August 2, 2019

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

RE: Notice of Exempt Modification
123 Pine Orchard Road, Branford, CT 06405
Latitude: 41.275707
Longitude: -72.791609
T-Mobile Site#: CTNH801B – L600

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 120-foot level of the existing 123-foot monopole tower at 123 Pine Orchard, Branford, CT. The 123-foot monopole tower is owned by American Tower Corporation. The property the 123-foot monopole tower sits on is owned by Malavasi Investments LLC. T-Mobile now intends to replace three (3) of its existing antennas with three (3) new 600/700 MHz antenna. The new antennas would be installed at the same 120-foot level of the tower. Mount modifications are necessary per the enclosed mount analysis.

Planned Modifications:
Tower:

Remove
(6) 1-5/8" coax

Remove and Replace:
(3) Andrew – LNX-6515DS-A1M (existing) – Add (3) APXAARR24_43-U-NA20
(3) RRUS11 B12 (existing) – Add (3) Ericsson Radio 4449 B12 B71

Install New:
(3) 1-5/8" hybrid

Existing to Remain:
(3) AIR B4A B2P
(3) AIR B2A B4P
(3) KRY 112 144/1
(6) 1-5/8" coax
(1) 1-5/8" hybrid

Ground:
Install New: Equipment inside existing 6131 cabinet

This facility was originally approved by the Council in Docket No. 386 dated February 25, 2010. This modification complies with the approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to First Selectman - James B. Cosgrove, Elected Official, for the Town of Branford, David Anderson, Town Planner for Town of Branford, and the property and tower owner.

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

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

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

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

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

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

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

For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under

R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Austin Cofrancesco
Transcend Wireless
Cell: 203-909-1781
Email: acofrancesco@transcendwireless.com

Attachments
cc: James B. Cosgrove- Branford First Selectman
David Anderson- Branford Town Planner
American Tower Corporation- Tower Owner
Malavasi Investments LLC- Property Owner

Town of Branford
Property Listing Report

Parcel ID F08/000/006/00049 **Account** 003607

Property Information

Owner	MALAVASI INVESTMENTS LLC
Address	123 PINE ORCHARD RD
Mailing Address	35 STONY CREEK RD BRANFORD , CT 06405
Land Use	- COMM WHS MDL96
Land Class	C

Census Tract	
Neighborhood	0070
Zoning	R3
Acreage	3.76
Utilities	Public Water,Public Sewer
Lot Setting/ Desc	/ Level

Photo

PARCEL VALUATIONS (Assessed value = 70% of Appraised Value)

	Appraised	Assessed
Buildings	157900	110600
Outbuildings	19600	13710
Improvements	233300	163400
Extras	55800	39090
Land	341800	239300
Total	575100	402700
Previous		

Construction Details

Year Built	1941
Stories	1
Building Style	Service Shop
Building Use	Ind/Comm
Building Condition	03
Total Rooms	
Bedrooms	
Full Bathrooms	
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	Flat
Roof Cover	T&G/Rubber

EXTERIOR WALLS:	
Primary	MASONRY
Secondary	Concr/Cinder
INTERIOR WALLS:	
Primary	Minim/Masonry
Secondary	
FLOORS:	
Primary	Concr-Finished
Secondary	
HEATING/AC:	
Heating Type	Hot Air-no Duc
Heating Fuel	Oil
AC Type	None

BUILDING AREA:	
Effective Building Area	
Gross Building Area	10752
Total Living Area	5376

SALES HISTORY:	
Sale Date	2/13/2003
Sale Price	537500
Book/ Page	0802/0624

Report Created On **7/29/2019**

Town of Branford, Connecticut - Assessment Parcel Map

Parcel: F08-000-006-00049 Address: 123 PINE ORCHARD RD

Approximate Scale: 1 inch : 200 feet

Grand List Date October 2018

Disclaimer:
This map is for informational purposes only.
All information is subject to verification by any user. The Town of Branford and its mapping contractors assume no legal responsibility for the information contained herein.

DOCKET NO. 386 – T-Mobile Northeast LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and management of a telecommunications facility located at 123 Pine Orchard Road, Branford, Connecticut.	}	Connecticut Siting Council February 25, 2010

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, maintenance, and management of a telecommunications facility, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to T-Mobile Northeast LLC, hereinafter referred to as the Certificate Holder, for a telecommunications facility at 123 Pine Orchard Road, Branford, 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 T-Mobile Northeast LLC and New Cingular Wireless PCS LLC and other entities, both public and private, but such tower shall not exceed a height of 125 feet above ground level. Panel antennas shall be installed in a flush-mount configuration or utilizing t-arm mounts and such panel antennas shall not exceed a height of 125 feet above ground level.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Branford for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
    a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line, and landscaping; and
    b) construction plans for site clearing, grading, landscaping, water drainage, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.
    c) correspondence indicating results of discussions with the property owner at 119 Pine Orchard Road regarding continued use of the existing driveway entrance. If an agreement cannot be reached and the driveway is expanded as proposed, a 12-foot spruce tree shall be planted in the front yard of 121 Pine Orchard Road.

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

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

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

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

7. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed and providing wireless services within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline.

8. At least one wireless telecommunications carrier shall install their equipment and shall become operational not later than 120 days after the tower is erected. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The Certificate Holder shall provide written notice to the Executive Director of any schedule changes as soon as is practicable.

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

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

11. The Certificate Holder shall remove any nonfunctioning antenna, and associated antenna mounting equipment, within 60 days of the date the antenna ceased to function.

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

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

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

The parties and intervenors to this proceeding are:

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

Intervenor	**Its Representative**
New Cingular Wireless PCS, LLC	Christopher B. Fisher, Esq. Daniel M. Laub, Esq. Cuddy & Feder LLP 445 Hamilton Avenue, 14th Floor White Plains, NY 10601

VICINITY MAP

AMERICAN TOWER®

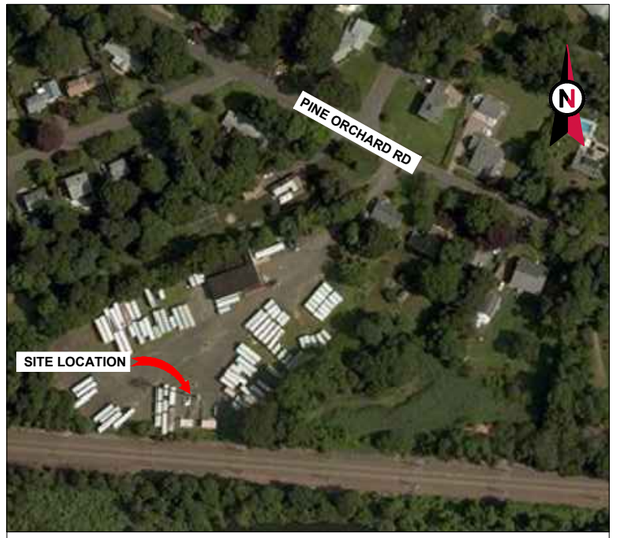
ATC SITE NAME: PINE ORCHARD
BRANFORD CT

ATC SITE NUMBER: 283419

T-MOBILE SITE ID: CTNH801B

SITE ADDRESS: 123 PINE ORCHARD ROAD
BRANFORD, CT 06405

T-MOBILE L600 ANTENNA AMENDMENT
67D02C CONFIGURATION



LOCATION MAP

BIRD WATCH SITE:
PLEASE CONTACT BIRD.WATCH@AMERICANTOWER.COM OR
AMERICAN TOWER NOC AT 877-518-6937 FOR ASSISTANCE

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: EVERSOURCE
PHONE: (877) 659-6326

TELEPHONE COMPANY: FRONTIER COMMUNICATIONS
PHONE: (800) 376-6843

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

PROJECT SUMMARY

SITE ADDRESS:

123 PINE ORCHARD ROAD
BRANFORD, CT 06405
COUNTY: NEW HAVEN

1A CERTIFICATE SUMMARY:

LATITUDE: 41° 16' 29.50" N

LONGITUDE: 72° 47' 35.08" W

GROUND ELEVATION: 31' AMSL

TOWER HEIGHT: 125' AGL

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:

MALAVASI INVESTMENTS LLC
35 STONY CREEK ROAD
BRANFORD, CT, 06405

PROJECT DESCRIPTION

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

REMOVE (3) PANELS, (3) TTAs, (3) RRUs, (3) T-ARM MOUNTS, AND (6) 1-5/8" COAX CABLES

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

EXISTING (6) PANELS, (6) 1-5/8" COAX CABLES, AND (1) 1-5/8" HYBRID CABLE 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 DOWNTOWN NEW HAVEN CT START OUT GOING NORTHEAST ON CHURCH ST TOWARD WALL ST. CHURCH ST BECOMES WHITNEY AVE TURN RIGHT ONTO TRUMBULL ST. TURN SLIGHT LEFT TO TAKE THE I-91 S/I-91 N RAMP. MERGE ONTO I-91 S TOWARD I-95/NEW LONDON/N.Y.CITY. MERGE ONTO I-95 N/GOVERNOR JOHN DAVIS LODGE TPKE N VIA THE EXIT ON THE LEFT TOWARD NEW LONDON. TAKE THE CEDAR ST EXIT, EXIT 54, TOWARD BRANFORD. TAKE THE CEDAR ST EXIT, EXIT 54, TOWARD BRANFORD. TURN LEFT ONTO MAIN ST/CT-146. TURN SLIGHT RIGHT ONTO S MAIN ST/CT-146. TURN RIGHT ONTO MONTOWESE ST/CT-146. TAKE THE 3RD LEFT ONTO PINE ORCHARD RD. TAKE THE 3RD RIGHT TO STAY ON PINE ORCHARD RD. SITE IS IN THE PROPERTY OF ACE TRANSPORTATION & STORAGE

SHEET INDEX

SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
G-001	TITLE SHEET	1	07/25/19	EB
G-002	GENERAL NOTES	0	06/25/19	EF
C-101	DETAILED SITE PLAN & TOWER ELEVATION	1	07/25/19	EB
C-501	ANTENNA INFORMATION & SCHEDULE	1	07/25/19	EB
E-501	GROUNDING DETAILS	0	06/25/19	EF
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	EF	06/25/19
1	REV. ANT. MODEL & MA	EB	07/25/19

ATC SITE NUMBER:
283419

ATC SITE NAME:
PINE ORCHARD
BRANFORD CT

SITE ADDRESS:
123 PINE ORCHARD ROAD
BRANFORD, CT 06405

SEAL:

Authorized by "EOR"
Jul 25 2019 5:24 PM

T-Mobile design

DRAWN BY:	EF
APPROVED BY:	PB
DATE DRAWN:	06/25/19
ATC JOB NO:	12951856

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

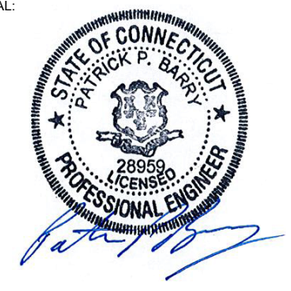
REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	EF	06/25/19

ATC SITE NUMBER:
283419

ATC SITE NAME:
PINE ORCHARD
BRANFORD CT

SITE ADDRESS:
123 PINE ORCHARD ROAD
BRANFORD, CT 06405

SEAL:



Authorized by "EOR"
Jul 25 2019 5:24 PM

T-Mobile cosign

DRAWN BY:	EF
APPROVED BY:	PB
DATE DRAWN:	06/25/19
ATC JOB NO:	12951856

GENERAL NOTES

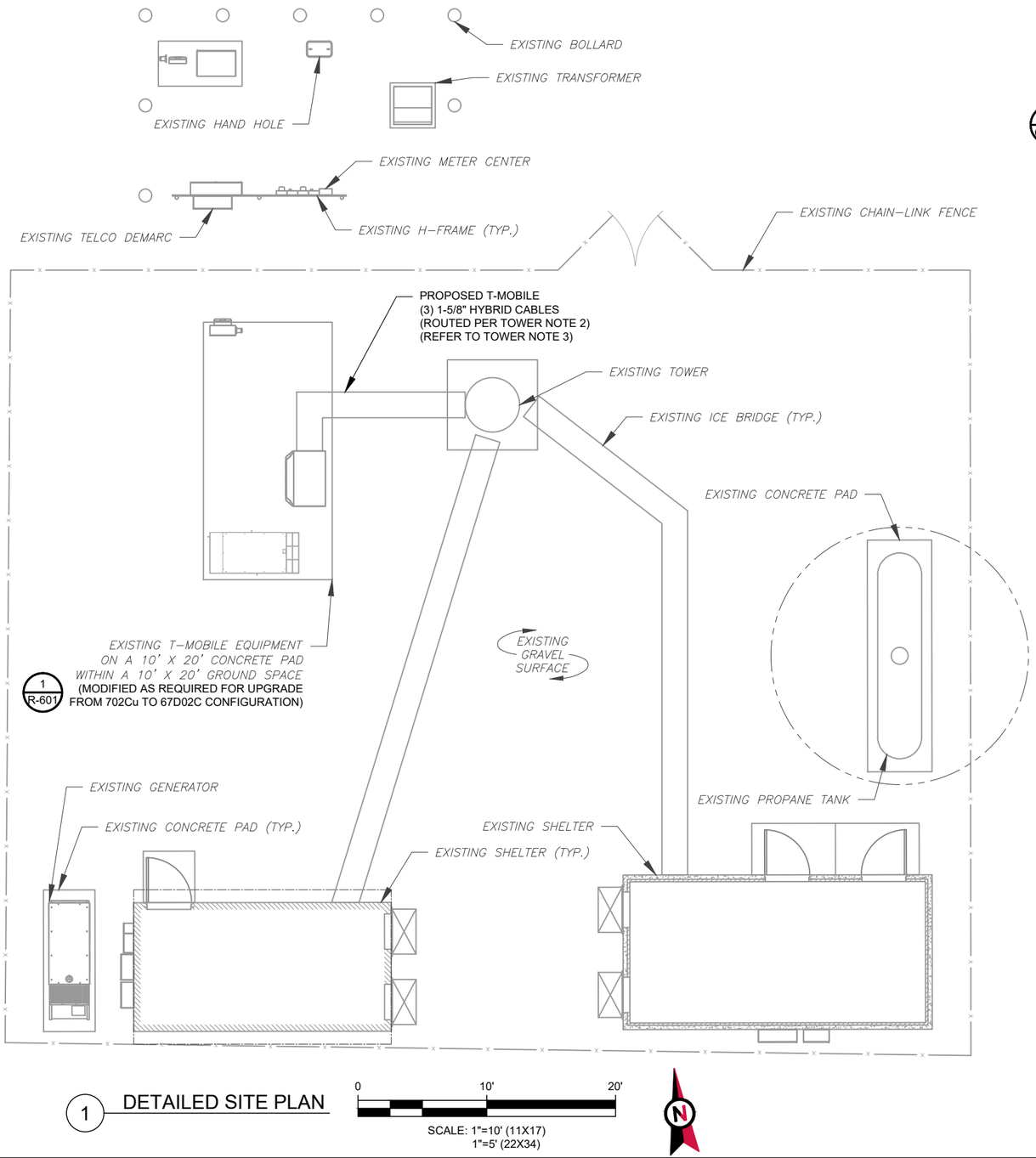
SHEET NUMBER:	REVISION:
G-002	0

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. THIS PROJECT INCLUDES NO INSTALL OR MODIFICATION AT GRADE.

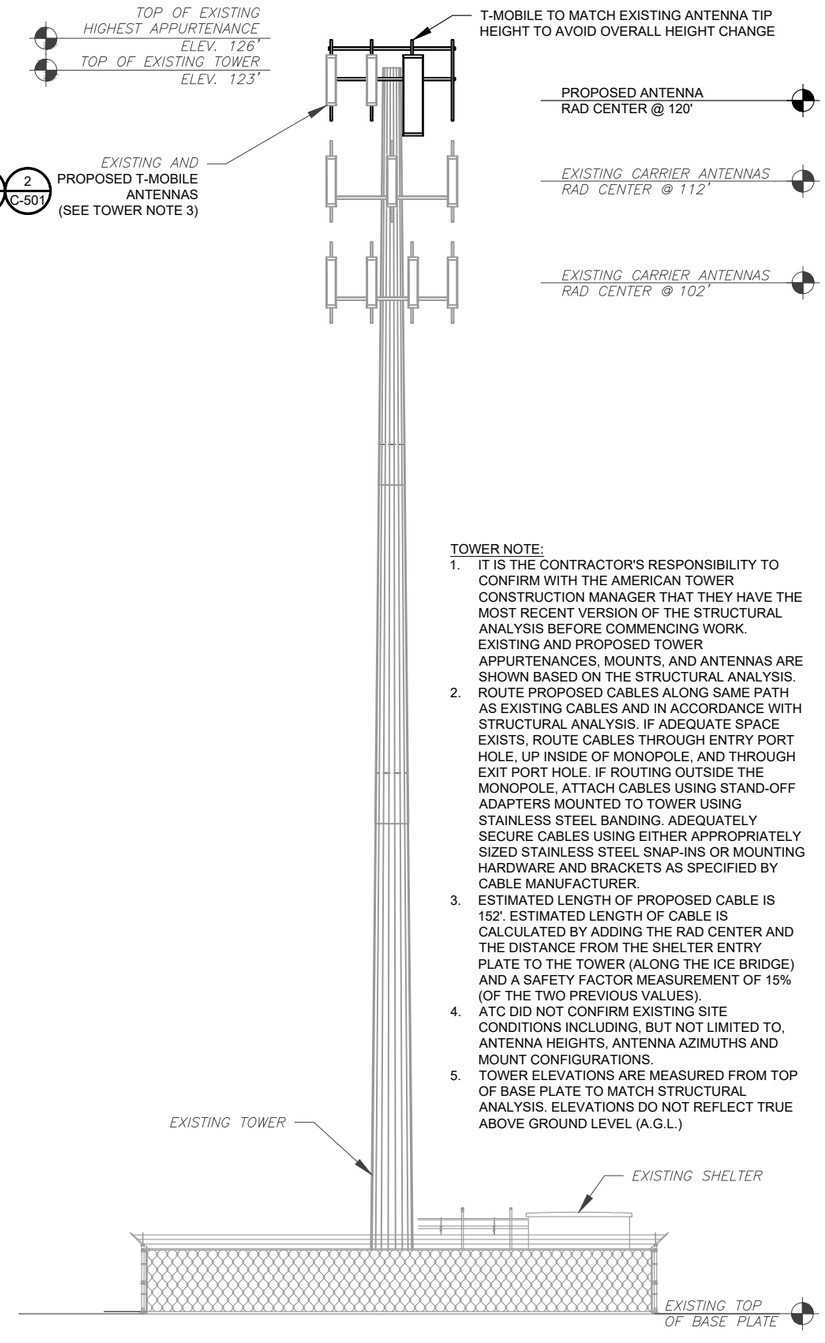


1 DETAILED SITE PLAN

0 10' 20'

SCALE: 1"=10' (11X17)
1"=5' (22X34)

PER MOUNT ANALYSIS COMPLETED BY CLS ENGINEERING, DATED 07/08/2019, 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



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. IF ADEQUATE SPACE EXISTS, ROUTE CABLES THROUGH ENTRY PORT HOLE, UP INSIDE OF MONOPOLE, AND THROUGH EXIT PORT HOLE. IF ROUTING OUTSIDE THE MONOPOLE, ATTACH CABLES USING STAND-OFF ADAPTERS MOUNTED TO TOWER USING STAINLESS STEEL BANDING. ADEQUATELY SECURE CABLES USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER.
3. ESTIMATED LENGTH OF PROPOSED CABLE IS 152'. 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 CONFIGURATIONS.
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.)

2 TOWER ELEVATION

SCALE: NOT TO SCALE

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	EF	06/25/19
1	REV. ANT. MODEL & MA	EB	07/25/19

ATC SITE NUMBER:
283419

ATC SITE NAME:
PINE ORCHARD
BRANFORD CT

SITE ADDRESS:
123 PINE ORCHARD ROAD
BRANFORD, CT 06405

SEAL:

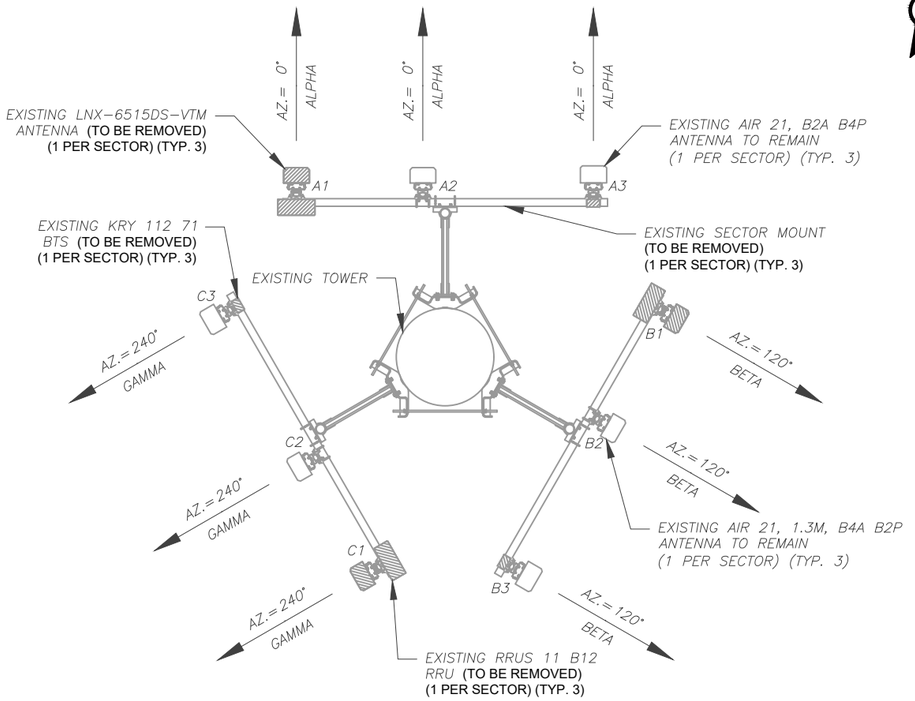
Authorized by "EOR"
Jul 25 2019 5:25 PM

T-Mobile design

DRAWN BY:	EF
APPROVED BY:	PB
DATE DRAWN:	06/25/19
ATC JOB NO:	12951856

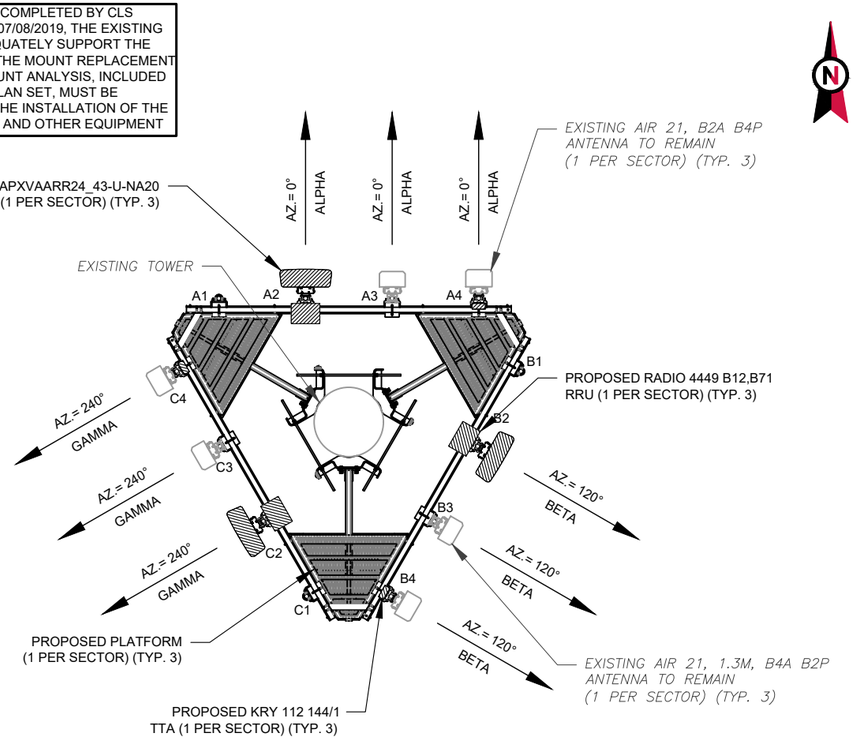
DETAILED SITE PLAN & TOWER ELEVATION

SHEET NUMBER:	REVISION:
C-101	1



1 EXISTING ANTENNA PLAN

PER MOUNT ANALYSIS COMPLETED BY CLS ENGINEERING, DATED 07/08/2019, 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	LNX-6515DS-VTM	122'-0"	0°	0°	2°	RRUS 11 B12
ALPHA	A2	AIR 21, 1.3M, B4A B2P	122'-0"	0°	0°	2°	–
ALPHA	A3	AIR 21, 1.3M, B2A B4P	122'-0"	0°	0°	2°	KRY 112 71
BETA	B1	LNX-6515DS-VTM	122'-0"	120°	0°	2°	RRUS 11 B12
BETA	B2	AIR 21, 1.3M, B4A B2P	122'-0"	120°	0°	2°	–
BETA	B3	AIR 21, 1.3M, B2A B4P	122'-0"	120°	0°	2°	KRY 112 71
GAMMA	C1	LNX-6515DS-VTM	122'-0"	240°	0°	2°	RRUS 11 B12
GAMMA	C2	AIR 21, 1.3M, B4A B2P	122'-0"	240°	0°	2°	–
GAMMA	C3	AIR 21, 1.3M, B2A B4P	122'-0"	240°	0°	2°	KRY 112 71

NOTES

1. BASED ON APPROVED ATC APPLICATION 12927144, DATED 04/02/2019. 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	-	-	-	-	-	-
ALPHA	A2	APXVAARR24_43-U-NA20	120'-0"	0°	0°	2°	RADIO 4449 B12,B71
ALPHA	A3	AIR 21, 1.3M, B4A B2P	122'-0"	0°	0°	2°	–
ALPHA	A4	AIR 21, 1.3M, B2A B4P	122'-0"	0°	0°	2°	KRY 112 144/1
BETA	B1	-	-	-	-	-	-
BETA	B2	APXVAARR24_43-U-NA20	120'-0"	120°	0°	2°	RADIO 4449 B12,B71
BETA	B3	AIR 21, 1.3M, B4A B2P	122'-0"	120°	0°	2°	-
BETA	B4	AIR 21, 1.3M, B2A B4P	122'-0"	120°	0°	2°	KRY 112 144/1
GAMMA	C1	-	-	-	-	-	-
GAMMA	C2	APXVAARR24_43-U-NA20	120'-0"	240°	0°	2°	RADIO 4449 B12,B71
GAMMA	C3	AIR 21, 1.3M, B4A B2P	122'-0"	240°	0°	2°	-
GAMMA	C4	AIR 21, 1.3M, B2A B4P	122'-0"	240°	0°	2°	KRY 112 144/1

CURRENT FIBER DISTRIBUTION/OVP BOX		CURRENT CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
–	–	(6) 1-5/8"	(1) 1-5/8"	RMN
–	–	(6) 1-5/8"	–	RMV

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 COMBINER: 10'
COMBINER TO ANTENNA: 10'

PROPOSED FIBER DISTRIBUTION/OVP BOX		PROPOSED CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
-	-	(6) 1-5/8"	(1) 1-5/8"	RMN
-	-	-	(3) 1-5/8"	ADD

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	EF	06/25/19
1	REV. ANT. MODEL & MA	EB	07/25/19

ATC SITE NUMBER:
283419
ATC SITE NAME:
PINE ORCHARD
BRANFORD CT
SITE ADDRESS:
123 PINE ORCHARD ROAD
BRANFORD, CT 06405

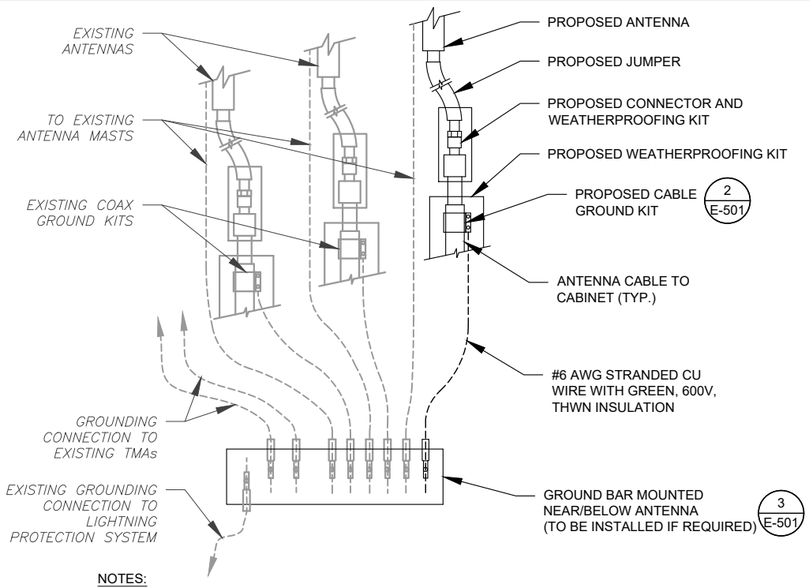
SEAL:

Authorized by "EOR"
Jul 25 2019 5:25 PM

DRAWN BY:	EF
APPROVED BY:	PB
DATE DRAWN:	06/25/19
ATC JOB NO:	12951856

ANTENNA INFORMATION & SCHEDULE

SHEET NUMBER:	REVISION:
C-501	1

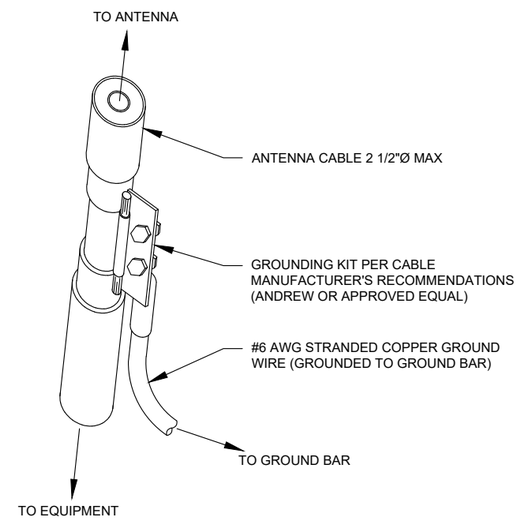


NOTES:

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

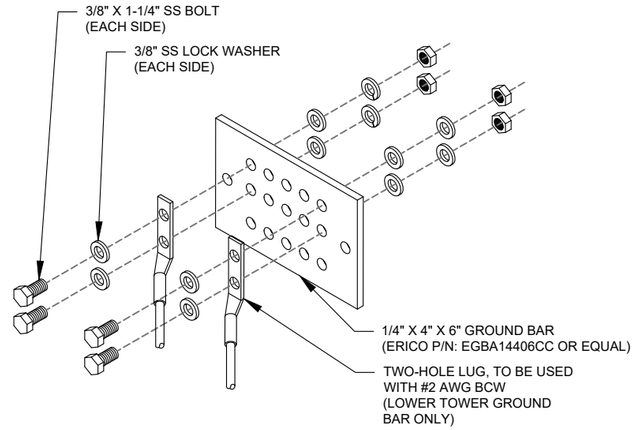


GROUND KIT NOTES:

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

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	EF	06/25/19

ATC SITE NUMBER:
283419

ATC SITE NAME:
PINE ORCHARD
BRANFORD CT

SITE ADDRESS:
123 PINE ORCHARD ROAD
BRANFORD, CT 06405

SEAL:

Authorized by "EOR"
Jul 25 2019 5:25 PM

DRAWN BY:	EF
APPROVED BY:	PB
DATE DRAWN:	06/25/19
ATC JOB NO:	12951856

GROUNDING DETAILS

SHEET NUMBER:	REVISION:
E-501	0

Existing RAN Equipment	
Template:	702Cu
Enclosure	1
Enclosure Type	RBS 6131
Baseband	DUW30 (x 2) · DUG20 · DUS41
Hybrid Cable System	Ericsson 9x18 HCS *Select Length*
Radio	RU22 (x 6)

Proposed RAN Equipment	
Template:	67D02C Outdoor
Enclosure	1
Enclosure Type	RBS 6131
Baseband	DUW30 (U2100) · DUW30 (U1900) · DUG20 (G1900) · BB 6630 (L2100, L700, L600) · BB 6630 (N600 [DARK])
Hybrid Cable System	Ericsson 9x18 HCS *Select Length* · Ericsson 6x12 HCS *Select Length & AWG* (x 3)
Radio	RU22 (x 6) (U2100)

RAN Scope of Work:

Replace (1) DUS41 with (1) BB6630 for L2100, L700, and L600.
Add (1) BB6630 for future 5G N600.

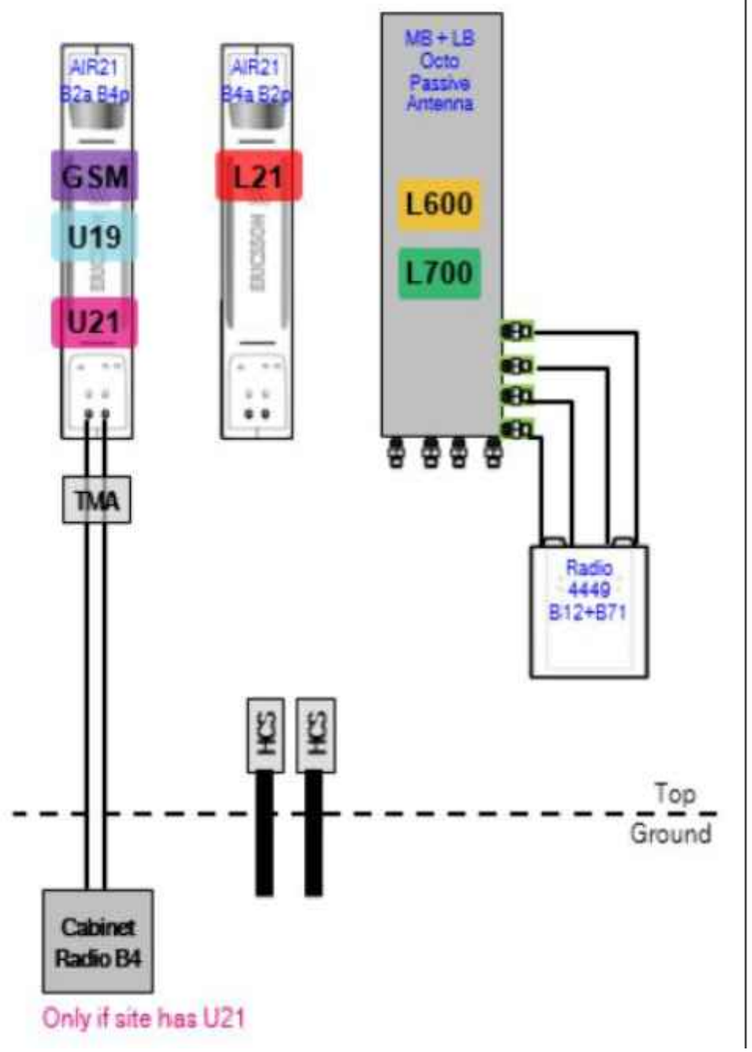
Add (3) 6X12 HCS.

