NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Northeast Site Solutions
Victoria Masse
420 Main Street #2, Sturbridge, MA 01566
860-306-2326
victoria@northeastsitesolutions.com

September 13, 2021

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

RE: Notice of Exempt Modification
280 Morehouse Drive, Fairfield CT 06825
Latitude: 41.20998700
Longitude: -73.26153900
T-Mobile Site#: CT11317B_L600

Dear Ms. Bachman:
T-Mobile currently maintains six (6) antennas at the 95-foot level of the existing 86-foot transmission pole (#876) located at 280 Morehouse Drive, Fairfield CT. The electric transmission pole (#876) is owned by CL&P d/b/a Eversource. The property which holds the utility easement is owned by Zhang Chijian & Hu Yuzhi. T-Mobile now intends to replace three (3) existing antennas with three (3) new 600/700MHz antenna. The new antennas would be installed at the 95-foot level of the tower. This modification includes B2, B5 hardware that is both 4G (LTE), and 5G capable. T-Mobile is also proposing tower structure reinforcements from the foundation through the structure. Please see enclosed reinforcement drawings by Centek Engineering dated September 16, 2021.
T-Mobile Planned Modifications:
Remove:
NONE

Remove and Replace:
(3) Andrew LNX-6515DS Antenna (Remove) – (3) RFS APXVAALL24_43 600/700 MHz Antenna (Replace)

Install New:
(3) Andrew Smart Bias Tees
(1) Handrail Kit
(6) Coax

Existing to Remain:
(3) RFS APX16DWV-16DWVS 1900/2100 MHz Antenna
(3) Andrew Smart Bias Tees
(18) Coax

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Ground Work:
(3) Existing Radios (Remove) – (3) Radio 4449 B71 + B85 (Replace)
(6) Existing TMA's (Remove)
Install (1) BB6648 Support Cabinet (on existing pad)

This facility was approved by the CT Siting Council. Per the attached Petition No. 525 – Dated September 12, 2001. Sprint received approval to install with a 104' centerline (petition number 383) and Voicestream received approval to install antenna with a 95' centerline on the existing CL&P transmission structure. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §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 First Selectman Mike Tetreau, Elected Official and Joe Devonshuk, Planning Director for the Town of Fairfield, as well as the property owner and the tower owner.

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

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

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

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

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

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

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

Sincerely,

Victoria Masse
Mobile: 860-306-2326
Fax: 413-521-0558
Office: 420 Main Street, Unit 2, Sturbridge MA 01566
Email: victoria@northeastsitesolutions.com

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Turnkey Wireless Development

Attachments:

cc:
The Honorable Brenda Kupchick- First Selectwomen
Sullivan Independence Hall, Second Floor
725 Old Post Road
Fairfield, CT 06824

Jim Wendt- Planning Director
Sullivan Independence Hall
725 Old Post Road
Fairfield, CT 06824

CL&P d/b/a Eversource - as tower owner
56 Prospect St., First Floor
Hartford, CT 06103

Zhang Chijian & Hu Yuzhi- Utility Easement
280 Morehouse Drive
Fairfield, CT 06824

Exhibit A

Petition No. 475
Voicestream Wireless
Fairfield, Connecticut
Staff Report
August 31, 2000

On August 22, 2000, Connecticut Siting Council (Council) member Edward S. Wilensky met Voicestream Wireless (Voicestream) representatives J. Brendan Sharkey, Esq., Haider Syed, Brian Raggazine, and David Wicanpole for inspection of a Connecticut Light & Power Company (CL&P) electric transmission line structure (no. 876) located off Morehouse Drive, Fairfield. 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.

This site consists of an existing Fort Worth Powermount™ installed within the 84-foot high CL&P transmission line support structure by Sprint Spectrum L.P. approved by the Council on December 18, 1997 (Petition No. 383). Sprint's antennas are mounted to a platform with a centerline height of 104 feet above ground level. At that time Sprint contended a distance of about 10 feet would be necessary between the antenna support platform and the top of the tower as a minimum to maintain electric safety clearances. Also, the Council's approval in Petition 383 required Sprint to install landscaping; however, this landscaping appears to have little or no upkeep uncharacteristic to the neighborhood. Staff recommends that landscaping be restored.

Voicestream proposes to attach a platform, similar to Sprint, with three antennas at a centerline height of 95 feet attached to the platform on the Powermount™ structure. The distance between the bottom of Voicestream's antenna and CL&P's shield wire would be four feet. While CL&P approves of this design it would be two feet less than their minimum separation. A structural analysis concludes that one x-brace at the top conductor level would be overstressed one percent and the south foundations of the structure would be overstressed two percent; however these calculations are considered acceptable with no additional reinforcement necessary. Also, Voicestream would place associated equipment cabinets on a 9-foot by 10-foot steel platform supported by concrete piers within the structure's footprint and within an existing wood fence compound. Electric telephone utilities would be placed underground from an existing distribution pole. No clearing or grading is proposed.

The proposed site is within an R-3 Residential District zone. There are three homes approximately 150 feet; one each located north, east, and south, of the transmission structure.

The worst case power density for the telecommunications operations at the site has been calculated to be less than 4.5% 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.

Petition No. 383
Sprint Personal Communications System
Fairfield, Connecticut
Staff Report
November 19, 1997

On November 10, 1997, Edward S. Wilensky of the Connecticut Siting Council (Council), and Fred O. Cunliffe of the Council staff met Karen Johnson representing Sprint Personal Communications System (Sprint), and Dorian Hill of the Connecticut Light and Power Company (CL&P) for a field review of this petition in Fairfield, Connecticut. Sprint is petitioning the Council for a determination that no Certificate of Environmental Compatibility and Public Need would be required for proposed modifications to a structure on the existing CL&P Weston to Pequonnock to Devon and Norwalk to Hawthorne double circuit 115 kV electric transmission lines, because the proposed construction would not have a substantial adverse environmental effect.

Sprint proposes to install a 101-foot power mount pole within an existing 86-foot CL&P transmission line structure off of Morehouse Drive in Fairfield, Connecticut. This new monopole with antennas would extend approximately 18 feet above the existing transmission line structure. Sprint would attach nine panel antennas to a platform on the power mount pole, and install communications equipment on an 8-foot by 11-foot concrete pad adjacent to the existing tower. Two supports of the tower and equipment would be surrounded by a 6-foot chain link security fence. An approximate 12-foot by 65-foot stone-covered access drive and staging area is proposed to be constructed off Morehouse Drive to the site. Utilities would run overhead from an existing pole across Morehouse Drive to a new pole placed within the CL&P right-of-way and placed underground to Sprint's equipment. A United Illuminating representative investigated the placement of utilities underground from the existing pole; however, this pole location is not configured to allow for permanent underground utility connection. While clearing of a six-inch cedar tree and shrub vegetation would be required, Sprint proposes to use erosion and sedimentation controls consistent with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, and to plant four (six-foot) white pines on the southeast corner of the fenced site.

The existing transmission structure is adjacent to Morehouse Drive and is approximately 125 feet from three homes, one each located north, east, and south of the transmission structure. Sprint has informed these neighbors of the proposed project. Adjacent steel lattice structures on this line are 86- and 81-feet in height but are at lower elevations and do not have short access.

The installation and operation of the proposed PCS antennas would not increase the total radio frequency electromagnetic power density of the proposed site to a level at or above the State standards for the proposed antenna frequencies. Based on conservative assumptions, the power density at the base of the proposed tower would constitute 4.7 percent of the maximum permissible exposure for the proposed frequencies, as defined by the Federal Communications Commission.

Sprint contends that the proposed project will not result in a substantial adverse effect on the environment, ecology nor will there be damage to existing scenic, historical, or recreational values. Furthermore, Sprint will not have a need to construct a new tower in the project area if the Council determines that no Certificate is required.

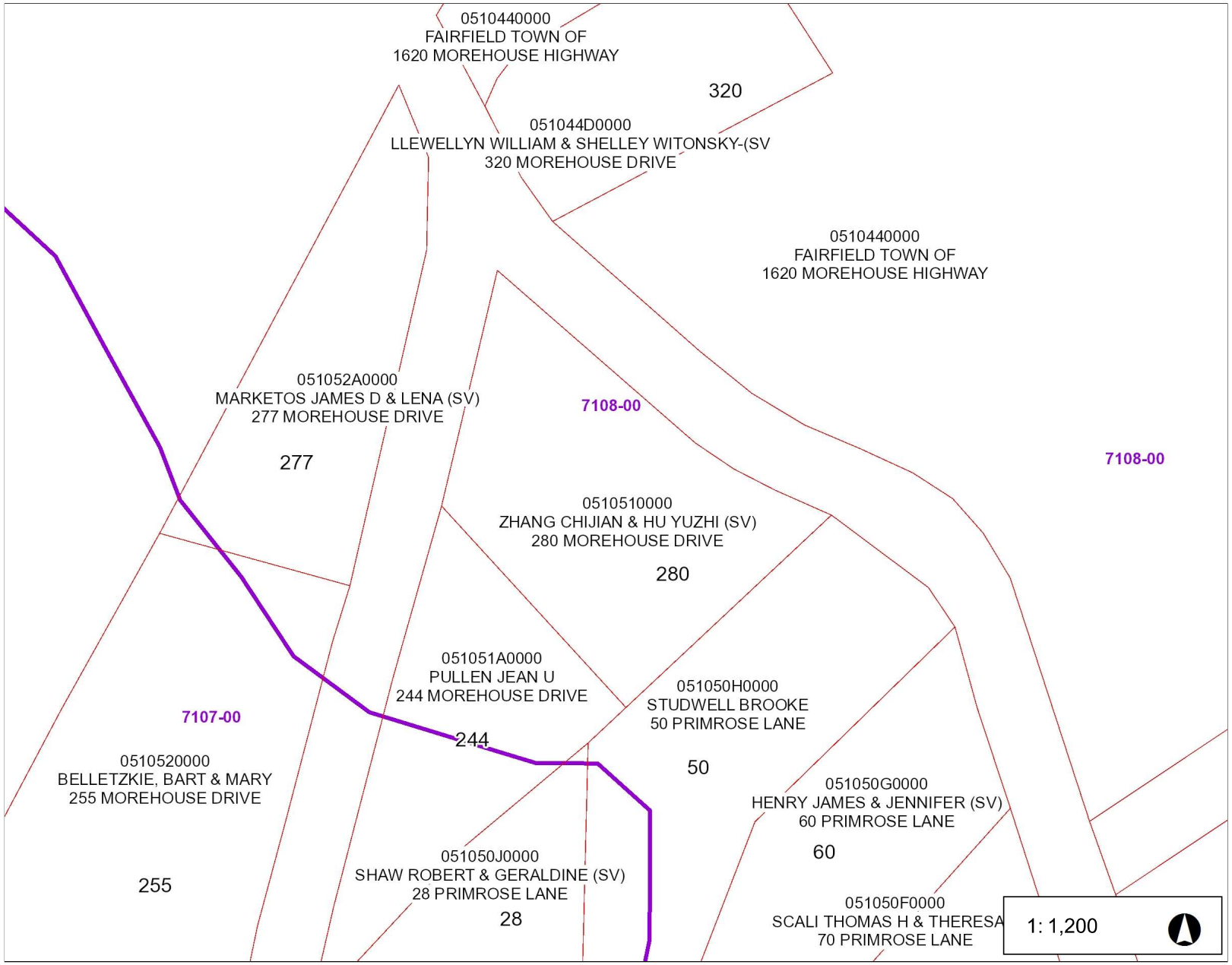
Petition 383 Schedule

Petition submitted	November 03, 1997
Field Reviewed	November 10, 1997
Responses to Interrogatories received	November 17, 1997
Council consideration at public meeting	November 19, 1997
Hearing	December 09, 1997
[Optional dates	Dec. 04, or 11, 1997]
Decision	December 16, 1997

Exhibit B

Town of Fairfield

Title



Legend

- Parcels
- Local Basin Boundary
  - Major
  - Regional
  - Subregional
  - Local
- Local Basin Area

200.0 0 100.00 200.0 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Created by Greater Bridgeport Regional Council

METROCOG
Connecticut Metropolitan Council of Governments

280 MOREHOUSE DRIVE

Location	280 MOREHOUSE DRIVE	**Mblu**	51/ 51/ / /
Acct#	17416	**Owner**	ZHANG CHIJIAN & HU YUZHI (SV)
Assessment	$362,950	**Appraisal**	$518,500
PID	5101	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$232,900	$285,600	$518,500
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$163,030	$199,920	$362,950

Owner of Record

Owner	ZHANG CHIJIAN & HU YUZHI (SV)	**Sale Price**	$300,000
Co-Owner		**Certificate**	
Address	280 MOREHOUSE DRIVE FAIRFIELD, CT 06824-2374	**Book & Page**	2095/ 192
		Sale Date	03/06/2000
		Instrument	07

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
ZHANG CHIJIAN & HU YUZHI (SV)	$300,000		2095/ 192	07	03/06/2000
FLEET BANK,N.A.	$0		2060/ 112		11/10/1999
STONE WILLIAM & SANDRA	$0		620/ 360		08/06/1976

Building Information

Building 1 : Section 1

Year Built:	1976
Living Area:	2,172
Replacement Cost:	$362,258
Building Percent Good:	63

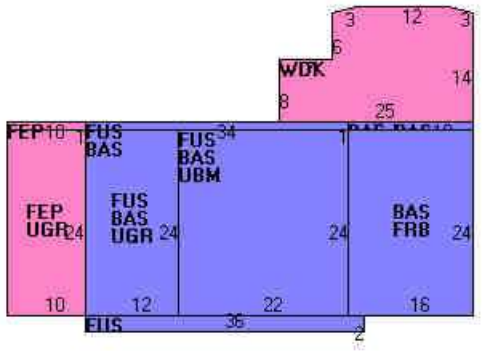
Replacement Cost
Less Depreciation: $228,200

Building Attributes	
Field	**Description**
Style	Colonial
Stories:	2 Stories
Occupancy	1
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	
Roof Structure:	Gable/Hip
Roof Cover	Asphalt
Interior Wall 1	Drywall
Interior Wall 2	
Interior Flr 1	Linoleum
Interior Flr 2	Hardwood
Heat Fuel	Gas
Heat Type:	Hot Water
AC Type:	Central
Total Bedrooms:	4 Bedrooms
Total Bthrms:	2
Total Half Baths:	1
Total Xtra Fixtrs:	
Total Rooms:	9 Rooms
Bath Style:	Average
Kitchen Style:	Average
FCPZ	

Building Photo

(http://images.vgsi.com/photos2/FairfieldCTPhotos//\02\03\80/6

Building Layout



(http://images.vgsi.com/photos2/FairfieldCTPhotos//Sketches/51

Building Sub-Areas (sq ft)			
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	1,250	1,250
FUS	Upper Story, Finished	922	922
FEP	Porch, Enclosed, Finished	250	0
FRB	Finished Raised Bsmt	384	0
UBM	Basement, Unfinished	534	0
UGR	Garage, Under	528	0
WDK	Deck, Wood	323	0
		4,191	2,172

Extra Features

Extra Features				
Code	**Description**	**Size**	**Value**	**Bldg #**
FPL3	2.0 STORY FIREPLACE	1 UNITS	$4,700	1

Land

Land Use

Use Code	1010
Description	Single Fam MDL-01
Zone	R3
Neighborhood	0085
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0.79
Depth	0
Assessed Value	$199,920
Appraised Value	$285,600

Outbuildings

Outbuildings	Legend
No Data for Outbuildings	

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$232,900	$285,600	$518,500
2017	$232,900	$285,600	$518,500
2016	$232,900	$285,600	$518,500

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$163,030	$199,920	$362,950
2017	$163,030	$199,920	$362,950
2016	$163,030	$199,920	$362,950

Exhibit C

SITE NAME: FAIRFIELD/MP/X44&X42
SITE ID: CT11317B
280 MOREHOUSE DRIVE
(TOWER 876, LINE 1730)
FAIRFIELD, CT 06825

T-MOBILE A&L TEMPLATE (PROVIDED BY RFDS)
67D94B_1DP+1QP+1OP

T-MOBILE RAN TEMPLATE (PROVIDED BY RFDS)
67D94B_FLAGPOLE OUTOOR

GENERAL NOTES

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

SITE DIRECTIONS

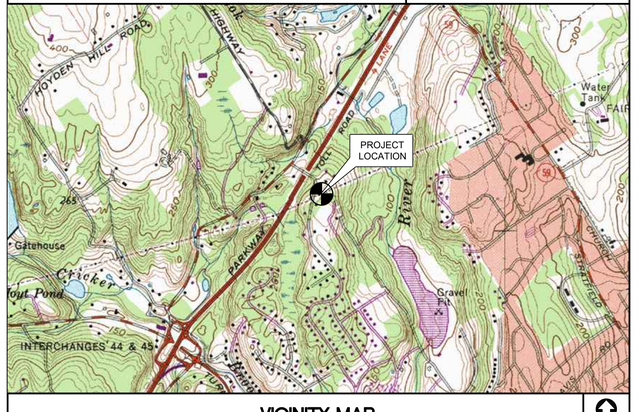
FROM: 35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

TO: 280 MOREHOUSE DRIVE
FAIRFIELD, CT 06825

1.	START OUT BY GOING TO WAYSIDE ROAD.	0.12 MI.
2.	TURN LEFT ONTO CAMBRIDGE ST/US-3 N/MA	0.12 MI.
3.	MERGE ONTO I-95 S/MA-128 S/YANKEE DIVISION HWY S TOWARD WALTHAM/LOWELL	0.27 MI.
4.	TAKE THE I-90/MASS PIKE EXIT, EXIT 25, TOWARD BOSTON/ALBANY NY.	12.32 MI.
5.	MERGE ONTO I-90 W/MASSACHUSETTS TPKE W TOWARD WORCESTER (PORTIONS TOLL).	0.32 MI.
6.	MERGE ONTO I-84 W/WILBUR CROSS HWY S VIA EXIT 9 TOWARD US-20(PORTIONS TOLL).	44.45 MI.
7.	KEEP LEFT TO TAKE CT-15 S VIA EXIT 57 TOWARD I-91 S/CHARTER OAK BR/NY CITY.	41.73 MI.
8.	MERGE ONTO I-91 S VIA EXIT 86 TOWARD NEW HAVEN/NY CITY.	1.99 MI.
9.	MERGE ONTO CT-15 S VIA EXIT 17 TOWARD E MAIN ST.	17.07 MI.
10.	TAKE EXIT 46 TOWARD CONGRESS ST.	36.30 MI.
11.	TURN LEFT ONTO CONGRESS ST.	0.64 MI.
12.	TURN LEFT ONTO MOREHOUSE DR.	0.10 MI.
13.	THE DESTINATION WILL BE ON THE LEFT.	

SITE COORDINATES: LATITUDE: 41°-12'-36.1" N
LONGITUDE: 73°-15'-41.6" W
GROUND ELEVATION: 230'± AMSL

COORDINATES AND GROUND ELEVATION ARE REFERENCED FROM GOOGLE EARTH



VICINITY MAP — NORTH

PROJECT SUMMARY

THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:

1. REMOVE (3) EXISTING ANDREW – LNX-6515DS-A1M ANTENNAS
2. REMOVE (3) EXISTING RADIOS AT CABINETS
3. INSTALL (6) 1-1/4" COAX CABLES FOR NEW TOTAL OF (24)
4. INSTALL RADIO 4449 B71+B85 TYP. (1) PER SECTOR. TOTAL (3)
5. INSTALL (3) RFS-APXVAALL24_43-U-NA20 ANTENNAS
6. INSTALL (3) NEW ANDREW SMART BIAS T DEVICES AT ANTENNAS
7. TOWER REINFORCEMENT AND HAND-RAIL KIT TO BE INSTALLED

PROJECT SUMMARY (STRUCTURAL)

FOR REQUIRED STRUCTURAL MODIFICATIONS, SEE SHEET(S) S-1 FOR ADDITIONAL DETAILS. TOWER REINFORCEMENT TO BE INSTALLED ALONG WITH THE INSTALLATION OF HAND-RAIL KIT AT ANTENNAS.

PROJECT INFORMATION

SITE NAME:	FAIRFIELD/MP/X44&X42
SITE ID:	CT11317B
SITE ADDRESS:	280 MOREHOUSE DRIVE FAIRFIELD, CT 06825
APPLICANT:	T-MOBILE NORTHEAST, LLC 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002
CONTACT PERSON:	SHELDON FREINCLE (PROJECT MANAGER) NORTHEAST SITE SOLUTIONS (203) 776-8521
ENGINEER OF RECORD:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405 CARLO F. CENTORE, PE (203) 488-0580 EXT. 122
PROJECT COORDINATES:	LATITUDE: 41°-12'-36.1" N LONGITUDE: 73°-15'-41.6" W GROUND ELEVATION: 230'± AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	07/23/21	ASC	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION
A	09/16/21	ASC	TJR	CONSTRUCTION DRAWINGS - REVISED STRUCTURAL COMPLIANCE NOTE

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

T-MOBILE NORTHEAST LLC

SITE NAME:FAIRFIELD/MP/X44&X42
SITE ID: CT11317B
280 MOREHOUSE DRIVE
FAIRFIELD, CT 06825

DATE: 06/17/21
SCALE: AS NOTED
JOB NO. 21051.10

TITLE SHEET

T-1

Sheet No. 1 of 9

NOTES AND SPECIFICATIONS

DESIGN BASIS:

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

1. DESIGN CRITERIA:

- RISK CATEGORY II (BASED ON IBC TABLE 1604.5)
- NOMINAL DESIGN SPEED (OTHER STRUCTURE): 97 MPH (Vasd) (EXPOSURE B/ IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-10).

SITE NOTES

1. THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
2. ACTIVE EXISTING UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY, PRIOR TO PROCEEDING, SHOULD ANY UNCOVERED EXISTING UTILITY PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
3. THE AREAS OF THE COMPOUND DISTURBED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.
4. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
5. 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.

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2015 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2018 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "G" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2017 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
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3. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
4. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
5. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
7. LOCATION OF EQUIPMENT AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS, SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
8. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND IT'S COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
9. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
10. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
11. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
12. ANY AND ALL ERRORS, DISCREPANCIES, AND "MISSED" ITEMS, ARE TO BE BROUGHT TO THE ATTENTION OF THE SITE OWNER'S CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
14. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
15. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
16. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
17. 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.
18. THE CONTRACTOR SHALL CONTACT 'CALL BEFORE YOU DIG' AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
18. CONTRACTOR SHALL COMPLY WITH OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
19. THE COUNTY/CITY/TOWN WILL MAKE PERIODIC FIELD OBSERVATION AND INSPECTIONS TO MONITOR THE INSTALLATION, MATERIALS, WORKMANSHIP AND EQUIPMENT INCORPORATED INTO THE PROJECT TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, CONTRACT DOCUMENTS AND APPROVED SHOP DRAWINGS.
20. THE COUNTY/CITY/TOWN MUST BE NOTIFIED (2) WORKING DAYS PRIOR TO CONCEALMENT/BURIAL OF ANY SYSTEM OR MATERIAL THAT WILL PREVENT THE DIRECT INSPECTION OF MATERIALS, METHODS OR WORKMANSHIP. EXAMPLES OF THESE PROCESSES ARE BACKFILLING A GROUND RING OR TOWER FOUNDATION, POURING TOWER FOUNDATIONS, BURYING GROUND RODS, PLATES OR GRIDS, ETC. THE CONTRACTOR MAY PROCEED WITH THE SCHEDULED PROCESS (2) WORKING DAYS AFTER PROVIDING NOTICE UNLESS NOTIFIED OTHERWISE BY THE COUNTY/CITY/TOWN.

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SITE NAME:FAIRFIELD/MP/X44&X42

SITE ID: CT11317B

280 MOREHOUSE DRIVE

FAIRFIELD, CT 06825

DATE: 06/17/21

SCALE: AS NOTED

JOB NO. 21051.10

GENERAL NOTES AND SPECIFICATIONS

N-1

NOTE:
ALL COAX LENGTHS TO BE MEASURED
AND VERIFIED IN FIELD BEFORE ORDERING

ANTENNA SCHEDULE

SECTOR	EXISTING/PROPOSED	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	(E/P) RRU (QTY)	(E/P) TMA (QTY)	(QTY) PROPOSED COAX
A1	EXISTING	RFS (APX16DWV-16DWV-S-E-A20)	55.9 x 13 x 3.15	95'	60°		(P) ANDREW-SMART BIAS-T (AT ANTENNA) (1)	(2) COAX CABLES
A2	PROPOSED	RFS (APXVAARR24_43-U-NA20)	95.9 x 24 x 8.5	95'	60°	(P) RADIO 4449 B71+B85 (AT CABINET) (1)	(E) ANDREW-SMART BIAS-T (AT ANTENNA) (1)	
B1	EXISTING	RFS (APX16DWV-16DWV-S-E-A20)	55.9 x 13 x 3.15	95'	180°		(P) ANDREW-SMART BIAS-T (AT ANTENNA) (1)	(2) COAX CABLES
B2	PROPOSED	RFS (APXVAARR24_43-U-NA20)	95.9 x 24 x 8.5	95'	180°	(P) RADIO 4449 B71+B85 (AT CABINET) (1)	(E) ANDREW-SMART BIAS-T (AT ANTENNA) (1)	
C1	EXISTING	RFS (APX16DWV-16DWV-S-E-A20)	55.9 x 13 x 3.15	95'	300°		(P) ANDREW-SMART BIAS-T (AT ANTENNA) (1)	(2) COAX CABLES
C2	PROPOSED	RFS (APXVAARR24_43-U-NA20)	95.9 x 24 x 8.5	95'	300°	(P) RADIO 4449 B71+B85 (AT CABINET) (1)	(E) ANDREW-SMART BIAS-T (AT ANTENNA) (1)	

1 C-1 **SITE LOCATION PLAN**
SCALE: NOT TO SCALE

TRUE NORTH

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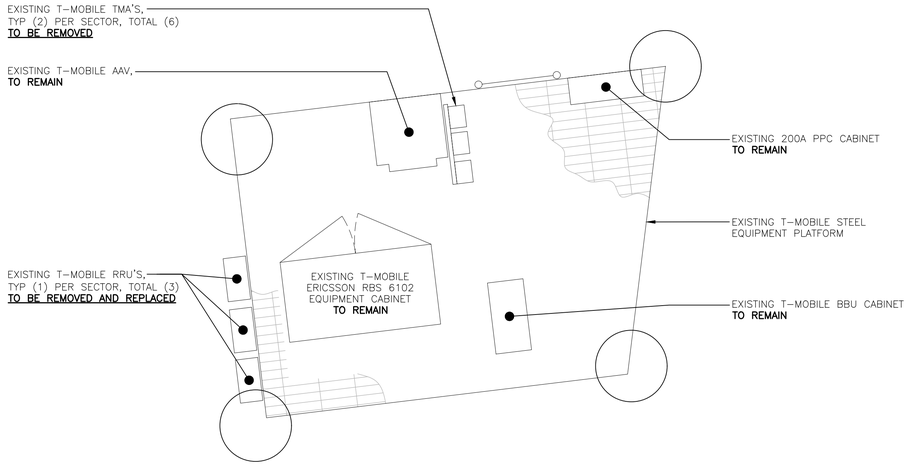
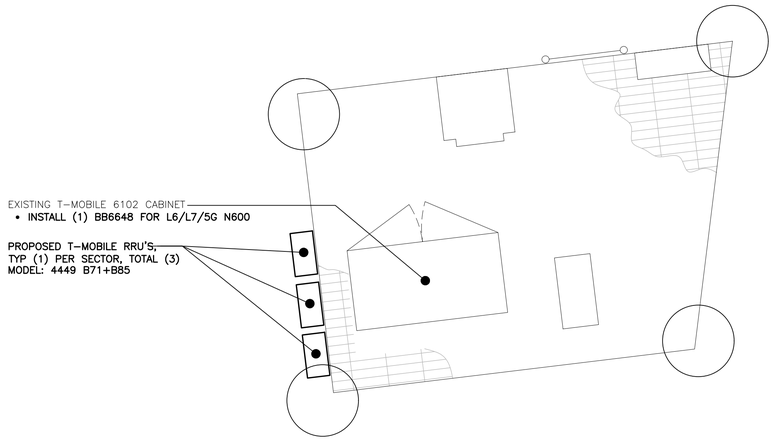
SITE LOCATION PLAN

C-1

Sheet No. 3 of 9



3 C-2 **EXISTING EQUIPMENT PLAN**
SCALE: 1/2" = 1'
TRUE NORTH



4 C-2 **PROPOSED EQUIPMENT PLAN**
SCALE: 1/2" = 1'
TRUE NORTH

STRUCTURAL COMPLIANCE

ANTENNA MOUNTS

A STRUCTURAL ANALYSIS OF THE ANTENNA MOUNTS WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY DEFICIENT AND WARRANTING MODIFICATION PRIOR TO INSTALLATION OF THE PROPOSED EQUIPMENT. FOR REQUIRED STRUCTURAL MODIFICATIONS, SEE SHEET(S) S-1 FOR ADDITIONAL DETAILS.

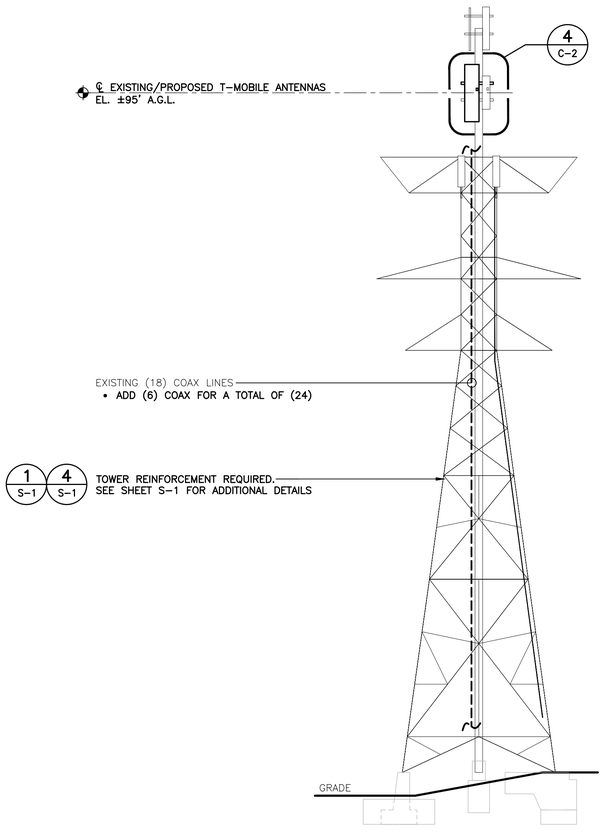
REFER TO THE ANTENNA MOUNT ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 21051.10) DATED 07/09/21 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

TOWER AND TOWER FOUNDATION

A STRUCTURAL ANALYSIS OF THE TOWER AND TOWER FOUNDATION WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE DEFICIENT AND WARRANTING MODIFICATION PRIOR TO INSTALLATION OF THE PROPOSED EQUIPMENT. FOR REQUIRED STRUCTURAL MODIFICATIONS, SEE SHEET(S) S-1 FOR ADDITIONAL DETAILS.

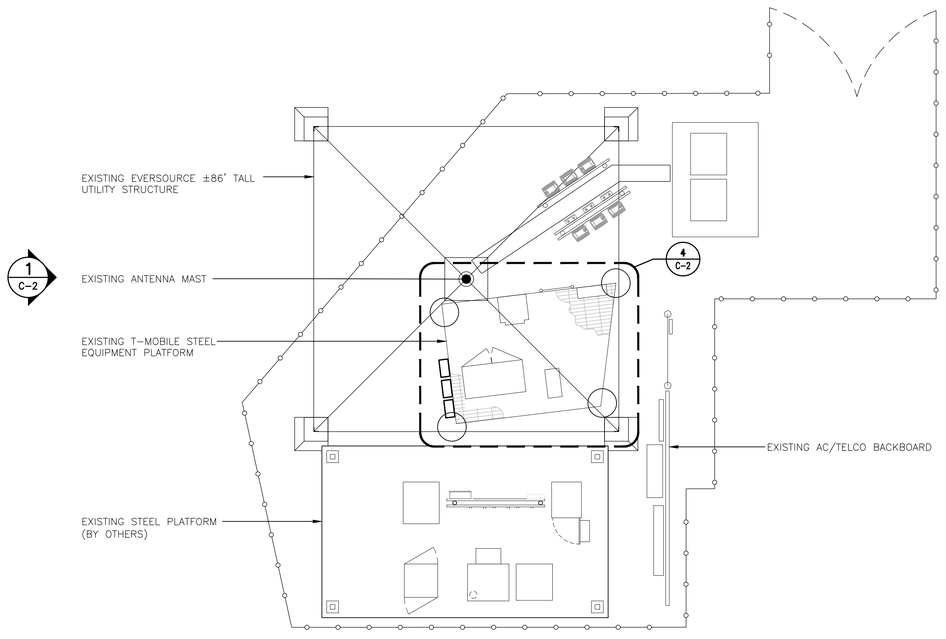
REFER TO THE STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 21051.10) DATED 09/09/21 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

NOTE: NO EQUIPMENT SHALL BE INSTALLED ON THE HOSTING STRUCTURE WITHOUT A PASSING STRUCTURAL ANALYSIS REPORT AND CONTRACTOR PRIOR CONFIRMATION THAT ANY AND ALL REQUISITE MODIFICATIONS HAVE BEEN COMPLETED.



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

GRAPHIC SCALE
10 0 5 10 20 40
1" = 10'-0"



2 C-2 **COMPOUND PLAN - PROPOSED**
SCALE: 1" = 5'
TRUE NORTH

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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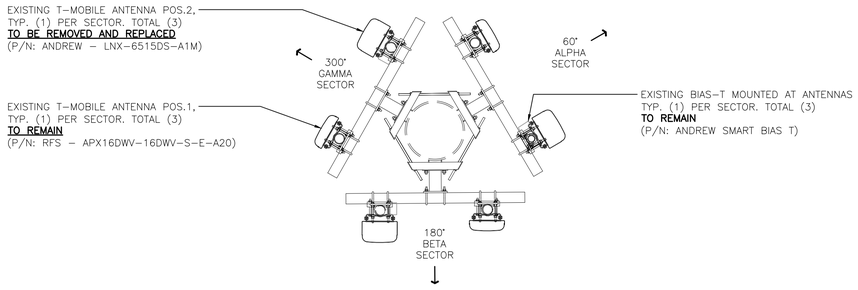
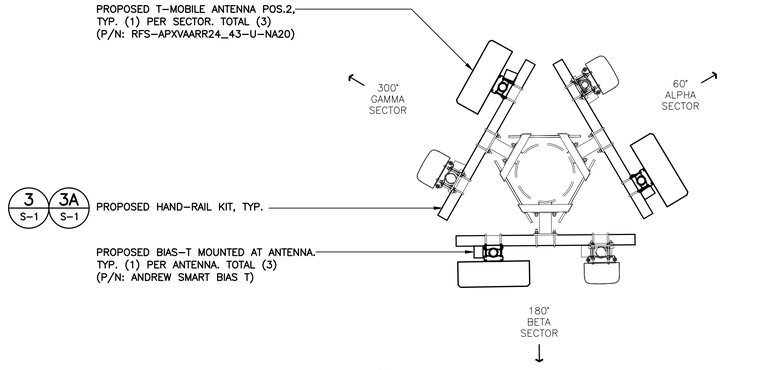
COMPOUND PLAN, EQUIPMENT PLANS, AND ELEVATION

C-2

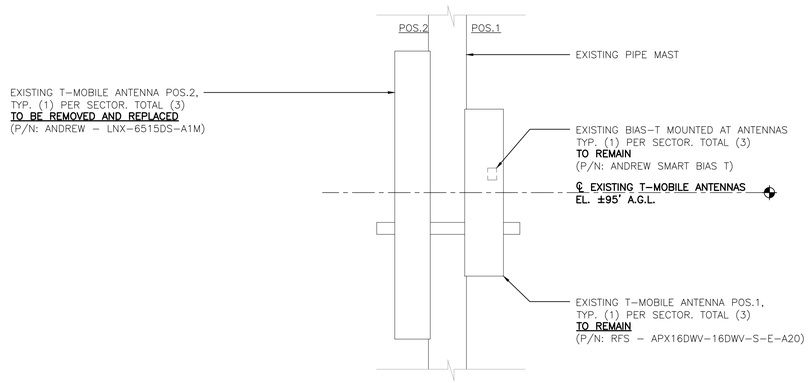
Sheet No. 4 of 9



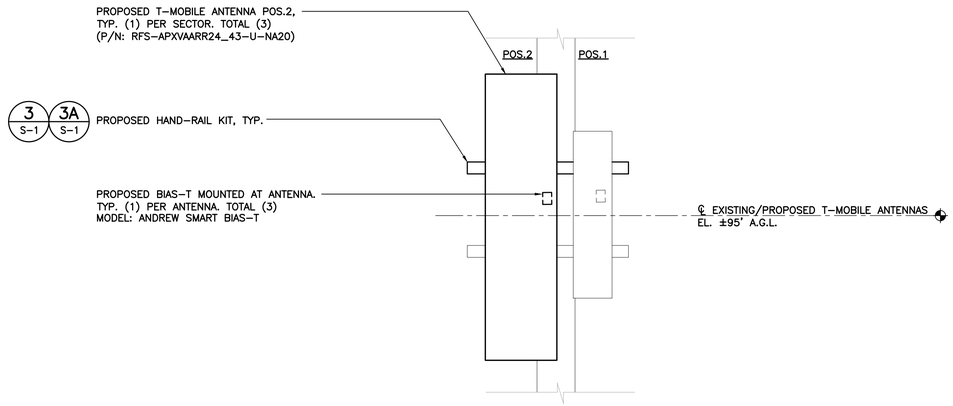
1 / C-3 **ANTENNA PLAN - EXISTING**
SCALE: 1/2" = 1'
TRUE NORTH



2 / C-3 **ANTENNA PLAN - PROPOSED**
SCALE: 1/2" = 1'
TRUE NORTH



1A / C-3 **ANTENNA ELEVATION - EXISTING**
SCALE: 1/2" = 1'



2A / C-3 **ANTENNA ELEVATION - PROPOSED**
SCALE: 1/2" = 1'

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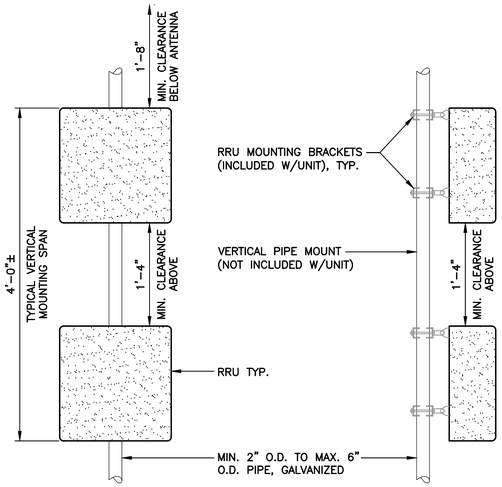
ANTENNA PLANS AND ELEVATIONS

C-3

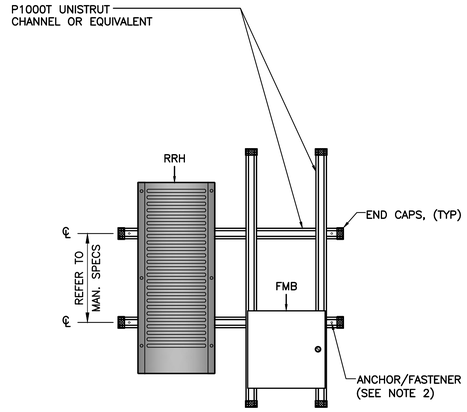
Sheet No. 5 of 9



FRONT ELEVATION SIDE ELEVATION

NOTES: (POLE MOUNTING)

1. T-MOBILE SHALL SUPPLY RRU, AND RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRU POLE-MOUNTING BRACKET.
2. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.



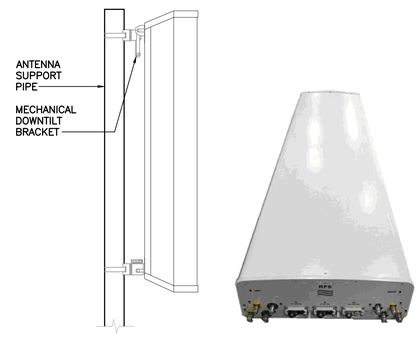
FRONT ELEVATION

NOTES: (UNISTRUT MOUNTING)

1. INSTALL A MINIMUM OF (2) ANCHORS PER UNISTRUT (± 16"o/c MIN).
2. MOUNT RRU TO UNISTRUT WITH 3/8"ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS. TYPICAL FOUR PER BRACKET.
3. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

1 C-4 TYPICAL RRU MOUNTING DETAILS

SCALE: NOT TO SCALE



APXVAALL24_43-U-NA20

ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: RFS MODEL: APXVAALL24_43-U-NA20	95.9"L x 24.0"W x 8.5"D	±150 LBS.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T-MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.

2 C-4 PROPOSED ANTENNA DETAIL

SCALE: NOT TO SCALE

ANDREW SMART BIAS TEE		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: COMMSCOPE MODEL: ATSBT-TOP-FF-4G	5.63"L x 3.7"W x 2"D	±1.7 LBS.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T-MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.

3 C-4 PROPOSED BIAS-T DETAIL

SCALE: NOT TO SCALE

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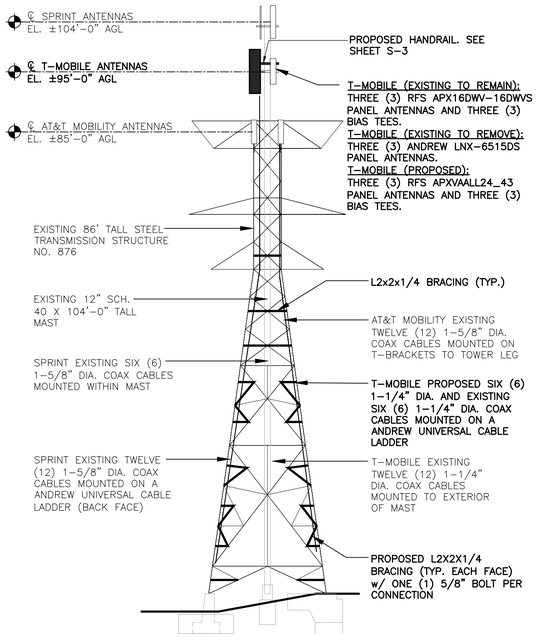
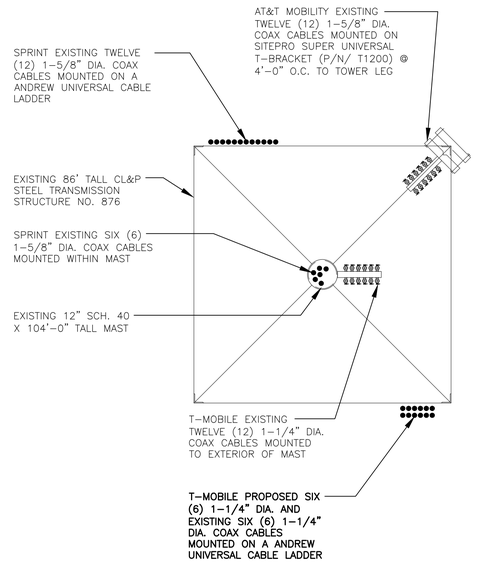
TYPICAL EQUIPMENT DETAILS

C-4

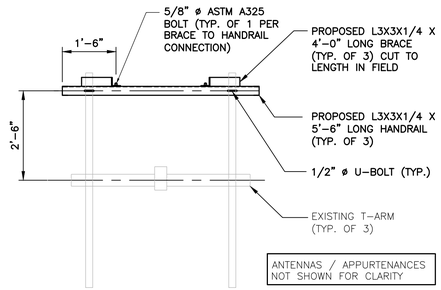
Sheet No. 6 of 9



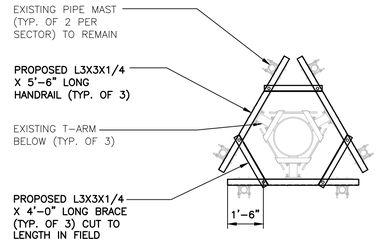
1 / S-1 TOWER & MAST ELEVATION
SCALE: NOT TO SCALE



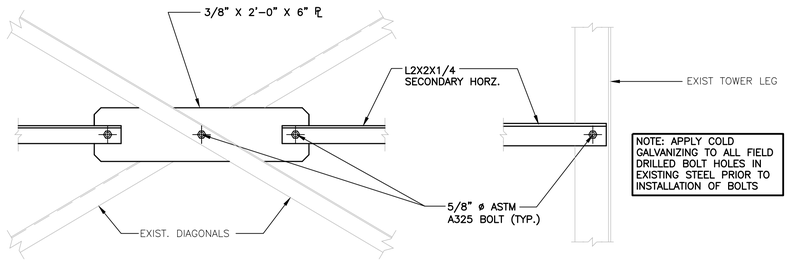
2 / S-1 FEEDLINE PLAN
SCALE: NOT TO SCALE

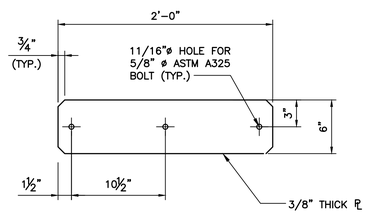


3 / S-1 MOUNT MOD ELEVATION
SCALE: NOT TO SCALE



3A / S-1 MOUNT MOD PLAN
SCALE: NOT TO SCALE





4 / S-1 TOWER REINFORCMENT DETAILS
SCALE: NOT TO SCALE

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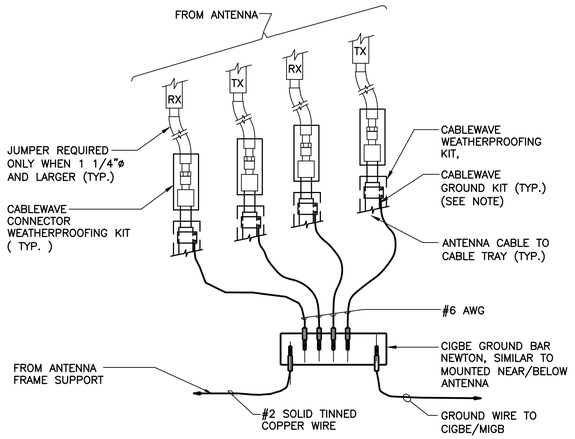
STRUCTURAL DETAILS

S-1

Sheet No. 7 of 9

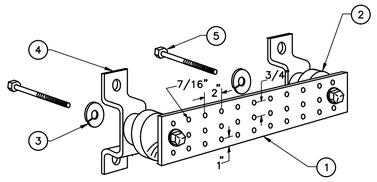


NOTES:

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

1 E-1 CONNECTION OF GROUND WIRES TO GROUND BAR

SCALE: NOT TO SCALE

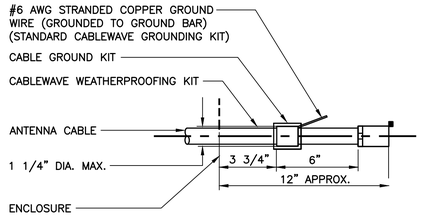


NOTES

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

2 E-1 GROUND BAR DETAIL

SCALE: NOT TO SCALE

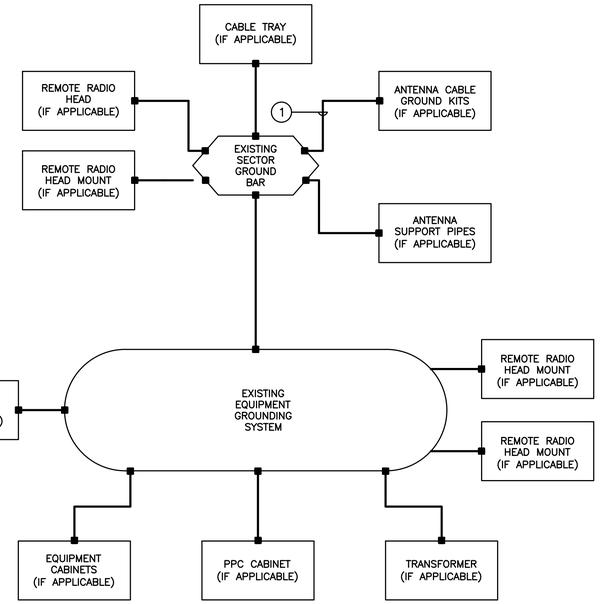


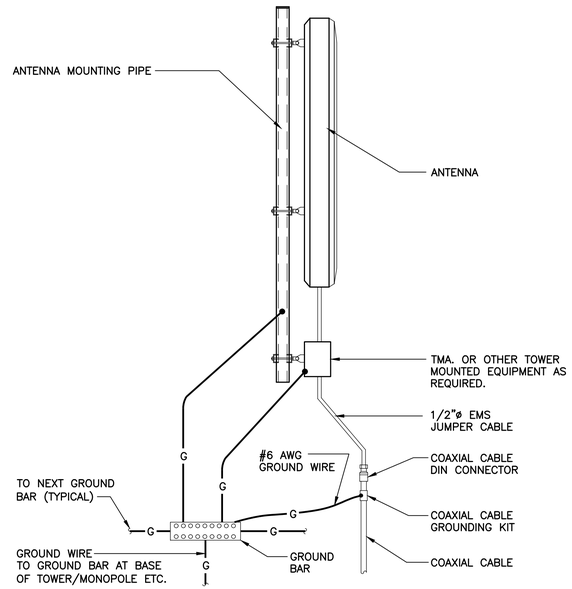
NOTES:

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

3 E-1 ANTENNA CABLE GROUNDING DETAIL

SCALE: NOT TO SCALE



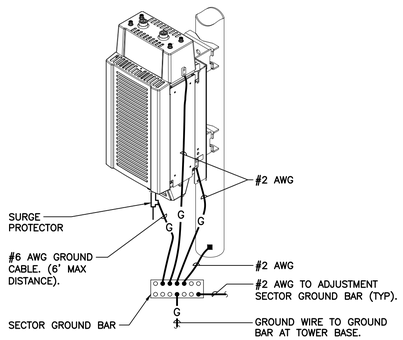


4 E-1 TYPICAL ANTENNA GROUNDING DETAIL

SCALE: NOT TO SCALE

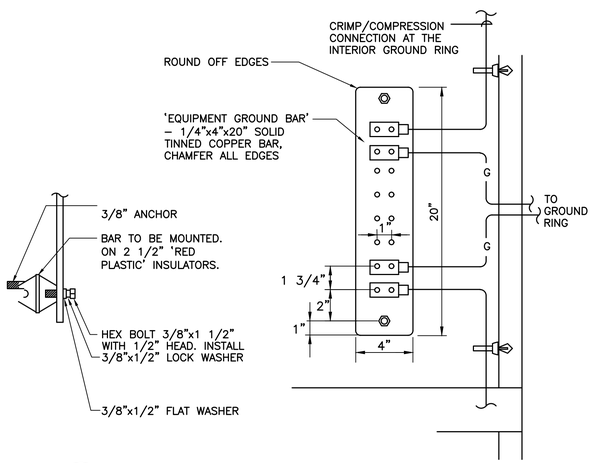
EACH RRH CABINET SHALL BE GROUNDED IN THE FOLLOWING MANNER:

1. AT TOP OF THE CABINET
2. AT RIGHT SIDE OF THE CABINET.



5 E-1 RRH POLE MOUNT GROUNDING

SCALE: NOT TO SCALE



6 E-1 EQUIPMENT GROUND BAR DETAIL

SCALE: NOT TO SCALE

GROUNDING SCHEMATIC NOTES

(1) #6 AWG

GENERAL NOTES:

1. ALL SURGE SUPPRESSION EQUIPMENT SHALL BE BONDED TO GROUND PER MANUFACTURER'S SPECIFICATIONS
2. UNLESS OTHERWISE NOTED OR REQUIRED BY CODE, GROUND CONDUCTORS SHOWN SHALL BE #2 AWG (SOLID TINNED BCW – EXTERIOR; STRANDED GREEN INSULATED – INTERIOR).
3. BOND CABLE TRAY SECTIONS TOGETHER WITH #6 AWG STRANDED GREEN INSULATED JUMPERS.
4. ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
5. BOND ALL EQUIPMENT CABINETS AND BATTERY CABINETS TO GROUND PER MANUFACTURER'S SPECIFICATIONS.
6. REFER TO ALL ELECTRICAL AND GROUNDING DETAILS.
7. COORDINATE ALL ROOF MOUNTED EQUIPMENT WITH OWNER.
8. ALL ROOF MOUNTED AMPLIFIERS AND ASSOCIATED EQUIPMENT SHALL BE BONDED TO THE SECTOR GROUND BAR PER MANUFACTURER'S SPECIFICATIONS.
9. ALL GROUNDING SHALL BE IN ACCORDANCE WITH NEC AND OWNER'S REQUIREMENTS.

7 E-1 ELECTRICAL SCHEMATIC DIAGRAM

SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	07/23/21	ASC	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION
A	09/16/21	ASC	TJR	CONSTRUCTION DRAWINGS – REVISED STRUCTURAL COMPLIANCE NOTE

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SITE NAME:FAIRFIELD/MP/X44&X42

SITE ID: CT11317B

280 MOREHOUSE DRIVE

FAIRFIELD, CT 06825

DATE: 06/17/21

SCALE: AS NOTED

JOB NO. 21051.10

TYPICAL ELECTRICAL DETAILS

E-1

Sheet No. 8 of 9

ELECTRICAL SPECIFICATIONS

1.00. GENERAL REQUIREMENTS

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

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

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

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

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

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

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

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

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

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

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

L. PROVIDE TEMPORARY POWER AND LIGHTING IN WORK AREAS AS REQUIRED.

M. SHOP DRAWINGS:

1. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF SHOP DRAWINGS ON ALL EQUIPMENT AND MATERIALS PROPOSED FOR USE ON THIS PROJECT, GIVING ALL DETAILS, WHICH INCLUDE DIMENSIONS, CAPACITIES, ETC.

2. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF ALL TEST REPORTS CALLED FOR IN THE SPECIFICATIONS AND DRAWINGS.

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

SECTION 16111

1.01. CONDUIT

A. MINIMUM CONDUIT SIZE FOR BRANCH CIRCUITS, LOW VOLTAGE CONTROL AND ALARM CIRCUITS SHALL BE 3/4". CONDUITS SHALL BE PROPERLY FASTENED AS REQUIRED BY THE N.E.C.

B. THE INTERIOR OF RACEWAYS/ENCLOSURES INSTALLED UNDERGROUND SHALL BE CONSIDERED TO BE WET LOCATION, INSULATED CONDUCTORS SHALL BE LISTED FOR USE IN WET LOCATIONS. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.

C. CONDUIT INSTALLED UNDERGROUND SHALL BE INSTALLED TO MEET MINIMUM COVER REQUIREMENTS OF TABLE 300.5.

D. PROVIDE RIGID GALVANIZED STEEL CONDUIT (RMC) FOR THE FIRST 10 FOOT SECTION WHEN LEAVING A BUILDING OR SECTIONS PASSING THROUGH FLOOR SLABS

E. ONLY LISTED PVC CONDUIT AND FITTINGS ARE PERMITTED FOR THE INSTALLATION OF ELECTRICAL CONDUCTORS, SUITABLE FOR UNDERGROUND APPLICATIONS.

CONDUIT SCHEDULE SECTION 16111

CONDUIT TYPE	NEC REFERENCE	APPLICATION	MIN. BURIAL DEPTH (PER NEC TABLE 300.5) [2,3]
EMT	ARTICLE 358	INTERIOR CIRCUITING, EQUIPMENT ROOMS, SHELTERS	N/A
RMC, RIGID GALV. STEEL	ARTICLE 344, 300.5, 300.50	ALL INTERIOR/ EXTERIOR CIRCUITING, ALL UNDERGROUND INSTALLATIONS.	6 INCHES
PVC, SCHEDULE 40	ARTICLE 352, 300.5, 300.50	INTERIOR/ EXTERIOR CIRCUITING AND GROUNDING SYSTEMS, UNDERGROUND INSTALLATIONS, WHERE NOT SUBJECT TO PHYSICAL DAMAGE. [1]	18 INCHES
PVC, SCHEDULE 80	ARTICLE 352, 300.5, 300.50	INTERIOR/ EXTERIOR CIRCUITING AND GROUNDING SYSTEMS, UNDERGROUND INSTALLATIONS, WHERE SUBJECT TO PHYSICAL DAMAGE. [1]	18 INCHES
LIQUID TIGHT FLEX. METAL	ARTICLE 350	SHORT LENGTHS (MAX. 3FT.) WIRING TO VIBRATING EQUIPMENT IN WET LOCATIONS.	N/A
FLEX. METAL	ARTICLE 348	SHORT LENGTHS (MAX. 3FT.) WIRING TO VIBRATING EQUIPMENT IN WET LOCATIONS.	N/A

[1] PHYSICAL DAMAGE IS SUBJECT TO THE AUTHORITY HAVING JURISDICTION.

[2] UNDERGROUND CONDUIT INSTALLED UNDER ROADS, HIGHWAYS, DRIVEWAYS, PARKING LOTS SHALL HAVE MINIMUM DEPTH OF 24".

[3] WHERE SOLID ROCK PREVENTS COMPLIANCE WITH MINIMUM COVER DEPTHS, WIRING SHALL BE INSTALLED IN PERMITTED RACEWAY FOR DIRECT BURIAL. THE RACEWAY SHALL BE COVERED BY A MINIMUM OF 2" OF CONCRETE EXTENDING DOWN TO ROCK.

SECTION 16123

1.01. CONDUCTORS

A. ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT-BOLT TYPE CONNECTORS. #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION:

	120/208/240V	277/480V
LINE	COLOR	COLOR
A	BLACK	BROWN
B	RED	ORANGE
C	BLUE	YELLOW
N	CONTINUOUS WHITE	GREY
G	CONTINUOUS GREEN	GREEN WITH YELLOW STRIPE

B. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.

SECTION 16130

1.01. BOXES

A. FURNISH AND INSTALL OUTLET BOXES FOR ALL DEVICES, SWITCHES, RECEPTACLES, ETC.. BOXES TO BE ZINC COATED STEEL.

B. FURNISH AND INSTALL PULL BOXES IN MAIN FEEDERS RUNS WHERE REQUIRED. PULL BOXES SHALL BE GALVANIZED STEEL WITH SCREW REMOVABLE COVERS, SIZE AND QUANTITY AS REQUIRED. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.

SECTION 16140

1.01. WIRING DEVICES

A. THE FOLLOWING LIST IS PROVIDED TO CONVEY THE QUALITY AND RATING OF WIRING DEVICES WHICH ARE TO BE INSTALLED. A COMPLETE LIST OF ALL DEVICES MUST BE SUBMITTED BEFORE INSTALLATION FOR APPROVAL.

1. 15 MINUTE TIMER SWITCH - INTERMATIC #FF15M (INTERIOR LIGHTS)

2. DUPLEX RECEPTACLE - P&S #2095 (GFCI) SPECIFICATION GRADE

3. SINGLE POLE SWITCH - P&S #CSB20AC2 (20A-120V HARD USE) SPECIFICATION GRADE

4. DUPLEX RECEPTACLE - P&S #5362 (20A-120V HARD USE) SPECIFICATION GRADE

B. PLATES - ALL PLATES USED SHALL BE CORROSION RESISTANT TYPE 304 STAINLESS STEEL. PLATES SHALL BE FROM SAME MANUFACTURER AS SWITCHES AND RECEPTACLES. PROVIDE WEATHERPROOF HOUSING FOR DEVICES LOCATED IN WET LOCATIONS.

C. OTHER MANUFACTURERS OF THE SWITCHES, RECEPTACLES AND PLATES MAY BE SUBMITTED FOR APPROVAL BY THE ENGINEER.

SECTION 16170

1.01. DISCONNECT SWITCHES

A. FUSIBLE AND NON-FUSIBLE, 600V, HEAVY DUTY DISCONNECT SWITCHES SHALL BE AS MANUFACTURED BY SQUARE "D". PROVIDE FUSES AS CALLED FOR ON THE CONTRACT DRAWINGS. AMPERE RATING SHALL BE CONSISTENT WITH LOAD BEING SERVED. DISCONNECT SWITCH COVER SHALL BE MECHANICALLY INTERLOCKED TO PREVENT COVER FROM OPENING WHEN THE SWITCH IS IN THE "ON" POSITION. EXTERIOR APPLICATIONS SHALL BE NEMA 3R CONSTRUCTION WITH PADLOCK FEATURE.

SECTION 16190

1.01. SEISMIC RESTRAINT

A. ALL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH ZONE 2 SEISMIC REQUIREMENTS.

SECTION 16195

1.01. LABELING AND IDENTIFICATION NOMENCLATURE FOR ELECTRICAL EQUIPMENT

A. CONTRACTOR SHALL FURNISH AND INSTALL NON-METALLIC ENGRAVED BACK-LIT NAMEPLATES ON ALL PANELS AND MAJOR ITEMS OF ELECTRICAL EQUIPMENT.

B. LETTERS TO BE WHITE ON BLACK BACKGROUND WITH LETTERS 1-1/2 INCH HIGH WITH 1/4 INCH MARGIN.

C. IDENTIFICATION NOMENCLATURE SHALL BE IN ACCORDANCE WITH OWNER'S STANDARDS.

SECTION 16450

1.01. GROUNDING

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

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

C. GROUNDING OF PANELBOARDS:

1. PANELBOARD SHALL BE GROUNDED BY TERMINATING THE PANELBOARD FEEDER'S EQUIPMENT GROUND CONDUCTOR TO THE EQUIPMENT GROUND BAR KIT(S) LUGGED TO THE CABINET. ENSURE THAT THE SURFACE BETWEEN THE KIT AND CABINET ARE BARE METAL TO BARE METAL. PRIME AND PAINT OVER TO PREVENT CORROSION.

2. CONDUIT(S) TERMINATING INTO THE PANELBOARD SHALL HAVE GROUNDING TYPE BUSHINGS. THE BUSHINGS SHALL BE BONDED TOGETHER WITH BARE #10 AWG COPPER CONDUCTOR WHICH IN TURN IS TERMINATED INTO THE PANELBOARD'S EQUIPMENT GROUND BAR KIT(S).

D. EQUIPMENT GROUNDING CONDUCTOR:

1. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122.

2. THE MINIMUM SIZE OF EQUIPMENT GROUND CONDUCTOR SHALL BE #12 AWG COPPER.

3. EACH FEEDER OR BRANCH CIRCUIT SHALL HAVE EQUIPMENT GROUND CONDUCTOR(S) INSTALLED IN THE SAME RACEWAY(S).

E. CELLULAR GROUNDING SYSTEM:

CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 10 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

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

1. GROUND BARS

2. EXTERIOR GROUNDING (WHERE REQUIRED DUE TO MEASURED AC RESISTANCE GREATER THAN SPECIFIED).

3. ANTENNA GROUND CONNECTIONS AND PLATES.

F. CONTRACTOR, AFTER COMPLETION OF THE COMPLETE GROUNDING SYSTEM BUT PRIOR TO CONCEALMENT/BURIAL OF SAME, SHALL NOTIFY OWNER'S PROJECT ENGINEER WHO WILL HAVE A DESIGN ENGINEER VISIT SITE AND MAKE A VISUAL INSPECTION OF THE GROUNDING GRID AND CONNECTIONS OF THE SYSTEM.

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

SECTION 16470

1.01. DISTRIBUTION EQUIPMENT

A. REFER TO CONTRACT DRAWINGS FOR DETAILS AND SCHEDULES.

SECTION 16477

1.01. FUSES

A. FUSES SHALL BE NONRENEWABLE TYPE AS MANUFACTURED BY "BUSSMAN" OR APPROVED EQUAL. FUSES RATED TO 1/10 AMPERE UP TO 600 AMPERES SHALL BE EQUIVALENT TO BUSSMAN TYPE LPN-RK (250V) UL CLASS RK1, LOW PEAK, DUAL ELEMENT, TIME-DELAY FUSES. FUSES SHALL HAVE SEPARATE SHORT CIRCUIT AND OVERLOAD ELEMENTS AND HAVE AN INTERRUPTING RATING OF 200 KAIC. UPON COMPLETION OF WORK, PROVIDE ONE SPARE SET OF FUSES FOR EACH TYPE INSTALLED.

SECTION 16960

1.01. TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

A. CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:

TEST 1: THERMAL OVERLOAD AND MAGNETIC TRIP TEST, AND CABLE INSULATION TEST FOR ALL CIRCUIT BREAKERS RATED 100 AMPS OR GREATER.

TEST 2: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.

THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:

1. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.

2. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.

3. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.

B. THESE TESTS SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNER'S CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION REPRESENTATIVE AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.

C. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM'S REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.

D. CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

SECTION 16961

1.01. TESTS BY CONTRACTOR

A. ALL TESTS AS REQUIRED UPON COMPLETION OF WORK, SHALL BE MADE BY THIS CONTRACTOR. THESE SHALL BE CONTINUITY AND INSULATION TESTS; TEST TO DETERMINE THE QUALITY OF MATERIALS, ETC. AND SHALL BE MADE IN ACCORDANCE WITH N.E.C. RECOMMENDATIONS. ALL FEEDERS AND BRANCH CIRCUIT WIRING (EXCEPT CLASS 2 SIGNAL CIRCUITS) MUST BE TESTED FREE FROM SHORT CIRCUIT AND GROUND FAULT CONDITIONS AT 500V IN A REASONABLY DRY AMBIENT OF APPROXIMATELY 70 DEGREES F.

B. CONTRACTOR SHALL PERFORM LOAD PHASE BALANCING TESTS. CIRCUITS SHALL BE SO CONNECTED TO THE PANELBOARDS SUCH THAT THE NEW LOAD IS DISTRIBUTED AS EQUALLY AS POSSIBLE BETWEEN EACH LOAD AND NEUTRAL. 10% SHALL BE CONSIDERED AS A REASONABLE AND ACCEPTABLE ALLOWANCE. BRANCH CIRCUITS SHALL BE BALANCED ON THEIR OWN PANELBOARDS; FEEDER LOADS SHALL, IN TURN, BE BALANCED ON THE SERVICE EQUIPMENT. REASONABLE LOAD TEST SHALL BE ARRANGED TO VERIFY LOAD BALANCE IF REQUESTED BY THE ENGINEER.

C. ALL TESTS, UPON REQUEST, SHALL BE REPEATED IN THE PRESENCE OF OWNER'S REPRESENTATIVE. ALL TESTS SHALL BE DOCUMENTED AND TURNED OVER TO OWNER. OWNER SHALL HAVE THE AUTHORITY TO STOP ANY OF THE WORK NOT BEING PROPERLY INSTALLED. ALL SUCH DETECTED WORK SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL EXPENSE TO THE OWNER AND THE TESTS SHALL BE REPEATED.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	07/23/21	ASC	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION
1	09/16/21	ASC	TJR	CONSTRUCTION DRAWINGS - REVISED STRUCTURAL COMPLIANCE NOTE

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T-MOBILE NORTHEAST LLC

SITE NAME:FAIRFIELD/MP/X44&X42

SITE ID: CT11317B

280 MOREHOUSE DRIVE

FAIRFIELD, CT 06825

DATE: 06/17/21

SCALE: AS NOTED

JOB NO. 21051.10

ELECTRICAL SPECIFICATIONS

E-2

Sheet No. 9 of 9

Exhibit D

CENTEK engineering

Centered on Solutions℠

Structural Analysis of Antenna Mast and Tower

T-Mobile Site Ref: CT11317B

Eversource Structure No. 876

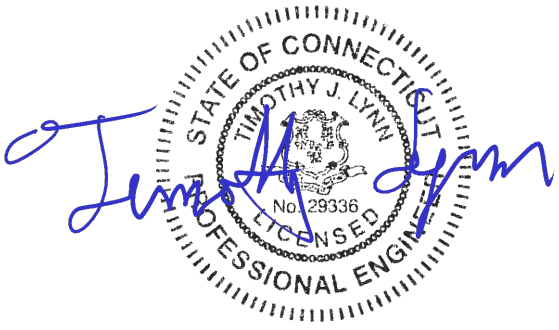
86' Electric Transmission Lattice Tower

280 Morehouse Drive
Fairfield, CT

CENTEK Project No. 21051.10

~~Date: July 9, 2021~~

Rev 1: September 9, 2021



Prepared for:
T-Mobile USA
35 Griffin Road
Bloomfield, CT 06002

T a b l e o f C o n t e n t s

Introduction

The purpose of this report is to analyze the existing mast and 86' utility tower located at 280 Morehouse Dr., in Fairfield, CT for the proposed antenna and equipment upgrade by Sprint.

The existing and proposed loads consist of the following:

- SPRINT (Existing to Remain):
  Antennas: Three (3) RFS APXVSPP18-C panel antennas mounted on a Site Pro WiMAX Monopole T-Arm p/n UDS-NP to the existing mast with a RAD center elevation of 104-ft above grade.
  Coax Cables: Six (6) 1-5/8" ∅ coax cables running on the inside of the existing mast and twelve (12) 1-5/8" ∅ coax cables mounted on a cable ladder running on a face of the tower.
- T-MOBILE (Existing to Remain):
  Antennas: Three (3) RFS APX16DWV-16DWVS panel antennas and three (3) Andrew ATSBT-TOP-FM-4G Smart Bias Tees mounted on a Site Pro WiMAX Monopole T-Arm p/n UDS-NP to the existing mast with a RAD center elevation of 95-ft above grade.
  Coax Cables: Twelve (12) 1-1/4" ∅ coax cables running on the exterior of the existing mast and six (6) 1-1/4" ∅ coax cables mounted on a cable ladder running on a face of the existing tower as indicated in section 4 of this report.
- T-MOBILE (Existing to Remove):
  Antennas: Three (3) Andrew LNX-6515DS panel antennas mounted on a Site Pro WiMAX Monopole T-Arm p/n UDS-NP to the existing mast with a RAD center elevation of 95-ft above grade.
- **T-MOBILE (Proposed):**
  Antennas: Three (3) RFS APXVAALL24_43 panel antennas and three (3) Andrew ATSBT-TOP-FM-4G Smart Bias Tees mounted on a Site Pro WiMAX Monopole T-Arm p/n UDS-NP to the existing mast with a RAD center elevation of 95-ft above grade. (Handrail to be installed on existing T-Arms. Refer to section 4 for details)
  Coax Cables: Six (6) 1-1/4" ∅ coax cables mounted on a cable ladder running on a face of the existing tower as indicated in section 4 of this report.
- AT&T (EXISTING TO REMAIN):
  Antennas: Three (3) Quintel QS46512-2 panel antennas and six (6) Kaelus TMA2117F00V1-1 TMAs leg mounted to the existing utility tower with a RAD center elevation of 84-ft AGL.
  Coax Cables: Twelve (12) 1-5/8" ∅ coax cables running on a leg of the existing utility tower.

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. 10-97, "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 antenna mast 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 antenna mast consisting of a 12" std. pipe conforming to ASTM A500 Grade C (Fy = 50ksi) connected at five points to the existing tower was analyzed for its ability to resist loads prescribed by the TIA-222-G 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 utility 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 86-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 antenna mast 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. 10-97, "Design of Latticed Steel Transmission Structures", NESC C2-2017 and Northeast Utilities Design Criteria.

- 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 NU Design Criteria Table, NESC C2-2017 ~ Construction Grade B, and ASCE Manual No. 10-97, "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 NU Design Criteria Table, TIA-222-G and AISC standards.

  Load cases considered:

  Load Case 1:
  Wind Speed……..... 97 mph (2016 CSBC Appendix-N)
  Radial Ice Thickness…….. 0”

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

R e s u l t s

- ANTENNA MAST

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

Component	Design Limit	Stress Ratio (percentage of capacity)	Result
12” Std. Pipe	Bending	72.4%	**PASS**
L3.5x3.5x1/4 Brace	Bending	26.5%	**PASS**
Connection	Shear	87.9%	**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. 10-97, “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 **99.8%** occurs in the utility tower under the **NESC Extreme** loading condition **with the reinforcements detailed in section 4 of this report.**

  TOWER SECTION:

  The utility structure was found to be within allowable limits **with the reinforcements detailed in section 4 of this report.**

Tower Member	Stress Ratio (% of capacity)	Result
Angle g37p	99.8%	**PASS**

- FOUNDATION AND ANCHORS

  The existing foundation consists of four (4) 1-ft 8-in square tapering to 2-ft 4-in square x 5.25-ft long reinforced concrete piers and four (4) 5-ft square x 2-ft thick reinforced concrete pads. The base of the tower is connected to the foundation by one (1) anchor stub angle per leg. Foundation information was obtained from Northeast Utilities drawing 01064-60003. The foundation was previously reinforced per drawings prepared by Centek job no. 12066.01 dated February 20, 2013.

BASE REACTIONS:

From PLS-Tower analysis of CL&P tower based on NESC/NU prescribed loads.

Foundation	Load Case	Shear	Uplift	Compression
Single Conc. Pad & Pier	NESC Heavy Wind	11.33 kips	31.80 kips	53.70 kips
	NESC Extreme Wind	17.52 kips	63.12 kips	74.86 kips
Combined (2) Conc. Pad & Piers	NESC Heavy Wind	18.03 kips	36.95 kips	83.50 kips
	NESC Extreme Wind	32.48 kips	113.41 kips	138.44 kips

Note 1 – 10% increase to be applied to the above tower base reactions for foundation verification per OTRM 051
Note 2 – Reactions used to analysis the reinforced foundation are the combination of the two adjacent tower legs.

FOUNDATION:

The foundation was found to be within allowable limits.

Foundation	Design Limit	Allowable Limit	Proposed Loading (2)	Result
Northeast Pier	Uplift	1.0 FS (1)	1.06 FS (1)	**PASS**
Northwest Pier	Uplift	1.0 FS (1)	1.04 FS (1)	**PASS**
Combined Southeast and Southwest Piers	Uplift	1.0 FS (1)	1.14 FS (1)	**PASS**

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

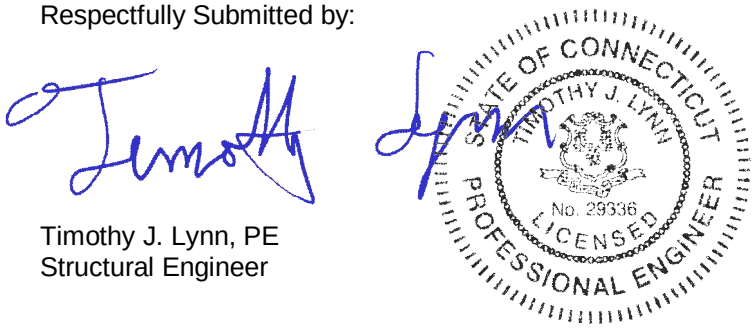
C o n c l u s i o n

This analysis shows that the subject utility tower **with the reinforcements detailed in section 4 of this report is adequate** to support the proposed equipment upgrade.

The analysis is based, in part on the information provided to this office by Eversource and T-Mobile. 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 drawing/editing environment: draw, generate, modify and load elements as well as snap, move, rotate, copy, mirror, scale, split, merge, mesh, delete, apply, trim, extend, etc.
- Versatile drawing grids (orthogonal, radial, skewed, DXF underlay)
- Universal snaps and object snaps allow drawing without grids
- Powerful graphic select/unselect tools including box, line, polygon, invert, criteria, spreadsheet based, save/recall selections with locking
- True spreadsheet editing with cut, paste, fill, math, sort, find, etc.
- Dynamic synchronization between spreadsheets and graphics
- Open multiple spreadsheets simultaneously
- Constant in-stream error checking and data validation
- Unlimited undo/redo capability, automatic timed backup
- Generation templates for grids, disks, cylinders, cones, arcs, trusses, tanks, hydrostatic loads, geodesic domes, etc.
- Support for all units systems & conversions at any time
- Automatic interaction with RISASection custom shape libraries
- Steel Shapes: AISC, Historic, Australian, British, Canadian, Chilean, Chinese, European, Indian, Mexican
- Light Gage Shapes: AISI, SSMA, Dale/Incor, Dietrich, Marino\WARE
- Import DXF, RISA-2D, STAAD and CIS/2 files
- Export DXF, SDNF and CIS/2 files
- Robust two-way link with Revit Structure 2019
- Link with Tekla Structures 2018

Analysis Features

- Analysis of 1D members (beams, columns, braces, etc.) using Finite Element Method
- Analysis of 2D elements (plates, walls) using Finite Element Method
- Analysis of 3D elements (solids) using Finite Element Method
- Partial fixity member end releases using rotational spring constants
- Time History Analysis
- Accelerated true sparse solver for static analysis
- Flexible modeling of P-Delta effects
- Accelerated Sparse Lanczos dynamics solver, very fast and robust
- Multiple simultaneous dynamic and response spectra analysis using Gupta, CQC or SRSS with automatic calc of scaling factors
- Automatic inclusion of mass offset (5% or user defined) for dynamics when integrated with RISAFloor
- Ritz vector dynamic solver
- True physical member modeling (members are aware of interior joints)
- Plate/shell elements with plane stress only option
- 8 node solid elements
- High end mesh generation — draw a polygon with any number of sides to create a mesh of well formed quadrilateral (NO triangular) elements
- Automatic rigid diaphragm modeling with detachable joints

- Area loads with one-way or two-way distributions with optional “blow through” distribution for loading open structures
- Plate thermal loads
- Simultaneous moving loads, AASHTO/custom for bridges, cranes…
- Torsional warping calculations for stiffness, stress and design of hot rolled steel
- Member end releases, rigid end offsets, analysis offsets
- Enforced joint displacements
- One Way members, for tension only bracing, slipping, etc.
- One Way springs, for modeling soils and other effects
- Euler members: Compression up to buckling load, then disable
- Stress calculations on any arbitrary shape
- Inactivate members, plates, solids and diaphragms without deleting them
- Story drift calculations provide relative drift and ratio to height
- Automatic self-weight calculations for members, plates and solids

Graphics Features

- Unlimited simultaneous model view windows
- “True to scale” rendering with translucency, even when drawing
- High-speed redraw algorithm for instant refreshing
- Dynamically zoom, pan, rotate, scroll, snap views
- Font and color control
- Saved views to quickly restore frequent or desired views
- Rendered or wire-frame animations of deflected model and mode shapes
- Animation of moving loads with speed control
- Distance tool for measuring between points
- Force/moment summation about any arbitrary cut line
- High quality customizable graphics printing

Design Codes

- Steel Design Codes: AISC 360-16/10/05: ASD & LRFD, AISC 2nd & 3rd: LRFD, AISC 9th: ASD, CSA S16-14/09/05/01/CSA-S16.1-94, BS 5950-1: 2000, EN 1993-1-1:2014/2005, ENV 1993-1-1:1992, IS 800: 2007/1998, AS 4100-1998, NZS 3404: 1997
- Seismic design per AISC 341-10/05, including 358 prequalified connections
- Concrete Design Codes: ACI 318-14/11/08/05/02/99, CSA A23.3-14/04/94, NTC-DF 2004, BS 8110-1: 1997, BS EN 1992-1-1: 2004+A1: 2014/2004, EN 1992-1-1:1992, IS 456: 2000, AS 3600-2001, NZS 3101: 1995, SBC 304-2007
- Cold Formed Steel Design Codes: AISI S100-16/12/10/07: ASD & LRFD, AISI NAS-04/01: ASD & LRFD, AISI 1999: ASD & LRFD, CSA S136-16/12/10/07/04/01: LSD, CANACERO 16: ASD, CANACERO 12/10/07/04/01: ASD & LRFD
- Aluminum Design Codes: AA ADM1-15/10: ASD & LRFD, AA ADM1-05: ASD
- Wood Design Codes: AWC NDS-18/15/12: ASD, AF&PA NDS-08/05/01/97/91: ASD, CSA 086-14/09 Ultimate, Structural Composite Lumber, multi-ply, full sawn, Glulam, shear walls
- Masonry Design Codes: TMS 402-16: ASD & Strength, ACI 530-13/11/08/05/02: ASD & Strength, ACI 530-99: ASD, UBC 1997: ASD & Strength
- Stainless Steel Design Code: AISC 360-10: ASD & LRFD
- Wind loads are generated automatically (ASCE 7-16/10/05/02/98/95, NBC 15/10/05, NTC 2004, & IS 875: 1987) for building-type structures, including partial wind cases
- Seismic loads are generated automatically (ASCE 7-16/10/05/02, CBC 2001, IBC 2000, UBC 1997, NBC 15/10/05, NTC 2004, & IS 1893: 2002) for building-type structures, including accidental torsion

Design Features

- Designs/optimizes concrete, hot rolled & cold formed steel, masonry, wood and aluminum

- Program selected or user-defined rebar layouts for flexure and shear
- Concrete beam detailing (Rectangular, T and L).
- Concrete column interaction diagrams
- Concrete wall design including in-plane, out-of-plane & bearing loads
- Automatic spectra generation for ASCE 7, NBC, IS 1893, NTC
- Extensive user controlled generation of load combinations
- Intelligent unbraced length calculations for physical members
- Tapered wide flange design per AISC Design Guide 25
- Masonry wall design for in-plane and out-of-plane
- Wood Shapes: Complete NDS species/grade and Glulam database
- Complete wood wall design for bearing & shear walls: Segmented, Perforated & Force Transfer Around Openings design methods
- Strap and Hold Down design for Wood Shear Walls
- Seismic design of concrete walls using ACI 318-14 Chapter 18
- Concrete seismic coupling beams for multi-story walls with diaphragms

Results Features

- Graphic presentation of color-coded results and plotted designs
- Color contours on plates, solid stresses/forces with smoothing and animation
- Spreadsheet results with sorting and filtering of: deflections, forces, stresses, optimized sizes for strength or deflection, code designs, concrete reinforcing, material takeoffs, etc.
- Standard and user-defined reports
- Graphic member detail reports with force/stress/deflection diagrams and detailed design calculations and expanded diagrams

Integrated Building Design

RISA-3D, RISAFloor, RISAFoundation and RISAConnection are so tightly integrated that they operate as one program on the same building model. Optimize the gravity system in RISAFloor, the lateral system in RISA-3D, the connection design in RISAConnection and the foundation system in RISAFoundation, with a complete flow of information both ways.

