Robinson+Cole

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Also admitted in Massachusetts
and New York

May 17, 2022

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**
12 (a/k/a 9) Sound Shore Drive, Greenwich, 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 a power-mount tower and associated equipment on the ground near the base of the power-mount. The power-mount structure was approved by the Siting Council ("Council") in June of 2000 (Petition No. 466). Cellco's use of the power-mount was approved by the Council in August of 2005 (EM-VER-157-090206). Copies of the Council's approvals are included in Attachment 1.

Cellco now intends to modify its facility by removing nine (9) existing antennas and installing three (3) new Samsung MT6407-77A antennas, two (2) CBRS antennas; four (4) new MX10FRO640 antennas and four (4) new MX06FRO660-03 antennas all on the existing t-arm antenna mounts. Cellco also intends to remove three (3) remote radio heads ("RRHs") and install six (6) new RRHs behind its antennas. A set of project plans showing Cellco's proposed facility modifications and new antennas and RRH specifications 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 Greenwich'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 tower. The replacement antennas will be installed on Cellco's existing antenna mounts.

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 power mount tower, tower foundation and antenna mounts, with certain modifications, 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 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:

Fred Camillo, Greenwich First Selectman
Katie DeLuca, Director of Planning and Zoning
Connecticut Light & Power (Eversource), Property Owner
Alex Tyurin, Verizon Wireless

ATTACHMENT 1

Petition No. 466
Voicestream Wireless
Greenwich, Connecticut
Staff Report
June 20, 2000

On June 16, 2000, Connecticut Siting Council (Council) member Edward S. Wilensky, and Fred Cunliffe of Council staff met Voicestream Wireless (Voicestream) representatives J. Brendan Sharkey, Esq., Chetan Dharduk, and Haider Syed for inspection of a Connecticut Light & Power Company (CL&P) electric transmission line structure (no. 1280) located off Sound Shore Drive in Greenwich. Voicestream, with the agreement of CL&P, proposes to modify the transmission structure 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.

Voicestream proposes to attach a 7-inch diameter pipe extending the existing lattice structure height of 140 feet by 23 feet four inches for a total height of approximately 164 feet. A structural analysis concludes no additional reinforcement is necessary. Voicestream proposes to install two low profile antenna cluster mounts with centers of radiation at 161 feet and 152 feet 4 inches on the pipe and a 2-foot by 2-foot microwave antenna at the approximate 140-foot level of the structure. Voicestream proposes to place associated equipment cabinets on a concrete foundation within a 10.5-foot by 11.5-foot compound secured by a six-foot chain link fence. Since CL&P transmission line easement is limited to an aerial right-of-way, Voicestream will need to obtain a lease agreement with the Connecticut Department of Rail Transportation (ConnDOT) for underlying land use. Access to the CL&P structure would be from Sound Shore Drive over a ConnDOT easement. Utilities would be placed underground within this easement from an existing distribution pole located approximately 350 feet west of the proposed site.

Surrounding land uses include a CL&P substation and transmission lines, Town-owned water tank and abandoned power station, railroad right-of-way, and Interstate 95. Other existing transmission line structures in the area range in height from 95 feet to 140 feet AGL.

The Council approved Petition No. 399 on July 23, 1998 for Sprint to use structure no. 1281 just west of the proposed site and approved Petition No. 443 on February 2, 2000 for AT&T to use structure no. 1292 adjacent to the Cos Cob Substation. The zoning of the proposed site is Residential R-6. The nearest home is approximately 350 north across the railroad right-of-way of the site.

The worst case power density for the telecommunications operations at the site has been calculated to be less than 1.8% of the applicable standard for uncontrolled environments.

Voicestream contends that the proposed installation will not cause a substantial adverse environmental effect, and for this reason would not require a Certificate.

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@po.state.ct.us
www.ct.gov/csc

August 25, 2005

Joey Lee Miranda, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597

RE: **EM-VER-057-050713** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 9 Sound Shore Drive, Greenwich, Connecticut.

Dear Attorney Miranda:

At a public meeting held on August 24, 2005, the Connecticut Siting Council (Council) acknowledged your notice to modify this existing telecommunications facility pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the condition that the recommendations noted on page 3 of the structural analysis report dated February 9, 2005 are implemented prior to the antenna installation.

The proposed modifications are to be implemented as specified here and in your notice dated July 13, 2005, including the placement of all necessary equipment and shelters within the tower compound. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

Thank you for your attention and cooperation.

Very truly yours,

Pamela B. Katz

Pamela B. Katz, P.E.
Chairman

PBK/laf

c: The Honorable James A. Lash, First Selectman, Town of Greenwich
Diane Fox, Planning & Zoning Director, Town of Greenwich
Michael Green, Real Estate Department, Northeast Utilities
Thomas J. Regan, Esq., Brown Rudnick Berlack Israels LLP

G:\EM\BAM-VERIZON\GREENWIC\dc082405.DOC

CSC
CONNECTICUT SITING COUNCIL

ATTACHMENT 2

WIRELESS COMMUNICATIONS FACILITY

SITE NAME:
GREENWICH 3 CT

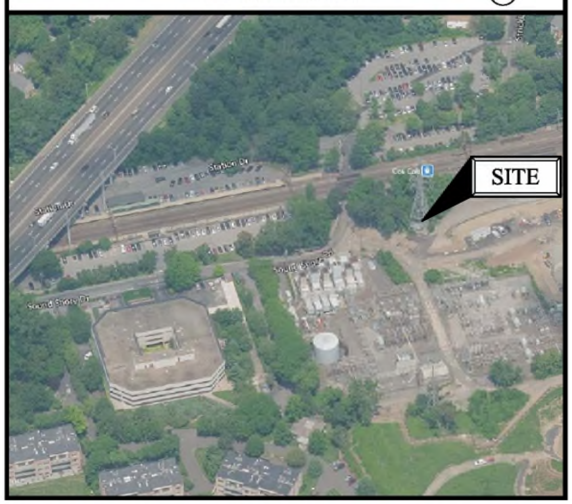
EVERSOURCE TOWER #1281
9 SOUND SHORE DR.
GREENWICH, CT 06830
ANTENNA MODIFICATION

PROJECT SUMMARY

SITE NAME:	GREENWICH 3 CT
SITE ADDRESS:	EVERSOURCE TOWER #1281 9 SOUND SHORE DR. GREENWICH, CT 06830
OWNER:	EVERSOURCE
PARCEL ID:	N/A
COORDINATES:	41° 01' 46.9596" N 73° 35' 54.06" W
VERIZON CONSTRUCTION:	WALTER CHARCZYNSKI (860) 306-1806
VERIZON REAL ESTATE:	ALEX TYURIN (860) 550-3195

AERIAL MAP

N



SHEET INDEX

DE-1	TITLE SHEET
DE-2	SITE LAYOUT & COMPOUND PLAN
DE-3	ELEVATION & ANTENNA PLANS
DE-4	ANTENNA ELEVATIONS
DE-5	RF PLUMBING DIAGRAM & B.O.M.
DE-6	GENERAL CONSTRUCTION NOTES

WIRELESS COMMUNICATIONS FACILITY

20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

On Air Engineering, LLC
88 Foundry Pond Road
Cold Spring, NY 10516
201-456-4624
onair@optonline.net

LICENSURE

STATE OF CONNECTICUT
DAVID A. WEINPAHL
NO. 22144
LICENSED
LICENSED PROFESSIONAL ENGINEER

DAVID WEINPAHL, P.E.
CT LIC NO. 22144

SUBMITTALS

NO	DATE	DESCRIPTION
1	03.21.22	REVIEW
2	04.15.22	PERMITTING/CONSTRUCTION

DRAWN BY: MF
CHECKED BY: DW

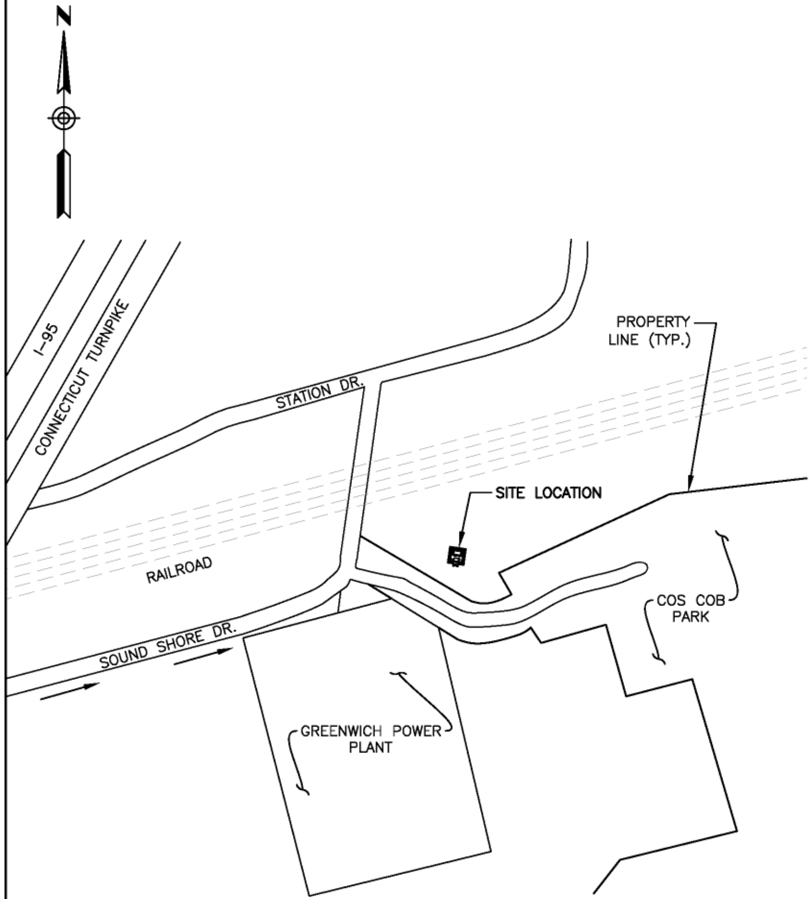
PROJECT NAME:
ANTMO 4TH SECTOR
MT6407-CBRS-850-LTE
DESIGN EXHIBITS

SITE NAME:
GREENWICH 3 CT

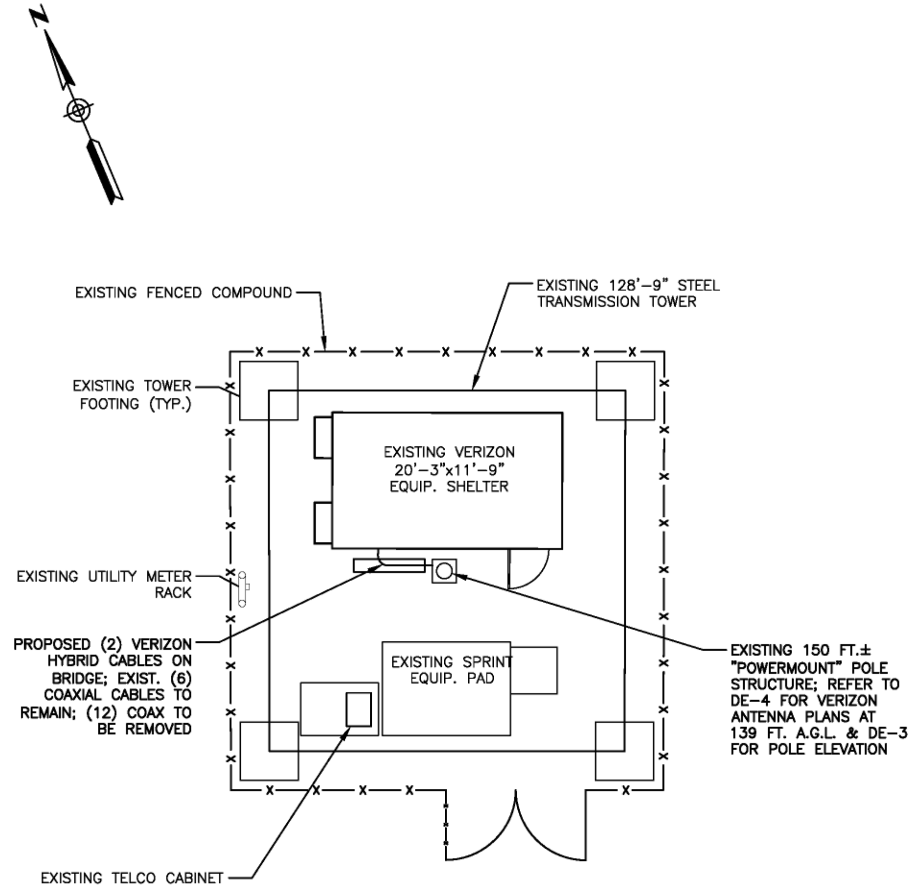
SITE ADDRESS:
EVERSOURCE TOWER #1281
9 SOUND SHORE DR.
GREENWICH, CT 06830

SHEET TITLE:
TITLE SHEET

SHEET NUMBER:
DE-1



1 / DE-2 **SITE LAYOUT**
Scale: 1" = 20'



2 / DE-2 **COMPOUND PLAN**
Scale: 3/32" = 1'-0"

NOTES:
1. SITE LAYOUT IS COMPILED FROM EXISTING DRAWINGS ON FILE WITH THE CT SITING COUNCIL AND A LIMITED DESIGN VISIT ON 9-30-21 FOR A PROPOSED VERIZON ANTENNA MODIFICATION.
2. PLANS ARE DIAGRAMMATIC ONLY AND NOT TO BE SCALED.
3. REFER TO STRUCTURAL TOWER AND MOUNT ANALYSIS REPORTS, BY OTHERS UNDER SEPARATE COVER, FOR ANY REQUIRED TOWER & MOUNT REINFORCEMENTS, WHICH MUST BE PERFORMED PRIOR TO ANY OTHER VERIZON ANTENNA MODIFICATIONS.

verizon
WIRELESS COMMUNICATIONS FACILITY
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LICENSURE
STATE OF CONNECTICUT DAVID A. WEINPAHL NO. 22144 LICENSED PROFESSIONAL ENGINEER
DAVID WEINPAHL, P.E.
CT LIC NO. 22144

SUBMITTALS

NO	DATE	DESCRIPTION
1	03.21.22	REVIEW
2	04.15.22	PERMITTING/CONSTRUCTION

DRAWN BY: MF
CHECKED BY: DW

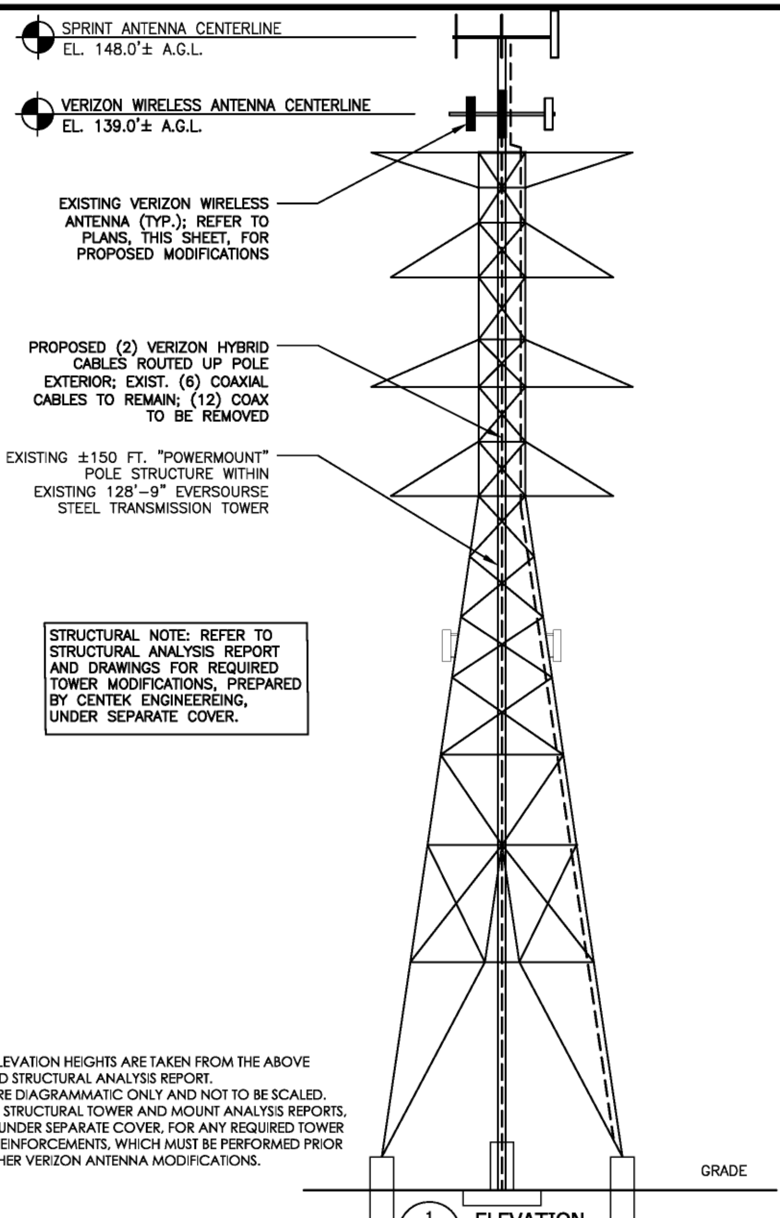
PROJECT NAME:
ANTMO 4TH SECTOR MT6407-CBRS-850-LTE DESIGN EXHIBITS

SITE NAME:
GREENWICH 3 CT

SITE ADDRESS:
EVERSOURCE TOWER #1281
9 SOUND SHORE DR.
GREENWICH, CT 06830

SHEET TITLE:
SITE LAYOUT & COMPOUND PLAN

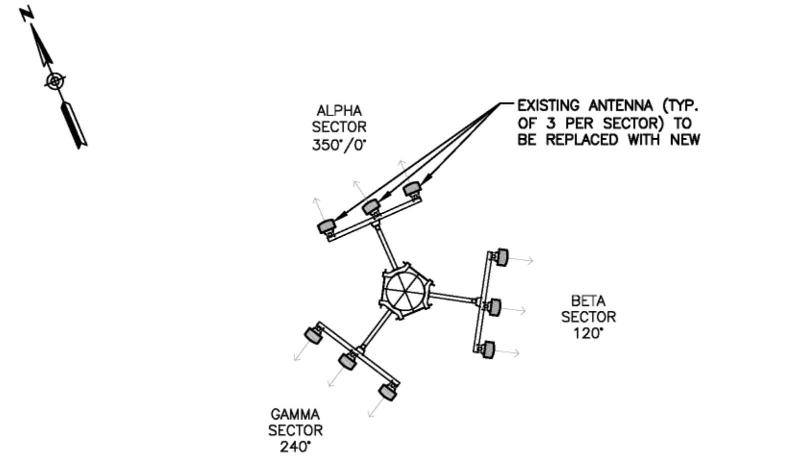
SHEET NUMBER:
DE-2



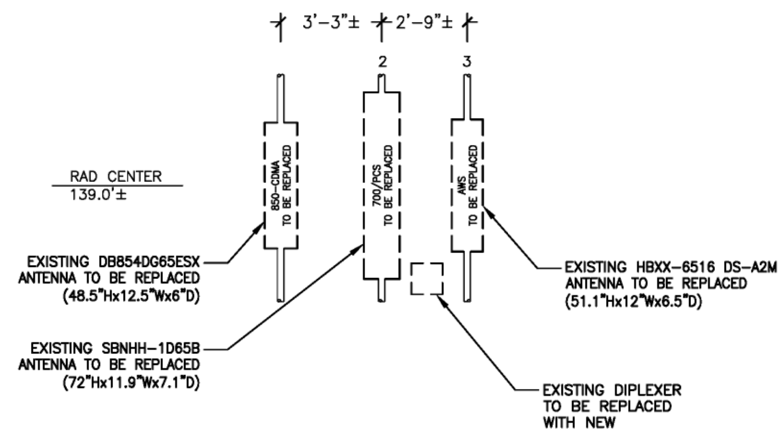
STRUCTURAL NOTE: REFER TO STRUCTURAL ANALYSIS REPORT AND DRAWINGS FOR REQUIRED TOWER MODIFICATIONS, PREPARED BY CENTEK ENGINEEREING, UNDER SEPARATE COVER.

NOTES:
1. TOWER ELEVATION HEIGHTS ARE TAKEN FROM THE ABOVE REFERENCED STRUCTURAL ANALYSIS REPORT.
2. PLANS ARE DIAGRAMMATIC ONLY AND NOT TO BE SCALED.
3. REFER TO STRUCTURAL TOWER AND MOUNT ANALYSIS REPORTS, BY OTHERS UNDER SEPARATE COVER, FOR ANY REQUIRED TOWER & MOUNT REINFORCEMENTS, WHICH MUST BE PERFORMED PRIOR TO ANY OTHER VERIZON ANTENNA MODIFICATIONS.

1 / DE-3 ELEVATION
Scale: NTS



2 / DE-3 ANTENNA PLAN @ 139 FT. - EXISTING
Scale: 1/8" = 1'-0"



(VIEWED FROM BEHIND SECTOR)

3 / DE-3 ANTENNA ELEVATION - EXISTING (ALL SECTORS)
Scale: 1/4" = 1'-0"

verizon✓
WIRELESS COMMUNICATIONS FACILITY
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

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88 Foundry Pond Road
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DAVID WEINPAHL, P.E.
CT LIC NO. 22144

SUBMITTALS

NO	DATE	DESCRIPTION
1	03.21.22	REVIEW
2	04.15.22	PERMITTING/CONSTRUCTION

DRAWN BY: MF
CHECKED BY: DW

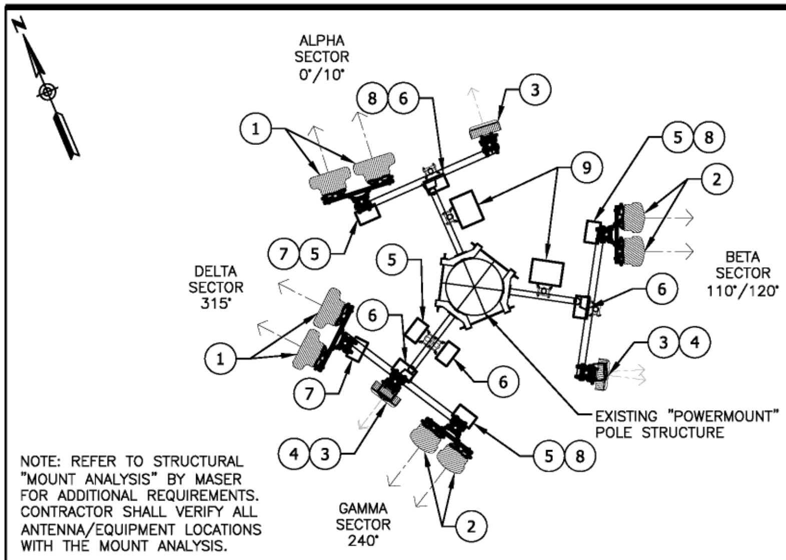
PROJECT NAME:
ANTMO 4TH SECTOR
MT6407-CBRS-850-LTE
DESIGN EXHIBITS

SITE NAME:
GREENWICH 3 CT

SITE ADDRESS:
EVERSOURCE TOWER #1281
9 SOUND SHORE DR.
GREENWICH, CT 06830

SHEET TITLE:
ELEVATIONS & ANTENNA PLAN

SHEET NUMBER:
DE-3

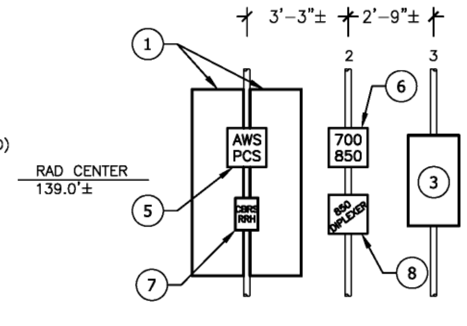


NOTE: REFER TO STRUCTURAL "MOUNT ANALYSIS" BY MASER FOR ADDITIONAL REQUIREMENTS. CONTRACTOR SHALL VERIFY ALL ANTENNA/EQUIPMENT LOCATIONS WITH THE MOUNT ANALYSIS.

1 / DE-4 **ANTENNA PLAN @ 139 FT. - PROPOSED**
Scale: 3/16" = 1'-0"

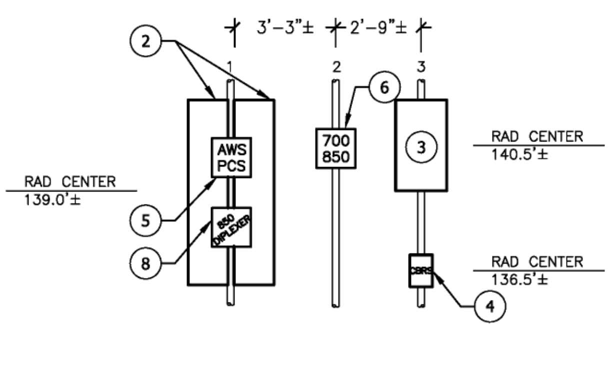
ANTENNA/EQUIPMENT LEGEND:

1. NEW MX10FR0640 ANTENNA (71.6"Hx19.8"Wx7.4"D)
2. NEW MX06FR0660–03 ANTENNA (71.3"Hx15.4"Wx10.7"D)
3. NEW MT6407–77A INTEGRATED ANTENNA/RRH (35.0"Hx19.7"Wx5.8"D)
4. NEW SAMSUNG CBRS INTEGRATED ANTENNA/RRH (12.3"Hx8.7"Wx5.5"D)
5. NEW SAMSUNG PCS/AWS DUAL BAND RRH (15.0"Hx15.0"Wx10.0"D)
6. NEW SAMSUNG 700/850 DUAL BAND RRH (15.0"Hx15.0"Wx8.1"D)
7. NEW SAMSUNG CBRS RRH (12.1"Hx8.5"Wx4.1"D)
8. NEW COMMSCOPE 700/850 DIPLEXER (6.4"Hx6.9"Wx9.6"D)
9. NEW 12–CKT RAYCAP OVP (29.5"Hx16.5"Wx12.6"D)



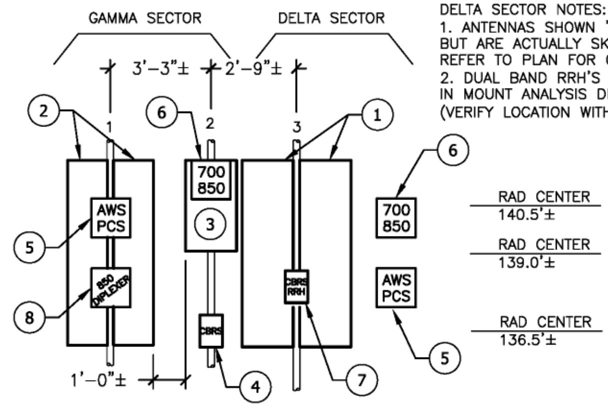
(VIEWED FROM BEHIND SECTOR)

2 / DE-4 **ALPHA SECTOR ELEVATION - PROPOSED**
Scale: 1/4" = 1'-0"



(VIEWED FROM BEHIND SECTOR)

3 / DE-4 **BETA SECTOR ELEVATION - PROPOSED**
Scale: 1/4" = 1'-0"



DELTA SECTOR NOTES:
1. ANTENNAS SHOWN "FACE–ON", BUT ARE ACTUALLY SKEWED, REFER TO PLAN FOR CLEARANCES.
2. DUAL BAND RRH'S NOT SHOWN IN MOUNT ANALYSIS DIAGRAM (VERIFY LOCATION WITH MASER).

(VIEWED FROM BEHIND SECTOR)

4 / DE-4 **GAMMA/DELTA ELEVATION - PROPOSED**
Scale: 1/4" = 1'-0"

verizon
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20 ALEXANDER DRIVE
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LICENSURE

STATE OF CONNECTICUT DAVID A. WEINPAHL NO. 22144 LICENSED PROFESSIONAL ENGINEER

DAVID WEINPAHL, P.E.
CT LIC NO. 22144

SUBMITTALS

NO	DATE	DESCRIPTION
1	03.21.22	REVIEW
2	04.15.22	PERMITTING/CONSTRUCTION

DRAWN BY: MF
CHECKED BY: DW

PROJECT NAME:
ANTMO 4TH SECTOR MT6407-CBRS-850-LTE DESIGN EXHIBITS

SITE NAME:
GREENWICH 3 CT

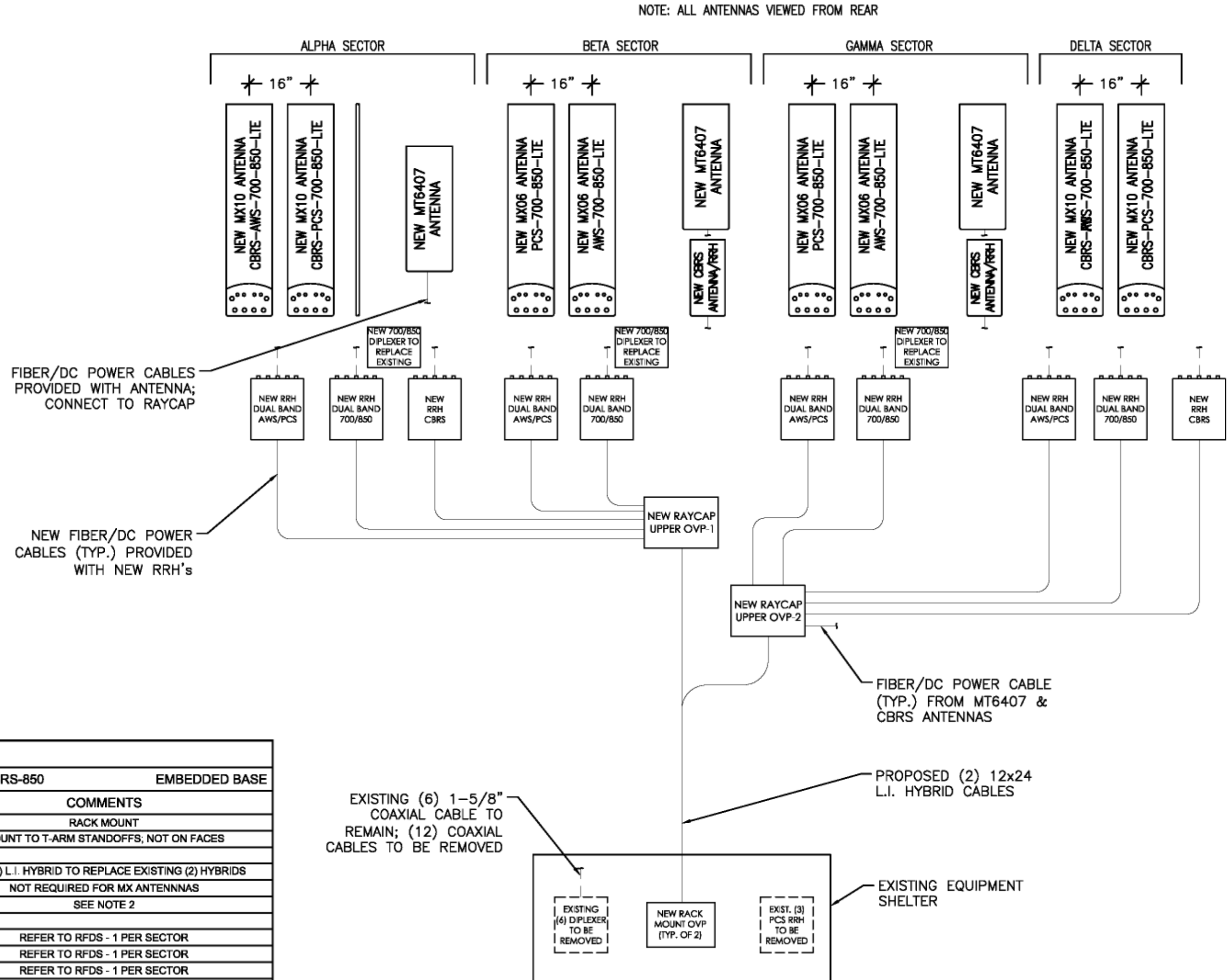
SITE ADDRESS:
EVERSOURCE TOWER #1281
9 SOUND SHORE DR.
GREENWICH, CT 06830

SHEET TITLE:
ANTENNA PLAN & ELEVATIONS

SHEET NUMBER:
DE-4

GENERAL NOTES:

1. CONTRACTOR SHALL REFER TO THE LATEST VERIZON WIRELESS RFDS WHICH MAY INCLUDE ANTENNA SECTOR AZIMUTHS/ANTENNA CHANGES, ETC. THAT ARE REQUIRED AS PART OF THE PROJECT.
2. CONTRACTOR SHALL SECURE ALL CONTROL CABLES IN ACCORDANCE WITH INDUSTRY STANDARDS AND MANUFACTURERS INSTRUCTIONS. EXTERIOR CABLES MAY BE TAPED OR TIE-WRAPPED TO EXISTING SUPPORTS EVERY 4 FT. MAX. FOR HORIZONTAL RUNS. CONTRACTOR MAY USE HOISTING GRIPS AT TOP OF VERTICAL CABLE RUNS WHEN REQUIRED.
3. ALL CABLES SHALL BE ROUTED AND SECURED ON STRUCTURAL MEMBERS ONLY - DO NOT "LOOP" THE CABLES IN MID-AIR BETWEEN ANTENNAS
4. REFER TO RFDS FOR DETAILED PLUMBING DIAGRAM SHOWING ALL JUMPER AND OTHER CABLING CONNECTIONS AT ANTENNAS, RRH's, DIPLEXERS OR OTHER DEVICES.



1 / DE-5 **RF PLUMBING DIAGRAM**
Scale: N.T.S

BILL OF MATERIALS			
SITE NAME: GREENWICH 3 CT	ANTMO MT6407-CBRS-850		EMBEDDED BASE
DESCRIPTION	QTY	LENGTH	COMMENTS
LOWER OVP	2	-	RACK MOUNT
12-CKT. UPPER OVP	2	-	MOUNT TO T-ARM STANDOFFS; NOT ON FACES
12x24 L.I. HYBRID CABLE	2	170 FT.	NEW (1) L.I. HYBRID TO REPLACE EXISTING (2) HYBRIDS
RET CONTROL CABLE	-	-	NOT REQUIRED FOR MX ANTENNNAS
1/2" JUMPERS	-	-	SEE NOTE 2
AWS/PCS DUAL BAND RRH	4	-	REFER TO RFDS - 1 PER SECTOR
700/850 DUAL BAND RRH	4	-	REFER TO RFDS - 1 PER SECTOR
CBRS RRH	4	-	REFER TO RFDS - 1 PER SECTOR
700/850 DIPLEXER	3	-	REFER TO RFDS - 3 TOTAL
MT6407 INTEGRATED ANTENNA	3	-	ANTENNA/RRH INTEGRATED - REFER TO RFDS
CBRS ANTENNA	2	-	INTEGRATE WITH CBRS RRH - 2 SECTORS
MX10 ANTENNA	4	-	REFER TO RFDS - 1 PER SECTOR
MX06 ANTENNA	4	-	REFER TO RFDS - 1 PER SECTOR
SIDE-BY-SIDE MTG. BRACKET	4	-	REFER TO RFDS - 1 PER SECTOR

NOTES:
1. ITEMS SHOWN ARE FOR MAJOR DESIGN ELEMENTS ONLY. REFER TO VERIZON WIRELESS RFDS FOR ALL MANUFACTURER PART NUMBERS AND ACCESSORY ITEMS REQUIRED FOR A COMPLETE INSTALLATION.
2. CONTRACTOR SHALL DETERMINE AND PROVIDE ALL REQUIRED PRE-FAB JUMPER QUANTITIES AND LENGTHS, KEEPING ALL LENGTHS TO A MINIMUM.

verizon
WIRELESS COMMUNICATIONS FACILITY
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DAVID WEINPAHL, P.E.
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2	04.15.22	PERMITTING/CONSTRUCTION
NO	DATE	DESCRIPTION

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CHECKED BY: DW

PROJECT NAME:
ANTMO 4TH SECTOR MT6407-CBRS-850-LTE DESIGN EXHIBITS

SITE NAME:
GREENWICH 3 CT

SITE ADDRESS:
EVERSOURCE TOWER #1281
9 SOUND SHORE DR.
GREENWICH, CT 06830

SHEET TITLE:
RF PLUMBING DIAGRAM & B.O.M.

SHEET NUMBER:
DE-5

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR SHALL NOT COMMENCE ANY WORK UNTIL HE OBTAINS, AT HIS OWN EXPENSE, ALL INSURANCE REQUIRED BY *CELLCO PARTNERSHIP d/b/a VERIZON, THE PRO*PERTY OWNER AND/OR PROPERTY MANAGEMENT COMPANY.

2. ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE CODES AND REGULATIONS AND ALL LOCAL LAWS AND REGULATIONS, CURRENT EDITIONS.

3. CONTRACTOR SHALL VISIT THE JOB SITE AND FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.

4. 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 AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.

5. CONTRACTOR IS TO REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUB-CONTRACTORS AND ALL RELATED PARTIES. THE SUB-CONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.

6. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON DRAWINGS OR WRITTEN IN SPECIFICATIONS.

7. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.

8. CONTRACTOR SHALL OBTAIN AT HIS OWN EXPENSE ALL PERMITS AND ALL INSPECTIONS REQUIRED FROM FEDERAL AND STATE GOVERNMENTS, COUNTIES, MUNICIPALITIES AND OTHER REGULATORY AGENCIES WHICH MAY BE REQUIRED FOR THE PROJECT.

10. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. MINOR MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.

11. ALL MATERIAL PROVIDED BY *CELLCO PARTNERSHIP d/b/a VERIZON IS TO BE* REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTOR PRIOR TO INSTALLATION. ANY DEFICIENCIES TO PROVIDED MATERIALS SHALL BE BROUGHT TO THE CONSTRUCTION MANAGERS ATTENTION IMMEDIATELY.

12. THE MATERIALS INSTALLED IN THE WORK SHALL MEET THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. NO SUBSTITUTIONS ARE ALLOWED.

13. CONTRACTOR IS SOLELY RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION, FOR SEQUENCES AND PROCEDURES TO BE USED, AND TO ENSURE THE SAFETY OF THE EXISTING BUILDING AND ITS COMPONENT DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.

14. CONTRACTOR SHALL COORDINATE ALL CIVIL, STRUCTURAL AND ELECTRICAL DRAWINGS FOR THE LOCATION OF ALL OPENINGS, RECESSES, BUILT-IN WORK, ETC.

15. CONTRACTOR SHALL RECEIVE CLARIFICATION IN WRITING AND SHALL RECEIVE IN WRITING AUTHORIZATION TO PROCEED BEFORE STARTING WORK ON ANY ITEMS NOT CLEARLY DEFINED OR IDENTIFIED BY THE CONTRACT DOCUMENTS.

16. CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ALL PRODUCTS OR ITEMS NOTED AS "EXISTING" WHICH ARE NOT FOUND TO BE IN THE FIELD.

17. ERECTION SHALL BE DONE IN A WORKMANLIKE MANNER BY COMPETENT EXPERIENCED WORKMEN IN ACCORDANCE WITH APPLICABLE CODES AND THE BEST-ACCEPTED PRACTICE. ALL MEMBERS SHALL BE LAID PLUMB AND TRUE AS INDICATED ON THE DRAWINGS.

18. CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE WORK AREA, ADJACENT AREAS, AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFORM TO ALL O.S.H.A REQUIREMENTS.

19. CONTRACTOR SHALL COORDINATE HIS WORK AND SCHEDULE HIS ACTIVITIES AND WORKING HOURS IN ACCORDANCE WITH THE REQUIREMENTS OF THE PROPERTY OWNER AND/OR PROPERTY MANAGEMENT COMPANY.

20. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH THE WORK OF OTHERS AS IT MAY RELATE TO RADIO EQUIPMENT, ANTENNAS AND ANY OTHER PORTIONS OF THE WORK.

21. CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY INDICATED OR WHERE LOCAL CODES OR REGULATIONS MAY TAKE PRECEDENCE.

22. CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING SURFACES, EQUIPMENT, IMPROVEMENTS, PIPING, ANTENNA AND ANTENNA CABLES AND REPAIR ANY DAMAGE THAT OCCURS DURING CONSTRUCTION.

23. CONTRACTOR SHALL REPAIR ALL EXISTING SURFACES DAMAGED DURING CONSTRUCTION SUCH THAT THEY MATCH AND BLEND WITH ADJACENT SURFACES.

24. CONTRACTOR SHALL KEEP CONTRACT AREA CLEAN, HAZARD FREE AND DISPOSE OF ALL DEBRIS AND RUBBISH. EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY OF THE OWNER SHALL BE REMOVED. LEAVE PREMISES IN CLEAN CONDITIONS AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL ITEMS UNTIL COMPLETION OF CONSTRUCTION.

25. BEFORE FINAL ACCEPTANCE OF THE WORK, CONTRACTOR SHALL REMOVE ALL EQUIPMENT, TEMPORARY WORKS, UNUSED AND USELESS MATERIALS, RUBBISH AND TEMPORARY STRUCTURES.

verizon
WIRELESS COMMUNICATIONS FACILITY

20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

On Air Engineering, LLC
88 Foundry Pond Road
Cold Spring, NY 10516
201-456-4624
onair@optonline.net

LICENSURE

STATE OF CONNECTICUT
DAVID A. WEINPAHL
NO. 22144
LICENSED
LICENSED PROFESSIONAL ENGINEER

DAVID WEINPAHL, P.E.
CT LIC NO. 22144

SUBMITTALS

NO	DATE	DESCRIPTION
1	03.21.22	REVIEW
2	04.15.22	PERMITTING/CONSTRUCTION

DRAWN BY:	MF
CHECKED BY:	DW

PROJECT NAME:
ANTMO 4TH SECTOR
MT6407-CBRS-850-LTE
DESIGN EXHIBITS

SITE NAME:
GREENWICH 3 CT

SITE ADDRESS:
EVERSOURCE TOWER #1281
9 SOUND SHORE DR.
GREENWICH, CT 06830

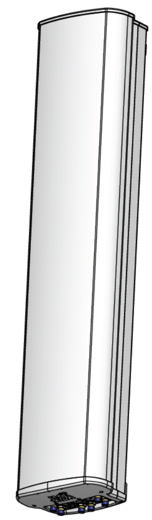
SHEET TITLE:
GENERAL CONSTRUCTION NOTES

SHEET NUMBER:
DE-6

MX06FRO660-03

NWAV™ X-Pol Hex-Port Antenna

X-Pol Hex-Port 6 ft 60° Fast Roll Off antenna with independent tilt on 700 & 850 MHz: 2 ports 698-798, 824-894 MHz and 4 ports 1695-2180 MHz

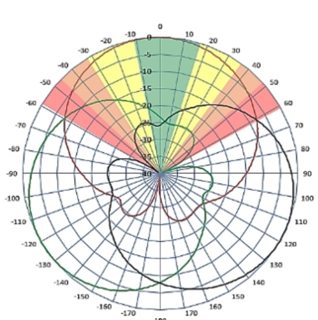


- Fast Roll Off (FRO™) azimuth beam pattern improves Intra- and Inter-cell SINR
- Compatible with dual band 700/850 MHz radios with independent low band EDT without external diplexers
- Fully integrated (iRETs) with independent RET control for low and high bands for ease of network optimization
- SON-Ready array spacing supports beamforming capabilities
- Suitable for LTE/CDMA/PCS/UMTS/GSM air interface technologies
- Integrated Smart Bias-Ts reduce leasing costs

Fast Roll-Off antennas increase data throughput without compromising coverage

The horizontal beam produced by Fast Roll-Off (FRO) technology increases the Signal to Interference & Noise Ratio (SINR) by eliminating overlap between sectors .

Non-FRO antenna



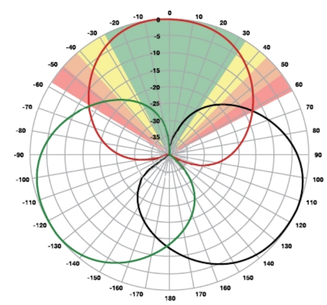
Large traditional antenna pattern overlap creates harmful interference.

JMA's FRO antenna pattern minimizes overlap, thereby minimizing interference.

LTE throughput	SINR	Speed (bps/Hz)	Speed increase	CQI
Excellent	>18	>4.5	333+%	8-10
Good	15-18	3.3-4.5	277%	6-7
Fair	10-15	2-3.3	160%	4-6
Poor	<10	<2	0%	1-3

The LTE radio automatically selects the best throughput based on measured SINR.

JMA FRO antenna



Electrical specification (minimum/maximum)	Ports 1, 2		Ports 3, 4, 5, 6		
Frequency bands, MHz	698-798	824-894	1695-1880	1850-1990	1920-2180
Polarization	± 45°		± 45°		
Average gain over all tilts, dBi	14.4	14.0	17.6	18.0	18.2
Horizontal beamwidth (HBW), degrees	60.5	53.0	55.0	55.0	55.5
Front-to-back ratio, co-polar power @180°± 30°, dB	>24	>24.0	>25.0	>25.0	>25.0
X-Pol discrimination (CPR) at boresight, dB	>15.0	>14.2	>18	>18	>15
Sector power ratio, percent	<3.5	<3.0	<3.7	<3.8	<3.6
Vertical beamwidth (VBW), degrees[1]	13.1	11.8	6.0	5.5	5.5
Electrical downtilt (EDT) range, degrees	2-14	2-14	0-9		
First upper side lobe (USLS) suppression, dB[1]	≤-15.0	≤-16.5	≤-16.0	≤-16.0	≤-16.0
Cross-polar isolation, port-to-port, dB[1]	25	25	25	25	25
Max VSWR / return loss, dB	1.5:1 / -14.0		1.5:1 / -14.0		
Max passive intermodulation (PIM), 2x20W carrier, dBc	-153		-153		
Max input power per any port, watts	300		250		
Total composite power all ports, watts	1500				

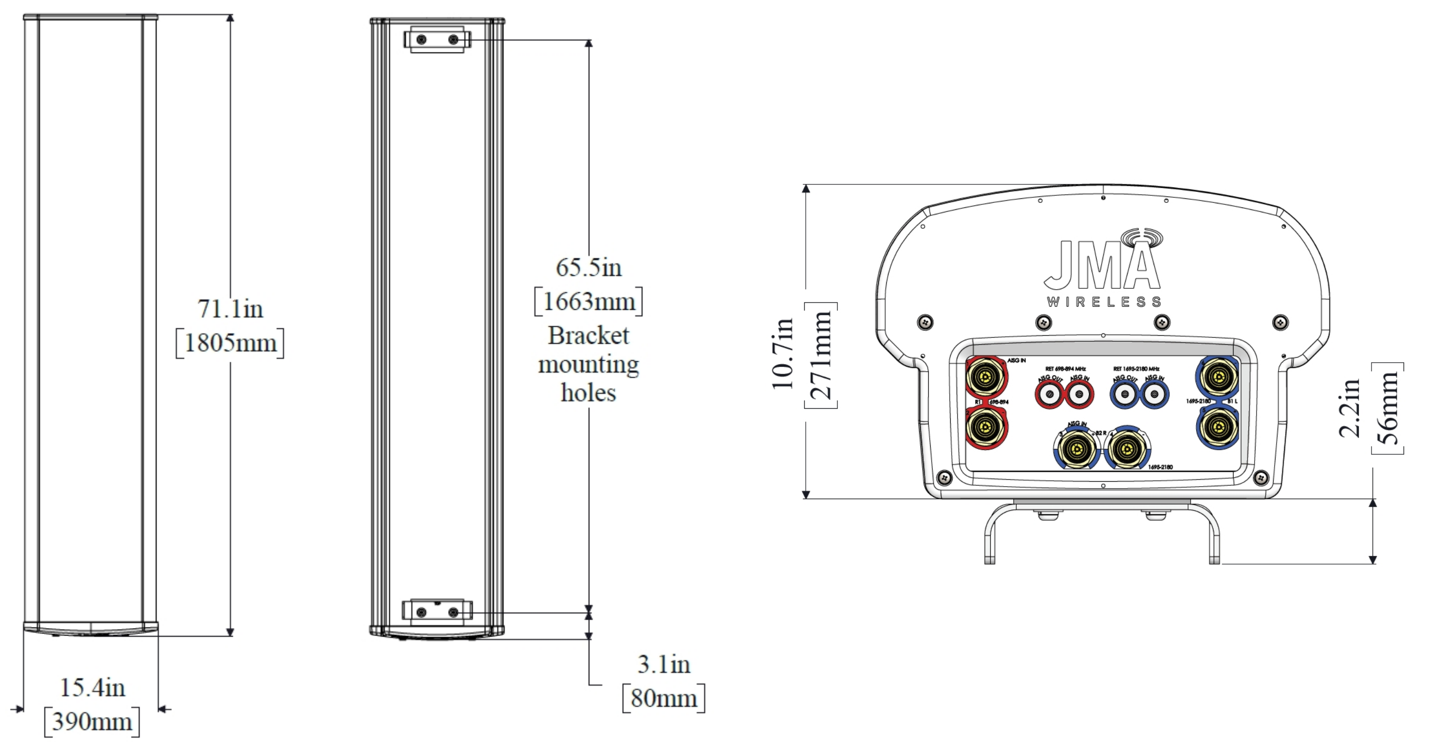
[1] Typical value over frequency and tilt

MX06FRO660-03

NWAV™ X-Pol Hex-Port Antenna

Mechanical specifications	
Dimensions height/width/depth, inches (mm)	71.3/ 15.4/ 10.7 (1811/ 392/ 273)
Shipping dimensions length/width/height, inches (mm)	82/ 20/ 15 (2083/ 508/ 381)
No. of RF input ports, connector type, and location	6 x 4.3-10 female, bottom
RF connector torque	96 lbf·in (10.85 N·m or 8 lbf·ft)
Net antenna weight, lb (kg)	60 (27.0)
Shipping weight, lb (kg)	90 (41.0)
Antenna mounting and downtilt kit included with antenna	91900318
Net weight of the mounting and downtilt kit, lb (kg)	18 (8.18)
Range of mechanical up/down tilt	-2° to 14°
Rated wind survival speed, mph (km/h)	150 (241)
Frontal, lateral, and rear wind loading @ 150 km/h, lbf (N)	154 (685), 73 (325), 158 (703)
Equivalent flat plate @ 100 mph and Cd=2, sq ft	2.6

Front view **Back view** **Bottom view**



Ordering information	
Antenna model	**Description**
MX06FRO660-03	6F X-Pol HEX FRO 60° independent tilt 700/850 RET, 4.3-10 & SBT
Optional accessories	
AISG cables	M/F cables for AISG connections
PCU-1000 RET controller	Stand-alone controller for RET control and configurations

MX06FRO660-03

NWAV™ X-Pol Hex-Port Antenna

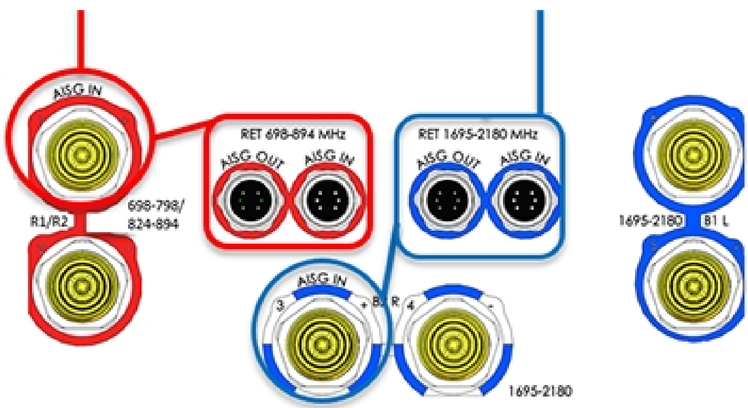
Remote electrical tilt (RET 1000) information	
RET location	Integrated into antenna
RET interface connector type	8-pin AISG connector per IEC 60130-9
RET connector torque	Min 0.5 N·m to max 1.0 N·m (hand pressure & finger tight)
RET interface connector quantity	2 pairs of AISG male/female connectors
RET interface connector location	Bottom of the antenna
Total no. of internal RETs (low bands)	2
Total no. of internal RETs (high bands)	1
RET input operating voltage, vdc	10-30
RET max power consumption, idle state, W	≤ 2.0
RET max power consumption, normal operating conditions, W	≤ 13.0
RET communication protocol	AISG 2.0 / 3GPP

RET and RF connector topology

Each RET device can be controlled either via the designated external AISG connector or RF port as shown below:

RET device	Band	RF port
R1	698-798	1-2
R2	824-894	1-2

RET device	Band	RF port
B1/B2	1695-2180	3-6



Array topology

3 sets of radiating arrays

R1/R2: 698-894 MHz
B1: 1695-2180 MHz
B2: 1695-2180 MHz

Band	RF port
1695-2180	3-4
698-894	1-2
1695-2180	5-6

MX10FRO640-xx

NWAV™ X-Pol Ten-Port Antenna

X-Pol Ten-Port 6 ft, 40° Fast Roll Off, with Smart Bias Ts, 698-4200 MHz:

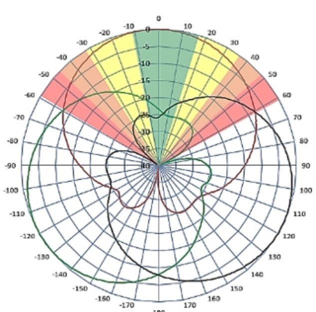
2 ports 698-894 MHz, 4 ports 1695-2180 MHz, and 4 ports 3400-4200 MHz

- Fast Roll Off (FRO™) azimuth beam pattern improves Intra- and Inter-cell SINR
- Excellent passive intermodulation (PIM) performance reduces harmful interference.
- Fully integrated (iRETs) with independent RET control for low band and mid band
- FET configured with internal RET for high band & ease of future network optimization.
- SON-Ready array spacing supports beamforming capabilities
- Suitable for 3G, 4G, and 5G interface technologies
- Integrated Smart Bias-Ts reduce leasing costs

Fast Roll-Off antennas increase data throughput without compromising coverage

The horizontal beam produced by Fast Roll-Off (FRO) technology increases the Signal to Interference & Noise Ratio (SINR) by eliminating overlap between sectors .

Non-FRO antenna



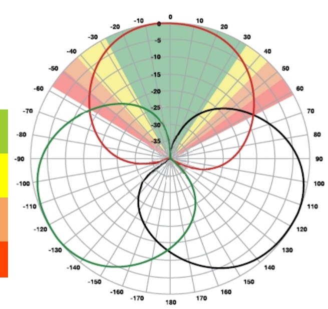
Large traditional antenna pattern overlap creates harmful interference.

JMA's FRO antenna pattern minimizes overlap, thereby minimizing interference.

LTE throughput	SINR	Speed (bps/Hz)	Speed increase	CQI
Excellent	>18	>4.5	333+%	8-10
Good	15-18	3.3-4.5	277%	6-7
Fair	10-15	2-3.3	160%	4-6
Poor	<10	<2	0%	1-3

The LTE radio automatically selects the best throughput based on measured SINR.

JMA FRO antenna



Electrical specification (minimum/maximum)	Ports 1, 2		Ports 3, 4, 5, 6		
Frequency bands, MHz	698-798	824-894	1695-1880	1850-1990	1920-2180
Polarization	± 45°		± 45°		
Average gain over all tilts, dBi	16.3	17.2	19.3	20.1	20.4
Horizontal beamwidth (HBW), degrees[1]	42	37	40	39	37
Front-to-back ratio, co-polar power @180°± 30°, dB	>25.0	>25.0	>28.0	>28.0	>28.0
X-Pol discrimination (CPR) at boresight, dB	>18.0	>15.0	>18	>18	>15
Vertical beamwidth (VBW), degrees[1]	13.1	11.8	6.0	5.7	5.3
Electrical downtilt (EDT) range, degrees	2-14		0-9		
First upper side lobe (USLS) suppression, dB[1]	≤-15.0	≤-15.0	≤-16.0	≤-16.0	≤-16.0
Cross-polar isolation, port-to-port, dB[1]	25	25	25	25	25
Max VSWR / return loss, dB	1.5:1 / -14.0		1.5:1 / -14.0		
Max passive intermodulation (PIM), 2x20W carrier, dBc	-153		-153		
Max input power per any port, watts	300		250		
Total composite power all ports (1-10), watts	1500				

[1] Typical value over frequency and tilt

Electrical specification (minimum/maximum)	Ports 7, 8, 9, 10			
Frequency bands, MHz	3400-3550	3550-3700	3700-3950	3950-4200
Polarization	± 45°			
Average gain over all tilts, dBi	14.6	14.7	14.8	14.9
Horizontal beamwidth (HBW), degrees	42	41	40	40
Front-to-back ratio, co-polar power @180°± 30°, dB	>22	>22	>22	>22
Vertical beamwidth (VBW), degrees[1]	20.1	19.9	19.6	19.2
Electrical downtilt (EDT) range, degrees	2-12 orderable in 1 deg increments			
First upper side lobe (USLS) suppression, dB[1]	≤-15	≤-15	≤-15	≤-15
Cross-polar isolation, port-to-port, dB[1]	25	25	25	25
Max VSWR / return loss, dB	1.5:1 / -14.0			
Max input power per any port, watts	100			
Total composite power all ports (1-10), watts	1500			

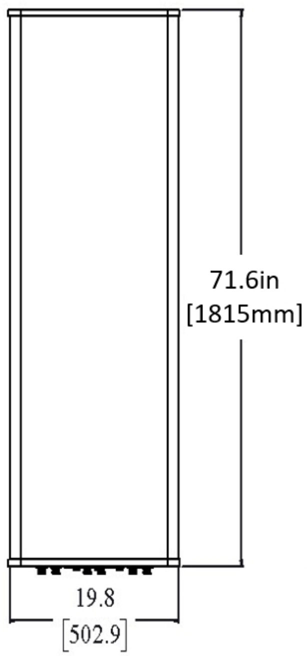
[1] Typical value over frequency and tilt

* For ports 7-10, the electrical downtilt is FET configured with internal RET, where the required electrical downtilt is defined at the time of order per the ordering information below.

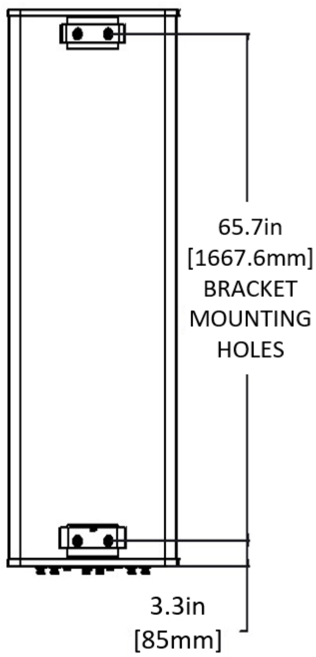
Ordering information	
Antenna model	**Description**
MX10FRO640-xx (xx represents the FET in one degree increments for 3.4-4.2 GHz)	6F X- Pol 10 Port FRO 40º 2-14º/ 0-9º/ 2-12º, 4.3-10 & SBTs
	xx=02 thru 12 for each 1 degree tilt 3.4-4.2GHz Examples: MX10FRO640-02 – 2deg, MX10FRO640-09 – 9deg, MX10FRO640-12-12deg
Optional accessories	
AISG cables	M/F cables for AISG connections
PCU-1000 RET controller	Stand-alone controller for RET control and configurations
91900314-02	Dual Mount Bracket (see 91900314 bracket document for details)

Mechanical specifications	
Dimensions height/width/depth, inches (mm)	71.6/ 19.8/ 7.4 (1815/ 503/ 188)
Shipping dimensions length/width/height, inches (mm)	76.2/ 23.8/ 14.5(1935/ 605/ 368)
No. of RF input ports, connector type, and location	10 x 4.3-10 female, bottom
RF connector torque	96 lbf·in (10.85 N·m or 8 lbf·ft)
Net antenna weight, lb (kg)	76.3 (35)
Shipping weight, lb (kg)	115.9 (53)
Antenna mounting and downtilt kit included with antenna	91900318
Net weight of the mounting and downtilt kit, lb (kg)	20.3 (9.2)
Range of mechanical up/down tilt	-2° to 12°
Rated wind survival speed, mph (km/h)	150 (241)
Frontal, lateral, and rear wind loading @ 150 km/h, lbf (N)	183.3 (815), 40.7 (181), 276.8 (1231)
Equivalent flat plate @ 100 mph and Cd=2, sq ft	3.69

Front view



Back view



Bottom view

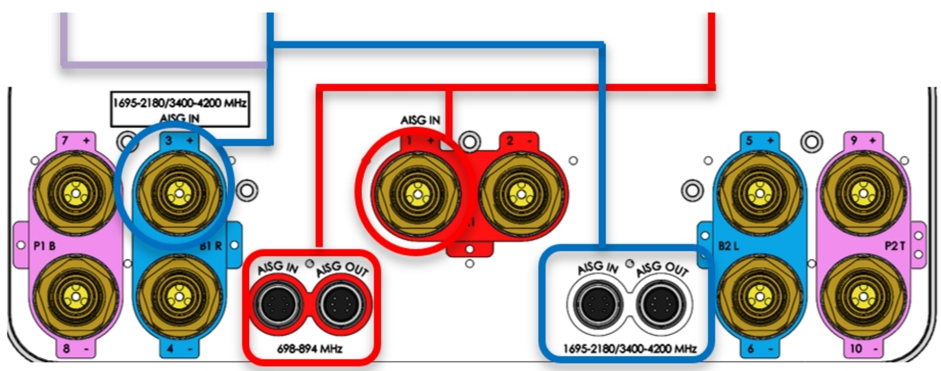
Remote electrical tilt (RET 1000) information	
RET location	Integrated into antenna
RET interface connector type	8-pin AISG connector per IEC 60130-9 or RF port bias-t
RET connector torque	Min 0.5 N·m to max 1.0 N·m (hand pressure & finger tight)
RET interface connector quantity	2 pairs of AISG male/female connectors and 2 RF port Bias Ts
RET interface connector location	Bottom of the antenna
Total no. of internal RETs 698-894 MHz	1
Total no. of internal RETs 1695-2180 MHz	1
Total no. of internal RETs 3400-4200 MHz	1
RET input operating voltage, vdc	10-30
RET max power consumption, idle state, W	≤ 2.0
RET max power consumption, normal operating conditions, W	≤ 13.0
RET communication protocol	AISG 2.0 / 3GPP

RET and RF connector topology

Each RET device can be controlled either via the designated external AISG connector or RF smart bias-t port as shown below:

Band	RF port	Band	RF port
3400-4200	7-10	1695-2180	3-6

Band	RF port
698-894	1-2



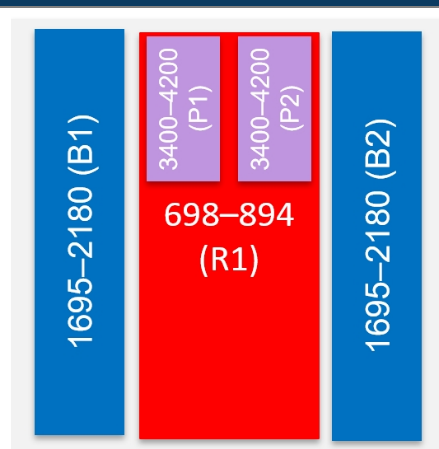
Note: The RET Device for 3400-4200 MHz is connected via the 1695-2180 Port 3 Bias T port or 1695-2180/3400-4200 MHz AISG ports.

Array topology

5 sets of radiating arrays

R1: 698-894 MHz
B1: 1695-2180 MHz
B2: 1695-2180 MHz
P1: 3400-4200 MHz
P2: 3400-4200 MHz

Band	RF port
698-894	1-2
1695-2180	3-4
1695-2180	5-6
3400-4200	7-8
3400-4200	9-10



[CBRS] Clip-on Antenna Specifications

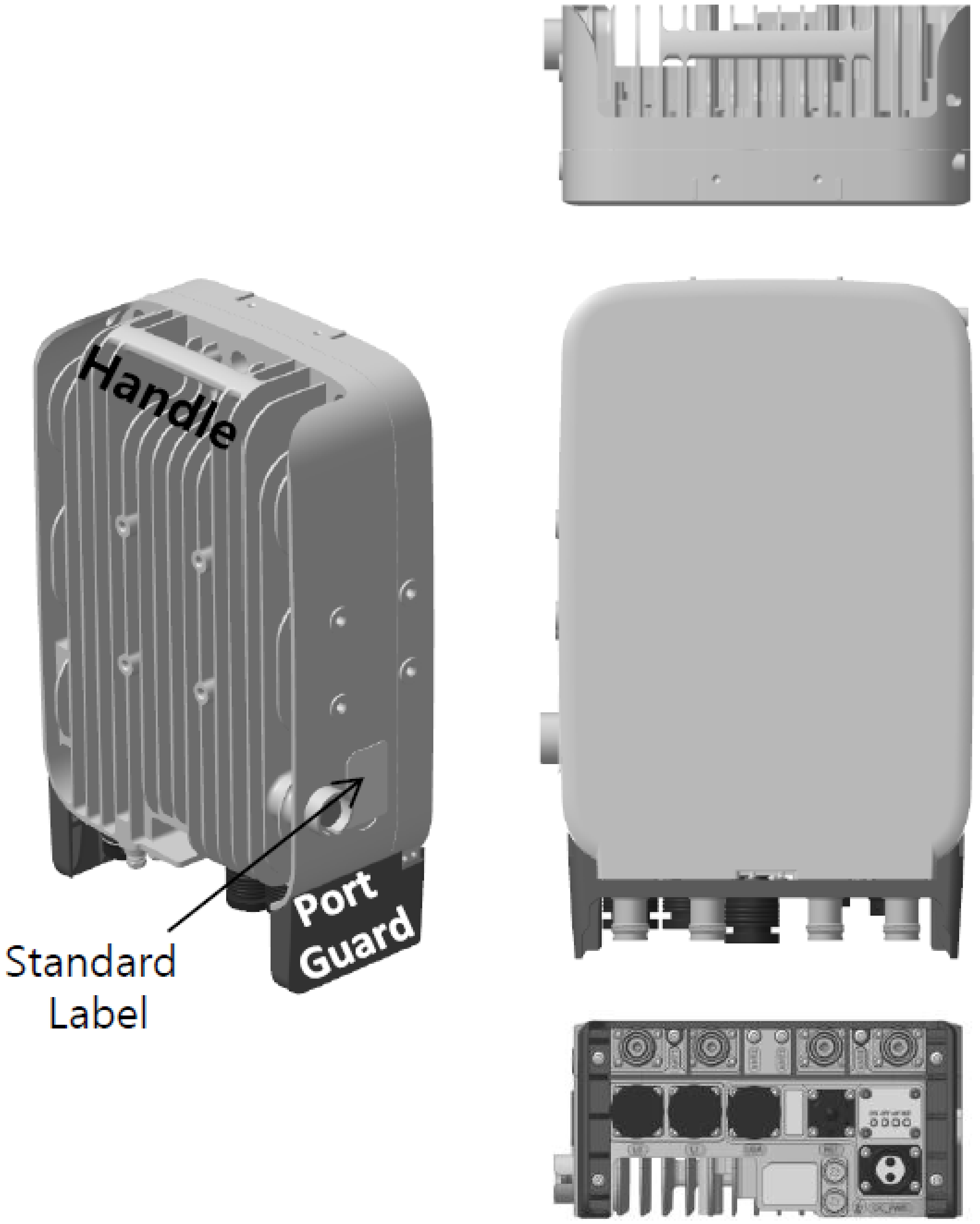
VzW accepted IP45 in FLD,
but IP55 is Samsung Spec.

Items	Clip-on Antenna, BASTA**
Antenna Gain	12.5 ± 0.5 dBi (Max 13 dBi)
Horizontal BW (-3dB)	65° ± 5°
Vertical BW (-3dB)	17° ±3°
Electrical Tilt	8° (fixed) ±2°
Front-to-Back Ratio	> 25 dB
Port-to-Port Tracking	< 3 dB
VSWR	< 1.5
Isolation	> 25 dB
Ingress Protection	**IP55**
Size	220(W)×313(H)×34.3(D) mm (*) (8.7 x 12.3 x 1.4 inch.)
Weight	< **2.0** kg [Typ. 1.3 kg]
It is required that the radio should be weatherproofed properly with JMA WPS Boot with external antenna or with Weatherproof Boot for clip-on antennas.	

Antenna includes integrated cable with connector
* Design is subject to minor change

** Ant. spec. follows NGMN recommendations on Base Station Antenna Standards (BASTA). For example, 'mean ± tolerance of 86.6%' is applied to double-sided specification of statistical RF parameters.

[CBRS RRH] Spec.



Current Size: 216 x 307 x 105.5 mm (6.99L)
(8.5 x 12.1 x 4.1 inch., excluding Port Guard)
Design is subject to minor change

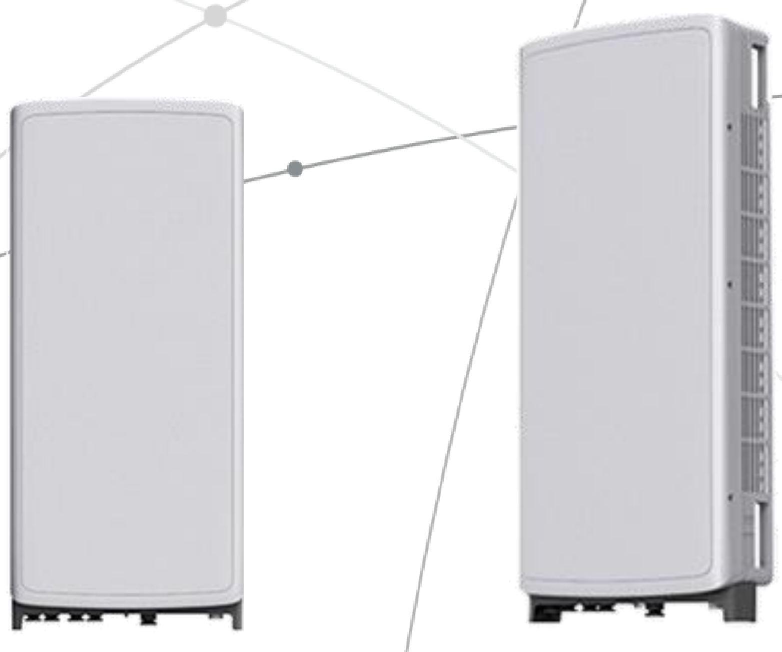
Item	Specification
Band	Band 48 (3.5 GHz)
Frequency	3550~3700 MHz
IBW	150 MHz
OBW	80 MHz
# of Carriers	5/10/15/20 MHz x 4 carriers
RF Chain	4TX / 4RX
RF Output Power & EIRP	4 path x 5 W (Total: 20 W = 43 dBm) (EIRP: 47 dBm / 10 MHz)
RX Sensitivity	Typical : -101.5 dBm @ 1 Rx (3GPP 36.104, Wide Area)
Modulation	256-QAM support (1024-QAM with 1~2dB power back-off)
Input Power	-48 VDC (-38 to -57 VDC, 1 SKU), with clip-on AC-DC converter (Option)
Power Consumption	About 160 Watt @ 100% RF load, typical conditions
Volume	**Under 7L** (w/o Antenna), Under 9.6L (with antenna)
Weight	**Under 8.0 kg** (**18.64** lb) (w/o Antenna), Under 10.5 Kg (with ant.)
Operating Temperature	-40°C (-40°F) ~ 55°C (131°F) (W/o solar load)
Cooling	Natural convection
Unwanted Emission	3GPP 36.104 Category A
	[B48] : FCC 47 CFR 96.41 e)
Optic Interface	20km, 2 ports (9.8Gbps x 2), SFP, single mode, duplex or Bi-Di
CPRI Cascade	Not supported
# of Antenna Port	4
External Alarm (UDA)	4
RET	AISG 2.2
TMA & built-in Bias-T I//F and PIM cancellation	Not supported
Mounting Options	Pole, wall, tower, back to back, side by side (for external ant), 3 RRH with Clip-on Antenna on the pole
Antenna Type	Integrated (Clip-on) antenna (Option), External antenna (Option)
NB-IoT	Not Supported (HW Resource reserved for 1 Guard Band NB-IoT per LTE carrier)
Spectrum Analyzer	TX/RX Support
External Alarm (UDA)	4
5G NR	Support with S/W upgrade
XRAN	Support with S/W upgrade

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

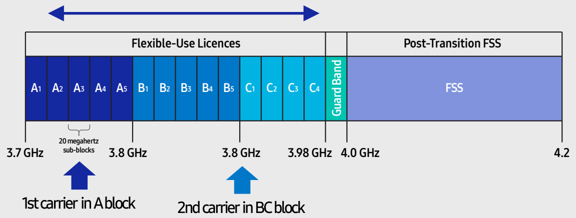


Points of Differentiation

Wide Bandwidth

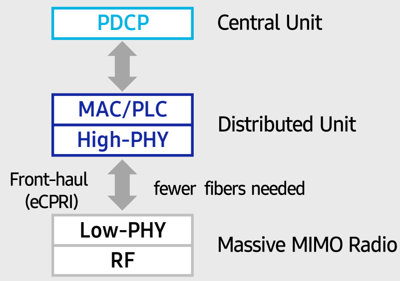
With capability to support up to 2 CC carrier configuration, Samsung C-Band massive MIMO Radio supports 200 MHz bandwidth in the C-Band spectrum.

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



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.

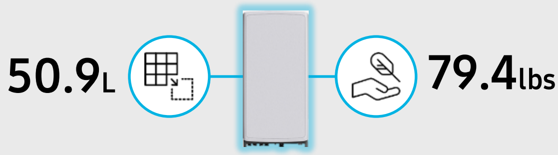
This helps operators reduce their CAPEX as they now need less products to cover the same area than before.

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

SAMSUNG

700/850MHZ MACRO RADIO

DUAL-BAND AND HIGH POWER FOR MACRO COVERAGE

Samsung's future proof dual-band radio is designed to help effectively increase the coverage areas in wireless networks. This 700/850MHz 4T4R dual-band radio has 4Tx/4Rx to 2Tx/2Rx RF chains options and a total output power of 320W, making it ideal for macro sites.

Model Code	RF4440d-13A

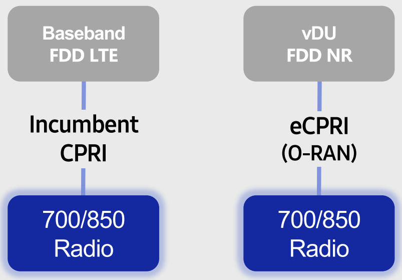
Homepage
samsungnetworks.com

Youtube
www.youtube.com/samsung5g

Points of Differentiation

Continuous Migration

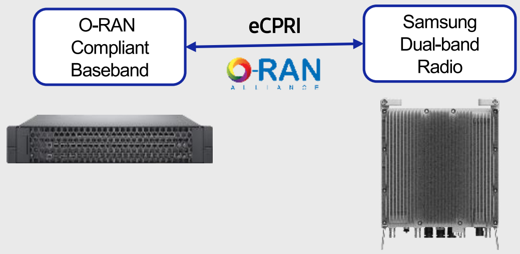
Samsung's 700/850MHz macro radio can support each incumbent CPRI interface as well as an advanced eCPRI interface. This feature provides installable options for both legacy LTE networks and added NR networks.



O-RAN Compliant

A standardized O-RAN radio can help when implementing cost-effective networks because it is capable of sending more data without compromising additional investments.

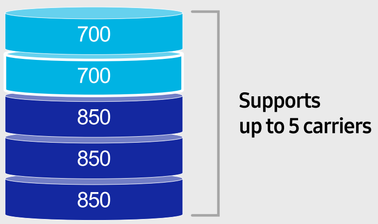
Samsung's state-of-the-art O-RAN technology will help accelerate the effort toward constructing a solid O-RAN ecosystem.



Optimum Spectrum Utilization

The number of required carriers varies according to site (region). The ability to support many carriers is essential for using all frequencies that the operator has available.

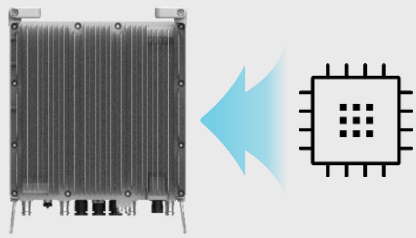
The new 700/850MHz dual-band radio can support up to 2 carriers in the B13 (700MHz) band and 3 carriers in the B5 (850MHz) band, respectively.



Secured Integrity

Access to sensitive data is allowed only to authorized software.

The Samsung radio's CPU can protect root of trust, which is credential information to verify SW integrity, and secure storage provides access control to sensitive data by using dedicated hardware (TPM).



Technical Specifications

Item	Specification
Tech	LTE / NR
Brand	B13(700MHz), B5(850MHz)
Frequency Band	DL: 746 – 756MHz, UL: 777 – 787MHz DL: 869 – 894MHz, UL: 824 – 849MHz
RF Power	(B13) 4 × 40W or 2 × 60W (B5) 4 × 40W or 2 × 60W
IBW/OBW	(B13) 10MHz / 10MHz (B5) 25MHz / 25MHz
Installation	Pole, Wall
Size/ Weight	14.96 x 14.96 x 9.05inch (33.2L) / 70.33 lb

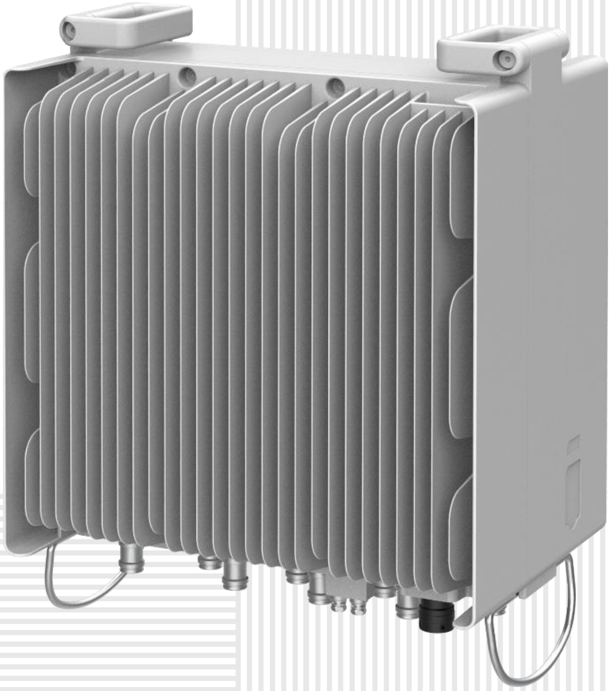
SAMSUNG

AWS/PCS MACRO RADIO

DUAL-BAND AND HIGH POWER FOR MACRO COVERAGE

Samsung's future proof dual-band radio is designed to help effectively increase the coverage areas in wireless networks. This AWS/PCS 4T4R dual-band radio has 4Tx/4Rx to 2Tx/2Rx RF chains options and a total output power of 320W, making it ideal for macro sites.

Model Code	RF4439d-25A



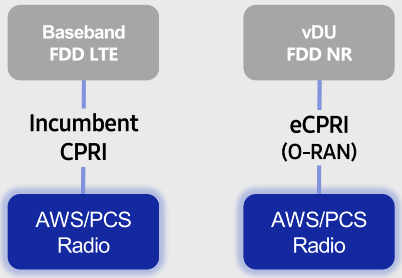
Homepage
samsungnetworks.com

Youtube
www.youtube.com/samsung5g

Points of Differentiation

Continuous Migration

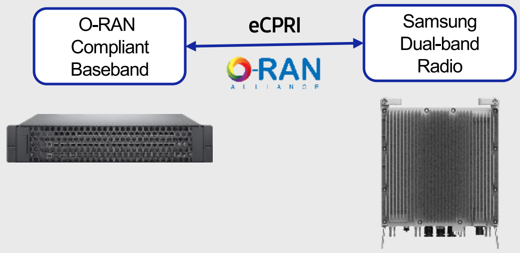
Samsung's AWS/PCS macro radio can support each incumbent CPRI interface as well as advanced eCPRI interfaces. This feature provides installable options for both legacy LTE networks and added NR networks.



O-RAN Compliant

A standardized O-RAN radio can help in implementing cost-effective networks, which are capable of sending more data without compromising additional investments.

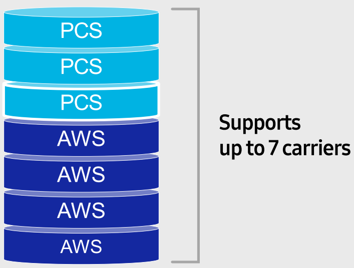
Samsung's state-of-the-art O-RAN technology will help accelerate the effort toward constructing a solid O-RAN ecosystem.



Optimum Spectrum Utilization

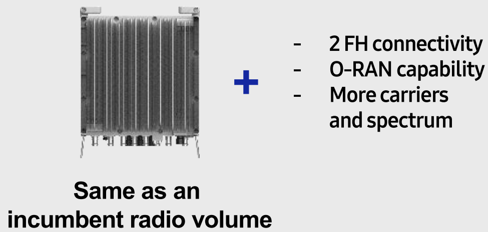
The number of required carriers varies according to site (region). Supporting many carriers is essential for using all frequencies that the operator has available.

The new AWS/PCS dual-band radio can support up to 3 carriers in the PCS (1.9GHz) band and 4 carriers in the AWS (2.1GHz) band, respectively.



Brand New Features in a Compact Size

Samsung's AWS/PCS macro radio offers several features, such as dual connectivity for baseband for both CDU and vDU, O-RAN capability, more carriers and an enlarged PCS spectrum, combined into an incumbent radio volume of 36.8L.



Technical Specifications

Item	Specification
Tech	LTE / NR
Brand	B25(PCS), B66(AWS)
Frequency Band	DL: 1930 – 1995MHz, UL: 1850 – 1915MHz DL: 2110 – 2200MHz, UL: 1710 – 1780MHz
RF Power	(B25) 4 × 40W or 2 × 60W (B66) 4 × 60W or 2 × 80W
IBW/OBW	(B25) 65MHz / 30MHz (B66) DL 90MHz, UL 70MHz / 60MHz
Installation	Pole, Wall
Size/ Weight	14.96 x 14.96 x 10.04inch (36.8L) / 74.7lb

ATTACHMENT 3

	General	Power	Density					
Site Name: Greenwich 3								
Tower Height: Verizon @ 139ft								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**FREQ.**	**CALC. POWER DENS**	**MAX. PERMISS.EXP.**	**FRACTION MPE**	**Total**
*Sprint	2	1081	148	800	0.0386	0.5333	0.72%	
*Sprint	4	1340	148	1900	0.0956	1.0000	0.96%	
*Sprint	8	640	148	2500	0.0913	1.0000	0.91%	
VZW 700	**4**	**1208**	**139**	**751**	**0.0090**	**0.5007**	**1.80%**	
VZW CDMA	**2**	**499**	**139**	**876.03**	**0.0019**	**0.5840**	**0.32%**	
VZW Cellular	**4**	**1355**	**139**	**874**	**0.0101**	**0.5827**	**1.73%**	
VZW PCS	**4**	**1706**	**139**	**1980**	**0.0127**	**1.0000**	**1.27%**	
VZW AWS	**4**	**2148**	**139**	**2120**	**0.0160**	**1.0000**	**1.60%**	
VZW CBRS	**4**	**21**	**139**	**3625**	**0.0002**	**1.0000**	**0.02%**	
VZW CBAND	**2**	**14521**	**139**	**3730.08**	**0.0541**	**1.0000**	**5.41%**	
								14.73%
* Source: Siting Council								

ATTACHMENT 4

Centered on Solutions℠

Structural Analysis of Antenna Mast and Tower

Verizon Site Ref: Greenwich 3

Eversource Structure No. 1281
129' Electric Transmission Lattice Tower

9 Sound Shore Drive
Greenwich, CT

CENTEK Project No. 21007.68

Date: February 15, 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

SECTION 9 - REFERENCE MATERIAL

Introduction

The purpose of this report is to analyze the existing 150' FWT Powermount job no. 18404 dated January 5, 1999 and 128.75' utility tower located at 9 Sound Shore Drive in Greenwich, CT for the proposed antenna and equipment upgrade by Verizon.

The loads considered in this analysis consist of the following:

- SPRINT (Existing):
  Antennas: Three (3) RFS APXVSPP18-C panel antennas mounted on an existing 14-ft low profile platform to the powermount with a RAD center elevation of 148-ft above grade.
  Coax Cables: Six (6) 1-5/8" ∅ coax cables running on the inside of the existing powermount. Twelve (12) 1-5/8" ∅ coax cables mounted on Site Pro Super Universal T-Brackets p/n T1200 running on a leg of the existing tower as indicated in section 4 of this report.
- VERIZON WIRELESS (Existing to Remain):
  Coax Cables: Six (6) 1-5/8" ∅ coax cables running on the outside of the powermount as indicated in section 4 of this report
- **VERIZON WIRELESS (Existing to Remove):**
  Antennas: Six (6) Decibel DB854DG65ESX panel antennas, three (3) Andrew HBXX-6516DS panel antennas, three (3) Andrew SBNHH-1D65B panel antennas mounted on a (3) T-Arms with a RAD center elevation of 139-ft above grade.
  Coax Cables: Twelve (12) 1-5/8" ∅ coax cables running on the outside of the powermount as indicated in section 4 of this report
- **VERIZON WIRELESS (Existing):**
  Antennas: Four (4) JMA MX10FRO640 panel antennas, four (4) JMA MX06FRO660-03 panel antennas, three (3) Samsung MT6407-77A panel antennas, two (2) XXDWMM12.5-65 panel antennas, four (4) Samsung B2/B66A RRHs, four (4) Samsung B5/B13 RRHs, four (4) CBRS RRH RT4401-48A, three (3) Commscope TD-850B-LTE78-43 diplexers and two (2) RFS DB-C1-12C-24AB-0Z OVP Boxes mounted on a (3) T-Arms with a RAD center elevation of 139-ft above grade.
  Coax Cables: Two (2) 1-5/8" hybrid cables running on the outside of the powermount as indicated in section 4 of this report
  Mount: Install handrail consisting of three (3) 2 Std. horizontal pipes and angle corner plate kit (SitePro p/n AHCP).

Primary assumptions used in the analysis

- Design steel stresses are defined by AISC-LRFD 14th edition for design of the antenna Mast and antenna supporting elements.
- ASCE Manual No. 10-15, "Design of Latticed Steel Transmission Structures", defines allowable steel stresses for evaluation of the utility tower.
- All utility tower members are adequately protected to prevent corrosion of steel members.
- All proposed antenna mounts are modeled as listed above.
- All coaxial cable will be installed within the antenna mast unless specified otherwise.
- Antenna mast will be properly installed and maintained.
- No residual stresses exist due to incorrect tower erection.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds conform to the requirements of AWS D1.1.
- Antenna mast and utility tower will be in plumb condition.
- Utility tower 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 powermount was independently completed using the current version of RISA-3D computer program licensed to CENTEK Engineering, Inc. 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 existing FWT powermount consisting of a 12-in SCH. 40 pipe (O.D. = 12.75") connected at six points to the existing tower was analyzed for its ability to resist loads prescribed by the TIA/EIA standard. Section 5 of this report details these gravity and lateral wind loads. Load cases and combinations used in RISA-3D for TIA/EIA loading are listed in report Section 6.

Structural analysis of the existing tower structure was completed using the current version of PLS-Tower computer program licensed to CENTEK Engineering, Inc. The NESC program contains a library of all AISC angle shapes and corresponding section properties are computed and applied directly within the program. The program's Steel Code Check option was also utilized.

The existing 129-ft tall lattice tower was analyzed for its ability to resist loads prescribed by the NESC standard. Maximum usage for the tower was calculated considering the additional forces from the powermount and associated appurtenances. Section 7 of this report details these gravity and lateral wind loads.

Design Basis

Our analysis was performed in accordance with TIA-222-G, ASCE Manual No. 10-15, "Design of Latticed Steel Transmission Structures", NESC C2-2017 and Eversource Design Criteria.

The utility tower structure, considering existing and future conductor and shield wire loading, with the proposed antenna mast was analyzed under two conditions:

- UTILITY TOWER ANALYSIS

  The purpose of this analysis is to determine the adequacy of the existing utility structure 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 Manual No. 10-15, "Design of Latticed Steel Transmission Structures".

  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.………………………………. 110 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 (2018 CSBC Appendix-N)
Radial Ice Thickness………………………… 0”

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

Results

- ANTENNA MAST

The existing antenna mast was determined to be structurally **adequate**.

FWT Powermount	Stress Ratio (% of capacity)	Result
12” Sch. 40 Pipe	55.6%	**PASS**
L2.5x2.5x1/4 Brace	46.0%	**PASS**
Connection	96.8%	**PASS**

- UTILITY TOWER

This analysis finds that the subject utility structure is adequate to support the proposed antenna mast and related appurtenances. The tower stresses meet the requirements set forth by the ASCE Manual No. 10-15, “Design of Latticed Steel Transmission Structures”, for the applied NESC Heavy and Hi-Wind load cases. The detailed analysis results are provided in Section 8 of this report. The analysis results are summarized as follows:

A maximum usage of **98.99%** occurs in the utility structure under the **NESC Heavy** loading condition.

TOWER SECTION:
The utility structure **with the reinforcements detailed in section 4** was determined to be structurally adequate.

Tower Member	Stress Ratio (% of capacity)	Result
Angle 25AP	98.99%	**PASS**

- FOUNDATION AND ANCHORS

The existing foundation consists of a 5-ft square x 8.5-ft long reinforced concrete pier with eight (8) rock anchor groups embedded 12-ft into rock The base of the tower is connected to the foundation by four (4) 2.00” ∅ A36 bolts per leg. Foundation information was obtained from NUSCO drawing no. 01037-60010.

BASE REACTIONS:

From PLS-Tower analysis of utility tower based on NESC/EVERSOURCE prescribed loads.

Load Case	Shear	Uplift	Compression
NESC Heavy Wind	45.66 kips	167.73 kips	192.54 kips
NESC Extreme Wind	51.15 kips	185.44 kips	203.54 kips

Note 1 – 10% increase to be applied to the above tower base reactions for foundation verification per OTRM 051

ANCHOR BOLTS:

The anchor bolts were found to be within allowable limits.

Component	Design Check	Stress Ratio (percentage of capacity)	Result
Anchor Bolts	Tension	85.9%	**PASS**

FOUNDATION:

The foundation was found to be within allowable limits.

Foundation	Design Check	Design Limit	Proposed Loading	Result
Reinf. Conc. Pier w/ Rock Anchors	Uplift	1.0 FS (2)	1.31 FS (2)	**PASS**
	OTM (1)	1.0 FS (2)	1.14 FS (2)	**PASS**
	Soil Bearing	50 ksf	29.9 ksf	**PASS**

Note 1: OTM denote overturning moment.
Note 2: FS denotes Factor of Safety.

Conclusion

This analysis shows that the subject utility tower and antenna mast **with the reinforcements detailed in section 4 are adequate** to support the proposed equipment installation.

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.

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ RISA-3D

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-TOWER

PLS-TOWER is a Microsoft Windows program for the analysis and design of steel latticed towers used in electric power lines or communication facilities. Both self-supporting and guyed towers can be modeled. The program performs design checks of structures under user specified loads. For electric power structures it can also calculate maximum allowable wind and weight spans and interaction diagrams between different ratios of allowable wind and weight spans.

Modeling Features:

- Powerful graphics module (stress usages shown in different colors)
- Graphical selection of joints and members allows graphical editing and checking
- Towers can be shown as lines, wire frames or can be rendered as 3-d polygon surfaces
- Can extract geometry and connectivity information from a DXF CAD drawing
- CAD design drawings, title blocks, drawing borders or photos can be tied to structure model
- XML based post processor interface
- Steel Detailing Neutral File (SDNF) export to link with detailing packages
- Can link directly to line design program PLS-CADD
- Automatic generation of structure files for PLS-CADD
- Databases of steel angles, rounds, bolts, guys, etc.
- Automatic generation of joints and members by symmetries and interpolations
- Automated mast generation (quickly builds model for towers that have regular repeating sections) via graphical copy/paste
- Steel angles and rounds modeled either as truss, beam or tension-only elements
- Guys are easily handled (can be modeled as exact cable elements)

Analysis Features:

- Automatic handling of tension-only members
- Automatic distribution of loads in 2-part suspension insulators (v-strings, horizontal vees, etc.)
- Automatic calculation of tower dead, ice, and wind loads as well as 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
- Minimization of problems caused by unstable joints and mechanisms
- Automatic bandwidth minimization and ability to solve large problems
- Design checks according to (other standards can be added easily):
    - ASCE Standard 10-90

- AS 3995 (Australian Standard 3995)
- BS 8100 (British Standard 8100)
- EN50341-1 (CENELEC, both empirical and analytical methods are available)
- ECCS 1985
- NGT-ECCS
- PN-90/B-03200
- EIA/TIA 222-F
- ANSI/TIA 222-G
- CSA S37-01
- EDF/RTE Resal
- IS 802 (India Standard 802)

Results Features:

- Design summaries printed for each group of members
- 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
- Capability to batch run multiple tower configurations and consolidate the results
- Automated optimum angle member size selection and bolt quantity determination

Tool for interactive angle member sizing and bolt quantity determination.

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/EIA-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 C2-2007 (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/EIA Standard 222 with two exceptions:

1. An 85 mph extreme wind speed shall be used for locations in all counties throughout the NU system.
2. The stress increase of TIA Section 3.1.1.1 is disallowed. The combined wind and ice condition shall consider ½" radial ice in combination with the wind load (0.75 Wi) as specified in TIA section 2.3.16.

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

		Attachment A ES Design Criteria	Basic Wind Speed	Pressure	Height Factor	Gust Factor	Load or Stress Factor	Force Coef. - Shape Factor
			V (MPH)	Q (PSF)	Kz	Gh		
Ice Condition	TIA/EIA	Antenna Mount	TIA	TIA (0.75Wi)	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
Ice Condition	NESC Heavy	Tower/Pole Analysis with antennas extending above top of Tower/Pole (Yield Stress)	-----	4	1	1	2.5	1.6 Flat Surfaces 1.3 Round Surfaces
Ice Condition	NESC Heavy	Tower/Pole Analysis with antennas below top of Tower/Pole (on two faces)	-----	4	1	1	2.5	1.6 Flat Surfaces 1.3 Round Surfaces
Ice Condition		Conductors:	Conductor Loads Provided by ES					
High Wind Condition	TIA/EIA	Antenna Mount	85	TIA	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
High Wind Condition	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
High Wind Condition	NESC Extreme Wind	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
High Wind Condition		Conductors:	Conductor Loads Provided by ES					
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
NESC Extreme Ice with Wind Condition*		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
NESC Extreme Ice with Wind Condition*		Conductors:	Conductor Loads Provided by ES					
		*Only for structures installed after 2007						

determined from NESC applied loading conditions (not TIA Loads) on the structure and 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)

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	See Below Table

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.

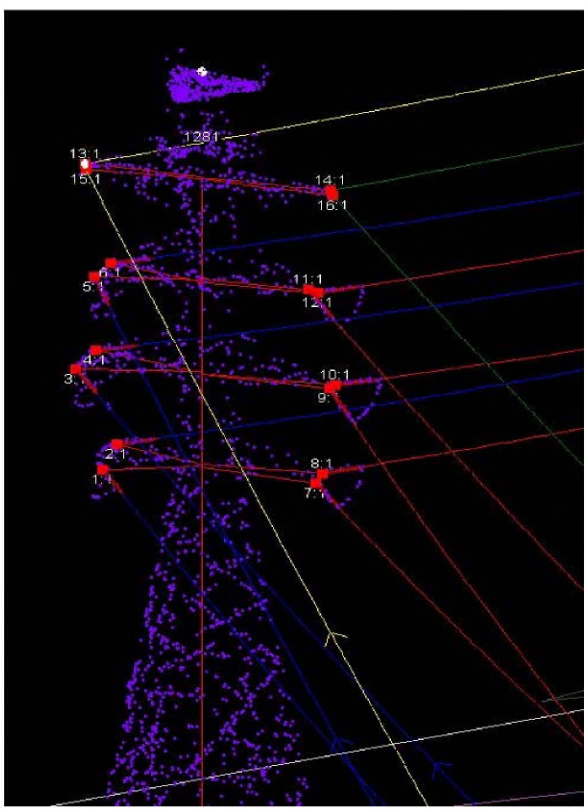
Project: 1740/1750 Lines, Structure 1281
Date: 11/26/18
Engineer: JS
Purpose: Recalculate wire loads for Sprint/Verizon site.

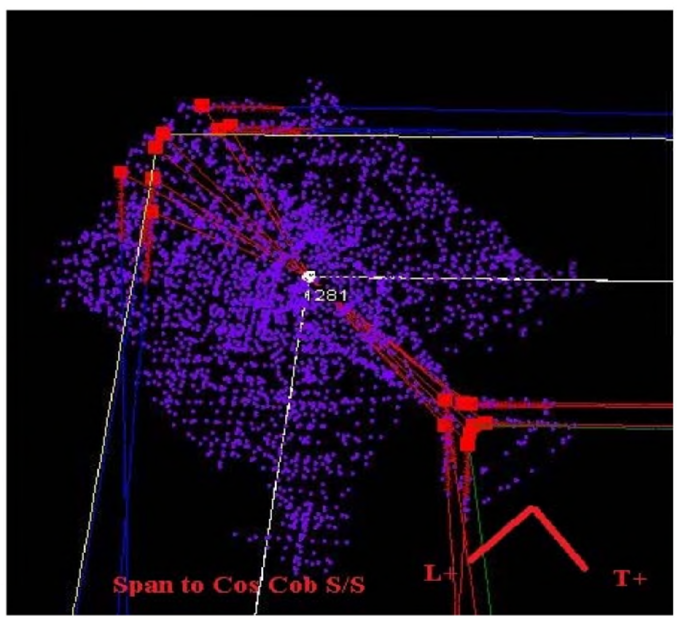
Shield Wires:
1740: Linnet 336 ACSR, sagged in PLS-CADD
1750: AFL DNO-8363 OPGW, sagged in PLS-CADD

Conductors:
1740/1750: 1272 ACSR, sagged in PLS-CADD

NESC 250B

Linnet	1610	1610	1610
OPGW	1298	8213	-2807
1740 Set 1	2332	7785	7437
1740 Set 2	438	7124	-7493
1740 Set 3	3241	9292	7457
1740 Set 4	573	5259	-5419
1750 Set 5	2933	5363	5970
1740 Set 6	520	5739	-5969
1750 Top Phase	2393	10693	-4869
1750 Middle Phase	2366	9228	-2072
1750 Bottom Phase	1702	12051	-5996





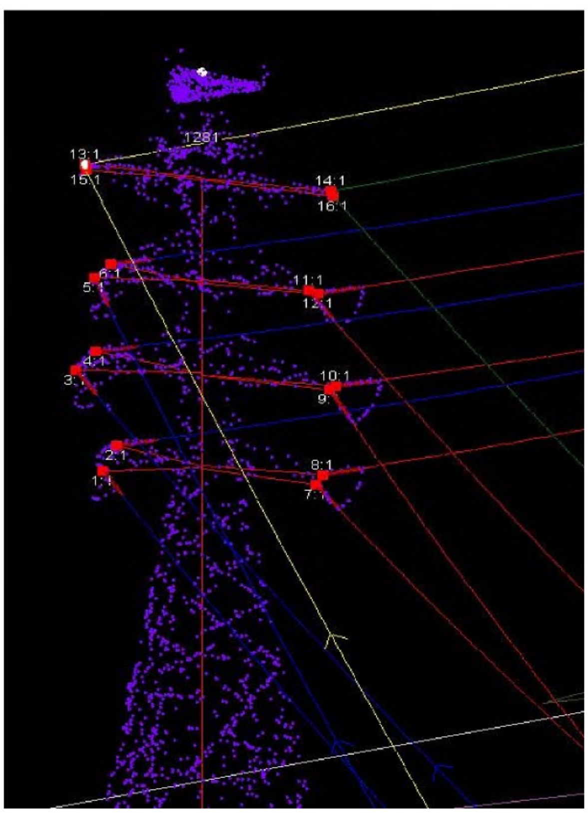
Project: 1740/1750 Lines, Structure 1281
Date: 11/26/18
Engineer: JS
Purpose: Recalculate wire loads for Sprint/Verizon site.

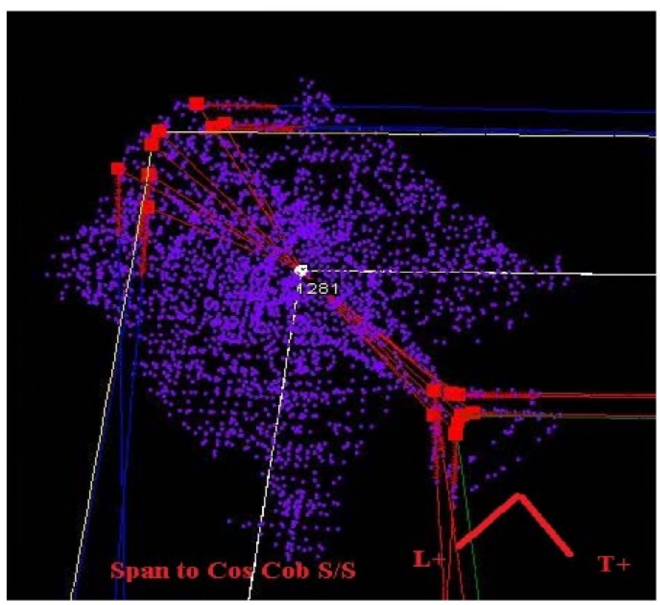
Shield Wires:
1740: Linnet 336 ACSR, sagged in PLS-CADD
1750: AFL DNO-8363 OPGW, sagged in PLS-CADD

Conductors:
1740/1750: 1272 ACSR, sagged in PLS-CADD

NESC 250C

Linnet	**876**	**5036**	**-1015**
OPGW	**681**	**5012**	**-2032**
1740 Set 1	**1333**	**4079**	**3425**
1740 Set 2	**95**	**4777**	**-4362**
1740 Set 3	**1811**	**4637**	**3263**
1740 Set 4	**163**	**4024**	**-3498**
1750 Set 5	**1835**	**3229**	**3049**
1740 Set 6	**124**	**4322**	**-3823**
1750 Top Phase (Sets 11+12)	**1463**	**7489**	**-3001**
1750 Middle Phase (Sets 9+10)	**1390**	**6685**	**-1521**
1750 Bottom Phase (Sets 7+8)	**969**	**7820**	**-3146**





REINFORCEMENT DESIGN

EVERSOURCE STRUCT. NO. 1281
9 SOUND SHORE DRIVE
GREENWICH, CT 06830

VICINITY MAP

PROJECT SUMMARY

SITE ADDRESS:	9 SOUND SHORE DRIVE GREENWICH CT, 06830
PROJECT COORDINATES:	LAT: 41°-01'-47.00N LON: 73°-35'-54.11W ELEV: ±22' AMSL
EVERSOURCE CONTACT:	RICH BADON 860.728.4852
EVERSOURCE STRCT NO.:	1281
VERIZON SITE REF.:	GREENWICH 3
VERIZON CONTACT:	COREY VACCARO 781.227.1314
ENGINEER OF RECORD:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD ROAD BRANFORD, CT 06405
CENTEK CONTACT:	TIMOTHY J. LYNN, PE 203.433.7507

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
N-1	DESIGN BASIS & GENERAL NOTES	0
N-2	STRUCTURAL STEEL NOTES	0
MI-1	MODIFICATION INSPECTION REQUIREMENTS	0
S-1	TOWER ELEVATION AND FEEDLINE PLAN	0
S-2	CONNECTION REINFORCEMENT DETAILS	0

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	2/15/22	TJL	CFC	ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

CENTEK engineering
Centered on Solutions
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www.CentekEng.com

VERIZON WIRELESS
REINFORCEMENT DESIGN
GREENWICH 3
CL&P STRUCTURE 1281
9 SOUND SHORE DRIVE
GREENWICH, CT 06830

DATE: 2/15/22
SCALE: AS SHOWN
JOB NO. 21007.68

TITLE SHEET

SHEET NO. T-1
Sheet No. 1 of 6

DESIGN BASIS

1. GOVERNING CODE: 2015 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2018 CT STATE SUPPLEMENT.
2. TIA-222-G, ASCE MANUAL NO. 10-15 – "DESIGN OF LATTICE STEEL TRANSMISSION STRUCTURES", NESC C2-2017 AND EVERSOURCE DESIGN CRITERIA.
3. DESIGN CRITERIA

   WIND LOAD: (ANTENNA MAST)
   NOMINAL DESIGN WIND SPEED (V) = 93 MPH (2018 CSBC: APPENDIX 'N')

   WIND LOAD: (UTILITY POLE & FOUNDATION)
   BASIC WIND SPEED (V) =110 MPH (3-SECOND GUST) BASED ON NESC C2-2017, SECTION 25 RULE 250C.

