Transcend Wireless

10 Industrial Ave,
Suite 3
Mahwah NJ 07430

Phone: 201.684.0055
Fax: 201.684.0066

August 1, 2019

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

RE: Notice of Exempt Modification
401-411 Lopus Road, Beacon Falls, CT 06403
Latitude: 41.4325973600
Longitude: -73.0703846000
T-Mobile Site#: CT11487B – L600

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 135-foot level of the existing 144-foot monopole at 401-411 Lopus Road, Beacon Falls, CT. The 144-foot monopole and property are owned and operated by American Tower Corporation. T-Mobile now intends to add three (3) new 600/700 MHz antennas. The new antennas will be installed at the same 135-foot level of the tower. Mount modifications are also required as detailed in the enclosed mount analysis.

Planned Modifications:
Tower:

Remove
(6) 1-5/8" coax

Remove and Replace:
N/A

Install New:
(3) APXVAARR24_43-U-NA20 600/700 MHz
(3) Ericsson Radio 4449 B12, B71
(3) 1-5/8" hybrid

Existing to Remain:
(6) AIR 21 1900/2100 MHZ
(6) 1-5/8" coax
(1) 1-1/4" Hybrid
(3) TMA

Ground:
Install New: Equipment inside existing 6131 cabinet

T-Mobile was approved for tower-sharing at this facility by the Siting Council on January 25, 2006. T-Mobile has been approved for subsequent exempt modifications by the Siting Council. This proposed modification complies with all previous approvals.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to First Selectmen -Christopher Bielik, Elected Official, and Mike Mormile, Zoning Enforcement Officer for the Town of Beacon Falls, as well as the 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,

Kyle Richers
Transcend Wireless
Cell: 908-447-4716
Email: krichers@transcendwireless.com

Attachments
cc: Christopher Bielik – Town of Beacon Falls First Selectmen
Mike Mormile– Town of Beacon Falls Zoning Enforcement Offier
American Tower – Owner

UPS Internet Shipping: View/Print Label

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

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

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

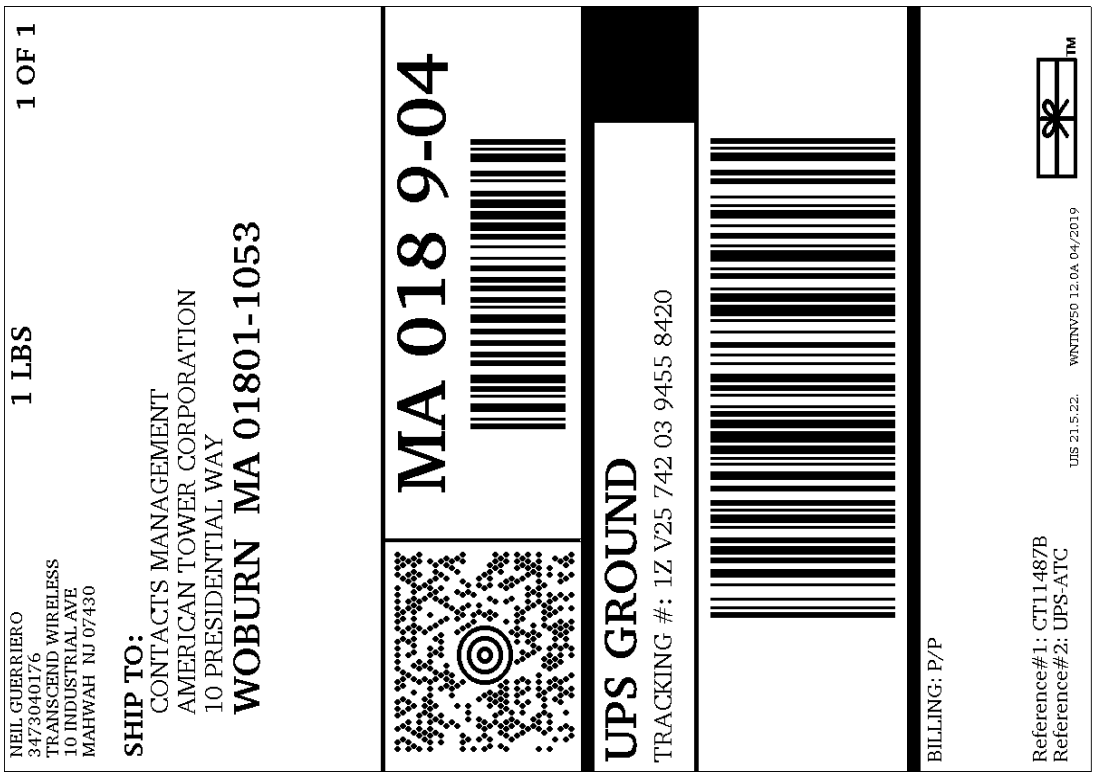
   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To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

UPS Access Point™
THE UPS STORE
115 FRANKLIN TPKE
MAHWAH ,NJ 07430

UPS Access Point™
THE UPS STORE
120 E MAIN ST
RAMSEY ,NJ 07446

UPS Access Point™
POSTNET NY137
74 LAFAYETTE AVE
SUFFERN ,NY 10901

FOLD HERE



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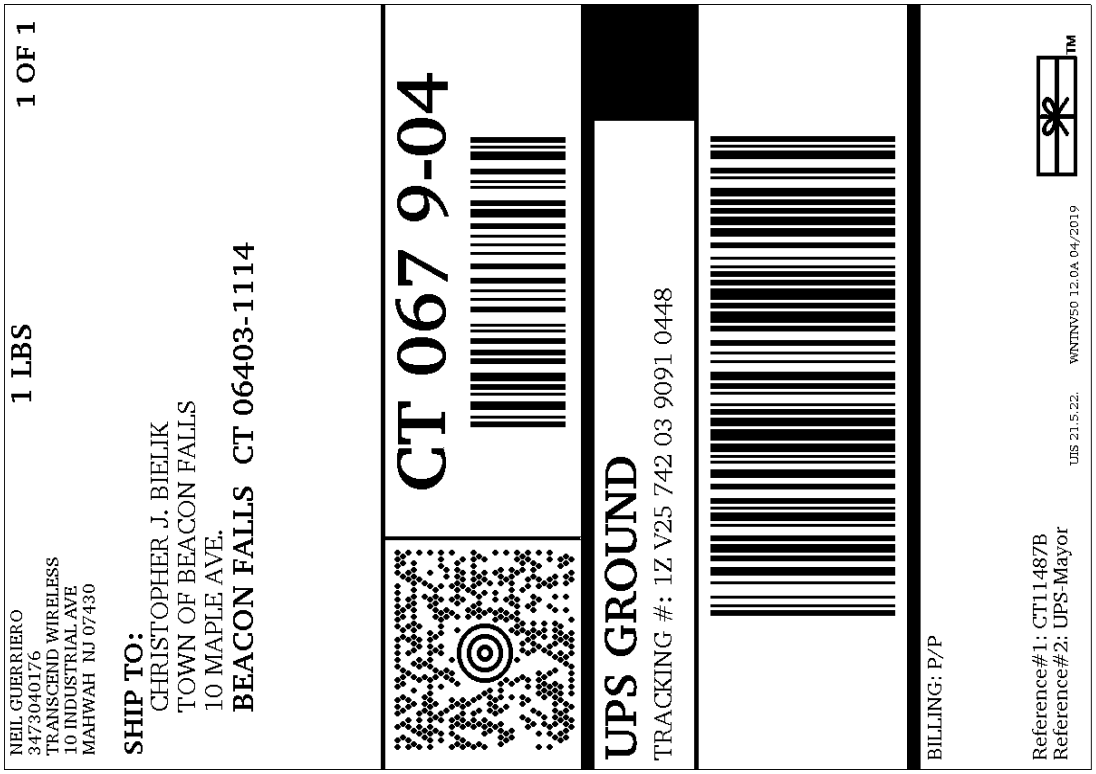

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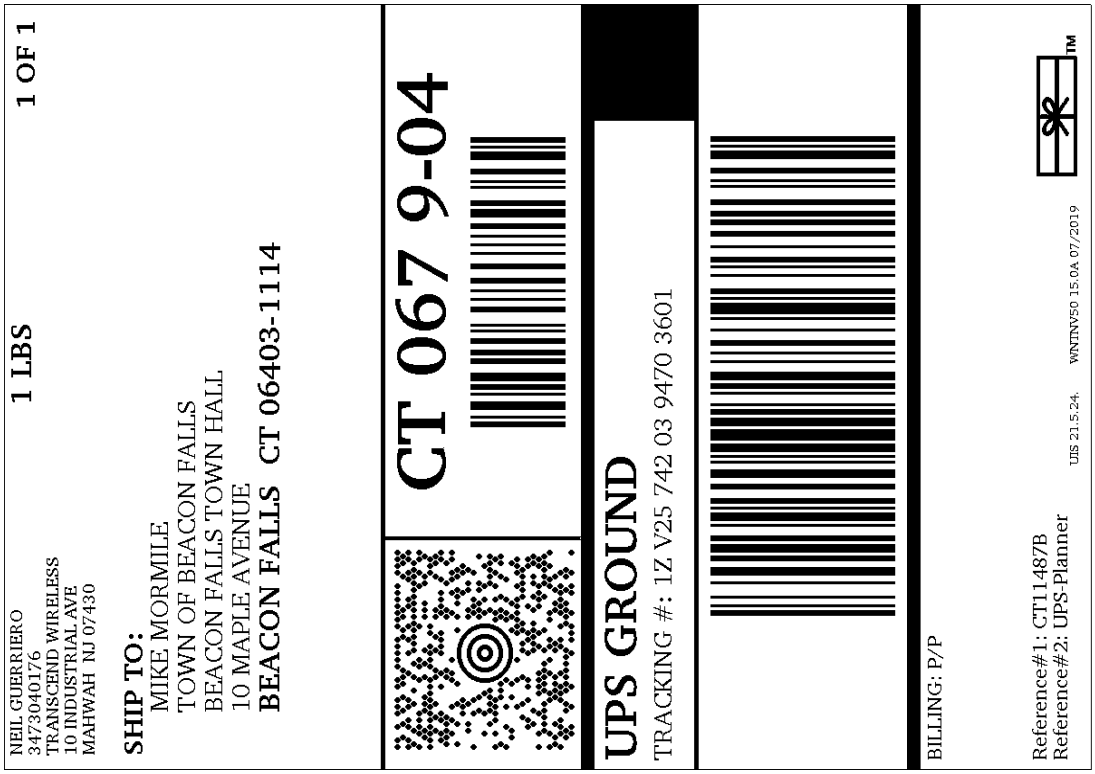


GLOBAL TOWER PROPERTIES, LLC
750 PARK OF COMMERCE BLVD SUITE 300
BOCA RATON, FL 33487

Tax ID 003-001-0016 Printed 04/26/2019 Card No. 1 of 1

Neighborhood Number
300
Neighborhood Name
General Industrial
TAXING DISTRICT INFORMATION

Jurisdiction Name	BEACON FALLS
Area	006
Routing Number	003-001-0016

Transfer of Ownership

Owner	Consideration	Transfer Date	Deed Type	Deed Book/Page
BEACON FALLS TOWN OF	0	10/05/2012		. .

Valuation Record

Assessment Year		2012	2016						
Reason for Change		Use Chg	2016 Reval						
2016 Market	L	0	0						
	I	250000	275000						
	T	250000	275000						
70% Assessed	L	0	0						
	I	175000	192500						
	T	175000	192500						

Site Description

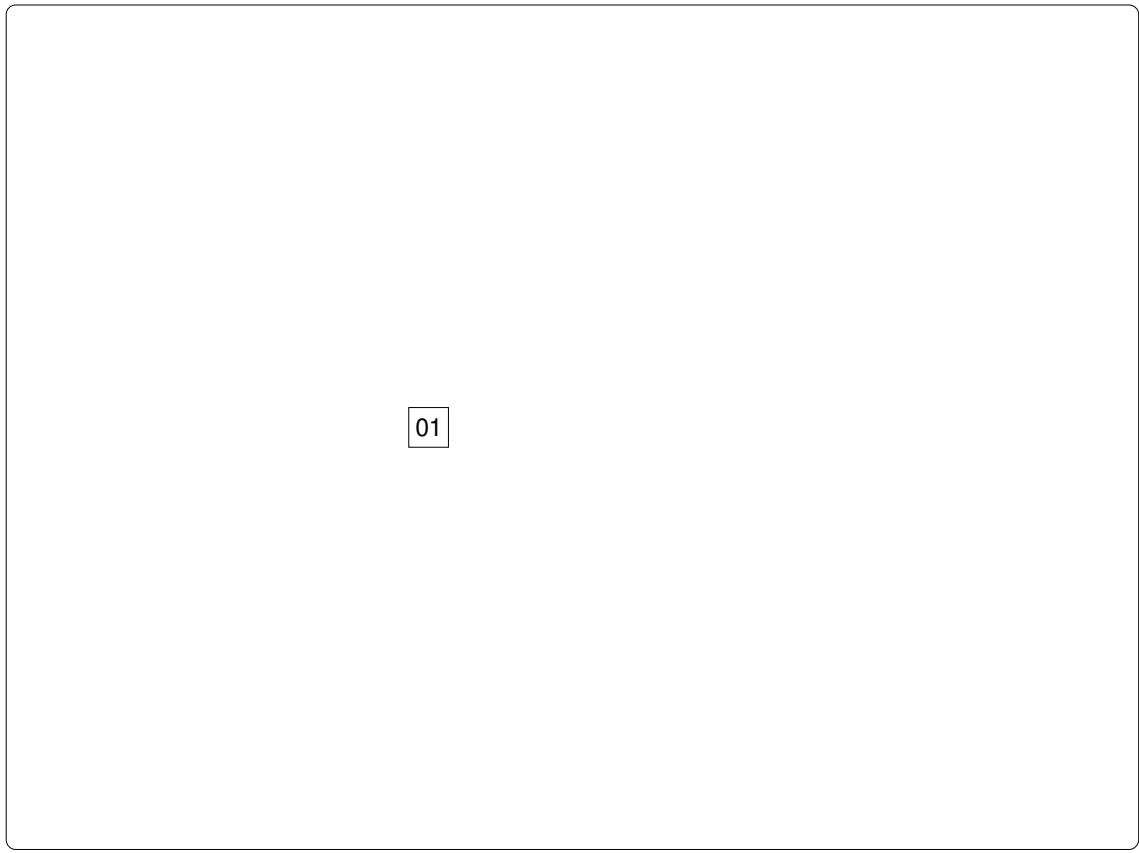
Topography
Level
Public Utilities
Electric
Street or Road
Paved
Neighborhood
Static
Zoning:
IPD
Legal Acres:
0.0000

Land Size

Land Type	Rating, Soil ID - or - Actual Frontage	Acreage - or - Effective Frontage	Square Feet - or - Effective Depth	Influence Factor

Tax ID 003-001-0016 Printed 04/26/2019

Physical Characteristics



Special Features

Description

Summary of Improvements

ID	USE	Story Height	Const Type	Grade	Year Cons	Eff Year	Cond	Size or Area
01	TOWERMON	0.00		AVG	2011	2011	AV	160

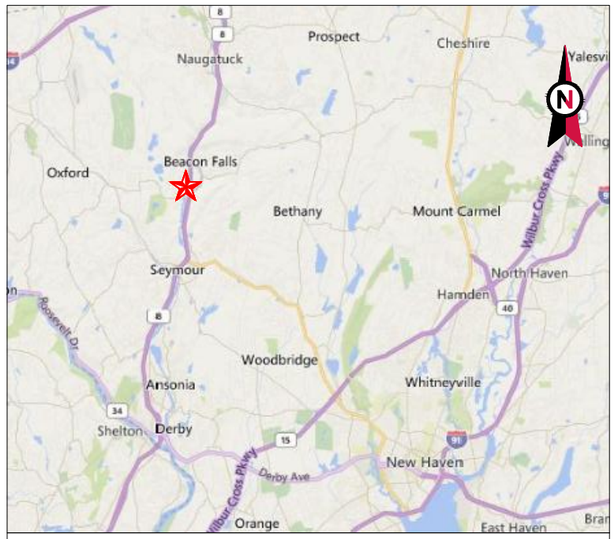
Town of Beacon Falls, Connecticut
Geographic & Property Information Application

Full Town View | Reset Map | **Search** | Print Map | Help | Map Layer

Full Extent | Zoom In | Zoom Out | Prev Extent | Next Extent | Pan | **Parcel Information** | Simple M

MapXpress v1.2

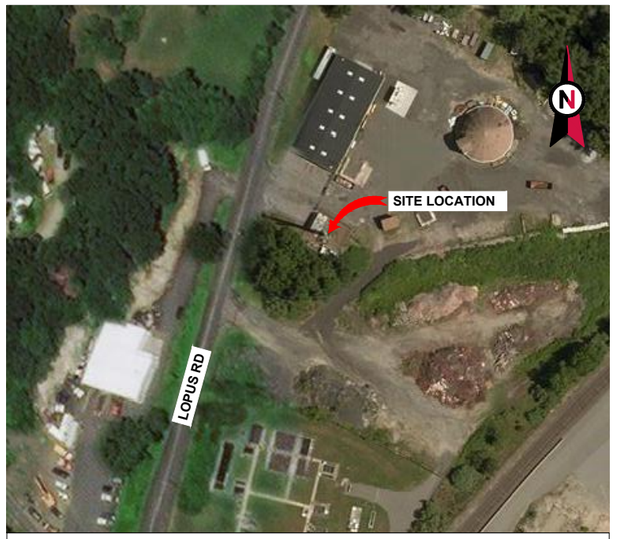
Parcels Updated April 2019



VICINITY MAP

AMERICAN TOWER®

ATC SITE NAME: BEACON FALLS CT
ATC SITE NUMBER: 370641
T-MOBILE SITE ID: CT11487B
SITE ADDRESS: 401-411 LOPUS ROAD
BEACON FALLS, CT 06403



LOCATION MAP

T-MOBILE L600 ANTENNA AMENDMENT
67D02C OUTDOOR CONFIGURATION

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: CONNECTICUT LIGHT AND POWER
PHONE: (888) 783-6617

TELEPHONE COMPANY: AT&T
PHONE: (800) 288-2020

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

PROJECT SUMMARY

SITE ADDRESS:

401-411 LOPUS ROAD
BEACON FALLS, CT 06403
COUNTY: NEW HAVEN

1A CERTIFICATE SUMMARY:

LATITUDE: 41° 25' 58.22" N
LONGITUDE: 73° 04' 12.77" W
GROUND ELEVATION: 159' AMSL
TOWER HEIGHT: 144' 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:

AMERICAN TOWER
116 HUNTINGTON AVE
BOSTON, MA 02116

PROJECT DESCRIPTION

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

REMOVE (6) 1-5/8" COAX CABLES

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

EXISTING (6) PANELS, (3) TTAs, (1) 1-1/4" HYBRID CABLE, AND (6) 1-5/8" COAX CABLES TO REMAIN

PROJECT NOTES

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

PROJECT LOCATION DIRECTIONS

FROM HAMDEN, CT:

TAKE WILBUR CROSS PARKWAY CT-15 SOUTH TOWARD NEW YORK CITY. TAKE EXIT 59 CT-69 WOODBRIDGE / NEW HAVEN. TURN LEFT ONTO CT-69; TURN LEFT ON LUCY ST; TURN RIGHT ON CT-63 AMITY ROAD; TURN LEFT ON SEYMOUR ROAD CT-67; MERGE ONTO CT-8 NORTH TOWARD WATERBURY; TAKE EXIT 23 CT-42 TO BEACON FALLS / OXFORD; TURN RIGHT ONTO SOUTH MAIN ST CT-42; TURN LEFT ON DEPOT ST; TURN RIGHT ON LOPUS ROAD. SITE IS ON THE LEFT

SHEET INDEX

SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
G-001	TITLE SHEET	0	07/24/19	LR
G-002	GENERAL NOTES	0	07/24/19	LR
C-101	DETAILED SITE PLAN & TOWER ELEVATION	0	07/24/19	LR
C-501	ANTENNA INFORMATION & SCHEDULE	0	07/24/19	LR
E-501	GROUNDING DETAILS	0	07/24/19	LR
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	LR	07/24/19

ATC SITE NUMBER:
370641

ATC SITE NAME:
BEACON FALLS CT

SITE ADDRESS:
401-411 LOPUS ROAD
BEACON FALLS, CT 06403

SEAL:

Authorized by "EOR"
Jul 24 2019 11:15 AM

T-Mobile esign

DRAWN BY:	LR
APPROVED BY:	PPB
DATE DRAWN:	07/24/19
ATC JOB NO:	12958692

TITLE SHEET

SHEET NUMBER:	REVISION:
G-001	0

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	LR	07/24/19

ATC SITE NUMBER:
370641

ATC SITE NAME:
BEACON FALLS CT

SITE ADDRESS:
401-411 LOPUS ROAD
BEACON FALLS, CT 06403

SEAL:

Authorized by "EOR"
Jul 24 2019 11:15 AM

T-Mobile

DRAWN BY:	LR
APPROVED BY:	PPB
DATE DRAWN:	07/24/19
ATC JOB NO:	12958692

GENERAL NOTES

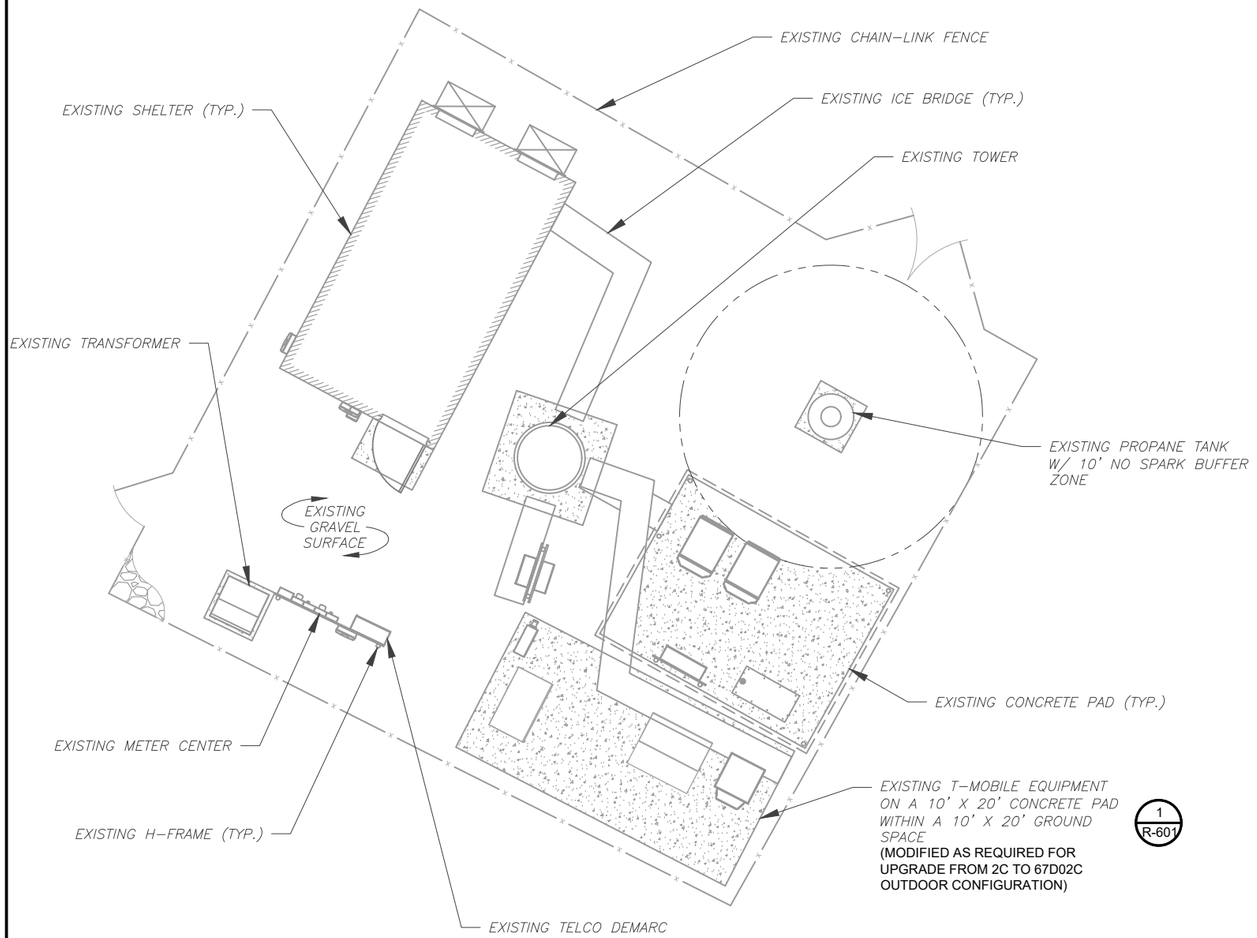
SHEET NUMBER:	REVISION:
G-002	0

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.

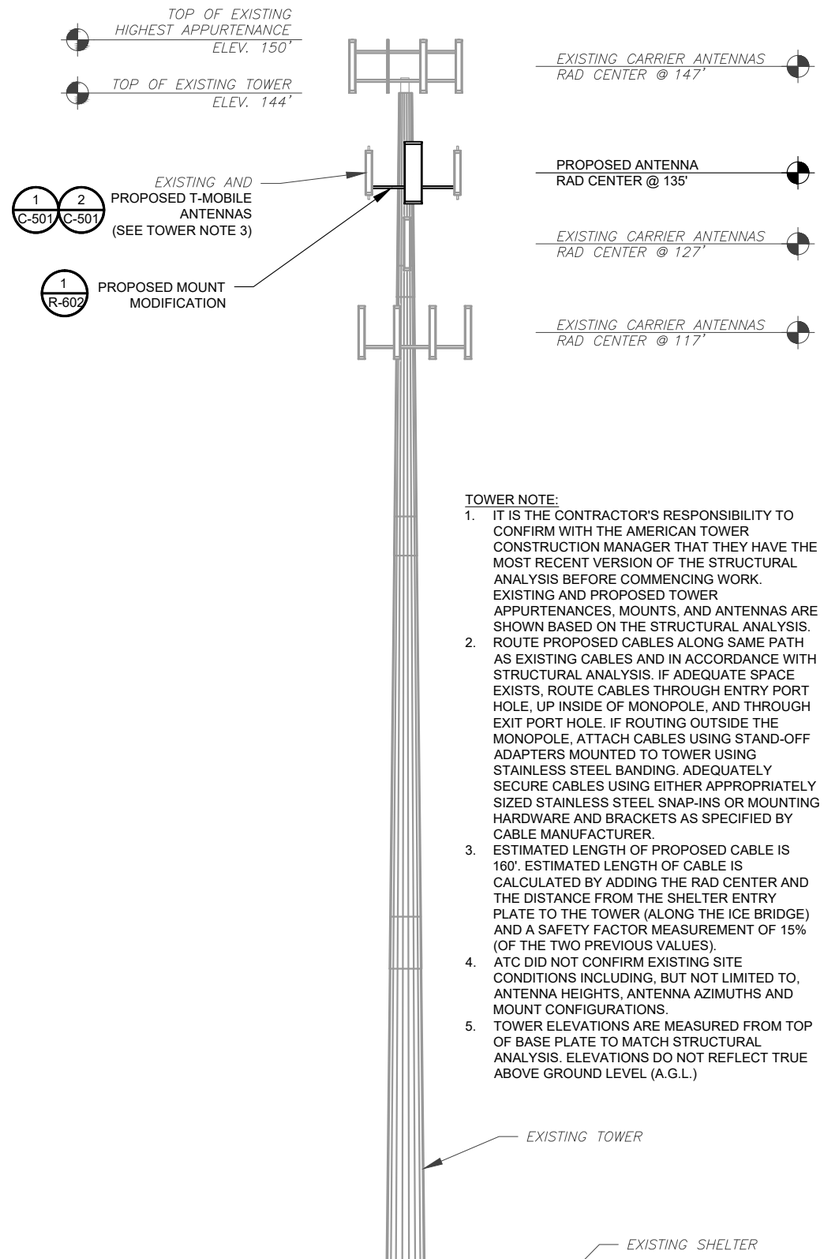


1 DETAILED SITE PLAN

0 10' 20'

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

PER MOUNT ANALYSIS COMPLETED BY CLS ENGINEERING, DATED 07-03-19, THE EXISTING MOUNT CAN NOT ADEQUATELY SUPPORT THE PROPOSED LOADING. THE MOUNT MODIFICATION PROPOSED IN THE MOUNT ANALYSIS, INCLUDED AT THE END OF THIS PLAN SET, MUST BE INSTALLED PRIOR TO THE INSTALLATION OF THE PROPOSED ANTENNAS AND OTHER EQUIPMENT



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 160'. 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	LR	07/24/19

ATC SITE NUMBER:
370641

ATC SITE NAME:
BEACON FALLS CT

SITE ADDRESS:
401-411 LOPUS ROAD
BEACON FALLS, CT 06403

SEAL:

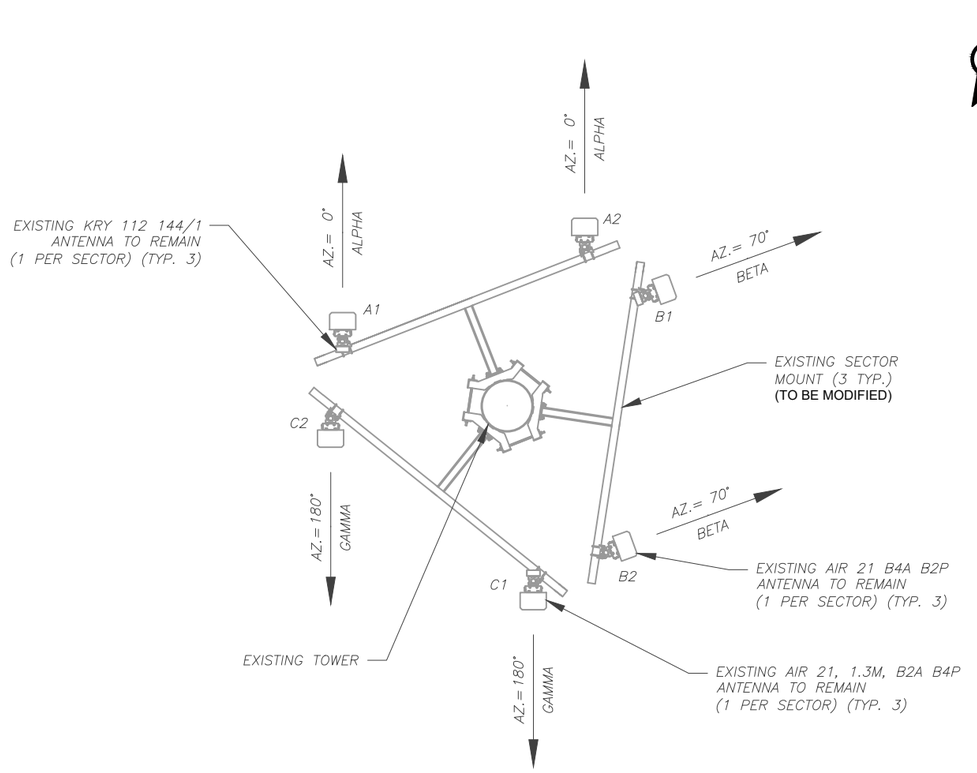
Authorized by "EOR"
Jul 24 2019 11:15 AM