General Features

- Compatible with Windows 7/8.1/10 (64-bit Windows)
- Program technical support provided by Professional Engineers

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, 2009
- NESC 2002, 2007, 2012, 2017
- IEC 60826:2003, 2017
- IS 802 : 1995, 2015
- ISEC-NCR-83
- EN50341-1:2001 and 2012 (CENELEC)
- EN50341-3-2:2001 (Belgium NNA)
- EN50341-3-9:2001, EN50341-2-9:2015, 2017 (UK NNA)
- EN50341-3-17:2001 (Portugal NNA)
- EN50341-2-22:2016 (Poland NNA)
- AS/NZS 7000:2010, 2016
- ESAA C(b)1-2003 (Austalia)
- TPNZ (New Zealand)
- REE (Spain)
- SP 16.13330.2011 (SNiP Russia)
- Minimization of problems caused by unstable joints and mechanisms
- Automatic bandwidth minimization and ability to solve large problems
- Design checks according to (PLS can add strength checks for other standards):
- ASCE 10
- AS 3995 (Australian Standard 3995)

- BS 8100 (British Standard 8100)
- EN50341-1 2001 and 2012 (CENELEC, both empirical and analytical methods are available)
- EN50341-2-9:2015, 2017 (UK NNA)
- ECCS 1985
- NGT-ECCS
- PN-90/B-03200
- EN50341-2-22:2016 (Poland NNA)
- SP 16.13330.2011 (SNiP Russia)
- 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-222-G covering the design of telecommunications structures specifies a limit state design approach. This approach applies the loads from extreme weather loading conditions, and designs the structure so that the design strength exceeds the required strength.

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

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

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

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

Note 1: Prepared from documentation provide from Northeast Utilities.

P C S M a s t

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

E L E C T R I C T R A N S M I S S I O N T O W E R

The electric transmission tower shall be analyzed using yield stress theory in accordance with the attached table titled “Eversource 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 2017 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
	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
		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
		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
	NESC Extreme Wind	Tower/Pole Analysis with antennas extending above top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250C: Extreme Wind Loading Apply a 1.25 x Gust Response Factor to all telecommunication equipment projected above top of tower/pole and apply a 1.0 x Gust Response Factor to the tower/pole structure					1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with antennas below top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250C: Extreme Wind Loading Height above ground is based on overall height to top of tower/pole					1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor Loads Provided by 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
		Tower/Pole Analysis with antennas below top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250D: Extreme Ice with Wind Loading 4 PSF Wind Load Height above ground is based on overall height to top of tower/pole					1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor Loads Provided by 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: 1714/1720 Lines, Structure 876
Date: 8/2/18
Engineer: JS
Purpose: Recalculate wire loads for Sprint site. AT&T and T-Mobile are also located here.

Shield Wires:
1714: 7#9 Copperweld, sagged in PLS-CADD
1720: FOCAS 0.738" OPGW, sagged in PLS-CADD

Conductors:
1714: 556 Dove ACSR, sagged in PLS-CADD
1720: 556 Dove ACSR, sagged in PLS-CADD
Insulators are strain converted.

NESC 250B

		1714 (Circuit to North)		1720 (Circuit to South)
Shield:	**V**	1350		2325 **V**
	T	875		1100 **T**
	L	1150		0 **L**
Top Phase:	**V**	3600		3600 **V**
	T	1300		1300 **T**
	L	50		2200 **L**
Mid Phase:	**V**	3600		3600 **V**
	T	1300		1300 **T**
	L	600		625 **L**
Bot Phase:	**V**	3600		3600 **V**
	T	1300		1300 **T**
	L	1275		1175 **L**

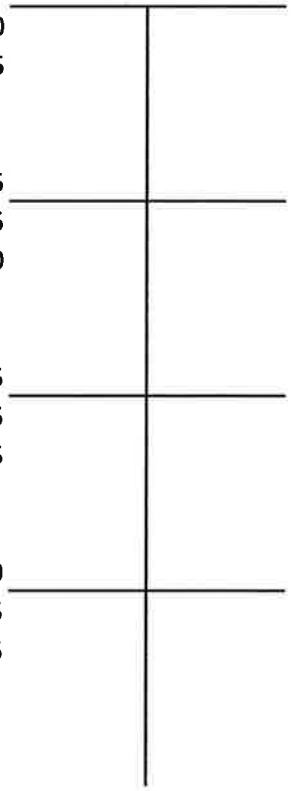
Project: 1714/1720 Lines, Structure 876
Date: 8/2/18
Engineer: JS
Purpose: Recalculate wire loads for Sprint site. AT&T and T-Mobile are also located on this structure.

Shield Wires:
1714: 7#9 Copperweld, sagged in PLS-CADD
1720: FOCAS 0.738" OPGW, sagged in PLS-CADD

Conductors:
1714: 556 Dove ACSR, sagged in PLS-CADD
1720: 556 Dove ACSR, sagged in PLS-CADD
Insulators are strain converted.

NESC 250C

		1714 (Circuit to North)	1720 (Circuit to South)
Shield:	**V**	500	1050 **V**
	T	600	1225 **T**
	L	425	0 **L**
Top Phase:	**V**	1775	1730 **V**
	T	1725	1700 **T**
	L	250	1275 **L**
Mid Phase:	**V**	1775	1725 **V**
	T	1675	1650 **T**
	L	75	500 **L**
Bot Phase:	**V**	1750	1750 **V**
	T	1625	1600 **T**
	L	425	400 **L**



TOWER REINFORCEMENT DESIGN

T-MOBILE - CT11317B
STRUCT NO. 876
280 MOREHOUSE DRIVE
FAIRFIELD, CT 06825

VICINITY MAP

NORTH

PROJECT SUMMARY

SITE ADDRESS:	280 MOREHOUSE DRIVE FAIRFIELD, CT 06825
PROJECT COORDINATES:	LAT: 41°–12'–35.95N LON: 73°–15'–41.59W ELEV:±220' AMSL
EVERSOURCE STRUCT NO:	876
EVERSOURCE CONTACT:	RICHARD BADON 860.728.4852
T–MOBILE SITE REF.:	CT11317B
T–MOBILE CONTACT:	SHELDON FREINCLE 201.776.8521
ANTENNA CL HEIGHT:	95'–0"
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

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	7/9/21	TJL	CFC	ISSUED FOR CONSTRUCTION

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Licensed Professional Engineer
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T-MOBILE
TOWER REINFORCEMENT DESIGN

CT11317B
EVERSOURCE STRUCTURE 876

280 MOREHOUSE DRIVE
FAIRFIELD, CT 06825

DATE:	7/9/21
SCALE:	AS SHOWN
JOB NO.	21051.10

TITLE SHEET

SHEET NO.
T-1
Sheet No. 1 of 7

DESIGN BASIS

1. GOVERNING CODE: 2015 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2018 CT STATE SUPPLEMENT.

2. 2. TIA–222–G, ASCE MANUAL NO. 10–97 – "DESIGN OF STEEL TRANSMISSION POLE STRUCTURES SECOND EDITION", NESC C2–2017 AND NORTHEAST UTILITIES DESIGN CRITERIA

3. DESIGN CRITERIA

   WIND LOAD: (ANTENNA MAST)
   NOMINAL DESIGN WIND SPEED (V) = 97 MPH (2018 CSBC: APPENDIX 'N')

   WIND LOAD: (UTILITY POLE & FOUNDATION)
   BASIC WIND SPEED (V) =110 MPH (3–SECOND GUST) BASED ON NESC C2–2012, SECTION 25 RULE 250C.

GENERAL NOTES

1. REFER TO STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING, INC., FOR T–MOBILE, DATED 7/9/21.

2. TOWER GEOMETRY AND STRUCTURE MEMBER SIZES WERE OBTAINED FROM THE TOWER DESIGN DRAWINGS PREPARED BY AMERICAN BRIDGE CO.

3. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE GOVERNING BUILDING CODE.

4. 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.

5. 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.

6. 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.

7. 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.

8. 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.

9. NO DRILLING WELDING OR TAPING IS PERMITTED ON CL&P OWNED EQUIPMENT.

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DESIGN BASIS AND GENERAL NOTES

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STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY LOAD AND 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).
   A. STRUCTURAL STEEL (TOWER REINF. SOLID ROUND BAR)--- ASTM A572_GR50 (50 KSI)
   D. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
   E. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
   F. 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.
   E. BLIND BOLTS---AS1252 PROPERTY CLASS 8.8 (FU=120 KSI).

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" 9TH 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. ALL BOLTS SHALL BE INSTALLED PER THE REQUIREMENTS OF AISC 14TH EDITION & RCSC "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH STRENGTH BOLTS".

17. ALL BOLTS SHALL BE INSTALLED AS SNUG-TIGHT CONNECTIONS UNLESS OTHERWISE INDICATED. CONNECTIONS SPECIFIED AS PRETENSIONED OR SLIP-CRITICAL SHALL BE TIGHTENED TO A BOLT TENSION NOT LESS THAN THAT GIVEN IN TABLE J3.1 OF AISC 14TH EDITION.

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

19. LOAD INDICATOR WASHERS SHALL BE UTILIZED ON ALL PRETENSIONED OR SLIP-CRITICAL CONNECTIONS.

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

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

22. FABRICATE BEAMS WITH MILL CAMBER UP.

23. 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.

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

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STRUCTURAL STEEL NOTES

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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

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DO NOT SCALE DRAWINGS
CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.
PRELIMINARY, NOT FOR CONSTRUCTION OR PERMIT PURPOSES

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MODIFICATION INSPECTION REQUIREMENTS

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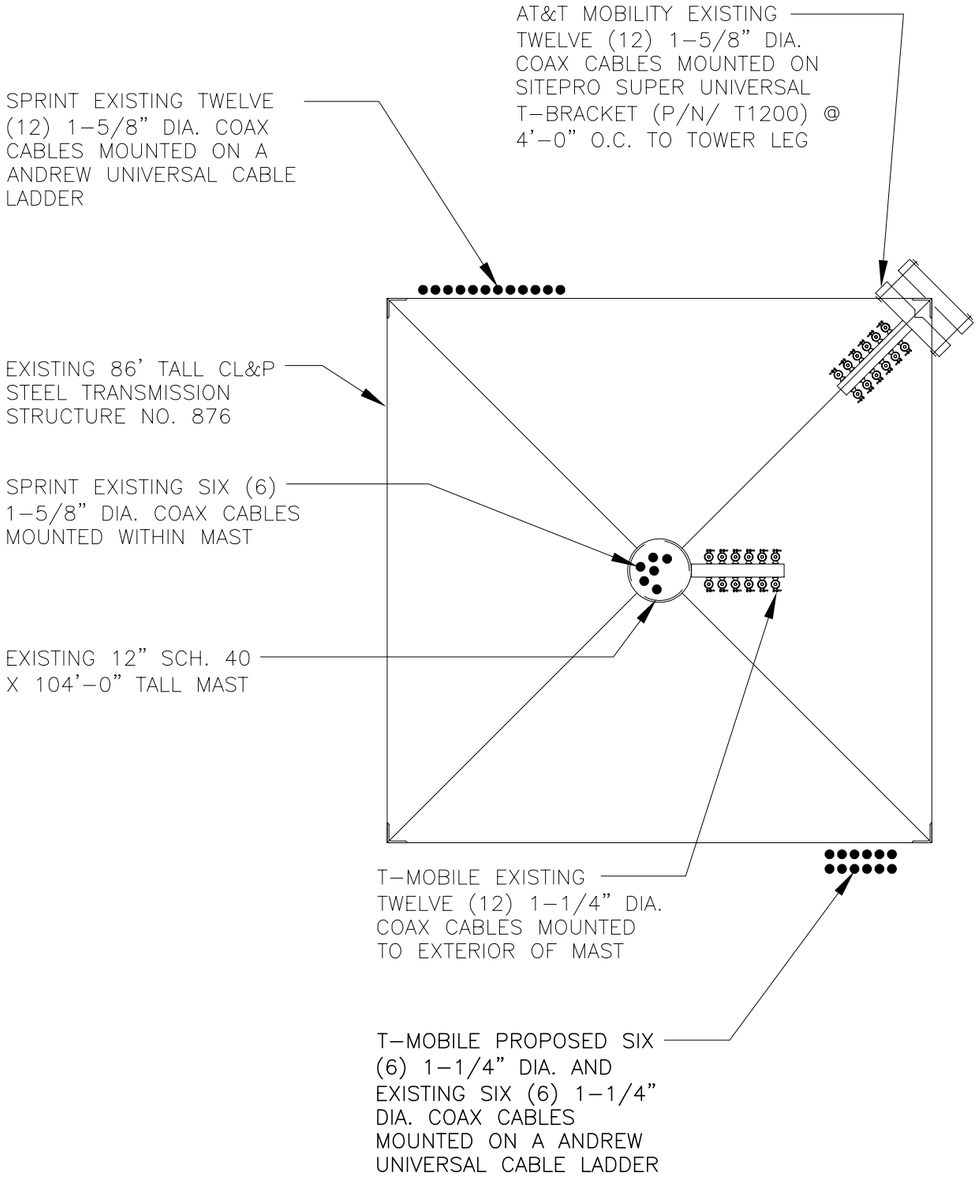
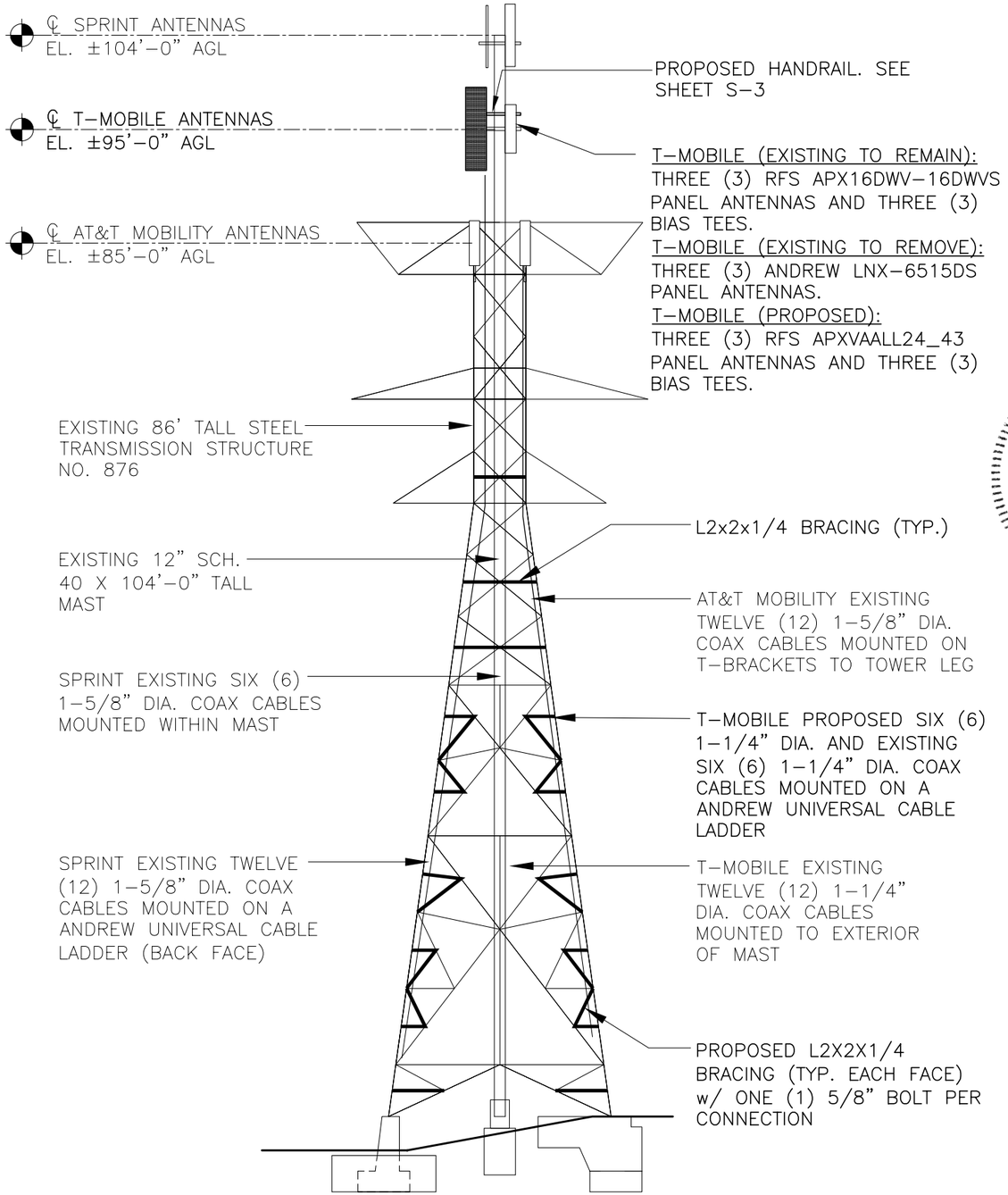


1 / FP–1 **FEEDLINE PLAN**

SCALE: NOT TO SCALE



1 / EL–1 **TOWER & MAST ELEVATION**

SCALE: NOT TO SCALE

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TOWER ELEVATION AND FEEDLINE PLAN

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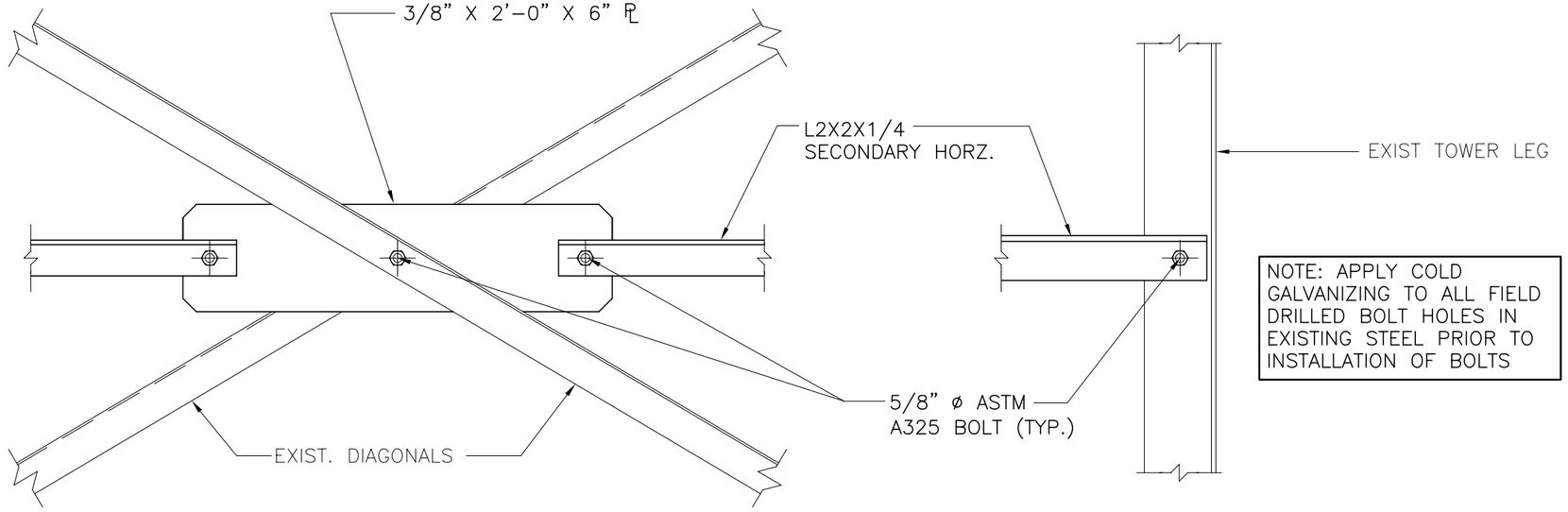
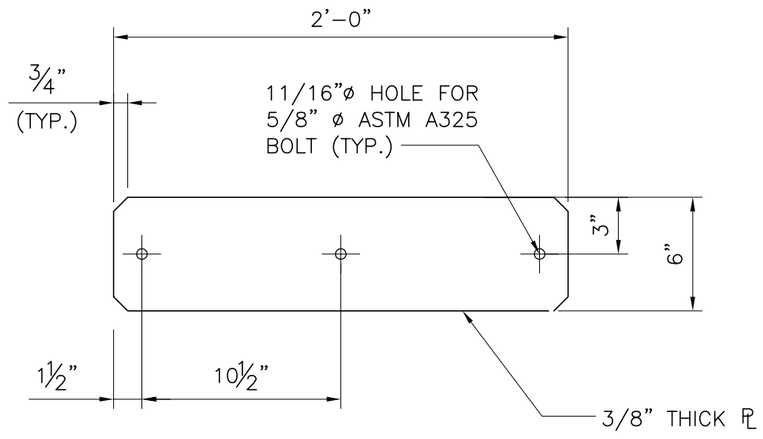


NOTE: APPLY COLD GALVANIZING TO ALL FIELD DRILLED BOLT HOLES IN EXISTING STEEL PRIOR TO INSTALLATION OF BOLTS



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TOWER REINFORCMENT DETAILS

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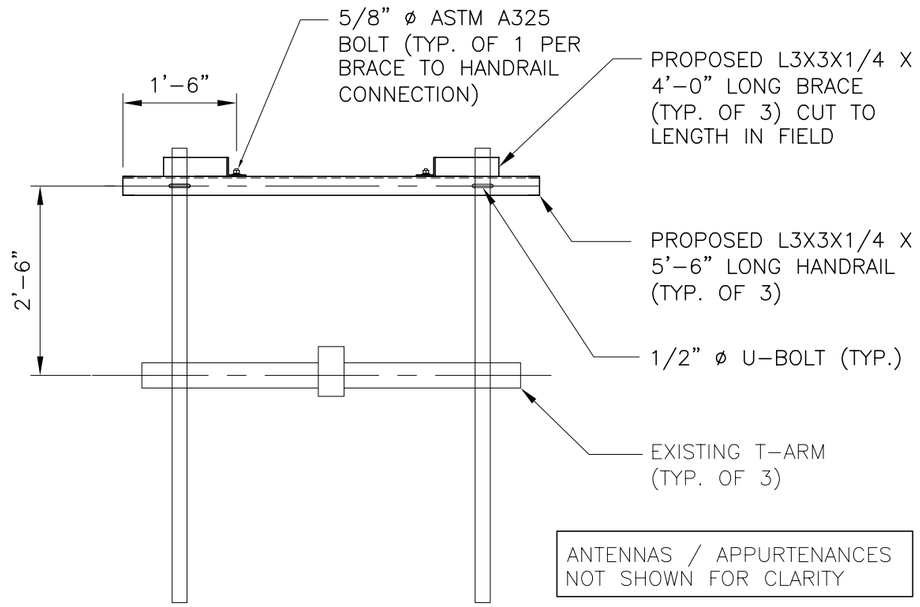
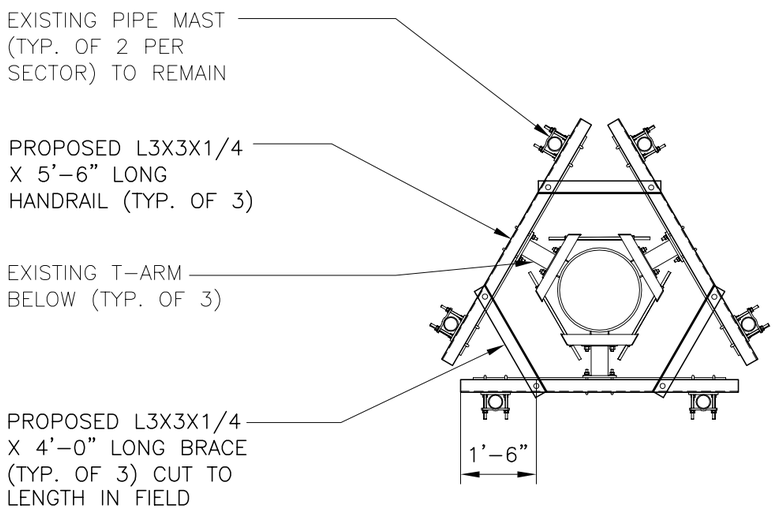


1 / S–3 **MOUNT MOD ELEVATION**

SCALE: NOT TO SCALE



2 / S–3 **MOUNT MOD PLAN**

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MOUNT MOD DETAILS

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Subject:	Loads on Equipmnet Structure 876
Location:	Fairfield, CT
Rev. 0: 7/9/21	Prepared by: T.J.L. Checked by: C.F.C. Job No. 21051.10

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

Wind Speeds

Basic Wind Speed $V := 97$ mph (User Input - 2016 CSBC Appendix N)

Basic Wind Speed with Ice $V_i := 50$ mph (User Input per Annex B of TIA-222-G)

Input

Structure Type = Structure_Type := Lattice (User Input)

Structure Category = $SC := III$ (User Input)

Exposure Category = $Exp := C$ (User Input)

Structure Height = $h := 86$ ft (User Input)

Height to Center of Antennas = $z_{Sprint} := 104$ ft (User Input)

Height to Center of Antennas = $z_{TMo} := 95$ ft (User Input)

Height to Center of Mast = $z_{Mast5} := 90$ ft (User Input)

Height to Center of Mast = $z_{Mast4} := 70$ ft (User Input)

Height to Center of Mast = $z_{Mast3} := 50$ ft (User Input)

Height to Center of Mast = $z_{Mast2} := 30$ ft (User Input)

Height to Center of Mast = $z_{Mast1} := 10$ ft (User Input)

Mast Based on Max 20-ft Section per 2.6.9.1.3

Radial Ice Thickness = $t_i := 0.75$ in (User Input per Annex B of TIA-222-G)

Radial Ice Density = $Id := 56.00$ pcf (User Input)

Topograpic Factor = $K_{zt} := 1.0$ (User Input)

$K_a := 1.0$ (User Input)

Gust Response Factor = $G_H := 1.35$ (User Input)

Output

Wind Direction Probability Factor =

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

(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)

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

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

$$K_{iz} := \left(\frac{z_{Sprint}}{33}\right)^{0.1} = 1.122 \qquad t_{izSprint} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 2.103$$

Velocity Pressure CoefficientAntennas =
$$Kz_{Sprint} := 2.01\left(\left(\frac{z_{Sprint}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.276$$

Velocity Pressure w/o Ice Antennas =
$$qz_{Sprint} := 0.00256 \cdot K_d \cdot Kz_{Sprint} \cdot V^2 \cdot I_{Wind} = 30.046$$

Velocity Pressure with Ice Antennas =
$$qz_{ice.Sprint} := 0.00256 \cdot K_d \cdot Kz_{Sprint} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 6.942$$

$$K_{iz} := \left(\frac{z_{TMo}}{33}\right)^{0.1} = 1.112 \qquad t_{izTMo} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 2.084$$

Velocity Pressure CoefficientAntennas =
$$Kz_{TMo} := 2.01\left(\left(\frac{z_{TMo}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.252$$

Velocity Pressure w/o Ice Antennas =
$$qz_{TMo} := 0.00256 \cdot K_d \cdot Kz_{TMo} \cdot V^2 \cdot I_{Wind} = 29.479$$

Velocity Pressure with Ice Antennas =
$$qz_{ice.TMo} := 0.00256 \cdot K_d \cdot Kz_{TMo} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 6.811$$

$$K_{izMast5} := \left(\frac{z_{Mast5}}{33}\right)^{0.1} = 1.106 \qquad t_{izMast5} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast5} \cdot K_{zt}^{0.35} = 2.073$$

Velocity Pressure Coefficient Mast =
$$Kz_{Mast5} := 2.01\left(\left(\frac{z_{Mast5}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.238$$

Velocity Pressure w/o Ice Mast=
$$qz_{Mast5} := 0.00256 \cdot K_d \cdot Kz_{Mast5} \cdot V^2 \cdot I_{Wind} = 29.145$$

Velocity Pressure with Ice Mast =
$$qz_{ice.Mast5} := 0.00256 \cdot K_d \cdot Kz_{Mast5} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 6.734$$

$$K_{izMast4} := \left(\frac{z_{Mast4}}{33}\right)^{0.1} = 1.078 \qquad t_{izMast4} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast4} \cdot K_{zt}^{0.35} = 2.021$$

Velocity Pressure Coefficient Mast =
$$Kz_{Mast4} := 2.01\left(\left(\frac{z_{Mast4}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.174$$

Velocity Pressure w/o Ice Mast=
$$qz_{Mast4} := 0.00256 \cdot K_d \cdot Kz_{Mast4} \cdot V^2 \cdot I_{Wind} = 27.643$$

Velocity Pressure with Ice Mast =
$$qz_{ice.Mast4} := 0.00256 \cdot K_d \cdot Kz_{Mast4} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 6.387$$

$$K_{izMast3} := \left(\frac{z_{Mast3}}{33}\right)^{0.1} = 1.042 \qquad t_{izMast3} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast3} \cdot K_{zt}^{0.35} = 1.955$$

Velocity Pressure Coefficient Mast =

$$Kz_{Mast3} := 2.01\left(\left(\frac{z_{Mast3}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.094$$

Velocity Pressure w/o Ice Mast=

$$qz_{Mast3} := 0.00256 \cdot K_d \cdot Kz_{Mast3} \cdot V^2 \cdot I_{Wind} = 25.753$$

Velocity Pressure with Ice Mast =

$$qz_{ice.Mast3} := 0.00256 \cdot K_d \cdot Kz_{Mast3} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 5.95$$

$$K_{izMast2} := \left(\frac{z_{Mast2}}{33}\right)^{0.1} = 0.991 \qquad t_{izMast2} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast2} \cdot K_{zt}^{0.35} = 1.857$$

Velocity Pressure Coefficient Mast =

$$Kz_{Mast2} := 2.01\left(\left(\frac{z_{Mast2}}{zg}\right)\right)^{\frac{2}{\alpha}} = 0.982$$

Velocity Pressure w/o Ice Mast=

$$qz_{Mast2} := 0.00256 \cdot K_d \cdot Kz_{Mast2} \cdot V^2 \cdot I_{Wind} = 23.127$$

Velocity Pressure with Ice Mast =

$$qz_{ice.Mast2} := 0.00256 \cdot K_d \cdot Kz_{Mast2} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 5.343$$

$$K_{izMast1} := \left(\frac{z_{Mast1}}{33}\right)^{0.1} = 0.887 \qquad t_{izMast1} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast1} \cdot K_{zt}^{0.35} = 1.664$$

Velocity Pressure Coefficient Mast =

$$Kz_{Mast1} := 2.01\left(\left(\frac{z_{Mast1}}{zg}\right)\right)^{\frac{2}{\alpha}} = 0.779$$

Velocity Pressure w/o Ice Mast=

$$qz_{Mast1} := 0.00256 \cdot K_d \cdot Kz_{Mast1} \cdot V^2 \cdot I_{Wind} = 18.352$$

Velocity Pressure with Ice Mast =

$$qz_{ice.Mast1} := 0.00256 \cdot K_d \cdot Kz_{Mast1} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 4.24$$

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Subject: Loads on Equipmnet Structure 876

Location: Fairfield, CT

Rev. 0: 7/9/21

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 21051.10

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 = $L_{mast} := 131.25$ 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 = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast5})}{12} = 1.408$ 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 = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast4})}{12} = 1.399$ sf/ft

Total Mast Wind Force w/ Ice = $qz_{ice.Mast4} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 7$ plf BLC 4

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast3})}{12} = 1.388$ 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 = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast2})}{12} = 1.372$ sf/ft

Total Mast Wind Force w/ Ice = $qz_{ice.Mast2} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 6$ plf BLC 4

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast1})}{12} = 1.34$ sf/ft

Total Mast Wind Force w/ Ice = $qz_{ice.Mast1} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 5$ plf BLC 4

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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 =	$Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + t_{izMast5}\cdot 2\right)^2 - D_{mast}^2\right] = 96.5$		sq in	
Weight of Ice on Mast =	$W_{ICEmast5} := Id\cdot\frac{Ai_{mast}}{144} = 38$		plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + t_{izMast4}\cdot 2\right)^2 - D_{mast}^2\right] = 93.8$		sq in	
Weight of Ice on Mast =	$W_{ICEmast4} := Id\cdot\frac{Ai_{mast}}{144} = 36$		plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + t_{izMast3}\cdot 2\right)^2 - D_{mast}^2\right] = 90.3$		sq in	
Weight of Ice on Mast =	$W_{ICEmast3} := Id\cdot\frac{Ai_{mast}}{144} = 35$		plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + t_{izMast2}\cdot 2\right)^2 - D_{mast}^2\right] = 85.2$		sq in	
Weight of Ice on Mast =	$W_{ICEmast2} := Id\cdot\frac{Ai_{mast}}{144} = 33$		plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + t_{izMast1}\cdot 2\right)^2 - D_{mast}^2\right] = 75.4$		sq in	
Weight of Ice on Mast =	$W_{ICEmast1} := Id\cdot\frac{Ai_{mast}}{144} = 29$		plf	**BLC 3**

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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 =	$F_{ant} := qz_{Sprint} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 976$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{izSprint}) \cdot (W_{ant} + 2 \cdot t_{izSprint})}{144} = 8.5$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 25.4$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Sprint} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 324$	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 =	$V_{ice} := (L_{ant} + 2 \cdot t_{izSprint})(W_{ant} + 2 \cdot t_{izSprint}) \cdot (T_{ant} + 2 \cdot t_{izSprint}) - V_{ant} = 7722$		
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 250$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 751$	lbs	**BLC 3**

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Development of Wind & Ice Load on Antenna Mounts

Mount Data: (Sprint)

Mount Type: WiMax Monopole T-Arm

Mount Shape =	Flat		(User Input)
Mount Projected Surface Area =	$CaAa := 6.3$	sf	(User Input)
Mount Projected Surface Area w/ Ice =	$CaAa_{ice} := 7.88$	sf	(User Input)
Mount Weight =	$WT_{mnt} := 550$	lbs	(User Input)
Mount Weight w/ Ice =	$WT_{mnt.ice} := 700$	lbs	

Wind Load (without ice)

Total Mount Wind Force = $F_{mnt} := qz_{TMo} \cdot G_H \cdot CaAa = 251$ lbs **BLC 5**

Wind Load (with ice)

Total Mount Wind Force = $Fi_{mnt} := qz_{ice.TMo} \cdot G_H \cdot CaAa_{ice} = 72$ lbs **BLC 4**

Gravity Loads (without ice)

Weight of All Mounts = $WT_{mnt} = 550$ lbs **BLC 2**

Gravity Loads (ice only)

Weight of Ice on All Mounts = $WT_{mnt.ice} - WT_{mnt} = 150$ lbs **BLC 3**

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Development of Wind & Ice Load on Antennas

Antenna Data: (T-Mobile)

Antenna Model =	RFS APX16DWV-16DWVS		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 55.9$	in	(User Input)
Antenna Width =	$W_{ant} := 13$	in	(User Input)
Antenna Thickness =	$T_{ant} := 3.15$	in	(User Input)
Antenna Weight =	$WT_{ant} := 40.7$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.3$		
Antenna Force Coefficient =	$Ca_{ant} = 1.28$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 5$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 15.1$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{TMo} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 771$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{izTMo}) \cdot (W_{ant} + 2 \cdot t_{izTMo})}{144} = 7.2$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 21.5$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.TMo} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 253$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 122$	lbs	**BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2289$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{izTMo})(W_{ant} + 2 \cdot t_{izTMo}) \cdot (T_{ant} + 2 \cdot t_{izTMo}) - V_{ant} = 5258$		
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 170$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 511$	lbs	**BLC 3**

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Development of Wind & Ice Load on Antennas

Antenna Data: (T-Mobile)

Antenna Model =	RFSAPXVAALL24_43			
Antenna Shape =	Flat		(User Input)	
Antenna Height =	$L_{ant} := 95.9$	in	(User Input)	
Antenna Width =	$W_{ant} := 24$	in	(User Input)	
Antenna Thickness =	$T_{ant} := 8.5$	in	(User Input)	
Antenna Weight =	$WT_{ant} := 150$	lbs	(User Input)	
Number of Antennas =	$N_{ant} := 3$		(User Input)	
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.0$			
Antenna Force Coefficient =	$Ca_{ant} = 1.27$			

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 16$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 48$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{TMo} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 2417$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{izTMo}) \cdot (W_{ant} + 2 \cdot t_{izTMo})}{144} = 19.6$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 58.7$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.TMo} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 684$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 450$	lbs	**BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2 \times 10^4$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{izTMo})(W_{ant} + 2 \cdot t_{izTMo}) \cdot (T_{ant} + 2 \cdot t_{izTMo}) - V_{ant} = 2 \times 10^4$		
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 523$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 1570$	lbs	**BLC 3**

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Development of Wind & Ice Load on Antennas

Antenna Data: (T-Mobile)

Antenna Model =	Andrew ATSBT-TOP-FM-4G			
Antenna Shape =	Flat		(User Input)	
Antenna Height =	$L_{ant} := 5.63$	in	(User Input)	
Antenna Width =	$W_{ant} := 3.7$	in	(User Input)	
Antenna Thickness =	$T_{ant} := 2.0$	in	(User Input)	
Antenna Weight =	$WT_{ant} := 2$	lbs	(User Input)	
Number of Antennas =	$N_{ant} := 6$		(User Input)	
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 1.5$			
Antenna Force Coefficient =	$Ca_{ant} = 1.2$			

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.1$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 0.9$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{TMo} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 41$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{izTMo}) \cdot (W_{ant} + 2 \cdot t_{izTMo})}{144} = 0.5$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 3.2$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.TMo} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 35$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 12$	lbs	**BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 42$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{izTMo})(W_{ant} + 2 \cdot t_{izTMo}) \cdot (T_{ant} + 2 \cdot t_{izTMo}) - V_{ant} = 434$		
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 14$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 84$	lbs	**BLC 3**

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Development of Wind & Ice Load on Antenna Mounts

Mount Data: (T-Mobile)

Mount Type: WiMax Monopole T-Arm w/ Handrail

Mount Shape =	Flat		(User Input)
Mount Projected Surface Area =	$CaAa := 10$	sf	(User Input)
Mount Projected Surface Area w/ Ice =	$CaAa_{ice} := 12$	sf	(User Input)
Mount Weight =	$WT_{mnt} := 900$	lbs	(User Input)
Mount Weight w/ Ice =	$WT_{mnt.ice} := 1100$	lbs	

MOUNT PROJECTED AREA =
(1.2)*(3"/12)*(5')*(3)+(1.2)*(3"/12)*(1.5')*(3)+(0.8)*(3.5"/12)*(5')*(3) = 9.4 SF

Wind Load (without ice)

Total Mount Wind Force = $F_{mnt} := qz_{Sprint} \cdot G_H \cdot CaAa = 406$ lbs **BLC 5**

Wind Load (with ice)

Total Mount Wind Force = $Fi_{mnt} := qz_{ice.Sprint} \cdot G_H \cdot CaAa_{ice} = 112$ lbs **BLC 4**

Gravity Loads (without ice)

Weight of All Mounts = $WT_{mnt} = 900$ lbs **BLC 2**

Gravity Loads (ice only)

Weight of Ice on All Mounts = $WT_{mnt.ice} - WT_{mnt} = 200$ lbs **BLC 3**

Development of Wind & Ice Load on Coax Cables

Coax Cable Data: (Sprint)

Coax Type = HELIAX 1-5/8"

Shape = Round (User Input)

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

Coax Cable Length = $L_{coax} := 104$ ft (User Input)

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

Total Number of Coax = $N_{coax} := 6$ (User Input)

Total Number of Exterior Coax = $Ne_{coax} := 0$ (User Input) (6 coax within mast)

No. of Coax Projecting Outside Face of Mast = $NP_{coax} := 0$ (User Input)

Coax aspect ratio, $Ar_{coax} := \frac{(L_{coax} \cdot 12)}{D_{coax}} = 630.3$

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

Wind Load (without ice)

Coax projected surface area = $A_{coax} := \frac{(NP_{coax} D_{coax})}{12} = 0$ sf/ft

Total Coax Wind Force =	$F_{coax} := Ca_{coax} \cdot qz_{Mast5} \cdot G_H \cdot A_{coax} = 0$	plf	**BLC 5,7**
Total Coax Wind Force =	$F_{coax} := Ca_{coax} \cdot qz_{Mast4} \cdot G_H \cdot A_{coax} = 0$	plf	**BLC 5,7**
Total Coax Wind Force =	$F_{coax} := Ca_{coax} \cdot qz_{Mast3} \cdot G_H \cdot A_{coax} = 0$	plf	**BLC 5,7**
Total Coax Wind Force =	$F_{coax} := Ca_{coax} \cdot qz_{Mast2} \cdot G_H \cdot A_{coax} = 0$	plf	**BLC 5,7**
Total Coax Wind Force =	$F_{coax} := Ca_{coax} \cdot qz_{Mast1} \cdot G_H \cdot A_{coax} = 0$	plf	**BLC 5,7**

Wind Load (with ice)

Coax projected surface area w/ Ice = $AICE_{coax} := 0$ sf/ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast5} \cdot G_H \cdot AICE_{coax} = 0$ plf **BLC 4,6**

Coax projected surface area w/ Ice = $AICE_{coax} := 0$ sf/ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast4} \cdot G_H \cdot AICE_{coax} = 0$ plf **BLC 4,6**

Coax projected surface area w/ Ice = $AICE_{coax} := 0$ sf/ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast3} \cdot G_H \cdot AICE_{coax} = 0$ plf **BLC 4,6**

Coax projected surface area w/ Ice =	$AICE_{coax} := 0$	sf/ft	
Total Coax Wind Force w/ Ice =	$Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast2} \cdot G_H \cdot AICE_{coax} = 0$	plf	**BLC 4,6**
Coax projected surface area w/ Ice =	$AICE_{coax} := 0$	sf/ft	
Total Coax Wind Force w/ Ice =	$Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast1} \cdot G_H \cdot AICE_{coax} = 0$	plf	**BLC 4,6**
Gravity Loads (without ice)			
Weight of all cables w/o ice	$WT_{coax} := Wt_{coax} \cdot N_{coax} = 6$	plf	**BLC 2**
Gravity Loads (ice only)			
Ice Area per Linear Foot =	$Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot t_{izMast5}\right)^2 - D_{coax}^2\right] = 26.4$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := Ne_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 0$	plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot t_{izMast4}\right)^2 - D_{coax}^2\right] = 25.4$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := Ne_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 0$	plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot t_{izMast3}\right)^2 - D_{coax}^2\right] = 24.2$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := Ne_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 0$	plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot t_{izMast2}\right)^2 - D_{coax}^2\right] = 22.4$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := Ne_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 0$	plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot t_{izMast1}\right)^2 - D_{coax}^2\right] = 19$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := Ne_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 0$	plf	**BLC 3**

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Subject:	Loads on Equipmnet Structure 876
Location:	Fairfield, CT
Rev. 0: 7/9/21	Prepared by: T.J.L. Checked by: C.F.C. Job No. 21051.10

Development of Wind & Ice Load on Coax Cables

Coax Cable Data: (T-Mobile)

Coax Type =	HELIAX 1-1/4"		
Shape =	Round		(User Input)
Coax Outside Diameter =	$D_{coax} := 1.55$	in	(User Input)
Coax Cable Length =	$L_{coax} := 95$	ft	(User Input)
Weight of Coax per foot =	$Wt_{coax} := 0.66$	plf	(User Input)
Total Number of Coax =	$N_{coax} := 12$		(User Input)
Total Number of Exterior Coax =	$Ne_{coax} := 12$		(User Input)
No. of Coax Projecting Outside Face of Mast =	$NP_{coax} := 6$		(User Input)
Coax aspect ratio,	$Ar_{coax} := \frac{(L_{coax} \cdot 12)}{D_{coax}} = 735.5$		
Coax Cable Force Factor Coefficient =	$Ca_{coax} = 1.2$		

Wind Load (without ice)

Coax projected surface area =	$A_{coax} := \frac{(NP_{coax} D_{coax})}{12} = 0.8$	sf/ft		
Total Coax Wind Force =	$F_{coax} := Ca_{coax} \cdot qz_{Mast5} \cdot G_H \cdot A_{coax} = 37$	plf	**BLC 5,7**	
Total Coax Wind Force =	$F_{coax} := Ca_{coax} \cdot qz_{Mast4} \cdot G_H \cdot A_{coax} = 35$	plf	**BLC 5,7**	
Total Coax Wind Force =	$F_{coax} := Ca_{coax} \cdot qz_{Mast3} \cdot G_H \cdot A_{coax} = 32$	plf	**BLC 5,7**	
Total Coax Wind Force =	$F_{coax} := Ca_{coax} \cdot qz_{Mast2} \cdot G_H \cdot A_{coax} = 29$	plf	**BLC 5,7**	
Total Coax Wind Force =	$F_{coax} := Ca_{coax} \cdot qz_{Mast1} \cdot G_H \cdot A_{coax} = 23$	plf	**BLC 5,7**	

Wind Load (with ice)

Coax projected surface area w/ Ice =	$AICE_{coax} := \frac{(NP_{coax} \cdot D_{coax} + 2 \cdot t_{izMast5})}{12} = 1.1$	sf/ft		
Total Coax Wind Force w/ Ice =	$Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast5} \cdot G_H \cdot AICE_{coax} = 12$	plf	**BLC 4,6**	
Coax projected surface area w/ Ice =	$AICE_{coax} := \frac{(NP_{coax} \cdot D_{coax} + 2 \cdot t_{izMast4})}{12} = 1.1$	sf/ft		
Total Coax Wind Force w/ Ice =	$Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast4} \cdot G_H \cdot AICE_{coax} = 12$	plf	**BLC 4,6**	
Coax projected surface area w/ Ice =	$AICE_{coax} := \frac{(NP_{coax} \cdot D_{coax} + 2 \cdot t_{izMast3})}{12} = 1.1$	sf/ft		
Total Coax Wind Force w/ Ice =	$Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast3} \cdot G_H \cdot AICE_{coax} = 11$	plf	**BLC 4,6**	

Coax projected surface area w/ Ice =	$AICE_{coax} := \frac{\left(NP_{coax} \cdot D_{coax} + 2 \cdot t_{izMast2}\right)}{12} = 1.1$	sf/ft	
Total Coax Wind Force w/ Ice =	$Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast2} \cdot G_H \cdot AICE_{coax} = 9$	plf	**BLC 4,6**
Coax projected surface area w/ Ice =	$AICE_{coax} := \frac{\left(NP_{coax} \cdot D_{coax} + 2 \cdot t_{izMast1}\right)}{12} = 1.1$	sf/ft	
Total Coax Wind Force w/ Ice =	$Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast1} \cdot G_H \cdot AICE_{coax} = 7$	plf	**BLC 4,6**
Gravity Loads (without ice)			
Weight of all cables w/o ice	$WT_{coax} := Wt_{coax} \cdot N_{coax} = 8$	plf	**BLC 2**
Gravity Loads (ice only)			
Ice Area per Linear Foot =	$Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot t_{izMast5}\right)^2 - D_{coax}^2\right] = 23.6$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := Ne_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 110$	plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot t_{izMast4}\right)^2 - D_{coax}^2\right] = 22.7$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := Ne_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 106$	plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot t_{izMast3}\right)^2 - D_{coax}^2\right] = 21.5$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := Ne_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 100$	plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot t_{izMast2}\right)^2 - D_{coax}^2\right] = 19.9$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := Ne_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 93$	plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot t_{izMast1}\right)^2 - D_{coax}^2\right] = 16.8$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := Ne_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 78$	plf	**BLC 3**

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Subject:	Loads on Equipmnet Structure 876
Location:	Fairfield, CT
Rev. 0: 7/9/21	Prepared by: T.J.L. Checked by: C.F.C. Job No. 21051.10

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 = $L_{mem} := 120$ in (User Input)

Member Aspect Ratio = $Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 34.3$

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 = $A_{ICEmem} := \frac{\left(H_{mem} + 2 \cdot t_{izMast5}\right)}{12} = 0.6$ 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 =

$$Ai_{mem} := \left[\left(H_{mem} + 2 \cdot t_{izMast5}\right) + \left(W_{mem} - t_{mem}\right)\right] \cdot \left(t_{mem} + 2 \cdot t_{izMast5}\right) - \left[H_{mem} + \left(W_{mem} + t_{mem}\right)\right] \cdot t_{mem} = 46 \text{ sq in}$$

Weight of Ice on Member = $W_{ICE.mem} := Id \cdot \frac{Ai_{mem}}{144} = 18$ 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. C 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	PIPE_12.0	Column	Pipe	A500 Gr. C ...	Typical	13.7	262	262	523
2	L3.5x3.5x1/4	L3.5X3.5X4	Beam	Single Angle	A36 Gr.36	Typical	1.7	2	2	.039
3	L2.5x2.5x3/16	L2.5x2.5x3	Beam	Single Angle	A36 Gr.36	Typical	.901	.535	.535	.011

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	104			Lbyy						Lateral
2	M2	L3.5x3.5x1/4	9.758			Lbyy						Lateral
3	M3	L3.5x3.5x1/4	9.758			Lbyy						Lateral
4	M4	L3.5x3.5x1/4	9.758			Lbyy						Lateral
5	M5	L3.5x3.5x1/4	9.758			Lbyy						Lateral
6	M6	L3.5x3.5x1/4	3.536			Lbyy						Lateral
7	M7	L3.5x3.5x1/4	3.536			Lbyy						Lateral
8	M8	L3.5x3.5x1/4	3.536			Lbyy						Lateral
9	M9	L3.5x3.5x1/4	3.536			Lbyy						Lateral
10	M10	L3.5x3.5x1/4	3.536			Lbyy						Lateral
11	M11	L3.5x3.5x1/4	3.536			Lbyy						Lateral
12	M12	L3.5x3.5x1/4	3.536			Lbyy						Lateral
13	M13	L3.5x3.5x1/4	3.536			Lbyy						Lateral
14	M14	L3.5x3.5x1/4	3.536			Lbyy						Lateral
15	M15	L3.5x3.5x1/4	3.536			Lbyy						Lateral
16	M16	L3.5x3.5x1/4	3.536			Lbyy						Lateral
17	M17	L3.5x3.5x1/4	3.536			Lbyy						Lateral
18	M18	L3.5x3.5x1/4	3.536			Lbyy						Lateral
19	M19	L3.5x3.5x1/4	3.536			Lbyy						Lateral
20	M20	L3.5x3.5x1/4	3.536			Lbyy						Lateral
21	M21	L3.5x3.5x1/4	3.536			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
1	M1	N1	N7			Powermount	Column	Pipe	A500 Gr. C 50	Typical
2	M2	N2	N8			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
3	M3	N2	N9			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
4	M4	N2	N10			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
5	M5	N2	N11			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
6	M6	N3	N12			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
7	M7	N3	N13			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
8	M8	N3	N14			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
9	M9	N3	N15			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
10	M10	N4	N16			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
11	M11	N4	N17			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
12	M12	N4	N18			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
13	M13	N4	N19			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
14	M14	N5	N20			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
15	M15	N5	N21			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
16	M16	N5	N22			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
17	M17	N5	N23			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
18	M18	N6	N24			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
19	M19	N6	N25			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
20	M20	N6	N26			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
21	M21	N6	N27			L3.5x3.5x1/4	Beam	Single Angle	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	27	0	0	
3	N3	0	59	0	0	
4	N4	0	69	0	0	
5	N5	0	81	0	0	
6	N6	0	86	0	0	
7	N7	0	104	0	0	
8	N8	6.9	27	6.9	0	
9	N9	6.9	27	-6.9	0	
10	N10	-6.9	27	6.9	0	
11	N11	-6.9	27	-6.9	0	
12	N12	2.5	59	2.5	0	
13	N13	2.5	59	-2.5	0	
14	N14	-2.5	59	2.5	0	
15	N15	-2.5	59	-2.5	0	
16	N16	2.5	69	2.5	0	
17	N17	2.5	69	-2.5	0	
18	N18	-2.5	69	2.5	0	
19	N19	-2.5	69	-2.5	0	
20	N20	2.5	81	2.5	0	
21	N21	2.5	81	-2.5	0	
22	N22	-2.5	81	2.5	0	
23	N23	-2.5	81	-2.5	0	
24	N24	2.5	86	2.5	0	
25	N25	2.5	86	-2.5	0	
26	N26	-2.5	86	2.5	0	
27	N27	-2.5	86	-2.5	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	N26	Reaction	Reaction	Reaction			
3	N27	Reaction	Reaction	Reaction			
4	N25	Reaction	Reaction	Reaction			
5	N24	Reaction	Reaction	Reaction			
6	N21	Reaction	Reaction	Reaction			
7	N20	Reaction	Reaction	Reaction			
8	N22	Reaction	Reaction	Reaction			
9	N23	Reaction	Reaction	Reaction			
10	N19	Reaction	Reaction	Reaction			
11	N18	Reaction	Reaction	Reaction			
12	N17	Reaction	Reaction	Reaction			
13	N16	Reaction	Reaction	Reaction			

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]
14	N14	Reaction	Reaction	Reaction			
15	N15	Reaction	Reaction	Reaction			
16	N12	Reaction	Reaction	Reaction			
17	N13	Reaction	Reaction	Reaction			
18	N10	Reaction	Reaction	Reaction			
19	N11	Reaction	Reaction	Reaction			
20	N8	Reaction	Reaction	Reaction			
21	N9	Reaction	Reaction	Reaction			

Member Point Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.171	104
2	M1	Y	-.55	104
3	M1	Y	-.122	95
4	M1	Y	-.45	95
5	M1	Y	-.012	95
6	M1	Y	-.9	95

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.751	104
2	M1	Y	-.15	104
3	M1	Y	-.511	95
4	M1	Y	-1.57	95
5	M1	Y	-.084	95
6	M1	Y	-.2	95

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.324	104
2	M1	X	.072	104
3	M1	X	.253	95
4	M1	X	.684	95
5	M1	X	.035	95
6	M1	X	.112	95

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.976	104
2	M1	X	.251	104
3	M1	X	.771	95
4	M1	X	2.417	95
5	M1	X	.041	95
6	M1	X	.406	95

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	.324	104

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
2	M1	Z	.072	104
3	M1	Z	.253	95
4	M1	Z	.684	95
5	M1	Z	.035	95
6	M1	Z	.112	95

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	.976	104
2	M1	Z	.251	104
3	M1	Z	.771	95
4	M1	Z	2.417	95
5	M1	Z	.041	95
6	M1	Z	.406	95

Member Distributed Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.006	-.006	0	0
2	M1	Y	-.008	-.008	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.038	-.038	80	104
2	M1	Y	-.036	-.036	60	80
3	M1	Y	-.035	-.035	40	60
4	M1	Y	-.033	-.033	20	40
5	M1	Y	-.029	-.029	0	20
6	M1	Y	-.11	-.11	80	95
7	M1	Y	-.106	-.106	60	80
8	M1	Y	-.1	-.1	40	60
9	M1	Y	-.093	-.093	20	40
10	M1	Y	-.078	-.078	0	20
11	M2	Y	-.018	-.018	0	0
12	M3	Y	-.018	-.018	0	0
13	M4	Y	-.018	-.018	0	0
14	M5	Y	-.018	-.018	0	0
15	M6	Y	-.018	-.018	0	0
16	M7	Y	-.018	-.018	0	0
17	M8	Y	-.018	-.018	0	0
18	M9	Y	-.018	-.018	0	0
19	M10	Y	-.018	-.018	0	0
20	M11	Y	-.018	-.018	0	0
21	M12	Y	-.018	-.018	0	0
22	M13	Y	-.018	-.018	0	0
23	M14	Y	-.018	-.018	0	0
24	M15	Y	-.018	-.018	0	0
25	M16	Y	-.018	-.018	0	0
26	M17	Y	-.018	-.018	0	0
27	M18	Y	-.018	-.018	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f..	Start Location[ft,%]	End Location[ft,%]
28	M19	Y	-.018	-.018	0	0
29	M20	Y	-.018	-.018	0	0
30	M21	Y	-.018	-.018	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f..	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.008	.008	80	104
2	M1	X	.007	.007	60	80
3	M1	X	.007	.007	40	60
4	M1	X	.006	.006	20	40
5	M1	X	.005	.005	0	20
6	M1	X	.012	.012	80	95
7	M1	X	.012	.012	60	80
8	M1	X	.011	.011	40	60
9	M1	X	.009	.009	20	40
10	M1	X	.007	.007	0	20
11	M2	X	.012	.012	0	0
12	M3	X	.012	.012	0	0
13	M4	X	.012	.012	0	0
14	M5	X	.012	.012	0	0
15	M6	X	.012	.012	0	0
16	M7	X	.012	.012	0	0
17	M8	X	.012	.012	0	0
18	M9	X	.012	.012	0	0
19	M10	X	.012	.012	0	0
20	M11	X	.012	.012	0	0
21	M12	X	.012	.012	0	0
22	M13	X	.012	.012	0	0
23	M14	X	.012	.012	0	0
24	M15	X	.012	.012	0	0
25	M16	X	.012	.012	0	0
26	M17	X	.012	.012	0	0
27	M18	X	.012	.012	0	0
28	M19	X	.012	.012	0	0
29	M20	X	.012	.012	0	0
30	M21	X	.012	.012	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f..	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.025	.025	80	104
2	M1	X	.024	.024	60	80
3	M1	X	.022	.022	40	60
4	M1	X	.02	.02	20	40
5	M1	X	.016	.016	0	20
6	M1	X	.037	.037	80	95
7	M1	X	.035	.035	60	80
8	M1	X	.032	.032	40	60
9	M1	X	.029	.029	20	40
10	M1	X	.023	.023	0	20
11	M2	X	.023	.023	0	0
12	M3	X	.023	.023	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f..	Start Location[ft,%]	End Location[ft,%]
13	M4	X	.023	.023	0	0
14	M5	X	.023	.023	0	0
15	M6	X	.023	.023	0	0
16	M7	X	.023	.023	0	0
17	M8	X	.023	.023	0	0
18	M9	X	.023	.023	0	0
19	M10	X	.023	.023	0	0
20	M11	X	.023	.023	0	0
21	M12	X	.023	.023	0	0
22	M13	X	.023	.023	0	0
23	M14	X	.023	.023	0	0
24	M15	X	.023	.023	0	0
25	M16	X	.023	.023	0	0
26	M17	X	.023	.023	0	0
27	M18	X	.023	.023	0	0
28	M19	X	.023	.023	0	0
29	M20	X	.023	.023	0	0
30	M21	X	.023	.023	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f..	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.008	.008	80	104
2	M1	Z	.007	.007	60	80
3	M1	Z	.007	.007	40	60
4	M1	Z	.006	.006	20	40
5	M1	Z	.005	.005	0	20
6	M1	Z	.012	.012	80	95
7	M1	Z	.012	.012	60	80
8	M1	Z	.011	.011	40	60
9	M1	Z	.009	.009	20	40
10	M1	Z	.007	.007	0	20
11	M2	Z	.012	.012	0	0
12	M3	Z	.012	.012	0	0
13	M4	Z	.012	.012	0	0
14	M5	Z	.012	.012	0	0
15	M6	Z	.012	.012	0	0
16	M7	Z	.012	.012	0	0
17	M8	Z	.012	.012	0	0
18	M9	Z	.012	.012	0	0
19	M10	Z	.012	.012	0	0
20	M11	Z	.012	.012	0	0
21	M12	Z	.012	.012	0	0
22	M13	Z	.012	.012	0	0
23	M14	Z	.012	.012	0	0
24	M15	Z	.012	.012	0	0
25	M16	Z	.012	.012	0	0
26	M17	Z	.012	.012	0	0
27	M18	Z	.012	.012	0	0
28	M19	Z	.012	.012	0	0
29	M20	Z	.012	.012	0	0
30	M21	Z	.012	.012	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.025	.025	80	104
2	M1	Z	.024	.024	60	80
3	M1	Z	.022	.022	40	60
4	M1	Z	.02	.02	20	40
5	M1	Z	.016	.016	0	20
6	M1	Z	.037	.037	80	95
7	M1	Z	.035	.035	60	80
8	M1	Z	.032	.032	40	60
9	M1	Z	.029	.029	20	40
10	M1	Z	.023	.023	0	20
11	M2	Z	.023	.023	0	0
12	M3	Z	.023	.023	0	0
13	M4	Z	.023	.023	0	0
14	M5	Z	.023	.023	0	0
15	M6	Z	.023	.023	0	0
16	M7	Z	.023	.023	0	0
17	M8	Z	.023	.023	0	0
18	M9	Z	.023	.023	0	0
19	M10	Z	.023	.023	0	0
20	M11	Z	.023	.023	0	0
21	M12	Z	.023	.023	0	0
22	M13	Z	.023	.023	0	0
23	M14	Z	.023	.023	0	0
24	M15	Z	.023	.023	0	0
25	M16	Z	.023	.023	0	0
26	M17	Z	.023	.023	0	0
27	M18	Z	.023	.023	0	0
28	M19	Z	.023	.023	0	0
29	M20	Z	.023	.023	0	0
30	M21	Z	.023	.023	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					6	2		
3	Weight of Ice Only	None					6	30		
4	(x) TIA Wind with Ice	None					6	30		
5	(x) TIA Wind	None					6	30		
6	(z) TIA Wind with Ice	None					6	30		
7	(z) TIA Wind	None					6	30		

Load Combinations

	Description	Solve	P...	S...	B...	Fa...	BLC	Fact...	BLC	Fa...	BLC	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.2D + 1.6W (X-dir...	Yes	Y		1	1.2	2	1.2	5	1.6														
2	0.9D + 1.6W (X-dir...	Yes	Y		1	.9	2	.9	5	1.6														
3	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	2	1.2	3	1	4	1												
4	1.2D + 1.6W (Z-dire...	Yes	Y		1	1.2	2	1.2	7	1.6														
5	0.9D + 1.6W (Z-dire...	Yes	Y		1	.9	2	.9	7	1.6														
6	1.2D + 1.0Di + 1.0...	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	27.431	6	0	3	0	3	0	6	2.85	2
2		min	-.733	2	7.907	2	-.733	5	-2.85	5	0	1	0	4
3	N26	max	7.627	4	.047	3	7.623	1	0	6	0	6	0	6
4		min	-7.692	1	.005	5	-7.688	4	0	1	0	1	0	1
5	N27	max	-1.488	6	.047	6	-1.488	3	0	6	0	6	0	6
6		min	-7.692	1	.014	2	-7.692	4	0	1	0	1	0	1
7	N25	max	7.623	4	.047	6	7.627	1	0	6	0	6	0	6
8		min	-7.688	1	.005	2	-7.692	4	0	1	0	1	0	1
9	N24	max	-1.488	6	.041	6	-1.488	3	0	6	0	6	0	6
10		min	-7.688	1	.005	2	-7.688	4	0	1	0	1	0	1
11	N21	max	5.099	1	.046	3	5.097	4	0	6	0	6	0	6
12		min	-5.164	4	.006	5	-5.163	1	0	1	0	1	0	1
13	N20	max	5.163	4	.046	6	5.163	1	0	6	0	6	0	6
14		min	.975	3	.012	2	.975	6	0	1	0	1	0	1
15	N22	max	5.097	1	.046	6	5.099	4	0	6	0	6	0	6
16		min	-5.163	4	.006	2	-5.164	1	0	1	0	1	0	1
17	N23	max	5.164	4	.042	6	5.164	1	0	6	0	6	0	6
18		min	.975	3	.006	2	.975	6	0	1	0	1	0	1
19	N19	max	-.089	6	.044	6	-.089	3	0	6	0	6	0	6
20		min	-.478	1	.009	2	-.478	4	0	1	0	1	0	1
21	N18	max	.413	4	.044	3	.413	1	0	6	0	6	0	6
22		min	-.478	1	.009	5	-.478	4	0	1	0	1	0	1
23	N17	max	.413	4	.044	6	.413	1	0	6	0	6	0	6
24		min	-.478	1	.009	2	-.478	4	0	1	0	1	0	1
25	N16	max	-.089	6	.044	6	-.089	3	0	6	0	6	0	6
26		min	-.478	1	.009	2	-.478	4	0	1	0	1	0	1
27	N14	max	.624	5	.044	3	.624	2	0	6	0	6	0	6
28		min	-.689	2	.009	5	-.689	5	0	1	0	1	0	1
29	N15	max	-.137	6	.044	6	-.137	3	0	6	0	6	0	6
30		min	-.689	2	.009	2	-.689	5	0	1	0	1	0	1
31	N12	max	-.137	6	.044	6	-.137	3	0	6	0	6	0	6
32		min	-.689	2	.009	2	-.689	5	0	1	0	1	0	1
33	N13	max	.624	5	.044	6	.624	2	0	6	0	6	0	6
34		min	-.689	2	.009	2	-.689	5	0	1	0	1	0	1
35	N10	max	.773	4	.122	3	.773	1	0	6	0	6	0	6
36		min	-.952	1	.025	5	-.952	4	0	1	0	1	0	1
37	N11	max	-.174	6	.122	6	-.174	3	0	6	0	6	0	6
38		min	-.952	1	.025	2	-.952	4	0	1	0	1	0	1
39	N8	max	-.174	6	.122	6	-.174	3	0	6	0	6	0	6
40		min	-.952	1	.025	2	-.952	4	0	1	0	1	0	1
41	N9	max	.773	4	.122	6	.773	1	0	6	0	6	0	6
42		min	-.952	1	.025	2	-.952	4	0	1	0	1	0	1
43	Totals:	max	0	6	28.624	6	0	3						
44		min	-19.577	1	8.156	2	-19.577	4						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotation [rad]	LC
1	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

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotation [rad]	LC
3	N2	max	.005	1	-.007	5	.005	4	3.652e-04	4	0	6	0	6
4		min	0	4	-.025	3	0	1	0	1	0	1	-3.652e-04	1
5	N3	max	.001	2	-.014	5	.001	5	0	3	0	6	4.497e-04	1
6		min	0	4	-.048	3	0	1	-4.497e-04	4	0	1	0	4
7	N4	max	0	1	-.016	5	0	4	2.657e-04	4	0	6	0	6
8		min	0	4	-.053	3	0	1	0	1	0	1	-2.657e-04	1
9	N5	max	0	6	-.017	5	0	3	0	3	0	6	8.911e-04	1
10		min	-.011	1	-.059	3	-.011	4	-8.911e-04	4	0	1	0	4
11	N6	max	.016	1	-.018	5	.016	4	4.393e-03	4	0	6	0	6
12		min	0	4	-.061	3	0	1	0	1	0	1	-4.393e-03	1
13	N7	max	3.271	1	-.019	5	3.271	4	1.874e-02	4	0	6	0	6
14		min	0	4	-.064	3	0	1	0	1	0	1	-1.874e-02	1
15	N8	max	0	6	0	6	0	6	1.505e-03	5	4.314e-03	5	4.085e-03	3
16		min	0	1	0	1	0	1	-4.161e-03	3	-5.671e-03	1	-1.14e-03	5
17	N9	max	0	6	0	6	0	6	2.821e-03	6	4.314e-03	5	2.745e-03	6
18		min	0	1	0	1	0	1	-1.14e-03	2	-1.193e-03	3	-1.505e-03	2
19	N10	max	0	6	0	6	0	6	-2.606e-03	5	-4.38e-03	6	-2.971e-03	5
20		min	0	1	0	1	0	1	-4.085e-03	3	-5.671e-03	1	-4.161e-03	3
21	N11	max	0	6	0	6	0	6	4.161e-03	6	4.314e-03	2	1.14e-03	2
22		min	0	1	0	1	0	1	-1.505e-03	2	-5.671e-03	4	-4.085e-03	6
23	N12	max	0	6	0	6	0	6	-1.377e-04	2	2.275e-04	5	1.037e-03	3
24		min	0	1	0	1	0	1	-9.737e-04	6	-2.92e-04	1	-5.786e-05	5
25	N13	max	0	6	0	6	0	6	8.814e-04	6	2.275e-04	5	9.737e-04	6
26		min	0	1	0	1	0	1	-5.786e-05	2	-5.171e-05	3	3.917e-04	2
27	N14	max	0	6	0	6	0	6	-5.872e-04	5	-2.133e-04	6	-1.377e-04	5
28		min	0	1	0	1	0	1	-1.037e-03	3	-2.92e-04	1	-9.451e-04	3
29	N15	max	0	6	0	6	0	6	9.737e-04	3	2.275e-04	2	5.786e-05	2
30		min	0	1	0	1	0	1	1.377e-04	5	-2.92e-04	4	-1.037e-03	6
31	N16	max	0	6	0	6	0	6	-6.111e-05	5	2.199e-04	5	1.054e-03	3
32		min	0	1	0	1	0	1	-1.107e-03	3	-2.844e-04	1	2.566e-04	2
33	N17	max	0	6	0	6	0	6	1.043e-03	6	2.199e-04	5	9.902e-04	6
34		min	0	1	0	1	0	1	3.266e-04	2	-5.345e-05	3	6.111e-05	2
35	N18	max	0	6	0	6	0	6	-2.566e-04	5	-2.116e-04	6	-5.221e-04	5
36		min	0	1	0	1	0	1	-1.054e-03	3	-2.844e-04	1	-1.107e-03	3
37	N19	max	0	6	0	6	0	6	1.107e-03	6	2.199e-04	2	-2.566e-04	5
38		min	0	1	0	1	0	1	6.111e-05	2	-2.844e-04	4	-1.054e-03	6
39	N20	max	0	6	0	6	0	6	2.796e-05	2	2.029e-05	5	1.256e-03	3
40		min	0	1	0	1	0	1	-1.192e-03	6	-1.727e-04	3	-2.235e-04	5
41	N21	max	0	6	0	6	0	6	1.018e-03	6	2.029e-05	5	1.192e-03	6
42		min	0	1	0	1	0	1	-2.235e-04	2	-9.235e-05	3	6.661e-04	2
43	N22	max	0	6	0	6	0	6	-8.617e-04	5	-7.561e-05	5	2.796e-05	5
44		min	0	1	0	1	0	1	-1.256e-03	3	-1.727e-04	3	-1.081e-03	3
45	N23	max	0	6	0	6	0	6	1.192e-03	3	2.029e-05	2	2.235e-04	2
46		min	0	1	0	1	0	1	-2.796e-05	5	-1.727e-04	6	-1.256e-03	6
47	N24	max	0	6	0	6	0	6	1.962e-03	5	4.782e-04	5	2.537e-03	4
48		min	0	1	0	1	0	1	-2.733e-03	1	-5.43e-04	1	-1.766e-03	2
49	N25	max	0	6	0	6	0	6	2.537e-03	4	4.782e-04	5	7.069e-04	6
50		min	0	1	0	1	0	1	1.563e-03	3	-3.276e-06	3	-1.962e-03	2
51	N26	max	0	6	0	6	0	6	1.766e-03	5	-2.618e-04	6	-1.627e-03	6
52		min	0	1	0	1	0	1	-7.707e-04	3	-5.43e-04	1	-2.733e-03	1
53	N27	max	0	6	0	6	0	6	2.733e-03	4	4.782e-04	2	1.766e-03	5
54		min	0	1	0	1	0	1	-1.962e-03	2	-5.43e-04	4	-2.537e-03	1

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

	Member	Shape	Code Check	Lo...	LC	She...	Lo...	Dir	...	phi*...	phi*...	phi*...	phi*...	Cb	Eqn
1	M1	PIPE_12.0	.724	0	6	.114	85...		4	38.002	616.5	201....	201....	1	H1-...
2	M2	L3.5X3.5X4	.239	4....	1	.007	0	z	5	13.258	55.08	2.416	3.9	1.1..	H2-1
3	M3	L3.5X3.5X4	.222	5....	2	.007	0	z	5	13.258	55.08	2.416	3.9	1.1..	H2-1
4	M4	L3.5X3.5X4	.239	4....	4	.007	0	z	5	13.258	55.08	2.416	3.9	1.1..	H2-1
5	M5	L3.5X3.5X4	.176	4....	4	.007	0	z	5	13.258	55.08	2.416	3.9	1.1..	H2-1
6	M6	L3.5X3.5X4	.039	1....	1	.003	3....	z	5	43.819	55.08	2.416	5.012	1.1..	H2-1
7	M7	L3.5X3.5X4	.037	1....	2	.003	3....	z	5	43.819	55.08	2.416	5.012	1.1..	H2-1
8	M8	L3.5X3.5X4	.039	1....	4	.003	3....	z	5	43.819	55.08	2.416	5.012	1.1..	H2-1
9	M9	L3.5X3.5X4	.035	1....	4	.003	3....	z	5	43.819	55.08	2.416	5.012	1.1..	H2-1
10	M10	L3.5X3.5X4	.033	1....	1	.003	3....	z	5	43.819	55.08	2.416	5.012	1.1..	H2-1
11	M11	L3.5X3.5X4	.030	1....	2	.003	3....	z	5	43.819	55.08	2.416	5.012	1.1..	H2-1
12	M12	L3.5X3.5X4	.033	1....	4	.003	3....	z	5	43.819	55.08	2.416	5.012	1.1..	H2-1
13	M13	L3.5X3.5X4	.030	1....	4	.003	3....	z	5	43.819	55.08	2.416	5.012	1.1..	H2-1
14	M14	L3.5X3.5X4	.152	1....	1	.003	3....	z	5	43.819	55.08	2.416	5.012	1.1..	H2-1
15	M15	L3.5X3.5X4	.183	1....	5	.003	3....	z	5	43.819	55.08	2.416	5.012	1.1..	H2-1
16	M16	L3.5X3.5X4	.186	1....	1	.003	0	z	5	43.819	55.08	2.416	5.012	1.1..	H2-1
17	M17	L3.5X3.5X4	.186	1....	4	.003	0	z	5	43.819	55.08	2.416	5.012	1.1..	H2-1
18	M18	L3.5X3.5X4	.265	1....	1	.003	3....	z	5	43.819	55.08	2.416	5.012	1.1..	H2-1
19	M19	L3.5X3.5X4	.262	1....	2	.003	3....	z	5	43.819	55.08	2.416	5.012	1.1..	H2-1
20	M20	L3.5X3.5X4	.265	1....	4	.003	3....	z	5	43.819	55.08	2.416	5.012	1.1..	H2-1
21	M21	L3.5X3.5X4	.215	1....	4	.003	3....	z	5	43.819	55.08	2.416	5.012	1.1..	H2-1

Joint Reactions (By Combination)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N1	-.733	10.543	0	0	0	2.85
2	1	N26	-7.692	.018	7.623	0	0	0
3	1	N27	-7.692	.018	-7.623	0	0	0
4	1	N25	-7.688	.006	7.627	0	0	0
5	1	N24	-7.688	.006	-7.627	0	0	0
6	1	N21	5.099	.016	-5.163	0	0	0
7	1	N20	5.099	.016	5.163	0	0	0
8	1	N22	5.097	.008	-5.164	0	0	0
9	1	N23	5.097	.008	5.164	0	0	0
10	1	N19	-.478	.013	-.413	0	0	0
11	1	N18	-.478	.013	.413	0	0	0
12	1	N17	-.478	.012	.413	0	0	0
13	1	N16	-.478	.012	-.413	0	0	0
14	1	N14	-.689	.013	.624	0	0	0
15	1	N15	-.689	.013	-.624	0	0	0
16	1	N12	-.689	.012	-.624	0	0	0
17	1	N13	-.689	.012	.624	0	0	0
18	1	N10	-.952	.034	.773	0	0	0
19	1	N11	-.952	.034	-.773	0	0	0
20	1	N8	-.952	.034	-.773	0	0	0
21	1	N9	-.952	.034	.773	0	0	0
22	1	Totals:	-19.577	10.875	0			
23	1	COG (ft):	X: 0	Y: 63.341	Z: 0			

