pro 1 RMQP-4096-HK Platform w/ Support Rails and Kickers at 99 ft AGL
ANTENNA ELEVATION	Nominal Rad. Elevation of 100 ft AGL (Eccentricity of ~1 ft)
SITE DESCRIPTION	120 ft Monopole
SITE ADDRESS	650 Albany Turnpike, Collinsville, CT 06019, Hartford County
GPS COORDINATES	41.850564, -72.948725
ANALYSIS STANDARD	2015 IBC / 2018 Connecticut State Building Code / TIA-222-G
LOADING CRITERIA	125 mph, V_{ult} / 96.8 mph, V_{asd} (3-Second Gust) w/o ice & 50 mph (3-Second Gust) w/ 1" Ice

■ **ANALYSIS RESULT:** **Pass (Replacement)**

MEMBER USAGE	**26%**	**Pass**

Existing mounts to be replaced; see conclusion for details.

Prepared by:
Sean Rock, E.I.

Reviewed and Approved by:
Tyler M. Barker, P.E.

STATE OF CONNECTICUT
TYLER M BARKER
No. 32402
LICENSED
PROFESSIONAL ENGINEER

Tyler M. Barker
CLS Engineering, PLLC
Director of Engineering
PE # 32402 Exp. 1/31/2020
COA # PEC.001833 Exp. 8/14/2019

IdenTrust

Digitally signed by Tyler Barker
DN: c=US, o=Telamon Corporation, ou=A01427E0000016A4525ADF800001D17, cn=Tyler Barker
Date: 2019.07.08 09:07:33 -04'00'

■ INTRODUCTION

The proposed equipment is to be mounted to the proposed Proposed Site Pro 1 RMQP-4096-HK Platform w/ Support Rails and Kickers. 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.

■ STRUCTURAL DOCUMENTS PROVIDED

STRUCTURAL DATA	Site Photos, dated March 06, 2018 Site Pro 1 Drawing Number RMQP-4096-HK, dated July 14, 2014
PREVIOUS ANALYSES	Tower SA by Centek Engineering, Project #12044.C07, dated September 24, 2012
LOADING DATA	ATC Application, Project #12927154, dated April 02, 2019

■ ANALYSIS CRITERIA

STANDARD	2015 IBC / 2018 Connecticut State Building Code / TIA-222-G
BASIC WIND SPEED	125 mph, V_{ult} / 96.8 mph, V_{asd} (3-Second Gust)
BASIC WIND SPEED W/ ICE	50 mph (3-Second Gust) w/ 1" Radial Ice (Escalating)
EXPOSURE CATEGORY	B
MAX. TOPOGRAPHIC FACTOR, K_{zt}	1.00
RISK CATEGORY	II
MAINTENANCE LIVE LOAD	L_M: 500 lb

■ FINAL EQUIPMENT

ELEVATION (ft)		ANTENNAS	
MOUNT	**RAD.**	**#**	**NAME**
99.0	100.0	3	RFS APX16DWV-16DWV-S-E-ACU
		3	Ericsson RADIO 4449 B12/B71
		3	Ericsson KRY 112 489/2
		3	Ericsson KRY 112 144/1
		3	RFS Celwave APXVAARR24_43-U-NA20

■ RESULTS SUMMARY

Existing Mount Usages:

COMPONENT	PEAK USAGE	RESULT
Collar	**135%**	**Fail**
Connections	**118%**	**Fail**
Mount Pipes	97%	Pass
Stand-Off Horizontals	89%	Pass
Face Horizontals	65%	Pass
Vertical Pipe	15%	Pass

Replacement Mount Usages:

COMPONENT	PEAK USAGE	RESULT
Corner Plates	26%	Pass
Collar Reactions	19%	Pass
Mount Pipes	18%	Pass
Reinforcement Members	18%	Pass
Bracing Members	16%	Pass
Stand-Off Horizontals	16%	Pass
Support Rail	16%	Pass
Face Horizontals	9%	Pass

■ CONCLUSION AND RECOMMENDATIONS

According to our structural analysis, the mounts have been found to **PASS PENDING REPLACEMENT**. 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 T-Arm mounts with (1) new Site Pro 1 RMQP-4096-HK Platform w/ Support Rails and Kickers.**
- **All mount pipes are to be installed equidistant from each other as shown in the assembly drawings.**
- **Install existing and proposed antennas such that they are vertically offset 1-ft above the face horizontal member. Install existing and proposed RRUS and TMAs behind the antennas.**

See following Sketches and Site Pro 1 assembly drawing for additional details.

■ ASSUMPTIONS AND 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, CLS Engineering PLLC should be notified immediately to revise results.

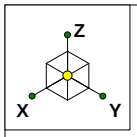
This analysis assumes the following:

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.

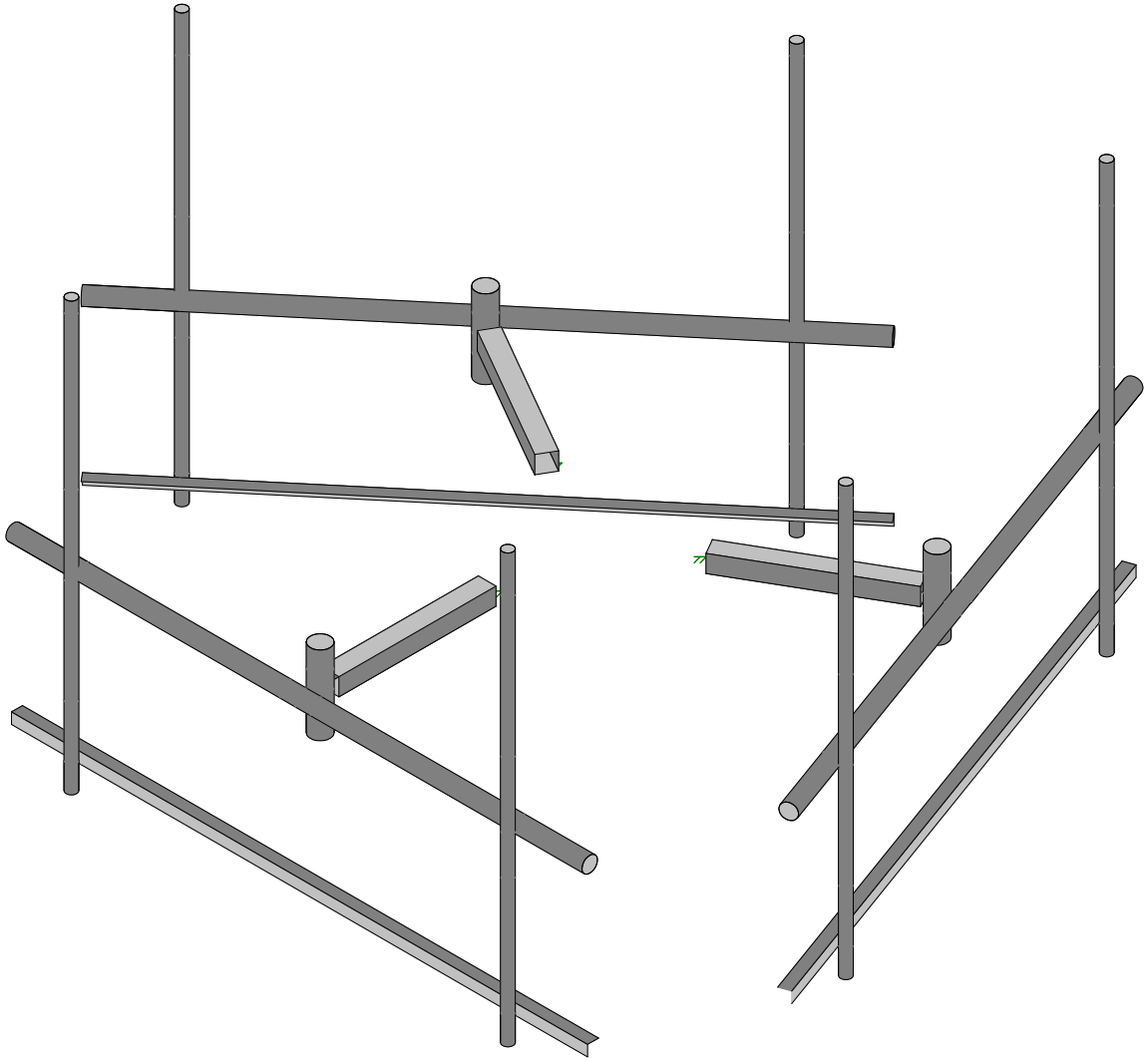
All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of the report. All opinions and conclusions contained herein are subject to revision based upon receipt of new or updated information. All services are provided 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 CLS Engineering PLLC.

All services were performed, results obtained and recommendations made in accordance with generally accepted engineering principles and practices. CLS 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 CLS Engineering PLLC verifies the adequacy of the primary members of the structure. CLS Engineering PLLC provides a limited scope of service in that we cannot verify the adequacy of every weld, bolt, gusset, etc.



Existing T-Arm mount to be modified.



Envelope Only Solution

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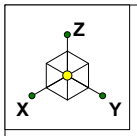

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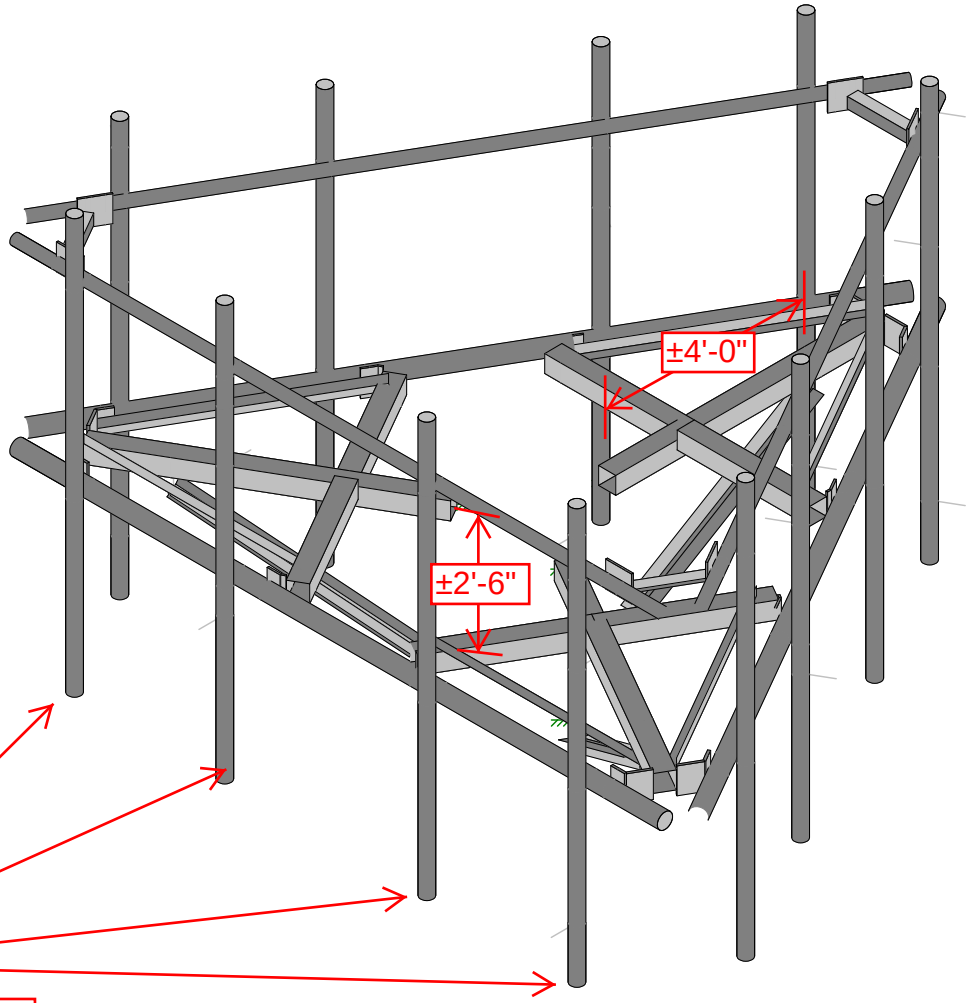

All mount pipes are to be installed equidistant from each other as shown in the assembly drawings.