Existing (12) Coaxial Lines; (1) 9X18. Remove (6) Coaxial Lines.

Add (3) 6X12 HCS, Length and AWG will decide by Dev.

Swap (3) LNX 6515 Antennas with (3) 8' Octoport antennas @ P1. Swap (3) RRUS11 B12 with (3) Radios 4449.

67D02C.JPG



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 Perfect Vison PV-LPP12M-HR-B Platform w/ PV-PKBK-M kicker kits for American Tower on behalf of T-Mobile
283419 - PINE ORCHARD BRANFORD CT
Project #: 12927144

T-Mobile Site ID: CTNH801B
Program: L600

CLS Engineering PLLC Project #41124-12927144-01-MR-R1
July 8, 2019

MOUNT DESCRIPTION	Proposed Perfect Vison PV-LPP12M-HR-B Platform w/ PV-PKBK-M kicker kits at 121 ft
ANTENNA ELEVATION	Nominal Rad. Elevation of 121 ft AGL
SITE DESCRIPTION	123 ft Monopole
SITE ADDRESS	123 Pine Orchard Road, Branford, CT 06405-3939, New Haven County
GPS COORDINATES	41.274861, -72.793078
ANALYSIS STANDARD	2015 IBC / 2018 Connecticut State Building Code / TIA-222-G
LOADING CRITERIA	130 mph, V_{ult} / 100.7 mph, V_{asd} (3-Second Gust) w/o ice & 50 mph (3-Second Gust) w/ 0.75"

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

MEMBER USAGE	60%	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

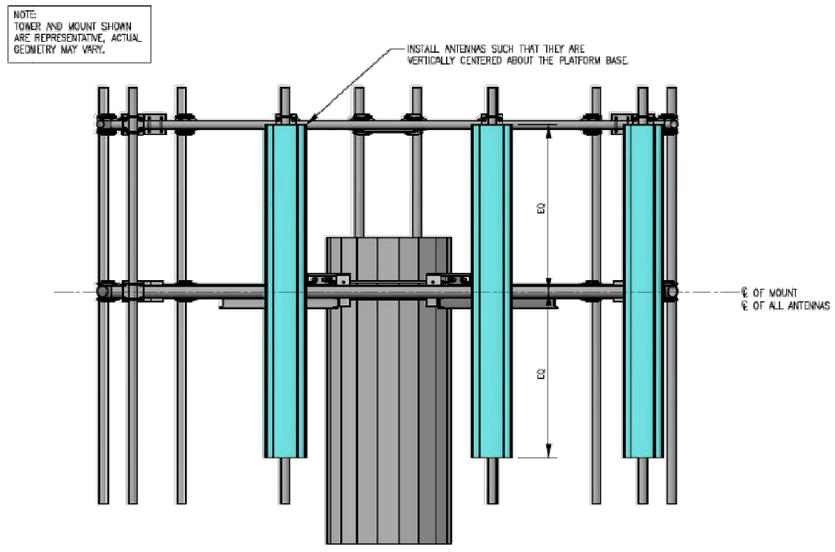
IdenTrust

Digitally signed by Tyler Barker
DN: c=US, o=Telamon Corporation, ou=A01427E0000016A4525ADF800001D17, cn=Tyler Barker
Date: 2019.07.09 13:47:29 -04'00'

■ 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 Platform Mount with (1) new Perfect Vison PV-LPP12M-HR-B Platform Mount.**
- **Install (1) PerfectVision PV-PKBK-M Monopole Platform Kicker Kit as shown. Field-cut kicker angle as required. Maintain minimum bolt edge distance.**
- **Install (4) PerfectVision PIPE-238X126 antenna mount pipes per sector (12 total). Connect to platform base horizontal member using (12) PerfectVision PV-XP-2030-HD crossover brackets such that they are equidistant from each other as shown in the assembly drawings.**
- **Install support rails 3'-0" above the platform base. Connect to all mount pipes using crossover angles included in proposed platform kit.**
- **Install existing and proposed antennas such that they are vertically centered about the face horizontal member. Install existing and proposed RRUS and TMAs behind the antennas.**

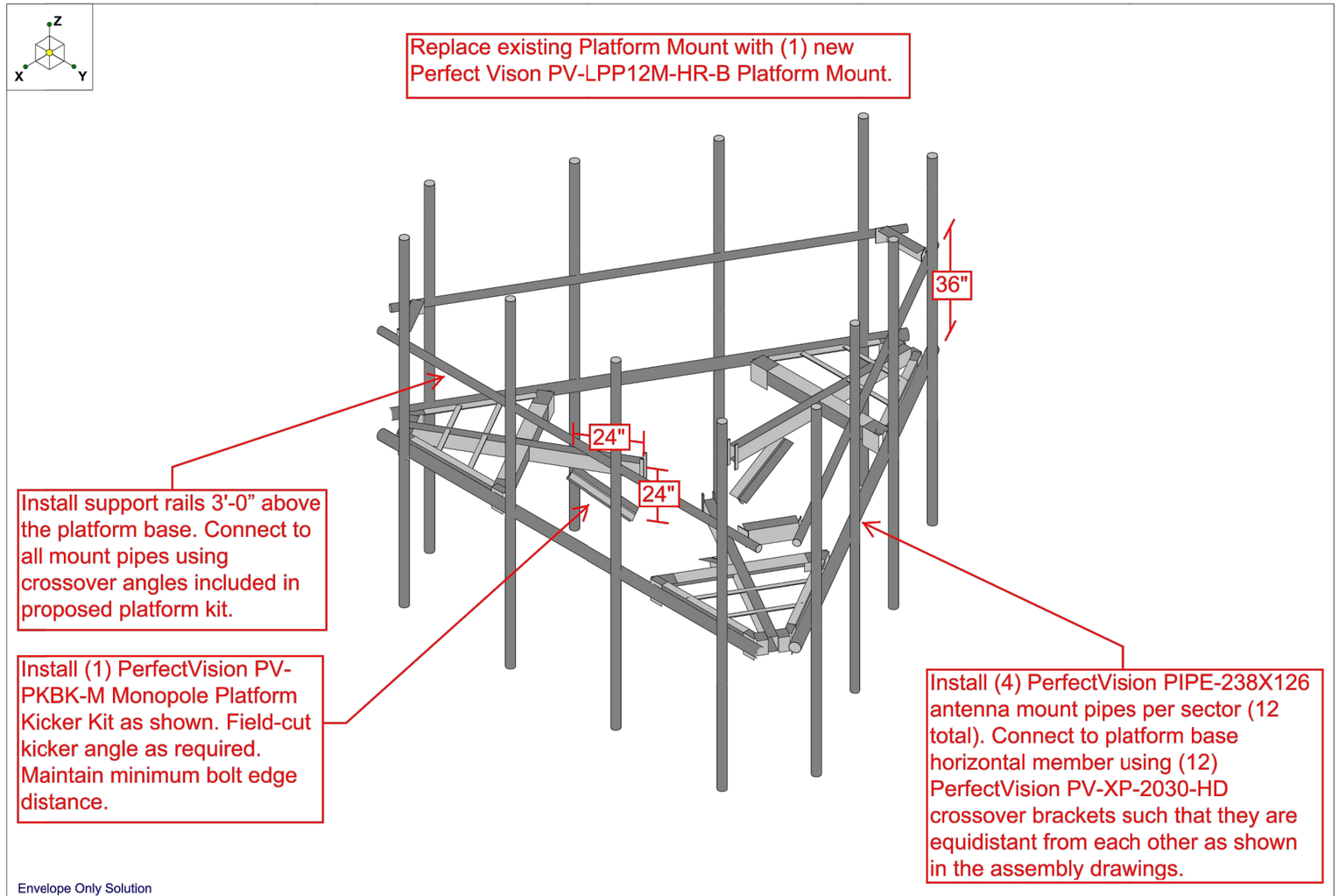


See following sketch and Perfect Vision assembly drawing for additional details.

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

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-602	1



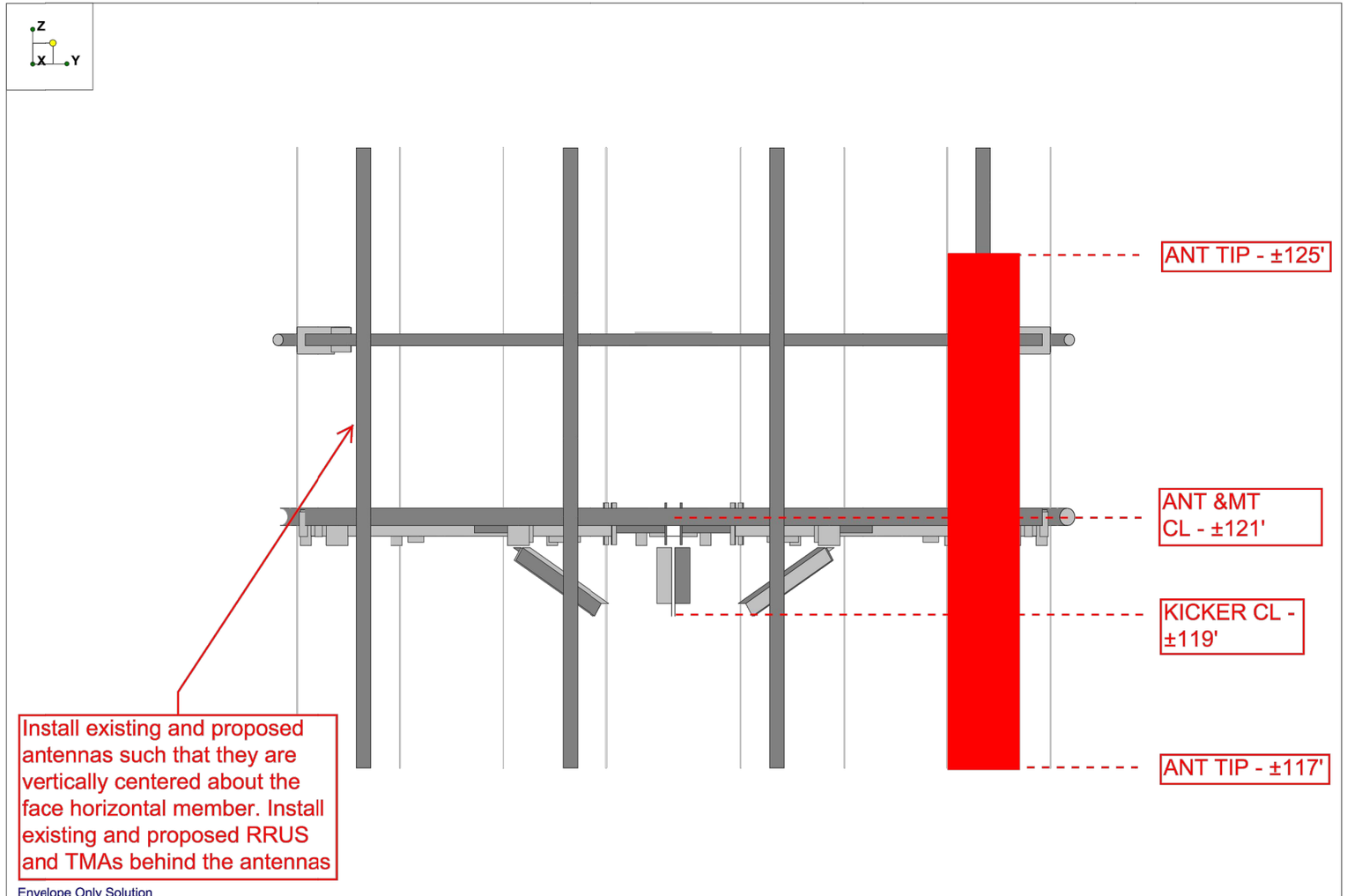
Envelope Only Solution

CLS		SK - 0
SMR	41124-12927144-PINE ORCHARD BRANFORD CT-283419	July 8, 2019 at 11:39 AM
41124-12927144-01-MR-R1	Installation Sketch - Isometric View	41124-12927144-01-MR-R1.r3d

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

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-603	1



Envelope Only Solution

CLS	41124-12927144-PINE ORCHARD BRANFORD CT-283419	SK - 0
SMR		July 8, 2019 at 11:40 AM
41124-12927144-01-MR-R1	Installation Sketch - Elevation Sketch	41124-12927144-01-MR-R1.r3d

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

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-604	1

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**123 ft Monopole**
ATC Site Name	:	**Pine Orchard Branford CT, CT**
ATC Site Number	:	**283419**
Engineering Number	:	**12927144_C3_02**
Proposed Carrier	:	**T-Mobile**
Carrier Site Name	:	**Amtrak_Branford**
Carrier Site Number	:	**CTNH801B**
Site Location	:	**123 Pine Orchard Road** **Branford, CT 06405-3939** **41.274900,-72.793100**
County	:	**New Haven**
Date	:	**July 26, 2019**
Max Usage	:	**60%**
Result	:	**Pass**

Prepared By:
Julio Benitez-Santiago
Structural Engineer I

Reviewed By:

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
32593
LICENSED
PROFESSIONAL ENGINEER

Authorized by "EOR"
Jul 26 2019 4:38 PM cosign

COA: PEC.0001553

AMERICAN TOWER®
CORPORATION

Table of Contents

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Equipment to be Removed 2

Proposed Equipment 2

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Foundations 3

Deflection and Sway 3

Standard Conditions 4

Calculations ..... Attached

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 123 ft monopole to reflect the change in loading by T-Mobile.

Supporting Documents

Tower Drawings	Sabre Drawing #11-05276-PE, dated June 1, 2010
Foundation Drawing	Sabre Job #11-05276, dated June 2, 2010
Geotechnical Report	Terracon Project #J2105131, dated April 2, 2010
Mount Analysis	CLS Engineering PLLC Project #41124-12927144-01-MR-R1, dated July 8, 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:	101 mph (3-Second Gust, Vasd) / 130 mph (3-Second Gust, Vult)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2015 IBC / 2018 Connecticut State Building Code
Structure Class:	II
Exposure Category:	C
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
122.0	-	-	T-Arms	(6) 1 5/8" Coax (1) 1 5/8" (1.63"-41.3mm) Fiber	T-MOBILE
120.0	-	-			
112.0	3	Commscope SBNHH-1D65A	T-Arms	(1) 0.40" (10.3mm) Fiber (2) 0.45" (11.5mm) Fiber (2) 0.78" (19.7mm) 8 AWG 6 (12) 1 5/8" Coax (1) 2" conduit	AT&T MOBILITY
	3	Ericsson RRUS 32 B2			
	3	Ericsson RRUS 11 (Band 12)			
	1	Raycap DC6-48-60-18-8F			
	6	Powerwave Allgon P90-15-XLH-RR			
	6	Powerwave Allgon TT19-08BP111-001			
102.0	4	Antel LPA-80063/6CF	T-Arms	(2) 1 5/8" (1.63"-41.3mm) Fiber (12) 1 5/8" Coax	VERIZON WIRELESS
	6	Andrew SBNHH-1D65B			
	2	Swedcom SC-E 6016 REV2			
	2	Raycap RC2DC-3315-PF-48			
	3	Alcatel-Lucent B66 RRH4x45			
	3	Alcatel-Lucent RRH2x60 700			

Equipment to be Removed

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
122.0	6	Ericsson AIR 21	T-Arms	(11) 1 5/8" Coax	T-MOBILE
120.0	3	Ericsson RRUS 11 B12			
	3	Andrew LNX-6515DS-VTM			
	3	Ericsson KRY 112 71			

Proposed Equipment

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
122.0	3	Ericsson AIR 21, 1.3 M, B2A B4P	Platform with Handrails (Perfect Vision PV-LPP12M-HR-B)	(3) 1 5/8" (1.63"-41.3mm) Fiber	T-MOBILE
	3	Ericsson AIR 21, 1.3M, B4A B2P			
120.0	3	Ericsson KRY 112 144/1			
	3	Ericsson Radio 4449 B12,B71			
	3	RFS APXVAARR24_43-U-NA20			

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

Install proposed lines inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	45%	Pass
Shaft	60%	Pass
Base Plate	38%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Moment (Kips-Ft)	3,210.8	4,334.6	2,175.0	50%
Shear (Kips)	36.1	48.7	24.2	50%

***Design reactions have been 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) (°)
122.0	Ericsson AIR 21, 1.3 M, B2A B4P	T-MOBILE	0.885	0.780
	Ericsson AIR 21, 1.3M, B4A B2P			
120.0	Ericsson KRY 112 144/1		0.857	
	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**

AMERICAN TOWER®
CORPORATION

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:

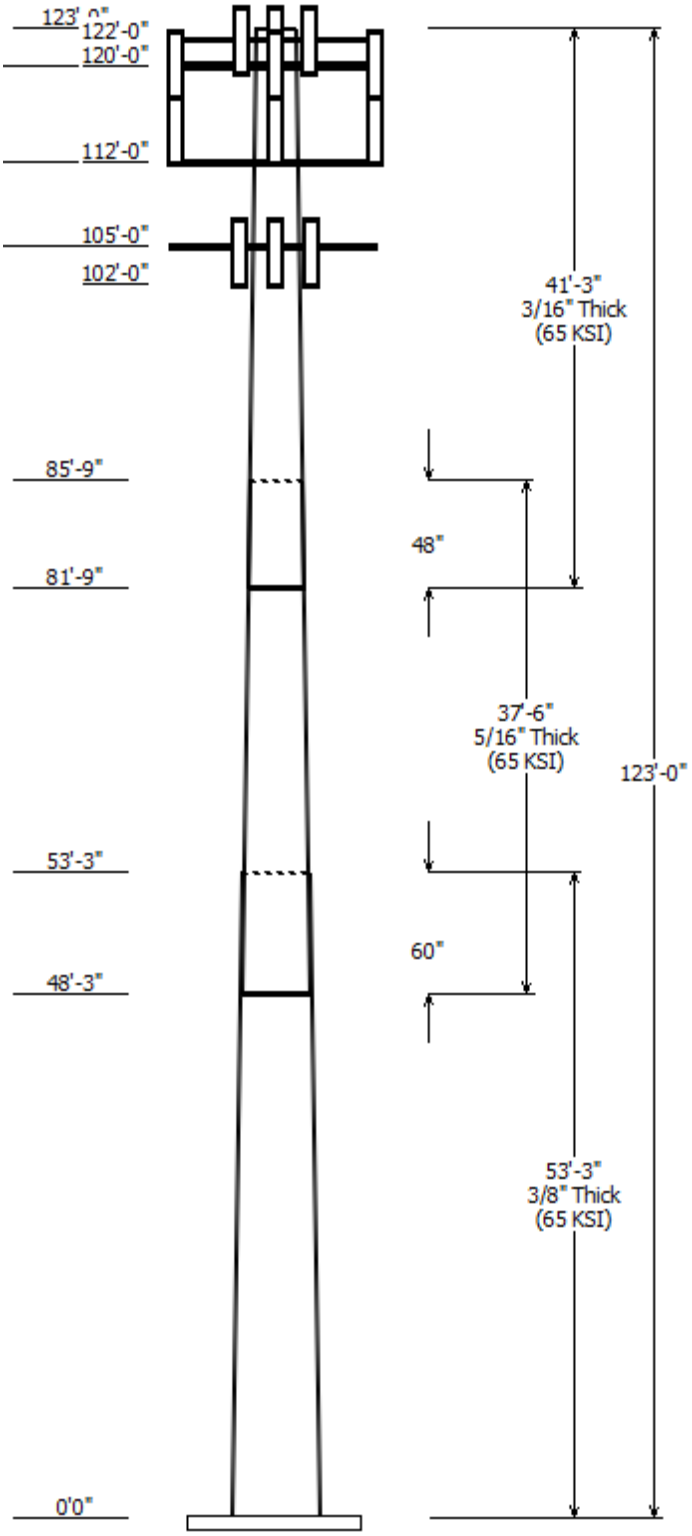
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

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 :	283419	Code:	ANSI/TIA-222-G
Location :	PINE ORCHARD BRANFORD CT, CT		
Description :		Struct Class :	II
Shape :	18 Sides	Exposure :	C
Height :	123.00 (ft)	Topo :	1
Base Elev (ft):	0.00		
Taper:	0.250000 (in/ft)		

Sections Properties

Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	53.250	37.43	50.75	0.375		0.000	18 Sides	65
2	37.500	29.93	39.31	0.313	Slip Joint	60.000	18 Sides	65
3	41.250	21.00	31.31	0.188	Slip Joint	48.000	18 Sides	65

Discrete Appurtenance

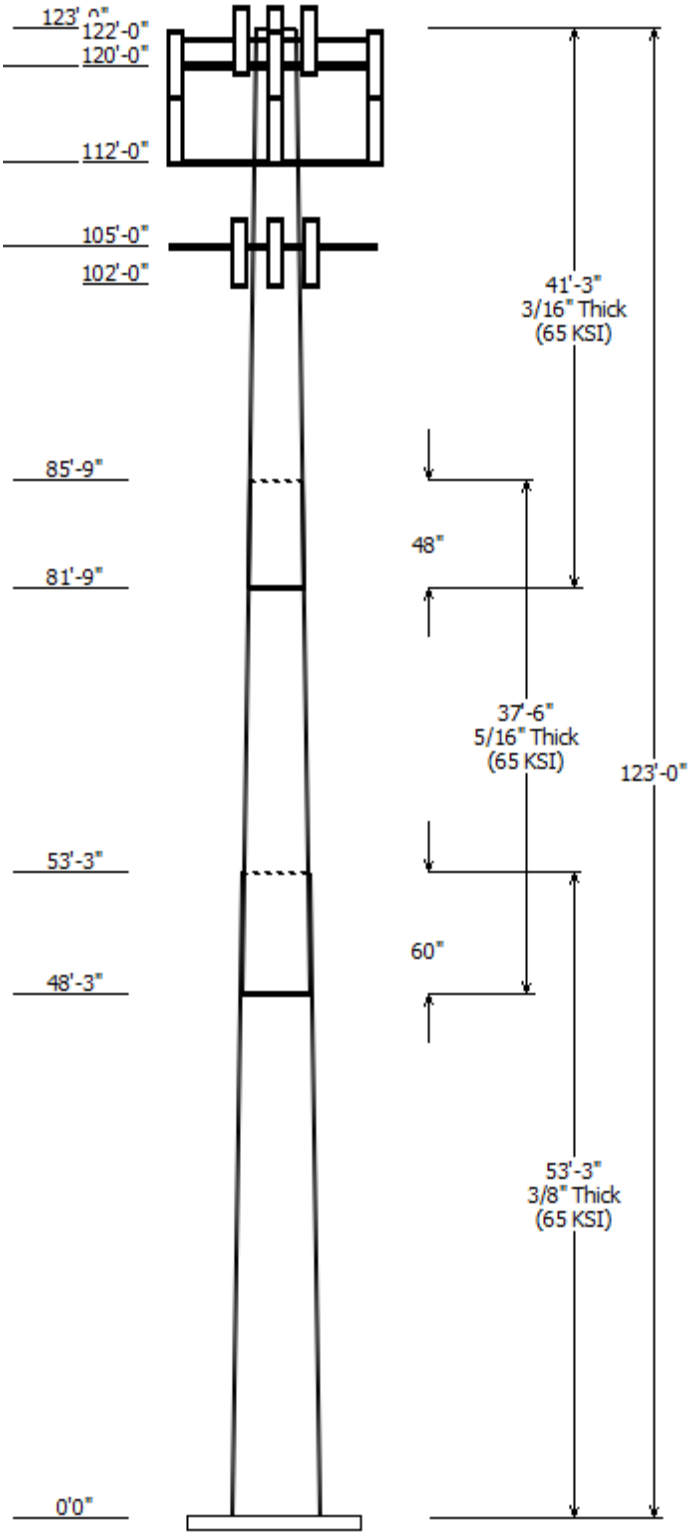
Attach Elev (ft)	Force Elev (ft)	Qty	Description
122.000	122.000	3	Ericsson AIR 21, 1.3M, B4A B2P
122.000	122.000	3	Ericsson AIR 21, 1.3 M, B2A B4
120.000	120.000	1	Generic Round Platform with
120.000	120.000	3	RFS APXVAARR24_43-U-NA20
120.000	120.000	3	Ericsson Radio 4449 B12,B71
120.000	120.000	3	Ericsson KRY 112 144/1
112.000	112.000	3	Round T-Arm
112.000	114.000	6	Powerwave Allgon P90-15-
112.000	114.000	3	Commscope SBNHH-1D65A
112.000	114.000	3	Ericsson RRUS 32 B2
112.000	114.000	3	Ericsson RRUS 11 (Band 12)
112.000	114.000	1	Raycap DC6-48-60-18-8F
112.000	114.000	6	Powerwave Allgon TT19-
105.000	105.000	3	Round T-Arm
102.000	103.000	4	Antel LPA-80063/6CF
102.000	103.000	6	Andrew SBNHH-1D65B
102.000	103.000	2	Swedcom SC-E 6016 REV2
102.000	103.000	2	Raycap RC2DC-3315-PF-48
102.000	103.000	3	Alcatel-Lucent B66 RRH4x45
102.000	103.000	3	Alcatel-Lucent RRH2x60 700

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	102.0	1 5/8" (1.63"-	No
0.000	102.0	1 5/8" Coax	No
0.000	112.0	0.40" (10.3mm)	No
0.000	112.0	0.45" (11.5mm)	No
0.000	112.0	0.78" (19.7mm) 8	No
0.000	112.0	1 5/8" Coax	No
0.000	112.0	2" conduit	No
0.000	120.0	1 5/8" (1.63"-	No
0.000	120.0	1 5/8" (1.63"-	No
0.000	122.0	1 5/8" (1.63"-	No
0.000	122.0	1 5/8" Coax	No

Load Cases

1.2D + 1.6W	101 mph with No Ice
0.9D + 1.6W	101 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice



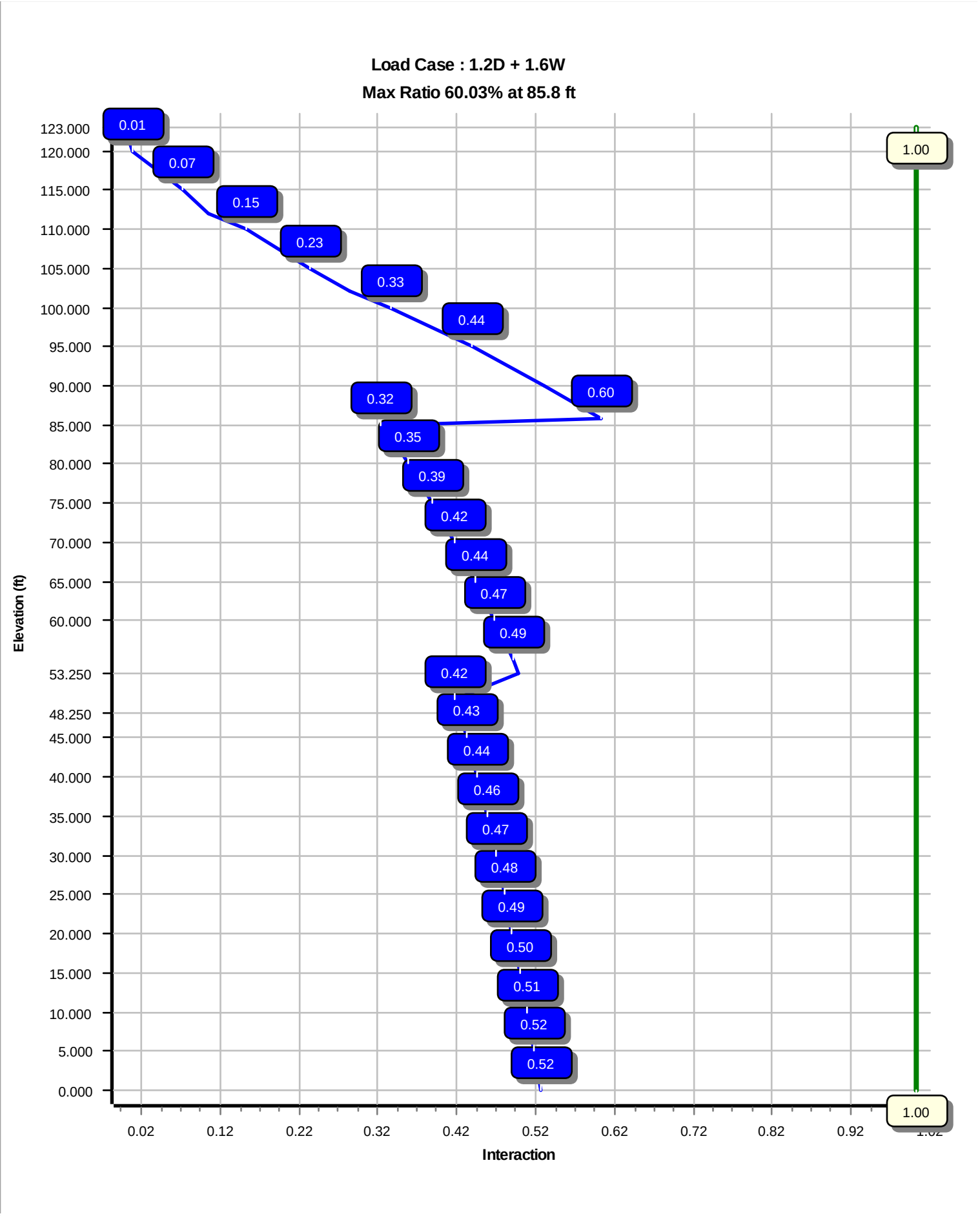
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	2174.96	24.17	32.60
0.9D + 1.6W	2159.84	24.15	24.44
1.2D + 1.0Di + 1.0Wi	551.09	6.29	48.88
(1.2 + 0.2Sds) * DL + E ELFM	103.27	1.05	32.18
(1.2 + 0.2Sds) * DL + E EMAM	158.37	1.56	32.18
(0.9 - 0.2Sds) * DL + E ELFM	102.41	1.05	22.40
(0.9 - 0.2Sds) * DL + E EMAM	156.95	1.56	22.40
1.0D + 1.0W	427.43	4.77	27.19

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 60.03% at 85.8 ft
Elevation (ft)
123.000
120.000
115.000
110.000
105.000
100.000
95.000
90.000
85.000
80.000
75.000
70.000
65.000
60.000
53.250
48.250
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
0.01
0.07
0.15
0.23
0.33
0.44
0.60
0.32
0.35
0.39
0.42
0.44
0.47
0.49
0.42
0.43
0.44
0.46
0.47
0.48
0.49
0.50
0.51
0.52
0.52
1.00
1.00
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction

Site Number: 283419 Code: ANSI/TIA-222-G

Site Name: PINE ORCHARD BRANFORD CT, CT Engineering Number: 7/26/2019 10:32:09 AM

Customer: T-MOBILE

Analysis Parameters

Location :	New Haven County, CT	Height (ft) :	123
Code :	ANSI/TIA-222-G	Base Diameter (in) :	50.75
Shape :	18 Sides	Top Diameter (in) :	21.00
Pole Type :	Taper	Taper (in/ft) :	0.250
Pole Manfacturer :	Sabre	Rotation (deg) :	0.00

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	101 mph
Exposure Category:	C	Design Wind Speed With Ice:	50 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0 ft	Design Ice Thickness:	0.75 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods				
Site Class:	D - Stiff Soil				
Period Based on Rayleigh Method (sec):	1.69				
T_L (sec):	6	p:	1	C_s:	0.039
S_s:	0.179	S_1:	0.061	C_s Max:	0.039
F_a:	1.600	F_v:	2.400	C_s Min:	0.030
S_{ds}:	0.191	S_{d1}:	0.098		

Load Cases

1.2D + 1.6W	101 mph with No Ice
0.9D + 1.6W	101 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 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

Site Number: 283419 Code: ANSI/TIA-222-G

Site Name: PINE ORCHARD BRANFORD CT, CT Engineering Number: 7/26/2019 10:32:09 AM

Customer: T-MOBILE

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	53.250	0.3750	65		0.00	9,429	50.75	0.00	59.96	19223.0	22.10	135.33	37.43	53.25	44.11	7655.6	15.84	99.83	0.250000
2-18	37.500	0.3125	65	Slip	60.00	4,343	39.31	48.25	38.68	7433.4	20.42	125.80	29.93	85.75	29.38	3258.1	15.13	95.80	0.250000
3-18	41.250	0.1875	65	Slip	48.00	2,169	31.31	81.75	18.52	2267.1	27.68	167.00	21.00	123.00	12.39	677.8	17.99	112.00	0.250000
				Shaft Weight		15,940													

