Robinson+Cole

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and New York

March 14, 2022

Via Electronic Mail

Melanie A. Bachman, Esq.
Executive Director/Staff Attorney
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification – Facility Modification**
8 Sky Edge Lane, Bethel, Connecticut

Dear Attorney Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains an existing wireless telecommunications facility at the above-referenced property address (the "Property"). The facility consists of antennas and remote radio heads attached to an Eversource transmission line tower and associated equipment on the ground near the base of the tower. In July of 2001, the Siting Council ("Council") approved Petition No. 515 permitting Sprint to install antennas on a power mount extending above the top of an Eversource transmission line tower. In January of 2007, the Council approved Petition No. 796 permitting Cellco to extend the power mount by ten feet and install its antennas and related equipment above the Sprint antennas. Copies of the Council's Staff report for Petition Nos. 515 and 796 are included in Attachment 1.

Cellco now intends to modify its facility by replacing its six (6) existing antennas with three (3) new Samsung MT6407-77A antennas and three (3) new NNH4-65B-R6H4 antennas on the existing T-Arm mounts. A set of project plans showing Cellco's proposed facility modifications and the specifications for Cellco's new antennas are included in Attachment 2.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Bethel's Chief Elected Official and Land Use Officer.

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 power mount tower. Cellco's new antennas will be installed on its existing T-Arms.

2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, 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 installation of Cellco's new antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative General Power Density table for Cellco's modified facility is included in Attachment 3. The modified facility will be capable of providing Cellco's 5G wireless service.

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

6. According to the attached Structural Analysis ("SA") and Mount Analysis ("MA"), the existing transmission line tower, tower foundation and antenna mounts, with certain hardware upgrades, can support Cellco's proposed modifications. Copies of the SA and MA are included in Attachment 4.

A copy of the parcel map and Property owner information is included in Attachment 5. A Certificate of Mailing verifying that this filing was sent to municipal officials and the property owner is included in Attachment 6.

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

Sincerely,

Kenneth C. Baldwin

Enclosures

Copy to:

Matthew Knickerbocker, Bethel First Selectman
Beth Cavagna, Director/Town Planner Land Use, Planning and Zoning/Inland Wetlands
Connecticut Light and Power, Property Owner
Karla Hanna, Verizon Wireless

ATTACHMENT 1

Petition No. 515
Sprint Spectrum, L.P.
Bethel, Connecticut
Staff Report
July 11, 2001

On July 9, 2001, Connecticut Siting Council (Council) member Gerald J. Heffernan and Christina Lepage of the Council staff met with Sprint Spectrum, L.P. (Sprint) representative Julie Donaldson, Kim Filomia, Laura Thoman and John Lusi at 8 Sky Edge Lane, Bethel, Connecticut for inspection of an electric transmission structure. The property and structure is owned by Connecticut Light and Power Co. (CL&P). Sprint, with the agreement of CL&P, proposes to modify the structure by installing antennas and associated equipment for telecommunications use and is petitioning the Council for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need (Certificate) is required for the modification.

Sprint proposes the installation of twelve PCS panel antennas on a Power Mount. The antennas will extend approximately 9-feet 10-inches above the existing 150-foot transmission line monopole structure (#10255). The centerline of the antennas will be at approximately 157-feet 6-inches above ground level (AGL). The top of the antennas will be approximately 159-feet 10-inches. A global positioning system (GPS) antenna will be placed at 50-feet AGL on the monopole.

Sprint proposes a 20-foot by 10-foot concrete pad with space for four cabinets containing equipment and three growth cabinets. The associated equipment will be placed immediately adjacent to the base of the structure. Sprint also proposes to install equipment cabinets off of the concrete pad. A 6-foot high chain link fence topped with 1 foot of barbed wire will surround the equipment cabinets. The access drive will extend from Sky Edge Lane to the monopole structure. An underground conduit from an adjacent utility pole along the proposed access drive will provide power and telephone service to the site.

Surrounding land uses includes undeveloped land with mature trees and vegetation, and residential homes, with commercial and industrial uses on an adjacent parcel owned by Yankee Gas. The zoning designation of this site is R-30 (residential). The nearest residence is about 290 feet to the southwest.

The worst-case power density for the telecommunications operations at the site has been calculated to be 5.54% of the applicable standard for uncontrolled environments.

The Town of Bethel Planning and Zoning Commission has requested the opportunity to review the erosion and sedimentation control and landscaping for the proposed site.
Sprint contends that the increase in height of this monopole structure will not result in a substantial environmental effect, and will eliminate the need to construct a new telecommunications tower to provide coverage to this area of Bethel.

Petition No. 796
Cellco Partnership d/b/a Verizon Wireless
Bethel, Connecticut
Staff Report
December 28, 2006

Verizon is seeking to extend an existing pipe mast extension on a steel transmission line pole to place six antennas at a height of 167 feet above ground level.

Council member Ed Wilensky and staff person David Martin conducted a field review of the proposal on December 27, 2006. They were met at the site by Joey Lee Miranda, a lawyer with Robinson & Cole who was representing Verizon.

The transmission line pole on which the antennas would be attached is 150 feet tall and is located north of Sky Edge Lane in Bethel. It is not far south of I-84 and would provide PCS and cellular coverage along this interstate highway where Verizon currently has coverage gaps. The Council previously gave approval for Sprint to locate antennas on this pole (Petition 515).

Sprint placed an extension on this pole to place antennas on a platform. There is a stub of the mast extension Sprint installed that extends above Sprint's platform. Verizon would add an additional 10 feet onto this extension to place six antennas at 167 feet. Verizon's antennas would be attached to the extension with Valmont standoff mounts (similar to T-bar mounts).

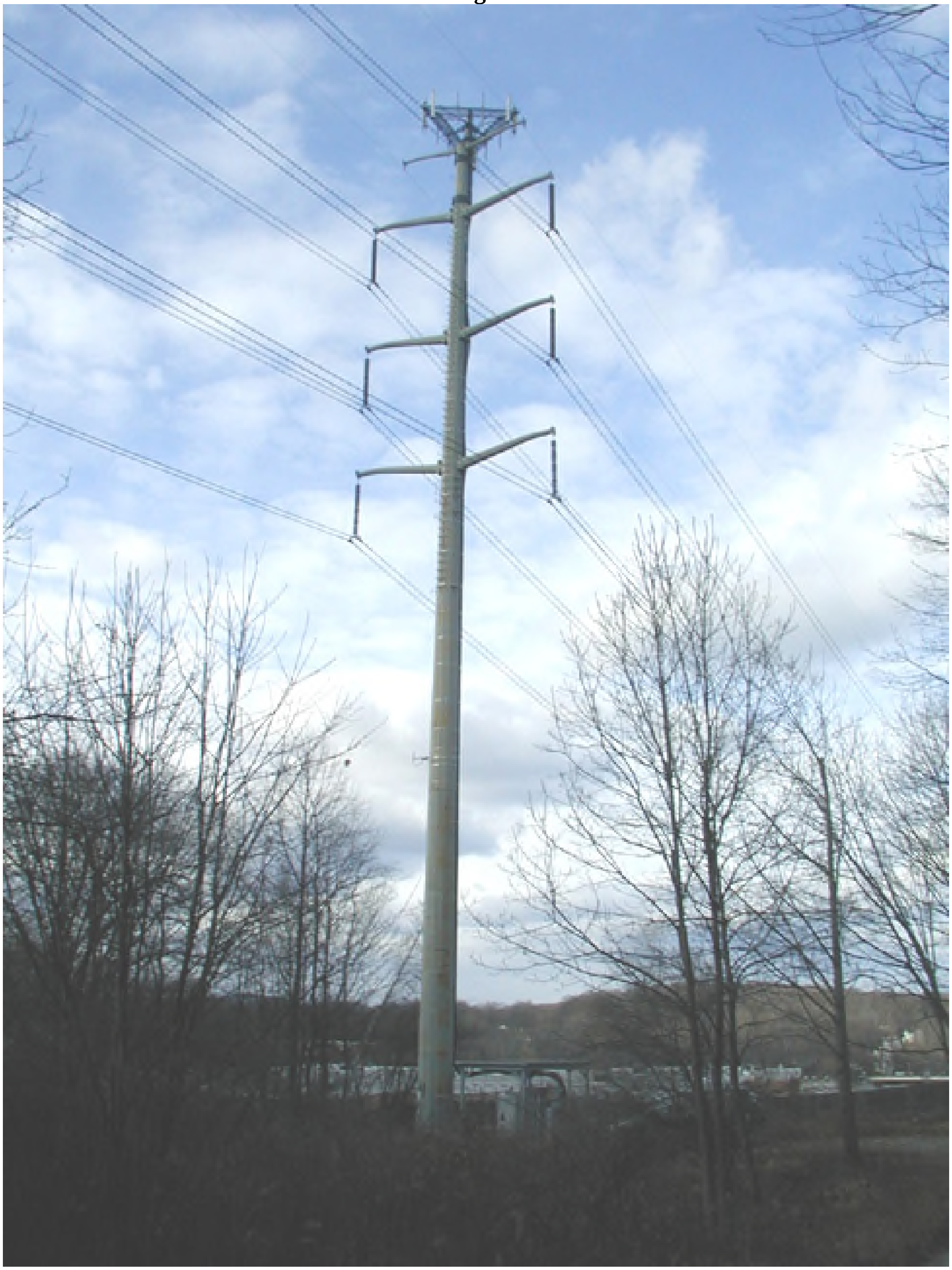
Verizon ground equipment would be housed in a 12-foot by 30-foot shelter that would be enclosed by an eight-foot chain link fence within a small compound that would be approximately 20 feet by 45 feet. Verizon's coax cables would run underground from its equipment shelter to the existing tower. Minimal clearing would be necessary to install Verizon's compound. A gravel access drive to the tower's base was previously installed by Sprint.

The tower is located in a residential area with single family homes visible to the east, west, and south of the site. There is a large Target store just to the north of the site. Beyond the Target store is more commercial development along Route 6, which runs closely parallel to I-84 in this vicinity. The nearest home is located 237 feet to the south. Most of the nearby homes are located approximately 300 to 400 feet from the tower.

The tower is located on land owned by CL&P, which has reviewed and approved Verizon's proposal. Attorney Miranda agreed to inform the nearest resident of Verizon's plans.

There are many deciduous trees between the tower and the nearest neighbors that provide some screening of the tower. However, the top of the tower is visible from the nearest roads. The addition of Verizon's antennas would be a slight marginal increase in the visibility of this tower.

Existing tower



Close-up of antenna platform and mount extension

ATTACHMENT 2

verizon

BETHEL NORTH CT
SKY EDGE LANE
BETHEL, CT 06801

GENERAL NOTES AND SPECIFICATIONS

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2015 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2018 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "G" STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES, 2017 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE, AND LOCAL CODES.
2. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
5. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
6. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, AND ALL TRADES AS APPLICABLE PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
7. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
8. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING BUILDING'S/PROPERTY'S OPERATIONS, COORDINATE WORK WITH BUILDING/PROPERTY OWNER.
10. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
11. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
12. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
13. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE VERIZON WIRELESS CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
15. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
16. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
17. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB- CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
19. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
20. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
21. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
22. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
23. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS, ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
24. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.

SITE DIRECTIONS

FROM: 20 ALEXANDER DRIVE
WALLINGFORD, CONNECTICUT

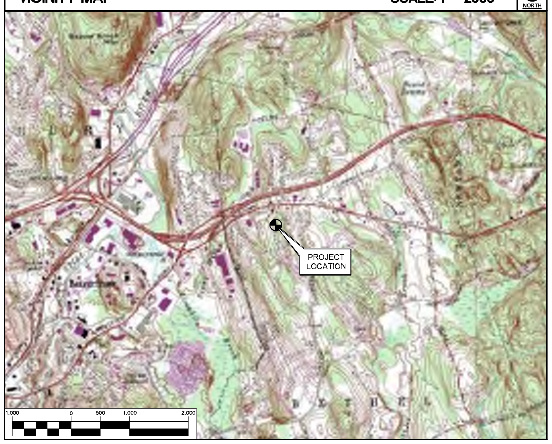
TO: SKY EDGE LANE
BETHEL, CT 06801

1.	START OUT GOING NORTH ON ALEXANDER DR TOWARD BARNES INDUSTRIAL RD.	0.18 MI
2.	TURN RIGHT ONTO BARNES INDUSTRIAL RD.	0.11 MI
3.	TAKE THE 1ST LEFT ONTO CT-68 W.	4.40 MI
4.	TURN RIGHT.	0.20 MI
5.	TURN RIGHT ONTO N COLONY RD.	0.30 MI
6.	TURN RIGHT TO MERGE ONTO CT-15 N TOWARD HARTFORD.	0.50 MI
7.	MERGE ONTO CT-15 N.	3.10 MI
8.	USE THE MIDDLE LANE TO SAY ON CT-15 N.	0.10 MI
9.	TAKE EXIT 68 W TO MERGE ONTO I-691 W TOWARD MERIDEN/WATERBURY.	7.70 MI
10.	USE ANY LANE TO EXIT 1 FOR I-84 W TOWARD WATERBURY/DANBURY.	1.20 MI
11.	MERGE ONTO I-84.	1.60 MI
12.	KEEP LEFT TO STAY ON I-84.	21.6 MI
13.	TAKE EXIT 8 T MERGE ONTO NEWTOWN RD TOWARD BETHEL.	0.30 MI
14.	MERGE ONTO NEWTOWN RD.	0.20 MI
15.	CONTINUE STRAIGHT TO STAY ON NEWTOWN RD.	0.10 MI
16.	TURN LEFT ONTO US-6 E/NEWTOWN RD.	0.40 MI
17.	TURN RIGHT ONTO SKY EDGE DR.	0.20 MI
18.	CONTINUE ONTO SKY EDGE LN. ENTRANCE TO SITE WILL BE ON THE LEFT.	0.08 MI

VICINITY MAP

SCALE: 1" = 2000'

NORTH



DESIGN BASIS:

GOVERNING CODE: 2015 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2018 CT STATE BUILDING CODE AND AMENDMENTS.

1. DESIGN CRITERIA:
   - RISK CATEGORY: II (BASED ON TABLE 1604.5 OF THE 2015 IBC)
   - NOMINAL DESIGN SPEED (TOWER): 93 MPH (Vasd) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-10) PER 2015 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2018 CONNECTICUT STATE BUILDING CODE.
   - SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7-10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

PROJECT SUMMARY

1. THE PROPOSED UPGRADE SCOPE OF WORK AT THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY GENERALLY INCLUDES THE FOLLOWING:

   A. AT THE EXISTING UTILITY POLE MOUNTED ANTENNA SECTORS:
   - REMOVE (6) EXISTING ANDREW ANTENNAS.
   - RETAIN (12) EXISTING COAXIAL CABLES.
   - INSTALL (3) SAMSUNG – MT6407-77A ALL-IN-ONE ANTENNA/ RRUs.
   - INSTALL (3) COMMSCOPE – NNH4-65B-R6H4 ANTENNAS.
   - INSTALL (6) COMMSCOPE – CBC61923T-DS-43 TRIPLEXERS.
   - INSTALL (1) 6x12 HYBRIFLEX CABLE.
   - INSTALL (1) OVP-6 BOX.

   B. AT THE EXISTING EQUIPMENT SHELTER:
   - REMOVE (3) EXISTING COMMSCOPE COMBINERS.
   - REMOVE (6) EXISTING RFS DIPLEXERS.
   - RETAIN (3) EXISTING SAMSUNG – B2/B66A RRH-BR049.
   - RETAIN (3) EXISTING SAMSUNG – B5/B13 RRH-BR04C.
   - INSTALL (6) COMMSCOPE – CBC61923T-DS-43 TRIPLEXERS.
   - INSTALL (3) COMMSCOPE – TD-850B-LTE78-43 COMBINER.

PROJECT INFORMATION

SITE NAME:	BETHEL NORTH CT
SITE ADDRESS:	SKY EDGE LANE BETHEL, CT 06801
LESSEE/TENANT:	CELLCO PARTNERSHIP d.b.a. VERIZON WIRELESS 20 ALEXANDER DRIVE WALLINGFORD, CT 06492
CONTACT PERSON:	WALTER CHARCZNSKI (CONSTRUCTION MANAGER) VERIZON WIRELESS (860) 306-1806
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT. 06405 (203) 488-0580
PROJECT COORDINATES:	LATITUDE: 41° 24' 48.4884"N LONGITUDE: 73° 24' 3.1392"W (COORDINATES REFERENCED FROM VERIZON WIRELESS RFDS DATED 09/27/2021)

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	1
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C-2	ANTENNA SECTOR CONFIGURATION DETAILS	1
C-3	RF DETAILS	1
E-1	ELECTRICAL DETAILS AND SPECIFICATIONS	1

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	03/02/22	JLW	DMD	CONSTRUCTION DRAWINGS – REVISED PER APPROVED EVERSOURCE SA
0	12/28/21	JLW	DMD	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION
A	12/02/21	JLW	DMD	CONSTRUCTION DRAWINGS – ISSUED FOR CLIENT REVIEW

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verizon

CENTEK engineering
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Branford, CT 06405
www.CentekEng.com

Cellco Partnership d/b/a Verizon Wireless

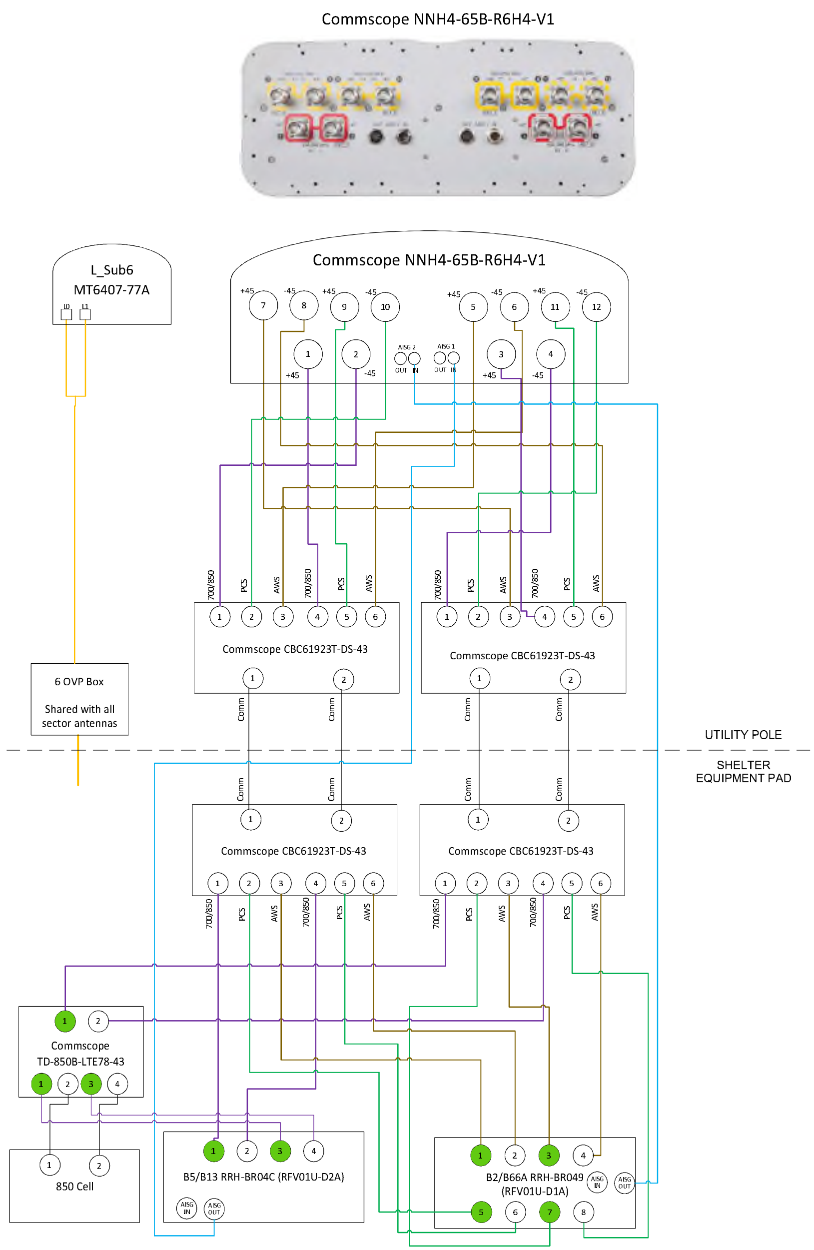
BETHEL NORTH CT
SKY EDGE LANE
BETHEL, CT 06801

DATE:	12/02/21
SCALE:	AS NOTED
JOB NO.	21007.74

TITLE SHEET

T-1

Sheet No. 1 of 6



PLUMBING DIAGRAM NOTES:

1. PORTS 1,2,3 & 4 ARE FOR LOW BAND (698–896 MHz).
2. PORTS 5,6,7,8,9,10,11 & 12 ARE FOR HIGH BAND (1695–2360 MHz).
3. SMART BIAS TEE (SBT) IS THROUGH ANTENNA PORTS 1 & 4 FOR LOW BAND AND 5,7,10 &12 FOR HIGH BAND.
4. AISG CABLE IS ONLY NEEDED WHEN DRAWN IN THE DIAGRAMS ABOVE. IF IT IS NOT DRAWN THEN SBT IS ENOUGH TO CONTROL ALL RET MOTORS.
5. NOT ALL SBT PORTS ARE NEEDED TO CONTROL RET. ONLY GREEN PORT CONNECTION TO GREEN PORT WILL CONTROL RET.

RET DC SIGNAL PASS FOR RET
(PORT THAT WILL CONTROL RET)

PLUMBING DIAGRAM COMMENTS:

A. DIAGRAMS SHOW ANTENNA PORT CONFIGURATIONS AS VIEWED FROM STANDING BEHIND THE ANTENNAS.
B. ANTENNAS WILL BE INSTLLED IN THAT ORDER FROM LEFT TO RIGHT.
C. CAP AND WEATHERPROOF UNUSED ANTENNA PORTS.
D. ALL PLUMBING DIAGRAM COLORS ARE IRRELEVANT EXCEPT FOR AISG AND HYBRIFLEX CABLE. (FOR THE COAX COLORS, FOLLOW COAX COLORS GUIDE ABOVE)

DC SIGNAL CAPABLE PORT

AISG CABLE

RET DC SIGNAL PASS FOR RET
(PORT THAT WILL CONTROL RET)

HYBRIFLEX CABLES

NOTES:

1. INFORMATION SHOWN HEREIN IS FOR USE BY VERIZON WIRELESS EQUIPMENT OPERATIONS.
2. THIS B.O.M. DRAWING IS BASED ON FACILITY UPGRADE DESIGN DRAWINGS PREPARED BY CENTEK ENGINEERING (REV.1 DATED: 03/02/22), & VERIZON WIRELESS RF ANTENNA EQUIPMENT RECOMMENDATION (DATED 09/27/2021).

BILL OF MATERIALS

TECHNOLOGY	QUANTITY	ANTENNA
LTE 700	6	COMMSCOPE ANTENNA MODEL: NNH4–65B–R6H4
LTE 850		
LTE PCS 1900		
LTE AWS 2100		
5G	3	SAMSUNG ANTENNA MODEL: MT6407–77A

CABLES	QUANTITY	LENGTH EA	COMMENTS
HYBRID CABLE	1	±287 FT EA	6X12 HYBRIFLEX CABLE

RADIOS	QUANTITY	COMMENTS
LTE 700	0	–
LTE 850		
LTE PCS 1900	0	–
LTE AWS 2100		
5G	3	INTEGRATED INTO MT6407–77A ANTENNA

TRIPLEXERS	QUANTITY	COMMENTS
COMMSCOPE	12	COMMSCOPE MODEL: CBC61923T–DS–43

OVP BOXES	QUANTITY	COMMENTS
OVP	1	RFS MODEL: DB–B1–6C–12AB–0Z

ANTENNA MOUNT	QUANTITY	COMMENTS
SIDE–BY–SIDE MOUNTING KIT	0	–

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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PROFESSIONAL ENGINEER SEAL

verizon

CENTEK engineering
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Cellco Partnership d/b/a Verizon Wireless

BETHEL NORTH CT

SKY EDGE LANE
BETHEL, CT 06801

DATE: 12/02/21
SCALE: AS NOTED
JOB NO. 21007.74

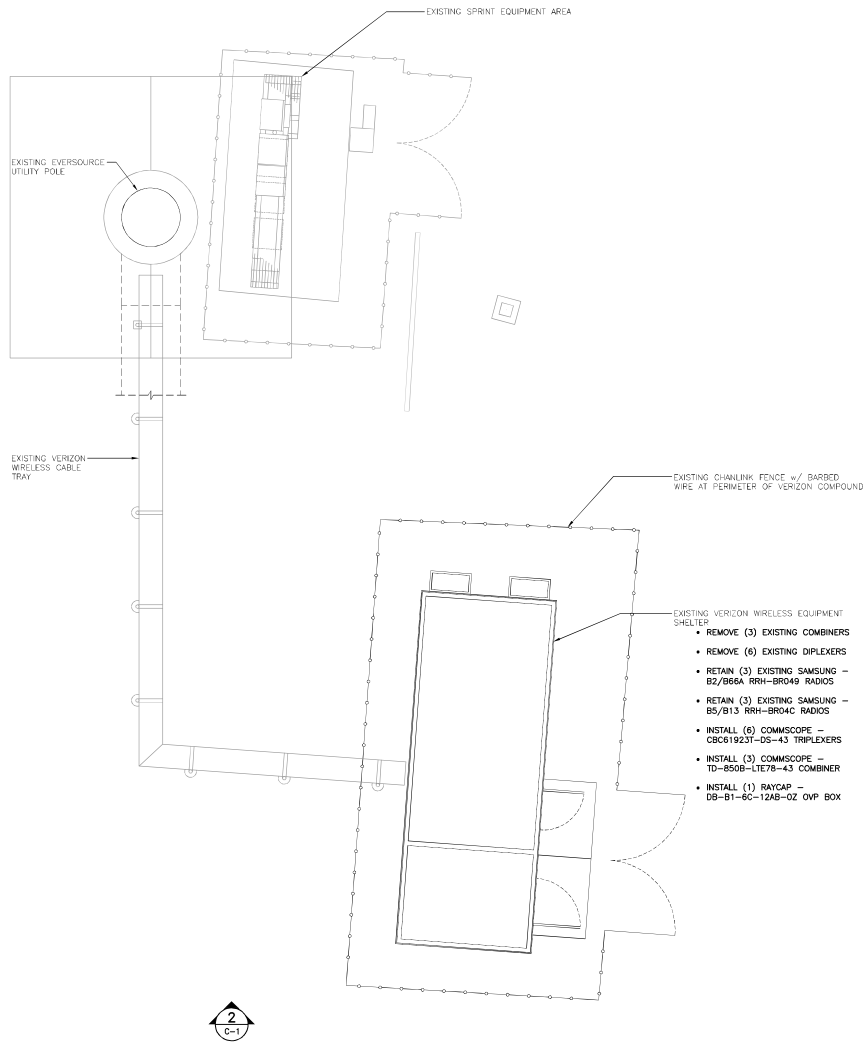
RF BILL OF MATERIALS

B-1

Sheet No. 2 of 6

TOWER STRUCTURAL ANALYSIS REFERENCE NOTE:

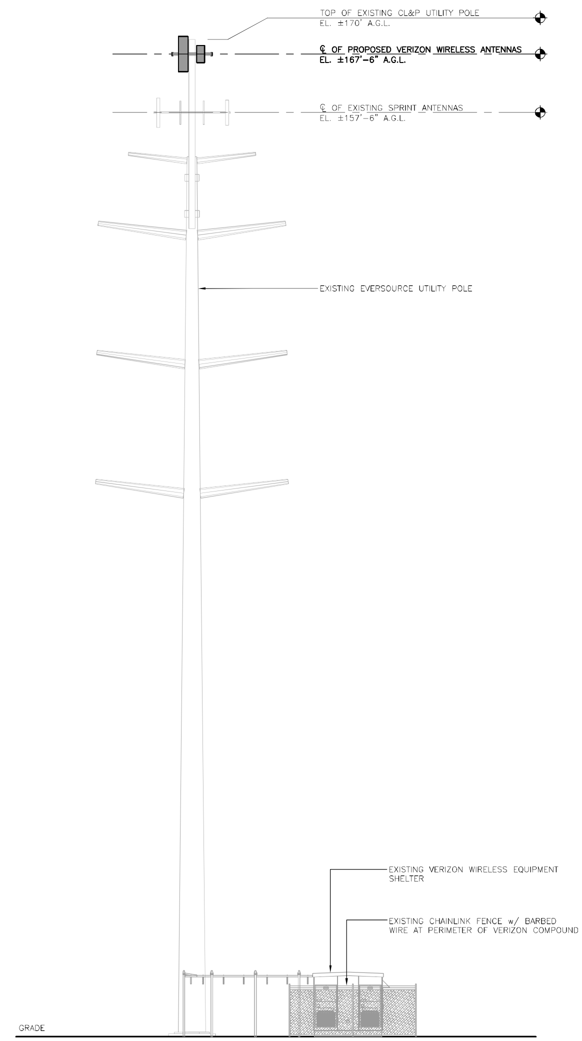
REFER TO PASSING STRUCTURAL ANALYSIS OF ANTENNA MAST AND POLE REPORT PREPARED BY CENTEK ENGINEERING, REVISION 1, DATED 01/24/2022. CENTEK PROJECT NO. 21007.74 FOR ADDITIONAL INFORMATION.



1 C-1 **COMPOUND PLAN**
SCALE: 1" = 5'

APPROXIMATE NORTH

GRAPHIC SCALE 5 0 2.5 5 10 20
1" = 5'-0"



2 C-1 **SOUTH ELEVATION - PROPOSED**
SCALE: 1" = 10'

GRAPHIC SCALE 10 0 5 10 20 40
(IN FEET)
1 inch = 10 ft.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
2	03/02/22	JLW	DMD	CONSTRUCTION DRAWINGS – REVISED PER APPROVED EVERSOURCE SA
1	12/28/21	JLW	DMD	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION
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PROFESSIONAL ENGINEER SEAL

verizon

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Cellco Partnership d/b/a Verizon Wireless

BETHEL NORTH CT

SKY EDGE LANE
BETHEL, CT 06801

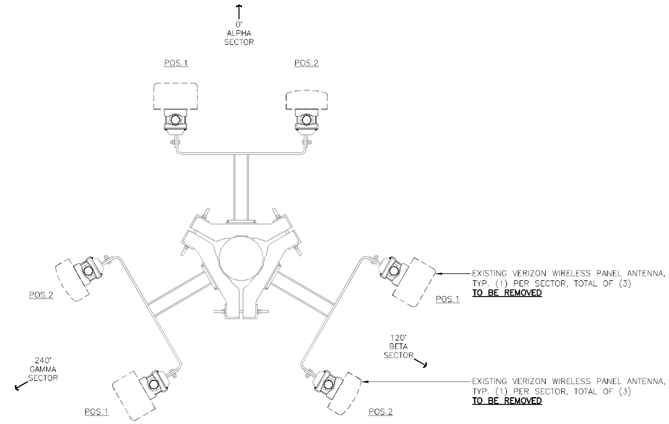
DATE: 12/02/21
SCALE: AS NOTED
JOB NO. 21007.74

COMPOUND PLAN AND ELEVATION

C-1

Sheet No. 3 of 6

EXISTING ANTENNA CONFIGURATIONS



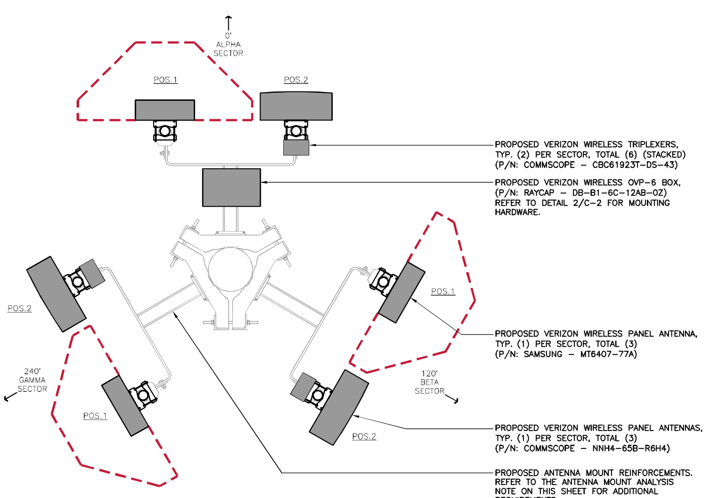
1 / C-2 **EXISTING SECTOR CONFIGURATION PLAN**
SCALE: 3/4" = 1'
APPROXIMATE NORTH

PROPOSED ANTENNA CONFIGURATIONS

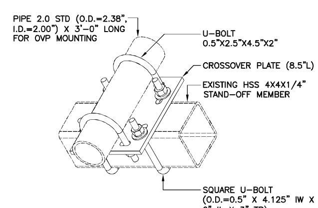
ANTENNA MOUNT ANALYSIS REFERENCE NOTE:

REFER TO ANTENNA MOUNT ANALYSIS REPORT WITH HARDWARE UPGRADES AND PMI REQUIREMENTS PREPARED BY MASER CONSULTING CONNECTICUT DATED NOVEMBER 8, 2021 FOR ADDITIONAL INFORMATION.

LEGEND	
- - - (red dashed line)	VERIZON WIRELESS VZS01 REQUIRED ANTENNA CLEARANCE LIMITS (PER DETAILS ON SHEET C-3)
ANTENNA CLEARANCE STATUS	ALPHA SECTOR: COMPLIANT BETA SECTOR: COMPLIANT GAMMA SECTOR: COMPLIANT



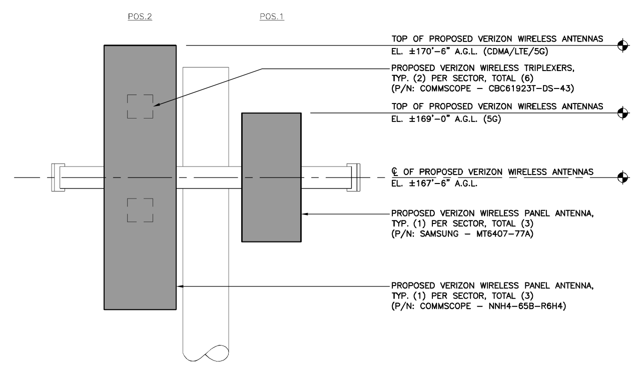
1A / C-2 **PROPOSED SECTOR CONFIGURATION PLAN**
SCALE: 3/4" = 1'
APPROXIMATE NORTH



CROSSOVER PLATE	
MAKE/MODEL	DESCRIPTION
MAKE: SITE PRO MODEL: SCX43-K	HOT-DIP GALVANIZED, PIPE/HSS IN 90° JUNCTION

NOTES:
1. PIPE/HSS NOT INCLUDED IN ASSEMBLY KIT.

2 / C-2 **CROSSOVER PLATE KIT DETAIL**
NOT TO SCALE



3 / C-2 **PROPOSED SECTOR CONFIGURATION ELEVATION**
SCALE: 3/4" = 1'

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	03/02/22	JLW	DMD	CONSTRUCTION DRAWINGS – REVISED PER APPROVED EVERSOURCE SA
0	12/28/21	JLW	DMD	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION
A	12/02/21	JLW	DMD	CONSTRUCTION DRAWINGS – ISSUED FOR CLIENT REVIEW

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BETHEL NORTH CT

SKY EDGE LANE
BETHEL, CT 06801

DATE: 12/02/21
SCALE: AS NOTED
JOB NO. 21007.74

ANTENNA SECTOR CONFIGURATION DETAILS

C-2

COMBINER			
EQUIPMENT	DESCRIPTION	DIMENSIONS	WEIGHT
MAKE: COMMSCOPE MODEL: TD-850B-LTE78-43	TWIN IN-BAND DIPLEXER 850MHz	15.4"H x 15.2"W x 6.4"D	52.9 LBS.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.

1 C-3 COMBINER DETAIL
NOT TO SCALE

TRIPLEXER			
EQUIPMENT	DESCRIPTION	DIMENSIONS	WEIGHT
MAKE: COMMSCOPE MODEL: CBC61923T-DS-43	TWIN TRIPLEXER 555-894/PCS/AWS+WCS	6.9"H x 7.8"W x 4.2"D	12.8 LBS. (W/MNTG HDWR)

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.

2 C-3 TRIPLEXER DETAIL
NOT TO SCALE

OVP BOX		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: RFS MODEL: DB-B1-6C-12AB-0Z	29.0"H x 15.7"W x 10.3"D	32 LBS.

NOTES:
1. CONTRACTOR TO CONFIRM OVP BOX MAKE/MODEL AND QUANTITY WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.

3 C-3 OVER-VOLTAGE PROTECTION BOX DETAIL
NOT TO SCALE

ANTENNA FRONT

SECTOR ANTENNA			
EQUIPMENT	DIMENSIONS		WEIGHT
MAKE: SAMSUNG MODEL: MT6407-77A	35.1"h x 16.1"W x 5.5"D (NOT TO EXCEED)		87 LBS. (NOT TO EXCEED)
CLEARANCES AND SERVICE AREA			
TOP:	31.5"	HORIZONTAL DISTANCE: (ANT. TO ANT.)	31.5"
FRONT, SIDES & BOTTOM:	15.7"	VERTICAL DISTANCE: (ANT. TO ANT.)	63.0"

NOTES:
1. THIS ANTENNA HAS ITS OWN BUILT-IN RRH.

4 C-3 ANTENNA DETAIL
NOT TO SCALE

ELEVATION - FRONT

BOTTOM

12-PORT SECTOR ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: COMMSCOPE MODEL: NNH4-65B-R6H4	72"L x 19.6"W x 7.7"D	84.4 LBS. (W/OUT MOUNT KIT)

5 C-3 ANTENNA DETAIL
NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	03/02/22	JLW	DMD	CONSTRUCTION DRAWINGS – REVISED PER APPROVED EVERSOURCE SA
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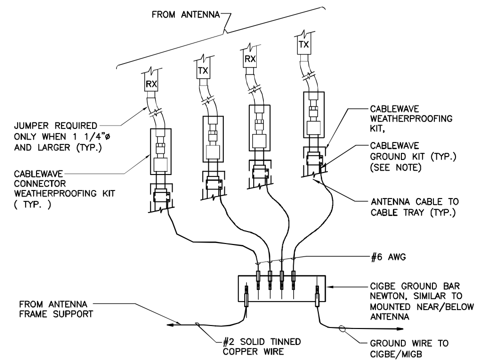
DATE: 12/02/21
SCALE: AS NOTED
JOB NO. 21007.74

RF DETAILS

C-3

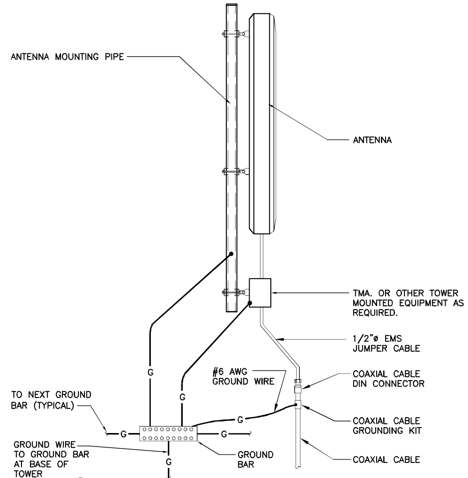
Sheet No. 5 of 6



NOTES:

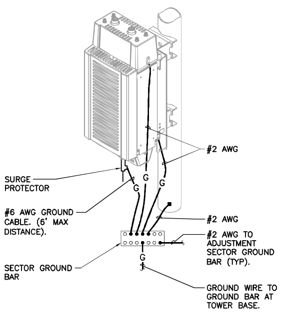
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

1 / E-1 **CONNECTION OF GROUND WIRES TO GROUND BAR**
NOT TO SCALE

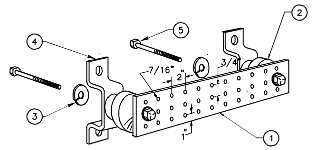


4 / E-1 **TYPICAL ANTENNA GROUNDING DETAIL**
NOT TO SCALE

EACH RRH CABINET SHALL BE GROUNDED IN THE FOLLOWING MANNER:
1. AT TOP OF THE CABINET
2. AT RIGHT SIDE OF THE CABINET.



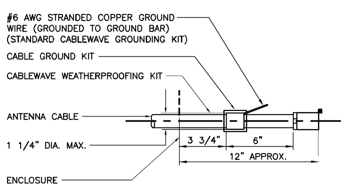
2 / E-1 **RRH POLE MOUNT GROUNDING**
NOT TO SCALE



NOTES

1. TINNED COPPER GROUND BAR, 1/4" x 4" x 20", NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4.
3. 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-6056.
5. 5/8-11 x 1" STAINLESS STEEL TRUSS SPANNER MACHINE SCREWS.

5 / E-1 **GROUND BAR DETAIL**
NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

3 / E-1 **ANTENNA CABLE GROUNDING DETAIL**
NOT TO SCALE

ELECTRICAL SPECIFICATIONS

SECTION 16010

1.01. SCOPE OF WORK

A. WORK SHALL INCLUDE ALL LABOR, EQUIPMENT AND SERVICES REQUIRED TO COMPLETE (MAKE READY FOR OPERATION) ALL THE ELECTRICAL WORK INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

1. CELLULAR GROUNDING SYSTEMS CONSISTING OF ANTENNA GROUNDING, GROUND BARS, ETC.

1.02. GENERAL REQUIREMENTS

A. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.

B. THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNERS REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES THAT MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS THAT MAY BE REQUIRED BY THE LOCAL AUTHORITY.

D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.

E. NO MATERIAL OTHER THAN THAT CONTAINED IN THE "LATEST LIST OF ELECTRICAL FITTINGS" APPROVED BY THE UNDERWRITERS' LABORATORIES, SHALL BE USED IN ANY PART OF THE WORK. ALL MATERIAL FOR WHICH LABEL SERVICE HAS BEEN ESTABLISHED SHALL BEAR THE U.L. LABEL.

F. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.

G. DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL, WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.

H. THE ELECTRICAL CONTRACTOR SHALL SUPPLY THREE (3) COMPLETE SETS OF APPROVED DRAWINGS, ENGINEERING DATA SHEETS, MAINTENANCE AND OPERATING INSTRUCTION MANUALS FOR ALL SYSTEMS AND THEIR RESPECTIVE EQUIPMENT. THESE MANUALS SHALL BE INSERTED IN VINYL COVERED 3-RING BINDERS AND TURNED OVER TO OWNER'S REPRESENTATIVE ONE (1) WEEK PRIOR TO FINAL PUNCH LIST.

I. ALL WORK SHALL BE INSTALLED IN A NEAT AND WORKMAN LIKE MANNER AND WILL BE SUBJECT TO THE APPROVAL OF THE OWNER'S REPRESENTATIVE.

J. ALL EQUIPMENT AND MATERIALS TO BE INSTALLED SHALL BE NEW, UNLESS OTHERWISE NOTED.

K. BEFORE FINAL PAYMENT, THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF PRINTS (AS-BUILTS), LEGIBLY MARKED IN RED PENCIL TO SHOW ALL CHANGES FROM THE ORIGINAL PLANS.

L. ENTIRE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH OWNER'S SPECIFICATIONS, AND REQUIREMENTS OF ALL LOCAL AUTHORITIES HAVING JURISDICTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH APPROPRIATE INDIVIDUALS TO OBTAIN ALL SUCH SPECIFICATIONS AND REQUIREMENTS. NOTHING CONTAINED IN, OR OMITTED FROM, THESE DOCUMENTS SHALL RELIEVE CONTRACTOR FROM THIS OBLIGATION.

SECTION 16450

1.01. GROUNDING

A. ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.

B. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.

C. EQUIPMENT GROUNDING CONDUCTOR:

1. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122.
2. THE MINIMUM SIZE OF EQUIPMENT GROUND CONDUCTOR SHALL BE #12 AWG COPPER.

D. CELLULAR GROUNDING SYSTEM:

PROVIDE THE CELLULAR GROUNDING SYSTEM AS SPECIFIED ON DRAWINGS, INCLUDING, BUT NOT LIMITED TO:

1. GROUND BARS
2. ANTENNA GROUND CONNECTIONS AND PLATES.

E. ALL EQUIPMENT SHALL BE BONDED TO GROUND AS REQUIRED BY N.E.C., MFG. SPECIFICATIONS, AND OWNER'S SPECIFICATIONS.

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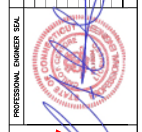

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ELECTRICAL DETAILS AND SPECIFICATIONS

E-1

Sheet No. 6 of 6

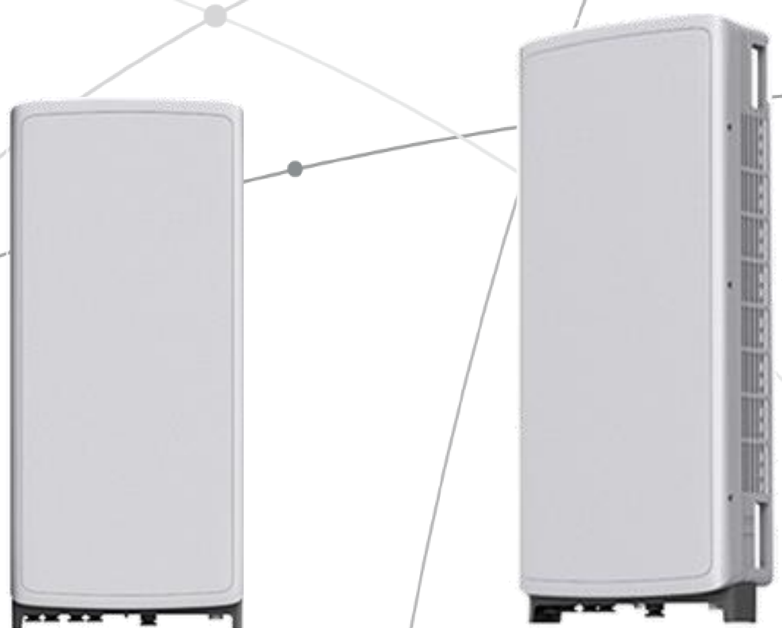
SAMSUNG

SAMSUNG C-Band 64T64R Massive MIMO Radio

for High Capacity and Wide Coverage

Samsung C-Band 64T64R Massive MIMO Radio enables mobile operators to increase coverage range, boost data speeds and ultimately offer enriched 5G experiences to users in the U.S..

Model Code : MT6407-77A



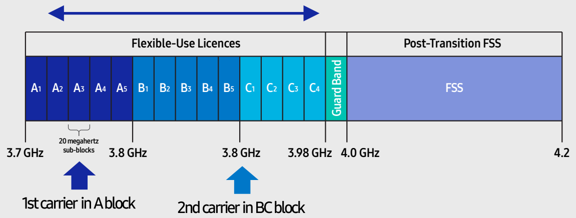
Points of Differentiation

Wide Bandwidth

With capability to support up to 2 CC carrier configuration, Samsung C-Band massive MIMO Radio supports 200 MHz bandwidth in the C-Band spectrum.

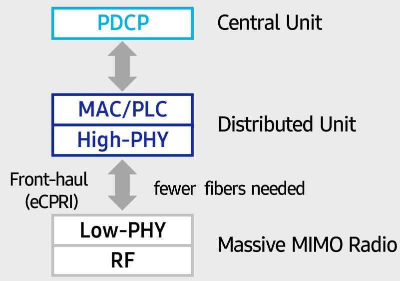
Samsung C-Band massive MIMO Radio covers the entire C-Band 280 MHz spectrum, so it can meet the operator's needs in current A block and future B/C blocks

C-Band spectrum supported by Massive MIMO Radio



Future Proof Product

Samsung C-Band 64T64R Massive MIMO radio supports not only CPRI but also eCPRI as front-haul interface.
It enables operators can cut down on OPEX/CAPEX by reducing front-haul bandwidth through low layer split and using ethernet based higher efficient line.



Enhanced Performance

C-Band massive MIMO Radio creates sharp beams and extends networks' coverage on the critical mid-band spectrum using a large number of antenna elements and high output power to boost data speeds.

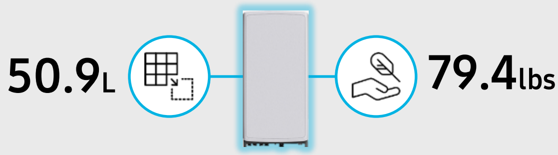
This helps operators reduce their CAPEX as they now need less products to cover the same area than before.

Furthermore, as C-Band massive MIMO Radio supports MU-MIMO(Multi-user MIMO) , it enables to increase user throughput by minimizing interference.

Well Matched Design

Samsung C-Band Massive MIMO radio utilizes 64 antennas, supports up to 280MHz bandwidth, and delivers a 200W output power. despite the above advanced performance, the Radio has a compact size of 50.9L and 79.4lbs. This makes it easy to install the Radio.

It is designed to look solid and compact, with a low profile appearance so that, when installed, harmonizes well with the surrounding environment..



Technical Specifications

Item	Specification
Tech	NR
Band	n77
Frequency Band	3700 - 3980 MHz
EIRP	78.5dBm (53.0 dBm+25.5 dBi)
IBW/OBW	280 MHz / 200 MHz
Installation	Pole/Wall
Size/ Weight	16.06 x 35.06 x 5.51 inch (50.86L)/ 79.4 lbs

SAMSUNG

About Samsung Electronics Co., Ltd.

Samsung inspires the world and shapes the future with transformative ideas and technologies. The company is redefining the worlds of TVs, smartphones, wearable devices, tablets, digital appliances, network systems, and memory, system LSI, foundry and LED solutions.

129 Samsung-ro, Yeongtong-gu, Suwon-si Gyeonggi-do, Korea

NNH4-65B-R6H4

12-port sector antenna, 4x 698–896 and 8x 1695–2360 MHz, 65° HPBW, 6x RET

- Features broadband Low Band (698-896 MHz) and High Band (1695-2360 MHz) arrays for 4T4R (4X MIMO) capability for Band 14, AWS, PCS and WCS applications
- Non-stacked high band array design provides higher gain and narrower vertical beamwidth than traditional antenna designs.
- Independent tilt for all arrays.
- Array configuration provides capability for 4T4R (4x MIMO) on Low band and Dual 4T4R (4x MIMO) on High band
- Optimized SPR performance across all operating bands
- Excellent wind loading characteristics
- Supports re-configurable antenna sharing capability enabling control of the internal RET system using up to two separate RET compatible OEM radios

General Specifications

Antenna Type	Sector
Band	Multiband
Color	Light gray
Grounding Type	RF connector inner conductor and body grounded to reflector and mounting bracket
Performance Note	Outdoor usage | Wind loading figures are validated by wind tunnel measurements described in white paper WP-112534-EN
Radome Material	Fiberglass, UV resistant
Radiator Material	Low loss circuit board
Reflector Material	Aluminum
RF Connector Interface	4.3-10 Female
RF Connector Location	Bottom
RF Connector Quantity, high band	8
RF Connector Quantity, low band	4
RF Connector Quantity, total	12

Remote Electrical Tilt (RET) Information

RET Hardware	CommRET v2
RET Interface	8-pin DIN Female | 8-pin DIN Male
RET Interface, quantity	2 female | 2 male

COMMSCOPE®

NNH4-65B-R6H4

Input Voltage	10–30 Vdc
Internal RET	High band (4) | Low band (2)
Power Consumption, active state, maximum	8 W
Power Consumption, idle state, maximum	1 W
Protocol	3GPP/AISG 2.0 (Multi-RET)

Dimensions

Width	498 mm | 19.606 in
Depth	197 mm | 7.756 in
Length	1828 mm | 71.969 in
Net Weight, without mounting kit	34 kg | 74.957 lb

Array Layout

Array	Freq (MHz)	Conns	RET (MRET)	AISG RET UID
R1	698-896	1-2	1	CPxxxxxxxxxxxxxxxmm.1
R2	698-896	3-4	2	CPxxxxxxxxxxxxxxxmm.2
Y1	1695-2360	5-6	3	CPxxxxxxxxxxxxxxxmm.3
Y2	1695-2360	7-8	4	CPxxxxxxxxxxxxxxxmm.4
Y3	1695-2360	9-10	5	CPxxxxxxxxxxxxxxxmm.5
Y4	1695-2360	11-12	6	CPxxxxxxxxxxxxxxxmm.6

(Sizes of colored boxes are not true depictions of array sizes)

Port Configuration

NNH4-65B-R6H4

Electrical Specifications

Impedance	50 ohm
Operating Frequency Band	1695 – 2360 MHz | 698 – 896 MHz
Polarization	±45°
Total Input Power, maximum	900 W @ 50 °C

Electrical Specifications

Frequency Band, MHz	**698–806**	**806–896**	**1695–1880**	**1850–1990**	**1920–2180**	**2300–2360**
Gain, dBi	14.2	14.8	16.7	17.3	17.9	18.4
Beamwidth, Horizontal, degrees	68	64	70	67	61	59
Beamwidth, Vertical, degrees	11.5	10.2	6.9	6.5	6	5.4
Beam Tilt, degrees	2–14	2–14	2–12	2–12	2–12	2–12
USLS (First Lobe), dB	16	18	16	19	19	19
Front-to-Back Ratio at 180°, dB	30	30	33	34	34	34
Isolation, Cross Polarization, dB	25	25	25	25	25	25
Isolation, Inter-band, dB	25	25	25	25	25	25
VSWR | Return loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0

COMMSCOPE®

PIM, 3rd Order, 2 x 20 W, dBc	-150	-150	-150	-150	-150	-150
Input Power per Port at 50°C, maximum, watts	300	300	250	250	250	200

Electrical Specifications, BASTA

Frequency Band, MHz	**698–806**	**806–896**	**1695–1880**	**1850–1990**	**1920–2180**	**2300–2360**
Gain by all Beam Tilts, average, dBi	13.8	14.5	16.1	16.9	17.5	18
Gain by all Beam Tilts Tolerance, dB	±0.6	±0.5	±0.7	±0.6	±0.6	±0.5
Gain by Beam Tilt, average, dBi	2 ° | 14.0 8 ° | 13.9 14 ° | 13.5	2 ° | 14.6 8 ° | 14.6 14 ° | 14.1	2 ° | 15.9 7 ° | 16.2 12 ° | 16.0	2 ° | 16.6 7 ° | 17.0 12 ° | 16.9	2 ° | 17.1 7 ° | 17.6 12 ° | 17.4	2 ° | 17.7 7 ° | 18.0 12 ° | 17.9
Beamwidth, Horizontal Tolerance, degrees	±5.7	±3.2	±6.4	±7.5	±5.9	±3.6
Beamwidth, Vertical Tolerance, degrees	±0.9	±0.7	±0.5	±0.3	±0.4	±0.2
USLS, beampeak to 20° above beampeak, dB	16	15	12	15	15	16
Front-to-Back Total Power at 180° ± 30°, dB	20	21	27	26	27	28
CPR at Boresight, dB	24	23	19	19	20	17
CPR at Sector, dB	12	10	7	5	6	8

Mechanical Specifications

Effective Projective Area (EPA), frontal	0.65 m² | 6.997 ft²
Effective Projective Area (EPA), lateral	0.22 m² | 2.368 ft²
Wind Loading at Velocity, frontal	156.0 lbf @ 150 km/h | 694.0 N @ 150 km/h
Wind Loading at Velocity, lateral	235.0 N @ 150 km/h | 52.8 lbf @ 150 km/h
Wind Loading at Velocity, maximum	202.3 lbf @ 150 km/h | 900.0 N @ 150 km/h
Wind Loading at Velocity, rear	128.4 lbf @ 150 km/h | 571.0 N @ 150 km/h
Wind Speed, maximum	241.402 km/h | 150 mph

Packaging and Weights

Width, packed	608 mm | 23.937 in
Depth, packed	352 mm | 13.858 in
Length, packed	2030 mm | 79.921 in
Weight, gross	47.8 kg | 105.381 lb

NNH4-65B-R6H4

Regulatory Compliance/Certifications

Agency	Classification
CHINA-ROHS	Above maximum concentration value
ISO 9001:2015	Designed, manufactured and/or distributed under this quality management system
ROHS	Compliant/Exempted

Included Products

BSAMNT-3 – Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

ATTACHMENT 3

	General	Power	Density					
Site Name: Bethel N								
Tower Height: Verizon @ 167.5ft								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**FREQ.**	**CALC. POWER DENS**	**MAX. PERMISS.EXP.**	**FRACTION MPE**	**Total**
*Sprint	2	1081	157.5	800	0.033874621	0.533333333	0.64%	
*Sprint	4	1340	157.5	1900	0.083981485	1	0.84%	
*Sprint	8	640	157.5	2500	0.08022112	1	0.80%	
VZW 700	**4**	**688**	**167.5**	**751**	**0.0035**	**0.5007**	**0.70%**	
VZW CDMA	**2**	**372**	**167.5**	**878.49**	**0.0010**	**0.5857**	**0.16%**	
VZW Cellular	**4**	**831**	**167.5**	**874**	**0.0043**	**0.5827**	**0.73%**	
VZW PCS	**4**	**1071**	**167.5**	**1980**	**0.0055**	**1.0000**	**0.55%**	
VZW AWS	**4**	**1418**	**167.5**	**2120**	**0.0073**	**1.0000**	**0.73%**	
VZW CBAND	**2**	**19770**	**167.5**	**3730.08**	**0.0507**	**1.0000**	**5.07%**	
								10.22%
* Source: Siting Council								

ATTACHMENT 4

CENTEK engineering

Centered on Solutions℠

Structural Analysis of Antenna Mast and Pole

Verizon Site Ref: Bethel North

Eversource Structure No. 10255
150' Electric Transmission Pole

Sky Edge Lane
Bethel, CT

CENTEK Project No. 21007.74

~~Date: December 2, 2021~~
Rev 1: January 24, 2022

STATE OF CONNECTICUT
TIMOTHY J. LYNN
No. 29336
LICENSED
PROFESSIONAL ENGINEER

Prepared for:
Verizon Wireless
20 Alexander Drive
Wallingford, CT 06492

Table of Contents

Introduction

The purpose of this report is to analyze the existing mast and 150' utility pole located on Sky Edge Lane in Bethel, CT for the proposed antenna and equipment upgrade by Verizon.

The existing/proposed loads consist of the following:

- VERIZON (Existing to Remain):
  Coax Cables: Twelve (12) 1-5/8" ∅ coax cables running on the outside of the tower as indicated in section 4 of this report.
- **VERIZON (Existing to Remove):**
  Antennas: Three (3) Andrew HBX-6516DS panel antennas, three (3) Andrew LNX-6513DS panel antennas and three (3) Bias Tees mounted on three (3) dual standoff mounts with RAD center elevation of 167-ft 6-in above grade.
- **VERIZON (Proposed):**
  Antennas: Three (3) Commscope NNH4-65B-R6H4 panel antennas, three (3) Samsung MT6407-77A panel antennas, six (6) Commscope CBC61923T-DS-43 triplexers and one (1) RFS DB-B1-6C-12AB OVP Box mounted on three (3) dual standoff mounts with RAD center elevation of 167-ft 6-in above grade.
  Coax Cables: One (1) 6x12 hybrid cable running on the outside of the tower as indicated in section 4 of this report.
- SPRINT (Existing to Remain):
  Antennas: Three (3) RFS APXVSPP18-C panel antennas mounted on an existing 13-ft low profile platform with RAD center elevation of 157-ft 6-in above grade.
  Coax Cables: Eighteen (18) 1-1/4" ∅ coax cables running on the exterior of the pole and antenna mast.

Primary assumptions used in the analysis

- ASCE 48-11, "Design of Steel Transmission Pole Structures", defines steel stresses for evaluation of the utility pole.
- All utility pole members are adequately protected to prevent corrosion of steel members.
- All proposed antenna mounts are modeled as listed above.
- Pipe mast will be properly installed and maintained.
- No residual stresses exist due to incorrect pole erection.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds conform to the requirements of AWS D1.1.
- Pipe mast and utility pole will be in plumb condition.
- Utility pole was properly installed and maintained and all members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
- Any deviation from the analyzed loading will require a new analysis for verification of structural adequacy.

Analysis

Structural analysis of the existing antenna mast was independently completed using the current version of RISA-3D computer program licensed to CENTEK Engineering, Inc.

The existing mast consisting of a 12-in x 33-ft long SCH. 80 pipe (O.D. = 12.75") connected at two points to the existing tower was analyzed for its ability to resist loads prescribed by the TIA-222G standard. Section 5 of this report details these gravity and lateral wind loads. NESC prescribed loads were also applied to the mast in order to obtain reactions needed for analyzing the utility pole structure. These loads are developed in Section 7 of this report. Load cases and combinations used in RISA-3D for TIA-222-G loading and for NESC/NU loading are listed in report Sections 6 and 8, respectively.

An envelope solution was first made to determine maximum and minimum forces, stresses, and deflections to confirm the selected section as adequate. Additional analyses were then made to determine the NESC forces to be applied to the pole structure.

The RISA-3D program contains a library of all AISC shapes and corresponding section properties are computed and applied directly within the program. The program's Steel Code Check option was also utilized. The forces calculated in RISA-3D using NESC guidelines were then applied to the pole using PLS-Pole. Maximum usage for the pole was calculated considering the additional forces from the mast and associated appurtenances.

Design Basis

Our analysis was performed in accordance with TIA-222-G, ASCE 48-11, "Design of Steel Transmission Pole Structures", NESC C2-2017 and Eversource Design Criteria.

- UTILITY POLE ANALYSIS

  The purpose of this analysis is to determine the adequacy of the existing utility pole to support the proposed antenna loads. The loading and design requirements were analyzed in accordance with the Eversource Design Criteria Table, NESC C2-2017 ~ Construction Grade B, and ASCE 48-11.

  Load cases considered:

  Load Case 1: NESC Heavy
  Wind Pressure.……………………………….. 4.0 psf
  Radial Ice Thickness………………………… 0.5"
  Vertical Overload Capacity Factor…………. 1.50
  Wind Overload Capacity Factor……………. 2.50
  Wire Tension Overload Capacity Factor…… 1.65

  Load Case 2: NESC Extreme
  Wind Speed.………………………………… 100 mph (1)
  Radial Ice Thickness……………………….. 0"

  Note 1: NESC C2-2017, Section25, Rule 250C: Extreme Wind Loading, 1.25 x Gust Response Factor (wind speed: 3-second gust)

- MAST ASSEMBLY ANALYSIS

Mast, appurtenances and connections to the utility tower were analyzed and designed in accordance with the Eversource Design Criteria Table, TIA-222-G and AISC standards.

Load cases considered:

Load Case 1:
Wind Speed………………………………... 93 mph (2016 CSBC Appendix-N)
Radial Ice Thickness………………………. 0”

Load Case 2:
Wind Pressure.……………………………. 50 mph wind pressure
Radial Ice Thickness……………………….. 0.75”

Results

- MAST ASSEMBLY

The existing pipe mast was determined to be structurally adequate.

Component	Stress Ratio (percentage of capacity)	Result
12” Sch. 80 Pipe	93.3%	**PASS**
Connection to Tower	51.0%	**PASS**

Horizontal Displacement (% of Cantilever Height)	Allowable	Result
1.16 %	1.5 %	**PASS**

- UTILITY POLE

This analysis finds that the subject utility pole is adequate to support the proposed antenna mast and related appurtenances. The pole stresses meet the requirements set forth by the ASCE 48-11, “Design of Steel Transmission Pole Structures” for the applied NESC Heavy and Extreme load cases. The detailed analysis results are provided in Section 9 of this report. The analysis results are summarized as follows:

A maximum usage of **99.63%** occurs in the utility pole base plate under the **NESC Extreme** loading condition.

POLE SECTION:

The utility pole was found to be within allowable limits.

Tower Section	Elevation	Stress Ratio (% of capacity)	Result
Tube Number 3	0.00’ -51.17’ (AGL)	99.63%	**PASS**

BASE PLATE:

The base plate was found to be within allowable limits from the PLS output based on 24 bend lines.

Tower Component	Design Limit	Stress Ratio (percentage of capacity)	Result
Base Plate	Bending	98.06%	**PASS**

- FOUNDATION AND ANCHORS

The existing foundation consists of a 8-ft ∅ x 20.5-ft long reinforced concrete caisson with a 24-ft square by 4-ft thick reinforced concrete mat installed at the periphery of the caisson. The base of the tower is connected to the foundation by means of (24) 2.25"∅, ASTM A615-75 anchor bolts embedded approximately 8-ft into the concrete foundation structure. Foundation information was obtained from NUSCO drawing # 01143-60001.

BASE REACTIONS:

From PLS-Pole analysis of utility pole based on NESC/EVERSOURCE prescribed loads.

Load Case	Shear	Axial	Moment
NESC Heavy Wind	36.68 kips	132.50 kips	4546.62 ft-kips
NESC Extreme Wind	54.85 kips	64.32 kips	6283.53 ft-kips

Note 1 – 10% increase will be applied to tower base reactions per OTRM 051

ANCHOR BOLTS:

The anchor bolts were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (% of capacity)	Result
Anchor Bolts	Tension	59.96%	**PASS**

FOUNDATION:

The foundation was found to be structurally adequate.

Foundation	Design Limit	Allowable Limit	Proposed Loading (2)	Result
Reinforced Conc. Caisson with Mat	Overturning	1.0 FS (1)	1.49 FS (1)	**PASS**

Note 1: FS denotes Factor of Safety
Note 2: 10% increase to PLS base reactions used in foundation analysis per OTRM 051.

Conclusion

This analysis shows that the subject tower **is adequate** to support the proposed modified antenna configuration.

The analysis is based, in part on the information provided to this office by Eversource and Verizon. If the existing conditions are different than the information in this report, CENTEK engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:

Timothy J. Lynn, PE
Structural Engineer

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING STRUCTURES

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.

- Information from the field and/or drawings in the possession of CENTEK engineering, Inc. or generated by field inspections or measurements of the structure.

- It is the responsibility of the client to ensure that the information provided to CENTEK engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the "as new" condition.

- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222.

- All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. CENTEK engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

G E N E R A L   D E S C R I P T I O N   O F   S T R U C T U R A L   A N A L Y S I S   P R O G R A M ~ R I S A - 3 D

RISA-3D Structural Analysis Program is an integrated structural analysis and design software package for buildings, bridges, tower structures, etc.

Modeling Features:

- Comprehensive CAD-like graphic drawing/editing capabilities that let you draw, modify and load elements as well as snap, move, rotate, copy, mirror, scale, split, merge, mesh, delete, apply, etc.
- Versatile drawing grids (orthogonal, radial, skewed)
- Universal snaps and object snaps allow drawing without grids
- Versatile general truss generator
- Powerful graphic select/unselect tools including box, line, polygon, invert, criteria, spreadsheet selection, with locking
- Saved selections to quickly recall desired selections
- Modification tools that modify single items or entire selections
- Real spreadsheets with cut, paste, fill, math, sort, find, etc.
- Dynamic synchronization between spreadsheets and views so you can edit or view any data in the plotted views or in the spreadsheets
- Simultaneous view of multiple spreadsheets
- Constant in-stream error checking and data validation
- Unlimited undo/redo capability
- Generation templates for grids, disks, cylinders, cones, arcs, trusses, tanks, hydrostatic loads, etc.
- Support for all units systems & conversions at any time
- Automatic interaction with RISASection libraries
- Import DXF, RISA-2D, STAAD and ProSteel 3D files
- Export DXF, SDNF and ProSteel 3D files

Analysis Features:

- Static analysis and P-Delta effects
- Multiple simultaneous dynamic and response spectra analysis using Gupta, CQC or SRSS mode combinations
- Automatic inclusion of mass offset (5% or user defined) for dynamic analysis
- Physical member modeling that does not require members to be broken up at intermediate joints
- State of the art 3 or 4 node plate/shell elements
- High-end automatic mesh generation — draw a polygon with any number of sides to create a mesh of well-formed quadrilateral (NOT triangular) elements.
- Accurate analysis of tapered wide flanges - web, top and bottom flanges may all taper independently
- Automatic rigid diaphragm modeling
- Area loads with one-way or two-way distributions
- Multiple simultaneous moving loads with standard AASHTO loads and custom moving loads for bridges, cranes, etc.
- Torsional warping calculations for stiffness, stress and design
- Automatic Top of Member offset modeling
- Member end releases & rigid end offsets
- Joint master-slave assignments
- Joints detachable from diaphragms
- Enforced joint displacements
- 1-Way members, for tension only bracing, slipping, etc.

- 1-Way springs, for modeling soils and other effects
- Euler members that take compression up to their buckling load, then turn off.
- Stress calculations on any arbitrary shape
- Inactive members, plates, and diaphragms allows you to quickly remove parts of structures from consideration
- Story drift calculations provide relative drift and ratio to height
- Automatic self-weight calculations for members and plates
- Automatic subgrade soil spring generator

Graphics Features:

- Unlimited simultaneous model view windows
- Extraordinary "true to scale" rendering, even when drawing
- High-speed redraw algorithm for instant refreshing
- Dynamic scrolling stops right where you want
- Plot & print virtually everything with color coding & labeling
- Rotate, zoom, pan, scroll and snap views
- Saved views to quickly restore frequent or desired views
- Full render or wire-frame animations of deflected model and dynamic mode shapes with frame and speed control
- Animation of moving loads with speed control
- High quality customizable graphics printing

Design Features:

- Designs concrete, hot rolled steel, cold formed steel and wood
- ACI 1999/2002, BS 8110-97, CSA A23.3-94, IS456:2000,EC 2-1992 with consistent bar sizes through adjacent spans
- Exact integration of concrete stress distributions using parabolic or rectangular stress blocks
- Concrete beam detailing (Rectangular, T and L)
- Concrete column interaction diagrams
- Steel Design Codes: AISC ASD 9th, LRFD 2nd & 3rd, HSS Specification, CAN/CSA-S16.1-1994 & 2004, BS 5950-1-2000, IS 800-1984, Euro 3-1993 including local shape databases
- AISI 1999 cold formed steel design
- NDS 1991/1997/2001 wood design, including Structural Composite Lumber, multi-ply, full sawn
- Automatic spectra generation for UBC 1997, IBC 2000/2003
- Generation of load combinations: ASCE, UBC, IBC, BOCA, SBC, ACI
- Unbraced lengths for physical members that recognize connecting elements and full lengths of members
- Automatic approximation of K factors
- Tapered wide flange design with either ASD or LRFD codes
- Optimization of member sizes for all materials and all design codes, controlled by standard or user-defined lists of available sizes and criteria such as maximum depths
- Automatic calculation of custom shape properties
- Steel Shapes: AISC, HSS, CAN, ARBED, British, Euro, Indian, Chilean
- Light Gage Shapes: AISI, SSMA, Dale / Incor, Dietrich, Marino\WARE
- Wood Shapes: Complete NDS species/grade database
- Full seamless integration with RISAFoot (Ver 2 or better) for advanced footing design and detailing
- Plate force summation tool

Results Features:

- Graphic presentation of color-coded results and plotted designs
- Color contours of plate stresses and forces with quadratic smoothing, the contours may also be animated
- Spreadsheet results with sorting and filtering of: reactions, member & joint deflections, beam & plate forces/stresses, optimized sizes, code designs, concrete reinforcing, material takeoffs, frequencies and mode shapes
- Standard and user-defined reports
- Graphic member detail reports with force/stress/deflection diagrams and detailed design calculations and expanded diagrams that display magnitudes at any dialed location
- Saved solutions quickly restore analysis and design results.