T-Mobile design

DRAWN BY:	LR
APPROVED BY:	PPB
DATE DRAWN:	07/24/19
ATC JOB NO:	12958692

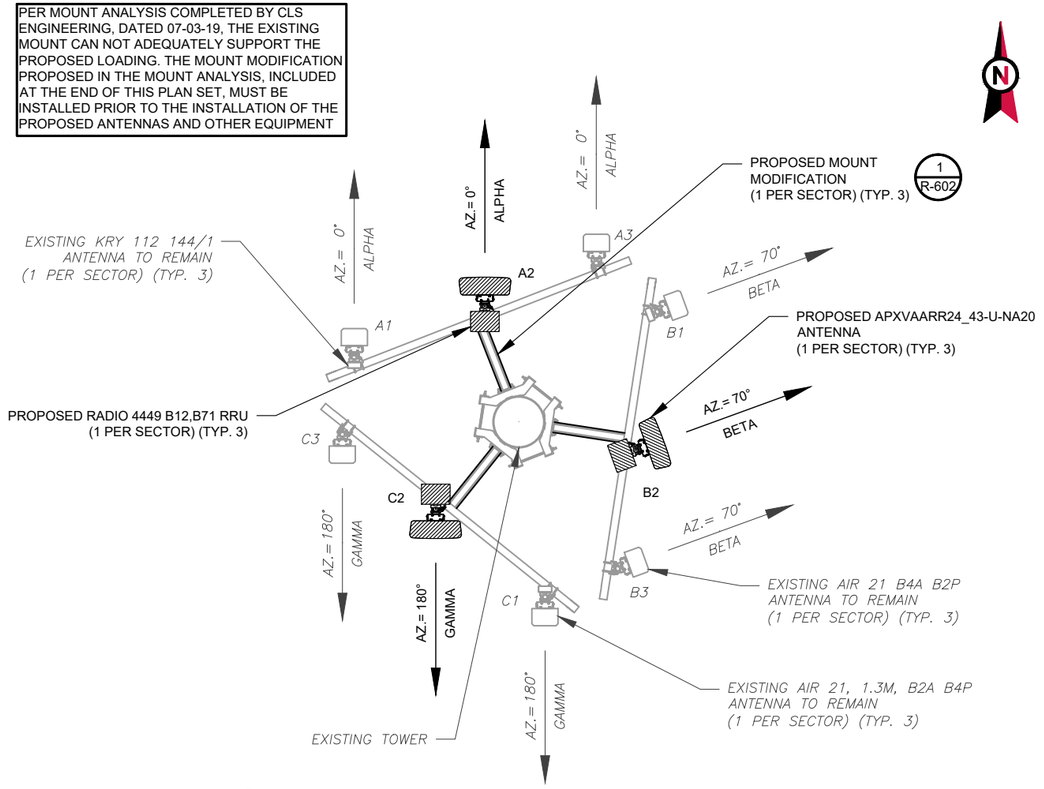
DETAILED SITE PLAN & TOWER ELEVATION

SHEET NUMBER:	REVISION:
C-101	0



1 EXISTING ANTENNA PLAN

PER MOUNT ANALYSIS COMPLETED BY CLS ENGINEERING, DATED 07-03-19, THE EXISTING MOUNT CAN NOT ADEQUATELY SUPPORT THE PROPOSED LOADING. THE MOUNT MODIFICATION PROPOSED IN THE MOUNT ANALYSIS, INCLUDED AT THE END OF THIS PLAN SET, MUST BE INSTALLED PRIOR TO THE INSTALLATION OF THE PROPOSED ANTENNAS AND OTHER EQUIPMENT



2 FINAL ANTENNA PLAN

EXISTING ANTENNA / EQUIPMENT SCHEDULE

SECTOR	ANT.	MANUFACTURER (MODEL #)	RAD CENTER	AZIMUTH (TN)	MECH. D-TILT	ELEC. D-TILT	ADDITIONAL TOWER MOUNTED EQUIPMENT
ALPHA	A1	AIR 21, 1.3M, B2A B4P	135'-0"	0°	0°	2°	KRY 112 144/1
ALPHA	A2	AIR 21 B4A B2P	135'-0"	0°	0°	2°	–
BETA	B1	AIR 21 B2A B4P	135'-0"	70°	–	2°	KRY 112 144/1
BETA	B2	AIR 21 B4A B2P	135'-0"	70°	–	2°	–
GAMMA	C1	AIR 21 B2A B4P	135'-0"	180°	–	2°	KRY 112 144/1
GAMMA	C2	AIR 21 B4A B2P	135'-0"	180°	–	2°	–

NOTES

1. BASED ON APPROVED ATC APPLICATION 12927148, DATED 04/17/19. CONFIRM WITH T-MOBILE REP FOR APPLICABLE UPDATES/REVISIONS AND MOST RECENT RFDS FOR NSN CONFIGURATION (CONFIG). GC TO CAP ALL UNUSED PORTS.
2. ATC HAS NOT YET VERIFIED ANY EXISTING ANTENNA CONFIG OR MOUNT CONFIG. CONTRACTOR TO VERIFY MOUNT CONFIG HAS SUFFICIENT SPACE FOR PROPOSED LESSEE EQUIPMENT (EQUIP) (I.E. CLEARANCES, MOUNT PIPE, SUFFICIENT LENGTH, ETC.) ATC DID NOT ANALYZE ANTENNA MOUNT TO DETERMINE ADEQUATE STRUCTURAL CAPACITY FOR ANY LESSEE LOADING.
3. ALL PROPOSED EQUIP INCLUDING ANTENNAS, COAX, ETC. SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS ON FILE WITH ATC'S CM.
4. CONFIRM SPACING OF PROPOSED EQUIP DOES NOT CAUSE TOWER CONFLICTS NOR IMPEDE TOWER CLIMBING PEGS.
5. POSITIONS START WITH FIRST PIPE ON THE LEFT SIDE (AS VIEWED FROM BEHIND THE MOUNT).

FINAL ANTENNA / EQUIPMENT SCHEDULE

SECTOR	ANT.	MANUFACTURER (MODEL #)	RAD CENTER	AZIMUTH (TN)	MECH. D-TILT	ELEC. D-TILT	ADDITIONAL TOWER MOUNTED EQUIPMENT
ALPHA	A1	AIR 21, 1.3M, B2A B4P	135'-0"	0°	0°	2°	KRY 112 144/1
ALPHA	A2	APXVAARR24_43-U-NA20	135'-0"	0°	0°	2°	RADIO 4449 B12,B71
ALPHA	A3	AIR 21 B4A B2P	135'-0"	0°	0°	2°	–
BETA	B1	AIR 21 B2A B4P	135'-0"	70°	–	2°	KRY 112 144/1
BETA	B2	APXVAARR24_43-U-NA20	135'-0"	70°	-	2°	RADIO 4449 B12,B71
BETA	B3	AIR 21 B4A B2P	135'-0"	70°	–	2°	–
GAMMA	C1	AIR 21 B2A B4P	135'-0"	180°	–	2°	KRY 112 144/1
GAMMA	C2	APXVAARR24_43-U-NA20	135'-0"	180°	-	2°	RADIO 4449 B12,B71
GAMMA	C3	AIR 21 B4A B2P	135'-0"	180°	–	2°	–

CURRENT FIBER DISTRIBUTION/OVP BOX		CURRENT CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
–	–	(6) 1-5/8"	(1)1-1/4"	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 ANTENNA: 10'

PROPOSED FIBER DISTRIBUTION/OVP BOX		PROPOSED CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
-	-	(6) 1-5/8"	(1)1-1/4"	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	LR	07/24/19

ATC SITE NUMBER:
370641
ATC SITE NAME:
BEACON FALLS CT

SITE ADDRESS:
401-411 LOPUS ROAD
BEACON FALLS, CT 06403

SEAL:

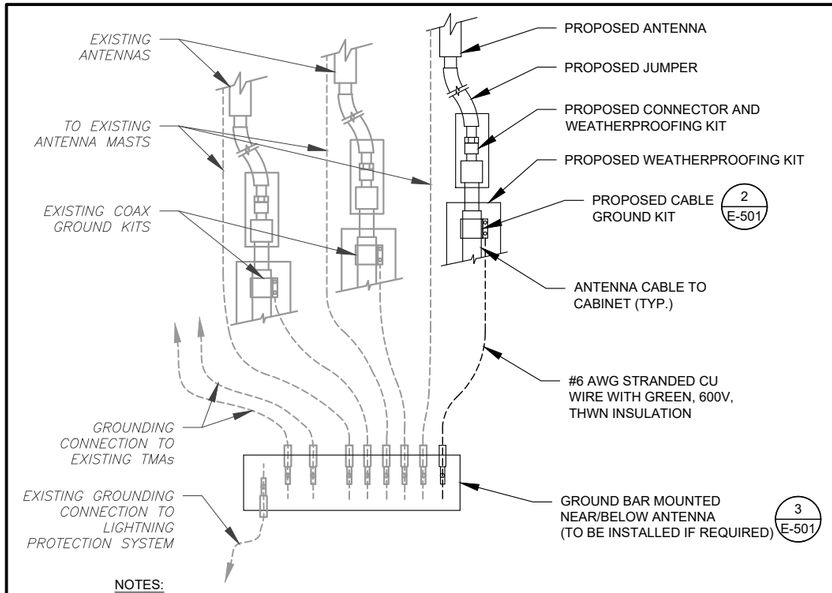
Authorized by "EOR"
Jul 24 2019 11:15 AM

T-Mobile cosign

DRAWN BY:	LR
APPROVED BY:	PPB
DATE DRAWN:	07/24/19
ATC JOB NO:	12958692

ANTENNA INFORMATION & SCHEDULE

SHEET NUMBER:	REVISION:
C-501	0

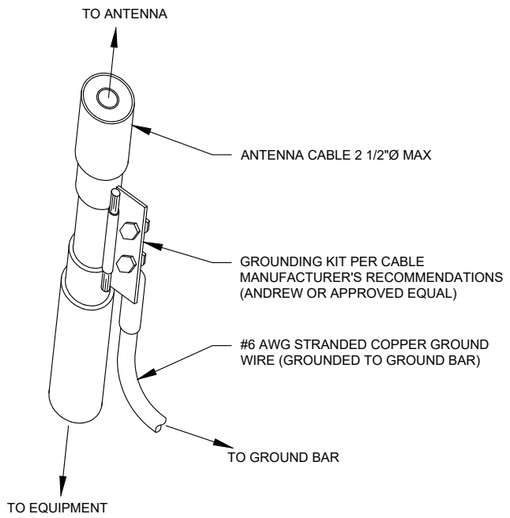


NOTES:

1. THIS DETAIL IS INTENDED TO SHOW THE GENERAL GROUNDING REQUIREMENTS. SLIGHT ADJUSTMENTS MAY BE REQUIRED BASED ON EXISTING SITE CONDITIONS. THE CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS AS NEEDED AND INFORM THE CONSTRUCTION MANAGER OF ANY CONFLICTS.
2. SITE GROUNDING SHALL COMPLY WITH T-MOBILE GROUNDING STANDARDS, LATEST EDITION, AND COMPLY WITH T-MOBILE GROUNDING CHECKLIST, LATEST VERSION. WHEN NATIONAL AND LOCAL GROUNDING CODES ARE MORE STRINGENT THEY SHALL GOVERN.

1 TYPICAL ANTENNA GROUNDING DIAGRAM

SCALE: NOT TO SCALE

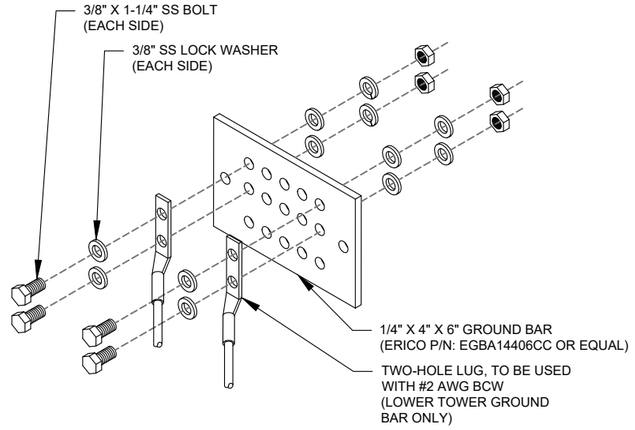


GROUND KIT NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. CONTRACTOR SHALL PROVIDE WEATHERPROOFING KIT (ANDREW PART NUMBER 221213) AND INSTALL/TAPE PER MANUFACTURER'S SPECIFICATIONS.

2 CABLE GROUND KIT CONNECTION DETAIL

SCALE: NOT TO SCALE



GROUND BAR NOTES:

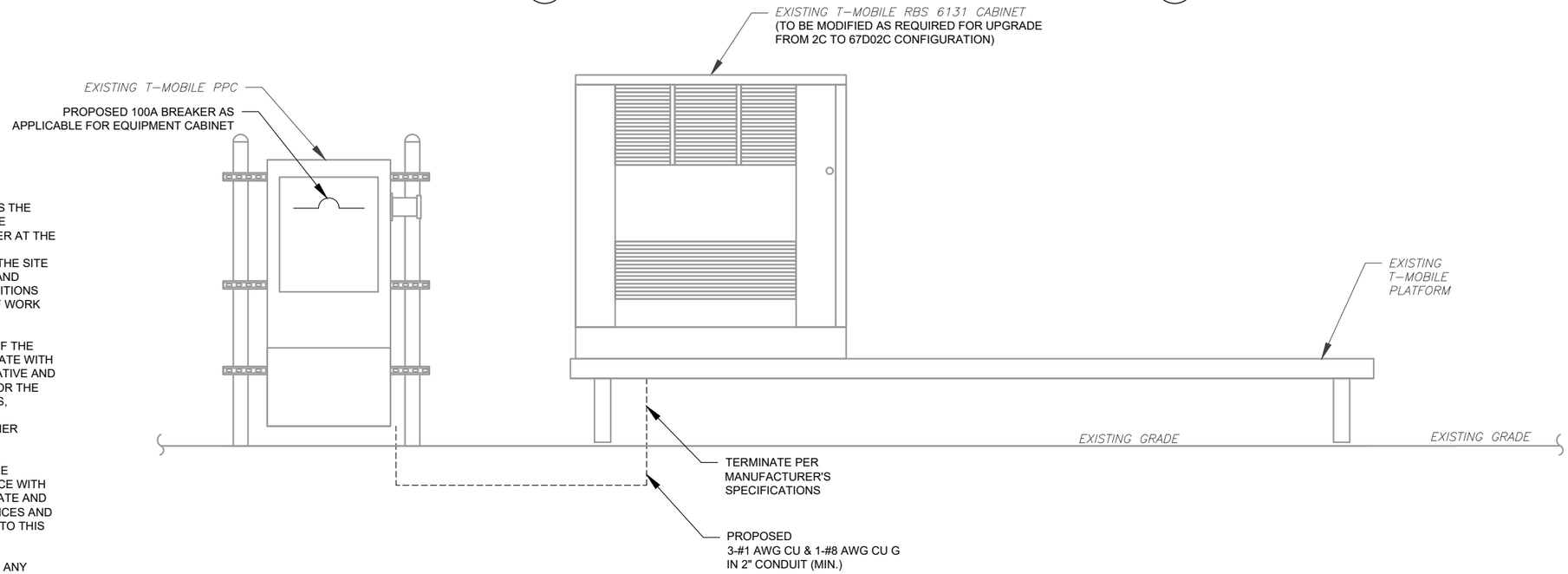
1. GROUND BAR KITS COME WITH ALL HARDWARE, NUTS, BOLTS, WASHERS, ETC. EXCEPT THE STRUCTURAL MOUNTING MEMBER(S).
2. GROUND BAR TO BE BONDED DIRECTLY TO TOWER.

3 TOWER GROUND BAR DETAIL

SCALE: NOT TO SCALE

ELECTRICAL NOTES:

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



4 ELECTRICAL UPGRADE DIAGRAM

SCALE: NOT TO SCALE

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	LR	07/24/19

ATC SITE NUMBER:
370641

ATC SITE NAME:
BEACON FALLS CT

SITE ADDRESS:
401-411 LOPUS ROAD
BEACON FALLS, CT 06403

SEAL:

Authorized by "EOR"
Jul 24 2019 11:15 AM

T-Mobile esign

DRAWN BY:	LR
APPROVED BY:	PPB
DATE DRAWN:	07/24/19
ATC JOB NO:	12958692

GROUNDING DETAILS

SHEET NUMBER:	REVISION:
E-501	0

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

CT11487B_L600_3.1_draft

Section 5 - RAN Equipment

Existing RAN Equipment		
Template: 2C		
Enclosure	1	2
Enclosure Type	RBS 6131	S12000 Outdoor
Baseband	DUW30 (x 2) DUG20 DUS31	
Hybrid Cable System	Ericsson 9x18 HCS *Select Length*	
Radio	RU22 (x 6)	

Proposed RAN Equipment		
Template: 67D02C Outdoor		
Enclosure	1	2
Enclosure Type	RBS 6131	S12000 Outdoor
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 DUS31 with (1) BB6630 for L2100, L700, and L600.
Add (1) BB6630 for future 5G N600.

Add (3) 6X12 HCS.

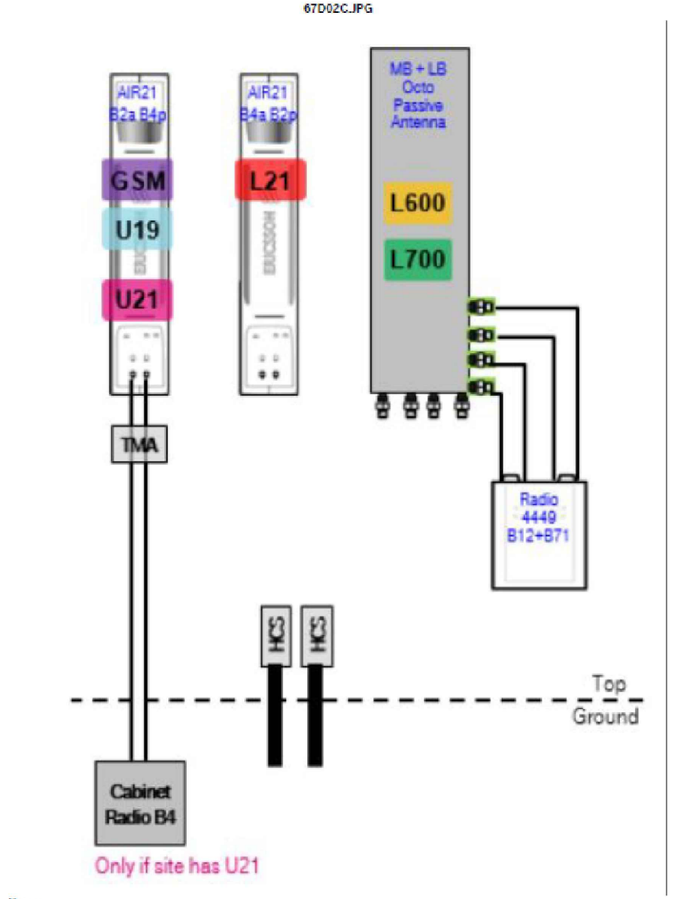
Existing: (12) Coaxial Lines; (1) 9x18. Remove (6) Coax.

Add Battery Backup Cabinet.

1 CABINET CONFIGURATION
SCALE: NOT TO SCALE

Section 3 - Proposed Template Images

67D02C.JPG



Notes:

2 ANTENNA CONFIGURATION
SCALE: NOT TO SCALE

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

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-601	0

Mount Analysis of Existing T-Arms for American Tower on behalf of T-Mobile
370641 - Beacon Falls CT
Project #: 12927148
T-Mobile Site ID: CT11487B
Program: L600

CLS Engineering PLLC Project #41124-12927148-01-MA-R1
July 3, 2019

MOUNT DESCRIPTION	Existing T-Arms at 134 ft AGL
ANTENNA ELEVATION	Nominal Rad. Elevation of 135 ft AGL (Eccentricity of ~1 ft)
SITE DESCRIPTION	149 ft Monopole
SITE ADDRESS	401-411 Lopus Road, Beacon Falls, CT 06403-0000, New Haven County
GPS COORDINATES	41.43283333, -73.07022222
ANALYSIS STANDARD	2015 IBC / 2018 Connecticut State Building Code / TIA-222-G
LOADING CRITERIA	125 mph, V_{ult} (3-Second Gust) w/o ice & 50 mph (3-Second Gust) w/ 1" Ice

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

MEMBER USAGE	84%	Pass

Modifications are proposed to bring mounts into compliance; see conclusion for details.

Prepared by:
Jennifer Soza

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 part of HID Global
Digitally signed by Tyler Barker
DN: c=US, o=Telamon Corporation, ou=A01427E0000016A4525ADF800001D17, cn=Tyler Barker
Date: 2019.07.03 12:49:30 -04'00'

■ CONCLUSION AND RECOMMENDATIONS

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

- **Install mount pipe at empty Position 2 (1) 8ft. long proposed Pipe 2½ STD, A53 Gr. B, at each sector for proposed panel configuration (3 total) as shown. Connect to t-arm face horizontal member using Site Pro 1 SCX45-K crossover plate or equal.**
- **Install (1) Site Pro 1 PRK-1245 kit at the offset arms on the existing T-Arm mount as shown in the following sketches. Field-Cut proposed angles as required. Maintain minimum bolt edge distance.**

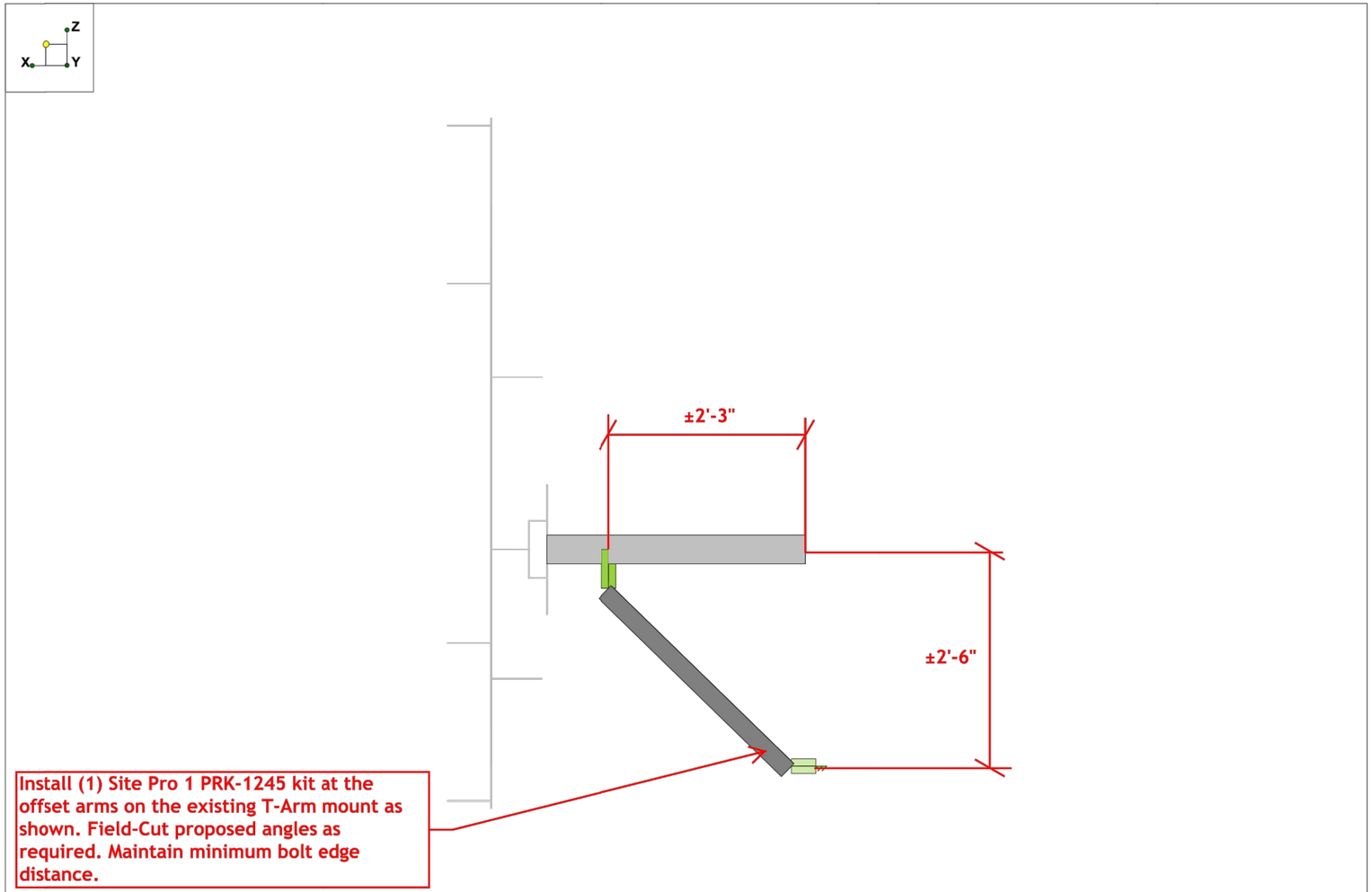
See following sketches and Site Pro 1 assembly drawings for additional details.

1 MOUNT ANALYSIS
SCALE: NOT TO SCALE

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

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-602	0



Envelope Only Solution

CLS		IN - 1
JLS	41124-12927148-Beacon Falls CT	May 3, 2019 at 9:34 AM
41124-12927148-01-MA	Installation Sketch	41124-12927148-01-MA.r3d

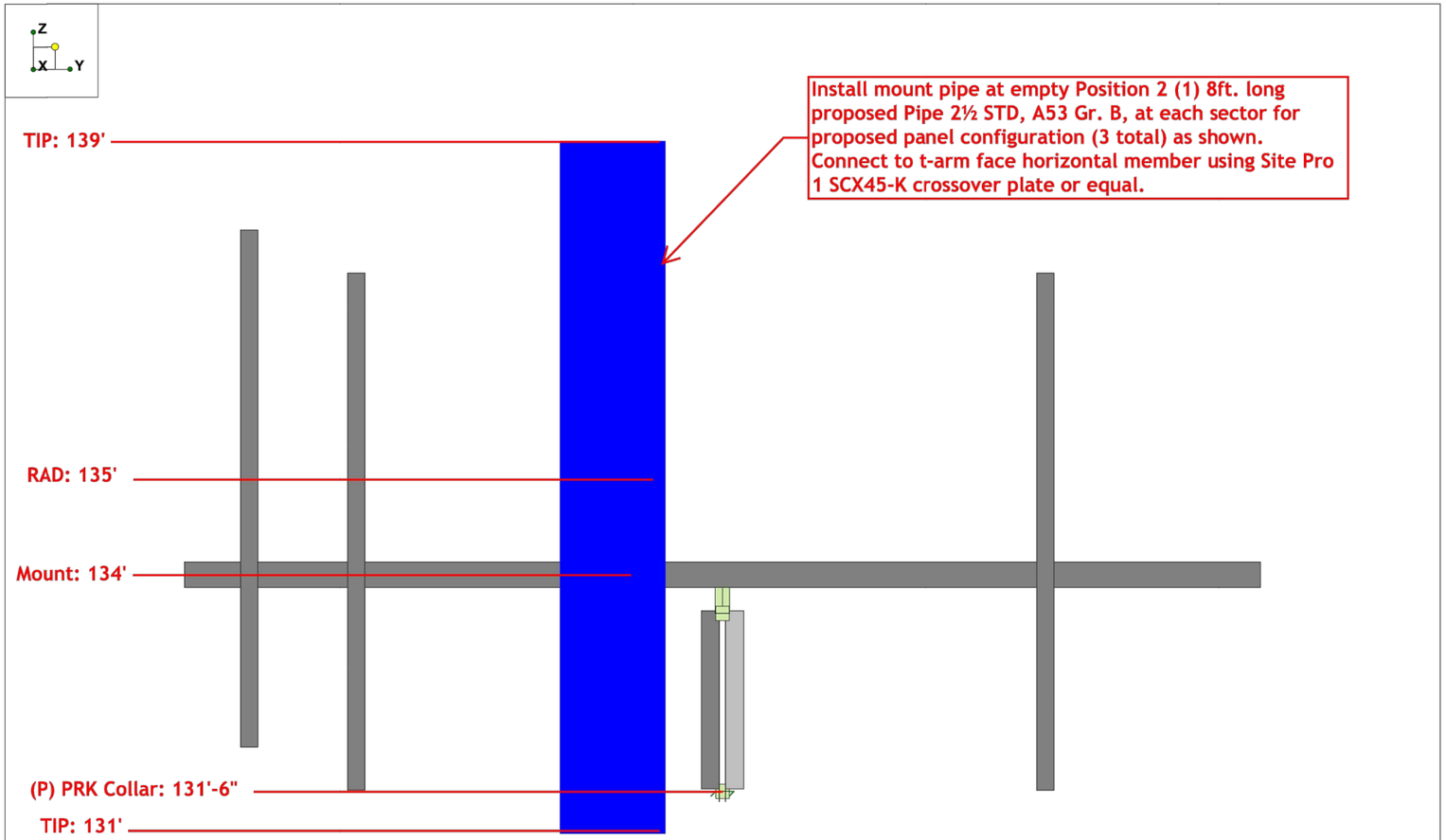
1 MOUNT ANALYSIS

SCALE: NOT TO SCALE

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

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-603	0



Envelope Only Solution

CLS	41124-12927148-Beacon Falls CT	IN - 2
JLS		May 3, 2019 at 9:34 AM
41124-12927148-01-MA	Installation Sketch	41124-12927148-01-MA.r3d

1 MOUNT ANALYSIS

SCALE: NOT TO SCALE

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

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-604	0

AMERICAN TOWER®
CORPORATION

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Prepared By:
Timothy Kassakatis
Structural Engineer II

Reviewed By:

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
32598
LICENSED
PROFESSIONAL ENGINEER

Authorized by "EOR"
Jul 19 2019 2:56 PM cosign

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AMERICAN TOWER®
CORPORATION

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Lyűů2ŘdzŐűů2y

The purpose of this report is to summarize results of a structural analysis performed on the 149 ft monopole to reflect the change in loading by T-MOBILE.

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¢2øŜ 5l·øyƎă	EEI Job #13674, dated October 19, 2005
C2dzyŘl·ű2y 5l·øyƎ	EEI Job #13674, dated October 19, 2005
DŜ2úŜŐKyůÓl·f wŜLJ2ůů	Tectonic Project #3917.BEACON, dated August 17, 2005
a 2dzyű Analysis	CLS Engineering PLLC Project #41124-12927148-01-MA-R1, dated July 3, 2019

! yl·fèăůă

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.

.l·ăůÖ ² ůyŘ {LJŜŜŘY	97 mph (3-Second Gust, Vasd) / 125 mph (3-Second Gust, Vult)
.l·ăůÖ ² ůyŘ {LJŜŜŘ øĸ LÖŜY	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
/2ŘŜY	ANSI/TIA-222-G / 2015 IBC / 2018 Connecticut State Building Code
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/ůŜăű l ŜƎKűY	0 ft
{LJŜÖúůÌ·f wŜăLJ2yáŜY	Ss = 0.19, S_1 = 0.06
{ůúŜ /fl·ăăY	D - Stiff Soil

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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.

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Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
145.0	3	CCI HPA-65R-BUU-H6	Platform with Handrails	(1) 0.39" (10mm) Fiber Trunk (2) 0.78" (19.7mm) 8 AWG 6 (12) 1 5/8" Coax (1) 2" conduit	AT&T MOBILITY
	6	Allgon 7770.00			
	6	Powerwave Allgon LGP13519			
	6	Powerwave Allgon 7020.00 Dual Band RET			
	6	Powerwave Allgon LGP21401			
	1	Raycap DC6-48-60-18-8F ("Squid")			
	3	Ericsson RRUS 11 (Band 12)			
	3	Ericsson RRUS 32 B2			
135.0	3	Ericsson KRY 112 144/1	-	(6) 1 5/8" Coax	T-MOBILE
117.0	1	RFS DB-B1-6C-12AB-0Z	Low Profile Platform	(2) 1 5/8" Hybriflex	VERIZON WIRELESS
115.0	2	Alcatel-Lucent RRH2x60 700			
	1	RFS DB-B1-6C-12AB-0Z			
	2	Alcatel-Lucent B66A RRH4x45-4R w/ Solar Shield			
	4	Andrew HBXX-6517DS-A2M (43 lbs)			
	4	Commscope LNX-6515DS-A1M (50.3 lb)			
	2	Alcatel-Lucent RRH2X60-1900			

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Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
135.0	6	Ericsson AIR 21	T-Arm	(6) 1 5/8" Coax (1) 1.57" (40mm) Hybrid	T-MOBILE

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Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
135.0	3	Ericsson Radio 4449 B12,B71	T-Arm w/ Site Pro 1 PRK-1245's	(4) 1 5/8" (1.63"-41.3mm) Fiber	T-MOBILE
	3	Ericsson AIR 21 B4A B2P			
	3	Ericsson AIR 21, 1.3M, B2A B4P (91.5 lbs)			
	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.