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
122.00	Ericsson AIR 21, 1.3 M, B2A B4P	3	0.80	0.000	83.00	6.050	0.71	226.13	8.171	0.71
122.00	Ericsson AIR 21, 1.3M, B4A B2P	3	0.80	0.000	81.50	6.090	0.70	224.11	8.212	0.70
120.00	Ericsson KRY 112 144/1	3	0.80	0.000	11.00	0.350	0.50	21.52	0.746	0.50
120.00	Ericsson Radio 4449 B12,B71	3	0.80	0.000	74.00	1.640	0.50	128.75	2.466	0.50
120.00	RFS APXVAARR24_43-U-NA20	3	0.80	0.000	127.90	20.240	0.63	511.80	23.866	0.63
120.00	Generic Round Platform with	1	1.00	0.000	2,500.00	27.200	1.00	4,083.90	51.104	1.00
112.00	Powerwave Allgon TT19-	6	0.80	2.000	16.00	0.550	0.50	35.64	1.044	0.50
112.00	Raycap DC6-48-60-18-8F	1	0.80	2.000	20.00	1.260	1.00	71.20	1.900	1.00
112.00	Ericsson RRUS 11 (Band 12)	3	0.80	2.000	50.00	2.570	0.67	116.28	3.590	0.67
112.00	Ericsson RRUS 32 B2	3	0.80	2.000	53.00	2.740	0.67	124.52	3.876	0.67
112.00	Commscope SBNHH-1D65A	3	0.80	2.000	33.50	5.880	0.69	165.11	7.947	0.69
112.00	Powerwave Allgon P90-15-XLH-	6	0.80	2.000	53.00	8.130	0.67	213.15	10.839	0.67
112.00	Round T-Arm	3	0.75	0.000	250.00	9.700	0.67	453.21	17.716	0.67
105.00	Round T-Arm	3	0.75	0.000	250.00	9.700	0.67	451.80	17.660	0.67
102.00	Alcatel-Lucent RRH2x60 700	3	0.80	1.000	56.70	2.150	0.67	122.25	3.115	0.67
102.00	Alcatel-Lucent B66 RRH4x45	3	0.80	1.000	67.00	2.580	0.67	135.25	3.665	0.67
102.00	Raycap RC2DC-3315-PF-48	2	0.80	1.000	32.00	3.780	0.77	137.58	5.053	0.77
102.00	Swedcom SC-E 6016 REV2	2	0.80	1.000	25.00	7.630	0.83	225.29	9.049	0.83
102.00	Andrew SBNHH-1D65B	6	0.80	1.000	50.70	8.170	0.69	219.71	10.895	0.69
102.00	Antel LPA-80063/6CF	4	0.80	1.000	27.00	9.590	0.76	302.32	10.897	0.76
Totals	Num Loadings:20	64			6,873.00			16,943.38		

Linear Appurtenance Properties

Load Case Azimuth (deg) :

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax / Row	Dist Between Rows (in)	Dist Between Cols (in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	122.00	1	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	122.00	6	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	T-MOBILE
0.00	120.00	2	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0	0.00	0.00	0	0.00	N	T-MOBILE
0.00	120.00	1	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	112.00	1	0.40" (10.3mm) Fiber	0.40	0.09	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	112.00	2	0.45" (11.5mm) Fiber	0.45	0.08	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	112.00	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	112.00	12	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	112.00	1	2" conduit	2.38	3.65	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	102.00	2	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0	0.00	0.00	0	0.00	N	VERIZON WIRELESS
0.00	102.00	12	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	VERIZON WIRELESS

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)
0.00		0.3750	50.750	59.957	19,223.0	22.10	135.33	75.4	746.0	0.0	0.0
5.00		0.3750	49.500	58.469	17,827.2	21.51	132.00	76.1	709.3	0.0	1,007.4
10.00		0.3750	48.250	56.981	16,500.7	20.92	128.67	76.8	673.6	0.0	982.1
15.00		0.3750	47.000	55.493	15,241.7	20.34	125.33	77.5	638.7	0.0	956.8
20.00		0.3750	45.750	54.006	14,048.4	19.75	122.00	78.2	604.8	0.0	931.5
25.00		0.3750	44.500	52.518	12,919.0	19.16	118.67	78.9	571.8	0.0	906.2
30.00		0.3750	43.250	51.030	11,851.9	18.57	115.33	79.6	539.7	0.0	880.9
35.00		0.3750	42.000	49.542	10,845.2	17.99	112.00	80.2	508.6	0.0	855.6
40.00		0.3750	40.750	48.055	9,897.2	17.40	108.67	80.9	478.4	0.0	830.3
45.00		0.3750	39.500	46.567	9,006.1	16.81	105.33	81.6	449.1	0.0	804.9
48.25	Bot - Section 2	0.3750	38.688	45.600	8,456.6	16.43	103.17	82.1	430.5	0.0	509.6
50.00		0.3750	38.250	45.079	8,170.2	16.22	102.00	82.3	420.7	0.0	499.0
53.25	Top - Section 1	0.3125	38.063	37.442	6,741.3	19.71	121.80	78.2	348.8	0.0	911.7
55.00		0.3125	37.625	37.008	6,509.6	19.47	120.40	78.5	340.8	0.0	221.7
60.00		0.3125	36.375	35.768	5,877.1	18.76	116.40	79.3	318.2	0.0	619.1
65.00		0.3125	35.125	34.528	5,286.9	18.06	112.40	80.2	296.5	0.0	598.0
70.00		0.3125	33.875	33.289	4,737.6	17.35	108.40	81.0	275.5	0.0	576.9
75.00		0.3125	32.625	32.049	4,227.7	16.65	104.40	81.8	255.2	0.0	555.8
80.00		0.3125	31.375	30.809	3,755.8	15.94	100.40	82.6	235.8	0.0	534.7
81.75	Bot - Section 3	0.3125	30.938	30.375	3,599.3	15.69	99.00	82.6	229.1	0.0	182.2
85.00		0.3125	30.125	29.569	3,320.4	15.23	96.40	82.6	217.1	0.0	533.6
85.75	Top - Section 2	0.1875	30.313	17.927	2,055.5	26.74	161.67	69.9	133.6	0.0	121.1
90.00		0.1875	29.250	17.295	1,845.6	25.74	156.00	71.1	124.3	0.0	254.7
95.00		0.1875	28.000	16.551	1,617.6	24.57	149.33	72.5	113.8	0.0	287.9
100.0		0.1875	26.750	15.807	1,409.1	23.39	142.67	73.9	103.8	0.0	275.3
102.0		0.1875	26.250	15.510	1,331.0	22.92	140.00	74.4	99.9	0.0	106.6
105.0		0.1875	25.500	15.064	1,219.4	22.22	136.00	75.3	94.2	0.0	156.1
110.0		0.1875	24.250	14.320	1,047.5	21.04	129.33	76.7	85.1	0.0	250.0
112.0		0.1875	23.750	14.022	983.6	20.57	126.67	77.2	81.6	0.0	96.4
115.0		0.1875	23.000	13.576	892.6	19.87	122.67	78.0	76.4	0.0	140.9
120.0		0.1875	21.750	12.832	753.8	18.69	116.00	79.4	68.3	0.0	224.6
122.0		0.1875	21.250	12.534	702.5	18.22	113.33	80.0	65.1	0.0	86.3
123.0		0.1875	21.000	12.386	677.8	17.99	112.00	80.2	63.6	0.0	42.4
											15,940.4

Load Case: 1.2D + 1.6W — 101 mph with No Ice — 22 Iterations

Gust Response Factor :1.10
Dead Load Factor :1.20
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		255.8	0.0					0.0	0.0	255.8	0.0	0.0	0.0
5.00		505.2	1,208.9					0.0	236.0	505.2	1,445.0	0.0	0.0
10.00		492.5	1,178.6					0.0	236.0	492.5	1,414.6	0.0	0.0
15.00		487.2	1,148.2					0.0	236.0	487.2	1,384.2	0.0	0.0
20.00		494.6	1,117.8					0.0	236.0	494.6	1,353.8	0.0	0.0
25.00		504.5	1,087.4					0.0	236.0	504.5	1,323.5	0.0	0.0
30.00		509.7	1,057.1					0.0	236.0	509.7	1,293.1	0.0	0.0
35.00		511.4	1,026.7					0.0	236.0	511.4	1,262.7	0.0	0.0
40.00		510.4	996.3					0.0	236.0	510.4	1,232.3	0.0	0.0
45.00		419.1	965.9					0.0	236.0	419.1	1,202.0	0.0	0.0
48.25	Bot - Section 2	254.0	611.6					0.0	153.4	254.0	765.0	0.0	0.0
50.00		254.8	598.9					0.0	82.6	254.8	681.5	0.0	0.0
53.25	Top - Section 1	253.8	1,094.1					0.0	153.4	253.8	1,247.5	0.0	0.0
55.00		338.7	266.0					0.0	82.6	338.7	348.6	0.0	0.0
60.00		496.3	742.9					0.0	236.0	496.3	979.0	0.0	0.0
65.00		487.4	717.6					0.0	236.0	487.4	953.7	0.0	0.0
70.00		477.5	692.3					0.0	236.0	477.5	928.3	0.0	0.0
75.00		466.6	667.0					0.0	236.0	466.6	903.0	0.0	0.0
80.00		309.7	641.7					0.0	236.0	309.7	877.7	0.0	0.0
81.75	Bot - Section 3	226.2	218.6					0.0	82.6	226.2	301.2	0.0	0.0
85.00		180.4	640.4					0.0	153.4	180.4	793.8	0.0	0.0
85.75	Top - Section 2	220.7	145.3					0.0	35.4	220.7	180.8	0.0	0.0
90.00		401.2	305.6					0.0	200.6	401.2	506.3	0.0	0.0
95.00		420.9	345.5					0.0	236.0	420.9	581.6	0.0	0.0
100.00		287.6	330.3					0.0	236.0	287.6	566.4	0.0	0.0
102.00	Appurtenance(s)	199.5	127.9	4,046.9	0.0	4,046.9	1,076.8	0.0	94.4	4,246.4	1,299.1	0.0	0.0
105.00	Appurtenance(s)	310.7	187.3	816.4	0.0	0.0	900.0	0.0	94.6	1,127.2	1,181.9	0.0	0.0
110.00		266.5	300.0					0.0	157.7	266.5	457.6	0.0	0.0
112.00	Appurtenance(s)	184.0	115.7	3,483.3	0.0	5,311.4	1,912.2	0.0	63.1	3,667.3	2,091.0	0.0	0.0
115.00		285.3	169.0					0.0	40.9	285.3	209.9	0.0	0.0
120.00	Appurtenance(s)	243.9	269.6	3,456.4	0.0	0.0	3,766.4	0.0	68.2	3,700.3	4,104.2	0.0	0.0
122.00	Appurtenance(s)	101.5	103.6	1,183.6	0.0	0.0	592.2	0.0	15.7	1,285.1	711.5	0.0	0.0
123.00		33.5	50.9					0.0	0.0	33.5	50.9	0.0	0.0
								Totals:		24,377.8	32,631.4	0.00	0.00

Load Case: 1.2D + 1.6W — 101 mph with No Ice — 22 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	-32.60	-24.17	0.00	-2,174.96	0.00	2,174.96	4,069.07	2,034.53	8,426.11	4,219.32	0.00	0.00	0.524
5.00	-31.09	-23.75	0.00	-2,054.13	0.00	2,054.13	4,004.48	2,002.24	8,085.07	4,048.54	0.08	-0.16	0.515
10.00	-29.61	-23.33	0.00	-1,935.40	0.00	1,935.40	3,938.03	1,969.02	7,747.07	3,879.29	0.33	-0.32	0.507
15.00	-28.16	-22.91	0.00	-1,818.75	0.00	1,818.75	3,869.74	1,934.87	7,412.41	3,711.71	0.75	-0.48	0.497
20.00	-26.75	-22.48	0.00	-1,704.18	0.00	1,704.18	3,799.59	1,899.80	7,081.37	3,545.95	1.34	-0.64	0.488
25.00	-25.37	-22.04	0.00	-1,591.76	0.00	1,591.76	3,727.59	1,863.80	6,754.24	3,382.14	2.10	-0.81	0.478
30.00	-24.02	-21.58	0.00	-1,481.58	0.00	1,481.58	3,653.75	1,826.87	6,431.30	3,220.43	3.04	-0.98	0.467
35.00	-22.70	-21.11	0.00	-1,373.68	0.00	1,373.68	3,578.04	1,789.02	6,112.84	3,060.96	4.16	-1.15	0.455
40.00	-21.42	-20.64	0.00	-1,268.13	0.00	1,268.13	3,500.49	1,750.25	5,799.16	2,903.89	5.45	-1.32	0.443
45.00	-20.18	-20.24	0.00	-1,164.92	0.00	1,164.92	3,421.09	1,710.55	5,490.53	2,749.35	6.93	-1.50	0.430
48.25	-19.39	-20.00	0.00	-1,099.13	0.00	1,099.13	3,368.49	1,684.24	5,292.78	2,650.32	7.99	-1.61	0.421
50.00	-18.68	-19.75	0.00	-1,064.14	0.00	1,064.14	3,339.84	1,669.92	5,187.25	2,597.48	8.60	-1.68	0.415
53.25	-17.41	-19.49	0.00	-999.94	0.00	999.94	2,635.64	1,317.82	4,086.59	2,046.33	9.78	-1.79	0.495
55.00	-17.03	-19.18	0.00	-965.83	0.00	965.83	2,614.77	1,307.38	4,006.85	2,006.40	10.45	-1.86	0.488
60.00	-16.00	-18.71	0.00	-869.93	0.00	869.93	2,553.87	1,276.94	3,781.34	1,893.48	12.51	-2.06	0.466
65.00	-15.01	-18.24	0.00	-776.40	0.00	776.40	2,491.13	1,245.56	3,559.50	1,782.39	14.77	-2.26	0.442
70.00	-14.04	-17.77	0.00	-685.22	0.00	685.22	2,426.53	1,213.27	3,341.60	1,673.28	17.24	-2.45	0.416
75.00	-13.10	-17.31	0.00	-596.38	0.00	596.38	2,360.09	1,180.04	3,127.93	1,566.29	19.91	-2.65	0.387
80.00	-12.20	-16.98	0.00	-509.86	0.00	509.86	2,288.96	1,144.48	2,915.17	1,459.75	22.79	-2.83	0.355
81.75	-11.89	-16.76	0.00	-480.14	0.00	480.14	2,256.72	1,128.36	2,833.23	1,418.72	23.84	-2.90	0.344
85.00	-11.08	-16.55	0.00	-425.68	0.00	425.68	2,196.84	1,098.42	2,684.15	1,344.07	25.85	-3.01	0.322
85.75	-10.89	-16.34	0.00	-413.26	0.00	413.26	1,128.57	564.28	1,399.26	700.67	26.33	-3.04	0.600
90.00	-10.35	-15.94	0.00	-343.83	0.00	343.83	1,107.06	553.53	1,323.88	662.92	29.10	-3.18	0.529
95.00	-9.74	-15.53	0.00	-264.11	0.00	264.11	1,080.04	540.02	1,235.66	618.75	32.56	-3.42	0.437
100.00	-9.15	-15.23	0.00	-186.48	0.00	186.48	1,051.16	525.58	1,148.21	574.96	36.25	-3.61	0.334
102.00	-8.11	-10.92	0.00	-151.98	0.00	151.98	1,039.10	519.55	1,113.52	557.59	37.78	-3.68	0.281
105.00	-6.99	-9.73	0.00	-119.23	0.00	119.23	1,020.44	510.22	1,061.83	531.71	40.13	-3.77	0.231
110.00	-6.54	-9.44	0.00	-70.60	0.00	70.60	987.87	493.93	976.80	489.13	44.14	-3.88	0.151
112.00	-4.70	-5.64	0.00	-46.41	0.00	46.41	974.32	487.16	943.23	472.32	45.77	-3.91	0.103
115.00	-4.51	-5.34	0.00	-29.49	0.00	29.49	953.44	476.72	893.41	447.37	48.24	-3.95	0.071
120.00	-0.67	-1.37	0.00	-2.77	0.00	2.77	917.17	458.58	811.94	406.57	52.39	-3.97	0.008
122.00	-0.05	-0.04	0.00	-0.04	0.00	0.04	902.14	451.07	779.96	390.56	54.05	-3.97	0.000
123.00	0.00	-0.03	0.00	0.00	0.00	0.00	894.51	447.26	764.11	382.62	54.88	-3.97	0.000

Load Case: 0.9D + 1.6W — 101 mph with No Ice (Reduced DL) — 21 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		255.8	0.0					0.0	0.0	255.8	0.0	0.0	0.0
5.00		505.2	906.7					0.0	177.0	505.2	1,083.7	0.0	0.0
10.00		492.5	883.9					0.0	177.0	492.5	1,060.9	0.0	0.0
15.00		487.2	861.1					0.0	177.0	487.2	1,038.2	0.0	0.0
20.00		494.6	838.4					0.0	177.0	494.6	1,015.4	0.0	0.0
25.00		504.5	815.6					0.0	177.0	504.5	992.6	0.0	0.0
30.00		509.7	792.8					0.0	177.0	509.7	969.8	0.0	0.0
35.00		511.4	770.0					0.0	177.0	511.4	947.0	0.0	0.0
40.00		510.4	747.2					0.0	177.0	510.4	924.3	0.0	0.0
45.00		419.1	724.4					0.0	177.0	419.1	901.5	0.0	0.0
48.25	Bot - Section 2	254.0	458.7					0.0	115.1	254.0	573.7	0.0	0.0
50.00		254.8	449.1					0.0	62.0	254.8	511.1	0.0	0.0
53.25	Top - Section 1	253.8	820.5					0.0	115.1	253.8	935.6	0.0	0.0
55.00		338.7	199.5					0.0	62.0	338.7	261.5	0.0	0.0
60.00		496.3	557.2					0.0	177.0	496.3	734.2	0.0	0.0
65.00		487.4	538.2					0.0	177.0	487.4	715.2	0.0	0.0
70.00		477.5	519.2					0.0	177.0	477.5	696.3	0.0	0.0
75.00		466.6	500.2					0.0	177.0	466.6	677.3	0.0	0.0
80.00		309.7	481.3					0.0	177.0	309.7	658.3	0.0	0.0
81.75	Bot - Section 3	226.2	164.0					0.0	62.0	226.2	225.9	0.0	0.0
85.00		180.4	480.3					0.0	115.1	180.4	595.3	0.0	0.0
85.75	Top - Section 2	220.7	109.0					0.0	26.6	220.7	135.6	0.0	0.0
90.00		401.2	229.2					0.0	150.5	401.2	379.7	0.0	0.0
95.00		420.9	259.1					0.0	177.0	420.9	436.2	0.0	0.0
100.00		287.6	247.7					0.0	177.0	287.6	424.8	0.0	0.0
102.00	Appurtenance(s)	199.5	95.9	4,046.9	0.0	4,046.9	807.6	0.0	70.8	4,246.4	974.3	0.0	0.0
105.00	Appurtenance(s)	310.7	140.4	816.4	0.0	0.0	675.0	0.0	71.0	1,127.2	886.4	0.0	0.0
110.00		266.5	225.0					0.0	118.3	266.5	343.2	0.0	0.0
112.00	Appurtenance(s)	184.0	86.8	3,483.3	0.0	5,311.4	1,434.1	0.0	47.3	3,667.3	1,568.3	0.0	0.0
115.00		285.3	126.8					0.0	30.7	285.3	157.4	0.0	0.0
120.00	Appurtenance(s)	243.9	202.2	3,456.4	0.0	0.0	2,824.8	0.0	51.1	3,700.3	3,078.1	0.0	0.0
122.00	Appurtenance(s)	101.5	77.7	1,183.6	0.0	0.0	444.1	0.0	11.8	1,285.1	533.6	0.0	0.0
123.00		33.5	38.2					0.0	0.0	33.5	38.2	0.0	0.0
								Totals:		24,377.8	24,473.5	0.00	0.00

Load Case: 0.9D + 1.6W — 101 mph with No Ice (Reduced DL) — 21 Iterations

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

Wind Importance 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	-24.44	-24.15	0.00	-2,159.84	0.00	2,159.84	4,069.07	2,034.53	8,426.11	4,219.32	0.00	0.00	0.518
5.00	-23.29	-23.71	0.00	-2,039.06	0.00	2,039.06	4,004.48	2,002.24	8,085.07	4,048.54	0.08	-0.16	0.510
10.00	-22.17	-23.28	0.00	-1,920.50	0.00	1,920.50	3,938.03	1,969.02	7,747.07	3,879.29	0.33	-0.31	0.501
15.00	-21.07	-22.84	0.00	-1,804.12	0.00	1,804.12	3,869.74	1,934.87	7,412.41	3,711.71	0.75	-0.47	0.492
20.00	-19.99	-22.40	0.00	-1,689.91	0.00	1,689.91	3,799.59	1,899.80	7,081.37	3,545.95	1.33	-0.64	0.482
25.00	-18.94	-21.93	0.00	-1,577.94	0.00	1,577.94	3,727.59	1,863.80	6,754.24	3,382.14	2.09	-0.80	0.472
30.00	-17.92	-21.46	0.00	-1,468.27	0.00	1,468.27	3,653.75	1,826.87	6,431.30	3,220.43	3.02	-0.97	0.461
35.00	-16.92	-20.98	0.00	-1,360.97	0.00	1,360.97	3,578.04	1,789.02	6,112.84	3,060.96	4.13	-1.14	0.449
40.00	-15.95	-20.50	0.00	-1,256.05	0.00	1,256.05	3,500.49	1,750.25	5,799.16	2,903.89	5.41	-1.31	0.437
45.00	-15.00	-20.10	0.00	-1,153.55	0.00	1,153.55	3,421.09	1,710.55	5,490.53	2,749.35	6.88	-1.48	0.424
48.25	-14.41	-19.85	0.00	-1,088.23	0.00	1,088.23	3,368.49	1,684.24	5,292.78	2,650.32	7.93	-1.60	0.415
50.00	-13.87	-19.60	0.00	-1,053.49	0.00	1,053.49	3,339.84	1,669.92	5,187.25	2,597.48	8.53	-1.66	0.410
53.25	-12.91	-19.34	0.00	-989.78	0.00	989.78	2,635.64	1,317.82	4,086.59	2,046.33	9.70	-1.78	0.489
55.00	-12.62	-19.02	0.00	-955.94	0.00	955.94	2,614.77	1,307.38	4,006.85	2,006.40	10.36	-1.84	0.481
60.00	-11.84	-18.54	0.00	-860.82	0.00	860.82	2,553.87	1,276.94	3,781.34	1,893.48	12.40	-2.04	0.459
65.00	-11.08	-18.07	0.00	-768.10	0.00	768.10	2,491.13	1,245.56	3,559.50	1,782.39	14.64	-2.24	0.436
70.00	-10.35	-17.60	0.00	-677.75	0.00	677.75	2,426.53	1,213.27	3,341.60	1,673.28	17.09	-2.43	0.410
75.00	-9.63	-17.13	0.00	-589.76	0.00	589.76	2,360.09	1,180.04	3,127.93	1,566.29	19.74	-2.62	0.381
80.00	-8.95	-16.81	0.00	-504.10	0.00	504.10	2,288.96	1,144.48	2,915.17	1,459.75	22.59	-2.81	0.349
81.75	-8.71	-16.59	0.00	-474.68	0.00	474.68	2,256.72	1,128.36	2,833.23	1,418.72	23.63	-2.87	0.339
85.00	-8.11	-16.39	0.00	-420.76	0.00	420.76	2,196.84	1,098.42	2,684.15	1,344.07	25.62	-2.99	0.317
85.75	-7.96	-16.17	0.00	-408.47	0.00	408.47	1,128.57	564.28	1,399.26	700.67	26.10	-3.01	0.591
90.00	-7.55	-15.78	0.00	-339.74	0.00	339.74	1,107.06	553.53	1,323.88	662.92	28.84	-3.15	0.520
95.00	-7.08	-15.36	0.00	-260.86	0.00	260.86	1,080.04	540.02	1,235.66	618.75	32.27	-3.38	0.429
100.00	-6.64	-15.06	0.00	-184.07	0.00	184.07	1,051.16	525.58	1,148.21	574.96	35.92	-3.58	0.327
102.00	-5.92	-10.77	0.00	-149.90	0.00	149.90	1,039.10	519.55	1,113.52	557.59	37.44	-3.65	0.275
105.00	-5.10	-9.60	0.00	-117.59	0.00	117.59	1,020.44	510.22	1,061.83	531.71	39.76	-3.73	0.227
110.00	-4.76	-9.31	0.00	-69.62	0.00	69.62	987.87	493.93	976.80	489.13	43.73	-3.84	0.147
112.00	-3.44	-5.55	0.00	-45.68	0.00	45.68	974.32	487.16	943.23	472.32	45.34	-3.87	0.100
115.00	-3.30	-5.26	0.00	-29.03	0.00	29.03	953.44	476.72	893.41	447.37	47.79	-3.91	0.068
120.00	-0.48	-1.35	0.00	-2.75	0.00	2.75	917.17	458.58	811.94	406.57	51.89	-3.93	0.007
122.00	-0.04	-0.04	0.00	-0.04	0.00	0.04	902.14	451.07	779.96	390.56	53.54	-3.93	0.000
123.00	0.00	-0.03	0.00	0.00	0.00	0.00	894.51	447.26	764.11	382.62	54.36	-3.93	0.000

Load Case: 1.2D + 1.0Di + 1.0Wi — 50 mph with 0.75 in Radial Ice — 21 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

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		75.6	0.0					0.0	0.0	75.6	0.0	0.0	0.0
5.00		149.8	1,576.7					0.0	236.0	149.8	1,812.7	0.0	0.0
10.00		146.8	1,580.0					0.0	236.0	146.8	1,816.0	0.0	0.0
15.00		145.8	1,560.5					0.0	236.0	145.8	1,796.6	0.0	0.0
20.00		148.5	1,533.7					0.0	236.0	148.5	1,769.7	0.0	0.0
25.00		151.9	1,502.9					0.0	236.0	151.9	1,738.9	0.0	0.0
30.00		153.9	1,469.6					0.0	236.0	153.9	1,705.7	0.0	0.0
35.00		154.8	1,434.7					0.0	236.0	154.8	1,670.8	0.0	0.0
40.00		155.0	1,398.5					0.0	236.0	155.0	1,634.6	0.0	0.0
45.00		127.6	1,361.3					0.0	236.0	127.6	1,597.4	0.0	0.0
48.25	Bot - Section 2	77.4	865.9					0.0	153.4	77.4	1,019.4	0.0	0.0
50.00		77.8	737.2					0.0	82.6	77.8	819.8	0.0	0.0
53.25	Top - Section 1	77.6	1,347.1					0.0	153.4	77.6	1,500.6	0.0	0.0
55.00		103.8	401.4					0.0	82.6	103.8	484.0	0.0	0.0
60.00		152.4	1,119.9					0.0	236.0	152.4	1,355.9	0.0	0.0
65.00		150.2	1,085.3					0.0	236.0	150.2	1,321.4	0.0	0.0
70.00		147.7	1,050.4					0.0	236.0	147.7	1,286.4	0.0	0.0
75.00		144.9	1,015.0					0.0	236.0	144.9	1,251.1	0.0	0.0
80.00		96.5	979.4					0.0	236.0	96.5	1,215.4	0.0	0.0
81.75	Bot - Section 3	70.6	335.7					0.0	82.6	70.6	418.4	0.0	0.0
85.00		56.4	855.7					0.0	153.4	56.4	1,009.1	0.0	0.0
85.75	Top - Section 2	69.2	194.9					0.0	35.4	69.2	230.3	0.0	0.0
90.00		126.2	577.7					0.0	200.6	126.2	778.4	0.0	0.0
95.00		133.0	654.4					0.0	236.0	133.0	890.4	0.0	0.0
100.00		91.2	627.8					0.0	236.0	91.2	863.8	0.0	0.0
102.00	Appurtenance(s)	63.6	245.2	781.3	0.0	781.3	3,719.4	0.0	94.4	844.9	4,059.0	0.0	0.0
105.00	Appurtenance(s)	99.4	359.0	227.7	0.0	0.0	1,355.4	0.0	94.6	327.1	1,809.0	0.0	0.0
110.00		85.5	574.1					0.0	157.7	85.5	731.7	0.0	0.0
112.00	Appurtenance(s)	59.4	223.6	788.9	0.0	1,114.7	3,733.1	0.0	63.1	848.2	4,019.8	0.0	0.0
115.00		92.6	326.5					0.0	40.9	92.6	367.4	0.0	0.0
120.00	Appurtenance(s)	79.4	519.6	800.8	0.0	0.0	5,802.7	0.0	68.2	880.2	6,390.4	0.0	0.0
122.00	Appurtenance(s)	33.2	201.8	244.7	0.0	0.0	1,198.1	0.0	15.7	277.9	1,415.5	0.0	0.0
123.00		11.0	99.5					0.0	0.0	11.0	99.5	0.0	0.0
								Totals:		6,352.08	48,878.9	0.00	0.00

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 21 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	-48.88	-6.29	0.00	-551.09	0.00	551.09	4,069.07	2,034.53	8,426.11	4,219.32	0.00	0.00	0.143
5.00	-47.06	-6.18	0.00	-519.62	0.00	519.62	4,004.48	2,002.24	8,085.07	4,048.54	0.02	-0.04	0.140
10.00	-45.24	-6.06	0.00	-488.74	0.00	488.74	3,938.03	1,969.02	7,747.07	3,879.29	0.08	-0.08	0.137
15.00	-43.44	-5.94	0.00	-458.45	0.00	458.45	3,869.74	1,934.87	7,412.41	3,711.71	0.19	-0.12	0.135
20.00	-41.67	-5.82	0.00	-428.74	0.00	428.74	3,799.59	1,899.80	7,081.37	3,545.95	0.34	-0.16	0.132
25.00	-39.92	-5.69	0.00	-399.65	0.00	399.65	3,727.59	1,863.80	6,754.24	3,382.14	0.53	-0.20	0.129
30.00	-38.21	-5.56	0.00	-371.20	0.00	371.20	3,653.75	1,826.87	6,431.30	3,220.43	0.77	-0.25	0.126
35.00	-36.54	-5.42	0.00	-343.40	0.00	343.40	3,578.04	1,789.02	6,112.84	3,060.96	1.05	-0.29	0.122
40.00	-34.90	-5.29	0.00	-316.29	0.00	316.29	3,500.49	1,750.25	5,799.16	2,903.89	1.38	-0.33	0.119
45.00	-33.30	-5.17	0.00	-289.86	0.00	289.86	3,421.09	1,710.55	5,490.53	2,749.35	1.75	-0.38	0.115
48.25	-32.28	-5.10	0.00	-273.06	0.00	273.06	3,368.49	1,684.24	5,292.78	2,650.32	2.01	-0.41	0.113
50.00	-31.46	-5.03	0.00	-264.14	0.00	264.14	3,339.84	1,669.92	5,187.25	2,597.48	2.17	-0.42	0.111
53.25	-29.96	-4.95	0.00	-247.80	0.00	247.80	2,635.64	1,317.82	4,086.59	2,046.33	2.46	-0.45	0.132
55.00	-29.47	-4.86	0.00	-239.14	0.00	239.14	2,614.77	1,307.38	4,006.85	2,006.40	2.63	-0.47	0.130
60.00	-28.11	-4.72	0.00	-214.85	0.00	214.85	2,553.87	1,276.94	3,781.34	1,893.48	3.14	-0.52	0.124
65.00	-26.79	-4.58	0.00	-191.26	0.00	191.26	2,491.13	1,245.56	3,559.50	1,782.39	3.71	-0.56	0.118
70.00	-25.50	-4.44	0.00	-168.36	0.00	168.36	2,426.53	1,213.27	3,341.60	1,673.28	4.33	-0.61	0.111
75.00	-24.25	-4.30	0.00	-146.17	0.00	146.17	2,360.09	1,180.04	3,127.93	1,566.29	5.00	-0.66	0.104
80.00	-23.03	-4.20	0.00	-124.67	0.00	124.67	2,288.96	1,144.48	2,915.17	1,459.75	5.71	-0.71	0.095
81.75	-22.61	-4.13	0.00	-117.32	0.00	117.32	2,256.72	1,128.36	2,833.23	1,418.72	5.97	-0.72	0.093
85.00	-21.60	-4.07	0.00	-103.88	0.00	103.88	2,196.84	1,098.42	2,684.15	1,344.07	6.48	-0.75	0.087
85.75	-21.37	-4.01	0.00	-100.83	0.00	100.83	1,128.57	564.28	1,399.26	700.67	6.59	-0.76	0.163
90.00	-20.59	-3.89	0.00	-83.80	0.00	83.80	1,107.06	553.53	1,323.88	662.92	7.28	-0.79	0.145
95.00	-19.70	-3.76	0.00	-64.37	0.00	64.37	1,080.04	540.02	1,235.66	618.75	8.14	-0.85	0.122
100.00	-18.84	-3.67	0.00	-45.57	0.00	45.57	1,051.16	525.58	1,148.21	574.96	9.06	-0.90	0.097
102.00	-14.79	-2.76	0.00	-37.46	0.00	37.46	1,039.10	519.55	1,113.52	557.59	9.44	-0.91	0.081
105.00	-12.99	-2.41	0.00	-29.17	0.00	29.17	1,020.44	510.22	1,061.83	531.71	10.02	-0.93	0.068
110.00	-12.26	-2.32	0.00	-17.12	0.00	17.12	987.87	493.93	976.80	489.13	11.01	-0.96	0.047
112.00	-8.25	-1.40	0.00	-11.37	0.00	11.37	974.32	487.16	943.23	472.32	11.42	-0.97	0.033
115.00	-7.88	-1.30	0.00	-7.16	0.00	7.16	953.44	476.72	893.41	447.37	12.03	-0.98	0.024
120.00	-1.51	-0.31	0.00	-0.64	0.00	0.64	917.17	458.58	811.94	406.57	13.06	-0.98	0.003
122.00	-0.10	-0.01	0.00	-0.01	0.00	0.01	902.14	451.07	779.96	390.56	13.47	-0.98	0.000
123.00	0.00	-0.01	0.00	0.00	0.00	0.00	894.51	447.26	764.11	382.62	13.68	-0.98	0.000