Joint Reactions (By Combination)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	N1	-.733	7.907	0	0	0	2.85
2	2	N26	-7.683	.014	7.614	0	0	0
3	2	N27	-7.683	.014	-7.614	0	0	0
4	2	N25	-7.679	.005	7.618	0	0	0
5	2	N24	-7.679	.005	-7.618	0	0	0
6	2	N21	5.09	.012	-5.153	0	0	0
7	2	N20	5.09	.012	5.153	0	0	0
8	2	N22	5.088	.006	-5.155	0	0	0
9	2	N23	5.088	.006	5.155	0	0	0
10	2	N19	-.478	.009	-.412	0	0	0
11	2	N18	-.478	.009	.412	0	0	0
12	2	N17	-.478	.009	.412	0	0	0
13	2	N16	-.478	.009	-.412	0	0	0
14	2	N14	-.689	.009	.624	0	0	0
15	2	N15	-.689	.009	-.624	0	0	0
16	2	N12	-.689	.009	-.624	0	0	0
17	2	N13	-.689	.009	.624	0	0	0
18	2	N10	-.952	.025	.773	0	0	0
19	2	N11	-.952	.025	-.773	0	0	0
20	2	N8	-.952	.025	-.773	0	0	0
21	2	N9	-.952	.025	.773	0	0	0
22	2	Totals:	-19.577	8.156	0			
23	2	COG (ft):	X: 0	Y: 63.341	Z: 0			

Joint Reactions (By Combination)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	3	N1	-.139	27.431	0	0	0	.533
2	3	N26	-1.509	.047	1.488	0	0	0
3	3	N27	-1.509	.047	-1.488	0	0	0
4	3	N25	-1.509	.041	1.488	0	0	0
5	3	N24	-1.509	.041	-1.488	0	0	0
6	3	N21	.975	.046	-.996	0	0	0
7	3	N20	.975	.046	.996	0	0	0
8	3	N22	.975	.042	-.996	0	0	0
9	3	N23	.975	.042	.996	0	0	0
10	3	N19	-.11	.044	-.089	0	0	0
11	3	N18	-.11	.044	.089	0	0	0
12	3	N17	-.11	.044	.089	0	0	0
13	3	N16	-.11	.044	-.089	0	0	0
14	3	N14	-.158	.044	.137	0	0	0
15	3	N15	-.158	.044	-.137	0	0	0
16	3	N12	-.158	.044	-.137	0	0	0
17	3	N13	-.158	.044	.137	0	0	0
18	3	N10	-.233	.122	.174	0	0	0
19	3	N11	-.233	.122	-.174	0	0	0
20	3	N8	-.233	.122	-.174	0	0	0
21	3	N9	-.233	.122	.174	0	0	0
22	3	Totals:	-4.279	28.624	0			
23	3	COG (ft):	X: 0	Y: 61.5	Z: 0			

Joint Reactions (By Combination)

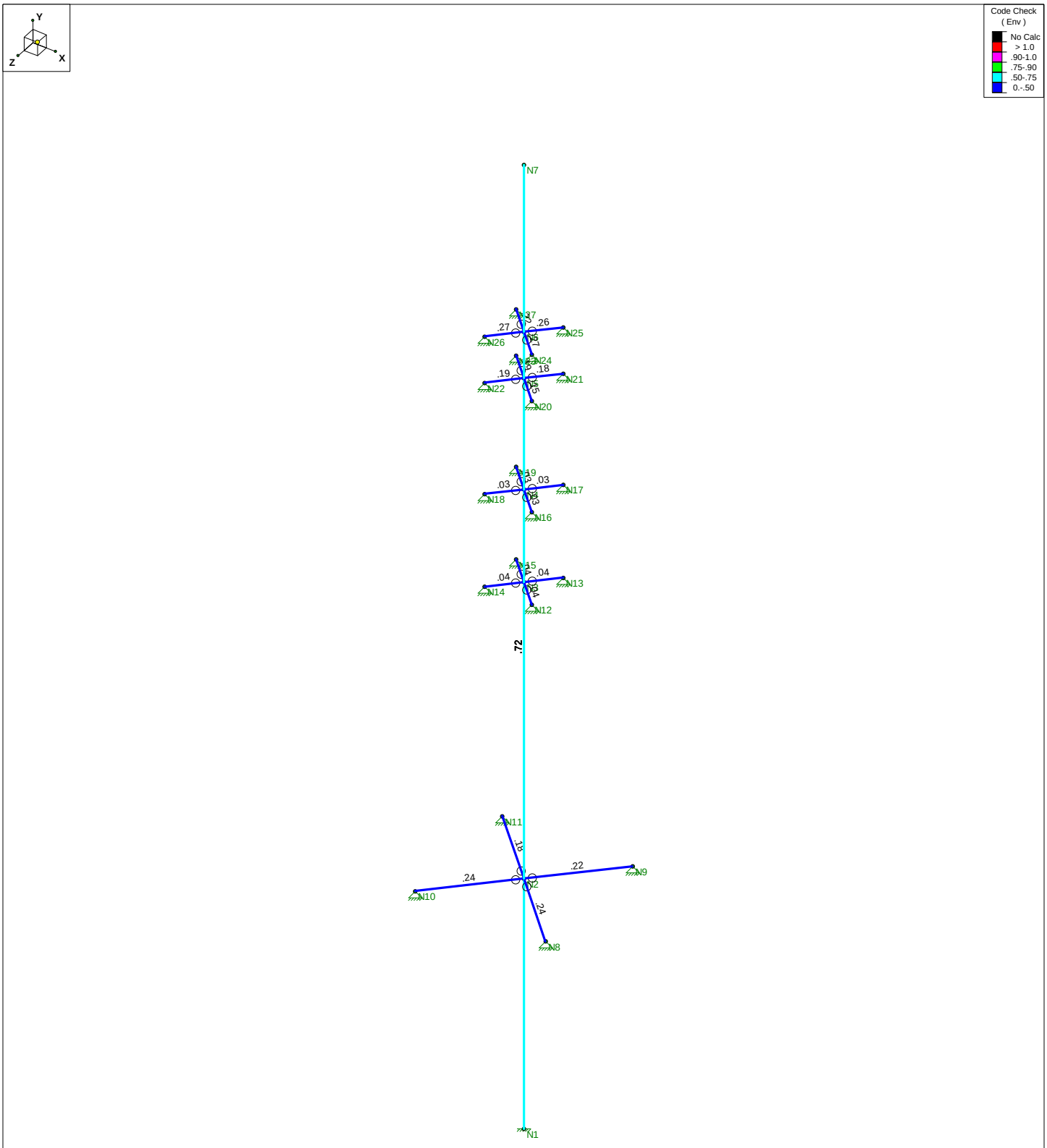
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	4	N1	0	10.543	-.733	-2.85	0	0
2	4	N26	7.627	.006	-7.688	0	0	0
3	4	N27	-7.623	.018	-7.692	0	0	0
4	4	N25	7.623	.018	-7.692	0	0	0
5	4	N24	-7.627	.006	-7.688	0	0	0
6	4	N21	-5.164	.008	5.097	0	0	0
7	4	N20	5.163	.016	5.099	0	0	0
8	4	N22	-5.163	.016	5.099	0	0	0
9	4	N23	5.164	.008	5.097	0	0	0
10	4	N19	-.413	.013	-.478	0	0	0
11	4	N18	.413	.012	-.478	0	0	0
12	4	N17	.413	.013	-.478	0	0	0
13	4	N16	-.413	.012	-.478	0	0	0
14	4	N14	.624	.012	-.689	0	0	0
15	4	N15	-.624	.013	-.689	0	0	0
16	4	N12	-.624	.012	-.689	0	0	0
17	4	N13	.624	.013	-.689	0	0	0
18	4	N10	.773	.034	-.952	0	0	0
19	4	N11	-.773	.034	-.952	0	0	0
20	4	N8	-.773	.034	-.952	0	0	0
21	4	N9	.773	.034	-.952	0	0	0
22	4	Totals:	0	10.875	-19.577			
23	4	COG (ft):	X: 0	Y: 63.341	Z: 0			

Joint Reactions (By Combination)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	5	N1	0	7.907	-.733	-2.85	0	0
2	5	N26	7.618	.005	-7.679	0	0	0
3	5	N27	-7.614	.014	-7.683	0	0	0
4	5	N25	7.614	.014	-7.683	0	0	0
5	5	N24	-7.618	.005	-7.679	0	0	0
6	5	N21	-5.155	.006	5.088	0	0	0
7	5	N20	5.153	.012	5.09	0	0	0
8	5	N22	-5.153	.012	5.09	0	0	0
9	5	N23	5.155	.006	5.088	0	0	0
10	5	N19	-.412	.009	-.478	0	0	0
11	5	N18	.412	.009	-.478	0	0	0
12	5	N17	.412	.009	-.478	0	0	0
13	5	N16	-.412	.009	-.478	0	0	0
14	5	N14	.624	.009	-.689	0	0	0
15	5	N15	-.624	.009	-.689	0	0	0
16	5	N12	-.624	.009	-.689	0	0	0
17	5	N13	.624	.009	-.689	0	0	0
18	5	N10	.773	.025	-.952	0	0	0
19	5	N11	-.773	.025	-.952	0	0	0
20	5	N8	-.773	.025	-.952	0	0	0
21	5	N9	.773	.025	-.952	0	0	0
22	5	Totals:	0	8.156	-19.577			
23	5	COG (ft):	X: 0	Y: 63.341	Z: 0			

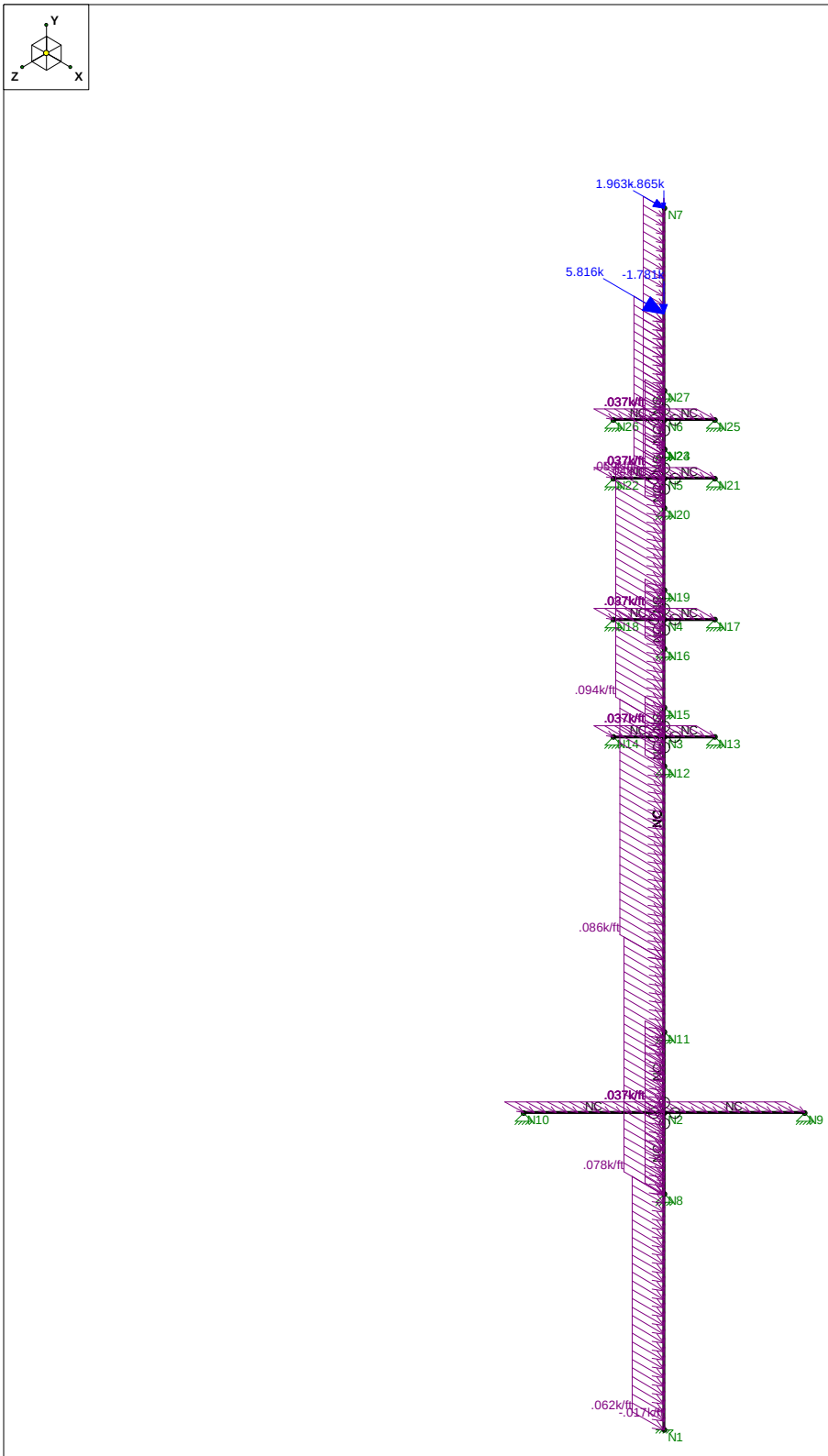
Joint Reactions (By Combination)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	6	N1	0	27.431	-.139	-.533	0	0
2	6	N26	1.488	.041	-1.509	0	0	0
3	6	N27	-1.488	.047	-1.509	0	0	0
4	6	N25	1.488	.047	-1.509	0	0	0
5	6	N24	-1.488	.041	-1.509	0	0	0
6	6	N21	-.996	.042	.975	0	0	0
7	6	N20	.996	.046	.975	0	0	0
8	6	N22	-.996	.046	.975	0	0	0
9	6	N23	.996	.042	.975	0	0	0
10	6	N19	-.089	.044	-.11	0	0	0
11	6	N18	.089	.044	-.11	0	0	0
12	6	N17	.089	.044	-.11	0	0	0
13	6	N16	-.089	.044	-.11	0	0	0
14	6	N14	.137	.044	-.158	0	0	0
15	6	N15	-.137	.044	-.158	0	0	0
16	6	N12	-.137	.044	-.158	0	0	0
17	6	N13	.137	.044	-.158	0	0	0
18	6	N10	.174	.122	-.233	0	0	0
19	6	N11	-.174	.122	-.233	0	0	0
20	6	N8	-.174	.122	-.233	0	0	0
21	6	N9	.174	.122	-.233	0	0	0
22	6	Totals:	0	28.624	-4.279			
23	6	COG (ft):	X: 0	Y: 61.5	Z: 0			



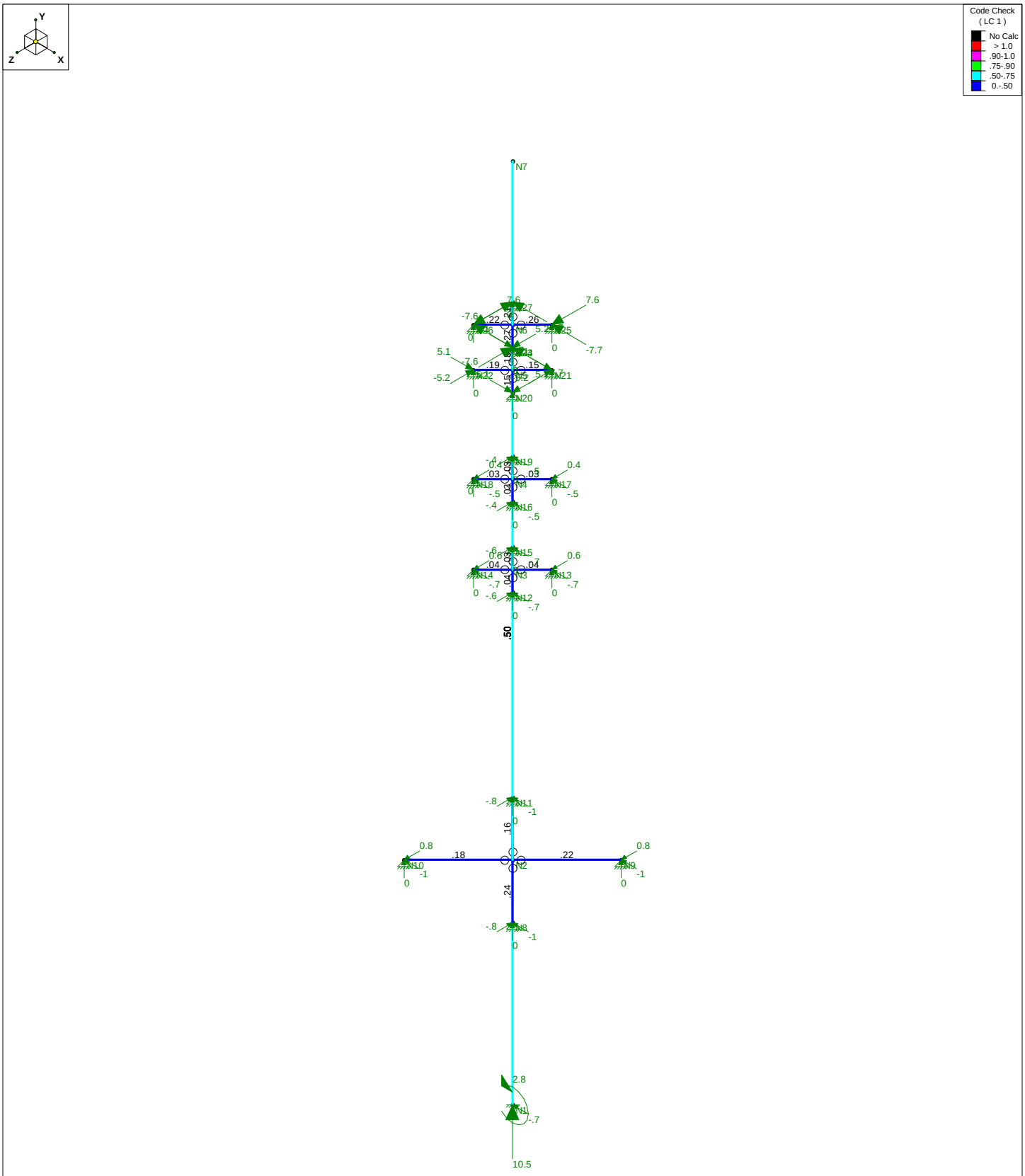
Member Code Checks Displayed (Enveloped)
Envelope Only Solution

CENTEK Engineering, INC.		
TJL	Tower # 876 - Mast	July 9, 2021 at 8:48 AM
21051.10 - CT11317B	Unity Check	TIA-222-G - Mast.r3d



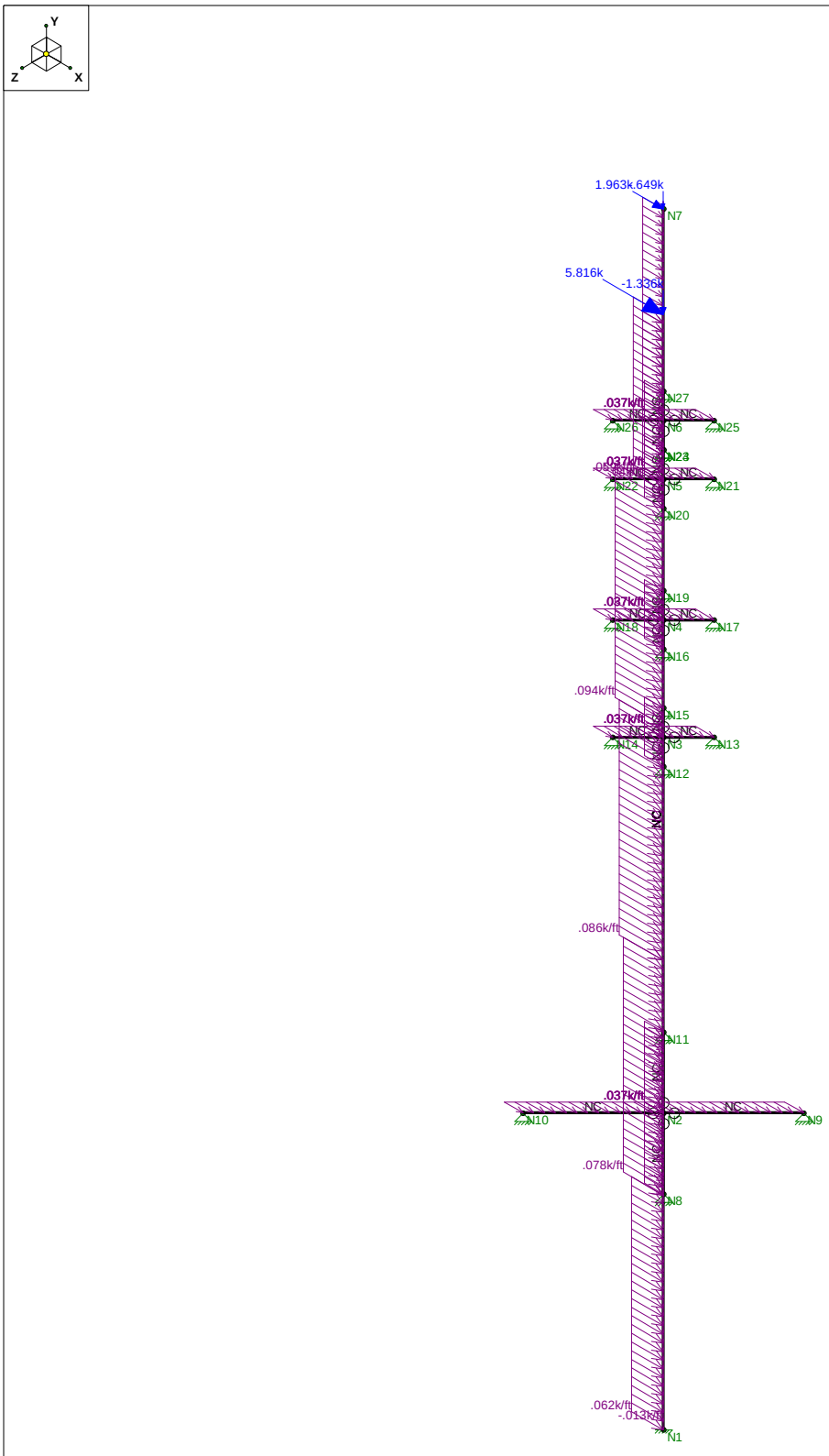
Member Code Checks Displayed
Loads: LC 1, 1.2D + 1.6W (X-direction)

CENTEK Engineering, INC.		
TJL	Tower # 876 - Mast	July 9, 2021 at 8:49 AM
21051.10 - CT11317B	LC #1 Loads	TIA-222-G - Mast.r3d



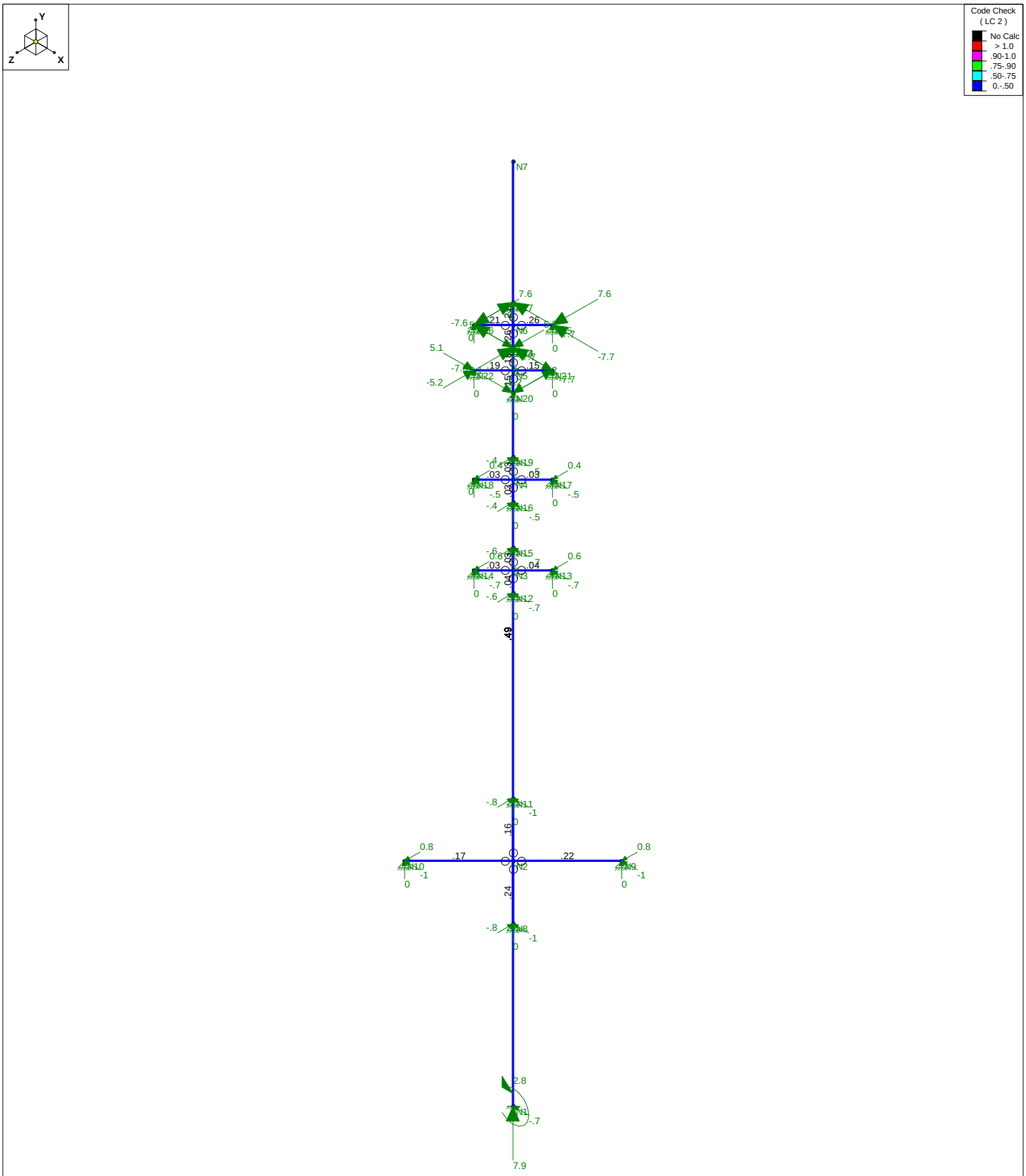
Member Code Checks Displayed
Results for LC 1, 1.2D + 1.6W (X-direction)
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.		
TJL	Tower # 876 - Mast	July 9, 2021 at 8:51 AM
21051.10 - CT11317B	LC #1 Reactions	TIA-222-G - Mast.r3d



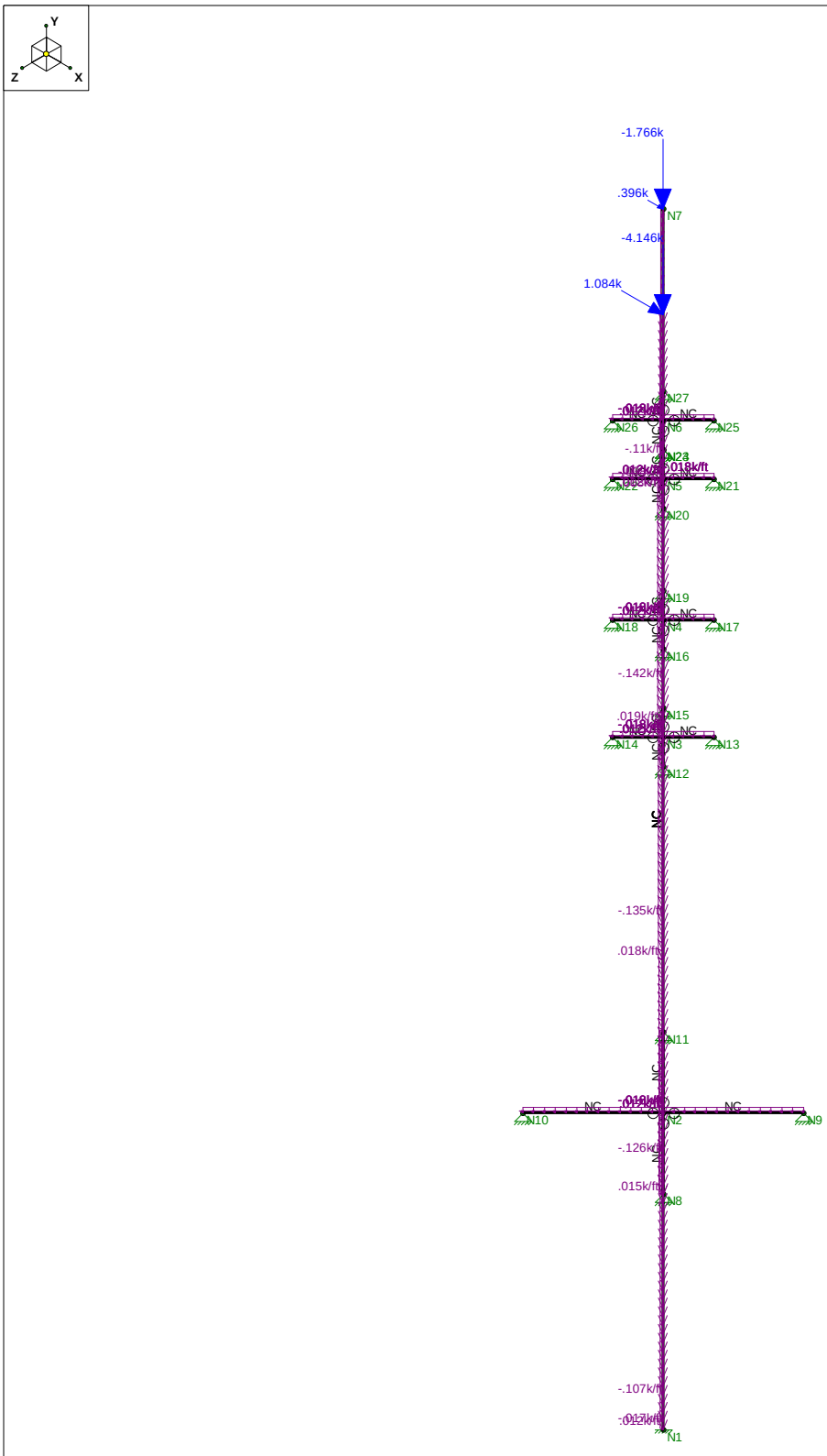
Member Code Checks Displayed
Loads: LC 2, 0.9D + 1.6W (X-direction)

CENTEK Engineering, INC.		
TJL	Tower # 876 - Mast	July 9, 2021 at 8:49 AM
21051.10 - CT11317B	LC #2 Loads	TIA-222-G - Mast.r3d



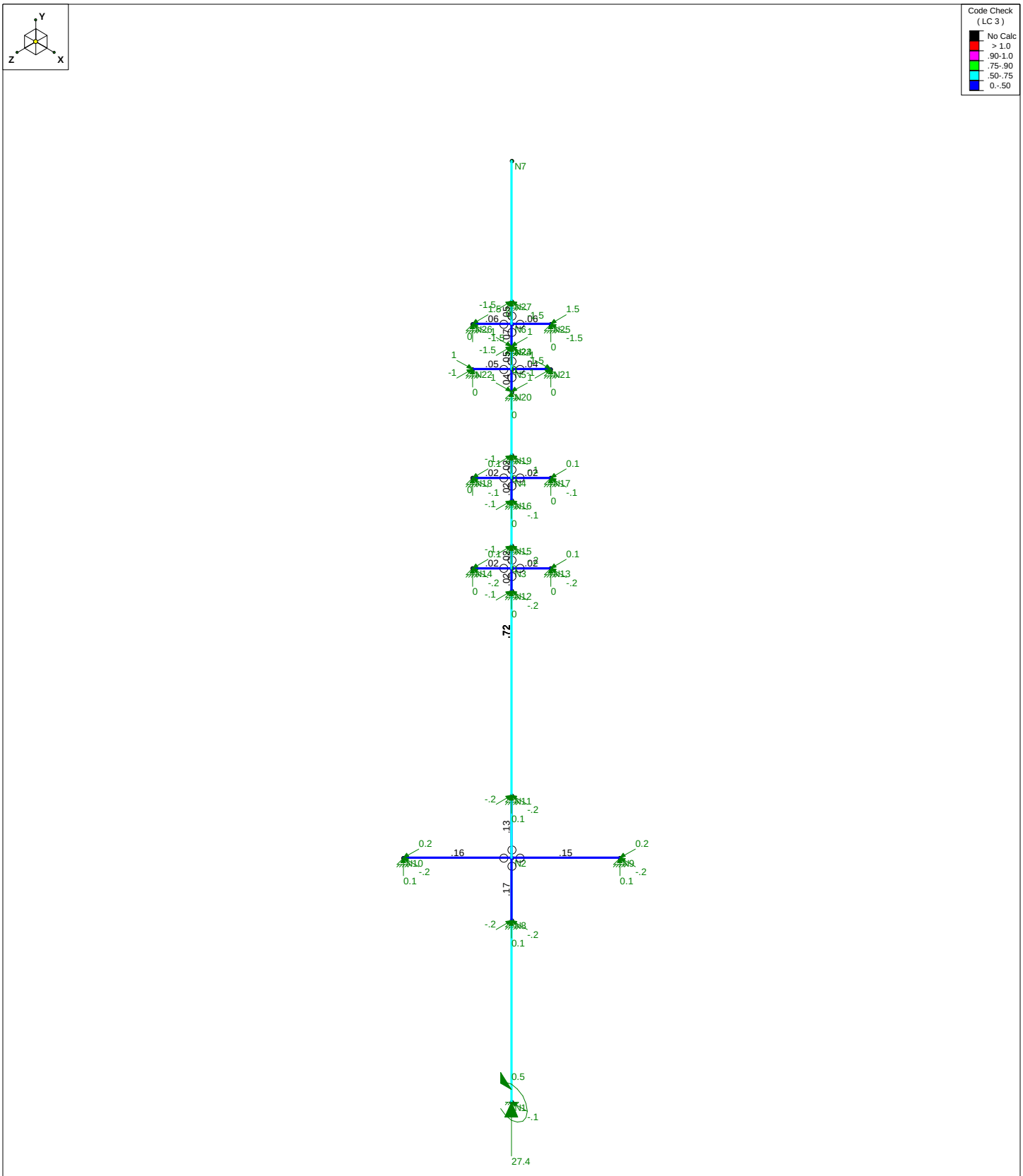
Member Code Checks Displayed
Results for LC 2, 0.9D + 1.6W (X-direction)
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.		
TJL	Tower # 876 - Mast	July 9, 2021 at 8:52 AM
21051.10 - CT11317B	LC #2 Reactions	TIA-222-G - Mast.r3d



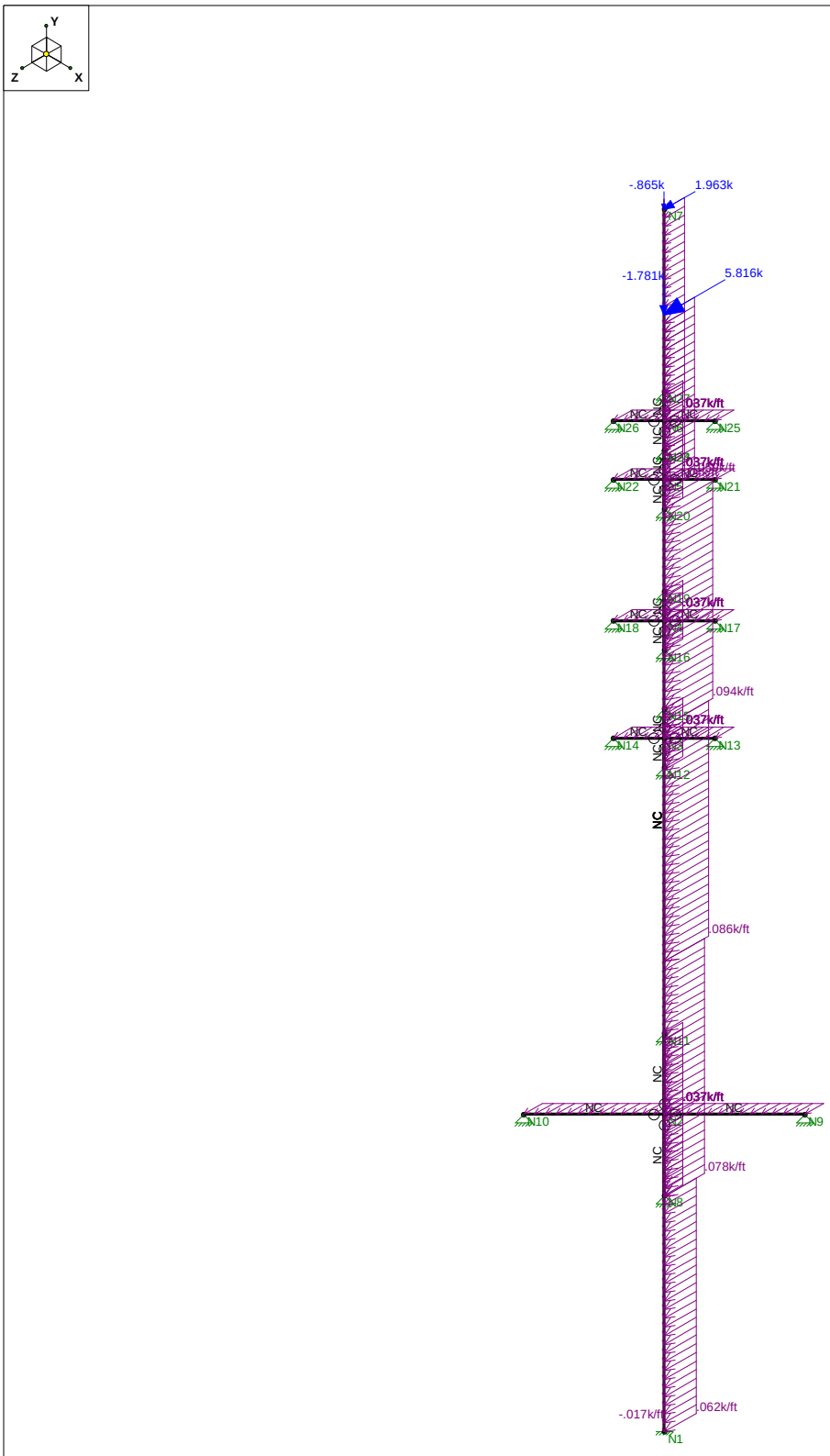
Member Code Checks Displayed
Loads: LC 3, 1.2D + 1.0Di + 1.0Wi (X-direction)

CENTEK Engineering, INC.		
TJL	Tower # 876 - Mast	July 9, 2021 at 8:49 AM
21051.10 - CT11317B	LC #3 Loads	TIA-222-G - Mast.r3d



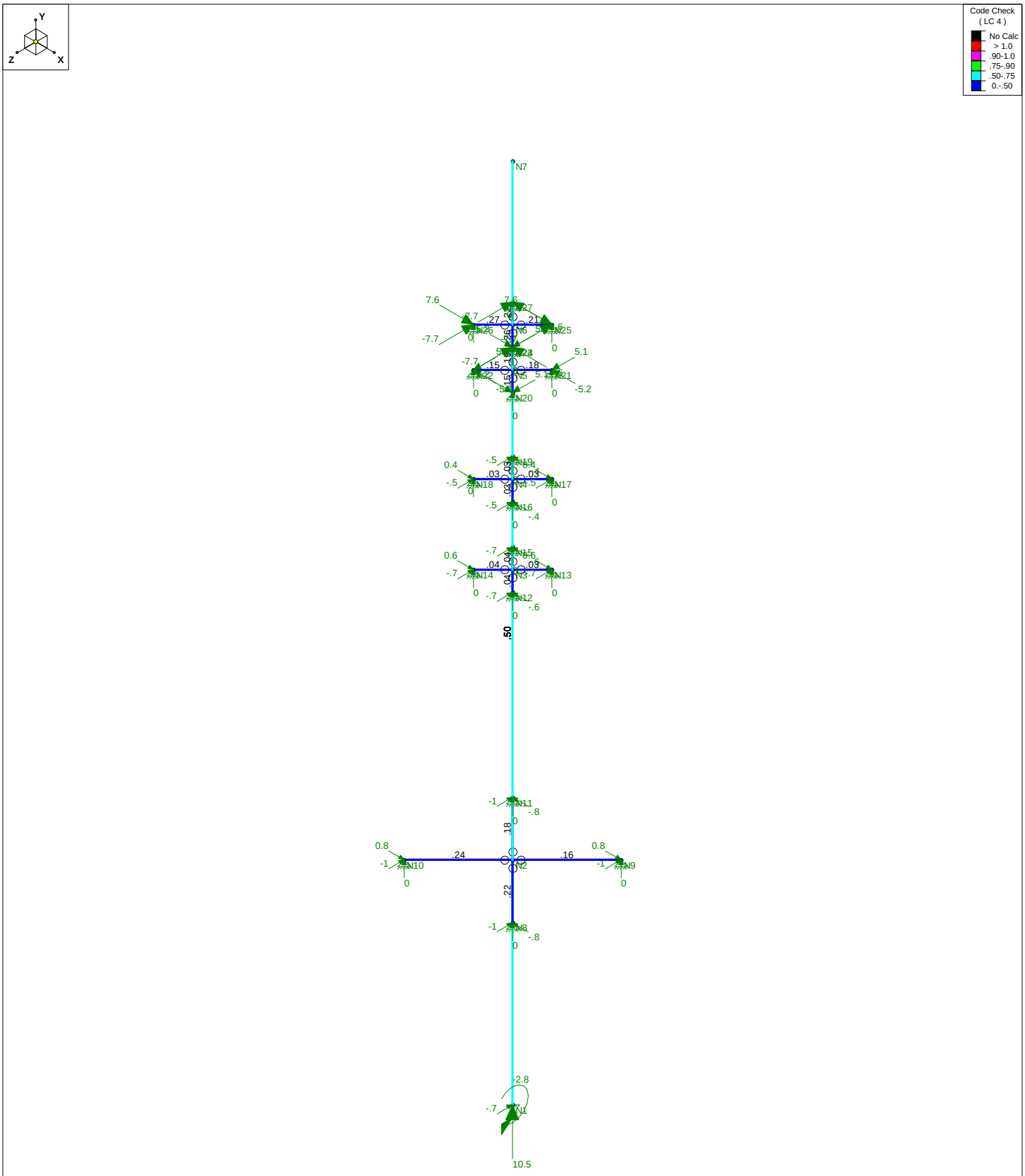
Member Code Checks Displayed
Results for LC 3, 1.2D + 1.0Di + 1.0Wi (X-direction)
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.		
TJL	Tower # 876 - Mast	July 9, 2021 at 8:52 AM
21051.10 - CT11317B	LC #3 Reactions	TIA-222-G - Mast.r3d



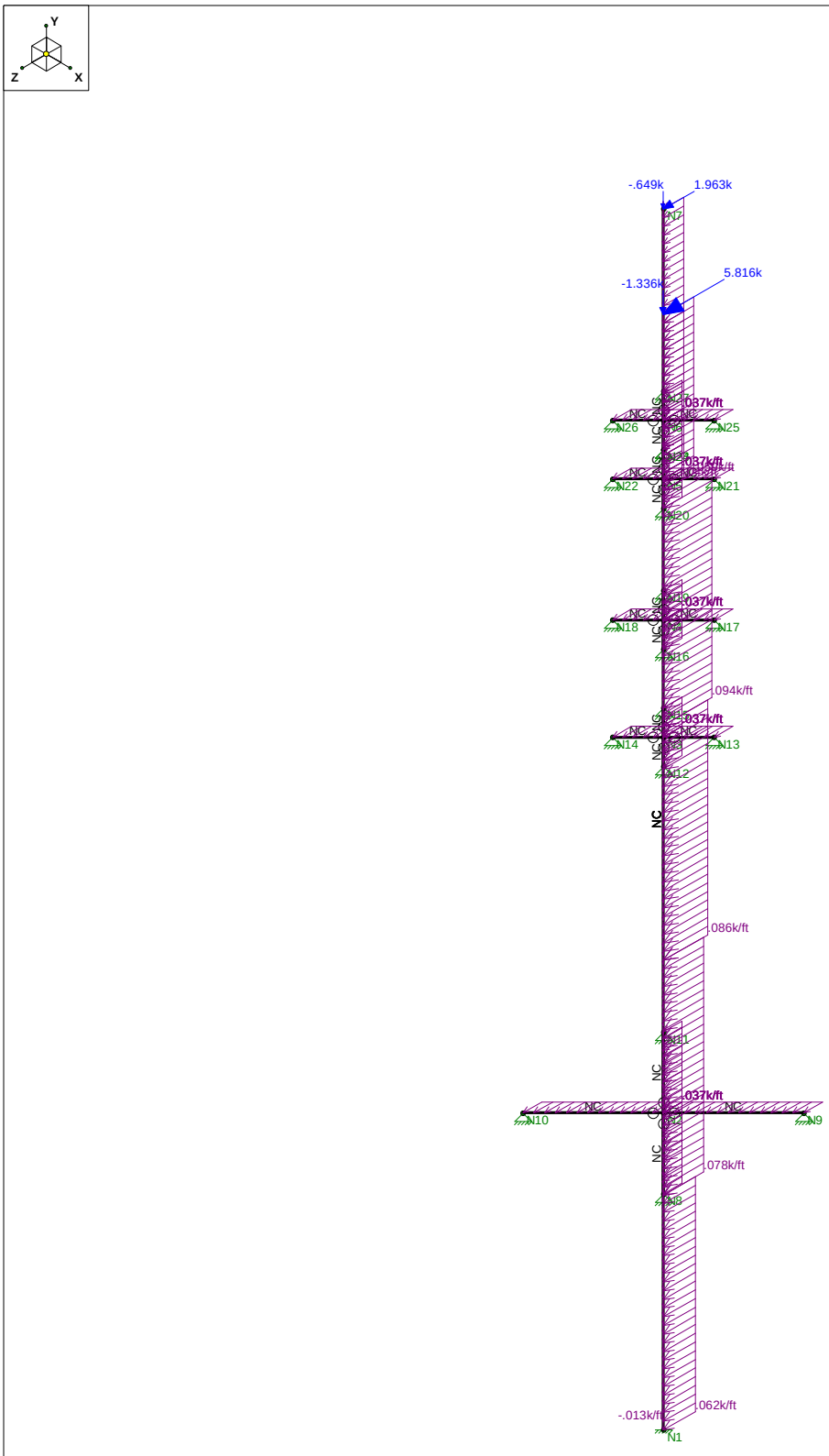
Member Code Checks Displayed
Loads: LC 4, 1.2D + 1.6W (Z-direction)

CENTEK Engineering, INC.		
TJL	Tower # 876 - Mast	July 9, 2021 at 8:50 AM
21051.10 - CT11317B	LC #4 Loads	TIA-222-G - Mast.r3d



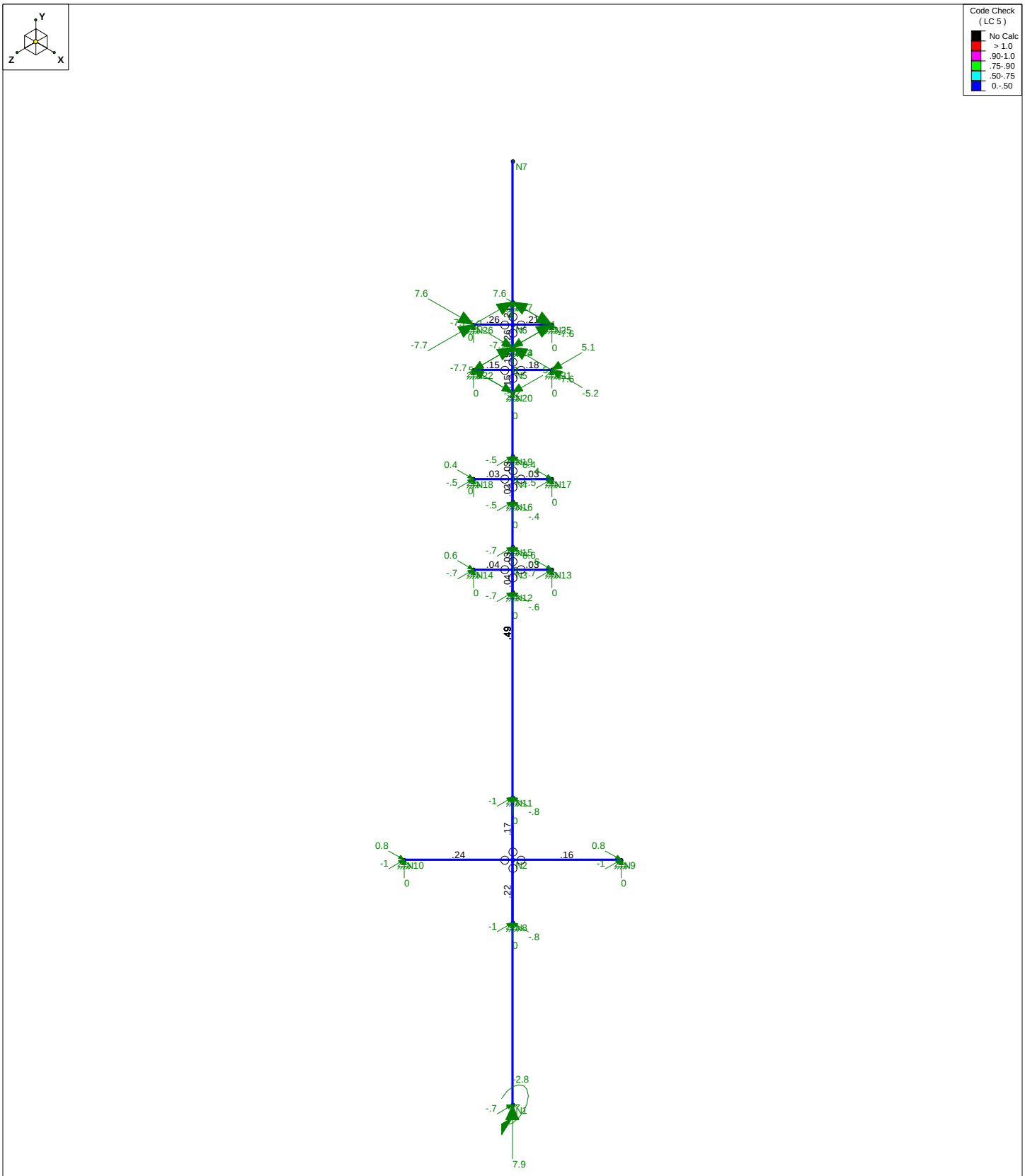
Member Code Checks Displayed
Results for LC 4, 1.2D + 1.6W (Z-direction)
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.		
TJL	Tower # 876 - Mast	July 9, 2021 at 8:53 AM
21051.10 - CT11317B	LC #4 Reactions	TIA-222-G - Mast.r3d



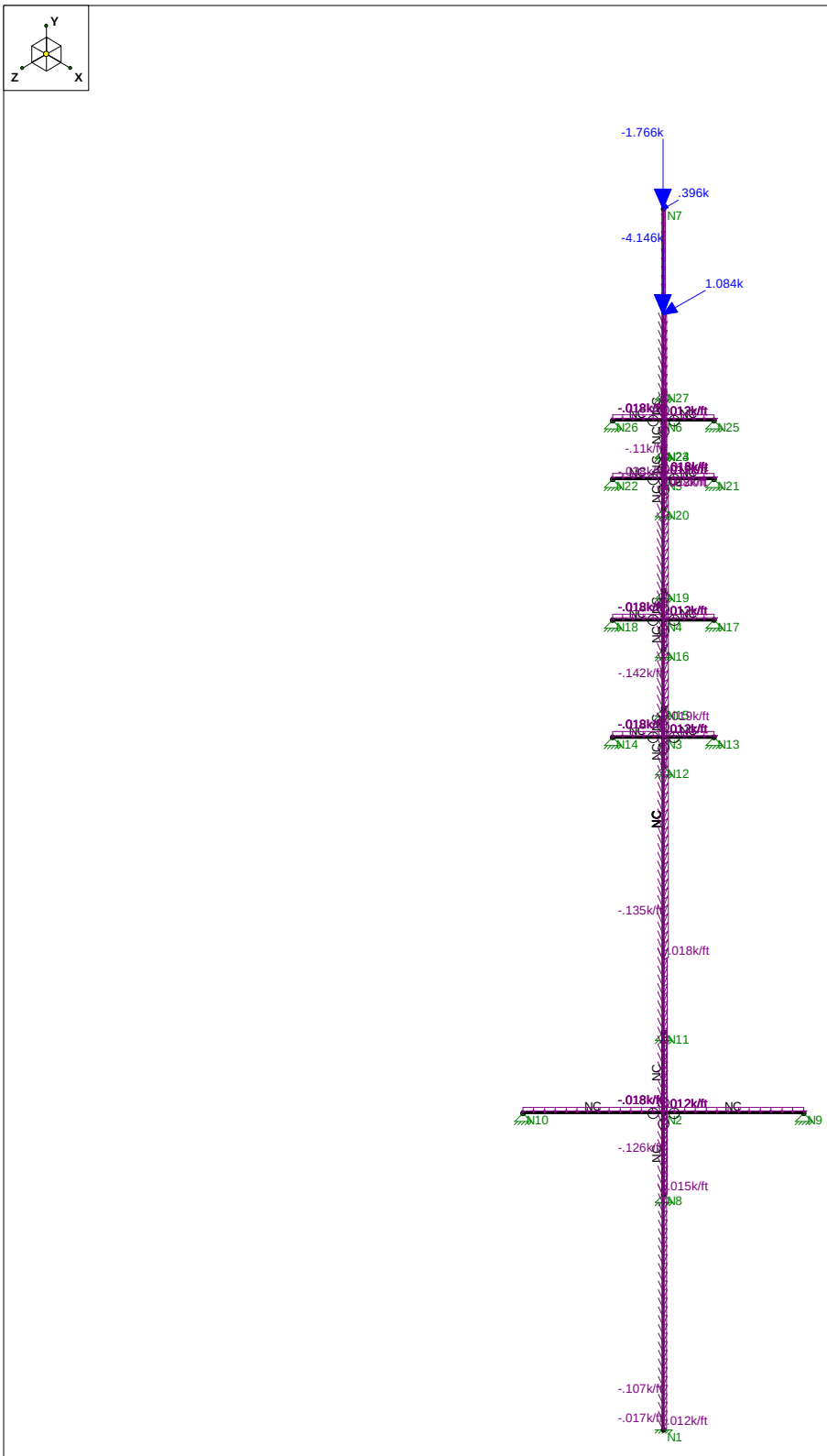
Member Code Checks Displayed
Loads: LC 5, 0.9D + 1.6W (Z-direction)

CENTEK Engineering, INC.		
TJL	Tower # 876 - Mast	July 9, 2021 at 8:50 AM
21051.10 - CT11317B	LC #5 Loads	TIA-222-G - Mast.r3d



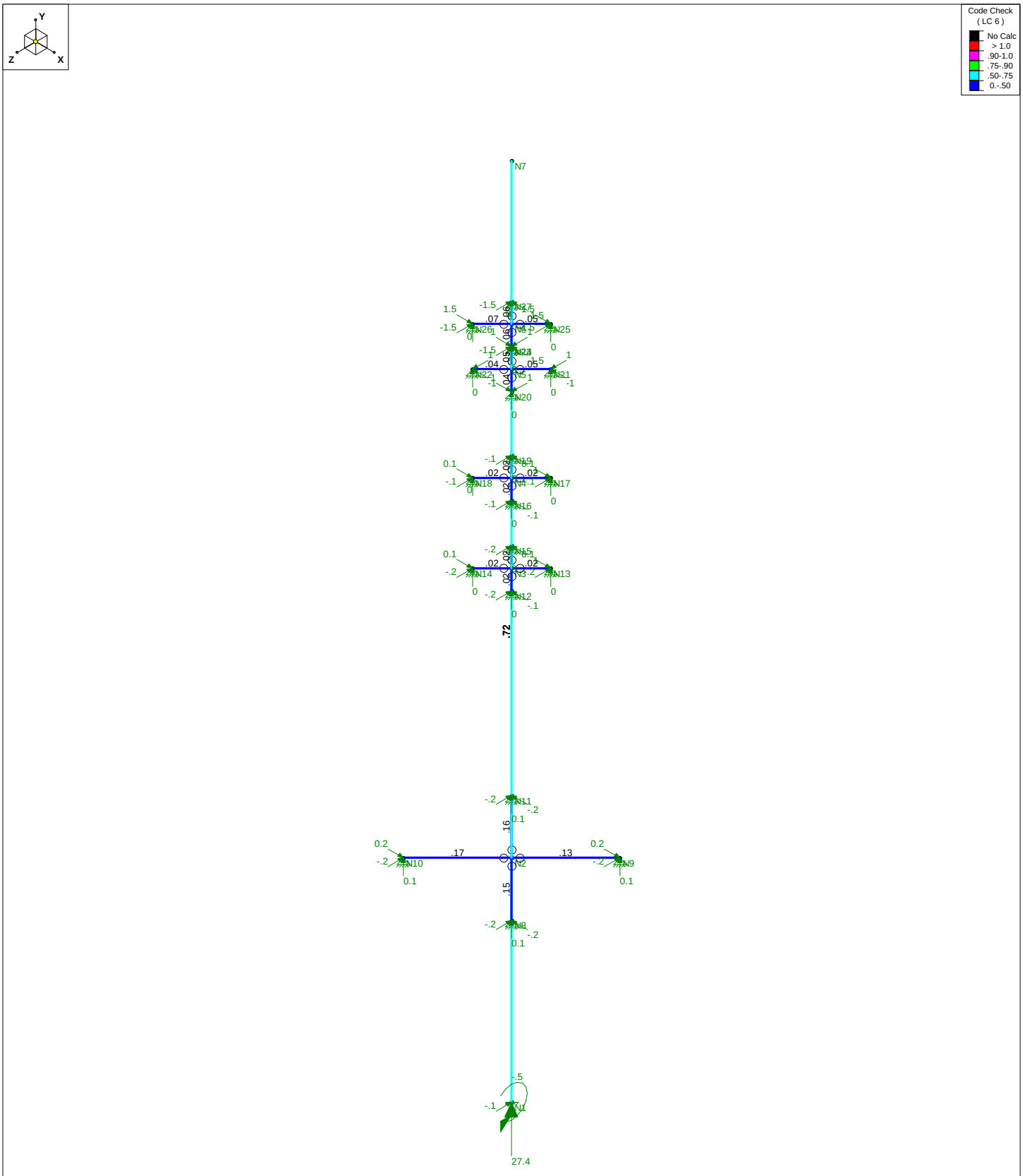
Member Code Checks Displayed
Results for LC 5, 0.9D + 1.6W (Z-direction)
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.		
TJL	Tower # 876 - Mast	July 9, 2021 at 8:53 AM
21051.10 - CT11317B	LC #5 Reactions	TIA-222-G - Mast.r3d



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

CENTEK Engineering, INC.		
TJL	Tower # 876 - Mast	July 9, 2021 at 8:50 AM
21051.10 - CT11317B	LC #16 Loads	TIA-222-G - Mast.r3d



Member Code Checks Displayed
Results for LC 6, 1.2D + 1.0Di + 1.0Wi (Z-direction)
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.		
TJL	Tower # 876 - Mast	July 9, 2021 at 8:54 AM
21051.10 - CT11317B	LC #6 Reactions	TIA-222-G - Mast.r3d

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Subject:	Connection of Antenna Mast to Tower # 876
Location:	Fairfield, CT
Rev. 0: 7/9/21	Prepared by: T.J.L. Checked by: C.F.C. Job No. 21051.10

Antenna Mast Connection to Tower:

Pipe Collar:

Reactions:

Horz = $Horz := 31 \cdot kips$ (User Input)

Bolt Data:

Bolt Type = ASTMA325 (User Input)

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

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

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

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

Check Pipe Collar Bolts:

Tension Force = $f_t := \frac{Horz}{N_b} = 7.8 \cdot kips$

Bolt Tenison % of Capacity = $\frac{f_t}{F_t} = 37.44 \cdot \%$

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

$Bolt\_Tension = "OK"$

Angle Brace

Reactions:

Force = $Fab := 10.9 \cdot kips$ (User Input)

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)

Check Angle Brace Bolts:

Shear Force = $f_v := \frac{Fab}{N_b} = 10.9 \cdot kips$

Bolt Shear % of Capacity = $\frac{f_v}{F_v} = 87.9 \cdot \%$

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

$Bolt\_Shear = "OK"$

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Subject: Load Analysis of Equipment on Tower # 876

Location: Fairfield, CT

Rev. 1: 9/9/21 Prepared by: T.J.L Checked by: C.F.C. Job No. 21051.10

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 := 104	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 = $Kz := 2.01 \cdot \left(\frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.276$ (NESC 2017 Table 250-2)

Exposure Factor = $Es := 0.346 \left[\frac{33}{(0.67 \cdot TME)}\right]^{\frac{1}{7}} = 0.311$ (NESC 2017 Table 250-3)

Response Term = $Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.849$ (NESC 2017 Table 250-3)

Gust Response Factor = $Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.867$ (NESC 2017 Table 250-3)

Wind Pressure = $qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 34.3$ 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 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

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Subject:	Load Analysis of Equipment on Tower # 876
Location:	Fairfield, CT
Rev. 1: 9/9/21	Prepared by: T.J.L Checked by: C.F.C. Job No. 21051.10

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)

Gravity Load (without ice)

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

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 = $V_{ice} := \left(L_{ant} + 2 \cdot Ir\right)\left(W_{ant} + 2 \cdot Ir\right)\left(T_{ant} + 2 \cdot Ir\right) - V_{ant} = 1528$ 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

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

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

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 = $F_{ant1} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1214$ lbs

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Subject:	Load Analysis of Equipment on Tower # 876
Location:	Fairfield, CT
Rev. 1: 9/9/21	Prepared by: T.J.L Checked by: C.F.C. Job No. 21051.10

Development of Wind & Ice Load on Antenna Mounts

Mount Data: (Sprint)

Mount Type: Site Pro WiMAX Monopole T-Arm p/n UDS-NP

Mount Shape = Flat

Mount Projected Surface Area = $CdAa := 6.3$ sf (User Input)

Mount Projected Surface Area w/ Ice = $CdAa_{ice} := 7.88$ sf (User Input)

Mount Weight = $WT_{mnt} := 550$ lbs (User Input)

Mount Weight w/ Ice = $WT_{mnt.ice} := 700$ lbs (User Input)

Gravity Loads (without ice)

Weight of All Mounts = $Wt_{mnt1} := WT_{mnt} = 550$ lbs **BLC 2**

Gravity Load (ice only)

Weight of Ice on All Mounts = $Wt_{ice.mnt1} := WT_{mnt.ice} - WT_{mnt} = 150$ lbs **BLC 3**

Wind Load (NESC Heavy)

Total Mount Wind Force w/ Ice = $Fi_{mnt1} := p \cdot CdAa_{ice} = 32$ lbs **BLC 4**

Wind Load (NESC Extreme)

Total Mount Wind Force = $F_{mnt1} := qz \cdot CdAa \cdot m = 270$ lbs **BLC 5**

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Subject: Load Analysis of Equipment on Tower # 876

Location: Fairfield, CT

Rev. 1: 9/9/21 Prepared by: T.J.L Checked by: C.F.C.
Job No. 21051.10

Development of Wind & Ice Load on Antennas

Antenna Data: (T-Mobile)

Antenna Model =	RFSAPX16DWV-16DWVS		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 55.9$	in	(User Input)
Antenna Width =	$W_{ant} := 13$	in	(User Input)
Antenna Thickness =	$T_{ant} := 3.15$	in	(User Input)
Antenna Weight =	$WT_{ant} := 40.7$	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 = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 5$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 15.1$ sf

Total Antenna Wind Force = $F_{ant2} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1038$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 5.5$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 16.6$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant2} := p \cdot Cd_F \cdot A_{ICEant} = 106$ lbs

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant2} := (WT_{ant} \cdot N_{ant}) = 122.1$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2289$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1017$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 33$ lbs

Weight of Ice on All Antennas = $Wt_{ice.ant2} := W_{ICEant} \cdot N_{ant} = 99$ lbs

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Subject:	Load Analysis of Equipment on Tower # 876
Location:	Fairfield, CT
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Development of Wind & Ice Load on Antennas

Antenna Data: (T-Mobile)

Antenna Model =	RFSAPXVAALL24_43		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 95.9$	in	(User Input)
Antenna Width =	$W_{ant} := 24$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.5$	in	(User Input)
Antenna Weight =	$WT_{ant} := 150$	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 =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 16$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 48$	sf
Total Antenna Wind Force =	$F_{ant3} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 3288$	lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 16.8$	sf
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 50.5$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant3} := p \cdot Cd_F \cdot A_{ICEant} = 323$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$Wt_{ant3} := (WT_{ant} \cdot N_{ant}) = 450$	lbs

Gravity Load (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2 \times 10^4$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 3450$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 112$	lbs
Weight of Ice on All Antennas =	$Wt_{ice.ant3} := W_{ICEant} \cdot N_{ant} = 335$	lbs

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Development of Wind & Ice Load on Antennas

Antenna Data: (T-Mobile)

Antenna Model =	Andrew ATSBT-TOP-FM-4G		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 5.63$	in	(User Input)
Antenna Width =	$W_{ant} := 3.7$	in	(User Input)
Antenna Thickness =	$T_{ant} := 2.0$	in	(User Input)
Antenna Weight =	$WT_{ant} := 2$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 6$		(User Input)

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.1$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 0.9$	sf
Total Antenna Wind Force =	$F_{ant4} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 60$	lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 0.2$	sf
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 1.3$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant4} := p \cdot Cd_F \cdot A_{ICEant} = 8$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$Wt_{ant4} := (WT_{ant} \cdot N_{ant}) = 12$	lbs

Gravity Load (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 42$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 52$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 2$	lbs
Weight of Ice on All Antennas =	$Wt_{ice.ant4} := W_{ICEant} \cdot N_{ant} = 10$	lbs

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Subject: Load Analysis of Equipment on Tower # 876

Location: Fairfield, CT

Rev. 1: 9/9/21

Prepared by: T.J.L Checked by: C.F.C.
Job No. 21051.10

Development of Wind & Ice Load on Antenna Mounts

Mount Data: (T-Mobile)

Mount Type: Site Pro WiMAX Monopole T-Arm p/n UDS-NP w/ Handrail

Mount Shape = Flat

Mount Projected Surface Area = $CdAa := 13.5$ sf (User Input)

Mount Projected Surface Area w/ Ice = $CdAa_{ice} := 16$ sf (User Input)

Mount Weight = $WT_{mnt} := 900$ lbs (User Input)

Mount Weight w/ Ice = $WT_{mnt.ice} := 1100$ lbs (User Input)

MOUNT PROJECTED AREA =
(1.6)*(3"/12)*(5')*(3)+(1.6)*(3"/12)*(1.5')*(3)+(1.3)*(3.5"/12)*(5')*(3) = 13.5 SF

Gravity Loads (without ice)

Weight of All Mounts = $Wt_{mnt2} := WT_{mnt} = 900$ lbs **BLC 2**

Gravity Load (ice only)

Weight of Ice on All Mounts = $Wt_{ice.mnt2} := WT_{mnt.ice} - WT_{mnt} = 200$ lbs **BLC 3**

Wind Load (NESC Heavy)

Total Mount Wind Force w/ Ice = $Fi_{mnt2} := p \cdot CdAa_{ice} = 64$ lbs **BLC 4**

Wind Load (NESC Extreme)

Total Mount Wind Force = $F_{mnt2} := qz \cdot CdAa \cdot m = 579$ lbs **BLC 5**

Development of Wind & Ice Load on Antennas

Antenna Data: (AT&T)

Antenna Model =	Qunitel QS46512-2		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 52$	in	(User Input)
Antenna Width =	$W_{ant} := 12$	in	(User Input)
Antenna Thickness =	$T_{ant} := 10.8$	in	(User Input)
Antenna Weight =	$WT_{ant} := 75$	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 = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.3$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 13$ sf

Total Antenna Wind Force = $F_{ant5} := qz \cdot Cd_F \cdot A_{ant} = 713$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 4.8$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 14.4$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant5} := p \cdot Cd_F \cdot A_{ICEant} = 92$ lbs

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant5} := WT_{ant} \cdot N_{ant} = 225$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 6739$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1391$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 45$ lbs

Weight of Ice on All Antennas = $Wt_{ice.ant5} := W_{ICEant} \cdot N_{ant} = 135$ lbs

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Subject:	Load Analysis of Equipment on Tower # 876
Location:	Fairfield, CT
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Development of Wind & Ice Load on Antennas

Antenna Data: (AT&T)

Antenna Model =	Kaelus TMA2117F00V1-1		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 8.46$	in	(User Input)
Antenna Width =	$W_{ant} := 11.81$	in	(User Input)
Antenna Thickness =	$T_{ant} := 4.21$	in	(User Input)
Antenna Weight =	$WT_{ant} := 18$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 6$		(User Input)

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.7$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 4.2$	sf
Total Antenna Wind Force =	$F_{ant6} := qz \cdot Cd_F \cdot A_{ant} = 228$	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 =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 5$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant6} := p \cdot Cd_F \cdot A_{ICEant} = 32$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$Wt_{ant6} := WT_{ant} \cdot N_{ant} = 108$	lbs

Gravity Load (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 421$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 211$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 7$	lbs
Weight of Ice on All Antennas =	$Wt_{ice.ant6} := W_{ICEant} \cdot N_{ant} = 41$	lbs

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Location:	Fairfield, CT
Rev. 1: 9/9/21	Prepared by: T.J.L Checked by: C.F.C. Job No. 21051.10

Development of Wind & Ice Load on Antenna Mounts

Mount Data: (AT&T)

Mount Type:	Pipe Mount		
Mount Shape =	Round		(User Input)
Pipe Mount Length =	$L_{mnt} := 72$	in	(User Input)
Pipe Mount Linear Weight =	$W_{mnt} := 7.58$	plf	(User Input)
Pipe Mount Outside Diameter =	$D_{mnt} := 3.5$	in	(User Input)
Number of Mounting Pipes =	$N_{mnt} := 3$		(User Input)

Wind Load (NESC Extreme)

Mount Projected Surface Area = $A_{mnt} := \frac{D_{mnt} \cdot L_{mnt}}{144} \cdot N_{mnt} = 5.25$ sf

Total Mount Wind Force = $F_{mnt3} := qz \cdot Cd_R \cdot A_{mnt} = 234$ lbs

Wind Load (NESC Heavy)

Mount Projected Surface Area w/ Ice = $A_{ICEmnt} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} \cdot N_{mnt} = 2.525$ sf

Total Mount Wind Force = $Fi_{mnt3} := p \cdot Cd_R \cdot A_{ICEmnt} = 13$ lbs

Gravity Loads (without ice)

(per TIA/EIA-222-F-1996)

Weight Each Pipe Mount = $WT_{mnt} := W_{mnt} \cdot \frac{L_{mnt}}{12} = 45$ lbs

Weight of All Mounts = $Wt_{mnt3} := WT_{mnt} \cdot N_{mnt} = 136$ lbs

Gravity Load (ice only)

(per TIA/EIA-222-F-1996)

Volume of Each Pipe = $V_{mnt} := \frac{\pi}{4} \cdot D_{mnt}^2 \cdot L_{mnt} = 693$ cu in

Volume of Ice on Each Pipe = $V_{ice} := \left[\frac{\pi}{4} \cdot \left[(D_{mnt} + 1)^2\right] \cdot (L_{mnt} + 1)\right] - V_{mnt} = 468$ cu in

Weight of Ice each mount (incl, hardware) = $W_{ICEmnt} := \frac{V_{ice}}{1728} \cdot Id = 15$ lbs

Weight of Ice on All Mounts = $Wt_{ice.mnt3} := (W_{ICEmnt} \cdot N_{mnt} + 5) = 51$ lbs

Total Equipment Loads:

Sprint @ 104-ft AGL

NESC Heavy Wind Vertical = $\left(Wt_{ant1} + Wt_{ice.ant1} + Wt_{mnt1} + Wt_{ice.mnt1}\right)\cdot 1.5 = 1529$

NESC Heavy Wind Trasnsverse = $\left(Fi_{ant1} + Fi_{mnt1}\right)\cdot 2.5 = 390$

NESC Extreme Wind Vertical = $\left(Wt_{ant1} + Wt_{mnt1}\right) = 721$

NESC Extreme Wind Trasnsverse = $\left(F_{ant1} + F_{mnt1}\right) = 1484$

T-Mobile @ 95-ft AGL

NESC Heavy Wind Vertical = $\left(Wt_{ant2} + Wt_{ice.ant2} + Wt_{ant3} + Wt_{ice.ant3} + Wt_{ant4} + Wt_{ice.ant4} + Wt_{mnt2} + Wt_{ice.mnt2}\right)\cdot 1.5 = 3193$

NESC Heavy Wind Trasnsverse = $\left(Fi_{ant2} + Fi_{ant3} + Fi_{ant4} + Fi_{mnt2}\right)\cdot 2.5 = 1254$

NESC Extreme Wind Vertical = $\left(Wt_{ant2} + Wt_{ant3} + Wt_{ant4} + Wt_{mnt2}\right) = 1484$

NESC Extreme Wind Trasnsverse = $\left(F_{ant2} + F_{ant3} + F_{ant4} + F_{mnt2}\right) = 4965$

AT&T @ 84-ft AGL / Per Leg

NESC Heavy Wind Vertical = $\frac{\left[\left(Wt_{ant5} + Wt_{ice.ant5} + Wt_{ant6} + Wt_{ice.ant6} + Wt_{mnt3} + Wt_{ice.mnt3}\right)\cdot 1.5\right]}{3} = 348$

NESC Heavy Wind Trasnsverse = $\frac{\left[\left(Fi_{ant5} + Fi_{ant6} + Fi_{mnt3}\right)\cdot 2.5\right]}{3} = 114$

NESC Extreme Wind Vertical = $\frac{\left(Wt_{ant5} + Wt_{ant6} + Wt_{mnt3}\right)}{3} = 156$

NESC Extreme Wind Trasnsverse = $\frac{\left(F_{ant5} + F_{ant6} + F_{mnt3}\right)}{3} = 392$

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Subject:	Coax Cable Loads Tower # 876
Location:	Fairfield, CT
Rev. 0: 7/8/21	Prepared by: T.J.L Checked by: C.F.C. Job No. 21051.10

Coax Cable on Tower

Heavy Wind Pressure =	$p := 4 \cdot psf$		*(User Input)*
Radial Ice Thickness =	$Ir := 0.5 \cdot in$		*(User Input)*
Radial Ice Density =	$Id := 56 \cdot pcf$		*(User Input)*
Basic Windspeed =	$V := 110$	mph	(User Input NESC 2017 Figure 250-2(e))
Height to Top of Coax Above Grade =	$TC := 104$	ft	(User Input)
NESC Factor =	$kv := 1.43$		(User Input from NESC 2017 Table 250-3 equation)
Importance Factor =	$I := 1.0$		(User Input from NESC 2017 Section 250.C.2)
Velocity Pressure Coefficient =	$Kz := 2.01 \cdot \left(\frac{0.67TC}{900}\right)^{\frac{2}{9.5}} = 1.173$		(NESC 2017 Table 250-2)
Exposure Factor =	$Es := 0.346\left[\frac{33}{(0.67 \cdot TC)}\right]^{\frac{1}{7}} = 0.311$		(NESC 2017 Table 250-3)
Response Term =	$Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TC}{220}\right)} = 0.849$		(NESC 2017 Table 250-3)
Gust Response Factor =	$Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.867$		(NESC 2017 Table 250-3)
Wind Pressure =	$qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 31.5$	psf	(NESC 2017 Section 250.C.2)

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Location:	Fairfield, CT
Rev. 0: 7/8/21	Prepared by: T.J.L Checked by: C.F.C. Job No. 21051.10

Coax Cable within Powermount

(Sprint)

Distance Between Coax Cable Attach Points =

Coax Cable Span = $Coax_{Span} := \begin{pmatrix} 5 \\ 7 \\ 8.5 \\ 11 \\ 21 \\ 43 \end{pmatrix} \cdot ft$ *(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 = $N_{coax} := 6$ *(User Input)*

Number of Projected Coax Cables = $NP_{coax} := 0$ *(User Input)*

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)*

Wind Area with Ice = $A_{ice} := 0$

Wind Area without Ice = $A := \left(NP_{coax} \cdot D_{coax}\right) = 0 \cdot in$

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 = $W_{ice} := 0$

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 =

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

$$Heavy_{Vert} = \begin{pmatrix} 47 \\ 66 \\ 80 \\ 103 \\ 197 \\ 402 \end{pmatrix} lb \qquad Heavy_{Trans} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}$$

Extreme Vertical Load =

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

Extreme Transverse Load =

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

$$Extreme_{Vert} = \begin{pmatrix} 31 \\ 44 \\ 53 \\ 69 \\ 131 \\ 268 \end{pmatrix} lb \qquad Extreme_{Trans} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}$$

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Subject:	Coax Cable Loads Tower # 876
Location:	Fairfield, CT
Rev. 0: 7/8/21	Prepared by: T.J.L Checked by: C.F.C. Job No. 21051.10

Coax Cable on CL&P Tower

(Sprint - NE Leg)

Distance Between Coax Cable Attach Points =

Coax Cable Span = $Coax_{Span} := \begin{pmatrix} 11 \\ 11 \\ 13.5 \\ 16 \\ 18.5 \\ 16 \end{pmatrix} \cdot ft$ *(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 = $NP_{Tcoax} := 1$ *(User Input)*

Number of Projected Coax Cables Longitudinal = $NP_{Lcoax} := 12$ *(User Input)*

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)*

Wind Area with Ice Transverse = $A_{Tice} := \left(NP_{Tcoax} \cdot D_{coax} + 2 \cdot Ir\right) = 2.98 \cdot in$

Wind Area without Ice Transverse = $A_T := \left(NP_{Tcoax} \cdot D_{coax}\right) = 1.98 \cdot in$

Wind Area with Ice Longitudinal = $A_{Lice} := \left(NP_{Lcoax} \cdot D_{coax} + 2 \cdot Ir\right) = 24.76 \cdot in$

Wind Area without Ice Longitudinal = $A_L := \left(NP_{Lcoax} \cdot D_{coax}\right) = 23.76 \cdot in$

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

Weight of Ice on All Coax Cables = $W_{ice} := Ai_{coax} \cdot Id \cdot N_{coax} = 18.179 \cdot plf$

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 Longitudinal Load =

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

$$Heavy_{Vert} = \begin{pmatrix} 506 \\ 506 \\ 621 \\ 736 \\ 851 \\ 736 \end{pmatrix} lb \qquad Heavy_{Trans} = \begin{pmatrix} 44 \\ 44 \\ 54 \\ 64 \\ 74 \\ 64 \end{pmatrix} lb$$

$$Heavy_{Long} = \begin{pmatrix} 363 \\ 363 \\ 446 \\ 528 \\ 611 \\ 528 \end{pmatrix} lb$$

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 Longitudinal Load =

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

$$Extreme_{Vert} = \begin{pmatrix} 137 \\ 137 \\ 168 \\ 200 \\ 231 \\ 200 \end{pmatrix} lb \qquad Extreme_{Trans} = \begin{pmatrix} 92 \\ 92 \\ 112 \\ 133 \\ 154 \\ 133 \end{pmatrix} lb$$

$$Extreme_{Long} = \begin{pmatrix} 1098 \\ 1098 \\ 1348 \\ 1597 \\ 1847 \\ 1597 \end{pmatrix} lb$$