GENERAL NOTES

1. REFER TO STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING, INC., FOR VERIZON, DATED 2/15/22.
2. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE GOVERNING BUILDING CODE.
3. 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 SCOPE OF WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
4. 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. THIS INCLUDES VERIFYING ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA. CONTRACTOR SHALL TAKE FIELD MEASUREMENTS NECESSARY TO ASSURE PROPER FIT OF ALL FINISHED WORK.
5. PCS MAST INSTALLATION SHALL BE CONDUCTED BY FIELD CREWS EXPERIENCED IN THE ASSEMBLY AND ERECTION OF TRANSMISSION STRUCTURES. ALL SAFETY PROCEDURES, RIGGING AND ERECTION METHODS SHALL BE STANDARD TO THE INDUSTRY AND IN COMPLIANCE WITH OSHA.
6. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.
7. 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.
8. NO DRILLING WELDING OR TAPING IS PERMITTED ON EVERSOURCE OWNED EQUIPMENT.

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DESIGN BASIS AND GENERAL NOTES

SHEET NO. N-1
Sheet No. 2 of 6

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY LOAD RESISTANCE FACTOR DESIGN (LRFD).

2. MATERIAL SPECIFICATIONS

   A. STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI).
   C. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
   D. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
   E. PIPE---ASTM A53 GRADE B (FY = 35 KSI)

3. FASTENER SPECIFICATIONS

   A. CONNECTION BOLTS---ASTM A325-N, UNLESS OTHERWISE SCHEDULED.
   B. U-BOLTS---ASTM A307
   C. ANCHOR RODS---ASTM F1554
   D. WELDING ELECTRODES---ASTM E70XX FOR A36 & A572_GR50 STEELS, ASTM E80XX FOR A572_GR65 STEEL.

4. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.

5. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.

6. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.

7. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.

8. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.

9. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.

10. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.

11. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".

12. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES APPEARANCE AND QUALITY OF WELDS, AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING THE SCHEDULED ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D1.1 WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLET J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION" 14TH EDITION. AT THE COMPLETION OF WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED.

13. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.

14. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.

15. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.

16. LOCK WASHER ARE NOT PERMITTED FOR A325 BOLTED STEEL ASSEMBLIES.

17. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.

18. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.

19. FABRICATE BEAMS WITH MILL CAMBER UP.

20. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.

21. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.

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STRUCTURAL NOTES

SHEET NO.
N-4
Sheet No. 3 of 6

MODIFICATION INSPECTION REPORT REQUIREMENTS

PRE-CONSTUCTION		DURING CONSTRUCTION		POST-CONSTRUCTION	
SCHEDULED ITEM	REPORT ITEM	SCHEDULED ITEM	REPORT ITEM	SCHEDULED ITEM	REPORT ITEM
X	EOR MODIFICATION INSPECTION DRAWING	–	FOUNDATIONS	X	MODIFICATION INSPECTOR RECORD REDLINE DRAWING
X	EOR APPROVED SHOP DRAWINGS	–	EARTHWORK: BACKFILL MATERIAL & COMPACTION	–	POST–INSTALLED ANCHOR ROD PULL–OUT TEST
–	EOR APPROVED POST–INSTALLED ANCHOR MPII	–	REBAR & FORMWORK GEOMETRY VERIFICATION	X	PHOTOGRAPHS
–	FABRICATION INSPECTION	–	CONCRETE TESTING		
–	FABRICATOR CERTIFIED WELDER INSPECTION	X	STEEL INSPECTION		
X	MATERIAL CERTIFICATIONS	–	POST INSTALLED ANCHOR ROD VERIFICATION		
		–	BASE PLATE GROUT VERIFICATION		
		–	CONTRACTOR'S CERTIFIED WELD INSPECTION		
		X	ON–SITE COLD GALVANIZING VERIFICATION		
		X	CONTRACTOR AS–BUILT REDLINE DRAWINGS		

NOTES:
1. REFER TO MODIFICATION INSPECTION NOTES FOR ADDITIONAL REQUIREMENTS
2. "X" DENOTES DOCUMENT REQUIRED FOR INCLUSION IN MODIFICATION INSPECTION FINAL REPORT.
3. "–" DENOTES DOCUMENT NOT REQUIRED FOR INCLUSION IN MODIFICATION INSPECTION FINAL REPORT.
4. EOR – ENGINEER OF RECORD
4. MPII – "MANUFACTURER'S PRINTED INSTALLATION GUIDELINES"

GENERAL

1. THE MODIFICATION INSPECTION IS A VISUAL INSPECTION OF STRUCTURAL MODIFICATIONS, TO INCLUDE A REVIEW AND COMPILATION OF SPECIFIED SUBMITTALS AND CONSTRUCTION INSPECTIONS, AS AN ASSURANCE OF COMPLIANCE WITH THE CONSTRUCTION DOCUMENTS PREPARED UNDER THE DIRECTION OF THE ENGINEER OF RECORD (EOR).

2. THE MODIFICATION INSPECTION IS TO CONFIRM INSTALLATION CONFIGURATION AND GENERAL WORKMANSHIP AND IS NOT A REVIEW OF THE MODIFICATION DESIGN. OWNERSHIP OF THE MODIFICATION DESIGN EFFECTIVENESS AND INTENT RESIDES WITH THE ENGINEER OF RECORD.

3. TO ENSURE COMPLIANCE WITH THE MODIFICATION INSPECTION REQUIREMENTS THE GENERAL CONTRACTOR (GC) AND THE MODIFICATION INSPECTOR (MI) COMMENCE COMMUNICATION UPON AUTHORIZATION TO PROCEED BY THE CLIENT. EACH PARTY SHALL BE PROACTIVE IN CONTACTING THE OTHER. THE EOR SHALL BE CONTACTED IF SPECIFIC GC/MI CONTACT INFORMATION IS NOT MADE AVAILABLE.

4. THE GC SHALL PROVIDE THE MI WITH A MINIMUM OF 5 BUSINESS DAYS NOTICE OF IMPENDING INSPECTIONS.

5. WHEN POSSIBLE, THE GC AND MI SHALL BE ON SITE DURING THE MODIFICATION INSPECTION TO HAVE ANY NOTED DEFICIENCIES ADDRESSED DURING THE INITIAL MODIFICATION INSPECTION.

MODIFICATION INSPECTOR (MI)

1. THE MI SHALL CONTACT THE GC UPON AUTHORIZATION BY THE CLIENT TO:

   – REVIEW THE MODIFICATION INSPECTION REPORT REQUIREMENTS.
   – WORK WITH THE GC IN DEVELOPMENT OF A SCHEDULE FOR ON–SITE INSPECTIONS.
   – DISCUSS CRITICAL INSPECTIONS AND PROJECT CONCERNS.

2. THE MI IS RESPONSIBLE FOR COLLECTION OF ALL INSPECTION AND TEST REPORTS, REVIEWING REPORTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING ON–SITE INSPECTIONS AND COMPILATION & SUBMISSION OF THE MODIFICATION INSPECTION REPORT TO THE CLIENT AND THE EOR.

GENERAL CONTRACTOR (GC)

1. THE GC IS REQUIRED TO CONTACT THE GC UPON AUTHORIZATION TO PROCEED WITH CONSTRUCTION BY THE CLIENT TO:

   – REVIEW THE MODIFICATION INSPECTION REPORT REQUIREMENTS.
   – WORK WITH THE MI IN DEVELOPMENT OF A SCHEDULE FOR ON–SITE INSPECTIONS.
   – DISCUSS CRITICAL INSPECTIONS AND PROJECT CONCERNS.

2. THE GC IS RESPONSIBLE FOR COORDINATING AND SCHEDULING IN ADVANCE ALL REQUIRED INSPECTIONS AND TESTS WITH THE MI.

CORRECTION OF FAILING MODIFICATION INSPECTION

1. SHOULD THE STRUCTURAL MODIFICATION NOT COMPLY WITH THE REQUIREMENTS OF THE CONSTRUCTION DOCUMENTS, THE GC SHALL WORK WITH THE MODIFICATION INSPECTOR IN A VIABLE REMEDIATION PLAN AS FOLLOWS:

   – CORRECT ALL DEFICIENCIES TO COMPLY WITH THE CONTRACT DOCUMENTS AND COORDINATE WITH THE MI FOR A FOLLOW UP INSPECTION.
   – WITH CLIENT AUTHORIZATION, THE GC MAY WORK WITH THE EOR TO REANALYZE THE MODIFICATION USING THE AS–BUILT CONDITION.

REQUIRED PHOTOGRAPHS

1. THE GC AND MI SHALL AT MINIMUM PHOTO DOCUMENT THE FOLLOWING FOR INCLUSION IN THE MODIFICATION INSPECTION REPORT:

   – PRE–CONSTRUCTION: GENERAL CONDITION OF THE SITE.
   – DURING CONSTRUCTION: RAW MATERIALS, CRITICAL DETAILS, WELD PREPARATION, BOLT INSTALLATION & TORQUE, FINAL INSTALLED CONDITION & SURFACE COATING REPAIRS.
   – POST–CONSTRUCTION: FINAL CONDITION OF THE SITE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	2/15/22	TJL	CFC	ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

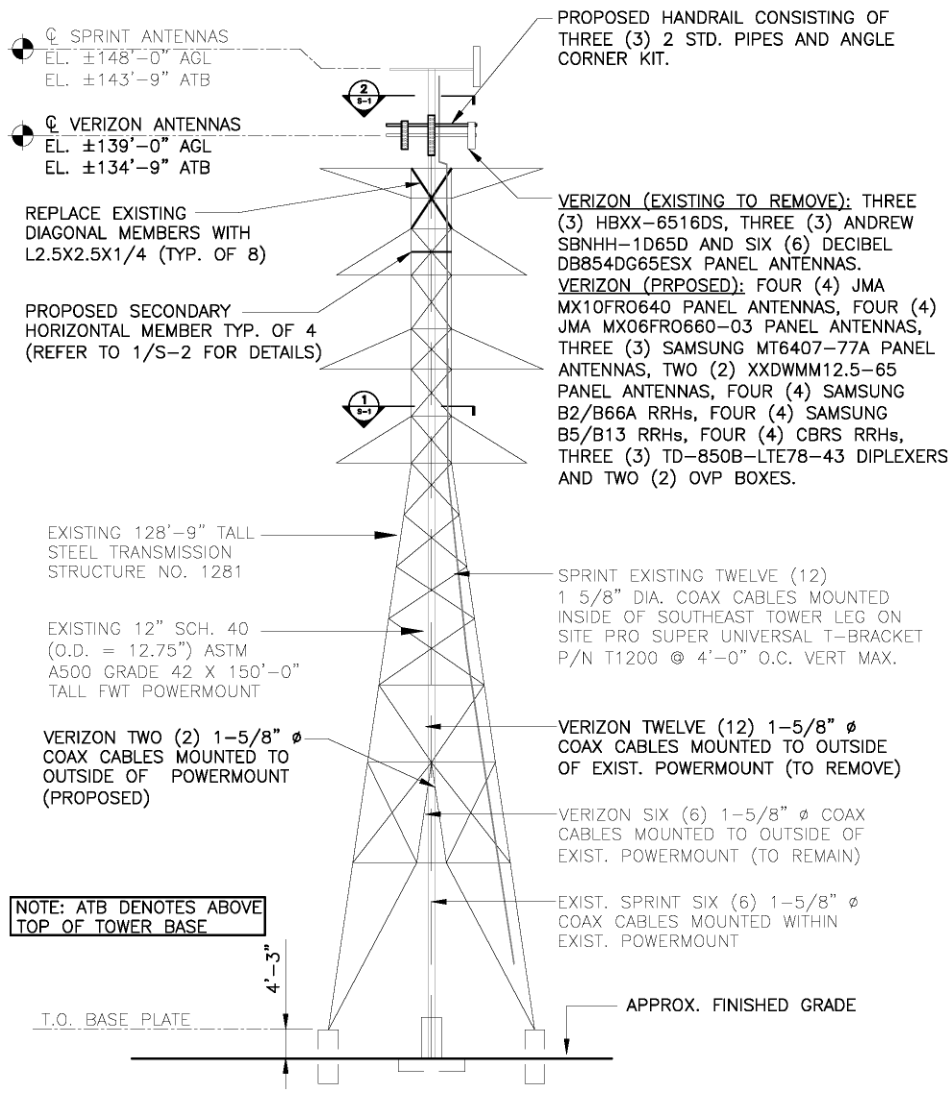
CENTEK engineering
Centered on Solutions
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

VERIZON WIRELESS
REINFORCEMENT DESIGN
GREENWICH 3
CL&P STRUCTURE 1281
9 SOUND SHORE DRIVE
GREENWICH, CT 06830

DATE: 2/15/22
SCALE: AS SHOWN
JOB NO. 21007.68

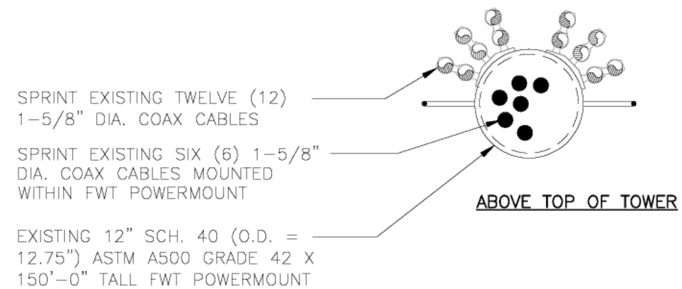
MODIFICATION INSPECTION REQUIREMENTS

SHEET NO. MI-1



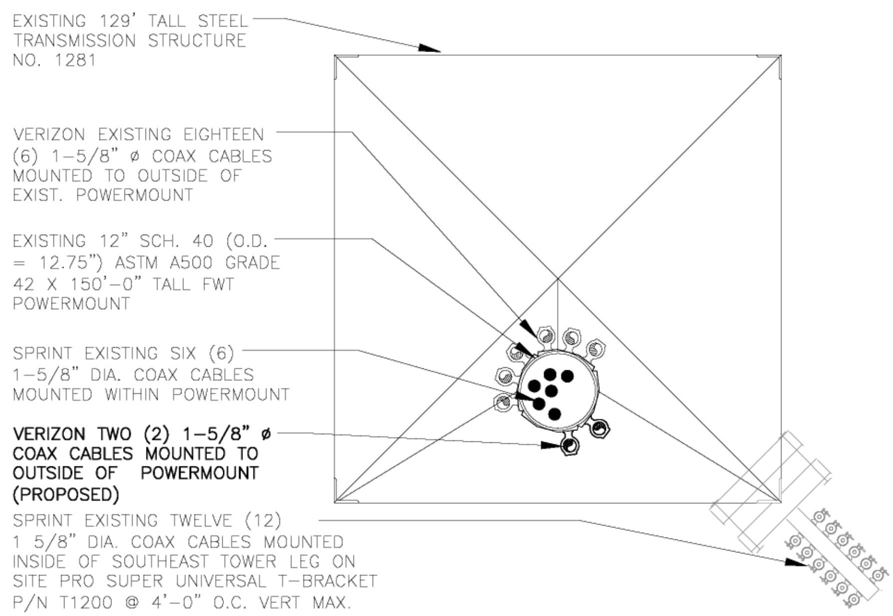
1 S–1 **TOWER & POWERMOUNT ELEVATION**

SCALE: NOT TO SCALE



3 S–1 **FEEDLINE PLAN - POWERMOUNT**

SCALE: NOT TO SCALE



2 S–1 **FEEDLINE PLAN - TOWER**

SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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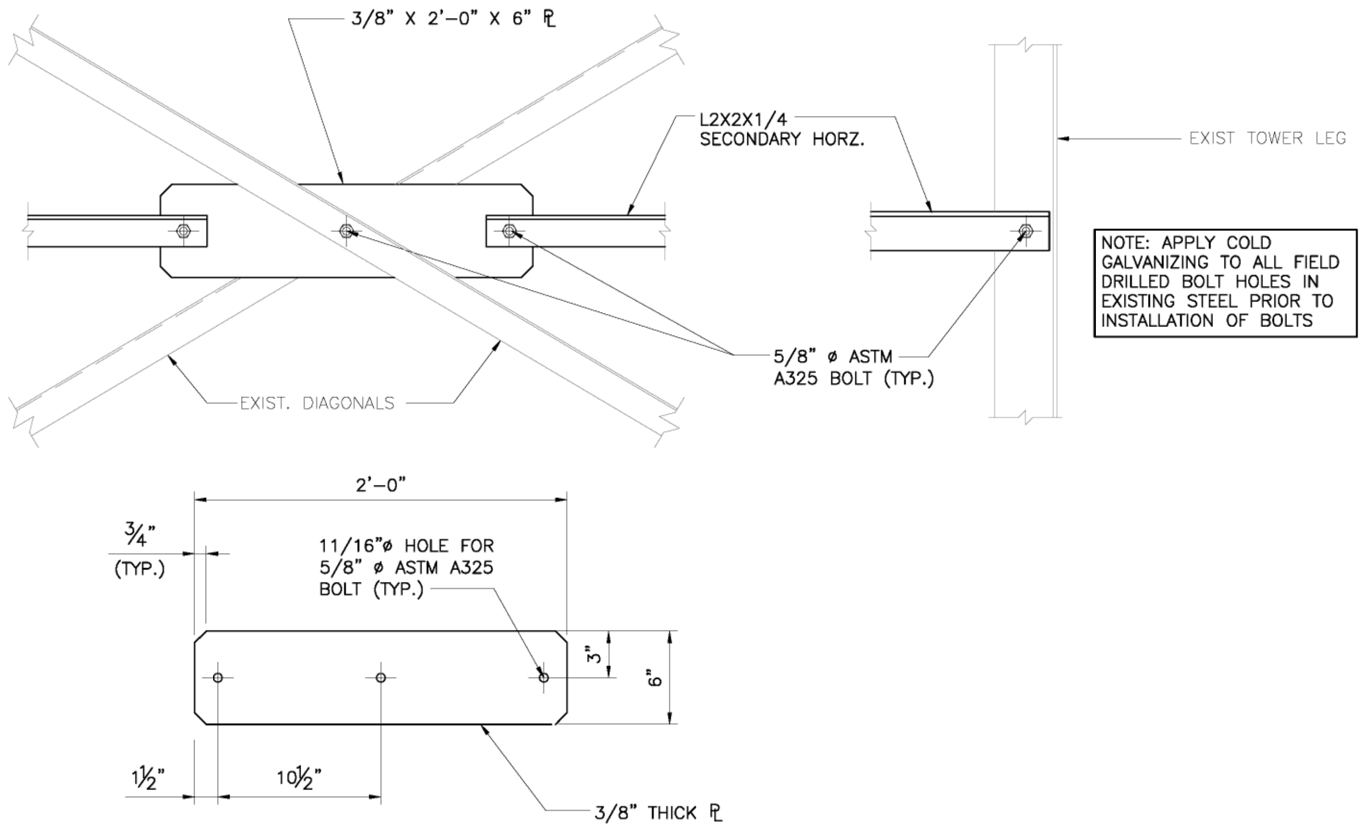
GREENWICH, CT 06830

DATE: 2/15/22
SCALE: AS SHOWN
JOB NO. 21007.68

TOWER ELEVATION AND FEEDLINE PLAN

SHEET NO. S–1



1 / S–2 SECONDARY HORZ. DETAILS

SCALE: 1–1/2"= 1'–0"

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	2/15/22	TJL	CFC	ISSUED FOR CONSTRUCTION

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DATE: 2/15/22
SCALE: AS SHOWN
JOB NO. 21007.68

CONNECTION REINFORCEMENT DETAILS

SHEET NO.
S–2

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

Wind Speeds

Basic Wind Speed	$V := 93$	mph	(User Input - 2018 CSBC Appendix N)
Basic Wind Speed with Ice	$V_i := 50$	mph	(User Input per Annex B of TIA-222-G)

Input

Structure Type =	Structure_Type := Lattice		(User Input)
Structure Category =	SC := III		(User Input)
Exposure Category =	Exp := C		(User Input)
Structure Height =	$h := 129$	ft	(User Input)
Height to Center of Antennas =	$z_{Sprint} := 148$	ft	(User Input)
Height to Center of Antennas =	$z_{VZ} := 139$	ft	(User Input)
Height to Center of Mast =	$z_{Mast5} := 135$	ft	(User Input)
Height to Center of Mast =	$z_{Mast4} := 105$	ft	(User Input)
Height to Center of Mast =	$z_{Mast3} := 75$	ft	(User Input)
Height to Center of Mast =	$z_{Mast2} := 45$	ft	(User Input)
Height to Center of Mast =	$z_{Mast1} := 15$	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 =

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

(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)

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

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

$K_{iz} := \left(\frac{z_{Sprint}}{33}\right)^{0.1} = 1.162$ $t_{izSprint} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 2.179$

Velocity Pressure Coefficient Antennas = $Kz_{Sprint} := 2.01 \left(\left(\frac{z_{Sprint}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.375$

Velocity Pressure w/o Ice Antennas = $qz_{Sprint} := 0.00256 \cdot K_d \cdot Kz_{Sprint} \cdot V^2 \cdot I_{Wind} = 29.749$

Velocity Pressure with Ice Antennas = $qz_{ice.Sprint} := 0.00256 \cdot K_d \cdot Kz_{Sprint} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 7.477$

$K_{iz} := \left(\frac{z_{VZ}}{33}\right)^{0.1} = 1.155$ $t_{izVZ} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 2.165$

Velocity Pressure Coefficient Antennas = $Kz_{VZ} := 2.01 \left(\left(\frac{z_{VZ}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.356$

Velocity Pressure w/o Ice Antennas = $qz_{VZ} := 0.00256 \cdot K_d \cdot Kz_{VZ} \cdot V^2 \cdot I_{Wind} = 29.359$

Velocity Pressure with Ice Antennas = $qz_{ice.VZ} := 0.00256 \cdot K_d \cdot Kz_{VZ} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 7.379$

$K_{izMast5} := \left(\frac{z_{Mast5}}{33}\right)^{0.1} = 1.151$ $t_{izMast5} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast5} \cdot K_{zt}^{0.35} = 2.159$

Velocity Pressure Coefficient Mast = $Kz_{Mast5} := 2.01 \left(\left(\frac{z_{Mast5}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.348$

Velocity Pressure w/o Ice Mast= $qz_{Mast5} := 0.00256 \cdot K_d \cdot Kz_{Mast5} \cdot V^2 \cdot I_{Wind} = 29.179$

Velocity Pressure with Ice Mast = $qz_{ice.Mast5} := 0.00256 \cdot K_d \cdot Kz_{Mast5} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 7.334$

$K_{izMast4} := \left(\frac{z_{Mast4}}{33}\right)^{0.1} = 1.123$ $t_{izMast4} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast4} \cdot K_{zt}^{0.35} = 2.105$

Velocity Pressure Coefficient Mast = $Kz_{Mast4} := 2.01 \left(\left(\frac{z_{Mast4}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.279$

Velocity Pressure w/o Ice Mast= $qz_{Mast4} := 0.00256 \cdot K_d \cdot Kz_{Mast4} \cdot V^2 \cdot I_{Wind} = 27.675$

Velocity Pressure with Ice Mast = $qz_{ice.Mast4} := 0.00256 \cdot K_d \cdot Kz_{Mast4} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 6.956$

$K_{izMast3} := \left(\frac{z_{Mast3}}{33}\right)^{0.1} = 1.086$ $\qquad t_{izMast3} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast3} \cdot K_{zt}^{0.35} = 2.035$

Velocity Pressure Coefficient Mast = $Kz_{Mast3} := 2.01\left(\left(\frac{z_{Mast3}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.191$

Velocity Pressure w/o Ice Mast= $qz_{Mast3} := 0.00256 \cdot K_d \cdot Kz_{Mast3} \cdot V^2 \cdot I_{Wind} = 25.782$

Velocity Pressure with Ice Mast = $qz_{ice.Mast3} := 0.00256 \cdot K_d \cdot Kz_{Mast3} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 6.48$

$K_{izMast2} := \left(\frac{z_{Mast2}}{33}\right)^{0.1} = 1.032$ $\qquad t_{izMast2} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast2} \cdot K_{zt}^{0.35} = 1.934$

Velocity Pressure Coefficient Mast = $Kz_{Mast2} := 2.01\left(\left(\frac{z_{Mast2}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.07$

Velocity Pressure w/o Ice Mast= $qz_{Mast2} := 0.00256 \cdot K_d \cdot Kz_{Mast2} \cdot V^2 \cdot I_{Wind} = 23.154$

Velocity Pressure with Ice Mast = $qz_{ice.Mast2} := 0.00256 \cdot K_d \cdot Kz_{Mast2} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 5.82$

$K_{izMast1} := \left(\frac{z_{Mast1}}{33}\right)^{0.1} = 0.924$ $\qquad t_{izMast1} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast1} \cdot K_{zt}^{0.35} = 1.733$

Velocity Pressure Coefficient Mast = $Kz_{Mast1} := 2.01\left(\left(\frac{z_{Mast1}}{zg}\right)\right)^{\frac{2}{\alpha}} = 0.849$

Velocity Pressure w/o Ice Mast= $qz_{Mast1} := 0.00256 \cdot K_d \cdot Kz_{Mast1} \cdot V^2 \cdot I_{Wind} = 18.373$

Velocity Pressure with Ice Mast = $qz_{ice.Mast1} := 0.00256 \cdot K_d \cdot Kz_{Mast1} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 4.618$

Development of Wind & Ice Load on Mast

Mast Data:	(12" Sch. 40 Pipe)		(User Input)
Mast Shape =	Round		(User Input)
Mast Diameter =	$D_{mast} := 12.75$	in	(User Input)
Mast Length =	$L_{mast} := 150$	ft	(User Input)
Mast Thickness =	$t_{mast} := 0.375$	in	(User Input)
Velocity Coefficient =	$C := \sqrt{I \cdot Kz_{Mast1}} \cdot V \cdot \frac{D_{mast}}{12} = 91$		
Mast Force Coefficient =	$CF_{mast} = 0.6$		

Wind Load (without ice)

Mast Projected Surface Area =	$A_{mast} := \frac{D_{mast}}{12} = 1.063$	sf/ft	
Total Mast Wind Force =	$qz_{Mast5} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 25$	plf	**BLC 5**
Total Mast Wind Force =	$qz_{Mast4} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 24$	plf	**BLC 5**
Total Mast Wind Force =	$qz_{Mast3} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 22$	plf	**BLC 5**
Total Mast Wind Force =	$qz_{Mast2} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 20$	plf	**BLC 5**
Total Mast Wind Force =	$qz_{Mast1} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 16$	plf	**BLC 5**

Wind Load (with ice)

Mast Projected Surface Area w/ Ice =	$AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast5})}{12} = 1.422$	sf/ft	
Total Mast Wind Force w/ Ice =	$qz_{ice.Mast5} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 8$	plf	**BLC 4**
Mast Projected Surface Area w/ Ice =	$AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast4})}{12} = 1.413$	sf/ft	
Total Mast Wind Force w/ Ice =	$qz_{ice.Mast4} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 8$	plf	**BLC 4**
Mast Projected Surface Area w/ Ice =	$AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast3})}{12} = 1.402$	sf/ft	
Total Mast Wind Force w/ Ice =	$qz_{ice.Mast3} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 7$	plf	**BLC 4**
Mast Projected Surface Area w/ Ice =	$AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast2})}{12} = 1.385$	sf/ft	
Total Mast Wind Force w/ Ice =	$qz_{ice.Mast2} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 7$	plf	**BLC 4**
Mast Projected Surface Area w/ Ice =	$AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast1})}{12} = 1.351$	sf/ft	
Total Mast Wind Force w/ Ice =	$qz_{ice.Mast1} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 5$	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 =	$Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + t_{izMast5} \cdot 2\right)^2 - D_{mast}{}^2\right] = 101.1$	sq in	
Weight of Ice on Mast =	$W_{ICEmast5} := Id \cdot \frac{Ai_{mast}}{144} = 39$	plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + t_{izMast4} \cdot 2\right)^2 - D_{mast}{}^2\right] = 98.2$	sq in	
Weight of Ice on Mast =	$W_{ICEmast4} := Id \cdot \frac{Ai_{mast}}{144} = 38$	plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + t_{izMast3} \cdot 2\right)^2 - D_{mast}{}^2\right] = 94.5$	sq in	
Weight of Ice on Mast =	$W_{ICEmast3} := Id \cdot \frac{Ai_{mast}}{144} = 37$	plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + t_{izMast2} \cdot 2\right)^2 - D_{mast}{}^2\right] = 89.2$	sq in	
Weight of Ice on Mast =	$W_{ICEmast2} := Id \cdot \frac{Ai_{mast}}{144} = 35$	plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + t_{izMast1} \cdot 2\right)^2 - D_{mast}{}^2\right] = 78.8$	sq in	
Weight of Ice on Mast =	$W_{ICEmast1} := Id \cdot \frac{Ai_{mast}}{144} = 31$	plf	**BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data: (Sprint)

Antenna Model = RFSAPXVSPP18-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 = $F_{ant} := qz_{Sprint} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 967$ lbs **BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{\left(L_{ant} + 2 \cdot t_{izSprint}\right) \cdot \left(W_{ant} + 2 \cdot t_{izSprint}\right)}{144} = 8.6$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 25.7$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := qz_{ice.Sprint} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 353$ lbs **BLC 4**

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 = $V_{ice} := \left(L_{ant} + 2 \cdot t_{izSprint}\right)\left(W_{ant} + 2 \cdot t_{izSprint}\right) \cdot \left(T_{ant} + 2 \cdot t_{izSprint}\right) - V_{ant} = 8064$

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 261$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 784$ lbs **BLC 3**

Development of Wind & Ice Load on Antenna Mounts

Mount Data: (Sprint)

Mount Type: FWT 14' Low Profile Platform

Mount Shape = Flat

Mount Projected Surface Area = $CaAa := 14.2$ sf (User Input from FWT Design Calcs)

Mount Projected Surface Area w/ Ice = $CaAa_{ice} := 15.8$ sf (User Input from FWT Design Calcs)

Mount Weight = $WT_{mnt} := 3020$ lbs (User Input from FWT Design Calcs)

Mount Weight w/ Ice = $WT_{mnt.ice} := 4300$ lbs (User Input from FWT Design Calcs)

Wind Load (without ice)

Total Mount Wind Force = $F_{mnt} := qz_{Sprint} \cdot G_H \cdot CaAa = 570$ lbs **BLC 5**

Wind Load (with ice)

Total Mount Wind Force = $Fi_{mnt} := qz_{ice.Sprint} \cdot G_H \cdot CaAa_{ice} = 159$ lbs **BLC 4**

Gravity Loads (without ice)

Weight of All Mounts = $WT_{mnt} = 3020$ lbs **BLC 2**

Gravity Loads (ice only)

Weight of Ice on All Mounts = $WT_{mnt.ice} - WT_{mnt} = 1280$ lbs **BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data: (Verizon)

Antenna Model =	JMA MX10FRO640		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 71.6$	in	(User Input)
Antenna Width =	$W_{ant} := 19.8$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.4$	in	(User Input)
Antenna Weight =	$WT_{ant} := 80$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 4$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 3.6$		
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 =	$A_{ant} := SA_{ant} \cdot N_{ant} = 39.4$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 1950$	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 =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 50.9$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 634$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 320$	lbs	**BLC 2**

Gravity Loads (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 =	$V_{ice} := (L_{ant} + 2 \cdot t_{izVZ})(W_{ant} + 2 \cdot t_{izVZ}) \cdot (T_{ant} + 2 \cdot t_{izVZ}) - V_{ant} = 1 \times 10^4$		
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 356$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 1426$	lbs	**BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data: (Verizon)

Antenna Model = JMA MX06FRO660-03

Antenna Shape = Flat (User Input)

Antenna Height = $L_{ant} := 71.3$ in (User Input)

Antenna Width = $W_{ant} := 15.4$ in (User Input)

Antenna Thickness = $T_{ant} := 10.7$ in (User Input)

Antenna Weight = $WT_{ant} := 65$ lbs (User Input)

Number of Antennas = $N_{ant} := 4$ (User Input)

Antenna Aspect Ratio = $Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.6$

Antenna Force Coefficient = $Ca_{ant} = 1.29$

Wind Load (without ice)

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 7.6$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 30.5$ sf

Total Antenna Wind Force = $F_{ant} := qz_{VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 1565$ lbs **BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{izVZ}) \cdot (W_{ant} + 2 \cdot t_{izVZ})}{144} = 10.4$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 41.4$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := qz_{ice.VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 535$ lbs **BLC 4**

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 260$ lbs **BLC 2**

Gravity Loads (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 = $V_{ice} := (L_{ant} + 2 \cdot t_{izVZ})(W_{ant} + 2 \cdot t_{izVZ}) \cdot (T_{ant} + 2 \cdot t_{izVZ}) - V_{ant} = 1 \times 10^4$

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 346$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 1384$ 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 = $F_{ant} := qz_{VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 560$ 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 = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 16.8$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := qz_{ice.VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 201$ lbs **BLC 4**

Gravity Load (without ice)

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

Gravity Loads (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 = $V_{ice} := (L_{ant} + 2 \cdot t_{izVZ})(W_{ant} + 2 \cdot t_{izVZ}) \cdot (T_{ant} + 2 \cdot t_{izVZ}) - V_{ant} = 4810$

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 156$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 468$ lbs **BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data: (Verizon)

Antenna Model = Samsung XXDWMM12.5-65

Antenna Shape = Flat (User Input)

Antenna Height = $L_{ant} := 12.3$ in (User Input)

Antenna Width = $W_{ant} := 8.7$ in (User Input)

Antenna Thickness = $T_{ant} := 1.4$ in (User Input)

Antenna Weight = $WT_{ant} := 3$ lbs (User Input)

Number of Antennas = $N_{ant} := 2$ (User Input)

Antenna Aspect Ratio = $Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 1.4$

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

Wind Load (without ice)

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.7$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 1.5$ sf

Total Antenna Wind Force = $F_{ant} := qz_{VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 71$ lbs **BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{izVZ}) \cdot (W_{ant} + 2 \cdot t_{izVZ})}{144} = 1.5$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 3$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := qz_{ice.VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 36$ lbs **BLC 4**

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 6$ lbs **BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 150$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 2 \cdot t_{izVZ})(W_{ant} + 2 \cdot t_{izVZ}) \cdot (T_{ant} + 2 \cdot t_{izVZ}) - V_{ant} = 1092$

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 35$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 71$ lbs **BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Samsung B2/B66A RRH		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 15$	in	(User Input)
Antenna Width =	$W_{ant} := 15$	in	(User Input)
Antenna Thickness =	$T_{ant} := 10$	in	(User Input)
Antenna Weight =	$WT_{ant} := 75$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 4$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 1.0$		
Antenna Force Coefficient =	$Ca_{ant} = 1.2$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 1.6$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 6.3$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 297$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{izVZ}) \cdot (W_{ant} + 2 \cdot t_{izVZ})}{144} = 2.6$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 10.4$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 124$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 300$	lbs	**BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2250$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{izVZ})(W_{ant} + 2 \cdot t_{izVZ}) \cdot (T_{ant} + 2 \cdot t_{izVZ}) - V_{ant} = 3104$		
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 101$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 402$	lbs	**BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Samsung B5/B13 RRH		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 15$	in	(User Input)
Antenna Width =	$W_{ant} := 15$	in	(User Input)
Antenna Thickness =	$T_{ant} := 9.1$	in	(User Input)
Antenna Weight =	$WT_{ant} := 70.3$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 4$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 1.0$		
Antenna Force Coefficient =	$Ca_{ant} = 1.2$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 1.6$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 6.3$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 297$	lbs	BLC 5

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{izVZ}) \cdot (W_{ant} + 2 \cdot t_{izVZ})}{144} = 2.6$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 10.4$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 124$	lbs	BLC 4

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 281$	lbs	BLC 2

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2048$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{izVZ})(W_{ant} + 2 \cdot t_{izVZ}) \cdot (T_{ant} + 2 \cdot t_{izVZ}) - V_{ant} = 2971$		
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 96$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 385$	lbs	BLC 3

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model = CBRS RRH RT4401-48A

Antenna Shape = Flat (User Input)

Antenna Height = $L_{ant} := 12.1$ in (User Input)

Antenna Width = $W_{ant} := 8.5$ in (User Input)

Antenna Thickness = $T_{ant} := 4.1$ in (User Input)

Antenna Weight = $WT_{ant} := 20$ lbs (User Input)

Number of Antennas = $N_{ant} := 4$ (User Input)

Antenna Aspect Ratio = $Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 1.4$

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

Wind Load (without ice)

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.7$ sf

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

Total Antenna Wind Force = $F_{ant} := qz_{VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 136$ lbs **BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{izVZ}) \cdot (W_{ant} + 2 \cdot t_{izVZ})}{144} = 1.5$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 5.9$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := qz_{ice.VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 70$ lbs **BLC 4**

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 80$ lbs **BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 422$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 2 \cdot t_{izVZ})(W_{ant} + 2 \cdot t_{izVZ}) \cdot (T_{ant} + 2 \cdot t_{izVZ}) - V_{ant} = 1355$

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 44$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 176$ lbs **BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	RFS DB-C1-12C-24AB-0Z OVP Box		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 29.5$	in	(User Input)
Antenna Width =	$W_{ant} := 16.5$	in	(User Input)
Antenna Thickness =	$T_{ant} := 12.6$	in	(User Input)
Antenna Weight =	$WT_{ant} := 32$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 2$		(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 =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 3.4$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 6.8$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 322$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{izVZ}) \cdot (W_{ant} + 2 \cdot t_{izVZ})}{144} = 4.9$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 9.8$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 117$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 64$	lbs	**BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 6133$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{izVZ})(W_{ant} + 2 \cdot t_{izVZ}) \cdot (T_{ant} + 2 \cdot t_{izVZ}) - V_{ant} = 5797$		
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 188$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 376$	lbs	**BLC 3**

Development of Wind & Ice Load on Antennas

Antenna Data: (Verizon)

Antenna Model =	Commscope TD-850B-LTE78-43 Diplexer		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 15.433$	in	(User Input)
Antenna Width =	$W_{ant} := 6.378$	in	(User Input)
Antenna Thickness =	$T_{ant} := 3.3$	in	(User Input)
Antenna Weight =	$WT_{ant} := 53$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 2.4$		
Antenna Force Coefficient =	$Ca_{ant} = 1.2$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.7$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 2.1$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 98$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{izVZ}) \cdot (W_{ant} + 2 \cdot t_{izVZ})}{144} = 1.5$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 4.4$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.VZ} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 53$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 159$	lbs	**BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 325$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{izVZ})(W_{ant} + 2 \cdot t_{izVZ}) \cdot (T_{ant} + 2 \cdot t_{izVZ}) - V_{ant} = 1290$		
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 42$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 125$	lbs	**BLC 3**

Development of Wind & Ice Load on Antenna Mounts

Mount Data: (Verizon)

Mount Type: T-Arm Colocation Mount

Mount Shape = Flat

Mount Projected Surface Area = $CaAa := 15$ sf (User Input)

Mount Projected Surface Area w/ Ice = $CaAa_{ice} := 26$ sf (User Input)

Mount Weight = $WT_{mnt} := 1000$ lbs (User Input)

Mount Weight w/ Ice = $WT_{mnt.ice} := 1300$ lbs (User Input)

Wind Load (without ice)

Total Mount Wind Force = $F_{mnt} := qz_{VZ} \cdot G_H \cdot CaAa = 595$ lbs **BLC 5**

Wind Load (with ice)

Total Mount Wind Force = $Fi_{mnt} := qz_{ice.VZ} \cdot G_H \cdot CaAa_{ice} = 259$ lbs **BLC 4**

Gravity Loads (without ice)

Weight of All Mounts = $WT_{mnt} = 1000$ lbs **BLC 2**

Gravity Loads (ice only)

Weight of Ice on All Mounts = $WT_{mnt.ice} - WT_{mnt} = 300$ lbs **BLC 3**

Development of Wind & Ice Load on Coax Cables

Coax Cable Data:

Coax Type = HELIAX 1-5/8"

Shape = Round (User Input)

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

Coax Cable Length = $L_{coax} := 139$ ft (User Input)

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

Total Number of Coax = $N_{coax} := 14$ (User Input) (6 Sprint Coax, 6 Verizon Coax and 2 Verizon Hybrid Cables)

Total Number of Exterior Coax = $Ne_{coax} := 8$ (User Input) (6 Sprint Coax within mast)

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

Coax aspect ratio, $Ar_{coax} := \frac{(L_{coax} \cdot 12)}{D_{coax}} = 842.4$

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 = $F_{coax} := Ca_{coax} \cdot qz_{Mast5} \cdot G_H \cdot A_{coax} = 16$ plf **BLC 5,7**

Total Coax Wind Force = $F_{coax} := Ca_{coax} \cdot qz_{Mast4} \cdot G_H \cdot A_{coax} = 15$ plf **BLC 5,7**

Total Coax Wind Force = $F_{coax} := Ca_{coax} \cdot qz_{Mast3} \cdot G_H \cdot A_{coax} = 14$ plf **BLC 5,7**

Total Coax Wind Force = $F_{coax} := Ca_{coax} \cdot qz_{Mast2} \cdot G_H \cdot A_{coax} = 12$ plf **BLC 5,7**

Total Coax Wind Force = $F_{coax} := Ca_{coax} \cdot qz_{Mast1} \cdot G_H \cdot A_{coax} = 10$ plf **BLC 5,7**

Wind Load (with ice)

Coax projected surface area w/ Ice = $AICE_{coax} := \frac{(NP_{coax} D_{coax} + 2 \cdot t_{izMast5})}{12}$ sf/ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast5} \cdot G_H \cdot AICE_{coax} = 8$ plf **BLC 4,6**

Coax projected surface area w/ Ice = $AICE_{coax} := \frac{(NP_{coax} D_{coax} + 2 \cdot t_{izMast4})}{12}$ sf/ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast4} \cdot G_H \cdot AICE_{coax} = 8$ plf **BLC 4,6**

Coax projected surface area w/ Ice = $AICE_{coax} := \frac{(NP_{coax} D_{coax} + 2 \cdot t_{izMast3})}{12}$ sf/ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast3} \cdot G_H \cdot AICE_{coax} = 7$ plf **BLC 4,6**

Coax projected surface area w/ Ice =	$AICE_{coax} := \frac{(NP_{coax} D_{coax} + 2 \cdot t_{izMast2})}{12}$	sf/ft	
Total Coax Wind Force w/ Ice =	$Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast2} \cdot G_H \cdot AICE_{coax} = 6$	plf	BLC 4,6
Coax projected surface area w/ Ice =	$AICE_{coax} := \frac{(NP_{coax} D_{coax} + 2 \cdot t_{izMast1})}{12}$	sf/ft	
Total Coax Wind Force w/ Ice =	$Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast1} \cdot G_H \cdot AICE_{coax} = 5$	plf	BLC 4,6
Gravity Loads (without ice)			
Weight of all cables w/o ice	$WT_{coax} := Wt_{coax} \cdot N_{coax} = 15$	plf	BLC 2
Gravity Loads (ice only)			
Ice Area per Linear Foot =	$Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot t_{izMast5}\right)^2 - D_{coax}{}^2\right] = 28.1$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := Ne_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 87$	plf	BLC 3
Ice Area per Linear Foot =	$Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot t_{izMast4}\right)^2 - D_{coax}{}^2\right] = 27$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := Ne_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 84$	plf	BLC 3
Ice Area per Linear Foot =	$Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot t_{izMast3}\right)^2 - D_{coax}{}^2\right] = 25.7$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := Ne_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 80$	plf	BLC 3
Ice Area per Linear Foot =	$Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot t_{izMast2}\right)^2 - D_{coax}{}^2\right] = 23.8$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := Ne_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 74$	plf	BLC 3
Ice Area per Linear Foot =	$Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot t_{izMast1}\right)^2 - D_{coax}{}^2\right] = 20.2$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := Ne_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 63$	plf	BLC 3

Development of Wind & Ice Load on Brace Member

Member Data:	L2x2x3/16		
Antenna Shape =	Flat		(User Input)
Height =	$H_{mem} := 2$	in	(User Input)
Width =	$W_{mem} := 2$	in	(User Input)
Thickness =	$t_{mem} := 0.1875$	in	(User Input)
Length =	$L_{mem} := 18$	in	(User Input)
Member Aspect Ratio =	$Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 9.0$		
Member Force Coefficient =	$Ca_{mem} = 1.47$		

Wind Load (without ice)

Member Projected Surface Area =	$A_{mem} := \frac{H_{mem}}{12} = 0.2$	sf/ft	
Total Member Wind Force =	$F_{mem} := qz_{Mast5} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 10$	plf	**BLC 5,7**

Wind Load (with ice)

Member Projected Surface Area w/ Ice =	$A_{ICEmem} := \frac{(H_{mem} + 2 \cdot t_{izMast5})}{12} = 0.5$	sf/ft	
Total Member Wind Force w/ Ice =	$Fi_{mem} := qz_{ice.Mast5} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 8$	plf	**BLC 4,6**

Gravity Load (without ice)

Weight of Member =	Self Weight	plf	**BLC 1**

Gravity Loads (ice only)

Ice Area per Linear foot =

$$Ai_{mem} := \left[\left(H_{mem} + 2 \cdot t_{izMast5}\right) + \left(W_{mem} - t_{mem}\right)\right] \cdot \left(t_{mem} + 2 \cdot t_{izMast5}\right) - \left[H_{mem} + \left(W_{mem} + t_{mem}\right)\right] \cdot t_{mem} = 36 \quad \text{sq in}$$

Weight of Ice on Member =	$W_{ICE.mem} := Id \cdot \frac{Ai_{mem}}{144} = 14$	plf	**BLC 3**

Development of Wind & Ice Load on Brace Member

Member Data: L2.5x2.5x3/16

Antenna Shape = Flat (User Input)

Height = $H_{mem} := 2.5$ in (User Input)

Width = $W_{mem} := 2.5$ in (User Input)

Thickness = $t_{mem} := 0.1875$ in (User Input)

Length = $L_{mem} := 40$ in (User Input)

Member Aspect Ratio = $Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 16.0$

Member Force Coefficient = $Ca_{mem} = 1.7$

Wind Load (without ice)

Member Projected Surface Area = $A_{mem} := \frac{H_{mem}}{12} = 0.2$ sf/ft

Total Member Wind Force = $F_{mem} := qz_{Mast5} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 14$ plf **BLC 5,7**

Wind Load (with ice)

Member Projected Surface Area w/ Ice = $A_{ICEmem} := \frac{\left(H_{mem} + 2 \cdot t_{izMast5}\right)}{12} = 0.6$ sf/ft

Total Member Wind Force w/ Ice = $Fi_{mem} := qz_{ice.Mast5} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 10$ plf **BLC 4,6**

Gravity Load (without ice)

Weight of Member = Self Weight plf **BLC 1**

Gravity Loads (ice only)

Ice Area per Linear foot =

$$Ai_{mem} := \left[\left(H_{mem} + 2 \cdot t_{izMast5}\right) + \left(W_{mem} - t_{mem}\right)\right] \cdot \left(t_{mem} + 2 \cdot t_{izMast5}\right) - \left[H_{mem} + \left(W_{mem} + t_{mem}\right)\right] \cdot t_{mem} = 40$$ sq in

Weight of Ice on Member = $W_{ICE.mem} := Id \cdot \frac{Ai_{mem}}{144} = 16$ plf **BLC 3**

Development of Wind & Ice Load on Brace Member

Member Data: L3x3x3/16

Antenna Shape = Flat (User Input)

Height = $H_{mem} := 3$ in (User Input)

Width = $W_{mem} := 3$ in (User Input)

Thickness = $t_{mem} := 0.1875$ in (User Input)

Length = $L_{mem} := 96$ in (User Input)

Member Aspect Ratio = $Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 32.0$

Member Force Coefficient = $Ca_{mem} = 2$

Wind Load (without ice)

Member Projected Surface Area = $A_{mem} := \frac{H_{mem}}{12} = 0.3$ sf/ft

Total Member Wind Force = $F_{mem} := qz_{Mast5} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 20$ plf **BLC 5,7**

Wind Load (with ice)

Member Projected Surface Area w/ Ice = $A_{ICEmem} := \frac{\left(H_{mem} + 2 \cdot t_{izMast5}\right)}{12} = 0.6$ sf/ft

Total Member Wind Force w/ Ice = $Fi_{mem} := qz_{ice.Mast5} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 12$ plf **BLC 4,6**

Gravity Load (without ice)

Weight of Member = Self Weight plf **BLC 1**

Gravity Loads (ice only)

Ice Area per Linear foot =

$$Ai_{mem} := \left[\left(H_{mem} + 2 \cdot t_{izMast5}\right) + \left(W_{mem} - t_{mem}\right)\right] \cdot \left(t_{mem} + 2 \cdot t_{izMast5}\right) - \left[H_{mem} + \left(W_{mem} + t_{mem}\right)\right] \cdot t_{mem} = 44$$ sq in

Weight of Ice on Member = $W_{ICE.mem} := Id \cdot \frac{Ai_{mem}}{144} = 17$ plf **BLC 3**

Development of Wind & Ice Load on Brace Member

Member Data:	L3.5x3.5x1/4		
Antenna Shape =	Flat		(User Input)
Height =	$H_{mem} := 3.5$	in	(User Input)
Width =	$W_{mem} := 3.5$	in	(User Input)
Thickness =	$t_{mem} := 0.25$	in	(User Input)
Length =	$L_{mem} := 133$	in	(User Input)
Member Aspect Ratio =	$Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 38.0$		
Member Force Coefficient =	$Ca_{mem} = 2$		

Wind Load (without ice)

Member Projected Surface Area = $A_{mem} := \frac{H_{mem}}{12} = 0.3$ sf/ft

Total Member Wind Force = $F_{mem} := qz_{Mast5} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 23$ plf **BLC 5,7**

Wind Load (with ice)

Member Projected Surface Area w/ Ice = $A_{ICEmem} := \frac{\left(H_{mem} + 2 \cdot t_{izMast5}\right)}{12} = 0.7$ sf/ft

Total Member Wind Force w/ Ice = $Fi_{mem} := qz_{ice.Mast5} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 13$ plf **BLC 4,6**

Gravity Load (without ice)

Weight of Member = Self Weight plf **BLC 1**

Gravity Loads (ice only)

Ice Area per Linear foot =

$$Ai_{mem} := \left[\left(H_{mem} + 2 \cdot t_{izMast5}\right) + \left(W_{mem} - t_{mem}\right)\right] \cdot \left(t_{mem} + 2 \cdot t_{izMast5}\right) - \left[H_{mem} + \left(W_{mem} + t_{mem}\right)\right] \cdot t_{mem} = 49$$ sq in

Weight of Ice on Member = $W_{ICE.mem} := Id \cdot \frac{Ai_{mem}}{144} = 19$ plf **BLC 3**

Development of Wind & Ice Load on Brace Member

Member Data:	L4x4x1/4		
Antenna Shape =	Flat		(User Input)
Height =	$H_{mem} := 4$	in	(User Input)
Width =	$W_{mem} := 4$	in	(User Input)
Thickness =	$t_{mem} := 0.25$	in	(User Input)
Length =	$L_{mem} := 159$	in	(User Input)
Member Aspect Ratio =	$Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 39.8$		
Member Force Coefficient =	$Ca_{mem} = 2$		

Wind Load (without ice)

Member Projected Surface Area = $A_{mem} := \frac{H_{mem}}{12} = 0.3$ sf/ft

Total Member Wind Force = $F_{mem} := qz_{Mast5} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 26$ plf **BLC 5,7**

Wind Load (with ice)

Member Projected Surface Area w/ Ice = $A_{ICEmem} := \frac{\left(H_{mem} + 2 \cdot t_{izMast5}\right)}{12} = 0.7$ sf/ft

Total Member Wind Force w/ Ice = $Fi_{mem} := qz_{ice.Mast5} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 14$ plf **BLC 4,6**

Gravity Load (without ice)

Weight of Member = Self Weight plf **BLC 1**

Gravity Loads (ice only)

Ice Area per Linear foot =

$$Ai_{mem} := \left[\left(H_{mem} + 2 \cdot t_{izMast5}\right) + \left(W_{mem} - t_{mem}\right)\right] \cdot \left(t_{mem} + 2 \cdot t_{izMast5}\right) - \left[H_{mem} + \left(W_{mem} + t_{mem}\right)\right] \cdot t_{mem} = 53$$ sq in

Weight of Ice on Member = $W_{ICE.mem} := Id \cdot \frac{Ai_{mem}}{144} = 21$ 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
7	A500 Gr. 50	29000	11154	.3	.65	.49	50	1.1	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	Powermount	12" FWT Powermou...	Column	Pipe	A500 Gr.42	Typical	14.579	279.3...	279.3...	558.67
2	Brace 1	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009
3	Brace 2	L2.5x2.5x3	Beam	Single Angle	A36 Gr.36	Typical	.901	.535	.535	.011
4	Brace 3	L3X3X3	Beam	Single Angle	A36 Gr.36	Typical	1.09	.948	.948	.014
5	Brace 4	L3.5X3.5X4	Beam	Single Angle	A36 Gr.36	Typical	1.7	2	2	.039
6	Brace 5	L4X4X4	Beam	Single Angle	A36 Gr.36	Typical	1.93	3	3	.044
7	6"x3/4" Plate	6"X3/4" PL	Beam	Single Angle	A36 Gr.36	Typical	4.5	.211	13.5	.777
8	L2.5x2.5x1/4	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026

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	Powermount	148	Segment	Segment	Lbyy						Lateral
2	M2	Brace 4	10.25			Lbyy						Lateral
3	M3	Brace 5	13.25			Lbyy						Lateral
4	M4	Brace 3	8.083			Lbyy						Lateral
5	M5	Brace 4	11.083			Lbyy						Lateral
6	M6	Brace 5	11.845			Lbyy						Lateral
7	M7	Brace 5	11.845			Lbyy						Lateral
8	M8	Brace 4	9.7			Lbyy						Lateral
9	M9	Brace 4	9.7			Lbyy						Lateral
10	M10	Brace 2	3.354			Lbyy						Lateral
11	M11	Brace 2	3.354			Lbyy						Lateral
12	M12	Brace 1	1.5			Lbyy						Lateral
13	M13	Brace 2	3.354			Lbyy						Lateral
14	M14	Brace 2	3.354			Lbyy						Lateral
15	M15	Brace 1	1.5			Lbyy						Lateral
16	M16	Brace 2	3.354			Lbyy						Lateral
17	M17	Brace 2	3.354			Lbyy						Lateral
18	M18	Brace 1	1.5			Lbyy						Lateral
19	M19	6"x3/4" Plate	1.5			Lbyy						Lateral
20	M20	L2.5x2.5x1/4	3.354			Lbyy						Lateral
21	M21	L2.5x2.5x1/4	3.354			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design ...
1	M1	N1	N8			Powermount	Column	Pipe	A500 Gr.42	Typical
2	M2	N9	N2			Brace 4	Beam	Single An...	A36 Gr.36	Typical
3	M3	N2	N10			Brace 5	Beam	Single An...	A36 Gr.36	Typical
4	M4	N13	N3			Brace 3	Beam	Single An...	A36 Gr.36	Typical
5	M5	N3	N14			Brace 4	Beam	Single An...	A36 Gr.36	Typical
6	M6	N11	N2			Brace 5	Beam	Single An...	A36 Gr.36	Typical
7	M7	N2	N12			Brace 5	Beam	Single An...	A36 Gr.36	Typical
8	M8	N15	N3			Brace 4	Beam	Single An...	A36 Gr.36	Typical
9	M9	N3	N16			Brace 4	Beam	Single An...	A36 Gr.36	Typical
10	M10	N18	N4			Brace 2	Beam	Single An...	A36 Gr.36	Typical
11	M11	N4	N19			Brace 2	Beam	Single An...	A36 Gr.36	Typical
12	M12	N4	N17			Brace 1	Beam	Single An...	A36 Gr.36	Typical
13	M13	N21	N5			Brace 2	Beam	Single An...	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design ...
14	M14	N5	N22			Brace 2	Beam	Single An...	A36 Gr.36	Typical
15	M15	N5	N20			Brace 1	Beam	Single An...	A36 Gr.36	Typical
16	M16	N24	N6			Brace 2	Beam	Single An...	A36 Gr.36	Typical
17	M17	N6	N25			Brace 2	Beam	Single An...	A36 Gr.36	Typical
18	M18	N6	N23			Brace 1	Beam	Single An...	A36 Gr.36	Typical
19	M19	N26	N7			6"x3/4" Plate	Beam	Single An...	A36 Gr.36	Typical
20	M20	N27	N7			L2.5x2.5x1/4	Beam	Single An...	A36 Gr.36	Typical
21	M21	N28	N7			L2.5x2.5x1/4	Beam	Single An...	A36 Gr.36	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N1	0	0	0	0	
2	N2	0	29.25	0	0	
3	N3	0	44.25	0	0	
4	N4	0	89	0	0	
5	N5	0	103	0	0	
6	N6	0	117	0	0	
7	N7	0	133	0	0	
8	N8	0	148	0	0	
9	N9	0	29.25	10.25	0	
10	N10	0	29.25	-13.25	0	
11	N11	-11.75	29.25	-1.5	0	
12	N12	11.75	29.25	-1.5	0	
13	N13	0	44.25	8.083	0	
14	N14	0	44.25	-11.083	0	
15	N15	-9.583	44.25	-1.5	0	
16	N16	9.583	44.25	-1.5	0	
17	N17	0	89	-1.5	0	
18	N18	-3	89	1.5	0	
19	N19	3	89	1.5	0	
20	N20	0	103	-1.5	0	
21	N21	-3	103	1.5	0	
22	N22	3	103	1.5	0	
23	N23	0	117	-1.5	0	
24	N24	-3	117	1.5	0	
25	N25	3	117	1.5	0	
26	N26	0	133	-1.5	0	
27	N27	-3	133	1.5	0	
28	N28	3	133	1.5	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	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N2						
3	N3						
4	N4						
5	N5						
6	N6						
7	N7						

Joint Boundary Conditions (Continued)

	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]
8	N8						
9	N9	Reaction	Reaction	Reaction			
10	N10	Reaction	Reaction	Reaction			
11	N11	Reaction	Reaction	Reaction			
12	N12	Reaction	Reaction	Reaction			
13	N13	Reaction	Reaction	Reaction			
14	N14	Reaction	Reaction	Reaction			
15	N15	Reaction	Reaction	Reaction			
16	N16	Reaction	Reaction	Reaction			
17	N17	Reaction	Reaction	Reaction			
18	N18	Reaction	Reaction	Reaction			
19	N19	Reaction	Reaction	Reaction			
20	N20	Reaction	Reaction	Reaction			
21	N21	Reaction	Reaction	Reaction			
22	N23	Reaction	Reaction	Reaction			
23	N24	Reaction	Reaction	Reaction			
24	N22	Reaction	Reaction	Reaction			
25	N25	Reaction	Reaction	Reaction			
26	N28	Reaction	Reaction	Reaction			
27	N26	Reaction	Reaction	Reaction			
28	N27	Reaction	Reaction	Reaction			

Member Point Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.171	148
2	M1	Y	-3.02	148
3	M1	Y	-.32	139
4	M1	Y	-.26	139
5	M1	Y	-.261	139
6	M1	Y	-.006	139
7	M1	Y	-.3	139
8	M1	Y	-.281	139
9	M1	Y	-.08	139
10	M1	Y	-.064	139
11	M1	Y	-.159	139
12	M1	Y	-1	139

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.784	148
2	M1	Y	-1.28	148
3	M1	Y	-1.426	139
4	M1	Y	-1.384	139
5	M1	Y	-.468	139
6	M1	Y	-.071	139
7	M1	Y	-.402	139
8	M1	Y	-.385	139
9	M1	Y	-.176	139
10	M1	Y	-.376	139
11	M1	Y	-.125	139

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
12	M1	Y	-.3	139

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.353	148
2	M1	X	.159	148
3	M1	X	.634	139
4	M1	X	.535	139
5	M1	X	.201	139
6	M1	X	.036	139
7	M1	X	.124	139
8	M1	X	.124	139
9	M1	X	.07	139
10	M1	X	.117	139
11	M1	X	.053	139
12	M1	X	.259	139

Member Point Loads (BLC 5 : (x) TIA Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.967	148
2	M1	X	.57	148
3	M1	X	1.95	139
4	M1	X	1.565	139
5	M1	X	.56	139
6	M1	X	.071	139
7	M1	X	.297	139
8	M1	X	.297	139
9	M1	X	.136	139
10	M1	X	.322	139
11	M1	X	.098	139
12	M1	X	.595	139

Member Point Loads (BLC 6 : (z) TIA Wind with Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	.353	148
2	M1	Z	.159	148
3	M1	Z	.634	139
4	M1	Z	.535	139
5	M1	Z	.201	139
6	M1	Z	.036	139
7	M1	Z	.124	139
8	M1	Z	.124	139
9	M1	Z	.07	139
10	M1	Z	.117	139
11	M1	Z	.053	139
12	M1	Z	.259	139

Member Point Loads (BLC 7 : (z) TIA Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	.967	148

Member Point Loads (BLC 7 : (z) TIA Wind) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
2	M1	Z	.57	148
3	M1	Z	1.95	139
4	M1	Z	1.565	139
5	M1	Z	.56	139
6	M1	Z	.071	139
7	M1	Z	.297	139
8	M1	Z	.297	139
9	M1	Z	.136	139
10	M1	Z	.322	139
11	M1	Z	.098	139
12	M1	Z	.595	139

Member Distributed Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.015	-.015	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.039	-.039	120	0
2	M1	Y	-.038	-.038	90	120
3	M1	Y	-.037	-.037	60	90
4	M1	Y	-.035	-.035	30	60
5	M1	Y	-.031	-.031	0	30
6	M1	Y	-.087	-.087	120	0
7	M1	Y	-.084	-.084	90	120
8	M1	Y	-.08	-.08	60	90
9	M1	Y	-.074	-.074	30	60
10	M1	Y	-.063	-.063	0	30
11	M18	Y	-.014	-.014	0	0
12	M15	Y	-.014	-.014	0	0
13	M12	Y	-.014	-.014	0	0
14	M16	Y	-.016	-.016	0	0
15	M17	Y	-.016	-.016	0	0
16	M13	Y	-.016	-.016	0	0
17	M14	Y	-.016	-.016	0	0
18	M10	Y	-.016	-.016	0	0
19	M11	Y	-.016	-.016	0	0
20	M4	Y	-.017	-.017	0	0
21	M2	Y	-.019	-.019	0	0
22	M9	Y	-.019	-.019	0	0
23	M5	Y	-.019	-.019	0	0
24	M8	Y	-.019	-.019	0	0
25	M6	Y	-.021	-.021	0	0
26	M3	Y	-.021	-.021	0	0
27	M7	Y	-.021	-.021	0	0
28	M20	Y	-.016	-.016	0	0
29	M21	Y	-.016	-.016	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.008	.008	120	0
2	M1	X	.008	.008	90	120
3	M1	X	.007	.007	60	90
4	M1	X	.007	.007	30	60
5	M1	X	.005	.005	0	30
6	M1	X	.008	.008	120	0
7	M1	X	.008	.008	90	120
8	M1	X	.007	.007	60	90
9	M1	X	.006	.006	30	60
10	M1	X	.005	.005	0	30
11	M18	X	.008	.008	0	0
12	M15	X	.008	.008	0	0
13	M12	X	.008	.008	0	0
14	M16	X	.01	.01	0	0
15	M17	X	.01	.01	0	0
16	M13	X	.01	.01	0	0
17	M14	X	.01	.01	0	0
18	M10	X	.01	.01	0	0
19	M11	X	.01	.01	0	0
20	M4	X	.012	.012	0	0
21	M2	X	.013	.013	0	0
22	M5	X	.013	.013	0	0
23	M3	X	.014	.014	0	0
24	M20	X	.01	.01	0	0
25	M21	X	.01	.01	0	0

Member Distributed Loads (BLC 5 : (x) TIA Wind)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.025	.025	120	0
2	M1	X	.024	.024	90	120
3	M1	X	.022	.022	60	90
4	M1	X	.02	.02	30	60
5	M1	X	.016	.016	0	30
6	M1	X	.016	.016	120	0
7	M1	X	.015	.015	90	120
8	M1	X	.014	.014	60	90
9	M1	X	.012	.012	30	60
10	M1	X	.01	.01	0	30
11	M18	X	.01	.01	0	0
12	M15	X	.01	.01	0	0
13	M12	X	.01	.01	0	0
14	M16	X	.014	.014	0	0
15	M17	X	.014	.014	0	0
16	M13	X	.014	.014	0	0
17	M14	X	.014	.014	0	0
18	M10	X	.014	.014	0	0
19	M11	X	.014	.014	0	0
20	M4	X	.02	.02	0	0
21	M2	X	.023	.023	0	0
22	M5	X	.023	.023	0	0
23	M3	X	.026	.026	0	0

Member Distributed Loads (BLC 5 : (x) TIA Wind) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
24	M20	X	.014	.014	0	0
25	M21	X	.014	.014	0	0

Member Distributed Loads (BLC 6 : (z) TIA Wind with Ice)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.008	.008	120	0
2	M1	Z	.008	.008	90	120
3	M1	Z	.007	.007	60	90
4	M1	Z	.007	.007	30	60
5	M1	Z	.005	.005	0	30
6	M1	Z	.008	.008	120	0
7	M1	Z	.008	.008	90	120
8	M1	Z	.007	.007	60	90
9	M1	Z	.006	.006	30	60
10	M1	Z	.005	.005	0	30
11	M16	Z	.01	.01	0	0
12	M17	Z	.01	.01	0	0
13	M13	Z	.01	.01	0	0
14	M14	Z	.01	.01	0	0
15	M10	Z	.01	.01	0	0
16	M11	Z	.01	.01	0	0
17	M8	Z	.013	.013	0	0
18	M9	Z	.013	.013	0	0
19	M6	Z	.014	.014	0	0
20	M7	Z	.014	.014	0	0
21	M20	Z	.01	.01	0	0
22	M21	Z	.01	.01	0	0

Member Distributed Loads (BLC 7 : (z) TIA Wind)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.025	.025	120	0
2	M1	Z	.024	.024	90	120
3	M1	Z	.022	.022	60	90
4	M1	Z	.02	.02	30	60
5	M1	Z	.016	.016	0	30
6	M1	Z	.016	.016	120	0
7	M1	Z	.015	.015	90	120
8	M1	Z	.014	.014	60	90
9	M1	Z	.012	.012	30	60
10	M1	Z	.01	.01	0	30
11	M16	Z	.014	.014	0	0
12	M17	Z	.014	.014	0	0
13	M13	Z	.014	.014	0	0
14	M14	Z	.014	.014	0	0
15	M10	Z	.014	.014	0	0
16	M11	Z	.014	.014	0	0
17	M8	Z	.023	.023	0	0
18	M9	Z	.023	.023	0	0
19	M6	Z	.026	.026	0	0
20	M7	Z	.026	.026	0	0
21	M20	Z	.014	.014	0	0

Member Distributed Loads (BLC 7 : (z) TIA Wind) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
22	M21	Z	.014	.014	0	0

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					12	1		
3	Weight of Ice Only	None					12	29		
4	(x) TIA Wind with Ice	None					12	25		
5	(x) TIA Wind	None					12	25		
6	(z) TIA Wind with Ice	None					12	22		
7	(z) TIA Wind	None					12	22		

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 + 1.6W (X-direction)	Yes	Y		1	1.2	2	1.2	5	1.6														
2	0.9D + 1.6W (X-direction)	Yes	Y		1	.9	2	.9	5	1.6														
3	1.2D + 1.0Di + 1.0Wi (X-d...	Yes	Y		1	1.2	2	1.2	3	1	4	1												
4	1.2D + 1.6W (Z-direction)	Yes	Y		1	1.2	2	1.2	7	1.6														
5	0.9D + 1.6W (Z-direction)	Yes	Y		1	.9	2	.9	7	1.6														
6	1.2D + 1.0Di + 1.0Wi (Z-d...	Yes	Y		1	1.2	2	1.2	3	1	6	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	N1	max	0	6	44.014	3	0	2	0	2	0	6	4.057	1
2		min	-.719	2	14.175	5	-.719	5	-4.053	4	0	1	0	4
3	N9	max	0	6	.133	3	0	3	0	6	0	6	0	6
4		min	-.189	1	.027	5	-.472	5	0	1	0	1	0	1
5	N10	max	0	6	.191	6	0	3	0	6	0	6	0	6
6		min	-.276	1	.039	2	-.415	5	0	1	0	1	0	1
7	N11	max	-.017	6	.171	3	-.016	3	0	6	0	6	0	6
8		min	-.436	2	.035	5	-.254	5	0	1	0	1	0	1
9	N12	max	.058	5	.171	6	.056	2	0	6	0	6	0	6
10		min	-.436	2	.035	2	-.254	5	0	1	0	1	0	1
11	N13	max	0	6	.087	3	0	3	0	6	0	6	0	6
12		min	-.129	1	.013	5	-1.101	4	0	1	0	1	0	1
13	N14	max	0	6	.144	6	0	3	0	6	0	6	0	6
14		min	-.204	1	.029	2	-1.252	4	0	1	0	1	0	1
15	N15	max	-.058	6	.126	3	-.05	3	0	6	0	6	0	6
16		min	-1.199	1	.025	5	-.213	4	0	1	0	1	0	1
17	N16	max	.219	4	.126	6	.188	1	0	6	0	6	0	6
18		min	-1.199	1	.025	2	-.213	4	0	1	0	1	0	1
19	N17	max	0	6	.015	6	0	2	0	6	0	6	0	6
20		min	-.012	1	.002	2	-1.554	5	0	1	0	1	0	1
21	N18	max	.347	5	.034	3	.483	2	0	6	0	6	0	6
22		min	-1.005	2	.004	5	-.211	5	0	1	0	1	0	1
23	N19	max	-.09	6	.033	6	-.062	6	0	6	0	6	0	6
24		min	-1.005	2	.004	2	-.484	2	0	1	0	1	0	1

Envelope Joint Reactions (Continued)

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
25	N20	max	0	6	.017	6	0	1	0	6	0	6	0	6
26		min	-.012	1	.002	2	-2.504	4	0	1	0	1	0	1
27	N21	max	.559	4	.034	3	.748	1	0	6	0	6	0	6
28		min	-1.534	1	.004	5	-.317	4	0	1	0	1	0	1
29	N23	max	0	6	.013	3	7.546	4	0	6	0	6	0	6
30		min	-.012	1	-.022	4	0	3	0	1	0	1	0	1
31	N24	max	4.523	1	.034	6	.805	4	0	6	0	6	0	6
32		min	-1.684	4	-.001	1	-2.281	1	0	1	0	1	0	1
33	N22	max	-.131	6	.033	6	-.082	6	0	6	0	6	0	6
34		min	-1.533	1	.003	2	-.748	1	0	1	0	1	0	1
35	N25	max	4.524	1	.037	3	2.28	1	0	6	0	6	0	6
36		min	.371	6	.007	5	.169	6	0	1	0	1	0	1
37	N28	max	-.22	6	.034	6	-.127	6	0	6	0	6	0	6
38		min	-10.761	1	-.011	1	-5.364	1	0	1	0	1	0	1
39	N26	max	0	2	.086	4	.004	1	0	6	0	6	0	6
40		min	0	4	.01	2	-20.514	4	0	1	0	1	0	1
41	N27	max	.97	4	.045	3	5.36	1	0	6	0	6	0	6
42		min	-10.763	1	.005	5	-.523	4	0	1	0	1	0	1
43	Totals:	max	0	6	45.483	6	0	3						
44		min	-22.374	1	14.504	2	-22.406	4						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
1	N1	max	0	6	0	6	0	6	0	6	0	6	0	6
2		min	0	1	0	1	0	1	0	1	0	1	0	1
3	N2	max	.001	2	-.014	5	.001	5	0	3	0	6	3.464e-04	1
4		min	0	4	-.043	3	0	1	-3.445e-04	4	0	1	0	4
5	N3	max	.004	1	-.02	5	.004	4	7.741e-04	4	0	6	0	6
6		min	0	4	-.063	3	0	3	0	1	0	1	-7.709e-04	1
7	N4	max	.002	2	-.036	5	.002	5	0	3	0	6	8.888e-04	1
8		min	0	4	-.112	3	0	1	-9.01e-04	4	0	1	0	4
9	N5	max	.004	1	-.04	5	.003	4	8.172e-04	4	0	6	0	6
10		min	0	4	-.124	3	0	1	0	1	0	1	-7.922e-04	1
11	N6	max	0	6	-.044	5	0	3	0	3	0	6	2.598e-03	1
12		min	-.011	1	-.135	3	-.008	4	-2.625e-03	4	0	1	0	4
13	N7	max	.02	1	-.048	5	.004	4	1.053e-02	4	0	6	0	6
14		min	0	4	-.146	3	0	1	0	1	0	1	-1.067e-02	1
15	N8	max	3.423	1	-.05	5	3.383	4	2.155e-02	4	0	6	0	6
16		min	0	4	-.152	3	0	2	0	1	0	1	-2.169e-02	1
17	N9	max	0	6	0	6	0	6	3.523e-03	2	3.359e-03	6	3.464e-04	1
18		min	0	1	0	1	0	1	-5.974e-03	6	-7.315e-03	2	0	4
19	N10	max	0	6	0	6	0	6	9.421e-03	6	1.206e-02	2	3.464e-04	1
20		min	0	1	0	1	0	1	-6.017e-03	2	-5.538e-03	6	0	4
21	N11	max	0	6	0	6	0	6	8.769e-04	3	3.957e-03	3	4.141e-03	5
22		min	0	1	0	1	0	1	-8.731e-04	5	-8.543e-03	5	-6.786e-03	3
23	N12	max	0	6	0	6	0	6	8.559e-04	3	8.543e-03	5	6.788e-03	3
24		min	0	1	0	1	0	1	-8.731e-04	5	-3.957e-03	3	-4.141e-03	5
25	N13	max	0	6	0	6	0	6	3.434e-03	2	2.951e-03	6	0	6
26		min	0	1	0	1	0	1	-5.527e-03	6	-6.859e-03	2	-7.709e-04	1
27	N14	max	0	6	0	6	0	6	7.58e-03	6	9.259e-03	2	0	6

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
28		min	0	1	0	1	0	1	-4.444e-03	2	-4.246e-03	6	-7.709e-04	1
29	N15	max	0	6	0	6	0	6	7.916e-04	3	2.848e-03	3	2.943e-03	5
30		min	0	1	0	1	0	1	5.705e-05	2	-6.145e-03	5	-5.246e-03	3
31	N16	max	0	6	0	6	0	6	8.492e-04	3	6.145e-03	5	5.237e-03	3
32		min	0	1	0	1	0	1	2.926e-04	2	-2.845e-03	3	-2.943e-03	5
33	N17	max	0	6	0	6	0	6	6.283e-03	6	2.036e-04	2	8.888e-04	1
34		min	0	1	0	1	0	1	1.98e-03	2	-5.061e-05	6	0	4
35	N18	max	0	6	0	6	0	6	-7.153e-04	2	2.104e-04	3	-1.99e-04	5
36		min	0	1	0	1	0	1	-1.597e-03	6	-5.709e-04	5	-2.88e-03	3
37	N19	max	0	6	0	6	0	6	-1.63e-04	2	5.709e-04	5	3.106e-03	3
38		min	0	1	0	1	0	1	-1.597e-03	6	-4.839e-04	3	1.99e-04	5
39	N20	max	0	6	0	6	0	6	6.973e-03	6	2.735e-04	2	0	6
40		min	0	1	0	1	0	1	2.211e-03	2	-5.061e-05	6	-7.922e-04	1
41	N21	max	0	6	0	6	0	6	3.259e-04	5	2.077e-04	3	-9.708e-04	2
42		min	0	1	0	1	0	1	-1.527e-03	3	-5.934e-04	5	-3.235e-03	3
43	N22	max	0	6	0	6	0	6	3.259e-04	5	5.934e-04	5	3.303e-03	3
44		min	0	1	0	1	0	1	-1.742e-03	3	-4.866e-04	3	9.712e-04	2
45	N23	max	0	6	0	6	0	6	7.583e-03	6	-6.603e-06	5	2.598e-03	1
46		min	0	1	0	1	0	1	2.42e-03	2	-5.377e-04	1	0	4
47	N24	max	0	6	0	6	0	6	-1.483e-03	2	2.44e-04	3	3.109e-04	5
48		min	0	1	0	1	0	1	-2.642e-03	4	-3.545e-04	5	-3.326e-03	3
49	N25	max	0	6	0	6	0	6	4.285e-04	2	3.545e-04	5	3.701e-03	3
50		min	0	1	0	1	0	1	-2.642e-03	4	-4.503e-04	3	-3.109e-04	5
51	N26	max	0	6	0	6	0	6	8.106e-03	3	1.086e-03	1	0	6
52		min	0	1	0	1	0	1	2.657e-03	5	0	4	-1.067e-02	1
53	N27	max	0	6	0	6	0	6	7.94e-03	5	1.28e-04	3	-3.145e-03	2
54		min	0	1	0	1	0	1	-8.392e-04	3	-4.735e-04	5	-5.488e-03	4
55	N28	max	0	6	0	6	0	6	7.703e-03	5	5.863e-04	4	5.962e-03	4
56		min	0	1	0	1	0	1	-4.966e-03	1	-3.902e-04	2	-1.103e-03	2

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	12" FWT Po...	.556	1...	1	.078	1...		1	489.6...	551.086	180.952	180...	3....	H1...
2	M2	L3.5X3.5X4	.223	5....	2	.011	0	z	2	12.016	55.08	2.416	3.831	1....	H2...
3	M3	L4X4X4	.340	6....	2	.014	0	z	2	10.574	62.532	3.138	4.514	1....	H2...
4	M4	L3X3X3	.223	4....	2	.012	0	z	2	8.988	35.316	1.32	2.085	1....	H2...
5	M5	L3.5X3.5X4	.265	5....	2	.012	0	z	2	10.278	55.08	2.416	3.716	1....	H2...
6	M6	L4X4X4	.264	5....	5	.013	0	z	5	13.23	62.532	3.138	4.749	1....	H2...
7	M7	L4X4X4	.264	5....	5	.013	0	z	5	13.23	62.532	3.138	4.749	1....	H2...
8	M8	L3.5X3.5X4	.200	4....	5	.010	9.7	z	5	13.418	55.08	2.416	3.908	1....	H2...
9	M9	L3.5X3.5X4	.200	4....	5	.010	9.7	z	5	13.418	55.08	2.416	3.908	1....	H2...
10	M10	L2.5x2.5x3	.052	1....	2	.004	3....	z	5	20.016	29.192	.873	1.818	1....	H2...
11	M11	L2.5x2.5x3	.073	1....	1	.004	0	z	5	20.016	29.192	.873	1.818	1....	H2...
12	M12	L2x2x3	.068	.75	4	.002	0	y	6	20.899	23.393	.558	1.239	1....	H2...
13	M13	L2.5x2.5x3	.072	1....	2	.004	0	z	5	20.016	29.192	.873	1.818	1....	H2...
14	M14	L2.5x2.5x3	.103	1....	1	.004	3....	z	5	20.016	29.192	.873	1.818	1....	H2...
15	M15	L2x2x3	.109	.75	4	.002	0	y	6	20.899	23.393	.558	1.239	1....	H2...
16	M16	L2.5x2.5x3	.270	1....	1	.004	0	z	5	20.016	29.192	.873	1.818	1....	H2...
17	M17	L2.5x2.5x3	.194	1....	1	.004	3....	z	5	20.016	29.192	.873	1.818	1....	H2...
18	M18	L2x2x3	.363	.75	4	.002	0	y	6	20.899	23.393	.558	1.239	1....	H2...

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

	Memb...	Shape	Code Check	L...	LC	Sh...	L...	Dir	...	phi*P...	phi*Pn...	phi*Mn y-y [k-ft]	phi*...	Cb	Eqn
19	M19	6"X3/4" PL	.071	.75	4	.000	1.5	y	6	101.3...	145.8	2.278	18....	1....	H1...
20	M20	L2.5x2.5x4	.322	1....	2	.003	3....	y	6	26.71	38.556	1.114	2.473	1....	H2...
21	M21	L2.5x2.5x4	.460	1....	1	.003	3....	y	6	26.71	38.556	1.114	2.473	1....	H2...

Joint Reactions (By Combination)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N1	-.719	18.96	0	0	0	4.057
2	1	N9	-.189	.036	0	0	0	0
3	1	N10	-.276	.052	0	0	0	0
4	1	N11	-.436	.047	-.056	0	0	0
5	1	N12	-.436	.047	.056	0	0	0
6	1	N13	-.129	.018	0	0	0	0
7	1	N14	-.204	.038	0	0	0	0
8	1	N15	-1.199	.034	-.188	0	0	0
9	1	N16	-1.199	.033	.188	0	0	0
10	1	N17	-.012	.002	0	0	0	0
11	1	N18	-1.003	.007	.483	0	0	0
12	1	N19	-1.003	.005	-.483	0	0	0
13	1	N20	-.012	.002	0	0	0	0
14	1	N21	-1.534	.008	.748	0	0	0
15	1	N23	-.012	.002	0	0	0	0
16	1	N24	4.523	-.001	-2.281	0	0	0
17	1	N22	-1.533	.004	-.748	0	0	0
18	1	N25	4.524	.014	2.28	0	0	0
19	1	N28	-10.761	-.011	-5.364	0	0	0
20	1	N26	0	.014	.004	0	0	0
21	1	N27	-10.763	.027	5.36	0	0	0
22	1	Totals:	-22.374	19.338	0			
23	1	COG (ft):	X: 0	Y: 98.763	Z: -.041			

Joint Reactions (By Combination)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	N1	-.719	14.22	0	0	0	4.057
2	2	N9	-.189	.027	0	0	0	0
3	2	N10	-.276	.039	0	0	0	0
4	2	N11	-.436	.035	-.056	0	0	0
5	2	N12	-.436	.035	.056	0	0	0
6	2	N13	-.129	.013	0	0	0	0
7	2	N14	-.204	.029	0	0	0	0
8	2	N15	-1.199	.025	-.188	0	0	0
9	2	N16	-1.199	.025	.188	0	0	0
10	2	N17	-.012	.002	0	0	0	0
11	2	N18	-1.005	.006	.483	0	0	0
12	2	N19	-1.005	.004	-.484	0	0	0
13	2	N20	-.012	.002	0	0	0	0
14	2	N21	-1.527	.006	.745	0	0	0
15	2	N23	-.012	.002	0	0	0	0
16	2	N24	4.5	0	-2.269	0	0	0
17	2	N22	-1.527	.003	-.745	0	0	0
18	2	N25	4.501	.01	2.269	0	0	0
19	2	N28	-10.743	-.008	-5.356	0	0	0
20	2	N26	0	.01	.004	0	0	0
21	2	N27	-10.746	.02	5.351	0	0	0
22	2	Totals:	-22.374	14.504	0			
23	2	COG (ft):	X: 0	Y: 98.763	Z: -.041			

Joint Reactions (By Combination)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	3	N1	-.173	44.014	0	0	0	.978
2	3	N9	-.067	.133	0	0	0	0
3	3	N10	-.093	.191	0	0	0	0
4	3	N11	-.129	.171	-.016	0	0	0
5	3	N12	-.129	.171	.016	0	0	0
6	3	N13	-.048	.087	0	0	0	0
7	3	N14	-.072	.144	0	0	0	0
8	3	N15	-.318	.126	-.05	0	0	0
9	3	N16	-.318	.126	.05	0	0	0
10	3	N17	-.006	.013	0	0	0	0
11	3	N18	-.268	.034	.126	0	0	0
12	3	N19	-.268	.032	-.126	0	0	0
13	3	N20	-.006	.013	0	0	0	0
14	3	N21	-.371	.034	.177	0	0	0
15	3	N23	-.006	.013	0	0	0	0
16	3	N24	.987	.029	-.502	0	0	0
17	3	N22	-.371	.032	-.177	0	0	0
18	3	N25	.987	.037	.502	0	0	0
19	3	N28	-2.449	.025	-1.216	0	0	0
20	3	N26	0	.014	0	0	0	0
21	3	N27	-2.449	.045	1.216	0	0	0
22	3	Totals:	-5.567	45.483	0			
23	3	COG (ft):	X: 0	Y: 95.638	Z: -.058			

Joint Reactions (By Combination)

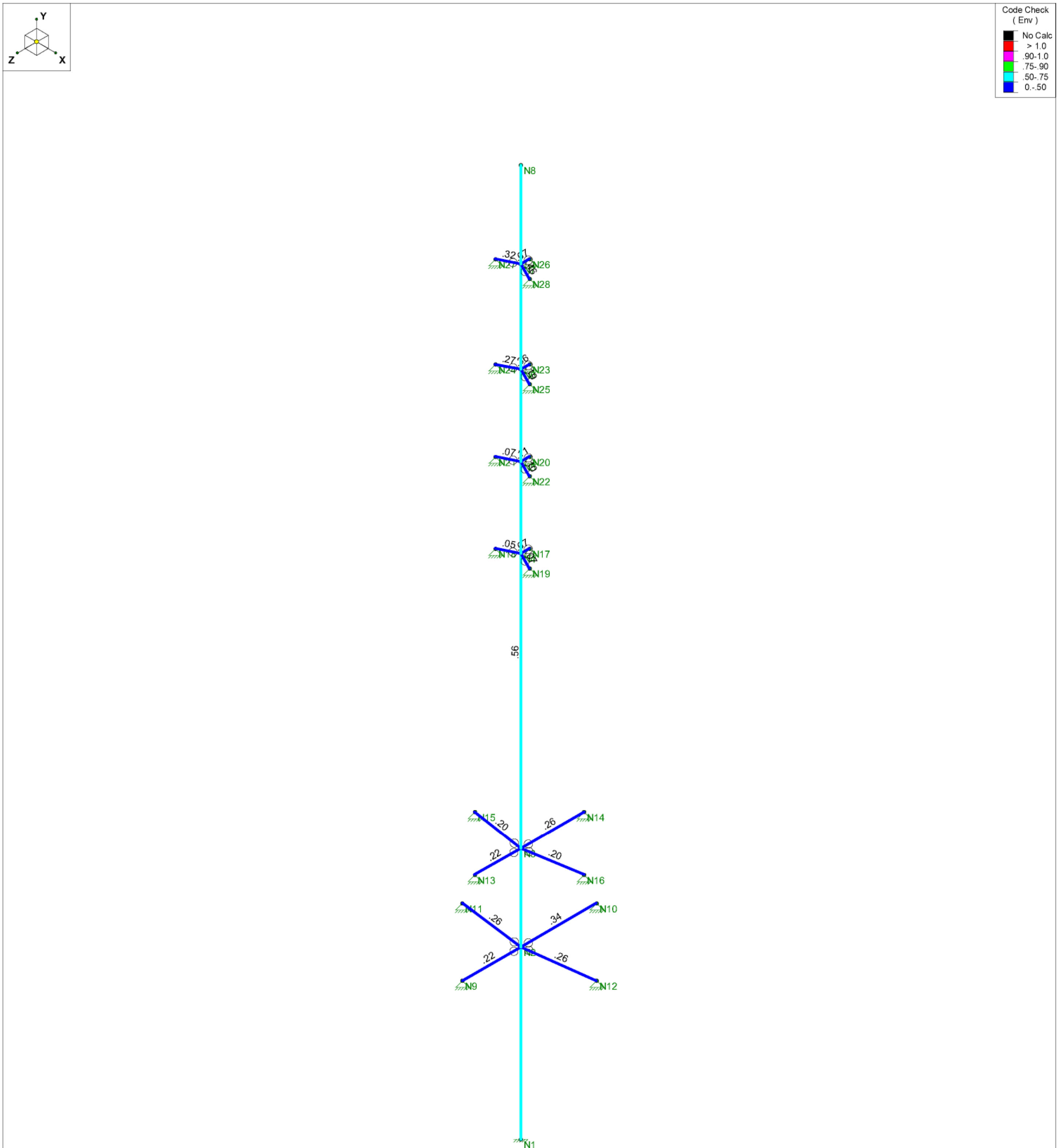
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	4	N1	0	18.9	-.719	-4.053	0	0
2	4	N9	0	.036	-.472	0	0	0
3	4	N10	0	.052	-.414	0	0	0
4	4	N11	-.058	.047	-.254	0	0	0
5	4	N12	.058	.047	-.254	0	0	0
6	4	N13	0	.018	-1.101	0	0	0
7	4	N14	0	.039	-1.252	0	0	0
8	4	N15	-.219	.034	-.213	0	0	0
9	4	N16	.219	.034	-.213	0	0	0
10	4	N17	0	.006	-1.552	0	0	0
11	4	N18	.346	.006	-.211	0	0	0
12	4	N19	-.346	.006	-.211	0	0	0
13	4	N20	0	.01	-2.504	0	0	0
14	4	N21	.559	.005	-.317	0	0	0
15	4	N23	0	-.022	7.546	0	0	0
16	4	N24	-1.684	.009	.805	0	0	0
17	4	N22	-.559	.005	-.317	0	0	0
18	4	N25	1.684	.009	.805	0	0	0
19	4	N28	-.97	.006	-.523	0	0	0
20	4	N26	0	.086	-20.514	0	0	0
21	4	N27	.97	.006	-.523	0	0	0
22	4	Totals:	0	19.338	-22.406			
23	4	COG (ft):	X: 0	Y: 98.763	Z: -.041			

Joint Reactions (By Combination)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	5	N1	0	14.175	-.719	-4.053	0	0
2	5	N9	0	.027	-.472	0	0	0
3	5	N10	0	.039	-.415	0	0	0
4	5	N11	-.058	.035	-.254	0	0	0
5	5	N12	.058	.035	-.254	0	0	0
6	5	N13	0	.013	-1.101	0	0	0
7	5	N14	0	.029	-1.252	0	0	0
8	5	N15	-.219	.025	-.213	0	0	0
9	5	N16	.219	.025	-.213	0	0	0
10	5	N17	0	.005	-1.554	0	0	0
11	5	N18	.347	.004	-.211	0	0	0
12	5	N19	-.347	.004	-.211	0	0	0
13	5	N20	0	.007	-2.493	0	0	0
14	5	N21	.557	.004	-.316	0	0	0
15	5	N23	0	-.017	7.509	0	0	0
16	5	N24	-1.676	.007	.801	0	0	0
17	5	N22	-.557	.004	-.316	0	0	0
18	5	N25	1.676	.007	.801	0	0	0
19	5	N28	-.969	.005	-.522	0	0	0
20	5	N26	0	.065	-20.481	0	0	0
21	5	N27	.969	.005	-.522	0	0	0
22	5	Totals:	0	14.504	-22.406			
23	5	COG (ft):	X: 0	Y: 98.763	Z: -.041			

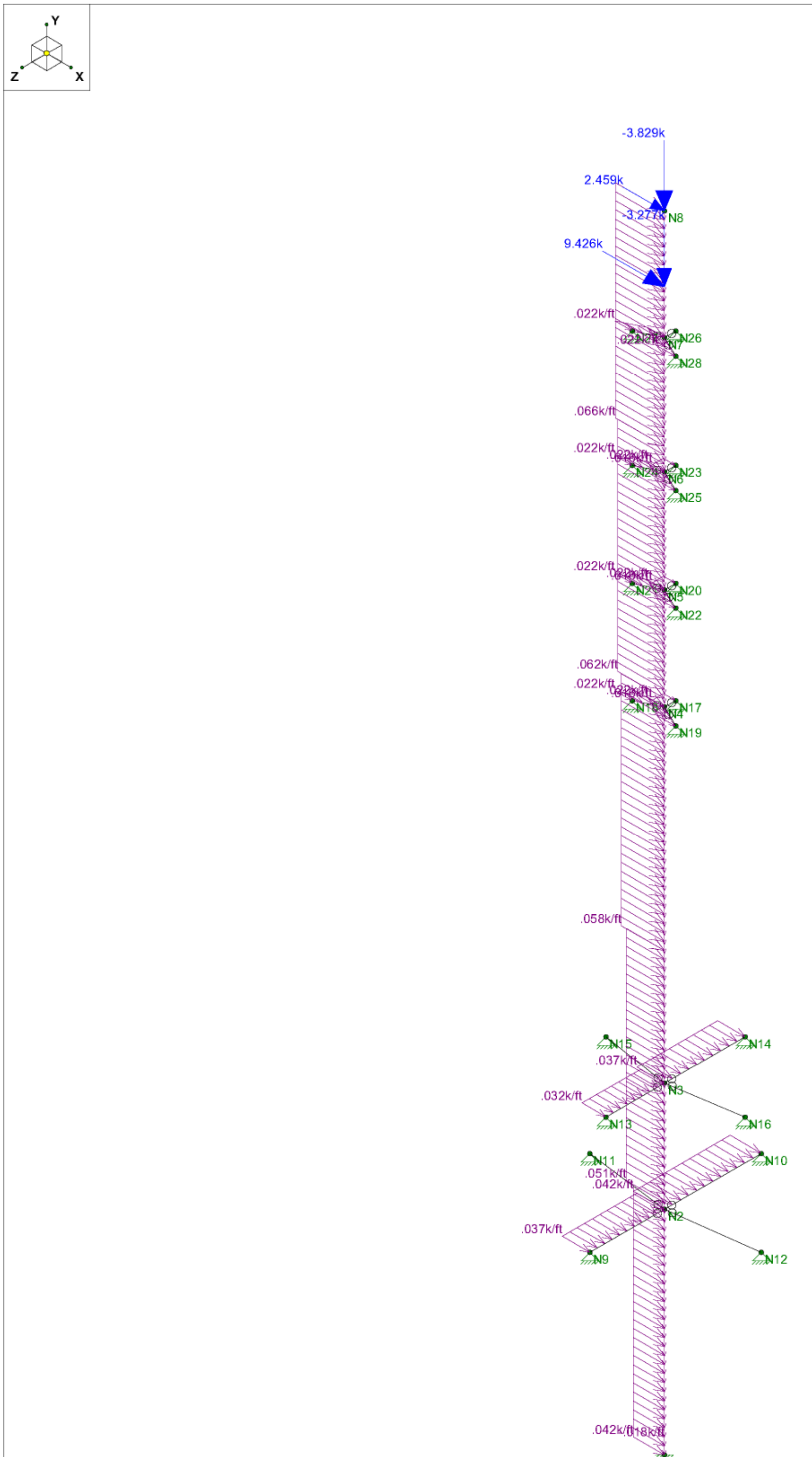
Joint Reactions (By Combination)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	6	N1	0	43.983	-.173	-.977	0	0
2	6	N9	0	.133	-.139	0	0	0
3	6	N10	0	.191	-.122	0	0	0
4	6	N11	-.017	.171	-.085	0	0	0
5	6	N12	.017	.171	-.085	0	0	0
6	6	N13	0	.087	-.292	0	0	0
7	6	N14	0	.144	-.332	0	0	0
8	6	N15	-.058	.126	-.072	0	0	0
9	6	N16	.058	.126	-.072	0	0	0
10	6	N17	0	.015	-.403	0	0	0
11	6	N18	.09	.033	-.062	0	0	0
12	6	N19	-.09	.033	-.062	0	0	0
13	6	N20	0	.017	-.589	0	0	0
14	6	N21	.131	.033	-.082	0	0	0
15	6	N23	0	0	1.664	0	0	0
16	6	N24	-.371	.034	.169	0	0	0
17	6	N22	-.131	.033	-.082	0	0	0
18	6	N25	.371	.034	.169	0	0	0
19	6	N28	-.22	.034	-.127	0	0	0
20	6	N26	0	.051	-4.653	0	0	0
21	6	N27	.22	.034	-.127	0	0	0
22	6	Totals:	0	45.483	-5.555			
23	6	COG (ft):	X: 0	Y: 95.638	Z: -.058			



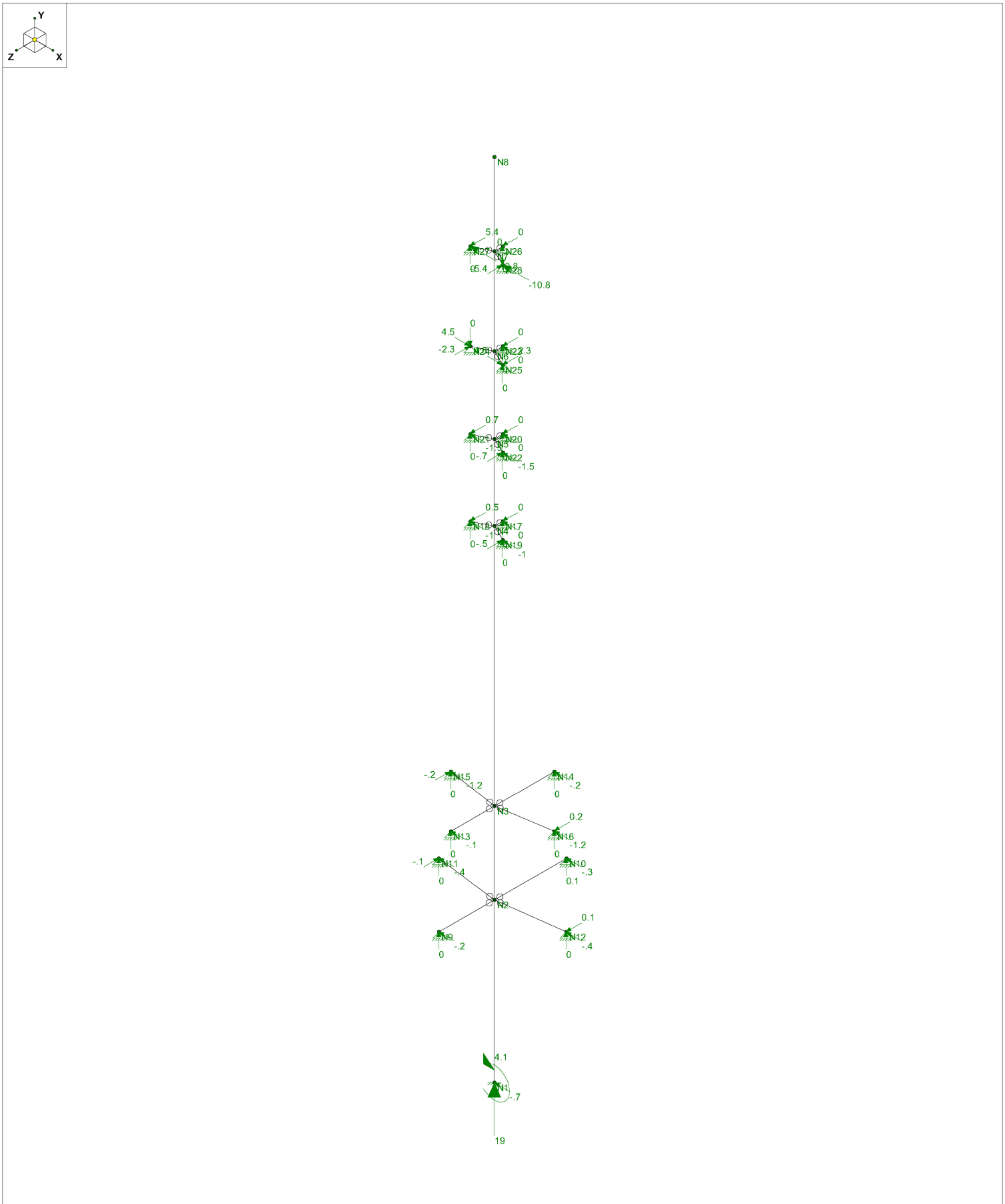
Member Code Checks Displayed (Enveloped)
Envelope Only Solution

CENTEK Engineering, INC.		
TJL	Struct. #1281 - Antenna Mast	Feb 15, 2022 at 2:20 PM
21007.68 - Greenwich 3	Unity Check	TIA-222-G Mast.r3d