Envelope Only Solution

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SMR		July 5, 2019 at 10:55 AM
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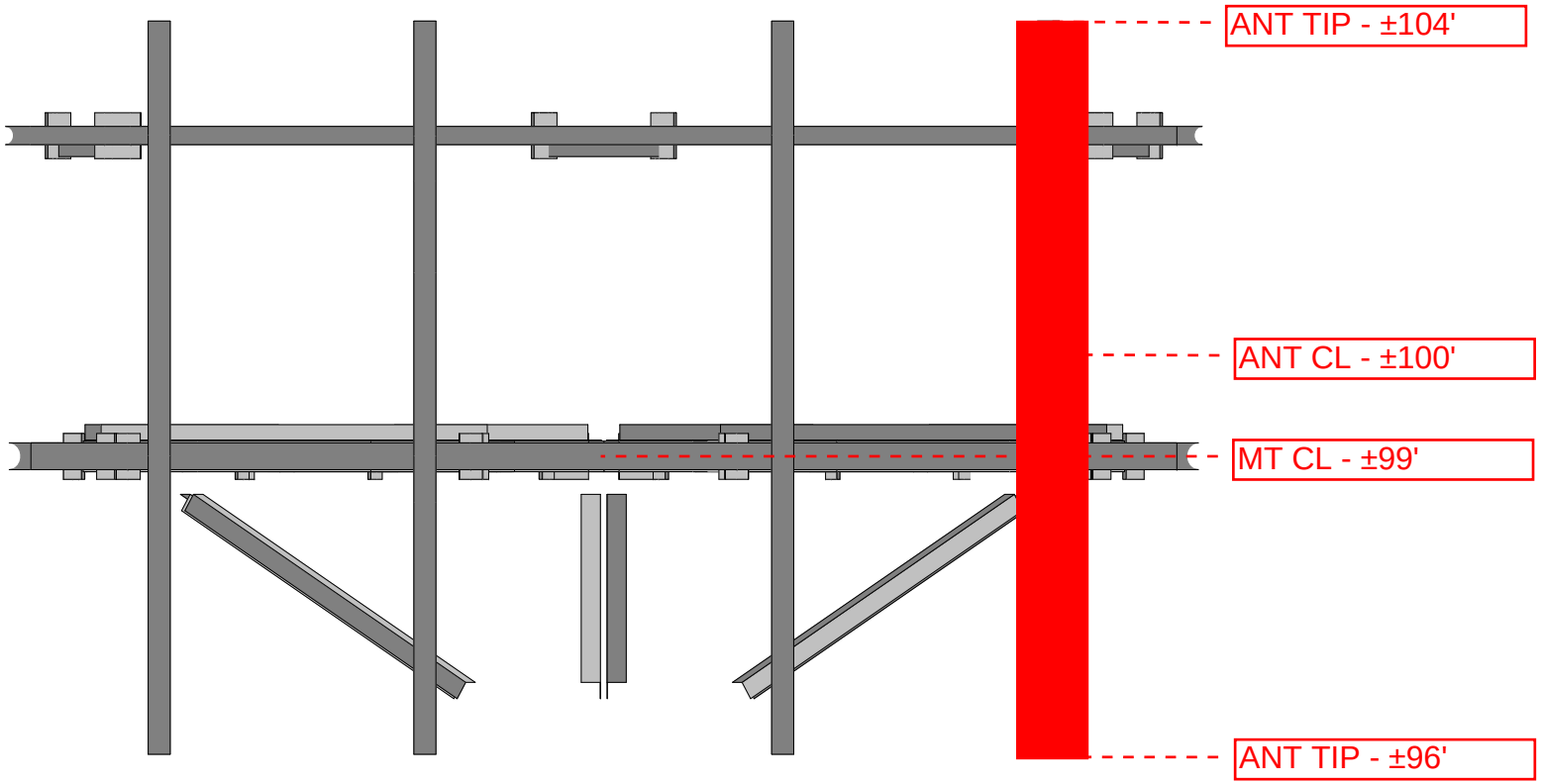

Install existing and proposed antennas such that they are vertically offset 1-ft above the face horizontal member. Install existing and proposed RRUS and TMAs behind the antennas.

Envelope Only Solution

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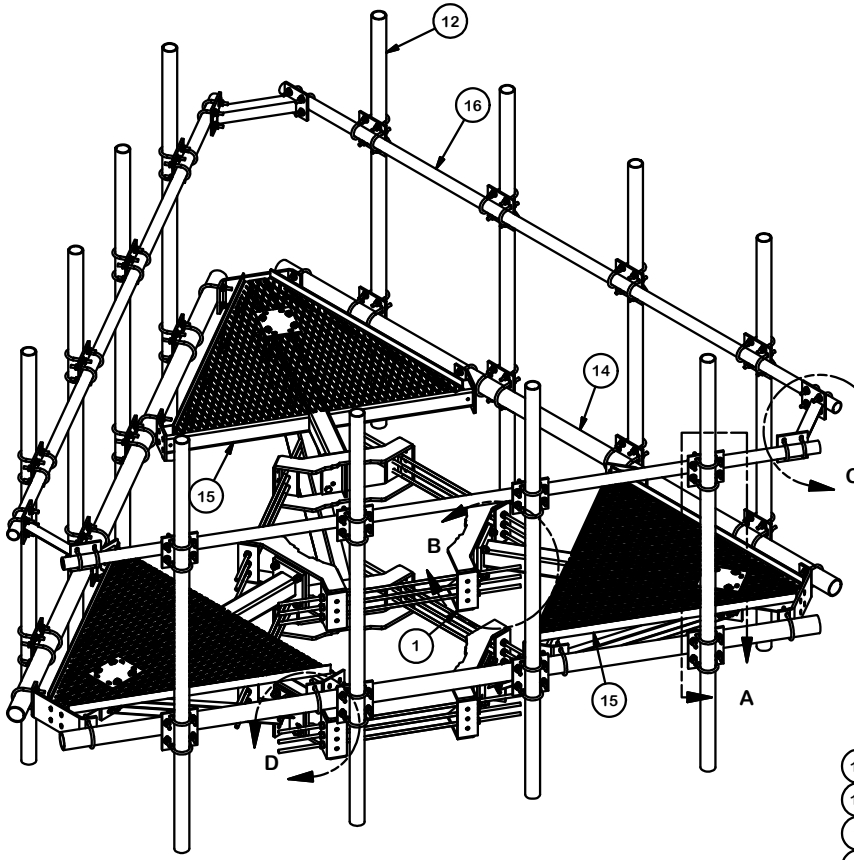
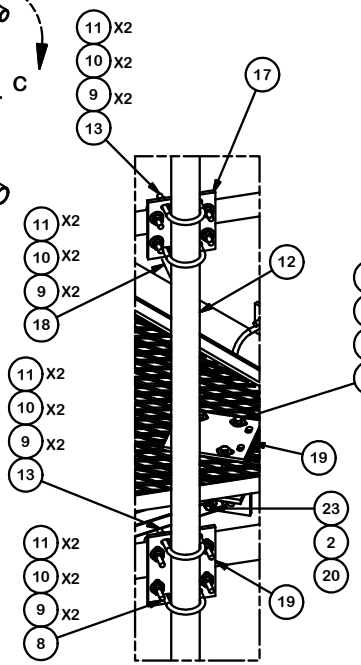
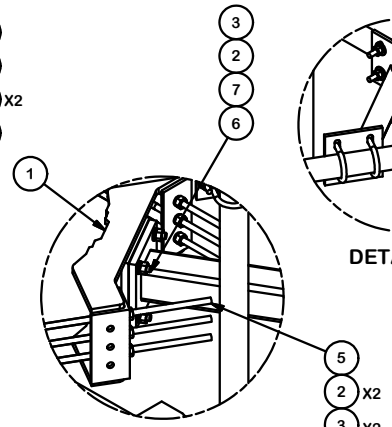




DETAIL A



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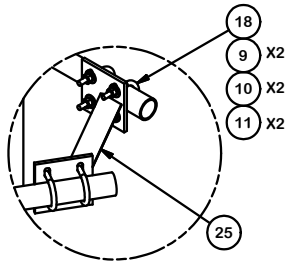
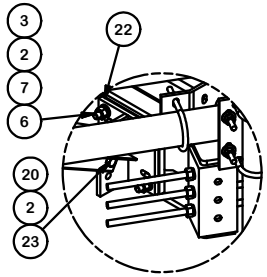


DETAIL C



DETAIL D

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	6	X-LWRM	RING MOUNT WELDMENT		68.16	408.95
2	66	G58LW	5/8" HDG LOCKWASHER		0.03	1.72
3	60	A58NUT	5/8" HDG A325 HEX NUT		0.13	7.78
4	18	G58R-24	5/8" x 24" THREADED ROD (HDG.)		0.55	9.88
5	18	G58R-48	5/8" x 48" THREADED ROD (HDG.)		0.55	9.88
6	24	A58234	5/8" x 2-3/4" HDG A325 HEX BOLT	2 3/4 in	0.36	8.53
7	24	A58FW	5/8" HDG A325 FLATWASHER		0.03	0.82
8	36	X-UB1306	1/2" X 3-5/8" X 6" X 3" U-BOLT (HDG.)		0.73	26.34
9	264	G12FW	1/2" HDG USS FLATWASHER		0.03	8.99
10	252	G12LW	1/2" HDG LOCKWASHER		0.01	3.50
11	252	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	18.03
12	12	P3096	2-7/8" OD X 96" Sch 40 Galvanized Pipe		46.45	557.43
13	48	X-UB1300	1/2" X 3" X 5" X 2" U-BOLT (HDG.)		0.73	35.12
14	3	P3150	3-1/2" X 150" SCH 40 GALVANIZED PIPE	150 in	94.80	284.40
15	3	X-SV196	LOW PROFILE PLATFORM CORNER		212.10	636.31
16	3	P2150	2-3/8" OD X 150" SCH 40 GALVANIZED PIPE	150 in	48.06	144.17
17	12	SCX2	CROSSOVER PLATE	7 in	4.80	57.56
18	36	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.73	26.34
19	15	SCX4	CROSSOVER PLATE	8 1/2 in	6.02	90.32
20	6	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	0.78
21	6	X-253993	PLATFORM REINFORCEMENT KIT ANGLE	52 25/32 in	14.33	85.99
22	6	X-253992	T-BRACKET FOR REINFORCEMENT KIT		13.55	81.27
23	6	G5802	5/8" x 2" HDG HEX BOLT GR5		0.27	1.62
24	12	G12065	1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD	6 1/2 in	0.41	4.91
25	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
					TOTAL WT. #	2645.84

REVISION HISTORY				
REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REPLACED HCP WITH X-AHCP	4488	CEK	7/14/2014

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
12' 6" LOW PROFILE PLATFORM
WITH TWELVE 2-7/8" ANTENNA MOUTING
PIPES, AND HANDRAIL

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
4488	CEK 3/24/2014		RMQP-4096-HK	1 OF 3

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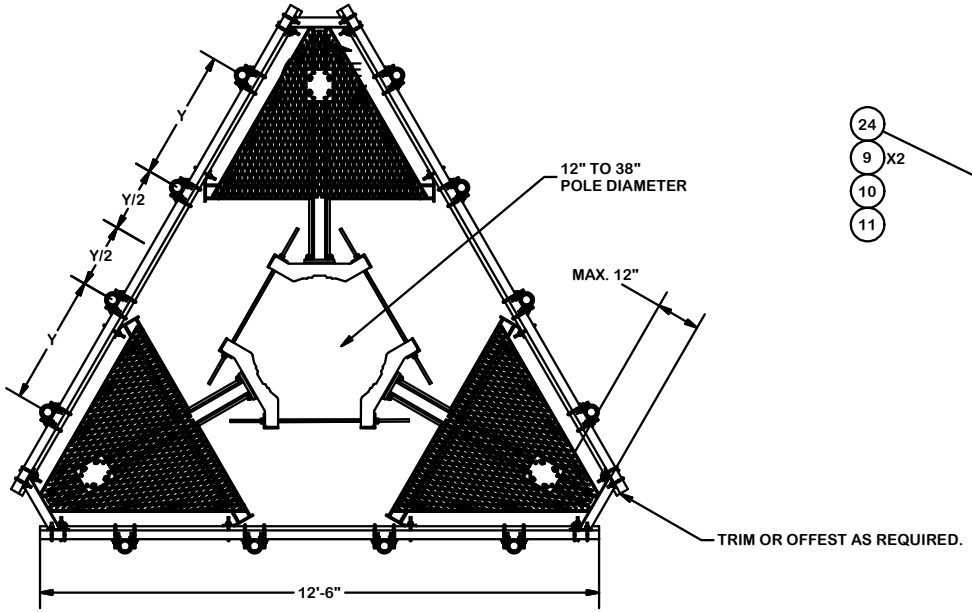
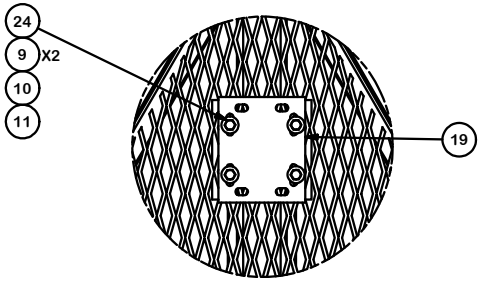
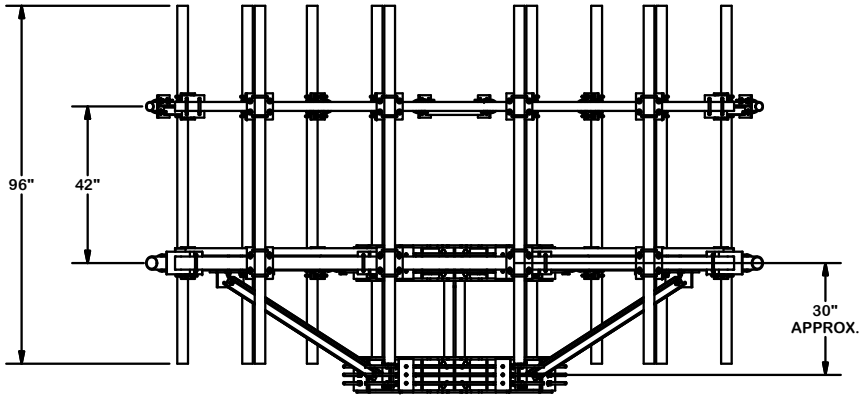
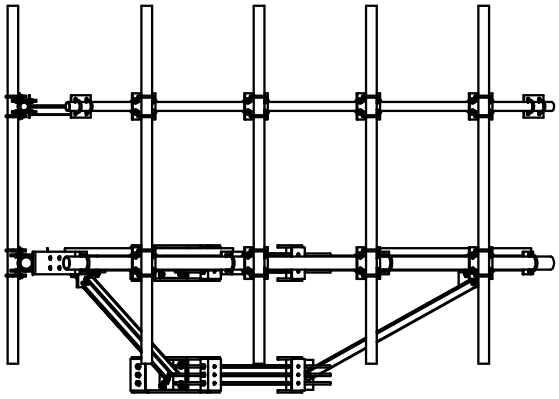




