Transcend Wireless

10 Industrial Avenue,
Suite 3
Mahwah, NJ 07430

Phone: 201.684.0055
Fax: 201.684.0066

July 30, 2019

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

Notice of Exempt Modification
1725 Stafford Road, Mansfield CT
Latitude: 41.83595
Longitude: -72.30778889
T-Mobile site: CT11517B /L600

Dear Ms. Bachman:

T-Mobile currently maintains (6) antennas at the 140 foot level of the existing 170 -foot monopole located at 1725 Stafford Road in Mansfield CT. The monopole is owned by American Tower Corporation and the property is owned by the Town of Mansfield. T-Mobile now intends to replace (3) of its existing antennas with (3) 600/700 MHz antennas The new antennas would be relocated and installed at the 162 foot level of the tower with new mounts to be installed per the attached mount analysis.

Planned Modifications:

Remove
(3) Andrew ATSBT-BOTTOM-MF (Andrew diplexer)

Remove and Replace:
Antennas:
(3) LNX-6515DS-A1M (REMOVE) – Add (3) APXVAARR24_43-U-NA20 (REPLACE) - 600 MHz / 700 MHz

Existing to Remain:
Antennas/TMAs/RRUs/coax:
(3) APXV18-203219-C
(3) KRY 112 144/1
(12) 1-5/8" coax

Install New:
Antennas/TMAs/RRUs/coax:
(3) KRY 112 489/2 TMAs
(3) Ericsson Radio 4449 B12 B71
(1) 1-5/8" hybrid

This facility was approved by the Town of Mansfield Planning and Zoning Commission on January 22, 2002 with no record of approvals, however subsequent Exempt Modifications have been filed with the Citing Council with no known conditions that would restrict exempt modifications. A copy of the documentation from Mansfield referencing the Commission's original zoning approval is attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to The Honorable Paul Shapiro, Mayor and land owner, and Linda Painter, Director of Planning & Development.

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

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

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

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

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

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

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

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

Sincerely,

Elizabeth Jamieson

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

cc:

The Honorable Paul Shapiro, Mayor and land owner
Linda Painter, Director of Planning & Development
American Tower Corporation, Tower Owner

Exhibit A

Original Facility Approval

TOWN OF MANSFIELD
OFFICE OF THE TOWN MANAGER

Martin H. Berliner, Town Manager

AUDREY P. BECK BUILDING
4 SOUTH EAGLEVILLE RD
MANSFIELD, CT 06268-2599
(860) 429-3336
Fax: (860) 429-6863

November 5, 2002

TCP Communications Inc.
Attn : Ms. Sheila Becker
3 Oceanside Drive
Beverly, Massachusetts 01915

RE: Proposed Telecommunications Tower at 1725 Stafford Road, Mansfield, CT

Dear Ms. Becker:

I understand that SBA Properties, Inc. has assigned its rights to TCP Communications Inc. under its lease with the Town of Mansfield to construct a telecommunications tower on town-owned property at 1725 Stafford Road. I write to encourage you to develop this site as quickly as possible. The purpose of the proposed Stafford Road telecommunications tower is to significantly improve the town's critical communications capabilities.

There are several "dead spots" throughout the community that both the town's emergency services and its bus carrier experience. A tower at the Stafford Road location will serve to significantly reduce the number of those problem areas.

The Stafford Road site is the location of the town's school-bus garage and a dedicated antenna at that location will significantly improve communications for Mansfield's school bus carrier. The safety of our schoolchildren is our highest priority and enhanced communications abilities will greatly assist our efforts to safely transport those children.

An antenna at this location for the town's emergency services will further allow the town to improve communications for all aspects of public safety, including ambulance, fire, police, storm control and civil preparedness. One of the hallmarks of a successful emergency services system is a rapid response time, which in turn is predicated upon quality communications equipment and capabilities.

The Mansfield Planning and Zoning Commission has approved the application for construction of a telecommunications tower at this site. We look forward to the completion of the tower in the very near future, which will result in the overall improvement of the town's communications system.

Your assistance with this project is greatly appreciated. I can be reached at (860) 429-3336 with any questions.

Sincerely,

Martin H. Berliner

Martin H. Berliner
Town Manager

cc: Matt Hart, Assistant Town Manager
Greg Padick, Town Planner
Fred Baruzzi, Deputy Superintendent of Schools
John Jackman, Fire Marshal
Chief William Jordan, Eagelville Fire Department
Chief Tony Noel, Mansfield Volunteer Fire Department

Exhibit B

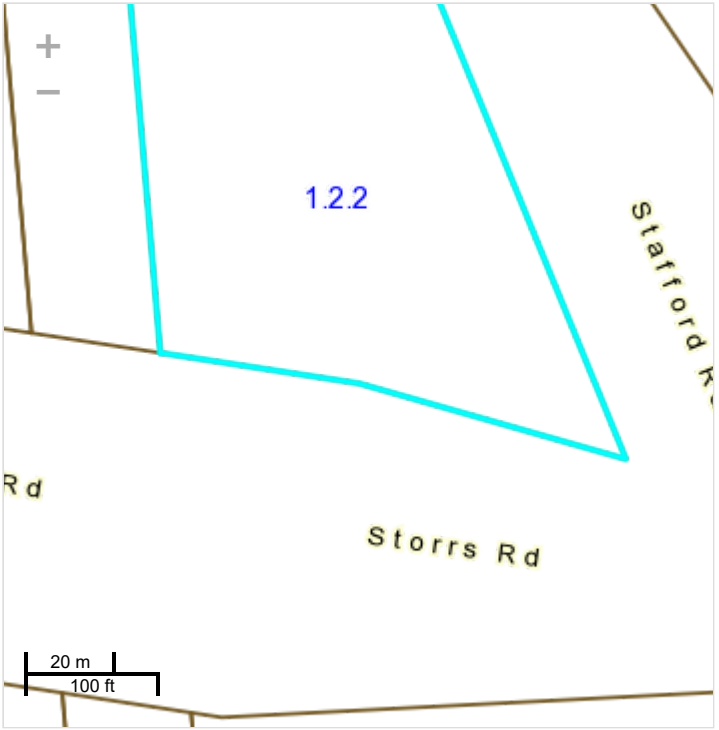
Property card

Town of Mansfield, Connecticut
Property Record Card

ID: 17

1725 STAFFORD RD

ID: **1.2.2** Account #: **1 2 2**



Owner: MANSFIELD TOWN OF
Co-Owner: BUS GARAGE
Address: 4 SO EAGLEVILLE RD
STORRS MANSFIELD CT 06268

Assessment: Total: $332,200
Improvements: $156,000 Land: $176,200

Sales History

Grantee	Book / Page	Sale Date	Sale Price
MANSFIELD TOWN OF	391 / 486	1997-10-17	$0
SMYTH RICHARD E	362 / 498	1995-06-22	$55,817
SMYTH RICHARD E &	359 / 389	1995-03-13	$0
PROBATE CERTIFICATE	350 / 479	1994-05-06	$0
SMYTH F EDWIN RHODA G+RICHARD	173 / 9	1979-07-23	$0

MainStreetGIS, LLC
www.mainstreetgis.com

Land Information
Land Area: 1.1 AC
Zoning: (See Map)
Land Use: 901 - Town MDL-Com

Building Information
Style:
Year Built:
Stories:
Rooms: Bedrooms:
Baths: Half Baths:
Living Area:
Grade:
Condition:
Heat Type:
Heat Fuel:
AC Type:
Fireplaces:
Roof Structure:
Roof Covering:
Exterior Wall:
Interior Floor:
Basement:

Extra Features

Description	Area / Units	Assessment
PAV1 Paving	8000.00 S.F.	$7,100

MEZ3 Mezz-Part Fin	400.00 S.F.	$3,600

Sub Areas

Description	Living Area	Gross Area
BAS First Floor	6300	6300

Printed on 7/30/2019 from: http://www.mainstreetmaps.com/ct/mansfield/

v1.11

Town of Mansfield, Connecticut

Web GIS Maps and Online Property Information

by MainStreetGIS, LLC Town Website

User Guide Feedback Disclaimer

Base Map: Town Base Map

1725 STAFFORD RD

Address | Parcel ID | Google | Owner

GIS Map | Street View

Layers | Property | Selection

1725 STAFFORD RD

1.2.2

Zoom To

Property Card

PDF Property Card

Abutters List

Tax Map

Property List

Report an Issue

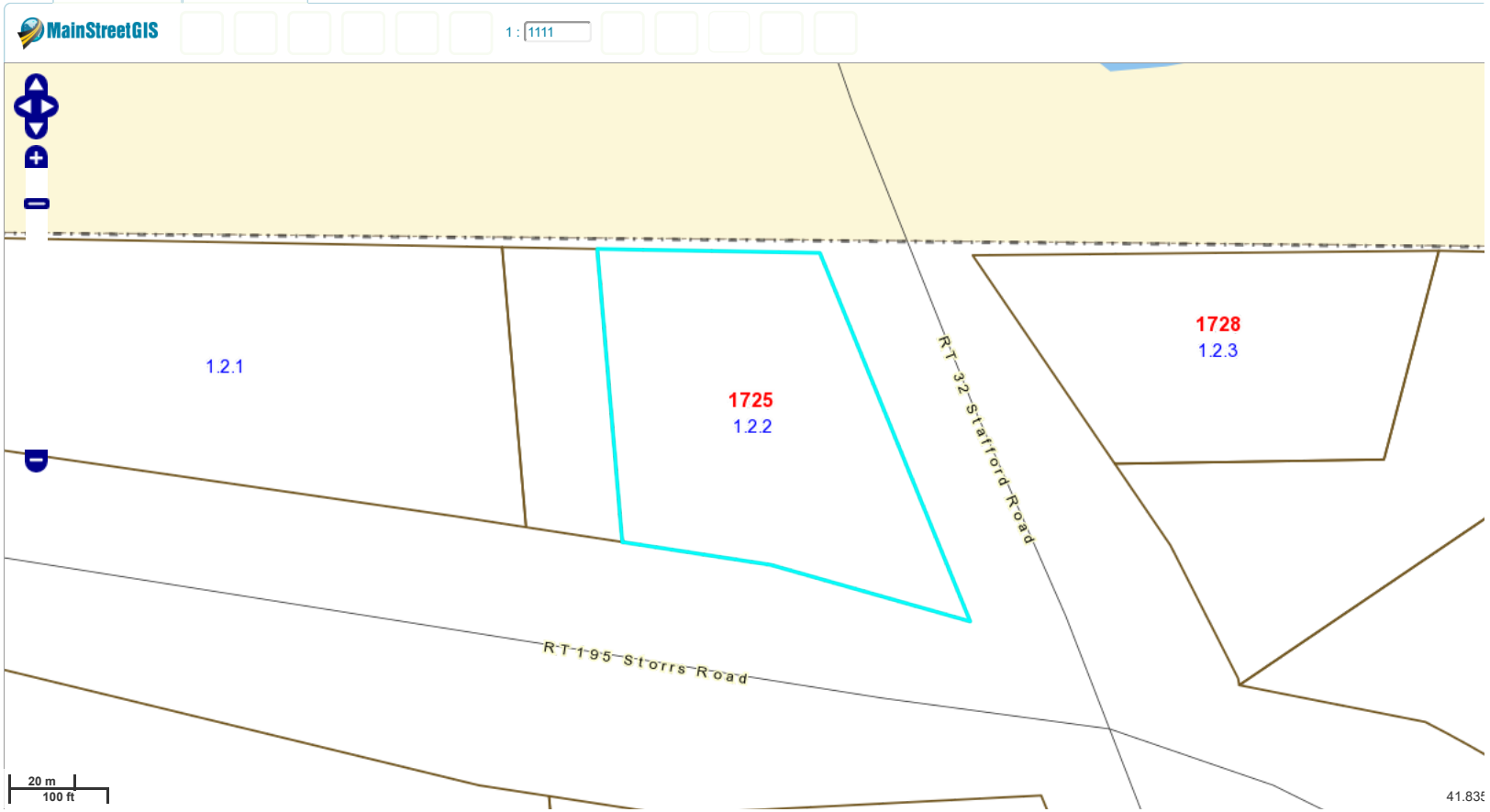
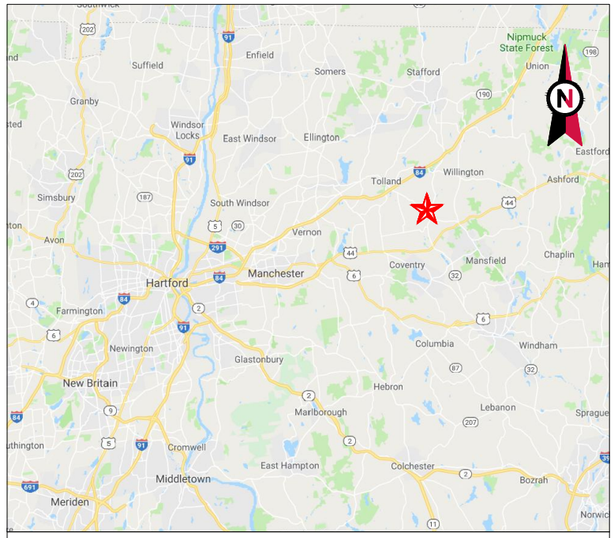


Exhibit C

Construction Drawings

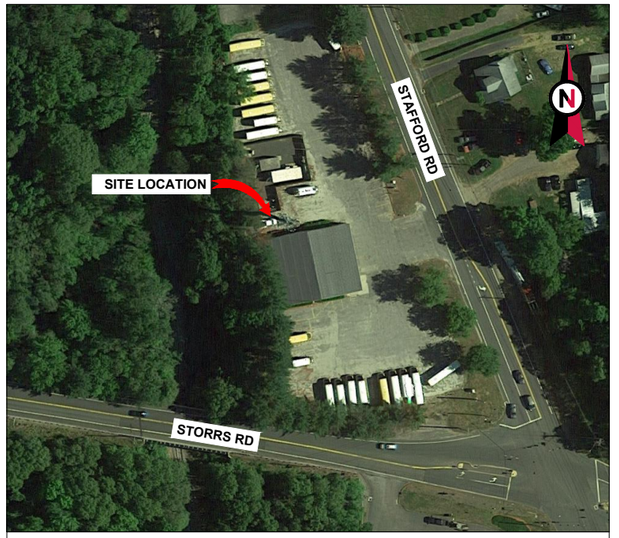


VICINITY MAP

AMERICAN TOWER®

ATC SITE NAME: MANSFIELD CENTER 2 CT
ATC SITE NUMBER: 376047
T-MOBILE SITE ID: CT11517B
SITE ADDRESS: 1725 STAFFORD ROAD STORRS MANSFIELD, CT 06268

T-MOBILE L600 ANTENNA AMENDMENT
67D94AR V2 OUTDOOR CONFIGURATION



LOCATION MAP

COMPLIANCE CODE

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNMENT AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

1. INTERNATIONAL BUILDING CODE (IBC)
2. NATIONAL ELECTRIC CODE (NEC)
3. LOCAL BUILDING CODE
4. CITY/COUNTY ORDINANCES

UTILITY COMPANIES

POWER COMPANY: EVERSOURCE
PHONE: (877) 662-7764

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

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

PROJECT SUMMARY

SITE ADDRESS:

1725 STAFFORD ROAD
STORRS MANSFIELD, CT 06268
COUNTY: TOLLAND

GEOGRAPHIC COORDINATES:

LATITUDE: 41.83595277

LONGITUDE: -72.30784722

GROUND ELEVATION: 368' AMSL

PROJECT TEAM

TOWER OWNER:

AMERICAN TOWER
10 PRESIDENTIAL WAY
WOBURN, MA 01801

ENGINEER:

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

PROPERTY OWNER:

TOWN OF MANSFIELD CT
4 SOUTH EAGLEVILLE RD
STORRS, CT 06268

PROJECT DESCRIPTION

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

REMOVE (6) PANELS, (3) SECTOR MOUNTS, (1) PLATFORM MOUNT, AND (12) 1-5/8" COAX CABLES

INSTALL (3) NEW PANELS, (3) TTAs, (3) RRUs, (12) 1-5/8" COAX CABLES, (1) PLATFORM MOUNT, AND (1) 1-5/8" HYBRID CABLE TO NEW RAD

EXISTING (3) PANELS, AND (3) TTAs TO REMAIN AND BE RELOCATED TO NEW RAD

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 HARTFORD, CT:

START OUT GOING NORTH ON MAIN ST TOWARD ATHENEUM SQ N. TAKE THE 2ND RIGHT ONTO CENTRAL ROW. CENTRAL ROW BECOMES AMERICAN ROW. AMERICAN ROW BECOMES STATE ST. STAY STRAIGHT TO GO ONTO RAMP. MERGE ONTO CT-2 E. MERGE ONTO I-84 E/US-6 E VIA EXIT 2 TOWARD E HARTFORD/BOSTON. KEEP LEFT TO TAKE I-84 E/WILBUR CROSS HWY N TOWARD BOSTON. TAKE THE CT-195 EXIT, EXIT 68, TOWARD TOLLAND/MANSFIELD. TURN RIGHT ONTO MERROW RD/CT-195. CONTINUE TO FOLLOW CT-195. TURN LEFT ONTO STAFFORD RD/CT-32. 1798 STAFFORD RD IS ON THE RIGHT.

SHEET INDEX

SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
G-001	TITLE SHEET	1	07/25/19	LR
G-002	GENERAL NOTES	0	06/18/19	LR
C-101	DETAILED SITE PLAN & TOWER ELEVATION	1	07/25/19	LR
C-501	ANTENNA INFORMATION & SCHEDULE	1	07/25/19	LR
C-502	ANTENNA INFORMATION & SCHEDULE	0	06/18/19	LR
E-501	GENERAL DETAILS	0	06/18/19	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	06/18/19
1	MA UPDATE	LR	07/25/19

ATC SITE NUMBER:
376047

ATC SITE NAME:
MANSFIELD CENTER 2 CT

SITE ADDRESS:
1725 STAFFORD ROAD
STORRS MANSFIELD, CT 06268

SEAL:

Authorized by "EOR"
Jul 25 2019 12:55 PM

T-Mobile design

DRAWN BY:	LR
APPROVED BY:	PPB
DATE DRAWN:	06/18/19
ATC JOB NO:	12964046

TITLE SHEET

SHEET NUMBER:	REVISION:
G-001	1

GENERAL CONSTRUCTION NOTES:

1. ALL WORK SHALL CONFORM TO ALL CURRENT APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING ANSI/EIA/TIA-222, AND COMPLY WITH ATC MASTER SPECIFICATIONS.
2. CONTRACTOR SHALL CONTACT LOCAL 811 FOR IDENTIFICATION OF UNDERGROUND UTILITIES PRIOR TO START OF CONSTRUCTION.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED INSPECTIONS.
4. ALL DIMENSIONS TO, OF, AND ON EXISTING BUILDINGS, DRAINAGE STRUCTURES, AND SITE IMPROVEMENTS SHALL BE VERIFIED IN FIELD BY CONTRACTOR WITH ALL DISCREPANCIES REPORTED TO THE ENGINEER.
5. DO NOT CHANGE SIZE OR SPACING OF STRUCTURAL ELEMENTS.
6. DETAILS SHOWN ARE TYPICAL; SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.
7. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY WHICH SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
8. CONTRACTOR SHALL BRACE STRUCTURES UNTIL ALL STRUCTURAL ELEMENTS NEEDED FOR STABILITY ARE INSTALLED. THESE ELEMENTS ARE AS FOLLOWS: LATERAL BRACING, ANCHOR BOLTS, ETC.
9. CONTRACTOR SHALL DETERMINE EXACT LOCATION OF EXISTING UTILITIES, GROUNDS DRAINS, DRAIN PIPES, VENTS, ETC. BEFORE COMMENCING WORK.
10. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE T-MOBILE WIRELESS REP PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH REMEDIAL ACTION SHALL REQUIRE WRITTEN APPROVAL BY THE T-MOBILE WIRELESS REP PRIOR TO PROCEEDING.
11. EACH CONTRACTOR SHALL COOPERATE WITH THE T-MOBILE WIRELESS REP, AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.
12. CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION OF THIS PROJECT TO MATCH EXISTING PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE T-MOBILE WIRELESS CONSTRUCTION MANAGER.
13. ALL CABLE/CONDUIT ENTRY/EXIT PORTS SHALL BE WEATHERPROOFED DURING INSTALLATION USING A SILICONE SEALANT.
14. WHERE EXISTING CONDITIONS DO NOT MATCH THOSE SHOWN IN THIS PLAN SET, CONTRACTOR SHALL NOTIFY THE T-MOBILE WIRELESS REP IMMEDIATELY.
15. CONTRACTOR SHALL ENSURE ALL SUBCONTRACTORS ARE PROVIDED WITH A COMPLETE AND CURRENT SET OF DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
16. CONTRACTOR SHALL REMOVE ALL RUBBISH AND DEBRIS FROM THE SITE AT THE END OF EACH DAY.
17. CONTRACTOR SHALL COORDINATE WORK SCHEDULE WITH LANDLORD AND TAKE PRECAUTIONS TO MINIMIZE IMPACT AND DISRUPTION OF OTHER OCCUPANTS OF THE FACILITY.
18. CONTRACTOR SHALL FURNISH T-MOBILE WIRELESS WITH A PDF MARKED UP AS-BUILT SET OF DRAWINGS UPON COMPLETION OF WORK.
19. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE WIRELESS REP TO DETERMINE WHAT, IF ANY, ITEMS WILL BE PROVIDED. ALL ITEMS NOT PROVIDED SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. CONTRACTOR WILL INSTALL ALL ITEMS PROVIDED.
20. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE WIRELESS REP TO DETERMINE IF ANY PERMITS WILL BE OBTAINED BY CONTRACTOR. ALL REQUIRED PERMITS NOT OBTAINED BY T-MOBILE WIRELESS MUST BE OBTAINED, AND PAID FOR, BY THE CONTRACTOR.
21. CONTRACTOR SHALL INSTALL ALL SITE SIGNAGE IN ACCORDANCE WITH T-MOBILE WIRELESS SPECIFICATIONS AND REQUIREMENTS.
22. CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS TO T-MOBILE WIRELESS FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
23. ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND LOCATED ACCORDING TO T-MOBILE WIRELESS SPECIFICATIONS, AND AS SHOWN IN THESE PLANS.
24. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
25. CONTRACTOR SHALL NOTIFY T-MOBILE WIRELESS REP A MINIMUM OF 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACKFILLING ANY UNDERGROUND UTILITIES, FOUNDATIONS OR SEALING ANY WALL, FLOOR OR ROOF PENETRATIONS FOR ENGINEERING REVIEW AND APPROVAL.
26. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY INCLUDING COMPLIANCE WITH ALL APPLICABLE OSHA STANDARDS AND RECOMMENDATIONS AND SHALL PROVIDE ALL NECESSARY SAFETY DEVICES INCLUDING PPE AND PPM AND CONSTRUCTION DEVICES SUCH AS WELDING AND FIRE PREVENTION, TEMPORARY SHORING, SCAFFOLDING, TRENCH BOXES/SLOPING, BARRIERS, ETC.
27. THE CONTRACTOR SHALL PROTECT AT HIS OWN EXPENSE, ALL EXISTING FACILITIES AND SUCH OF HIS NEW WORK LIABLE TO INJURY DURING THE CONSTRUCTION PERIOD. ANY DAMAGE CAUSED BY NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, OR BY THE ELEMENTS DUE TO NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, EITHER TO THE EXISTING WORK, OR TO HIS WORK OR THE WORK OF ANY OTHER CONTRACTOR, SHALL BE REPAIRED AT HIS EXPENSE TO THE OWNER'S SATISFACTION.
28. ALL WORK SHALL BE INSTALLED IN A FIRST CLASS, NEAT AND WORKMANLIKE MANNER BY MECHANICS SKILLED IN THE TRADE INVOLVED. THE QUALITY OF WORKMANSHIP SHALL BE SUBJECT TO THE APPROVAL OF THE T-MOBILE WIRELESS REP. ANY WORK FOUND BY THE T-MOBILE WIRELESS REP TO BE OF INFERIOR QUALITY AND/OR WORKMANSHIP SHALL BE REPLACED AND/OR REWORKED AT CONTRACTOR EXPENSE UNTIL APPROVAL IS OBTAINED.
29. IN ORDER TO ESTABLISH STANDARDS OF QUALITY AND PERFORMANCE, ALL TYPES OF MATERIALS LISTED HEREINAFTER BY MANUFACTURER'S NAMES AND/OR MANUFACTURER'S CATALOG NUMBER SHALL BE PROVIDED BY THESE MANUFACTURERS AS SPECIFIED.

STRUCTURAL STEEL NOTES:

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

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

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	LR	06/18/19

ATC SITE NUMBER:
376047

ATC SITE NAME:
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SITE ADDRESS:
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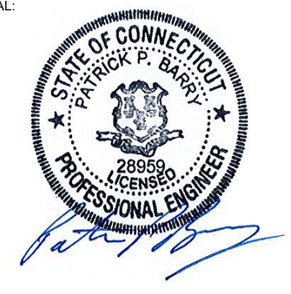


Authorized by "EOR"
Jul 25 2019 12:55 PM

T-Mobile design

DRAWN BY:	LR
APPROVED BY:	PPB
DATE DRAWN:	06/18/19
ATC JOB NO:	12964046

GENERAL NOTES

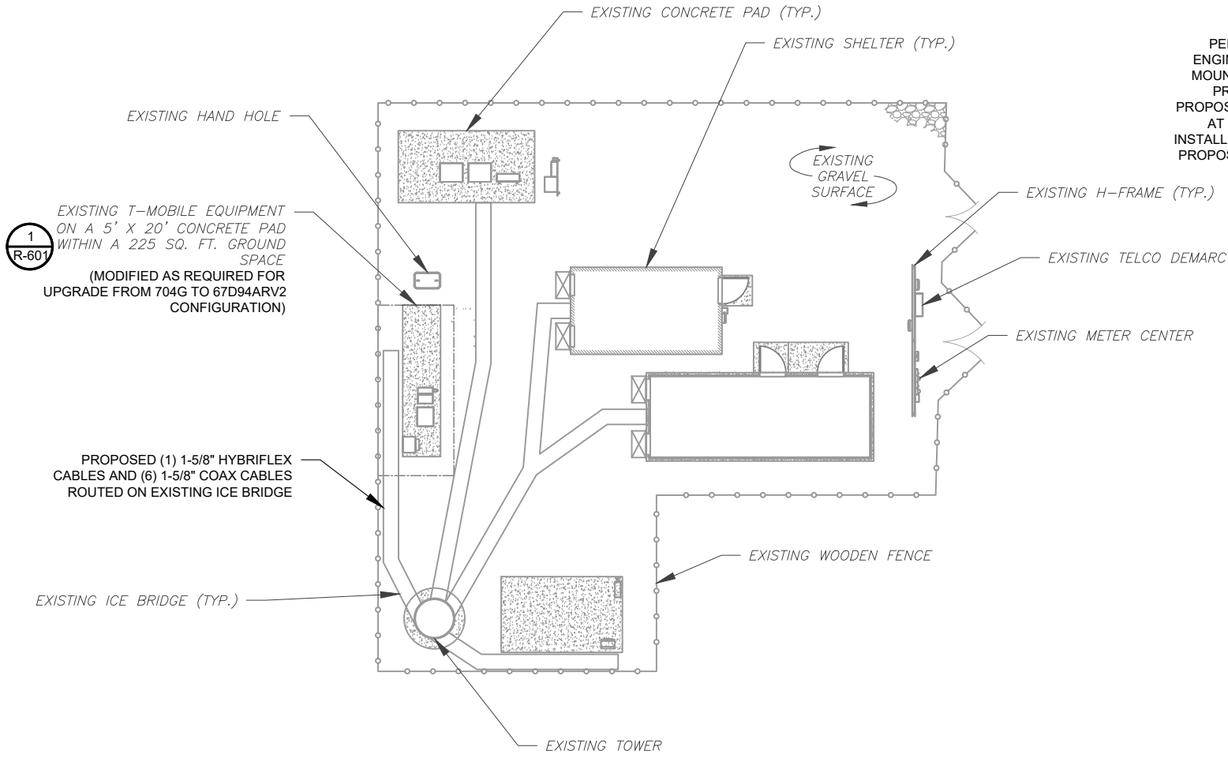
SHEET NUMBER:	REVISION:
G-002	0

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.

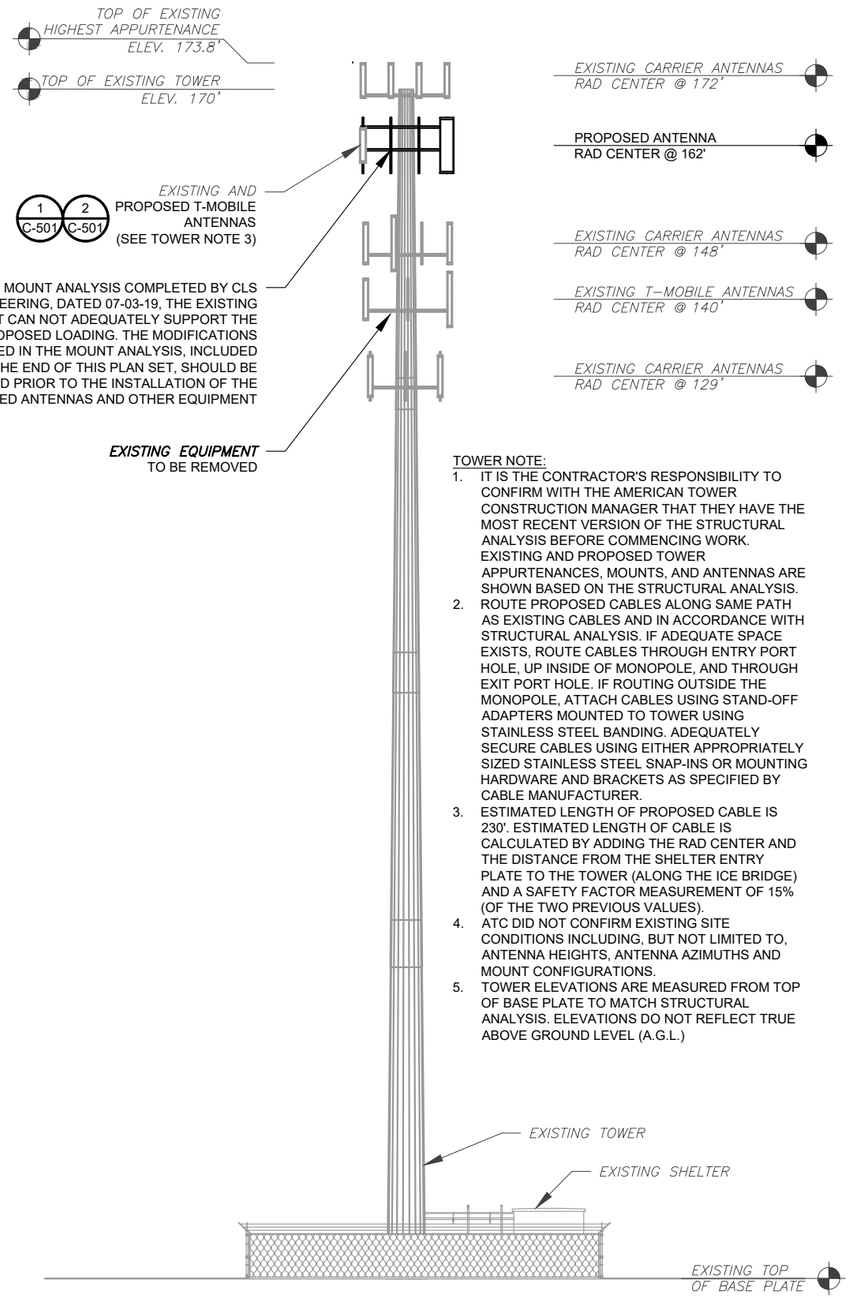
3. THIS PROJECT INCLUDES NO INSTALL OR MODIFICATION AT GRADE.



1 DETAILED SITE PLAN

0 20' 40'

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



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 230'. 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	06/18/19
1	MA UPDATE	LR	07/25/19

ATC SITE NUMBER:
376047

ATC SITE NAME:
MANSFIELD CENTER 2 CT

SITE ADDRESS:
1725 STAFFORD ROAD
STORRS MANSFIELD, CT 06268

SEAL:

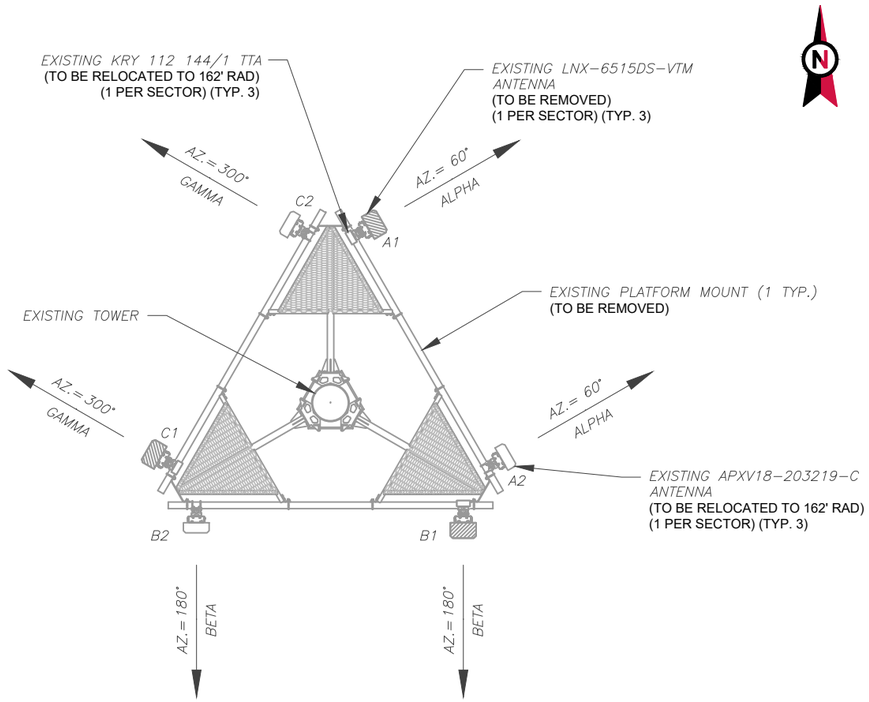
Authorized by "EOR"
Jul 25 2019 12:55 PM

T-Mobile design

DRAWN BY:	LR
APPROVED BY:	PPB
DATE DRAWN:	06/18/19
ATC JOB NO:	12964046

DETAILED SITE PLAN & TOWER ELEVATION

SHEET NUMBER:	REVISION:
C-101	1



1 EXISTING ANTENNA PLAN @ 140' RAD

EXISTING ANTENNA / EQUIPMENT SCHEDULE

SECTOR	ANT.	MANUFACTURER (MODEL #)	RAD CENTER	AZIMUTH (TN)	MECH. D-TILT	ELEC. D-TILT	ADDITIONAL TOWER MOUNTED EQUIPMENT
ALPHA	A1	LNX-6515DS-VTM	140'-0"	60°	0°	2°	KRY 112 144/1
ALPHA	A2	APXV18-203219-C	140'-0"	60°	0°	2°	–
BETA	B1	LNX-6515DS-VTM	140'-0"	180°	0°	2°	KRY 112 144/1
BETA	B2	APXV18-203219-C	140'-0"	180°	0°	2°	–
GAMMA	C1	LNX-6515DS-VTM	140'-0"	300°	0°	2°	KRY 112 144/1
GAMMA	C2	APXV18-203219-C	140'-0"	300°	0°	2°	–

CURRENT FIBER DISTRIBUTION/OVP BOX		CURRENT CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
–	–	(12) 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

2 ANTENNA SCHEDULE

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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	06/18/19
1	MA UPDATE	LR	07/25/19

ATC SITE NUMBER:
376047

ATC SITE NAME:
MANSFIELD CENTER 2 CT

SITE ADDRESS:
1725 STAFFORD ROAD
STORRS MANSFIELD, CT 06268

SEAL:

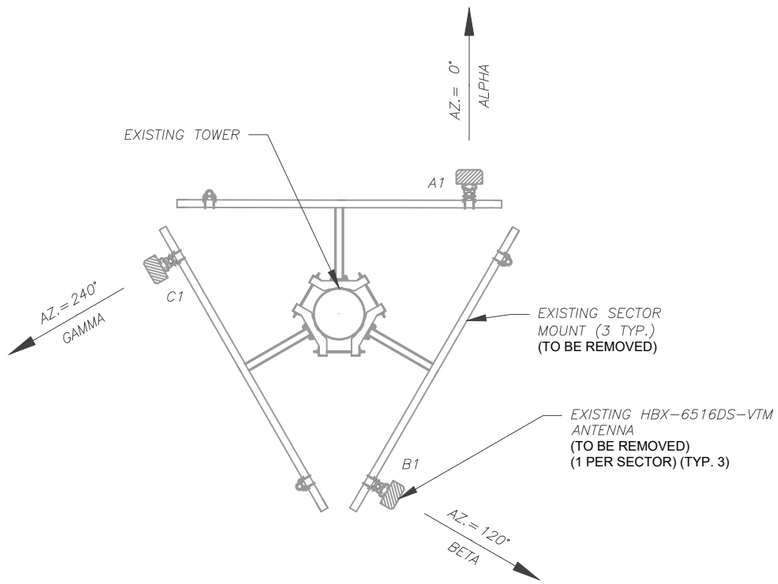
Authorized by "EOR"
Jul 25 2019 12:55 PM

T-Mobile design

DRAWN BY:	LR
APPROVED BY:	PPB
DATE DRAWN:	06/18/19
ATC JOB NO:	12964046

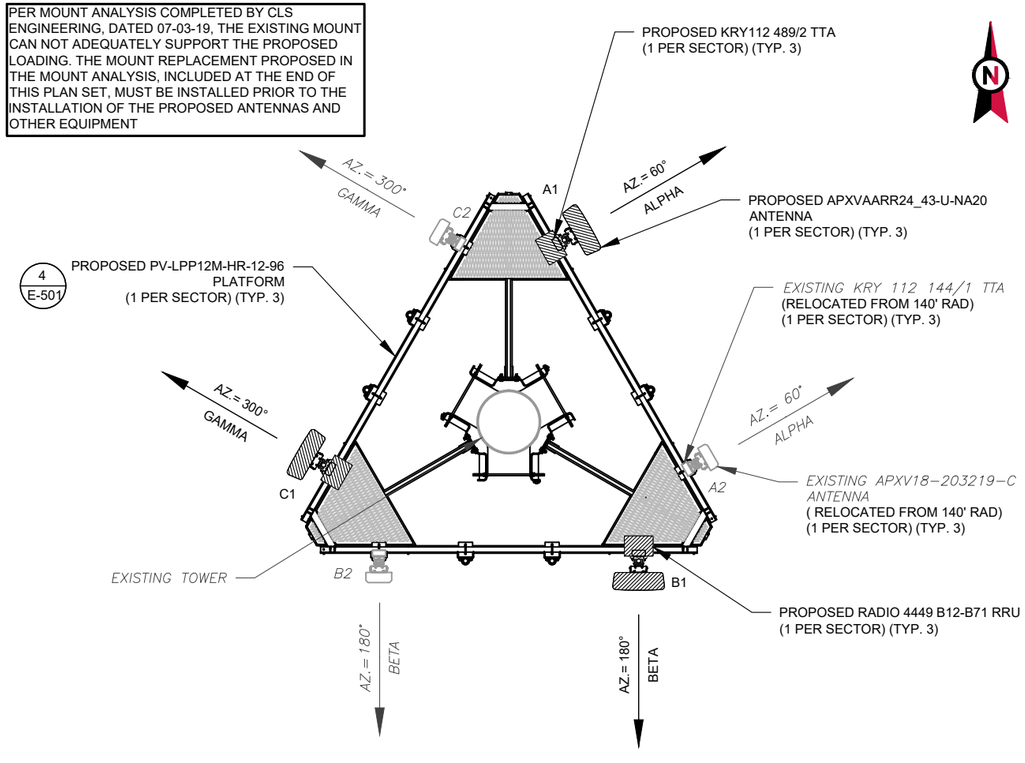
ANTENNA INFORMATION & SCHEDULE

SHEET NUMBER:	REVISION:
C-501	1



1 EXISTING ANTENNA PLAN @ 162'

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



2 FINAL ANTENNA PLAN @ 162'

EXISTING ANTENNA / EQUIPMENT SCHEDULE

SECTOR	ANT.	MANUFACTURER (MODEL #)	RAD CENTER	AZIMUTH (TN)	MECH. D-TILT	ELEC. D-TILT	ADDITIONAL TOWER MOUNTED EQUIPMENT
ALPHA	A1	HBX-6516DS-VTM	162'-0"	0°	–	–	–
BETA	B1	HBX-6516DS-VTM	162'-0"	120°	–	–	–
GAMMA	C1	HBX-6516DS-VTM	162'-0"	240°	–	–	–

NOTES

1. BASED ON APPROVED ATC APPLICATION 12927168, DATED 04/02/19. CONFIRM WITH T-MOBILE REP FOR APPLICABLE UPDATES/REVISIONS AND MOST RECENT RFDS FOR NSN CONFIGURATION (CONFIG). GC TO CAP ALL UNUSED PORTS.
2. ATC HAS NOT YET VERIFIED ANY EXISTING ANTENNA CONFIG OR MOUNT CONFIG. CONTRACTOR TO VERIFY MOUNT CONFIG HAS SUFFICIENT SPACE FOR PROPOSED LESSEE EQUIPMENT (EQUIP) (I.E. CLEARANCES, MOUNT PIPE, SUFFICIENT LENGTH, ETC.) ATC DID NOT ANALYZE ANTENNA MOUNT TO DETERMINE ADEQUATE STRUCTURAL CAPACITY FOR ANY LESSEE LOADING.
3. ALL PROPOSED EQUIP INCLUDING ANTENNAS, COAX, ETC. SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS ON FILE WITH ATC'S CM.
4. CONFIRM SPACING OF PROPOSED EQUIP DOES NOT CAUSE TOWER CONFLICTS NOR IMPEDE TOWER CLIMBING PEGS.
5. POSITIONS START WITH FIRST PIPE ON THE LEFT SIDE (AS VIEWED FROM BEHIND THE MOUNT).