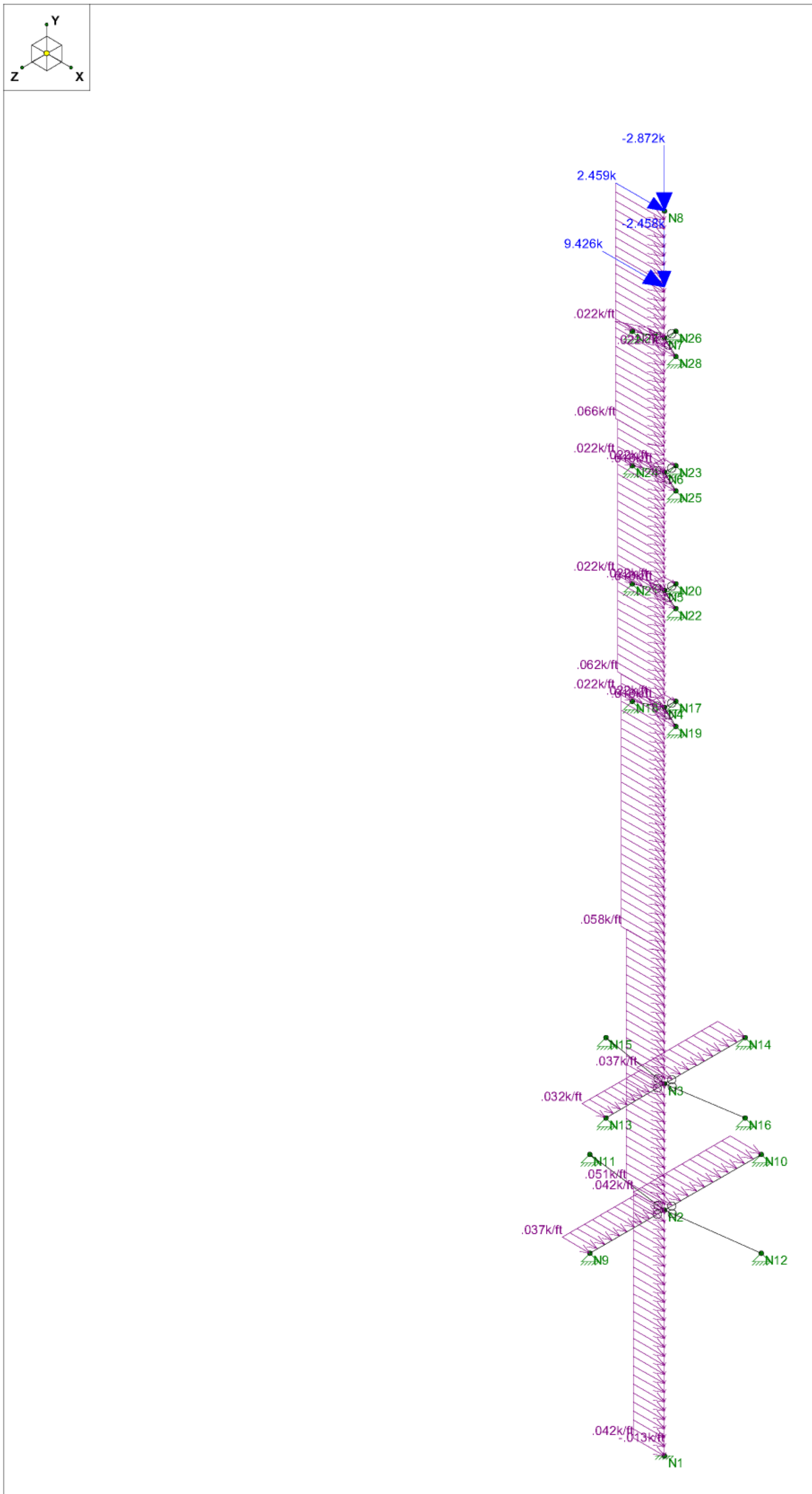
Loads: LC 1, 1.2D + 1.6W (X-direction)

CENTEK Engineering, INC.		
TJL	Struct. #1281 - Antenna Mast	Feb 15, 2022 at 2:18 PM
21007.68 - Greenwich 3	LC #1 Loads	TIA-222-G Mast.r3d



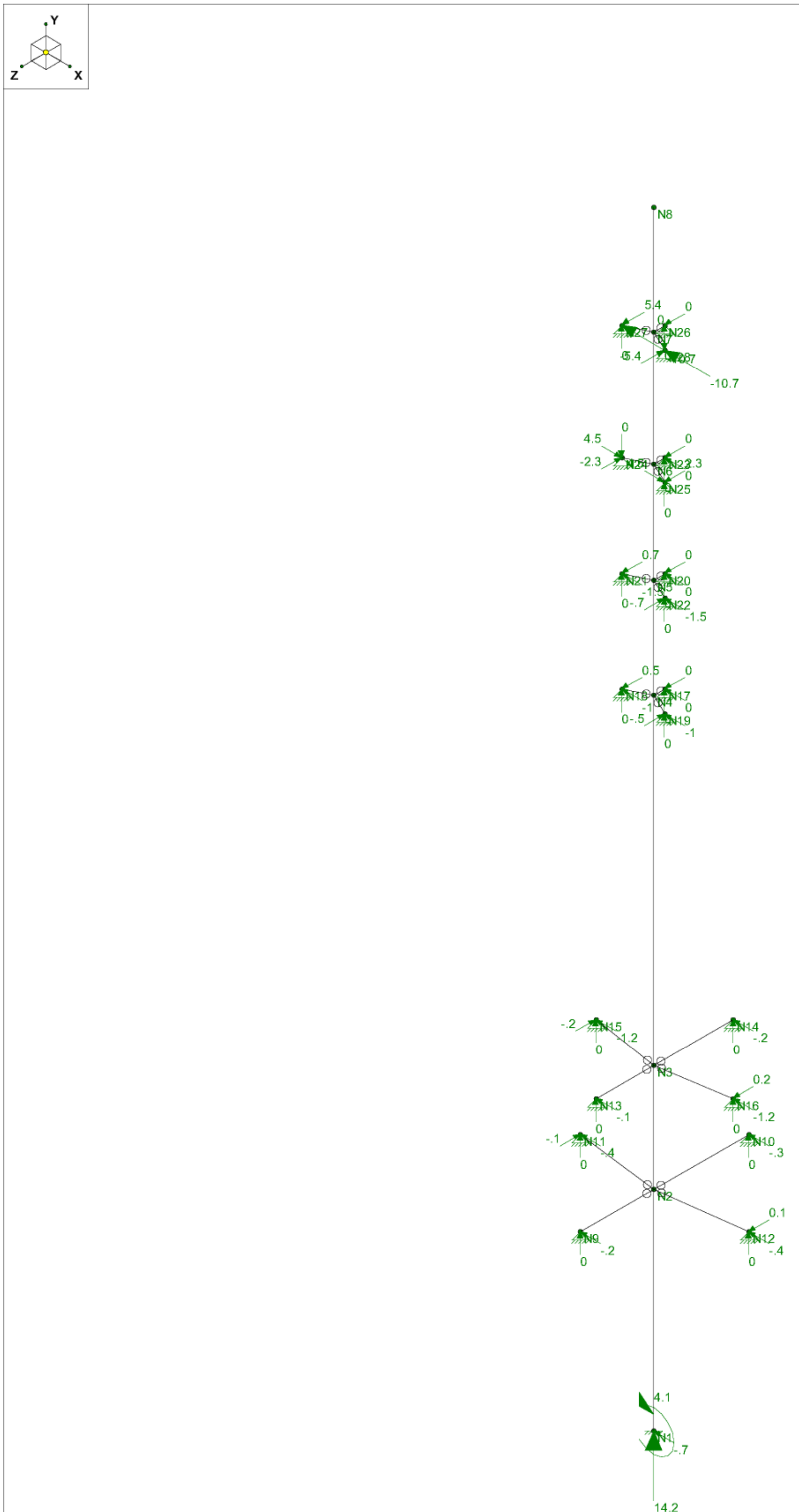
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.		
TJL	Struct. #1281 - Antenna Mast	Feb 15, 2022 at 2:20 PM
21007.68 - Greenwich 3	LC #1 Reactions	TIA-222-G Mast.r3d



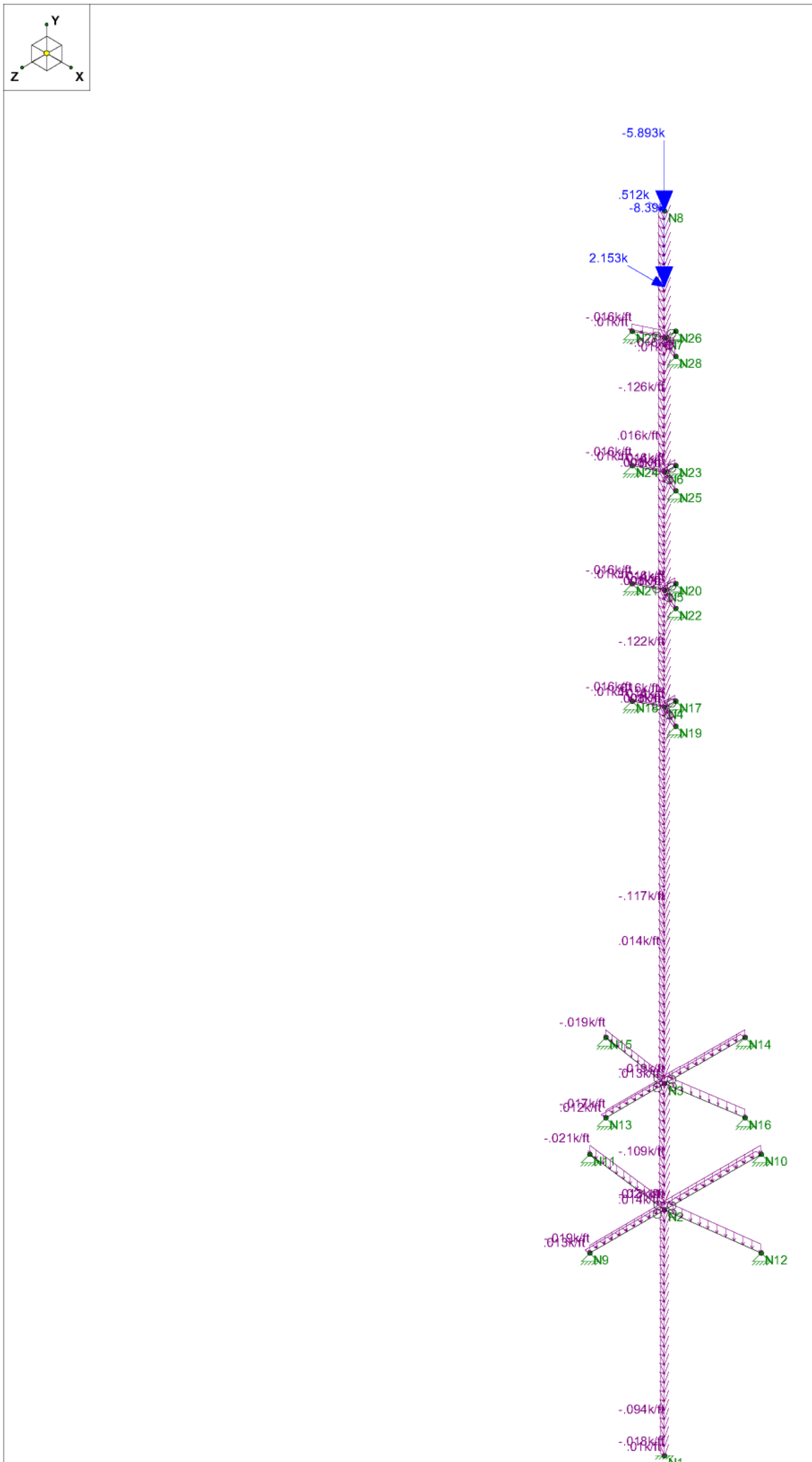
Loads: LC 2, 0.9D + 1.6W (X-direction)

CENTEK Engineering, INC.		
TJL	Struct. #1281 - Antenna Mast	Feb 15, 2022 at 2:19 PM
21007.68 - Greenwich 3	LC #2 Loads	TIA-222-G Mast.r3d



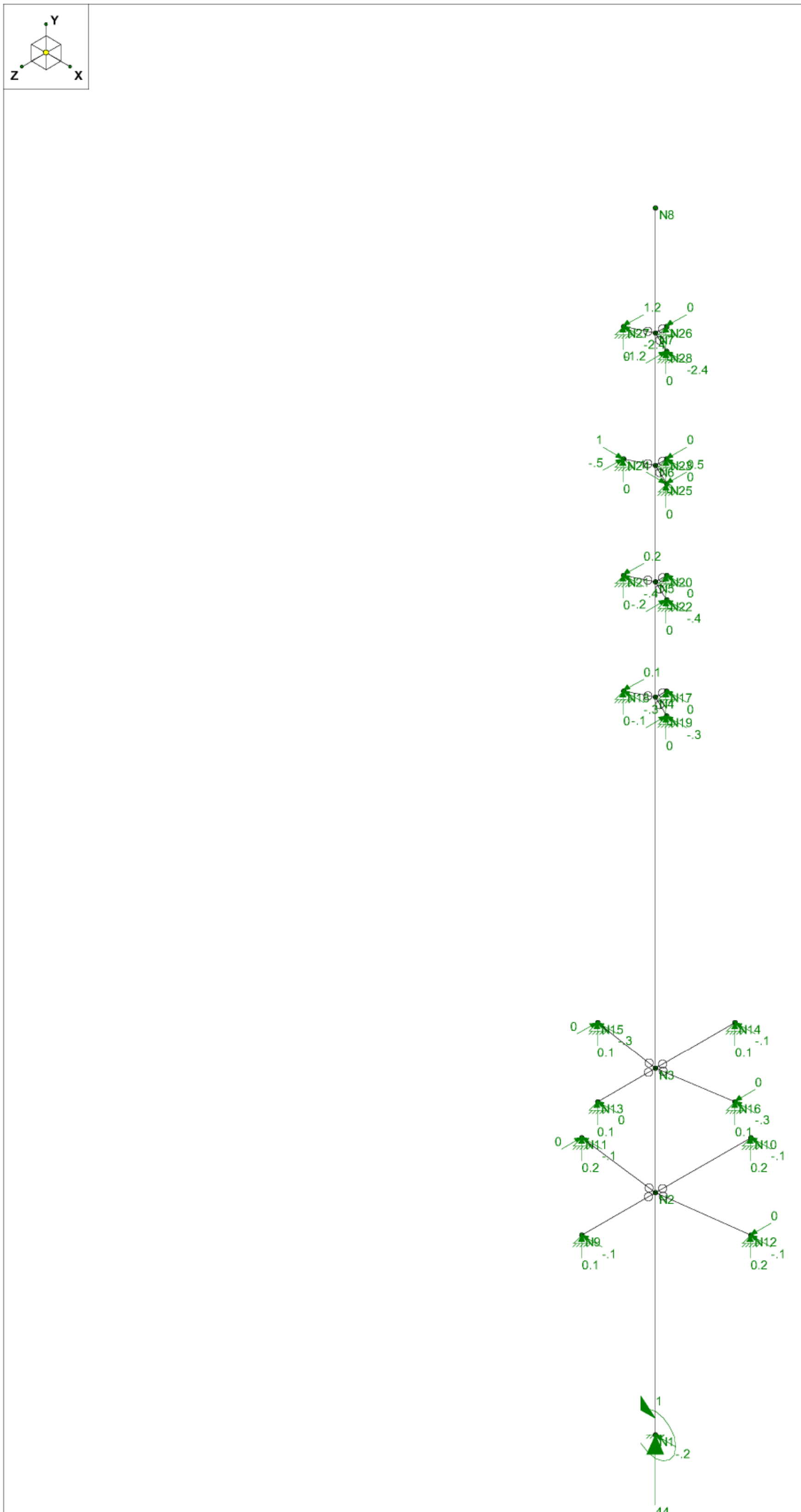
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.		
TJL	Struct. #1281 - Antenna Mast	Feb 15, 2022 at 2:21 PM
21007.68 - Greenwich 3	LC #2 Reactions	TIA-222-G Mast.r3d



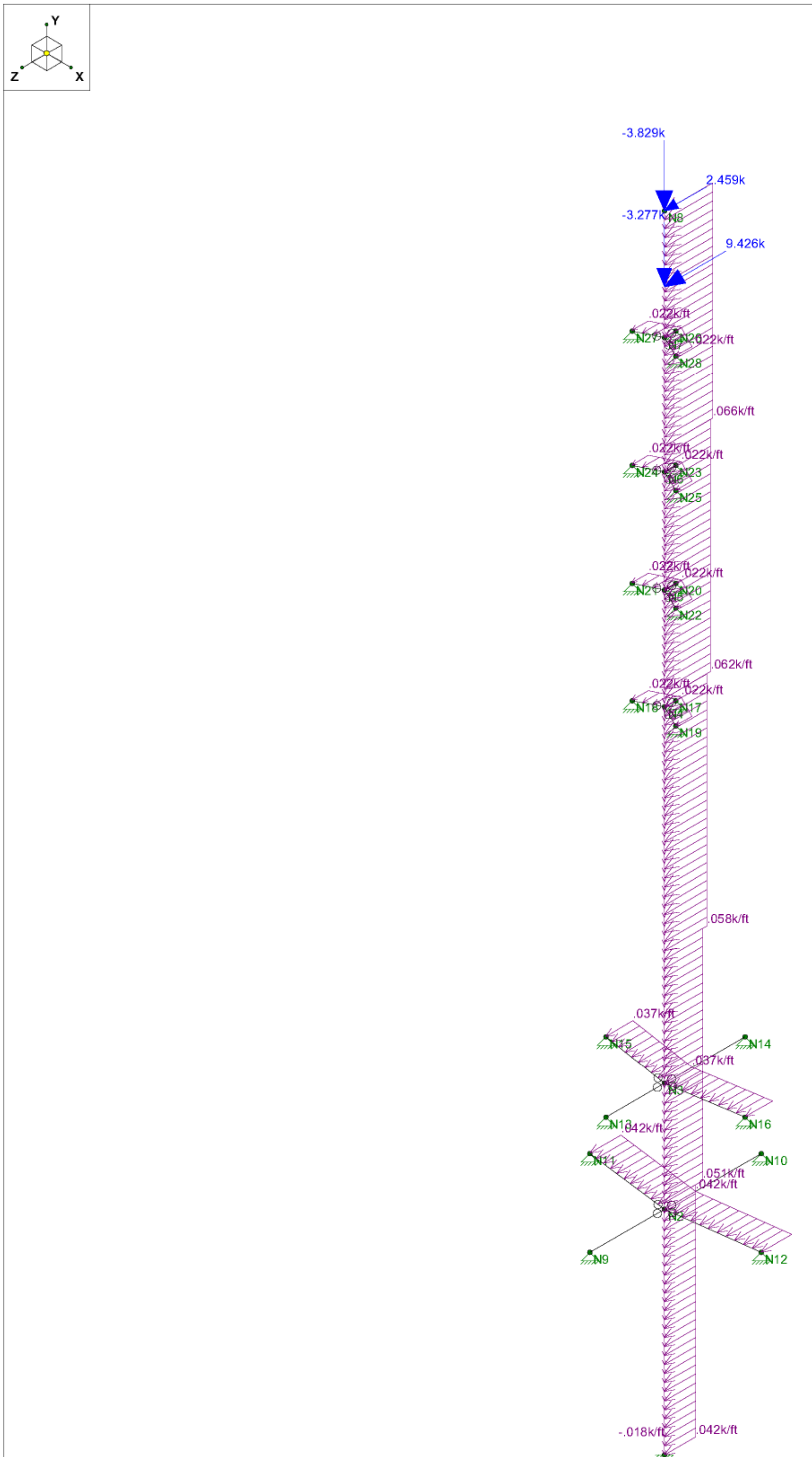
Loads: LC 3, 1.2D + 1.0Di + 1.0Wi (X-direction)

CENTEK Engineering, INC.		
TJL	Struct. #1281 - Antenna Mast	Feb 15, 2022 at 2:19 PM
21007.68 - Greenwich 3	LC #3 Loads	TIA-222-G Mast.r3d



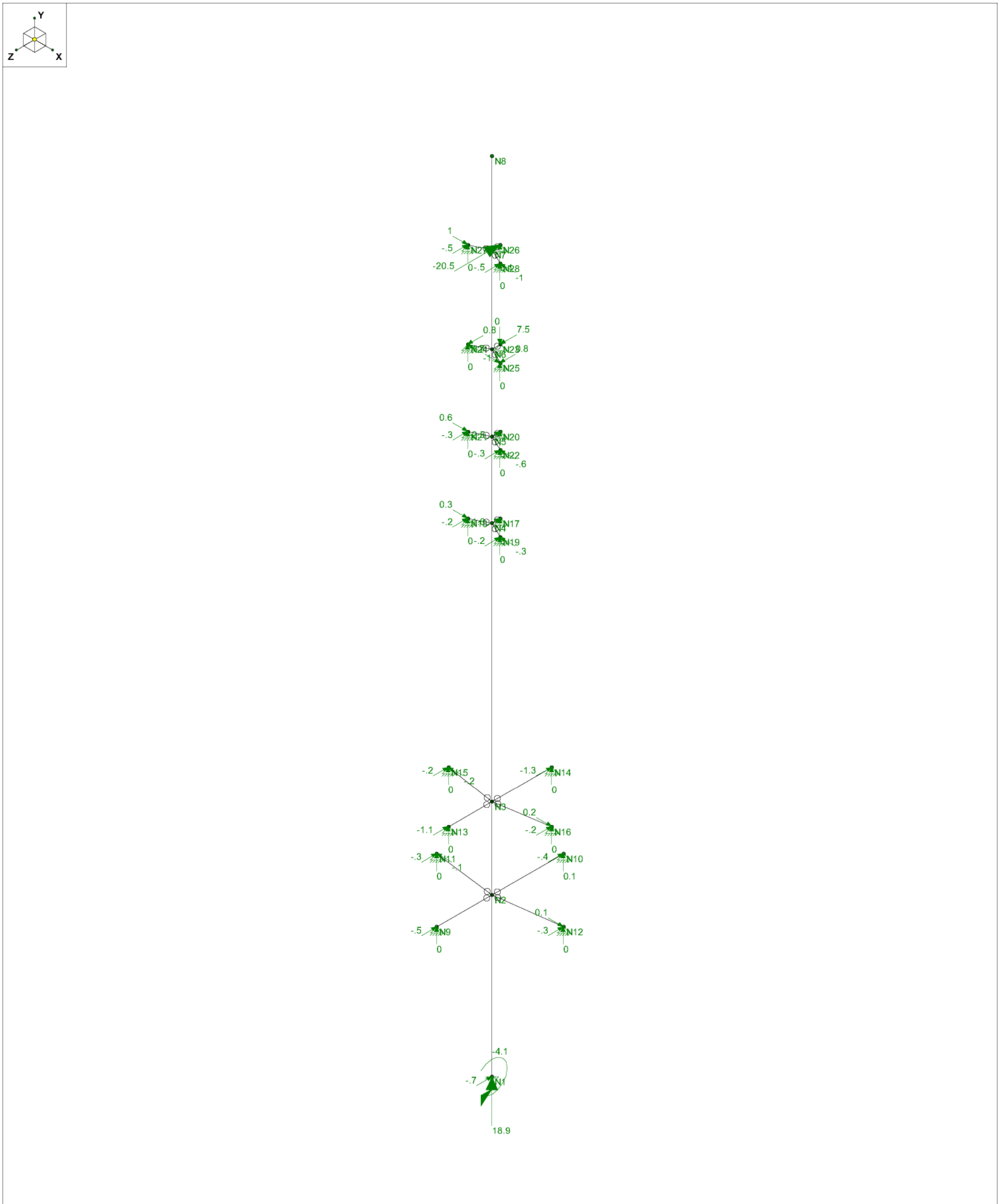
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.	Struct. #1281 - Antenna Mast	
TJL		Feb 15, 2022 at 2:22 PM
21007.68 - Greenwich 3	LC #3 Reactions	TIA-222-G Mast.r3d



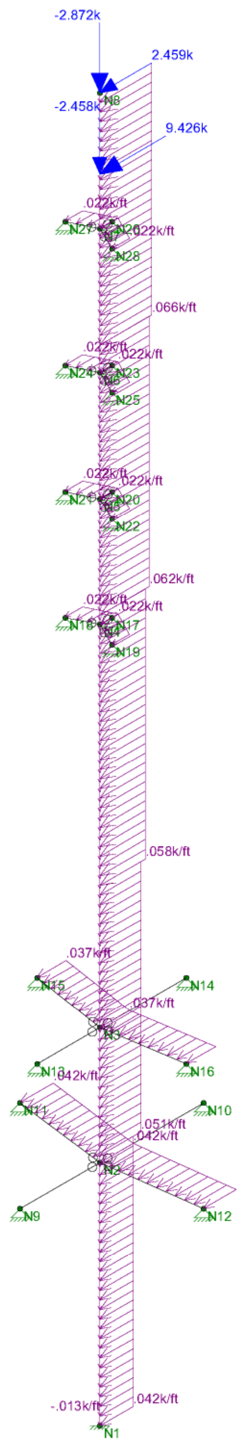
Loads: LC 4, 1.2D + 1.6W (Z-direction)

CENTEK Engineering, INC.		
TJL	Struct. #1281 - Antenna Mast	Feb 15, 2022 at 2:19 PM
21007.68 - Greenwich 3	LC #4 Loads	TIA-222-G Mast.r3d



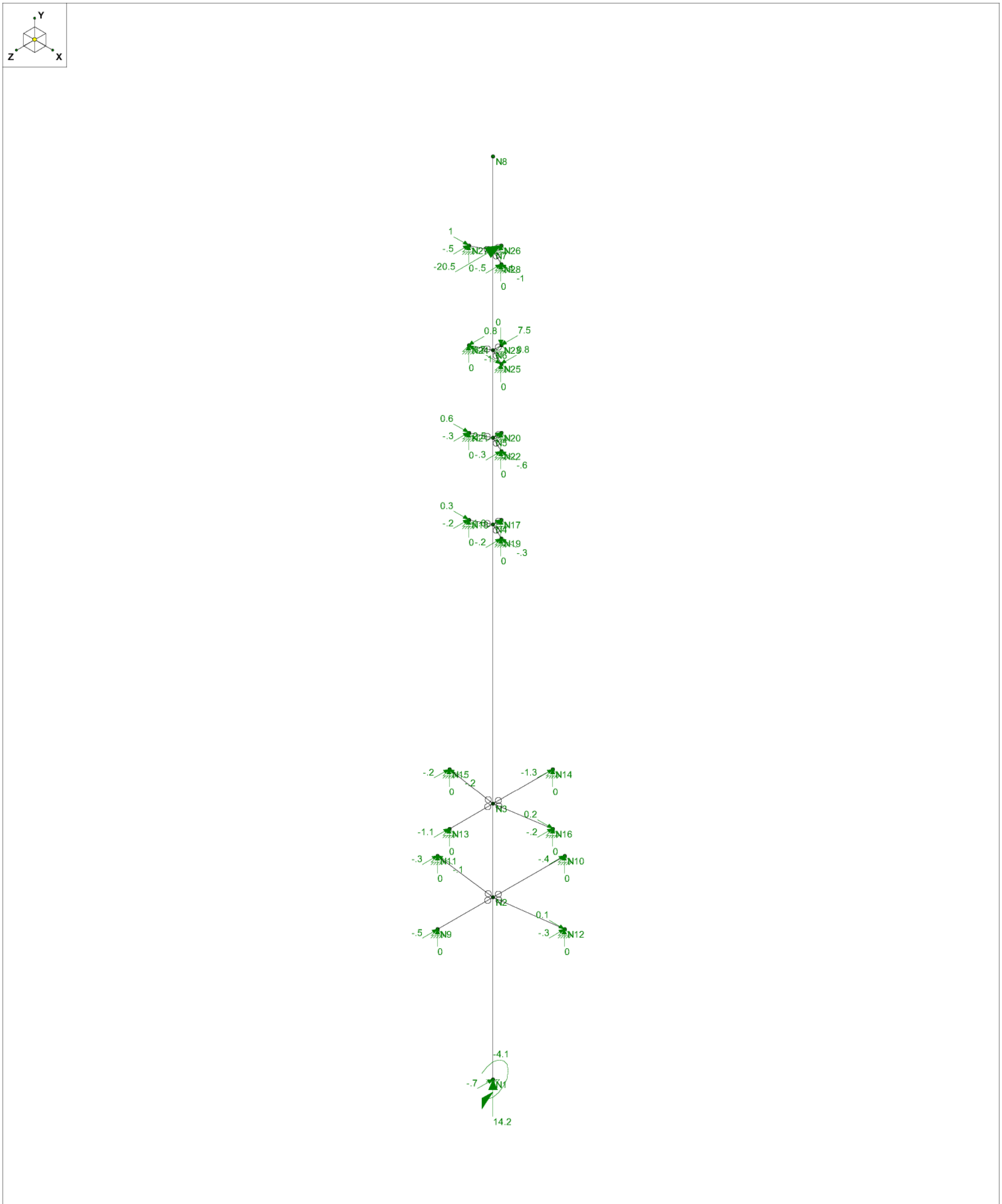
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.		
TJL	Struct. #1281 - Antenna Mast	Feb 15, 2022 at 2:23 PM
21007.68 - Greenwich 3	LC #4 Reactions	TIA-222-G Mast.r3d



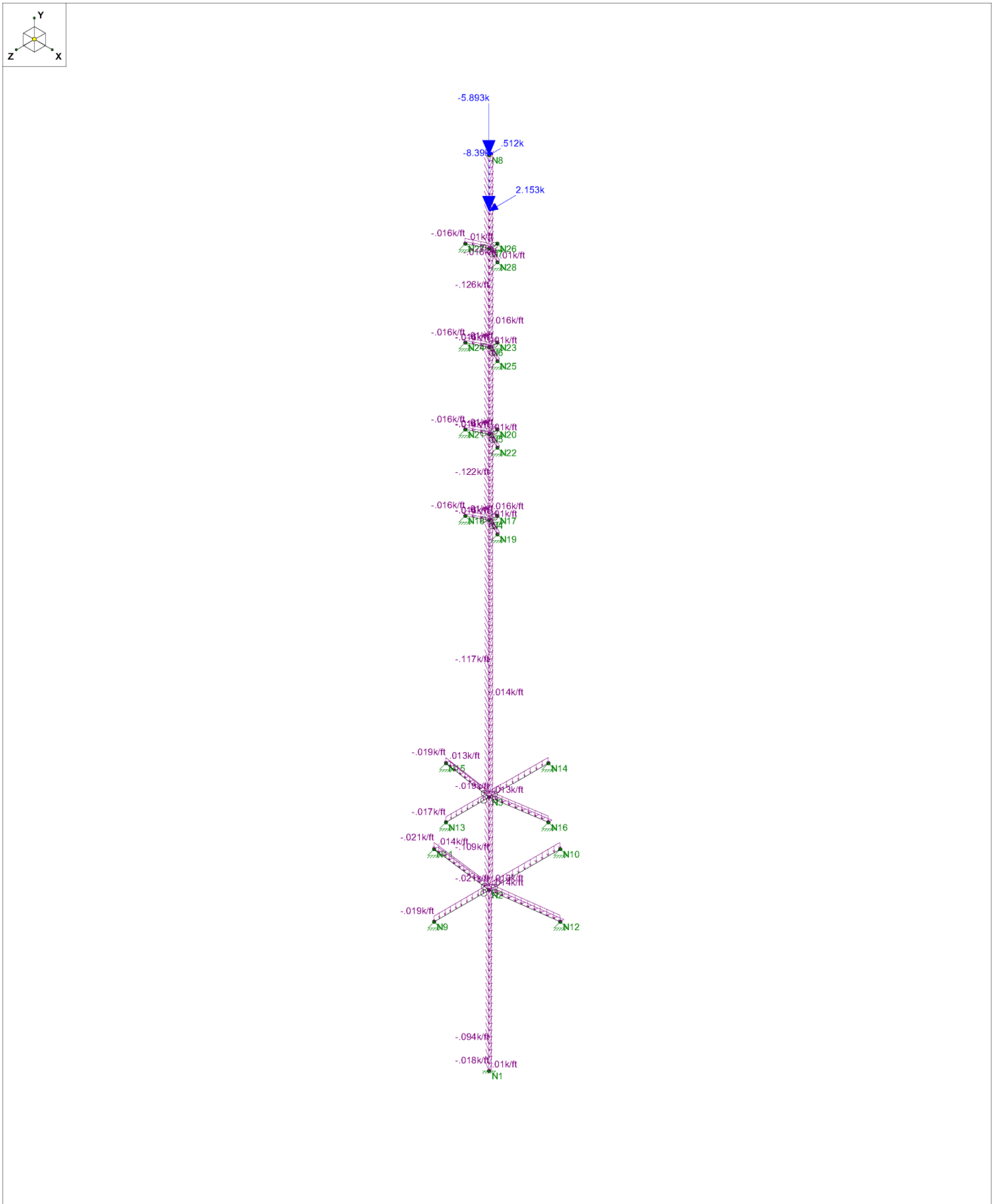
Loads: LC 5, 0.9D + 1.6W (Z-direction)

CENTEK Engineering, INC.		
TJL	Struct. #1281 - Antenna Mast	Feb 15, 2022 at 2:19 PM
21007.68 - Greenwich 3	LC #5 Loads	TIA-222-G Mast.r3d



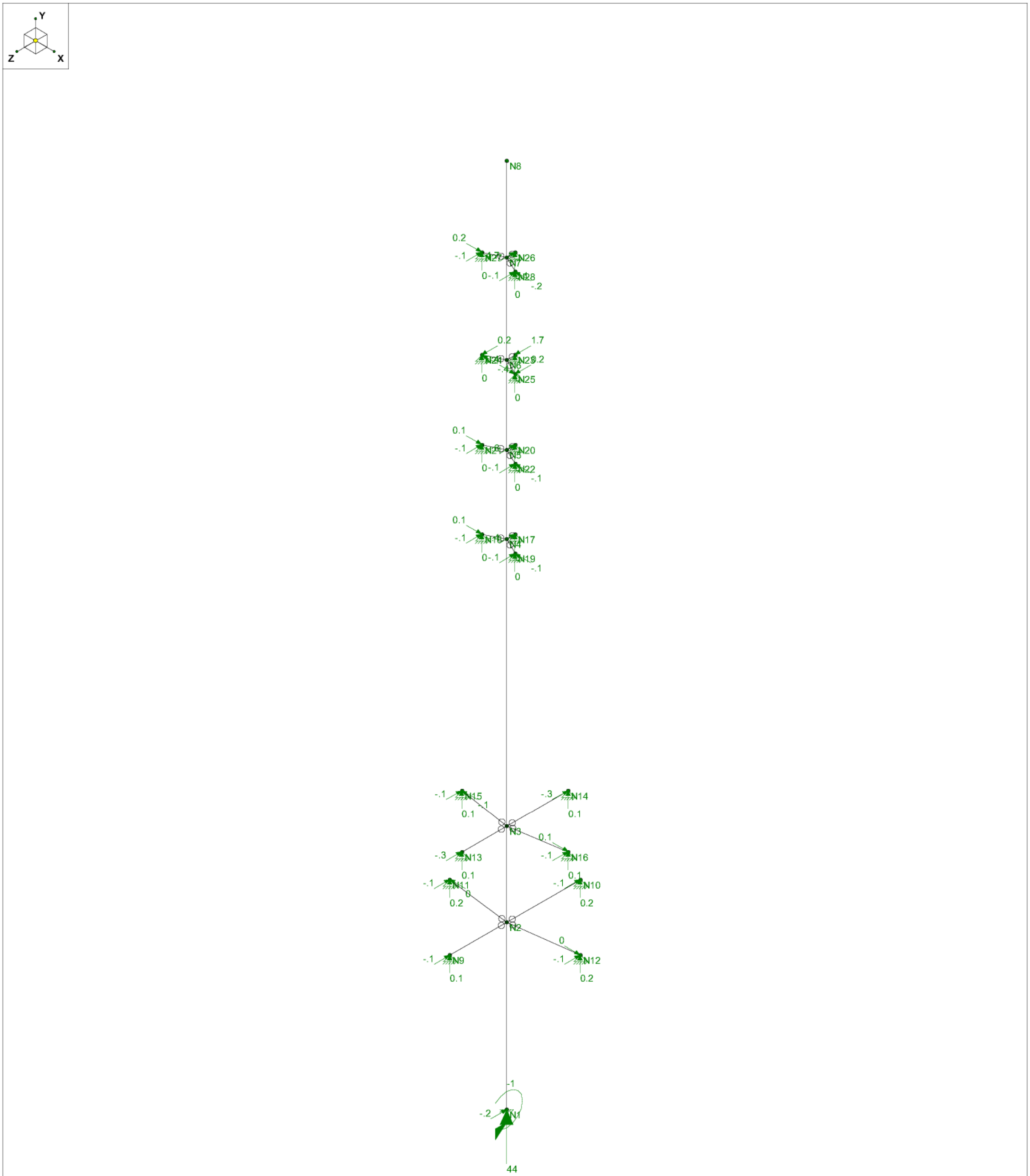
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.		
TJL	Struct. #1281 - Antenna Mast	Feb 15, 2022 at 2:23 PM
21007.68 - Greenwich 3	LC #5 Reactions	TIA-222-G Mast.r3d



Loads: LC 6, 1.2D + 1.0Di + 1.0Wi (Z-direction)

CENTEK Engineering, INC.		
TJL	Struct. #1281 - Antenna Mast	Feb 15, 2022 at 2:19 PM
21007.68 - Greenwich 3	LC #6 Loads	TIA-222-G Mast.r3d



Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.		
TJL	Struct. #1281 - Antenna Mast	Feb 15, 2022 at 2:23 PM
21007.68 - Greenwich 3	LC #6 Reactions	TIA-222-G Mast.r3d

Powermount Connection to CL&P Tower:

Check Pipe Collar Bolts:

Reactions:

Tension = $Tension := 21.5 \cdot kips$
(Input From Risa-3D LC #4)

Shear = $Shear := 21.5 \cdot kips$
(Input From Risa-3D LC #1)

Bolt Data:

Bolt Type = ASTMA325 (User Input)

Bolt Diameter = $D := 0.75 \cdot in$ (User Input)

Number of Bolts = $N_b := 4$ (User Input)

Design Tensile Strength = $F_t := 29.8 \cdot kips$ (User Input)

Design Shear Strength = $F_v := 17.9 \cdot kips$ (User Input)

Plate Data:

Plate Width = $W_{plt} := 5 \cdot in$ (User Input)

Plate Thickness = $t_{plt} := 1 \cdot in$ (User Input)

Distance from Bolt to Collar = $d_{st} := 1.75 \cdot in$ (User Input)

Yield Strength = $F_y := 36 \cdot ksi$ (User Input)

Weld Data:

Weld Size = $sw := \frac{5}{16} \cdot in$ (User Input)

Weld Length = $l_w := 5 \cdot in$ (User Input)

Number of Welds = $n_w := 2$ (User Input)

Weld Strength = $F_w := 70 \cdot ksi$ (User Input)

Shear Force = $f_v := \frac{Shear}{N_b} = 5.4 \cdot kips$

Bolt Shear % of Capacity = $\frac{f_v}{F_v} = 30.03 \cdot \%$

Check Bolt Shear = $Bolt\_Shear := if\left(\frac{f_v}{F_v} \le 1.00, "OK", "Overstressed"\right)$

$Bolt\_Shear = "OK"$

Tension Force = $f_t := \frac{Tension}{N_b} = 5.4 \cdot kips$

Bolt Tenison % of Capacity = $\frac{f_t}{F_t} = 18.04 \cdot \%$

Check Bolt Tension = $Bolt\_Tension := if\left(\frac{f_t}{F_t} \le 1.00, "OK", "Overstressed"\right)$

$Bolt\_Tension = "OK"$

Check Pipe Collar Plate:

Design Bending Strength = $F_b := 0.9F_y = 32.4 \cdot ksi$

Plate Section Modulus = $Z_{plt} := \frac{1}{4} \cdot W_{plt} \cdot t_{plt}^{2} = 1.25 \cdot in^3$

Plate Bending Moment = $M := \frac{f_t \cdot N_b}{2} \cdot d_{st} = 18.812 \cdot in \cdot kips$

Plate Bending Stress = $f_b := \frac{M}{Z_{plt}} = 15.05 \cdot ksi$

$Plate\_Bending := if\left(f_b < F_b, "OK", "Overstressed"\right)$

$Plate\_Bending = "OK"$

Check Pipe Collar Weld:

Design Weld Strength = $F_w := 0.45 \cdot F_w = 31.5 \cdot ksi$

Weld Section Modulus = $S_w := \frac{1}{6} \cdot .707 \cdot sw \cdot l_w^{2} = 0.921 \cdot in^3$

Weld Area = $A_w := .707 \cdot sw \cdot l_w = 1.105 \cdot in^2$

Plate Stress = $f_w := \frac{\frac{f_t \cdot N_b}{2}}{A_w \cdot n_w} = 4.866 \cdot ksi$

$Weld := if\left(f_w < F_w, "OK", "Overstressed"\right)$

$Weld = "OK"$

Check Pipe Collar to Angle Brace Bolts:

Reactions:

Axial Force in Member = $Axial := 12 \cdot kips$ (Input From Risa-3D LC #1)

Bolt Data:

Bolt Type = ASTMA325 (User Input)

Bolt Diameter = $D := 0.75 \cdot in$ (User Input)

Number of Bolts = $N_b := 1$ (User Input)

Design Tensile Strength = $F_t := 29.8 \cdot kips$ (User Input)

Design Shear Strength = $F_v := 17.9 \cdot kips$ (User Input)

Shear Force = $f_v := \frac{Axial}{N_b} = 12 \cdot kips$

Bolt Shear % of Capacity = $\frac{f_v}{F_v} = 67.04 \cdot \%$

Check Bolt Shear = $Bolt\_Shear := if\left(\frac{f_v}{F_v} \le 1.00, \text{"OK"}, \text{"Overstressed"}\right)$

$Bolt\_Shear = \text{"OK"}$

Check Angle Brace to Tower Bolts:

Reactions:

Axial Force in Member = $Axial := 12 \cdot kips$ (Input From Risa-3D LC #1)

Bolt Data:

Bolt Type = ASTMA325 (User Input)

Bolt Diameter = $D := 0.625 \cdot in$ (User Input)

Number of Bolts = $N_b := 1$ (User Input)

Design Tensile Strength = $F_t := 20.7 \cdot kips$ (User Input)

Design Shear Strength = $F_v := 12.4 \cdot kips$ (User Input)

Shear Force = $f_v := \frac{Axial}{N_b} = 12 \cdot kips$

Bolt Shear % of Capacity = $\frac{f_v}{F_v} = 96.77 \cdot \%$

Check Bolt Shear = $Bolt\_Shear := if\left(\frac{f_v}{F_v} \le 1.00, \text{"OK"}, \text{"Overstressed"}\right)$

$Bolt\_Shear = \text{"OK"}$

Check Pipe Collar to Plate Brace Bolts:

Reactions:

Axial Force in Member = $Axial := 20.5 \cdot kips$ (Input From Risa-3D LC #4)

Bolt Data:

Bolt Type = ASTMA325 (User Input)

Bolt Diameter = $D := 0.75 \cdot in$ (User Input)

Number of Bolts = $N_b := 2$ (User Input)

Design Tensile Strength = $F_t := 29.8 \cdot kips$ (User Input)

Design Shear Strength = $F_v := 17.9 \cdot kips$ (User Input)

Shear Force = $f_v := \frac{Axial}{N_b} = 10.3 \cdot kips$

Bolt Shear % of Capacity = $\frac{f_v}{F_v} = 57.26 \cdot \%$

Check Bolt Shear = $Bolt\_Shear := if\left(\frac{f_v}{F_v} \le 1.00, \text{"OK"}, \text{"Overstressed"}\right)$

$Bolt\_Shear = \text{"OK"}$

Check Plate Brace to Tower Bolts:

Reactions:

Axial Force in Member = $Axial := 20.5 \cdot kips$ (Input From Risa-3D LC #4)

Bolt Data:

Bolt Type = ASTMA325 (User Input)

Bolt Diameter = $D := 0.625 \cdot in$ (User Input)

Number of Bolts = $N_b := 1$ (User Input)

Design Tensile Strength = $F_t := 20.7 \cdot kips$ (User Input)

Design Shear Strength = $F_v := 24.9 \cdot kips$ (User Input) (Bolt is in Double Shear)

Shear Force = $f_v := \frac{Axial}{N_b} = 20.5 \cdot kips$

Bolt Shear % of Capacity = $\frac{f_v}{F_v} = 82.33 \cdot \%$

Check Bolt Shear = $Bolt\_Shear := if\left(\frac{f_v}{F_v} \le 1.00, \text{"OK"}, \text{"Overstressed"}\right)$

$Bolt\_Shear = \text{"OK"}$

Basic Components

Heavy Wind Pressure =	$p := 4.00$	psf	(User Input NESC 2017 Figure 250-1 & Table 250-1)
Basic Windspeed =	$V := 110$	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 =	$TME := 148$ 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 = $Kz := 2.01 \cdot \left(\frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.375$ (NESC 2017 Table 250-2)

Exposure Factor = $Es := 0.346 \left[\frac{33}{(0.67 \cdot TME)}\right]^{\frac{1}{7}} = 0.296$ (NESC 2017 Table 250-3)

Response Term = $Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.799$ (NESC 2017 Table 250-3)

Gust Response Factor = $Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.838$ (NESC 2017 Table 250-3)

Wind Pressure = $qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 35.7$ psf (NESC 2017 Section 250.C.2)

Shape Factors

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 Open Lattice =	$Cd_{OL} := 3.2$	(User Input)
Shape Factor for Coax Cables Attached to Outside of Pole =	$Cd_{coax} := 1.6$	(User Input)

Overload Factors

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 Antennas (Sprint)

Antenna Data:

Antenna Model =	RFSAPXVSPP18-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 = $F_{ant1} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1263$ lbs **BLC 5**

Development of Wind & Ice Load on Platform

Platform Data: (Sprint)

Platform Model = FWT 14' Low Profile Platform

Platform Shape = Flat

Platform Area = $A_{plt} := 14.2$ sq ft (User Input from FWT design calcs)

Platform Area w/ Ice = $A_{ICEplt} := 15.8$ sq ft (User Input from FWT design calcs)

Platform Weight = $WT_{plt} := 3020$ lbs (User Input from FWT design calcs)

Platform Weight w/ Ice = $WT_{ICEplt} := 4300$ lbs (User Input from FWT design calcs)

Wind Load (NESC Extreme)

Total Platform Wind Force = $F_{mnt1} := qz \cdot Cd_F \cdot A_{plt} \cdot m = 1013$ lbs

Wind Load (NESC Heavy)

Total Platform Wind Force w/ Ice = $Fi_{mnt1} := p \cdot Cd_F \cdot A_{ICEplt} = 101$ lbs

Gravity Load (without ice)

Weight of Platform = $Wt_{mnt1} := WT_{plt} = 3020$ lbs

Gravity Load (ice only)

Weight of Ice on Platform = $Wt_{ice.mnt1} := WT_{ICEplt} - WT_{plt} = 1280$ lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	JMA MX10FRO640		(Verizon)
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 71.6$	in	(User Input)
Antenna Width =	$W_{ant} := 19.8$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.4$	in	(User Input)
Antenna Weight =	$WT_{ant} := 80$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 4$		(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 = $A_{ant} := SA_{ant} \cdot N_{ant} = 39.4$ sf

Total Antenna Wind Force = $F_{ant2} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 2810$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant}+1) \cdot (W_{ant}+1)}{144} = 10.5$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 41.9$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant2} := p \cdot Cd_F \cdot A_{ICEant} = 268$ lbs

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant2} := (WT_{ant} \cdot N_{ant}) = 320$ lbs

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 = $V_{ice} := (L_{ant}+1)(W_{ant}+1) \cdot (T_{ant}+1) - V_{ant} = 2194$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 71$ lbs

Weight of Ice on All Antennas = $Wt_{ice.ant2} := W_{ICEant} \cdot N_{ant} = 284$ lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	JMA MX06FRO660-03		(Verizon)
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 71.3$	in	(User Input)
Antenna Width =	$W_{ant} := 15.4$	in	(User Input)
Antenna Thickness =	$T_{ant} := 10.7$	in	(User Input)
Antenna Weight =	$WT_{ant} := 65$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 4$		(User Input)

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 7.6$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 30.5$ sf

Total Antenna Wind Force = $F_{ant3} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 2176$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 8.2$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 32.9$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant3} := p \cdot Cd_F \cdot A_{ICEant} = 211$ lbs

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant3} := (WT_{ant} \cdot N_{ant}) = 260$ lbs

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 = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 2124$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 69$ lbs

Weight of Ice on All Antennas = $Wt_{ice.ant3} := W_{ICEant} \cdot N_{ant} = 275$ lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Samsung MT6407-77A		(Verizon)
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 =	$F_{ant4} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 840$	lbs

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 =	$Fi_{ant4} := p \cdot Cd_F \cdot A_{ICEant} = 82$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$Wt_{ant4} := (WT_{ant} \cdot N_{ant}) = 261$	lbs

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 =	$Wt_{ice.ant4} := W_{ICEant} \cdot N_{ant} = 88$	lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Samsung XXDWMM12.5-65		(Verizon)
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 12.3$	in	(User Input)
Antenna Width =	$W_{ant} := 8.7$	in	(User Input)
Antenna Thickness =	$T_{ant} := 1.4$	in	(User Input)
Antenna Weight =	$WT_{ant} := 3$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 2$		(User Input)

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.7$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 1.5$ sf

Total Antenna Wind Force = $F_{ant5} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 106$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 0.9$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 1.8$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant5} := p \cdot Cd_F \cdot A_{ICEant} = 11$ lbs

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant5} := (WT_{ant} \cdot N_{ant}) = 6$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 150$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 160$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 5$ lbs

Weight of Ice on All Antennas = $Wt_{ice.ant5} := W_{ICEant} \cdot N_{ant} = 10$ lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Samsung B2/B66A RRH		(Verizon)
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 15$	in	(User Input)
Antenna Width =	$W_{ant} := 15$	in	(User Input)
Antenna Thickness =	$T_{ant} := 10$	in	(User Input)
Antenna Weight =	$WT_{ant} := 75$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 4$		(User Input)

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 1.6$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 6.3$ sf

Total Antenna Wind Force = $F_{ant6} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 446$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 1.8$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 7.1$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant6} := p \cdot Cd_F \cdot A_{ICEant} = 46$ lbs

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant6} := (WT_{ant} \cdot N_{ant}) = 300$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2250$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 566$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 18$ lbs

Weight of Ice on All Antennas = $Wt_{ice.ant6} := W_{ICEant} \cdot N_{ant} = 73$ lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Samsung B5/B13 RRH		(Verizon)
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 15$	in	(User Input)
Antenna Width =	$W_{ant} := 15$	in	(User Input)
Antenna Thickness =	$T_{ant} := 9.1$	in	(User Input)
Antenna Weight =	$WT_{ant} := 70.3$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 4$		(User Input)

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 1.6$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 6.3$ sf

Total Antenna Wind Force = $F_{ant7} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 446$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 1.8$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 7.1$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant7} := p \cdot Cd_F \cdot A_{ICEant} = 46$ lbs

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant7} := (WT_{ant} \cdot N_{ant}) = 281$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2048$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 538$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 17$ lbs

Weight of Ice on All Antennas = $Wt_{ice.ant7} := W_{ICEant} \cdot N_{ant} = 70$ lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	CBRS RRH RT4401-48A		(Verizon)
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 12.1$	in	(User Input)
Antenna Width =	$W_{ant} := 8.5$	in	(User Input)
Antenna Thickness =	$T_{ant} := 4.1$	in	(User Input)
Antenna Weight =	$WT_{ant} := 20$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 4$		(User Input)

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.7$ sf

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

Total Antenna Wind Force = $F_{ant8} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 204$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 0.9$ sf

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

Total Antenna Wind Force w/ Ice = $Fi_{ant8} := p \cdot Cd_F \cdot A_{ICEant} = 22$ lbs

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant8} := (WT_{ant} \cdot N_{ant}) = 80$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 422$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 213$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 7$ lbs

Weight of Ice on All Antennas = $Wt_{ice.ant8} := W_{ICEant} \cdot N_{ant} = 28$ lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model = RFS DB-C1-12C-24AB-0Z OVP Box (Verizon)

Antenna Shape = Flat (User Input)

Antenna Height = $L_{ant} := 29.5$ in (User Input)

Antenna Width = $W_{ant} := 16.5$ in (User Input)

Antenna Thickness = $T_{ant} := 12.6$ in (User Input)

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

Number of Antennas = $N_{ant} := 2$ (User Input)

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 3.4$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 6.8$ sf

Total Antenna Wind Force = $F_{ant9} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 482$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 3.7$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 7.4$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant9} := p \cdot Cd_F \cdot A_{ICEant} = 47$ lbs

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant9} := (WT_{ant} \cdot N_{ant}) = 64$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 6133$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1126$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 36$ lbs

Weight of Ice on All Antennas = $Wt_{ice.ant9} := W_{ICEant} \cdot N_{ant} = 73$ lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Commscope TD-850B-LTE78-43		(Verizon)
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 15.433$	in	(User Input)
Antenna Width =	$W_{ant} := 6.378$	in	(User Input)
Antenna Thickness =	$T_{ant} := 3.3$	in	(User Input)
Antenna Weight =	$WT_{ant} := 53$	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 = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.7$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 2.1$ sf

Total Antenna Wind Force = $F_{ant10} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 146$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 0.8$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 2.5$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant10} := p \cdot Cd_F \cdot A_{ICEant} = 16$ lbs

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant10} := (WT_{ant} \cdot N_{ant}) = 159$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 325$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 197$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 6$ lbs

Weight of Ice on All Antennas = $Wt_{ice.ant10} := W_{ICEant} \cdot N_{ant} = 19$ lbs

Development of Wind & Ice Load on Platform

Platform Data:

Platform Model =	T-Arm Colocation Mount w_ Handrail		(User Input)
Platform Shape =	Flat		(User Input)
Platform Area =	$CdAa := 15$	sf	(User Input)
Platform Area w/ Ice =	$CdAa_{ice} := 26$	sf	(User Input)
Platform Weight =	$WT_{plt} := 1000$	lbs	(User Input)
Platform Weight w/ Ice =	$WT_{ICEplt} := 1300$	lbs	(User Input)

Wind Load (NESC Extreme)

Total Platform Wind Force = $F_{mnt2} := qz \cdot CdAa \cdot m = 669$ lbs

Wind Load (NESC Heavy)

Total Platform Wind Force w/ Ice = $Fi_{mnt2} := p \cdot CdAa_{ice} = 104$ lbs

Gravity Load (without ice)

Weight of Platform = $Wt_{mnt2} := WT_{plt} = 1000$ lbs

Gravity Load (ice only)

Weight of Ice on Platform = $Wt_{ice.mnt2} := WT_{ICEplt} - WT_{plt} = 300$ lbs

Total Equipment Loads:

Sprint @ 148-ft AGL

NESC Heavy Wind Vertical = $\left(Wt_{ant1} + Wt_{ice.ant1} + Wt_{mnt1} + Wt_{ice.mnt1}\right) \cdot 1.5 = 6929$

NESC Heavy Wind Trasnsverse = $\left(Fi_{ant1} + Fi_{mnt1}\right) \cdot 2.5 = 564$

NESC Extreme Wind Vertical = $\left(Wt_{ant1} + Wt_{mnt1}\right) = 3191$

NESC Extreme Wind Trasnsverse = $\left(F_{ant1} + F_{mnt1}\right) = 2276$

Verizon @ 139-ft AGL

NESC Heavy Wind Vertical =

$NESC\_Heavy\_Vert := \left(Wt_{ant2} + Wt_{ice.ant2} + Wt_{ant3} + Wt_{ice.ant3} + Wt_{ant4} + Wt_{ice.ant4} + Wt_{ant5} + Wt_{ice.ant5} + Wt_{ant6} + Wt_{ice.ant6} + Wt_{ant7} + Wt_{ice.ant7}\right.$

$NESC\_Heavy\_Vert = 5928$

NESC Heavy Wind Trasnsverse = $\left(Fi_{ant2} + Fi_{ant3} + Fi_{ant4} + Fi_{ant5} + Fi_{ant6} + Fi_{ant7} + Fi_{ant8} + Fi_{ant9} + Fi_{ant10} + Fi_{mnt2}\right) \cdot 2.5 = 2134$

NESC Extreme Wind Vertical = $\left(Wt_{ant2} + Wt_{ant3} + Wt_{ant4} + Wt_{ant5} + Wt_{ant6} + Wt_{ant7} + Wt_{ant8} + Wt_{ant9} + Wt_{ant10} + Wt_{mnt2}\right) = 2731$

NESC Extreme Wind Trasnsverse = $\left(F_{ant2} + F_{ant3} + F_{ant4} + F_{ant5} + F_{ant6} + F_{ant7} + F_{ant8} + F_{ant9} + F_{ant10} + F_{mnt2}\right) = 8325$

Coax Cables

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

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

Radial Ice Density = $Id := 57 \cdot pcf$ *(User Input)*

Basic Windspeed = $V := 110$ mph (User Input NESC 2017 Figure 250-2(e))

Height to Top of Coax Above Grade = $TC := 148$ 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 = $Kz := 2.01 \cdot \left(\frac{0.67TC}{900}\right)^{\frac{2}{9.5}} = 1.263$ (NESC 2017 Table 250-2)

Exposure Factor = $Es := 0.346 \left[\frac{33}{(0.67 \cdot TC)}\right]^{\frac{1}{7}} = 0.296$ (NESC 2017 Table 250-3)

Response Term = $Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TC}{220}\right)} = 0.799$ (NESC 2017 Table 250-3)

Gust Response Factor = $Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.838$ (NESC 2017 Table 250-3)

Wind Pressure = $qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 32.8$ psf (NESC 2017 Section 250.C.2)

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

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

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

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

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

Coax Cable within Powermount

(Below Top of Tower)

Distance Between Coax Cable Attach Points = $Coax_{Span} := \begin{pmatrix} 8 \\ 15 \\ 14 \\ 29.375 \\ 29.875 \\ 32.5 \end{pmatrix} \cdot ft$ *(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 = $N_{coax} := 14$ *(User Input)*

Number of Coax Cables Exterior = $Nex_{coax} := 8$ *(User Input)*

(6 Cables inside Powermount 8 on Exterior)

Number of Projected Coax Cables Transverse = $NP_{Tcoax} := 2$ *(User Input)*

Wind Area with Ice Transverse = $A_{Tice} := \left(NP_{Tcoax} \cdot D_{coax} + 2 \cdot Ir\right) = 4.96 \cdot in$

Wind Area without Ice Transverse = $A_T := \left(NP_{Tcoax} \cdot D_{coax}\right) = 3.96 \cdot in$

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 = $W_{ice} := Ai_{coax} \cdot Id \cdot Nex_{coax} = 12.336 \cdot plf$

Heavy Vertical Load =

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

Heavy Transverse Load =

$$Heavy_{Trans} := \overrightarrow{\left(p \cdot A_{Tice} \cdot Cd_{coax} \cdot Coax_{Span} \cdot OF_{HW}\right)}$$

$$Heavy_{Vert} = \begin{pmatrix} 323 \\ 605 \\ 565 \\ 1185 \\ 1205 \\ 1311 \end{pmatrix} lb \qquad Heavy_{Trans} = \begin{pmatrix} 53 \\ 99 \\ 93 \\ 194 \\ 198 \\ 215 \end{pmatrix} lb$$

Extreme Vertical Load =

$$Extreme_{Vert} := \overrightarrow{\left[\left(N_{coax} \cdot W_{coax}\right) \cdot Coax_{Span} \cdot OF_{EV}\right]}$$

Extreme Transverse Load =

$$Extreme_{Trans} := \overrightarrow{\left[\left(qz \cdot psf \cdot A_T \cdot Cd_{coax}\right) \cdot Coax_{Span} \cdot OF_{EW}\right]}$$

$$Extreme_{Vert} = \begin{pmatrix} 116 \\ 218 \\ 204 \\ 428 \\ 435 \\ 473 \end{pmatrix} lb \qquad Extreme_{Trans} = \begin{pmatrix} 139 \\ 260 \\ 242 \\ 509 \\ 517 \\ 563 \end{pmatrix} lb$$

Coax Cable on Powermount

(Above Top of Tower)

Coax Cable Span =	$Coax_{Span} := 15 \cdot ft$	*(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 =	$N_{coax} := 18$	*(User Input)*	(6 Cables inside Powermount 12 on Exterior)
Number of Coax Cables Exterior =	$Nex_{coax} := 12$	*(User Input)*	
Number of Projected Coax Cables Transverse =	$NP_{Tcoax} := 2$	*(User Input)*	

Wind Area with Ice Transverse = $A_{Tice} := \left(NP_{Tcoax} \cdot D_{coax} + 2 \cdot Ir\right) = 4.96 \cdot in$

Wind Area without Ice Transverse = $A_T := \left(NP_{Tcoax} \cdot D_{coax}\right) = 3.96 \cdot in$

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 = $W_{ice} := Ai_{coax} \cdot Id \cdot Nex_{coax} = 18.504 \cdot plf$

Heavy Vertical Load =

$Heavy_{Vert} := \overrightarrow{\left[\left(N_{coax} \cdot W_{coax} + W_{ice}\right) \cdot Coax_{Span} \cdot OF_{HV}\right]}$ $\qquad Heavy_{Vert} = 838 \, lb$

Heavy Transverse Load =

$Heavy_{Trans} := \overrightarrow{\left(p \cdot A_{Tice} \cdot Cd_{coax} \cdot Coax_{Span} \cdot OF_{HW}\right)}$ $\qquad Heavy_{Trans} = 99 \, lb$

Extreme Vertical Load =

$Extreme_{Vert} := \overrightarrow{\left[\left(N_{coax} \cdot W_{coax}\right) \cdot Coax_{Span} \cdot OF_{EV}\right]}$ $\qquad Extreme_{Vert} = 281 \, lb$

Extreme Transverse Load =

$Extreme_{Trans} := \overrightarrow{\left[\left(qz \cdot psf \cdot m \cdot A_T \cdot Cd_{coax}\right) \cdot Coax_{Span} \cdot OF_{EW}\right]}$ $\qquad Extreme_{Trans} = 325 \, lb$

Coax Cable on CL&P Tower

Sprint Cables on East Leg

Distance Between Coax Cable Attach Points =

Coax Cable Span = $Coax_{Span} := \begin{pmatrix} 10.25 \\ 12.775 \\ 14.025 \\ 14.75 \\ 16.585 \\ 14.625 \\ 13.29 \\ 32.5 \end{pmatrix} \cdot ft$ *(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 = $N_{coax} := 12$ *(User Input)*

Number of Projected Coax Cables Transverse = $NP_{Tcoax} := 6$ *(User Input)*

Wind Area with Ice Transverse = $A_{Tice} := (NP_{Tcoax} \cdot D_{coax} + 2 \cdot Ir) = 12.88 \cdot in$

Wind Area without Ice Transverse = $A_T := (NP_{Tcoax} \cdot D_{coax}) = 11.88 \cdot in$

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

Weight of Ice on All Coax Cables = $W_{ice} := Ai_{coax} \cdot Id \cdot N_{coax} = 18.504 \cdot plf$

Heavy Vertical Load =

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

Heavy Transverse Load =

$$Heavy_{Trans} := \overrightarrow{\left(p \cdot A_{Tice} \cdot Cd_{coax} \cdot Coax_{Span} \cdot OF_{HW}\right)}$$

$$Heavy_{Vert} = \begin{pmatrix} 476 \\ 594 \\ 652 \\ 686 \\ 771 \\ 680 \\ 618 \\ 1510 \end{pmatrix} lb \qquad Heavy_{Trans} = \begin{pmatrix} 176 \\ 219 \\ 241 \\ 253 \\ 285 \\ 251 \\ 228 \\ 558 \end{pmatrix} lb$$

Extreme Vertical Load =

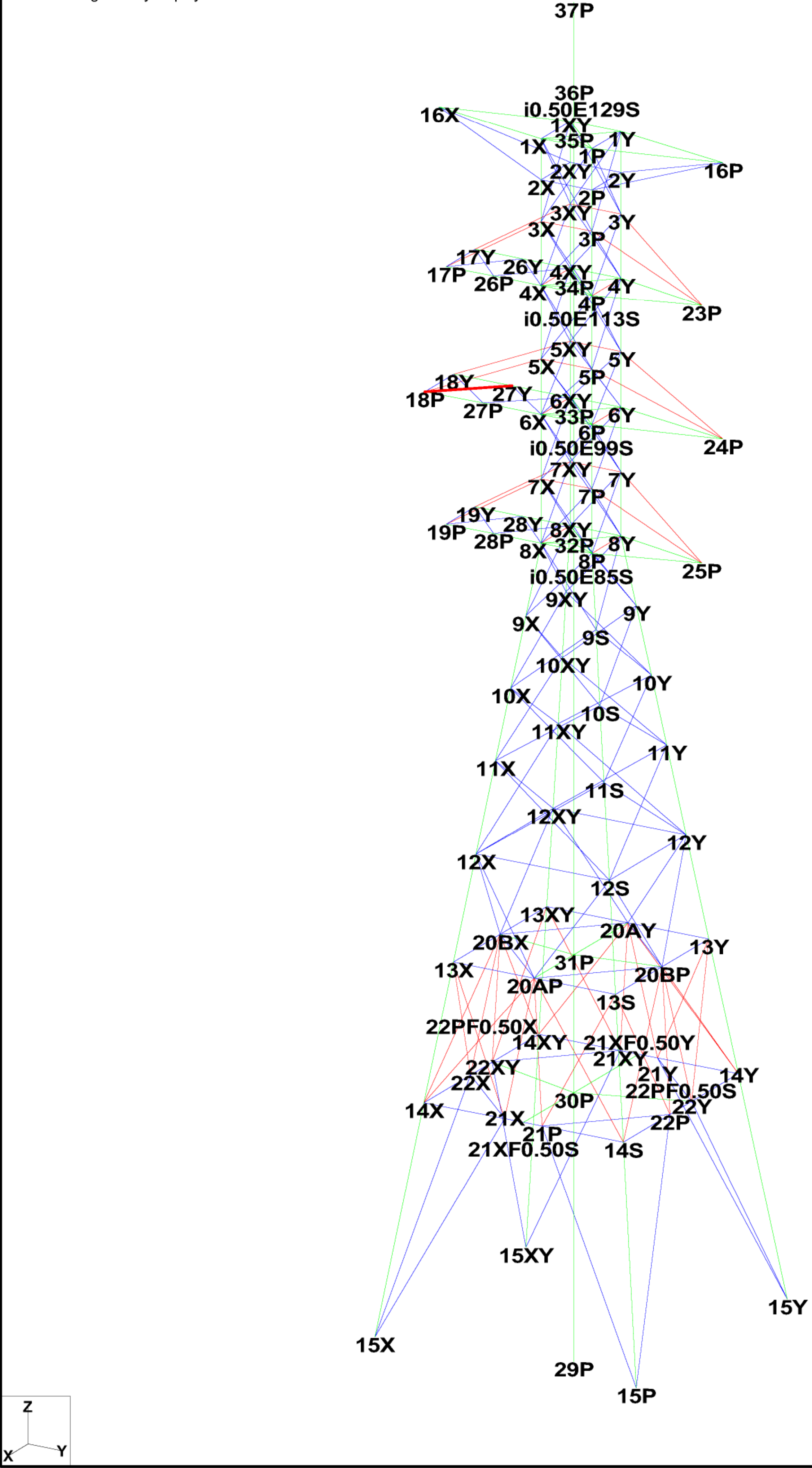
$$Extreme_{Vert} := \overrightarrow{\left[(N_{coax} \cdot W_{coax}) \cdot Coax_{Span} \cdot OF_{EV}\right]}$$

Extreme Transverse Load =

$$Extreme_{Trans} := \overrightarrow{\left[(qz \cdot psf \cdot A_T \cdot Cd_{coax}) \cdot Coax_{Span} \cdot OF_{EW}\right]}$$

$$Extreme_{Vert} = \begin{pmatrix} 128 \\ 159 \\ 175 \\ 184 \\ 207 \\ 183 \\ 166 \\ 406 \end{pmatrix} lb \qquad Extreme_{Trans} = \begin{pmatrix} 532 \\ 664 \\ 728 \\ 766 \\ 861 \\ 760 \\ 690 \\ 1688 \end{pmatrix} lb$$

Centek Engineering Inc, Project: "CL&P # 1281"
Tower Version 12.50, 1:44:54 PM Tuesday, February 15, 2022
Undeformed geometry displayed



Project Name : 21007.68 - Greenwich, CT
Project Notes: Structure #1281 / Verizon Greenwich 3
Project File : J:\Jobs\2100700.WI\68_Greenwich 3 CT\05_Structural\Backup Documentation\Calcs\PLS Tower\CL&P # 1281.tow
Date run : 1:43:51 PM Tuesday, February 15, 2022
by : Tower Version 12.50
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

KL/R value of 200.30 exceeds maximum of 200.00 for member "g118P" ??
Problem calculating gross area of longitudinal face for section "1": width is zero at elevation 128.80 (ft) which is not the top of the section. ??
Problem calculating gross area of longitudinal face for section "2": width is zero at elevation -4.25 (ft) which is not the top of the section. ??
Unusual number of fixed joints found: 5. Towers normally have from between 1 and 4 fixed joints. ??
The model has 4 warnings. ??

Member check option: ASCE 10
Connection rupture check: ASCE 10
Crossing diagonal check: ASCE 10 [Alternate Unsupported RLOUT = 1]
Included angle check: None
Climbing load check: None
Redundant members checked with: Actual Force

Loads from file: j:\jobs\2100700.wi\68_greenwich 3 ct\05_structural\backup documentation\calcs\pls tower\cl&p # 1281.lca

*** Analysis Results:

Maximum element usage is 98.99% for Angle "25AP" in load case "NESC Heavy"
Maximum insulator usage is 27.17% for Clamp "11" in load case "NESC Heavy"

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	15P	-20.38	-23.81	-164.15	31.34	4.07	7.41	8.46	0.60	0.00
NESC Heavy	29P	0.17	-1.24	-31.34	1.25	13.56	5.24	14.54	-3.83	0.00
NESC Heavy	15X	28.25	-35.87	167.73	45.66	5.90	-0.99	5.98	-0.09	0.00
NESC Heavy	15XY	-23.68	-15.26	116.45	28.17	-1.85	-1.04	2.12	-0.51	0.00
NESC Heavy	15Y	27.79	-27.74	-192.54	39.27	-2.34	0.09	2.34	-0.56	0.00
NESC Extreme	15P	-22.98	-23.98	-166.12	33.21	0.20	6.81	6.81	0.45	0.00
NESC Extreme	29P	0.20	-2.06	-12.63	2.07	23.33	4.51	23.76	-1.84	0.00
NESC Extreme	15X	33.23	-38.88	185.44	51.15	5.64	0.21	5.64	0.24	0.00
NESC Extreme	15XY	-26.40	-23.60	136.73	35.41	1.15	-0.76	1.38	-0.44	0.00
NESC Extreme	15Y	28.61	-33.31	-203.54	43.91	-1.77	-2.52	3.08	-0.51	0.00

Summary of Joint Support Reactions For All Load Cases in Direction of Leg:

Load Case	Support Joint	Origin Joint	Leg Member	Force In Leg Dir. (kips)	Residual Shear Perpendicular To Leg (kips)	Residual Shear Horizontal To Leg - Res. (kips)	Residual Shear Horizontal To Leg - Long. (kips)	Residual Shear Horizontal To Leg - Tran. (kips)	Total Long. Force (kips)	Total Tran. Force (kips)	Total Vert. Force (kips)
NESC Heavy	15P	14S	14P	167.073	3.680	3.725	-3.714	-0.281	-20.38	-23.81	-164.15
NESC Heavy	15X	14X	14X	-173.447	11.625	11.820	-3.630	11.248	28.25	-35.87	167.73
NESC Heavy	15XY	14XY	14XY	-119.620	6.802	6.836	6.585	-1.836	-23.68	-15.26	116.45
NESC Heavy	15Y	14Y	14Y	196.505	0.684	0.699	0.469	-0.518	27.79	-27.74	-192.54
NESC Extreme	15P	14S	14P	169.404	1.439	1.462	-1.406	-0.400	-22.98	-23.98	-166.12
NESC Extreme	15X	14X	14X	-191.935	12.870	13.118	-6.013	11.659	33.23	-38.88	185.44

NESC Extreme	15XY	14XY	14XY	-141.057	7.110	7.250	6.333	3.528	-26.40	-23.60	136.73
NESC Extreme	15Y	14Y	14Y	208.195	3.645	3.658	1.267	3.432	28.61	-33.31	-203.54

Sections Information:

Section Label	Top Z (ft)	Bottom Z (ft)	Joint Count	Member Count	Tran. Face Top Width (ft)	Tran. Face Bot Width (ft)	Tran. Face Gross Area (ft^2)	Long. Face Top Width (ft)	Long. Face Bot Width (ft)	Long. Face Gross Area (ft^2)
1	143.750	84.750	59	188	0.00	6.00	309.150	0.00	28.50	817.275
2	84.750	-4.250	52	147	6.00	0.00	1226.814	6.00	0.00	1226.814

Problem calculating gross area of longitudinal face for section "1": width is zero at elevation 128.80 (ft) which is not the top of the section. ??

Problem calculating gross area of longitudinal face for section "2": width is zero at elevation -4.25 (ft) which is not the top of the section. ??

*** Overall summary for all load cases - Usage = Maximum Stress / Allowable Stress
Printed capacities do not include the strength factor entered for each load case.
The Group Summary reports on the member and load case that resulted in maximum usage
which may not necessarily be the same as that which produces maximum force.

Group Summary (Compression Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Cont-rol	Max Use In Comp. %	Comp. Control Member	Comp. Force (kips)	Comp. Control Load Case	L/R Capacity (kips)	Comp. Connect. Shear Capacity (kips)	Comp. Connect. Bearing Capacity (kips)	RLX	RLY	RLZ	L/R	KL/R Comp.	Length Comp. Member (ft)	Curve No.	No. Of Bolts
1	LEG1	SAE	3.5X3.5X0.25	36.0	91.43	Comp	91.43	3Y	-33.282	NESC Ext	53.833	36.400	54.375	0.500	0.500	0.500	60.52	60.52	7.000	1	4
2	LEG2	SAE	6X6X0.3125	36.0	91.18	Comp	91.18	5Y	-90.345	NESC Ext	99.083	109.200	203.906	1.000	1.000	1.000	60.50	60.50	6.050	1	12
3	LEG3	SAE	8X8X0.5	36.0	64.31	Tens	63.43	7Y	-158.333	NESC Ext	249.636	254.800	380.624	1.000	1.000	1.000	52.83	52.83	7.000	1	14
4	LEG4	SAE	8X8X0.625	36.0	64.50	Comp	64.50	10Y	-187.830	NESC Ext	306.646	291.200	543.749	1.000	1.000	1.000	60.12	60.12	7.915	1	16
5	LEG5	SAE	8X8X0.75	36.0	56.44	Comp	56.44	11Y	-189.164	NESC Ext	335.162	0.000	0.000	1.000	1.000	1.000	76.95	76.95	10.131	1	0
6	X1	SAE	2.5X2.5X0.1875	36.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.000	0	0
7	X2	SAU	2.5X2X0.1875	36.0	93.34	Comp	93.34	16AX	-13.349	NESC Ext	14.303	18.200	20.391	0.500	0.500	0.500	129.55	127.32	9.220	5	2
8	X3	SAU	4X3X0.25	36.0	61.56	Comp	61.56	17AX	-24.388	NESC Hea	39.613	45.500	67.969	0.500	0.750	0.500	100.45	105.33	10.000	2	5
9	X4	SAU	3.5X2.5X0.25	36.0	53.22	Comp	53.22	18AX	-17.423	NESC Hea	32.738	36.400	54.375	0.500	0.750	0.500	104.34	108.25	8.521	2	4
10	X5	SAU	4X3.5X0.3125	36.0	64.85	Tens	63.32	19AX	-38.755	NESC Hea	61.204	63.700	118.945	0.500	0.750	0.500	77.55	88.16	9.220	2	7
11	X6	SAU	5X3.5X0.25	36.0	57.13	Comp	57.13	21BY	-25.327	NESC Hea	44.335	54.600	81.562	0.580	0.580	0.580	95.79	101.84	10.597	2	6
12	X7	SAU	4X3X0.25	36.0	49.16	Comp	49.16	22AX	-15.234	NESC Hea	30.985	36.400	54.375	0.560	0.560	0.560	126.41	124.92	12.246	5	4
13	X8	SAU	3.5X3X0.25	36.0	42.65	Tens	41.92	23AX	-9.450	NESC Hea	22.542	27.300	40.781	0.550	0.550	0.550	147.17				

```
140.74 14.070      5     3
    14            X9    SAU          5X3X0.25      36.0 53.15  Comp 53.15    24AX  -11.391NESC Hea   21.431   27.300   40.781 0.550 0.550 0.550 173.71
160.96 17.450      5     3
    15            D1    SAU          5X3X0.25      36.0 98.99  Tens 33.30    25AY  -11.256NESC Hea   33.799   63.700   95.156 1.000 0.500 0.500 127.63
125.86 14.103      5     7
    16            D2    SAE        2X2X0.1875      36.0 39.49  Tens 14.46    26AX   -0.585NESC Hea    4.044   18.200   20.391 0.500 0.500 0.500 256.65
224.16 16.853      5     2
    17            D3    SAU          3X2X0.25      36.0 76.98  Tens 58.20   27AXY   -3.737NESC Hea    6.420   36.400   54.375 1.000 0.500 0.500 264.74
230.33 19.194      5     4
    18            D4    SAU          4X3X0.25      36.0 98.53  Comp 98.53   28AXY  -11.320NESC Ext   11.489   45.500   67.969 0.500 1.000 0.500 205.19
205.19 15.321      4     5
    19            D5    SAU        3.5X3X0.25      36.0 67.48  Tens 35.50    29AY   -9.106NESC Ext   25.652   45.500   67.969 0.250 0.250 0.250 135.61
131.93 28.523      5     5
    20            H1    SAE 1.75X1.75X0.1875      36.0 51.13  Tens 23.44     32X   -0.944NESC Ext    4.027    9.100   10.195 1.000 1.000 1.000 209.91
209.91  6.000      4     1
    21            H2    SAU        4X3.5X0.25      36.0 56.67  Comp 56.67    37AP  -15.471NESC Hea   27.341   27.300   40.781 1.000 0.500 0.500 148.70
137.65 15.738      6     3
    22            H3    SAE        3X3X0.1875      36.0 36.78  Comp 36.78    38BX   -4.231NESC Ext   11.503   18.200   20.391 1.000 1.000 1.000 192.66
164.68  9.569      6     2
    23            H4    SAU          5X3X0.25      36.0 53.07  Comp 53.07    39AP   -9.658NESC Hea   21.560   18.200   27.187 1.000 1.000 1.000 173.07
160.48  9.562      5     2
    24            H5    SAE      3.5X3.5X0.25      36.0 19.68  Comp 19.68     40X   -2.634NESC Hea   13.386   18.200   27.187 1.000 1.000 1.000 233.97
190.09 13.531      6     2
    25           X10    SAE 1.75X1.75X0.1875      36.0  0.00        0.00             0.000             0.000    0.000    0.000 0.000 0.000 0.000   0.00
0.00  0.000     0     0
    26           X11    SAE        2X2X0.1875      36.0 39.32  Comp 39.32   43CXY   -4.950NESC Hea   12.587   18.200   20.391 1.000 1.000 1.000 129.22
127.06  4.243      5     2
    27           X12    SAU      2.5X2X0.1875      36.0 12.73  Comp 12.73    44BP   -1.849NESC Hea   14.533   18.200   20.391 0.750 0.500 0.500 128.22
126.30  9.125      5     2
    28            H6    SAU          4X3X0.25      36.0 41.54  Tens  0.00    45BP    0.000            35.407   18.200   27.187 1.000 1.000 1.000 110.60
115.30  6.000      3     2
    29            D6    SAU        3X2X0.1875      36.0 37.67  Comp 37.67     46X   -2.914NESC Hea    7.736   18.200   20.391 1.000 0.500 0.500 201.94
182.48 14.775      5     2
    30          HGR1    SAU      2.5X2X0.1875      36.0 44.52  Tens  0.00    49AY    0.000             5.486   18.200   20.391 1.000 0.500 0.500 205.58
205.58 13.585      4     2
    31          HGR2    SAE        3X3X0.1875      36.0 45.34  Tens  0.00    48AY    0.000             8.140   18.200   20.391 1.000 0.500 0.500 195.77
195.77 15.319      4     2
    32            A1    SAE          3X3X0.25      36.0 67.35  Tens 16.35    50XY   -2.975NESC Ext   21.867   18.200   27.187 0.500 0.500 0.500 142.64
137.29 14.073      5     2
    33            A2    SAU        3.5X3X0.25      36.0 49.96  Tens 43.36    53BP  -11.838NESC Hea   33.416   27.300   40.781 1.000 1.000 1.000 106.97
113.49  5.625      3     3
    34            A#    SAE          4X4X0.25      36.0 48.23  Comp 48.23    52BP  -20.364NESC Hea   42.220   45.500   67.969 1.000 1.000 1.000 103.77
111.89  6.875      3     5
    35            H7    SAU      2.5X2X0.1875      36.0 18.22  Comp 18.22     54X   -1.486NESC Ext    8.154    9.100   10.195 1.000 1.000 1.000 168.62
168.62  6.000      4     1
    36            H8    DAE 1.75X1.75X0.1875      36.0 61.49  Comp 61.49     36P  -10.330NESC Ext   19.743   16.800   20.391 1.000 1.000 1.000 134.08
134.08  6.000      4     1
  Pwmnt 12" Std. Pipe Pwmnt    Pipe 12" Std.      42.0  8.76  Comp  8.76   g101P  -22.794NESC Hea  260.146    0.000    0.000 1.000 1.000 1.000 122.32
122.32 44.750      4     0
  PMBR1     L2x2x3/16   SAE        2X2X0.1875      36.0  7.65  Comp  7.65   g108P   -0.780NESC Hea   20.044   16.800   10.195 1.000 1.000 1.000  45.69
82.84  1.500      3     1 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize
moments): g107P  ??
  PMBR2 L2.5x2.5x3/16   SAE    2.5X2.5X0.1875      36.0 46.47  Comp 46.47   g111P   -4.738NESC Ext   22.126   16.800   10.195 1.000 1.000 1.000  81.32
100.66  3.354      3     1
  PMBR3     L3x3x3/16   SAE        3X3X0.1875      36.0  1.22  Comp  1.22   g114P   -0.124NESC Hea   11.823   16.800   10.195 1.000 1.000 1.000 162.44
162.44  8.068      4     1
  PMBR4  L3.5x3.5x1/4   SAE      3.5X3.5X0.25      36.0 11.20  Comp 11.20   g116X   -1.523NESC Ext   17.249   16.800   13.594 1.000 1.000 1.000 167.46
167.46  9.685      4     1 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize
moments): g117P  ??
```

PMBR5	**L4x4x1/4**	**SAE**	**4X4X0.25**	**36.0**	**8.17**	**Comp**	**8.17**	**g120P**	**-1.111**	**NESC Ext**	**16.004**	**16.800**	**13.594**	**1.000**	**1.000**	**1.000**	**186.27**	**186.27**	**12.340**	**4**	**1**

A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g118P ??

20a	H1	SAE	1.75X1.75X0.1875	36.0	27.78	Comp	27.78	30AY	-2.528	NESC Hea	13.441	9.100	10.195	0.500	0.500	0.500	104.96	112.48	6.000	3	1
AngleR	L2x2x1/4	SAE	2X2X0.25	36.0	60.84	Tens	54.05	42XY	-4.919	NESC Ext	15.869	9.100	13.594	1.000	1.000	1.000	130.21	130.21	4.243	4	1
BraceR	**L2.5x2.5x1/4**	**SAE**	**2.5X2.5X0.25**	**36.0**	**75.94**	**Tens**	**75.32**	**g110X**	**-10.239**	**NESC Ext**	**29.101**	**16.800**	**13.594**	**1.000**	**1.000**	**1.000**	**81.98**	**100.99**	**3.354**	**3**	**1**

A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g110P g110X ??

Plate	6"x3/4" PL	Bar	6x3/4	36.0	4.93	Tens	0.00	g106P	0.000		109.423	16.800	40.781	1.000	1.000	1.000	83.19	101.59	1.501	3	1
6R	X1	SAE	2.5X2.5X0.25	36.0	80.44	Comp	80.44	15AX	-16.382	NESC Ext	20.366	33.600	27.187	0.500	0.500	0.500	132.18	129.32	10.817	5	2

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Cont-rol	Max Use In Tens. %	Tension Control Member	Tension Force (kips)	Tension Control Load Case	Net Section Capacity (kips)	Tension Connect. Shear Capacity (kips)	Tension Connect. Bearing Capacity (kips)	Tension Connect. Rupture Capacity (kips)	Length Tens. Member (ft)	No. Of Tens. Bolts	No. Of Holes	Hole Diameter (in)
1	LEG1	SAE	3.5X3.5X0.25	36.0	91.43	Comp	85.87	3X	31.257	NESC Ext	47.340	36.400	54.375	60.417	7.000	4	2.000	0.75
2	LEG2	SAE	6X6X0.3125	36.0	91.18	Comp	84.50	5X	82.514	NESC Ext	97.650	109.200	203.906	183.656	6.050	12	4.000	0.75
3	LEG3	SAE	8X8X0.5	36.0	64.31	Tens	64.31	7X	149.045	NESC Ext	231.750	254.800	380.624	395.849	7.000	14	3.500	0.75
4	LEG4	SAE	8X8X0.625	36.0	64.50	Comp	62.48	9X	179.258	NESC Ext	286.897	0.000	0.000	0.000	7.915	0	3.500	0.75
5	LEG5	SAE	8X8X0.75	36.0	56.44	Comp	53.42	11X	176.742	NESC Ext	330.839	0.000	0.000	0.000	10.131	0	4.000	0.75
6	X1	SAE	2.5X2.5X0.1875	36.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0
7	X2	SAU	2.5X2X0.1875	36.0	93.34	Comp	79.25	16AP	14.363	NESC Ext	18.650	18.200	20.391	18.125	9.220	2	1.000	0.75
8	X3	SAU	4X3X0.25	36.0	61.56	Comp	60.79	17AP	26.860	NESC Hea	44.185	45.500	67.969	52.912	10.000	5	1.740	0.75
9	X4	SAU	3.5X2.5X0.25	36.0	53.22	Comp	51.36	18AP	18.695	NESC Hea	40.399	36.400	54.375	42.647	8.521	4	1.030	0.75
10	X5	SAU	4X3.5X0.3125	36.0	64.85	Tens	64.85	20AP	38.459	NESC Hea	59.307	63.700	118.945	74.976	9.220	7	1.790	0.75
11	X6	SAU	5X3.5X0.25	36.0	57.13	Comp	49.30	21BXY	22.272	NESC Hea	45.178	54.600	81.562	46.012	10.597	6	1.550	0.75
12	X7	SAU	4X3X0.25	36.0	49.16	Comp	38.88	22BP	14.152	NESC Hea	40.581	36.400	54.375	42.206	12.246	4	1.000	0.75
13	X8	SAU	3.5X3X0.25	36.0	42.65	Tens	42.65	23AP	11.642	NESC Hea	40.419	27.300	40.781	38.516	14.070	3	1.000	0.75
14	X9	SAU	5X3X0.25	36.0	53.15	Comp	25.34	24AP	6.918	NESC Hea	40.581	27.300	40.781	36.250	17.450	3	1.000	0.75
15	D1	SAU	5X3X0.25	36.0	98.99	Tens	98.99	25AP	35.903	NESC Hea	36.268	63.700	95.156	72.037	14.103	7	1.710	0.75

```
    16          D2   SAE      2X2X0.1875    36.0 39.49  Tens 39.49     26BX   7.158NESC Ext   18.448   18.200   20.391   18.125 16.853    2
1.000    0.75
    17          D3   SAU        3X2X0.25    36.0 76.98  Tens 76.98     27AX  18.768NESC Hea   24.381   36.400   54.375   48.333 19.194    4
1.000    0.75
    18          D4   SAU        4X3X0.25    36.0 98.53  Comp 59.64     28AP  27.134NESC Hea   47.101   45.500   67.969   60.337 15.321    5
1.260    0.75
    19          D5   SAU      3.5X3X0.25    36.0 67.48  Tens 67.48     29AX  30.010NESC Ext   44.469   45.500   67.969   50.906 28.523    5
1.000    0.75
    20          H1   SAE 1.75X1.75X0.1875   36.0 51.13  Tens 51.13      33Y   3.379NESC Hea   15.532    9.100   10.195    6.609  6.000    1
1.000    0.75
    21          H2   SAU      4X3.5X0.25    36.0 56.67  Comp 15.20     37AY   4.151NESC Hea   48.519   27.300   40.781   36.250 15.738    3
1.000    0.75
    22          H3   SAE      3X3X0.1875    36.0 36.78  Comp  0.00     38BY   0.000           30.760   18.200   20.391   18.125  9.569    2
1.000    0.75
    23          H4   SAU        5X3X0.25    36.0 53.07  Comp 44.68 F39C2118X   8.132NESC Ext   40.581   18.200   27.187   24.167  2.208    2
1.000    0.75
    24          H5   SAE    3.5X3.5X0.25    36.0 19.68  Comp 16.28      40P   2.963NESC Hea   48.681   18.200   27.187   25.677 13.531    2
1.000    0.75
    25         X10   SAE 1.75X1.75X0.1875   36.0  0.00        0.00            0.000            0.000    0.000    0.000    0.000  0.000    0
0.000       0
    26         X11   SAE      2X2X0.1875    36.0 39.32  Comp 26.70     43BX   3.296NESC Hea   18.448   18.200   20.391   12.347  4.243    2
1.000    0.75
    27         X12   SAU    2.5X2X0.1875    36.0 12.73  Comp 10.47     44CY   1.897NESC Hea   18.650   18.200   20.391   18.125  9.125    2
1.000    0.75
    28          H6   SAU        4X3X0.25    36.0 41.54  Tens 41.54     45BP   7.560NESC Hea   40.581   18.200   27.187   24.167  6.000    2
1.000    0.75
    29          D6   SAU      3X2X0.1875    36.0 37.67  Comp  0.00      46Y   0.000           18.529   18.200   20.391   12.755 14.775    2
1.000    0.75
    30        HGR1   SAU    2.5X2X0.1875    36.0 44.52  Tens 44.52      47P   5.679NESC Hea   18.650   18.200   20.391   12.755 13.250    2
1.000    0.75
    31        HGR2   SAE      3X3X0.1875    36.0 45.34  Tens 45.34      48P   8.219NESC Hea   30.760   18.200   20.391   18.125 15.022    2
1.000    0.75
    32          A1   SAE        3X3X0.25    36.0 67.35  Tens 67.35      50P  12.208NESC Hea   36.997   18.200   27.187   18.125 14.073    2
1.590    0.75
    33          A2   SAU      3.5X3X0.25    36.0 49.96  Tens 49.96      53P  16.429NESC Hea   32.886   36.400   54.375   42.647 11.643    4
2.240    0.75
    34          A#   SAE        4X4X0.25    36.0 48.23  Comp 16.88      52P   7.680NESC Hea   46.393   45.500   67.969   48.262 14.073    5
2.710    0.75
    35          H7   SAU    2.5X2X0.1875    36.0 18.22  Comp  8.10      54P   0.737NESC Ext   21.688    9.100   10.195    9.629  6.000    1
1.000    0.75
    36          H8   DAE 1.75X1.75X0.1875   36.0 61.49  Comp 59.25      36X   8.807NESC Ext   31.823   16.800   20.391   14.864  6.000    1
2.000  0.6875
  Pwmnt 12" Std. Pipe Pwmnt   Pipe 12" Std.   42.0  8.76  Comp  0.00    g121P   0.000          571.199    0.000    0.000    0.000  9.000    0
0.000       0
  PMBR1     L2x2x3/16   SAE      2X2X0.1875    36.0  7.65  Comp  0.00    g109P   0.000           18.827   16.800   10.195   10.343  1.500    1
1.000   0.6875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g107P
??
  PMBR2 L2.5x2.5x3/16   SAE   2.5X2.5X0.1875   36.0 46.47  Comp 40.78    g111X   4.158NESC Ext   25.048   16.800   10.195   11.328  3.354    1
1.000  0.6875
  PMBR3     L3x3x3/16   SAE      3X3X0.1875    36.0  1.22  Comp  0.20    g114P   0.020NESC Ext   31.139   16.800   10.195   11.328  8.068    1
1.000  0.6875
  PMBR4  L3.5x3.5x1/4   SAE    3.5X3.5X0.25    36.0 11.20  Comp  9.99    g116P   1.358NESC Ext   49.187   16.800   13.594   15.104  9.685    1
1.000   0.6875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g117P
??
  PMBR5      L4x4x1/4   SAE        4X4X0.25    36.0  8.17  Comp  7.70    g120X   1.047NESC Ext   57.287   16.800   13.594   15.104 12.340    1
1.000   0.6875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g118P
??
   20a          H1   SAE 1.75X1.75X0.1875   36.0 27.78  Comp  8.38     30BP   0.554NESC Hea   15.532    9.100   10.195    6.609  6.000    1
1.000    0.75
```

```
 AngleR      L2x2x1/4   SAE         2X2X0.25     36.0 60.84  Tens 60.84       42Y   5.361NESC Ext   24.381    9.100   13.594    8.812  4.243     1
1.000     0.75
```

BraceR L2.5x2.5x1/4 SAE 2.5X2.5X0.25 36.0 75.94 Tens 75.94 g110P 10.323NESC Ext 32.987 16.800 13.594 15.104 3.354 1
1.000 0.6875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g110P g110X ??

```
  Plate    6"x3/4" PL   Bar             6x3/4     36.0  4.93  Tens  4.93      g106P   0.827NESC Hea  129.094   16.800   40.781   45.312  1.501     1
1.000   0.6875
     6R           X1    SAE     2.5X2.5X0.25     36.0 80.44  Comp 74.52      15AP  17.947NESC Ext   32.987   33.600   27.187   24.084 10.817     2
1.000   0.6875
```

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	98.99	25AP	Angle
NESC Extreme	98.53	28AXY	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	10.89	NESC Extreme	0.0
2	Clamp	17.61	NESC Heavy	0.0
3	Clamp	17.22	NESC Heavy	0.0
4	Clamp	16.68	NESC Heavy	0.0
5	Clamp	24.84	NESC Heavy	0.0
6	Clamp	15.24	NESC Heavy	0.0
7	Clamp	22.15	NESC Heavy	0.0
8	Clamp	20.78	NESC Heavy	0.0
9	Clamp	24.04	NESC Heavy	0.0
10	Clamp	19.61	NESC Heavy	0.0
11	Clamp	27.17	NESC Heavy	0.0
12	Clamp	1.60	NESC Extreme	0.0
13	Clamp	1.88	NESC Heavy	0.0
14	Clamp	2.32	NESC Heavy	0.0
15	Clamp	3.70	NESC Extreme	0.0
16	Clamp	3.35	NESC Extreme	0.0
17	Clamp	3.81	NESC Heavy	0.0
18	Clamp	3.26	NESC Heavy	0.0
19	Clamp	6.21	NESC Heavy	0.0
20	Clamp	7.07	NESC Heavy	0.0
21	Clamp	8.08	NESC Heavy	0.0
22	Clamp	7.55	NESC Heavy	0.0
23	Clamp	3.44	NESC Heavy	0.0
24	Clamp	3.69	NESC Heavy	0.0
25	Clamp	2.52	NESC Heavy	0.0
26	Clamp	18.03	NESC Extreme	0.0
27	Clamp	16.29	NESC Heavy	0.0
28	Clamp	1.68	NESC Extreme	0.0
29	Clamp	2.68	NESC Heavy	0.0

30	Clamp	2.15	NESC Heavy	0.0
31	Clamp	3.33	NESC Heavy	0.0

*** Weight of structure (lbs):
Weight of Angles*Section DLF: 39703.5
Total: 39703.5

*** End of Report

```
************************************************************************
*                                                                      *
* TOWER - Analysis and Design -  Copyright Power Line Systems, Inc. 1986-2011 *
*                                                                      *
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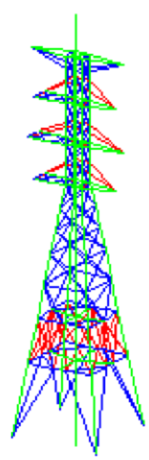
```

Project Name : 21007.68 - Greenwich, CT
Project Notes: Structure #1281 / Verizon Greenwich 3
Project File : J:\Jobs\2100700.WI\68_Greenwich 3 CT\05_Structural\Backup Documentation\Calcs\PLS Tower\CL&P # 1281.tow
Date run : 1:43:50 PM Tuesday, February 15, 2022
by : Tower Version 12.50
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

KL/R value of 200.30 exceeds maximum of 200.00 for member "g118P" ??
Problem calculating gross area of longitudinal face for section "1": width is zero at elevation 128.80 (ft) which is not the top of the section. ??
Problem calculating gross area of longitudinal face for section "2": width is zero at elevation -4.25 (ft) which is not the top of the section. ??
Unusual number of fixed joints found: 5. Towers normally have from between 1 and 4 fixed joints. ??
The model has 4 warnings. ??



Nonlinear convergence parameters: Use Standard Parameters
Tension only member maximum compression load as a percent of compression capacity: 100%
Member check option: ASCE 10
Connection rupture check: ASCE 10
Crossing diagonal check: ASCE 10 [Alternate Unsupported RLOUT = 1]
Included angle check: None
Climbing load check: None
Redundant members checked with: Actual Force

Joints Geometry:

Joint Label	Symmetry Code	X Coord. (ft)	Y Coord. (ft)	Z Coord. (ft)	X Disp. Rest.	Y Disp. Rest.	Z Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.
1P	XY-Symmetry	3	3	128.8	Free	Free	Free	Free	Free	Free

2P	XY-Symmetry	3	3	124.3	Free	Free	Free	Free	Free	Free
3P	XY-Symmetry	3	3	119.8	Free	Free	Free	Free	Free	Free
4P	XY-Symmetry	3	3	112.8	Free	Free	Free	Free	Free	Free
5P	XY-Symmetry	3	3	104.8	Free	Free	Free	Free	Free	Free
6P	XY-Symmetry	3	3	98.75	Free	Free	Free	Free	Free	Free
7P	XY-Symmetry	3	3	91.75	Free	Free	Free	Free	Free	Free
8P	XY-Symmetry	3	3	84.75	Free	Free	Free	Free	Free	Free
15P	XY-Symmetry	15.44	15.44	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
16P	X-Symmetry	0	16.75	128.8	Free	Free	Free	Free	Free	Free
17P	Y-Symmetry	3	-14.25	112.8	Free	Free	Free	Free	Free	Free
18P	Y-Symmetry	3	-16.75	98.75	Free	Free	Free	Free	Free	Free
19P	Y-Symmetry	3	-14.25	84.75	Free	Free	Free	Free	Free	Free
20AP	Y-Symmetry	9.568	0	40	Free	Free	Free	Free	Free	Free
20BP	X-Symmetry	0	9.568	40	Free	Free	Free	Free	Free	Free
21P	XY-Symmetry	11.77	2.208	25	Free	Free	Free	Free	Free	Free
22P	XY-Symmetry	2.208	11.77	25	Free	Free	Free	Free	Free	Free
23P	None	0	14.25	112.8	Free	Free	Free	Free	Free	Free
24P	None	0	16.75	98.75	Free	Free	Free	Free	Free	Free
25P	None	0	14.25	84.75	Free	Free	Free	Free	Free	Free
26P	Y-Symmetry	3	-8.625	112.8	Free	Free	Free	Free	Free	Free
27P	Y-Symmetry	3	-9.875	98.75	Free	Free	Free	Free	Free	Free
28P	Y-Symmetry	3	-8.625	84.75	Free	Free	Free	Free	Free	Free
29P	None	1.5	0	-4.25	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
30P	None	1.5	0	25	Free	Free	Free	Free	Free	Free
31P	None	1.5	0	40	Free	Free	Free	Free	Free	Free
32P	None	1.5	0	84.75	Free	Free	Free	Free	Free	Free
33P	None	1.5	0	98.75	Free	Free	Free	Free	Free	Free
34P	None	1.5	0	112.8	Free	Free	Free	Free	Free	Free
35P	None	1.5	0	128.8	Free	Free	Free	Free	Free	Free
36P	None	1.5	0	134.8	Free	Free	Free	Free	Free	Free
37P	None	1.5	0	143.8	Free	Free	Free	Free	Free	Free
1X	X-GenXY	3	-3	128.8	Free	Free	Free	Free	Free	Free
1XY	XY-GenXY	-3	-3	128.8	Free	Free	Free	Free	Free	Free
1Y	Y-GenXY	-3	3	128.8	Free	Free	Free	Free	Free	Free
2X	X-GenXY	3	-3	124.3	Free	Free	Free	Free	Free	Free
2XY	XY-GenXY	-3	-3	124.3	Free	Free	Free	Free	Free	Free
2Y	Y-GenXY	-3	3	124.3	Free	Free	Free	Free	Free	Free
3X	X-GenXY	3	-3	119.8	Free	Free	Free	Free	Free	Free
3XY	XY-GenXY	-3	-3	119.8	Free	Free	Free	Free	Free	Free
3Y	Y-GenXY	-3	3	119.8	Free	Free	Free	Free	Free	Free
4X	X-GenXY	3	-3	112.8	Free	Free	Free	Free	Free	Free
4XY	XY-GenXY	-3	-3	112.8	Free	Free	Free	Free	Free	Free
4Y	Y-GenXY	-3	3	112.8	Free	Free	Free	Free	Free	Free
5X	X-GenXY	3	-3	104.8	Free	Free	Free	Free	Free	Free
5XY	XY-GenXY	-3	-3	104.8	Free	Free	Free	Free	Free	Free
5Y	Y-GenXY	-3	3	104.8	Free	Free	Free	Free	Free	Free
6X	X-GenXY	3	-3	98.75	Free	Free	Free	Free	Free	Free
6XY	XY-GenXY	-3	-3	98.75	Free	Free	Free	Free	Free	Free
6Y	Y-GenXY	-3	3	98.75	Free	Free	Free	Free	Free	Free
7X	X-GenXY	3	-3	91.75	Free	Free	Free	Free	Free	Free
7XY	XY-GenXY	-3	-3	91.75	Free	Free	Free	Free	Free	Free
7Y	Y-GenXY	-3	3	91.75	Free	Free	Free	Free	Free	Free
8X	X-GenXY	3	-3	84.75	Free	Free	Free	Free	Free	Free
8XY	XY-GenXY	-3	-3	84.75	Free	Free	Free	Free	Free	Free
8Y	Y-GenXY	-3	3	84.75	Free	Free	Free	Free	Free	Free
15X	X-GenXY	15.44	-15.44	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
15XY	XY-GenXY	-15.44	-15.44	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
15Y	Y-GenXY	-15.44	15.44	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
16X	X-Gen	0	-16.75	128.8	Free	Free	Free	Free	Free	Free

17Y	Y-Gen	-3	-14.25	112.8	Free	Free	Free	Free	Free	Free
18Y	Y-Gen	-3	-16.75	98.75	Free	Free	Free	Free	Free	Free
19Y	Y-Gen	-3	-14.25	84.75	Free	Free	Free	Free	Free	Free
20AY	Y-Gen	-9.568	0	40	Free	Free	Free	Free	Free	Free
20BX	X-Gen	0	-9.568	40	Free	Free	Free	Free	Free	Free
21X	X-GenXY	11.77	-2.208	25	Free	Free	Free	Free	Free	Free
21XY	XY-GenXY	-11.77	-2.208	25	Free	Free	Free	Free	Free	Free
21Y	Y-GenXY	-11.77	2.208	25	Free	Free	Free	Free	Free	Free
22X	X-GenXY	2.208	-11.77	25	Free	Free	Free	Free	Free	Free
22XY	XY-GenXY	-2.208	-11.77	25	Free	Free	Free	Free	Free	Free
22Y	Y-GenXY	-2.208	11.77	25	Free	Free	Free	Free	Free	Free
26Y	Y-Gen	-3	-8.625	112.8	Free	Free	Free	Free	Free	Free
27Y	Y-Gen	-3	-9.875	98.75	Free	Free	Free	Free	Free	Free
28Y	Y-Gen	-3	-8.625	84.75	Free	Free	Free	Free	Free	Free

Secondary Joints:

Joint Label	Symmetry Code	Origin Joint	End Joint	Fraction	Elevation (ft)	X Disp. Rest.	Y Disp. Rest.	Z Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.
9S	XY-Symmetry	8P	15P	0	77	Free	Free	Free	Free	Free	Free
10S	XY-Symmetry	8P	15P	0	69.25	Free	Free	Free	Free	Free	Free
11S	XY-Symmetry	8P	15P	0	61.5	Free	Free	Free	Free	Free	Free
12S	XY-Symmetry	8P	15P	0	51.58	Free	Free	Free	Free	Free	Free
13S	XY-Symmetry	8P	15P	0	40	Free	Free	Free	Free	Free	Free
14S	XY-Symmetry	8P	15P	0	25	Free	Free	Free	Free	Free	Free
i0.50E129S	None	1X	1Y	0.5	0	Free	Free	Free	Free	Free	Free
i0.50E113S	None	4X	4Y	0.5	0	Free	Free	Free	Free	Free	Free
i0.50E99S	None	6X	6Y	0.5	0	Free	Free	Free	Free	Free	Free
i0.50E85S	None	8X	8Y	0.5	0	Free	Free	Free	Free	Free	Free
21XF0.50S	Y-Symmetry	21X	21P	0.5	0	Free	Free	Free	Free	Free	Free
22PF0.50S	X-Symmetry	22P	22Y	0.5	0	Free	Free	Free	Free	Free	Free
9X	X-GenXY	8P	15P	0	77	Free	Free	Free	Free	Free	Free
9XY	XY-GenXY	8P	15P	0	77	Free	Free	Free	Free	Free	Free
9Y	Y-GenXY	8P	15P	0	77	Free	Free	Free	Free	Free	Free
10X	X-GenXY	8P	15P	0	69.25	Free	Free	Free	Free	Free	Free
10XY	XY-GenXY	8P	15P	0	69.25	Free	Free	Free	Free	Free	Free
10Y	Y-GenXY	8P	15P	0	69.25	Free	Free	Free	Free	Free	Free
11X	X-GenXY	8P	15P	0	61.5	Free	Free	Free	Free	Free	Free
11XY	XY-GenXY	8P	15P	0	61.5	Free	Free	Free	Free	Free	Free
11Y	Y-GenXY	8P	15P	0	61.5	Free	Free	Free	Free	Free	Free
12X	X-GenXY	8P	15P	0	51.58	Free	Free	Free	Free	Free	Free
12XY	XY-GenXY	8P	15P	0	51.58	Free	Free	Free	Free	Free	Free
12Y	Y-GenXY	8P	15P	0	51.58	Free	Free	Free	Free	Free	Free
13X	X-GenXY	8P	15P	0	40	Free	Free	Free	Free	Free	Free
13XY	XY-GenXY	8P	15P	0	40	Free	Free	Free	Free	Free	Free
13Y	Y-GenXY	8P	15P	0	40	Free	Free	Free	Free	Free	Free
14X	X-GenXY	8P	15P	0	25	Free	Free	Free	Free	Free	Free
14XY	XY-GenXY	8P	15P	0	25	Free	Free	Free	Free	Free	Free
14Y	Y-GenXY	8P	15P	0	25	Free	Free	Free	Free	Free	Free
21XF0.50Y	Y-Gen	21X	21P	0.5	0	Free	Free	Free	Free	Free	Free
22PF0.50X	X-Gen	22P	22Y	0.5	0	Free	Free	Free	Free	Free	Free

The model contains 74 primary and 32 secondary joints for a total of 106 joints.