DETAIL E





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CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
4488	CEK 3/24/2014		RMQP-4096-HK

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
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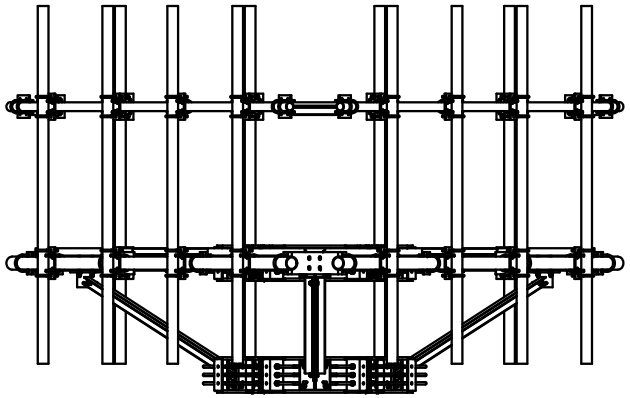

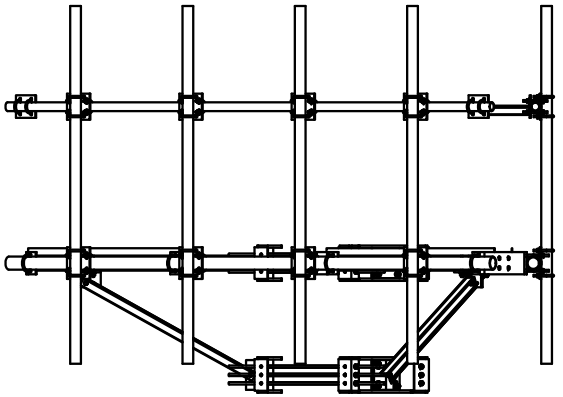

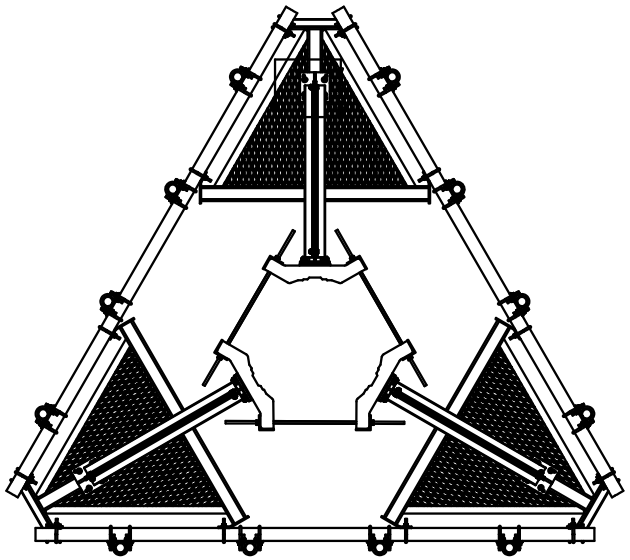

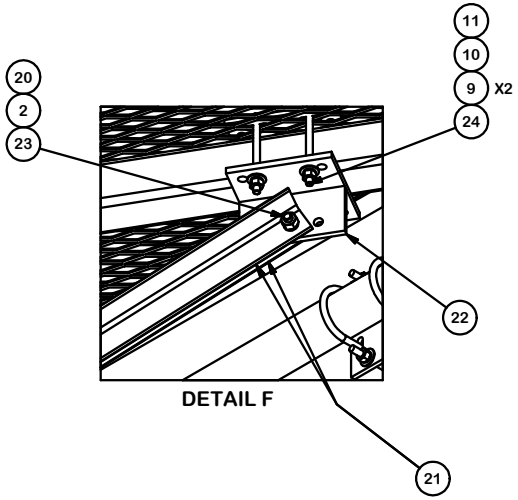

DETAIL F

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A	REPLACED HCP WITH X-AHCP	4488	CEK	7/14/2014

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WITH TWELVE 2-7/8" ANTENNA MOUTING
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CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
4488	CEK 3/24/2014		RMQP-4096-HK

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER	BMC 7/14/2014	RMQP-4096-HK

Wind & Ice Loading

Nominal Mount Elevation (AGL), z_{mount}	98 ft	K_a	0.90
Nominal Rad Elevation (AGL), z_{rad}	100 ft	K_d	0.95
Elevation AMSL (ft)	-	K_e	-
TIA Standard	G	K_z	0.98
Basic Wind Speed, V_{ult} (bare)	125 mph	K_{zt}	1.00
Basic Wind Speed, V (ice)	50 mph	K_s	-
Design Ice Thickness, t_i	1 in	t_{iz}	2.23 in
Exposure Category	B	G_h	1.00
Risk Category	II	q_z (bare)	37.3 psf
Seismic Response Coeff., C_s	-	q_z (ice)	6.0 psf

Live Loading

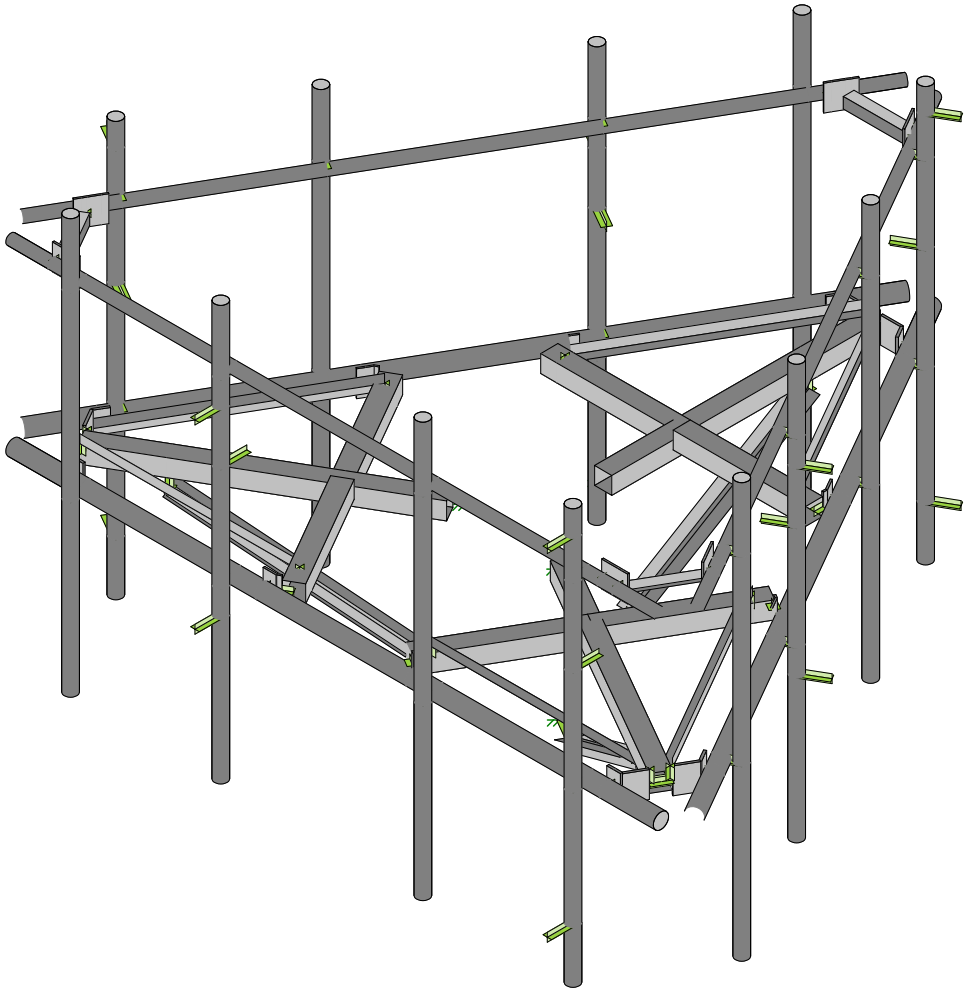
At Mount Pipes, L_M	500 lb
Joint Labels Considered	M1
	M3

Member Distributed Loading

Section Set Label	Shape Label	F_A (lb/ft)		Ice Wt. (lb/ft)
		Bare	Ice	
PRK-1245	L2.5x2.5x3	14.00	2.57	14.33
Offset Tube	HSS4X4X4	22.40	2.67	19.95
Offset End Plate	0.5 x 6 Plate	33.60	5.63	17.35
Offset Side Plate	0.38 X 6 Plate	33.60	5.63	17.14
Platform Horzontal Pipe	PIPE_3.0	11.76	4.28	15.61
Grating Angle	L2x2x3	11.20	3.92	13.78
HRKAngle	L2.5x2.5x4	14.00	2.57	14.33
HRK12-U	PIPE_2.0	7.98	3.67	12.55
HRKPlate	0.38 X 6 Plate	33.60	5.63	17.14
Mount Pipe	PIPE_2.5	9.66	3.94	13.91

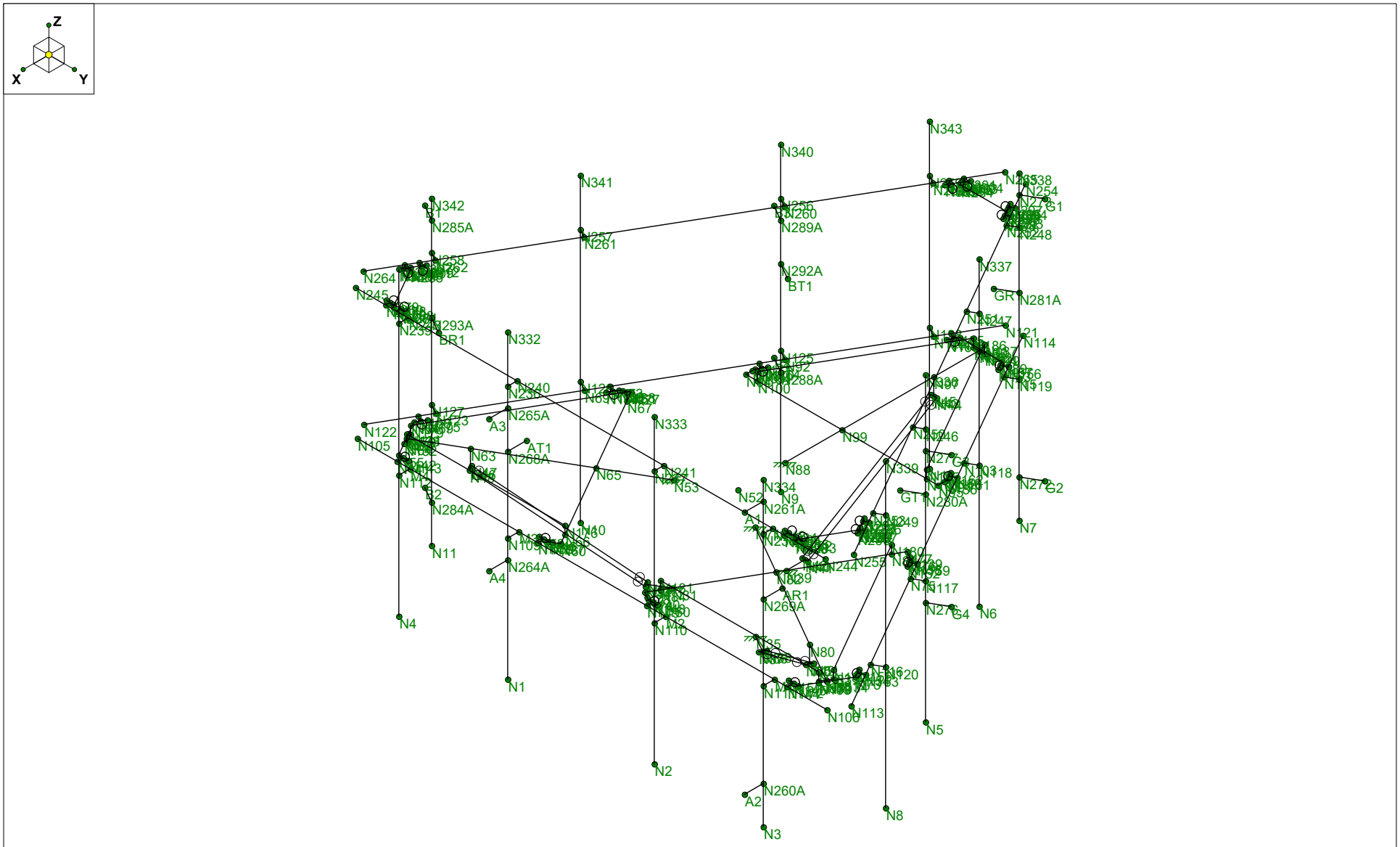
Appurtenances

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) (ft²)		EPA_A (Ice) (ft²)		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
APX16DWV-16DWV-S-E-ACU				☐			1				A3	A4					53	13	3.1	39.6	Flat	177.03	6.08	1.98	8.61	4.29	205.39	66.97	46.56	23.19
APXVAARR24_43-U-NA20				☐			1				A1	A2					0	0	0	153.3	Generic	503.16	14.67	5.32	18.07	8.31	495.81	179.80	97.70	44.96
KRY 112 489/2				☑		0.5	1	1	1		AT1		BT1		GT1		11	6.1	3.94	15.4	Flat	22.67	0.37	0.28	1.08	0.68	12.34	9.45	5.86	3.68
APX16DWV-16DWV-S-E-ACU		20		☐				1					B3	B4			53	13	3.1	39.6	Flat	177.03	6.08	1.98	8.61	4.29	205.39	66.97	46.56	23.19
APXVAARR24_43-U-NA20		20		☐				1					B1	B2			0	0	0	153.3	Generic	503.16	14.67	5.32	18.07	8.31	495.81	179.80	97.70	44.96
KRY 112 144/1				☑		0.5	1	1	1		AT1		BT1		GT1		7	6	3	11	Flat	14.19	0.18	0.18	0.71	0.50	5.91	5.91	3.86	2.71
APX16DWV-16DWV-S-E-ACU		10		☐					1						G3	G4	53	13	3.1	39.6	Flat	177.03	6.08	1.98	8.61	4.29	205.39	66.97	46.56	23.19
APXVAARR24_43-U-NA20		10		☐					1						G1	G2	0	0	0	153.3	Generic	503.16	14.67	5.32	18.07	8.31	495.81	179.80	97.70	44.96
RADIO 4449 B12/B71				☐	0.25		1	1	1		AR1		BR1		GR1		15	13.2	10.4	75	Flat	76.89	0.41	1.30	0.72	2.41	13.94	43.94	3.88	13.05