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ PLS-POLE

PLS-POLE provides all of the capabilities a structural engineer requires to design transmission, substation or communications structures. It does so using a simple easy to use graphical interface that rests upon our time tested finite element engine. Regardless of whether you want to model a simple wood pole or a guyed steel X-Frame; PLS-POLE can handle the job simply, reliably and efficiently.

Modeling Features:

- Structures are made of standard reusable components that are available in libraries. You can easily create your own libraries or get them from a manufacturer
- Structure models are built interactively using interactive menus and graphical commands
- Automatic generation of underlying finite element model of structure
- Steel poles can have circular, 4, 6, 8, 12, 16, or 18-sided, regular, elliptical or user input cross sections (flat-to-flat or tip-to-tip orientations)
- Steel and concrete poles can be selected from standard sizes available from manufacturers
- Automatic pole class selection
- Cross brace position optimizer
- Capability to specify pole ground line rotations
- Capability to model foundation displacements
- Can optionally model foundation stiffness
- Guys are easily handled (modeled as exact cable elements in nonlinear analysis)
- Powerful graphics module (members color-coded by stress usage)
- Graphical selection of joints and components allows graphical editing and checking
- Poles can be shown as lines, wire frames or can be rendered as 3-d polygon surfaces

Analysis Features:

- Automatic distribution of loads in 2-part suspension insulators (v-strings, horizontal vees, etc.)
- Design checks for ASCE, ANSI/TIA/EIA 222 (Revisions F and G) or other requirements
- Automatic calculation of dead and wind loads
- Automated loading on structure (wind, ice and drag coefficients) according to:
    - ASCE 74-1991
    - NESC 2002
    - NESC 2007
    - IEC 60826:2003
    - EN50341-1:2001 (CENELEC)
    - EN50341-3-9:2001 (UK NNA)
    - EN50341-3-17:2001 (Portugal NNA)
    - ESAA C(b)1-2003 (Australia)
    - TPNZ (New Zealand)
    - REE (Spain)
    - EIA/TIA 222-F
    - ANSI/TIA 222-G
    - CSA S37-01
- Automated microwave antenna loading as per EIA/TIA 222-F and ANSI/TIA 222-G
- Detects buckling by nonlinear analysis

Results Features:

- Detects buckling by nonlinear analysis
- Easy to interpret text, spreadsheet and graphics design summaries
- Automatic determination of allowable wind and weight spans
- Automatic determination of interaction diagrams between allowable wind and weight spans
- Automatic tracking of part numbers and costs

Criteria for Design of PCS Facilities On or Extending Above Metal Electric Transmission Towers & Analysis of Transmission Towers Supporting PCS Masts [(1)]

Introduction

This criteria is the result from an evaluation of the methods and loadings specified by the separate standards, which are used in designing telecommunications towers and electric transmission towers. That evaluation is detailed elsewhere, but in summary; the methods and loadings are significantly different. This criteria specifies the manner in which the appropriate standard is used to design PCS facilities including masts and brackets (hereafter referred to as “masts”), and to evaluate the electric transmission towers to support PCS masts. The intent is to achieve an equivalent level of safety and security under the extreme design conditions expected in Connecticut and Massachusetts.

ANSI Standard TIA-222 covering the design of telecommunications structures specifies a working strength/allowable stress design approach. This approach applies the loads from extreme weather loading conditions, and designs the structure so that it does not exceed some defined percentage of failure strength (allowable stress).

ANSI Standard C2-2017 (National Electrical Safety Code) covering the design of electric transmission metal structures is based upon an ultimate strength/yield stress design approach. This approach applies a multiplier (overload capacity factor) to the loads possible from extreme weather loading conditions, and designs the structure so that it does not exceed its ultimate strength (yield stress).

Each standard defines the details of how loads are to be calculated differently. Most of the NU effort in “unifying” both codes was to establish what level of strength each approach would provide, and then increasing the appropriate elements of each to achieve a similar level of security under extreme weather loadings.

Two extreme weather conditions are considered. The first is an extreme wind condition (hurricane) based upon a 50-year recurrence (2% annual probability). The second is a winter condition combining wind and ice loadings.

The following sections describe the design criteria for any PCS mast extending above the top of an electric transmission tower, and the analysis criteria for evaluating the loads on the transmission tower from such a mast from the lower portions of such a mast, and loads on the pre-existing electric lower portions of such a mast, and loads on the pre-existing electric transmission tower and the conductors it supports.

Note 1: Prepared from documentation provide from Northeast Utilities.

PCS Mast

The PCS facility (mast, external cable/trays, including the initial and any planned future support platforms, antennas, etc. extending the full height above the top level of the electric transmission structure) shall be designed in accordance with the provisions of TIA 222-G:

ELECTRIC TRANSMISSION TOWER

The electric transmission tower shall be analyzed using yield stress theory in accordance with the attached table titled “NU Design Criteria”. This specifies uniform loadings (different from the TIA loadings) on the each of the following components of the installed facility:

- PCS mast for its total height above ground level, including the initial and planned future support platforms, antennas, etc. above the top of an electric transmission structure.
- Conductors are related devices and hardware.
- Electric transmission structure. The loads from the PCS facility and from the electric conductors shall be applied to the structure at conductor and PCS mast attachment points, where those load transfer to the tower.

The uniform loadings and factors specified for the above components in the table are based upon the National Electrical Safety Code 2007 Edition Extreme Wind (Rule 250C) and Combined Ice and Wind (Rule 250B-Heavy) Loadings. These provide equivalent loadings compared to TIA and its loads and factors with the exceptions noted above. (Note that the NESC does not require the projected wind surfaces of structures and equipment to be increased by the ice covering.)

In the event that the electric transmission tower is not sufficient to support the additional loadings of the PCS mast, reinforcement will be necessary to upgrade the strength of the overstressed members.

Attachment A
Eversource Design Criteria

Condition	Code	Attachment A NU Design Criteria	Basic Wind Speed V (MPH)	Pressure Q (PSF)	Height factor Kz	Gust Factor Gh	Load or Stress Factor	Force Coef. - Shape Factor
Ice Condition	TIA/EIA	Antenna Mount	TIA	TIA (0.75Wi)	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
	NESC Heavy	Tower/Pole Analysis with antennas extending above top of Tower/Pole (Yield Stress)	____	4	1	1	2.50	1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with antennas below top of Tower/Pole (on two faces)	____	4	1	1	2.50	1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor Loads Provided by NU					
High Wind Condition	TIA/EIA	Antenna Mount	85	TIA	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
	NESC Extreme Wind	Tower/Pole Analysis with antennas extending above top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250C: Extreme Wind Loading Apply a 1.25 X Gust Response Factor to all telecommunication equipment projected above top of tower/pole and apply a 1.0 x Gust Response Factor to the tower/pole structure					1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with antennas below top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250C: Extreme Wind Loading Height above ground is based on overall height to top of tower/pole					1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor Loads Provided by NU					
NESC Extreme Ice with Wind Condition*		Tower/Pole Analysis with antennas extending above top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250D: Extreme Ice with Wind Loading 4 PSF Wind Load 1.25 X Gust Response Factor Apply a 1.25 X Gust Response Factor to all telecommunication equipment projected above top of tower/pole and apply a 1.0 x Gust Response Factor to the tower/pole structure					1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with antennas below top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250D: Extreme Ice with Wind Loading 4 PSF Wind Load Height above ground is based on overall height to top of tower/pole					1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor Loads Provided by NU					

* Only for structures installed after 2007

mount as specified below, and shall include the wireless communication mast and antenna loads per NESC criteria)

The strength reduction factor obtained from the field investigation shall be applied to the members or connections that are showing signs of deterioration from their original condition

With the written approval of Eversource Transmission Line Engineering on a case by case the existing structures may be analyzed initially using the current NESC code, then it is permitted to use the original design code with the original conductor load should the existing tower fail the current NESC code.

The structure shall be analyzed using yield stress theory in accordance with Attachment A, “Eversource Design Criteria.” This specifies uniform loadings (different from the TIA loadings) on each of the following components of the installed facility:

a) Wireless communication mast for its total height above ground level, including the initial and any planned future equipment (Support Platforms, Antennas, TMA’s etc.) above the top of an electric transmission structure.

b) Conductors and related devices and hardware (wire loads will be provided by Eversource).

c) Electric Transmission Structure

   i) The loads from the wireless communication equipment components based on NESC and Eversource Criteria in Attachment A, and from the electric conductors shall be applied to the structure at conductor and wireless communication mast attachment points, where those loads transfer to the tower.

   ii) Shape Factor Multiplier:

NESC Structure Shape	Cd
Polyround (for polygonal steel poles)	1.3
Flat	1.6
Open Lattice	3.2
Pole with Coaxial Cable	1.6

   iii) When Coaxial Cables are mounted alongside the pole structure, the shape multiplier shall be:

Mount Type	Cable Cd	Pole Cd
Coaxial Cables on outside periphery (One layer)	1.45	1.45
Coaxial Cables mounted on stand offs	1.6	1.6

d) The uniform loadings and factors specified for the above components in Attachment A, “Eversource Design Criteria” are based upon the National Electric Safety Code 2007 Edition Extreme Wind (Rule 250C) and Combined Ice and Wind (Rule 250B-Heavy) Loadings. These provide equivalent loadings compared to the TIA and its loads and factors with the exceptions noted above.

   Note: The NESC does not require ice load be included in the supporting structure. (Ice on conductors and shield wire only, and Eversource will provide these loads).

e) Mast reaction loads shall be evaluated for local effects on the transmission structure members at the attachment points.

Project: 321/1618 Line, Structure 10255
Date: 7/12/18
Engineer: JS
Purpose: Recalculate wire loads for Sprint site. OPGW installed over 321 circuit.

Shield Wires:
321:0.457" AFL DNO-4963 OPGW, tensioned to 4200# @ NESC 250B final
1618: 7#8 Alumoweld, tensioned to 4200# @ NESC 250B final

Conductors:
Bundled 1272 ACSR, tensioned to 10000# @ NESC 250B final
Tangent line angle. Suspension cond. insulator configuration

Wind Span: 936'. 250B Weight Span: 935'.

NESC 250B

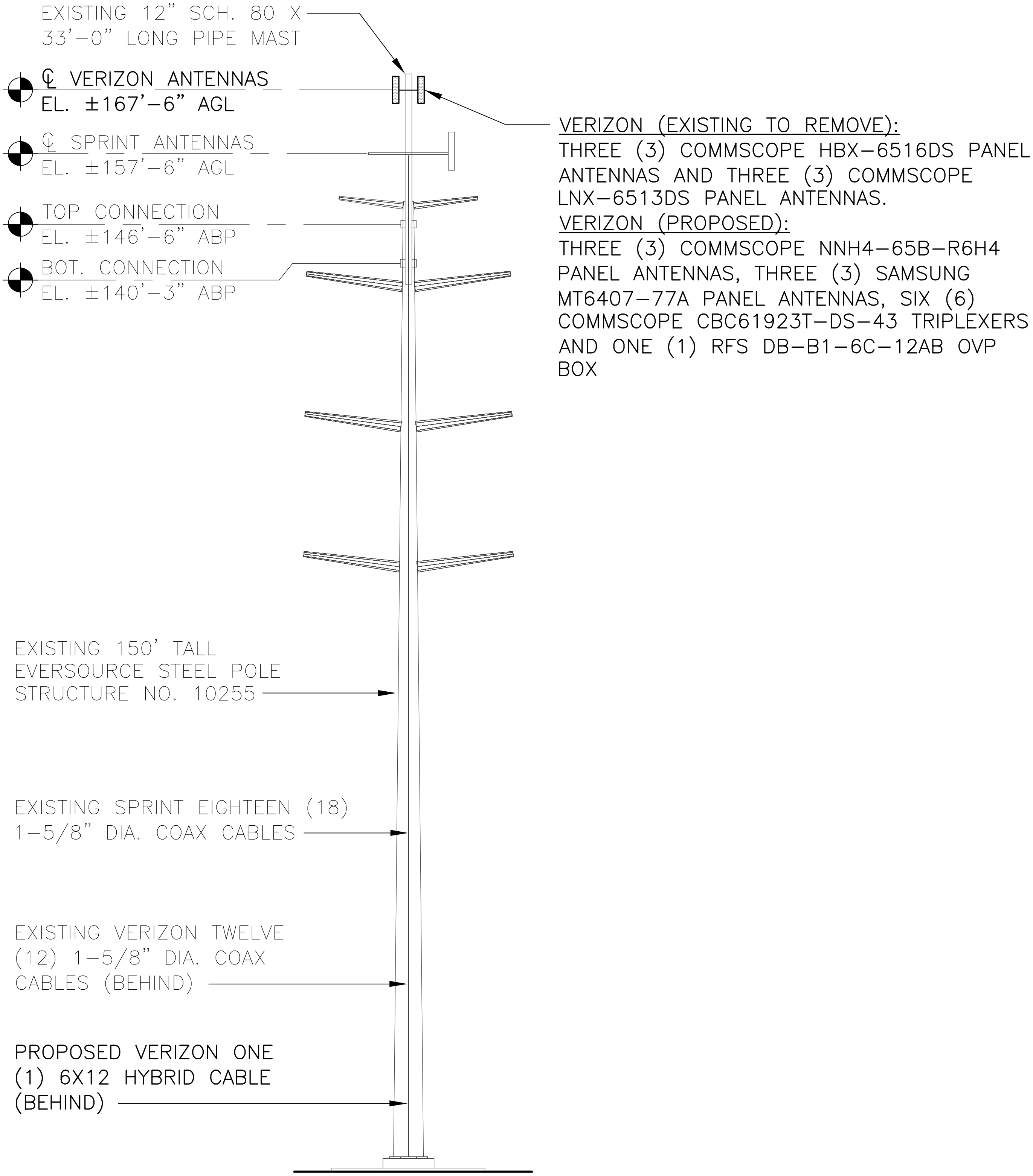
	Vertical	Transverse	Longitudinal
OPGW	1235	1202	0
Alumoweld	1194	1133	0
Conductor	7920	3813	0

NESC 250C

	Vertical	Transverse	Longitudinal
OPGW	236	881	0
Alumoweld	254	742	0
Conductor	3062	4981	0

60 deg F

	Vertical	Transverse	Longitudinal
OPGW	239	0	0
Alumoweld	256	0	0
Conductor	3072	0	0



1 / EL–1

TOWER & MAST ELEVATION

SCALE: NOT TO SCALE

REVISIONS		
00	12/2/21	ISSUED FOR REVIEW

CENTEK engineering
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(203) 488-8587 Fax
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BETHEL NORTH
EVERSOURCE 10255

SKY EDGE LANE
BETHEL, CT 06801

PROJECT NO:	21007.74
DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED
DATE:	12/2/21

TOWER AND MAST ELEVATION

EL-1

DWG. 1 OF 1

Development of Design Heights, Exposure Coefficients, and Velocity Pressures Per TIA-222-G

Wind Speeds

Basic Wind Speed	$V := 93$	mph	(User Input - 2016 CSBC Appendix N)
Basic Wind Speed with Ice	$V_i := 50$	mph	(User Input per Annex B of TIA-222-G)
Basic Wind Speed Service Loads	$V_{Ser} := 60$	mph	(User Input - TIA-222-G Section 2.8.3)

Input

Structure Type =	Structure_Type := Pole		(User Input)
Structure Category =	SC := III		(User Input)
Exposure Category =	Exp := C		(User Input)
Structure Height =	$h := 150$	ft	(User Input)
Height to Center of Antennas=	$z_{VZ} := 167.5$	ft	(User Input)
Height to Center of Antennas=	$z_{Sprint} := 157.5$	ft	(User Input)
Height to Center of Mast =	$z_{Mast1} := 156.5$	ft	(User Input)
Radial Ice Thickness =	$t_i := 0.75$	in	(User Input per Annex B of TIA-222-G)
Radial Ice Density =	$Id := 56.00$	pcf	(User Input)
Topograpic Factor =	$K_{zt} := 1.0$		(User Input)
	$K_a := 1.0$		(User Input)
Gust Response Factor =	$G_H := 1.35$		(User Input)

Output

Wind Direction Probability Factor =

$$K_d := \begin{cases} 0.95 & \text{if Structure\_Type = Pole} \\ 0.85 & \text{if Structure\_Type = Lattice} \end{cases} = 0.95$$

(Per Table 2-2 of TIA-222-G)

Importance Factors =

$$I_{Wind} := \begin{cases} 0.87 & \text{if } SC = 1 \\ 1.00 & \text{if } SC = 2 \\ 1.15 & \text{if } SC = 3 \end{cases} = 1.15$$

(Per Table 2-3 of TIA-222-G)

$$I_{Wind\_w\_Ice} := \begin{cases} 0 & \text{if } SC = 1 \\ 1.00 & \text{if } SC = 2 \\ 1.00 & \text{if } SC = 3 \end{cases} = 1$$

$$I_{ice} := \begin{cases} 0 & \text{if } SC = 1 \\ 1.00 & \text{if } SC = 2 \\ 1.25 & \text{if } SC = 3 \end{cases} = 1.25$$

Wind Direction Probability Factor (Service) = $K_{dSer} := 0.85$ (Per Section 2.8.3 of TIA-222-G)

Importance Factor (Service) = $I_{Ser} := 1$ (Per Section 2.8.3 of TIA-222-G)

$K_{iz} := \left(\frac{z_{VZ}}{33}\right)^{0.1} = 1.176$ $t_{izVZ} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 2.206$

Velocity Pressure Coefficient Antennas = $Kz_{VZ} := 2.01\left(\left(\frac{z_{VZ}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.411$

Velocity Pressure w/o Ice Antennas = $qz_{VZ} := 0.00256 \cdot K_d \cdot Kz_{VZ} \cdot V^2 \cdot I_{Wind} = 34.126$

Velocity Pressure with Ice Antennas = $qz_{ice.VZ} := 0.00256 \cdot K_d \cdot Kz_{VZ} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 8.578$

Velocity Pressure Service = $qz_{VZ.Ser} := 0.00256 \cdot K_{dSer} \cdot Kz_{VZ} \cdot V_{Ser}^2 \cdot I_{Ser} = 11.052$

$K_{iz} := \left(\frac{z_{Sprint}}{33}\right)^{0.1} = 1.169$ $t_{izSprint} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 2.192$

Velocity Pressure Coefficient Antennas = $Kz_{Sprint} := 2.01\left(\left(\frac{z_{Sprint}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.393$

Velocity Pressure w/o Ice Antennas = $qz_{Sprint} := 0.00256 \cdot K_d \cdot Kz_{Sprint} \cdot V^2 \cdot I_{Wind} = 33.687$

Velocity Pressure with Ice Antennas = $qz_{ice.Sprint} := 0.00256 \cdot K_d \cdot Kz_{Sprint} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 8.467$

Velocity Pressure Service = $qz_{Sprint.Ser} := 0.00256 \cdot K_{dSer} \cdot Kz_{Sprint} \cdot V_{Ser}^2 \cdot I_{Ser} = 10.909$

$K_{izMast1} := \left(\frac{z_{Mast1}}{33}\right)^{0.1} = 1.168$ $t_{izMast1} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast1} \cdot K_{zt}^{0.35} = 2.191$

Velocity Pressure Coefficient Mast = $Kz_{Mast1} := 2.01\left(\left(\frac{z_{Mast1}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.391$

Velocity Pressure w/o Ice Mast= $qz_{Mast1} := 0.00256 \cdot K_d \cdot Kz_{Mast1} \cdot V^2 \cdot I_{Wind} = 33.642$

Velocity Pressure with Ice Mast = $qz_{ice.Mast1} := 0.00256 \cdot K_d \cdot Kz_{Mast1} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 8.456$

Velocity Pressure Service = $qz_{Mast1.Ser} := 0.00256 \cdot K_{dSer} \cdot Kz_{Mast1} \cdot V_{Ser}^2 \cdot I_{Ser} = 10.895$

Development of Wind & Ice Load on Mast

Mast Data:	(Pipe 12" SCH. 80)		(User Input)
Mast Shape =	Round		(User Input)
Mast Diameter =	$D_{mast} := 12.75$	in	(User Input)
Mast Length =	$L_{mast} := 30$	ft	(User Input)
Mast Thickness =	$t_{mast} := 0.5$	in	(User Input)

Mast Aspect Ratio = $Ar_{mast} := \frac{12L_{mast}}{D_{mast}} = 28.2$

Mast Force Coefficient = $Ca_{mast} = 1.2$

Wind Load (without ice)

Mast Projected Surface Area = $A_{mast} := \frac{D_{mast}}{12} = 1.063$ sf/ft

Total Mast Wind Force = $qz_{Mast1} \cdot G_H \cdot Ca_{mast} \cdot A_{mast} = 58$ plf **BLC 5**

Wind Load (with ice)

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{\left(D_{mast} + 2 \cdot t_{izMast1}\right)}{12} = 1.428$ sf/ft

Total Mast Wind Force w/ Ice = $qz_{ice.Mast1} \cdot G_H \cdot Ca_{mast} \cdot AICE_{mast} = 20$ plf **BLC 4**

Wind Load (Service)

Total Mast Wind Force Service Loads = $qz_{Mast1.Ser} \cdot G_H \cdot Ca_{mast} \cdot A_{mast} = 19$ plf **BLC 6**

Gravity Loads (without ice)

Weight of the mast = Self Weight **(Computed internally by Risa-3D)** plf **BLC 1**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + t_{izMast1} \cdot 2\right)^2 - D_{mast}^{\,2}\right] = 102.8$ sq in

Weight of Ice on Mast = $W_{ICEmast} := Id \cdot \frac{Ai_{mast}}{144} = 40$ plf **BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data: (Verizon)

Antenna Model = Commscope NNH4-65B-R6H4

Antenna Shape = Flat (User Input)

Antenna Height = $L_{ant} := 71.969$ in (User Input)

Antenna Width = $W_{ant} := 19.606$ in (User Input)

Antenna Thickness = $T_{ant} := 7.756$ in (User Input)

Antenna Weight = $WT_{ant} := 120$ lbs (User Input)

Number of Antennas = $N_{ant} := 3$ (User Input)

Antenna Aspect Ratio = $Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 3.7$

Antenna Force Coefficient = $Ca_{ant} = 1.25$

Wind Load (without ice)

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 9.8$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 29.4$ sf

Total Antenna Wind Force = $F_{ant} := qz_{VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 1696$ lbs **BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{izVZ}) \cdot (W_{ant} + 2 \cdot t_{izVZ})}{144} = 12.7$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 38.2$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := qz_{ice.VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 554$ lbs **BLC 4**

Wind Load (Service)

Total Antenna Wind Force Service Loads = $F_{ant.Ser} := qz_{VZ.Ser} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 549$ lbs **BLC 6**

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 360$ lbs **BLC 2**

Gravity Loads (ice only)

cu in

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 1 \times 10^4$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 2 \cdot t_{izVZ})(W_{ant} + 2 \cdot t_{izVZ}) \cdot (T_{ant} + 2 \cdot t_{izVZ}) - V_{ant} = 1 \times 10^4$

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 369$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 1106$ lbs **BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data: (Verizon)

Antenna Model =	Samsung MT6407-77A		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 35.1$	in	(User Input)
Antenna Width =	$W_{ant} := 16.1$	in	(User Input)
Antenna Thickness =	$T_{ant} := 5.5$	in	(User Input)
Antenna Weight =	$WT_{ant} := 87$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 2.2$		
Antenna Force Coefficient =	$Ca_{ant} = 1.2$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 3.9$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 11.8$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 651$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{izVZ}) \cdot (W_{ant} + 2 \cdot t_{izVZ})}{144} = 5.6$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 16.9$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 235$	lbs	**BLC 4**

Wind Load (Service)

Total Antenna Wind Force Service Loads =	$F_{ant.Ser} := qz_{VZ.Ser} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 211$	lbs	**BLC 6**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 261$	lbs	**BLC 2**

Gravity Loads (ice only) cu in

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 3108$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{izVZ})(W_{ant} + 2 \cdot t_{izVZ}) \cdot (T_{ant} + 2 \cdot t_{izVZ}) - V_{ant} = 4925$		
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 160$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 479$	lbs	**BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data: (Verizon)

Antenna Model = Commscope CBC61923T-DS-43 Triplexer

Antenna Shape = Flat (User Input)

Antenna Height = $L_{ant} := 7.8$ in (User Input)

Antenna Width = $W_{ant} := 6.9$ in (User Input)

Antenna Thickness = $T_{ant} := 4.2$ in (User Input)

Antenna Weight = $WT_{ant} := 15$ lbs (User Input)

Number of Antennas = $N_{ant} := 6$ (User Input)

Antenna Aspect Ratio = $Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 1.1$

Antenna Force Coefficient = $Ca_{ant} = 1.2$

Wind Load (without ice)

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.4$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 2.2$ sf

Total Antenna Wind Force = $F_{ant} := qz_{VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 124$ lbs **BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{izVZ}) \cdot (W_{ant} + 2 \cdot t_{izVZ})}{144} = 1$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 5.8$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := qz_{ice.VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 80$ lbs **BLC 4**

Wind Load (Service)

Total Antenna Wind Force Service Loads = $F_{ant.Ser} := qz_{VZ.Ser} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 40$ lbs **BLC 6**

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 90$ lbs **BLC 2**

Gravity Loads (ice only)

cu in

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 226$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 2 \cdot t_{izVZ})(W_{ant} + 2 \cdot t_{izVZ}) \cdot (T_{ant} + 2 \cdot t_{izVZ}) - V_{ant} = 963$

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 31$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 187$ lbs **BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data: (Verizon)

Antenna Model =	RFS DB-B1-6C-12AB OVP Box		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 29$	in	(User Input)
Antenna Width =	$W_{ant} := 15.7$	in	(User Input)
Antenna Thickness =	$T_{ant} := 10.3$	in	(User Input)
Antenna Weight =	$WT_{ant} := 32$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 1.8$		
Antenna Force Coefficient =	$Ca_{ant} = 1.2$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 3.2$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 3.2$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 175$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{izVZ}) \cdot (W_{ant} + 2 \cdot t_{izVZ})}{144} = 4.7$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 4.7$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 65$	lbs	**BLC 4**

Wind Load (Service)

Total Antenna Wind Force Service Loads =	$F_{ant.Ser} := qz_{VZ.Ser} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 57$	lbs	**BLC 6**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 32$	lbs	**BLC 2**

Gravity Loads (ice only)

cu in

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 4690$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{izVZ})(W_{ant} + 2 \cdot t_{izVZ}) \cdot (T_{ant} + 2 \cdot t_{izVZ}) - V_{ant} = 5196$		
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 168$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 168$	lbs	**BLC 3**

Development of Wind & Ice Load on Antenna Mounts

Mount Data: (Verizon)

Mount Type: Dual Standoff Mount
B1827 w/ 6 Pipe Mounts

Platform Shape =	Flat		(User Input)	
Platform Area =	$A_{plt} := 7$	sq ft	(User Input)	(Force Coefficient Included)
Platform Area w/ Ice =	$A_{ICE.plt} := 10$	sq ft	(User Input)	(Force Coefficient Included)
Platform Weight =	$WT_{plt} := 575$	lbs	(User Input)	
Platform Weight w/ Ice =	$WT_{ICE.plt} := 800$	lbs	(User Input)	

Wind Load (without ice)

Total Platform Wind Force = $F_{plt} := qz_{VZ} \cdot G_H \cdot A_{plt} = 322$ lbs **BLC 5**

Wind Load (with ice)

Total Platform Wind Force w/ Ice = $Fi_{plt} := qz_{ice.VZ} \cdot G_H \cdot A_{ICE.plt} = 116$ lbs **BLC 4**

Wind Load (Service)

Total Platform Wind Force Service Loads = $F_{ant.Ser} := qz_{VZ.Ser} \cdot G_H \cdot A_{plt} = 104$ lbs **BLC 6**

Gravity Load (without ice)

Weight of Platform = $WT_{plt} = 575$ lbs **BLC 2**

Gravity Loads (ice only)

Weight of Ice on Platform = $WT_{ICE.plt} - WT_{plt} = 225$ lbs **BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data: (Sprint)

Antenna Model =	RFS APXVSPP18-C		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 72$	in	(User Input)
Antenna Width =	$W_{ant} := 11.8$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7$	in	(User Input)
Antenna Weight =	$WT_{ant} := 57$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 6.1$		
Antenna Force Coefficient =	$Ca_{ant} = 1.36$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 5.9$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 17.7$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{Sprint} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 1095$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{izSprint}) \cdot (W_{ant} + 2 \cdot t_{izSprint})}{144} = 8.6$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 25.8$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Sprint} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 400$	lbs	**BLC 4**

Wind Load (Service)

Total Antenna Wind Force Service Loads =	$F_{ant.Ser} := qz_{Sprint.Ser} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 355$	lbs	**BLC 6**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 171$	lbs	**BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 5947$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{izSprint})(W_{ant} + 2 \cdot t_{izSprint}) \cdot (T_{ant} + 2 \cdot t_{izSprint}) - V_{ant} = 8127$		
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 263$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 790$	lbs	**BLC 3**

Development of Wind & Ice Load on Antenna Mounts

Mount Data:	(Sprint)			
Mount Type:	13-ft Low Profile Platform			
Platform Shape =	Flat		(User Input)	
Platform Area =	$A_{plt} := 20$	sq ft	(User Input)	(Force Coefficient Included)
Platform Area w/ Ice =	$A_{ICE.plt} := 25$	sq ft	(User Input)	(Force Coefficient Included)
Platform Weight =	$WT_{plt} := 1500$	lbs	(User Input)	
Platform Weight w/ Ice =	$WT_{ICE.plt} := 2000$	lbs	(User Input)	

Wind Load (without ice)

Total Platform Wind Force =	$F_{plt} := qz_{Sprint} \cdot G_H \cdot A_{plt} = 910$	lbs	**BLC 5**

Wind Load (with ice)

Total Platform Wind Force w/ Ice =	$Fi_{plt} := qz_{ice.Sprint} \cdot G_H \cdot A_{ICE.plt} = 286$	lbs	**BLC 4**

Wind Load (Service)

Total Platform Wind Force Service Loads =	$F_{ant.Ser} := qz_{Sprint.Ser} \cdot G_H \cdot A_{plt} = 295$	lbs	**BLC 6**

Gravity Load (without ice)

Weight of Platform =	$WT_{plt} = 1500$	lbs	**BLC 2**

Gravity Loads (ice only)

Weight of Ice on Platform =	$WT_{ICE.plt} - WT_{plt} = 500$	lbs	**BLC 3**

Development of Wind & Ice Load on Coax Cables

Coax Cable Data: (Bottom Mast to Sprint Antennas)

Coax Type =	HELIAX 1-5/8"		
Shape =	Round		(User Input)
Coax Outside Diameter =	$D_{coax} := 1.98$	in	(User Input)
Coax Cable Length =	$L_{coax} := 31$	ft	(User Input)
Weight of Coax per foot =	$Wt_{coax} := 1.04$	plf	(User Input)
Total Number of Coax =	$N_{coax} := 31$		(User Input)
No. of Coax Projecting Outside Face of PCS Mast =	$NP_{coax} := 4$		(User Input)

Coax aspect ratio, $Ar_{coax} := \frac{(L_{coax} \cdot 12)}{D_{coax}} = 187.9$

Coax Cable Force Factor Coefficient = $Ca_{coax} = 1.2$

Wind Load (without ice)

Coax projected surface area = $A_{coax} := \frac{(NP_{coax} D_{coax})}{12} = 0.7$ sf/ft

Total Coax Wind Force = $F_{coax} := Ca_{coax} \cdot qz_{Mast1} \cdot G_H \cdot A_{coax} = 36$ plf **BLC 5**

Wind Load (with ice)

Coax projected surface area w/ Ice = $AICE_{coax} := \frac{(NP_{coax} \cdot D_{coax} + 2 \cdot t_{izMast1})}{12} = 1$ sf/ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast1} \cdot G_H \cdot AICE_{coax} = 14$ plf **BLC 4**

Wind Load (Service)

Total Coax Wind Force Service Loads = $F_{coax} := Ca_{coax} \cdot qz_{Mast1.Ser} \cdot G_H \cdot A_{coax} = 12$ plf **BLC 6**

Gravity Loads (without ice)

Weight of all cables w/o ice $WT_{coax} := Wt_{coax} \cdot N_{coax} = 32$ plf **BLC 2**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot t_{izMast1}\right)^2 - D_{coax}{}^2\right] = 28.7$ sq in

Ice Weight All Coax per foot = $WTi_{coax} := N_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 346$ plf **BLC 3**

Development of Wind & Ice Load on Coax Cables

Coax Cable Data: (Above Sprint Antennas)

Coax Type =	HELIAX 1-5/8"		
Shape =	Round		(User Input)
Coax Outside Diameter =	$D_{coax} := 1.98$	in	(User Input)
Coax Cable Length =	$L_{coax} := 31$	ft	(User Input)
Weight of Coax per foot =	$Wt_{coax} := 1.04$	plf	(User Input)
Total Number of Coax =	$N_{coax} := 13$		(User Input)
No. of Coax Projecting Outside Face of PCS Mast =	$NP_{coax} := 2$		(User Input)

Coax aspect ratio, $Ar_{coax} := \frac{(L_{coax} \cdot 12)}{D_{coax}} = 187.9$

Coax Cable Force Factor Coefficient = $Ca_{coax} = 1.2$

Wind Load (without ice)

Coax projected surface area = $A_{coax} := \frac{(NP_{coax} D_{coax})}{12} = 0.3$ sf/ft

Total Coax Wind Force = $F_{coax} := Ca_{coax} \cdot qz_{Mast1} \cdot G_H \cdot A_{coax} = 18$ plf **BLC 5**

Wind Load (with ice)

Coax projected surface area w/ Ice = $AICE_{coax} := \frac{(NP_{coax} \cdot D_{coax} + 2 \cdot t_{izMast1})}{12} = 0.7$ sf/ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast1} \cdot G_H \cdot AICE_{coax} = 10$ plf **BLC 4**

Wind Load (Service)

Total Coax Wind Force Service Loads = $F_{coax} := Ca_{coax} \cdot qz_{Mast1.Ser} \cdot G_H \cdot A_{coax} = 6$ plf **BLC 6**

Gravity Loads (without ice)

Weight of all cables w/o ice $WT_{coax} := Wt_{coax} \cdot N_{coax} = 14$ plf **BLC 2**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{coax} := \frac{\pi}{4}\left[(D_{coax} + 2 \cdot t_{izMast1})^2 - D_{coax}^{\ 2}\right] = 28.7$ sq in

Ice Weight All Coax per foot = $WTi_{coax} := N_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 145$ plf **BLC 3**

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	No
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI 1999: ASD
Wood Code	AF&PA NDS-91/97: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-02
Masonry Code	ACI 530-05: ASD
Aluminum Code	AA ADM1-05: ASD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	PCA Load Contour
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	UBC 1997
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	No
Ct X	.035
Ct Z	.035
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	8.5
R Z	8.5
Ca	.36
Cv	.54
Nv	1
Occupancy Category	4
Seismic Zone	3
Om Z	1
Om X	1
Rho Z	1
Rho X	1
Footing Overturning Safety Factor	1.5
Optimize for OTM/Sliding	No
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	0
Footing Concrete f'c (ksi)	3
Footing Concrete Ec (ksi)	4000
Lambda	1
Footing Steel fy (ksi)	60
Minimum Steel	0.0018
Maximum Steel	0.0075
Footing Top Bar	#3
Footing Top Bar Cover (in)	3.5
Footing Bottom Bar	#3
Footing Bottom Bar Cover (in)	3.5
Pedestal Bar	#3
Pedestal Bar Cover (in)	1.5
Pedestal Ties	#3

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\...	Density[k/ft^3]	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	58	1.2
3	A992	29000	11154	.3	.65	.49	50	1.1	58	1.2
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.2	58	1.1
6	A53 Gr. B	29000	11154	.3	.65	.49	35	1.5	58	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Mast	PIPE_12.0X	Column	Pipe	A53 Gr. B	Typical	17.5	339	339	678

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[...	Lcomp bot[...	L-torq...	Kyy	Kzz	Cb	Functi...
1	M1	Mast	14			Lbyy						Lateral
2	M2	Mast	19			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design ...
1	M1	BOTM...	FLANGE			Mast	Column	Pipe	A53 Gr. B	Typical
2	M2	FLANGE	TOPM...			Mast	Column	Pipe	A53 Gr. B	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	BOTMAST	0	0	0	0	
2	BOTCONNECTION	0	3.25	0	0	
3	TOPCONNECTION	0	9.42	0	0	
4	FLANGE	0	14	0	0	
5	TOPMAST	0	33	0	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	BOTCONNECTION	Reaction	Reaction	Reaction		Reaction	
2	TOPCONNECTION	Reaction	Reaction	Reaction		Reaction	

Member Point Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Y	-.36	16.5
2	M2	Y	-.261	16.5
3	M2	Y	-.09	16.5
4	M2	Y	-.032	16.5
5	M2	Y	-.575	16.5
6	M2	Y	-.171	6.5
7	M2	Y	-1.5	6.5

Member Point Loads (BLC 3 : Weight of Ice Only)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Y	-1.106	16.5
2	M2	Y	-.479	16.5
3	M2	Y	-.187	16.5
4	M2	Y	-.168	16.5
5	M2	Y	-.225	16.5
6	M2	Y	-.79	6.5
7	M2	Y	-.5	6.5

Member Point Loads (BLC 4 : TIA Wind with Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	X	.554	16.5
2	M2	X	.235	16.5
3	M2	X	.08	16.5
4	M2	X	.065	16.5
5	M2	X	.116	16.5
6	M2	X	.4	6.5
7	M2	X	.286	6.5

Member Point Loads (BLC 5 : TIA Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	X	1.696	16.5
2	M2	X	.651	16.5
3	M2	X	.124	16.5
4	M2	X	.175	16.5
5	M2	X	.322	16.5
6	M2	X	1.095	6.5
7	M2	X	.91	6.5

Member Point Loads (BLC 6 : Service Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	X	.549	16.5
2	M2	X	.211	16.5
3	M2	X	.04	16.5
4	M2	X	.057	16.5
5	M2	X	.104	16.5
6	M2	X	.355	6.5
7	M2	X	.295	6.5

Member Distributed Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.032	-.032	0	0
2	M2	Y	-.032	-.032	0	6.5
3	M2	Y	-.014	-.014	6.5	16.5

Member Distributed Loads (BLC 3 : Weight of Ice Only)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.04	-.04	0	0
2	M2	Y	-.04	-.04	0	0
3	M1	Y	-.346	-.346	0	0
4	M2	Y	-.346	-.346	0	6.5
5	M2	Y	-.145	-.145	6.5	16.5

Member Distributed Loads (BLC 4 : TIA Wind with Ice)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.02	.02	0	0
2	M2	X	.02	.02	0	0
3	M1	X	.014	.014	0	0
4	M2	X	.014	.014	0	6.5

Member Distributed Loads (BLC 4 : TIA Wind with Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
5	M2	X	.01	.01	6.5	16.5

Member Distributed Loads (BLC 5 : TIA Wind)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.058	.058	0	0
2	M2	X	.058	.058	0	0
3	M1	X	.036	.036	0	0
4	M2	X	.036	.036	0	6.5
5	M2	X	.018	.018	6.5	16.5

Member Distributed Loads (BLC 6 : Service Wind)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.019	.019	0	0
2	M2	X	.019	.019	0	0
3	M1	X	.012	.012	0	0
4	M2	X	.012	.012	0	6.5
5	M2	X	.006	.006	6.5	16.5

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distrib..	Area(...	Surfa...
1	Self Weight	None		-1						
2	Weight of Appurtenances	None					7	3		
3	Weight of Ice Only	None					7	5		
4	TIA Wind with Ice	None					7	5		
5	TIA Wind	None					7	5		
6	Service Wind	None					7	5		

Load Combinations

	Description	Solve	P...	S...	B...	Fa...	BLC	Fact...	BLC	Fa...	BLC	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.2D + 1.6W	Yes	Y		1	1.2	2	1.2	5	1.6														
2	0.9D + 1.6W	Yes	Y		1	.9	2	.9	5	1.6														
3	1.2D +1.0Di + 1.0Wi	Yes	Y		1	1.2	2	1.2	3	1	4	1												
4	1.0D + 1.0W Service	Yes	Y		1	1	2	1	6	1	4	1												

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	BOTCONNEC...	max	26.717	1	3.141	3	0	4	0	4	0	4	0	4
2		min	6.05	3	.522	2	0	1	0	1	0	1	0	1
3	TOPCONNEC...	max	-8.833	3	17.077	3	0	4	0	4	0	4	0	4
4		min	-39.205	1	4.653	2	0	1	0	1	0	1	0	1
5	Totals:	max	-2.783	3	20.218	3	0	4						
6		min	-12.488	1	5.175	2	0	1						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotation [rad]	LC
1	BOTMAST	max	.116	1	0	2	0	4	0	4	0	4	2.981e-03	1
2		min	.026	3	0	3	0	1	0	1	0	1	6.75e-04	3
3	BOTCONNE...	max	0	4	0	4	0	4	0	4	0	4	2.966e-03	1
4		min	0	1	0	1	0	1	0	1	0	1	6.715e-04	3
5	TOPCONNE...	max	0	4	0	4	0	4	0	4	0	4	-1.52e-03	3
6		min	0	1	0	1	0	1	0	1	0	1	-6.713e-03	1
7	FLANGE	max	.731	1	0	2	0	4	0	4	0	4	-4.305e-03	3
8		min	.166	3	-.002	3	0	1	0	1	0	1	-1.9e-02	1
9	TOPMAST	max	7.694	1	-.002	2	0	4	0	4	0	4	-7.899e-03	3
10		min	1.748	3	-.006	3	0	1	0	1	0	1	-3.471e-02	1

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

	Memb...	Shape	Code Check	L...	LC	Sh...	L...	Dir	...	phi*P...	phi*Pn...	phi*Mn y-y [k-ft]	phi*...	Cb	Eqn
1	M1	PIPE_12.0X	.933	9...	1	.170	9...		1	511.6...	551.25	184.275	184...	1....	H1...
2	M2	PIPE_12.0X	.668	0	1	.063	0		1	480.5...	551.25	184.275	184...	2....	H1...

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	BOTCONNECTION	26.717	.696	0	0	0	0
2	1	TOPCONNECTION	-39.205	6.204	0	0	0	0
3	1	Totals:	-12.488	6.9	0			
4	1	COG (ft):	X: 0	Y: 20.377	Z: 0			

Joint Reactions

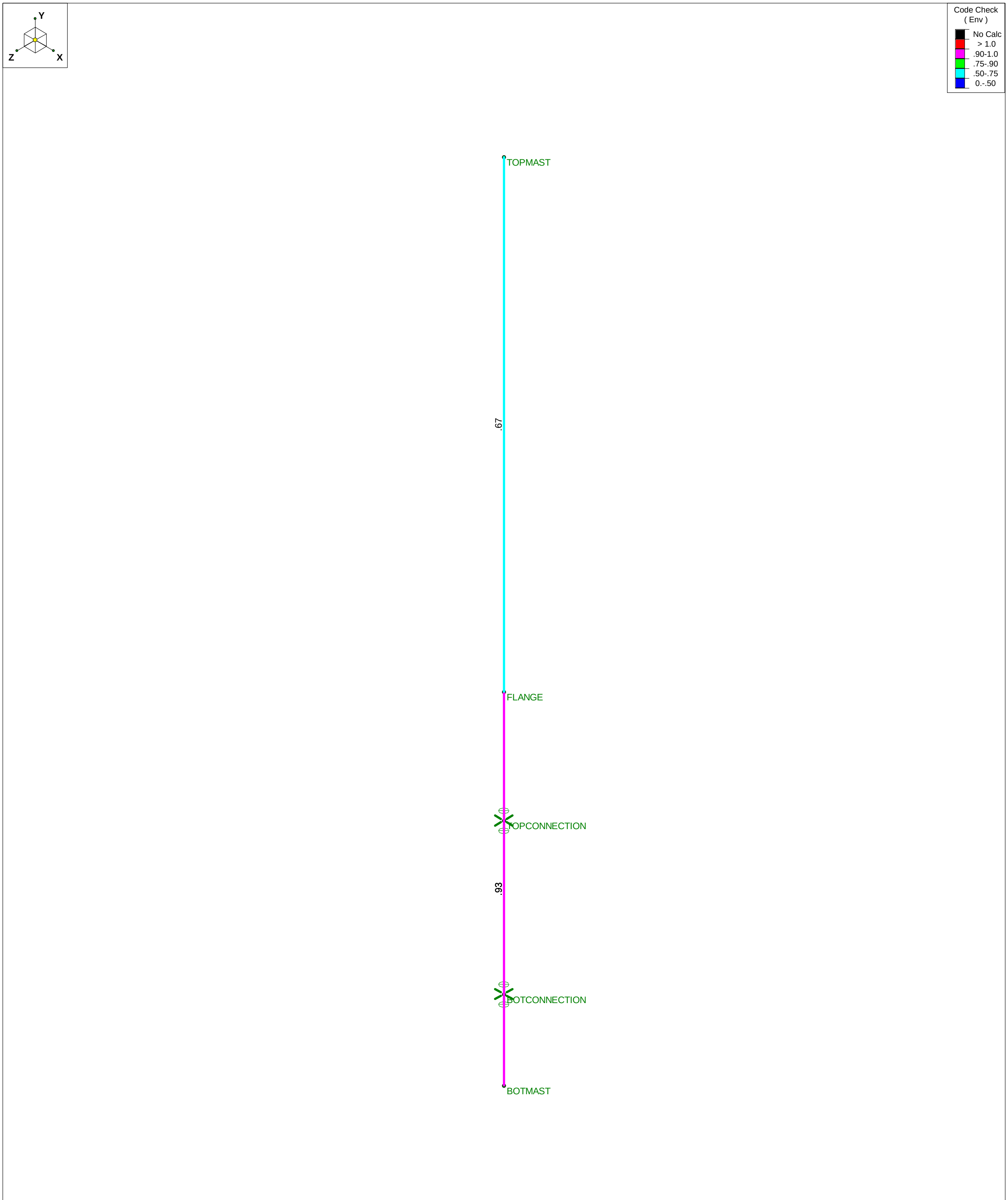
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	BOTCONNECTION	26.639	.522	0	0	0	0
2	2	TOPCONNECTION	-39.127	4.653	0	0	0	0
3	2	Totals:	-12.488	5.175	0			
4	2	COG (ft):	X: 0	Y: 20.377	Z: 0			

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	3	BOTCONNECTION	6.05	3.141	0	0	0	0
2	3	TOPCONNECTION	-8.833	17.077	0	0	0	0
3	3	Totals:	-2.783	20.218	0			
4	3	COG (ft):	X: 0	Y: 18.031	Z: 0			

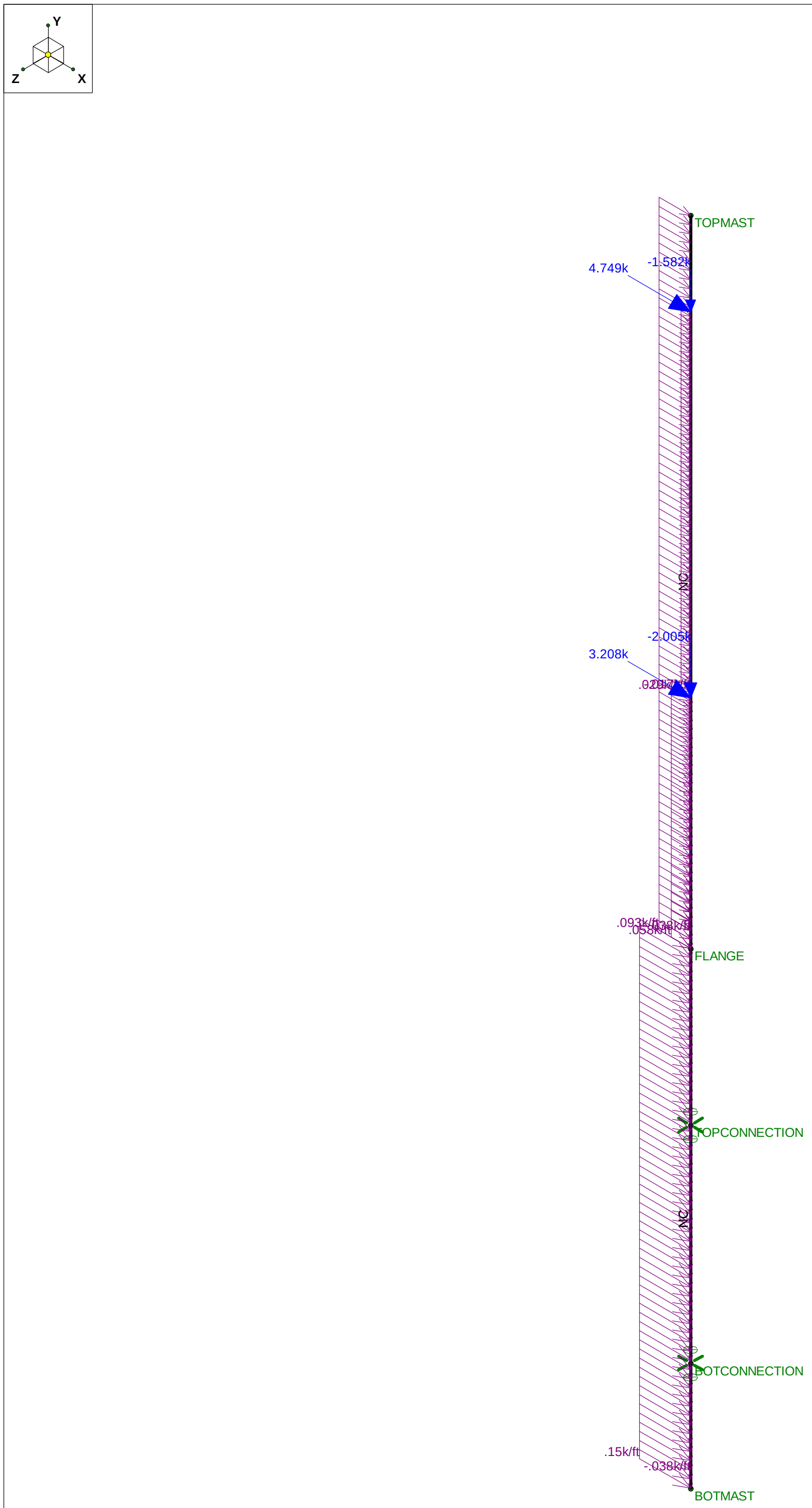
Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	4	BOTCONNECTION	11.344	.58	0	0	0	0
2	4	TOPCONNECTION	-16.671	5.17	0	0	0	0
3	4	Totals:	-5.327	5.75	0			
4	4	COG (ft):	X: 0	Y: 20.377	Z: 0			



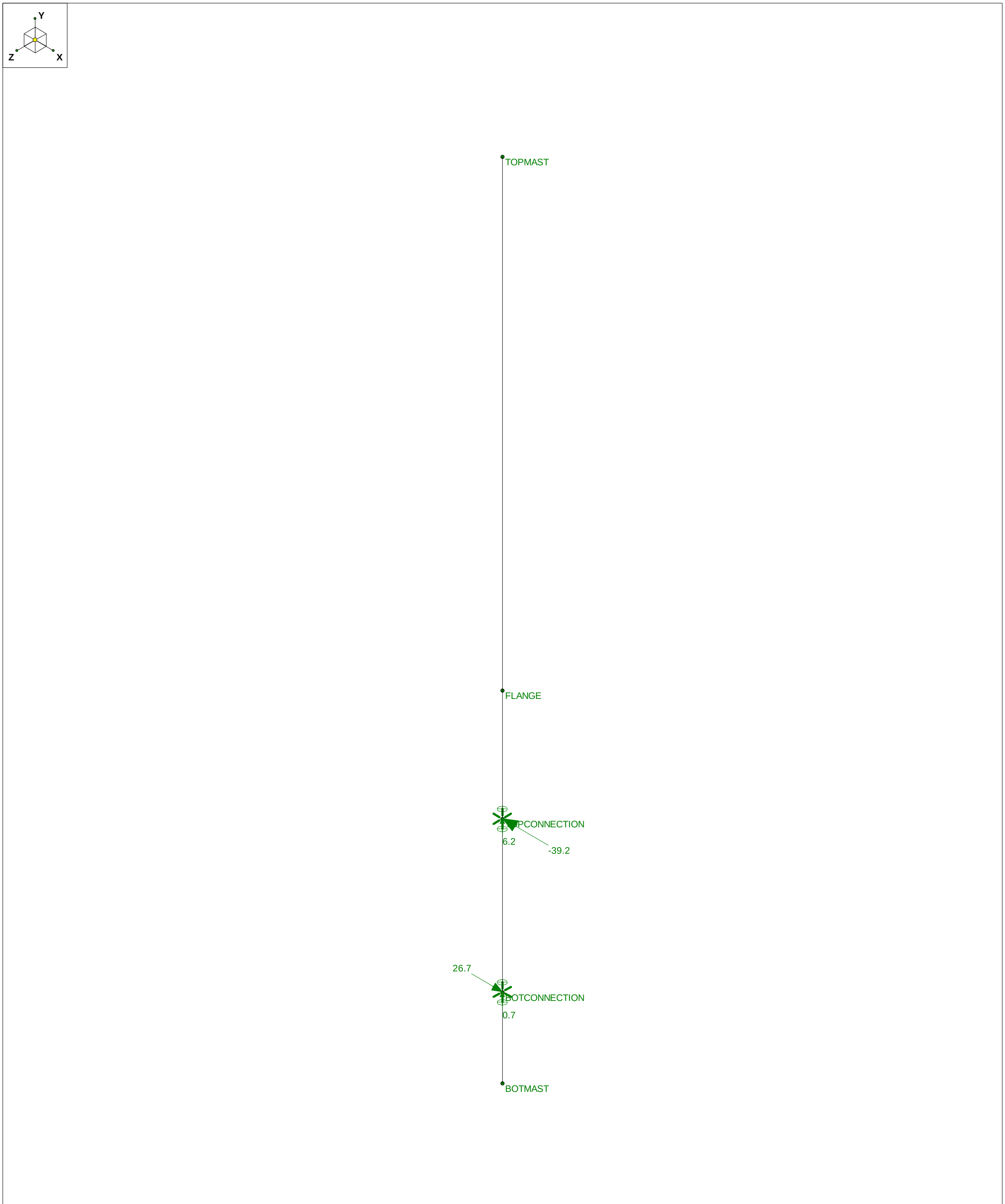
Member Code Checks Displayed (Enveloped)
Envelope Only Solution

CENTEK Engineering, INC.		
TJL	Strcuture #10255 - Mast	Dec 2, 2021 at 3:15 PM
21007.74 / Verizon Bethel ...	Unity Check	TIA.r3d



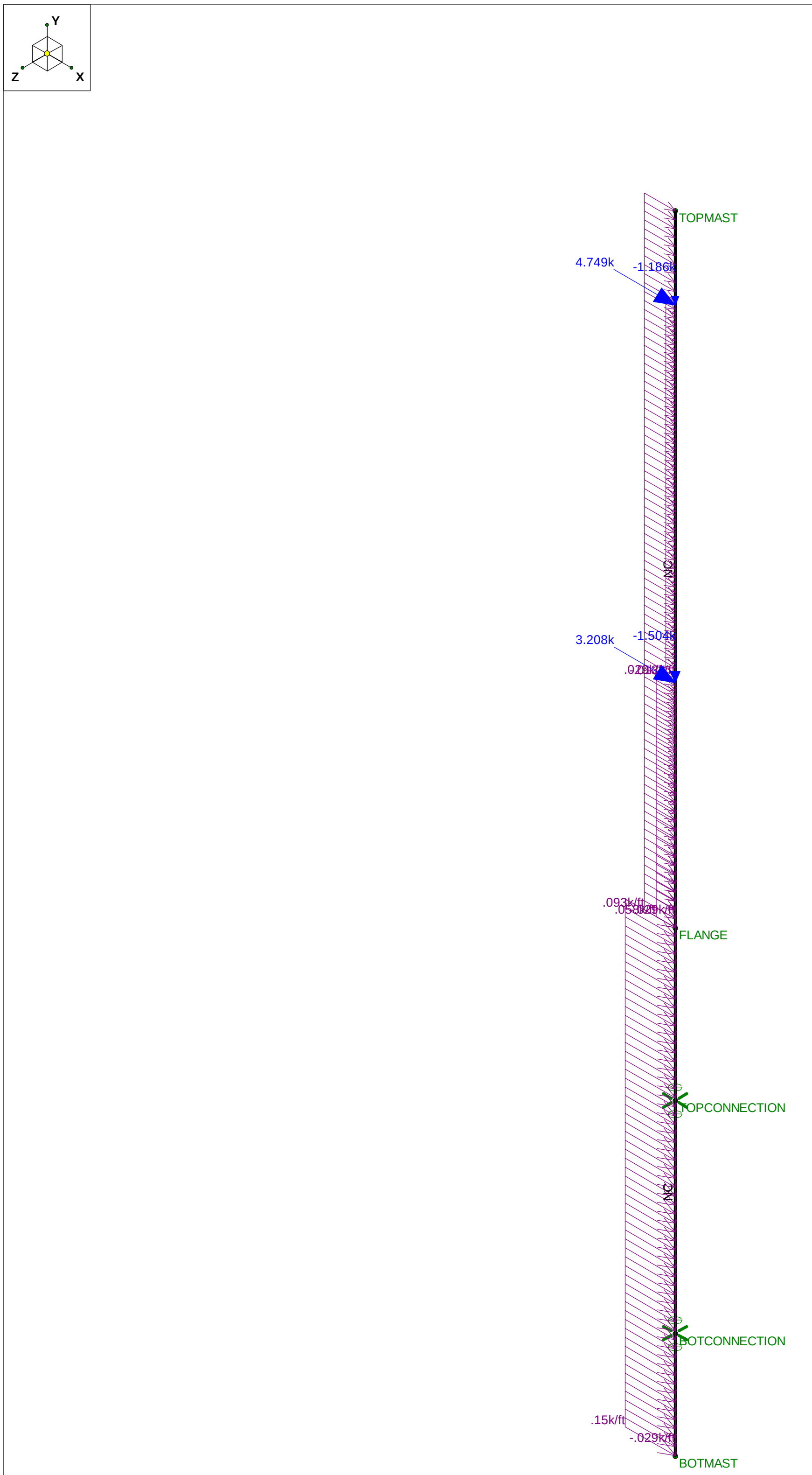
Member Code Checks Displayed
Loads: LC 1, 1.2D + 1.6W

CENTEK Engineering, INC.	Strcuture #10255 - Mast	
TJL		Dec 2, 2021 at 3:15 PM
21007.74 / Verizon Bethel ...	LC #1 Loads	TIA.r3d



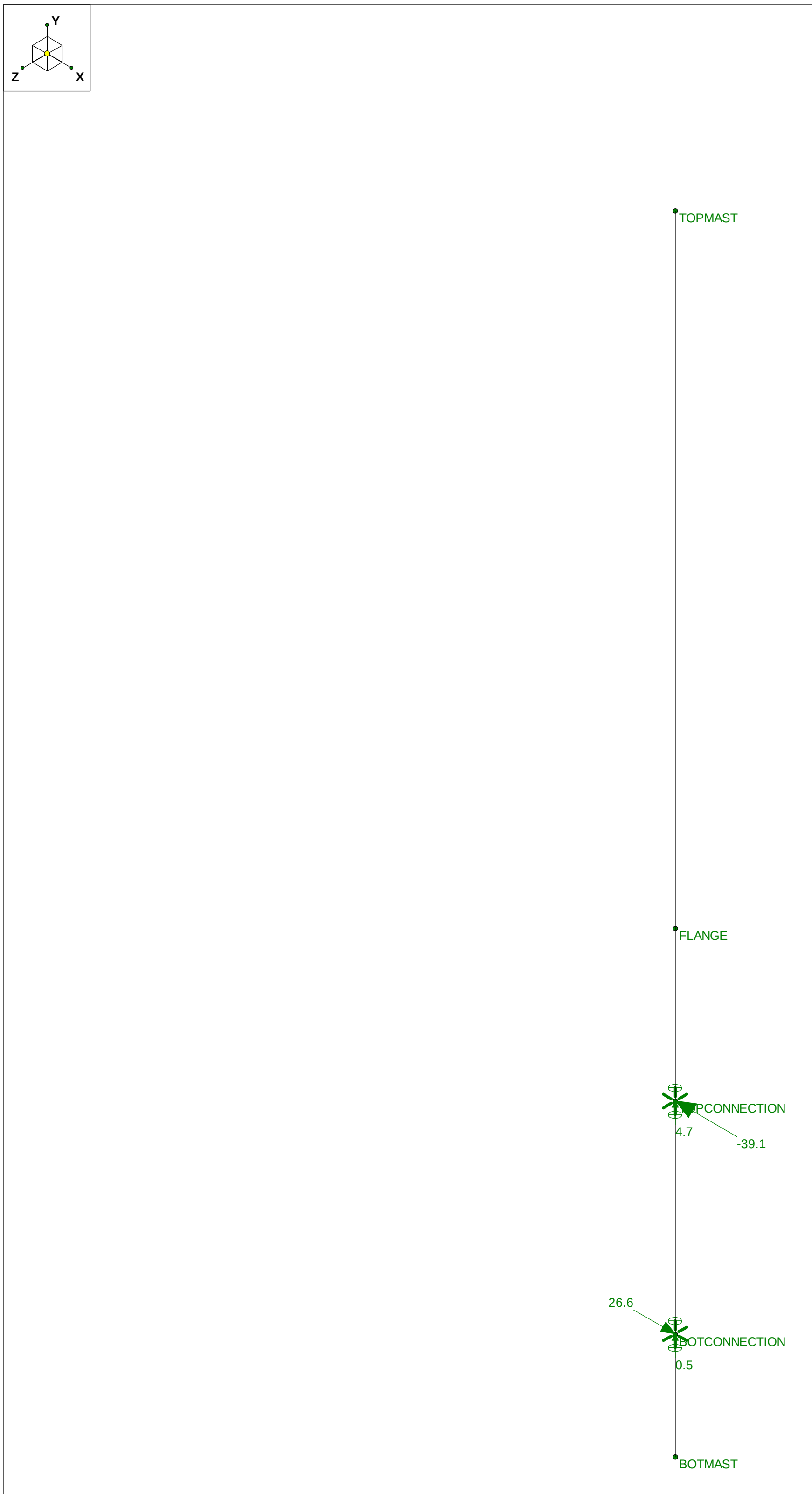
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.		
TJL	Strcuture #10255 - Mast	Dec 2, 2021 at 3:16 PM
21007.74 / Verizon Bethel ...	LC #1 Reactions	TIA.r3d



Member Code Checks Displayed
Loads: LC 2, 0.9D + 1.6W

CENTEK Engineering, INC.		
TJL	Strcuture #10255 - Mast	Dec 2, 2021 at 3:16 PM
21007.74 / Verizon Bethel ...	LC #2 Loads	TIA.r3d



Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.		
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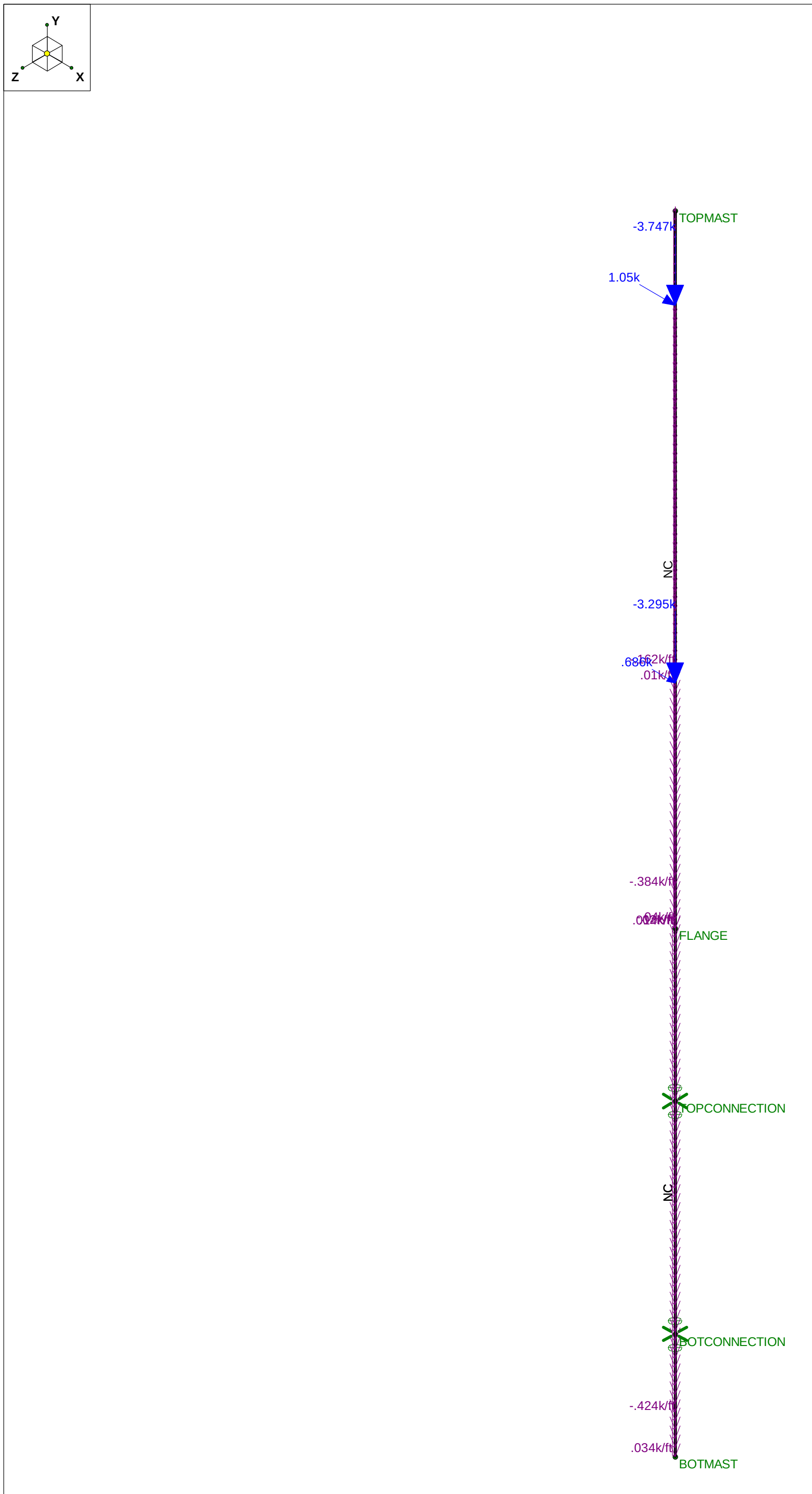
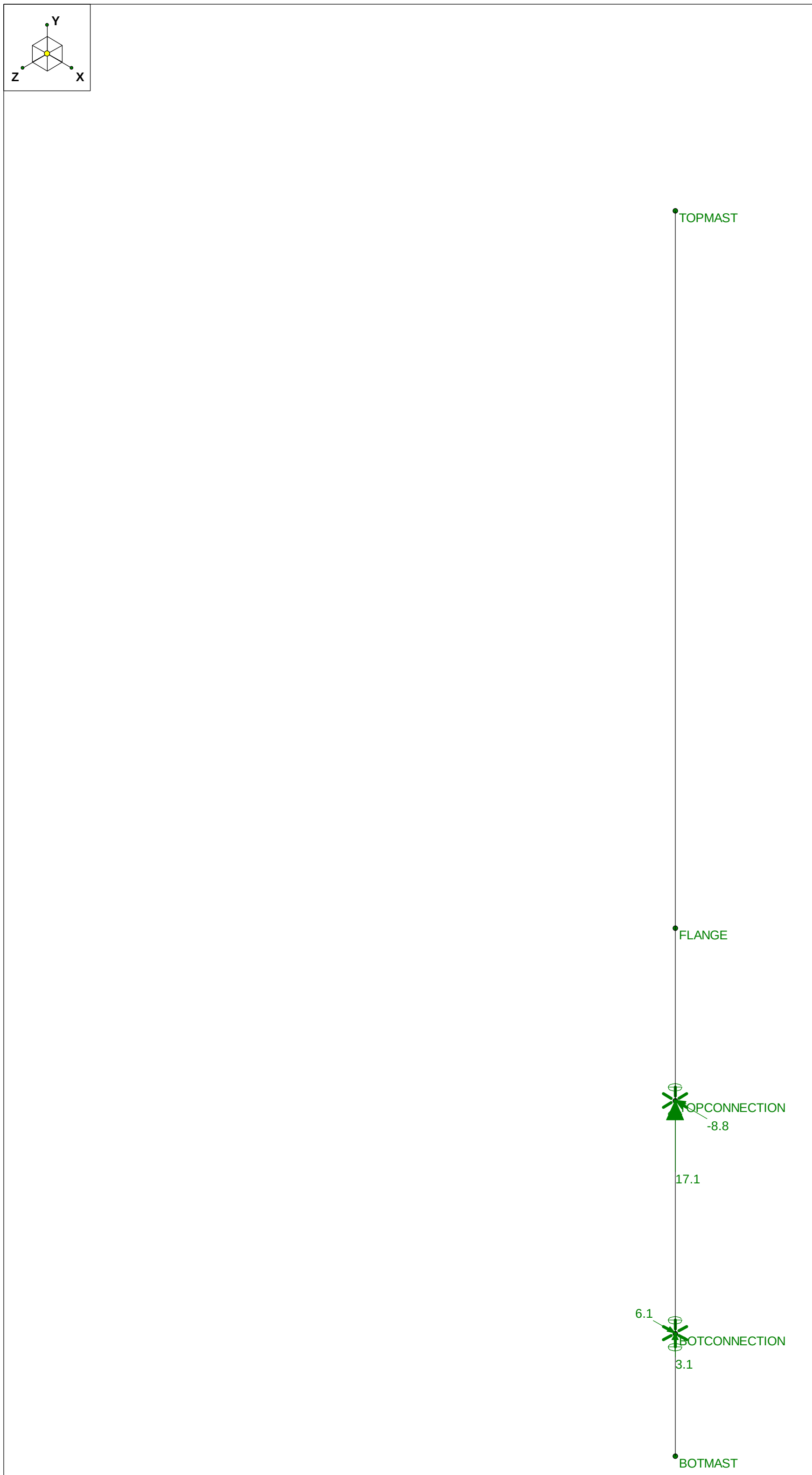
21007.74 / Verizon Bethel ...	LC #2 Reactions	TIA.r3d