Steel Material Properties:

Steel	Modulus	Yield	Ultimate	Member	Member	Member	Member	Member	Member

Material Label	Modulus of Elasticity (ksi)	Stress Fy (ksi)	Stress Fu (ksi)	All. Stress Hyp. 1 (ksi)	All. Stress Hyp. 2 (ksi)	Rupture Hyp. 1 (ksi)	Rupture Hyp. 2 (ksi)	Bearing Hyp. 1 (ksi)	Bearing Hyp. 2 (ksi)
A 36	2.9e+004	36	58	0	0	0	0	0	0
A500-42	2.9e+004	42	58	0	0	0	0	0	0

Bolt Properties:

Bolt Label	Bolt Diameter (in)	Hole Diameter (in)	Ultimate Shear Capacity (kips)	Default End Distance (in)	Default Bolt Spacing (in)	Shear Capacity Hyp. 1 (kips)	Shear Capacity Hyp. 2 (kips)
5/8 A394	0.625	0.75	9.1	1.125	1.5	0	0
5/8 A325	0.625	0.6875	16.8	1.25	1.5	0	0

Number Bolts Used By Type:

Bolt Type	Number Bolts
5/8 A394	1230
5/8 A325	38

Angle Properties:

Angle Type	Angle Size	Long Leg (in)	Short Leg (in)	Thick. (in)	Unit Weight (lbs/ft)	Gross Area (in^2)	w/t Ratio	Radius of Gyration Rx (in)	Radius of Gyration Ry (in)	Radius of Gyration Rz (in)	Number of Angles	Wind Width (in)	Short Edge Dist. (in)	Long Edge Dist. (in)	Optimize Cost Factor	Section Modulus (in^3)
SAE	8X8X0.75	8	8	0.75	38.9	11.44	8.83	2.47	2.47	1.58	1	8	4	0	1.0000	0
SAE	8X8X0.625	8	8	0.625	32.7	9.61	10.8	2.49	2.49	1.58	1	8	4	0	1.0000	0
SAE	8X8X0.5	8	8	0.5	26.4	7.75	13.75	2.5	2.5	1.59	1	8	4	0	1.0000	0
SAE	6X6X0.3125	6	6	0.3125	12.5	3.65	16.6	1.89	1.89	1.2	1	6	3	0	1.0000	0
SAE	4X4X0.25	4	4	0.25	6.6	1.94	13.5	1.25	1.25	0.795	1	4	2	0	1.0000	0
SAE	3.5X3.5X0.25	3.5	3.5	0.25	5.8	1.69	11.5	1.09	1.09	0.694	1	3.5	1.75	0	1.0000	0
SAE	3X3X0.25	3	3	0.25	4.9	1.44	9.75	0.93	0.93	0.592	1	3	1.5	0	1.0000	0
SAE	3X3X0.1875	3	3	0.1875	3.71	1.09	13.33	0.939	0.939	0.596	1	3	1.5	0	1.0000	0
SAE	2.5X2.5X0.25	2.5	2.5	0.25	4.1	1.19	7.75	0.769	0.769	0.491	1	2.5	1.25	0	1.0000	0
SAE	2.5X2.5X0.1875	2.5	2.5	0.1875	3.07	0.902	10.67	0.778	0.778	0.495	1	2.5	1.25	0	1.0000	0
SAE	2X2X0.25	2	2	0.25	3.19	0.94	5	0.609	0.609	0.391	1	2	1	0	1.0000	0
SAE	2X2X0.1875	2	2	0.1875	2.44	0.71	8	0.617	0.617	0.394	1	2	1	0	1.0000	0
SAE	1.75X1.75X0.1875	1.75	1.75	0.1875	2.12	0.62	6	0.537	0.537	0.343	1	1.75	0.875	0	1.0000	0
SAU	5X3.5X0.25	5	3.5	0.25	7	2.06	17	1.62	1.04	0.77	1	5	1.75	0	1.0000	0
SAU	5X3X0.25	5	3	0.25	6.6	1.94	17	1.62	0.861	0.663	1	5	1.5	0	1.0000	0
SAU	4X3.5X0.3125	4	3.5	0.3125	7.7	2.25	10.4	1.26	1.07	0.73	1	4	1.75	0	1.0000	0
SAU	4X3.5X0.25	4	3.5	0.25	6.2	1.81	13.25	1.27	1.07	0.734	1	4	1.75	0	1.0000	0
SAU	4X3X0.25	4	3	0.25	5.8	1.69	13.25	1.28	0.896	0.651	1	4	1.5	0	1.0000	0
SAU	3.5X3X0.25	3.5	3	0.25	5.4	1.56	11.25	1.11	0.914	0.631	1	3.5	1.5	0	1.0000	0
SAU	3.5X2.5X0.25	3.5	2.5	0.25	4.9	1.44	11.25	1.12	0.735	0.544	1	3.5	1.25	0	1.0000	0
SAU	3X2X0.25	3	2	0.25	4.1	1.19	9.75	0.957	0.574	0.435	1	3	1	0	1.0000	0
SAU	3X2X0.1875	3	2	0.1875	3.07	0.9	13.33	0.966	0.583	0.439	1	3	1	0	1.0000	0
SAU	2.5X2X0.1875	2.5	2	0.1875	2.75	0.81	10.67	0.793	0.6	0.427	1	2.5	1	0	1.0000	0
Pwmnt	Pipe 12" Std.	12.75	12	0	49.6	13.6	1	4.39	4.39	4.39	1	12.75	0	0	0.0000	0
Bar	6x3/4	6	0.75	0.75	15.3	4.5	8	0.2165	1.732	1.732	1	6	0	0	0.0000	0
DAE	1.75X1.75X0.1875	1.75	1.75	0.1875	4.2	1.24	7	0.537	0.738	0.537	2	3.5	0	0	0.0000	0

Angle Groups:

Group Label	Group Description	Angle Type	Angle Size	Material Type	Element Type	Group Type	Optimize Group	Allow. Add. Angle Width For Optimize (in)
1	LEG1	SAE	3.5X3.5X0.25	A 36	Beam	Leg	None	0.000
2	LEG2	SAE	6X6X0.3125	A 36	Beam	Leg	None	0.000
3	LEG3	SAE	8X8X0.5	A 36	Beam	Leg	None	0.000
4	LEG4	SAE	8X8X0.625	A 36	Beam	Leg	None	0.000
5	LEG5	SAE	8X8X0.75	A 36	Beam	Leg	None	0.000
6	X1	SAE	2.5X2.5X0.1875	A 36	Truss	Crossing Diagonal	None	0.000
7	X2	SAU	2.5X2X0.1875	A 36	Truss	Crossing Diagonal	None	0.000
8	X3	SAU	4X3X0.25	A 36	Truss	Crossing Diagonal	None	0.000
9	X4	SAU	3.5X2.5X0.25	A 36	Truss	Crossing Diagonal	None	0.000
10	X5	SAU	4X3.5X0.3125	A 36	Truss	Crossing Diagonal	None	0.000
11	X6	SAU	5X3.5X0.25	A 36	Truss	Crossing Diagonal	None	0.000
12	X7	SAU	4X3X0.25	A 36	Truss	Crossing Diagonal	None	0.000
13	X8	SAU	3.5X3X0.25	A 36	Truss	Crossing Diagonal	None	0.000
14	X9	SAU	5X3X0.25	A 36	Truss	Crossing Diagonal	None	0.000
15	D1	SAU	5X3X0.25	A 36	Truss	Other	None	0.000
16	D2	SAE	2X2X0.1875	A 36	T-Only	Other	None	0.000
17	D3	SAU	3X2X0.25	A 36	T-Only	Other	None	0.000
18	D4	SAU	4X3X0.25	A 36	T-Only	Other	None	0.000
19	D5	SAU	3.5X3X0.25	A 36	Truss	Other	None	0.000
20	H1	SAE	1.75X1.75X0.1875	A 36	T-Only	Other	None	0.000
21	H2	SAU	4X3.5X0.25	A 36	Truss	Other	None	0.000
22	H3	SAE	3X3X0.1875	A 36	Truss	Other	None	0.000
23	H4	SAU	5X3X0.25	A 36	Truss	Other	None	0.000
24	H5	SAE	3.5X3.5X0.25	A 36	Truss	Other	None	0.000
25	X10	SAE	1.75X1.75X0.1875	A 36	Beam	Other	None	0.000
26	X11	SAE	2X2X0.1875	A 36	Beam	Other	None	0.000
27	X12	SAU	2.5X2X0.1875	A 36	Truss	Other	None	0.000
28	H6	SAU	4X3X0.25	A 36	Truss	Other	None	0.000
29	D6	SAU	3X2X0.1875	A 36	Truss	Other	None	0.000
30	HGR1	SAU	2.5X2X0.1875	A 36	T-Only	Other	None	0.000
31	HGR2	SAE	3X3X0.1875	A 36	T-Only	Other	None	0.000
32	A1	SAE	3X3X0.25	A 36	Beam	Other	None	0.000
33	A2	SAU	3.5X3X0.25	A 36	Beam	Other	None	0.000
34	A#	SAE	4X4X0.25	A 36	Beam	Other	None	0.000
35	H7	SAU	2.5X2X0.1875	A 36	Truss	Other	None	0.000
36	H8	DAE	1.75X1.75X0.1875	A 36	T-Only Beam	Other	None	0.000
Pwmnt	12" Std. Pipe	Pwmnt	Pipe 12" Std.	A500-42	Beam	Other	None	0.000
PMBR1	L2x2x3/16	SAE	2X2X0.1875	A 36	Beam	Other	None	12.000
PMBR2	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	A 36	Beam	Other	None	12.000
PMBR3	L3x3x3/16	SAE	3X3X0.1875	A 36	Beam	Other	None	12.000
PMBR4	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	A 36	Beam	Other	None	12.000
PMBR5	L4x4x1/4	SAE	4X4X0.25	A 36	Beam	Other	None	12.000
20a	H1	SAE	1.75X1.75X0.1875	A 36	Truss	Other	None	0.000
AngleR	L2x2x1/4	SAE	2X2X0.25	A 36	Beam	Other	None	0.000
BraceR	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	A 36	Beam	Other	None	0.000
Plate	6"x3/4" PL	Bar	6x3/4	A 36			None	0.000
6R	X1	SAE	2.5X2.5X0.25	A 36	Truss	Crossing Diagonal	None	0.000

Aggregate Angle Information:

Note: Estimate of surface area reported for painting purposes, not wind loading.

Angle Type	Angle Size	Material Type	Total Length (ft)	Total Surface Area (ft^2)	Total Weight (lbs)
SAE	3.5X3.5X0.25	A 36	212.92	248.41	1234.96
SAE	6X6X0.3125	A 36	56.20	112.40	702.50
SAE	8X8X0.5	A 36	56.00	149.33	1478.40
SAE	8X8X0.625	A 36	94.98	253.29	3105.93
SAE	8X8X0.75	A 36	251.24	669.98	9773.41
SAE	2.5X2.5X0.25	A 36	93.24	77.70	382.29
SAU	2.5X2X0.1875	A 36	295.39	221.54	812.33
SAU	4X3X0.25	A 36	318.53	371.62	1847.48
SAU	3.5X2.5X0.25	A 36	68.17	68.17	334.01
SAU	4X3.5X0.3125	A 36	147.51	184.39	1135.85
SAU	5X3.5X0.25	A 36	84.78	120.10	593.45
SAU	3.5X3X0.25	A 36	456.32	494.34	2464.10
SAU	5X3X0.25	A 36	346.59	462.12	2287.47
SAE	2X2X0.1875	A 36	190.24	126.82	464.18
SAU	3X2X0.25	A 36	153.55	127.96	629.55
SAE	1.75X1.75X0.1875	A 36	84.00	49.00	178.08
DAE	1.75X1.75X0.1875	A 36	12.00	7.00	50.40
SAU	4X3.5X0.25	A 36	62.95	78.69	390.29
SAE	3X3X0.1875	A 36	145.30	145.30	539.06
SAE	2X2X0.25	A 36	16.97	11.31	54.14
SAU	3X2X0.1875	A 36	59.10	49.25	181.44
SAE	3X3X0.25	A 36	68.29	68.29	334.64
SAE	4X4X0.25	A 36	105.60	140.80	696.94
Pwmnt	Pipe 12" Std.	A500-42	148.00	610.50	7340.80
Bar	6x3/4	A 36	1.50	1.69	22.96
SAE	2.5X2.5X0.1875	A 36	20.13	16.77	61.78

Sections:
The adjustment factors below only apply to dead load and wind areas that are calculated for members in the model.
They do not apply to equipment or to manually input dead load and drag areas.

Section Label	Joint Defining Section Bottom	Dead Load Adjust. Factor	Transverse Drag x Area Factor For Face	Longitudinal Drag x Area Factor For Face	Transverse Area Factor (CD From Code)	Longitudinal Area Factor (CD From Code)	Af Flat Factor For Face EIA Only	Ar Round Factor For Face EIA Only	Transverse Drag x Area Factor For All	Longitudinal Drag x Area Factor For All	SAPS Angle Drag x Area Factor	SAPS Round Drag x Area Factor	Force Solid Face
1	8X	1.000	3.200	3.200	1.000	1.000	0.000	0.000	1.000	1.000	0.000	0.000	None
2	29P	1.100	3.500	3.500	1.100	1.100	0.000	0.000	1.000	1.000	0.000	0.000	None

Angle Member Connectivity:

Member Label	Group Label	Section Label	Symmetry Code	Origin Joint	End Joint	Ecc. Code	Rest. Code	Ratio RLX	Ratio RLY	Ratio RLZ	Bolt Type	# Bolts	# Bolt Holes	# Shear Planes	Connect Leg	Short Edge Dist. (in)	Long Edge Dist. (in)	End Dist. (in)	Bolt Spacing (in)	Shear Path Length (in)	Tension Path Length (in)	Rest. Coef.
1P	1		XY-Symmetry	1P	2P	1	4	1	1	1	5/8 A394	0	2	1	Both	0	0	0	0	0	0	0
1X	1		X-GenXY	1X	2X	1	4	1	1	1	5/8 A394	0	2	1	Both	0	0	0				

																			0	0	0	0
1XY	1	XY-GenXY	1XY	2XY	1	4	1	1	1	5/8	A394	0	2	1	Both	0	0	0	0	0	0	0
1Y	1	Y-GenXY	1Y	2Y	1	4	1	1	1	5/8	A394	0	2	1	Both	0	0	0	0	0	0	0
2P	1	XY-Symmetry	2P	3P	1	4	1	1	1	5/8	A394	0	2	1	Both	0	0	0	0	0	0	0
2X	1	X-GenXY	2X	3X	1	4	1	1	1	5/8	A394	0	2	1	Both	0	0	0	0	0	0	0
2XY	1	XY-GenXY	2XY	3XY	1	4	1	1	1	5/8	A394	0	2	1	Both	0	0	0	0	0	0	0
2Y	1	Y-GenXY	2Y	3Y	1	4	1	1	1	5/8	A394	0	2	1	Both	0	0	0	0	0	0	0
3P	1	XY-Symmetry	3P	4P	1	4	0.5	0.5	0.5	5/8	A394	4	2	1	Both	1.875	0	1.25	2.5	0	0	0
3X	1	X-GenXY	3X	4X	1	4	0.5	0.5	0.5	5/8	A394	4	2	1	Both	1.875	0	1.25	2.5	0	0	0
3XY	1	XY-GenXY	3XY	4XY	1	4	0.5	0.5	0.5	5/8	A394	4	2	1	Both	1.875	0	1.25	2.5	0	0	0
3Y	1	Y-GenXY	3Y	4Y	1	4	0.5	0.5	0.5	5/8	A394	4	2	1	Both	1.875	0	1.25	2.5	0	0	0
4P	2	XY-Symmetry	4P	5P	1	4	1	1	1	5/8	A394	0	4	1	Both	0	0	0	0	0	0	0
4X	2	X-GenXY	4X	5X	1	4	1	1	1	5/8	A394	0	4	1	Both	0	0	0	0	0	0	0
4XY	2	XY-GenXY	4XY	5XY	1	4	1	1	1	5/8	A394	0	4	1	Both	0	0	0	0	0	0	0
4Y	2	Y-GenXY	4Y	5Y	1	4	1	1	1	5/8	A394	0	4	1	Both	0	0	0	0	0	0	0
5P	2	XY-Symmetry	5P	6P	1	4	1	1	1	5/8	A394	12	4	1	Both	1.125	3.125	1.25	3.5	12.75	4	0
5X	2	X-GenXY	5X	6X	1	4	1	1	1	5/8	A394	12	4	1	Both	1.125	3.125	1.25	3.5	12.75	4	0
5XY	2	XY-GenXY	5XY	6XY	1	4	1	1	1	5/8	A394	12	4	1	Both	1.125	3.125	1.25	3.5	12.75	4	0
5Y	2	Y-GenXY	5Y	6Y	1	4	1	1	1	5/8	A394	12	4	1	Both	1.125	3.125	1.25	3.5	12.75	4	0
6P	3	XY-Symmetry	6P	7P	1	4	1	1	1	5/8	A394	0	3.5	1	Both	0	0	0	0	0	0	0
6X	3	X-GenXY	6X	7X	1	4	1	1	1	5/8	A394	0	3.5	1	Both	0	0	0	0	0	0	0
6XY	3	XY-GenXY	6XY	7XY	1	4	1	1	1	5/8	A394	0	3.5	1	Both	0	0	0	0	0	0	0
6Y	3	Y-GenXY	6Y	7Y	1	4	1	1	1	5/8	A394	0	3.5	1	Both	0	0	0	0	0	0	0
7P	3	XY-Symmetry	7P	8P	1	4	1	1	1	5/8	A394	14	3.5	2	Both	1.5	4.75	1.25	3	15.25	7.25	0
7X	3	X-GenXY	7X	8X	1	4	1	1	1	5/8	A394	14	3.5	2	Both	1.5	4.75	1.25	3	15.25	7.25	0
7XY	3	XY-GenXY	7XY	8XY	1	4	1	1	1	5/8	A394	14	3.5	2	Both	1.5	4.75	1.25	3	15.25	7.25	0
7Y	3	Y-GenXY	7Y	8Y	1	4	1	1	1	5/8	A394	14	3.5	2	Both	1.5	4.75	1.25	3	15.25	7.25	0
8P	4	XY-Symmetry	8P	9S	1	4	1	1	1	5/8	A394	0	3.5	1	Both	0	0	0	0	0	0	0
8X	4	X-GenXY	8X	9X	1	4	1	1	1	5/8	A394	0	3.5	1	Both	0	0	0	0	0	0	0
8XY	4	XY-GenXY	8XY	9XY	1	4	1	1	1	5/8	A394	0	3.5	1	Both	0	0	0	0	0	0	0

8Y	4	Y-GenXY	8Y	9Y	1	4	1	1	1	5/8	A394	0	3.5	1	Both	0	0	0	0	0	0	0
9P	4	XY-Symmetry	9S	10S	1	4	1	1	1	5/8	A394	0	3.5	1	Both	0	0	0	0	0	0	0
9X	4	X-GenXY	9X	10X	1	4	1	1	1	5/8	A394	0	3.5	1	Both	0	0	0	0	0	0	0
9XY	4	XY-GenXY	9XY	10XY	1	4	1	1	1	5/8	A394	0	3.5	1	Both	0	0	0	0	0	0	0
9Y	4	Y-GenXY	9Y	10Y	1	4	1	1	1	5/8	A394	0	3.5	1	Both	0	0	0	0	0	0	0
10P	4	XY-Symmetry	10S	11S	1	4	1	1	1	5/8	A394	16	3.5	2	Both	1.5	4.75	1.25	3	15.25	7.25	0
10X	4	X-GenXY	10X	11X	1	4	1	1	1	5/8	A394	16	3.5	2	Both	1.5	4.75	1.25	3	15.25	7.25	0
10XY	4	XY-GenXY	10XY	11XY	1	4	1	1	1	5/8	A394	16	3.5	2	Both	1.5	4.75	1.25	3	15.25	7.25	0
10Y	4	Y-GenXY	10Y	11Y	1	4	1	1	1	5/8	A394	16	3.5	2	Both	1.5	4.75	1.25	3	15.25	7.25	0
11P	5	XY-Symmetry	11S	12S	1	4	1	1	1	5/8	A394	0	4	1	Both	0	0	0	0	0	0	0
11X	5	X-GenXY	11X	12X	1	4	1	1	1	5/8	A394	0	4	1	Both	0	0	0	0	0	0	0
11XY	5	XY-GenXY	11XY	12XY	1	4	1	1	1	5/8	A394	0	4	1	Both	0	0	0	0	0	0	0
11Y	5	Y-GenXY	11Y	12Y	1	4	1	1	1	5/8	A394	0	4	1	Both	0	0	0	0	0	0	0
12P	5	XY-Symmetry	12S	13S	1	4	0.5	0.5	0.5	5/8	A394	20	4	2	Both	1.25	4.75	1.25	3.5	18.25	7.25	0
12X	5	X-GenXY	12X	13X	1	4	0.5	0.5	0.5	5/8	A394	20	4	2	Both	1.25	4.75	1.25	3.5	18.25	7.25	0
12XY	5	XY-GenXY	12XY	13XY	1	4	0.5	0.5	0.5	5/8	A394	20	4	2	Both	1.25	4.75	1.25	3.5	18.25	7.25	0
12Y	5	Y-GenXY	12Y	13Y	1	4	0.5	0.5	0.5	5/8	A394	20	4	2	Both	1.25	4.75	1.25	3.5	18.25	7.25	0
13P	5	XY-Symmetry	13S	14S	1	4	0.5	0.5	0.5	5/8	A394	20	4	2	Both	1.25	4.75	1.25	3.5	18.25	7.25	0
13X	5	X-GenXY	13X	14X	1	4	0.5	0.5	0.5	5/8	A394	20	4	2	Both	1.25	4.75	1.25	3.5	18.25	7.25	0
13XY	5	XY-GenXY	13XY	14XY	1	4	0.5	0.5	0.5	5/8	A394	20	4	2	Both	1.25	4.75	1.25	3.5	18.25	7.25	0
13Y	5	Y-GenXY	13Y	14Y	1	4	0.5	0.5	0.5	5/8	A394	20	4	2	Both	1.25	4.75	1.25	3.5	18.25	7.25	0
14P	5	XY-Symmetry	14S	15P	1	4	0.25	0.25	0.25	5/8	A394	20	4	2	Both	1.25	4.75	1.25	3.5	18.25	7.25	0
14X	5	X-GenXY	14X	15X	1	4	0.25	0.25	0.25	5/8	A394	20	4	2	Both	1.25	4.75	1.25	3.5	18.25	7.25	0
14XY	5	XY-GenXY	14XY	15XY	1	4	0.25	0.25	0.25	5/8	A394	20	4	2	Both	1.25	4.75	1.25	3.5	18.25	7.25	0
14Y	5	Y-GenXY	14Y	15Y	1	4	0.25	0.25	0.25	5/8	A394	20	4	2	Both	1.25	4.75	1.25	3.5	18.25	7.25	0
15AP	6R	XY-Symmetry	1P	3X	2	5	0.5	0.5	0.5	5/8	A325	2	1	1	Long only	0.875	0	1	2.25	0	0	0
15AX	6R	X-GenXY	1X	3P	2	5	0.5	0.5	0.5	5/8	A325	2	1	1	Long only	0.875	0	1	2.25	0	0	0
15AXY	6R	XY-GenXY	1XY	3Y	2	5	0.5	0.5	0.5	5/8	A325	2	1	1	Long only	0.875	0	1	2.25	0	0	0
15AY	6R	Y-GenXY	1Y	3XY	2	5	0.5	0.5	0.5	5/8	A325	2	1	1	Long only	0.875	0	1	2.25	0	0	0
15BP	6R	XY-Symmetry	3P	1Y	2	5	0.5	0.5	0.5	5/8	A325	2	1	1	Long only	0.875	0	1				

																			2.25	0	0	0
15BX	6R	X-GenXY	3X	1XY	2	5	0.5	0.5	0.5	5/8	A325	2	1	1	Long only	0.875	0	1	2.25	0	0	0
15BXY	6R	XY-GenXY	3XY	1X	2	5	0.5	0.5	0.5	5/8	A325	2	1	1	Long only	0.875	0	1	2.25	0	0	0
15BY	6R	Y-GenXY	3Y	1P	2	5	0.5	0.5	0.5	5/8	A325	2	1	1	Long only	0.875	0	1	2.25	0	0	0
16AP	7	XY-Symmetry	3P	4X	2	5	0.5	0.5	0.5	5/8	A394	2	1	1	Short only	0.875	0	1	3.25	0	0	0
16AX	7	X-GenXY	3X	4P	2	5	0.5	0.5	0.5	5/8	A394	2	1	1	Short only	0.875	0	1	3.25	0	0	0
16AXY	7	XY-GenXY	3XY	4Y	2	5	0.5	0.5	0.5	5/8	A394	2	1	1	Short only	0.875	0	1	3.25	0	0	0
16AY	7	Y-GenXY	3Y	4XY	2	5	0.5	0.5	0.5	5/8	A394	2	1	1	Short only	0.875	0	1	3.25	0	0	0
16BP	7	XY-Symmetry	4P	3Y	2	5	0.5	0.5	0.5	5/8	A394	2	1	1	Short only	0.875	0	1	3.125	0	0	0
16BX	7	X-GenXY	4X	3XY	2	5	0.5	0.5	0.5	5/8	A394	2	1	1	Short only	0.875	0	1	3.125	0	0	0
16BXY	7	XY-GenXY	4XY	3X	2	5	0.5	0.5	0.5	5/8	A394	2	1	1	Short only	0.875	0	1	3.125	0	0	0
16BY	7	Y-GenXY	4Y	3P	2	5	0.5	0.5	0.5	5/8	A394	2	1	1	Short only	0.875	0	1	3.125	0	0	0
17AP	8	XY-Symmetry	4P	5X	2	5	0.5	0.75	0.5	5/8	A394	5	1.74	1	Long only	1	2.75	1	2.25	3.625	2.375	0
17AX	8	X-GenXY	4X	5P	2	5	0.5	0.75	0.5	5/8	A394	5	1.74	1	Long only	1	2.75	1	2.25	3.625	2.375	0
17AXY	8	XY-GenXY	4XY	5Y	2	5	0.5	0.75	0.5	5/8	A394	5	1.74	1	Long only	1	2.75	1	2.25	3.625	2.375	0
17AY	8	Y-GenXY	4Y	5XY	2	5	0.5	0.75	0.5	5/8	A394	5	1.74	1	Long only	1	2.75	1	2.25	3.625	2.375	0
17BP	8	XY-Symmetry	5P	4Y	2	5	0.5	0.75	0.5	5/8	A394	5	1.74	1	Long only	1	2.75	1	2.25	3.625	2.375	0
17BX	8	X-GenXY	5X	4XY	2	5	0.5	0.75	0.5	5/8	A394	5	1.74	1	Long only	1	2.75	1	2.25	3.625	2.375	0
17BXY	8	XY-GenXY	5XY	4X	2	5	0.5	0.75	0.5	5/8	A394	5	1.74	1	Long only	1	2.75	1	2.25	3.625	2.375	0
17BY	8	Y-GenXY	5Y	4P	2	5	0.5	0.75	0.5	5/8	A394	5	1.74	1	Long only	1	2.75	1	2.25	3.625	2.375	0
18AP	9	XY-Symmetry	5P	6X	2	5	0.5	0.75	0.5	5/8	A394	4	1.03	1	Long only	0.75	2.25	1	4	4.875	1.875	0
18AX	9	X-GenXY	5X	6P	2	5	0.5	0.75	0.5	5/8	A394	4	1.03	1	Long only	0.75	2.25	1	4	4.875	1.875	0
18AXY	9	XY-GenXY	5XY	6Y	2	5	0.5	0.75	0.5	5/8	A394	4	1.03	1	Long only	0.75	2.25	1	4	4.875	1.875	0
18AY	9	Y-GenXY	5Y	6XY	2	5	0.5	0.75	0.5	5/8	A394	4	1.03	1	Long only	0.75	2.25	1	4	4.875	1.875	0
18BP	9	XY-Symmetry	6P	5Y	2	5	0.5	0.75	0.5	5/8	A394	4	1.03	1	Long only	0.75	2.25	1	4	4.875	1.875	0
18BX	9	X-GenXY	6X	5XY	2	5	0.5	0.75	0.5	5/8	A394	4	1.03	1	Long only	0.75	2.25	1	4	4.875	1.875	0
18BXY	9	XY-GenXY	6XY	5X	2	5	0.5	0.75	0.5	5/8	A394	4	1.03	1	Long only	0.75	2.25	1	4	4.875	1.875	0
18BY	9	Y-GenXY	6Y	5P	2	5	0.5	0.75	0.5	5/8	A394	4	1.03	1	Long only	0.75	2.25	1	4	4.875	1.875	0
19AP	10	XY-Symmetry	6P	7X	2	5	0.5	0.75	0.5	5/8	A394	7	1.79	1	Long only	1	2.75	1.0625	2	4.4375	2.375	0
19AX	10	X-GenXY	6X	7P	2	5	0.5	0.75	0.5	5/8	A394	7	1.79	1	Long only	1	2.75	1.0625	2	4.4375	2.375	0

19AXY	10	XY-GenXY	6XY	7Y	2	5	0.5	0.75	0.5	5/8	A394	7	1.79	1	Long only	1	2.75	1.0625	2	4.4375	2.375	0
19AY	10	Y-GenXY	6Y	7XY	2	5	0.5	0.75	0.5	5/8	A394	7	1.79	1	Long only	1	2.75	1.0625	2	4.4375	2.375	0
19BP	10	XY-Symmetry	7P	6Y	2	5	0.5	0.75	0.5	5/8	A394	7	1.79	1	Long only	1	2.75	1.0625	2	4.4375	2.375	0
19BX	10	X-GenXY	7X	6XY	2	5	0.5	0.75	0.5	5/8	A394	7	1.79	1	Long only	1	2.75	1.0625	2	4.4375	2.375	0
19BXY	10	XY-GenXY	7XY	6X	2	5	0.5	0.75	0.5	5/8	A394	7	1.79	1	Long only	1	2.75	1.0625	2	4.4375	2.375	0
19BY	10	Y-GenXY	7Y	6P	2	5	0.5	0.75	0.5	5/8	A394	7	1.79	1	Long only	1	2.75	1.0625	2	4.4375	2.375	0
20AP	10	XY-Symmetry	7P	8X	2	5	0.5	0.75	0.5	5/8	A394	7	1.79	1	Long only	1	2.75	1	1.75	4.4375	2.375	0
20AX	10	X-GenXY	7X	8P	2	5	0.5	0.75	0.5	5/8	A394	7	1.79	1	Long only	1	2.75	1	1.75	4.4375	2.375	0
20AXY	10	XY-GenXY	7XY	8Y	2	5	0.5	0.75	0.5	5/8	A394	7	1.79	1	Long only	1	2.75	1	1.75	4.4375	2.375	0
20AY	10	Y-GenXY	7Y	8XY	2	5	0.5	0.75	0.5	5/8	A394	7	1.79	1	Long only	1	2.75	1	1.75	4.4375	2.375	0
20BP	10	XY-Symmetry	8P	7Y	2	5	0.5	0.75	0.5	5/8	A394	7	1.79	1	Long only	1	2.75	1.0625	1.75	4.4375	2.375	0
20BX	10	X-GenXY	8X	7XY	2	5	0.5	0.75	0.5	5/8	A394	7	1.79	1	Long only	1	2.75	1.0625	1.75	4.4375	2.375	0
20BXY	10	XY-GenXY	8XY	7X	2	5	0.5	0.75	0.5	5/8	A394	7	1.79	1	Long only	1	2.75	1.0625	1.75	4.4375	2.375	0
20BY	10	Y-GenXY	8Y	7P	2	5	0.5	0.75	0.5	5/8	A394	7	1.79	1	Long only	1	2.75	1.0625	1.75	4.4375	2.375	0
21AP	11	XY-Symmetry	8P	9X	2	5	0.58	0.58	0.58	5/8	A394	6	1.55	1	Short only	1	2.25	1	3.5	4.125	1.125	0
21AX	11	X-GenXY	8X	9S	2	5	0.58	0.58	0.58	5/8	A394	6	1.55	1	Short only	1	2.25	1	3.5	4.125	1.125	0
21AXY	11	XY-GenXY	8XY	9Y	2	5	0.58	0.58	0.58	5/8	A394	6	1.55	1	Short only	1	2.25	1	3.5	4.125	1.125	0
21AY	11	Y-GenXY	8Y	9XY	2	5	0.58	0.58	0.58	5/8	A394	6	1.55	1	Short only	1	2.25	1	3.5	4.125	1.125	0
21BP	11	XY-Symmetry	9S	8Y	2	5	0.58	0.58	0.58	5/8	A394	6	1.55	1	Short only	1	2.25	1	3.5	4.125	1.125	0
21BX	11	X-GenXY	9X	8XY	2	5	0.58	0.58	0.58	5/8	A394	6	1.55	1	Short only	1	2.25	1	3.5	4.125	1.125	0
21BXY	11	XY-GenXY	9XY	8X	2	5	0.58	0.58	0.58	5/8	A394	6	1.55	1	Short only	1	2.25	1	3.5	4.125	1.125	0
21BY	11	Y-GenXY	9Y	8P	2	5	0.58	0.58	0.58	5/8	A394	6	1.55	1	Short only	1	2.25	1	3.5	4.125	1.125	0
22AP	12	XY-Symmetry	9S	10X	2	5	0.56	0.56	0.56	5/8	A394	4	1	1	Short only	1.5	0	1.0625	1.75	0	0	0
22AX	12	X-GenXY	9X	10S	2	5	0.56	0.56	0.56	5/8	A394	4	1	1	Short only	1.5	0	1.0625	1.75	0	0	0
22AXY	12	XY-GenXY	9XY	10Y	2	5	0.56	0.56	0.56	5/8	A394	4	1	1	Short only	1.5	0	1.0625	1.75	0	0	0
22AY	12	Y-GenXY	9Y	10XY	2	5	0.56	0.56	0.56	5/8	A394	4	1	1	Short only	1.5	0	1.0625	1.75	0	0	0
22BP	12	XY-Symmetry	10S	9Y	2	5	0.56	0.56	0.56	5/8	A394	4	1	1	Short only	1.5	0	1.0625	1.75	0	0	0
22BX	12	X-GenXY	10X	9XY	2	5	0.56	0.56	0.56	5/8	A394	4	1	1	Short only	1.5	0	1.0625	1.75	0	0	0
22BXY	12	XY-GenXY	10XY	9X	2	5	0.56	0.56	0.56	5/8	A394	4	1	1	Short only	1.5	0	1.0625	1.75	0	0	0
22BY	12	Y-GenXY	10Y	9S	2	5	0.56	0.56	0.56	5/8	A394	4	1	1	Short only	1.5	0	1.0625				

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1.75     0      0     0
     23AP     13         XY-Symmetry      10S        11X    2      5  0.55  0.55  0.55 5/8 A394    3      1       1 Short only    1.5      0 1.0625
2.75     0      0     0
     23AX     13            X-GenXY       10X        11S    2      5  0.55  0.55  0.55 5/8 A394    3      1       1 Short only    1.5      0 1.0625
2.75     0      0     0
    23AXY     13           XY-GenXY     10XY         11Y    2      5  0.55  0.55  0.55 5/8 A394    3      1       1 Short only    1.5      0 1.0625
2.75     0      0     0
     23AY     13            Y-GenXY       10Y       11XY    2      5  0.55  0.55  0.55 5/8 A394    3      1       1 Short only    1.5      0 1.0625
2.75     0      0     0
     23BP     13         XY-Symmetry      11S        10Y    2      5  0.55  0.55  0.55 5/8 A394    3      1       1 Short only    1.5      0 1.0625
2.75     0      0     0
     23BX     13            X-GenXY       11X       10XY    2      5  0.55  0.55  0.55 5/8 A394    3      1       1 Short only    1.5      0 1.0625
2.75     0      0     0
    23BXY     13           XY-GenXY     11XY         10X    2      5  0.55  0.55  0.55 5/8 A394    3      1       1 Short only    1.5      0 1.0625
2.75     0      0     0
     23BY     13            Y-GenXY       11Y        10S    2      5  0.55  0.55  0.55 5/8 A394    3      1       1 Short only    1.5      0 1.0625
2.75     0      0     0
     24AP     14         XY-Symmetry      11S        12X    2      5  0.55  0.55  0.55 5/8 A394    3      1       1 Short only    1.5      0      1
2.25     0      0     0
     24AX     14            X-GenXY       11X        12S    2      5  0.55  0.55  0.55 5/8 A394    3      1       1 Short only    1.5      0      1
2.25     0      0     0
    24AXY     14           XY-GenXY     11XY         12Y    2      5  0.55  0.55  0.55 5/8 A394    3      1       1 Short only    1.5      0      1
2.25     0      0     0
     24AY     14            Y-GenXY       11Y       12XY    2      5  0.55  0.55  0.55 5/8 A394    3      1       1 Short only    1.5      0      1
2.25     0      0     0
     24BP     14         XY-Symmetry      12S        11Y    2      5  0.55  0.55  0.55 5/8 A394    3      1       1 Short only    1.5      0      1
2.25     0      0     0
     24BX     14            X-GenXY       12X       11XY    2      5  0.55  0.55  0.55 5/8 A394    3      1       1 Short only    1.5      0      1
2.25     0      0     0
    24BXY     14           XY-GenXY     12XY         11X    2      5  0.55  0.55  0.55 5/8 A394    3      1       1 Short only    1.5      0      1
2.25     0      0     0
     24BY     14            Y-GenXY       12Y        11S    2      5  0.55  0.55  0.55 5/8 A394    3      1       1 Short only    1.5      0      1
2.25     0      0     0
     25AP     15         XY-Symmetry      12S       20AP    3      5     1   0.5   0.5 5/8 A394    7   1.71       1 Short only   0.75      2 1.0625
2  7.375  0.875     0
     25AX     15            X-GenXY       12X       20AP    3      5     1   0.5   0.5 5/8 A394    7   1.71       1 Short only   0.75      2 1.0625
2  7.375  0.875     0
    25AXY     15           XY-GenXY     12XY        20AY    3      5     1   0.5   0.5 5/8 A394    7   1.71       1 Short only   0.75      2 1.0625
2  7.375  0.875     0
     25AY     15            Y-GenXY       12Y       20AY    3      5     1   0.5   0.5 5/8 A394    7   1.71       1 Short only   0.75      2 1.0625
2  7.375  0.875     0
     25BP     15         XY-Symmetry     20BP        12S    3      5     1   0.5   0.5 5/8 A394    7   1.71       1 Short only   0.75      2 1.0625
2  7.375  0.875     0
     25BX     15            X-GenXY      20BX        12X    3      5     1   0.5   0.5 5/8 A394    7   1.71       1 Short only   0.75      2 1.0625
2  7.375  0.875     0
    25BXY     15           XY-GenXY      20BX       12XY    3      5     1   0.5   0.5 5/8 A394    7   1.71       1 Short only   0.75      2 1.0625
2  7.375  0.875     0
     25BY     15            Y-GenXY      20BP        12Y    3      5     1   0.5   0.5 5/8 A394    7   1.71       1 Short only   0.75      2 1.0625
2  7.375  0.875     0
     26AP     16         XY-Symmetry      21P        13S    2      5   0.5   0.5   0.5 5/8 A394    2      1       1  Long only      1      0      1
4     0      0     0
     26AX     16            X-GenXY       21X        13X    2      5   0.5   0.5   0.5 5/8 A394    2      1       1  Long only      1      0      1
4     0      0     0
    26AXY     16           XY-GenXY     21XY        13XY    2      5   0.5   0.5   0.5 5/8 A394    2      1       1  Long only      1      0      1
4     0      0     0
     26AY     16            Y-GenXY       21Y        13Y    2      5   0.5   0.5   0.5 5/8 A394    2      1       1  Long only      1      0      1
4     0      0     0
     26BP     16         XY-Symmetry      22P        13S    2      5   0.5   0.5   0.5 5/8 A394    2      1       1  Long only      1      0      1
4     0      0     0
```

26BX	16	X-GenXY	22X	13X	2	5	0.5	0.5	0.5	5/8 A394	2	1	1	Long only	1	0	1	4	0	0	0
26BXY	16	XY-GenXY	22XY	13XY	2	5	0.5	0.5	0.5	5/8 A394	2	1	1	Long only	1	0	1	4	0	0	0
26BY	16	Y-GenXY	22Y	13Y	2	5	0.5	0.5	0.5	5/8 A394	2	1	1	Long only	1	0	1	4	0	0	0
27AP	17	XY-Symmetry	20AP	14S	3	5	1	0.5	0.5	5/8 A394	4	1	1	Short only	0.875	0	1	2.25	0	0	0
27AX	17	X-GenXY	20AP	14X	3	5	1	0.5	0.5	5/8 A394	4	1	1	Short only	0.875	0	1	2.25	0	0	0
27AXY	17	XY-GenXY	20AY	14XY	3	5	1	0.5	0.5	5/8 A394	4	1	1	Short only	0.875	0	1	2.25	0	0	0
27AY	17	Y-GenXY	20AY	14Y	3	5	1	0.5	0.5	5/8 A394	4	1	1	Short only	0.875	0	1	2.25	0	0	0
27BP	17	XY-Symmetry	14S	20BP	3	5	1	0.5	0.5	5/8 A394	4	1	1	Short only	0.875	0	1	2.25	0	0	0
27BX	17	X-GenXY	14X	20BX	3	5	1	0.5	0.5	5/8 A394	4	1	1	Short only	0.875	0	1	2.25	0	0	0
27BXY	17	XY-GenXY	14XY	20BX	3	5	1	0.5	0.5	5/8 A394	4	1	1	Short only	0.875	0	1	2.25	0	0	0
27BY	17	Y-GenXY	14Y	20BP	3	5	1	0.5	0.5	5/8 A394	4	1	1	Short only	0.875	0	1	2.25	0	0	0
28AP	18	XY-Symmetry	21X	20AP	3	4	0.5	1	0.5	5/8 A394	5	1.26	1	Long only	2.875	1.375	1	3.5	5.125	1.75	0
28AX	18	X-GenXY	21P	20AP	3	4	0.5	1	0.5	5/8 A394	5	1.26	1	Long only	2.875	1.375	1	3.5	5.125	1.75	0
28AXY	18	XY-GenXY	21Y	20AY	3	4	0.5	1	0.5	5/8 A394	5	1.26	1	Long only	2.875	1.375	1	3.5	5.125	1.75	0
28AY	18	Y-GenXY	21XY	20AY	3	4	0.5	1	0.5	5/8 A394	5	1.26	1	Long only	2.875	1.375	1	3.5	5.125	1.75	0
28BP	18	XY-Symmetry	20BP	22P	3	4	0.5	1	0.5	5/8 A394	5	1.26	1	Long only	2.875	1.375	1	3.5	5.125	1.75	0
28BX	18	X-GenXY	20BX	22X	3	4	0.5	1	0.5	5/8 A394	5	1.26	1	Long only	2.875	1.375	1	3.5	5.125	1.75	0
28BXY	18	XY-GenXY	20BX	22XY	3	4	0.5	1	0.5	5/8 A394	5	1.26	1	Long only	2.875	1.375	1	3.5	5.125	1.75	0
28BY	18	Y-GenXY	20BP	22Y	3	4	0.5	1	0.5	5/8 A394	5	1.26	1	Long only	2.875	1.375	1	3.5	5.125	1.75	0
29AP	19	XY-Symmetry	21P	15P	2	5	0.25	0.25	0.25	5/8 A394	5	1	1	Long only	1.5	0	1.0625	1.75	0	0	0
29AX	19	X-GenXY	21X	15X	2	5	0.25	0.25	0.25	5/8 A394	5	1	1	Long only	1.5	0	1.0625	1.75	0	0	0
29AXY	19	XY-GenXY	21XY	15XY	2	5	0.25	0.25	0.25	5/8 A394	5	1	1	Long only	1.5	0	1.0625	1.75	0	0	0
29AY	19	Y-GenXY	21Y	15Y	2	5	0.25	0.25	0.25	5/8 A394	5	1	1	Long only	1.5	0	1.0625	1.75	0	0	0
29BP	19	XY-Symmetry	15P	22P	2	5	0.25	0.25	0.25	5/8 A394	5	1	1	Long only	1.5	0	1.0625	1.75	0	0	0
29BX	19	X-GenXY	15X	22X	2	5	0.25	0.25	0.25	5/8 A394	5	1	1	Long only	1.5	0	1.0625	1.75	0	0	0
29BXY	19	XY-GenXY	15XY	22XY	2	5	0.25	0.25	0.25	5/8 A394	5	1	1	Long only	1.5	0	1.0625	1.75	0	0	0
29BY	19	Y-GenXY	15Y	22Y	2	5	0.25	0.25	0.25	5/8 A394	5	1	1	Long only	1.5	0	1.0625	1.75	0	0	0
30AP	20a	Y-Symmetry	2X	2P	3	4	0.5	0.5	0.5	5/8 A394	1	1	1	Long only	0.75	0	1	0	0	0	0
30AY	20a	Y-Gen	2XY	2Y	3	4	0.5	0.5	0.5	5/8 A394	1	1	1	Long only	0.75	0	1	0	0	0	0
30BP	20a	X-Symmetry	2P	2Y	3	4	0.5	0.5	0.5	5/8 A394	1	1	1	Long only	0.75	0	1				