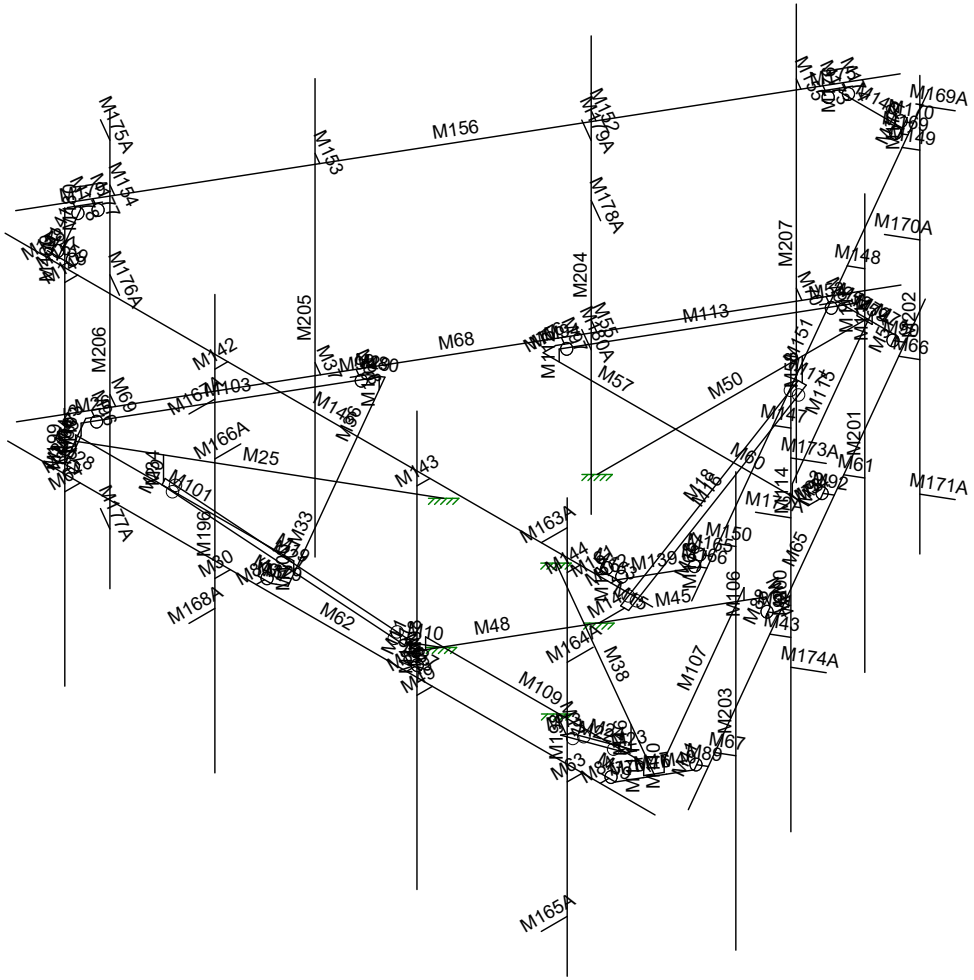
Envelope Only Solution

CLS	41124-12927154-CT Collinsville CAC 802816 CT	SK - 1
SMR		July 5, 2019 at 10:50 AM
41124-12927154-01-MA-R1	Rendered	41124-12927154-01-MA-R1.r3d



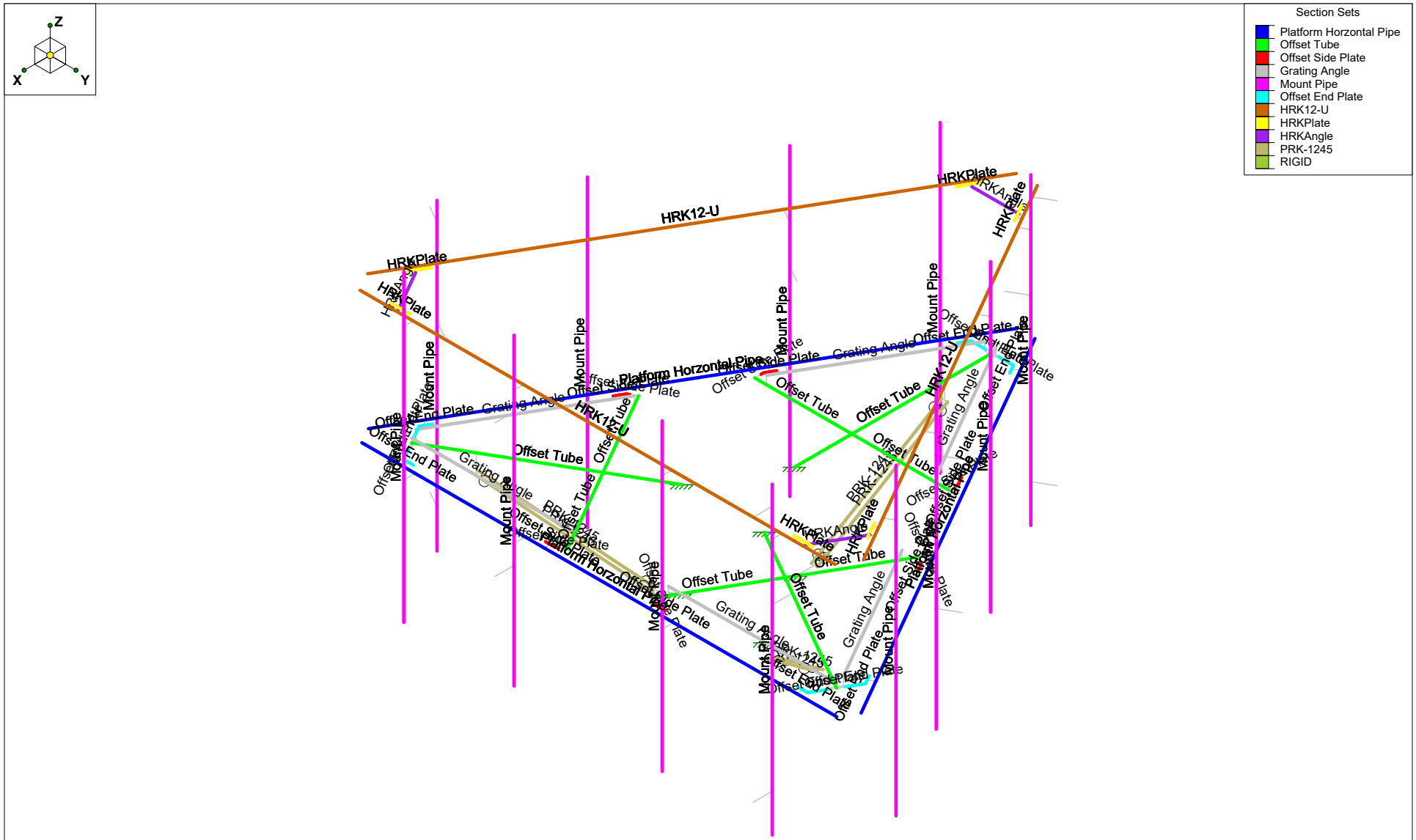
Envelope Only Solution

CLS	41124-12927154-CT Collinsville CAC 802816 CT	SK - 2
SMR		July 5, 2019 at 10:50 AM
41124-12927154-01-MA-R1	Joint Labels	41124-12927154-01-MA-R1.r3d



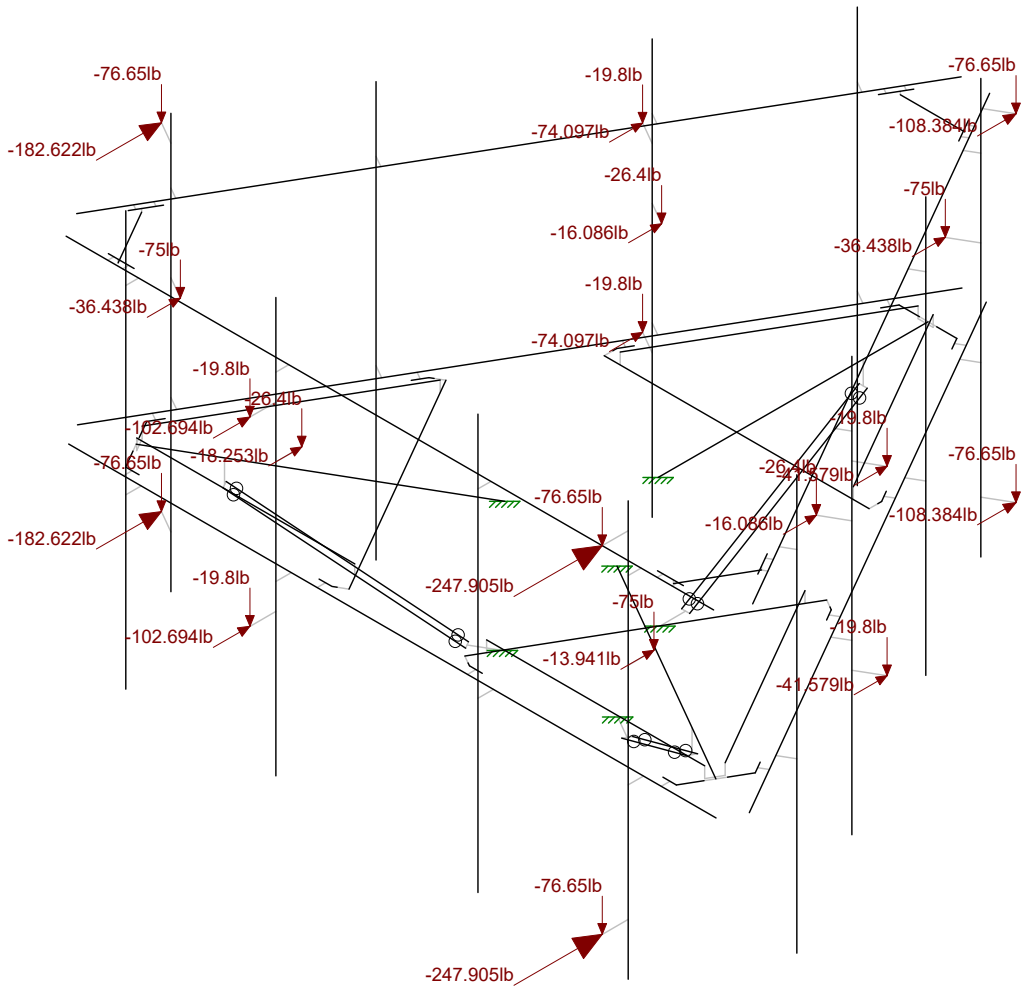
Envelope Only Solution

CLS	41124-12927154-CT Collinsville CAC 802816 CT	SK - 3
SMR		July 5, 2019 at 10:50 AM
41124-12927154-01-MA-R1	Member Labels	41124-12927154-01-MA-R1.r3d