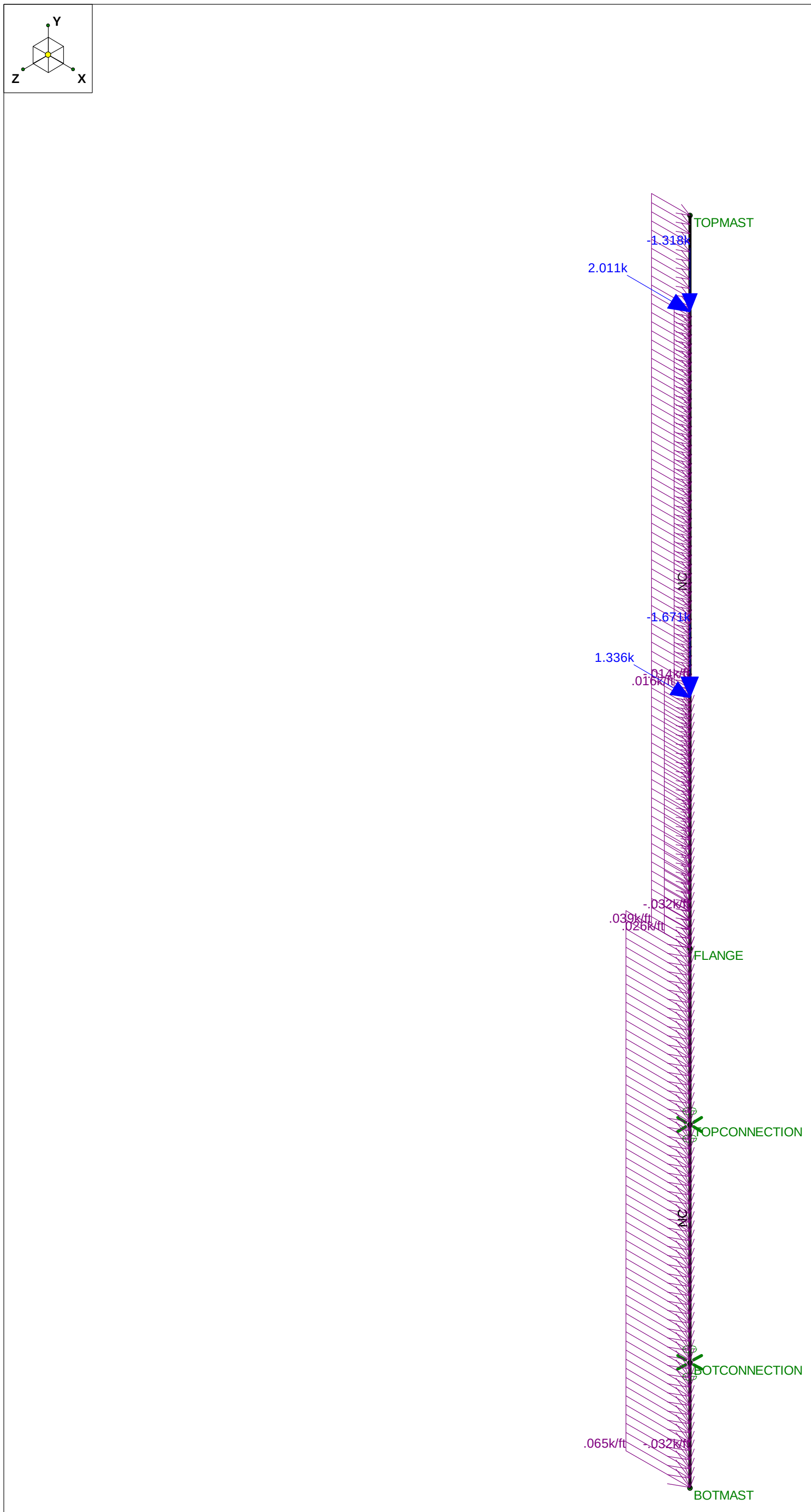
Member Code Checks Displayed
Loads: LC 3, 1.2D +1.0Di + 1.0Wi

CENTEK Engineering, INC.		
TJL	Strcuture #10255 - Mast	Dec 2, 2021 at 3:16 PM
21007.74 / Verizon Bethel ...	LC #3 Loads	TIA.r3d



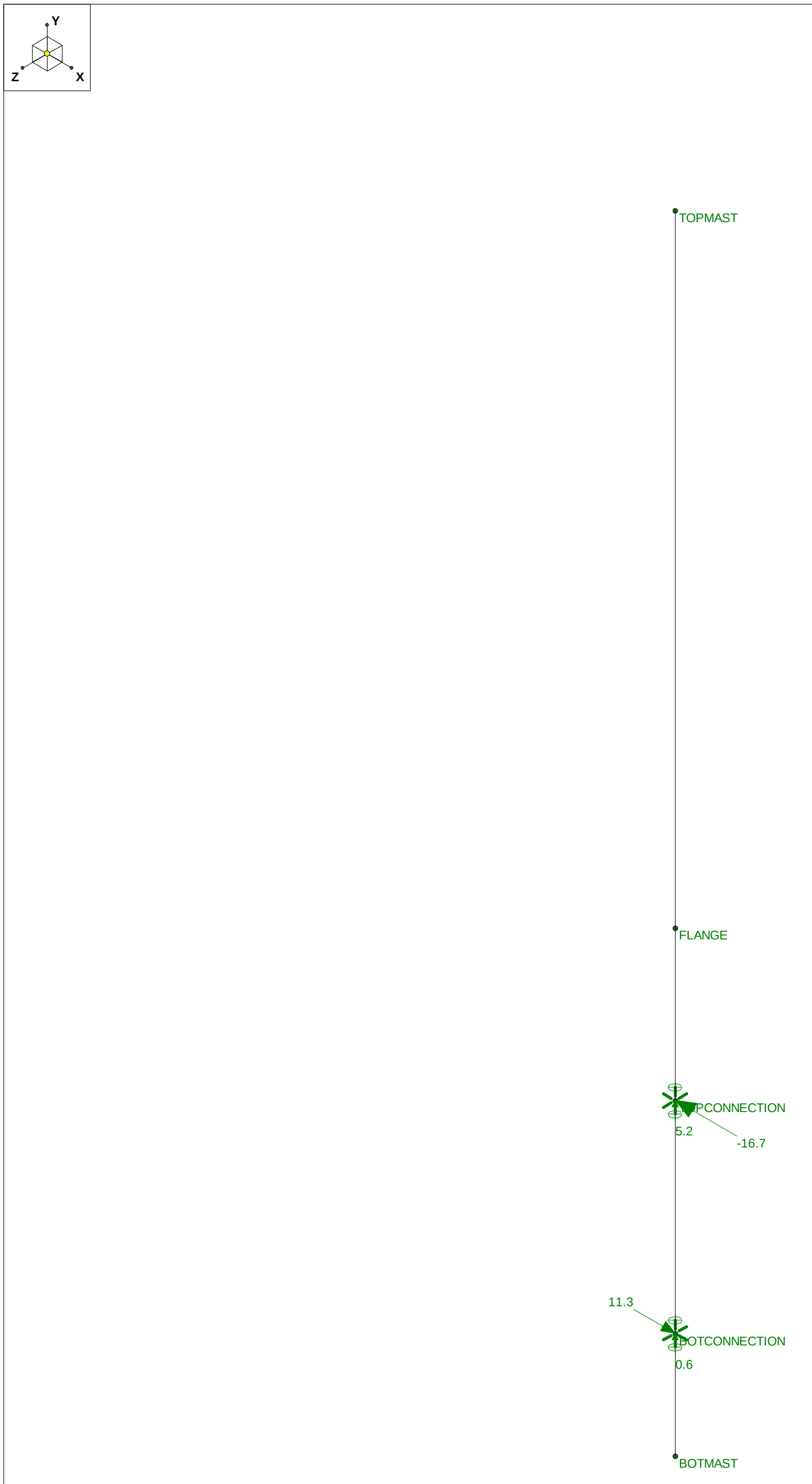
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.		
TJL	Strcuture #10255 - Mast	Dec 2, 2021 at 3:58 PM
21007.74 / Verizon Bethel ...	LC #3 Reactions	TIA.r3d



Member Code Checks Displayed
Loads: LC 4, 1.0D + 1.0WService

CENTEK Engineering, INC.		
TJL	Strcuture #10255 - Mast	Dec 2, 2021 at 3:16 PM
21007.74 / Verizon Bethel ...	LC #4 Loads	TIA.r3d



Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.		
TJL	Strcuture #10255 - Mast	Dec 2, 2021 at 3:58 PM
21007.74 / Verizon Bethel ...	LC #1 Reactions	TIA.r3d

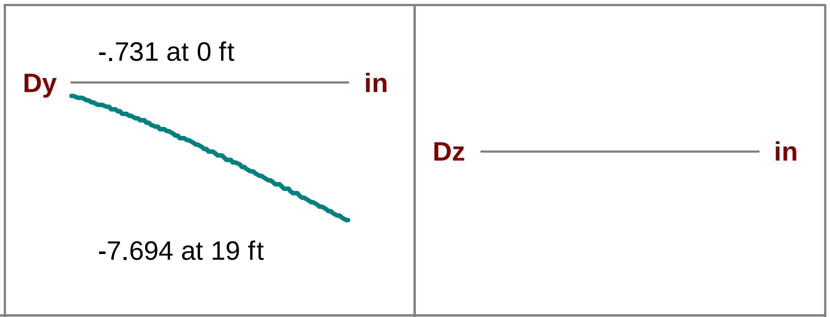
Column: ***M2***

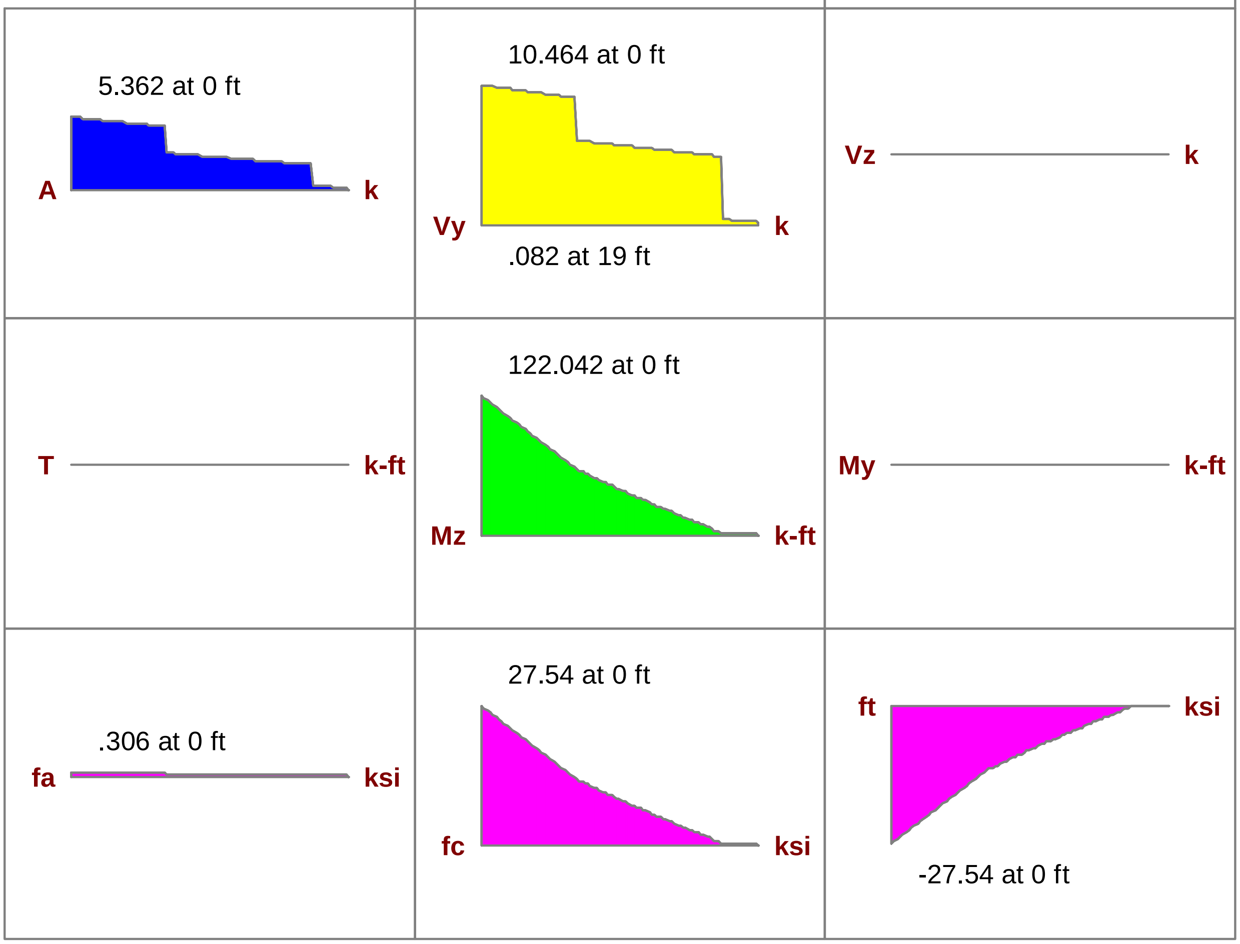
Shape:	**PIPE_12.0X**
Material:	**A53 Gr. B**
Length:	**19 ft**
I Joint:	**FLANGE**
J Joint:	**TOPMAST**

LC 1: 1.2D + 1.6W

Code Check: **0.668 (bending)**

Report Based On 97 Sections





AISC 14th(360-10): LRFD Code Check

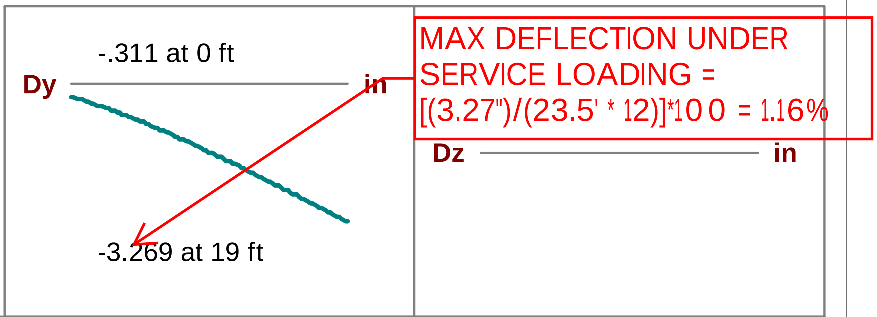
Direct Analysis Method

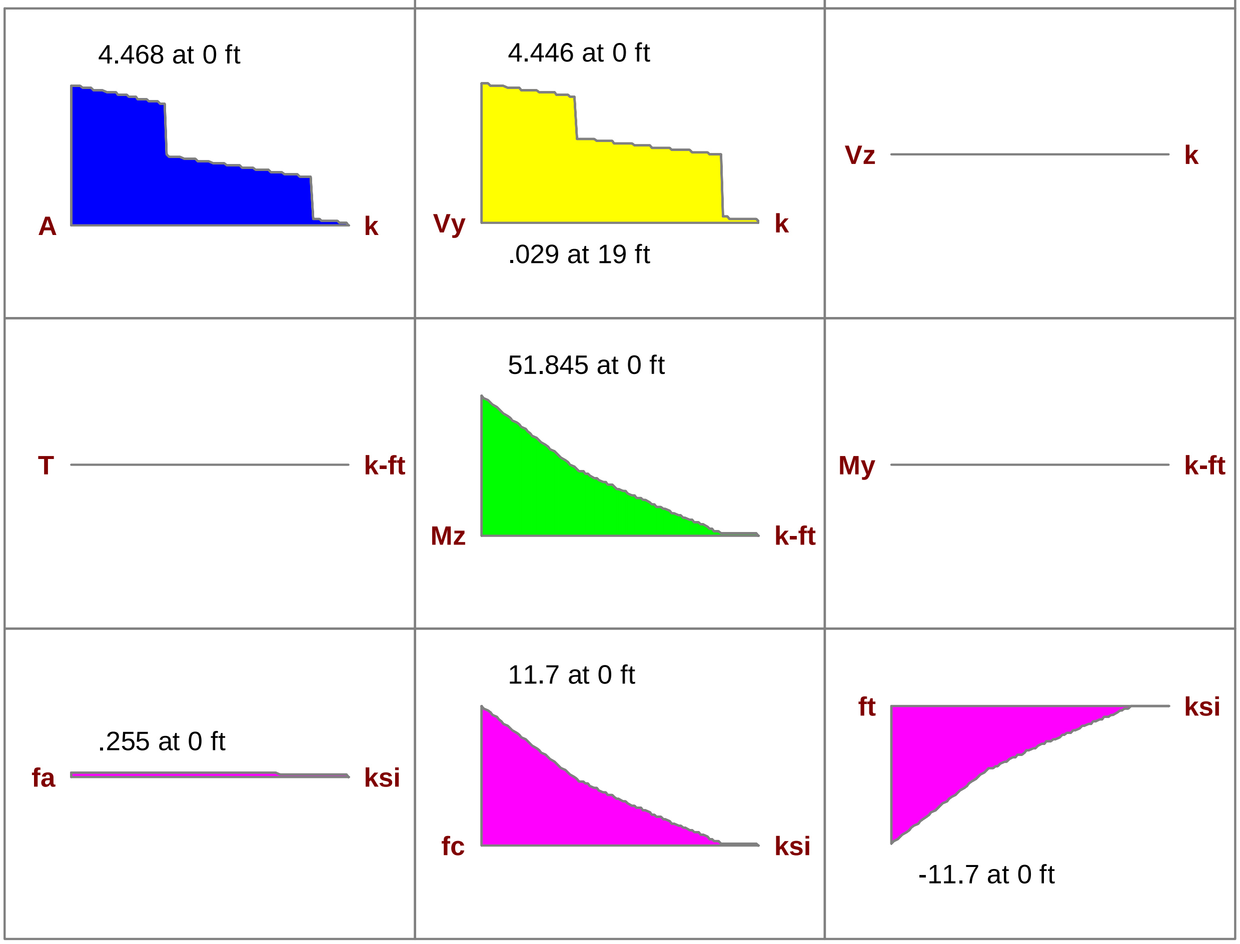
Max Bending Check	**0.668**	Max Shear Check	**0.063 (s)**
Location	**0 ft**	Location	**0 ft**
Equation	**H1-1b**	Max Defl Ratio	**L/32**
Bending	**Compact**	Compression	**Non-Slender**

			y-y	z-z
Fy	**35 ksi**	Lb	**19 ft**	**19 ft**
phi*Pnc	**480.506 k**	KL/r	**51.803**	**51.803**
phi*Pnt	**551.25 k**			
phi*Mny	**184.275 k-ft**	L Comp Flange	**19 ft**	
phi*Mnz	**184.275 k-ft**	L-torque	**19 ft**	
phi*Vny	**165.375 k**	Tau_b	**1**	
phi*Vnz	**165.375 k**			
phi*Tn	**173.622 k-ft**			
Cb	**2.12**			

Column: ***M2***

Shape: **PIPE_12.0X**
Material: **A53 Gr. B**
Length: **19 ft**
I Joint: **FLANGE**
J Joint: **TOPMAST**
LC 4: 1.0D + 1.0WService
Code Check: **0.286 (bending)**
Report Based On 97 Sections





AISC 14th(360-10): LRFD Code Check

Direct Analysis Method

Max Bending Check	**0.286**	Max Shear Check	**0.027 (s)**
Location	**0 ft**	Location	**0 ft**
Equation	**H1-1b**	Max Defl Ratio	**L/77**

Bending	**Compact**	Compression	**Non-Slender**

			y-y	z-z
Fy	**35 ksi**	Lb	**19 ft**	**19 ft**
phi*Pnc	**480.506 k**	KL/r	**51.803**	**51.803**
phi*Pnt	**551.25 k**			
phi*Mny	**184.275 k-ft**	L Comp Flange	**19 ft**	
phi*Mnz	**184.275 k-ft**	L-torque	**19 ft**	
phi*Vny	**165.375 k**	Tau_b	**1**	
phi*Vnz	**165.375 k**			
phi*Tn	**173.622 k-ft**			
Cb	**2.122**			

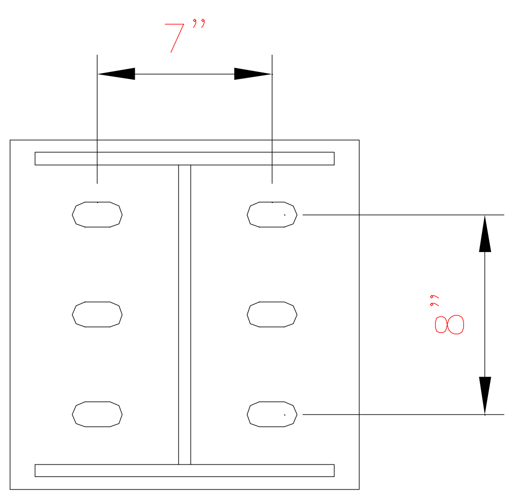
Mast Connection:

Maximum Design Reactions at Brace:

Vertical =	$Vert := 6.2 \cdot kips$	(User Input)
Horizontal =	$Horz := 39.2 \cdot kips$	(User Input)
Moment =	$Moment := 0$	(User Input)

Bolt Data:

Bolt Grade =	A325	(User Input)
Number of Bolts =	$n_b := 6$	(User Input)
Bolt Diameter =	$d_b := 1.0in$	(User Input)
Nominal Tensile Strength =	$F_{nt} := 90 \cdot ksi$	(User Input)
Nominal Shear Strength =	$F_{nv} := 54 \cdot ksi$	(User Input)
Resistance Factor =	$\phi := 0.75$	(User Input)
Bolt Eccentricity from C.L. Mast =	$e := 12 \cdot in$	(User Input)
Vetical Spacing Between Top and Bottom Bolts =	$S_{vert} := 8 \cdot in$	(User Input)
Horizontal Spacing Between Bolts =	$S_{horz} := 7 \cdot in$	(User Input)
Bolt Area =	$a_b := \frac{1}{4} \cdot \pi \cdot d_b^2 = 0.785 \cdot in^2$	



Check Bolt Stresses:

Wind Acting Parallel to Stiffiner Plate:

Shear Stress per Bolt = $f_v := \frac{Vert}{n_b \cdot a_b} = 1.316 \cdot ksi$

Condition1 := if($f_v < \phi \cdot F_{nv}$, "OK", "Overstressed")

Condition1 = "OK"

$\frac{f_v}{(\phi \cdot F_{nv})} = 3.2 \cdot \%$

Tensile Stress Adjusted for Shear = $F'_{nt} := \begin{cases} \left(1.3 \cdot F_{nt} - \frac{F_{nt}}{\phi \cdot F_{nv}} \cdot f_v\right) & \text{if } 1.3 \cdot F_{nt} - \frac{F_{nt}}{\phi \cdot F_{nv}} \cdot f_v \le F_{nt} \\ F_{nt} & \text{otherwise} \end{cases} = 90 \cdot ksi$

Tension Force Each Bolt = $F_{tension.bolt} := \frac{Horz}{n_b} + \frac{Vert \cdot e}{S_{vert} \cdot 2} = 11.183 \cdot kips$

Tension Stress Each Bolt = $f_t := \frac{F_{tension.bolt}}{a_b} = 14.2 \cdot ksi$

Condition2 := if($f_t < \phi \cdot F'_{nt}$, "OK", "Overstressed")

Condition2 = "OK"

$\frac{f_t}{(\phi \cdot F'_{nt})} = 21.1 \cdot \%$

Wind Acting Perpendicular to Stiffiner Plate:

Shear Stress per Bolt = $f_v := \frac{\sqrt{Vert^2 + Horz^2}}{n_b \cdot a_b} = 8.422 \cdot ksi$

Condition3 := if($f_v < \phi \cdot F_{nv}$, "OK", "Overstressed")

Condition3 = "OK"

$\frac{f_v}{(\phi \cdot F_{nv})} = 20.8 \cdot \%$

Tensile Stress Adjusted for Shear = $F'_{nt} := \begin{cases} \left(1.3 \cdot F_{nt} - \frac{F_{nt}}{\phi \cdot F_{nv}} \cdot f_v\right) & \text{if } 1.3 \cdot F_{nt} - \frac{F_{nt}}{\phi \cdot F_{nv}} \cdot f_v \le F_{nt} \\ F_{nt} & \text{otherwise} \end{cases} = 90 \cdot ksi$

Tension Force per Bolt = $F_{tension.conn} := \frac{Horz \cdot e}{S_{horz} \cdot \frac{n_b}{2}} + \frac{Vert \cdot e}{S_{vert} \cdot 2} = 27.05 \cdot kips$

Tension Stress Each Bolt = $f_t := \frac{F_{tension.conn}}{a_b} = 34.441 \cdot ksi$

Condition4 := if($f_t < \phi \cdot F'_{nt}$, "OK", "Overstressed")

Condition4 = "OK"

$\frac{f_t}{(\phi \cdot F'_{nt})} = 51 \cdot \%$

Flange Bolt and Flange Plate Analysis:

Input Data:

Tower Reactions:

Overturning Moment =	$OM := 122 \cdot ft \cdot kips$	(Input From Risa3D)
Shear Force =	$Shear := 10.5 \cdot kips$	(Input From Risa3D)
Axial Force =	$Axial := 5.4 \cdot kips$	(Input From Risa3D)

Flange Bolt Data:

Use ASTM A325

Number of Flange Bolts =	$N := 8$	(User Input)
Diameter of Bolt Circle =	$D_{bc} := 17 \cdot in$	(User Input)
Bolt Minimum Tensile Strength =	$F_{ub} := 120 \cdot ksi$	(User Input)
Bolt Modulus =	$E := 29000 \cdot ksi$	(User Input)
Diameter of Flange Bolts =	$D := 1.00 \cdot in$	(User Input)
Threads per Inch =	$n := 8$	(User Input)

Flange Plate Data:

Use ASTM A36

Plate Yield Strength =	$Fy_{bp} := 36 \cdot ksi$	(User Input)
Flange Plate Thickness =	$t_{bp} := 1.0 \cdot in$	(User Input)
Flange Plate Diameter =	$D_{bp} := 20 \cdot in$	(User Input)
Outer Pole Diameter =	$D_{pole} := 12.8 \cdot in$	(User Input)

Geometric Layout Data:

Distance from Bolts to Centroid of Pole:

Radius of Bolt Circle =: $R_{bc} := \frac{D_{bc}}{2} = 8.5 \cdot in$

Distance to Bolts = $i := 1..N$

$$d_i := \begin{vmatrix} \theta \leftarrow 2 \cdot \pi \cdot \left(\frac{i}{N}\right) \\ d \leftarrow R_{bc} \cdot \sin(\theta) \end{vmatrix}$$

$d_1 = 6.01 \cdot in$ $d_7 = -6.01 \cdot in$

$d_2 = 8.50 \cdot in$ $d_8 = -0.00 \cdot in$

$d_3 = 6.01 \cdot in$ $d_9 = ■ \cdot in$

$d_4 = 0.00 \cdot in$ $d_{10} = ■ \cdot in$

$d_5 = -6.01 \cdot in$ $d_{11} = ■ \cdot in$

$d_6 = -8.50 \cdot in$ $d_{12} = ■ \cdot in$

Critical Distances For Bending in Plate:

Outer Pole Radius = $R_{pole} := \frac{D_{pole}}{2} = 6.4 \cdot in$

Moment Arms of Bolts about Neutral Axis = $MA_i := \text{if}\left(d_i \geq R_{pole}, d_i - R_{pole}, 0in\right)$

$MA_1 = 0.00 \cdot in$ $MA_7 = 0.00 \cdot in$

$MA_2 = 2.10 \cdot in$ $MA_8 = 0.00 \cdot in$

$MA_3 = 0.00 \cdot in$ $MA_9 = ■ \cdot in$

$MA_4 = 0.00 \cdot in$ $MA_{10} = ■ \cdot in$

$MA_5 = 0.00 \cdot in$ $MA_{11} = ■ \cdot in$

$MA_6 = 0.00 \cdot in$ $MA_{12} = ■ \cdot in$

Effective Width of Flangeplate for Bending = $B_{eff} := .8 \cdot 2 \cdot \sqrt{\left(\frac{D_{bp}}{2}\right)^2 - \left(\frac{D_{pole}}{2}\right)^2} = 12.3 \cdot in$

Flange Bolt Analysis:

Calculated Flange Bolt Properties:

Polar Moment of Inertia = $I_p := \sum_i (d_i)^2 = 289 \cdot in^2$

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 0.785 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n}\right)^2 = 0.606 \cdot in^2$

Net Diameter = $D_n := \frac{2 \cdot \sqrt{A_n}}{\sqrt{\pi}} = 0.878 \cdot in$

Radius of Gyration of Bolt = $r := \frac{D_n}{4} = 0.22 \cdot in$

Section Modulus of Bolt = $S_x := \frac{\pi \cdot D_n^{\ 3}}{32} = 0.066 \cdot in^3$

Check Flange Bolt Tension Force:

Maximum Tensile Force = $T_{Max} := OM \cdot \frac{R_{bc}}{I_p} - \frac{Axial}{N} = 42.4 \cdot kips$

Maximum Shear Force = $V_{Max} := \frac{Shear}{N} = 1.3 \cdot kips$

Design Tensile Strength = $\Phi R_{nt} := (0.75 \cdot F_{ub} \cdot 0.75 \cdot A_g) = 53 \cdot kips$

Bolt Tension % of Capacity = $\frac{T_{Max}}{\Phi R_{nt}} = 79.95 \cdot \%$

Condition1 = $Condition1 := if\left(\frac{T_{Max}}{\Phi R_{nt}} \le 1.00, \text{"OK"}, \text{"Overstressed"}\right)$

Condition1 = "OK"

Design Shear Strength = $\Phi R_{nv} := (0.75 \cdot 0.45 \cdot F_{ub} \cdot A_g) = 31.8 \cdot kips$

Condition2 = $Condition2 := if\left[\left(\frac{V_{Max}}{\Phi R_{nv}}\right)^2 + \left(\frac{T_{Max}}{\Phi R_{nt}}\right)^2 \le 1.00, \text{"OK"}, \text{"Overstressed"}\right]$

Condition2 = "OK"

Flange Plate Analysis:

Force from Bolts = $C_i := \frac{OM \cdot d_i}{I_p} + \frac{Axial}{N}$

$C_1 = 31.1 \cdot kips$	$C_7 = -29.8 \cdot kips$
$C_2 = 43.7 \cdot kips$	$C_8 = 0.7 \cdot kips$
$C_3 = 31.1 \cdot kips$	$C_9 = ■ \cdot kips$
$C_4 = 0.7 \cdot kips$	$C_{10} = ■ \cdot kips$
$C_5 = -29.8 \cdot kips$	$C_{11} = ■ \cdot kips$
$C_6 = -42.4 \cdot kips$	$C_{12} = ■ \cdot kips$

Maximum Bending Stress in Plate =

$$f_{bp} := \sum_i \frac{4 \cdot C_i \cdot MA_i}{\left(B_{eff} \cdot t_{bp}^{2}\right)} = 29.9 \cdot ksi$$

Allowable Bending Stress in Plate = $F_{bp} := 0.9 \cdot Fy_{bp} = 32.4 \cdot ksi$

Plate Bending Stress % of Capacity = $\frac{f_{bp}}{F_{bp}} = 92.2 \cdot \%$

Condition3 = $Condition3 := if\left(\frac{f_{bp}}{F_{bp}} < 1.00, \text{"Ok"}, \text{"Overstressed"}\right)$

Condition3 = "Ok"

Basic Components

Heavy Wind Pressure =	$p := 4.00$	psf	(User Input NESC 2017 Figure 250-1 & Table 250-1)
Basic Windspeed =	$V := 100$	mph	(User Input NESC 2017 Figure 250-2(e))
Radial Ice Thickness =	$Ir := 0.50$	in	(User Input)
Radial Ice Density =	$Id := 56.0$	pcf	(User Input)

Factors for Extreme Wind Calculation

Elevation of Top of Mast Above Grade =	$TME := 170$	ft	(User Input)
Multiplier Gust Response Factor =	$m := 1.25$		(User Input - Only for NESC Extreme wind case)
NESC Factor =	$kv := 1.43$		(User Input from NESC 2017 Table 250-3 equation)
Importance Factor =	$I := 1.0$		(User Input from NESC 2017 Section 250.C.2)

Velocity Pressure Coefficient = $Kz := 2.01 \cdot \left(\frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.415$ (NESC 2017 Table 250-2)

Exposure Factor = $Es := 0.346 \left[\frac{33}{(0.67 \cdot TME)}\right]^{\frac{1}{7}} = 0.29$ (NESC 2017 Table 250-3)

Response Term = $Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.775$ (NESC 2017 Table 250-3)

Gust Response Factor = $Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.826$ (NESC 2017 Table 250-3)

Wind Pressure = $qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 29.9$ psf (NESC 2017 Section 250.C.2)

Shape Factors Eversource Design Criteria

Shape Factor for Round Members =	$Cd_R := 1.3$	(User Input)
Shape Factor for Flat Members =	$Cd_F := 1.6$	(User Input)
Shape Factor for Coax Cables Attached to Outside of Pole =	$Cd_{coax} := 1.6$	(User Input)

Overload Factors Eversource Design Criteria Table

Overload Factors for Wind Loads:

NESC Heavy Loading =	**2.5**	(User Input)	Apply in Risa-3D Analysis
NESC Extreme Loading =	**1.0**	(User Input)	Apply in Risa-3D Analysis

Overload Factors for Vertical Loads:

NESC Heavy Loading =	**1.5**	(User Input)	Apply in Risa-3D Analysis
NESC Extreme Loading =	**1.0**	(User Input)	Apply in Risa-3D Analysis

Development of Wind & Ice Load on PCS Mast

Mast Data: (Pipe 12" Sch. 80)

Mast Shape =	Round		(User Input)
Mast Diameter =	$D_{mast} := 12.75$	in	(User Input)
Mast Length =	$L_{mast} := 33$	ft	(User Input)
Mast Thickness =	$t_{mast} := 0.5$	in	(User Input)

Wind Load (NESC Extreme)

Mast Projected Surface Area = $A_{mast} := \frac{D_{mast}}{12} = 1.063$ sf/ft

Total Mast Wind Force (Above NU Structure) = $qz \cdot Cd_{coax} \cdot A_{mast} \cdot m = 64$ plf **BLC 5**

Total Mast Wind Force (Below NU Structure) = $qz \cdot Cd_{coax} \cdot A_{mast} = 51$ plf **BLC 5**

Wind Load (NESE Heavy)

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{\left(D_{mast} + 2 \cdot Ir\right)}{12} = 1.146$ sf/ft

Total Mast Wind Force w/ Ice = $p \cdot Cd_{coax} \cdot AICE_{mast} = 7$ plf **BLC 4**

Gravity Loads (without ice)

Weight of the mast = Self Weight **(Computed internally by Risa-3D)** plf **BLC 1**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + Ir \cdot 2\right)^2 - D_{mast}^{\,2}\right] = 20.8$ sq in

Weight of Ice on Mast = $W_{ICEmast} := Id \cdot \frac{Ai_{mast}}{144} = 8$ plf **BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data: (Verizon)

Antenna Model = Commscope NNH4-65B-R6H4

Antenna Shape = Flat (User Input)

Antenna Height = $L_{ant} := 71.969$ in (User Input)

Antenna Width = $W_{ant} := 19.606$ in (User Input)

Antenna Thickness = $T_{ant} := 7.756$ in (User Input)

Antenna Weight = $WT_{ant} := 120$ lbs (User Input)

Number of Antennas = $N_{ant} := 3$ (User Input)

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 9.8$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 29.4$ sf

Total Antenna Wind Force = $F_{ant} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1759$ lbs **BLC 5**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 10.4$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 31.3$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := p \cdot Cd_F \cdot A_{ICEant} = 200$ lbs **BLC 4**

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 360$ lbs **BLC 2**

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 1 \times 10^4$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 2222$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 72$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 216$ lbs **BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data: (Verizon)

Antenna Model =	Samsung MT6407-77A		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 35.1$	in	(User Input)
Antenna Width =	$W_{ant} := 16.1$	in	(User Input)
Antenna Thickness =	$T_{ant} := 5.5$	in	(User Input)
Antenna Weight =	$WT_{ant} := 87$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 3.9$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 11.8$ sf

Total Antenna Wind Force = $F_{ant} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 705$ lbs **BLC 5**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 4.3$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 12.9$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := p \cdot Cd_F \cdot A_{ICEant} = 82$ lbs **BLC 4**

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 261$ lbs **BLC 2**

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 3108$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 904$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 29$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 88$ lbs **BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data: (Verizon)

Antenna Model =	Commscope CBC61923T-DS-43 Triplexer		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 7.8$	in	(User Input)
Antenna Width =	$W_{ant} := 6.9$	in	(User Input)
Antenna Thickness =	$T_{ant} := 4.2$	in	(User Input)
Antenna Weight =	$WT_{ant} := 15$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 6$		(User Input)

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.4$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 2.2$ sf

Total Antenna Wind Force = $F_{ant} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 134$ lbs **BLC 5**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 0.5$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 2.9$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := p \cdot Cd_F \cdot A_{ICEant} = 19$ lbs **BLC 4**

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 90$ lbs **BLC 2**

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 226$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 135$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 4$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 26$ lbs **BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data: (Verizon)

Antenna Model = RFS DB-B1-6C-12AB OVP Box

Antenna Shape = Flat (User Input)

Antenna Height = $L_{ant} := 29$ in (User Input)

Antenna Width = $W_{ant} := 15.7$ in (User Input)

Antenna Thickness = $T_{ant} := 10.3$ in (User Input)

Antenna Weight = $WT_{ant} := 32$ lbs (User Input)

Number of Antennas = $N_{ant} := 1$ (User Input)

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 3.2$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 3.2$ sf

Total Antenna Wind Force = $F_{ant} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 189$ lbs **BLC 5**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 3.5$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 3.5$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := p \cdot Cd_F \cdot A_{ICEant} = 22$ lbs **BLC 4**

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 32$ lbs **BLC 2**

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 4690$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 972$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 31$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 31$ lbs **BLC 3**

Development of Wind & Ice Load on Mounts

Mount Data: (Verizon)

Mount Type = Dual Standoff Mount
B1827 w/ 6 Pipe Mounts

Platform Shape = Flat (User Input)

Platform Area = $A_{plt} := 7$ sq ft (User Input) (Shape Factor Included)

Platform Area w/ Ice = $A_{ICEplt} := 10$ sq ft (User Input) (Shape Factor Included)

Platform Weight = $WT_{plt} := 575$ lbs (User Input)

Platform Weight w/ Ice = $WT_{ICEplt} := 800$ lbs (User Input)

Wind Load (NESC Extreme)

Total Platform Wind Force = $F_{plt} := qz \cdot A_{plt} \cdot m = 262$ lbs **BLC 5**

Wind Load (NESC Heavy)

Total Platform Wind Force w/ Ice = $Fi_{plt} := p \cdot A_{ICEplt} = 40$ lbs **BLC 4**

Gravity Load (without ice)

Weight of Platform = $WT_{plt} = 575$ lbs **BLC 2**

Gravity Load (ice only)

Weight of Ice on Platform = $WT_{ICEplt} - WT_{plt} = 225$ lbs **BLC 3**

Development of Wind & Ice Load on Antennas

(Sprint)

Antenna Data:

Antenna Model =	RFS APXVSPP18-C		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 72$	in	(User Input)
Antenna Width =	$W_{ant} := 11.8$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7$	in	(User Input)
Antenna Weight =	$WT_{ant} := 57$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant1} := WT_{ant} \cdot N_{ant} = 171$ lbs **BLC 2**

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 5947$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 2 \cdot Ir)(W_{ant} + 2 \cdot Ir)(T_{ant} + 2 \cdot Ir) - V_{ant} = 1528$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 50$ lbs

Weight of Ice on All Antennas = $Wt_{ice.ant1} := W_{ICEant} \cdot N_{ant} = 149$ lbs **BLC 3**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 2 \cdot Ir) \cdot (W_{ant} + 2 \cdot Ir)}{144} = 6.5$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 19.5$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant1} := p \cdot Cd_F \cdot A_{ICEant} = 125$ lbs **BLC 4**

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 5.9$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 17.7$ sf

Total Antenna Wind Force = $F_{ant1} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1059$ lbs **BLC 5**

Development of Wind & Ice Load on Mounts

Mount Data: (Sprint)

Mount Type = 13-ft Low Profile Platform

Platform Shape = Flat (User Input)

Platform Area = $A_{plt} := 20$ sq ft (User Input)

Platform Area w/ Ice = $A_{ICEplt} := 25$ sq ft (User Input)

Platform Weight = $WT_{plt} := 1500$ lbs (User Input)

Platform Weight w/ Ice = $WT_{ICEplt} := 2000$ lbs (User Input)

Wind Load (NESC Extreme)

Total Platform Wind Force = $F_{plt} := qz \cdot Cd_F \cdot A_{plt} \cdot m = 1197$ lbs **BLC 5**

Wind Load (NESC Heavy)

Total Platform Wind Force w/ Ice = $Fi_{plt} := p \cdot Cd_F \cdot A_{ICEplt} = 160$ lbs **BLC 4**

Gravity Load (without ice)

Weight of Platform = $WT_{plt} = 1500$ lbs **BLC 2**

Gravity Load (ice only)

Weight of Ice on Platform = $WT_{ICEplt} - WT_{plt} = 500$ lbs **BLC 3**

Development of Wind & Ice Load on Coax Cables

Coax Cable Data: (Bottom Mast to Sprint Antennas)

Coax Type = HELIAX 1-5/8"

Shape = Round (User Input)

Coax Outside Diameter = $D_{coax} := 1.98$ in (User Input)

Coax Cable Length = $L_{coax} := 31$ ft (User Input)

Weight of Coax per foot = $Wt_{coax} := 1.04$ plf (User Input)

Total Number of Coax = $N_{coax} := 31$ (User Input)

No. of Coax Projecting Outside Face of PCS Mast = $NP_{coax} := 4$ (User Input)

Wind Load (NESC Extreme)

Coax projected surface area = $A_{coax} := \frac{(NP_{coax} D_{coax})}{12} = 0.7$ sf/ft

Total Coax Wind Force (Above NU Structure) = $F_{coax} := qz \cdot Cd_{coax} \cdot A_{coax} = 32$ plf **BLC 5**

Total Coax Wind Force (Below NU Structure) = $F_{coax} := qz \cdot Cd_{coax} \cdot A_{coax} \cdot m = 40$ plf **BLC 5**

Wind Load (NESC Heavy)

Coax projected surface area w/ Ice = $AICE_{coax} := \frac{NP_{coax} \cdot (D_{coax} + 2 \cdot Ir)}{12} = 1$ sf/ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := p \cdot Cd_{coax} \cdot AICE_{coax} = 6$ plf **BLC 4**

Gravity Loads (without ice)

Weight of all cables w/o ice $WT_{coax} := Wt_{coax} \cdot N_{coax} = 32$ plf **BLC 2**

Gravity Load (ice only)

Ice Area per Linear Foot = $Ai_{coax} := \frac{\pi}{4} \left[(D_{coax} + 2 \cdot Ir)^2 - D_{coax}{}^2 \right] = 3.9$ sq in

Ice Weight All Coax per foot = $WTi_{coax} := N_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 47$ plf **BLC 3**

Development of Wind & Ice Load on Coax Cables

Coax Cable Data: (Above Sprint Antennas)

Coax Type = HELIAX 1-5/8"

Shape = Round (User Input)

Coax Outside Diameter = $D_{coax} := 1.98$ in (User Input)

Coax Cable Length = $L_{coax} := 31$ ft (User Input)

Weight of Coax per foot = $Wt_{coax} := 1.04$ plf (User Input)

Total Number of Coax = $N_{coax} := 13$ (User Input)

No. of Coax Projecting Outside Face of PCS Mast = $NP_{coax} := 2$ (User Input)

Wind Load (NESC Extreme)

Coax projected surface area = $A_{coax} := \frac{(NP_{coax} D_{coax})}{12} = 0.3$ sf/ft

Total Coax Wind Force (Above NU Structure) = $F_{coax} := qz \cdot Cd_{coax} \cdot A_{coax} \cdot m = 20$ plf **BLC 5**

Wind Load (NESC Heavy)

Coax projected surface area w/ Ice = $AICE_{coax} := \frac{NP_{coax} \cdot (D_{coax} + 2 \cdot Ir)}{12} = 0.5$ sf/ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := p \cdot Cd_{coax} \cdot AICE_{coax} = 3$ plf **BLC 4**

Gravity Loads (without ice)

Weight of all cables w/o ice $WT_{coax} := Wt_{coax} \cdot N_{coax} = 14$ plf **BLC 2**

Gravity Load (ice only)

Ice Area per Linear Foot = $Ai_{coax} := \frac{\pi}{4}\left[(D_{coax} + 2 \cdot Ir)^2 - D_{coax}^{\ 2}\right] = 3.9$ sq in

Ice Weight All Coax per foot = $WTi_{coax} := N_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 20$ plf **BLC 3**

Coax Cable on CL&P Pole

Heavy Wind Pressure = $p := 4 \cdot psf$ *(User Input)*

Radial Ice Thickness = $Ir := 0.5 \cdot in$ *(User Input)*

Radial Ice Density = $Id := 56 \cdot pcf$ *(User Input)*

Basic Windspeed = $V := 100$ mph (User Input NESC 2017 Figure 250-2(e))

Height to Top of Coax Above Grade = $TC := 167.5$ ft (User Input)

NESC Factor = $kv := 1.43$ (User Input from NESC 2017 Table 250-3 equation)

Importance Factor = $I := 1.0$ (User Input from NESC 2017 Section 250.C.2)

Velocity Pressure Coefficient = $Kz := 2.01 \cdot \left(\frac{0.67TC}{900}\right)^{\frac{2}{9.5}} = 1.297$ (NESC 2017 Table 250-2)

Exposure Factor = $Es := 0.346 \left[\frac{33}{(0.67 \cdot TC)}\right]^{\frac{1}{7}} = 0.29$ (NESC 2017 Table 250-3)

Response Term = $Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TC}{220}\right)} = 0.778$ (NESC 2017 Table 250-3)

Gust Response Factor = $Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.827$ (NESC 2017 Table 250-3)

Wind Pressure = $qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 27.5$ psf (NESC 2017 Section 250.C.2)

Distance Between Coax Cable Attach Points =

Coaxial Cable Span $Coax_{Span} := \begin{pmatrix} 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \end{pmatrix} \cdot ft$ *(User Input)*

Diameter of Coax Cable = $D_{coax} := 1.98 \cdot in$ *(User Input)*

Weight of Coax Cable = $W_{coax} := 1.04 \cdot plf$ *(User Input)*

Number of Coax Cables = $N_{coax} := 31$ *(User Input)*

Number of Projected Coax Cables = $NP_{coax} := 3$ *(User Input)*

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P: (203) 488-0580
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Subject: Coax Cable on Pole #10255

Location: Bethel, CT

Rev. 1: 1/24/22

Prepared by: T.J.L Checked by: C.F.C.
Job No. 21007.74

Shape Factor = $Cd_{coax} := 1.6$ *(User Input)*

Overload Factor for NESC Heavy Wind Transverse Load = $OF_{HWT} := 2.5$ *(User Input)*

Overload Factor for NESC Heavy Wind Vertical Load = $OF_{HWV} := 1.5$ *(User Input)*

Overload Factor for NESC Extreme Wind Transverse Load = $OF_{EWT} := 1.0$ *(User Input)*

Overload Factor for NESC Extreme Wind Vertical Load = $OF_{EWV} := 1.0$ *(User Input)*

Wind Area without Ice = $A := \left(NP_{coax} \cdot D_{coax}\right) = 5.94 \cdot in$

Wind Area with Ice = $A_{ice} := \left(NP_{coax} \cdot D_{coax} + 2 \cdot Ir\right) = 6.94 \cdot in$

Ice Area per Liner Ft = $Ai_{coax} := \frac{\pi}{4} \cdot \left[\left(D_{coax} + 2 \cdot Ir\right)^2 - D_{coax}^{\ 2}\right] = 0.027 \, ft^2$

Weight of Ice on All Coax Cables = $W_{ice} := Ai_{coax} \cdot Id \cdot N_{coax} = 46.963 \cdot plf$

Heavy Wind Vertical Load =

$$Heavy\_WInd_{Vert} := \overrightarrow{\left[\left(N_{coax} \cdot W_{coax} + W_{ice}\right) \cdot Coax_{Span} \cdot OF_{HWV}\right]}$$

Heavy Wind Transverse Load =

$$Heavy\_Wind_{Trans} := \overrightarrow{\left(p \cdot A_{ice} \cdot Cd_{coax} \cdot Coax_{Span} \cdot OF_{HWT}\right)}$$

$$Heavy\_WInd_{Vert} = \begin{pmatrix} 1188 \\ 1188 \\ 1188 \\ 1188 \\ 1188 \\ 1188 \\ 1188 \\ 1188 \\ 1188 \\ 1188 \\ 1188 \\ 1188 \\ 1188 \end{pmatrix} lb \qquad Heavy\_Wind_{Trans} = \begin{pmatrix} 93 \\ 93 \\ 93 \\ 93 \\ 93 \\ 93 \\ 93 \\ 93 \\ 93 \\ 93 \\ 93 \\ 93 \\ 93 \end{pmatrix} lb$$

Extreme Wind Vertical Load =

$$Extreme\_Wind_{Vert} := \overrightarrow{\left(N_{coax} \cdot W_{coax} \cdot Coax_{Span} \cdot OF_{EWV}\right)}$$

Extreme Wind Transverse Load =

$$Extreme\_Wind_{Trans} := \overrightarrow{\left[\left(qz \cdot A \cdot Cd_{coax}\right) \cdot Coax_{Span} \cdot OF_{EWT}\right]}$$

$$Extreme\_Wind_{Vert} = \begin{pmatrix} 322 \\ 322 \\ 322 \\ 322 \\ 322 \\ 322 \\ 322 \\ 322 \\ 322 \\ 322 \\ 322 \\ 322 \\ 322 \end{pmatrix} lb \qquad Extreme\_Wind_{Trans} = \begin{pmatrix} 218 \\ 218 \\ 218 \\ 218 \\ 218 \\ 218 \\ 218 \\ 218 \\ 218 \\ 218 \\ 218 \\ 218 \\ 218 \end{pmatrix} ft^2$$

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	No
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI 1999: ASD
Wood Code	AF&PA NDS-91/97: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-02
Masonry Code	ACI 530-05: ASD
Aluminum Code	AA ADM1-05: ASD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	PCA Load Contour
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	UBC 1997
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	No
Ct X	.035
Ct Z	.035
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	8.5
R Z	8.5
Ca	.36
Cv	.54
Nv	1
Occupancy Category	4
Seismic Zone	3
Om Z	1
Om X	1
Rho Z	1
Rho X	1
Footing Overturning Safety Factor	1.5
Optimize for OTM/Sliding	No
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	0
Footing Concrete f'c (ksi)	3
Footing Concrete Ec (ksi)	4000
Lambda	1
Footing Steel fy (ksi)	60
Minimum Steel	0.0018
Maximum Steel	0.0075
Footing Top Bar	#3
Footing Top Bar Cover (in)	3.5
Footing Bottom Bar	#3
Footing Bottom Bar Cover (in)	3.5
Pedestal Bar	#3
Pedestal Bar Cover (in)	1.5
Pedestal Ties	#3

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\...	Density[k/ft^3]	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	58	1.2
3	A992	29000	11154	.3	.65	.49	50	1.1	58	1.2
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.2	58	1.1
6	A53 Gr. B	29000	11154	.3	.65	.49	35	1.5	58	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Mast	PIPE_12.0X	Column	Pipe	A53 Gr. B	Typical	17.5	339	339	678

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[...	Lcomp bot[...	L-torq...	Kyy	Kzz	Cb	Functi...
1	M1	Mast	14			Lbyy						Lateral
2	M2	Mast	19			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design ...
1	M1	BOTM...	FLANGE			Mast	Column	Pipe	A53 Gr. B	Typical
2	M2	FLANGE	TOPM...			Mast	Column	Pipe	A53 Gr. B	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	BOTMAST	0	0	0	0	
2	BOTCONNECTION	0	3.25	0	0	
3	TOPCONNECTION	0	9.42	0	0	
4	FLANGE	0	14	0	0	
5	TOPMAST	0	33	0	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	BOTCONNECTION	Reaction	Reaction	Reaction		Reaction	
2	TOPCONNECTION	Reaction	Reaction	Reaction		Reaction	

Member Point Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Y	-.36	16.5
2	M2	Y	-.261	16.5
3	M2	Y	-.09	16.5
4	M2	Y	-.032	16.5
5	M2	Y	-.575	16.5
6	M2	Y	-.171	6.5
7	M2	Y	-1.5	6.5

Member Point Loads (BLC 3 : Weight of Ice Only)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Y	-.216	16.5
2	M2	Y	-.088	16.5
3	M2	Y	-.026	16.5
4	M2	Y	-.031	16.5
5	M2	Y	-.225	16.5
6	M2	Y	-.149	6.5
7	M2	Y	-.5	6.5

Member Point Loads (BLC 4 : NESC Heavy Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	X	.2	16.5
2	M2	X	.082	16.5
3	M2	X	.019	16.5
4	M2	X	.022	16.5
5	M2	X	.04	16.5
6	M2	X	.125	6.5
7	M2	X	.16	6.5

Member Point Loads (BLC 5 : NESC Extreme Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	X	1.759	16.5
2	M2	X	.705	16.5
3	M2	X	.134	16.5
4	M2	X	.189	16.5
5	M2	X	.262	16.5
6	M2	X	1.059	6.5
7	M2	X	1.197	6.5

Member Distributed Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.032	-.032	0	0
2	M2	Y	-.032	-.032	0	6.5
3	M2	Y	-.014	-.014	6.5	14

Member Distributed Loads (BLC 3 : Weight of Ice Only)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.008	-.008	0	0
2	M2	Y	-.008	-.008	0	0
3	M1	Y	-.047	-.047	0	0
4	M2	Y	-.047	-.047	0	6.5
5	M2	Y	-.02	-.02	6.5	14

Member Distributed Loads (BLC 4 : NESC Heavy Wind)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.007	.007	0	0
2	M2	X	.007	.007	0	14
3	M1	X	.006	.006	0	0
4	M2	X	.006	.006	0	6.5
5	M2	X	.003	.003	6.5	14

Member Distributed Loads (BLC 5 : NESC Extreme Wind)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.051	.051	0	0
2	M2	X	.051	.051	0	6.5
3	M2	X	.064	.064	6.5	14
4	M1	X	.032	.032	0	0
5	M2	X	.04	.04	0	6.5
6	M2	X	.02	.02	6.5	14

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distrib..	Area(...	Surfa...
1	Self Weight	None		-1						
2	Weight of Appurtenances	None					7	3		
3	Weight of Ice Only	None					7	5		
4	NESC Heavy Wind	None					7	5		
5	NESC Extreme Wind	None					7	6		

Load Combinations

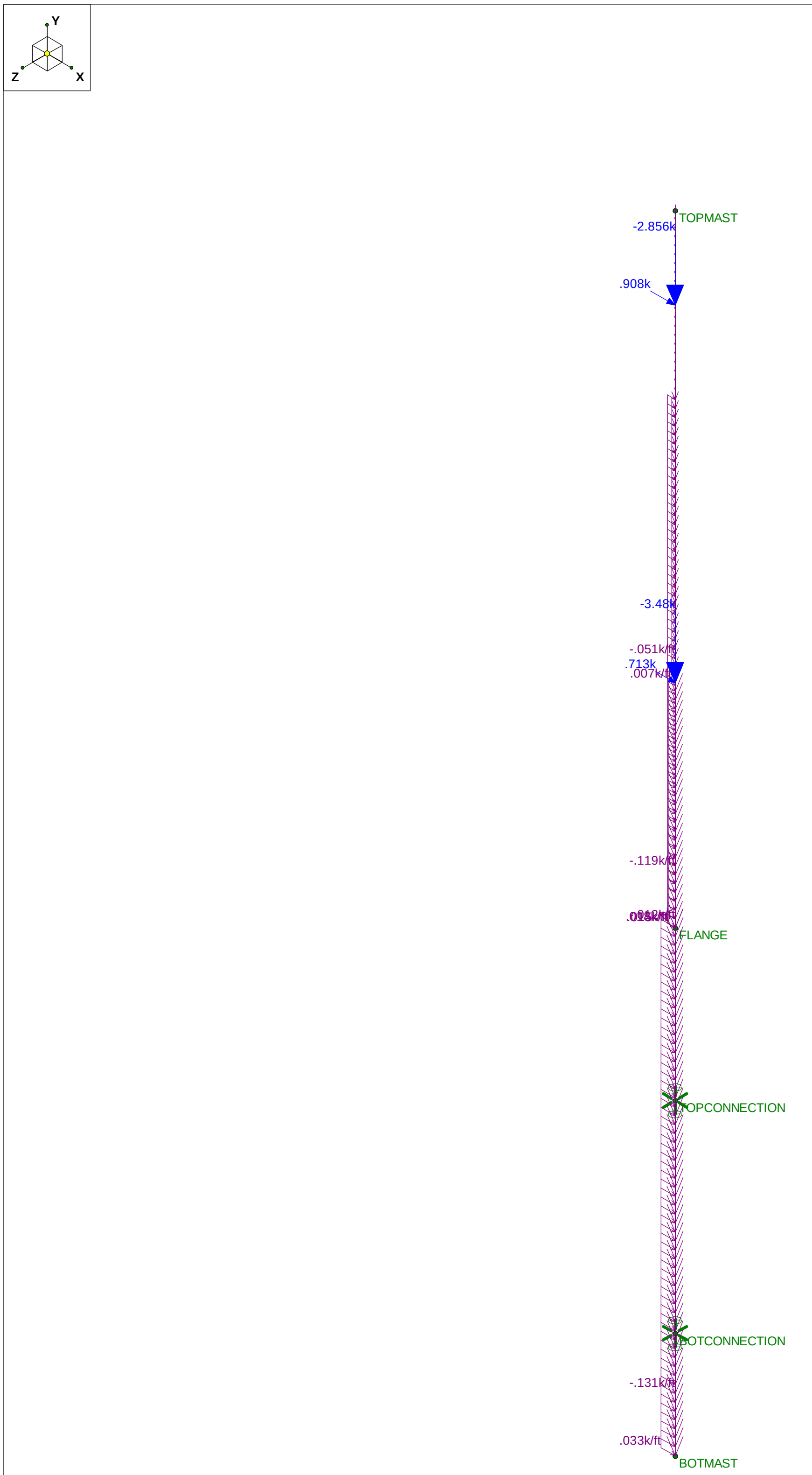
	Description	Solve	P...	S...	B...	Fa...	BLC	Fact...	BLC	Fa...	BLC	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	NESC Heavy Wind	Yes	Y		1	1.5	2	1.5	3	1.5	4	2.5												
2	NESC Extreme Wind	Yes	Y		1	1	2	1	5	1														
3	Self Weight				1	1																		

Joint Reactions (By Combination)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	BOTCONNECTION	5.084	1.393	0	0	0	0
2	1	TOPCONNECTION	-7.557	11.099	0	0	0	0
3	1	Totals:	-2.474	12.491	0			
4	1	COG (ft):	X: 0	Y: 19.837	Z: 0			

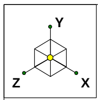
Joint Reactions (By Combination)

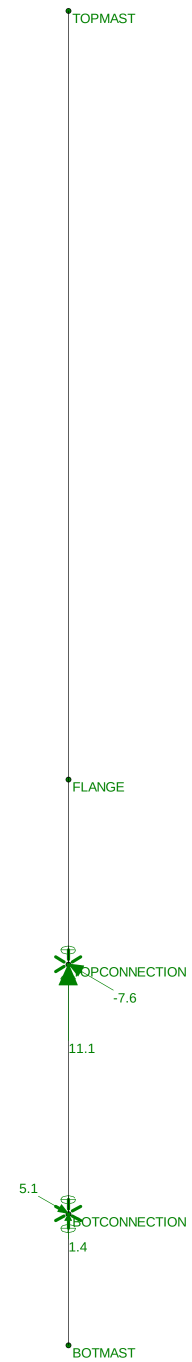
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	BOTCONNECTION	16.526	.58	0	0	0	0
2	2	TOPCONNECTION	-24.215	5.135	0	0	0	0
3	2	Totals:	-7.688	5.715	0			
4	2	COG (ft):	X: 0	Y: 20.323	Z: 0			



Loads: LC 1, NESC Heavy Wind

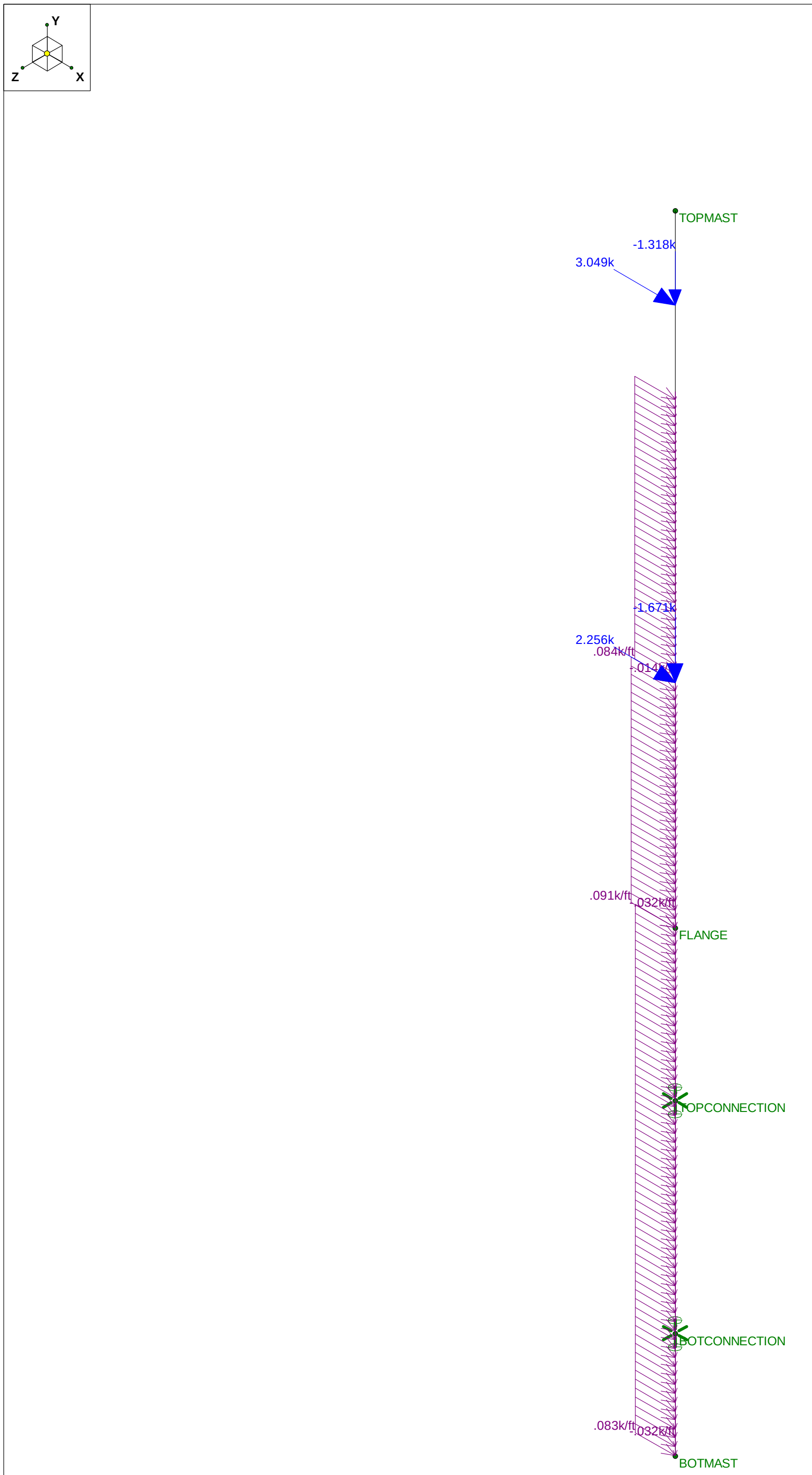
CENTEK Engineering, Inc.		SK - 1
TJL	Structure # 10255 - Mast	Dec 2, 2021 at 4:06 PM
21007.74 / Verizon Bethel ...	LC #1 Loads	NESC.r3d





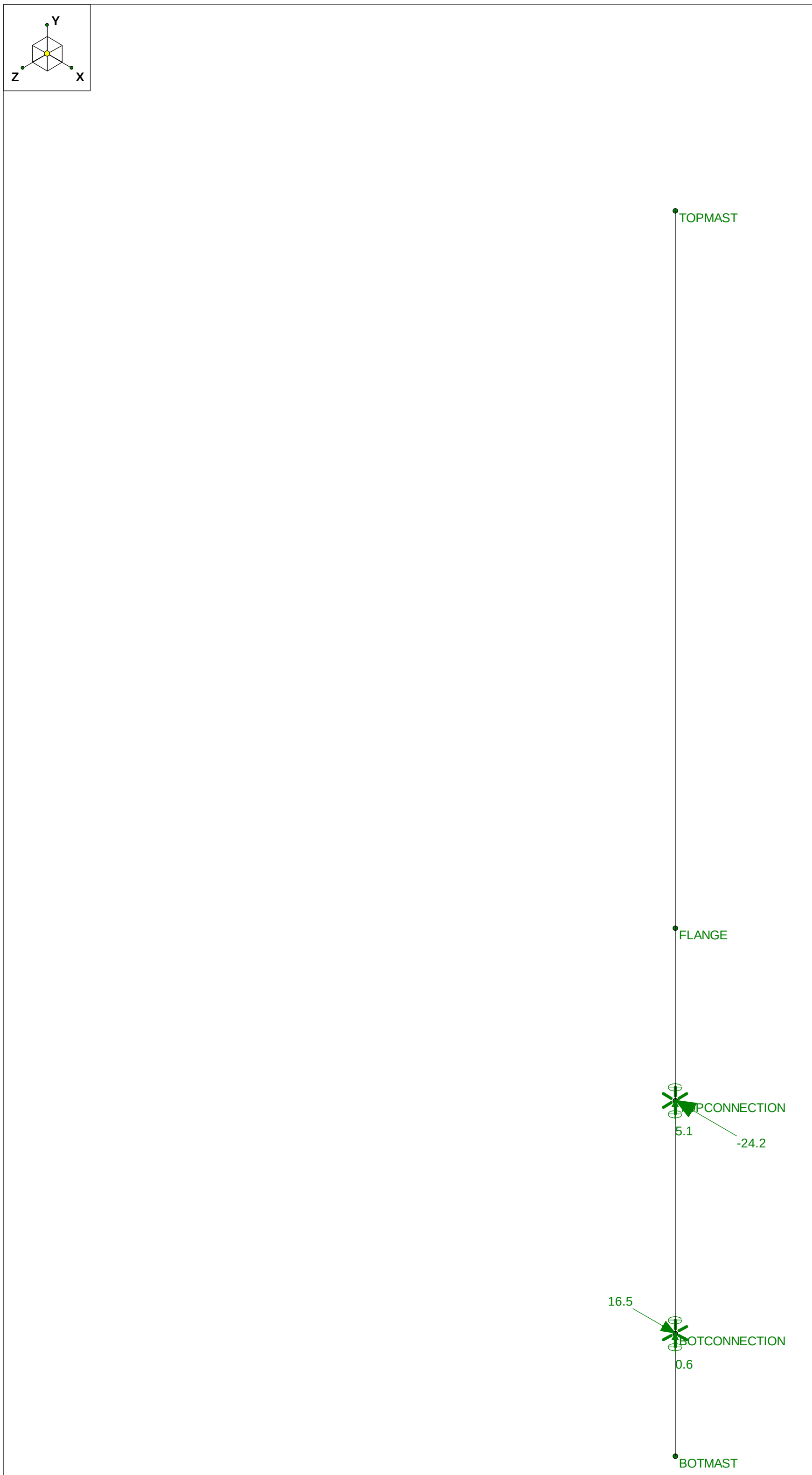
Results for LC 1, NESC Heavy Wind
Reaction and Moment Units are k and k-ft

CENTEK Engineering, Inc.		
TJL	Structure # 10255 - Mast	Dec 2, 2021 at 4:08 PM
21007.74 / Verizon Bethel ...	LC #1 Reactions	NESC.r3d



Loads: LC 2, NESC Extreme Wind

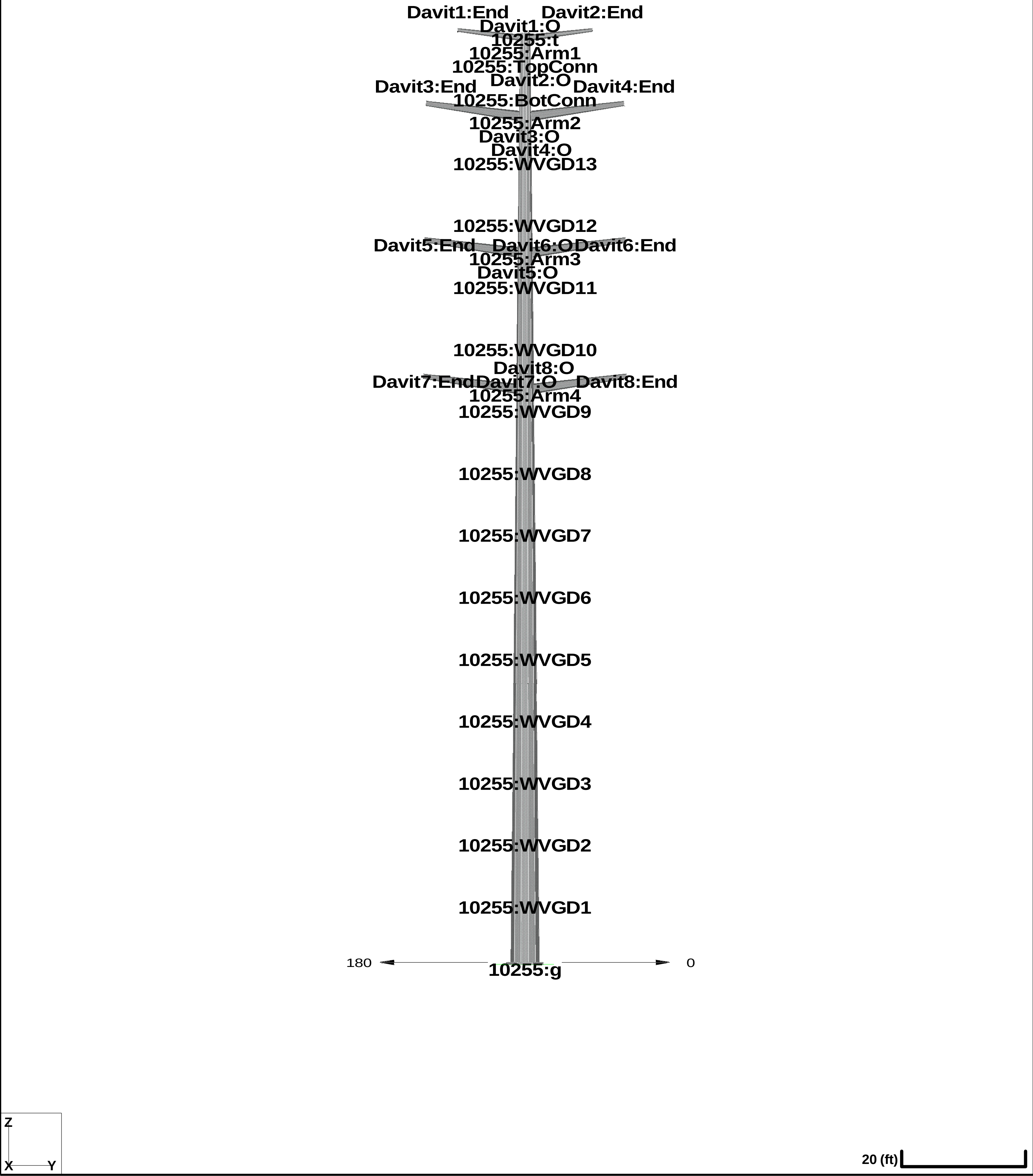
CENTEK Engineering, Inc.		
TJL	Structure # 10255 - Mast	Dec 2, 2021 at 4:06 PM
21007.74 / Verizon Bethel ...	LC #2 Loads	NESC.r3d



Results for LC 2, NESC Extreme Wind
Reaction and Moment Units are k and k-ft

CENTEK Engineering, Inc.		
TJL	Structure # 10255 - Mast	Dec 2, 2021 at 4:08 PM
21007.74 / Verizon Bethel ...	LC #2 Reactions	NESC.r3d

Centek Engineering Inc, Project: "cl&p structure # 10255"
PLS-POLE Version 16.81, 2:51:33 PM Thursday, December 02, 2021
Undeformed geometry displayed



Project Name : 21007.74 - Bethel, CT
Project Notes: Structure # 10255/ Verizon Bethel North
Project File : J:\Jobs\2100700.WI\74_Bethel North CT\05_Structural\Backup Documentation\Rev (1)\Calcs\PLS-Pole\cl&p structure # 10255.pol
Date run : 9:58:21 AM Monday, January 24, 2022
by : PLS-POLE Version 16.81
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

The model has 0 warnings.