FINAL ANTENNA / EQUIPMENT SCHEDULE

SECTOR	ANT.	MANUFACTURER (MODEL #)	RAD CENTER	AZIMUTH (TN)	MECH. D-TILT	ELEC. D-TILT	ADDITIONAL TOWER MOUNTED EQUIPMENT
ALPHA	A1	APXVAARR24_43-U-NA20	162'-0"	60°	0°	2°	RADIO 4449 B12-B71 KRY112 489/2
ALPHA	A2	APXV18-203219-C	162'-0"	60°	0°	2°	KRY 112 144/1
BETA	B1	APXVAARR24_43-U-NA20	162'-0"	180°	0°	2°	RADIO 4449 B12-B71 KRY112 489/2
BETA	B2	APXV18-203219-C	162'-0"	180°	0°	2°	KRY 112 144/1
GAMMA	C1	APXVAARR24_43-U-NA20	162'-0"	300°	0°	2°	RADIO 4449 B12-B71 KRY112 489/2
GAMMA	C2	APXV18-203219-C	162'-0"	300°	0°	2°	KRY 112 144/1

CURRENT FIBER DISTRIBUTION/OVP BOX		CURRENT CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
–	–	(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

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

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

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	LR	06/18/19

ATC SITE NUMBER:
376047

ATC SITE NAME:
MANSFIELD CENTER 2 CT

SITE ADDRESS:
1725 STAFFORD ROAD
STORRS MANSFIELD, CT 06268

SEAL:

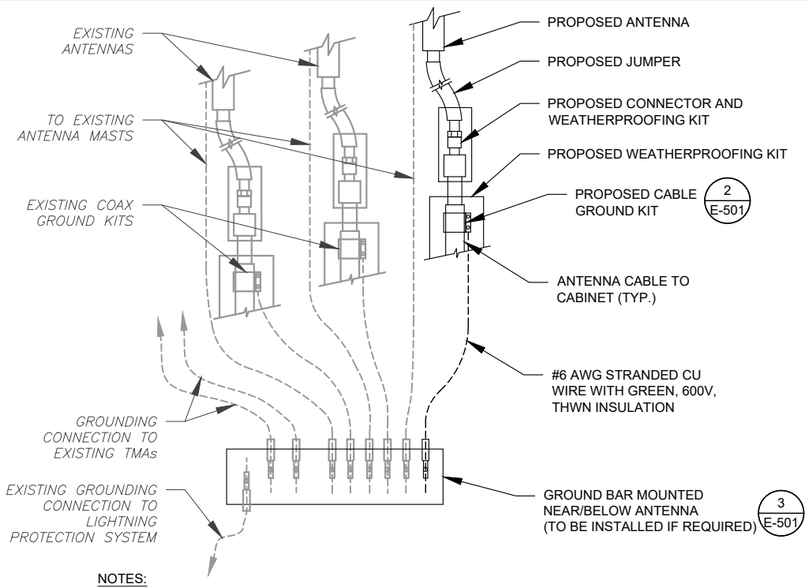
Authorized by "EOR"
Jul 25 2019 12:55 PM

T-Mobile design

DRAWN BY:	LR
APPROVED BY:	PPB
DATE DRAWN:	06/18/19
ATC JOB NO:	12964046

ANTENNA INFORMATION & SCHEDULE

SHEET NUMBER:	REVISION:
C-502	0

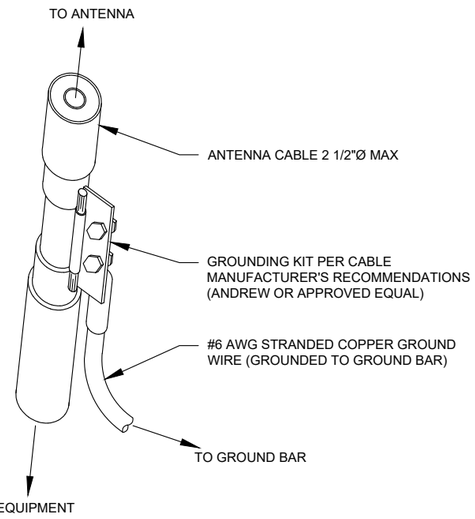


NOTES:

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

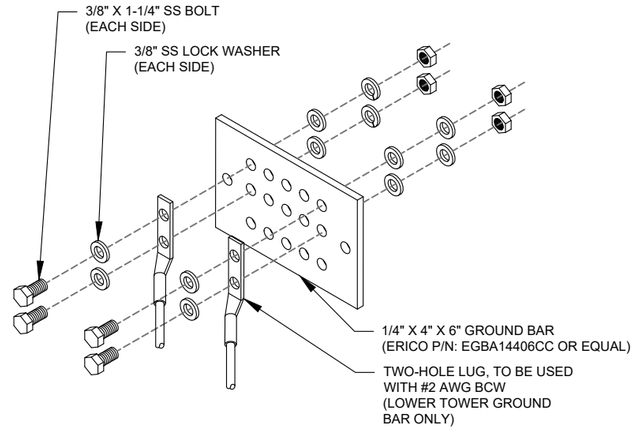


GROUND KIT NOTES:

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

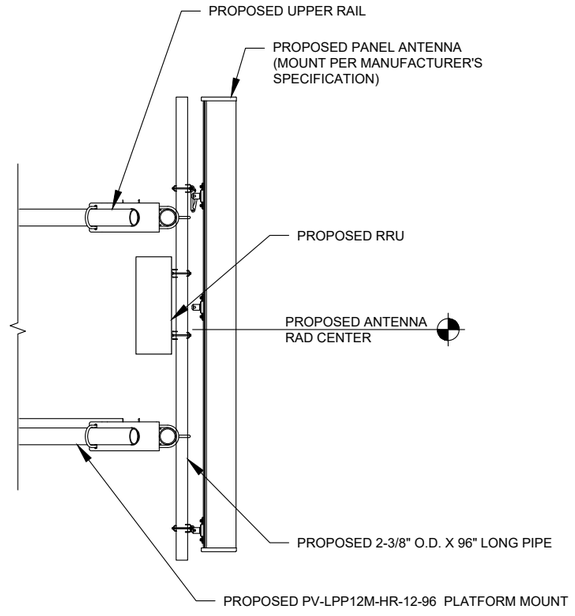


GROUND BAR NOTES:

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



4 PROPOSED ANTENNA MOUNTING DETAIL (ELEVATION)

SCALE: NOT TO SCALE

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

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	LR	06/18/19

ATC SITE NUMBER:
376047

ATC SITE NAME:
MANSFIELD CENTER 2 CT

SITE ADDRESS:
1725 STAFFORD ROAD
STORRS MANSFIELD, CT 06268

SEAL:

Authorized by "EOR"
Jul 25 2019 12:55 PM

T-Mobile cosign

DRAWN BY:	LR
APPROVED BY:	PPB
DATE DRAWN:	06/18/19
ATC JOB NO:	12964046

GENERAL DETAILS

SHEET NUMBER: E-501

REVISION: 0

Mount Analysis of Proposed PerfectVision PV-LPP12M-HR-12-96 Platform w/ PV-PKBK-M Kicker Kit for American Tower on behalf of T-Mobile

376047 - Mansfield Center 2 CT

Project #: 12927168

T-Mobile Site ID: CT11517B

Program: L600

CLS Engineering PLLC Project #41124-12927168-01-MR-R1

July 3, 2019

MOUNT DESCRIPTION	Proposed PerfectVision PV-LPP12M-HR-12-96 Platform w/ PV-PKBK-M Kicker Kit at 162 ft
ANTENNA ELEVATION	Nominal Rad. Elevation of 162 ft AGL
SITE DESCRIPTION	170 ft Monopole
SITE ADDRESS	1725 Stafford Road, Storrs Mansfield, CT 06268-1138, Tolland County
GPS COORDINATES	41.835953, -72.307847
ANALYSIS STANDARD	2015 IBC / 2018 Connecticut State Building Code / TIA-222-G
LOADING CRITERIA	130 mph, V_{ult} / 100.7 mph, V_{asd} (3-Second Gust) w/o ice & 50 mph (3-Second Gust) w/ 1" Ice

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

MEMBER USAGE	53%	Pass

Existing mounts to be replaced; 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

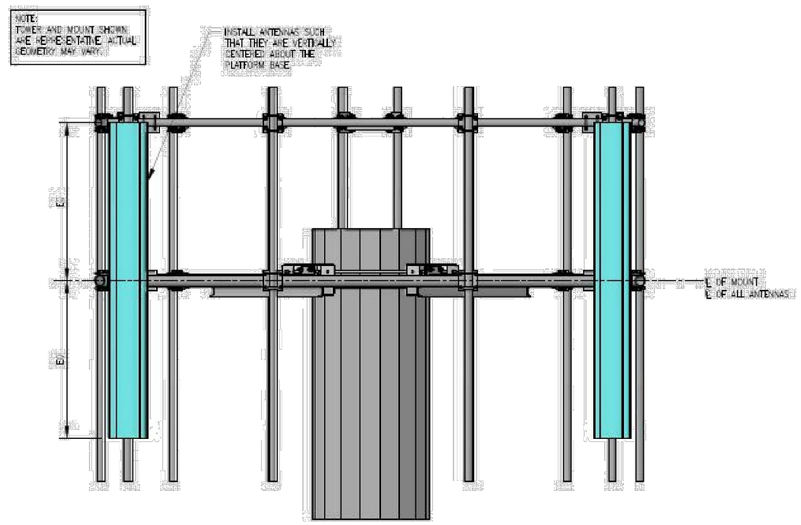
IdenTrust Issued and Managed

Digitally signed by Tyler Barker
DN: c=US, o=Telamon Corporation, ou=A01427E00000164A525ADF80000 1D17, cn=Tyler Barker
Date: 2019.07.03 21:59:56 -04'00'

■ CONCLUSION AND RECOMMENDATIONS

According to our structural analysis, the mounts have been found to **PASS PENDING REPLACEMENT**. The mounting configuration considered in this analysis will be capable of supporting the referenced loading pursuant to referenced standards once the following scope is executed:

- **Replace the existing mount with (1) new PerfectVision PV-LPP12M-HR-12-96 Platform Mount.**
- **Install (1) PerfectVision PV-PKBK-M Monopole Platform Kicker Kit as shown. Field-cut angles as required. Maintain minimum bolt edge distance.**
- **Install (4) 2 STD x 8'-0" long mount pipes, included in the kit, per sector (12 total). All mount pipes to be installed equidistant from each other as shown in the following sketches.**
- **Install support rails 3'-6" above the platform base. Connect to all mount pipes using crossover angles included in proposed platform kit.**
- **Install proposed antennas such that they are vertically centered about the face base horizontal member. Install proposed RRUS and TMA's behind the antennas.**



See following sketches and PerfectVision drawings for additional details.

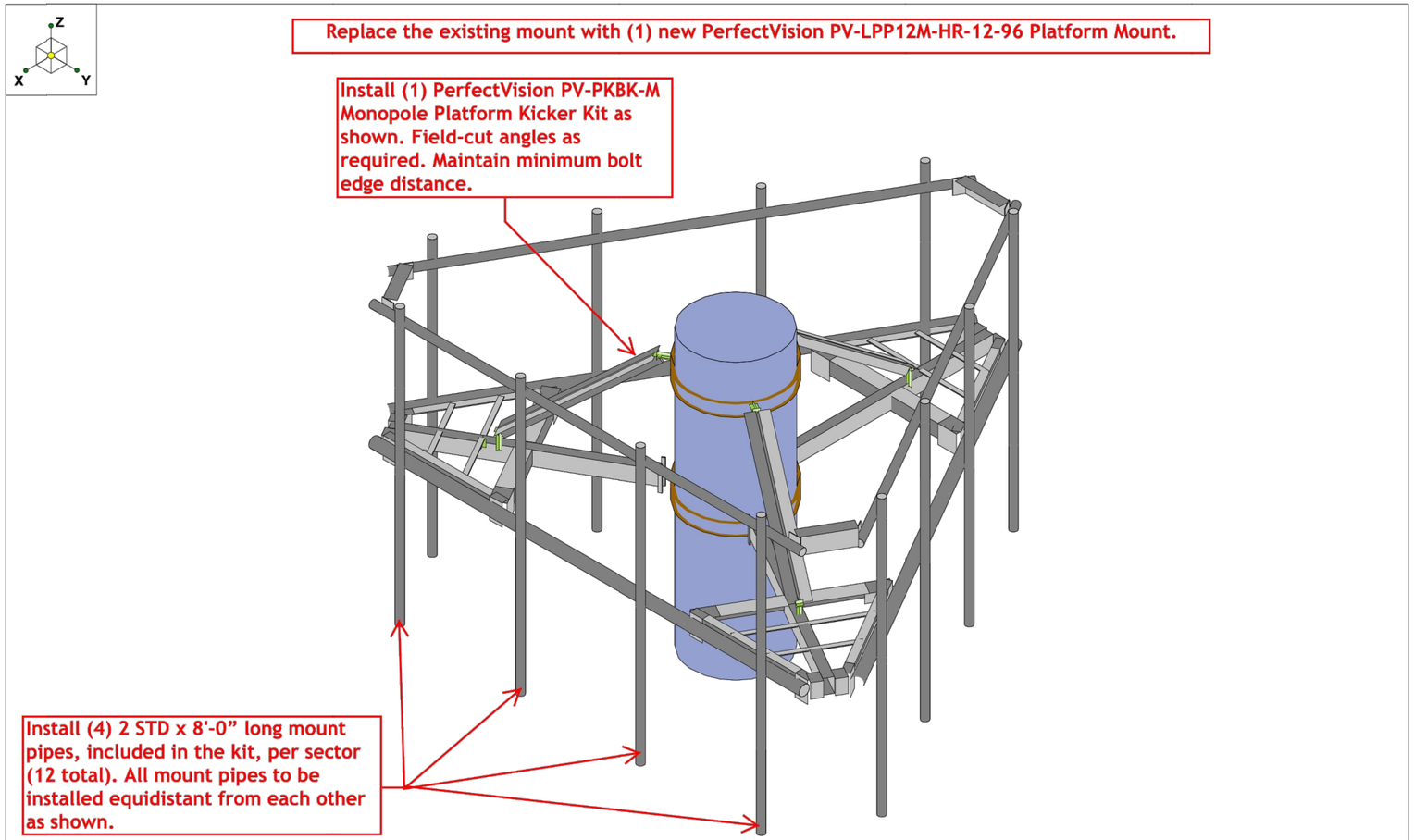
1 MOUNT ANALYSIS
SCALE: NOT TO SCALE

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: R-601

REVISION: 0



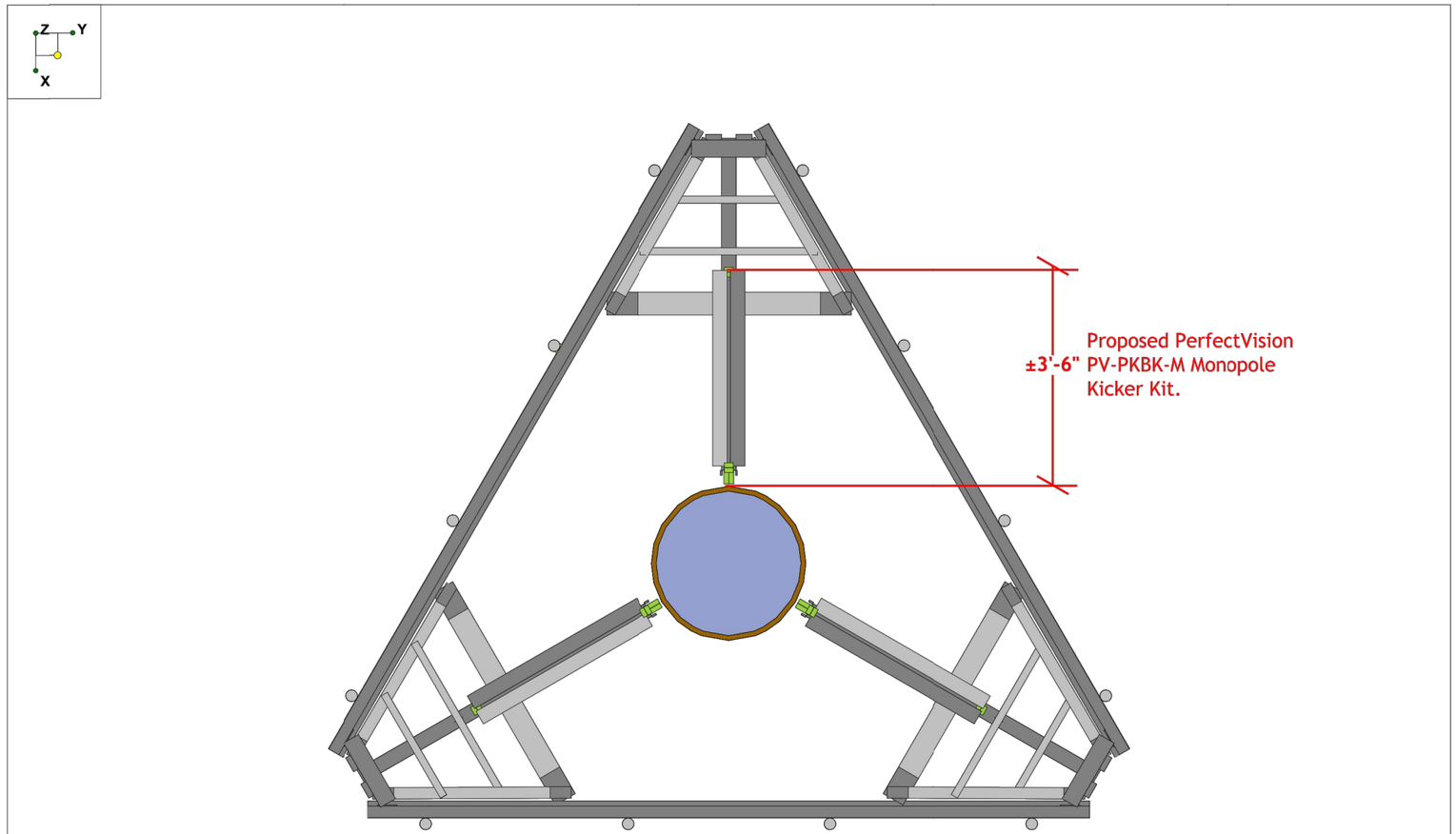
CLS	41124-12927168-Mansfield Center 2 CT	IN - 1
JLS	Installation Sketch	Apr 18, 2019 at 10:27 AM
41124-12927168-01-MR		41124-12927168-01-MR-IMAGES.r3d

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-602	0



CLS	41124-12927168-Mansfield Center 2 CT	IN - 2
JLS		Apr 18, 2019 at 10:27 AM
41124-12927168-01-MR	Installation Sketch	41124-12927168-01-MR-IMAGES.r3d

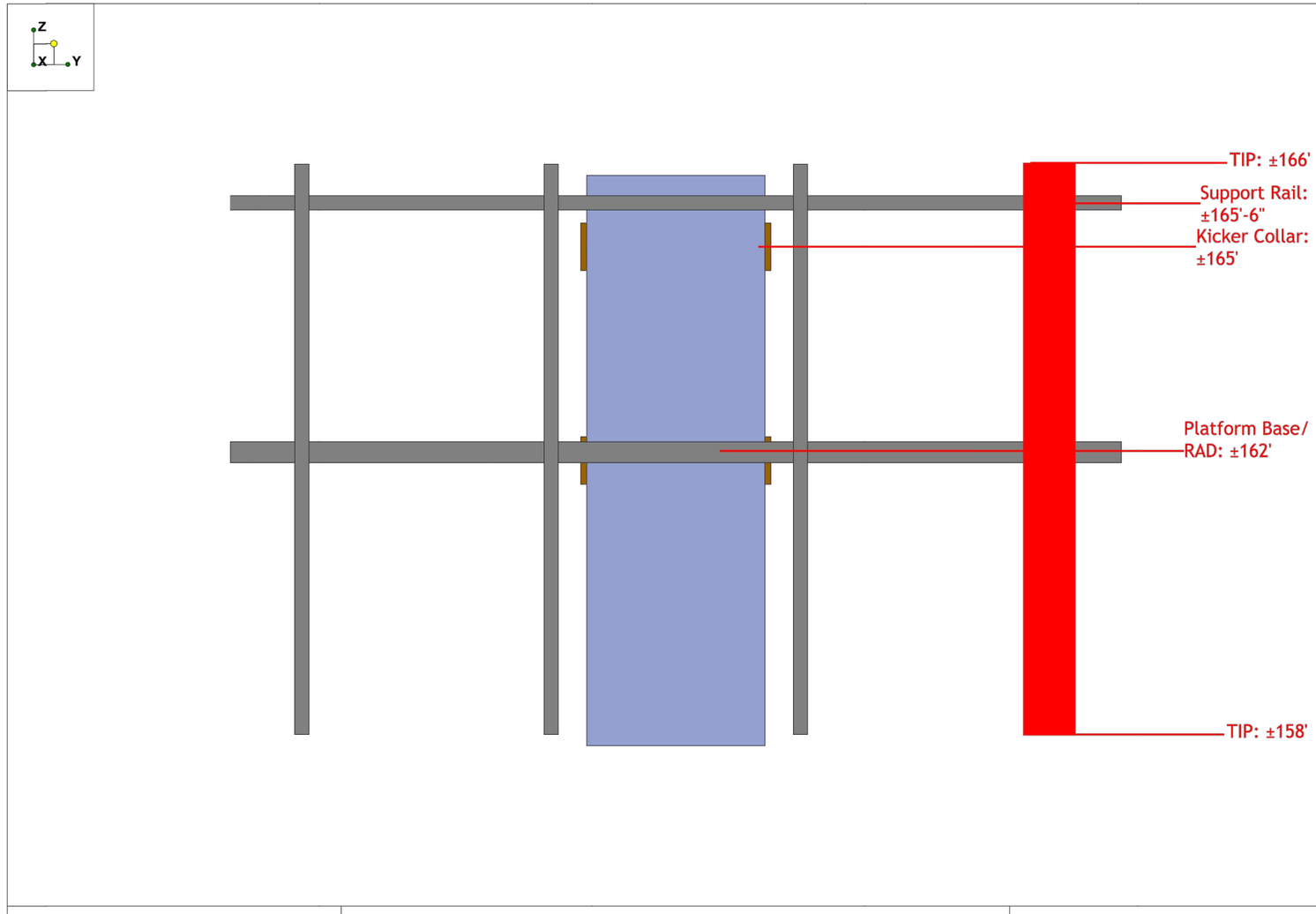
1 MOUNT ANALYSIS

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



CLS	41124-12927168-Mansfield Center 2 CT	IN - 3
JLS		Apr 18, 2019 at 10:28 AM
41124-12927168-01-MR	Installation Sketch	41124-12927168-01-MR-IMAGES.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

Exhibit D

Structural Analysis Report

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**170 ft Monopole**
ATC Site Name	:	**MANSFIELD CENTER 2 CT, CT**
ATC Site Number	:	**376047**
Engineering Number	:	**12927168_C3_02**
Proposed Carrier	:	**T-MOBILE**
Carrier Site Name	:	**CT517/TCP Mansfield**
Carrier Site Number	:	**CT11517B**
Site Location	:	**1725 Stafford Road** **STORRS MANSFIELD, CT 06268-1138** **41.836000,-72.307800**
County	:	**Tolland**
Date	:	**July 19, 2019**
Max Usage	:	**50%**
Result	:	**Pass**

Prepared By:
Cole Melody Koffi
Structural Engineer I

Reviewed By:

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
32598
LICENSED
PROFESSIONAL ENGINEER

Authorized by "EOR"
Jul 25 2019 5:46 PM
cosign

COA: PEC.0001553

AMERICAN TOWER®
CORPORATION

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 170 ft monopole to reflect the change in loading by T-MOBILE.

Supporting Documents

Tower Drawings	PennSummit, PJF Job #29202-0365, dated December 6, 2002
Foundation Drawing	PennSummit, PJF Job #29202-0365, dated December 6, 2002
Geotechnical Report	GEOServices Project #31-151383K, dated December 21, 2015
Mount Analysis	CLS Engineering PLLC Project #41124-12927168-01-MR-R1, dated July 3, 2019

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	98 mph (3-Second Gust V_{ASD}) / 126 mph (3-Second Gust V_{ULT})
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1" radial ice concurrent
Code:	ANSI/TIA-222-G / 2015 IBC / 2018 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Spectral Response:	Ss = 0.17, S_1 = 0.06
Site Class:	D - Stiff Soil

Conclusion

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

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

Existing and Reserved Equipment

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
174.0	6	Commscope HBXX-6517DS-A2M	Low Profile Platform	(12) 1 5/8" Coax (1) 1 5/8" Hybriflex	VERIZON WIRELESS
	3	Andrew LNX-6514DS-A1M			
	3	Amphenol Antel BXA-70080-4BF-EDIN-X			
170.0	6	Alcatel-Lucent RRH2X60-AWS			
	6	RFS FD9R6004/2C-3L (3.1 lbs)			
	1	RFS DB-T1-6Z-8AB-0Z			
162.0	-	-	-	-	T-MOBILE
150.0	1	Powerwave Allgon P65-17-XLH-RR	Low Profile Platform	(12) 1 5/8" Coax (12) 1/2" Coax (2) 3" conduit	AT&T MOBILITY
	2	KMW AM-X-CD-16-65-00T-RET			
	6	Ericsson RRUS 11 (Band 12)			
	6	Powerwave Allgon LGP21401			
	6	Powerwave Allgon LGP21901			
	6	Powerwave Allgon 7770.00			
130.0	3	Alcatel-Lucent RRH 1900 MHz	Low Profile Platform	(3) 1 1/4" Hybriflex Cable (1) 1 5/8" Hybriflex	SPRINT NEXTEL
	3	Alcatel-Lucent 800MHz RRH			
	3	Alcatel-Lucent TD-RRH8x20-25			
	3	RFS APXV9TM14-ALU-I20			
	3	RFS APXV9ERR18-C (62 lbs)			

Equipment to be Removed

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
162.0	-	-	T-Arms	-	T-MOBILE
140.0	3	Commscope LNX-6515DS-VTM	Low Profile Platform	(12) 1 5/8" Coax	
	3	Andrew ATSBT-BOTTOM-MF			
	3	RFS APXV18-203219-C (54.1" x 11.3")			
	3	Ericsson KRY 112 144/1			

Proposed Equipment

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
162.0	3	Ericsson KRY 112 489/2	PerfectVision PV-LPP12M-HR-12-96 Platform with Handrails	(12) 1 5/8" Coax (1) 1 5/8" Fiber	T-MOBILE
	3	Ericsson Radio 4449 B12,B71			
	3	RFS APXVAARR24_43-U-NA20			
	3	RFS APXV18-203219-C (54.1" x 11.3")			
	3	Ericsson KRY 112 144/1			

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

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	47%	Pass
Shaft	50%	Pass
Base Plate	35%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Moment (Kips-Ft)	5,555.0	7,499.3	3,518.4	47%
Shear (Kips)	45.0	60.8	28.9	47%

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

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

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
162.0	Ericsson KRY 112 489/2	T-MOBILE	1.245	0.878
	Ericsson Radio 4449 B12,B71			
	RFS APXVAARR24_43-U-NA20			

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

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CORPORATION

Standard Conditions

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

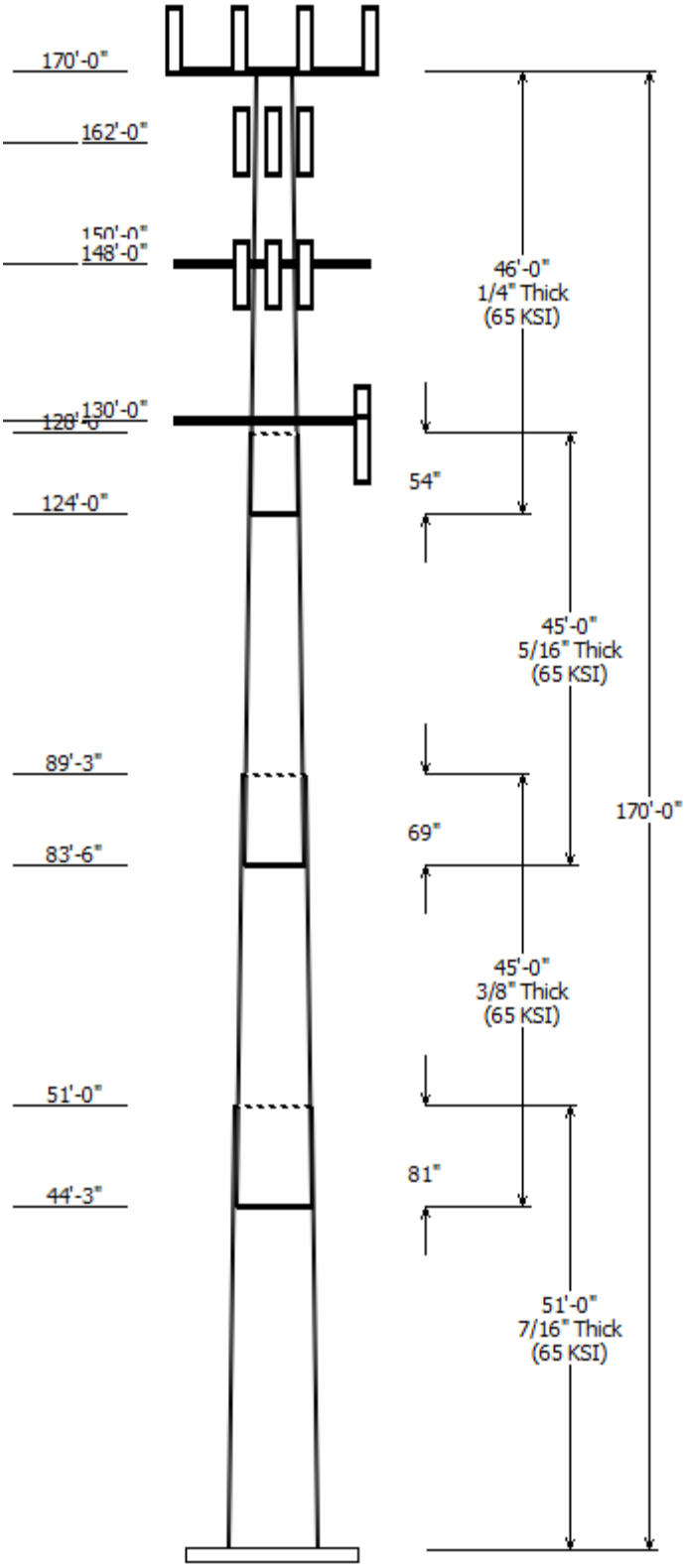
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

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

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

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

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



Job Information

Client :	T-MOBILE		
Pole :	376047	Code:	ANSI/TIA-222-G
Location :	MANSFIELD CENTER 2 CT, CT		
Description :		Struct Class :	II
Shape :	18 Sides	Exposure :	B
Height :	170.00 (ft)	Topo :	1
Base Elev (ft):	0.00		
Taper:	0.247029 (in/ft)		

Sections Properties

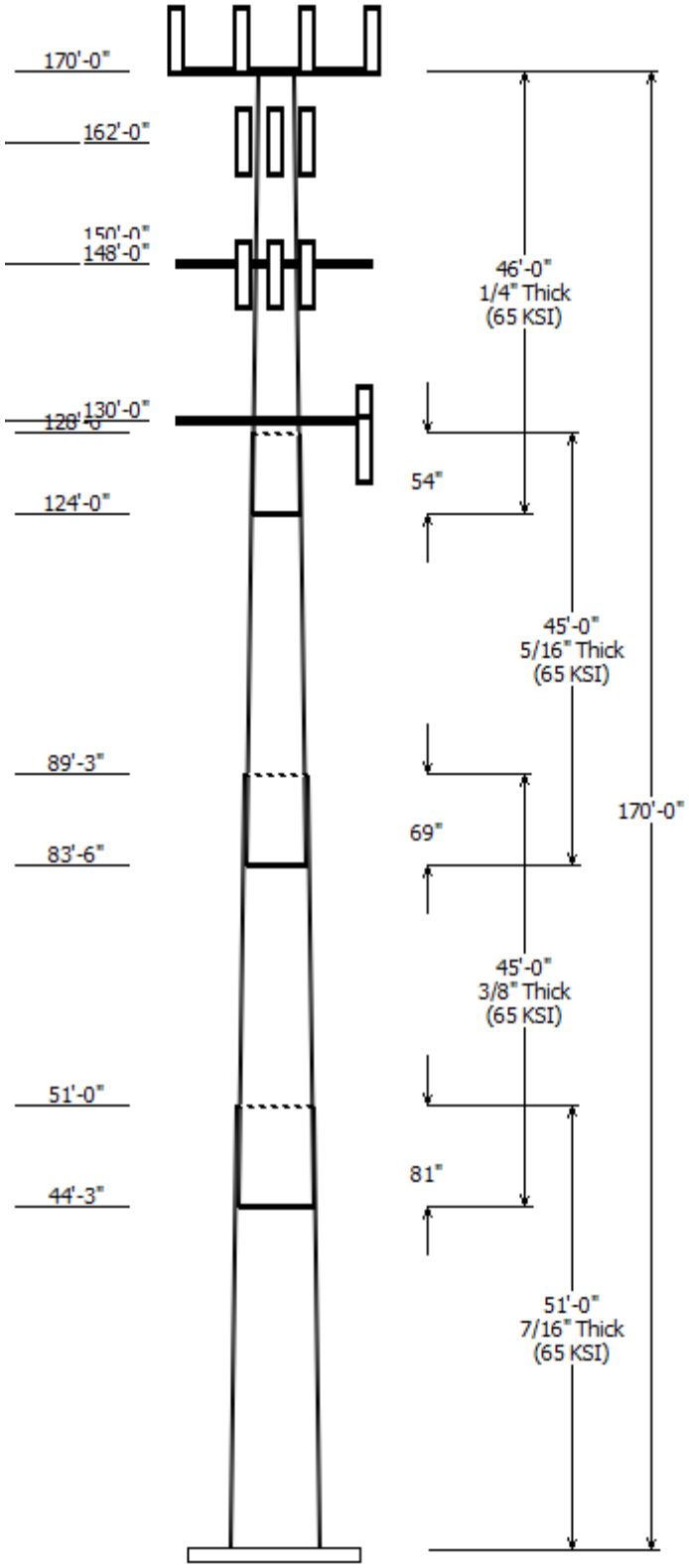
Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	51.000	51.52	64.12	0.438		0.000	18 Sides	65
2	45.000	42.82	53.93	0.375	Slip Joint	81.000	18 Sides	65
3	45.000	33.75	44.86	0.313	Slip Joint	69.000	18 Sides	65
4	46.000	24.00	35.36	0.250	Slip Joint	54.000	18 Sides	65