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Subject:	Coax Cable Loads Tower # 876
Location:	Fairfield, CT
Rev. 0: 7/8/21	Prepared by: T.J.L Checked by: C.F.C. Job No. 21051.10

Coax Cable on Powermount

(T-Mobile)

Distance Between Coax Cable Attach Points =

Coax Cable Span = $Coax_{Span} := \begin{pmatrix} 5 \\ 7 \\ 8.5 \\ 11 \\ 21 \\ 43 \end{pmatrix} \cdot ft$ *(User Input)*

Diameter of Coax Cable = $D_{coax} := 1.55 \cdot in$ *(User Input)*

Weight of Coax Cable = $W_{coax} := 0.66 \cdot plf$ *(User Input)*

Number of Coax Cables = $N_{coax} := 12$ *(User Input)*

Number of Projected Coax Cables Transverse = $NP_{Tcoax} := 0$ *(User Input)*

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

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)*

Wind Area with Ice Transverse = $A_{Tice} := (0) = 0 \cdot in$

Wind Area without Ice Transverse = $A_T := \left(NP_{Tcoax} \cdot D_{coax}\right) = 0 \cdot in$

Wind Area with Ice Longitudinal = $A_{Lice} := \left(NP_{Lcoax} \cdot D_{coax} + 2 \cdot Ir\right) = 10.3 \cdot in$

Wind Area without Ice Longitudinal = $A_L := \left(NP_{Lcoax} \cdot D_{coax}\right) = 9.3 \cdot in$

Ice Area per Liner Ft = $Ai_{coax} := \frac{\pi}{4} \cdot \left[\left(D_{coax} + 2 \cdot Ir\right)^2 - D_{coax}^2\right] = 0.022\,ft^2$

Weight of Ice on All Coax Cables = $W_{ice} := Ai_{coax} \cdot Id \cdot N_{coax} = 15.027 \cdot plf$

Heavy Vertical Load =

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

$$Heavy_{Vert} = \begin{pmatrix} 172 \\ 241 \\ 293 \\ 379 \\ 723 \\ 1480 \end{pmatrix} lb$$

Heavy Transverse Load =

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

$$Heavy_{Trans} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}$$

Heavy Longitudinal Load =

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

$$Heavy_{Long} = \begin{pmatrix} 69 \\ 96 \\ 117 \\ 151 \\ 288 \\ 591 \end{pmatrix} lb$$

Extreme Vertical Load =

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

$$Extreme_{Vert} = \begin{pmatrix} 40 \\ 55 \\ 67 \\ 87 \\ 166 \\ 341 \end{pmatrix} lb$$

Extreme Transverse Load =

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

$$Extreme_{Trans} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}$$

Extreme Longitudinal Load =

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

$$Extreme_{Long} = \begin{pmatrix} 195 \\ 274 \\ 332 \\ 430 \\ 821 \\ 1680 \end{pmatrix} lb$$

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Subject:	Coax Cable Loads Tower # 876
Location:	Fairfield, CT
Rev. 0: 7/8/21	Prepared by: T.J.L Checked by: C.F.C. Job No. 21051.10

Coax Cable on CL&P Tower

(T-Mobile - SW Leg)

Distance Between Coax Cable Attach Points =

Coax Cable Span = $Coax_{Span} := \begin{pmatrix} 11 \\ 11 \\ 13.5 \\ 16 \\ 18.5 \\ 16 \end{pmatrix} \cdot ft$ *(User Input)*

Diameter of Coax Cable = $D_{coax} := 1.55 \cdot in$ *(User Input)*

Weight of Coax Cable = $W_{coax} := 0.66 \cdot plf$ *(User Input)*

Number of Coax Cables = $N_{coax} := 12$ *(User Input)*

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

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

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)*

Wind Area with Ice Transverse = $A_{Tice} := \left(NP_{Tcoax} \cdot D_{coax} + 2 \cdot Ir\right) = 4.1 \cdot in$

Wind Area without Ice Transverse = $A_T := \left(NP_{Tcoax} \cdot D_{coax}\right) = 3.1 \cdot in$

Wind Area with Ice Longitudinal = $A_{Lice} := \left(NP_{Lcoax} \cdot D_{coax} + 2 \cdot Ir\right) = 10.3 \cdot in$

Wind Area without Ice Longitudinal = $A_L := \left(NP_{Lcoax} \cdot D_{coax}\right) = 9.3 \cdot in$

Ice Area per Liner Ft = $Ai_{coax} := \frac{\pi}{4} \cdot \left[\left(D_{coax} + 2 \cdot Ir\right)^2 - D_{coax}^2\right] = 0.022\,ft^2$

Weight of Ice on All Coax Cables = $W_{ice} := Ai_{coax} \cdot Id \cdot N_{coax} = 15.027 \cdot plf$

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 Longitudinal Load =

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

$$Heavy_{Vert} = \begin{pmatrix} 379 \\ 379 \\ 465 \\ 551 \\ 637 \\ 551 \end{pmatrix} lb \qquad Heavy_{Trans} = \begin{pmatrix} 60 \\ 60 \\ 74 \\ 87 \\ 101 \\ 87 \end{pmatrix} lb$$

$$Heavy_{Long} = \begin{pmatrix} 151 \\ 151 \\ 185 \\ 220 \\ 254 \\ 220 \end{pmatrix} lb$$

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 Longitudinal Load =

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

$$Extreme_{Vert} = \begin{pmatrix} 87 \\ 87 \\ 107 \\ 127 \\ 147 \\ 127 \end{pmatrix} lb \qquad Extreme_{Trans} = \begin{pmatrix} 143 \\ 143 \\ 176 \\ 208 \\ 241 \\ 208 \end{pmatrix} lb$$

$$Extreme_{Long} = \begin{pmatrix} 430 \\ 430 \\ 528 \\ 625 \\ 723 \\ 625 \end{pmatrix} lb$$

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Location:	Fairfield, CT
Rev. 0: 7/8/21	Prepared by: T.J.L Checked by: C.F.C. Job No. 21051.10

Coax Cable on CL&P Tower

(AT&T - SE Leg)

Distance Between Coax Cable Attach Points =

Coax Cable Span = $Coax_{Span} := \begin{pmatrix} 6 \\ 11 \\ 13.5 \\ 16 \\ 18.5 \\ 16 \end{pmatrix} \cdot ft$ *(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)*

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

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)*

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

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

Wind Area with Ice Longitudinal = $A_{Lice} := \left(NP_{Lcoax} \cdot D_{coax} + 2 \cdot Ir\right) = 12.88 \cdot in$

Wind Area without Ice Longitudinal = $A_L := \left(NP_{Lcoax} \cdot D_{coax}\right) = 11.88 \cdot in$

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

Weight of Ice on All Coax Cables = $W_{ice} := Ai_{coax} \cdot Id \cdot N_{coax} = 18.179 \cdot plf$

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 Longitudinal Load =

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

$$Heavy_{Vert} = \begin{pmatrix} 276 \\ 506 \\ 621 \\ 736 \\ 851 \\ 736 \end{pmatrix} lb \qquad Heavy_{Trans} = \begin{pmatrix} 103 \\ 189 \\ 232 \\ 275 \\ 318 \\ 275 \end{pmatrix} lb$$

$$Heavy_{Long} = \begin{pmatrix} 103 \\ 189 \\ 232 \\ 275 \\ 318 \\ 275 \end{pmatrix} lb$$

Extreme Vertical Load =

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

Extreme Transverse Load =

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

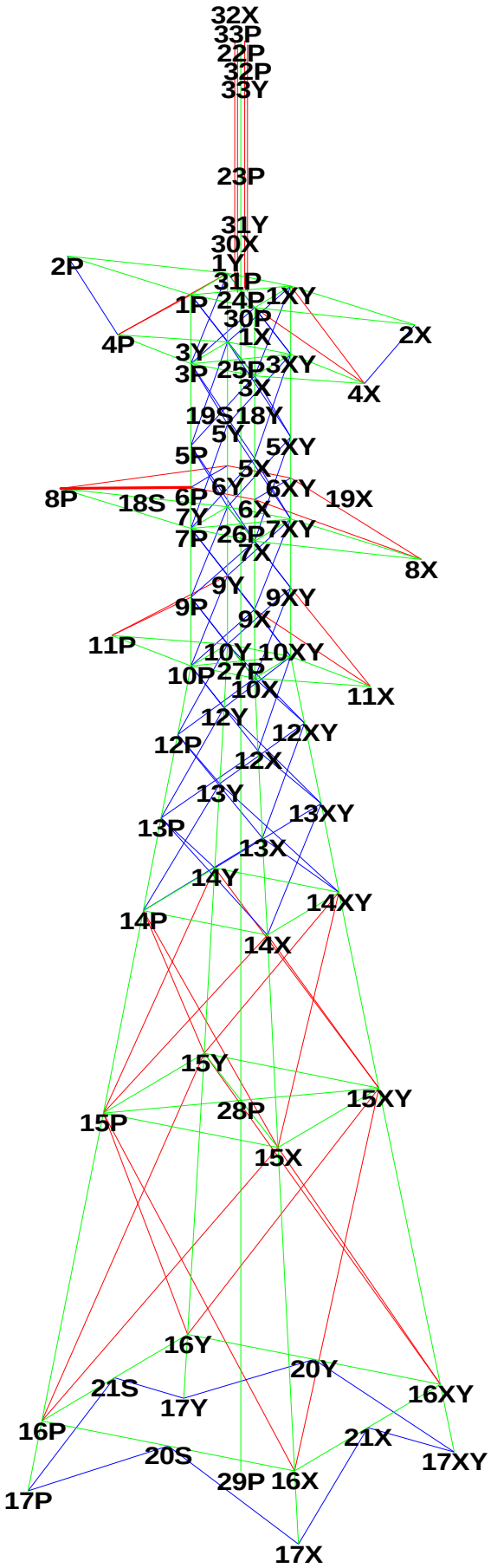
Extreme Longitudinal Load =

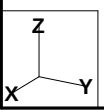
$$Extreme_{Long} := \overrightarrow{\left[\left(qz \cdot psf \cdot A_L \cdot Cd_{coax}\right) \cdot Coax_{Span} \cdot OF_{EW}\right]}$$

$$Extreme_{Vert} = \begin{pmatrix} 75 \\ 137 \\ 168 \\ 200 \\ 231 \\ 200 \end{pmatrix} lb \qquad Extreme_{Trans} = \begin{pmatrix} 300 \\ 549 \\ 674 \\ 799 \\ 924 \\ 799 \end{pmatrix} lb$$

$$Extreme_{Long} = \begin{pmatrix} 300 \\ 549 \\ 674 \\ 799 \\ 924 \\ 799 \end{pmatrix} lb$$

Centek Engineering Inc, Project: "cl&p # 876 w_powermnt rein"
Tower Version 12.50, 8:24:05 AM Friday, July 09, 2021
Undeformed geometry displayed





Project Name : 21051.10 - Fairfield, CT
Project Notes: Structure # 876 / T-Mobile CT11317B
Project File : J:\Jobs\2105100.WI\10_CT11317B\05_Structural\Tower\Backup Documentation\Rev (1)\Calcs\PLS Tower\cl&p # 876 w_powermnt rein.tow
Date run   : 1:45:24 PM Thursday, September 09, 2021
by   : Tower Version 12.50
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

Member "g6P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g6X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g6XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g6Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g9P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g9X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g9XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g9Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g10P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g10X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g10XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g10Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g11P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g11X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g11XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g11Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g12P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g12X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g12XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g12Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g15P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g15X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g15XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g15Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g16P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge

and spacing distances will be checked. ??
Member "g16X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g16XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g16Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g17P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g17X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g17XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g17Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g18P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g18X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g18XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g18Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g19P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g19X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g19XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g19Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g20P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g20X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g20XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g20Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g21P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g21X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g21XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g21Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g22P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g22X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g22XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g22Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g23P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g23X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge

and spacing distances will be checked. ??
Member "g23XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g23Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g24P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g24X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g24XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g24Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Unable to calculate rupture capacity for member "g47P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g47X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g47XY" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g47Y" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g49P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g49X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g49XY" because it has a long and short edge distance of 0. ??
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Unable to calculate rupture capacity for member "g51P" because it has a long and short edge distance of 0. ??
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Unable to calculate rupture capacity for member "g51XY" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g51Y" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g53P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g53X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g53XY" because it has a long and short edge distance of 0. ??
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Unable to calculate rupture capacity for member "g55P" because it has a long and short edge distance of 0. ??
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Unable to calculate rupture capacity for member "g56P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g56X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g56XY" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g56Y" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g57P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g57X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g57XY" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g57Y" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g58P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g58X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g58XY" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g58Y" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g59P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g59X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g59XY" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g59Y" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g60P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g60X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g60XY" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g60Y" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g61P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g61X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g61XY" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g61Y" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g62P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g62X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g62XY" because it has a long and short edge distance of 0. ??

Unable to calculate rupture capacity for member "g62Y" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g63P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g63X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g63XY" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g63Y" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g64P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g64X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g64XY" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g64Y" because it has a long and short edge distance of 0. ??
w/t equals 34.00 for member "g65P" which exceeds ASCE 10 section 3.7.1 limit of 25. ??
w/t equals 34.00 for member "g66P" which exceeds ASCE 10 section 3.7.1 limit of 25. ??
w/t equals 34.00 for member "g67P" which exceeds ASCE 10 section 3.7.1 limit of 25. ??
w/t equals 34.00 for member "g68P" which exceeds ASCE 10 section 3.7.1 limit of 25. ??
w/t equals 34.00 for member "g69P" which exceeds ASCE 10 section 3.7.1 limit of 25. ??
w/t equals 34.00 for member "g70P" which exceeds ASCE 10 section 3.7.1 limit of 25. ??
w/t equals 34.00 for member "g71P" which exceeds ASCE 10 section 3.7.1 limit of 25. ??
Unusual number of fixed joints found: 5. Towers normally have from between 1 and 4 fixed joints. ??
The model has 122 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\2105100.wi\10_ct11317b\05_structural\tower\backup documentation\rev (1)\calcs\pls tower\876 w_ powermnt.lca

*** Analysis Results:

Maximum element usage is 99.80% for Angle "g37P" in load case "Extreme Wind - Transverse"
Maximum insulator usage is 18.03% for Clamp "25" in load case "Extreme Wind - Longitudinal"

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 - Transverse	17P	0.52	-1.46	5.15	1.55	-0.02	0.03	0.03	0.26	0.00
NESC Heavy - Transverse	29P	0.10	-0.65	-20.56	0.66	5.43	0.29	5.44	-0.23	0.00
NESC Heavy - Transverse	17X	-7.57	-8.43	-53.70	11.33	-0.07	0.08	0.11	-0.04	0.00
NESC Heavy - Transverse	17XY	4.32	-5.12	-29.80	6.70	-0.01	-0.07	0.07	0.03	0.00
NESC Heavy - Transverse	17Y	-4.43	-5.19	31.80	6.82	-0.05	0.00	0.05	-0.28	0.00
Extreme Wind - Transverse	17P	6.83	-9.90	50.29	12.03	-0.06	0.09	0.11	0.71	0.00
Extreme Wind - Transverse	29P	0.09	-0.87	-7.98	0.88	9.57	0.67	9.59	0.02	0.00
Extreme Wind - Transverse	17X	-10.77	-13.81	-74.86	17.52	-0.13	0.13	0.18	0.61	0.00
Extreme Wind - Transverse	17XY	9.21	-11.79	-63.58	14.96	-0.13	-0.15	0.20	-0.62	0.00
Extreme Wind - Transverse	17Y	-8.72	-11.22	63.12	14.20	-0.12	-0.07	0.14	-0.71	0.00
NESC Heavy - Longitudinal	17P	-5.33	4.28	-31.14	6.84	-0.02	0.04	0.04	0.26	0.00
NESC Heavy - Longitudinal	29P	-0.15	-0.61	-20.46	0.62	2.97	-4.25	5.19	-0.17	0.00
NESC Heavy - Longitudinal	17X	-5.97	-5.85	-40.06	8.36	-0.09	0.06	0.11	-0.04	0.00
NESC Heavy - Longitudinal	17XY	-0.56	-0.76	3.15	0.94	0.08	0.01	0.08	0.02	0.00
NESC Heavy - Longitudinal	17Y	-3.78	-3.96	21.41	5.48	0.00	-0.06	0.06	-0.27	0.00
Extreme Wind - Longitudinal	17P	-6.91	3.32	-33.65	7.66	-0.06	0.04	0.07	0.66	0.00
Extreme Wind - Longitudinal	29P	-0.30	-0.81	-7.79	0.86	5.72	-7.62	9.53	-0.04	0.00
Extreme Wind - Longitudinal	17X	-10.52	-11.01	-65.36	15.23	-0.21	0.06	0.21	0.60	0.00
Extreme Wind - Longitudinal	17XY	-2.41	-2.01	12.12	3.14	0.07	-0.04	0.08	-0.64	0.00
Extreme Wind - Longitudinal	17Y	-10.57	-11.78	61.69	15.82	-0.01	-0.18	0.18	-0.66	0.00

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

Load Case	Support Origin Joint	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 - Transverse	17P	16P	g12P	-5.328	0.768	0.771	0.201	0.745	0.52	-1.46	5.15
NESC Heavy - Transverse	17X	16X	g12X	54.871	0.966	0.978	0.116	0.971	-7.57	-8.43	-53.70
NESC Heavy - Transverse	17XY	16XY	g12XY	30.527	0.990	1.003	-0.182	0.986	4.32	-5.12	-29.80
NESC Heavy - Transverse	17Y	16Y	g12Y	-32.511	0.766	0.773	0.016	0.773	-4.43	-5.19	31.80
Extreme Wind - Transverse	17P	16P	g12P	-51.629	2.896	2.920	0.151	2.916	6.83	-9.90	50.29
Extreme Wind - Transverse	17X	16X	g12X	76.804	3.398	3.437	0.374	3.417	-10.77	-13.81	-74.86
Extreme Wind - Transverse	17XY	16XY	g12XY	65.247	2.947	2.982	-0.383	2.957	9.21	-11.79	-63.58
Extreme Wind - Transverse	17Y	16Y	g12Y	-64.651	2.429	2.451	-0.051	2.450	-8.72	-11.22	63.12
NESC Heavy - Longitudinal	17P	16P	g12P	31.867	0.993	1.002	1.001	0.040	-5.33	4.28	-31.14
NESC Heavy - Longitudinal	17X	16X	g12X	40.924	0.487	0.496	0.407	0.283	-5.97	-5.85	-40.06
NESC Heavy - Longitudinal	17XY	16XY	g12XY	-3.068	1.192	1.201	0.121	1.195	-0.56	-0.76	3.15
NESC Heavy - Longitudinal	17Y	16Y	g12Y	-22.061	1.252	1.276	0.808	0.987	-3.78	-3.96	21.41
Extreme Wind - Longitudinal	17P	16P	g12P	34.414	2.610	2.612	2.233	1.356	-6.91	3.32	-33.65
Extreme Wind - Longitudinal	17X	16X	g12X	67.071	2.364	2.408	1.441	1.930	-10.52	-11.01	-65.36
Extreme Wind - Longitudinal	17XY	16XY	g12XY	-11.944	3.739	3.761	0.728	3.690	-2.41	-2.01	12.12
Extreme Wind - Longitudinal	17Y	16Y	g12Y	-63.579	3.714	3.781	1.997	3.211	-10.57	-11.78	61.69

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	104.000	86.000	17	26	1.00	5.00	36.000	1.00	27.50	137.250
2	86.000	41.500	56	173	5.00	9.81	264.882	27.50	9.81	431.382
3	41.500	0.000	23	54	9.81	21.39	646.560	9.81	21.39	646.560

*** 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 Angle KL/R	Length (ft)	Angle Curve	Steel Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Control	Max Cont-rol In Comp. %	Comp. 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. No.	No. Of Bolts
LEG1	L4x4x1/4	37.74	SAE	4X4X0.25	33.0	93.52	Comp	93.52	g6X	-57.412	Extreme	61.392	125.640	168.750	0.500	0.500	0.500	37.74	37.74	5.000	1	12
LEG2	L4x4x5/16	38.65	SAE	4X4X0.3125	33.0	97.97	Tens	97.87	g12X	-74.173	Extreme	75.789	104.700	175.781	0.500	0.500	0.500	38.65	38.65	5.096	1	10