Loads from file: J:\Jobs\2100700.WI\74_Bethel North CT\05_Structural\Backup Documentation\Rev (1)\Calcs\PLS-Pole\cl&p #10255.lca

*** Analysis Results:

Maximum element usage is 99.63% for Steel Pole "10255" in load case "NESC Extreme"
Maximum insulator usage is 30.94% for Clamp "Clamp9" in load case "NESC Extreme"

Foundation Design Forces For All Load Cases:

Note: loads are factored.

Load Case	Foundation Description	Axial Force (kips)	Shear Force (kips)	Bending Moment (ft-k)	Foundation Usage %
NESC Heavy	10255:g	132.50	36.68	4546.62	0.00
NESC Extreme	10255:g	64.32	54.85	6283.53	0.00

Summary of Joint Support Reactions For All Load Cases:

Load Case	Joint Label	Long. Force (kips)	Tran. Force (kips)	Vert. Force (kips)	Shear Force (kips)	Tran. Moment (ft-k)	Long. Moment (ft-k)	Bending Moment (ft-k)	Vert. Moment (ft-k)	Found. Usage %
NESC Heavy	10255:g	-0.21	-36.68	-132.50	36.68	4546.59	-14.88	4546.62	-0.02	0.00
NESC Extreme	10255:g	-0.05	-54.85	-64.32	54.85	6283.53	-3.69	6283.53	-0.01	0.00

Summary of Tip Deflections For All Load Cases:

Note: positive tip load results in positive deflection

Load Case	Joint Label	Long. Defl. (in)	Tran. Defl. (in)	Vert. Defl. (in)	Resultant Defl. (in)	Long. Rot. (deg)	Tran. Rot. (deg)	Twist (deg)
NESC Heavy	10255:t	0.27	110.33	-4.68	110.43	0.01	-6.58	0.00
NESC Extreme	10255:t	0.06	151.01	-8.69	151.26	0.00	-9.22	0.00

Tubes Summary:

Pole Label	Tube Num.	Weight (lbs)	Load Case	Maximum Usage %	Resultant Moment (ft-k)
10255	1	5022	NESC Extreme	90.00	1285.94
10255	2	10058	NESC Extreme	98.30	3585.32
10255	3	12901	NESC Extreme	99.63	5738.37

*** Overall summary for all load cases - Usage = Maximum Stress / Allowable Stress

Summary of Steel Pole Usages:

Steel Pole Label	Maximum Usage %	Load Case	Height AGL (ft)	Segment Number	Weight (lbs)
10255	99.63	NESC Extreme	7.5	36	30952.3

Summary of Tubular Davit Usages:

Tubular Davit Label	Maximum Usage %	Load Case	Height AGL (ft)	Segment Number	Weight (lbs)
Davit1	11.69	NESC Heavy	149.6	1	182.3
Davit2	14.59	NESC Heavy	149.6	1	182.3
Davit3	30.84	NESC Heavy	137.0	1	575.0
Davit4	35.62	NESC Heavy	137.0	1	575.0
Davit5	31.18	NESC Heavy	115.0	1	575.0
Davit6	35.83	NESC Heavy	115.0	1	575.0
Davit7	31.65	NESC Heavy	93.0	1	575.0
Davit8	36.12	NESC Heavy	93.0	1	575.0

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	74.73	10255	Steel Pole
NESC Extreme	99.63	10255	Steel Pole

Summary of Steel Pole Usages by Load Case:

Load Case	Maximum Usage %	Steel Pole Label	Height AGL (ft)	Segment Number
NESC Heavy	74.73	10255	50.6	27
NESC Extreme	99.63	10255	7.5	36

Summary of Base Plate Usages by Load Case:

Load Case	Pole Label	Bend Line #	Length (in)	Vertical Load (kips)	X Moment (ft-k)	Y Moment (ft-k)	Bending Stress (ksi)	Bolt Moment Sum (ft-k)	# Bolts Acting On Bend Line	Max Bolt Load For Bend Line (kips)	Minimum Plate Thickness (in)	Usage %
NESC Heavy	10255	12	37.250	129.531	4546.591	-14.879	44.001	204.881	5	109.401	2.569	73.34
NESC Extreme	10255	12	37.250	61.352	6283.527	-3.693	58.835	273.950	5	146.007	2.971	98.06

Summary of Tubular Davit Usages by Load Case:

Load Case	Maximum Usage %	Tubular Davit Label	Height AGL (ft)	Segment Number
NESC Heavy	36.12	Davit8	93.0	1

NESC Extreme	15.02	Davit8	93.0	1

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
Clamp1	Clamp	2.15	NESC Heavy	0.0
Clamp2	Clamp	2.06	NESC Heavy	0.0
Clamp3	Clamp	10.99	NESC Heavy	0.0
Clamp4	Clamp	10.99	NESC Heavy	0.0
Clamp5	Clamp	10.99	NESC Heavy	0.0
Clamp6	Clamp	10.99	NESC Heavy	0.0
Clamp7	Clamp	10.99	NESC Heavy	0.0
Clamp8	Clamp	10.99	NESC Heavy	0.0
Clamp9	Clamp	30.94	NESC Extreme	0.0
Clamp10	Clamp	20.67	NESC Extreme	0.0
Clamp11	Clamp	1.49	NESC Heavy	0.0
Clamp12	Clamp	1.49	NESC Heavy	0.0
Clamp13	Clamp	1.49	NESC Heavy	0.0
Clamp14	Clamp	1.49	NESC Heavy	0.0
Clamp15	Clamp	1.49	NESC Heavy	0.0
Clamp16	Clamp	1.49	NESC Heavy	0.0
Clamp17	Clamp	1.49	NESC Heavy	0.0
Clamp18	Clamp	1.49	NESC Heavy	0.0
Clamp19	Clamp	1.49	NESC Heavy	0.0
Clamp20	Clamp	1.49	NESC Heavy	0.0
Clamp21	Clamp	1.49	NESC Heavy	0.0
Clamp22	Clamp	1.49	NESC Heavy	0.0
Clamp23	Clamp	1.49	NESC Heavy	0.0

*** Weight of structure (lbs):

Weight of Tubular Davit Arms:	3814.7
Weight of Steel Poles:	30952.3
Total:	34767.0

*** End of Report

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************************************************************************
*                                                                      *
*                              PLS-POLE                                *
*                  POLE AND FRAME ANALYSIS AND DESIGN                  *
*               Copyright Power Line Systems 1999-2021                 *
*                                                                      *
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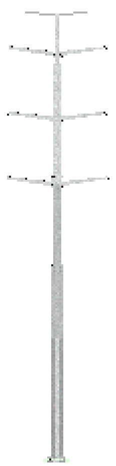
Project Name : 21007.74 - Bethel, CT
Project Notes: Structure # 10255/ Verizon Bethel North
Project File : J:\Jobs\2100700.WI\74_Bethel North CT\05_Structural\Backup Documentation\Rev (1)\Calcs\PLS-Pole\cl&p structure # 10255.pol
Date run   : 9:58:20 AM Monday, January 24, 2022
by   : PLS-POLE Version 16.81
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

The model has 0 warnings.



Modeling options:
  Offset Arms from Pole/Mast: Yes
  Offset Braces from Pole/Mast: Yes
  Offset Guys from Pole/Mast: Yes
  Offset Posts from Pole/Mast: Yes
  Offset Strains from Pole/Mast: Yes
  Use Alternate Convergence Process: No
  Steel poles and tubular arms checked with ASCE/SEI 48-05

Default Modulus of Elasticity for Steel = 29000.00 (ksi)
Default Weight Density for Steel = 490.00 (lbs/ft^3)

Steel Pole Properties:

Steel Pole Stock Length Default Base Shape Tip Base Taper Default Tubes Modulus of Weight Shape Strength Distance Ultimate
Ultimate Texture
Property Number Embedded Plate Diameter Diameter Drag Elasticity Density At Check From Trans.

	Label	(ft)	Length (ft)			(in)	(in)	(in/ft)	Coef.		Override (ksi)	Override (lbs/ft^3)	Base	Type	Tip (ft)	Load (kips)	Long. Load (kips)	
CL&P10255	10255	150.00	0	Yes	12F	20.18	55.99	0	1.6	3 tubes	0	0		Calculated	0.000	0.0000	0.0000	Galvanized Steel

Steel Tubes Properties:

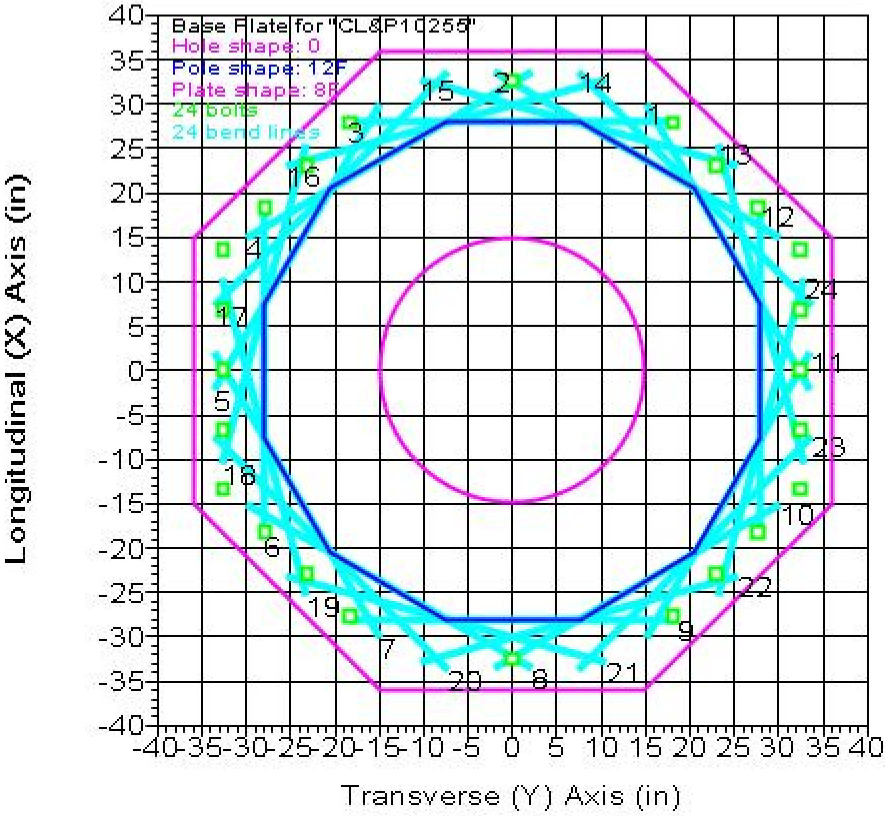
Pole Property	Tube No.	Length (ft)	Thickness (in)	Lap Length (ft)	Lap Factor	Lap Gap or Butt Offset (in)	Yield Stress (ksi)	Moment Cap. Override (ft-k)	Tube Weight (lbs)	Center of Gravity (ft)	Calculated Taper (in/ft)	Tube Top Diameter (in)	Tube Bot. Diameter (in)	1.5x Diam. Lap Length (ft)	Actual Overlap (ft)
CL&P10255	1	55	0.3125	4.670	0.000	0.000	65.000	0.000	5022	29.85	0.24873	20.18	33.86	4.154	4.670
CL&P10255	2	54.67	0.4375	6.170	0.000	0.000	65.000	0.000	10058	28.95	0.24873	32.07	45.67	5.600	6.170
CL&P10255	3	51.17	0.46875	0.000	0.000	0.000	65.000	0.000	12901	26.69	0.24873	43.26	55.99	0.000	0.000

Base Plate Properties:

Pole Property	Plate Diam. (in)	Plate Shape	Plate Thick. (in)	Plate Weight (lbs)	Bend Line Length Override (in)	Hole Diam. (in)	Hole Shape	Steel Density (lbs/ft^3)	Steel Yield Stress (ksi)	Bolt Diam. (in)	Bolt Pattern Diam. (in)	Num. Of Bolts	Bolt Cage X Inertia (in^4)	Bolt Cage Y Inertia (in^4)
CL&P10255	72.000	8F	3.000	2971	37.250	30.000	0	490.00	60.000	2.250	65.000	24	67953.29	37978.89

Base Plate Bolt Coordinates for Property "CL&P10255":

Bolt X Coord.	Bolt Y Coord.	Bolt Angle (deg)
0	1	0
0.8538	0.5615	0
0.7077	0.7077	0
0.5615	0.8538	0
0.4154	1	0
0.2077	1	0
1	0	0



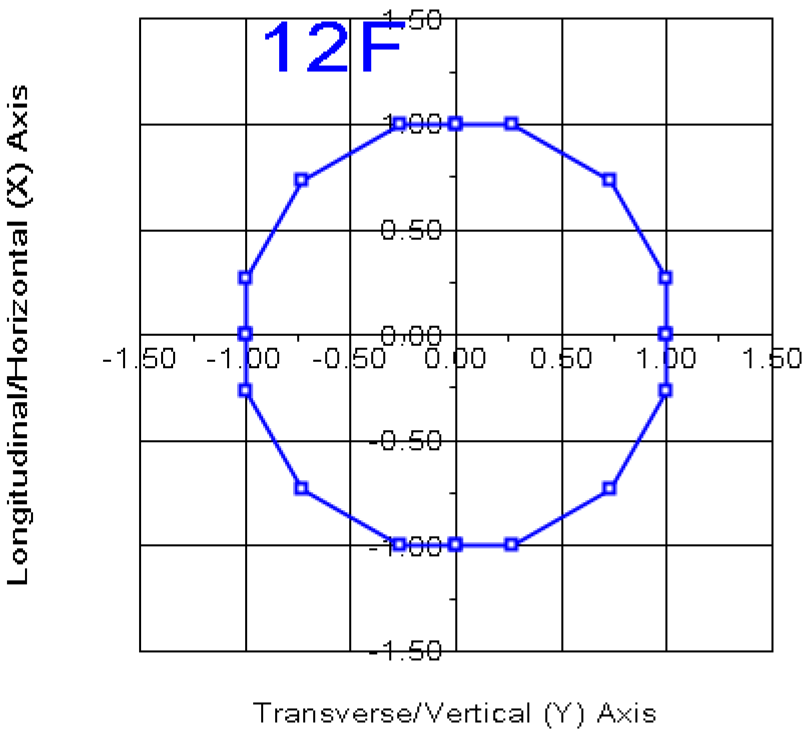
Steel Pole Connectivity:

Pole Label	Tip Joint	Base Joint	X of Base (ft)	Y of Base (ft)	Z of Base (ft)	Inclin. About X (deg)	Inclin. About Y (deg)	Property Set	Attach. Labels	Base Connect	Embed % Override	Embed C. Override (ft)
10255			0	0	0	0	0	CL&P10255	19 labels		0.00	0

Relative Attachment Labels for Steel Pole "10255":

Joint Label	Distance From Origin/Top Joint (ft)	Global Z of Attach (ft)
10255:Arm1	0.00	149.30
10255:Arm2	0.00	136.63
10255:Arm3	0.00	114.63
10255:Arm4	0.00	92.63
10255:TopConn	0.00	146.42

10255:BotConn	0.00	140.25
10255:WVGD1	0.00	10.00
10255:WVGD2	0.00	20.00
10255:WVGD3	0.00	30.00
10255:WVGD4	0.00	40.00
10255:WVGD5	0.00	50.00
10255:WVGD6	0.00	60.00
10255:WVGD7	0.00	70.00
10255:WVGD8	0.00	80.00
10255:WVGD9	0.00	90.00
10255:WVGD10	0.00	100.00
10255:WVGD11	0.00	110.00
10255:WVGD12	0.00	120.00
10255:WVGD13	0.00	130.00



Pole Steel Properties:

Warning: Capacities and usages printed in splices are listed for the inner tube except at the splice top which uses the outer tube. ??

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Outer Diam. (in)	Area (in^2)	T-Moment Inertia (in^4)	L-Moment Inertia (in^4)	D/t	W/t Max.	Fy (ksi)	Fa Min. (ksi)	T-Moment Capacity (ft-k)	L-Moment Capacity (ft-k)
10255	10255:t	10255:t Ori	0.00	20.18	19.96	1008.79	1008.79	0.00	14.6	65.00	65.00	541.55	541.55

10255	10255:Arm1	10255:Arm1	End	0.70	20.35	20.14	1035.54	1035.54	0.00	14.8	65.00	65.00	551.16	551.16
10255	10255:Arm1	10255:Arm1	Ori	0.70	20.35	20.14	1035.54	1035.54	0.00	14.8	65.00	65.00	551.16	551.16
10255	10255:TopConn	10255:TopConn	End	3.58	21.07	20.86	1150.58	1150.58	0.00	15.4	65.00	65.00	591.56	591.56
10255	10255:TopConn	10255:TopConn	Ori	3.58	21.07	20.86	1150.58	1150.58	0.00	15.4	65.00	65.00	591.56	591.56
10255	#10255:0	Tube 1	End	6.67	21.84	21.63	1282.93	1282.93	0.00	16.0	65.00	65.00	636.44	636.44
10255	#10255:0	Tube 1	Ori	6.67	21.84	21.63	1282.93	1282.93	0.00	16.0	65.00	65.00	636.44	636.44
10255	10255:BotConn	10255:BotConn	End	9.75	22.61	22.40	1425.06	1425.06	0.00	16.7	65.00	65.00	682.95	682.95
10255	10255:BotConn	10255:BotConn	Ori	9.75	22.61	22.40	1425.06	1425.06	0.00	16.7	65.00	65.00	682.95	682.95
10255	10255:Arm2	10255:Arm2	End	13.38	23.51	23.31	1605.04	1605.04	0.00	17.5	65.00	65.00	739.70	739.70
10255	10255:Arm2	10255:Arm2	Ori	13.38	23.51	23.31	1605.04	1605.04	0.00	17.5	65.00	65.00	739.70	739.70
10255	#10255:1	Tube 1	End	16.69	24.33	24.13	1782.21	1782.21	0.00	18.2	65.00	65.00	793.54	793.54
10255	#10255:1	Tube 1	Ori	16.69	24.33	24.13	1782.21	1782.21	0.00	18.2	65.00	65.00	793.54	793.54
10255	10255:WVGD13	10255:WVGD13	End	20.00	25.15	24.96	1971.97	1971.97	0.00	18.9	65.00	65.00	849.26	849.26
10255	10255:WVGD13	10255:WVGD13	Ori	20.00	25.15	24.96	1971.97	1971.97	0.00	18.9	65.00	65.00	849.27	849.27
10255	#10255:2	Tube 1	End	25.00	26.40	26.21	2283.18	2283.18	0.00	20.0	65.00	65.00	936.97	936.97
10255	#10255:2	Tube 1	Ori	25.00	26.40	26.21	2283.18	2283.18	0.00	20.0	65.00	65.00	936.97	936.97
10255	10255:WVGD12	10255:WVGD12	End	30.00	27.64	27.46	2625.52	2625.52	0.00	21.0	65.00	65.00	1028.98	1028.98
10255	10255:WVGD12	10255:WVGD12	Ori	30.00	27.64	27.46	2625.52	2625.52	0.00	21.0	65.00	65.00	1028.98	1028.98
10255	#10255:3	Tube 1	End	32.69	28.31	28.13	2822.91	2822.91	0.00	21.6	65.00	65.00	1080.22	1080.22
10255	#10255:3	Tube 1	Ori	32.69	28.31	28.13	2822.91	2822.91	0.00	21.6	65.00	65.00	1080.22	1080.22
10255	10255:Arm3	10255:Arm3	End	35.38	28.98	28.80	3029.96	3029.96	0.00	22.2	65.00	65.00	1132.70	1132.70
10255	10255:Arm3	10255:Arm3	Ori	35.38	28.98	28.80	3029.96	3029.96	0.00	22.2	65.00	65.00	1132.70	1132.70
10255	10255:WVGD11	10255:WVGD11	End	40.00	30.13	29.96	3409.54	3409.54	0.00	23.2	65.00	65.00	1225.94	1225.94
10255	10255:WVGD11	10255:WVGD11	Ori	40.00	30.13	29.96	3409.54	3409.54	0.00	23.2	65.00	65.00	1225.94	1225.94
10255	#10255:4	Tube 1	End	45.00	31.37	31.21	3854.19	3854.19	0.00	24.2	65.00	65.00	1330.88	1330.88
10255	#10255:4	Tube 1	Ori	45.00	31.37	31.21	3854.19	3854.19	0.00	24.2	65.00	65.00	1330.88	1330.88
10255	10255:WVGD10	10255:WVGD10	End	50.00	32.62	32.46	4335.91	4335.91	0.00	25.3	65.00	65.00	1440.13	1440.13
10255	10255:WVGD10	10255:WVGD10	Ori	50.00	32.62	32.46	4335.91	4335.91	0.00	25.3	65.00	65.00	1440.13	1440.13
10255	#10255:5	SpliceT	End	50.33	32.70	32.54	4369.04	4369.04	0.00	25.4	65.00	65.00	1447.49	1447.49
10255	#10255:5	SpliceT	Ori	50.33	32.70	32.54	4369.04	4369.04	0.00	25.4	65.00	65.00	1447.49	1447.49
10255	#10255:6	SpliceB	End	55.00	33.24	46.14	6353.36	6353.36	0.00	17.7	65.00	65.00	2070.93	2070.93
10255	#10255:6	SpliceB	Ori	55.00	33.24	46.14	6353.36	6353.36	0.00	17.7	65.00	65.00	2070.93	2070.93
10255	10255:Arm4	10255:Arm4	End	57.38	33.83	46.97	6702.85	6702.85	0.00	18.0	65.00	65.00	2146.69	2146.69
10255	10255:Arm4	10255:Arm4	Ori	57.38	33.83	46.97	6702.85	6702.85	0.00	18.0	65.00	65.00	2146.69	2146.69
10255	10255:WVGD9	10255:WVGD9	End	60.00	34.48	47.89	7103.77	7103.77	0.00	18.4	65.00	65.00	2232.01	2232.01
10255	10255:WVGD9	10255:WVGD9	Ori	60.00	34.48	47.89	7103.77	7103.77	0.00	18.4	65.00	65.00	2232.01	2232.01
10255	#10255:7	Tube 2	End	65.00	35.72	49.64	7911.06	7911.06	0.00	19.2	65.00	65.00	2399.12	2399.12
10255	#10255:7	Tube 2	Ori	65.00	35.72	49.64	7911.06	7911.06	0.00	19.2	65.00	65.00	2399.12	2399.12
10255	10255:WVGD8	10255:WVGD8	End	70.00	36.97	51.39	8777.30	8777.30	0.00	20.0	65.00	65.00	2572.27	2572.27
10255	10255:WVGD8	10255:WVGD8	Ori	70.00	36.97	51.39	8777.31	8777.31	0.00	20.0	65.00	65.00	2572.27	2572.27
10255	#10255:8	Tube 2	End	75.00	38.21	53.14	9704.59	9704.59	0.00	20.7	65.00	65.00	2751.45	2751.45
10255	#10255:8	Tube 2	Ori	75.00	38.21	53.14	9704.59	9704.59	0.00	20.7	65.00	65.00	2751.45	2751.45
10255	10255:WVGD7	10255:WVGD7	End	80.00	39.45	54.89	10694.98	10694.98	0.00	21.5	65.00	65.00	2936.66	2936.66
10255	10255:WVGD7	10255:WVGD7	Ori	80.00	39.45	54.89	10694.98	10694.98	0.00	21.5	65.00	65.00	2936.66	2936.66
10255	#10255:9	Tube 2	End	85.00	40.70	56.63	11750.57	11750.57	0.00	22.2	65.00	65.00	3127.91	3127.91
10255	#10255:9	Tube 2	Ori	85.00	40.70	56.63	11750.57	11750.57	0.00	22.2	65.00	65.00	3127.91	3127.91
10255	10255:WVGD6	10255:WVGD6	End	90.00	41.94	58.38	12873.43	12873.43	0.00	23.0	65.00	65.00	3325.19	3325.19
10255	10255:WVGD6	10255:WVGD6	Ori	90.00	41.94	58.38	12873.43	12873.43	0.00	23.0	65.00	65.00	3325.19	3325.19
10255	#10255:10	Tube 2	End	94.42	43.04	59.93	13922.50	13922.50	0.00	23.7	65.00	65.00	3504.41	3504.41
10255	#10255:10	Tube 2	Ori	94.42	43.04	59.93	13922.50	13922.50	0.00	23.7	65.00	65.00	3504.41	3504.41
10255	#10255:11	SpliceT	End	98.83	44.14	61.47	15027.07	15027.07	0.00	24.4	65.00	65.00	3688.33	3688.33
10255	#10255:11	SpliceT	Ori	98.83	44.14	61.47	15027.07	15027.07	0.00	24.4	65.00	65.00	3688.33	3688.33
10255	10255:WVGD5	10255:WVGD5	End	100.00	43.55	64.94	15430.22	15430.22	0.00	22.2	65.00	65.00	3838.06	3838.06
10255	10255:WVGD5	10255:WVGD5	Ori	100.00	43.55	64.94	15430.22	15430.22	0.00	22.2	65.00	65.00	3838.06	3838.06
10255	#10255:12	SpliceB	End	105.00	44.80	66.81	16805.27	16805.27	0.00	22.9	65.00	65.00	4064.04	4064.04
10255	#10255:12	SpliceB	Ori	105.00	44.80	66.81	16805.27	16805.27	0.00	22.9	65.00	65.00	4064.04	4064.04
10255	10255:WVGD4	10255:WVGD4	End	110.00	46.04	68.69	18259.67	18259.67	0.00	23.6	65.00	65.00	4296.48	4296.48
10255	10255:WVGD4	10255:WVGD4	Ori	110.00	46.04	68.69	18259.67	18259.67	0.00	23.6	65.00	65.00	4296.48	4296.48
10255	#10255:13	Tube 3	End	115.00	47.28	70.56	19795.66	19795.66	0.00	24.3	65.00	65.00	4535.39	4535.39

10255	#10255:13	Tube 3	Ori	115.00	47.28	70.56	19795.66	19795.66	0.00	24.3	65.00	65.00	4535.39	4535.39
10255	10255:WVGD3	10255:WVGD3	End	120.00	48.53	72.44	21415.47	21415.47	0.00	25.1	65.00	65.00	4780.76	4780.76
10255	10255:WVGD3	10255:WVGD3	Ori	120.00	48.53	72.44	21415.47	21415.47	0.00	25.1	65.00	65.00	4780.76	4780.76
10255	#10255:14	Tube 3	End	125.00	49.77	74.31	23121.31	23121.31	0.00	25.8	65.00	65.00	5032.59	5032.59
10255	#10255:14	Tube 3	Ori	125.00	49.77	74.31	23121.31	23121.31	0.00	25.8	65.00	65.00	5032.59	5032.59
10255	10255:WVGD2	10255:WVGD2	End	130.00	51.02	76.18	24915.41	24915.41	0.00	26.5	65.00	65.00	5290.89	5290.89
10255	10255:WVGD2	10255:WVGD2	Ori	130.00	51.02	76.18	24915.42	24915.42	0.00	26.5	65.00	65.00	5290.89	5290.89
10255	#10255:15	Tube 3	End	135.00	52.26	78.06	26800.01	26800.01	0.00	27.2	65.00	65.00	5555.66	5555.66
10255	#10255:15	Tube 3	Ori	135.00	52.26	78.06	26800.01	26800.01	0.00	27.2	65.00	65.00	5555.66	5555.66
10255	10255:WVGD1	10255:WVGD1	End	140.00	53.50	79.93	28777.33	28777.33	0.00	27.9	65.00	65.00	5826.89	5826.89
10255	10255:WVGD1	10255:WVGD1	Ori	140.00	53.50	79.93	28777.33	28777.33	0.00	27.9	65.00	65.00	5826.89	5826.89
10255	#10255:16	Tube 3	End	145.00	54.75	81.81	30849.59	30849.59	0.00	28.6	65.00	65.00	6104.58	6104.58
10255	#10255:16	Tube 3	Ori	145.00	54.75	81.81	30849.59	30849.59	0.00	28.6	65.00	65.00	6104.58	6104.58
10255	10255:g	10255:g	End	150.00	55.99	83.68	33019.02	33019.02	0.00	29.3	65.00	65.00	6388.74	6388.74

Tubular Davit Properties:

Davit Property Label	Stock Number	Steel Shape	Thickness (in)	Base Diameter or Depth (in)	Tip Diameter or Depth (in)	Taper (in/ft)	Drag Coef.	Modulus of Elasticity (ksi)	Geometry	Strength Check Type	Vertical Capacity (lbs)	Tension Capacity (lbs)	Compres. Capacity (lbs)	Long. Capacity (lbs)	Yield Stress (ksi)	Weight Density Override (lbs/ft^3)	Steel Texture Shape At End
ARM1	601420	6T	0.1875	10.75	6	0	1	29000	1 point	Calculated	0	0	0	0	65	0	
ARM2	601515	8T	0.25	18.46	9	0	1	29000	1 point	Calculated	0	0	0	0	65	0	

Intermediate Joints for Davit Property "ARM1":

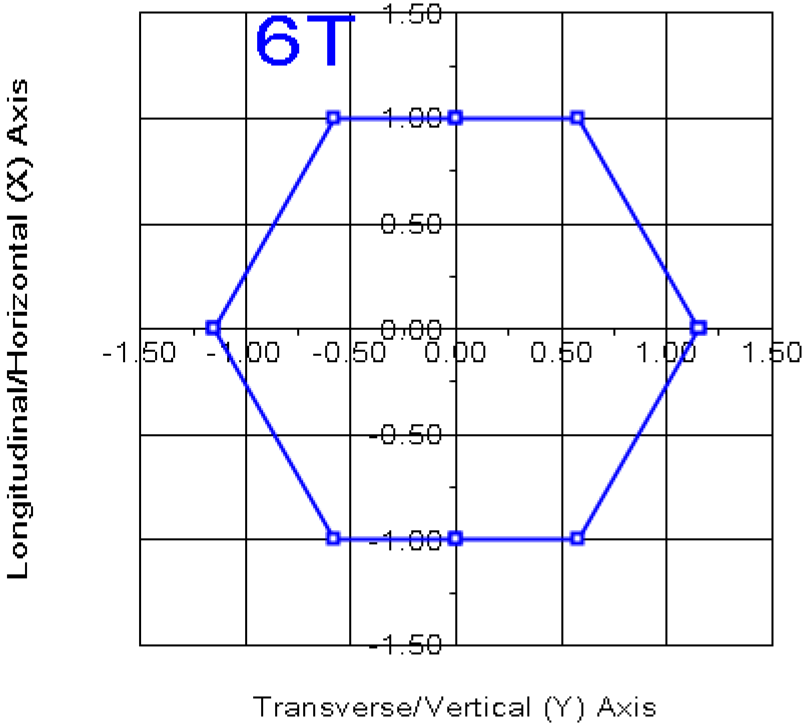
Joint Label	Horz. Offset (ft)	Vert. Offset (ft)
End	10	-1.2

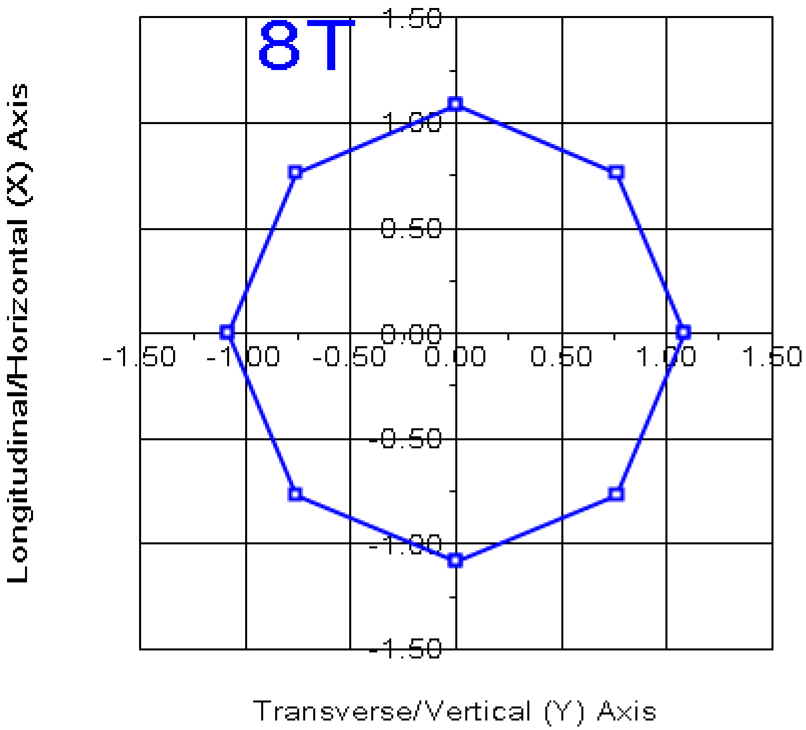
Intermediate Joints for Davit Property "ARM2":

Joint Label	Horz. Offset (ft)	Vert. Offset (ft)
End	15	-2

Tubular Davit Arm Connectivity:

Davit Label	Attach Label	Davit Property Set	Azimuth (deg)
Davit1	10255:Arm1	ARM1	180
Davit2	10255:Arm1	ARM1	0
Davit3	10255:Arm2	ARM2	180
Davit4	10255:Arm2	ARM2	0
Davit5	10255:Arm3	ARM2	180
Davit6	10255:Arm3	ARM2	0
Davit7	10255:Arm4	ARM2	180


6T
1.50
1.00
0.50
0.00
-0.50
-1.00
-1.50
-1.50 -1.00 -0.50 0.00 0.50 1.00 1.50
Longitudinal/Horizontal (X) Axis
Transverse/Vertical (Y) Axis



Tubular Davit Arm Steel Properties:

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Outer Diam. (in)	Area (in^2)	V-Moment Inertia (in^4)	H-Moment Inertia (in^4)	D/t	W/t Max.	Fy (ksi)	Fa Min. (ksi)	V-Moment Capacity (ft-k)	H-Moment Capacity (ft-k)
Davit1	Davit1:O	Origin	0.00	10.75	6.86	106.34	106.34	0.00	27.3	65.00	65.00	92.80	107.16
Davit1	#Davit1:0	End	5.00	8.39	5.33	49.84	49.84	0.00	20.1	65.00	65.00	55.72	64.34
Davit1	#Davit1:0	Origin	5.00	8.39	5.33	49.84	49.84	0.00	20.1	65.00	65.00	55.72	64.34
Davit1	#Davit1:1	End	7.54	7.20	4.55	31.08	31.08	0.00	16.4	65.00	65.00	40.52	46.78
Davit1	#Davit1:1	Origin	7.54	7.20	4.55	31.08	31.08	0.00	16.4	65.00	65.00	40.52	46.78
Davit1	Davit1:End	End	10.07	6.00	3.78	17.73	17.73	0.00	12.7	65.00	65.00	27.73	32.02
Davit2	Davit2:O	Origin	0.00	10.75	6.86	106.34	106.34	0.00	27.3	65.00	65.00	92.80	107.16
Davit2	#Davit2:0	End	5.00	8.39	5.33	49.84	49.84	0.00	20.1	65.00	65.00	55.72	64.34
Davit2	#Davit2:0	Origin	5.00	8.39	5.33	49.84	49.84	0.00	20.1	65.00	65.00	55.72	64.34
Davit2	#Davit2:1	End	7.54	7.20	4.55	31.08	31.08	0.00	16.4	65.00	65.00	40.52	46.78
Davit2	#Davit2:1	Origin	7.54	7.20	4.55	31.08	31.08	0.00	16.4	65.00	65.00	40.52	46.78
Davit2	Davit2:End	End	10.07	6.00	3.78	17.73	17.73	0.00	12.7	65.00	65.00	27.73	32.02
Davit3	Davit3:O	Origin	0.00	18.46	15.09	661.20	661.20	0.00	26.4	65.00	65.00	358.49	358.49
Davit3	#Davit3:0	End	5.00	15.33	12.50	375.85	375.85	0.00	21.3	65.00	65.00	245.32	245.32
Davit3	#Davit3:0	Origin	5.00	15.33	12.50	375.85	375.85	0.00	21.3	65.00	65.00	245.32	245.32

Davit3	#Davit3:1	End	10.00	12.21	9.91	187.31	187.31	0.00	16.1	65.00	65.00	153.55	153.55
Davit3	#Davit3:1	Origin	10.00	12.21	9.91	187.31	187.31	0.00	16.1	65.00	65.00	153.55	153.55
Davit3	#Davit3:2	End	12.57	10.60	8.58	121.60	121.60	0.00	13.4	65.00	65.00	114.77	114.77
Davit3	#Davit3:2	Origin	12.57	10.60	8.58	121.60	121.60	0.00	13.4	65.00	65.00	114.77	114.77
Davit3	Davit3:End	End	15.13	9.00	7.25	73.40	73.40	0.00	10.8	65.00	65.00	81.63	81.63
Davit4	Davit4:O	Origin	0.00	18.46	15.09	661.20	661.20	0.00	26.4	65.00	65.00	358.49	358.49
Davit4	#Davit4:0	End	5.00	15.33	12.50	375.85	375.85	0.00	21.3	65.00	65.00	245.32	245.32
Davit4	#Davit4:0	Origin	5.00	15.33	12.50	375.85	375.85	0.00	21.3	65.00	65.00	245.32	245.32
Davit4	#Davit4:1	End	10.00	12.21	9.91	187.31	187.31	0.00	16.1	65.00	65.00	153.55	153.55
Davit4	#Davit4:1	Origin	10.00	12.21	9.91	187.31	187.31	0.00	16.1	65.00	65.00	153.55	153.55
Davit4	#Davit4:2	End	12.57	10.60	8.58	121.60	121.60	0.00	13.4	65.00	65.00	114.77	114.77
Davit4	#Davit4:2	Origin	12.57	10.60	8.58	121.60	121.60	0.00	13.4	65.00	65.00	114.77	114.77
Davit4	Davit4:End	End	15.13	9.00	7.25	73.40	73.40	0.00	10.8	65.00	65.00	81.63	81.63
Davit5	Davit5:O	Origin	0.00	18.46	15.09	661.20	661.20	0.00	26.4	65.00	65.00	358.49	358.49
Davit5	#Davit5:0	End	5.00	15.33	12.50	375.85	375.85	0.00	21.3	65.00	65.00	245.32	245.32
Davit5	#Davit5:0	Origin	5.00	15.33	12.50	375.85	375.85	0.00	21.3	65.00	65.00	245.32	245.32
Davit5	#Davit5:1	End	10.00	12.21	9.91	187.31	187.31	0.00	16.1	65.00	65.00	153.55	153.55
Davit5	#Davit5:1	Origin	10.00	12.21	9.91	187.31	187.31	0.00	16.1	65.00	65.00	153.55	153.55
Davit5	#Davit5:2	End	12.57	10.60	8.58	121.60	121.60	0.00	13.4	65.00	65.00	114.77	114.77
Davit5	#Davit5:2	Origin	12.57	10.60	8.58	121.60	121.60	0.00	13.4	65.00	65.00	114.77	114.77
Davit5	Davit5:End	End	15.13	9.00	7.25	73.40	73.40	0.00	10.8	65.00	65.00	81.63	81.63
Davit6	Davit6:O	Origin	0.00	18.46	15.09	661.20	661.20	0.00	26.4	65.00	65.00	358.49	358.49
Davit6	#Davit6:0	End	5.00	15.33	12.50	375.85	375.85	0.00	21.3	65.00	65.00	245.32	245.32
Davit6	#Davit6:0	Origin	5.00	15.33	12.50	375.85	375.85	0.00	21.3	65.00	65.00	245.32	245.32
Davit6	#Davit6:1	End	10.00	12.21	9.91	187.31	187.31	0.00	16.1	65.00	65.00	153.55	153.55
Davit6	#Davit6:1	Origin	10.00	12.21	9.91	187.31	187.31	0.00	16.1	65.00	65.00	153.55	153.55
Davit6	#Davit6:2	End	12.57	10.60	8.58	121.60	121.60	0.00	13.4	65.00	65.00	114.77	114.77
Davit6	#Davit6:2	Origin	12.57	10.60	8.58	121.60	121.60	0.00	13.4	65.00	65.00	114.77	114.77
Davit6	Davit6:End	End	15.13	9.00	7.25	73.40	73.40	0.00	10.8	65.00	65.00	81.63	81.63
Davit7	Davit7:O	Origin	0.00	18.46	15.09	661.20	661.20	0.00	26.4	65.00	65.00	358.49	358.49
Davit7	#Davit7:0	End	5.00	15.33	12.50	375.85	375.85	0.00	21.3	65.00	65.00	245.32	245.32
Davit7	#Davit7:0	Origin	5.00	15.33	12.50	375.85	375.85	0.00	21.3	65.00	65.00	245.32	245.32
Davit7	#Davit7:1	End	10.00	12.21	9.91	187.31	187.31	0.00	16.1	65.00	65.00	153.55	153.55
Davit7	#Davit7:1	Origin	10.00	12.21	9.91	187.31	187.31	0.00	16.1	65.00	65.00	153.55	153.55
Davit7	#Davit7:2	End	12.57	10.60	8.58	121.60	121.60	0.00	13.4	65.00	65.00	114.77	114.77
Davit7	#Davit7:2	Origin	12.57	10.60	8.58	121.60	121.60	0.00	13.4	65.00	65.00	114.77	114.77
Davit7	Davit7:End	End	15.13	9.00	7.25	73.40	73.40	0.00	10.8	65.00	65.00	81.63	81.63
Davit8	Davit8:O	Origin	0.00	18.46	15.09	661.20	661.20	0.00	26.4	65.00	65.00	358.49	358.49
Davit8	#Davit8:0	End	5.00	15.33	12.50	375.85	375.85	0.00	21.3	65.00	65.00	245.32	245.32
Davit8	#Davit8:0	Origin	5.00	15.33	12.50	375.85	375.85	0.00	21.3	65.00	65.00	245.32	245.32
Davit8	#Davit8:1	End	10.00	12.21	9.91	187.31	187.31	0.00	16.1	65.00	65.00	153.55	153.55
Davit8	#Davit8:1	Origin	10.00	12.21	9.91	187.31	187.31	0.00	16.1	65.00	65.00	153.55	153.55
Davit8	#Davit8:2	End	12.57	10.60	8.58	121.60	121.60	0.00	13.4	65.00	65.00	114.77	114.77
Davit8	#Davit8:2	Origin	12.57	10.60	8.58	121.60	121.60	0.00	13.4	65.00	65.00	114.77	114.77
Davit8	Davit8:End	End	15.13	9.00	7.25	73.40	73.40	0.00	10.8	65.00	65.00	81.63	81.63

*** Insulator Data

Clamp Properties:

Label	Stock Number	Holding Capacity (lbs)	Hardware Capacity (lbs)	Notes

clamp clamp1   8e+04   0

Clamp Insulator Connectivity:

Clamp Label	Structure And Tip Attach	Property Set	Min. Required Vertical Load (uplift) (lbs)
Clamp1	Davit1:End	clamp	No Limit
Clamp2	Davit2:End	clamp	No Limit
Clamp3	Davit3:End	clamp	No Limit
Clamp4	Davit4:End	clamp	No Limit
Clamp5	Davit5:End	clamp	No Limit
Clamp6	Davit6:End	clamp	No Limit
Clamp7	Davit7:End	clamp	No Limit
Clamp8	Davit8:End	clamp	No Limit
Clamp9	10255:TopConn	clamp	No Limit
Clamp10	10255:BotConn	clamp	No Limit
Clamp11	10255:WVGD1	clamp	No Limit
Clamp12	10255:WVGD2	clamp	No Limit
Clamp13	10255:WVGD3	clamp	No Limit
Clamp14	10255:WVGD4	clamp	No Limit
Clamp15	10255:WVGD5	clamp	No Limit
Clamp16	10255:WVGD6	clamp	No Limit
Clamp17	10255:WVGD7	clamp	No Limit
Clamp18	10255:WVGD8	clamp	No Limit
Clamp19	10255:WVGD9	clamp	No Limit
Clamp20	10255:WVGD10	clamp	No Limit
Clamp21	10255:WVGD11	clamp	No Limit
Clamp22	10255:WVGD12	clamp	No Limit
Clamp23	10255:WVGD13	clamp	No Limit

Material List Options:
Show Parts: YES
Decompose Assemblies: NO
Show Assemblies: YES

Material List

Stock Number	Item Description	Quantity	Unit of Measure
601420	Tubular Davit property: ARM1	2.00	Each
601515	Tubular Davit property: ARM2	6.00	Each
clamp1	Clamp property: clamp	23.00	Each
10255	Steel Pole property: CL&P10255	1.00	Each

*** Loads Data

Loads from file: J:\Jobs\2100700.WI\74_Bethel North CT\05_Structural\Backup Documentation\Rev (1)\Calcs\PLS-Pole\cl&p #10255.lca

Insulator dead and wind loads are already included in the point loads printed below.

Loading Method Parameters:

Structure Height Summary (used for calculating wind/ice adjust with height):

```
  Z of ground for wind height adjust      0.00 (ft) and structure Z coordinate that will be put on the centerline ground profile in PLS-CADD.
  Ground elevation shift                  0.00 (ft)
  Z of ground with shift                  0.00 (ft)
  Z of structure top (highest joint)    150.50 (ft)
  Structure height                      150.50 (ft)
  Structure height above ground         150.50 (ft)
```

Vector Load Cases:

Load Case Description	Dead Load Factor	Wind Area Factor	SF for Steel Poles Tubular Arms and Towers	SF for Wood Poles	SF for Conc. Ult.	SF for Conc. First Crack	SF for Conc. Zero Tens.	SF for Guys and Cables	SF for Non Tubular Arms	SF for Braces	SF for Insuls.	SF for Hardware	SF For Found.	Point Loads	Wind/Ice Model	Trans. Wind Pressure (psf)	Longit. Wind Pressure (psf)	Ice Thick. (in)	Ice Density (lbs/ft^3)	Temperature (deg F)	Pole Deflection Check	Pole Deflection Limit % or (ft)
NESC Heavy	1.5000	2.5000	1.00000	0.6500	0.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	23 loads	Wind on All	4	0	0.500	56.000	0.0	No Limit	0
NESC Extreme	1.0000	1.0000	1.00000	0.6500	0.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	23 loads	NESC 2017	25.6	0	0.000	0.000	0.0	No Limit	0

Point Loads for Load Case "NESC Heavy":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
Davit1:End	1235	1202	0	Shield Wire
Davit2:End	1194	1133	0	Shield Wire
Davit3:End	7920	3813	0	Conductor
Davit4:End	7920	3813	0	Conductor
Davit5:End	7920	3813	0	Conductor
Davit6:End	7920	3813	0	Conductor
Davit7:End	7920	3813	0	Conductor
Davit8:End	7920	3813	0	Conductor
10255:TopConn	11099	7557	0	Top Connection
10255:BotConn	1393	-5084	0	Bottom Connection
10255:WVGD1	1188	93	0	Coax Cables
10255:WVGD2	1188	93	0	Coax Cables
10255:WVGD3	1188	93	0	Coax Cables
10255:WVGD4	1188	93	0	Coax Cables
10255:WVGD5	1188	93	0	Coax Cables
10255:WVGD6	1188	93	0	Coax Cables

10255:WVGD7	1188	93	0	Coax Cables
10255:WVGD8	1188	93	0	Coax Cables
10255:WVGD9	1188	93	0	Coax Cables
10255:WVGD10	1188	93	0	Coax Cables
10255:WVGD11	1188	93	0	Coax Cables
10255:WVGD12	1188	93	0	Coax Cables
10255:WVGD13	1188	93	0	Coax Cables

Detailed Pole Loading Data for Load Case "NESC Heavy":

Notes: Does not include loads from equipment, arms, guys, braces, etc. or user input loads.
Wind load is calculated for the undeformed shape of a pole.

Pole Label	Top Joint	Bottom Joint	Section Top Z (ft)	Section Bottom Z (ft)	Section Average Elevation (ft)	Outer Diameter (in)	Reynolds Number	Drag Coef.	Adjusted Wind Pressure (psf)	Adjusted Ice Thickness (in)	Pole Vert. Load (lbs)	Pole Wind Load (lbs)	Pole Ice Vertical Load (lbs)	Pole Ice Wind Load (lbs)	Tran. Wind Load (lbs)	Long. Wind Load (lbs)
10255	10255:t	10255:Arm1	150.00	149.30	149.65	20.267	9.6e+05	1.600	10.00	0.50	71.64	18.92	8.87	0.93	19.85	0.00
10255	10255:Arm1	10255:TopConn	149.30	146.42	147.86	20.712	9.81e+05	1.600	10.00	0.50	301.32	79.54	37.29	3.84	83.38	0.00
10255	10255:TopConn		146.42	143.34	144.88	21.454	1.02e+06	1.600	10.00	0.50	334.50	88.25	41.38	4.11	92.37	0.00
10255		10255:BotConn	143.34	140.25	141.79	22.221	1.05e+06	1.600	10.00	0.50	346.65	91.41	42.86	4.11	95.52	0.00
10255	10255:BotConn	10255:Arm2	140.25	136.63	138.44	23.056	1.09e+06	1.600	10.00	0.50	422.84	111.44	52.25	4.83	116.28	0.00
10255	10255:Arm2		136.63	133.31	134.97	23.919	1.13e+06	1.600	10.00	0.50	401.04	105.65	49.54	4.42	110.06	0.00
10255		10255:WVGD13	133.31	130.00	131.66	24.743	1.17e+06	1.600	10.00	0.50	415.04	109.29	51.24	4.42	113.70	0.00
10255	10255:WVGD13		130.00	125.00	127.50	25.777	1.22e+06	1.600	10.00	0.50	652.99	171.85	80.58	6.67	178.52	0.00
10255		10255:WVGD12	125.00	120.00	122.50	27.020	1.28e+06	1.600	10.00	0.50	684.88	180.14	84.47	6.67	186.81	0.00
10255	10255:WVGD12		120.00	117.31	118.66	27.976	1.32e+06	1.600	10.00	0.50	381.30	100.25	47.01	3.58	103.84	0.00
10255		10255:Arm3	117.31	114.63	115.97	28.645	1.36e+06	1.600	10.00	0.50	390.51	102.65	48.13	3.58	106.23	0.00
10255	10255:Arm3	10255:WVGD11	114.63	110.00	112.31	29.554	1.4e+06	1.600	10.00	0.50	693.62	182.26	85.46	6.17	188.43	0.00
10255	10255:WVGD11		110.00	105.00	107.50	30.751	1.46e+06	1.600	10.00	0.50	780.56	205.02	96.13	6.67	211.69	0.00
10255		10255:WVGD10	105.00	100.00	102.50	31.995	1.51e+06	1.600	10.00	0.50	812.45	213.31	100.02	6.67	219.98	0.00
10255	10255:WVGD10		100.00	99.67	99.84	32.658	1.55e+06	1.600	10.00	0.50	54.74	14.37	6.74	0.44	14.81	0.00
10255			99.67	95.00	97.34	32.967	1.56e+06	1.600	10.00	0.50	1869.88	205.29	96.26	6.23	211.51	0.00
10255		10255:Arm4	95.00	92.63	93.81	33.531	1.59e+06	1.600	10.00	0.50	564.48	106.19	49.79	3.17	109.35	0.00
10255	10255:Arm4	10255:WVGD9	92.63	90.00	91.31	34.153	1.62e+06	1.600	10.00	0.50	635.46	119.54	56.05	3.50	123.04	0.00
10255	10255:WVGD9		90.00	85.00	87.50	35.101	1.66e+06	1.600	10.00	0.50	1244.45	234.02	109.73	6.67	240.68	0.00
10255		10255:WVGD8	85.00	80.00	82.50	36.345	1.72e+06	1.600	10.00	0.50	1289.10	242.31	113.62	6.67	248.98	0.00
10255	10255:WVGD8		80.00	75.00	77.50	37.588	1.78e+06	1.600	10.00	0.50	1333.75	250.60	117.50	6.67	257.27	0.00
10255		10255:WVGD7	75.00	70.00	72.50	38.832	1.84e+06	1.600	10.00	0.50	1378.39	258.89	121.39	6.67	265.56	0.00
10255	10255:WVGD7		70.00	65.00	67.50	40.076	1.9e+06	1.600	10.00	0.50	1423.04	267.18	125.28	6.67	273.85	0.00
10255		10255:WVGD6	65.00	60.00	62.50	41.319	1.96e+06	1.600	10.00	0.50	1467.69	275.48	129.17	6.67	282.14	0.00
10255	10255:WVGD6		60.00	55.59	57.79	42.490	2.01e+06	1.600	10.00	0.50	1333.09	250.14	117.29	5.89	256.03	0.00
10255			55.59	51.17	53.38	43.588	2.06e+06	1.600	10.00	0.50	1367.90	256.60	120.32	5.89	262.49	0.00
10255		10255:WVGD5	51.17	50.00	50.59	43.845	2.08e+06	1.600	10.00	0.50	754.83	68.40	32.07	1.56	69.96	0.00
10255	10255:WVGD5		50.00	45.00	47.50	44.175	2.09e+06	1.600	10.00	0.50	3282.82	294.52	138.09	6.67	301.18	0.00
10255		10255:WVGD4	45.00	40.00	42.50	45.419	2.15e+06	1.600	10.00	0.50	1729.02	302.81	141.98	6.67	309.48	0.00
10255	10255:WVGD4		40.00	35.00	37.50	46.662	2.21e+06	1.600	10.00	0.50	1776.86	311.10	145.87	6.67	317.77	0.00
10255		10255:WVGD3	35.00	30.00	32.50	47.906	2.27e+06	1.600	10.00	0.50	1824.70	319.39	149.76	6.67	326.06	0.00
10255	10255:WVGD3		30.00	25.00	27.50	49.150	2.33e+06	1.600	10.00	0.50	1872.54	327.68	153.65	6.67	334.35	0.00
10255		10255:WVGD2	25.00	20.00	22.50	50.394	2.39e+06	1.600	10.00	0.50	1920.37	335.97	157.53	6.67	342.64	0.00
10255	10255:WVGD2		20.00	15.00	17.50	51.637	2.44e+06	1.600	10.00	0.50	1968.21	344.27	161.42	6.67	350.93	0.00
10255		10255:WVGD1	15.00	10.00	12.50	52.881	2.5e+06	1.600	10.00	0.50	2016.05	352.56	165.31	6.67	359.22	0.00
10255	10255:WVGD1		10.00	5.00	7.50	54.125	2.56e+06	1.600	10.00	0.50	2063.89	360.85	169.20	6.67	367.52	0.00
10255		10255:g	5.00	0.00	2.50	55.368	2.62e+06	1.600	10.00	0.50	2111.73	369.14	173.08	6.67	375.81	0.00

Point Loads for Load Case "NESC Extreme":

Joint	Vertical	Transverse	Longitudinal	Load

Label	Load (lbs)	Load (lbs)	Load (lbs)	Comment
Davit1:End	236	881	0	Shield Wire
Davit2:End	254	742	0	Shield Wire
Davit3:End	3062	4981	0	Conductor
Davit4:End	3062	4981	0	Conductor
Davit5:End	3062	4981	0	Conductor
Davit6:End	3062	4981	0	Conductor
Davit7:End	3062	4981	0	Conductor
Davit8:End	3062	4981	0	Conductor
10255:TopConn	5135	24215	0	Top Connection
10255:BotConn	580	-16526	0	Bottom Connection
10255:WVGD1	322	218	0	Coax Cables
10255:WVGD2	322	218	0	Coax Cables
10255:WVGD3	322	218	0	Coax Cables
10255:WVGD4	322	218	0	Coax Cables
10255:WVGD5	322	218	0	Coax Cables
10255:WVGD6	322	218	0	Coax Cables
10255:WVGD7	322	218	0	Coax Cables
10255:WVGD8	322	218	0	Coax Cables
10255:WVGD9	322	218	0	Coax Cables
10255:WVGD10	322	218	0	Coax Cables
10255:WVGD11	322	218	0	Coax Cables
10255:WVGD12	322	218	0	Coax Cables
10255:WVGD13	322	218	0	Coax Cables

Detailed Pole Loading Data for Load Case "NESC Extreme":

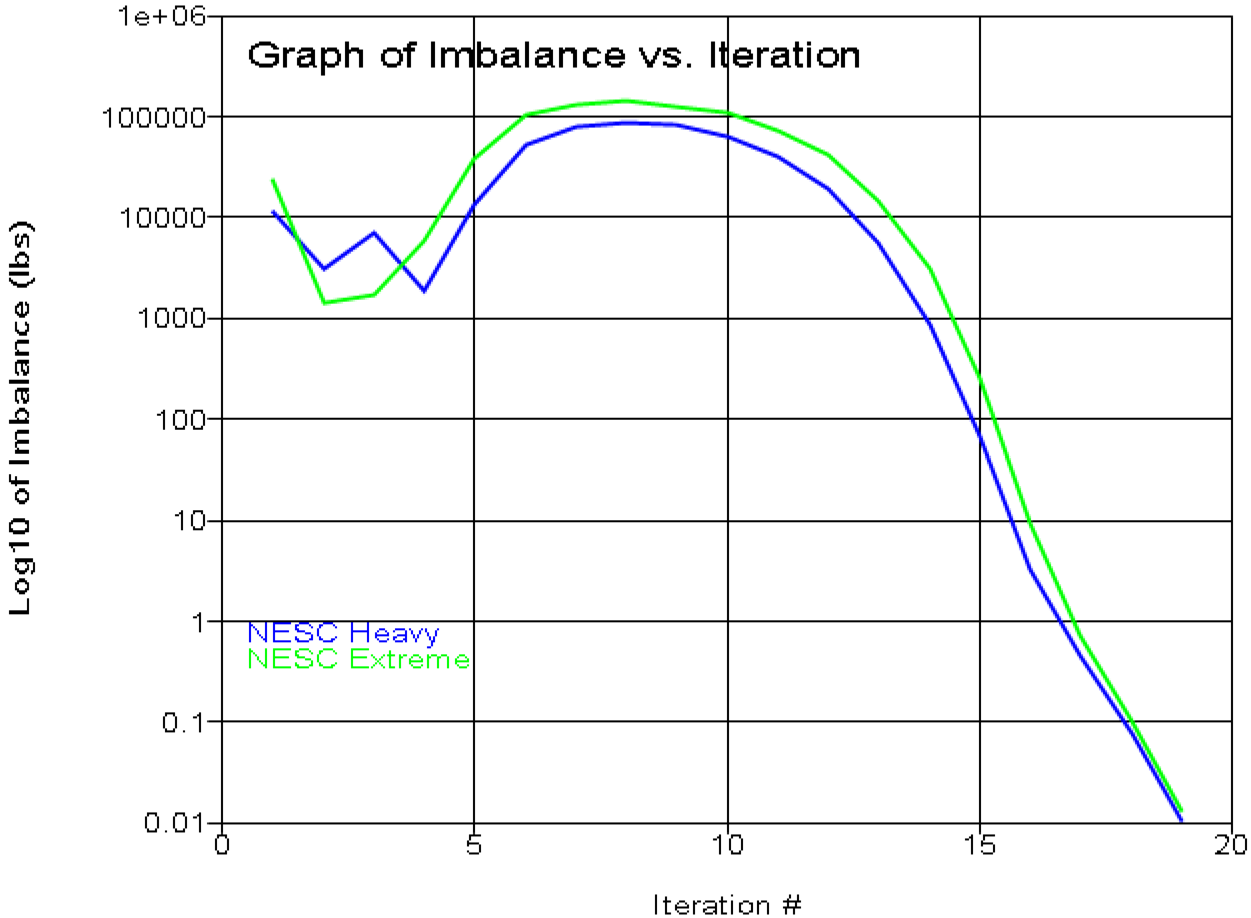
**Notes: Does not include loads from equipment, arms, guys, braces, etc. or user input loads.
Wind load is calculated for the undeformed shape of a pole.**

Pole Label	Top Joint	Bottom Joint	Section Top Z (ft)	Section Bottom Z (ft)	Section Average Elevation (ft)	Outer Diameter (in)	Reynolds Number	Drag Coef.	Adjusted Wind Pressure (psf)	Adjusted Ice Thickness (in)	Pole Vert. Load (lbs)	Pole Wind Load (lbs)	Pole Ice Vertical Load (lbs)	Pole Ice Wind Load (lbs)	Tran. Wind Load (lbs)	Long. Wind Load (lbs)
10255	10255:t	10255:Arm1	150.00	149.30	149.65	20.267	1.58e+06	1.000	27.12	0.00	47.76	32.07	0.00	0.00	32.07	0.00
10255	10255:Arm1	10255:TopConn	149.30	146.42	147.86	20.712	1.62e+06	1.000	27.12	0.00	200.88	134.83	0.00	0.00	134.83	0.00
10255	10255:TopConn		146.42	143.34	144.88	21.454	1.67e+06	1.000	27.12	0.00	223.00	149.61	0.00	0.00	149.61	0.00
10255		10255:BotConn	143.34	140.25	141.79	22.221	1.73e+06	1.000	27.12	0.00	231.10	154.96	0.00	0.00	154.96	0.00
10255	10255:BotConn	10255:Arm2	140.25	136.63	138.44	23.056	1.8e+06	1.000	27.12	0.00	281.89	188.92	0.00	0.00	188.92	0.00
10255	10255:Arm2		136.63	133.31	134.97	23.919	1.87e+06	1.000	27.12	0.00	267.36	179.09	0.00	0.00	179.09	0.00
10255		10255:WVGD13	133.31	130.00	131.66	24.743	1.93e+06	1.000	27.12	0.00	276.69	185.26	0.00	0.00	185.26	0.00
10255	10255:WVGD13		130.00	125.00	127.50	25.777	2.01e+06	1.000	27.12	0.00	435.33	291.32	0.00	0.00	291.32	0.00
10255		10255:WVGD12	125.00	120.00	122.50	27.020	2.11e+06	1.000	27.12	0.00	456.59	305.38	0.00	0.00	305.38	0.00
10255	10255:WVGD12		120.00	117.31	118.66	27.976	2.18e+06	1.000	27.12	0.00	254.20	169.95	0.00	0.00	169.95	0.00
10255		10255:Arm3	117.31	114.63	115.97	28.645	2.23e+06	1.000	27.12	0.00	260.34	174.01	0.00	0.00	174.01	0.00
10255	10255:Arm3	10255:WVGD11	114.63	110.00	112.31	29.554	2.3e+06	1.000	27.12	0.00	462.41	308.97	0.00	0.00	308.97	0.00
10255	10255:WVGD11		110.00	105.00	107.50	30.751	2.4e+06	1.000	27.12	0.00	520.37	347.55	0.00	0.00	347.55	0.00
10255		10255:WVGD10	105.00	100.00	102.50	31.995	2.49e+06	1.000	27.12	0.00	541.63	361.60	0.00	0.00	361.60	0.00
10255	10255:WVGD10		100.00	99.67	99.84	32.658	2.55e+06	1.000	27.12	0.00	36.50	24.36	0.00	0.00	24.36	0.00
10255			99.67	95.00	97.34	32.967	2.57e+06	1.000	27.12	0.00	1246.59	348.00	0.00	0.00	348.00	0.00
10255		10255:Arm4	95.00	92.63	93.81	33.531	2.61e+06	1.000	27.12	0.00	376.32	180.01	0.00	0.00	180.01	0.00
10255	10255:Arm4	10255:WVGD9	92.63	90.00	91.31	34.153	2.66e+06	1.000	27.12	0.00	423.64	202.64	0.00	0.00	202.64	0.00
10255	10255:WVGD9		90.00	85.00	87.50	35.101	2.74e+06	1.000	27.12	0.00	829.63	396.71	0.00	0.00	396.71	0.00
10255		10255:WVGD8	85.00	80.00	82.50	36.345	2.83e+06	1.000	27.12	0.00	859.40	410.76	0.00	0.00	410.76	0.00
10255	10255:WVGD8		80.00	75.00	77.50	37.588	2.93e+06	1.000	27.12	0.00	889.16	424.82	0.00	0.00	424.82	0.00
10255		10255:WVGD7	75.00	70.00	72.50	38.832	3.03e+06	1.000	27.12	0.00	918.93	438.87	0.00	0.00	438.87	0.00

10255	10255:WVGD7		70.00	65.00	67.50	40.076	3.12e+06	1.000	27.12	0.00	948.70	452.93	0.00	0.00	452.93	0.00
10255		10255:WVGD6	65.00	60.00	62.50	41.319	3.22e+06	1.000	27.12	0.00	978.46	466.98	0.00	0.00	466.98	0.00
10255	10255:WVGD6		60.00	55.59	57.79	42.490	3.31e+06	1.000	27.12	0.00	888.73	424.03	0.00	0.00	424.03	0.00
10255			55.59	51.17	53.38	43.588	3.4e+06	1.000	27.12	0.00	911.94	434.99	0.00	0.00	434.99	0.00
10255		10255:WVGD5	51.17	50.00	50.59	43.845	3.42e+06	1.000	27.12	0.00	503.22	115.96	0.00	0.00	115.96	0.00
10255	10255:WVGD5		50.00	45.00	47.50	44.175	3.44e+06	1.000	27.12	0.00	2188.55	499.26	0.00	0.00	499.26	0.00
10255		10255:WVGD4	45.00	40.00	42.50	45.419	3.54e+06	1.000	27.12	0.00	1152.68	513.32	0.00	0.00	513.32	0.00
10255	10255:WVGD4		40.00	35.00	37.50	46.662	3.64e+06	1.000	27.12	0.00	1184.57	527.37	0.00	0.00	527.37	0.00
10255		10255:WVGD3	35.00	30.00	32.50	47.906	3.74e+06	1.000	27.12	0.00	1216.46	541.43	0.00	0.00	541.43	0.00
10255	10255:WVGD3		30.00	25.00	27.50	49.150	3.83e+06	1.000	27.12	0.00	1248.36	555.49	0.00	0.00	555.49	0.00
10255		10255:WVGD2	25.00	20.00	22.50	50.394	3.93e+06	1.000	27.12	0.00	1280.25	569.54	0.00	0.00	569.54	0.00
10255	10255:WVGD2		20.00	15.00	17.50	51.637	4.03e+06	1.000	27.12	0.00	1312.14	583.60	0.00	0.00	583.60	0.00
10255		10255:WVGD1	15.00	10.00	12.50	52.881	4.12e+06	1.000	27.12	0.00	1344.03	597.65	0.00	0.00	597.65	0.00
10255	10255:WVGD1		10.00	5.00	7.50	54.125	4.22e+06	1.000	27.12	0.00	1375.92	611.71	0.00	0.00	611.71	0.00
10255		10255:g	5.00	0.00	2.50	55.368	4.32e+06	1.000	27.12	0.00	1407.82	625.76	0.00	0.00	625.76	0.00

*** Analysis Results:

Maximum element usage is 99.63% for Steel Pole "10255" in load case "NESC Extreme"
Maximum insulator usage is 30.94% for Clamp "Clamp9" in load case "NESC Extreme"



*** Analysis Results for Load Case No. 1 "NESC Heavy" - Number of iterations in SAPS 19

Equilibrium Joint Positions and Rotations for Load Case "NESC Heavy":

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
10255:g	0	0	0	0.0000	0.0000	0.0000	0	0	0
10255:t	0.02223	9.194	-0.3903	-6.5840	0.0141	0.0004	0.02223	9.194	149.6
10255:Arm1	0.02205	9.114	-0.3857	-6.5840	0.0141	0.0004	0.02205	9.114	148.9