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
170.000	172.000	6	Commscope HBXX-6517DS-
170.000	172.000	3	Andrew LNX-6514DS-A1M
170.000	172.000	3	Amphenol Antel BXA-70080-
170.000	172.000	1	RFS DB-T1-6Z-8AB-0Z
170.000	170.000	6	Alcatel-Lucent RRH2X60-AWS
170.000	170.000	6	RFS FD9R6004/2C-3L (3.1 lbs)
170.000	170.000	1	Flat Low Profile Platform
162.000	162.000	3	Andrew ATSBT-BOTTOM-MF
162.000	162.000	3	Commscope LNX-6515DS-VTM
162.000	162.000	3	RFS APXVAARR24_43-U-NA20
162.000	162.000	3	Ericsson Radio 4449 B12,B71
162.000	162.000	3	Ericsson KRY 112 489/2
162.000	165.000	3	Ericsson KRY 112 144/1
162.000	162.000	1	PerfectVision PV-LPP12M-HR-
162.000	162.000	3	RFS APXV18-203219-C (54.1" x 1
150.000	148.000	6	Powerwave Allgon LGP21901
150.000	148.000	1	Powerwave Allgon P65-17-
150.000	148.000	2	KMW AM-X-CD-16-65-00T-RET
150.000	148.000	6	Powerwave Allgon 7770.00
150.000	148.000	6	Ericsson RRUS 11 (Band 12)
150.000	148.000	6	Powerwave Allgon LGP21401
148.000	148.000	1	Flat Low Profile Platform
148.000	148.000	1	Generic SSB (27lb)
130.000	130.000	1	Flat Low Profile Platform
130.000	129.000	3	RFS APXV9ERR18-C (62 lbs)
130.000	130.000	3	RFS APXV9TM14-ALU-I20
130.000	130.000	3	Alcatel-Lucent TD-RRH8x20-25
130.000	129.000	3	Alcatel-Lucent 800MHz RRH
130.000	129.000	3	Alcatel-Lucent RRH 1900 MHz

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
5.000	130.0	1 1/4" Hybriflex	No
5.000	130.0	1 5/8" Hybriflex	No
5.000	150.0	1 5/8" Coax	No
5.000	150.0	1/2" Coax	No
5.000	150.0	3" conduit	No
5.000	162.0	1 5/8" (1.63"-	No
5.000	162.0	1 5/8" Coax	No
5.000	170.0	1 5/8" Coax	No



5.000	170.0	1 5/8" Hybriflex	No

Load Cases

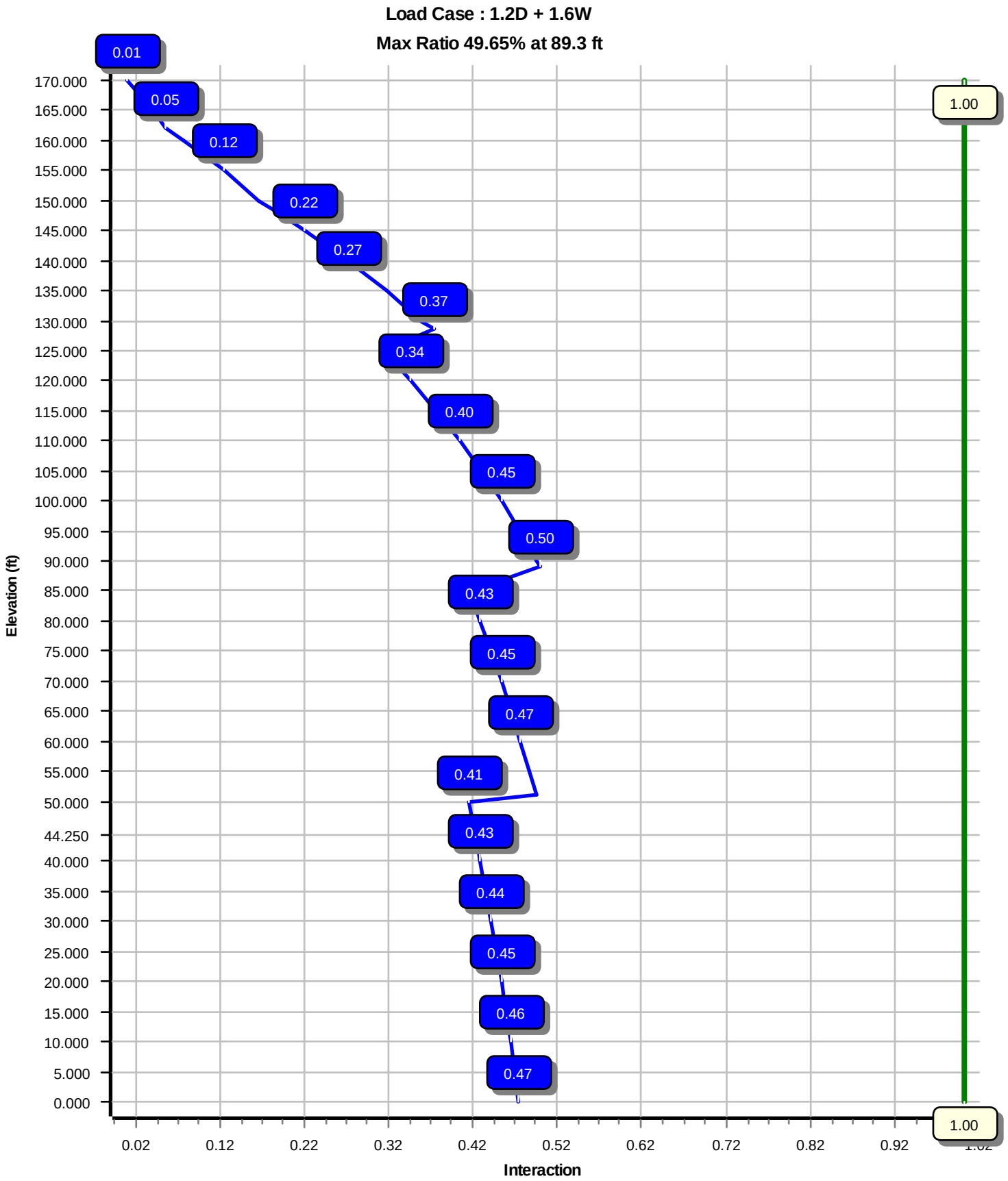
1.2D + 1.6W	98 mph with No Ice
0.9D + 1.6W	98 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	3518.37	28.85	60.03
0.9D + 1.6W	3483.41	28.84	45.01
1.2D + 1.0Di + 1.0Wi	1053.41	8.62	92.92
(1.2 + 0.2Sds) * DL + E ELFM	204.62	1.50	60.08
(1.2 + 0.2Sds) * DL + E EMAM	278.68	2.14	60.08
(0.9 - 0.2Sds) * DL + E ELFM	202.18	1.50	41.89
(0.9 - 0.2Sds) * DL + E EMAM	275.12	2.14	41.89
1.0D + 1.0W	733.06	6.05	50.05

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 49.65% at 89.3 ft
0.01
0.05
0.12
0.22
0.27
0.37
0.34
0.40
0.45
0.50
0.43
0.45
0.47
0.41
0.43
0.44
0.45
0.46
0.47
1.00
1.00
170.000
165.000
160.000
155.000
150.000
145.000
140.000
135.000
130.000
125.000
120.000
115.000
110.000
105.000
100.000
95.000
90.000
85.000
80.000
75.000
70.000
65.000
60.000
55.000
50.000
44.250
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
Elevation (ft)
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction

Site Number: 376047 Code: ANSI/TIA-222-G

Site Name: MANSFIELD CENTER 2 CT, CT Engineering Number:12927168_C3_02 7/19/2019 12:17:56 PM

Customer: T-MOBILE

Analysis Parameters

Location :	Tolland County, CT	Height (ft) :	170
Code :	ANSI/TIA-222-G	Base Diameter (in) :	64.12
Shape :	18 Sides	Top Diameter (in) :	24.00
Pole Type :	Taper	Taper (in/ft) :	0.247
Pole Manfacturer :	PennSummit Tub	Rotation (deg) :	0.00

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	98 mph
Exposure Category:	B	Design Wind Speed With Ice:	50 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0 ft	Design Ice Thickness:	1.00 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods				
Site Class:	D - Stiff Soil				
Period Based on Rayleigh Method (sec):	2.30				
T_L (sec):	6	p:	1	C_s:	0.030
S_s:	0.175	S_1:	0.063	C_s Max:	0.030
F_a:	1.600	F_v:	2.400	C_s Min:	0.030
S_{ds}:	0.187	S_{d1}:	0.101		

Load Cases

1.2D + 1.6W	98 mph with No Ice
0.9D + 1.6W	98 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
(1.2 + 0.2Sds) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2Sds) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

Site Number: 376047 Code: ANSI/TIA-222-G

Site Name: MANSFIELD CENTER 2 CT, CT Engineering Number:12927168_C3_02 7/19/2019 12:17:56 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	51.000	0.4375	65		0.00	13,828	64.12	0.00	88.43	45308.8	24.08	146.56	51.52	51.00	70.93	23387.1	19.00	117.76	0.247029
2-18	45.000	0.3750	65	Slip	81.00	8,749	53.93	44.25	63.75	23109.7	23.60	143.84	42.82	89.25	50.52	11501.0	18.37	114.19	0.247029
3-18	45.000	0.3125	65	Slip	69.00	5,923	44.86	83.50	44.19	11084.1	23.55	143.58	33.75	128.50	33.17	4685.6	17.28	108.01	0.247029
4-18	46.000	0.2500	65	Slip	54.00	3,655	35.36	124.00	27.86	4340.1	23.18	141.45	24.00	170.00	18.84	1343.0	15.16	96.00	0.247029
				Shaft Weight		32,155													

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
170.00	RFS FD9R6004/2C-3L (3.1 lbs)	6	0.80	0.000	3.10	0.310	0.50	13.92	0.825	0.50
170.00	Alcatel-Lucent RRH2X60-AWS	6	0.80	0.000	44.00	1.880	0.50	120.69	3.149	0.50
170.00	Amphenol Antel BXA-70080-4BF-	3	0.80	2.000	9.90	3.290	0.72	120.03	5.618	0.72
170.00	RFS DB-T1-6Z-8AB-0Z	1	0.80	2.000	44.00	4.800	1.00	214.02	6.720	1.00
170.00	Andrew LNX-6514DS-A1M	3	0.80	2.000	38.80	8.170	0.69	276.48	11.976	0.69
170.00	Commscope HBXX-6517DS-A2M	6	0.80	2.000	40.80	8.530	0.68	278.40	12.456	0.68
170.00	Flat Low Profile Platform	1	1.00	0.000	1,500.00	26.100	1.00	2,375.23	51.891	1.00
162.00	Andrew ATSBT-BOTTOM-MF	3	0.75	0.000	1.80	0.170	0.50	9.64	0.566	0.50
162.00	Ericsson KRY 112 144/1	3	0.75	3.000	11.00	0.350	0.50	25.48	0.895	0.50
162.00	Ericsson KRY 112 489/2	3	0.75	0.000	15.40	0.560	0.50	39.16	1.267	0.50
162.00	Ericsson Radio 4449 B12,B71	3	0.75	0.000	74.00	1.640	0.50	149.33	2.776	0.50
162.00	RFS APXV18-203219-C (54.1" x	3	0.75	0.000	39.00	5.940	0.67	188.34	8.963	0.67
162.00	Commscope LNX-6515DS-VTM	3	0.75	0.000	50.30	11.440	0.70	359.00	15.794	0.70
162.00	RFS APXVAARR24_43-U-NA20	3	0.75	0.000	127.90	20.240	0.63	656.15	25.230	0.63
162.00	PerfectVision PV-LPP12M-HR-	1	1.00	0.000	2,000.00	27.200	1.00	3,874.78	52.697	1.00
150.00	Powerwave Allgon LGP21901	6	0.80	-2.000	5.50	0.200	0.50	15.75	0.626	0.50
150.00	Powerwave Allgon LGP21401	6	0.80	-2.000	14.10	1.100	0.50	47.41	2.050	0.50
150.00	Ericsson RRUS 11 (Band 12)	6	0.80	-2.000	50.00	2.570	0.67	141.02	3.971	0.67
150.00	Powerwave Allgon 7770.00	6	0.80	-2.000	35.00	5.510	0.65	228.95	6.950	0.65
150.00	KMW AM-X-CD-16-65-00T-RET	2	0.80	-2.000	48.50	8.020	0.75	264.73	11.742	0.75
150.00	Powerwave Allgon P65-17-XLH-	1	0.80	-2.000	59.00	11.460	1.00	347.61	15.777	1.00
148.00	Generic SSB (27lb)	1	0.80	0.000	27.00	3.200	1.00	164.97	4.787	1.00
148.00	Flat Low Profile Platform	1	1.00	0.000	1,500.00	26.100	1.00	2,363.59	51.548	1.00
130.00	Alcatel-Lucent RRH 1900 MHz	3	0.80	-1.000	46.00	2.080	0.67	134.21	3.427	0.67
130.00	Alcatel-Lucent 800MHz RRH	3	0.80	-1.000	53.00	2.130	0.67	150.16	3.415	0.67
130.00	Alcatel-Lucent TD-RRH8x20-25	3	0.80	0.000	66.00	3.700	0.60	175.67	5.376	0.60
130.00	RFS APXV9TM14-ALU-I20	3	0.80	0.000	55.10	6.380	0.66	236.24	9.264	0.66
130.00	RFS APXV9ERR18-C (62 lbs)	3	0.80	-1.000	62.00	8.020	0.71	300.40	11.690	0.71
130.00	Flat Low Profile Platform	1	1.00	0.000	1,500.00	26.100	1.00	2,352.83	51.231	1.00
Totals	Num Loadings:29	93			9,832.60			25,760.13		

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
5.00	170.00	12	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	VERIZON WIRELESS
5.00	170.00	1	1 5/8" Hybriflex	1.98	1.30	N	0	0.00	0.00	0	0.00	N	VERIZON WIRELESS
5.00	162.00	1	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0	0.00	0.00	0	0.00	N	T-MOBILE
5.00	162.00	12	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	T-MOBILE
5.00	150.00	12	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
5.00	150.00	12	1/2" Coax	0.63	0.15	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
5.00	150.00	2	3" conduit	3.50	7.58	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY

5.00	130.00	3	1 1/4" Hybriflex Cable	1.54	1.00	N	0	0.00	0.00	0	0.00	N	SPRINT NEXTEL
5.00	130.00	1	1 5/8" Hybriflex	1.98	1.30	N	0	0.00	0.00	0	0.00	N	SPRINT NEXTEL

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	64.120	88.428	45,308.8	24.08	146.56	73.1	1391.	0.0	0.0
5.00		0.4375	62.885	86.713	42,723.3	23.58	143.74	73.7	1338.	0.0	1,489.9
10.00		0.4375	61.650	84.998	40,238.0	23.08	140.91	74.3	1285.	0.0	1,460.7
15.00		0.4375	60.415	83.283	37,851.1	22.59	138.09	74.8	1234.	0.0	1,431.6
20.00		0.4375	59.179	81.568	35,560.4	22.09	135.27	75.4	1183.	0.0	1,402.4
25.00		0.4375	57.944	79.852	33,364.1	21.59	132.44	76.0	1134.	0.0	1,373.2
30.00		0.4375	56.709	78.137	31,260.1	21.09	129.62	76.6	1085.	0.0	1,344.0
35.00		0.4375	55.474	76.422	29,246.5	20.59	126.80	77.2	1038.	0.0	1,314.8
40.00		0.4375	54.239	74.707	27,321.3	20.10	123.97	77.8	992.1	0.0	1,285.6
44.25	Bot - Section 2	0.4375	53.189	73.249	25,752.9	19.67	121.57	78.3	953.6	0.0	1,069.9
45.00		0.4375	53.004	72.992	25,482.5	19.60	121.15	78.3	946.9	0.0	349.0
50.00		0.4375	51.769	71.277	23,728.1	19.10	118.33	78.9	902.8	0.0	2,295.7
51.00	Top - Section 1	0.3750	52.272	61.768	21,017.9	22.82	139.39	74.6	792.0	0.0	452.6
55.00		0.3750	51.283	60.592	19,840.1	22.35	136.76	75.1	762.0	0.0	832.7
60.00		0.3750	50.048	59.121	18,430.8	21.77	133.46	75.8	725.3	0.0	1,018.4
65.00		0.3750	48.813	57.651	17,089.8	21.19	130.17	76.5	689.6	0.0	993.4
70.00		0.3750	47.578	56.181	15,815.5	20.61	126.87	77.2	654.7	0.0	968.4
75.00		0.3750	46.343	54.711	14,606.2	20.03	123.58	77.8	620.8	0.0	943.4
80.00		0.3750	45.108	53.241	13,460.1	19.45	120.29	78.5	587.7	0.0	918.3
83.50	Bot - Section 3	0.3750	44.243	52.212	12,694.6	19.04	117.98	79.0	565.1	0.0	628.0
85.00		0.3750	43.873	51.771	12,375.7	18.87	116.99	79.2	555.6	0.0	490.0
89.25	Top - Section 2	0.3125	43.448	42.783	10,057.4	22.75	139.03	74.6	455.9	0.0	1,365.9
90.00		0.3125	43.262	42.599	9,928.4	22.65	138.44	74.8	452.0	0.0	109.0
95.00		0.3125	42.027	41.374	9,096.2	21.95	134.49	75.6	426.3	0.0	714.4
100.0		0.3125	40.792	40.149	8,311.9	21.25	130.53	76.4	401.3	0.0	693.5
105.0		0.3125	39.557	38.924	7,574.0	20.56	126.58	77.2	377.1	0.0	672.7
110.0		0.3125	38.322	37.699	6,881.2	19.86	122.63	78.0	353.7	0.0	651.8
115.0		0.3125	37.087	36.474	6,231.9	19.16	118.68	78.9	331.0	0.0	631.0
120.0		0.3125	35.851	35.249	5,624.8	18.47	114.72	79.7	309.0	0.0	610.1
124.0	Bot - Section 4	0.3125	34.863	34.269	5,168.6	17.91	111.56	80.3	292.0	0.0	473.1
125.0		0.3125	34.616	34.024	5,058.5	17.77	110.77	80.5	287.8	0.0	210.7
128.5	Top - Section 3	0.2500	34.252	26.979	3,940.8	22.39	137.01	75.1	226.6	0.0	725.5
130.0		0.2500	33.881	26.685	3,813.4	22.13	135.52	75.4	221.7	0.0	137.0
135.0		0.2500	32.646	25.705	3,408.5	21.26	130.58	76.4	205.6	0.0	445.7
140.0		0.2500	31.411	24.725	3,033.3	20.39	125.64	77.4	190.2	0.0	429.0
145.0		0.2500	30.176	23.745	2,686.7	19.52	120.70	78.4	175.4	0.0	412.3
148.0		0.2500	29.435	23.157	2,492.0	19.00	117.74	79.1	166.8	0.0	239.4
150.0		0.2500	28.941	22.765	2,367.6	18.65	115.76	79.5	161.1	0.0	156.3
155.0		0.2500	27.705	21.785	2,074.8	17.78	110.82	80.5	147.5	0.0	379.0
160.0		0.2500	26.470	20.805	1,807.2	16.91	105.88	81.5	134.5	0.0	362.3
162.0		0.2500	25.976	20.413	1,706.9	16.56	103.90	81.9	129.4	0.0	140.3
165.0		0.2500	25.235	19.825	1,563.6	16.04	100.94	82.5	122.0	0.0	205.4
170.0		0.2500	24.000	18.845	1,343.0	15.16	96.00	82.6	110.2	0.0	329.0
											32,155.2

Load Case: 1.2D + 1.6W — 98 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		251.3	0.0					0.0	0.0	251.3	0.0	0.0	0.0
5.00		497.6	1,787.9					0.0	0.0	497.6	1,787.9	0.0	0.0
10.00		487.9	1,752.9					0.0	322.1	487.9	2,075.0	0.0	0.0
15.00		478.1	1,717.9					0.0	322.1	478.1	2,040.0	0.0	0.0
20.00		468.3	1,682.8					0.0	322.1	468.3	2,005.0	0.0	0.0
25.00		458.6	1,647.8					0.0	322.1	458.6	1,970.0	0.0	0.0
30.00		454.1	1,612.8					0.0	322.1	454.1	1,935.0	0.0	0.0
35.00		458.8	1,577.8					0.0	322.1	458.8	1,899.9	0.0	0.0
40.00		430.8	1,542.8					0.0	322.1	430.8	1,864.9	0.0	0.0
44.25	Bot - Section 2	235.1	1,283.8					0.0	273.8	235.1	1,557.7	0.0	0.0
45.00		275.8	418.8					0.0	48.3	275.8	467.2	0.0	0.0
50.00		288.1	2,754.8					0.0	322.1	288.1	3,077.0	0.0	0.0
51.00	Top - Section 1	241.2	543.2					0.0	64.4	241.2	607.6	0.0	0.0
55.00		434.6	999.3					0.0	257.7	434.6	1,257.0	0.0	0.0
60.00		483.1	1,222.1					0.0	322.1	483.1	1,544.2	0.0	0.0
65.00		482.1	1,192.1					0.0	322.1	482.1	1,514.2	0.0	0.0
70.00		479.9	1,162.0					0.0	322.1	479.9	1,484.2	0.0	0.0
75.00		476.8	1,132.0					0.0	322.1	476.8	1,454.2	0.0	0.0
80.00		402.4	1,102.0					0.0	322.1	402.4	1,424.2	0.0	0.0
83.50	Bot - Section 3	236.2	753.6					0.0	225.5	236.2	979.0	0.0	0.0
85.00		272.0	588.0					0.0	96.6	272.0	684.6	0.0	0.0
89.25	Top - Section 2	235.9	1,639.1					0.0	273.8	235.9	1,912.9	0.0	0.0
90.00		268.2	130.7					0.0	48.3	268.2	179.1	0.0	0.0
95.00		462.6	857.2					0.0	322.1	462.6	1,179.4	0.0	0.0
100.00		455.7	832.2					0.0	322.1	455.7	1,154.4	0.0	0.0
105.00		448.1	807.2					0.0	322.1	448.1	1,129.3	0.0	0.0
110.00		439.9	782.2					0.0	322.1	439.9	1,104.3	0.0	0.0
115.00		431.2	757.2					0.0	322.1	431.2	1,079.3	0.0	0.0
120.00		380.6	732.2					0.0	322.1	380.6	1,054.3	0.0	0.0
124.00	Bot - Section 4	209.2	567.7					0.0	257.7	209.2	825.4	0.0	0.0
125.00		187.0	252.8					0.0	64.4	187.0	317.2	0.0	0.0
128.50	Top - Section 3	206.6	870.6					0.0	225.5	206.6	1,096.1	0.0	0.0
130.00	Appurtenance(s)	262.8	164.3	2,711.5	0.0	-892.8	2,815.6	0.0	96.6	2,974.3	3,076.6	0.0	0.0
135.00		397.3	534.8					0.0	296.3	397.3	831.2	0.0	0.0
140.00		386.3	514.8					0.0	296.3	386.3	811.2	0.0	0.0
145.00		301.7	494.8					0.0	296.3	301.7	791.1	0.0	0.0
148.00	Appurtenance(s)	184.5	287.3	1,302.3	0.0	0.0	1,832.4	0.0	177.8	1,486.8	2,297.5	0.0	0.0
150.00	Appurtenance(s)	251.6	187.5	2,152.4	0.0	-4,304.8	940.3	0.0	118.5	2,404.0	1,246.4	0.0	0.0
155.00		350.8	454.8					0.0	135.5	350.8	590.3	0.0	0.0
160.00		239.4	434.8					0.0	135.5	239.4	570.3	0.0	0.0
162.00	Appurtenance(s)	165.9	168.3	4,006.5	0.0	55.4	3,549.8	0.0	54.2	4,172.4	3,772.4	0.0	0.0
165.00		258.1	246.5					0.0	40.1	258.1	286.6	0.0	0.0
170.00	Appurtenance(s)	159.4	394.8	3,896.5	0.0	4,828.4	2,661.0	0.0	66.8	4,055.9	3,122.6	0.0	0.0
								Totals:		29,044.4	60,056.4	0.00	0.00

Load Case: 1.2D + 1.6W 98 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	-60.03	-28.85	0.00	-3,518.37	0.00	3,518.37	5,816.03	2,908.01	15,233.9	7,628.28	0.00	0.00	0.472
5.00	-58.19	-28.46	0.00	-3,374.12	0.00	3,374.12	5,748.91	2,874.46	14,764.0	7,393.01	0.06	-0.11	0.467
10.00	-56.06	-28.08	0.00	-3,231.81	0.00	3,231.81	5,680.00	2,840.00	14,296.5	7,158.90	0.23	-0.22	0.461
15.00	-53.97	-27.70	0.00	-3,091.43	0.00	3,091.43	5,609.27	2,804.63	13,831.6	6,926.09	0.52	-0.33	0.456
20.00	-51.91	-27.32	0.00	-2,952.96	0.00	2,952.96	5,536.73	2,768.37	13,369.5	6,694.72	0.93	-0.44	0.451
25.00	-49.89	-26.94	0.00	-2,816.38	0.00	2,816.38	5,462.39	2,731.20	12,910.6	6,464.93	1.45	-0.56	0.445
30.00	-47.91	-26.57	0.00	-2,681.67	0.00	2,681.67	5,386.24	2,693.12	12,455.1	6,236.85	2.10	-0.68	0.439
35.00	-45.96	-26.18	0.00	-2,548.84	0.00	2,548.84	5,308.29	2,654.14	12,003.4	6,010.63	2.87	-0.80	0.433
40.00	-44.05	-25.81	0.00	-2,417.94	0.00	2,417.94	5,228.52	2,614.26	11,555.6	5,786.40	3.77	-0.92	0.426
44.25	-42.47	-25.59	0.00	-2,308.26	0.00	2,308.26	5,159.30	2,579.65	11,178.3	5,597.47	4.64	-1.02	0.421
45.00	-41.97	-25.36	0.00	-2,289.07	0.00	2,289.07	5,146.95	2,573.48	11,112.0	5,564.30	4.80	-1.04	0.420
50.00	-38.87	-25.06	0.00	-2,162.27	0.00	2,162.27	5,063.57	2,531.79	10,673.0	5,344.47	5.95	-1.16	0.412
51.00	-38.24	-24.85	0.00	-2,137.21	0.00	2,137.21	4,145.19	2,072.60	8,844.92	4,429.04	6.20	-1.19	0.492
55.00	-36.94	-24.47	0.00	-2,037.80	0.00	2,037.80	4,096.07	2,048.03	8,572.50	4,292.62	7.24	-1.29	0.484
60.00	-35.35	-24.04	0.00	-1,915.45	0.00	1,915.45	4,033.03	2,016.52	8,234.29	4,123.27	8.67	-1.43	0.473
65.00	-33.79	-23.60	0.00	-1,795.26	0.00	1,795.26	3,968.19	1,984.10	7,898.94	3,955.34	10.25	-1.58	0.463
70.00	-32.26	-23.16	0.00	-1,677.26	0.00	1,677.26	3,901.54	1,950.77	7,566.71	3,788.98	11.97	-1.72	0.451
75.00	-30.76	-22.72	0.00	-1,561.45	0.00	1,561.45	3,833.09	1,916.54	7,237.89	3,624.33	13.86	-1.87	0.439
80.00	-29.31	-22.33	0.00	-1,447.87	0.00	1,447.87	3,762.82	1,881.41	6,912.76	3,461.52	15.89	-2.01	0.426
83.50	-28.31	-22.10	0.00	-1,369.71	0.00	1,369.71	3,712.56	1,856.28	6,687.50	3,348.72	17.40	-2.12	0.417
85.00	-27.60	-21.84	0.00	-1,336.57	0.00	1,336.57	3,690.75	1,845.38	6,591.58	3,300.69	18.08	-2.16	0.413
89.25	-25.67	-21.56	0.00	-1,243.75	0.00	1,243.75	2,874.01	1,437.01	5,097.10	2,552.34	20.06	-2.29	0.496
90.00	-25.47	-21.33	0.00	-1,227.58	0.00	1,227.58	2,866.38	1,433.19	5,061.58	2,534.55	20.42	-2.31	0.493
95.00	-24.25	-20.89	0.00	-1,120.92	0.00	1,120.92	2,814.48	1,407.24	4,825.96	2,416.57	22.93	-2.48	0.473
100.00	-23.05	-20.45	0.00	-1,016.47	0.00	1,016.47	2,760.76	1,380.38	4,592.64	2,299.74	25.62	-2.65	0.451
105.00	-21.89	-20.01	0.00	-914.22	0.00	914.22	2,705.24	1,352.62	4,361.91	2,184.20	28.48	-2.81	0.427
110.00	-20.75	-19.58	0.00	-814.16	0.00	814.16	2,647.91	1,323.95	4,134.03	2,070.09	31.51	-2.97	0.401
115.00	-19.65	-19.14	0.00	-716.28	0.00	716.28	2,588.77	1,294.38	3,909.29	1,957.55	34.71	-3.13	0.374
120.00	-18.57	-18.75	0.00	-620.58	0.00	620.58	2,527.82	1,263.91	3,687.97	1,846.73	38.07	-3.29	0.344
124.00	-17.74	-18.51	0.00	-545.60	0.00	545.60	2,477.76	1,238.88	3,513.55	1,759.39	40.88	-3.40	0.317
125.00	-17.41	-18.33	0.00	-527.09	0.00	527.09	2,465.07	1,232.53	3,470.33	1,737.75	41.59	-3.43	0.311
128.50	-16.31	-18.07	0.00	-462.95	0.00	462.95	1,822.58	911.29	2,547.67	1,275.73	44.14	-3.53	0.372
130.00	-13.40	-14.94	0.00	-435.84	0.00	435.84	1,810.10	905.05	2,502.45	1,253.09	45.26	-3.57	0.355
135.00	-12.56	-14.52	0.00	-361.17	0.00	361.17	1,767.32	883.66	2,352.92	1,178.21	49.08	-3.72	0.314
140.00	-11.74	-14.10	0.00	-288.58	0.00	288.58	1,722.74	861.37	2,205.45	1,104.37	53.05	-3.86	0.268
145.00	-10.95	-13.77	0.00	-218.06	0.00	218.06	1,676.35	838.18	2,060.32	1,031.69	57.15	-3.97	0.218
148.00	-8.75	-12.13	0.00	-176.76	0.00	176.76	1,647.65	823.83	1,974.49	988.71	59.67	-4.04	0.184
150.00	-7.67	-9.65	0.00	-152.50	0.00	152.50	1,628.16	814.08	1,917.81	960.33	61.36	-4.07	0.164
155.00	-7.09	-9.27	0.00	-104.25	0.00	104.25	1,578.15	789.08	1,778.19	890.42	65.67	-4.15	0.122
160.00	-6.54	-8.99	0.00	-57.91	0.00	57.91	1,526.34	763.17	1,641.75	822.09	70.05	-4.21	0.075
162.00	-3.08	-4.55	0.00	-39.87	0.00	39.87	1,505.11	752.56	1,588.12	795.24	71.81	-4.22	0.052
165.00	-2.81	-4.28	0.00	-26.21	0.00	26.21	1,472.72	736.36	1,508.75	755.50	74.47	-4.24	0.037
170.00	0.00	-4.06	0.00	-4.83	0.00	4.83	1,400.09	700.04	1,362.73	682.38	78.92	-4.25	0.007

Load Case: 0.9D + 1.6W — 98 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

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		251.3	0.0					0.0	0.0	251.3	0.0	0.0	0.0
5.00		497.6	1,340.9					0.0	0.0	497.6	1,340.9	0.0	0.0
10.00		487.9	1,314.7					0.0	241.6	487.9	1,556.3	0.0	0.0
15.00		478.1	1,288.4					0.0	241.6	478.1	1,530.0	0.0	0.0
20.00		468.3	1,262.1					0.0	241.6	468.3	1,503.7	0.0	0.0
25.00		458.6	1,235.9					0.0	241.6	458.6	1,477.5	0.0	0.0
30.00		454.1	1,209.6					0.0	241.6	454.1	1,451.2	0.0	0.0
35.00		458.8	1,183.3					0.0	241.6	458.8	1,425.0	0.0	0.0
40.00		430.8	1,157.1					0.0	241.6	430.8	1,398.7	0.0	0.0
44.25	Bot - Section 2	235.1	962.9					0.0	205.4	235.1	1,168.2	0.0	0.0
45.00		275.8	314.1					0.0	36.2	275.8	350.4	0.0	0.0
50.00		288.1	2,066.1					0.0	241.6	288.1	2,307.7	0.0	0.0
51.00	Top - Section 1	241.2	407.4					0.0	48.3	241.2	455.7	0.0	0.0
55.00		434.6	749.4					0.0	193.3	434.6	942.7	0.0	0.0
60.00		483.1	916.6					0.0	241.6	483.1	1,158.2	0.0	0.0
65.00		482.1	894.0					0.0	241.6	482.1	1,135.6	0.0	0.0
70.00		479.9	871.5					0.0	241.6	479.9	1,113.1	0.0	0.0
75.00		476.8	849.0					0.0	241.6	476.8	1,090.6	0.0	0.0
80.00		402.4	826.5					0.0	241.6	402.4	1,068.1	0.0	0.0
83.50	Bot - Section 3	236.2	565.2					0.0	169.1	236.2	734.3	0.0	0.0
85.00		272.0	441.0					0.0	72.5	272.0	513.5	0.0	0.0
89.25	Top - Section 2	235.9	1,229.3					0.0	205.4	235.9	1,434.7	0.0	0.0
90.00		268.2	98.1					0.0	36.2	268.2	134.3	0.0	0.0
95.00		462.6	642.9					0.0	241.6	462.6	884.5	0.0	0.0
100.00		455.7	624.2					0.0	241.6	455.7	865.8	0.0	0.0
105.00		448.1	605.4					0.0	241.6	448.1	847.0	0.0	0.0
110.00		439.9	586.6					0.0	241.6	439.9	828.3	0.0	0.0
115.00		431.2	567.9					0.0	241.6	431.2	809.5	0.0	0.0
120.00		380.6	549.1					0.0	241.6	380.6	790.7	0.0	0.0
124.00	Bot - Section 4	209.2	425.8					0.0	193.3	209.2	619.1	0.0	0.0
125.00		187.0	189.6					0.0	48.3	187.0	237.9	0.0	0.0
128.50	Top - Section 3	206.6	653.0					0.0	169.1	206.6	822.1	0.0	0.0
130.00	Appurtenance(s)	262.8	123.3	2,711.5	0.0	-892.8	2,111.7	0.0	72.5	2,974.3	2,307.4	0.0	0.0
135.00		397.3	401.1					0.0	222.3	397.3	623.4	0.0	0.0
140.00		386.3	386.1					0.0	222.3	386.3	608.4	0.0	0.0
145.00		301.7	371.1					0.0	222.3	301.7	593.4	0.0	0.0
148.00	Appurtenance(s)	184.5	215.5	1,302.3	0.0	0.0	1,374.3	0.0	133.4	1,486.8	1,723.1	0.0	0.0
150.00	Appurtenance(s)	251.6	140.6	2,152.4	0.0	-4,304.8	705.2	0.0	88.9	2,404.0	934.8	0.0	0.0
155.00		350.8	341.1					0.0	101.7	350.8	442.7	0.0	0.0
160.00		239.4	326.1					0.0	101.7	239.4	427.7	0.0	0.0
162.00	Appurtenance(s)	165.9	126.2	4,006.5	0.0	55.4	2,662.4	0.0	40.7	4,172.4	2,829.3	0.0	0.0
165.00		258.1	184.8					0.0	30.1	258.1	214.9	0.0	0.0
170.00	Appurtenance(s)	159.4	296.1	3,896.5	0.0	4,828.4	1,995.7	0.0	50.1	4,055.9	2,341.9	0.0	0.0
								Totals:		29,044.4	45,042.3	0.00	0.00

Site Number: 376047 Code: ANSI/TIA-222-G

Site Name: MANSFIELD CENTER 2 CT, CT Engineering Number:12927168_C3_02 7/19/2019 12:18:03 PM