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     LEG3        L4x4x3/8   SAE        4X4X0.375     33.0 86.27  Comp 86.27    g11X -73.786Extreme    85.526  104.700  210.937 0.167 0.167 0.167
57.05      57.05 22.432     1    10
     XBR1 L1.75x1.75x3/16   SAE 1.75X1.75X0.1875     33.0 78.62  Comp 78.62    g13P  -9.088Extreme    11.559   20.940   21.094 0.750 0.500 0.500
123.69     122.85  7.071     5     2
     XBR2       L3x2x3/16   SAU       3X2X0.1875     33.0 44.56  Comp 44.56    g16Y  -7.698Extreme    17.275   31.410   31.641 0.500 0.750 0.500
120.57     120.47  7.810     5     3
     XBR3       L3x2x3/16   SAU       3X2X0.1875     33.0 43.84  Comp 43.84   g19XY  -7.564Extreme    17.255   31.410   31.641 1.000 1.500 1.000
120.57     120.57  3.905     4     3
     XBR4       L2x2x3/16   SAE       2X2X0.1875     33.0 30.97 Cross 30.97    g26Y  -3.363Extreme    10.862   20.940   21.094 1.000 0.560 0.560
147.29     136.78  7.573     6     2
     XBR5     L2.5x2x3/16   SAU      2.5X2X0.1875     33.0 26.67 Cross 26.67    g27Y  -2.371Extreme     8.890   20.940   21.094 0.560 1.000 0.560
187.46     161.49  9.373     6     2
     XBR6  L1.75x1.75x1/4   SAE   1.75X1.75X0.25     33.0 55.39  Comp 55.39   g32XY  -1.250NESC Hea    2.257   20.940   28.125 0.790 0.580 0.580
383.86     321.10 18.807     5     2
     XBR7 L1.75x1.75x3/16   SAE 1.75X1.75X0.1875     33.0 53.66  Tens 43.44    g33Y  -0.461NESC Hea    1.061   20.940   21.094 0.800 0.410 0.410
499.05     408.88 27.916     5     2
    PMBR1   L2.5x2.5x3/16   SAE   2.5X2.5X0.1875     36.0 74.87  Tens 67.70    g60P  -6.902Extreme    21.670   10.470   10.195 1.000 1.000 1.000
85.71     102.85  3.536     3     1 A potentially damaging moment exists in the following members (make sure your system is well triangulated to
minimize moments): g60P g60XY g60Y  ??
    PMBR2    L3.5x3.5x1/4   SAE     3.5X3.5X0.25     36.0 30.37  Comp 30.37    g64P  -3.180Extreme    16.980   10.470   13.594 1.000 1.000 1.000
168.78     168.78  9.761     4     1
     HBR1 L1.75x1.75x3/16   SAE 1.75X1.75X0.1875     33.0 99.80  Comp 99.80    g37P  -5.787Extreme     5.799   10.470   10.547 1.000 1.000 1.000
174.93     174.93  5.000     4     1
     HBR2      2.5x2x3/16   SAU      2.5X2X0.1875     33.0 52.51  Comp 52.51    g41P  -5.498Extreme    10.510   10.470   10.547 1.000 0.500 0.500
148.52     148.52  9.815     4     1
     HBR3       L3x2.5x1/4   SAU       3X2.5X0.25     33.0 55.90  Comp 55.90    g43P  -5.853Extreme    12.202   10.470   14.062 1.000 0.500 0.500
175.29     175.29 13.804     4     1
     HBR4       L4x3x1/4   SAU        4X3X0.25     33.0 46.96  Comp 46.96    g45Y  -4.916Extreme    13.759   10.470   14.062 2.000 1.000 1.000
187.50     187.50 10.000     4     1 A potentially damaging moment exists in the following members (make sure your system is well triangulated to
minimize moments): g46P g46X g46XY g46Y  ??
     Arm1       L3x2.5x1/4   SAU       3X2.5X0.25     33.0 29.36  Comp 29.36    g49X  -8.371NESC Hea   28.509   31.410   42.187 1.000 0.500 0.500
97.38     108.69  7.669     3     3
     Arm2     L3.5x2.5x1/4   SAU     3.5X2.5X0.25     33.0 37.08  Comp 37.08    g53P  -9.096NESC Hea   24.527   31.410   42.187 1.000 0.500 0.500
132.50     129.56 12.013     5     3
   ArmBR1    L2.5x2.5x3/16   SAE   2.5X2.5X0.1875     33.0 29.47  Comp 29.47    g55X  -3.086NESC Hea   10.714   10.470   10.547 1.000 1.000 1.000
155.23     155.23  6.403     4     1
   ArmBR2   L1.75x1/4x1/4   BAR  1.75X0.25X0.25     33.0 93.43  Tens  0.00    g59Y   0.000            0.050   10.470   14.062 1.000 1.000 1.000
1588.21    1588.21  9.556     4     1
 Powermnt    12" Std. Pipe   PIP      12.75X0.375     50.0 16.87  Comp 16.87    g65P -19.454NESC Hea  115.298    0.000    0.000 1.000 1.000 1.000
73.97      73.97 27.000     1     0
     fic1     Fictitious1   Bar               fic     36.0  0.00        0.00    g72P   0.000            0.000    0.000    0.000 1.000 1.000 1.000
2160000.00 2160000.00 18.000     4     0
      fic     Fictitious2   Bar               fic     36.0  0.00        0.00    g74P   0.000            0.000    0.000    0.000 1.000 1.000 1.000
60000.00   60000.00  0.500     4     0
     HBR5 L1.75x1.75x3/16   SAE 1.75X1.75X0.1875     33.0 14.10  Comp 14.10   g78XY  -1.476NESC Hea   14.114   10.470   10.547 1.000 1.000 1.000
87.46     103.73  2.500     3     1
  ArmBR2R   L1.75x3/8x3/8   BAR 1.75X0.375X0.375     33.0 77.61  Tens  0.00    g57Y   0.000            0.100   10.470   21.094 1.000 1.000 1.000
1372.59    1372.59 12.382     4     1
```

Group Summary (Tension Portion):

Group No.	Group Label	Angle Desc.	Angle Type	Angle Size	Steel Strength	Max Usage Cont-rol	Max Tension Use In Tens.	Tension Control Member	Tension Force Control Case	Net Section Capacity	Tension Connect. Shear Capacity	Tension Connect. Bearing Capacity	Tension Connect. Rupture Capacity	Tension Member Length	No. Tens. Bolts	Hole Of Diameter Holes

				(ksi)	%		%		(kips)	(kips)	(kips)	(kips)	(kips)	(ft)	(in)
LEG1	L4x4x1/4	SAE	4X4X0.25	33.0	93.52	Comp	87.51	g6Y	46.096Extreme	52.676	125.640	168.750	220.588	5.000	12
2.000	0.6875														
LEG2	L4x4x5/16	SAE	4X4X0.3125	33.0	97.97	Tens	97.97	g12Y	63.702Extreme	65.020	104.700	175.781	103.401	5.096	10
2.000	0.6875														
LEG3	L4x4x3/8	SAE	4X4X0.375	33.0	86.27	Comp	72.85	g11Y	56.360Extreme	77.364	104.700	210.937	193.014	22.432	10
2.000	0.6875														
XBR1	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	33.0	78.62	Comp	56.62	g13X	8.259Extreme	14.585	20.940	21.094	16.189	7.071	2
1.000	0.6875														
XBR2	L3x2x3/16	SAU	3X2X0.1875	33.0	44.56	Comp	40.40	g23XY	9.253Extreme	22.901	31.410	31.641	28.125	7.071	3
1.000	0.6875														
XBR3	L3x2x3/16	SAU	3X2X0.1875	33.0	43.84	Comp	39.62	g35Y	3.057Extreme	17.333	10.470	10.547	7.717	11.826	1
1.000	0.6875														
XBR4	L2x2x3/16	SAE	2X2X0.1875	33.0	30.97	Cross	19.12	g25XY	2.914Extreme	17.258	20.940	21.094	15.240	7.573	2
1.000	0.6875														
XBR5	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	26.67	Cross	12.57	g28P	2.357Extreme	20.228	20.940	21.094	18.750	9.373	2
1.000	0.6875														
XBR6	L1.75x1.75x1/4	SAE	1.75X1.75X0.25	33.0	55.39	Comp	34.78	g32X	6.623Extreme	19.041	20.940	28.125	24.820	18.807	2
1.000	0.6875														
XBR7	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	33.0	53.66	Tens	53.66	g33XY	7.827Extreme	14.585	20.940	21.094	17.420	27.916	2
1.000	0.6875														
PMBR1	**L2.5x2.5x3/16**	**SAE**	**2.5X2.5X0.1875**	**36.0**	**74.87**	**Tens**	**74.87**	**g60Y**	**7.634Extreme**	**25.048**	**10.470**	**10.195**	**0.000**	**3.536**	**1**
1.000	**0.6875**	**A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g60P**													
g60XY	**g60Y**	**??**													
PMBR2	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	36.0	30.37	Comp	4.12	g64Y	0.431NESC Hea	49.187	10.470	13.594	0.000	9.761	1
1.000	0.6875														
HBR1	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	33.0	99.80	Comp	61.59	g38P	4.753Extreme	14.585	10.470	10.547	7.717	5.000	1
1.000	0.6875														
HBR2	2.5x2x3/16	SAU	2.5X2X0.1875	33.0	52.51	Comp	11.59	g41X	0.894Extreme	17.444	10.470	10.547	7.717	9.815	1
1.000	0.6875														
HBR3	L3x2.5x1/4	SAU	3X2.5X0.25	33.0	55.90	Comp	11.85	g43X	1.241Extreme	30.090	10.470	14.062	12.500	13.804	1
1.000	0.6875														
HBR4	**L4x3x1/4**	**SAU**	**4X3X0.25**	**33.0**	**46.96**	**Comp**	**16.08**	**g46X**	**1.684Extreme**	**37.663**	**10.470**	**14.062**	**12.500**	**10.000**	**1**
1.000	**0.6875**	**A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g46P**													
g46X	**g46XY**	**g46Y**	**??**												
Arm1	L3x2.5x1/4	SAU	3X2.5X0.25	33.0	29.36	Comp	17.76	g48P	7.677Extreme	43.230	0.000	0.000	0.000	5.000	0
0.000	0.6875														
Arm2	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	33.0	37.08	Comp	0.00	g54Y	0.000	47.520	0.000	0.000	0.000	5.000	0
0.000	0.6875														
ArmBR1	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	33.0	29.47	Comp	0.00	g55X	0.000	22.961	10.470	10.547	0.000	6.403	1
1.000	0.6875														
ArmBR2	L1.75x1/4x1/4	BAR	1.75X0.25X0.25	33.0	93.43	Tens	93.43	g58XY	7.370NESC Hea	7.889	10.470	14.062	0.000	2.500	1
1.000	0.6875														
Powermnt	12" Std. Pipe	PIP	12.75X0.375	50.0	16.87	Comp	0.00	g71P	0.000	729.999	0.000	0.000	0.000	9.000	0
0.000	0														
fic1	Fictitious1	Bar	fic	36.0	0.00		0.00	g72P	0.000NESC Hea	3.600	0.000	0.000	0.000	18.000	0
0.000	0														
fic	Fictitious2	Bar	fic	36.0	0.00		0.00	g74P	0.072Extreme	3.600	0.000	0.000	0.000	0.500	0
0.000	0														
HBR5	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	33.0	14.10	Comp	0.00	g78Y	0.000	14.585	10.470	10.547	7.717	2.500	1
1.000	0.6875														
ArmBR2R	L1.75x3/8x3/8	BAR	1.75X0.375X0.375	33.0	77.61	Tens	77.61	g57Y	8.126NESC Hea	11.834	10.470	21.094	0.000	12.382	1
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 - Transverse	93.43	g58XY	Angle
Extreme Wind - Transverse	99.80	g37P	Angle
NESC Heavy - Longitudinal	92.88	g58Y	Angle
Extreme Wind - Longitudinal	93.65	g12Y	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	6.86	NESC Heavy - Transverse	0.0
2	Clamp	8.86	NESC Heavy - Transverse	0.0
3	Clamp	13.12	NESC Heavy - Transverse	0.0
4	Clamp	14.97	NESC Heavy - Transverse	0.0
5	Clamp	13.38	NESC Heavy - Transverse	0.0
6	Clamp	13.35	NESC Heavy - Transverse	0.0
7	Clamp	13.74	NESC Heavy - Transverse	0.0
8	Clamp	13.59	NESC Heavy - Transverse	0.0
14	Clamp	4.83	Extreme Wind - Transverse	0.0
15	Clamp	5.44	NESC Heavy - Transverse	0.0
16	Clamp	5.47	Extreme Wind - Transverse	0.0
17	Clamp	2.95	Extreme Wind - Transverse	0.0
18	Clamp	2.52	Extreme Wind - Transverse	0.0
19	Clamp	4.47	Extreme Wind - Longitudinal	0.0
20	Clamp	1.50	Extreme Wind - Transverse	0.0
21	Clamp	2.37	Extreme Wind - Transverse	0.0
22	Clamp	1.50	Extreme Wind - Transverse	0.0
23	Clamp	1.50	Extreme Wind - Transverse	0.0
24	Clamp	1.35	Extreme Wind - Transverse	0.0
25	Clamp	18.03	Extreme Wind - Longitudinal	0.0
26	Clamp	2.92	NESC Heavy - Longitudinal	0.0
27	Clamp	3.65	NESC Heavy - Longitudinal	0.0
28	Clamp	4.78	NESC Heavy - Longitudinal	0.0
29	Clamp	9.21	NESC Heavy - Longitudinal	0.0
30	Clamp	15.43	NESC Heavy - Longitudinal	0.0
31	Clamp	6.35	NESC Heavy - Transverse	0.0
32	Clamp	3.79	Extreme Wind - Longitudinal	0.0
33	Clamp	4.62	Extreme Wind - Longitudinal	0.0
34	Clamp	6.19	Extreme Wind - Longitudinal	0.0
35	Clamp	6.68	Extreme Wind - Longitudinal	0.0
36	Clamp	5.89	Extreme Wind - Longitudinal	0.0
37	Clamp	1.95	NESC Heavy - Longitudinal	0.0
38	Clamp	2.28	NESC Heavy - Longitudinal	0.0
39	Clamp	3.67	Extreme Wind - Longitudinal	0.0
40	Clamp	4.51	NESC Heavy - Transverse	0.0
41	Clamp	3.41	NESC Heavy - Transverse	0.0
42	Clamp	1.97	NESC Heavy - Longitudinal	0.0

*** Weight of structure (lbs):

Weight of Angles*Section DLF:	14156.8
Total:	14156.8

*** End of Report

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*****************************************************************************
*                                                                           *
* TOWER - Analysis and Design -  Copyright Power Line Systems, Inc. 1986-2011 *
*                                                                           *
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Project Name : 21051.10 - Fairfield, CT
Project Notes: Structure # 876 / T-Mobile CT11317B
Project File : J:\Jobs\2105100.WI\10_CT11317B\05_Structural\Tower\Backup Documentation\Rev (1)\Calcs\PLS Tower\cl&p # 876 w_powermnt rein.tow
Date run     : 1:45:23 PM Thursday, September 09, 2021
by           : Tower Version 12.50
Licensed to  : Centek Engineering Inc

Successfully performed nonlinear analysis

Member "g6P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g6X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g6XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g6Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g9P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g9X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g9XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g9Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g10P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g10X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g10XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g10Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g11P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g11X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g11XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g11Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g12P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g12X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g12XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g12Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g15P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g15X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
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and spacing distances will be checked. ??
Member "g15XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g15Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g16P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g16X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g16XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
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Member "g19P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
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Member "g20Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g21P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g21X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g21XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g21Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g22P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g22X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g22XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge

and spacing distances will be checked. ??
Member "g22Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g23P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g23X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
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Member "g23Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g24P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g24X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g24XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g24Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Unable to calculate rupture capacity for member "g47P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g47X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g47XY" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g47Y" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g49P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g49X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g49XY" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g49Y" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g51P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g51X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g51XY" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g51Y" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g53P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g53X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g53XY" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g53Y" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g55P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g55X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g56P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g56X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g56XY" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g56Y" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g57P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g57X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g57XY" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g57Y" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g58P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g58X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g58XY" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g58Y" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g59P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g59X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g59XY" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g59Y" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g60P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g60X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g60XY" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g60Y" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g61P" because it has a long and short edge distance of 0. ??

Unable to calculate rupture capacity for member "g61X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g61XY" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g61Y" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g62P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g62X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g62XY" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g62Y" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g63P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g63X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g63XY" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g63Y" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g64P" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g64X" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g64XY" because it has a long and short edge distance of 0. ??
Unable to calculate rupture capacity for member "g64Y" because it has a long and short edge distance of 0. ??
w/t equals 34.00 for member "g65P" which exceeds ASCE 10 section 3.7.1 limit of 25. ??
w/t equals 34.00 for member "g66P" which exceeds ASCE 10 section 3.7.1 limit of 25. ??
w/t equals 34.00 for member "g67P" which exceeds ASCE 10 section 3.7.1 limit of 25. ??
w/t equals 34.00 for member "g68P" which exceeds ASCE 10 section 3.7.1 limit of 25. ??
w/t equals 34.00 for member "g69P" which exceeds ASCE 10 section 3.7.1 limit of 25. ??
w/t equals 34.00 for member "g70P" which exceeds ASCE 10 section 3.7.1 limit of 25. ??
w/t equals 34.00 for member "g71P" which exceeds ASCE 10 section 3.7.1 limit of 25. ??
Unusual number of fixed joints found: 5. Towers normally have from between 1 and 4 fixed joints. ??
The model has 122 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	2.5	-2.5	86	Free	Free	Free	Free	Free	Free
2P	X-Symmetry	0	-13.75	86	Free	Free	Free	Free	Free	Free
3P	XY-Symmetry	2.5	-2.5	81	Free	Free	Free	Free	Free	Free
4P	X-Symmetry	0	-9.75	81	Free	Free	Free	Free	Free	Free
5P	XY-Symmetry	2.5	-2.5	75	Free	Free	Free	Free	Free	Free
6P	XY-Symmetry	2.5	-2.5	72	Free	Free	Free	Free	Free	Free
7P	XY-Symmetry	2.5	-2.5	69	Free	Free	Free	Free	Free	Free
8P	X-Symmetry	0	-14.25	69	Free	Free	Free	Free	Free	Free
9P	XY-Symmetry	2.5	-2.5	64	Free	Free	Free	Free	Free	Free
10P	XY-Symmetry	2.5	-2.5	59	Free	Free	Free	Free	Free	Free
11P	X-Symmetry	0	-10.25	59	Free	Free	Free	Free	Free	Free
12P	XY-Symmetry	3.188	-3.188	54.05	Free	Free	Free	Free	Free	Free
13P	XY-Symmetry	4.013	-4.013	48.1	Free	Free	Free	Free	Free	Free
14P	XY-Symmetry	4.907	-4.907	41.5	Free	Free	Free	Free	Free	Free
15P	XY-Symmetry	6.902	-6.902	27	Free	Free	Free	Free	Free	Free
16P	XY-Symmetry	10	-10	5	Free	Free	Free	Free	Free	Free
17P	XY-Symmetry	10.69	-10.69	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
22P	None	0	0	104	Free	Free	Free	Free	Free	Free
23P	None	0	0	95	Free	Free	Free	Free	Free	Free
24P	None	0	0	86	Free	Free	Free	Free	Free	Free
25P	None	0	0	81	Free	Free	Free	Free	Free	Free
26P	None	0	0	69	Free	Free	Free	Free	Free	Free
27P	None	0	0	59	Free	Free	Free	Free	Free	Free
28P	None	0	0	27	Free	Free	Free	Free	Free	Free
29P	None	0	0	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
30P	X-Symmetry	0	0.5	86	Free	Free	Free	Free	Free	Free
31P	Y-Symmetry	0.5	0	86	Free	Free	Free	Free	Free	Free
32P	X-Symmetry	0	0.5	104	Free	Free	Free	Free	Free	Free
33P	Y-Symmetry	0.5	0	104	Free	Free	Free	Free	Free	Free
1X	X-GenXY	2.5	2.5	86	Free	Free	Free	Free	Free	Free
1XY	XY-GenXY	-2.5	2.5	86	Free	Free	Free	Free	Free	Free
1Y	Y-GenXY	-2.5	-2.5	86	Free	Free	Free	Free	Free	Free
2X	X-Gen	0	13.75	86	Free	Free	Free	Free	Free	Free
3X	X-GenXY	2.5	2.5	81	Free	Free	Free	Free	Free	Free
3XY	XY-GenXY	-2.5	2.5	81	Free	Free	Free	Free	Free	Free
3Y	Y-GenXY	-2.5	-2.5	81	Free	Free	Free	Free	Free	Free
4X	X-Gen	0	9.75	81	Free	Free	Free	Free	Free	Free
5X	X-GenXY	2.5	2.5	75	Free	Free	Free	Free	Free	Free
5XY	XY-GenXY	-2.5	2.5	75	Free	Free	Free	Free	Free	Free
5Y	Y-GenXY	-2.5	-2.5	75	Free	Free	Free	Free	Free	Free
6X	X-GenXY	2.5	2.5	72	Free	Free	Free	Free	Free	Free
6XY	XY-GenXY	-2.5	2.5	72	Free	Free	Free	Free	Free	Free
6Y	Y-GenXY	-2.5	-2.5	72	Free	Free	Free	Free	Free	Free
7X	X-GenXY	2.5	2.5	69	Free	Free	Free	Free	Free	Free
7XY	XY-GenXY	-2.5	2.5	69	Free	Free	Free	Free	Free	Free
7Y	Y-GenXY	-2.5	-2.5	69	Free	Free	Free	Free	Free	Free
8X	X-Gen	0	14.25	69	Free	Free	Free	Free	Free	Free
9X	X-GenXY	2.5	2.5	64	Free	Free	Free	Free	Free	Free
9XY	XY-GenXY	-2.5	2.5	64	Free	Free	Free	Free	Free	Free
9Y	Y-GenXY	-2.5	-2.5	64	Free	Free	Free	Free	Free	Free
10X	X-GenXY	2.5	2.5	59	Free	Free	Free	Free	Free	Free
10XY	XY-GenXY	-2.5	2.5	59	Free	Free	Free	Free	Free	Free
10Y	Y-GenXY	-2.5	-2.5	59	Free	Free	Free	Free	Free	Free
11X	X-Gen	0	10.25	59	Free	Free	Free	Free	Free	Free
12X	X-GenXY	3.188	3.188	54.05	Free	Free	Free	Free	Free	Free

12XY	XY-GenXY	-3.188	3.188	54.05	Free	Free	Free	Free	Free	Free
12Y	Y-GenXY	-3.188	-3.188	54.05	Free	Free	Free	Free	Free	Free
13X	X-GenXY	4.013	4.013	48.1	Free	Free	Free	Free	Free	Free
13XY	XY-GenXY	-4.013	4.013	48.1	Free	Free	Free	Free	Free	Free
13Y	Y-GenXY	-4.013	-4.013	48.1	Free	Free	Free	Free	Free	Free
14X	X-GenXY	4.907	4.907	41.5	Free	Free	Free	Free	Free	Free
14XY	XY-GenXY	-4.907	4.907	41.5	Free	Free	Free	Free	Free	Free
14Y	Y-GenXY	-4.907	-4.907	41.5	Free	Free	Free	Free	Free	Free
15X	X-GenXY	6.902	6.902	27	Free	Free	Free	Free	Free	Free
15XY	XY-GenXY	-6.902	6.902	27	Free	Free	Free	Free	Free	Free
15Y	Y-GenXY	-6.902	-6.902	27	Free	Free	Free	Free	Free	Free
16X	X-GenXY	10	10	5	Free	Free	Free	Free	Free	Free
16XY	XY-GenXY	-10	10	5	Free	Free	Free	Free	Free	Free
16Y	Y-GenXY	-10	-10	5	Free	Free	Free	Free	Free	Free
17X	X-GenXY	10.69	10.69	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
17XY	XY-GenXY	-10.69	10.69	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
17Y	Y-GenXY	-10.69	-10.69	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
30X	X-Gen	0	-0.5	86	Free	Free	Free	Free	Free	Free
31Y	Y-Gen	-0.5	0	86	Free	Free	Free	Free	Free	Free
32X	X-Gen	0	-0.5	104	Free	Free	Free	Free	Free	Free
33Y	Y-Gen	-0.5	0	104	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.
18S	Y-Symmetry	6P	6X	0.5	0	Free	Free	Free	Free	Free	Free
19S	X-Symmetry	6P	6Y	0.5	0	Free	Free	Free	Free	Free	Free
20S	Y-Symmetry	16P	16X	0.5	0	Free	Free	Free	Free	Free	Free
21S	X-Symmetry	16P	16Y	0.5	0	Free	Free	Free	Free	Free	Free
18Y	Y-Gen	6P	6X	0.5	0	Free	Free	Free	Free	Free	Free
19X	X-Gen	6P	6Y	0.5	0	Free	Free	Free	Free	Free	Free
20Y	Y-Gen	16P	16X	0.5	0	Free	Free	Free	Free	Free	Free
21X	X-Gen	16P	16Y	0.5	0	Free	Free	Free	Free	Free	Free

The model contains 76 primary and 8 secondary joints for a total of 84 joints.

Steel Material Properties:

Steel Material Label	Modulus of Elasticity (ksi)	Yield Stress Fy (ksi)	Ultimate Stress Fu (ksi)	Member Stress All. Hyp. 1 (ksi)	Member Stress All. Hyp. 2 (ksi)	Member Rupture Hyp. 1 (ksi)	Member Rupture Hyp. 2 (ksi)	Member Bearing Hyp. 1 (ksi)	Member Bearing Hyp. 2 (ksi)
A7	2.9e+004	33	60	0	0	0	0	0	0
A36	2.9e+004	36	58	0	0	0	0	0	0
A 36	2.9e+004	36	58	0	0	0	0	0	0
A572-50	2.9e+004	50	65	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 A7	0.625	0.6875	10.47	0	0	0	0

Number Bolts Used By Type:

Bolt Type	Number Bolts
5/8 A7	546

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	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	0	1.0000	0
SAE	1.75X1.75X0.25	1.75	1.75	0.25	2.77	0.813	4.25	0.529	0.529	0.341	1	1.75	0	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	0	0	1.0000	0
SAE	2X2X0.1875	2	2	0.1875	2.44	0.71	8	0.617	0.617	0.394	1	2	0	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	0	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	0	0	1.0000	0
SAE	4X4X0.3125	4	4	0.3125	8.2	2.4	10.6	1.24	1.24	0.791	1	4	0	0	1.0000	0
SAE	4X4X0.375	4	4	0.375	9.8	2.86	8.67	1.23	1.23	0.788	1	4	0	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	0	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	0	0	1.0000	0
SAU	3X2.5X0.25	3	2.5	0.25	4.5	1.31	9.5	0.945	0.753	0.528	1	3	0	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	0	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	0	0	1.0000	0
BAR	1.75X0.25X0.25	1.75	0.25	0.25	1.49	0.4375	7	0.5052	0.0722	0.101	1	1.75	0	0	1.0000	0
BAR	1.75X0.375X0.375	1.75	0.375	0.375	2.233	0.6563	4.666	0.5052	0.1083	0.1497	1	1.75	0	0	1.0000	0
PIP	12.75X0.375	12.75	12.75	0.375	49.56	14.6	34	4.38	4.38	4.38	1	12.75	0	0	1.0000	0
Bar	fic	1	0	0.1	0.005	0.1	1	0.0001	0.0001	0.0001	1	0.1	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)
LEG1	L4x4x1/4	SAE	4X4X0.25	A7	Beam	Leg	None	12.000
LEG2	L4x4x5/16	SAE	4X4X0.3125	A7	Beam	Leg	None	12.000
LEG3	L4x4x3/8	SAE	4X4X0.375	A7	Beam	Leg	None	12.000
XBR1	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	A7	Truss Crossing Diagonal		None	12.000
XBR2	L3x2x3/16	SAU	3X2X0.1875	A7	Truss Crossing Diagonal		None	12.000
XBR3	L3x2x3/16	SAU	3X2X0.1875	A7	Truss	Other	None	12.000
XBR4	L2x2x3/16	SAE	2X2X0.1875	A7	Truss Crossing Diagonal		None	12.000
XBR5	L2.5x2x3/16	SAU	2.5X2X0.1875	A7	Truss Crossing Diagonal		None	12.000
XBR6	L1.75x1.75x1/4	SAE	1.75X1.75X0.25	A7	T-Only	Other	None	12.000
XBR7	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	A7	T-Only	Other	None	12.000
PMBR1	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	A36	Beam	Other	None	12.000
PMBR2	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	A36	Beam	Other	None	12.000
HBR1	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	A7	Beam	Other	None	12.000
HBR2	2.5x2x3/16	SAU	2.5X2X0.1875	A7	Beam	Other	None	12.000
HBR3	L3x2.5x1/4	SAU	3X2.5X0.25	A7	Beam	Other	None	12.000
HBR4	L4x3x1/4	SAU	4X3X0.25	A7	Beam	Other	None	12.000
Arm1	L3x2.5x1/4	SAU	3X2.5X0.25	A7	Beam	Other	None	12.000
Arm2	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	A7	Beam	Other	None	12.000
ArmBR1	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	A7	Truss	Other	None	0.000

ArmBR2	L1.75x1/4x1/4	BAR	1.75X0.25X0.25	A7	T-Only	Other	None	0.000
Powermnt	12" Std. Pipe	PIP	12.75X0.375	A572-50	Beam	Other	None	0.000
fic1	Fictitious1	Bar	fic	A 36	T-Only	Other	None	0.000
fic	Fictitious2	Bar	fic	A 36	T-Only	Fictitious	None	0.000
HBR5	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	A7	Truss	Other	None	0.000
ArmBR2R	L1.75x3/8x3/8	BAR	1.75X0.375X0.375	A7	T-Only	Other	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	4X4X0.25	A7	108.00	144.00	712.80
SAE	4X4X0.3125	A7	91.69	122.26	751.90
SAE	4X4X0.375	A7	148.82	198.42	1458.39
SAE	1.75X1.75X0.1875	A7	329.89	192.44	699.37
SAU	3X2X0.1875	A7	332.71	277.26	1021.42
SAE	2X2X0.1875	A7	60.58	40.39	147.83
SAU	2.5X2X0.1875	A7	203.33	152.50	559.15
SAE	1.75X1.75X0.25	A7	150.45	87.77	416.76
SAU	3X2.5X0.25	A7	194.56	178.35	875.54
SAU	4X3X0.25	A7	80.00	93.33	464.00
SAU	3.5X2.5X0.25	A7	58.05	58.05	284.46
SAE	2.5X2.5X0.1875	A7	12.81	10.67	39.32
BAR	1.75X0.25X0.25	A7	84.84	28.28	126.42
BAR	1.75X0.375X0.375	A7	49.53	17.54	110.60
SAE	2.5X2.5X0.1875	A36	56.57	47.14	173.67
SAE	3.5X3.5X0.25	A36	39.04	45.55	226.46
PIP	12.75X0.375	A572-50	104.00	442.00	5154.24
Bar	fic	A 36	76.00	12.67	0.38

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	24P	1.000	3.200	3.200	1.000	1.000	0.000	0.000	1.000	1.000	0.000	0.000	None
2	14P	1.050	3.200	3.200	1.000	1.000	0.000	0.000	1.000	1.000	0.000	0.000	None
3	17P	1.100	3.200	3.200	1.050	1.050	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.

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    g1P     LEG1          XY-Symmetry     1P    3P    1     4     1     1     1 5/8 A7     0      4       0                0      0      0       0
0       0     0
    g1X     LEG1              X-GenXY     1X    3X    1     4     1     1     1 5/8 A7     0      4       0                0      0      0       0
0       0     0
   g1XY     LEG1             XY-GenXY    1XY   3XY    1     4     1     1     1 5/8 A7     0      4       0                0      0      0       0
0       0     0
    g1Y     LEG1              Y-GenXY     1Y    3Y    1     4     1     1     1 5/8 A7     0      4       0                0      0      0       0
0       0     0
    g2P     LEG1          XY-Symmetry     3P    5P    1     4     1     1     1 5/8 A7     0      4       0                0      0      0       0
0       0     0
    g2X     LEG1              X-GenXY     3X    5X    1     4     1     1     1 5/8 A7     0      4       0                0      0      0       0
0       0     0
   g2XY     LEG1             XY-GenXY    3XY   5XY    1     4     1     1     1 5/8 A7     0      4       0                0      0      0       0
0       0     0
    g2Y     LEG1              Y-GenXY     3Y    5Y    1     4     1     1     1 5/8 A7     0      4       0                0      0      0       0
0       0     0
    g3P     LEG1          XY-Symmetry     5P    6P    1     4     1     1     1 5/8 A7     0      2       0                0      0      0       0
0       0     0
    g3X     LEG1              X-GenXY     5X    6X    1     4     1     1     1 5/8 A7     0      2       0                0      0      0       0
0       0     0
   g3XY     LEG1             XY-GenXY    5XY   6XY    1     4     1     1     1 5/8 A7     0      2       0                0      0      0       0
0       0     0
    g3Y     LEG1              Y-GenXY     5Y    6Y    1     4     1     1     1 5/8 A7     0      2       0                0      0      0       0
0       0     0
    g4P     LEG1          XY-Symmetry     6P    7P    1     4     1     1     1 5/8 A7     0      4       0                0      0      0       0
0       0     0
    g4X     LEG1              X-GenXY     6X    7X    1     4     1     1     1 5/8 A7     0      4       0                0      0      0       0
0       0     0
   g4XY     LEG1             XY-GenXY    6XY   7XY    1     4     1     1     1 5/8 A7     0      4       0                0      0      0       0
0       0     0
    g4Y     LEG1              Y-GenXY     6Y    7Y    1     4     1     1     1 5/8 A7     0      4       0                0      0      0       0
0       0     0
    g5P     LEG1          XY-Symmetry     7P    9P    1     4     1     1     1 5/8 A7     0      2       0                0      0      0       0
0       0     0
    g5X     LEG1              X-GenXY     7X    9X    1     4     1     1     1 5/8 A7     0      2       0                0      0      0       0
0       0     0
   g5XY     LEG1             XY-GenXY    7XY   9XY    1     4     1     1     1 5/8 A7     0      2       0                0      0      0       0
0       0     0
    g5Y     LEG1              Y-GenXY     7Y    9Y    1     4     1     1     1 5/8 A7     0      2       0                0      0      0       0
0       0     0
    g6P     LEG1          XY-Symmetry     9P   10P    1     4   0.5   0.5   0.5 5/8 A7    12      2       1       Both   1.25  2.375    1.5       4
0       0     0
    g6X     LEG1              X-GenXY     9X   10X    1     4   0.5   0.5   0.5 5/8 A7    12      2       1       Both   1.25  2.375    1.5       4
0       0     0
   g6XY     LEG1             XY-GenXY    9XY  10XY    1     4   0.5   0.5   0.5 5/8 A7    12      2       1       Both   1.25  2.375    1.5       4
0       0     0
    g6Y     LEG1              Y-GenXY     9Y   10Y    1     4   0.5   0.5   0.5 5/8 A7    12      2       1       Both   1.25  2.375    1.5       4
0       0     0
    g7P     LEG2          XY-Symmetry    10P   12P    1     4     1     1     1 5/8 A7     0      2       0                0      0      0       0
0       0     0
    g7X     LEG2              X-GenXY    10X   12X    1     4     1     1     1 5/8 A7     0      2       0                0      0      0       0
0       0     0
   g7XY     LEG2             XY-GenXY   10XY  12XY    1     4     1     1     1 5/8 A7     0      2       0                0      0      0       0
0       0     0
    g7Y     LEG2              Y-GenXY    10Y   12Y    1     4     1     1     1 5/8 A7     0      2       0                0      0      0       0
0       0     0
    g8P     LEG2          XY-Symmetry    12P   13P    1     4   0.5   0.5   0.5 5/8 A7     0      2       0                0      0      0       0
0       0     0
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g8X	LEG2	X-GenXY	12X	13X	1	4	0.5	0.5	0.5	5/8	A7	0	2	0			0	0	0	0	0	0
g8XY	LEG2	XY-GenXY	12XY	13XY	1	4	0.5	0.5	0.5	5/8	A7	0	2	0			0	0	0	0	0	0
g8Y	LEG2	Y-GenXY	12Y	13Y	1	4	0.5	0.5	0.5	5/8	A7	0	2	0			0	0	0	0	0	0
g9P	LEG2	XY-Symmetry	13P	14P	1	4	0.5	0.5	0.5	5/8	A7	10	2.02	1	Both	0.875	2	1.5	3.5	0	0	0
g9X	LEG2	X-GenXY	13X	14X	1	4	0.5	0.5	0.5	5/8	A7	10	2.02	1	Both	0.875	2	1.5	3.5	0	0	0
g9XY	LEG2	XY-GenXY	13XY	14XY	1	4	0.5	0.5	0.5	5/8	A7	10	2.02	1	Both	0.875	2	1.5	3.5	0	0	0
g9Y	LEG2	Y-GenXY	13Y	14Y	1	4	0.5	0.5	0.5	5/8	A7	10	2.02	1	Both	0.875	2	1.5	3.5	0	0	0
g10P	LEG3	XY-Symmetry	14P	15P	1	4	0.25	0.25	0.25	5/8	A7	10	2	1	Both	1.3125	2.375	1.5	3.5	0	0	0
g10X	LEG3	X-GenXY	14X	15X	1	4	0.25	0.25	0.25	5/8	A7	10	2	1	Both	1.3125	2.375	1.5	3.5	0	0	0
g10XY	LEG3	XY-GenXY	14XY	15XY	1	4	0.25	0.25	0.25	5/8	A7	10	2	1	Both	1.3125	2.375	1.5	3.5	0	0	0
g10Y	LEG3	Y-GenXY	14Y	15Y	1	4	0.25	0.25	0.25	5/8	A7	10	2	1	Both	1.3125	2.375	1.5	3.5	0	0	0
g11P	LEG3	XY-Symmetry	15P	16P	1	4	0.167	0.167	0.167	5/8	A7	10	2	1	Both	0.875	1.9375	1.5	3.75	0	0	0
g11X	LEG3	X-GenXY	15X	16X	1	4	0.167	0.167	0.167	5/8	A7	10	2	1	Both	0.875	1.9375	1.5	3.75	0	0	0
g11XY	LEG3	XY-GenXY	15XY	16XY	1	4	0.167	0.167	0.167	5/8	A7	10	2	1	Both	0.875	1.9375	1.5	3.75	0	0	0
g11Y	LEG3	Y-GenXY	15Y	16Y	1	4	0.167	0.167	0.167	5/8	A7	10	2	1	Both	0.875	1.9375	1.5	3.75	0	0	0
g12P	LEG2	XY-Symmetry	16P	17P	1	4	0.5	0.5	0.5	5/8	A7	10	2	1	Both	0.5625	1.625	1.5625	3.75	0	0	0
g12X	LEG2	X-GenXY	16X	17X	1	4	0.5	0.5	0.5	5/8	A7	10	2	1	Both	0.5625	1.625	1.5625	3.75	0	0	0
g12XY	LEG2	XY-GenXY	16XY	17XY	1	4	0.5	0.5	0.5	5/8	A7	10	2	1	Both	0.5625	1.625	1.5625	3.75	0	0	0
g12Y	LEG2	Y-GenXY	16Y	17Y	1	4	0.5	0.5	0.5	5/8	A7	10	2	1	Both	0.5625	1.625	1.5625	3.75	0	0	0
g13P	XBR1	XY-Symmetry	1P	3X	2	5	0.75	0.5	0.5	5/8	A7	2	1	1	Short only	0.8125	0	1	2	0	0	0
g13X	XBR1	X-GenXY	1X	3P	2	5	0.75	0.5	0.5	5/8	A7	2	1	1	Short only	0.8125	0	1	2	0	0	0
g13XY	XBR1	XY-GenXY	1XY	3Y	2	5	0.75	0.5	0.5	5/8	A7	2	1	1	Short only	0.8125	0	1	2	0	0	0
g13Y	XBR1	Y-GenXY	1Y	3XY	2	5	0.75	0.5	0.5	5/8	A7	2	1	1	Short only	0.8125	0	1	2	0	0	0
g14P	XBR1	XY-Symmetry	1X	3XY	2	5	0.75	0.5	0.5	5/8	A7	2	1	1	Short only	0.8125	0	1	2	0	0	0
g14X	XBR1	X-GenXY	1P	3Y	2	5	0.75	0.5	0.5	5/8	A7	2	1	1	Short only	0.8125	0	1	2	0	0	0
g14XY	XBR1	XY-GenXY	1Y	3P	2	5	0.75	0.5	0.5	5/8	A7	2	1	1	Short only	0.8125	0	1	2	0	0	0
g14Y	XBR1	Y-GenXY	1XY	3X	2	5	0.75	0.5	0.5	5/8	A7	2	1	1	Short only	0.8125	0	1	2	0	0	0
g15P	XBR2	XY-Symmetry	3P	5X	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	3.125	0	0	0
g15X	XBR2	X-GenXY	3X	5P	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	3.125	0	0	0
g15XY	XBR2	XY-GenXY	3XY	5Y	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	3.125			

0	0	0																		
	g15Y	XBR2		Y-GenXY	3Y	5XY	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	3.125
0	0	0																		
	g16P	XBR2		XY-Symmetry	3X	5XY	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	3.125
0	0	0																		
	g16X	XBR2		X-GenXY	3P	5Y	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	3.125
0	0	0																		
	g16XY	XBR2		XY-GenXY	3Y	5P	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	3.125
0	0	0																		
	g16Y	XBR2		Y-GenXY	3XY	5X	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	3.125
0	0	0																		
	g17P	XBR3		XY-Symmetry	5P	18S	2	4	1	1.5	1	5/8	A7	3	1	1	Long only	0.875	2	1	3.125
0	0	0																		
	g17X	XBR3		X-GenXY	5X	18S	2	4	1	1.5	1	5/8	A7	3	1	1	Long only	0.875	2	1	3.125
0	0	0																		
	g17XY	XBR3		XY-GenXY	5XY	18Y	2	4	1	1.5	1	5/8	A7	3	1	1	Long only	0.875	2	1	3.125
0	0	0																		
	g17Y	XBR3		Y-GenXY	5Y	18Y	2	4	1	1.5	1	5/8	A7	3	1	1	Long only	0.875	2	1	3.125
0	0	0																		
	g18P	XBR3		XY-Symmetry	5X	19X	2	4	1	1.5	1	5/8	A7	3	1	1	Long only	0.875	2	1	3.125
0	0	0																		
	g18X	XBR3		X-GenXY	5P	19S	2	4	1	1.5	1	5/8	A7	3	1	1	Long only	0.875	2	1	3.125
0	0	0																		
	g18XY	XBR3		XY-GenXY	5Y	19S	2	4	1	1.5	1	5/8	A7	3	1	1	Long only	0.875	2	1	3.125
0	0	0																		
	g18Y	XBR3		Y-GenXY	5XY	19X	2	4	1	1.5	1	5/8	A7	3	1	1	Long only	0.875	2	1	3.125
0	0	0																		
	g19P	XBR3		XY-Symmetry	18S	7P	2	4	1	1.5	1	5/8	A7	3	1	1	Long only	0.875	2	1	3.125
0	0	0																		
	g19X	XBR3		X-GenXY	18S	7X	2	4	1	1.5	1	5/8	A7	3	1	1	Long only	0.875	2	1	3.125
0	0	0																		
	g19XY	XBR3		XY-GenXY	18Y	7XY	2	4	1	1.5	1	5/8	A7	3	1	1	Long only	0.875	2	1	3.125
0	0	0																		
	g19Y	XBR3		Y-GenXY	18Y	7Y	2	4	1	1.5	1	5/8	A7	3	1	1	Long only	0.875	2	1	3.125
0	0	0																		
	g20P	XBR3		XY-Symmetry	19X	7X	2	4	1	1.5	1	5/8	A7	3	1	1	Long only	0.875	2	1	3.125
0	0	0																		
	g20X	XBR3		X-GenXY	19S	7P	2	4	1	1.5	1	5/8	A7	3	1	1	Long only	0.875	2	1	3.125
0	0	0																		
	g20XY	XBR3		XY-GenXY	19S	7Y	2	4	1	1.5	1	5/8	A7	3	1	1	Long only	0.875	2	1	3.125
0	0	0																		
	g20Y	XBR3		Y-GenXY	19X	7XY	2	4	1	1.5	1	5/8	A7	3	1	1	Long only	0.875	2	1	3.125
0	0	0																		
	g21P	XBR2		XY-Symmetry	7P	9X	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	2.75
0	0	0																		
	g21X	XBR2		X-GenXY	7X	9P	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	2.75
0	0	0																		
	g21XY	XBR2		XY-GenXY	7XY	9Y	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	2.75
0	0	0																		
	g21Y	XBR2		Y-GenXY	7Y	9XY	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	2.75
0	0	0																		
	g22P	XBR2		XY-Symmetry	7X	9XY	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	2.75
0	0	0																		
	g22X	XBR2		X-GenXY	7P	9Y	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	2.75
0	0	0																		
	g22XY	XBR2		XY-GenXY	7Y	9P	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	2.75
0	0	0																		
	g22Y	XBR2		Y-GenXY	7XY	9X	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	2.75
0	0	0																		

g23P	XBR2	XY-Symmetry	9P	10X	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	2.75	0	0	0
g23X	XBR2	X-GenXY	9X	10P	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	2.75	0	0	0
g23XY	XBR2	XY-GenXY	9XY	10Y	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	2.75	0	0	0
g23Y	XBR2	Y-GenXY	9Y	10XY	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	2.75	0	0	0
g24P	XBR2	XY-Symmetry	9X	10XY	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	2.75	0	0	0
g24X	XBR2	X-GenXY	9P	10Y	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	2.75	0	0	0
g24XY	XBR2	XY-GenXY	9Y	10P	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	2.75	0	0	0
g24Y	XBR2	Y-GenXY	9XY	10X	2	5	0.5	0.75	0.5	5/8	A7	3	1	1	Long only	0.875	2	1	2.75	0	0	0
g25P	XBR4	XY-Symmetry	10P	12X	2	5	0.78	0.56	0.56	5/8	A7	2	1	1	Short only	1	0	1	1.6875	0	0	0
g25X	XBR4	X-GenXY	10X	12P	2	5	0.78	0.56	0.56	5/8	A7	2	1	1	Short only	1	0	1	1.6875	0	0	0
g25XY	XBR4	XY-GenXY	10XY	12Y	2	5	0.78	0.56	0.56	5/8	A7	2	1	1	Short only	1	0	1	1.6875	0	0	0
g25Y	XBR4	Y-GenXY	10Y	12XY	2	5	0.78	0.56	0.56	5/8	A7	2	1	1	Short only	1	0	1	1.6875	0	0	0
g26P	XBR4	XY-Symmetry	10X	12XY	2	5	0.78	0.56	0.56	5/8	A7	2	1	1	Short only	1	0	1	1.6875	0	0	0
g26X	XBR4	X-GenXY	10P	12Y	2	5	0.78	0.56	0.56	5/8	A7	2	1	1	Short only	1	0	1	1.6875	0	0	0
g26XY	XBR4	XY-GenXY	10Y	12P	2	5	0.78	0.56	0.56	5/8	A7	2	1	1	Short only	1	0	1	1.6875	0	0	0
g26Y	XBR4	Y-GenXY	10XY	12X	2	5	0.78	0.56	0.56	5/8	A7	2	1	1	Short only	1	0	1	1.6875	0	0	0
g27P	XBR5	XY-Symmetry	12P	13X	2	5	0.56	0.78	0.56	5/8	A7	2	1	1	Long only	1	0	1	2.375	0	0	0
g27X	XBR5	X-GenXY	12X	13P	2	5	0.56	0.78	0.56	5/8	A7	2	1	1	Long only	1	0	1	2.375	0	0	0
g27XY	XBR5	XY-GenXY	12XY	13Y	2	5	0.56	0.78	0.56	5/8	A7	2	1	1	Long only	1	0	1	2.375	0	0	0
g27Y	XBR5	Y-GenXY	12Y	13XY	2	5	0.56	0.78	0.56	5/8	A7	2	1	1	Long only	1	0	1	2.375	0	0	0
g28P	XBR5	XY-Symmetry	12X	13XY	2	5	0.56	0.78	0.56	5/8	A7	2	1	1	Long only	1	0	1	2.375	0	0	0
g28X	XBR5	X-GenXY	12P	13Y	2	5	0.56	0.78	0.56	5/8	A7	2	1	1	Long only	1	0	1	2.375	0	0	0
g28XY	XBR5	XY-GenXY	12Y	13P	2	5	0.56	0.78	0.56	5/8	A7	2	1	1	Long only	1	0	1	2.375	0	0	0
g28Y	XBR5	Y-GenXY	12XY	13X	2	5	0.56	0.78	0.56	5/8	A7	2	1	1	Long only	1	0	1	2.375	0	0	0
g29P	XBR5	XY-Symmetry	13P	14X	2	5	0.56	0.78	0.56	5/8	A7	2	1	1	Long only	1	0	1	2.25	0	0	0
g29X	XBR5	X-GenXY	13X	14P	2	5	0.56	0.78	0.56	5/8	A7	2	1	1	Long only	1	0	1	2.25	0	0	0
g29XY	XBR5	XY-GenXY	13XY	14Y	2	5	0.56	0.78	0.56	5/8	A7	2	1	1	Long only	1	0	1	2.25	0	0	0
g29Y	XBR5	Y-GenXY	13Y	14XY	2	5	0.56	0.78	0.56	5/8	A7	2	1	1	Long only	1	0	1	2.25	0	0	0
g30P	XBR5	XY-Symmetry	13X	14XY	2	5	0.56	0.78	0.56	5/8	A7	2	1	1	Long only	1	0	1	2.25	0	0	0
g30X	XBR5	X-GenXY	13P	14Y	2	5	0.56	0.78	0.56	5/8	A7	2	1	1	Long only	1	0	1	2.25			

0	0	0																			
	g30XY	XBR5	XY-GenXY	13Y	14P	2	5	0.56	0.78	0.56	5/8	A7	2	1	1	Long	only	1	0	1	2.25
0	0	0																			
	g30Y	XBR5	Y-GenXY	13XY	14X	2	5	0.56	0.78	0.56	5/8	A7	2	1	1	Long	only	1	0	1	2.25
0	0	0																			
	g31P	XBR6	XY-Symmetry	14P	15X	2	5	0.79	0.58	0.58	5/8	A7	2	1	1	Short	only	1	0	1	2.1875
0	0	0																			
	g31X	XBR6	X-GenXY	14X	15P	2	5	0.79	0.58	0.58	5/8	A7	2	1	1	Short	only	1	0	1	2.1875
0	0	0																			
	g31XY	XBR6	XY-GenXY	14XY	15Y	2	5	0.79	0.58	0.58	5/8	A7	2	1	1	Short	only	1	0	1	2.1875
0	0	0																			
	g31Y	XBR6	Y-GenXY	14Y	15XY	2	5	0.79	0.58	0.58	5/8	A7	2	1	1	Short	only	1	0	1	2.1875
0	0	0																			
	g32P	XBR6	XY-Symmetry	14X	15XY	2	5	0.79	0.58	0.58	5/8	A7	2	1	1	Short	only	1	0	1	2.1875
0	0	0																			
	g32X	XBR6	X-GenXY	14P	15Y	2	5	0.79	0.58	0.58	5/8	A7	2	1	1	Short	only	1	0	1	2.1875
0	0	0																			
	g32XY	XBR6	XY-GenXY	14Y	15P	2	5	0.79	0.58	0.58	5/8	A7	2	1	1	Short	only	1	0	1	2.1875
0	0	0																			
	g32Y	XBR6	Y-GenXY	14XY	15X	2	5	0.79	0.58	0.58	5/8	A7	2	1	1	Short	only	1	0	1	2.1875
0	0	0																			
	g33P	XBR7	XY-Symmetry	15P	16X	2	5	0.8	0.41	0.41	5/8	A7	2	1	1	Short	only	0.875	0	1	2.125
0	0	0																			
	g33X	XBR7	X-GenXY	15X	16P	2	5	0.8	0.41	0.41	5/8	A7	2	1	1	Short	only	0.875	0	1	2.125
0	0	0																			
	g33XY	XBR7	XY-GenXY	15XY	16Y	2	5	0.8	0.41	0.41	5/8	A7	2	1	1	Short	only	0.875	0	1	2.125
0	0	0																			
	g33Y	XBR7	Y-GenXY	15Y	16XY	2	5	0.8	0.41	0.41	5/8	A7	2	1	1	Short	only	0.875	0	1	2.125
0	0	0																			
	g34P	XBR7	XY-Symmetry	15X	16XY	2	5	0.8	0.41	0.41	5/8	A7	2	1	1	Short	only	0.875	0	1	2.125
0	0	0																			
	g34X	XBR7	X-GenXY	15P	16Y	2	5	0.8	0.41	0.41	5/8	A7	2	1	1	Short	only	0.875	0	1	2.125
0	0	0																			
	g34XY	XBR7	XY-GenXY	15Y	16P	2	5	0.8	0.41	0.41	5/8	A7	2	1	1	Short	only	0.875	0	1	2.125
0	0	0																			
	g34Y	XBR7	Y-GenXY	15XY	16X	2	5	0.8	0.41	0.41	5/8	A7	2	1	1	Short	only	0.875	0	1	2.125
0	0	0																			
	g35P	XBR3	XY-Symmetry	17P	20S	3	4	1	0.5	0.5	5/8	A7	1	1	1	Short	only	0.875	0	1	0
0	0	0																			
	g35X	XBR3	X-GenXY	17X	20S	3	4	1	0.5	0.5	5/8	A7	1	1	1	Short	only	0.875	0	1	0
0	0	0																			
	g35XY	XBR3	XY-GenXY	17XY	20Y	3	4	1	0.5	0.5	5/8	A7	1	1	1	Short	only	0.875	0	1	0
0	0	0																			
	g35Y	XBR3	Y-GenXY	17Y	20Y	3	4	1	0.5	0.5	5/8	A7	1	1	1	Short	only	0.875	0	1	0
0	0	0																			
	g36P	XBR3	XY-Symmetry	17X	21X	3	4	1	0.5	0.5	5/8	A7	1	1	1	Short	only	0.875	0	1	0
0	0	0																			
	g36X	XBR3	X-GenXY	17P	21S	3	4	1	0.5	0.5	5/8	A7	1	1	1	Short	only	0.875	0	1	0
0	0	0																			
	g36XY	XBR3	XY-GenXY	17Y	21S	3	4	1	0.5	0.5	5/8	A7	1	1	1	Short	only	0.875	0	1	0
0	0	0																			
	g36Y	XBR3	Y-GenXY	17XY	21X	3	4	1	0.5	0.5	5/8	A7	1	1	1	Short	only	0.875	0	1	0
0	0	0																			
	g37P	HBR1	X-Symmetry	1P	1Y	3	4	1	1	1	5/8	A7	1	1	1	Short	only	0.875	0	1	0
0	0	0																			
	g37X	HBR1	X-Gen	1X	1XY	3	4	1	1	1	5/8	A7	1	1	1	Short	only	0.875	0	1	0
0	0	0																			
	g38P	HBR1	X-Symmetry	3P	3Y	3	4	1	1	1	5/8	A7	1	1	1	Short	only	0.875	0	1	0
0	0	0																			

g38X	HBR1	X-Gen	3X	3XY	3	4	1	1	1	5/8	A7	1	1	1	Short only	0.875	0	1	0	0	0
g39P	HBR1	X-Symmetry	7P	7Y	3	4	1	1	1	5/8	A7	1	1	1	Short only	0.875	0	1	0	0	0
g39X	HBR1	X-Gen	7X	7XY	3	4	1	1	1	5/8	A7	1	1	1	Short only	0.875	0	1	0	0	0
g40P	HBR1	X-Symmetry	10P	10Y	3	4	1	1	1	5/8	A7	1	1	1	Short only	0.875	0	1	0	0	0
g40X	HBR1	X-Gen	10X	10XY	3	4	1	1	1	5/8	A7	1	1	1	Short only	0.875	0	1	0	0	0
g41P	HBR2	X-Symmetry	14P	14Y	3	4	1	0.5	0.5	5/8	A7	1	1	1	Short only	0.875	0	1	0	0	0
g41X	HBR2	X-Gen	14X	14XY	3	4	1	0.5	0.5	5/8	A7	1	1	1	Short only	0.875	0	1	0	0	0
g42P	HBR2	Y-Symmetry	14P	14X	3	4	1	0.5	0.5	5/8	A7	1	1	1	Short only	0.875	0	1	0	0	0
g42Y	HBR2	Y-Gen	14Y	14XY	3	4	1	0.5	0.5	5/8	A7	1	1	1	Short only	0.875	0	1	0	0	0
g43P	HBR3	X-Symmetry	15P	15Y	3	4	1	0.5	0.5	5/8	A7	1	1	1	Short only	1.25	0	1	0	0	0
g43X	HBR3	X-Gen	15X	15XY	3	4	1	0.5	0.5	5/8	A7	1	1	1	Short only	1.25	0	1	0	0	0
g44P	HBR3	Y-Symmetry	15P	15X	3	4	1	0.5	0.5	5/8	A7	1	1	1	Short only	1.25	0	1	0	0	0
g44Y	HBR3	Y-Gen	15Y	15XY	3	4	1	0.5	0.5	5/8	A7	1	1	1	Short only	1.25	0	1	0	0	0
g45P	HBR4	XY-Symmetry	16P	20S	3	4	2	1	1	5/8	A7	1	1	1	Short only	1.25	0	1	0	0	0
g45X	HBR4	X-GenXY	16X	20S	3	4	2	1	1	5/8	A7	1	1	1	Short only	1.25	0	1	0	0	0
g45XY	HBR4	XY-GenXY	16XY	20Y	3	4	2	1	1	5/8	A7	1	1	1	Short only	1.25	0	1	0	0	0
g45Y	HBR4	Y-GenXY	16Y	20Y	3	4	2	1	1	5/8	A7	1	1	1	Short only	1.25	0	1	0	0	0
g46P	HBR4	XY-Symmetry	16P	21S	3	4	2	1	1	5/8	A7	1	1	1	Short only	1.25	0	1	0	0	0
g46X	HBR4	X-GenXY	16X	21X	3	4	2	1	1	5/8	A7	1	1	1	Short only	1.25	0	1	0	0	0
g46XY	HBR4	XY-GenXY	16XY	21X	3	4	2	1	1	5/8	A7	1	1	1	Short only	1.25	0	1	0	0	0
g46Y	HBR4	Y-GenXY	16Y	21S	3	4	2	1	1	5/8	A7	1	1	1	Short only	1.25	0	1	0	0	0
g47P	Arm1	XY-Symmetry	2P	1P	3	5	1	0.5	0.5	5/8	A7	3	1	1	Long only	0	0	0	0	0	0
g47X	Arm1	X-GenXY	2X	1X	3	5	1	0.5	0.5	5/8	A7	3	1	1	Long only	0	0	0	0	0	0
g47XY	Arm1	XY-GenXY	2X	1XY	3	5	1	0.5	0.5	5/8	A7	3	1	1	Long only	0	0	0	0	0	0
g47Y	Arm1	Y-GenXY	2P	1Y	3	5	1	0.5	0.5	5/8	A7	3	1	1	Long only	0	0	0	0	0	0
g48P	Arm1	Y-Symmetry	1P	1X	3	6	1	1	1	5/8	A7	0	0	0		0	0	0	0	0	0
g48Y	Arm1	Y-Gen	1Y	1XY	3	6	1	1	1	5/8	A7	0	0	0		0	0	0	0	0	0
g49P	Arm1	XY-Symmetry	4P	3P	3	5	1	0.5	0.5	5/8	A7	3	1	1	Long only	0	0	0	0	0	0
g49X	Arm1	X-GenXY	4X	3X	3	5	1	0.5	0.5	5/8	A7	3	1	1	Long only	0	0	0	0	0	0
g49XY	Arm1	XY-GenXY	4X	3XY	3	5	1	0.5	0.5	5/8	A7	3	1	1	Long only	0	0	0	0	0	0

0	0	0																		
	g49Y	Arm1	Y-GenXY	4P	3Y	3	5	1	0.5	0.5	5/8	A7	3	1	1	Long only	0	0	0	0
0	0	0																		
	g50P	Arm1	Y-Symmetry	3P	3X	3	6	1	1	1	5/8	A7	0	0	0		0	0	0	0
0	0	0																		
	g50Y	Arm1	Y-Gen	3Y	3XY	3	6	1	1	1	5/8	A7	0	0	0		0	0	0	0
0	0	0																		
	g51P	Arm1	XY-Symmetry	11P	10P	3	5	1	0.5	0.5	5/8	A7	3	1	1	Long only	0	0	0	0
0	0	0																		
	g51X	Arm1	X-GenXY	11X	10X	3	5	1	0.5	0.5	5/8	A7	3	1	1	Long only	0	0	0	0
0	0	0																		
	g51XY	Arm1	XY-GenXY	11X	10XY	3	5	1	0.5	0.5	5/8	A7	3	1	1	Long only	0	0	0	0
0	0	0																		
	g51Y	Arm1	Y-GenXY	11P	10Y	3	5	1	0.5	0.5	5/8	A7	3	1	1	Long only	0	0	0	0
0	0	0																		
	g52P	Arm1	Y-Symmetry	10P	10X	3	6	1	1	1	5/8	A7	0	0	0		0	0	0	0
0	0	0																		
	g52Y	Arm1	Y-Gen	10Y	10XY	3	6	1	1	1	5/8	A7	0	0	0		0	0	0	0
0	0	0																		
	g53P	Arm2	XY-Symmetry	8P	7P	3	5	1	0.5	0.5	5/8	A7	3	1	1	Long only	0	0	0	0
0	0	0																		
	g53X	Arm2	X-GenXY	8X	7X	3	5	1	0.5	0.5	5/8	A7	3	1	1	Long only	0	0	0	0
0	0	0																		
	g53XY	Arm2	XY-GenXY	8X	7XY	3	5	1	0.5	0.5	5/8	A7	3	1	1	Long only	0	0	0	0
0	0	0																		
	g53Y	Arm2	Y-GenXY	8P	7Y	3	5	1	0.5	0.5	5/8	A7	3	1	1	Long only	0	0	0	0
0	0	0																		
	g54P	Arm2	Y-Symmetry	7P	7X	3	6	1	1	1	5/8	A7	0	0	0		0	0	0	0
0	0	0																		
	g54Y	Arm2	Y-Gen	7Y	7XY	3	6	1	1	1	5/8	A7	0	0	0		0	0	0	0
0	0	0																		
	g55P	ArmBR1	X-Symmetry	2P	4P	3	4	1	1	1	5/8	A7	1	1	1	Long only	0	0	0	0
0	0	0																		
	g55X	ArmBR1	X-Gen	2X	4X	3	4	1	1	1	5/8	A7	1	1	1	Long only	0	0	0	0
0	0	0																		
	g56P	ArmBR2	XY-Symmetry	4P	1P	3	4	1	1	1	5/8	A7	1	1	1	Long only	0	0	0	0
0	0	0																		
	g56X	ArmBR2	X-GenXY	4X	1X	3	4	1	1	1	5/8	A7	1	1	1	Long only	0	0	0	0
0	0	0																		
	g56XY	ArmBR2	XY-GenXY	4X	1XY	3	4	1	1	1	5/8	A7	1	1	1	Long only	0	0	0	0
0	0	0																		
	g56Y	ArmBR2	Y-GenXY	4P	1Y	3	4	1	1	1	5/8	A7	1	1	1	Long only	0	0	0	0
0	0	0																		
	g57P	ArmBR2R	XY-Symmetry	8P	6P	3	4	1	1	1	5/8	A7	1	1	1	Long only	0	0	0	0
0	0	0																		
	g57X	ArmBR2R	X-GenXY	8X	6X	3	4	1	1	1	5/8	A7	1	1	1	Long only	0	0	0	0
0	0	0																		
	g57XY	ArmBR2R	XY-GenXY	8X	6XY	3	4	1	1	1	5/8	A7	1	1	1	Long only	0	0	0	0
0	0	0																		
	g57Y	ArmBR2R	Y-GenXY	8P	6Y	3	4	1	1	1	5/8	A7	1	1	1	Long only	0	0	0	0
0	0	0																		
	g58P	ArmBR2	XY-Symmetry	6P	18S	2	4	1	1	1	5/8	A7	1	1	1	Long only	0	0	0	0
0	0	0																		
	g58X	ArmBR2	X-GenXY	6X	18S	2	4	1	1	1	5/8	A7	1	1	1	Long only	0	0	0	0
0	0	0																		
	g58XY	ArmBR2	XY-GenXY	6XY	18Y	2	4	1	1	1	5/8	A7	1	1	1	Long only	0	0	0	0
0	0	0																		
	g58Y	ArmBR2	Y-GenXY	6Y	18Y	2	4	1	1	1	5/8	A7	1	1	1	Long only	0	0	0	0
0	0	0																		

g59P	ArmBR2	XY-Symmetry	11P	9P	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g59X	ArmBR2	X-GenXY	11X	9X	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g59XY	ArmBR2	XY-GenXY	11X	9XY	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g59Y	ArmBR2	Y-GenXY	11P	9Y	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g60P	PMBR1	XY-Symmetry	1P	24P	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g60X	PMBR1	X-GenXY	1X	24P	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g60XY	PMBR1	XY-GenXY	1XY	24P	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g60Y	PMBR1	Y-GenXY	1Y	24P	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g61P	PMBR1	XY-Symmetry	3P	25P	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g61X	PMBR1	X-GenXY	3X	25P	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g61XY	PMBR1	XY-GenXY	3XY	25P	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g61Y	PMBR1	Y-GenXY	3Y	25P	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g62P	PMBR1	XY-Symmetry	7P	26P	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g62X	PMBR1	X-GenXY	7X	26P	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g62XY	PMBR1	XY-GenXY	7XY	26P	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g62Y	PMBR1	Y-GenXY	7Y	26P	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g63P	PMBR1	XY-Symmetry	10P	27P	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g63X	PMBR1	X-GenXY	10X	27P	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g63XY	PMBR1	XY-GenXY	10XY	27P	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g63Y	PMBR1	Y-GenXY	10Y	27P	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g64P	PMBR2	XY-Symmetry	15P	28P	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g64X	PMBR2	X-GenXY	15X	28P	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g64XY	PMBR2	XY-GenXY	15XY	28P	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g64Y	PMBR2	Y-GenXY	15Y	28P	3	4	1	1	1 5/8 A7	1	1	1	Long only	0	0	0	0	0	0
g65P	Powermnt	None	29P	28P	1	4	1	1	1	0	0	0		0	0	0	0	0	0
g66P	Powermnt	None	28P	27P	1	4	1	1	1	0	0	0		0	0	0	0	0	0
g67P	Powermnt	None	27P	26P	1	4	1	1	1	0	0	0		0	0	0	0	0	0
g68P	Powermnt	None	26P	25P	1	4	1	1	1	0	0	0		0	0	0	0	0	0
g69P	Powermnt	None	25P	24P	1	4	1	1	1	0	0	0		0	0	0	0	0	0
g70P	Powermnt	None	24P	23P	1	4	1	1	1	0	0	0		0	0	0	0	0	0

0	0	0																		
	g71P	Powermnt	None	23P	22P	1	4	1	1	1		0	0	0		0	0	0	0	
0	0	0																		
	g72P	fic1	X-Symmetry	30X	32X	1	4	1	1	1		0	0	0		0	0	0	0	
0	0	0																		
	g72X	fic1	X-Gen	30P	32P	1	4	1	1	1		0	0	0		0	0	0	0	
0	0	0																		
	g73P	fic1	Y-Symmetry	33P	31P	1	4	1	1	1		0	0	0		0	0	0	0	
0	0	0																		
	g73Y	fic1	Y-Gen	33Y	31Y	1	4	1	1	1		0	0	0		0	0	0	0	
0	0	0																		
	g74P	fic	X-Symmetry	32X	22P	1	4	1	1	1		0	0	0		0	0	0	0	
0	0	0																		
	g74X	fic	X-Gen	32P	22P	1	4	1	1	1		0	0	0		0	0	0	0	
0	0	0																		
	g75P	fic	X-Symmetry	30X	24P	1	4	1	1	1		0	0	0		0	0	0	0	
0	0	0																		
	g75X	fic	X-Gen	30P	24P	1	4	1	1	1		0	0	0		0	0	0	0	
0	0	0																		
	g76P	fic	Y-Symmetry	31P	24P	1	4	1	1	1		0	0	0		0	0	0	0	
0	0	0																		
	g76Y	fic	Y-Gen	31Y	24P	1	4	1	1	1		0	0	0		0	0	0	0	
0	0	0																		
	g77P	fic	Y-Symmetry	33P	22P	1	4	1	1	1		0	0	0		0	0	0	0	
0	0	0																		
	g77Y	fic	Y-Gen	33Y	22P	1	4	1	1	1		0	0	0		0	0	0	0	
0	0	0																		
	g78P	HBR5	XY-Symmetry	6X	19X	3	4	1	1	1	5/8 A7	1	1	1	Short only	0.875	0	1	0	
0	0	0																		
	g78X	HBR5	X-GenXY	6P	19S	3	4	1	1	1	5/8 A7	1	1	1	Short only	0.875	0	1	0	
0	0	0																		
	g78XY	HBR5	XY-GenXY	6Y	19S	3	4	1	1	1	5/8 A7	1	1	1	Short only	0.875	0	1	0	
0	0	0																		
	g78Y	HBR5	Y-GenXY	6XY	19X	3	4	1	1	1	5/8 A7	1	1	1	Short only	0.875	0	1	0	
0	0	0																		

Member Capacities and Overrides:

Member Label	Group Label	Design Comp. Override	Comp. Control Override	Design Tension Override	Tension Control	L/r Length (ft)	L/r Comp.	Connection Shear Capacity (kips)	Connection Bearing Capacity (kips)	Net Section Tension Capacity (kips)	Rupture Tension Capacity (kips)	RTE End Dist. Capacity (kips)	RTE Edge Dist. Capacity (kips)	Override Comp. Capacity (kips)	Warnings or Errors
		Capacity Control	Criterion Capacity	Criterion Control	Member Criterion										
g1P	LEG1	53.509	L/r 41.332	Net Sect	75	5.00	53.509	0.000	0.000	41.332	0.000	0.000	0.000	0.000	
		0.000	Automatic												
g1X	LEG1	53.509	L/r 41.332	Net Sect	75	5.00	53.509	0.000	0.000	41.332	0.000	0.000	0.000	0.000	
		0.000	Automatic												
g1XY	LEG1	53.509	L/r 41.332	Net Sect	75	5.00	53.509	0.000	0.000	41.332	0.000	0.000	0.000	0.000	
		0.000	Automatic												

g1Y	LEG1	53.509	L/r	41.332	Net Sect	75	5.00	53.509	0.000	0.000	41.332	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g2P	LEG1	48.884	L/r	41.332	Net Sect	91	6.00	48.884	0.000	0.000	41.332	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g2X	LEG1	48.884	L/r	41.332	Net Sect	91	6.00	48.884	0.000	0.000	41.332	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g2XY	LEG1	48.884	L/r	41.332	Net Sect	91	6.00	48.884	0.000	0.000	41.332	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g2Y	LEG1	48.884	L/r	41.332	Net Sect	91	6.00	48.884	0.000	0.000	41.332	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g3P	LEG1	60.236	L/r	52.676	Net Sect	45	3.00	60.236	0.000	0.000	52.676	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g3X	LEG1	60.236	L/r	52.676	Net Sect	45	3.00	60.236	0.000	0.000	52.676	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g3XY	LEG1	60.236	L/r	52.676	Net Sect	45	3.00	60.236	0.000	0.000	52.676	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g3Y	LEG1	60.236	L/r	52.676	Net Sect	45	3.00	60.236	0.000	0.000	52.676	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g4P	LEG1	60.236	L/r	41.332	Net Sect	45	3.00	60.236	0.000	0.000	41.332	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g4X	LEG1	60.236	L/r	41.332	Net Sect	45	3.00	60.236	0.000	0.000	41.332	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g4XY	LEG1	60.236	L/r	41.332	Net Sect	45	3.00	60.236	0.000	0.000	41.332	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g4Y	LEG1	60.236	L/r	41.332	Net Sect	45	3.00	60.236	0.000	0.000	41.332	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g5P	LEG1	53.509	L/r	52.676	Net Sect	75	5.00	53.509	0.000	0.000	52.676	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g5X	LEG1	53.509	L/r	52.676	Net Sect	75	5.00	53.509	0.000	0.000	52.676	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g5XY	LEG1	53.509	L/r	52.676	Net Sect	75	5.00	53.509	0.000	0.000	52.676	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g5Y	LEG1	53.509	L/r	52.676	Net Sect	75	5.00	53.509	0.000	0.000	52.676	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g6P	**LEG1**	**61.392**	**L/r**	**52.676**	**Net Sect**	**38**	**5.00**	**61.392**	**125.640**	**168.750**	**52.676**	**220.588**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g6P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**										
g6X	**LEG1**	**61.392**	**L/r**	**52.676**	**Net Sect**	**38**	**5.00**	**61.392**	**125.640**	**168.750**	**52.676**	**220.588**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g6X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**										
g6XY	**LEG1**	**61.392**	**L/r**	**52.676**	**Net Sect**	**38**	**5.00**	**61.392**	**125.640**	**168.750**	**52.676**	**220.588**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g6XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**										
g6Y	**LEG1**	**61.392**	**L/r**	**52.676**	**Net Sect**	**38**	**5.00**	**61.392**	**125.640**	**168.750**	**52.676**	**220.588**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**Member "g6Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??**										
g7P	LEG2	65.816	L/r	65.020	Net Sect	77	5.05	65.816	0.000	0.000	65.020	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g7X	LEG2	65.816	L/r	65.020	Net Sect	77	5.05	65.816	0.000	0.000	65.020	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g7XY	LEG2	65.816	L/r	65.020	Net Sect	77	5.05	65.816	0.000	0.000	65.020	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g7Y	LEG2	65.816	L/r	65.020	Net Sect	77	5.05	65.816	0.000	0.000	65.020	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g8P	LEG2	74.382	L/r	65.020	Net Sect	46	6.06	74.382	0.000	0.000	65.020	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g8X	LEG2	74.382	L/r	65.020	Net Sect	46	6.06	74.382	0.000	0.000	65.020	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g8XY	LEG2	74.382	L/r	65.020	Net Sect	46	6.06	74.382	0.000	0.000	65.020	0.000	0.000	0.000	0.000

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0.000             0.000          Automatic
    g8Y     LEG2   74.382       L/r   65.020  Net Sect      46   6.06   74.382      0.000      0.000   65.020    0.000    0.000    0.000    0.000
0.000             0.000          Automatic
    g9P     LEG2   73.260       L/r   64.878  Net Sect      51   6.72   73.260    104.700    175.781   64.878  160.845    0.000    0.000    0.000
0.000             0.000          Automatic   Member "g9P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g9X     LEG2   73.260       L/r   64.878  Net Sect      51   6.72   73.260    104.700    175.781   64.878  160.845    0.000    0.000    0.000
0.000             0.000          Automatic   Member "g9X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g9XY     LEG2   73.260       L/r   64.878  Net Sect      51   6.72   73.260    104.700    175.781   64.878  160.845    0.000    0.000    0.000
0.000             0.000          Automatic   Member "g9XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g9Y     LEG2   73.260       L/r   64.878  Net Sect      51   6.72   73.260    104.700    175.781   64.878  160.845    0.000    0.000    0.000
0.000             0.000          Automatic   Member "g9Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g10P     LEG3   85.776       L/r   77.364  Net Sect      56  14.77   85.776    104.700    210.937   77.364  281.250    0.000    0.000    0.000
0.000             0.000          Automatic   Member "g10P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g10X     LEG3   85.776       L/r   77.364  Net Sect      56  14.77   85.776    104.700    210.937   77.364  281.250    0.000    0.000    0.000
0.000             0.000          Automatic   Member "g10X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
  g10XY     LEG3   85.776       L/r   77.364  Net Sect      56  14.77   85.776    104.700    210.937   77.364  281.250    0.000    0.000    0.000
0.000             0.000          Automatic Member "g10XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g10Y     LEG3   85.776       L/r   77.364  Net Sect      56  14.77   85.776    104.700    210.937   77.364  281.250    0.000    0.000    0.000
0.000             0.000          Automatic   Member "g10Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g11P     LEG3   85.526       L/r   77.364  Net Sect      57  22.43   85.526    104.700    210.937   77.364  193.014    0.000    0.000    0.000
0.000             0.000          Automatic   Member "g11P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g11X     LEG3   85.526       L/r   77.364  Net Sect      57  22.43   85.526    104.700    210.937   77.364  193.014    0.000    0.000    0.000
0.000             0.000          Automatic   Member "g11X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
  g11XY     LEG3   85.526       L/r   77.364  Net Sect      57  22.43   85.526    104.700    210.937   77.364  193.014    0.000    0.000    0.000
0.000             0.000          Automatic Member "g11XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g11Y     LEG3   85.526       L/r   77.364  Net Sect      57  22.43   85.526    104.700    210.937   77.364  193.014    0.000    0.000    0.000
0.000             0.000          Automatic   Member "g11Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g12P     LEG2   75.789       L/r   65.020  Net Sect      39   5.10   75.789    104.700    175.781   65.020  103.401    0.000    0.000    0.000
0.000             0.000          Automatic   Member "g12P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g12X     LEG2   75.789       L/r   65.020  Net Sect      39   5.10   75.789    104.700    175.781   65.020  103.401    0.000    0.000    0.000
0.000             0.000          Automatic   Member "g12X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
  g12XY     LEG2   75.789       L/r   65.020  Net Sect      39   5.10   75.789    104.700    175.781   65.020  103.401    0.000    0.000    0.000
0.000             0.000          Automatic Member "g12XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g12Y     LEG2   75.789       L/r   65.020  Net Sect      39   5.10   75.789    104.700    175.781   65.020  103.401    0.000    0.000    0.000
0.000             0.000          Automatic   Member "g12Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g13P     XBR1   11.559       L/r   14.585  Net Sect     124   7.07   11.559     20.940     21.094   14.585   16.189    0.000    0.000    0.000
0.000             0.000          Automatic
   g13X     XBR1   11.559       L/r   14.585  Net Sect     124   7.07   11.559     20.940     21.094   14.585   16.189    0.000    0.000    0.000
0.000             0.000          Automatic
  g13XY     XBR1   11.559       L/r   14.585  Net Sect     124   7.07   11.559     20.940     21.094   14.585   16.189    0.000    0.000    0.000
0.000             0.000          Automatic
   g13Y     XBR1   11.559       L/r   14.585  Net Sect     124   7.07   11.559     20.940     21.094   14.585   16.189    0.000    0.000    0.000
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0.000             0.000          Automatic
   g14P     XBR1   11.559       L/r   14.585  Net Sect     124   7.07   11.559     20.940     21.094   14.585   16.189    0.000    0.000    0.000
0.000             0.000          Automatic
   g14X     XBR1   11.559       L/r   14.585  Net Sect     124   7.07   11.559     20.940     21.094   14.585   16.189    0.000    0.000    0.000
0.000             0.000          Automatic
  g14XY     XBR1   11.559       L/r   14.585  Net Sect     124   7.07   11.559     20.940     21.094   14.585   16.189    0.000    0.000    0.000
0.000             0.000          Automatic
   g14Y     XBR1   11.559       L/r   14.585  Net Sect     124   7.07   11.559     20.940     21.094   14.585   16.189    0.000    0.000    0.000
0.000             0.000          Automatic
   g15P     XBR2   17.275       L/r   22.901  Net Sect     121   7.81   17.275     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g15P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g15X     XBR2   17.275       L/r   22.901  Net Sect     121   7.81   17.275     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g15X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
  g15XY     XBR2   17.275       L/r   22.901  Net Sect     121   7.81   17.275     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic Member "g15XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g15Y     XBR2   17.275       L/r   22.901  Net Sect     121   7.81   17.275     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g15Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g16P     XBR2   17.275       L/r   22.901  Net Sect     121   7.81   17.275     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g16P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g16X     XBR2   17.275       L/r   22.901  Net Sect     121   7.81   17.275     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g16X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