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Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	30%	Pass
Shaft	37%	Pass
Base Plate	26%	Pass

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Reaction Component	Original Design Reactions	Factored Design ReactionsF	Analysis Reactions	% of Design
Moment (Kips-Ft)	3,762.3	5,079.1	2,012.2	40%
Shear (Kips)	34.9	47.1	19.6	42%

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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.

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Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
135.0	Ericsson Radio 4449 B12,B71	T-MOBILE	0.767	0.686
	Ericsson AIR 21 B4A B2P			
	Ericsson AIR 21, 1.3M, B2A B4P (91.5 lbs)			
	RFS APXVAARR24_43-U-NA20			

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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:

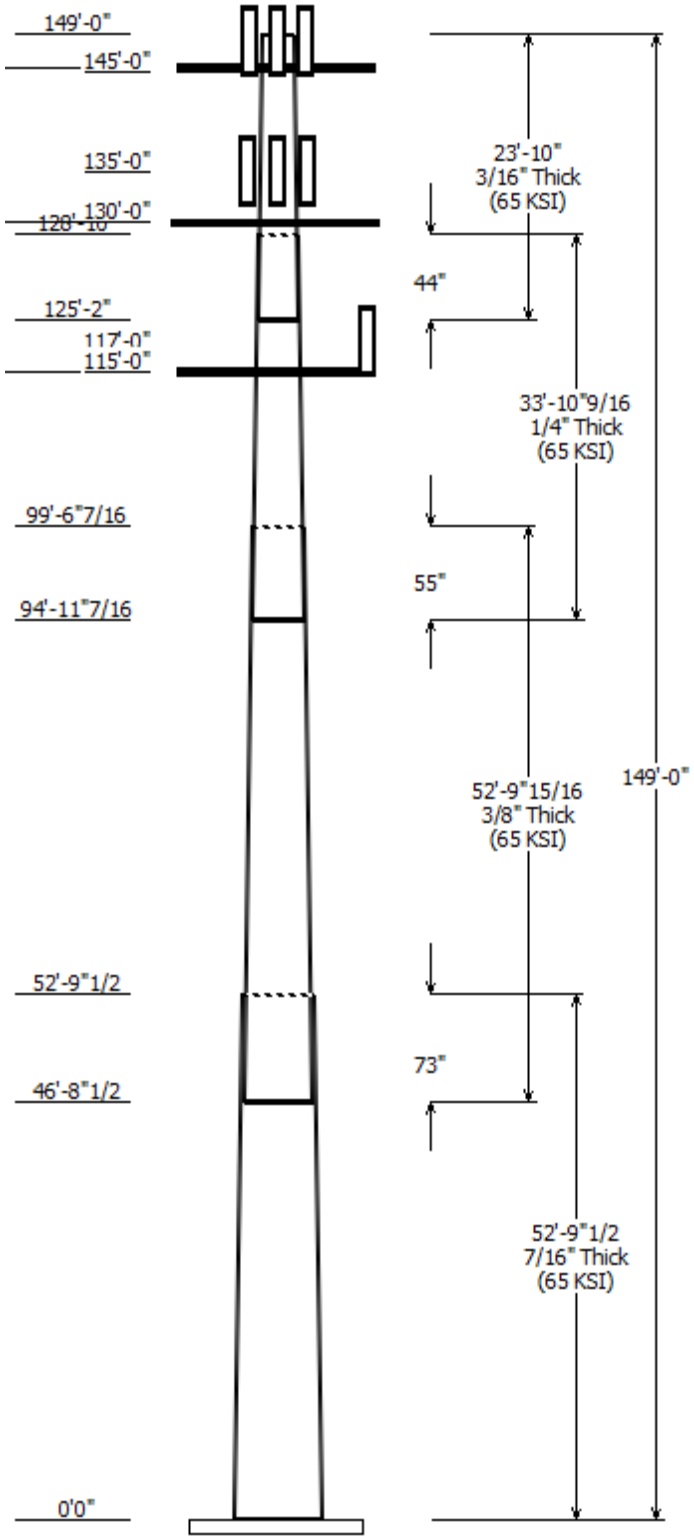
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

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 :	370641	Code:	ANSI/TIA-222-G
Location :	Beacon Falls CT, CT		
Description :	149 ft EEI Monopole	Struct Class :	II
Shape :	18 Sides	Exposure :	B
Height :	149.00 (ft)	Topo :	1
Base Elev (ft):	0.00		
Taper:	0.262584 (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	52.790	42.13	56.00	0.438		0.000	18 Sides	65
2	52.830	30.61	44.48	0.375	Slip Joint	73.000	18 Sides	65
3	33.880	23.42	32.31	0.250	Slip Joint	55.000	18 Sides	65
4	23.833	18.50	24.75	0.188	Slip Joint	44.000	18 Sides	65

Discrete Appurtenance

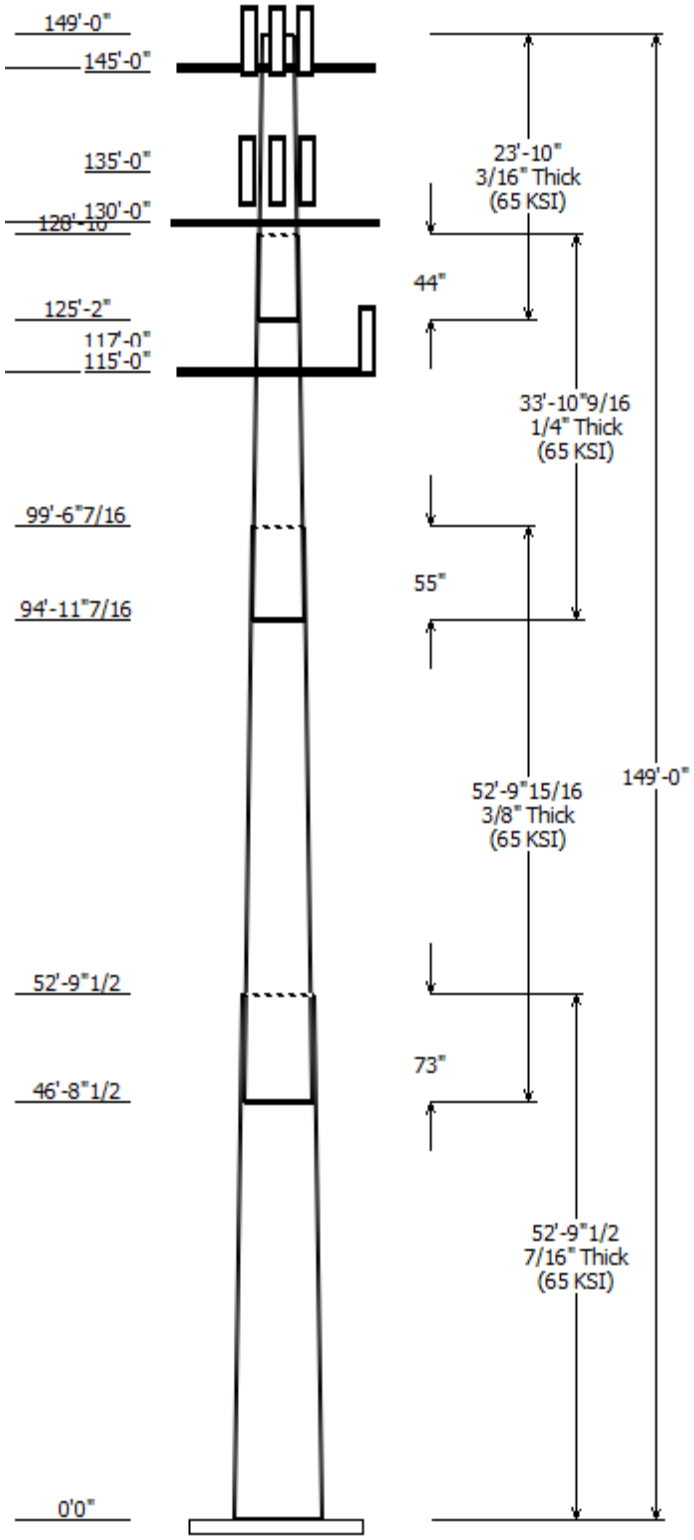
Attach Elev (ft)	Force Elev (ft)	Qty	Description
145.500	145.500	1	Flat Low Profile Platform
145.000	147.000	3	CCI HPA-65R-BUU-H6
145.000	147.000	6	Allgon 7770.00
145.000	145.000	3	Ericsson RRUS 32 B2
145.000	147.000	3	Ericsson RRUS 11 (Band 12)
145.000	147.000	1	Raycap DC6-48-60-18-8F
145.000	147.000	6	Powerwave Allgon LGP21401
145.000	145.000	6	Powerwave Allgon 7020.00
145.000	147.000	6	Powerwave Allgon LGP13519
135.000	135.000	3	RFS APXVAARR24_43-U-NA20
135.000	135.000	3	Ericsson AIR 21, 1.3M, B2A B4P
135.000	135.000	3	Ericsson AIR 21 B4A B2P
135.000	135.000	3	Ericsson Radio 4449 B12,B71
135.000	137.000	3	Ericsson KRY 112 144/1
130.000	130.000	3	Round T-Arm
117.000	119.000	1	RFS DB-B1-6C-12AB-0Z
115.000	115.000	1	Generic Round Low Profile
115.000	117.000	4	Commscope LNX-6515DS-A1M
115.000	117.000	4	Andrew HBXX-6517DS-A2M (43
115.000	115.000	2	Alcatel-Lucent B66A RRH4x45-
115.000	117.000	1	RFS DB-B1-6C-12AB-0Z
115.000	117.000	2	Alcatel-Lucent RRH2x60 700
115.000	117.000	2	Alcatel-Lucent RRH2X60-1900

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	115.0	1 5/8" Hybriflex	No
0.000	135.0	1 5/8" (1.63"-	No
0.000	135.0	1 5/8" Coax	No
0.000	145.0	0.39" (10mm)	No
0.000	145.0	0.78" (19.7mm) 8	No
0.000	145.0	1 5/8" Coax	No
0.000	145.0	2" conduit	No

Load Cases

1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method



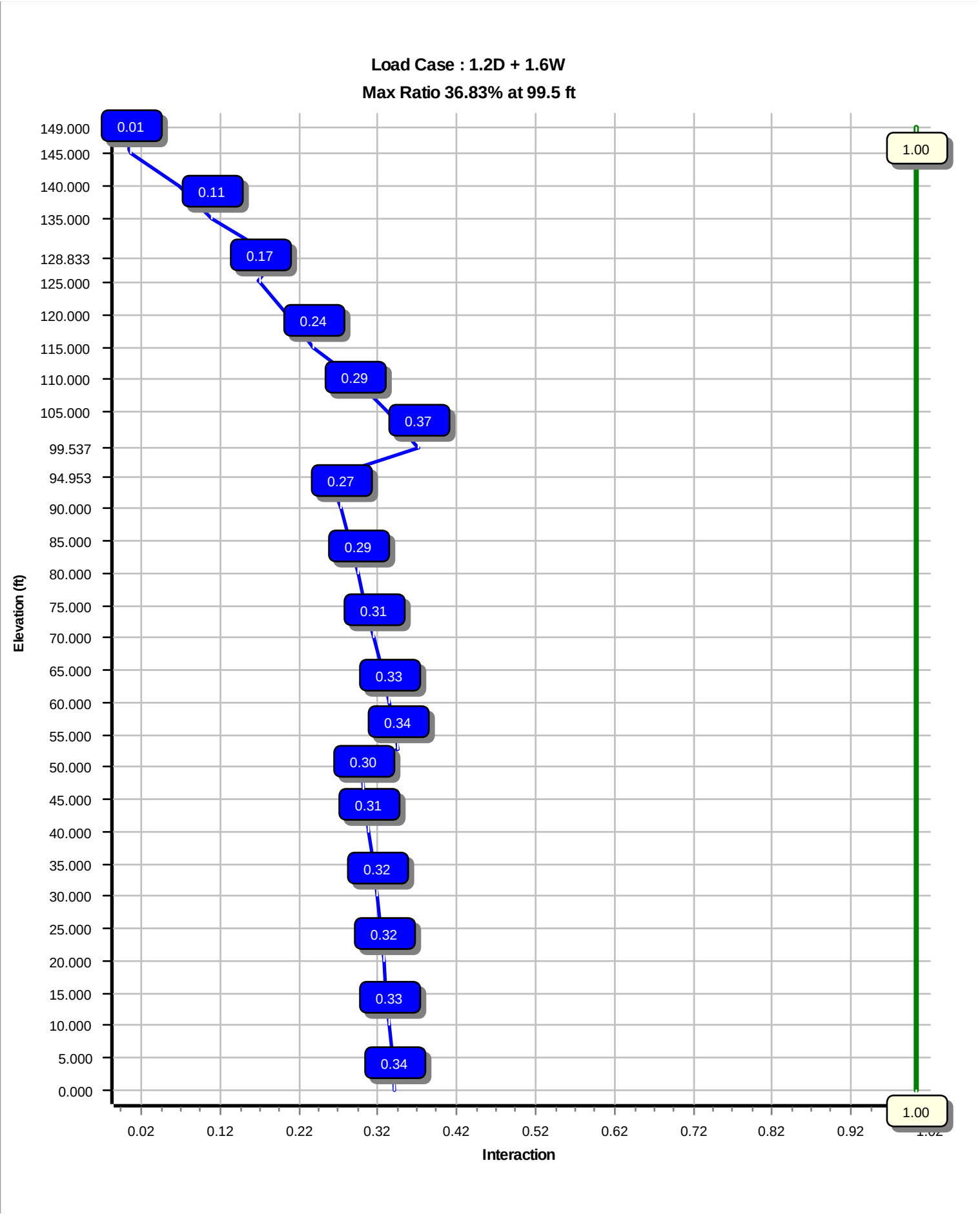
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	2012.16	19.64	41.37
0.9D + 1.6W	1997.13	19.63	31.02
1.2D + 1.0Di + 1.0Wi	566.72	5.69	58.53
(1.2 + 0.2Sds) * DL + E ELFM	173.53	1.54	40.99
(1.2 + 0.2Sds) * DL + E EMAM	194.61	1.82	40.99
(0.9 - 0.2Sds) * DL + E ELFM	171.98	1.54	28.40
(0.9 - 0.2Sds) * DL + E EMAM	192.73	1.82	28.40
1.0D + 1.0W	428.49	4.20	34.48

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 36.83% at 99.5 ft
Elevation (ft)
149.000
145.000
140.000
135.000
128.833
125.000
120.000
115.000
110.000
105.000
99.537
94.953
90.000
85.000
80.000
75.000
70.000
65.000
60.000
55.000
50.000
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
0.01
0.11
0.17
0.24
0.29
0.37
0.27
0.29
0.31
0.33
0.34
0.30
0.31
0.32
0.32
0.33
0.34
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: 370641 Code: ANSI/TIA-222-G

Site Name: Beacon Falls CT, CT Engineering Number:12927148_C3_02 7/17/2019 7:50:17 PM

Customer: T-MOBILE

Analysis Parameters

Location :	New Haven County, CT	Height (ft) :	149
Code :	ANSI/TIA-222-G	Base Diameter (in) :	56.00
Shape :	18 Sides	Top Diameter (in) :	18.50
Pole Type :	Taper	Taper (in/ft) :	0.263
Pole Manfacturer :	EEI	Rotation (deg) :	0.00

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	97 mph
Exposure Category:	B	Design Wind Speed With Ice:	50 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0 ft	Design Ice Thickness:	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):	1.86				
T_L (sec):	6	p:	1.3	C_s:	0.034
S_s:	0.193	S_1:	0.064	C_s Max:	0.034
F_a:	1.600	F_v:	2.400	C_s Min:	0.030
S_{ds}:	0.203	S_{d1}:	0.096		

Load Cases

1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 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: 370641 Code: ANSI/TIA-222-G

Site Name: Beacon Falls CT, CT Engineering Number:12927148_C3_02 7/17/2019 7:50:17 PM

Customer: T-MOBILE

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (ft)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-18	52.790	0.4375	65		0.00	12,130	56.00	0.00	77.15	30093.2	21.16	128.00	42.13	52.79	57.90	12721.9	15.57	96.32	0.262584
2-18	52.830	0.3750	65	Slip	73.00	7,954	44.48	46.71	52.50	12906.4	19.51	118.63	30.61	99.54	35.99	4157.6	12.98	81.64	0.262584
3-18	33.880	0.2500	65	Slip	55.00	2,526	32.31	94.95	25.44	3305.6	21.38	129.27	23.42	128.83	18.39	1247.1	15.11	93.68	0.262584
4-18	23.833	0.1875	65	Slip	44.00	1,035	24.75	125.17	14.62	1115.3	21.87	132.04	18.50	149.00	10.90	461.7	15.99	98.67	0.262584
				Shaft Weight		23,646													

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
145.50	Flat Low Profile Platform	1	1.00	0.000	1,500.00	26.100	1.00	2,147.13	45.170	1.00
145.00	Powerwave Allgon LGP13519	6	0.80	2.000	5.30	0.290	0.50	14.75	0.675	0.50
145.00	Powerwave Allgon 7020.00 Dual	6	0.80	0.000	2.20	0.340	0.50	12.38	0.749	0.50
145.00	Powerwave Allgon LGP21401	6	0.80	2.000	14.10	1.100	0.50	38.97	1.809	0.50
145.00	Raycap DC6-48-60-18-8F	1	0.80	2.000	31.80	1.470	1.00	93.31	2.166	1.00
145.00	Ericsson RRUS 11 (Band 12)	3	0.80	2.000	50.00	2.570	0.67	117.96	3.616	0.67
145.00	Ericsson RRUS 32 B2	3	0.80	0.000	53.00	2.740	0.67	126.32	3.905	0.67
145.00	Allgon 7770.00	6	0.80	2.000	35.00	5.510	0.65	169.32	6.559	0.65
145.00	CCI HPA-65R-BUU-H6	3	0.80	2.000	51.00	9.660	0.69	269.72	12.424	0.69
135.00	Ericsson KRY 112 144/1	3	0.80	2.000	11.00	0.350	0.50	21.65	0.751	0.50
135.00	Ericsson Radio 4449 B12,B71	3	0.80	0.000	74.00	1.640	0.50	129.41	2.476	0.50
135.00	Ericsson AIR 21 B4A B2P	3	0.80	0.000	90.00	5.800	0.71	229.74	7.867	0.71
135.00	Ericsson AIR 21, 1.3M, B2A B4P	3	0.80	0.000	91.50	6.040	0.70	235.59	8.164	0.70
135.00	RFS APXVAARR24_43-U-NA20	3	0.80	0.000	127.90	20.240	0.63	516.44	23.910	0.63
130.00	Round T-Arm	3	0.75	0.000	250.00	9.700	0.67	456.36	17.840	0.67
117.00	RFS DB-B1-6C-12AB-0Z	1	0.80	2.000	21.40	2.510	1.00	99.35	3.526	1.00
115.00	Alcatel-Lucent RRH2X60-1900	2	0.80	2.000	43.00	1.880	0.50	96.87	2.794	0.50
115.00	Alcatel-Lucent RRH2x60 700	2	0.80	2.000	56.70	2.150	0.67	122.96	3.126	0.67
115.00	RFS DB-B1-6C-12AB-0Z	1	0.80	2.000	21.40	2.510	1.00	99.12	3.523	1.00
115.00	Alcatel-Lucent B66A RRH4x45-	2	0.80	0.000	56.80	2.540	0.67	125.03	3.632	0.67
115.00	Andrew HBXX-6517DS-A2M (43	4	0.80	2.000	43.00	8.530	0.68	214.24	11.359	0.68
115.00	Commscope LNX-6515DS-A1M	4	0.80	2.000	50.30	11.440	0.70	275.58	14.606	0.70
115.00	Generic Round Low Profile	1	1.00	0.000	1,875.00	21.700	1.00	2,663.51	40.393	1.00
Totals	Num Loadings:23	70			6,870.60			15,473.59		

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	145.00	1	0.39" (10mm) Fiber	0.39	0.06	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	145.00	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	145.00	12	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	145.00	1	2" conduit	2.38	3.65	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	135.00	4	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	135.00	6	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	T-MOBILE
0.00	115.00	2	1 5/8" Hybriflex	1.98	1.30	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		0.4375	56.000	77.153	30,093.2	21.16	128.00	76.5	1058.	0.0	0.0
5.00		0.4375	54.687	75.330	28,009.9	20.63	125.00	77.1	1008.	0.0	1,297.2
10.00		0.4375	53.374	73.507	26,025.1	20.10	122.00	77.8	960.4	0.0	1,266.1
15.00		0.4375	52.061	71.683	24,136.3	19.57	119.00	78.4	913.1	0.0	1,235.1
20.00		0.4375	50.748	69.860	22,341.2	19.04	116.00	79.0	867.1	0.0	1,204.1
25.00		0.4375	49.435	68.037	20,637.4	18.51	113.00	79.6	822.2	0.0	1,173.1
30.00		0.4375	48.122	66.214	19,022.5	17.98	109.99	80.2	778.6	0.0	1,142.1
35.00		0.4375	46.810	64.391	17,494.1	17.46	106.99	80.9	736.1	0.0	1,111.1
40.00		0.4375	45.497	62.568	16,049.9	16.93	103.99	81.5	694.8	0.0	1,080.0
45.00		0.4375	44.184	60.745	14,687.4	16.40	100.99	82.1	654.7	0.0	1,049.0
46.71	Bot - Section 2	0.4375	43.736	60.123	14,240.6	16.22	99.97	82.3	641.3	0.0	351.0
50.00		0.4375	42.871	58.922	13,404.3	15.87	97.99	82.6	615.8	0.0	1,249.6
52.79	Top - Section 1	0.3750	42.888	50.600	11,554.4	18.76	114.37	79.3	530.6	0.0	1,039.1
55.00		0.3750	42.308	49.909	11,087.7	18.48	112.82	79.7	516.2	0.0	377.9
60.00		0.3750	40.995	48.346	10,078.5	17.87	109.32	80.4	484.2	0.0	835.8
65.00		0.3750	39.682	46.784	9,132.4	17.25	105.82	81.1	453.3	0.0	809.3
70.00		0.3750	38.369	45.221	8,247.6	16.63	102.32	81.8	423.4	0.0	782.7
75.00		0.3750	37.056	43.658	7,421.8	16.01	98.82	82.6	394.5	0.0	756.1
80.00		0.3750	35.743	42.096	6,653.0	15.40	95.32	82.6	366.6	0.0	729.5
85.00		0.3750	34.430	40.533	5,939.3	14.78	91.81	82.6	339.8	0.0	702.9
90.00		0.3750	33.117	38.970	5,278.5	14.16	88.31	82.6	313.9	0.0	676.3
94.95	Bot - Section 3	0.3750	31.817	37.422	4,674.1	13.55	84.84	82.6	289.3	0.0	643.8
95.00		0.3750	31.805	37.408	4,668.6	13.54	84.81	82.6	289.1	0.0	10.0
99.54	Top - Section 2	0.2500	31.113	24.489	2,947.2	20.53	124.45	77.2	186.6	0.0	951.9
100.0		0.2500	30.992	24.393	2,912.5	20.45	123.97	77.4	185.1	0.0	38.5
105.0		0.2500	29.679	23.351	2,555.0	19.52	118.71	78.4	169.6	0.0	406.2
110.0		0.2500	28.366	22.309	2,228.1	18.60	113.46	79.5	154.7	0.0	388.4
115.0		0.2500	27.053	21.267	1,930.3	17.67	108.21	80.6	140.5	0.0	370.7
117.0		0.2500	26.528	20.851	1,819.1	17.30	106.11	81.1	135.1	0.0	143.3
120.0		0.2500	25.740	20.226	1,660.3	16.74	102.96	81.7	127.0	0.0	209.7
125.0		0.2500	24.427	19.184	1,416.7	15.82	97.71	82.6	114.2	0.0	335.3
125.1	Bot - Section 4	0.2500	24.383	19.149	1,409.1	15.79	97.53	82.6	113.8	0.0	10.9
128.8	Top - Section 3	0.1875	23.795	14.049	989.3	20.97	126.91	76.7	81.9	0.0	413.0
130.0		0.1875	23.489	13.867	951.3	20.68	125.28	77.1	79.8	0.0	55.4
135.0		0.1875	22.176	13.086	799.4	19.44	118.27	78.5	71.0	0.0	229.3
140.0		0.1875	20.863	12.304	664.6	18.21	111.27	80.0	62.7	0.0	216.0
145.0		0.1875	19.550	11.523	545.8	16.97	104.27	81.4	55.0	0.0	202.7
145.5		0.1875	19.419	11.445	534.8	16.85	103.57	81.6	54.2	0.0	19.5
149.0		0.1875	18.500	10.898	461.7	15.99	98.67	82.6	49.2	0.0	133.0
											23,645.5

Load Case: 1.2D + 1.6W — 97 mph with No Ice — 23 Iterations

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

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		214.5	0.0					0.0	0.0	214.5	0.0	0.0	0.0
5.00		424.0	1,556.6					0.0	172.1	424.0	1,728.7	0.0	0.0
10.00		413.8	1,519.4					0.0	172.1	413.8	1,691.5	0.0	0.0
15.00		403.6	1,482.1					0.0	172.1	403.6	1,654.3	0.0	0.0
20.00		393.5	1,444.9					0.0	172.1	393.5	1,617.1	0.0	0.0
25.00		383.3	1,407.7					0.0	172.1	383.3	1,579.8	0.0	0.0
30.00		377.5	1,370.5					0.0	172.1	377.5	1,542.6	0.0	0.0
35.00		379.3	1,333.3					0.0	172.1	379.3	1,505.4	0.0	0.0
40.00		383.0	1,296.0					0.0	172.1	383.0	1,468.2	0.0	0.0
45.00		257.9	1,258.8					0.0	172.1	257.9	1,431.0	0.0	0.0
46.71	Bot - Section 2	194.7	421.2					0.0	58.8	194.7	479.9	0.0	0.0
50.00		238.2	1,499.5					0.0	113.4	238.2	1,612.9	0.0	0.0
52.79	Top - Section 1	195.6	1,246.9					0.0	96.1	195.6	1,343.0	0.0	0.0
55.00		281.0	453.5					0.0	76.1	281.0	529.6	0.0	0.0
60.00		387.6	1,003.0					0.0	172.1	387.6	1,175.2	0.0	0.0
65.00		383.9	971.1					0.0	172.1	383.9	1,143.3	0.0	0.0
70.00		379.2	939.2					0.0	172.1	379.2	1,111.4	0.0	0.0
75.00		373.5	907.3					0.0	172.1	373.5	1,079.4	0.0	0.0
80.00		367.0	875.4					0.0	172.1	367.0	1,047.5	0.0	0.0
85.00		359.7	843.5					0.0	172.1	359.7	1,015.6	0.0	0.0
90.00		350.0	811.6					0.0	172.1	350.0	983.7	0.0	0.0
94.95	Bot - Section 3	173.8	772.6					0.0	170.5	173.8	943.1	0.0	0.0
95.00		157.8	12.0					0.0	1.6	157.8	13.6	0.0	0.0
99.54	Top - Section 2	171.9	1,142.3					0.0	156.2	171.9	1,298.4	0.0	0.0
100.00		182.9	46.2					0.0	16.0	182.9	62.2	0.0	0.0
105.00		329.3	487.4					0.0	172.1	329.3	659.5	0.0	0.0
110.00		319.0	466.1					0.0	172.1	319.0	638.3	0.0	0.0
115.00	Appurtenance(s)	218.0	444.8	3,093.1	0.0	4,162.9	3,099.1	0.0	172.1	3,311.1	3,716.1	0.0	0.0
117.00	Appurtenance(s)	151.3	172.0	84.0	0.0	168.0	25.7	0.0	62.6	235.3	260.3	0.0	0.0
120.00		235.5	251.6					0.0	93.9	235.5	345.5	0.0	0.0
125.00		150.2	402.3					0.0	156.5	150.2	558.8	0.0	0.0
125.17	Bot - Section 4	109.1	13.0					0.0	5.2	109.1	18.3	0.0	0.0
128.83	Top - Section 3	136.8	495.6					0.0	114.8	136.8	610.4	0.0	0.0
130.00	Appurtenance(s)	167.9	66.5	627.3	0.0	0.0	900.0	0.0	36.5	795.2	1,003.0	0.0	0.0
135.00	Appurtenance(s)	264.4	275.1	2,299.2	0.0	36.6	1,419.8	0.0	156.5	2,563.6	1,851.5	0.0	0.0
140.00		251.3	259.2					0.0	88.4	251.3	347.6	0.0	0.0
145.00	Appurtenance(s)	134.2	243.2	2,089.8	0.0	3,717.3	1,000.1	0.0	88.4	2,224.0	1,331.7	0.0	0.0
145.50	Appurtenance(s)	93.0	23.4	1,156.2	0.0	0.0	1,800.0	0.0	0.0	1,249.2	1,823.4	0.0	0.0
149.00		81.1	159.7					0.0	0.0	81.1	159.7	0.0	0.0
								Totals:		19,818.0	41,381.5	0.00	0.00

Site Number: 370641 Code: ANSI/TIA-222-G

Site Name: Beacon Falls CT, CT Engineering Number:12927148_C3_02 7/17/2019 7:50:19 PM