Customer: T-MOBILE

Load Case: 0.9D + 1.6W 98 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	-45.01	-28.84	0.00	-3,483.41	0.00	3,483.41	5,816.03	2,908.01	15,233.9	7,628.28	0.00	0.00	0.464
5.00	-43.62	-28.42	0.00	-3,339.23	0.00	3,339.23	5,748.91	2,874.46	14,764.0	7,393.01	0.06	-0.11	0.459
10.00	-42.01	-28.01	0.00	-3,197.14	0.00	3,197.14	5,680.00	2,840.00	14,296.5	7,158.90	0.23	-0.22	0.454
15.00	-40.43	-27.60	0.00	-3,057.10	0.00	3,057.10	5,609.27	2,804.63	13,831.6	6,926.09	0.51	-0.33	0.449
20.00	-38.88	-27.20	0.00	-2,919.10	0.00	2,919.10	5,536.73	2,768.37	13,369.5	6,694.72	0.92	-0.44	0.443
25.00	-37.35	-26.80	0.00	-2,783.11	0.00	2,783.11	5,462.39	2,731.20	12,910.6	6,464.93	1.44	-0.55	0.437
30.00	-35.85	-26.41	0.00	-2,649.10	0.00	2,649.10	5,386.24	2,693.12	12,455.1	6,236.85	2.08	-0.67	0.432
35.00	-34.38	-26.00	0.00	-2,517.07	0.00	2,517.07	5,308.29	2,654.14	12,003.4	6,010.63	2.84	-0.79	0.425
40.00	-32.94	-25.61	0.00	-2,387.07	0.00	2,387.07	5,228.52	2,614.26	11,555.6	5,786.40	3.73	-0.91	0.419
44.25	-31.74	-25.39	0.00	-2,278.22	0.00	2,278.22	5,159.30	2,579.65	11,178.3	5,597.47	4.58	-1.01	0.413
45.00	-31.37	-25.15	0.00	-2,259.17	0.00	2,259.17	5,146.95	2,573.48	11,112.0	5,564.30	4.74	-1.03	0.412
50.00	-29.03	-24.85	0.00	-2,133.43	0.00	2,133.43	5,063.57	2,531.79	10,673.0	5,344.47	5.89	-1.15	0.405
51.00	-28.56	-24.64	0.00	-2,108.58	0.00	2,108.58	4,145.19	2,072.60	8,844.92	4,429.04	6.13	-1.18	0.483
55.00	-27.57	-24.24	0.00	-2,010.03	0.00	2,010.03	4,096.07	2,048.03	8,572.50	4,292.62	7.16	-1.28	0.475
60.00	-26.37	-23.79	0.00	-1,888.84	0.00	1,888.84	4,033.03	2,016.52	8,234.29	4,123.27	8.57	-1.42	0.465
65.00	-25.19	-23.34	0.00	-1,769.88	0.00	1,769.88	3,968.19	1,984.10	7,898.94	3,955.34	10.13	-1.56	0.454
70.00	-24.03	-22.89	0.00	-1,653.16	0.00	1,653.16	3,901.54	1,950.77	7,566.71	3,788.98	11.84	-1.70	0.443
75.00	-22.90	-22.44	0.00	-1,538.69	0.00	1,538.69	3,833.09	1,916.54	7,237.89	3,624.33	13.69	-1.84	0.431
80.00	-21.80	-22.05	0.00	-1,426.49	0.00	1,426.49	3,762.82	1,881.41	6,912.76	3,461.52	15.70	-1.99	0.418
83.50	-21.04	-21.81	0.00	-1,349.32	0.00	1,349.32	3,712.56	1,856.28	6,687.50	3,348.72	17.19	-2.09	0.409
85.00	-20.51	-21.55	0.00	-1,316.60	0.00	1,316.60	3,690.75	1,845.38	6,591.58	3,300.69	17.86	-2.13	0.405
89.25	-19.06	-21.29	0.00	-1,225.00	0.00	1,225.00	2,874.01	1,437.01	5,097.10	2,552.34	19.82	-2.26	0.487
90.00	-18.90	-21.05	0.00	-1,209.03	0.00	1,209.03	2,866.38	1,433.19	5,061.58	2,534.55	20.17	-2.28	0.484
95.00	-17.97	-20.60	0.00	-1,103.81	0.00	1,103.81	2,814.48	1,407.24	4,825.96	2,416.57	22.65	-2.45	0.463
100.00	-17.07	-20.15	0.00	-1,000.81	0.00	1,000.81	2,760.76	1,380.38	4,592.64	2,299.74	25.30	-2.61	0.442
105.00	-16.19	-19.71	0.00	-900.04	0.00	900.04	2,705.24	1,352.62	4,361.91	2,184.20	28.12	-2.77	0.418
110.00	-15.33	-19.27	0.00	-801.48	0.00	801.48	2,647.91	1,323.95	4,134.03	2,070.09	31.12	-2.93	0.393
115.00	-14.50	-18.84	0.00	-705.11	0.00	705.11	2,588.77	1,294.38	3,909.29	1,957.55	34.27	-3.09	0.366
120.00	-13.69	-18.45	0.00	-610.91	0.00	610.91	2,527.82	1,263.91	3,687.97	1,846.73	37.59	-3.24	0.336
124.00	-13.06	-18.22	0.00	-537.12	0.00	537.12	2,477.76	1,238.88	3,513.55	1,759.39	40.35	-3.36	0.311
125.00	-12.81	-18.03	0.00	-518.90	0.00	518.90	2,465.07	1,232.53	3,470.33	1,737.75	41.06	-3.39	0.304
128.50	-11.98	-17.79	0.00	-455.79	0.00	455.79	1,822.58	911.29	2,547.67	1,275.73	43.58	-3.48	0.364
130.00	-9.84	-14.70	0.00	-429.10	0.00	429.10	1,810.10	905.05	2,502.45	1,253.09	44.68	-3.52	0.348
135.00	-9.20	-14.29	0.00	-355.61	0.00	355.61	1,767.32	883.66	2,352.92	1,178.21	48.44	-3.67	0.307
140.00	-8.59	-13.88	0.00	-284.18	0.00	284.18	1,722.74	861.37	2,205.45	1,104.37	52.36	-3.80	0.263
145.00	-8.00	-13.55	0.00	-214.78	0.00	214.78	1,676.35	838.18	2,060.32	1,031.69	56.40	-3.92	0.213
148.00	-6.37	-11.95	0.00	-174.13	0.00	174.13	1,647.65	823.83	1,974.49	988.71	58.88	-3.98	0.180
150.00	-5.60	-9.50	0.00	-150.23	0.00	150.23	1,628.16	814.08	1,917.81	960.33	60.55	-4.02	0.160
155.00	-5.17	-9.12	0.00	-102.74	0.00	102.74	1,578.15	789.08	1,778.19	890.42	64.80	-4.09	0.119
160.00	-4.76	-8.85	0.00	-57.14	0.00	57.14	1,526.34	763.17	1,641.75	822.09	69.12	-4.15	0.073
162.00	-2.24	-4.49	0.00	-39.37	0.00	39.37	1,505.11	752.56	1,588.12	795.24	70.86	-4.16	0.051
165.00	-2.04	-4.22	0.00	-25.91	0.00	25.91	1,472.72	736.36	1,508.75	755.50	73.48	-4.18	0.036
170.00	0.00	-4.06	0.00	-4.83	0.00	4.83	1,400.09	700.04	1,362.73	682.38	77.86	-4.19	0.007

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 1.00 in Radial Ice 23 Iterations

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

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		79.1	0.0					0.0	0.0	79.1	0.0	0.0	0.0
5.00		157.1	2,411.5					0.0	0.0	157.1	2,411.5	0.0	0.0
10.00		154.8	2,437.5					0.0	322.1	154.8	2,759.6	0.0	0.0
15.00		152.2	2,425.3					0.0	322.1	152.2	2,747.5	0.0	0.0
20.00		149.6	2,400.7					0.0	322.1	149.6	2,722.9	0.0	0.0
25.00		146.8	2,369.6					0.0	322.1	146.8	2,691.8	0.0	0.0
30.00		145.8	2,334.5					0.0	322.1	145.8	2,656.7	0.0	0.0
35.00		147.7	2,296.6					0.0	322.1	147.7	2,618.8	0.0	0.0
40.00		138.9	2,256.6					0.0	322.1	138.9	2,578.8	0.0	0.0
44.25	Bot - Section 2	75.9	1,886.5					0.0	273.8	75.9	2,160.3	0.0	0.0
45.00		89.2	526.9					0.0	48.3	89.2	575.2	0.0	0.0
50.00		93.2	3,464.0					0.0	322.1	93.2	3,786.2	0.0	0.0
51.00	Top - Section 1	78.2	685.3					0.0	64.4	78.2	749.7	0.0	0.0
55.00		141.1	1,560.1					0.0	257.7	141.1	1,817.8	0.0	0.0
60.00		157.2	1,912.7					0.0	322.1	157.2	2,234.9	0.0	0.0
65.00		157.3	1,872.2					0.0	322.1	157.3	2,194.4	0.0	0.0
70.00		157.0	1,831.1					0.0	322.1	157.0	2,153.2	0.0	0.0
75.00		156.4	1,789.3					0.0	322.1	156.4	2,111.5	0.0	0.0
80.00		132.3	1,747.0					0.0	322.1	132.3	2,069.2	0.0	0.0
83.50	Bot - Section 3	77.8	1,199.3					0.0	225.5	77.8	1,424.8	0.0	0.0
85.00		89.7	780.7					0.0	96.6	89.7	877.3	0.0	0.0
89.25	Top - Section 2	77.9	2,174.6					0.0	273.8	77.9	2,448.5	0.0	0.0
90.00		88.8	225.1					0.0	48.3	88.8	273.5	0.0	0.0
95.00		153.4	1,471.5					0.0	322.1	153.4	1,793.6	0.0	0.0
100.00		151.6	1,432.6					0.0	322.1	151.6	1,754.8	0.0	0.0
105.00		149.6	1,393.4					0.0	322.1	149.6	1,715.6	0.0	0.0
110.00		147.4	1,354.0					0.0	322.1	147.4	1,676.1	0.0	0.0
115.00		145.1	1,314.2					0.0	322.1	145.1	1,636.3	0.0	0.0
120.00		128.5	1,274.2					0.0	322.1	128.5	1,596.3	0.0	0.0
124.00	Bot - Section 4	70.8	991.8					0.0	257.7	70.8	1,249.5	0.0	0.0
125.00		63.4	359.8					0.0	64.4	63.4	424.2	0.0	0.0
128.50	Top - Section 3	70.2	1,237.0					0.0	225.5	70.2	1,462.5	0.0	0.0
130.00	Appurtenance(s)	89.6	320.1	744.4	0.0	-219.8	5,044.0	0.0	96.6	834.1	5,460.8	0.0	0.0
135.00		135.9	1,037.6					0.0	296.3	135.9	1,333.9	0.0	0.0
140.00		132.8	1,001.7					0.0	296.3	132.8	1,298.1	0.0	0.0
145.00		104.2	965.7					0.0	296.3	104.2	1,262.0	0.0	0.0
148.00	Appurtenance(s)	64.0	564.2	409.4	0.0	0.0	2,504.2	0.0	177.8	473.4	3,246.2	0.0	0.0
150.00	Appurtenance(s)	87.7	369.6	499.7	0.0	-999.3	3,303.9	0.0	118.5	587.4	3,791.9	0.0	0.0
155.00		122.8	893.0					0.0	135.5	122.8	1,028.5	0.0	0.0
160.00		84.3	856.4					0.0	135.5	84.3	991.9	0.0	0.0
162.00	Appurtenance(s)	58.7	334.5	1,009.3	0.0	23.0	7,639.2	0.0	54.2	1,068.0	8,027.9	0.0	0.0
165.00		91.9	489.6					0.0	40.1	91.9	529.7	0.0	0.0
170.00	Appurtenance(s)	56.9	782.8	1,055.6	0.0	1,166.4	5,727.9	0.0	66.8	1,112.5	6,577.6	0.0	0.0
								Totals:		8,671.61	92,921.3	0.00	0.00

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 1.00 in Radial Ice 23 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	-92.92	-8.62	0.00	-1,053.41	0.00	1,053.41	5,816.03	2,908.01	15,233.9	7,628.28	0.00	0.00	0.154
5.00	-90.50	-8.51	0.00	-1,010.31	0.00	1,010.31	5,748.91	2,874.46	14,764.0	7,393.01	0.02	-0.03	0.152
10.00	-87.74	-8.41	0.00	-967.75	0.00	967.75	5,680.00	2,840.00	14,296.5	7,158.90	0.07	-0.07	0.151
15.00	-84.99	-8.30	0.00	-925.72	0.00	925.72	5,609.27	2,804.63	13,831.6	6,926.09	0.16	-0.10	0.149
20.00	-82.26	-8.19	0.00	-884.22	0.00	884.22	5,536.73	2,768.37	13,369.5	6,694.72	0.28	-0.13	0.147
25.00	-79.56	-8.09	0.00	-843.24	0.00	843.24	5,462.39	2,731.20	12,910.6	6,464.93	0.44	-0.17	0.145
30.00	-76.90	-7.98	0.00	-802.80	0.00	802.80	5,386.24	2,693.12	12,455.1	6,236.85	0.63	-0.20	0.143
35.00	-74.28	-7.87	0.00	-762.89	0.00	762.89	5,308.29	2,654.14	12,003.4	6,010.63	0.86	-0.24	0.141
40.00	-71.70	-7.76	0.00	-723.54	0.00	723.54	5,228.52	2,614.26	11,555.6	5,786.40	1.13	-0.27	0.139
44.25	-69.53	-7.70	0.00	-690.54	0.00	690.54	5,159.30	2,579.65	11,178.3	5,597.47	1.39	-0.31	0.137
45.00	-68.96	-7.63	0.00	-684.77	0.00	684.77	5,146.95	2,573.48	11,112.0	5,564.30	1.44	-0.31	0.136
50.00	-65.17	-7.54	0.00	-646.61	0.00	646.61	5,063.57	2,531.79	10,673.0	5,344.47	1.78	-0.35	0.134
51.00	-64.42	-7.48	0.00	-639.07	0.00	639.07	4,145.19	2,072.60	8,844.92	4,429.04	1.86	-0.36	0.160
55.00	-62.59	-7.37	0.00	-609.15	0.00	609.15	4,096.07	2,048.03	8,572.50	4,292.62	2.17	-0.39	0.157
60.00	-60.35	-7.24	0.00	-572.31	0.00	572.31	4,033.03	2,016.52	8,234.29	4,123.27	2.60	-0.43	0.154
65.00	-58.16	-7.11	0.00	-536.11	0.00	536.11	3,968.19	1,984.10	7,898.94	3,955.34	3.07	-0.47	0.150
70.00	-56.00	-6.98	0.00	-500.57	0.00	500.57	3,901.54	1,950.77	7,566.71	3,788.98	3.58	-0.51	0.146
75.00	-53.88	-6.84	0.00	-465.70	0.00	465.70	3,833.09	1,916.54	7,237.89	3,624.33	4.15	-0.56	0.143
80.00	-51.81	-6.72	0.00	-431.50	0.00	431.50	3,762.82	1,881.41	6,912.76	3,461.52	4.76	-0.60	0.138
83.50	-50.39	-6.65	0.00	-407.97	0.00	407.97	3,712.56	1,856.28	6,687.50	3,348.72	5.21	-0.63	0.135
85.00	-49.51	-6.57	0.00	-398.00	0.00	398.00	3,690.75	1,845.38	6,591.58	3,300.69	5.41	-0.65	0.134
89.25	-47.06	-6.48	0.00	-370.08	0.00	370.08	2,874.01	1,437.01	5,097.10	2,552.34	6.00	-0.68	0.161
90.00	-46.78	-6.41	0.00	-365.22	0.00	365.22	2,866.38	1,433.19	5,061.58	2,534.55	6.11	-0.69	0.160
95.00	-44.98	-6.28	0.00	-333.16	0.00	333.16	2,814.48	1,407.24	4,825.96	2,416.57	6.86	-0.74	0.154
100.00	-43.23	-6.14	0.00	-301.78	0.00	301.78	2,760.76	1,380.38	4,592.64	2,299.74	7.66	-0.79	0.147
105.00	-41.51	-6.00	0.00	-271.09	0.00	271.09	2,705.24	1,352.62	4,361.91	2,184.20	8.52	-0.84	0.139
110.00	-39.83	-5.86	0.00	-241.09	0.00	241.09	2,647.91	1,323.95	4,134.03	2,070.09	9.42	-0.89	0.132
115.00	-38.19	-5.72	0.00	-211.79	0.00	211.79	2,588.77	1,294.38	3,909.29	1,957.55	10.38	-0.93	0.123
120.00	-36.59	-5.59	0.00	-183.20	0.00	183.20	2,527.82	1,263.91	3,687.97	1,846.73	11.38	-0.98	0.114
124.00	-35.34	-5.51	0.00	-160.84	0.00	160.84	2,477.76	1,238.88	3,513.55	1,759.39	12.22	-1.01	0.106
125.00	-34.92	-5.45	0.00	-155.33	0.00	155.33	2,465.07	1,232.53	3,470.33	1,737.75	12.43	-1.02	0.104
128.50	-33.46	-5.37	0.00	-136.25	0.00	136.25	1,822.58	911.29	2,547.67	1,275.73	13.19	-1.05	0.125
130.00	-28.01	-4.45	0.00	-128.20	0.00	128.20	1,810.10	905.05	2,502.45	1,253.09	13.52	-1.06	0.118
135.00	-26.67	-4.30	0.00	-105.98	0.00	105.98	1,767.32	883.66	2,352.92	1,178.21	14.66	-1.11	0.105
140.00	-25.38	-4.16	0.00	-84.46	0.00	84.46	1,722.74	861.37	2,205.45	1,104.37	15.84	-1.15	0.091
145.00	-24.11	-4.04	0.00	-63.66	0.00	63.66	1,676.35	838.18	2,060.32	1,031.69	17.07	-1.18	0.076
148.00	-20.88	-3.51	0.00	-51.53	0.00	51.53	1,647.65	823.83	1,974.49	988.71	17.81	-1.20	0.065
150.00	-17.10	-2.85	0.00	-44.51	0.00	44.51	1,628.16	814.08	1,917.81	960.33	18.32	-1.21	0.057
155.00	-16.07	-2.71	0.00	-30.29	0.00	30.29	1,578.15	789.08	1,778.19	890.42	19.60	-1.23	0.044
160.00	-15.08	-2.60	0.00	-16.76	0.00	16.76	1,526.34	763.17	1,641.75	822.09	20.90	-1.25	0.030
162.00	-7.08	-1.36	0.00	-11.53	0.00	11.53	1,505.11	752.56	1,588.12	795.24	21.43	-1.25	0.019
165.00	-6.55	-1.26	0.00	-7.45	0.00	7.45	1,472.72	736.36	1,508.75	755.50	22.22	-1.26	0.014
170.00	0.00	-1.11	0.00	-1.17	0.00	1.17	1,400.09	700.04	1,362.73	682.38	23.54	-1.26	0.002

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		52.7	0.0					0.0	0.0	52.7	0.0	0.0	0.0
5.00		104.3	1,489.9					0.0	0.0	104.3	1,489.9	0.0	0.0
10.00		102.3	1,460.7					0.0	268.5	102.3	1,729.2	0.0	0.0
15.00		100.2	1,431.6					0.0	268.5	100.2	1,700.0	0.0	0.0
20.00		98.2	1,402.4					0.0	268.5	98.2	1,670.8	0.0	0.0
25.00		96.1	1,373.2					0.0	268.5	96.1	1,641.6	0.0	0.0
30.00		95.2	1,344.0					0.0	268.5	95.2	1,612.5	0.0	0.0
35.00		96.2	1,314.8					0.0	268.5	96.2	1,583.3	0.0	0.0
40.00		90.3	1,285.6					0.0	268.5	90.3	1,554.1	0.0	0.0
44.25	Bot - Section 2	49.3	1,069.9					0.0	228.2	49.3	1,298.0	0.0	0.0
45.00		57.8	349.0					0.0	40.3	57.8	389.3	0.0	0.0
50.00		60.4	2,295.7					0.0	268.5	60.4	2,564.2	0.0	0.0
51.00	Top - Section 1	50.6	452.6					0.0	53.7	50.6	506.3	0.0	0.0
55.00		91.1	832.7					0.0	214.8	91.1	1,047.5	0.0	0.0
60.00		101.3	1,018.4					0.0	268.5	101.3	1,286.8	0.0	0.0
65.00		101.0	993.4					0.0	268.5	101.0	1,261.8	0.0	0.0
70.00		100.6	968.4					0.0	268.5	100.6	1,236.8	0.0	0.0
75.00		99.9	943.4					0.0	268.5	99.9	1,211.8	0.0	0.0
80.00		84.4	918.3					0.0	268.5	84.4	1,186.8	0.0	0.0
83.50	Bot - Section 3	49.5	628.0					0.0	187.9	49.5	815.9	0.0	0.0
85.00		57.0	490.0					0.0	80.5	57.0	570.5	0.0	0.0
89.25	Top - Section 2	49.5	1,365.9					0.0	228.2	49.5	1,594.1	0.0	0.0
90.00		56.2	109.0					0.0	40.3	56.2	149.2	0.0	0.0
95.00		97.0	714.4					0.0	268.5	97.0	982.8	0.0	0.0
100.00		95.5	693.5					0.0	268.5	95.5	962.0	0.0	0.0
105.00		93.9	672.7					0.0	268.5	93.9	941.1	0.0	0.0
110.00		92.2	651.8					0.0	268.5	92.2	920.3	0.0	0.0
115.00		90.4	631.0					0.0	268.5	90.4	899.4	0.0	0.0
120.00		79.8	610.1					0.0	268.5	79.8	878.6	0.0	0.0
124.00	Bot - Section 4	43.8	473.1					0.0	214.8	43.8	687.9	0.0	0.0
125.00		39.2	210.7					0.0	53.7	39.2	264.4	0.0	0.0
128.50	Top - Section 3	43.3	725.5					0.0	187.9	43.3	913.4	0.0	0.0
130.00	Appurtenance(s)	55.1	137.0	568.4	0.0	-187.2	2,346.3	0.0	80.5	623.5	2,563.8	0.0	0.0
135.00		83.3	445.7					0.0	247.0	83.3	692.6	0.0	0.0
140.00		81.0	429.0					0.0	247.0	81.0	676.0	0.0	0.0
145.00		63.3	412.3					0.0	247.0	63.3	659.3	0.0	0.0
148.00	Appurtenance(s)	38.7	239.4	273.0	0.0	0.0	1,527.0	0.0	148.2	311.7	1,914.6	0.0	0.0
150.00	Appurtenance(s)	52.7	156.3	451.2	0.0	-902.4	783.6	0.0	98.8	503.9	1,038.6	0.0	0.0
155.00		73.5	379.0					0.0	113.0	73.5	491.9	0.0	0.0
160.00		50.2	362.3					0.0	113.0	50.2	475.3	0.0	0.0
162.00	Appurtenance(s)	34.8	140.3	839.8	0.0	11.6	2,958.2	0.0	45.2	874.6	3,143.6	0.0	0.0
165.00		54.1	205.4					0.0	33.4	54.1	238.8	0.0	0.0
170.00	Appurtenance(s)	33.4	329.0	816.8	0.0	1,012.1	2,217.5	0.0	55.7	850.2	2,602.2	0.0	0.0
								Totals:		6,088.21	50,047.0	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	-50.05	-6.05	0.00	-733.06	0.00	733.06	5,816.03	2,908.01	15,233.9	7,628.28	0.00	0.00	0.105
5.00	-48.55	-5.96	0.00	-702.83	0.00	702.83	5,748.91	2,874.46	14,764.0	7,393.01	0.01	-0.02	0.104
10.00	-46.82	-5.88	0.00	-673.04	0.00	673.04	5,680.00	2,840.00	14,296.5	7,158.90	0.05	-0.05	0.102
15.00	-45.12	-5.79	0.00	-643.66	0.00	643.66	5,609.27	2,804.63	13,831.6	6,926.09	0.11	-0.07	0.101
20.00	-43.45	-5.71	0.00	-614.70	0.00	614.70	5,536.73	2,768.37	13,369.5	6,694.72	0.19	-0.09	0.100
25.00	-41.80	-5.63	0.00	-586.16	0.00	586.16	5,462.39	2,731.20	12,910.6	6,464.93	0.30	-0.12	0.098
30.00	-40.19	-5.55	0.00	-558.02	0.00	558.02	5,386.24	2,693.12	12,455.1	6,236.85	0.44	-0.14	0.097
35.00	-38.60	-5.46	0.00	-530.29	0.00	530.29	5,308.29	2,654.14	12,003.4	6,010.63	0.60	-0.17	0.096
40.00	-37.05	-5.38	0.00	-502.97	0.00	502.97	5,228.52	2,614.26	11,555.6	5,786.40	0.79	-0.19	0.094
44.25	-35.75	-5.34	0.00	-480.10	0.00	480.10	5,159.30	2,579.65	11,178.3	5,597.47	0.97	-0.21	0.093
45.00	-35.36	-5.29	0.00	-476.09	0.00	476.09	5,146.95	2,573.48	11,112.0	5,564.30	1.00	-0.22	0.092
50.00	-32.79	-5.23	0.00	-449.66	0.00	449.66	5,063.57	2,531.79	10,673.0	5,344.47	1.24	-0.24	0.091
51.00	-32.28	-5.18	0.00	-444.44	0.00	444.44	4,145.19	2,072.60	8,844.92	4,429.04	1.29	-0.25	0.108
55.00	-31.24	-5.10	0.00	-423.72	0.00	423.72	4,096.07	2,048.03	8,572.50	4,292.62	1.51	-0.27	0.106
60.00	-29.95	-5.01	0.00	-398.23	0.00	398.23	4,033.03	2,016.52	8,234.29	4,123.27	1.80	-0.30	0.104
65.00	-28.68	-4.91	0.00	-373.20	0.00	373.20	3,968.19	1,984.10	7,898.94	3,955.34	2.13	-0.33	0.102
70.00	-27.44	-4.82	0.00	-348.64	0.00	348.64	3,901.54	1,950.77	7,566.71	3,788.98	2.49	-0.36	0.099
75.00	-26.23	-4.73	0.00	-324.54	0.00	324.54	3,833.09	1,916.54	7,237.89	3,624.33	2.88	-0.39	0.096
80.00	-25.04	-4.64	0.00	-300.91	0.00	300.91	3,762.82	1,881.41	6,912.76	3,461.52	3.31	-0.42	0.094
83.50	-24.23	-4.59	0.00	-284.66	0.00	284.66	3,712.56	1,856.28	6,687.50	3,348.72	3.62	-0.44	0.092
85.00	-23.65	-4.54	0.00	-277.77	0.00	277.77	3,690.75	1,845.38	6,591.58	3,300.69	3.76	-0.45	0.091
89.25	-22.06	-4.48	0.00	-258.47	0.00	258.47	2,874.01	1,437.01	5,097.10	2,552.34	4.17	-0.48	0.109
90.00	-21.91	-4.43	0.00	-255.11	0.00	255.11	2,866.38	1,433.19	5,061.58	2,534.55	4.25	-0.48	0.108
95.00	-20.92	-4.34	0.00	-232.93	0.00	232.93	2,814.48	1,407.24	4,825.96	2,416.57	4.77	-0.52	0.104
100.00	-19.96	-4.25	0.00	-211.23	0.00	211.23	2,760.76	1,380.38	4,592.64	2,299.74	5.33	-0.55	0.099
105.00	-19.02	-4.16	0.00	-189.98	0.00	189.98	2,705.24	1,352.62	4,361.91	2,184.20	5.93	-0.58	0.094
110.00	-18.10	-4.07	0.00	-169.19	0.00	169.19	2,647.91	1,323.95	4,134.03	2,070.09	6.56	-0.62	0.089
115.00	-17.20	-3.98	0.00	-148.86	0.00	148.86	2,588.77	1,294.38	3,909.29	1,957.55	7.22	-0.65	0.083
120.00	-16.32	-3.89	0.00	-128.98	0.00	128.98	2,527.82	1,263.91	3,687.97	1,846.73	7.92	-0.68	0.076
124.00	-15.63	-3.85	0.00	-113.41	0.00	113.41	2,477.76	1,238.88	3,513.55	1,759.39	8.51	-0.71	0.071
125.00	-15.36	-3.81	0.00	-109.56	0.00	109.56	2,465.07	1,232.53	3,470.33	1,737.75	8.65	-0.71	0.069
128.50	-14.45	-3.76	0.00	-96.24	0.00	96.24	1,822.58	911.29	2,547.67	1,275.73	9.19	-0.73	0.083
130.00	-11.89	-3.10	0.00	-90.61	0.00	90.61	1,810.10	905.05	2,502.45	1,253.09	9.42	-0.74	0.079
135.00	-11.20	-3.02	0.00	-75.09	0.00	75.09	1,767.32	883.66	2,352.92	1,178.21	10.21	-0.77	0.070
140.00	-10.52	-2.93	0.00	-60.01	0.00	60.01	1,722.74	861.37	2,205.45	1,104.37	11.04	-0.80	0.060
145.00	-9.86	-2.86	0.00	-45.35	0.00	45.35	1,676.35	838.18	2,060.32	1,031.69	11.89	-0.83	0.050
148.00	-7.95	-2.52	0.00	-36.77	0.00	36.77	1,647.65	823.83	1,974.49	988.71	12.42	-0.84	0.042
150.00	-6.92	-2.01	0.00	-31.72	0.00	31.72	1,628.16	814.08	1,917.81	960.33	12.77	-0.85	0.037
155.00	-6.43	-1.93	0.00	-21.69	0.00	21.69	1,578.15	789.08	1,778.19	890.42	13.67	-0.86	0.028
160.00	-5.96	-1.87	0.00	-12.06	0.00	12.06	1,526.34	763.17	1,641.75	822.09	14.58	-0.87	0.019
162.00	-2.83	-0.95	0.00	-8.31	0.00	8.31	1,505.11	752.56	1,588.12	795.24	14.94	-0.88	0.012
165.00	-2.59	-0.89	0.00	-5.46	0.00	5.46	1,472.72	736.36	1,508.75	755.50	15.50	-0.88	0.009
170.00	0.00	-0.85	0.00	-1.01	0.00	1.01	1,400.09	700.04	1,362.73	682.38	16.42	-0.88	0.001

Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.17	
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06	
Long-Period Transition Period (T_L):	6	
Importance Factor (I_E):	1.00	
Site Coefficient F_a:	1.60	
Site Coeffiecient F_v:	2.40	
Response Modification Coefficient (R):	1.50	
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.19	
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10	
Seismic Response Coefficient (C_s):	0.03	
Upper Limit C_s	0.03	
Lower Limit C_s	0.03	
Period based on Rayleigh Method (sec):	2.30	
Redundancy Factor (p):	1.00	
Seismic Force Distribution Exponent (k):	1.90	
Total Unfactored Dead Load:	50.05	k
Seismic Base Shear (E):	1.50	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)
42	167.50	385	6,435	0.021	32	476
41	163.50	239	3,815	0.013	19	295
40	161.00	185	2,877	0.009	14	229
39	157.50	475	7,073	0.023	35	588
38	152.50	492	6,886	0.023	34	609
37	149.00	255	3,416	0.011	17	316
36	146.50	388	5,027	0.017	25	480
35	142.50	659	8,113	0.027	40	816
34	137.50	676	7,773	0.026	38	836
33	132.50	693	7,424	0.024	37	857
32	129.25	217	2,224	0.007	11	269
31	126.75	913	8,999	0.030	44	1,130
30	124.50	264	2,517	0.008	12	327
29	122.00	688	6,303	0.021	31	851
28	117.50	879	7,496	0.025	37	1,087
27	112.50	899	7,066	0.023	35	1,113
26	107.50	920	6,631	0.022	33	1,139
25	102.50	941	6,195	0.020	31	1,164
24	97.50	962	5,759	0.019	28	1,190
23	92.50	983	5,324	0.018	26	1,216
22	89.63	149	761	0.003	4	185
21	87.13	1,594	7,707	0.025	38	1,972
20	84.25	571	2,588	0.009	13	706

19	81.75	816	3,495	0.012	17	1,010
18	77.50	1,187	4,594	0.015	23	1,468
17	72.50	1,212	4,133	0.014	20	1,499
16	67.50	1,237	3,683	0.012	18	1,530
15	62.50	1,262	3,246	0.011	16	1,561
14	57.50	1,287	2,826	0.009	14	1,592
13	53.00	1,047	1,971	0.006	10	1,296
12	50.50	506	869	0.003	4	626
11	47.50	2,564	3,918	0.013	19	3,173
10	44.63	389	528	0.002	3	482
9	42.13	1,298	1,579	0.005	8	1,606
8	37.50	1,554	1,516	0.005	7	1,923
7	32.50	1,583	1,177	0.004	6	1,959
6	27.50	1,612	873	0.003	4	1,995
5	22.50	1,642	607	0.002	3	2,031
4	17.50	1,671	383	0.001	2	2,067
3	12.50	1,700	206	0.001	1	2,103
2	7.50	1,729	79	0.000	0	2,140
1	2.50	1,490	8	0.000	0	1,844
RFS FD9R6004/2C-3L (	170.00	19	320	0.001	2	23
Alcatel-Lucent RRH2X	170.00	264	4,542	0.015	22	327
Amphenol Antel BXA-7	170.00	30	511	0.002	3	37
RFS DB-T1-6Z-8AB-0Z	170.00	44	757	0.002	4	54
Andrew LNX-6514DS-A1	170.00	116	2,003	0.007	10	144
Commscope HBXX-6517D	170.00	245	4,212	0.014	21	303
Flat Low Profile Pla	170.00	1,500	25,808	0.085	128	1,856
Andrew ATSBT-BOTTOM-	162.00	5	85	0.000	0	7
Ericsson KRY 112 144	162.00	33	518	0.002	3	41
Ericsson KRY 112 489	162.00	46	725	0.002	4	57
Ericsson Radio 4449	162.00	222	3,485	0.011	17	275
RFS APXV18-203219-C	162.00	117	1,837	0.006	9	145
Commscope LNX-6515DS	162.00	151	2,369	0.008	12	187
RFS APXVAARR24_43-U-	162.00	384	6,024	0.020	30	475
PerfectVision PV-LP	162.00	2,000	31,401	0.103	155	2,475
Powerwave Allgon LGP	150.00	33	448	0.001	2	41
Powerwave Allgon LGP	150.00	85	1,148	0.004	6	105
Ericsson RRUS 11 (Ba	150.00	300	4,070	0.013	20	371
Powerwave Allgon 777	150.00	210	2,849	0.009	14	260
KMW AM-X-CD-16-65-00	150.00	97	1,316	0.004	7	120
Powerwave Allgon P65	150.00	59	800	0.003	4	73
Generic SSB (27lb)	148.00	27	357	0.001	2	33
Flat Low Profile Pla	148.00	1,500	19,836	0.065	98	1,856
Alcatel-Lucent RRH 1	130.00	138	1,427	0.005	7	171
Alcatel-Lucent 800MH	130.00	159	1,644	0.005	8	197
Alcatel-Lucent TD-RR	130.00	198	2,047	0.007	10	245
RFS APXV9TM14-ALU-I2	130.00	165	1,709	0.006	8	205
RFS APXV9ERR18-C (62	130.00	186	1,923	0.006	10	230
Flat Low Profile Pla	130.00	1,500	15,506	0.051	77	1,856
		50,047	303,776	1.000	1,501	61,925

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)
42	167.50	385	6,435	0.021	32	332
41	163.50	239	3,815	0.013	19	206
40	161.00	185	2,877	0.009	14	160
39	157.50	475	7,073	0.023	35	410
38	152.50	492	6,886	0.023	34	424
37	149.00	255	3,416	0.011	17	220

36	146.50	388	5,027	0.017	25	334
35	142.50	659	8,113	0.027	40	569
34	137.50	676	7,773	0.026	38	583
33	132.50	693	7,424	0.024	37	598
32	129.25	217	2,224	0.007	11	188
31	126.75	913	8,999	0.030	44	788
30	124.50	264	2,517	0.008	12	228
29	122.00	688	6,303	0.021	31	593
28	117.50	879	7,496	0.025	37	758
27	112.50	899	7,066	0.023	35	776
26	107.50	920	6,631	0.022	33	794
25	102.50	941	6,195	0.020	31	812
24	97.50	962	5,759	0.019	28	830
23	92.50	983	5,324	0.018	26	848
22	89.63	149	761	0.003	4	129
21	87.13	1,594	7,707	0.025	38	1,375
20	84.25	571	2,588	0.009	13	492
19	81.75	816	3,495	0.012	17	704
18	77.50	1,187	4,594	0.015	23	1,024
17	72.50	1,212	4,133	0.014	20	1,045
16	67.50	1,237	3,683	0.012	18	1,067
15	62.50	1,262	3,246	0.011	16	1,089
14	57.50	1,287	2,826	0.009	14	1,110
13	53.00	1,047	1,971	0.006	10	904
12	50.50	506	869	0.003	4	437
11	47.50	2,564	3,918	0.013	19	2,212
10	44.63	389	528	0.002	3	336
9	42.13	1,298	1,579	0.005	8	1,120
8	37.50	1,554	1,516	0.005	7	1,341
7	32.50	1,583	1,177	0.004	6	1,366
6	27.50	1,612	873	0.003	4	1,391
5	22.50	1,642	607	0.002	3	1,416
4	17.50	1,671	383	0.001	2	1,441
3	12.50	1,700	206	0.001	1	1,467
2	7.50	1,729	79	0.000	0	1,492
1	2.50	1,490	8	0.000	0	1,285
RFS FD9R6004/2C-3L (	170.00	19	320	0.001	2	16
Alcatel-Lucent RRH2X	170.00	264	4,542	0.015	22	228
Amphenol Antel BXA-7	170.00	30	511	0.002	3	26
RFS DB-T1-6Z-8AB-0Z	170.00	44	757	0.002	4	38
Andrew LNX-6514DS-A1	170.00	116	2,003	0.007	10	100
Commscope HBXX-6517D	170.00	245	4,212	0.014	21	211
Flat Low Profile Pla	170.00	1,500	25,808	0.085	128	1,294
Andrew ATSBT-BOTTOM-	162.00	5	85	0.000	0	5
Ericsson KRY 112 144	162.00	33	518	0.002	3	28
Ericsson KRY 112 489	162.00	46	725	0.002	4	40
Ericsson Radio 4449	162.00	222	3,485	0.011	17	192
RFS APXV18-203219-C	162.00	117	1,837	0.006	9	101
Commscope LNX-6515DS	162.00	151	2,369	0.008	12	130
RFS APXVAARR24_43-U-	162.00	384	6,024	0.020	30	331
PerfectVision PV-LP	162.00	2,000	31,401	0.103	155	1,725
Powerwave Allgon LGP	150.00	33	448	0.001	2	28
Powerwave Allgon LGP	150.00	85	1,148	0.004	6	73
Ericsson RRUS 11 (Ba	150.00	300	4,070	0.013	20	259
Powerwave Allgon 777	150.00	210	2,849	0.009	14	181
KMW AM-X-CD-16-65-00	150.00	97	1,316	0.004	7	84
Powerwave Allgon P65	150.00	59	800	0.003	4	51
Generic SSB (27lb)	148.00	27	357	0.001	2	23
Flat Low Profile Pla	148.00	1,500	19,836	0.065	98	1,294
Alcatel-Lucent RRH 1	130.00	138	1,427	0.005	7	119
Alcatel-Lucent 800MH	130.00	159	1,644	0.005	8	137
Alcatel-Lucent TD-RR	130.00	198	2,047	0.007	10	171
RFS APXV9TM14-ALU-I2	130.00	165	1,709	0.006	8	143
RFS APXV9ERR18-C (62	130.00	186	1,923	0.006	10	160

Flat Low Profile Pla	130.00	1,500	15,506	0.051	77	1,294
		50,047	303,776	1.000	1,501	43,174