10255:TopConn	0.02135	8.784	-0.3667	-6.5790	0.0141	0.0004	0.02135	8.784	146.1
10255:BotConn	0.01984	8.079	-0.3262	-6.5163	0.0141	0.0004	0.01984	8.079	139.9
10255:Arm2	0.01895	7.669	-0.3029	-6.4512	0.0140	0.0003	0.01895	7.669	136.3
10255:WVGD13	0.01735	6.935	-0.2617	-6.2602	0.0138	0.0003	0.01735	6.935	129.7
10255:WVGD12	0.01499	5.877	-0.2051	-5.8603	0.0133	0.0003	0.01499	5.877	119.8
10255:Arm3	0.01377	5.339	-0.1778	-5.6130	0.0129	0.0002	0.01377	5.339	114.4
10255:WVGD11	0.01274	4.896	-0.1562	-5.3741	0.0125	0.0002	0.01274	4.896	109.8
10255:WVGD10	0.01065	4.007	-0.116	-4.7981	0.0115	0.0002	0.01065	4.007	99.88
10255:Arm4	0.009207	3.414	-0.09173	-4.4194	0.0108	0.0001	0.009207	3.414	92.53
10255:WVGD9	0.008716	3.215	-0.08398	-4.2909	0.0106	0.0001	0.008716	3.215	89.92
10255:WVGD8	0.00695	2.51	-0.05846	-3.7820	0.0096	0.0001	0.00695	2.51	79.94
10255:WVGD7	0.005361	1.894	-0.03892	-3.2594	0.0086	0.0001	0.005361	1.894	69.96
10255:WVGD6	0.003964	1.37	-0.02459	-2.7387	0.0074	0.0000	0.003964	1.37	59.98
10255:WVGD5	0.002769	0.9365	-0.01459	-2.2292	0.0062	0.0000	0.002769	0.9365	49.99
10255:WVGD4	0.001782	0.5897	-0.008009	-1.7403	0.0050	0.0000	0.001782	0.5897	39.99
10255:WVGD3	0.001008	0.3264	-0.003983	-1.2723	0.0038	0.0000	0.001008	0.3264	30
10255:WVGD2	0.0004511	0.1429	-0.001745	-0.8262	0.0025	0.0000	0.0004511	0.1429	20
10255:WVGD1	0.0001145	0.03539	-0.0006139	-0.4022	0.0013	0.0000	0.0001145	0.03539	9.999
Davit1:O	0.02208	9.119	-0.2884	-6.5840	0.0141	0.0004	0.02208	8.271	149
Davit1:End	0.02273	9.317	0.8257	-6.3410	0.0141	0.0004	0.02273	-1.531	151.3
Davit2:O	0.02202	9.108	-0.4829	-6.5840	0.0141	0.0004	0.02202	9.956	148.8
Davit2:End	0.02196	9.18	-1.669	-6.8929	0.0141	0.0004	0.02196	20.03	148.8
Davit3:O	0.01898	7.676	-0.1928	-6.4512	0.0140	0.0003	0.01898	6.696	136.4
Davit3:End	0.01996	7.971	1.379	-5.7430	0.0141	0.0004	0.01996	-8.009	140
Davit4:O	0.01892	7.663	-0.4129	-6.4512	0.0140	0.0003	0.01892	8.643	136.2
Davit4:End	0.01887	7.795	-2.232	-7.2755	0.0140	0.0003	0.01887	23.77	136.4
Davit5:O	0.0138	5.345	-0.05973	-5.6130	0.0129	0.0002	0.0138	4.137	114.6
Davit5:End	0.01462	5.589	1.295	-4.8965	0.0129	0.0003	0.01462	-10.62	117.9
Davit6:O	0.01374	5.333	-0.2959	-5.6130	0.0129	0.0002	0.01374	6.541	114.3
Davit6:End	0.01377	5.461	-1.894	-6.4427	0.0129	0.0002	0.01377	21.67	114.7
Davit7:O	0.009231	3.419	0.01688	-4.4194	0.0108	0.0001	0.009231	2.009	92.64
Davit7:End	0.00985	3.596	1.062	-3.6914	0.0109	0.0002	0.00985	-12.81	95.69
Davit8:O	0.009183	3.41	-0.2003	-4.4194	0.0108	0.0001	0.009183	4.82	92.42
Davit8:End	0.009285	3.526	-1.485	-5.2565	0.0108	0.0001	0.009285	19.94	93.14

Joint Support Reactions for Load Case "NESC Heavy":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	H-Bend-M Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
10255:g	-0.21	0.0	-36.68	0.0	0.0	-132.50	0.0	0.0	137.49	0.0	4546.59	0.0	-14.9	0.0	0.0	-0.02	0.0	0.0

Detailed Steel Pole Usages for Load Case "NESC Heavy":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Trans. Mom. (Local Mx) (ft-k)	Long. Mom. (Local My) (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Tran. Shear (kips)	Long. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
10255	10255:t	Origin	0.00	110.33	0.27	-4.68	-0.00	-0.00	0.0	-0.04	0.01	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	5
10255	10255:Arm1	End	0.70	109.37	0.26	-4.63	0.01	-0.00	0.0	-0.04	0.01	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	3
10255	10255:Arm1	Origin	0.70	109.37	0.26	-4.63	2.75	-0.00	0.0	-2.93	2.75	-0.00	-0.15	0.09	0.27	0.00	0.52	0.8	4

10255	10255:TopConn	End	3.58	105.40	0.26	-4.40	10.68	-0.01	0.0	-2.93	2.75	-0.00	-0.14	1.17	0.07	0.00	1.32	2.0	2
10255	10255:TopConn	Origin	3.58	105.40	0.26	-4.40	10.68	-0.01	0.0	-13.45	11.66	-0.01	-0.64	0.32	1.10	0.00	2.14	3.3	4
10255	Tube 1	End	6.67	101.17	0.25	-4.16	46.63	-0.03	0.0	-13.45	11.66	-0.01	-0.62	4.76	0.29	0.00	5.41	8.3	2
10255	Tube 1	Origin	6.67	101.17	0.25	-4.16	46.63	-0.03	0.0	-13.84	11.78	-0.01	-0.64	4.76	0.29	0.00	5.43	8.3	2
10255	10255:BotConn	End	9.75	96.95	0.24	-3.91	82.99	-0.07	0.0	-13.84	11.78	-0.01	-0.62	7.90	0.28	0.00	8.53	13.1	2
10255	10255:BotConn	Origin	9.75	96.95	0.24	-3.91	82.99	-0.07	0.0	-16.24	7.03	-0.01	-0.72	7.90	0.17	0.00	8.63	13.3	2
10255	10255:Arm2	End	13.38	92.03	0.23	-3.63	108.47	-0.12	0.0	-16.24	7.03	-0.01	-0.70	9.53	0.16	0.00	10.23	15.7	2
10255	10255:Arm2	Origin	13.38	92.03	0.23	-3.63	126.40	-0.13	0.0	-33.30	16.72	-0.02	-1.43	11.11	0.38	0.00	12.56	19.3	2
10255	Tube 1	End	16.69	87.59	0.22	-3.38	181.77	-0.20	0.0	-33.30	16.72	-0.02	-1.38	14.89	0.37	0.00	16.29	25.1	2
10255	Tube 1	Origin	16.69	87.59	0.22	-3.38	181.77	-0.20	0.0	-33.78	16.82	-0.03	-1.40	14.89	0.37	0.00	16.31	25.1	2
10255	10255:WVGD13	End	20.00	83.22	0.21	-3.14	237.48	-0.28	0.0	-33.78	16.82	-0.03	-1.35	18.18	0.36	0.00	19.55	30.1	2
10255	10255:WVGD13	Origin	20.00	83.22	0.21	-3.14	237.48	-0.28	0.0	-35.59	17.16	-0.03	-1.43	18.18	0.36	0.00	19.62	30.2	2
10255	Tube 1	End	25.00	76.76	0.19	-2.79	323.30	-0.43	0.0	-35.59	17.16	-0.03	-1.36	22.44	0.35	0.00	23.80	36.6	2
10255	Tube 1	Origin	25.00	76.76	0.19	-2.79	323.30	-0.43	0.0	-36.40	17.30	-0.03	-1.39	22.44	0.35	0.00	23.83	36.7	2
10255	10255:WVGD12	End	30.00	70.52	0.18	-2.46	409.79	-0.60	0.0	-36.40	17.30	-0.03	-1.33	25.90	0.33	0.00	27.23	41.9	2
10255	10255:WVGD12	Origin	30.00	70.52	0.18	-2.46	409.79	-0.60	0.0	-38.22	17.61	-0.04	-1.39	25.90	0.34	0.00	27.29	42.0	2
10255	Tube 1	End	32.69	67.26	0.17	-2.29	457.11	-0.70	0.0	-38.22	17.61	-0.04	-1.36	27.52	0.33	0.00	28.88	44.4	2
10255	Tube 1	Origin	32.69	67.26	0.17	-2.29	457.11	-0.70	0.0	-38.69	17.67	-0.04	-1.38	27.52	0.33	0.00	28.90	44.5	2
10255	10255:Arm3	End	35.38	64.07	0.17	-2.13	504.60	-0.81	0.0	-38.69	17.67	-0.04	-1.34	28.97	0.32	0.00	30.32	46.6	2
10255	10255:Arm3	Origin	35.38	64.07	0.17	-2.13	522.08	-0.82	0.0	-56.09	27.03	-0.05	-1.95	29.97	0.50	0.00	31.93	49.1	2
10255	10255:WVGD11	End	40.00	58.75	0.15	-1.87	647.10	-1.05	0.0	-56.09	27.03	-0.05	-1.87	34.32	0.48	0.00	36.21	55.7	2
10255	10255:WVGD11	Origin	40.00	58.75	0.15	-1.87	647.10	-1.05	0.0	-58.21	27.25	-0.05	-1.94	34.32	0.48	0.00	36.28	55.8	2
10255	Tube 1	End	45.00	53.26	0.14	-1.62	783.36	-1.32	0.0	-58.21	27.25	-0.05	-1.87	38.28	0.46	0.00	40.15	61.8	2
10255	Tube 1	Origin	45.00	53.26	0.14	-1.62	783.36	-1.32	0.0	-59.24	27.25	-0.06	-1.90	38.28	0.46	0.00	40.18	61.8	2
10255	10255:WVGD10	End	50.00	48.08	0.13	-1.39	919.61	-1.62	0.0	-59.24	27.25	-0.06	-1.83	41.53	0.44	0.00	43.36	66.7	2
10255	10255:WVGD10	Origin	50.00	48.08	0.13	-1.39	919.61	-1.62	0.0	-60.98	27.43	-0.06	-1.88	41.53	0.45	0.00	43.41	66.8	2
10255	SpliceT	End	50.33	47.75	0.13	-1.38	928.66	-1.64	0.0	-60.98	27.43	-0.06	-1.87	41.72	0.45	0.00	43.60	67.1	2
10255	SpliceT	Origin	50.33	47.75	0.13	-1.38	928.66	-1.64	0.0	-62.05	27.49	-0.07	-1.91	41.72	0.45	0.00	43.64	67.1	2
10255	SpliceB	End	55.00	43.20	0.12	-1.19	1057.02	-1.95	0.0	-62.05	27.49	-0.07	-1.34	33.19	0.32	0.00	34.54	53.1	2
10255	SpliceB	Origin	55.00	43.20	0.12	-1.19	1057.02	-1.95	0.0	-63.43	27.55	-0.07	-1.37	33.19	0.32	0.00	34.57	53.2	

2	10255	10255:Arm4	End	57.38	40.97	0.11	-1.10	1122.45	-2.12	0.0	-63.43	27.55	-0.07	-1.35	34.00	0.31	0.00	35.36	54.4
2	10255	10255:Arm4	Origin	57.38	40.97	0.11	-1.10	1139.28	-2.12	0.0	-81.06	36.52	-0.08	-1.73	34.51	0.41	0.00	36.25	55.8
2	10255	10255:WVGD9	End	60.00	38.58	0.10	-1.01	1235.15	-2.33	0.0	-81.06	36.52	-0.08	-1.69	35.99	0.40	0.00	37.69	58.0
2	10255	10255:WVGD9	Origin	60.00	38.58	0.10	-1.01	1235.15	-2.33	0.0	-83.38	36.69	-0.08	-1.74	35.99	0.41	0.00	37.74	58.1
2	10255	Tube 2	End	65.00	34.21	0.09	-0.85	1418.60	-2.74	0.0	-83.38	36.69	-0.08	-1.68	38.45	0.39	0.00	40.14	61.8
2	10255	Tube 2	Origin	65.00	34.21	0.09	-0.85	1418.60	-2.74	0.0	-84.92	36.66	-0.09	-1.71	38.45	0.39	0.00	40.17	61.8
2	10255	10255:WVGD8	End	70.00	30.11	0.08	-0.70	1601.89	-3.18	0.0	-84.92	36.66	-0.09	-1.65	40.50	0.38	0.00	42.16	64.9
2	10255	10255:WVGD8	Origin	70.00	30.11	0.08	-0.70	1601.89	-3.17	0.0	-87.69	36.79	-0.09	-1.71	40.50	0.38	0.00	42.21	64.9
2	10255	Tube 2	End	75.00	26.29	0.07	-0.58	1785.80	-3.65	0.0	-87.69	36.79	-0.09	-1.65	42.21	0.37	0.00	43.87	67.5
2	10255	Tube 2	Origin	75.00	26.29	0.07	-0.58	1785.80	-3.64	0.0	-89.33	36.73	-0.10	-1.68	42.21	0.37	0.00	43.90	67.5
2	10255	10255:WVGD7	End	80.00	22.73	0.06	-0.47	1969.45	-4.15	0.0	-89.33	36.73	-0.10	-1.63	43.62	0.35	0.00	45.25	69.6
2	10255	10255:WVGD7	Origin	80.00	22.73	0.06	-0.47	1969.45	-4.15	0.0	-92.20	36.83	-0.11	-1.68	43.62	0.36	0.00	45.30	69.7
2	10255	Tube 2	End	85.00	19.45	0.06	-0.37	2153.61	-4.68	0.0	-92.20	36.83	-0.11	-1.63	44.78	0.34	0.00	46.41	71.4
2	10255	Tube 2	Origin	85.00	19.45	0.06	-0.37	2153.61	-4.68	0.0	-93.94	36.77	-0.11	-1.66	44.78	0.34	0.00	46.44	71.4
2	10255	10255:WVGD6	End	90.00	16.44	0.05	-0.30	2337.45	-5.25	0.0	-93.94	36.77	-0.11	-1.61	45.72	0.33	0.00	47.33	72.8
2	10255	10255:WVGD6	Origin	90.00	16.44	0.05	-0.30	2337.45	-5.24	0.0	-96.80	36.86	-0.12	-1.66	45.72	0.33	0.00	47.38	72.9
2	10255	Tube 2	End	94.42	14.01	0.04	-0.24	2500.16	-5.77	0.0	-96.80	36.86	-0.12	-1.62	46.40	0.33	0.00	48.02	73.9
2	10255	Tube 2	Origin	94.42	14.01	0.04	-0.24	2500.16	-5.77	0.0	-98.41	36.79	-0.13	-1.64	46.40	0.32	0.00	48.05	73.9
2	10255	SpliceT	End	98.83	11.79	0.03	-0.19	2662.60	-6.33	0.0	-98.41	36.79	-0.13	-1.60	46.95	0.32	0.00	48.56	74.7
2	10255	SpliceT	Origin	98.83	11.79	0.03	-0.19	2662.60	-6.33	0.0	-99.64	36.76	-0.13	-1.62	46.95	0.32	0.00	48.58	74.7
2	10255	10255:WVGD5	End	100.00	11.24	0.03	-0.18	2705.61	-6.48	0.0	-99.64	36.76	-0.13	-1.53	45.85	0.30	0.00	47.39	72.9
2	10255	10255:WVGD5	Origin	100.00	11.24	0.03	-0.18	2705.61	-6.48	0.0	-103.02	36.90	-0.13	-1.59	45.85	0.30	0.00	47.44	73.0
2	10255	SpliceB	End	105.00	9.03	0.03	-0.13	2890.08	-7.15	0.0	-103.02	36.90	-0.13	-1.54	46.25	0.29	0.00	47.80	73.5
2	10255	SpliceB	Origin	105.00	9.03	0.03	-0.13	2890.08	-7.15	0.0	-105.83	36.85	-0.14	-1.58	46.25	0.29	0.00	47.84	73.6
2	10255	10255:WVGD4	End	110.00	7.08	0.02	-0.10	3074.30	-7.86	0.0	-105.83	36.85	-0.14	-1.54	46.54	0.28	0.00	48.09	74.0
2	10255	10255:WVGD4	Origin	110.00	7.08	0.02	-0.10	3074.30	-7.86	0.0	-109.06	36.90	-0.15	-1.59	46.54	0.28	0.00	48.13	74.0
2	10255	Tube 3	End	115.00	5.37	0.02	-0.07	3258.78	-8.60	0.0	-109.06	36.90	-0.15	-1.55	46.74	0.28	0.00	48.29	74.3
2	10255	Tube 3	Origin	115.00	5.37	0.02	-0.07	3258.78	-8.60	0.0	-111.16	36.82	-0.16	-1.58	46.74	0.28	0.00	48.31	74.3
2	10255	10255:WVGD3	End	120.00	3.92	0.01	-0.05	3442.88	-9.38	0.0	-111.16	36.82	-0.16	-1.53	46.84	0.27	0.00	48.38	74.4
2																			

10255	10255:WVGD3	Origin	120.00	3.92	0.01	-0.05	3442.88	-9.38	0.0	-114.49	36.86	-0.16	-1.58	46.84	0.27	0.00	48.43	74.5	2
10255	Tube 3	End	125.00	2.70	0.01	-0.03	3627.19	-10.20	0.0	-114.49	36.86	-0.16	-1.54	46.88	0.26	0.00	48.43	74.5	2
10255	Tube 3	Origin	125.00	2.70	0.01	-0.03	3627.19	-10.20	0.0	-116.69	36.79	-0.17	-1.57	46.88	0.26	0.00	48.46	74.5	2
10255	10255:WVGD2	End	130.00	1.71	0.01	-0.02	3811.14	-11.05	0.0	-116.69	36.79	-0.17	-1.53	46.86	0.26	0.00	48.39	74.4	2
10255	10255:WVGD2	Origin	130.00	1.71	0.01	-0.02	3811.14	-11.05	0.0	-120.12	36.83	-0.18	-1.58	46.86	0.26	0.00	48.44	74.5	2
10255	Tube 3	End	135.00	0.96	0.00	-0.01	3995.27	-11.95	0.0	-120.12	36.83	-0.18	-1.54	46.78	0.25	0.00	48.32	74.3	2
10255	Tube 3	Origin	135.00	0.96	0.00	-0.01	3995.27	-11.95	0.0	-122.41	36.76	-0.19	-1.57	46.78	0.25	0.00	48.35	74.4	2
10255	10255:WVGD1	End	140.00	0.42	0.00	-0.01	4179.04	-12.88	0.0	-122.41	36.76	-0.19	-1.53	46.66	0.24	0.00	48.19	74.1	2
10255	10255:WVGD1	Origin	140.00	0.42	0.00	-0.01	4179.04	-12.88	0.0	-125.93	36.79	-0.20	-1.58	46.66	0.24	0.00	48.23	74.2	2
10255	Tube 3	End	145.00	0.11	0.00	-0.00	4362.98	-13.86	0.0	-125.93	36.79	-0.20	-1.54	46.50	0.24	0.00	48.04	73.9	2
10255	Tube 3	Origin	145.00	0.11	0.00	-0.00	4362.98	-13.86	0.0	-128.32	36.72	-0.20	-1.57	46.50	0.24	0.00	48.07	73.9	2
10255	10255:g	End	150.00	0.00	0.00	0.00	4546.59	-14.88	0.0	-128.32	36.72	-0.20	-1.53	46.30	0.23	0.00	47.83	73.6	2

Detailed Tubular Davit Arm Usages for Load Case "NESC Heavy":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Vert. Mom. (ft-k)	Horz. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Vert. Shear (kips)	Horz. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
Davit1	Davit1:O	Origin	0.00	109.43	0.27	-3.46	-10.54	0.01	0.0	-1.50	1.11	-0.00	-0.22	7.38	0.00	0.00	7.60	11.7	1
Davit1	#Davit1:0	End	5.00	110.63	0.27	3.24	-4.98	0.00	0.0	-1.50	1.11	-0.00	-0.28	5.81	0.00	0.00	6.09	9.4	1
Davit1	#Davit1:0	Origin	5.00	110.63	0.27	3.24	-4.98	0.00	0.0	-1.47	1.01	-0.00	-0.28	5.81	0.00	0.00	6.08	9.4	1
Davit1	#Davit1:1	End	7.54	111.22	0.27	6.59	-2.42	0.00	0.0	-1.47	1.01	-0.00	-0.32	3.88	0.00	0.00	4.20	6.5	1
Davit1	#Davit1:1	Origin	7.54	111.22	0.27	6.59	-2.42	0.00	0.0	-1.46	0.95	-0.00	-0.32	3.88	0.00	0.00	4.20	6.5	1
Davit1	Davit1:End	End	10.07	111.81	0.27	9.91	-0.00	0.00	0.0	-1.46	0.95	-0.00	-0.39	0.00	0.54	0.00	1.01	1.6	3
Davit2	Davit2:O	Origin	0.00	109.30	0.26	-5.79	-13.31	-0.00	-0.0	1.13	1.39	0.00	0.16	9.32	0.00	0.00	9.48	14.6	1
Davit2	#Davit2:0	End	5.00	109.73	0.26	-12.78	-6.34	-0.00	-0.0	1.13	1.39	0.00	0.21	7.40	0.00	0.00	7.61	11.7	1
Davit2	#Davit2:0	Origin	5.00	109.73	0.26	-12.78	-6.34	-0.00	-0.0	1.13	1.28	0.00	0.21	7.40	0.00	0.00	7.61	11.7	1
Davit2	#Davit2:1	End	7.54	109.94	0.26	-16.39	-3.09	-0.00	-0.0	1.13	1.28	0.00	0.25	4.96	0.00	0.00	5.21	8.0	1
Davit2	#Davit2:1	Origin	7.54	109.94	0.26	-16.39	-3.09	-0.00	0.0	1.13	1.22	0.00	0.25	4.96	0.00	0.00	5.21	8.0	1
Davit2	Davit2:End	End	10.07	110.16	0.26	-20.03	0.00	0.00	0.0	1.13	1.22	0.00	0.30	0.00	0.69	0.00	1.23	1.9	3
Davit3	Davit3:O	Origin	0.00	92.11	0.23	-2.31	-108.44	0.04	0.0	-5.77	7.43	-0.00	-0.38	19.66	0.00	0.00	20.04	30.8	1
Davit3	#Davit3:0	End	5.00	93.34	0.23	4.18	-71.29	0.02	0.0	-5.77	7.43	-0.00	-0.46	18.89	0.00	0.00	19.35	29.8	1
Davit3	#Davit3:0	Origin	5.00	93.34	0.23	4.18	-71.29	0.02	0.0	-5.66	7.15	-0.00	-0.45	18.89	0.00	0.00	19.34	29.8	1
Davit3	#Davit3:1	End	10.00	94.51	0.24	10.41	-35.54	0.01	0.0	-5.66	7.15	-0.00	-0.57	15.04	0.00	0.00	15.62	24.0	1
Davit3	#Davit3:1	Origin	10.00	94.51	0.24	10.41	-35.54	0.01	0.0	-5.59	6.97	-0.00	-0.56	15.04	0.00	0.00	15.61	24.0	1
Davit3	#Davit3:2	End	12.57	95.09	0.24	13.50	-17.64	0.00	0.0	-5.59	6.97	-0.00	-0.65	9.99	0.00	0.00	10.64	16.4	1
Davit3	#Davit3:2	Origin	12.57	95.09	0.24	13.50	-17.64	0.00	0.0	-5.55	6.87	-0.00	-0.65	9.99	0.00	0.00	10.64	16.4	1
Davit3	Davit3:End	End	15.13	95.65	0.24	16.55	-0.00	0.00	0.0	-5.55	6.87	-0.00	-0.77	0.00	1.97	0.00	3.49	5.4	3
Davit4	Davit4:O	Origin	0.00	91.96	0.23	-4.95	-126.36	-0.03	-0.0	3.66	8.67	0.00	0.24	22.91	0.00	0.00	23.15	35.6	1
Davit4	#Davit4:0	End	5.00	92.48	0.23	-11.85	-83.00	-0.02	-0.0	3.66	8.67	0.00	0.29	21.99	0.00	0.00	22.29	34.3	1
Davit4	#Davit4:0	Origin	5.00	92.48	0.23	-11.85	-83.00	-0.02	-0.0	3.71	8.33	0.00	0.30	21.99	0.00	0.00	22.29	34.3	1
Davit4	#Davit4:1	End	10.00	93.00	0.23	-19.07	-41.34	-0.01	-0.0	3.71	8.33	0.00	0.37	17.50	0.00	0.00	17.87	27.5	1

Davit4	#Davit4:1	Origin	10.00	93.00	0.23	-19.07	-41.34	-0.01	-0.0	3.75	8.11	0.00	0.38	17.50	0.00	0.00	17.88	27.5	1
Davit4	#Davit4:2	End	12.57	93.27	0.23	-22.90	-20.52	-0.01	-0.0	3.75	8.11	0.00	0.44	11.62	0.00	0.00	12.06	18.5	1
Davit4	#Davit4:2	Origin	12.57	93.27	0.23	-22.90	-20.52	-0.01	0.0	3.77	7.99	0.00	0.44	11.62	0.00	0.00	12.06	18.6	1
Davit4	Davit4:End	End	15.13	93.54	0.23	-26.78	-0.00	0.00	0.0	3.77	7.99	0.00	0.52	0.00	2.29	0.00	3.99	6.1	3
Davit5	Davit5:O	Origin	0.00	64.14	0.17	-0.72	-109.69	0.03	0.0	-5.66	7.51	-0.00	-0.38	19.89	0.00	0.00	20.26	31.2	1
Davit5	#Davit5:0	End	5.00	65.17	0.17	4.92	-72.12	0.02	0.0	-5.66	7.51	-0.00	-0.45	19.11	0.00	0.00	19.56	30.1	1
Davit5	#Davit5:0	Origin	5.00	65.17	0.17	4.92	-72.12	0.02	0.0	-5.55	7.23	-0.00	-0.44	19.11	0.00	0.00	19.55	30.1	1
Davit5	#Davit5:1	End	10.00	66.13	0.17	10.29	-35.96	0.01	0.0	-5.55	7.23	-0.00	-0.56	15.22	0.00	0.00	15.78	24.3	1
Davit5	#Davit5:1	Origin	10.00	66.13	0.17	10.29	-35.96	0.01	0.0	-5.49	7.06	-0.00	-0.55	15.22	0.00	0.00	15.77	24.3	1
Davit5	#Davit5:2	End	12.57	66.61	0.17	12.94	-17.85	0.00	0.0	-5.49	7.06	-0.00	-0.64	10.11	0.00	0.00	10.75	16.5	1
Davit5	#Davit5:2	Origin	12.57	66.61	0.17	12.94	-17.85	0.00	0.0	-5.45	6.96	-0.00	-0.64	10.11	0.00	0.00	10.75	16.5	1
Davit5	Davit5:End	End	15.13	67.07	0.18	15.54	-0.00	0.00	0.0	-5.45	6.96	-0.00	-0.75	0.00	1.99	0.00	3.53	5.4	3
Davit6	Davit6:O	Origin	0.00	64.00	0.16	-3.55	-127.16	-0.03	-0.0	3.54	8.72	0.00	0.23	23.06	0.00	0.00	23.29	35.8	1
Davit6	#Davit6:0	End	5.00	64.49	0.17	-9.57	-83.55	-0.02	-0.0	3.54	8.72	0.00	0.28	22.14	0.00	0.00	22.42	34.5	1
Davit6	#Davit6:0	Origin	5.00	64.49	0.17	-9.57	-83.55	-0.02	-0.0	3.59	8.39	0.00	0.29	22.14	0.00	0.00	22.42	34.5	1
Davit6	#Davit6:1	End	10.00	65.00	0.17	-15.92	-41.62	-0.01	-0.0	3.59	8.39	0.00	0.36	17.62	0.00	0.00	17.98	27.7	1
Davit6	#Davit6:1	Origin	10.00	65.00	0.17	-15.92	-41.62	-0.01	-0.0	3.63	8.17	0.00	0.37	17.62	0.00	0.00	17.98	27.7	1
Davit6	#Davit6:2	End	12.57	65.26	0.17	-19.29	-20.65	-0.00	-0.0	3.63	8.17	0.00	0.42	11.70	0.00	0.00	12.12	18.6	1
Davit6	#Davit6:2	Origin	12.57	65.26	0.17	-19.29	-20.65	-0.00	0.0	3.65	8.05	0.00	0.43	11.70	0.00	0.00	12.12	18.7	1
Davit6	Davit6:End	End	15.13	65.53	0.17	-22.73	-0.00	0.00	0.0	3.65	8.05	0.00	0.50	0.00	2.30	0.00	4.02	6.2	3
Davit7	Davit7:O	Origin	0.00	41.02	0.11	0.20	-111.44	0.03	0.0	-5.50	7.63	-0.00	-0.36	20.21	0.00	0.00	20.57	31.6	1
Davit7	#Davit7:0	End	5.00	41.78	0.11	4.62	-73.28	0.02	0.0	-5.50	7.63	-0.00	-0.44	19.42	0.00	0.00	19.86	30.5	1
Davit7	#Davit7:0	Origin	5.00	41.78	0.11	4.62	-73.28	0.02	0.0	-5.40	7.35	-0.00	-0.43	19.42	0.00	0.00	19.85	30.5	1
Davit7	#Davit7:1	End	10.00	42.48	0.12	8.76	-36.54	0.01	0.0	-5.40	7.35	-0.00	-0.55	15.47	0.00	0.00	16.01	24.6	1
Davit7	#Davit7:1	Origin	10.00	42.48	0.12	8.76	-36.54	0.01	0.0	-5.34	7.17	-0.00	-0.54	15.47	0.00	0.00	16.01	24.6	1
Davit7	#Davit7:2	End	12.57	42.82	0.12	10.78	-18.14	0.00	0.0	-5.34	7.17	-0.00	-0.62	10.27	0.00	0.00	10.90	16.8	1
Davit7	#Davit7:2	Origin	12.57	42.82	0.12	10.78	-18.14	0.00	0.0	-5.30	7.07	-0.00	-0.62	10.27	0.00	0.00	10.89	16.8	1
Davit7	Davit7:End	End	15.13	43.15	0.12	12.74	-0.00	0.00	0.0	-5.30	7.07	-0.00	-0.73	0.00	2.02	0.00	3.58	5.5	3
Davit8	Davit8:O	Origin	0.00	40.92	0.11	-2.40	-128.27	-0.03	-0.0	3.35	8.80	0.00	0.22	23.26	0.00	0.00	23.48	36.1	1
Davit8	#Davit8:0	End	5.00	41.37	0.11	-7.18	-84.29	-0.02	-0.0	3.35	8.80	0.00	0.27	22.33	0.00	0.00	22.60	34.8	1
Davit8	#Davit8:0	Origin	5.00	41.37	0.11	-7.18	-84.29	-0.02	-0.0	3.42	8.46	0.00	0.27	22.33	0.00	0.00	22.61	34.8	1
Davit8	#Davit8:1	End	10.00	41.83	0.11	-12.28	-42.00	-0.01	-0.0	3.42	8.46	0.00	0.35	17.78	0.00	0.00	18.12	27.9	1
Davit8	#Davit8:1	Origin	10.00	41.83	0.11	-12.28	-42.00	-0.01	-0.0	3.46	8.24	0.00	0.35	17.78	0.00	0.00	18.13	27.9	1
Davit8	#Davit8:2	End	12.57	42.07	0.11	-15.02	-20.84	-0.00	-0.0	3.46	8.24	0.00	0.40	11.81	0.00	0.00	12.21	18.8	1
Davit8	#Davit8:2	Origin	12.57	42.07	0.11	-15.02	-20.84	-0.00	0.0	3.48	8.12	0.00	0.41	11.81	0.00	0.00	12.21	18.8	1
Davit8	Davit8:End	End	15.13	42.31	0.11	-17.82	-0.00	0.00	0.0	3.48	8.12	0.00	0.48	0.00	2.32	0.00	4.05	6.2	3

Summary of Clamp Capacities and Usages for Load Case "NESC Heavy":

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Holding Usage %	Input Hardware Capacity (kips)	Factored Hardware Capacity (kips)	Hardware Usage %	Max. Usage %
Clamp1	1.723	80.00	80.00	2.15	0.00	0.00	0.00	2.15
Clamp2	1.646	80.00	80.00	2.06	0.00	0.00	0.00	2.06
Clamp3	8.790	80.00	80.00	10.99	0.00	0.00	0.00	10.99
Clamp4	8.790	80.00	80.00	10.99	0.00	0.00	0.00	10.99
Clamp5	8.790	80.00	80.00	10.99	0.00	0.00	0.00	10.99
Clamp6	8.790	80.00	80.00	10.99	0.00	0.00	0.00	10.99
Clamp7	8.790	80.00	80.00	10.99	0.00	0.00	0.00	10.99
Clamp8	8.790	80.00	80.00	10.99	0.00	0.00	0.00	10.99
Clamp9	13.427	80.00	80.00	16.78	0.00	0.00	0.00	16.78
Clamp10	5.271	80.00	80.00	6.59	0.00	0.00	0.00	6.59

Clamp11	1.192	80.00	80.00	1.49	0.00	0.00	0.00	1.49
Clamp12	1.192	80.00	80.00	1.49	0.00	0.00	0.00	1.49
Clamp13	1.192	80.00	80.00	1.49	0.00	0.00	0.00	1.49
Clamp14	1.192	80.00	80.00	1.49	0.00	0.00	0.00	1.49
Clamp15	1.192	80.00	80.00	1.49	0.00	0.00	0.00	1.49
Clamp16	1.192	80.00	80.00	1.49	0.00	0.00	0.00	1.49
Clamp17	1.192	80.00	80.00	1.49	0.00	0.00	0.00	1.49
Clamp18	1.192	80.00	80.00	1.49	0.00	0.00	0.00	1.49
Clamp19	1.192	80.00	80.00	1.49	0.00	0.00	0.00	1.49
Clamp20	1.192	80.00	80.00	1.49	0.00	0.00	0.00	1.49
Clamp21	1.192	80.00	80.00	1.49	0.00	0.00	0.00	1.49
Clamp22	1.192	80.00	80.00	1.49	0.00	0.00	0.00	1.49
Clamp23	1.192	80.00	80.00	1.49	0.00	0.00	0.00	1.49

*** Analysis Results for Load Case No. 2 "NESC Extreme" - Number of iterations in SAPS 19

Equilibrium Joint Positions and Rotations for Load Case "NESC Extreme":

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
10255:g	0	0	0	0.0000	0.0000	0.0000	0	0	0
10255:t	0.005278	12.58	-0.7245	-9.2228	0.0033	0.0002	0.005278	12.58	149.3
10255:Arm1	0.005238	12.47	-0.7154	-9.2228	0.0033	0.0002	0.005238	12.47	148.6
10255:TopConn	0.005074	12.01	-0.6782	-9.2189	0.0033	0.0002	0.005074	12.01	145.7
10255:BotConn	0.004722	11.03	-0.5991	-9.0978	0.0033	0.0002	0.004722	11.03	139.7
10255:Arm2	0.004516	10.46	-0.5541	-8.9662	0.0033	0.0002	0.004516	10.46	136.1
10255:WVGD13	0.004142	9.441	-0.4757	-8.6420	0.0032	0.0001	0.004142	9.441	129.5
10255:WVGD12	0.003591	7.989	-0.3694	-8.0279	0.0031	0.0001	0.003591	7.989	119.6
10255:Arm3	0.003303	7.254	-0.3189	-7.6630	0.0030	0.0001	0.003303	7.254	114.3
10255:WVGD11	0.003063	6.65	-0.2792	-7.3198	0.0030	0.0001	0.003063	6.65	109.7
10255:WVGD10	0.002567	5.444	-0.2058	-6.5131	0.0027	0.0001	0.002567	5.444	99.79
10255:Arm4	0.002225	4.641	-0.1618	-5.9909	0.0026	0.0001	0.002225	4.641	92.46
10255:WVGD9	0.002108	4.37	-0.1478	-5.8153	0.0025	0.0001	0.002108	4.37	89.85
10255:WVGD8	0.001686	3.415	-0.1018	-5.1250	0.0023	0.0000	0.001686	3.415	79.9
10255:WVGD7	0.001305	2.582	-0.06673	-4.4210	0.0021	0.0000	0.001305	2.582	69.93
10255:WVGD6	0.000968	1.871	-0.04114	-3.7209	0.0018	0.0000	0.000968	1.871	59.96
10255:WVGD5	0.0006781	1.281	-0.02343	-3.0354	0.0015	0.0000	0.0006781	1.281	49.98
10255:WVGD4	0.0004377	0.8082	-0.01197	-2.3758	0.0012	0.0000	0.0004377	0.8082	39.99
10255:WVGD3	0.0002483	0.4483	-0.005217	-1.7418	0.0009	0.0000	0.0002483	0.4483	29.99
10255:WVGD2	0.0001115	0.1967	-0.001774	-1.1345	0.0006	0.0000	0.0001115	0.1967	20
10255:WVGD1	2.837e-05	0.04885	-0.0004001	-0.5541	0.0003	0.0000	2.837e-05	0.04885	10
Davit1:O	0.005248	12.48	-0.5795	-9.2228	0.0033	0.0002	0.005248	11.64	148.7
Davit1:End	0.005443	12.8	1.007	-9.2162	0.0033	0.0002	0.005443	1.956	151.5
Davit2:O	0.005228	12.46	-0.8514	-9.2228	0.0033	0.0002	0.005228	13.31	148.4
Davit2:End	0.005173	12.52	-2.477	-9.2890	0.0033	0.0002	0.005173	23.37	148
Davit3:O	0.004527	10.47	-0.4015	-8.9662	0.0033	0.0002	0.004527	9.489	136.2
Davit3:End	0.00482	10.96	1.888	-8.7994	0.0033	0.0002	0.00482	-5.023	140.5
Davit4:O	0.004504	10.44	-0.7068	-8.9662	0.0033	0.0002	0.004504	11.42	135.9
Davit4:End	0.004439	10.57	-3.115	-9.2751	0.0033	0.0002	0.004439	26.55	135.5
Davit5:O	0.003314	7.265	-0.1579	-7.6630	0.0030	0.0001	0.003314	6.058	114.5
Davit5:End	0.003556	7.659	1.799	-7.4829	0.0030	0.0001	0.003556	-8.548	118.4
Davit6:O	0.003293	7.244	-0.4799	-7.6630	0.0030	0.0001	0.003293	8.451	114.1
Davit6:End	0.003262	7.376	-2.545	-7.9834	0.0030	0.0001	0.003262	23.58	114.1
Davit7:O	0.002233	4.648	-0.0147	-5.9909	0.0026	0.0001	0.002233	3.239	92.61
Davit7:End	0.002411	4.932	1.512	-5.7940	0.0026	0.0001	0.002411	-11.48	96.14
Davit8:O	0.002217	4.633	-0.3089	-5.9909	0.0026	0.0001	0.002217	6.042	92.32
Davit8:End	0.002219	4.761	-1.935	-6.3258	0.0026	0.0001	0.002219	21.17	92.69

Joint Support Reactions for Load Case "NESC Extreme":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	H-Bend-M Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
10255:g	-0.05	0.0	-54.85	0.0	0.0	-64.32	0.0	0.0	84.53	0.0	6283.53	0.0	-3.7	0.0	0.0	-0.01	0.0	0.0

Detailed Steel Pole Usages for Load Case "NESC Extreme":

Element	Joint	Joint	Rel.	Trans.	Long.	Vert.	Trans. Mom.	Long. Mom.	Tors.	Axial	Tran.	Long.	P/A	M/S.	V/Q.	T/R.	Res.	Max.	At

Label	Label	Position	Dist. (ft)	Defl. (in)	Defl. (in)	Defl. (in)	(Local Mx) (ft-k)	(Local My) (ft-k)	Mom. (ft-k)	Force (kips)	Shear (kips)	Shear (kips)	(ksi)	(ksi)	(ksi)	(ksi)	(ksi)	Usage %	Pt.
10255	10255:t	Origin	0.00	151.01	0.06	-8.69	-0.00	-0.00	-0.0	-0.02	0.02	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	5
10255	10255:Arm1	End	0.70	149.67	0.06	-8.59	0.01	-0.00	-0.0	-0.02	0.02	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	4
10255	10255:Arm1	Origin	0.70	149.67	0.06	-8.59	2.57	-0.00	0.0	-0.71	1.86	-0.00	-0.04	0.30	0.05	0.00	0.35	0.5	2
10255	10255:TopConn	End	3.58	144.13	0.06	-8.14	7.93	-0.00	0.0	-0.71	1.86	-0.00	-0.03	0.87	0.05	0.00	0.91	1.4	2
10255	10255:TopConn	Origin	3.58	144.13	0.06	-8.14	7.93	-0.00	0.0	-2.12	26.76	-0.00	-0.10	0.00	2.61	0.00	4.53	7.0	5
10255	Tube 1	End	6.67	138.20	0.06	-7.66	90.48	-0.01	0.0	-2.12	26.76	-0.00	-0.10	9.24	0.66	0.00	9.41	14.5	2
10255	Tube 1	Origin	6.67	138.20	0.06	-7.66	90.48	-0.01	0.0	-2.37	26.94	-0.00	-0.11	9.24	0.66	0.00	9.42	14.5	2
10255	10255:BotConn	End	9.75	132.31	0.06	-7.19	173.59	-0.01	0.0	-2.37	26.94	-0.00	-0.11	16.52	0.64	0.00	16.66	25.6	2
10255	10255:BotConn	Origin	9.75	132.31	0.06	-7.19	173.59	-0.01	0.0	-5.85	10.91	-0.00	-0.26	16.52	0.26	0.00	16.79	25.8	2
10255	10255:Arm2	End	13.38	125.48	0.05	-6.65	213.15	-0.03	0.0	-5.85	10.91	-0.00	-0.25	18.73	0.25	0.00	18.99	29.2	2
10255	10255:Arm2	Origin	13.38	125.48	0.05	-6.65	234.82	-0.03	0.0	-11.75	22.09	-0.00	-0.50	20.64	0.50	0.00	21.16	32.5	2
10255	Tube 1	End	16.69	119.33	0.05	-6.17	308.01	-0.04	0.0	-11.75	22.09	-0.00	-0.49	25.23	0.49	0.00	25.73	39.6	2
10255	Tube 1	Origin	16.69	119.33	0.05	-6.17	308.01	-0.04	0.0	-12.08	22.28	-0.01	-0.50	25.23	0.49	0.00	25.75	39.6	2
10255	10255:WVGD13	End	20.00	113.29	0.05	-5.71	381.81	-0.06	0.0	-12.08	22.28	-0.01	-0.48	29.22	0.47	0.00	29.72	45.7	2
10255	10255:WVGD13	Origin	20.00	113.29	0.05	-5.71	381.81	-0.06	0.0	-12.81	22.78	-0.01	-0.51	29.22	0.48	0.00	29.75	45.8	2
10255	Tube 1	End	25.00	104.42	0.05	-5.05	495.71	-0.09	0.0	-12.81	22.78	-0.01	-0.49	34.39	0.46	0.00	34.89	53.7	2
10255	Tube 1	Origin	25.00	104.42	0.05	-5.05	495.71	-0.09	0.0	-13.37	23.07	-0.01	-0.51	34.39	0.47	0.00	34.91	53.7	2
10255	10255:WVGD12	End	30.00	95.86	0.04	-4.43	611.04	-0.13	0.0	-13.37	23.07	-0.01	-0.49	38.60	0.44	0.00	39.10	60.1	2
10255	10255:WVGD12	Origin	30.00	95.86	0.04	-4.43	611.04	-0.13	0.0	-14.12	23.55	-0.01	-0.51	38.60	0.45	0.00	39.12	60.2	2
10255	Tube 1	End	32.69	91.41	0.04	-4.12	674.33	-0.15	0.0	-14.12	23.55	-0.01	-0.50	40.58	0.44	0.00	41.09	63.2	2
10255	Tube 1	Origin	32.69	91.41	0.04	-4.12	674.33	-0.15	0.0	-14.45	23.71	-0.01	-0.51	40.58	0.45	0.00	41.10	63.2	2
10255	10255:Arm3	End	35.38	87.05	0.04	-3.83	738.04	-0.18	0.0	-14.45	23.71	-0.01	-0.50	42.36	0.44	0.00	42.86	65.9	2
10255	10255:Arm3	Origin	35.38	87.05	0.04	-3.83	759.43	-0.18	0.0	-20.79	34.76	-0.01	-0.72	43.58	0.64	0.00	44.32	68.2	2
10255	10255:WVGD11	End	40.00	79.81	0.04	-3.35	920.18	-0.23	0.0	-20.79	34.76	-0.01	-0.69	48.79	0.61	0.00	49.50	76.1	2
10255	10255:WVGD11	Origin	40.00	79.81	0.04	-3.35	920.18	-0.23	0.0	-21.80	35.26	-0.01	-0.73	48.79	0.62	0.00	49.53	76.2	2
10255	Tube 1	End	45.00	72.35	0.03	-2.88	1096.49	-0.30	0.0	-21.80	35.26	-0.01	-0.70	53.56	0.60	0.00	54.26	83.5	2
10255	Tube 1	Origin	45.00	72.35	0.03	-2.88	1096.49	-0.30	0.0	-22.57	35.52	-0.01	-0.72	53.56	0.60	0.00	54.29	83.5	2
10255	10255:WVGD10	End	50.00	65.32	0.03	-2.47	1274.09	-0.37	0.0	-22.57	35.52	-0.01	-0.70	57.51	0.58	0.00	58.21	89.6	2
10255	10255:WVGD10	Origin	50.00	65.32	0.03	-2.47	1274.09	-0.37	0.0	-23.30	35.91	-0.01	-0.72	57.51	0.58	0.00	58.24	89.6	2
10255	SpliceT	End	50.33	64.87	0.03	-2.44	1285.94	-0.37	0.0	-23.30	35.91	-0.01	-0.72	57.75	0.58	0.00	58.47	90.0	2
10255	SpliceT	Origin	50.33	64.87	0.03	-2.44	1285.94	-0.37	0.0	-24.05	36.09	-0.02	-0.74	57.75	0.59	0.00	58.50	90.0	2
10255	SpliceB	End	55.00	58.70	0.03	-2.10	1454.47	-0.44	0.0	-24.05	36.09	-0.02	-0.52	45.65	0.41	0.00	46.18	71.0	2
10255	SpliceB	Origin	55.00	58.70	0.03	-2.10	1454.47	-0.44	0.0	-25.01	36.33	-0.02	-0.54	45.65	0.42	0.00	46.20	71.1	2
10255	10255:Arm4	End	57.38	55.69	0.03	-1.94	1540.75	-0.48	0.0	-25.01	36.33	-0.02	-0.53	46.66	0.41	0.00	47.19	72.6	2
10255	10255:Arm4	Origin	57.38	55.69	0.03	-1.94	1561.75	-0.48	0.0	-31.70	47.15	-0.02	-0.67	47.29	0.53	0.00	47.98	73.8	2
10255	10255:WVGD9	End	60.00	52.44	0.03	-1.77	1685.52	-0.53	0.0	-31.70	47.15	-0.02	-0.66	49.09	0.52	0.00	49.76	76.6	2
10255	10255:WVGD9	Origin	60.00	52.44	0.03	-1.77	1685.52	-0.53	0.0	-32.83	47.61	-0.02	-0.69	49.09	0.53	0.00	49.78	76.6	2
10255	Tube 2	End	65.00	46.53	0.02	-1.48	1923.59	-0.63	0.0	-32.83	47.61	-0.02	-0.66	52.12	0.51	0.00	52.79	81.2	2
10255	Tube 2	Origin	65.00	46.53	0.02	-1.48	1923.59	-0.63	0.0	-33.96	47.89	-0.02	-0.68	52.12	0.51	0.00	52.81	81.2	2
10255	10255:WVGD8	End	70.00	40.98	0.02	-1.22	2163.05	-0.73	0.0	-33.96	47.89	-0.02	-0.66	54.66	0.49	0.00	55.33	85.1	2
10255	10255:WVGD8	Origin	70.00	40.98	0.02	-1.22	2163.05	-0.73	0.0	-35.43	48.42	-0.02	-0.69	54.66	0.50	0.00	55.36	85.2	2
10255	Tube 2	End	75.00	35.80	0.02	-1.00	2405.15	-0.84	0.0	-35.43	48.42	-0.02	-0.67	56.82	0.48	0.00	57.50	88.5	2
10255	Tube 2	Origin	75.00	35.80	0.02	-1.00	2405.15	-0.84	0.0	-36.63	48.70	-0.02	-0.69	56.82	0.49	0.00	57.52	88.5	2
10255	10255:WVGD7	End	80.00	30.98	0.02	-0.80	2648.65	-0.97	0.0	-36.63	48.70	-0.02	-0.67	58.63	0.47	0.00	59.30	91.2	2
10255	10255:WVGD7	Origin	80.00	30.98	0.02	-0.80	2648.65	-0.96	0.0	-38.16	49.23	-0.03	-0.70	58.63	0.47	0.00	59.33	91.3	2
10255	Tube 2	End	85.00	26.53	0.01	-0.63	2894.80	-1.10	0.0	-38.16	49.23	-0.03	-0.67	60.16	0.46	0.00	60.84	93.6	2
10255	Tube 2	Origin	85.00	26.53	0.01	-0.63	2894.80	-1.09	0.0	-39.43	49.52	-0.03	-0.70	60.16	0.46	0.00	60.86	93.6	2
10255	10255:WVGD6	End	90.00	22.45	0.01	-0.49	3142.39	-1.23	0.0	-39.43	49.52	-0.03	-0.68	61.43	0.45	0.00	62.11	95.6	2
10255	10255:WVGD6	Origin	90.00	22.45	0.01	-0.49	3142.39	-1.23	0.0	-40.95	50.03	-0.03	-0.70	61.43	0.45	0.00	62.14	95.6	2
10255	Tube 2	End	94.42	19.15	0.01	-0.39	3363.28	-1.36	0.0	-40.95	50.03	-0.03	-0.68	62.39	0.44	0.00	63.08	97.0	2
10255	Tube 2	Origin	94.42	19.15	0.01	-0.39	3363.28	-1.36	0.0	-42.12	50.29	-0.03	-0.70	62.39	0.44	0.00	63.10	97.1	2
10255	SpliceT	End	98.83	16.13	0.01	-0.30	3585.32	-1.50	0.0	-42.12	50.29	-0.03	-0.69	63.19	0.43	0.00	63.88	98.3	2
10255	SpliceT	Origin	98.83	16.13	0.01	-0.30	3585.32	-1.50	0.0	-42.99	50.47	-0.03	-0.70	63.19	0.43	0.00	63.90	98.3	2
10255	10255:WVGD5	End	100.00	15.37	0.01	-0.28	3644.37	-1.54	0.0	-42.99	50.47	-0.03	-0.66	61.73	0.41	0.00	62.39	96.0	2
10255	10255:WVGD5	Origin	100.00	15.37	0.01	-0.28	3644.37	-1.54	0.0	-44.83	50.92	-0.03	-0.69	61.73	0.41	0.00	62.42	96.0	2
10255	SpliceB	End	105.00	12.36	0.01	-0.20	3898.96	-1.71	0.0	-44.83	50.92	-0.03	-0.67	62.37	0.40	0.00	63.04	97.0	2

10255	SpliceB	Origin	105.00	12.36	0.01	-0.20	3898.96	-1.71	0.0	-46.79	51.24	-0.04	-0.70	62.37	0.41	0.00	63.07	97.0	2
10255	10255:WVGD4	End	110.00	9.70	0.01	-0.14	4155.16	-1.89	0.0	-46.79	51.24	-0.04	-0.68	62.87	0.39	0.00	63.55	97.8	2
10255	10255:WVGD4	Origin	110.00	9.70	0.01	-0.14	4155.16	-1.89	0.0	-48.56	51.77	-0.04	-0.71	62.87	0.40	0.00	63.58	97.8	2
10255	Tube 3	End	115.00	7.37	0.00	-0.10	4414.00	-2.07	0.0	-48.56	51.77	-0.04	-0.69	63.27	0.39	0.00	63.96	98.4	2
10255	Tube 3	Origin	115.00	7.37	0.00	-0.10	4414.00	-2.07	0.0	-50.05	52.07	-0.04	-0.71	63.27	0.39	0.00	63.98	98.4	2
10255	10255:WVGD3	End	120.00	5.38	0.00	-0.06	4674.37	-2.27	0.0	-50.05	52.07	-0.04	-0.69	63.56	0.38	0.00	64.26	98.9	2
10255	10255:WVGD3	Origin	120.00	5.38	0.00	-0.06	4674.37	-2.27	0.0	-51.88	52.61	-0.04	-0.72	63.56	0.38	0.00	64.28	98.9	2
10255	Tube 3	End	125.00	3.71	0.00	-0.04	4937.42	-2.48	0.0	-51.88	52.61	-0.04	-0.70	63.78	0.37	0.00	64.48	99.2	2
10255	Tube 3	Origin	125.00	3.71	0.00	-0.04	4937.42	-2.48	0.0	-53.42	52.93	-0.04	-0.72	63.78	0.38	0.00	64.50	99.2	2
10255	10255:WVGD2	End	130.00	2.36	0.00	-0.02	5202.04	-2.70	0.0	-53.42	52.93	-0.04	-0.70	63.92	0.37	0.00	64.62	99.4	2
10255	10255:WVGD2	Origin	130.00	2.36	0.00	-0.02	5202.04	-2.70	0.0	-55.31	53.47	-0.05	-0.73	63.92	0.37	0.00	64.65	99.5	2
10255	Tube 3	End	135.00	1.32	0.00	-0.01	5469.39	-2.93	0.0	-55.31	53.47	-0.05	-0.71	64.00	0.36	0.00	64.71	99.6	2
10255	Tube 3	Origin	135.00	1.32	0.00	-0.01	5469.39	-2.93	0.0	-56.91	53.80	-0.05	-0.73	64.00	0.36	0.00	64.73	99.6	2
10255	10255:WVGD1	End	140.00	0.59	0.00	-0.00	5738.37	-3.17	0.0	-56.91	53.80	-0.05	-0.71	64.02	0.36	0.00	64.74	99.6	2
10255	10255:WVGD1	Origin	140.00	0.59	0.00	-0.00	5738.37	-3.17	0.0	-58.86	54.35	-0.05	-0.74	64.02	0.36	0.00	64.76	99.6	2
10255	Tube 3	End	145.00	0.15	0.00	-0.00	6010.10	-3.43	0.0	-58.86	54.35	-0.05	-0.72	64.00	0.35	0.00	64.73	99.6	2
10255	Tube 3	Origin	145.00	0.15	0.00	-0.00	6010.10	-3.43	0.0	-60.51	54.69	-0.05	-0.74	64.00	0.35	0.00	64.75	99.6	2
10255	10255:g	End	150.00	0.00	0.00	0.00	6283.53	-3.69	0.0	-60.51	54.69	-0.05	-0.72	63.94	0.34	0.00	64.67	99.5	2

Detailed Tubular Davit Arm Usages for Load Case "NESC Extreme":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Vert. Mom. (ft-k)	Horz. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Vert. Shear (kips)	Horz. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
Davit1	Davit1:O	Origin	0.00	149.80	0.06	-6.95	-0.57	0.00	0.0	-0.95	0.10	-0.00	-0.14	0.40	0.00	0.00	0.54	0.8	1
Davit1	#Davit1:0	End	5.00	151.71	0.06	2.50	-0.08	0.00	0.0	-0.95	0.10	-0.00	-0.18	0.10	0.00	0.00	0.27	0.4	1
Davit1	#Davit1:0	Origin	5.00	151.71	0.06	2.50	-0.08	0.00	0.0	-0.93	0.03	-0.00	-0.17	0.10	0.00	0.00	0.27	0.4	1
Davit1	#Davit1:1	End	7.54	152.68	0.06	7.29	0.00	0.00	0.0	-0.93	0.03	-0.00	-0.20	0.00	0.00	0.00	0.21	0.3	1
Davit1	#Davit1:1	Origin	7.54	152.68	0.06	7.29	0.00	0.00	0.0	-0.92	-0.00	-0.00	-0.20	0.00	0.00	0.00	0.21	0.3	1
Davit1	Davit1:End	End	10.07	153.65	0.07	12.08	-0.00	0.00	0.0	-0.92	-0.00	-0.00	-0.24	0.00	0.00	0.00	0.24	0.4	3
Davit2	Davit2:O	Origin	0.00	149.53	0.06	-10.22	-3.08	-0.00	-0.0	0.76	0.35	0.00	0.11	2.16	0.00	0.00	2.27	3.5	1
Davit2	#Davit2:0	End	5.00	149.91	0.06	-19.88	-1.32	-0.00	-0.0	0.76	0.35	0.00	0.14	1.54	0.00	0.00	1.68	2.6	1
Davit2	#Davit2:0	Origin	5.00	149.91	0.06	-19.88	-1.32	-0.00	-0.0	0.75	0.28	0.00	0.14	1.54	0.00	0.00	1.68	2.6	1
Davit2	#Davit2:1	End	7.54	150.10	0.06	-24.80	-0.61	-0.00	-0.0	0.75	0.28	0.00	0.17	0.98	0.00	0.00	1.14	1.8	1
Davit2	#Davit2:1	Origin	7.54	150.10	0.06	-24.80	-0.61	-0.00	0.0	0.75	0.24	0.00	0.17	0.98	0.00	0.00	1.14	1.8	1
Davit2	Davit2:End	End	10.07	150.29	0.06	-29.72	0.00	0.00	0.0	0.75	0.24	0.00	0.20	0.00	0.14	0.00	0.31	0.5	3
Davit3	Davit3:O	Origin	0.00	125.62	0.05	-4.82	-26.54	0.01	0.0	-5.78	1.93	-0.00	-0.38	4.81	0.00	0.00	5.19	8.0	1
Davit3	#Davit3:0	End	5.00	127.58	0.06	4.32	-16.90	0.00	0.0	-5.78	1.93	-0.00	-0.46	4.48	0.00	0.00	4.94	7.6	1
Davit3	#Davit3:0	Origin	5.00	127.58	0.06	4.32	-16.90	0.00	0.0	-5.71	1.74	-0.00	-0.46	4.48	0.00	0.00	4.94	7.6	1
Davit3	#Davit3:1	End	10.00	129.51	0.06	13.40	-8.18	0.00	0.0	-5.71	1.74	-0.00	-0.58	3.46	0.00	0.00	4.04	6.2	1
Davit3	#Davit3:1	Origin	10.00	129.51	0.06	13.40	-8.18	0.00	0.0	-5.67	1.63	-0.00	-0.57	3.46	0.00	0.00	4.04	6.2	1
Davit3	#Davit3:2	End	12.57	130.50	0.06	18.03	-4.01	0.00	0.0	-5.67	1.63	-0.00	-0.66	2.27	0.00	0.00	2.93	4.5	1
Davit3	#Davit3:2	Origin	12.57	130.50	0.06	18.03	-4.01	0.00	0.0	-5.65	1.56	-0.00	-0.66	2.27	0.00	0.00	2.93	4.5	1
Davit3	Davit3:End	End	15.13	131.48	0.06	22.66	-0.00	0.00	0.0	-5.65	1.56	-0.00	-0.78	0.00	0.45	0.00	1.10	1.7	3
Davit4	Davit4:O	Origin	0.00	125.34	0.05	-8.48	-48.17	-0.00	-0.0	5.07	3.39	0.00	0.34	8.73	0.00	0.00	9.07	14.0	1
Davit4	#Davit4:0	End	5.00	125.85	0.05	-17.91	-31.20	-0.00	-0.0	5.07	3.39	0.00	0.41	8.27	0.00	0.00	8.67	13.3	1
Davit4	#Davit4:0	Origin	5.00	125.85	0.05	-17.91	-31.20	-0.00	-0.0	5.07	3.17	0.00	0.41	8.27	0.00	0.00	8.67	13.3	1
Davit4	#Davit4:1	End	10.00	126.35	0.05	-27.46	-15.34	-0.00	-0.0	5.07	3.17	0.00	0.51	6.49	0.00	0.00	7.01	10.8	1
Davit4	#Davit4:1	Origin	10.00	126.35	0.05	-27.46	-15.34	-0.00	-0.0	5.07	3.03	0.00	0.51	6.49	0.00	0.00	7.01	10.8	1
Davit4	#Davit4:2	End	12.57	126.61	0.05	-32.41	-7.57	-0.00	-0.0	5.07	3.03	0.00	0.59	4.29	0.00	0.00	4.88	7.5	1
Davit4	#Davit4:2	Origin	12.57	126.61	0.05	-32.41	-7.57	-0.00	0.0	5.07	2.95	0.00	0.59	4.29	0.00	0.00	4.88	7.5	1
Davit4	Davit4:End	End	15.13	126.87	0.05	-37.37	-0.00	0.00	0.0	5.07	2.95	0.00	0.70	0.00	0.84	0.00	1.62	2.5	3
Davit5	Davit5:O	Origin	0.00	87.18	0.04	-1.90	-28.55	0.01	0.0	-5.73	2.06	-0.00	-0.38	5.18	0.00	0.00	5.56	8.5	1

Davit5	#Davit5:0	End	5.00	88.76	0.04	5.93	-18.23	0.00	0.0	-5.73	2.06	-0.00	-0.46	4.83	0.00	0.00	5.29	8.1	1
Davit5	#Davit5:0	Origin	5.00	88.76	0.04	5.93	-18.23	0.00	0.0	-5.67	1.88	-0.00	-0.45	4.83	0.00	0.00	5.29	8.1	1
Davit5	#Davit5:1	End	10.00	90.32	0.04	13.68	-8.85	0.00	0.0	-5.67	1.88	-0.00	-0.57	3.75	0.00	0.00	4.32	6.6	1
Davit5	#Davit5:1	Origin	10.00	90.32	0.04	13.68	-8.85	0.00	0.0	-5.64	1.76	-0.00	-0.57	3.75	0.00	0.00	4.32	6.6	1
Davit5	#Davit5:2	End	12.57	91.12	0.04	17.64	-4.34	0.00	0.0	-5.64	1.76	-0.00	-0.66	2.46	0.00	0.00	3.12	4.8	1
Davit5	#Davit5:2	Origin	12.57	91.12	0.04	17.64	-4.34	0.00	0.0	-5.62	1.69	-0.00	-0.65	2.46	0.00	0.00	3.11	4.8	1
Davit5	Davit5:End	End	15.13	91.91	0.04	21.58	-0.00	0.00	0.0	-5.62	1.69	-0.00	-0.77	0.00	0.48	0.00	1.14	1.8	3
Davit6	Davit6:O	Origin	0.00	86.92	0.04	-5.76	-49.89	-0.00	-0.0	4.99	3.51	0.00	0.33	9.05	0.00	0.00	9.38	14.4	1
Davit6	#Davit6:0	End	5.00	87.45	0.04	-13.83	-32.35	-0.00	-0.0	4.99	3.51	0.00	0.40	8.57	0.00	0.00	8.97	13.8	1
Davit6	#Davit6:0	Origin	5.00	87.45	0.04	-13.83	-32.35	-0.00	-0.0	5.00	3.29	0.00	0.40	8.57	0.00	0.00	8.97	13.8	1
Davit6	#Davit6:1	End	10.00	87.98	0.04	-22.02	-15.93	-0.00	-0.0	5.00	3.29	0.00	0.50	6.74	0.00	0.00	7.25	11.1	1
Davit6	#Davit6:1	Origin	10.00	87.98	0.04	-22.02	-15.93	-0.00	-0.0	5.00	3.14	0.00	0.50	6.74	0.00	0.00	7.25	11.1	1
Davit6	#Davit6:2	End	12.57	88.25	0.04	-26.27	-7.86	-0.00	-0.0	5.00	3.14	0.00	0.58	4.45	0.00	0.00	5.04	7.7	1
Davit6	#Davit6:2	Origin	12.57	88.25	0.04	-26.27	-7.86	-0.00	0.0	5.00	3.06	0.00	0.58	4.45	0.00	0.00	5.04	7.7	1
Davit6	Davit6:End	End	15.13	88.52	0.04	-30.54	-0.00	0.00	0.0	5.00	3.06	0.00	0.69	0.00	0.88	0.00	1.67	2.6	3
Davit7	Davit7:O	Origin	0.00	55.78	0.03	-0.18	-31.10	0.01	0.0	-5.67	2.23	-0.00	-0.38	5.64	0.00	0.00	6.01	9.3	1
Davit7	#Davit7:0	End	5.00	56.92	0.03	5.95	-19.93	0.00	0.0	-5.67	2.23	-0.00	-0.45	5.28	0.00	0.00	5.73	8.8	1
Davit7	#Davit7:0	Origin	5.00	56.92	0.03	5.95	-19.93	0.00	0.0	-5.61	2.04	-0.00	-0.45	5.28	0.00	0.00	5.73	8.8	1
Davit7	#Davit7:1	End	10.00	58.05	0.03	12.00	-9.70	0.00	0.0	-5.61	2.04	-0.00	-0.57	4.11	0.00	0.00	4.67	7.2	1
Davit7	#Davit7:1	Origin	10.00	58.05	0.03	12.00	-9.70	0.00	0.0	-5.58	1.92	-0.00	-0.56	4.11	0.00	0.00	4.67	7.2	1
Davit7	#Davit7:2	End	12.57	58.62	0.03	15.07	-4.77	0.00	0.0	-5.58	1.92	-0.00	-0.65	2.70	0.00	0.00	3.35	5.2	1
Davit7	#Davit7:2	Origin	12.57	58.62	0.03	15.07	-4.77	0.00	0.0	-5.56	1.86	-0.00	-0.65	2.70	0.00	0.00	3.35	5.2	1
Davit7	Davit7:End	End	15.13	59.19	0.03	18.14	-0.00	0.00	0.0	-5.56	1.86	-0.00	-0.77	0.00	0.53	0.00	1.20	1.8	3
Davit8	Davit8:O	Origin	0.00	55.59	0.03	-3.71	-52.07	-0.00	-0.0	4.88	3.65	0.00	0.32	9.44	0.00	0.00	9.77	15.0	1
Davit8	#Davit8:0	End	5.00	56.10	0.03	-10.02	-33.81	-0.00	-0.0	4.88	3.65	0.00	0.39	8.96	0.00	0.00	9.35	14.4	1
Davit8	#Davit8:0	Origin	5.00	56.10	0.03	-10.02	-33.81	-0.00	-0.0	4.90	3.43	0.00	0.39	8.96	0.00	0.00	9.35	14.4	1
Davit8	#Davit8:1	End	10.00	56.61	0.03	-16.47	-16.66	-0.00	-0.0	4.90	3.43	0.00	0.49	7.05	0.00	0.00	7.55	11.6	1
Davit8	#Davit8:1	Origin	10.00	56.61	0.03	-16.47	-16.66	-0.00	-0.0	4.91	3.29	0.00	0.50	7.05	0.00	0.00	7.55	11.6	1
Davit8	#Davit8:2	End	12.57	56.87	0.03	-19.83	-8.23	-0.00	-0.0	4.91	3.29	0.00	0.57	4.66	0.00	0.00	5.23	8.1	1
Davit8	#Davit8:2	Origin	12.57	56.87	0.03	-19.83	-8.23	-0.00	0.0	4.91	3.21	0.00	0.57	4.66	0.00	0.00	5.23	8.1	1
Davit8	Davit8:End	End	15.13	57.13	0.03	-23.22	-0.00	0.00	0.0	4.91	3.21	0.00	0.68	0.00	0.92	0.00	1.73	2.7	3

Summary of Clamp Capacities and Usages for Load Case "NESC Extreme":

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Holding Usage %	Input Hardware Capacity (kips)	Factored Hardware Capacity (kips)	Hardware Usage %	Max. Usage %
Clamp1	0.912	80.00	80.00	1.14	0.00	0.00	0.00	1.14
Clamp2	0.784	80.00	80.00	0.98	0.00	0.00	0.00	0.98
Clamp3	5.847	80.00	80.00	7.31	0.00	0.00	0.00	7.31
Clamp4	5.847	80.00	80.00	7.31	0.00	0.00	0.00	7.31
Clamp5	5.847	80.00	80.00	7.31	0.00	0.00	0.00	7.31
Clamp6	5.847	80.00	80.00	7.31	0.00	0.00	0.00	7.31
Clamp7	5.847	80.00	80.00	7.31	0.00	0.00	0.00	7.31
Clamp8	5.847	80.00	80.00	7.31	0.00	0.00	0.00	7.31
Clamp9	24.753	80.00	80.00	30.94	0.00	0.00	0.00	30.94
Clamp10	16.536	80.00	80.00	20.67	0.00	0.00	0.00	20.67
Clamp11	0.389	80.00	80.00	0.49	0.00	0.00	0.00	0.49
Clamp12	0.389	80.00	80.00	0.49	0.00	0.00	0.00	0.49
Clamp13	0.389	80.00	80.00	0.49	0.00	0.00	0.00	0.49
Clamp14	0.389	80.00	80.00	0.49	0.00	0.00	0.00	0.49
Clamp15	0.389	80.00	80.00	0.49	0.00	0.00	0.00	0.49
Clamp16	0.389	80.00	80.00	0.49	0.00	0.00	0.00	0.49

Clamp17	0.389	80.00	80.00	0.49	0.00	0.00	0.00	0.49
Clamp18	0.389	80.00	80.00	0.49	0.00	0.00	0.00	0.49
Clamp19	0.389	80.00	80.00	0.49	0.00	0.00	0.00	0.49
Clamp20	0.389	80.00	80.00	0.49	0.00	0.00	0.00	0.49
Clamp21	0.389	80.00	80.00	0.49	0.00	0.00	0.00	0.49
Clamp22	0.389	80.00	80.00	0.49	0.00	0.00	0.00	0.49
Clamp23	0.389	80.00	80.00	0.49	0.00	0.00	0.00	0.49

*** Overall summary for all load cases - Usage = Maximum Stress / Allowable Stress

Summary of Steel Pole Usages:

Steel Pole Label	Maximum Usage %	Load Case	Height AGL (ft)	Segment Number	Weight (lbs)
10255	99.63	NESC Extreme	7.5	36	30952.3

Base Plate Results by Bend Line:

Pole Label	Load Case	Bend Line #	Start X (ft)	Start Y (ft)	End X (ft)	End Y (ft)	Length (in)	Bending Stress (ksi)	Bolt Mom. Sum (ft-k)	# Bolts Acting	Bolt Max Load (kips)	Min Plate Thickness (in)	Actual Thickness (in)	Usage %
10255	NESC Heavy	1	2.511	1.244	-0.178	2.796	37.250	35.978	167.521	6	109.149	2.323	3.000	59.96
10255	NESC Heavy	2	2.796	-0.178	1.244	2.511	37.250	13.468	62.712	4	93.639	1.421	3.000	22.45
10255	NESC Heavy	3	2.333	-1.552	2.333	1.552	37.250	0.386	1.798	1	4.790	0.241	3.000	0.64
10255	NESC Heavy	4	1.244	-2.511	2.796	0.178	37.250	11.654	54.263	4	-83.527	1.322	3.000	19.42
10255	NESC Heavy	5	-0.178	-2.796	2.511	-1.244	37.250	32.176	149.819	6	-98.607	2.197	3.000	53.63
10255	NESC Heavy	6	-1.552	-2.333	1.552	-2.333	37.250	39.650	184.620	5	-98.607	2.439	3.000	66.08
10255	NESC Heavy	7	-2.511	-1.244	0.178	-2.796	37.250	31.951	148.770	6	-98.355	2.189	3.000	53.25
10255	NESC Heavy	8	-2.796	0.178	-1.244	-2.511	37.250	11.488	53.491	4	-82.845	1.313	3.000	19.15
10255	NESC Heavy	9	-2.333	1.552	-2.333	-1.552	37.250	0.484	2.254	1	6.005	0.269	3.000	0.81
10255	NESC Heavy	10	-1.244	2.511	-2.796	-0.178	37.250	13.641	63.514	4	94.321	1.430	3.000	22.73
10255	NESC Heavy	11	0.178	2.796	-2.511	1.244	37.250	36.203	168.570	6	109.401	2.330	3.000	60.34
10255	NESC Heavy	12	1.552	2.333	-1.552	2.333	37.250	44.001	204.881	5	109.401	2.569	3.000	73.34
10255	NESC Heavy	13	2.124	1.931	-0.874	2.735	37.250	29.885	139.153	5	109.275	2.117	3.000	49.81
10255	NESC Heavy	14	2.805	0.610	0.610	2.805	37.250	21.821	101.604	4	108.896	1.809	3.000	36.37
10255	NESC Heavy	15	2.735	-0.874	1.931	2.124	37.250	3.081	14.344	2	63.135	0.680	3.000	5.13
10255	NESC Heavy	16	1.931	-2.124	2.735	0.874	37.250	2.636	12.276	2	-53.378	0.629	3.000	4.39
10255	NESC Heavy	17	0.610	-2.805	2.805	-0.610	37.250	19.278	89.765	4	-98.607	1.701	3.000	32.13
10255	NESC Heavy	18	-0.874	-2.735	2.124	-1.931	37.250	26.957	125.517	5	-98.607	2.011	3.000	44.93
10255	NESC Heavy	19	-2.124	-1.931	0.874	-2.735	37.250	26.857	125.050	5	-98.481	2.007	3.000	44.76
10255	NESC Heavy	20	-2.805	-0.610	-0.610	-2.805	37.250	19.083	88.854	4	-98.102	1.692	3.000	31.80
10255	NESC Heavy	21	-2.735	0.874	-1.931	-2.124	37.250	2.642	12.300	2	-52.341	0.629	3.000	4.40
10255	NESC Heavy	22	-1.931	2.124	-2.735	-0.874	37.250	3.180	14.808	2	64.172	0.691	3.000	5.30
10255	NESC Heavy	23	-0.610	2.805	-2.805	0.610	37.250	22.017	102.515	4	109.401	1.817	3.000	36.69
10255	NESC Heavy	24	0.874	2.735	-2.124	1.931	37.250	29.985	139.619	5	109.401	2.121	3.000	49.98
10255	NESC Extreme	1	2.511	1.244	-0.178	2.796	37.250	48.021	223.597	6	145.944	2.684	3.000	80.03
10255	NESC Extreme	2	2.796	-0.178	1.244	2.511	37.250	17.797	82.868	4	124.896	1.634	3.000	29.66
10255	NESC Extreme	3	2.333	-1.552	2.333	1.552	37.250	0.194	0.903	1	2.406	0.171	3.000	0.32
10255	NESC Extreme	4	1.244	-2.511	2.796	0.178	37.250	16.900	78.689	4	-119.953	1.592	3.000	28.17
10255	NESC Extreme	5	-0.178	-2.796	2.511	-1.244	37.250	46.169	214.976	6	-140.894	2.632	3.000	76.95
10255	NESC Extreme	6	-1.552	-2.333	1.552	-2.333	37.250	56.774	264.353	5	-140.894	2.918	3.000	94.62
10255	NESC Extreme	7	-2.511	-1.244	0.178	-2.796	37.250	46.114	214.716	6	-140.832	2.630	3.000	76.86
10255	NESC Extreme	8	-2.796	0.178	-1.244	-2.511	37.250	16.859	78.497	4	-119.784	1.590	3.000	28.10
10255	NESC Extreme	9	-2.333	1.552	-2.333	-1.552	37.250	0.218	1.016	1	2.707	0.181	3.000	0.36
10255	NESC Extreme	10	-1.244	2.511	-2.796	-0.178	37.250	17.840	83.067	4	125.066	1.636	3.000	29.73
10255	NESC Extreme	11	0.178	2.796	-2.511	1.244	37.250	48.077	223.857	6	146.007	2.685	3.000	80.13
10255	NESC Extreme	12	1.552	2.333	-1.552	2.333	37.250	58.835	273.950	5	146.007	2.971	3.000	98.06
10255	NESC Extreme	13	2.124	1.931	-0.874	2.735	37.250	39.983	186.173	5	145.976	2.449	3.000	66.64
10255	NESC Extreme	14	2.805	0.610	0.610	2.805	37.250	29.025	135.146	4	145.882	2.087	3.000	48.37
10255	NESC Extreme	15	2.735	-0.874	1.931	2.124	37.250	3.879	18.063	2	82.940	0.763	3.000	6.47
10255	NESC Extreme	16	1.931	-2.124	2.735	0.874	37.250	3.658	17.034	2	-78.085	0.741	3.000	6.10
10255	NESC Extreme	17	0.610	-2.805	2.805	-0.610	37.250	27.776	129.333	4	-140.894	2.041	3.000	46.29

10255	NESC Extreme	18	-0.874	-2.735	2.124	-1.931	37.250	38.574	179.609	5	-140.894	2.405	3.000	64.29
10255	NESC Extreme	19	-2.124	-1.931	0.874	-2.735	37.250	38.549	179.493	5	-140.863	2.405	3.000	64.25
10255	NESC Extreme	20	-2.805	-0.610	-0.610	-2.805	37.250	27.728	129.107	4	-140.769	2.039	3.000	46.21
10255	NESC Extreme	21	-2.735	0.874	-1.931	-2.124	37.250	3.660	17.040	2	-77.827	0.741	3.000	6.10
10255	NESC Extreme	22	-1.931	2.124	-2.735	-0.874	37.250	3.904	18.179	2	83.197	0.765	3.000	6.51
10255	NESC Extreme	23	-0.610	2.805	-2.805	0.610	37.250	29.073	135.372	4	146.007	2.088	3.000	48.46
10255	NESC Extreme	24	0.874	2.735	-2.124	1.931	37.250	40.008	186.289	5	146.007	2.450	3.000	66.68

Summary of Tubular Davit Usages:

Tubular Davit Label	Maximum Usage %	Load Case	Height AGL (ft)	Segment Number	Weight (lbs)
Davit1	11.69	NESC Heavy	149.6	1	182.3
Davit2	14.59	NESC Heavy	149.6	1	182.3
Davit3	30.84	NESC Heavy	137.0	1	575.0
Davit4	35.62	NESC Heavy	137.0	1	575.0
Davit5	31.18	NESC Heavy	115.0	1	575.0
Davit6	35.83	NESC Heavy	115.0	1	575.0
Davit7	31.65	NESC Heavy	93.0	1	575.0
Davit8	36.12	NESC Heavy	93.0	1	575.0

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	74.73	10255	Steel Pole
NESC Extreme	99.63	10255	Steel Pole

Summary of Steel Pole Usages by Load Case:

Load Case	Maximum Usage %	Steel Pole Label	Height AGL (ft)	Segment Number
NESC Heavy	74.73	10255	50.6	27
NESC Extreme	99.63	10255	7.5	36

Summary of Base Plate Usages by Load Case:

Load Case	Pole Label	Bend Line #	Length (in)	Vertical Load (kips)	X Moment (ft-k)	Y Moment (ft-k)	Bending Stress (ksi)	Bolt Moment Sum (ft-k)	# Bolts Acting On Bend Line	Max Bolt Load For Bend Line (kips)	Minimum Plate Thickness (in)	Usage %
NESC Heavy	10255	12	37.250	129.531	4546.591	-14.879	44.001	204.881	5	109.401	2.569	73.34
NESC Extreme	10255	12	37.250	61.352	6283.527	-3.693	58.835	273.950	5	146.007	2.971	98.06

Summary of Tubular Davit Usages by Load Case:

Load Case	Maximum Usage %	Tubular Davit Label	Height AGL (ft)	Segment Number
NESC Heavy	36.12	Davit8	93.0	1
NESC Extreme	15.02	Davit8	93.0	1

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
Clamp1	Clamp	2.15	NESC Heavy	0.0
Clamp2	Clamp	2.06	NESC Heavy	0.0
Clamp3	Clamp	10.99	NESC Heavy	0.0
Clamp4	Clamp	10.99	NESC Heavy	0.0
Clamp5	Clamp	10.99	NESC Heavy	0.0
Clamp6	Clamp	10.99	NESC Heavy	0.0
Clamp7	Clamp	10.99	NESC Heavy	0.0
Clamp8	Clamp	10.99	NESC Heavy	0.0
Clamp9	Clamp	30.94	NESC Extreme	0.0
Clamp10	Clamp	20.67	NESC Extreme	0.0
Clamp11	Clamp	1.49	NESC Heavy	0.0
Clamp12	Clamp	1.49	NESC Heavy	0.0
Clamp13	Clamp	1.49	NESC Heavy	0.0
Clamp14	Clamp	1.49	NESC Heavy	0.0
Clamp15	Clamp	1.49	NESC Heavy	0.0
Clamp16	Clamp	1.49	NESC Heavy	0.0
Clamp17	Clamp	1.49	NESC Heavy	0.0
Clamp18	Clamp	1.49	NESC Heavy	0.0
Clamp19	Clamp	1.49	NESC Heavy	0.0
Clamp20	Clamp	1.49	NESC Heavy	0.0
Clamp21	Clamp	1.49	NESC Heavy	0.0
Clamp22	Clamp	1.49	NESC Heavy	0.0
Clamp23	Clamp	1.49	NESC Heavy	0.0

Loads At Insulator Attachments For All Load Cases:

Load Case	Insulator Label	Insulator Type	Structure Attach Label	Structure Attach Load X (kips)	Structure Attach Load Y (kips)	Structure Attach Load Z (kips)	Structure Attach Load Res. (kips)
NESC Heavy	Clamp1	Clamp	Davit1:End	0.000	1.202	1.235	1.723
NESC Heavy	Clamp2	Clamp	Davit2:End	0.000	1.133	1.194	1.646
NESC Heavy	Clamp3	Clamp	Davit3:End	0.000	3.813	7.920	8.790
NESC Heavy	Clamp4	Clamp	Davit4:End	0.000	3.813	7.920	8.790
NESC Heavy	Clamp5	Clamp	Davit5:End	0.000	3.813	7.920	8.790
NESC Heavy	Clamp6	Clamp	Davit6:End	0.000	3.813	7.920	8.790
NESC Heavy	Clamp7	Clamp	Davit7:End	0.000	3.813	7.920	8.790
NESC Heavy	Clamp8	Clamp	Davit8:End	0.000	3.813	7.920	8.790
NESC Heavy	Clamp9	Clamp	10255:TopConn	0.000	7.557	11.099	13.427
NESC Heavy	Clamp10	Clamp	10255:BotConn	0.000	-5.084	1.393	5.271
NESC Heavy	Clamp11	Clamp	10255:WVGD1	0.000	0.093	1.188	1.192
NESC Heavy	Clamp12	Clamp	10255:WVGD2	0.000	0.093	1.188	1.192
NESC Heavy	Clamp13	Clamp	10255:WVGD3	0.000	0.093	1.188	1.192
NESC Heavy	Clamp14	Clamp	10255:WVGD4	0.000	0.093	1.188	1.192
NESC Heavy	Clamp15	Clamp	10255:WVGD5	0.000	0.093	1.188	1.192
NESC Heavy	Clamp16	Clamp	10255:WVGD6	0.000	0.093	1.188	1.192
NESC Heavy	Clamp17	Clamp	10255:WVGD7	0.000	0.093	1.188	1.192
NESC Heavy	Clamp18	Clamp	10255:WVGD8	0.000	0.093	1.188	1.192
NESC Heavy	Clamp19	Clamp	10255:WVGD9	0.000	0.093	1.188	1.192
NESC Heavy	Clamp20	Clamp	10255:WVGD10	0.000	0.093	1.188	1.192
NESC Heavy	Clamp21	Clamp	10255:WVGD11	0.000	0.093	1.188	1.192

NESC Heavy	Clamp22	Clamp	10255:WVGD12	0.000	0.093	1.188	1.192
NESC Heavy	Clamp23	Clamp	10255:WVGD13	0.000	0.093	1.188	1.192
NESC Extreme	Clamp1	Clamp	Davit1:End	0.000	0.881	0.236	0.912
NESC Extreme	Clamp2	Clamp	Davit2:End	0.000	0.742	0.254	0.784
NESC Extreme	Clamp3	Clamp	Davit3:End	0.000	4.981	3.062	5.847
NESC Extreme	Clamp4	Clamp	Davit4:End	0.000	4.981	3.062	5.847
NESC Extreme	Clamp5	Clamp	Davit5:End	0.000	4.981	3.062	5.847
NESC Extreme	Clamp6	Clamp	Davit6:End	0.000	4.981	3.062	5.847
NESC Extreme	Clamp7	Clamp	Davit7:End	0.000	4.981	3.062	5.847
NESC Extreme	Clamp8	Clamp	Davit8:End	0.000	4.981	3.062	5.847
NESC Extreme	Clamp9	Clamp	10255:TopConn	0.000	24.215	5.135	24.753
NESC Extreme	Clamp10	Clamp	10255:BotConn	0.000	-16.526	0.580	16.536
NESC Extreme	Clamp11	Clamp	10255:WVGD1	0.000	0.218	0.322	0.389
NESC Extreme	Clamp12	Clamp	10255:WVGD2	0.000	0.218	0.322	0.389
NESC Extreme	Clamp13	Clamp	10255:WVGD3	0.000	0.218	0.322	0.389
NESC Extreme	Clamp14	Clamp	10255:WVGD4	0.000	0.218	0.322	0.389
NESC Extreme	Clamp15	Clamp	10255:WVGD5	0.000	0.218	0.322	0.389
NESC Extreme	Clamp16	Clamp	10255:WVGD6	0.000	0.218	0.322	0.389
NESC Extreme	Clamp17	Clamp	10255:WVGD7	0.000	0.218	0.322	0.389
NESC Extreme	Clamp18	Clamp	10255:WVGD8	0.000	0.218	0.322	0.389
NESC Extreme	Clamp19	Clamp	10255:WVGD9	0.000	0.218	0.322	0.389
NESC Extreme	Clamp20	Clamp	10255:WVGD10	0.000	0.218	0.322	0.389
NESC Extreme	Clamp21	Clamp	10255:WVGD11	0.000	0.218	0.322	0.389
NESC Extreme	Clamp22	Clamp	10255:WVGD12	0.000	0.218	0.322	0.389
NESC Extreme	Clamp23	Clamp	10255:WVGD13	0.000	0.218	0.322	0.389

Overturning Moments For User Input Concentrated Loads:

Moments are static equivalents based on central axis of 0,0 (i.e. a single pole).

Load Case	Total Tran. Load (kips)	Total Long. Load (kips)	Total Vert. Load (kips)	Transverse Overturning Moment (ft-k)	Longitudinal Overturning Moment (ft-k)	Torsional Moment (ft-k)
NESC Heavy	28.895	0.000	77.885	3497.214	0.000	0.000
NESC Extreme	42.032	0.000	28.763	5156.080	0.000	0.000

*** Weight of structure (lbs):

Weight of Tubular Davit Arms:	3814.7
Weight of Steel Poles:	30952.3
Total:	34767.0

*** End of Report

Anchor Bolt Analysis:

Input Data:

Bolt Force:

Maximum Tension Force per Bolt =	$T_{Max} := 146 \cdot kips$	(User Input from PLS-Pole)
Maximum Shear Force at Base =	$V_{base} := 55 \cdot kips$	(User Input from PLS-Pole)

Anchor Bolt Data:

Use ASTM A615 Grade 75

Number of Anchor Bolts =	$N := 24$	(User Input)
Bolt "Column" Distance =	$l := 3.0 \cdot in$	(User Input)
Bolt Ultimate Strength =	$F_u := 100 \cdot ksi$	(User Input)
Bolt Yeild Strength=	$F_y := 75 \cdot ksi$	(User Input)
Bolt Modulus =	$E := 29000 \cdot ksi$	(User Input)
Diameter of Anchor Bolts =	$D := 2.25 \cdot in$	(User Input)
Threads per Inch =	$n := 4.5$	(User Input)

Anchor Bolt Analysis:

Stress Area of Bolt = $A_s := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n}\right)^2 = 3.248 \cdot in^2$

Maximum Shear Force per Bolt = $V_{Max} := \frac{V_{base}}{N} = 2.3 \times 10^3 \, lbf$

Shear Stress per Bolt = $f_v := \frac{V_{Max}}{A_s} = 705.6 \, psi$

Tensile Stress Permitted = $F_t := 0.75 \cdot F_u = 75 \cdot ksi$

Shear Stress Permitted = $F_v := 0.35 F_y = 26.25 \cdot ksi$

Permitted Axial Tensile Stress in Conjuction with Shear = $F_{tv} := F_t \cdot \sqrt{1 - \left(\frac{f_v}{F_v}\right)^2} = 74.97 \cdot ksi$

Bolt Tension % of Capacity = $\frac{T_{Max}}{F_{tv} \cdot A_s} = 59.96 \cdot \%$

Condition1 = $Condition1 := if\left(\frac{T_{Max}}{F_{tv} \cdot A_s} \le 1.00, "OK", "Overstressed"\right)$

Condition1 = "OK"

Foundation:

Input Data:

Tower Data

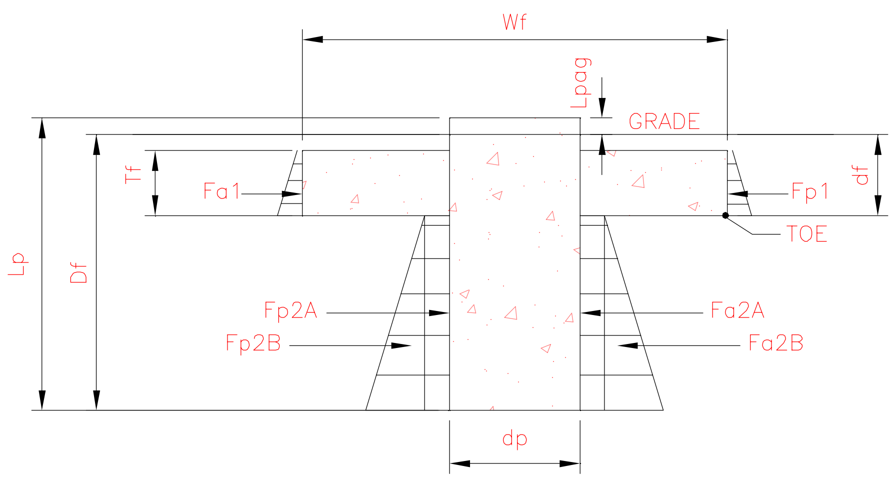
Overturning Moment =	$OM := 6283.5 \cdot ft \cdot kips \cdot 1.1 = 6912 \cdot ft \cdot kips$	(User Input)	
Shear Force =	$Shear := 54.9 \cdot kip \cdot 1.1 = 60 \cdot kips$	(User Input)	
Axial Force =	$Axial := 64.3 \cdot kip \cdot 1.1 = 71 \cdot kips$	(User Input)	
Tower Height =	$H_t := 150 \cdot ft$	(User Input)	

Footing Data:

Overall Depth of Footing =	$D_f := 20 \cdot ft$	(User Input)	
Length of Pier =	$L_p := 20.5 \cdot ft$	(User Input)	
Extension of Pier Above Grade =	$L_{pag} := 0.5 \cdot ft$	(User Input)	
Diameter of Cassion =	$d_p := 8 \cdot ft$	(User Input)	
Thickness of Footing =	$T_f := 4 \cdot ft$	(User Input)	
Width of Footing =	$W_f := 24 \cdot ft$	(User Input)	
Water Depth =	$D_{water} := 0 \cdot ft$	(User Input)	
Distance From Grade to Bottom of Pad =	$d_f := 5 \cdot ft$	(User Input)	

Material Properties:

Concrete Compressive Strength =	$f_c := 3000 \cdot psi$	(User Input)	
Steel Reinforcment Yield Strength =	$f_y := 60000 \cdot psi$	(User Input)	
Anchor Bolt Yield Strength =	$f_{ya} := 75000 \cdot psi$	(User Input)	
Internal Friction Angle of Soil (mat) =	$\Phi_{s1} := 30 \cdot deg$	(User Input)	
Internal Friction Angle of Soil (below mat) =	$\Phi_{s2} := 30 \cdot deg$	(User Input)	
Unit Weight of Soil =	$\gamma_{soil1} := 100 \cdot pcf$	(User Input)	
Unit Weight of Soil =	$\gamma_{soil2} := 100 \cdot pcf$	(User Input)	
Allowable Soil Bearing Capacity =	$q_s := 4000 \cdot psf$	(User Input)	(Conservative)
Unit Weight of Concrete =	$\gamma_{conc} := 150 \cdot pcf$	(User Input)	
Foundation Bouyancy =	$Bouyancy := 0$	(User Input)	(Yes=1 / No=0)
Depth to Neglect =	$n := 0 \cdot ft$	(User Input)	
Cohesion of Clay Type Soil =	$c := 0 \cdot ksf$	(User Input)	(Use 0 for Sandy Soil)
Seismic Zone Factor =	$Z := 2$	(User Input)	(UBC-1997 Fig 23-2)



Calculated Factors:

Coefficient of Lateral Soil Pressure =

$$K_{p1} := \frac{1+\sin(\Phi_{s1})}{1-\sin(\Phi_{s1})} = 3 \qquad Ka1 := \frac{(1-\sin(\Phi_{s1}))}{(1+\sin(\Phi_{s1}))} = 0.333$$

$$K_{p2} := \frac{1+\sin(\Phi_{s2})}{1-\sin(\Phi_{s2})} = 3 \qquad Ka2 := \frac{(1-\sin(\Phi_{s2}))}{(1+\sin(\Phi_{s2}))} = 0.333$$

Stability of Footing:

Passive Pressure 1 =

$$P_{p1.top} := K_{p1}\cdot\gamma_{soil1}\cdot(0) = 0\cdot ksf$$

$$P_{p1.bot} := K_{p1}\cdot\gamma_{soil1}\cdot d_f = 1.5\cdot ksf$$

$$P_{p1.ave} := \frac{P_{p1.top}+P_{p1.bot}}{2} = 0.75\cdot ksf$$

Active Pressure 1 =

$$P_{a1.top} := Ka1\cdot\gamma_{soil1}\cdot(0) = 0\cdot ksf$$

$$P_{a1.bot} := Ka1\cdot\gamma_{soil1}\cdot d_f = 0.167\cdot ksf$$

$$P_{a1.ave} := \frac{P_{a1.top}+P_{a1.bot}}{2} = 0.083\cdot ksf$$

Area of Pressure 1 =

$$A_{p1} := T_f\cdot W_f = 96\,ft^2$$

Forces 1 =

$$F_{p1} := P_{p1.ave}\cdot A_{p1} = 72\cdot kip$$

$$F_{a1} := P_{a1.ave}\cdot A_{p1} = 8\cdot kip$$

Ultimate Shear 1 =

$$S_{u1} := (F_{p1} - F_{a1}) = 64\cdot kip$$

Passive Pressure 2 = $P_{p2.top} := K_{p2} \cdot \gamma_{soil2} \cdot d_f = 1.5 \cdot ksf$

$P_{p2.bot} := K_{p2} \cdot \gamma_{soil2} \cdot D_f = 6 \cdot ksf$

Active Pressure 2 = $P_{a2.top} := Ka2 \cdot \gamma_{soil2} \cdot d_f = 0.167 \cdot ksf$

$P_{a2.bot} := Ka2 \cdot \gamma_{soil2} \cdot D_f = 0.667 \cdot ksf$

Area of Pressure 2 = $A_{p2} := \left(D_f - d_f\right) \cdot d_p = 120ft^2$

Forces 2 = $F_{p2A} := P_{p2.top} \cdot A_{p2} = 180 \cdot kips$

$F_{a2A} := P_{a2.top} \cdot A_{p2} = 20 \cdot kips$

$F_{p2B} := \frac{1}{2} \cdot \left(P_{p2.bot} - P_{p2.top}\right) \cdot A_{p2} = 270 \cdot kips$

$F_{a2B} := \frac{1}{2} \cdot \left(P_{a2.bot} - P_{a2.top}\right) \cdot A_{p2} = 30 \cdot kips$

Ultimate Shear 2 = $S_{u2A} := F_{p2A} - F_{a2A} = 160 \cdot kip$

$S_{u2B} := F_{p2B} - F_{a2B} = 240 \cdot kip$

Weight of Concrete Mat = $WT_{mat} := \left(W_f^{\,2} - \frac{d_p^{\,2} \cdot \pi}{4}\right) \cdot T_f \cdot \gamma_{conc} = 315.44 \cdot kip$

Weight of Concrete Caission = $WT_{caission} := \left(\frac{d_p^{\,2} \cdot \pi}{4} L_p\right) \cdot \gamma_{conc} = 154.57 \cdot kip$

Weight of Soil Above Mat = $WT_s := \left[\left(W_f^{\,2} - \frac{d_p^{\,2} \cdot \pi}{4}\right) \cdot \left(d_f - T_f\right)\right] \cdot \gamma_{soil1} = 52.57 \cdot kip$

Total Weight = $W_{tot} := WT_{mat} + WT_{caission} + WT_s + Axial = 593.311 \cdot kips$

Overturning Moment = $M_{ot} := OM + Shear \cdot \left(d_f + L_{pag}\right) = 7244 \cdot kip \cdot ft$

Resisting Moment = $M_r := \left(W_{tot}\right) \cdot \frac{W_f}{2} + S_{u1} \cdot T_f \cdot \frac{1}{3} + S_{u2A} \cdot \frac{\left(D_f - d_f\right)}{2} + S_{u2B} \cdot \frac{2 \cdot \left(D_f - d_f\right)}{3} = 10805 \cdot kip \cdot ft$

Factor of Safety Actual = $FS := \frac{M_r}{M_{ot}} = 1.49$

Factor of Safety Required = $FS_{req} := 1.0$

Overturning_Check := if$\left(FS \geq FS_{req}, \text{"Okay"}, \text{"No Good"}\right)$

Overturning_Check = "Okay"

Bearing Pressure Check:

Area of Mat = $A_{mat} := W_f^{\,2} - \frac{d_p^{\,2} \cdot \pi}{4} = 525.735\,ft^2$

Section Modulus of Mat = $S_{mat} := \frac{W_f^{\,3}}{6} - \frac{d_p^{\,3} \cdot \pi}{32} = 2254 \cdot ft^3$

Axial Force @ Base of Mat = $P_{mat} := WT_{mat} + WT_s = 368.014 \cdot kips$

Resisting Moment Capacity of Caissson = $M_{cap} := S_{u2A} \cdot \left[\frac{1}{2} \cdot (D_f - d_f) + d_f + L_{pag}\right] + S_{u2B} \cdot \left[\frac{2}{3} \cdot (D_f - d_f) + d_f + L_{pag}\right] = 5800 \cdot kip \cdot ft$

Residual Moment @ Base of Mat = $M_{mat} := (OM - M_{cap}) + Shear \cdot (d_f + L_{pag}) - \left(S_{u1} \cdot T_f \cdot \frac{1}{3}\right) = 1359 \cdot kip \cdot ft$

Maximum Pressure in Mat = $P_{max} := \frac{P_{mat}}{A_{mat}} + \frac{M_{mat}}{S_{mat}} = 1.303 \cdot ksf$

Max_Pressure_Check := if($P_{max} < q_s$, "Okay" , "No Good")

Max_Pressure_Check = "Okay"

Minimum Pressure in Mat = $P_{min} := \frac{P_{mat}}{A_{mat}} - \frac{M_{mat}}{S_{mat}} = 0.097 \cdot ksf$

Min_Pressure_Check := if[($P_{min} \geq 0$)·($P_{min} < q_s$), "Okay" , "No Good"]

Min_Pressure_Check = "Okay"

Distance to Resultant of Pressure Distribution = $X_p := \frac{P_{max}}{\frac{P_{max} - P_{min}}{W_f}} \cdot \frac{1}{3} = 8.645\,ft$

Distance to Kern = $X_k := \frac{W_f}{6} = 4\,ft$

Since Resultant Force is Not in Kern, Area to which Pressure is Applied Must be Reduced.

Eccentricity = $e := \frac{M_{mat}}{P_{mat}} = 3.692\,ft$

Adjusted Soil Pressure = $P_a := \frac{2 \cdot P_{mat}}{3 \cdot W_f \cdot \left(\frac{W_f}{2} - e\right)} = 1.23 \cdot ksf$

$q_{adj} := if(P_{min} < 0, P_a, P_{max}) = 1.303 \cdot ksf$

Pressure_Check := if($q_{adj} < q_s$, "Okay" , "No Good")

Pressure_Check = "Okay"

verizon
fuze | RFDS

EAST > North East > New England > New England West > **BETHEL NORTH CT**

Kumar, Produtturi - produtturi.kumar@verizonwireless.com - 9/27/2021 16:58:41

Project Details

FUZE Project ID:	16092790
Project Name:	850 ADD
Project Alt Name:	Bethel north CT
Project Type:	Modification
Modification Type:	VDU_UPGRADE_OR_ADD
Designed Sector Carrier 4G:	15
Designed Sector Carrier 5G:	3
Additional Sector Carrier 4G:	N/A
Additional Sector Carrier 5G:	N/A
FP Solution Type & Tech Type:	MODIFICATION;4G_850,5G_850,5G_L-Sub6-Prep,5G_Radio Swap
Carrier Aggregation:	false
MPT Id:	806892
eCIP-0:	false
Suffix:	Rev0_09.27.2021

Location Information

Site ID:	323444
E-NodeB ID:	065124,0659451
PSLC:	468846
Switch Name:	Wallingford 2
Tower Owner:	
Tower Type:	Utility pole/tower
Site Type:	MACRO
Site Sub Type:	TRADITIONAL
Street Address:	8 Sky Ridge Lane
City:	Bethel
State:	CT
Zip Code:	06801
County:	Fairfield
Latitude:	41.413469 / 41° 24' 48.4884" N
Longitude:	-73.400872 / 73° 24' 3.1392" W

RFDS Project Scope:

Rev0_09.27.2021
L-Sub6 Add
1. Replace Existing (3)HBX-6516DS-A1M & (3)LNX-6513DS-A1M antennas with (3) L-sub6 & (3) Commscope NNH4-65B-R6H4-V1 as shown in the Plumbing Diagram
2. Retain (3) Samsung B2/B66A RRHBR049 (RFV01UD1A) & (3) B5/B13 RRHBR04C (RFV01UD2A) in Shelter.
3. Replace (3) CHB626-43-2X Combiners & (6) FDL85002/ 3C-3L Diplexers in Shelter with (12) Commscope CBC61923T-DS-43 & (3) Commscope TD-850B-LTE78-43 as shown in Diagram.
4. Daisy chain AISG cables between RET capable antennas and connect via RRH
5. Cap and weatherproof unused ports/connectors

Antenna Summary

Added

700	850	1900	AWS	L-Sub6	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity	Item ID
LTE	CDMA LTE 5G	LTE	LTE		COMMSCOPE	NNH4-65B-R6H4	167.5	170.5	0(0061) 0(01) 0(D1) 120(0062) 120(02) 120(D2) 240(0063) 240(03) 240(D3)	false	false	PHYSICAL	3	
				5G	Samsung	MT6407-77A	167.5	169	0(0061) 120(0062) 240(0063)	false	false	PHYSICAL	3	

Removed

700	850	1900	AWS	L-Sub6	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity	Item ID
		LTE	LTE		ANDREW	HBX-6516DS-A1M	167.5	169.6	0(01) 120(02) 240(03)	false	false	PHYSICAL	3	
LTE	CDMA LTE 5G				ANDREW	LNX-6513DS-A1M	167.5	169.8	0(0061) 0(01) 0(D1) 120(0062) 120(02) 120(D2) 240(03)	false	false	PHYSICAL	3	

Retained

700	850	1900	AWS	L-Sub6	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity	Item ID

No data available.

Added: 6	Removed: 6	Retained: 0

Equipment Summary

Added

Equipment Type	Location	700	850	1900	AWS	L-Sub6	Make	Model	Cable Length	Cable Size	Install Type	Quantity	Item ID
Triplexer	Tower						Commscope	CBC61923T-DS-43			PHYSICAL	6	
OVP Box	Tower						N/A	6 OVP			PHYSICAL	1	
Hybrid Cable	Tower						N/A	6x12 Hybriflex			PHYSICAL	1	
RRU	Tower					5G	Samsung	MT6407-77A			PHYSICAL	3	
Triplexer	Shelter						Commscope	CBC61923T-DS-43			PHYSICAL	6	
Combiner	Shelter						Commscope	TD-850B-LTE78-43			PHYSICAL	3	

Removed

Equipment Type	Location	700	850	1900	AWS	L-Sub6	Make	Model	Cable Length	Cable Size	Install Type	Quantity	Item ID
Combiner	Shelter						Commscope	CHB626-43-2X			PHYSICAL	3	
Diplexer	Shelter	LTE	CDMA				RFS	FDL85002/ 3C-3L			PHYSICAL	6	

Retained

Equipment Type	Location	700	850	1900	AWS	L-Sub6	Make	Model	Cable Length	Cable Size	Install Type	Quantity	Item ID
Coaxial Cables	Tower	LTE	CDMA LTE	LTE	LTE		N/A	AVA7-50		1 5/8"	PHYSICAL	12	
RRU	Shelter			LTE	LTE		Samsung	B2/B66A RRH-BR049 (RFV01U-D1A)			PHYSICAL	3	
RRU	Shelter	LTE	LTE 5G				Samsung	B5/B13 RRH-BR04C (RFV01U-D2A)			PHYSICAL	3	

Service Info

700 MHz LTE

	1000			5GLS		
Sector	**01**	**02**	**03**	**01**	**02**	**03**
Azimuth	0	120	240	0	120	240
Cell / ENode B ID	065124	065124	065124	065124	065124	065124
Antenna Model	LNX-6513DS-A1M	LNX-6513DS-A1M	LNX-6513DS-A1M	NNH4-65B-R6H4	NNH4-65B-R6H4	NNH4-65B-R6H4
Antenna Make	ANDREW	ANDREW	ANDREW	COMMSCOPE	COMMSCOPE	COMMSCOPE
Antenna Centerline(Ft)	167.5	167.5	167.5	167.5	167.5	167.5
Mechanical Down-Tilt(Deg.)	0	0	0	0	0	0
Electrical Down-Tilt	2	2	0	2	2	2
Tip Height	169.8	169.8	169.8	170.5	170.5	170.5
Regulatory Power	85.64	85.64	85.64	76.48	76.48	76.48
DLEARFCN	5230	5230	5230	5230	5230	5230
Channel Bandwidth(MHz)	10	10	10	10	10	10
Total ERP (W)	770.73	770.73	770.73	688.34	688.34	688.34
TMA Make						
TMA Model						
RRU Make	Samsung	Samsung	Samsung	Samsung	Samsung	Samsung
RRU Model	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)
Number of Tx, Rx Lines	2,2	2,2	2,2	4,4	4,4	4,4
Position						
Transmitter Id	11069106	11069109	11069112	11076137	11076140	11076143
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

850 MHz LTE

	1000			5GLS		
Sector	**01**	**02**	**03**	**01**	**02**	**03**
Azimuth	0	120	240	0	120	240
Cell / ENode B ID	065124	065124	065124	065124	065124	065124
Antenna Model	LNX-6513DS-A1M	LNX-6513DS-A1M	LNX-6513DS-A1M	NNH4-65B-R6H4	NNH4-65B-R6H4	NNH4-65B-R6H4
Antenna Make	ANDREW	ANDREW	COMMSCOPE	COMMSCOPE	COMMSCOPE	COMMSCOPE
Antenna Centerline(Ft)	167.5	167.5	167.5	167.5	167.5	167.5
Mechanical Down-Tilt(Deg.)	0	0	0	0	0	0
Electrical Down-Tilt	0	0	8	2	2	8
Tip Height	169.8	169.8	169.8	170.5	170.5	170.5
Regulatory Power	184.58	184.58	184.58	369.5	369.5	369.5
DLEARFCN	2450	2450	2450	2450	2450	2450
Channel Bandwidth(MHz)	10	10	10	10	10	10
Total ERP (W)	830.62	830.62	830.62	831.38	831.38	831.38
TMA Make						
TMA Model						
RRU Make	Samsung	Samsung	Samsung	Samsung	Samsung	Samsung
RRU Model	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)
Number of Tx, Rx Lines	2,2	2,2	2,2	4,4	4,4	4,4
Position						
Transmitter Id	11069103	11069104	11069105	11076134	11076135	11076136
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

850 MHz CDMA

	1000			5GLS		
Sector	**D1**	**D2**	**D3**	**D1**	**D2**	**D3**
Azimuth	0	120	240	0	120	240
Cell / ENode B ID						
Antenna Model	LNX-6513DS-A1M	LNX-6513DS-A1M	LNX-6513DS-A1M	NNH4-65B-R6H4	NNH4-65B-R6H4	NNH4-65B-R6H4
Antenna Make	ANDREW	ANDREW	COMMSCOPE	COMMSCOPE	COMMSCOPE	COMMSCOPE
Antenna Centerline(Ft)	167.5	167.5	167.5	167.5	167.5	167.5
Mechanical Down-Tilt(Deg.)	0	0	0	0	0	0
Electrical Down-Tilt	0	0	8	2	2	8
Tip Height	169.8	169.8	169.8	170.5	170.5	170.5
Regulatory Power	371.88	371.88	248.54	372.22	372.22	248.77
DLEARFCN	201, 283	201, 283	201, 283	201, 283	201, 283	201, 283
Channel Bandwidth(MHz)	2	2	2	2	2	2
Total ERP (W)						
TMA Make						
TMA Model						
RRU Make						
RRU Model						
Number of Tx, Rx Lines	2,2	2,2	2,2	2,2	2,2	2,2
Position						
Transmitter Id						
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

850 MHz 5GNR

	1000			5GLS		
Sector	**0061**	**0062**	**0063**	**0061**	**0062**	**0063**
Azimuth	0	120	240	0	120	240
Cell / ENode B ID	0659451	0659451	0659451	0659451	0659451	0659451
Antenna Model	LNX-6513DS-A1M	LNX-6513DS-A1M	LNX-6513DS-A1M	NNH4-65B-R6H4	NNH4-65B-R6H4	NNH4-65B-R6H4
Antenna Make	ANDREW	ANDREW	COMMSCOPE	COMMSCOPE	COMMSCOPE	COMMSCOPE
Antenna Centerline(Ft)	167.5	167.5	167.5	167.5	167.5	167.5
Mechanical Down-Tilt(Deg.)	0	0	0	0	0	0
Electrical Down-Tilt	0	0	8	2	2	8
Tip Height	169.8	169.8	169.8	170.5	170.5	170.5
Regulatory Power	184.58	184.58	184.58	369.5	369.5	369.5
DLEARFCN	2450	2450	2450	2450	2450	2450
Channel Bandwidth(MHz)	10	10	10	10	10	10
Total ERP (W)	830.62	830.62	830.62	831.38	831.38	831.38
TMA Make						
TMA Model						
RRU Make	Samsung	Samsung	Samsung	Samsung	Samsung	Samsung
RRU Model	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)
Number of Tx, Rx Lines	2,2	2,2	2,2	4,4	4,4	4,4
Position						
Transmitter Id	11069103	11069104	11069105	11076134	11076135	11076136
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

1900 MHz LTE

	1000			5GLS		
Sector	01	02	03	01	02	03
Azimuth	0	120	240	0	120	240
Cell / ENode B ID	065124	065124	065124	065124	065124	065124
Antenna Model	HBX-6516DS-A1M	HBX-6516DS-A1M	HBX-6516DS-A1M	NNH4-65B-R6H4	NNH4-65B-R6H4	NNH4-65B-R6H4
Antenna Make	ANDREW	ANDREW	ANDREW	COMMSCOPE	COMMSCOPE	COMMSCOPE
Antenna Centerline(Ft)	167.5	167.5	167.5	167.5	167.5	167.5
Mechanical Down-Tilt(Deg.)	0	0	0	0	0	0
Electrical Down-Tilt	2	2	2	2	2	2
Tip Height	169.6	169.6	169.6	170.5	170.5	170.5
Regulatory Power	109.33	109.33	109.33	97.62	97.62	97.62
DLEARFCN	1100	1100	1100	1100	1100	1100
Channel Bandwidth(MHz)	20	20	20	20	20	20
Total ERP (W)	1199.5	1199.5	1199.5	1071.03	1071.03	1071.03
TMA Make						
TMA Model						
RRU Make	Samsung	Samsung	Samsung	Samsung	Samsung	Samsung
RRU Model	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)
Number of Tx, Rx Lines	2,2	2,2	2,2	4,4	4,4	4,4
Position						
Transmitter Id	11069107	11069110	11069113	11076138	11076141	11076144
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

2100 MHz LTE

	1000			5GLS		
Sector	01	02	03	01	02	03
Azimuth	0	120	240	0	120	240
Cell / ENode B ID	065124	065124	065124	065124	065124	065124
Antenna Model	HBX-6516DS-A1M	HBX-6516DS-A1M	HBX-6516DS-A1M	NNH4-65B-R6H4	NNH4-65B-R6H4	NNH4-65B-R6H4
Antenna Make	ANDREW	ANDREW	ANDREW	COMMSCOPE	COMMSCOPE	COMMSCOPE
Antenna Centerline(Ft)	167.5	167.5	167.5	167.5	167.5	167.5
Mechanical Down-Tilt(Deg.)	0	0	0	0	0	0
Electrical Down-Tilt	2	2	2	2	2	2
Tip Height	169.6	169.6	169.6	170.5	170.5	170.5
Regulatory Power	119.87	119.87	119.87	129.28	129.28	129.28
DLEARFCN	2050	2050	2050	2050	2050	2050
Channel Bandwidth(MHz)	20	20	20	20	20	20
Total ERP (W)	1315.22	1315.22	1315.22	1418.4	1418.4	1418.4
TMA Make						
TMA Model						
RRU Make	Samsung	Samsung	Samsung	Samsung	Samsung	Samsung
RRU Model	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)
Number of Tx, Rx Lines	2,2	2,2	2,2	4,4	4,4	4,4
Position						
Transmitter Id	11069108	11069111	11069114	11076139	11076142	11076145
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

nL-Sub6

	5GLS		
Sector	0061	0062	0063
Azimuth	0	120	240
Cell / ENode B ID	0659451	0659451	0659451
Antenna Model	MT6407-77A	MT6407-77A	MT6407-77A
Antenna Make	Samsung	Samsung	Samsung
Antenna Centerline(Ft)	167.5	167.5	167.5
Mechanical Down-Tilt(Deg.)	0	0	0
Electrical Down-Tilt	6	6	6
Tip Height	169	169	169
Regulatory Power	687.36	687.36	687.36
DLEARFCN	648672	648672	648672
Channel Bandwidth(MHz)	60	60	60
Total ERP (W)	5970.35	5970.35	5970.35
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	MT6407-77A	MT6407-77A	MT6407-77A
Number of Tx, Rx Lines	4,4	4,4	4,4
Position			
Transmitter Id	11076146	11076147	11076148
Source	ATOLL_API	ATOLL_API	ATOLL_API

Service Comments

Callsigns Per Antenna

Sector	Antenna Ma	Antenna Mo	Ant CL Height AGL	Tip Height	Azimuth (TI	Electrical Tilt	Mechanical Tilt	Gain	Beamwidth	Regulatory Power	Callsigns						
											700	850	1900	2100	28 GHz	31 GHz	39 GHz

No data available.

Callsigns

Callsign	Market	Radio Code	Market Number	Block	State	County	Licensee Name	Wholly Owned	Total MHZ	Freq Range 1	Freq Range 2	Freq Range 3	Freq Range 4	Regulatory Power	Threshold (W)	POPs/Sq Mi	Status	Action	Approved for Insvc
WQJQ689	*Northeast*	*WU*	*REA001*	*C*	*CT*	*Fairfield*	*Cellco Partnership*	*Yes*	*22.000*	*746.000-757.000*	*776.000-787.000*	*.000-.000*	*.000-.000*	*76.48*	*1000*	*1467.18*	*Active*	*added*	*Yes*
KNKA363	*Bridgeport-Stamford-Norwalk-Danbury, CT*	*CL*	*CMA042*	*A*	*CT*	*Fairfield*	*Cellco Partnership*	*Yes*	*25.000*	*824.000-835.000*	*869.000-880.000*	*845.000-846.500*	*890.000-891.500*	*372.22*	*400*	*1467.18*	*Active*	*added*	*Yes*
WQBT539	*New York, NY*	*CW*	*BTA321*	*C*	*CT*	*Fairfield*	*Cellco Partnership*	*Yes*	*10.000*	*1895.000-1900.000*	*1975.000-1980.000*	*.000-.000*	*.000-.000*	*97.62*	*1640*	*1467.18*	*Active*	*added*	*Yes*
KNLF644	*New York, NY*	*CW*	*BTA321*	*C*	*CT*	*Fairfield*	*AirTouch Cellular*	*Yes*	*20.000*	*1900.000-1910.000*	*1980.000-1990.000*	*.000-.000*	*.000-.000*	*97.62*	*1640*	*1467.18*	*Active*	*added*	*Yes*
KNLH264	*New York, NY*	*CW*	*BTA321*	*F*	*CT*	*Fairfield*	*Cellco Partnership*	*Yes*	*10.000*	*1890.000-1895.000*	*1970.000-1975.000*	*.000-.000*	*.000-.000*	*97.62*	*1640*	*1467.18*	*Active*	*added*	*Yes*
WQGB279	*Bridgeport-Stamford-Norwalk-Danbury, CT*	*AW*	*CMA042*	*A*	*CT*	*Fairfield*	*Cellco Partnership*	*Yes*	*20.000*	*1710.000-1720.000*	*2110.000-2120.000*	*.000-.000*	*.000-.000*	*129.28*	*1640*	*1467.18*	*Active*	*added*	*Yes*
WQGA906	*New York-No. New Jer.-Long Island, NY-NJ-CT-PA-MA-*	*AW*	*BEA010*	*B*	*CT*	*Fairfield*	*Cellco Partnership*	*Yes*	*20.000*	*1720.000-1730.000*	*2120.000-2130.000*	*.000-.000*	*.000-.000*	*129.28*	*1640*	*1467.18*	*Active*	*added*	*Yes*
WRBA702	New York, NY	UU	BTA321	L1	CT	Fairfield	Cellco Partnership	Yes	325.000	27600.000-27925.000	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRBA703	New York, NY	UU	BTA321	L2	CT	Fairfield	Cellco Partnership	Yes	325.000	27925.000-27950.000	28050.000-28350.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD609	New York, NY	UU	PEA001	M1	CT	Fairfield	Straight Path Spectrum, LLC	Yes	100.000	37600.000-37700.000	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD610	New York, NY	UU	PEA001	M10	CT	Fairfield	Straight Path Spectrum, LLC	Yes	100.000	38500.000-38600.000	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD611	New York, NY	UU	PEA001	M2	CT	Fairfield	Straight Path Spectrum, LLC	Yes	100.000	37700.000-37800.000	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD612	New York, NY	UU	PEA001	M3	CT	Fairfield	Straight Path Spectrum, LLC	Yes	100.000	37800.000-37900.000	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes

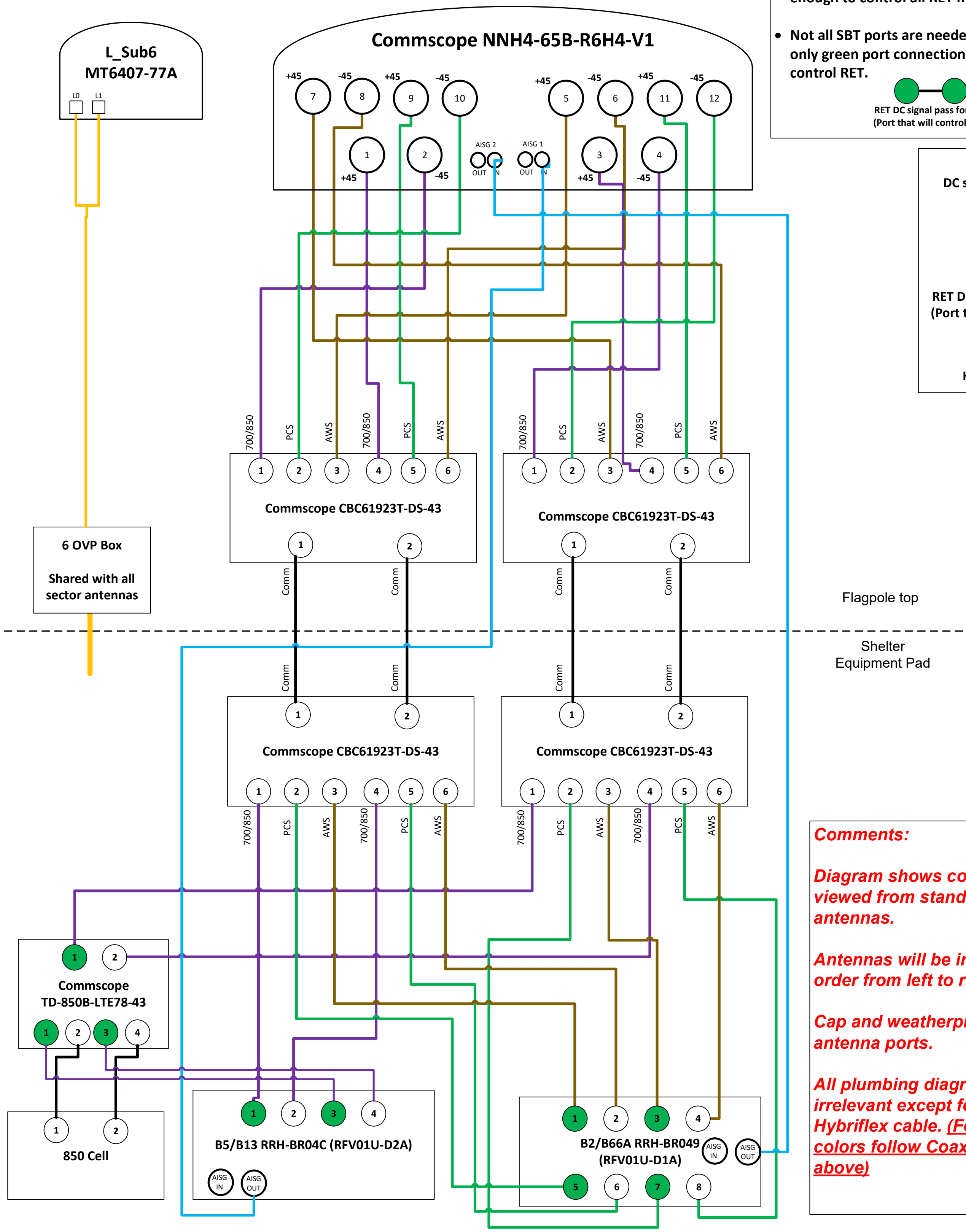
WRHD613	New York, NY	UU	PEA001	M4	CT	Fairfield	Straight Path Spectrum, LLC	Yes	100.000	37900.000-38000.000	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD614	New York, NY	UU	PEA001	M5	CT	Fairfield	Straight Path Spectrum, LLC	Yes	100.000	38000.000-38100.000	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD615	New York, NY	UU	PEA001	M6	CT	Fairfield	Straight Path Spectrum, LLC	Yes	100.000	38100.000-38200.000	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD616	New York, NY	UU	PEA001	M7	CT	Fairfield	Straight Path Spectrum, LLC	Yes	100.000	38200.000-38300.000	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD617	New York, NY	UU	PEA001	M8	CT	Fairfield	Straight Path Spectrum, LLC	Yes	100.000	38300.000-38400.000	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD618	New York, NY	UU	PEA001	M9	CT	Fairfield	Straight Path Spectrum, LLC	Yes	100.000	38400.000-38500.000	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD619	New York, NY	UU	PEA001	N1	CT	Fairfield	Straight Path Spectrum, LLC	Yes	100.000	38600.000-38700.000	.000-.000	.000-.000	.000-.000			1467.18	Active	N/A	No
WRLD512	D09001 - Fairfield, CT	PL	D09001	0	CT	Fairfield	Verizon Wireless Network Procuremer LP	Yes	100.000	3550.000-3650.000	.000-.000	.000-.000	.000-.000			.00	Active		Yes
WRLD509	D09001 - Fairfield, CT	PL	D09001	0	CT	Fairfield	Verizon Wireless Network Procuremer LP	Yes	100.000	3550.000-3650.000	.000-.000	.000-.000	.000-.000			.00	Active		Yes
WRLD511	D09001 - Fairfield, CT	PL	D09001	0	CT	Fairfield	Verizon Wireless Network Procuremer LP	Yes	100.000	3550.000-3650.000	.000-.000	.000-.000	.000-.000			.00	Active		Yes
WRLD510	D09001 - Fairfield, CT	PL	D09001	0	CT	Fairfield	Verizon Wireless Network Procuremer LP	Yes	100.000	3550.000-3650.000	.000-.000	.000-.000	.000-.000			.00	Active		Yes
WRNE581	New York, NY	PM	PEA001	A1	CT	Fairfield	Cellco Partnership	Yes	20.000	3700.000-3720.000	.000-.000	.000-.000	.000-.000			1467.18	Active		No
WRNE582	New York, NY	PM	PEA001	A2	CT	Fairfield	Cellco Partnership	Yes	20.000	3720.000-3740.000	.000-.000	.000-.000	.000-.000			1467.18	Active		No

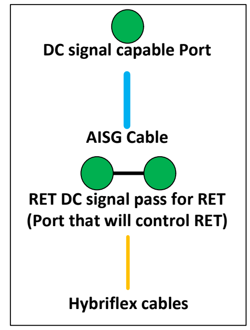
WRNE583	**New York, NY**	**PM**	**PEA001**	**A3**	**CT**	**Fairfield**	**Cellco Partnership**	**Yes**	**20.000**	**3740.000-3760.000**	**.000-.000**	**.000-.000**	**.000-.000**			**1467.18**	**Active**		**No**
WRNE584	**New York, NY**	**PM**	**PEA001**	**A4**	**CT**	**Fairfield**	**Cellco Partnership**	**Yes**	**20.000**	**3760.000-3780.000**	**.000-.000**	**.000-.000**	**.000-.000**			**1467.18**	**Active**		**No**
WRNE585	**New York, NY**	**PM**	**PEA001**	**A5**	**CT**	**Fairfield**	**Cellco Partnership**	**Yes**	**20.000**	**3780.000-3800.000**	**.000-.000**	**.000-.000**	**.000-.000**			**1467.18**	**Active**		**No**
WRNE586	**New York, NY**	**PM**	**PEA001**	**B1**	**CT**	**Fairfield**	**Cellco Partnership**	**Yes**	**20.000**	**3800.000-3820.000**	**.000-.000**	**.000-.000**	**.000-.000**			**1467.18**	**Active**		**No**
WRNE587	**New York, NY**	**PM**	**PEA001**	**B2**	**CT**	**Fairfield**	**Cellco Partnership**	**Yes**	**20.000**	**3820.000-3840.000**	**.000-.000**	**.000-.000**	**.000-.000**			**1467.18**	**Active**		**No**
WRNE588	**New York, NY**	**PM**	**PEA001**	**B3**	**CT**	**Fairfield**	**Cellco Partnership**	**Yes**	**20.000**	**3840.000-3860.000**	**.000-.000**	**.000-.000**	**.000-.000**			**1467.18**	**Active**		**No**

Commscope NNH4-65B-R6H4-V1

- Port 1,2,3 & 4 are for low band (698-896 MHz).
- Port 5,6,7,8,9,10,11 & 12 are for high band (1695-2360 MHz).
- Antenna Smart Bias Tee (SBT) is through port 1 & 4 for low band and port 5,7,10 & 12 for high band.
- AISG cable is only needed when drawn in the diagrams below, if it is not drawn then SBT is enough to control all RET motors.
- Not all SBT ports are needed to control RET, only green port connection to green port will control RET.

RET DC signal pass for RET
(Port that will control RET)





Comments:

Diagram shows configuration as viewed from standing behind the antennas.

Antennas will be installed in that order from left to right.

Cap and weatherproof unused antenna ports.

All plumbing diagram colors are irrelevant except for AISG & Hybriflex cable. (For the coax colors follow Coax Colors guide above)

NNH4-65B-R6H4

12-port sector antenna, 4x 698–896 and 8x 1695–2360 MHz, 65° HPBW, 6x RET.

- Features broadband Low Band (698-896 MHz) and High Band (1695-2360 MHz) arrays for 4T4R (4X MIMO) capability for Band 14, AWS, PCS and WCS applications.
- Non-stacked high band array design provides higher gain and narrower vertical beamwidth than traditional antenna designs.
- Independent tilt for all arrays.
- Array configuration provides capability for 4T4R (4x MIMO) on Low band and Dual 4T4R (4x MIMO) on High band
- Optimized SPR performance across all operating bands
- Excellent wind loading characteristics
- Supports re-configurable antenna sharing capability enabling control of the internal RET system using up to two separate RET compatible OEM radios

General Specifications

Antenna Type	Sector
Band	Multiband
Effective Projective Area (EPA), frontal	0.65 m² | 6.997 ft²
Effective Projective Area (EPA), lateral	0.22 m² | 2.368 ft²
Grounding Type	RF connector inner conductor and body grounded to reflector and mounting bracket
Performance Note	Outdoor usage | Wind loading figures are validated by wind tunnel measurements described in white paper WP-112534-EN
Radome Material	Fiberglass, UV resistant
Radiator Material	Low loss circuit board
Reflector Material	Aluminum
RF Connector Interface	4.3-10 Female
RF Connector Location	Bottom
RF Connector Quantity, high band	8
RF Connector Quantity, low band	4
RF Connector Quantity, total	12

Remote Electrical Tilt (RET) Information, General

RET Hardware	CommRET v2
RET Interface	8-pin DIN Female | 8-pin DIN Male

RET Interface, quantity 2 female | 2 male

Dimensions

Width	498 mm | 19.606 in
Depth	197 mm | 7.756 in
Length	1828 mm | 71.969 in

Array Layout

Array	Freq (MHz)	Conns	RET (MRET)	AISG RET UID
R1	698-896	1-2	1	CPxxxxxxxxxxxxxxxxmm.1
R2	698-896	3-4	2	CPxxxxxxxxxxxxxxxxmm.2
Y1	1695-2360	5-6	3	CPxxxxxxxxxxxxxxxxmm.3
Y2	1695-2360	7-8	4	CPxxxxxxxxxxxxxxxxmm.4
Y3	1695-2360	9-10	5	CPxxxxxxxxxxxxxxxxmm.5
Y4	1695-2360	11-12	6	CPxxxxxxxxxxxxxxxxmm.6

(Sizes of colored boxes are not true depictions of array sizes)

Port Configuration

NNH4-65B-R6H4

Packaging and Weights

Width, packed	608 mm | 23.937 in
Depth, packed	352 mm | 13.858 in
Length, packed	2030 mm | 79.921 in
Net Weight, without mounting kit	38.3 kg | 84.437 lb
Weight, gross	53.6 kg | 118.168 lb

Regulatory Compliance/Certifications

Agency	**Classification**
CHINA-ROHS	Above maximum concentration value
ISO 9001:2015	Designed, manufactured and/or distributed under this quality management system
ROHS	Compliant/Exempted

Included Products

BSAMNT-3 – Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

* Footnotes

Performance Note Severe environmental conditions may degrade optimum performance

CBC61923T-DS-43 | E14F10P58

Twin Triplexer, 555-894/PCS/AWS+WCS, dc Sense,4.3-10

- BTS-to-feeder and feeder-to-antenna application
- New 4.3-10 connectors for improved PIM performance and size reduction
- DC Load Sense in Feeder-to-Antenna applications
- Automatic dc switching with dc sense
- Convertible mounting brackets

Product Classification

Product Type	Triplexer

General Specifications

Product Family	CBC61923
Color	Gray
Common Port Label	COMMON
Modularity	2-Twin
Mounting	Pole | Wall
Mounting Pipe Hardware	Band clamps (2)
RF Connector Interface	4.3-10 Female
RF Connector Interface Body Style	Long neck

Dimensions

Height	176 mm | 6.929 in
Width	198 mm | 7.795 in
Depth	106 mm | 4.173 in
Ground Screw Diameter	6 mm | 0.236 in
Mounting Pipe Diameter Range	40–160 mm

Electrical Specifications

Impedance	50 ohm
License Band, Band Pass	AWS 1700 | CEL 850 | LMR 750 | PCS 1900 | USA 600 | USA 700 | USA 750 | WCS 2300

Electrical Specifications, Common Port

Composite Power, RMS	250 W

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Logic Table

Combining Mode Operation (Ground Based)				
RF Ports Input Voltage				
555 to 894 MHz	PCS	AWS/WCS	COMMON	DC/AISG Path Selection
7 ≤ V ≤ 30	<7	<7	<7	555 to 894 MHz to COMMON "ON"
<7	7 ≤ V ≤ 30	<7	<7	PCS to COMMON "ON"
<7	<7	7 ≤ V ≤ 30	<7	AWS/WCS to COMMON"ON"
7 ≤ V ≤ 30	7 ≤ V ≤ 30	<7	<7	555 to 894 MHz to COMMON "ON"
7 ≤ V ≤ 30	<7	7 ≤ V ≤ 30	<7	AWS/WCS to COMMON"ON"
<7	7 ≤ V ≤ 30	7 ≤ V ≤ 30	<7	AWS/WCS to COMMON"ON"
7 ≤ V ≤ 30	7 ≤ V ≤ 30	7 ≤ V ≤ 30	<7	AWS/WCS to COMMON"ON"

Splitting Mode Operation (Tower Top)				
RF Ports Impedance DC (Load sensing)				
555 to 894 MHz	PCS	AWS/WCS	COMMON	DC/AISG Path Selection
open/load	short	short	7 ≤ V ≤ 30	COMMON to 555-894 "ON"
short	open/load	short	7 ≤ V ≤ 30	COMMON to PCS "ON"
short	short	open/load	7 ≤ V ≤ 30	COMMON to AWS/WCS "ON"
open/load	open/load	short	7 ≤ V ≤ 30	COMMON to 555-894 "ON" COMMON to PCS "ON"
open/load	short	open/load	7 ≤ V ≤ 30	COMMON to 555-894 "ON" COMMON to AWS/WCS "ON"
short	open/load	open/load	7 ≤ V ≤ 30	COMMON to PCS "ON" COMMON to AWS/WCS "ON"
open/load	open/load	open/load	7 ≤ V ≤ 30	ALL ports ON
short	short	short	7 ≤ V ≤ 30	ALL ports OFF

Environmental Specifications

Operating Temperature	-40 °C to +65 °C (-40 °F to +149 °F)
Corrosion Test Method	IEC 60068-2-11, 30 days
Ingress Protection Test Method	IEC 60529:2001, IP67

Packaging and Weights

Included	Mounting hardware
Mounting Hardware Weight	0.5 kg | 1.102 lb
Volume	3.7 L
Weight, without mounting hardware	5.3 kg | 11.684 lb

COMMSCOPE®

Product Data Sheet | **DB-B1 and DB-T1 Series**

DC and Fiber Management Distribution Boxes for HYBRIFLEX™ Cable

Product Description

RFS' flexible Tower, Base Stations and Rooftop protection and Distribution products provide protection for up to 6 Remote Radio Heads/Integrated Antennas. The solutions mitigate the risk of damage due to lightning and provide high levels of availability and reliability to radio equipment.

Features

- Employs the Strikesorb® 30-V1-HV Surge Protective Device (SPD) specifically designed for the Remote Radio Head (RRH) installation environment and certified for use in DC applications and at low DC operating voltages (48V).
- The Strikesorb 30-V1-HV is a Class I SPD, certified by VDE per the IEC 61643-1 standard as suitable for installation in areas where direct lightning exposure is expected. Strikesorb 30-V1-HV is able to withstand direct lightning currents of up to 5kA (10/350) and induced surge currents of up to 60kA (8/20).
- Provides very low let through / clamping voltage – unique for a Class I product – as it does not employ spark gaps or other switching elements. Strikesorb offers unique protection levels to the RRH equipment as well as the Base Band Units.
- Alarms for SPD sacrifice, Moisture detection and Intrusion.
- Fully recognized to the UL 1449 3rd Edition Safety Standard.
- Digital Voltmeter with six (6) position switch to monitor each DC circuit (Model DB-B1-6C-12AB-0Z).
- Patent pending design

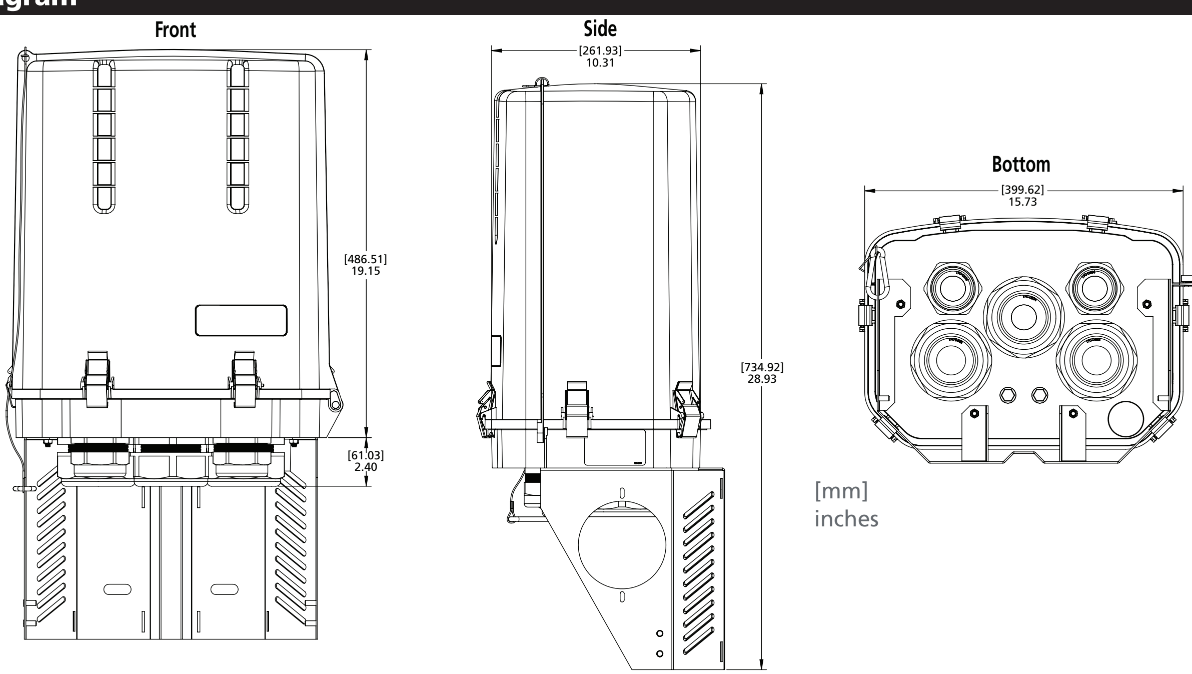

Tower / Base / Rooftop / Rooftop Distribution Models:
DB-T1-6Z-12AB-0Z
DB-B1-6C-12AB-0Z

Companion Sector Model:
DB-E1-2C-4AB-0Z

Benefits

- Offers unique maintenance-free protection against direct lightning currents.
- Protects up to 6 Remote Radio Heads and connects up to 12 fiber pairs.
- Utilizes an IP 67 rated enclosure, allowing for indoor or outdoor installation on a roof or tower top.
- Configurable cable ports are designed to accommodate varying diameters of hybrid (combined power and fiber optic) or standard cables with diameters up to 2" (will fit most standard 1-5/8" coax class cables) depending upon port configuration.
- Lightweight aerodynamic design provides maximum flexibility for tower top installation.

Product Diagram



Product Data Sheet **DB-B1 and DB-T1 Series**

You Connect the World. We Make it Easy.®

DC and Fiber Management Distribution Boxes for HYBRIFLEX™ Cable

Technical Specifications

Electrical Specifications

Model Numbers	DB-T1-6Z-12AB-0Z	DB-B1-6C-12AB-0Z
Nominal Operating Voltage	48 VDC	
Nominal Discharge Current [I_n]	N/A	20 kA 8/20 µs
Maximum Surge Current [I_{max}]	N/A	60 kA 8/20 µs
Maximum Impulse (Lightning) Current per IEC 61643-1	N/A	5 kA 10/350 µs
Maximum Continuous Operating Voltage [Uc]	N/A	75 VDC
Voltage Protection Rating (VPR) per UL 1449 3rd Edition	N/A	400V
Protection Class as per IEC 61643-1	N/A	Class I
SPD Alarm	N/A	Upon sacrifice
Intrusion Sensor	Microswitch	
Moisture Sensor	Infrared moisture detector	
Strikesorb Module Type	No Strikesorb modules installed *(used as Distribution Unit only)*	30-V1-HV – Strikesorb modules installed to protect 6 RRHs

Mechanical Specifications

Suppression Connection Method	Compression lug, #14-#2 AWG (2 mm^2-33 mm^2)	
Fiber Connection Method	LC-LC Single mode	
Pressure Equalizing Vent	Gore™ Vent	
Environmental Rating	IP 67	
Operating Temperature	-40° C to +80° C	
UV Resistant	Yes	
Weight	System: 26 lbs (11.8 kg)	System: 32 lbs (14.51 kg)
Combined Wind Loading	150mph (sustained): 185 lbs (823 N)	

Standards Compliance

Standards (Strikesorb modules ONLY)	Not Applicable	ANSI/UL 1449 3rd Edition IEEE C62.41, NEMA LS-1 IEC 61643-1:2005 2nd Ed (Class I Protection) IEC 61643-12 EN 61643-11:2002 (including A11:2007)

verizon

MASER CONSULTING CONNECTICUT

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Antenna Mount Analysis Report with Hardware Upgrades and PMI Requirements

Mount Analysis

SMART Tool Project #: 10107935
Maser Consulting Connecticut Project #: 21781188A

November 8, 2021

Site Information	*Site ID:*	*468846-VZW / BETHEL NORTH CT*
	Site Name:	*BETHEL NORTH CT*
	Carrier Name:	*Verizon Wireless*
	Address:	*8 Sky Ridge Lane Bethel, Connecticut 06801 Fairfield County*
	Latitude:	*41.413469°*
	Longitude:	*-73.400872°*
Structure Information	*Tower Type:*	*Monopole*
	Mount Type:	*3.04-Ft T-Arm*

FUZE ID # 16092790

Analysis Results

T-Arm: **70.6% Pass***
*Results valid after hardware upgrades noted in the PMI Requirements are installed.