Customer: T-MOBILE

Load Case: 1.2D + 1.6W 97 mph with No Ice 23 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	-41.37	-19.64	0.00	-2,012.16	0.00	2,012.16	5,312.91	2,656.45	12,129.5	6,073.81	0.00	0.00	0.339
5.00	-39.61	-19.28	0.00	-1,913.98	0.00	1,913.98	5,229.56	2,614.78	11,654.9	5,836.15	0.05	-0.09	0.336
10.00	-37.88	-18.92	0.00	-1,817.59	0.00	1,817.59	5,144.17	2,572.09	11,184.9	5,600.81	0.20	-0.19	0.332
15.00	-36.20	-18.57	0.00	-1,722.98	0.00	1,722.98	5,056.74	2,528.37	10,719.9	5,367.95	0.45	-0.28	0.328
20.00	-34.55	-18.23	0.00	-1,630.12	0.00	1,630.12	4,967.26	2,483.63	10,260.2	5,137.73	0.80	-0.38	0.324
25.00	-32.94	-17.89	0.00	-1,538.97	0.00	1,538.97	4,875.75	2,437.87	9,806.10	4,910.34	1.25	-0.48	0.320
30.00	-31.37	-17.56	0.00	-1,449.50	0.00	1,449.50	4,782.19	2,391.09	9,357.93	4,685.92	1.82	-0.59	0.316
35.00	-29.84	-17.22	0.00	-1,361.70	0.00	1,361.70	4,686.58	2,343.29	8,916.06	4,464.66	2.49	-0.69	0.311
40.00	-28.35	-16.87	0.00	-1,275.61	0.00	1,275.61	4,588.94	2,294.47	8,480.81	4,246.71	3.27	-0.80	0.307
45.00	-26.90	-16.63	0.00	-1,191.26	0.00	1,191.26	4,489.25	2,244.63	8,052.51	4,032.24	4.17	-0.91	0.301
46.71	-26.40	-16.45	0.00	-1,162.89	0.00	1,162.89	4,454.76	2,227.38	7,907.97	3,959.86	4.50	-0.95	0.300
50.00	-24.78	-16.21	0.00	-1,108.72	0.00	1,108.72	4,377.60	2,188.80	7,614.23	3,812.78	5.18	-1.02	0.297
52.79	-23.42	-16.02	0.00	-1,063.48	0.00	1,063.48	3,613.14	1,806.57	6,305.68	3,157.53	5.80	-1.09	0.343
55.00	-22.87	-15.76	0.00	-1,028.09	0.00	1,028.09	3,578.23	1,789.12	6,158.78	3,083.97	6.31	-1.14	0.340
60.00	-21.67	-15.40	0.00	-949.28	0.00	949.28	3,497.79	1,748.90	5,830.16	2,919.41	7.57	-1.27	0.331
65.00	-20.50	-15.03	0.00	-872.29	0.00	872.29	3,415.31	1,707.65	5,506.99	2,757.59	8.97	-1.39	0.322
70.00	-19.37	-14.67	0.00	-797.13	0.00	797.13	3,330.78	1,665.39	5,189.62	2,598.67	10.50	-1.52	0.313
75.00	-18.27	-14.31	0.00	-723.78	0.00	723.78	3,243.59	1,621.79	4,877.42	2,442.34	12.16	-1.65	0.302
80.00	-17.20	-13.95	0.00	-652.23	0.00	652.23	3,127.49	1,563.75	4,532.82	2,269.78	13.97	-1.79	0.293
85.00	-16.16	-13.60	0.00	-582.48	0.00	582.48	3,011.40	1,505.70	4,200.83	2,103.54	15.91	-1.92	0.282
90.00	-15.16	-13.25	0.00	-514.51	0.00	514.51	2,895.30	1,447.65	3,881.48	1,943.62	17.99	-2.05	0.270
94.95	-14.21	-13.05	0.00	-448.89	0.00	448.89	2,780.28	1,390.14	3,577.55	1,791.43	20.19	-2.18	0.256
95.00	-14.19	-12.91	0.00	-448.29	0.00	448.29	2,779.20	1,389.60	3,574.75	1,790.03	20.21	-2.18	0.256
99.54	-12.89	-12.70	0.00	-389.72	0.00	389.72	1,702.59	851.29	2,158.67	1,080.94	22.33	-2.30	0.368
100.00	-12.81	-12.54	0.00	-383.83	0.00	383.83	1,698.09	849.05	2,144.41	1,073.80	22.56	-2.31	0.365
105.00	-12.13	-12.22	0.00	-321.15	0.00	321.15	1,648.46	824.23	1,992.11	997.54	25.07	-2.48	0.330
110.00	-11.47	-11.90	0.00	-260.07	0.00	260.07	1,596.78	798.39	1,842.85	922.79	27.76	-2.64	0.289
115.00	-7.91	-8.43	0.00	-196.41	0.00	196.41	1,543.06	771.53	1,696.96	849.74	30.60	-2.79	0.236
117.00	-7.65	-8.19	0.00	-179.38	0.00	179.38	1,521.01	760.50	1,639.62	821.03	31.78	-2.84	0.224
120.00	-7.30	-7.95	0.00	-154.81	0.00	154.81	1,487.30	743.65	1,554.78	778.54	33.60	-2.92	0.204
125.00	-6.74	-7.78	0.00	-115.05	0.00	115.05	1,425.26	712.63	1,412.43	707.26	36.72	-3.04	0.168
125.17	-6.72	-7.67	0.00	-113.75	0.00	113.75	1,422.68	711.34	1,407.29	704.69	36.83	-3.04	0.166
128.83	-6.12	-7.51	0.00	-85.62	0.00	85.62	970.32	485.16	941.18	471.29	39.19	-3.12	0.188
130.00	-5.15	-6.67	0.00	-76.86	0.00	76.86	961.96	480.98	920.87	461.12	39.96	-3.14	0.172
135.00	-3.44	-4.01	0.00	-43.49	0.00	43.49	924.86	462.43	835.07	418.16	43.30	-3.23	0.108
140.00	-3.10	-3.74	0.00	-23.45	0.00	23.45	885.72	442.86	751.58	376.35	46.71	-3.29	0.066
145.00	-1.90	-1.44	0.00	-1.04	0.00	1.04	844.53	422.27	670.72	335.86	50.17	-3.32	0.005
145.50	-0.15	-0.09	0.00	-0.32	0.00	0.32	840.30	420.15	662.79	331.89	50.52	-3.32	0.001
149.00	0.00	-0.08	0.00	0.00	0.00	0.00	809.65	404.83	607.80	304.35	52.95	-3.32	0.000

Load Case: 0.9D + 1.6W — 97 mph with No Ice (Reduced DL) — 23 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

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		214.5	0.0					0.0	0.0	214.5	0.0	0.0	0.0
5.00		424.0	1,167.4					0.0	129.1	424.0	1,296.5	0.0	0.0
10.00		413.8	1,139.5					0.0	129.1	413.8	1,268.6	0.0	0.0
15.00		403.6	1,111.6					0.0	129.1	403.6	1,240.7	0.0	0.0
20.00		393.5	1,083.7					0.0	129.1	393.5	1,212.8	0.0	0.0
25.00		383.3	1,055.8					0.0	129.1	383.3	1,184.9	0.0	0.0
30.00		377.5	1,027.9					0.0	129.1	377.5	1,157.0	0.0	0.0
35.00		379.3	999.9					0.0	129.1	379.3	1,129.1	0.0	0.0
40.00		383.0	972.0					0.0	129.1	383.0	1,101.1	0.0	0.0
45.00		257.9	944.1					0.0	129.1	257.9	1,073.2	0.0	0.0
46.71	Bot - Section 2	194.7	315.9					0.0	44.1	194.7	359.9	0.0	0.0
50.00		238.2	1,124.6					0.0	85.0	238.2	1,209.7	0.0	0.0
52.79	Top - Section 1	195.6	935.2					0.0	72.0	195.6	1,007.2	0.0	0.0
55.00		281.0	340.1					0.0	57.1	281.0	397.2	0.0	0.0
60.00		387.6	752.3					0.0	129.1	387.6	881.4	0.0	0.0
65.00		383.9	728.3					0.0	129.1	383.9	857.4	0.0	0.0
70.00		379.2	704.4					0.0	129.1	379.2	833.5	0.0	0.0
75.00		373.5	680.5					0.0	129.1	373.5	809.6	0.0	0.0
80.00		367.0	656.6					0.0	129.1	367.0	785.7	0.0	0.0
85.00		359.7	632.6					0.0	129.1	359.7	761.7	0.0	0.0
90.00		350.0	608.7					0.0	129.1	350.0	737.8	0.0	0.0
94.95	Bot - Section 3	173.8	579.4					0.0	127.9	173.8	707.3	0.0	0.0
95.00		157.8	9.0					0.0	1.2	157.8	10.2	0.0	0.0
99.54	Top - Section 2	171.9	856.7					0.0	117.1	171.9	973.8	0.0	0.0
100.00		182.9	34.7					0.0	12.0	182.9	46.6	0.0	0.0
105.00		329.3	365.5					0.0	129.1	329.3	494.6	0.0	0.0
110.00		319.0	349.6					0.0	129.1	319.0	478.7	0.0	0.0
115.00	Appurtenance(s)	218.0	333.6	3,093.1	0.0	4,162.9	2,324.3	0.0	129.1	3,311.1	2,787.1	0.0	0.0
117.00	Appurtenance(s)	151.3	129.0	84.0	0.0	168.0	19.3	0.0	47.0	235.3	195.2	0.0	0.0
120.00		235.5	188.7					0.0	70.4	235.5	259.1	0.0	0.0
125.00		150.2	301.7					0.0	117.4	150.2	419.1	0.0	0.0
125.17	Bot - Section 4	109.1	9.8					0.0	3.9	109.1	13.7	0.0	0.0
128.83	Top - Section 3	136.8	371.7					0.0	86.1	136.8	457.8	0.0	0.0
130.00	Appurtenance(s)	167.9	49.9	627.3	0.0	0.0	675.0	0.0	27.4	795.2	752.3	0.0	0.0
135.00	Appurtenance(s)	264.4	206.4	2,299.2	0.0	36.6	1,064.9	0.0	117.4	2,563.6	1,388.6	0.0	0.0
140.00		251.3	194.4					0.0	66.3	251.3	260.7	0.0	0.0
145.00	Appurtenance(s)	134.2	182.4	2,089.8	0.0	3,717.3	750.1	0.0	66.3	2,224.0	998.8	0.0	0.0
145.50	Appurtenance(s)	93.0	17.6	1,156.2	0.0	0.0	1,350.0	0.0	0.0	1,249.2	1,367.6	0.0	0.0
149.00		81.1	119.7					0.0	0.0	81.1	119.7	0.0	0.0
								Totals:		19,818.0	31,036.1	0.00	0.00

Load Case: 0.9D + 1.6W — 97 mph with No Ice (Reduced DL) — 23 Iterations

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-31.02	-19.63	0.00	-1,997.13	0.00	1,997.13	5,312.91	2,656.45	12,129.5	6,073.81	0.00	0.00	0.335
5.00	-29.69	-19.25	0.00	-1,898.99	0.00	1,898.99	5,229.56	2,614.78	11,654.9	5,836.15	0.05	-0.09	0.331
10.00	-28.39	-18.88	0.00	-1,802.73	0.00	1,802.73	5,144.17	2,572.09	11,184.9	5,600.81	0.20	-0.19	0.327
15.00	-27.12	-18.52	0.00	-1,708.32	0.00	1,708.32	5,056.74	2,528.37	10,719.9	5,367.95	0.44	-0.28	0.324
20.00	-25.88	-18.16	0.00	-1,615.73	0.00	1,615.73	4,967.26	2,483.63	10,260.2	5,137.73	0.79	-0.38	0.320
25.00	-24.67	-17.81	0.00	-1,524.91	0.00	1,524.91	4,875.75	2,437.87	9,806.10	4,910.34	1.24	-0.48	0.316
30.00	-23.48	-17.47	0.00	-1,435.84	0.00	1,435.84	4,782.19	2,391.09	9,357.93	4,685.92	1.80	-0.58	0.311
35.00	-22.33	-17.12	0.00	-1,348.50	0.00	1,348.50	4,686.58	2,343.29	8,916.06	4,464.66	2.47	-0.69	0.307
40.00	-21.20	-16.76	0.00	-1,262.91	0.00	1,262.91	4,588.94	2,294.47	8,480.81	4,246.71	3.24	-0.79	0.302
45.00	-20.11	-16.51	0.00	-1,179.10	0.00	1,179.10	4,489.25	2,244.63	8,052.51	4,032.24	4.13	-0.90	0.297
46.71	-19.74	-16.33	0.00	-1,150.92	0.00	1,150.92	4,454.76	2,227.38	7,907.97	3,959.86	4.46	-0.94	0.295
50.00	-18.51	-16.09	0.00	-1,097.14	0.00	1,097.14	4,377.60	2,188.80	7,614.23	3,812.78	5.13	-1.01	0.292
52.79	-17.49	-15.90	0.00	-1,052.24	0.00	1,052.24	3,613.14	1,806.57	6,305.68	3,157.53	5.75	-1.08	0.338
55.00	-17.08	-15.64	0.00	-1,017.10	0.00	1,017.10	3,578.23	1,789.12	6,158.78	3,083.97	6.26	-1.13	0.335
60.00	-16.17	-15.27	0.00	-938.92	0.00	938.92	3,497.79	1,748.90	5,830.16	2,919.41	7.50	-1.25	0.326
65.00	-15.29	-14.90	0.00	-862.59	0.00	862.59	3,415.31	1,707.65	5,506.99	2,757.59	8.89	-1.38	0.317
70.00	-14.43	-14.53	0.00	-788.11	0.00	788.11	3,330.78	1,665.39	5,189.62	2,598.67	10.40	-1.51	0.308
75.00	-13.60	-14.16	0.00	-715.46	0.00	715.46	3,243.59	1,621.79	4,877.42	2,442.34	12.05	-1.64	0.297
80.00	-12.79	-13.80	0.00	-644.64	0.00	644.64	3,127.49	1,563.75	4,532.82	2,269.78	13.84	-1.77	0.288
85.00	-12.01	-13.45	0.00	-575.62	0.00	575.62	3,011.40	1,505.70	4,200.83	2,103.54	15.76	-1.90	0.278
90.00	-11.26	-13.10	0.00	-508.39	0.00	508.39	2,895.30	1,447.65	3,881.48	1,943.62	17.82	-2.03	0.266
94.95	-10.55	-12.91	0.00	-443.52	0.00	443.52	2,780.28	1,390.14	3,577.55	1,791.43	19.99	-2.16	0.251
95.00	-10.53	-12.76	0.00	-442.91	0.00	442.91	2,779.20	1,389.60	3,574.75	1,790.03	20.01	-2.16	0.251
99.54	-9.55	-12.56	0.00	-385.02	0.00	385.02	1,702.59	851.29	2,158.67	1,080.94	22.12	-2.27	0.362
100.00	-9.49	-12.39	0.00	-379.20	0.00	379.20	1,698.09	849.05	2,144.41	1,073.80	22.34	-2.28	0.359
105.00	-8.97	-12.07	0.00	-317.23	0.00	317.23	1,648.46	824.23	1,992.11	997.54	24.83	-2.45	0.324
110.00	-8.48	-11.75	0.00	-256.88	0.00	256.88	1,596.78	798.39	1,842.85	922.79	27.48	-2.61	0.284
115.00	-5.83	-8.32	0.00	-193.95	0.00	193.95	1,543.06	771.53	1,696.96	849.74	30.30	-2.76	0.232
117.00	-5.64	-8.09	0.00	-177.13	0.00	177.13	1,521.01	760.50	1,639.62	821.03	31.47	-2.81	0.220
120.00	-5.38	-7.85	0.00	-152.87	0.00	152.87	1,487.30	743.65	1,554.78	778.54	33.26	-2.89	0.200
125.00	-4.96	-7.68	0.00	-113.63	0.00	113.63	1,425.26	712.63	1,412.43	707.26	36.35	-3.01	0.164
125.17	-4.95	-7.58	0.00	-112.35	0.00	112.35	1,422.68	711.34	1,407.29	704.69	36.46	-3.01	0.163
128.83	-4.49	-7.42	0.00	-84.58	0.00	84.58	970.32	485.16	941.18	471.29	38.80	-3.08	0.184
130.00	-3.78	-6.59	0.00	-75.92	0.00	75.92	961.96	480.98	920.87	461.12	39.56	-3.10	0.169
135.00	-2.53	-3.95	0.00	-42.95	0.00	42.95	924.86	462.43	835.07	418.16	42.86	-3.19	0.106
140.00	-2.28	-3.69	0.00	-23.18	0.00	23.18	885.72	442.86	751.58	376.35	46.23	-3.25	0.064
145.00	-1.41	-1.41	0.00	-1.01	0.00	1.01	844.53	422.27	670.72	335.86	49.66	-3.28	0.005
145.50	-0.11	-0.09	0.00	-0.31	0.00	0.31	840.30	420.15	662.79	331.89	50.00	-3.28	0.001
149.00	0.00	-0.08	0.00	0.00	0.00	0.00	809.65	404.83	607.80	304.35	52.40	-3.28	0.000

Load Case: 1.2D + 1.0Di + 1.0Wi — 50 mph with 0.75 in Radial Ice — 22 Iterations

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

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		68.5	0.0					0.0	0.0	68.5	0.0	0.0	0.0
5.00		135.7	1,962.0					0.0	172.1	135.7	2,134.2	0.0	0.0
10.00		133.1	1,962.3					0.0	172.1	133.1	2,134.5	0.0	0.0
15.00		130.2	1,937.7					0.0	172.1	130.2	2,109.8	0.0	0.0
20.00		127.3	1,904.9					0.0	172.1	127.3	2,077.0	0.0	0.0
25.00		124.3	1,867.8					0.0	172.1	124.3	2,039.9	0.0	0.0
30.00		122.8	1,828.0					0.0	172.1	122.8	2,000.2	0.0	0.0
35.00		123.7	1,786.4					0.0	172.1	123.7	1,958.6	0.0	0.0
40.00		125.2	1,743.5					0.0	172.1	125.2	1,915.6	0.0	0.0
45.00		84.4	1,699.4					0.0	172.1	84.4	1,871.5	0.0	0.0
46.71	Bot - Section 2	63.9	571.2					0.0	58.8	63.9	630.0	0.0	0.0
50.00		78.2	1,790.0					0.0	113.4	78.2	1,903.4	0.0	0.0
52.79	Top - Section 1	64.3	1,490.5					0.0	96.1	64.3	1,586.6	0.0	0.0
55.00		92.5	644.9					0.0	76.1	92.5	721.0	0.0	0.0
60.00		127.9	1,425.9					0.0	172.1	127.9	1,598.0	0.0	0.0
65.00		127.1	1,384.5					0.0	172.1	127.1	1,556.6	0.0	0.0
70.00		125.9	1,342.7					0.0	172.1	125.9	1,514.8	0.0	0.0
75.00		124.4	1,300.4					0.0	172.1	124.4	1,472.6	0.0	0.0
80.00		122.7	1,257.8					0.0	172.1	122.7	1,429.9	0.0	0.0
85.00		120.7	1,214.9					0.0	172.1	120.7	1,387.0	0.0	0.0
90.00		117.9	1,171.7					0.0	172.1	117.9	1,343.8	0.0	0.0
94.95	Bot - Section 3	58.6	1,117.9					0.0	170.5	58.6	1,288.5	0.0	0.0
95.00		53.4	15.3					0.0	1.6	53.4	16.9	0.0	0.0
99.54	Top - Section 2	58.2	1,453.5					0.0	156.2	58.2	1,609.7	0.0	0.0
100.00		62.2	78.0					0.0	16.0	62.2	93.9	0.0	0.0
105.00		112.3	817.3					0.0	172.1	112.3	989.4	0.0	0.0
110.00		109.3	783.8					0.0	172.1	109.3	955.9	0.0	0.0
115.00	Appurtenance(s)	75.0	750.1	759.7	0.0	910.2	4,953.7	0.0	172.1	834.7	5,875.9	0.0	0.0
117.00	Appurtenance(s)	52.3	292.2	19.6	0.0	39.2	80.7	0.0	62.6	71.9	435.6	0.0	0.0
120.00		81.8	427.3					0.0	93.9	81.8	521.2	0.0	0.0
125.00		52.2	682.1					0.0	156.5	52.2	838.7	0.0	0.0
125.17	Bot - Section 4	38.1	22.4					0.0	5.2	38.1	27.6	0.0	0.0
128.83	Top - Section 3	47.8	696.6					0.0	114.8	47.8	811.4	0.0	0.0
130.00	Appurtenance(s)	59.1	129.8	191.6	0.0	0.0	1,369.1	0.0	36.5	250.7	1,535.4	0.0	0.0
135.00	Appurtenance(s)	93.5	533.0	483.5	0.0	13.0	2,994.2	0.0	156.5	577.0	3,683.7	0.0	0.0
140.00		89.7	503.9					0.0	88.4	89.7	592.2	0.0	0.0
145.00	Appurtenance(s)	48.1	474.6	461.8	0.0	805.0	2,804.4	0.0	88.4	510.0	3,367.3	0.0	0.0
145.50	Appurtenance(s)	33.6	46.5	332.3	0.0	0.0	2,147.1	0.0	0.0	366.0	2,193.6	0.0	0.0
149.00		29.4	314.1					0.0	0.0	29.4	314.1	0.0	0.0
								Totals:		5,743.80	58,536.2	0.00	0.00

Site Number: 370641 Code: ANSI/TIA-222-G

Site Name: Beacon Falls CT, CT Engineering Number:12927148_C3_02 7/17/2019 7:50:24 PM

Customer: T-MOBILE

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 22 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	-58.53	-5.69	0.00	-566.72	0.00	566.72	5,312.91	2,656.45	12,129.5	6,073.81	0.00	0.00	0.104
5.00	-56.40	-5.58	0.00	-538.28	0.00	538.28	5,229.56	2,614.78	11,654.9	5,836.15	0.01	-0.03	0.103
10.00	-54.26	-5.47	0.00	-510.39	0.00	510.39	5,144.17	2,572.09	11,184.9	5,600.81	0.06	-0.05	0.102
15.00	-52.15	-5.36	0.00	-483.05	0.00	483.05	5,056.74	2,528.37	10,719.9	5,367.95	0.13	-0.08	0.100
20.00	-50.07	-5.25	0.00	-456.24	0.00	456.24	4,967.26	2,483.63	10,260.2	5,137.73	0.22	-0.11	0.099
25.00	-48.03	-5.15	0.00	-429.97	0.00	429.97	4,875.75	2,437.87	9,806.10	4,910.34	0.35	-0.14	0.097
30.00	-46.03	-5.05	0.00	-404.22	0.00	404.22	4,782.19	2,391.09	9,357.93	4,685.92	0.51	-0.16	0.096
35.00	-44.06	-4.94	0.00	-378.99	0.00	378.99	4,686.58	2,343.29	8,916.06	4,464.66	0.70	-0.19	0.094
40.00	-42.15	-4.83	0.00	-354.30	0.00	354.30	4,588.94	2,294.47	8,480.81	4,246.71	0.92	-0.22	0.093
45.00	-40.27	-4.75	0.00	-330.16	0.00	330.16	4,489.25	2,244.63	8,052.51	4,032.24	1.17	-0.25	0.091
46.71	-39.64	-4.69	0.00	-322.05	0.00	322.05	4,454.76	2,227.38	7,907.97	3,959.86	1.26	-0.26	0.090
50.00	-37.74	-4.62	0.00	-306.59	0.00	306.59	4,377.60	2,188.80	7,614.23	3,812.78	1.45	-0.29	0.089
52.79	-36.15	-4.56	0.00	-293.70	0.00	293.70	3,613.14	1,806.57	6,305.68	3,157.53	1.62	-0.30	0.103
55.00	-35.43	-4.48	0.00	-283.63	0.00	283.63	3,578.23	1,789.12	6,158.78	3,083.97	1.77	-0.32	0.102
60.00	-33.83	-4.36	0.00	-261.25	0.00	261.25	3,497.79	1,748.90	5,830.16	2,919.41	2.12	-0.35	0.099
65.00	-32.27	-4.24	0.00	-239.45	0.00	239.45	3,415.31	1,707.65	5,506.99	2,757.59	2.51	-0.39	0.096
70.00	-30.75	-4.13	0.00	-218.24	0.00	218.24	3,330.78	1,665.39	5,189.62	2,598.67	2.93	-0.42	0.093
75.00	-29.28	-4.01	0.00	-197.61	0.00	197.61	3,243.59	1,621.79	4,877.42	2,442.34	3.39	-0.46	0.090
80.00	-27.85	-3.89	0.00	-177.57	0.00	177.57	3,127.49	1,563.75	4,532.82	2,269.78	3.89	-0.50	0.087
85.00	-26.46	-3.77	0.00	-158.12	0.00	158.12	3,011.40	1,505.70	4,200.83	2,103.54	4.43	-0.53	0.084
90.00	-25.12	-3.66	0.00	-139.25	0.00	139.25	2,895.30	1,447.65	3,881.48	1,943.62	5.01	-0.57	0.080
94.95	-23.83	-3.59	0.00	-121.12	0.00	121.12	2,780.28	1,390.14	3,577.55	1,791.43	5.62	-0.60	0.076
95.00	-23.81	-3.55	0.00	-120.95	0.00	120.95	2,779.20	1,389.60	3,574.75	1,790.03	5.62	-0.60	0.076
99.54	-22.20	-3.48	0.00	-104.86	0.00	104.86	1,702.59	851.29	2,158.67	1,080.94	6.21	-0.63	0.110
100.00	-22.10	-3.43	0.00	-103.25	0.00	103.25	1,698.09	849.05	2,144.41	1,073.80	6.27	-0.64	0.109
105.00	-21.11	-3.32	0.00	-86.12	0.00	86.12	1,648.46	824.23	1,992.11	997.54	6.96	-0.68	0.099
110.00	-20.16	-3.21	0.00	-69.53	0.00	69.53	1,596.78	798.39	1,842.85	922.79	7.70	-0.73	0.088
115.00	-14.29	-2.31	0.00	-52.56	0.00	52.56	1,543.06	771.53	1,696.96	849.74	8.48	-0.77	0.071
117.00	-13.86	-2.23	0.00	-47.91	0.00	47.91	1,521.01	760.50	1,639.62	821.03	8.81	-0.78	0.067
120.00	-13.33	-2.15	0.00	-41.21	0.00	41.21	1,487.30	743.65	1,554.78	778.54	9.30	-0.80	0.062
125.00	-12.50	-2.09	0.00	-30.46	0.00	30.46	1,425.26	712.63	1,412.43	707.26	10.16	-0.83	0.052
125.17	-12.47	-2.05	0.00	-30.11	0.00	30.11	1,422.68	711.34	1,407.29	704.69	10.19	-0.83	0.051
128.83	-11.66	-2.00	0.00	-22.58	0.00	22.58	970.32	485.16	941.18	471.29	10.84	-0.85	0.060
130.00	-10.13	-1.73	0.00	-20.25	0.00	20.25	961.96	480.98	920.87	461.12	11.05	-0.86	0.054
135.00	-6.45	-1.10	0.00	-11.61	0.00	11.61	924.86	462.43	835.07	418.16	11.96	-0.88	0.035
140.00	-5.86	-1.00	0.00	-6.13	0.00	6.13	885.72	442.86	751.58	376.35	12.89	-0.90	0.023
145.00	-2.50	-0.43	0.00	-0.34	0.00	0.34	844.53	422.27	670.72	335.86	13.84	-0.91	0.004
145.50	-0.31	-0.03	0.00	-0.12	0.00	0.12	840.30	420.15	662.79	331.89	13.93	-0.91	0.001
149.00	0.00	-0.03	0.00	0.00	0.00	0.00	809.65	404.83	607.80	304.35	14.59	-0.91	0.000

Load Case: 1.0D + 1.0W Serviceability 60 mph 22 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		45.9	0.0					0.0	0.0	45.9	0.0	0.0	0.0
5.00		90.7	1,297.2					0.0	143.5	90.7	1,440.6	0.0	0.0
10.00		88.5	1,266.1					0.0	143.5	88.5	1,409.6	0.0	0.0
15.00		86.4	1,235.1					0.0	143.5	86.4	1,378.6	0.0	0.0
20.00		84.2	1,204.1					0.0	143.5	84.2	1,347.6	0.0	0.0
25.00		82.0	1,173.1					0.0	143.5	82.0	1,316.5	0.0	0.0
30.00		80.8	1,142.1					0.0	143.5	80.8	1,285.5	0.0	0.0
35.00		81.1	1,111.1					0.0	143.5	81.1	1,254.5	0.0	0.0
40.00		82.0	1,080.0					0.0	143.5	82.0	1,223.5	0.0	0.0
45.00		55.2	1,049.0					0.0	143.5	55.2	1,192.5	0.0	0.0
46.71	Bot - Section 2	41.7	351.0					0.0	49.0	41.7	399.9	0.0	0.0
50.00		51.0	1,249.6					0.0	94.5	51.0	1,344.1	0.0	0.0
52.79	Top - Section 1	41.8	1,039.1					0.0	80.0	41.8	1,119.1	0.0	0.0
55.00		60.1	377.9					0.0	63.4	60.1	441.3	0.0	0.0
60.00		82.9	835.8					0.0	143.5	82.9	979.3	0.0	0.0
65.00		82.1	809.3					0.0	143.5	82.1	952.7	0.0	0.0
70.00		81.1	782.7					0.0	143.5	81.1	926.1	0.0	0.0
75.00		79.9	756.1					0.0	143.5	79.9	899.5	0.0	0.0
80.00		78.5	729.5					0.0	143.5	78.5	873.0	0.0	0.0
85.00		77.0	702.9					0.0	143.5	77.0	846.4	0.0	0.0
90.00		74.9	676.3					0.0	143.5	74.9	819.8	0.0	0.0
94.95	Bot - Section 3	37.2	643.8					0.0	142.1	37.2	785.9	0.0	0.0
95.00		33.8	10.0					0.0	1.3	33.8	11.3	0.0	0.0
99.54	Top - Section 2	36.8	951.9					0.0	130.2	36.8	1,082.0	0.0	0.0
100.00		39.1	38.5					0.0	13.3	39.1	51.8	0.0	0.0
105.00		70.5	406.2					0.0	143.5	70.5	549.6	0.0	0.0
110.00		68.2	388.4					0.0	143.5	68.2	531.9	0.0	0.0
115.00	Appurtenance(s)	46.6	370.7	661.8	0.0	890.7	2,582.6	0.0	143.5	708.4	3,096.8	0.0	0.0
117.00	Appurtenance(s)	32.4	143.3	18.0	0.0	35.9	21.4	0.0	52.2	50.3	216.9	0.0	0.0
120.00		50.4	209.7					0.0	78.3	50.4	287.9	0.0	0.0
125.00		32.1	335.3					0.0	130.5	32.1	465.7	0.0	0.0
125.17	Bot - Section 4	23.3	10.9					0.0	4.3	23.3	15.2	0.0	0.0
128.83	Top - Section 3	29.3	413.0					0.0	95.7	29.3	508.7	0.0	0.0
130.00	Appurtenance(s)	35.9	55.4	134.2	0.0	0.0	750.0	0.0	30.4	170.1	835.8	0.0	0.0
135.00	Appurtenance(s)	56.6	229.3	491.9	0.0	7.8	1,183.2	0.0	130.5	548.5	1,542.9	0.0	0.0
140.00		53.8	216.0					0.0	73.7	53.8	289.6	0.0	0.0
145.00	Appurtenance(s)	28.7	202.7	447.1	0.0	795.4	833.4	0.0	73.7	475.8	1,109.7	0.0	0.0
145.50	Appurtenance(s)	19.9	19.5	247.4	0.0	0.0	1,500.0	0.0	0.0	267.3	1,519.5	0.0	0.0
149.00		17.4	133.0					0.0	0.0	17.4	133.0	0.0	0.0
								Totals:		4,240.28	34,484.5	0.00	0.00

Load Case: 1.0D + 1.0W Serviceability 60 mph 22 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	-34.48	-4.20	0.00	-428.49	0.00	428.49	5,312.91	2,656.45	12,129.5	6,073.81	0.00	0.00	0.077
5.00	-33.04	-4.12	0.00	-407.49	0.00	407.49	5,229.56	2,614.78	11,654.9	5,836.15	0.01	-0.02	0.076
10.00	-31.63	-4.04	0.00	-386.89	0.00	386.89	5,144.17	2,572.09	11,184.9	5,600.81	0.04	-0.04	0.075
15.00	-30.25	-3.97	0.00	-366.68	0.00	366.68	5,056.74	2,528.37	10,719.9	5,367.95	0.10	-0.06	0.074
20.00	-28.90	-3.89	0.00	-346.85	0.00	346.85	4,967.26	2,483.63	10,260.2	5,137.73	0.17	-0.08	0.073
25.00	-27.58	-3.82	0.00	-327.40	0.00	327.40	4,875.75	2,437.87	9,806.10	4,910.34	0.27	-0.10	0.072
30.00	-26.30	-3.74	0.00	-308.31	0.00	308.31	4,782.19	2,391.09	9,357.93	4,685.92	0.39	-0.12	0.071
35.00	-25.04	-3.67	0.00	-289.59	0.00	289.59	4,686.58	2,343.29	8,916.06	4,464.66	0.53	-0.15	0.070
40.00	-23.82	-3.59	0.00	-271.24	0.00	271.24	4,588.94	2,294.47	8,480.81	4,246.71	0.70	-0.17	0.069
45.00	-22.62	-3.54	0.00	-253.27	0.00	253.27	4,489.25	2,244.63	8,052.51	4,032.24	0.89	-0.19	0.068
46.71	-22.22	-3.50	0.00	-247.23	0.00	247.23	4,454.76	2,227.38	7,907.97	3,959.86	0.96	-0.20	0.067
50.00	-20.88	-3.45	0.00	-235.70	0.00	235.70	4,377.60	2,188.80	7,614.23	3,812.78	1.10	-0.22	0.067
52.79	-19.76	-3.41	0.00	-226.06	0.00	226.06	3,613.14	1,806.57	6,305.68	3,157.53	1.23	-0.23	0.077
55.00	-19.32	-3.35	0.00	-218.53	0.00	218.53	3,578.23	1,789.12	6,158.78	3,083.97	1.34	-0.24	0.076
60.00	-18.34	-3.28	0.00	-201.75	0.00	201.75	3,497.79	1,748.90	5,830.16	2,919.41	1.61	-0.27	0.074
65.00	-17.38	-3.20	0.00	-185.37	0.00	185.37	3,415.31	1,707.65	5,506.99	2,757.59	1.91	-0.30	0.072
70.00	-16.46	-3.12	0.00	-169.38	0.00	169.38	3,330.78	1,665.39	5,189.62	2,598.67	2.23	-0.32	0.070
75.00	-15.55	-3.04	0.00	-153.79	0.00	153.79	3,243.59	1,621.79	4,877.42	2,442.34	2.59	-0.35	0.068
80.00	-14.68	-2.96	0.00	-138.58	0.00	138.58	3,127.49	1,563.75	4,532.82	2,269.78	2.97	-0.38	0.066
85.00	-13.83	-2.89	0.00	-123.75	0.00	123.75	3,011.40	1,505.70	4,200.83	2,103.54	3.38	-0.41	0.063
90.00	-13.01	-2.81	0.00	-109.31	0.00	109.31	2,895.30	1,447.65	3,881.48	1,943.62	3.83	-0.44	0.061
94.95	-12.23	-2.77	0.00	-95.37	0.00	95.37	2,780.28	1,390.14	3,577.55	1,791.43	4.29	-0.46	0.058
95.00	-12.21	-2.74	0.00	-95.24	0.00	95.24	2,779.20	1,389.60	3,574.75	1,790.03	4.30	-0.46	0.058
99.54	-11.13	-2.70	0.00	-82.80	0.00	82.80	1,702.59	851.29	2,158.67	1,080.94	4.75	-0.49	0.083
100.00	-11.08	-2.66	0.00	-81.55	0.00	81.55	1,698.09	849.05	2,144.41	1,073.80	4.80	-0.49	0.082
105.00	-10.53	-2.60	0.00	-68.23	0.00	68.23	1,648.46	824.23	1,992.11	997.54	5.33	-0.53	0.075
110.00	-10.00	-2.53	0.00	-55.25	0.00	55.25	1,596.78	798.39	1,842.85	922.79	5.90	-0.56	0.066
115.00	-6.91	-1.79	0.00	-41.72	0.00	41.72	1,543.06	771.53	1,696.96	849.74	6.51	-0.59	0.054
117.00	-6.69	-1.74	0.00	-38.11	0.00	38.11	1,521.01	760.50	1,639.62	821.03	6.76	-0.60	0.051
120.00	-6.40	-1.69	0.00	-32.89	0.00	32.89	1,487.30	743.65	1,554.78	778.54	7.15	-0.62	0.047
125.00	-5.94	-1.65	0.00	-24.45	0.00	24.45	1,425.26	712.63	1,412.43	707.26	7.81	-0.65	0.039
125.17	-5.92	-1.63	0.00	-24.17	0.00	24.17	1,422.68	711.34	1,407.29	704.69	7.83	-0.65	0.038
128.83	-5.41	-1.60	0.00	-18.19	0.00	18.19	970.32	485.16	941.18	471.29	8.34	-0.66	0.044
130.00	-4.58	-1.42	0.00	-16.33	0.00	16.33	961.96	480.98	920.87	461.12	8.50	-0.67	0.040
135.00	-3.04	-0.85	0.00	-9.24	0.00	9.24	924.86	462.43	835.07	418.16	9.21	-0.69	0.025
140.00	-2.75	-0.79	0.00	-4.99	0.00	4.99	885.72	442.86	751.58	376.35	9.93	-0.70	0.016
145.00	-1.65	-0.30	0.00	-0.22	0.00	0.22	844.53	422.27	670.72	335.86	10.67	-0.71	0.003
145.50	-0.13	-0.02	0.00	-0.07	0.00	0.07	840.30	420.15	662.79	331.89	10.74	-0.71	0.000
149.00	0.00	-0.02	0.00	0.00	0.00	0.00	809.65	404.83	607.80	304.35	11.26	-0.71	0.000

Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.19	
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}):	0.20	
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10	
Seismic Response Coefficient (C_s):	0.03	
Upper Limit C_s	0.03	
Lower Limit C_s	0.03	
Period based on Rayleigh Method (sec):	1.86	
Redundancy Factor (p):	1.30	
Seismic Force Distribution Exponent (k):	1.68	
Total Unfactored Dead Load:	34.48	k
Seismic Base Shear (E):	1.54	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)
38	147.25	133	586	0.011	16	165
37	145.25	20	84	0.002	2	24
36	142.50	276	1,152	0.021	32	343
35	137.50	290	1,137	0.020	31	359
34	132.50	360	1,327	0.024	37	446
33	129.42	86	304	0.005	8	106
32	127.00	509	1,747	0.031	48	631
31	125.08	15	51	0.001	1	19
30	122.50	466	1,505	0.027	42	578
29	118.50	288	880	0.016	24	357
28	116.00	195	577	0.010	16	243
27	112.50	514	1,440	0.026	40	638
26	107.50	532	1,380	0.025	38	660
25	102.50	550	1,316	0.024	36	682
24	99.77	52	119	0.002	3	64
23	97.27	1,082	2,373	0.043	66	1,342
22	94.98	11	24	0.000	1	14
21	92.48	786	1,584	0.028	44	975
20	87.50	820	1,505	0.027	42	1,017
19	82.50	846	1,408	0.025	39	1,050
18	77.50	873	1,307	0.023	36	1,083
17	72.50	900	1,204	0.022	33	1,116
16	67.50	926	1,099	0.020	30	1,149

15	62.50	953	994	0.018	28	1,182
14	57.50	979	888	0.016	25	1,215
13	53.90	441	359	0.006	10	547
12	51.40	1,119	840	0.015	23	1,388
11	48.35	1,344	911	0.016	25	1,667
10	45.85	400	248	0.004	7	496
9	42.50	1,192	650	0.012	18	1,479
8	37.50	1,223	541	0.010	15	1,518
7	32.50	1,255	436	0.008	12	1,556
6	27.50	1,286	337	0.006	9	1,595
5	22.50	1,317	247	0.004	7	1,633
4	17.50	1,348	165	0.003	5	1,672
3	12.50	1,379	96	0.002	3	1,710
2	7.50	1,410	42	0.001	1	1,749
1	2.50	1,441	7	0.000	0	1,787
Flat Low Profile Pla	145.50	1,500	6,474	0.116	179	1,861
Powerwave Allgon LGP	145.00	32	136	0.002	4	39
Powerwave Allgon 702	145.00	13	57	0.001	2	16
Powerwave Allgon LGP	145.00	85	363	0.007	10	105
Raycap DC6-48-60-18-	145.00	32	136	0.002	4	39
Ericsson RRUS 11 (Ba	145.00	150	644	0.012	18	186
Ericsson RRUS 32 B2	145.00	159	682	0.012	19	197
Allgon 7770.00	145.00	210	901	0.016	25	261
CCI HPA-65R-BUU-H6	145.00	153	657	0.012	18	190
Ericsson KRY 112 144	135.00	33	126	0.002	3	41
Ericsson Radio 4449	135.00	222	845	0.015	23	275
Ericsson AIR 21 B4A	135.00	270	1,027	0.018	28	335
Ericsson AIR 21, 1.3	135.00	275	1,045	0.019	29	341
RFS APXVAARR24_43-U-	135.00	384	1,460	0.026	40	476
Round T-Arm	130.00	750	2,679	0.048	74	930
RFS DB-B1-6C-12AB-0Z	117.00	21	64	0.001	2	27
Alcatel-Lucent RRH2X	115.00	86	250	0.004	7	107
Alcatel-Lucent RRH2x	115.00	113	330	0.006	9	141
RFS DB-B1-6C-12AB-0Z	115.00	21	62	0.001	2	27
Alcatel-Lucent B66A	115.00	114	330	0.006	9	141
Andrew HBXX-6517DS-A	115.00	172	500	0.009	14	213
Commscope LNX-6515DS	115.00	201	585	0.011	16	250
Generic Round Low Pr	115.00	1,875	5,449	0.098	151	2,326
		34,485	55,669	1.000	1,541	42,779

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)
38	147.25	133	586	0.011	16	114
37	145.25	20	84	0.002	2	17
36	142.50	276	1,152	0.021	32	238
35	137.50	290	1,137	0.020	31	249
34	132.50	360	1,327	0.024	37	309
33	129.42	86	304	0.005	8	74
32	127.00	509	1,747	0.031	48	437
31	125.08	15	51	0.001	1	13
30	122.50	466	1,505	0.027	42	400
29	118.50	288	880	0.016	24	247
28	116.00	195	577	0.010	16	168
27	112.50	514	1,440	0.026	40	442
26	107.50	532	1,380	0.025	38	457
25	102.50	550	1,316	0.024	36	472
24	99.77	52	119	0.002	3	45
23	97.27	1,082	2,373	0.043	66	930

22	94.98	11	24	0.000	1	10
21	92.48	786	1,584	0.028	44	675
20	87.50	820	1,505	0.027	42	705
19	82.50	846	1,408	0.025	39	727
18	77.50	873	1,307	0.023	36	750
17	72.50	900	1,204	0.022	33	773
16	67.50	926	1,099	0.020	30	796
15	62.50	953	994	0.018	28	819
14	57.50	979	888	0.016	25	842
13	53.90	441	359	0.006	10	379
12	51.40	1,119	840	0.015	23	962
11	48.35	1,344	911	0.016	25	1,155
10	45.85	400	248	0.004	7	344
9	42.50	1,192	650	0.012	18	1,025
8	37.50	1,223	541	0.010	15	1,052
7	32.50	1,255	436	0.008	12	1,078
6	27.50	1,286	337	0.006	9	1,105
5	22.50	1,317	247	0.004	7	1,132
4	17.50	1,348	165	0.003	5	1,158
3	12.50	1,379	96	0.002	3	1,185
2	7.50	1,410	42	0.001	1	1,211
1	2.50	1,441	7	0.000	0	1,238
Flat Low Profile Pla	145.50	1,500	6,474	0.116	179	1,289
Powerwave Allgon LGP	145.00	32	136	0.002	4	27
Powerwave Allgon 702	145.00	13	57	0.001	2	11
Powerwave Allgon LGP	145.00	85	363	0.007	10	73
Raycap DC6-48-60-18-	145.00	32	136	0.002	4	27
Ericsson RRUS 11 (Ba	145.00	150	644	0.012	18	129
Ericsson RRUS 32 B2	145.00	159	682	0.012	19	137
Allgon 7770.00	145.00	210	901	0.016	25	180
CCI HPA-65R-BUU-H6	145.00	153	657	0.012	18	131
Ericsson KRY 112 144	135.00	33	126	0.002	3	28
Ericsson Radio 4449	135.00	222	845	0.015	23	191
Ericsson AIR 21 B4A	135.00	270	1,027	0.018	28	232
Ericsson AIR 21, 1.3	135.00	275	1,045	0.019	29	236
RFS APXVAARR24_43-U-	135.00	384	1,460	0.026	40	330
Round T-Arm	130.00	750	2,679	0.048	74	645
RFS DB-B1-6C-12AB-0Z	117.00	21	64	0.001	2	18
Alcatel-Lucent RRH2X	115.00	86	250	0.004	7	74
Alcatel-Lucent RRH2x	115.00	113	330	0.006	9	97
RFS DB-B1-6C-12AB-0Z	115.00	21	62	0.001	2	18
Alcatel-Lucent B66A	115.00	114	330	0.006	9	98
Andrew HBXX-6517DS-A	115.00	172	500	0.009	14	148
Commscope LNX-6515DS	115.00	201	585	0.011	16	173
Generic Round Low Pr	115.00	1,875	5,449	0.098	151	1,611
		34,485	55,669	1.000	1,541	29,638

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	-40.99	-1.54	0.00	-173.53	0.00	173.53	5,312.91	2,656.45	12,129.5	6,073.81	0.00	0.00	0.036
5.00	-39.24	-1.55	0.00	-165.82	0.00	165.82	5,229.56	2,614.78	11,654.9	5,836.15	0.00	-0.01	0.036
10.00	-37.53	-1.55	0.00	-158.08	0.00	158.08	5,144.17	2,572.09	11,184.9	5,600.81	0.02	-0.02	0.036
15.00	-35.86	-1.55	0.00	-150.33	0.00	150.33	5,056.74	2,528.37	10,719.9	5,367.95	0.04	-0.02	0.035
20.00	-34.23	-1.55	0.00	-142.58	0.00	142.58	4,967.26	2,483.63	10,260.2	5,137.73	0.07	-0.03	0.035
25.00	-32.63	-1.54	0.00	-134.84	0.00	134.84	4,875.75	2,437.87	9,806.10	4,910.34	0.11	-0.04	0.034
30.00	-31.08	-1.53	0.00	-127.12	0.00	127.12	4,782.19	2,391.09	9,357.93	4,685.92	0.16	-0.05	0.034
35.00	-29.56	-1.52	0.00	-119.45	0.00	119.45	4,686.58	2,343.29	8,916.06	4,464.66	0.22	-0.06	0.033
40.00	-28.08	-1.51	0.00	-111.84	0.00	111.84	4,588.94	2,294.47	8,480.81	4,246.71	0.28	-0.07	0.032
45.00	-27.58	-1.50	0.00	-104.30	0.00	104.30	4,489.25	2,244.63	8,052.51	4,032.24	0.36	-0.08	0.032
46.71	-25.91	-1.48	0.00	-101.74	0.00	101.74	4,454.76	2,227.38	7,907.97	3,959.86	0.39	-0.08	0.032
50.00	-24.53	-1.46	0.00	-96.87	0.00	96.87	4,377.60	2,188.80	7,614.23	3,812.78	0.45	-0.09	0.031
52.79	-23.98	-1.45	0.00	-92.81	0.00	92.81	3,613.14	1,806.57	6,305.68	3,157.53	0.51	-0.09	0.036
55.00	-22.76	-1.42	0.00	-89.61	0.00	89.61	3,578.23	1,789.12	6,158.78	3,083.97	0.55	-0.10	0.035
60.00	-21.58	-1.40	0.00	-82.50	0.00	82.50	3,497.79	1,748.90	5,830.16	2,919.41	0.66	-0.11	0.034
65.00	-20.43	-1.37	0.00	-75.51	0.00	75.51	3,415.31	1,707.65	5,506.99	2,757.59	0.78	-0.12	0.033
70.00	-19.32	-1.34	0.00	-68.67	0.00	68.67	3,330.78	1,665.39	5,189.62	2,598.67	0.92	-0.13	0.032
75.00	-18.23	-1.30	0.00	-61.99	0.00	61.99	3,243.59	1,621.79	4,877.42	2,442.34	1.06	-0.14	0.031
80.00	-17.18	-1.26	0.00	-55.48	0.00	55.48	3,127.49	1,563.75	4,532.82	2,269.78	1.22	-0.16	0.030
85.00	-16.17	-1.22	0.00	-49.17	0.00	49.17	3,011.40	1,505.70	4,200.83	2,103.54	1.39	-0.17	0.029
90.00	-15.19	-1.18	0.00	-43.06	0.00	43.06	2,895.30	1,447.65	3,881.48	1,943.62	1.57	-0.18	0.027
94.95	-15.18	-1.18	0.00	-37.22	0.00	37.22	2,780.28	1,390.14	3,577.55	1,791.43	1.76	-0.19	0.026
95.00	-13.83	-1.11	0.00	-37.17	0.00	37.17	2,779.20	1,389.60	3,574.75	1,790.03	1.76	-0.19	0.026
99.54	-13.77	-1.11	0.00	-32.14	0.00	32.14	1,702.59	851.29	2,158.67	1,080.94	1.94	-0.20	0.038
100.00	-13.09	-1.07	0.00	-31.62	0.00	31.62	1,698.09	849.05	2,144.41	1,073.80	1.96	-0.20	0.037
105.00	-12.43	-1.03	0.00	-26.27	0.00	26.27	1,648.46	824.23	1,992.11	997.54	2.18	-0.21	0.034
110.00	-11.79	-0.99	0.00	-21.11	0.00	21.11	1,596.78	798.39	1,842.85	922.79	2.41	-0.23	0.030
115.00	-8.35	-0.76	0.00	-16.14	0.00	16.14	1,543.06	771.53	1,696.96	849.74	2.65	-0.24	0.024
117.00	-7.96	-0.73	0.00	-14.63	0.00	14.63	1,521.01	760.50	1,639.62	821.03	2.75	-0.24	0.023
120.00	-7.38	-0.69	0.00	-12.44	0.00	12.44	1,487.30	743.65	1,554.78	778.54	2.91	-0.25	0.021
125.00	-7.37	-0.69	0.00	-9.01	0.00	9.01	1,425.26	712.63	1,412.43	707.26	3.17	-0.26	0.018
125.17	-6.73	-0.63	0.00	-8.90	0.00	8.90	1,422.68	711.34	1,407.29	704.69	3.18	-0.26	0.017
128.83	-6.63	-0.63	0.00	-6.57	0.00	6.57	970.32	485.16	941.18	471.29	3.38	-0.26	0.021
130.00	-5.25	-0.51	0.00	-5.84	0.00	5.84	961.96	480.98	920.87	461.12	3.45	-0.27	0.018
135.00	-3.43	-0.34	0.00	-3.29	0.00	3.29	924.86	462.43	835.07	418.16	3.73	-0.27	0.012
140.00	-3.08	-0.31	0.00	-1.57	0.00	1.57	885.72	442.86	751.58	376.35	4.02	-0.28	0.008
145.00	-0.16	-0.02	0.00	-0.01	0.00	0.01	844.53	422.27	670.72	335.86	4.31	-0.28	0.000
145.50	0.00	0.00	0.00	0.00	0.00	0.00	840.30	420.15	662.79	331.89	4.34	-0.28	0.000
149.00	0.00	0.00	0.00	0.00	0.00	0.00	809.65	404.83	607.80	304.35	4.55	-0.28	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	-28.40	-1.54	0.00	-171.98	0.00	171.98	5,312.91	2,656.45	12,129.5	6,073.81	0.00	0.00	0.034
5.00	-27.19	-1.55	0.00	-164.27	0.00	164.27	5,229.56	2,614.78	11,654.9	5,836.15	0.00	-0.01	0.033
10.00	-26.00	-1.55	0.00	-156.55	0.00	156.55	5,144.17	2,572.09	11,184.9	5,600.81	0.02	-0.02	0.033
15.00	-24.84	-1.54	0.00	-148.82	0.00	148.82	5,056.74	2,528.37	10,719.9	5,367.95	0.04	-0.02	0.033
20.00	-23.71	-1.54	0.00	-141.09	0.00	141.09	4,967.26	2,483.63	10,260.2	5,137.73	0.07	-0.03	0.032
25.00	-22.61	-1.53	0.00	-133.39	0.00	133.39	4,875.75	2,437.87	9,806.10	4,910.34	0.11	-0.04	0.032
30.00	-21.53	-1.52	0.00	-125.72	0.00	125.72	4,782.19	2,391.09	9,357.93	4,685.92	0.16	-0.05	0.031
35.00	-20.48	-1.51	0.00	-118.09	0.00	118.09	4,686.58	2,343.29	8,916.06	4,464.66	0.21	-0.06	0.031
40.00	-19.45	-1.50	0.00	-110.53	0.00	110.53	4,588.94	2,294.47	8,480.81	4,246.71	0.28	-0.07	0.030
45.00	-19.11	-1.49	0.00	-103.05	0.00	103.05	4,489.25	2,244.63	8,052.51	4,032.24	0.36	-0.08	0.030
46.71	-17.95	-1.47	0.00	-100.51	0.00	100.51	4,454.76	2,227.38	7,907.97	3,959.86	0.39	-0.08	0.029
50.00	-16.99	-1.44	0.00	-95.68	0.00	95.68	4,377.60	2,188.80	7,614.23	3,812.78	0.45	-0.09	0.029
52.79	-16.61	-1.43	0.00	-91.66	0.00	91.66	3,613.14	1,806.57	6,305.68	3,157.53	0.50	-0.09	0.034
55.00	-15.77	-1.41	0.00	-88.49	0.00	88.49	3,578.23	1,789.12	6,158.78	3,083.97	0.54	-0.10	0.033
60.00	-14.95	-1.38	0.00	-81.44	0.00	81.44	3,497.79	1,748.90	5,830.16	2,919.41	0.65	-0.11	0.032
65.00	-14.16	-1.35	0.00	-74.52	0.00	74.52	3,415.31	1,707.65	5,506.99	2,757.59	0.77	-0.12	0.031
70.00	-13.38	-1.32	0.00	-67.75	0.00	67.75	3,330.78	1,665.39	5,189.62	2,598.67	0.91	-0.13	0.030
75.00	-12.63	-1.29	0.00	-61.14	0.00	61.14	3,243.59	1,621.79	4,877.42	2,442.34	1.05	-0.14	0.029
80.00	-11.90	-1.25	0.00	-54.71	0.00	54.71	3,127.49	1,563.75	4,532.82	2,269.78	1.20	-0.15	0.028
85.00	-11.20	-1.21	0.00	-48.47	0.00	48.47	3,011.40	1,505.70	4,200.83	2,103.54	1.37	-0.16	0.027
90.00	-10.52	-1.16	0.00	-42.44	0.00	42.44	2,895.30	1,447.65	3,881.48	1,943.62	1.55	-0.18	0.025
94.95	-10.51	-1.16	0.00	-36.68	0.00	36.68	2,780.28	1,390.14	3,577.55	1,791.43	1.74	-0.19	0.024
95.00	-9.58	-1.09	0.00	-36.63	0.00	36.63	2,779.20	1,389.60	3,574.75	1,790.03	1.74	-0.19	0.024
99.54	-9.54	-1.09	0.00	-31.66	0.00	31.66	1,702.59	851.29	2,158.67	1,080.94	1.92	-0.20	0.035
100.00	-9.07	-1.06	0.00	-31.15	0.00	31.15	1,698.09	849.05	2,144.41	1,073.80	1.94	-0.20	0.034
105.00	-8.61	-1.02	0.00	-25.88	0.00	25.88	1,648.46	824.23	1,992.11	997.54	2.15	-0.21	0.031
110.00	-8.17	-0.98	0.00	-20.79	0.00	20.79	1,596.78	798.39	1,842.85	922.79	2.38	-0.22	0.028
115.00	-5.78	-0.75	0.00	-15.90	0.00	15.90	1,543.06	771.53	1,696.96	849.74	2.62	-0.24	0.022
117.00	-5.52	-0.72	0.00	-14.41	0.00	14.41	1,521.01	760.50	1,639.62	821.03	2.72	-0.24	0.021
120.00	-5.11	-0.68	0.00	-12.25	0.00	12.25	1,487.30	743.65	1,554.78	778.54	2.87	-0.25	0.019
125.00	-5.10	-0.67	0.00	-8.87	0.00	8.87	1,425.26	712.63	1,412.43	707.26	3.14	-0.25	0.016
125.17	-4.66	-0.62	0.00	-8.76	0.00	8.76	1,422.68	711.34	1,407.29	704.69	3.15	-0.26	0.016
128.83	-4.59	-0.62	0.00	-6.47	0.00	6.47	970.32	485.16	941.18	471.29	3.34	-0.26	0.018
130.00	-3.64	-0.50	0.00	-5.75	0.00	5.75	961.96	480.98	920.87	461.12	3.41	-0.26	0.016
135.00	-2.37	-0.34	0.00	-3.24	0.00	3.24	924.86	462.43	835.07	418.16	3.69	-0.27	0.010
140.00	-2.14	-0.31	0.00	-1.54	0.00	1.54	885.72	442.86	751.58	376.35	3.97	-0.27	0.007
145.00	-0.11	-0.02	0.00	-0.01	0.00	0.01	844.53	422.27	670.72	335.86	4.26	-0.28	0.000
145.50	0.00	0.00	0.00	0.00	0.00	0.00	840.30	420.15	662.79	331.89	4.29	-0.28	0.000
149.00	0.00	0.00	0.00	0.00	0.00	0.00	809.65	404.83	607.80	304.35	4.49	-0.28	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):	0.19
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}):	0.20
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	1.86
Redundancy Factor (p):	1.30

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)
38	147.25	133	1.846	1.755	1.058	0.359	41	165
37	145.25	20	1.796	1.521	0.970	0.326	6	24
36	142.50	276	1.729	1.234	0.859	0.284	68	343
35	137.50	290	1.610	0.808	0.683	0.214	54	359
34	132.50	360	1.495	0.488	0.536	0.153	48	446
33	129.42	86	1.426	0.335	0.459	0.120	9	106
32	127.00	509	1.373	0.235	0.405	0.096	42	631
31	125.08	15	1.332	0.167	0.365	0.078	1	19
30	122.50	466	1.278	0.091	0.317	0.057	23	578
29	118.50	288	1.195	0.000	0.251	0.028	7	357
28	116.00	195	1.146	-0.041	0.216	0.013	2	243
27	112.50	514	1.077	-0.082	0.173	-0.005	-2	638
26	107.50	532	0.984	-0.114	0.123	-0.023	-11	660
25	102.50	550	0.894	-0.122	0.085	-0.033	-16	682
24	99.77	52	0.847	-0.119	0.068	-0.036	-2	64
23	97.27	1,082	0.805	-0.113	0.055	-0.036	-33	1,342
22	94.98	11	0.768	-0.105	0.045	-0.034	0	14
21	92.48	786	0.728	-0.095	0.036	-0.031	-21	975
20	87.50	820	0.652	-0.071	0.021	-0.020	-14	1,017
19	82.50	846	0.579	-0.045	0.012	-0.006	-4	1,050
18	77.50	873	0.511	-0.020	0.008	0.010	7	1,083
17	72.50	900	0.447	0.002	0.006	0.024	19	1,116
16	67.50	926	0.388	0.022	0.007	0.036	29	1,149
15	62.50	953	0.333	0.037	0.010	0.044	36	1,182
14	57.50	979	0.281	0.049	0.014	0.049	41	1,215
13	53.90	441	0.247	0.056	0.017	0.051	19	547
12	51.40	1,119	0.225	0.059	0.020	0.051	50	1,388
11	48.35	1,344	0.199	0.063	0.023	0.052	60	1,667
10	45.85	400	0.179	0.065	0.026	0.052	18	496
9	42.50	1,192	0.154	0.068	0.030	0.051	53	1,479
8	37.50	1,223	0.120	0.070	0.034	0.050	53	1,518
7	32.50	1,255	0.090	0.071	0.038	0.049	53	1,556
6	27.50	1,286	0.064	0.072	0.041	0.047	53	1,595
5	22.50	1,317	0.043	0.071	0.042	0.046	52	1,633

4	17.50	1,348	0.026	0.067	0.040	0.043	50	1,672
3	12.50	1,379	0.013	0.059	0.034	0.038	46	1,710
2	7.50	1,410	0.005	0.044	0.025	0.030	37	1,749
1	2.50	1,441	0.001	0.018	0.010	0.014	17	1,787
Flat Low Profile Pla	145.50	1,500	1.802	1.549	0.981	0.330	429	1,861
Powerwave Allgon LGP	145.00	32	1.790	1.493	0.960	0.322	9	39
Powerwave Allgon 702	145.00	13	1.790	1.493	0.960	0.322	4	16
Powerwave Allgon LGP	145.00	85	1.790	1.493	0.960	0.322	24	105
Raycap DC6-48-60-18-	145.00	32	1.790	1.493	0.960	0.322	9	39
Ericsson RRUS 11 (Ba	145.00	150	1.790	1.493	0.960	0.322	42	186
Ericsson RRUS 32 B2	145.00	159	1.790	1.493	0.960	0.322	44	197
Allgon 7770.00	145.00	210	1.790	1.493	0.960	0.322	59	261
CCI HPA-65R-BUU-H6	145.00	153	1.790	1.493	0.960	0.322	43	190
Ericsson KRY 112 144	135.00	33	1.552	0.636	0.606	0.182	5	41
Ericsson Radio 4449	135.00	222	1.552	0.636	0.606	0.182	35	275
Ericsson AIR 21 B4A	135.00	270	1.552	0.636	0.606	0.182	43	335
Ericsson AIR 21, 1.3	135.00	275	1.552	0.636	0.606	0.182	43	341
RFS APXVAARR24_43-U-	135.00	384	1.552	0.636	0.606	0.182	61	476
Round T-Arm	130.00	750	1.439	0.361	0.473	0.126	82	930
RFS DB-B1-6C-12AB-0Z	117.00	21	1.165	-0.025	0.230	0.019	0	27
Alcatel-Lucent RRH2X	115.00	86	1.126	-0.054	0.203	0.007	1	107
Alcatel-Lucent RRH2x	115.00	113	1.126	-0.054	0.203	0.007	1	141
RFS DB-B1-6C-12AB-0Z	115.00	21	1.126	-0.054	0.203	0.007	0	27
Alcatel-Lucent B66A	115.00	114	1.126	-0.054	0.203	0.007	1	141
Andrew HBXX-6517DS-A	115.00	172	1.126	-0.054	0.203	0.007	1	213
Commscope LNX-	115.00	201	1.126	-0.054	0.203	0.007	1	250
Generic Round Low Pr	115.00	1,875	1.126	-0.054	0.203	0.007	12	2,326
		34,485	61.250	23.229	20.982	6.252	1,837	42,779

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)
38	147.25	133	1.846	1.755	1.058	0.359	41	114
37	145.25	20	1.796	1.521	0.970	0.326	6	17
36	142.50	276	1.729	1.234	0.859	0.284	68	238
35	137.50	290	1.610	0.808	0.683	0.214	54	249
34	132.50	360	1.495	0.488	0.536	0.153	48	309
33	129.42	86	1.426	0.335	0.459	0.120	9	74
32	127.00	509	1.373	0.235	0.405	0.096	42	437
31	125.08	15	1.332	0.167	0.365	0.078	1	13
30	122.50	466	1.278	0.091	0.317	0.057	23	400
29	118.50	288	1.195	0.000	0.251	0.028	7	247
28	116.00	195	1.146	-0.041	0.216	0.013	2	168
27	112.50	514	1.077	-0.082	0.173	-0.005	-2	442
26	107.50	532	0.984	-0.114	0.123	-0.023	-11	457
25	102.50	550	0.894	-0.122	0.085	-0.033	-16	472
24	99.77	52	0.847	-0.119	0.068	-0.036	-2	45
23	97.27	1,082	0.805	-0.113	0.055	-0.036	-33	930
22	94.98	11	0.768	-0.105	0.045	-0.034	0	10
21	92.48	786	0.728	-0.095	0.036	-0.031	-21	675
20	87.50	820	0.652	-0.071	0.021	-0.020	-14	705
19	82.50	846	0.579	-0.045	0.012	-0.006	-4	727
18	77.50	873	0.511	-0.020	0.008	0.010	7	750
17	72.50	900	0.447	0.002	0.006	0.024	19	773
16	67.50	926	0.388	0.022	0.007	0.036	29	796
15	62.50	953	0.333	0.037	0.010	0.044	36	819
14	57.50	979	0.281	0.049	0.014	0.049	41	842
13	53.90	441	0.247	0.056	0.017	0.051	19	379

12	51.40	1,119	0.225	0.059	0.020	0.051	50	962
11	48.35	1,344	0.199	0.063	0.023	0.052	60	1,155
10	45.85	400	0.179	0.065	0.026	0.052	18	344
9	42.50	1,192	0.154	0.068	0.030	0.051	53	1,025
8	37.50	1,223	0.120	0.070	0.034	0.050	53	1,052
7	32.50	1,255	0.090	0.071	0.038	0.049	53	1,078
6	27.50	1,286	0.064	0.072	0.041	0.047	53	1,105
5	22.50	1,317	0.043	0.071	0.042	0.046	52	1,132
4	17.50	1,348	0.026	0.067	0.040	0.043	50	1,158
3	12.50	1,379	0.013	0.059	0.034	0.038	46	1,185
2	7.50	1,410	0.005	0.044	0.025	0.030	37	1,211
1	2.50	1,441	0.001	0.018	0.010	0.014	17	1,238
Flat Low Profile Pla	145.50	1,500	1.802	1.549	0.981	0.330	429	1,289
Powerwave Allgon LGP	145.00	32	1.790	1.493	0.960	0.322	9	27
Powerwave Allgon 702	145.00	13	1.790	1.493	0.960	0.322	4	11
Powerwave Allgon LGP	145.00	85	1.790	1.493	0.960	0.322	24	73
Raycap DC6-48-60-18-	145.00	32	1.790	1.493	0.960	0.322	9	27
Ericsson RRUS 11 (Ba	145.00	150	1.790	1.493	0.960	0.322	42	129
Ericsson RRUS 32 B2	145.00	159	1.790	1.493	0.960	0.322	44	137
Allgon 7770.00	145.00	210	1.790	1.493	0.960	0.322	59	180
CCI HPA-65R-BUU-H6	145.00	153	1.790	1.493	0.960	0.322	43	131
Ericsson KRY 112 144	135.00	33	1.552	0.636	0.606	0.182	5	28
Ericsson Radio 4449	135.00	222	1.552	0.636	0.606	0.182	35	191
Ericsson AIR 21 B4A	135.00	270	1.552	0.636	0.606	0.182	43	232
Ericsson AIR 21, 1.3	135.00	275	1.552	0.636	0.606	0.182	43	236
RFS APXVAARR24_43-U-	135.00	384	1.552	0.636	0.606	0.182	61	330
Round T-Arm	130.00	750	1.439	0.361	0.473	0.126	82	645
RFS DB-B1-6C-12AB-0Z	117.00	21	1.165	-0.025	0.230	0.019	0	18
Alcatel-Lucent RRH2X	115.00	86	1.126	-0.054	0.203	0.007	1	74
Alcatel-Lucent RRH2x	115.00	113	1.126	-0.054	0.203	0.007	1	97
RFS DB-B1-6C-12AB-0Z	115.00	21	1.126	-0.054	0.203	0.007	0	18
Alcatel-Lucent B66A	115.00	114	1.126	-0.054	0.203	0.007	1	98
Andrew HBXX-6517DS-A	115.00	172	1.126	-0.054	0.203	0.007	1	148
Commscope LNX-	115.00	201	1.126	-0.054	0.203	0.007	1	173
Generic Round Low Pr	115.00	1,875	1.126	-0.054	0.203	0.007	12	1,611
		34,485	61.250	23.229	20.982	6.252	1,837	29,638