Load Case: 1.0D + 1.0W Serviceability 60 mph 20 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		50.5	0.0					0.0	0.0	50.5	0.0	0.0	0.0
5.00		99.7	1,007.4					0.0	196.7	99.7	1,204.1	0.0	0.0
10.00		97.2	982.1					0.0	196.7	97.2	1,178.8	0.0	0.0
15.00		96.1	956.8					0.0	196.7	96.1	1,153.5	0.0	0.0
20.00		97.6	931.5					0.0	196.7	97.6	1,128.2	0.0	0.0
25.00		99.6	906.2					0.0	196.7	99.6	1,102.9	0.0	0.0
30.00		100.6	880.9					0.0	196.7	100.6	1,077.6	0.0	0.0
35.00		100.9	855.6					0.0	196.7	100.9	1,052.3	0.0	0.0
40.00		100.7	830.3					0.0	196.7	100.7	1,027.0	0.0	0.0
45.00		82.7	804.9					0.0	196.7	82.7	1,001.6	0.0	0.0
48.25	Bot - Section 2	50.1	509.6					0.0	127.9	50.1	637.5	0.0	0.0
50.00		50.3	499.0					0.0	68.8	50.3	567.9	0.0	0.0
53.25	Top - Section 1	50.1	911.7					0.0	127.9	50.1	1,039.6	0.0	0.0
55.00		66.8	221.7					0.0	68.8	66.8	290.5	0.0	0.0
60.00		97.9	619.1					0.0	196.7	97.9	815.8	0.0	0.0
65.00		96.2	598.0					0.0	196.7	96.2	794.7	0.0	0.0
70.00		94.2	576.9					0.0	196.7	94.2	773.6	0.0	0.0
75.00		92.1	555.8					0.0	196.7	92.1	752.5	0.0	0.0
80.00		61.1	534.7					0.0	196.7	61.1	731.4	0.0	0.0
81.75	Bot - Section 3	44.6	182.2					0.0	68.8	44.6	251.0	0.0	0.0
85.00		35.6	533.6					0.0	127.9	35.6	661.5	0.0	0.0
85.75	Top - Section 2	43.6	121.1					0.0	29.5	43.6	150.6	0.0	0.0
90.00		79.2	254.7					0.0	167.2	79.2	421.9	0.0	0.0
95.00		83.1	287.9					0.0	196.7	83.1	484.6	0.0	0.0
100.00		56.8	275.3					0.0	196.7	56.8	472.0	0.0	0.0
102.00	Appurtenance(s)	39.4	106.6	798.6	0.0	798.6	897.3	0.0	78.7	838.0	1,082.5	0.0	0.0
105.00	Appurtenance(s)	61.3	156.1	161.1	0.0	0.0	750.0	0.0	78.8	222.4	984.9	0.0	0.0
110.00		52.6	250.0					0.0	131.4	52.6	381.4	0.0	0.0
112.00	Appurtenance(s)	36.3	96.4	687.4	0.0	1,048.2	1,593.5	0.0	52.6	723.7	1,742.5	0.0	0.0
115.00		56.3	140.9					0.0	34.1	56.3	174.9	0.0	0.0
120.00	Appurtenance(s)	48.1	224.6	682.1	0.0	0.0	3,138.7	0.0	56.8	730.3	3,420.1	0.0	0.0
122.00	Appurtenance(s)	20.0	86.3	233.6	0.0	0.0	493.5	0.0	13.1	253.6	592.9	0.0	0.0
123.00		6.6	42.4					0.0	0.0	6.6	42.4	0.0	0.0
								Totals:		4,810.94	27,192.8	0.00	0.00

Load Case: 1.0D + 1.0W Serviceability 60 mph 20 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	-27.19	-4.77	0.00	-427.43	0.00	427.43	4,069.07	2,034.53	8,426.11	4,219.32	0.00	0.00	0.108
5.00	-25.98	-4.68	0.00	-403.60	0.00	403.60	4,004.48	2,002.24	8,085.07	4,048.54	0.02	-0.03	0.106
10.00	-24.80	-4.60	0.00	-380.19	0.00	380.19	3,938.03	1,969.02	7,747.07	3,879.29	0.07	-0.06	0.104
15.00	-23.65	-4.51	0.00	-357.21	0.00	357.21	3,869.74	1,934.87	7,412.41	3,711.71	0.15	-0.09	0.102
20.00	-22.52	-4.43	0.00	-334.65	0.00	334.65	3,799.59	1,899.80	7,081.37	3,545.95	0.26	-0.13	0.100
25.00	-21.41	-4.34	0.00	-312.52	0.00	312.52	3,727.59	1,863.80	6,754.24	3,382.14	0.41	-0.16	0.098
30.00	-20.33	-4.24	0.00	-290.85	0.00	290.85	3,653.75	1,826.87	6,431.30	3,220.43	0.60	-0.19	0.096
35.00	-19.28	-4.15	0.00	-269.63	0.00	269.63	3,578.04	1,789.02	6,112.84	3,060.96	0.82	-0.23	0.093
40.00	-18.25	-4.06	0.00	-248.89	0.00	248.89	3,500.49	1,750.25	5,799.16	2,903.89	1.07	-0.26	0.091
45.00	-17.25	-3.98	0.00	-228.61	0.00	228.61	3,421.09	1,710.55	5,490.53	2,749.35	1.36	-0.29	0.088
48.25	-16.61	-3.93	0.00	-215.69	0.00	215.69	3,368.49	1,684.24	5,292.78	2,650.32	1.57	-0.32	0.086
50.00	-16.04	-3.88	0.00	-208.81	0.00	208.81	3,339.84	1,669.92	5,187.25	2,597.48	1.69	-0.33	0.085
53.25	-15.00	-3.83	0.00	-196.20	0.00	196.20	2,635.64	1,317.82	4,086.59	2,046.33	1.92	-0.35	0.102
55.00	-14.71	-3.77	0.00	-189.51	0.00	189.51	2,614.77	1,307.38	4,006.85	2,006.40	2.05	-0.36	0.100
60.00	-13.89	-3.67	0.00	-170.68	0.00	170.68	2,553.87	1,276.94	3,781.34	1,893.48	2.46	-0.40	0.096
65.00	-13.09	-3.58	0.00	-152.32	0.00	152.32	2,491.13	1,245.56	3,559.50	1,782.39	2.90	-0.44	0.091
70.00	-12.32	-3.49	0.00	-134.42	0.00	134.42	2,426.53	1,213.27	3,341.60	1,673.28	3.39	-0.48	0.085
75.00	-11.56	-3.40	0.00	-116.99	0.00	116.99	2,360.09	1,180.04	3,127.93	1,566.29	3.91	-0.52	0.080
80.00	-10.83	-3.33	0.00	-100.01	0.00	100.01	2,288.96	1,144.48	2,915.17	1,459.75	4.47	-0.56	0.073
81.75	-10.58	-3.29	0.00	-94.18	0.00	94.18	2,256.72	1,128.36	2,833.23	1,418.72	4.68	-0.57	0.071
85.00	-9.92	-3.25	0.00	-83.49	0.00	83.49	2,196.84	1,098.42	2,684.15	1,344.07	5.08	-0.59	0.067
85.75	-9.77	-3.21	0.00	-81.05	0.00	81.05	1,128.57	564.28	1,399.26	700.67	5.17	-0.60	0.124
90.00	-9.34	-3.13	0.00	-67.43	0.00	67.43	1,107.06	553.53	1,323.88	662.92	5.71	-0.62	0.110
95.00	-8.86	-3.05	0.00	-51.78	0.00	51.78	1,080.04	540.02	1,235.66	618.75	6.39	-0.67	0.092
100.00	-8.38	-2.99	0.00	-36.55	0.00	36.55	1,051.16	525.58	1,148.21	574.96	7.12	-0.71	0.072
102.00	-7.31	-2.14	0.00	-29.77	0.00	29.77	1,039.10	519.55	1,113.52	557.59	7.42	-0.72	0.060
105.00	-6.33	-1.91	0.00	-23.36	0.00	23.36	1,020.44	510.22	1,061.83	531.71	7.88	-0.74	0.050
110.00	-5.95	-1.85	0.00	-13.83	0.00	13.83	987.87	493.93	976.80	489.13	8.67	-0.76	0.034
112.00	-4.22	-1.10	0.00	-9.08	0.00	9.08	974.32	487.16	943.23	472.32	8.99	-0.77	0.024
115.00	-4.04	-1.05	0.00	-5.77	0.00	5.77	953.44	476.72	893.41	447.37	9.47	-0.77	0.017
120.00	-0.63	-0.27	0.00	-0.54	0.00	0.54	917.17	458.58	811.94	406.57	10.29	-0.78	0.002
122.00	-0.04	-0.01	0.00	-0.01	0.00	0.01	902.14	451.07	779.96	390.56	10.61	-0.78	0.000
123.00	0.00	-0.01	0.00	0.00	0.00	0.00	894.51	447.26	764.11	382.62	10.78	-0.78	0.000

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):	1.69	
Redundancy Factor (p):	1.00	
Seismic Force Distribution Exponent (k):	1.59	
Total Unfactored Dead Load:	27.19	k
Seismic Base Shear (E):	1.05	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)
32	122.50	42	90	0.004	4	52
31	121.00	99	207	0.008	9	123
30	117.50	281	559	0.022	23	348
29	113.50	175	329	0.013	14	217
28	111.00	149	270	0.011	11	184
27	107.50	381	657	0.026	28	472
26	103.50	235	381	0.015	16	291
25	101.00	185	289	0.012	12	229
24	97.50	472	696	0.028	29	584
23	92.50	485	657	0.026	28	600
22	87.88	422	527	0.021	22	522
21	85.38	151	180	0.007	8	187
20	83.38	661	760	0.030	32	819
19	80.88	251	275	0.011	12	311
18	77.50	731	748	0.030	31	906
17	72.50	753	692	0.028	29	932
16	67.50	774	635	0.025	27	958
15	62.50	795	577	0.023	24	984
14	57.50	816	519	0.021	22	1,010
13	54.13	291	168	0.007	7	360
12	51.63	1,040	557	0.022	23	1,287
11	49.13	568	281	0.011	12	703
10	46.63	637	290	0.012	12	789

9	42.50	1,002	394	0.016	17	1,240
8	37.50	1,027	331	0.013	14	1,272
7	32.50	1,052	270	0.011	11	1,303
6	27.50	1,078	212	0.008	9	1,334
5	22.50	1,103	157	0.006	7	1,366
4	17.50	1,128	108	0.004	5	1,397
3	12.50	1,154	64	0.003	3	1,428
2	7.50	1,179	29	0.001	1	1,460
1	2.50	1,204	5	0.000	0	1,491
Ericsson AIR 21, 1.3	122.00	249	525	0.021	22	308
Ericsson AIR 21, 1.3	122.00	244	515	0.021	22	303
Ericsson KRY 112 144	120.00	33	68	0.003	3	41
Ericsson Radio 4449	120.00	222	456	0.018	19	275
RFS APXVAARR24_43-U-	120.00	384	788	0.032	33	475
Generic Round Platfo	120.00	2,500	5,133	0.205	215	3,095
Powerwave Allgon TT1	112.00	96	177	0.007	7	119
Raycap DC6-48-60-18-	112.00	20	37	0.001	2	25
Ericsson RRUS 11 (Ba	112.00	150	276	0.011	12	186
Ericsson RRUS 32 B2	112.00	159	292	0.012	12	197
Commscope SBNHH-1D65	112.00	101	185	0.007	8	124
Powerwave Allgon P90	112.00	318	585	0.023	25	394
Round T-Arm	112.00	750	1,380	0.055	58	929
Round T-Arm	105.00	750	1,245	0.050	52	929
Alcatel-Lucent RRH2x	102.00	170	270	0.011	11	211
Alcatel-Lucent B66 R	102.00	201	319	0.013	13	249
Raycap RC2DC-3315-PF	102.00	64	101	0.004	4	79
Swedcom SC-E 6016 RE	102.00	50	79	0.003	3	62
Andrew SBNHH-1D65B	102.00	304	482	0.019	20	377
Antel LPA-80063/6CF	102.00	108	171	0.007	7	134
		27,193	24,997	1.000	1,049	33,670

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)
32	122.50	42	90	0.004	4	37
31	121.00	99	207	0.008	9	86
30	117.50	281	559	0.022	23	243
29	113.50	175	329	0.013	14	151
28	111.00	149	270	0.011	11	128
27	107.50	381	657	0.026	28	329
26	103.50	235	381	0.015	16	202
25	101.00	185	289	0.012	12	160
24	97.50	472	696	0.028	29	407
23	92.50	485	657	0.026	28	418
22	87.88	422	527	0.021	22	364
21	85.38	151	180	0.007	8	130
20	83.38	661	760	0.030	32	570
19	80.88	251	275	0.011	12	216
18	77.50	731	748	0.030	31	630
17	72.50	753	692	0.028	29	649
16	67.50	774	635	0.025	27	667
15	62.50	795	577	0.023	24	685
14	57.50	816	519	0.021	22	703
13	54.13	291	168	0.007	7	250
12	51.63	1,040	557	0.022	23	896
11	49.13	568	281	0.011	12	489
10	46.63	637	290	0.012	12	549
9	42.50	1,002	394	0.016	17	863
8	37.50	1,027	331	0.013	14	885

7	32.50	1,052	270	0.011	11	907
6	27.50	1,078	212	0.008	9	929
5	22.50	1,103	157	0.006	7	950
4	17.50	1,128	108	0.004	5	972
3	12.50	1,154	64	0.003	3	994
2	7.50	1,179	29	0.001	1	1,016
1	2.50	1,204	5	0.000	0	1,038
Ericsson AIR 21, 1.3	122.00	249	525	0.021	22	215
Ericsson AIR 21, 1.3	122.00	244	515	0.021	22	211
Ericsson KRY 112 144	120.00	33	68	0.003	3	28
Ericsson Radio 4449	120.00	222	456	0.018	19	191
RFS APXVAARR24_43-U-	120.00	384	788	0.032	33	331
Generic Round Platfo	120.00	2,500	5,133	0.205	215	2,155
Powerwave Allgon TT1	112.00	96	177	0.007	7	83
Raycap DC6-48-60-18-	112.00	20	37	0.001	2	17
Ericsson RRUS 11 (Ba	112.00	150	276	0.011	12	129
Ericsson RRUS 32 B2	112.00	159	292	0.012	12	137
Commscope SBNHH-1D65	112.00	101	185	0.007	8	87
Powerwave Allgon P90	112.00	318	585	0.023	25	274
Round T-Arm	112.00	750	1,380	0.055	58	646
Round T-Arm	105.00	750	1,245	0.050	52	646
Alcatel-Lucent RRH2x	102.00	170	270	0.011	11	147
Alcatel-Lucent B66 R	102.00	201	319	0.013	13	173
Raycap RC2DC-3315-PF	102.00	64	101	0.004	4	55
Swedcom SC-E 6016 RE	102.00	50	79	0.003	3	43
Andrew SBNHH-1D65B	102.00	304	482	0.019	20	262
Antel LPA-80063/6CF	102.00	108	171	0.007	7	93
		27,193	24,997	1.000	1,049	23,435

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	-32.18	-1.05	0.00	-103.27	0.00	103.27	4,069.07	2,034.53	8,426.11	4,219.32	0.00	0.00	0.032
5.00	-30.72	-1.05	0.00	-98.02	0.00	98.02	4,004.48	2,002.24	8,085.07	4,048.54	0.00	-0.01	0.032
10.00	-29.29	-1.05	0.00	-92.76	0.00	92.76	3,938.03	1,969.02	7,747.07	3,879.29	0.02	-0.02	0.031
15.00	-27.89	-1.05	0.00	-87.49	0.00	87.49	3,869.74	1,934.87	7,412.41	3,711.71	0.04	-0.02	0.031
20.00	-26.53	-1.05	0.00	-82.22	0.00	82.22	3,799.59	1,899.80	7,081.37	3,545.95	0.06	-0.03	0.030
25.00	-25.19	-1.04	0.00	-76.98	0.00	76.98	3,727.59	1,863.80	6,754.24	3,382.14	0.10	-0.04	0.030
30.00	-23.89	-1.03	0.00	-71.76	0.00	71.76	3,653.75	1,826.87	6,431.30	3,220.43	0.15	-0.05	0.029
35.00	-22.62	-1.02	0.00	-66.59	0.00	66.59	3,578.04	1,789.02	6,112.84	3,060.96	0.20	-0.06	0.028
40.00	-21.38	-1.01	0.00	-61.48	0.00	61.48	3,500.49	1,750.25	5,799.16	2,903.89	0.26	-0.06	0.027
45.00	-20.59	-1.00	0.00	-56.44	0.00	56.44	3,421.09	1,710.55	5,490.53	2,749.35	0.33	-0.07	0.027
48.25	-19.89	-0.99	0.00	-53.19	0.00	53.19	3,368.49	1,684.24	5,292.78	2,650.32	0.38	-0.08	0.026
50.00	-18.60	-0.96	0.00	-51.47	0.00	51.47	3,339.84	1,669.92	5,187.25	2,597.48	0.41	-0.08	0.025
53.25	-18.24	-0.96	0.00	-48.34	0.00	48.34	2,635.64	1,317.82	4,086.59	2,046.33	0.47	-0.09	0.031
55.00	-17.23	-0.93	0.00	-46.67	0.00	46.67	2,614.77	1,307.38	4,006.85	2,006.40	0.50	-0.09	0.030
60.00	-16.24	-0.91	0.00	-41.99	0.00	41.99	2,553.87	1,276.94	3,781.34	1,893.48	0.60	-0.10	0.029
65.00	-15.29	-0.89	0.00	-37.43	0.00	37.43	2,491.13	1,245.56	3,559.50	1,782.39	0.71	-0.11	0.027
70.00	-14.35	-0.86	0.00	-33.00	0.00	33.00	2,426.53	1,213.27	3,341.60	1,673.28	0.83	-0.12	0.026
75.00	-13.45	-0.83	0.00	-28.72	0.00	28.72	2,360.09	1,180.04	3,127.93	1,566.29	0.96	-0.13	0.024
80.00	-13.14	-0.82	0.00	-24.59	0.00	24.59	2,288.96	1,144.48	2,915.17	1,459.75	1.10	-0.14	0.023
81.75	-12.32	-0.78	0.00	-23.16	0.00	23.16	2,256.72	1,128.36	2,833.23	1,418.72	1.15	-0.14	0.022
85.00	-12.13	-0.78	0.00	-20.62	0.00	20.62	2,196.84	1,098.42	2,684.15	1,344.07	1.25	-0.15	0.021
85.75	-11.61	-0.75	0.00	-20.04	0.00	20.04	1,128.57	564.28	1,399.26	700.67	1.27	-0.15	0.039
90.00	-11.01	-0.73	0.00	-16.84	0.00	16.84	1,107.06	553.53	1,323.88	662.92	1.40	-0.15	0.035
95.00	-10.43	-0.70	0.00	-13.21	0.00	13.21	1,080.04	540.02	1,235.66	618.75	1.57	-0.17	0.031
100.00	-10.20	-0.68	0.00	-9.73	0.00	9.73	1,051.16	525.58	1,148.21	574.96	1.75	-0.18	0.027
102.00	-8.79	-0.61	0.00	-8.36	0.00	8.36	1,039.10	519.55	1,113.52	557.59	1.82	-0.18	0.023
105.00	-7.39	-0.52	0.00	-6.54	0.00	6.54	1,020.44	510.22	1,061.83	531.71	1.94	-0.18	0.020
110.00	-7.21	-0.51	0.00	-3.93	0.00	3.93	987.87	493.93	976.80	489.13	2.13	-0.19	0.015
112.00	-5.02	-0.37	0.00	-2.91	0.00	2.91	974.32	487.16	943.23	472.32	2.21	-0.19	0.011
115.00	-4.67	-0.34	0.00	-1.81	0.00	1.81	953.44	476.72	893.41	447.37	2.33	-0.19	0.009
120.00	-0.66	-0.05	0.00	-0.10	0.00	0.10	917.17	458.58	811.94	406.57	2.54	-0.20	0.001
122.00	0.00	0.00	0.00	0.00	0.00	0.00	902.14	451.07	779.96	390.56	2.62	-0.20	0.000
123.00	0.00	0.00	0.00	0.00	0.00	0.00	894.51	447.26	764.11	382.62	2.66	-0.20	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	-22.40	-1.05	0.00	-102.41	0.00	102.41	4,069.07	2,034.53	8,426.11	4,219.32	0.00	0.00	0.030
5.00	-21.38	-1.05	0.00	-97.17	0.00	97.17	4,004.48	2,002.24	8,085.07	4,048.54	0.00	-0.01	0.029
10.00	-20.39	-1.05	0.00	-91.91	0.00	91.91	3,938.03	1,969.02	7,747.07	3,879.29	0.02	-0.01	0.029
15.00	-19.41	-1.05	0.00	-86.65	0.00	86.65	3,869.74	1,934.87	7,412.41	3,711.71	0.04	-0.02	0.028
20.00	-18.46	-1.04	0.00	-81.41	0.00	81.41	3,799.59	1,899.80	7,081.37	3,545.95	0.06	-0.03	0.028
25.00	-17.54	-1.04	0.00	-76.19	0.00	76.19	3,727.59	1,863.80	6,754.24	3,382.14	0.10	-0.04	0.027
30.00	-16.63	-1.03	0.00	-71.00	0.00	71.00	3,653.75	1,826.87	6,431.30	3,220.43	0.14	-0.05	0.027
35.00	-15.74	-1.02	0.00	-65.86	0.00	65.86	3,578.04	1,789.02	6,112.84	3,060.96	0.20	-0.05	0.026
40.00	-14.88	-1.00	0.00	-60.79	0.00	60.79	3,500.49	1,750.25	5,799.16	2,903.89	0.26	-0.06	0.025
45.00	-14.33	-0.99	0.00	-55.79	0.00	55.79	3,421.09	1,710.55	5,490.53	2,749.35	0.33	-0.07	0.024
48.25	-13.84	-0.98	0.00	-52.57	0.00	52.57	3,368.49	1,684.24	5,292.78	2,650.32	0.38	-0.08	0.024
50.00	-12.94	-0.95	0.00	-50.86	0.00	50.86	3,339.84	1,669.92	5,187.25	2,597.48	0.41	-0.08	0.023
53.25	-12.69	-0.95	0.00	-47.76	0.00	47.76	2,635.64	1,317.82	4,086.59	2,046.33	0.47	-0.09	0.028
55.00	-11.99	-0.93	0.00	-46.10	0.00	46.10	2,614.77	1,307.38	4,006.85	2,006.40	0.50	-0.09	0.028
60.00	-11.31	-0.90	0.00	-41.47	0.00	41.47	2,553.87	1,276.94	3,781.34	1,893.48	0.60	-0.10	0.026
65.00	-10.64	-0.88	0.00	-36.96	0.00	36.96	2,491.13	1,245.56	3,559.50	1,782.39	0.70	-0.11	0.025
70.00	-9.99	-0.85	0.00	-32.58	0.00	32.58	2,426.53	1,213.27	3,341.60	1,673.28	0.82	-0.12	0.024
75.00	-9.36	-0.82	0.00	-28.34	0.00	28.34	2,360.09	1,180.04	3,127.93	1,566.29	0.95	-0.13	0.022
80.00	-9.14	-0.81	0.00	-24.25	0.00	24.25	2,288.96	1,144.48	2,915.17	1,459.75	1.09	-0.14	0.021
81.75	-8.57	-0.77	0.00	-22.85	0.00	22.85	2,256.72	1,128.36	2,833.23	1,418.72	1.14	-0.14	0.020
85.00	-8.44	-0.77	0.00	-20.33	0.00	20.33	2,196.84	1,098.42	2,684.15	1,344.07	1.23	-0.14	0.019
85.75	-8.08	-0.74	0.00	-19.76	0.00	19.76	1,128.57	564.28	1,399.26	700.67	1.26	-0.15	0.035
90.00	-7.66	-0.72	0.00	-16.60	0.00	16.60	1,107.06	553.53	1,323.88	662.92	1.39	-0.15	0.032
95.00	-7.26	-0.69	0.00	-13.02	0.00	13.02	1,080.04	540.02	1,235.66	618.75	1.55	-0.16	0.028
100.00	-7.10	-0.68	0.00	-9.59	0.00	9.59	1,051.16	525.58	1,148.21	574.96	1.73	-0.17	0.023
102.00	-6.12	-0.60	0.00	-8.24	0.00	8.24	1,039.10	519.55	1,113.52	557.59	1.80	-0.18	0.021
105.00	-5.15	-0.51	0.00	-6.45	0.00	6.45	1,020.44	510.22	1,061.83	531.71	1.92	-0.18	0.017
110.00	-5.02	-0.50	0.00	-3.87	0.00	3.87	987.87	493.93	976.80	489.13	2.11	-0.19	0.013
112.00	-3.49	-0.36	0.00	-2.87	0.00	2.87	974.32	487.16	943.23	472.32	2.19	-0.19	0.010
115.00	-3.25	-0.34	0.00	-1.78	0.00	1.78	953.44	476.72	893.41	447.37	2.31	-0.19	0.007
120.00	-0.46	-0.05	0.00	-0.10	0.00	0.10	917.17	458.58	811.94	406.57	2.51	-0.19	0.001
122.00	0.00	0.00	0.00	0.00	0.00	0.00	902.14	451.07	779.96	390.56	2.59	-0.19	0.000
123.00	0.00	0.00	0.00	0.00	0.00	0.00	894.51	447.26	764.11	382.62	2.63	-0.19	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):	1.69
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)
32	122.50	42	1.875	1.900	1.111	0.361	10	52
31	121.00	99	1.829	1.674	1.028	0.332	22	123
30	117.50	281	1.725	1.218	0.853	0.270	51	348
29	113.50	175	1.609	0.808	0.683	0.207	24	217
28	111.00	149	1.539	0.602	0.591	0.172	17	184
27	107.50	381	1.444	0.372	0.478	0.128	32	472
26	103.50	235	1.338	0.177	0.371	0.084	13	291
25	101.00	185	1.274	0.087	0.314	0.061	8	229
24	97.50	472	1.188	-0.007	0.246	0.034	11	584
23	92.50	485	1.069	-0.086	0.168	0.005	2	600
22	87.88	422	0.965	-0.117	0.115	-0.012	-3	522
21	85.38	151	0.911	-0.122	0.091	-0.017	-2	187
20	83.38	661	0.868	-0.121	0.076	-0.019	-8	819
19	80.88	251	0.817	-0.115	0.059	-0.020	-3	311
18	77.50	731	0.750	-0.101	0.041	-0.017	-8	906
17	72.50	753	0.657	-0.073	0.022	-0.007	-4	932
16	67.50	774	0.569	-0.042	0.011	0.006	3	958
15	62.50	795	0.488	-0.012	0.007	0.020	11	984
14	57.50	816	0.413	0.014	0.006	0.032	17	1,010
13	54.13	291	0.366	0.028	0.008	0.037	7	360
12	51.63	1,040	0.333	0.037	0.010	0.041	28	1,287
11	49.13	568	0.301	0.045	0.012	0.043	16	703
10	46.63	637	0.272	0.051	0.015	0.045	19	789
9	42.50	1,002	0.226	0.059	0.020	0.046	30	1,240
8	37.50	1,027	0.176	0.066	0.026	0.045	31	1,272
7	32.50	1,052	0.132	0.069	0.033	0.044	31	1,303
6	27.50	1,078	0.094	0.071	0.038	0.042	30	1,334
5	22.50	1,103	0.063	0.072	0.041	0.041	30	1,366
4	17.50	1,128	0.038	0.070	0.041	0.038	29	1,397
3	12.50	1,154	0.020	0.064	0.038	0.035	27	1,428
2	7.50	1,179	0.007	0.050	0.028	0.028	22	1,460
1	2.50	1,204	0.001	0.022	0.012	0.013	10	1,491
Ericsson AIR 21, 1.3	122.00	249	1.859	1.822	1.083	0.351	58	308
Ericsson AIR 21, 1.3	122.00	244	1.859	1.822	1.083	0.351	57	303

Ericsson KRY 112 144	120.00	33	1.799	1.534	0.975	0.314	7	41
Ericsson Radio 4449	120.00	222	1.799	1.534	0.975	0.314	46	275
RFS APXVAARR24_43-U-	120.00	384	1.799	1.534	0.975	0.314	80	475
Generic Round Platfo	120.00	2,500	1.799	1.534	0.975	0.314	523	3,095
Powerwave Allgon TT1	112.00	96	1.567	0.680	0.626	0.186	12	119
Raycap DC6-48-60-18-	112.00	20	1.567	0.680	0.626	0.186	2	25
Ericsson RRUS 11 (Ba	112.00	150	1.567	0.680	0.626	0.186	19	186
Ericsson RRUS 32 B2	112.00	159	1.567	0.680	0.626	0.186	20	197
Commscope SBNHH-	112.00	101	1.567	0.680	0.626	0.186	12	124
Powerwave Allgon P90	112.00	318	1.567	0.680	0.626	0.186	39	394
Round T-Arm	112.00	750	1.567	0.680	0.626	0.186	93	929
Round T-Arm	105.00	750	1.377	0.242	0.409	0.100	50	929
Alcatel-Lucent RRH2x	102.00	170	1.300	0.120	0.336	0.070	8	211
Alcatel-Lucent B66 R	102.00	201	1.300	0.120	0.336	0.070	9	249
Raycap RC2DC-3315-PF	102.00	64	1.300	0.120	0.336	0.070	3	79
Swedcom SC-E 6016 RE	102.00	50	1.300	0.120	0.336	0.070	2	62
Andrew SBNHH-1D65B	102.00	304	1.300	0.120	0.336	0.070	14	377
Antel LPA-80063/6CF	102.00	108	1.300	0.120	0.336	0.070	5	134
		27,193	54.416	22.264	19.468	5.895	1,564	33,670

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)
32	122.50	42	1.875	1.900	1.111	0.361	10	37
31	121.00	99	1.829	1.674	1.028	0.332	22	86
30	117.50	281	1.725	1.218	0.853	0.270	51	243
29	113.50	175	1.609	0.808	0.683	0.207	24	151
28	111.00	149	1.539	0.602	0.591	0.172	17	128
27	107.50	381	1.444	0.372	0.478	0.128	32	329
26	103.50	235	1.338	0.177	0.371	0.084	13	202
25	101.00	185	1.274	0.087	0.314	0.061	8	160
24	97.50	472	1.188	-0.007	0.246	0.034	11	407
23	92.50	485	1.069	-0.086	0.168	0.005	2	418
22	87.88	422	0.965	-0.117	0.115	-0.012	-3	364
21	85.38	151	0.911	-0.122	0.091	-0.017	-2	130
20	83.38	661	0.868	-0.121	0.076	-0.019	-8	570
19	80.88	251	0.817	-0.115	0.059	-0.020	-3	216
18	77.50	731	0.750	-0.101	0.041	-0.017	-8	630
17	72.50	753	0.657	-0.073	0.022	-0.007	-4	649
16	67.50	774	0.569	-0.042	0.011	0.006	3	667
15	62.50	795	0.488	-0.012	0.007	0.020	11	685
14	57.50	816	0.413	0.014	0.006	0.032	17	703
13	54.13	291	0.366	0.028	0.008	0.037	7	250
12	51.63	1,040	0.333	0.037	0.010	0.041	28	896
11	49.13	568	0.301	0.045	0.012	0.043	16	489
10	46.63	637	0.272	0.051	0.015	0.045	19	549
9	42.50	1,002	0.226	0.059	0.020	0.046	30	863
8	37.50	1,027	0.176	0.066	0.026	0.045	31	885
7	32.50	1,052	0.132	0.069	0.033	0.044	31	907
6	27.50	1,078	0.094	0.071	0.038	0.042	30	929
5	22.50	1,103	0.063	0.072	0.041	0.041	30	950
4	17.50	1,128	0.038	0.070	0.041	0.038	29	972
3	12.50	1,154	0.020	0.064	0.038	0.035	27	994
2	7.50	1,179	0.007	0.050	0.028	0.028	22	1,016
1	2.50	1,204	0.001	0.022	0.012	0.013	10	1,038
Ericsson AIR 21, 1.3	122.00	249	1.859	1.822	1.083	0.351	58	215
Ericsson AIR 21, 1.3	122.00	244	1.859	1.822	1.083	0.351	57	211
Ericsson KRY 112 144	120.00	33	1.799	1.534	0.975	0.314	7	28

Ericsson Radio 4449	120.00	222	1.799	1.534	0.975	0.314	46	191
RFS APXVAARR24_43-U-	120.00	384	1.799	1.534	0.975	0.314	80	331
Generic Round Platfo	120.00	2,500	1.799	1.534	0.975	0.314	523	2,155
Powerwave Allgon TT1	112.00	96	1.567	0.680	0.626	0.186	12	83
Raycap DC6-48-60-18-	112.00	20	1.567	0.680	0.626	0.186	2	17
Ericsson RRUS 11 (Ba	112.00	150	1.567	0.680	0.626	0.186	19	129
Ericsson RRUS 32 B2	112.00	159	1.567	0.680	0.626	0.186	20	137
Commscope SBNHH-	112.00	101	1.567	0.680	0.626	0.186	12	87
Powerwave Allgon P90	112.00	318	1.567	0.680	0.626	0.186	39	274
Round T-Arm	112.00	750	1.567	0.680	0.626	0.186	93	646
Round T-Arm	105.00	750	1.377	0.242	0.409	0.100	50	646
Alcatel-Lucent RRH2x	102.00	170	1.300	0.120	0.336	0.070	8	147
Alcatel-Lucent B66 R	102.00	201	1.300	0.120	0.336	0.070	9	173
Raycap RC2DC-3315-PF	102.00	64	1.300	0.120	0.336	0.070	3	55
Swedcom SC-E 6016 RE	102.00	50	1.300	0.120	0.336	0.070	2	43
Andrew SBNHH-1D65B	102.00	304	1.300	0.120	0.336	0.070	14	262
Antel LPA-80063/6CF	102.00	108	1.300	0.120	0.336	0.070	5	93
		27,193	54.416	22.264	19.468	5.895	1,564	23,435