```
0      0      0     0
     30BX    20a                X-Gen        2X        2XY    3     4   0.5   0.5   0.5 5/8 A394    1      1      1  Long only   0.75    0      1
0      0      0     0
     31P     20            Y-Symmetry        3X         3P    3     4     1     1     1 5/8 A394    1      1      1  Long only   0.75    0      1
0      0      0     0
     31Y     20                 Y-Gen       3XY         3Y    3     4     1     1     1 5/8 A394    1      1      1  Long only   0.75    0      1
0      0      0     0
     32P     20            X-Symmetry        4P         4Y    3     4     1     1     1 5/8 A394    1      1      1  Long only   0.75    0 1.0625
0      0      0     0
     32X     20                 X-Gen        4X        4XY    3     4     1     1     1 5/8 A394    1      1      1  Long only   0.75    0 1.0625
0      0      0     0
     33P     20            Y-Symmetry        5X         5P    3     4     1     1     1 5/8 A394    1      1      1  Long only   0.75    0      1
0      0      0     0
     33Y     20                 Y-Gen       5XY         5Y    3     4     1     1     1 5/8 A394    1      1      1  Long only   0.75    0      1
0      0      0     0
     34P     20            X-Symmetry        6P         6Y    3     4     1     1     1 5/8 A394    1      1      1  Long only   0.75    0 1.0625
0      0      0     0
     34X     20                 X-Gen        6X        6XY    3     4     1     1     1 5/8 A394    1      1      1  Long only   0.75    0 1.0625
0      0      0     0
     35P     20            Y-Symmetry        7X         7P    3     4     1     1     1 5/8 A394    1      1      1  Long only   0.75    0      1
0      0      0     0
     35Y     20                 Y-Gen       7XY         7Y    3     4     1     1     1 5/8 A394    1      1      1  Long only   0.75    0      1
0      0      0     0
     36P     36            X-Symmetry        8P         8Y    3     4     1     1     1 5/8 A325    1      2      1  Long only   0.75    0 1.0625
0      0      0     0
     36X     36                 X-Gen        8X        8XY    3     4     1     1     1 5/8 A325    1      2      1  Long only   0.75    0 1.0625
0      0      0     0
     37AP    21            Y-Symmetry       12X        12S    3     6     1   0.5   0.5 5/8 A394    3      1      1 Short only   1.75    0      1
2      0      0     0
     37AY    21                 Y-Gen      12XY        12Y    3     6     1   0.5   0.5 5/8 A394    3      1      1 Short only   1.75    0      1
2      0      0     0
     37BP    21            X-Symmetry       12S        12Y    3     6     1   0.5   0.5 5/8 A394    3      1      1 Short only   1.75    0      1
2      0      0     0
     37BX    21                 X-Gen       12X       12XY    3     6     1   0.5   0.5 5/8 A394    3      1      1 Short only   1.75    0      1
2      0      0     0
     38AP    22           XY-Symmetry       13X       20AP    3     6     1     1     1 5/8 A394    2      1      1  Long only    1.5    0      1
3.25      0       0     0
     38AX    22              X-GenXY        13S       20AP    3     6     1     1     1 5/8 A394    2      1      1  Long only    1.5    0      1
3.25      0       0     0
    38AXY    22             XY-GenXY        13Y       20AY    3     6     1     1     1 5/8 A394    2      1      1  Long only    1.5    0      1
3.25      0       0     0
     38AY    22              Y-GenXY       13XY       20AY    3     6     1     1     1 5/8 A394    2      1      1  Long only    1.5    0      1
3.25      0       0     0
     38BP    22           XY-Symmetry       13S       20BP    3     6     1     1     1 5/8 A394    2      1      1  Long only    1.5    0      1
3.25      0       0     0
     38BX    22              X-GenXY        13X       20BX    3     6     1     1     1 5/8 A394    2      1      1  Long only    1.5    0      1
3.25      0       0     0
    38BXY    22             XY-GenXY       13XY       20BX    3     6     1     1     1 5/8 A394    2      1      1  Long only    1.5    0      1
3.25      0       0     0
     38BY    22              Y-GenXY        13Y       20BP    3     6     1     1     1 5/8 A394    2      1      1  Long only    1.5    0      1
3.25      0       0     0
     39AP    23           XY-Symmetry       14X        21X    3     5     1     1     1 5/8 A394    2      1      1 Short only    1.5    0      1
3.25      0       0     0
     39AX    23              X-GenXY        14S        21P    3     5     1     1     1 5/8 A394    2      1      1 Short only    1.5    0      1
3.25      0       0     0
    39AXY    23             XY-GenXY        14Y        21Y    3     5     1     1     1 5/8 A394    2      1      1 Short only    1.5    0      1
3.25      0       0     0
     39AY    23              Y-GenXY       14XY       21XY    3     5     1     1     1 5/8 A394    2      1      1 Short only    1.5    0      1
3.25      0       0     0
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     39BP     23         XY-Symmetry       14S         22P    3     5     1     1     1 5/8 A394     2      1       1 Short only    1.5      0       1
3.25     0       0     0
     39BX     23            X-GenXY       14X         22X    3     5     1     1     1 5/8 A394     2      1       1 Short only    1.5      0       1
3.25     0       0     0
    39BXY     23           XY-GenXY      14XY        22XY    3     5     1     1     1 5/8 A394     2      1       1 Short only    1.5      0       1
3.25     0       0     0
     39BY     23            Y-GenXY       14Y         22Y    3     5     1     1     1 5/8 A394     2      1       1 Short only    1.5      0       1
3.25     0       0     0
    39C1P     23          Y-Symmetry       21X  21XF0.50S    3     4     1     2     1 5/8 A394     2      1       1 Short only    1.5      0       1
3.25     0       0     0
    39C1Y     23               Y-Gen      21XY  21XF0.50Y    3     4     1     2     1 5/8 A394     2      1       1 Short only    1.5      0       1
3.25     0       0     0
  F39C197P    23          Y-Symmetry 21XF0.50S         21P    3     4     1     2     1 5/8 A394     2      1       1 Short only    1.5      0       1
3.25     0       0     0
  F39C197Y    23               Y-Gen 21XF0.50Y         21Y    3     4     1     2     1 5/8 A394     2      1       1 Short only    1.5      0       1
3.25     0       0     0
    39C2P     23          X-Symmetry       22P  22PF0.50S    3     4     1     2     1 5/8 A394     2      1       1 Short only    1.5      0       1
3.25     0       0     0
    39C2X     23               X-Gen       22X  22PF0.50X    3     4     1     2     1 5/8 A394     2      1       1 Short only    1.5      0       1
3.25     0       0     0
 F39C2118P    23          X-Symmetry 22PF0.50S         22Y    3     4     1     2     1 5/8 A394     2      1       1 Short only    1.5      0       1
3.25     0       0     0
 F39C2118X    23               X-Gen 22PF0.50X        22XY    3     4     1     2     1 5/8 A394     2      1       1 Short only    1.5      0       1
3.25     0       0     0
      40P     24         XY-Symmetry      20AP        20BP    3     6     1     1     1 5/8 A394     2      1       1  Long only    1.5 2.375 1.0625
2.125      2    1.25     0
      40X     24            X-GenXY      20AP        20BX    3     6     1     1     1 5/8 A394     2      1       1  Long only    1.5 2.375 1.0625
2.125      2    1.25     0
     40XY     24           XY-GenXY      20AY        20BX    3     6     1     1     1 5/8 A394     2      1       1  Long only    1.5 2.375 1.0625
2.125      2    1.25     0
      40Y     24            Y-GenXY      20AY        20BP    3     6     1     1     1 5/8 A394     2      1       1  Long only    1.5 2.375 1.0625
2.125      2    1.25     0
      41P     24         XY-Symmetry       21P         22P    3     6     1     1     1 5/8 A394     2      1       1  Long only      2      0 1.0625
2.5      0       0     0
      41X     24            X-GenXY       21X         22X    3     6     1     1     1 5/8 A394     2      1       1  Long only      2      0 1.0625
2.5      0       0     0
     41XY     24           XY-GenXY      21XY        22XY    3     6     1     1     1 5/8 A394     2      1       1  Long only      2      0 1.0625
2.5      0       0     0
      41Y     24            Y-GenXY       21Y         22Y    3     6     1     1     1 5/8 A394     2      1       1  Long only      2      0 1.0625
2.5      0       0     0
      42P AngleR         XY-Symmetry        1X i0.50E129S    2     4     1     1     1 5/8 A394     1      1       1  Long only   0.75      0       1
0      0       0     0
      42X AngleR            X-GenXY        1P i0.50E129S    2     4     1     1     1 5/8 A394     1      1       1  Long only   0.75      0       1
0      0       0     0
     42XY AngleR           XY-GenXY        1Y i0.50E129S    2     4     1     1     1 5/8 A394     1      1       1  Long only   0.75      0       1
0      0       0     0
      42Y AngleR            Y-GenXY       1XY i0.50E129S    2     4     1     1     1 5/8 A394     1      1       1  Long only   0.75      0       1
0      0       0     0
     43AP     26         XY-Symmetry        4X i0.50E113S    2     5     1     1     1 5/8 A394     2      1       1  Long only  0.875      0       1
1.5      0       0     0
     43AX     26            X-GenXY        4P i0.50E113S    2     5     1     1     1 5/8 A394     2      1       1  Long only  0.875      0       1
1.5      0       0     0
    43AXY     26           XY-GenXY        4Y i0.50E113S    2     5     1     1     1 5/8 A394     2      1       1  Long only  0.875      0       1
1.5      0       0     0
     43AY     26            Y-GenXY       4XY i0.50E113S    2     5     1     1     1 5/8 A394     2      1       1  Long only  0.875      0       1
1.5      0       0     0
     43BP     26         XY-Symmetry        6X  i0.50E99S    2     5     1     1     1 5/8 A394     2      1       1  Long only  0.875      0       1
1.5      0       0     0
     43BX     26            X-GenXY        6P  i0.50E99S    2     5     1     1     1 5/8 A394     2      1       1  Long only  0.875      0       1
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1.5      0        0      0
     43BXY     26              XY-GenXY        6Y  i0.50E99S    2     5     1     1     1 5/8 A394    2      1       1  Long only  0.875    0     1
1.5      0        0      0
      43BY     26               Y-GenXY       6XY  i0.50E99S    2     5     1     1     1 5/8 A394    2      1       1  Long only  0.875    0     1
1.5      0        0      0
      43CP     26           XY-Symmetry        8X  i0.50E85S    2     5     1     1     1 5/8 A394    2      1       1  Long only  0.875    0     1
1.5      0        0      0
      43CX     26               X-GenXY        8P  i0.50E85S    2     5     1     1     1 5/8 A394    2      1       1  Long only  0.875    0     1
1.5      0        0      0
     43CXY     26              XY-GenXY        8Y  i0.50E85S    2     5     1     1     1 5/8 A394    2      1       1  Long only  0.875    0     1
1.5      0        0      0
      43CY     26               Y-GenXY       8XY  i0.50E85S    2     5     1     1     1 5/8 A394    2      1       1  Long only  0.875    0     1
1.5      0        0      0
       44P     27            Y-Symmetry        8X        28Y    2     5  0.75   0.5   0.5 5/8 A394    2      1       1 Short only  0.875    0     1
4      0        0      0
       44Y     27                 Y-Gen       8XY        28P    2     5  0.75   0.5   0.5 5/8 A394    2      1       1 Short only  0.875    0     1
4      0        0      0
      44AP     27            Y-Symmetry       28P        19Y    2     5  0.75   0.5   0.5 5/8 A394    2      1       1 Short only  0.875    0     1
4      0        0      0
      44AY     27                 Y-Gen       28Y        19P    2     5  0.75   0.5   0.5 5/8 A394    2      1       1 Short only  0.875    0     1
4      0        0      0
      44BP     27            Y-Symmetry        6X        27Y    2     5  0.75   0.5   0.5 5/8 A394    2      1       1 Short only  0.875    0     1
4      0        0      0
      44BY     27                 Y-Gen       6XY        27P    2     5  0.75   0.5   0.5 5/8 A394    2      1       1 Short only  0.875    0     1
4      0        0      0
      44CP     27            Y-Symmetry       27P        18Y    2     5  0.75   0.5   0.5 5/8 A394    2      1       1 Short only  0.875    0     1
4      0        0      0
      44CY     27                 Y-Gen       27Y        18P    2     5  0.75   0.5   0.5 5/8 A394    2      1       1 Short only  0.875    0     1
4      0        0      0
      44DP     27            Y-Symmetry        4X        26Y    2     5  0.75   0.5   0.5 5/8 A394    2      1       1 Short only  0.875    0     1
4      0        0      0
      44DY     27                 Y-Gen       4XY        26P    2     5  0.75   0.5   0.5 5/8 A394    2      1       1 Short only  0.875    0     1
4      0        0      0
      44EP     27            Y-Symmetry       26P        17Y    2     5  0.75   0.5   0.5 5/8 A394    2      1       1 Short only  0.875    0     1
4      0        0      0
      44EY     27                 Y-Gen       26Y        17P    2     5  0.75   0.5   0.5 5/8 A394    2      1       1 Short only  0.875    0     1
4      0        0      0
       45P     28                  None       17P        17Y    3     5     1     1     1 5/8 A394    2      1       1 Short only    1.5    0     1
4      0        0      0
      45AP     28                  None       18P        18Y    3     5     1     1     1 5/8 A394    2      1       1 Short only    1.5    0     1
4      0        0      0
      45BP     28                  None       19P        19Y    3     5     1     1     1 5/8 A394    2      1       1 Short only    1.5    0     1
4      0        0      0
       46P     29           XY-Symmetry       16P         2P    2     5     1   0.5   0.5 5/8 A394    2      1       1 Short only  0.875    0 1.0625
1.5      0        0      0
       46X     29               X-GenXY       16X         2X    2     5     1   0.5   0.5 5/8 A394    2      1       1 Short only  0.875    0 1.0625
1.5      0        0      0
      46XY     29              XY-GenXY       16X        2XY    2     5     1   0.5   0.5 5/8 A394    2      1       1 Short only  0.875    0 1.0625
1.5      0        0      0
       46Y     29               Y-GenXY       16P         2Y    2     5     1   0.5   0.5 5/8 A394    2      1       1 Short only  0.875    0 1.0625
1.5      0        0      0
       47P     30            Y-Symmetry        3X        17P    3     4     1   0.5   0.5 5/8 A394    2      1       1 Short only  0.875    0     1
1.5625     0        0      0
       47Y     30                 Y-Gen       3XY        17Y    3     4     1   0.5   0.5 5/8 A394    2      1       1 Short only  0.875    0     1
1.5625     0        0      0
      47AP     30            Y-Symmetry       23P         3P    3     4     1   0.5   0.5 5/8 A394    2      1       1 Short only  0.875    0 1.0625
1.75     0        0      0
      47AY     30                 Y-Gen       23P         3Y    3     4     1   0.5   0.5 5/8 A394    2      1       1 Short only  0.875    0 1.0625
1.75     0        0      0
```

48P	31	Y-Symmetry	5X	18P	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short only	0.875	0	1	2.75	0	0	0
48Y	31	Y-Gen	5XY	18Y	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short only	0.875	0	1	2.75	0	0	0
48AP	31	Y-Symmetry	24P	5P	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short only	0.875	0	1	1.75	0	0	0
48AY	31	Y-Gen	24P	5Y	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short only	0.875	0	1	1.75	0	0	0
49P	30	Y-Symmetry	7X	19P	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short only	0.875	0	1.0625	1.5625	0	0	0
49Y	30	Y-Gen	7XY	19Y	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short only	0.875	0	1.0625	1.5625	0	0	0
49AP	30	Y-Symmetry	25P	7P	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short only	0.875	0	1	1.75	0	0	0
49AY	30	Y-Gen	25P	7Y	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short only	0.875	0	1	1.75	0	0	0
50P	32	XY-Symmetry	16P	1P	3	5	0.5	0.5	0.5	5/8	A394	2	1.59	1	Long only	0.75	1.875	2.25	1.125	2.125	0.875	0
50X	32	X-GenXY	16X	1X	3	5	0.5	0.5	0.5	5/8	A394	2	1.59	1	Long only	0.75	1.875	2.25	1.125	2.125	0.875	0
50XY	32	XY-GenXY	16X	1XY	3	5	0.5	0.5	0.5	5/8	A394	2	1.59	1	Long only	0.75	1.875	2.25	1.125	2.125	0.875	0
50Y	32	Y-GenXY	16P	1Y	3	5	0.5	0.5	0.5	5/8	A394	2	1.59	1	Long only	0.75	1.875	2.25	1.125	2.125	0.875	0
50AP	32	Y-Symmetry	1X	1P	3	6	1	1	1	5/8	A394	2	1.3	1	Long only	1.1875	2	2	1.25	2.125	0.875	0
50AY	32	Y-Gen	1XY	1Y	3	6	1	1	1	5/8	A394	2	1.3	1	Long only	1.1875	2	2	1.25	2.125	0.875	0
51P	33	Y-Symmetry	23P	4P	3	5	0.5	0.5	0.5	5/8	A394	4	2.24	1	Short only	0.75	1.75	1	2.25	6.25	0.375	0
51Y	33	Y-Gen	23P	4Y	3	5	0.5	0.5	0.5	5/8	A394	4	2.24	1	Short only	0.75	1.75	1	2.25	6.25	0.375	0
51AP	33	Y-Symmetry	4X	4P	3	6	1	1	1	5/8	A394	4	1.54	1	Short only	0.75	1.75	1	2.25	6.25	0.375	0
51AY	33	Y-Gen	4XY	4Y	3	6	1	1	1	5/8	A394	4	1.54	1	Short only	0.75	1.75	1	2.25	6.25	0.375	0
51BP	33	Y-Symmetry	4X	26P	3	5	1	1	1	5/8	A394	3	2.1	1	Short only	0.75	1.5	1	3	4.375	1.125	0
51BY	33	Y-Gen	4XY	26Y	3	5	1	1	1	5/8	A394	3	2.1	1	Short only	0.75	1.5	1	3	4.375	1.125	0
51CP	33	Y-Symmetry	26P	17P	3	5	1	1	1	5/8	A394	3	2.1	1	Long only	0.75	1.5	1	3.625	3.875	1.125	0
51CY	33	Y-Gen	26Y	17Y	3	5	1	1	1	5/8	A394	3	2.1	1	Long only	0.75	1.5	1	3.625	3.875	1.125	0
52P	34	Y-Symmetry	24P	6P	3	5	0.5	0.5	0.5	5/8	A394	5	2.71	1	Long only	1	2.625	1	2.25	4.125	1.375	0
52Y	34	Y-Gen	24P	6Y	3	5	0.5	0.5	0.5	5/8	A394	5	2.71	1	Long only	1	2.625	1	2.25	4.125	1.375	0
52AP	34	Y-Symmetry	6X	6P	3	6	1	1	1	5/8	A394	5	1.82	1	Long only	0.5	2.5	1	2	4.125	1.375	0
52AY	34	Y-Gen	6XY	6Y	3	6	1	1	1	5/8	A394	5	1.82	1	Long only	0.5	2.5	1	2	4.125	1.375	0
52BP	34	Y-Symmetry	6X	27P	3	5	1	1	1	5/8	A394	5	2	1	Long only	1	2.5	1.5	5	8.625	1.375	0
52BY	34	Y-Gen	6XY	27Y	3	5	1	1	1	5/8	A394	5	2	1	Long only	1	2.5	1.5	5	8.625	1.375	0
52CP	34	Y-Symmetry	27P	18P	3	5	1	1	1	5/8	A394	6	2.66	1	Long only	0.75	2.75	1	2.25	6.875	1.625	0
52CY	34	Y-Gen	27Y	18Y	3	5	1	1	1	5/8	A394	6	2.66	1	Long only	0.75	2.75	1				

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2.25  6.875   1.625     0
       53P     33            Y-Symmetry       25P          8P    3     5   0.5   0.5   0.5 5/8 A394     4   2.24       1 Short only   0.75   1.5       1
3  4.375   0.625     0
       53Y     33                 Y-Gen       25P          8Y    3     5   0.5   0.5   0.5 5/8 A394     4   2.24       1 Short only   0.75   1.5       1
3  4.375   0.625     0
      53AP     33            Y-Symmetry        8X          8P    3     6     1     1     1 5/8 A394     4      1       1 Short only   0.75   1.5       1
3  4.375   0.625     0
      53AY     33                 Y-Gen       8XY          8Y    3     6     1     1     1 5/8 A394     4      1       1 Short only   0.75   1.5       1
3  4.375   0.625     0
      53BP     33            Y-Symmetry        8X         28P    3     5     1     1     1 5/8 A394     3      2       1 Short only   0.75   1.5 2.6875
4  4.625   0.625     0
      53BY     33                 Y-Gen       8XY         28Y    3     5     1     1     1 5/8 A394     3      2       1 Short only   0.75   1.5 2.6875
4  4.625   0.625     0
      53CP     33            Y-Symmetry       28P         19P    3     5     1     1     1 5/8 A394     4   2.21       1  Long only   0.75  2.25       1
3.5  5.875   1.125     0
      53CY     33                 Y-Gen       28Y         19Y    3     5     1     1     1 5/8 A394     4   2.21       1  Long only   0.75  2.25       1
3.5  5.875   1.125     0
       54P     35            X-Symmetry        1P          1Y    3     4     1     1     1 5/8 A394     1      1       1  Long only    1.5     0 1.0625
0      0       0     0
       54X     35                 X-Gen        1X         1XY    3     4     1     1     1 5/8 A394     1      1       1  Long only    1.5     0 1.0625
0      0       0     0
      g99P  Pwmnt                  None       29P         30P    1     4     1     1     1              0      0       0                  0     0       0
0      0       0     0
     g100P  Pwmnt                  None       30P         31P    1     4     1     1     1              0      0       0                  0     0       0
0      0       0     0
     g101P  Pwmnt                  None       31P         32P    1     4     1     1     1              0      0       0                  0     0       0
0      0       0     0
     g102P  Pwmnt                  None       32P         33P    1     4     1     1     1              0      0       0                  0     0       0
0      0       0     0
     g103P  Pwmnt                  None       33P         34P    1     4     1     1     1              0      0       0                  0     0       0
0      0       0     0
     g104P  Pwmnt                  None       34P         35P    1     4     1     1     1              0      0       0                  0     0       0
0      0       0     0
     g105P  Pwmnt                  None       35P         36P    1     4     1     1     1              0      0       0                  0     0       0
0      0       0     0
     g106P  Plate                  None       35P i0.50E129S    3     4     1     1     1 5/8 A325     1      1       1  Long only      3     0    1.25
0      0       0     0
     g107P  PMBR1                  None       34P i0.50E113S    3     4     1     1     1 5/8 A325     1      1       1  Long only      0     0       0
0      0       0     0
     g108P  PMBR1                  None       33P  i0.50E99S    3     4     1     1     1 5/8 A325     1      1       1  Long only      0     0       0
0      0       0     0
     g109P  PMBR1                  None       32P  i0.50E85S    3     4     1     1     1 5/8 A325     1      1       1  Long only      0     0       0
0      0       0     0
     g110P BraceR            X-Symmetry        1X         35P    3     4     1     1     1 5/8 A325     1      1       1  Long only      0     0       0
0      0       0     0
     g110X BraceR                 X-Gen        1P         35P    3     4     1     1     1 5/8 A325     1      1       1  Long only      0     0       0
0      0       0     0
     g111P  PMBR2            X-Symmetry        4X         34P    3     4     1     1     1 5/8 A325     1      1       1  Long only      0     0       0
0      0       0     0
     g111X  PMBR2                 X-Gen        4P         34P    3     4     1     1     1 5/8 A325     1      1       1  Long only      0     0       0
0      0       0     0
     g112P  PMBR2            X-Symmetry        6X         33P    3     4     1     1     1 5/8 A325     1      1       1  Long only      0     0       0
0      0       0     0
     g112X  PMBR2                 X-Gen        6P         33P    3     4     1     1     1 5/8 A325     1      1       1  Long only      0     0       0
0      0       0     0
     g113P  PMBR2            X-Symmetry        8X         32P    3     4     1     1     1 5/8 A325     1      1       1  Long only      0     0       0
0      0       0     0
     g113X  PMBR2                 X-Gen        8P         32P    3     4     1     1     1 5/8 A325     1      1       1  Long only      0     0       0
0      0       0     0
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g114P	PMBR3	None	20AP	31P	3	4	1	1	1	5/8 A325	1	1	1	Long only	0	0	0	0	0	0	0
g115P	PMBR4	None	31P	20AY	3	4	1	1	1	5/8 A325	1	1	1	Long only	0	0	0	0	0	0	0
g116P	PMBR4	X-Symmetry	20BX	31P	3	4	1	1	1	5/8 A325	1	1	1	Long only	0	0	0	0	0	0	0
g116X	PMBR4	X-Gen	20BP	31P	3	4	1	1	1	5/8 A325	1	1	1	Long only	0	0	0	0	0	0	0
g117P	PMBR4	None	21XF0.50S	30P	3	4	1	1	1	5/8 A325	1	1	1	Long only	0	0	0	0	0	0	0
g118P	PMBR5	None	30P	21XF0.50Y	3	4	1	1	1	5/8 A325	1	1	1	Long only	0	0	0	0	0	0	0
g120P	PMBR5	X-Symmetry	22XY	30P	3	4	1	1	1	5/8 A325	1	1	1	Long only	0	0	0	0	0	0	0
g120X	PMBR5	X-Gen	22Y	30P	3	4	1	1	1	5/8 A325	1	1	1	Long only	0	0	0	0	0	0	0
g121P	Pwmnt	None	36P	37P	1	4	1	1	1		0	0	0		0	0	0	0	0	0	0

Member Capacities and Overrides:

Member Label	Group Label	Design Comp. Capacity (kips)	Comp. Control Criterion	Design Tension Capacity (kips)	Tension Control Criterion	L/r	Length (ft)	L/r Comp. Capacity (kips)	Connection Shear Capacity (kips)	Connection Bearing Capacity (kips)	Net Section Tension Capacity (kips)	Rupture Tension Capacity (kips)	RTE End Dist. Tension Capacity (kips)	RTE Edge Dist. Tension Capacity (kips)	Override Comp. Capacity (kips)	Override Comp. Capacity Unsup. (kips)	Override Comp. Tension Capacity (kips)	Override Tension Face Control Member ship	Warnings or Errors
1P	1	49.257	L/r	47.340	Net Sect	78	4.50	49.257	0.000	0.000	47.340	0.000	0.000	0.000	0.000	0.000	0.000	Automatic	
1X	1	49.257	L/r	47.340	Net Sect	78	4.50	49.257	0.000	0.000	47.340	0.000	0.000	0.000	0.000	0.000	0.000	Automatic	
1XY	1	49.257	L/r	47.340	Net Sect	78	4.50	49.257	0.000	0.000	47.340	0.000	0.000	0.000	0.000	0.000	0.000	Automatic	
1Y	1	49.257	L/r	47.340	Net Sect	78	4.50	49.257	0.000	0.000	47.340	0.000	0.000	0.000	0.000	0.000	0.000	Automatic	
2P	1	49.257	L/r	47.340	Net Sect	78	4.50	49.257	0.000	0.000	47.340	0.000	0.000	0.000	0.000	0.000	0.000	Automatic	
2X	1	49.257	L/r	47.340	Net Sect	78	4.50	49.257	0.000	0.000	47.340	0.000	0.000	0.000	0.000	0.000	0.000	Automatic	
2XY	1	49.257	L/r	47.340	Net Sect	78	4.50	49.257	0.000	0.000	47.340	0.000	0.000	0.000	0.000	0.000	0.000	Automatic	
2Y	1	49.257	L/r	47.340	Net Sect	78	4.50	49.257	0.000	0.000	47.340	0.000	0.000	0.000	0.000	0.000	0.000	Automatic	
3P	1	36.400	Shear	36.400	Shear	61	7.00	53.833	36.400	54.375	47.340	60.417	0.000	0.000	0.000	0.000	0.000	Automatic	
3X	1	36.400	Shear	36.400	Shear	61	7.00	53.833	36.400	54.375	47.340	60.417	0.000	0.000	0.000	0.000	0.000	Automatic	
3XY	1	36.400	Shear	36.400	Shear	61	7.00	53.833	36.400	54.375	47.340	60.417	0.000	0.000	0.000	0.000	0.000	Automatic	
3Y	1	36.400	Shear	36.400	Shear	61	7.00	53.833	36.400	54.375	47.340	60.417	0.000	0.000	0.000	0.000	0.000	Automatic	
4P	2	91.206	L/r	97.650	Net Sect	80	8.00	91.206	0.000	0.000	97.650	0.000	0.000	0.000	0.000	0.000	0.000	Automatic	

4X	2	91.206	L/r	97.650	Net Sect	80	8.00	91.206	0.000	0.000	97.650	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
4XY	2	91.206	L/r	97.650	Net Sect	80	8.00	91.206	0.000	0.000	97.650	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
4Y	2	91.206	L/r	97.650	Net Sect	80	8.00	91.206	0.000	0.000	97.650	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
5P	2	99.083	L/r	97.650	Net Sect	60	6.05	99.083	109.200	203.906	97.650	183.656	0.000	0.000	0.000	0.000	0.000	Automatic
5X	2	99.083	L/r	97.650	Net Sect	60	6.05	99.083	109.200	203.906	97.650	183.656	0.000	0.000	0.000	0.000	0.000	Automatic
5XY	2	99.083	L/r	97.650	Net Sect	60	6.05	99.083	109.200	203.906	97.650	183.656	0.000	0.000	0.000	0.000	0.000	Automatic
5Y	2	99.083	L/r	97.650	Net Sect	60	6.05	99.083	109.200	203.906	97.650	183.656	0.000	0.000	0.000	0.000	0.000	Automatic
6P	3	249.636	L/r	231.750	Net Sect	53	7.00	249.636	0.000	0.000	231.750	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
6X	3	249.636	L/r	231.750	Net Sect	53	7.00	249.636	0.000	0.000	231.750	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
6XY	3	249.636	L/r	231.750	Net Sect	53	7.00	249.636	0.000	0.000	231.750	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
6Y	3	249.636	L/r	231.750	Net Sect	53	7.00	249.636	0.000	0.000	231.750	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
7P	3	249.636	L/r	231.750	Net Sect	53	7.00	249.636	254.800	380.624	231.750	395.849	0.000	0.000	0.000	0.000	0.000	Automatic
7X	3	249.636	L/r	231.750	Net Sect	53	7.00	249.636	254.800	380.624	231.750	395.849	0.000	0.000	0.000	0.000	0.000	Automatic
7XY	3	249.636	L/r	231.750	Net Sect	53	7.00	249.636	254.800	380.624	231.750	395.849	0.000	0.000	0.000	0.000	0.000	Automatic
7Y	3	249.636	L/r	231.750	Net Sect	53	7.00	249.636	254.800	380.624	231.750	395.849	0.000	0.000	0.000	0.000	0.000	Automatic
8P	4	306.646	L/r	286.897	Net Sect	60	7.92	306.646	0.000	0.000	286.897	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
8X	4	306.646	L/r	286.897	Net Sect	60	7.92	306.646	0.000	0.000	286.897	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
8XY	4	306.646	L/r	286.897	Net Sect	60	7.92	306.646	0.000	0.000	286.897	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
8Y	4	306.646	L/r	286.897	Net Sect	60	7.92	306.646	0.000	0.000	286.897	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
9P	4	306.646	L/r	286.897	Net Sect	60	7.92	306.646	0.000	0.000	286.897	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
9X	4	306.646	L/r	286.897	Net Sect	60	7.92	306.646	0.000	0.000	286.897	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
9XY	4	306.646	L/r	286.897	Net Sect	60	7.92	306.646	0.000	0.000	286.897	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
9Y	4	306.646	L/r	286.897	Net Sect	60	7.92	306.646	0.000	0.000	286.897	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
10P	4	291.200	Shear	286.897	Net Sect	60	7.92	306.646	291.200	543.749	286.897	494.812	0.000	0.000	0.000	0.000	0.000	Automatic
10X	4	291.200	Shear	286.897	Net Sect	60	7.92	306.646	291.200	543.749	286.897	494.812	0.000	0.000	0.000	0.000	0.000	Automatic
10XY	4	291.200	Shear	286.897	Net Sect	60	7.92	306.646	291.200	543.749	286.897	494.812	0.000	0.000	0.000	0.000	0.000	Automatic
10Y	4	291.200	Shear	286.897	Net Sect	60	7.92	306.646	291.200	543.749	286.897	494.812	0.000	0.000	0.000	0.000	0.000	Automatic
11P	5	335.162	L/r	330.839	Net Sect	77	10.13	335.162	0.000	0.000	330.839	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
11X	5	335.162	L/r	330.839	Net Sect	77	10.13	335.162	0.000	0.000	330.839	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
11XY	5	335.162	L/r	330.839	Net Sect	77	10.13	335.162	0.000	0.000	330.839	0.000	0.000	0.000	0.000			

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0.000           0.000          Automatic
      11Y     5 335.162      L/r 330.839  Net Sect   77  10.13  335.162      0.000      0.000  330.839    0.000    0.000    0.000    0.000
0.000           0.000          Automatic
      12P     5 364.000    Shear 330.839  Net Sect   45  11.83  385.718    364.000    815.624  330.839  672.074    0.000    0.000    0.000
0.000           0.000          Automatic
      12X     5 364.000    Shear 330.839  Net Sect   45  11.83  385.718    364.000    815.624  330.839  672.074    0.000    0.000    0.000
0.000           0.000          Automatic
     12XY     5 364.000    Shear 330.839  Net Sect   45  11.83  385.718    364.000    815.624  330.839  672.074    0.000    0.000    0.000
0.000           0.000          Automatic
      12Y     5 364.000    Shear 330.839  Net Sect   45  11.83  385.718    364.000    815.624  330.839  672.074    0.000    0.000    0.000
0.000           0.000          Automatic
      13P     5 364.000    Shear 330.839  Net Sect   58  15.32  368.010    364.000    815.624  330.839  672.074    0.000    0.000    0.000
0.000           0.000          Automatic
      13X     5 364.000    Shear 330.839  Net Sect   58  15.32  368.010    364.000    815.624  330.839  672.074    0.000    0.000    0.000
0.000           0.000          Automatic
     13XY     5 364.000    Shear 330.839  Net Sect   58  15.32  368.010    364.000    815.624  330.839  672.074    0.000    0.000    0.000
0.000           0.000          Automatic
      13Y     5 364.000    Shear 330.839  Net Sect   58  15.32  368.010    364.000    815.624  330.839  672.074    0.000    0.000    0.000
0.000           0.000          Automatic
      14P     5 364.000    Shear 330.839  Net Sect   48  25.53  381.402    364.000    815.624  330.839  672.074    0.000    0.000    0.000
0.000           0.000          Automatic
      14X     5 364.000    Shear 330.839  Net Sect   48  25.53  381.402    364.000    815.624  330.839  672.074    0.000    0.000    0.000
0.000           0.000          Automatic
     14XY     5 364.000    Shear 330.839  Net Sect   48  25.53  381.402    364.000    815.624  330.839  672.074    0.000    0.000    0.000
0.000           0.000          Automatic
      14Y     5 364.000    Shear 330.839  Net Sect   48  25.53  381.402    364.000    815.624  330.839  672.074    0.000    0.000    0.000
0.000           0.000          Automatic
     15AP    6R  20.366      L/r  24.084   Rupture  132  10.82   20.366     33.600     27.187   32.987   24.084    0.000    0.000    0.000
0.000           0.000          Automatic
     15AX    6R  20.366      L/r  24.084   Rupture  132  10.82   20.366     33.600     27.187   32.987   24.084    0.000    0.000    0.000
0.000           0.000          Automatic
    15AXY    6R  20.366      L/r  24.084   Rupture  132  10.82   20.366     33.600     27.187   32.987   24.084    0.000    0.000    0.000
0.000           0.000          Automatic
     15AY    6R  20.366      L/r  24.084   Rupture  132  10.82   20.366     33.600     27.187   32.987   24.084    0.000    0.000    0.000
0.000           0.000          Automatic
     15BP    6R  20.366      L/r  24.084   Rupture  132  10.82   20.366     33.600     27.187   32.987   24.084    0.000    0.000    0.000
0.000           0.000          Automatic
     15BX    6R  20.366      L/r  24.084   Rupture  132  10.82   20.366     33.600     27.187   32.987   24.084    0.000    0.000    0.000
0.000           0.000          Automatic
    15BXY    6R  20.366      L/r  24.084   Rupture  132  10.82   20.366     33.600     27.187   32.987   24.084    0.000    0.000    0.000
0.000           0.000          Automatic
     15BY    6R  20.366      L/r  24.084   Rupture  132  10.82   20.366     33.600     27.187   32.987   24.084    0.000    0.000    0.000
0.000           0.000          Automatic
     16AP     7  14.303      L/r  18.125   Rupture  130   9.22   14.303     18.200     20.391   18.650   18.125    0.000    0.000    0.000
0.000           0.000          Automatic
     16AX     7  14.303      L/r  18.125   Rupture  130   9.22   14.303     18.200     20.391   18.650   18.125    0.000    0.000    0.000
0.000           0.000          Automatic
    16AXY     7  14.303      L/r  18.125   Rupture  130   9.22   14.303     18.200     20.391   18.650   18.125    0.000    0.000    0.000
0.000           0.000          Automatic
     16AY     7  14.303      L/r  18.125   Rupture  130   9.22   14.303     18.200     20.391   18.650   18.125    0.000    0.000    0.000
0.000           0.000          Automatic
     16BP     7  14.303      L/r  18.125   Rupture  130   9.22   14.303     18.200     20.391   18.650   18.125    0.000    0.000    0.000
0.000           0.000          Automatic
     16BX     7  14.303      L/r  18.125   Rupture  130   9.22   14.303     18.200     20.391   18.650   18.125    0.000    0.000    0.000
0.000           0.000          Automatic
    16BXY     7  14.303      L/r  18.125   Rupture  130   9.22   14.303     18.200     20.391   18.650   18.125    0.000    0.000    0.000
0.000           0.000          Automatic
     16BY     7  14.303      L/r  18.125   Rupture  130   9.22   14.303     18.200     20.391   18.650   18.125    0.000    0.000    0.000
0.000           0.000          Automatic
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17AP	8	39.613	0.000	L/r	44.185	Automatic	Net Sect	100	10.00	39.613	45.500	67.969	44.185	52.912	0.000	0.000	0.000	0.000
17AX	8	39.613	0.000	L/r	44.185	Automatic	Net Sect	100	10.00	39.613	45.500	67.969	44.185	52.912	0.000	0.000	0.000	0.000
17AXY	8	39.613	0.000	L/r	44.185	Automatic	Net Sect	100	10.00	39.613	45.500	67.969	44.185	52.912	0.000	0.000	0.000	0.000
17AY	8	39.613	0.000	L/r	44.185	Automatic	Net Sect	100	10.00	39.613	45.500	67.969	44.185	52.912	0.000	0.000	0.000	0.000
17BP	8	39.613	0.000	L/r	44.185	Automatic	Net Sect	100	10.00	39.613	45.500	67.969	44.185	52.912	0.000	0.000	0.000	0.000
17BX	8	39.613	0.000	L/r	44.185	Automatic	Net Sect	100	10.00	39.613	45.500	67.969	44.185	52.912	0.000	0.000	0.000	0.000
17BXY	8	39.613	0.000	L/r	44.185	Automatic	Net Sect	100	10.00	39.613	45.500	67.969	44.185	52.912	0.000	0.000	0.000	0.000
17BY	8	39.613	0.000	L/r	44.185	Automatic	Net Sect	100	10.00	39.613	45.500	67.969	44.185	52.912	0.000	0.000	0.000	0.000
18AP	9	32.738	0.000	L/r	36.400	Automatic	Shear	104	8.52	32.738	36.400	54.375	40.399	42.647	0.000	0.000	0.000	0.000
18AX	9	32.738	0.000	L/r	36.400	Automatic	Shear	104	8.52	32.738	36.400	54.375	40.399	42.647	0.000	0.000	0.000	0.000
18AXY	9	32.738	0.000	L/r	36.400	Automatic	Shear	104	8.52	32.738	36.400	54.375	40.399	42.647	0.000	0.000	0.000	0.000
18AY	9	32.738	0.000	L/r	36.400	Automatic	Shear	104	8.52	32.738	36.400	54.375	40.399	42.647	0.000	0.000	0.000	0.000
18BP	9	32.738	0.000	L/r	36.400	Automatic	Shear	104	8.52	32.738	36.400	54.375	40.399	42.647	0.000	0.000	0.000	0.000
18BX	9	32.738	0.000	L/r	36.400	Automatic	Shear	104	8.52	32.738	36.400	54.375	40.399	42.647	0.000	0.000	0.000	0.000
18BXY	9	32.738	0.000	L/r	36.400	Automatic	Shear	104	8.52	32.738	36.400	54.375	40.399	42.647	0.000	0.000	0.000	0.000
18BY	9	32.738	0.000	L/r	36.400	Automatic	Shear	104	8.52	32.738	36.400	54.375	40.399	42.647	0.000	0.000	0.000	0.000
19AP	10	61.204	0.000	L/r	59.307	Automatic	Net Sect	78	9.22	61.204	63.700	118.945	59.307	74.976	0.000	0.000	0.000	0.000
19AX	10	61.204	0.000	L/r	59.307	Automatic	Net Sect	78	9.22	61.204	63.700	118.945	59.307	74.976	0.000	0.000	0.000	0.000
19AXY	10	61.204	0.000	L/r	59.307	Automatic	Net Sect	78	9.22	61.204	63.700	118.945	59.307	74.976	0.000	0.000	0.000	0.000
19AY	10	61.204	0.000	L/r	59.307	Automatic	Net Sect	78	9.22	61.204	63.700	118.945	59.307	74.976	0.000	0.000	0.000	0.000
19BP	10	61.204	0.000	L/r	59.307	Automatic	Net Sect	78	9.22	61.204	63.700	118.945	59.307	74.976	0.000	0.000	0.000	0.000
19BX	10	61.204	0.000	L/r	59.307	Automatic	Net Sect	78	9.22	61.204	63.700	118.945	59.307	74.976	0.000	0.000	0.000	0.000
19BXY	10	61.204	0.000	L/r	59.307	Automatic	Net Sect	78	9.22	61.204	63.700	118.945	59.307	74.976	0.000	0.000	0.000	0.000
19BY	10	61.204	0.000	L/r	59.307	Automatic	Net Sect	78	9.22	61.204	63.700	118.945	59.307	74.976	0.000	0.000	0.000	0.000
20AP	10	61.204	0.000	L/r	59.307	Automatic	Net Sect	78	9.22	61.204	63.700	118.945	59.307	74.976	0.000	0.000	0.000	0.000
20AX	10	61.204	0.000	L/r	59.307	Automatic	Net Sect	78	9.22	61.204	63.700	118.945	59.307	74.976	0.000	0.000	0.000	0.000
20AXY	10	61.204	0.000	L/r	59.307	Automatic	Net Sect	78	9.22	61.204	63.700	118.945	59.307	74.976	0.000	0.000	0.000	0.000
20AY	10	61.204	0.000	L/r	59.307	Automatic	Net Sect	78	9.22	61.204	63.700	118.945	59.307	74.976	0.000	0.000	0.000	0.000
20BP	10	61.204	0.000	L/r	59.307	Automatic	Net Sect	78	9.22	61.204	63.700	118.945	59.307	74.976	0.000	0.000	0.000	0.000
20BX	10	61.204		L/r	59.307		Net Sect	78	9.22	61.204	63.700	118.945	59.307	74.976	0.000	0.000	0.000	

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0.000            0.000         Automatic
    20BXY    10  61.204       L/r  59.307  Net Sect   78   9.22   61.204     63.700    118.945   59.307   74.976    0.000    0.000    0.000
0.000            0.000         Automatic
    20BY     10  61.204       L/r  59.307  Net Sect   78   9.22   61.204     63.700    118.945   59.307   74.976    0.000    0.000    0.000
0.000            0.000         Automatic
     21AP    11  44.335       L/r  45.178  Net Sect   96  10.60   44.335     54.600     81.562   45.178   46.012    0.000    0.000    0.000
0.000            0.000         Automatic
     21AX    11  44.335       L/r  45.178  Net Sect   96  10.60   44.335     54.600     81.562   45.178   46.012    0.000    0.000    0.000
0.000            0.000         Automatic
    21AXY    11  44.335       L/r  45.178  Net Sect   96  10.60   44.335     54.600     81.562   45.178   46.012    0.000    0.000    0.000
0.000            0.000         Automatic
     21AY    11  44.335       L/r  45.178  Net Sect   96  10.60   44.335     54.600     81.562   45.178   46.012    0.000    0.000    0.000
0.000            0.000         Automatic
     21BP    11  44.335       L/r  45.178  Net Sect   96  10.60   44.335     54.600     81.562   45.178   46.012    0.000    0.000    0.000
0.000            0.000         Automatic
     21BX    11  44.335       L/r  45.178  Net Sect   96  10.60   44.335     54.600     81.562   45.178   46.012    0.000    0.000    0.000
0.000            0.000         Automatic
    21BXY    11  44.335       L/r  45.178  Net Sect   96  10.60   44.335     54.600     81.562   45.178   46.012    0.000    0.000    0.000
0.000            0.000         Automatic
     21BY    11  44.335       L/r  45.178  Net Sect   96  10.60   44.335     54.600     81.562   45.178   46.012    0.000    0.000    0.000
0.000            0.000         Automatic
     22AP    12  30.985       L/r  36.400     Shear  126  12.25   30.985     36.400     54.375   40.581   42.206    0.000    0.000    0.000
0.000            0.000         Automatic
     22AX    12  30.985       L/r  36.400     Shear  126  12.25   30.985     36.400     54.375   40.581   42.206    0.000    0.000    0.000
0.000            0.000         Automatic
    22AXY    12  30.985       L/r  36.400     Shear  126  12.25   30.985     36.400     54.375   40.581   42.206    0.000    0.000    0.000
0.000            0.000         Automatic
     22AY    12  30.985       L/r  36.400     Shear  126  12.25   30.985     36.400     54.375   40.581   42.206    0.000    0.000    0.000
0.000            0.000         Automatic
     22BP    12  30.985       L/r  36.400     Shear  126  12.25   30.985     36.400     54.375   40.581   42.206    0.000    0.000    0.000
0.000            0.000         Automatic
     22BX    12  30.985       L/r  36.400     Shear  126  12.25   30.985     36.400     54.375   40.581   42.206    0.000    0.000    0.000
0.000            0.000         Automatic
    22BXY    12  30.985       L/r  36.400     Shear  126  12.25   30.985     36.400     54.375   40.581   42.206    0.000    0.000    0.000
0.000            0.000         Automatic
     22BY    12  30.985       L/r  36.400     Shear  126  12.25   30.985     36.400     54.375   40.581   42.206    0.000    0.000    0.000
0.000            0.000         Automatic
     23AP    13  22.542       L/r  27.300     Shear  147  14.07   22.542     27.300     40.781   40.419   38.516    0.000    0.000    0.000
0.000            0.000         Automatic
     23AX    13  22.542       L/r  27.300     Shear  147  14.07   22.542     27.300     40.781   40.419   38.516    0.000    0.000    0.000
0.000            0.000         Automatic
    23AXY    13  22.542       L/r  27.300     Shear  147  14.07   22.542     27.300     40.781   40.419   38.516    0.000    0.000    0.000
0.000            0.000         Automatic
     23AY    13  22.542       L/r  27.300     Shear  147  14.07   22.542     27.300     40.781   40.419   38.516    0.000    0.000    0.000
0.000            0.000         Automatic
     23BP    13  22.542       L/r  27.300     Shear  147  14.07   22.542     27.300     40.781   40.419   38.516    0.000    0.000    0.000
0.000            0.000         Automatic
     23BX    13  22.542       L/r  27.300     Shear  147  14.07   22.542     27.300     40.781   40.419   38.516    0.000    0.000    0.000
0.000            0.000         Automatic
    23BXY    13  22.542       L/r  27.300     Shear  147  14.07   22.542     27.300     40.781   40.419   38.516    0.000    0.000    0.000
0.000            0.000         Automatic
     23BY    13  22.542       L/r  27.300     Shear  147  14.07   22.542     27.300     40.781   40.419   38.516    0.000    0.000    0.000
0.000            0.000         Automatic
     24AP    14  21.431       L/r  27.300     Shear  174  17.45   21.431     27.300     40.781   40.581   36.250    0.000    0.000    0.000
0.000            0.000         Automatic
     24AX    14  21.431       L/r  27.300     Shear  174  17.45   21.431     27.300     40.781   40.581   36.250    0.000    0.000    0.000
0.000            0.000         Automatic
    24AXY    14  21.431       L/r  27.300     Shear  174  17.45   21.431     27.300     40.781   40.581   36.250    0.000    0.000    0.000
0.000            0.000         Automatic
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24AY	14	21.431	L/r	27.300	Shear	174	17.45	21.431	27.300	40.781	40.581	36.250	0.000	0.000	0.000
0.000		0.000	Automatic												
24BP	14	21.431	L/r	27.300	Shear	174	17.45	21.431	27.300	40.781	40.581	36.250	0.000	0.000	0.000
0.000		0.000	Automatic												
24BX	14	21.431	L/r	27.300	Shear	174	17.45	21.431	27.300	40.781	40.581	36.250	0.000	0.000	0.000
0.000		0.000	Automatic												
24BXY	14	21.431	L/r	27.300	Shear	174	17.45	21.431	27.300	40.781	40.581	36.250	0.000	0.000	0.000
0.000		0.000	Automatic												
24BY	14	21.431	L/r	27.300	Shear	174	17.45	21.431	27.300	40.781	40.581	36.250	0.000	0.000	0.000
0.000		0.000	Automatic												
25AP	15	33.799	L/r	36.268	Net Sect	128	14.10	33.799	63.700	95.156	36.268	72.037	0.000	0.000	0.000
0.000		0.000	Automatic												
25AX	15	33.799	L/r	36.268	Net Sect	128	14.10	33.799	63.700	95.156	36.268	72.037	0.000	0.000	0.000
0.000		0.000	Automatic												
25AXY	15	33.799	L/r	36.268	Net Sect	128	14.10	33.799	63.700	95.156	36.268	72.037	0.000	0.000	0.000
0.000		0.000	Automatic												
25AY	15	33.799	L/r	36.268	Net Sect	128	14.10	33.799	63.700	95.156	36.268	72.037	0.000	0.000	0.000
0.000		0.000	Automatic												
25BP	15	33.799	L/r	36.268	Net Sect	128	14.10	33.799	63.700	95.156	36.268	72.037	0.000	0.000	0.000
0.000		0.000	Automatic												
25BX	15	33.799	L/r	36.268	Net Sect	128	14.10	33.799	63.700	95.156	36.268	72.037	0.000	0.000	0.000
0.000		0.000	Automatic												
25BXY	15	33.799	L/r	36.268	Net Sect	128	14.10	33.799	63.700	95.156	36.268	72.037	0.000	0.000	0.000
0.000		0.000	Automatic												
25BY	15	33.799	L/r	36.268	Net Sect	128	14.10	33.799	63.700	95.156	36.268	72.037	0.000	0.000	0.000
0.000		0.000	Automatic												
26AP	16	4.044	L/r	18.125	Rupture	257	16.85	4.044	18.200	20.391	18.448	18.125	0.000	0.000	0.000
0.000		0.000	Automatic												
26AX	16	4.044	L/r	18.125	Rupture	257	16.85	4.044	18.200	20.391	18.448	18.125	0.000	0.000	0.000
0.000		0.000	Automatic												
26AXY	16	4.044	L/r	18.125	Rupture	257	16.85	4.044	18.200	20.391	18.448	18.125	0.000	0.000	0.000
0.000		0.000	Automatic												
26AY	16	4.044	L/r	18.125	Rupture	257	16.85	4.044	18.200	20.391	18.448	18.125	0.000	0.000	0.000
0.000		0.000	Automatic												
26BP	16	4.044	L/r	18.125	Rupture	257	16.85	4.044	18.200	20.391	18.448	18.125	0.000	0.000	0.000
0.000		0.000	Automatic												
26BX	16	4.044	L/r	18.125	Rupture	257	16.85	4.044	18.200	20.391	18.448	18.125	0.000	0.000	0.000
0.000		0.000	Automatic												
26BXY	16	4.044	L/r	18.125	Rupture	257	16.85	4.044	18.200	20.391	18.448	18.125	0.000	0.000	0.000
0.000		0.000	Automatic												
26BY	16	4.044	L/r	18.125	Rupture	257	16.85	4.044	18.200	20.391	18.448	18.125	0.000	0.000	0.000
0.000		0.000	Automatic												
27AP	17	6.420	L/r	24.381	Net Sect	265	19.19	6.420	36.400	54.375	24.381	48.333	0.000	0.000	0.000
0.000		0.000	Automatic												
27AX	17	6.420	L/r	24.381	Net Sect	265	19.19	6.420	36.400	54.375	24.381	48.333	0.000	0.000	0.000
0.000		0.000	Automatic												
27AXY	17	6.420	L/r	24.381	Net Sect	265	19.19	6.420	36.400	54.375	24.381	48.333	0.000	0.000	0.000
0.000		0.000	Automatic												
27AY	17	6.420	L/r	24.381	Net Sect	265	19.19	6.420	36.400	54.375	24.381	48.333	0.000	0.000	0.000
0.000		0.000	Automatic												
27BP	17	6.420	L/r	24.381	Net Sect	265	19.19	6.420	36.400	54.375	24.381	48.333	0.000	0.000	0.000
0.000		0.000	Automatic												
27BX	17	6.420	L/r	24.381	Net Sect	265	19.19	6.420	36.400	54.375	24.381	48.333	0.000	0.000	0.000
0.000		0.000	Automatic												
27BXY	17	6.420	L/r	24.381	Net Sect	265	19.19	6.420	36.400	54.375	24.381	48.333	0.000	0.000	0.000
0.000		0.000	Automatic												
27BY	17	6.420	L/r	24.381	Net Sect	265	19.19	6.420	36.400	54.375	24.381	48.333	0.000	0.000	0.000
0.000		0.000	Automatic												
28AP	18	11.489	L/r	45.500	Shear	205	15.32	11.489	45.500	67.969	47.101	60.337	0.000	0.000	0.000

																0.000	0.000	Automatic
28AX	18	11.489	L/r	45.500	Shear	205	15.32	11.489	45.500	67.969	47.101	60.337	0.000	0.000	0.000	0.000	0.000	Automatic
28AXY	18	11.489	L/r	45.500	Shear	205	15.32	11.489	45.500	67.969	47.101	60.337	0.000	0.000	0.000	0.000	0.000	Automatic
28AY	18	11.489	L/r	45.500	Shear	205	15.32	11.489	45.500	67.969	47.101	60.337	0.000	0.000	0.000	0.000	0.000	Automatic
28BP	18	11.489	L/r	45.500	Shear	205	15.32	11.489	45.500	67.969	47.101	60.337	0.000	0.000	0.000	0.000	0.000	Automatic
28BX	18	11.489	L/r	45.500	Shear	205	15.32	11.489	45.500	67.969	47.101	60.337	0.000	0.000	0.000	0.000	0.000	Automatic
28BXY	18	11.489	L/r	45.500	Shear	205	15.32	11.489	45.500	67.969	47.101	60.337	0.000	0.000	0.000	0.000	0.000	Automatic
28BY	18	11.489	L/r	45.500	Shear	205	15.32	11.489	45.500	67.969	47.101	60.337	0.000	0.000	0.000	0.000	0.000	Automatic
29AP	19	25.652	L/r	44.469	Net Sect	136	28.52	25.652	45.500	67.969	44.469	50.906	0.000	0.000	0.000	0.000	0.000	Automatic
29AX	19	25.652	L/r	44.469	Net Sect	136	28.52	25.652	45.500	67.969	44.469	50.906	0.000	0.000	0.000	0.000	0.000	Automatic
29AXY	19	25.652	L/r	44.469	Net Sect	136	28.52	25.652	45.500	67.969	44.469	50.906	0.000	0.000	0.000	0.000	0.000	Automatic
29AY	19	25.652	L/r	44.469	Net Sect	136	28.52	25.652	45.500	67.969	44.469	50.906	0.000	0.000	0.000	0.000	0.000	Automatic
29BP	19	25.652	L/r	44.469	Net Sect	136	28.52	25.652	45.500	67.969	44.469	50.906	0.000	0.000	0.000	0.000	0.000	Automatic
29BX	19	25.652	L/r	44.469	Net Sect	136	28.52	25.652	45.500	67.969	44.469	50.906	0.000	0.000	0.000	0.000	0.000	Automatic
29BXY	19	25.652	L/r	44.469	Net Sect	136	28.52	25.652	45.500	67.969	44.469	50.906	0.000	0.000	0.000	0.000	0.000	Automatic
29BY	19	25.652	L/r	44.469	Net Sect	136	28.52	25.652	45.500	67.969	44.469	50.906	0.000	0.000	0.000	0.000	0.000	Automatic
30AP	20a	9.100	Shear	6.609	Rupture	105	6.00	13.441	9.100	10.195	15.532	6.609	0.000	0.000	0.000	0.000	0.000	Automatic
30AY	20a	9.100	Shear	6.609	Rupture	105	6.00	13.441	9.100	10.195	15.532	6.609	0.000	0.000	0.000	0.000	0.000	Automatic
30BP	20a	9.100	Shear	6.609	Rupture	105	6.00	13.441	9.100	10.195	15.532	6.609	0.000	0.000	0.000	0.000	0.000	Automatic
30BX	20a	9.100	Shear	6.609	Rupture	105	6.00	13.441	9.100	10.195	15.532	6.609	0.000	0.000	0.000	0.000	0.000	Automatic
31P	20	4.027	L/r	6.609	Rupture	210	6.00	4.027	9.100	10.195	15.532	6.609	0.000	0.000	0.000	0.000	0.000	Automatic
31Y	20	4.027	L/r	6.609	Rupture	210	6.00	4.027	9.100	10.195	15.532	6.609	0.000	0.000	0.000	0.000	0.000	Automatic
32P	20	4.027	L/r	7.017	Rupture	210	6.00	4.027	9.100	10.195	15.532	7.017	0.000	0.000	0.000	0.000	0.000	Automatic
32X	20	4.027	L/r	7.017	Rupture	210	6.00	4.027	9.100	10.195	15.532	7.017	0.000	0.000	0.000	0.000	0.000	Automatic
33P	20	4.027	L/r	6.609	Rupture	210	6.00	4.027	9.100	10.195	15.532	6.609	0.000	0.000	0.000	0.000	0.000	Automatic
33Y	20	4.027	L/r	6.609	Rupture	210	6.00	4.027	9.100	10.195	15.532	6.609	0.000	0.000	0.000	0.000	0.000	Automatic
34P	20	4.027	L/r	7.017	Rupture	210	6.00	4.027	9.100	10.195	15.532	7.017	0.000	0.000	0.000	0.000	0.000	Automatic
34X	20	4.027	L/r	7.017	Rupture	210	6.00	4.027	9.100	10.195	15.532	7.017	0.000	0.000	0.000	0.000	0.000	Automatic
35P	20	4.027	L/r	6.609	Rupture	210	6.00	4.027	9.100	10.195	15.532	6.609	0.000	0.000	0.000	0.000	0.000	Automatic
35Y	20	4.027	L/r	6.609	Rupture	210	6.00	4.027	9.100	10.195	15.532	6.609	0.000	0.000	0.000	0.000	0.000	Automatic

36P	36	16.800	Shear	14.864	Rupture	134	6.00	19.743	16.800	20.391	31.823	14.864	0.000	0.000	0.000	0.000	0.000	Automatic
36X	36	16.800	Shear	14.864	Rupture	134	6.00	19.743	16.800	20.391	31.823	14.864	0.000	0.000	0.000	0.000	0.000	Automatic
37AP	21	27.300	Shear	27.300	Shear	149	15.74	27.341	27.300	40.781	48.519	36.250	0.000	0.000	0.000	0.000	0.000	Automatic
37AY	21	27.300	Shear	27.300	Shear	149	15.74	27.341	27.300	40.781	48.519	36.250	0.000	0.000	0.000	0.000	0.000	Automatic
37BP	21	27.300	Shear	27.300	Shear	149	15.74	27.341	27.300	40.781	48.519	36.250	0.000	0.000	0.000	0.000	0.000	Automatic
37BX	21	27.300	Shear	27.300	Shear	149	15.74	27.341	27.300	40.781	48.519	36.250	0.000	0.000	0.000	0.000	0.000	Automatic
38AP	22	11.503	L/r	18.125	Rupture	193	9.57	11.503	18.200	20.391	30.760	18.125	0.000	0.000	0.000	0.000	0.000	Automatic
38AX	22	11.503	L/r	18.125	Rupture	193	9.57	11.503	18.200	20.391	30.760	18.125	0.000	0.000	0.000	0.000	0.000	Automatic
38AXY	22	11.503	L/r	18.125	Rupture	193	9.57	11.503	18.200	20.391	30.760	18.125	0.000	0.000	0.000	0.000	0.000	Automatic
38AY	22	11.503	L/r	18.125	Rupture	193	9.57	11.503	18.200	20.391	30.760	18.125	0.000	0.000	0.000	0.000	0.000	Automatic
38BP	22	11.503	L/r	18.125	Rupture	193	9.57	11.503	18.200	20.391	30.760	18.125	0.000	0.000	0.000	0.000	0.000	Automatic
38BX	22	11.503	L/r	18.125	Rupture	193	9.57	11.503	18.200	20.391	30.760	18.125	0.000	0.000	0.000	0.000	0.000	Automatic
38BXY	22	11.503	L/r	18.125	Rupture	193	9.57	11.503	18.200	20.391	30.760	18.125	0.000	0.000	0.000	0.000	0.000	Automatic
38BY	22	11.503	L/r	18.125	Rupture	193	9.57	11.503	18.200	20.391	30.760	18.125	0.000	0.000	0.000	0.000	0.000	Automatic
39AP	23	18.200	Shear	18.200	Shear	173	9.56	21.560	18.200	27.187	40.581	24.167	0.000	0.000	0.000	0.000	0.000	Automatic
39AX	23	18.200	Shear	18.200	Shear	173	9.56	21.560	18.200	27.187	40.581	24.167	0.000	0.000	0.000	0.000	0.000	Automatic
39AXY	23	18.200	Shear	18.200	Shear	173	9.56	21.560	18.200	27.187	40.581	24.167	0.000	0.000	0.000	0.000	0.000	Automatic
39AY	23	18.200	Shear	18.200	Shear	173	9.56	21.560	18.200	27.187	40.581	24.167	0.000	0.000	0.000	0.000	0.000	Automatic
39BP	23	18.200	Shear	18.200	Shear	173	9.56	21.560	18.200	27.187	40.581	24.167	0.000	0.000	0.000	0.000	0.000	Automatic
39BX	23	18.200	Shear	18.200	Shear	173	9.56	21.560	18.200	27.187	40.581	24.167	0.000	0.000	0.000	0.000	0.000	Automatic
39BXY	23	18.200	Shear	18.200	Shear	173	9.56	21.560	18.200	27.187	40.581	24.167	0.000	0.000	0.000	0.000	0.000	Automatic
39BY	23	18.200	Shear	18.200	Shear	173	9.56	21.560	18.200	27.187	40.581	24.167	0.000	0.000	0.000	0.000	0.000	Automatic
39C1P	23	18.200	Shear	18.200	Shear	62	2.21	44.853	18.200	27.187	40.581	24.167	0.000	0.000	0.000	0.000	0.000	Automatic
39C1Y	23	18.200	Shear	18.200	Shear	62	2.21	44.853	18.200	27.187	40.581	24.167	0.000	0.000	0.000	0.000	0.000	Automatic
F39C197P	23	18.200	Shear	18.200	Shear	62	2.21	44.853	18.200	27.187	40.581	24.167	0.000	0.000	0.000	0.000	0.000	Automatic
F39C197Y	23	18.200	Shear	18.200	Shear	62	2.21	44.853	18.200	27.187	40.581	24.167	0.000	0.000	0.000	0.000	0.000	Automatic
39C2P	23	18.200	Shear	18.200	Shear	62	2.21	44.853	18.200	27.187	40.581	24.167	0.000	0.000	0.000	0.000	0.000	Automatic
39C2X	23	18.200	Shear	18.200	Shear	62	2.21	44.853	18.200	27.187	40.581	24.167	0.000	0.000	0.000	0.000	0.000	Automatic
F39C2118P	23	18.200	Shear	18.200	Shear	62	2.21	44.853	18.200	27.187	40.581	24.167	0.000	0.000	0.000	0.000	0.000	Automatic
F39C2118X	23	18.200	Shear	18.200	Shear	62	2.21	44.853	18.200	27.187	40.581	24.167	0.000	0.000	0.000			

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0.000           0.000          Automatic
     40P     24  13.386         L/r  18.200    Shear  234  13.53   13.386     18.200     27.187   48.681   25.677    0.000    0.000    0.000
0.000           0.000          Automatic
     40X     24  13.386         L/r  18.200    Shear  234  13.53   13.386     18.200     27.187   48.681   25.677    0.000    0.000    0.000
0.000           0.000          Automatic
    40XY     24  13.386         L/r  18.200    Shear  234  13.53   13.386     18.200     27.187   48.681   25.677    0.000    0.000    0.000
0.000           0.000          Automatic
     40Y     24  13.386         L/r  18.200    Shear  234  13.53   13.386     18.200     27.187   48.681   25.677    0.000    0.000    0.000
0.000           0.000          Automatic
     41P     24  13.399         L/r  18.200    Shear  234  13.52   13.399     18.200     27.187   48.681   25.677    0.000    0.000    0.000
0.000           0.000          Automatic
     41X     24  13.399         L/r  18.200    Shear  234  13.52   13.399     18.200     27.187   48.681   25.677    0.000    0.000    0.000
0.000           0.000          Automatic
    41XY     24  13.399         L/r  18.200    Shear  234  13.52   13.399     18.200     27.187   48.681   25.677    0.000    0.000    0.000
0.000           0.000          Automatic
     41Y     24  13.399         L/r  18.200    Shear  234  13.52   13.399     18.200     27.187   48.681   25.677    0.000    0.000    0.000
0.000           0.000          Automatic
     42P AngleR   9.100       Shear   8.812  Rupture  130   4.24   15.869      9.100     13.594   24.381    8.812    0.000    0.000    0.000
0.000           0.000          Automatic
     42X AngleR   9.100       Shear   8.812  Rupture  130   4.24   15.869      9.100     13.594   24.381    8.812    0.000    0.000    0.000
0.000           0.000          Automatic
    42XY AngleR   9.100       Shear   8.812  Rupture  130   4.24   15.869      9.100     13.594   24.381    8.812    0.000    0.000    0.000
0.000           0.000          Automatic
     42Y AngleR   9.100       Shear   8.812  Rupture  130   4.24   15.869      9.100     13.594   24.381    8.812    0.000    0.000    0.000
0.000           0.000          Automatic
    43AP     26  12.587         L/r  12.347  Rupture  129   4.24   12.587     18.200     20.391   18.448   12.347    0.000    0.000    0.000
0.000           0.000          Automatic
    43AX     26  12.587         L/r  12.347  Rupture  129   4.24   12.587     18.200     20.391   18.448   12.347    0.000    0.000    0.000
0.000           0.000          Automatic
   43AXY     26  12.587         L/r  12.347  Rupture  129   4.24   12.587     18.200     20.391   18.448   12.347    0.000    0.000    0.000
0.000           0.000          Automatic
    43AY     26  12.587         L/r  12.347  Rupture  129   4.24   12.587     18.200     20.391   18.448   12.347    0.000    0.000    0.000
0.000           0.000          Automatic
    43BP     26  12.587         L/r  12.347  Rupture  129   4.24   12.587     18.200     20.391   18.448   12.347    0.000    0.000    0.000
0.000           0.000          Automatic
    43BX     26  12.587         L/r  12.347  Rupture  129   4.24   12.587     18.200     20.391   18.448   12.347    0.000    0.000    0.000
0.000           0.000          Automatic
   43BXY     26  12.587         L/r  12.347  Rupture  129   4.24   12.587     18.200     20.391   18.448   12.347    0.000    0.000    0.000
0.000           0.000          Automatic
    43BY     26  12.587         L/r  12.347  Rupture  129   4.24   12.587     18.200     20.391   18.448   12.347    0.000    0.000    0.000
0.000           0.000          Automatic
    43CP     26  12.587         L/r  12.347  Rupture  129   4.24   12.587     18.200     20.391   18.448   12.347    0.000    0.000    0.000
0.000           0.000          Automatic
    43CX     26  12.587         L/r  12.347  Rupture  129   4.24   12.587     18.200     20.391   18.448   12.347    0.000    0.000    0.000
0.000           0.000          Automatic
   43CXY     26  12.587         L/r  12.347  Rupture  129   4.24   12.587     18.200     20.391   18.448   12.347    0.000    0.000    0.000
0.000           0.000          Automatic
    43CY     26  12.587         L/r  12.347  Rupture  129   4.24   12.587     18.200     20.391   18.448   12.347    0.000    0.000    0.000
0.000           0.000          Automatic
     44P     27  16.678         L/r  18.125  Rupture  116   8.22   16.678     18.200     20.391   18.650   18.125    0.000    0.000    0.000
0.000           0.000          Automatic
     44Y     27  16.678         L/r  18.125  Rupture  116   8.22   16.678     18.200     20.391   18.650   18.125    0.000    0.000    0.000
0.000           0.000          Automatic
    44AP     27  16.678         L/r  18.125  Rupture  116   8.22   16.678     18.200     20.391   18.650   18.125    0.000    0.000    0.000
0.000           0.000          Automatic
    44AY     27  16.678         L/r  18.125  Rupture  116   8.22   16.678     18.200     20.391   18.650   18.125    0.000    0.000    0.000
0.000           0.000          Automatic
    44BP     27  14.533         L/r  18.125  Rupture  128   9.13   14.533     18.200     20.391   18.650   18.125    0.000    0.000    0.000
0.000           0.000          Automatic
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44BY	27	14.533	L/r	18.125	Rupture	128	9.13	14.533	18.200	20.391	18.650	18.125	0.000	0.000	0.000	0.000	0.000	Automatic
44CP	27	14.533	L/r	18.125	Rupture	128	9.13	14.533	18.200	20.391	18.650	18.125	0.000	0.000	0.000	0.000	0.000	Automatic
44CY	27	14.533	L/r	18.125	Rupture	128	9.13	14.533	18.200	20.391	18.650	18.125	0.000	0.000	0.000	0.000	0.000	Automatic
44DP	27	16.678	L/r	18.125	Rupture	116	8.22	16.678	18.200	20.391	18.650	18.125	0.000	0.000	0.000	0.000	0.000	Automatic
44DY	27	16.678	L/r	18.125	Rupture	116	8.22	16.678	18.200	20.391	18.650	18.125	0.000	0.000	0.000	0.000	0.000	Automatic
44EP	27	16.678	L/r	18.125	Rupture	116	8.22	16.678	18.200	20.391	18.650	18.125	0.000	0.000	0.000	0.000	0.000	Automatic
44EY	27	16.678	L/r	18.125	Rupture	116	8.22	16.678	18.200	20.391	18.650	18.125	0.000	0.000	0.000	0.000	0.000	Automatic
45P	28	18.200	Shear	18.200	Shear	111	6.00	35.407	18.200	27.187	40.581	24.167	0.000	0.000	0.000	0.000	0.000	Automatic
45AP	28	18.200	Shear	18.200	Shear	111	6.00	35.407	18.200	27.187	40.581	24.167	0.000	0.000	0.000	0.000	0.000	Automatic
45BP	28	18.200	Shear	18.200	Shear	111	6.00	35.407	18.200	27.187	40.581	24.167	0.000	0.000	0.000	0.000	0.000	Automatic
46P	29	7.736	L/r	12.755	Rupture	202	14.78	7.736	18.200	20.391	18.529	12.755	0.000	0.000	0.000	0.000	0.000	Automatic
46X	29	7.736	L/r	12.755	Rupture	202	14.78	7.736	18.200	20.391	18.529	12.755	0.000	0.000	0.000	0.000	0.000	Automatic
46XY	29	7.736	L/r	12.755	Rupture	202	14.78	7.736	18.200	20.391	18.529	12.755	0.000	0.000	0.000	0.000	0.000	Automatic
46Y	29	7.736	L/r	12.755	Rupture	202	14.78	7.736	18.200	20.391	18.529	12.755	0.000	0.000	0.000	0.000	0.000	Automatic
47P	30	5.767	L/r	12.755	Rupture	201	13.25	5.767	18.200	20.391	18.650	12.755	0.000	0.000	0.000	0.000	0.000	Automatic
47Y	30	5.767	L/r	12.755	Rupture	201	13.25	5.767	18.200	20.391	18.650	12.755	0.000	0.000	0.000	0.000	0.000	Automatic
47AP	30	5.486	L/r	14.386	Rupture	206	13.59	5.486	18.200	20.391	18.650	14.386	0.000	0.000	0.000	0.000	0.000	Automatic
47AY	30	5.486	L/r	14.386	Rupture	206	13.59	5.486	18.200	20.391	18.650	14.386	0.000	0.000	0.000	0.000	0.000	Automatic
48P	31	8.465	L/r	18.125	Rupture	192	15.02	8.465	18.200	20.391	30.760	18.125	0.000	0.000	0.000	0.000	0.000	Automatic
48Y	31	8.465	L/r	18.125	Rupture	192	15.02	8.465	18.200	20.391	30.760	18.125	0.000	0.000	0.000	0.000	0.000	Automatic
48AP	31	8.140	L/r	13.978	Rupture	196	15.32	8.140	18.200	20.391	30.760	13.978	0.000	0.000	0.000	0.000	0.000	Automatic
48AY	31	8.140	L/r	13.978	Rupture	196	15.32	8.140	18.200	20.391	30.760	13.978	0.000	0.000	0.000	0.000	0.000	Automatic
49P	30	5.767	L/r	13.162	Rupture	201	13.25	5.767	18.200	20.391	18.650	13.162	0.000	0.000	0.000	0.000	0.000	Automatic
49Y	30	5.767	L/r	13.162	Rupture	201	13.25	5.767	18.200	20.391	18.650	13.162	0.000	0.000	0.000	0.000	0.000	Automatic
49AP	30	5.486	L/r	13.978	Rupture	206	13.59	5.486	18.200	20.391	18.650	13.978	0.000	0.000	0.000	0.000	0.000	Automatic
49AY	30	5.486	L/r	13.978	Rupture	206	13.59	5.486	18.200	20.391	18.650	13.978	0.000	0.000	0.000	0.000	0.000	Automatic
50P	32	18.200	Shear	18.125	Rupture	143	14.07	21.867	18.200	27.187	36.997	18.125	0.000	0.000	0.000	0.000	0.000	Automatic
50X	32	18.200	Shear	18.125	Rupture	143	14.07	21.867	18.200	27.187	36.997	18.125	0.000	0.000	0.000	0.000	0.000	Automatic
50XY	32	18.200	Shear	18.125	Rupture	143	14.07	21.867	18.200	27.187	36.997	18.125	0.000	0.000	0.000	0.000	0.000	Automatic
50Y	32	18.200	Shear	18.125	Rupture	143	14.07	21.867	18.200	27.187	36.997	18.125	0.000	0.000	0.000			

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0.000             0.000          Automatic
     50AP      32  18.200     Shear  18.200     Shear 122   6.00  27.975     18.200     27.187  38.758  21.146    0.000    0.000    0.000
0.000             0.000          Automatic
     50AY      32  18.200     Shear  18.200     Shear 122   6.00  27.975     18.200     27.187  38.758  21.146    0.000    0.000    0.000
0.000             0.000          Automatic
      51P      33  32.661       L/r  32.886  Net Sect 111  11.64  32.661     36.400     54.375  32.886  42.647    0.000    0.000    0.000
0.000             0.000          Automatic
      51Y      33  32.661       L/r  32.886  Net Sect 111  11.64  32.661     36.400     54.375  32.886  42.647    0.000    0.000    0.000
0.000             0.000          Automatic
     51AP      33  31.965       L/r  36.400     Shear 114   6.00  31.965     36.400     54.375  37.138  42.647    0.000    0.000    0.000
0.000             0.000          Automatic
     51AY      33  31.965       L/r  36.400     Shear 114   6.00  31.965     36.400     54.375  37.138  42.647    0.000    0.000    0.000
0.000             0.000          Automatic
     51BP      33  27.300     Shear  27.300     Shear 107   5.62  33.416     27.300     40.781  33.736  31.985    0.000    0.000    0.000
0.000             0.000          Automatic
     51BY      33  27.300     Shear  27.300     Shear 107   5.62  33.416     27.300     40.781  33.736  31.985    0.000    0.000    0.000
0.000             0.000          Automatic
     51CP      33  27.300     Shear  27.300     Shear 107   5.63  33.416     27.300     40.781  37.786  31.985    0.000    0.000    0.000
0.000             0.000          Automatic
     51CY      33  27.300     Shear  27.300     Shear 107   5.63  33.416     27.300     40.781  37.786  31.985    0.000    0.000    0.000
0.000             0.000          Automatic
      52P      34  41.627       L/r  45.500     Shear 106  14.07  41.627     45.500     67.969  46.393  48.262    0.000    0.000    0.000
0.000             0.000          Automatic
      52Y      34  41.627       L/r  45.500     Shear 106  14.07  41.627     45.500     67.969  46.393  48.262    0.000    0.000    0.000
0.000             0.000          Automatic
     52AP      34  45.317       L/r  35.539   Rupture  91   6.00  45.317     45.500     67.969  51.799  35.539    0.000    0.000    0.000
0.000             0.000          Automatic
     52AY      34  45.317       L/r  35.539   Rupture  91   6.00  45.317     45.500     67.969  51.799  35.539    0.000    0.000    0.000
0.000             0.000          Automatic
     52BP      34  42.220       L/r  45.500     Shear 104   6.88  42.220     45.500     67.969  50.706  71.078    0.000    0.000    0.000
0.000             0.000          Automatic
     52BY      34  42.220       L/r  45.500     Shear 104   6.88  42.220     45.500     67.969  50.706  71.078    0.000    0.000    0.000
0.000             0.000          Automatic
     52CP      34  42.220       L/r  46.696  Net Sect 104   6.88  42.220     54.600     81.562  46.696  63.970    0.000    0.000    0.000
0.000             0.000          Automatic
     52CY      34  42.220       L/r  46.696  Net Sect 104   6.88  42.220     54.600     81.562  46.696  63.970    0.000    0.000    0.000
0.000             0.000          Automatic
      53P      33  32.661       L/r  32.886  Net Sect 111  11.64  32.661     36.400     54.375  32.886  42.647    0.000    0.000    0.000
0.000             0.000          Automatic
      53Y      33  32.661       L/r  32.886  Net Sect 111  11.64  32.661     36.400     54.375  32.886  42.647    0.000    0.000    0.000
0.000             0.000          Automatic
     53AP      33  31.965       L/r  36.400     Shear 114   6.00  31.965     36.400     54.375  40.419  42.647    0.000    0.000    0.000
0.000             0.000          Automatic
     53AY      33  31.965       L/r  36.400     Shear 114   6.00  31.965     36.400     54.375  40.419  42.647    0.000    0.000    0.000
0.000             0.000          Automatic
     53BP      33  27.300     Shear  27.300     Shear 107   5.62  33.416     27.300     40.781  34.344  31.985    0.000    0.000    0.000
0.000             0.000          Automatic
     53BY      33  27.300     Shear  27.300     Shear 107   5.62  33.416     27.300     40.781  34.344  31.985    0.000    0.000    0.000
0.000             0.000          Automatic
     53CP      33  33.416       L/r  36.400     Shear 107   5.63  33.416     36.400     54.375  37.118  42.647    0.000    0.000    0.000
0.000             0.000          Automatic
     53CY      33  33.416       L/r  36.400     Shear 107   5.63  33.416     36.400     54.375  37.118  42.647    0.000    0.000    0.000
0.000             0.000          Automatic
      54P      35   8.154       L/r   9.100     Shear 169   6.00   8.154      9.100     10.195  21.688   9.629    0.000    0.000    0.000
0.000             0.000          Automatic
      54X      35   8.154       L/r   9.100     Shear 169   6.00   8.154      9.100     10.195  21.688   9.629    0.000    0.000    0.000
0.000             0.000          Automatic
     g99P   Pwmnt 437.242       L/r 571.199  Net Sect  80  29.25 437.242      0.000      0.000 571.199   0.000    0.000    0.000    0.000
0.000             0.000          Automatic
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    g100P  Pwmnt  535.971       L/r  571.199  Net Sect   41  15.00  535.971       0.000       0.000  571.199    0.000     0.000     0.000     0.000
0.000             0.000           Automatic
    g101P  Pwmnt  260.146       L/r  571.199  Net Sect  122  44.75  260.146       0.000       0.000  571.199    0.000     0.000     0.000     0.000
0.000             0.000           Automatic
    g102P  Pwmnt  540.511       L/r  571.199  Net Sect   38  14.00  540.511       0.000       0.000  571.199    0.000     0.000     0.000     0.000
0.000             0.000           Automatic
    g103P  Pwmnt  540.511       L/r  571.199  Net Sect   38  14.00  540.511       0.000       0.000  571.199    0.000     0.000     0.000     0.000
0.000             0.000           Automatic
    g104P  Pwmnt  531.117       L/r  571.199  Net Sect   44  16.00  531.117       0.000       0.000  571.199    0.000     0.000     0.000     0.000
0.000             0.000           Automatic
    g105P  Pwmnt  565.563       L/r  571.199  Net Sect   16   6.00  565.563       0.000       0.000  571.199    0.000     0.000     0.000     0.000
0.000             0.000           Automatic
    g106P  Plate   16.800     Shear   16.800     Shear   83   1.50  109.423      16.800      40.781  129.094   45.312     0.000     0.000     0.000
0.000             0.000           Automatic
    g107P  PMBR1   10.195   Bearing   10.195   Bearing   46   1.50   20.042      16.800      10.195   18.827   10.343     0.000     0.000     0.000
0.000             0.000           Automatic