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	-40.99	-1.82	0.00	-194.61	0.00	194.61	5,312.91	2,656.45	12,129.59	6,073.81	0.00	0.00	0.040
5.00	-39.24	-1.79	0.00	-185.50	0.00	185.50	5,229.56	2,614.78	11,654.98	5,836.15	0.00	-0.01	0.039
10.00	-37.53	-1.75	0.00	-176.54	0.00	176.54	5,144.17	2,572.09	11,184.99	5,600.81	0.02	-0.02	0.039
15.00	-35.86	-1.71	0.00	-167.79	0.00	167.79	5,056.74	2,528.37	10,719.96	5,367.95	0.04	-0.03	0.038
20.00	-34.23	-1.66	0.00	-159.25	0.00	159.25	4,967.26	2,483.63	10,260.22	5,137.73	0.08	-0.04	0.038
25.00	-32.63	-1.61	0.00	-150.96	0.00	150.96	4,875.75	2,437.87	9,806.10	4,910.34	0.12	-0.05	0.037
30.00	-31.08	-1.56	0.00	-142.90	0.00	142.90	4,782.19	2,391.09	9,357.93	4,685.92	0.18	-0.06	0.037
35.00	-29.56	-1.51	0.00	-135.09	0.00	135.09	4,686.58	2,343.29	8,916.06	4,464.66	0.24	-0.07	0.037
40.00	-28.08	-1.46	0.00	-127.52	0.00	127.52	4,588.94	2,294.47	8,480.81	4,246.71	0.32	-0.08	0.036
45.00	-27.58	-1.45	0.00	-120.20	0.00	120.20	4,489.25	2,244.63	8,052.51	4,032.24	0.41	-0.09	0.036
46.71	-25.91	-1.39	0.00	-117.73	0.00	117.73	4,454.76	2,227.38	7,907.97	3,959.86	0.44	-0.09	0.036
50.00	-24.53	-1.34	0.00	-113.16	0.00	113.16	4,377.60	2,188.80	7,614.23	3,812.78	0.51	-0.10	0.035
52.79	-23.98	-1.32	0.00	-109.42	0.00	109.42	3,613.14	1,806.57	6,305.68	3,157.53	0.57	-0.11	0.041
55.00	-22.76	-1.28	0.00	-106.50	0.00	106.50	3,578.23	1,789.12	6,158.78	3,083.97	0.62	-0.11	0.041
60.00	-21.58	-1.25	0.00	-100.10	0.00	100.10	3,497.79	1,748.90	5,830.16	2,919.41	0.74	-0.13	0.040
65.00	-20.43	-1.22	0.00	-93.86	0.00	93.86	3,415.31	1,707.65	5,506.99	2,757.59	0.88	-0.14	0.040
70.00	-19.32	-1.20	0.00	-87.75	0.00	87.75	3,330.78	1,665.39	5,189.62	2,598.67	1.04	-0.15	0.040
75.00	-18.23	-1.20	0.00	-81.73	0.00	81.73	3,243.59	1,621.79	4,877.42	2,442.34	1.21	-0.17	0.039
80.00	-17.18	-1.20	0.00	-75.73	0.00	75.73	3,127.49	1,563.75	4,532.82	2,269.78	1.39	-0.18	0.039
85.00	-16.17	-1.22	0.00	-69.71	0.00	69.71	3,011.40	1,505.70	4,200.83	2,103.54	1.59	-0.20	0.039
90.00	-15.19	-1.24	0.00	-63.60	0.00	63.60	2,895.30	1,447.65	3,881.48	1,943.62	1.81	-0.22	0.038
94.95	-15.18	-1.24	0.00	-57.45	0.00	57.45	2,780.28	1,390.14	3,577.55	1,791.43	2.04	-0.23	0.038
95.00	-13.83	-1.27	0.00	-57.40	0.00	57.40	2,779.20	1,389.60	3,574.75	1,790.03	2.04	-0.23	0.037
99.54	-13.77	-1.28	0.00	-51.62	0.00	51.62	1,702.59	851.29	2,158.67	1,080.94	2.27	-0.25	0.056
100.00	-13.09	-1.29	0.00	-51.02	0.00	51.02	1,698.09	849.05	2,144.41	1,073.80	2.29	-0.25	0.055
105.00	-12.43	-1.31	0.00	-44.56	0.00	44.56	1,648.46	824.23	1,992.11	997.54	2.57	-0.27	0.052
110.00	-11.79	-1.31	0.00	-38.03	0.00	38.03	1,596.78	798.39	1,842.85	922.79	2.86	-0.29	0.049
115.00	-8.34	-1.28	0.00	-31.48	0.00	31.48	1,543.06	771.53	1,696.96	849.74	3.18	-0.32	0.042
117.00	-7.96	-1.27	0.00	-28.93	0.00	28.93	1,521.01	760.50	1,639.62	821.03	3.32	-0.33	0.040
120.00	-7.38	-1.24	0.00	-25.13	0.00	25.13	1,487.30	743.65	1,554.78	778.54	3.53	-0.34	0.037
125.00	-7.36	-1.24	0.00	-18.91	0.00	18.91	1,425.26	712.63	1,412.43	707.26	3.89	-0.36	0.032
125.17	-6.73	-1.20	0.00	-18.71	0.00	18.71	1,422.68	711.34	1,407.29	704.69	3.90	-0.36	0.031
128.83	-6.62	-1.19	0.00	-14.32	0.00	14.32	970.32	485.16	941.18	471.29	4.18	-0.37	0.037
130.00	-5.25	-1.05	0.00	-12.93	0.00	12.93	961.96	480.98	920.87	461.12	4.27	-0.37	0.033
135.00	-3.42	-0.80	0.00	-7.67	0.00	7.67	924.86	462.43	835.07	418.16	4.67	-0.39	0.022
140.00	-3.08	-0.73	0.00	-3.67	0.00	3.67	885.72	442.86	751.58	376.35	5.09	-0.40	0.013
145.00	-0.16	-0.04	0.00	-0.02	0.00	0.02	844.53	422.27	670.72	335.86	5.51	-0.40	0.000
145.50	0.00	0.00	0.00	0.00	0.00	0.00	840.30	420.15	662.79	331.89	5.55	-0.40	0.000
149.00	0.00	0.00	0.00	0.00	0.00	0.00	809.65	404.83	607.80	304.35	5.85	-0.40	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	-28.40	-1.82	0.00	-192.73	0.00	192.73	5,312.91	2,656.45	12,129.59	6,073.81	0.00	0.00	0.037
5.00	-27.19	-1.79	0.00	-183.62	0.00	183.62	5,229.56	2,614.78	11,654.98	5,836.15	0.00	-0.01	0.037
10.00	-26.00	-1.75	0.00	-174.68	0.00	174.68	5,144.17	2,572.09	11,184.99	5,600.81	0.02	-0.02	0.036
15.00	-24.84	-1.70	0.00	-165.95	0.00	165.95	5,056.74	2,528.37	10,719.96	5,367.95	0.04	-0.03	0.036
20.00	-23.71	-1.65	0.00	-157.45	0.00	157.45	4,967.26	2,483.63	10,260.22	5,137.73	0.08	-0.04	0.035
25.00	-22.61	-1.60	0.00	-149.19	0.00	149.19	4,875.75	2,437.87	9,806.10	4,910.34	0.12	-0.05	0.035
30.00	-21.53	-1.55	0.00	-141.18	0.00	141.18	4,782.19	2,391.09	9,357.93	4,685.92	0.17	-0.06	0.035
35.00	-20.48	-1.50	0.00	-133.42	0.00	133.42	4,686.58	2,343.29	8,916.06	4,464.66	0.24	-0.07	0.034
40.00	-19.45	-1.45	0.00	-125.91	0.00	125.91	4,588.94	2,294.47	8,480.81	4,246.71	0.32	-0.08	0.034
45.00	-19.11	-1.43	0.00	-118.66	0.00	118.66	4,489.25	2,244.63	8,052.51	4,032.24	0.40	-0.09	0.034
46.71	-17.95	-1.37	0.00	-116.21	0.00	116.21	4,454.76	2,227.38	7,907.97	3,959.86	0.43	-0.09	0.033
50.00	-16.99	-1.33	0.00	-111.68	0.00	111.68	4,377.60	2,188.80	7,614.23	3,812.78	0.50	-0.10	0.033
52.79	-16.61	-1.31	0.00	-107.99	0.00	107.99	3,613.14	1,806.57	6,305.68	3,157.53	0.56	-0.11	0.039
55.00	-15.77	-1.27	0.00	-105.10	0.00	105.10	3,578.23	1,789.12	6,158.78	3,083.97	0.61	-0.11	0.038
60.00	-14.95	-1.23	0.00	-98.77	0.00	98.77	3,497.79	1,748.90	5,830.16	2,919.41	0.73	-0.12	0.038
65.00	-14.16	-1.21	0.00	-92.61	0.00	92.61	3,415.31	1,707.65	5,506.99	2,757.59	0.87	-0.14	0.038
70.00	-13.38	-1.19	0.00	-86.58	0.00	86.58	3,330.78	1,665.39	5,189.62	2,598.67	1.02	-0.15	0.037
75.00	-12.63	-1.18	0.00	-80.64	0.00	80.64	3,243.59	1,621.79	4,877.42	2,442.34	1.19	-0.17	0.037
80.00	-11.90	-1.19	0.00	-74.73	0.00	74.73	3,127.49	1,563.75	4,532.82	2,269.78	1.37	-0.18	0.037
85.00	-11.20	-1.20	0.00	-68.80	0.00	68.80	3,011.40	1,505.70	4,200.83	2,103.54	1.57	-0.20	0.036
90.00	-10.52	-1.22	0.00	-62.79	0.00	62.79	2,895.30	1,447.65	3,881.48	1,943.62	1.79	-0.21	0.036
94.95	-10.51	-1.22	0.00	-56.73	0.00	56.73	2,780.28	1,390.14	3,577.55	1,791.43	2.01	-0.23	0.035
95.00	-9.58	-1.26	0.00	-56.68	0.00	56.68	2,779.20	1,389.60	3,574.75	1,790.03	2.02	-0.23	0.035
99.54	-9.54	-1.26	0.00	-50.98	0.00	50.98	1,702.59	851.29	2,158.67	1,080.94	2.24	-0.24	0.053
100.00	-9.07	-1.27	0.00	-50.40	0.00	50.40	1,698.09	849.05	2,144.41	1,073.80	2.27	-0.24	0.052
105.00	-8.61	-1.29	0.00	-44.02	0.00	44.02	1,648.46	824.23	1,992.11	997.54	2.53	-0.27	0.049
110.00	-8.16	-1.29	0.00	-37.59	0.00	37.59	1,596.78	798.39	1,842.85	922.79	2.83	-0.29	0.046
115.00	-5.78	-1.26	0.00	-31.14	0.00	31.14	1,543.06	771.53	1,696.96	849.74	3.14	-0.31	0.040
117.00	-5.51	-1.25	0.00	-28.62	0.00	28.62	1,521.01	760.50	1,639.62	821.03	3.28	-0.32	0.038
120.00	-5.11	-1.23	0.00	-24.86	0.00	24.86	1,487.30	743.65	1,554.78	778.54	3.48	-0.33	0.035
125.00	-5.10	-1.23	0.00	-18.72	0.00	18.72	1,425.26	712.63	1,412.43	707.26	3.84	-0.35	0.030
125.17	-4.66	-1.18	0.00	-18.52	0.00	18.52	1,422.68	711.34	1,407.29	704.69	3.86	-0.35	0.030
128.83	-4.59	-1.18	0.00	-14.17	0.00	14.17	970.32	485.16	941.18	471.29	4.13	-0.37	0.035
130.00	-3.63	-1.04	0.00	-12.80	0.00	12.80	961.96	480.98	920.87	461.12	4.22	-0.37	0.032
135.00	-2.37	-0.79	0.00	-7.60	0.00	7.60	924.86	462.43	835.07	418.16	4.62	-0.38	0.021
140.00	-2.13	-0.72	0.00	-3.64	0.00	3.64	885.72	442.86	751.58	376.35	5.03	-0.39	0.012
145.00	-0.11	-0.04	0.00	-0.02	0.00	0.02	844.53	422.27	670.72	335.86	5.44	-0.40	0.000
145.50	0.00	0.00	0.00	0.00	0.00	0.00	840.30	420.15	662.79	331.89	5.48	-0.40	0.000
149.00	0.00	0.00	0.00	0.00	0.00	0.00	809.65	404.83	607.80	304.35	5.77	-0.40	0.000

Analysis Summary

	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	19.64	0.00	41.37	0.00	0.00	2012.16	99.54	0.37
0.9D + 1.6W	19.63	0.00	31.02	0.00	0.00	1997.13	99.54	0.36
1.2D + 1.0Di + 1.0Wi	5.69	0.00	58.53	0.00	0.00	566.72	99.54	0.11
(1.2 + 0.2Sds) * DL + E ELFM	1.54	0.00	40.99	0.00	0.00	173.53	99.54	0.04
(1.2 + 0.2Sds) * DL + E EMAM	1.82	0.00	40.99	0.00	0.00	194.61	99.54	0.06
(0.9 - 0.2Sds) * DL + E ELFM	1.54	0.00	28.40	0.00	0.00	171.98	99.54	0.03
(0.9 - 0.2Sds) * DL + E EMAM	1.82	0.00	28.40	0.00	0.00	192.73	99.54	0.05
1.0D + 1.0W	4.20	0.00	34.48	0.00	0.00	428.49	99.54	0.08

Base Summary

Reactions

Original Design			Analysis			
Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment Design %
3,762.30	38.90	34.90	2,012.16	58.53	19.64	39.62

Base Plate

Yield (ksi)	Thick (in)	Width (in)	Style	Poly Sides	Clip Len (in)	Effective Len (in)	Mu (kip-in)	Phi Mn (kip-in)	Ratio
60.0	2.500	71.000	Round	0	0.00	8.887	241.16	749.83	0.32

Anchor Bolts

Bolt Circle	Num Bolts	Bolt Type	Bolt Dia (in)	Yield (ksi)	Ultimate (ksi)	Arrange	Cluster Dist (in)	Start Angle (deg)	Compression			Tension		
									Force (kip)	Allow (kip)	Ratio	Force (kip)	Allow (kip)	Ratio
65.00	20	2.25" A615-	2.25	75.00	100.00	Radial	0.00	0.0	77.22	260.00	0.30	71.37	260.00	0.28

Base Plate & Anchor Rod Analysis

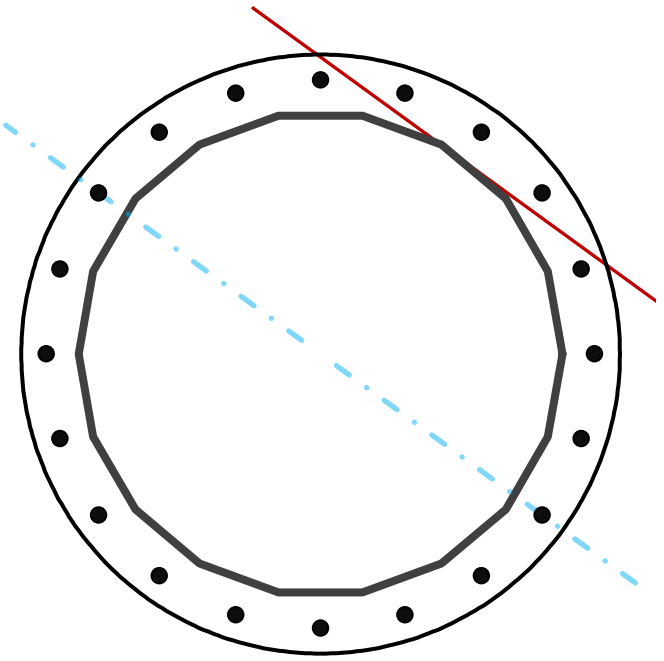
Pole Dimensions		
Number of Sides	18	-
Diameter	56	in
Thickness	0.4375	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	2012.2	k-ft
Axial, Pu	41.4	k
Shear, Vu	19.6	k
Neutral Axis	324	°

Report Capacities		
Component	Capacity	Result
Base Plate	26%	Pass
Anchor Rods	30%	Pass
Dwyidag	-	-

Base Plate		
Shape	Round	-
Diameter, ø	71	in
Thickness	2 1/2	in
Grade	A572-60	-
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Clip	N/A	in
Orientation Offset	0	°
Anchor Rod Detail	d	η=0.5
Clear Distance	3	in
Applied Moment, Mu	711.0	k
Bending Stress, ϕMn	2782.4	k

Original Anchor Rods		
Arrangement	Radial	-
Quantity	20	-
Diameter, ø	2 1/4	in
Bolt Circle	65	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	10.2	in
Orientation Offset	0	°
Applied Force, Pu	76.3	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	19.6	2012.2	1.00
Anchor Rod Forces	19.6	2012.2	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	75.9806	4.2211	0.2704		29325.69
Bolt	3.9761	3.2477	0.8393	4.5	34320.51
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	0.0000	0.0000	0.0000		0.00
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate		
Shape	Round	-
Diameter, D	71	in
Thickness, t	2.5	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Base Plate Chord	43.646	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3	-

Anchor Rods		
Anchor Rod Quantity, N	20	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	65	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	76.3	k
Applied Shear, Vu	0.5	k
Compressive Capacity, ϕPn	259.8	k
Tensile Capacity, ϕRnt	0.294	OK
Interaction Capacity	0.297	OK

External Base Plate		
Chord Length AA	36.932	in
Additional AA	5.000	in
Section Modulus, Z	65.519	in^3
Applied Moment, Mu	711.0	k-ft
Bending Capacity, ϕMn	3538.0	k-ft
Capacity, Mu/ϕMn	0.201	OK
Chord Length AB	35.563	in
Additional AB	5.000	in
Section Modulus, Z	63.380	in^3
Applied Moment, Mu	614.4	k-ft
Bending Capacity, ϕMn	3422.5	k-ft
Capacity, Mu/ϕMn	0.180	OK
Bend Line Length	32.976	in
Additional Bend Line	0.000	in
Section Modulus, Z	51.526	in^3
Applied Moment, Mu	711.0	k-ft
Bending Capacity, ϕMn	2782.4	k-ft
Capacity, Mu/ϕMn	0.256	OK

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

Mount Analysis of Existing T-Arms for American Tower on behalf of T-Mobile
370641 - Beacon Falls CT
Project #: 12927148
T-Mobile Site ID: CT11487B
Program: L600

CLS Engineering PLLC Project #41124-12927148-01-MA-R1
July 3, 2019

MOUNT DESCRIPTION	Existing T-Arms at 134 ft AGL
ANTENNA ELEVATION	Nominal Rad. Elevation of 135 ft AGL (Eccentricity of ~1 ft)
SITE DESCRIPTION	149 ft Monopole
SITE ADDRESS	401-411 Lopus Road, Beacon Falls, CT 06403-0000, New Haven County
GPS COORDINATES	41.43283333, -73.07022222
ANALYSIS STANDARD	2015 IBC / 2018 Connecticut State Building Code / TIA-222-G
LOADING CRITERIA	125 mph, V_{ult} (3-Second Gust) w/o ice & 50 mph (3-Second Gust) w/ 1" Ice

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

MEMBER USAGE	**84%**	**Pass**

Modifications are proposed to bring mounts into compliance; see conclusion for details.

Prepared by:
Jennifer Soza

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 part of HID Global

Digitally signed by Tyler Barker
DN: c=US, o=Telamon Corporation, ou=A01427E0000016A4525ADF800001D17, cn=Tyler Barker
Date: 2019.07.03 12:49:30 -04'00'

■ INTRODUCTION

The proposed equipment is to be mounted to the existing T-Arms. 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 27, 2019 Site Pro 1 Drawing #SCX45-K, February 19, 2015 Site Pro 1 Drawing #PRK-1245, dated April 10, 2014
PREVIOUS ANALYSES	Structural Analysis by ATC, Engineering #OAA597776_C3_10, dated October 31, 2016
LOADING DATA	ATC Application Project #12927148, dated April 17, 2019

■ ANALYSIS CRITERIA

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

■ FINAL EQUIPMENT

ELEVATION (ft)		ANTENNAS	
MOUNT	**RAD.**	**#**	**NAME**
134.0	135.0	3	RFS Celwave APXVAARR24_43-U-NA20
		3	Ericsson AIR 21, 1.3 M, B2A B4P
		3	Ericsson AIR 21 B4A/B2P
		3	Ericsson RADIO 4449 B12/B71
		3	Ericsson KRY 112 144/1

■ RESULTS SUMMARY

COMPONENT	PEAK USAGE	RESULT
Face Horizontals	84%	Pass
Mount Pipes	57%	Pass
Stand-Off Horizontals	48%	Pass

■ CONCLUSION AND RECOMMENDATIONS

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

- **Install mount pipe at empty Position 2 (1) 8ft. long proposed Pipe 2½ STD, A53 Gr. B, at each sector for proposed panel configuration (3 total) as shown. Connect to t-arm face horizontal member using Site Pro 1 SCX45-K crossover plate or equal.**
- **Install (1) Site Pro 1 PRK-1245 kit at the offset arms on the existing T-Arm mount as shown in the following sketches. Field-Cut proposed angles as required. Maintain minimum bolt edge distance.**

See following sketches and Site Pro 1 assembly drawings 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.

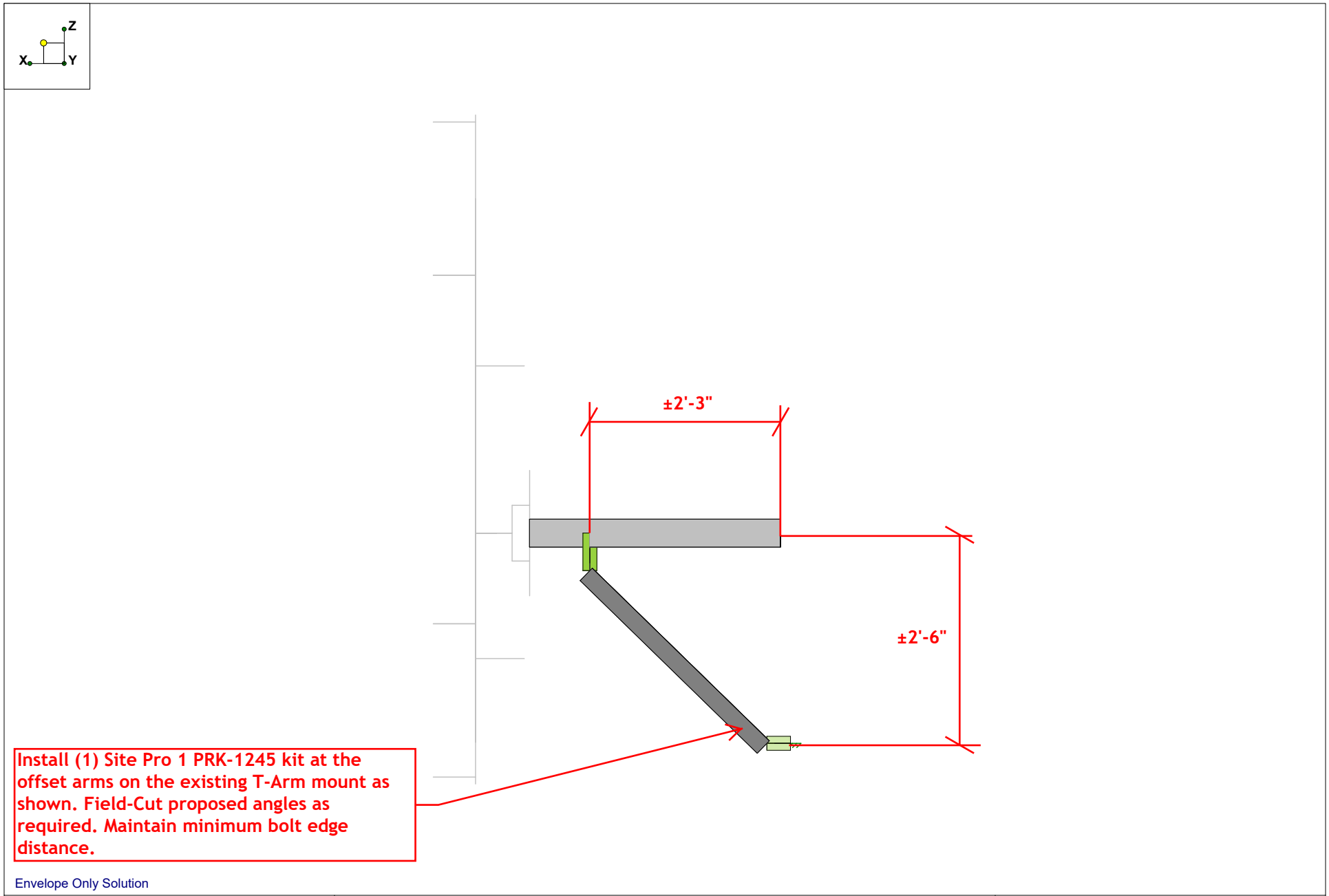
This analysis assumes the following:

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.



Envelope Only Solution

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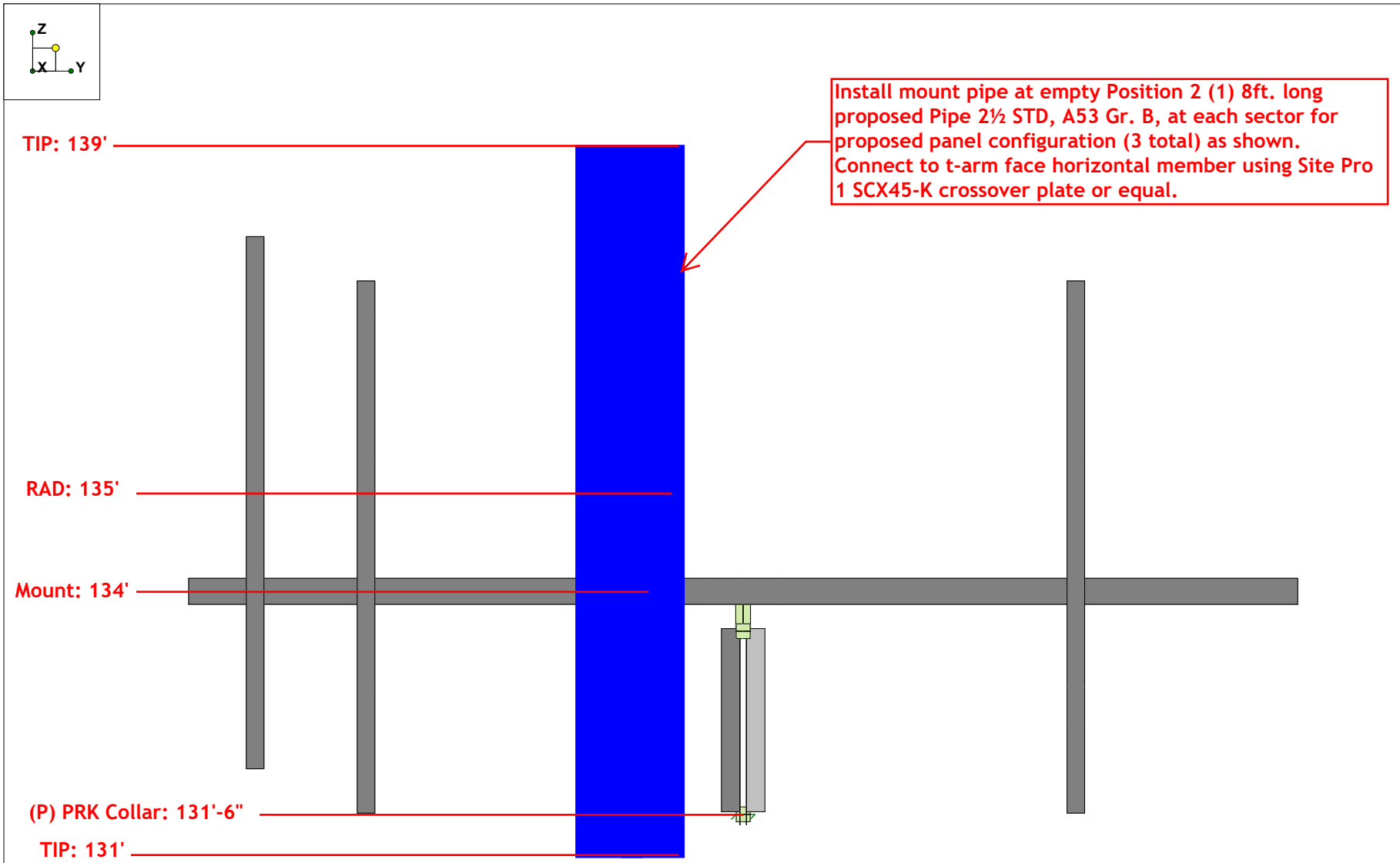

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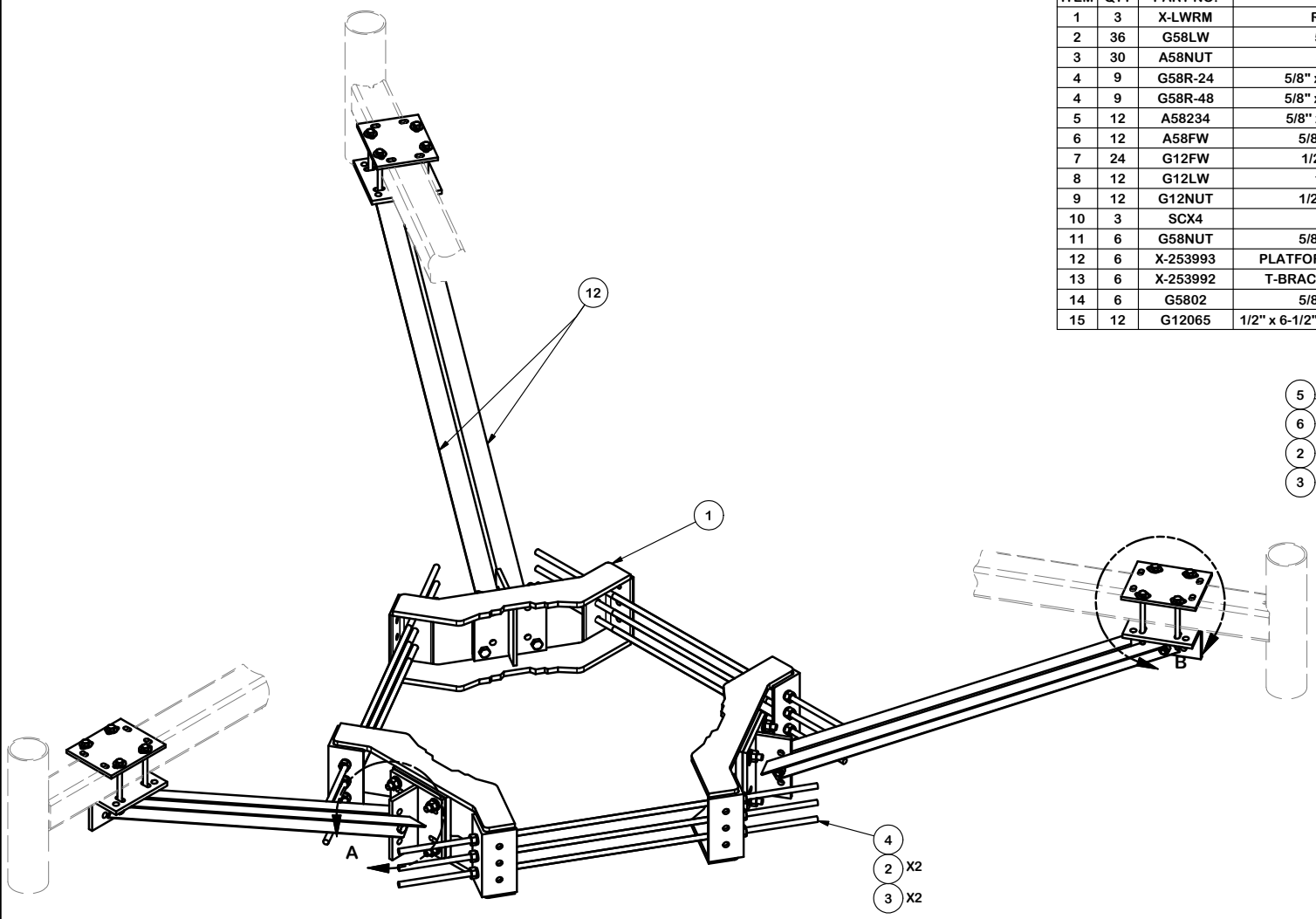
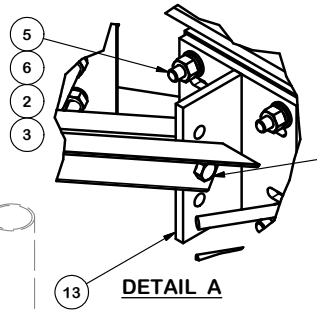
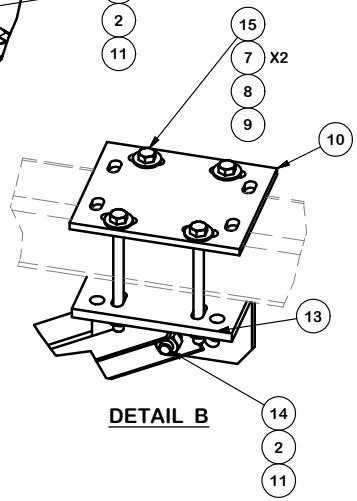






PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-LWRM	RING MOUNT WELDMENT		68.81	206.42
2	36	G58LW	5/8" HDG LOCKWASHER		0.03	0.94
3	30	A58NUT	5/8" HDG A325 HEX NUT		0.13	3.90
4	9	G58R-24	5/8" x 24" THREADED ROD (HDG.)		0.55	4.94
4	9	G58R-48	5/8" x 48" THREADED ROD (HDG.)		0.55	4.94
5	12	A58234	5/8" x 2-3/4" HDG A325 HEX BOLT	2 3/4 in	0.36	4.27
6	12	A58FW	5/8" HDG A325 FLATWASHER		0.03	0.41
7	24	G12FW	1/2" HDG USS FLATWASHER		0.03	0.82
8	12	G12LW	1/2" HDG LOCKWASHER		0.01	0.17
9	12	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	0.86
10	3	SCX4	CROSSOVER PLATE	8 1/2 in	6.02	18.06
11	6	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	0.78
12	6	X-253993	PLATFORM REINFORCEMENT KIT ANGLE	52 25/32 in	14.33	85.99
13	6	X-253992	T-BRACKET FOR REINFORCEMENT KIT		13.55	81.27
14	6	G5802	5/8" x 2" HDG HEX BOLT GR5		0.27	1.62
15	12	G12065	1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD	6 1/2 in	0.41	4.91
					TOTAL WT. #	464.91

TOLERANCE NOTES

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

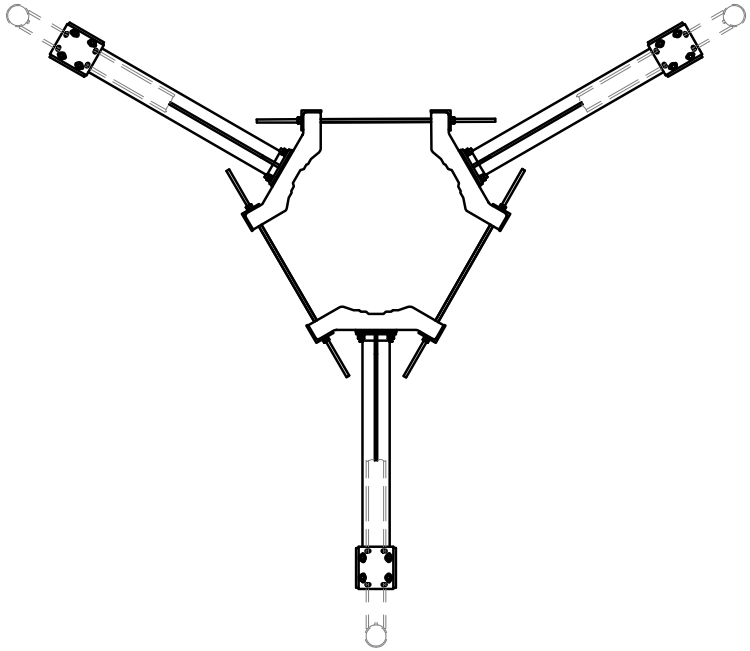
DESCRIPTION
PLATFORM RENIFORCEMENT
ON A 12" TO 45" POLE
4' 6" ANGLE

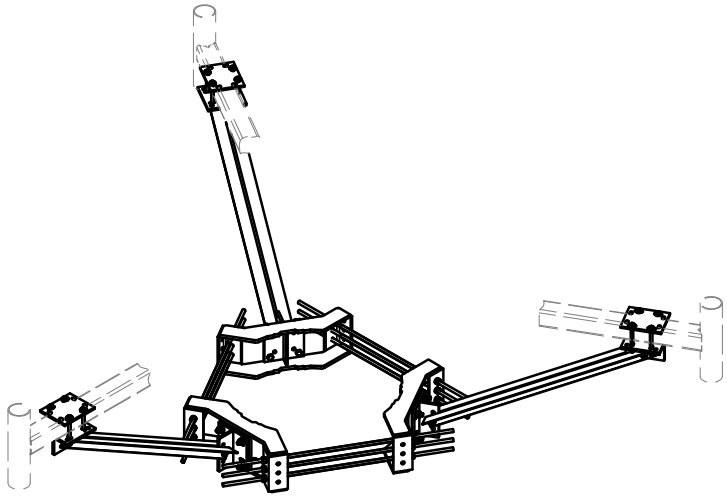
SITE PRO 1 — A valmont COMPANY

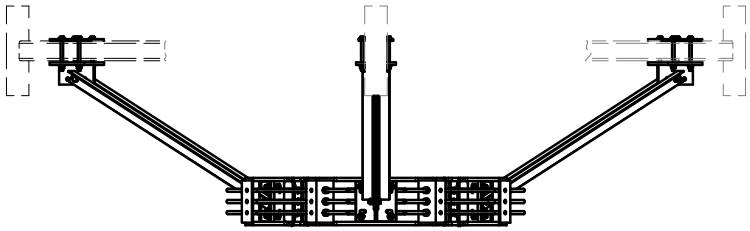
Engineering Support Team: 1-888-753-7446

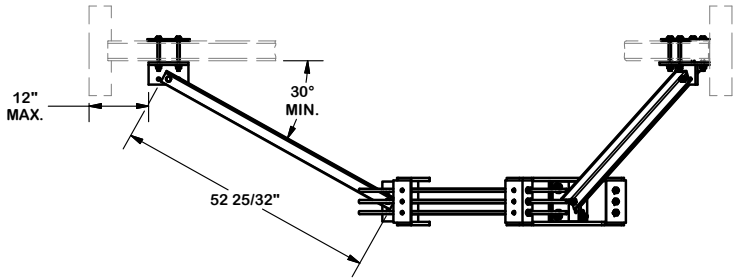
Locations:
New York, NY
Atlanta, GA
Los Angeles, CA
Plymouth, IN
Salem, OR
Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.	
4488	CEK 4/10/2014		PRK-1245	PAGE 1 OF 2
CLASS / SUB	DRAWING USAGE	CHECKED BY	DWG. NO.	
81 / 01	CUSTOMER	BMC 4/10/2014	PRK-1245	









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BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

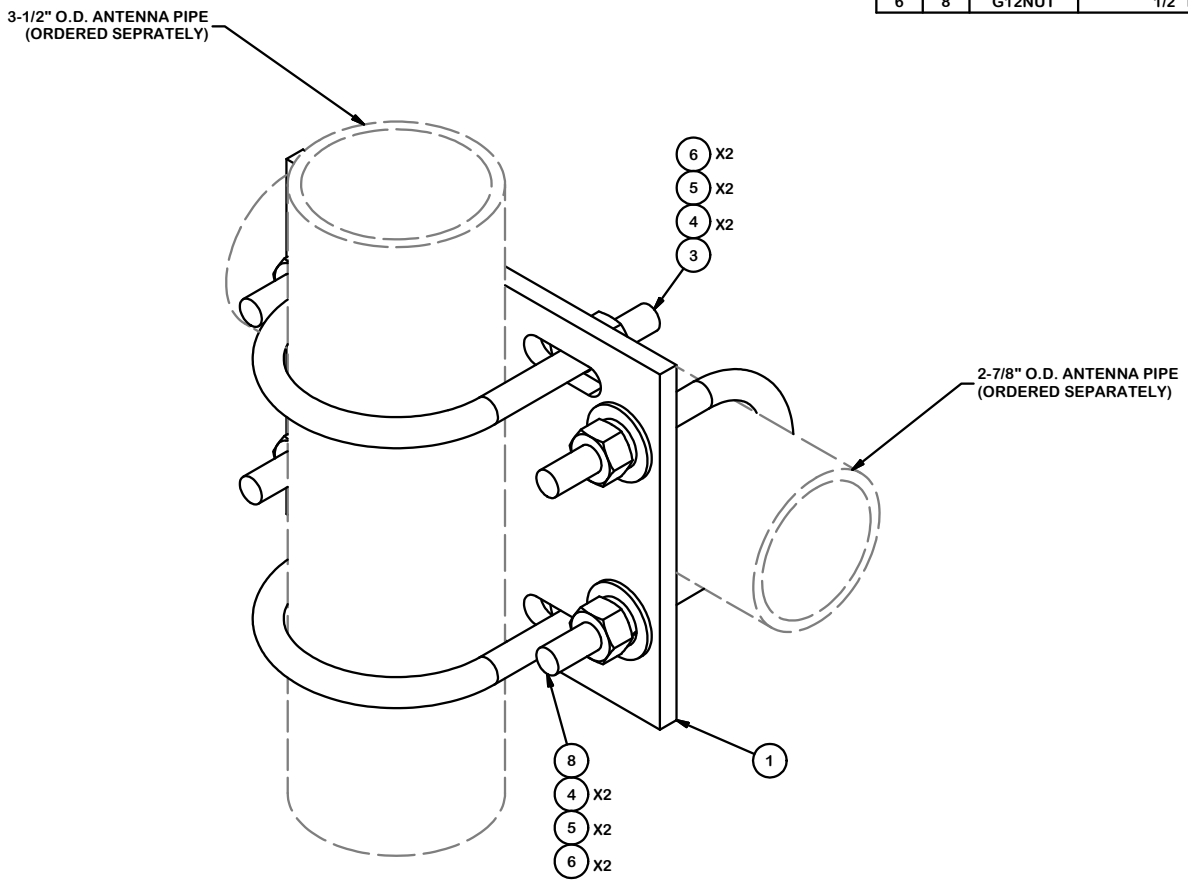
DESCRIPTION
PLATFORM RENIFORCEMENT
ON A 12" TO 45" POLE
4' 6" ANGLE

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

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
4488	CEK 4/10/2014		PRK-1245

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	BMC 4/10/2014	PRK-1245

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	1	SCX4	CROSSOVER PLATE	8 1/2 in	6.02	6.02
3	2	X-UB1358	1/2" X 3-5/8" X 5-1/2" X 3" U-BOLT (HDG.)		0.73	1.46
8	2	X-UB1300	1/2" X 3" X 5" X 2" U-BOLT (HDG.)		0.73	1.46
4	8	G12FW	1/2" HDG USS FLATWASHER		0.03	0.27
5	8	G12LW	1/2" HDG LOCKWASHER		0.01	0.11
6	8	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	0.57
					TOTAL WT. #	9.92



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LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

DESCRIPTION: CROSSOVER PLATE KIT

SITE PRO 1 — A valmont COMPANY

Engineering Support Team: 1-888-753-7446

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

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.	PAGE
	CEK 2/19/2015		SCX45-K	1 OF 1

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	BMC 2/19/2015	SCX45-K

Wind & Ice Loading

Nominal Mount Elevation (AGL), z_{mount}	134 ft	**K_a**	0.90
Nominal Rad Elevation (AGL), z_{rad}	135 ft	**K_d**	0.95
Elevation AMSL (ft)	162 ft	**K_e**	0.99
TIA Standard	H	**K_z**	1.07
Basic Wind Speed, V_{ult} (bare)	125 mph	**K_{zt}**	1.00
Basic Wind Speed, V (ice)	50 mph	**K_s**	1.00
Design Ice Thickness, t_i	1 in	**t_{iz}**	1.15 in
Exposure Category	B	**G_h**	1.00
Risk Category	II	**q_z (bare)**	40.6 psf
Seismic Response Coeff., C_s	-	**q_z (ice)**	6.5 psf

Live Loading

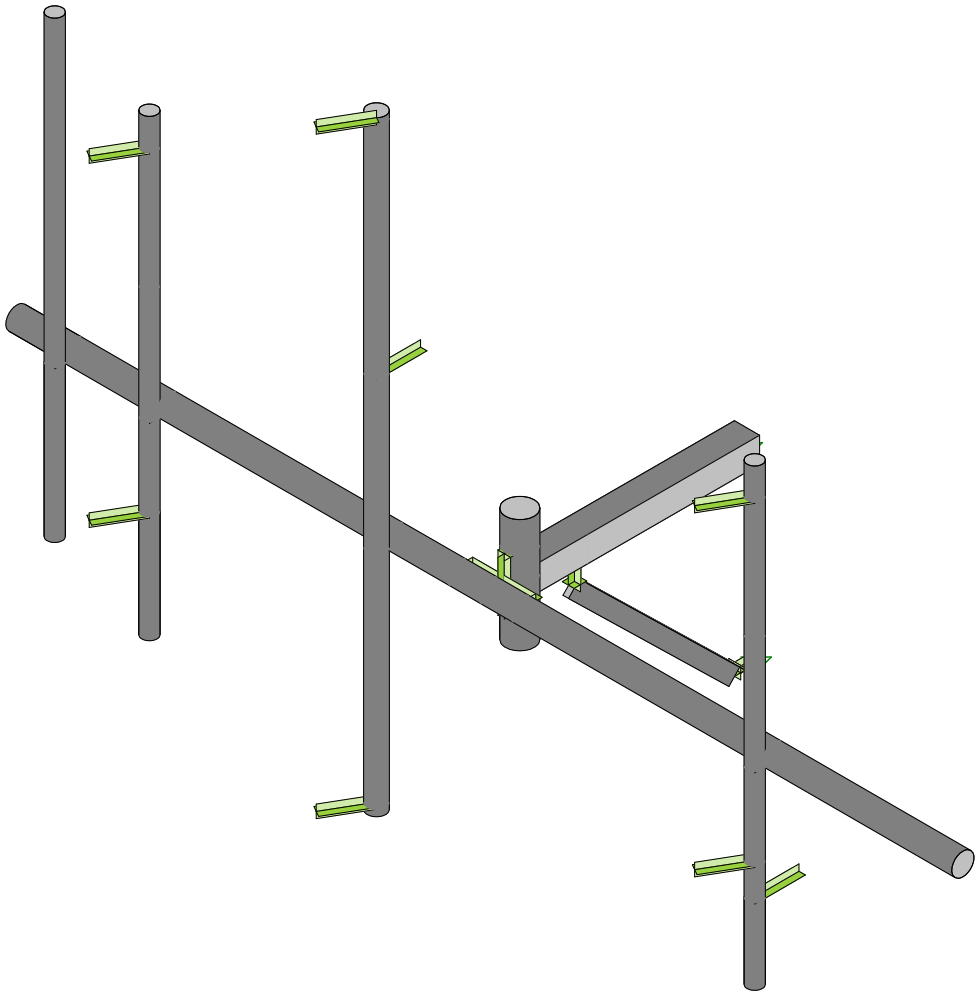
At Mount Pipes, L_M	500 lb
Joint Labels Considered	m1
	m2
	m3
	m4

Member Distributed Loading

Section Set Label	Shape Label	F_A (lb/ft)		Ice Wt. (lb/ft)
		Bare	Ice	
Standoff Horizontal	HSS4X4X4	24.35	1.64	8.78
Vertical Pipe	PIPE_4.0	16.44	3.97	7.94
Face Horizontal	PIPE_3.0	12.79	3.39	6.54
Mount Pipe	PIPE_2.0	8.68	2.73	4.96
MOD Mount Pipe	PIPE_2.5	10.50	3.03	5.66
MOD PRK	L2.5x2.5x3	15.22	1.53	5.98

Appurtenances

Appurtenance Model	Status	Azimuth Offset (°, ↻)	Rad Elev. Override (ft)	Swap Width & Depth	Area Factor		Qty.	Total Qty. Override	0° 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°		1	2							N	T	N	T	N	T	N	T
AIR 21, 1.3 M, B2A B4P				☐			1	***3***	a1	a2	56	12	8	132.2	Flat	96.48	6.05	4.36	7.35	5.59	221.46	159.45	43.08	32.75
KRY 112 144/1				☐	0.2		1	***3***	t1		7	6	3	11	Flat	7.31	0.07	0.18	0.13	0.41	2.56	6.41	0.75	2.41
APXVAARR24_43-U-NA20				☐			1	***3***	a3	a4	95.9	24	8.7	128	Flat	259.26	20.24	8.89	22.51	10.99	741.04	325.39	131.84	64.35
RADIO 4449 B12/B71				☐	0.5		1	***3***	r1		15	13.2	10.4	75	Flat	39.61	0.83	1.30	1.12	1.83	30.20	47.59	6.55	10.73
AIR 21 B4A/B2P				☐			1	***3***	a5	a6	55	12	7.9	83	Flat	94.41	5.92	4.22	7.21	5.43	216.88	154.46	42.24	31.83



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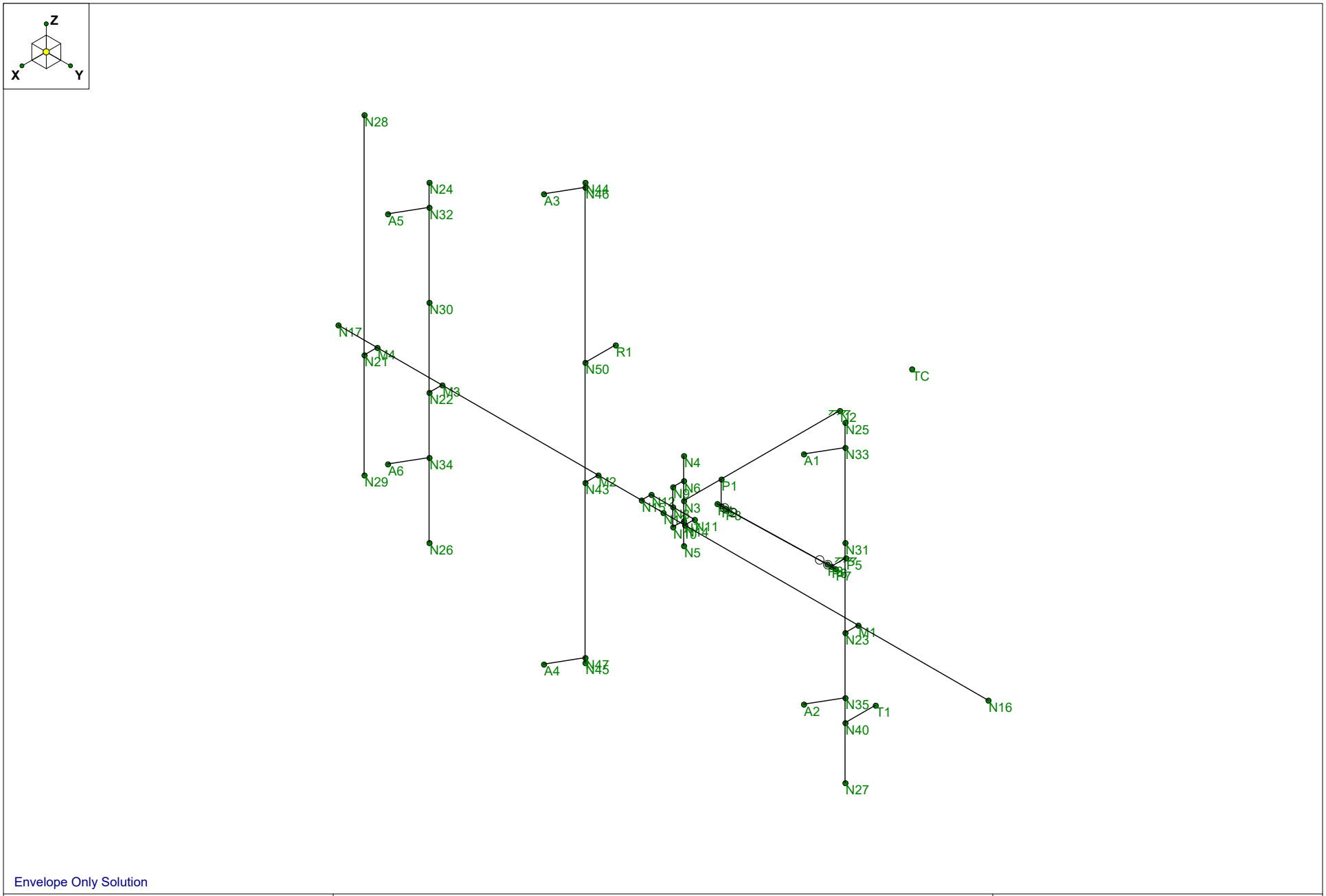

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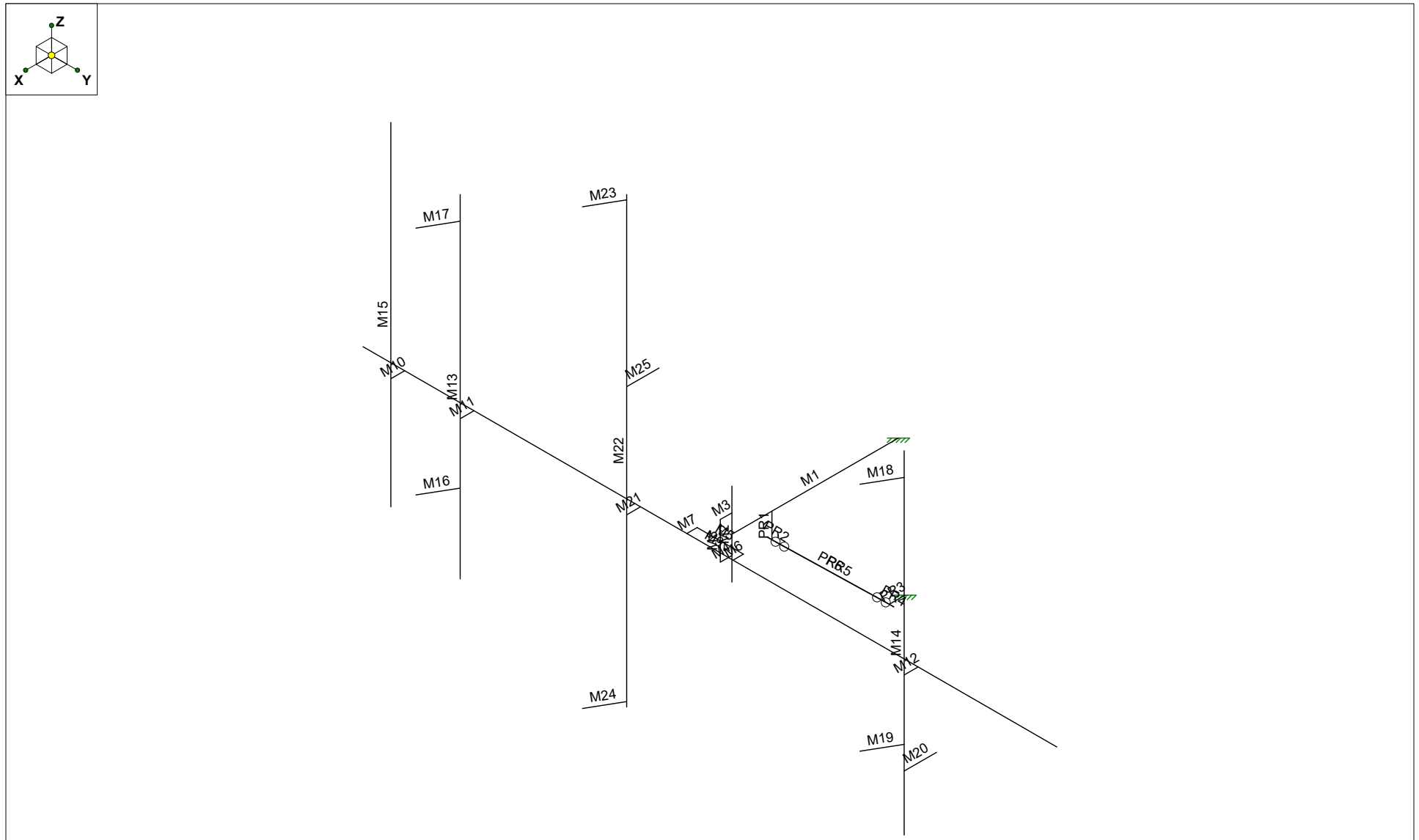
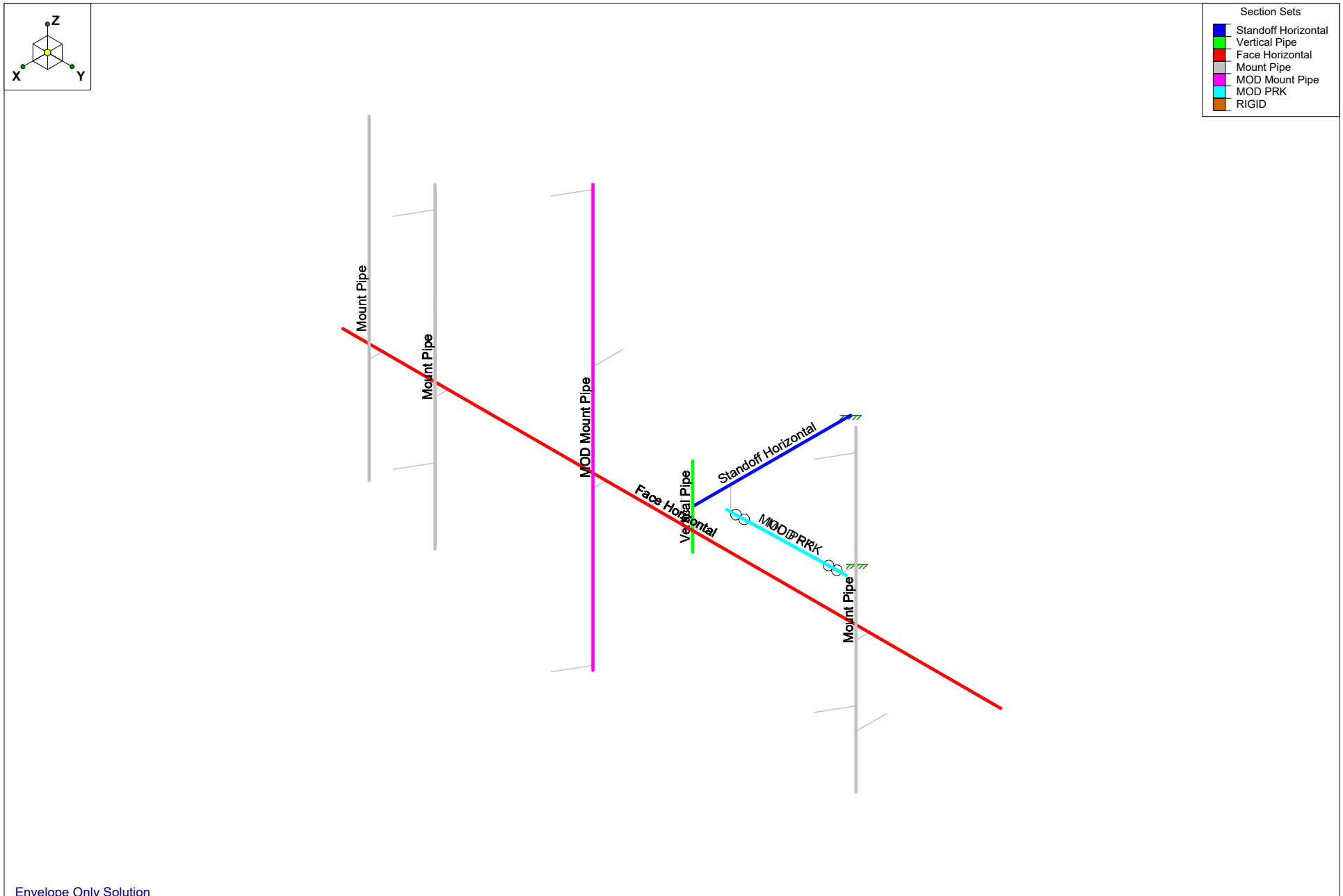


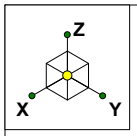
Envelope Only Solution

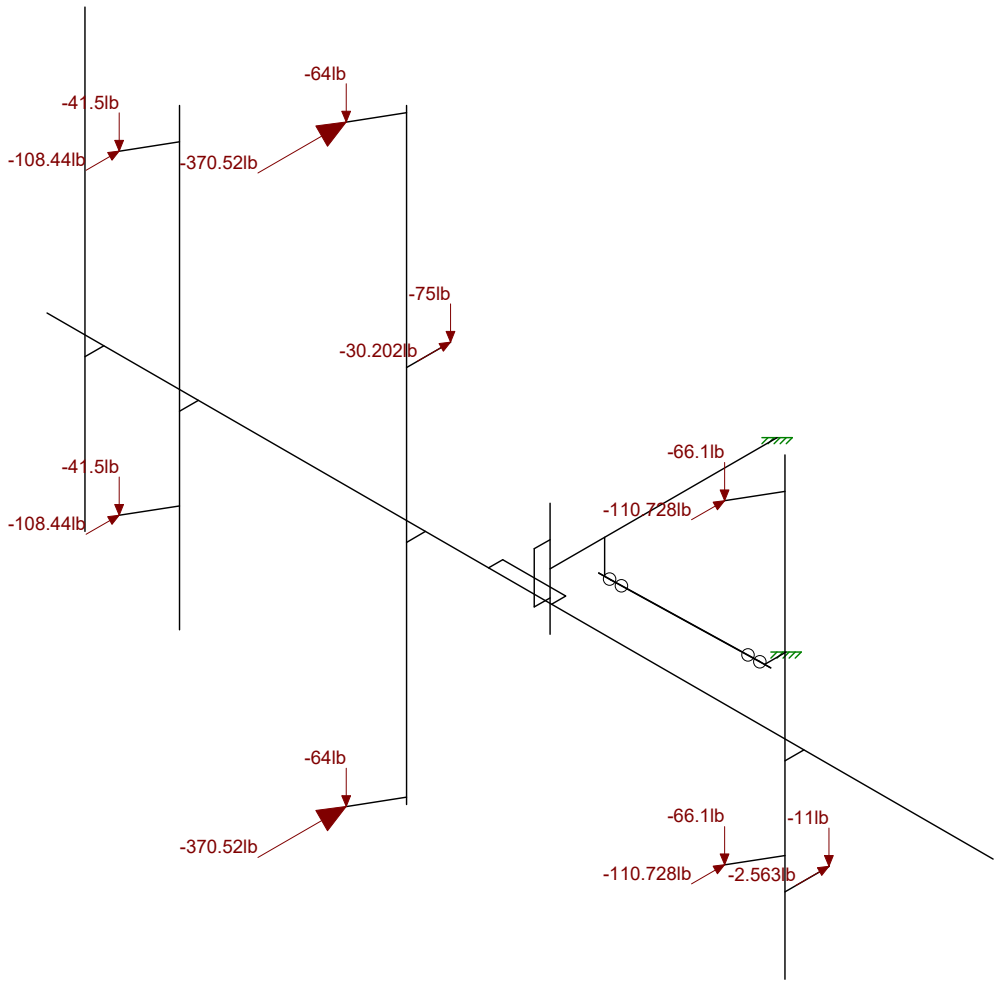
CLS	41124-12927148-Beacon Falls CT	SK - 3
JLS		May 3, 2019 at 9:32 AM
41124-12927148-01-MA	Member Labels	41124-12927148-01-MA.r3d