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	-32.18	-1.56	0.00	-158.37	0.00	158.37	4,069.07	2,034.53	8,426.11	4,219.32	0.00	0.00	0.045
5.00	-30.72	-1.54	0.00	-150.58	0.00	150.58	4,004.48	2,002.24	8,085.07	4,048.54	0.01	-0.01	0.045
10.00	-29.29	-1.52	0.00	-142.88	0.00	142.88	3,938.03	1,969.02	7,747.07	3,879.29	0.02	-0.02	0.044
15.00	-27.89	-1.50	0.00	-135.28	0.00	135.28	3,869.74	1,934.87	7,412.41	3,711.71	0.06	-0.04	0.044
20.00	-26.53	-1.47	0.00	-127.79	0.00	127.79	3,799.59	1,899.80	7,081.37	3,545.95	0.10	-0.05	0.043
25.00	-25.19	-1.45	0.00	-120.44	0.00	120.44	3,727.59	1,863.80	6,754.24	3,382.14	0.15	-0.06	0.042
30.00	-23.89	-1.42	0.00	-113.21	0.00	113.21	3,653.75	1,826.87	6,431.30	3,220.43	0.22	-0.07	0.042
35.00	-22.62	-1.39	0.00	-106.12	0.00	106.12	3,578.04	1,789.02	6,112.84	3,060.96	0.31	-0.09	0.041
40.00	-21.38	-1.36	0.00	-99.16	0.00	99.16	3,500.49	1,750.25	5,799.16	2,903.89	0.41	-0.10	0.040
45.00	-20.59	-1.35	0.00	-92.35	0.00	92.35	3,421.09	1,710.55	5,490.53	2,749.35	0.52	-0.11	0.040
48.25	-19.88	-1.33	0.00	-87.97	0.00	87.97	3,368.49	1,684.24	5,292.78	2,650.32	0.60	-0.12	0.039
50.00	-18.60	-1.30	0.00	-85.64	0.00	85.64	3,339.84	1,669.92	5,187.25	2,597.48	0.64	-0.13	0.039
53.25	-18.24	-1.30	0.00	-81.40	0.00	81.40	2,635.64	1,317.82	4,086.59	2,046.33	0.73	-0.14	0.047
55.00	-17.23	-1.28	0.00	-79.13	0.00	79.13	2,614.77	1,307.38	4,006.85	2,006.40	0.78	-0.14	0.046
60.00	-16.24	-1.27	0.00	-72.72	0.00	72.72	2,553.87	1,276.94	3,781.34	1,893.48	0.94	-0.16	0.045
65.00	-15.28	-1.27	0.00	-66.36	0.00	66.36	2,491.13	1,245.56	3,559.50	1,782.39	1.12	-0.18	0.043
70.00	-14.35	-1.28	0.00	-60.00	0.00	60.00	2,426.53	1,213.27	3,341.60	1,673.28	1.31	-0.19	0.042
75.00	-13.45	-1.29	0.00	-53.62	0.00	53.62	2,360.09	1,180.04	3,127.93	1,566.29	1.52	-0.21	0.040
80.00	-13.13	-1.29	0.00	-47.20	0.00	47.20	2,288.96	1,144.48	2,915.17	1,459.75	1.75	-0.23	0.038
81.75	-12.32	-1.30	0.00	-44.94	0.00	44.94	2,256.72	1,128.36	2,833.23	1,418.72	1.84	-0.23	0.037
85.00	-12.13	-1.30	0.00	-40.73	0.00	40.73	2,196.84	1,098.42	2,684.15	1,344.07	2.00	-0.24	0.036
85.75	-11.61	-1.30	0.00	-39.75	0.00	39.75	1,128.57	564.28	1,399.26	700.67	2.04	-0.25	0.067
90.00	-11.01	-1.30	0.00	-34.22	0.00	34.22	1,107.06	553.53	1,323.88	662.92	2.26	-0.26	0.062
95.00	-10.42	-1.29	0.00	-27.71	0.00	27.71	1,080.04	540.02	1,235.66	618.75	2.55	-0.28	0.054
100.00	-10.19	-1.29	0.00	-21.25	0.00	21.25	1,051.16	525.58	1,148.21	574.96	2.86	-0.31	0.047
102.00	-8.79	-1.23	0.00	-18.68	0.00	18.68	1,039.10	519.55	1,113.52	557.59	2.99	-0.31	0.042
105.00	-7.39	-1.14	0.00	-15.01	0.00	15.01	1,020.44	510.22	1,061.83	531.71	3.19	-0.32	0.035
110.00	-7.20	-1.12	0.00	-9.32	0.00	9.32	987.87	493.93	976.80	489.13	3.54	-0.34	0.026
112.00	-5.02	-0.89	0.00	-7.08	0.00	7.08	974.32	487.16	943.23	472.32	3.68	-0.34	0.020
115.00	-4.67	-0.83	0.00	-4.43	0.00	4.43	953.44	476.72	893.41	447.37	3.90	-0.35	0.015
120.00	-0.66	-0.13	0.00	-0.26	0.00	0.26	917.17	458.58	811.94	406.57	4.26	-0.35	0.001
122.00	0.00	0.00	0.00	0.00	0.00	0.00	902.14	451.07	779.96	390.56	4.41	-0.35	0.000
123.00	0.00	0.00	0.00	0.00	0.00	0.00	894.51	447.26	764.11	382.62	4.48	-0.35	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	-22.40	-1.56	0.00	-156.95	0.00	156.95	4,069.07	2,034.53	8,426.11	4,219.32	0.00	0.00	0.043
5.00	-21.38	-1.54	0.00	-149.17	0.00	149.17	4,004.48	2,002.24	8,085.07	4,048.54	0.01	-0.01	0.042
10.00	-20.39	-1.52	0.00	-141.48	0.00	141.48	3,938.03	1,969.02	7,747.07	3,879.29	0.02	-0.02	0.042
15.00	-19.41	-1.49	0.00	-133.90	0.00	133.90	3,869.74	1,934.87	7,412.41	3,711.71	0.05	-0.03	0.041
20.00	-18.46	-1.46	0.00	-126.45	0.00	126.45	3,799.59	1,899.80	7,081.37	3,545.95	0.10	-0.05	0.041
25.00	-17.53	-1.44	0.00	-119.13	0.00	119.13	3,727.59	1,863.80	6,754.24	3,382.14	0.15	-0.06	0.040
30.00	-16.63	-1.41	0.00	-111.95	0.00	111.95	3,653.75	1,826.87	6,431.30	3,220.43	0.22	-0.07	0.039
35.00	-15.74	-1.38	0.00	-104.91	0.00	104.91	3,578.04	1,789.02	6,112.84	3,060.96	0.30	-0.09	0.039
40.00	-14.88	-1.35	0.00	-98.01	0.00	98.01	3,500.49	1,750.25	5,799.16	2,903.89	0.40	-0.10	0.038
45.00	-14.33	-1.33	0.00	-91.26	0.00	91.26	3,421.09	1,710.55	5,490.53	2,749.35	0.51	-0.11	0.037
48.25	-13.84	-1.32	0.00	-86.92	0.00	86.92	3,368.49	1,684.24	5,292.78	2,650.32	0.59	-0.12	0.037
50.00	-12.94	-1.29	0.00	-84.61	0.00	84.61	3,339.84	1,669.92	5,187.25	2,597.48	0.64	-0.13	0.036
53.25	-12.69	-1.28	0.00	-80.42	0.00	80.42	2,635.64	1,317.82	4,086.59	2,046.33	0.73	-0.14	0.044
55.00	-11.99	-1.27	0.00	-78.18	0.00	78.18	2,614.77	1,307.38	4,006.85	2,006.40	0.78	-0.14	0.044
60.00	-11.30	-1.26	0.00	-71.84	0.00	71.84	2,553.87	1,276.94	3,781.34	1,893.48	0.93	-0.16	0.042
65.00	-10.64	-1.26	0.00	-65.55	0.00	65.55	2,491.13	1,245.56	3,559.50	1,782.39	1.11	-0.17	0.041
70.00	-9.99	-1.26	0.00	-59.27	0.00	59.27	2,426.53	1,213.27	3,341.60	1,673.28	1.30	-0.19	0.040
75.00	-9.36	-1.27	0.00	-52.97	0.00	52.97	2,360.09	1,180.04	3,127.93	1,566.29	1.51	-0.21	0.038
80.00	-9.14	-1.27	0.00	-46.62	0.00	46.62	2,288.96	1,144.48	2,915.17	1,459.75	1.73	-0.22	0.036
81.75	-8.57	-1.28	0.00	-44.40	0.00	44.40	2,256.72	1,128.36	2,833.23	1,418.72	1.82	-0.23	0.035
85.00	-8.44	-1.28	0.00	-40.23	0.00	40.23	2,196.84	1,098.42	2,684.15	1,344.07	1.98	-0.24	0.034
85.75	-8.08	-1.29	0.00	-39.27	0.00	39.27	1,128.57	564.28	1,399.26	700.67	2.01	-0.24	0.063
90.00	-7.66	-1.29	0.00	-33.81	0.00	33.81	1,107.06	553.53	1,323.88	662.92	2.24	-0.26	0.058
95.00	-7.25	-1.28	0.00	-27.38	0.00	27.38	1,080.04	540.02	1,235.66	618.75	2.52	-0.28	0.051
100.00	-7.09	-1.27	0.00	-21.00	0.00	21.00	1,051.16	525.58	1,148.21	574.96	2.83	-0.30	0.043
102.00	-6.12	-1.21	0.00	-18.47	0.00	18.47	1,039.10	519.55	1,113.52	557.59	2.95	-0.31	0.039
105.00	-5.14	-1.12	0.00	-14.84	0.00	14.84	1,020.44	510.22	1,061.83	531.71	3.15	-0.32	0.033
110.00	-5.01	-1.11	0.00	-9.22	0.00	9.22	987.87	493.93	976.80	489.13	3.50	-0.33	0.024
112.00	-3.49	-0.88	0.00	-7.01	0.00	7.01	974.32	487.16	943.23	472.32	3.64	-0.34	0.018
115.00	-3.25	-0.82	0.00	-4.38	0.00	4.38	953.44	476.72	893.41	447.37	3.85	-0.34	0.013
120.00	-0.46	-0.13	0.00	-0.26	0.00	0.26	917.17	458.58	811.94	406.57	4.22	-0.35	0.001
122.00	0.00	0.00	0.00	0.00	0.00	0.00	902.14	451.07	779.96	390.56	4.36	-0.35	0.000
123.00	0.00	0.00	0.00	0.00	0.00	0.00	894.51	447.26	764.11	382.62	4.43	-0.35	0.000

Analysis Summary

Load Case	Reactions Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Max Usage Elev (ft)	Interaction Ratio
1.2D + 1.6W	24.17	0.00	32.60	0.00	0.00	2174.96	85.75	0.60
0.9D + 1.6W	24.15	0.00	24.44	0.00	0.00	2159.84	85.75	0.59
1.2D + 1.0Di + 1.0Wi	6.29	0.00	48.88	0.00	0.00	551.09	85.75	0.16
(1.2 + 0.2Sds) * DL + E ELFM	1.05	0.00	32.18	0.00	0.00	103.27	85.75	0.04
(1.2 + 0.2Sds) * DL + E EMAM	1.56	0.00	32.18	0.00	0.00	158.37	85.75	0.07
(0.9 - 0.2Sds) * DL + E ELFM	1.05	0.00	22.40	0.00	0.00	102.41	85.75	0.04
(0.9 - 0.2Sds) * DL + E EMAM	1.56	0.00	22.40	0.00	0.00	156.95	85.75	0.06
1.0D + 1.0W	4.77	0.00	27.19	0.00	0.00	427.43	85.75	0.12

Base Plate & Anchor Rod Analysis

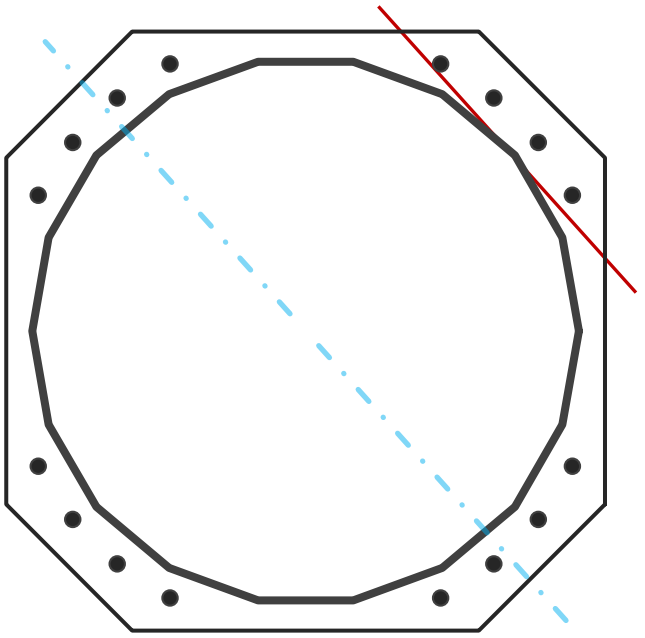
Pole Dimensions		
Number of Sides	18	-
Diameter	50.75	in
Thickness	0.375	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	2175.0	k-ft
Axial, Pu	32.6	k
Shear, Vu	24.2	k
Neutral Axis	312	°

Report Capacities		
Component	Capacity	Result
Base Plate	38%	Pass
Anchor Rods	45%	Pass
Dwyidag	-	-

Base Plate		
Shape	Square	-
Width	57	in
Thickness	2 3/4	in
Grade	A572-50	-
Yield Strength, Fy	50	ksi
Tensile Strength, Fu	65	ksi
Clip	12	in
Orientation Offset	0	°
Anchor Rod Detail	d	η=0.5
Clear Distance	3	in
Applied Moment, Mu	937.5	k
Bending Stress, ϕMn	2497.9	k

Original Anchor Rods		
Arrangement	Cluster	-
Quantity	16	-
Diameter, ø	2 1/4	in
Bolt Circle	57	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	6.0	in
Orientation Offset	0	°
Applied Force, Pu	116.3	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	24.2	2175.0	1.00
Anchor Rod Forces	24.2	2175.0	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	59.0458	3.2803	0.1543		18732.41
Bolt	3.9761	3.2477	0.8393	4.5	21116.92
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	0.0000	0.0000	0.0000		0.00
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate		
Shape	Square	-
Width, W	57	in
Thickness, t	2.75	in
Yield Strength, Fy	50	ksi
Tensile Strength, Fu	65	ksi
Base Plate Chord	25.951	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3	-

Anchor Rods		
Anchor Rod Quantity, N	16	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	57	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	116.3	k
Applied Shear, Vu	0.1	k
Compressive Capacity, ϕPn	259.8	k
Tensile Capacity, ϕRnt	0.448	OK
Interaction Capacity	0.449	OK

External Base Plate		
Chord Length AA	29.360	in
Additional AA	0.000	in
Section Modulus, Z	55.509	in^3
Applied Moment, Mu	937.5	k-ft
Bending Capacity, ϕMn	2497.9	k-ft
Capacity, Mu/ϕMn	0.375	OK
Chord Length AB	28.570	in
Additional AB	0.000	in
Section Modulus, Z	54.014	in^3
Applied Moment, Mu	758.6	k-ft
Bending Capacity, ϕMn	2430.6	k-ft
Capacity, Mu/ϕMn	0.312	OK
Bend Line Length	0.000	in
Additional Bend Line	0.000	in
Section Modulus, Z	0.000	in^3
Applied Moment, Mu	0.0	k-ft
Bending Capacity, ϕMn	0.0	k-ft
Capacity, Mu/ϕMn		

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

Mount Analysis of Proposed Perfect Vison PV-LPP12M-HR-B Platform w/ PV-PKBK-M kicker kits for American Tower on behalf of T-Mobile

283419 - PINE ORCHARD BRANFORD CT

Project #: 12927144

T-Mobile Site ID: CTNH801B

Program: L600

CLS Engineering PLLC Project #41124-12927144-01-MR-R1

July 8, 2019

MOUNT DESCRIPTION	Proposed Perfect Vison PV-LPP12M-HR-B Platform w/ PV-PKBK-M kicker kits at 121 ft
ANTENNA ELEVATION	Nominal Rad. Elevation of 121 ft AGL
SITE DESCRIPTION	123 ft Monopole
SITE ADDRESS	123 Pine Orchard Road, Branford, CT 06405-3939, New Haven County
GPS COORDINATES	41.274861, -72.793078
ANALYSIS STANDARD	2015 IBC / 2018 Connecticut State Building Code / TIA-222-G
LOADING CRITERIA	130 mph, V_{ult} / 100.7 mph, V_{asd} (3-Second Gust) w/o ice & 50 mph (3-Second Gust) w/ 0.75"

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

MEMBER USAGE	**60%**	**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: 2019.07.09 13:47:29 -04'00'

■ INTRODUCTION

The proposed equipment is to be mounted to the proposed Perfect Vison PV-LPP12M-HR-B Platform w/ PV-PKBK-M kicker kits. 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 February 20, 2018 Perfect Vision Drawing #LPP-ENG-01-R7 Rev. 7, dated January 16, 2018 PerfectVision Monopole Platform Kicker, #PV-PKBK-M, Rev. 0, dated April 11, 2017
PREVIOUS ANALYSES	Structural Analysis by American Tower, Engineering #OAA694357_C3_01, dated February 10, 2017

■ ANALYSIS CRITERIA

STANDARD	2015 IBC / 2018 Connecticut State Building Code / TIA-222-G
BASIC WIND SPEED	130 mph, V_{ult} / 100.7 mph, V_{asd} (3-Second Gust)
BASIC WIND SPEED W/ ICE	50 mph (3-Second Gust) w/ 0.75" 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**
121.0	121.0	3	Ericsson AIR 21, 1.3 M, B2A B4P
		3	Ericsson AIR 21, 1.3 M, B4A B2P
		3	Ericsson RADIO 4449 B12/B71
		3	Ericsson KRY 112 144/1
		3	RFS Celwave APXVAARR24_43-U-NA20

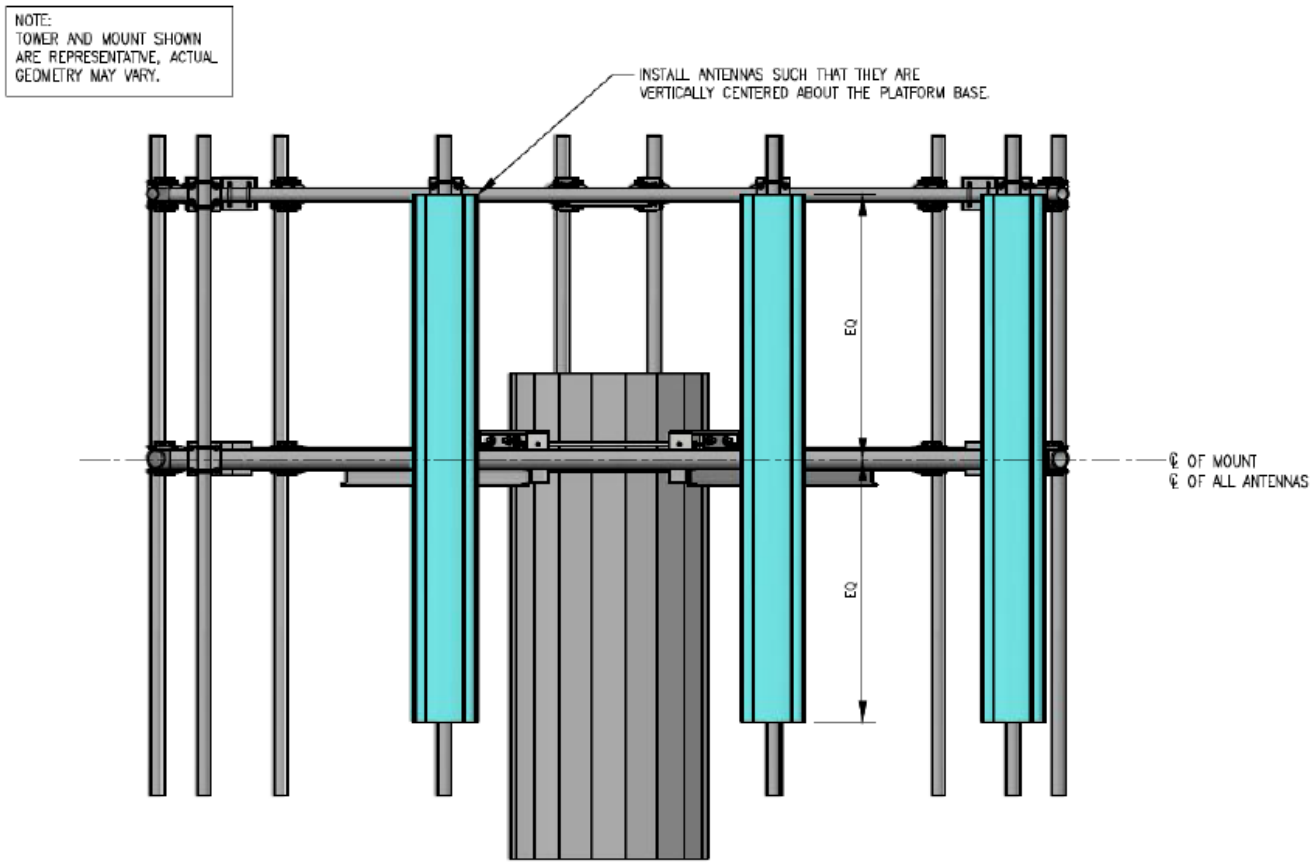
■ RESULTS SUMMARY

COMPONENT	PEAK USAGE	RESULT
Support Rail	60%	Pass
Corner Plates	57%	Pass
Mount Pipes	47%	Pass
Platform Base	40%	Pass
Stand-Off Horizontals	20%	Pass
Face Horizontals	13%	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 Platform Mount with (1) new Perfect Vison PV-LPP12M-HR-B Platform Mount.**
- **Install (1) PerfectVision PV-PKBK-M Monopole Platform Kicker Kit as shown. Field-cut kicker angle as required. Maintain minimum bolt edge distance.**
- **Install (4) PerfectVision PIPE-238X126 antenna mount pipes per sector (12 total). Connect to platform base horizontal member using (12) PerfectVision PV-XP-2030-HD crossover brackets such that they are equidistant from each other as shown in the assembly drawings.**
- **Install support rails 3'-0" above the platform base. Connect to all mount pipes using crossover angles included in proposed platform kit.**
- **Install existing and proposed antennas such that they are vertically centered about the face horizontal member. Install existing and proposed RRUS and TMAs behind the antennas.**



See following sketch and Perfect Vision 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.

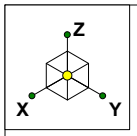
This analysis assumes the following:

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.

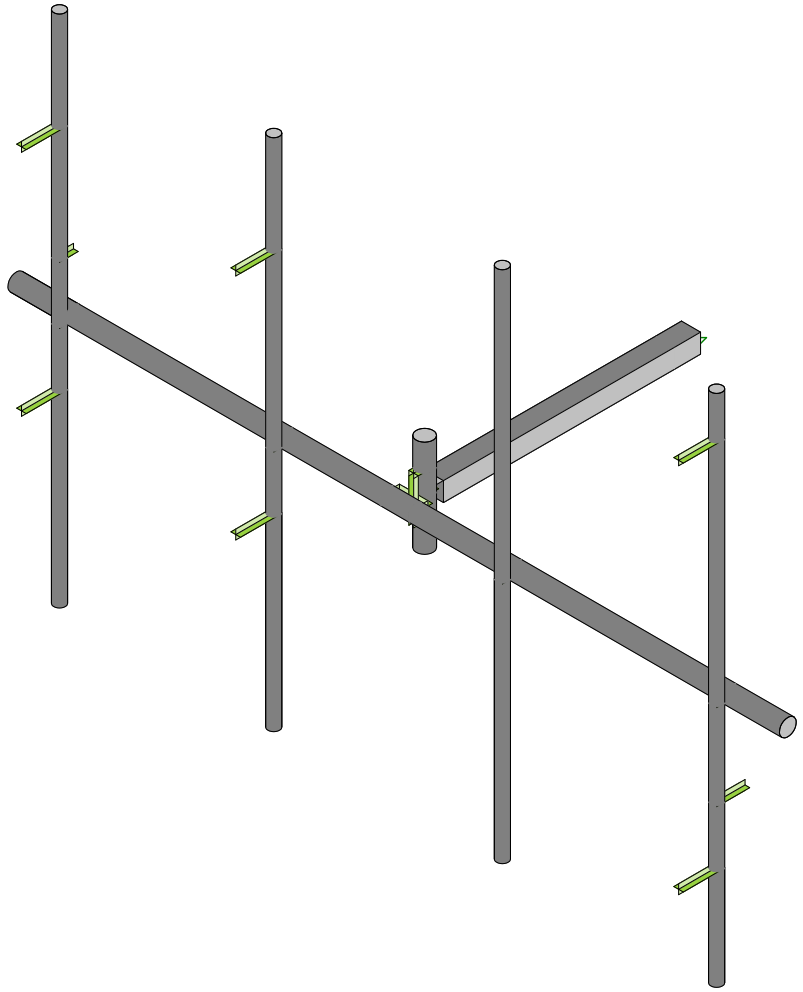
All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of the report. All opinions and conclusions contained herein are subject to revision based upon receipt of new or updated information. All services are provided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



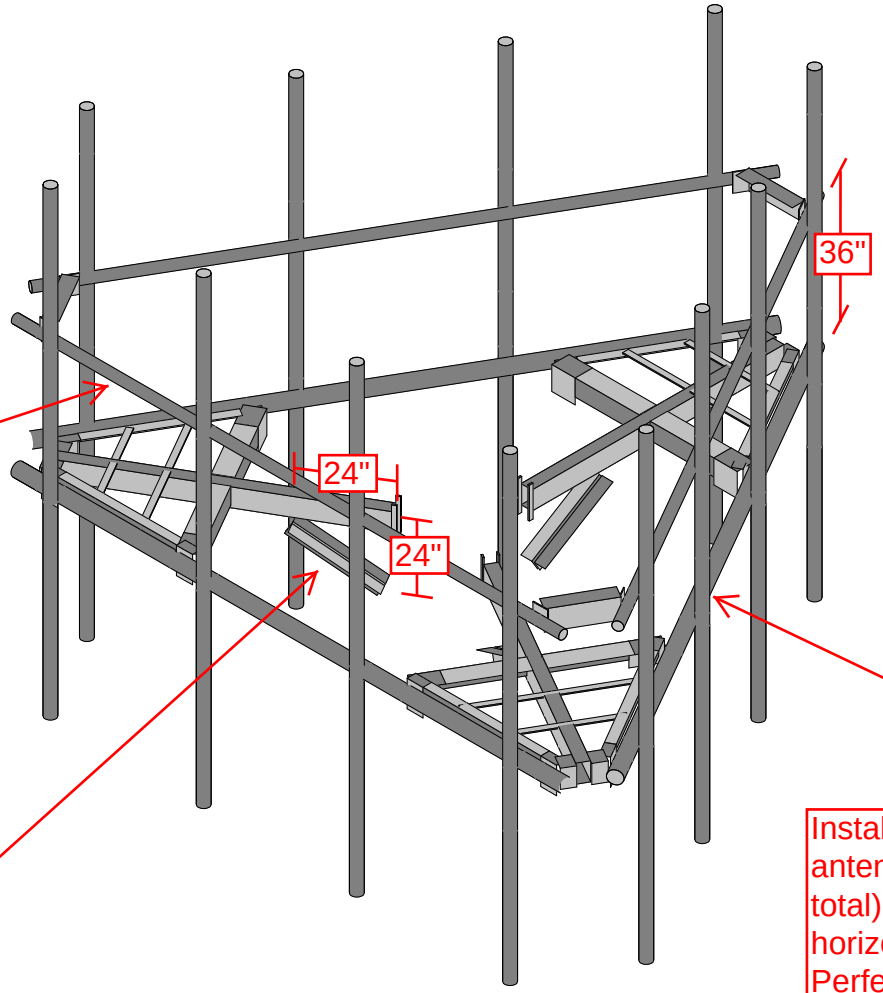
Existing mount to be replaced



Envelope Only Solution

CLS	41124-12927144-PINE ORCHARD BRANFORD CT-283419	SK - 0
SMR		Apr 10, 2019 at 10:11 AM
41124-12927144-01-MA	Existing Mount - Rendered	41124-12927144-01-MA.r3d

Replace existing Platform Mount with (1) new Perfect Vison PV-LPP12M-HR-B Platform Mount.



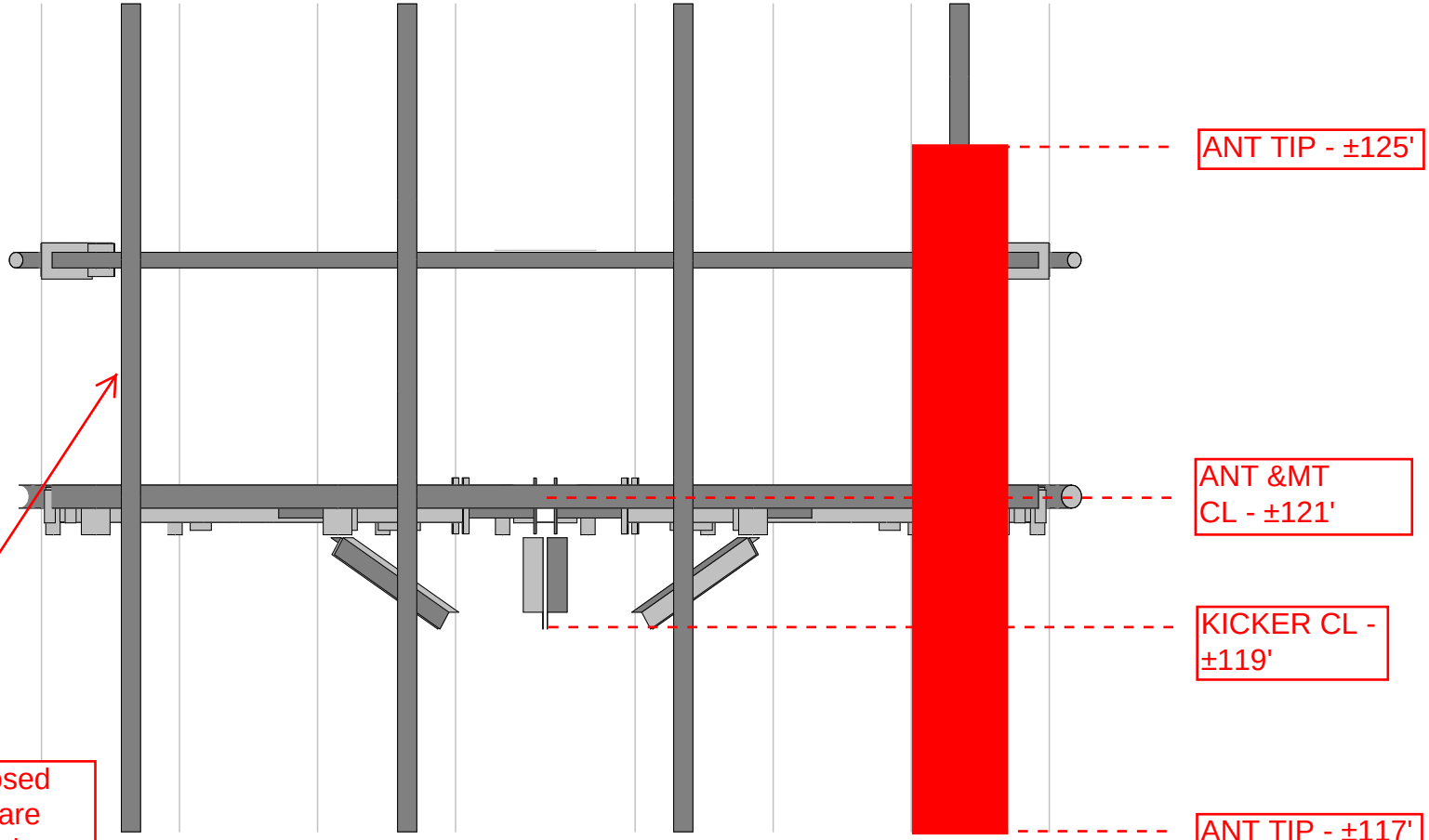
Install support rails 3'-0" above the platform base. Connect to all mount pipes using crossover angles included in proposed platform kit.

Install (1) PerfectVision PV-PKBK-M Monopole Platform Kicker Kit as shown. Field-cut kicker angle as required. Maintain minimum bolt edge distance.

Install (4) PerfectVision PIPE-238X126 antenna mount pipes per sector (12 total). Connect to platform base horizontal member using (12) PerfectVision PV-XP-2030-HD crossover brackets such that they are equidistant from each other as shown in the assembly drawings.