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	-60.08	-1.50	0.00	-204.62	0.00	204.62	5,816.03	2,908.01	15,233.9	7,628.28	0.00	0.00	0.037
5.00	-57.94	-1.51	0.00	-197.10	0.00	197.10	5,748.91	2,874.46	14,764.0	7,393.01	0.00	-0.01	0.037
10.00	-55.84	-1.51	0.00	-189.55	0.00	189.55	5,680.00	2,840.00	14,296.5	7,158.90	0.01	-0.01	0.036
15.00	-53.77	-1.52	0.00	-181.98	0.00	181.98	5,609.27	2,804.63	13,831.6	6,926.09	0.03	-0.02	0.036
20.00	-51.74	-1.52	0.00	-174.38	0.00	174.38	5,536.73	2,768.37	13,369.5	6,694.72	0.05	-0.03	0.035
25.00	-49.74	-1.52	0.00	-166.78	0.00	166.78	5,462.39	2,731.20	12,910.6	6,464.93	0.09	-0.03	0.035
30.00	-47.78	-1.52	0.00	-159.17	0.00	159.17	5,386.24	2,693.12	12,455.1	6,236.85	0.12	-0.04	0.034
35.00	-45.86	-1.52	0.00	-151.57	0.00	151.57	5,308.29	2,654.14	12,003.4	6,010.63	0.17	-0.05	0.034
40.00	-44.25	-1.51	0.00	-143.98	0.00	143.98	5,228.52	2,614.26	11,555.6	5,786.40	0.22	-0.05	0.033
44.25	-43.77	-1.51	0.00	-137.55	0.00	137.55	5,159.30	2,579.65	11,178.3	5,597.47	0.27	-0.06	0.033
45.00	-40.60	-1.49	0.00	-136.42	0.00	136.42	5,146.95	2,573.48	11,112.0	5,564.30	0.28	-0.06	0.032
50.00	-39.97	-1.49	0.00	-128.95	0.00	128.95	5,063.57	2,531.79	10,673.0	5,344.47	0.35	-0.07	0.032
51.00	-38.68	-1.48	0.00	-127.46	0.00	127.46	4,145.19	2,072.60	8,844.92	4,429.04	0.37	-0.07	0.038
55.00	-37.09	-1.47	0.00	-121.53	0.00	121.53	4,096.07	2,048.03	8,572.50	4,292.62	0.43	-0.08	0.037
60.00	-35.52	-1.46	0.00	-114.17	0.00	114.17	4,033.03	2,016.52	8,234.29	4,123.27	0.51	-0.08	0.036
65.00	-33.99	-1.44	0.00	-106.88	0.00	106.88	3,968.19	1,984.10	7,898.94	3,955.34	0.60	-0.09	0.036
70.00	-32.49	-1.42	0.00	-99.67	0.00	99.67	3,901.54	1,950.77	7,566.71	3,788.98	0.71	-0.10	0.035
75.00	-31.02	-1.40	0.00	-92.54	0.00	92.54	3,833.09	1,916.54	7,237.89	3,624.33	0.82	-0.11	0.034
80.00	-30.02	-1.39	0.00	-85.52	0.00	85.52	3,762.82	1,881.41	6,912.76	3,461.52	0.94	-0.12	0.033
83.50	-29.31	-1.38	0.00	-80.66	0.00	80.66	3,712.56	1,856.28	6,687.50	3,348.72	1.03	-0.13	0.032
85.00	-27.34	-1.34	0.00	-78.60	0.00	78.60	3,690.75	1,845.38	6,591.58	3,300.69	1.07	-0.13	0.031
89.25	-27.15	-1.33	0.00	-72.92	0.00	72.92	2,874.01	1,437.01	5,097.10	2,552.34	1.19	-0.14	0.038
90.00	-25.94	-1.31	0.00	-71.92	0.00	71.92	2,866.38	1,433.19	5,061.58	2,534.55	1.21	-0.14	0.037
95.00	-24.75	-1.28	0.00	-65.38	0.00	65.38	2,814.48	1,407.24	4,825.96	2,416.57	1.36	-0.15	0.036
100.00	-23.58	-1.25	0.00	-58.98	0.00	58.98	2,760.76	1,380.38	4,592.64	2,299.74	1.52	-0.16	0.034
105.00	-22.44	-1.22	0.00	-52.72	0.00	52.72	2,705.24	1,352.62	4,361.91	2,184.20	1.68	-0.17	0.032
110.00	-21.33	-1.18	0.00	-46.63	0.00	46.63	2,647.91	1,323.95	4,134.03	2,070.09	1.86	-0.18	0.031
115.00	-20.24	-1.15	0.00	-40.71	0.00	40.71	2,588.77	1,294.38	3,909.29	1,957.55	2.05	-0.18	0.029
120.00	-19.39	-1.12	0.00	-34.98	0.00	34.98	2,527.82	1,263.91	3,687.97	1,846.73	2.25	-0.19	0.027
124.00	-19.06	-1.10	0.00	-30.52	0.00	30.52	2,477.76	1,238.88	3,513.55	1,759.39	2.41	-0.20	0.025
125.00	-17.93	-1.06	0.00	-29.42	0.00	29.42	2,465.07	1,232.53	3,470.33	1,737.75	2.46	-0.20	0.024
128.50	-17.66	-1.04	0.00	-25.72	0.00	25.72	1,822.58	911.29	2,547.67	1,275.73	2.61	-0.21	0.030
130.00	-13.90	-0.88	0.00	-24.15	0.00	24.15	1,810.10	905.05	2,502.45	1,253.09	2.67	-0.21	0.027
135.00	-13.07	-0.84	0.00	-19.77	0.00	19.77	1,767.32	883.66	2,352.92	1,178.21	2.89	-0.22	0.024
140.00	-12.25	-0.79	0.00	-15.59	0.00	15.59	1,722.74	861.37	2,205.45	1,104.37	3.13	-0.22	0.021
145.00	-11.77	-0.77	0.00	-11.62	0.00	11.62	1,676.35	838.18	2,060.32	1,031.69	3.36	-0.23	0.018
148.00	-9.57	-0.64	0.00	-9.31	0.00	9.31	1,647.65	823.83	1,974.49	988.71	3.51	-0.23	0.015
150.00	-7.99	-0.55	0.00	-8.03	0.00	8.03	1,628.16	814.08	1,917.81	960.33	3.61	-0.24	0.013
155.00	-7.40	-0.51	0.00	-5.27	0.00	5.27	1,578.15	789.08	1,778.19	890.42	3.86	-0.24	0.011
160.00	-7.17	-0.50	0.00	-2.70	0.00	2.70	1,526.34	763.17	1,641.75	822.09	4.11	-0.24	0.008
162.00	-3.22	-0.23	0.00	-1.70	0.00	1.70	1,505.11	752.56	1,588.12	795.24	4.21	-0.24	0.004
165.00	-2.74	-0.20	0.00	-1.00	0.00	1.00	1,472.72	736.36	1,508.75	755.50	4.37	-0.24	0.003
170.00	0.00	-0.19	0.00	0.00	0.00	0.00	1,400.09	700.04	1,362.73	682.38	4.62	-0.24	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	-41.89	-1.50	0.00	-202.18	0.00	202.18	5,816.03	2,908.01	15,233.9	7,628.28	0.00	0.00	0.034
5.00	-40.40	-1.51	0.00	-194.67	0.00	194.67	5,748.91	2,874.46	14,764.0	7,393.01	0.00	-0.01	0.033
10.00	-38.93	-1.51	0.00	-187.13	0.00	187.13	5,680.00	2,840.00	14,296.5	7,158.90	0.01	-0.01	0.033
15.00	-37.49	-1.51	0.00	-179.58	0.00	179.58	5,609.27	2,804.63	13,831.6	6,926.09	0.03	-0.02	0.033
20.00	-36.07	-1.51	0.00	-172.02	0.00	172.02	5,536.73	2,768.37	13,369.5	6,694.72	0.05	-0.03	0.032
25.00	-34.68	-1.51	0.00	-164.46	0.00	164.46	5,462.39	2,731.20	12,910.6	6,464.93	0.08	-0.03	0.032
30.00	-33.31	-1.51	0.00	-156.90	0.00	156.90	5,386.24	2,693.12	12,455.1	6,236.85	0.12	-0.04	0.031
35.00	-31.97	-1.50	0.00	-149.35	0.00	149.35	5,308.29	2,654.14	12,003.4	6,010.63	0.17	-0.05	0.031
40.00	-30.85	-1.50	0.00	-141.83	0.00	141.83	5,228.52	2,614.26	11,555.6	5,786.40	0.22	-0.05	0.030
44.25	-30.52	-1.50	0.00	-135.46	0.00	135.46	5,159.30	2,579.65	11,178.3	5,597.47	0.27	-0.06	0.030
45.00	-28.31	-1.48	0.00	-134.33	0.00	134.33	5,146.95	2,573.48	11,112.0	5,564.30	0.28	-0.06	0.030
50.00	-27.87	-1.48	0.00	-126.94	0.00	126.94	5,063.57	2,531.79	10,673.0	5,344.47	0.35	-0.07	0.029
51.00	-26.97	-1.47	0.00	-125.46	0.00	125.46	4,145.19	2,072.60	8,844.92	4,429.04	0.36	-0.07	0.035
55.00	-25.86	-1.46	0.00	-119.60	0.00	119.60	4,096.07	2,048.03	8,572.50	4,292.62	0.42	-0.08	0.034
60.00	-24.77	-1.44	0.00	-112.32	0.00	112.32	4,033.03	2,016.52	8,234.29	4,123.27	0.50	-0.08	0.033
65.00	-23.70	-1.42	0.00	-105.12	0.00	105.12	3,968.19	1,984.10	7,898.94	3,955.34	0.60	-0.09	0.033
70.00	-22.65	-1.41	0.00	-97.99	0.00	97.99	3,901.54	1,950.77	7,566.71	3,788.98	0.70	-0.10	0.032
75.00	-21.63	-1.38	0.00	-90.96	0.00	90.96	3,833.09	1,916.54	7,237.89	3,624.33	0.81	-0.11	0.031
80.00	-20.93	-1.37	0.00	-84.04	0.00	84.04	3,762.82	1,881.41	6,912.76	3,461.52	0.93	-0.12	0.030
83.50	-20.43	-1.36	0.00	-79.25	0.00	79.25	3,712.56	1,856.28	6,687.50	3,348.72	1.01	-0.12	0.029
85.00	-19.06	-1.32	0.00	-77.22	0.00	77.22	3,690.75	1,845.38	6,591.58	3,300.69	1.05	-0.13	0.029
89.25	-18.93	-1.31	0.00	-71.62	0.00	71.62	2,874.01	1,437.01	5,097.10	2,552.34	1.17	-0.13	0.035
90.00	-18.08	-1.29	0.00	-70.63	0.00	70.63	2,866.38	1,433.19	5,061.58	2,534.55	1.19	-0.13	0.034
95.00	-17.25	-1.26	0.00	-64.20	0.00	64.20	2,814.48	1,407.24	4,825.96	2,416.57	1.34	-0.14	0.033
100.00	-16.44	-1.23	0.00	-57.90	0.00	57.90	2,760.76	1,380.38	4,592.64	2,299.74	1.49	-0.15	0.031
105.00	-15.65	-1.20	0.00	-51.75	0.00	51.75	2,705.24	1,352.62	4,361.91	2,184.20	1.66	-0.16	0.029
110.00	-14.87	-1.16	0.00	-45.76	0.00	45.76	2,647.91	1,323.95	4,134.03	2,070.09	1.84	-0.17	0.028
115.00	-14.11	-1.13	0.00	-39.94	0.00	39.94	2,588.77	1,294.38	3,909.29	1,957.55	2.02	-0.18	0.026
120.00	-13.52	-1.09	0.00	-34.32	0.00	34.32	2,527.82	1,263.91	3,687.97	1,846.73	2.22	-0.19	0.024
124.00	-13.29	-1.08	0.00	-29.94	0.00	29.94	2,477.76	1,238.88	3,513.55	1,759.39	2.38	-0.20	0.022
125.00	-12.50	-1.04	0.00	-28.86	0.00	28.86	2,465.07	1,232.53	3,470.33	1,737.75	2.42	-0.20	0.022
128.50	-12.31	-1.02	0.00	-25.23	0.00	25.23	1,822.58	911.29	2,547.67	1,275.73	2.57	-0.20	0.027
130.00	-9.69	-0.86	0.00	-23.70	0.00	23.70	1,810.10	905.05	2,502.45	1,253.09	2.63	-0.21	0.024
135.00	-9.11	-0.82	0.00	-19.40	0.00	19.40	1,767.32	883.66	2,352.92	1,178.21	2.85	-0.21	0.022
140.00	-8.54	-0.78	0.00	-15.29	0.00	15.29	1,722.74	861.37	2,205.45	1,104.37	3.08	-0.22	0.019
145.00	-8.21	-0.75	0.00	-11.40	0.00	11.40	1,676.35	838.18	2,060.32	1,031.69	3.31	-0.23	0.016
148.00	-6.67	-0.63	0.00	-9.14	0.00	9.14	1,647.65	823.83	1,974.49	988.71	3.46	-0.23	0.013
150.00	-5.57	-0.54	0.00	-7.88	0.00	7.88	1,628.16	814.08	1,917.81	960.33	3.55	-0.23	0.012
155.00	-5.16	-0.50	0.00	-5.17	0.00	5.17	1,578.15	789.08	1,778.19	890.42	3.80	-0.24	0.009
160.00	-5.00	-0.49	0.00	-2.65	0.00	2.65	1,526.34	763.17	1,641.75	822.09	4.05	-0.24	0.007
162.00	-2.24	-0.23	0.00	-1.67	0.00	1.67	1,505.11	752.56	1,588.12	795.24	4.15	-0.24	0.004
165.00	-1.91	-0.20	0.00	-0.98	0.00	0.98	1,472.72	736.36	1,508.75	755.50	4.30	-0.24	0.003
170.00	0.00	-0.19	0.00	0.00	0.00	0.00	1,400.09	700.04	1,362.73	682.38	4.55	-0.24	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):	0.17
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.60
Site Coefficient F_v	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.19
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	2.30
Redundancy Factor (p):	1.00

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

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
42	167.50	385	1.835	1.702	1.038	0.322	83	476
41	163.50	239	1.748	1.314	0.891	0.271	43	295
40	161.00	185	1.695	1.104	0.807	0.241	30	229
39	157.50	475	1.622	0.849	0.701	0.202	64	588
38	152.50	492	1.521	0.554	0.568	0.151	49	609
37	149.00	255	1.452	0.389	0.487	0.119	20	316
36	146.50	388	1.404	0.291	0.435	0.098	25	480
35	142.50	659	1.328	0.161	0.361	0.068	30	816
34	137.50	676	1.236	0.042	0.283	0.035	16	836
33	132.50	693	1.148	-0.039	0.218	0.009	4	857
32	129.25	217	1.093	-0.074	0.182	-0.005	-1	269
31	126.75	913	1.051	-0.094	0.158	-0.014	-9	1,130
30	124.50	264	1.014	-0.106	0.138	-0.021	-4	327
29	122.00	688	0.973	-0.116	0.119	-0.028	-13	851
28	117.50	879	0.903	-0.122	0.088	-0.035	-21	1,087
27	112.50	899	0.828	-0.116	0.062	-0.039	-23	1,113
26	107.50	920	0.756	-0.102	0.042	-0.036	-22	1,139
25	102.50	941	0.687	-0.083	0.027	-0.029	-18	1,164
24	97.50	962	0.622	-0.061	0.017	-0.018	-12	1,190
23	92.50	983	0.560	-0.038	0.011	-0.005	-3	1,216
22	89.63	149	0.525	-0.025	0.008	0.003	0	185
21	87.13	1,594	0.496	-0.015	0.007	0.009	10	1,972
20	84.25	571	0.464	-0.003	0.006	0.017	6	706
19	81.75	816	0.437	0.006	0.006	0.023	12	1,010
18	77.50	1,187	0.393	0.020	0.007	0.032	25	1,468
17	72.50	1,212	0.344	0.034	0.009	0.039	32	1,499
16	67.50	1,237	0.298	0.046	0.012	0.045	37	1,530
15	62.50	1,262	0.255	0.054	0.017	0.048	40	1,561
14	57.50	1,287	0.216	0.061	0.021	0.049	42	1,592
13	53.00	1,047	0.184	0.065	0.025	0.049	34	1,296
12	50.50	506	0.167	0.066	0.028	0.049	17	626
11	47.50	2,564	0.148	0.068	0.030	0.049	83	3,173
10	44.63	389	0.130	0.069	0.033	0.048	12	482
9	42.13	1,298	0.116	0.070	0.035	0.048	41	1,606

8	37.50	1,554	0.092	0.071	0.038	0.047	48	1,923
7	32.50	1,583	0.069	0.072	0.041	0.046	48	1,959
6	27.50	1,612	0.049	0.071	0.042	0.044	48	1,995
5	22.50	1,642	0.033	0.069	0.041	0.043	47	2,031
4	17.50	1,671	0.020	0.064	0.038	0.040	44	2,067
3	12.50	1,700	0.010	0.055	0.032	0.035	40	2,103
2	7.50	1,729	0.004	0.040	0.022	0.027	31	2,140
1	2.50	1,490	0.000	0.016	0.009	0.012	12	1,844
RFS FD9R6004/2C-3L (	170.00	19	1.890	1.980	1.140	0.356	4	23
Alcatel-Lucent RRH2X	170.00	264	1.890	1.980	1.140	0.356	63	327
Amphenol Antel BXA-7	170.00	30	1.890	1.980	1.140	0.356	7	37
RFS DB-T1-6Z-8AB-0Z	170.00	44	1.890	1.980	1.140	0.356	10	54
Andrew LNX-6514DS-A1	170.00	116	1.890	1.980	1.140	0.356	28	144
Commscope HBXX-	170.00	245	1.890	1.980	1.140	0.356	58	303
Flat Low Profile Pla	170.00	1,500	1.890	1.980	1.140	0.356	356	1,856
Andrew ATSBT-	162.00	5	1.716	1.185	0.840	0.253	1	7
Ericsson KRY 112 144	162.00	33	1.716	1.185	0.840	0.253	6	41
Ericsson KRY 112 489	162.00	46	1.716	1.185	0.840	0.253	8	57
Ericsson Radio 4449	162.00	222	1.716	1.185	0.840	0.253	37	275
RFS APXV18-203219-C	162.00	117	1.716	1.185	0.840	0.253	20	145
Commscope LNX-	162.00	151	1.716	1.185	0.840	0.253	25	187
RFS APXVAARR24_43-U-	162.00	384	1.716	1.185	0.840	0.253	65	475
PerfectVision PV-LP	162.00	2,000	1.716	1.185	0.840	0.253	337	2,475
Powerwave Allgon LGP	150.00	33	1.471	0.433	0.509	0.128	3	41
Powerwave Allgon LGP	150.00	85	1.471	0.433	0.509	0.128	7	105
Ericsson RRUS 11 (Ba	150.00	300	1.471	0.433	0.509	0.128	26	371
Powerwave Allgon 777	150.00	210	1.471	0.433	0.509	0.128	18	260
KMW AM-X-CD-16-65-00	150.00	97	1.471	0.433	0.509	0.128	8	120
Powerwave Allgon P65	150.00	59	1.471	0.433	0.509	0.128	5	73
Generic SSB (27lb)	148.00	27	1.432	0.348	0.466	0.110	2	33
Flat Low Profile Pla	148.00	1,500	1.432	0.348	0.466	0.110	110	1,856
Alcatel-Lucent RRH 1	130.00	138	1.105	-0.067	0.190	-0.002	0	171
Alcatel-Lucent 800MH	130.00	159	1.105	-0.067	0.190	-0.002	0	197
Alcatel-Lucent TD-RR	130.00	198	1.105	-0.067	0.190	-0.002	0	245
RFS APXV9TM14-ALU-I2	130.00	165	1.105	-0.067	0.190	-0.002	0	205
RFS APXV9ERR18-C (62	130.00	186	1.105	-0.067	0.190	-0.002	0	230
Flat Low Profile Pla	130.00	1,500	1.105	-0.067	0.190	-0.002	-2	1,856
		50,047	73.211	32.664	26.970	7.568	2,149	61,925

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)
42	167.50	385	1.835	1.702	1.038	0.322	83	332
41	163.50	239	1.748	1.314	0.891	0.271	43	206
40	161.00	185	1.695	1.104	0.807	0.241	30	160
39	157.50	475	1.622	0.849	0.701	0.202	64	410
38	152.50	492	1.521	0.554	0.568	0.151	49	424
37	149.00	255	1.452	0.389	0.487	0.119	20	220
36	146.50	388	1.404	0.291	0.435	0.098	25	334
35	142.50	659	1.328	0.161	0.361	0.068	30	569
34	137.50	676	1.236	0.042	0.283	0.035	16	583
33	132.50	693	1.148	-0.039	0.218	0.009	4	598
32	129.25	217	1.093	-0.074	0.182	-0.005	-1	188
31	126.75	913	1.051	-0.094	0.158	-0.014	-9	788
30	124.50	264	1.014	-0.106	0.138	-0.021	-4	228
29	122.00	688	0.973	-0.116	0.119	-0.028	-13	593
28	117.50	879	0.903	-0.122	0.088	-0.035	-21	758
27	112.50	899	0.828	-0.116	0.062	-0.039	-23	776

26	107.50	920	0.756	-0.102	0.042	-0.036	-22	794
25	102.50	941	0.687	-0.083	0.027	-0.029	-18	812
24	97.50	962	0.622	-0.061	0.017	-0.018	-12	830
23	92.50	983	0.560	-0.038	0.011	-0.005	-3	848
22	89.63	149	0.525	-0.025	0.008	0.003	0	129
21	87.13	1,594	0.496	-0.015	0.007	0.009	10	1,375
20	84.25	571	0.464	-0.003	0.006	0.017	6	492
19	81.75	816	0.437	0.006	0.006	0.023	12	704
18	77.50	1,187	0.393	0.020	0.007	0.032	25	1,024
17	72.50	1,212	0.344	0.034	0.009	0.039	32	1,045
16	67.50	1,237	0.298	0.046	0.012	0.045	37	1,067
15	62.50	1,262	0.255	0.054	0.017	0.048	40	1,089
14	57.50	1,287	0.216	0.061	0.021	0.049	42	1,110
13	53.00	1,047	0.184	0.065	0.025	0.049	34	904
12	50.50	506	0.167	0.066	0.028	0.049	17	437
11	47.50	2,564	0.148	0.068	0.030	0.049	83	2,212
10	44.63	389	0.130	0.069	0.033	0.048	12	336
9	42.13	1,298	0.116	0.070	0.035	0.048	41	1,120
8	37.50	1,554	0.092	0.071	0.038	0.047	48	1,341
7	32.50	1,583	0.069	0.072	0.041	0.046	48	1,366
6	27.50	1,612	0.049	0.071	0.042	0.044	48	1,391
5	22.50	1,642	0.033	0.069	0.041	0.043	47	1,416
4	17.50	1,671	0.020	0.064	0.038	0.040	44	1,441
3	12.50	1,700	0.010	0.055	0.032	0.035	40	1,467
2	7.50	1,729	0.004	0.040	0.022	0.027	31	1,492
1	2.50	1,490	0.000	0.016	0.009	0.012	12	1,285
RFS FD9R6004/2C-3L (	170.00	19	1.890	1.980	1.140	0.356	4	16
Alcatel-Lucent RRH2X	170.00	264	1.890	1.980	1.140	0.356	63	228
Amphenol Antel BXA-7	170.00	30	1.890	1.980	1.140	0.356	7	26
RFS DB-T1-6Z-8AB-0Z	170.00	44	1.890	1.980	1.140	0.356	10	38
Andrew LNX-6514DS-A1	170.00	116	1.890	1.980	1.140	0.356	28	100
Commscope HBXX-	170.00	245	1.890	1.980	1.140	0.356	58	211
Flat Low Profile Pla	170.00	1,500	1.890	1.980	1.140	0.356	356	1,294
Andrew ATSBT-	162.00	5	1.716	1.185	0.840	0.253	1	5
Ericsson KRY 112 144	162.00	33	1.716	1.185	0.840	0.253	6	28
Ericsson KRY 112 489	162.00	46	1.716	1.185	0.840	0.253	8	40
Ericsson Radio 4449	162.00	222	1.716	1.185	0.840	0.253	37	192
RFS APXV18-203219-C	162.00	117	1.716	1.185	0.840	0.253	20	101
Commscope LNX-	162.00	151	1.716	1.185	0.840	0.253	25	130
RFS APXVAARR24_43-U-	162.00	384	1.716	1.185	0.840	0.253	65	331
PerfectVision PV-LP	162.00	2,000	1.716	1.185	0.840	0.253	337	1,725
Powerwave Allgon LGP	150.00	33	1.471	0.433	0.509	0.128	3	28
Powerwave Allgon LGP	150.00	85	1.471	0.433	0.509	0.128	7	73
Ericsson RRUS 11 (Ba	150.00	300	1.471	0.433	0.509	0.128	26	259
Powerwave Allgon 777	150.00	210	1.471	0.433	0.509	0.128	18	181
KMW AM-X-CD-16-65-00	150.00	97	1.471	0.433	0.509	0.128	8	84
Powerwave Allgon P65	150.00	59	1.471	0.433	0.509	0.128	5	51
Generic SSB (27lb)	148.00	27	1.432	0.348	0.466	0.110	2	23
Flat Low Profile Pla	148.00	1,500	1.432	0.348	0.466	0.110	110	1,294
Alcatel-Lucent RRH 1	130.00	138	1.105	-0.067	0.190	-0.002	0	119
Alcatel-Lucent 800MH	130.00	159	1.105	-0.067	0.190	-0.002	0	137
Alcatel-Lucent TD-RR	130.00	198	1.105	-0.067	0.190	-0.002	0	171
RFS APXV9TM14-ALU-I2	130.00	165	1.105	-0.067	0.190	-0.002	0	143
RFS APXV9ERR18-C (62	130.00	186	1.105	-0.067	0.190	-0.002	0	160
Flat Low Profile Pla	130.00	1,500	1.105	-0.067	0.190	-0.002	-2	1,294
		50,047	73.211	32.664	26.970	7.568	2,149	43,174

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	-60.08	-2.14	0.00	-278.68	0.00	278.68	5,816.03	2,908.01	15,233.90	7,628.28	0.00	0.00	0.047
5.00	-57.94	-2.12	0.00	-267.98	0.00	267.98	5,748.91	2,874.46	14,764.07	7,393.01	0.00	-0.01	0.046
10.00	-55.84	-2.09	0.00	-257.39	0.00	257.39	5,680.00	2,840.00	14,296.55	7,158.90	0.02	-0.02	0.046
15.00	-53.77	-2.05	0.00	-246.96	0.00	246.96	5,609.27	2,804.63	13,831.63	6,926.09	0.04	-0.03	0.045
20.00	-51.74	-2.01	0.00	-236.71	0.00	236.71	5,536.73	2,768.37	13,369.57	6,694.72	0.07	-0.04	0.045
25.00	-49.74	-1.97	0.00	-226.66	0.00	226.66	5,462.39	2,731.20	12,910.67	6,464.93	0.12	-0.04	0.044
30.00	-47.78	-1.93	0.00	-216.82	0.00	216.82	5,386.24	2,693.12	12,455.19	6,236.85	0.17	-0.05	0.044
35.00	-45.86	-1.88	0.00	-207.18	0.00	207.18	5,308.29	2,654.14	12,003.41	6,010.63	0.23	-0.06	0.043
40.00	-44.25	-1.85	0.00	-197.76	0.00	197.76	5,228.52	2,614.26	11,555.62	5,786.40	0.30	-0.07	0.043
44.25	-43.77	-1.84	0.00	-189.90	0.00	189.90	5,159.30	2,579.65	11,178.32	5,597.47	0.37	-0.08	0.042
45.00	-40.60	-1.76	0.00	-188.52	0.00	188.52	5,146.95	2,573.48	11,112.08	5,564.30	0.38	-0.08	0.042
50.00	-39.97	-1.74	0.00	-179.74	0.00	179.74	5,063.57	2,531.79	10,673.07	5,344.47	0.48	-0.09	0.042
51.00	-38.68	-1.71	0.00	-178.00	0.00	178.00	4,145.19	2,072.60	8,844.92	4,429.04	0.50	-0.10	0.050
55.00	-37.08	-1.67	0.00	-171.16	0.00	171.16	4,096.07	2,048.03	8,572.50	4,292.62	0.58	-0.10	0.049
60.00	-35.52	-1.64	0.00	-162.80	0.00	162.80	4,033.03	2,016.52	8,234.29	4,123.27	0.70	-0.12	0.048
65.00	-33.99	-1.60	0.00	-154.62	0.00	154.62	3,968.19	1,984.10	7,898.94	3,955.34	0.83	-0.13	0.048
70.00	-32.49	-1.58	0.00	-146.60	0.00	146.60	3,901.54	1,950.77	7,566.71	3,788.98	0.97	-0.14	0.047
75.00	-31.02	-1.55	0.00	-138.72	0.00	138.72	3,833.09	1,916.54	7,237.89	3,624.33	1.12	-0.15	0.046
80.00	-30.01	-1.54	0.00	-130.96	0.00	130.96	3,762.82	1,881.41	6,912.76	3,461.52	1.29	-0.17	0.046
83.50	-29.31	-1.54	0.00	-125.55	0.00	125.55	3,712.56	1,856.28	6,687.50	3,348.72	1.42	-0.18	0.045
85.00	-27.33	-1.53	0.00	-123.24	0.00	123.24	3,690.75	1,845.38	6,591.58	3,300.69	1.47	-0.18	0.045
89.25	-27.15	-1.53	0.00	-116.75	0.00	116.75	2,874.01	1,437.01	5,097.10	2,552.34	1.64	-0.19	0.055
90.00	-25.93	-1.53	0.00	-115.60	0.00	115.60	2,866.38	1,433.19	5,061.58	2,534.55	1.67	-0.19	0.055
95.00	-24.74	-1.55	0.00	-107.94	0.00	107.94	2,814.48	1,407.24	4,825.96	2,416.57	1.88	-0.21	0.053
100.00	-23.58	-1.57	0.00	-100.20	0.00	100.20	2,760.76	1,380.38	4,592.64	2,299.74	2.11	-0.23	0.052
105.00	-22.44	-1.59	0.00	-92.36	0.00	92.36	2,705.24	1,352.62	4,361.91	2,184.20	2.36	-0.24	0.051
110.00	-21.33	-1.62	0.00	-84.40	0.00	84.40	2,647.91	1,323.95	4,134.03	2,070.09	2.62	-0.26	0.049
115.00	-20.24	-1.64	0.00	-76.32	0.00	76.32	2,588.77	1,294.38	3,909.29	1,957.55	2.90	-0.28	0.047
120.00	-19.39	-1.65	0.00	-68.13	0.00	68.13	2,527.82	1,263.91	3,687.97	1,846.73	3.20	-0.29	0.045
124.00	-19.06	-1.66	0.00	-61.52	0.00	61.52	2,477.76	1,238.88	3,513.55	1,759.39	3.46	-0.31	0.043
125.00	-17.93	-1.66	0.00	-59.87	0.00	59.87	2,465.07	1,232.53	3,470.33	1,737.75	3.52	-0.31	0.042
128.50	-17.66	-1.66	0.00	-54.05	0.00	54.05	1,822.58	911.29	2,547.67	1,275.73	3.75	-0.32	0.052
130.00	-13.90	-1.64	0.00	-51.56	0.00	51.56	1,810.10	905.05	2,502.45	1,253.09	3.85	-0.33	0.049
135.00	-13.06	-1.63	0.00	-43.34	0.00	43.34	1,767.32	883.66	2,352.92	1,178.21	4.20	-0.34	0.044
140.00	-12.25	-1.60	0.00	-35.20	0.00	35.20	1,722.74	861.37	2,205.45	1,104.37	4.57	-0.36	0.039
145.00	-11.77	-1.57	0.00	-27.22	0.00	27.22	1,676.35	838.18	2,060.32	1,031.69	4.96	-0.37	0.033
148.00	-9.56	-1.42	0.00	-22.51	0.00	22.51	1,647.65	823.83	1,974.49	988.71	5.20	-0.38	0.029
150.00	-7.98	-1.30	0.00	-19.67	0.00	19.67	1,628.16	814.08	1,917.81	960.33	5.36	-0.39	0.025
155.00	-7.40	-1.23	0.00	-13.18	0.00	13.18	1,578.15	789.08	1,778.19	890.42	5.77	-0.40	0.019
160.00	-7.17	-1.20	0.00	-7.02	0.00	7.02	1,526.34	763.17	1,641.75	822.09	6.19	-0.40	0.013
162.00	-3.22	-0.63	0.00	-4.62	0.00	4.62	1,505.11	752.56	1,588.12	795.24	6.36	-0.41	0.008
165.00	-2.74	-0.55	0.00	-2.73	0.00	2.73	1,472.72	736.36	1,508.75	755.50	6.61	-0.41	0.005
170.00	0.00	-0.53	0.00	0.00	0.00	0.00	1,400.09	700.04	1,362.73	682.38	7.04	-0.41	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	-41.89	-2.14	0.00	-275.12	0.00	275.12	5,816.03	2,908.01	15,233.90	7,628.28	0.00	0.00	0.043
5.00	-40.40	-2.11	0.00	-264.42	0.00	264.42	5,748.91	2,874.46	14,764.07	7,393.01	0.00	-0.01	0.043
10.00	-38.93	-2.08	0.00	-253.85	0.00	253.85	5,680.00	2,840.00	14,296.55	7,158.90	0.02	-0.02	0.042
15.00	-37.49	-2.04	0.00	-243.46	0.00	243.46	5,609.27	2,804.63	13,831.63	6,926.09	0.04	-0.03	0.042
20.00	-36.07	-2.00	0.00	-233.25	0.00	233.25	5,536.73	2,768.37	13,369.57	6,694.72	0.07	-0.03	0.041
25.00	-34.68	-1.96	0.00	-223.26	0.00	223.26	5,462.39	2,731.20	12,910.67	6,464.93	0.11	-0.04	0.041
30.00	-33.31	-1.91	0.00	-213.48	0.00	213.48	5,386.24	2,693.12	12,455.19	6,236.85	0.17	-0.05	0.040
35.00	-31.97	-1.87	0.00	-203.92	0.00	203.92	5,308.29	2,654.14	12,003.41	6,010.63	0.23	-0.06	0.040
40.00	-30.85	-1.83	0.00	-194.58	0.00	194.58	5,228.52	2,614.26	11,555.62	5,786.40	0.30	-0.07	0.040
44.25	-30.52	-1.82	0.00	-186.81	0.00	186.81	5,159.30	2,579.65	11,178.32	5,597.47	0.37	-0.08	0.039
45.00	-28.31	-1.74	0.00	-185.44	0.00	185.44	5,146.95	2,573.48	11,112.08	5,564.30	0.38	-0.08	0.039
50.00	-27.87	-1.72	0.00	-176.76	0.00	176.76	5,063.57	2,531.79	10,673.07	5,344.47	0.47	-0.09	0.039
51.00	-26.96	-1.69	0.00	-175.04	0.00	175.04	4,145.19	2,072.60	8,844.92	4,429.04	0.49	-0.09	0.046
55.00	-25.85	-1.65	0.00	-168.28	0.00	168.28	4,096.07	2,048.03	8,572.50	4,292.62	0.57	-0.10	0.046
60.00	-24.77	-1.61	0.00	-160.03	0.00	160.03	4,033.03	2,016.52	8,234.29	4,123.27	0.69	-0.11	0.045
65.00	-23.70	-1.58	0.00	-151.97	0.00	151.97	3,968.19	1,984.10	7,898.94	3,955.34	0.81	-0.13	0.044
70.00	-22.65	-1.55	0.00	-144.08	0.00	144.08	3,901.54	1,950.77	7,566.71	3,788.98	0.95	-0.14	0.044
75.00	-21.63	-1.53	0.00	-136.34	0.00	136.34	3,833.09	1,916.54	7,237.89	3,624.33	1.11	-0.15	0.043
80.00	-20.92	-1.52	0.00	-128.70	0.00	128.70	3,762.82	1,881.41	6,912.76	3,461.52	1.27	-0.16	0.043
83.50	-20.43	-1.51	0.00	-123.40	0.00	123.40	3,712.56	1,856.28	6,687.50	3,348.72	1.40	-0.17	0.042
85.00	-19.06	-1.50	0.00	-121.13	0.00	121.13	3,690.75	1,845.38	6,591.58	3,300.69	1.45	-0.18	0.042
89.25	-18.93	-1.50	0.00	-114.76	0.00	114.76	2,874.01	1,437.01	5,097.10	2,552.34	1.61	-0.19	0.052
90.00	-18.08	-1.50	0.00	-113.63	0.00	113.63	2,866.38	1,433.19	5,061.58	2,534.55	1.64	-0.19	0.051
95.00	-17.25	-1.52	0.00	-106.11	0.00	106.11	2,814.48	1,407.24	4,825.96	2,416.57	1.85	-0.21	0.050
100.00	-16.44	-1.54	0.00	-98.53	0.00	98.53	2,760.76	1,380.38	4,592.64	2,299.74	2.08	-0.22	0.049
105.00	-15.64	-1.56	0.00	-90.84	0.00	90.84	2,705.24	1,352.62	4,361.91	2,184.20	2.32	-0.24	0.047
110.00	-14.87	-1.59	0.00	-83.03	0.00	83.03	2,647.91	1,323.95	4,134.03	2,070.09	2.58	-0.26	0.046
115.00	-14.11	-1.61	0.00	-75.11	0.00	75.11	2,588.77	1,294.38	3,909.29	1,957.55	2.86	-0.27	0.044
120.00	-13.51	-1.62	0.00	-67.07	0.00	67.07	2,527.82	1,263.91	3,687.97	1,846.73	3.15	-0.29	0.042
124.00	-13.29	-1.62	0.00	-60.60	0.00	60.60	2,477.76	1,238.88	3,513.55	1,759.39	3.40	-0.30	0.040
125.00	-12.50	-1.63	0.00	-58.97	0.00	58.97	2,465.07	1,232.53	3,470.33	1,737.75	3.46	-0.30	0.039
128.50	-12.31	-1.63	0.00	-53.26	0.00	53.26	1,822.58	911.29	2,547.67	1,275.73	3.69	-0.32	0.049
130.00	-9.69	-1.62	0.00	-50.82	0.00	50.82	1,810.10	905.05	2,502.45	1,253.09	3.79	-0.32	0.046
135.00	-9.10	-1.60	0.00	-42.72	0.00	42.72	1,767.32	883.66	2,352.92	1,178.21	4.14	-0.34	0.041
140.00	-8.53	-1.57	0.00	-34.71	0.00	34.71	1,722.74	861.37	2,205.45	1,104.37	4.50	-0.35	0.036
145.00	-8.20	-1.55	0.00	-26.86	0.00	26.86	1,676.35	838.18	2,060.32	1,031.69	4.88	-0.37	0.031
148.00	-6.66	-1.40	0.00	-22.22	0.00	22.22	1,647.65	823.83	1,974.49	988.71	5.11	-0.38	0.027
150.00	-5.56	-1.28	0.00	-19.42	0.00	19.42	1,628.16	814.08	1,917.81	960.33	5.27	-0.38	0.024
155.00	-5.15	-1.21	0.00	-13.01	0.00	13.01	1,578.15	789.08	1,778.19	890.42	5.68	-0.39	0.018
160.00	-4.99	-1.18	0.00	-6.94	0.00	6.94	1,526.34	763.17	1,641.75	822.09	6.09	-0.40	0.012
162.00	-2.24	-0.62	0.00	-4.57	0.00	4.57	1,505.11	752.56	1,588.12	795.24	6.26	-0.40	0.007
165.00	-1.91	-0.54	0.00	-2.70	0.00	2.70	1,472.72	736.36	1,508.75	755.50	6.51	-0.40	0.005
170.00	0.00	-0.53	0.00	0.00	0.00	0.00	1,400.09	700.04	1,362.73	682.38	6.93	-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	28.85	0.00	60.03	0.00	0.00	3518.37	89.25	0.50
0.9D + 1.6W	28.84	0.00	45.01	0.00	0.00	3483.41	89.25	0.49
1.2D + 1.0Di + 1.0Wi	8.62	0.00	92.92	0.00	0.00	1053.41	89.25	0.16
(1.2 + 0.2Sds) * DL + E ELFM	1.50	0.00	60.08	0.00	0.00	204.62	51.00	0.04
(1.2 + 0.2Sds) * DL + E EMAM	2.14	0.00	60.08	0.00	0.00	278.68	89.25	0.06
(0.9 - 0.2Sds) * DL + E ELFM	1.50	0.00	41.89	0.00	0.00	202.18	51.00	0.03
(0.9 - 0.2Sds) * DL + E EMAM	2.14	0.00	41.89	0.00	0.00	275.12	89.25	0.05
1.0D + 1.0W	6.05	0.00	50.05	0.00	0.00	733.06	89.25	0.11