  g16XY     XBR2   17.275       L/r   22.901  Net Sect     121   7.81   17.275     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic Member "g16XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g16Y     XBR2   17.275       L/r   22.901  Net Sect     121   7.81   17.275     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g16Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g17P     XBR3   17.255       L/r   22.901  Net Sect     121   3.91   17.255     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g17P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g17X     XBR3   17.255       L/r   22.901  Net Sect     121   3.91   17.255     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g17X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
  g17XY     XBR3   17.255       L/r   22.901  Net Sect     121   3.91   17.255     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic Member "g17XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g17Y     XBR3   17.255       L/r   22.901  Net Sect     121   3.91   17.255     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g17Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g18P     XBR3   17.255       L/r   22.901  Net Sect     121   3.91   17.255     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g18P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g18X     XBR3   17.255       L/r   22.901  Net Sect     121   3.91   17.255     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g18X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
  g18XY     XBR3   17.255       L/r   22.901  Net Sect     121   3.91   17.255     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic Member "g18XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g18Y     XBR3   17.255       L/r   22.901  Net Sect     121   3.91   17.255     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g18Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g19P     XBR3   17.255       L/r   22.901  Net Sect     121   3.91   17.255     31.410     31.641   22.901   28.125    0.000    0.000    0.000
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0.000             0.000          Automatic  Member "g19P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g19X     XBR3   17.255       L/r   22.901  Net Sect     121   3.91   17.255     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g19X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
  g19XY     XBR3   17.255       L/r   22.901  Net Sect     121   3.91   17.255     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic Member "g19XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g19Y     XBR3   17.255       L/r   22.901  Net Sect     121   3.91   17.255     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g19Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g20P     XBR3   17.255       L/r   22.901  Net Sect     121   3.91   17.255     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g20P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g20X     XBR3   17.255       L/r   22.901  Net Sect     121   3.91   17.255     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g20X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
  g20XY     XBR3   17.255       L/r   22.901  Net Sect     121   3.91   17.255     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic Member "g20XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g20Y     XBR3   17.255       L/r   22.901  Net Sect     121   3.91   17.255     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g20Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g21P     XBR2   18.986       L/r   22.901  Net Sect     109   7.07   18.986     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g21P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g21X     XBR2   18.986       L/r   22.901  Net Sect     109   7.07   18.986     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g21X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
  g21XY     XBR2   18.986       L/r   22.901  Net Sect     109   7.07   18.986     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic Member "g21XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g21Y     XBR2   18.986       L/r   22.901  Net Sect     109   7.07   18.986     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g21Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g22P     XBR2   18.986       L/r   22.901  Net Sect     109   7.07   18.986     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g22P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g22X     XBR2   18.986       L/r   22.901  Net Sect     109   7.07   18.986     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g22X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
  g22XY     XBR2   18.986       L/r   22.901  Net Sect     109   7.07   18.986     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic Member "g22XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g22Y     XBR2   18.986       L/r   22.901  Net Sect     109   7.07   18.986     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g22Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g23P     XBR2   18.986       L/r   22.901  Net Sect     109   7.07   18.986     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g23P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g23X     XBR2   18.986       L/r   22.901  Net Sect     109   7.07   18.986     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g23X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
  g23XY     XBR2   18.986       L/r   22.901  Net Sect     109   7.07   18.986     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic Member "g23XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g23Y     XBR2   18.986       L/r   22.901  Net Sect     109   7.07   18.986     31.410     31.641   22.901   28.125    0.000    0.000    0.000
0.000             0.000          Automatic  Member "g23Y" will not be checked for block shear since more than one gage line exists (long edge
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distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g24P XBR2 18.986 L/r 22.901 Net Sect 109 7.07 18.986 31.410 31.641 22.901 28.125 0.000 0.000 0.000
0.000 0.000 Automatic Member "g24P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g24X XBR2 18.986 L/r 22.901 Net Sect 109 7.07 18.986 31.410 31.641 22.901 28.125 0.000 0.000 0.000
0.000 0.000 Automatic Member "g24X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g24XY XBR2 18.986 L/r 22.901 Net Sect 109 7.07 18.986 31.410 31.641 22.901 28.125 0.000 0.000 0.000
0.000 0.000 Automatic Member "g24XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g24Y XBR2 18.986 L/r 22.901 Net Sect 109 7.07 18.986 31.410 31.641 22.901 28.125 0.000 0.000 0.000
0.000 0.000 Automatic Member "g24Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g25P XBR4 12.533 L/r 15.240 Rupture 129 7.57 12.533 20.940 21.094 17.258 15.240 0.000 0.000 0.000
0.000 0.000 Automatic
g25X XBR4 12.533 L/r 15.240 Rupture 129 7.57 12.533 20.940 21.094 17.258 15.240 0.000 0.000 0.000
0.000 0.000 Automatic
g25XY XBR4 12.533 L/r 15.240 Rupture 129 7.57 12.533 20.940 21.094 17.258 15.240 0.000 0.000 0.000
0.000 0.000 Automatic
g25Y XBR4 12.533 L/r 15.240 Rupture 129 7.57 12.533 20.940 21.094 17.258 15.240 0.000 0.000 0.000
0.000 0.000 Automatic
g26P XBR4 12.533 L/r 15.240 Rupture 129 7.57 12.533 20.940 21.094 17.258 15.240 0.000 0.000 0.000
0.000 0.000 Automatic
g26X XBR4 12.533 L/r 15.240 Rupture 129 7.57 12.533 20.940 21.094 17.258 15.240 0.000 0.000 0.000
0.000 0.000 Automatic
g26XY XBR4 12.533 L/r 15.240 Rupture 129 7.57 12.533 20.940 21.094 17.258 15.240 0.000 0.000 0.000
0.000 0.000 Automatic
g26Y XBR4 12.533 L/r 15.240 Rupture 129 7.57 12.533 20.940 21.094 17.258 15.240 0.000 0.000 0.000
0.000 0.000 Automatic
g27P XBR5 11.661 L/r 18.750 Rupture 148 9.37 11.661 20.940 21.094 20.228 18.750 0.000 0.000 0.000
0.000 0.000 Automatic
g27X XBR5 11.661 L/r 18.750 Rupture 148 9.37 11.661 20.940 21.094 20.228 18.750 0.000 0.000 0.000
0.000 0.000 Automatic
g27XY XBR5 11.661 L/r 18.750 Rupture 148 9.37 11.661 20.940 21.094 20.228 18.750 0.000 0.000 0.000
0.000 0.000 Automatic
g27Y XBR5 11.661 L/r 18.750 Rupture 148 9.37 11.661 20.940 21.094 20.228 18.750 0.000 0.000 0.000
0.000 0.000 Automatic
g28P XBR5 11.661 L/r 18.750 Rupture 148 9.37 11.661 20.940 21.094 20.228 18.750 0.000 0.000 0.000
0.000 0.000 Automatic
g28X XBR5 11.661 L/r 18.750 Rupture 148 9.37 11.661 20.940 21.094 20.228 18.750 0.000 0.000 0.000
0.000 0.000 Automatic
g28XY XBR5 11.661 L/r 18.750 Rupture 148 9.37 11.661 20.940 21.094 20.228 18.750 0.000 0.000 0.000
0.000 0.000 Automatic
g28Y XBR5 11.661 L/r 18.750 Rupture 148 9.37 11.661 20.940 21.094 20.228 18.750 0.000 0.000 0.000
0.000 0.000 Automatic
g29P XBR5 8.819 L/r 18.750 Rupture 175 11.14 8.819 20.940 21.094 20.228 18.750 0.000 0.000 0.000
0.000 0.000 Automatic
g29X XBR5 8.819 L/r 18.750 Rupture 175 11.14 8.819 20.940 21.094 20.228 18.750 0.000 0.000 0.000
0.000 0.000 Automatic
g29XY XBR5 8.819 L/r 18.750 Rupture 175 11.14 8.819 20.940 21.094 20.228 18.750 0.000 0.000 0.000
0.000 0.000 Automatic
g29Y XBR5 8.819 L/r 18.750 Rupture 175 11.14 8.819 20.940 21.094 20.228 18.750 0.000 0.000 0.000
0.000 0.000 Automatic
g30P XBR5 8.819 L/r 18.750 Rupture 175 11.14 8.819 20.940 21.094 20.228 18.750 0.000 0.000 0.000
0.000 0.000 Automatic
g30X XBR5 8.819 L/r 18.750 Rupture 175 11.14 8.819 20.940 21.094 20.228 18.750 0.000 0.000 0.000
0.000 0.000 Automatic
g30XY XBR5 8.819 L/r 18.750 Rupture 175 11.14 8.819 20.940 21.094 20.228 18.750 0.000 0.000 0.000
0.000 0.000 Automatic

g30Y	XBR5	8.819	L/r	18.750	Rupture	175	11.14	8.819	20.940	21.094	20.228	18.750	0.000	0.000	0.000
0.000		0.000		Automatic											
g31P	XBR6	2.257	L/r	19.041	Net Sect	384	18.81	2.257	20.940	28.125	19.041	24.820	0.000	0.000	0.000
0.000		0.000		Automatic											
g31X	XBR6	2.257	L/r	19.041	Net Sect	384	18.81	2.257	20.940	28.125	19.041	24.820	0.000	0.000	0.000
0.000		0.000		Automatic											
g31XY	XBR6	2.257	L/r	19.041	Net Sect	384	18.81	2.257	20.940	28.125	19.041	24.820	0.000	0.000	0.000
0.000		0.000		Automatic											
g31Y	XBR6	2.257	L/r	19.041	Net Sect	384	18.81	2.257	20.940	28.125	19.041	24.820	0.000	0.000	0.000
0.000		0.000		Automatic											
g32P	XBR6	2.257	L/r	19.041	Net Sect	384	18.81	2.257	20.940	28.125	19.041	24.820	0.000	0.000	0.000
0.000		0.000		Automatic											
g32X	XBR6	2.257	L/r	19.041	Net Sect	384	18.81	2.257	20.940	28.125	19.041	24.820	0.000	0.000	0.000
0.000		0.000		Automatic											
g32XY	XBR6	2.257	L/r	19.041	Net Sect	384	18.81	2.257	20.940	28.125	19.041	24.820	0.000	0.000	0.000
0.000		0.000		Automatic											
g32Y	XBR6	2.257	L/r	19.041	Net Sect	384	18.81	2.257	20.940	28.125	19.041	24.820	0.000	0.000	0.000
0.000		0.000		Automatic											
g33P	XBR7	1.061	L/r	14.585	Net Sect	499	27.92	1.061	20.940	21.094	14.585	17.420	0.000	0.000	0.000
0.000		0.000		Automatic											
g33X	XBR7	1.061	L/r	14.585	Net Sect	499	27.92	1.061	20.940	21.094	14.585	17.420	0.000	0.000	0.000
0.000		0.000		Automatic											
g33XY	XBR7	1.061	L/r	14.585	Net Sect	499	27.92	1.061	20.940	21.094	14.585	17.420	0.000	0.000	0.000
0.000		0.000		Automatic											
g33Y	XBR7	1.061	L/r	14.585	Net Sect	499	27.92	1.061	20.940	21.094	14.585	17.420	0.000	0.000	0.000
0.000		0.000		Automatic											
g34P	XBR7	1.061	L/r	14.585	Net Sect	499	27.92	1.061	20.940	21.094	14.585	17.420	0.000	0.000	0.000
0.000		0.000		Automatic											
g34X	XBR7	1.061	L/r	14.585	Net Sect	499	27.92	1.061	20.940	21.094	14.585	17.420	0.000	0.000	0.000
0.000		0.000		Automatic											
g34XY	XBR7	1.061	L/r	14.585	Net Sect	499	27.92	1.061	20.940	21.094	14.585	17.420	0.000	0.000	0.000
0.000		0.000		Automatic											
g34Y	XBR7	1.061	L/r	14.585	Net Sect	499	27.92	1.061	20.940	21.094	14.585	17.420	0.000	0.000	0.000
0.000		0.000		Automatic											
g35P	XBR3	9.860	L/r	7.717	Rupture	162	11.83	9.860	10.470	10.547	17.333	7.717	0.000	0.000	0.000
0.000		0.000		Automatic											
g35X	XBR3	9.860	L/r	7.717	Rupture	162	11.83	9.860	10.470	10.547	17.333	7.717	0.000	0.000	0.000
0.000		0.000		Automatic											
g35XY	XBR3	9.860	L/r	7.717	Rupture	162	11.83	9.860	10.470	10.547	17.333	7.717	0.000	0.000	0.000
0.000		0.000		Automatic											
g35Y	XBR3	9.860	L/r	7.717	Rupture	162	11.83	9.860	10.470	10.547	17.333	7.717	0.000	0.000	0.000
0.000		0.000		Automatic											
g36P	XBR3	9.860	L/r	7.717	Rupture	162	11.83	9.860	10.470	10.547	17.333	7.717	0.000	0.000	0.000
0.000		0.000		Automatic											
g36X	XBR3	9.860	L/r	7.717	Rupture	162	11.83	9.860	10.470	10.547	17.333	7.717	0.000	0.000	0.000
0.000		0.000		Automatic											
g36XY	XBR3	9.860	L/r	7.717	Rupture	162	11.83	9.860	10.470	10.547	17.333	7.717	0.000	0.000	0.000
0.000		0.000		Automatic											
g36Y	XBR3	9.860	L/r	7.717	Rupture	162	11.83	9.860	10.470	10.547	17.333	7.717	0.000	0.000	0.000
0.000		0.000		Automatic											
g37P	HBR1	5.799	L/r	7.717	Rupture	175	5.00	5.799	10.470	10.547	14.585	7.717	0.000	0.000	0.000
0.000		0.000		Automatic											
g37X	HBR1	5.799	L/r	7.717	Rupture	175	5.00	5.799	10.470	10.547	14.585	7.717	0.000	0.000	0.000
0.000		0.000		Automatic											
g38P	HBR1	5.799	L/r	7.717	Rupture	175	5.00	5.799	10.470	10.547	14.585	7.717	0.000	0.000	0.000
0.000		0.000		Automatic											
g38X	HBR1	5.799	L/r	7.717	Rupture	175	5.00	5.799	10.470	10.547	14.585	7.717	0.000	0.000	0.000
0.000		0.000		Automatic											
g39P	HBR1	5.799	L/r	7.717	Rupture	175	5.00	5.799	10.470	10.547	14.585	7.717	0.000	0.000	0.000

0.000		0.000		Automatic											
g39X	HBR1	5.799	L/r	7.717	Rupture	175	5.00	5.799	10.470	10.547	14.585	7.717	0.000	0.000	0.000
0.000		0.000		Automatic											
g40P	HBR1	5.799	L/r	7.717	Rupture	175	5.00	5.799	10.470	10.547	14.585	7.717	0.000	0.000	0.000
0.000		0.000		Automatic											
g40X	HBR1	5.799	L/r	7.717	Rupture	175	5.00	5.799	10.470	10.547	14.585	7.717	0.000	0.000	0.000
0.000		0.000		Automatic											
g41P	HBR2	10.470	Shear	7.717	Rupture	149	9.81	10.510	10.470	10.547	17.444	7.717	0.000	0.000	0.000
0.000		0.000		Automatic											
g41X	HBR2	10.470	Shear	7.717	Rupture	149	9.81	10.510	10.470	10.547	17.444	7.717	0.000	0.000	0.000
0.000		0.000		Automatic											
g42P	HBR2	10.470	Shear	7.717	Rupture	149	9.81	10.510	10.470	10.547	17.444	7.717	0.000	0.000	0.000
0.000		0.000		Automatic											
g42Y	HBR2	10.470	Shear	7.717	Rupture	149	9.81	10.510	10.470	10.547	17.444	7.717	0.000	0.000	0.000
0.000		0.000		Automatic											
g43P	HBR3	10.470	Shear	10.470	Shear	175	13.80	12.202	10.470	14.062	30.090	12.500	0.000	0.000	0.000
0.000		0.000		Automatic											
g43X	HBR3	10.470	Shear	10.470	Shear	175	13.80	12.202	10.470	14.062	30.090	12.500	0.000	0.000	0.000
0.000		0.000		Automatic											
g44P	HBR3	10.470	Shear	10.470	Shear	175	13.80	12.202	10.470	14.062	30.090	12.500	0.000	0.000	0.000
0.000		0.000		Automatic											
g44Y	HBR3	10.470	Shear	10.470	Shear	175	13.80	12.202	10.470	14.062	30.090	12.500	0.000	0.000	0.000
0.000		0.000		Automatic											
g45P	HBR4	10.470	Shear	10.470	Shear	188	10.00	13.759	10.470	14.062	37.663	12.500	0.000	0.000	0.000
0.000		0.000		Automatic											
g45X	HBR4	10.470	Shear	10.470	Shear	188	10.00	13.759	10.470	14.062	37.663	12.500	0.000	0.000	0.000
0.000		0.000		Automatic											
g45XY	HBR4	10.470	Shear	10.470	Shear	188	10.00	13.759	10.470	14.062	37.663	12.500	0.000	0.000	0.000
0.000		0.000		Automatic											
g45Y	HBR4	10.470	Shear	10.470	Shear	188	10.00	13.759	10.470	14.062	37.663	12.500	0.000	0.000	0.000
0.000		0.000		Automatic											
g46P	HBR4	10.470	Shear	10.470	Shear	188	10.00	13.759	10.470	14.062	37.663	12.500	0.000	0.000	0.000
0.000		0.000		Automatic											
g46X	HBR4	10.470	Shear	10.470	Shear	188	10.00	13.759	10.470	14.062	37.663	12.500	0.000	0.000	0.000
0.000		0.000		Automatic											
g46XY	HBR4	10.470	Shear	10.470	Shear	188	10.00	13.759	10.470	14.062	37.663	12.500	0.000	0.000	0.000
0.000		0.000		Automatic											
g46Y	HBR4	10.470	Shear	10.470	Shear	188	10.00	13.759	10.470	14.062	37.663	12.500	0.000	0.000	0.000
0.000		0.000		Automatic											
g47P	**Arm1**	**19.099**	**L/r**	**31.410**	**Shear**	**146**	**11.52**	**19.099**	**31.410**	**42.187**	**33.802**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**										**Unable to calculate**	
rupture capacity for member "g47P" because it has a long and short edge distance of 0. ??															
g47X	**Arm1**	**19.099**	**L/r**	**31.410**	**Shear**	**146**	**11.52**	**19.099**	**31.410**	**42.187**	**33.802**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**										**Unable to calculate**	
rupture capacity for member "g47X" because it has a long and short edge distance of 0. ??															
g47XY	**Arm1**	**19.099**	**L/r**	**31.410**	**Shear**	**146**	**11.52**	**19.099**	**31.410**	**42.187**	**33.802**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**										**Unable to calculate**	
rupture capacity for member "g47XY" because it has a long and short edge distance of 0. ??															
g47Y	**Arm1**	**19.099**	**L/r**	**31.410**	**Shear**	**146**	**11.52**	**19.099**	**31.410**	**42.187**	**33.802**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**										**Unable to calculate**	
rupture capacity for member "g47Y" because it has a long and short edge distance of 0. ??															
g48P	Arm1	26.226	L/r	43.230	Net Sect	114	5.00	26.226	0.000	0.000	43.230	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g48Y	Arm1	26.226	L/r	43.230	Net Sect	114	5.00	26.226	0.000	0.000	43.230	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g49P	**Arm1**	**28.509**	**L/r**	**31.410**	**Shear**	**97**	**7.67**	**28.509**	**31.410**	**42.187**	**33.802**	**0.000**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**										**Unable to calculate**	
rupture capacity for member "g49P" because it has a long and short edge distance of 0. ??															
g49X	**Arm1**	**28.509**	**L/r**	**31.410**	**Shear**	**97**	**7.67**	**28.509**	**31.410**	**42.187**	**33.802**	**0.000**	**0.000**	**0.000**	**0.000**

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0.000             0.000          Automatic                                                                                  Unable to calculate
rupture capacity for member "g49X" because it has a long and short edge distance of 0.  ??
  g49XY     Arm1   28.509       L/r   31.410     Shear      97   7.67   28.509     31.410     42.187   33.802    0.000    0.000    0.000    0.000
0.000             0.000          Automatic                                                                                  Unable to calculate
rupture capacity for member "g49XY" because it has a long and short edge distance of 0.  ??
   g49Y     Arm1   28.509       L/r   31.410     Shear      97   7.67   28.509     31.410     42.187   33.802    0.000    0.000    0.000    0.000
0.000             0.000          Automatic                                                                                  Unable to calculate
rupture capacity for member "g49Y" because it has a long and short edge distance of 0.  ??
   g50P     Arm1   26.226       L/r   43.230  Net Sect     114   5.00   26.226      0.000      0.000   43.230    0.000    0.000    0.000    0.000
0.000             0.000          Automatic
   g50Y     Arm1   26.226       L/r   43.230  Net Sect     114   5.00   26.226      0.000      0.000   43.230    0.000    0.000    0.000    0.000
0.000             0.000          Automatic
   g51P     Arm1   27.682       L/r   31.410     Shear     103   8.14   27.682     31.410     42.187   33.802    0.000    0.000    0.000    0.000
0.000             0.000          Automatic                                                                                  Unable to calculate
rupture capacity for member "g51P" because it has a long and short edge distance of 0.  ??
   g51X     Arm1   27.682       L/r   31.410     Shear     103   8.14   27.682     31.410     42.187   33.802    0.000    0.000    0.000    0.000
0.000             0.000          Automatic                                                                                  Unable to calculate
rupture capacity for member "g51X" because it has a long and short edge distance of 0.  ??
  g51XY     Arm1   27.682       L/r   31.410     Shear     103   8.14   27.682     31.410     42.187   33.802    0.000    0.000    0.000    0.000
0.000             0.000          Automatic                                                                                  Unable to calculate
rupture capacity for member "g51XY" because it has a long and short edge distance of 0.  ??
   g51Y     Arm1   27.682       L/r   31.410     Shear     103   8.14   27.682     31.410     42.187   33.802    0.000    0.000    0.000    0.000
0.000             0.000          Automatic                                                                                  Unable to calculate
rupture capacity for member "g51Y" because it has a long and short edge distance of 0.  ??
   g52P     Arm1   26.226       L/r   43.230  Net Sect     114   5.00   26.226      0.000      0.000   43.230    0.000    0.000    0.000    0.000
0.000             0.000          Automatic
   g52Y     Arm1   26.226       L/r   43.230  Net Sect     114   5.00   26.226      0.000      0.000   43.230    0.000    0.000    0.000    0.000
0.000             0.000          Automatic
   g53P     Arm2   24.527       L/r   31.410     Shear     132  12.01   24.527     31.410     42.187   37.663    0.000    0.000    0.000    0.000
0.000             0.000          Automatic                                                                                  Unable to calculate
rupture capacity for member "g53P" because it has a long and short edge distance of 0.  ??
   g53X     Arm2   24.527       L/r   31.410     Shear     132  12.01   24.527     31.410     42.187   37.663    0.000    0.000    0.000    0.000
0.000             0.000          Automatic                                                                                  Unable to calculate
rupture capacity for member "g53X" because it has a long and short edge distance of 0.  ??
  g53XY     Arm2   24.527       L/r   31.410     Shear     132  12.01   24.527     31.410     42.187   37.663    0.000    0.000    0.000    0.000
0.000             0.000          Automatic                                                                                  Unable to calculate
rupture capacity for member "g53XY" because it has a long and short edge distance of 0.  ??
   g53Y     Arm2   24.527       L/r   31.410     Shear     132  12.01   24.527     31.410     42.187   37.663    0.000    0.000    0.000    0.000
0.000             0.000          Automatic                                                                                  Unable to calculate
rupture capacity for member "g53Y" because it has a long and short edge distance of 0.  ??
   g54P     Arm2   29.359       L/r   47.520  Net Sect     110   5.00   29.359      0.000      0.000   47.520    0.000    0.000    0.000    0.000
0.000             0.000          Automatic
   g54Y     Arm2   29.359       L/r   47.520  Net Sect     110   5.00   29.359      0.000      0.000   47.520    0.000    0.000    0.000    0.000
0.000             0.000          Automatic
   g55P   ArmBR1   10.470     Shear   10.470     Shear     155   6.40   10.714     10.470     10.547   22.961    0.000    0.000    0.000    0.000
0.000             0.000          Automatic                                                                                  Unable to calculate
rupture capacity for member "g55P" because it has a long and short edge distance of 0.  ??
   g55X   ArmBR1   10.470     Shear   10.470     Shear     155   6.40   10.714     10.470     10.547   22.961    0.000    0.000    0.000    0.000
0.000             0.000          Automatic                                                                                  Unable to calculate
rupture capacity for member "g55X" because it has a long and short edge distance of 0.  ??
   g56P   ArmBR2    0.054       L/r    7.889  Net Sect    1522   9.15    0.054     10.470     14.062    7.889    0.000    0.000    0.000    0.000
0.000             0.000          Automatic                                                                                  Unable to calculate
rupture capacity for member "g56P" because it has a long and short edge distance of 0.  ??
   g56X   ArmBR2    0.054       L/r    7.889  Net Sect    1522   9.15    0.054     10.470     14.062    7.889    0.000    0.000    0.000    0.000
0.000             0.000          Automatic                                                                                  Unable to calculate
rupture capacity for member "g56X" because it has a long and short edge distance of 0.  ??
  g56XY   ArmBR2    0.054       L/r    7.889  Net Sect    1522   9.15    0.054     10.470     14.062    7.889    0.000    0.000    0.000    0.000
0.000             0.000          Automatic                                                                                  Unable to calculate
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rupture capacity for member "g56XY" because it has a long and short edge distance of 0.  ??
   g56Y   ArmBR2    0.054       L/r    7.889  Net Sect    1522   9.15    0.054     10.470     14.062    7.889    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g56Y" because it has a long and short edge distance of 0.  ??
   g57P  ArmBR2R    0.100       L/r   10.470     Shear    1373  12.38    0.100     10.470     21.094   11.834    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g57P" because it has a long and short edge distance of 0.  ??
   g57X  ArmBR2R    0.100       L/r   10.470     Shear    1373  12.38    0.100     10.470     21.094   11.834    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g57X" because it has a long and short edge distance of 0.  ??
  g57XY  ArmBR2R    0.100       L/r   10.470     Shear    1373  12.38    0.100     10.470     21.094   11.834    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g57XY" because it has a long and short edge distance of 0.  ??
   g57Y  ArmBR2R    0.100       L/r   10.470     Shear    1373  12.38    0.100     10.470     21.094   11.834    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g57Y" because it has a long and short edge distance of 0.  ??
   g58P   ArmBR2    0.725       L/r    7.889  Net Sect     416   2.50    0.725     10.470     14.062    7.889    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g58P" because it has a long and short edge distance of 0.  ??
   g58X   ArmBR2    0.725       L/r    7.889  Net Sect     416   2.50    0.725     10.470     14.062    7.889    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g58X" because it has a long and short edge distance of 0.  ??
  g58XY   ArmBR2    0.725       L/r    7.889  Net Sect     416   2.50    0.725     10.470     14.062    7.889    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g58XY" because it has a long and short edge distance of 0.  ??
   g58Y   ArmBR2    0.725       L/r    7.889  Net Sect     416   2.50    0.725     10.470     14.062    7.889    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g58Y" because it has a long and short edge distance of 0.  ??
   g59P   ArmBR2    0.050       L/r    7.889  Net Sect    1588   9.56    0.050     10.470     14.062    7.889    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g59P" because it has a long and short edge distance of 0.  ??
   g59X   ArmBR2    0.050       L/r    7.889  Net Sect    1588   9.56    0.050     10.470     14.062    7.889    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g59X" because it has a long and short edge distance of 0.  ??
  g59XY   ArmBR2    0.050       L/r    7.889  Net Sect    1588   9.56    0.050     10.470     14.062    7.889    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g59XY" because it has a long and short edge distance of 0.  ??
   g59Y   ArmBR2    0.050       L/r    7.889  Net Sect    1588   9.56    0.050     10.470     14.062    7.889    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g59Y" because it has a long and short edge distance of 0.  ??
   g60P    PMBR1   10.195   Bearing   10.195   Bearing      86   3.54   21.670     10.470     10.195   25.048    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g60P" because it has a long and short edge distance of 0.  ??
   g60X    PMBR1   10.195   Bearing   10.195   Bearing      86   3.54   21.670     10.470     10.195   25.048    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g60X" because it has a long and short edge distance of 0.  ??
  g60XY    PMBR1   10.195   Bearing   10.195   Bearing      86   3.54   21.670     10.470     10.195   25.048    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g60XY" because it has a long and short edge distance of 0.  ??
   g60Y    PMBR1   10.195   Bearing   10.195   Bearing      86   3.54   21.670     10.470     10.195   25.048    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g60Y" because it has a long and short edge distance of 0.  ??
   g61P    PMBR1   10.195   Bearing   10.195   Bearing      86   3.54   21.670     10.470     10.195   25.048    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g61P" because it has a long and short edge distance of 0.  ??
   g61X    PMBR1   10.195   Bearing   10.195   Bearing      86   3.54   21.670     10.470     10.195   25.048    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g61X" because it has a long and short edge distance of 0.  ??
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  g61XY    PMBR1   10.195   Bearing   10.195   Bearing      86   3.54   21.670     10.470     10.195   25.048    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g61XY" because it has a long and short edge distance of 0.  ??
   g61Y    PMBR1   10.195   Bearing   10.195   Bearing      86   3.54   21.670     10.470     10.195   25.048    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g61Y" because it has a long and short edge distance of 0.  ??
   g62P    PMBR1   10.195   Bearing   10.195   Bearing      86   3.54   21.670     10.470     10.195   25.048    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g62P" because it has a long and short edge distance of 0.  ??
   g62X    PMBR1   10.195   Bearing   10.195   Bearing      86   3.54   21.670     10.470     10.195   25.048    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g62X" because it has a long and short edge distance of 0.  ??
  g62XY    PMBR1   10.195   Bearing   10.195   Bearing      86   3.54   21.670     10.470     10.195   25.048    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g62XY" because it has a long and short edge distance of 0.  ??
   g62Y    PMBR1   10.195   Bearing   10.195   Bearing      86   3.54   21.670     10.470     10.195   25.048    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g62Y" because it has a long and short edge distance of 0.  ??
   g63P    PMBR1   10.195   Bearing   10.195   Bearing      86   3.54   21.670     10.470     10.195   25.048    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g63P" because it has a long and short edge distance of 0.  ??
   g63X    PMBR1   10.195   Bearing   10.195   Bearing      86   3.54   21.670     10.470     10.195   25.048    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g63X" because it has a long and short edge distance of 0.  ??
  g63XY    PMBR1   10.195   Bearing   10.195   Bearing      86   3.54   21.670     10.470     10.195   25.048    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g63XY" because it has a long and short edge distance of 0.  ??
   g63Y    PMBR1   10.195   Bearing   10.195   Bearing      86   3.54   21.670     10.470     10.195   25.048    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g63Y" because it has a long and short edge distance of 0.  ??
   g64P    PMBR2   10.470    Shear   10.470    Shear     169   9.76   16.980     10.470     13.594   49.187    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g64P" because it has a long and short edge distance of 0.  ??
   g64X    PMBR2   10.470    Shear   10.470    Shear     169   9.76   16.980     10.470     13.594   49.187    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g64X" because it has a long and short edge distance of 0.  ??
  g64XY    PMBR2   10.470    Shear   10.470    Shear     169   9.76   16.980     10.470     13.594   49.187    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g64XY" because it has a long and short edge distance of 0.  ??
   g64Y    PMBR2   10.470    Shear   10.470    Shear     169   9.76   16.980     10.470     13.594   49.187    0.000    0.000    0.000    0.000
0.000              0.000           Automatic                                                                                  Unable to calculate
rupture capacity for member "g64Y" because it has a long and short edge distance of 0.  ??
   g65P Powermnt  115.298       L/r  729.999  Net Sect      74  27.00  115.298      0.000      0.000  729.999    0.000    0.000    0.000    0.000
0.000              0.000           Automatic
w/t equals 34.00 for member "g65P" which exceeds ASCE 10 section 3.7.1 limit of 25.  ??
   g66P Powermnt  113.390       L/r  729.999  Net Sect      88  32.00  113.390      0.000      0.000  729.999    0.000    0.000    0.000    0.000
0.000              0.000           Automatic
w/t equals 34.00 for member "g66P" which exceeds ASCE 10 section 3.7.1 limit of 25.  ??
   g67P Powermnt  119.367       L/r  729.999  Net Sect      27  10.00  119.367      0.000      0.000  729.999    0.000    0.000    0.000    0.000
0.000              0.000           Automatic
w/t equals 34.00 for member "g67P" which exceeds ASCE 10 section 3.7.1 limit of 25.  ??
   g68P Powermnt  119.082       L/r  729.999  Net Sect      33  12.00  119.082      0.000      0.000  729.999    0.000    0.000    0.000    0.000
0.000              0.000           Automatic
w/t equals 34.00 for member "g68P" which exceeds ASCE 10 section 3.7.1 limit of 25.  ??
   g69P Powermnt  119.852       L/r  729.999  Net Sect      14   5.00  119.852      0.000      0.000  729.999    0.000    0.000    0.000    0.000
0.000              0.000           Automatic
w/t equals 34.00 for member "g69P" which exceeds ASCE 10 section 3.7.1 limit of 25.  ??
   g70P Powermnt  119.490       L/r  729.999  Net Sect      25   9.00  119.490      0.000      0.000  729.999    0.000    0.000    0.000    0.000
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0.000 0.000 Automatic
w/t equals 34.00 for member "g70P" which exceeds ASCE 10 section 3.7.1 limit of 25. ??
g71P Powermnt 119.490 L/r 729.999 Net Sect 25 9.00 119.490 0.000 0.000 729.999 0.000 0.000 0.000 0.000
0.000 0.000 Automatic
w/t equals 34.00 for member "g71P" which exceeds ASCE 10 section 3.7.1 limit of 25. ??
g72P fic1 0.000 L/r 3.600 Net Sect 2160000 18.00 0.000 0.000 0.000 3.600 0.000 0.000 0.000 0.000
0.000 0.000 Automatic
g72X fic1 0.000 L/r 3.600 Net Sect 2160000 18.00 0.000 0.000 0.000 3.600 0.000 0.000 0.000 0.000
0.000 0.000 Automatic
g73P fic1 0.000 L/r 3.600 Net Sect 2160000 18.00 0.000 0.000 0.000 3.600 0.000 0.000 0.000 0.000
0.000 0.000 Automatic
g73Y fic1 0.000 L/r 3.600 Net Sect 2160000 18.00 0.000 0.000 0.000 3.600 0.000 0.000 0.000 0.000
0.000 0.000 Automatic
g74P fic 0.000 L/r 3.600 Net Sect 60000 0.50 0.000 0.000 0.000 3.600 0.000 0.000 0.000 0.000
0.000 0.000 Automatic
g74X fic 0.000 L/r 3.600 Net Sect 60000 0.50 0.000 0.000 0.000 3.600 0.000 0.000 0.000 0.000
0.000 0.000 Automatic
g75P fic 0.000 L/r 3.600 Net Sect 60000 0.50 0.000 0.000 0.000 3.600 0.000 0.000 0.000 0.000
0.000 0.000 Automatic
g75X fic 0.000 L/r 3.600 Net Sect 60000 0.50 0.000 0.000 0.000 3.600 0.000 0.000 0.000 0.000
0.000 0.000 Automatic
g76P fic 0.000 L/r 3.600 Net Sect 60000 0.50 0.000 0.000 0.000 3.600 0.000 0.000 0.000 0.000
0.000 0.000 Automatic
g76Y fic 0.000 L/r 3.600 Net Sect 60000 0.50 0.000 0.000 0.000 3.600 0.000 0.000 0.000 0.000
0.000 0.000 Automatic
g77P fic 0.000 L/r 3.600 Net Sect 60000 0.50 0.000 0.000 0.000 3.600 0.000 0.000 0.000 0.000
0.000 0.000 Automatic
g77Y fic 0.000 L/r 3.600 Net Sect 60000 0.50 0.000 0.000 0.000 3.600 0.000 0.000 0.000 0.000
0.000 0.000 Automatic
g78P HBR5 10.470 Shear 7.717 Rupture 87 2.50 14.114 10.470 10.547 14.585 7.717 0.000 0.000 0.000
0.000 0.000 Automatic
g78X HBR5 10.470 Shear 7.717 Rupture 87 2.50 14.114 10.470 10.547 14.585 7.717 0.000 0.000 0.000
0.000 0.000 Automatic
g78XY HBR5 10.470 Shear 7.717 Rupture 87 2.50 14.114 10.470 10.547 14.585 7.717 0.000 0.000 0.000
0.000 0.000 Automatic
g78Y HBR5 10.470 Shear 7.717 Rupture 87 2.50 14.114 10.470 10.547 14.585 7.717 0.000 0.000 0.000
0.000 0.000 Automatic

The model contains 253 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	0.0862	4.647	3.059
2P	0.0617	3.479	1.146
3P	0.115	6.231	5.377
4P	0.058	3.764	1.961
5P	0.0657	4.089	4.089
6P	0.0381	2.067	1.467
7P	0.113	6.408	4.695
8P	0.0865	5.196	1.299
9P	0.0835	5.357	5.092
10P	0.118	6.075	5.158
11P	0.0509	3.283	1.440
12P	0.0898	4.476	4.476
13P	0.109	5.559	5.559

14P	0.21	8.854	8.854
15P	0.384	14.948	14.948
16P	0.248	9.854	9.854
17P	0.0572	2.948	2.948
22P	0.223	4.785	4.785
23P	0.446	9.563	9.563
24P	0.369	8.483	8.483
25P	0.443	10.073	10.073
26P	0.567	12.729	12.729
27P	1.06	23.354	23.354
28P	1.58	35.370	35.370
29P	0.669	14.344	14.344
30P	4.62e-005	0.077	0.075
31P	4.62e-005	0.075	0.077
32P	4.62e-005	0.077	0.075
33P	4.62e-005	0.075	0.077
1X	0.0862	4.647	3.059
1XY	0.0862	4.647	3.059
1Y	0.0862	4.647	3.059
2X	0.0617	3.479	1.146
3X	0.115	6.231	5.377
3XY	0.115	6.231	5.377
3Y	0.115	6.231	5.377
4X	0.058	3.764	1.961
5X	0.0657	4.089	4.089
5XY	0.0657	4.089	4.089
5Y	0.0657	4.089	4.089
6X	0.0381	2.067	1.467
6XY	0.0381	2.067	1.467
6Y	0.0381	2.067	1.467
7X	0.113	6.408	4.695
7XY	0.113	6.408	4.695
7Y	0.113	6.408	4.695
8X	0.0865	5.196	1.299
9X	0.0835	5.357	5.092
9XY	0.0835	5.357	5.092
9Y	0.0835	5.357	5.092
10X	0.118	6.075	5.158
10XY	0.118	6.075	5.158
10Y	0.118	6.075	5.158
11X	0.0509	3.283	1.440
12X	0.0898	4.476	4.476
12XY	0.0898	4.476	4.476
12Y	0.0898	4.476	4.476
13X	0.109	5.559	5.559
13XY	0.109	5.559	5.559
13Y	0.109	5.559	5.559
14X	0.21	8.854	8.854
14XY	0.21	8.854	8.854
14Y	0.21	8.854	8.854
15X	0.384	14.948	14.948
15XY	0.384	14.948	14.948
15Y	0.384	14.948	14.948
16X	0.248	9.854	9.854
16XY	0.248	9.854	9.854
16Y	0.248	9.854	9.854
17X	0.0572	2.948	2.948
17XY	0.0572	2.948	2.948
17Y	0.0572	2.948	2.948

30X	4.62e-005	0.077	0.075
31Y	4.62e-005	0.075	0.077
32X	4.62e-005	0.077	0.075
33Y	4.62e-005	0.075	0.077
18S	0.0277	2.317	1.500
19S	0.0293	1.500	2.317
20S	0.0943	6.285	1.262
21S	0.0943	1.262	6.285
18Y	0.0277	2.317	1.500
19X	0.0293	1.500	2.317
20Y	0.0943	6.285	1.262
21X	0.0943	1.262	6.285
Total	13.2	499.536	456.034

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	1.210	35.575	25.783	7.325	1.700
2	5.344	251.672	217.963	118.987	93.298
3	6.669	212.288	212.288	120.189	120.189
Total	13.223	499.536	456.034	246.500	215.187

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	1.210	1.210	165.438	165.438
2	5.344	5.611	1027.681	1079.065
3	6.669	7.336	962.726	1058.999
Total	13.223	14.157	2155.845	2303.502

Section Joint Information:

Section Label	Joint Label	Joint Elevation (ft)
1	1P	86.000
1	1Y	86.000
1	1X	86.000
1	1XY	86.000
1	2P	86.000
1	2X	86.000
1	24P	86.000
1	23P	95.000
1	22P	104.000
1	30X	86.000
1	32X	104.000
1	30P	86.000
1	32P	104.000
1	33P	104.000
1	31P	86.000
1	33Y	104.000
1	31Y	86.000

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2    1P    86.000
2    3P    81.000
2    1X    86.000
2    3X    81.000
2   1XY    86.000
2   3XY    81.000
2    1Y    86.000
2    3Y    81.000
2    5P    75.000
2    5X    75.000
2   5XY    75.000
2    5Y    75.000
2    6P    72.000
2    6X    72.000
2   6XY    72.000
2    6Y    72.000
2    7P    69.000
2    7X    69.000
2   7XY    69.000
2    7Y    69.000
2    9P    64.000
2    9X    64.000
2   9XY    64.000
2    9Y    64.000
2   10P    59.000
2   10X    59.000
2  10XY    59.000
2   10Y    59.000
2   12P    54.047
2   12X    54.047
2  12XY    54.047
2   12Y    54.047
2   13P    48.105
2   13X    48.105
2  13XY    48.105
2   13Y    48.105
2   14P    41.500
2   14X    41.500
2  14XY    41.500
2   14Y    41.500
2   18S    72.000
2   18Y    72.000
2   19X    72.000
2   19S    72.000
2    4P    81.000
2    4X    81.000
2   11P    59.000
2   11X    59.000
2    8P    69.000
2    8X    69.000
2    2P    86.000
2    2X    86.000
2   25P    81.000
2   26P    69.000
2   27P    59.000
2   24P    86.000
3   14P    41.500
3   15P    27.000
3   14X    41.500
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3	15X	27.000
3	14XY	41.500
3	15XY	27.000
3	14Y	41.500
3	15Y	27.000
3	16P	5.000
3	16X	5.000
3	16XY	5.000
3	16Y	5.000
3	17P	0.000
3	17X	0.000
3	17XY	0.000
3	17Y	0.000
3	20S	5.000
3	20Y	5.000
3	21X	5.000
3	21S	5.000
3	28P	27.000
3	29P	0.000
3	27P	59.000

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	104.000	86.000	17	26	1.00	5.00	36.000	1.00	27.50	137.250
2	86.000	41.500	56	173	5.00	9.81	264.882	27.50	9.81	431.382
3	41.500	0.000	23	54	9.81	21.39	646.560	9.81	21.39	646.560

*** Insulator Data

Clamp Properties:

Label	Stock Number	Holding Capacity (lbs)
clamp-prop#1		3e+004

Clamp Insulator Connectivity:

Clamp Label	Structure And Tip Attach	Property Set	Min. Required Vertical Load (uplift) (lbs)
1	2P	clamp-prop#1	No Limit
2	2X	clamp-prop#1	No Limit
3	4P	clamp-prop#1	No Limit
4	4X	clamp-prop#1	No Limit
5	8P	clamp-prop#1	No Limit
6	8X	clamp-prop#1	No Limit
7	11P	clamp-prop#1	No Limit
8	11X	clamp-prop#1	No Limit
14	16P	clamp-prop#1	No Limit
15	15P	clamp-prop#1	No Limit
16	14P	clamp-prop#1	No Limit

17	10P	clamp-prop#1	No Limit
18	7P	clamp-prop#1	No Limit
19	3X	clamp-prop#1	No Limit
20	1P	clamp-prop#1	No Limit
21	3P	clamp-prop#1	No Limit
22	1X	clamp-prop#1	No Limit
23	1XY	clamp-prop#1	No Limit
24	3XY	clamp-prop#1	No Limit
25	23P	clamp-prop#1	No Limit
26	24P	clamp-prop#1	No Limit
27	25P	clamp-prop#1	No Limit
28	26P	clamp-prop#1	No Limit
29	27P	clamp-prop#1	No Limit
30	28P	clamp-prop#1	No Limit
31	22P	clamp-prop#1	No Limit
32	7X	clamp-prop#1	No Limit
33	10X	clamp-prop#1	No Limit
34	14X	clamp-prop#1	No Limit
35	15X	clamp-prop#1	No Limit
36	16X	clamp-prop#1	No Limit
37	7Y	clamp-prop#1	No Limit
38	10Y	clamp-prop#1	No Limit
39	14Y	clamp-prop#1	No Limit
40	15Y	clamp-prop#1	No Limit
41	16Y	clamp-prop#1	No Limit
42	3Y	clamp-prop#1	No Limit

*** Loads Data

Loads from file: j:\jobs\2105100.wi\10_ct11317b\05_structural\tower\backup documentation\rev (1)\calcs\pls tower\876 w_ powermnt.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)	104.00 (ft)	
Structure height	104.00 (ft)	
Structure height above ground	104.00 (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 - Transverse	1.5000	2.5000	1.00000	1.0000	1.0000	1.0000	46 loads	Wind on Face	4	0	0.000	56.000	0.0	
Extreme Wind - Transverse	1.0000	1.0000	1.00000	1.0000	1.0000	1.0000	46 loads	NESC 2012	31	0	0.000	56.000	0.0	
NESC Heavy - Longitudinal	1.5000	2.5000	1.00000	1.0000	1.0000	1.0000	46 loads	Wind on Face	4	0	0.000	56.000	0.0	
Extreme Wind - Longitudinal	1.0000	1.0000	1.00000	1.0000	1.0000	1.0000	46 loads	NESC 2012	31	0	0.000	56.000	0.0	

Point Loads for Load Case "NESC Heavy - Transverse":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
2P	1350	875	1150	Shield Wire
2X	2325	1100	0	Shield Wire
4P	3600	1300	50	Conductor
4X	3600	1300	2200	Conductor
8P	3600	1300	600	Conductor
8X	3600	1300	625	Conductor
11P	3600	1300	1275	Conductor
11X	3600	1300	1175	Conductor
1P	174	57	0	AT&T Antennas
3P	174	57	0	AT&T Antennas
1X	174	57	0	AT&T Antennas
3X	174	57	0	AT&T Antennas
1XY	174	57	0	AT&T Antennas
3XY	174	57	0	AT&T Antennas
3P	276	103	0	AT&T Coax (on tower leg)

7P	506	189	0	AT&T Coax (on tower leg)
10P	621	232	0	AT&T Coax (on tower leg)
14P	736	275	0	AT&T Coax (on tower leg)
15P	851	318	0	AT&T Coax (on tower leg)
16P	736	275	0	AT&T Coax (on tower leg)
23P	47	0	0	Sprint Coax (within powermount)
24P	66	0	0	Sprint Coax (within powermount)
25P	80	0	0	Sprint Coax (within powermount)
26P	103	0	0	Sprint Coax (within powermount)
27P	197	0	0	Sprint Coax (within powermount)
28P	402	0	0	Sprint Coax (within powermount)
23P	172	0	0	T-Mobile Coax (on powermount exterior)
24P	241	0	0	T-Mobile Coax (on powermount exterior)
25P	293	0	0	T-Mobile Coax (on powermount exterior)
26P	379	0	0	T-Mobile Coax (on powermount exterior)
27P	723	0	0	T-Mobile Coax (on powermount exterior)
28P	1480	0	0	T-Mobile Coax (on powermount exterior)
22P	1529	390	0	Sprint Antennas
23P	3193	1254	0	T-Mobile Antennas
3X	506	44	0	Sprint Coax (on tower leg)
7X	506	44	0	Sprint Coax (on tower leg)
10X	621	54	0	Sprint Coax (on tower leg)
14X	736	64	0	Sprint Coax (on tower leg)
15X	851	74	0	Sprint Coax (on tower leg)
16X	736	64	0	Sprint Coax (on tower leg)
3Y	379	60	0	T-Mobile Coax (on tower leg)
7Y	379	60	0	T-Mobile Coax (on tower leg)
10Y	465	74	0	T-Mobile Coax (on tower leg)
14Y	551	87	0	T-Mobile Coax (on tower leg)
15Y	637	101	0	T-Mobile Coax (on tower leg)
16Y	551	87	0	T-Mobile Coax (on tower leg)

Section Load Case Information (Standard) for "NESC Heavy - Transverse":

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	104.00	86.00	95.00	10.00	10.00	3.200	54.4	0.00	3.200	0.0	0	1814
2	86.00	41.50	63.75	10.00	10.00	3.200	2985.5	0.00	3.200	0.0	0	8417
3	41.50	0.00	20.75	10.00	10.00	3.200	3846.0	0.00	3.200	0.0	0	11004

Point Loads for Load Case "Extreme Wind - Transverse":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
2P	500	600	425	Shield Wire
2X	1050	1225	0	Shield Wire
4P	1775	1725	250	Conductor
4X	1730	1700	1275	Conductor
8P	1775	1675	75	Conductor
8X	1725	1650	500	Conductor
11P	1750	1625	425	Conductor
11X	1750	1600	400	Conductor
1P	78	196	0	AT&T Antennas

3P	78	196	0	AT&T Antennas
1X	78	196	0	AT&T Antennas
3X	78	196	0	AT&T Antennas
1XY	78	196	0	AT&T Antennas
3XY	78	196	0	AT&T Antennas
3P	75	300	0	AT&T Coax (on tower leg)
7P	137	549	0	AT&T Coax (on tower leg)
10P	168	674	0	AT&T Coax (on tower leg)
14P	200	799	0	AT&T Coax (on tower leg)
15P	231	924	0	AT&T Coax (on tower leg)
16P	200	799	0	AT&T Coax (on tower leg)
23P	31	0	0	Sprint Coax (within powermount)
24P	44	0	0	Sprint Coax (within powermount)
25P	53	0	0	Sprint Coax (within powermount)
26P	69	0	0	Sprint Coax (within powermount)
27P	131	0	0	Sprint Coax (within powermount)
28P	268	0	0	Sprint Coax (within powermount)
23P	40	0	0	T-Mobile Coax (on powermount exterior)
24P	55	0	0	T-Mobile Coax (on powermount exterior)
25P	67	0	0	T-Mobile Coax (on powermount exterior)
26P	87	0	0	T-Mobile Coax (on powermount exterior)
27P	166	0	0	T-Mobile Coax (on powermount exterior)
28P	341	0	0	T-Mobile Coax (on powermount exterior)
22P	721	1484	0	Sprint Antennas
23P	1484	4965	0	T-Mobile Antennas
3X	137	92	0	Sprint Coax (on tower leg)
7X	137	92	0	Sprint Coax (on tower leg)
10X	168	112	0	Sprint Coax (on tower leg)
14X	200	133	0	Sprint Coax (on tower leg)
15X	231	154	0	Sprint Coax (on tower leg)
16X	200	133	0	Sprint Coax (on tower leg)
3Y	87	143	0	T-Mobile Coax (on tower leg)
7Y	87	143	0	T-Mobile Coax (on tower leg)
10Y	107	176	0	T-Mobile Coax (on tower leg)
14Y	127	208	0	T-Mobile Coax (on tower leg)
15Y	147	241	0	T-Mobile Coax (on tower leg)
16Y	127	208	0	T-Mobile Coax (on tower leg)

Section Load Case Information (Code) for "Extreme Wind - Transverse":

Section Label	Z Top (ft)	Z Bottom (ft)	Ave. Elev. Above Ground (ft)	Res. Wind Pres. (psf)	Tran Wind Pres. (psf)	Tran Angle Face Area (ft^2)	Tran Round Face Area (ft^2)	Tran Gross Area (ft^2)	Tran Soli- dity Ratio	Tran Drag Coef	Tran Round Drag Coef	Tran Wind Load (lbs)	Long Adj. Wind Pres. (psf)	Long Angle Face Area (ft^2)	Long Round Face Area (ft^2)	Long Gross Area (ft^2)	Long Soli- dity Ratio	Long Drag Coef	Long Round Drag Coef	Long Wind Load (lbs)	Ice Weight (lbs)	Total Weight (lbs)
1	104.00	86.00	95.00	31.51	31.51	1.25	0.45	36.00	0.047	3.200	2.000	154.4	0.00	6.88	0.45	137.25	0.053	3.200	2.000	0.0	0	1210
2	86.00	41.50	63.75	31.51	31.51	93.30	0.00	264.88	0.352	3.200	2.000	9407.9	0.00	118.99	0.00	431.38	0.276	3.200	2.000	0.0	0	5611
3	41.50	0.00	20.75	31.51	31.51	126.20	0.00	646.56	0.195	3.200	2.000	12725.5	0.00	126.20	0.00	646.56	0.195	3.200	2.000	0.0	0	7336

Point Loads for Load Case "NESC Heavy - Longitudinal":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
2P	1350	0	1150	Shield Wire
2X	2325	0	0	Shield Wire
4P	3600	0	50	Conductor
4X	3600	0	2200	Conductor
8P	3600	0	600	Conductor
8X	3600	0	625	Conductor
11P	3600	0	1275	Conductor
11X	3600	0	1175	Conductor
1P	174	0	57	AT&T Antennas
3P	174	0	57	AT&T Antennas
1X	174	0	57	AT&T Antennas
3X	174	0	57	AT&T Antennas
1XY	174	0	57	AT&T Antennas
3XY	174	0	57	AT&T Antennas
3P	276	0	103	AT&T Coax (on tower leg)
7P	506	0	189	AT&T Coax (on tower leg)
10P	621	0	232	AT&T Coax (on tower leg)
14P	736	0	275	AT&T Coax (on tower leg)
15P	851	0	318	AT&T Coax (on tower leg)
16P	736	0	275	AT&T Coax (on tower leg)
23P	47	0	0	Sprint Coax (within powermount)
24P	66	0	0	Sprint Coax (within powermount)
25P	80	0	0	Sprint Coax (within powermount)
26P	103	0	0	Sprint Coax (within powermount)
27P	197	0	0	Sprint Coax (within powermount)
28P	402	0	0	Sprint Coax (within powermount)
23P	172	0	69	T-Mobile Coax (on powermount exterior)
24P	241	0	96	T-Mobile Coax (on powermount exterior)
25P	293	0	117	T-Mobile Coax (on powermount exterior)
26P	379	0	151	T-Mobile Coax (on powermount exterior)
27P	723	0	288	T-Mobile Coax (on powermount exterior)
28P	1480	0	591	T-Mobile Coax (on powermount exterior)
22P	1529	0	390	Sprint Antennas
23P	3193	0	1254	T-Mobile Antennas
3X	506	0	363	Sprint Coax (on tower leg)
7X	506	0	363	Sprint Coax (on tower leg)
10X	621	0	446	Sprint Coax (on tower leg)
14X	736	0	528	Sprint Coax (on tower leg)
15X	851	0	611	Sprint Coax (on tower leg)
16X	736	0	528	Sprint Coax (on tower leg)
3Y	379	0	151	T-Mobile Coax (on tower leg)
7Y	379	0	151	T-Mobile Coax (on tower leg)
10Y	465	0	185	T-Mobile Coax (on tower leg)
14Y	551	0	220	T-Mobile Coax (on tower leg)
15Y	637	0	254	T-Mobile Coax (on tower leg)
16Y	551	0	220	T-Mobile Coax (on tower leg)

Section Load Case Information (Standard) for "NESC Heavy - Longitudinal":

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	104.00	86.00	95.00	10.00	10.00	3.200	54.4	0.00	3.200	0.0	0	1814
2	86.00	41.50	63.75	10.00	10.00	3.200	2985.5	0.00	3.200	0.0	0	8417
3	41.50	0.00	20.75	10.00	10.00	3.200	3846.0	0.00	3.200	0.0	0	11004

Point Loads for Load Case "Extreme Wind - Longitudinal":

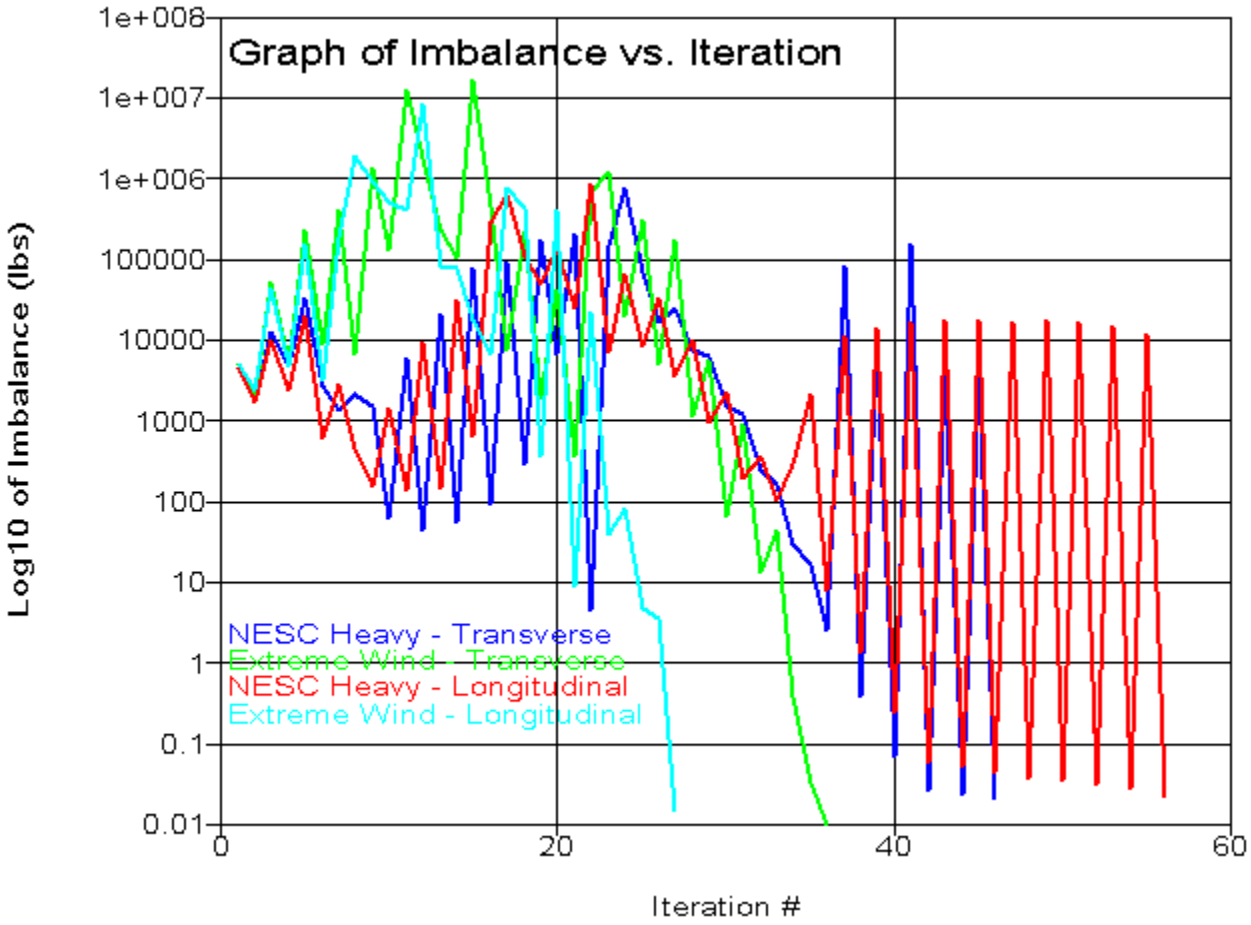
Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
2P	500	0	425	Shield Wire
2X	1050	0	0	Shield Wire
4P	1775	0	250	Conductor
4X	1730	0	1275	Conductor
8P	1775	0	75	Conductor
8X	1725	0	500	Conductor
11P	1750	0	425	Conductor
11X	1750	0	400	Conductor
1P	78	0	196	AT&T Antennas
3P	78	0	196	AT&T Antennas
1X	78	0	196	AT&T Antennas
3X	78	0	196	AT&T Antennas
1XY	78	0	196	AT&T Antennas
3XY	78	0	196	AT&T Antennas
3P	75	0	300	AT&T Coax (on tower leg)
7P	137	0	549	AT&T Coax (on tower leg)
10P	168	0	674	AT&T Coax (on tower leg)
14P	200	0	799	AT&T Coax (on tower leg)
15P	231	0	924	AT&T Coax (on tower leg)
16P	200	0	799	AT&T Coax (on tower leg)
23P	31	0	0	Sprint Coax (within powermount)
24P	44	0	0	Sprint Coax (within powermount)
25P	53	0	0	Sprint Coax (within powermount)
26P	69	0	0	Sprint Coax (within powermount)
27P	131	0	0	Sprint Coax (within powermount)
28P	268	0	0	Sprint Coax (within powermount)
23P	40	0	195	T-Mobile Coax (on powermount exterior)
24P	55	0	274	T-Mobile Coax (on powermount exterior)
25P	67	0	332	T-Mobile Coax (on powermount exterior)
26P	87	0	430	T-Mobile Coax (on powermount exterior)
27P	166	0	821	T-Mobile Coax (on powermount exterior)
28P	341	0	1680	T-Mobile Coax (on powermount exterior)
22P	721	0	1484	Sprint Antennas
23P	1484	0	4965	T-Mobile Antennas
3X	137	0	1098	Sprint Coax (on tower leg)
7X	137	0	1098	Sprint Coax (on tower leg)
10X	168	0	1348	Sprint Coax (on tower leg)
14X	200	0	1597	Sprint Coax (on tower leg)
15X	231	0	1847	Sprint Coax (on tower leg)
16X	200	0	1597	Sprint Coax (on tower leg)
3Y	87	0	430	T-Mobile Coax (on tower leg)
7Y	87	0	430	T-Mobile Coax (on tower leg)
10Y	107	0	528	T-Mobile Coax (on tower leg)
14Y	127	0	625	T-Mobile Coax (on tower leg)
15Y	147	0	723	T-Mobile Coax (on tower leg)
16Y	127	0	625	T-Mobile Coax (on tower leg)

Section Load Case Information (Code) for "Extreme Wind - Longitudinal":

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 Angle Face Area (ft^2)	Tran Round Face Area (ft^2)	Tran Gross Area (ft^2)	Tran Soli- dity Ratio	Tran Angle Drag Coef	Tran Round Drag Coef	Tran Wind Load (lbs)	Long Adj. Wind Pres. (psf)	Long Angle Face Area (ft^2)	Long Round Face Area (ft^2)	Long Gross Area (ft^2)	Long Soli- dity Ratio	Long Angle Drag Coef	Long Round Drag Coef	Long Wind Load (lbs)	Ice Weight (lbs)	Total Weight
1	104.00	86.00	95.00	31.51	31.51	1.25	0.45	36.00	0.047	3.200	2.000	154.4	0.00	6.88	0.45	137.25	0.053	3.200	2.000	0.0	0	1210
2	86.00	41.50	63.75	31.51	31.51	93.30	0.00	264.88	0.352	3.200	2.000	9407.9	0.00	118.99	0.00	431.38	0.276	3.200	2.000	0.0	0	5611
3	41.50	0.00	20.75	31.51	31.51	126.20	0.00	646.56	0.195	3.200	2.000	12725.5	0.00	126.20	0.00	646.56	0.195	3.200	2.000	0.0	0	7336

*** Analysis Results:

Maximum element usage is 99.80% for Angle "g37P" in load case "Extreme Wind - Transverse"
Maximum insulator usage is 18.03% for Clamp "25" in load case "Extreme Wind - Longitudinal"



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)	LC 3 (kips)	LC 4 (kips)
LEG1	g1P	11.24	4.647	-5.712	-0.293	4.647	-3.331	-5.712
LEG1	g1X	13.33	0.000	-7.133	-4.696	-7.133	-4.368	-7.079
LEG1	g1XY	13.94	2.864	-7.457	-5.079	-7.457	-2.057	2.864
LEG1	g1Y	11.58	4.786	-0.065	0.308	4.786	-0.065	4.569

LEG1	g2P	39.15	16.181	-12.571	3.359	16.181	-5.948	-12.571
LEG1	g2X	36.77	0.000	-17.974	-11.750	-17.974	-9.901	-16.917
LEG1	g2XY	33.01	12.428	-16.138	-7.937	-16.138	1.260	12.428
LEG1	g2Y	43.41	17.943	0.000	7.024	17.943	5.097	16.830
LEG1	g3P	40.92	21.554	-20.265	3.551	21.554	-11.193	-20.265
LEG1	g3X	52.29	0.000	-31.500	-18.985	-31.500	-14.648	-28.107
LEG1	g3XY	45.66	14.073	-27.503	-11.850	-27.503	2.835	14.073
LEG1	g3Y	47.51	25.028	0.000	10.684	25.028	6.442	21.711
LEG1	g4P	49.74	20.560	-21.242	1.738	20.560	-12.999	-21.242
LEG1	g4X	53.84	0.000	-32.431	-20.826	-32.431	-16.493	-29.041
LEG1	g4XY	47.41	12.996	-28.558	-13.856	-28.558	0.823	12.996
LEG1	g4Y	58.00	23.974	0.000	8.641	23.974	4.391	20.623
LEG1	g5P	61.90	32.608	-24.891	5.083	32.608	-16.440	-24.891
LEG1	g5X	84.82	0.000	-45.386	-30.132	-45.386	-22.690	-39.333
LEG1	g5XY	71.26	19.347	-38.131	-17.511	-38.131	3.667	19.347
LEG1	g5Y	71.90	37.875	0.000	15.939	37.875	8.727	31.585
LEG1	g6P	77.33	40.736	-28.302	6.985	40.736	-19.862	-28.302
LEG1	g6X	93.52	0.000	-57.412	-38.681	-57.412	-28.592	-49.275
LEG1	g6XY	75.36	22.520	-46.264	-21.110	-46.264	4.999	22.520
LEG1	g6Y	87.51	46.096	0.000	19.672	46.096	10.227	37.956
LEG2	g7P	71.63	46.574	-29.849	8.896	46.574	-21.840	-29.849
LEG2	g7X	96.89	0.000	-63.772	-43.522	-63.772	-32.117	-55.546
LEG2	g7XY	76.67	26.064	-50.459	-21.199	-50.459	8.945	26.064
LEG2	g7Y	83.05	53.996	0.000	25.859	53.996	14.727	44.955
LEG2	g8P	73.50	47.787	-30.882	7.905	47.787	-24.501	-30.882
LEG2	g8X	91.38	0.000	-67.973	-47.755	-67.973	-35.290	-59.089
LEG2	g8XY	74.64	24.856	-55.519	-24.282	-55.519	8.544	24.856
LEG2	g8Y	89.22	58.011	0.000	29.004	58.011	16.139	47.457
LEG2	g9P	70.97	46.047	-28.339	7.555	46.047	-23.768	-28.339
LEG2	g9X	88.63	0.000	-64.932	-46.275	-64.932	-34.340	-57.025
LEG2	g9XY	73.85	22.577	-54.099	-23.975	-54.099	8.275	22.577
LEG2	g9Y	88.50	57.419	0.000	29.744	57.419	16.622	46.619
LEG3	g10P	52.58	40.676	-30.012	4.166	40.676	-25.311	-30.012
LEG3	g10X	81.00	0.000	-69.477	-49.741	-69.477	-37.648	-62.325
LEG3	g10XY	69.08	16.517	-59.254	-26.177	-59.254	6.025	16.517
LEG3	g10Y	68.78	53.208	0.000	29.180	53.208	16.635	44.931
LEG3	g11P	55.29	42.772	-32.893	3.265	42.772	-29.800	-32.893
LEG3	g11X	86.27	0.000	-73.786	-52.909	-73.786	-39.202	-64.294
LEG3	g11XY	73.32	13.078	-62.708	-29.250	-62.708	4.522	13.078
LEG3	g11Y	72.85	56.360	0.000	29.523	56.360	17.341	50.513
LEG2	g12P	77.61	50.461	-33.251	5.105	50.461	-31.105	-33.251
LEG2	g12X	97.87	0.000	-74.173	-54.018	-74.173	-40.324	-64.692
LEG2	g12XY	82.99	13.945	-62.899	-29.634	-62.899	3.850	13.945
LEG2	g12Y	97.97	63.702	0.000	32.115	63.702	21.041	60.890
XBR1	g13P	78.62	0.000	-9.088	-4.681	-9.088	-2.326	-2.086
XBR1	g13X	56.62	8.259	0.000	3.211	8.259	0.568	0.167
XBR1	g13XY	55.39	8.079	0.000	2.450	8.079	0.104	1.098
XBR1	g13Y	71.12	0.000	-8.221	-2.650	-8.221	-0.050	-0.264
XBR1	g14P	49.64	7.241	-0.374	-0.374	-0.329	1.699	7.241
XBR1	g14X	51.73	7.545	0.000	1.086	0.897	2.747	7.545
XBR1	g14XY	62.94	0.093	-7.275	-0.816	0.093	-2.832	-7.275
XBR1	g14Y	61.70	0.000	-7.132	-0.559	-0.476	-2.225	-7.132
XBR2	g15P	31.90	0.796	-5.511	-1.979	-5.511	0.796	0.330
XBR2	g15X	28.83	6.601	0.000	3.126	6.601	0.463	1.290
XBR2	g15XY	29.56	6.771	0.000	3.631	6.771	1.044	1.630
XBR2	g15Y	34.43	0.000	-5.948	-2.933	-5.948	-0.466	-1.230
XBR2	g16P	13.31	2.749	-1.629	0.326	-1.629	1.663	2.749
XBR2	g16X	15.07	1.873	-1.845	-1.086	-1.845	-0.041	1.873
XBR2	g16XY	39.28	0.000	-6.786	-2.972	-2.859	-4.082	-6.786

XBR2	g16Y	44.56	0.000	-7.698	-2.938	-3.500	-4.050	-7.698
XBR3	g17P	39.28	0.000	-6.778	-3.272	-6.778	-0.823	-2.184
XBR3	g17X	24.57	5.628	-1.028	1.814	5.628	-1.028	-0.284
XBR3	g17XY	26.69	6.113	0.000	3.056	6.113	0.812	1.955
XBR3	g17Y	39.59	0.000	-6.831	-3.547	-6.831	-0.865	-1.249
XBR3	g18P	32.10	7.351	0.000	2.555	2.842	3.819	7.351
XBR3	g18X	28.68	6.567	0.000	3.040	3.392	3.896	6.567
XBR3	g18XY	10.48	2.401	-1.731	1.193	2.401	-0.018	-1.731
XBR3	g18Y	15.71	0.976	-2.710	-0.704	0.976	-1.799	-2.710
XBR3	g19P	26.42	6.052	-0.892	2.033	6.052	-0.892	-0.077
XBR3	g19X	42.55	0.000	-7.343	-3.555	-7.343	-1.022	-2.524
XBR3	g19XY	43.84	0.000	-7.564	-3.636	-7.564	-0.827	-1.650
XBR3	g19Y	29.28	6.706	0.000	3.082	6.706	0.715	2.229
XBR3	g20P	18.03	0.817	-3.111	-0.856	0.817	-2.009	-3.111
XBR3	g20X	12.11	2.288	-2.090	0.989	2.288	-0.285	-2.090
XBR3	g20XY	29.66	6.792	0.000	3.186	3.382	4.103	6.792
XBR3	g20Y	33.26	7.616	0.000	2.647	2.872	3.967	7.616
XBR2	g21P	35.71	1.069	-6.781	-2.245	-6.781	1.069	-0.770
XBR2	g21X	36.68	8.401	0.000	5.223	8.401	1.586	1.964
XBR2	g21XY	39.82	9.118	0.000	5.979	9.118	3.061	3.851
XBR2	g21Y	37.24	1.353	-7.071	-1.919	-7.071	1.353	-1.149
XBR2	g22P	27.57	6.314	0.000	2.430	2.655	3.180	6.314
XBR2	g22X	15.03	3.442	-1.280	0.131	-1.280	1.821	3.442
XBR2	g22XY	24.18	0.000	-4.592	-2.070	-1.634	-2.760	-4.592
XBR2	g22Y	33.35	0.000	-6.332	-1.892	-0.676	-3.660	-6.332
XBR2	g23P	40.19	0.000	-7.630	-3.021	-7.630	-0.049	-2.618
XBR2	g23X	37.20	8.519	0.000	5.018	8.519	1.070	0.577
XBR2	g23XY	40.40	9.253	0.000	6.438	9.253	3.850	5.573
XBR2	g23Y	35.95	2.394	-6.825	-1.252	-6.825	2.394	0.123
XBR2	g24P	27.23	6.235	-0.274	0.690	-0.274	2.817	6.235
XBR2	g24X	20.37	4.664	0.000	1.473	1.903	2.126	4.664
XBR2	g24XY	24.25	1.095	-4.604	-1.488	1.095	-3.607	-4.604
XBR2	g24Y	40.27	0.000	-7.646	-4.124	-3.703	-4.888	-7.646
XBR4	g25P	21.21	0.000	-2.304	-1.586	-0.287	-1.660	-2.304
XBR4	g25X	24.65	0.000	-2.677	-1.286	-1.410	-2.082	-2.677
XBR4	g25XY	19.12	2.914	0.000	0.951	0.600	0.888	2.914
XBR4	g25Y	10.49	0.000	-1.314	-1.314	-1.057	-0.468	-0.119
XBR4	g26P	30.06	0.195	-3.265	-1.325	-3.265	0.195	-0.700
XBR4	g26X	19.05	2.904	-0.758	1.767	2.904	0.315	-0.758
XBR4	g26XY	16.46	2.509	-0.268	0.446	2.509	-0.268	1.666
XBR4	g26Y	30.97	0.000	-3.363	-2.110	-3.363	-1.085	-0.727
XBR5	g27P	9.27	1.738	0.000	0.716	0.809	1.301	1.738
XBR5	g27X	9.34	1.752	0.000	0.985	0.140	1.067	1.752
XBR5	g27XY	4.63	0.867	0.000	0.867	0.813	0.287	0.377
XBR5	g27Y	26.67	0.000	-2.371	-0.989	-0.739	-0.899	-2.371
XBR5	g28P	12.57	2.357	0.000	1.469	2.357	0.744	0.383
XBR5	g28X	18.71	0.136	-1.663	-0.276	-1.663	0.136	-1.367
XBR5	g28XY	22.23	0.586	-1.976	-1.300	-1.976	-0.282	0.586
XBR5	g28Y	12.52	2.348	-0.183	0.923	2.348	-0.183	0.504
XBR5	g29P	21.07	0.000	-1.456	-0.979	-0.609	-0.899	-1.456
XBR5	g29X	12.81	0.000	-0.885	-0.378	-0.242	-0.845	-0.885
XBR5	g29XY	10.08	1.890	0.000	0.834	0.899	0.643	1.890
XBR5	g29Y	13.35	0.000	-1.177	-0.962	-1.177	-0.455	-0.724
XBR5	g30P	21.37	0.239	-1.477	-0.525	-1.477	0.239	-0.210
XBR5	g30X	6.64	1.244	-0.389	0.910	1.244	0.270	-0.389
XBR5	g30XY	5.04	0.946	-0.206	0.026	0.946	-0.206	0.793
XBR5	g30Y	23.44	0.000	-1.620	-1.086	-1.620	-0.671	-0.469
XBR6	g31P	0.00	0.000	0.000	0.000	0.000	0.000	0.000
XBR6	g31X	16.51	3.143	0.000	1.119	3.143	0.291	2.363

XBR6 g31XY	34.02	6.477	0.000	1.211	3.935	2.271	6.477
XBR6 g31Y	41.87	1.963	-0.945	-0.945	0.000	0.790	1.963
XBR6 g32P	10.74	2.046	0.000	0.261	0.057	1.284	2.046
XBR6 g32X	34.78	6.623	-0.248	2.665	6.623	-0.248	1.252
XBR6 g32XY	55.39	6.340	-1.250	1.865	6.340	-1.250	0.659
XBR6 g32Y	0.00	0.000	0.000	0.000	0.000	0.000	0.000
XBR7 g33P	0.00	0.000	0.000	0.000	0.000	0.000	0.000
XBR7 g33X	31.17	4.547	-0.172	1.986	4.547	-0.172	0.304
XBR7 g33XY	53.66	7.827	0.000	2.332	3.891	3.118	7.827
XBR7 g33Y	43.44	0.100	-0.461	0.000	0.000	-0.461	0.100
XBR7 g34P	9.13	1.331	0.000	0.000	0.000	0.158	1.331
XBR7 g34X	41.36	6.032	0.000	2.198	6.032	2.763	5.839
XBR7 g34XY	40.26	5.872	0.000	1.799	5.872	0.000	0.000
XBR7 g34Y	0.00	0.000	0.000	0.000	0.000	0.000	0.000
XBR3 g35P	35.92	2.772	-0.038	0.797	2.772	-0.038	0.970
XBR3 g35X	35.87	0.000	-3.537	-1.215	-3.537	-0.398	-1.800
XBR3 g35XY	37.71	0.000	-3.718	-1.201	-2.979	-1.402	-3.718
XBR3 g35Y	39.62	3.057	0.000	0.837	2.243	1.063	3.057
XBR3 g36P	18.73	0.000	-1.847	-0.177	-0.570	-0.531	-1.847
XBR3 g36X	27.03	0.000	-2.665	-0.238	-0.197	-1.206	-2.665
XBR3 g36XY	29.86	2.304	-0.071	0.037	-0.071	0.956	2.304
XBR3 g36Y	9.91	0.765	-0.609	-0.265	-0.609	0.140	0.765
HBR1 g37P	99.80	0.000	-5.787	-2.806	-5.787	-1.542	-0.846
HBR1 g37X	50.94	3.931	-1.836	-0.607	3.931	-1.836	-0.925
HBR1 g38P	61.59	4.753	0.000	3.342	4.753	2.459	1.758
HBR1 g38X	36.78	2.838	-0.877	1.865	-0.877	2.838	2.497
HBR1 g39P	20.09	1.550	0.000	1.550	0.702	1.146	0.105
HBR1 g39X	24.71	1.906	-0.873	1.305	-0.873	1.906	0.270
HBR1 g40P	46.96	3.624	0.000	2.400	3.624	1.014	0.835
HBR1 g40X	45.49	1.175	-2.638	-0.285	-2.638	1.175	0.511
HBR2 g41P	52.51	0.406	-5.498	-2.086	-5.498	0.406	-0.848
HBR2 g41X	11.59	0.894	-0.172	0.323	0.894	-0.172	0.171
HBR2 g42P	12.68	0.201	-1.328	-0.332	-1.328	0.201	-0.188
HBR2 g42Y	33.50	0.000	-3.507	-0.308	-1.566	-1.362	-3.507
HBR3 g43P	55.90	0.000	-5.853	-2.166	-5.853	-0.550	-1.569
HBR3 g43X	11.85	1.241	0.000	0.477	1.241	0.325	0.840
HBR3 g44P	13.16	0.303	-1.378	-0.866	-1.378	-0.029	0.303
HBR3 g44Y	39.69	0.000	-4.156	-0.582	-1.108	-1.636	-4.156
HBR4 g45P	40.02	0.000	-4.190	-1.831	-4.190	-0.394	-1.045
HBR4 g45X	9.19	0.962	-0.068	-0.012	0.962	-0.068	0.906
HBR4 g45XY	8.14	0.852	-0.019	-0.019	0.852	0.130	0.657
HBR4 g45Y	46.96	0.000	-4.916	-1.862	-3.317	-2.099	-4.916
HBR4 g46P	30.23	0.652	-3.165	-1.095	-3.165	0.136	0.652
HBR4 g46X	16.08	1.684	-0.044	-0.044	0.173	0.446	1.684
HBR4 g46XY	6.48	0.208	-0.678	0.035	0.208	-0.161	-0.678
HBR4 g46Y	36.69	0.000	-3.842	-1.344	-3.279	-1.820	-3.842
Arm1 g47P	13.31	0.000	-2.543	-2.543	-1.112	-2.096	-0.811
Arm1 g47X	4.92	1.545	0.000	1.545	1.216	0.966	0.565
Arm1 g47XY	4.99	1.567	0.000	1.567	1.219	1.012	0.617
Arm1 g47Y	10.29	3.232	0.000	2.773	0.847	3.232	1.173
Arm1 g48P	17.76	7.677	0.000	3.569	2.040	5.026	7.677
Arm1 g48Y	14.20	6.140	-2.741	6.140	3.180	4.581	-2.741
Arm1 g49P	20.11	0.000	-5.733	-5.733	-3.686	-5.166	-3.235
Arm1 g49X	29.36	0.000	-8.371	-7.515	-3.308	-8.371	-4.774
Arm1 g49XY	10.38	0.000	-2.959	-2.391	-0.267	-2.959	-0.700
Arm1 g49Y	16.68	0.000	-4.755	-4.755	-2.746	-3.937	-1.383
Arm1 g50P	27.67	0.000	-7.257	-6.408	-3.844	-7.257	-7.148
Arm1 g50Y	14.34	1.243	-3.760	-3.760	-1.956	-2.919	1.243
Arm1 g51P	17.67	0.000	-4.892	-4.892	-2.613	-3.730	-0.803

Arm1	g51X	13.96	0.000	-3.863	-3.599	-1.049	-3.863	-0.580
Arm1	g51XY	8.04	0.002	-2.226	-0.947	0.002	-2.089	-2.226
Arm1	g51Y	9.07	0.000	-2.512	-2.512	-2.311	-2.281	-2.392
Arm1	g52P	21.04	0.000	-5.517	-5.517	-2.711	-5.406	-3.080
Arm1	g52Y	10.28	0.000	-2.697	-2.683	-1.469	-2.697	-0.912
Arm2	g53P	37.08	0.000	-9.096	-9.096	-4.704	-8.414	-3.805
Arm2	g53X	35.08	0.000	-8.604	-7.894	-3.577	-8.604	-4.472
Arm2	g53XY	25.21	0.000	-6.183	-5.506	-1.665	-6.183	-2.562
Arm2	g53Y	28.88	0.000	-7.083	-7.083	-4.574	-6.423	-3.800
Arm2	g54P	26.78	0.000	-7.863	-7.863	-3.563	-7.629	-2.945
Arm2	g54Y	22.88	0.000	-6.717	-6.454	-2.779	-6.717	-3.497
ArmBR1	g55P	17.52	0.000	-1.834	-1.832	-0.847	-1.834	-0.852
ArmBR1	g55X	29.47	0.000	-3.086	-3.075	-1.532	-3.086	-1.559
ArmBR2	g56P	66.97	5.284	0.000	5.145	2.399	5.284	2.927
ArmBR2	g56X	59.88	4.724	0.000	4.556	2.205	4.724	2.829
ArmBR2	g56XY	82.67	6.522	0.000	6.522	3.244	6.381	2.699
ArmBR2	g56Y	53.08	4.187	0.000	4.187	2.194	4.060	1.699
ArmBR2R	g57P	68.37	7.158	0.000	7.158	3.679	7.132	3.609
ArmBR2R	g57X	69.64	7.291	0.000	7.272	3.418	7.291	3.428