    g108P  PMBR1   10.195   Bearing   10.195   Bearing   46   1.50   20.044      16.800      10.195   18.827   10.343     0.000     0.000     0.000
0.000             0.000           Automatic
    g109P  PMBR1   10.195   Bearing   10.195   Bearing   46   1.50   20.044      16.800      10.195   18.827   10.343     0.000     0.000     0.000
0.000             0.000           Automatic
    g110P BraceR   13.594   Bearing   13.594   Bearing   82   3.35   29.101      16.800      13.594   32.987   15.104     0.000     0.000     0.000
0.000             0.000           Automatic
    g110X BraceR   13.594   Bearing   13.594   Bearing   82   3.35   29.101      16.800      13.594   32.987   15.104     0.000     0.000     0.000
0.000             0.000           Automatic
    g111P  PMBR2   10.195   Bearing   10.195   Bearing   81   3.35   22.126      16.800      10.195   25.048   11.328     0.000     0.000     0.000
0.000             0.000           Automatic
    g111X  PMBR2   10.195   Bearing   10.195   Bearing   81   3.35   22.126      16.800      10.195   25.048   11.328     0.000     0.000     0.000
0.000             0.000           Automatic
    g112P  PMBR2   10.195   Bearing   10.195   Bearing   81   3.35   22.127      16.800      10.195   25.048   11.328     0.000     0.000     0.000
0.000             0.000           Automatic
    g112X  PMBR2   10.195   Bearing   10.195   Bearing   81   3.35   22.127      16.800      10.195   25.048   11.328     0.000     0.000     0.000
0.000             0.000           Automatic
    g113P  PMBR2   10.195   Bearing   10.195   Bearing   81   3.35   22.127      16.800      10.195   25.048   11.328     0.000     0.000     0.000
0.000             0.000           Automatic
    g113X  PMBR2   10.195   Bearing   10.195   Bearing   81   3.35   22.127      16.800      10.195   25.048   11.328     0.000     0.000     0.000
0.000             0.000           Automatic
    g114P  PMBR3   10.195   Bearing   10.195   Bearing  162   8.07   11.823      16.800      10.195   31.139   11.328     0.000     0.000     0.000
0.000             0.000           Automatic
    g115P  PMBR4   13.207       L/r   13.594   Bearing  191  11.07   13.207      16.800      13.594   49.187   15.104     0.000     0.000     0.000
0.000             0.000           Automatic
    g116P  PMBR4   13.594   Bearing   13.594   Bearing  167   9.68   17.249      16.800      13.594   49.187   15.104     0.000     0.000     0.000
0.000             0.000           Automatic
    g116X  PMBR4   13.594   Bearing   13.594   Bearing  167   9.68   17.249      16.800      13.594   49.187   15.104     0.000     0.000     0.000
0.000             0.000           Automatic
    g117P  PMBR4   13.594   Bearing   13.594   Bearing  178  10.27   15.339      16.800      13.594   49.187   15.104     0.000     0.000     0.000
0.000             0.000           Automatic
    g118P  PMBR5   13.594   Bearing   13.594   Bearing  200  13.27   13.840      16.800      13.594   57.287   15.104     0.000     0.000     0.000
0.000             0.000           Automatic KL/R value of 200.30 exceeds maximum of 200.00 for member "g118P"  ??
    g120P  PMBR5   13.594   Bearing   13.594   Bearing  186  12.34   16.004      16.800      13.594   57.287   15.104     0.000     0.000     0.000
0.000             0.000           Automatic
    g120X  PMBR5   13.594   Bearing   13.594   Bearing  186  12.34   16.004      16.800      13.594   57.287   15.104     0.000     0.000     0.000
0.000             0.000           Automatic
    g121P  Pwmnt  558.517       L/r  571.199  Net Sect   25   9.00  558.517       0.000       0.000  571.199    0.000     0.000     0.000     0.000
0.000             0.000           Automatic
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The model contains 335 angle members.

Sum of Unfactored Dead Load and Drag Areas From Equipment, Input and Calculated:

Joint Label	Dead Load (kips)	X-Drag Area (ft^2)	Y-Drag Area (ft^2)
1P	0.128	5.752	4.127
2P	0.0615	3.558	2.426
3P	0.128	7.249	6.224
4P	0.218	10.789	8.992
5P	0.222	10.953	9.482
6P	0.326	12.528	10.018
7P	0.352	11.891	10.866
8P	0.438	14.553	13.193
15P	0.651	16.233	16.233
16P	0.114	7.054	2.102
17P	0.0621	2.786	2.354
18P	0.0805	3.740	2.381
19P	0.0621	2.786	2.354
20AP	0.39	20.837	17.520
20BP	0.403	17.907	21.056
21P	0.22	11.891	8.870
22P	0.22	8.870	11.891
23P	0.1	6.042	2.462
24P	0.15	8.339	2.688
25P	0.1	6.042	2.462
26P	0.053	2.813	1.250
27P	0.0705	3.724	1.250
28P	0.053	2.813	1.250
29P	0.725	15.539	15.539
30P	1.25	27.431	28.453
31P	1.59	34.533	34.802
32P	1.47	31.836	31.648
33P	0.707	15.500	15.312
34P	0.756	16.567	16.375
35P	0.571	12.325	12.375
36P	0.372	7.969	7.969
37P	0.223	4.781	4.781
1X	0.128	5.752	4.127
1XY	0.122	5.439	3.970
1Y	0.122	5.439	3.970
2X	0.0615	3.558	2.426
2XY	0.0615	3.558	2.426
2Y	0.0615	3.558	2.426
3X	0.128	7.249	6.160
3XY	0.128	7.249	6.160
3Y	0.128	7.249	6.224
4X	0.213	10.554	9.179
4XY	0.208	10.242	9.023
4Y	0.213	10.476	8.835
5X	0.222	10.953	9.394
5XY	0.222	10.953	9.394
5Y	0.222	10.953	9.482
6X	0.315	12.098	10.143
6XY	0.31	11.786	9.986
6Y	0.321	12.216	9.861
7X	0.351	11.891	10.802
7XY	0.351	11.891	10.802
7Y	0.352	11.891	10.866
8X	0.433	14.318	13.381
8XY	0.427	14.006	13.224

8Y	0.432	14.240	13.037
15X	0.651	16.233	16.233
15XY	0.651	16.233	16.233
15Y	0.651	16.233	16.233
16X	0.114	7.054	2.102
17Y	0.0621	2.786	2.354
18Y	0.0805	3.740	2.381
19Y	0.0621	2.786	2.354
20AY	0.407	20.837	18.125
20BX	0.403	17.907	21.056
21X	0.22	11.891	8.870
21XY	0.22	11.891	8.870
21Y	0.22	11.891	8.870
22X	0.22	8.870	11.891
22XY	0.261	10.831	12.509
22Y	0.261	10.831	12.509
26Y	0.053	2.813	1.250
27Y	0.0705	3.724	1.250
28Y	0.053	2.813	1.250
9S	0.404	12.387	12.387
10S	0.406	11.747	11.747
11S	0.518	14.852	14.852
12S	0.733	20.933	20.933
13S	0.605	12.807	12.807
14S	0.936	19.747	19.747
i0.50E129S	0.0385	1.012	1.375
i0.50E113S	0.0225	1.004	1.125
i0.50E99S	0.0225	1.000	1.125
i0.50E85S	0.0225	1.000	1.125
21XF0.50S	0.0444	0.920	1.498
22PF0.50S	0.0146	0.000	0.920
9X	0.404	12.387	12.387
9XY	0.404	12.387	12.387
9Y	0.404	12.387	12.387
10X	0.406	11.747	11.747
10XY	0.406	11.747	11.747
10Y	0.406	11.747	11.747
11X	0.518	14.852	14.852
11XY	0.518	14.852	14.852
11Y	0.518	14.852	14.852
12X	0.733	20.933	20.933
12XY	0.733	20.933	20.933
12Y	0.733	20.933	20.933
13X	0.605	12.807	12.807
13XY	0.605	12.807	12.807
13Y	0.605	12.807	12.807
14X	0.936	19.747	19.747
14XY	0.936	19.747	19.747
14Y	0.936	19.747	19.747
21XF0.50Y	0.0584	0.920	2.212
22PF0.50X	0.0146	0.000	0.920
Total	37.1	1148.254	1068.534

Unadjusted Dead Load and Drag Areas by Section:

Section Label	Unfactored Dead Load (kips)	X-Drag Area All (ft^2)	Y-Drag Area All (ft^2)	X-Drag Area Face (ft^2)	Y-Drag Area Face (ft^2)

1	11.026	420.113	337.810	139.781	139.112
2	26.071	728.141	730.724	227.007	321.570
Total	37.096	1148.254	1068.534	366.789	460.682

Angle Member Weights and Surface Areas by Section:

Section Label	Unfactored Weight (kips)	Factored Weight (kips)	Unfactored Surface Area (ft^2)	Factored Surface Area (ft^2)
1	11.026	11.026	1715.817	1715.817
2	26.071	28.678	3034.480	3337.928
Total	37.096	39.704	4750.297	5053.745

Section Joint Information:

Section Label	Joint Label	Joint Elevation (ft)
1	1P	128.800
1	2P	124.300
1	1X	128.800
1	2X	124.300
1	1XY	128.800
1	2XY	124.300
1	1Y	128.800
1	2Y	124.300
1	3P	119.800
1	3X	119.800
1	3XY	119.800
1	3Y	119.800
1	4P	112.800
1	4X	112.800
1	4XY	112.800
1	4Y	112.800
1	5P	104.800
1	5X	104.800
1	5XY	104.800
1	5Y	104.800
1	6P	98.750
1	6X	98.750
1	6XY	98.750
1	6Y	98.750
1	7P	91.750
1	7X	91.750
1	7XY	91.750
1	7Y	91.750
1	8P	84.750
1	8X	84.750
1	8XY	84.750
1	8Y	84.750
1	i0.50E129S	128.800
1	i0.50E113S	112.800
1	i0.50E99S	98.750
1	i0.50E85S	84.750
1	28Y	84.750
1	28P	84.750
1	19Y	84.750

1	19P	84.750
1	27Y	98.750
1	27P	98.750
1	18Y	98.750
1	18P	98.750
1	26Y	112.800
1	26P	112.800
1	17Y	112.800
1	17P	112.800
1	16P	128.800
1	16X	128.800
1	23P	112.800
1	24P	98.750
1	25P	84.750
1	32P	84.750
1	33P	98.750
1	34P	112.750
1	35P	128.750
1	36P	134.750
1	37P	143.750
2	8P	84.750
2	9S	77.000
2	8X	84.750
2	9X	77.000
2	8XY	84.750
2	9XY	77.000
2	8Y	84.750
2	9Y	77.000
2	10S	69.250
2	10X	69.250
2	10XY	69.250
2	10Y	69.250
2	11S	61.500
2	11X	61.500
2	11XY	61.500
2	11Y	61.500
2	12S	51.580
2	12X	51.580
2	12XY	51.580
2	12Y	51.580
2	13S	40.000
2	13X	40.000
2	13XY	40.000
2	13Y	40.000
2	14S	25.000
2	14X	25.000
2	14XY	25.000
2	14Y	25.000
2	15P	0.000
2	15X	0.000
2	15XY	0.000
2	15Y	0.000
2	20AP	40.000
2	20AY	40.000
2	20BP	40.000
2	20BX	40.000
2	21P	25.000
2	21X	25.000
2	21XY	25.000

2	21Y	25.000
2	22P	25.000
2	22X	25.000
2	22XY	25.000
2	22Y	25.000
2	21XF0.50S	25.000
2	21XF0.50Y	25.000
2	22PF0.50S	25.000
2	22PF0.50X	25.000
2	29P	-4.250
2	30P	25.000
2	31P	40.000
2	32P	84.750

Sections Information:

Section Label	Top Z (ft)	Bottom Z (ft)	Joint Count	Member Count	Tran. Face Top Width (ft)	Tran. Face Bot Width (ft)	Tran. Face Gross Area (ft^2)	Long. Face Top Width (ft)	Long. Face Bot Width (ft)	Long. Face Gross Area (ft^2)
1	143.750	84.750	59	188	0.00	6.00	309.150	0.00	28.50	817.275
2	84.750	-4.250	52	147	6.00	0.00	1226.814	6.00	0.00	1226.814

Problem calculating gross area of longitudinal face for section "1": width is zero at elevation 128.80 (ft) which is not the top of the section. ??

Problem calculating gross area of longitudinal face for section "2": width is zero at elevation -4.25 (ft) which is not the top of the section. ??

*** Insulator Data

Clamp Properties:

Label	Stock Number	Holding Capacity (lbs)
C-EX1		5e+004

Clamp Insulator Connectivity:

Clamp Label	Structure And Tip Attach	Property Set	Min. Required Vertical Load (uplift) (lbs)
1	16X	C-EX1	No Limit
2	16P	C-EX1	No Limit
3	17P	C-EX1	No Limit
4	17Y	C-EX1	No Limit
5	18P	C-EX1	No Limit
6	18Y	C-EX1	No Limit
7	19P	C-EX1	No Limit
8	19Y	C-EX1	No Limit
9	23P	C-EX1	No Limit
10	24P	C-EX1	No Limit
11	25P	C-EX1	No Limit
12	2Y	C-EX1	No Limit
13	4Y	C-EX1	No Limit
14	6Y	C-EX1	No Limit
15	8Y	C-EX1	No Limit
16	10Y	C-EX1	No Limit
17	12Y	C-EX1	No Limit

18	13Y	C-EX1	No Limit
19	14Y	C-EX1	No Limit
20	30P	C-EX1	No Limit
21	31P	C-EX1	No Limit
22	32P	C-EX1	No Limit
23	33P	C-EX1	No Limit
24	34P	C-EX1	No Limit
25	35P	C-EX1	No Limit
26	36P	C-EX1	No Limit
27	37P	C-EX1	No Limit
28	10XY	C-EX1	No Limit
29	12XY	C-EX1	No Limit
30	13XY	C-EX1	No Limit
31	14XY	C-EX1	No Limit

*** Loads Data

Loads from file: j:\jobs\2100700.wi\68_greenwich 3 ct\05_structural\backup documentation\calcs\pls tower\cl&p # 1281.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)	143.75 (ft)	
Structure height	148.00 (ft)	
Structure height above ground	143.75 (ft)	
Tower Shape	Rectangular	

Load distributed evenly among joints in section for section based load cases

Vector Load Cases:

Load Case Description	Dead Load Factor	Wind Area Factor	SF for Steel Poles Tubular Arms and Towers	SF for Guys and Cables	SF for Insuls.	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)	Joint Displ.
NESC Heavy	1.5000	2.5000	1.00000	1.0000	1.0000	1.0000	28 loads	Wind on Face	4	0	0.000	0.000	0.0	
NESC Extreme	1.0000	1.0000	1.00000	1.0000	1.0000	1.0000	28 loads	NESC 2012	31	0	0.000	0.000	0.0	

Point Loads for Load Case "NESC Heavy":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
16X	1610	1610	1610	Shield Wire
16P	1298	8213	-2807	Shield Wire
19P	2332	7785	7437	Conductor - Back
19Y	438	7124	-7493	Conductor - Ahead
18P	3241	9292	7457	Conductor - Back
18Y	573	5259	-5419	Conductor - Ahead
17P	2933	5363	5970	Conductor - Back
17Y	520	5739	-5969	Conductor - Ahead
23P	2393	10693	-4869	Conductor
24P	2366	9228	-2072	Conductor
25P	1702	12051	-5996	Conductor
37P	6929	564	0	Sprint Antennas
36P	5928	2134	0	Verizon Antennas
37P	838	99	0	Coax Cable on Powermount
35P	323	53	0	Coax Cable on Powermount
34P	605	99	0	Coax Cable on Powermount
33P	565	93	0	Coax Cable on Powermount
32P	1185	194	0	Coax Cable on Powermount
31P	1205	198	0	Coax Cable on Powermount
30P	1311	215	0	Coax Cable on Powermount

2Y	476	176	0	Coax Cable on Tower
4Y	594	219	0	Coax Cable on Tower
6Y	652	241	0	Coax Cable on Tower
8Y	686	253	0	Coax Cable on Tower
10Y	771	285	0	Coax Cable on Tower
12Y	680	251	0	Coax Cable on Tower
13Y	618	228	0	Coax Cable on Tower
14Y	1510	558	0	Coax Cable on Tower

Section Load Case Information (Standard) for "NESC Heavy":

Section Label	Z of Top (ft)	Z of Bottom (ft)	Ave. Elev. Above Ground (ft)	Res. Adj. Wind Pres. (psf)	Tran Adj. Wind Pres. (psf)	Tran Drag Coef	Tran Wind Load (lbs)	Long Adj. Wind Pres. (psf)	Long Drag Coef	Long Wind Load (lbs)	Ice Weight (lbs)	Total Weight (lbs)
1	143.75	84.75	114.25	10.00	10.00	3.200	4451.6	0.00	3.200	0.0	0	16539
2	84.75	-4.25	40.25	10.00	10.00	3.500	11254.9	0.00	3.500	0.0	0	43017

Point Loads for Load Case "NESC Extreme":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
16X	876	5036	-1015	Shield Wire
16P	681	5012	-2032	Shield Wire
19P	1333	4079	3425	Conductor - Back
19Y	95	4777	-4362	Conductor - Ahead
18P	1811	4637	3263	Conductor - Back
18Y	163	4024	-3498	Conductor - Ahead
17P	1835	3229	3049	Conductor - Back
17Y	124	4322	-3823	Conductor - Ahead
23P	1463	7489	-3001	Conductor
24P	1390	6685	-1521	Conductor
25P	969	7820	-3146	Conductor
37P	3191	2276	0	Sprint Antennas
36P	2731	8325	0	Verizon Antennas
37P	281	325	0	Coax Cable on Powermount
35P	116	139	0	Coax Cable on Powermount
34P	218	260	0	Coax Cable on Powermount
33P	204	242	0	Coax Cable on Powermount
32P	428	509	0	Coax Cable on Powermount
31P	435	517	0	Coax Cable on Powermount
30P	473	563	0	Coax Cable on Powermount
2Y	128	532	0	Coax Cable on Tower
4Y	159	664	0	Coax Cable on Tower
6Y	175	728	0	Coax Cable on Tower
8Y	184	766	0	Coax Cable on Tower
10Y	207	861	0	Coax Cable on Tower
12Y	183	760	0	Coax Cable on Tower
13Y	166	690	0	Coax Cable on Tower
14Y	406	1688	0	Coax Cable on Tower

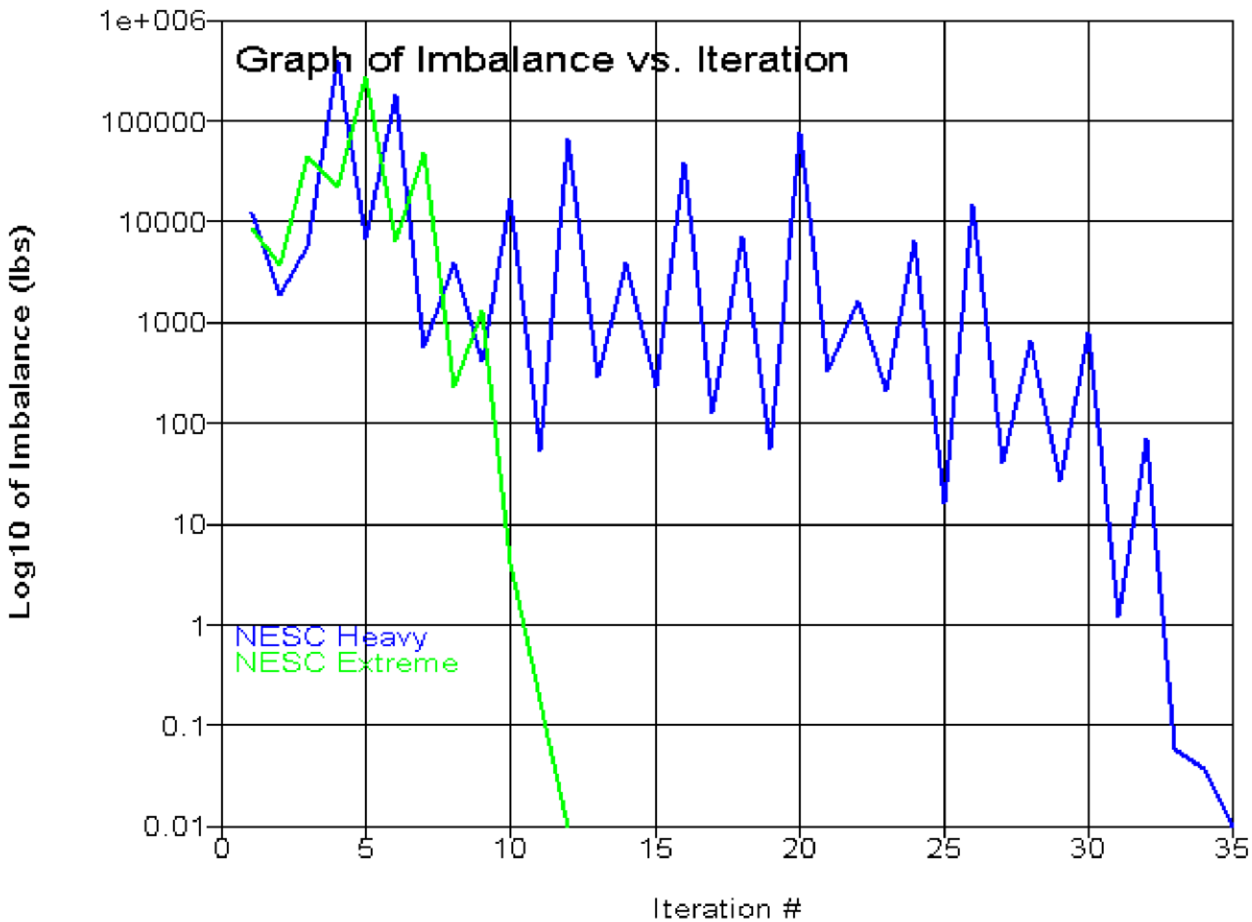
Section Load Case Information (Code) for "NESC Extreme":

Section Z Z Ave. Res. Tran Tran Tran Tran Tran Tran Tran Tran Long Long Long Long Long Long Long Long Ice
Total

Label	Top of (ft)	Bottom of (ft)	Elev. Above Ground (ft)	Adj. Wind Pres. (psf)	Adj. Wind Pres. (psf)	Angle Face Area (ft^2)	Round Face Area (ft^2)	Gross Area (ft^2)	Solidity Ratio	Angle Drag Coef	Round Drag Coef	Wind Load (lbs)	Adj. Wind Pres. (psf)	Angle Face Area (ft^2)	Round Face Area (ft^2)	Gross Area (ft^2)	Solidity Ratio	Angle Drag Coef	Round Drag Coef	Wind Load (lbs)	Weight (lbs)	Weight (lbs)
1	143.75	84.75	114.25	32.59	32.59	76.42	62.69	309.15	0.450	3.200	2.000	12054.4	0.00	139.78	0.00	817.27	0.171	3.200	2.000	0.0	0	11026
2	84.75	-4.25	40.25	32.59	32.59	249.71	104.02	1226.81	0.288	3.200	2.000	32816.8	0.00	249.71	0.00	1226.81	0.204	3.200	2.000	0.0	0	28678

*** Analysis Results:

Maximum element usage is 98.99% for Angle "25AP" in load case "NESC Heavy"
Maximum insulator usage is 27.17% for Clamp "11" in load case "NESC Heavy"



Angle Forces For All Load Cases:
Positive for tension - negative for compression

Group Label	Angle Label	Max. Usage For All LC %	Max. Tens. For All LC (kips)	Max. Comp. For All LC (kips)	LC 1 (kips)	LC 2 (kips)
1	1P	26.21	0.000	-12.910	-7.172	-12.910
1	1X	28.20	13.350	0.000	6.508	13.350
1	1XY	22.59	10.693	0.000	4.635	10.693
1	1Y	24.87	0.000	-12.250	-5.739	-12.250

1	2P	26.83	0.000	-13.218	-7.805	-13.218
1	2X	27.07	12.813	0.000	5.534	12.813
1	2XY	20.84	9.866	0.000	3.672	9.866
1	2Y	26.86	0.000	-13.232	-7.149	-13.232
1	3P	84.29	0.000	-30.683	-17.300	-30.683
1	3X	85.87	31.257	0.000	12.754	31.257
1	3XY	70.60	25.697	0.000	11.866	25.697
1	3Y	91.43	0.000	-33.282	-17.425	-33.282
2	4P	55.94	0.000	-51.019	-33.405	-51.019
2	4X	57.04	55.704	0.000	30.856	55.704
2	4XY	46.49	45.399	0.000	25.591	45.399
2	4Y	64.72	0.000	-59.028	-36.274	-59.028
2	5P	73.53	0.000	-72.853	-51.724	-72.853
2	5X	84.50	82.514	0.000	51.643	82.514
2	5XY	68.48	66.867	0.000	41.857	66.867
2	5Y	91.18	0.000	-90.345	-63.087	-90.345
3	6P	39.61	0.000	-98.888	-77.957	-98.888
3	6X	50.33	116.650	0.000	83.258	116.650
3	6XY	40.14	93.031	0.000	67.447	93.031
3	6Y	50.32	0.000	-125.614	-96.301	-125.614
3	7P	50.52	0.000	-126.113	-107.645	-126.113
3	7X	64.31	149.045	0.000	113.145	149.045
3	7XY	51.05	118.308	0.000	93.995	118.308
3	7Y	63.43	0.000	-158.333	-127.530	-158.333
4	8P	46.07	0.000	-141.257	-128.054	-141.257
4	8X	59.30	170.124	0.000	138.471	170.124
4	8XY	45.70	131.110	0.000	112.311	131.110
4	8Y	58.86	0.000	-180.480	-154.894	-180.480
4	9P	48.27	0.000	-148.021	-139.577	-148.021
4	9X	62.48	179.258	0.000	154.183	179.258
4	9XY	47.17	135.327	0.000	121.239	135.327
4	9Y	62.24	0.000	-190.869	-172.876	-190.869
4	10P	50.34	0.000	-146.582	-142.379	-146.582
4	10X	60.69	174.107	0.000	154.040	174.107
4	10XY	45.83	131.499	0.000	121.188	131.499
4	10Y	64.50	0.000	-187.830	-175.990	-187.830
5	11P	43.65	0.000	-146.300	-143.052	-146.300
5	11X	53.42	176.742	0.000	159.421	176.742
5	11XY	40.04	132.462	0.000	122.868	132.462
5	11Y	56.44	0.000	-189.164	-179.911	-189.164
5	12P	49.11	0.000	-178.776	-178.776	-169.163
5	12X	44.40	146.888	0.000	127.098	146.888
5	12XY	37.25	123.230	0.000	116.907	123.230
5	12Y	52.87	0.000	-192.455	-190.011	-192.455
5	13P	49.43	0.000	-179.916	-179.916	-173.657
5	13X	41.17	136.207	0.000	121.704	136.207
5	13XY	34.11	112.844	0.000	108.206	112.844
5	13Y	55.08	0.000	-200.495	-191.998	-200.495
5	14P	48.33	0.000	-175.904	-175.904	-174.116
5	14X	44.49	147.197	0.000	136.548	147.197
5	14XY	35.28	116.709	0.000	109.222	116.709
5	14Y	55.33	0.000	-201.387	-195.924	-201.387
6R	15AP	74.52	17.947	0.000	14.052	17.947
6R	15AX	80.44	0.000	-16.382	-12.460	-16.382
6R	15AXY	50.97	0.000	-10.381	-0.321	-10.381
6R	15AY	40.30	9.707	0.000	0.915	9.707
6R	15BP	24.16	5.818	0.000	5.818	4.895
6R	15BX	27.36	0.000	-5.572	-5.572	-2.858
6R	15BXY	17.75	4.275	0.000	4.275	0.292

6R	15BY	27.56	0.000	-5.612	-5.612	-2.755
7	16AP	79.25	14.363	0.000	9.589	14.363
7	16AX	93.34	0.000	-13.349	-9.317	-13.349
7	16AXY	75.62	0.000	-10.815	-2.648	-10.815
7	16AY	49.54	8.978	0.000	1.087	8.978
7	16BP	20.78	3.766	0.000	3.766	1.703
7	16BX	24.29	0.250	-3.474	-3.474	0.250
7	16BXY	26.95	4.885	0.000	4.885	2.633
7	16BY	41.17	0.000	-5.888	-5.888	-5.134
8	17AP	60.79	26.860	0.000	26.860	22.599
8	17AX	61.56	0.000	-24.388	-24.388	-19.756
8	17AXY	37.06	0.000	-14.680	-5.681	-14.680
8	17AY	27.19	12.014	0.000	3.962	12.014
8	17BP	23.44	10.359	0.000	10.359	4.555
8	17BX	15.82	0.677	-6.268	-6.268	0.677
8	17BXY	16.32	7.210	0.000	7.210	2.798
8	17BY	31.71	0.000	-12.561	-12.561	-8.540
9	18AP	51.36	18.695	0.000	18.695	17.784
9	18AX	53.22	0.000	-17.423	-17.423	-15.352
9	18AXY	40.50	0.000	-13.260	-6.415	-13.260
9	18AY	30.27	11.018	0.000	5.520	11.018
9	18BP	23.89	8.696	0.000	8.696	5.723
9	18BX	16.36	0.000	-5.356	-5.356	-1.089
9	18BXY	16.97	6.178	0.000	6.178	0.693
9	18BY	31.13	0.000	-10.190	-10.190	-5.615
10	19AP	64.58	38.298	0.000	38.298	30.248
10	19AX	63.32	0.000	-38.755	-38.755	-28.872
10	19AXY	32.67	0.000	-19.994	-9.967	-19.994
10	19AY	29.79	17.670	0.000	8.627	17.670
10	19BP	30.44	18.055	0.000	18.055	10.534
10	19BX	22.00	0.000	-13.462	-13.462	-3.856
10	19BXY	15.52	9.207	-0.536	9.207	-0.536
10	19BY	21.08	0.000	-12.900	-12.900	-5.422
10	20AP	64.85	38.459	0.000	38.459	30.887
10	20AX	57.10	0.000	-34.949	-34.949	-26.424
10	20AXY	34.62	0.000	-21.191	-12.121	-21.191
10	20AY	26.38	15.646	0.000	6.923	15.646
10	20BP	15.68	9.301	0.000	9.301	1.502
10	20BX	10.43	4.354	-6.384	-6.384	4.354
10	20BXY	27.84	16.513	0.000	16.513	7.818
10	20BY	35.57	0.000	-21.769	-21.769	-14.801
11	21AP	48.71	22.008	0.000	22.008	5.185
11	21AX	46.68	0.000	-20.695	-20.695	-3.113
11	21AXY	19.57	8.841	0.000	8.841	5.302
11	21AY	30.73	0.000	-13.626	-13.626	-9.761
11	21BP	21.89	9.888	-3.431	9.888	-3.431
11	21BX	17.03	3.805	-7.549	-7.549	3.805
11	21BXY	49.30	22.272	0.000	22.272	14.405
11	21BY	57.13	0.000	-25.327	-25.327	-15.153
12	22AP	35.21	12.815	0.000	12.815	1.840
12	22AX	49.16	0.000	-15.234	-15.234	-4.027
12	22AXY	23.10	8.408	0.000	8.408	5.641
12	22AY	22.88	0.000	-7.088	-7.088	-4.066
12	22BP	38.88	14.152	0.000	14.152	7.148
12	22BX	41.65	0.000	-12.904	-12.904	-7.174
12	22BXY	18.95	6.898	-0.064	6.898	-0.064
12	22BY	29.63	0.000	-9.181	-9.181	-0.474
13	23AP	42.65	11.642	0.000	11.642	3.942
13	23AX	41.92	0.000	-9.450	-9.450	-2.010

13	23AXY	17.27	4.715	0.000	4.715	2.176
13	23AY	26.77	0.000	-6.034	-6.034	-2.563
13	23BP	31.41	8.574	0.000	8.574	2.223
13	23BX	27.99	0.000	-6.310	-6.310	-1.452
13	23BXY	30.02	8.195	0.000	8.195	3.709
13	23BY	38.03	0.000	-8.571	-8.571	-3.374
14	24AP	25.34	6.918	0.000	6.918	1.509
14	24AX	53.15	0.000	-11.391	-11.391	-4.873
14	24AXY	15.89	4.339	0.000	4.339	1.155
14	24AY	19.31	0.000	-4.139	-4.139	-1.379
14	24BP	19.27	5.260	0.000	5.260	1.169
14	24BX	30.58	0.000	-6.554	-6.554	-2.570
14	24BXY	20.67	5.642	0.000	5.642	1.730
14	24BY	40.15	0.000	-8.605	-8.605	-3.219
15	25AP	98.99	35.903	0.000	35.903	25.245
15	25AX	43.32	15.710	0.000	15.001	15.710
15	25AXY	9.83	0.000	-3.321	-2.678	-3.321
15	25AY	33.30	0.000	-11.256	-11.256	-3.216
15	25BP	3.13	1.137	-0.950	1.137	-0.950
15	25BX	61.71	22.382	0.000	22.382	18.539
15	25BXY	38.36	13.912	0.000	9.366	13.912
15	25BY	50.52	18.322	0.000	18.322	5.095
16	26AP	14.72	2.668	0.000	0.000	2.668
16	26AX	21.56	3.908	-0.585	-0.585	3.908
16	26AXY	25.19	4.566	0.000	4.465	4.566
16	26AY	23.78	4.310	0.000	0.000	4.310
16	26BP	7.75	1.404	0.000	0.000	1.404
16	26BX	39.49	7.158	0.000	5.386	7.158
16	26BXY	34.06	6.173	0.000	3.942	6.173
16	26BY	19.31	3.501	0.000	0.158	3.501
17	27AP	0.00	0.000	0.000	0.000	0.000
17	27AX	76.98	18.768	0.000	18.768	12.131
17	27AXY	58.20	1.998	-3.737	-3.737	1.998
17	27AY	17.23	0.000	-1.106	-1.106	0.000
17	27BP	28.58	6.969	0.000	6.969	0.000
17	27BX	9.08	2.213	0.000	1.756	2.213
17	27BXY	28.77	7.015	0.000	7.015	3.496
17	27BY	0.00	0.000	0.000	0.000	0.000
18	28AP	59.64	27.134	0.000	27.134	24.158
18	28AX	0.00	0.000	0.000	0.000	0.000
18	28AXY	98.53	1.200	-11.320	1.200	-11.320
18	28AY	84.51	3.692	-9.710	-9.710	3.692
18	28BP	22.20	10.100	0.000	10.100	2.949
18	28BX	22.68	10.321	0.000	5.214	10.321
18	28BXY	30.17	13.727	0.000	13.727	11.747
18	28BY	0.00	0.000	0.000	0.000	0.000
19	29AP	4.28	1.902	-0.380	-0.380	1.902
19	29AX	67.48	30.010	0.000	29.296	30.010
19	29AXY	26.34	7.854	-6.756	-6.756	7.854
19	29AY	35.50	0.901	-9.106	0.901	-9.106
19	29BP	24.44	10.868	0.000	10.868	3.765
19	29BX	40.29	17.916	0.000	10.892	17.916
19	29BXY	42.34	18.828	0.000	18.828	18.434
19	29BY	5.75	2.557	-0.402	-0.402	2.557
20a	30AP	23.68	0.000	-2.155	-2.155	-0.672
20a	30AY	27.78	0.000	-2.528	-2.528	-1.679
20a	30BP	8.38	0.554	0.000	0.554	0.466
20a	30BX	7.80	0.516	0.000	0.516	0.154
20	31P	38.42	2.539	0.000	2.539	1.392

20	31Y	28.44	1.880	0.000	1.880	1.642
20	32P	16.78	1.178	0.000	0.732	1.178
20	32X	23.44	0.000	-0.944	-0.258	-0.944
20	33P	47.04	3.109	0.000	3.109	1.350
20	33Y	51.13	3.379	0.000	3.379	2.551
20	34P	6.46	0.453	0.000	0.453	0.282
20	34X	5.48	0.385	-0.098	0.385	-0.098
20	35P	17.62	1.165	-0.115	1.165	-0.115
20	35Y	41.33	2.732	0.000	2.732	2.456
36	36P	61.49	0.000	-10.330	-8.760	-10.330
36	36X	59.25	8.807	0.000	7.202	8.807
21	37AP	56.67	0.000	-15.471	-15.471	-12.039
21	37AY	15.20	4.151	0.000	4.151	2.677
21	37BP	16.53	0.348	-4.513	-4.513	0.348
21	37BX	39.69	0.000	-10.835	-10.659	-10.835
22	38AP	28.31	0.000	-3.256	-0.368	-3.256
22	38AX	15.94	0.000	-1.833	-0.508	-1.833
22	38AXY	14.15	0.000	-1.628	-0.207	-1.628
22	38AY	31.22	0.000	-3.591	-3.243	-3.591
22	38BP	14.40	0.000	-1.657	-0.627	-1.657
22	38BX	36.78	0.000	-4.231	-3.134	-4.231
22	38BXY	32.41	0.000	-3.728	-2.515	-3.728
22	38BY	28.30	0.000	-3.256	-1.508	-3.256
23	39AP	53.07	0.000	-9.658	-9.658	-6.078
23	39AX	4.74	0.862	-0.265	-0.265	0.862
23	39AXY	12.07	2.197	0.000	0.572	2.197
23	39AY	8.85	0.659	-1.611	0.659	-1.611
23	39BP	19.06	0.320	-3.470	-3.470	0.320
23	39BX	7.57	0.000	-1.378	-1.378	-1.162
23	39BXY	19.48	0.000	-3.545	-3.545	-1.626
23	39BY	2.41	0.438	0.000	0.190	0.438
23	39C1P	26.39	4.802	-0.476	-0.476	4.802
23	39C1Y	14.88	2.707	0.000	0.813	2.707
23	F39C197P	22.89	4.166	-0.490	-0.490	4.166
23	F39C197Y	11.19	2.037	0.000	0.792	2.037
23	39C2P	15.54	2.828	0.000	0.087	2.828
23	39C2X	44.59	8.115	0.000	5.023	8.115
23	F39C2118P	15.71	2.860	0.000	0.087	2.860
23	F39C2118X	44.68	8.132	0.000	5.024	8.132
24	40P	16.28	2.963	0.000	2.963	2.601
24	40X	19.68	0.000	-2.634	-2.634	-2.445
24	40XY	4.71	0.585	-0.630	0.585	-0.630
24	40Y	10.75	0.384	-1.439	-1.439	0.384
24	41P	4.37	0.796	-0.068	-0.068	0.796
24	41X	7.05	0.000	-0.945	-0.349	-0.945
24	41XY	1.73	0.000	-0.231	-0.099	-0.231
24	41Y	0.74	0.000	-0.099	-0.039	-0.099
AngleR	42P	53.95	0.000	-4.910	-3.810	-4.910
AngleR	42X	57.77	5.091	0.000	3.881	5.091
AngleR	42XY	54.05	0.000	-4.919	-3.220	-4.919
AngleR	42Y	60.84	5.361	0.000	4.464	5.361
26	43AP	13.70	1.004	-1.724	-1.724	1.004
26	43AX	9.50	1.173	-1.156	1.173	-1.156
26	43AXY	16.36	0.610	-2.060	-2.060	0.610
26	43AY	10.15	1.243	-1.278	1.243	-1.278
26	43BP	29.09	0.000	-3.661	-3.661	-1.397
26	43BX	26.70	3.296	0.000	3.296	1.044
26	43BXY	34.94	0.000	-4.398	-4.398	-1.908
26	43BY	23.74	2.931	0.000	2.931	1.008

26	43CP	34.99	0.000	-4.404	-4.404	-1.617
26	43CX	26.39	3.258	0.000	3.258	0.739
26	43CXY	39.32	0.000	-4.950	-4.950	-2.061
26	43CY	24.88	3.071	0.000	3.071	0.813
27	44P	5.69	1.032	0.000	0.087	1.032
27	44Y	1.29	0.152	-0.216	0.152	-0.216
27	44AP	1.17	0.211	-0.183	-0.183	0.211
27	44AY	6.12	0.000	-1.020	-0.070	-1.020
27	44BP	12.73	0.000	-1.849	-1.849	-0.020
27	44BY	7.46	1.351	-0.361	1.351	-0.361
27	44CP	10.13	0.305	-1.472	-1.472	0.305
27	44CY	10.47	1.897	0.000	1.897	0.020
27	44DP	2.59	0.159	-0.432	-0.432	0.159
27	44DY	5.07	0.000	-0.845	-0.277	-0.845
27	44EP	4.60	0.834	0.000	0.248	0.834
27	44EY	2.47	0.448	-0.172	0.448	-0.172
28	45P	31.40	5.715	0.000	5.715	3.193
28	45AP	34.77	6.328	0.000	6.328	3.279
28	45BP	41.54	7.560	0.000	7.560	4.185
29	46P	22.99	0.000	-1.778	-1.778	-0.408
29	46X	37.67	0.000	-2.914	-2.914	-1.167
29	46XY	37.16	0.000	-2.875	-2.875	-2.120
29	46Y	35.80	0.000	-2.770	-2.770	-2.218
30	47P	44.52	5.679	0.000	5.679	3.874
30	47Y	8.65	1.103	0.000	1.103	0.602
30	47AP	12.94	1.862	0.000	1.862	1.358
30	47AY	19.74	2.839	0.000	2.839	1.594
31	48P	45.34	8.219	0.000	8.219	4.991
31	48Y	9.53	1.727	0.000	1.727	0.927
31	48AP	14.92	2.085	0.000	1.771	2.085
31	48AY	32.51	4.545	0.000	4.545	1.680
30	49P	34.62	4.556	0.000	4.556	2.946
30	49Y	7.39	0.972	0.000	0.972	0.589
30	49AP	12.03	1.682	0.000	1.419	1.682
30	49AY	14.21	1.986	0.000	1.986	0.400
32	50P	67.35	12.208	0.000	12.208	7.739
32	50X	10.47	0.724	-1.906	-1.906	0.724
32	50XY	31.52	5.713	-2.975	5.713	-2.975
32	50Y	3.23	0.585	0.000	0.585	0.127
32	50AP	20.47	3.725	0.000	3.725	3.567
32	50AY	13.25	2.412	-1.399	2.412	-1.399
33	51P	39.92	13.128	0.000	13.128	8.563
33	51Y	18.37	0.000	-6.000	-6.000	-3.092
33	51AP	1.61	0.586	0.000	0.586	0.462
33	51AY	14.97	0.000	-4.784	-4.784	-2.851
33	51BP	37.14	0.000	-10.140	-10.140	-5.672
33	51BY	23.37	0.000	-6.380	-6.380	-6.065
33	51CP	38.46	0.000	-10.499	-10.499	-6.613
33	51CY	25.57	0.000	-6.981	-6.981	-5.632
34	52P	16.88	7.680	0.000	7.680	5.085
34	52Y	9.59	0.000	-3.993	-3.993	-1.469
34	52AP	13.67	0.000	-6.193	-6.193	-2.751
34	52AY	3.16	0.000	-1.433	-1.433	-1.250
34	52BP	48.23	0.000	-20.364	-20.364	-9.129
34	52BY	13.04	0.000	-5.504	-3.033	-5.504
34	52CP	43.19	0.000	-18.237	-18.237	-9.426
34	52CY	13.87	0.000	-5.854	-5.854	-5.328
33	53P	49.96	16.429	0.000	16.429	8.740
33	53Y	20.83	0.000	-6.804	-6.804	-2.197

33	53AP	3.85	1.400	0.000	1.360	1.400
33	53AY	18.92	0.000	-6.048	-6.048	-4.159
33	53BP	43.36	0.000	-11.838	-11.838	-5.997
33	53BY	29.51	0.000	-8.057	-8.057	-7.254
33	53CP	34.74	0.000	-11.609	-11.609	-6.083
33	53CY	23.79	0.000	-7.949	-7.949	-5.645
35	54P	12.98	0.737	-1.058	-1.058	0.737
35	54X	18.22	0.000	-1.486	-1.273	-1.486
Pwmnt	g99P	6.89	0.000	-30.137	-30.137	-12.074
Pwmnt	g100P	4.97	0.000	-26.639	-26.639	-10.802
Pwmnt	g101P	8.76	0.000	-22.794	-22.794	-9.789
Pwmnt	g102P	3.54	0.000	-19.128	-19.128	-8.257
Pwmnt	g103P	3.23	0.000	-17.441	-17.441	-7.537
Pwmnt	g104P	2.95	0.000	-15.684	-15.684	-6.898
Pwmnt	g105P	2.57	0.000	-14.541	-14.541	-6.274
Plate	g106P	4.93	0.827	0.000	0.827	0.182
PMBR1	g107P	3.64	0.000	-0.371	-0.184	-0.371
PMBR1	g108P	7.65	0.000	-0.780	-0.780	-0.390
PMBR1	g109P	4.96	0.000	-0.506	-0.506	-0.257
BraceR	g110P	75.94	10.323	0.000	4.166	10.323
BraceR	g110X	75.32	0.000	-10.239	-2.457	-10.239
PMBR2	g111P	46.47	0.000	-4.738	-1.366	-4.738
PMBR2	g111X	40.78	4.158	0.000	1.067	4.158
PMBR2	g112P	9.07	0.925	-0.574	-0.574	0.925
PMBR2	g112X	20.53	0.000	-2.093	-1.701	-2.093
PMBR2	g113P	5.59	0.570	0.000	0.570	0.416
PMBR2	g113X	8.28	0.000	-0.844	-0.844	-0.509
PMBR3	g114P	1.22	0.020	-0.124	-0.124	0.020
PMBR4	g115P	3.67	0.498	0.000	0.498	0.180
PMBR4	g116P	9.99	1.358	0.000	0.659	1.358
PMBR4	g116X	11.20	0.000	-1.523	-1.212	-1.523
PMBR4	g117P	2.12	0.000	-0.288	-0.020	-0.288
PMBR5	g118P	0.40	0.000	-0.054	-0.013	-0.054
PMBR5	g120P	8.17	0.000	-1.111	-0.513	-1.111
PMBR5	g120X	7.70	1.047	-0.056	-0.056	1.047
Pwmnt	g121P	1.45	0.000	-8.088	-8.088	-3.571

*** Analysis Results for Load Case No. 1 "NESC Heavy" - Number of iterations in SAPS 35

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)
1P	-0.07862	0.6044	-0.0396	-0.5007	0.0111	0.8541	2.921	3.604	128.8
2P	-0.07808	0.5659	-0.03878	-0.6081	-0.0426	0.8112	2.922	3.566	124.3
3P	-0.07094	0.5093	-0.0377	-0.7079	-0.0503	0.7679	2.929	3.509	119.8
4P	-0.06828	0.4389	-0.03487	-0.5380	-0.0584	0.7005	2.932	3.439	112.8
5P	-0.0597	0.3633	-0.03199	-0.5245	-0.0038	0.6252	2.94	3.363	104.8
6P	-0.05905	0.3116	-0.02881	-0.4530	-0.0542	0.5691	2.941	3.312	98.72
7P	-0.0519	0.2574	-0.02617	-0.4278	-0.0072	0.5192	2.948	3.257	91.72
8P	-0.05346	0.2099	-0.02266	-0.3362	-0.0213	0.4696	2.947	3.21	84.73
15P	0	0	0	0.0000	0.0000	0.0000	15.44	15.44	0
16P	-0.2868	0.5609	-0.1728	-0.5694	-0.0064	0.8834	-0.2868	17.31	128.6
17P	0.1468	0.4434	0.1218	-0.5755	0.0424	0.7081	3.147	-13.81	112.9
18P	0.16	0.3187	0.1096	-0.4436	0.0526	0.6393	3.16	-16.43	98.86
19P	0.09809	0.2136	0.07772	-0.4259	0.0382	0.5038	3.098	-14.04	84.83
20AP	-0.04438	0.107	-0.02029	-0.0489	0.1979	0.3369	9.524	0.107	39.98
20BP	-0.0969	0.05537	-0.02574	-0.1658	-0.0543	0.3529	-0.0969	9.623	39.97
21P	-0.03035	0.06303	0.02852	0.0000	0.0000	0.0000	11.74	2.271	25.03
22P	-0.07962	0.01328	-0.03253	0.0000	0.0000	0.0000	2.128	11.78	24.97
23P	-0.2189	0.4005	-0.1479	-0.5925	-0.0090	0.8011	-0.2189	14.65	112.7
24P	-0.2141	0.2783	-0.147	-0.5171	-0.0052	0.6837	-0.2141	17.03	98.6
25P	-0.1647	0.1838	-0.09611	-0.4092	0.0145	0.6129	-0.1647	14.43	84.65
26P	0.07667	0.4414	0.06737	-0.5142	0.0433	0.7260	3.077	-8.184	112.9
27P	0.08204	0.3158	0.05904	-0.3784	0.0536	0.6700	3.082	-9.559	98.81
28P	0.04825	0.2118	0.03856	-0.3459	0.0390	0.5149	3.048	-8.413	84.79
29P	0	0	0	0.0000	0.0000	0.0000	1.5	0	-4.25
30P	-0.02736	0.05091	-0.002292	-0.0835	-0.0764	0.1584	1.473	0.05091	25
31P	-0.04421	0.06404	-0.003321	-0.0478	-0.0354	0.2418	1.456	0.06404	40
32P	-0.02711	0.1971	-0.006108	-0.3408	0.0166	0.4574	1.473	0.1971	84.74
33P	-0.02787	0.2965	-0.00714	-0.4701	-0.0065	0.5158	1.472	0.2965	98.74
34P	-0.0311	0.4201	-0.008305	-0.5152	-0.0083	0.5597	1.469	0.4201	112.7
35P	-0.03551	0.5831	-0.009773	-0.7424	-0.0096	0.5868	1.464	0.5831	128.7
36P	-0.03741	0.6685	-0.0106	-0.8643	-0.0099	0.5867	1.463	0.6685	134.7
37P	-0.0404	0.8086	-0.01188	-0.9057	-0.0100	0.5867	1.46	0.8086	143.7
1X	0.006595	0.6047	0.02022	-0.4807	-0.0000	0.8405	3.007	-2.395	128.8
1XY	0.007548	0.5179	0.01928	-0.5193	0.0287	0.8147	-2.992	-2.482	128.8
1Y	-0.07772	0.5173	-0.04003	-0.5399	0.0175	0.8183	-3.078	3.517	128.8
2X	0.006631	0.5675	0.01977	-0.6119	0.0311	0.8009	3.007	-2.433	124.3
2XY	0.007135	0.4775	0.01904	-0.5618	-0.0038	0.7762	-2.993	-2.523	124.3
2Y	-0.07758	0.4757	-0.03931	-0.5571	-0.0039	0.7804	-3.078	3.476	124.3
3X	0.004937	0.5092	0.01964	-0.7197	0.0188	0.7619	3.005	-2.491	119.8
3XY	0.008625	0.4299	0.01895	-0.5944	0.0155	0.7373	-2.991	-2.57	119.8
3Y	-0.07468	0.4297	-0.03842	-0.5866	-0.0484	0.7427	-3.075	3.43	119.8
4X	0.005609	0.4395	0.01817	-0.5390	0.0428	0.7008	3.006	-2.561	112.8
4XY	0.006159	0.3649	0.01756	-0.5082	-0.0154	0.6773	-2.994	-2.635	112.8
4Y	-0.06805	0.3635	-0.03562	-0.5049	0.0030	0.6831	-3.068	3.364	112.8
5X	0.002222	0.3627	0.01621	-0.5146	-0.0079	0.6348	3.002	-2.637	104.8
5XY	0.007888	0.2946	0.01593	-0.4776	0.0383	0.6177	-2.992	-2.705	104.8
5Y	-0.06535	0.295	-0.03258	-0.4822	-0.0559	0.6174	-3.065	3.295	104.8
6X	0.003813	0.3127	0.01346	-0.4511	0.0522	0.5842	3.004	-2.687	98.76
6XY	0.004039	0.2475	0.01373	-0.4150	-0.0046	0.5733	-2.996	-2.752	98.76
6Y	-0.05885	0.2469	-0.02878	-0.4113	0.0066	0.5671	-3.059	3.247	98.72

7X	-0.001971	0.2574	0.01109	-0.4337	0.0178	0.5289	2.998	-2.743	91.76
7XY	0.004845	0.1983	0.0118	-0.3783	0.0374	0.5286	-2.995	-2.802	91.76
7Y	-0.05892	0.1988	-0.02562	-0.3834	-0.0348	0.5235	-3.059	3.199	91.72
8X	-0.001308	0.21	0.007725	-0.3323	0.0389	0.4733	2.999	-2.79	84.76
8XY	-0.002279	0.1574	0.008994	-0.2809	0.0376	0.4839	-3.002	-2.843	84.76
8Y	-0.05176	0.1563	-0.02151	-0.2819	-0.0130	0.4798	-3.052	3.156	84.73
15X	0	0	0	0.0000	0.0000	0.0000	15.44	-15.44	0
15XY	0	0	0	0.0000	0.0000	0.0000	-15.44	-15.44	0
15Y	0	0	0	0.0000	0.0000	0.0000	-15.44	15.44	0
16X	0.2121	0.5626	0.1304	-0.4443	0.0186	0.8659	0.2121	-16.19	128.9
17Y	0.1466	0.3679	0.1198	-0.5783	-0.0159	0.7257	-2.853	-13.88	112.9
18Y	0.1596	0.2499	0.1184	-0.5100	-0.0051	0.6701	-2.84	-16.5	98.87
19Y	0.0974	0.16	0.07329	-0.4061	0.0366	0.5095	-2.903	-14.09	84.82
20AY	-0.04416	0.003518	0.002303	-0.0483	0.0609	0.3490	-9.612	0.003518	40
20BX	0.008121	0.05586	0.005057	-0.0590	-0.0336	0.3491	0.008121	-9.512	40.01
21X	0.07352	0.0708	-0.005807	0.0000	0.0000	0.0000	11.84	-2.137	24.99
21XY	-0.04171	-0.01137	0.007243	0.0000	0.0000	0.0000	-11.81	-2.219	25.01
21Y	0.02644	-0.01446	-0.01091	0.0000	0.0000	0.0000	-11.74	2.194	24.99
22X	0.008271	0.1366	-0.00822	0.0000	0.0000	0.0000	2.216	-11.63	24.99
22XY	0.008991	0.03964	0.002935	-0.0367	-0.0910	0.1859	-2.199	-11.73	25
22Y	-0.0365	0.04798	0.02599	0.2508	0.0296	-0.0124	-2.244	11.82	25.03
26Y	0.07547	0.3663	0.06528	-0.5096	-0.0151	0.7223	-2.925	-8.259	112.9
27Y	0.07956	0.2485	0.06064	-0.4228	-0.0042	0.6616	-2.92	-9.627	98.81
28Y	0.04726	0.1587	0.03627	-0.3201	0.0373	0.5130	-2.953	-8.466	84.79
9S	-0.05514	0.1787	-0.02371	-0.2621	-0.0231	0.4268	4.082	4.316	76.98
10S	-0.0657	0.1545	-0.02472	-0.1978	0.0016	0.3861	5.209	5.43	69.23
11S	-0.07021	0.1381	-0.02363	-0.1602	-0.0015	0.3376	6.343	6.551	61.48
12S	-0.08524	0.1197	-0.02405	-0.1162	0.0473	0.2926	7.784	7.989	51.56
13S	-0.09723	0.1067	-0.0212	-0.1248	-0.0162	0.2137	9.471	9.675	39.98
14S	-0.08036	0.06275	-0.01662	-0.2160	-0.1874	0.0874	11.69	11.83	24.98
i0.50E129S	-0.03544	0.5611	-0.01229	-0.5785	-0.0190	0.8171	-0.03544	0.5611	128.8
i0.50E113S	-0.03098	0.4018	-0.008707	-0.5169	-0.0220	0.7503	-0.03098	0.4018	112.8
i0.50E99S	-0.02772	0.2797	-0.007314	-0.4248	-0.0183	0.6596	-0.02772	0.2797	98.74
i0.50E85S	-0.027	0.1828	-0.006073	-0.2973	-0.0075	0.5391	-0.027	0.1828	84.74
21XF0.50S	-0.02781	0.06659	-0.09638	-0.0858	0.8249	0.0533	11.74	0.06659	24.9
22PF0.50S	-0.06216	0.03066	-0.3092	0.0000	0.0000	0.0000	-0.06216	11.8	24.69
9X	-0.00164	0.1791	0.008257	-0.2521	0.0613	0.4276	4.136	-3.958	77.01
9XY	0.005035	0.1162	0.01083	-0.1983	0.0303	0.4272	-4.133	-4.021	77.01
9Y	-0.0627	0.117	-0.02107	-0.1882	-0.0005	0.4224	-4.2	4.255	76.98
10X	0.003176	0.1558	0.007957	-0.2139	0.0355	0.3831	5.278	-5.119	69.26
10XY	0.004917	0.08423	0.01208	-0.1533	0.0528	0.3712	-5.27	-5.191	69.26
10Y	-0.06586	0.08431	-0.02033	-0.1608	-0.0008	0.3731	-5.341	5.359	69.23
11X	0.003773	0.1365	0.006432	-0.1478	0.0548	0.3359	6.417	-6.276	61.51
11XY	0.007274	0.05826	0.01208	-0.1229	0.0257	0.3250	-6.405	-6.354	61.51
11Y	-0.07626	0.05814	-0.01749	-0.1156	0.0186	0.3240	-6.489	6.471	61.48
12X	0.005402	0.1247	0.003439	-0.1022	0.0354	0.2865	7.874	-7.744	51.58
12XY	0.00888	0.03079	0.01208	-0.1036	0.0358	0.2705	-7.86	-7.838	51.59
12Y	-0.08364	0.03174	-0.01464	-0.1026	0.0417	0.2760	-7.952	7.901	51.57
13X	0.007037	0.1073	0.001613	-0.1293	0.0278	0.2148	9.576	-9.461	40
13XY	0.009025	0.004649	0.01167	-0.0725	0.0240	0.2092	-9.56	-9.564	40.01
13Y	-0.09629	0.003302	-0.009994	-0.0873	-0.0901	0.1971	-9.665	9.572	39.99
14X	0.007816	0.07266	0.00111	-0.1990	0.0312	0.1149	11.78	-11.7	25
14XY	0.009734	-0.01134	0.008817	0.0115	0.0258	0.1208	-11.76	-11.78	25.01
14Y	-0.03625	-0.01457	-0.01225	0.0101	-0.2475	0.0861	-11.81	11.76	24.99
21XF0.50Y	-0.027	-0.01292	-0.07497	-0.0827	-0.4329	0.3334	-11.8	-0.01292	24.93
22PF0.50X	0.008463	0.09521	-0.007927	0.0000	0.0000	0.0000	0.008463	-11.67	24.99

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 %
15P	-20.38	0.0	-23.81	0.0	0.0	-164.15	0.0	0.0	167.11	0.0	4.07	0.0	7.4	0.0	0.0	0.60	0.0	0.0
29P	0.17	0.0	-1.24	0.0	0.0	-31.34	0.0	0.0	31.36	0.0	13.56	0.0	5.2	0.0	0.0	-3.83	0.0	0.0
15X	28.25	0.0	-35.87	0.0	0.0	167.73	0.0	0.0	173.84	0.0	5.90	0.0	-1.0	0.0	0.0	-0.09	0.0	0.0
15XY	-23.68	0.0	-15.26	0.0	0.0	116.45	0.0	0.0	119.81	0.0	-1.85	0.0	-1.0	0.0	0.0	-0.51	0.0	0.0
15Y	27.79	0.0	-27.74	0.0	0.0	-192.54	0.0	0.0	196.51	0.0	-2.34	0.0	0.1	0.0	0.0	-0.56	0.0	0.0

Joint Displacements, Loads and Member Forces on Joints for Load Case "NESC Heavy":

Joint Label	X External Load (kips)	Y External Load (kips)	Z External Load (kips)	X Member Force (kips)	Y Member Force (kips)	Z Member Force (kips)	X Disp. (ft)	Y Disp. (ft)	Z Disp. (ft)
1P	0.0000	0.0000	-0.1927	0.0000	-0.0000	0.1927	-0.0786	0.6044	-0.0396
2P	0.0000	0.0000	-0.0923	0.0000	-0.0000	0.0923	-0.0781	0.5659	-0.0388
3P	0.0000	0.0000	-0.1921	0.0000	-0.0000	0.1921	-0.0709	0.5093	-0.0377
4P	0.0000	0.0000	-0.3270	-0.0000	0.0000	0.3270	-0.0683	0.4389	-0.0349
5P	0.0000	0.0000	-0.3335	-0.0000	0.0000	0.3335	-0.0597	0.3633	-0.0320
6P	0.0000	0.0000	-0.4888	-0.0000	-0.0000	0.4888	-0.0591	0.3116	-0.0288
7P	0.0000	0.0000	-0.5277	0.0000	-0.0000	0.5277	-0.0519	0.2574	-0.0262
8P	0.0000	0.0000	-0.6869	-0.0000	-0.0000	0.6869	-0.0535	0.2099	-0.0227
15P	0.0000	0.0000	-1.0736	20.3800	23.8134	-163.0743	0.0000	0.0000	0.0000
16P	-2.8070	8.2130	-1.4695	2.8070	-8.2130	1.4695	-0.2868	0.5609	-0.1728
17P	5.9700	5.4183	-3.0262	-5.9700	-5.4183	3.0262	0.1468	0.4434	0.1218
18P	7.4570	9.3482	-3.3618	-7.4570	-9.3482	3.3618	0.1600	0.3187	0.1096
19P	7.4370	7.8403	-2.4252	-7.4370	-7.8403	2.4252	0.0981	0.2136	0.0777
20AP	0.0000	0.0000	-0.6428	-0.0000	-0.0000	0.6428	-0.0444	0.1070	-0.0203
20BP	0.0000	0.0000	-0.6645	0.0000	-0.0000	0.6645	-0.0969	0.0554	-0.0257
21P	0.0000	0.0000	-0.3631	0.0000	-0.0000	0.3631	-0.0303	0.0630	0.0285
22P	0.0000	0.0000	-0.3631	-0.0000	-0.0000	0.3631	-0.0796	0.0133	-0.0325
23P	-4.8690	10.6930	-2.5433	4.8690	-10.6930	2.5433	-0.2189	0.4005	-0.1479
24P	-2.0720	9.2280	-2.5906	2.0720	-9.2280	2.5906	-0.2141	0.2783	-0.1470
25P	-5.9960	12.0510	-1.8523	5.9960	-12.0510	1.8523	-0.1647	0.1838	-0.0961
26P	0.0000	0.0000	-0.0795	0.0000	-0.0000	0.0795	0.0767	0.4414	0.0674
27P	0.0000	0.0000	-0.1057	-0.0000	0.0000	0.1057	0.0820	0.3158	0.0590
28P	0.0000	0.0000	-0.0795	0.0000	0.0000	0.0795	0.0483	0.2118	0.0386
29P	0.0000	0.5439	-1.1969	-0.1666	0.6947	-30.1383	0.0000	0.0000	0.0000
30P	0.0000	1.0378	-3.3775	0.0000	-1.0378	3.3775	-0.0274	0.0509	-0.0023
31P	0.0000	1.3090	-3.8203	-0.0000	-1.3090	3.8203	-0.0442	0.0640	-0.0033
32P	0.0000	1.2641	-3.5552	0.0000	-1.2641	3.5552	-0.0271	0.1971	-0.0061
33P	0.0000	0.5690	-1.6248	0.0000	-0.5690	1.6248	-0.0279	0.2965	-0.0071
34P	0.0000	0.6180	-1.7392	-0.0000	-0.6180	1.7392	-0.0311	0.4201	-0.0083
35P	0.0000	0.4440	-1.1793	0.0000	-0.4440	1.1793	-0.0355	0.5831	-0.0098
36P	0.0000	2.3890	-6.4860	-0.0000	-2.3890	6.4860	-0.0374	0.6685	-0.0106
37P	0.0000	0.8160	-8.1018	-0.0000	-0.8160	8.1018	-0.0404	0.8086	-0.0119
1X	0.0000	0.0741	-0.1927	-0.0000	-0.0741	0.1927	0.0066	0.6047	0.0202
1XY	0.0000	0.0691	-0.1824	0.0000	-0.0691	0.1824	0.0075	0.5179	0.0193
1Y	0.0000	0.0000	-0.1824	0.0000	-0.0000	0.1824	-0.0777	0.5173	-0.0400
2X	0.0000	0.0776	-0.0923	-0.0000	-0.0776	0.0923	0.0066	0.5675	0.0198
2XY	0.0000	0.0776	-0.0923	0.0000	-0.0776	0.0923	0.0071	0.4775	0.0190
2Y	0.0000	0.1760	-0.5683	-0.0000	-0.1760	0.5683	-0.0776	0.4757	-0.0393
3X	0.0000	0.1111	-0.1914	0.0000	-0.1111	0.1914	0.0049	0.5092	0.0196
3XY	0.0000	0.1111	-0.1914	0.0000	-0.1111	0.1914	0.0086	0.4299	0.0190
3Y	0.0000	0.0000	-0.1921	-0.0000	0.0000	0.1921	-0.0747	0.4297	-0.0384
4X	0.0000	0.1531	-0.3196	0.0000	-0.1531	0.3196	0.0056	0.4395	0.0182

4XY	0.0000	0.1481	-0.3118	-0.0000	-0.1481	0.3118	0.0062	0.3649	0.0176
4Y	0.0000	0.2190	-0.9132	-0.0000	-0.2190	0.9132	-0.0681	0.3635	-0.0356
5X	0.0000	0.1813	-0.3327	-0.0000	-0.1813	0.3327	0.0022	0.3627	0.0162
5XY	0.0000	0.1813	-0.3327	-0.0000	-0.1813	0.3327	0.0079	0.2946	0.0159
5Y	0.0000	0.0000	-0.3335	0.0000	0.0000	0.3335	-0.0653	0.2950	-0.0326
6X	0.0000	0.1636	-0.4720	-0.0000	-0.1636	0.4720	0.0038	0.3127	0.0135
6XY	0.0000	0.1636	-0.4643	-0.0000	-0.1636	0.4643	0.0040	0.2475	0.0137
6Y	0.0000	0.2410	-1.1331	0.0000	-0.2410	1.1331	-0.0589	0.2469	-0.0288
7X	0.0000	0.1963	-0.5270	0.0000	-0.1963	0.5270	-0.0020	0.2574	0.0111
7XY	0.0000	0.1963	-0.5270	0.0000	-0.1963	0.5270	0.0048	0.1983	0.0118
7Y	0.0000	0.0000	-0.5277	0.0000	0.0000	0.5277	-0.0589	0.1988	-0.0256
8X	0.0000	0.2174	-0.6794	0.0000	-0.2174	0.6794	-0.0013	0.2100	0.0077
8XY	0.0000	0.2174	-0.6717	-0.0000	-0.2174	0.6717	-0.0023	0.1574	0.0090
8Y	0.0000	0.2530	-1.3651	-0.0000	-0.2530	1.3651	-0.0518	0.1563	-0.0215
15X	0.0000	0.4392	-1.0736	-28.2506	35.4297	168.8062	0.0000	0.0000	0.0000
15XY	0.0000	0.4392	-1.0736	23.6790	14.8189	117.5285	0.0000	0.0000	0.0000
15Y	0.0000	0.0000	-1.0736	-27.7929	27.7446	-191.4682	0.0000	0.0000	0.0000
16X	1.6100	1.6773	-1.7815	-1.6100	-1.6773	1.7815	0.2121	0.5626	0.1304
17Y	-5.9690	5.7943	-0.6132	5.9690	-5.7943	0.6132	0.1466	0.3679	0.1198
18Y	-5.4190	5.3152	-0.6938	5.4190	-5.3152	0.6938	0.1596	0.2499	0.1184
19Y	-7.4930	7.1793	-0.5312	7.4930	-7.1793	0.5312	0.0974	0.1600	0.0733
20AY	0.0000	0.0000	-0.6711	0.0000	-0.0000	0.6711	-0.0442	0.0035	0.0023
20BX	0.0000	0.6316	-0.6645	-0.0000	-0.6316	0.6645	0.0081	0.0559	0.0051
21X	0.0000	0.0000	-0.3631	-0.0000	0.0000	0.3631	0.0735	0.0708	-0.0058
21XY	0.0000	0.0000	-0.3631	0.0000	-0.0000	0.3631	-0.0417	-0.0114	0.0072
21Y	0.0000	0.0000	-0.3631	-0.0000	-0.0000	0.3631	0.0264	-0.0145	-0.0109
22X	0.0000	0.3674	-0.3631	0.0000	-0.3674	0.3631	0.0083	0.1366	-0.0082
22XY	0.0000	0.3674	-0.4303	-0.0000	-0.3674	0.4303	0.0090	0.0396	0.0029
22Y	0.0000	0.0000	-0.4303	0.0000	-0.0000	0.4303	-0.0365	0.0480	0.0260
26Y	0.0000	0.0000	-0.0795	0.0000	-0.0000	0.0795	0.0755	0.3663	0.0653
27Y	0.0000	0.0000	-0.1057	-0.0000	0.0000	0.1057	0.0796	0.2485	0.0606
28Y	0.0000	0.0000	-0.0795	-0.0000	0.0000	0.0795	0.0473	0.1587	0.0363
9S	0.0000	0.0000	-0.6667	0.0000	0.0000	0.6667	-0.0551	0.1787	-0.0237
10S	0.0000	0.0000	-0.6696	-0.0000	-0.0000	0.6696	-0.0657	0.1545	-0.0247
11S	0.0000	0.0000	-0.8541	0.0000	0.0000	0.8541	-0.0702	0.1381	-0.0236
12S	0.0000	0.0000	-1.2093	0.0000	-0.0000	1.2093	-0.0852	0.1197	-0.0241
13S	0.0000	0.0000	-0.9976	-0.0000	-0.0000	0.9976	-0.0972	0.1067	-0.0212
14S	0.0000	0.0000	-1.5450	0.0000	0.0000	1.5450	-0.0804	0.0628	-0.0166
i0.50E129S	0.0000	0.0120	-0.0578	-0.0000	-0.0120	0.0578	-0.0354	0.5611	-0.0123
i0.50E113S	0.0000	0.0040	-0.0338	0.0000	-0.0040	0.0338	-0.0310	0.4018	-0.0087
i0.50E99S	0.0000	0.0000	-0.0338	0.0000	-0.0000	0.0338	-0.0277	0.2797	-0.0073
i0.50E85S	0.0000	0.0000	-0.0338	-0.0000	-0.0000	0.0338	-0.0270	0.1828	-0.0061
21XF0.50S	0.0000	0.0000	-0.0732	-0.0000	0.0000	0.0732	-0.0278	0.0666	-0.0964
22PF0.50S	0.0000	0.0000	-0.0240	-0.0000	-0.0000	0.0240	-0.0622	0.0307	-0.3092
9X	0.0000	0.3307	-0.6667	-0.0000	-0.3307	0.6667	-0.0016	0.1791	0.0083
9XY	0.0000	0.3307	-0.6667	0.0000	-0.3307	0.6667	0.0050	0.1162	0.0108
9Y	0.0000	0.0000	-0.6667	-0.0000	0.0000	0.6667	-0.0627	0.1170	-0.0211
10X	0.0000	0.3255	-0.6696	0.0000	-0.3255	0.6696	0.0032	0.1558	0.0080
10XY	0.0000	0.3255	-0.6696	-0.0000	-0.3255	0.6696	0.0049	0.0842	0.0121
10Y	0.0000	0.2850	-1.4406	0.0000	-0.2850	1.4406	-0.0659	0.0843	-0.0203
11X	0.0000	0.4067	-0.8541	0.0000	-0.4067	0.8541	0.0038	0.1365	0.0064
11XY	0.0000	0.4067	-0.8541	0.0000	-0.4067	0.8541	0.0073	0.0583	0.0121
11Y	0.0000	0.0000	-0.8541	-0.0000	-0.0000	0.8541	-0.0763	0.0581	-0.0175
12X	0.0000	0.5742	-1.2093	0.0000	-0.5742	1.2093	0.0054	0.1247	0.0034
12XY	0.0000	0.5742	-1.2093	-0.0000	-0.5742	1.2093	0.0089	0.0308	0.0121
12Y	0.0000	0.2510	-1.8893	-0.0000	-0.2510	1.8893	-0.0836	0.0317	-0.0146
13X	0.0000	0.4040	-0.9976	0.0000	-0.4040	0.9976	0.0070	0.1073	0.0016
13XY	0.0000	0.4040	-0.9976	0.0000	-0.4040	0.9976	0.0090	0.0046	0.0117
13Y	0.0000	0.2280	-1.6156	0.0000	-0.2280	1.6156	-0.0963	0.0033	-0.0100

14X	0.0000	0.6248	-1.5450	-0.0000	-0.6248	1.5450	0.0078	0.0727	0.0011
14XY	0.0000	0.6248	-1.5450	-0.0000	-0.6248	1.5450	0.0097	-0.0113	0.0088
14Y	0.0000	0.5580	-3.0550	-0.0000	-0.5580	3.0550	-0.0363	-0.0146	-0.0122
21XF0.50Y	0.0000	0.0000	-0.0963	-0.0000	-0.0000	0.0963	-0.0270	-0.0129	-0.0750
22PF0.50X	0.0000	0.0322	-0.0240	-0.0000	-0.0322	0.0240	0.0085	0.0952	-0.0079

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
1	2.929	50.00	50.00	5.86
2	8.803	50.00	50.00	17.61
3	8.611	50.00	50.00	17.22
4	8.341	50.00	50.00	16.68
5	12.422	50.00	50.00	24.84
6	7.622	50.00	50.00	15.24
7	11.075	50.00	50.00	22.15
8	10.391	50.00	50.00	20.78
9	12.021	50.00	50.00	24.04
10	9.806	50.00	50.00	19.61
11	13.587	50.00	50.00	27.17
12	0.595	50.00	50.00	1.19
13	0.939	50.00	50.00	1.88
14	1.158	50.00	50.00	2.32
15	1.388	50.00	50.00	2.78
16	1.469	50.00	50.00	2.94
17	1.906	50.00	50.00	3.81
18	1.632	50.00	50.00	3.26
19	3.106	50.00	50.00	6.21
20	3.533	50.00	50.00	7.07
21	4.038	50.00	50.00	8.08
22	3.773	50.00	50.00	7.55
23	1.722	50.00	50.00	3.44
24	1.846	50.00	50.00	3.69
25	1.260	50.00	50.00	2.52
26	6.912	50.00	50.00	13.82
27	8.143	50.00	50.00	16.29
28	0.745	50.00	50.00	1.49
29	1.339	50.00	50.00	2.68
30	1.076	50.00	50.00	2.15
31	1.667	50.00	50.00	3.33

*** Analysis Results for Load Case No. 2 "NESC Extreme" - Number of iterations in SAPS 12

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)
1P	-0.08288	0.6761	-0.04604	-0.6614	-0.0183	0.3872	2.917	3.676	128.8
2P	-0.08143	0.6236	-0.04454	-0.8041	-0.0966	0.3697	2.919	3.624	124.3
3P	-0.06796	0.551	-0.04272	-0.9046	-0.1189	0.3511	2.932	3.551	119.8
4P	-0.06321	0.4608	-0.03776	-0.6591	-0.0992	0.3215	2.937	3.461	112.8
5P	-0.04971	0.3716	-0.03339	-0.6032	-0.0227	0.2883	2.95	3.372	104.8
6P	-0.0484	0.3129	-0.02894	-0.5042	-0.0802	0.2642	2.952	3.313	98.72
7P	-0.03827	0.2537	-0.02561	-0.4601	-0.0258	0.2436	2.962	3.254	91.72
8P	-0.03921	0.2036	-0.0215	-0.3414	-0.0271	0.2231	2.961	3.204	84.73
15P	0	0	0	0.0000	0.0000	0.0000	15.44	15.44	0
16P	-0.1829	0.6555	-0.215	-0.7033	-0.0266	0.4323	-0.1829	17.41	128.6
17P	0.03168	0.4638	0.1703	-0.8881	0.0001	0.3024	3.032	-13.79	113
18P	0.04945	0.3165	0.1454	-0.6547	0.0057	0.2768	3.049	-16.43	98.9
19P	0.03212	0.2054	0.09195	-0.5651	-0.0103	0.2333	3.032	-14.04	84.84
20AP	-0.0286	0.09302	-0.01446	0.0251	0.1453	0.1897	9.539	0.09302	39.99
20BP	-0.05781	0.06474	-0.02143	-0.1841	-0.0459	0.2046	-0.05781	9.633	39.98
21P	-0.3206	0.03678	-0.02833	0.0000	0.0000	0.0000	11.45	2.245	24.97
22P	-0.059	0.2916	0.01252	0.0000	0.0000	0.0000	2.149	12.06	25.01
23P	-0.1317	0.4436	-0.1871	-0.7857	-0.0473	0.3601	-0.1317	14.69	112.6
24P	-0.1199	0.2977	-0.1669	-0.5969	-0.0366	0.3136	-0.1199	17.05	98.58
25P	-0.09174	0.1915	-0.1037	-0.4544	-0.0143	0.2913	-0.09174	14.44	84.65
26P	0.001565	0.4623	0.08911	-0.7057	0.0012	0.3154	3.002	-8.163	112.9
27P	0.01547	0.3149	0.07309	-0.4979	0.0067	0.2960	3.015	-9.56	98.82
28P	0.009246	0.2044	0.0423	-0.3865	-0.0096	0.2330	3.009	-8.421	84.79
29P	0	0	0	0.0000	0.0000	0.0000	1.5	0	-4.25
30P	-0.02047	0.07423	-0.0009968	-0.0644	-0.0477	0.0762	1.48	0.07423	25
31P	-0.02857	0.0697	-0.001411	0.0255	-0.0126	0.1173	1.471	0.0697	40
32P	-0.02597	0.1971	-0.002703	-0.3635	-0.0172	0.2131	1.474	0.1971	84.75
33P	-0.03413	0.3062	-0.003423	-0.5454	-0.0413	0.2361	1.466	0.3062	98.75
34P	-0.04637	0.4514	-0.004449	-0.5742	-0.0530	0.2526	1.454	0.4514	112.7
35P	-0.06328	0.6671	-0.006191	-1.2793	-0.0580	0.2624	1.437	0.6671	128.7
36P	-0.07011	0.8261	-0.008398	-1.6750	-0.0584	0.2619	1.43	0.8261	134.7
37P	-0.08057	1.103	-0.01274	-1.8033	-0.0586	0.2618	1.419	1.103	143.7
1X	-0.04474	0.6762	0.03332	-0.6362	0.0075	0.3670	2.955	-2.324	128.8
1XY	-0.04423	0.6358	0.02716	-0.6796	0.0285	0.3655	-3.044	-2.364	128.8
1Y	-0.08292	0.635	-0.05126	-0.6749	0.0010	0.3787	-3.083	3.635	128.7
2X	-0.04282	0.6244	0.0324	-0.8075	-0.0252	0.3525	2.957	-2.376	124.3
2XY	-0.04273	0.5834	0.02648	-0.7682	-0.0935	0.3496	-3.043	-2.417	124.3
2Y	-0.08144	0.5822	-0.04983	-0.7645	-0.0301	0.3614	-3.081	3.582	124.3
3X	-0.03945	0.5511	0.03182	-0.9125	-0.0677	0.3387	2.961	-2.449	119.8
3XY	-0.0319	0.5154	0.0261	-0.8518	-0.0829	0.3320	-3.032	-2.485	119.8
3Y	-0.07605	0.5153	-0.04811	-0.8437	-0.1014	0.3450	-3.076	3.515	119.8
4X	-0.02985	0.4612	0.02794	-0.6418	0.0016	0.3161	2.97	-2.539	112.8
4XY	-0.02944	0.4282	0.02297	-0.6341	-0.0817	0.3048	-3.029	-2.572	112.8
4Y	-0.06351	0.4274	-0.04279	-0.6399	-0.0112	0.3175	-3.064	3.427	112.8
5X	-0.02781	0.3715	0.02423	-0.6051	-0.0707	0.2883	2.972	-2.628	104.8
5XY	-0.01903	0.3406	0.02003	-0.5897	-0.0041	0.2800	-3.019	-2.659	104.8
5Y	-0.05897	0.3411	-0.03787	-0.5915	-0.0944	0.2892	-3.059	3.341	104.8
6X	-0.01964	0.3134	0.0198	-0.4947	0.0065	0.2663	2.98	-2.687	98.77
6XY	-0.01953	0.2837	0.01647	-0.4875	-0.0600	0.2622	-3.02	-2.716	98.77
6Y	-0.04842	0.2833	-0.03242	-0.4854	-0.0097	0.2667	-3.048	3.283	98.72

7X	-0.02051	0.2539	0.01642	-0.4670	-0.0346	0.2429	2.979	-2.746	91.77
7XY	-0.0119	0.2261	0.01382	-0.4429	-0.0103	0.2459	-3.012	-2.774	91.76
7Y	-0.04738	0.2267	-0.02827	-0.4460	-0.0547	0.2501	-3.047	3.227	91.72
8X	-0.01316	0.2035	0.01196	-0.3339	-0.0094	0.2194	2.987	-2.796	84.76
8XY	-0.01458	0.1787	0.01029	-0.3185	-0.0065	0.2297	-3.015	-2.821	84.76
8Y	-0.03743	0.178	-0.02317	-0.3191	-0.0259	0.2334	-3.037	3.178	84.73
15X	0	0	0	0.0000	0.0000	0.0000	15.44	-15.44	0
15XY	0	0	0	0.0000	0.0000	0.0000	-15.44	-15.44	0
15Y	0	0	0	0.0000	0.0000	0.0000	-15.44	15.44	0
16X	0.04494	0.6575	0.1864	-0.6487	0.0078	0.3766	0.04494	-16.09	129
17Y	0.03138	0.4307	0.1637	-0.8776	-0.0829	0.3218	-2.969	-13.82	113
18Y	0.04913	0.2858	0.1454	-0.6730	-0.0607	0.2992	-2.951	-16.46	98.9
19Y	0.03167	0.1807	0.08689	-0.5478	-0.0075	0.2298	-2.968	-14.07	84.84
20AY	-0.02855	0.03544	-0.001212	0.0254	0.0079	0.2073	-9.597	0.03544	40
20BX	0.000573	0.0649	0.005269	-0.0732	0.0026	0.2033	0.000573	-9.503	40.01
21X	0.1053	0.06526	0.0022	0.0000	0.0000	0.0000	11.88	-2.143	25
21XY	-0.04249	0.01821	0.002209	0.0000	0.0000	0.0000	-11.81	-2.19	25
21Y	0.07372	0.0001474	-0.01741	0.0000	0.0000	0.0000	-11.7	2.208	24.98
22X	-0.001215	0.1733	-0.0138	0.0000	0.0000	0.0000	2.207	-11.6	24.99
22XY	0.005346	0.06638	0.0006002	-0.0074	-0.0655	0.1498	-2.203	-11.7	25
22Y	-0.005915	0.07903	0.01644	0.1597	0.0229	-0.1448	-2.214	11.85	25.02
26Y	0.0003036	0.4293	0.08339	-0.6967	-0.0821	0.3096	-3	-8.196	112.9
27Y	0.01369	0.2847	0.07087	-0.5153	-0.0599	0.2897	-2.986	-9.59	98.82
28Y	0.008831	0.1797	0.03895	-0.3688	-0.0067	0.2385	-2.991	-8.445	84.79
9S	-0.03548	0.1694	-0.02179	-0.2394	-0.0289	0.2095	4.102	4.307	76.98
10S	-0.04195	0.1442	-0.02212	-0.1784	0.0022	0.1942	5.233	5.419	69.23
11S	-0.04277	0.1265	-0.02056	-0.1437	-0.0086	0.1691	6.37	6.539	61.48
12S	-0.05122	0.1076	-0.01999	-0.0919	0.0231	0.1500	7.818	7.976	51.56
13S	-0.05836	0.09242	-0.01709	-0.1558	0.0247	0.1044	9.51	9.661	39.98
14S	-0.06247	0.03342	-0.01805	-0.2088	-0.0894	0.0335	11.71	11.8	24.98
i0.50E129S	-0.06349	0.6559	-0.01434	-0.7740	-0.0797	0.3789	-0.06349	0.6559	128.8
i0.50E113S	-0.04643	0.4446	-0.007649	-0.6338	-0.0969	0.3108	-0.04643	0.4446	112.8
i0.50E99S	-0.03408	0.2984	-0.00585	-0.4911	-0.0915	0.3025	-0.03408	0.2984	98.74
i0.50E85S	-0.02594	0.1902	-0.004865	-0.3254	-0.0754	0.2616	-0.02594	0.1902	84.75
21XF0.50S	-0.02117	0.05872	-0.1148	-0.0655	0.9760	-0.1666	11.75	0.05872	24.89
22PF0.50S	-0.04456	0.4297	-0.1996	0.0000	0.0000	0.0000	-0.04456	12.2	24.8
9X	-0.01308	0.1702	0.012	-0.2298	0.0219	0.2025	4.124	-3.967	77.01
9XY	-0.005414	0.1385	0.01116	-0.2193	-0.0158	0.1982	-4.143	-3.999	77.01
9Y	-0.04404	0.1395	-0.02251	-0.2088	0.0027	0.2014	-4.182	4.277	76.98
10X	-0.006691	0.1451	0.01147	-0.1915	-0.0042	0.1847	5.268	-5.13	69.26
10XY	-0.005101	0.1082	0.01169	-0.1705	0.0171	0.1674	-5.28	-5.167	69.26
10Y	-0.04258	0.1086	-0.02167	-0.1747	-0.0088	0.1753	-5.318	5.384	69.23
11X	-0.005421	0.1254	0.009524	-0.1288	0.0259	0.1621	6.407	-6.287	61.51
11XY	-0.001632	0.08409	0.01094	-0.1316	-0.0078	0.1468	-6.414	-6.329	61.51
11Y	-0.0485	0.08436	-0.01887	-0.1277	0.0164	0.1524	-6.461	6.497	61.48
12X	-0.002982	0.1113	0.006447	-0.0922	0.0076	0.1404	7.866	-7.758	51.59
12XY	0.0003511	0.05991	0.0101	-0.1081	0.0110	0.1202	-7.868	-7.809	51.59
12Y	-0.05126	0.06061	-0.01603	-0.1009	0.0276	0.1288	-7.92	7.929	51.56
13X	-0.0007505	0.09407	0.003966	-0.0962	0.0172	0.1035	9.568	-9.475	40
13XY	0.001746	0.03658	0.008853	-0.0767	-0.0031	0.0939	-9.567	-9.532	40.01
13Y	-0.05678	0.0349	-0.01195	-0.1239	-0.0887	0.0905	-9.625	9.604	39.99
14X	-0.002021	0.06689	0.001367	-0.1601	0.0143	0.0495	11.77	-11.7	25
14XY	0.005745	0.0186	0.005593	-0.0473	0.0027	0.0579	-11.76	-11.75	25.01
14Y	-0.005616	0.0001882	-0.01498	-0.0685	-0.1646	0.0396	-11.78	11.77	24.99
21XF0.50Y	-0.01886	0.009261	-0.1961	-0.0631	-1.2399	0.3811	-11.79	0.009261	24.8
22PF0.50X	-0.0002583	0.2056	-0.08155	0.0000	0.0000	0.0000	-0.0002583	-11.56	24.92

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 %
15P	-22.98	0.0	-23.98	0.0	0.0	-166.12	0.0	0.0	169.41	0.0	0.20	0.0	6.8	0.0	0.0	0.45	0.0	0.0
29P	0.20	0.0	-2.06	0.0	0.0	-12.63	0.0	0.0	12.80	0.0	23.33	0.0	4.5	0.0	0.0	-1.84	0.0	0.0
15X	33.23	0.0	-38.88	0.0	0.0	185.44	0.0	0.0	192.37	0.0	5.64	0.0	0.2	0.0	0.0	0.24	0.0	0.0
15XY	-26.40	0.0	-23.60	0.0	0.0	136.73	0.0	0.0	141.24	0.0	1.15	0.0	-0.8	0.0	0.0	-0.44	0.0	0.0
15Y	28.61	0.0	-33.31	0.0	0.0	-203.54	0.0	0.0	208.23	0.0	-1.77	0.0	-2.5	0.0	0.0	-0.51	0.0	0.0

Joint Displacements, Loads and Member Forces on Joints for Load Case "NESC Extreme":

Joint Label	X External Load (kips)	Y External Load (kips)	Z External Load (kips)	X Member Force (kips)	Y Member Force (kips)	Z Member Force (kips)	X Disp. (ft)	Y Disp. (ft)	Z Disp. (ft)
1P	0.0000	0.2043	-0.1869	-0.0000	-0.2043	0.1869	-0.0829	0.6761	-0.0460
2P	0.0000	0.2043	-0.1869	0.0000	-0.2043	0.1869	-0.0814	0.6236	-0.0445
3P	0.0000	0.2043	-0.1869	0.0000	-0.2043	0.1869	-0.0680	0.5510	-0.0427
4P	0.0000	0.2043	-0.1869	-0.0000	-0.2043	0.1869	-0.0632	0.4608	-0.0378
5P	0.0000	0.2043	-0.1869	0.0000	-0.2043	0.1869	-0.0497	0.3716	-0.0334
6P	0.0000	0.2043	-0.1869	0.0000	-0.2043	0.1869	-0.0484	0.3129	-0.0289
7P	0.0000	0.2043	-0.1869	0.0000	-0.2043	0.1869	-0.0383	0.2537	-0.0256
8P	0.0000	0.8354	-0.7384	-0.0000	-0.8354	0.7384	-0.0392	0.2036	-0.0215
15P	0.0000	0.6311	-0.5515	22.9780	23.3531	-165.5702	0.0000	0.0000	0.0000
16P	-2.0320	5.2163	-0.8679	2.0320	-5.2163	0.8679	-0.1829	0.6555	-0.2150
17P	3.0490	3.4333	-2.0219	-3.0490	-3.4333	2.0219	0.0317	0.4638	0.1703
18P	3.2630	4.8413	-1.9979	-3.2630	-4.8413	1.9979	0.0495	0.3165	0.1454
19P	3.4250	4.2833	-1.5199	-3.4250	-4.2833	1.5199	0.0321	0.2054	0.0920
20AP	0.0000	0.6311	-0.5515	0.0000	-0.6311	0.5515	-0.0286	0.0930	-0.0145
20BP	0.0000	0.6311	-0.5515	0.0000	-0.6311	0.5515	-0.0578	0.0647	-0.0214
21P	0.0000	0.6311	-0.5515	-0.0000	-0.6311	0.5515	-0.3206	0.0368	-0.0283
22P	0.0000	0.6311	-0.5515	-0.0000	-0.6311	0.5515	-0.0590	0.2916	0.0125
23P	-3.0010	7.6933	-1.6499	3.0010	-7.6933	1.6499	-0.1317	0.4436	-0.1871
24P	-1.5210	6.8893	-1.5769	1.5210	-6.8893	1.5769	-0.1199	0.2977	-0.1669
25P	-3.1460	8.0243	-1.1559	3.1460	-8.0243	1.1559	-0.0917	0.1915	-0.1037
26P	0.0000	0.2043	-0.1869	-0.0000	-0.2043	0.1869	0.0016	0.4623	0.0891
27P	0.0000	0.2043	-0.1869	-0.0000	-0.2043	0.1869	0.0155	0.3149	0.0731
28P	0.0000	0.2043	-0.1869	-0.0000	-0.2043	0.1869	0.0092	0.2044	0.0423
29P	0.0000	0.6311	-0.5515	-0.1980	1.4255	-12.0782	0.0000	0.0000	0.0000
30P	0.0000	1.1941	-1.0245	0.0000	-1.1941	1.0245	-0.0205	0.0742	-0.0010
31P	0.0000	1.1481	-0.9865	0.0000	-1.1481	0.9865	-0.0286	0.0697	-0.0014
32P	0.0000	1.3444	-1.1664	-0.0000	-1.3444	1.1664	-0.0260	0.1971	-0.0027
33P	0.0000	0.4463	-0.3909	0.0000	-0.4463	0.3909	-0.0341	0.3062	-0.0034
34P	0.0000	0.4643	-0.4049	-0.0000	-0.4643	0.4049	-0.0464	0.4514	-0.0044
35P	0.0000	0.3433	-0.3029	-0.0000	-0.3433	0.3029	-0.0633	0.6671	-0.0062
36P	0.0000	8.5293	-2.9179	0.0000	-8.5293	2.9179	-0.0701	0.8261	-0.0084
37P	0.0000	2.8053	-3.6589	0.0000	-2.8053	3.6589	-0.0806	1.1027	-0.0127
1X	0.0000	0.2043	-0.1869	-0.0000	-0.2043	0.1869	-0.0447	0.6762	0.0333
1XY	0.0000	0.2043	-0.1869	-0.0000	-0.2043	0.1869	-0.0442	0.6358	0.0272
1Y	0.0000	0.2043	-0.1869	-0.0000	-0.2043	0.1869	-0.0829	0.6350	-0.0513
2X	0.0000	0.2043	-0.1869	0.0000	-0.2043	0.1869	-0.0428	0.6244	0.0324
2XY	0.0000	0.2043	-0.1869	0.0000	-0.2043	0.1869	-0.0427	0.5834	0.0265
2Y	0.0000	0.7363	-0.3149	0.0000	-0.7363	0.3149	-0.0814	0.5822	-0.0498
3X	0.0000	0.2043	-0.1869	0.0000	-0.2043	0.1869	-0.0394	0.5511	0.0318
3XY	0.0000	0.2043	-0.1869	0.0000	-0.2043	0.1869	-0.0319	0.5154	0.0261
3Y	0.0000	0.2043	-0.1869	0.0000	-0.2043	0.1869	-0.0760	0.5153	-0.0481
4X	0.0000	0.2043	-0.1869	-0.0000	-0.2043	0.1869	-0.0299	0.4612	0.0279

4XY	0.0000	0.2043	-0.1869	-0.0000	-0.2043	0.1869	-0.0294	0.4282	0.0230
4Y	0.0000	0.8683	-0.3459	-0.0000	-0.8683	0.3459	-0.0635	0.4274	-0.0428
5X	0.0000	0.2043	-0.1869	0.0000	-0.2043	0.1869	-0.0278	0.3715	0.0242
5XY	0.0000	0.2043	-0.1869	0.0000	-0.2043	0.1869	-0.0190	0.3406	0.0200
5Y	0.0000	0.2043	-0.1869	0.0000	-0.2043	0.1869	-0.0590	0.3411	-0.0379
6X	0.0000	0.2043	-0.1869	-0.0000	-0.2043	0.1869	-0.0196	0.3134	0.0198
6XY	0.0000	0.2043	-0.1869	-0.0000	-0.2043	0.1869	-0.0195	0.2837	0.0165
6Y	0.0000	0.9323	-0.3619	0.0000	-0.9323	0.3619	-0.0484	0.2833	-0.0324
7X	0.0000	0.2043	-0.1869	0.0000	-0.2043	0.1869	-0.0205	0.2539	0.0164
7XY	0.0000	0.2043	-0.1869	0.0000	-0.2043	0.1869	-0.0119	0.2261	0.0138
7Y	0.0000	0.2043	-0.1869	0.0000	-0.2043	0.1869	-0.0474	0.2267	-0.0283
8X	0.0000	0.8354	-0.7384	-0.0000	-0.8354	0.7384	-0.0132	0.2035	0.0120
8XY	0.0000	0.8354	-0.7384	-0.0000	-0.8354	0.7384	-0.0146	0.1787	0.0103
8Y	0.0000	1.6014	-0.9224	-0.0000	-1.6014	0.9224	-0.0374	0.1780	-0.0232
15X	0.0000	0.6311	-0.5515	-33.2331	38.2479	185.9933	0.0000	0.0000	0.0000
15XY	0.0000	0.6311	-0.5515	26.4024	22.9663	137.2768	0.0000	0.0000	0.0000
15Y	0.0000	0.6311	-0.5515	-28.6102	32.6780	-202.9927	0.0000	0.0000	0.0000
16X	-1.0150	5.2403	-1.0629	1.0150	-5.2403	1.0629	0.0449	0.6575	0.1864
17Y	-3.8230	4.5263	-0.3109	3.8230	-4.5263	0.3109	0.0314	0.4307	0.1637
18Y	-3.4980	4.2283	-0.3499	3.4980	-4.2283	0.3499	0.0491	0.2858	0.1454
19Y	-4.3620	4.9813	-0.2819	4.3620	-4.9813	0.2819	0.0317	0.1807	0.0869
20AY	0.0000	0.6311	-0.5515	0.0000	-0.6311	0.5515	-0.0286	0.0354	-0.0012
20BX	0.0000	0.6311	-0.5515	0.0000	-0.6311	0.5515	0.0006	0.0649	0.0053
21X	0.0000	0.6311	-0.5515	-0.0000	-0.6311	0.5515	0.1053	0.0653	0.0022
21XY	0.0000	0.6311	-0.5515	-0.0000	-0.6311	0.5515	-0.0425	0.0182	0.0022
21Y	0.0000	0.6311	-0.5515	0.0000	-0.6311	0.5515	0.0737	0.0001	-0.0174
22X	0.0000	0.6311	-0.5515	0.0000	-0.6311	0.5515	-0.0012	0.1733	-0.0138
22XY	0.0000	0.6311	-0.5515	0.0000	-0.6311	0.5515	0.0053	0.0664	0.0006
22Y	0.0000	0.6311	-0.5515	0.0000	-0.6311	0.5515	-0.0059	0.0790	0.0164
26Y	0.0000	0.2043	-0.1869	-0.0000	-0.2043	0.1869	0.0003	0.4293	0.0834
27Y	0.0000	0.2043	-0.1869	-0.0000	-0.2043	0.1869	0.0137	0.2847	0.0709
28Y	0.0000	0.2043	-0.1869	-0.0000	-0.2043	0.1869	0.0088	0.1797	0.0389
9S	0.0000	0.6311	-0.5515	0.0000	-0.6311	0.5515	-0.0355	0.1694	-0.0218
10S	0.0000	0.6311	-0.5515	-0.0000	-0.6311	0.5515	-0.0419	0.1442	-0.0221
11S	0.0000	0.6311	-0.5515	-0.0000	-0.6311	0.5515	-0.0428	0.1265	-0.0206
12S	0.0000	0.6311	-0.5515	-0.0000	-0.6311	0.5515	-0.0512	0.1076	-0.0200
13S	0.0000	0.6311	-0.5515	-0.0000	-0.6311	0.5515	-0.0584	0.0924	-0.0171
14S	0.0000	0.6311	-0.5515	0.0000	-0.6311	0.5515	-0.0625	0.0334	-0.0181
i0.50E129S	0.0000	0.2043	-0.1869	-0.0000	-0.2043	0.1869	-0.0635	0.6559	-0.0143
i0.50E113S	0.0000	0.2043	-0.1869	-0.0000	-0.2043	0.1869	-0.0464	0.4446	-0.0076
i0.50E99S	0.0000	0.2043	-0.1869	0.0000	-0.2043	0.1869	-0.0341	0.2984	-0.0058
i0.50E85S	0.0000	0.2043	-0.1869	0.0000	-0.2043	0.1869	-0.0259	0.1902	-0.0049
21XF0.50S	0.0000	0.6311	-0.5515	-0.0000	-0.6311	0.5515	-0.0212	0.0587	-0.1148
22PF0.50S	0.0000	0.6311	-0.5515	-0.0000	-0.6311	0.5515	-0.0446	0.4297	-0.1996
9X	0.0000	0.6311	-0.5515	0.0000	-0.6311	0.5515	-0.0131	0.1702	0.0120
9XY	0.0000	0.6311	-0.5515	0.0000	-0.6311	0.5515	-0.0054	0.1385	0.0112
9Y	0.0000	0.6311	-0.5515	-0.0000	-0.6311	0.5515	-0.0440	0.1395	-0.0225
10X	0.0000	0.6311	-0.5515	0.0000	-0.6311	0.5515	-0.0067	0.1451	0.0115
10XY	0.0000	0.6311	-0.5515	0.0000	-0.6311	0.5515	-0.0051	0.1082	0.0117
10Y	0.0000	1.4921	-0.7585	0.0000	-1.4921	0.7585	-0.0426	0.1086	-0.0217
11X	0.0000	0.6311	-0.5515	-0.0000	-0.6311	0.5515	-0.0054	0.1254	0.0095
11XY	0.0000	0.6311	-0.5515	-0.0000	-0.6311	0.5515	-0.0016	0.0841	0.0109
11Y	0.0000	0.6311	-0.5515	-0.0000	-0.6311	0.5515	-0.0485	0.0844	-0.0189
12X	0.0000	0.6311	-0.5515	0.0000	-0.6311	0.5515	-0.0030	0.1113	0.0064
12XY	0.0000	0.6311	-0.5515	-0.0000	-0.6311	0.5515	0.0004	0.0599	0.0101
12Y	0.0000	1.3911	-0.7345	-0.0000	-1.3911	0.7345	-0.0513	0.0606	-0.0160
13X	0.0000	0.6311	-0.5515	0.0000	-0.6311	0.5515	-0.0008	0.0941	0.0040
13XY	0.0000	0.6311	-0.5515	-0.0000	-0.6311	0.5515	0.0017	0.0366	0.0089
13Y	0.0000	1.3211	-0.7175	-0.0000	-1.3211	0.7175	-0.0568	0.0349	-0.0120

14X	0.0000	0.6311	-0.5515	-0.0000	-0.6311	0.5515	-0.0020	0.0669	0.0014
14XY	0.0000	0.6311	-0.5515	-0.0000	-0.6311	0.5515	0.0057	0.0186	0.0056
14Y	0.0000	2.3191	-0.9575	0.0000	-2.3191	0.9575	-0.0056	0.0002	-0.0150
21XF0.50Y	0.0000	0.6311	-0.5515	-0.0000	-0.6311	0.5515	-0.0189	0.0093	-0.1961
22PF0.50X	0.0000	0.6311	-0.5515	0.0000	-0.6311	0.5515	-0.0003	0.2056	-0.0816

Crossing Diagonal Check for Load Case "NESC Extreme" (RLOUT controls):

Comp. Member Label	Tens. Member Label	Connect Leg for Comp. Member	Force In Comp. Member (kips)	Force In Tens. Member (kips)	Original Supported L/R Cap. (kips)	RLX	RLY	RLZ	L/R	KL/R	Curve No.	Alternate Unsupported L/R Cap. (kips)	RLOUT	L/R	KL/R	Curve No.
15BX	15BXY	Long only	-2.86	0.29	20.37	0.500	0.500	0.500	132.18	129.32	5	15.14	1.000	168.79	150.01	6
19BX	19BXY	Long only	-3.86	-0.54	61.20	0.500	0.750	0.500	77.55	88.16	2	49.22	1.000	103.40	111.70	3
19BXY	19BX	Long only	-0.54	-3.86	61.20	0.500	0.750	0.500	77.55	88.16	2	49.22	1.000	103.40	111.70	3
20BY	20BP	Long only	-14.80	1.50	61.20	0.500	0.750	0.500	77.55	88.16	2	49.22	1.000	103.40	111.70	3
21BP	21BY	Short only	-3.43	-15.15	44.33	0.580	0.580	0.580	95.79	101.84	2	42.37	1.000	95.79	107.89	3
21BY	21BP	Short only	-15.15	-3.43	44.33	0.580	0.580	0.580	95.79	101.84	2	42.37	1.000	95.79	107.89	3

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
1	5.443	50.00	50.00	10.89
2	5.665	50.00	50.00	11.33
3	5.017	50.00	50.00	10.03
4	5.933	50.00	50.00	11.87
5	6.171	50.00	50.00	12.34
6	5.499	50.00	50.00	11.00
7	5.691	50.00	50.00	11.38
8	6.627	50.00	50.00	13.25
9	8.421	50.00	50.00	16.84
10	7.229	50.00	50.00	14.46
11	8.696	50.00	50.00	17.39
12	0.801	50.00	50.00	1.60
13	0.935	50.00	50.00	1.87
14	1.000	50.00	50.00	2.00
15	1.848	50.00	50.00	3.70
16	1.674	50.00	50.00	3.35
17	1.573	50.00	50.00	3.15
18	1.503	50.00	50.00	3.01
19	2.509	50.00	50.00	5.02
20	1.573	50.00	50.00	3.15
21	1.514	50.00	50.00	3.03
22	1.780	50.00	50.00	3.56
23	0.593	50.00	50.00	1.19
24	0.616	50.00	50.00	1.23
25	0.458	50.00	50.00	0.92
26	9.015	50.00	50.00	18.03
27	4.611	50.00	50.00	9.22
28	0.838	50.00	50.00	1.68
29	0.838	50.00	50.00	1.68

30	0.838	50.00	50.00	1.68
31	0.838	50.00	50.00	1.68

*** Overall summary for all load cases - Usage = Maximum Stress / Allowable Stress
Printed capacities do not include the strength factor entered for each load case.
The Group Summary reports on the member and load case that resulted in maximum usage
which may not necessarily be the same as that which produces maximum force.

Group Summary (Compression Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Cont-rol	Max Use In Comp. %	Comp. Control Member	Comp. Force (kips)	Comp. Control Load Case	L/R Capacity (kips)	Comp. Connect. Shear Capacity (kips)	Comp. Connect. Bearing Capacity (kips)	RLX	RLY	RLZ	L/R	KL/R Comp.	Length Comp. Member (ft)	Curve No.	No. Of Bolts
1	LEG1	SAE	3.5X3.5X0.25	36.0	91.43	Comp	91.43	3Y	-33.282	NESC Ext	53.833	36.400	54.375	0.500	0.500	0.500	60.52	60.52	7.000	1	4
2	LEG2	SAE	6X6X0.3125	36.0	91.18	Comp	91.18	5Y	-90.345	NESC Ext	99.083	109.200	203.906	1.000	1.000	1.000	60.50	60.50	6.050	1	12
3	LEG3	SAE	8X8X0.5	36.0	64.31	Tens	63.43	7Y	-158.333	NESC Ext	249.636	254.800	380.624	1.000	1.000	1.000	52.83	52.83	7.000	1	14
4	LEG4	SAE	8X8X0.625	36.0	64.50	Comp	64.50	10Y	-187.830	NESC Ext	306.646	291.200	543.749	1.000	1.000	1.000	60.12	60.12	7.915	1	16
5	LEG5	SAE	8X8X0.75	36.0	56.44	Comp	56.44	11Y	-189.164	NESC Ext	335.162	0.000	0.000	1.000	1.000	1.000	76.95	76.95	10.131	1	0
6	X1	SAE	2.5X2.5X0.1875	36.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.000	0	0
7	X2	SAU	2.5X2X0.1875	36.0	93.34	Comp	93.34	16AX	-13.349	NESC Ext	14.303	18.200	20.391	0.500	0.500	0.500	129.55	127.32	9.220	5	2
8	X3	SAU	4X3X0.25	36.0	61.56	Comp	61.56	17AX	-24.388	NESC Hea	39.613	45.500	67.969	0.500	0.750	0.500	100.45	105.33	10.000	2	5
9	X4	SAU	3.5X2.5X0.25	36.0	53.22	Comp	53.22	18AX	-17.423	NESC Hea	32.738	36.400	54.375	0.500	0.750	0.500	104.34	108.25	8.521	2	4
10	X5	SAU	4X3.5X0.3125	36.0	64.85	Tens	63.32	19AX	-38.755	NESC Hea	61.204	63.700	118.945	0.500	0.750	0.500	77.55	88.16	9.220	2	7
11	X6	SAU	5X3.5X0.25	36.0	57.13	Comp	57.13	21BY	-25.327	NESC Hea	44.335	54.600	81.562	0.580	0.580	0.580	95.79	101.84	10.597	2	6
12	X7	SAU	4X3X0.25	36.0	49.16	Comp	49.16	22AX	-15.234	NESC Hea	30.985	36.400	54.375	0.560	0.560	0.560	126.41	124.92	12.246	5	4
13	X8	SAU	3.5X3X0.25	36.0	42.65	Tens	41.92	23AX	-9.450	NESC Hea	22.542	27.300	40.781	0.550	0.550	0.550	147.17	140.74	14.070	5	3
14	X9	SAU	5X3X0.25	36.0	53.15	Comp	53.15	24AX	-11.391	NESC Hea	21.431	27.300	40.781	0.550	0.550	0.550	173.71	160.96	17.450	5	3
15	D1	SAU	5X3X0.25	36.0	98.99	Tens	33.30	25AY	-11.256	NESC Hea	33.799	63.700	95.156	1.000	0.500	0.500	127.63	125.86	14.103	5	7
16	D2	SAE	2X2X0.1875	36.0	39.49	Tens	14.46	26AX	-0.585	NESC Hea	4.044	18.200	20.391	0.500	0.500	0.500	256.65	224.16	16.853	5	2
17	D3	SAU	3X2X0.25	36.0	76.98	Tens	58.20	27AXY	-3.737	NESC Hea	6.420	36.400	54.375	1.000	0.500	0.500	264.74	230.33	19.194	5	4
18	D4	SAU	4X3X0.25	36.0	98.53	Comp	98.53	28AXY	-11.320	NESC Ext	11.489	45.500	67.969	0.500	1.000	0.500	205.19	205.19	15.321	4	5
19	D5	SAU	3.5X3X0.25	36.0	67.48	Tens	35.50	29AY	-9.106	NESC Ext	25.652	45.500	67.969	0.250	0.250	0.250	135.61				

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131.93 28.523     5     5
   20            H1    SAE 1.75X1.75X0.1875     36.0 51.13  Tens 23.44     32X   -0.944NESC Ext    4.027    9.100   10.195 1.000 1.000 1.000 209.91
209.91  6.000     4     1
   21            H2    SAU       4X3.5X0.25     36.0 56.67  Comp 56.67    37AP  -15.471NESC Hea   27.341   27.300   40.781 1.000 0.500 0.500 148.70
137.65 15.738     6     3
   22            H3    SAE       3X3X0.1875     36.0 36.78  Comp 36.78    38BX   -4.231NESC Ext   11.503   18.200   20.391 1.000 1.000 1.000 192.66
164.68  9.569     6     2
   23            H4    SAU         5X3X0.25     36.0 53.07  Comp 53.07    39AP   -9.658NESC Hea   21.560   18.200   27.187 1.000 1.000 1.000 173.07
160.48  9.562     5     2
   24            H5    SAE     3.5X3.5X0.25     36.0 19.68  Comp 19.68     40X   -2.634NESC Hea   13.386   18.200   27.187 1.000 1.000 1.000 233.97
190.09 13.531     6     2
   25           X10    SAE 1.75X1.75X0.1875     36.0  0.00        0.00            0.000            0.000    0.000    0.000 0.000 0.000 0.000   0.00
0.00  0.000     0     0
   26           X11    SAE       2X2X0.1875     36.0 39.32  Comp 39.32   43CXY   -4.950NESC Hea   12.587   18.200   20.391 1.000 1.000 1.000 129.22
127.06  4.243     5     2
   27           X12    SAU     2.5X2X0.1875     36.0 12.73  Comp 12.73    44BP   -1.849NESC Hea   14.533   18.200   20.391 0.750 0.500 0.500 128.22
126.30  9.125     5     2
   28            H6    SAU         4X3X0.25     36.0 41.54  Tens  0.00    45BP    0.000           35.407   18.200   27.187 1.000 1.000 1.000 110.60
115.30  6.000     3     2
   29            D6    SAU       3X2X0.1875     36.0 37.67  Comp 37.67     46X   -2.914NESC Hea    7.736   18.200   20.391 1.000 0.500 0.500 201.94
182.48 14.775     5     2
   30          HGR1    SAU     2.5X2X0.1875     36.0 44.52  Tens  0.00    49AY    0.000            5.486   18.200   20.391 1.000 0.500 0.500 205.58
205.58 13.585     4     2
   31          HGR2    SAE       3X3X0.1875     36.0 45.34  Tens  0.00    48AY    0.000            8.140   18.200   20.391 1.000 0.500 0.500 195.77
195.77 15.319     4     2
   32            A1    SAE         3X3X0.25     36.0 67.35  Tens 16.35    50XY   -2.975NESC Ext   21.867   18.200   27.187 0.500 0.500 0.500 142.64
137.29 14.073     5     2
   33            A2    SAU       3.5X3X0.25     36.0 49.96  Tens 43.36    53BP  -11.838NESC Hea   33.416   27.300   40.781 1.000 1.000 1.000 106.97
113.49  5.625     3     3
   34            A#    SAE         4X4X0.25     36.0 48.23  Comp 48.23    52BP  -20.364NESC Hea   42.220   45.500   67.969 1.000 1.000 1.000 103.77
111.89  6.875     3     5
   35            H7    SAU     2.5X2X0.1875     36.0 18.22  Comp 18.22     54X   -1.486NESC Ext    8.154    9.100   10.195 1.000 1.000 1.000 168.62
168.62  6.000     4     1
   36            H8    DAE 1.75X1.75X0.1875     36.0 61.49  Comp 61.49     36P  -10.330NESC Ext   19.743   16.800   20.391 1.000 1.000 1.000 134.08
134.08  6.000     4     1
  Pwmnt 12" Std. Pipe Pwmnt    Pipe 12" Std.    42.0  8.76  Comp  8.76   g101P  -22.794NESC Hea  260.146    0.000    0.000 1.000 1.000 1.000 122.32
122.32 44.750     4     0
  PMBR1     L2x2x3/16   SAE       2X2X0.1875     36.0  7.65  Comp  7.65   g108P   -0.780NESC Hea   20.044   16.800   10.195 1.000 1.000 1.000  45.69
82.84  1.500     3     1 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize
moments): g107P  ??
  PMBR2 L2.5x2.5x3/16   SAE   2.5X2.5X0.1875     36.0 46.47  Comp 46.47   g111P   -4.738NESC Ext   22.126   16.800   10.195 1.000 1.000 1.000  81.32
100.66  3.354     3     1
  PMBR3     L3x3x3/16   SAE       3X3X0.1875     36.0  1.22  Comp  1.22   g114P   -0.124NESC Hea   11.823   16.800   10.195 1.000 1.000 1.000 162.44
162.44  8.068     4     1
  PMBR4  L3.5x3.5x1/4   SAE     3.5X3.5X0.25     36.0 11.20  Comp 11.20   g116X   -1.523NESC Ext   17.249   16.800   13.594 1.000 1.000 1.000 167.46
167.46  9.685     4     1 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize
moments): g117P  ??
  PMBR5      L4x4x1/4   SAE         4X4X0.25     36.0  8.17  Comp  8.17   g120P   -1.111NESC Ext   16.004   16.800   13.594 1.000 1.000 1.000 186.27
186.27 12.340     4     1 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize
moments): g118P  ??
   20a           H1    SAE 1.75X1.75X0.1875     36.0 27.78  Comp 27.78    30AY   -2.528NESC Hea   13.441    9.100   10.195 0.500 0.500 0.500 104.96
112.48  6.000     3     1
 AngleR     L2x2x1/4    SAE         2X2X0.25     36.0 60.84  Tens 54.05    42XY   -4.919NESC Ext   15.869    9.100   13.594 1.000 1.000 1.000 130.21
130.21  4.243     4     1
 BraceR  L2.5x2.5x1/4   SAE     2.5X2.5X0.25     36.0 75.94  Tens 75.32   g110X  -10.239NESC Ext   29.101   16.800   13.594 1.000 1.000 1.000  81.98
100.99  3.354     3     1 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize
moments): g110P g110X  ??
  Plate    6"x3/4" PL   Bar            6x3/4     36.0  4.93  Tens  0.00   g106P    0.000          109.423   16.800   40.781 1.000 1.000 1.000  83.19
101.59  1.501     3     1
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6R X1 SAE 2.5X2.5X0.25 36.0 80.44 Comp 80.44 15AX -16.382NESC Ext 20.366 33.600 27.187 0.500 0.500 0.500 132.18