AMERICAN TOWER CORPORATION

Base Plate & Anchor Rod Analysis

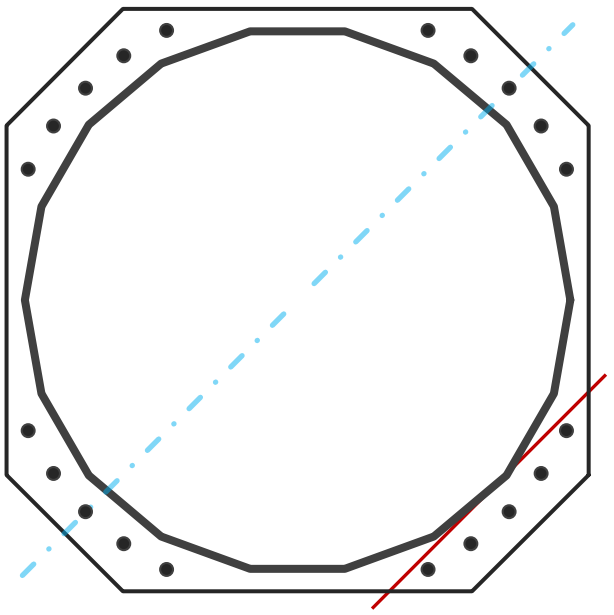
Pole Dimensions		
Number of Sides	18	-
Diameter	64.1	in
Thickness	0.4375	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	3518.4	k-ft
Axial, Pu	60.0	k
Shear, Vu	28.9	k
Neutral Axis	225	°

Report Capacities		
Component	Capacity	Result
Base Plate	35%	Pass
Anchor Rods	47%	Pass
Dwyidag	-	-

Base Plate		
Shape	Square	-
Width	70	in
Thickness	3 1/4	in
Grade	Other	-
Yield Strength, Fy	55	ksi
Tensile Strength, Fu	70	ksi
Clip	14	in
Orientation Offset	0	°
Anchor Rod Detail	d	η=0.5
Clear Distance	3	in
Applied Moment, Mu	1595.3	k
Bending Stress, ϕMn	4495.8	k

Original Anchor Rods		
Arrangement	Cluster	-
Quantity	20	-
Diameter, ø	2 1/4	in
Bolt Circle	72	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	6.0	in
Orientation Offset	0	°
Applied Force, Pu	120.2	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	28.9	3518.4	1.00
Anchor Rod Forces	28.9	3518.4	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	87.0572	4.8365	0.3096		44109.97
Bolt	3.9761	3.2477	0.8393	4.5	42106.84
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	0.0000	0.0000	0.0000		0.00
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate		
Shape	Square	-
Width, W	70	in
Thickness, t	3.25	in
Yield Strength, Fy	55	ksi
Tensile Strength, Fu	70	ksi
Base Plate Chord	28.128	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	72	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	120.2	k
Applied Shear, Vu	0.4	k
Compressive Capacity, ϕPn	259.8	k
Tensile Capacity, ϕRnt	0.463	OK
Interaction Capacity	0.466	OK

External Base Plate		
Chord Length AA	34.395	in
Additional AA	0.000	in
Section Modulus, Z	90.824	in^3
Applied Moment, Mu	1595.3	k-ft
Bending Capacity, ϕMn	4495.8	k-ft
Capacity, Mu/ϕMn	0.355	OK
Chord Length AB	33.398	in
Additional AB	0.000	in
Section Modulus, Z	88.193	in^3
Applied Moment, Mu	1303.8	k-ft
Bending Capacity, ϕMn	4365.5	k-ft
Capacity, Mu/ϕMn	0.299	OK
Bend Line Length	0.000	in
Additional Bend Line	0.000	in
Section Modulus, Z	0.000	in^3
Applied Moment, Mu	0.0	k-ft
Bending Capacity, ϕMn	0.0	k-ft
Capacity, Mu/ϕMn		

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

Exhibit E

Mount Analysis

Mount Analysis of Proposed PerfectVision PV-LPP12M-HR-12-96 Platform w/ PV-PKBK-M Kicker Kit for American Tower on behalf of T-Mobile
376047 - Mansfield Center 2 CT
Project #: 12927168
T-Mobile Site ID: CT11517B
Program: L600

CLS Engineering PLLC Project #41124-12927168-01-MR-R1
July 3, 2019

MOUNT DESCRIPTION	Proposed PerfectVision PV-LPP12M-HR-12-96 Platform w/ PV-PKBK-M Kicker Kit at 162 ft
ANTENNA ELEVATION	Nominal Rad. Elevation of 162 ft AGL
SITE DESCRIPTION	170 ft Monopole
SITE ADDRESS	1725 Stafford Road, Storrs Mansfield, CT 06268-1138, Tolland County
GPS COORDINATES	41.835953, -72.307847
ANALYSIS STANDARD	2015 IBC / 2018 Connecticut State Building Code / TIA-222-G
LOADING CRITERIA	130 mph, V_{ult} / 100.7 mph, V_{asd} (3-Second Gust) w/o ice & 50 mph (3-Second Gust) w/ 1" Ice

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

MEMBER USAGE	**53%**	**Pass**

Existing mounts to be replaced; 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 21:59:56 -04'00'

■ INTRODUCTION

The proposed equipment is to be mounted to the proposed PerfectVision PV-LPP12M-HR-12-96 Platform w/ PV-PKBK-M Kicker Kit. 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 November 12, 2018 PerfectVision Drawing #LPP-ENG-01-R7, Rev. 7, dated January 16, 2018 PerfectVision Drawing #PV-PKBK-M, Rev. 0, dated April 11, 2017
PREVIOUS ANALYSES	Structural Analysis by ATC, Engineering #OAA716740_C3_01, dated November 15, 2017
LOADING DATA	ATC Application, Project #12927168, dated April 2, 2019

■ ANALYSIS CRITERIA

STANDARD	2015 IBC / 2018 Connecticut State Building Code / TIA-222-G
BASIC WIND SPEED	130 mph, V_{ult} / 100.7 mph, V_{asd} (3-Second Gust)
BASIC WIND SPEED W/ ICE	50 mph (3-Second Gust) w/ 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**
162.0	162.0	3	RFS Celwave APXV18-203219-C
		3	Ericsson RADIO 4449 B12/B71
		3	Ericsson KRY 112 489/2
		3	Ericsson KRY 112 144/1
		3	RFS Celwave APXVAARR24_43-U-NA20

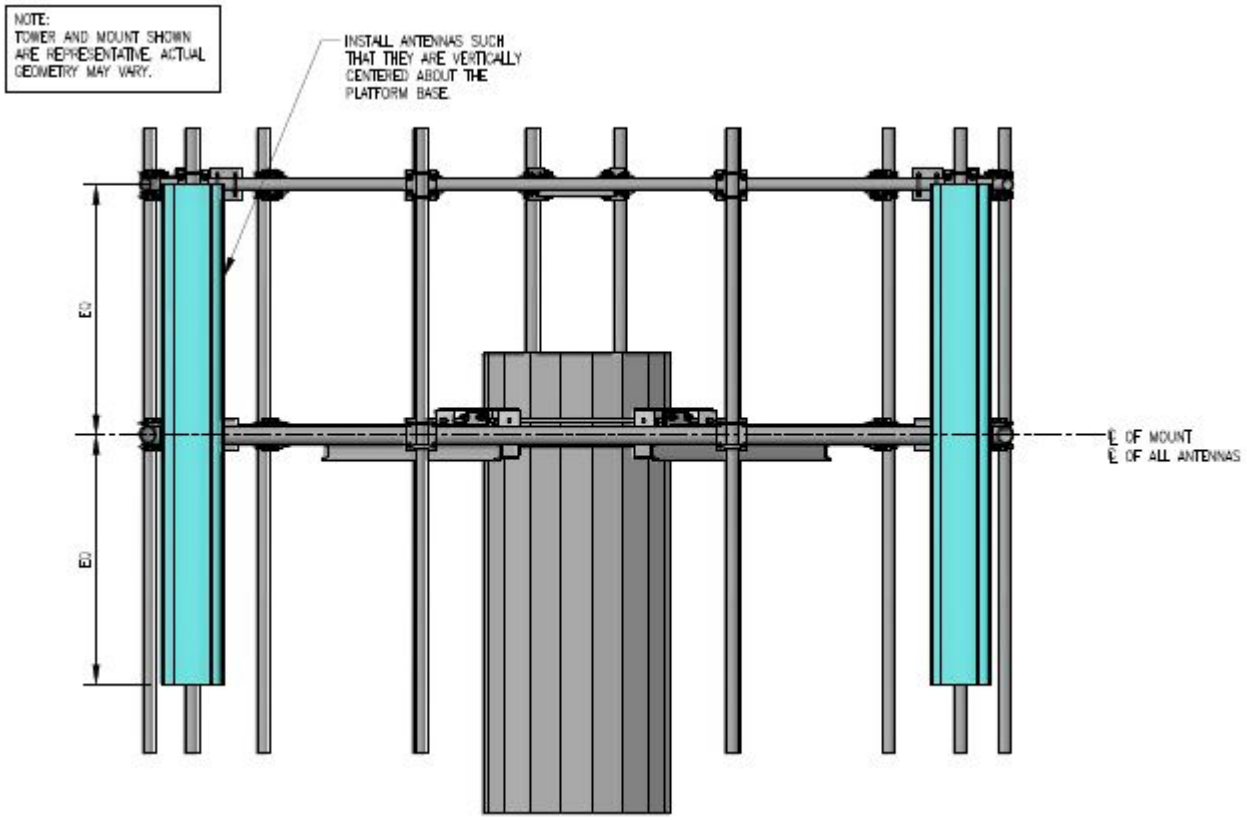
■ RESULTS SUMMARY

COMPONENT	PEAK USAGE	RESULT
Mount Pipes	53%	Pass
Support Rail	49%	Pass
Stand-Off Horizontals	14%	Pass
Platform Base	13%	Pass

■ CONCLUSION AND RECOMMENDATIONS

According to our structural analysis, the mounts have been found to **PASS PENDING REPLACEMENT**. The mounting configuration considered in this analysis will be capable of supporting the referenced loading pursuant to referenced standards once the following scope is executed:

- **Replace the existing mount with (1) new PerfectVision PV-LPP12M-HR-12-96 Platform Mount.**
- **Install (1) PerfectVision PV-PKBK-M Monopole Platform Kicker Kit as shown. Field-cut angles as required. Maintain minimum bolt edge distance.**
- **Install (4) 2 STD x 8'-0" long mount pipes, included in the kit, per sector (12 total). All mount pipes to be installed equidistant from each other as shown in the following sketches.**
- **Install support rails 3'-6" above the platform base. Connect to all mount pipes using crossover angles included in proposed platform kit.**
- **Install proposed antennas such that they are vertically centered about the face base horizontal member. Install proposed RRUS and TMA's behind the antennas.**



See following sketches and PerfectVision 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.

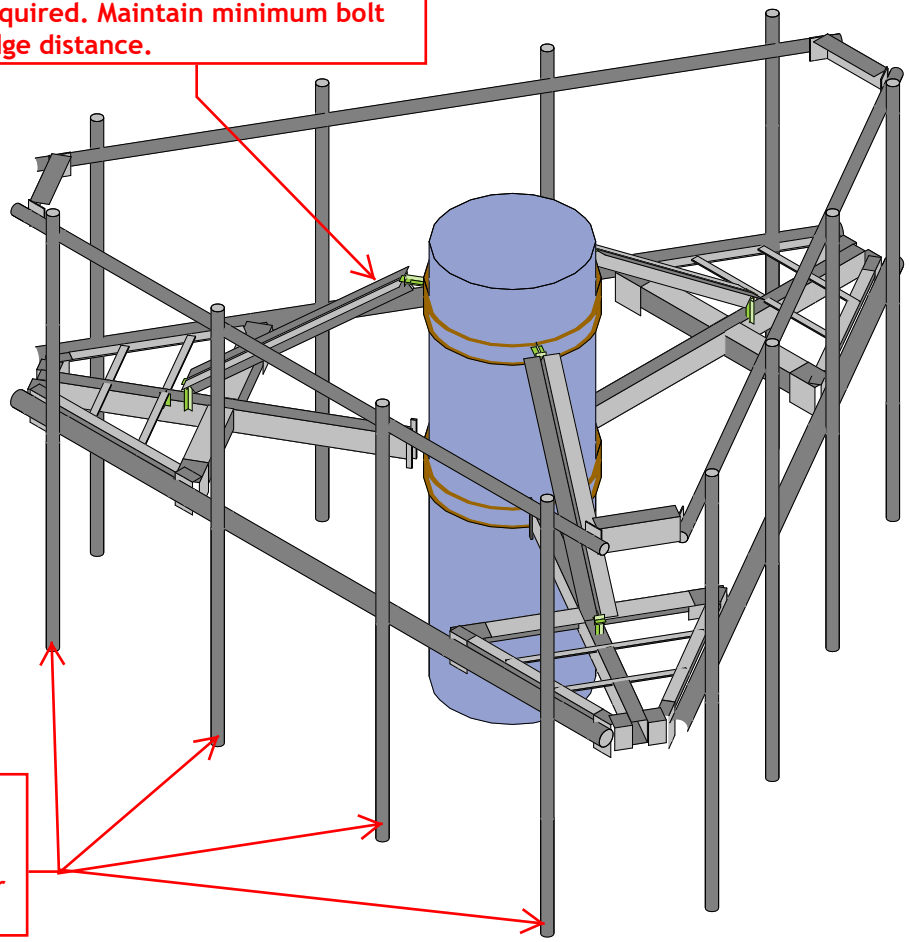
All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of the report. All opinions and conclusions contained herein are subject to revision based upon receipt of new or updated information. All services are provided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

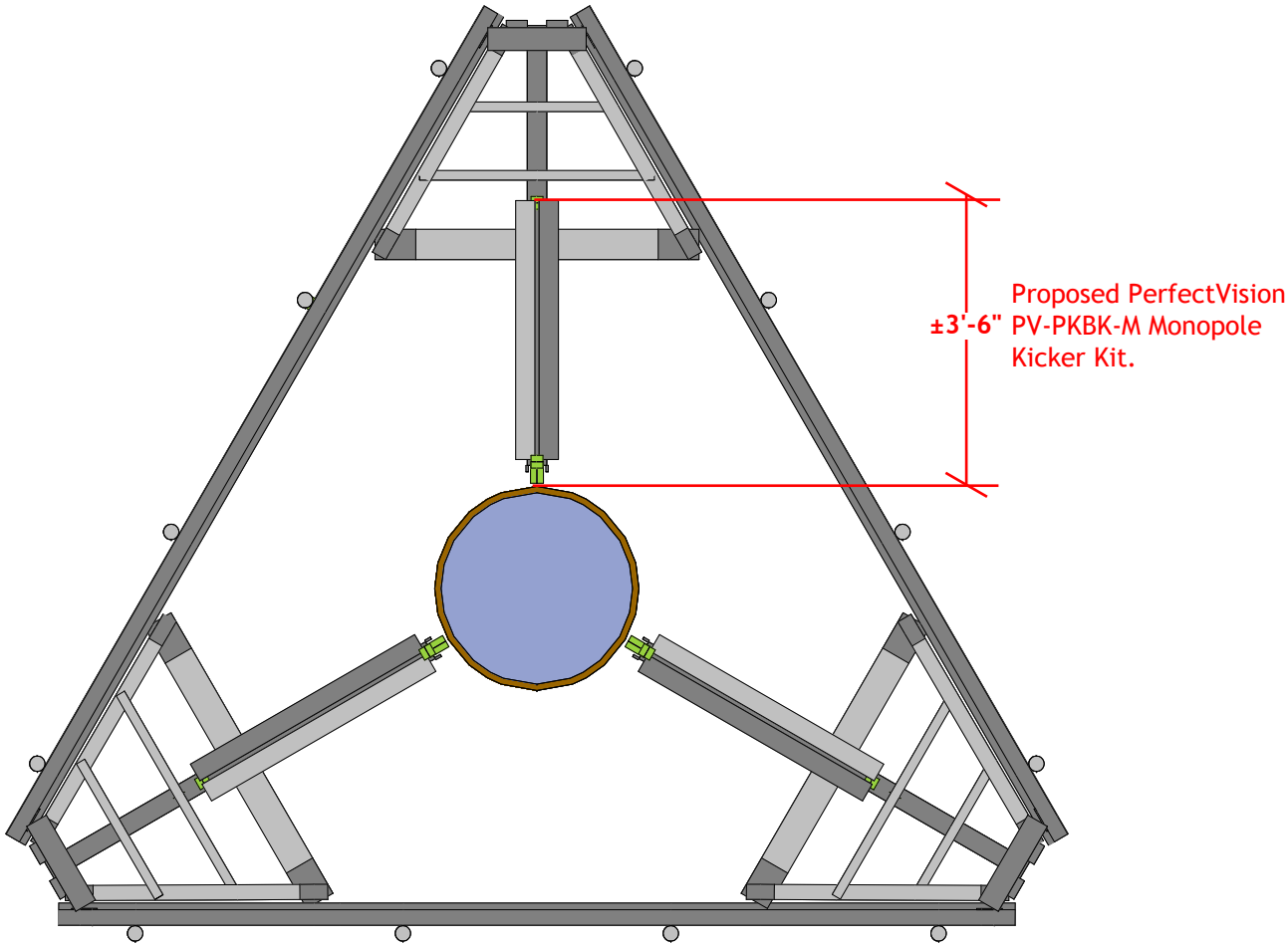
Replace the existing mount with (1) new PerfectVision PV-LPP12M-HR-12-96 Platform Mount.

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

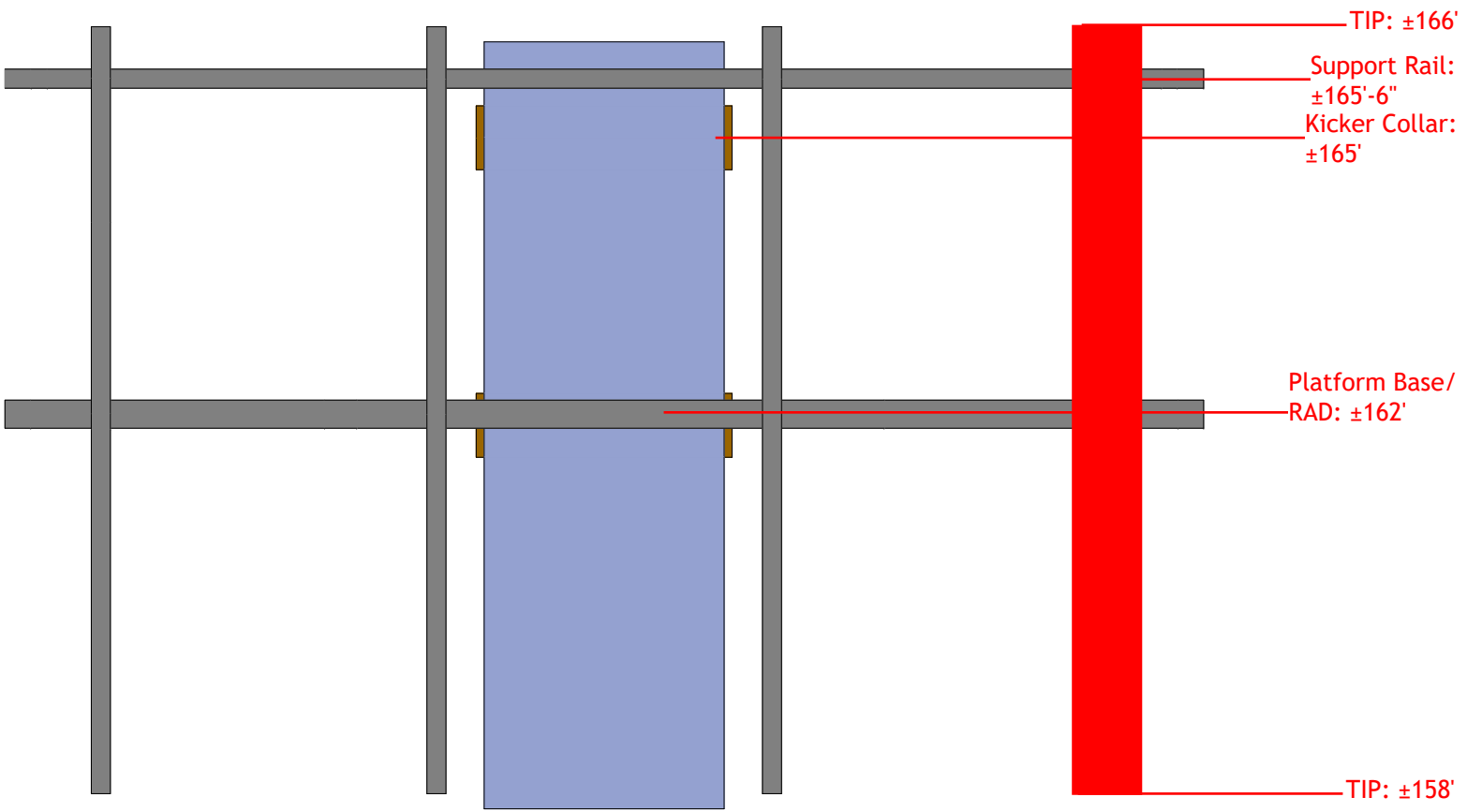


Install (4) 2 STD x 8'-0" long mount pipes, included in the kit, per sector (12 total). All mount pipes to be installed equidistant from each other as shown.

CLS	41124-12927168-Mansfield Center 2 CT	IN - 1
JLS		Apr 18, 2019 at 10:27 AM
41124-12927168-01-MR	Installation Sketch	41124-12927168-01-MR-IMAGES.r3d



CLS	41124-12927168-Mansfield Center 2 CT	IN - 2
JLS		Apr 18, 2019 at 10:27 AM
41124-12927168-01-MR	Installation Sketch	41124-12927168-01-MR-IMAGES.r3d



CLS	41124-12927168-Mansfield Center 2 CT	IN - 3
JLS		Apr 18, 2019 at 10:28 AM
41124-12927168-01-MR	Installation Sketch	41124-12927168-01-MR-IMAGES.r3d

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

TABLE 1: PLATFORM CONFIGURATIONS

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

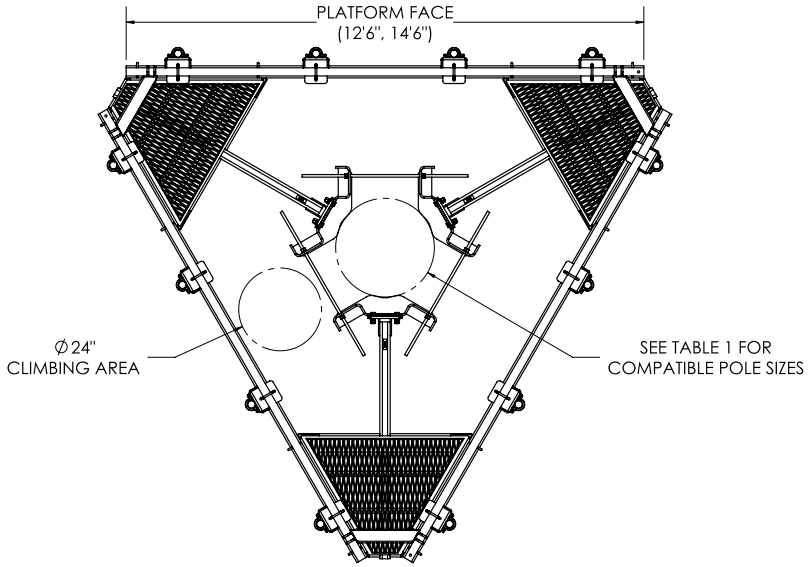


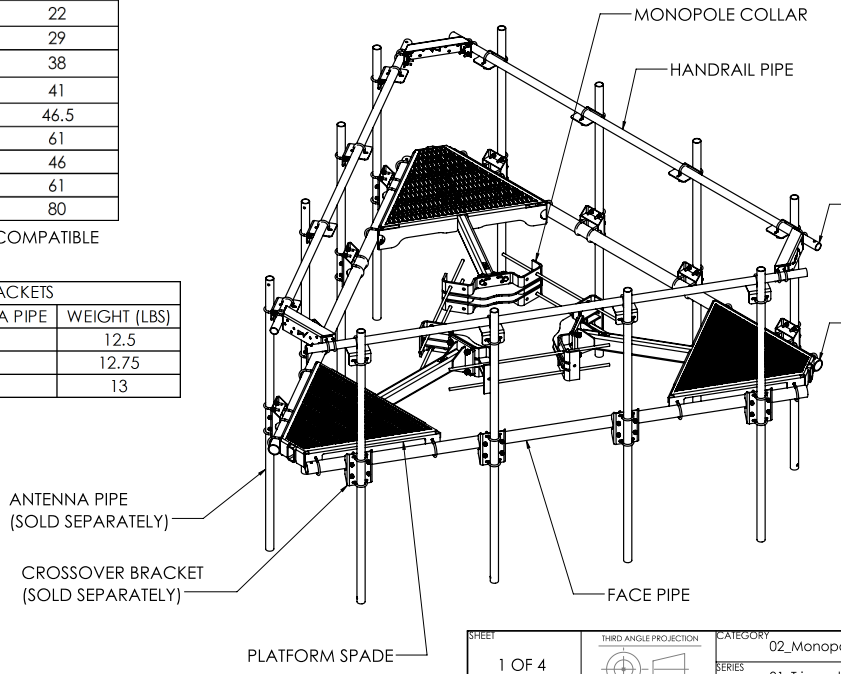
TABLE 2: ANTENNA PIPE OPTIONS***

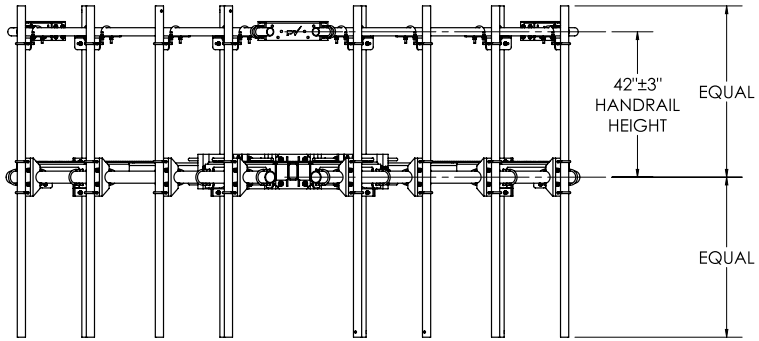
OD	LENGTH	ANTENNA PIPE	WEIGHT (LBS)
2-3/8"	72"	PIPE-238X72	22
	96"	PIPE-238X96	29
	126"	PIPE-238X126	38
2-7/8"	84"	PIPE-278X84	41
	96"	PIPE-278X96	46.5
	126"	PIPE-278X126	61
3-1/2"	72"	PIPE-312X72	46
	96"	PIPE-312X96	61
	126"	PIPE-312X126	80

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

TABLE 3: CROSSOVER BRACKETS

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





FALL-SAFE L.I.F.E. MOUNTS™

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

PERFECTVISION MANUFACTURING

L.I.F.E. MOUNT™ LOW PROFILE PLATFORM

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

MOUNT CLASSIFICATIONS:

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

MOUNT CLASSIFICATION INFORMATION:

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

APPROVED MOUNT CLASSIFICATIONS*

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

- HEAVY-5

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

POLE THICKNESS LIMITATIONS:

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

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

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

PLATFORM EPA:

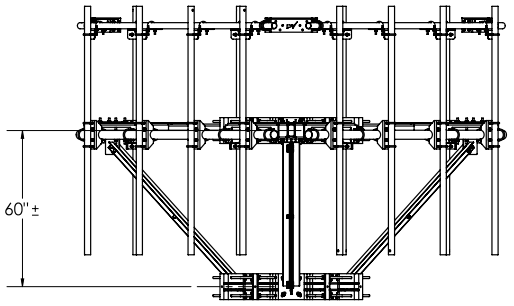
PLATFORM EPA		
PLATFORM TYPE	NO ICE (FT^2)	1/2" RADIAL ICE (FT^2)
12'6" FACE	20.3*	25.8*
12'6" FACE WITH HANDRAIL	34.4**	43.0**
14'6" FACE	22.1*	28.1*
14'6" FACE WITH HANDRAIL	36.8**	46.2**

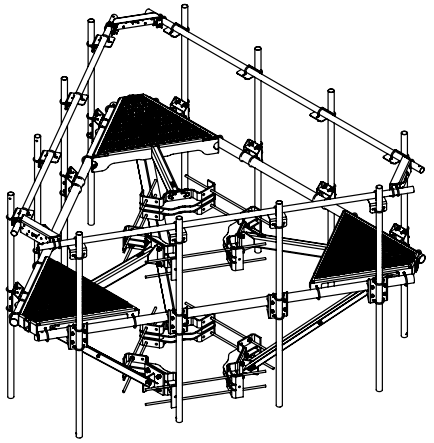
*DOES NOT INCLUDE CROSSOVER PLATES OR ANTENNA PIPES
**DOES NOT INCLUDE ANTENNA PIPES

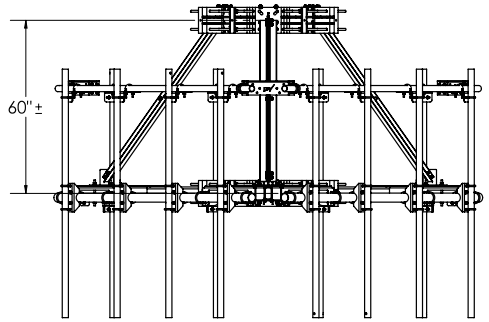
KICKER ATTACHMENT:

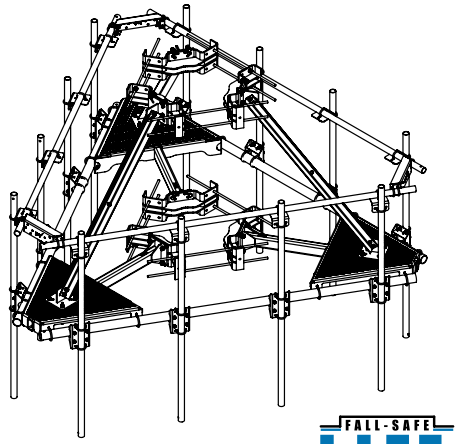
SEE CLASSIFICATIONS SECTION FOR KICKER REQUIREMENT DETAILS.

INSTALL KICKER ABOVE OR BELOW PLATFORM









FALL-SAFE L.I.F.E. MOUNTS™

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

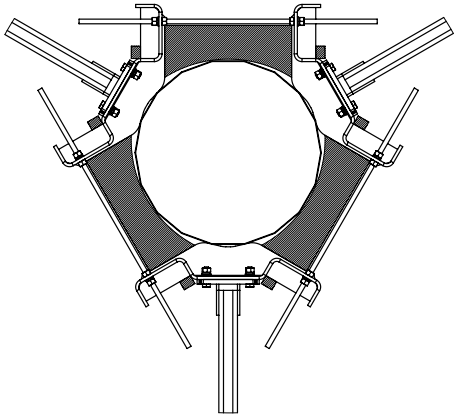
PERFECT VISION MANUFACTURING

L.I.F.E. MOUNT™ LOW PROFILE PLATFORM

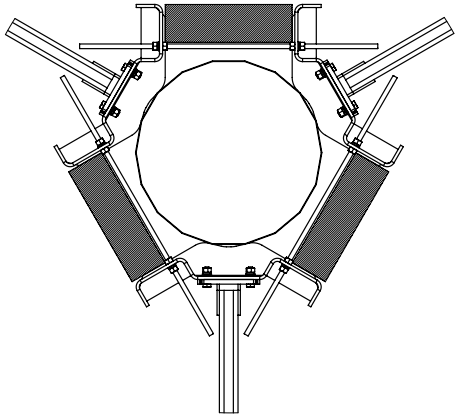
DOCUMENT NUMBER LPP-ENG-01-R7 | REV 7

SAFETY CLIMB ROUTING:

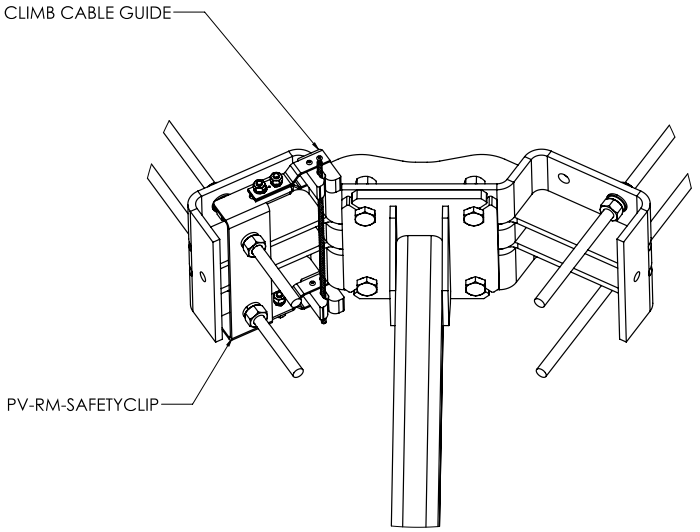
CABLE GUIDES AND PV-RM-SAFETYCLIP SOLD SEPARATELY.