******Contractor PMI Requirements*:**
Included at the end of this MA report
Available & Submitted via portal at https://pmi.vzwsmart.com
Contractor - Please Review Specific Site PMI Requirements Upon Award
Requirements may also be Noted on A & E drawings
For additional questions and support, please reach out to:
pmisupport@colliersengineering.com

Report Prepared By: Sarah Ali

11/8/2021

STATE OF CONNECTICUT
DEREK R HARTZELL
32710
LICENSED
PROFESSIONAL ENGINEER

Executive Summary:

The objective of this report is to determine the capacity of the antenna support mount at the subject facility for the final wireless telecommunications configuration, per the applicable codes and standards. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

This analysis is inclusive of the mount structure only and does not address the structural capacity of the supporting structure. This mounting frame was not analyzed as an anchor attachment point for fall protection. All climbing activities are required to have a fall protection plan completed by a competent person.

Sources of Information:

Document Type	Remarks
Radio Frequency Data Sheet (RFDS)	*Verizon RFDS, Site ID: 323444, dated September 27, 2021*
Desktop Mount Mapping Form	*Colliers Engineering & Design, project #: 21781188, dated November 8, 2021*

Analysis Criteria:

Codes and Standards:	ANSI/TIA-222-H	
Wind Parameters:	Basic Wind Speed (Ultimate 3-sec. Gust),	115 mph
	Ice Wind Speed (3-sec. Gust):	50 mph
	Design Ice Thickness:	1.00 in
	Risk Category:	II
	Exposure Category:	B
	Topographic Category:	1
	Topographic Feature Considered:	N/A
	Topographic Method:	N/A
	Ground Elevation Factor, K_e:	0.984
Seismic Parameters:	S_S:	0.218 g
	S_1:	0.056 g
Maintenance Parameters:	Wind Speed (3-sec. Gust):	30 mph
	Maintenance Live Load, Lv:	250 lbs.
	Maintenance Live Load, Lm:	500 lbs.
Analysis Software:	RISA-3D (V17)	

Final Loading Configuration:

The following equipment has been considered for the analysis of the mounts:

Mount Elevation (ft)	Equipment Elevation (ft)	Quantity	Manufacturer	Model	Status
			Commscope		Added
			Samsung		
			Commscope		
			Raycap		

The recent ground mount mapping did not report existing OVP units. However, it is acceptable to install up to any three (3) of the OVP model numbers listed below as required at any location other than the mount face without affecting the structural capacity of the mount. If OVP units are installed on the mount face, a mount re-analysis may be required.

Model Number	Ports	AKA
DB-B1-6C-12AB-0Z	6	OVP-6
RVZDC-6627-PF-48	12	OVP-12

Standard Conditions:

1. All engineering services are performed on the basis that the information provided to Maser Consulting Connecticut and used in this analysis is current and correct. The existing equipment loading has been applied at locations determined from the supplied documentation and field observations. Any deviation from the loading locations specified in this report shall be communicated to Maser Consulting Connecticut to verify deviation will not adversely impact the analysis.

2. Mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.

   Obvious safety and structural issues/deficiencies noticed at the time of the mount mapping and reported in the Mount Mapping Report are assumed to be corrected and documented as part of the PMI process and are not considered in the mount analysis.

   The mount analysis and the mount mapping are not a condition assessment of the mount. Proper maintenance and condition assessments are still required post analysis.

3. For mount analyses completed from other data sources (including new replacement mounts) and not specifically mapped in accordance with the NSTD-446 Standard, the mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.

4. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.

5. The mount was checked up to, and including, the bolts that fasten it to the mount collar/attachment and threaded rod connections in collar members if applicable. Local deformation and interaction between the mount collar/attachment and the supporting tower structure are outside the scope of this analysis.

6. All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Maser Consulting Connecticut is not responsible for the conclusion, opinions, and recommendations made by others based on the information supplied.

7. Structural Steel Grades have been assumed as follows, if applicable, unless otherwise noted in this analysis:
   - Channel, Solid Round, Angle, Plate — ASTM A36 (Gr. 36)
   - HSS (Rectangular) — ASTM 500 (Gr. B-46)
   - Pipe — ASTM A53 (Gr. B-35)
   - Threaded Rod — F1554 (Gr. 36)
   - Bolts — ASTM A325

Discrepancies between in-field conditions and the assumptions listed above may render this analysis invalid unless explicitly approved by Maser Consulting Connecticut.

Analysis Results:

Component	Utilization %	Pass/Fail
Standoff Arm		*Pass*
Mount Pipe		*Pass*
Face Horizontal		*Pass*
Connection Check		*Pass*

Structure Rating – *(Controlling Utilization of all Components)*	**70.6%**

***** Results valid after hardware upgrades noted in the PMI Requirements are installed.

Recommendation:

The existing mounts will be **SUFFICIENT** for the final loading configuration upon the completion of the recommendations listed in the Special Instructions section of the below referenced PMI document.

ANSI/ASSP rigging plan review services compliant with the requirements of ANSI/TIA 322 are available for a Construction Class IV site or other, if required. Separate review fees will apply.

Attachments:

Mount Photos
Desktop Mount Mapping Form
Analysis Calculations
Contractor Required Post Installation Inspection (PMI) Report Deliverables
Antenna Placement Diagrams
TIA Adoption and Wind Speed Usage Letter

Desktop Mount Mapping Form

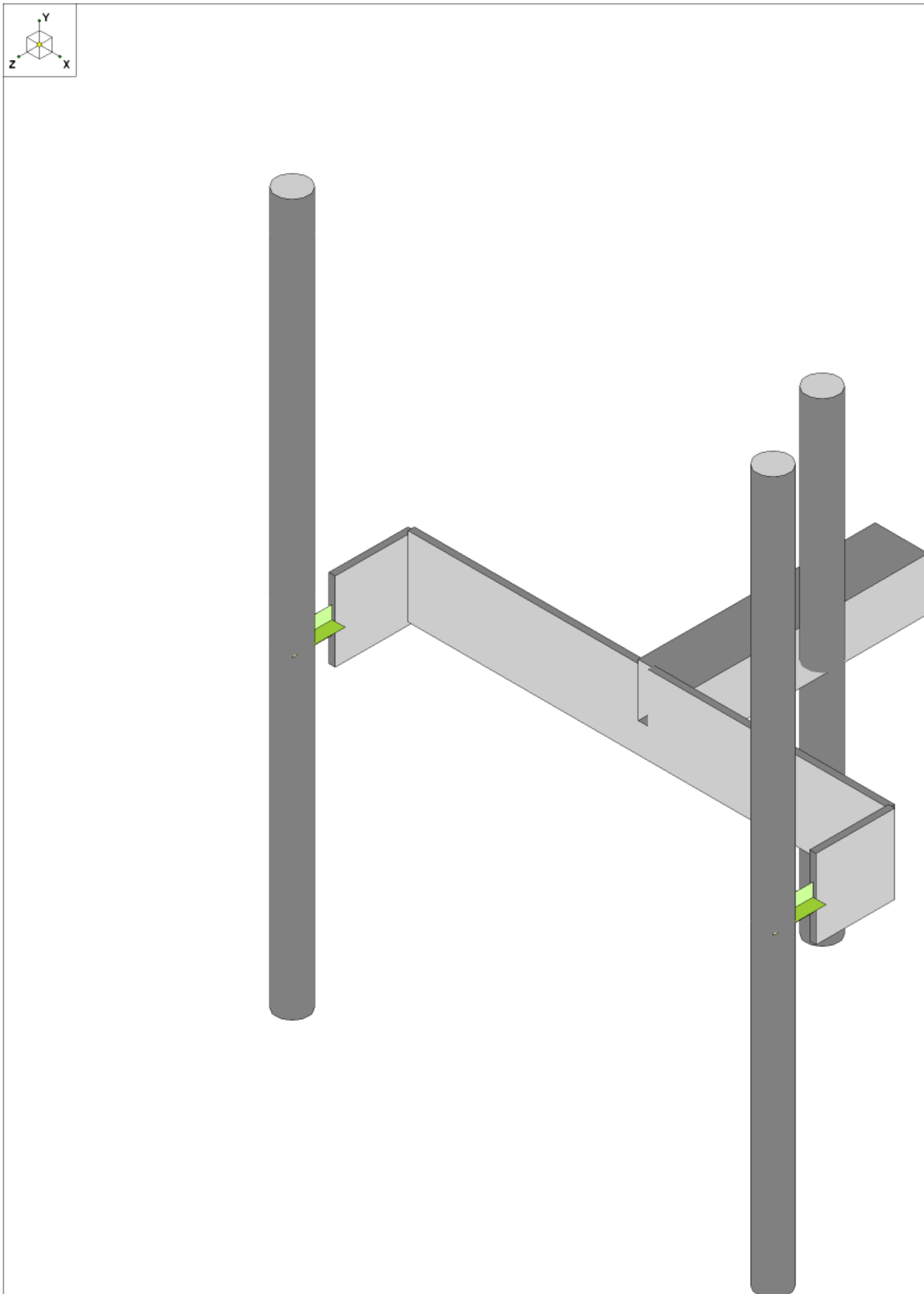
Site Name:	BETHEL NORTH CT	**Tower Type:**	Monopole
Site ID:		**Tower Owner:**	Utility
FUZE Project ID:	16092790	**Tower Height (Ft.):**	Unknown
Customer:	Verizon Wireless	**Mount Elevation (Ft.):**	167.25
Colliers Project No.	21781188	**Date:**	11/8/2021

Document Type	Provided? (Yes/No)	Source Name	Project No.	Dated	Comments/Remarks
Previous Mount Mapping	No				
Previous Mapping Photos	No				
Previous Mount Analysis	No				
Previous Mount Modifications	No				
Previous Structural Analysis	No				
Construction Drawings	No				
Closeout Package	No				
Closeout Photos	No				
Handover Package	No				
New Build 445 Documentation	No				
Other	Yes	21781188-468846 BETHEL NORTH CT		10/20/2021	Ground Mapping photos provided. Use as first source of information for mount assumptions.
Previous PMI	No				

The desktop mount mapping is based on the engineering review of the available site documents in FUZE, as listed above, in place of a full mount mapping. It is assumed that the information provided in the documents listed above, provide an accurate representation of the existing mount. EOR reserves the right and will typically require additional clarification and verification as will be included in the PMI requirements. During the Post Modification Inspection (PMI) process, the GC on site will be required to confirm all questions, confirmations, and validations as posed by the EOR. The engineering review for this desktop mount mapping was performed in accordance to the ANSI/TIA-222-H requirements and Verizon's NSTD446 standard.

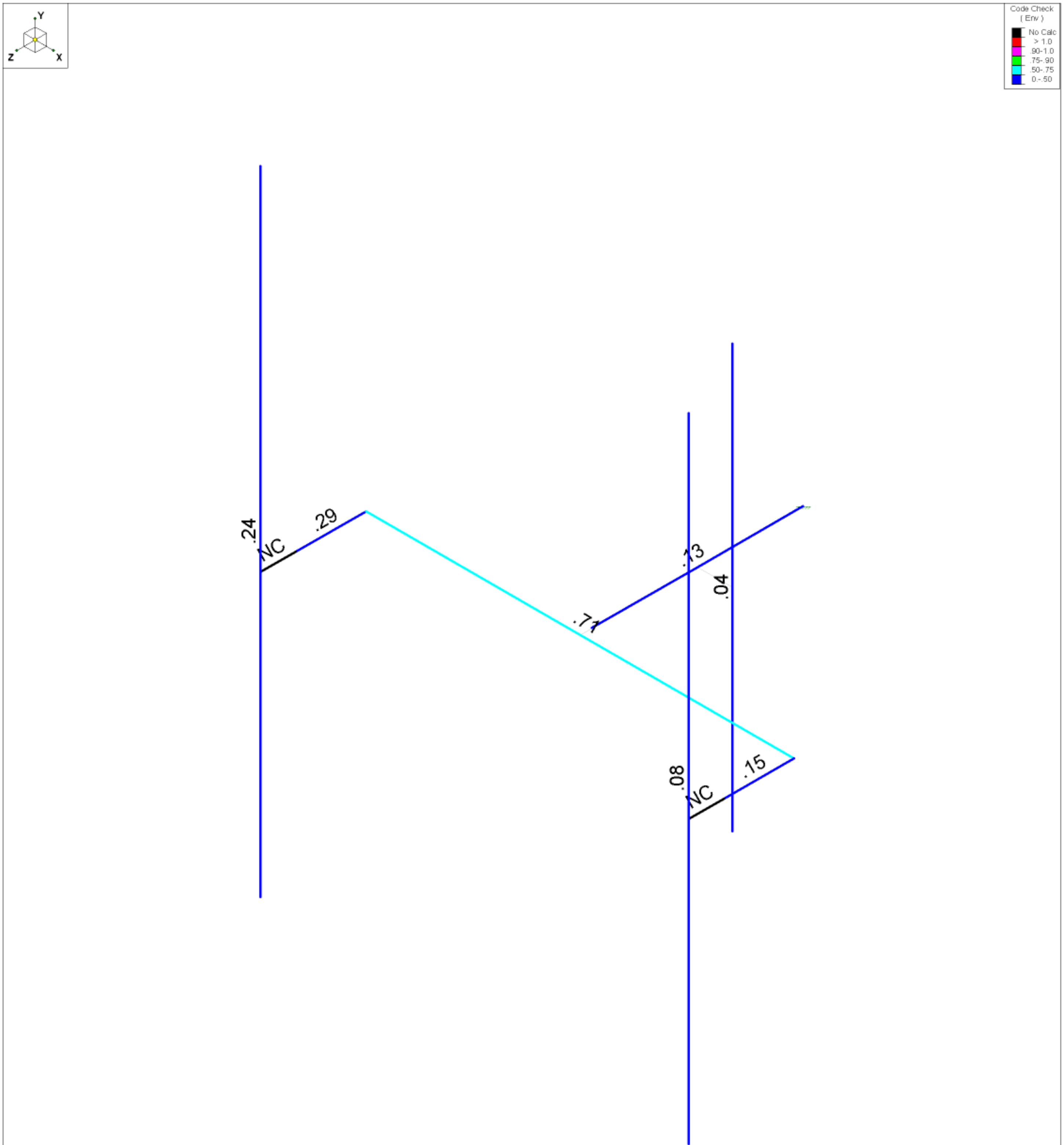
Photo taken from: Ground Mapping Photos

Photo taken from: Ground Mapping Photos



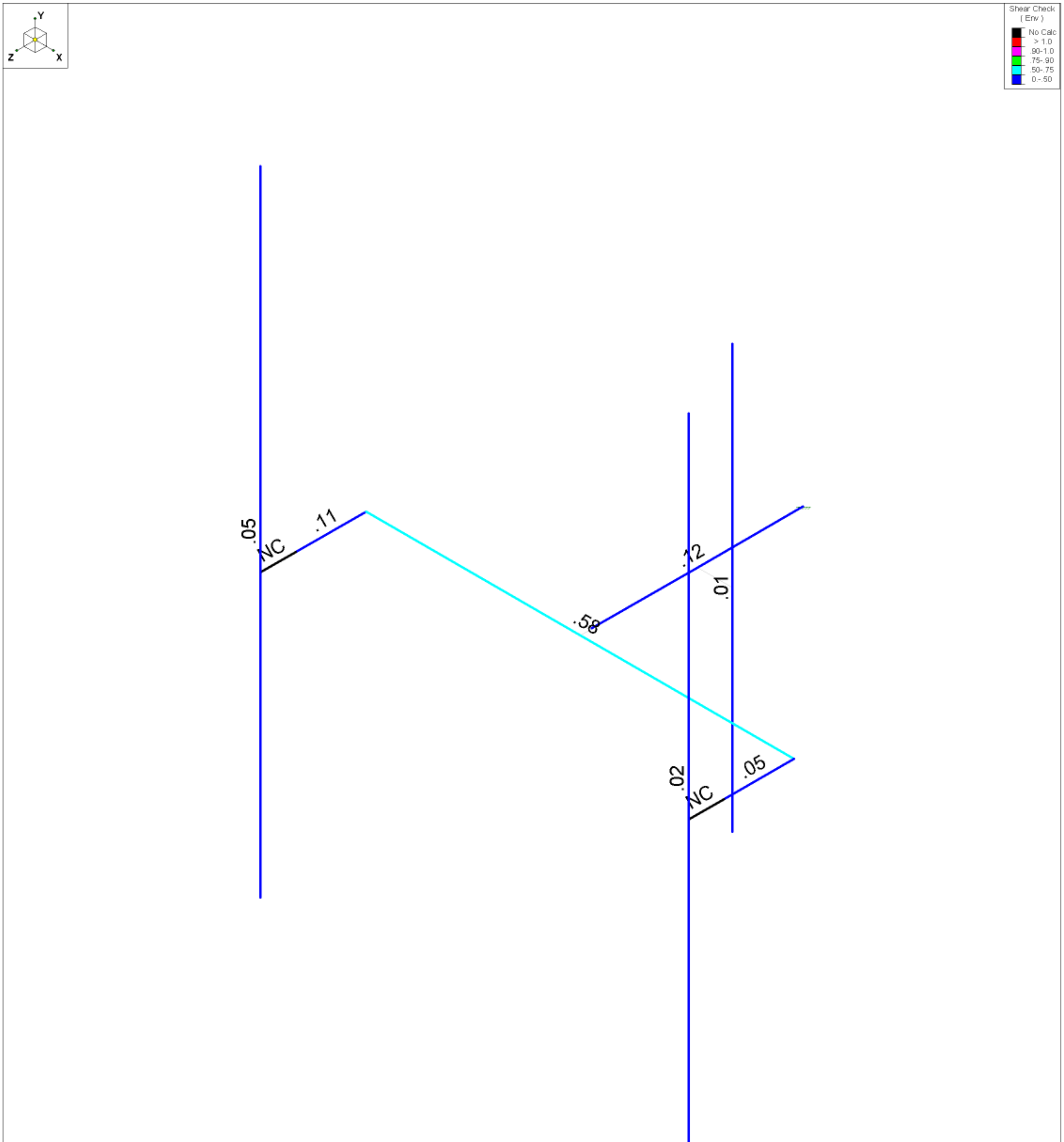
Envelope Only Solution

Maser Consulting	Mount Analysis	SK - 1
SEA		Nov 3, 2021 at 4:38 PM
		468846-VZW_MT_LOT_A_H.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Maser Consulting	Mount Analysis	SK - 2
SEA		Nov 3, 2021 at 4:39 PM
		468846-VZW_MT_LOT_A_H.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Maser Consulting	Mount Analysis	SK - 3
SEA		Nov 3, 2021 at 4:39 PM
		468846-VZW_MT_LOT_A_H.r3d

Basic Load Cases

	BLC Description	Category	X Gravi...	Y Gravi...	Z Gravity	Joint	Point	Distrib...	Area(M...	Surfac...
1	Antenna D	None					21			
2	Antenna Di	None					21			
3	Antenna Wo (0 Deg)	None					21			
4	Antenna Wo (30 Deg)	None					21			
5	Antenna Wo (60 Deg)	None					21			
6	Antenna Wo (90 Deg)	None					21			
7	Antenna Wo (120 Deg)	None					21			
8	Antenna Wo (150 Deg)	None					21			
9	Antenna Wo (180 Deg)	None					21			
10	Antenna Wo (210 Deg)	None					21			
11	Antenna Wo (240 Deg)	None					21			
12	Antenna Wo (270 Deg)	None					21			
13	Antenna Wo (300 Deg)	None					21			
14	Antenna Wo (330 Deg)	None					21			
15	Antenna Wi (0 Deg)	None					21			
16	Antenna Wi (30 Deg)	None					21			
17	Antenna Wi (60 Deg)	None					21			
18	Antenna Wi (90 Deg)	None					21			
19	Antenna Wi (120 Deg)	None					21			
20	Antenna Wi (150 Deg)	None					21			
21	Antenna Wi (180 Deg)	None					21			
22	Antenna Wi (210 Deg)	None					21			
23	Antenna Wi (240 Deg)	None					21			
24	Antenna Wi (270 Deg)	None					21			
25	Antenna Wi (300 Deg)	None					21			
26	Antenna Wi (330 Deg)	None					21			
27	Antenna Wm (0 Deg)	None					21			
28	Antenna Wm (30 Deg)	None					21			
29	Antenna Wm (60 Deg)	None					21			
30	Antenna Wm (90 Deg)	None					21			
31	Antenna Wm (120 Deg)	None					21			
32	Antenna Wm (150 Deg)	None					21			
33	Antenna Wm (180 Deg)	None					21			
34	Antenna Wm (210 Deg)	None					21			
35	Antenna Wm (240 Deg)	None					21			
36	Antenna Wm (270 Deg)	None					21			
37	Antenna Wm (300 Deg)	None					21			
38	Antenna Wm (330 Deg)	None					21			
39	Structure D	None		-1						
40	Structure Di	None						7		
41	Structure Wo (0 Deg)	None						14		
42	Structure Wo (30 Deg)	None						14		
43	Structure Wo (60 Deg)	None						14		
44	Structure Wo (90 Deg)	None						14		
45	Structure Wo (120 Deg)	None						14		
46	Structure Wo (150 Deg)	None						14		
47	Structure Wo (180 Deg)	None						14		
48	Structure Wo (210 Deg)	None						14		

Basic Load Cases (Continued)

	BLC Description	Category	X Gravi...	Y Gravi...	Z Gravity	Joint	Point	Distrib...	Area(M...	Surfac...
49	Structure Wo (240 Deg)	None						14		
50	Structure Wo (270 Deg)	None						14		
51	Structure Wo (300 Deg)	None						14		
52	Structure Wo (330 Deg)	None						14		
53	Structure Wi (0 Deg)	None						14		
54	Structure Wi (30 Deg)	None						14		
55	Structure Wi (60 Deg)	None						14		
56	Structure Wi (90 Deg)	None						14		
57	Structure Wi (120 Deg)	None						14		
58	Structure Wi (150 Deg)	None						14		
59	Structure Wi (180 Deg)	None						14		
60	Structure Wi (210 Deg)	None						14		
61	Structure Wi (240 Deg)	None						14		
62	Structure Wi (270 Deg)	None						14		
63	Structure Wi (300 Deg)	None						14		
64	Structure Wi (330 Deg)	None						14		
65	Structure Wm (0 Deg)	None						14		
66	Structure Wm (30 Deg)	None						14		
67	Structure Wm (60 Deg)	None						14		
68	Structure Wm (90 Deg)	None						14		
69	Structure Wm (120 Deg)	None						14		
70	Structure Wm (150 Deg)	None						14		
71	Structure Wm (180 Deg)	None						14		
72	Structure Wm (210 Deg)	None						14		
73	Structure Wm (240 Deg)	None						14		
74	Structure Wm (270 Deg)	None						14		
75	Structure Wm (300 Deg)	None						14		
76	Structure Wm (330 Deg)	None						14		
77	Lm1	None					1			
78	Lm2	None					1			
79	Lv1	None					1			
80	Lv2	None					1			
81	Antenna Ev	None					21			
82	Antenna Eh (0 Deg)	None					14			
83	Antenna Eh (90 Deg)	None					14			
84	Structure Ev	ELY		-.047						
85	Structure Eh (0 Deg)	ELZ	-.116							
86	Structure Eh (90 Deg)	ELX			.116					

Load Combinations

	Description	So...	P...	S...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...
1	1.2D+1.0Wo (0 Deg)	Yes	Y		1	1.2	39	1.2	3	1	41	1												
2	1.2D+1.0Wo (30 Deg)	Yes	Y		1	1.2	39	1.2	4	1	42	1												
3	1.2D+1.0Wo (60 Deg)	Yes	Y		1	1.2	39	1.2	5	1	43	1												
4	1.2D+1.0Wo (90 Deg)	Yes	Y		1	1.2	39	1.2	6	1	44	1												
5	1.2D+1.0Wo (120 D...	Yes	Y		1	1.2	39	1.2	7	1	45	1												
6	1.2D+1.0Wo (150 D...	Yes	Y		1	1.2	39	1.2	8	1	46	1												
7	1.2D+1.0Wo (180 D...	Yes	Y		1	1.2	39	1.2	9	1	47	1												
8	1.2D+1.0Wo (210 D...	Yes	Y		1	1.2	39	1.2	10	1	48	1												
9	1.2D+1.0Wo (240 D...	Yes	Y		1	1.2	39	1.2	11	1	49	1												

Load Combinations (Continued)

	Description	So...	P...	S...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...
10	1.2D+1.0Wo (270 D...	Yes	Y		1	1.2	39	1.2	12	1	50	1												
11	1.2D+1.0Wo (300 D...	Yes	Y		1	1.2	39	1.2	13	1	51	1												
12	1.2D+1.0Wo (330 D...	Yes	Y		1	1.2	39	1.2	14	1	52	1												
13	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	39	1.2	2	1	40	1	15	1	53	1								
14	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	39	1.2	2	1	40	1	16	1	54	1								
15	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	39	1.2	2	1	40	1	17	1	55	1								
16	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	39	1.2	2	1	40	1	18	1	56	1								
17	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	39	1.2	2	1	40	1	19	1	57	1								
18	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	39	1.2	2	1	40	1	20	1	58	1								
19	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	39	1.2	2	1	40	1	21	1	59	1								
20	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	39	1.2	2	1	40	1	22	1	60	1								
21	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	39	1.2	2	1	40	1	23	1	61	1								
22	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	39	1.2	2	1	40	1	24	1	62	1								
23	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	39	1.2	2	1	40	1	25	1	63	1								
24	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	39	1.2	2	1	40	1	26	1	64	1								
25	1.2D + 1.5Lm1 + 1.0...	Yes	Y		1	1.2	39	1.2	77	1.5	27	1	65	1										
26	1.2D + 1.5Lm1 + 1.0...	Yes	Y		1	1.2	39	1.2	77	1.5	28	1	66	1										
27	1.2D + 1.5Lm1 + 1.0...	Yes	Y		1	1.2	39	1.2	77	1.5	29	1	67	1										
28	1.2D + 1.5Lm1 + 1.0...	Yes	Y		1	1.2	39	1.2	77	1.5	30	1	68	1										
29	1.2D + 1.5Lm1 + 1.0...	Yes	Y		1	1.2	39	1.2	77	1.5	31	1	69	1										
30	1.2D + 1.5Lm1 + 1.0...	Yes	Y		1	1.2	39	1.2	77	1.5	32	1	70	1										
31	1.2D + 1.5Lm1 + 1.0...	Yes	Y		1	1.2	39	1.2	77	1.5	33	1	71	1										
32	1.2D + 1.5Lm1 + 1.0...	Yes	Y		1	1.2	39	1.2	77	1.5	34	1	72	1										
33	1.2D + 1.5Lm1 + 1.0...	Yes	Y		1	1.2	39	1.2	77	1.5	35	1	73	1										
34	1.2D + 1.5Lm1 + 1.0...	Yes	Y		1	1.2	39	1.2	77	1.5	36	1	74	1										
35	1.2D + 1.5Lm1 + 1.0...	Yes	Y		1	1.2	39	1.2	77	1.5	37	1	75	1										
36	1.2D + 1.5Lm1 + 1.0...	Yes	Y		1	1.2	39	1.2	77	1.5	38	1	76	1										
37	1.2D + 1.5Lm2 + 1.0...	Yes	Y		1	1.2	39	1.2	78	1.5	27	1	65	1										
38	1.2D + 1.5Lm2 + 1.0...	Yes	Y		1	1.2	39	1.2	78	1.5	28	1	66	1										
39	1.2D + 1.5Lm2 + 1.0...	Yes	Y		1	1.2	39	1.2	78	1.5	29	1	67	1										
40	1.2D + 1.5Lm2 + 1.0...	Yes	Y		1	1.2	39	1.2	78	1.5	30	1	68	1										
41	1.2D + 1.5Lm2 + 1.0...	Yes	Y		1	1.2	39	1.2	78	1.5	31	1	69	1										
42	1.2D + 1.5Lm2 + 1.0...	Yes	Y		1	1.2	39	1.2	78	1.5	32	1	70	1										
43	1.2D + 1.5Lm2 + 1.0...	Yes	Y		1	1.2	39	1.2	78	1.5	33	1	71	1										
44	1.2D + 1.5Lm2 + 1.0...	Yes	Y		1	1.2	39	1.2	78	1.5	34	1	72	1										
45	1.2D + 1.5Lm2 + 1.0...	Yes	Y		1	1.2	39	1.2	78	1.5	35	1	73	1										
46	1.2D + 1.5Lm2 + 1.0...	Yes	Y		1	1.2	39	1.2	78	1.5	36	1	74	1										
47	1.2D + 1.5Lm2 + 1.0...	Yes	Y		1	1.2	39	1.2	78	1.5	37	1	75	1										
48	1.2D + 1.5Lm2 + 1.0...	Yes	Y		1	1.2	39	1.2	78	1.5	38	1	76	1										
49	1.2D + 1.5Lv1	Yes	Y		1	1.2	39	1.2	79	1.5														
50	1.2D + 1.5Lv2	Yes	Y		1	1.2	39	1.2	80	1.5														
51	1.4D	Yes	Y		1	1.4	39	1.4																
52	1.2D + 1.0Ev + 1.0E...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82	1	83		ELZ	1	ELX					
53	1.2D + 1.0Ev + 1.0E...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82	.866	83	.5	ELZ	.866	ELX	.5				
54	1.2D + 1.0Ev + 1.0E...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82	.5	83	.866	ELZ	.5	ELX	.866				
55	1.2D + 1.0Ev + 1.0E...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82		83	1	ELZ		ELX	1				
56	1.2D + 1.0Ev + 1.0E...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82	-.5	83	.866	ELZ	-.5	ELX	.866				
57	1.2D + 1.0Ev + 1.0E...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82	-.866	83	.5	ELZ	-.866	ELX	.5				
58	1.2D + 1.0Ev + 1.0E...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82	-1	83		ELZ	-1	ELX					
59	1.2D + 1.0Ev + 1.0E...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82	-.866	83	-.5	ELZ	-.866	ELX	-.5				
60	1.2D + 1.0Ev + 1.0E...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82	-.5	83	-.866	ELZ	-.5	ELX	-.866				
61	1.2D + 1.0Ev + 1.0E...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82		83	-1	ELZ		ELX	-1				

Load Combinations (Continued)

	Description	So...	P...	S...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...
62	1.2D + 1.0Ev + 1.0E...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82	.5	83	-.866	ELZ	.5	ELX	-.866				
63	1.2D + 1.0Ev + 1.0E...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82	.866	83	-.5	ELZ	.866	ELX	-.5				
64	0.9D - 1.0Ev + 1.0E...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	1	83		ELZ	1	ELX					
65	0.9D - 1.0Ev + 1.0E...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	.866	83	.5	ELZ	.866	ELX	.5				
66	0.9D - 1.0Ev + 1.0E...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	.5	83	.866	ELZ	.5	ELX	.866				
67	0.9D - 1.0Ev + 1.0E...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82		83	1	ELZ		ELX	1				
68	0.9D - 1.0Ev + 1.0E...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	-.5	83	.866	ELZ	-.5	ELX	.866				
69	0.9D - 1.0Ev + 1.0E...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	-.866	83	.5	ELZ	-.866	ELX	.5				
70	0.9D - 1.0Ev + 1.0E...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	-1	83		ELZ	-1	ELX					
71	0.9D - 1.0Ev + 1.0E...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	-.866	83	-.5	ELZ	-.866	ELX	-.5				
72	0.9D - 1.0Ev + 1.0E...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	-.5	83	-.866	ELZ	-.5	ELX	-.866				
73	0.9D - 1.0Ev + 1.0E...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82		83	-1	ELZ		ELX	-1				
74	0.9D - 1.0Ev + 1.0E...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	.5	83	-.866	ELZ	.5	ELX	-.866				
75	0.9D - 1.0Ev + 1.0E...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	.866	83	-.5	ELZ	.866	ELX	-.5				

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N1	0	0	0.614583	0	
2	N2	0	0	2.114583	0	
3	N6	1.520833	0	2.197917	0	
4	N7	-1.520833	0	2.197917	0	
5	N12	1.520833	0	2.947917	0	
6	N13	1.520833	2.5	2.947917	0	
7	N14	1.520833	-2	2.947917	0	
8	N16	-1.520833	0	2.947917	0	
9	N17	-1.520833	2.5	2.947917	0	
10	N18	-1.520833	-2	2.947917	0	
11	N13A	0	0	1.364583	0	
12	N14A	.25	0	1.364583	0	
13	N15	.25	1.5	1.364583	0	
14	N16A	.25	-1.5	1.364583	0	
15	N17A	1.520833	0	2.697917	0	
16	N18A	-1.520833	0	2.697917	0	
17	N19	0	0	2.197917	0	
18	ACL	-1.520833	.25	2.947917	0	
19	N19A	-1.520833	2.25	2.947917	0	

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Mount Pipe	PIPE_2.0	Column	Pipe	A53 Gr. B	Typical	1.02	.627	.627	1.25
2	Standoff Arm	HSS4X4X4	Beam	Tube	A500 Gr.46	Typical	3.37	7.8	7.8	12.8
3	Face Horizontal	PL1/2x6	Column	Pipe	A36 Gr.36	Typical	3	.063	9	.237
4	OVP Mount Pipe	PIPE_2.0	Column	Pipe	A53 Gr. B	Typical	1.02	.627	.627	1.25

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	Standoff Arm	1.5			Lbyy						Lateral
2	OVP1	OVP Mount ...	3									Lateral
3	MP1A	Mount Pipe	4.5									Lateral
4	MP2A	Mount Pipe	4.5									Lateral
5	M8	Face Horizo...	.5									Lateral
6	M10	Face Horizo...	.5									Lateral
7	M4	Face Horizo...	3.042									Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
1	M1	N1	N2			Standoff Arm	Beam	Tube	A500 Gr...	Typical
2	M7	N13A	N14A			RIGID	None	None	RIGID	Typical
3	M9	N17A	N12			RIGID	None	None	RIGID	Typical
4	M10A	N18A	N16			RIGID	None	None	RIGID	Typical
5	M11	N2	N19			RIGID	None	None	RIGID	Typical
6	OVP1	N15	N16A			OVP Mount Pipe	Column	Pipe	A53 Gr. B	Typical
7	MP1A	N13	N14			Mount Pipe	Column	Pipe	A53 Gr. B	Typical
8	MP2A	N17	N18			Mount Pipe	Column	Pipe	A53 Gr. B	Typical
9	M8	N6	N17A			Face Horizontal	Column	Pipe	A36 Gr....	Typical
10	M10	N7	N18A			Face Horizontal	Column	Pipe	A36 Gr....	Typical
11	M4	N7	N6			Face Horizontal	Column	Pipe	A36 Gr....	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes	Default			None
2	M7						Yes	** NA **			None
3	M9						Yes	** NA **			None
4	M10A						Yes	** NA **			None
5	M11						Yes	** NA **			None
6	OVP1						Yes	** NA **			None
7	MP1A						Yes	** NA **			None
8	MP2A						Yes	** NA **			None
9	M8						Yes	** NA **			None
10	M10						Yes	** NA **			None
11	M4						Yes	** NA **			None

Member Point Loads (BLC 1 : Antenna D)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	Y	-43.8	.25
2	MP2A	My	-.029	.25
3	MP2A	Mz	.003	.25
4	MP2A	Y	-43.8	4.25
5	MP2A	My	-.029	4.25
6	MP2A	Mz	.003	4.25
7	MP1A	Y	-43.55	1.25
8	MP1A	My	-.029	1.25
9	MP1A	Mz	.003	1.25

Member Point Loads (BLC 1 : Antenna D) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
10	MP1A	Y	-43.55	3.25
11	MP1A	My	-.029	3.25
12	MP1A	Mz	.003	3.25
13	MP2A	Y	-10.4	.5
14	MP2A	My	.006	.5
15	MP2A	Mz	-.000634	.5
16	MP2A	Y	-10.4	1.5
17	MP2A	My	.006	1.5
18	MP2A	Mz	-.000634	1.5
19	OVP1	Y	-32	1
20	OVP1	My	0	1
21	OVP1	Mz	0	1

Member Point Loads (BLC 2 : Antenna Di)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	Y	-73.644	.25
2	MP2A	My	-.049	.25
3	MP2A	Mz	.005	.25
4	MP2A	Y	-73.644	4.25
5	MP2A	My	-.049	4.25
6	MP2A	Mz	.005	4.25
7	MP1A	Y	-36.378	1.25
8	MP1A	My	-.024	1.25
9	MP1A	Mz	.003	1.25
10	MP1A	Y	-36.378	3.25
11	MP1A	My	-.024	3.25
12	MP1A	Mz	.003	3.25
13	MP2A	Y	-11.004	.5
14	MP2A	My	.006	.5
15	MP2A	Mz	-.000671	.5
16	MP2A	Y	-11.004	1.5
17	MP2A	My	.006	1.5
18	MP2A	Mz	-.000671	1.5
19	OVP1	Y	-77.565	1
20	OVP1	My	0	1
21	OVP1	Mz	0	1

Member Point Loads (BLC 3 : Antenna Wo (0 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	0	.25
2	MP2A	Z	-159.123	.25
3	MP2A	Mx	-.011	.25
4	MP2A	X	0	4.25
5	MP2A	Z	-159.123	4.25
6	MP2A	Mx	-.011	4.25
7	MP1A	X	0	1.25
8	MP1A	Z	-76.1	1.25
9	MP1A	Mx	-.005	1.25
10	MP1A	X	0	3.25
11	MP1A	Z	-76.1	3.25
12	MP1A	Mx	-.005	3.25

Member Point Loads (BLC 3 : Antenna Wo (0 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
13	MP2A	X	0	.5
14	MP2A	Z	-12.021	.5
15	MP2A	Mx	.000733	.5
16	MP2A	X	0	1.5
17	MP2A	Z	-12.021	1.5
18	MP2A	Mx	.000733	1.5
19	OVP1	X	0	1
20	OVP1	Z	-82.238	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 4 : Antenna Wo (30 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	65.149	.25
2	MP2A	Z	-112.841	.25
3	MP2A	Mx	-.051	.25
4	MP2A	X	65.149	4.25
5	MP2A	Z	-112.841	4.25
6	MP2A	Mx	-.051	4.25
7	MP1A	X	30.252	1.25
8	MP1A	Z	-52.397	1.25
9	MP1A	Mx	-.024	1.25
10	MP1A	X	30.252	3.25
11	MP1A	Z	-52.397	3.25
12	MP1A	Mx	-.024	3.25
13	MP2A	X	5.389	.5
14	MP2A	Z	-9.334	.5
15	MP2A	Mx	.004	.5
16	MP2A	X	5.389	1.5
17	MP2A	Z	-9.334	1.5
18	MP2A	Mx	.004	1.5
19	OVP1	X	48.107	1
20	OVP1	Z	-83.323	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 5 : Antenna Wo (60 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	76.349	.25
2	MP2A	Z	-44.08	.25
3	MP2A	Mx	-.054	.25
4	MP2A	X	76.349	4.25
5	MP2A	Z	-44.08	4.25
6	MP2A	Mx	-.054	4.25
7	MP1A	X	32.653	1.25
8	MP1A	Z	-18.852	1.25
9	MP1A	Mx	-.023	1.25
10	MP1A	X	32.653	3.25
11	MP1A	Z	-18.852	3.25
12	MP1A	Mx	-.023	3.25
13	MP2A	X	7.76	.5
14	MP2A	Z	-4.48	.5
15	MP2A	Mx	.005	.5

Member Point Loads (BLC 5 : Antenna Wo (60 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
16	MP2A	X	7.76	1.5
17	MP2A	Z	-4.48	1.5
18	MP2A	Mx	.005	1.5
19	OVP1	X	101.015	1
20	OVP1	Z	-58.321	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 6 : Antenna Wo (90 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	74.849	.25
2	MP2A	Z	0	.25
3	MP2A	Mx	-.05	.25
4	MP2A	X	74.849	4.25
5	MP2A	Z	0	4.25
6	MP2A	Mx	-.05	4.25
7	MP1A	X	30.502	1.25
8	MP1A	Z	0	1.25
9	MP1A	Mx	-.02	1.25
10	MP1A	X	30.502	3.25
11	MP1A	Z	0	3.25
12	MP1A	Mx	-.02	3.25
13	MP2A	X	8.386	.5
14	MP2A	Z	0	.5
15	MP2A	Mx	.005	.5
16	MP2A	X	8.386	1.5
17	MP2A	Z	0	1.5
18	MP2A	Mx	.005	1.5
19	OVP1	X	123.096	1
20	OVP1	Z	0	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 7 : Antenna Wo (120 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	89.784	.25
2	MP2A	Z	51.837	.25
3	MP2A	Mx	-.056	.25
4	MP2A	X	89.784	4.25
5	MP2A	Z	51.837	4.25
6	MP2A	Mx	-.056	4.25
7	MP1A	X	39.922	1.25
8	MP1A	Z	23.049	1.25
9	MP1A	Mx	-.025	1.25
10	MP1A	X	39.922	3.25
11	MP1A	Z	23.049	3.25
12	MP1A	Mx	-.025	3.25
13	MP2A	X	8.339	.5
14	MP2A	Z	4.815	.5
15	MP2A	Mx	.005	.5
16	MP2A	X	8.339	1.5
17	MP2A	Z	4.815	1.5
18	MP2A	Mx	.005	1.5

Member Point Loads (BLC 7 : Antenna Wo (120 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
19	OVP1	X	94.502	1
20	OVP1	Z	54.561	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 8 : Antenna Wo (150 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	72.905	.25
2	MP2A	Z	126.276	.25
3	MP2A	Mx	-.04	.25
4	MP2A	X	72.905	4.25
5	MP2A	Z	126.276	4.25
6	MP2A	Mx	-.04	4.25
7	MP1A	X	34.449	1.25
8	MP1A	Z	59.667	1.25
9	MP1A	Mx	-.019	1.25
10	MP1A	X	34.449	3.25
11	MP1A	Z	59.667	3.25
12	MP1A	Mx	-.019	3.25
13	MP2A	X	5.724	.5
14	MP2A	Z	9.913	.5
15	MP2A	Mx	.003	.5
16	MP2A	X	5.724	1.5
17	MP2A	Z	9.913	1.5
18	MP2A	Mx	.003	1.5
19	OVP1	X	44.346	1
20	OVP1	Z	76.81	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 9 : Antenna Wo (180 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	0	.25
2	MP2A	Z	159.123	.25
3	MP2A	Mx	.011	.25
4	MP2A	X	0	4.25
5	MP2A	Z	159.123	4.25
6	MP2A	Mx	.011	4.25
7	MP1A	X	0	1.25
8	MP1A	Z	76.1	1.25
9	MP1A	Mx	.005	1.25
10	MP1A	X	0	3.25
11	MP1A	Z	76.1	3.25
12	MP1A	Mx	.005	3.25
13	MP2A	X	0	.5
14	MP2A	Z	12.021	.5
15	MP2A	Mx	-.000733	.5
16	MP2A	X	0	1.5
17	MP2A	Z	12.021	1.5
18	MP2A	Mx	-.000733	1.5
19	OVP1	X	0	1
20	OVP1	Z	82.238	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 10 : Antenna Wo (210 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-65.149	.25
2	MP2A	Z	112.841	.25
3	MP2A	Mx	.051	.25
4	MP2A	X	-65.149	4.25
5	MP2A	Z	112.841	4.25
6	MP2A	Mx	.051	4.25
7	MP1A	X	-30.252	1.25
8	MP1A	Z	52.397	1.25
9	MP1A	Mx	.024	1.25
10	MP1A	X	-30.252	3.25
11	MP1A	Z	52.397	3.25
12	MP1A	Mx	.024	3.25
13	MP2A	X	-5.389	.5
14	MP2A	Z	9.334	.5
15	MP2A	Mx	-.004	.5
16	MP2A	X	-5.389	1.5
17	MP2A	Z	9.334	1.5
18	MP2A	Mx	-.004	1.5
19	OVP1	X	-48.107	1
20	OVP1	Z	83.323	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 11 : Antenna Wo (240 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-76.349	.25
2	MP2A	Z	44.08	.25
3	MP2A	Mx	.054	.25
4	MP2A	X	-76.349	4.25
5	MP2A	Z	44.08	4.25
6	MP2A	Mx	.054	4.25
7	MP1A	X	-32.653	1.25
8	MP1A	Z	18.852	1.25
9	MP1A	Mx	.023	1.25
10	MP1A	X	-32.653	3.25
11	MP1A	Z	18.852	3.25
12	MP1A	Mx	.023	3.25
13	MP2A	X	-7.76	.5
14	MP2A	Z	4.48	.5
15	MP2A	Mx	-.005	.5
16	MP2A	X	-7.76	1.5
17	MP2A	Z	4.48	1.5
18	MP2A	Mx	-.005	1.5
19	OVP1	X	-101.015	1
20	OVP1	Z	58.321	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 12 : Antenna Wo (270 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-74.849	.25
2	MP2A	Z	0	.25
3	MP2A	Mx	.05	.25

Member Point Loads (BLC 12 : Antenna Wo (270 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
4	MP2A	X	-74.849	4.25
5	MP2A	Z	0	4.25
6	MP2A	Mx	.05	4.25
7	MP1A	X	-30.502	1.25
8	MP1A	Z	0	1.25
9	MP1A	Mx	.02	1.25
10	MP1A	X	-30.502	3.25
11	MP1A	Z	0	3.25
12	MP1A	Mx	.02	3.25
13	MP2A	X	-8.386	.5
14	MP2A	Z	0	.5
15	MP2A	Mx	-.005	.5
16	MP2A	X	-8.386	1.5
17	MP2A	Z	0	1.5
18	MP2A	Mx	-.005	1.5
19	OVP1	X	-123.096	1
20	OVP1	Z	0	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 13 : Antenna Wo (300 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-89.784	.25
2	MP2A	Z	-51.837	.25
3	MP2A	Mx	.056	.25
4	MP2A	X	-89.784	4.25
5	MP2A	Z	-51.837	4.25
6	MP2A	Mx	.056	4.25
7	MP1A	X	-39.922	1.25
8	MP1A	Z	-23.049	1.25
9	MP1A	Mx	.025	1.25
10	MP1A	X	-39.922	3.25
11	MP1A	Z	-23.049	3.25
12	MP1A	Mx	.025	3.25
13	MP2A	X	-8.339	.5
14	MP2A	Z	-4.815	.5
15	MP2A	Mx	-.005	.5
16	MP2A	X	-8.339	1.5
17	MP2A	Z	-4.815	1.5
18	MP2A	Mx	-.005	1.5
19	OVP1	X	-94.502	1
20	OVP1	Z	-54.561	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 14 : Antenna Wo (330 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-72.905	.25
2	MP2A	Z	-126.276	.25
3	MP2A	Mx	.04	.25
4	MP2A	X	-72.905	4.25
5	MP2A	Z	-126.276	4.25
6	MP2A	Mx	.04	4.25

Member Point Loads (BLC 14 : Antenna Wo (330 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
7	MP1A	X	-34.449	1.25
8	MP1A	Z	-59.667	1.25
9	MP1A	Mx	.019	1.25
10	MP1A	X	-34.449	3.25
11	MP1A	Z	-59.667	3.25
12	MP1A	Mx	.019	3.25
13	MP2A	X	-5.724	.5
14	MP2A	Z	-9.913	.5
15	MP2A	Mx	-.003	.5
16	MP2A	X	-5.724	1.5
17	MP2A	Z	-9.913	1.5
18	MP2A	Mx	-.003	1.5
19	OVP1	X	-44.346	1
20	OVP1	Z	-76.81	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 15 : Antenna Wi (0 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	0	.25
2	MP2A	Z	-32.712	.25
3	MP2A	Mx	-.002	.25
4	MP2A	X	0	4.25
5	MP2A	Z	-32.712	4.25
6	MP2A	Mx	-.002	4.25
7	MP1A	X	0	1.25
8	MP1A	Z	-16.295	1.25
9	MP1A	Mx	-.001	1.25
10	MP1A	X	0	3.25
11	MP1A	Z	-16.295	3.25
12	MP1A	Mx	-.001	3.25
13	MP2A	X	0	.5
14	MP2A	Z	-3.362	.5
15	MP2A	Mx	.000205	.5
16	MP2A	X	0	1.5
17	MP2A	Z	-3.362	1.5
18	MP2A	Mx	.000205	1.5
19	OVP1	X	0	1
20	OVP1	Z	-18.307	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 16 : Antenna Wi (30 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	13.543	.25
2	MP2A	Z	-23.457	.25
3	MP2A	Mx	-.011	.25
4	MP2A	X	13.543	4.25
5	MP2A	Z	-23.457	4.25
6	MP2A	Mx	-.011	4.25
7	MP1A	X	6.575	1.25
8	MP1A	Z	-11.388	1.25
9	MP1A	Mx	-.005	1.25

Member Point Loads (BLC 16 : Antenna Wi (30 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
10	MP1A	X	6.575	3.25
11	MP1A	Z	-11.388	3.25
12	MP1A	Mx	-.005	3.25
13	MP2A	X	1.541	.5
14	MP2A	Z	-2.668	.5
15	MP2A	Mx	.001	.5
16	MP2A	X	1.541	1.5
17	MP2A	Z	-2.668	1.5
18	MP2A	Mx	.001	1.5
19	OVP1	X	10.558	1
20	OVP1	Z	-18.286	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 17 : Antenna Wi (60 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	16.333	.25
2	MP2A	Z	-9.43	.25
3	MP2A	Mx	-.011	.25
4	MP2A	X	16.333	4.25
5	MP2A	Z	-9.43	4.25
6	MP2A	Mx	-.011	4.25
7	MP1A	X	7.406	1.25
8	MP1A	Z	-4.276	1.25
9	MP1A	Mx	-.005	1.25
10	MP1A	X	7.406	3.25
11	MP1A	Z	-4.276	3.25
12	MP1A	Mx	-.005	3.25
13	MP2A	X	2.313	.5
14	MP2A	Z	-1.336	.5
15	MP2A	Mx	.001	.5
16	MP2A	X	2.313	1.5
17	MP2A	Z	-1.336	1.5
18	MP2A	Mx	.001	1.5
19	OVP1	X	21.842	1
20	OVP1	Z	-12.61	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 18 : Antenna Wi (90 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	16.262	.25
2	MP2A	Z	0	.25
3	MP2A	Mx	-.011	.25
4	MP2A	X	16.262	4.25
5	MP2A	Z	0	4.25
6	MP2A	Mx	-.011	4.25
7	MP1A	X	7.099	1.25
8	MP1A	Z	0	1.25
9	MP1A	Mx	-.005	1.25
10	MP1A	X	7.099	3.25
11	MP1A	Z	0	3.25
12	MP1A	Mx	-.005	3.25

Member Point Loads (BLC 18 : Antenna Wi (90 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
13	MP2A	X	2.542	.5
14	MP2A	Z	0	.5
15	MP2A	Mx	.001	.5
16	MP2A	X	2.542	1.5
17	MP2A	Z	0	1.5
18	MP2A	Mx	.001	1.5
19	OVP1	X	26.518	1
20	OVP1	Z	0	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 19 : Antenna Wi (120 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	18.956	.25
2	MP2A	Z	10.944	.25
3	MP2A	Mx	-.012	.25
4	MP2A	X	18.956	4.25
5	MP2A	Z	10.944	4.25
6	MP2A	Mx	-.012	4.25
7	MP1A	X	8.872	1.25
8	MP1A	Z	5.122	1.25
9	MP1A	Mx	-.006	1.25
10	MP1A	X	8.872	3.25
11	MP1A	Z	5.122	3.25
12	MP1A	Mx	-.006	3.25
13	MP2A	X	2.444	.5
14	MP2A	Z	1.411	.5
15	MP2A	Mx	.001	.5
16	MP2A	X	2.444	1.5
17	MP2A	Z	1.411	1.5
18	MP2A	Mx	.001	1.5
19	OVP1	X	20.533	1
20	OVP1	Z	11.855	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 20 : Antenna Wi (150 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	15.057	.25
2	MP2A	Z	26.079	.25
3	MP2A	Mx	-.008	.25
4	MP2A	X	15.057	4.25
5	MP2A	Z	26.079	4.25
6	MP2A	Mx	-.008	4.25
7	MP1A	X	7.421	1.25
8	MP1A	Z	12.854	1.25
9	MP1A	Mx	-.004	1.25
10	MP1A	X	7.421	3.25
11	MP1A	Z	12.854	3.25
12	MP1A	Mx	-.004	3.25
13	MP2A	X	1.616	.5
14	MP2A	Z	2.799	.5
15	MP2A	Mx	.000767	.5

Member Point Loads (BLC 20 : Antenna Wi (150 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
16	MP2A	X	1.616	1.5
17	MP2A	Z	2.799	1.5
18	MP2A	Mx	.000767	1.5
19	OVP1	X	9.802	1
20	OVP1	Z	16.977	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 21 : Antenna Wi (180 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	0	.25
2	MP2A	Z	32.712	.25
3	MP2A	Mx	.002	.25
4	MP2A	X	0	4.25
5	MP2A	Z	32.712	4.25
6	MP2A	Mx	.002	4.25
7	MP1A	X	0	1.25
8	MP1A	Z	16.295	1.25
9	MP1A	Mx	.001	1.25
10	MP1A	X	0	3.25
11	MP1A	Z	16.295	3.25
12	MP1A	Mx	.001	3.25
13	MP2A	X	0	.5
14	MP2A	Z	3.362	.5
15	MP2A	Mx	-.000205	.5
16	MP2A	X	0	1.5
17	MP2A	Z	3.362	1.5
18	MP2A	Mx	-.000205	1.5
19	OVP1	X	0	1
20	OVP1	Z	18.307	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 22 : Antenna Wi (210 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-13.543	.25
2	MP2A	Z	23.457	.25
3	MP2A	Mx	.011	.25
4	MP2A	X	-13.543	4.25
5	MP2A	Z	23.457	4.25
6	MP2A	Mx	.011	4.25
7	MP1A	X	-6.575	1.25
8	MP1A	Z	11.388	1.25
9	MP1A	Mx	.005	1.25
10	MP1A	X	-6.575	3.25
11	MP1A	Z	11.388	3.25
12	MP1A	Mx	.005	3.25
13	MP2A	X	-1.541	.5
14	MP2A	Z	2.668	.5
15	MP2A	Mx	-.001	.5
16	MP2A	X	-1.541	1.5
17	MP2A	Z	2.668	1.5
18	MP2A	Mx	-.001	1.5

Member Point Loads (BLC 22 : Antenna Wi (210 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
19	OVP1	X	-10.558	1
20	OVP1	Z	18.286	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 23 : Antenna Wi (240 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-16.333	.25
2	MP2A	Z	9.43	.25
3	MP2A	Mx	.011	.25
4	MP2A	X	-16.333	4.25
5	MP2A	Z	9.43	4.25
6	MP2A	Mx	.011	4.25
7	MP1A	X	-7.406	1.25
8	MP1A	Z	4.276	1.25
9	MP1A	Mx	.005	1.25
10	MP1A	X	-7.406	3.25
11	MP1A	Z	4.276	3.25
12	MP1A	Mx	.005	3.25
13	MP2A	X	-2.313	.5
14	MP2A	Z	1.336	.5
15	MP2A	Mx	-.001	.5
16	MP2A	X	-2.313	1.5
17	MP2A	Z	1.336	1.5
18	MP2A	Mx	-.001	1.5
19	OVP1	X	-21.842	1
20	OVP1	Z	12.61	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 24 : Antenna Wi (270 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-16.262	.25
2	MP2A	Z	0	.25
3	MP2A	Mx	.011	.25
4	MP2A	X	-16.262	4.25
5	MP2A	Z	0	4.25
6	MP2A	Mx	.011	4.25
7	MP1A	X	-7.099	1.25
8	MP1A	Z	0	1.25
9	MP1A	Mx	.005	1.25
10	MP1A	X	-7.099	3.25
11	MP1A	Z	0	3.25
12	MP1A	Mx	.005	3.25
13	MP2A	X	-2.542	.5
14	MP2A	Z	0	.5
15	MP2A	Mx	-.001	.5
16	MP2A	X	-2.542	1.5
17	MP2A	Z	0	1.5
18	MP2A	Mx	-.001	1.5
19	OVP1	X	-26.518	1
20	OVP1	Z	0	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 25 : Antenna Wi (300 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-18.956	.25
2	MP2A	Z	-10.944	.25
3	MP2A	Mx	.012	.25
4	MP2A	X	-18.956	4.25
5	MP2A	Z	-10.944	4.25
6	MP2A	Mx	.012	4.25
7	MP1A	X	-8.872	1.25
8	MP1A	Z	-5.122	1.25
9	MP1A	Mx	.006	1.25
10	MP1A	X	-8.872	3.25
11	MP1A	Z	-5.122	3.25
12	MP1A	Mx	.006	3.25
13	MP2A	X	-2.444	.5
14	MP2A	Z	-1.411	.5
15	MP2A	Mx	-.001	.5
16	MP2A	X	-2.444	1.5
17	MP2A	Z	-1.411	1.5
18	MP2A	Mx	-.001	1.5
19	OVP1	X	-20.533	1
20	OVP1	Z	-11.855	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 26 : Antenna Wi (330 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-15.057	.25
2	MP2A	Z	-26.079	.25
3	MP2A	Mx	.008	.25
4	MP2A	X	-15.057	4.25
5	MP2A	Z	-26.079	4.25
6	MP2A	Mx	.008	4.25
7	MP1A	X	-7.421	1.25
8	MP1A	Z	-12.854	1.25
9	MP1A	Mx	.004	1.25
10	MP1A	X	-7.421	3.25
11	MP1A	Z	-12.854	3.25
12	MP1A	Mx	.004	3.25
13	MP2A	X	-1.616	.5
14	MP2A	Z	-2.799	.5
15	MP2A	Mx	-.000767	.5
16	MP2A	X	-1.616	1.5
17	MP2A	Z	-2.799	1.5
18	MP2A	Mx	-.000767	1.5
19	OVP1	X	-9.802	1
20	OVP1	Z	-16.977	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 27 : Antenna Wm (0 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	0	.25
2	MP2A	Z	-10.829	.25
3	MP2A	Mx	-.000755	.25

Member Point Loads (BLC 27 : Antenna Wm (0 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
4	MP2A	X	0	4.25
5	MP2A	Z	-10.829	4.25
6	MP2A	Mx	-.000755	4.25
7	MP1A	X	0	1.25
8	MP1A	Z	-5.179	1.25
9	MP1A	Mx	-.000361	1.25
10	MP1A	X	0	3.25
11	MP1A	Z	-5.179	3.25
12	MP1A	Mx	-.000361	3.25
13	MP2A	X	0	.5
14	MP2A	Z	-.818	.5
15	MP2A	Mx	5e-5	.5
16	MP2A	X	0	1.5
17	MP2A	Z	-.818	1.5
18	MP2A	Mx	5e-5	1.5
19	OVP1	X	0	1
20	OVP1	Z	-5.597	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 28 : Antenna Wm (30 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	4.434	.25
2	MP2A	Z	-7.679	.25
3	MP2A	Mx	-.003	.25
4	MP2A	X	4.434	4.25
5	MP2A	Z	-7.679	4.25
6	MP2A	Mx	-.003	4.25
7	MP1A	X	2.059	1.25
8	MP1A	Z	-3.566	1.25
9	MP1A	Mx	-.002	1.25
10	MP1A	X	2.059	3.25
11	MP1A	Z	-3.566	3.25
12	MP1A	Mx	-.002	3.25
13	MP2A	X	.367	.5
14	MP2A	Z	-.635	.5
15	MP2A	Mx	.000252	.5
16	MP2A	X	.367	1.5
17	MP2A	Z	-.635	1.5
18	MP2A	Mx	.000252	1.5
19	OVP1	X	3.274	1
20	OVP1	Z	-5.67	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 29 : Antenna Wm (60 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	5.196	.25
2	MP2A	Z	-3	.25
3	MP2A	Mx	-.004	.25
4	MP2A	X	5.196	4.25
5	MP2A	Z	-3	4.25
6	MP2A	Mx	-.004	4.25

Member Point Loads (BLC 29 : Antenna Wm (60 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
7	MP1A	X	2.222	1.25
8	MP1A	Z	-1.283	1.25
9	MP1A	Mx	-.002	1.25
10	MP1A	X	2.222	3.25
11	MP1A	Z	-1.283	3.25
12	MP1A	Mx	-.002	3.25
13	MP2A	X	.528	.5
14	MP2A	Z	-.305	.5
15	MP2A	Mx	.000325	.5
16	MP2A	X	.528	1.5
17	MP2A	Z	-.305	1.5
18	MP2A	Mx	.000325	1.5
19	OVP1	X	6.874	1
20	OVP1	Z	-3.969	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 30 : Antenna Wm (90 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	5.094	.25
2	MP2A	Z	0	.25
3	MP2A	Mx	-.003	.25
4	MP2A	X	5.094	4.25
5	MP2A	Z	0	4.25
6	MP2A	Mx	-.003	4.25
7	MP1A	X	2.076	1.25
8	MP1A	Z	0	1.25
9	MP1A	Mx	-.001	1.25
10	MP1A	X	2.076	3.25
11	MP1A	Z	0	3.25
12	MP1A	Mx	-.001	3.25
13	MP2A	X	.571	.5
14	MP2A	Z	0	.5
15	MP2A	Mx	.000331	.5
16	MP2A	X	.571	1.5
17	MP2A	Z	0	1.5
18	MP2A	Mx	.000331	1.5
19	OVP1	X	8.377	1
20	OVP1	Z	0	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 31 : Antenna Wm (120 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	6.11	.25
2	MP2A	Z	3.528	.25
3	MP2A	Mx	-.004	.25
4	MP2A	X	6.11	4.25
5	MP2A	Z	3.528	4.25
6	MP2A	Mx	-.004	4.25
7	MP1A	X	2.717	1.25
8	MP1A	Z	1.569	1.25
9	MP1A	Mx	-.002	1.25

Member Point Loads (BLC 31 : Antenna Wm (120 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
10	MP1A	X	2.717	3.25
11	MP1A	Z	1.569	3.25
12	MP1A	Mx	-.002	3.25
13	MP2A	X	.568	.5
14	MP2A	Z	.328	.5
15	MP2A	Mx	.00031	.5
16	MP2A	X	.568	1.5
17	MP2A	Z	.328	1.5
18	MP2A	Mx	.00031	1.5
19	OVP1	X	6.431	1
20	OVP1	Z	3.713	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 32 : Antenna Wm (150 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	4.961	.25
2	MP2A	Z	8.593	.25
3	MP2A	Mx	-.003	.25
4	MP2A	X	4.961	4.25
5	MP2A	Z	8.593	4.25
6	MP2A	Mx	-.003	4.25
7	MP1A	X	2.344	1.25
8	MP1A	Z	4.06	1.25
9	MP1A	Mx	-.001	1.25
10	MP1A	X	2.344	3.25
11	MP1A	Z	4.06	3.25
12	MP1A	Mx	-.001	3.25
13	MP2A	X	.39	.5
14	MP2A	Z	.675	.5
15	MP2A	Mx	.000185	.5
16	MP2A	X	.39	1.5
17	MP2A	Z	.675	1.5
18	MP2A	Mx	.000185	1.5
19	OVP1	X	3.018	1
20	OVP1	Z	5.227	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 33 : Antenna Wm (180 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	0	.25
2	MP2A	Z	10.829	.25
3	MP2A	Mx	.000755	.25
4	MP2A	X	0	4.25
5	MP2A	Z	10.829	4.25
6	MP2A	Mx	.000755	4.25
7	MP1A	X	0	1.25
8	MP1A	Z	5.179	1.25
9	MP1A	Mx	.000361	1.25
10	MP1A	X	0	3.25
11	MP1A	Z	5.179	3.25
12	MP1A	Mx	.000361	3.25

Member Point Loads (BLC 33 : Antenna Wm (180 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
13	MP2A	X	0	.5
14	MP2A	Z	.818	.5
15	MP2A	Mx	-5e-5	.5
16	MP2A	X	0	1.5
17	MP2A	Z	.818	1.5
18	MP2A	Mx	-5e-5	1.5
19	OVP1	X	0	1
20	OVP1	Z	5.597	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 34 : Antenna Wm (210 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-4.434	.25
2	MP2A	Z	7.679	.25
3	MP2A	Mx	.003	.25
4	MP2A	X	-4.434	4.25
5	MP2A	Z	7.679	4.25
6	MP2A	Mx	.003	4.25
7	MP1A	X	-2.059	1.25
8	MP1A	Z	3.566	1.25
9	MP1A	Mx	.002	1.25
10	MP1A	X	-2.059	3.25
11	MP1A	Z	3.566	3.25
12	MP1A	Mx	.002	3.25
13	MP2A	X	-.367	.5
14	MP2A	Z	.635	.5
15	MP2A	Mx	-.000252	.5
16	MP2A	X	-.367	1.5
17	MP2A	Z	.635	1.5
18	MP2A	Mx	-.000252	1.5
19	OVP1	X	-3.274	1
20	OVP1	Z	5.67	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 35 : Antenna Wm (240 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-5.196	.25
2	MP2A	Z	3	.25
3	MP2A	Mx	.004	.25
4	MP2A	X	-5.196	4.25
5	MP2A	Z	3	4.25
6	MP2A	Mx	.004	4.25
7	MP1A	X	-2.222	1.25
8	MP1A	Z	1.283	1.25
9	MP1A	Mx	.002	1.25
10	MP1A	X	-2.222	3.25
11	MP1A	Z	1.283	3.25
12	MP1A	Mx	.002	3.25
13	MP2A	X	-.528	.5
14	MP2A	Z	.305	.5
15	MP2A	Mx	-.000325	.5

Member Point Loads (BLC 35 : Antenna Wm (240 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
16	MP2A	X	-.528	1.5
17	MP2A	Z	.305	1.5
18	MP2A	Mx	-.000325	1.5
19	OVP1	X	-6.874	1
20	OVP1	Z	3.969	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 36 : Antenna Wm (270 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-5.094	.25
2	MP2A	Z	0	.25
3	MP2A	Mx	.003	.25
4	MP2A	X	-5.094	4.25
5	MP2A	Z	0	4.25
6	MP2A	Mx	.003	4.25
7	MP1A	X	-2.076	1.25
8	MP1A	Z	0	1.25
9	MP1A	Mx	.001	1.25
10	MP1A	X	-2.076	3.25
11	MP1A	Z	0	3.25
12	MP1A	Mx	.001	3.25
13	MP2A	X	-.571	.5
14	MP2A	Z	0	.5
15	MP2A	Mx	-.000331	.5
16	MP2A	X	-.571	1.5
17	MP2A	Z	0	1.5
18	MP2A	Mx	-.000331	1.5
19	OVP1	X	-8.377	1
20	OVP1	Z	0	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 37 : Antenna Wm (300 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-6.11	.25
2	MP2A	Z	-3.528	.25
3	MP2A	Mx	.004	.25
4	MP2A	X	-6.11	4.25
5	MP2A	Z	-3.528	4.25
6	MP2A	Mx	.004	4.25
7	MP1A	X	-2.717	1.25
8	MP1A	Z	-1.569	1.25
9	MP1A	Mx	.002	1.25
10	MP1A	X	-2.717	3.25
11	MP1A	Z	-1.569	3.25
12	MP1A	Mx	.002	3.25
13	MP2A	X	-.568	.5
14	MP2A	Z	-.328	.5
15	MP2A	Mx	-.00031	.5
16	MP2A	X	-.568	1.5
17	MP2A	Z	-.328	1.5
18	MP2A	Mx	-.00031	1.5

Member Point Loads (BLC 37 : Antenna Wm (300 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
19	OVP1	X	-6.431	1
20	OVP1	Z	-3.713	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 38 : Antenna Wm (330 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-4.961	.25
2	MP2A	Z	-8.593	.25
3	MP2A	Mx	.003	.25
4	MP2A	X	-4.961	4.25
5	MP2A	Z	-8.593	4.25
6	MP2A	Mx	.003	4.25
7	MP1A	X	-2.344	1.25
8	MP1A	Z	-4.06	1.25
9	MP1A	Mx	.001	1.25
10	MP1A	X	-2.344	3.25
11	MP1A	Z	-4.06	3.25
12	MP1A	Mx	.001	3.25
13	MP2A	X	-.39	.5
14	MP2A	Z	-.675	.5
15	MP2A	Mx	-.000185	.5
16	MP2A	X	-.39	1.5
17	MP2A	Z	-.675	1.5
18	MP2A	Mx	-.000185	1.5
19	OVP1	X	-3.018	1
20	OVP1	Z	-5.227	1
21	OVP1	Mx	0	1

Member Point Loads (BLC 77 : Lm1)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M4	Y	-500	%100

Member Point Loads (BLC 78 : Lm2)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M4	Y	-500	0

Member Point Loads (BLC 79 : Lv1)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M4	Y	-250	%50

Member Point Loads (BLC 80 : Lv2)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M4	Y	-250	%100

Member Point Loads (BLC 81 : Antenna Ev)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	Y	-2.037	.25
2	MP2A	My	-.001	.25
3	MP2A	Mz	.000142	.25

Member Point Loads (BLC 81 : Antenna Ev) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
4	MP2A	Y	-2.037	4.25
5	MP2A	My	-.001	4.25
6	MP2A	Mz	.000142	4.25
7	MP1A	Y	-2.025	1.25
8	MP1A	My	-.001	1.25
9	MP1A	Mz	.000141	1.25
10	MP1A	Y	-2.025	3.25
11	MP1A	My	-.001	3.25
12	MP1A	Mz	.000141	3.25
13	MP2A	Y	-.484	.5
14	MP2A	My	.000281	.5
15	MP2A	Mz	-2.9e-5	.5
16	MP2A	Y	-.484	1.5
17	MP2A	My	.000281	1.5
18	MP2A	Mz	-2.9e-5	1.5
19	OVP1	Y	-1.488	1
20	OVP1	My	0	1
21	OVP1	Mz	0	1