129.32 10.817 5 2

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Control	Max Use In Tens. %	Tension Control Member	Tension Force (kips)	Tension Control Load Case	Net Section Capacity (kips)	Tension Connect. Shear Capacity (kips)	Tension Connect. Bearing Capacity (kips)	Tension Connect. Rupture Capacity (kips)	Length Tens. Member (ft)	No. Of Bolts Tens.	No. Of Holes	Hole Diameter (in)
1	LEG1	SAE	3.5X3.5X0.25	36.0	91.43	Comp	85.87	3X	31.257	NESC Ext	47.340	36.400	54.375	60.417	7.000	4	2.000	0.75
2	LEG2	SAE	6X6X0.3125	36.0	91.18	Comp	84.50	5X	82.514	NESC Ext	97.650	109.200	203.906	183.656	6.050	12	4.000	0.75
3	LEG3	SAE	8X8X0.5	36.0	64.31	Tens	64.31	7X	149.045	NESC Ext	231.750	254.800	380.624	395.849	7.000	14	3.500	0.75
4	LEG4	SAE	8X8X0.625	36.0	64.50	Comp	62.48	9X	179.258	NESC Ext	286.897	0.000	0.000	0.000	7.915	0	3.500	0.75
5	LEG5	SAE	8X8X0.75	36.0	56.44	Comp	53.42	11X	176.742	NESC Ext	330.839	0.000	0.000	0.000	10.131	0	4.000	0.75
6	X1	SAE	2.5X2.5X0.1875	36.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0
7	X2	SAU	2.5X2X0.1875	36.0	93.34	Comp	79.25	16AP	14.363	NESC Ext	18.650	18.200	20.391	18.125	9.220	2	1.000	0.75
8	X3	SAU	4X3X0.25	36.0	61.56	Comp	60.79	17AP	26.860	NESC Hea	44.185	45.500	67.969	52.912	10.000	5	1.740	0.75
9	X4	SAU	3.5X2.5X0.25	36.0	53.22	Comp	51.36	18AP	18.695	NESC Hea	40.399	36.400	54.375	42.647	8.521	4	1.030	0.75
10	X5	SAU	4X3.5X0.3125	36.0	64.85	Tens	64.85	20AP	38.459	NESC Hea	59.307	63.700	118.945	74.976	9.220	7	1.790	0.75
11	X6	SAU	5X3.5X0.25	36.0	57.13	Comp	49.30	21BXY	22.272	NESC Hea	45.178	54.600	81.562	46.012	10.597	6	1.550	0.75
12	X7	SAU	4X3X0.25	36.0	49.16	Comp	38.88	22BP	14.152	NESC Hea	40.581	36.400	54.375	42.206	12.246	4	1.000	0.75
13	X8	SAU	3.5X3X0.25	36.0	42.65	Tens	42.65	23AP	11.642	NESC Hea	40.419	27.300	40.781	38.516	14.070	3	1.000	0.75
14	X9	SAU	5X3X0.25	36.0	53.15	Comp	25.34	24AP	6.918	NESC Hea	40.581	27.300	40.781	36.250	17.450	3	1.000	0.75
15	D1	SAU	5X3X0.25	36.0	98.99	Tens	98.99	25AP	35.903	NESC Hea	36.268	63.700	95.156	72.037	14.103	7	1.710	0.75
16	D2	SAE	2X2X0.1875	36.0	39.49	Tens	39.49	26BX	7.158	NESC Ext	18.448	18.200	20.391	18.125	16.853	2	1.000	0.75
17	D3	SAU	3X2X0.25	36.0	76.98	Tens	76.98	27AX	18.768	NESC Hea	24.381	36.400	54.375	48.333	19.194	4	1.000	0.75
18	D4	SAU	4X3X0.25	36.0	98.53	Comp	59.64	28AP	27.134	NESC Hea	47.101	45.500	67.969	60.337	15.321	5	1.260	0.75
19	D5	SAU	3.5X3X0.25	36.0	67.48	Tens	67.48	29AX	30.010	NESC Ext	44.469	45.500	67.969	50.906	28.523	5	1.000	0.75
20	H1	SAE	1.75X1.75X0.1875	36.0	51.13	Tens	51.13	33Y	3.379	NESC Hea	15.532	9.100	10.195	6.609	6.000	1	1.000	0.75
21	H2	SAU	4X3.5X0.25	36.0	56.67	Comp	15.20	37AY	4.151	NESC Hea	48.519	27.300	40.781	36.250	15.738	3	1.000	0.75

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     22           H3   SAE       3X3X0.1875     36.0 36.78  Comp  0.00      38BY   0.000            30.760   18.200   20.391   18.125  9.569     2
1.000     0.75
     23           H4   SAU         5X3X0.25     36.0 53.07  Comp 44.68 F39C2118X   8.132NESC Ext   40.581   18.200   27.187   24.167  2.208     2
1.000     0.75
     24           H5   SAE     3.5X3.5X0.25     36.0 19.68  Comp 16.28       40P   2.963NESC Hea   48.681   18.200   27.187   25.677 13.531     2
1.000     0.75
     25          X10   SAE 1.75X1.75X0.1875     36.0  0.00        0.00             0.000             0.000    0.000    0.000    0.000  0.000     0
0.000        0
     26          X11   SAE       2X2X0.1875     36.0 39.32  Comp 26.70      43BX   3.296NESC Hea   18.448   18.200   20.391   12.347  4.243     2
1.000     0.75
     27          X12   SAU     2.5X2X0.1875     36.0 12.73  Comp 10.47      44CY   1.897NESC Hea   18.650   18.200   20.391   18.125  9.125     2
1.000     0.75
     28           H6   SAU         4X3X0.25     36.0 41.54  Tens 41.54      45BP   7.560NESC Hea   40.581   18.200   27.187   24.167  6.000     2
1.000     0.75
     29           D6   SAU       3X2X0.1875     36.0 37.67  Comp  0.00       46Y   0.000            18.529   18.200   20.391   12.755 14.775     2
1.000     0.75
     30         HGR1   SAU     2.5X2X0.1875     36.0 44.52  Tens 44.52       47P   5.679NESC Hea   18.650   18.200   20.391   12.755 13.250     2
1.000     0.75
     31         HGR2   SAE       3X3X0.1875     36.0 45.34  Tens 45.34       48P   8.219NESC Hea   30.760   18.200   20.391   18.125 15.022     2
1.000     0.75
     32           A1   SAE         3X3X0.25     36.0 67.35  Tens 67.35       50P  12.208NESC Hea   36.997   18.200   27.187   18.125 14.073     2
1.590     0.75
     33           A2   SAU       3.5X3X0.25     36.0 49.96  Tens 49.96       53P  16.429NESC Hea   32.886   36.400   54.375   42.647 11.643     4
2.240     0.75
     34           A#   SAE         4X4X0.25     36.0 48.23  Comp 16.88       52P   7.680NESC Hea   46.393   45.500   67.969   48.262 14.073     5
2.710     0.75
     35           H7   SAU     2.5X2X0.1875     36.0 18.22  Comp  8.10       54P   0.737NESC Ext   21.688    9.100   10.195    9.629  6.000     1
1.000     0.75
     36           H8   DAE 1.75X1.75X0.1875     36.0 61.49  Comp 59.25       36X   8.807NESC Ext   31.823   16.800   20.391   14.864  6.000     1
2.000   0.6875
  Pwmnt 12" Std. Pipe Pwmnt    Pipe 12" Std.     42.0  8.76  Comp  0.00     g121P   0.000           571.199    0.000    0.000    0.000  9.000     0
0.000        0
  PMBR1     L2x2x3/16   SAE      2X2X0.1875     36.0  7.65  Comp  0.00     g109P   0.000            18.827   16.800   10.195   10.343  1.500     1
1.000   0.6875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g107P
??
  PMBR2 L2.5x2.5x3/16   SAE   2.5X2.5X0.1875     36.0 46.47  Comp 40.78     g111X   4.158NESC Ext   25.048   16.800   10.195   11.328  3.354     1
1.000   0.6875
  PMBR3     L3x3x3/16   SAE       3X3X0.1875     36.0  1.22  Comp  0.20     g114P   0.020NESC Ext   31.139   16.800   10.195   11.328  8.068     1
1.000   0.6875
  PMBR4  L3.5x3.5x1/4   SAE     3.5X3.5X0.25     36.0 11.20  Comp  9.99     g116P   1.358NESC Ext   49.187   16.800   13.594   15.104  9.685     1
1.000   0.6875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g117P
??
  PMBR5      L4x4x1/4   SAE         4X4X0.25     36.0  8.17  Comp  7.70     g120X   1.047NESC Ext   57.287   16.800   13.594   15.104 12.340     1
1.000   0.6875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g118P
??
    20a           H1   SAE 1.75X1.75X0.1875     36.0 27.78  Comp  8.38      30BP   0.554NESC Hea   15.532    9.100   10.195    6.609  6.000     1
1.000     0.75
 AngleR      L2x2x1/4   SAE         2X2X0.25     36.0 60.84  Tens 60.84       42Y   5.361NESC Ext   24.381    9.100   13.594    8.812  4.243     1
1.000     0.75
 BraceR  L2.5x2.5x1/4   SAE     2.5X2.5X0.25     36.0 75.94  Tens 75.94     g110P  10.323NESC Ext   32.987   16.800   13.594   15.104  3.354     1
1.000   0.6875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g110P
g110X  ??
  Plate    6"x3/4" PL   Bar            6x3/4     36.0  4.93  Tens  4.93     g106P   0.827NESC Hea  129.094   16.800   40.781   45.312  1.501     1
1.000   0.6875
     6R           X1   SAE     2.5X2.5X0.25     36.0 80.44  Comp 74.52      15AP  17.947NESC Ext   32.987   33.600   27.187   24.084 10.817     2
1.000   0.6875
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*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	98.99	25AP	Angle
NESC Extreme	98.53	28AXY	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	10.89	NESC Extreme	0.0
2	Clamp	17.61	NESC Heavy	0.0
3	Clamp	17.22	NESC Heavy	0.0
4	Clamp	16.68	NESC Heavy	0.0
5	Clamp	24.84	NESC Heavy	0.0
6	Clamp	15.24	NESC Heavy	0.0
7	Clamp	22.15	NESC Heavy	0.0
8	Clamp	20.78	NESC Heavy	0.0
9	Clamp	24.04	NESC Heavy	0.0
10	Clamp	19.61	NESC Heavy	0.0
11	Clamp	27.17	NESC Heavy	0.0
12	Clamp	1.60	NESC Extreme	0.0
13	Clamp	1.88	NESC Heavy	0.0
14	Clamp	2.32	NESC Heavy	0.0
15	Clamp	3.70	NESC Extreme	0.0
16	Clamp	3.35	NESC Extreme	0.0
17	Clamp	3.81	NESC Heavy	0.0
18	Clamp	3.26	NESC Heavy	0.0
19	Clamp	6.21	NESC Heavy	0.0
20	Clamp	7.07	NESC Heavy	0.0
21	Clamp	8.08	NESC Heavy	0.0
22	Clamp	7.55	NESC Heavy	0.0
23	Clamp	3.44	NESC Heavy	0.0
24	Clamp	3.69	NESC Heavy	0.0
25	Clamp	2.52	NESC Heavy	0.0
26	Clamp	18.03	NESC Extreme	0.0
27	Clamp	16.29	NESC Heavy	0.0
28	Clamp	1.68	NESC Extreme	0.0
29	Clamp	2.68	NESC Heavy	0.0
30	Clamp	2.15	NESC Heavy	0.0
31	Clamp	3.33	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	1	Clamp	16X	1.610	1.677	1.781	2.929
NESC Heavy	2	Clamp	16P	-2.807	8.213	1.469	8.803

NESC Heavy	3	Clamp	17P	5.970	5.418	3.026	8.611
NESC Heavy	4	Clamp	17Y	-5.969	5.794	0.613	8.341
NESC Heavy	5	Clamp	18P	7.457	9.348	3.362	12.422
NESC Heavy	6	Clamp	18Y	-5.419	5.315	0.694	7.622
NESC Heavy	7	Clamp	19P	7.437	7.840	2.425	11.075
NESC Heavy	8	Clamp	19Y	-7.493	7.179	0.531	10.391
NESC Heavy	9	Clamp	23P	-4.869	10.693	2.543	12.021
NESC Heavy	10	Clamp	24P	-2.072	9.228	2.591	9.806
NESC Heavy	11	Clamp	25P	-5.996	12.051	1.852	13.587
NESC Heavy	12	Clamp	2Y	0.000	0.176	0.568	0.595
NESC Heavy	13	Clamp	4Y	0.000	0.219	0.913	0.939
NESC Heavy	14	Clamp	6Y	0.000	0.241	1.133	1.158
NESC Heavy	15	Clamp	8Y	0.000	0.253	1.365	1.388
NESC Heavy	16	Clamp	10Y	0.000	0.285	1.441	1.469
NESC Heavy	17	Clamp	12Y	0.000	0.251	1.889	1.906
NESC Heavy	18	Clamp	13Y	0.000	0.228	1.616	1.632
NESC Heavy	19	Clamp	14Y	0.000	0.558	3.055	3.106
NESC Heavy	20	Clamp	30P	0.000	1.038	3.377	3.533
NESC Heavy	21	Clamp	31P	0.000	1.309	3.820	4.038
NESC Heavy	22	Clamp	32P	0.000	1.264	3.555	3.773
NESC Heavy	23	Clamp	33P	0.000	0.569	1.625	1.722
NESC Heavy	24	Clamp	34P	0.000	0.618	1.739	1.846
NESC Heavy	25	Clamp	35P	0.000	0.444	1.179	1.260
NESC Heavy	26	Clamp	36P	0.000	2.389	6.486	6.912
NESC Heavy	27	Clamp	37P	0.000	0.816	8.102	8.143
NESC Heavy	28	Clamp	10XY	0.000	0.325	0.670	0.745
NESC Heavy	29	Clamp	12XY	0.000	0.574	1.209	1.339
NESC Heavy	30	Clamp	13XY	0.000	0.404	0.998	1.076
NESC Heavy	31	Clamp	14XY	0.000	0.625	1.545	1.667
NESC Extreme	1	Clamp	16X	-1.015	5.240	1.063	5.443
NESC Extreme	2	Clamp	16P	-2.032	5.216	0.868	5.665
NESC Extreme	3	Clamp	17P	3.049	3.433	2.022	5.017
NESC Extreme	4	Clamp	17Y	-3.823	4.526	0.311	5.933
NESC Extreme	5	Clamp	18P	3.263	4.841	1.998	6.171
NESC Extreme	6	Clamp	18Y	-3.498	4.228	0.350	5.499
NESC Extreme	7	Clamp	19P	3.425	4.283	1.520	5.691
NESC Extreme	8	Clamp	19Y	-4.362	4.981	0.282	6.627
NESC Extreme	9	Clamp	23P	-3.001	7.693	1.650	8.421
NESC Extreme	10	Clamp	24P	-1.521	6.889	1.577	7.229
NESC Extreme	11	Clamp	25P	-3.146	8.024	1.156	8.696
NESC Extreme	12	Clamp	2Y	0.000	0.736	0.315	0.801
NESC Extreme	13	Clamp	4Y	0.000	0.868	0.346	0.935
NESC Extreme	14	Clamp	6Y	0.000	0.932	0.362	1.000
NESC Extreme	15	Clamp	8Y	0.000	1.601	0.922	1.848
NESC Extreme	16	Clamp	10Y	0.000	1.492	0.758	1.674
NESC Extreme	17	Clamp	12Y	0.000	1.391	0.734	1.573
NESC Extreme	18	Clamp	13Y	0.000	1.321	0.717	1.503
NESC Extreme	19	Clamp	14Y	0.000	2.319	0.957	2.509
NESC Extreme	20	Clamp	30P	0.000	1.194	1.024	1.573
NESC Extreme	21	Clamp	31P	0.000	1.148	0.986	1.514
NESC Extreme	22	Clamp	32P	0.000	1.344	1.166	1.780
NESC Extreme	23	Clamp	33P	0.000	0.446	0.391	0.593
NESC Extreme	24	Clamp	34P	0.000	0.464	0.405	0.616
NESC Extreme	25	Clamp	35P	0.000	0.343	0.303	0.458
NESC Extreme	26	Clamp	36P	0.000	8.529	2.918	9.015
NESC Extreme	27	Clamp	37P	0.000	2.805	3.659	4.611
NESC Extreme	28	Clamp	10XY	0.000	0.631	0.551	0.838
NESC Extreme	29	Clamp	12XY	0.000	0.631	0.551	0.838
NESC Extreme	30	Clamp	13XY	0.000	0.631	0.551	0.838

NESC Extreme	31	Clamp	14XY	0.000	0.631	0.551	0.838

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	88.217	-12.151	44.282	8924.582	-1210.619	300.402
NESC Extreme	76.955	-12.661	20.425	7994.732	-1322.643	72.925

*** Weight of structure (lbs):
Weight of Angles*Section DLF: 39703.5
Total: 39703.5

*** End of Report

Tower Anchor Bolt Analysis

Max Leg Reactions:

Uplift = $\text{Uplift} := 185.5 \cdot \text{kips}$ (User Input)

Shear = $\text{Shear} := 51.2 \cdot \text{kips}$ (User Input)

Compression = $\text{Compression} := 203.5 \cdot \text{kips}$ (User Input)

Anchor Bolt Data:

Use ASTM A36 (Assumed Conservative Value - Actual Grade Unknown)

Number of Anchor Bolts = $N := 4$ (User Input)

Bolt Ultimate Strength = $F_u := 58\text{ksi}$ (User Input)

Bolt Yield Strength = $F_y := 36\text{ksi}$ (User Input)

Diameter of Bolts = $D := 2.0\text{in}$ (User Input)

Threads per Inch = $n := 4.5$ (User Input)

Coefficient of Friction = $\mu := 0.55$ (User Input)

Anchor Bolt Area:

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 3.142 \cdot \text{in}^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot \text{in}}{n}\right)^2 = 2.498 \cdot \text{in}^2$ (AISC 13th Ed. pg. 7-83)

Check Tensile Force:

Maximum Tensile Force (Gross Area) = $F_{gross.area} := 1.0 \cdot (0.33 \cdot A_g \cdot F_u) = 60.1 \cdot kips$

Maximum Tensile Force (Net Area) = $F_{net.area} := 1.0 \cdot (0.60 \cdot A_n \cdot F_y) = 54 \cdot kips$

Allowable Tension = $AllowableTension := \begin{cases} F_{gross.area} & \text{if } F_{gross.area} < F_{net.area} \\ F_{net.area} & \text{if } F_{net.area} < F_{gross.area} \end{cases}$

$AllowableTension = 54 \cdot kips$

Applied Tension = $MaxTension := \frac{Uplift}{N} = 46.38 \cdot kips$

$\frac{MaxTension}{F_{net.area}} = 85.9 \cdot \%$

$Condition1 := if\left(\frac{MaxTension}{F_{net.area}} \le 1.00, \text{"OK"}, \text{"Overstressed"}\right)$

$Condition1 = \text{"OK"}$

Check Anchor Bolt Area:

Based on the ASCE 10-97 Design of Latticed Steel Transmission Structures

Required Area = $A_{s1} := \frac{Uplift}{F_y} + \frac{Shear}{\mu \cdot .85 \cdot F_y} = 8.2 \cdot in^2$

$A_{s2} := \left[\frac{Shear - (0.3 \cdot Compression)}{\mu \cdot .85 \cdot F_y}\right] = -0.585 \cdot in^2$

Provided Area = $A_{sprovided} := A_n \cdot N = 10 \cdot in^2$

$Condition2 := if\left(\frac{A_{s1}}{A_{sprovided}} \le 1.00, \text{"OK"}, \text{"Overstressed"}\right)$

$Condition2 = \text{"OK"}$

$Condition3 := if\left(\frac{A_{s2}}{A_{sprovided}} \le 1.00, \text{"OK"}, \text{"Overstressed"}\right)$

$Condition3 = \text{"OK"}$

Foundation:

Input Data:

Tower Data

Shear (Compression Leg) =	$Shear_{comp} := 43.9 \cdot 1.1 \cdot kips = 48.3 \cdot kips$	(User Input from PLS Tower)
Shear (Uplift Leg) =	$Shear_{up} := 51.2 \cdot 1.1 \cdot kips = 56.3 \cdot kips$	(User Input from PLS Tower)
Compression =	$Comp := 203.5 \cdot 1.1 \cdot kips = 223.9 \cdot kips$	(User Input from PLS Tower)
Uplift =	$Uplift := 185.5 \cdot 1.1 \cdot kips = 204.1 \cdot kips$	(User Input from PLS Tower)
Tower Height =	$H_t := 129 \cdot ft$	(User Input)

Footing Data:

Depth to Bottom of Footing =	$D_f := 8 \cdot ft$	(User Input)
Length of Pier =	$L_p := 8.5 \cdot ft$	(User Input)
Extension of Pier Above Grade =	$L_{pag} := 0.5 \cdot ft$	(User Input)
Width of Pier =	$W_p := 5 \cdot ft$	(User Input)
Depth of Soil =	$D_{soil} := 8 \cdot ft$	(User Input)
Depth of Rock =	$D_{rock} := 12 \cdot ft$	(User Input)

Material Properties:

Concrete Compressive Strength =	$f_c := 3500 \cdot psi$	(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 =	$\Phi_s := 30 \cdot deg$	(User Input)	
Soil Bearing Capacity =	$q_s := 9000 \cdot psf$	(User Input)	
Rock Bearing Capacity =	$q_{rock} := 50000 \cdot psf$	(User Input)	
Unit Weight of Soil =	$\gamma_{soil} := 100 \cdot pcf$	(User Input)	
Unit Weight of Concrete =	$\gamma_{conc} := 150 \cdot pcf$	(User Input)	
Unit Weight of Rock =	$\gamma_{rock} := 160 \cdot pcf$	(User Input)	
Foundation Bouyancy =	$Bouyancy := 0$	(User Input)	(Yes=1 / No=0)
Depth to Neglect =	$n := 1.0 \cdot ft$	(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)
Coefficient of Friction Between Concrete =	$\mu := 0.45$	(User Input)	

Rock Anchor Properties:

ASTM A615 Grade 60

Bolt Ultimate Strength = $F_u := 90 \cdot ksi$ (User Input)

Bolt Yield Strength = $F_y := 60 \cdot ksi$ (User Input)

Anchor Diameter = $d_{ra1} := 1.128 \cdot in$ (User Input) (1 # 9 and 1 # 11 per Rock Group)

Anchor Diameter = $d_{ra2} := 1.41 \cdot in$ (User Input)

Hole Diameter = $d_{Hole} := 4 \cdot in$ (User Input)

Grout Strength = $\tau := 120 \cdot psi$ (User Input)

Distance to Rock Anchor Group 1 = $D_{a1} := 24 \cdot in$ (User Input)

Number of Rock Anchors in Group 1 = $N_{a1} := 6$ (User Input)

Total Number of Rock Bolts = $N_{atot} := 8$ (User Input)

Check Uplift:

Adjusted Concrete Unit Weight = $\gamma_c := \text{if}(\text{Bouyancy} = 1, \gamma_{conc} - 62.4pcf, \gamma_{conc}) = 150 \cdot pcf$

Adjusted Soil Unit Weight = $\gamma_s := \text{if}(\text{Bouyancy} = 1, \gamma_{soil} - 62.4pcf, \gamma_{soil}) = 100 \cdot pcf$

Weight of Concrete = $WT_c := \left(W_p^{\,2} \cdot L_p\right) \cdot \gamma_c = 31.875 \cdot kip$

Base Area 1 of Resisting Pyramid = $B_1 := \left(D_{a1} \cdot 2\right)^2 = 16\,ft^2$

Base Area 2 of Resisting Pyramid = $B_2 := \left[\tan(\Phi_s) \cdot \left(D_{rock} \cdot 0.5\right) \cdot 2 + D_{a1} \cdot 2\right]^2 = 119.4\,ft^2$

Base Area 3 of Resisting Pyramid = $B_3 := \left[\tan(\Phi_s) \cdot \left(D_{rock} \cdot 0.5 + D_{soil}\right) \cdot 2 + D_{a1} \cdot 2\right]^2 = 406.7\,ft^2$

Weight of Soil = $WT_{soil} := \left[\frac{D_{soil}}{3} \cdot \left(B_2 + B_3 + \sqrt{B_2 \cdot B_3}\right) - W_p^{\,2} \cdot L_p\right] \cdot \gamma_s = 177.806 \cdot kip$

Weight of Rock = $WT_{rock} := \left[\frac{D_{rock} \cdot 0.5}{3} \cdot \left(B_1 + B_2 + \sqrt{B_1 \cdot B_2}\right)\right] \cdot \gamma_{rock} = 57.324 \cdot kip$

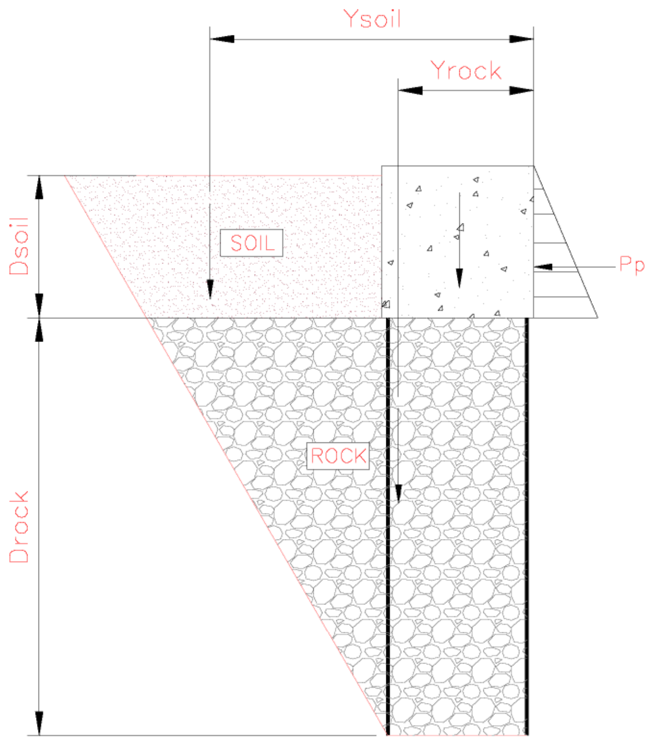
Total Resistance = $WT_{tot} := WT_c + WT_{rock} + WT_{soil} = 267 \cdot kips$

Factor of Safety Actual = $FS := \frac{WT_{tot}}{Uplift} = 1.31$

Factor of Safety Required = $FS_{req} := 1.0$

Uplift_Check := if(FS ≥ FS_{req}, "Okay", "No Good")

Uplift_Check = "Okay"



Area 1 = $A1 := \frac{1}{2} \cdot \tan(\Phi_s) \cdot D_{soil}^2 = 18.475\,ft^2$ sf

Area 2 = $A2 := \tan(\Phi_s) \cdot D_{rock} \cdot D_{soil} = 55.426\,ft^2$ sf

Distance to Centroid 1 = $Y1 := \tan(\Phi_s) \cdot D_{rock} + \frac{1}{3} \cdot \tan(\Phi_s) \cdot D_{soil} = 8.468\,ft$ ft

Distance to Centroid 2 = $Y2 := \frac{1}{2} \cdot \tan(\Phi_s) \cdot D_{rock} = 3.464\,ft$ ft

Distance from Toe to Centroid of Soil = $Y_{soil} := \frac{(A1 \cdot Y1 + A2 \cdot Y2)}{(A1 + A2)} + W_p = 9.72\,ft$ ft

Area 3 = $A3 := \frac{1}{2} \cdot \tan(\Phi_s) \cdot D_{rock}^2 = 41.569\,ft^2$ sf

Area 4 = $A4 := W_p \cdot D_{rock} = 60\,ft^2$ sf

Distance to Centroid 3 = $Y3 := W_p + \frac{1}{3} \cdot \tan(\Phi_s) \cdot D_{rock} = 7.309\,ft$ ft

Distance to Centroid 4 = $Y4 := \frac{W_p}{2} = 2.5\,ft$ ft

Distance from Toe to Centroid of Rock = $Y_{rock} := \frac{(A3 \cdot Y3 + A4 \cdot Y4)}{(A3 + A4)} = 4.47\,ft$ ft

Check Oveturning:

Coefficient of Lateral Soil Pressure = $K_p := \frac{1 + \sin(\Phi_s)}{1 - \sin(\Phi_s)} = 3$

Passive Pressure = $P_{top} := 0 = 0 \cdot ksf$

$P_{bot} := K_p \cdot \gamma_s \cdot D_f + c \cdot 2 \cdot \sqrt{K_p} = 2.4 \cdot ksf$

$P_{ave} := \frac{P_{top} + P_{bot}}{2} = 1.2 \cdot ksf$

$A_p := W_p \cdot (L_p - L_{pag}) = 40 ft^2$

Ultimate Shear = $S_u := P_{ave} \cdot A_p = 48 \cdot kip$

Weight of Concrete Pad = $WT_c := (W_p^{\,2} \cdot L_p) \cdot \gamma_c = 31.875 \cdot kip$

Weight of Soil Wedge at Back Face Corners = $WT_{s2} := 2 \cdot \left[(D_{soil})^3 \cdot \frac{\tan(\Phi_s)}{3} \right] \cdot \gamma_s = 19.707 \cdot kips$

Total Weight of Soil = $WT_{Stot} := (A1 + A2) \cdot W_p \cdot \gamma_s + WT_{s2} = 56.7 \cdot kips$

Total Weight of Rock = $WT_{Rtot} := (A3 + A4) \cdot W_p \cdot \gamma_{rock} = 81.3 \cdot kips$

Resisting Moment = $M_r := (WT_c) \cdot \frac{W_p}{2} + S_u \cdot \frac{L_p}{3} + WT_{Stot} \cdot Y_{soil} + WT_{Rtot} \cdot Y_{rock} = 1129 \cdot kip \cdot ft$

Overturning Moment = $M_{ot} := Uplift \cdot \frac{W_p}{2} + Shear_{up} \cdot L_p = 989 \cdot kip \cdot ft$

Factor of Safety Actual = $FS := \frac{M_r}{M_{ot}} = 1.14$

Factor of Safety Required = $FS_{req} := 1.0$

OverTurning_Moment_Check := if(FS ≥ FS_{req}, "Okay" , "No Good")

OverTurning_Moment_Check = "Okay"

Check Bearing Pressure:

Area of the Pier = $A_{mat} := W_p^2 = 25\,ft^2$

Section Modulus of Pier = $S := \dfrac{W_p^3}{6} = 20.83 \cdot ft^3$

Maximum Bearing Pressure = $P_{max} := \dfrac{WT_c + Comp}{A_{mat}} + \dfrac{Shear_{comp} \cdot L_p}{S} = 29.931 \cdot ksf$

Max_Pressure_Check := if($P_{max} < q_{rock}$, "Okay" , "No Good")

Max_Pressure_Check = "Okay"

Check Rock Anchors:

Rock Anchor Check

Polar Moment of Inertia = $I_p := \left(D_{a1}^2 \cdot N_{a1}\right) = 3456 \cdot in^2$

Maximum Tension Force = $T_{Max} := \dfrac{Uplift}{N_{atot}} + \dfrac{Shear_{up} \cdot L_p \cdot D_{a1}}{I_p} - \dfrac{WT_c}{N_{atot}} = 61.4 \cdot kips$

Gross Area of Bolt Group = $A_g := \dfrac{\pi}{4} \cdot \left(d_{ra1}^2 + d_{ra2}^2\right) = 2.561 \cdot in^2$

Allowable Tension = $T_{all} := A_g \cdot F_y = 153.6 \cdot kips$

$\dfrac{T_{Max}}{T_{all}} = 40 \cdot \%$

Condition1 := if($T_{Max} < T_{all}$, "OK" , "NG")

Condition1 = "OK"

Check Bond Strength:

Bond Strength = Bond_Strength := $d_{Hole} \cdot \pi \cdot \left(D_{rock} \cdot 0.5\right) \cdot \tau = 109 \cdot kips$

$\dfrac{T_{Max}}{Bond\_Strength} = 56.6 \cdot \%$

Condition2 := if(T_{Max} < Bond_Strength, "OK" , "NG")

Condition2 = "OK"

verizon fuze | RFDS

EAST > North East > New England > New England West > GREENWICH 3 CT

Gadasu, Shiva - shiva.gadasu@verizonwireless.com - 5/12/2021 11:38:25

Project Details

Carrier Aggregation:	false
MPT Id:	366857
eCIP-0:	false
Project Name:	850 ADD
FUZE Project ID:	15444631
Designed Sector Carrier 4G:	21
Designed Sector Carrier 5G:	N/A
Additional Sector Carrier 4G:	N/A
Additional Sector Carrier 5G:	N/A
SiteTraker Project Id:	
FP Solution Type & Tech Type:	MODIFICATION;4G_700,4G_850,4G_AWS,4G_PCS,4G Swap,5G_850,5G_L-Sub6-Prep
Suffix:	Rev5_05.12.2021

Location Information

Site ID:	323974
E-NodeB ID:	065159
PSLC:	469290
Switch Name:	Wallingford 2
Tower Owner:	
Tower Type:	Monopole
Site Type:	MACRO
Street Address:	9 Sound Shore Drive
City:	Greenwich
State:	CT
Zip Code:	06830
County:	Fairfield
Latitude:	41.029711 / 41° 1' 46.9596" N
Longitude:	-73.59835 / 73° 35' 54.06" W

RFDS Project Scope:

4th sector add, Antenna, RRH swap
850LTE, CBRS, LSub6 add
Mount JMA antennas 2" edge-to-edge using mounting brackets as shown in plumbing
Remove all existing equipment except CDMA coax

Rev5_05.12.2021 : revised to add 4th sector and fully upgrade the site
Rev4_03.02.2020 : Revised to mount RRHs in shelter with new multiband Triplexers and new Hexport antennas. Plumbing attached
Rev3_02.27.2020 : Revised to delete OVP/Hybrid/700/AWS TRDU's reference from Removed non-antenna summary section, proposed to remove unused coax and any diplexers/SBT from shelter/tower
Rev2_20190917 : reverted back the design to Ant/RRH swap only, no CBRS
Rev1_20190212 : Initial design

Antenna Summary

Added

700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity
LTE	CDMA LTE	LTE	LTE	LTE		JMA	MX10FRO640	139	142	10(01) 10(19) 10(D1) 315(04) 315(22)	false	false	PHYSICAL	4
LTE	CDMA LTE	LTE	LTE			JMA WIRELESS	MX06FRO660-03	139	142	110(02) 110(D2) 240(03) 240(D3)	false	false	PHYSICAL	4
					5G	Samsung	MT6407-77A	139	140.5	0(0001) 120(0002) 240(0003)	false	false	PHYSICAL	3
				LTE		Samsung	XXDWMM-12.5-65	139	139.4	110(20) 240(21)	false	false	PHYSICAL	2

Removed

700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity
			LTE			ANDREW	HBXX-6516DS-A2M	139	141.1	120(02) 240(03) 350(01)	false	false	PHYSICAL	3
LTE		LTE				ANDREW	SBNHH-1D65B	139	142	120(02) 240(03) 350(01)	false	false	PHYSICAL	3
	CDMA					DECIBEL PRODUCTS	DB854DG65ESX (96902)	139	141	0(D1) 120(D2) 240(D3)	false	false	PHYSICAL	6

Retained

700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity

No data available.

Added: 13 **Removed:** 12 **Retained:** 0

Equipment Summary

Added

Equipment Type	Location	700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Cable Length	Cable Size	Install Type	Quantity
Diplexer	Tower	LTE	CDMA LTE					Commscope	TD-850B-LTE78-43			PHYSICAL	3
Mount	Tower							JMA	2" side by side mounting bracket for MX06 antennas			PHYSICAL	2
Mount	Tower							JMA	2" side by side mounting bracket for MX10 antennas			PHYSICAL	2
RRU	Tower			LTE	LTE			Samsung	B2/B66A RRH-BR049 (RFV01U-D1A)			PHYSICAL	4
RRU	Tower	LTE	LTE					Samsung	B5/B13 RRH-BR04C (RFV01U-D2A)			PHYSICAL	4
RRU	Tower					LTE		Samsung	CBRS RRH - RT4401-48A			PHYSICAL	4
RRU	Tower						5G	Samsung	MT6407-77A			PHYSICAL	3

Removed

Equipment Type	Location	700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Cable Length	Cable Size	Install Type	Quantity
Coaxial Cables	Tower											PHYSICAL	12
RRU	Shelter			LTE				Nokia	UHFA B25 RRH 4x30			PHYSICAL	3

Retained

Equipment Type	Location	700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Cable Length	Cable Size	Install Type	Quantity
Coaxial Cables	Tower		CDMA									PHYSICAL	6

Service Info

700 MHz LTE	0000			5GLS			
Sector	01	02	03	01	02	03	04
Azimuth	350	120	240	10	110	240	315
Cell / ENode B ID	065159	065159	065159	065159	065159	065159	065159
Antenna Model	SBNHH-1D65B	SBNHH-1D65B	SBNHH-1D65B	MX10FRO640	MX06FRO660-03	MX06FRO660-03	MX10FRO640
Antenna Make	ANDREW	ANDREW	ANDREW	JMA	JMA WIRELESS	JMA WIRELESS	JMA
Antenna Centerline(Ft)	139	139	139	139	139	139	139
Mechanical Down-Tilt(Deg.)	0	0	0	0	0	0	0
Electrical Down-Tilt	8	4	6	2	4	6	2
Tip Height	142	142	142	142	142	142	142
Regulatory Power	52.79	53.83	53.81	81.8	47.05	48.15	81.8
Total ERP (W)							
TMA Make							
TMA Model							
RRU Make	Nokia	Nokia	Nokia	Samsung	Samsung	Samsung	Samsung
RRU Model	UHBC B13 TRDU 2x40	UHBC B13 TRDU 2x40	UHBC B13 TRDU 2x40	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	4,4
Position							
Transmitter Id	1961258	1961261	1961264	10303270	10303271	10303272	10303273
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

850 MHz LTE

5GLS

Sector	01	02	03	04
Azimuth	10	110	240	315
Cell / ENode B ID	065159	065159	065159	065159
Antenna Model	MX10FRO640	MX06FRO660-03	MX06FRO660-03	MX10FRO640
Antenna Make	JMA	JMA WIRELESS	JMA WIRELESS	JMA
Antenna Centerline(Ft)	139	139	139	139
Mechanical Down-Tilt(Deg.)	0	0	0	0
Electrical Down-Tilt	2	10	10	2
Tip Height	142	142	142	142
Regulatory Power	367.13	188.2	188.2	367.13
Total ERP (W)				
TMA Make				
TMA Model				
RRU Make	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)
Number of Tx, Rx Lines	4,4	4,4	4,4	4,4
Position				
Transmitter Id	10303362	10303363	10303364	10303365
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

850 MHz CDMA		0000			5GLS	
Sector	D1	D2	D3	D1	D2	D3
Azimuth	0	120	240	10	110	240
Cell / ENode B ID						
Antenna Model	DB854DG65ESX (96902)	DB854DG65ESX (96902)	DB854DG65ESX (96902)	MX10FRO640	MX06FRO660-03	MX06FRO660-03
Antenna Make	DECIBEL PRODUCTS	DECIBEL PRODUCTS	DECIBEL PRODUCTS	JMA	JMA WIRELESS	JMA WIRELESS
Antenna Centerline(Ft)	139	139	139	139	139	139
Mechanical Down-Tilt(Deg.)	2	2	4	0	0	0
Electrical Down-Tilt	0	0	0	2	10	10
Tip Height	141	141	141	142	142	142
Regulatory Power	374.11	374.11	374.11	395.37	286.95	286.95
Total ERP (W)						
TMA Make						
TMA Model						
RRU Make						
RRU Model						
Number of Tx, Rx Lines						
Position						
Transmitter Id						
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

1900 MHz LTE

	0000			5GLS			
Sector	01	02	03	01	02	03	04
Azimuth	350	120	240	10	110	240	315
Cell / ENode B ID	065159	065159	065159	065159	065159	065159	065159
Antenna Model	SBNHH-1D65B	SBNHH-1D65B	SBNHH-1D65B	MX10FRO640	MX06FRO660-03	MX06FRO660-03	MX10FRO640
Antenna Make	ANDREW	ANDREW	ANDREW	JMA	JMA WIRELESS	JMA WIRELESS	JMA
Antenna Centerline(Ft)	139	139	139	139	139	139	139
Mechanical Down-Tilt(Deg.)	0	0	0	0	0	0	0
Electrical Down-Tilt	1	2	2	0	2	2	0
Tip Height	142	142	142	142	142	142	142
Regulatory Power	144.62	145.15	145.15	94.78	90.47	90.47	94.78
Total ERP (W)							
TMA Make							
TMA Model							
RRU Make	Nokia	Nokia	Nokia	Samsung	Samsung	Samsung	Samsung
RRU Model	UHFA B25 RRH 4x30	UHFA B25 RRH 4x30	UHFA B25 RRH 4x30	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	4,4
Position							
Transmitter Id	1961259	1961262	1961265	10303366	10303367	10303368	10303369
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

2100 MHz LTE

	0000			5GLS		
Sector	01	02	03	01	02	03
Azimuth	350	120	240	10	110	240
Cell / ENode B ID	065159	065159	065159	065159	065159	065159
Antenna Model	HBXX-6516DS-A2M	HBXX-6516DS-A2M	HBXX-6516DS-A2M	MX10FRO640	MX06FRO660-03	MX06FRO660-03
Antenna Make	ANDREW	ANDREW	ANDREW	JMA	JMA WIRELESS	JMA WIRELESS
Antenna Centerline(Ft)	139	139	139	139	139	139
Mechanical Down-Tilt(Deg.)	0	0	0	0	0	0
Electrical Down-Tilt	1	2	2	0	2	2
Tip Height	141.1	141.1	141.1	142	142	142
Regulatory Power	110.98	114.22	114.22	119.32	96.95	96.95
Total ERP (W)						
TMA Make						
TMA Model						
RRU Make	Nokia	Nokia	Nokia	Samsung	Samsung	Samsung
RRU Model	UHIB B4 TRDU 2x60	UHIB B4 TRDU 2x60	UHIB B4 TRDU 2x60	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	1961260	1961263	1961266	10303370	10303371	10303372
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

	5GLS
Sector	04
Azimuth	315
Cell / ENode B ID	065159
Antenna Model	MX10FRO640
Antenna Make	JMA
Antenna Centerline(Ft)	139
Mechanical Down-Tilt(Deg.)	0
Electrical Down-Tilt	0
Tip Height	142
Regulatory Power	119.32
Total ERP (W)	
TMA Make	
TMA Model	
RRU Make	Samsung
RRU Model	B2/B66A RRH-BR049 (RFV01U-D1A)
Number of Tx, Rx Lines	4,4
Position	
Transmitter Id	10303373
Source	ATOLL_API

CBRS 3_5 GHz

	5GLS			
Sector	19	20	21	22
Azimuth	10	110	240	315
Cell / ENode B ID	065159	065159	065159	065159
Antenna Model	MX10FRO640	XXDWMM-12.5-65	XXDWMM-12.5-65	MX10FRO640
Antenna Make	JMA	Samsung	Samsung	JMA
Antenna Centerline(Ft)	139	139	139	139
Mechanical Down-Tilt(Deg.)	0	0	0	0
Electrical Down-Tilt	2	8	8	2
Tip Height	142	139.4	139.4	142
Regulatory Power	9.12	5.62	5.62	9.12
Total ERP (W)				
TMA Make				
TMA Model				
RRU Make	Samsung	Samsung	Samsung	Samsung
RRU Model	CBRS RRH - RT4401-48A	CBRS RRH - RT4401-48A	CBRS RRH - RT4401-48A	CBRS RRH - RT4401-48A
Number of Tx, Rx Lines	4,4	4,4	4,4	4,4
Position				
Transmitter Id	10303377	10303378	10303379	10303380
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

nL-Sub6

5GLS

Sector	0001	0002	0003
Azimuth	0	120	240
Cell / ENode B ID			
Antenna Model	MT6407-77A	MT6407-77A	MT6407-77A
Antenna Make	Samsung	Samsung	Samsung
Antenna Centerline(Ft)	139	139	139
Mechanical Down-Tilt(Deg.)	0	0	0
Electrical Down-Tilt	6	6	6
Tip Height	140.5	140.5	140.5
Regulatory Power	657.94	657.94	657.94
Total ERP (W)			
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	10303374	10303375	10303376
Source	ATOLL_API	ATOLL_API	ATOLL_API

Service Comments

Callsigns Per Antenna

Sector	Antenna Ma	Antenna Mc	Ant CL Height AGL	Tip Height	Azimuth (Tl	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	81.8	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	395.37	400	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	94.78	1640	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	94.78	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	94.78	1640	1467.18	Active	added	Yes
CBRS_CALL	UNLICENSE	3.5 GHz	UNLICENSE	UNLICENSE	CT	Fairfield	UNLICENSE	UNLICENSE	UNLICENSE	UNLICENSED-UNLICE	UNLICENSED-UNLICE	UNLICENSED-UNLICE	UNLICENSED-UNLICE	9.12		1467.18	Active	added	No
WRLD511	D09001 - Fairfield, CT	PL	D09001	0	CT	Fairfield	Verizon Wireless Network Procure LP	Yes	100.000	3550.000-3650.000	.000-.000	.000-.000	.000-.000	9.12		.00	Active	added	Yes
WRLD510	D09001 - Fairfield, CT	PL	D09001	0	CT	Fairfield	Verizon Wireless Network Procure LP	Yes	100.000	3550.000-3650.000	.000-.000	.000-.000	.000-.000	9.12		.00	Active	added	Yes
WRLD512	D09001 - Fairfield, CT	PL	D09001	0	CT	Fairfield	Verizon Wireless Network Procure LP	Yes	100.000	3550.000-3650.000	.000-.000	.000-.000	.000-.000	9.12		.00	Active	added	Yes
WRLD509	D09001 - Fairfield, CT	PL	D09001	0	CT	Fairfield	Verizon Wireless Network Procure LP	Yes	100.000	3550.000-3650.000	.000-.000	.000-.000	.000-.000	9.12		.00	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	119.32	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	119.32	1640	1467.18	Active	added	Yes

WPOH942	New York, NY	LD	BTA321	A	CT	Fairfield	Cellco Partnership	Yes	300.000	29100.000-29250.00	31075.000-31225.000	.000-.000	.000-.000			1467.18	Active		No
WPLM397	New York, NY	LD	BTA321	B	CT	Fairfield	Cellco Partnership	Yes	150.000	31000.000-31075.00	31225.000-31300.000	.000-.000	.000-.000			1467.18	Active		No
WRBA702	New York, NY	UU	BTA321	L1	CT	Fairfield	Cellco Partnership	Yes	325.000	27600.000-27925.00	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRBA703	New York, NY	UU	BTA321	L2	CT	Fairfield	Cellco Partnership	Yes	325.000	27925.000-27950.00	28050.000-28350.00	.000-.000	.000-.000			1467.18	Active		Yes
WRHD609	New York, NY	UU	PEA001	M1	CT	Fairfield	Straight Path um, LLC	Yes	100.000	37600.000-37700.00	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD610	New York, NY	UU	PEA001	M10	CT	Fairfield	Straight Path um, LLC	Yes	100.000	38500.000-38600.00	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD611	New York, NY	UU	PEA001	M2	CT	Fairfield	Straight Path um, LLC	Yes	100.000	37700.000-37800.00	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD612	New York, NY	UU	PEA001	M3	CT	Fairfield	Straight Path um, LLC	Yes	100.000	37800.000-37900.00	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD613	New York, NY	UU	PEA001	M4	CT	Fairfield	Straight Path um, LLC	Yes	100.000	37900.000-38000.00	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD614	New York, NY	UU	PEA001	M5	CT	Fairfield	Straight Path um, LLC	Yes	100.000	38000.000-38100.00	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD615	New York, NY	UU	PEA001	M6	CT	Fairfield	Straight Path um, LLC	Yes	100.000	38100.000-38200.00	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD616	New York, NY	UU	PEA001	M7	CT	Fairfield	Straight Path um, LLC	Yes	100.000	38200.000-38300.00	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD617	New York, NY	UU	PEA001	M8	CT	Fairfield	Straight Path um, LLC	Yes	100.000	38300.000-38400.00	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD618	New York, NY	UU	PEA001	M9	CT	Fairfield	Straight Path um, LLC	Yes	100.000	38400.000-38500.00	.000-.000	.000-.000	.000-.000			1467.18	Active		Yes
WRHD619	New York, NY	UU	PEA001	N1	CT	Fairfield	Straight Path um, LLC	Yes	100.000	38600.000-38700.00	.000-.000	.000-.000	.000-.000			1467.18	Active		No

MX10FRO640-xx

NWAV™ X-Pol Ten-Port Antenna

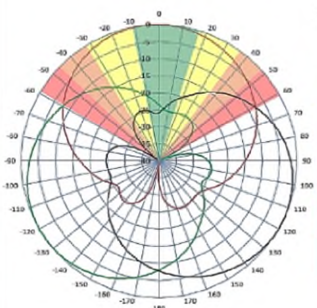
X-Pol Ten-Port 6 ft, 40° Fast Roll Off, with Smart Bias Ts, 698-4200 MHz:
2 ports 698-894 MHz, 4 ports 1695-2180 MHz, and 4 ports 3400-4200 MHz

- Fast Roll Off (FRO™) azimuth beam pattern improves Intra- and Inter-cell SINR
- Excellent passive intermodulation (PIM) performance reduces harmful interference.
- Fully integrated (iRETs) with independent RET control for low band and mid band
- FET configured with internal RET for high band & ease of future network optimization.
- SON-Ready array spacing supports beamforming capabilities
- Suitable for 3G, 4G, and 5G interface technologies
- Integrated Smart Bias-Ts reduce leasing costs

Fast Roll-Off antennas increase data throughput without compromising coverage

The horizontal beam produced by Fast Roll-Off (FRO) technology increases the Signal to Interference & Noise Ratio (SINR) by eliminating overlap between sectors .

Non-FRO antenna



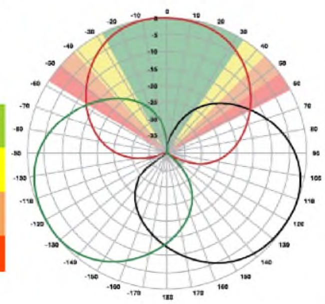
Large traditional antenna pattern overlap creates harmful interference.

JMA's FRO antenna pattern minimizes overlap, thereby minimizing interference.

LTE throughput	SINR	Speed (bps/Hz)	Speed increase	CQI
Excellent	>18	>4.5	333+%	8-10
Good	15-18	3.3-4.5	277%	6-7
Fair	10-15	2-3.3	160%	4-6
Poor	<10	<2	0%	1-3

The LTE radio automatically selects the best throughput based on measured SINR.

JMA FRO antenna

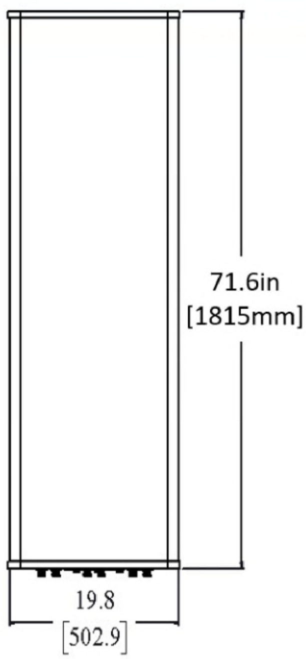


Electrical specification (minimum/maximum)	Ports 1, 2		Ports 3, 4, 5, 6		
Frequency bands, MHz	698-798	824-894	1695-1880	1850-1990	1920-2180
Polarization	± 45°		± 45°		
Average gain over all tilts, dBi	16.3	17.2	19.3	20.1	20.4
Horizontal beamwidth (HBW), degrees[1]	42	37	40	39	37
Front-to-back ratio, co-polar power @180°± 30°, dB	>25.0	>25.0	>28.0	>28.0	>28.0
X-Pol discrimination (CPR) at boresight, dB	>18.0	>15.0	>18	>18	>15
Vertical beamwidth (VBW), degrees[1]	13.1	11.8	6.0	5.7	5.3
Electrical downtilt (EDT) range, degrees	2-14		0-9		
First upper side lobe (USLS) suppression, dB[1]	≤-15.0	≤-15.0	≤-16.0	≤-16.0	≤-16.0
Cross-polar isolation, port-to-port, dB[1]	25	25	25	25	25
Max VSWR / return loss, dB	1.5:1 / -14.0		1.5:1 / -14.0		
Max passive intermodulation (PIM), 2x20W carrier, dBc	-153		-153		
Max input power per any port, watts	300		250		
Total composite power all ports (1-10), watts	1500				

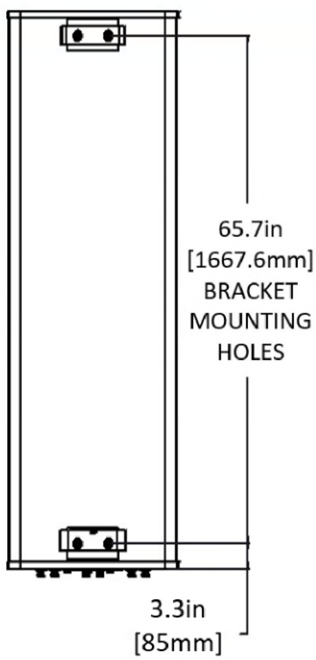
[1] Typical value over frequency and tilt

Mechanical specifications	
Dimensions height/width/depth, inches (mm)	71.6/ 19.8/ 7.4 (1815/ 503/ 188)
Shipping dimensions length/width/height, inches (mm)	76.2/ 23.8/ 14.5(1935/ 605/ 368)
No. of RF input ports, connector type, and location	10 x 4.3-10 female, bottom
RF connector torque	96 lbf·in (10.85 N·m or 8 lbf·ft)
Net antenna weight, lb (kg)	76.3 (35)
Shipping weight, lb (kg)	115.9 (53)
Antenna mounting and downtilt kit included with antenna	91900318
Net weight of the mounting and downtilt kit, lb (kg)	20.3 (9.2)
Range of mechanical up/down tilt	-2° to 12°
Rated wind survival speed, mph (km/h)	150 (241)
Frontal, lateral, and rear wind loading @ 150 km/h, lbf (N)	183.3 (815), 40.7 (181), 276.8 (1231)
Equivalent flat plate @ 100 mph and Cd=2, sq ft	3.69

Front view



Back view



Bottom view

MX06FRO660-03

NWAV™ X-Pol Hex-Port Antenna

X-Pol Hex-Port 6 ft 60° Fast Roll Off antenna with independent tilt on 700 & 850 MHz:

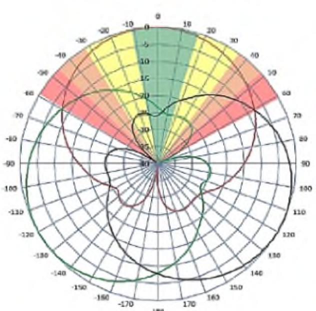
2 ports 698-798, 824-894 MHz and 4 ports 1695-2180 MHz

- Fast Roll Off (FRO™) azimuth beam pattern improves Intra- and Inter-cell SINR
- Compatible with dual band 700/850 MHz radios with independent low band EDT without external diplexers
- Fully integrated (iRETs) with independent RET control for low and high bands for ease of network optimization
- SON-Ready array spacing supports beamforming capabilities
- Suitable for LTE/CDMA/PCS/UMTS/GSM air interface technologies
- Integrated Smart Bias-Ts reduce leasing costs

Fast Roll-Off antennas increase data throughput without compromising coverage

The horizontal beam produced by Fast Roll-Off (FRO) technology increases the Signal to Interference & Noise Ratio (SINR) by eliminating overlap between sectors .

Non-FRO antenna



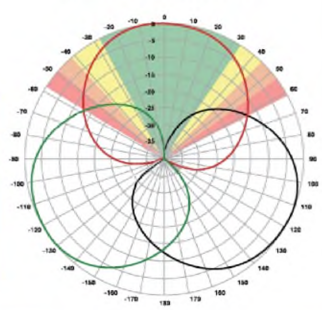
Large traditional antenna pattern overlap creates harmful interference.

JMA's FRO antenna pattern minimizes overlap, thereby minimizing interference.

LTE throughput	SINR	Speed (bps/Hz)	Speed increase	CQI
Excellent	>18	>4.5	333+%	8-10
Good	15-18	3.3-4.5	277%	6-7
Fair	10-15	2-3.3	160%	4-6
Poor	<10	<2	0%	1-3

The LTE radio automatically selects the best throughput based on measured SINR.

JMA FRO antenna



Electrical specification (minimum/maximum)	Ports 1, 2		Ports 3, 4, 5, 6		
Frequency bands, MHz	698-798	824-894	1695-1880	1850-1990	1920-2180
Polarization	± 45°		± 45°		
Average gain over all tilts, dBi	14.4	14.0	17.6	18.0	18.2
Horizontal beamwidth (HBW), degrees	60.5	53.0	55.0	55.0	55.5
Front-to-back ratio, co-polar power @180°± 30°, dB	>24	>24.0	>25.0	>25.0	>25.0
X-Pol discrimination (CPR) at boresight, dB	>15.0	>14.2	>18	>18	>15
Sector power ratio, percent	<3.5	<3.0	<3.7	<3.8	<3.6
Vertical beamwidth (VBW), degrees[1]	13.1	11.8	6.0	5.5	5.5
Electrical downtilt (EDT) range, degrees	2-14	2-14	0-9		
First upper side lobe (USLS) suppression, dB[1]	≤-15.0	≤-16.5	≤-16.0	≤-16.0	≤-16.0
Cross-polar isolation, port-to-port, dB[1]	25	25	25	25	25
Max VSWR / return loss, dB	1.5:1 / -14.0		1.5:1 / -14.0		
Max passive intermodulation (PIM), 2x20W carrier, dBc	-153		-153		
Max input power per any port, watts	300		250		
Total composite power all ports, watts	1500				

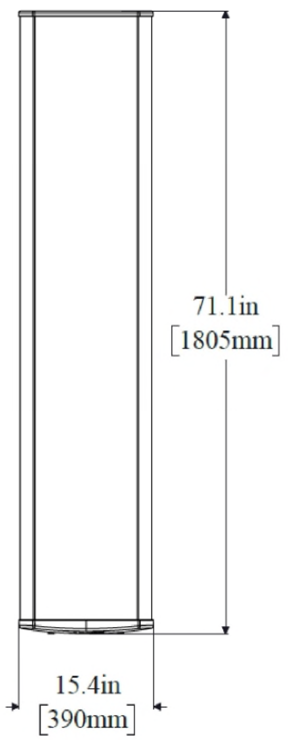
[1] Typical value over frequency and tilt

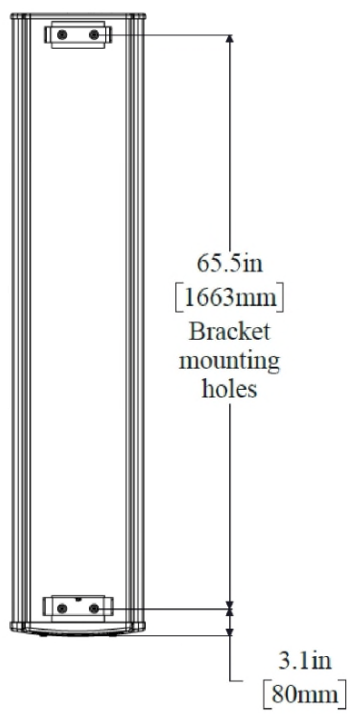
MX06FRO660-03

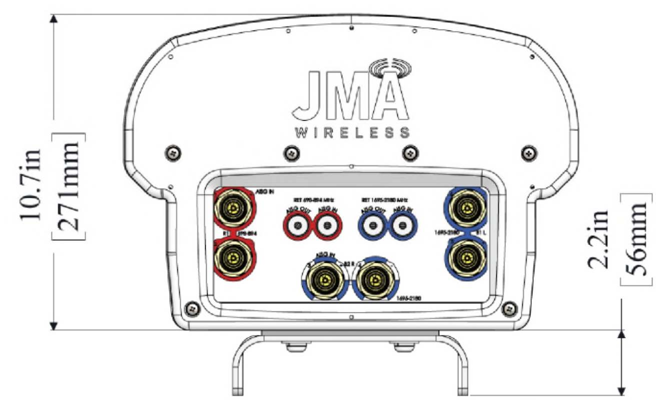
NWAV™ X-Pol Hex-Port Antenna

Mechanical specifications	
Dimensions height/width/depth, inches (mm)	71.3/ 15.4/ 10.7 (1811/ 392/ 273)
Shipping dimensions length/width/height, inches (mm)	82/ 20/ 15 (2083/ 508/ 381)
No. of RF input ports, connector type, and location	6 x 4.3-10 female, bottom
RF connector torque	96 lbf·in (10.85 N·m or 8 lbf·ft)
Net antenna weight, lb (kg)	60 (27.0)
Shipping weight, lb (kg)	90 (41.0)
Antenna mounting and downtilt kit included with antenna	91900318
Net weight of the mounting and downtilt kit, lb (kg)	18 (8.18)
Range of mechanical up/down tilt	-2° to 14°
Rated wind survival speed, mph (km/h)	150 (241)
Frontal, lateral, and rear wind loading @ 150 km/h, lbf (N)	154 (685), 73 (325), 158 (703)
Equivalent flat plate @ 100 mph and Cd=2, sq ft	2.6

Front view	Back view	Bottom view







Ordering information	
Antenna model	**Description**
MX06FRO660-03	6F X-Pol HEX FRO 60° independent tilt 700/850 RET, 4.3-10 & SBT
Optional accessories	
AISG cables	M/F cables for AISG connections
PCU-1000 RET controller	Stand-alone controller for RET control and configurations

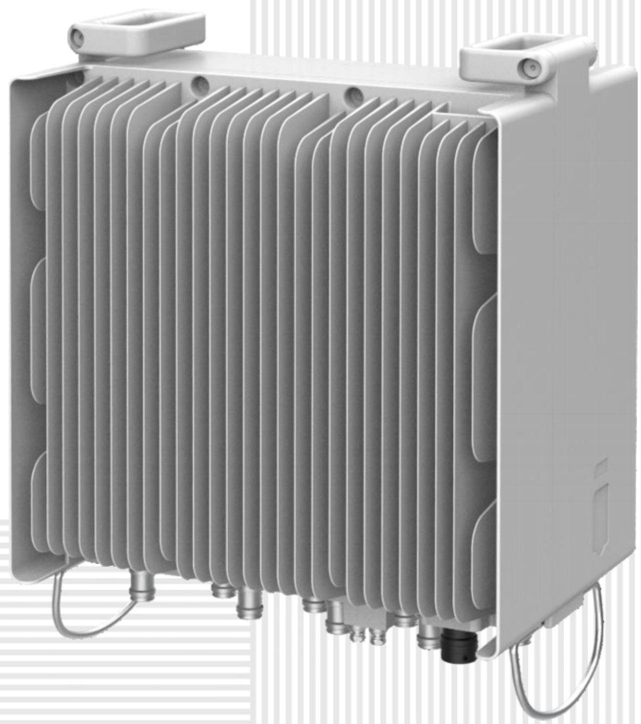
SAMSUNG

AWS/PCS MACRO RADIO

DUAL-BAND AND HIGH POWER FOR MACRO COVERAGE

Samsung's future proof dual-band radio is designed to help effectively increase the coverage areas in wireless networks. This AWS/PCS 4T4R dual-band radio has 4Tx/4Rx to 2Tx/2Rx RF chains options and a total output power of 320W, making it ideal for macro sites.

Model Code	RF4439d-25A



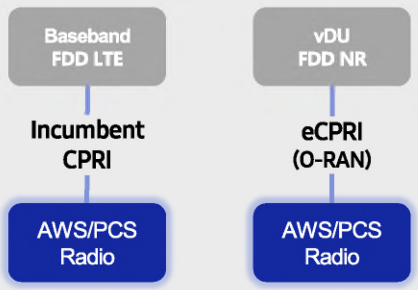
Homepage
samsungnetworks.com

Youtube
www.youtube.com/samsung5g

Points of Differentiation

Continuous Migration

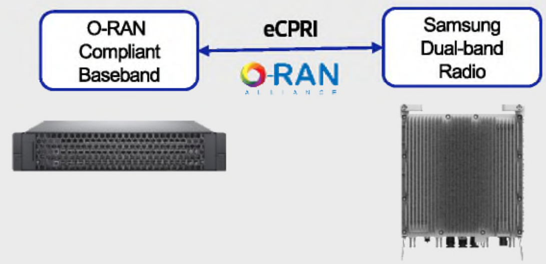
Samsung's AWS/PCS macro radio can support each incumbent CPRI interface as well as advanced eCPRI interfaces. This feature provides installable options for both legacy LTE networks and added NR networks.



O-RAN Compliant

A standardized O-RAN radio can help in implementing cost-effective networks, which are capable of sending more data without compromising additional investments.

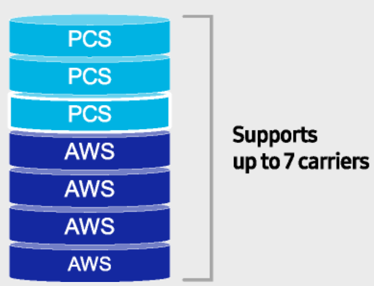
Samsung's state-of-the-art O-RAN technology will help accelerate the effort toward constructing a solid O-RAN ecosystem.



Optimum Spectrum Utilization

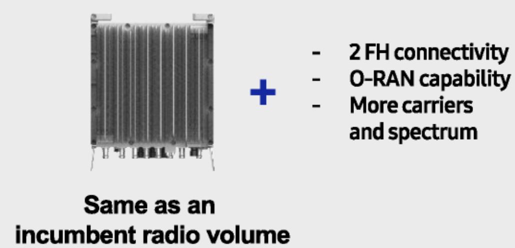
The number of required carriers varies according to site (region). Supporting many carriers is essential for using all frequencies that the operator has available.

The new AWS/PCS dual-band radio can support up to 3 carriers in the PCS (1.9GHz) band and 4 carriers in the AWS (2.1GHz) band, respectively.



Brand New Features in a Compact Size

Samsung's AWS/PCS macro radio offers several features, such as dual connectivity for baseband for both CDU and vDU, O-RAN capability, more carriers and an enlarged PCS spectrum, combined into an incumbent radio volume of 36.8L.



Technical Specifications

Item	Specification
Tech	LTE / NR
Brand	B25(PCS), B66(AWS)
Frequency Band	DL: 1930 – 1995MHz, UL: 1850 – 1915MHz DL: 2110 – 2200MHz, UL: 1710 – 1780MHz
RF Power	(B25) 4 × 40W or 2 × 60W (B66) 4 × 60W or 2 × 80W
IBW/OBW	(B25) 65MHz / 30MHz (B66) DL 90MHz, UL 70MHz / 60MHz
Installation	Pole, Wall
Size/ Weight	14.96 x 14.96 x 10.04inch (36.8L) / 74.7lb

SAMSUNG

700/850MHZ MACRO RADIO

DUAL-BAND AND HIGH POWER FOR MACRO COVERAGE

Samsung's future proof dual-band radio is designed to help effectively increase the coverage areas in wireless networks. This 700/850MHz 4T4R dual-band radio has 4Tx/4Rx to 2Tx/2Rx RF chains options and a total output power of 320W, making it ideal for macro sites.

Model Code	RF4440d-13A

Homepage
samsungnetworks.com

Youtube
www.youtube.com/samsung5g

TD-850B-LTE78-43 | E14Z00P06

Twin In-band Diplexer 850 MHz, DC Sense

- Enables LTE carrier to share the RF path with other CDMA/EVDO services
- LTE port supports the use of dual band 700/850 radios or diplexed radio ports
- CDMA port supports carriers F1(384), F2(425), F3(466) and F8(770/777)
- Optimized for 5MHz LTE carrier on B-Block CH 2585 and 10MHz LTE carrier on A-Block CH 2460
- Narrow guard band to maximize utilization of licensed spectrum

Product Classification

Product Type	Diplexer

General Specifications

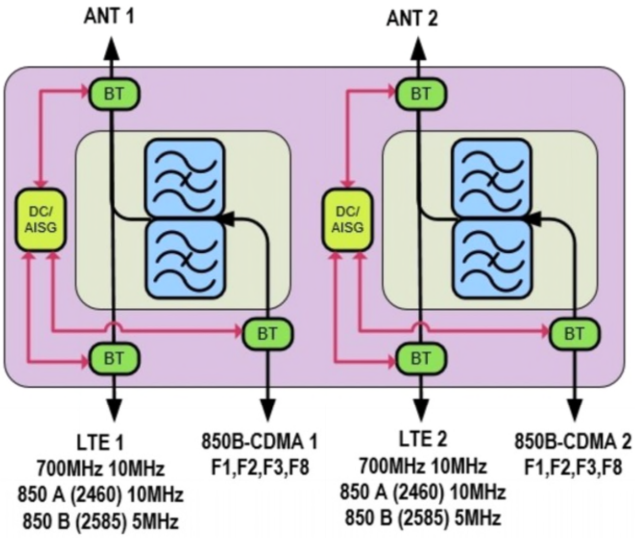
Application	Indoor | Outdoor
Antenna Interface	4.3-10 Female
Connector Interface Style	Long neck

Dimensions

Height	392 mm | 15.433 in
Width	387 mm | 15.236 in
Depth	162 mm | 6.378 in
Ground Screw Diameter	6 mm | 0.236 in

Outline Drawing

Block Diagram



Logic Table

DC input voltage		ANT Port
LTE Port	CDMA Port	DC/AISG path selection
<7	<7	All Ports OFF
7 ≤ V ≤ 30	<7	**LTE Port to ANT Port ON** CDMA Port to ANT OFF
<7	**7 ≤ V ≤ 30**	LTE Port to ANT Port OFF **CDMA Port to ANT ON**
7 ≤ V ≤ 30	**7 ≤ V ≤ 30**	All Ports OFF

Environmental Specifications

Operating Temperature -40 °C to +65 °C (-40 °F to +149 °F)

Ingress Protection Test Method IEC 60529:2001, IP67

Packaging and Weights

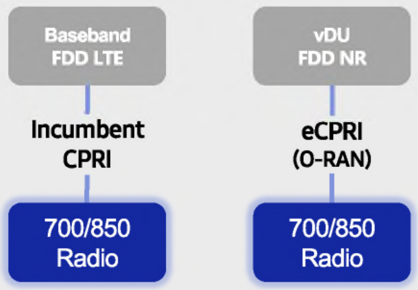
Included Brackets

Weight, net 24 kg | 52.911 lb

Points of Differentiation

Continuous Migration

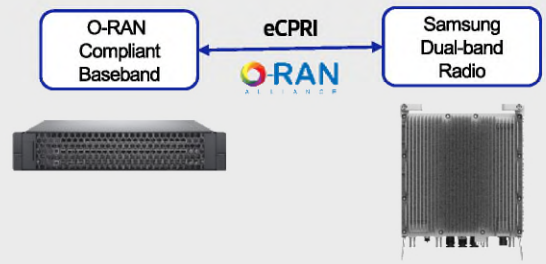
Samsung's 700/850MHz macro radio can support each incumbent CPRI interface as well as an advanced eCPRI interface. This feature provides installable options for both legacy LTE networks and added NR networks.



O-RAN Compliant

A standardized O-RAN radio can help when implementing cost-effective networks because it is capable of sending more data without compromising additional investments.

Samsung's state-of-the-art O-RAN technology will help accelerate the effort toward constructing a solid O-RAN ecosystem.



Optimum Spectrum Utilization

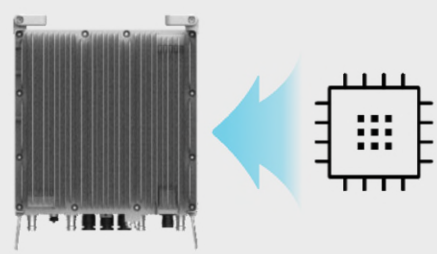
The number of required carriers varies according to site (region). The ability to support many carriers is essential for using all frequencies that the operator has available.

The new 700/850MHz dual-band radio can support up to 2 carriers in the B13 (700MHz) band and 3 carriers in the B5 (850MHz) band, respectively.

Secured Integrity

Access to sensitive data is allowed only to authorized software.

The Samsung radio's CPU can protect root of trust, which is credential information to verify SW integrity, and secure storage provides access control to sensitive data by using dedicated hardware (TPM).



Technical Specifications

Item	Specification
Tech	LTE / NR
Brand	B13(700MHz), B5(850MHz)
Frequency Band	DL: 746 – 756MHz, UL: 777 – 787MHz DL: 869 – 894MHz, UL: 824 – 849MHz
RF Power	(B13) 4 × 40W or 2 × 60W (B5) 4 × 40W or 2 × 60W
IBW/OBW	(B13) 10MHz / 10MHz (B5) 25MHz / 25MHz
Installation	Pole, Wall
Size/ Weight	14.96 x 14.96 x 9.05inch (33.2L) / 70.33 lb

Product Data Sheet DB-C1-12C-24AB-0Z

Tower Top and Base Power Protection/Fiber Connection System for HYBRIFLEX® Cable

Product Description

RFS' flexible Tower, Base Stations and Rooftop protection and Distribution products provide protection for up to 12 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

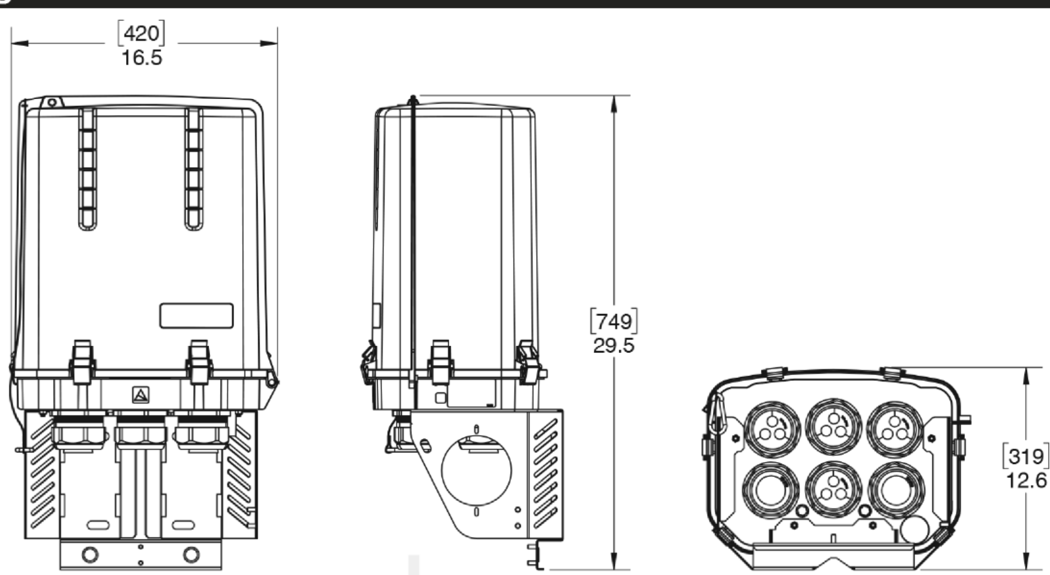
- Designed for distribution to 12 RRH circuits, DC power and fiber optics.
- Alarms for moisture detection and intrusion
- Digital Voltmeter with twelve (12) position switch to monitor each DC circuit
- Power alarms for wiring anomalies and power disruptions
- Employs the Strikesorb® 30-V1-2CHV Surge 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-V1-2CHV is a Class I SPD certified by VDE per the IEC 61643-11standard as suitable for installation in areas where direct lightning exposure is expected. Strikesorb 30-V1-2CHV 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
- RS485 communication link uses two (2) twisted pair (+ground) wires per hybrid cable, and communicates all voltage, boost system and alarm data
- Patent pending design

Mounting Bracket Included

Benefits

- Distributes DC up to 12 Remote Radio Heads and connects up to 24 LC fiber pairs
- Utilizes an IP 67 rated enclosure, also rated to NEBS and UL, allowing for indoor or outdoor installation on a roof or tower top
- Six total cable ports for cable access with custom configurable UL rated glands that accommodate varying diameters of hybrid (combined power and fiber optic) or standard cables with diameters up to 2" (will fit most standard 15/8" coax class cables), depending upon port configuration
- Lightweight aerodynamic design provides maximum flexibility for tower top installation

Product Diagram



* This data is provisional and subject to change.

Product Data Sheet DB-C1-12C-24AB-0Z

Tower Top and Base Power Protection/Fiber Connection System for HYBRIFLEX® Cable

Technical Specifications

Electrical Specifications

Nominal Operating Voltage	48 VDC
Nominal Discharge Current [I_n]	20 kA 8/20 µs
Maximum Surge Current [I_{max}]	60 kA 8/20 µs
Maximum Impulse (Lightning) Current per IEC 61643-11	5 kA 10/350 µs
Maximum Continuous Operating Voltage [Uc]	75 VDC
Voltage Protection Rating (VPR) per UL 1449 4th Edition	400V
Protection Class as per IEC 61643-11	Class I
Power Alarm	Cross polarity, short circuit, or power outage
Intrusion Sensor	Microswitch
Moisture Sensor	infrared moisture detector
Strikesorb Module Type	30-V1-2CHV Strikesorb modules installed to protect 12 Remote Radio Heads
Power Boost Ready	RS485 twisted pair connection available

Mechanical Specifications

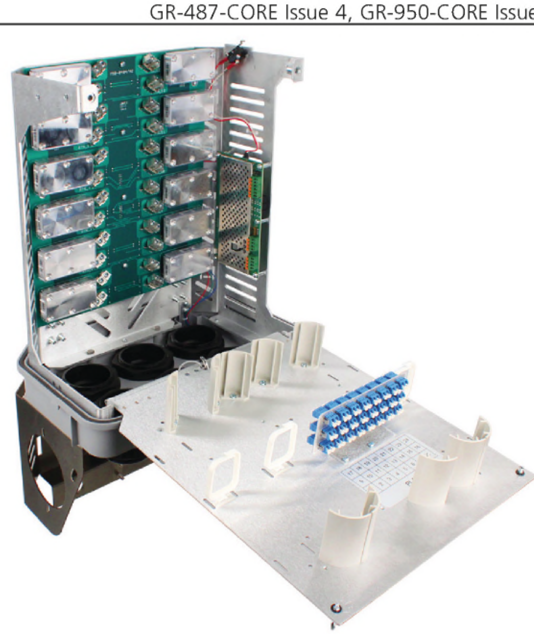
Suppression Connection Method	Compression lug, #14 - #2 AWG (2 mm2 - 33 mm2)
Fiber Connection Method	LC-LC Single mode
Pressure Equalizing Vent	Gore™ Vent
Environmental Rating	IP 67
Operating Temperature	-40° C to +80° C
UV Resistant	Yes
Dimensions (L x W x H)	12.6" x 16.5" x 29.5" [319mm x 420mm 749mm]
Weight System:	32 lbs (14.51 kg)
Combined Wind Loading	150mph (sustained): 185 lbs (823 N)

Standards Compliance

Strikesorb modules are compliant to the following Surge Protective Device (SPD) Standards:

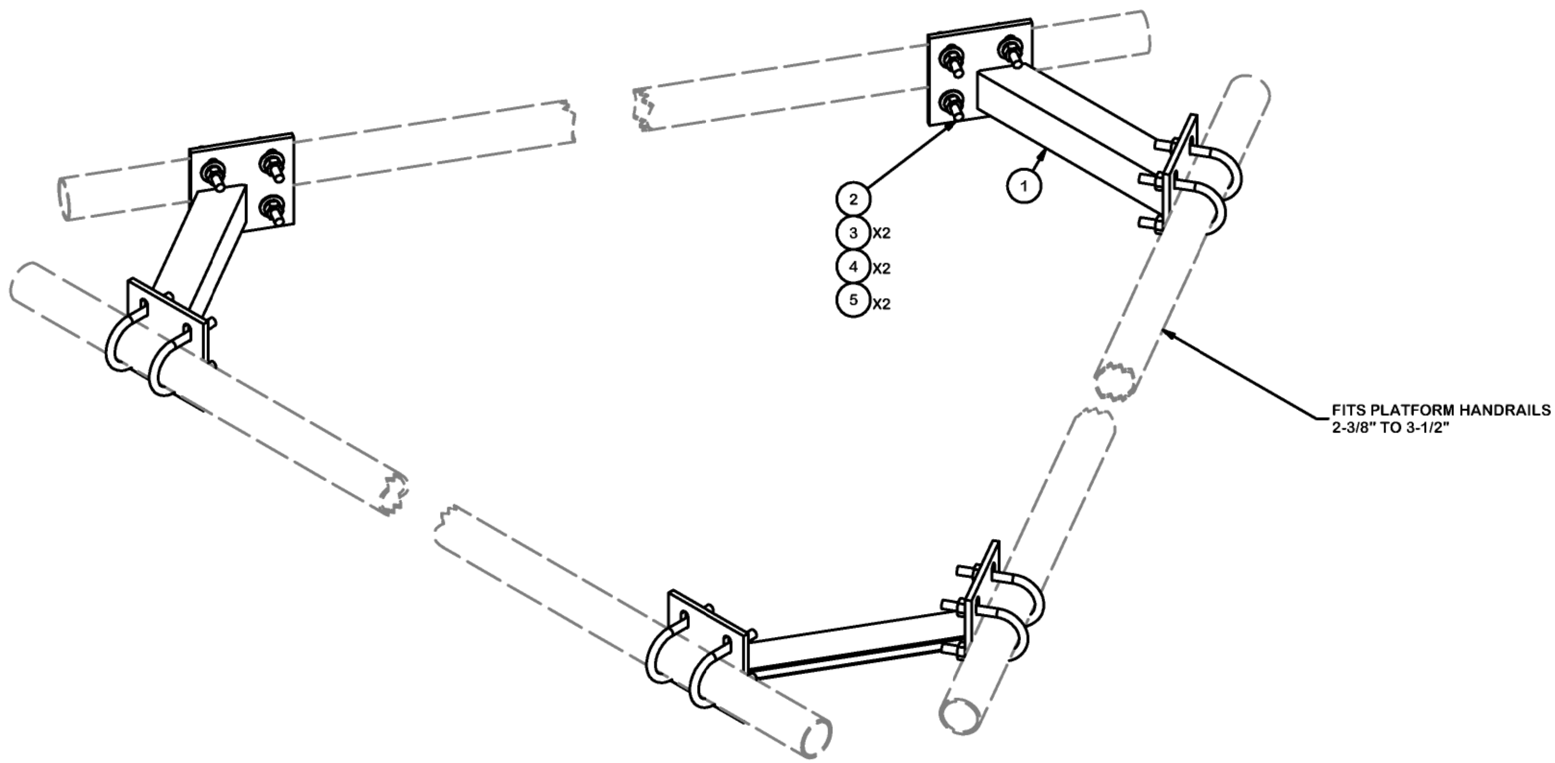
UL 1449 4th Edition, IEC 61643-11:2011, EN 61643-11:2012, IEEE C62.11, IEEE C62.41.2, IEEE C62.45

NEBS certified to: GR-63-CORE Issue 4, GR-1089-CORE Issue 6, GR-3108-CORE Issue 3, GR-487-CORE Issue 4, GR-950-CORE Issue 1



* This data is provisional and subject to change.

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
2	12	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.73	8.78
2	12	X-UB1300	1/2" X 3" X 5" X 2" U-BOLT (HDG.)		0.73	8.78
2	12	X-UB1358	1/2" X 3-5/8" X 5-1/2" X 3" U-BOLT (HDG.)		0.73	8.78
3	24	G12FW	1/2" HDG USS FLATWASHER		0.03	0.82
4	24	G12LW	1/2" HDG LOCKWASHER		0.01	0.33
5	24	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	1.72
					TOTAL WT. #	66.76



TOLERANCE NOTES

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

DESCRIPTION
ANGLE HANDRAIL
CORNER PLATE KIT

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

CPD NO.		DRAWN BY	ENG. APPROVAL	PART NO.
		CEK 5/13/2014		AHCP
CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	BMC 5/23/2014	AHCP

Maser Consulting Connecticut
2000 Midlantic Drive, Suite 100
Mt. Laurel, NJ 08054
856.797.0412
peter.albano@colliersengineering.com

Antenna Mount Analysis Report with Hardware Upgrades and PMI Requirements

Mount Analysis

SMART Tool Project #: 10105321
Maser Consulting Connecticut Project #: 21781145A

October 28, 2021

<u>Site Information</u>	*Site ID:*	*469290-VZW / GREENWICH 3 CT*
	Site Name:	*GREENWICH 3 CT*
	Carrier Name:	*Verizon Wireless*
	Address:	*9 Sound Shore Drive* *Greenwich, Connecticut 06830* *Fairfield County*
	Latitude:	*41.029711°*
	Longitude:	*-73.59835°*
<u>Structure Information</u>	*Tower Type:*	*148-Ft Monopole*
	Mount Type:	*6.50-Ft T-Arm*

FUZE ID # 15444631

Analysis Results

T-Arm: **75.9% 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: Frank Centone

STATE OF CONNECTICUT
PETER MICHAEL ALBANO
No. 35459
LICENSED
PROFESSIONAL ENGINEER
10/28/21

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: 323974, dated July 12, 2021*
Desktop Mount Mapping Form	*Colliers Engineering & Design, Project #: 21781145A, Dated September 29, 2021*

Analysis Criteria:

Codes and Standards:	ANSI/TIA-222-H	
Wind Parameters:	Basic Wind Speed (Ultimate 3-sec. Gust), V_{ULT}:	117 mph
	Ice Wind Speed (3-sec. Gust):	50 mph
	Design Ice Thickness:	1.00 in
	Risk Category:	II
	Exposure Category:	C
	Topographic Category:	1
	Topographic Feature Considered:	N/A
	Topographic Method:	N/A
	Ground Elevation Factor, K_e:	0.999
Seismic Parameters:	S_S:	0.270 g
	S_1:	0.059 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
139.00	139.00	4	JMA Wireless	MX10FRO640	Added
		4	JMA Wireless	MX06FRO660-03	
		3	Samsung	MT6407-77A	
		2	Samsung	XXDWMM-12.5-65-8T-CBRS	
		3	Commscope	TD-850B-LTE78-43	
		2	RFS	DB-C1-12C-24AB-0Z	
		4	Samsung	B2/B66A RRH-BR049	
		4	Samsung	B5/B13 RRH-BR04C	
		4	Samsung	CBRS RRH - RT4401-48A	

Any proposed antennas not currently installed should be mounted such that the centerline of the antennas does not exceed 6 inches vertically from the center of the antenna mount(s).

The provided closeout photos 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. 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
RRU Pipe	62.1%	Pass
Antenna Pipe	66.9%	Pass
Horizontal	62.9%	Pass
Standoff Pipe	79.4%	Pass
Mount Connection	75.9%	Pass

Structure Rating – *(Controlling Utilization of all Components)*	**75.9%***

***** Results valid after hardware upgrades noted in the PMI Requirements are installed.

The mount has been found structurally adequate for all steel and external connection capacities. Serviceability in accordance with TIA-222-H Section 4.9.11.3 has not been considered.

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:

1. Mount Photos
2. Desktop Mount Mapping Form (for reference only)
3. Analysis Calculations
4. **Contractor Required Post Installation Inspection (PMI) Report Deliverables**
5. Antenna Placement Diagrams
6. TIA Adoption and Wind Speed Usage Letter

Colliers Engineering & Design	Desktop Mount Mapping Form			
	Site Name:	Greenwich 3 CT	Tower Type:	Self-Support Tower
	Site ID:	469290	Tower Owner:	
	FUZE Project ID:	15444631	Tower Height (Ft.):	148'
	Customer:	Verizon Wireless	Mount Elevation (Ft.):	138.75'
	Colliers Project No.	21781145A	Date:	9/29/2021

Document Type	Provided? (Yes/No)	Engineering Firm	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	Yes	Centek Engineering	15001.017	7/10/2015	Not a primary source for mount information
Closeout Package	No				
Closeout Photos	Yes	Greenwich+3+COP	-	-	Photos show existing mount to be T-Arm with square tube standoffs
Handover Package	No				
New Build 445 Documentation	No				
Other	No				
Previous PMI	No				

Conclusion		
Full Mount Mapping Required?	No	Data supports Moving Forward

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 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.

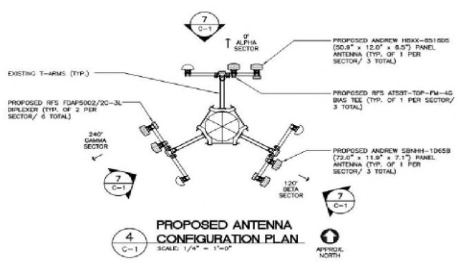


Photo taken from: Construction Drawings

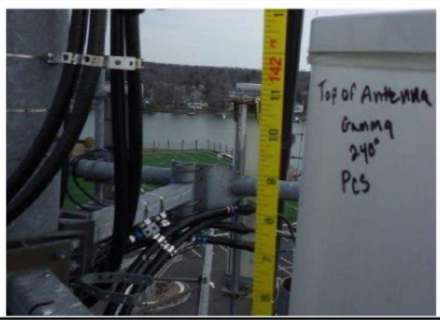
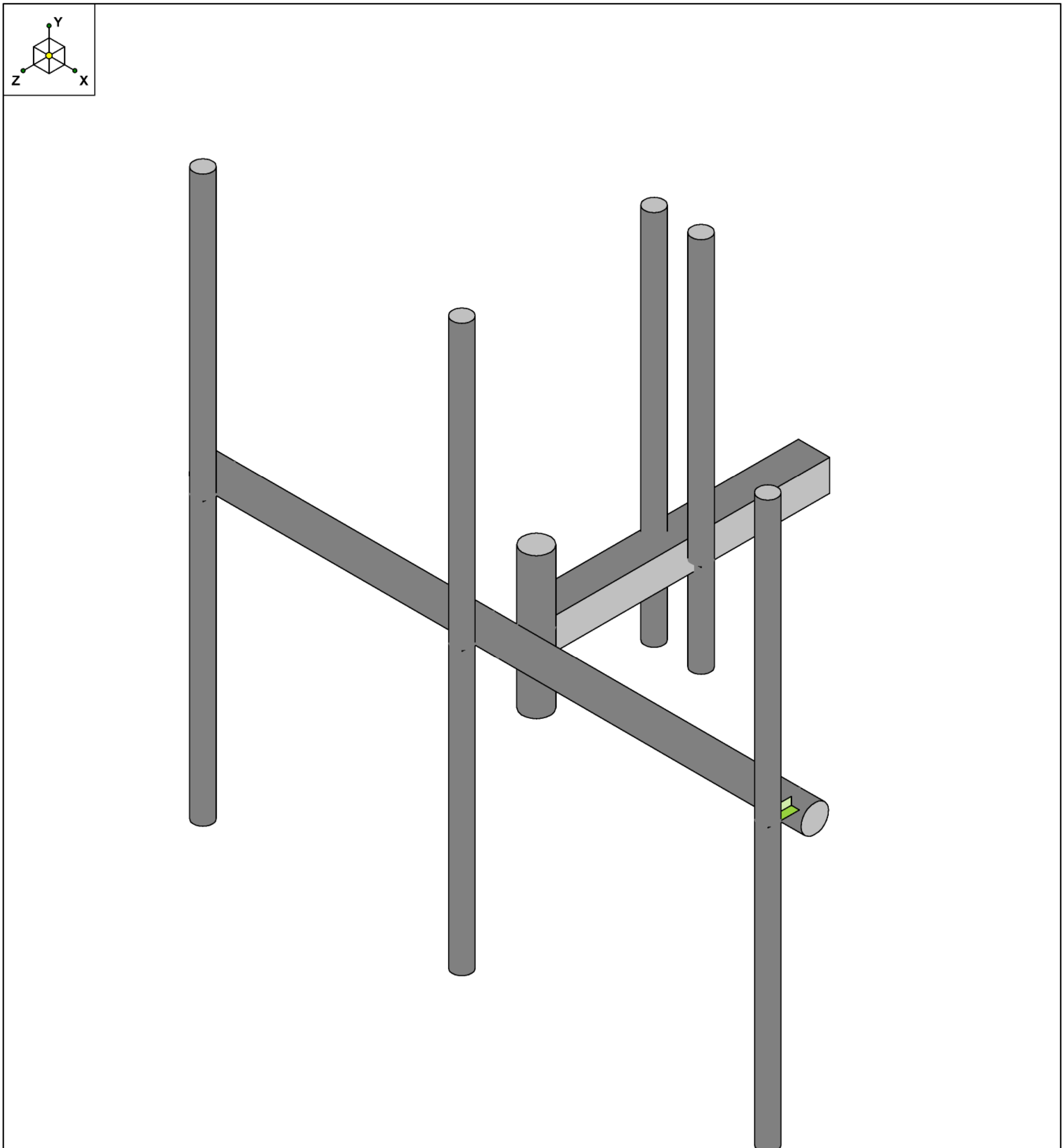
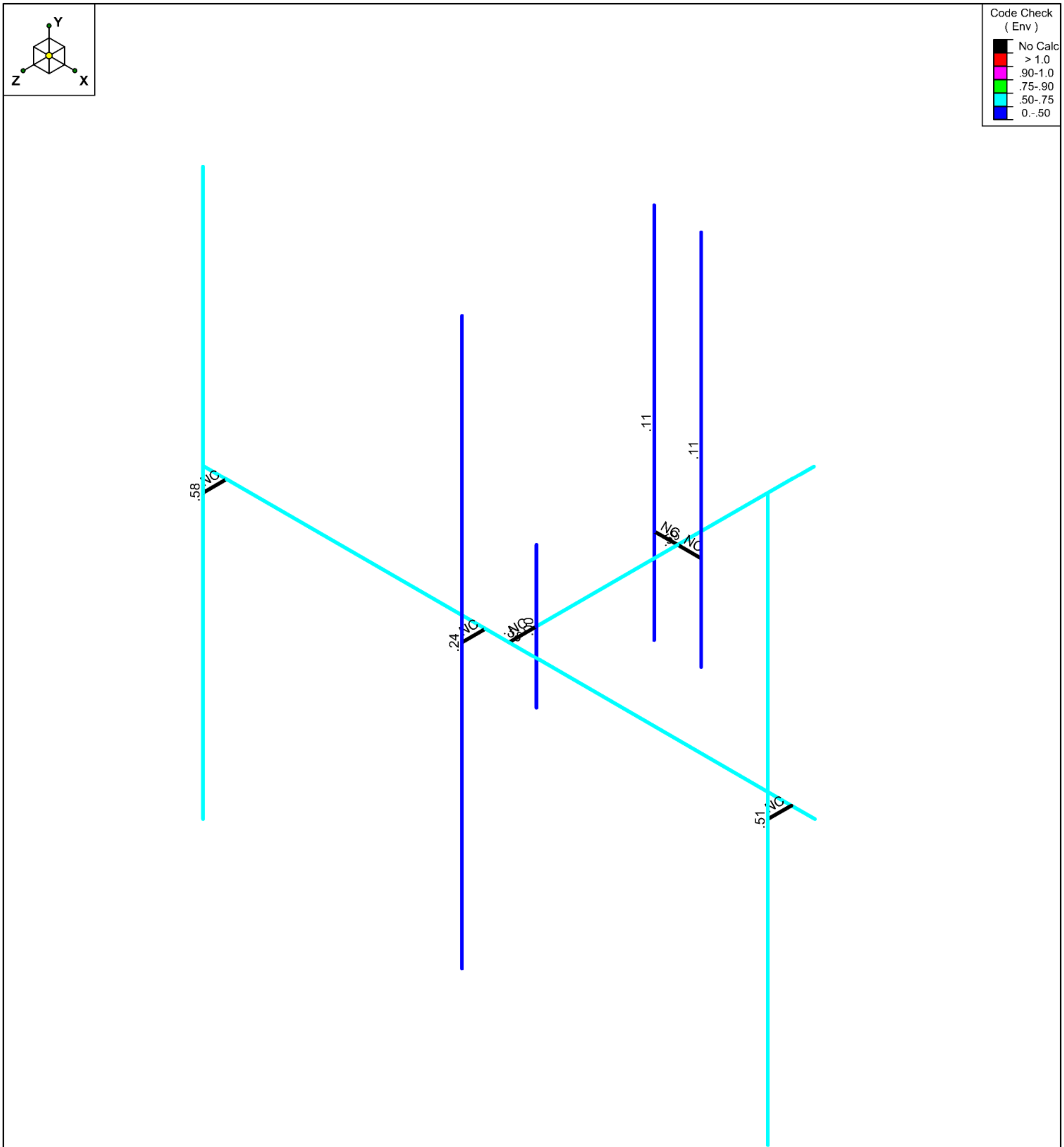


Photo taken from: Closeout Photos

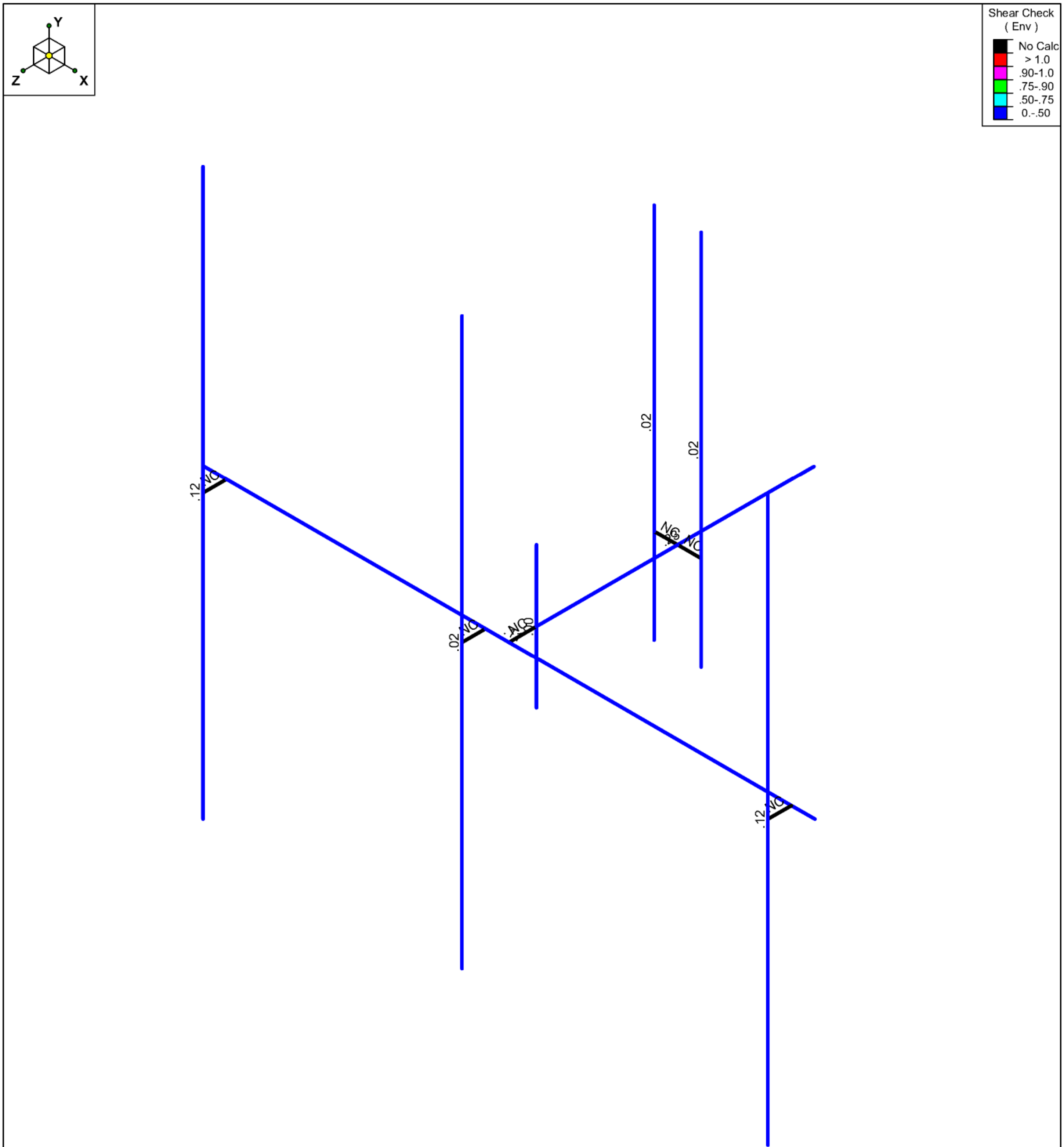


Maser Consulting	469290-VZW_MT_LOT_SectorC_H	SK - 1
		Oct 28, 2021 at 10:58 AM
		469290-VZW_MT_LO_H.r3d



Member Code Checks Displayed (Enveloped)
Results for LC 1, 1.2D+1.0Wo (0 Deg)

Maser Consulting	469290-VZW_MT_LOT_SectorC_H	SK - 2
		Oct 28, 2021 at 10:58 AM
		469290-VZW_MT_LO_H.r3d



Member Shear Checks Displayed (Enveloped)
Results for LC 1, 1.2D+1.0Wo (0 Deg)

Maser Consulting	469290-VZW_MT_LOT_SectorC_H	SK - 3
		Oct 28, 2021 at 10:58 AM
		469290-VZW_MT_LO_H.r3d

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Antenna D	None					51			
2	Antenna Di	None					51			
3	Antenna Wo (0 Deg)	None					51			
4	Antenna Wo (30 Deg)	None					51			
5	Antenna Wo (60 Deg)	None					51			
6	Antenna Wo (90 Deg)	None					51			
7	Antenna Wo (120 Deg)	None					51			
8	Antenna Wo (150 Deg)	None					51			
9	Antenna Wo (180 Deg)	None					51			
10	Antenna Wo (210 Deg)	None					51			
11	Antenna Wo (240 Deg)	None					51			
12	Antenna Wo (270 Deg)	None					51			
13	Antenna Wo (300 Deg)	None					51			
14	Antenna Wo (330 Deg)	None					51			
15	Antenna Wi (0 Deg)	None					51			
16	Antenna Wi (30 Deg)	None					51			
17	Antenna Wi (60 Deg)	None					51			
18	Antenna Wi (90 Deg)	None					51			
19	Antenna Wi (120 Deg)	None					51			
20	Antenna Wi (150 Deg)	None					51			
21	Antenna Wi (180 Deg)	None					51			
22	Antenna Wi (210 Deg)	None					51			
23	Antenna Wi (240 Deg)	None					51			
24	Antenna Wi (270 Deg)	None					51			
25	Antenna Wi (300 Deg)	None					51			
26	Antenna Wi (330 Deg)	None					51			
27	Antenna Wm (0 Deg)	None					51			
28	Antenna Wm (30 Deg)	None					51			
29	Antenna Wm (60 Deg)	None					51			
30	Antenna Wm (90 Deg)	None					51			
31	Antenna Wm (120 Deg)	None					51			
32	Antenna Wm (150 Deg)	None					51			
33	Antenna Wm (180 Deg)	None					51			
34	Antenna Wm (210 Deg)	None					51			
35	Antenna Wm (240 Deg)	None					51			
36	Antenna Wm (270 Deg)	None					51			
37	Antenna Wm (300 Deg)	None					51			
38	Antenna Wm (330 Deg)	None					51			
39	Structure D	None		-1						
40	Structure Di	None						8		
41	Structure Wo (0 Deg)	None						16		
42	Structure Wo (30 Deg)	None						16		
43	Structure Wo (60 Deg)	None						16		
44	Structure Wo (90 Deg)	None						16		
45	Structure Wo (120 D...	None						16		
46	Structure Wo (150 D...	None						16		
47	Structure Wo (180 D...	None						16		
48	Structure Wo (210 D...	None						16		
49	Structure Wo (240 D...	None						16		
50	Structure Wo (270 D...	None						16		
51	Structure Wo (300 D...	None						16		
52	Structure Wo (330 D...	None						16		
53	Structure Wi (0 Deg)	None						16		
54	Structure Wi (30 Deg)	None						16		
55	Structure Wi (60 Deg)	None						16		
56	Structure Wi (90 Deg)	None						16		

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
57	Structure Wi (120 De...	None						16		
58	Structure Wi (150 De...	None						16		
59	Structure Wi (180 De...	None						16		
60	Structure Wi (210 De...	None						16		
61	Structure Wi (240 De...	None						16		
62	Structure Wi (270 De...	None						16		
63	Structure Wi (300 De...	None						16		
64	Structure Wi (330 De...	None						16		
65	Structure Wm (0 Deg)	None						16		
66	Structure Wm (30 De...	None						16		
67	Structure Wm (60 De...	None						16		
68	Structure Wm (90 De...	None						16		
69	Structure Wm (120 D...	None						16		
70	Structure Wm (150 D...	None						16		
71	Structure Wm (180 D...	None						16		
72	Structure Wm (210 D...	None						16		
73	Structure Wm (240 D...	None						16		
74	Structure Wm (270 D...	None						16		
75	Structure Wm (300 D...	None						16		
76	Structure Wm (330 D...	None						16		
77	Lm1	None					1			
78	Lm2	None					1			
79	Lv1	None					1			
80	Lv2	None					1			
81	Antenna Ev	None					51			
82	Antenna Eh (0 Deg)	None					34			
83	Antenna Eh (90 Deg)	None					34			
84	Structure Ev	ELY								
85	Structure Eh (0 Deg)	ELZ	-.03							
86	Structure Eh (90 Deg)	ELX			.03					

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 ...	Yes	Y		1	1.2	39	1.2	3	1	41	1												
2	1.2D+1.0Wo (30...	Yes	Y		1	1.2	39	1.2	4	1	42	1												
3	1.2D+1.0Wo (60...	Yes	Y		1	1.2	39	1.2	5	1	43	1												
4	1.2D+1.0Wo (90...	Yes	Y		1	1.2	39	1.2	6	1	44	1												
5	1.2D+1.0Wo (12...	Yes	Y		1	1.2	39	1.2	7	1	45	1												
6	1.2D+1.0Wo (15...	Yes	Y		1	1.2	39	1.2	8	1	46	1												
7	1.2D+1.0Wo (18...	Yes	Y		1	1.2	39	1.2	9	1	47	1												
8	1.2D+1.0Wo (21...	Yes	Y		1	1.2	39	1.2	10	1	48	1												
9	1.2D+1.0Wo (24...	Yes	Y		1	1.2	39	1.2	11	1	49	1												
10	1.2D+1.0Wo (27...	Yes	Y		1	1.2	39	1.2	12	1	50	1												
11	1.2D+1.0Wo (30...	Yes	Y		1	1.2	39	1.2	13	1	51	1												
12	1.2D+1.0Wo (33...	Yes	Y		1	1.2	39	1.2	14	1	52	1												
13	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	39	1.2	2	1	40	1	15	1	53	1								
14	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	39	1.2	2	1	40	1	16	1	54	1								
15	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	39	1.2	2	1	40	1	17	1	55	1								
16	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	39	1.2	2	1	40	1	18	1	56	1								
17	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	39	1.2	2	1	40	1	19	1	57	1								
18	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	39	1.2	2	1	40	1	20	1	58	1								
19	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	39	1.2	2	1	40	1	21	1	59	1								
20	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	39	1.2	2	1	40	1	22	1	60	1								
21	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	39	1.2	2	1	40	1	23	1	61	1								
22	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	39	1.2	2	1	40	1	24	1	62	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...
23	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	39	1.2	2	1	40	1	25	1	63	1								
24	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	39	1.2	2	1	40	1	26	1	64	1								
25	1.2D + 1.5Lm1 +...	Yes	Y		1	1.2	39	1.2	77	1.5	27	1	65	1										
26	1.2D + 1.5Lm1 +...	Yes	Y		1	1.2	39	1.2	77	1.5	28	1	66	1										
27	1.2D + 1.5Lm1 +...	Yes	Y		1	1.2	39	1.2	77	1.5	29	1	67	1										
28	1.2D + 1.5Lm1 +...	Yes	Y		1	1.2	39	1.2	77	1.5	30	1	68	1										
29	1.2D + 1.5Lm1 +...	Yes	Y		1	1.2	39	1.2	77	1.5	31	1	69	1										
30	1.2D + 1.5Lm1 +...	Yes	Y		1	1.2	39	1.2	77	1.5	32	1	70	1										
31	1.2D + 1.5Lm1 +...	Yes	Y		1	1.2	39	1.2	77	1.5	33	1	71	1										
32	1.2D + 1.5Lm1 +...	Yes	Y		1	1.2	39	1.2	77	1.5	34	1	72	1										
33	1.2D + 1.5Lm1 +...	Yes	Y		1	1.2	39	1.2	77	1.5	35	1	73	1										
34	1.2D + 1.5Lm1 +...	Yes	Y		1	1.2	39	1.2	77	1.5	36	1	74	1										
35	1.2D + 1.5Lm1 +...	Yes	Y		1	1.2	39	1.2	77	1.5	37	1	75	1										
36	1.2D + 1.5Lm1 +...	Yes	Y		1	1.2	39	1.2	77	1.5	38	1	76	1										
37	1.2D + 1.5Lm2 +...	Yes	Y		1	1.2	39	1.2	78	1.5	27	1	65	1										
38	1.2D + 1.5Lm2 +...	Yes	Y		1	1.2	39	1.2	78	1.5	28	1	66	1										
39	1.2D + 1.5Lm2 +...	Yes	Y		1	1.2	39	1.2	78	1.5	29	1	67	1										
40	1.2D + 1.5Lm2 +...	Yes	Y		1	1.2	39	1.2	78	1.5	30	1	68	1										
41	1.2D + 1.5Lm2 +...	Yes	Y		1	1.2	39	1.2	78	1.5	31	1	69	1										
42	1.2D + 1.5Lm2 +...	Yes	Y		1	1.2	39	1.2	78	1.5	32	1	70	1										
43	1.2D + 1.5Lm2 +...	Yes	Y		1	1.2	39	1.2	78	1.5	33	1	71	1										
44	1.2D + 1.5Lm2 +...	Yes	Y		1	1.2	39	1.2	78	1.5	34	1	72	1										
45	1.2D + 1.5Lm2 +...	Yes	Y		1	1.2	39	1.2	78	1.5	35	1	73	1										
46	1.2D + 1.5Lm2 +...	Yes	Y		1	1.2	39	1.2	78	1.5	36	1	74	1										
47	1.2D + 1.5Lm2 +...	Yes	Y		1	1.2	39	1.2	78	1.5	37	1	75	1										
48	1.2D + 1.5Lm2 +...	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...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82	1	83		ELZ	1	ELX					
53	1.2D + 1.0Ev + 1...	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...	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...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82		83	1	ELZ		ELX	1				
56	1.2D + 1.0Ev + 1...	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...	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...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82	-1	83		ELZ	-1	ELX					
59	1.2D + 1.0Ev + 1...	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...	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...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82		83	-1	ELZ		ELX	-1				
62	1.2D + 1.0Ev + 1...	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...	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...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	1	83		ELZ	1	ELX					
65	0.9D - 1.0Ev + 1...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	.866	83	.5	ELZ	.866	ELX	.5				
66	0.9D - 1.0Ev + 1...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	.5	83	.866	ELZ	.5	ELX	.866				
67	0.9D - 1.0Ev + 1...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82		83	1	ELZ		ELX	1				
68	0.9D - 1.0Ev + 1...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	-.5	83	.866	ELZ	-.5	ELX	.866				
69	0.9D - 1.0Ev + 1...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	-.866	83	.5	ELZ	-.866	ELX	.5				
70	0.9D - 1.0Ev + 1...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	-1	83		ELZ	-1	ELX					
71	0.9D - 1.0Ev + 1...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	-.866	83	-.5	ELZ	-.866	ELX	-.5				
72	0.9D - 1.0Ev + 1...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	-.5	83	-.866	ELZ	-.5	ELX	-.866				
73	0.9D - 1.0Ev + 1...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82		83	-1	ELZ		ELX	-1				
74	0.9D - 1.0Ev + 1...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	.5	83	-.866	ELZ	.5	ELX	-.866				
75	0.9D - 1.0Ev + 1...	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	-1.041667	0	
2	N2	0	0	1.90625	0	
3	N3	0	-.75	1.90625	0	
4	N4	0	.75	1.90625	0	
5	N5	0	0	2.197917	0	
6	N6	3.25	0	2.197917	0	
7	N7	-3.25	0	2.197917	0	
8	N11	3	0	2.197917	0	
9	N12	3	0	2.447917	0	
10	N13	3	3	2.447917	0	
11	N14	3	-3	2.447917	0	
12	N15	-3	0	2.197917	0	
13	N16	-3	0	2.447917	0	
14	N17	-3	3	2.447917	0	
15	N18	-3	-3	2.447917	0	
16	N17A	-.25	0	2.197917	0	
17	N18A	-.25	0	2.447917	0	
18	N19	-.25	3	2.447917	0	
19	N20	-.25	-3	2.447917	0	
20	N20A	0	0	-1.541667	0	
21	N21	0	0	0.40625	0	
22	N22	.25	0	0.40625	0	
23	N23	-.25	0	0.40625	0	
24	N24	.25	3	0.40625	0	
25	N25	-.25	3	0.40625	0	
26	N26	.25	-1	0.40625	0	
27	N27	-.25	-1	0.40625	0	

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Antenna 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	Standoff Pipe	PIPE_3.0	Column	Pipe	A53 Gr. B	Typical	2.07	2.85	2.85	5.69
4	Horizontal	PIPE_3.0	Column	Pipe	A53 Gr. B	Typical	2.07	2.85	2.85	5.69
5	Delta Horizontal	PIPE_2.5	Column	Pipe	A53 Gr. B	Typical	1.61	1.45	1.45	2.89
6	OVP Pipe	PIPE_2.0	Column	Pipe	A53 Gr. B	Typical	1.02	.627	.627	1.25

Hot Rolled Steel Properties

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

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N2			Standoff Arm	Beam	Tube	A500 Gr.46	Typical
2	M2	N4	N3			Standoff Pipe	Column	Pipe	A53 Gr. B	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
3	M4	N7	N6			Horizontal	Column	Pipe	A53 Gr. B	Typical
4	MP1A	N13	N14			Antenna Pipe	Column	Pipe	A53 Gr. B	Typical
5	LIVE1	N11	N12			RIGID	None	None	RIGID	Typical
6	MP3A	N17	N18			Antenna Pipe	Column	Pipe	A53 Gr. B	Typical
7	LIVE2	N15	N16			RIGID	None	None	RIGID	Typical
8	M10A	N2	N5			RIGID	None	None	RIGID	Typical
9	MP2A	N19	N20			Antenna Pipe	Column	Pipe	A53 Gr. B	Typical
10	M10B	N17A	N18A			RIGID	None	None	RIGID	Typical
11	RRU1	N24	N26			OVP Pipe	Column	Pipe	A53 Gr. B	Typical
12	RRU2	N25	N27			OVP Pipe	Column	Pipe	A53 Gr. B	Typical
13	M13	N21	N22			RIGID	None	None	RIGID	Typical
14	M14	N21	N23			RIGID	None	None	RIGID	Typical

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	2.948			Lbyy						Lateral
2	M2	Standoff Pipe	1.5									Lateral
3	M4	Horizontal	6.5									Lateral
4	MP1A	Antenna Pipe	6									Lateral
5	MP3A	Antenna Pipe	6									Lateral
6	MP2A	Antenna Pipe	6									Lateral
7	RRU1	OVP Pipe	4									Lateral
8	RRU2	OVP Pipe	4									Lateral

Member Point Loads (BLC 1 : Antenna D)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	Y	-48.3	1
2	MP3A	My	.034	1
3	MP3A	Mz	-.033	1
4	MP3A	Y	-48.3	5
5	MP3A	My	.034	5
6	MP3A	Mz	-.033	5
7	MP3A	Y	-48.3	1
8	MP3A	My	.013	1
9	MP3A	Mz	.045	1
10	MP3A	Y	-48.3	5
11	MP3A	My	.013	5
12	MP3A	Mz	.045	5
13	MP1A	Y	-23	1
14	MP1A	My	-.008	1
15	MP1A	Mz	-.018	1
16	MP1A	Y	-23	5
17	MP1A	My	-.008	5
18	MP1A	Mz	-.018	5
19	MP1A	Y	-23	1
20	MP1A	My	.019	1
21	MP1A	Mz	-.002	1
22	MP1A	Y	-23	5
23	MP1A	My	.019	5
24	MP1A	Mz	-.002	5
25	MP2A	Y	-43.55	1
26	MP2A	My	.011	1
27	MP2A	Mz	-.019	1
28	MP2A	Y	-43.55	3

Member Point Loads (BLC 1 : Antenna D) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
29	MP2A	My	.011	3
30	MP2A	Mz	-.019	3
31	MP2A	Y	-4.4	5
32	MP2A	My	.001	5
33	MP2A	Mz	-.002	5
34	MP1A	Y	-52.9	4
35	MP1A	My	-.013	4
36	MP1A	Mz	.023	4
37	MP1A	Y	-84.4	2
38	MP1A	My	-.021	2
39	MP1A	Mz	.037	2
40	MP2A	Y	-70.3	.5
41	MP2A	My	-.018	.5
42	MP2A	Mz	.03	.5
43	MP3A	Y	-18.7	4
44	MP3A	My	-.003	4
45	MP3A	Mz	-.009	4
46	RRU1	Y	-84.4	1.5
47	RRU1	My	.021	1.5
48	RRU1	Mz	.037	1.5
49	RRU2	Y	-70.3	1.5
50	RRU2	My	.018	1.5
51	RRU2	Mz	.03	1.5

Member Point Loads (BLC 2 : Antenna Di)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	Y	-85.167	1
2	MP3A	My	.06	1
3	MP3A	Mz	-.058	1
4	MP3A	Y	-85.167	5
5	MP3A	My	.06	5
6	MP3A	Mz	-.058	5
7	MP3A	Y	-85.167	1
8	MP3A	My	.023	1
9	MP3A	Mz	.08	1
10	MP3A	Y	-85.167	5
11	MP3A	My	.023	5
12	MP3A	Mz	.08	5
13	MP1A	Y	-82.515	1
14	MP1A	My	-.027	1
15	MP1A	Mz	-.063	1
16	MP1A	Y	-82.515	5
17	MP1A	My	-.027	5
18	MP1A	Mz	-.063	5
19	MP1A	Y	-82.515	1
20	MP1A	My	.068	1
21	MP1A	Mz	-.008	1
22	MP1A	Y	-82.515	5
23	MP1A	My	.068	5
24	MP1A	Mz	-.008	5
25	MP2A	Y	-35.636	1
26	MP2A	My	.009	1
27	MP2A	Mz	-.015	1
28	MP2A	Y	-35.636	3
29	MP2A	My	.009	3
30	MP2A	Mz	-.015	3

Member Point Loads (BLC 2 : Antenna Di) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
31	MP2A	Y	-13.458	5
32	MP2A	My	.003	5
33	MP2A	Mz	-.006	5
34	MP1A	Y	-37.406	4
35	MP1A	My	-.009	4
36	MP1A	Mz	.016	4
37	MP1A	Y	-44.929	2
38	MP1A	My	-.011	2
39	MP1A	Mz	.019	2
40	MP2A	Y	-40.405	.5
41	MP2A	My	-.01	.5
42	MP2A	Mz	.017	.5
43	MP3A	Y	-19.852	4
44	MP3A	My	-.003	4
45	MP3A	Mz	-.009	4
46	RRU1	Y	-44.929	1.5
47	RRU1	My	.011	1.5
48	RRU1	Mz	.019	1.5
49	RRU2	Y	-40.405	1.5
50	RRU2	My	.01	1.5
51	RRU2	Mz	.017	1.5

Member Point Loads (BLC 3 : Antenna Wo (0 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	0	1
2	MP3A	Z	-240.435	1
3	MP3A	Mx	.162	1
4	MP3A	X	0	5
5	MP3A	Z	-240.435	5
6	MP3A	Mx	.162	5
7	MP3A	X	0	1
8	MP3A	Z	-240.435	1
9	MP3A	Mx	-.225	1
10	MP3A	X	0	5
11	MP3A	Z	-240.435	5
12	MP3A	Mx	-.225	5
13	MP1A	X	0	1
14	MP1A	Z	-161.824	1
15	MP1A	Mx	.124	1
16	MP1A	X	0	5
17	MP1A	Z	-161.824	5
18	MP1A	Mx	.124	5
19	MP1A	X	0	1
20	MP1A	Z	-161.824	1
21	MP1A	Mx	.016	1
22	MP1A	X	0	5
23	MP1A	Z	-161.824	5
24	MP1A	Mx	.016	5
25	MP2A	X	0	1
26	MP2A	Z	-51.871	1
27	MP2A	Mx	.022	1
28	MP2A	X	0	3
29	MP2A	Z	-51.871	3
30	MP2A	Mx	.022	3
31	MP2A	X	0	5
32	MP2A	Z	-14.349	5

Member Point Loads (BLC 3 : Antenna Wo (0 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
33	MP2A	Mx	.006	5
34	MP1A	X	0	4
35	MP1A	Z	-44.907	4
36	MP1A	Mx	-.019	4
37	MP1A	X	0	2
38	MP1A	Z	-57.048	2
39	MP1A	Mx	-.025	2
40	MP2A	X	0	.5
41	MP2A	Z	-49.815	.5
42	MP2A	Mx	-.022	.5
43	MP3A	X	0	4
44	MP3A	Z	-22.715	4
45	MP3A	Mx	.011	4
46	RRU1	X	0	1.5
47	RRU1	Z	-57.048	1.5
48	RRU1	Mx	-.025	1.5
49	RRU2	X	0	1.5
50	RRU2	Z	-49.815	1.5
51	RRU2	Mx	-.022	1.5

Member Point Loads (BLC 4 : Antenna Wo (30 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	120.217	1
2	MP3A	Z	-208.222	1
3	MP3A	Mx	.225	1
4	MP3A	X	120.217	5
5	MP3A	Z	-208.222	5
6	MP3A	Mx	.225	5
7	MP3A	X	120.217	1
8	MP3A	Z	-208.222	1
9	MP3A	Mx	-.162	1
10	MP3A	X	120.217	5
11	MP3A	Z	-208.222	5
12	MP3A	Mx	-.162	5
13	MP1A	X	74.486	1
14	MP1A	Z	-129.014	1
15	MP1A	Mx	.074	1
16	MP1A	X	74.486	5
17	MP1A	Z	-129.014	5
18	MP1A	Mx	.074	5
19	MP1A	X	74.486	1
20	MP1A	Z	-129.014	1
21	MP1A	Mx	.074	1
22	MP1A	X	74.486	5
23	MP1A	Z	-129.014	5
24	MP1A	Mx	.074	5
25	MP2A	X	18.678	1
26	MP2A	Z	-32.351	1
27	MP2A	Mx	.019	1
28	MP2A	X	18.678	3
29	MP2A	Z	-32.351	3
30	MP2A	Mx	.019	3
31	MP2A	X	3.543	5
32	MP2A	Z	-6.137	5