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



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



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

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

FALL-SAFE L.I.F.E. MOUNTS™

PERFECT VISION® MANUFACTURING

L.I.F.E. MOUNT™ LOW PROFILE PLATFORM

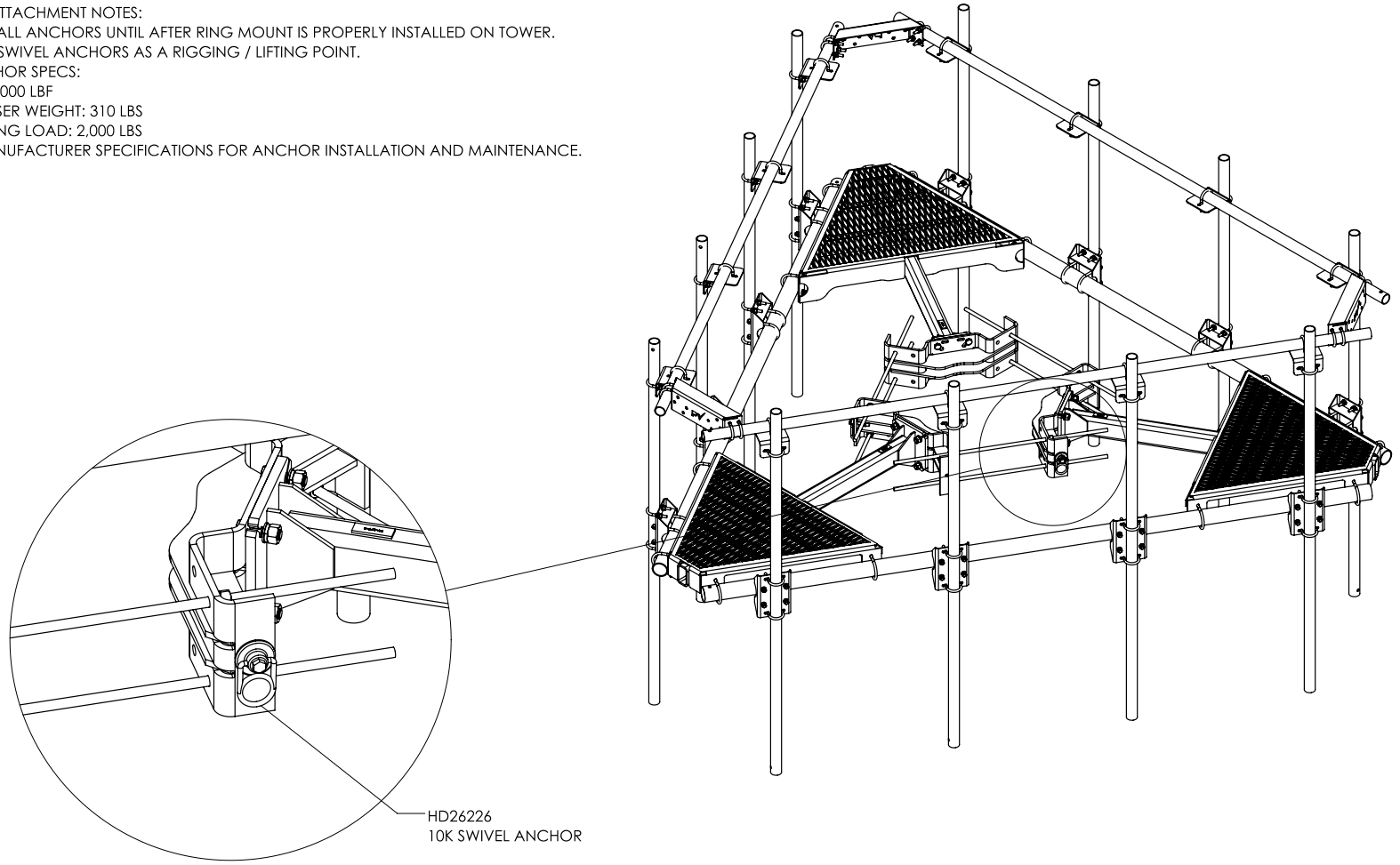
DOCUMENT NUMBER: LPP-ENG-01-R7

REV: 7

10K SWIVEL ANCHOR

SWIVEL ANCHOR ATTACHMENT NOTES:

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



DETAIL A
SCALE 1 : 8

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

FALL-SAFE L.I.F.E. MOUNTS™

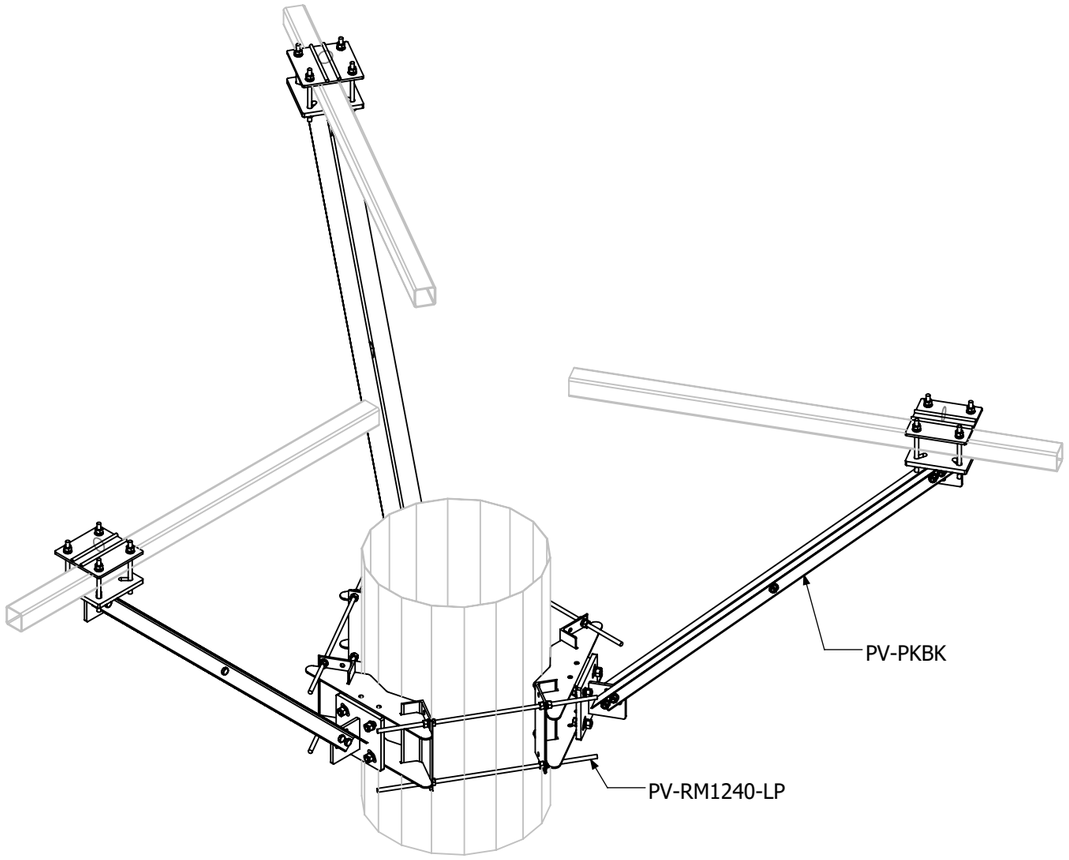
PERFECT VISION MANUFACTURING

L.I.F.E. MOUNT™ LOW PROFILE PLATFORM

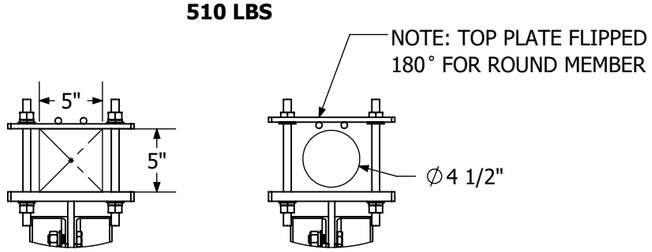
DOCUMENT NUMBER: LPP-ENG-01-R7

REV: 7

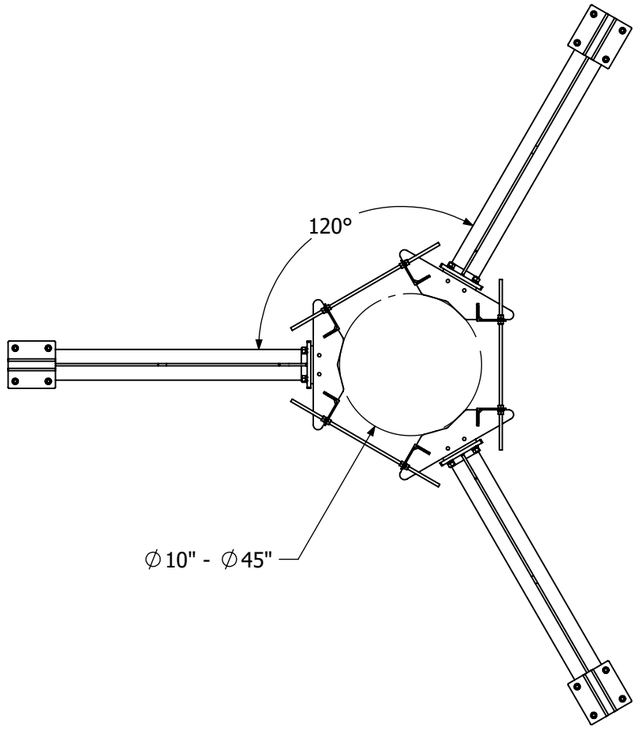
C:\Users\DominicN\Documents\PVMSteel\PVM Sales Catalog\SW Working Files\Engineering Details\

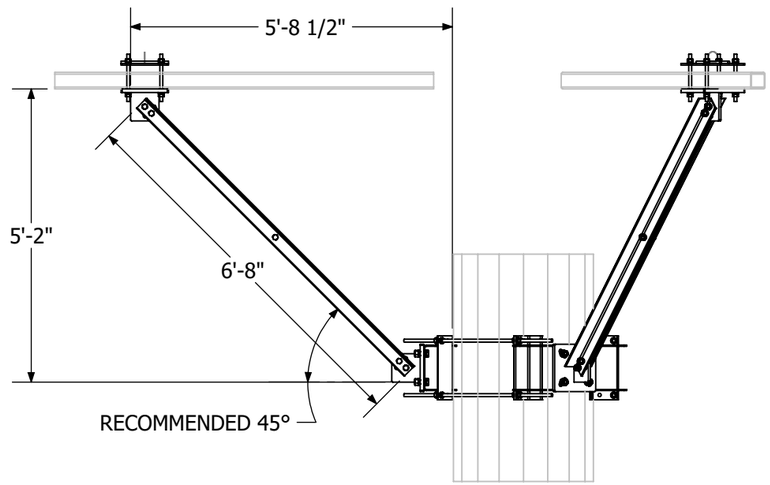


PV-PKBK-M
(INCLUDES (1) PV-RM1240-LP AND (1) PV-PKBK)
KICKER BRACE
510 LBS



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





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

STAMP:

REVISIONS:

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

SITE INFORMATION:

DESIGN TYPE:
MONOPOLE KICKER BRACE KIT

SHEET TITLE:
ENGINEERING DETAIL

SHEET TITLE: E-1

REVISION: 0

Wind & Ice Loading

Nominal Mount Elevation (AGL), z_{mount}	162 ft	K_a	0.90
Nominal Rad Elevation (AGL), z_{rad}	162 ft	K_d	0.95
Elevation AMSL (ft)	-	K_e	-
TIA Standard	G	K_z	1.13
Basic Wind Speed, V_{ult} (bare)	130 mph	K_{zt}	1.00
Basic Wind Speed, V (ice)	50 mph	K_s	-
Design Ice Thickness, t_i	1 in	t_{iz}	2.34 in
Exposure Category	B	G_h	1.00
Risk Category	II	q_z (bare)	46.6 psf
Seismic Response Coeff., C_s	-	q_z (ice)	6.9 psf

Live Loading

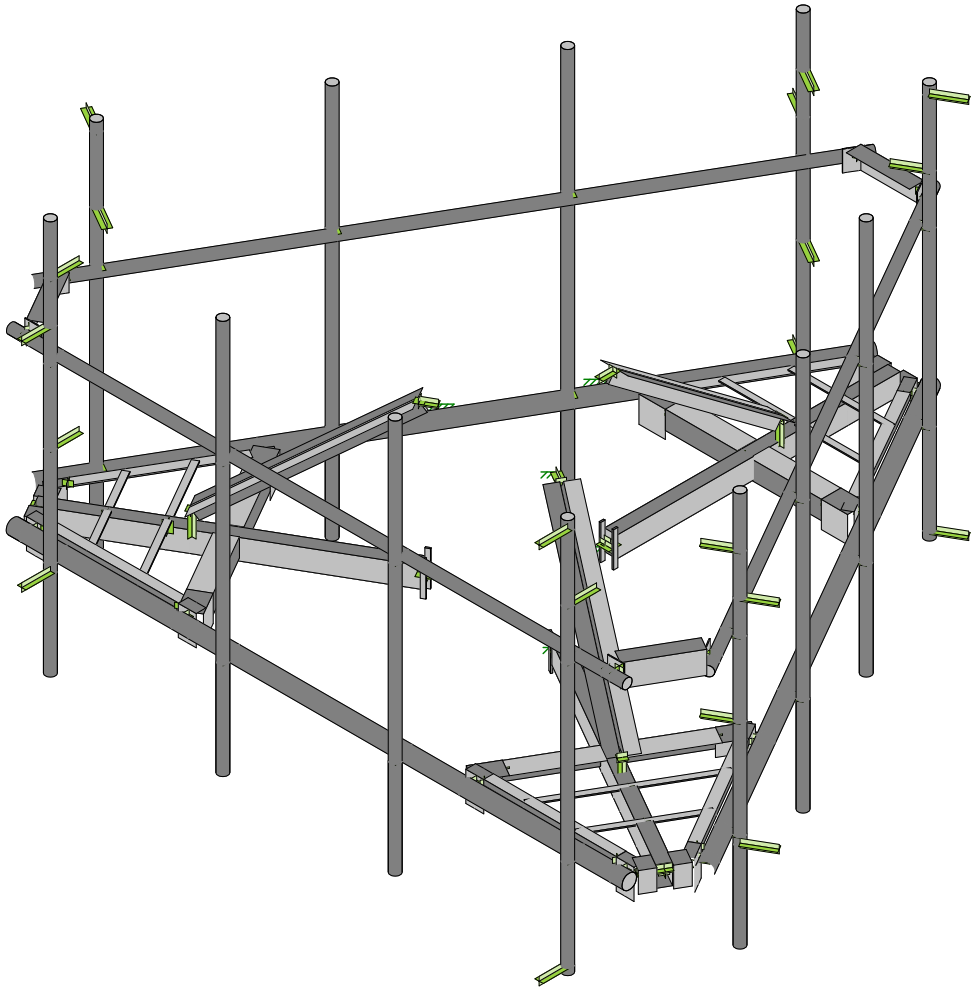
At Mount Pipes, L_M	500 lb
Joint Labels Considered	m1
	m2
	M3
	M4

Member Distributed Loading

Section Set Label	Shape Label	F_A (lb/ft)		Ice Wt. (lb/ft)
		Bare	Ice	
Offsett Tube	HSS5x3x3/8"	34.96	3.30	21.31
End Plate Angle	L5x4x0.25	34.96	3.30	22.67
Grating Angle 2	L6.4x4.750x0.25	44.75	3.41	26.59
Grating Angle 4	L7.25x2.375x0.25	50.70	3.47	23.81
Grating Angle 3	L2.375x1.25x0.25	16.61	4.58	14.41
Grating PL 2	PL1.50x0.25	10.49	3.85	9.91
Grating Angle 1	L4.75x4.5x0.25	33.22	3.28	23.13
Platform Horizontal Pipe	PIPE_3.0	14.69	5.08	16.74
Mount Pipe	PIPE_2.0	9.96	4.39	13.52
Support Rail	PIPE_2.0	9.96	4.39	13.52
Conn. PL	PL8.5x3/8	59.44	8.19	22.90
SR Conn Plate	PL5x0.1875	34.96	6.02	16.18
SR Conn Angle	L5.50X3.5625X3	38.46	3.34	22.79
MOD Stabilizer	L3X3X3	20.98	3.14	17.20

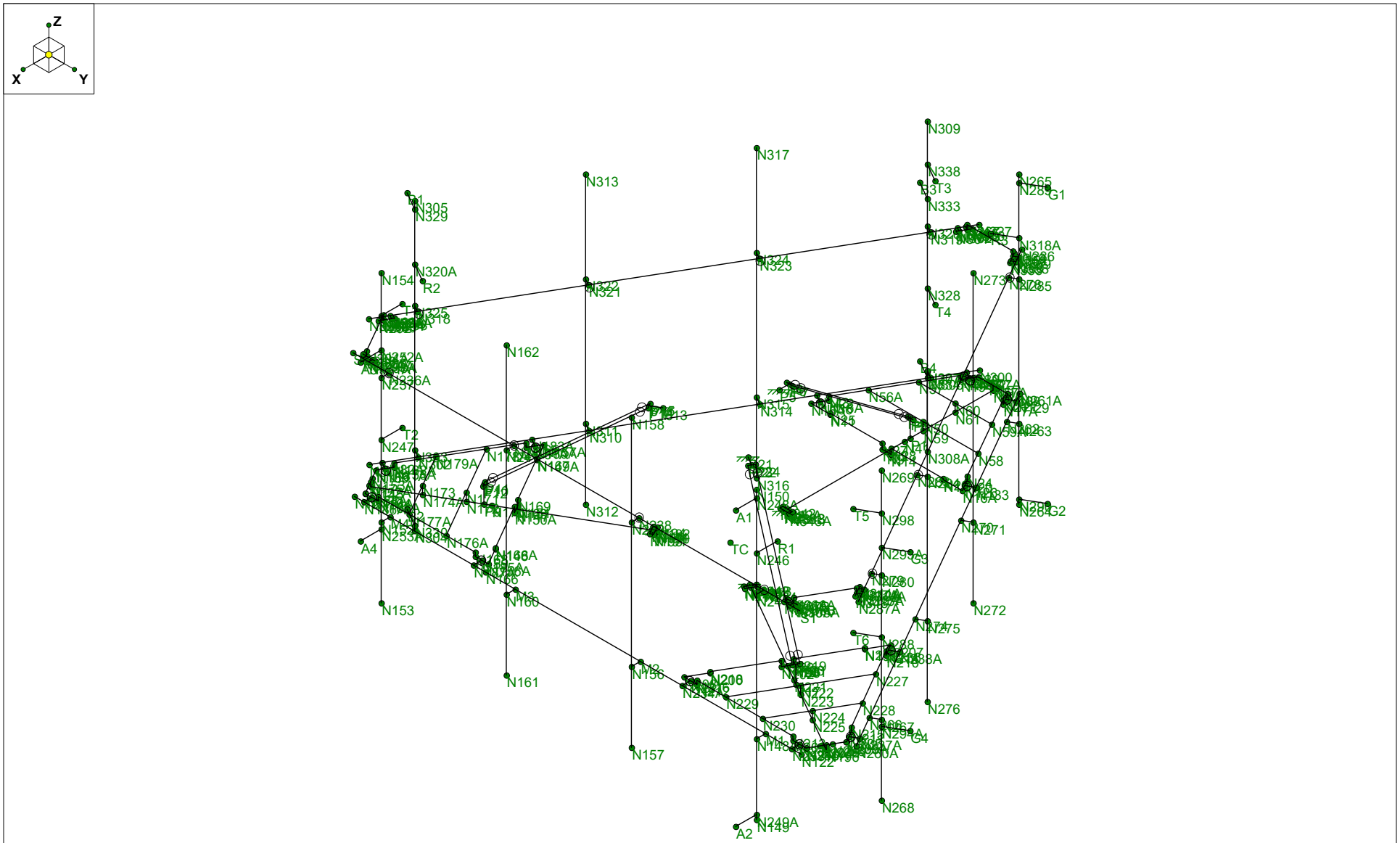
Appurtenances

Appurtenance Model	Status	Azimuth Offset (°, ↻)	Rad Elev. Override (ft)	Swap Width & Depth	Area Factor		Qty. per Azimuth			Total Qty. Override	0° Joints		120° Joints		240° Joints		Height (in)	Width (in)	Depth (in)	Weight (Bare) (lb)	Shape	Weight of Ice (lb)	EPA_A (Bare) (ft^2)		EPA_A (Ice) (ft^2)		F_A (Bare) (lb)		F_A (Ice) (lb)	
					Front	Side	0°	120°	240°		1	2	1	2	1	2							N	T	N	T	N	T	N	T
APXVAARR24_43-U-NA20				☐			1	1	1		a1	a2	b1	b2	g1	g2	0	0	0	153.3	Generic	528.03	14.67	5.32	18.23	8.46	615.52	223.22	113.18	52.52
RADIO 4449 B12/B71				☐	0.5		1	1	1		r1		r2		r3		15	13.2	10.4	75	Flat	80.69	0.83	1.30	1.47	2.48	34.62	54.55	9.11	15.37
APXV18-203219-C				☐			1	1	1		a3	a4	b3	b4	g3	g4	54.1	11.3	4.6	39	Flat	191.88	5.53	2.69	8.18	5.20	231.86	113.02	50.74	32.25
KRY 112 489/2				☐	0.2		1	1	1		t1		t3		t5		11	6.1	3.94	15.4	Flat	23.79	0.11	0.37	0.28	1.13	4.69	15.32	1.75	7.00
KRY 112 144/1				☐	0.2		1	1	1		t2		t4		t6		7	6	3	11	Flat	14.89	0.07	0.18	0.21	0.75	2.94	7.34	1.29	4.65



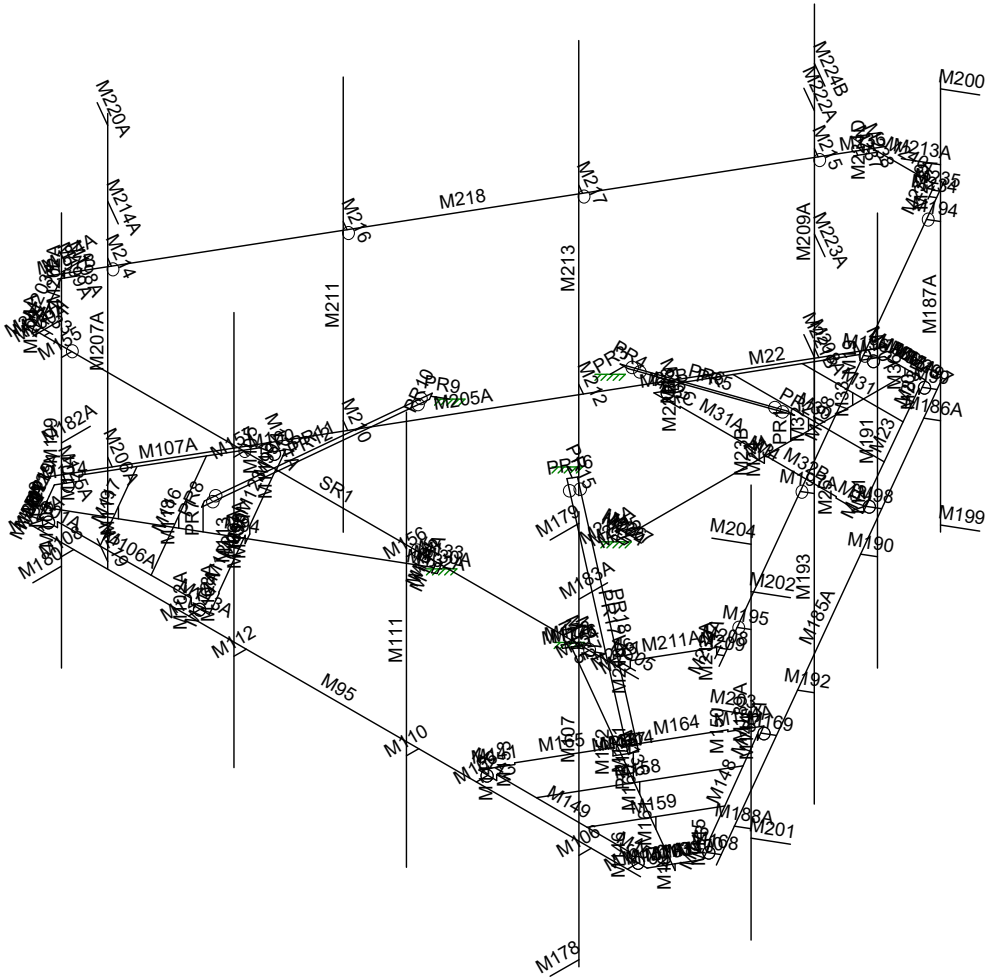
Envelope Only Solution

CLS	41124-12927168-Mansfield Center 2 CT	SK - 1
JLS		July 3, 2019 at 1:09 PM
41124-12927168-01-MR-R1	Rendered	41124-12927168-01-MR-R1.r3d



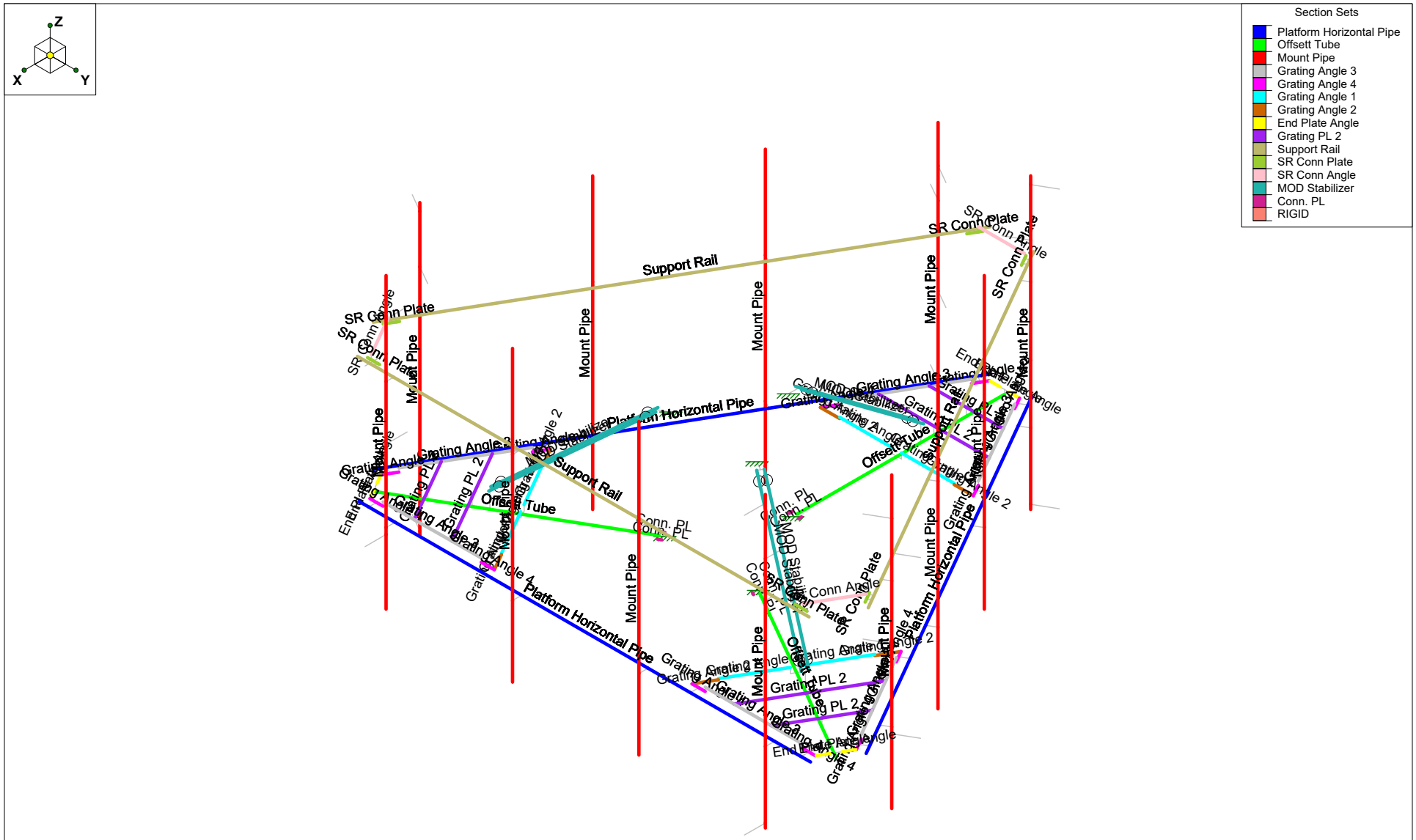
Envelope Only Solution

CLS	41124-12927168-Mansfield Center 2 CT	SK - 2
JLS		July 3, 2019 at 1:09 PM
41124-12927168-01-MR-R1	Joint Labels	41124-12927168-01-MR-R1.r3d



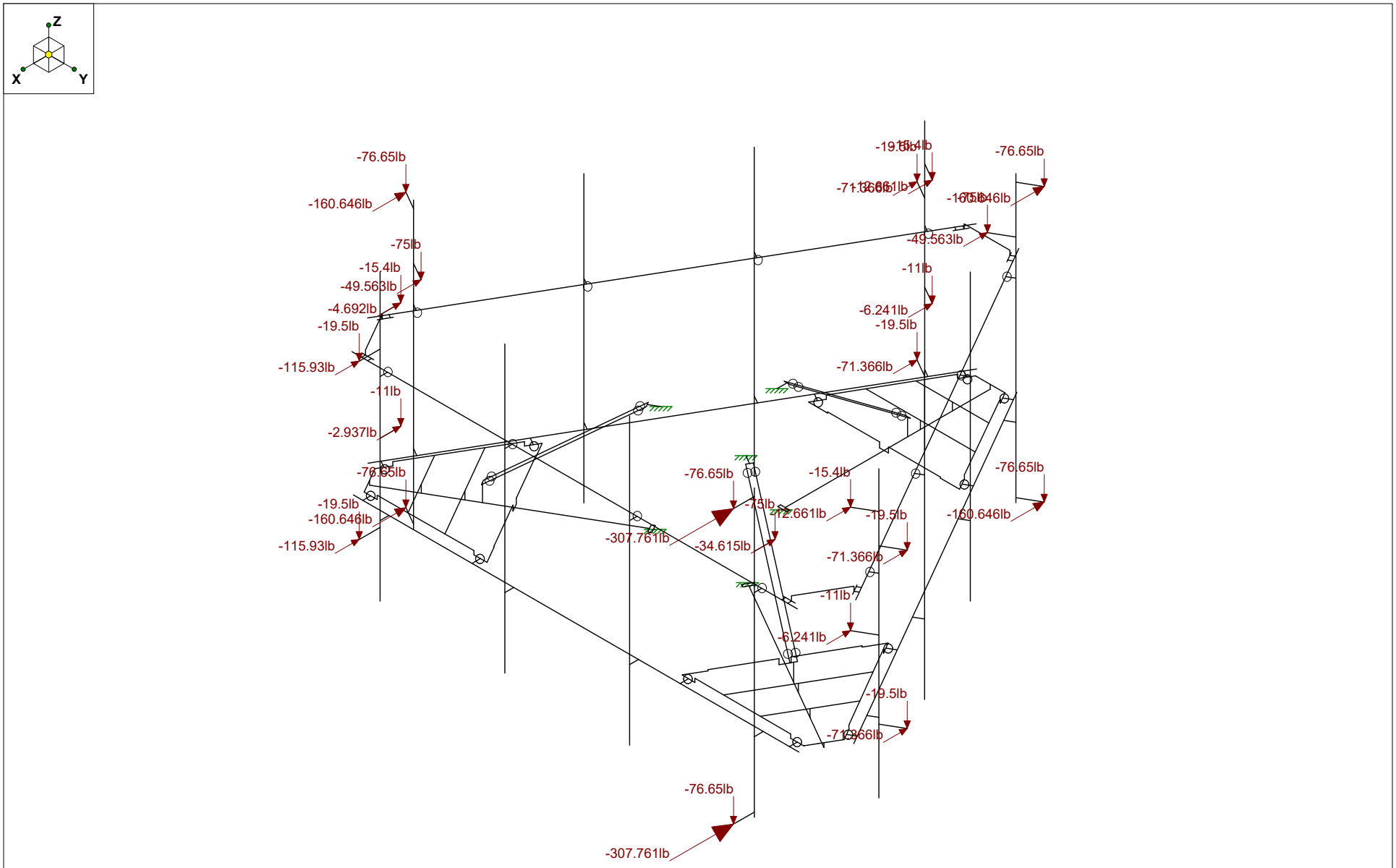
Envelope Only Solution

CLS	41124-12927168-Mansfield Center 2 CT	SK - 3
JLS		July 3, 2019 at 1:09 PM
41124-12927168-01-MR-R1	Member Labels	41124-12927168-01-MR-R1.r3d



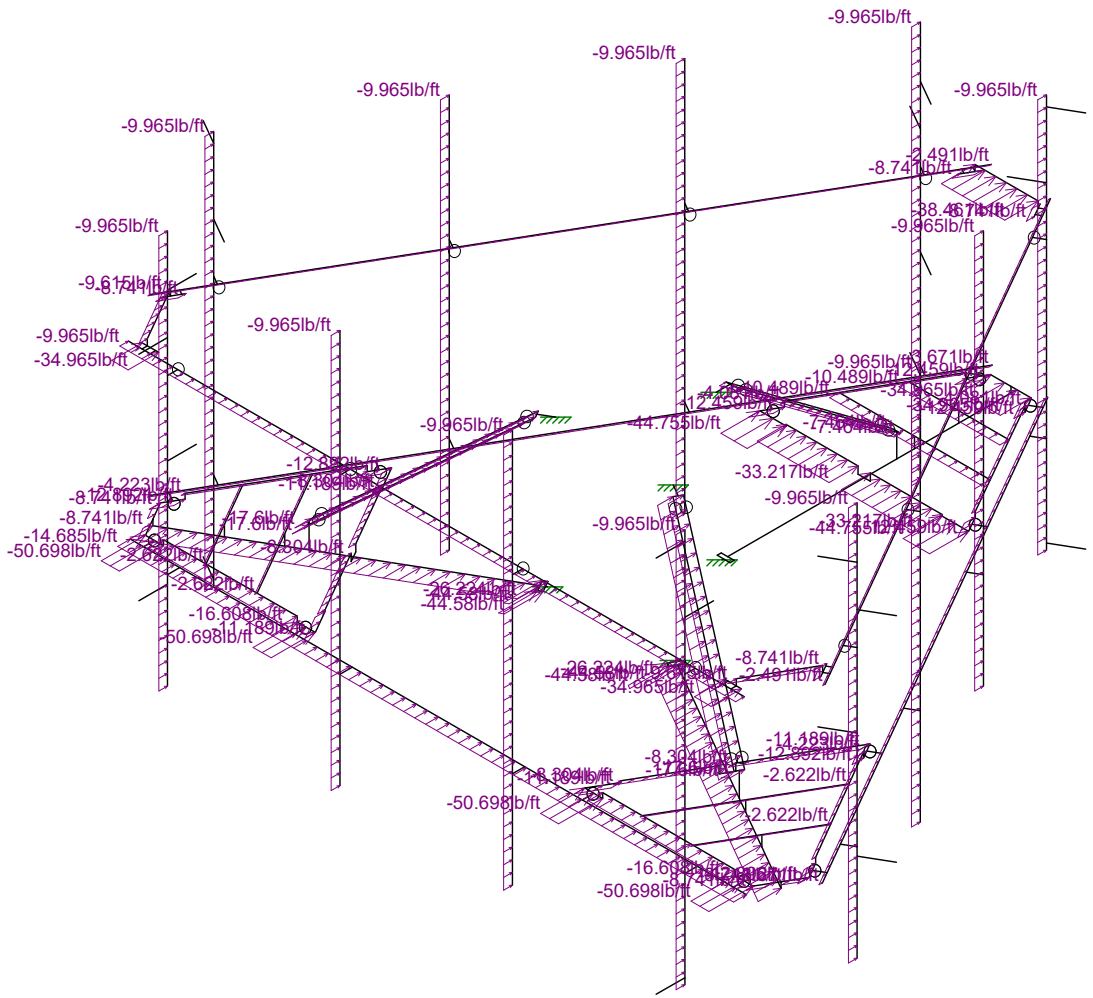
Envelope Only Solution

CLS	41124-12927168-Mansfield Center 2 CT	SK - 4
JLS		July 3, 2019 at 1:09 PM
41124-12927168-01-MR-R1	Section Sets	41124-12927168-01-MR-R1.r3d



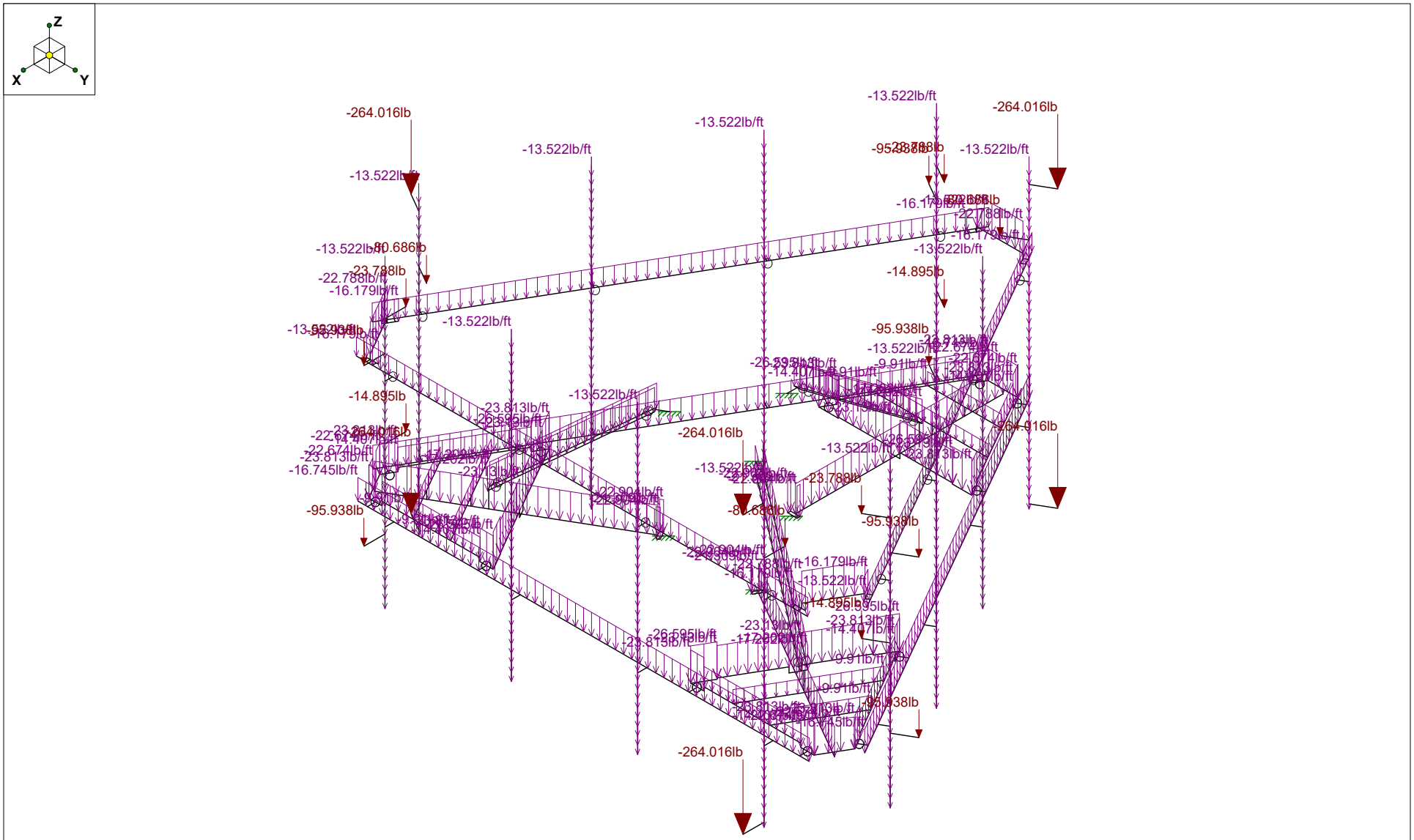
Loads: LC 1, DISPLAY (1.0D + 1.0W_0°)
Envelope Only Solution

CLS	41124-12927168-Mansfield Center 2 CT	SK - 5
JLS		July 3, 2019 at 1:10 PM
41124-12927168-01-MR-R1	Joint Loads - Dead and Normal Wind	41124-12927168-01-MR-R1.r3d



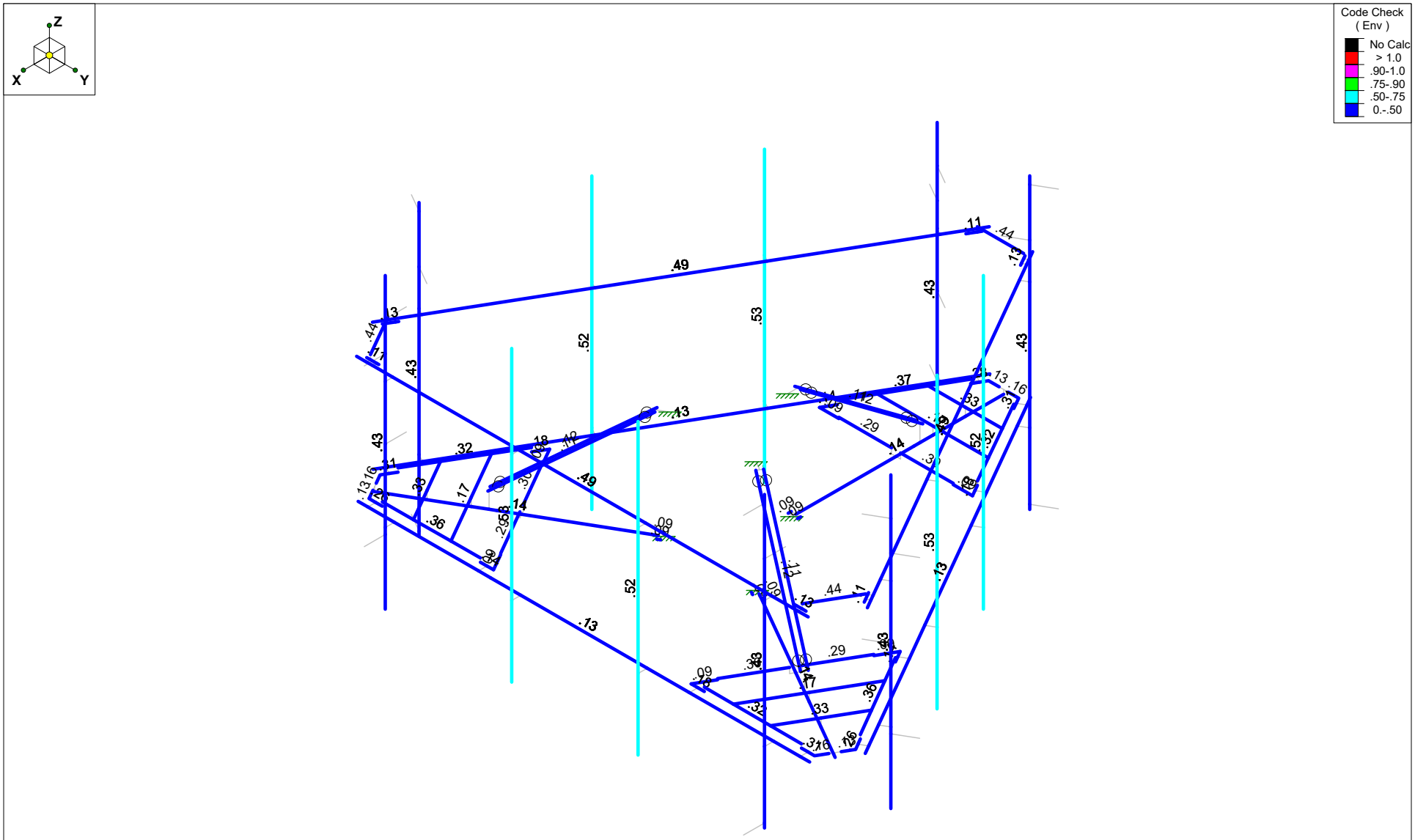
Loads: BLC 4, Structure Wind 0°
Envelope Only Solution