Envelope Only Solution

CLS		SK - 0
SMR	41124-12927144-PINE ORCHARD BRANFORD CT-283419	July 8, 2019 at 11:39 AM
41124-12927144-01-MR-R1	Installation Sketch - Isometric View	41124-12927144-01-MR-R1.r3d



Install existing and proposed antennas such that they are vertically centered about the face horizontal member. Install existing and proposed RRUS and TMAs behind the antennas

Envelope Only Solution

CLS		SK - 0
SMR	41124-12927144-PINE ORCHARD BRANFORD CT-283419	July 8, 2019 at 11:40 AM
41124-12927144-01-MR-R1	Installation Sketch - Elevation Sketch	41124-12927144-01-MR-R1.r3d

PV-LPP
L.I.F.E. MOUNT™ LOW PROFILE PLATFORM

TABLE 1: PLATFORM CONFIGURATIONS

PART NUMBER	DESCRIPTION	MIN POLE OD	MAX POLE OD	WEIGHT (LBS)	INCLUDED PARTS									
					PIPE-312X150	PIPE-312X174	PIPE-238X150	PIPE-238X174	PV-RM1045	PV-RM3060	PV-LPP12-01	PV-LPP14-01	PV-LPPH	PV-PHK12-B
PV-LPP12M-B	12'6" FACE PLATFORM	10"	34"	1267	3	-	-	-	1	-	3	-	1	0
PV-LPP14M-B	14'6" FACE PLATFORM	10"	35"	1365	-	3	-	-	1	-	-	3	1	0
PV-LPP14L-B	14'6" FACE PLATFORM, LARGE POLE	33"	60"	1370	-	3	-	-	-	1	3	-	1	0
PV-LPP12M-HR-B	12'6" FACE PLATFORM W/ HANDRAIL	10"	34"	1522	3	-	3	-	1	-	3	-	1	1
PV-LPP14M-HR-B	14'6" FACE PLATFORM W/ HANDRAIL	10"	35"	1641	-	3	-	3	1	-	-	3	1	1
PV-LPP14L-HR-B	14'6" FACE PLATFORM W/ HANDRAIL, LARGE POLE	33"	60"	1647	-	3	-	3	-	1	3	-	1	1

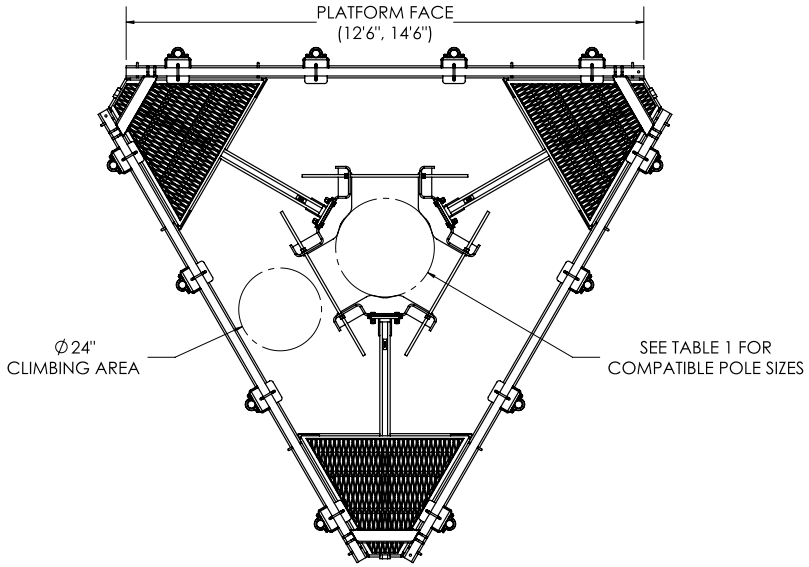


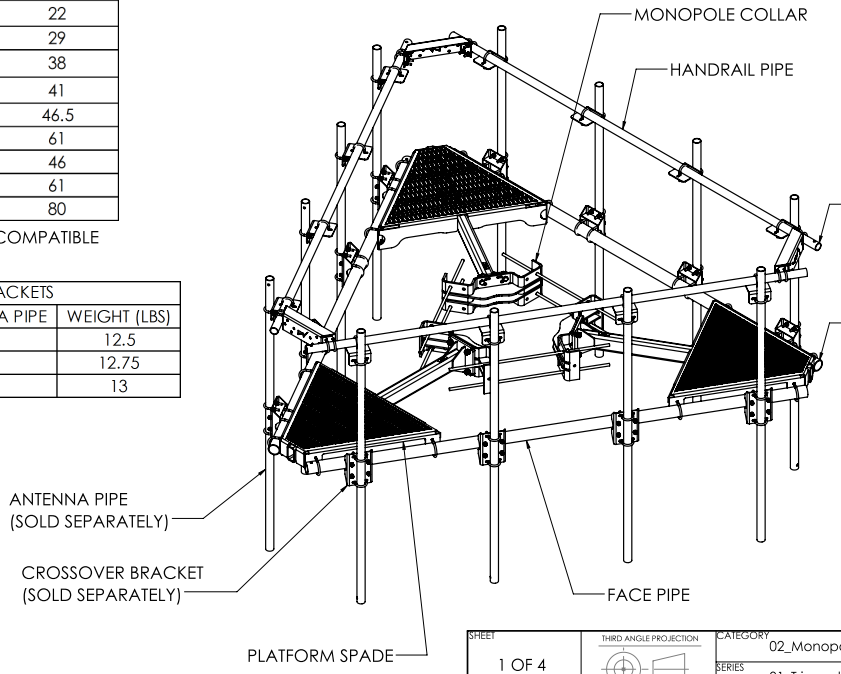
TABLE 2: ANTENNA PIPE OPTIONS***

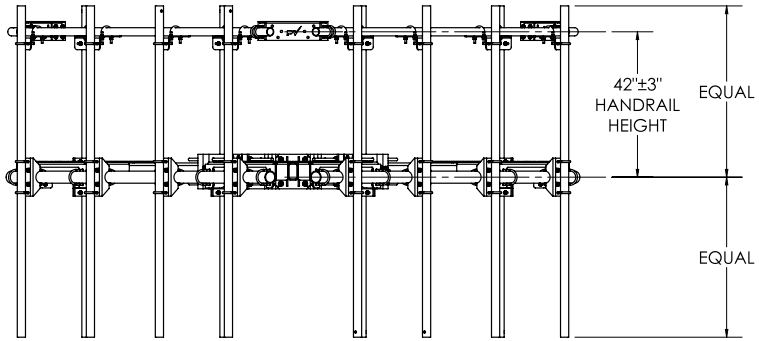
OD	LENGTH	ANTENNA PIPE	WEIGHT (LBS)
2-3/8"	72"	PIPE-238X72	22
	96"	PIPE-238X96	29
	126"	PIPE-238X126	38
2-7/8"	84"	PIPE-278X84	41
	96"	PIPE-278X96	46.5
	126"	PIPE-278X126	61
3-1/2"	72"	PIPE-312X72	46
	96"	PIPE-312X96	61
	126"	PIPE-312X126	80

***PLATFORM WITH HANDRAIL KITS ARE COMPATIBLE WITH 2-3/8" OD HANDRAIL PIPE ONLY

TABLE 3: CROSSOVER BRACKETS

PART NUMBER	COMPATIBLE ANTENNA PIPE	WEIGHT (LBS)
PV-XP-2030-HD	2-3/8" OD	12.5
PV-XP-2530-HD	2-7/8" OD	12.75
PV-XP-3030-HD	3-1/2" OD	13





FALL-SAFE L.I.F.E. MOUNTS™

SHEET: 1 OF 4	THIRD ANGLE PROJECTION	CATEGORY: 02_Monopole	7	UPDATED LOADING, TEMPLATE	1/16/18
		SERIES: 01_Triangular	6	VZW LOADING	1/19/17
3/13/2018	SCALE: 1:36	TYPE: PV-LPP_LIFE Mount	5	HEAVY-5 LOADING	6/13/16
DIMENSIONS ARE IN INCHES TOLERANCES U.N.O. HOLES: +1/16", -1/32" ANGULAR: PROFILE±1/4°, BEND±2° ALL OTHERS: ±1/16"		BY: DJN	4	L.I.F.E. MOUNT™ UPDATE	2/22/16
		CHECKED: SJS	3	REDESIGNED COLLAR	12/30/15
		STATUS: APPROVED	REV	DESCRIPTION	DATE

PERFECTVISION MANUFACTURING

L.I.F.E. MOUNT™ LOW PROFILE PLATFORM

DOCUMENT NUMBER: LPP-ENG-01-R7 | REV: 7

MOUNT CLASSIFICATIONS:

REFERENCE STRUCTURAL LETTER (LPP-STL-01-R1) FOR ADDITIONAL LOADING REQUIREMENTS

MOUNT CLASSIFICATION INFORMATION:

- MAX STRUCTURE HEIGHT: 400ft
- STRUCTURE CLASS: I OR II
- EXPOSURE CATEGORY: B OR C
- TOPOGRAPHIC CATEGORY: 1
- DESIGN WIND PRESSURE (NO ICE): 135psf
- DESIGN WIND PRESSURE (ICED): 15psf
- DESIGN ICE THICKNESS: 2.75in Radial

APPROVED MOUNT CLASSIFICATIONS*

APPROVED MOUNT CLASSIFICATIONS (4 PIPE)						
		REQUIRED EXTREME WIND LOAD (LBS)				
		700	750	1150	1550	1800
REQUIRED EXTREME ICE LOAD (LBS)	0	M750R(0)-4[6]	M750R(0)-4[6]	M1150R(0)-4[6]	M1550R(0)-4[6]	M1800R(0)-4[6]
	600	M750R(600)-4[6]	M750R(600)-4[6]	M1150R(600)-4[6]	M1550R(600)-4[6]	M1800R(600)-4[6]
	800	M750R(800)-4[6]	M750R(800)-4[6]	M1150R(800)-4[6]	M1550R(800)-4[6]	M1800R(800)-4[6]
	1100	M750R(1100)-4[6]	M750R(1100)-4[6]	M1150R(1100)-4[6]	M1550R(1100)-4[6]	M1800R(1100)-4[6]
	1250	M750R(1250)-4[6]	M750R(1250)-4[6]	M1150R(1250)-4[6]	M1550R(1250)-4[6]	M1800R(1250)-4[6]

- HEAVY-5

APPLIES TO ALL PV-LPP12M, PV-LPP14M, AND PV-LPP14L SERIES PLATFORMS WITH ANTENNAS AND APPURTENANCES SYMMETRICALLY MOUNTED ABOUT THE PLATFORM CENTERLINE.

POLE THICKNESS LIMITATIONS:

ON POLES WITH WALL THICKNESS EQUAL TO OR GREATER THAN THE VALUES LISTED BELOW, THE PERFECT VISION PV-LPP MOUNT SERIES IS STRUCTURALLY CAPABLE OF SUPPORTING THE ABOVE LOADING SCENARIOS WITHOUT THE NEED FOR AN ADDITIONAL KICKER BRACE.

FOR THIN WALL POLES, USE PV-PKBK PLATFORM KICKER BRACE TO AVOID POLE CRIMPING FAILURES. KICKER BRACE CAN BE INSTALLED ABOVE OR BELOW PLATFORM.

POLE THICKNESS LIMITATIONS	
MOUNT CLASSIFICATION	MINIMUM POLE THICKNESS
M750R-4[6]	1/4"
M800R-4[6]	1/4"
M900R-4[6]	1/4"
M950R-4[6]	1/4"
M1000R-4[6]	5/16"
M1400R-4[6]	5/16"
M1000R(i)-4[6]	5/16"
M1150R(i)-4[6]	5/16"

PLATFORM EPA:

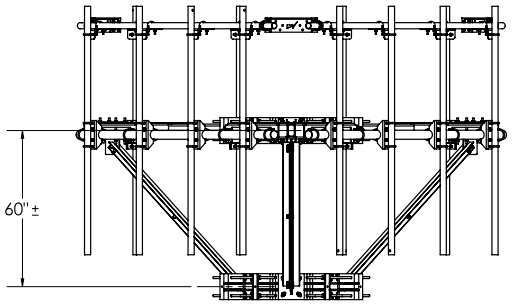
PLATFORM EPA		
PLATFORM TYPE	NO ICE (FT^2)	1/2" RADIAL ICE (FT^2)
12'6" FACE	20.3*	25.8*
12'6" FACE WITH HANDRAIL	34.4**	43.0**
14'6" FACE	22.1*	28.1*
14'6" FACE WITH HANDRAIL	36.8**	46.2**

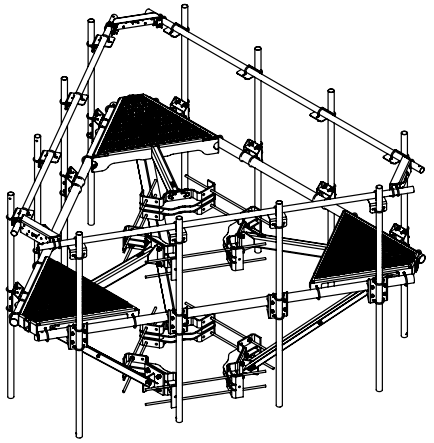
*DOES NOT INCLUDE CROSSOVER PLATES OR ANTENNA PIPES
**DOES NOT INCLUDE ANTENNA PIPES

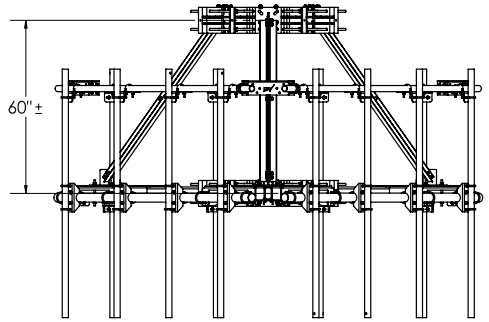
KICKER ATTACHMENT:

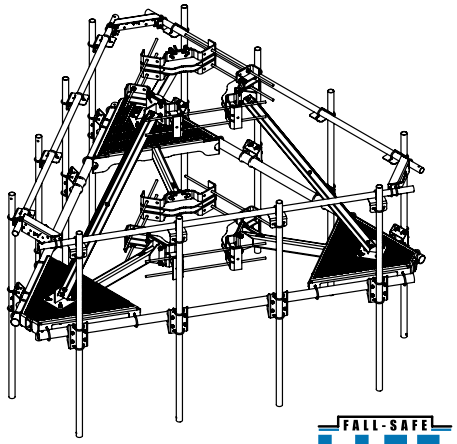
SEE CLASSIFICATIONS SECTION FOR KICKER REQUIREMENT DETAILS.

INSTALL KICKER ABOVE OR BELOW PLATFORM









FALL-SAFE L.I.F.E. MOUNTS™

SHEET 2 OF 4	THIRD ANGLE PROJECTION	CATEGORY 02_Monopole	7	UPDATED LOADING, TEMPLATE	1/16/18
		SERIES 01_Triangular	6	VZW LOADING	1/19/17
3/13/2018	SCALE 1:48	TYPE PV-LPP_LIFE Mount	5	HEAVY-5 LOADING	6/13/16
DIMENSIONS ARE IN INCHES TOLERANCES U.N.O. HOLES: +1/16", -1/32" ANGULAR: PROFILE±1/4°, BEND±2° ALL OTHERS: ±1/16"		BY DJN	4	L.I.F.E. MOUNT™ UPDATE	2/22/16
		CHECKED SJS	3	REDESIGNED COLLAR	12/30/15
		STATUS APPROVED	REV	DESCRIPTION	DATE

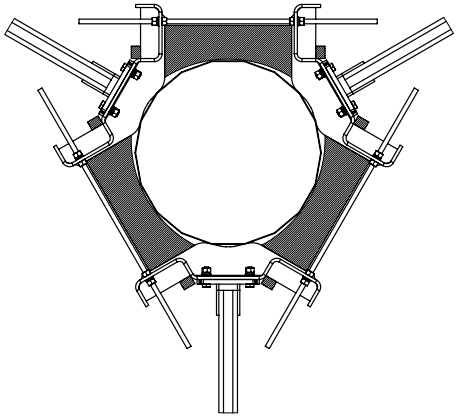
PERFECT VISION MANUFACTURING

L.I.F.E. MOUNT™ LOW PROFILE PLATFORM

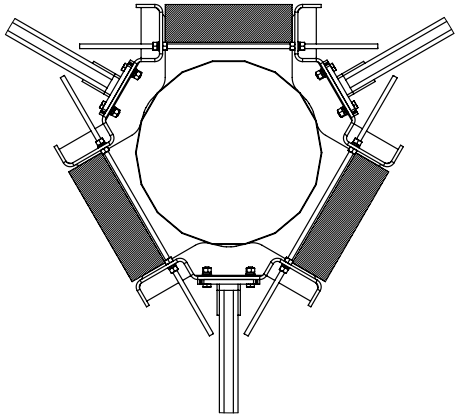
DOCUMENT NUMBER LPP-ENG-01-R7 | REV 7

SAFETY CLIMB ROUTING:

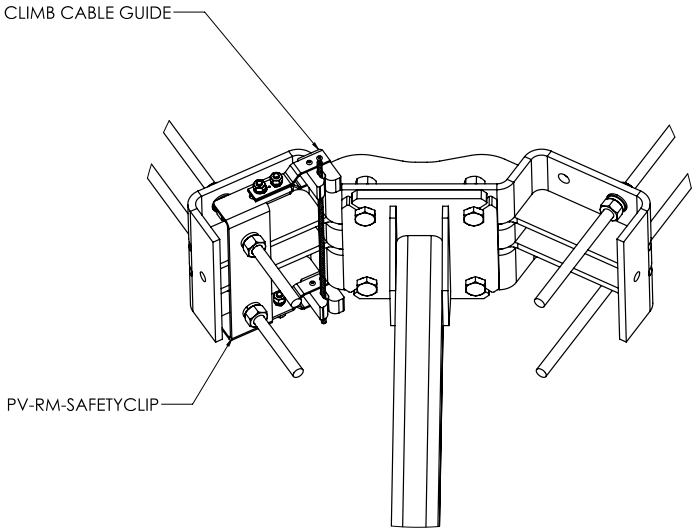
CABLE GUIDES AND PV-RM-SAFETYCLIP SOLD SEPARATELY.



SAFETY CLIMB CABLE
RECOMMENDED ROUTING
(ALL THREAD IN EXTERIOR HOLES)



SAFETY CLIMB CABLE
RECOMMENDED ROUTING
(ALL THREAD IN INTERIOR HOLES)



SAFETY CLIMB CABLE GUIDE ATTACHMENT
IF RING MOUNT IS TO BE INSTALLED ON THE SAFETY CLIMB FACE, USE THE RECOMMENDED ROUTING AS SHOWN

SHEET: 3 OF 4	THIRD ANGLE PROJECTION	CATEGORY: 02_Monopole	7	UPDATED LOADING, TEMPLATE	1/16/18
		SERIES: 01_Triangular	6	VZW LOADING	1/19/17
3/13/2018	SCALE: NTS	TYPE: PV-LPP_LIFE Mount	5	HEAVY-5 LOADING	6/13/16
DIMENSIONS ARE IN INCHES TOLERANCES U.N.O. HOLES: +1/16", -1/32" ANGULAR: PROFILE±1/4°, BEND±2° ALL OTHERS: ±1/16"		BY: DJN	4	L.I.F.E. MOUNT™ UPDATE	2/22/16
		CHECKED: SJS	3	REDESIGNED COLLAR	12/30/15
		STATUS: APPROVED	REV	DESCRIPTION	DATE

FALL-SAFE L.I.F.E. MOUNTS™

PERFECTVISION® MANUFACTURING

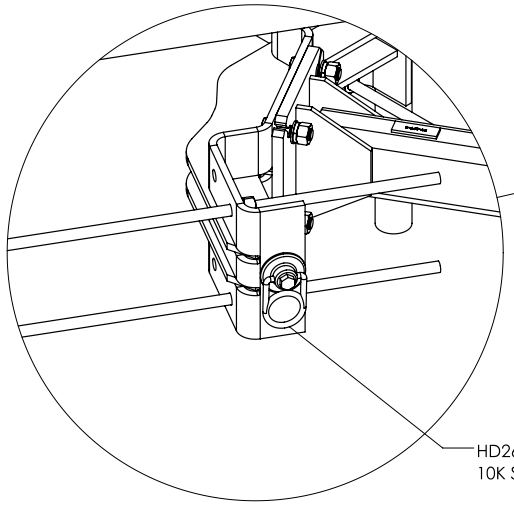
L.I.F.E. MOUNT™ LOW PROFILE PLATFORM

DOCUMENT NUMBER: LPP-ENG-01-R7 REV: 7

10K SWIVEL ANCHOR

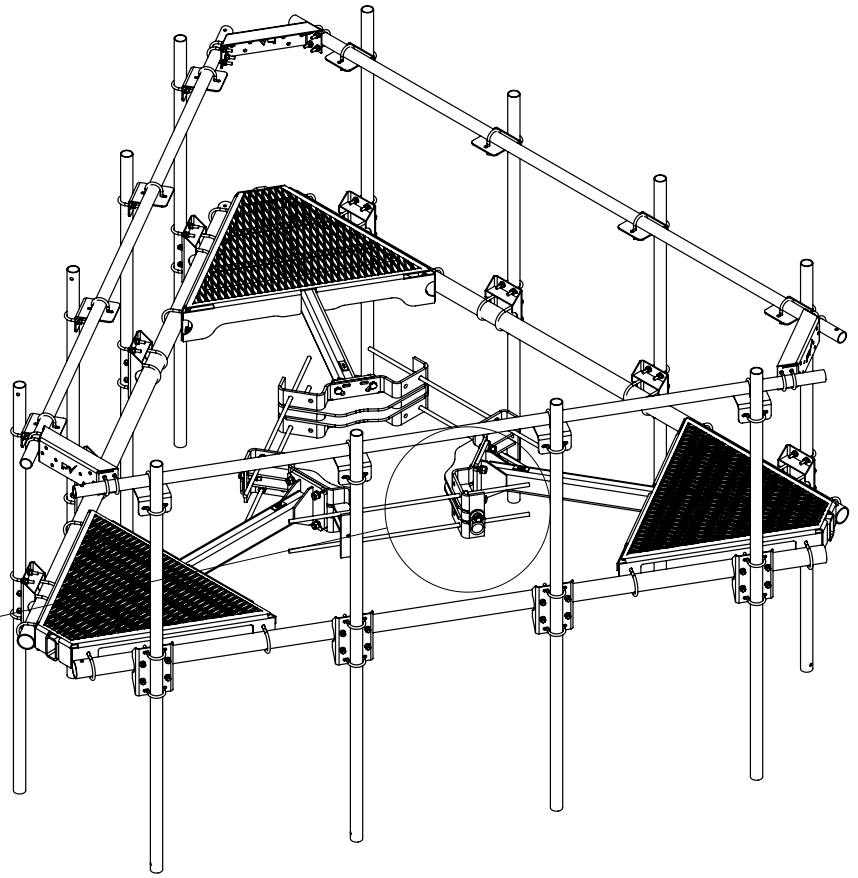
SWIVEL ANCHOR ATTACHMENT NOTES:

- DO NOT INSTALL ANCHORS UNTIL AFTER RING MOUNT IS PROPERLY INSTALLED ON TOWER.
- DO NOT USE SWIVEL ANCHORS AS A RIGGING / LIFTING POINT.
- SWIVEL ANCHOR SPECS:
  - UTS: 10,000 LBF
  - MAX USER WEIGHT: 310 LBS
  - WORKING LOAD: 2,000 LBS
- FOLLOW MANUFACTURER SPECIFICATIONS FOR ANCHOR INSTALLATION AND MAINTENANCE.



HD26226
10K SWIVEL ANCHOR

DETAIL A
SCALE 1 : 8



SHEET: 4 OF 4	THIRD ANGLE PROJECTION	CATEGORY: 02_Monopole	7	UPDATED LOADING, TEMPLATE	1/16/18
		SERIES: 01_Triangular	6	VZW LOADING	1/19/17
3/13/2018	SCALE: 1:24	TYPE: PV-LPP_LIFE Mount	5	HEAVY-5 LOADING	6/13/16
DIMENSIONS ARE IN INCHES TOLERANCES U.N.O. HOLES: +1/16", -1/32" ANGULAR: PROFILE±1/4°, BEND±2° ALL OTHERS: ±1/16"		BY: DJN	4	L.I.F.E. MOUNT™ UPDATE	2/22/16
		CHECKED: SJS	3	REDESIGNED COLLAR	12/30/15
		STATUS: APPROVED	REV	DESCRIPTION	DATE

FALL-SAFE L.I.F.E. MOUNTS™

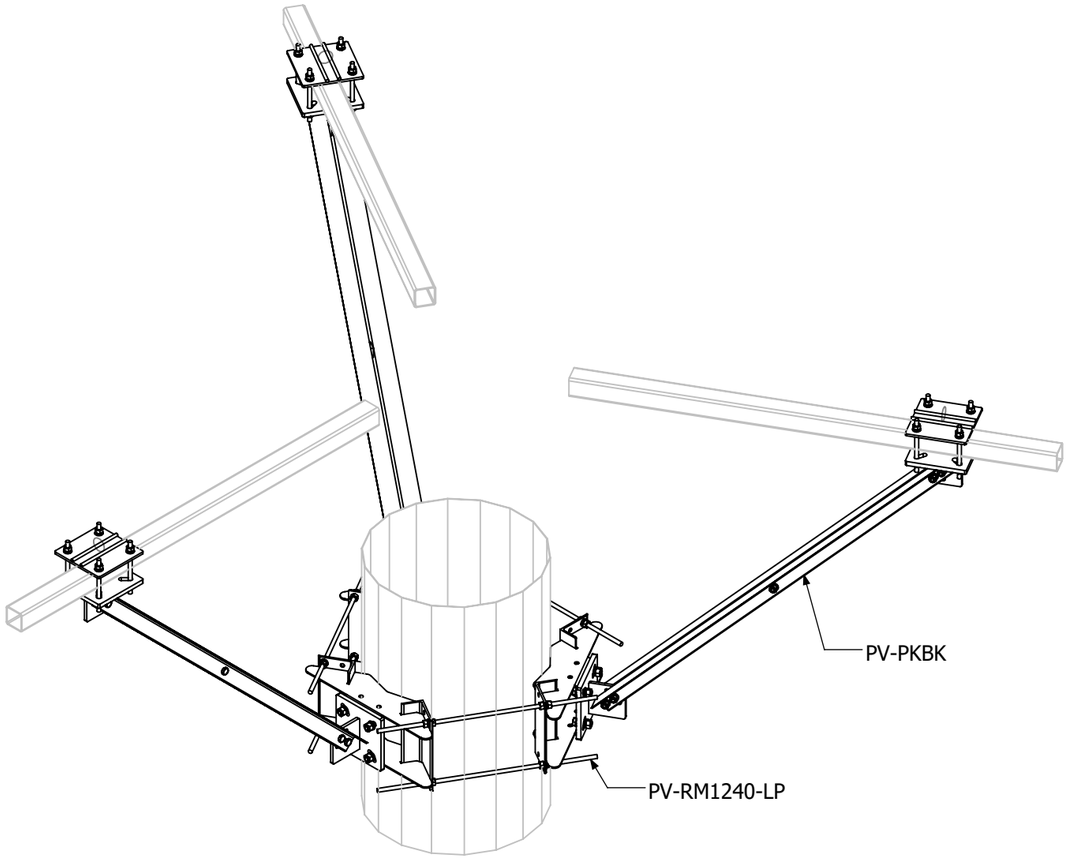
PERFECT VISION® MANUFACTURING

L.I.F.E. MOUNT™ LOW PROFILE PLATFORM

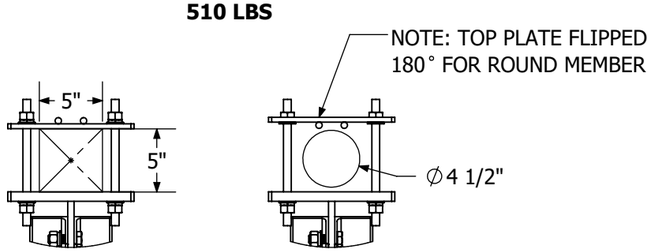
DOCUMENT NUMBER: LPP-ENG-01-R7

REV: 7

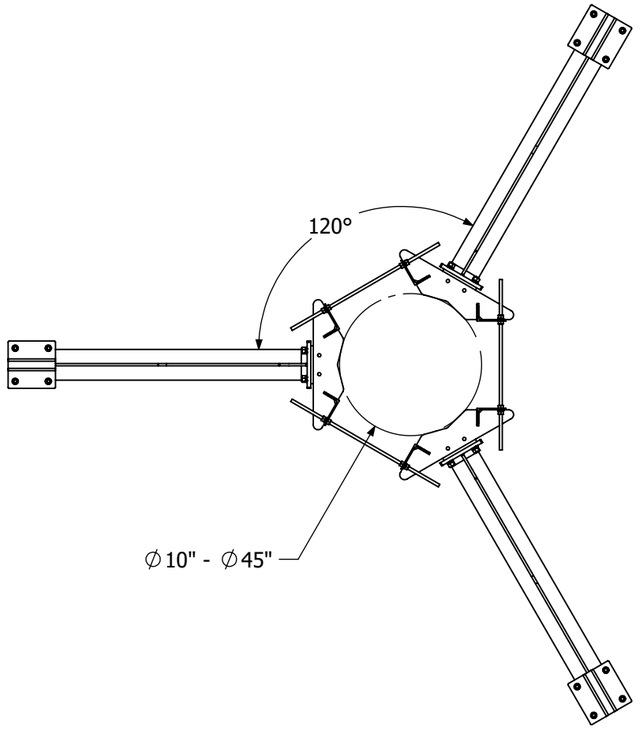
C:\Users\DominicN\Documents\PVMSteel\PVM Sales Catalog\SW Working Files\Engineering Details\

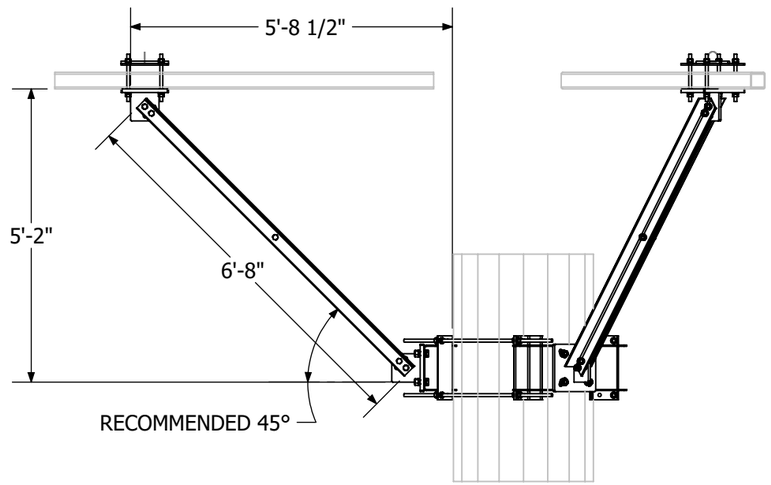


PV-PKBK-M
(INCLUDES (1) PV-RM1240-LP AND (1) PV-PKBK)
KICKER BRACE
510 LBS



ARM ATTACHMENT
CLAMPS TO RECT HSS UP TO 5"X5" AND ROUND PIPE UP TO 4-1/2" OD





PERFECT VISION MANUFACTURING
16101 La Grande Dr.
Little Rock, AR 72223
1-800-205-8620

STAMP:

REVISIONS:

NO.	DATE	DESCRIPTION	BY	CHK	APD
0	4/11/17	INTIAL RELEASE	DJN	LL	SS
1					
2					
3					
4					
5					

SITE INFORMATION:

DESIGN TYPE:
MONOPOLE KICKER BRACE KIT

SHEET TITLE:
ENGINEERING DETAIL

SHEET TITLE: E-1

REVISION: 0

Wind & Ice Loading

Nominal Mount Elevation (AGL), z_{mount}	121 ft	K_a	0.90
Nominal Rad Elevation (AGL), z_{rad}	121 ft	K_d	0.95
Elevation AMSL (ft)	-	K_e	-
TIA Standard	G	K_z	1.04
Basic Wind Speed, V_{ult} (bare)	130 mph	K_{zt}	1.00
Basic Wind Speed, V (ice)	50 mph	K_s	-
Design Ice Thickness, t_i	3/4 in	t_{iz}	1.71 in
Exposure Category	B	G_h	1.00
Risk Category	II	q_z (bare)	42.9 psf
Seismic Response Coeff., C_s	-	q_z (ice)	6.3 psf

Live Loading

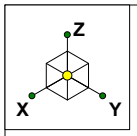
At Mount Pipes, L_M	500 lb
Joint Labels Considered	M1
	M2
	M3
	M4

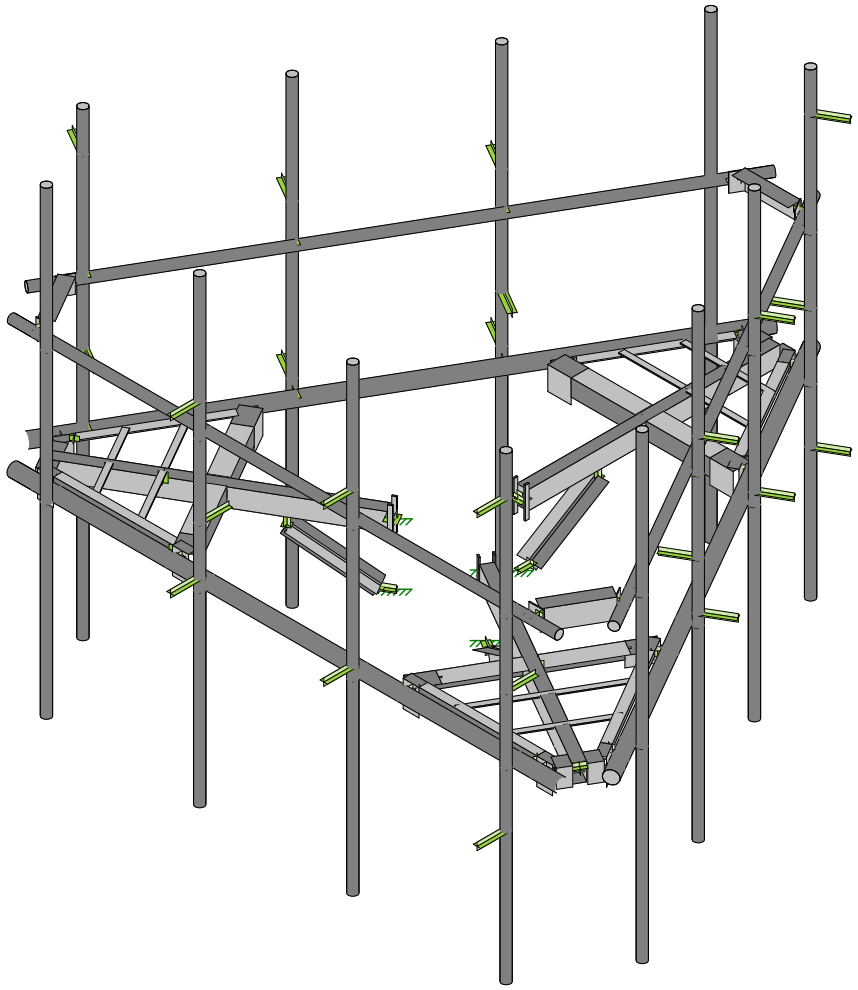
Member Distributed Loading

Section Set Label	Shape Label	F_A (lb/ft)		Ice Wt. (lb/ft)
		Bare	Ice	
Offset Tube	HSS5x3x3/8"	32.17	2.31	14.19
End Plate Angle	L5x4x0.25	32.17	2.31	15.28
Grating Angle 2	L6.4x4.750x0.25	41.17	2.41	18.13
Grating Angle 4	L7.25x2.375x0.25	46.64	2.47	16.11
Grating Angle 3	L2.375x1.25x0.25	15.28	3.48	9.17
Grating PL 2	PL1.50x0.25	9.65	2.82	5.89
Grating Angle 1	L4.75x4.5x0.25	30.56	2.29	15.61
Platform Horizontal Pipe	PIPE_3.0	13.51	3.95	10.87
Mount Pipe	PIPE_2.0	9.17	3.31	8.52
Support Rail	PIPE_2.0	9.17	3.31	8.52
Conn. PL	PL8.5x3/8	54.69	6.81	15.36
SR Conn Plate	PL5x0.1875	32.17	4.81	10.46
SR Conn Angle	L5.50X3.5625X3	35.38	2.34	15.36
MOD PRK	L3X3X3	19.30	2.16	11.29