ArmBR2R	g57XY	76.07	7.964	0.000	7.942	3.925	7.964	4.006
ArmBR2R	g57Y	77.61	8.126	0.000	8.095	3.922	8.126	4.052
ArmBR2	g58P	84.28	6.649	0.000	6.525	3.065	6.649	3.451
ArmBR2	g58X	87.00	6.863	0.000	6.844	3.526	6.863	3.632
ArmBR2	g58XY	93.43	7.370	0.000	7.370	3.930	7.241	3.546
ArmBR2	g58Y	92.88	7.327	0.000	7.298	3.251	7.327	3.280
ArmBR2	g59P	31.11	2.454	0.000	2.454	1.137	1.890	0.000
ArmBR2	g59X	35.24	2.780	0.000	2.780	1.566	2.270	0.000
ArmBR2	g59XY	59.85	4.722	0.000	4.180	1.864	4.722	3.506
ArmBR2	g59Y	64.77	5.109	0.000	4.560	2.412	5.109	3.538
PMBR1	g60P	68.78	7.012	-6.902	1.863	7.012	-1.768	-6.902
PMBR1	g60X	67.61	0.000	-6.893	-0.913	-6.512	-1.023	-6.893
PMBR1	g60XY	69.68	7.104	-6.761	-1.506	-6.761	2.106	7.104
PMBR1	g60Y	74.87	7.634	0.000	2.527	7.294	2.622	7.634
PMBR1	g61P	51.57	5.258	-3.933	-0.532	-3.933	1.897	5.258
PMBR1	g61X	50.34	5.133	0.000	1.067	4.909	1.059	5.133
PMBR1	g61XY	49.79	5.076	-3.998	1.500	5.076	-0.895	-3.998
PMBR1	g61Y	41.94	0.000	-4.276	-1.219	-4.276	-1.133	-4.156
PMBR1	g62P	9.47	0.000	-0.966	-0.966	-0.893	-0.805	-0.219
PMBR1	g62X	13.79	0.000	-1.406	-1.391	-1.288	-1.316	-1.406
PMBR1	g62XY	10.14	0.000	-1.033	-0.910	-0.330	-1.033	-0.318
PMBR1	g62Y	15.65	0.000	-1.596	-1.338	-1.596	-1.195	-1.449
PMBR1	g63P	6.42	0.132	-0.655	-0.400	0.132	-0.655	-0.585
PMBR1	g63X	11.81	0.000	-1.204	-0.868	-0.727	-1.107	-1.204
PMBR1	g63XY	16.21	0.067	-1.653	-1.419	-1.653	-0.635	0.067
PMBR1	g63Y	9.88	1.008	0.000	0.269	0.895	0.144	1.008
PMBR2	g64P	30.37	0.000	-3.180	-0.818	-2.429	-1.095	-3.180
PMBR2	g64X	21.37	0.000	-2.238	-1.250	-2.238	-0.252	-0.383
PMBR2	g64XY	25.69	0.000	-2.690	-1.111	-2.061	-1.515	-2.690
PMBR2	g64Y	23.14	0.431	-2.423	-0.858	-2.423	0.431	0.347
Powermnt	g65P	16.87	0.000	-19.454	-19.454	-7.658	-19.356	-7.475
Powermnt	g66P	13.16	0.000	-14.923	-14.923	-6.692	-14.828	-6.515
Powermnt	g67P	9.77	0.000	-11.662	-11.662	-5.498	-11.589	-5.361
Powermnt	g68P	8.00	0.000	-9.522	-9.522	-4.651	-9.473	-4.555
Powermnt	g69P	6.36	0.000	-7.625	-7.625	-3.866	-7.600	-3.813
Powermnt	g70P	4.97	0.000	-5.933	-5.931	-2.565	-5.933	-2.587
Powermnt	g71P	1.56	0.000	-1.861	-1.860	-1.039	-1.861	-1.046
fic1	g72P	0.00	0.000	0.000	0.000	0.000	0.000	0.000
fic1	g72X	0.00	0.000	0.000	0.000	0.000	0.000	0.000
fic1	g73P	0.00	0.000	0.000	0.000	0.000	0.000	0.000

fic1	g73Y	0.00	0.000	0.000	0.000	0.000	0.000	0.000
fic	g74P	0.00	0.072	0.000	0.002	0.072	0.002	0.072
fic	g74X	0.00	0.072	0.000	0.000	0.072	0.000	0.072
fic	g75P	0.00	0.072	0.000	0.002	0.072	0.002	0.072
fic	g75X	0.00	0.072	0.000	0.000	0.072	0.000	0.072
fic	g76P	0.00	0.072	0.000	0.002	0.072	0.002	0.072
fic	g76Y	0.00	0.072	0.000	0.002	0.072	0.002	0.072
fic	g77P	0.00	0.072	0.000	0.002	0.072	0.002	0.072
fic	g77Y	0.00	0.072	0.000	0.002	0.072	0.002	0.072
HBR5	g78P	11.07	0.000	-1.159	-1.088	-0.151	-1.159	-0.291
HBR5	g78X	11.95	0.000	-1.251	-1.251	-0.805	-1.117	-0.397
HBR5	g78XY	14.10	0.000	-1.476	-1.476	-0.872	-1.420	-0.770
HBR5	g78Y	13.26	0.000	-1.389	-1.244	-0.271	-1.389	-0.717

*** Analysis Results for Load Case No. 1 "NESC Heavy - Transverse" - Number of iterations in SAPS 46

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

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	0.0988	0.2403	-0.002215	-0.3256	0.1495	0.0068	2.599	-2.26	86
2P	0.1056	0.2398	0.06271	-0.2887	0.1351	0.0396	0.1056	-13.51	86.06
3P	0.08756	0.2093	-0.00208	-0.3378	0.1549	0.0107	2.588	-2.291	81
4P	0.08805	0.2105	0.03997	-0.2609	0.1297	0.0062	0.08805	-9.54	81.04
5P	0.07097	0.1722	-0.0023	-0.3522	0.1382	0.0137	2.571	-2.328	75
6P	0.0649	0.1549	-0.002434	-0.2947	0.0931	0.0152	2.565	-2.345	72
7P	0.05988	0.1408	-0.002489	-0.2665	0.1262	0.0165	2.56	-2.359	69
8P	0.06337	0.1428	0.02723	-0.0489	0.1179	0.0198	0.06337	-14.11	69.03
9P	0.04781	0.113	-0.002849	-0.2901	0.1107	0.0159	2.548	-2.387	64
10P	0.04022	0.09386	-0.003427	-0.1870	0.1072	0.0151	2.54	-2.406	59
11P	0.04319	0.09406	0.02546	-0.1776	0.0994	0.0262	0.04319	-10.16	59.03
12P	0.03105	0.07668	-0.002934	-0.1852	0.0956	0.0113	3.219	-3.111	54.04
13P	0.0237	0.06167	-0.002548	-0.1152	0.0648	0.0184	4.037	-3.952	48.1
14P	0.01684	0.05017	-0.002649	-0.0982	0.0558	0.0144	4.924	-4.857	41.5
15P	0.006305	0.02613	-0.001524	-0.0721	0.0433	0.0087	6.909	-6.876	27
16P	-0.000264	0.0008782	0.0002221	-0.0059	-0.0276	-0.1331	10	-9.999	5
17P	0	0	0	0.0000	0.0000	0.0000	10.69	-10.69	0
22P	0.1417	0.3956	-0.004472	-0.5245	0.1373	0.0093	0.1417	0.3956	104
23P	0.1201	0.314	-0.004037	-0.5074	0.1371	0.0093	0.1201	0.314	95
24P	0.09869	0.2406	-0.003586	-0.4035	0.1361	0.0090	0.09869	0.2406	86
25P	0.08683	0.2084	-0.003378	-0.3484	0.1358	0.0088	0.08683	0.2084	81
26P	0.05914	0.1399	-0.002881	-0.3023	0.1249	0.0092	0.05914	0.1399	69
27P	0.03917	0.09273	-0.002474	-0.2293	0.1027	0.0094	0.03917	0.09273	59
28P	0.003543	0.02314	-0.001251	-0.0726	0.0266	0.0081	0.003543	0.02314	27
29P	0	0	0	0.0000	0.0000	0.0000	0	0	0
30P	0.03932	-0.1002	-0.4738	0.0000	0.0000	0.0000	0.03932	0.3998	85.53
31P	-0.4013	0.7404	-0.01803	0.0000	0.0000	0.0000	0.09869	0.7404	85.98
32P	0.03846	-0.02575	-0.4873	0.0000	0.0000	0.0000	0.03846	0.4742	103.5
33P	-0.3583	0.8954	-0.01892	0.0000	0.0000	0.0000	0.1417	0.8954	104
1X	0.09821	0.2407	-0.03193	-0.3869	0.1459	0.0058	2.598	2.741	85.97
1XY	0.09839	0.2399	-0.02042	-0.3798	0.1178	0.0074	-2.402	2.74	85.98
1Y	0.0996	0.2392	0.009381	-0.3216	0.1274	0.0197	-2.4	-2.261	86.01
2X	0.09637	0.2405	-0.1095	-0.4463	0.1344	0.0100	0.09637	13.99	85.89
3X	0.08698	0.2084	-0.0314	-0.3633	0.1354	0.0007	2.587	2.708	80.97
3XY	0.08647	0.2083	-0.01985	-0.3673	0.1344	0.0003	-2.414	2.708	80.98
3Y	0.08665	0.2089	0.009462	-0.3276	0.1178	0.0041	-2.413	-2.291	81.01
4X	0.08813	0.207	-0.08148	-0.4770	0.1323	-0.0163	0.08813	9.957	80.92
5X	0.07274	0.1746	-0.03003	-0.3146	0.1643	0.0034	2.573	2.675	74.97
5XY	0.07197	0.1733	-0.01889	-0.3103	0.1095	0.0056	-2.428	2.673	74.98
5Y	0.07514	0.1724	0.008835	-0.3668	0.1275	0.0071	-2.425	-2.328	75.01
6X	0.06415	0.1575	-0.02896	-0.3383	0.1335	0.0051	2.564	2.657	71.97
6XY	0.06647	0.1569	-0.0182	-0.3294	0.1281	0.0082	-2.434	2.657	71.98
6Y	0.06746	0.154	0.008331	-0.3097	0.1630	0.0082	-2.433	-2.346	72.01
7X	0.05884	0.1398	-0.02779	-0.3232	0.0979	0.0067	2.559	2.64	68.97
7XY	0.05848	0.139	-0.0174	-0.3339	0.1504	0.0107	-2.442	2.639	68.98
7Y	0.05946	0.1399	0.007914	-0.2581	0.1168	0.0097	-2.441	-2.36	69.01
8X	0.05824	0.137	-0.1223	-0.5594	0.1188	-0.0022	0.05824	14.39	68.88
9X	0.05004	0.1173	-0.02506	-0.2612	0.1237	0.0122	2.55	2.617	63.97
9XY	0.04598	0.1153	-0.01577	-0.2593	0.1129	0.0101	-2.454	2.615	63.98
9Y	0.05086	0.1129	0.006578	-0.2956	0.1191	0.0154	-2.449	-2.387	64.01

10X	0.03856	0.0931	-0.02155	-0.2402	0.1036	0.0179	2.539	2.593	58.98
10XY	0.03865	0.09191	-0.01384	-0.2500	0.0804	0.0097	-2.461	2.592	58.99
10Y	0.03956	0.0923	0.004885	-0.1940	0.0900	0.0208	-2.46	-2.408	59
11X	0.03762	0.09188	-0.06203	-0.3695	0.0860	0.0044	0.03762	10.34	58.94
12X	0.03287	0.07851	-0.02112	-0.1373	0.0432	0.0224	3.221	3.266	54.03
12XY	0.02995	0.07447	-0.01345	-0.1717	0.0994	0.0099	-3.158	3.262	54.03
12Y	0.03322	0.07459	0.00635	-0.1855	0.0733	0.0266	-3.155	-3.113	54.05
13X	0.02639	0.0636	-0.01984	-0.1333	0.0576	0.0232	4.04	4.077	48.08
13XY	0.02272	0.05712	-0.01267	-0.1480	0.0443	0.0095	-3.991	4.07	48.09
13Y	0.02496	0.05749	0.007331	-0.1388	0.0753	0.0252	-3.988	-3.956	48.11
14X	0.01873	0.05002	-0.01815	-0.1040	0.0630	0.0261	4.926	4.957	41.48
14XY	0.0186	0.04211	-0.01177	-0.1064	0.0500	0.0157	-4.889	4.95	41.49
14Y	0.01772	0.04226	0.007468	-0.1100	0.0560	0.0300	-4.89	-4.865	41.51
15X	0.0005049	0.02581	-0.01493	-0.0829	0.0350	0.0274	6.903	6.928	26.99
15XY	0.0003349	0.01961	-0.007572	-0.0718	0.0425	0.0270	-6.902	6.922	26.99
15Y	0.007095	0.01983	0.006741	-0.0541	0.0267	0.0449	-6.895	-6.882	27.01
16X	-3.294e-005	0.0005004	-0.003965	-0.0163	-0.0070	0.0178	10	10	4.996
16XY	-2.755e-005	0.0005058	-0.002137	-0.0120	-0.0017	-0.0166	-10	10	4.998
16Y	0.0004542	0.0008915	0.002209	-0.0022	0.0323	0.1398	-10	-9.999	5.002
17X	0	0	0	0.0000	0.0000	0.0000	10.69	10.69	0
17XY	0	0	0	0.0000	0.0000	0.0000	-10.69	10.69	0
17Y	0	0	0	0.0000	0.0000	0.0000	-10.69	-10.69	0
30X	0.09869	1.24	-0.01803	0.0000	0.0000	0.0000	0.09869	0.7404	85.98
31Y	0.5987	0.7404	-0.01803	0.0000	0.0000	0.0000	0.09869	0.7404	85.98
32X	0.1417	1.395	-0.01892	0.0000	0.0000	0.0000	0.1417	0.8954	104
33Y	0.6417	0.8954	-0.01892	0.0000	0.0000	0.0000	0.1417	0.8954	104
18S	0.06478	0.1562	-0.01494	0.0000	0.0000	0.0000	2.565	0.1562	71.99
19S	0.06615	0.2281	0.001651	0.0000	0.0000	0.0000	0.06615	-2.272	72
20S	0.00279	0.000504	0.0001628	-0.0124	-0.0173	0.0278	10	0.000504	5
21S	6.893e-005	0.04715	-0.006883	-0.0049	0.0074	-0.0017	6.893e-005	-9.953	4.993
18Y	0.06669	0.1554	-0.004528	0.0000	0.0000	0.0000	-2.433	0.1554	72
19X	0.06531	0.08685	-0.02304	0.0000	0.0000	0.0000	0.06531	2.587	71.98
20Y	-0.00348	0.0005106	0.0002874	-0.0151	0.0153	-0.0287	-10	0.0005106	5
21X	-2.196e-005	-0.004994	-0.0009331	-0.0142	0.0100	-0.0003	-2.196e-005	9.995	4.999

Joint Support Reactions for Load Case "NESC Heavy - Transverse":

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 %
17P	0.52	0.0	-1.46	0.0	0.0	5.15	0.0	0.0	5.38	0.0	-0.02	0.0	0.0	0.0	0.0	0.26	0.0	0.0
29P	0.10	0.0	-0.65	0.0	0.0	-20.56	0.0	0.0	20.57	0.0	5.43	0.0	0.3	0.0	0.0	-0.23	0.0	0.0
17X	-7.57	0.0	-8.43	0.0	0.0	-53.70	0.0	0.0	54.88	0.0	-0.07	0.0	0.1	0.0	0.0	-0.04	0.0	0.0
17XY	4.32	0.0	-5.12	0.0	0.0	-29.80	0.0	0.0	30.54	0.0	-0.01	0.0	-0.1	0.0	0.0	0.03	0.0	0.0
17Y	-4.43	0.0	-5.19	0.0	0.0	31.80	0.0	0.0	32.52	0.0	-0.05	0.0	0.0	0.0	0.0	-0.28	0.0	0.0

Joint Displacements, Loads and Member Forces on Joints for Load Case "NESC Heavy - Transverse":

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	0.1232	-0.3062	-0.0000	-0.1232	0.3062	0.0988	0.2403	-0.0022
2P	1.1500	0.9117	-1.4433	-1.1500	-0.9117	1.4433	0.1056	0.2398	0.0627
3P	0.0000	0.2764	-0.6303	-0.0000	-0.2764	0.6303	0.0876	0.2093	-0.0021
4P	0.0500	1.3628	-3.6913	-0.0500	-1.3628	3.6913	0.0880	0.2105	0.0400
5P	0.0000	0.0949	-0.1034	0.0000	-0.0949	0.1034	0.0710	0.1722	-0.0023

6P	0.0000	0.0469	-0.0601	-0.0000	-0.0469	0.0601	0.0649	0.1549	-0.0024
7P	0.0000	0.2872	-0.6832	-0.0000	-0.2872	0.6832	0.0599	0.1408	-0.0025
8P	0.6000	1.3416	-3.7363	-0.6000	-1.3416	3.7363	0.0634	0.1428	0.0272
9P	0.0000	0.1229	-0.1316	0.0000	-0.1229	0.1316	0.0478	0.1130	-0.0028
10P	0.0000	0.3437	-0.8063	-0.0000	-0.3437	0.8063	0.0402	0.0939	-0.0034
11P	1.2750	1.3461	-3.6801	-1.2750	-1.3461	3.6801	0.0432	0.0941	0.0255
12P	0.0000	0.1099	-0.1414	-0.0000	-0.1099	0.1414	0.0311	0.0767	-0.0029
13P	0.0000	0.1357	-0.1714	-0.0000	-0.1357	0.1714	0.0237	0.0617	-0.0025
14P	0.0000	0.5020	-1.0756	-0.0000	-0.5020	1.0756	0.0168	0.0502	-0.0026
15P	0.0000	0.6781	-1.4846	-0.0000	-0.6781	1.4846	0.0063	0.0261	-0.0015
16P	0.0000	0.5385	-1.1452	0.0000	-0.5385	1.1452	-0.0003	0.0009	0.0002
17P	0.0000	0.0741	-0.0944	-0.5154	1.3866	5.2493	0.0000	0.0000	0.0000
22P	0.0000	0.3900	-1.8635	-0.0000	-0.3900	1.8635	0.1417	0.3956	-0.0045
23P	0.0000	1.2540	-4.0811	0.0000	-1.2540	4.0811	0.1201	0.3140	-0.0040
24P	0.0000	0.0000	-0.8692	-0.0000	0.0000	0.8693	0.0987	0.2406	-0.0036
25P	0.0000	0.2040	-1.0707	-0.0000	-0.2040	1.0707	0.0868	0.2084	-0.0034
26P	0.0000	0.3740	-1.3748	-0.0000	-0.3740	1.3748	0.0591	0.1399	-0.0029
27P	0.0000	0.7140	-2.6529	-0.0000	-0.7140	2.6529	0.0392	0.0927	-0.0025
28P	0.0000	1.0030	-4.4812	0.0000	-1.0030	4.4812	0.0035	0.0231	-0.0013
29P	0.0000	0.4590	-1.1039	-0.0956	0.1892	-19.4539	0.0000	0.0000	0.0000
30P	0.0000	0.0000	-0.0001	0.0000	-0.0000	0.0001	0.0393	-0.1002	-0.4738
31P	0.0000	0.0024	-0.0001	0.0000	-0.0024	0.0001	-0.4013	0.7404	-0.0180
32P	0.0000	0.0000	-0.0001	0.0000	-0.0000	0.0001	0.0385	-0.0258	-0.4873
33P	0.0000	0.0024	-0.0001	0.0000	-0.0024	0.0001	-0.3583	0.8954	-0.0189
1X	0.0000	0.0570	-0.3062	-0.0000	-0.0570	0.3062	0.0982	0.2407	-0.0319
1XY	0.0000	0.0570	-0.3062	0.0000	-0.0570	0.3062	0.0984	0.2399	-0.0204
1Y	0.0000	0.0662	-0.1322	0.0000	-0.0662	0.1322	0.0996	0.2392	0.0094
2X	0.0000	1.1000	-2.4183	0.0000	-1.1000	2.4183	0.0964	0.2405	-0.1095
3X	0.0000	0.1010	-0.8603	0.0000	-0.1010	0.8603	0.0870	0.2084	-0.0314
3XY	0.0000	0.0570	-0.3543	0.0000	-0.0570	0.3543	0.0865	0.2083	-0.0199
3Y	0.0000	0.1764	-0.5593	-0.0000	-0.1764	0.5593	0.0866	0.2089	0.0095
4X	2.2000	1.3000	-3.6913	-2.2000	-1.3000	3.6913	0.0881	0.2070	-0.0815
5X	0.0000	0.0000	-0.1034	0.0000	0.0000	0.1034	0.0727	0.1746	-0.0300
5XY	0.0000	0.0000	-0.1034	-0.0000	0.0000	0.1034	0.0720	0.1733	-0.0189
5Y	0.0000	0.0949	-0.1034	0.0000	-0.0949	0.1034	0.0751	0.1724	0.0088
6X	0.0000	0.0000	-0.0601	0.0000	0.0000	0.0601	0.0642	0.1575	-0.0290
6XY	0.0000	0.0000	-0.0601	0.0000	0.0000	0.0601	0.0665	0.1569	-0.0182
6Y	0.0000	0.0469	-0.0601	0.0000	-0.0469	0.0601	0.0675	0.1540	0.0083
7X	0.0000	0.0440	-0.6832	-0.0000	-0.0440	0.6832	0.0588	0.1398	-0.0278
7XY	0.0000	0.0000	-0.1772	0.0000	0.0000	0.1772	0.0585	0.1390	-0.0174
7Y	0.0000	0.1582	-0.5562	-0.0000	-0.1582	0.5562	0.0595	0.1399	0.0079
8X	0.6250	1.3000	-3.7363	-0.6250	-1.3000	3.7363	0.0582	0.1370	-0.1223
9X	0.0000	0.0000	-0.1316	0.0000	-0.0000	0.1316	0.0500	0.1173	-0.0251
9XY	0.0000	0.0000	-0.1316	-0.0000	0.0000	0.1316	0.0460	0.1153	-0.0158
9Y	0.0000	0.1229	-0.1316	0.0000	-0.1229	0.1316	0.0509	0.1129	0.0066
10X	0.0000	0.0540	-0.8063	0.0000	-0.0540	0.8063	0.0386	0.0931	-0.0215
10XY	0.0000	0.0000	-0.1853	0.0000	0.0000	0.1853	0.0386	0.0919	-0.0138
10Y	0.0000	0.1857	-0.6503	-0.0000	-0.1857	0.6503	0.0396	0.0923	0.0049
11X	1.1750	1.3000	-3.6801	-1.1750	-1.3000	3.6801	0.0376	0.0919	-0.0620
12X	0.0000	0.0000	-0.1414	-0.0000	-0.0000	0.1414	0.0329	0.0785	-0.0211
12XY	0.0000	0.0000	-0.1414	0.0000	0.0000	0.1414	0.0299	0.0745	-0.0134
12Y	0.0000	0.1099	-0.1414	0.0000	-0.1099	0.1414	0.0332	0.0746	0.0064
13X	0.0000	0.0000	-0.1714	-0.0000	-0.0000	0.1714	0.0264	0.0636	-0.0198
13XY	0.0000	0.0000	-0.1714	0.0000	0.0000	0.1714	0.0227	0.0571	-0.0127
13Y	0.0000	0.1357	-0.1714	0.0000	-0.1357	0.1714	0.0250	0.0575	0.0073
14X	0.0000	0.0640	-1.0756	-0.0000	-0.0640	1.0756	0.0187	0.0500	-0.0181
14XY	0.0000	0.0000	-0.3396	0.0000	-0.0000	0.3396	0.0186	0.0421	-0.0118
14Y	0.0000	0.3140	-0.8906	0.0000	-0.3140	0.8906	0.0177	0.0423	0.0075
15X	0.0000	0.0740	-1.4846	0.0000	-0.0740	1.4846	0.0005	0.0258	-0.0149

15XY	0.0000	0.0000	-0.6336	0.0000	0.0000	0.6336	0.0003	0.0196	-0.0076
15Y	0.0000	0.4611	-1.2706	0.0000	-0.4611	1.2706	0.0071	0.0198	0.0067
16X	0.0000	0.0640	-1.1452	-0.0000	-0.0640	1.1452	-0.0000	0.0005	-0.0040
16XY	0.0000	0.0000	-0.4092	0.0000	-0.0000	0.4092	-0.0000	0.0005	-0.0021
16Y	0.0000	0.3505	-0.9602	-0.0000	-0.3505	0.9602	0.0005	0.0009	0.0022
17X	0.0000	0.0000	-0.0944	7.5743	8.4287	-53.6026	0.0000	0.0000	0.0000
17XY	0.0000	0.0000	-0.0944	-4.3203	5.1250	-29.7045	0.0000	0.0000	0.0000
17Y	0.0000	0.0741	-0.0944	4.4321	5.1152	31.8900	0.0000	0.0000	0.0000
30X	0.0000	0.0024	-0.0001	0.0000	-0.0024	0.0001	0.0987	1.2404	-0.0180
31Y	0.0000	0.0024	-0.0001	0.0000	-0.0024	0.0001	0.5987	0.7404	-0.0180
32X	0.0000	0.0024	-0.0001	0.0000	-0.0024	0.0001	0.1417	1.3954	-0.0189
33Y	0.0000	0.0024	-0.0001	0.0000	-0.0024	0.0001	0.6417	0.8954	-0.0189
18S	0.0000	0.0000	-0.0436	0.0000	-0.0000	0.0436	0.0648	0.1562	-0.0149
19S	0.0000	0.0741	-0.0461	0.0000	-0.0741	0.0461	0.0662	0.2281	0.0017
20S	0.0000	0.0000	-0.1556	0.0000	0.0000	0.1556	0.0028	0.0005	0.0002
21S	0.0000	0.2011	-0.1556	0.0000	-0.2011	0.1556	0.0001	0.0472	-0.0069
18Y	0.0000	0.0000	-0.0436	0.0000	-0.0000	0.0436	0.0667	0.1554	-0.0045
19X	0.0000	0.0000	-0.0461	0.0000	-0.0000	0.0461	0.0653	0.0869	-0.0230
20Y	0.0000	0.0000	-0.1556	-0.0000	-0.0000	0.1556	-0.0035	0.0005	0.0003
21X	0.0000	0.0000	-0.1556	-0.0000	-0.0000	0.1556	-0.0000	-0.0050	-0.0009

Crossing Diagonal Check for Load Case "NESC Heavy - Transverse" (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.
g14P	g14Y	Short only	-0.37	-0.56	11.56	0.750	0.500	0.500	123.69	122.85	5	8.63	1.000	158.01	143.38	6
g14Y	g14P	Short only	-0.56	-0.37	11.56	0.750	0.500	0.500	123.69	122.85	5	8.63	1.000	158.01	143.38	6
g16X	g16XY	Long only	-1.09	-2.97	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g16XY	g16X	Long only	-2.97	-1.09	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g16Y	g16P	Long only	-2.94	0.33	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g22XY	g22X	Long only	-2.07	0.13	18.99	0.500	0.750	0.500	109.16	111.87	2	13.99	1.000	145.55	135.71	6
g24Y	g24P	Long only	-4.12	0.69	18.99	0.500	0.750	0.500	109.16	111.87	2	13.99	1.000	145.55	135.71	6
g25P	g25X	Short only	-1.59	-1.29	12.53	0.780	0.560	0.560	129.17	127.02	5	10.86	1.000	147.29	136.78	6
g25X	g25P	Short only	-1.29	-1.59	12.53	0.780	0.560	0.560	129.17	127.02	5	10.86	1.000	147.29	136.78	6
g26P	g26Y	Short only	-1.33	-2.11	12.53	0.780	0.560	0.560	129.17	127.02	5	10.86	1.000	147.29	136.78	6
g26Y	g26P	Short only	-2.11	-1.33	12.53	0.780	0.560	0.560	129.17	127.02	5	10.86	1.000	147.29	136.78	6
g28X	g28XY	Long only	-0.28	-1.30	11.66	0.560	0.780	0.560	147.51	141.00	5	8.89	1.000	187.46	161.49	6
g28XY	g28X	Long only	-1.30	-0.28	11.66	0.560	0.780	0.560	147.51	141.00	5	8.89	1.000	187.46	161.49	6
g29P	g29X	Long only	-0.98	-0.38	8.82	0.560	0.780	0.560	175.25	162.14	5	6.91	1.000	222.71	183.17	6
g29X	g29P	Long only	-0.38	-0.98	8.82	0.560	0.780	0.560	175.25	162.14	5	6.91	1.000	222.71	183.17	6
g30P	g30Y	Long only	-0.53	-1.09	8.82	0.560	0.780	0.560	175.25	162.14	5	6.91	1.000	222.71	183.17	6
g30Y	g30P	Long only	-1.09	-0.53	8.82	0.560	0.780	0.560	175.25	162.14	5	6.91	1.000	222.71	183.17	6

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
1	2.058	30.00	30.00	6.86
2	2.657	30.00	30.00	8.86
3	3.935	30.00	30.00	13.12

4	4.490	30.00	30.00	14.97
5	4.015	30.00	30.00	13.38
6	4.005	30.00	30.00	13.35
7	4.121	30.00	30.00	13.74
8	4.076	30.00	30.00	13.59
14	1.265	30.00	30.00	4.22
15	1.632	30.00	30.00	5.44
16	1.187	30.00	30.00	3.96
17	0.877	30.00	30.00	2.92
18	0.741	30.00	30.00	2.47
19	0.866	30.00	30.00	2.89
20	0.330	30.00	30.00	1.10
21	0.688	30.00	30.00	2.29
22	0.311	30.00	30.00	1.04
23	0.311	30.00	30.00	1.04
24	0.359	30.00	30.00	1.20
25	4.269	30.00	30.00	14.23
26	0.869	30.00	30.00	2.90
27	1.090	30.00	30.00	3.63
28	1.425	30.00	30.00	4.75
29	2.747	30.00	30.00	9.16
30	4.592	30.00	30.00	15.31
31	1.904	30.00	30.00	6.35
32	0.685	30.00	30.00	2.28
33	0.808	30.00	30.00	2.69
34	1.077	30.00	30.00	3.59
35	1.486	30.00	30.00	4.95
36	1.147	30.00	30.00	3.82
37	0.578	30.00	30.00	1.93
38	0.676	30.00	30.00	2.25
39	0.944	30.00	30.00	3.15
40	1.352	30.00	30.00	4.51
41	1.022	30.00	30.00	3.41
42	0.586	30.00	30.00	1.95

*** Analysis Results for Load Case No. 2 "Extreme Wind - Transverse" - Number of iterations in SAPS 36

Equilibrium Joint Positions and Rotations for Load Case "Extreme Wind - Transverse":

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	0.04663	0.5059	0.02066	-0.7537	0.0698	-0.0437	2.547	-1.994	86.02
2P	0.04415	0.5078	0.1721	-0.7592	0.0632	-0.0141	0.04415	-13.24	86.17
3P	0.04248	0.437	0.02072	-0.7572	0.0897	-0.0204	2.542	-2.063	81.02
4P	0.03876	0.4397	0.1187	-0.7476	0.0600	-0.0241	0.03876	-9.31	81.12
5P	0.03128	0.3588	0.01952	-0.7384	0.0501	-0.0204	2.531	-2.141	75.02
6P	0.03069	0.3212	0.0186	-0.6790	-0.0007	-0.0199	2.531	-2.179	72.02
7P	0.02907	0.2877	0.01769	-0.6197	0.0803	-0.0210	2.529	-2.212	69.02
8P	0.02416	0.2907	0.1361	-0.5366	0.0543	-0.0241	0.02416	-13.96	69.14
9P	0.02053	0.2323	0.01511	-0.5988	0.0399	-0.0183	2.521	-2.268	64.02
10P	0.02055	0.1871	0.01169	-0.4390	0.0518	-0.0158	2.521	-2.313	59.01
11P	0.01818	0.1888	0.08271	-0.5414	0.0485	-0.0133	0.01818	-10.06	59.08
12P	0.01337	0.1522	0.01223	-0.3556	0.0741	-0.0177	3.201	-3.036	54.06
13P	0.01036	0.1193	0.01224	-0.2641	0.0203	-0.0091	4.024	-3.894	48.12
14P	0.007546	0.09225	0.01104	-0.2071	0.0276	-0.0154	4.915	-4.815	41.51
15P	0.002291	0.04468	0.00956	-0.1346	0.0295	-0.0225	6.904	-6.858	27.01
16P	-0.001511	0.002437	0.003216	-0.0084	-0.0869	-0.3605	9.998	-9.998	5.003
17P	0	0	0	0.0000	0.0000	0.0000	10.69	-10.69	0
22P	0.0686	0.919	-0.008418	-1.4236	0.0637	-0.0167	0.0686	0.919	104
23P	0.05854	0.6987	-0.005693	-1.3596	0.0636	-0.0168	0.05854	0.6987	94.99
24P	0.0485	0.509	-0.003633	-0.9618	0.0634	-0.0172	0.0485	0.509	86
25P	0.04294	0.4366	-0.003061	-0.7600	0.0636	-0.0170	0.04294	0.4366	81
26P	0.02996	0.2883	-0.002005	-0.6498	0.0572	-0.0147	0.02996	0.2883	69
27P	0.02076	0.1873	-0.001361	-0.4890	0.0491	-0.0118	0.02076	0.1873	59
28P	0.0008393	0.04253	-0.0005219	-0.1392	0.0147	-0.0008	0.0008393	0.04253	27
29P	0	0	0	0.0000	0.0000	0.0000	0	0	0
30P	0.0485	0.07229	-0.4996	0.0000	0.0000	0.0000	0.0485	0.5723	85.5
31P	-0.4515	0.5723	-0.4996	0.0000	0.0000	0.0000	0.0485	0.5723	85.5
32P	0.0686	0.4823	-0.5044	0.0000	0.0000	0.0000	0.0686	0.9823	103.5
33P	-0.4314	0.9823	-0.5044	0.0000	0.0000	0.0000	0.0686	0.9823	103.5
1X	0.05018	0.5057	-0.04429	-0.7995	0.0730	-0.0423	2.55	3.006	85.96
1XY	0.04909	0.508	-0.03895	-0.7959	0.0494	-0.0148	-2.451	3.008	85.96
1Y	0.04824	0.508	0.02603	-0.7531	0.0585	-0.0072	-2.452	-1.992	86.03
2X	0.05461	0.506	-0.2027	-0.8332	0.0626	-0.0251	0.05461	14.26	85.8
3X	0.04408	0.4361	-0.04317	-0.7727	0.0562	-0.0251	2.544	2.936	80.96
3XY	0.04432	0.4387	-0.0378	-0.7750	0.0701	-0.0375	-2.456	2.939	80.96
3Y	0.04116	0.4394	0.02608	-0.7521	0.0367	-0.0337	-2.459	-2.061	81.03
4X	0.04884	0.4363	-0.1457	-0.8559	0.0617	-0.0393	0.04884	10.19	80.85
5X	0.03851	0.3597	-0.04076	-0.7201	0.1108	-0.0246	2.539	2.86	74.96
5XY	0.0363	0.3616	-0.03558	-0.7162	0.0184	-0.0327	-2.464	2.862	74.96
5Y	0.03917	0.3616	0.02467	-0.7442	0.0738	-0.0304	-2.461	-2.138	75.02
6X	0.03212	0.3222	-0.03884	-0.6991	0.0811	-0.0238	2.532	2.822	71.96
6XY	0.036	0.3245	-0.03389	-0.6943	0.0412	-0.0309	-2.464	2.825	71.97
6Y	0.03332	0.3235	0.02358	-0.6875	0.1198	-0.0293	-2.467	-2.177	72.02
7X	0.03083	0.2869	-0.03691	-0.6530	0.0022	-0.0223	2.531	2.787	68.96
7XY	0.03107	0.2892	-0.03215	-0.6604	0.1138	-0.0297	-2.469	2.789	68.97
7Y	0.02888	0.2898	0.0225	-0.6169	0.0307	-0.0266	-2.471	-2.21	69.02
8X	0.03736	0.2863	-0.1889	-0.7915	0.0544	-0.0345	0.03736	14.54	68.81
9X	0.03006	0.2342	-0.0326	-0.5816	0.0687	-0.0183	2.53	2.734	63.97
9XY	0.02164	0.2356	-0.02846	-0.5833	0.0437	-0.0259	-2.478	2.736	63.97
9Y	0.02811	0.2347	0.01944	-0.6040	0.0623	-0.0216	-2.472	-2.265	64.02

10X	0.02119	0.1866	-0.02726	-0.4733	0.0515	-0.0140	2.521	2.687	58.97
10XY	0.02193	0.1881	-0.02413	-0.4849	0.0238	-0.0221	-2.478	2.688	58.98
10Y	0.01954	0.1884	0.01556	-0.4490	0.0378	-0.0166	-2.48	-2.312	59.02
11X	0.02414	0.1869	-0.1045	-0.6339	0.0321	-0.0197	0.02414	10.44	58.9
12X	0.02191	0.1529	-0.02702	-0.3280	-0.0229	-0.0116	3.21	3.341	54.02
12XY	0.01631	0.1524	-0.02444	-0.3584	0.0730	-0.0147	-3.171	3.34	54.02
12Y	0.01901	0.1528	0.01671	-0.3694	0.0043	-0.0060	-3.169	-3.035	54.06
13X	0.02011	0.1204	-0.02566	-0.2742	0.0250	-0.0076	4.033	4.134	48.08
13XY	0.01421	0.1182	-0.02388	-0.2924	-0.0073	-0.0120	-3.999	4.131	48.08
13Y	0.01415	0.1181	0.01716	-0.2864	0.0453	-0.0035	-3.999	-3.895	48.12
14X	0.01604	0.09163	-0.02366	-0.2156	0.0446	-0.0077	4.923	4.999	41.48
14XY	0.01566	0.08785	-0.02279	-0.2273	0.0236	0.0078	-4.892	4.995	41.48
14Y	0.009845	0.08858	0.01616	-0.2237	0.0259	0.0127	-4.898	-4.819	41.52
15X	-0.00143	0.04414	-0.01991	-0.1405	0.0343	-0.0121	6.901	6.946	26.98
15XY	-0.001879	0.03921	-0.01623	-0.1401	0.0377	0.0573	-6.904	6.941	26.98
15Y	0.004419	0.03965	0.01407	-0.1278	0.0077	0.0644	-6.898	-6.863	27.01
16X	-0.0005076	0.001775	-0.005358	-0.0014	0.0420	-0.3081	9.999	10	4.995
16XY	0.0004825	0.00148	-0.004555	0.0055	-0.0518	0.3084	-10	10	4.995
16Y	0.001607	0.001987	0.004253	-0.0003	0.0893	0.3654	-9.998	-9.998	5.004
17X	0	0	0	0.0000	0.0000	0.0000	10.69	10.69	0
17XY	0	0	0	0.0000	0.0000	0.0000	-10.69	10.69	0
17Y	0	0	0	0.0000	0.0000	0.0000	-10.69	-10.69	0
30X	0.0485	1.072	-0.4996	0.0000	0.0000	0.0000	0.0485	0.5723	85.5
31Y	0.5485	0.5723	-0.4996	0.0000	0.0000	0.0000	0.0485	0.5723	85.5
32X	0.0686	1.482	-0.5044	0.0000	0.0000	0.0000	0.0686	0.9823	103.5
33Y	0.5686	0.9823	-0.5044	0.0000	0.0000	0.0000	0.0686	0.9823	103.5
18S	0.03541	0.3216	-0.009755	0.0000	0.0000	0.0000	2.535	0.3216	71.99
19S	0.03203	0.3997	0.01851	0.0000	0.0000	0.0000	0.03203	-2.1	72.02
20S	-0.005841	0.00158	-0.001225	-0.0343	-0.0222	0.1626	9.994	0.00158	4.999
21S	3.17e-005	0.1343	-0.02063	-0.0113	0.0039	0.0007	3.17e-005	-9.866	4.979
18Y	0.03144	0.3239	-0.004969	0.0000	0.0000	0.0000	-2.469	0.3239	72
19X	0.0341	0.421	-0.03701	0.0000	0.0000	0.0000	0.0341	2.921	71.96
20Y	0.005343	0.001308	-0.00114	-0.0391	0.0186	-0.1634	-9.995	0.001308	4.999
21X	-9.735e-006	0.1035	0.01265	0.0068	0.0059	0.0012	-9.735e-006	10.1	5.013

Joint Support Reactions for Load Case "Extreme Wind - Transverse":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Uplift Usage %	Result. Usage %	Result. Force (kips)	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 %
17P	6.83	0.0	-9.90	0.0	0.0	50.29	0.0	0.0	51.71	0.0	-0.06	0.0	0.1	0.0	0.0	0.71	0.0	0.0
29P	0.09	0.0	-0.87	0.0	0.0	-7.98	0.0	0.0	8.03	0.0	9.57	0.0	0.7	0.0	0.0	0.02	0.0	0.0
17X	-10.77	0.0	-13.81	0.0	0.0	-74.86	0.0	0.0	76.88	0.0	-0.13	0.0	0.1	0.0	0.0	0.61	0.0	0.0
17XY	9.21	0.0	-11.79	0.0	0.0	-63.58	0.0	0.0	65.31	0.0	-0.13	0.0	-0.2	0.0	0.0	-0.62	0.0	0.0
17Y	-8.72	0.0	-11.22	0.0	0.0	63.12	0.0	0.0	64.70	0.0	-0.12	0.0	-0.1	0.0	0.0	-0.71	0.0	0.0

Joint Displacements, Loads and Member Forces on Joints for Load Case "Extreme Wind - Transverse":

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	0.3731	-0.2493	-0.0000	-0.3731	0.2493	0.0466	0.5059	0.0207
2P	0.4250	0.7771	-0.6713	-0.4250	-0.7771	0.6713	0.0441	0.5078	0.1721
3P	0.0000	0.6640	-0.2532	0.0000	-0.6640	0.2532	0.0425	0.4370	0.0207
4P	0.2500	1.8930	-1.8752	-0.2500	-1.8930	1.8752	0.0388	0.4397	0.1187
5P	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.0313	0.3588	0.0195

6P	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.0307	0.3212	0.0186
7P	0.0000	0.7170	-0.2372	-0.0000	-0.7170	0.2372	0.0291	0.2877	0.0177
8P	0.0750	1.8430	-1.8752	-0.0750	-1.8430	1.8752	0.0242	0.2907	0.1361
9P	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.0205	0.2323	0.0151
10P	0.0000	0.8420	-0.2682	0.0000	-0.8420	0.2682	0.0205	0.1871	0.0117
11P	0.4250	1.7930	-1.8502	-0.4250	-1.7930	1.8502	0.0182	0.1888	0.0827
12P	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.0134	0.1522	0.0122
13P	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.0104	0.1193	0.0122
14P	0.0000	1.5203	-0.6192	-0.0000	-1.5203	0.6192	0.0075	0.0923	0.0110
15P	0.0000	1.4773	-0.5500	-0.0000	-1.4773	0.5500	0.0023	0.0447	0.0096
16P	0.0000	1.3523	-0.5190	0.0000	-1.3523	0.5190	-0.0015	0.0024	0.0032
17P	0.0000	0.5533	-0.3190	-6.8335	9.3479	50.6104	0.0000	0.0000	0.0000
22P	0.0000	1.4931	-0.7921	-0.0000	-1.4931	0.7921	0.0686	0.9190	-0.0084
23P	0.0000	4.9741	-1.6261	0.0000	-4.9741	1.6261	0.0585	0.6987	-0.0057
24P	0.0000	0.1771	-0.2703	0.0000	-0.1771	0.2703	0.0485	0.5090	-0.0036
25P	0.0000	0.1680	-0.2202	-0.0000	-0.1680	0.2202	0.0429	0.4366	-0.0031
26P	0.0000	0.1680	-0.2562	-0.0000	-0.1680	0.2562	0.0300	0.2883	-0.0020
27P	0.0000	0.7213	-0.7162	-0.0000	-0.7213	0.7162	0.0208	0.1873	-0.0014
28P	0.0000	0.5533	-0.9280	-0.0000	-0.5533	0.9280	0.0008	0.0425	-0.0005
29P	0.0000	0.5533	-0.3190	-0.0898	0.3210	-7.6585	0.0000	0.0000	0.0000
30P	0.0000	0.0091	-0.0711	-0.0000	-0.0091	0.0711	0.0485	0.0723	-0.4996
31P	0.0000	0.0091	-0.0711	-0.0000	-0.0091	0.0711	-0.4515	0.5723	-0.4996
32P	0.0000	0.0091	-0.0711	-0.0000	-0.0091	0.0711	0.0686	0.4823	-0.5044
33P	0.0000	0.0091	-0.0711	-0.0000	-0.0091	0.0711	-0.4314	0.9823	-0.5044
1X	0.0000	0.3731	-0.2493	0.0000	-0.3731	0.2493	0.0502	0.5057	-0.0443
1XY	0.0000	0.3731	-0.2493	0.0000	-0.3731	0.2493	0.0491	0.5080	-0.0389
1Y	0.0000	0.1771	-0.1713	-0.0000	-0.1771	0.1713	0.0482	0.5080	0.0260
2X	0.0000	1.4021	-1.2213	-0.0000	-1.4021	1.2213	0.0546	0.5060	-0.2027
3X	0.0000	0.4560	-0.3152	-0.0000	-0.4560	0.3152	0.0441	0.4361	-0.0432
3XY	0.0000	0.3640	-0.1782	-0.0000	-0.3640	0.1782	0.0443	0.4387	-0.0378
3Y	0.0000	0.3110	-0.1872	0.0000	-0.3110	0.1872	0.0412	0.4394	0.0261
4X	1.2750	1.8680	-1.8302	-1.2750	-1.8680	1.8302	0.0488	0.4363	-0.1457
5X	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.0385	0.3597	-0.0408
5XY	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.0363	0.3616	-0.0356
5Y	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.0392	0.3616	0.0247
6X	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.0321	0.3222	-0.0388
6XY	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.0360	0.3245	-0.0339
6Y	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.0333	0.3235	0.0236
7X	0.0000	0.2600	-0.2372	0.0000	-0.2600	0.2372	0.0308	0.2869	-0.0369
7XY	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.0311	0.2892	-0.0321
7Y	0.0000	0.3110	-0.1872	-0.0000	-0.3110	0.1872	0.0289	0.2898	0.0225
8X	0.5000	1.8180	-1.8252	-0.5000	-1.8180	1.8252	0.0374	0.2863	-0.1889
9X	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.0301	0.2342	-0.0326
9XY	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.0216	0.2356	-0.0285
9Y	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.0281	0.2347	0.0194
10X	0.0000	0.2800	-0.2682	-0.0000	-0.2800	0.2682	0.0212	0.1866	-0.0273
10XY	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.0219	0.1881	-0.0241
10Y	0.0000	0.3440	-0.2072	0.0000	-0.3440	0.2072	0.0195	0.1884	0.0156
11X	0.4000	1.7680	-1.8502	-0.4000	-1.7680	1.8502	0.0241	0.1869	-0.1045
12X	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.0219	0.1529	-0.0270
12XY	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.0163	0.1524	-0.0244
12Y	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.0190	0.1528	0.0167
13X	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.0201	0.1204	-0.0257
13XY	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.0142	0.1182	-0.0239
13Y	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.0142	0.1181	0.0172
14X	0.0000	0.8543	-0.6192	0.0000	-0.8543	0.6192	0.0160	0.0916	-0.0237
14XY	0.0000	0.7213	-0.4192	-0.0000	-0.7213	0.4192	0.0157	0.0878	-0.0228
14Y	0.0000	0.9293	-0.5462	-0.0000	-0.9293	0.5462	0.0098	0.0886	0.0162
15X	0.0000	0.7073	-0.5500	-0.0000	-0.7073	0.5500	-0.0014	0.0441	-0.0199

15XY	0.0000	0.5533	-0.3190	-0.0000	-0.5533	0.3190	-0.0019	0.0392	-0.0162
15Y	0.0000	0.7943	-0.4660	0.0000	-0.7943	0.4660	0.0044	0.0397	0.0141
16X	0.0000	0.6863	-0.5190	-0.0000	-0.6863	0.5190	-0.0005	0.0018	-0.0054
16XY	0.0000	0.5533	-0.3190	-0.0000	-0.5533	0.3190	0.0005	0.0015	-0.0046
16Y	0.0000	0.7613	-0.4460	-0.0000	-0.7613	0.4460	0.0016	0.0020	0.0043
17X	0.0000	0.5533	-0.3190	10.7707	13.2603	-74.5381	0.0000	0.0000	0.0000
17XY	0.0000	0.5533	-0.3190	-9.2128	11.2340	-63.2583	0.0000	0.0000	0.0000
17Y	0.0000	0.5533	-0.3190	8.7154	10.6632	63.4365	0.0000	0.0000	0.0000
30X	0.0000	0.0091	-0.0711	-0.0000	-0.0091	0.0711	0.0485	1.0723	-0.4996
31Y	0.0000	0.0091	-0.0711	0.0000	-0.0091	0.0711	0.5485	0.5723	-0.4996
32X	0.0000	0.0091	-0.0711	-0.0000	-0.0091	0.0711	0.0686	1.4823	-0.5044
33Y	0.0000	0.0091	-0.0711	-0.0000	-0.0091	0.0711	0.5686	0.9823	-0.5044
18S	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.0354	0.3216	-0.0098
19S	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.0320	0.3997	0.0185
20S	0.0000	0.5533	-0.3190	-0.0000	-0.5533	0.3190	-0.0058	0.0016	-0.0012
21S	0.0000	0.5533	-0.3190	0.0000	-0.5533	0.3190	0.0000	0.1343	-0.0206
18Y	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.0314	0.3239	-0.0050
19X	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.0341	0.4210	-0.0370
20Y	0.0000	0.5533	-0.3190	0.0000	-0.5533	0.3190	0.0053	0.0013	-0.0011
21X	0.0000	0.5533	-0.3190	0.0000	-0.5533	0.3190	-0.0000	0.1035	0.0127

Crossing Diagonal Check for Load Case "Extreme Wind - Transverse" (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)	Original Supported RLX	Original Supported RLY	Original Supported RLZ	Original Supported L/R	Original Supported KL/R	Original Supported Curve No.	Alternate Unsupported L/R Cap. (kips)	Alternate Unsupported RLOUT	Alternate Unsupported L/R	Alternate Unsupported KL/R	Alternate Unsupported Curve No.
g14P	g14Y	Short only	-0.33	-0.48	11.56	0.750	0.500	0.500	123.69	122.85	5	8.63	1.000	158.01	143.38	6
g14Y	g14P	Short only	-0.48	-0.33	11.56	0.750	0.500	0.500	123.69	122.85	5	8.63	1.000	158.01	143.38	6
g16P	g16Y	Long only	-1.63	-3.50	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g16X	g16XY	Long only	-1.85	-2.86	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g16XY	g16X	Long only	-2.86	-1.85	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g16Y	g16P	Long only	-3.50	-1.63	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g22X	g22XY	Long only	-1.28	-1.63	18.99	0.500	0.750	0.500	109.16	111.87	2	13.99	1.000	145.55	135.71	6
g22XY	g22X	Long only	-1.63	-1.28	18.99	0.500	0.750	0.500	109.16	111.87	2	13.99	1.000	145.55	135.71	6
g24P	g24Y	Long only	-0.27	-3.70	18.99	0.500	0.750	0.500	109.16	111.87	2	13.99	1.000	145.55	135.71	6
g24Y	g24P	Long only	-3.70	-0.27	18.99	0.500	0.750	0.500	109.16	111.87	2	13.99	1.000	145.55	135.71	6
g25P	g25X	Short only	-0.29	-1.41	12.53	0.780	0.560	0.560	129.17	127.02	5	10.86	1.000	147.29	136.78	6
g25X	g25P	Short only	-1.41	-0.29	12.53	0.780	0.560	0.560	129.17	127.02	5	10.86	1.000	147.29	136.78	6
g26P	g26Y	Short only	-3.26	-3.36	12.53	0.780	0.560	0.560	129.17	127.02	5	10.86	1.000	147.29	136.78	6
g26Y	g26P	Short only	-3.36	-3.26	12.53	0.780	0.560	0.560	129.17	127.02	5	10.86	1.000	147.29	136.78	6
g28X	g28XY	Long only	-1.66	-1.98	11.66	0.560	0.780	0.560	147.51	141.00	5	8.89	1.000	187.46	161.49	6
g28XY	g28X	Long only	-1.98	-1.66	11.66	0.560	0.780	0.560	147.51	141.00	5	8.89	1.000	187.46	161.49	6
g29P	g29X	Long only	-0.61	-0.24	8.82	0.560	0.780	0.560	175.25	162.14	5	6.91	1.000	222.71	183.17	6
g29X	g29P	Long only	-0.24	-0.61	8.82	0.560	0.780	0.560	175.25	162.14	5	6.91	1.000	222.71	183.17	6
g30P	g30Y	Long only	-1.48	-1.62	8.82	0.560	0.780	0.560	175.25	162.14	5	6.91	1.000	222.71	183.17	6
g30Y	g30P	Long only	-1.62	-1.48	8.82	0.560	0.780	0.560	175.25	162.14	5	6.91	1.000	222.71	183.17	6

Summary of Clamp Capacities and Usages for Load Case "Extreme Wind - Transverse":

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %

1	1.111	30.00	30.00	3.70
2	1.859	30.00	30.00	6.20
3	2.676	30.00	30.00	8.92
4	2.909	30.00	30.00	9.70
5	2.630	30.00	30.00	8.77
6	2.624	30.00	30.00	8.75
7	2.611	30.00	30.00	8.70
8	2.590	30.00	30.00	8.63
14	1.448	30.00	30.00	4.83
15	1.576	30.00	30.00	5.25
16	1.642	30.00	30.00	5.47
17	0.884	30.00	30.00	2.95
18	0.755	30.00	30.00	2.52
19	0.554	30.00	30.00	1.85
20	0.449	30.00	30.00	1.50
21	0.711	30.00	30.00	2.37
22	0.449	30.00	30.00	1.50
23	0.449	30.00	30.00	1.50
24	0.405	30.00	30.00	1.35
25	5.233	30.00	30.00	17.44
26	0.323	30.00	30.00	1.08
27	0.277	30.00	30.00	0.92
28	0.306	30.00	30.00	1.02
29	1.016	30.00	30.00	3.39
30	1.080	30.00	30.00	3.60
31	1.690	30.00	30.00	5.63
32	0.352	30.00	30.00	1.17
33	0.388	30.00	30.00	1.29
34	1.055	30.00	30.00	3.52
35	0.896	30.00	30.00	2.99
36	0.860	30.00	30.00	2.87
37	0.363	30.00	30.00	1.21
38	0.402	30.00	30.00	1.34
39	1.078	30.00	30.00	3.59
40	0.921	30.00	30.00	3.07
41	0.882	30.00	30.00	2.94
42	0.363	30.00	30.00	1.21

*** Analysis Results for Load Case No. 3 "NESC Heavy - Longitudinal" - Number of iterations in SAPS 56

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

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	0.1869	0.04281	-0.02002	-0.0281	0.2889	0.0052	2.687	-2.457	85.98
2P	0.1925	0.04224	-0.00873	0.0153	0.2697	0.0356	0.1925	-13.71	85.99
3P	0.1632	0.03845	-0.01966	-0.0441	0.2826	0.0078	2.663	-2.462	80.98
4P	0.1636	0.0394	-0.01034	0.0433	0.2573	0.0059	0.1636	-9.711	80.99
5P	0.1342	0.03134	-0.01895	-0.0572	0.2732	0.0113	2.634	-2.469	74.98
6P	0.1207	0.02951	-0.01833	-0.0132	0.2234	0.0128	2.621	-2.47	71.98
7P	0.1101	0.02914	-0.01761	-0.0169	0.2166	0.0145	2.61	-2.471	68.98
8P	0.1133	0.03095	-0.03684	0.2134	0.2210	0.0187	0.1133	-14.22	68.96
9P	0.09058	0.02264	-0.01611	-0.0494	0.2141	0.0145	2.591	-2.477	63.98
10P	0.07363	0.02291	-0.01432	0.0011	0.1797	0.0141	2.574	-2.477	58.99
11P	0.07649	0.02282	-0.01205	0.0577	0.1720	0.0238	0.07649	-10.23	58.99
12P	0.06046	0.01968	-0.01406	-0.0451	0.1326	0.0110	3.248	-3.168	54.03
13P	0.04778	0.01862	-0.01349	0.0049	0.1107	0.0167	4.061	-3.995	48.09
14P	0.03655	0.0196	-0.0128	-0.0093	0.0815	0.0143	4.944	-4.888	41.49
15P	0.02001	0.0124	-0.009479	-0.0251	0.0652	0.0007	6.922	-6.89	26.99
16P	0.0004603	0.0001711	-0.002281	0.0051	-0.0133	-0.1333	10	-10	4.998
17P	0	0	0	0.0000	0.0000	0.0000	10.69	-10.69	0
22P	0.3161	0.06046	-0.003935	-0.0569	0.4414	0.0069	0.3161	0.06046	104
23P	0.2477	0.05154	-0.003631	-0.0565	0.4247	0.0069	0.2477	0.05154	95
24P	0.1872	0.04275	-0.003298	-0.0552	0.3194	0.0070	0.1872	0.04275	86
25P	0.1624	0.03803	-0.003144	-0.0520	0.2667	0.0069	0.1624	0.03803	81
26P	0.1095	0.02834	-0.002755	-0.0415	0.2349	0.0076	0.1095	0.02834	69
27P	0.07278	0.0219	-0.002412	-0.0308	0.1785	0.0080	0.07278	0.0219	59
28P	0.01819	0.01027	-0.001242	-0.0244	0.0574	0.0062	0.01819	0.01027	27
29P	0	0	0	0.0000	0.0000	0.0000	0	0	0
30P	0.1597	-0.2894	-0.4735	0.0000	0.0000	0.0000	0.1597	0.2106	85.53
31P	-0.3128	0.5425	-0.01774	0.0000	0.0000	0.0000	0.1872	0.5425	85.98
32P	0.2702	-0.2757	-0.4741	0.0000	0.0000	0.0000	0.2702	0.2243	103.5
33P	-0.1839	0.5603	-0.01838	0.0000	0.0000	0.0000	0.3161	0.5603	104
1X	0.1862	0.04347	-0.02442	-0.0863	0.2825	0.0100	2.686	2.543	85.98
1XY	0.1868	0.04271	-0.001597	-0.0806	0.2586	0.0044	-2.313	2.543	86
1Y	0.1874	0.04211	0.00289	-0.0226	0.2647	0.0094	-2.313	-2.458	86
2X	0.1847	0.04343	-0.03703	-0.1432	0.2694	0.0093	0.1847	13.79	85.96
3X	0.1631	0.0375	-0.02398	-0.0630	0.2754	-0.0057	2.663	2.537	80.98
3XY	0.1623	0.03777	-0.001352	-0.0734	0.2628	-0.0011	-2.338	2.538	81
3Y	0.1625	0.03816	0.002959	-0.0285	0.2580	0.0049	-2.337	-2.462	81
4X	0.1647	0.03627	-0.03029	-0.1743	0.2595	-0.0207	0.1647	9.786	80.97
5X	0.1345	0.03491	-0.02285	-0.0304	0.2788	-0.0010	2.635	2.535	74.98
5XY	0.1354	0.0326	-0.001424	-0.0165	0.2458	0.0054	-2.365	2.533	75
5Y	0.1367	0.03276	0.002473	-0.0835	0.2417	0.0080	-2.363	-2.467	75
6X	0.1205	0.03217	-0.02204	-0.0722	0.2372	0.0016	2.62	2.532	71.98
6XY	0.1224	0.03157	-0.001547	-0.0488	0.2590	0.0089	-2.378	2.532	72
6Y	0.1236	0.0287	0.002161	-0.0439	0.2656	0.0092	-2.376	-2.471	72
7X	0.1092	0.02823	-0.02113	-0.0633	0.2208	0.0040	2.609	2.528	68.98
7XY	0.1088	0.02745	-0.001557	-0.0843	0.2417	0.0125	-2.391	2.527	69
7Y	0.1098	0.02825	0.001959	0.0006	0.2391	0.0104	-2.39	-2.472	69
8X	0.1087	0.02552	-0.05756	-0.2983	0.2217	-0.0024	0.1087	14.28	68.94
9X	0.08977	0.02805	-0.01908	-0.0233	0.2184	0.0113	2.59	2.528	63.98
9XY	0.08882	0.02492	-0.001842	-0.0201	0.2161	0.0130	-2.411	2.525	64
9Y	0.0906	0.02353	0.001223	-0.0587	0.2122	0.0165	-2.409	-2.476	64

10X	0.07224	0.02219	-0.0165	-0.0522	0.1784	0.0189	2.572	2.522	58.98
10XY	0.07193	0.02093	-0.002257	-0.0597	0.1597	0.0140	-2.428	2.521	59
10Y	0.07337	0.02129	0.0003439	-0.0047	0.1635	0.0221	-2.427	-2.479	59
11X	0.07071	0.02083	-0.02397	-0.1345	0.1627	0.0073	0.07071	10.27	58.98
12X	0.05933	0.02245	-0.01587	0.0149	0.1199	0.0234	3.247	3.21	54.03
12XY	0.05856	0.01764	-0.001499	-0.0278	0.1409	0.0125	-3.129	3.205	54.05
12Y	0.06029	0.01869	0.00145	-0.0300	0.1413	0.0274	-3.128	-3.169	54.05
13X	0.04724	0.02146	-0.01455	-0.0167	0.1004	0.0207	4.061	4.035	48.09
13XY	0.0457	0.01462	-0.0008763	-0.0261	0.0985	0.0132	-3.968	4.028	48.1
13Y	0.04743	0.0157	0.002236	-0.0202	0.1115	0.0284	-3.966	-3.998	48.11
14X	0.03585	0.01968	-0.01294	-0.0176	0.0844	0.0232	4.943	4.927	41.49
14XY	0.03594	0.01209	-0.0007015	-0.0165	0.0771	0.0162	-4.871	4.919	41.5
14Y	0.03639	0.01266	0.002515	-0.0196	0.0859	0.0300	-4.871	-4.895	41.5
15X	0.01599	0.01239	-0.009831	-0.0269	0.0536	0.0217	6.918	6.915	26.99
15XY	0.01588	0.007526	0.0003504	-0.0229	0.0570	0.0206	-6.886	6.91	27
15Y	0.02022	0.008122	0.002356	0.0003	0.0498	0.0334	-6.882	-6.894	27
16X	0.0002579	7.528e-005	-0.002962	-0.0092	0.0041	0.0172	10	10	4.997
16XY	0.0002024	0.0006435	0.0003485	-0.0102	0.0094	-0.0143	-10	10	5
16Y	0.00102	0.001047	0.001283	-0.0024	0.0431	0.1364	-9.999	-9.999	5.001
17X	0	0	0	0.0000	0.0000	0.0000	10.69	10.69	0
17XY	0	0	0	0.0000	0.0000	0.0000	-10.69	10.69	0
17Y	0	0	0	0.0000	0.0000	0.0000	-10.69	-10.69	0
30X	0.1872	1.043	-0.01774	0.0000	0.0000	0.0000	0.1872	0.5425	85.98
31Y	0.6872	0.5425	-0.01774	0.0000	0.0000	0.0000	0.1872	0.5425	85.98
32X	0.3161	1.06	-0.01838	0.0000	0.0000	0.0000	0.3161	0.5603	104
33Y	0.8161	0.5603	-0.01838	0.0000	0.0000	0.0000	0.3161	0.5603	104
18S	0.1204	0.03082	-0.0192	0.0000	0.0000	0.0000	2.62	0.03082	71.98
19S	0.1222	0.1081	-0.008665	0.0000	0.0000	0.0000	0.1222	-2.392	71.99
20S	0.003043	9.012e-005	0.0001878	-0.0019	-0.0047	0.0298	10	9.012e-005	5
21S	0.0005417	0.04666	-0.006836	0.0008	0.0079	-0.0045	0.0005417	-9.953	4.993
18Y	0.1231	0.03014	0.0004927	0.0000	0.0000	0.0000	-2.377	0.03014	72
19X	0.1215	-0.03001	-0.01196	0.0000	0.0000	0.0000	0.1215	2.47	71.99
20Y	-0.003054	0.0006176	0.0002413	-0.0009	0.0263	-0.0270	-10	0.0006176	5
21X	0.0001681	-0.004521	-0.0008392	-0.0097	0.0109	-0.0032	0.0001681	9.995	4.999

Joint Support Reactions for Load Case "NESC Heavy - Longitudinal":

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 %
17P	-5.33	0.0	4.28	0.0	0.0	-31.14	0.0	0.0	31.88	0.0	-0.02	0.0	0.0	0.0	0.0	0.26	0.0	0.0
29P	-0.15	0.0	-0.61	0.0	0.0	-20.46	0.0	0.0	20.47	0.0	2.97	0.0	-4.3	0.0	0.0	-0.17	0.0	0.0
17X	-5.97	0.0	-5.85	0.0	0.0	-40.06	0.0	0.0	40.93	0.0	-0.09	0.0	0.1	0.0	0.0	-0.04	0.0	0.0
17XY	-0.56	0.0	-0.76	0.0	0.0	3.15	0.0	0.0	3.29	0.0	0.08	0.0	0.0	0.0	0.0	0.02	0.0	0.0
17Y	-3.78	0.0	-3.96	0.0	0.0	21.41	0.0	0.0	22.10	0.0	0.00	0.0	-0.1	0.0	0.0	-0.27	0.0	0.0

Joint Displacements, Loads and Member Forces on Joints for Load Case "NESC Heavy - Longitudinal":

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	0.0570	0.0662	-0.3062	-0.0570	-0.0662	0.3062	0.1869	0.0428	-0.0200
2P	1.1500	0.0367	-1.4433	-1.1500	-0.0367	1.4433	0.1925	0.0422	-0.0087
3P	0.1600	0.1164	-0.6303	-0.1600	-0.1164	0.6303	0.1632	0.0385	-0.0197
4P	0.0500	0.0628	-3.6913	-0.0500	-0.0628	3.6913	0.1636	0.0394	-0.0103
5P	0.0000	0.0949	-0.1034	0.0000	-0.0949	0.1034	0.1342	0.0313	-0.0190

6P	0.0000	0.0469	-0.0601	0.0000	-0.0469	0.0601	0.1207	0.0295	-0.0183
7P	0.1890	0.0982	-0.6832	-0.1890	-0.0982	0.6832	0.1101	0.0291	-0.0176
8P	0.6000	0.0416	-3.7363	-0.6000	-0.0416	3.7363	0.1133	0.0310	-0.0368
9P	0.0000	0.1229	-0.1316	-0.0000	-0.1229	0.1316	0.0906	0.0226	-0.0161
10P	0.2320	0.1117	-0.8063	-0.2320	-0.1117	0.8063	0.0736	0.0229	-0.0143
11P	1.2750	0.0461	-3.6801	-1.2750	-0.0461	3.6801	0.0765	0.0228	-0.0120
12P	0.0000	0.1099	-0.1414	-0.0000	-0.1099	0.1414	0.0605	0.0197	-0.0141
13P	0.0000	0.1357	-0.1714	-0.0000	-0.1357	0.1714	0.0478	0.0186	-0.0135
14P	0.2750	0.2270	-1.0756	-0.2750	-0.2270	1.0756	0.0365	0.0196	-0.0128
15P	0.3180	0.3601	-1.4846	-0.3180	-0.3601	1.4846	0.0200	0.0124	-0.0095
16P	0.2750	0.2635	-1.1452	-0.2750	-0.2635	1.1452	0.0005	0.0002	-0.0023
17P	0.0000	0.0741	-0.0944	5.3258	-4.3591	-31.0464	0.0000	0.0000	0.0000
22P	0.3900	0.0000	-1.8635	-0.3900	0.0000	1.8635	0.3161	0.0605	-0.0039
23P	1.3230	0.0000	-4.0811	-1.3230	-0.0000	4.0811	0.2477	0.0515	-0.0036
24P	0.0960	0.0000	-0.8692	-0.0960	0.0000	0.8693	0.1872	0.0428	-0.0033
25P	0.1170	0.2040	-1.0707	-0.1170	-0.2040	1.0707	0.1624	0.0380	-0.0031
26P	0.1510	0.3740	-1.3748	-0.1510	-0.3740	1.3748	0.1095	0.0283	-0.0028
27P	0.2880	0.7140	-2.6529	-0.2880	-0.7140	2.6529	0.0728	0.0219	-0.0024
28P	0.5910	1.0030	-4.4812	-0.5910	-1.0030	4.4812	0.0182	0.0103	-0.0012
29P	0.0000	0.4590	-1.1039	0.1468	0.1469	-19.3562	0.0000	0.0000	0.0000
30P	0.0000	0.0000	-0.0001	0.0000	-0.0000	0.0001	0.1597	-0.2894	-0.4735
31P	0.0000	0.0024	-0.0001	0.0000	-0.0024	0.0001	-0.3128	0.5425	-0.0177
32P	0.0000	0.0000	-0.0001	0.0000	-0.0000	0.0001	0.2702	-0.2757	-0.4741
33P	0.0000	0.0024	-0.0001	0.0000	-0.0024	0.0001	-0.1839	0.5603	-0.0184
1X	0.0570	0.0000	-0.3062	-0.0570	0.0000	0.3062	0.1862	0.0435	-0.0244
1XY	0.0570	0.0000	-0.3062	-0.0570	-0.0000	0.3062	0.1868	0.0427	-0.0016
1Y	0.0000	0.0662	-0.1322	-0.0000	-0.0662	0.1322	0.1874	0.0421	0.0029
2X	0.0000	0.0000	-2.4183	0.0000	-0.0000	2.4183	0.1847	0.0434	-0.0370
3X	0.4200	0.0000	-0.8603	-0.4200	-0.0000	0.8603	0.1631	0.0375	-0.0240
3XY	0.0570	0.0000	-0.3543	-0.0570	0.0000	0.3543	0.1623	0.0378	-0.0014
3Y	0.1510	0.1164	-0.5593	-0.1510	-0.1164	0.5593	0.1625	0.0382	0.0030
4X	2.2000	0.0000	-3.6913	-2.2000	-0.0000	3.6913	0.1647	0.0363	-0.0303
5X	0.0000	0.0000	-0.1034	0.0000	0.0000	0.1034	0.1345	0.0349	-0.0229
5XY	0.0000	0.0000	-0.1034	0.0000	0.0000	0.1034	0.1354	0.0326	-0.0014
5Y	0.0000	0.0949	-0.1034	0.0000	-0.0949	0.1034	0.1367	0.0328	0.0025
6X	0.0000	0.0000	-0.0601	-0.0000	0.0000	0.0601	0.1205	0.0322	-0.0220
6XY	0.0000	0.0000	-0.0601	0.0000	0.0000	0.0601	0.1224	0.0316	-0.0015
6Y	0.0000	0.0469	-0.0601	0.0000	-0.0469	0.0601	0.1236	0.0287	0.0022
7X	0.3630	0.0000	-0.6832	-0.3630	-0.0000	0.6832	0.1092	0.0282	-0.0211
7XY	0.0000	0.0000	-0.1772	0.0000	0.0000	0.1772	0.1088	0.0274	-0.0016
7Y	0.1510	0.0982	-0.5562	-0.1510	-0.0982	0.5562	0.1098	0.0283	0.0020
8X	0.6250	0.0000	-3.7363	-0.6250	-0.0000	3.7363	0.1087	0.0255	-0.0576
9X	0.0000	0.0000	-0.1316	0.0000	0.0000	0.1316	0.0898	0.0280	-0.0191
9XY	0.0000	0.0000	-0.1316	0.0000	0.0000	0.1316	0.0888	0.0249	-0.0018
9Y	0.0000	0.1229	-0.1316	-0.0000	-0.1229	0.1316	0.0906	0.0235	0.0012
10X	0.4460	0.0000	-0.8063	-0.4460	-0.0000	0.8063	0.0722	0.0222	-0.0165
10XY	0.0000	0.0000	-0.1853	0.0000	0.0000	0.1853	0.0719	0.0209	-0.0023
10Y	0.1850	0.1117	-0.6503	-0.1850	-0.1117	0.6503	0.0734	0.0213	0.0003
11X	1.1750	0.0000	-3.6801	-1.1750	-0.0000	3.6801	0.0707	0.0208	-0.0240
12X	0.0000	0.0000	-0.1414	0.0000	0.0000	0.1414	0.0593	0.0224	-0.0159
12XY	0.0000	0.0000	-0.1414	0.0000	-0.0000	0.1414	0.0586	0.0176	-0.0015
12Y	0.0000	0.1099	-0.1414	-0.0000	-0.1099	0.1414	0.0603	0.0187	0.0014
13X	0.0000	0.0000	-0.1714	0.0000	-0.0000	0.1714	0.0472	0.0215	-0.0145
13XY	0.0000	0.0000	-0.1714	0.0000	-0.0000	0.1714	0.0457	0.0146	-0.0009
13Y	0.0000	0.1357	-0.1714	-0.0000	-0.1357	0.1714	0.0474	0.0157	0.0022
14X	0.5280	0.0000	-1.0756	-0.5280	-0.0000	1.0756	0.0359	0.0197	-0.0129
14XY	0.0000	0.0000	-0.3396	0.0000	-0.0000	0.3396	0.0359	0.0121	-0.0007
14Y	0.2200	0.2270	-0.8906	-0.2200	-0.2270	0.8906	0.0364	0.0127	0.0025
15X	0.6110	0.0000	-1.4846	-0.6110	-0.0000	1.4846	0.0160	0.0124	-0.0098

15XY	0.0000	0.0000	-0.6336	0.0000	0.0000	0.6336	0.0159	0.0075	0.0004
15Y	0.2540	0.3601	-1.2706	-0.2540	-0.3601	1.2706	0.0202	0.0081	0.0024
16X	0.5280	0.0000	-1.1452	-0.5280	-0.0000	1.1452	0.0003	0.0001	-0.0030
16XY	0.0000	0.0000	-0.4092	0.0000	0.0000	0.4092	0.0002	0.0006	0.0003
16Y	0.2200	0.2635	-0.9602	-0.2200	-0.2635	0.9602	0.0010	0.0010	0.0013
17X	0.0000	0.0000	-0.0944	5.9716	5.8479	-39.9698	0.0000	0.0000	0.0000
17XY	0.0000	0.0000	-0.0944	0.5591	0.7572	3.2489	0.0000	0.0000	0.0000
17Y	0.0000	0.0741	-0.0944	3.7817	3.8858	21.5018	0.0000	0.0000	0.0000
30X	0.0000	0.0024	-0.0001	0.0000	-0.0024	0.0001	0.1872	1.0425	-0.0177
31Y	0.0000	0.0024	-0.0001	0.0000	-0.0024	0.0001	0.6872	0.5425	-0.0177
32X	0.0000	0.0024	-0.0001	0.0000	-0.0024	0.0001	0.3161	1.0603	-0.0184
33Y	0.0000	0.0024	-0.0001	0.0000	-0.0024	0.0001	0.8161	0.5603	-0.0184
18S	0.0000	0.0000	-0.0436	0.0000	-0.0000	0.0436	0.1204	0.0308	-0.0192
19S	0.0000	0.0741	-0.0461	0.0000	-0.0741	0.0461	0.1222	0.1081	-0.0087
20S	0.0000	0.0000	-0.1556	0.0000	0.0000	0.1556	0.0030	0.0001	0.0002
21S	0.0000	0.2011	-0.1556	0.0000	-0.2011	0.1556	0.0005	0.0467	-0.0068
18Y	0.0000	0.0000	-0.0436	0.0000	-0.0000	0.0436	0.1231	0.0301	0.0005
19X	0.0000	0.0000	-0.0461	0.0000	-0.0000	0.0461	0.1215	-0.0300	-0.0120
20Y	0.0000	0.0000	-0.1556	-0.0000	-0.0000	0.1556	-0.0031	0.0006	0.0002
21X	0.0000	0.0000	-0.1556	-0.0000	-0.0000	0.1556	0.0002	-0.0045	-0.0008

Crossing Diagonal Check for Load Case "NESC Heavy - Longitudinal" (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)	Original Supported RLX	Original Supported RLY	Original Supported RLZ	Original Supported L/R	Original Supported KL/R	Original Supported Curve No.	Alternate Unsupported L/R Cap. (kips)	Alternate Unsupported RLOUT	Alternate Unsupported L/R	Alternate Unsupported KL/R	Alternate Unsupported Curve No.
g16X	g16XY	Long only	-0.04	-4.08	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g16XY	g16X	Long only	-4.08	-0.04	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g25P	g25X	Short only	-1.66	-2.08	12.53	0.780	0.560	0.560	129.17	127.02	5	10.86	1.000	147.29	136.78	6
g25X	g25P	Short only	-2.08	-1.66	12.53	0.780	0.560	0.560	129.17	127.02	5	10.86	1.000	147.29	136.78	6
g26Y	g26P	Short only	-1.09	0.20	12.53	0.780	0.560	0.560	129.17	127.02	5	10.86	1.000	147.29	136.78	6
g29P	g29X	Long only	-0.90	-0.84	8.82	0.560	0.780	0.560	175.25	162.14	5	6.91	1.000	222.71	183.17	6
g29X	g29P	Long only	-0.84	-0.90	8.82	0.560	0.780	0.560	175.25	162.14	5	6.91	1.000	222.71	183.17	6

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
1	1.846	30.00	30.00	6.15
2	2.418	30.00	30.00	8.06
3	3.692	30.00	30.00	12.31
4	4.297	30.00	30.00	14.32
5	3.784	30.00	30.00	12.61
6	3.788	30.00	30.00	12.63
7	3.895	30.00	30.00	12.98
8	3.863	30.00	30.00	12.88
14	1.207	30.00	30.00	4.02
15	1.560	30.00	30.00	5.20
16	1.133	30.00	30.00	3.78
17	0.846	30.00	30.00	2.82
18	0.716	30.00	30.00	2.39

19	0.957	30.00	30.00	3.19
20	0.318	30.00	30.00	1.06
21	0.661	30.00	30.00	2.20
22	0.311	30.00	30.00	1.04
23	0.311	30.00	30.00	1.04
24	0.359	30.00	30.00	1.20
25	4.290	30.00	30.00	14.30
26	0.875	30.00	30.00	2.92
27	1.096	30.00	30.00	3.65
28	1.433	30.00	30.00	4.78
29	2.762	30.00	30.00	9.21
30	4.630	30.00	30.00	15.43
31	1.904	30.00	30.00	6.35
32	0.774	30.00	30.00	2.58
33	0.921	30.00	30.00	3.07
34	1.198	30.00	30.00	3.99
35	1.605	30.00	30.00	5.35
36	1.261	30.00	30.00	4.20
37	0.585	30.00	30.00	1.95
38	0.685	30.00	30.00	2.28
39	0.945	30.00	30.00	3.15
40	1.345	30.00	30.00	4.48
41	1.020	30.00	30.00	3.40
42	0.591	30.00	30.00	1.97

*** Analysis Results for Load Case No. 4 "Extreme Wind - Longitudinal" - Number of iterations in SAPS 27

Equilibrium Joint Positions and Rotations for Load Case "Extreme Wind - Longitudinal":

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	0.3571	0.1201	-0.02518	-0.1285	0.5876	-0.0301	2.857	-2.38	85.97
2P	0.3541	0.1211	0.02157	-0.1116	0.5633	-0.0120	0.3541	-13.63	86.02
3P	0.3065	0.1083	-0.0244	-0.1472	0.5727	-0.0105	2.807	-2.392	80.98
4P	0.3055	0.1094	0.01272	-0.0942	0.5309	-0.0072	0.3055	-9.641	81.01
5P	0.2488	0.09054	-0.02275	-0.1277	0.5329	-0.0082	2.749	-2.409	74.98
6P	0.2222	0.08537	-0.02155	-0.0954	0.4650	-0.0073	2.722	-2.415	71.98
7P	0.1994	0.07943	-0.02033	-0.1295	0.4404	-0.0059	2.699	-2.421	68.98
8P	0.1974	0.08101	0.006763	-0.0029	0.4330	-0.0118	0.1974	-14.17	69.01
9P	0.1611	0.06527	-0.01795	-0.1213	0.4119	-0.0010	2.661	-2.435	63.98
10P	0.1292	0.05948	-0.01533	-0.0720	0.3264	0.0036	2.629	-2.441	58.98
11P	0.1298	0.05952	0.01136	-0.0995	0.3256	0.0041	0.1298	-10.19	59.01
12P	0.1046	0.05078	-0.01526	-0.1014	0.2471	0.0030	3.292	-3.137	54.03
13P	0.08154	0.0447	-0.01483	-0.0300	0.1949	0.0104	4.095	-3.969	48.09
14P	0.06179	0.04247	-0.01439	-0.0418	0.1436	0.0058	4.969	-4.865	41.49
15P	0.03231	0.02326	-0.01031	-0.0590	0.1080	-0.0253	6.935	-6.879	26.99
16P	0.0005886	0.0009091	-0.002526	0.0101	-0.0493	-0.3363	10	-9.999	4.997
17P	0	0	0	0.0000	0.0000	0.0000	10.69	-10.69	0
22P	0.7031	0.1695	-0.005992	-0.1561	1.2098	-0.0096	0.7031	0.1695	104
23P	0.5163	0.1451	-0.003997	-0.1541	1.1478	-0.0095	0.5163	0.1451	95
24P	0.3598	0.1214	-0.00255	-0.1476	0.7487	-0.0085	0.3598	0.1214	86
25P	0.306	0.1087	-0.0022	-0.1439	0.5486	-0.0077	0.306	0.1087	81
26P	0.1998	0.07971	-0.001565	-0.1306	0.4607	-0.0052	0.1998	0.07971	69
27P	0.1289	0.05904	-0.001166	-0.1024	0.3390	-0.0028	0.1289	0.05904	59
28P	0.03159	0.02164	-0.0005038	-0.0590	0.0963	0.0015	0.03159	0.02164	27
29P	0	0	0	0.0000	0.0000	0.0000	0	0	0
30P	0.3598	-0.3153	-0.4985	0.0000	0.0000	0.0000	0.3598	0.1847	85.5
31P	-0.1402	0.1847	-0.4985	0.0000	0.0000	0.0000	0.3598	0.1847	85.5
32P	0.7031	-0.2672	-0.502	0.0000	0.0000	0.0000	0.7031	0.2328	103.5
33P	0.2031	0.2328	-0.502	0.0000	0.0000	0.0000	0.7031	0.2328	103.5
1X	0.3585	0.1211	-0.03746	-0.1620	0.5839	-0.0060	2.858	2.621	85.96
1XY	0.3589	0.1219	0.00978	-0.1655	0.5683	-0.0073	-2.141	2.622	86.01
1Y	0.3576	0.1223	0.0221	-0.1229	0.5697	-0.0283	-2.142	-2.378	86.02
2X	0.3601	0.1217	-0.04924	-0.1900	0.5623	-0.0100	0.3601	13.87	85.95
3X	0.3081	0.1073	-0.03656	-0.1391	0.5687	-0.0295	2.808	2.607	80.96
3XY	0.3077	0.1095	0.009803	-0.1648	0.5519	-0.0242	-2.192	2.61	81.01
3Y	0.3062	0.1094	0.02197	-0.1216	0.5457	-0.0129	-2.194	-2.391	81.02
4X	0.3122	0.1077	-0.03731	-0.2093	0.5316	-0.0379	0.3122	9.858	80.96
5X	0.2504	0.096	-0.03447	-0.1499	0.5484	-0.0203	2.75	2.596	74.97
5XY	0.253	0.09262	0.00875	-0.1090	0.5083	-0.0161	-2.247	2.593	75.01
5Y	0.2523	0.09635	0.02043	-0.1763	0.5103	-0.0101	-2.248	-2.404	75.02
6X	0.2228	0.08675	-0.03283	-0.1745	0.4775	-0.0153	2.723	2.587	71.97
6XY	0.2263	0.08779	0.008123	-0.1133	0.5120	-0.0118	-2.274	2.588	72.01
6Y	0.2253	0.08646	0.01941	-0.1628	0.5142	-0.0091	-2.275	-2.414	72.02
7X	0.2	0.07906	-0.03118	-0.1243	0.4307	-0.0110	2.7	2.579	68.97
7XY	0.2001	0.0799	0.007555	-0.1697	0.4753	-0.0069	-2.3	2.58	69.01
7Y	0.1995	0.08033	0.01843	-0.0897	0.4565	-0.0086	-2.3	-2.42	69.02
8X	0.203	0.07835	-0.05821	-0.2622	0.4341	-0.0191	0.203	14.33	68.94
9X	0.1623	0.07177	-0.02754	-0.1142	0.4252	-0.0010	2.662	2.572	63.97
9XY	0.1607	0.06729	0.006006	-0.1114	0.4187	0.0012	-2.339	2.567	64.01
9Y	0.1623	0.07037	0.01577	-0.1409	0.4133	0.0001	-2.338	-2.43	64.02

10X	0.1285	0.05907	-0.02303	-0.1090	0.3256	0.0093	2.629	2.559	58.98
10XY	0.1285	0.05862	0.004116	-0.1183	0.3093	0.0099	-2.372	2.559	59
10Y	0.129	0.05875	0.01252	-0.0893	0.3112	0.0082	-2.371	-2.441	59.01
11X	0.1271	0.05848	-0.02923	-0.1636	0.3100	0.0088	0.1271	10.31	58.97
12X	0.1051	0.05477	-0.02272	-0.0280	0.2251	0.0099	3.293	3.243	54.02
12XY	0.104	0.04837	0.00424	-0.1060	0.2494	0.0144	-3.084	3.236	54.05
12Y	0.1055	0.05187	0.01348	-0.0715	0.2408	0.0170	-3.082	-3.136	54.06
13X	0.083	0.04915	-0.02129	-0.0545	0.1839	0.0050	4.096	4.062	48.08
13XY	0.08119	0.04005	0.004093	-0.0677	0.1776	0.0163	-3.932	4.053	48.11
13Y	0.0823	0.04281	0.01381	-0.0763	0.1986	0.0255	-3.931	-3.97	48.12
14X	0.06337	0.04239	-0.01922	-0.0592	0.1483	0.0043	4.971	4.95	41.48
14XY	0.06333	0.03268	0.003321	-0.0586	0.1368	0.0284	-4.844	4.94	41.5
14Y	0.06219	0.03415	0.01315	-0.0588	0.1515	0.0318	-4.845	-4.873	41.51
15X	0.02974	0.02336	-0.01511	-0.0481	0.0977	-0.0138	6.932	6.926	26.98
15XY	0.02945	0.01873	0.003112	-0.0459	0.0964	0.0547	-6.873	6.921	27
15Y	0.0329	0.02024	0.01098	-0.0235	0.0864	0.0467	-6.869	-6.882	27.01
16X	0.0004618	0.0008761	-0.004641	0.0102	0.0645	-0.3057	10	10	4.995
16XY	0.001311	0.001829	0.001112	0.0068	-0.0286	0.3117	-9.999	10	5.001
16Y	0.002808	0.002703	0.003777	-0.0089	0.1055	0.3356	-9.997	-9.997	5.004
17X	0	0	0	0.0000	0.0000	0.0000	10.69	10.69	0
17XY	0	0	0	0.0000	0.0000	0.0000	-10.69	10.69	0
17Y	0	0	0	0.0000	0.0000	0.0000	-10.69	-10.69	0
30X	0.3598	0.6847	-0.4985	0.0000	0.0000	0.0000	0.3598	0.1847	85.5
31Y	0.8598	0.1847	-0.4985	0.0000	0.0000	0.0000	0.3598	0.1847	85.5
32X	0.7031	0.7328	-0.502	0.0000	0.0000	0.0000	0.7031	0.2328	103.5
33Y	1.203	0.2328	-0.502	0.0000	0.0000	0.0000	0.7031	0.2328	103.5
18S	0.2214	0.08604	-0.02595	0.0000	0.0000	0.0000	2.721	0.08604	71.97
19S	0.2238	0.1694	-0.001936	0.0000	0.0000	0.0000	0.2238	-2.331	72
20S	-0.005658	0.0006938	-0.001234	-0.0141	0.0077	0.1608	9.994	0.0006938	4.999
21S	0.001245	0.1254	-0.01922	-0.0044	0.0130	-0.0075	0.001245	-9.875	4.981
18Y	0.2262	0.0871	0.0131	0.0000	0.0000	0.0000	-2.274	0.0871	72.01
19X	0.2245	0.1765	-0.01307	0.0000	0.0000	0.0000	0.2245	2.676	71.99
20Y	0.007294	0.001697	-0.001373	-0.0109	0.0384	-0.1552	-9.993	0.001697	4.999
21X	0.0006543	0.103	0.01265	0.0120	0.0157	-0.0056	0.0006543	10.1	5.013

Joint Support Reactions for Load Case "Extreme Wind - Longitudinal":

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 %
17P	-6.91	0.0	3.32	0.0	0.0	-33.65	0.0	0.0	34.51	0.0	-0.06	0.0	0.0	0.0	0.0	0.66	0.0	0.0
29P	-0.30	0.0	-0.81	0.0	0.0	-7.79	0.0	0.0	7.84	0.0	5.72	0.0	-7.6	0.0	0.0	-0.04	0.0	0.0
17X	-10.52	0.0	-11.01	0.0	0.0	-65.36	0.0	0.0	67.11	0.0	-0.21	0.0	0.1	0.0	0.0	0.60	0.0	0.0
17XY	-2.41	0.0	-2.01	0.0	0.0	12.12	0.0	0.0	12.52	0.0	0.07	0.0	-0.0	0.0	0.0	-0.64	0.0	0.0
17Y	-10.57	0.0	-11.78	0.0	0.0	61.69	0.0	0.0	63.69	0.0	-0.01	0.0	-0.2	0.0	0.0	-0.66	0.0	0.0

Joint Displacements, Loads and Member Forces on Joints for Load Case "Extreme Wind - Longitudinal":

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	0.1960	0.1771	-0.2493	-0.1960	-0.1771	0.2493	0.3571	0.1201	-0.0252
2P	0.4250	0.1771	-0.6713	-0.4250	-0.1771	0.6713	0.3541	0.1211	0.0216
3P	0.4960	0.1680	-0.2532	-0.4960	-0.1680	0.2532	0.3065	0.1083	-0.0244
4P	0.2500	0.1680	-1.8752	-0.2500	-0.1680	1.8752	0.3055	0.1094	0.0127
5P	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.2488	0.0905	-0.0228

6P	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.2222	0.0854	-0.0216
7P	0.5490	0.1680	-0.2372	-0.5490	-0.1680	0.2372	0.1994	0.0794	-0.0203
8P	0.0750	0.1680	-1.8752	-0.0750	-0.1680	1.8752	0.1974	0.0810	0.0068
9P	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.1611	0.0653	-0.0179
10P	0.6740	0.1680	-0.2682	-0.6740	-0.1680	0.2682	0.1292	0.0595	-0.0153
11P	0.4250	0.1680	-1.8502	-0.4250	-0.1680	1.8502	0.1298	0.0595	0.0114
12P	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.1046	0.0508	-0.0153
13P	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.0815	0.0447	-0.0148
14P	0.7990	0.7213	-0.6192	-0.7990	-0.7213	0.6192	0.0618	0.0425	-0.0144
15P	0.9240	0.5533	-0.5500	-0.9240	-0.5533	0.5500	0.0323	0.0233	-0.0103
16P	0.7990	0.5533	-0.5190	-0.7990	-0.5533	0.5190	0.0006	0.0009	-0.0025
17P	0.0000	0.5533	-0.3190	6.9068	-3.8710	-33.3330	0.0000	0.0000	0.0000
22P	1.4840	0.0091	-0.7921	-1.4840	-0.0091	0.7921	0.7031	0.1695	-0.0060
23P	5.1600	0.0091	-1.6261	-5.1600	-0.0091	1.6261	0.5163	0.1451	-0.0040
24P	0.2740	0.1771	-0.2703	-0.2740	-0.1771	0.2703	0.3598	0.1214	-0.0025
25P	0.3320	0.1680	-0.2202	-0.3320	-0.1680	0.2202	0.3060	0.1087	-0.0022
26P	0.4300	0.1680	-0.2562	-0.4300	-0.1680	0.2562	0.1998	0.0797	-0.0016
27P	0.8210	0.7213	-0.7162	-0.8210	-0.7213	0.7162	0.1289	0.0590	-0.0012
28P	1.6800	0.5533	-0.9280	-1.6800	-0.5533	0.9280	0.0316	0.0216	-0.0005
29P	0.0000	0.5533	-0.3190	0.2961	0.2586	-7.4755	0.0000	0.0000	0.0000
30P	0.0000	0.0091	-0.0711	0.0000	-0.0091	0.0711	0.3598	-0.3153	-0.4985
31P	0.0000	0.0091	-0.0711	0.0000	-0.0091	0.0711	-0.1402	0.1847	-0.4985
32P	0.0000	0.0091	-0.0711	0.0000	-0.0091	0.0711	0.7031	-0.2672	-0.5020
33P	0.0000	0.0091	-0.0711	0.0000	-0.0091	0.0711	0.2031	0.2328	-0.5020
1X	0.1960	0.1771	-0.2493	-0.1960	-0.1771	0.2493	0.3585	0.1211	-0.0375
1XY	0.1960	0.1771	-0.2493	-0.1960	-0.1771	0.2493	0.3589	0.1219	0.0098
1Y	0.0000	0.1771	-0.1713	0.0000	-0.1771	0.1713	0.3576	0.1223	0.0221
2X	0.0000	0.1771	-1.2213	-0.0000	-0.1771	1.2213	0.3601	0.1217	-0.0492
3X	1.2940	0.1680	-0.3152	-1.2940	-0.1680	0.3152	0.3081	0.1073	-0.0366
3XY	0.1960	0.1680	-0.1782	-0.1960	-0.1680	0.1782	0.3077	0.1095	0.0098
3Y	0.4300	0.1680	-0.1872	-0.4300	-0.1680	0.1872	0.3062	0.1094	0.0220
4X	1.2750	0.1680	-1.8302	-1.2750	-0.1680	1.8302	0.3122	0.1077	-0.0373
5X	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.2504	0.0960	-0.0345
5XY	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.2530	0.0926	0.0088
5Y	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.2523	0.0964	0.0204
6X	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.2228	0.0867	-0.0328
6XY	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.2263	0.0878	0.0081
6Y	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.2253	0.0865	0.0194
7X	1.0980	0.1680	-0.2372	-1.0980	-0.1680	0.2372	0.2000	0.0791	-0.0312
7XY	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.2001	0.0799	0.0076
7Y	0.4300	0.1680	-0.1872	-0.4300	-0.1680	0.1872	0.1995	0.0803	0.0184
8X	0.5000	0.1680	-1.8252	-0.5000	-0.1680	1.8252	0.2030	0.0783	-0.0582
9X	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.1623	0.0718	-0.0275
9XY	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.1607	0.0673	0.0060
9Y	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.1623	0.0704	0.0158
10X	1.3480	0.1680	-0.2682	-1.3480	-0.1680	0.2682	0.1285	0.0591	-0.0230
10XY	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.1285	0.0586	0.0041
10Y	0.5280	0.1680	-0.2072	-0.5280	-0.1680	0.2072	0.1290	0.0587	0.0125
11X	0.4000	0.1680	-1.8502	-0.4000	-0.1680	1.8502	0.1271	0.0585	-0.0292
12X	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.1051	0.0548	-0.0227
12XY	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.1040	0.0484	0.0042
12Y	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.1055	0.0519	0.0135
13X	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.0830	0.0491	-0.0213
13XY	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.0812	0.0400	0.0041
13Y	0.0000	0.1680	-0.1002	-0.0000	-0.1680	0.1002	0.0823	0.0428	0.0138
14X	1.5970	0.7213	-0.6192	-1.5970	-0.7213	0.6192	0.0634	0.0424	-0.0192
14XY	0.0000	0.7213	-0.4192	-0.0000	-0.7213	0.4192	0.0633	0.0327	0.0033
14Y	0.6250	0.7213	-0.5462	-0.6250	-0.7213	0.5462	0.0622	0.0342	0.0132
15X	1.8470	0.5533	-0.5500	-1.8470	-0.5533	0.5500	0.0297	0.0234	-0.0151

15XY	0.0000	0.5533	-0.3190	0.0000	-0.5533	0.3190	0.0294	0.0187	0.0031
15Y	0.7230	0.5533	-0.4660	-0.7230	-0.5533	0.4660	0.0329	0.0202	0.0110
16X	1.5970	0.5533	-0.5190	-1.5970	-0.5533	0.5190	0.0005	0.0009	-0.0046
16XY	0.0000	0.5533	-0.3190	0.0000	-0.5533	0.3190	0.0013	0.0018	0.0011
16Y	0.6250	0.5533	-0.4460	-0.6250	-0.5533	0.4460	0.0028	0.0027	0.0038
17X	0.0000	0.5533	-0.3190	10.5192	10.4547	-65.0439	0.0000	0.0000	0.0000
17XY	0.0000	0.5533	-0.3190	2.4106	1.4537	12.4346	0.0000	0.0000	0.0000
17Y	0.0000	0.5533	-0.3190	10.5653	11.2254	62.0098	0.0000	0.0000	0.0000
30X	0.0000	0.0091	-0.0711	-0.0000	-0.0091	0.0712	0.3598	0.6847	-0.4985
31Y	0.0000	0.0091	-0.0711	0.0000	-0.0091	0.0711	0.8598	0.1847	-0.4985
32X	0.0000	0.0091	-0.0711	0.0000	-0.0091	0.0712	0.7031	0.7328	-0.5020
33Y	0.0000	0.0091	-0.0711	0.0000	-0.0091	0.0711	1.2031	0.2328	-0.5020
18S	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.2214	0.0860	-0.0259
19S	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.2238	0.1694	-0.0019
20S	0.0000	0.5533	-0.3190	-0.0000	-0.5533	0.3190	-0.0057	0.0007	-0.0012
21S	0.0000	0.5533	-0.3190	-0.0000	-0.5533	0.3190	0.0012	0.1254	-0.0192
18Y	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.2262	0.0871	0.0131
19X	0.0000	0.1680	-0.1002	0.0000	-0.1680	0.1002	0.2245	0.1765	-0.0131
20Y	0.0000	0.5533	-0.3190	0.0000	-0.5533	0.3190	0.0073	0.0017	-0.0014
21X	0.0000	0.5533	-0.3190	-0.0000	-0.5533	0.3190	0.0007	0.1030	0.0126

Crossing Diagonal Check for Load Case "Extreme Wind - Longitudinal" (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)	Original Supported RLX	Original Supported RLY	Original Supported RLZ	Original Supported L/R	Original Supported KL/R	Original Supported Curve No.	Alternate Unsupported L/R Cap. (kips)	Alternate Unsupported RLOUT	Alternate Unsupported L/R	Alternate Unsupported KL/R	Alternate Unsupported Curve No.
g13P	g13X	Short only	-2.09	0.17	11.56	0.750	0.500	0.500	123.69	122.85	5	8.63	1.000	158.01	143.38	6
g25P	g25X	Short only	-2.30	-2.68	12.53	0.780	0.560	0.560	129.17	127.02	5	10.86	1.000	147.29	136.78	6
g25X	g25P	Short only	-2.68	-2.30	12.53	0.780	0.560	0.560	129.17	127.02	5	10.86	1.000	147.29	136.78	6
g26P	g26Y	Short only	-0.70	-0.73	12.53	0.780	0.560	0.560	129.17	127.02	5	10.86	1.000	147.29	136.78	6
g26Y	g26P	Short only	-0.73	-0.70	12.53	0.780	0.560	0.560	129.17	127.02	5	10.86	1.000	147.29	136.78	6
g27Y	g27XY	Long only	-2.37	0.38	11.66	0.560	0.780	0.560	147.51	141.00	5	8.89	1.000	187.46	161.49	6
g29P	g29X	Long only	-1.46	-0.89	8.82	0.560	0.780	0.560	175.25	162.14	5	6.91	1.000	222.71	183.17	6
g29X	g29P	Long only	-0.89	-1.46	8.82	0.560	0.780	0.560	175.25	162.14	5	6.91	1.000	222.71	183.17	6
g30P	g30Y	Long only	-0.21	-0.47	8.82	0.560	0.780	0.560	175.25	162.14	5	6.91	1.000	222.71	183.17	6
g30Y	g30P	Long only	-0.47	-0.21	8.82	0.560	0.780	0.560	175.25	162.14	5	6.91	1.000	222.71	183.17	6

Summary of Clamp Capacities and Usages for Load Case "Extreme Wind - Longitudinal":

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
1	0.814	30.00	30.00	2.71
2	1.234	30.00	30.00	4.11
3	1.899	30.00	30.00	6.33
4	2.237	30.00	30.00	7.46
5	1.884	30.00	30.00	6.28
6	1.900	30.00	30.00	6.33
7	1.906	30.00	30.00	6.35
8	1.900	30.00	30.00	6.33
14	1.102	30.00	30.00	3.67
15	1.209	30.00	30.00	4.03

16	1.242	30.00	30.00	4.14
17	0.745	30.00	30.00	2.48
18	0.621	30.00	30.00	2.07
19	1.342	30.00	30.00	4.47
20	0.363	30.00	30.00	1.21
21	0.582	30.00	30.00	1.94
22	0.363	30.00	30.00	1.21
23	0.363	30.00	30.00	1.21
24	0.314	30.00	30.00	1.05
25	5.410	30.00	30.00	18.03
26	0.424	30.00	30.00	1.41
27	0.432	30.00	30.00	1.44
28	0.528	30.00	30.00	1.76
29	1.307	30.00	30.00	4.36
30	1.997	30.00	30.00	6.66
31	1.682	30.00	30.00	5.61
32	1.136	30.00	30.00	3.79
33	1.385	30.00	30.00	4.62
34	1.858	30.00	30.00	6.19
35	2.005	30.00	30.00	6.68
36	1.768	30.00	30.00	5.89
37	0.498	30.00	30.00	1.66
38	0.592	30.00	30.00	1.97
39	1.100	30.00	30.00	3.67
40	1.023	30.00	30.00	3.41
41	0.946	30.00	30.00	3.15
42	0.498	30.00	30.00	1.66

*** 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 Size	Angle Curve Type	Steel Strength (ksi)	Max 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 Comp. (ft)	KL/R	Length	No. Of Bolts	No. Member
LEG1	L4x4x1/4	4X4X0.25	SAE	33.0	93.52	Comp	93.52	g6X	-57.412	Extreme	61.392	125.640	168.750	0.500	0.500	0.500	37.74	37.74	5.000	1	12
LEG2	L4x4x5/16	4X4X0.3125	SAE	33.0	97.97	Tens	97.87	g12X	-74.173	Extreme	75.789	104.700	175.781	0.500	0.500	0.500	38.65	38.65	5.096	1	10