CLS	41124-12927168-Mansfield Center 2 CT	SK - 6
JLS		July 3, 2019 at 1:10 PM
41124-12927168-01-MR-R1	Distributed Load - Normal Wind	41124-12927168-01-MR-R1.r3d



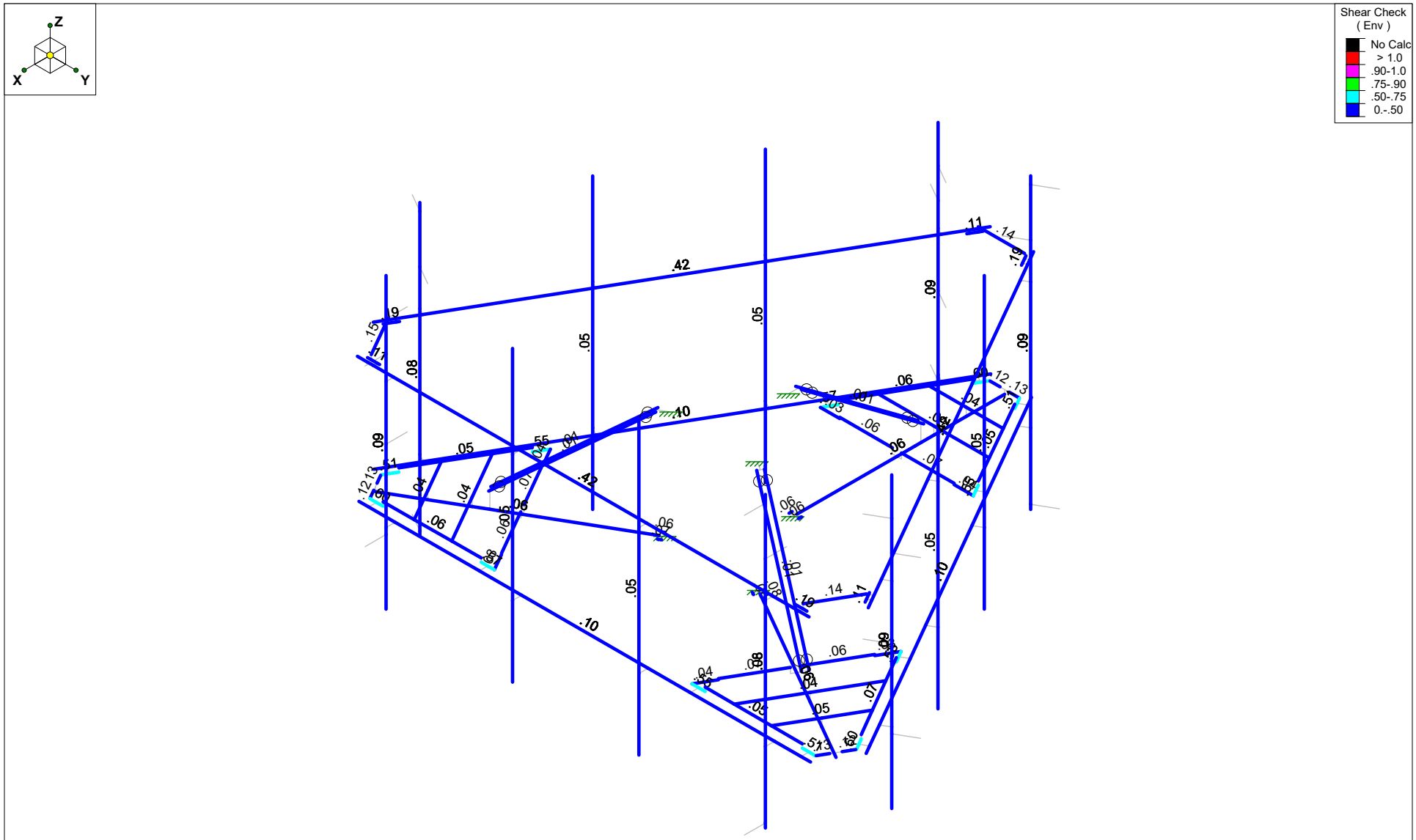
Loads: BLC 2, Ice Dead
Envelope Only Solution

CLS	41124-12927168-Mansfield Center 2 CT	SK - 7
JLS		July 3, 2019 at 1:10 PM
41124-12927168-01-MR-R1	Ice Dead Loads	41124-12927168-01-MR-R1.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

CLS	41124-12927168-Mansfield Center 2 CT	SK - 8
JLS		July 3, 2019 at 1:10 PM
41124-12927168-01-MR-R1	Envelope Member Unity Check Results - Bending	41124-12927168-01-MR-R1.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

CLS	41124-12927168-Mansfield Center 2 CT	SK - 9
JLS		July 3, 2019 at 1:11 PM
41124-12927168-01-MR-R1	Envelope Member Check Results - Shear	41124-12927168-01-MR-R1.r3d

Basic Load Cases

	BLC Description	Category	X Gravi..	Y Gravi..	Z Gravity	Joint	Point	Distributed	Area(Member)	Surfac...
1	Dead	DL			-1	21				
2	Ice Dead	RL				21		84		
4	Structure Wind 0°	None						81		
5	Structure Wind 30°	None						142		
6	Structure Wind 45°	None						168		
7	Structure Wind 60°	None						162		
8	Structure Wind 90°	None						71		
9	Structure Wind 120°	None						162		
10	Structure Wind 135°	None						168		
11	Structure Wind 150°	None						142		
12	Structure Wind w/ Ice 0°	None						81		
13	Structure Wind w/ Ice 30°	None						142		
14	Structure Wind w/ Ice 45°	None						168		
15	Structure Wind w/ Ice 60°	None						162		
16	Structure Wind w/ Ice 90°	None						72		
17	Structure Wind w/ Ice 120°	None						162		
18	Structure Wind w/ Ice 135°	None						168		
19	Structure Wind w/ Ice 150°	None						144		
20	Antenna Wind 0°	None				21				
21	Antenna Wind 30°	None				42				
22	Antenna Wind 45°	None				42				
23	Antenna Wind 60°	None				42				
24	Antenna Wind 90°	None				21				
25	Antenna Wind 120°	None				42				
26	Antenna Wind 135°	None				42				
27	Antenna Wind 150°	None				42				
28	Antenna Wind w/ Ice 0°	None				21				
29	Antenna Wind w/ Ice 30°	None				42				
30	Antenna Wind w/ Ice 45°	None				42				
31	Antenna Wind w/ Ice 60°	None				42				
32	Antenna Wind w/ Ice 90°	None				21				
33	Antenna Wind w/ Ice 120°	None				42				
34	Antenna Wind w/ Ice 135°	None				42				
35	Antenna Wind w/ Ice 150°	None				42				
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...
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	.056	20	.056	O...	1.5												
36	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	5	.056	21	.056	O...	1.5												
37	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	6	.056	22	.056	O...	1.5												
38	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	7	.056	23	.056	O...	1.5												
39	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	8	.056	24	.056	O...	1.5												
40	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	9	.056	25	.056	O...	1.5												
41	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	10	.056	26	.056	O...	1.5												
42	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	11	.056	27	.056	O...	1.5												
43	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	4	-.056	20	-.056	O...	1.5												
44	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	5	-.056	21	-.056	O...	1.5												
45	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	6	-.056	22	-.056	O...	1.5												
46	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	7	-.056	23	-.056	O...	1.5												
47	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	8	-.056	24	-.056	O...	1.5												
48	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	9	-.056	25	-.056	O...	1.5												
49	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	10	-.056	26	-.056	O...	1.5												
50	1.2D + 1.5Lm_1 +...	Y...	Y		DL	1.2	11	-.056	27	-.056	O...	1.5												
51	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	4	.056	20	.056	O...	1.5												
52	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	5	.056	21	.056	O...	1.5												
53	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	6	.056	22	.056	O...	1.5												
54	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	7	.056	23	.056	O...	1.5												
55	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	8	.056	24	.056	O...	1.5												
56	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	9	.056	25	.056	O...	1.5												
57	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	10	.056	26	.056	O...	1.5												
58	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	11	.056	27	.056	O...	1.5												
59	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	4	-.056	20	-.056	O...	1.5												
60	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	5	-.056	21	-.056	O...	1.5												
61	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	6	-.056	22	-.056	O...	1.5												
62	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	7	-.056	23	-.056	O...	1.5												
63	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	8	-.056	24	-.056	O...	1.5												
64	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	9	-.056	25	-.056	O...	1.5												
65	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	10	-.056	26	-.056	O...	1.5												
66	1.2D + 1.5Lm_2 +...	Y...	Y		DL	1.2	11	-.056	27	-.056	O...	1.5												
67	1.2D + 1.5Lm_3 +...	Y...	Y		DL	1.2	4	.056	20	.056	O...	1.5												
68	1.2D + 1.5Lm_3 +...	Y...	Y		DL	1.2	5	.056	21	.056	O...	1.5												
69	1.2D + 1.5Lm_3 +...	Y...	Y		DL	1.2	6	.056	22	.056	O...	1.5												
70	1.2D + 1.5Lm_3 +...	Y...	Y		DL	1.2	7	.056	23	.056	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...	B...	Fa...
71	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	8	.056	24	.056	O...	1.5														
72	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	9	.056	25	.056	O...	1.5														
73	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	10	.056	26	.056	O...	1.5														
74	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	11	.056	27	.056	O...	1.5														
75	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	4	-.056	20	-.056	O...	1.5														
76	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	5	-.056	21	-.056	O...	1.5														
77	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	6	-.056	22	-.056	O...	1.5														
78	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	7	-.056	23	-.056	O...	1.5														
79	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	8	-.056	24	-.056	O...	1.5														
80	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	9	-.056	25	-.056	O...	1.5														
81	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	10	-.056	26	-.056	O...	1.5														
82	1.2D + 1.5Lm_3 +..	Y...	Y		DL	1.2	11	-.056	27	-.056	O...	1.5														
83	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	4	.056	20	.056	O...	1.5														
84	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	5	.056	21	.056	O...	1.5														
85	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	6	.056	22	.056	O...	1.5														
86	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	7	.056	23	.056	O...	1.5														
87	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	8	.056	24	.056	O...	1.5														
88	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	9	.056	25	.056	O...	1.5														
89	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	10	.056	26	.056	O...	1.5														
90	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	11	.056	27	.056	O...	1.5														
91	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	4	-.056	20	-.056	O...	1.5														
92	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	5	-.056	21	-.056	O...	1.5														
93	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	6	-.056	22	-.056	O...	1.5														
94	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	7	-.056	23	-.056	O...	1.5														
95	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	8	-.056	24	-.056	O...	1.5														
96	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	9	-.056	25	-.056	O...	1.5														
97	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	10	-.056	26	-.056	O...	1.5														
98	1.2D + 1.5Lm_4 +..	Y...	Y		DL	1.2	11	-.056	27	-.056	O...	1.5														

Hot Rolled Steel Properties

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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Platform Horizontal Pipe	PIPE_3.0	Beam	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
2	Offsett Tube	HSS5x3x3/8"	Beam	None	A500 Gr....	Typical	5.438	7.216	16.856	15.248
3	Mount Pipe	PIPE_2.0	Beam	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
4	Grating Angle 3	L2.375x1.25x0.25	Beam	None	A36 Gr.36	Typical	.844	.093	.479	.016
5	Grating Angle 4	L7.25x2.375x0.25	Beam	None	A36 Gr.36	Typical	2.344	.789	12.975	.047
6	Grating Angle 1	L4.75x4.5x0.25	Beam	None	A36 Gr.36	Typical	2.25	4.444	5.077	.045
7	Grating Angle 2	L6.4x4.750x0.25	Beam	None	A36 Gr.36	Typical	2.725	5.633	11.713	.055
8	End Plate Angle	L5x4x0.25	Beam	None	A36 Gr.36	Typical	2.188	3.248	5.631	.044
9	Grating PL 2	PL1.50x0.25	Beam	None	A36 Gr.36	Typical	.375	.002	.07	.007
10	Support Rail	PIPE_2.0	Beam	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
11	SR Conn Plate	PL5x0.1875	Beam	None	A36 Gr.36	Typical	.938	.003	1.953	.011
12	SR Conn Angle	L5.50X3.5625X3	Beam	None	A36 Gr.36	Typical	1.664	1.848	5.368	.019
13	MOD Stabilizer	L3X3X3	Beam	None	A36 Gr.36	Typical	1.09	.948	.948	.014

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
14	Conn. PL	PL8.5x3/8	Beam	None	A36 Gr.36	Typical	3.188	.037	19.191	.145

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	Offsett Tube	69			Lbyy						Lateral
2	M8	End Plate A...	3.313			Lbyy			.65	.65		Lateral
3	M11	Grating Ang...	6.406			Lbyy			.65	.65		Lateral
4	M13	Grating Ang...	4.375			Lbyy			.65	.65		Lateral
5	M14	Grating Ang...	4.375			Lbyy			.65	.65		Lateral
6	M22	Grating Ang...	32.414			Lbyy			.65	.65		Lateral
7	M23	Grating Ang...	32.414			Lbyy			.65	.65		Lateral
8	M83C	Grating Ang...	6.406			Lbyy			.65	.65		Lateral
9	M82B	Grating Ang...	4.375			Lbyy			.65	.65		Lateral
10	M83D	Grating Ang...	4.375			Lbyy			.65	.65		Lateral
11	M29	End Plate A...	3.313			Lbyy			.65	.65		Lateral
12	M30	Grating PL 2	36.828						.65	.65		Lateral
13	M31	Grating PL 2	24.556						.65	.65		Lateral
14	M31A	Grating Ang...	17.5			Lbyy			.65	.65		Lateral
15	M32B	Grating Ang...	17.5			Lbyy			.65	.65		Lateral
16	M95	Platform Ho...	149.999	72	42	Lbyy						Lateral
17	M107	Mount Pipe	96			Lbyy						Lateral
18	M109	Mount Pipe	96			Lbyy						Lateral
19	M111	Mount Pipe	96			Lbyy						Lateral
20	M113	Mount Pipe	96			Lbyy						Lateral
21	SR1	Support Rail	150	143	42							Lateral
22	M224A	Conn. PL	1			Lbyy			.65	.65		Lateral
23	M225	Conn. PL	1			Lbyy			.65	.65		Lateral
24	M94	Offsett Tube	69			Lbyy						Lateral
25	M98A	End Plate A...	3.313			Lbyy			.65	.65		Lateral
26	M99A	Grating Ang...	6.406			Lbyy			.65	.65		Lateral
27	M100	Grating Ang...	4.375			Lbyy			.65	.65		Lateral
28	M101A	Grating Ang...	4.375			Lbyy			.65	.65		Lateral
29	M106A	Grating Ang...	32.414			Lbyy			.65	.65		Lateral
30	M107A	Grating Ang...	32.414			Lbyy			.65	.65		Lateral
31	M112A	Grating Ang...	6.406			Lbyy			.65	.65		Lateral
32	M113A	Grating Ang...	4.375			Lbyy			.65	.65		Lateral
33	M114	Grating Ang...	4.375			Lbyy			.65	.65		Lateral
34	M115	End Plate A...	3.313			Lbyy			.65	.65		Lateral
35	M116	Grating PL 2	36.828						.65	.65		Lateral
36	M117	Grating PL 2	24.556						.65	.65		Lateral
37	M122	Grating Ang...	17.5			Lbyy			.65	.65		Lateral
38	M123	Grating Ang...	17.5			Lbyy			.65	.65		Lateral
39	M132A	Conn. PL	1			Lbyy			.65	.65		Lateral
40	M133	Conn. PL	1			Lbyy			.65	.65		Lateral
41	M136	Offsett Tube	69			Lbyy						Lateral
42	M140	End Plate A...	3.313			Lbyy			.65	.65		Lateral
43	M141	Grating Ang...	6.406			Lbyy			.65	.65		Lateral
44	M142	Grating Ang...	4.375			Lbyy			.65	.65		Lateral
45	M143	Grating Ang...	4.375			Lbyy			.65	.65		Lateral
46	M148	Grating Ang...	32.414			Lbyy			.65	.65		Lateral
47	M149	Grating Ang...	32.414			Lbyy			.65	.65		Lateral
48	M154A	Grating Ang...	6.406			Lbyy			.65	.65		Lateral
49	M155A	Grating Ang...	4.375			Lbyy			.65	.65		Lateral
50	M156A	Grating Ang...	4.375			Lbyy			.65	.65		Lateral
51	M157A	End Plate A...	3.313			Lbyy			.65	.65		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
52	M158	Grating PL 2	36.828						.65	.65		Lateral
53	M159	Grating PL 2	24.556						.65	.65		Lateral
54	M164	Grating Ang...	17.5			Lbyy			.65	.65		Lateral
55	M165	Grating Ang...	17.5			Lbyy			.65	.65		Lateral
56	M174	Conn. PL	1			Lbyy			.65	.65		Lateral
57	M175	Conn. PL	1			Lbyy			.65	.65		Lateral
58	M185A	Platform Ho...	149.999	72	42	Lbyy						Lateral
59	M187A	Mount Pipe	96			Lbyy						Lateral
60	M189A	Mount Pipe	96			Lbyy						Lateral
61	M191	Mount Pipe	96			Lbyy						Lateral
62	M193	Mount Pipe	96			Lbyy						Lateral
63	M198	Support Rail	150	143	42							Lateral
64	M205A	Platform Ho...	149.999	72	42	Lbyy						Lateral
65	M207A	Mount Pipe	96			Lbyy						Lateral
66	M209A	Mount Pipe	96			Lbyy						Lateral
67	M211	Mount Pipe	96			Lbyy						Lateral
68	M213	Mount Pipe	96			Lbyy						Lateral
69	M218	Support Rail	150	143	42							Lateral
70	M233A	SR Conn Pl...	4									Lateral
71	M236	SR Conn Pl...	4									Lateral
72	M240	SR Conn A...	15.399									Lateral
73	M197B	SR Conn Pl...	4									Lateral
74	M203A	SR Conn A...	15.399									Lateral
75	M205	SR Conn Pl...	4									Lateral
76	M211A	SR Conn A...	15.399									Lateral
77	PR5	MOD Stabili...	50.6									Lateral
78	PR6	MOD Stabili...	50.6									Lateral
79	PR11	MOD Stabili...	50.6									Lateral
80	PR12	MOD Stabili...	50.6									Lateral
81	PR17	MOD Stabili...	50.6									Lateral
82	PR18	MOD Stabili...	50.6									Lateral
83	M233	SR Conn Pl...	4									Lateral
84	M234A	SR Conn Pl...	4									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	N190	max	2315.129	34	-244.533	15	441.845	6	238.612	12	592.507	16	1835.241	18
2		min	-280.489	10	-3814.939	24	-337.15	14	-512.384	21	-782.481	72	-1817.871	10
3	N241B	max	2318.777	19	3806.658	30	441.877	16	605.688	18	209.771	5	1835.172	12
4		min	-288.435	11	297.609	8	-337.179	8	-480.122	10	-883.522	61	-1817.804	4
5	N338B	max	-351.112	3	973.491	15	441.883	11	553.108	6	573.871	11	1834.637	7
6		min	-4393.333	27	-973.711	7	-337.188	3	-423.572	14	-352.999	3	-1817.274	15
7	P21	max	140.587	16	243.438	16	3371.413	24	812.328	24	54.082	17	64.351	18
8		min	-2210.739	24	-3828.18	24	-166.784	16	-33.644	16	-493.407	25	-76.343	10
9	P5	max	4420.697	19	89.742	15	3371.433	19	61.695	4	948.215	19	64.344	12
10		min	-281.167	11	-90.209	7	-166.821	11	-52.685	12	-46.918	11	-76.337	4
11	P13	max	140.477	6	3828.66	30	3371.424	30	47.572	6	39.744	4	64.324	7
12		min	-2209.939	30	-243.379	6	-166.705	6	-830.019	30	-463.327	29	-76.316	15
13	Totals:	max	4730.9	3	4730.579	15	9447.256	19						
14		min	-4730.899	11	-4730.57	7	2289.336	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	M213	PIPE_2.0	.530	70.737	5	.053	70.737		18	14916....	32130	1871.6...	1871.6.....	H1-1b
2	M193	PIPE_2.0	.526	70.737	10	.053	70.737		7	14916....	32130	1871.6...	1871.6.....	H1-1b
3	M113	PIPE_2.0	.526	70.737	15	.053	70.737		12	14916....	32130	1871.6...	1871.6.....	H1-1b
4	M211	PIPE_2.0	.524	70.737	5	.048	70.737		6	14916....	32130	1871.6...	1871.6.....	H1-1b
5	M191	PIPE_2.0	.523	70.737	10	.048	70.737		11	14916....	32130	1871.6...	1871.6.....	H1-1b
6	M111	PIPE_2.0	.523	70.737	15	.048	70.737		16	14916....	32130	1871.6...	1871.6.....	H1-1b
7	SR1	PIPE_2.0	.492	138.1...	3	.419	142.1...		3	6926.8...	32130	1871.6...	1871.6.....	H3-6
8	M218	PIPE_2.0	.492	138.1...	8	.419	142.1...		8	6926.8...	32130	1871.6...	1871.6.....	H3-6
9	M198	PIPE_2.0	.492	138.1...	14	.421	142.1...		13	6926.8...	32130	1871.6...	1871.6.....	H3-6
10	M211A	L5.50X3.5625X3	.440	0	11	.144	0	z	12	26491....	53915....	966.11	2943.7.....	H2-1
11	M203A	L5.50X3.5625X3	.440	0	16	.150	15.399	z	17	26491....	53915....	966.11	2943.7.....	H2-1
12	M240	L5.50X3.5625X3	.440	0	6	.144	0	z	7	26491....	53915....	966.11	2943.7.....	H2-1
13	M189A	PIPE_2.0	.431	70.737	18	.087	70.737		3	14916....	32130	1871.6...	1871.6.....	H1-1b
14	M209A	PIPE_2.0	.431	70.737	12	.090	70.737		13	14916....	32130	1871.6...	1871.6.....	H1-1b
15	M109	PIPE_2.0	.431	70.737	7	.087	70.737		8	14916....	32130	1871.6...	1871.6.....	H1-1b
16	M107	PIPE_2.0	.429	30.316	3	.083	70.737		10	14916....	32130	1871.6...	1871.6.....	H1-1b
17	M207A	PIPE_2.0	.429	30.316	8	.083	70.737		15	14916....	32130	1871.6...	1871.6.....	H1-1b
18	M187A	PIPE_2.0	.429	30.316	14	.085	70.737		5	14916....	32130	1871.6...	1871.6.....	H1-1b
19	M22	L2.375x1.25x0.25	.369	32.414	17	.065	22.178	y	16	19702....	27345.6	330.185	1344.7.....	H2-1
20	M106A	L2.375x1.25x0.25	.363	32.414	11	.065	22.178	y	11	19702....	27345.6	330.185	1343.2 ...	H2-1
21	M148	L2.375x1.25x0.25	.363	32.414	6	.065	22.178	y	5	19702....	27345.6	330.185	1343.2 ...	H2-1
22	M117	PL1.50x0.25	.333	0	3	.045	0	y	18	1731.8...	12150	63.283	379.688...	H1-1b
23	M31	PL1.50x0.25	.333	0	8	.045	0	y	7	1731.8...	12150	63.283	379.688...	H1-1b
24	M159	PL1.50x0.25	.333	0	14	.046	12.278	y	13	1731.8...	12150	63.283	379.688...	H1-1b
25	M149	L2.375x1.25x0.25	.318	0	10	.050	10.236	y	11	19702....	27345.6	330.185	1354.4.....	H2-1
26	M23	L2.375x1.25x0.25	.318	0	4	.050	10.236	y	6	19702....	27345.6	330.185	1354.4.....	H2-1
27	M107A	L2.375x1.25x0.25	.318	0	15	.050	10.236	y	16	19702....	27345.6	330.185	1354.4.....	H2-1
28	M156A	L7.25x2.375x0.25	.306	4.375	28	.511	4.375	y	11	38519....	75945.6	631.129	5474.5.....	H2-1
29	M114	L7.25x2.375x0.25	.306	4.375	34	.511	4.375	y	16	38519....	75945.6	631.129	5474.5.....	H2-1
30	M83D	L7.25x2.375x0.25	.306	4.375	23	.511	4.375	y	6	38519....	75945.6	631.129	5474.5.....	H2-1
31	M32B	L4.75x4.5x0.25	.297	17.5	19	.066	17.5	z	19	60192....	72900	4381.6...	8212.7.....	H2-1
32	M165	L4.75x4.5x0.25	.297	17.5	24	.066	17.5	z	25	60192....	72900	4381.6...	8212.7.....	H2-1
33	M123	L4.75x4.5x0.25	.297	17.5	30	.066	17.5	z	30	60192....	72900	4381.6...	8212.7.....	H2-1
34	M31A	L4.75x4.5x0.25	.288	0	34	.063	0	z	34	60192....	72900	4381.6...	8212.7.....	H2-1
35	M164	L4.75x4.5x0.25	.288	0	23	.063	0	z	23	60192....	72900	4381.6...	8212.7.....	H2-1
36	M122	L4.75x4.5x0.25	.288	0	28	.063	0	z	28	60192....	72900	4381.6...	8212.7.....	H2-1
37	M14	L7.25x2.375x0.25	.281	2.188	17	.603	0	y	16	38519....	75945.6	631.129	5474.5.....	H2-1
38	M101A	L7.25x2.375x0.25	.259	2.188	11	.603	0	y	11	38519....	75945.6	631.129	5474.5.....	H2-1
39	M143	L7.25x2.375x0.25	.259	2.188	6	.603	0	y	6	38519....	75945.6	631.129	5474.5.....	H2-1
40	M142	L7.25x2.375x0.25	.185	0	20	.545	0	z	11	38519....	75945.6	631.129	5474.5.....	H2-1
41	M100	L7.25x2.375x0.25	.185	0	26	.545	0	z	16	38519....	75945.6	631.129	5474.5.....	H2-1
42	M13	L7.25x2.375x0.25	.185	0	31	.545	0	z	6	38519....	75945.6	631.129	5474.5.....	H2-1
43	M116	PL1.50x0.25	.169	18.414	25	.036	18.414	y	16	769.952	12150	63.283	379.688...	H1-1b
44	M158	PL1.50x0.25	.168	18.414	20	.036	18.414	y	11	769.952	12150	63.283	379.688...	H1-1b
45	M30	PL1.50x0.25	.168	18.414	31	.036	18.414	y	6	769.952	12150	63.283	379.688...	H1-1b
46	M157A	L5x4x0.25	.158	3.313	28	.127	3.313	y	21	57000....	70875	2842.6...	6820.0.....	H2-1
47	M115	L5x4x0.25	.158	3.313	34	.126	3.313	y	26	57000....	70875	2842.6...	6820.0.....	H2-1
48	M29	L5x4x0.25	.158	3.313	23	.126	3.313	y	31	57000....	70875	2842.6...	6820.0.....	H2-1
49	M136	HSS5x3x3/8"	.141	41.763	25	.061	0	z	12	16489....	20553....	18493....	27058.....	H1-1b
50	M1	HSS5x3x3/8"	.140	41.763	20	.061	0	z	7	16489....	20553....	18493....	27058.....	H1-1b
51	M94	HSS5x3x3/8"	.140	41.763	31	.062	0	z	17	16489....	20553....	18493....	27058.....	H1-1b
52	M82B	L7.25x2.375x0.25	.140	4.375	22	.572	4.375	z	16	38519....	75945.6	631.129	5474.5.....	H2-1
53	M113A	L7.25x2.375x0.25	.140	4.375	32	.572	4.375	z	11	38519....	75945.6	631.129	5474.5.....	H2-1
54	M155A	L7.25x2.375x0.25	.140	4.375	27	.581	4.375	z	5	38519....	75945.6	631.129	5474.5.....	H2-1
55	M205	PL5x0.1875	.135	.842	3	.186	2.737	y	3	17775....	30375	118.652	3164.0.....	H1-1b
56	M197B	PL5x0.1875	.135	.842	8	.186	2.737	y	8	17775....	30375	118.652	3164.0.....	H1-1b

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pn...	phi*Pn...	phi*Mn...	phi*Mn...		Eqn
57	M233A	PL5x0.1875	.135	.842	14	.187	2.737	y	13	17775....	30375	118.652	3164.0...	....	H1-1b
58	M185A	PIPE_3.0	.129	15.789	3	.104	106.5...		14	53775....	65205	5748.75	5748.75	1	H1-1b
59	M95	PIPE_3.0	.129	15.789	8	.104	106.5...		3	53775....	65205	5748.75	5748.75	1	H1-1b
60	M205A	PIPE_3.0	.129	15.789	14	.104	106.5...		8	53775....	65205	5748.75	5748.75	1	H1-1b
61	M8	L5x4x0.25	.125	0	3	.118	0	z	8	57000....	70875	3500.8...	6820.0...	....	H2-1
62	M140	L5x4x0.25	.125	0	8	.118	0	z	14	57000....	70875	3500.8...	6820.0...	....	H2-1
63	M98A	L5x4x0.25	.125	0	14	.118	0	z	3	57000....	70875	3500.8...	6820.0...	....	H2-1
64	PR17	L3X3X3	.115	25.3	26	.007	0	z	12	22527....	35316	1320.0...	2539.2...	....	H2-1
65	PR5	L3X3X3	.115	25.3	20	.007	0	z	7	22527....	35316	1320.0...	2539.2...	....	H2-1
66	PR11	L3X3X3	.115	25.3	31	.007	0	z	18	22527....	35316	1320.0...	2539.2...	....	H2-1
67	M234A	PL5x0.1875	.108	.842	18	.106	2.737	y	15	17775....	30375	118.652	3164.0...	....	H1-1b
68	M236	PL5x0.1875	.108	.842	12	.106	2.737	y	10	17775....	30375	118.652	3164.0...	....	H1-1b
69	M233	PL5x0.1875	.108	.842	7	.106	2.737	y	4	17775....	30375	118.652	3164.0...	....	H1-1b
70	PR6	L3X3X3	.105	25.3	34	.007	0	y	7	22527....	35316	1320.0...	2539.2...	....	H2-1
71	PR12	L3X3X3	.105	25.3	28	.007	0	y	18	22527....	35316	1320.0...	2539.2...	....	H2-1
72	PR18	L3X3X3	.105	25.3	23	.007	0	y	12	22527....	35316	1320.0...	2539.2...	....	H2-1
73	M112A	L6.4x4.750x0.25	.094	6.406	11	.034	6.406	y	19	57754....	88290	2962.2...	7667.7...	....	H2-1
74	M83C	L6.4x4.750x0.25	.094	6.406	16	.034	6.406	y	24	57754....	88290	2962.2...	7667.7...	....	H2-1
75	M154A	L6.4x4.750x0.25	.094	6.406	6	.034	6.406	y	29	57754....	88290	2962.2...	7667.7...	....	H2-1
76	M11	L6.4x4.750x0.25	.092	0	21	.037	0	z	30	57754....	88290	2962.2...	7667.7...	....	H2-1
77	M141	L6.4x4.750x0.25	.092	0	27	.037	0	z	19	57754....	88290	2962.2...	7667.7...	....	H2-1
78	M99A	L6.4x4.750x0.25	.092	0	32	.037	0	z	25	57754....	88290	2962.2...	7667.7...	....	H2-1
79	M133	PL8.5x3/8	.087	0	18	.062	1	y	73	84967....	103275	806.836	18288....	....	H1-1b*
80	M175	PL8.5x3/8	.087	1	12	.084	0	y	59	84967....	103275	806.836	18288....	....	H1-1b*
81	M225	PL8.5x3/8	.087	0	7	.057	0	y	6	84967....	103275	806.836	18288....	....	H1-1b*
82	M132A	PL8.5x3/8	.085	0	9	.070	0	y	72	84967....	103275	806.836	18288....	....	H1-1b
83	M174	PL8.5x3/8	.085	0	4	.077	1	y	59	84967....	103275	806.836	18288....	....	H1-1b*
84	M224A	PL8.5x3/8	.085	0	15	.063	1	y	6	84967....	103275	806.836	18288....	....	H1-1b*

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11517B

CT517/TCP Mansfield
1725 Stafford Road
Mansfield, Connecticut 06268

May 29, 2019

EBI Project Number: 6219001922

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**10.92%**

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

May 29, 2019

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

Emissions Analysis for Site: CT11517B - CT517/TCP Mansfield

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **1725 Stafford Road** in **Mansfield, 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 1725 Stafford Road in Mansfield, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

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

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

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

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

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

8) The antennas used in this modeling are the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz / 2100 MHz channel(s), the RFS APXV18-203219-C-A20 for the 1900 MHz / 1900 MHz channel(s) in Sector A, the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz / 2100 MHz channel(s), the RFS APXV18-203219-C-A20 for the 1900 MHz / 1900 MHz channel(s) in Sector B, the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz / 2100 MHz channel(s), the RFS APXV18-203219-C-A20 for the 1900 MHz / 1900 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antenna mounting height centerline of the proposed antennas is 162 feet above ground level (AGL).

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

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 700 MHz / 2100 MHz	Frequency Bands:	600 MHz / 700 MHz / 2100 MHz	Frequency Bands:	600 MHz / 700 MHz / 2100 MHz
Gain:	12.95 dBd / 13.35 dBd / 16.35 dBd	Gain:	12.95 dBd / 13.35 dBd / 16.35 dBd	Gain:	12.95 dBd / 13.35 dBd / 16.35 dBd
Height (AGL):	162 feet	Height (AGL):	162 feet	Height (AGL):	162 feet
Channel Count:	6	Channel Count:	6	Channel Count:	6
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	7,659.31	ERP (W):	7,659.31	ERP (W):	7,659.31
Antenna A1 MPE %:	**1.50%**	Antenna B1 MPE %:	**1.50%**	Antenna C1 MPE %:	**1.50%**
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXV18-203219-C-A20	Make / Model:	RFS APXV18-203219-C-A20	Make / Model:	RFS APXV18-203219-C-A20
Frequency Bands:	1900 MHz / 1900 MHz	Frequency Bands:	1900 MHz / 1900 MHz	Frequency Bands:	1900 MHz / 1900 MHz
Gain:	18.5 dBd / 18.5 dBd	Gain:	18.5 dBd / 18.5 dBd	Gain:	18.5 dBd / 18.5 dBd
Height (AGL):	162 feet	Height (AGL):	162 feet	Height (AGL):	162 feet
Channel Count:	6	Channel Count:	6	Channel Count:	6
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	16,990.70	ERP (W):	16,990.70	ERP (W):	16,990.70
Antenna A2 MPE %:	**2.33%**	Antenna B2 MPE %:	**2.33%**	Antenna C2 MPE %:	**2.33%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	3.82%
Town	0.4%
AT&T	1.66%
Verizon	1.59%
Sprint	3.45%
Site Total MPE % :	10.92%

T-Mobile Sector A Total:	3.82%
T-Mobile Sector B Total:	3.82%
T-Mobile Sector C Total:	3.82%
Site Total:	10.92%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 600 MHz LTE	2	591.73	162.0	1.62	600 MHz LTE	400	0.41%
T-Mobile 700 MHz LTE	2	648.82	162.0	1.78	700 MHz LTE	467	0.38%
T-Mobile 2100 MHz LTE AWS	2	2589.11	162.0	7.09	2100 MHz LTE AWS	1000	0.71%
T-Mobile 1900 MHz GSM	4	2123.84	162.0	11.64	1900 MHz GSM	1000	1.16%
T-Mobile 1900 MHz LTE PCS	2	4247.67	162.0	11.64	1900 MHz LTE PCS	1000	1.16%
						Total:	**3.82%**

• 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:	3.82%
Sector B:	3.82%
Sector C:	3.82%
T-Mobile Maximum MPE % (Sector A):	3.82%
Site Total:	10.92%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **10.92%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Exhibit G

Mailing Receipts/Proof of Notice

UPS Internet Shipping: View/Print Label

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

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

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

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

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

NEIL GUERRIERO
3473040176
TRANSCEND WIRELESS
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

SHIP TO:
PAUL SHAPIRO
TOWN OF MANSFIELD
4 SOUTH EAGLEVILLE ROAD
STORRS MANSFIELD CT 06268-2574

CT 063 0-01

UPS GROUND

TRACKING #: 1Z V25 742 03 9143 9662

BILLING: P/P

Reference#1: CT11517B
Reference#2: UPS-Mayor

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UPS Internet Shipping: View/Print Label

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

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

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

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

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74 LAFAYETTE AVE
SUFFERN ,NY 10901

FOLD HERE

NEIL GUERRIERO
3473040176
TRANSCEND WIRELESS
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

SHIP TO:
CONTACTS MANAGEMENT
AMERICAN TOWER CORPORATION
10 PRESIDENTIAL WAY
WOBURN MA 01801-1053

MA 018 9-04

UPS GROUND

TRACKING #: 1Z V25 742 03 9231 1645

BILLING: P/P

Reference#1: CT11517B
Reference#2: UPS-ATC

UIS 21.5.24. WNTNV50 15.0A 07/2019

NEIL GUERRIERO
3473040176
TRANSCEND WIRELESS
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

SHIP TO:
Linda Painter, Director of Planning & Development
TOWN OF MANSF
AUDREY P. BECK I
4 SOUTH EAGLEVILLE ROAD
STORRS MANSFIELD CT 06268-2574

CT 063 0-01

UPS GROUND
TRACKING #: 1Z V25 742 03 9230 9676

BILLING: P/P

Reference#1: CT11517B
Reference#2: UPS-Planner

UBS 21.5.24. WNTNV50 15.0A 07/2019