Envelope Only Solution

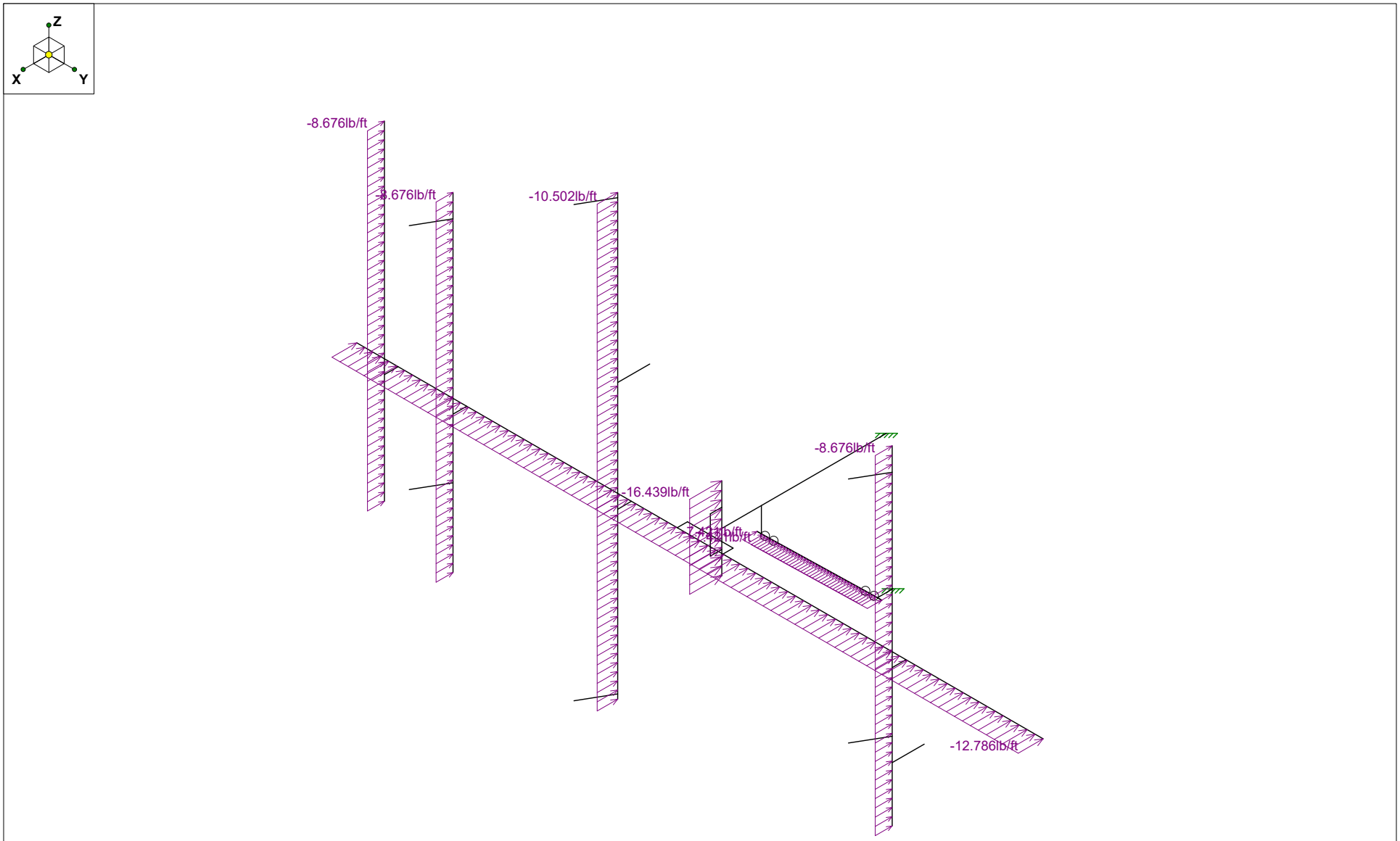
CLS	41124-12927148-Beacon Falls CT	SK - 4
JLS		May 3, 2019 at 9:32 AM
41124-12927148-01-MA	Section Sets	41124-12927148-01-MA.r3d





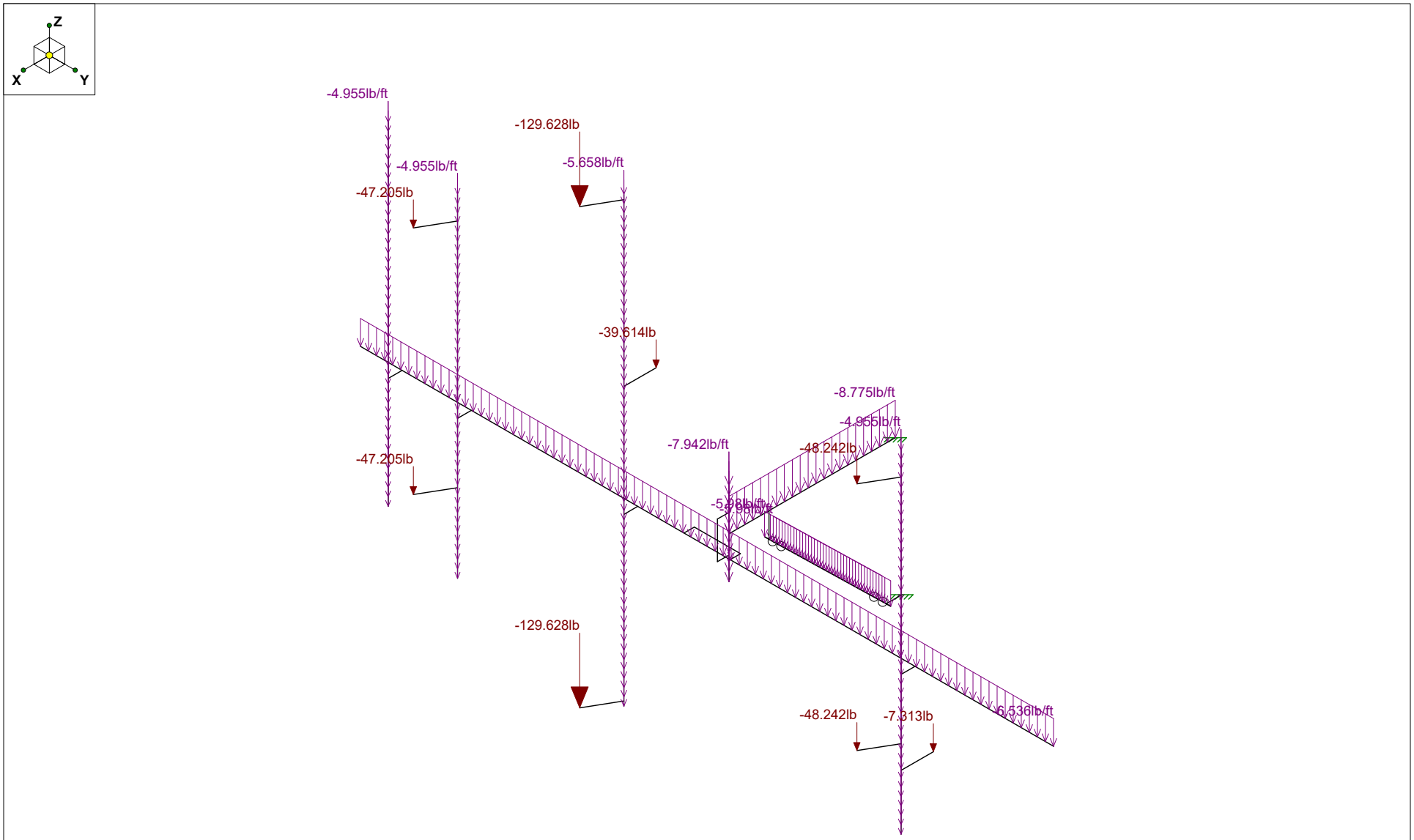
Loads: LC 1, DISPLAY (1.0D + 1.0W_0°)
Envelope Only Solution

CLS		SK - 5
JLS	41124-12927148-Beacon Falls CT	May 3, 2019 at 9:32 AM
41124-12927148-01-MA	Joint Loads - Dead and Normal Wind	41124-12927148-01-MA.r3d



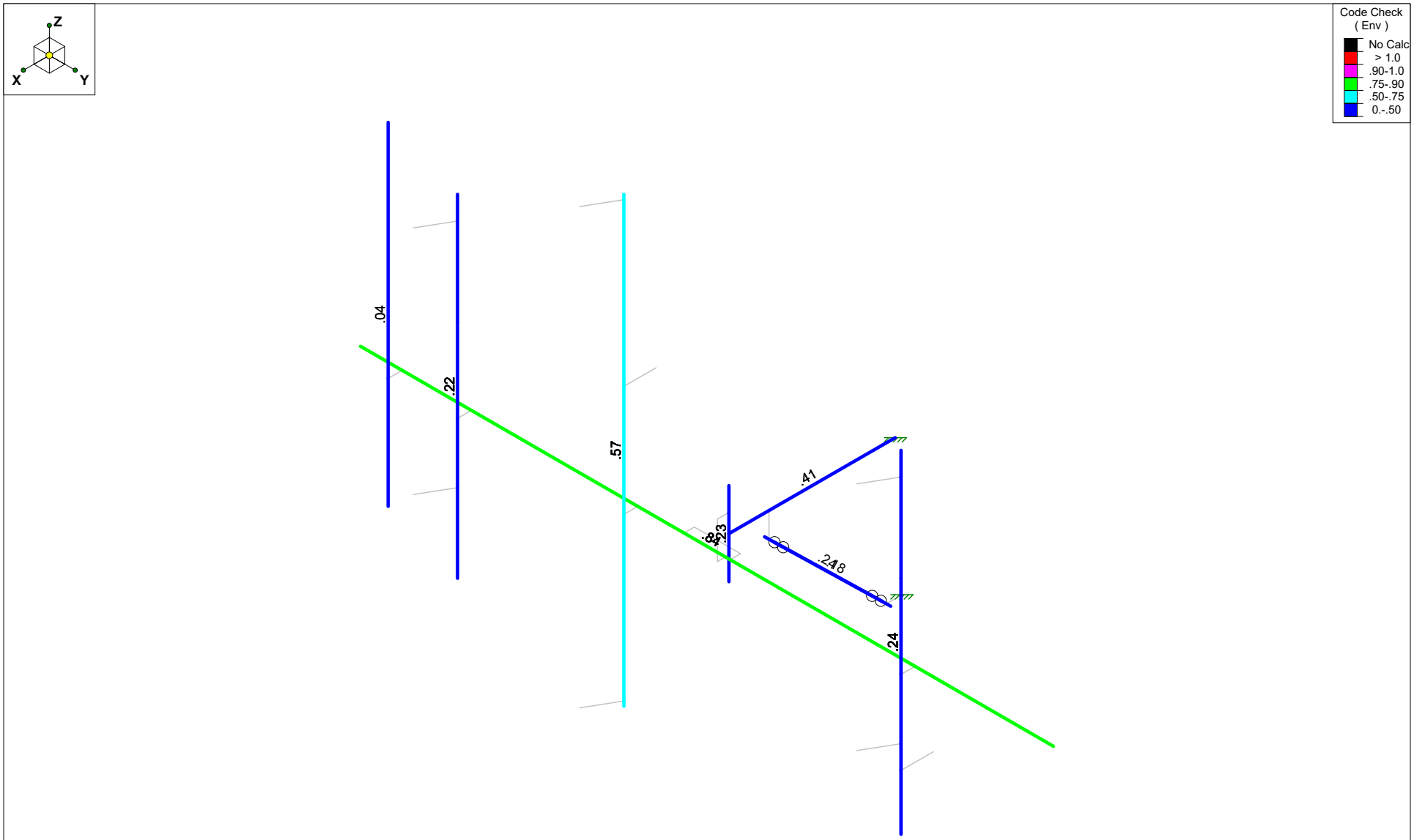
Loads: BLC 4, Structure Wind 0°
Envelope Only Solution

CLS	41124-12927148-Beacon Falls CT	SK - 6
JLS		May 3, 2019 at 9:32 AM
41124-12927148-01-MA	Distributed Load - Normal Wind	41124-12927148-01-MA.r3d



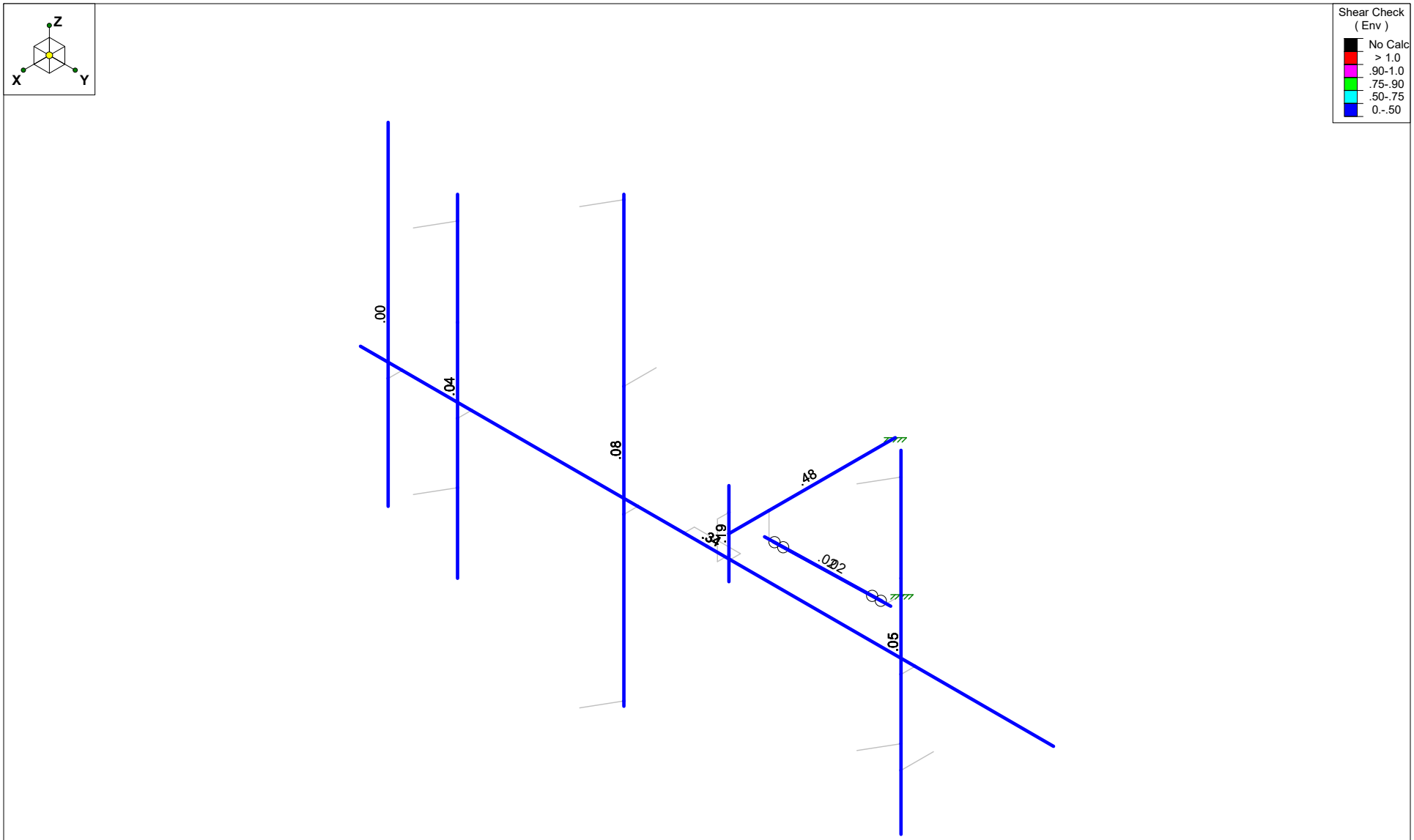
Loads: BLC 2, Ice Dead
Envelope Only Solution

CLS	41124-12927148-Beacon Falls CT	SK - 7
JLS		May 3, 2019 at 9:32 AM
41124-12927148-01-MA	Ice Dead Loads	41124-12927148-01-MA.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

CLS	41124-12927148-Beacon Falls CT	SK - 8
JLS		May 3, 2019 at 9:33 AM
41124-12927148-01-MA	Envelope Member Unity Check Results - Bending	41124-12927148-01-MA.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

CLS	41124-12927148-Beacon Falls CT	SK - 9
JLS		May 3, 2019 at 9:33 AM
41124-12927148-01-MA	Envelope Member Check Results - Shear	41124-12927148-01-MA.r3d

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
1	Dead	DL			-1	8				
2	Ice Dead	RL				8		9		
4	Structure Wind 0°	None						8		
5	Structure Wind 30°	None						18		
6	Structure Wind 45°	None						18		
7	Structure Wind 60°	None						18		
8	Structure Wind 90°	None						8		
9	Structure Wind 120°	None						18		
10	Structure Wind 135°	None						18		
11	Structure Wind 150°	None						18		
12	Structure Wind w/ Ice 0°	None						8		
13	Structure Wind w/ Ice 30°	None						18		
14	Structure Wind w/ Ice 45°	None						18		
15	Structure Wind w/ Ice 60°	None						18		
16	Structure Wind w/ Ice 90°	None						8		
17	Structure Wind w/ Ice 120°	None						18		
18	Structure Wind w/ Ice 135°	None						18		
19	Structure Wind w/ Ice 150°	None						18		
20	Antenna Wind 0°	None				8				
21	Antenna Wind 30°	None				16				
22	Antenna Wind 45°	None				16				
23	Antenna Wind 60°	None				16				
24	Antenna Wind 90°	None				8				
25	Antenna Wind 120°	None				16				
26	Antenna Wind 135°	None				16				
27	Antenna Wind 150°	None				16				
28	Antenna Wind w/ Ice 0°	None				8				
29	Antenna Wind w/ Ice 30°	None				16				
30	Antenna Wind w/ Ice 45°	None				16				
31	Antenna Wind w/ Ice 60°	None				16				
32	Antenna Wind w/ Ice 90°	None				8				
33	Antenna Wind w/ Ice 120°	None				16				
34	Antenna Wind w/ Ice 135°	None				16				
35	Antenna Wind w/ Ice 150°	None				16				
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	S...	P...	S...	BLC	Factor	BLC	Factor	BLC	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	DISPLAY (1.0D + ...	Y...	Y		DL	1	20	1																		
2	1.4D	Y...	Y		DL	1.4																				
3	1.2D + 1.0W_0°	Y...	Y		DL	1.2	4	1	20	1																
4	1.2D + 1.0W_30°	Y...	Y		DL	1.2	5	1	21	1																
5	1.2D + 1.0W_45°	Y...	Y		DL	1.2	6	1	22	1																
6	1.2D + 1.0W_60°	Y...	Y		DL	1.2	7	1	23	1																
7	1.2D + 1.0W_90°	Y...	Y		DL	1.2	8	1	24	1																
8	1.2D + 1.0W_120°	Y...	Y		DL	1.2	9	1	25	1																
9	1.2D + 1.0W_135°	Y...	Y		DL	1.2	10	1	26	1																
10	1.2D + 1.0W_150°	Y...	Y		DL	1.2	11	1	27	1																
11	1.2D + 1.0W_180°	Y...	Y		DL	1.2	4	-1	20	-1																
12	1.2D + 1.0W_210°	Y...	Y		DL	1.2	5	-1	21	-1																
13	1.2D + 1.0W_225°	Y...	Y		DL	1.2	6	-1	22	-1																

Load Combinations (Continued)

	Description	S...	P...	S...	BLC	Factor	BLC	Factor	BLC	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
14	1.2D + 1.0W_240°	Y...	Y		DL	1.2	7	-1	23	-1														
15	1.2D + 1.0W_270°	Y...	Y		DL	1.2	8	-1	24	-1														
16	1.2D + 1.0W_300°	Y...	Y		DL	1.2	9	-1	25	-1														
17	1.2D + 1.0W_315°	Y...	Y		DL	1.2	10	-1	26	-1														
18	1.2D + 1.0W_330°	Y...	Y		DL	1.2	11	-1	27	-1														
19	1.2D + 1.0Di + 1.0...	Y...	Y		DL	1.2	12	1	28	1	RL	1												
20	1.2D + 1.0Di + 1.0...	Y...	Y		DL	1.2	13	1	29	1	RL	1												
21	1.2D + 1.0Di + 1.0...	Y...	Y		DL	1.2	14	1	30	1	RL	1												
22	1.2D + 1.0Di + 1.0...	Y...	Y		DL	1.2	15	1	31	1	RL	1												
23	1.2D + 1.0Di + 1.0...	Y...	Y		DL	1.2	16	1	32	1	RL	1												
24	1.2D + 1.0Di + 1.0...	Y...	Y		DL	1.2	17	1	33	1	RL	1												
25	1.2D + 1.0Di + 1.0...	Y...	Y		DL	1.2	18	1	34	1	RL	1												
26	1.2D + 1.0Di + 1.0...	Y...	Y		DL	1.2	19	1	35	1	RL	1												
27	1.2D + 1.0Di + 1.0...	Y...	Y		DL	1.2	12	-1	28	-1	RL	1												
28	1.2D + 1.0Di + 1.0...	Y...	Y		DL	1.2	13	-1	29	-1	RL	1												
29	1.2D + 1.0Di + 1.0...	Y...	Y		DL	1.2	14	-1	30	-1	RL	1												
30	1.2D + 1.0Di + 1.0...	Y...	Y		DL	1.2	15	-1	31	-1	RL	1												
31	1.2D + 1.0Di + 1.0...	Y...	Y		DL	1.2	16	-1	32	-1	RL	1												
32	1.2D + 1.0Di + 1.0...	Y...	Y		DL	1.2	17	-1	33	-1	RL	1												
33	1.2D + 1.0Di + 1.0...	Y...	Y		DL	1.2	18	-1	34	-1	RL	1												
34	1.2D + 1.0Di + 1.0...	Y...	Y		DL	1.2	19	-1	35	-1	RL	1												
35	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	4	.061	20	.061	O...	1.5												
36	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	5	.061	21	.061	O...	1.5												
37	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	6	.061	22	.061	O...	1.5												
38	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	7	.061	23	.061	O...	1.5												
39	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	8	.061	24	.061	O...	1.5												
40	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	9	.061	25	.061	O...	1.5												
41	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	10	.061	26	.061	O...	1.5												
42	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	11	.061	27	.061	O...	1.5												
43	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	4	-.061	20	-.061	O...	1.5												
44	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	5	-.061	21	-.061	O...	1.5												
45	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	6	-.061	22	-.061	O...	1.5												
46	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	7	-.061	23	-.061	O...	1.5												
47	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	8	-.061	24	-.061	O...	1.5												
48	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	9	-.061	25	-.061	O...	1.5												
49	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	10	-.061	26	-.061	O...	1.5												
50	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	11	-.061	27	-.061	O...	1.5												
51	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	4	.061	20	.061	O...	1.5												
52	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	5	.061	21	.061	O...	1.5												
53	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	6	.061	22	.061	O...	1.5												
54	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	7	.061	23	.061	O...	1.5												
55	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	8	.061	24	.061	O...	1.5												
56	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	9	.061	25	.061	O...	1.5												
57	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	10	.061	26	.061	O...	1.5												
58	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	11	.061	27	.061	O...	1.5												
59	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	4	-.061	20	-.061	O...	1.5												
60	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	5	-.061	21	-.061	O...	1.5												
61	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	6	-.061	22	-.061	O...	1.5												
62	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	7	-.061	23	-.061	O...	1.5												
63	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	8	-.061	24	-.061	O...	1.5												
64	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	9	-.061	25	-.061	O...	1.5												
65	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	10	-.061	26	-.061	O...	1.5												
66	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	11	-.061	27	-.061	O...	1.5												
67	1.2D + 1.5Lm_3 +...	Y...	Y		DL	1.2	4	.061	20	.061	O...	1.5												
68	1.2D + 1.5Lm_3 +...	Y...	Y		DL	1.2	5	.061	21	.061	O...	1.5												
69	1.2D + 1.5Lm_3 +...	Y...	Y		DL	1.2	6	.061	22	.061	O...	1.5												
70	1.2D + 1.5Lm_3 +...	Y...	Y		DL	1.2	7	.061	23	.061	O...	1.5												

Load Combinations (Continued)

	Description	S...	P...	S...	BLC	Factor	BLC	Factor	BLC	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
71	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	8	.061	24	.061	O...	1.5												
72	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	9	.061	25	.061	O...	1.5												
73	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	10	.061	26	.061	O...	1.5												
74	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	11	.061	27	.061	O...	1.5												
75	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	4	-.061	20	-.061	O...	1.5												
76	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	5	-.061	21	-.061	O...	1.5												
77	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	6	-.061	22	-.061	O...	1.5												
78	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	7	-.061	23	-.061	O...	1.5												
79	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	8	-.061	24	-.061	O...	1.5												
80	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	9	-.061	25	-.061	O...	1.5												
81	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	10	-.061	26	-.061	O...	1.5												
82	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	11	-.061	27	-.061	O...	1.5												
83	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	4	.061	20	.061	O...	1.5												
84	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	5	.061	21	.061	O...	1.5												
85	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	6	.061	22	.061	O...	1.5												
86	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	7	.061	23	.061	O...	1.5												
87	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	8	.061	24	.061	O...	1.5												
88	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	9	.061	25	.061	O...	1.5												
89	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	10	.061	26	.061	O...	1.5												
90	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	11	.061	27	.061	O...	1.5												
91	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	4	-.061	20	-.061	O...	1.5												
92	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	5	-.061	21	-.061	O...	1.5												
93	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	6	-.061	22	-.061	O...	1.5												
94	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	7	-.061	23	-.061	O...	1.5												
95	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	8	-.061	24	-.061	O...	1.5												
96	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	9	-.061	25	-.061	O...	1.5												
97	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	10	-.061	26	-.061	O...	1.5												
98	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	11	-.061	27	-.061	O...	1.5												

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[lb/f...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	490	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	490	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	490	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	490	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	490	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Standoff Horizontal	HSS4X4X4	Beam	None	A36 Gr.36	Typical	3.37	7.8	7.8	12.8
2	Vertical Pipe	PIPE_4.0	Beam	None	A53 Gr.B	Typical	2.96	6.82	6.82	13.6
3	Face Horizontal	PIPE_3.0	Beam	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
4	Mount Pipe	PIPE_2.0	Beam	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
5	MOD Mount Pipe	PIPE_2.5	Beam	None	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
6	MOD PRK	L2.5x2.5x3	Beam	None	A36 Gr.36	Typical	.901	.535	.535	.011

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torq...	Kyy	Kzz	Cb	Function
1	M1	Standoff Ho...	36			Lbyy						Lateral
2	M2	Vertical Pipe	18			Lbyy						Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torq...	Kyy	Kzz	Cb	Function
3	M9	Face Horizo...	150			Lbyy						Lateral
4	M13	Mount Pipe	72			Lbyy						Lateral
5	M14	Mount Pipe	72			Lbyy						Lateral
6	M15	Mount Pipe	72			Lbyy						Lateral
7	M22	MOD Mount...	96			Lbyy						Lateral
8	PR5	MOD PRK	35.5									Lateral
9	PR6	MOD PRK	35.5									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	N2	max	1186.719	3	1079.087	15	357.953	3	2246.801	38	755.936	11	4400.957	17
2		min	-3592.151	11	-1079.637	7	-1067.743	11	-4232.616	94	-299.044	3	-4459.04	9
3	P5	max	2530.105	27	42.176	15	2499.711	27	273.437	9	-102.174	1	402.126	97
4		min	363.059	1	-41.627	7	363.286	1	-396.469	97	-703.044	27	-288.736	9
5	Totals:	max	1680.734	3	1121.264	15	1616.301	31						
6		min	-1680.737	11	-1121.263	7	691.202	1						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pn...	phi*Pn...	phi*Mn...	phi*Mn.....	Eqn
1	M9	PIPE_3.0	.837	81.25	96	.337	81.25		11	28250....	65205	5748.75	5748.75 ...	H1-1b
2	M22	PIPE_2.5	.570	60	3	.078	60		18	30038....	50715	3596.25	3596.25 ...	H1-1b
3	M1	HSS4X4X4	.406	0	9	.482	27.375	y	95	10601...	109188	12663	12663 ...	H1-1b
4	PR6	L2.5x2.5x3	.240	18.12	96	.020	35.5	y	90	21687....	29192.4	872.574	1860.9.....	H2-1
5	M14	PIPE_2.0	.235	42	11	.045	42		17	20866....	32130	1871.6...	1871.6.....	H1-1b
6	M2	PIPE_4.0	.226	9	94	.188	9		10	92571....	93240	10631....	10631.....	H1-1b
7	M13	PIPE_2.0	.223	42	11	.045	42		18	20866....	32130	1871.6...	1871.6.....	H1-1b
8	PR5	L2.5x2.5x3	.183	17.75	9	.020	0	z	90	21687....	29192.4	872.574	1860.9.....	H2-1
9	M15	PIPE_2.0	.038	48	14	.004	48		14	20866....	32130	1871.6...	1871.6.....	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: CT11487B

CT487/BeaconFalls
139 Lopus Road
Beacon Falls, Connecticut 06403

June 11, 2019

EBI Project Number: 6219002188

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**11.08%**

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

June 11, 2019

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

Emissions Analysis for Site: CT11487B - CT487/BeaconFalls

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **139 Lopus Road** in **Beacon Falls, 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 139 Lopus Road in Beacon Falls, 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 Ericsson AIR 21 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz channel(s), the Ericsson AIR 21 for the 2100 MHz channel(s) in Sector A, the Ericsson AIR 21 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz channel(s), the Ericsson AIR 21 for the 2100 MHz channel(s) in Sector B, the Ericsson AIR 21 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz channel(s), the Ericsson AIR 21 for the 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 centerline of the proposed antennas is 135 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

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Ericsson AIR 21	Make / Model:	Ericsson AIR 21	Make / Model:	Ericsson AIR 21
Frequency Bands:	1900 MHz / 1900 MHz / 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):	135 feet	Height (AGL):	135 feet	Height (AGL):	135 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 A1 MPE %:	**1.62%**	Antenna B1 MPE %:	**1.62%**	Antenna C1 MPE %:	**1.62%**
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):	135 feet	Height (AGL):	135 feet	Height (AGL):	135 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 %:	**1.13%**	Antenna B2 MPE %:	**1.13%**	Antenna C2 MPE %:	**1.13%**
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):	135 feet	Height (AGL):	135 feet	Height (AGL):	135 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 %:	**0.81%**	Antenna B3 MPE %:	**0.81%**	Antenna C3 MPE %:	**0.81%**

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	3.57%
Verizon	4.86%
AT&T	2.17%
Metro PCS	0.48%
Site Total MPE % :	11.08%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	3.57%
T-Mobile Sector B Total:	3.57%
T-Mobile Sector C Total:	3.57%
Site Total MPE % :	11.08%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 1900 MHz GSM	4	1028.30	135.0	8.11	1900 MHz GSM	1000	0.81%
T-Mobile 1900 MHz UMTS	2	1028.30	135.0	4.06	1900 MHz UMTS	1000	0.41%
T-Mobile 2100 MHz UMTS	2	1028.30	135.0	4.06	2100 MHz UMTS	1000	0.41%
T-Mobile 600 MHz LTE	2	591.73	135.0	2.33	600 MHz LTE	400	0.58%
T-Mobile 700 MHz LTE	2	648.82	135.0	2.56	700 MHz LTE	467	0.55%
T-Mobile 2100 MHz LTE	2	2056.61	135.0	8.11	2100 MHz LTE	1000	0.81%
						Total:	**3.57%**

• 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:	3.57%
Sector B:	3.57%
Sector C:	3.57%
T-Mobile Maximum MPE % (Sector A):	3.57%
Site Total:	11.08%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **11.08%** 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.