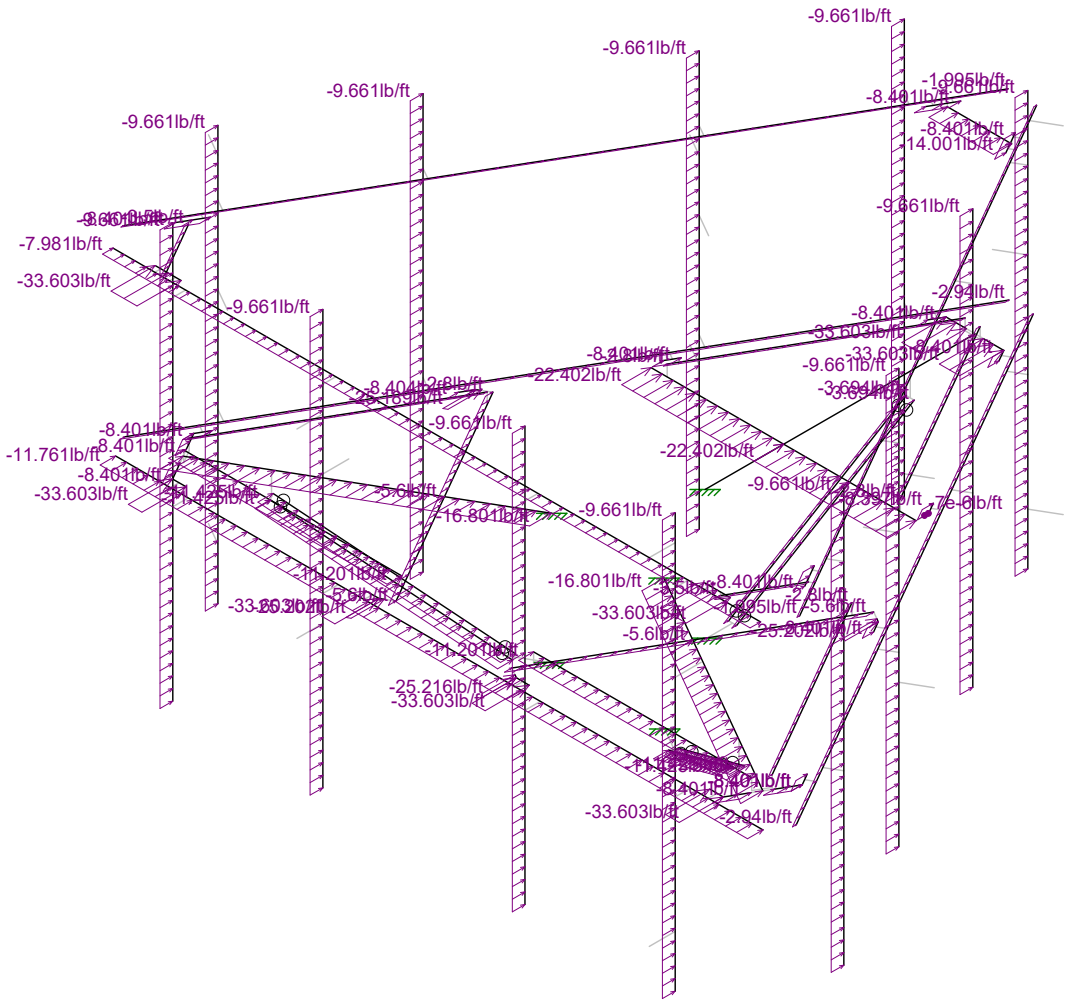
Envelope Only Solution

CLS	41124-12927154-CT Collinsville CAC 802816 CT	SK - 4
SMR		July 5, 2019 at 10:51 AM
41124-12927154-01-MA-R1	Section Sets	41124-12927154-01-MA-R1.r3d



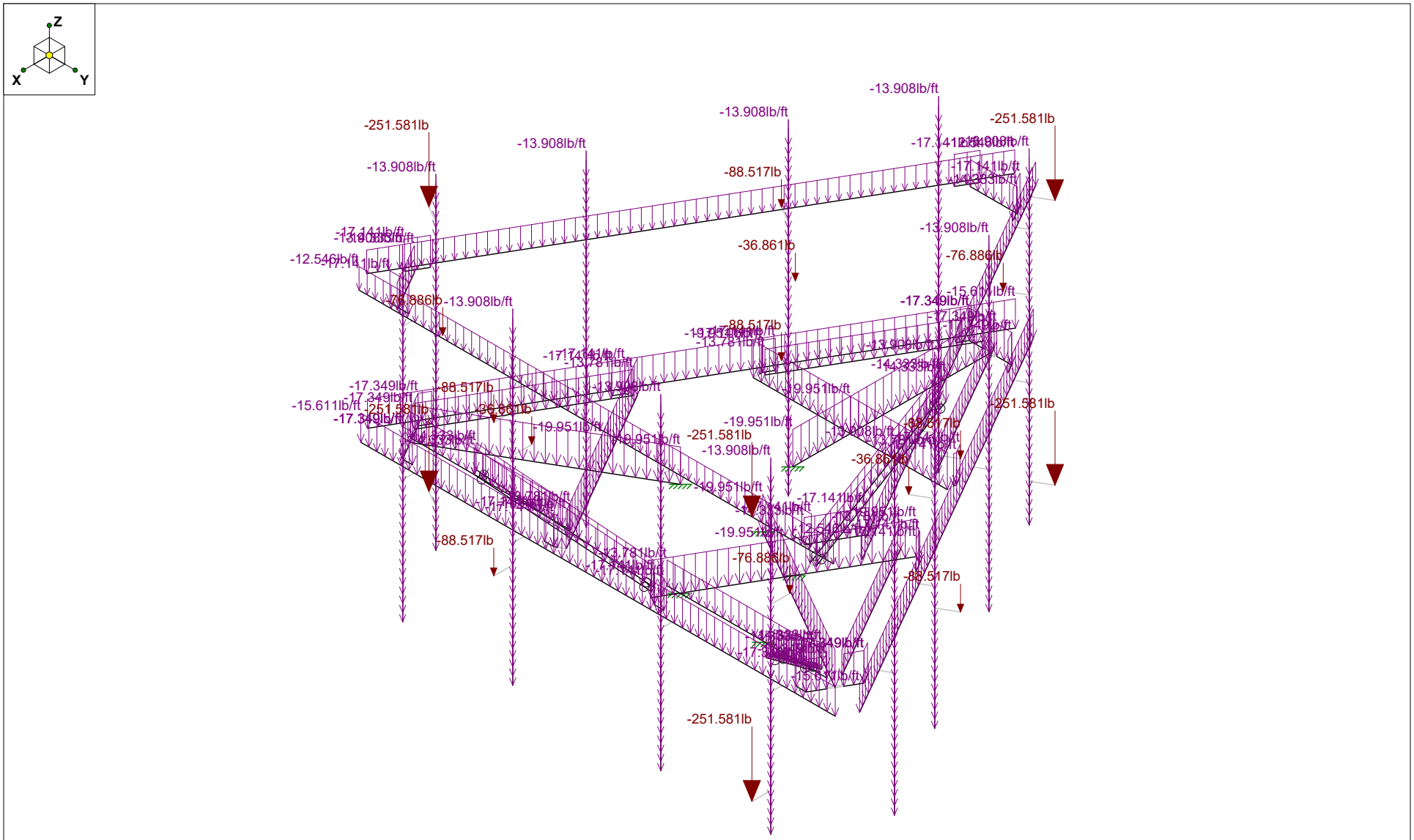
Loads: LC 1, DISPLAY (1.0D + 1.0W_0°)
Envelope Only Solution

CLS	41124-12927154-CT Collinsville CAC 802816 CT	SK - 5
SMR		July 5, 2019 at 10:51 AM
41124-12927154-01-MA-R1	Joint Loads - Dead and Normal Wind	41124-12927154-01-MA-R1.r3d



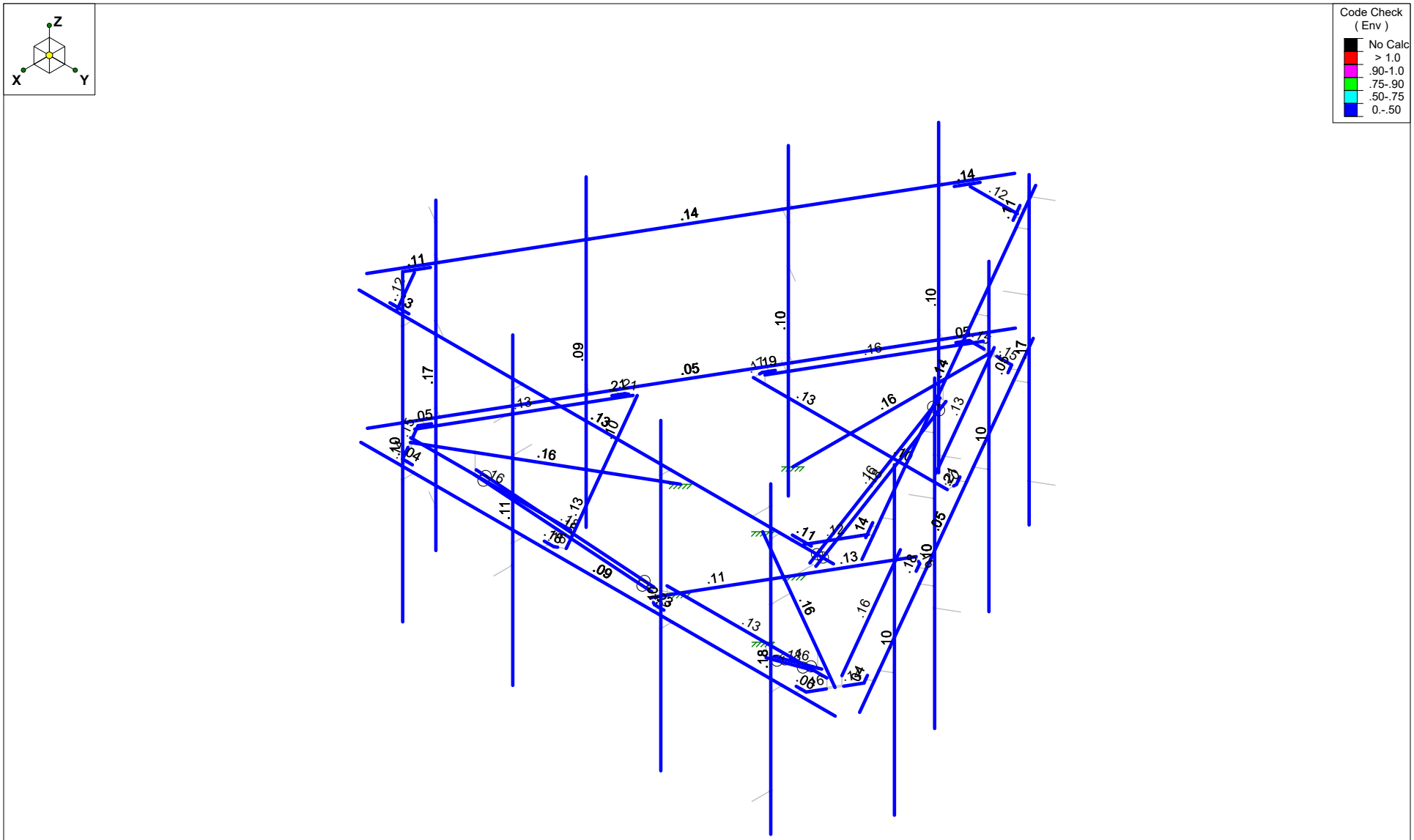
Loads: BLC 4, Structure Wind 0°
Envelope Only Solution

CLS	41124-12927154-CT Collinsville CAC 802816 CT	SK - 6
SMR		July 5, 2019 at 10:51 AM
41124-12927154-01-MA-R1	Distributed Load - Normal Wind	41124-12927154-01-MA-R1.r3d



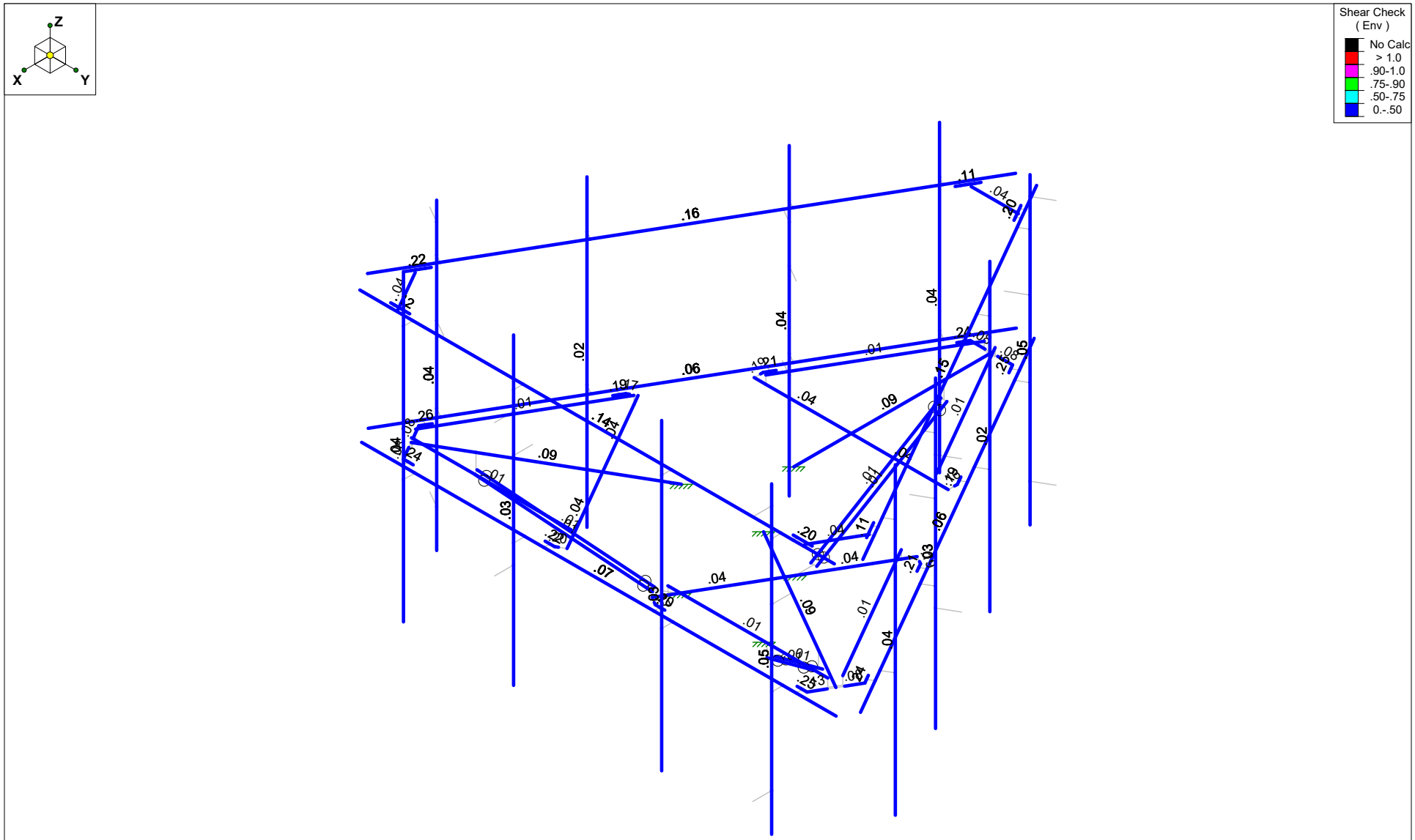
Loads: BLC 2, Ice Dead
Envelope Only Solution