Appurtenances

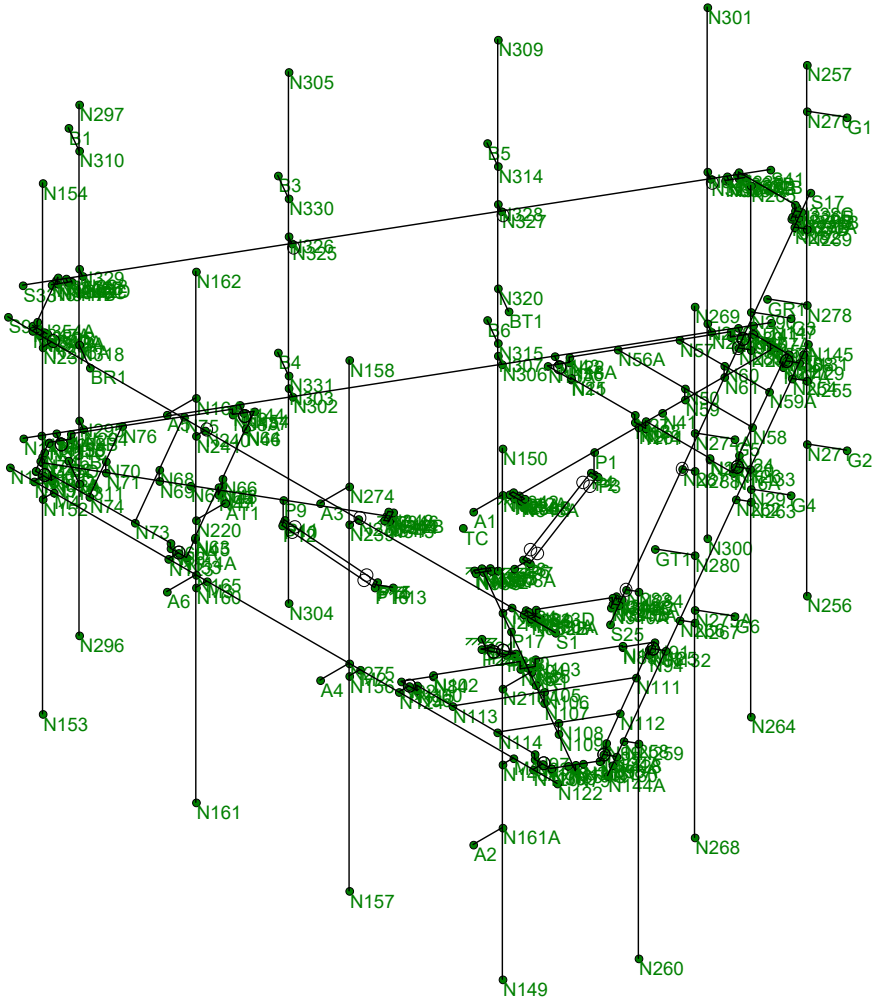
Appurtenance Model	Status	Azimuth Offset (°, ↻)	Rad Elev. Override (ft)	Swap Width & Depth	Area Factor		Qty. per Azimuth			Total Qty. Override	0° Joints		120° Joints		240° Joints		Height (in)	Width (in)	Depth (in)	Weight (Bare) (lb)	Shape	Weight of Ice (lb)	EPA_A (Bare) (ft^2)		EPA_A (Ice) (ft^2)		F_A (Bare) (lb)		F_A (Ice) (lb)	
					Front	Side	0°	120°	240°		1	2	1	2	1	2							N	T	N	T	N	T	N	T
APXVAARR24_43-U-NA20				☐			1	1	1		A1	A2	b1	B2	G1	G2	0	0	0	153.3	Generic	384.63	14.67	5.32	17.27	7.61	566.28	205.36	98.60	43.45
AIR 21, 1.3 M, B2A B4P				☐			1	1	1		A3	A4	B3	B4	G3	G4	56	12	8	83	Flat	143.15	6.05	4.36	8.02	6.22	233.52	168.13	45.77	35.51
AIR 21, 1.3 M, B4A B2P				☐			1	1	1		A5	A6	B5	B6	G5	G6	56	12	8	132.2	Flat	164.66	6.05	4.36	8.02	6.22	233.52	168.13	45.77	35.51
RADIO 4449 B12/B71				☐			1	1	1		AR1		BR1		GR1		15	13.2	10.4	75	Flat	58.77	1.65	1.30	2.55	2.12	63.69	50.18	14.56	12.11
KRY 112 144/1				☐			1	1	1		AT1		BT1		GT1		7	6	3	11	Flat	10.85	0.35	0.18	0.82	0.56	13.51	6.76	4.67	3.18





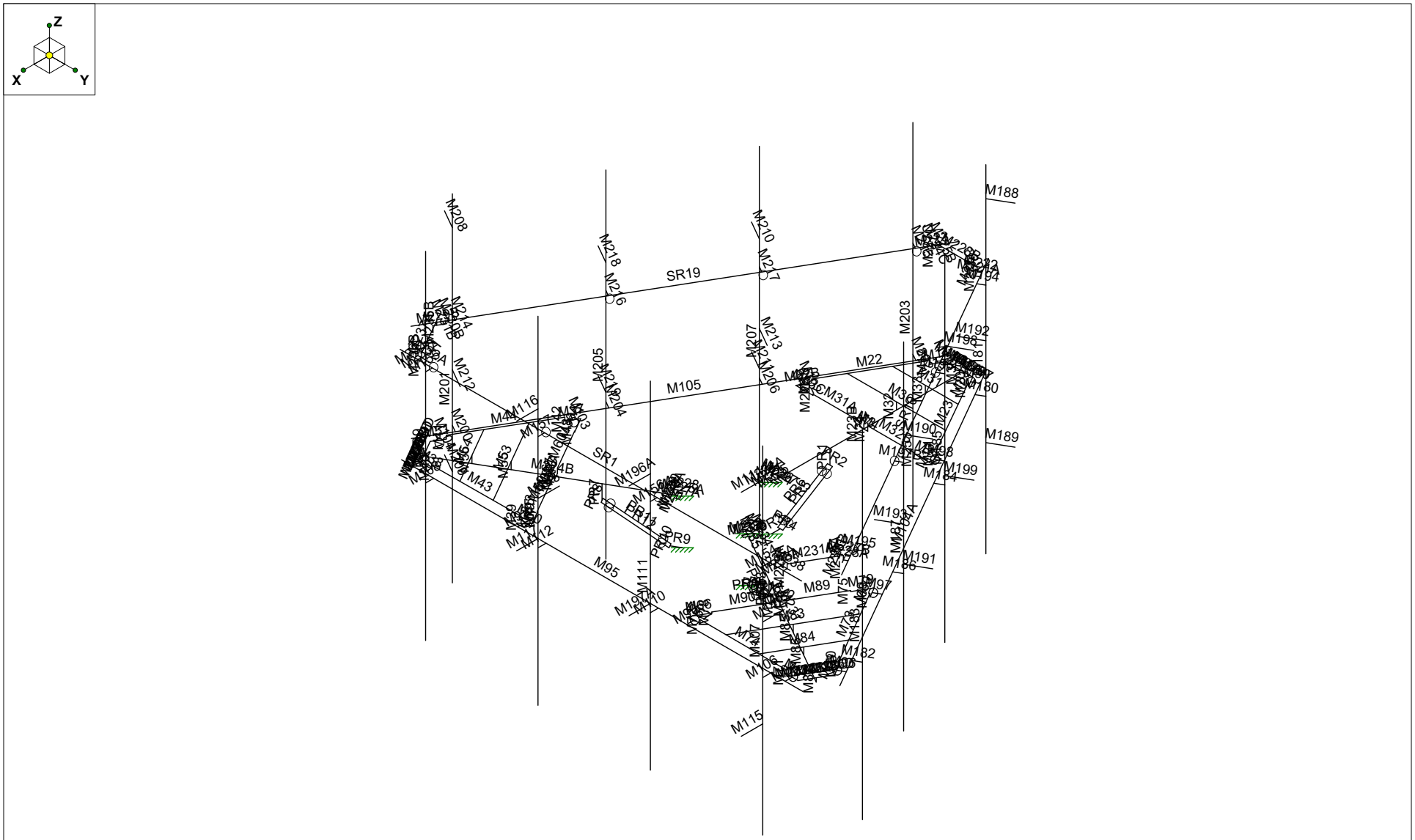
Envelope Only Solution

CLS	41124-12927144-PINE ORCHARD BRANFORD CT-283419	SK - 1
SMR		July 8, 2019 at 1:46 PM
41124-12927144-01-MR-R1	Rendered	41124-12927144-01-MR-R1.r3d



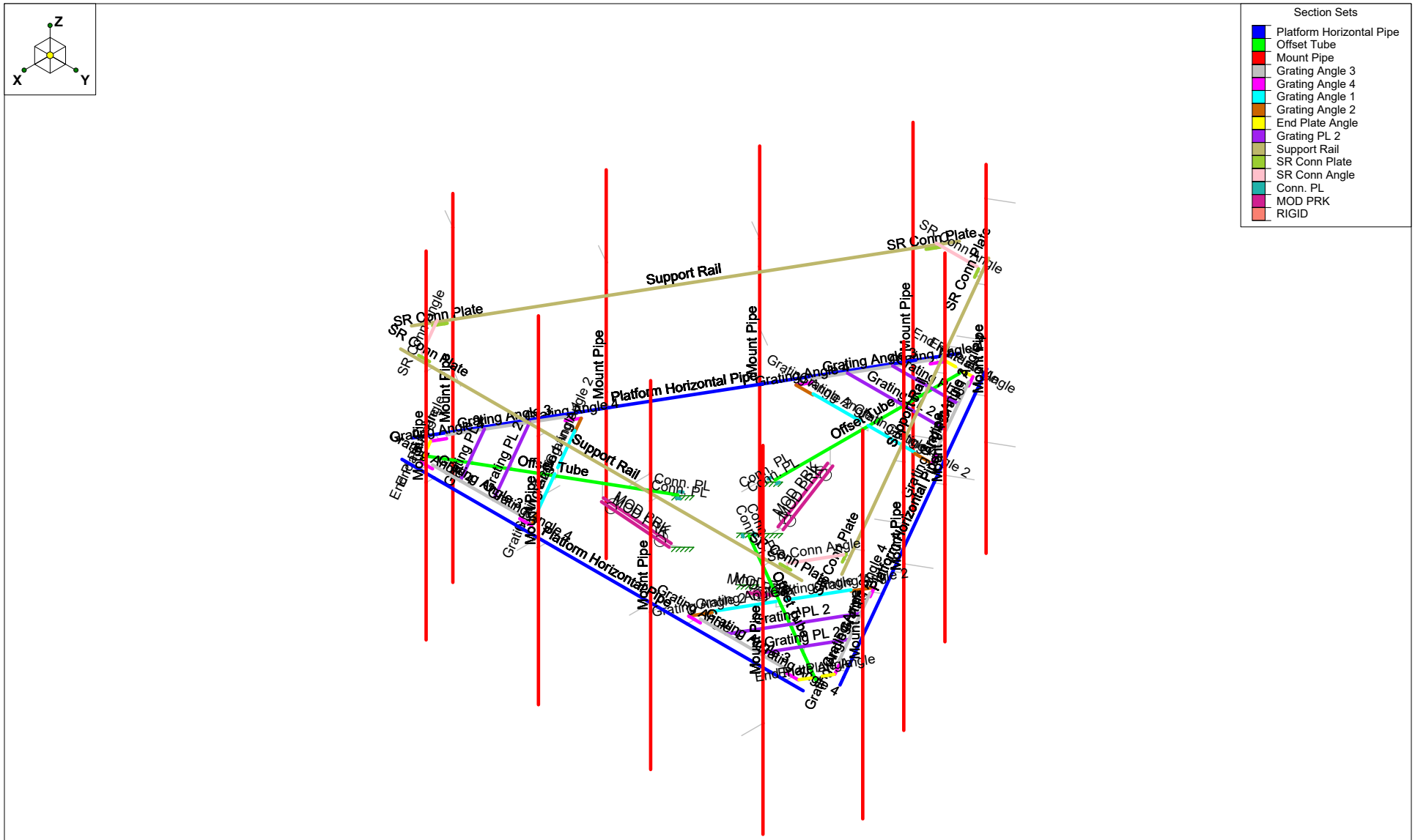
Envelope Only Solution

CLS	41124-12927144-PINE ORCHARD BRANFORD CT-283419	SK - 2
SMR		July 8, 2019 at 1:47 PM
41124-12927144-01-MR-R1	Joint Labels	41124-12927144-01-MR-R1.r3d



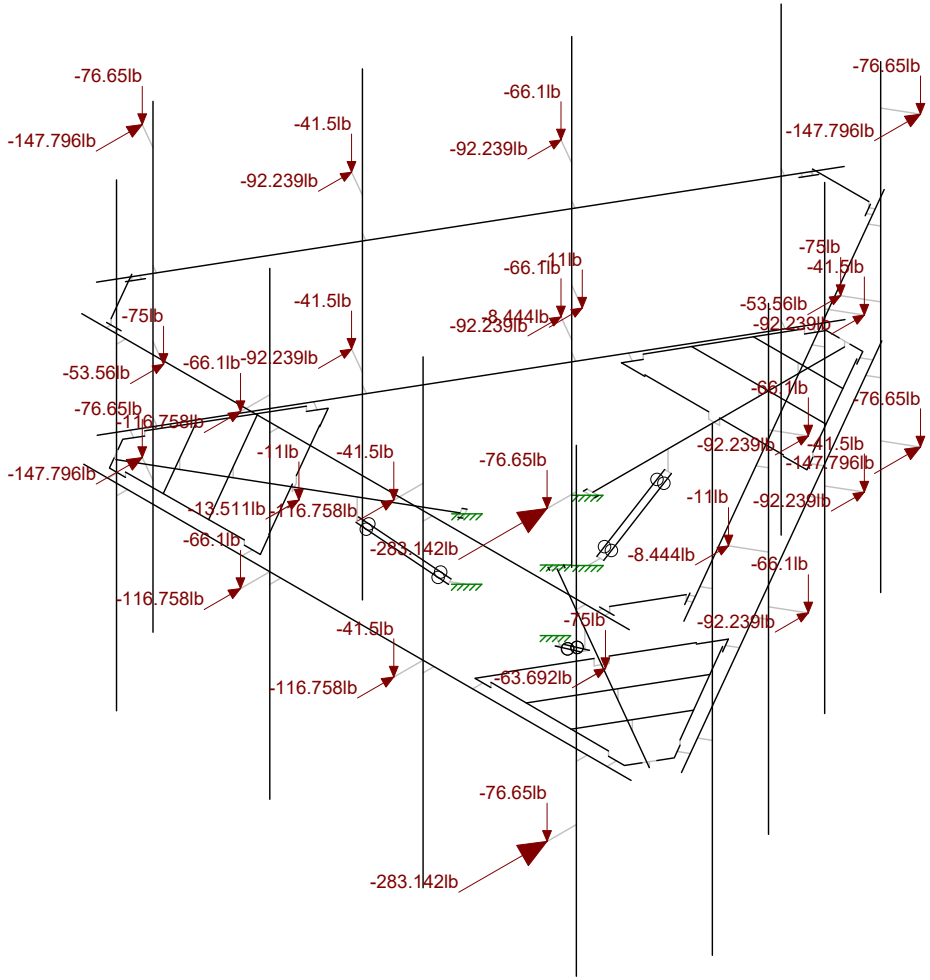
Envelope Only Solution

CLS	41124-12927144-PINE ORCHARD BRANFORD CT-283419	SK - 3
SMR		July 8, 2019 at 1:47 PM
41124-12927144-01-MR-R1	Member Labels	41124-12927144-01-MR-R1.r3d



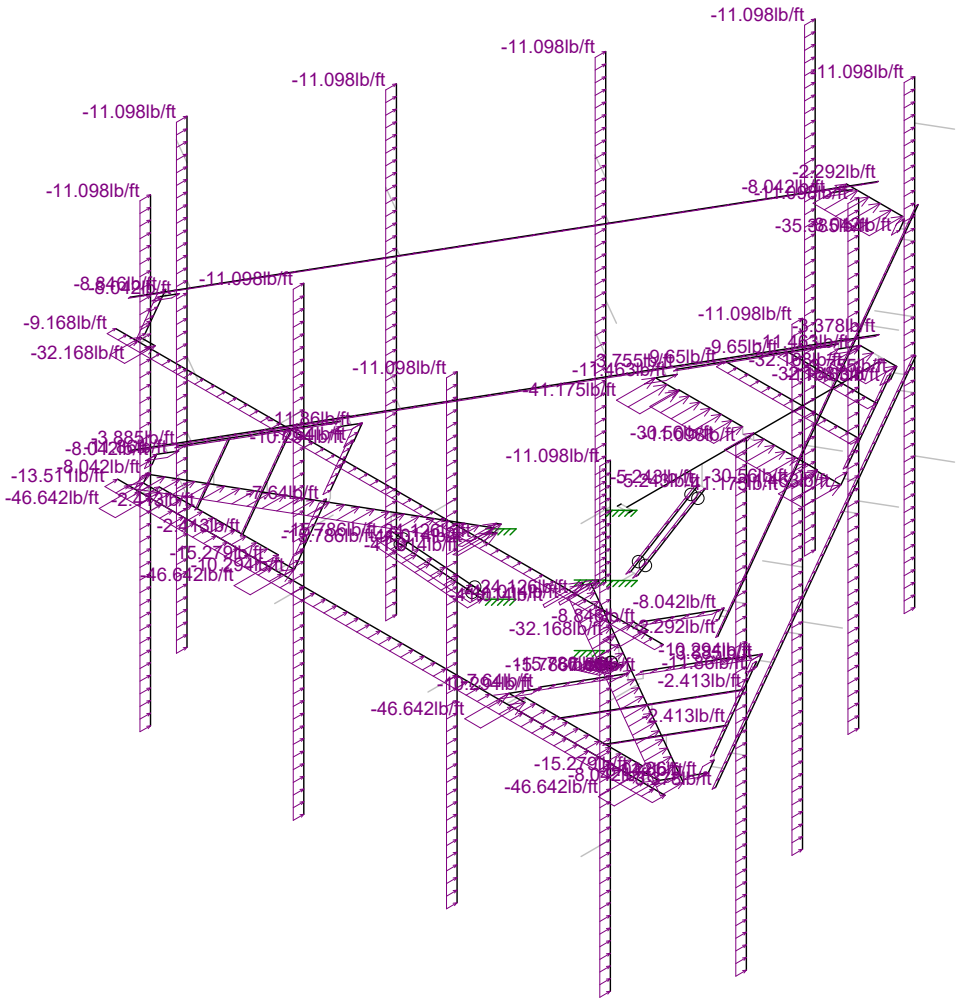
Envelope Only Solution

CLS	41124-12927144-PINE ORCHARD BRANFORD CT-283419	SK - 4
SMR		July 8, 2019 at 1:47 PM
41124-12927144-01-MR-R1	Section Sets	41124-12927144-01-MR-R1.r3d



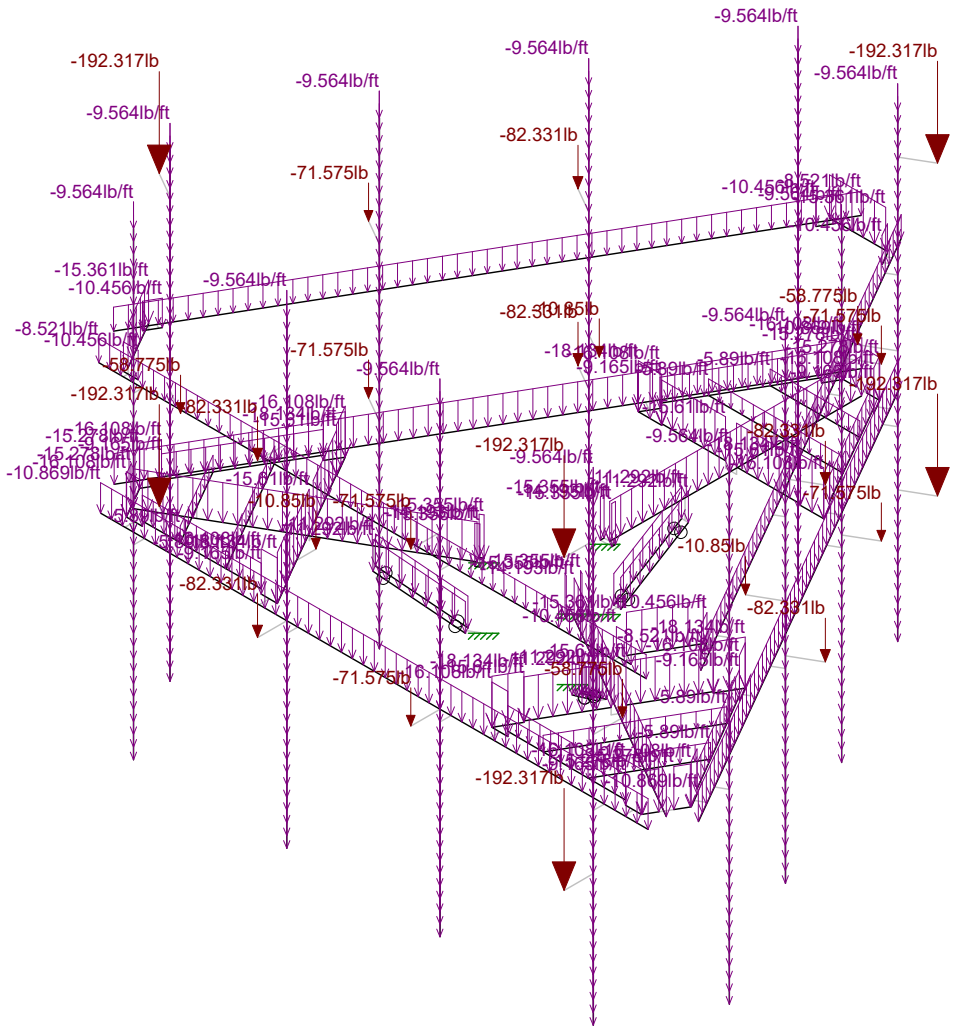
Loads: LC 1, DISPLAY (1.0D + 1.0W_0°)
Envelope Only Solution

CLS	41124-12927144-PINE ORCHARD BRANFORD CT-283419	SK - 5
SMR		July 8, 2019 at 1:48 PM
41124-12927144-01-MR-R1	Joint Loads - Dead and Normal Wind	41124-12927144-01-MR-R1.r3d



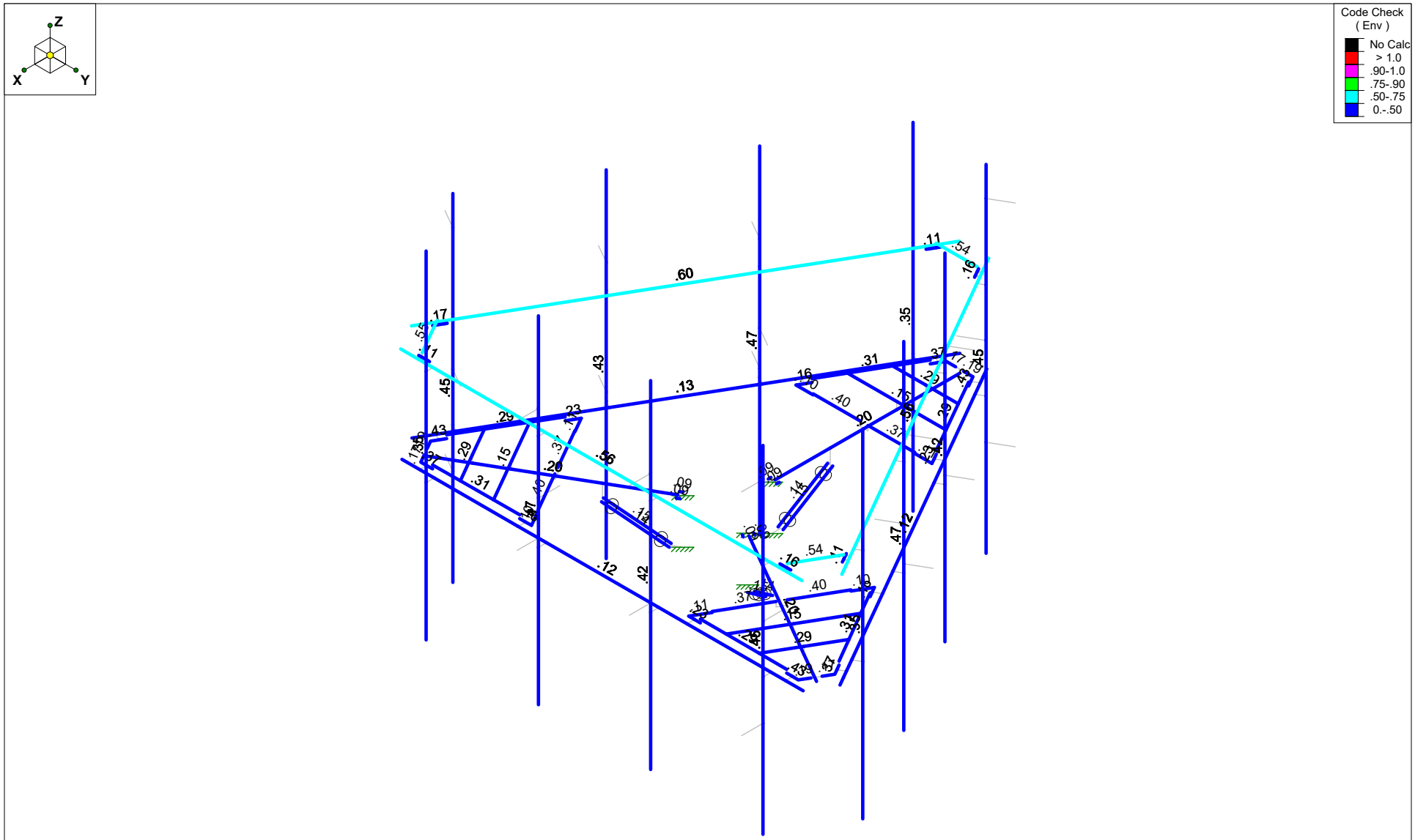
Loads: BLC 4, Structure Wind 0°
Envelope Only Solution

CLS	41124-12927144-PINE ORCHARD BRANFORD CT-283419	SK - 6
SMR		July 8, 2019 at 1:48 PM
41124-12927144-01-MR-R1	Distributed Load - Normal Wind	41124-12927144-01-MR-R1.r3d



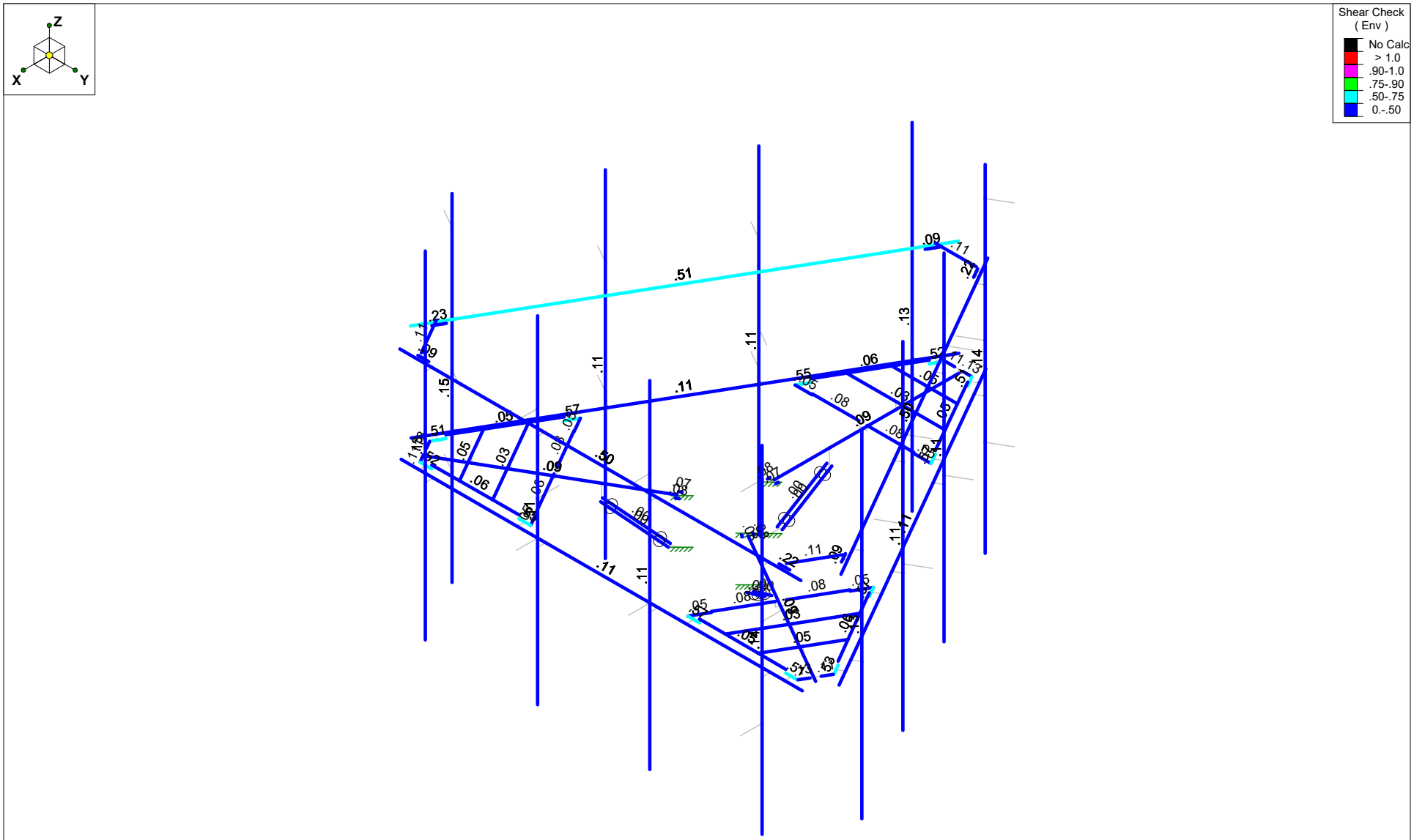
Loads: BLC 2, Ice Dead
Envelope Only Solution

CLS	41124-12927144-PINE ORCHARD BRANFORD CT-283419	SK - 7
SMR		July 8, 2019 at 1:48 PM
41124-12927144-01-MR-R1	Ice Dead Loads	41124-12927144-01-MR-R1.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

CLS		SK - 8
SMR	41124-12927144-PINE ORCHARD BRANFORD CT-283419	July 8, 2019 at 1:48 PM
41124-12927144-01-MR-R1	Envelope Member Unity Check Results - Bending	41124-12927144-01-MR-R1.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

CLS	41124-12927144-PINE ORCHARD BRANFORD CT-283419	SK - 9
SMR		July 8, 2019 at 1:49 PM
41124-12927144-01-MR-R1	Envelope Member Check Results - Shear	41124-12927144-01-MR-R1.r3d

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	Dead	DL			-1	24				
2	Ice Dead	RL				24		84		
4	Structure Wind 0Á	None						81		
5	Structure Wind 30Á	None						142		
6	Structure Wind 45Á	None						168		
7	Structure Wind 60Á	None						162		
8	Structure Wind 90Á	None						71		
9	Structure Wind 120Á	None						162		
10	Structure Wind 135Á	None						168		
11	Structure Wind 150Á	None						142		
12	Structure Wind w/ Ice 0Á	None						81		
13	Structure Wind w/ Ice 30Á	None						142		
14	Structure Wind w/ Ice 45Á	None						168		
15	Structure Wind w/ Ice 60Á	None						162		
16	Structure Wind w/ Ice 90Á	None						71		
17	Structure Wind w/ Ice 120Á	None						162		
18	Structure Wind w/ Ice 135Á	None						168		
19	Structure Wind w/ Ice 150Á	None						142		
20	Antenna Wind 0Á	None				24				
21	Antenna Wind 30Á	None				48				
22	Antenna Wind 45Á	None				48				
23	Antenna Wind 60Á	None				48				
24	Antenna Wind 90Á	None				24				
25	Antenna Wind 120Á	None				48				
26	Antenna Wind 135Á	None				48				
27	Antenna Wind 150Á	None				48				
28	Antenna Wind w/ Ice 0Á	None				24				
29	Antenna Wind w/ Ice 30Á	None				48				
30	Antenna Wind w/ Ice 45Á	None				48				
31	Antenna Wind w/ Ice 60Á	None				48				
32	Antenna Wind w/ Ice 90Á	None				24				
33	Antenna Wind w/ Ice 120Á	None				48				
34	Antenna Wind w/ Ice 135Á	None				48				
35	Antenna Wind w/ Ice 150Á	None				48				
39	Maintenance Live 500 (1)	OL1				1				
40	Maintenance Live 500 (2)	OL2				1				
41	Maintenance Live 500 (3)	OL3				1				
42	Maintenance Live 500 (4)	OL4				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																