Member Point Loads (BLC 82 : Antenna Eh (0 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	Z	-5.092	.25
2	MP2A	Mx	-.000355	.25
3	MP2A	Z	-5.092	4.25
4	MP2A	Mx	-.000355	4.25
5	MP1A	Z	-5.063	1.25
6	MP1A	Mx	-.000353	1.25
7	MP1A	Z	-5.063	3.25
8	MP1A	Mx	-.000353	3.25
9	MP2A	Z	-1.209	.5
10	MP2A	Mx	7.4e-5	.5
11	MP2A	Z	-1.209	1.5
12	MP2A	Mx	7.4e-5	1.5
13	OVP1	Z	-3.721	1
14	OVP1	Mx	0	1

Member Point Loads (BLC 83 : Antenna Eh (90 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	5.092	.25
2	MP2A	Mx	-.003	.25
3	MP2A	X	5.092	4.25
4	MP2A	Mx	-.003	4.25
5	MP1A	X	5.063	1.25
6	MP1A	Mx	-.003	1.25
7	MP1A	X	5.063	3.25
8	MP1A	Mx	-.003	3.25
9	MP2A	X	1.209	.5
10	MP2A	Mx	.000701	.5
11	MP2A	X	1.209	1.5
12	MP2A	Mx	.000701	1.5
13	OVP1	X	3.721	1

Member Point Loads (BLC 83 : Antenna Eh (90 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
14	OVP1	Mx	0	1

Member Distributed Loads (BLC 40 : Structure Di)

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-9.819	-9.819	0	%100
2	OVP1	Y	-5.103	-5.103	0	%100
3	MP1A	Y	-5.103	-5.103	0	%100
4	MP2A	Y	-5.103	-5.103	0	%100
5	M8	Y	-10.342	-10.342	0	%100
6	M10	Y	-10.342	-10.342	0	%100
7	M4	Y	-10.342	-10.342	0	%100

Member Distributed Loads (BLC 41 : Structure Wo (0 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	OVP1	X	0	0	0	%100
4	OVP1	Z	-6.331	-6.331	0	%100
5	MP1A	X	0	0	0	%100
6	MP1A	Z	-7.418	-7.418	0	%100
7	MP2A	X	0	0	0	%100
8	MP2A	Z	-7.418	-7.418	0	%100
9	M8	X	0	0	0	%100
10	M8	Z	0	0	0	%100
11	M10	X	0	0	0	%100
12	M10	Z	0	0	0	%100
13	M4	X	0	0	0	%100
14	M4	Z	-22.156	-22.156	0	%100

Member Distributed Loads (BLC 42 : Structure Wo (30 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	1.185	1.185	0	%100
2	M1	Z	-2.052	-2.052	0	%100
3	OVP1	X	3.166	3.166	0	%100
4	OVP1	Z	-5.483	-5.483	0	%100
5	MP1A	X	3.709	3.709	0	%100
6	MP1A	Z	-6.424	-6.424	0	%100
7	MP2A	X	3.709	3.709	0	%100
8	MP2A	Z	-6.424	-6.424	0	%100
9	M8	X	2.445	2.445	0	%100
10	M8	Z	-4.235	-4.235	0	%100
11	M10	X	2.445	2.445	0	%100
12	M10	Z	-4.235	-4.235	0	%100
13	M4	X	8.308	8.308	0	%100
14	M4	Z	-14.391	-14.391	0	%100

Member Distributed Loads (BLC 43 : Structure Wo (60 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	6.156	6.156	0	%100

Member Distributed Loads (BLC 43 : Structure Wo (60 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
2	M1	Z	-3.554	-3.554	0	%100
3	OVP1	X	5.483	5.483	0	%100
4	OVP1	Z	-3.166	-3.166	0	%100
5	MP1A	X	6.424	6.424	0	%100
6	MP1A	Z	-3.709	-3.709	0	%100
7	MP2A	X	6.424	6.424	0	%100
8	MP2A	Z	-3.709	-3.709	0	%100
9	M8	X	12.704	12.704	0	%100
10	M8	Z	-7.335	-7.335	0	%100
11	M10	X	12.704	12.704	0	%100
12	M10	Z	-7.335	-7.335	0	%100
13	M4	X	4.797	4.797	0	%100
14	M4	Z	-2.769	-2.769	0	%100

Member Distributed Loads (BLC 44 : Structure Wo (90 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	9.478	9.478	0	%100
2	M1	Z	0	0	0	%100
3	OVP1	X	6.331	6.331	0	%100
4	OVP1	Z	0	0	0	%100
5	MP1A	X	7.418	7.418	0	%100
6	MP1A	Z	0	0	0	%100
7	MP2A	X	7.418	7.418	0	%100
8	MP2A	Z	0	0	0	%100
9	M8	X	19.56	19.56	0	%100
10	M8	Z	0	0	0	%100
11	M10	X	19.56	19.56	0	%100
12	M10	Z	0	0	0	%100
13	M4	X	0	0	0	%100
14	M4	Z	0	0	0	%100

Member Distributed Loads (BLC 45 : Structure Wo (120 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	6.156	6.156	0	%100
2	M1	Z	3.554	3.554	0	%100
3	OVP1	X	5.483	5.483	0	%100
4	OVP1	Z	3.166	3.166	0	%100
5	MP1A	X	6.424	6.424	0	%100
6	MP1A	Z	3.709	3.709	0	%100
7	MP2A	X	6.424	6.424	0	%100
8	MP2A	Z	3.709	3.709	0	%100
9	M8	X	12.704	12.704	0	%100
10	M8	Z	7.335	7.335	0	%100
11	M10	X	12.704	12.704	0	%100
12	M10	Z	7.335	7.335	0	%100
13	M4	X	4.797	4.797	0	%100
14	M4	Z	2.769	2.769	0	%100

Member Distributed Loads (BLC 46 : Structure Wo (150 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]

Member Distributed Loads (BLC 46 : Structure Wo (150 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	1.185	1.185	0	%100
2	M1	Z	2.052	2.052	0	%100
3	OVP1	X	3.166	3.166	0	%100
4	OVP1	Z	5.483	5.483	0	%100
5	MP1A	X	3.709	3.709	0	%100
6	MP1A	Z	6.424	6.424	0	%100
7	MP2A	X	3.709	3.709	0	%100
8	MP2A	Z	6.424	6.424	0	%100
9	M8	X	2.445	2.445	0	%100
10	M8	Z	4.235	4.235	0	%100
11	M10	X	2.445	2.445	0	%100
12	M10	Z	4.235	4.235	0	%100
13	M4	X	8.308	8.308	0	%100
14	M4	Z	14.391	14.391	0	%100

Member Distributed Loads (BLC 47 : Structure Wo (180 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	OVP1	X	0	0	0	%100
4	OVP1	Z	6.331	6.331	0	%100
5	MP1A	X	0	0	0	%100
6	MP1A	Z	7.418	7.418	0	%100
7	MP2A	X	0	0	0	%100
8	MP2A	Z	7.418	7.418	0	%100
9	M8	X	0	0	0	%100
10	M8	Z	0	0	0	%100
11	M10	X	0	0	0	%100
12	M10	Z	0	0	0	%100
13	M4	X	0	0	0	%100
14	M4	Z	22.156	22.156	0	%100

Member Distributed Loads (BLC 48 : Structure Wo (210 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-1.185	-1.185	0	%100
2	M1	Z	2.052	2.052	0	%100
3	OVP1	X	-3.166	-3.166	0	%100
4	OVP1	Z	5.483	5.483	0	%100
5	MP1A	X	-3.709	-3.709	0	%100
6	MP1A	Z	6.424	6.424	0	%100
7	MP2A	X	-3.709	-3.709	0	%100
8	MP2A	Z	6.424	6.424	0	%100
9	M8	X	-2.445	-2.445	0	%100
10	M8	Z	4.235	4.235	0	%100
11	M10	X	-2.445	-2.445	0	%100
12	M10	Z	4.235	4.235	0	%100
13	M4	X	-8.308	-8.308	0	%100
14	M4	Z	14.391	14.391	0	%100

Member Distributed Loads (BLC 49 : Structure Wo (240 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]

Member Distributed Loads (BLC 49 : Structure Wo (240 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-6.156	-6.156	0	%100
2	M1	Z	3.554	3.554	0	%100
3	OVP1	X	-5.483	-5.483	0	%100
4	OVP1	Z	3.166	3.166	0	%100
5	MP1A	X	-6.424	-6.424	0	%100
6	MP1A	Z	3.709	3.709	0	%100
7	MP2A	X	-6.424	-6.424	0	%100
8	MP2A	Z	3.709	3.709	0	%100
9	M8	X	-12.704	-12.704	0	%100
10	M8	Z	7.335	7.335	0	%100
11	M10	X	-12.704	-12.704	0	%100
12	M10	Z	7.335	7.335	0	%100
13	M4	X	-4.797	-4.797	0	%100
14	M4	Z	2.769	2.769	0	%100

Member Distributed Loads (BLC 50 : Structure Wo (270 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-9.478	-9.478	0	%100
2	M1	Z	0	0	0	%100
3	OVP1	X	-6.331	-6.331	0	%100
4	OVP1	Z	0	0	0	%100
5	MP1A	X	-7.418	-7.418	0	%100
6	MP1A	Z	0	0	0	%100
7	MP2A	X	-7.418	-7.418	0	%100
8	MP2A	Z	0	0	0	%100
9	M8	X	-19.56	-19.56	0	%100
10	M8	Z	0	0	0	%100
11	M10	X	-19.56	-19.56	0	%100
12	M10	Z	0	0	0	%100
13	M4	X	0	0	0	%100
14	M4	Z	0	0	0	%100

Member Distributed Loads (BLC 51 : Structure Wo (300 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-6.156	-6.156	0	%100
2	M1	Z	-3.554	-3.554	0	%100
3	OVP1	X	-5.483	-5.483	0	%100
4	OVP1	Z	-3.166	-3.166	0	%100
5	MP1A	X	-6.424	-6.424	0	%100
6	MP1A	Z	-3.709	-3.709	0	%100
7	MP2A	X	-6.424	-6.424	0	%100
8	MP2A	Z	-3.709	-3.709	0	%100
9	M8	X	-12.704	-12.704	0	%100
10	M8	Z	-7.335	-7.335	0	%100
11	M10	X	-12.704	-12.704	0	%100
12	M10	Z	-7.335	-7.335	0	%100
13	M4	X	-4.797	-4.797	0	%100
14	M4	Z	-2.769	-2.769	0	%100

Member Distributed Loads (BLC 52 : Structure Wo (330 Deg))

Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]

Member Distributed Loads (BLC 52 : Structure Wo (330 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-1.185	-1.185	0	%100
2	M1	Z	-2.052	-2.052	0	%100
3	OVP1	X	-3.166	-3.166	0	%100
4	OVP1	Z	-5.483	-5.483	0	%100
5	MP1A	X	-3.709	-3.709	0	%100
6	MP1A	Z	-6.424	-6.424	0	%100
7	MP2A	X	-3.709	-3.709	0	%100
8	MP2A	Z	-6.424	-6.424	0	%100
9	M8	X	-2.445	-2.445	0	%100
10	M8	Z	-4.235	-4.235	0	%100
11	M10	X	-2.445	-2.445	0	%100
12	M10	Z	-4.235	-4.235	0	%100
13	M4	X	-8.308	-8.308	0	%100
14	M4	Z	-14.391	-14.391	0	%100

Member Distributed Loads (BLC 53 : Structure Wi (0 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	OVP1	X	0	0	0	%100
4	OVP1	Z	-2.386	-2.386	0	%100
5	MP1A	X	0	0	0	%100
6	MP1A	Z	-2.797	-2.797	0	%100
7	MP2A	X	0	0	0	%100
8	MP2A	Z	-2.797	-2.797	0	%100
9	M8	X	0	0	0	%100
10	M8	Z	0	0	0	%100
11	M10	X	0	0	0	%100
12	M10	Z	0	0	0	%100
13	M4	X	0	0	0	%100
14	M4	Z	-5.383	-5.383	0	%100

Member Distributed Loads (BLC 54 : Structure Wi (30 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.347	.347	0	%100
2	M1	Z	-.601	-.601	0	%100
3	OVP1	X	1.193	1.193	0	%100
4	OVP1	Z	-2.067	-2.067	0	%100
5	MP1A	X	1.399	1.399	0	%100
6	MP1A	Z	-2.422	-2.422	0	%100
7	MP2A	X	1.399	1.399	0	%100
8	MP2A	Z	-2.422	-2.422	0	%100
9	M8	X	.568	.568	0	%100
10	M8	Z	-.984	-.984	0	%100
11	M10	X	.568	.568	0	%100
12	M10	Z	-.984	-.984	0	%100
13	M4	X	2.019	2.019	0	%100
14	M4	Z	-3.497	-3.497	0	%100

Member Distributed Loads (BLC 55 : Structure Wi (60 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]

Member Distributed Loads (BLC 55 : Structure Wi (60 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	1.803	1.803	0	%100
2	M1	Z	-1.041	-1.041	0	%100
3	OVP1	X	2.067	2.067	0	%100
4	OVP1	Z	-1.193	-1.193	0	%100
5	MP1A	X	2.422	2.422	0	%100
6	MP1A	Z	-1.399	-1.399	0	%100
7	MP2A	X	2.422	2.422	0	%100
8	MP2A	Z	-1.399	-1.399	0	%100
9	M8	X	2.952	2.952	0	%100
10	M8	Z	-1.704	-1.704	0	%100
11	M10	X	2.952	2.952	0	%100
12	M10	Z	-1.704	-1.704	0	%100
13	M4	X	1.166	1.166	0	%100
14	M4	Z	-.673	-.673	0	%100

Member Distributed Loads (BLC 56 : Structure Wi (90 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	2.776	2.776	0	%100
2	M1	Z	0	0	0	%100
3	OVP1	X	2.386	2.386	0	%100
4	OVP1	Z	0	0	0	%100
5	MP1A	X	2.797	2.797	0	%100
6	MP1A	Z	0	0	0	%100
7	MP2A	X	2.797	2.797	0	%100
8	MP2A	Z	0	0	0	%100
9	M8	X	4.544	4.544	0	%100
10	M8	Z	0	0	0	%100
11	M10	X	4.544	4.544	0	%100
12	M10	Z	0	0	0	%100
13	M4	X	0	0	0	%100
14	M4	Z	0	0	0	%100

Member Distributed Loads (BLC 57 : Structure Wi (120 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	1.803	1.803	0	%100
2	M1	Z	1.041	1.041	0	%100
3	OVP1	X	2.067	2.067	0	%100
4	OVP1	Z	1.193	1.193	0	%100
5	MP1A	X	2.422	2.422	0	%100
6	MP1A	Z	1.399	1.399	0	%100
7	MP2A	X	2.422	2.422	0	%100
8	MP2A	Z	1.399	1.399	0	%100
9	M8	X	2.952	2.952	0	%100
10	M8	Z	1.704	1.704	0	%100
11	M10	X	2.952	2.952	0	%100
12	M10	Z	1.704	1.704	0	%100
13	M4	X	1.166	1.166	0	%100
14	M4	Z	.673	.673	0	%100

Member Distributed Loads (BLC 58 : Structure Wi (150 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]

Member Distributed Loads (BLC 58 : Structure Wi (150 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.347	.347	0	%100
2	M1	Z	.601	.601	0	%100
3	OVP1	X	1.193	1.193	0	%100
4	OVP1	Z	2.067	2.067	0	%100
5	MP1A	X	1.399	1.399	0	%100
6	MP1A	Z	2.422	2.422	0	%100
7	MP2A	X	1.399	1.399	0	%100
8	MP2A	Z	2.422	2.422	0	%100
9	M8	X	.568	.568	0	%100
10	M8	Z	.984	.984	0	%100
11	M10	X	.568	.568	0	%100
12	M10	Z	.984	.984	0	%100
13	M4	X	2.019	2.019	0	%100
14	M4	Z	3.497	3.497	0	%100

Member Distributed Loads (BLC 59 : Structure Wi (180 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	OVP1	X	0	0	0	%100
4	OVP1	Z	2.386	2.386	0	%100
5	MP1A	X	0	0	0	%100
6	MP1A	Z	2.797	2.797	0	%100
7	MP2A	X	0	0	0	%100
8	MP2A	Z	2.797	2.797	0	%100
9	M8	X	0	0	0	%100
10	M8	Z	0	0	0	%100
11	M10	X	0	0	0	%100
12	M10	Z	0	0	0	%100
13	M4	X	0	0	0	%100
14	M4	Z	5.383	5.383	0	%100

Member Distributed Loads (BLC 60 : Structure Wi (210 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.347	-.347	0	%100
2	M1	Z	.601	.601	0	%100
3	OVP1	X	-1.193	-1.193	0	%100
4	OVP1	Z	2.067	2.067	0	%100
5	MP1A	X	-1.399	-1.399	0	%100
6	MP1A	Z	2.422	2.422	0	%100
7	MP2A	X	-1.399	-1.399	0	%100
8	MP2A	Z	2.422	2.422	0	%100
9	M8	X	-.568	-.568	0	%100
10	M8	Z	.984	.984	0	%100
11	M10	X	-.568	-.568	0	%100
12	M10	Z	.984	.984	0	%100
13	M4	X	-2.019	-2.019	0	%100
14	M4	Z	3.497	3.497	0	%100

Member Distributed Loads (BLC 61 : Structure Wi (240 Deg))

Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]

Member Distributed Loads (BLC 61 : Structure Wi (240 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-1.803	-1.803	0	%100
2	M1	Z	1.041	1.041	0	%100
3	OVP1	X	-2.067	-2.067	0	%100
4	OVP1	Z	1.193	1.193	0	%100
5	MP1A	X	-2.422	-2.422	0	%100
6	MP1A	Z	1.399	1.399	0	%100
7	MP2A	X	-2.422	-2.422	0	%100
8	MP2A	Z	1.399	1.399	0	%100
9	M8	X	-2.952	-2.952	0	%100
10	M8	Z	1.704	1.704	0	%100
11	M10	X	-2.952	-2.952	0	%100
12	M10	Z	1.704	1.704	0	%100
13	M4	X	-1.166	-1.166	0	%100
14	M4	Z	.673	.673	0	%100

Member Distributed Loads (BLC 62 : Structure Wi (270 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-2.776	-2.776	0	%100
2	M1	Z	0	0	0	%100
3	OVP1	X	-2.386	-2.386	0	%100
4	OVP1	Z	0	0	0	%100
5	MP1A	X	-2.797	-2.797	0	%100
6	MP1A	Z	0	0	0	%100
7	MP2A	X	-2.797	-2.797	0	%100
8	MP2A	Z	0	0	0	%100
9	M8	X	-4.544	-4.544	0	%100
10	M8	Z	0	0	0	%100
11	M10	X	-4.544	-4.544	0	%100
12	M10	Z	0	0	0	%100
13	M4	X	0	0	0	%100
14	M4	Z	0	0	0	%100

Member Distributed Loads (BLC 63 : Structure Wi (300 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-1.803	-1.803	0	%100
2	M1	Z	-1.041	-1.041	0	%100
3	OVP1	X	-2.067	-2.067	0	%100
4	OVP1	Z	-1.193	-1.193	0	%100
5	MP1A	X	-2.422	-2.422	0	%100
6	MP1A	Z	-1.399	-1.399	0	%100
7	MP2A	X	-2.422	-2.422	0	%100
8	MP2A	Z	-1.399	-1.399	0	%100
9	M8	X	-2.952	-2.952	0	%100
10	M8	Z	-1.704	-1.704	0	%100
11	M10	X	-2.952	-2.952	0	%100
12	M10	Z	-1.704	-1.704	0	%100
13	M4	X	-1.166	-1.166	0	%100
14	M4	Z	-.673	-.673	0	%100

Member Distributed Loads (BLC 64 : Structure Wi (330 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]

Member Distributed Loads (BLC 64 : Structure Wi (330 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.347	-.347	0	%100
2	M1	Z	-.601	-.601	0	%100
3	OVP1	X	-1.193	-1.193	0	%100
4	OVP1	Z	-2.067	-2.067	0	%100
5	MP1A	X	-1.399	-1.399	0	%100
6	MP1A	Z	-2.422	-2.422	0	%100
7	MP2A	X	-1.399	-1.399	0	%100
8	MP2A	Z	-2.422	-2.422	0	%100
9	M8	X	-.568	-.568	0	%100
10	M8	Z	-.984	-.984	0	%100
11	M10	X	-.568	-.568	0	%100
12	M10	Z	-.984	-.984	0	%100
13	M4	X	-2.019	-2.019	0	%100
14	M4	Z	-3.497	-3.497	0	%100

Member Distributed Loads (BLC 65 : Structure Wm (0 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	OVP1	X	0	0	0	%100
4	OVP1	Z	-.431	-.431	0	%100
5	MP1A	X	0	0	0	%100
6	MP1A	Z	-.505	-.505	0	%100
7	MP2A	X	0	0	0	%100
8	MP2A	Z	-.505	-.505	0	%100
9	M8	X	0	0	0	%100
10	M8	Z	0	0	0	%100
11	M10	X	0	0	0	%100
12	M10	Z	0	0	0	%100
13	M4	X	0	0	0	%100
14	M4	Z	-1.508	-1.508	0	%100

Member Distributed Loads (BLC 66 : Structure Wm (30 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.081	.081	0	%100
2	M1	Z	-.14	-.14	0	%100
3	OVP1	X	.215	.215	0	%100
4	OVP1	Z	-.373	-.373	0	%100
5	MP1A	X	.252	.252	0	%100
6	MP1A	Z	-.437	-.437	0	%100
7	MP2A	X	.252	.252	0	%100
8	MP2A	Z	-.437	-.437	0	%100
9	M8	X	.166	.166	0	%100
10	M8	Z	-.288	-.288	0	%100
11	M10	X	.166	.166	0	%100
12	M10	Z	-.288	-.288	0	%100
13	M4	X	.565	.565	0	%100
14	M4	Z	-.979	-.979	0	%100

Member Distributed Loads (BLC 67 : Structure Wm (60 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]

Member Distributed Loads (BLC 67 : Structure Wm (60 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.419	.419	0	%100
2	M1	Z	-.242	-.242	0	%100
3	OVP1	X	.373	.373	0	%100
4	OVP1	Z	-.215	-.215	0	%100
5	MP1A	X	.437	.437	0	%100
6	MP1A	Z	-.252	-.252	0	%100
7	MP2A	X	.437	.437	0	%100
8	MP2A	Z	-.252	-.252	0	%100
9	M8	X	.865	.865	0	%100
10	M8	Z	-.499	-.499	0	%100
11	M10	X	.865	.865	0	%100
12	M10	Z	-.499	-.499	0	%100
13	M4	X	.326	.326	0	%100
14	M4	Z	-.188	-.188	0	%100

Member Distributed Loads (BLC 68 : Structure Wm (90 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.645	.645	0	%100
2	M1	Z	0	0	0	%100
3	OVP1	X	.431	.431	0	%100
4	OVP1	Z	0	0	0	%100
5	MP1A	X	.505	.505	0	%100
6	MP1A	Z	0	0	0	%100
7	MP2A	X	.505	.505	0	%100
8	MP2A	Z	0	0	0	%100
9	M8	X	1.331	1.331	0	%100
10	M8	Z	0	0	0	%100
11	M10	X	1.331	1.331	0	%100
12	M10	Z	0	0	0	%100
13	M4	X	0	0	0	%100
14	M4	Z	0	0	0	%100

Member Distributed Loads (BLC 69 : Structure Wm (120 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.419	.419	0	%100
2	M1	Z	.242	.242	0	%100
3	OVP1	X	.373	.373	0	%100
4	OVP1	Z	.215	.215	0	%100
5	MP1A	X	.437	.437	0	%100
6	MP1A	Z	.252	.252	0	%100
7	MP2A	X	.437	.437	0	%100
8	MP2A	Z	.252	.252	0	%100
9	M8	X	.865	.865	0	%100
10	M8	Z	.499	.499	0	%100
11	M10	X	.865	.865	0	%100
12	M10	Z	.499	.499	0	%100
13	M4	X	.326	.326	0	%100
14	M4	Z	.188	.188	0	%100

Member Distributed Loads (BLC 70 : Structure Wm (150 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]

Member Distributed Loads (BLC 70 : Structure Wm (150 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.081	.081	0	%100
2	M1	Z	.14	.14	0	%100
3	OVP1	X	.215	.215	0	%100
4	OVP1	Z	.373	.373	0	%100
5	MP1A	X	.252	.252	0	%100
6	MP1A	Z	.437	.437	0	%100
7	MP2A	X	.252	.252	0	%100
8	MP2A	Z	.437	.437	0	%100
9	M8	X	.166	.166	0	%100
10	M8	Z	.288	.288	0	%100
11	M10	X	.166	.166	0	%100
12	M10	Z	.288	.288	0	%100
13	M4	X	.565	.565	0	%100
14	M4	Z	.979	.979	0	%100

Member Distributed Loads (BLC 71 : Structure Wm (180 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	OVP1	X	0	0	0	%100
4	OVP1	Z	.431	.431	0	%100
5	MP1A	X	0	0	0	%100
6	MP1A	Z	.505	.505	0	%100
7	MP2A	X	0	0	0	%100
8	MP2A	Z	.505	.505	0	%100
9	M8	X	0	0	0	%100
10	M8	Z	0	0	0	%100
11	M10	X	0	0	0	%100
12	M10	Z	0	0	0	%100
13	M4	X	0	0	0	%100
14	M4	Z	1.508	1.508	0	%100

Member Distributed Loads (BLC 72 : Structure Wm (210 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.081	-.081	0	%100
2	M1	Z	.14	.14	0	%100
3	OVP1	X	-.215	-.215	0	%100
4	OVP1	Z	.373	.373	0	%100
5	MP1A	X	-.252	-.252	0	%100
6	MP1A	Z	.437	.437	0	%100
7	MP2A	X	-.252	-.252	0	%100
8	MP2A	Z	.437	.437	0	%100
9	M8	X	-.166	-.166	0	%100
10	M8	Z	.288	.288	0	%100
11	M10	X	-.166	-.166	0	%100
12	M10	Z	.288	.288	0	%100
13	M4	X	-.565	-.565	0	%100
14	M4	Z	.979	.979	0	%100

Member Distributed Loads (BLC 73 : Structure Wm (240 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]

Member Distributed Loads (BLC 73 : Structure Wm (240 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.419	-.419	0	%100
2	M1	Z	.242	.242	0	%100
3	OVP1	X	-.373	-.373	0	%100
4	OVP1	Z	.215	.215	0	%100
5	MP1A	X	-.437	-.437	0	%100
6	MP1A	Z	.252	.252	0	%100
7	MP2A	X	-.437	-.437	0	%100
8	MP2A	Z	.252	.252	0	%100
9	M8	X	-.865	-.865	0	%100
10	M8	Z	.499	.499	0	%100
11	M10	X	-.865	-.865	0	%100
12	M10	Z	.499	.499	0	%100
13	M4	X	-.326	-.326	0	%100
14	M4	Z	.188	.188	0	%100

Member Distributed Loads (BLC 74 : Structure Wm (270 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.645	-.645	0	%100
2	M1	Z	0	0	0	%100
3	OVP1	X	-.431	-.431	0	%100
4	OVP1	Z	0	0	0	%100
5	MP1A	X	-.505	-.505	0	%100
6	MP1A	Z	0	0	0	%100
7	MP2A	X	-.505	-.505	0	%100
8	MP2A	Z	0	0	0	%100
9	M8	X	-1.331	-1.331	0	%100
10	M8	Z	0	0	0	%100
11	M10	X	-1.331	-1.331	0	%100
12	M10	Z	0	0	0	%100
13	M4	X	0	0	0	%100
14	M4	Z	0	0	0	%100

Member Distributed Loads (BLC 75 : Structure Wm (300 Deg))

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.419	-.419	0	%100
2	M1	Z	-.242	-.242	0	%100
3	OVP1	X	-.373	-.373	0	%100
4	OVP1	Z	-.215	-.215	0	%100
5	MP1A	X	-.437	-.437	0	%100
6	MP1A	Z	-.252	-.252	0	%100
7	MP2A	X	-.437	-.437	0	%100
8	MP2A	Z	-.252	-.252	0	%100
9	M8	X	-.865	-.865	0	%100
10	M8	Z	-.499	-.499	0	%100
11	M10	X	-.865	-.865	0	%100
12	M10	Z	-.499	-.499	0	%100
13	M4	X	-.326	-.326	0	%100
14	M4	Z	-.188	-.188	0	%100

Member Distributed Loads (BLC 76 : Structure Wm (330 Deg))

Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]

Member Distributed Loads (BLC 76 : Structure Wm (330 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb...	End Magnitude[lb/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.081	-.081	0	%100
2	M1	Z	-.14	-.14	0	%100
3	OVP1	X	-.215	-.215	0	%100
4	OVP1	Z	-.373	-.373	0	%100
5	MP1A	X	-.252	-.252	0	%100
6	MP1A	Z	-.437	-.437	0	%100
7	MP2A	X	-.252	-.252	0	%100
8	MP2A	Z	-.437	-.437	0	%100
9	M8	X	-.166	-.166	0	%100
10	M8	Z	-.288	-.288	0	%100
11	M10	X	-.166	-.166	0	%100
12	M10	Z	-.288	-.288	0	%100
13	M4	X	-.565	-.565	0	%100
14	M4	Z	-.979	-.979	0	%100

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N1	max	481.393	11	1143.131	25	729.923	1	-.627	64	1.152	11	1.138	28
2		min	-481.393	5	279.612	70	-729.921	7	-2.098	31	-1.157	5	-1.165	46
3	Totals:	max	481.393	11	1143.131	25	729.923	1						
4		min	-481.393	5	279.612	70	-729.921	7						

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

	Member	Shape	Code Check	Loc[ft]	LC	She...	Lo...	...	LC	phi*...	phi*...	phi*...	phi*...	...	Eqn
1	M4	PL1/2x6	.706	1.521	12	.577	1....	y	19	1059...	97200	1.012	12.15	...	H1-...
2	M10	PL1/2x6	.287	0	11	.113	0	y	5	8874...	97200	1.012	12.15	...	H1-...
3	MP2A	PIPE_...	.236	2.484	7	.046	2....		5	2520...	32130	1.872	1.872	...	H1-...
4	M8	PL1/2x6	.145	0	5	.048	0	y	5	8874...	97200	1.012	12.15	...	H1-...
5	M1	HSS4...	.134	0	41	.115	.75	y	47	1382...	1395...	16.1...	16.1...	...	H1-...
6	MP1A	PIPE_...	.083	2.484	7	.022	2....		8	2520...	32130	1.872	1.872	...	H1-...
7	OVP1	PIPE_...	.037	1.5	10	.014	1.5		10	2884...	32130	1.872	1.872	...	H1-...

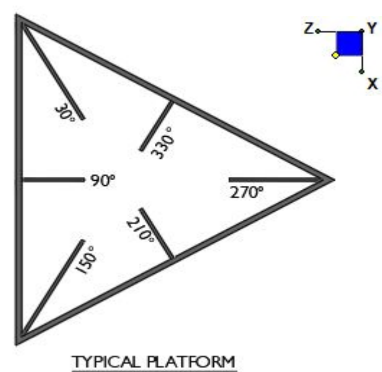
Client:	Verizon Wireless	Date:	11/2/2021
Site Name:	Bethel North CT		
Project No.	21781188A		
Title:	Mount Analysis	Page:	1

Version 3.1

I. Mount-to-Tower Connection Check

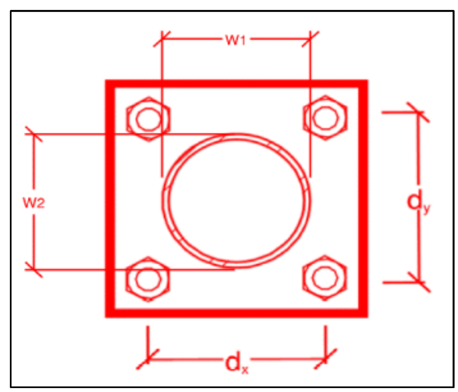
RISA Model Data

Nodes *(labeled per RISA)*	Orientation *(per graphic of typical platform)*
N1	90



Tower Connection Bolt Checks

Any moment resistance?:	yes
Bolt Quantity per Reaction:	4
d_x (in) *(Delta X of typ. bolt config. sketch)* :	6
d_y (in) *(Delta Y of typ. bolt config. sketch)* :	6
Bolt Type:	A325N
Bolt Diameter (in):	0.625
Required Tensile Strength (kips):	8.3
Required Shear Strength (kips):	5.8
Tensile Strength / bolt (kips):	20.7
Shear Strength / bolt (kips):	12.4
Tensile Capacity Overall:	**10.0%***
Shear Capacity Overall:	**11.6%**



**Note: Tension reduction not required if tension or shear capacity < 30%*

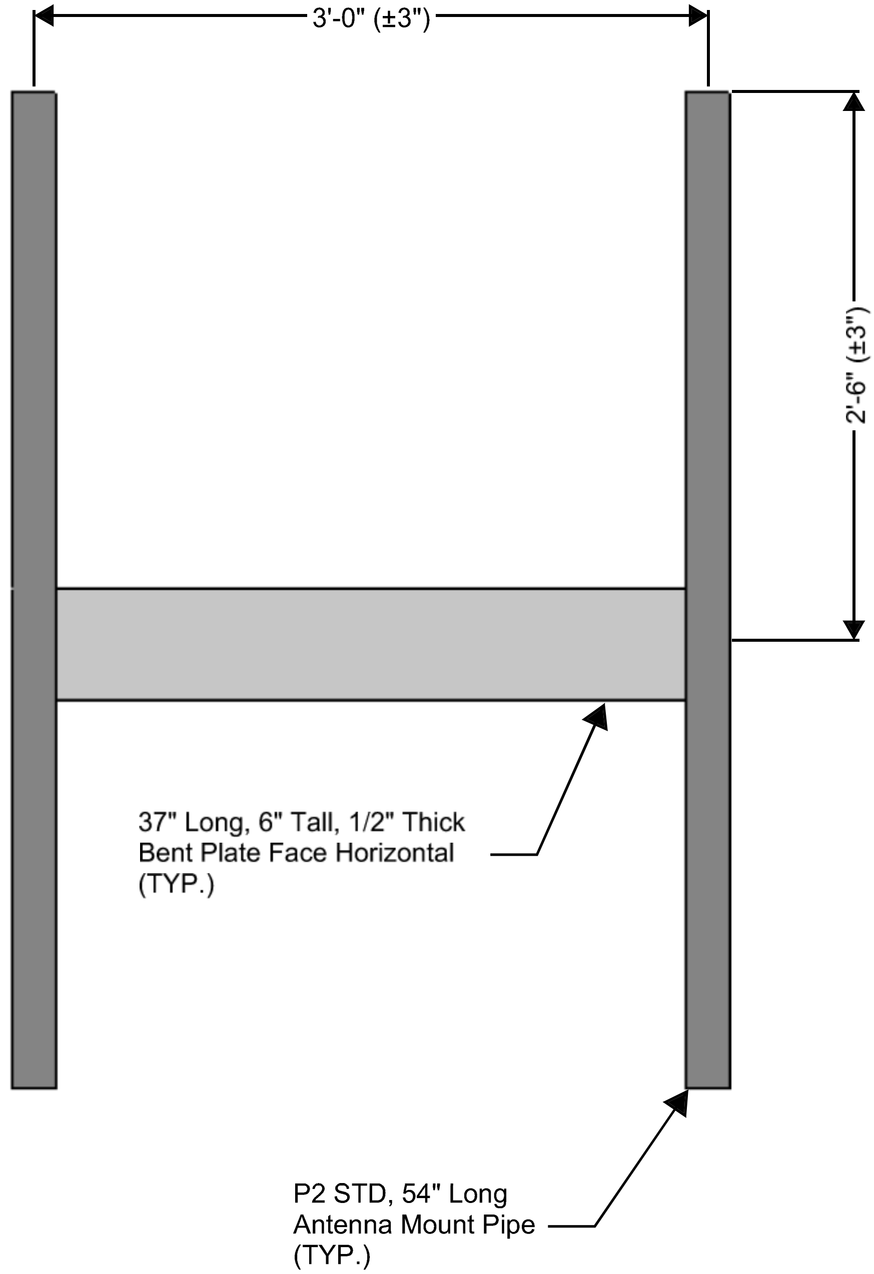
Tower Connection Plate and Weld Check

Connecting Standoff Member Shape:	Rect
Plate Width (in):	8
Plate Height (in):	8
W1 (in):	4
W2 (in):	4
Fy (ksi, plate):	36
t_{Plate} (in):	0.625
Weld Size (1/16 in):	4
Phi*Rn (kip/in):	5.57
Required Weld Strength (kip/in):	1.27
Plate Bending Capacity:	**19.1%**
Weld Capacity:	**22.8%**

Max Plate Bending Strengths

Mu_{xx} *(kip-in)* :	2.2
Phi*Mn_{xx} *(kip-in)* :	25.3
Mu_{yy} *(kip-in)* :	2.6
Phi*Mn_{yy} *(kip-in)* :	25.3

MOUNT GEOMETRY VERIFICATION

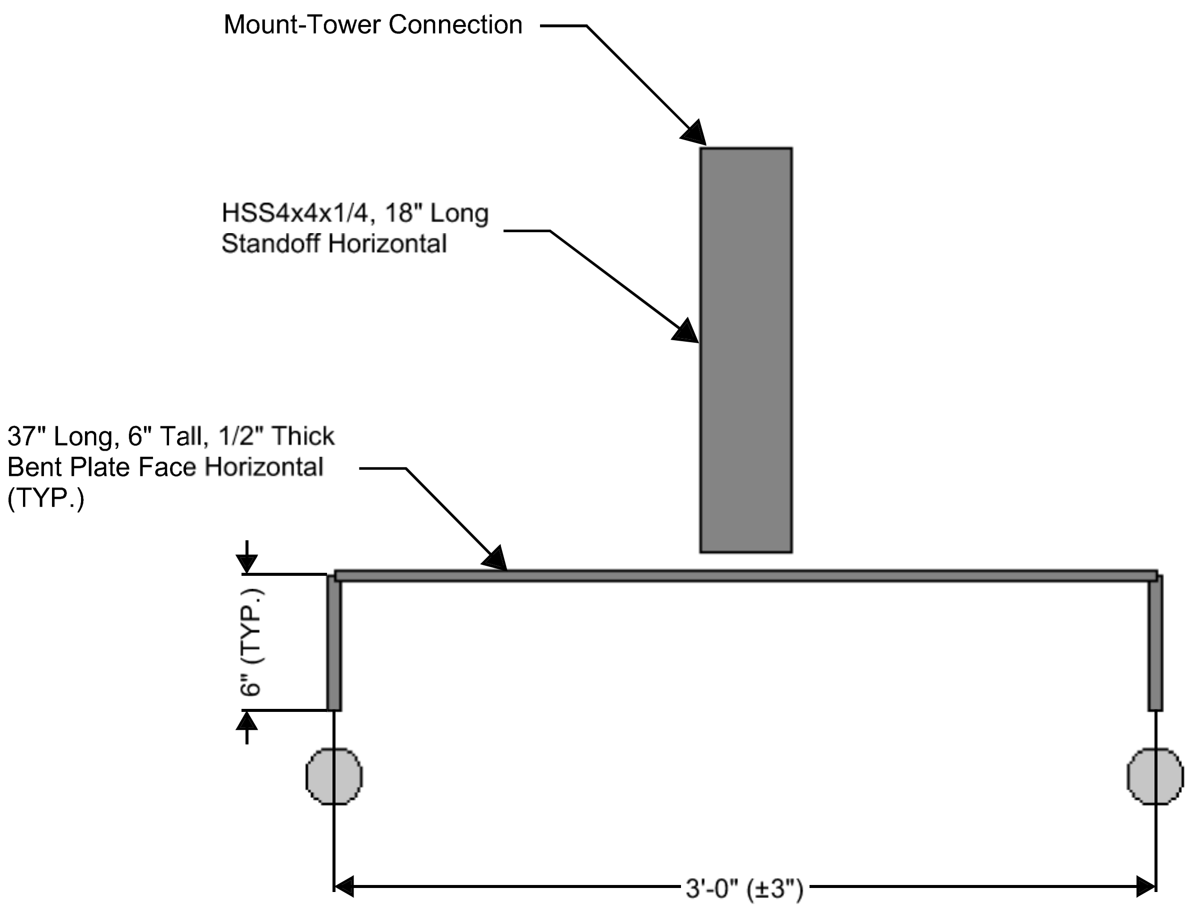


MOUNT FRONT ELEVATION VIEW (TYP. ALL SECTORS)

N.T.S.

CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND MEMBER SIZES SHOWN IN THIS SKETCH. DOCUMENT ALL VARIATIONS OR DEVIATIONS VIA PHOTOS AND SKETCHES AND PROVIDE TO THE EOR FOR EVALUATION

MOUNT GEOMETRY VERIFICATION

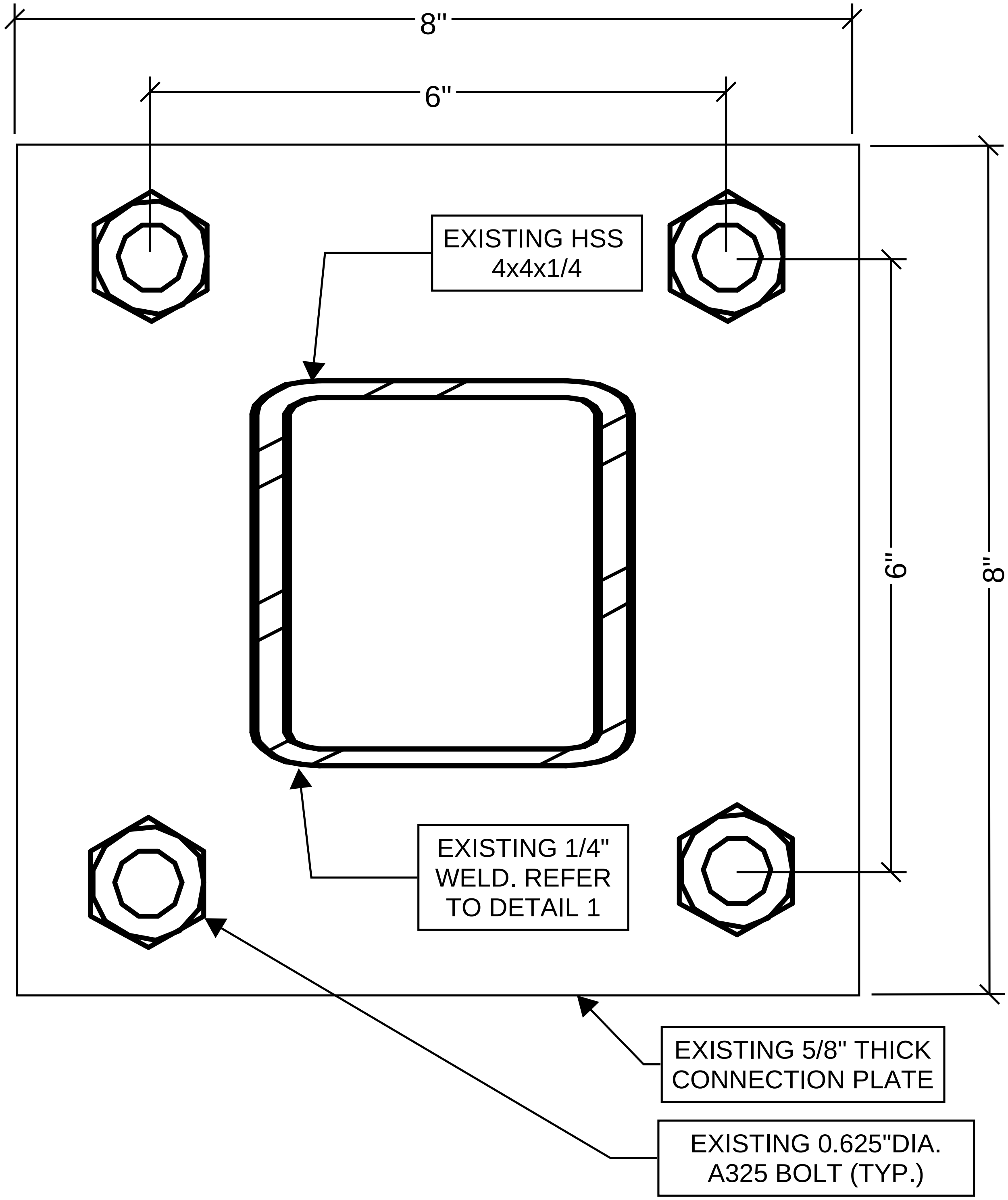


MOUNT PLAN VIEW (TYP. ALL SECTORS)

N.T.S.

CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND MEMBER SIZES SHOWN IN THIS SKETCH. DOCUMENT ALL VARIATIONS OR DEVIATIONS VIA PHOTOS AND SKETCHES AND PROVIDE TO THE EOR FOR EVALUATION

MOUNT GEOMETRY VERIFICATION



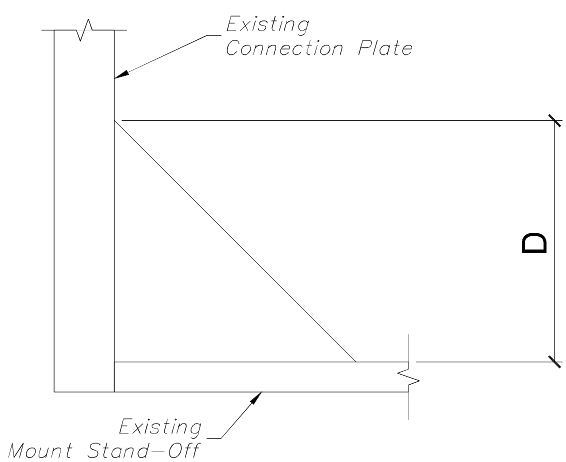
CONNECTION GEOMETRY (TYP. ALL SECTORS)

N.T.S.

CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND MEMBER SIZES SHOWN IN THIS SKETCH. DOCUMENT ALL VARIATIONS OR DEVIATIONS VIA PHOTOS AND SKETCHES AND PROVIDE TO THE EOR FOR EVALUATION

MOUNT GEOMETRY VERIFICATION

STANDARD PIPE DIMENSIONS				
		THICKNESS (IN.)		
PIPE SIZE	O.D. (IN.)	STD	XSTR	XXSTR
P1 1/2	1.900	0.145	0.200	0.400
P2	2.375	0.154	0.218	0.436
P2 1/2	2.875	0.203	0.276	0.552
P3	3.500	0.216	0.300	0.600
P3 1/2	4.000	0.226	0.318	0.636
P4	4.500	0.237	0.337	0.674
P4 1/2	5.000	0.247	0.355	0.710
P5	5.563	0.258	0.375	0.750
P6	6.625	0.280	0.432	0.864



WELD MEASUREMENT NOTE:

CONTRACTOR SHALL MEASURE WELD SIZE 'D' AS SHOWN IN THIS DETAIL.

1 **WELD MEASUREMENT DETAIL**

CONTRACTOR SHALL USE MEMBER SIZES AND DETAILS TO FACILITATE GEOMETRY VERIFICATION. CONTACT EOR FOR ADDITIONAL CLARIFICATION IF NEEDED

Mount Desktop – Post Modification Inspection (PMI) Report Requirements

Documents & Photos Required from Contractor – Passing Mount Analysis

Passing Mount Analysis requires a PMI due to a modification in loading.

Electronic pdf version of this can be downloaded at https://pmi.vzwsmart.com.

For additional questions and support, please reach out to pmisupport@colliersengineering.com

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Purpose – to provide SMART Tool structural vendor the proper documentation in order to complete the required Mount Desktop review of the Post Modification Inspection Report.

- Contractor is responsible for making certain the photos provided as noted below provide confirmation that the installation was completed in accordance with this Passing Mount Analysis.
- Contractor shall relay any data that can impact the performance of the mount, this includes safety issues.

Base Requirements:

- If installation will cause damage to the structure, the climbing facility, or safety climb if present or any installed system, SMART Tool vendor to be notified prior to install. Any special photos outside of the standard requirements will be indicated on the drawings.
- Provide "as built mount drawings" showing contractor's name, contact information, preparer's signature, and date. Any deviations from the drawings (Proposed modification) shall be shown. NOTE: If loading is different than what is conveyed in the passing mount analysis (MA) contact the SMART Tool vendor immediately.
- Each photo should be time and date stamped
- Photos should be high resolution.
- Contractor shall ensure that the safety climb wire rope is supported and not adversely impacted by the install of the modification components. This may involve the install of wire rope guides, or other items to protect the wire rope. If there is conflict, contact the SMART Tool engineer for recommendations.
- The PMI can be accessed at the following portal: ***https://pmi.vzwsmart.com***

Photo Requirements:

- *Photos taken at ground level*
  - Photo of Gate Signs showing the tower owner, site name, and number.
  - Overall tower structure after installation.
  - Photos of the mount after installation; if the mounts are at different rad elevations, pictures must be provided for all elevations that equipment was installed.
- *Photos taken at Mount Elevation*
  - Photos showing the safety climb wire rope above and below the mount prior to installation.
  - Photos showing the climbing facility and safety climb if present.
  - Photos showing each individual sector after installation. Each entire sector shall be in one photo to show the interconnection of members.

These photos shall also certify that the placement and geometry of the equipment on the mount is as depicted in the antenna placement diagram in this form.

- Photos that show the model number of each antenna and piece of equipment installed per sector.

Antenna & equipment placement and Geometry Confirmation:

- The contractor shall certify that the antenna & equipment placement and geometry is in accordance with the sketch and table as included in the mount analysis and noted below.

Special Instructions / Validation as required from the MA or any other information the contractor deems necessary to share that was identified:

Issue:

- Prior to installation of equipment, contractor shall verify all dimensions and member sizes shown in the mount geometry verification requirements section of the mount analysis report. Escalate any discrepancies to EOR immediately as it may render the results of this analysis invalid and require additional modifications. Contact EOR if these documents are not available to the general contractor.
- Contractor to install (1) OVP pipe mount, 3’-0” long, P2 STD on the standoff horizontal located in the Alpha Sector. Connect to existing standoff horizontal at 9” from standoff end closest to tower using VZWSMART-MSK6 crossover plate. Pipe to be cantilevered 1’-6” above the standoff horizontal. OVP to be installed 1’-0” below the top of proposed OVP pipe.

Response:

Contractor certifies that the climbing facility / safety climb was not damaged or obstructed prior to starting work:

☐ Yes ☐

Contractor certifies no new damage/obstructions created during the current installation:

☐ Yes ☐

Contractor to certify the condition of the safety climb and verify no obstructions when leaving the site:

☐ Safety climb in good condition with no obstructions ☐ Safety Climb Damaged
☐ Safety Climb Obstructed

Comments:

☐ All hardware has been properly installed, and the existing hardware was inspected.

☐ The material utilized was as specified on the SMART Tool engineering vendor Mount Modification Drawings and included in the material certification folder is a packing list or invoice for these materials.

☐ The material utilized was approved by a SMART Tool as an “equivalent” and this approval is included as part of the contractor submission.

Antenna & equipment placement and Geometry Confirmation:

☐ The contractor certifies that the photos support and the equipment on the mount is as depicted on the sketch and table included in this form and with the mount analysis provided.

☐ The contractor notes that the equipment on the mount is not in accordance with the sketch and has noted the differences below and provided photo documentation of any alterations.

Special Instruction Confirmation:

☐ The contractor has read and acknowledges the above special instructions.

Certifying Individual:

Company:	
Employee Name:	
Contact Phone:	
Email:	
Date:	

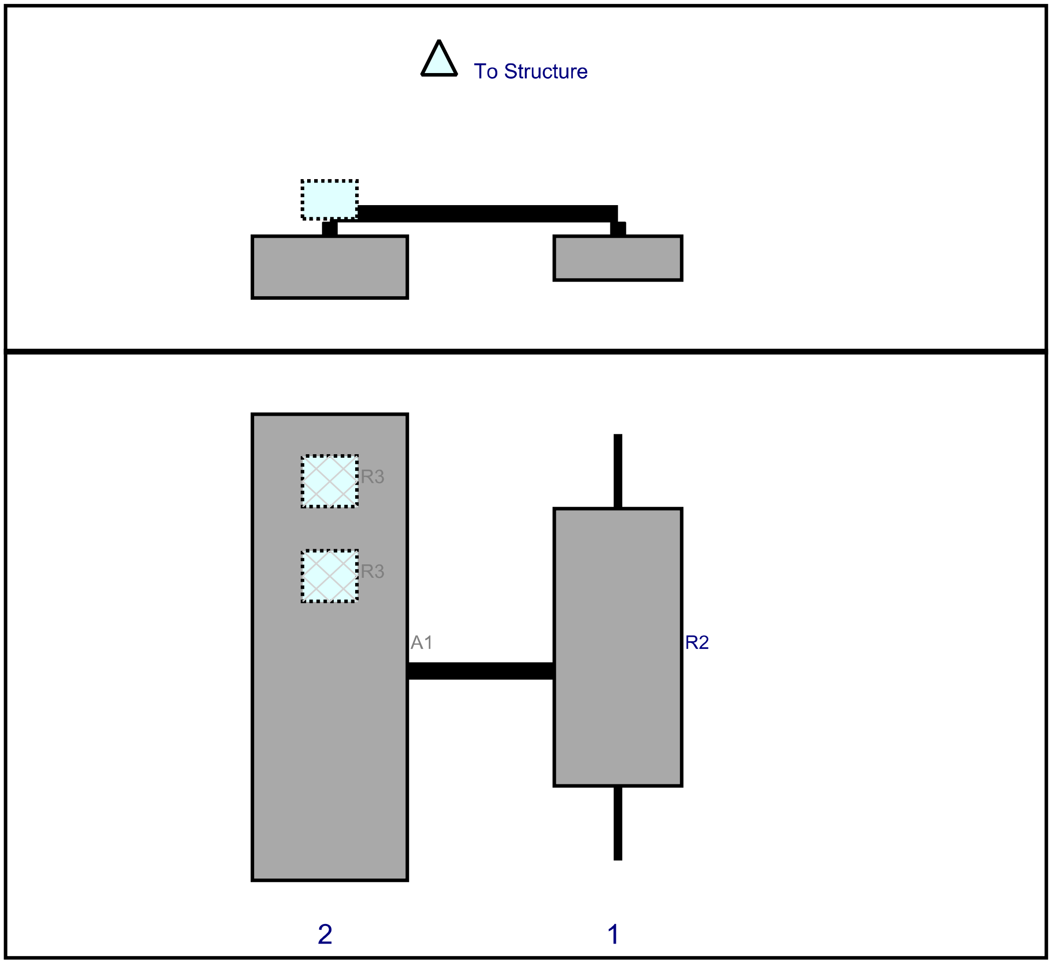
Sector: **A** 11/3/2021

Structure Type: Monopole 10107935

Mount Elev: 167.25

Plan View

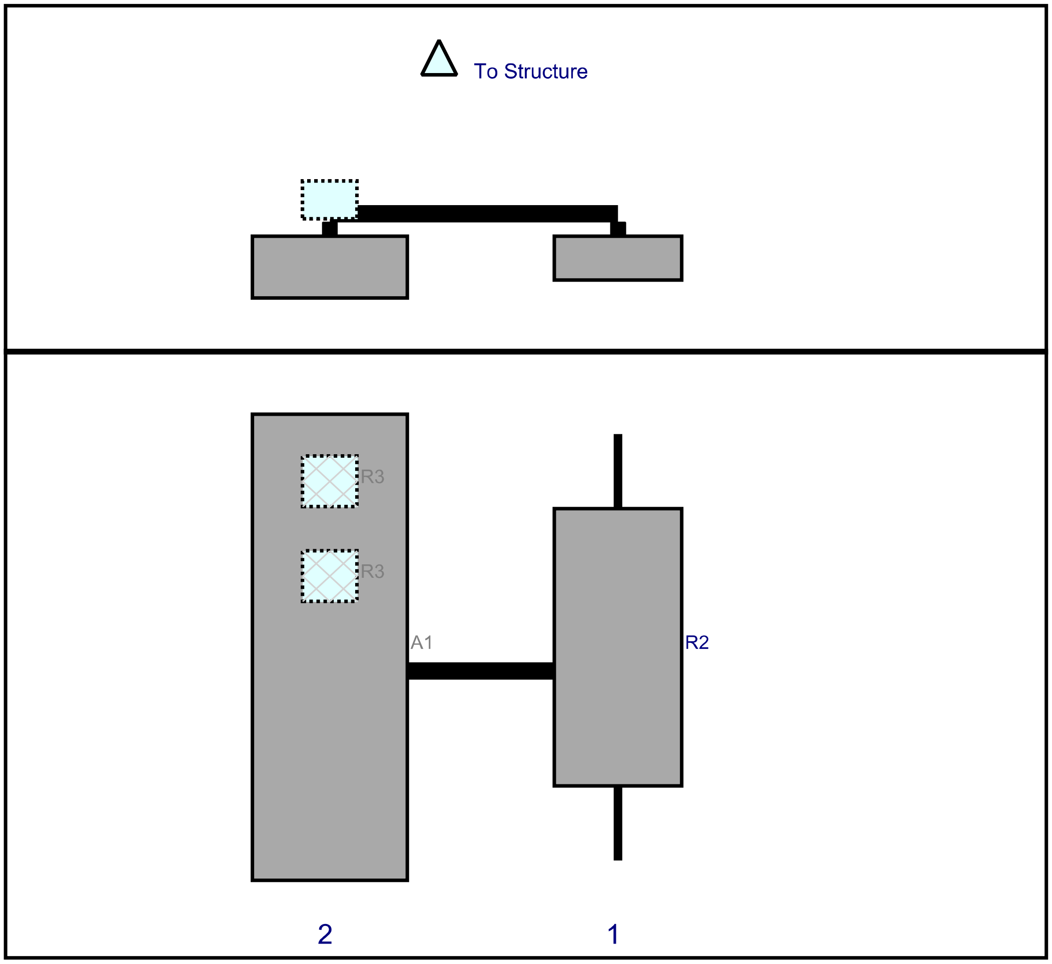
Front View
Looking at Structure



Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
R2	MT6407-77A	35.1	16.1	36.5	1	a	Front	27	0	Added	
A1	NNH4-65A-R6H4	59	19.6	0	2	a	Front	27	0	Added	
R3	CBC78T-DS-43	6.4	6.9	0	2	a	Behind	6	0	Added	
R3	CBC78T-DS-43	6.4	6.9	0	2	b	Behind	18	0	Added	

Plan View

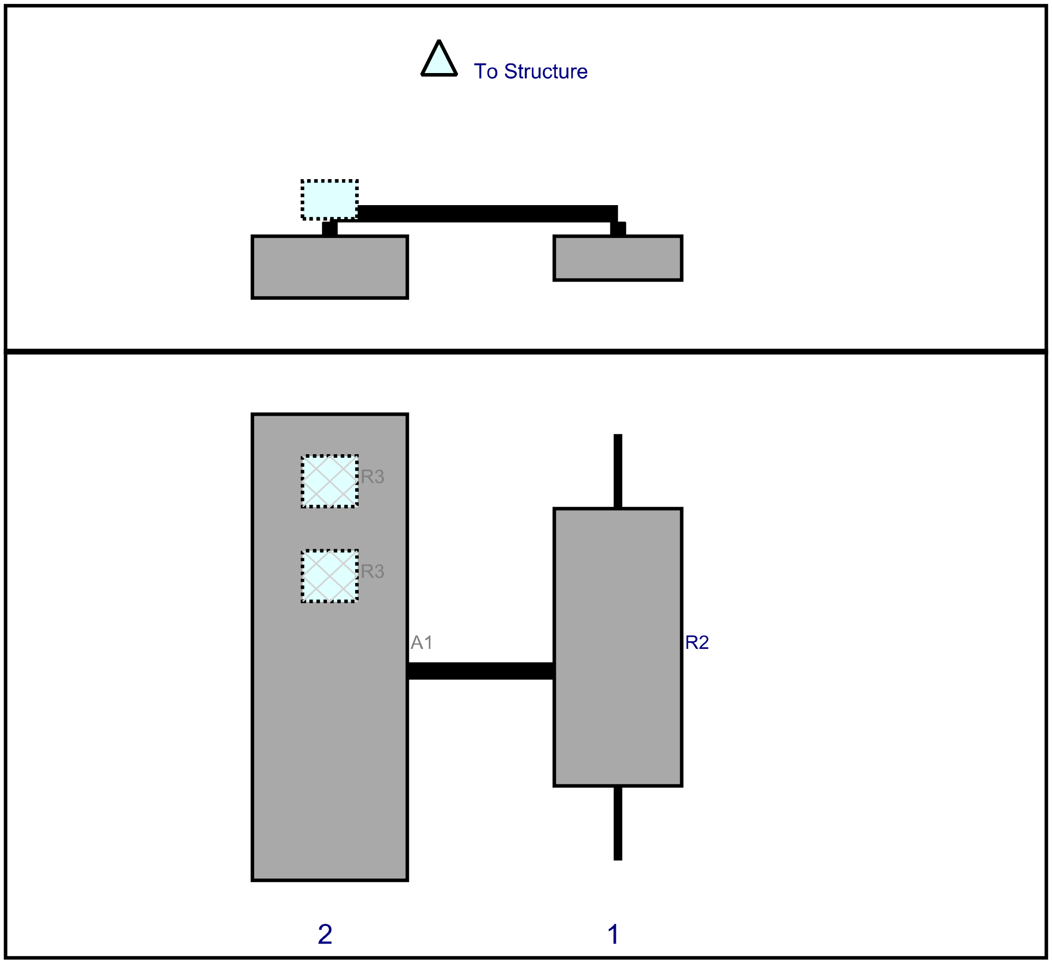
Front View
Looking at Structure



Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
R2	MT6407-77A	35.1	16.1	36.5	1	a	Front	27	0	Added	
A1	NNH4-65A-R6H4	59	19.6	0	2	a	Front	27	0	Added	
R3	CBC78T-DS-43	6.4	6.9	0	2	a	Behind	6	0	Added	
R3	CBC78T-DS-43	6.4	6.9	0	2	b	Behind	18	0	Added	

Plan View

Front View
Looking at Structure



Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
R2	MT6407-77A	35.1	16.1	36.5	1	a	Front	27	0	Added	
A1	NNH4-65A-R6H4	59	19.6	0	2	a	Front	27	0	Added	
R3	CBC78T-DS-43	6.4	6.9	0	2	a	Behind	6	0	Added	
R3	CBC78T-DS-43	6.4	6.9	0	2	b	Behind	18	0	Added	

MASER CONSULTING
— CONNECTICUT —

Maser Consulting Connecticut

Subject	TIA-222-H Usage	
Site Information	Site ID:	468846-VZW / BETHEL NORTH CT
	Site Name:	BETHEL NORTH CT
	Carrier Name:	Verizon Wireless
	Address:	8 Sky Ridge Lane Bethel, Connecticut 06801 Fairfield County
	Latitude:	41.413469°
	Longitude:	-73.400872°
Structure Information	Tower Type:	Monopole
	Mount Type:	3.04-Ft T-Arm

To Whom It May Concern,

We respectfully submit the above referenced Antenna Mount Structural Analysis report in conformance with ANSI/TIA-222-H, Structural Standard for Antenna Supporting Structures and Antennas and Small Wind Turbine Support Structures.

The 2015 International Building Code states that, in Section 3108, telecommunication towers shall be designed and constructed in accordance with the provisions of TIA-222. TIA-222-H is the latest revision of the TIA-222 Standard, effective as of January 01, 2018.

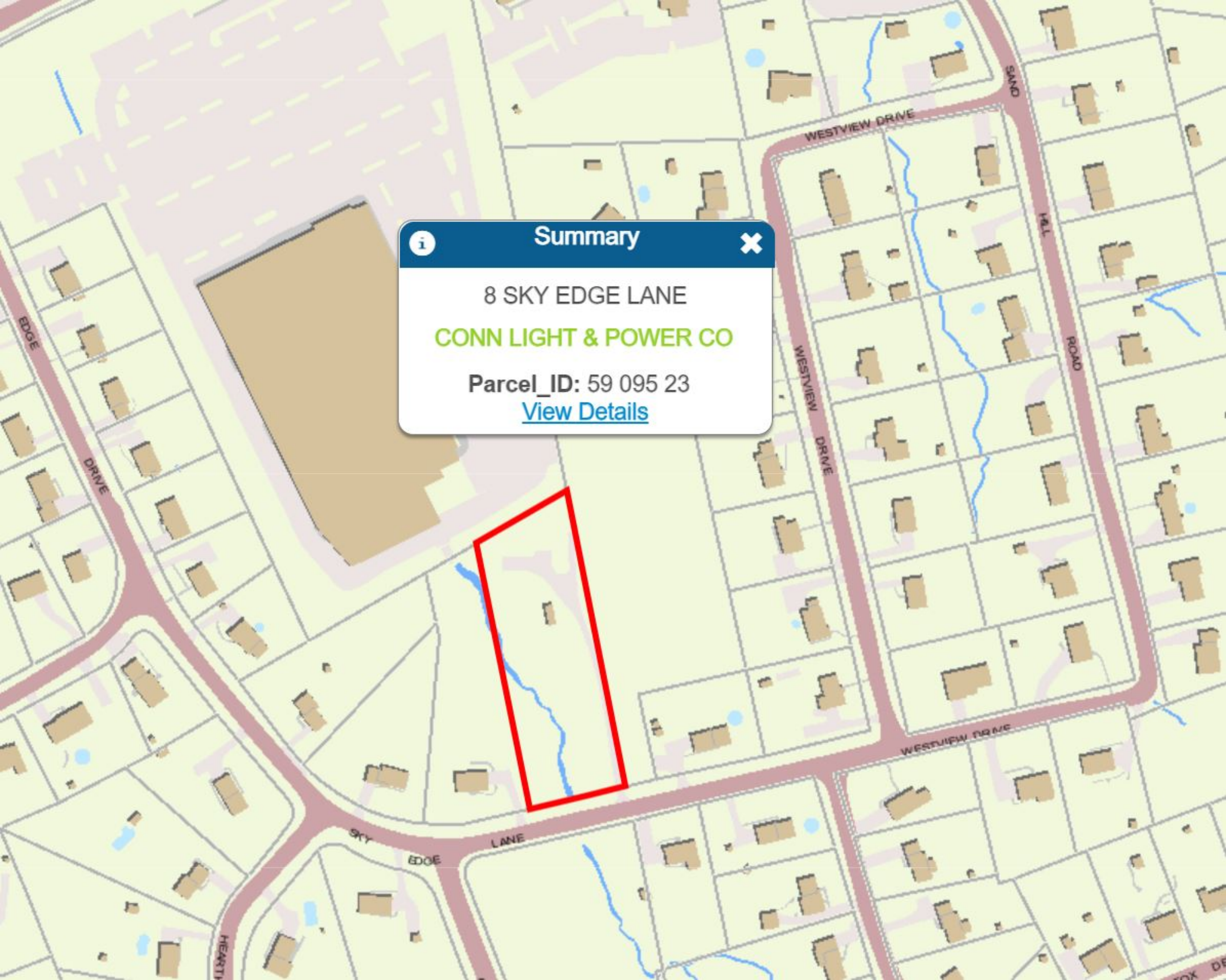
As with all ANSI standards and engineering best practice is to apply the most current revision of the standard. This ensures the engineer is applying all updates. As an example, the TIA-222-H Standard includes updates to bring it in line with the latest AISC and ACI standards and it also incorporates the latest wind speed maps by ASCE 7 based on updated studies of the wind data.

The TIA-222-H standard clarifies these specific requirements for the antenna mount analysis such as modeling methods, seismic analysis, 30-degree increment wind directions and maintenance loading. Therefore, it is our opinion that TIA-222-H is the most appropriate standard for antenna mount structural analysis and is acceptable for use at this site to ensure the engineer is taking into account the most current engineering standard available.

Sincerely,

Derek Hartzell, PE
Technical Specialist

ATTACHMENT 5


Summary
8 SKY EDGE LANE
CONN LIGHT & POWER CO
Parcel_ID: 59 095 23
View Details
WESTVIEW DRIVE
SAND HILL ROAD
WESTVIEW DRIVE
WESTVIEW DRIVE
EDGE DRIVE
SKY EDGE LANE

Bethel, CT : Assessor Database

Property Search:

Parcel ID:	Alternate ID:	Owner 1 Name:	Street Number:	Street Name:
		conn		...

Search Reset

Property Detail:

Parcel ID:	Alternate ID/Map Block Lot:	Card:	Card:	Street Name:	Street Number:	Zoning:	LUC:	Acres:
59 095 23	R01090			SKY EDGE LANE	8	R-30	PP FOR PUBLIC UTILITIES	1.48

Owner Information:

Owner 1 Name:	CONN LIGHT & POWER CO
Owner 2 Name:	% TAX DEPARTMENT
Street 1:	PO BOX 270
Street 2:	
City:	HARTFORD
State:	CT
Zip:	06141
Volume:	188
Page:	199
Deed Date:	0000-00-00

Valuation:

Appraised Land:	$20,100.00
Appraised Land PA490:	$0.00
Appraised Bldg:	$379,900.00
Appraised Total:	$400,000.00
Total Assessment:	$280,000.00

Out-Buildings:

ATTACHMENT 6

UNITED STATES POSTAL SERVICE ®

BETHEL NORTH

Certi□cate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Of□ce™	Af□x Stamp Here *Postmark with Date of Receipt.*
Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103		3	neopost 03/14/2022 US POSTAGE $002.99 ZIP 06103 041L12203937
	Postmaster, per *(name of receiving employee)*		USPS MAR 14 2022 OLD STATE HOUSE STATION 06106

USPS® Tracking Number / Firm-speci□c Identi□er	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Matthew Knickerbocker, First Selectman Town of Bethel Clifford J. Hurgin Municipal Center 1 School Street Bethel, CT 06801				
2.	Beth Cavagna, Director/Town Planner Land Use, Planning and Zoning/Inland Wetlands Town of Bethel Clifford J. Hurgin Municipal Center 1 School Street Bethel, CT 06801				
3.	Connecticut Light and Power P.O. Box 270 Hartford, CT 06141				
4.					
5.					
6.					

PS Form **3665,** January 2017 (Page 1 of 1) PSN 7530-17-000-5549

See Reverse for Instructions