CLS	41124-12927154-CT Collinsville CAC 802816 CT	SK - 7
SMR		July 5, 2019 at 10:51 AM
41124-12927154-01-MA-R1	Ice Dead Loads	41124-12927154-01-MA-R1.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

CLS		SK - 8
SMR	41124-12927154-CT Collinsville CAC 802816 CT	July 5, 2019 at 10:52 AM
41124-12927154-01-MA-R1	Envelope Member Unity Check Results - Bending	41124-12927154-01-MA-R1.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

CLS	41124-12927154-CT Collinsville CAC 802816 CT	SK - 9
SMR		July 5, 2019 at 10:52 AM
41124-12927154-01-MA-R1	Envelope Member Check Results - Shear	41124-12927154-01-MA-R1.r3d

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	Dead	DL			-1	21				
2	Ice Dead	RL				21		72		
4	Structure Wind 0Á	None						70		
5	Structure Wind 30Á	None						114		
6	Structure Wind 45Á	None						144		
7	Structure Wind 60Á	None						140		
8	Structure Wind 90Á	None						57		
9	Structure Wind 120Á	None						140		
10	Structure Wind 135Á	None						144		
11	Structure Wind 150Á	None						114		
12	Structure Wind w/ Ice 0Á	None						70		
13	Structure Wind w/ Ice 30Á	None						118		
14	Structure Wind w/ Ice 45Á	None						144		
15	Structure Wind w/ Ice 60Á	None						140		
16	Structure Wind w/ Ice 90Á	None						59		
17	Structure Wind w/ Ice 120Á	None						140		
18	Structure Wind w/ Ice 135Á	None						144		
19	Structure Wind w/ Ice 150Á	None						118		
20	Antenna Wind 0Á	None				21				
21	Antenna Wind 30Á	None				42				
22	Antenna Wind 45Á	None				42				
23	Antenna Wind 60Á	None				42				
24	Antenna Wind 90Á	None				21				
25	Antenna Wind 120Á	None				42				
26	Antenna Wind 135Á	None				42				
27	Antenna Wind 150Á	None				42				
28	Antenna Wind w/ Ice 0Á	None				21				
29	Antenna Wind w/ Ice 30Á	None				42				
30	Antenna Wind w/ Ice 45Á	None				42				
31	Antenna Wind w/ Ice 60Á	None				42				
32	Antenna Wind w/ Ice 90Á	None				21				
33	Antenna Wind w/ Ice 120Á	None				42				
34	Antenna Wind w/ Ice 135Á	None				42				
35	Antenna Wind w/ Ice 150Á	None				42				
39	Maintenance Live 500 (1)	OL1				1				
40	Maintenance Live 500 (2)	OL2				1				

Load Combinations

	Description	Solve	PDe..	SRSS	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
1	DISPLAY (1.0D + ..	Yes	Y		DL	1	20	1																		
2	1.4D	Yes	Y		DL	1.4																				
3	1.2D + 1.0W_0Á	Yes	Y		DL	1.2	4	1	20	1																
4	1.2D + 1.0W_30Á	Yes	Y		DL	1.2	5	1	21	1																
5	1.2D + 1.0W_45Á	Yes	Y		DL	1.2	6	1	22	1																
6	1.2D + 1.0W_60Á	Yes	Y		DL	1.2	7	1	23	1																
7	1.2D + 1.0W_90Á	Yes	Y		DL	1.2	8	1	24	1																
8	1.2D + 1.0W_120Á	Yes	Y		DL	1.2	9	1	25	1																
9	1.2D + 1.0W_135Á	Yes	Y		DL	1.2	10	1	26	1																
10	1.2D + 1.0W_150Á	Yes	Y		DL	1.2	11	1	27	1																

Load Combinations (Continued)

	Description	Solve	PDe..	SRSS	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
11	1.2D + 1.0W_180Á	Yes	Y		DL	1.2	4	-1	20	-1																
12	1.2D + 1.0W_210Á	Yes	Y		DL	1.2	5	-1	21	-1																
13	1.2D + 1.0W_225Á	Yes	Y		DL	1.2	6	-1	22	-1																
14	1.2D + 1.0W_240Á	Yes	Y		DL	1.2	7	-1	23	-1																
15	1.2D + 1.0W_270Á	Yes	Y		DL	1.2	8	-1	24	-1																
16	1.2D + 1.0W_300Á	Yes	Y		DL	1.2	9	-1	25	-1																
17	1.2D + 1.0W_315Á	Yes	Y		DL	1.2	10	-1	26	-1																
18	1.2D + 1.0W_330Á	Yes	Y		DL	1.2	11	-1	27	-1																
19	1.2D + 1.0Di + 1.0..	Yes	Y		DL	1.2	12	1	28	1	RL	1														
20	1.2D + 1.0Di + 1.0..	Yes	Y		DL	1.2	13	1	29	1	RL	1														
21	1.2D + 1.0Di + 1.0..	Yes	Y		DL	1.2	14	1	30	1	RL	1														
22	1.2D + 1.0Di + 1.0..	Yes	Y		DL	1.2	15	1	31	1	RL	1														
23	1.2D + 1.0Di + 1.0..	Yes	Y		DL	1.2	16	1	32	1	RL	1														
24	1.2D + 1.0Di + 1.0..	Yes	Y		DL	1.2	17	1	33	1	RL	1														
25	1.2D + 1.0Di + 1.0..	Yes	Y		DL	1.2	18	1	34	1	RL	1														
26	1.2D + 1.0Di + 1.0..	Yes	Y		DL	1.2	19	1	35	1	RL	1														
27	1.2D + 1.0Di + 1.0..	Yes	Y		DL	1.2	12	-1	28	-1	RL	1														
28	1.2D + 1.0Di + 1.0..	Yes	Y		DL	1.2	13	-1	29	-1	RL	1														
29	1.2D + 1.0Di + 1.0..	Yes	Y		DL	1.2	14	-1	30	-1	RL	1														
30	1.2D + 1.0Di + 1.0..	Yes	Y		DL	1.2	15	-1	31	-1	RL	1														
31	1.2D + 1.0Di + 1.0..	Yes	Y		DL	1.2	16	-1	32	-1	RL	1														
32	1.2D + 1.0Di + 1.0..	Yes	Y		DL	1.2	17	-1	33	-1	RL	1														
33	1.2D + 1.0Di + 1.0..	Yes	Y		DL	1.2	18	-1	34	-1	RL	1														
34	1.2D + 1.0Di + 1.0..	Yes	Y		DL	1.2	19	-1	35	-1	RL	1														
35	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	4	.061	20	.061	OL1	1.5														
36	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	5	.061	21	.061	OL1	1.5														
37	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	6	.061	22	.061	OL1	1.5														
38	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	7	.061	23	.061	OL1	1.5														
39	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	8	.061	24	.061	OL1	1.5														
40	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	9	.061	25	.061	OL1	1.5														
41	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	10	.061	26	.061	OL1	1.5														
42	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	11	.061	27	.061	OL1	1.5														
43	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	4	-.061	20	-.061	OL1	1.5														
44	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	5	-.061	21	-.061	OL1	1.5														
45	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	6	-.061	22	-.061	OL1	1.5														
46	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	7	-.061	23	-.061	OL1	1.5														
47	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	8	-.061	24	-.061	OL1	1.5														
48	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	9	-.061	25	-.061	OL1	1.5														
49	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	10	-.061	26	-.061	OL1	1.5														
50	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	11	-.061	27	-.061	OL1	1.5														
51	1.2D + 1.5Lm_2 +..	Yes	Y		DL	1.2	4	.061	20	.061	OL2	1.5														
52	1.2D + 1.5Lm_2 +..	Yes	Y		DL	1.2	5	.061	21	.061	OL2	1.5														
53	1.2D + 1.5Lm_2 +..	Yes	Y		DL	1.2	6	.061	22	.061	OL2	1.5														
54	1.2D + 1.5Lm_2 +..	Yes	Y		DL	1.2	7	.061	23	.061	OL2	1.5														
55	1.2D + 1.5Lm_2 +..	Yes	Y		DL	1.2	8	.061	24	.061	OL2	1.5														
56	1.2D + 1.5Lm_2 +..	Yes	Y		DL	1.2	9	.061	25	.061	OL2	1.5														
57	1.2D + 1.5Lm_2 +..	Yes	Y		DL	1.2	10	.061	26	.061	OL2	1.5														
58	1.2D + 1.5Lm_2 +..	Yes	Y		DL	1.2	11	.061	27	.061	OL2	1.5														
59	1.2D + 1.5Lm_2 +..	Yes	Y		DL	1.2	4	-.061	20	-.061	OL2	1.5														
60	1.2D + 1.5Lm_2 +..	Yes	Y		DL	1.2	5	-.061	21	-.061	OL2	1.5														
61	1.2D + 1.5Lm_2 +..	Yes	Y		DL	1.2	6	-.061	22	-.061	OL2	1.5														
62	1.2D + 1.5Lm_2 +..	Yes	Y		DL	1.2	7	-.061	23	-.061	OL2	1.5														

Load Combinations (Continued)

	Description	Solve	PDe..	SRSS	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
63	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	8	-.061	24	-.061	OL2	1.5														
64	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	9	-.061	25	-.061	OL2	1.5														
65	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	10	-.061	26	-.061	OL2	1.5														
66	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	11	-.061	27	-.061	OL2	1.5														

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
3	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Platform Horzontal Pipe	PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
2	Offset Tube	HSS4X4X4	Beam	SquareTu...	A36 Gr.36	Typical	3.37	7.8	7.8	12.8
3	Offset Side Plate	0.38 X 6 Plate	Beam	RECT	A36 Gr.36	Typical	2.28	.027	6.84	.105
4	Grating Angle	L2x2x3	Beam	Single An...	A36 Gr.36	Typical	.722	.271	.271	.009
5	Mount Pipe	PIPE_2.5	Column	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
6	Offset End Plate	0.5 x 6 Plate	Beam	RECT	A36 Gr.36	Typical	3	.063	9	.237
7	HRK12-U	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
8	HRKPlate	0.38 X 6 Plate	Beam	RECT	A36 Gr.36	Typical	2.28	.027	6.84	.105
9	HRKAngle	L2.5x2.5x4	Beam	Single An...	A36 Gr.36	Typical	1.19	.692	.692	.026
10	PRK-1245	L2.5x2.5x3	Beam	Single An...	A36 Gr.36	Typical	.901	.535	.535	.011

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[...	Lcomp...	L-tor...	Kyy	Kzz	Cb	Functi...
1	M16	PRK-1245	47.94			Lbyy						Lateral
2	M18	PRK-1245	47.94			Lbyy						Lateral
3	M19	PRK-1245	47.94			Lbyy						Lateral
4	M21	PRK-1245	47.94			Lbyy						Lateral
5	M22	PRK-1245	47.94			Lbyy						Lateral
6	M24	PRK-1245	47.94			Lbyy						Lateral
7	M25	Offset Tube	62.507									Lateral
8	M26	Offset End Plate	3.122			Lbyy						Lateral
9	M27	Offset End Plate	4.688			Lbyy						Lateral
10	M28	Offset End Plate	3.122			Lbyy						Lateral
11	M29	Offset Side Plate	.875			Lbyy						Lateral
12	M31	Offset Side Plate	3			Lbyy						Lateral
13	M32	Offset Side Plate	.875			Lbyy						Lateral
14	M33	Offset Tube	30.688			Lbyy						Lateral
15	M36	Offset Tube	30.687			Lbyy						Lateral
16	M38	Offset Tube	62.507									Lateral
17	M39	Offset End Plate	3.122			Lbyy						Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[...	Lcomp...	L-tor...	Kyy	Kzz	Cb	Functi...
18	M40	Offset End Plate	4.688			Lbyy						Lateral
19	M41	Offset End Plate	3.122			Lbyy						Lateral
20	M42	Offset Side Plate	.875			Lbyy						Lateral
21	M44	Offset Side Plate	.875			Lbyy						Lateral
22	M45	Offset Tube	30.688			Lbyy						Lateral
23	M48	Offset Tube	30.687			Lbyy						Lateral
24	M50	Offset Tube	62.507									Lateral
25	M51	Offset End Plate	3.122			Lbyy						Lateral
26	M52	Offset End Plate	4.688			Lbyy						Lateral
27	M53	Offset End Plate	3.122			Lbyy						Lateral
28	M54	Offset Side Plate	.875			Lbyy						Lateral
29	M56	Offset Side Plate	.875			Lbyy						Lateral
30	M57	Offset Tube	30.688			Lbyy						Lateral
31	M60	Offset Tube	30.687			Lbyy						Lateral
32	M62	Platform Horzontal Pipe	150			Lbyy						Lateral
33	M65	Platform Horzontal Pipe	150			Lbyy						Lateral
34	M68	Platform Horzontal Pipe	150			Lbyy						Lateral
35	M71	Offset End Plate	4.688			Lbyy						Lateral
36	M73	Offset End Plate	4.688			Lbyy						Lateral
37	M75	Offset End Plate	4.688			Lbyy						Lateral
38	M87	Offset Side Plate	3			Lbyy						Lateral
39	M88	Offset Side Plate	3			Lbyy						Lateral
40	M93	Offset Side Plate	3			Lbyy						Lateral
41	M94	Offset Side Plate	3			Lbyy						Lateral
42	M99	Offset Side Plate	3			Lbyy						Lateral
43	M101	Grating Angle	50.542			Lbyy						Lateral
44	M103	Grating Angle	50.542			Lbyy						Lateral
45	M107	Grating Angle	50.542			Lbyy						Lateral
46	M109	Grating Angle	50.542			Lbyy						Lateral
47	M113	Grating Angle	50.542			Lbyy						Lateral
48	M115	Grating Angle	50.542			Lbyy						Lateral
49	M139	HRKAngle	14.902			Lbyy						Lateral
50	M140	HRKAngle	14.902			Lbyy						Lateral
51	M141	HRKAngle	14.902			Lbyy						Lateral
52	M146	HRK12-U	150			Lbyy						Lateral
53	M151	HRK12-U	150			Lbyy						Lateral
54	M156	HRK12-U	150			Lbyy						Lateral
55	M159	HRKPlate	6			Lbyy						Lateral
56	M163	HRKPlate	6			Lbyy						Lateral
57	M167	HRKPlate	6			Lbyy						Lateral
58	M171	HRKPlate	6			Lbyy						Lateral
59	M175	HRKPlate	6			Lbyy						Lateral
60	M179	HRKPlate	6			Lbyy						Lateral
61	M196	Mount Pipe	96			Lbyy						Lateral
62	M197	Mount Pipe	96			Lbyy						Lateral
63	M198	Mount Pipe	96			Lbyy						Lateral
64	M199	Mount Pipe	96			Lbyy						Lateral
65	M200	Mount Pipe	96			Lbyy						Lateral
66	M201	Mount Pipe	96			Lbyy						Lateral
67	M202	Mount Pipe	96			Lbyy						Lateral
68	M203	Mount Pipe	96			Lbyy						Lateral
69	M204	Mount Pipe	96			Lbyy						Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[...	Lcomp...	L-tor...	Kyy	Kzz	Cb	Functi...
70	M205	Mount Pipe	96			Lbyy						Lateral
71	M206	Mount Pipe	96			Lbyy						Lateral
72	M207	Mount Pipe	96			Lbyy						Lateral