33	MP2A	Mx	.004	5
34	MP1A	X	16.674	4

Member Point Loads (BLC 4 : Antenna Wo (30 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
35	MP1A	Z	-28.881	4
36	MP1A	Mx	-.017	4
37	MP1A	X	25.377	2
38	MP1A	Z	-43.954	2
39	MP1A	Mx	-.025	2
40	MP2A	X	20.555	.5
41	MP2A	Z	-35.603	.5
42	MP2A	Mx	-.021	.5
43	MP3A	X	16.117	4
44	MP3A	Z	-27.915	4
45	MP3A	Mx	.01	4
46	RRU1	X	34.817	1.5
47	RRU1	Z	-60.305	1.5
48	RRU1	Mx	-.017	1.5
49	RRU2	X	33.612	1.5
50	RRU2	Z	-58.218	1.5
51	RRU2	Mx	-.017	1.5

Member Point Loads (BLC 5 : Antenna Wo (60 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	156.296	1
2	MP3A	Z	-90.238	1
3	MP3A	Mx	.17	1
4	MP3A	X	156.296	5
5	MP3A	Z	-90.238	5
6	MP3A	Mx	.17	5
7	MP3A	X	156.296	1
8	MP3A	Z	-90.238	1
9	MP3A	Mx	-.043	1
10	MP3A	X	156.296	5
11	MP3A	Z	-90.238	5
12	MP3A	Mx	-.043	5
13	MP1A	X	140.144	1
14	MP1A	Z	-80.912	1
15	MP1A	Mx	.016	1
16	MP1A	X	140.144	5
17	MP1A	Z	-80.912	5
18	MP1A	Mx	.016	5
19	MP1A	X	140.144	1
20	MP1A	Z	-80.912	1
21	MP1A	Mx	.124	1
22	MP1A	X	140.144	5
23	MP1A	Z	-80.912	5
24	MP1A	Mx	.124	5
25	MP2A	X	44.922	1
26	MP2A	Z	-25.936	1
27	MP2A	Mx	.022	1
28	MP2A	X	44.922	3
29	MP2A	Z	-25.936	3
30	MP2A	Mx	.022	3
31	MP2A	X	12.427	5
32	MP2A	Z	-7.175	5
33	MP2A	Mx	.006	5
34	MP1A	X	38.891	4
35	MP1A	Z	-22.454	4
36	MP1A	Mx	-.019	4

Member Point Loads (BLC 5 : Antenna Wo (60 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
37	MP1A	X	49.405	2
38	MP1A	Z	-28.524	2
39	MP1A	Mx	-.025	2
40	MP2A	X	43.141	.5
41	MP2A	Z	-24.908	.5
42	MP2A	Mx	-.022	.5
43	MP3A	X	34.634	4
44	MP3A	Z	-19.996	4
45	MP3A	Mx	.003	4
46	RRU1	X	65.756	1.5
47	RRU1	Z	-37.964	1.5
48	RRU1	Mx	0	1.5
49	RRU2	X	65.756	1.5
50	RRU2	Z	-37.964	1.5
51	RRU2	Mx	0	1.5

Member Point Loads (BLC 6 : Antenna Wo (90 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	120.516	1
2	MP3A	Z	0	1
3	MP3A	Mx	.084	1
4	MP3A	X	120.516	5
5	MP3A	Z	0	5
6	MP3A	Mx	.084	5
7	MP3A	X	120.516	1
8	MP3A	Z	0	1
9	MP3A	Mx	.032	1
10	MP3A	X	120.516	5
11	MP3A	Z	0	5
12	MP3A	Mx	.032	5
13	MP1A	X	187.526	1
14	MP1A	Z	0	1
15	MP1A	Mx	-.061	1
16	MP1A	X	187.526	5
17	MP1A	Z	0	5
18	MP1A	Mx	-.061	5
19	MP1A	X	187.526	1
20	MP1A	Z	0	1
21	MP1A	Mx	.155	1
22	MP1A	X	187.526	5
23	MP1A	Z	0	5
24	MP1A	Mx	.155	5
25	MP2A	X	80.902	1
26	MP2A	Z	0	1
27	MP2A	Mx	.02	1
28	MP2A	X	80.902	3
29	MP2A	Z	0	3
30	MP2A	Mx	.02	3
31	MP2A	X	28.874	5
32	MP2A	Z	0	5
33	MP2A	Mx	.007	5
34	MP1A	X	68.024	4
35	MP1A	Z	0	4
36	MP1A	Mx	-.017	4
37	MP1A	X	69.635	2
38	MP1A	Z	0	2

Member Point Loads (BLC 6 : Antenna Wo (90 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
39	MP1A	Mx	-.017	2
40	MP2A	X	67.224	.5
41	MP2A	Z	0	.5
42	MP2A	Mx	-.017	.5
43	MP3A	X	38.234	4
44	MP3A	Z	0	4
45	MP3A	Mx	-.007	4
46	RRU1	X	69.635	1.5
47	RRU1	Z	0	1.5
48	RRU1	Mx	.017	1.5
49	RRU2	X	67.224	1.5
50	RRU2	Z	0	1.5
51	RRU2	Mx	.017	1.5

Member Point Loads (BLC 7 : Antenna Wo (120 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	104.37	1
2	MP3A	Z	60.258	1
3	MP3A	Mx	.032	1
4	MP3A	X	104.37	5
5	MP3A	Z	60.258	5
6	MP3A	Mx	.032	5
7	MP3A	X	104.37	1
8	MP3A	Z	60.258	1
9	MP3A	Mx	.084	1
10	MP3A	X	104.37	5
11	MP3A	Z	60.258	5
12	MP3A	Mx	.084	5
13	MP1A	X	173.532	1
14	MP1A	Z	100.189	1
15	MP1A	Mx	-.134	1
16	MP1A	X	173.532	5
17	MP1A	Z	100.189	5
18	MP1A	Mx	-.134	5
19	MP1A	X	173.532	1
20	MP1A	Z	100.189	1
21	MP1A	Mx	.134	1
22	MP1A	X	173.532	5
23	MP1A	Z	100.189	5
24	MP1A	Mx	.134	5
25	MP2A	X	82.634	1
26	MP2A	Z	47.709	1
27	MP2A	Mx	0	1
28	MP2A	X	82.634	3
29	MP2A	Z	47.709	3
30	MP2A	Mx	0	3
31	MP2A	X	31.296	5
32	MP2A	Z	18.068	5
33	MP2A	Mx	0	5
34	MP1A	X	68.92	4
35	MP1A	Z	39.791	4
36	MP1A	Mx	0	4
37	MP1A	X	65.756	2
38	MP1A	Z	37.964	2
39	MP1A	Mx	0	2
40	MP2A	X	65.756	.5

Member Point Loads (BLC 7 : Antenna Wo (120 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
41	MP2A	Z	37.964	.5
42	MP2A	Mx	0	.5
43	MP3A	X	24.869	4
44	MP3A	Z	14.358	4
45	MP3A	Mx	-.011	4
46	RRU1	X	49.405	1.5
47	RRU1	Z	28.524	1.5
48	RRU1	Mx	.025	1.5
49	RRU2	X	43.141	1.5
50	RRU2	Z	24.908	1.5
51	RRU2	Mx	.022	1.5

Member Point Loads (BLC 8 : Antenna Wo (150 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	90.238	1
2	MP3A	Z	156.296	1
3	MP3A	Mx	-.043	1
4	MP3A	X	90.238	5
5	MP3A	Z	156.296	5
6	MP3A	Mx	-.043	5
7	MP3A	X	90.238	1
8	MP3A	Z	156.296	1
9	MP3A	Mx	.17	1
10	MP3A	X	90.238	5
11	MP3A	Z	156.296	5
12	MP3A	Mx	.17	5
13	MP1A	X	93.763	1
14	MP1A	Z	162.402	1
15	MP1A	Mx	-.155	1
16	MP1A	X	93.763	5
17	MP1A	Z	162.402	5
18	MP1A	Mx	-.155	5
19	MP1A	X	93.763	1
20	MP1A	Z	162.402	1
21	MP1A	Mx	.061	1
22	MP1A	X	93.763	5
23	MP1A	Z	162.402	5
24	MP1A	Mx	.061	5
25	MP2A	X	40.451	1
26	MP2A	Z	70.063	1
27	MP2A	Mx	-.02	1
28	MP2A	X	40.451	3
29	MP2A	Z	70.063	3
30	MP2A	Mx	-.02	3
31	MP2A	X	14.437	5
32	MP2A	Z	25.006	5
33	MP2A	Mx	-.007	5
34	MP1A	X	34.012	4
35	MP1A	Z	58.911	4
36	MP1A	Mx	.017	4
37	MP1A	X	34.817	2
38	MP1A	Z	60.305	2
39	MP1A	Mx	.017	2
40	MP2A	X	33.612	.5
41	MP2A	Z	58.218	.5
42	MP2A	Mx	.017	.5

Member Point Loads (BLC 8 : Antenna Wo (150 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
43	MP3A	X	10.478	4
44	MP3A	Z	18.149	4
45	MP3A	Mx	-.01	4
46	RRU1	X	25.377	1.5
47	RRU1	Z	43.954	1.5
48	RRU1	Mx	.025	1.5
49	RRU2	X	20.555	1.5
50	RRU2	Z	35.603	1.5
51	RRU2	Mx	.021	1.5

Member Point Loads (BLC 9 : Antenna Wo (180 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	0	1
2	MP3A	Z	240.435	1
3	MP3A	Mx	-.162	1
4	MP3A	X	0	5
5	MP3A	Z	240.435	5
6	MP3A	Mx	-.162	5
7	MP3A	X	0	1
8	MP3A	Z	240.435	1
9	MP3A	Mx	.225	1
10	MP3A	X	0	5
11	MP3A	Z	240.435	5
12	MP3A	Mx	.225	5
13	MP1A	X	0	1
14	MP1A	Z	161.824	1
15	MP1A	Mx	-.124	1
16	MP1A	X	0	5
17	MP1A	Z	161.824	5
18	MP1A	Mx	-.124	5
19	MP1A	X	0	1
20	MP1A	Z	161.824	1
21	MP1A	Mx	-.016	1
22	MP1A	X	0	5
23	MP1A	Z	161.824	5
24	MP1A	Mx	-.016	5
25	MP2A	X	0	1
26	MP2A	Z	51.871	1
27	MP2A	Mx	-.022	1
28	MP2A	X	0	3
29	MP2A	Z	51.871	3
30	MP2A	Mx	-.022	3
31	MP2A	X	0	5
32	MP2A	Z	14.349	5
33	MP2A	Mx	-.006	5
34	MP1A	X	0	4
35	MP1A	Z	44.907	4
36	MP1A	Mx	.019	4
37	MP1A	X	0	2
38	MP1A	Z	57.048	2
39	MP1A	Mx	.025	2
40	MP2A	X	0	.5
41	MP2A	Z	49.815	.5
42	MP2A	Mx	.022	.5
43	MP3A	X	0	4
44	MP3A	Z	22.715	4

Member Point Loads (BLC 9 : Antenna Wo (180 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
45	MP3A	Mx	-.011	4
46	RRU1	X	0	1.5
47	RRU1	Z	57.048	1.5
48	RRU1	Mx	.025	1.5
49	RRU2	X	0	1.5
50	RRU2	Z	49.815	1.5
51	RRU2	Mx	.022	1.5

Member Point Loads (BLC 10 : Antenna Wo (210 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	-120.217	1
2	MP3A	Z	208.222	1
3	MP3A	Mx	-.225	1
4	MP3A	X	-120.217	5
5	MP3A	Z	208.222	5
6	MP3A	Mx	-.225	5
7	MP3A	X	-120.217	1
8	MP3A	Z	208.222	1
9	MP3A	Mx	.162	1
10	MP3A	X	-120.217	5
11	MP3A	Z	208.222	5
12	MP3A	Mx	.162	5
13	MP1A	X	-74.486	1
14	MP1A	Z	129.014	1
15	MP1A	Mx	-.074	1
16	MP1A	X	-74.486	5
17	MP1A	Z	129.014	5
18	MP1A	Mx	-.074	5
19	MP1A	X	-74.486	1
20	MP1A	Z	129.014	1
21	MP1A	Mx	-.074	1
22	MP1A	X	-74.486	5
23	MP1A	Z	129.014	5
24	MP1A	Mx	-.074	5
25	MP2A	X	-18.678	1
26	MP2A	Z	32.351	1
27	MP2A	Mx	-.019	1
28	MP2A	X	-18.678	3
29	MP2A	Z	32.351	3
30	MP2A	Mx	-.019	3
31	MP2A	X	-3.543	5
32	MP2A	Z	6.137	5
33	MP2A	Mx	-.004	5
34	MP1A	X	-16.674	4
35	MP1A	Z	28.881	4
36	MP1A	Mx	.017	4
37	MP1A	X	-25.377	2
38	MP1A	Z	43.954	2
39	MP1A	Mx	.025	2
40	MP2A	X	-20.555	.5
41	MP2A	Z	35.603	.5
42	MP2A	Mx	.021	.5
43	MP3A	X	-16.117	4
44	MP3A	Z	27.915	4
45	MP3A	Mx	-.01	4
46	RRU1	X	-34.817	1.5

Member Point Loads (BLC 10 : Antenna Wo (210 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
47	RRU1	Z	60.305	1.5
48	RRU1	Mx	.017	1.5
49	RRU2	X	-33.612	1.5
50	RRU2	Z	58.218	1.5
51	RRU2	Mx	.017	1.5

Member Point Loads (BLC 11 : Antenna Wo (240 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	-156.296	1
2	MP3A	Z	90.238	1
3	MP3A	Mx	-.17	1
4	MP3A	X	-156.296	5
5	MP3A	Z	90.238	5
6	MP3A	Mx	-.17	5
7	MP3A	X	-156.296	1
8	MP3A	Z	90.238	1
9	MP3A	Mx	.043	1
10	MP3A	X	-156.296	5
11	MP3A	Z	90.238	5
12	MP3A	Mx	.043	5
13	MP1A	X	-140.144	1
14	MP1A	Z	80.912	1
15	MP1A	Mx	-.016	1
16	MP1A	X	-140.144	5
17	MP1A	Z	80.912	5
18	MP1A	Mx	-.016	5
19	MP1A	X	-140.144	1
20	MP1A	Z	80.912	1
21	MP1A	Mx	-.124	1
22	MP1A	X	-140.144	5
23	MP1A	Z	80.912	5
24	MP1A	Mx	-.124	5
25	MP2A	X	-44.922	1
26	MP2A	Z	25.936	1
27	MP2A	Mx	-.022	1
28	MP2A	X	-44.922	3
29	MP2A	Z	25.936	3
30	MP2A	Mx	-.022	3
31	MP2A	X	-12.427	5
32	MP2A	Z	7.175	5
33	MP2A	Mx	-.006	5
34	MP1A	X	-38.891	4
35	MP1A	Z	22.454	4
36	MP1A	Mx	.019	4
37	MP1A	X	-49.405	2
38	MP1A	Z	28.524	2
39	MP1A	Mx	.025	2
40	MP2A	X	-43.141	.5
41	MP2A	Z	24.908	.5
42	MP2A	Mx	.022	.5
43	MP3A	X	-34.634	4
44	MP3A	Z	19.996	4
45	MP3A	Mx	-.003	4
46	RRU1	X	-65.756	1.5
47	RRU1	Z	37.964	1.5
48	RRU1	Mx	0	1.5

Member Point Loads (BLC 11 : Antenna Wo (240 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
49	RRU2	X	-65.756	1.5
50	RRU2	Z	37.964	1.5
51	RRU2	Mx	0	1.5

Member Point Loads (BLC 12 : Antenna Wo (270 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	-120.516	1
2	MP3A	Z	0	1
3	MP3A	Mx	-.084	1
4	MP3A	X	-120.516	5
5	MP3A	Z	0	5
6	MP3A	Mx	-.084	5
7	MP3A	X	-120.516	1
8	MP3A	Z	0	1
9	MP3A	Mx	-.032	1
10	MP3A	X	-120.516	5
11	MP3A	Z	0	5
12	MP3A	Mx	-.032	5
13	MP1A	X	-187.526	1
14	MP1A	Z	0	1
15	MP1A	Mx	.061	1
16	MP1A	X	-187.526	5
17	MP1A	Z	0	5
18	MP1A	Mx	.061	5
19	MP1A	X	-187.526	1
20	MP1A	Z	0	1
21	MP1A	Mx	-.155	1
22	MP1A	X	-187.526	5
23	MP1A	Z	0	5
24	MP1A	Mx	-.155	5
25	MP2A	X	-80.902	1
26	MP2A	Z	0	1
27	MP2A	Mx	-.02	1
28	MP2A	X	-80.902	3
29	MP2A	Z	0	3
30	MP2A	Mx	-.02	3
31	MP2A	X	-28.874	5
32	MP2A	Z	0	5
33	MP2A	Mx	-.007	5
34	MP1A	X	-68.024	4
35	MP1A	Z	0	4
36	MP1A	Mx	.017	4
37	MP1A	X	-69.635	2
38	MP1A	Z	0	2
39	MP1A	Mx	.017	2
40	MP2A	X	-67.224	.5
41	MP2A	Z	0	.5
42	MP2A	Mx	.017	.5
43	MP3A	X	-38.234	4
44	MP3A	Z	0	4
45	MP3A	Mx	.007	4
46	RRU1	X	-69.635	1.5
47	RRU1	Z	0	1.5
48	RRU1	Mx	-.017	1.5
49	RRU2	X	-67.224	1.5
50	RRU2	Z	0	1.5

Member Point Loads (BLC 12 : Antenna Wo (270 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
51	RRU2	Mx	-.017	1.5

Member Point Loads (BLC 13 : Antenna Wo (300 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	-104.37	1
2	MP3A	Z	-60.258	1
3	MP3A	Mx	-.032	1
4	MP3A	X	-104.37	5
5	MP3A	Z	-60.258	5
6	MP3A	Mx	-.032	5
7	MP3A	X	-104.37	1
8	MP3A	Z	-60.258	1
9	MP3A	Mx	-.084	1
10	MP3A	X	-104.37	5
11	MP3A	Z	-60.258	5
12	MP3A	Mx	-.084	5
13	MP1A	X	-173.532	1
14	MP1A	Z	-100.189	1
15	MP1A	Mx	.134	1
16	MP1A	X	-173.532	5
17	MP1A	Z	-100.189	5
18	MP1A	Mx	.134	5
19	MP1A	X	-173.532	1
20	MP1A	Z	-100.189	1
21	MP1A	Mx	-.134	1
22	MP1A	X	-173.532	5
23	MP1A	Z	-100.189	5
24	MP1A	Mx	-.134	5
25	MP2A	X	-82.634	1
26	MP2A	Z	-47.709	1
27	MP2A	Mx	0	1
28	MP2A	X	-82.634	3
29	MP2A	Z	-47.709	3
30	MP2A	Mx	0	3
31	MP2A	X	-31.296	5
32	MP2A	Z	-18.068	5
33	MP2A	Mx	0	5
34	MP1A	X	-68.92	4
35	MP1A	Z	-39.791	4
36	MP1A	Mx	0	4
37	MP1A	X	-65.756	2
38	MP1A	Z	-37.964	2
39	MP1A	Mx	0	2
40	MP2A	X	-65.756	.5
41	MP2A	Z	-37.964	.5
42	MP2A	Mx	0	.5
43	MP3A	X	-24.869	4
44	MP3A	Z	-14.358	4
45	MP3A	Mx	.011	4
46	RRU1	X	-49.405	1.5
47	RRU1	Z	-28.524	1.5
48	RRU1	Mx	-.025	1.5
49	RRU2	X	-43.141	1.5
50	RRU2	Z	-24.908	1.5
51	RRU2	Mx	-.022	1.5

Member Point Loads (BLC 14 : Antenna Wo (330 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	-90.238	1
2	MP3A	Z	-156.296	1
3	MP3A	Mx	.043	1
4	MP3A	X	-90.238	5
5	MP3A	Z	-156.296	5
6	MP3A	Mx	.043	5
7	MP3A	X	-90.238	1
8	MP3A	Z	-156.296	1
9	MP3A	Mx	-.17	1
10	MP3A	X	-90.238	5
11	MP3A	Z	-156.296	5
12	MP3A	Mx	-.17	5
13	MP1A	X	-93.763	1
14	MP1A	Z	-162.402	1
15	MP1A	Mx	.155	1
16	MP1A	X	-93.763	5
17	MP1A	Z	-162.402	5
18	MP1A	Mx	.155	5
19	MP1A	X	-93.763	1
20	MP1A	Z	-162.402	1
21	MP1A	Mx	-.061	1
22	MP1A	X	-93.763	5
23	MP1A	Z	-162.402	5
24	MP1A	Mx	-.061	5
25	MP2A	X	-40.451	1
26	MP2A	Z	-70.063	1
27	MP2A	Mx	.02	1
28	MP2A	X	-40.451	3
29	MP2A	Z	-70.063	3
30	MP2A	Mx	.02	3
31	MP2A	X	-14.437	5
32	MP2A	Z	-25.006	5
33	MP2A	Mx	.007	5
34	MP1A	X	-34.012	4
35	MP1A	Z	-58.911	4
36	MP1A	Mx	-.017	4
37	MP1A	X	-34.817	2
38	MP1A	Z	-60.305	2
39	MP1A	Mx	-.017	2
40	MP2A	X	-33.612	.5
41	MP2A	Z	-58.218	.5
42	MP2A	Mx	-.017	.5
43	MP3A	X	-10.478	4
44	MP3A	Z	-18.149	4
45	MP3A	Mx	.01	4
46	RRU1	X	-25.377	1.5
47	RRU1	Z	-43.954	1.5
48	RRU1	Mx	-.025	1.5
49	RRU2	X	-20.555	1.5
50	RRU2	Z	-35.603	1.5
51	RRU2	Mx	-.021	1.5

Member Point Loads (BLC 15 : Antenna Wi (0 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	0	1
2	MP3A	Z	-47.442	1

Member Point Loads (BLC 15 : Antenna Wi (0 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
3	MP3A	Mx	.032	1
4	MP3A	X	0	5
5	MP3A	Z	-47.442	5
6	MP3A	Mx	.032	5
7	MP3A	X	0	1
8	MP3A	Z	-47.442	1
9	MP3A	Mx	-.044	1
10	MP3A	X	0	5
11	MP3A	Z	-47.442	5
12	MP3A	Mx	-.044	5
13	MP1A	X	0	1
14	MP1A	Z	-32.619	1
15	MP1A	Mx	.025	1
16	MP1A	X	0	5
17	MP1A	Z	-32.619	5
18	MP1A	Mx	.025	5
19	MP1A	X	0	1
20	MP1A	Z	-32.619	1
21	MP1A	Mx	.003	1
22	MP1A	X	0	5
23	MP1A	Z	-32.619	5
24	MP1A	Mx	.003	5
25	MP2A	X	0	1
26	MP2A	Z	-11.212	1
27	MP2A	Mx	.005	1
28	MP2A	X	0	3
29	MP2A	Z	-11.212	3
30	MP2A	Mx	.005	3
31	MP2A	X	0	5
32	MP2A	Z	-4.024	5
33	MP2A	Mx	.002	5
34	MP1A	X	0	4
35	MP1A	Z	-10.374	4
36	MP1A	Mx	-.004	4
37	MP1A	X	0	2
38	MP1A	Z	-12.805	2
39	MP1A	Mx	-.006	2
40	MP2A	X	0	.5
41	MP2A	Z	-11.366	.5
42	MP2A	Mx	-.005	.5
43	MP3A	X	0	4
44	MP3A	Z	-5.791	4
45	MP3A	Mx	.003	4
46	RRU1	X	0	1.5
47	RRU1	Z	-12.805	1.5
48	RRU1	Mx	-.006	1.5
49	RRU2	X	0	1.5
50	RRU2	Z	-11.366	1.5
51	RRU2	Mx	-.005	1.5

Member Point Loads (BLC 16 : Antenna Wi (30 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	23.721	1
2	MP3A	Z	-41.086	1
3	MP3A	Mx	.044	1
4	MP3A	X	23.721	5

Member Point Loads (BLC 16 : Antenna Wi (30 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
5	MP3A	Z	-41.086	5
6	MP3A	Mx	.044	5
7	MP3A	X	23.721	1
8	MP3A	Z	-41.086	1
9	MP3A	Mx	-.032	1
10	MP3A	X	23.721	5
11	MP3A	Z	-41.086	5
12	MP3A	Mx	-.032	5
13	MP1A	X	15.095	1
14	MP1A	Z	-26.145	1
15	MP1A	Mx	.015	1
16	MP1A	X	15.095	5
17	MP1A	Z	-26.145	5
18	MP1A	Mx	.015	5
19	MP1A	X	15.095	1
20	MP1A	Z	-26.145	1
21	MP1A	Mx	.015	1
22	MP1A	X	15.095	5
23	MP1A	Z	-26.145	5
24	MP1A	Mx	.015	5
25	MP2A	X	4.193	1
26	MP2A	Z	-7.263	1
27	MP2A	Mx	.004	1
28	MP2A	X	4.193	3
29	MP2A	Z	-7.263	3
30	MP2A	Mx	.004	3
31	MP2A	X	1.257	5
32	MP2A	Z	-2.177	5
33	MP2A	Mx	.001	5
34	MP1A	X	4.049	4
35	MP1A	Z	-7.013	4
36	MP1A	Mx	-.004	4
37	MP1A	X	5.771	2
38	MP1A	Z	-9.996	2
39	MP1A	Mx	-.006	2
40	MP2A	X	4.812	.5
41	MP2A	Z	-8.334	.5
42	MP2A	Mx	-.005	.5
43	MP3A	X	3.87	4
44	MP3A	Z	-6.702	4
45	MP3A	Mx	.002	4
46	RRU1	X	7.665	1.5
47	RRU1	Z	-13.277	1.5
48	RRU1	Mx	-.004	1.5
49	RRU2	X	7.425	1.5
50	RRU2	Z	-12.861	1.5
51	RRU2	Mx	-.004	1.5

Member Point Loads (BLC 17 : Antenna Wi (60 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	31.387	1
2	MP3A	Z	-18.121	1
3	MP3A	Mx	.034	1
4	MP3A	X	31.387	5
5	MP3A	Z	-18.121	5
6	MP3A	Mx	.034	5

Member Point Loads (BLC 17 : Antenna Wi (60 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
7	MP3A	X	31.387	1
8	MP3A	Z	-18.121	1
9	MP3A	Mx	-.009	1
10	MP3A	X	31.387	5
11	MP3A	Z	-18.121	5
12	MP3A	Mx	-.009	5
13	MP1A	X	28.249	1
14	MP1A	Z	-16.31	1
15	MP1A	Mx	.003	1
16	MP1A	X	28.249	5
17	MP1A	Z	-16.31	5
18	MP1A	Mx	.003	5
19	MP1A	X	28.249	1
20	MP1A	Z	-16.31	1
21	MP1A	Mx	.025	1
22	MP1A	X	28.249	5
23	MP1A	Z	-16.31	5
24	MP1A	Mx	.025	5
25	MP2A	X	9.71	1
26	MP2A	Z	-5.606	1
27	MP2A	Mx	.005	1
28	MP2A	X	9.71	3
29	MP2A	Z	-5.606	3
30	MP2A	Mx	.005	3
31	MP2A	X	3.485	5
32	MP2A	Z	-2.012	5
33	MP2A	Mx	.002	5
34	MP1A	X	8.984	4
35	MP1A	Z	-5.187	4
36	MP1A	Mx	-.004	4
37	MP1A	X	11.09	2
38	MP1A	Z	-6.403	2
39	MP1A	Mx	-.006	2
40	MP2A	X	9.843	.5
41	MP2A	Z	-5.683	.5
42	MP2A	Mx	-.005	.5
43	MP3A	X	8.077	4
44	MP3A	Z	-4.664	4
45	MP3A	Mx	.00081	4
46	RRU1	X	14.37	1.5
47	RRU1	Z	-8.297	1.5
48	RRU1	Mx	0	1.5
49	RRU2	X	14.37	1.5
50	RRU2	Z	-8.297	1.5
51	RRU2	Mx	0	1.5

Member Point Loads (BLC 18 : Antenna Wi (90 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	25.043	1
2	MP3A	Z	0	1
3	MP3A	Mx	.017	1
4	MP3A	X	25.043	5
5	MP3A	Z	0	5
6	MP3A	Mx	.017	5
7	MP3A	X	25.043	1
8	MP3A	Z	0	1

Member Point Loads (BLC 18 : Antenna Wi (90 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
9	MP3A	Mx	.007	1
10	MP3A	X	25.043	5
11	MP3A	Z	0	5
12	MP3A	Mx	.007	5
13	MP1A	X	37.477	1
14	MP1A	Z	0	1
15	MP1A	Mx	-.012	1
16	MP1A	X	37.477	5
17	MP1A	Z	0	5
18	MP1A	Mx	-.012	5
19	MP1A	X	37.477	1
20	MP1A	Z	0	1
21	MP1A	Mx	.031	1
22	MP1A	X	37.477	5
23	MP1A	Z	0	5
24	MP1A	Mx	.031	5
25	MP2A	X	16.862	1
26	MP2A	Z	0	1
27	MP2A	Mx	.004	1
28	MP2A	X	16.862	3
29	MP2A	Z	0	3
30	MP2A	Mx	.004	3
31	MP2A	X	7.043	5
32	MP2A	Z	0	5
33	MP2A	Mx	.002	5
34	MP1A	X	14.928	4
35	MP1A	Z	0	4
36	MP1A	Mx	-.004	4
37	MP1A	X	15.331	2
38	MP1A	Z	0	2
39	MP1A	Mx	-.004	2
40	MP2A	X	14.851	.5
41	MP2A	Z	0	.5
42	MP2A	Mx	-.004	.5
43	MP3A	X	8.967	4
44	MP3A	Z	0	4
45	MP3A	Mx	-.002	4
46	RRU1	X	15.331	1.5
47	RRU1	Z	0	1.5
48	RRU1	Mx	.004	1.5
49	RRU2	X	14.851	1.5
50	RRU2	Z	0	1.5
51	RRU2	Mx	.004	1.5

Member Point Loads (BLC 19 : Antenna Wi (120 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	21.688	1
2	MP3A	Z	12.522	1
3	MP3A	Mx	.007	1
4	MP3A	X	21.688	5
5	MP3A	Z	12.522	5
6	MP3A	Mx	.007	5
7	MP3A	X	21.688	1
8	MP3A	Z	12.522	1
9	MP3A	Mx	.017	1
10	MP3A	X	21.688	5

Member Point Loads (BLC 19 : Antenna Wi (120 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
11	MP3A	Z	12.522	5
12	MP3A	Mx	.017	5
13	MP1A	X	34.56	1
14	MP1A	Z	19.953	1
15	MP1A	Mx	-.027	1
16	MP1A	X	34.56	5
17	MP1A	Z	19.953	5
18	MP1A	Mx	-.027	5
19	MP1A	X	34.56	1
20	MP1A	Z	19.953	1
21	MP1A	Mx	.027	1
22	MP1A	X	34.56	5
23	MP1A	Z	19.953	5
24	MP1A	Mx	.027	5
25	MP2A	X	17.05	1
26	MP2A	Z	9.844	1
27	MP2A	Mx	0	1
28	MP2A	X	17.05	3
29	MP2A	Z	9.844	3
30	MP2A	Mx	0	3
31	MP2A	X	7.407	5
32	MP2A	Z	4.276	5
33	MP2A	Mx	0	5
34	MP1A	X	14.899	4
35	MP1A	Z	8.602	4
36	MP1A	Mx	0	4
37	MP1A	X	14.37	2
38	MP1A	Z	8.297	2
39	MP1A	Mx	0	2
40	MP2A	X	14.37	.5
41	MP2A	Z	8.297	.5
42	MP2A	Mx	0	.5
43	MP3A	X	6.079	4
44	MP3A	Z	3.51	4
45	MP3A	Mx	-.003	4
46	RRU1	X	11.09	1.5
47	RRU1	Z	6.403	1.5
48	RRU1	Mx	.006	1.5
49	RRU2	X	9.843	1.5
50	RRU2	Z	5.683	1.5
51	RRU2	Mx	.005	1.5

Member Point Loads (BLC 20 : Antenna Wi (150 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	18.121	1
2	MP3A	Z	31.387	1
3	MP3A	Mx	-.009	1
4	MP3A	X	18.121	5
5	MP3A	Z	31.387	5
6	MP3A	Mx	-.009	5
7	MP3A	X	18.121	1
8	MP3A	Z	31.387	1
9	MP3A	Mx	.034	1
10	MP3A	X	18.121	5
11	MP3A	Z	31.387	5
12	MP3A	Mx	.034	5

Member Point Loads (BLC 20 : Antenna Wi (150 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
13	MP1A	X	18.739	1
14	MP1A	Z	32.456	1
15	MP1A	Mx	-.031	1
16	MP1A	X	18.739	5
17	MP1A	Z	32.456	5
18	MP1A	Mx	-.031	5
19	MP1A	X	18.739	1
20	MP1A	Z	32.456	1
21	MP1A	Mx	.012	1
22	MP1A	X	18.739	5
23	MP1A	Z	32.456	5
24	MP1A	Mx	.012	5
25	MP2A	X	8.431	1
26	MP2A	Z	14.603	1
27	MP2A	Mx	-.004	1
28	MP2A	X	8.431	3
29	MP2A	Z	14.603	3
30	MP2A	Mx	-.004	3
31	MP2A	X	3.522	5
32	MP2A	Z	6.1	5
33	MP2A	Mx	-.002	5
34	MP1A	X	7.464	4
35	MP1A	Z	12.928	4
36	MP1A	Mx	.004	4
37	MP1A	X	7.665	2
38	MP1A	Z	13.277	2
39	MP1A	Mx	.004	2
40	MP2A	X	7.425	.5
41	MP2A	Z	12.861	.5
42	MP2A	Mx	.004	.5
43	MP3A	X	2.716	4
44	MP3A	Z	4.704	4
45	MP3A	Mx	-.003	4
46	RRU1	X	5.771	1.5
47	RRU1	Z	9.996	1.5
48	RRU1	Mx	.006	1.5
49	RRU2	X	4.812	1.5
50	RRU2	Z	8.334	1.5
51	RRU2	Mx	.005	1.5

Member Point Loads (BLC 21 : Antenna Wi (180 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	0	1
2	MP3A	Z	47.442	1
3	MP3A	Mx	-.032	1
4	MP3A	X	0	5
5	MP3A	Z	47.442	5
6	MP3A	Mx	-.032	5
7	MP3A	X	0	1
8	MP3A	Z	47.442	1
9	MP3A	Mx	.044	1
10	MP3A	X	0	5
11	MP3A	Z	47.442	5
12	MP3A	Mx	.044	5
13	MP1A	X	0	1
14	MP1A	Z	32.619	1

Member Point Loads (BLC 21 : Antenna Wi (180 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
15	MP1A	Mx	-.025	1
16	MP1A	X	0	5
17	MP1A	Z	32.619	5
18	MP1A	Mx	-.025	5
19	MP1A	X	0	1
20	MP1A	Z	32.619	1
21	MP1A	Mx	-.003	1
22	MP1A	X	0	5
23	MP1A	Z	32.619	5
24	MP1A	Mx	-.003	5
25	MP2A	X	0	1
26	MP2A	Z	11.212	1
27	MP2A	Mx	-.005	1
28	MP2A	X	0	3
29	MP2A	Z	11.212	3
30	MP2A	Mx	-.005	3
31	MP2A	X	0	5
32	MP2A	Z	4.024	5
33	MP2A	Mx	-.002	5
34	MP1A	X	0	4
35	MP1A	Z	10.374	4
36	MP1A	Mx	.004	4
37	MP1A	X	0	2
38	MP1A	Z	12.805	2
39	MP1A	Mx	.006	2
40	MP2A	X	0	.5
41	MP2A	Z	11.366	.5
42	MP2A	Mx	.005	.5
43	MP3A	X	0	4
44	MP3A	Z	5.791	4
45	MP3A	Mx	-.003	4
46	RRU1	X	0	1.5
47	RRU1	Z	12.805	1.5
48	RRU1	Mx	.006	1.5
49	RRU2	X	0	1.5
50	RRU2	Z	11.366	1.5
51	RRU2	Mx	.005	1.5

Member Point Loads (BLC 22 : Antenna Wi (210 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	-23.721	1
2	MP3A	Z	41.086	1
3	MP3A	Mx	-.044	1
4	MP3A	X	-23.721	5
5	MP3A	Z	41.086	5
6	MP3A	Mx	-.044	5
7	MP3A	X	-23.721	1
8	MP3A	Z	41.086	1
9	MP3A	Mx	.032	1
10	MP3A	X	-23.721	5
11	MP3A	Z	41.086	5
12	MP3A	Mx	.032	5
13	MP1A	X	-15.095	1
14	MP1A	Z	26.145	1
15	MP1A	Mx	-.015	1
16	MP1A	X	-15.095	5

Member Point Loads (BLC 22 : Antenna Wi (210 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
17	MP1A	Z	26.145	5
18	MP1A	Mx	-.015	5
19	MP1A	X	-15.095	1
20	MP1A	Z	26.145	1
21	MP1A	Mx	-.015	1
22	MP1A	X	-15.095	5
23	MP1A	Z	26.145	5
24	MP1A	Mx	-.015	5
25	MP2A	X	-4.193	1
26	MP2A	Z	7.263	1
27	MP2A	Mx	-.004	1
28	MP2A	X	-4.193	3
29	MP2A	Z	7.263	3
30	MP2A	Mx	-.004	3
31	MP2A	X	-1.257	5
32	MP2A	Z	2.177	5
33	MP2A	Mx	-.001	5
34	MP1A	X	-4.049	4
35	MP1A	Z	7.013	4
36	MP1A	Mx	.004	4
37	MP1A	X	-5.771	2
38	MP1A	Z	9.996	2
39	MP1A	Mx	.006	2
40	MP2A	X	-4.812	.5
41	MP2A	Z	8.334	.5
42	MP2A	Mx	.005	.5
43	MP3A	X	-3.87	4
44	MP3A	Z	6.702	4
45	MP3A	Mx	-.002	4
46	RRU1	X	-7.665	1.5
47	RRU1	Z	13.277	1.5
48	RRU1	Mx	.004	1.5
49	RRU2	X	-7.425	1.5
50	RRU2	Z	12.861	1.5
51	RRU2	Mx	.004	1.5

Member Point Loads (BLC 23 : Antenna Wi (240 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	-31.387	1
2	MP3A	Z	18.121	1
3	MP3A	Mx	-.034	1
4	MP3A	X	-31.387	5
5	MP3A	Z	18.121	5
6	MP3A	Mx	-.034	5
7	MP3A	X	-31.387	1
8	MP3A	Z	18.121	1
9	MP3A	Mx	.009	1
10	MP3A	X	-31.387	5
11	MP3A	Z	18.121	5
12	MP3A	Mx	.009	5
13	MP1A	X	-28.249	1
14	MP1A	Z	16.31	1
15	MP1A	Mx	-.003	1
16	MP1A	X	-28.249	5
17	MP1A	Z	16.31	5
18	MP1A	Mx	-.003	5

Member Point Loads (BLC 23 : Antenna Wi (240 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
19	MP1A	X	-28.249	1
20	MP1A	Z	16.31	1
21	MP1A	Mx	-.025	1
22	MP1A	X	-28.249	5
23	MP1A	Z	16.31	5
24	MP1A	Mx	-.025	5
25	MP2A	X	-9.71	1
26	MP2A	Z	5.606	1
27	MP2A	Mx	-.005	1
28	MP2A	X	-9.71	3
29	MP2A	Z	5.606	3
30	MP2A	Mx	-.005	3
31	MP2A	X	-3.485	5
32	MP2A	Z	2.012	5
33	MP2A	Mx	-.002	5
34	MP1A	X	-8.984	4
35	MP1A	Z	5.187	4
36	MP1A	Mx	.004	4
37	MP1A	X	-11.09	2
38	MP1A	Z	6.403	2
39	MP1A	Mx	.006	2
40	MP2A	X	-9.843	.5
41	MP2A	Z	5.683	.5
42	MP2A	Mx	.005	.5
43	MP3A	X	-8.077	4
44	MP3A	Z	4.664	4
45	MP3A	Mx	-.00081	4
46	RRU1	X	-14.37	1.5
47	RRU1	Z	8.297	1.5
48	RRU1	Mx	0	1.5
49	RRU2	X	-14.37	1.5
50	RRU2	Z	8.297	1.5
51	RRU2	Mx	0	1.5

Member Point Loads (BLC 24 : Antenna Wi (270 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	-25.043	1
2	MP3A	Z	0	1
3	MP3A	Mx	-.017	1
4	MP3A	X	-25.043	5
5	MP3A	Z	0	5
6	MP3A	Mx	-.017	5
7	MP3A	X	-25.043	1
8	MP3A	Z	0	1
9	MP3A	Mx	-.007	1
10	MP3A	X	-25.043	5
11	MP3A	Z	0	5
12	MP3A	Mx	-.007	5
13	MP1A	X	-37.477	1
14	MP1A	Z	0	1
15	MP1A	Mx	.012	1
16	MP1A	X	-37.477	5
17	MP1A	Z	0	5
18	MP1A	Mx	.012	5
19	MP1A	X	-37.477	1
20	MP1A	Z	0	1

Member Point Loads (BLC 24 : Antenna Wi (270 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
21	MP1A	Mx	-.031	1
22	MP1A	X	-37.477	5
23	MP1A	Z	0	5
24	MP1A	Mx	-.031	5
25	MP2A	X	-16.862	1
26	MP2A	Z	0	1
27	MP2A	Mx	-.004	1
28	MP2A	X	-16.862	3
29	MP2A	Z	0	3
30	MP2A	Mx	-.004	3
31	MP2A	X	-7.043	5
32	MP2A	Z	0	5
33	MP2A	Mx	-.002	5
34	MP1A	X	-14.928	4
35	MP1A	Z	0	4
36	MP1A	Mx	.004	4
37	MP1A	X	-15.331	2
38	MP1A	Z	0	2
39	MP1A	Mx	.004	2
40	MP2A	X	-14.851	.5
41	MP2A	Z	0	.5
42	MP2A	Mx	.004	.5
43	MP3A	X	-8.967	4
44	MP3A	Z	0	4
45	MP3A	Mx	.002	4
46	RRU1	X	-15.331	1.5
47	RRU1	Z	0	1.5
48	RRU1	Mx	-.004	1.5
49	RRU2	X	-14.851	1.5
50	RRU2	Z	0	1.5
51	RRU2	Mx	-.004	1.5

Member Point Loads (BLC 25 : Antenna Wi (300 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	-21.688	1
2	MP3A	Z	-12.522	1
3	MP3A	Mx	-.007	1
4	MP3A	X	-21.688	5
5	MP3A	Z	-12.522	5
6	MP3A	Mx	-.007	5
7	MP3A	X	-21.688	1
8	MP3A	Z	-12.522	1
9	MP3A	Mx	-.017	1
10	MP3A	X	-21.688	5
11	MP3A	Z	-12.522	5
12	MP3A	Mx	-.017	5
13	MP1A	X	-34.56	1
14	MP1A	Z	-19.953	1
15	MP1A	Mx	.027	1
16	MP1A	X	-34.56	5
17	MP1A	Z	-19.953	5
18	MP1A	Mx	.027	5
19	MP1A	X	-34.56	1
20	MP1A	Z	-19.953	1
21	MP1A	Mx	-.027	1
22	MP1A	X	-34.56	5

Member Point Loads (BLC 25 : Antenna Wi (300 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
23	MP1A	Z	-19.953	5
24	MP1A	Mx	-.027	5
25	MP2A	X	-17.05	1
26	MP2A	Z	-9.844	1
27	MP2A	Mx	0	1
28	MP2A	X	-17.05	3
29	MP2A	Z	-9.844	3
30	MP2A	Mx	0	3
31	MP2A	X	-7.407	5
32	MP2A	Z	-4.276	5
33	MP2A	Mx	0	5
34	MP1A	X	-14.899	4
35	MP1A	Z	-8.602	4
36	MP1A	Mx	0	4
37	MP1A	X	-14.37	2
38	MP1A	Z	-8.297	2
39	MP1A	Mx	0	2
40	MP2A	X	-14.37	.5
41	MP2A	Z	-8.297	.5
42	MP2A	Mx	0	.5
43	MP3A	X	-6.079	4
44	MP3A	Z	-3.51	4
45	MP3A	Mx	.003	4
46	RRU1	X	-11.09	1.5
47	RRU1	Z	-6.403	1.5
48	RRU1	Mx	-.006	1.5
49	RRU2	X	-9.843	1.5
50	RRU2	Z	-5.683	1.5
51	RRU2	Mx	-.005	1.5

Member Point Loads (BLC 26 : Antenna Wi (330 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	-18.121	1
2	MP3A	Z	-31.387	1
3	MP3A	Mx	.009	1
4	MP3A	X	-18.121	5
5	MP3A	Z	-31.387	5
6	MP3A	Mx	.009	5
7	MP3A	X	-18.121	1
8	MP3A	Z	-31.387	1
9	MP3A	Mx	-.034	1
10	MP3A	X	-18.121	5
11	MP3A	Z	-31.387	5
12	MP3A	Mx	-.034	5
13	MP1A	X	-18.739	1
14	MP1A	Z	-32.456	1
15	MP1A	Mx	.031	1
16	MP1A	X	-18.739	5
17	MP1A	Z	-32.456	5
18	MP1A	Mx	.031	5
19	MP1A	X	-18.739	1
20	MP1A	Z	-32.456	1
21	MP1A	Mx	-.012	1
22	MP1A	X	-18.739	5
23	MP1A	Z	-32.456	5
24	MP1A	Mx	-.012	5

Member Point Loads (BLC 26 : Antenna Wi (330 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
25	MP2A	X	-8.431	1
26	MP2A	Z	-14.603	1
27	MP2A	Mx	.004	1
28	MP2A	X	-8.431	3
29	MP2A	Z	-14.603	3
30	MP2A	Mx	.004	3
31	MP2A	X	-3.522	5
32	MP2A	Z	-6.1	5
33	MP2A	Mx	.002	5
34	MP1A	X	-7.464	4
35	MP1A	Z	-12.928	4
36	MP1A	Mx	-.004	4
37	MP1A	X	-7.665	2
38	MP1A	Z	-13.277	2
39	MP1A	Mx	-.004	2
40	MP2A	X	-7.425	.5
41	MP2A	Z	-12.861	.5
42	MP2A	Mx	-.004	.5
43	MP3A	X	-2.716	4
44	MP3A	Z	-4.704	4
45	MP3A	Mx	.003	4
46	RRU1	X	-5.771	1.5
47	RRU1	Z	-9.996	1.5
48	RRU1	Mx	-.006	1.5
49	RRU2	X	-4.812	1.5
50	RRU2	Z	-8.334	1.5
51	RRU2	Mx	-.005	1.5

Member Point Loads (BLC 27 : Antenna Wm (0 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	0	1
2	MP3A	Z	-15.808	1
3	MP3A	Mx	.011	1
4	MP3A	X	0	5
5	MP3A	Z	-15.808	5
6	MP3A	Mx	.011	5
7	MP3A	X	0	1
8	MP3A	Z	-15.808	1
9	MP3A	Mx	-.015	1
10	MP3A	X	0	5
11	MP3A	Z	-15.808	5
12	MP3A	Mx	-.015	5
13	MP1A	X	0	1
14	MP1A	Z	-10.639	1
15	MP1A	Mx	.008	1
16	MP1A	X	0	5
17	MP1A	Z	-10.639	5
18	MP1A	Mx	.008	5
19	MP1A	X	0	1
20	MP1A	Z	-10.639	1
21	MP1A	Mx	.001	1
22	MP1A	X	0	5
23	MP1A	Z	-10.639	5
24	MP1A	Mx	.001	5
25	MP2A	X	0	1
26	MP2A	Z	-3.41	1

Member Point Loads (BLC 27 : Antenna Wm (0 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
27	MP2A	Mx	.001	1
28	MP2A	X	0	3
29	MP2A	Z	-3.41	3
30	MP2A	Mx	.001	3
31	MP2A	X	0	5
32	MP2A	Z	-.943	5
33	MP2A	Mx	.000408	5
34	MP1A	X	0	4
35	MP1A	Z	-2.952	4
36	MP1A	Mx	-.001	4
37	MP1A	X	0	2
38	MP1A	Z	-3.751	2
39	MP1A	Mx	-.002	2
40	MP2A	X	0	.5
41	MP2A	Z	-3.275	.5
42	MP2A	Mx	-.001	.5
43	MP3A	X	0	4
44	MP3A	Z	-1.493	4
45	MP3A	Mx	.000701	4
46	RRU1	X	0	1.5
47	RRU1	Z	-3.751	1.5
48	RRU1	Mx	-.002	1.5
49	RRU2	X	0	1.5
50	RRU2	Z	-3.275	1.5
51	RRU2	Mx	-.001	1.5

Member Point Loads (BLC 28 : Antenna Wm (30 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	7.904	1
2	MP3A	Z	-13.69	1
3	MP3A	Mx	.015	1
4	MP3A	X	7.904	5
5	MP3A	Z	-13.69	5
6	MP3A	Mx	.015	5
7	MP3A	X	7.904	1
8	MP3A	Z	-13.69	1
9	MP3A	Mx	-.011	1
10	MP3A	X	7.904	5
11	MP3A	Z	-13.69	5
12	MP3A	Mx	-.011	5
13	MP1A	X	4.897	1
14	MP1A	Z	-8.482	1
15	MP1A	Mx	.005	1
16	MP1A	X	4.897	5
17	MP1A	Z	-8.482	5
18	MP1A	Mx	.005	5
19	MP1A	X	4.897	1
20	MP1A	Z	-8.482	1
21	MP1A	Mx	.005	1
22	MP1A	X	4.897	5
23	MP1A	Z	-8.482	5
24	MP1A	Mx	.005	5
25	MP2A	X	1.228	1
26	MP2A	Z	-2.127	1
27	MP2A	Mx	.001	1
28	MP2A	X	1.228	3

Member Point Loads (BLC 28 : Antenna Wm (30 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
29	MP2A	Z	-2.127	3
30	MP2A	Mx	.001	3
31	MP2A	X	.233	5
32	MP2A	Z	-.404	5
33	MP2A	Mx	.000233	5
34	MP1A	X	1.096	4
35	MP1A	Z	-1.899	4
36	MP1A	Mx	-.001	4
37	MP1A	X	1.668	2
38	MP1A	Z	-2.89	2
39	MP1A	Mx	-.002	2
40	MP2A	X	1.351	.5
41	MP2A	Z	-2.341	.5
42	MP2A	Mx	-.001	.5
43	MP3A	X	1.06	4
44	MP3A	Z	-1.835	4
45	MP3A	Mx	.000681	4
46	RRU1	X	2.289	1.5
47	RRU1	Z	-3.965	1.5
48	RRU1	Mx	-.001	1.5
49	RRU2	X	2.21	1.5
50	RRU2	Z	-3.828	1.5
51	RRU2	Mx	-.001	1.5

Member Point Loads (BLC 29 : Antenna Wm (60 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	10.276	1
2	MP3A	Z	-5.933	1
3	MP3A	Mx	.011	1
4	MP3A	X	10.276	5
5	MP3A	Z	-5.933	5
6	MP3A	Mx	.011	5
7	MP3A	X	10.276	1
8	MP3A	Z	-5.933	1
9	MP3A	Mx	-.003	1
10	MP3A	X	10.276	5
11	MP3A	Z	-5.933	5
12	MP3A	Mx	-.003	5
13	MP1A	X	9.214	1
14	MP1A	Z	-5.32	1
15	MP1A	Mx	.001	1
16	MP1A	X	9.214	5
17	MP1A	Z	-5.32	5
18	MP1A	Mx	.001	5
19	MP1A	X	9.214	1
20	MP1A	Z	-5.32	1
21	MP1A	Mx	.008	1
22	MP1A	X	9.214	5
23	MP1A	Z	-5.32	5
24	MP1A	Mx	.008	5
25	MP2A	X	2.953	1
26	MP2A	Z	-1.705	1
27	MP2A	Mx	.001	1
28	MP2A	X	2.953	3
29	MP2A	Z	-1.705	3
30	MP2A	Mx	.001	3

Member Point Loads (BLC 29 : Antenna Wm (60 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
31	MP2A	X	.817	5
32	MP2A	Z	-.472	5
33	MP2A	Mx	.000409	5
34	MP1A	X	2.557	4
35	MP1A	Z	-1.476	4
36	MP1A	Mx	-.001	4
37	MP1A	X	3.248	2
38	MP1A	Z	-1.875	2
39	MP1A	Mx	-.002	2
40	MP2A	X	2.836	.5
41	MP2A	Z	-1.638	.5
42	MP2A	Mx	-.001	.5
43	MP3A	X	2.277	4
44	MP3A	Z	-1.315	4
45	MP3A	Mx	.000228	4
46	RRU1	X	4.323	1.5
47	RRU1	Z	-2.496	1.5
48	RRU1	Mx	0	1.5
49	RRU2	X	4.323	1.5
50	RRU2	Z	-2.496	1.5
51	RRU2	Mx	0	1.5

Member Point Loads (BLC 30 : Antenna Wm (90 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	7.923	1
2	MP3A	Z	0	1
3	MP3A	Mx	.006	1
4	MP3A	X	7.923	5
5	MP3A	Z	0	5
6	MP3A	Mx	.006	5
7	MP3A	X	7.923	1
8	MP3A	Z	0	1
9	MP3A	Mx	.002	1
10	MP3A	X	7.923	5
11	MP3A	Z	0	5
12	MP3A	Mx	.002	5
13	MP1A	X	12.329	1
14	MP1A	Z	0	1
15	MP1A	Mx	-.004	1
16	MP1A	X	12.329	5
17	MP1A	Z	0	5
18	MP1A	Mx	-.004	5
19	MP1A	X	12.329	1
20	MP1A	Z	0	1
21	MP1A	Mx	.01	1
22	MP1A	X	12.329	5
23	MP1A	Z	0	5
24	MP1A	Mx	.01	5
25	MP2A	X	5.319	1
26	MP2A	Z	0	1
27	MP2A	Mx	.001	1
28	MP2A	X	5.319	3
29	MP2A	Z	0	3
30	MP2A	Mx	.001	3
31	MP2A	X	1.898	5
32	MP2A	Z	0	5

Member Point Loads (BLC 30 : Antenna Wm (90 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
33	MP2A	Mx	.000474	5
34	MP1A	X	4.472	4
35	MP1A	Z	0	4
36	MP1A	Mx	-.001	4
37	MP1A	X	4.578	2
38	MP1A	Z	0	2
39	MP1A	Mx	-.001	2
40	MP2A	X	4.42	.5
41	MP2A	Z	0	.5
42	MP2A	Mx	-.001	.5
43	MP3A	X	2.514	4
44	MP3A	Z	0	4
45	MP3A	Mx	-.00043	4
46	RRU1	X	4.578	1.5
47	RRU1	Z	0	1.5
48	RRU1	Mx	.001	1.5
49	RRU2	X	4.42	1.5
50	RRU2	Z	0	1.5
51	RRU2	Mx	.001	1.5

Member Point Loads (BLC 31 : Antenna Wm (120 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	6.862	1
2	MP3A	Z	3.962	1
3	MP3A	Mx	.002	1
4	MP3A	X	6.862	5
5	MP3A	Z	3.962	5
6	MP3A	Mx	.002	5
7	MP3A	X	6.862	1
8	MP3A	Z	3.962	1
9	MP3A	Mx	.006	1
10	MP3A	X	6.862	5
11	MP3A	Z	3.962	5
12	MP3A	Mx	.006	5
13	MP1A	X	11.409	1
14	MP1A	Z	6.587	1
15	MP1A	Mx	-.009	1
16	MP1A	X	11.409	5
17	MP1A	Z	6.587	5
18	MP1A	Mx	-.009	5
19	MP1A	X	11.409	1
20	MP1A	Z	6.587	1
21	MP1A	Mx	.009	1
22	MP1A	X	11.409	5
23	MP1A	Z	6.587	5
24	MP1A	Mx	.009	5
25	MP2A	X	5.433	1
26	MP2A	Z	3.137	1
27	MP2A	Mx	0	1
28	MP2A	X	5.433	3
29	MP2A	Z	3.137	3
30	MP2A	Mx	0	3
31	MP2A	X	2.058	5
32	MP2A	Z	1.188	5
33	MP2A	Mx	0	5
34	MP1A	X	4.531	4

Member Point Loads (BLC 31 : Antenna Wm (120 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
35	MP1A	Z	2.616	4
36	MP1A	Mx	0	4
37	MP1A	X	4.323	2
38	MP1A	Z	2.496	2
39	MP1A	Mx	0	2
40	MP2A	X	4.323	.5
41	MP2A	Z	2.496	.5
42	MP2A	Mx	0	.5
43	MP3A	X	1.635	4
44	MP3A	Z	.944	4
45	MP3A	Mx	-.000723	4
46	RRU1	X	3.248	1.5
47	RRU1	Z	1.875	1.5
48	RRU1	Mx	.002	1.5
49	RRU2	X	2.836	1.5
50	RRU2	Z	1.638	1.5
51	RRU2	Mx	.001	1.5

Member Point Loads (BLC 32 : Antenna Wm (150 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	5.933	1
2	MP3A	Z	10.276	1
3	MP3A	Mx	-.003	1
4	MP3A	X	5.933	5
5	MP3A	Z	10.276	5
6	MP3A	Mx	-.003	5
7	MP3A	X	5.933	1
8	MP3A	Z	10.276	1
9	MP3A	Mx	.011	1
10	MP3A	X	5.933	5
11	MP3A	Z	10.276	5
12	MP3A	Mx	.011	5
13	MP1A	X	6.165	1
14	MP1A	Z	10.677	1
15	MP1A	Mx	-.01	1
16	MP1A	X	6.165	5
17	MP1A	Z	10.677	5
18	MP1A	Mx	-.01	5
19	MP1A	X	6.165	1
20	MP1A	Z	10.677	1
21	MP1A	Mx	.004	1
22	MP1A	X	6.165	5
23	MP1A	Z	10.677	5
24	MP1A	Mx	.004	5
25	MP2A	X	2.66	1
26	MP2A	Z	4.606	1
27	MP2A	Mx	-.001	1
28	MP2A	X	2.66	3
29	MP2A	Z	4.606	3
30	MP2A	Mx	-.001	3
31	MP2A	X	.949	5
32	MP2A	Z	1.644	5
33	MP2A	Mx	-.000475	5
34	MP1A	X	2.236	4
35	MP1A	Z	3.873	4
36	MP1A	Mx	.001	4

Member Point Loads (BLC 32 : Antenna Wm (150 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
37	MP1A	X	2.289	2
38	MP1A	Z	3.965	2
39	MP1A	Mx	.001	2
40	MP2A	X	2.21	.5
41	MP2A	Z	3.828	.5
42	MP2A	Mx	.001	.5
43	MP3A	X	.689	4
44	MP3A	Z	1.193	4
45	MP3A	Mx	-.000678	4
46	RRU1	X	1.668	1.5
47	RRU1	Z	2.89	1.5
48	RRU1	Mx	.002	1.5
49	RRU2	X	1.351	1.5
50	RRU2	Z	2.341	1.5
51	RRU2	Mx	.001	1.5

Member Point Loads (BLC 33 : Antenna Wm (180 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	0	1
2	MP3A	Z	15.808	1
3	MP3A	Mx	-.011	1
4	MP3A	X	0	5
5	MP3A	Z	15.808	5
6	MP3A	Mx	-.011	5
7	MP3A	X	0	1
8	MP3A	Z	15.808	1
9	MP3A	Mx	.015	1
10	MP3A	X	0	5
11	MP3A	Z	15.808	5
12	MP3A	Mx	.015	5
13	MP1A	X	0	1
14	MP1A	Z	10.639	1
15	MP1A	Mx	-.008	1
16	MP1A	X	0	5
17	MP1A	Z	10.639	5
18	MP1A	Mx	-.008	5
19	MP1A	X	0	1
20	MP1A	Z	10.639	1
21	MP1A	Mx	-.001	1
22	MP1A	X	0	5
23	MP1A	Z	10.639	5
24	MP1A	Mx	-.001	5
25	MP2A	X	0	1
26	MP2A	Z	3.41	1
27	MP2A	Mx	-.001	1
28	MP2A	X	0	3
29	MP2A	Z	3.41	3
30	MP2A	Mx	-.001	3
31	MP2A	X	0	5
32	MP2A	Z	.943	5
33	MP2A	Mx	-.000408	5
34	MP1A	X	0	4
35	MP1A	Z	2.952	4
36	MP1A	Mx	.001	4
37	MP1A	X	0	2
38	MP1A	Z	3.751	2

Member Point Loads (BLC 33 : Antenna Wm (180 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
39	MP1A	Mx	.002	2
40	MP2A	X	0	.5
41	MP2A	Z	3.275	.5
42	MP2A	Mx	.001	.5
43	MP3A	X	0	4
44	MP3A	Z	1.493	4
45	MP3A	Mx	-.000701	4
46	RRU1	X	0	1.5
47	RRU1	Z	3.751	1.5
48	RRU1	Mx	.002	1.5
49	RRU2	X	0	1.5
50	RRU2	Z	3.275	1.5
51	RRU2	Mx	.001	1.5

Member Point Loads (BLC 34 : Antenna Wm (210 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	-7.904	1
2	MP3A	Z	13.69	1
3	MP3A	Mx	-.015	1
4	MP3A	X	-7.904	5
5	MP3A	Z	13.69	5
6	MP3A	Mx	-.015	5
7	MP3A	X	-7.904	1
8	MP3A	Z	13.69	1
9	MP3A	Mx	.011	1
10	MP3A	X	-7.904	5
11	MP3A	Z	13.69	5
12	MP3A	Mx	.011	5
13	MP1A	X	-4.897	1
14	MP1A	Z	8.482	1
15	MP1A	Mx	-.005	1
16	MP1A	X	-4.897	5
17	MP1A	Z	8.482	5
18	MP1A	Mx	-.005	5
19	MP1A	X	-4.897	1
20	MP1A	Z	8.482	1
21	MP1A	Mx	-.005	1
22	MP1A	X	-4.897	5
23	MP1A	Z	8.482	5
24	MP1A	Mx	-.005	5
25	MP2A	X	-1.228	1
26	MP2A	Z	2.127	1
27	MP2A	Mx	-.001	1
28	MP2A	X	-1.228	3
29	MP2A	Z	2.127	3
30	MP2A	Mx	-.001	3
31	MP2A	X	-.233	5
32	MP2A	Z	.404	5
33	MP2A	Mx	-.000233	5
34	MP1A	X	-1.096	4
35	MP1A	Z	1.899	4
36	MP1A	Mx	.001	4
37	MP1A	X	-1.668	2
38	MP1A	Z	2.89	2
39	MP1A	Mx	.002	2
40	MP2A	X	-1.351	.5

Member Point Loads (BLC 34 : Antenna Wm (210 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
41	MP2A	Z	2.341	.5
42	MP2A	Mx	.001	.5
43	MP3A	X	-1.06	4
44	MP3A	Z	1.835	4
45	MP3A	Mx	-.000681	4
46	RRU1	X	-2.289	1.5
47	RRU1	Z	3.965	1.5
48	RRU1	Mx	.001	1.5
49	RRU2	X	-2.21	1.5
50	RRU2	Z	3.828	1.5
51	RRU2	Mx	.001	1.5

Member Point Loads (BLC 35 : Antenna Wm (240 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	-10.276	1
2	MP3A	Z	5.933	1
3	MP3A	Mx	-.011	1
4	MP3A	X	-10.276	5
5	MP3A	Z	5.933	5
6	MP3A	Mx	-.011	5
7	MP3A	X	-10.276	1
8	MP3A	Z	5.933	1
9	MP3A	Mx	.003	1
10	MP3A	X	-10.276	5
11	MP3A	Z	5.933	5
12	MP3A	Mx	.003	5
13	MP1A	X	-9.214	1
14	MP1A	Z	5.32	1
15	MP1A	Mx	-.001	1
16	MP1A	X	-9.214	5
17	MP1A	Z	5.32	5
18	MP1A	Mx	-.001	5
19	MP1A	X	-9.214	1
20	MP1A	Z	5.32	1
21	MP1A	Mx	-.008	1
22	MP1A	X	-9.214	5
23	MP1A	Z	5.32	5
24	MP1A	Mx	-.008	5
25	MP2A	X	-2.953	1
26	MP2A	Z	1.705	1
27	MP2A	Mx	-.001	1
28	MP2A	X	-2.953	3
29	MP2A	Z	1.705	3
30	MP2A	Mx	-.001	3
31	MP2A	X	-.817	5
32	MP2A	Z	.472	5
33	MP2A	Mx	-.000409	5
34	MP1A	X	-2.557	4
35	MP1A	Z	1.476	4
36	MP1A	Mx	.001	4
37	MP1A	X	-3.248	2
38	MP1A	Z	1.875	2
39	MP1A	Mx	.002	2
40	MP2A	X	-2.836	.5
41	MP2A	Z	1.638	.5
42	MP2A	Mx	.001	.5

Member Point Loads (BLC 35 : Antenna Wm (240 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
43	MP3A	X	-2.277	4
44	MP3A	Z	1.315	4
45	MP3A	Mx	-.000228	4
46	RRU1	X	-4.323	1.5
47	RRU1	Z	2.496	1.5
48	RRU1	Mx	0	1.5
49	RRU2	X	-4.323	1.5
50	RRU2	Z	2.496	1.5
51	RRU2	Mx	0	1.5

Member Point Loads (BLC 36 : Antenna Wm (270 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	-7.923	1
2	MP3A	Z	0	1
3	MP3A	Mx	-.006	1
4	MP3A	X	-7.923	5
5	MP3A	Z	0	5
6	MP3A	Mx	-.006	5
7	MP3A	X	-7.923	1
8	MP3A	Z	0	1
9	MP3A	Mx	-.002	1
10	MP3A	X	-7.923	5
11	MP3A	Z	0	5
12	MP3A	Mx	-.002	5
13	MP1A	X	-12.329	1
14	MP1A	Z	0	1
15	MP1A	Mx	.004	1
16	MP1A	X	-12.329	5
17	MP1A	Z	0	5
18	MP1A	Mx	.004	5
19	MP1A	X	-12.329	1
20	MP1A	Z	0	1
21	MP1A	Mx	-.01	1
22	MP1A	X	-12.329	5
23	MP1A	Z	0	5
24	MP1A	Mx	-.01	5
25	MP2A	X	-5.319	1
26	MP2A	Z	0	1
27	MP2A	Mx	-.001	1
28	MP2A	X	-5.319	3
29	MP2A	Z	0	3
30	MP2A	Mx	-.001	3
31	MP2A	X	-1.898	5
32	MP2A	Z	0	5
33	MP2A	Mx	-.000474	5
34	MP1A	X	-4.472	4
35	MP1A	Z	0	4
36	MP1A	Mx	.001	4
37	MP1A	X	-4.578	2
38	MP1A	Z	0	2
39	MP1A	Mx	.001	2
40	MP2A	X	-4.42	.5
41	MP2A	Z	0	.5
42	MP2A	Mx	.001	.5
43	MP3A	X	-2.514	4
44	MP3A	Z	0	4

Member Point Loads (BLC 36 : Antenna Wm (270 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
45	MP3A	Mx	.00043	4
46	RRU1	X	-4.578	1.5
47	RRU1	Z	0	1.5
48	RRU1	Mx	-.001	1.5
49	RRU2	X	-4.42	1.5
50	RRU2	Z	0	1.5
51	RRU2	Mx	-.001	1.5

Member Point Loads (BLC 37 : Antenna Wm (300 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	-6.862	1
2	MP3A	Z	-3.962	1
3	MP3A	Mx	-.002	1
4	MP3A	X	-6.862	5
5	MP3A	Z	-3.962	5
6	MP3A	Mx	-.002	5
7	MP3A	X	-6.862	1
8	MP3A	Z	-3.962	1
9	MP3A	Mx	-.006	1
10	MP3A	X	-6.862	5
11	MP3A	Z	-3.962	5
12	MP3A	Mx	-.006	5
13	MP1A	X	-11.409	1
14	MP1A	Z	-6.587	1
15	MP1A	Mx	.009	1
16	MP1A	X	-11.409	5
17	MP1A	Z	-6.587	5
18	MP1A	Mx	.009	5
19	MP1A	X	-11.409	1
20	MP1A	Z	-6.587	1
21	MP1A	Mx	-.009	1
22	MP1A	X	-11.409	5
23	MP1A	Z	-6.587	5
24	MP1A	Mx	-.009	5
25	MP2A	X	-5.433	1
26	MP2A	Z	-3.137	1
27	MP2A	Mx	0	1
28	MP2A	X	-5.433	3
29	MP2A	Z	-3.137	3
30	MP2A	Mx	0	3
31	MP2A	X	-2.058	5
32	MP2A	Z	-1.188	5
33	MP2A	Mx	0	5
34	MP1A	X	-4.531	4
35	MP1A	Z	-2.616	4
36	MP1A	Mx	0	4
37	MP1A	X	-4.323	2
38	MP1A	Z	-2.496	2
39	MP1A	Mx	0	2
40	MP2A	X	-4.323	.5
41	MP2A	Z	-2.496	.5
42	MP2A	Mx	0	.5
43	MP3A	X	-1.635	4
44	MP3A	Z	-.944	4
45	MP3A	Mx	.000723	4
46	RRU1	X	-3.248	1.5

Member Point Loads (BLC 37 : Antenna Wm (300 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
47	RRU1	Z	-1.875	1.5
48	RRU1	Mx	-.002	1.5
49	RRU2	X	-2.836	1.5
50	RRU2	Z	-1.638	1.5
51	RRU2	Mx	-.001	1.5

Member Point Loads (BLC 38 : Antenna Wm (330 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	-5.933	1
2	MP3A	Z	-10.276	1
3	MP3A	Mx	.003	1
4	MP3A	X	-5.933	5
5	MP3A	Z	-10.276	5
6	MP3A	Mx	.003	5
7	MP3A	X	-5.933	1
8	MP3A	Z	-10.276	1
9	MP3A	Mx	-.011	1
10	MP3A	X	-5.933	5
11	MP3A	Z	-10.276	5
12	MP3A	Mx	-.011	5
13	MP1A	X	-6.165	1
14	MP1A	Z	-10.677	1
15	MP1A	Mx	.01	1
16	MP1A	X	-6.165	5
17	MP1A	Z	-10.677	5
18	MP1A	Mx	.01	5
19	MP1A	X	-6.165	1
20	MP1A	Z	-10.677	1
21	MP1A	Mx	-.004	1
22	MP1A	X	-6.165	5
23	MP1A	Z	-10.677	5
24	MP1A	Mx	-.004	5
25	MP2A	X	-2.66	1
26	MP2A	Z	-4.606	1
27	MP2A	Mx	.001	1
28	MP2A	X	-2.66	3
29	MP2A	Z	-4.606	3
30	MP2A	Mx	.001	3
31	MP2A	X	-.949	5
32	MP2A	Z	-1.644	5
33	MP2A	Mx	.000475	5
34	MP1A	X	-2.236	4
35	MP1A	Z	-3.873	4
36	MP1A	Mx	-.001	4
37	MP1A	X	-2.289	2
38	MP1A	Z	-3.965	2
39	MP1A	Mx	-.001	2
40	MP2A	X	-2.21	.5
41	MP2A	Z	-3.828	.5
42	MP2A	Mx	-.001	.5
43	MP3A	X	-.689	4
44	MP3A	Z	-1.193	4
45	MP3A	Mx	.000678	4
46	RRU1	X	-1.668	1.5
47	RRU1	Z	-2.89	1.5
48	RRU1	Mx	-.002	1.5

Member Point Loads (BLC 38 : Antenna Wm (330 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
49	RRU2	X	-1.351	1.5
50	RRU2	Z	-2.341	1.5
51	RRU2	Mx	-.001	1.5

Member Point Loads (BLC 77 : Lm1)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	LIVE2	Y	-500	0

Member Point Loads (BLC 78 : Lm2)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	LIVE1	Y	-500	0

Member Point Loads (BLC 79 : Lv1)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M4	Y	-250	0

Member Point Loads (BLC 80 : Lv2)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M4	Y	-250	%50

Member Point Loads (BLC 81 : Antenna Ev)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	Y	0	1
2	MP3A	My	0	1
3	MP3A	Mz	0	1
4	MP3A	Y	0	5
5	MP3A	My	0	5
6	MP3A	Mz	0	5
7	MP3A	Y	0	1
8	MP3A	My	0	1
9	MP3A	Mz	0	1
10	MP3A	Y	0	5
11	MP3A	My	0	5
12	MP3A	Mz	0	5
13	MP1A	Y	0	1
14	MP1A	My	0	1
15	MP1A	Mz	0	1
16	MP1A	Y	0	5
17	MP1A	My	0	5
18	MP1A	Mz	0	5
19	MP1A	Y	0	1
20	MP1A	My	0	1
21	MP1A	Mz	0	1
22	MP1A	Y	0	5
23	MP1A	My	0	5
24	MP1A	Mz	0	5
25	MP2A	Y	0	1
26	MP2A	My	0	1
27	MP2A	Mz	0	1
28	MP2A	Y	0	3
29	MP2A	My	0	3
30	MP2A	Mz	0	3
31	MP2A	Y	0	5
32	MP2A	My	0	5

Member Point Loads (BLC 81 : Antenna Ev) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
33	MP2A	Mz	0	5
34	MP1A	Y	0	4
35	MP1A	My	0	4
36	MP1A	Mz	0	4
37	MP1A	Y	0	2
38	MP1A	My	0	2
39	MP1A	Mz	0	2
40	MP2A	Y	0	.5
41	MP2A	My	0	.5
42	MP2A	Mz	0	.5
43	MP3A	Y	0	4
44	MP3A	My	0	4
45	MP3A	Mz	0	4
46	RRU1	Y	0	1.5
47	RRU1	My	0	1.5
48	RRU1	Mz	0	1.5
49	RRU2	Y	0	1.5
50	RRU2	My	0	1.5
51	RRU2	Mz	0	1.5

Member Point Loads (BLC 82 : Antenna Eh (0 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	Z	-1.449	1
2	MP3A	Mx	.000979	1
3	MP3A	Z	-1.449	5
4	MP3A	Mx	.000979	5
5	MP3A	Z	-1.449	1
6	MP3A	Mx	-.001	1
7	MP3A	Z	-1.449	5
8	MP3A	Mx	-.001	5
9	MP1A	Z	-.69	1
10	MP1A	Mx	.000529	1
11	MP1A	Z	-.69	5
12	MP1A	Mx	.000529	5
13	MP1A	Z	-.69	1
14	MP1A	Mx	6.9e-5	1
15	MP1A	Z	-.69	5
16	MP1A	Mx	6.9e-5	5
17	MP2A	Z	-1.306	1
18	MP2A	Mx	.000566	1
19	MP2A	Z	-1.306	3
20	MP2A	Mx	.000566	3
21	MP2A	Z	-.132	5
22	MP2A	Mx	5.7e-5	5
23	MP1A	Z	-1.587	4
24	MP1A	Mx	-.000687	4
25	MP1A	Z	-2.532	2
26	MP1A	Mx	-.001	2
27	MP2A	Z	-2.109	.5
28	MP2A	Mx	-.000913	.5
29	MP3A	Z	-.561	4
30	MP3A	Mx	.000264	4
31	RRU1	Z	-2.532	1.5
32	RRU1	Mx	-.001	1.5
33	RRU2	Z	-2.109	1.5
34	RRU2	Mx	-.000913	1.5

Member Point Loads (BLC 83 : Antenna Eh (90 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP3A	X	1.449	1
2	MP3A	Mx	.001	1
3	MP3A	X	1.449	5
4	MP3A	Mx	.001	5
5	MP3A	X	1.449	1
6	MP3A	Mx	.000387	1
7	MP3A	X	1.449	5
8	MP3A	Mx	.000387	5
9	MP1A	X	.69	1
10	MP1A	Mx	-.000226	1
11	MP1A	X	.69	5
12	MP1A	Mx	-.000226	5
13	MP1A	X	.69	1
14	MP1A	Mx	.000571	1
15	MP1A	X	.69	5
16	MP1A	Mx	.000571	5
17	MP2A	X	1.306	1
18	MP2A	Mx	.000327	1
19	MP2A	X	1.306	3
20	MP2A	Mx	.000327	3
21	MP2A	X	.132	5
22	MP2A	Mx	3.3e-5	5
23	MP1A	X	1.587	4
24	MP1A	Mx	-.000397	4
25	MP1A	X	2.532	2
26	MP1A	Mx	-.000633	2
27	MP2A	X	2.109	.5
28	MP2A	Mx	-.000527	.5
29	MP3A	X	.561	4
30	MP3A	Mx	-9.6e-5	4
31	RRU1	X	2.532	1.5
32	RRU1	Mx	.000633	1.5
33	RRU2	X	2.109	1.5
34	RRU2	Mx	.000527	1.5

Member Distributed Loads (BLC 40 : Structure Di)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-9.609	-9.609	0	%100
2	M2	Y	-6.566	-6.566	0	%100
3	M4	Y	-6.566	-6.566	0	%100
4	MP1A	Y	-4.979	-4.979	0	%100
5	MP3A	Y	-4.979	-4.979	0	%100
6	MP2A	Y	-4.979	-4.979	0	%100
7	RRU1	Y	-4.979	-4.979	0	%100
8	RRU2	Y	-4.979	-4.979	0	%100

Member Distributed Loads (BLC 41 : Structure Wo (0 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	M2	X	0	0	0	%100
4	M2	Z	-8.916	-8.916	0	%100
5	M4	X	0	0	0	%100
6	M4	Z	-13.266	-13.266	0	%100
7	MP1A	X	0	0	0	%100

Member Distributed Loads (BLC 41 : Structure Wo (0 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
8	MP1A	Z	-9.643	-9.643	0	%100
9	MP3A	X	0	0	0	%100
10	MP3A	Z	-9.643	-9.643	0	%100
11	MP2A	X	0	0	0	%100
12	MP2A	Z	-9.643	-9.643	0	%100
13	RRU1	X	0	0	0	%100
14	RRU1	Z	-8.788	-8.788	0	%100
15	RRU2	X	0	0	0	%100
16	RRU2	Z	-8.788	-8.788	0	%100

Member Distributed Loads (BLC 42 : Structure Wo (30 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	1.583	1.583	0	%100
2	M1	Z	-2.742	-2.742	0	%100
3	M2	X	4.458	4.458	0	%100
4	M2	Z	-7.721	-7.721	0	%100
5	M4	X	4.975	4.975	0	%100
6	M4	Z	-8.617	-8.617	0	%100
7	MP1A	X	4.822	4.822	0	%100
8	MP1A	Z	-8.351	-8.351	0	%100
9	MP3A	X	4.822	4.822	0	%100
10	MP3A	Z	-8.351	-8.351	0	%100
11	MP2A	X	4.822	4.822	0	%100
12	MP2A	Z	-8.351	-8.351	0	%100
13	RRU1	X	4.394	4.394	0	%100
14	RRU1	Z	-7.611	-7.611	0	%100
15	RRU2	X	4.394	4.394	0	%100
16	RRU2	Z	-7.611	-7.611	0	%100

Member Distributed Loads (BLC 43 : Structure Wo (60 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	8.227	8.227	0	%100
2	M1	Z	-4.75	-4.75	0	%100
3	M2	X	7.721	7.721	0	%100
4	M2	Z	-4.458	-4.458	0	%100
5	M4	X	2.872	2.872	0	%100
6	M4	Z	-1.658	-1.658	0	%100
7	MP1A	X	8.351	8.351	0	%100
8	MP1A	Z	-4.822	-4.822	0	%100
9	MP3A	X	8.351	8.351	0	%100
10	MP3A	Z	-4.822	-4.822	0	%100
11	MP2A	X	8.351	8.351	0	%100
12	MP2A	Z	-4.822	-4.822	0	%100
13	RRU1	X	7.611	7.611	0	%100
14	RRU1	Z	-4.394	-4.394	0	%100
15	RRU2	X	7.611	7.611	0	%100
16	RRU2	Z	-4.394	-4.394	0	%100

Member Distributed Loads (BLC 44 : Structure Wo (90 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	12.666	12.666	0	%100
2	M1	Z	0	0	0	%100
3	M2	X	8.916	8.916	0	%100
4	M2	Z	0	0	0	%100
5	M4	X	0	0	0	%100

Member Distributed Loads (BLC 44 : Structure Wo (90 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
6	M4	Z	0	0	0	%100
7	MP1A	X	9.643	9.643	0	%100
8	MP1A	Z	0	0	0	%100
9	MP3A	X	9.643	9.643	0	%100
10	MP3A	Z	0	0	0	%100
11	MP2A	X	9.643	9.643	0	%100
12	MP2A	Z	0	0	0	%100
13	RRU1	X	8.788	8.788	0	%100
14	RRU1	Z	0	0	0	%100
15	RRU2	X	8.788	8.788	0	%100
16	RRU2	Z	0	0	0	%100

Member Distributed Loads (BLC 45 : Structure Wo (120 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	8.227	8.227	0	%100
2	M1	Z	4.75	4.75	0	%100
3	M2	X	7.721	7.721	0	%100
4	M2	Z	4.458	4.458	0	%100
5	M4	X	2.872	2.872	0	%100
6	M4	Z	1.658	1.658	0	%100
7	MP1A	X	8.351	8.351	0	%100
8	MP1A	Z	4.822	4.822	0	%100
9	MP3A	X	8.351	8.351	0	%100
10	MP3A	Z	4.822	4.822	0	%100
11	MP2A	X	8.351	8.351	0	%100
12	MP2A	Z	4.822	4.822	0	%100
13	RRU1	X	7.611	7.611	0	%100
14	RRU1	Z	4.394	4.394	0	%100
15	RRU2	X	7.611	7.611	0	%100
16	RRU2	Z	4.394	4.394	0	%100

Member Distributed Loads (BLC 46 : Structure Wo (150 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	1.583	1.583	0	%100
2	M1	Z	2.742	2.742	0	%100
3	M2	X	4.458	4.458	0	%100
4	M2	Z	7.721	7.721	0	%100
5	M4	X	4.975	4.975	0	%100
6	M4	Z	8.617	8.617	0	%100
7	MP1A	X	4.822	4.822	0	%100
8	MP1A	Z	8.351	8.351	0	%100
9	MP3A	X	4.822	4.822	0	%100
10	MP3A	Z	8.351	8.351	0	%100
11	MP2A	X	4.822	4.822	0	%100
12	MP2A	Z	8.351	8.351	0	%100
13	RRU1	X	4.394	4.394	0	%100
14	RRU1	Z	7.611	7.611	0	%100
15	RRU2	X	4.394	4.394	0	%100
16	RRU2	Z	7.611	7.611	0	%100

Member Distributed Loads (BLC 47 : Structure Wo (180 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	M2	X	0	0	0	%100

Member Distributed Loads (BLC 47 : Structure Wo (180 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
4	M2	Z	8.916	8.916	0	%100
5	M4	X	0	0	0	%100
6	M4	Z	13.266	13.266	0	%100
7	MP1A	X	0	0	0	%100
8	MP1A	Z	9.643	9.643	0	%100
9	MP3A	X	0	0	0	%100
10	MP3A	Z	9.643	9.643	0	%100
11	MP2A	X	0	0	0	%100
12	MP2A	Z	9.643	9.643	0	%100
13	RRU1	X	0	0	0	%100
14	RRU1	Z	8.788	8.788	0	%100
15	RRU2	X	0	0	0	%100
16	RRU2	Z	8.788	8.788	0	%100

Member Distributed Loads (BLC 48 : Structure Wo (210 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-1.583	-1.583	0	%100
2	M1	Z	2.742	2.742	0	%100
3	M2	X	-4.458	-4.458	0	%100
4	M2	Z	7.721	7.721	0	%100
5	M4	X	-4.975	-4.975	0	%100
6	M4	Z	8.617	8.617	0	%100
7	MP1A	X	-4.822	-4.822	0	%100
8	MP1A	Z	8.351	8.351	0	%100
9	MP3A	X	-4.822	-4.822	0	%100
10	MP3A	Z	8.351	8.351	0	%100
11	MP2A	X	-4.822	-4.822	0	%100
12	MP2A	Z	8.351	8.351	0	%100
13	RRU1	X	-4.394	-4.394	0	%100
14	RRU1	Z	7.611	7.611	0	%100
15	RRU2	X	-4.394	-4.394	0	%100
16	RRU2	Z	7.611	7.611	0	%100

Member Distributed Loads (BLC 49 : Structure Wo (240 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-8.227	-8.227	0	%100
2	M1	Z	4.75	4.75	0	%100
3	M2	X	-7.721	-7.721	0	%100
4	M2	Z	4.458	4.458	0	%100
5	M4	X	-2.872	-2.872	0	%100
6	M4	Z	1.658	1.658	0	%100
7	MP1A	X	-8.351	-8.351	0	%100
8	MP1A	Z	4.822	4.822	0	%100
9	MP3A	X	-8.351	-8.351	0	%100
10	MP3A	Z	4.822	4.822	0	%100
11	MP2A	X	-8.351	-8.351	0	%100
12	MP2A	Z	4.822	4.822	0	%100
13	RRU1	X	-7.611	-7.611	0	%100
14	RRU1	Z	4.394	4.394	0	%100
15	RRU2	X	-7.611	-7.611	0	%100
16	RRU2	Z	4.394	4.394	0	%100

Member Distributed Loads (BLC 50 : Structure Wo (270 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-12.666	-12.666	0	%100

Member Distributed Loads (BLC 50 : Structure Wo (270 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
2	M1	Z	0	0	0	%100
3	M2	X	-8.916	-8.916	0	%100
4	M2	Z	0	0	0	%100
5	M4	X	0	0	0	%100
6	M4	Z	0	0	0	%100
7	MP1A	X	-9.643	-9.643	0	%100
8	MP1A	Z	0	0	0	%100
9	MP3A	X	-9.643	-9.643	0	%100
10	MP3A	Z	0	0	0	%100
11	MP2A	X	-9.643	-9.643	0	%100
12	MP2A	Z	0	0	0	%100
13	RRU1	X	-8.788	-8.788	0	%100
14	RRU1	Z	0	0	0	%100
15	RRU2	X	-8.788	-8.788	0	%100
16	RRU2	Z	0	0	0	%100

Member Distributed Loads (BLC 51 : Structure Wo (300 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-8.227	-8.227	0	%100
2	M1	Z	-4.75	-4.75	0	%100
3	M2	X	-7.721	-7.721	0	%100
4	M2	Z	-4.458	-4.458	0	%100
5	M4	X	-2.872	-2.872	0	%100
6	M4	Z	-1.658	-1.658	0	%100
7	MP1A	X	-8.351	-8.351	0	%100
8	MP1A	Z	-4.822	-4.822	0	%100
9	MP3A	X	-8.351	-8.351	0	%100
10	MP3A	Z	-4.822	-4.822	0	%100
11	MP2A	X	-8.351	-8.351	0	%100
12	MP2A	Z	-4.822	-4.822	0	%100
13	RRU1	X	-7.611	-7.611	0	%100
14	RRU1	Z	-4.394	-4.394	0	%100
15	RRU2	X	-7.611	-7.611	0	%100
16	RRU2	Z	-4.394	-4.394	0	%100

Member Distributed Loads (BLC 52 : Structure Wo (330 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-1.583	-1.583	0	%100
2	M1	Z	-2.742	-2.742	0	%100
3	M2	X	-4.458	-4.458	0	%100
4	M2	Z	-7.721	-7.721	0	%100
5	M4	X	-4.975	-4.975	0	%100
6	M4	Z	-8.617	-8.617	0	%100
7	MP1A	X	-4.822	-4.822	0	%100
8	MP1A	Z	-8.351	-8.351	0	%100
9	MP3A	X	-4.822	-4.822	0	%100
10	MP3A	Z	-8.351	-8.351	0	%100
11	MP2A	X	-4.822	-4.822	0	%100
12	MP2A	Z	-8.351	-8.351	0	%100
13	RRU1	X	-4.394	-4.394	0	%100
14	RRU1	Z	-7.611	-7.611	0	%100
15	RRU2	X	-4.394	-4.394	0	%100
16	RRU2	Z	-7.611	-7.611	0	%100

Member Distributed Loads (BLC 53 : Structure Wi (0 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]

Member Distributed Loads (BLC 53 : Structure Wi (0 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	M2	X	0	0	0	%100
4	M2	Z	-2.808	-2.808	0	%100
5	M4	X	0	0	0	%100
6	M4	Z	-4.177	-4.177	0	%100
7	MP1A	X	0	0	0	%100
8	MP1A	Z	-3.474	-3.474	0	%100
9	MP3A	X	0	0	0	%100
10	MP3A	Z	-3.474	-3.474	0	%100
11	MP2A	X	0	0	0	%100
12	MP2A	Z	-3.474	-3.474	0	%100
13	RRU1	X	0	0	0	%100
14	RRU1	Z	-3.184	-3.184	0	%100
15	RRU2	X	0	0	0	%100
16	RRU2	Z	-3.184	-3.184	0	%100

Member Distributed Loads (BLC 54 : Structure Wi (30 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.465	.465	0	%100
2	M1	Z	-.805	-.805	0	%100
3	M2	X	1.404	1.404	0	%100
4	M2	Z	-2.432	-2.432	0	%100
5	M4	X	1.566	1.566	0	%100
6	M4	Z	-2.713	-2.713	0	%100
7	MP1A	X	1.737	1.737	0	%100
8	MP1A	Z	-3.008	-3.008	0	%100
9	MP3A	X	1.737	1.737	0	%100
10	MP3A	Z	-3.008	-3.008	0	%100
11	MP2A	X	1.737	1.737	0	%100
12	MP2A	Z	-3.008	-3.008	0	%100
13	RRU1	X	1.592	1.592	0	%100
14	RRU1	Z	-2.757	-2.757	0	%100
15	RRU2	X	1.592	1.592	0	%100
16	RRU2	Z	-2.757	-2.757	0	%100

Member Distributed Loads (BLC 55 : Structure Wi (60 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	2.415	2.415	0	%100
2	M1	Z	-1.394	-1.394	0	%100
3	M2	X	2.432	2.432	0	%100
4	M2	Z	-1.404	-1.404	0	%100
5	M4	X	.904	.904	0	%100
6	M4	Z	-.522	-.522	0	%100
7	MP1A	X	3.008	3.008	0	%100
8	MP1A	Z	-1.737	-1.737	0	%100
9	MP3A	X	3.008	3.008	0	%100
10	MP3A	Z	-1.737	-1.737	0	%100
11	MP2A	X	3.008	3.008	0	%100
12	MP2A	Z	-1.737	-1.737	0	%100
13	RRU1	X	2.757	2.757	0	%100
14	RRU1	Z	-1.592	-1.592	0	%100
15	RRU2	X	2.757	2.757	0	%100
16	RRU2	Z	-1.592	-1.592	0	%100

Member Distributed Loads (BLC 56 : Structure Wi (90 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	3.719	3.719	0	%100
2	M1	Z	0	0	0	%100
3	M2	X	2.808	2.808	0	%100
4	M2	Z	0	0	0	%100
5	M4	X	0	0	0	%100
6	M4	Z	0	0	0	%100
7	MP1A	X	3.474	3.474	0	%100
8	MP1A	Z	0	0	0	%100
9	MP3A	X	3.474	3.474	0	%100
10	MP3A	Z	0	0	0	%100
11	MP2A	X	3.474	3.474	0	%100
12	MP2A	Z	0	0	0	%100
13	RRU1	X	3.184	3.184	0	%100
14	RRU1	Z	0	0	0	%100
15	RRU2	X	3.184	3.184	0	%100
16	RRU2	Z	0	0	0	%100

Member Distributed Loads (BLC 57 : Structure Wi (120 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	2.415	2.415	0	%100
2	M1	Z	1.394	1.394	0	%100
3	M2	X	2.432	2.432	0	%100
4	M2	Z	1.404	1.404	0	%100
5	M4	X	.904	.904	0	%100
6	M4	Z	.522	.522	0	%100
7	MP1A	X	3.008	3.008	0	%100
8	MP1A	Z	1.737	1.737	0	%100
9	MP3A	X	3.008	3.008	0	%100
10	MP3A	Z	1.737	1.737	0	%100
11	MP2A	X	3.008	3.008	0	%100
12	MP2A	Z	1.737	1.737	0	%100
13	RRU1	X	2.757	2.757	0	%100
14	RRU1	Z	1.592	1.592	0	%100
15	RRU2	X	2.757	2.757	0	%100
16	RRU2	Z	1.592	1.592	0	%100

Member Distributed Loads (BLC 58 : Structure Wi (150 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.465	.465	0	%100
2	M1	Z	.805	.805	0	%100
3	M2	X	1.404	1.404	0	%100
4	M2	Z	2.432	2.432	0	%100
5	M4	X	1.566	1.566	0	%100
6	M4	Z	2.713	2.713	0	%100
7	MP1A	X	1.737	1.737	0	%100
8	MP1A	Z	3.008	3.008	0	%100
9	MP3A	X	1.737	1.737	0	%100
10	MP3A	Z	3.008	3.008	0	%100
11	MP2A	X	1.737	1.737	0	%100
12	MP2A	Z	3.008	3.008	0	%100
13	RRU1	X	1.592	1.592	0	%100
14	RRU1	Z	2.757	2.757	0	%100
15	RRU2	X	1.592	1.592	0	%100
16	RRU2	Z	2.757	2.757	0	%100

Member Distributed Loads (BLC 59 : Structure Wi (180 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	M2	X	0	0	0	%100
4	M2	Z	2.808	2.808	0	%100
5	M4	X	0	0	0	%100
6	M4	Z	4.177	4.177	0	%100
7	MP1A	X	0	0	0	%100
8	MP1A	Z	3.474	3.474	0	%100
9	MP3A	X	0	0	0	%100
10	MP3A	Z	3.474	3.474	0	%100
11	MP2A	X	0	0	0	%100
12	MP2A	Z	3.474	3.474	0	%100
13	RRU1	X	0	0	0	%100
14	RRU1	Z	3.184	3.184	0	%100
15	RRU2	X	0	0	0	%100
16	RRU2	Z	3.184	3.184	0	%100

Member Distributed Loads (BLC 60 : Structure Wi (210 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.465	-.465	0	%100
2	M1	Z	.805	.805	0	%100
3	M2	X	-1.404	-1.404	0	%100
4	M2	Z	2.432	2.432	0	%100
5	M4	X	-1.566	-1.566	0	%100
6	M4	Z	2.713	2.713	0	%100
7	MP1A	X	-1.737	-1.737	0	%100
8	MP1A	Z	3.008	3.008	0	%100
9	MP3A	X	-1.737	-1.737	0	%100
10	MP3A	Z	3.008	3.008	0	%100
11	MP2A	X	-1.737	-1.737	0	%100
12	MP2A	Z	3.008	3.008	0	%100
13	RRU1	X	-1.592	-1.592	0	%100
14	RRU1	Z	2.757	2.757	0	%100
15	RRU2	X	-1.592	-1.592	0	%100
16	RRU2	Z	2.757	2.757	0	%100

Member Distributed Loads (BLC 61 : Structure Wi (240 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-2.415	-2.415	0	%100
2	M1	Z	1.394	1.394	0	%100
3	M2	X	-2.432	-2.432	0	%100
4	M2	Z	1.404	1.404	0	%100
5	M4	X	-.904	-.904	0	%100
6	M4	Z	.522	.522	0	%100
7	MP1A	X	-3.008	-3.008	0	%100
8	MP1A	Z	1.737	1.737	0	%100
9	MP3A	X	-3.008	-3.008	0	%100
10	MP3A	Z	1.737	1.737	0	%100
11	MP2A	X	-3.008	-3.008	0	%100
12	MP2A	Z	1.737	1.737	0	%100
13	RRU1	X	-2.757	-2.757	0	%100
14	RRU1	Z	1.592	1.592	0	%100
15	RRU2	X	-2.757	-2.757	0	%100
16	RRU2	Z	1.592	1.592	0	%100

Member Distributed Loads (BLC 62 : Structure Wi (270 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-3.719	-3.719	0	%100
2	M1	Z	0	0	0	%100
3	M2	X	-2.808	-2.808	0	%100
4	M2	Z	0	0	0	%100
5	M4	X	0	0	0	%100
6	M4	Z	0	0	0	%100
7	MP1A	X	-3.474	-3.474	0	%100
8	MP1A	Z	0	0	0	%100
9	MP3A	X	-3.474	-3.474	0	%100
10	MP3A	Z	0	0	0	%100
11	MP2A	X	-3.474	-3.474	0	%100
12	MP2A	Z	0	0	0	%100
13	RRU1	X	-3.184	-3.184	0	%100
14	RRU1	Z	0	0	0	%100
15	RRU2	X	-3.184	-3.184	0	%100
16	RRU2	Z	0	0	0	%100

Member Distributed Loads (BLC 63 : Structure Wi (300 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-2.415	-2.415	0	%100
2	M1	Z	-1.394	-1.394	0	%100
3	M2	X	-2.432	-2.432	0	%100
4	M2	Z	-1.404	-1.404	0	%100
5	M4	X	-.904	-.904	0	%100
6	M4	Z	-.522	-.522	0	%100
7	MP1A	X	-3.008	-3.008	0	%100
8	MP1A	Z	-1.737	-1.737	0	%100
9	MP3A	X	-3.008	-3.008	0	%100
10	MP3A	Z	-1.737	-1.737	0	%100
11	MP2A	X	-3.008	-3.008	0	%100
12	MP2A	Z	-1.737	-1.737	0	%100
13	RRU1	X	-2.757	-2.757	0	%100
14	RRU1	Z	-1.592	-1.592	0	%100
15	RRU2	X	-2.757	-2.757	0	%100
16	RRU2	Z	-1.592	-1.592	0	%100

Member Distributed Loads (BLC 64 : Structure Wi (330 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.465	-.465	0	%100
2	M1	Z	-.805	-.805	0	%100
3	M2	X	-1.404	-1.404	0	%100
4	M2	Z	-2.432	-2.432	0	%100
5	M4	X	-1.566	-1.566	0	%100
6	M4	Z	-2.713	-2.713	0	%100
7	MP1A	X	-1.737	-1.737	0	%100
8	MP1A	Z	-3.008	-3.008	0	%100
9	MP3A	X	-1.737	-1.737	0	%100
10	MP3A	Z	-3.008	-3.008	0	%100
11	MP2A	X	-1.737	-1.737	0	%100
12	MP2A	Z	-3.008	-3.008	0	%100
13	RRU1	X	-1.592	-1.592	0	%100
14	RRU1	Z	-2.757	-2.757	0	%100
15	RRU2	X	-1.592	-1.592	0	%100
16	RRU2	Z	-2.757	-2.757	0	%100

Member Distributed Loads (BLC 65 : Structure Wm (0 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	M2	X	0	0	0	%100
4	M2	Z	-.586	-.586	0	%100
5	M4	X	0	0	0	%100
6	M4	Z	-.872	-.872	0	%100
7	MP1A	X	0	0	0	%100
8	MP1A	Z	-.634	-.634	0	%100
9	MP3A	X	0	0	0	%100
10	MP3A	Z	-.634	-.634	0	%100
11	MP2A	X	0	0	0	%100
12	MP2A	Z	-.634	-.634	0	%100
13	RRU1	X	0	0	0	%100
14	RRU1	Z	-.578	-.578	0	%100
15	RRU2	X	0	0	0	%100
16	RRU2	Z	-.578	-.578	0	%100

Member Distributed Loads (BLC 66 : Structure Wm (30 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.104	.104	0	%100
2	M1	Z	-.18	-.18	0	%100
3	M2	X	.293	.293	0	%100
4	M2	Z	-.508	-.508	0	%100
5	M4	X	.327	.327	0	%100
6	M4	Z	-.567	-.567	0	%100
7	MP1A	X	.317	.317	0	%100
8	MP1A	Z	-.549	-.549	0	%100
9	MP3A	X	.317	.317	0	%100
10	MP3A	Z	-.549	-.549	0	%100
11	MP2A	X	.317	.317	0	%100
12	MP2A	Z	-.549	-.549	0	%100
13	RRU1	X	.289	.289	0	%100
14	RRU1	Z	-.5	-.5	0	%100
15	RRU2	X	.289	.289	0	%100
16	RRU2	Z	-.5	-.5	0	%100

Member Distributed Loads (BLC 67 : Structure Wm (60 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.541	.541	0	%100
2	M1	Z	-.312	-.312	0	%100
3	M2	X	.508	.508	0	%100
4	M2	Z	-.293	-.293	0	%100
5	M4	X	.189	.189	0	%100
6	M4	Z	-.109	-.109	0	%100
7	MP1A	X	.549	.549	0	%100
8	MP1A	Z	-.317	-.317	0	%100
9	MP3A	X	.549	.549	0	%100
10	MP3A	Z	-.317	-.317	0	%100
11	MP2A	X	.549	.549	0	%100
12	MP2A	Z	-.317	-.317	0	%100
13	RRU1	X	.5	.5	0	%100
14	RRU1	Z	-.289	-.289	0	%100
15	RRU2	X	.5	.5	0	%100
16	RRU2	Z	-.289	-.289	0	%100

Member Distributed Loads (BLC 68 : Structure Wm (90 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.833	.833	0	%100
2	M1	Z	0	0	0	%100
3	M2	X	.586	.586	0	%100
4	M2	Z	0	0	0	%100
5	M4	X	0	0	0	%100
6	M4	Z	0	0	0	%100
7	MP1A	X	.634	.634	0	%100
8	MP1A	Z	0	0	0	%100
9	MP3A	X	.634	.634	0	%100
10	MP3A	Z	0	0	0	%100
11	MP2A	X	.634	.634	0	%100
12	MP2A	Z	0	0	0	%100
13	RRU1	X	.578	.578	0	%100
14	RRU1	Z	0	0	0	%100
15	RRU2	X	.578	.578	0	%100
16	RRU2	Z	0	0	0	%100

Member Distributed Loads (BLC 69 : Structure Wm (120 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.541	.541	0	%100
2	M1	Z	.312	.312	0	%100
3	M2	X	.508	.508	0	%100
4	M2	Z	.293	.293	0	%100
5	M4	X	.189	.189	0	%100
6	M4	Z	.109	.109	0	%100
7	MP1A	X	.549	.549	0	%100
8	MP1A	Z	.317	.317	0	%100
9	MP3A	X	.549	.549	0	%100
10	MP3A	Z	.317	.317	0	%100
11	MP2A	X	.549	.549	0	%100
12	MP2A	Z	.317	.317	0	%100
13	RRU1	X	.5	.5	0	%100
14	RRU1	Z	.289	.289	0	%100
15	RRU2	X	.5	.5	0	%100
16	RRU2	Z	.289	.289	0	%100

Member Distributed Loads (BLC 70 : Structure Wm (150 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.104	.104	0	%100
2	M1	Z	.18	.18	0	%100
3	M2	X	.293	.293	0	%100
4	M2	Z	.508	.508	0	%100
5	M4	X	.327	.327	0	%100
6	M4	Z	.567	.567	0	%100
7	MP1A	X	.317	.317	0	%100
8	MP1A	Z	.549	.549	0	%100
9	MP3A	X	.317	.317	0	%100
10	MP3A	Z	.549	.549	0	%100
11	MP2A	X	.317	.317	0	%100
12	MP2A	Z	.549	.549	0	%100
13	RRU1	X	.289	.289	0	%100
14	RRU1	Z	.5	.5	0	%100
15	RRU2	X	.289	.289	0	%100
16	RRU2	Z	.5	.5	0	%100

Member Distributed Loads (BLC 71 : Structure Wm (180 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	M2	X	0	0	0	%100
4	M2	Z	.586	.586	0	%100
5	M4	X	0	0	0	%100
6	M4	Z	.872	.872	0	%100
7	MP1A	X	0	0	0	%100
8	MP1A	Z	.634	.634	0	%100
9	MP3A	X	0	0	0	%100
10	MP3A	Z	.634	.634	0	%100
11	MP2A	X	0	0	0	%100
12	MP2A	Z	.634	.634	0	%100
13	RRU1	X	0	0	0	%100
14	RRU1	Z	.578	.578	0	%100
15	RRU2	X	0	0	0	%100
16	RRU2	Z	.578	.578	0	%100

Member Distributed Loads (BLC 72 : Structure Wm (210 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.104	-.104	0	%100
2	M1	Z	.18	.18	0	%100
3	M2	X	-.293	-.293	0	%100
4	M2	Z	.508	.508	0	%100
5	M4	X	-.327	-.327	0	%100
6	M4	Z	.567	.567	0	%100
7	MP1A	X	-.317	-.317	0	%100
8	MP1A	Z	.549	.549	0	%100
9	MP3A	X	-.317	-.317	0	%100
10	MP3A	Z	.549	.549	0	%100
11	MP2A	X	-.317	-.317	0	%100
12	MP2A	Z	.549	.549	0	%100
13	RRU1	X	-.289	-.289	0	%100
14	RRU1	Z	.5	.5	0	%100
15	RRU2	X	-.289	-.289	0	%100
16	RRU2	Z	.5	.5	0	%100

Member Distributed Loads (BLC 73 : Structure Wm (240 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.541	-.541	0	%100
2	M1	Z	.312	.312	0	%100
3	M2	X	-.508	-.508	0	%100
4	M2	Z	.293	.293	0	%100
5	M4	X	-.189	-.189	0	%100
6	M4	Z	.109	.109	0	%100
7	MP1A	X	-.549	-.549	0	%100
8	MP1A	Z	.317	.317	0	%100
9	MP3A	X	-.549	-.549	0	%100
10	MP3A	Z	.317	.317	0	%100
11	MP2A	X	-.549	-.549	0	%100
12	MP2A	Z	.317	.317	0	%100
13	RRU1	X	-.5	-.5	0	%100
14	RRU1	Z	.289	.289	0	%100
15	RRU2	X	-.5	-.5	0	%100
16	RRU2	Z	.289	.289	0	%100

Member Distributed Loads (BLC 74 : Structure Wm (270 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.833	-.833	0	%100
2	M1	Z	0	0	0	%100
3	M2	X	-.586	-.586	0	%100
4	M2	Z	0	0	0	%100
5	M4	X	0	0	0	%100
6	M4	Z	0	0	0	%100
7	MP1A	X	-.634	-.634	0	%100
8	MP1A	Z	0	0	0	%100
9	MP3A	X	-.634	-.634	0	%100
10	MP3A	Z	0	0	0	%100
11	MP2A	X	-.634	-.634	0	%100
12	MP2A	Z	0	0	0	%100
13	RRU1	X	-.578	-.578	0	%100
14	RRU1	Z	0	0	0	%100
15	RRU2	X	-.578	-.578	0	%100
16	RRU2	Z	0	0	0	%100

Member Distributed Loads (BLC 75 : Structure Wm (300 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.541	-.541	0	%100
2	M1	Z	-.312	-.312	0	%100
3	M2	X	-.508	-.508	0	%100
4	M2	Z	-.293	-.293	0	%100
5	M4	X	-.189	-.189	0	%100
6	M4	Z	-.109	-.109	0	%100
7	MP1A	X	-.549	-.549	0	%100
8	MP1A	Z	-.317	-.317	0	%100
9	MP3A	X	-.549	-.549	0	%100
10	MP3A	Z	-.317	-.317	0	%100
11	MP2A	X	-.549	-.549	0	%100
12	MP2A	Z	-.317	-.317	0	%100
13	RRU1	X	-.5	-.5	0	%100
14	RRU1	Z	-.289	-.289	0	%100
15	RRU2	X	-.5	-.5	0	%100
16	RRU2	Z	-.289	-.289	0	%100

Member Distributed Loads (BLC 76 : Structure Wm (330 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.104	-.104	0	%100
2	M1	Z	-.18	-.18	0	%100
3	M2	X	-.293	-.293	0	%100
4	M2	Z	-.508	-.508	0	%100
5	M4	X	-.327	-.327	0	%100
6	M4	Z	-.567	-.567	0	%100
7	MP1A	X	-.317	-.317	0	%100
8	MP1A	Z	-.549	-.549	0	%100
9	MP3A	X	-.317	-.317	0	%100
10	MP3A	Z	-.549	-.549	0	%100
11	MP2A	X	-.317	-.317	0	%100
12	MP2A	Z	-.549	-.549	0	%100
13	RRU1	X	-.289	-.289	0	%100
14	RRU1	Z	-.5	-.5	0	%100
15	RRU2	X	-.289	-.289	0	%100
16	RRU2	Z	-.5	-.5	0	%100

Member Area Loads

Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
No Data to Print ...						

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	2097.424	10	2319.402	15	2351.952	1	-2.41	64	6.379	10	2.41	40
2		min	-2097.424	4	844.283	71	-2351.952	7	-6.913	19	-6.36	4	-2.161	34
3	Totals:	max	2097.424	10	2319.402	15	2351.952	1						
4		min	-2097.424	4	844.283	71	-2351.952	7						

Envelope AISC 15th(360-16): LRFD Steel Code Checks

	Member	Shape	Code Che...	Loc[ft]	LC	Shear...	Loc[ft]	Dir	LC	phi*Pn...	phi*Pnt...	phi*Mn...	phi*Mn...	Cb	Eqn
1	M1	HSS4X4X4	.594	0	10	.225	0	y	40	134534..	139518	16.181	16.181	1...	H1-1b
2	M2	PIPE_3.0	.000	.75	7	.000	.75		7	64424....	65205	5.749	5.749	1	H1-1b
3	M4	PIPE_3.0	.577	3.25	1	.109	3.25		7	52006....	65205	5.749	5.749	1...	H1-1b
4	MP1A	PIPE_2.0	.510	3	5	.122	1.938		8	20866....	32130	1.872	1.872	1...	H1-1b
5	MP3A	PIPE_2.0	.582	3	8	.123	3		9	20866....	32130	1.872	1.872	1...	H1-1b
6	MP2A	PIPE_2.0	.240	3	5	.023	3		6	20866....	32130	1.872	1.872	1...	H1-1b
7	RRU1	PIPE_2.0	.111	3	3	.024	3		7	26521....	32130	1.872	1.872	1...	H1-1b
8	RRU2	PIPE_2.0	.106	3	3	.021	3		7	26521....	32130	1.872	1.872	1...	H1-1b

Client:	Verizon Wireless	Date:	10/28/2021
Site Name:	GREENWICH 3 CT		
Project No.	21781145A		
Title:	Mount Analysis	Page:	1

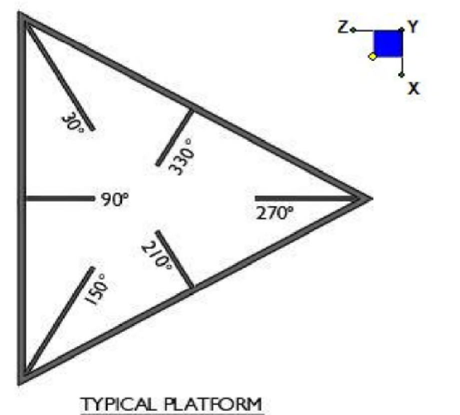
MASER CONSULTING — CONNECTICUT —

Version 3.1

I. Mount-to-Tower Connection Check

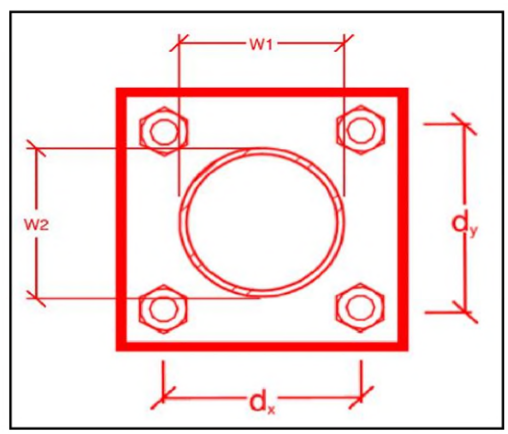
RISA Model Data

Nodes *(labeled per RISA)*	Orientation *(per graphic of typical platform)*
N1	90
N41	330
N21	210



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):	30.0
Required Shear Strength (kips):	27.6
Tensile Strength / bolt (kips):	20.7
Shear Strength / bolt (kips):	12.4
Tensile Capacity Overall:	**36.2%***
Shear Capacity Overall:	**55.6%**



**Note: Tension reduction not required if tension or shear capacity < 30%*

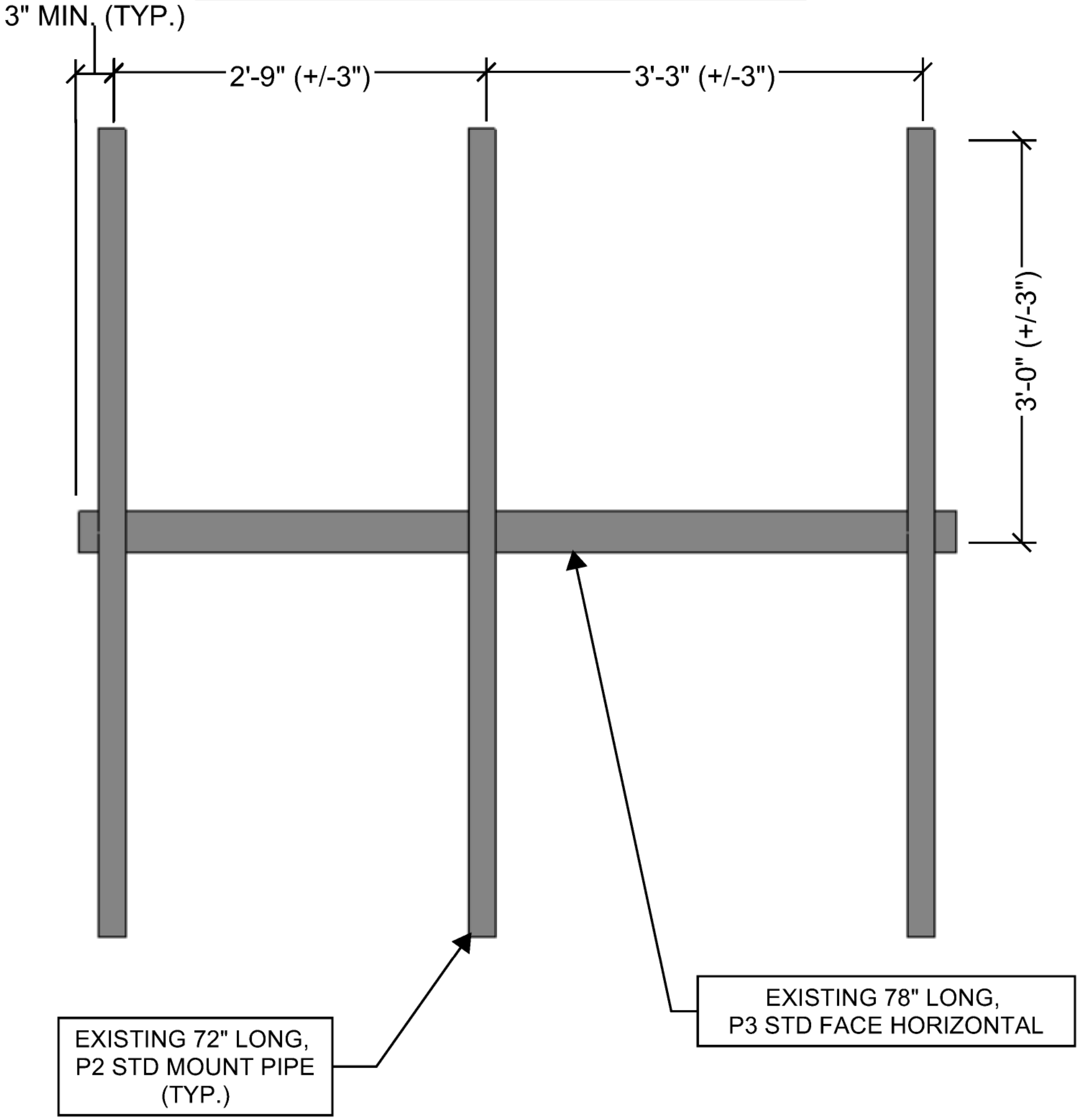
Tower Connection Plate and Weld Check

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):	4.03
Plate Bending Capacity:	**75.9%**
Weld Capacity:	**72.4%**

Max Plate Bending Strengths

Mu_{xx} *(kip-in)*:	6.5
$Phi*Mn_{xx}$ *(kip-in)*:	25.3
Mu_{yy} *(kip-in)*:	12.8
$Phi*Mn_{yy}$ *(kip-in)*:	25.3

MOUNT GEOMETRY VERIFICATION

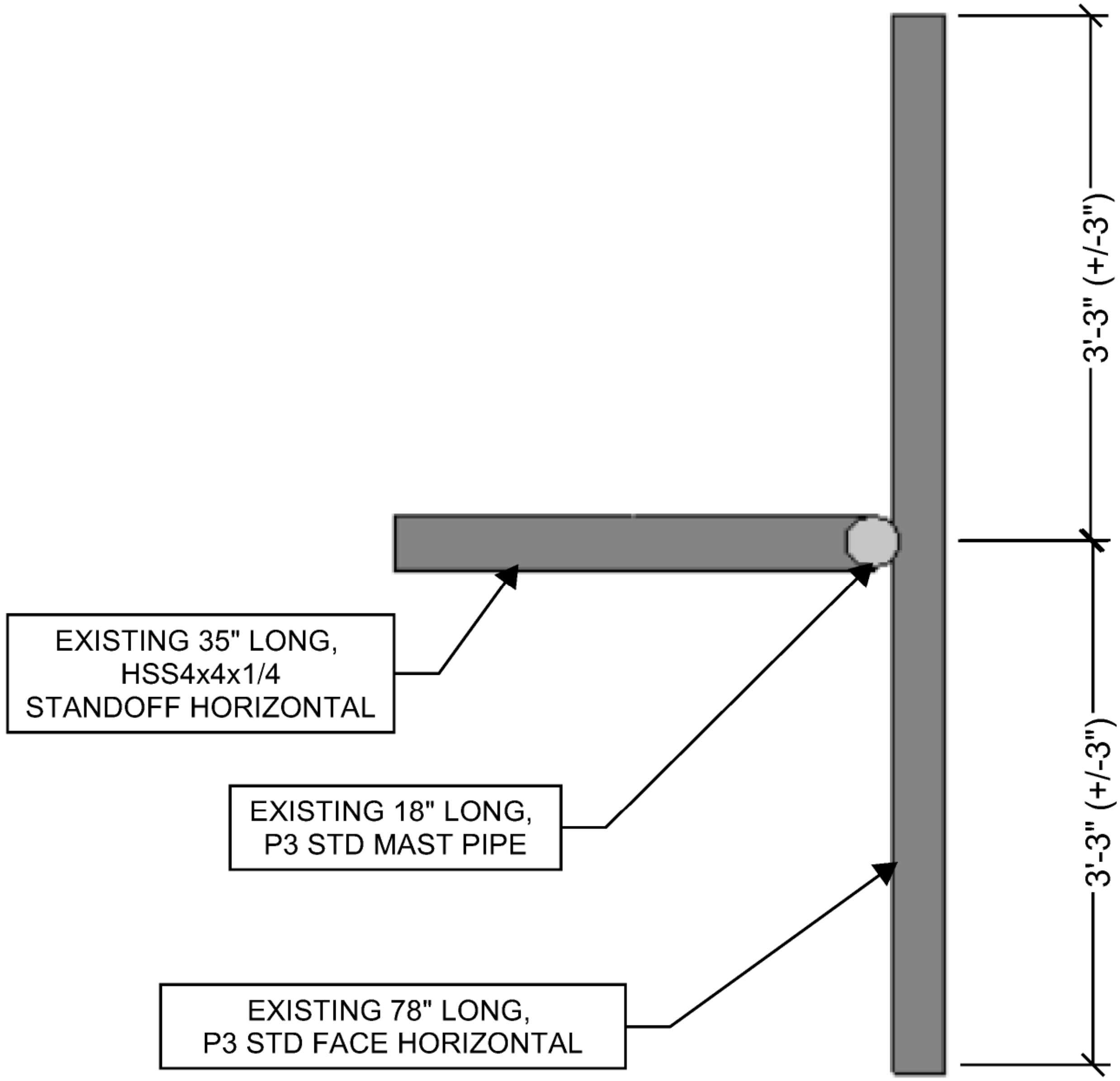


MOUNT FRONT ELEVATION VIEW (TYP. ALL SECTORS)

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

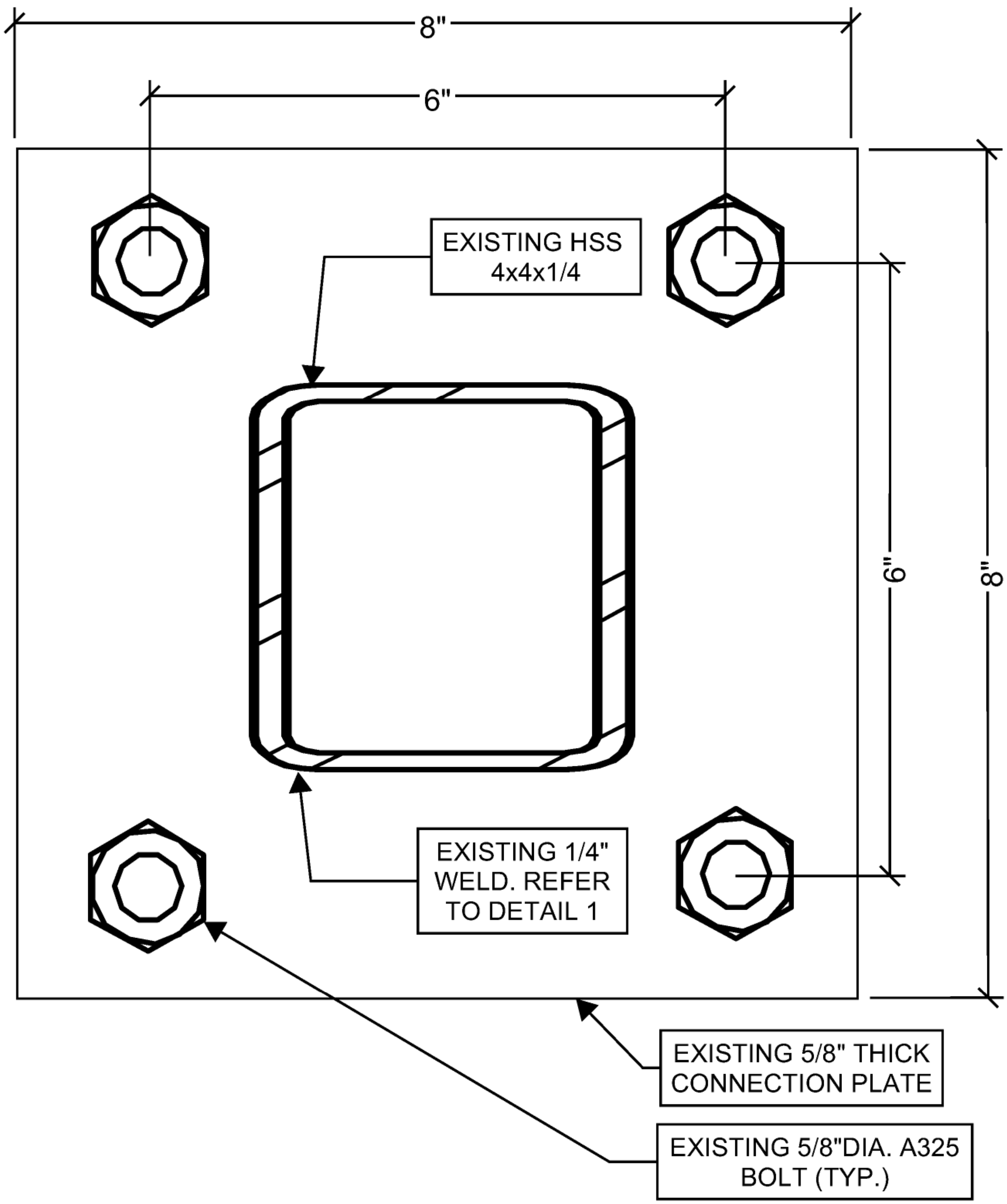


MOUNT PLAN VIEW (TYP. ALL SECTORS)

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



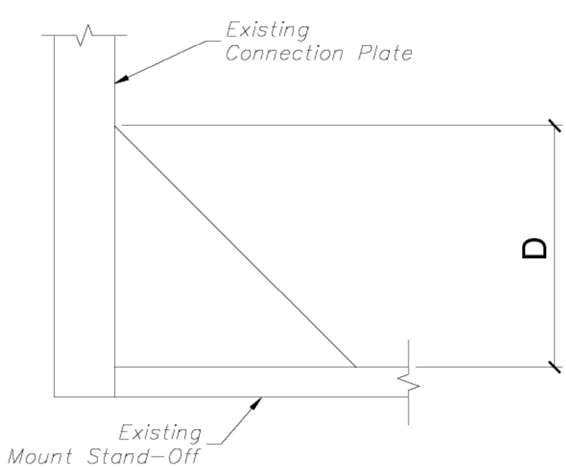
CONNECTION GEOMETRY (TYP. ALL SECTORS)

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 two (2) 48" long P2 STD mount pipe on Alpha standoff horizontal 18" from the mount connection. Attach proposed mount pipes, cantilevered 30" from the standoff with crossover plate (VZWSMART-MSK6). Contractor shall attach proposed OVP's 12" from top of each mount pipe.

Contractor to install two (2) 48" long P2 STD mount pipe on Gamma standoff horizontal 18" from the mount connection. Attach proposed mount pipes, cantilevered 36" from the standoff with crossover plate (VZWSMART-MSK6). Contractor shall attach proposed RRU's not shown in the attached placement diagrams 18" from top of each mount pipe.

Contractor to replace the position 2 mount pipe to face horizontal connection with crossover plate
(Part #: VZWSMART-MSK2) in all sectors.

Response:

Contractor certifies that the climbing facility / safety climb was not damaged or obstructed prior to starting work:

☐ Yes ☐ No

Contractor certifies no new damage/obstructions created during the current installation:

☐ Yes ☐ No

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.

OR

☐ 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.

OR

☐ 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:	

Structure: 469290-VZW - GREENWICH 3 CT

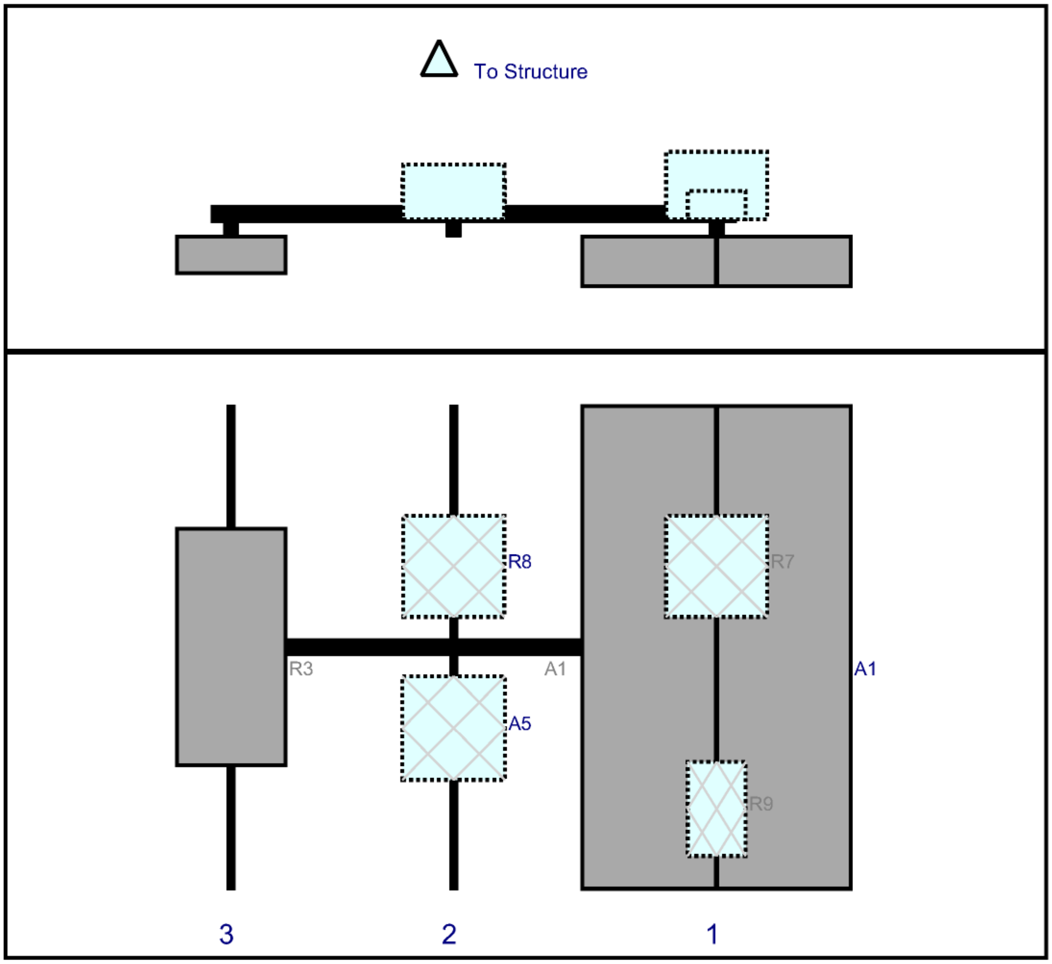
Sector: A 10/28/2021

Structure Type: Monopole 10105321

Mount Elev: 139.00

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
A1	MX10FRO640	71.6	19.8	75	1	a	Front	36	-10	Added	
A1	MX10FRO640	71.6	19.8	75	1	b	Front	36	10	Added	
R7	B2/B66A RRH-BR049 (RFV01U-D1A)	15	15	75	1	a	Behind	24	0	Added	
R9	CBRS RRH - RT4401-48A	13.9	8.6	75	1	a	Behind	60	0	Added	
A5	TD-850B-LTE78-43	15.4	15.2	36	2	a	Behind	48	0	Added	
R8	B5/B13 RRH-BR04C (RFV01U-D2A)	15	15	36	2	a	Behind	24	0	Added	
R3	MT6407-77A	35.1	16.1	3	3	a	Front	36	0	Added	

Structure: 469290-VZW - GREENWICH 3 CT

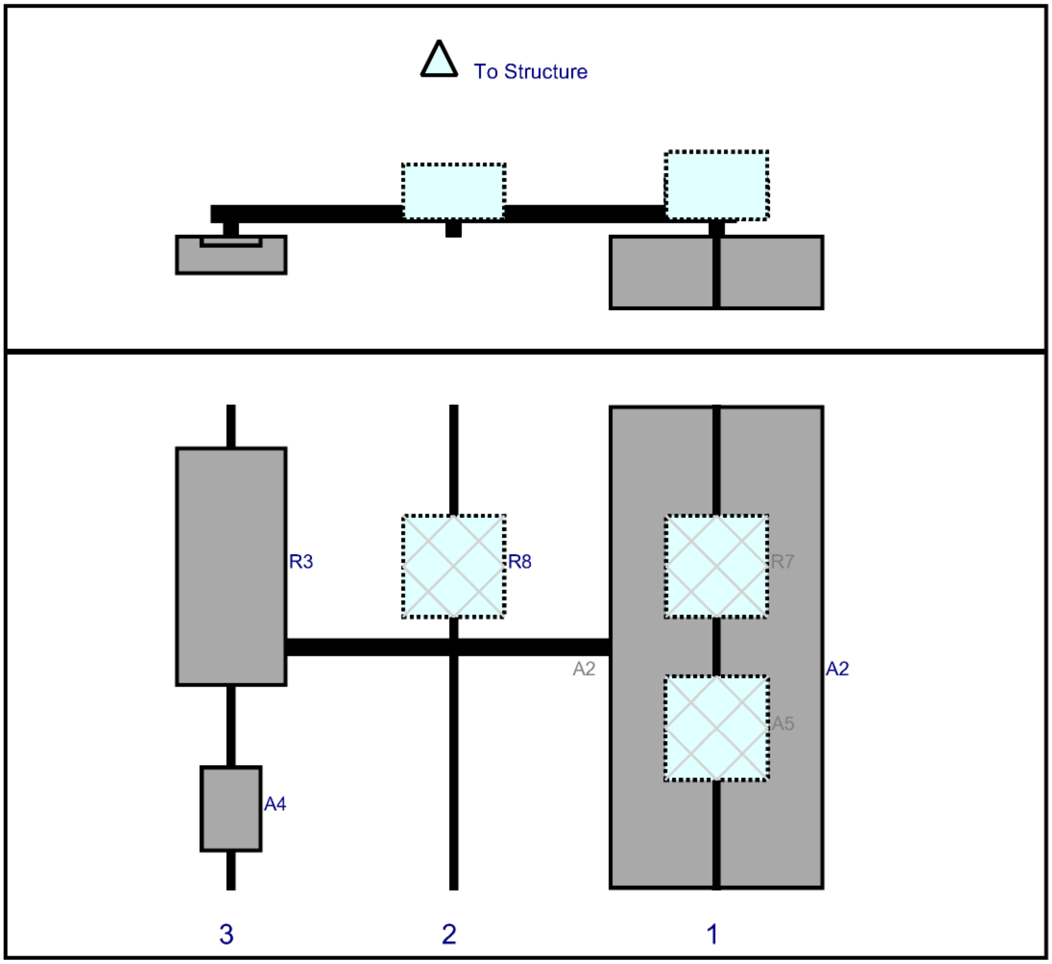
Sector: **B** 10/28/2021

Structure Type: Monopole 10105321

Mount Elev: 139.00

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
A2	MX06FRO660-03	71.3	15.4	75	1	a	Front	36	-8	Added	
A2	MX06FRO660-03	71.3	15.4	75	1	b	Front	36	8	Added	
A5	TD-850B-LTE78-43	15.4	15.2	75	1	a	Behind	48	0	Added	
R7	B2/B66A RRH-BR049 (RFV01U-D1A)	15	15	75	1	a	Behind	24	0	Added	
R8	B5/B13 RRH-BR04C (RFV01U-D2A)	15	15	36	2	a	Behind	24	0	Added	
A4	XXDWMM-12.5-65-8T-CBRS	12.3	8.7	3	3	a	Front	60	0	Added	
R3	MT6407-77A	35.1	16.1	3	3	a	Front	24	0	Added	

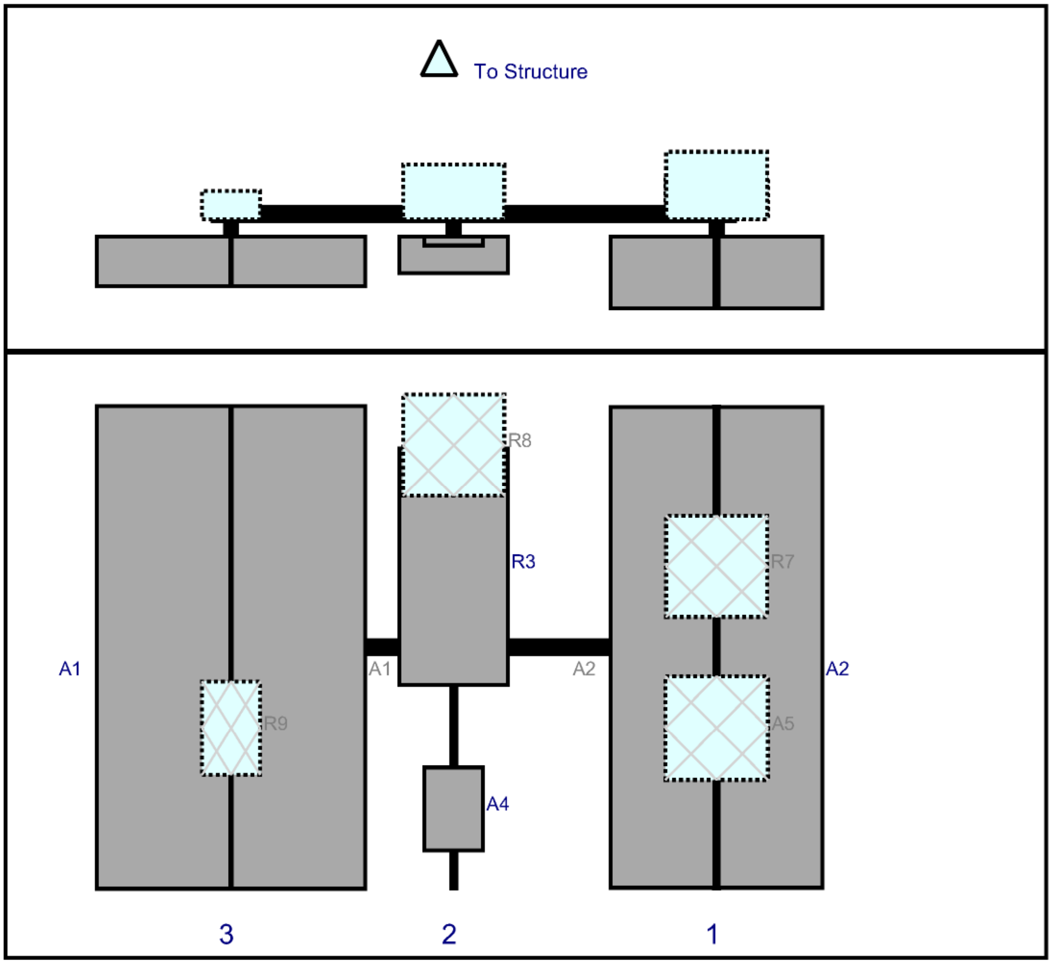
Sector: **C** 10/28/2021

Structure Type: Monopole 10105321

Mount Elev: 139.00

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
A2	MX06FRO660-03	71.3	15.4	75	1	a	Front	36	8	Added	
A2	MX06FRO660-03	71.3	15.4	75	1	b	Front	36	-8	Added	
A5	TD-850B-LTE78-43	15.4	15.2	75	1	a	Behind	48	0	Added	
R7	B2/B66A RRH-BR049 (RFV01U-D1A)	15	15	75	1	a	Behind	24	0	Added	
A4	XXDWMM-12.5-65-8T-CBRS	12.3	8.7	36	2	a	Front	60	0	Added	
R3	MT6407-77A	35.1	16.1	36	2	a	Front	24	0	Added	
R8	B5/B13 RRH-BR04C (RFV01U-D2A)	15	15	36	2	a	Behind	6	0	Added	
A1	MX10FRO640	71.6	19.8	3	3	a	Front	36	10	Added	
A1	MX10FRO640	71.6	19.8	3	3	b	Front	36	-10	Added	
R9	CBRS RRH - RT4401-48A	13.9	8.6	3	3	a	Behind	48	0	Added	

Maser Consulting Connecticut

Subject	*TIA-222-H Usage*		
Site Information	*Site ID:*	*469290-VZW / GREENWICH 3 CT*	
	Site Name:	*GREENWICH 3 CT*	
	Carrier Name:	*Verizon Wireless*	
	Address:	*9 Sound Shore Drive Greenwich, Connecticut 06830 Fairfield County*	
	Latitude:	*41.029711°*	
	Longitude:	*-73.59835°*	
Structure Information	*Tower Type:*	*148-Ft Monopole*	
	Mount Type:	*6.50-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,

Pete Albano, P.E.
Project Manager

ATTACHMENT 5

This map was produced from the Town of Greenwich Geographic Information System. The Town expressly disclaims any liability that may result from the use of this map. Aerial: 4/2/08. Data: 10/1/10. Map: 4/4/11.

TOWN OF GREENWICH TAX MAP 368

ADMINISTRATIVE INFORMATION

PARCEL NUMBER
02-1708/S

Parent Parcel Number

Property Address
SOUND SHORE DRIVE 0012

Neighborhood
2300 EAST PUTNAM

Property Class
402 Electical Transformer Station

TAXING DISTRICT INFORMATION

Jurisdiction 57 Greenwich, CT
Area 001
Corporation 057
District 02
Section & Plat 236
Routing Number 7890S0004Z

OWNERSHIP

CONNECTICUT LIGHT & POWER CO
PO BOX 270
HARTFORD, CT 06101

LOT NO 15 & 18A SOUND SHORE DR S4Z

Tax ID 368/039

Printed 04/27/2022 Card No. 1 of 1

TRANSFER OF OWNERSHIP

Date			
12/29/1959	NA	Bk/Pg: 626, 322	$0

UTILITY

VALUATION RECORD

Assessment Year		10/01/2016	10/01/2017	10/01/2018	10/01/2019	10/01/2020	10/01/2021	10/01/2021
Reason for Change		2016 List	2017 List	2018 List	2019 List	2020 List	2021 Prelim	2021 Final
VALUATION Market	L	2383100	2383100	2383100	2383100	2383100	2383100	2383100
	B	93500	93500	93500	93500	93500	94700	94700
	T	2476600	2476600	2476600	2476600	2476600	2477800	2477800
VALUATION 70% Assessed	L	1668170	1668170	1668170	1668170	1668170	1668170	1668170
	B	65450	65450	65450	65450	65450	66290	66290
	T	1733620	1733620	1733620	1733620	1733620	1734460	1734460

Site Description

Topography:

Public Utilities:
Electric

Street or Road:

Neighborhood:

Zoning:
WB Waterfront Business

Legal Acres:
1.5000

LAND DATA AND CALCULATIONS

Land Type	Rating Soil ID -or- Actual Frontage	Measured Acreage -or- Effective Frontage	Table 100 Effective Depth	Prod. Factor -or- Depth Factor -or- Square Feet	Base Rate	Adjusted Rate	Extended Value	Influence Factor	Value
1 Primary Commercial				65340.00	104.21	104.21	6808900	1 -65%	2383100

BP18: 15-3958: $55,000 Verizon Replace Antennas
GEN: CL&P Transformer Station.
Improved w/ Jet Generators owned by CT Jet Power
PP Acnt # 01-27287.
added 's' 2/27/14 per e-mail from c mandras
O/O: Owner-Occupied Commercial

Permit Number Type	FilingDate	Est. Cost Est. SqFt	Field Visit

Supplemental Cards
TRUE TAX VALUE 2383100

Supplemental Cards
TOTAL LAND VALUE 2383100

IMPROVEMENT DATA

PHYSICAL CHARACTERISTICS

ROOFING

Built-up

WALLS

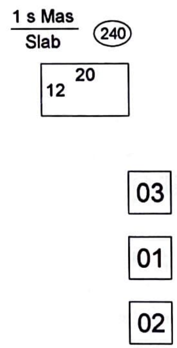
	B	1	2	U
Frame				
Brick				
Metal				
Guard				

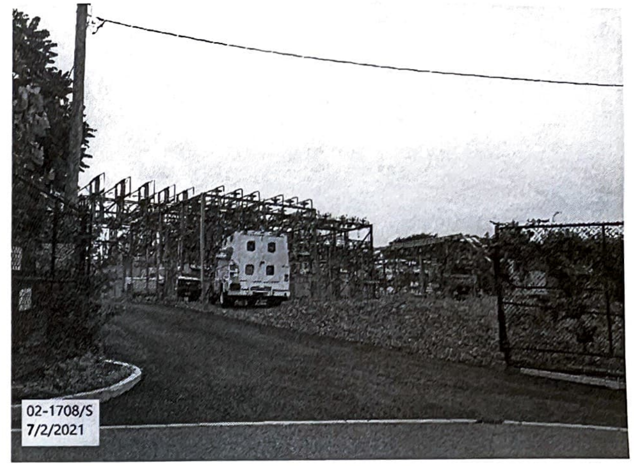
FRAMING

	B	1	2	U
F Res	0	240	0	0

HEATING AND AIR CONDITIONING

	B	1	2	U
Heat	0	240	0	0





(LCM: 150.00)

SPECIAL FEATURES

Description	Value
03 : BW	

SUMMARY OF IMPROVEMENTS

ID	Use	Stry Hgt	Const Type	Grade	Year Const	Eff Year	Cond	Base Rate	Feat-ures	Adj Rate	Size or Area	Computed Value	Phys Depr	Obsol Depr	Market Adj	% Comp	Value
C	HUTLSTOR	0.00		Good	2006	2006	GD	0.00	N	0.00	240	0	0	0	150	100	40500
01	UTLSHED	1.00	1	Fair	1980	1985	AV	44.50	N	53.40	20x 40	42720	45	0	100	100	23500
02	UTLSHED	1.00	1	Fair	1970	1985	AV	44.50	N	53.40	20x 36	38450	45	0	100	100	21200
03	FENCECL	6.00	51C	Avg	1970	1985	AV	19.20	Y	28.80	520	17220	45	0	100	100	9500

Data Collector/Date	Appraiser/Date	Neighborhood	Supplemental Cards	
TD 07/02/2021	TOG 10/01/2021	Neigh 2300 AV	TOTAL IMPROVEMENT VALUE	94700

ATTACHMENT 6

UNITED STATES POSTAL SERVICE ®

GREENWICH 3

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103	3	3	OLD STATE HOUSE STATION 06103 MAY 17 2022 USPS neopost 05/17/2022 US POSTAGE $002.99⁰ ZIP 06103 041L12203937
	Postmaster, per (*name of receiving employee*)		

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Fred Camillo, First Selectman Town of Greenwich 101 Field Point Road Greenwich, CT 06830				
2.	Katie DeLuca, Director of Planning and Zoning Town of Greenwich 101 Field Point Road Greenwich, CT 06830				
3.	Connecticut Light & Power P.O. Box 270 Hartford, CT 06101				
4.					
5.					
6.					