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..	BLC	Fac...
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																		
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	.056	20	.056	OL1	1.5																
36	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	5	.056	21	.056	OL1	1.5																
37	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	6	.056	22	.056	OL1	1.5																
38	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	7	.056	23	.056	OL1	1.5																
39	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	8	.056	24	.056	OL1	1.5																
40	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	9	.056	25	.056	OL1	1.5																
41	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	10	.056	26	.056	OL1	1.5																
42	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	11	.056	27	.056	OL1	1.5																
43	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	4	-.056	20	-.056	OL1	1.5																
44	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	5	-.056	21	-.056	OL1	1.5																
45	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	6	-.056	22	-.056	OL1	1.5																
46	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	7	-.056	23	-.056	OL1	1.5																
47	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	8	-.056	24	-.056	OL1	1.5																
48	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	9	-.056	25	-.056	OL1	1.5																
49	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	10	-.056	26	-.056	OL1	1.5																
50	1.2D + 1.5Lm_1 +..	Yes	Y		DL	1.2	11	-.056	27	-.056	OL1	1.5																
51	1.2D + 1.5Lm_2 +..	Yes	Y		DL	1.2	4	.056	20	.056	OL2	1.5																
52	1.2D + 1.5Lm_2 +..	Yes	Y		DL	1.2	5	.056	21	.056	OL2	1.5																
53	1.2D + 1.5Lm_2 +..	Yes	Y		DL	1.2	6	.056	22	.056	OL2	1.5																
54	1.2D + 1.5Lm_2 +..	Yes	Y		DL	1.2	7	.056	23	.056	OL2	1.5																
55	1.2D + 1.5Lm_2 +..	Yes	Y		DL	1.2	8	.056	24	.056	OL2	1.5																
56	1.2D + 1.5Lm_2 +..	Yes	Y		DL	1.2	9	.056	25	.056	OL2	1.5																
57	1.2D + 1.5Lm_2 +..	Yes	Y		DL	1.2	10	.056	26	.056	OL2	1.5																
58	1.2D + 1.5Lm_2 +..	Yes	Y		DL	1.2	11	.056	27	.056	OL2	1.5																
59	1.2D + 1.5Lm_2 +..	Yes	Y		DL	1.2	4	-.056	20	-.056	OL2	1.5																
60	1.2D + 1.5Lm_2 +..	Yes	Y		DL	1.2	5	-.056	21	-.056	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...
61	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	6	-.056	22	-.056	OL2	1.5														
62	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	7	-.056	23	-.056	OL2	1.5														
63	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	8	-.056	24	-.056	OL2	1.5														
64	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	9	-.056	25	-.056	OL2	1.5														
65	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	10	-.056	26	-.056	OL2	1.5														
66	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	11	-.056	27	-.056	OL2	1.5														
67	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	4	.056	20	.056	OL3	1.5														
68	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	5	.056	21	.056	OL3	1.5														
69	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	6	.056	22	.056	OL3	1.5														
70	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	7	.056	23	.056	OL3	1.5														
71	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	8	.056	24	.056	OL3	1.5														
72	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	9	.056	25	.056	OL3	1.5														
73	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	10	.056	26	.056	OL3	1.5														
74	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	11	.056	27	.056	OL3	1.5														
75	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	4	-.056	20	-.056	OL3	1.5														
76	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	5	-.056	21	-.056	OL3	1.5														
77	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	6	-.056	22	-.056	OL3	1.5														
78	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	7	-.056	23	-.056	OL3	1.5														
79	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	8	-.056	24	-.056	OL3	1.5														
80	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	9	-.056	25	-.056	OL3	1.5														
81	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	10	-.056	26	-.056	OL3	1.5														
82	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	11	-.056	27	-.056	OL3	1.5														
83	1.2D + 1.5Lm_4 +...	Yes	Y		DL	1.2	4	.056	20	.056	OL4	1.5														
84	1.2D + 1.5Lm_4 +...	Yes	Y		DL	1.2	5	.056	21	.056	OL4	1.5														
85	1.2D + 1.5Lm_4 +...	Yes	Y		DL	1.2	6	.056	22	.056	OL4	1.5														
86	1.2D + 1.5Lm_4 +...	Yes	Y		DL	1.2	7	.056	23	.056	OL4	1.5														
87	1.2D + 1.5Lm_4 +...	Yes	Y		DL	1.2	8	.056	24	.056	OL4	1.5														
88	1.2D + 1.5Lm_4 +...	Yes	Y		DL	1.2	9	.056	25	.056	OL4	1.5														
89	1.2D + 1.5Lm_4 +...	Yes	Y		DL	1.2	10	.056	26	.056	OL4	1.5														
90	1.2D + 1.5Lm_4 +...	Yes	Y		DL	1.2	11	.056	27	.056	OL4	1.5														
91	1.2D + 1.5Lm_4 +...	Yes	Y		DL	1.2	4	-.056	20	-.056	OL4	1.5														
92	1.2D + 1.5Lm_4 +...	Yes	Y		DL	1.2	5	-.056	21	-.056	OL4	1.5														
93	1.2D + 1.5Lm_4 +...	Yes	Y		DL	1.2	6	-.056	22	-.056	OL4	1.5														
94	1.2D + 1.5Lm_4 +...	Yes	Y		DL	1.2	7	-.056	23	-.056	OL4	1.5														
95	1.2D + 1.5Lm_4 +...	Yes	Y		DL	1.2	8	-.056	24	-.056	OL4	1.5														
96	1.2D + 1.5Lm_4 +...	Yes	Y		DL	1.2	9	-.056	25	-.056	OL4	1.5														
97	1.2D + 1.5Lm_4 +...	Yes	Y		DL	1.2	10	-.056	26	-.056	OL4	1.5														
98	1.2D + 1.5Lm_4 +...	Yes	Y		DL	1.2	11	-.056	27	-.056	OL4	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 Horizontal Pipe	PIPE 3.0	Beam	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
2	Offset Tube	HSS5x3x3/8"	Beam	None	A500 Gr.B RND	Typical	5.438	7.216	16.856	15.248
3	Mount Pipe	PIPE 2.0	Beam	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
4	Grating Angle 3	L2.375x1.25x0...	Beam	None	A36 Gr.36	Typical	.844	.093	.479	.016
5	Grating Angle 4	L7.25x2.375x0...	Beam	None	A36 Gr.36	Typical	2.344	.789	12.975	.047
6	Grating Angle 1	L4.75x4.5x0.25	Beam	None	A36 Gr.36	Typical	2.25	4.444	5.077	.045
7	Grating Angle 2	L6.4x4.750x0.25	Beam	None	A36 Gr.36	Typical	2.725	5.633	11.713	.055
8	End Plate Angle	L5x4x0.25	Beam	None	A36 Gr.36	Typical	2.188	3.248	5.631	.044
9	Grating PL 2	PL1.50x0.25	Beam	None	A36 Gr.36	Typical	.375	.002	.07	.007
10	Support Rail	PIPE 2.0	Beam	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
11	SR Conn Plate	PL5x0.1875	Beam	None	A36 Gr.36	Typical	.938	.003	1.953	.011
12	SR Conn Angle	L5.50X3.5625X3	Beam	None	A36 Gr.36	Typical	1.664	1.848	5.368	.019
13	MOD Stabilizer	L3X3X3	Beam	None	A36 Gr.36	Typical	1.09	.948	.948	.014
14	Conn. PL	PL8.5x3/8	Beam	None	A36 Gr.36	Typical	3.188	.037	19.191	.145
15	Grating Plate 1	PL4.75x0.25	Beam	None	A36 Gr.36	Typical	1.188	.006	2.233	.024
16	Grapting Plate 2	PL6.4x0.25	Beam	None	A36 Gr.36	Typical	1.6	.008	5.461	.033
17	MOD PRK	L3X3X3	Beam	None	A36 Gr.36	Typical	1.09	.948	.948	.014

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[...	Lcomp...	L-tor...	Kyy	Kzz	Cb	Functi...
1	M1	Offset Tube	69			Lbyy						Lateral
2	M8	End Plate Angle	3.313			Lbyy			.65	.65		Lateral
3	M11	Grating Angle 2	6.406			Lbyy			.65	.65		Lateral
4	M13	Grating Angle 4	4.375			Lbyy			.65	.65		Lateral
5	M14	Grating Angle 4	4.375			Lbyy			.65	.65		Lateral
6	M22	Grating Angle 3	32.414			Lbyy			.65	.65		Lateral
7	M23	Grating Angle 3	32.414			Lbyy			.65	.65		Lateral
8	M83C	Grating Angle 2	6.406			Lbyy			.65	.65		Lateral
9	M82B	Grating Angle 4	4.375			Lbyy			.65	.65		Lateral
10	M83D	Grating Angle 4	4.375			Lbyy			.65	.65		Lateral
11	M29	End Plate Angle	3.313			Lbyy			.65	.65		Lateral
12	M30	Grating PL 2	36.828						.65	.65		Lateral
13	M31	Grating PL 2	24.556						.65	.65		Lateral
14	M31A	Grating Angle 1	17.5			Lbyy			.65	.65		Lateral
15	M32B	Grating Angle 1	17.5			Lbyy			.65	.65		Lateral
16	M36A	Grating Angle 2	6.406			Lbyy			.65	.65		Lateral
17	M37	Grating Angle 4	4.375			Lbyy			.65	.65		Lateral
18	M38	Grating Angle 4	4.375			Lbyy			.65	.65		Lateral
19	M43	Grating Angle 3	32.414			Lbyy			.65	.65		Lateral
20	M44	Grating Angle 3	32.414			Lbyy			.65	.65		Lateral
21	M49	Grating Angle 2	6.406			Lbyy			.65	.65		Lateral
22	M50	Grating Angle 4	4.375			Lbyy			.65	.65		Lateral
23	M51	Grating Angle 4	4.375			Lbyy			.65	.65		Lateral
24	M53	Grating PL 2	36.828						.65	.65		Lateral
25	M54	Grating PL 2	24.556						.65	.65		Lateral
26	M59	Grating Angle 1	17.5			Lbyy			.65	.65		Lateral
27	M60	Grating Angle 1	17.5			Lbyy			.65	.65		Lateral
28	M66	Grating Angle 2	6.406			Lbyy			.65	.65		Lateral
29	M67	Grating Angle 4	4.375			Lbyy			.65	.65		Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[...	Lcomp...	L-tor...	Kyy	Kzz	Cb	Functi...
30	M68	Grating Angle 4	4.375			Lbyy			.65	.65		Lateral
31	M73	Grating Angle 3	32.414			Lbyy			.65	.65		Lateral
32	M74	Grating Angle 3	32.414			Lbyy			.65	.65		Lateral
33	M79	Grating Angle 2	6.406			Lbyy			.65	.65		Lateral
34	M80	Grating Angle 4	4.375			Lbyy			.65	.65		Lateral
35	M81	Grating Angle 4	4.375			Lbyy			.65	.65		Lateral
36	M83	Grating PL 2	36.828						.65	.65		Lateral
37	M84	Grating PL 2	24.556						.65	.65		Lateral
38	M89	Grating Angle 1	17.5			Lbyy			.65	.65		Lateral
39	M90	Grating Angle 1	17.5			Lbyy			.65	.65		Lateral
40	M95	Platform Horizontal Pipe	149.999			Lbyy						Lateral
41	M104A	Platform Horizontal Pipe	149.999			Lbyy						Lateral
42	M105	Platform Horizontal Pipe	149.999			Lbyy						Lateral
43	M107	Mount Pipe	126			Lbyy						Lateral
44	M109	Mount Pipe	126			Lbyy						Lateral
45	M111	Mount Pipe	126			Lbyy						Lateral
46	M113	Mount Pipe	126			Lbyy						Lateral
47	SR1	Support Rail	150									Lateral
48	SR10	Support Rail	150									Lateral
49	SR19	Support Rail	150									Lateral
50	M224A	Conn. PL	1			Lbyy			.65	.65		Lateral
51	M225	Conn. PL	1			Lbyy			.65	.65		Lateral
52	M224B	Offset Tube	69			Lbyy						Lateral
53	M227A	Conn. PL	1			Lbyy			.65	.65		Lateral
54	M228	Conn. PL	1			Lbyy			.65	.65		Lateral
55	M231	Offset Tube	69			Lbyy						Lateral
56	M234	Conn. PL	1			Lbyy			.65	.65		Lateral
57	M235	Conn. PL	1			Lbyy			.65	.65		Lateral
58	M238	SR Conn Plate	4									Lateral
59	M226B	SR Conn Plate	4									Lateral
60	M231A	SR Conn Angle	15.399									Lateral
61	M220	SR Conn Plate	4									Lateral
62	M223	SR Conn Plate	4									Lateral
63	M228B	SR Conn Angle	15.399									Lateral
64	M229B	SR Conn Plate	4									Lateral
65	M232A	SR Conn Plate	4									Lateral
66	M237A	SR Conn Angle	15.399									Lateral
67	M227E	End Plate Angle	3.313			Lbyy			.65	.65		Lateral
68	M228D	End Plate Angle	3.313			Lbyy			.65	.65		Lateral
69	M233C	End Plate Angle	3.313			Lbyy			.65	.65		Lateral
70	M234C	End Plate Angle	3.313			Lbyy			.65	.65		Lateral
71	M181	Mount Pipe	126			Lbyy						Lateral
72	M183	Mount Pipe	126			Lbyy						Lateral
73	M185	Mount Pipe	126			Lbyy						Lateral
74	M187	Mount Pipe	126			Lbyy						Lateral
75	M201	Mount Pipe	126			Lbyy						Lateral
76	M203	Mount Pipe	126			Lbyy						Lateral
77	M205	Mount Pipe	126			Lbyy						Lateral
78	M207	Mount Pipe	126			Lbyy						Lateral
79	PR5	MOD PRK	21.75									Lateral
80	PR6	MOD PRK	21.75									Lateral
81	PR11	MOD PRK	21.75									Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[...	Lcomp...	L-tor...	Kyy	Kzz	Cb	Functi...
82	PR12	MOD PRK	21.75									Lateral
83	PR17	MOD PRK	21.75									Lateral
84	PR18	MOD PRK	21.75									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	N338B	max	6855.354	3	1270.547	15	517.253	11	693.57	7	295.091	11	2147.018	7
2		min	-3474.746	11	-1268.396	7	-1459.867	19	-575.651	15	-506.539	3	-2154.785	15
3	N344	max	1738.887	6	5933.818	14	517.031	6	624.321	12	612.296	17	2168.191	17
4		min	-3430.615	14	-3007.384	6	-1459.632	30	-500.434	4	-449.968	73	-2178.523	9
5	N354	max	1765.091	17	3009.779	16	517.051	16	229.367	18	667.65	6	2147.67	12
6		min	-3450.933	9	-5937.939	8	-1459.567	24	-546.657	42	-666.881	14	-2155.442	4
7	P5	max	88.793	11	32.34	15	4482.927	19	159.346	7	1260.823	19	269.858	7
8		min	-7293.128	19	-32.859	7	-51.967	11	-151.499	15	-14.616	11	-257.207	15
9	P13	max	3646.781	30	76.336	6	4482.492	30	-3.726	6	35.462	6	269.963	18
10		min	-44.071	6	-6315.087	30	-51.571	6	-1095.377	30	-624.153	30	-257.315	10
11	P21	max	3645.519	24	6315.548	24	4482.351	24	1088.19	24	-20.983	16	269.942	12
12		min	-44.099	16	-76.38	16	-51.603	16	-28.873	16	-636.522	24	-257.293	4
13	Totals:	max	5438.332	3	5437.736	15	8589.742	34						
14		min	-5438.331	11	-5437.738	7	2822.333	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	SR19	PIPE 2.0	.595	138.1...	9	.512	138.1...		9	6295.422	32130	1871.625	1871.625	3.745	H3-6
2	SR1	PIPE 2.0	.559	138.1...	3	.499	138.1...		3	6295.422	32130	1871.625	1871.625	3.235	H3-6
3	SR10	PIPE 2.0	.559	138.1...	14	.499	138.1...		14	6295.422	32130	1871.625	1871.625	3.235	H3-6
4	M237A	L5.50X3.5...	.551	0	17	.113	15.399	z	16	26491.25	53915.6...	966.11	2943.754	1.465	H2-1
5	M231A	L5.50X3.5...	.541	0	12	.113	15.399	z	11	26491.25	53915.6...	966.11	2943.754	1.643	H2-1
6	M228B	L5.50X3.5...	.540	0	7	.113	15.399	z	6	26491.25	53915.6...	966.11	2943.754	1.644	H2-1
7	M207	PIPE 2.0	.470	72.947	5	.114	72.947		18	8922.084	32130	1871.625	1871.625	2.196	H1-1b
8	M187	PIPE 2.0	.465	72.947	11	.114	72.947		7	8922.084	32130	1871.625	1871.625	2.204	H1-1b
9	M113	PIPE 2.0	.465	72.947	16	.115	72.947		13	8922.084	32130	1871.625	1871.625	2.204	H1-1b
10	M181	PIPE 2.0	.446	72.947	10	.145	72.947		7	8922.084	32130	1871.625	1871.625	2.319	H1-1b
11	M201	PIPE 2.0	.446	72.947	4	.148	72.947		17	8922.084	32130	1871.625	1871.625	2.319	H1-1b
12	M107	PIPE 2.0	.446	72.947	15	.145	72.947		12	8922.084	32130	1871.625	1871.625	2.319	H1-1b
13	M205	PIPE 2.0	.433	72.947	5	.113	72.947		14	8922.084	32130	1871.625	1871.625	2.178	H1-1b
14	M51	L7.25x2.3...	.427	4.375	19	.512	4.375	y	16	38519.4...	75945.6	631.129	5474.562	1.415	H2-1
15	M83D	L7.25x2.3...	.427	4.375	24	.512	4.375	y	6	38519.4...	75945.6	631.129	5474.562	1.415	H2-1
16	M81	L7.25x2.3...	.427	4.375	30	.512	4.375	y	11	38519.4...	75945.6	631.129	5474.562	1.415	H2-1
17	M185	PIPE 2.0	.425	72.947	11	.113	72.947		3	8922.084	32130	1871.625	1871.625	2.185	H1-1b
18	M111	PIPE 2.0	.425	72.947	16	.113	72.947		8	8922.084	32130	1871.625	1871.625	2.185	H1-1b
19	M31A	L4.75x4.5...	.398	0	19	.083	0	z	19	60192.8...	72900	4381.691	8212.737	1.431	H2-1
20	M59	L4.75x4.5...	.398	0	30	.083	0	z	30	60192.8...	72900	4381.691	8212.737	1.431	H2-1
21	M89	L4.75x4.5...	.398	0	24	.083	0	z	24	60192.8...	72900	4381.691	8212.737	1.431	H2-1
22	M32B	L4.75x4.5...	.374	17.5	22	.081	17.5	z	20	60192.8...	72900	4381.691	8212.737	1.452	H2-1
23	M60	L4.75x4.5...	.374	17.5	32	.081	17.5	z	31	60192.8...	72900	4381.691	8212.737	1.452	H2-1
24	M90	L4.75x4.5...	.374	17.5	27	.081	17.5	z	26	60192.8...	72900	4381.691	8212.737	1.452	H2-1
25	M68	L7.25x2.3...	.370	0	3	.530	2.187	z	5	38519.4...	75945.6	631.129	5474.562	1.749	H2-1
26	M38	L7.25x2.3...	.370	0	8	.519	2.187	z	11	38519.4...	75945.6	631.129	5474.562	1.749	H2-1

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	M14	L7.25x2.3...	.370	0	14	.519	2.188	z	16	38519.4...	75945.6	631.129	5474.562	1.749	H2-1
28	M203	PIPE_2.0	.351	72.947	13	.133	72.947		14	8922.084	32130	1871.625	1871.625	2.174	H1-1b
29	M183	PIPE_2.0	.349	72.947	18	.134	72.947		3	8922.084	32130	1871.625	1871.625	2.173	H1-1b
30	M109	PIPE_2.0	.349	72.947	7	.135	72.947		9	8922.084	32130	1871.625	1871.625	2.173	H1-1b
31	M22	L2.375x1....	.313	0	33	.056	22.178	y	8	19702.4...	27345.6	330.185	1320.381	1.747	H2-1
32	M43	L2.375x1....	.312	32.414	12	.056	22.178	y	3	19702.4...	27345.6	330.185	1337.198	1.899	H2-1
33	M73	L2.375x1....	.311	32.414	7	.056	22.178	y	13	19702.4...	27345.6	330.185	1337.196	1.899	H2-1
34	M74	L2.375x1....	.288	0	10	.052	10.236	y	3	19702.4...	27345.6	330.185	1354.477	2.13	H2-1
35	M23	L2.375x1....	.288	0	4	.052	10.236	y	14	19702.4...	27345.6	330.185	1354.477	2.13	H2-1
36	M44	L2.375x1....	.288	0	15	.052	10.236	y	8	19702.4...	27345.6	330.185	1354.477	2.13	H2-1
37	M31	PL1.50x0....	.287	24.556	13	.048	0	y	7	1731.879	12150	63.283	379.688	2.091	H1-1b
38	M84	PL1.50x0....	.287	24.556	3	.048	0	y	12	1731.879	12150	63.283	379.688	2.064	H1-1b
39	M54	PL1.50x0....	.287	24.556	8	.049	12.278	y	17	1731.879	12150	63.283	379.688	2.063	H1-1b
40	M37	L7.25x2.3...	.225	0	24	.567	0	z	8	38519.4...	75945.6	631.129	5474.562	1.158	H2-1
41	M13	L7.25x2.3...	.225	0	30	.567	0	z	14	38519.4...	75945.6	631.129	5474.562	1.158	H2-1
42	M67	L7.25x2.3...	.225	0	19	.567	0	z	3	38519.4...	75945.6	631.129	5474.562	1.158	H2-1
43	M1	HSS5x3x3...	.204	21.789	34	.087	21.789	z	7	164890....	205537.5	18493.946	27058.009	2.022	H1-1b
44	M224B	HSS5x3x3...	.204	21.789	28	.087	21.789	z	18	164890....	205537.5	18493.946	27058.009	2.022	H1-1b
45	M231	HSS5x3x3...	.204	21.789	23	.087	21.789	z	12	164890....	205537.5	18493.946	27058.009	2.022	H1-1b
46	M29	L5x4x0.25	.194	3.313	24	.133	3.313	z	13	57000.7...	70875	2842.671	6820.024	2.22	H2-1
47	M228D	L5x4x0.25	.194	3.313	19	.130	3.313	z	7	57000.7...	70875	2842.671	6820.024	2.22	H2-1
48	M234C	L5x4x0.25	.194	3.313	30	.130	3.313	z	18	57000.7...	70875	2842.671	6820.024	2.22	H2-1
49	M233C	L5x4x0.25	.174	0	17	.114	0	z	15	57000.7...	70875	3500.891	8177.36	1.359	H2-1
50	M8	L5x4x0.25	.174	0	11	.114	0	z	10	57000.7...	70875	3500.891	8177.36	1.356	H2-1
51	M227E	L5x4x0.25	.174	0	6	.114	0	z	4	57000.7...	70875	3500.891	8177.36	1.356	H2-1
52	M229B	PL5x0.1875	.173	.842	9	.228	2.737	y	9	17775.9...	30375	118.652	3164.063	1.666	H1-1b
53	M82B	L7.25x2.3...	.165	4.375	23	.554	4.375	z	7	38519.4...	75945.6	631.129	5474.562	1.149	H2-1
54	M80	L7.25x2.3...	.165	4.375	28	.574	4.375	z	13	38519.4...	75945.6	631.129	5474.562	1.149	H2-1
55	M50	L7.25x2.3...	.165	4.375	34	.554	4.375	z	18	38519.4...	75945.6	631.129	5474.562	1.149	H2-1
56	M238	PL5x0.1875	.165	.842	3	.221	2.737	y	3	17775.9...	30375	118.652	3164.063	1.669	H1-1b
57	M220	PL5x0.1875	.165	.842	14	.221	2.737	y	14	17775.9...	30375	118.652	3164.063	1.669	H1-1b
58	PR11	L3X3X3	.155	10.875	33	.004	21.75	z	3	30168.55	35316	1320.097	2905.206	1.137	H2-1
59	PR5	L3X3X3	.154	10.875	22	.004	0	z	9	30168.55	35316	1320.097	2905.206	1.137	H2-1
60	PR17	L3X3X3	.154	10.875	27	.004	21.75	z	14	30168.55	35316	1320.097	2905.206	1.137	H2-1
61	M30	PL1.50x0....	.154	18.414	28	.035	18.414	y	6	769.952	12150	63.283	379.688	1.819	H1-1b
62	M83	PL1.50x0....	.154	18.414	34	.035	18.414	y	11	769.952	12150	63.283	379.688	1.819	H1-1b
63	M53	PL1.50x0....	.154	18.414	23	.035	18.414	y	16	769.952	12150	63.283	379.688	1.819	H1-1b
64	PR18	L3X3X3	.145	10.875	21	.004	21.75	y	14	30168.55	35316	1320.097	2833.473	1.137	H2-1
65	PR6	L3X3X3	.144	11.447	31	.004	0	y	9	30168.55	35316	1320.097	2833.473	1.137	H2-1
66	PR12	L3X3X3	.144	11.447	26	.004	21.75	y	3	30168.55	35316	1320.097	2833.473	1.137	H2-1
67	M105	PIPE_3.0	.125	94.736	5	.108	106.5...		8	28250.9...	65205	5748.75	5748.75	2.413	H1-1b
68	M104A	PIPE_3.0	.124	94.736	11	.109	106.5...		13	28250.9...	65205	5748.75	5748.75	2.412	H1-1b
69	M95	PIPE_3.0	.124	94.736	16	.108	106.5...		3	28250.9...	65205	5748.75	5748.75	2.412	H1-1b
70	M223	PL5x0.1875	.113	.842	13	.090	2.737	y	9	17775.9...	30375	118.652	3164.063	1.333	H1-1...
71	M66	L6.4x4.75...	.107	0	11	.048	0	z	19	57754.3...	88290	2962.277	7667.749	1.252	H2-1
72	M36A	L6.4x4.75...	.107	0	16	.048	0	z	24	57754.3...	88290	2962.277	7667.749	1.252	H2-1
73	M11	L6.4x4.75...	.107	0	6	.048	0	z	30	57754.3...	88290	2962.277	7667.749	1.252	H2-1
74	M226B	PL5x0.1875	.106	.842	18	.087	2.737	y	15	17775.9...	30375	118.652	3164.063	1.45	H1-1...
75	M232A	PL5x0.1875	.106	.842	7	.087	2.737	y	4	17775.9...	30375	118.652	3164.063	1.45	H1-1...
76	M49	L6.4x4.75...	.103	6.406	11	.045	6.406	y	34	57754.3...	88290	2962.277	7667.749	1.261	H2-1
77	M83C	L6.4x4.75...	.103	6.406	16	.045	6.406	y	23	57754.3...	88290	2962.277	7667.749	1.261	H2-1
78	M79	L6.4x4.75...	.103	6.406	6	.045	6.406	y	28	57754.3...	88290	2962.277	7667.749	1.261	H2-1

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
79	M227A	PL8.5x3/8	.093	0	17	.079	1	y	18	84967.8..	103275	806.836	18288.283	2.173	H1-1b
80	M228	PL8.5x3/8	.091	0	10	.075	0	y	3	84967.8..	103275	806.836	18288.283	1.796	H1-1b
81	M235	PL8.5x3/8	.091	0	4	.075	0	y	13	84967.8..	103275	806.836	18288.283	1.797	H1-1b
82	M225	PL8.5x3/8	.091	0	15	.075	0	y	8	84967.8..	103275	806.836	18288.283	1.796	H1-1b
83	M234	PL8.5x3/8	.087	0	12	.079	1	y	12	84967.8..	103275	806.836	18288.283	2.253	H1-1b
84	M224A	PL8.5x3/8	.087	0	7	.079	1	y	7	84967.8..	103275	806.836	18288.283	2.253	H1-1b

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: CTNH801B

Amtrak_Branford
123 Pine Orchard Road
Branford, Connecticut 06405

May 30, 2019

EBI Project Number: 6219001995

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**12.45%**

May 30, 2019

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

Emissions Analysis for Site: CTNH801B - Amtrak_Branford

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **123 Pine Orchard Road** in **Branford, 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 123 Pine Orchard Road in Branford, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

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

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

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

7) 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.

8) 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.

9) The antennas used in this modeling are the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz channel(s), the Ericsson AIR 21 for the 2100 MHz channel(s), the Ericsson AIR 21 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector A, , the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz channel(s), the Ericsson AIR 21 for the 2100 MHz channel(s), the Ericsson AIR 21 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector B, , the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz channel(s), the Ericsson AIR 21 for the 2100 MHz channel(s), the Ericsson AIR 21 for the 1900 MHz / 1900 MHz / 2100 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.

10) The antenna mounting height centerlines of the proposed antennas are 120 and 122 feet above ground level (AGL).

11) 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.

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

T-Mobile Site Inventory and Power Data

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):	120 feet	Height (AGL):	120 feet	Height (AGL):	120 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 %:	**1.43%**	Antenna B2 MPE %:	**1.43%**	Antenna C2 MPE %:	**1.43%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Ericsson AIR 21	Make / Model:	Ericsson AIR 21	Make / Model:	Ericsson AIR 21
Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz
Gain:	15.35 dBd	Gain:	15.35 dBd	Gain:	15.35 dBd
Height (AGL):	122 feet	Height (AGL):	122 feet	Height (AGL):	122 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts
ERP (W):	4,113.21	ERP (W):	4,113.21	ERP (W):	4,113.21
Antenna A3 MPE %:	**0.99%**	Antenna B3 MPE %:	**0.99%**	Antenna C3 MPE %:	**0.99%**
Antenna #:	**4**	Antenna #:	**4**	Antenna #:	**4**
Make / Model:	Ericsson AIR 21	Make / Model:	Ericsson AIR 21	Make / Model:	Ericsson AIR 21
Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.35 dBd / 15.35 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.35 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.35 dBd
Height (AGL):	122 feet	Height (AGL):	122 feet	Height (AGL):	122 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	8,226.43	ERP (W):	8,226.43	ERP (W):	8,226.43
Antenna A4 MPE %:	**1.99%**	Antenna B4 MPE %:	**1.99%**	Antenna C4 MPE %:	**1.99%**

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	4.41%
AT&T	1.35%
Verizon	6.69%
Site Total MPE % :	12.45%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	4.41%
T-Mobile Sector B Total:	4.41%
T-Mobile Sector C Total:	4.41%
Site Total MPE % :	12.45%

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 600 MHz LTE	2	591.73	120.0	2.95	600 MHz LTE	400	0.74%
T-Mobile 700 MHz LTE	2	648.82	120.0	3.24	700 MHz LTE	467	0.69%
T-Mobile 2100 MHz LTE	2	2056.61	122.0	9.94	2100 MHz LTE	1000	0.99%
T-Mobile 1900 MHz GSM	4	1028.30	122.0	9.94	1900 MHz GSM	1000	0.99%
T-Mobile 1900 MHz UMTS	2	1028.30	122.0	4.97	1900 MHz UMTS	1000	0.50%
T-Mobile 2100 MHz UMTS	2	1028.30	122.0	4.97	2100 MHz UMTS	1000	0.50%
						Total:	**4.41%**

• 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:	4.41%
Sector B:	4.41%
Sector C:	4.41%
T-Mobile Maximum MPE % (Sector A):	4.41%
Site Total:	12.45%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **12.45%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

NEIL GUERRIERO
3473040176
TRANSCEND WIRELESS
10 INDUSTRIAL AVE
MAHWAH NJ 07430

2 LBS

1 OF 1

DWT: 13,11,2

SHIP TO:
TOWN PLANNER
(203) 488-8394
DAVID ANDERSON
1019 MAIN STREET
BRANFORD CT 06405

CT 065 2-01

UPS 2ND DAY AIR

2

TRACKING #: 1Z V25 742 02 9900 8356

BILLING: P/P

XOL 19.08.02 NV45 15.0A 07/2019

NEIL GUERRIERO
3473040176
TRANSCEND WIRELESS
10 INDUSTRIAL AVE
MAHWAH NJ 07430

2 LBS

1 OF 1

DWT: 13,11,2

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

MA 018 9-04

UPS 2ND DAY AIR **2**

TRACKING #: 1Z V25 742 02 9893 8326

BILLING: P/P

XOL 19.08.02 NV45 15.0A 07/2019

NEIL GUERRIERO
3473040176
TRANSCEND WIRELESS
10 INDUSTRIAL AVE
MAHWAH NJ 07430

2 LBS

1 OF 1

DWT: 13,11,2

SHIP TO:
JAMES B COSGROVE
(203) 488-8394
1019 MAIN STREET
BRANFORD CT 06405

CT 065 2-01

UPS 2ND DAY AIR

2

TRACKING #: 1Z V25 742 02 9729 8341

BILLING: P/P

XOL 19.08.02 NV45 15.0A 07/2019

NEIL GUERRIERO
3473040176
TRANSCEND WIRELESS
10 INDUSTRIAL AVE
MAHWAH NJ 07430

2 LBS

1 OF 1

DWT: 13,11,2

SHIP TO:
MALAVASI INVESTMENTS LLC
35 STONY CREEK ROAD
BRANFORD CT 06405

CT 065 2-01

UPS 2ND DAY AIR

2

TRACKING #: 1Z V25 742 02 9560 8330

BILLING: P/P

XOL 19.08.02 NV45 15.0A 07/2019