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N53	max	625.414	3	3486.105	30	795.503	22	-191.783	12	73.461	17	1583.048	18
2		min	-2045.675	27	-922.798	6	197.339	1	-933.777	19	-735.878	57	-1580.225	10
3	N88	max	4066.458	19	1010.76	15	796.331	27	212.444	6	1011.259	27	1504.096	7
4		min	-1242.655	11	-998.5	7	192.607	51	-140.028	14	199.022	3	-1501.715	15
5	N71	max	694.582	3	1027.003	16	795.246	32	842.256	19	-49.945	4	1400.072	12
6		min	-2019.119	25	-3523.243	24	224.168	11	94.839	11	-631.017	29	-1397.474	4
7	N31	max	1931.957	30	-507.507	6	2386.626	30	-156.794	5	-84.688	6	94.12	18
8		min	292.991	6	-3345.162	30	356.656	6	-1039.763	30	-585.703	30	-80.615	10
9	N39	max	-538.386	11	54.902	15	2391.419	19	37.916	7	1195.709	19	90.584	7
10		min	-3870.986	19	-54.925	7	328.149	11	-29.609	15	164.074	11	-77.098	15
11	N35	max	1933.225	24	3349.49	24	2389.247	24	1028.16	24	-88.812	16	86.533	12
12		min	280.033	16	485.035	16	341.129	16	145.675	16	-608.422	24	-73.022	4
13	Totals:	max	3824.577	3	3639.271	15	9152.888	22						
14		min	-3824.578	11	-3639.268	7	2387.103	1						

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Member	Shape	Code Ch...	Loc[in]	LC	Shear ...	Loc[in]	...	LC	phi*Pnc ..	phi*Pnt [..	phi*Mn y-y [...	phi*Mn z...	Cb	Eqn
1	M26	0.5 x 6 Pl...	.053	0	7	.255	0	y	33	94834.5...	97200	1012.5	12150	3.088	H1-1b
2	M39	0.5 x 6 Pl...	.057	0	18	.255	0	y	28	94834.5...	97200	1012.5	12150	3.085	H1-1b
3	M51	0.5 x 6 Pl...	.054	0	12	.254	0	y	22	94834.5...	97200	1012.5	12150	3.087	H1-1b
4	M28	0.5 x 6 Pl...	.043	0	12	.243	0	y	26	94834.5...	97200	1012.5	12150	3.099	H1-1b
5	M41	0.5 x 6 Pl...	.044	1.479	8	.243	0	y	21	94834.5...	97200	1012.5	12150	3.098	H1-1b
6	M53	0.5 x 6 Pl...	.046	1.479	3	.241	0	y	31	94834.5...	97200	1012.5	12150	3.099	H1-1b
7	M31	0.38 X 6 ...	.178	1.5	4	.217	3	y	11	71019.8...	73872	584.82	9234	3.169	H1-1b
8	M179	0.38 X 6 ...	.114	2.368	11	.216	2.211	y	10	63107.4...	73872	584.82	9234	2.04	H1-1b
9	M94	0.38 X 6 ...	.186	1.5	10	.209	3	y	16	71019.8...	73872	584.82	9234	3.169	H1-1b
10	M88	0.38 X 6 ...	.179	1.5	15	.208	3	y	5	71019.8...	73872	584.82	9234	3.169	H1-1b
11	M171	0.38 X 6 ...	.108	2.368	16	.204	2.211	y	15	63107.4...	73872	584.82	9234	2.04	H1-1b
12	M32	0.38 X 6 ...	.161	.875	4	.198	.875	y	3	73624.9...	73872	584.82	9234	1.299	H1-1b
13	M87	0.38 X 6 ...	.225	1.5	18	.196	3	y	11	71020.2...	73872	584.82	9234	3.163	H1-1b
14	M163	0.38 X 6 ...	.107	2.368	5	.196	2.211	y	4	63107.4...	73872	584.82	9234	2.038	H1-1b
15	M99	0.38 X 6 ...	.207	1.5	7	.194	3	y	16	71020.2...	73872	584.82	9234	3.165	H1-1b
16	M56	0.38 X 6 ...	.173	.875	10	.192	.875	y	8	73624.9...	73872	584.82	9234	1.275	H1-1b
17	M44	0.38 X 6 ...	.164	.875	15	.191	.875	y	13	73624.9...	73872	584.82	9234	1.319	H1-1b
18	M93	0.38 X 6 ...	.213	1.5	12	.190	3	y	6	71020.2...	73872	584.82	9234	3.164	H1-1b
19	M42	0.38 X 6 ...	.222	.875	18	.171	.875	y	3	73624.9...	73872	584.82	9234	1.156	H1-1b
20	M29	0.38 X 6 ...	.208	.875	7	.169	.875	y	8	73624.9...	73872	584.82	9234	1.185	H1-1b
21	M54	0.38 X 6 ...	.203	.875	12	.165	.875	y	14	73624.9...	73872	584.82	9234	1.173	H1-1b
22	M156	PIPE_2.0	.144	134.2...	18	.160	138.1...		10	6295.422	32130	1871.625	1871.625	3.899	H1-1b
23	M151	PIPE_2.0	.135	134.2...	7	.150	138.1...		15	6295.422	32130	1871.625	1871.625	3.874	H1-1b
24	M146	PIPE_2.0	.131	134.2...	12	.145	138.1...		4	6295.422	32130	1871.625	1871.625	3.825	H1-1b
25	M75	0.5 x 6 Pl...	.163	0	18	.129	0	y	43	91950.0...	97200	1012.5	12150	1.372	H1-1b
26	M159	0.38 X 6 ...	.133	2.368	16	.119	1.421	y	10	63107.4...	73872	584.82	9234	2.014	H1-1b

Envelope AISC 14th(360-10): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Ch...	Loc[in]	LC	Shear ...	Loc[in]	...	LC	phi*Pnc ..	phi*Pnt [..	phi*Mn y-y [...	phi*Mn z...	Cb	Eqn
27	M175	0.38 X 6 ...	.140	2.368	6	.113	1.421	y	15	63107.4...	73872	584.82	9234	2.014	H1-1b
28	M167	0.38 X 6 ...	.142	2.368	11	.110	1.421	y	4	63107.4...	73872	584.82	9234	2.014	H1-1b
29	M25	HSS4X4X4	.164	47.702	29	.095	47.702	y	33	99903.4...	109188	12663	12663	3.796	H1-1b
30	M38	HSS4X4X4	.164	47.702	24	.094	47.702	y	27	99903.4...	109188	12663	12663	3.804	H1-1b
31	M50	HSS4X4X4	.164	47.702	19	.094	47.702	y	22	99903.4...	109188	12663	12663	3.806	H1-1b
32	M27	0.5 x 6 Pl...	.140	4.688	12	.085	4.688	y	10	91950.0...	97200	1012.5	12150	1.26	H1-1b
33	M71	0.5 x 6 Pl...	.154	0	12	.083	0	y	32	91950.0...	97200	1012.5	12150	1.407	H1-1b
34	M73	0.5 x 6 Pl...	.152	0	7	.083	0	y	27	91950.0...	97200	1012.5	12150	1.43	H1-1b
35	M40	0.5 x 6 Pl...	.140	4.688	7	.079	4.688	y	4	91950.0...	97200	1012.5	12150	1.261	H1-1b
36	M52	0.5 x 6 Pl...	.146	4.688	18	.079	4.688	y	15	91950.0...	97200	1012.5	12150	1.26	H1-1b
37	M62	PIPE 3.0	.086	51.316	64	.070	134.2...		43	28250.5...	65205	5748.75	5748.75	3.2	H1-1b
38	M65	PIPE 3.0	.051	90.789	7	.059	134.2...		32	28250.5...	65205	5748.75	5748.75	3.626	H1-1b
39	M68	PIPE 3.0	.054	90.789	18	.059	134.2...		27	28250.5...	65205	5748.75	5748.75	3.772	H1-1b
40	M198	PIPE 2.5	.176	58.105	3	.048	32.842		10	30038.4...	50715	3596.25	3596.25	2.518	H1-1b
41	M202	PIPE 2.5	.173	58.105	14	.046	55.579		5	30038.4...	50715	3596.25	3596.25	1.943	H1-1b
42	M206	PIPE 2.5	.175	58.105	9	.044	55.579		16	30038.4...	50715	3596.25	3596.25	1.795	H1-1b
43	M199	PIPE 2.5	.095	55.579	32	.041	55.579		10	30038.4...	50715	3596.25	3596.25	2.029	H1-1b
44	M57	HSS4X4X4	.127	30.688	34	.040	30.688	y	26	106874....	109188	12663	12663	1.717	H1-1b
45	M33	HSS4X4X4	.127	30.688	28	.040	30.688	y	21	106874....	109188	12663	12663	1.718	H1-1b
46	M45	HSS4X4X4	.127	30.688	23	.039	30.688	y	31	106874....	109188	12663	12663	1.718	H1-1b
47	M203	PIPE 2.5	.095	55.579	27	.039	55.579		5	30038.4...	50715	3596.25	3596.25	1.412	H1-1b
48	M207	PIPE 2.5	.096	55.579	21	.038	55.579		15	30038.4...	50715	3596.25	3596.25	2.208	H1-1b
49	M60	HSS4X4X4	.105	0	20	.038	0	y	29	106874....	109188	12663	12663	1.697	H1-1b
50	M48	HSS4X4X4	.105	0	26	.038	0	y	19	106874....	109188	12663	12663	1.695	H1-1b
51	M139	L2.5x2.5x4	.121	14.902	26	.038	14.902	y	11	36663.9	38556	1113.554	2537.388	1.362	H2-1
52	M36	HSS4X4X4	.105	0	31	.038	0	y	24	106874....	109188	12663	12663	1.698	H1-1b
53	M140	L2.5x2.5x4	.122	14.902	5	.037	14.902	y	6	36663.9	38556	1113.554	2537.388	2.225	H2-1
54	M141	L2.5x2.5x4	.118	14.902	31	.037	14.902	y	17	36663.9	38556	1113.554	2537.388	1.333	H2-1
55	M204	PIPE 2.5	.098	55.579	6	.036	55.579		18	30038.4...	50715	3596.25	3596.25	1.993	H1-1b
56	M200	PIPE 2.5	.102	55.579	11	.035	55.579		7	30038.4...	50715	3596.25	3596.25	2.424	H1-1b
57	M196	PIPE 2.5	.107	55.579	17	.034	55.579		12	30038.4...	50715	3596.25	3596.25	1.872	H1-1b
58	M197	PIPE 2.5	.102	55.579	18	.025	55.579		18	30038.4...	50715	3596.25	3596.25	1.842	H1-1b
59	M205	PIPE 2.5	.094	55.579	9	.024	55.579		7	30038.4...	50715	3596.25	3596.25	1.948	H1-1b
60	M201	PIPE 2.5	.098	55.579	11	.024	55.579		12	30038.4...	50715	3596.25	3596.25	2.534	H1-1b
61	M101	L2x2x3	.163	50.542	34	.012	50.542	y	34	9618.888	23392.8	557.717	1239.29	2.762	H2-1
62	M113	L2x2x3	.163	50.542	23	.012	50.542	y	23	9618.888	23392.8	557.717	1239.29	2.764	H2-1
63	M107	L2x2x3	.162	50.542	28	.012	50.542	y	28	9618.888	23392.8	557.717	1239.29	2.764	H2-1
64	M109	L2x2x3	.132	0	10	.007	50.542	z	25	9618.956	23392.8	557.717	1196.259	1.813	H2-1
65	M115	L2x2x3	.132	0	5	.007	50.542	z	20	9618.956	23392.8	557.717	1205.363	1.901	H2-1
66	M103	L2x2x3	.126	0	16	.007	50.542	z	31	9618.956	23392.8	557.717	1216.533	2.018	H2-1
67	M22	L2.5x2.5x3	.183	23.97	27	.005	0	y	26	17206.7...	29192.4	872.574	1753.654	1.137	H2-1
68	M24	L2.5x2.5x3	.161	23.97	21	.005	0	z	26	17206.7...	29192.4	872.574	1753.654	1.137	H2-1
69	M19	L2.5x2.5x3	.183	23.97	33	.005	47.94	y	31	17206.7...	29192.4	872.574	1753.654	1.137	H2-1
70	M21	L2.5x2.5x3	.162	23.97	27	.005	0	z	31	17206.7...	29192.4	872.574	1753.654	1.137	H2-1
71	M16	L2.5x2.5x3	.183	23.97	22	.005	47.94	y	20	17206.7...	29192.4	872.574	1753.654	1.137	H2-1
72	M18	L2.5x2.5x3	.161	23.97	32	.005	47.94	z	20	17206.7...	29192.4	872.574	1753.654	1.137	H2-1

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CTNH413A

Albany Turnpike Verizon
650 Albany Turnpike
Canton, Connecticut 06019

May 30, 2019

EBI Project Number: 6219001993

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**13.57%**

21 B Street, Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

May 30, 2019

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

Emissions Analysis for Site: CTNH413A - Albany Turnpike Verizon

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **650 Albany Turnpike** in **Canton, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 650 Albany Turnpike in Canton, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

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

4) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

5) 2 UMTS channels (AWS Band - 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

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

8) The antennas used in this modeling are the RFS APX16DWV-16DWV-S-E-A20 for the 1900 MHz / 2100 MHz / 1900 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz channel(s) in Sector A, the RFS APX16DWV-16DWV-S-E-A20 for the 1900 MHz / 2100 MHz / 1900 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz channel(s) in Sector B, the RFS APX16DWV-16DWV-S-E-A20 for the 1900 MHz / 2100 MHz / 1900 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antenna mounting height centerline of the proposed antennas is 100 feet above ground level (AGL).

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

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APX16DWV-16DWV-S-E-A20	Make / Model:	RFS APX16DWV-16DWV-S-E-A20	Make / Model:	RFS APX16DWV-16DWV-S-E-A20
Frequency Bands:	1900 MHz / 2100 MHz / 1900 MHz	Frequency Bands:	1900 MHz / 2100 MHz / 1900 MHz	Frequency Bands:	1900 MHz / 2100 MHz / 1900 MHz
Gain:	15.9 dBd / 15.9 dBd / 15.9 dBd	Gain:	15.9 dBd / 15.9 dBd / 15.9 dBd	Gain:	15.9 dBd / 15.9 dBd / 15.9 dBd
Height (AGL):	100 feet	Height (AGL):	100 feet	Height (AGL):	100 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	300 Watts	Total TX Power (W):	300 Watts	Total TX Power (W):	300 Watts
ERP (W):	11,671.35	ERP (W):	11,671.35	ERP (W):	11,671.35
Antenna A1 MPE %:	**4.20%**	Antenna B1 MPE %:	**4.20%**	Antenna C1 MPE %:	**4.20%**
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 700 MHz	Frequency Bands:	600 MHz / 700 MHz	Frequency Bands:	600 MHz / 700 MHz
Gain:	12.95 dBd / 13.35 dBd	Gain:	12.95 dBd / 13.35 dBd	Gain:	12.95 dBd / 13.35 dBd
Height (AGL):	100 feet	Height (AGL):	100 feet	Height (AGL):	100 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts
ERP (W):	2,481.08	ERP (W):	2,481.08	ERP (W):	2,481.08
Antenna A2 MPE %:	**2.06%**	Antenna B2 MPE %:	**2.06%**	Antenna C2 MPE %:	**2.06%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	6.26%
Verizon	2.53%
Metro PCS	0.96%
AT&T	3.82%
Site Total MPE % :	13.57%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	6.26%
T-Mobile Sector B Total:	6.26%
T-Mobile Sector C Total:	6.26%
Site Total MPE % :	13.57%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 1900 MHz GSM	4	1167.14	100.0	16.78	1900 MHz GSM	1000	1.68%
T-Mobile 2100 MHz UMTS	2	1167.14	100.0	8.39	2100 MHz UMTS	1000	0.84%
T-Mobile 1900 MHz LTE	2	2334.27	100.0	16.78	1900 MHz LTE	1000	1.68%
T-Mobile 600 MHz LTE	2	591.73	100.0	4.25	600 MHz LTE	400	1.06%
T-Mobile 700 MHz LTE	2	648.82	100.0	4.67	700 MHz LTE	467	1.00%
						Total:	**6.26%**

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

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	6.26%
Sector B:	6.26%
Sector C:	6.26%
T-Mobile Maximum MPE % (Sector A):	6.26%
Site Total:	13.57%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **13.57%** 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.

Exhibit G

Mailing Receipts/Proof of Notice

UPS Internet Shipping: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the 'Find Locations' Quick link at ups.com.
   Schedule a same day or future day Pickup to have a UPS driver pickup all of your Internet Shipping packages.
   Hand the package to any UPS driver in your area.

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74 LAFAYETTE AVE
SUFFERN ,NY 10901

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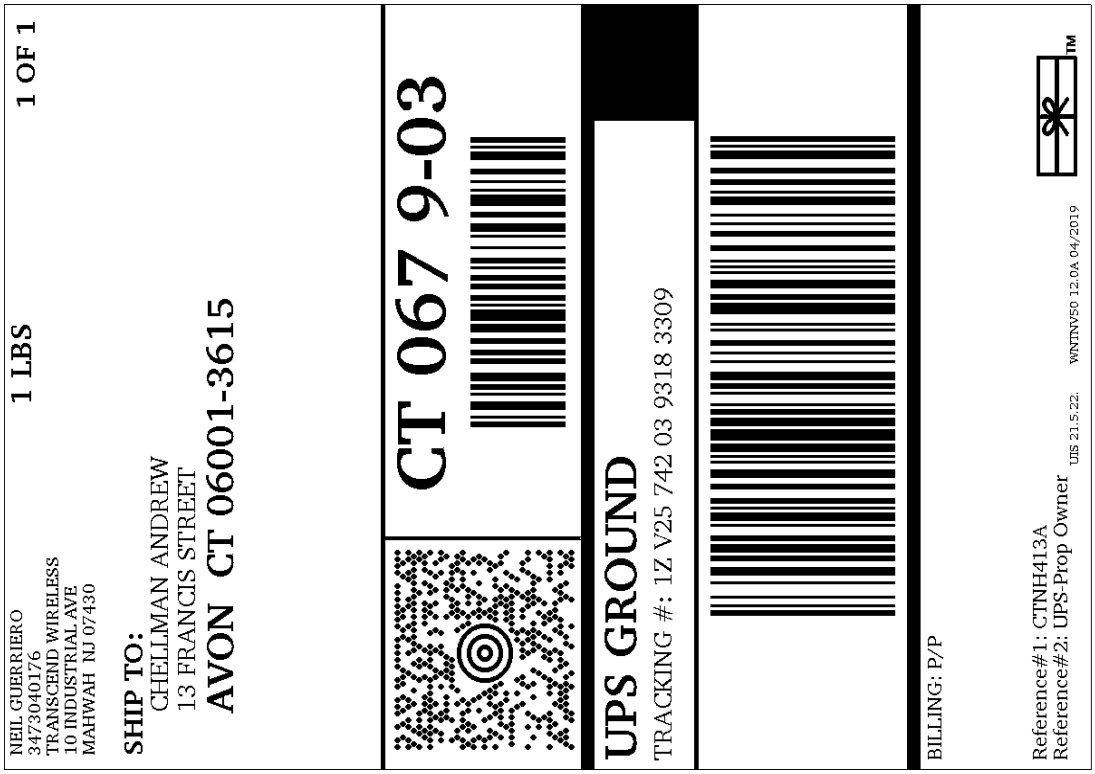

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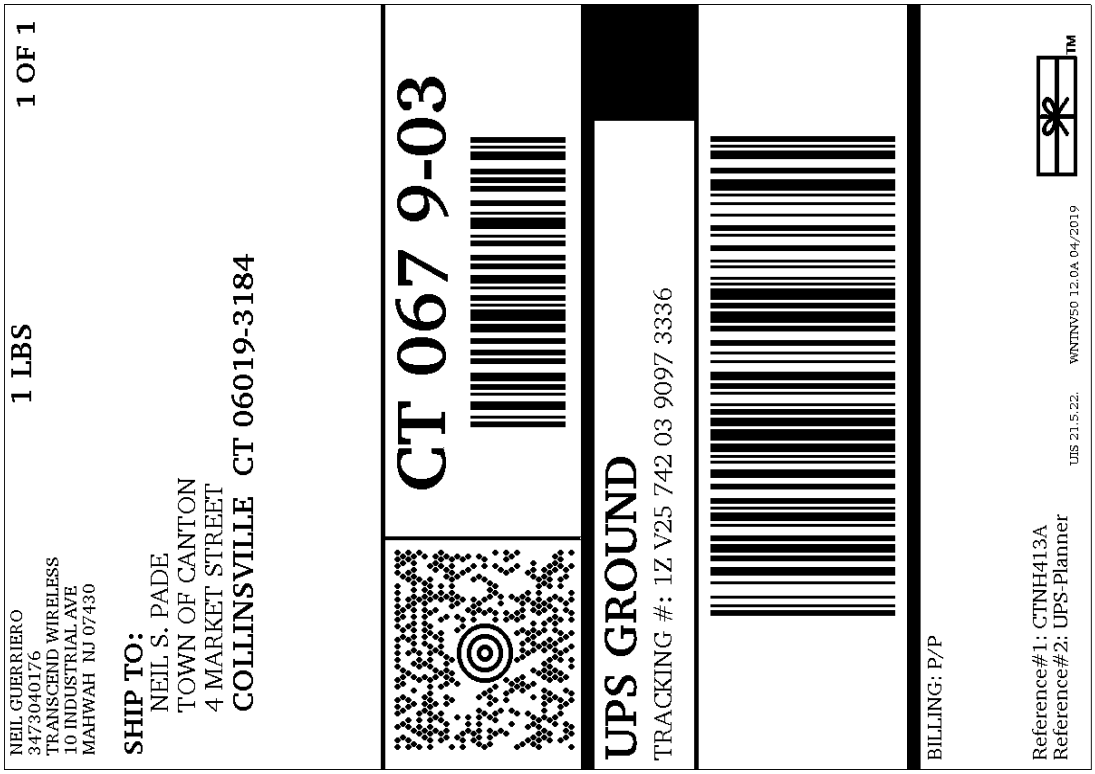

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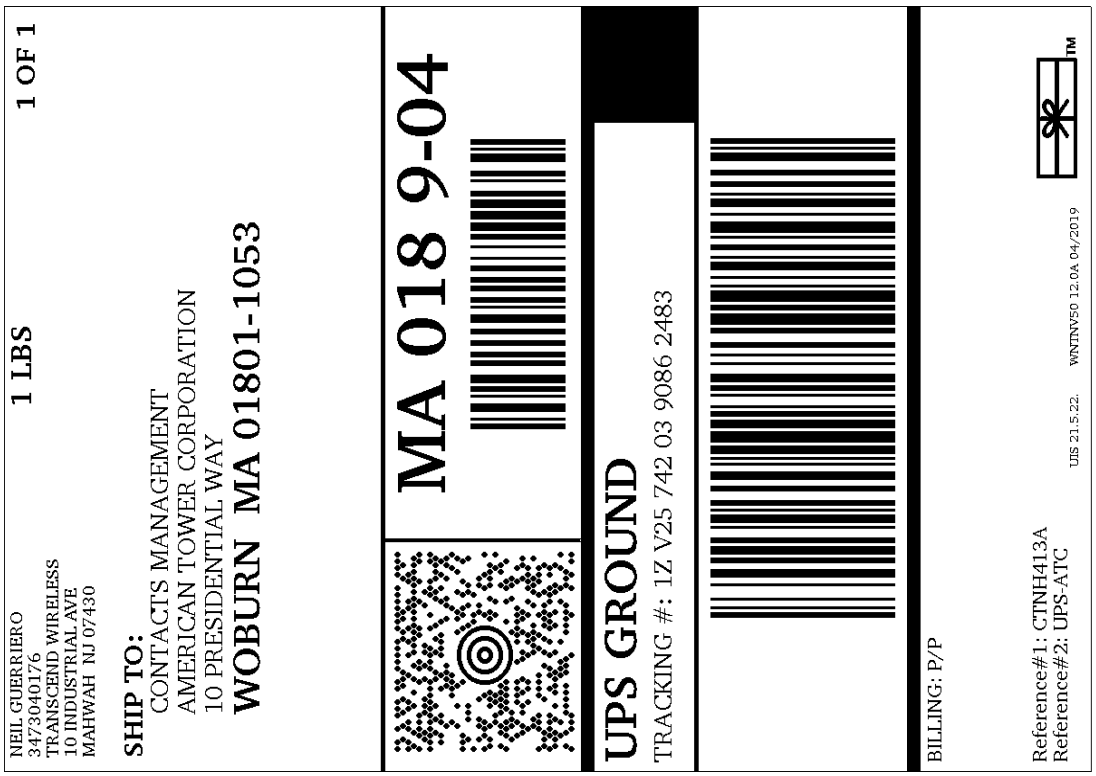

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