LEG3	L4x4x3/8	4X4X0.375	SAE	33.0	86.27	Comp	86.27	g11X	-73.786	Extreme	85.526	104.700	210.937	0.167	0.167	0.167	57.05	57.05	22.432	1	10
XBR1	L1.75x1.75x3/16	1.75X1.75X0.1875	SAE	33.0	78.62	Comp	78.62	g13P	-9.088	Extreme	11.559	20.940	21.094	0.750	0.500	0.500	123.69	122.85	7.071	5	2
XBR2	L3x2x3/16	3X2X0.1875	SAU	33.0	44.56	Comp	44.56	g16Y	-7.698	Extreme	17.275	31.410	31.641	0.500	0.750	0.500	120.57	120.47	7.810	5	3
XBR3	L3x2x3/16	3X2X0.1875	SAU	33.0	43.84	Comp	43.84	g19XY	-7.564	Extreme	17.255	31.410	31.641	1.000	1.500	1.000	120.57	120.57	3.905	4	3
XBR4	L2x2x3/16	2X2X0.1875	SAE	33.0	30.97	Cross	30.97	g26Y	-3.363	Extreme	10.862	20.940	21.094	1.000	0.560	0.560	147.29	136.78	7.573	6	2
XBR5	L2.5x2x3/16	2.5X2X0.1875	SAU	33.0	26.67	Cross	26.67	g27Y	-2.371	Extreme	8.890	20.940	21.094	0.560	1.000	0.560	187.46	161.49	9.373	6	2
XBR6	L1.75x1.75x1/4	1.75X1.75X0.25	SAE	33.0	55.39	Comp	55.39	g32XY	-1.250	NESC Hea	2.257	20.940	28.125	0.790	0.580	0.580	383.86	321.10	18.807	5	2
XBR7	L1.75x1.75x3/16	1.75X1.75X0.1875	SAE	33.0	53.66	Tens	43.44	g33Y	-0.461	NESC Hea	1.061	20.940	21.094	0.800	0.410	0.410	499.05	408.88	27.916	5	2
PMBR1	**L2.5x2.5x3/16**	**2.5X2.5X0.1875**	**SAE**	**33.0**	**74.87**	**Tens**	**67.70**	**g60P**	**-6.902**	**Extreme**	**21.670**	**10.470**	**10.195**	**1.000**	**1.000**	**1.000**	**85.71**	**102.85**	**3.536**	**3**	**1 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g60P g60XY g60Y ??**
PMBR2	L3.5x3.5x1/4	3.5X3.5X0.25	SAE	36.0	30.37	Comp	30.37	g64P	-3.180	Extreme	16.980	10.470	13.594	1.000	1.000	1.000	168.78	168.78	9.761	4	1
HBR1	L1.75x1.75x3/16	1.75X1.75X0.1875	SAE	33.0	99.80	Comp	99.80	g37P	-5.787	Extreme	5.799	10.470	10.547	1.000	1.000	1.000	174.93	174.93	5.000	4	1
HBR2	2.5x2x3/16	2.5X2X0.1875	SAU	33.0	52.51	Comp	52.51	g41P	-5.498	Extreme	10.510	10.470	10.547	1.000	0.500	0.500	148.52	148.52	9.815	4	1
HBR3	L3x2.5x1/4	3X2.5X0.25	SAU	33.0	55.90	Comp	55.90	g43P	-5.853	Extreme	12.202	10.470	14.062	1.000	0.500	0.500	175.29	175.29	13.804	4	1
HBR4	**L4x3x1/4**	**4X3X0.25**	**SAU**	**33.0**	**46.96**	**Comp**	**46.96**	**g45Y**	**-4.916**	**Extreme**	**13.759**	**10.470**	**14.062**	**2.000**	**1.000**	**1.000**	**187.50**	**187.50**	**10.000**	**4**	**1 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g46P g46X g46XY g46Y ??**
Arm1	L3x2.5x1/4	3X2.5X0.25	SAU	33.0	29.36	Comp	29.36	g49X	-8.371	NESC Hea	28.509	31.410	42.187	1.000	0.500	0.500	97.38	108.69	7.669	3	3
Arm2	L3.5x2.5x1/4	3.5X2.5X0.25	SAU	33.0	37.08	Comp	37.08	g53P	-9.096	NESC Hea	24.527	31.410	42.187	1.000	0.500	0.500					

132.50 129.56 12.013 5 3
ArmBR1 L2.5x2.5x3/16 SAE 2.5X2.5X0.1875 33.0 29.47 Comp 29.47 g55X -3.086NESC Hea 10.714 10.470 10.547 1.000 1.000 1.000
155.23 155.23 6.403 4 1
ArmBR2 L1.75x1/4x1/4 BAR 1.75X0.25X0.25 33.0 93.43 Tens 0.00 g59Y 0.000 0.050 10.470 14.062 1.000 1.000 1.000
1588.21 1588.21 9.556 4 1
Powermnt 12" Std. Pipe PIP 12.75X0.375 50.0 16.87 Comp 16.87 g65P -19.454NESC Hea 115.298 0.000 0.000 1.000 1.000 1.000
73.97 73.97 27.000 1 0
fic1 Fictitious1 Bar fic 36.0 0.00 0.00 g72P 0.000 0.000 0.000 0.000 1.000 1.000 1.000
2160000.00 2160000.00 18.000 4 0
fic Fictitious2 Bar fic 36.0 0.00 0.00 g74P 0.000 0.000 0.000 0.000 1.000 1.000 1.000
60000.00 60000.00 0.500 4 0
HBR5 L1.75x1.75x3/16 SAE 1.75X1.75X0.1875 33.0 14.10 Comp 14.10 g78XY -1.476NESC Hea 14.114 10.470 10.547 1.000 1.000 1.000
87.46 103.73 2.500 3 1
ArmBR2R L1.75x3/8x3/8 BAR 1.75X0.375X0.375 33.0 77.61 Tens 0.00 g57Y 0.000 0.100 10.470 21.094 1.000 1.000 1.000
1372.59 1372.59 12.382 4 1

Group Summary (Tension Portion):

Group No.	Group Label	Angle Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Control	Max Tens. %	Tension 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	Hole Diameter (in)
LEG1	L4x4x1/4	SAE	4X4X0.25	33.0	93.52	Comp	87.51	g6Y	46.096	Extreme	52.676	125.640	168.750	220.588	5.000	12	2.000	0.6875
LEG2	L4x4x5/16	SAE	4X4X0.3125	33.0	97.97	Tens	97.97	g12Y	63.702	Extreme	65.020	104.700	175.781	103.401	5.096	10	2.000	0.6875
LEG3	L4x4x3/8	SAE	4X4X0.375	33.0	86.27	Comp	72.85	g11Y	56.360	Extreme	77.364	104.700	210.937	193.014	22.432	10	2.000	0.6875
XBR1	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	33.0	78.62	Comp	56.62	g13X	8.259	Extreme	14.585	20.940	21.094	16.189	7.071	2	1.000	0.6875
XBR2	L3x2x3/16	SAU	3X2X0.1875	33.0	44.56	Comp	40.40	g23XY	9.253	Extreme	22.901	31.410	31.641	28.125	7.071	3	1.000	0.6875
XBR3	L3x2x3/16	SAU	3X2X0.1875	33.0	43.84	Comp	39.62	g35Y	3.057	Extreme	17.333	10.470	10.547	7.717	11.826	1	1.000	0.6875
XBR4	L2x2x3/16	SAE	2X2X0.1875	33.0	30.97	Cross	19.12	g25XY	2.914	Extreme	17.258	20.940	21.094	15.240	7.573	2	1.000	0.6875
XBR5	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	26.67	Cross	12.57	g28P	2.357	Extreme	20.228	20.940	21.094	18.750	9.373	2	1.000	0.6875
XBR6	L1.75x1.75x1/4	SAE	1.75X1.75X0.25	33.0	55.39	Comp	34.78	g32X	6.623	Extreme	19.041	20.940	28.125	24.820	18.807	2	1.000	0.6875
XBR7	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	33.0	53.66	Tens	53.66	g33XY	7.827	Extreme	14.585	20.940	21.094	17.420	27.916	2	1.000	0.6875
PMBR1	**L2.5x2.5x3/16**	**SAE**	**2.5X2.5X0.1875**	**36.0**	**74.87**	**Tens**	**74.87**	**g60Y**	**7.634**	**Extreme**	**25.048**	**10.470**	**10.195**	**0.000**	**3.536**	**1**	**1.000**	**0.6875**
PMBR2	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	36.0	30.37	Comp	4.12	g64Y	0.431	NESC Hea	49.187	10.470	13.594	0.000	9.761	1	1.000	0.6875
HBR1	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	33.0	99.80	Comp	61.59	g38P	4.753	Extreme	14.585	10.470	10.547	7.717	5.000	1	1.000	0.6875
HBR2	2.5x2x3/16	SAU	2.5X2X0.1875	33.0	52.51	Comp	11.59	g41X	0.894	Extreme	17.444	10.470	10.547	7.717	9.815	1	1.000	0.6875

PMBR1 L2.5x2.5x3/16 SAE 2.5X2.5X0.1875 36.0 74.87 Tens 74.87 g60Y 7.634Extreme 25.048 10.470 10.195 0.000 3.536 1 1.000 0.6875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g60P g60XY g60Y ??

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     HBR3      L3x2.5x1/4   SAU       3X2.5X0.25     33.0 55.90  Comp 11.85    g43X   1.241Extreme    30.090   10.470   14.062   12.500 13.804     1
1.000   0.6875
     HBR4        L4x3x1/4   SAU         4X3X0.25     33.0 46.96  Comp 16.08    g46X   1.684Extreme    37.663   10.470   14.062   12.500 10.000     1
1.000   0.6875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g46P
g46X g46XY g46Y  ??
     Arm1      L3x2.5x1/4   SAU       3X2.5X0.25     33.0 29.36  Comp 17.76    g48P   7.677Extreme    43.230    0.000    0.000    0.000  5.000     0
0.000   0.6875
     Arm2    L3.5x2.5x1/4   SAU     3.5X2.5X0.25     33.0 37.08  Comp  0.00    g54Y   0.000           47.520    0.000    0.000    0.000  5.000     0
0.000   0.6875
   ArmBR1   L2.5x2.5x3/16   SAE   2.5X2.5X0.1875     33.0 29.47  Comp  0.00    g55X   0.000           22.961   10.470   10.547    0.000  6.403     1
1.000   0.6875
   ArmBR2   L1.75x1/4x1/4   BAR   1.75X0.25X0.25     33.0 93.43  Tens 93.43    g58XY  7.370NESC Hea    7.889   10.470   14.062    0.000  2.500     1
1.000   0.6875
 Powermnt   12" Std. Pipe   PIP      12.75X0.375     50.0 16.87  Comp  0.00    g71P   0.000          729.999    0.000    0.000    0.000  9.000     0
0.000         0
     fic1     Fictitious1   Bar              fic     36.0  0.00        0.00    g72P   0.000NESC Hea    3.600    0.000    0.000    0.000 18.000     0
0.000         0
      fic     Fictitious2   Bar              fic     36.0  0.00        0.00    g74P   0.072Extreme     3.600    0.000    0.000    0.000  0.500     0
0.000         0
     HBR5 L1.75x1.75x3/16   SAE 1.75X1.75X0.1875     33.0 14.10  Comp  0.00    g78Y   0.000           14.585   10.470   10.547    7.717  2.500     1
1.000   0.6875
  ArmBR2R   L1.75x3/8x3/8   BAR 1.75X0.375X0.375     33.0 77.61  Tens 77.61    g57Y   8.126NESC Hea   11.834   10.470   21.094    0.000 12.382     1
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 - Transverse	93.43	g58XY	Angle
Extreme Wind - Transverse	99.80	g37P	Angle
NESC Heavy - Longitudinal	92.88	g58Y	Angle
Extreme Wind - Longitudinal	93.65	g12Y	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	6.86	NESC Heavy - Transverse	0.0
2	Clamp	8.86	NESC Heavy - Transverse	0.0
3	Clamp	13.12	NESC Heavy - Transverse	0.0
4	Clamp	14.97	NESC Heavy - Transverse	0.0
5	Clamp	13.38	NESC Heavy - Transverse	0.0
6	Clamp	13.35	NESC Heavy - Transverse	0.0
7	Clamp	13.74	NESC Heavy - Transverse	0.0
8	Clamp	13.59	NESC Heavy - Transverse	0.0
14	Clamp	4.83	Extreme Wind - Transverse	0.0
15	Clamp	5.44	NESC Heavy - Transverse	0.0
16	Clamp	5.47	Extreme Wind - Transverse	0.0
17	Clamp	2.95	Extreme Wind - Transverse	0.0
18	Clamp	2.52	Extreme Wind - Transverse	0.0

19	Clamp	4.47	Extreme Wind - Longitudinal	0.0
20	Clamp	1.50	Extreme Wind - Transverse	0.0
21	Clamp	2.37	Extreme Wind - Transverse	0.0
22	Clamp	1.50	Extreme Wind - Transverse	0.0
23	Clamp	1.50	Extreme Wind - Transverse	0.0
24	Clamp	1.35	Extreme Wind - Transverse	0.0
25	Clamp	18.03	Extreme Wind - Longitudinal	0.0
26	Clamp	2.92	NESC Heavy - Longitudinal	0.0
27	Clamp	3.65	NESC Heavy - Longitudinal	0.0
28	Clamp	4.78	NESC Heavy - Longitudinal	0.0
29	Clamp	9.21	NESC Heavy - Longitudinal	0.0
30	Clamp	15.43	NESC Heavy - Longitudinal	0.0
31	Clamp	6.35	NESC Heavy - Transverse	0.0
32	Clamp	3.79	Extreme Wind - Longitudinal	0.0
33	Clamp	4.62	Extreme Wind - Longitudinal	0.0
34	Clamp	6.19	Extreme Wind - Longitudinal	0.0
35	Clamp	6.68	Extreme Wind - Longitudinal	0.0
36	Clamp	5.89	Extreme Wind - Longitudinal	0.0
37	Clamp	1.95	NESC Heavy - Longitudinal	0.0
38	Clamp	2.28	NESC Heavy - Longitudinal	0.0
39	Clamp	3.67	Extreme Wind - Longitudinal	0.0
40	Clamp	4.51	NESC Heavy - Transverse	0.0
41	Clamp	3.41	NESC Heavy - Transverse	0.0
42	Clamp	1.97	NESC Heavy - Longitudinal	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 - Transverse	1	Clamp	2P	1.150	0.912	1.443	2.058
NESC Heavy - Transverse	2	Clamp	2X	0.000	1.100	2.418	2.657
NESC Heavy - Transverse	3	Clamp	4P	0.050	1.363	3.691	3.935
NESC Heavy - Transverse	4	Clamp	4X	2.200	1.300	3.691	4.490
NESC Heavy - Transverse	5	Clamp	8P	0.600	1.342	3.736	4.015
NESC Heavy - Transverse	6	Clamp	8X	0.625	1.300	3.736	4.005
NESC Heavy - Transverse	7	Clamp	11P	1.275	1.346	3.680	4.121
NESC Heavy - Transverse	8	Clamp	11X	1.175	1.300	3.680	4.076
NESC Heavy - Transverse	14	Clamp	16P	0.000	0.538	1.145	1.265
NESC Heavy - Transverse	15	Clamp	15P	0.000	0.678	1.485	1.632
NESC Heavy - Transverse	16	Clamp	14P	0.000	0.502	1.076	1.187
NESC Heavy - Transverse	17	Clamp	10P	0.000	0.344	0.806	0.877
NESC Heavy - Transverse	18	Clamp	7P	0.000	0.287	0.683	0.741
NESC Heavy - Transverse	19	Clamp	3X	0.000	0.101	0.860	0.866
NESC Heavy - Transverse	20	Clamp	1P	0.000	0.123	0.306	0.330
NESC Heavy - Transverse	21	Clamp	3P	0.000	0.276	0.630	0.688
NESC Heavy - Transverse	22	Clamp	1X	0.000	0.057	0.306	0.311
NESC Heavy - Transverse	23	Clamp	1XY	0.000	0.057	0.306	0.311
NESC Heavy - Transverse	24	Clamp	3XY	0.000	0.057	0.354	0.359
NESC Heavy - Transverse	25	Clamp	23P	0.000	1.254	4.081	4.269
NESC Heavy - Transverse	26	Clamp	24P	0.000	0.000	0.869	0.869
NESC Heavy - Transverse	27	Clamp	25P	0.000	0.204	1.071	1.090
NESC Heavy - Transverse	28	Clamp	26P	0.000	0.374	1.375	1.425
NESC Heavy - Transverse	29	Clamp	27P	0.000	0.714	2.653	2.747
NESC Heavy - Transverse	30	Clamp	28P	0.000	1.003	4.481	4.592
NESC Heavy - Transverse	31	Clamp	22P	0.000	0.390	1.864	1.904
NESC Heavy - Transverse	32	Clamp	7X	0.000	0.044	0.683	0.685

NESC Heavy - Transverse	33	Clamp	10X	0.000	0.054	0.806	0.808
NESC Heavy - Transverse	34	Clamp	14X	0.000	0.064	1.076	1.077
NESC Heavy - Transverse	35	Clamp	15X	0.000	0.074	1.485	1.486
NESC Heavy - Transverse	36	Clamp	16X	0.000	0.064	1.145	1.147
NESC Heavy - Transverse	37	Clamp	7Y	0.000	0.158	0.556	0.578
NESC Heavy - Transverse	38	Clamp	10Y	0.000	0.186	0.650	0.676
NESC Heavy - Transverse	39	Clamp	14Y	0.000	0.314	0.891	0.944
NESC Heavy - Transverse	40	Clamp	15Y	0.000	0.461	1.271	1.352
NESC Heavy - Transverse	41	Clamp	16Y	0.000	0.350	0.960	1.022
NESC Heavy - Transverse	42	Clamp	3Y	0.000	0.176	0.559	0.586
Extreme Wind - Transverse	1	Clamp	2P	0.425	0.777	0.671	1.111
Extreme Wind - Transverse	2	Clamp	2X	0.000	1.402	1.221	1.859
Extreme Wind - Transverse	3	Clamp	4P	0.250	1.893	1.875	2.676
Extreme Wind - Transverse	4	Clamp	4X	1.275	1.868	1.830	2.909
Extreme Wind - Transverse	5	Clamp	8P	0.075	1.843	1.875	2.630
Extreme Wind - Transverse	6	Clamp	8X	0.500	1.818	1.825	2.624
Extreme Wind - Transverse	7	Clamp	11P	0.425	1.793	1.850	2.611
Extreme Wind - Transverse	8	Clamp	11X	0.400	1.768	1.850	2.590
Extreme Wind - Transverse	14	Clamp	16P	0.000	1.352	0.519	1.448
Extreme Wind - Transverse	15	Clamp	15P	0.000	1.477	0.550	1.576
Extreme Wind - Transverse	16	Clamp	14P	0.000	1.520	0.619	1.642
Extreme Wind - Transverse	17	Clamp	10P	0.000	0.842	0.268	0.884
Extreme Wind - Transverse	18	Clamp	7P	0.000	0.717	0.237	0.755
Extreme Wind - Transverse	19	Clamp	3X	0.000	0.456	0.315	0.554
Extreme Wind - Transverse	20	Clamp	1P	0.000	0.373	0.249	0.449
Extreme Wind - Transverse	21	Clamp	3P	0.000	0.664	0.253	0.711
Extreme Wind - Transverse	22	Clamp	1X	0.000	0.373	0.249	0.449
Extreme Wind - Transverse	23	Clamp	1XY	0.000	0.373	0.249	0.449
Extreme Wind - Transverse	24	Clamp	3XY	0.000	0.364	0.178	0.405
Extreme Wind - Transverse	25	Clamp	23P	0.000	4.974	1.626	5.233
Extreme Wind - Transverse	26	Clamp	24P	0.000	0.177	0.270	0.323
Extreme Wind - Transverse	27	Clamp	25P	0.000	0.168	0.220	0.277
Extreme Wind - Transverse	28	Clamp	26P	0.000	0.168	0.256	0.306
Extreme Wind - Transverse	29	Clamp	27P	0.000	0.721	0.716	1.016
Extreme Wind - Transverse	30	Clamp	28P	0.000	0.553	0.928	1.080
Extreme Wind - Transverse	31	Clamp	22P	0.000	1.493	0.792	1.690
Extreme Wind - Transverse	32	Clamp	7X	0.000	0.260	0.237	0.352
Extreme Wind - Transverse	33	Clamp	10X	0.000	0.280	0.268	0.388
Extreme Wind - Transverse	34	Clamp	14X	0.000	0.854	0.619	1.055
Extreme Wind - Transverse	35	Clamp	15X	0.000	0.707	0.550	0.896
Extreme Wind - Transverse	36	Clamp	16X	0.000	0.686	0.519	0.860
Extreme Wind - Transverse	37	Clamp	7Y	0.000	0.311	0.187	0.363
Extreme Wind - Transverse	38	Clamp	10Y	0.000	0.344	0.207	0.402
Extreme Wind - Transverse	39	Clamp	14Y	0.000	0.929	0.546	1.078
Extreme Wind - Transverse	40	Clamp	15Y	0.000	0.794	0.466	0.921
Extreme Wind - Transverse	41	Clamp	16Y	0.000	0.761	0.446	0.882
Extreme Wind - Transverse	42	Clamp	3Y	0.000	0.311	0.187	0.363
NESC Heavy - Longitudinal	1	Clamp	2P	1.150	0.037	1.443	1.846
NESC Heavy - Longitudinal	2	Clamp	2X	0.000	0.000	2.418	2.418
NESC Heavy - Longitudinal	3	Clamp	4P	0.050	0.063	3.691	3.692
NESC Heavy - Longitudinal	4	Clamp	4X	2.200	0.000	3.691	4.297
NESC Heavy - Longitudinal	5	Clamp	8P	0.600	0.042	3.736	3.784
NESC Heavy - Longitudinal	6	Clamp	8X	0.625	0.000	3.736	3.788
NESC Heavy - Longitudinal	7	Clamp	11P	1.275	0.046	3.680	3.895
NESC Heavy - Longitudinal	8	Clamp	11X	1.175	0.000	3.680	3.863
NESC Heavy - Longitudinal	14	Clamp	16P	0.275	0.263	1.145	1.207
NESC Heavy - Longitudinal	15	Clamp	15P	0.318	0.360	1.485	1.560
NESC Heavy - Longitudinal	16	Clamp	14P	0.275	0.227	1.076	1.133
NESC Heavy - Longitudinal	17	Clamp	10P	0.232	0.112	0.806	0.846

NESC Heavy - Longitudinal	18	Clamp	7P	0.189	0.098	0.683	0.716
NESC Heavy - Longitudinal	19	Clamp	3X	0.420	0.000	0.860	0.957
NESC Heavy - Longitudinal	20	Clamp	1P	0.057	0.066	0.306	0.318
NESC Heavy - Longitudinal	21	Clamp	3P	0.160	0.116	0.630	0.661
NESC Heavy - Longitudinal	22	Clamp	1X	0.057	0.000	0.306	0.311
NESC Heavy - Longitudinal	23	Clamp	1XY	0.057	0.000	0.306	0.311
NESC Heavy - Longitudinal	24	Clamp	3XY	0.057	0.000	0.354	0.359
NESC Heavy - Longitudinal	25	Clamp	23P	1.323	0.000	4.081	4.290
NESC Heavy - Longitudinal	26	Clamp	24P	0.096	0.000	0.869	0.875
NESC Heavy - Longitudinal	27	Clamp	25P	0.117	0.204	1.071	1.096
NESC Heavy - Longitudinal	28	Clamp	26P	0.151	0.374	1.375	1.433
NESC Heavy - Longitudinal	29	Clamp	27P	0.288	0.714	2.653	2.762
NESC Heavy - Longitudinal	30	Clamp	28P	0.591	1.003	4.481	4.630
NESC Heavy - Longitudinal	31	Clamp	22P	0.390	0.000	1.864	1.904
NESC Heavy - Longitudinal	32	Clamp	7X	0.363	0.000	0.683	0.774
NESC Heavy - Longitudinal	33	Clamp	10X	0.446	0.000	0.806	0.921
NESC Heavy - Longitudinal	34	Clamp	14X	0.528	0.000	1.076	1.198
NESC Heavy - Longitudinal	35	Clamp	15X	0.611	0.000	1.485	1.605
NESC Heavy - Longitudinal	36	Clamp	16X	0.528	0.000	1.145	1.261
NESC Heavy - Longitudinal	37	Clamp	7Y	0.151	0.098	0.556	0.585
NESC Heavy - Longitudinal	38	Clamp	10Y	0.185	0.112	0.650	0.685
NESC Heavy - Longitudinal	39	Clamp	14Y	0.220	0.227	0.891	0.945
NESC Heavy - Longitudinal	40	Clamp	15Y	0.254	0.360	1.271	1.345
NESC Heavy - Longitudinal	41	Clamp	16Y	0.220	0.263	0.960	1.020
NESC Heavy - Longitudinal	42	Clamp	3Y	0.151	0.116	0.559	0.591
Extreme Wind - Longitudinal	1	Clamp	2P	0.425	0.177	0.671	0.814
Extreme Wind - Longitudinal	2	Clamp	2X	0.000	0.177	1.221	1.234
Extreme Wind - Longitudinal	3	Clamp	4P	0.250	0.168	1.875	1.899
Extreme Wind - Longitudinal	4	Clamp	4X	1.275	0.168	1.830	2.237
Extreme Wind - Longitudinal	5	Clamp	8P	0.075	0.168	1.875	1.884
Extreme Wind - Longitudinal	6	Clamp	8X	0.500	0.168	1.825	1.900
Extreme Wind - Longitudinal	7	Clamp	11P	0.425	0.168	1.850	1.906
Extreme Wind - Longitudinal	8	Clamp	11X	0.400	0.168	1.850	1.900
Extreme Wind - Longitudinal	14	Clamp	16P	0.799	0.553	0.519	1.102
Extreme Wind - Longitudinal	15	Clamp	15P	0.924	0.553	0.550	1.209
Extreme Wind - Longitudinal	16	Clamp	14P	0.799	0.721	0.619	1.242
Extreme Wind - Longitudinal	17	Clamp	10P	0.674	0.168	0.268	0.745
Extreme Wind - Longitudinal	18	Clamp	7P	0.549	0.168	0.237	0.621
Extreme Wind - Longitudinal	19	Clamp	3X	1.294	0.168	0.315	1.342
Extreme Wind - Longitudinal	20	Clamp	1P	0.196	0.177	0.249	0.363
Extreme Wind - Longitudinal	21	Clamp	3P	0.496	0.168	0.253	0.582
Extreme Wind - Longitudinal	22	Clamp	1X	0.196	0.177	0.249	0.363
Extreme Wind - Longitudinal	23	Clamp	1XY	0.196	0.177	0.249	0.363
Extreme Wind - Longitudinal	24	Clamp	3XY	0.196	0.168	0.178	0.314
Extreme Wind - Longitudinal	25	Clamp	23P	5.160	0.009	1.626	5.410
Extreme Wind - Longitudinal	26	Clamp	24P	0.274	0.177	0.270	0.424
Extreme Wind - Longitudinal	27	Clamp	25P	0.332	0.168	0.220	0.432
Extreme Wind - Longitudinal	28	Clamp	26P	0.430	0.168	0.256	0.528
Extreme Wind - Longitudinal	29	Clamp	27P	0.821	0.721	0.716	1.307
Extreme Wind - Longitudinal	30	Clamp	28P	1.680	0.553	0.928	1.997
Extreme Wind - Longitudinal	31	Clamp	22P	1.484	0.009	0.792	1.682
Extreme Wind - Longitudinal	32	Clamp	7X	1.098	0.168	0.237	1.136
Extreme Wind - Longitudinal	33	Clamp	10X	1.348	0.168	0.268	1.385
Extreme Wind - Longitudinal	34	Clamp	14X	1.597	0.721	0.619	1.858
Extreme Wind - Longitudinal	35	Clamp	15X	1.847	0.553	0.550	2.005
Extreme Wind - Longitudinal	36	Clamp	16X	1.597	0.553	0.519	1.768
Extreme Wind - Longitudinal	37	Clamp	7Y	0.430	0.168	0.187	0.498
Extreme Wind - Longitudinal	38	Clamp	10Y	0.528	0.168	0.207	0.592
Extreme Wind - Longitudinal	39	Clamp	14Y	0.625	0.721	0.546	1.100

Extreme Wind - Longitudinal	40	Clamp	15Y	0.723	0.553	0.466	1.023
Extreme Wind - Longitudinal	41	Clamp	16Y	0.625	0.553	0.446	0.946
Extreme Wind - Longitudinal	42	Clamp	3Y	0.430	0.168	0.187	0.498

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 - Transverse	13.966	7.075	45.868	992.024	536.708	2.749
Extreme Wind - Transverse	25.305	3.350	18.846	1824.440	256.411	10.993
NESC Heavy - Longitudinal	0.000	15.785	45.868	-0.817	1021.523	-5.930
Extreme Wind - Longitudinal	0.000	30.698	18.846	3.346	1849.714	-16.472

*** Weight of structure (lbs):
Weight of Angles*Section DLF: 14156.8
Total: 14156.8

*** End of Report

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Branford, CT 06405 F: (203) 488-8587

Subject:	Foundation Analysis Tower # 876
Location:	Fairfield, CT
Rev. 1: 9/9/21	Prepared by: T.J.L. Checked by: C.F.C. Job No. 21051.10

Foundation Analysis

Input Data:

Northeast Pier

Max. Reactions at Tower Leg:

Shear =	Shear := 17.52·1.1·kips = 19.3·kips	(User Input)
Compression =	Comp := 74.86·1.1·kips = 82.3·kips	(User Input)
Uplift =	Uplift := 63.12·1.1·kips = 69.4·kips	(User Input)

Tower Properties:

Tower Height =	$H_t := 86 \cdot ft$	(User Input)

Foundation Properties:

Pier Height =	$P_H := 3.75 \cdot ft$	(User Input)
Pier Width Top =	$P_{w1} := 1.67 \cdot ft$	(User Input)
Pier Width Botttom =	$P_{w2} := 2.14 \cdot ft$	(User Input)
Pier Projection Above Grade =	$P_P := 2.083 \cdot ft$	(User Input)
Pad Width =	$Pd_w := 10 \cdot ft$	(User Input)
Pad Thickness =	$Pd_t := 3.5 \cdot ft$	(User Input)
Mat Width =	$Mat_w := 0 \cdot ft$	(User Input)
Mat Thickness =	$Mat_t := 0 \cdot ft$	(User Input)

Subgrade Properties:

Concrete Unit Weight =	$\gamma c := 150 \cdot pcf$	(User Input)
Water Unit Weight =	$\gamma w := 62.4 \cdot pcf$	(User Input)
Soil Unit Weight =	$\gamma s := 100 \cdot pcf$	(User Input)
Uplift Angle =	$\psi := 30.0 \cdot deg$	(User Input)
Soil Bearing Capacity =	$BC_{soil} := 4000 \cdot psf$	(User Input)

Calculated Data:

Volume of the Concrete Pad = $V_{pad} := Pd_w^2 \cdot Pd_t = 350 \cdot ft^3$

Volume of the Concrete Pier = $V_{pier} := \frac{(P_H)}{3} \cdot \left(P_{w1}^2 + P_{w2}^2 + \sqrt{P_{w1}^2 \cdot P_{w2}^2}\right) = 13.68 \cdot ft^3$

Resisting Pyramid Base 1 = $B_1 := Pd_w^2 = 100 ft^2$

Resisting Pyramid Base 2 = $B_2 := \left[2 \cdot \tan(\psi) \cdot (P_H - P_P) + Pd_w\right]^2 = 142 ft^2$

Volume of Soil = $V_{soil} := \left[\frac{(P_H - P_P)}{3} \cdot \left(B_1 + B_2 + \sqrt{B_1 \cdot B_2}\right)\right] - V_{pier} = 187.17 \cdot ft^3$

Total Vdume of Concrete = $V_{Conc} := V_{pad} + V_{pier} = 364 \cdot ft^3$

Mass of Concrete = $Mass_{Conc} := V_{Conc} \cdot \gamma c = 54.6 \cdot kips$

Mass of Soil = $Mass_{Soil} := V_{soil} \cdot \gamma s = 19 \cdot kips$

Total Mass = $Mass_{tot} := Mass_{Conc} + Mass_{Soil} = 73 \cdot kips$

Check Uplift:

Required Factor of Safety = $F_S := 1.0$

$ActualFS := \frac{Mass_{tot}}{Uplift} = 1.06$

$Uplift\_Check := if\left(\frac{Mass_{tot}}{Uplift} \geq F_S, "OK", "Overstressed"\right)$

Uplift_Check = "OK"

Cross Sectional Area of Pad = $A_{pad} := Pd_w^2 = 100 ft^2$

Section Modulus of Pad = $S_{pad} := \frac{(Pd_w)^3}{6} = 167 \cdot ft^3$

Check Bearing:

$Bearing := \frac{Comp + Mass_{Conc}}{A_{pad}} + \frac{Shear \cdot (P_H + Pd_t)}{S_{pad}} = 2.21 \cdot ksf$

$Bearing\_Check := if\left(Bearing \leq BC_{soil}, "OK", "No Good"\right)$

Bearing_Check = "OK"

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Subject:	Foundation Analysis Tower # 876
Location:	Fairfield, CT
Rev. 1: 9/9/21	Prepared by: T.J.L. Checked by: C.F.C. Job No. 21051.10

Foundation Analysis

Input Data:

Northwest Pier

Max. Reactions at Tower Leg:

Shear =	Shear := 17.52·1.1·kips = 19.3·kips	(User Input)
Compression =	Comp := 74.86·1.1·kips = 82.3·kips	(User Input)
Uplift =	Uplift := 63.12·1.1·kips = 69.4·kips	(User Input)

Tower Properties:

Tower Height =	$H_t := 86 \cdot ft$	(User Input)

Foundation Properties:

Pier Height =	$P_H := 1.75 \cdot ft$	(User Input)
Pier Width Top =	$P_{w1} := 1.67 \cdot ft$	(User Input)
Pier Width Botttom =	$P_{w2} := 1.89 \cdot ft$	(User Input)
Pier Projection Above Grade =	$P_P := 1.75 \cdot ft$	(User Input)
Pad Width =	$Pd_w := 10 \cdot ft$	(User Input)
Pad Thickness =	$Pd_t := 3.5 \cdot ft$	(User Input)
Mat Width =	$Mat_w := 8 \cdot ft$	(User Input)
Mat Thickness =	$Mat_t := 2 \cdot ft$	(User Input)

Subgrade Properties:

Concrete Unit Weight =	$\gamma c := 150 \cdot pcf$	(User Input)
Water Unit Weight =	$\gamma w := 62.4 \cdot pcf$	(User Input)
Soil Unit Weight =	$\gamma s := 100 \cdot pcf$	(User Input)
Uplift Angle =	$\psi := 30.0 \cdot deg$	(User Input)
Soil Bearing Capacity =	$BC_{soil} := 4000 \cdot psf$	(User Input)

Calculated Data:

Volume of the Concrete Pad = $V_{pad} := Pd_w^{2} \cdot Pd_t = 350 \cdot ft^3$

Volume of the Concrete Pier = $V_{pier} := \frac{(P_H)}{3} \cdot \left(P_{w1}^{2} + P_{w2}^{2} + \sqrt{P_{w1}^{2} \cdot P_{w2}^{2}} \right) = 5.55 \cdot ft^3$

Volume of the Concrete Mat = $V_{mat} := Mat_w^{2} \cdot Mat_t = 128 \cdot ft^3$

Volume of Soil = $V_{soil} := 0$

Total Vdume of Concrete = $V_{Conc} := V_{pad} + V_{pier} + V_{mat} = 484 \cdot ft^3$

Mass of Concrete = $Mass_{Conc} := V_{Conc} \cdot \gamma c = 72.5 \cdot kips$

Mass of Soil = $Mass_{Soil} := V_{soil} \cdot \gamma s = 0 \cdot kips$

Total Mass = $Mass_{tot} := Mass_{Conc} + Mass_{Soil} = 72.5 \cdot kips$

Check Uplift:

Required Factor of Safety = $F_S := 1.0$

$ActualFS := \frac{Mass_{tot}}{Uplift} = 1.04$

$Uplift\_Check := if\left(\frac{Mass_{tot}}{Uplift} \geq F_S, "OK", "Overstressed" \right)$

Uplift_Check = "OK"

Cross Sectional Area of Pad = $A_{pad} := Pd_w^{2} = 100 ft^2$

Section Modulus of Pad = $S_{pad} := \frac{(Pd_w)^3}{6} = 167 \cdot ft^3$

Check Bearing:

$Bearing := \frac{Comp + Mass_{Conc}}{A_{pad}} + \frac{Shear \cdot (P_H + Pd_t)}{S_{pad}} = 2.16 \cdot ksf$

$Bearing\_Check := if\left(Bearing \leq BC_{soil}, "OK", "No Good" \right)$

Bearing_Check = "OK"

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Subject:	Foundation Analysis Tower # 876
Location:	Fairfield, CT
Rev. 1: 9/9/21	Prepared by: T.J.L. Checked by: C.F.C. Job No. 21051.10

Foundation Analysis

Input Data:

Southeast & Southwest Piers

Max. Reactions at Tower Leg:

Shear =	Shear := 32.48·1.1·kips = 35.7·kips	(User Input)	Combined Reactions from Two Adjacents Legs
Compression =	Comp := 138.44·1.1·kips = 152.3·kips	(User Input)	
Uplift =	Uplift := 113.41·1.1·kips = 124.8·kips	(User Input)	

Tower Properties:

Tower Height =	$H_t := 86 \cdot ft$	(User Input)

Foundation Properties:

Pier Height =	$P_H := 2.25 \cdot ft$	(User Input)
Pier Width Top =	$P_{w1} := 2.0 \cdot ft$	(User Input)
Pier Width Botttom =	$P_{w2} := 2.33 \cdot ft$	(User Input)
Pier Projection Above Grade =	$P_P := 0 \cdot ft$	(User Input)
Pad Width =	$Pd_w := 5 \cdot ft$	(User Input)
Pad Thickness =	$Pd_t := 2 \cdot ft$	(User Input)
Mat Width =	$Mat_w := 10 \cdot ft$	(User Input)
Mat Width =	$Mat_L := 24 \cdot ft$	(User Input)
Mat Thickness =	$Mat_t := 3 \cdot ft$	(User Input)

Subgrade Properties:

Concrete Unit Weight =	$\gamma c := 150 \cdot pcf$	(User Input)
Water Unit Weight =	$\gamma w := 62.4 \cdot pcf$	(User Input)
Soil Unit Weight =	$\gamma s := 100 \cdot pcf$	(User Input)
Uplift Angle =	$\psi := 30.0 \cdot deg$	(User Input)
Soil Bearing Capacity =	$BC_{soil} := 9000 \cdot psf$	(User Input)
Coefficient of Friction =	$\mu := 0.45$	(User Input)

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Subject:	Foundation Analysis Tower # 876
Location:	Fairfield, CT
Rev. 1: 9/9/21	Prepared by: T.J.L. Checked by: C.F.C. Job No. 21051.10

Calculated Data:

Volume of the Concrete Pad = $V_{pad} := Pd_w^2 \cdot Pd_t = 50 \cdot ft^3$

Volume of the Concrete Mat = $V_{mat} := Mat_w \cdot Mat_L \cdot Mat_t = 720 \cdot ft^3$

Volume of the Concrete Pier = $V_{pier} := \frac{(P_H)}{3} \cdot \left(P_{w1}^2 + P_{w2}^2 + \sqrt{P_{w1}^2 \cdot P_{w2}^2} \right) = 10.57 \cdot ft^3$

Resisting Pyramid Base 1 = $B_1 := Pd_w^2 = 25 ft^2$

Resisting Pyramid Base 2 = $B_2 := \left[2 \cdot \tan(\psi) \cdot (P_H - P_P) + Pd_w \right]^2 = 58 ft^2$

Volume of Soil = $V_{soil} := \left[\left[\frac{(P_H - P_P)}{3} \cdot \left(B_1 + B_2 + \sqrt{B_1 \cdot B_2} \right) \right] - V_{pier} \right] \cdot 2 = 159.95 \cdot ft^3$

Total Vdume of Concrete = $V_{Conc} := V_{pad} \cdot 2 + V_{mat} + V_{pier} \cdot 2 = 841 \cdot ft^3$

Mass of Concrete = $Mass_{Conc} := V_{Conc} \cdot \gamma c = 126.2 \cdot kips$

Mass of Soil = $Mass_{Soil} := V_{soil} \cdot \gamma s = 16 \cdot kips$

Total Mass = $Mass_{tot} := Mass_{Conc} + Mass_{Soil} = 142 \cdot kips$

Check Uplift:

Required Factor of Safety = $F_S := 1.0$

$ActualFS := \frac{Mass_{tot}}{Uplift} = 1.14$

$Uplift\_Check := if\left(\frac{Mass_{tot}}{Uplift} \geq F_S, "OK", "Overstressed" \right)$

Uplift_Check = "OK"

Check Sliding:

Sliding Resistance = $S_R := \mu \cdot (Mass_{Conc}) = 56.777 \cdot kips$

$Sliding\_Check := if(Shear \leq S_R, "OK", "No Good")$

Sliding_Check = "OK"

Check Bearing:

Cross Sectional Area of Pad = $A_{pad} := Pd_w^{2} = 25\,ft^2$

Section Modulus of Pad = $S_{pad} := \frac{(Pd_w)^3}{6} = 21\cdot ft^3$

Mass of Pad and Pier = $Mass_{pad.pier} := (V_{pad}\cdot 2 + V_{pier}\cdot 2)\cdot \gamma c = 18.2\cdot kips$

$$Bearing := \frac{Comp + Mass_{pad.pier}}{A_{pad}\cdot 2} + \frac{Shear\cdot(P_H + Pd_t)}{S_{pad}\cdot 2} = 7.05\cdot ksf$$

$Bearing\_Check := if(Bearing \le BC_{soil}, "OK", "No Good")$

Bearing_Check = "OK"

RAN Template:	A&L Template:
67D94B_Flagpole Outdoor	67D94B_1DP+1QP+1OP

CT11317B_L600_5_draft

Print Name: Standard

Section 1 - Site Information

Site ID: CT11317B
Status: Draft
Version: 5
Project Type: L600
Approved: Not Approved
Approved By: Not Approved
Last Modified: 5/7/2021 11:41:16 AM
Last Modified By: Mohamed.Seddik@T-Mobile.com

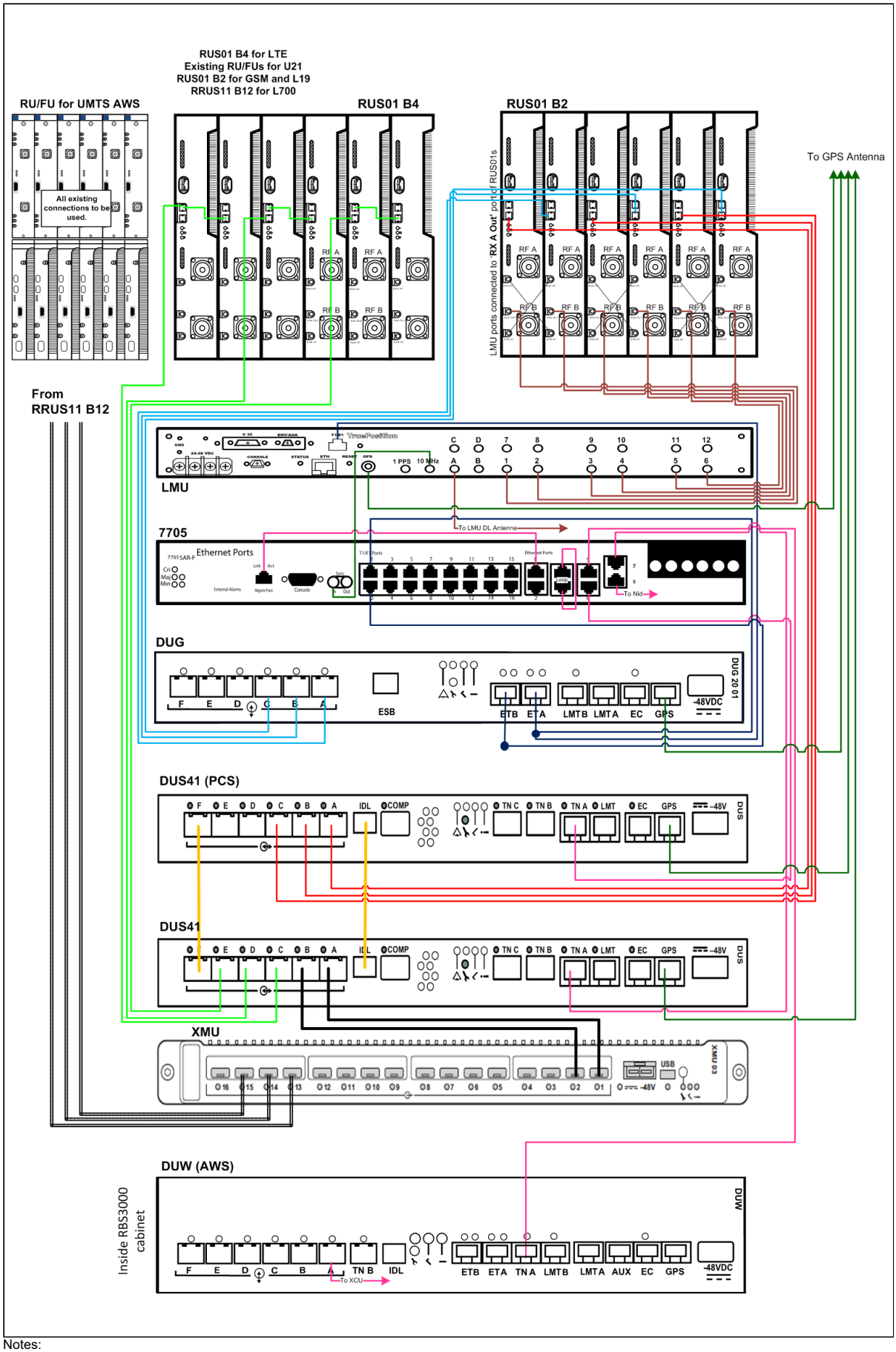
Site Name: Fairfield/MP/X44&X42
Site Class: Utility Lattice Tower
Site Type: Structure Non Building
Plan Year:
Market: CONNECTICUT CT
Vendor: Ericsson
Landlord: CL&P

Latitude: 41.20998700
Longitude: -73.26153900
Address: 280 Morehouse Drive (Tower 876 Line 1730)
City, State: Fairfield, CT
Region: NORTHEAST

RAN Template: 67D94B_Flagpole Outdoor			**AL Template:** 67D94B_1DP+1QP+1OP	
Sector Count: 3	**Antenna Count:** 6	**Coax Line Count:** 22	**TMA Count:** 0	**RRU Count:** 0

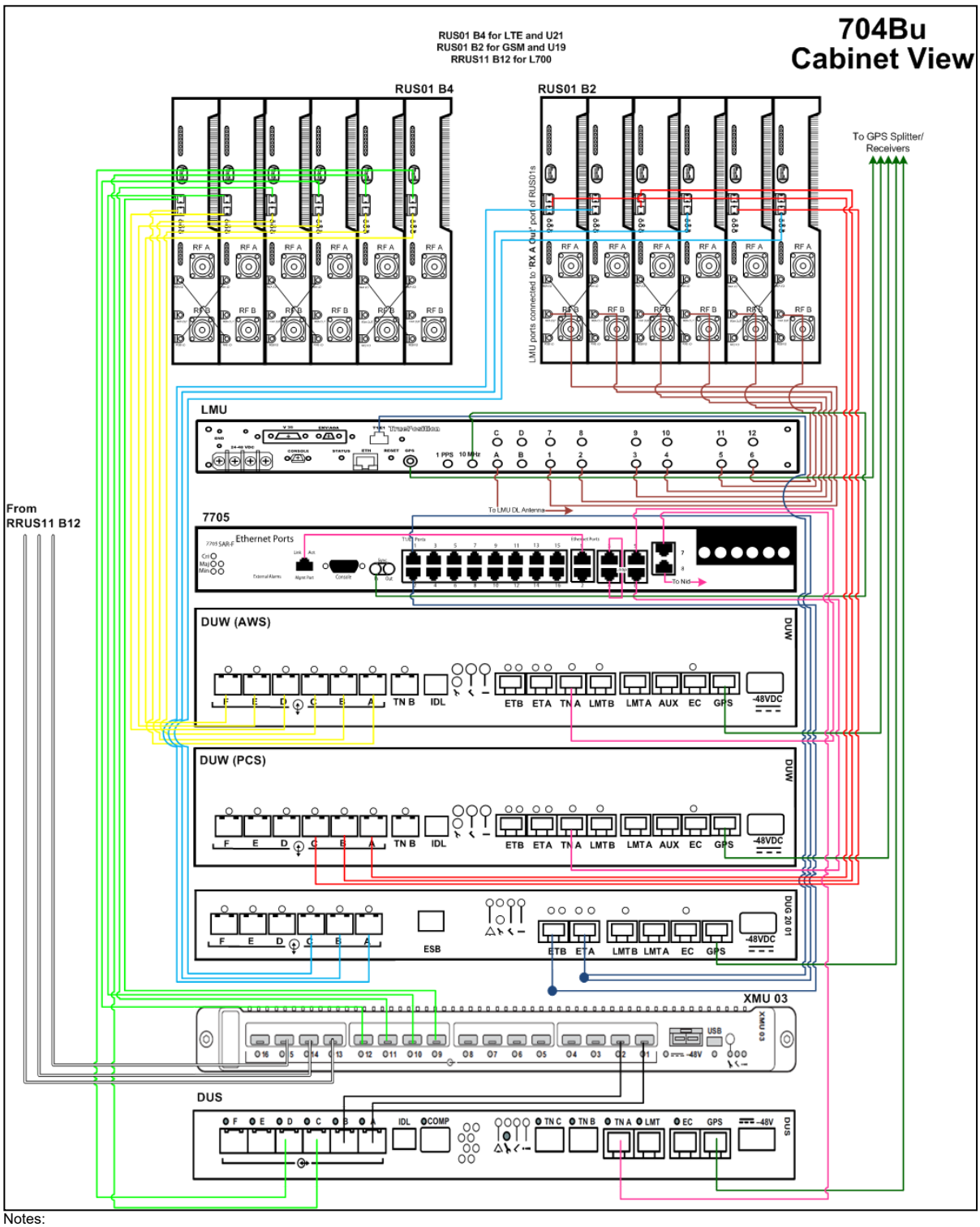
Section 2 - Existing Template Images

794A Outdoor.png



Notes:

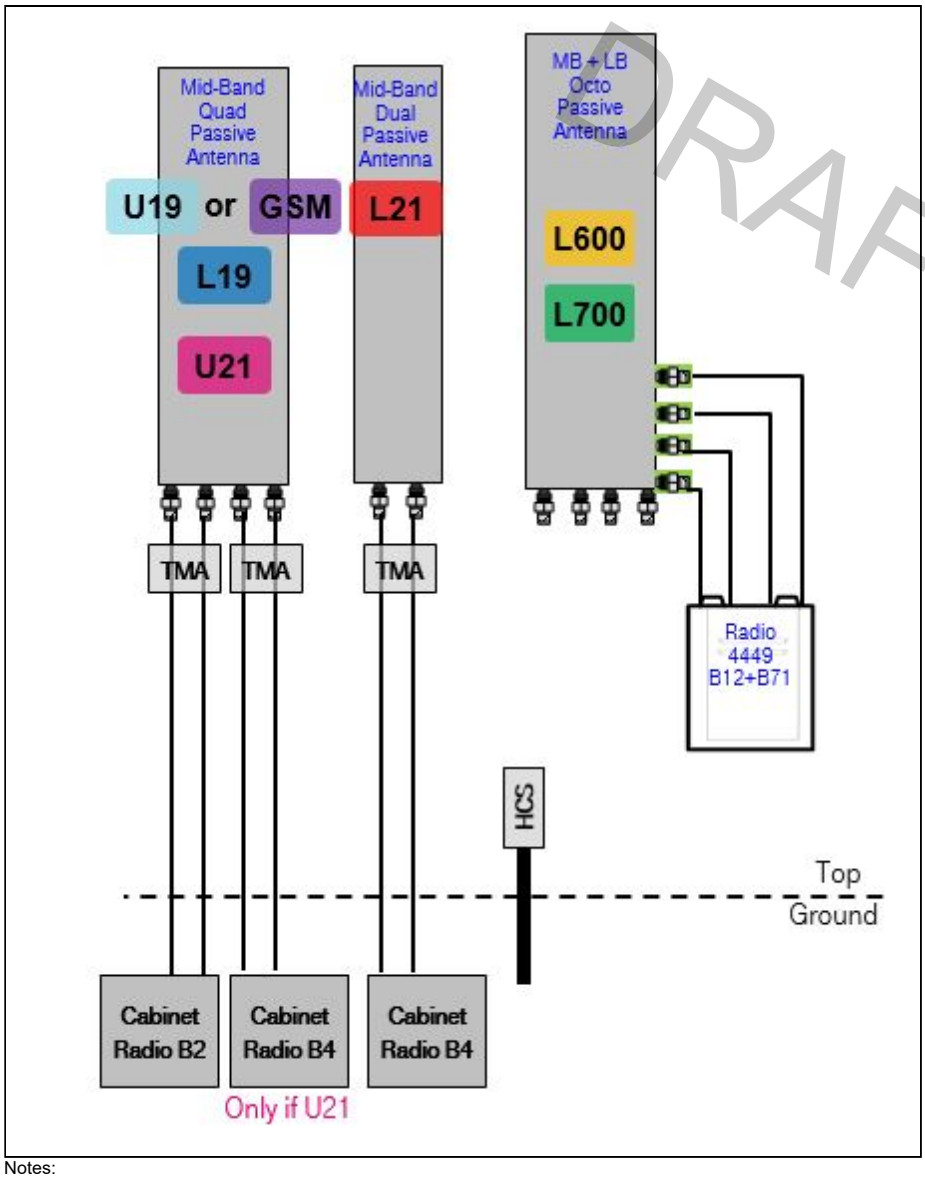
704Bu.png


704Bu
Cabinet View
RUS01 B4 for LTE and U21
RUS01 B2 for GSM and U19
RRUS11 B12 for L700
RUS01 B4
RUS01 B2
To GPS Splitter/
Receivers
LMU ports connected to 'RX A Out' port of RUS01s
LMU
From
RRUS11 B12
7705
Ethernet Ports
To LMU DL Antenna
To Nid
DUW (AWS)
DUW (PCS)
TN B
IDL
ETB ETA TN A LMTB LMTA AUX EC GPS
-48VDC
ESB
DUG 20 01
XMU 03
DUS
TN C
TN A
LMT
COMP

Notes:

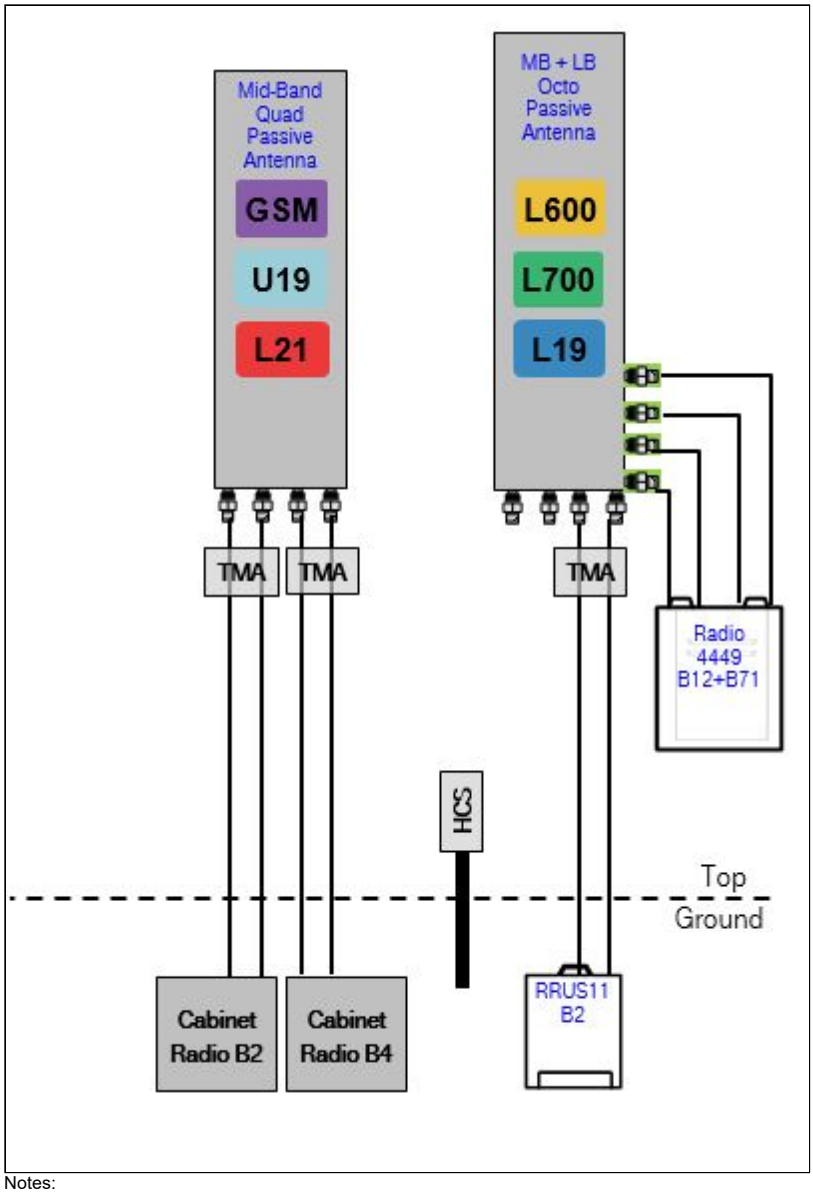
Section 3 - Proposed Template Images

67D94B_1DP+1QP+1OP.JPG



Notes:

67D94BR_1QP+1OP.JPG


Mid-Band
Quad
Passive
Antenna
GSM
U19
L21
MB + LB
Octo
Passive
Antenna
L600
L700
L19
TMA
TMA
TMA
Radio
4449
B12+B71
HCS
Top
Ground
Cabinet
Radio B2
Cabinet
Radio B4
RRUS11
B2

Notes:

Section 4 - Siteplan Images

----- This section is intentionally blank. -----

RAN Template:	A&L Template:
67D94B_Flagpole Outdoor	67D94B_1DP+1QP+1OP

CT11317B_L600_5_draft

Print Name: Standard

Section 5 - RAN Equipment

Existing RAN Equipment

Template: 794B GSM Shutdown Outdoor

Enclosure	1	2
Enclosure Type	RBS 6102	Ground Mount (Ericsson)
Baseband	DUW30, DUG20, BB 6630 (L1900, L2100, L700)	
Radio	RUS01 B2 **(x 3)** (L1900), RUS01 B2 **(x 3)** (G1900), RUS01 B4 **(x 3)** (L2100), RUS01 B4 **(x 3)** (U2100)	RRUS11 B12 **(x 3)** (L700)

Proposed RAN Equipment

Template: 67D94B_Flagpole Outdoor

Enclosure	1	2
Enclosure Type	RBS 6102	Ground Mount (Ericsson)
Baseband	DUW30, DUG20, BB 6630 (L2100, L1900), BB 6648 (L700, L600, N600)	
Radio	RUS01 B2 **(x 6)** (L1900), RUS01 B4 **(x 6)** (L2100)	Radio 4449 B71+B85 **(x 3)** (L700, L600)

RAN Scope of Work:

Install (1) BB6648 for L6/ L7/5G N600.

Remove existing TMA

Existing: (18) Coaxial Lines
Add (6) Coaxial Lines for new total of (24).

RAN Template:	A&L Template:
67D94B_Flagpole Outdoor	67D94B_1DP+1QP+1OP

CT11317B_L600_5_draft

Print Name: Standard

Section 6 - A&L Equipment

Existing Template: 794B_1HP U19 shutdown
Proposed Template: 67D94B_1DP+1QP+1OP

Sector 1 (Existing) view from behind			
Coverage Type	A - Outdoor Macro		
Antenna	**1**		**2**
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)		Andrew - LNX-6515DS-A1M (Dual)
Azimuth	60		60
M. Tilt	0		0
Height	95		95
Ports	**P1**	**P2**	**P3**
Active Tech.	L1900, G1900	U2100, L2100	L700
Dark Tech.			
Restricted Tech.			
Decomm. Tech.			
E. Tilt	2		2
Cables	1-1/4" Coax - 125 ft. **(x2)**	1-1/4" Coax - 125 ft. **(x2)**	1-1/4" Coax - 125 ft. **(x2)**
TMAs	Generic Twin Style 1A - PCS (AtCabinet)	Generic Twin Style 1B - AWS (AtCabinet)	
Diplexers / Combiners			
Radio			
Sector Equipment			Andrew Smart Bias T (Ericsson) (At Antenna)

Unconnected Equipment:

Scope of Work:

Ground TMA's

RAN Template:	A&L Template:
67D94B_Flagpole Outdoor	67D94B_1DP+1QP+1OP

CT11317B_L600_5_draft

Print Name: Standard

Sector 1 (Proposed) view from behind						
Coverage Type	A - Outdoor Macro					
Antenna	1		2			
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)		RFS - APXVAALL24_43-U-NA20 (Octo)			
Azimuth	60		60			
M. Tilt						
Height	95		95			
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Active Tech.	L1900 G1900	U2100 L2100	L700 L600 N600	L700 L600 N600		
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt						
Cables	1-1/4" Coax - 126 ft. **(x2)**	1-1/4" Coax - 126 ft. **(x2)**	1-1/4" Coax - 126 ft. **(x2)**	1-1/4" Coax - 126 ft. **(x2)**		
TMAs						
Diplexers / Combiners						
Radio						
Sector Equipment	Andrew Smart Bias T (Ericsson) (At Antenna)		Andrew Smart Bias T (Ericsson) (At Antenna)			

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67D94B_Flagpole Outdoor	67D94B_1DP+1QP+1OP

CT11317B_L600_5_draft

Print Name: Standard

Sector 2 (Existing) view from behind			
Coverage Type	A - Outdoor Macro		
Antenna	**1**		**2**
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)		Andrew - LNX-6515DS-A1M (Dual)
Azimuth	180		180
M. Tilt	0		0
Height	95		95
Ports	**P1**	**P2**	**P3**
Active Tech.	G1900 L1900	U2100 L2100	L700
Dark Tech.			
Restricted Tech.			
Decomm. Tech.			
E. Tilt	2		2
Cables	1-1/4" Coax - 125 ft. **(x2)**	1-1/4" Coax - 125 ft. **(x2)**	1-1/4" Coax - 125 ft. **(x2)**
TMAs	Generic Twin Style 1A - PCS (AtCabinet)	Generic Twin Style 1B - AWS (AtCabinet)	
Diplexers / Combiners			
Radio			
Sector Equipment			Andrew Smart Bias T (Ericsson) (At Antenna)

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67D94B_Flagpole Outdoor	67D94B_1DP+1QP+1OP

CT11317B_L600_5_draft

Print Name: Standard

Sector 2 (Proposed) view from behind						
Coverage Type	A - Outdoor Macro					
Antenna	1		2			
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)		RFS - APXVAALL24_43-U-NA20 (Octo)			
Azimuth	180		180			
M. Tilt						
Height	95		95			
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Active Tech.	L1900 G1900	U2100 L2100	L700 L600 N600	L700 L600 N600		
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt						
Cables	1-1/4" Coax - 126 ft. **(x2)**	1-1/4" Coax - 126 ft. **(x2)**	1-1/4" Coax - 126 ft. **(x2)**	1-1/4" Coax - 126 ft.		
TMAs						
Diplexers / Combiners						
Radio						
Sector Equipment	Andrew Smart Bias T (Ericsson) (At Antenna)		Andrew Smart Bias T (Ericsson) (At Antenna)			

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67D94B_Flagpole Outdoor	67D94B_1DP+1QP+1OP

CT11317B_L600_5_draft

Print Name: Standard

Sector 3 (Existing) view from behind			
Coverage Type	A - Outdoor Macro		
Antenna	**1**		**2**
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)		Andrew - LNX-6515DS-A1M (Dual)
Azimuth	300		300
M. Tilt	0		0
Height	95		95
Ports	**P1**	**P2**	**P3**
Active Tech.	G1900 L1900	U2100 L2100	L700
Dark Tech.			
Restricted Tech.			
Decomm. Tech.			
E. Tilt	2		2
Cables	1-1/4" Coax - 125 ft. **(x2)**	1-1/4" Coax - 125 ft. **(x2)**	1-1/4" Coax - 125 ft. **(x2)**
TMAs	Generic Twin Style 1A - PCS (AtCabinet)	Generic Twin Style 1B - AWS (AtCabinet)	
Diplexers / Combiners			
Radio			
Sector Equipment			Andrew Smart Bias T (Ericsson) (At Antenna)

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67D94B_Flagpole Outdoor	67D94B_1DP+1QP+1OP

CT11317B_L600_5_draft

Print Name: Standard

Sector 3 (Proposed) view from behind						
Coverage Type	A - Outdoor Macro					
Antenna	1		2			
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)		RFS - APXVAALL24_43-U-NA20 (Octo)			
Azimuth	300		300			
M. Tilt						
Height	95		95			
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Active Tech.	L1900 G1900	U2100 L2100	L700 L600 N600	L700 L600 N600		
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt						
Cables	1-1/4" Coax - 126 ft. **(x2)**	1-1/4" Coax - 126 ft. **(x2)**	1-1/4" Coax - 126 ft. **(x2)**	1-1/4" Coax - 126 ft.		
TMAs						
Diplexers / Combiners						
Radio						
Sector Equipment	Andrew Smart Bias T (Ericsson) (At Antenna)		Andrew Smart Bias T (Ericsson) (At Antenna)			

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67D94B_Flagpole Outdoor	67D94B_1DP+1QP+1OP

CT11317B_L600_5_draft

Print Name: Standard

Section 7 - Power Systems Equipment

Existing Power Systems Equipment

----- This section is intentionally blank. -----

Proposed Power Systems Equipment

PRODUCT DATASHEET

APXVAALL24_43-U-NA20

RADIO FREQUENCY SYSTEMS

Dual Slant Polarized Quad Band (8 Port) Antenna, 617-894/617-894/1695-2690/1695-2690MHz, 65deg, 16.2/16.1/18.9/18.7dBi, 2.4m (8ft), VET, RET, 2-12°/2-12°/2-12°/2-12°

FEATURES / BENEFITS

This antenna provides a 8 Port multi-band flexible platform for advanced use for flexible use in deployment scenarios for encompassing 600, 700, 800, AWS, PCS & BRS applications.

- **24 Inch Width For Easier Zoning**
- **Field Replaceable (Integrated) AISG RET platform for reduced environmental exposure and long lasting quality**
- **Superior elevation pattern performance across the entire electrical down tilt range**
- **Includes three AISG RET motors - Includes 0.5m AISG jumper for optional daisy chain of two high band RET motors for one single AISG point of high band tilt control.**
- **Low band arrays driven by a single RET motor**

Technical Features

LOW BAND LEFT ARRAY (617-894 MHZ) [R1]

Frequency Band	MHz	617-698	698-806	806-894
Gain Typical	dBi	15.5	16.1	16.2
Gain Over All Tilts	dBi	15.2 +/- .3	15.6 +/- .5	15.8 +/- .4
Horizontal Beamwidth @3dB	Deg	65 +/-3	64 +/-2	62 +/-3
Vertical Beamwidth @3dB	Deg	9.9 +/- .7	8.6 +/- .7	7.6 +/-.4
Electrical Downtilt Range	Deg	2 to 12		
Upper Side Lobe Suppression Peak to +20	dB	15	14	14
Front-to-Back, at +/-30°, Copolar	dB	25	25	29
Cross Polar Discrimination (XPD) @ Boresight	dB	18	18	17
Cross Polar Discrimination (XPD) @ +/-60	dB	5	5	6
3rd Order PIM 2 x 43dBm	dBc	-153		
VSWR	-	1.5:1		
Cross Polar Isolation	dB	25		
Maximum Effective Power per Port	Watt	400		

RADIO FREQUENCY SYSTEMS

Dual Slant Polarized Quad Band (8 Port) Antenna, 617-894/617-894/1695-2690/1695-2690MHz, 65deg, 16.2/16.1/18.9/18.7dBi, 2.4m (8ft), VET, RET, 2-12°/2-12°/2-12°/2-12°

HIGH BAND RIGHT ARRAY (1695-2690 MHZ) [Y2]

Frequency Band	MHz	1695-1880	1850-1990	1920-2200	2200-2490	2490-2690
Gain Typical	dBi	17.7	18.1	18.7	18.5	18.0
Gain Over All Tilts	dBi	17.1 +/- .6	17.6 +/- .5	18 +/- .7	17.9 +/- .6	17.4 +/- .6
Horizontal Beamwidth @3dB	Deg	67 +/- 5	64 +/- 5	65 +/- 5	62 +/- 7	60 +/- 9
Vertical Beamwidth @3dB	Deg	5.7 +/- .5	5.2 +/- .3	4.7 +/- .6	4.2 +/- .3	4.2 +/- .3
Electrical Downtilt Range	Deg	2 to 12				
Upper Side Lobe Suppression Peak to +20	dB	15	15	14	14	13
Front-to-Back, at +/-30°, Copolar	dB	27	28	26	23	21
Cross Polar Discrimination (XPD) @ Boresight	dB	21	17	14	16	18
Cross Polar Discrimination (XPD) @ +/-60	dB	10	8	7	4	1
3rd Order PIM 2 x 43dBm	dBc	-153				
VSWR	-	1.5:1				
Cross Polar Isolation	dB	25				
Maximum Effective Power per Port	Watt	300				

ELECTRICAL SPECIFICATIONS

Impedance	Ohm	50.0
Polarization	Deg	±45°

MECHANICAL SPECIFICATIONS

Dimensions - H x W x D	mm (in)	2436 x 609 x 215 (95.9 x 24 x 8.5)
Weight (Antenna Only)	kg (lb)	55.7 (122.8)
Weight (Mounting Hardware only)	kg (lb)	12.3 (27.1)
Packing size- HxWxD	mm (in)	2565 x 735 x 390 (101 x 28.9 x 15.4)
Shipping Weight	kg (lb)	77.9 (171.7)
Connector type		8 x 4.3-10 female at bottom + 6 AISG connectors (3 male, 3 female)
Adjustment mechanism		Integrated RET solution AISG compliant (Field Replaceable) + Manual Override + External Tilt Indicator
Radome Material / Color		Fiber Glass / Light Grey RAL7035

TESTING AND ENVIRONMENTAL

Temperature Range	°C (°F)	-40 to 60 (-40 to 140)
Grounding type		DC Grounded
Lightning protection		IEC 61000-4-5
Survival/Rated Wind Velocity	km/h	240 (150)
Wind Load @Rated Wind Front	N	1428.0
Wind Load @Rated Wind Side	N	434.0
Wind Load @Rated Wind Rear	N	1544.0
Environmental		ETSI 300-019-2-4 Class 4.1E

Product Specifications

COMMSCOPE®

POWERED BY ANDREW®

ATSBT-TOP-FM-4G

Teletilt® Top Smart Bias Tee

- Injects AISG power and control signals onto a coaxial cable line
- Reduces cable and site lease costs by eliminating the need for AISG home run cables
- AISG 1.1 and 2.0 compliant
- Operates at 10-30 Vdc
- Weatherproof AISG connectors
- Intuitive schematics simplify and ensure proper installation
- Enhanced lightning protection plus grounding stud for additional surge protection
- 7-16 DIN female connector (BTS)
- 7-16 DIN male connector (ANT)

General Specifications

Smart Bias Tee Type	10–30 V Top
Brand	Teletilt®
Operating Frequency Band	694 – 2690 MHz

Electrical Specifications

EU Certification	CE
Protocol	AISG 1.1 | AISG 2.0
Antenna Interface Signal	dc Blocked | RF
BTS Interface Signal	AISG data | dc | RF
Interface Protocol Signal	Data | dc
Voltage Range	10–30 Vdc
VSWR | Return Loss	1.17:1 | 22 dB, typical
Power Consumption, maximum	0.6 W
RF Power, maximum	250 W @ 1850 MHz 500 W @ 850 MHz
Impedance	50 ohm
Insertion Loss, typical	0.1 dB
3rd Order IMD	-158.0 dBc (relative to carrier)
3rd Order IMD Test Method	Two +43 dBm carriers
Electromagnetic Compatibility (EMC)	CFR 47 Part 15, Subpart B, Class B | EN 55022, Class B | ICES-003 Issue 4 CAN/CSA-CEI/IEC CISPR 22:02

Mechanical Specifications

Antenna Interface	7-16 DIN Male
BTS Interface	7-16 DIN Female
AISG Input Connector	8-pin DIN Female
Color	Silver
Grounding Lug Thread Size	M8
Material Type	Aluminum
Lightning Surge Capability	5 times @ -3 kA 5 times @ 3 kA

Product Specifications

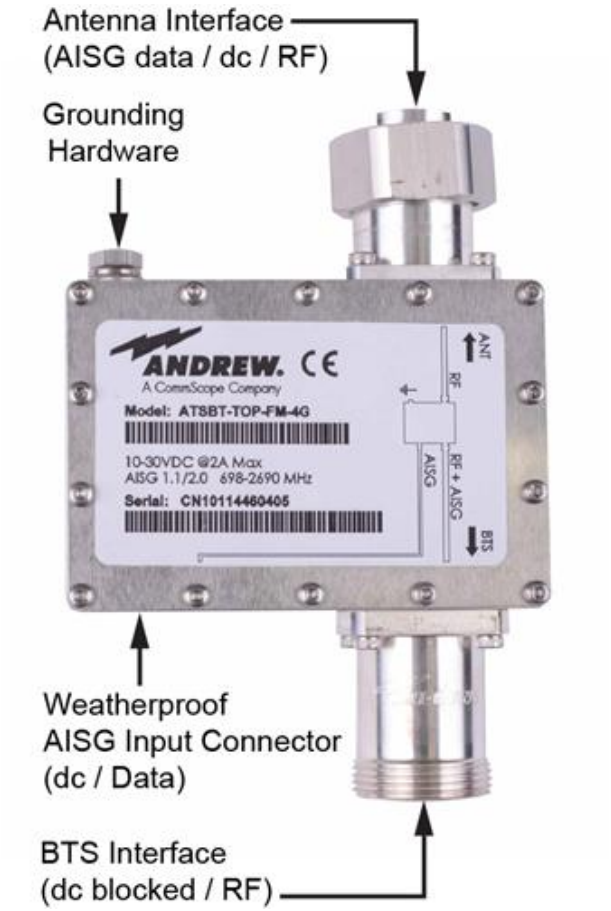
ATSBT-TOP-FM-4G

Lightning Surge Capability Test Method	IEC 61000-4-5, Level X
Lightning Surge Capability Waveform	1.2/50 voltage and 8/20 current combination waveform

Environmental Specifications

Ingress Protection Test Method	IEC 60529:2001, IP66
Operating Temperature	-40 °C to +70 °C (-40 °F to +158 °F)

Interface Port Drawing



Dimensions

Width	94.0 mm | 3.7 in
Depth	50.0 mm | 2.0 in
Height	143.00 mm | 5.63 in
Net Weight	0.8 kg | 1.8 lb

Regulatory Compliance/Certifications

Agency	Classification
RoHS 2011/65/EU	Compliant by Exemption

Exhibit E

CENTEK engineering
Centered on Solutions℠

Structural Analysis Report

Antenna Mount Analysis

Site Ref: CT11317B

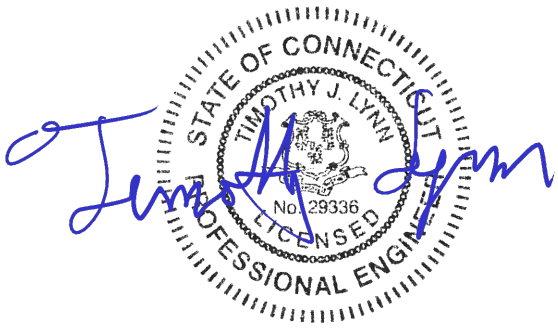
Eversource Structure No. 876
86' Electric Transmission Lattice Tower

280 Morehouse Drive
Fairfield, CT

Centek Project No. 21051.10

Date: July 9, 2021

Max Stress Ratio = 47.2%



Prepared for:

T-Mobile USA
35 Griffin Road
Bloomfield, CT 06002

Table of Contents

CENTEK engineering

Centered on Solutions℠

July 9, 2021

Mr. Sheldon Freincle
Northeast Site Solutions
420 Main Street, Building 4
Sturbridge, MA 01566

Re: Structural Letter ~ Antenna Mount
T-Mobile – Site Ref: CT11317B
280 Morehouse Drive
Fairfield, CT 06825

Centek Project No. 21051.10

Dear Mr. Freincle,

Centek Engineering, Inc. has reviewed the T-Mobile antenna installation at the above-referenced site. The purpose of the review is to determine the structural adequacy of the existing mount, consisting of one (1) monopole support arm kit (SitePro P/N:UDS-NP) to support the proposed/existing equipment configuration. The review considered the effects of wind load, dead load, and ice load in accordance with the 2015 International Building Code as modified by the 2018 Connecticut State Building Code (CTBC), including ASCE 7-10 and ANSI/TIA-222-G *Structural Standards for Steel Antenna Towers and Supporting Structures*.

The loads considered in this analysis consist of the following:

- T-Mobile:
  Three (3) RFS APXVAALL24_43-U-NA20 panel antennas, three (3) RFS APX16DWV-16DWV-S-E-A20 panel antennas and six (6) Andrew ATSBT-TOP-FF-4G Bias-T mounted on the existing mount with a RAD center elevation of 95-ft +/- AGL.

The antenna mount was analyzed per the requirements of the 2015 International Building Code as modified by the 2018 Connecticut State Building Code considering a nominal design wind speed of 97 mph for Fairfield as required in Appendix N of the 2018 Connecticut State Building Code.

Based on our review of the installation, it is our opinion that the subject antenna mount with the installation of a L3x3 handrail has sufficient capacity to support the aforementioned antenna configuration.

If there are any questions regarding this matter, please feel free to call.

Respectfully Submitted by:

Timothy J. Lynn, PE
Structural Engineer

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

Prepared by:

Fernando J. Palacios
Engineer

Section 2 - Calculations

CENTEK engineering
Centered on Solutions℠ www.centekeng.com
63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject: Loads on Equipment

Location: Fairfield,CT

Rev. 0: 06/24/2021

Prepared by: F.J.P.. Checked by: T.J.L.
Job No. 21051.10

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

Wind Speeds

Basic Wind Speed	$V := 97$	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 =	$h := 86$	ft	(User Input)
Height to Center of Antennas =	$z := 95$	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)
Topographic Factor =	$K_{zt} := 1.0$		(User Input)
	$K_a := 1.0$		(User Input)
Gust Response Factor =	$G_H = 1.214$		(User Input)

Output

Wind Direction Probability Factor =

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

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

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

Importance Factors =

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

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

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

$$K_{iz} := \left(\frac{z}{33}\right)^{0.1} = 1.112$$

Velocity Pressure Coefficient Antennas = $t_{iz} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 2.084$

$$Kz := 2.01 \cdot \left(\left(\frac{z}{zg}\right)\right)^{\overline{\alpha}} = 1.252$$

Velocity Pressure w/o Ice Antennas = $qz := 0.00256 \cdot K_d \cdot Kz \cdot V^2 \cdot I_{Wind} = 29$ psf

Velocity Pressure with Ice Antennas = $qz_{ice} := 0.00256 \cdot K_d \cdot Kz \cdot V_i^2 \cdot I_{Wind} = 8$ psf

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	RFS - APXVAALL24_43-U-NA20		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 95.9$	in	(User Input)
Antenna Width =	$W_{ant} := 24.0$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.5$	in	(User Input)
Antenna Weight =	$WT_{ant} := 150$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.0$		
Antenna Force Coefficient =	$Ca_{ant} = 1.27$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 16$	sf
Total Antenna Wind Force Front =	$F_{ant} := qz \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 724$	lbs
Surface Area for One Antenna =	$SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 5.7$	sf
Total Antenna Wind Force Side =	$F_{ant} := qz \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 257$	lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 19.6$	sf
Total Antenna Wind Force w/ Ice Front =	$Fi_{ant} := qz_{ice} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 236$	lbs
Surface Area for One Antenna w/ Ice =	$SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 8.8$	sf
Total Antenna Wind Force w/ Ice Side =	$Fi_{ant} := qz_{ice} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 106$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 150$	lbs

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2 \cdot 10^4$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 2 \cdot 10^4$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 523$	lbs
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 523$	lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	RFS-APX16DWV-16DWV-S-E-A20		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 55.9$	in	(User Input)
Antenna Width =	$W_{ant} := 13.0$	in	(User Input)
Antenna Thickness =	$T_{ant} := 3.15$	in	(User Input)
Antenna Weight =	$WT_{ant} := 41.8$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.3$		
Antenna Force Coefficient =	$Ca_{ant} = 1.28$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 5$	sf
Total Antenna Wind Force Front =	$F_{ant} := qz \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 231$	lbs
Surface Area for One Antenna =	$SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 1.2$	sf
Total Antenna Wind Force Side =	$F_{ant} := qz \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 56$	lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 7.2$	sf
Total Antenna Wind Force w/ Ice Front =	$Fi_{ant} := qz_{ice} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 87$	lbs
Surface Area for One Antenna w/ Ice =	$SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 3.1$	sf
Total Antenna Wind Force w/ Ice Side =	$Fi_{ant} := qz_{ice} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 37$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 42$	lbs

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2289$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 5258$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 170$	lbs
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 170$	lbs

Development of Wind & Ice Load on Equipment

Equipment Data:

Equipment Model =	Andrew ATSBT-TOP-FF-4G		
Equipment Shape =	Flat		(User Input)
Equipment Height =	$L_{EQ} := 5.6$	in	(User Input)
Equipment Width =	$W_{EQ} := 3.7$	in	(User Input)
Equipment Thickness =	$T_{EQ} := 2.0$	in	(User Input)
Equipment Weight =	$WT_{EQ} := 1.7$	lbs	(User Input)
Number of Equipment 's=	$N_{EQ} := 1$		
Equipment Aspect Ratio =	$Ar_{EQ} := \frac{L_{EQ}}{W_{EQ}} = 1.5$		
Equipment Force Coefficient =	$Ca_{EQ} = 1.2$		

Wind Load (without ice)

Surface Area for One Equipment =	$SA_{EQF} := \frac{L_{EQ} \cdot W_{EQ}}{144} = 0.1$	sf
Total Equipment Wind Force =	$F_{RRUS} := qz \cdot G_H \cdot Ca_{EQ} \cdot K_a \cdot SA_{EQF} = 6$	lbs
Surface Area for One Equipment =	$SA_{EQS} := \frac{L_{EQ} \cdot T_{EQ}}{144} = 7.8 \cdot 10^{-2}$	sf
Total Equipment Wind Force =	$F_{RRUS} := qz \cdot G_H \cdot Ca_{EQ} \cdot K_a \cdot SA_{EQS} = 3$	lbs

Wind Load (with ice)

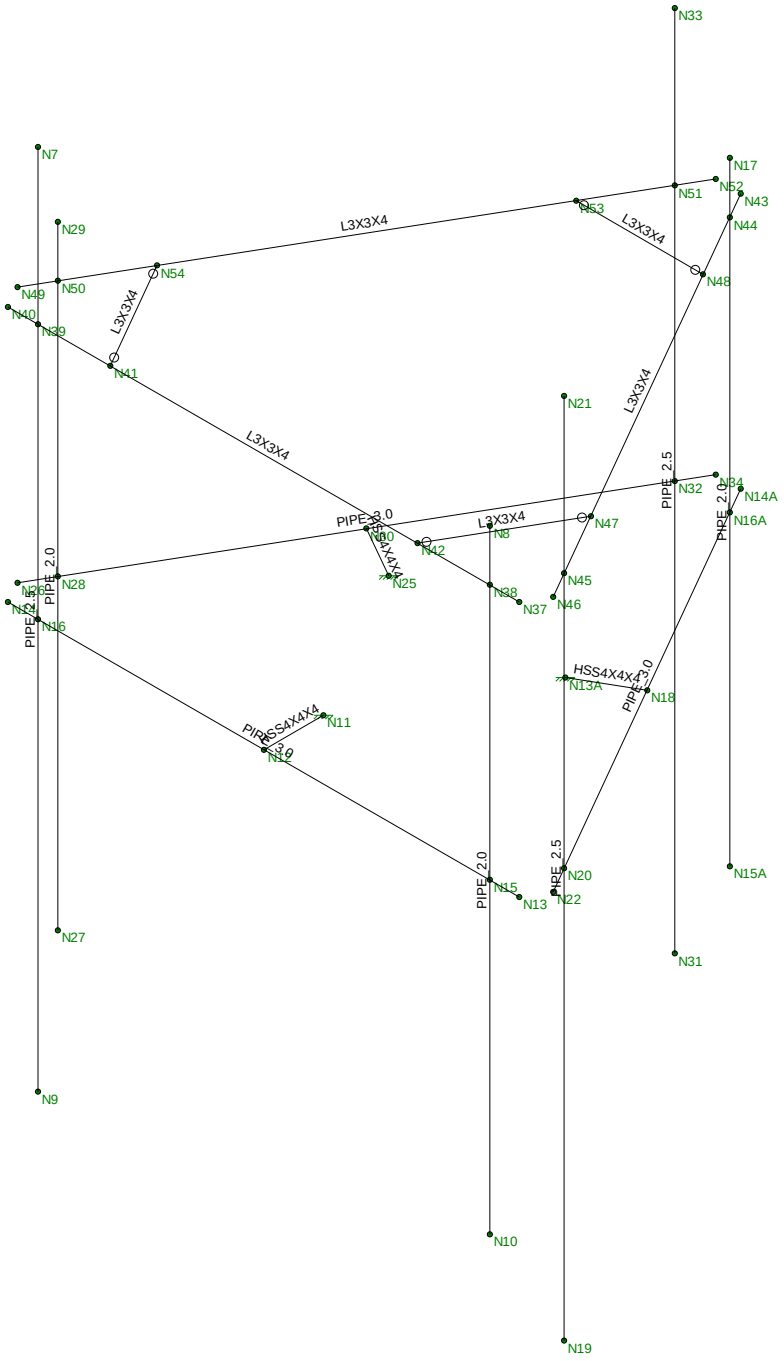
Surface Area for One Equipment w/ Ice =	$SA_{ICEEQF} := \frac{(L_{EQ} + 2 \cdot t_{iz}) \cdot (W_{EQ} + 2 \cdot t_{iz})}{144} = 0.5$	sf
Total Equipment Wind Force w/ Ice =	$Fi_{EQF} := qz_{ice} \cdot G_H \cdot Ca_{EQ} \cdot K_a \cdot SA_{ICEEQF} = 6$	lbs
Surface Area for One Equipment w/ Ice =	$SA_{ICEEQS} := \frac{(L_{EQ} + 2 \cdot t_{iz}) \cdot (T_{EQ} + 2 \cdot t_{iz})}{144} = 0.4$	sf
Total Equipment Wind Force w/ Ice =	$Fi_{EQS} := qz_{ice} \cdot G_H \cdot Ca_{EQ} \cdot K_a \cdot SA_{ICEEQS} = 5$	lbs

Gravity Load (without ice)

Weight of All Equipment 's=	$WT_{EQ} \cdot N_{EQ} = 2$	lbs

Gravity Loads (ice only)

Volume of Each Equipment =	$V_{EQ} := L_{EQ} \cdot W_{EQ} \cdot T_{EQ} = 41$	cu in
Volume of Ice on Each Equipment =	$V_{ice} := (L_{EQ} + 2 \cdot t_{iz}) \cdot (W_{EQ} + 2 \cdot t_{iz}) \cdot (T_{EQ} + 2 \cdot t_{iz}) - V_{EQ} = 433$	cu in
Weight of Ice on Each Equipment =	$W_{ICEEQS} := \frac{V_{ice}}{1728} \cdot Id = 14$	lbs
Weight of Ice on All Equipment 's=	$W_{ICEEQS} \cdot N_{EQ} = 14$	lbs



Envelope Only Solution

Centek Engineering Inc.		
FJP	CT11317B - AMA	July 9, 2021 at 11:32 AM
21051.10	Member Framing	CT11317B_AMA.R3D

(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?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	24
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 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI S100-12: ASD
Wood Code	AWC NDS-15: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-14
Masonry Code	ACI 530-13: ASD
Aluminum Code	AA ADM1-15: 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	Exact Integration
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	ASCE 7-10
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1
Footing Overturning Safety Factor	1
Optimize for OTM/Sliding	No
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	.145
Footing Concrete f'c (ksi)	4
Footing Concrete Ec (ksi)	3644
Lambda	1
Footing Steel fy (ksi)	60
Minimum Steel	0.0018
Maximum Steel	0.0075
Footing Top Bar	#6
Footing Top Bar Cover (in)	1.5
Footing Bottom Bar	#6
Footing Bottom Bar Cover (in)	3
Pedestal Bar	#6
Pedestal Bar Cover (in)	1.5
Pedestal Ties	#4

Hot Rolled Steel Properties

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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	(E)Horz_Pipe 3.0 STD	PIPE_3.0	Beam	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
2	(E)Outrigger	HSS4X4X4	Beam	None	A500 Gr.B ...	Typical	3.37	7.8	7.8	12.8
3	(E)Antenna Mast_Pipe ...	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
4	(P) Antenna Mast_Pipe...	PIPE_2.5	Column	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
5	Handrail	L3X3X4	Beam	Wide Flange	A36 Gr.36	Typical	1.44	1.23	1.23	.031

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	(E)Outrigger	.583			Lbyy						Lateral
2	M3	(E)Horz_Pipe 3.0 S...	5			Lbyy						Lateral
3	PS.2	(E)Antenna Mast_P...	6									Lateral
4	PS.1	(P) Antenna Mast_...	8	Segment	Segment							Lateral
5	M5	(E)Outrigger	.583			Lbyy						Lateral
6	M6	(E)Horz_Pipe 3.0 S...	5			Lbyy						Lateral
7	M7	(E)Antenna Mast_P...	6									Lateral
8	M8	(P) Antenna Mast_...	8	Segment	Segment							Lateral
9	M9	(E)Outrigger	.583			Lbyy						Lateral
10	M10	(E)Horz_Pipe 3.0 S...	5			Lbyy						Lateral
11	M11	(E)Antenna Mast_P...	6									Lateral
12	M12	(P) Antenna Mast_...	8	Segment	Segment							Lateral
13	M17	Handrail	5			Lbyy						Lateral
14	M18	Handrail	5			Lbyy						Lateral
15	M19	Handrail	5			Lbyy						Lateral
16	M16	Handrail	1.242			Lbyy						Lateral
17	M17A	Handrail	1.242			Lbyy						Lateral
18	M18A	Handrail	1.242			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
1	M1	N11	N12			(E)Outrigger	Beam	None	A500 Gr.B Rect	Typical
2	M3	N14	N13			(E)Horz_Pipe 3.0 STD	Beam	None	A53 Gr.B	Typical
3	PS.2	N10	N8			(E)Antenna Mast_Pipe 2.0 ..	Column	Pipe	A53 Gr.B	Typical
4	PS.1	N9	N7			(P) Antenna Mast_Pipe 2.5..	Column	Pipe	A53 Gr.B	Typical
5	M5	N13A	N18			(E)Outrigger	Beam	None	A500 Gr.B Rect	Typical
6	M6	N22	N14A			(E)Horz_Pipe 3.0 STD	Beam	None	A53 Gr.B	Typical
7	M7	N15A	N17			(E)Antenna Mast_Pipe 2.0 ..	Column	Pipe	A53 Gr.B	Typical
8	M8	N19	N21			(P) Antenna Mast_Pipe 2.5..	Column	Pipe	A53 Gr.B	Typical
9	M9	N25	N30			(E)Outrigger	Beam	None	A500 Gr.B Rect	Typical
10	M10	N34	N26			(E)Horz_Pipe 3.0 STD	Beam	None	A53 Gr.B	Typical
11	M11	N27	N29			(E)Antenna Mast_Pipe 2.0 ..	Column	Pipe	A53 Gr.B	Typical
12	M12	N31	N33			(P) Antenna Mast_Pipe 2.5..	Column	Pipe	A53 Gr.B	Typical
13	M17	N40	N37			Handrail	Beam	Wide Flange	A36 Gr.36	Typical
14	M18	N46	N43			Handrail	Beam	Wide Flange	A36 Gr.36	Typical
15	M19	N52	N49			Handrail	Beam	Wide Flange	A36 Gr.36	Typical
16	M16	N41	N54			Handrail	Beam	Wide Flange	A36 Gr.36	Typical
17	M17A	N42	N47			Handrail	Beam	Wide Flange	A36 Gr.36	Typical
18	M18A	N48	N53			Handrail	Beam	Wide Flange	A36 Gr.36	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N11	0	0	1	0	
2	N13	2.5	0	1.583333	0	
3	N10	2.208333	-3	1.583333	0	
4	N15	2.208333	0	1.583333	0	
5	N8	2.208333	3	1.583333	0	
6	N12	0	0	1.583333	0	
7	N9	-2.208333	-4	1.583333	0	
8	N16	-2.208333	0	1.583333	0	
9	N7	-2.208333	4	1.583333	0	
10	N14	-2.5	0	1.583333	0	
11	N13A	0.866025	0	-0.5	0	
12	N14A	0.121207	0	-2.95673	0	
13	N15A	0.26704	-3	-2.704139	0	
14	N16A	0.26704	0	-2.704139	0	
15	N17	0.26704	3	-2.704139	0	
16	N18	1.371207	0	-0.791667	0	
17	N19	2.475374	-4	1.120806	0	
18	N20	2.475374	0	1.120806	0	
19	N21	2.475374	4	1.120806	0	
20	N22	2.621207	0	1.373397	0	
21	N25	-0.866025	0	-0.5	0	
22	N26	-2.621207	0	1.373397	0	
23	N27	-2.475374	-3	1.120806	0	
24	N28	-2.475374	0	1.120806	0	
25	N29	-2.475374	3	1.120806	0	
26	N30	-1.371207	0	-0.791667	0	
27	N31	-0.26704	-4	-2.704139	0	
28	N32	-0.26704	0	-2.704139	0	
29	N33	-0.26704	4	-2.704139	0	
30	N34	-0.121207	0	-2.95673	0	
31	N37	2.5	2.5	1.583333	0	
32	N38	2.208333	2.5	1.583333	0	
33	N39	-2.208333	2.5	1.583333	0	
34	N40	-2.5	2.5	1.583333	0	
35	N41	-1.5	2.5	1.583333	0	
36	N42	1.5	2.5	1.583333	0	
37	N43	0.121207	2.5	-2.95673	0	
38	N44	0.26704	2.5	-2.704139	0	
39	N45	2.475374	2.5	1.120806	0	
40	N46	2.621207	2.5	1.373397	0	
41	N47	2.121207	2.5	0.507372	0	
42	N48	0.621207	2.5	-2.090705	0	
43	N49	-2.621207	2.5	1.373397	0	
44	N50	-2.475374	2.5	1.120806	0	
45	N51	-0.26704	2.5	-2.704139	0	
46	N52	-0.121207	2.5	-2.95673	0	
47	N53	-0.621207	2.5	-2.090705	0	
48	N54	-2.121207	2.5	0.507371	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	N11	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N13A	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N25	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Member Point Loads (BLC 2 : Dead Load)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	PS.1	Y	-.075	1.083
2	PS.1	Y	-.075	5.917
3	PS.2	Y	-.021	.667
4	PS.2	Y	-.021	5.333
5	PS.2	Y	-.002	3.5
6	M7	Y	-.021	.667
7	M7	Y	-.021	5.333
8	M7	Y	-.002	3.5
9	M8	Y	-.075	1.083
10	M8	Y	-.075	5.917
11	M11	Y	-.021	.667
12	M11	Y	-.021	5.333
13	M11	Y	-.002	3.5
14	M12	Y	-.075	1.083
15	M12	Y	-.075	5.917

Member Point Loads (BLC 3 : Ice Load)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	PS.1	Y	-.262	1.083
2	PS.1	Y	-.262	5.917
3	PS.2	Y	-.085	.667
4	PS.2	Y	-.085	5.333
5	PS.2	Y	-.014	3.5
6	M7	Y	-.085	.667
7	M7	Y	-.085	5.333
8	M7	Y	-.014	3.5
9	M8	Y	-.262	1.083
10	M8	Y	-.262	5.917
11	M11	Y	-.085	.667
12	M11	Y	-.085	5.333
13	M11	Y	-.014	3.5
14	M12	Y	-.262	1.083
15	M12	Y	-.262	5.917

Member Point Loads (BLC 4 : (x) TIA Wind with Ice (8 psf))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	PS.1	X	.053	1.083
2	PS.1	X	.053	5.917
3	PS.2	X	.019	.667
4	PS.2	X	.019	5.333
5	PS.2	X	.005	3.5
6	M7	X	.019	.667

Member Point Loads (BLC 4 : (x) TIA Wind with Ice (8 psf)) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
7	M7	X	.019	5.333
8	M7	X	.005	3.5
9	M8	X	.053	1.083
10	M8	X	.053	5.917
11	M11	X	.019	.667
12	M11	X	.019	5.333
13	M11	X	.005	3.5
14	M12	X	.053	1.083
15	M12	X	.053	5.917

Member Point Loads (BLC 5 : (x) TIA Wind (29 psf))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	PS.1	X	.129	1.083
2	PS.1	X	.129	5.917
3	PS.2	X	.028	.667
4	PS.2	X	.028	5.333
5	PS.2	X	.003	3.5
6	M7	X	.028	.667
7	M7	X	.028	5.333
8	M7	X	.003	3.5
9	M8	X	.129	1.083
10	M8	X	.129	5.917
11	M11	X	.028	.667
12	M11	X	.028	5.333
13	M11	X	.003	3.5
14	M12	X	.129	1.083
15	M12	X	.129	5.917

Member Point Loads (BLC 6 : (z) TIA Wind with Ice (8 psf))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	PS.1	Z	.118	1.083
2	PS.1	Z	.118	5.917
3	PS.2	Z	.044	.667
4	PS.2	Z	.044	5.333
5	PS.2	Z	.006	3.5
6	M7	Z	.044	.667
7	M7	Z	.044	5.333
8	M7	Z	.006	3.5
9	M8	Z	.118	1.083
10	M8	Z	.118	5.917
11	M11	Z	.044	.667
12	M11	Z	.044	5.333
13	M11	Z	.006	3.5
14	M12	Z	.118	1.083
15	M12	Z	.118	5.917

Member Point Loads (BLC 7 : (z) TIA Wind (29 psf))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	PS.1	Z	.362	1.083
2	PS.1	Z	.362	5.917

Member Point Loads (BLC 7 : (z) TIA Wind (29 psf)) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
3	PS.2	Z	.116	.667
4	PS.2	Z	.116	5.333
5	PS.2	Z	.006	3.5
6	M7	Z	.116	.667
7	M7	Z	.116	5.333
8	M7	Z	.006	3.5
9	M8	Z	.362	1.083
10	M8	Z	.362	5.917
11	M11	Z	.116	.667
12	M11	Z	.116	5.333
13	M11	Z	.006	3.5
14	M12	Z	.362	1.083
15	M12	Z	.362	5.917

Member Distributed Loads (BLC 4 : (x) TIA Wind with Ice (8 psf))

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f..	Start Location[ft,%]	End Location[ft,%]
1	PS.1	X	.002	.002	0	0
2	PS.2	X	.002	.002	0	0
3	M1	X	.003	.003	0	0
4	M5	X	.003	.003	0	0
5	M7	X	.002	.002	0	0
6	M8	X	.002	.002	0	0
7	M9	X	.003	.003	0	0
8	M11	X	.002	.002	0	0
9	M12	X	.002	.002	0	0
10	M1	X	.003	.003	0	.583
11	PS.2	X	.002	.002	0	6
12	PS.1	X	.002	.002	0	8

Member Distributed Loads (BLC 5 : (x) TIA Wind (29 psf))

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f..	Start Location[ft,%]	End Location[ft,%]
1	PS.1	X	.008	.008	0	0
2	PS.2	X	.008	.008	0	0
3	M1	X	.01	.01	0	0
4	M5	X	.01	.01	0	0
5	M7	X	.008	.008	0	0
6	M8	X	.008	.008	0	0
7	M9	X	.01	.01	0	0
8	M11	X	.008	.008	0	0
9	M12	X	.008	.008	0	0
10	M1	X	.01	.01	0	.583
11	PS.2	X	.008	.008	0	6
12	PS.1	X	.008	.008	0	8

Member Distributed Loads (BLC 6 : (z) TIA Wind with Ice (8 psf))

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f..	Start Location[ft,%]	End Location[ft,%]
1	M3	Z	.003	.003	1.292	3.167
2	M6	Z	.003	.003	1.292	3.167
3	M10	Z	.003	.003	1.292	3.167

Member Distributed Loads (BLC 6 : (z) TIA Wind with Ice (8 psf)) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
4	M3	Z	.003	.003	1.292	3.167
5	M17	Z	.003	.003	1.292	3.167
6	M18	Z	.003	.003	1.292	3.167
7	M19	Z	.003	.003	1.292	3.167
8	M17	Z	.003	.003	1.292	3.167

Member Distributed Loads (BLC 7 : (z) TIA Wind (29 psf))

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M3	Z	.01	.01	1.292	3.167
2	M6	Z	.01	.01	1.292	3.167
3	M10	Z	.01	.01	1.292	3.167
4	M3	Z	.01	.01	1.292	3.167
5	M17	Z	.01	.01	1.292	3.167
6	M18	Z	.01	.01	1.292	3.167
7	M19	Z	.01	.01	1.292	3.167
8	M17	Z	.01	.01	1.292	3.167

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distrib...	Area(...	Surfa...
1	Self Weight	None		-1						
2	Dead Load	None					15			
3	Ice Load	None					15			
4	(x) TIA Wind with Ice (8 psf)	None					15	12		
5	(x) TIA Wind (29 psf)	None					15	12		
6	(z) TIA Wind with Ice (8 psf)	None					15	8		
7	(z) TIA Wind (29 psf)	None					15	8		

Load Combinations

	Description	Solve	P...	S...	B...	Fa...	BLC	Fact...	BLC	Fa...	BLC	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.2D + 1.6W (X-dir...	Yes	Y		1	1.2	2	1.2	5	1.6														
2	0.9D + 1.6W (X-dir...	Yes	Y		1	.9	2	.9	5	1.6														
3	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	2	1.2	3	1	4	1												
4	1.2D + 1.6W (Z-dire...	Yes	Y		1	1.2	2	1.2	7	1.6														
5	0.9D + 1.6W (Z-dire...	Yes	Y		1	.9	2	.9	7	1.6														
6	1.2D + 1.0Di + 1.0...	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	N11	max	.047	5	1.106	3	.029	1	.538	5	-.157	3	-.366	2
2		min	-.926	1	.298	5	-1.545	5	-.617	3	-1.598	5	-1.108	3
3	N13A	max	-.015	6	1.106	3	-.014	3	.319	5	1.875	4	1.137	6
4		min	-.701	2	.298	5	-1.615	4	-.652	3	-.324	2	.079	2
5	N25	max	.055	5	1.106	6	.018	2	1.309	6	.845	2	-.035	6
6		min	-.659	1	.298	2	-1.698	4	.352	2	-.293	4	-.33	1
7	Totals:	max	0	6	3.318	6	0	3						
8		min	-2.285	1	.895	2	-4.858	4						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotation [rad]	LC
1	N11	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	N13	max	.003	5	.007	3	.014	4	3.169e-05	3	3.347e-04	2	4.024e-04	3
4		min	0	3	.003	2	-.008	2	-8.64e-04	5	-8.895e-04	4	2.018e-04	5
5	N10	max	.073	1	.006	6	.176	5	3.16e-05	3	3.347e-04	2	2.583e-03	1
6		min	.01	5	.002	2	-.003	3	-5.863e-03	5	-8.895e-04	4	2.017e-04	5
7	N15	max	.003	5	.006	6	.011	4	3.169e-05	3	3.347e-04	2	4.025e-04	3
8		min	0	3	.002	2	-.007	2	-8.64e-04	5	-8.895e-04	4	2.018e-04	5
9	N8	max	-.004	2	.006	6	.075	4	2.653e-03	4	5.861e-04	2	2.35e-03	6
10		min	-.074	6	.002	2	-.035	2	-9.341e-04	2	-4.379e-04	6	6.048e-04	2
11	N12	max	.003	5	0	5	0	5	1.372e-04	3	7.481e-04	5	6.519e-04	3
12		min	0	3	-.001	3	0	1	-2.9e-04	5	4.246e-05	3	2.154e-04	2
13	N9	max	.284	1	-.022	5	.659	5	1.149e-04	3	5.799e-03	4	7.074e-03	1
14		min	.055	5	-.077	3	-.003	3	-1.381e-02	5	1.19e-04	3	1.101e-03	5
15	N16	max	.003	4	-.022	5	.117	4	1.157e-04	3	5.799e-03	4	3.507e-03	3
16		min	0	3	-.077	3	.002	3	-3.276e-03	5	1.19e-04	3	1.103e-03	5
17	N7	max	.006	2	-.022	5	.141	4	1.178e-03	4	3.285e-03	4	1.223e-03	6
18		min	-.082	6	-.077	3	.001	2	-1.378e-04	2	3.095e-04	3	-3.539e-04	2
19	N14	max	.003	4	-.026	5	.137	4	1.157e-04	3	5.799e-03	4	3.507e-03	3
20		min	0	3	-.089	3	.003	3	-3.276e-03	5	1.19e-04	3	1.103e-03	5
21	N13A	max	0	6	0	6	0	6	0	6	0	6	0	6
22		min	0	1	0	1	0	1	0	1	0	1	0	1
23	N14A	max	.01	4	.006	3	0	6	2.709e-04	3	-4.546e-05	6	8.727e-05	2
24		min	.002	6	-.007	5	-.005	1	-8.463e-04	5	-5.371e-04	1	-7.568e-04	4
25	N15A	max	.058	2	.005	3	.163	5	2.702e-04	3	-4.546e-05	6	1.871e-03	2
26		min	-.018	4	-.006	5	-.012	3	-5.845e-03	5	-5.371e-04	1	-7.562e-04	4
27	N16A	max	.01	4	.005	3	0	6	2.709e-04	3	-4.546e-05	6	8.724e-05	2
28		min	.002	6	-.006	5	-.004	1	-8.462e-04	5	-5.371e-04	1	-7.569e-04	4
29	N17	max	.051	4	.005	3	.065	6	1.944e-03	6	-4.156e-04	2	-7.032e-04	5
30		min	.044	6	-.006	5	.002	2	1.364e-05	2	-1.601e-03	4	-1.493e-03	1
31	N18	max	.002	5	0	2	.003	4	4.935e-04	3	2.03e-04	2	-1.776e-05	2
32		min	0	1	-.001	6	0	2	-1.293e-04	5	-6.74e-04	4	-4.625e-04	6
33	N19	max	.23	2	.009	5	.518	5	2.833e-03	3	2.048e-03	1	5.102e-03	2
34		min	-.106	4	-.073	3	-.141	3	-1.248e-02	5	-3.611e-03	5	-1.793e-03	6
35	N20	max	.035	1	.009	5	.039	5	2.852e-03	3	2.048e-03	1	7.58e-04	2
36		min	-.06	5	-.073	3	-.021	1	-1.948e-03	5	-3.611e-03	5	-1.805e-03	6
37	N21	max	.066	1	.008	5	.097	4	1.404e-03	4	9.976e-04	1	-7.397e-05	5
38		min	-.044	5	-.073	3	-.002	2	1.017e-04	2	-3.296e-03	5	-8.091e-04	3
39	N22	max	.042	1	.013	5	.045	5	2.852e-03	3	2.048e-03	1	7.579e-04	2
40		min	-.071	5	-.084	3	-.024	1	-1.948e-03	5	-3.611e-03	5	-1.805e-03	6
41	N25	max	0	6	0	6	0	6	0	6	0	6	0	6
42		min	0	1	0	1	0	1	0	1	0	1	0	1
43	N26	max	.02	5	.007	6	.013	5	-1.542e-04	2	1.139e-03	5	4.834e-04	2
44		min	.001	3	-.003	2	0	1	-4.056e-04	6	7.715e-05	3	-2.706e-04	5
45	N27	max	.067	2	.005	6	.152	4	-1.542e-04	2	1.139e-03	5	2.267e-03	2
46		min	-.001	6	-.003	2	.005	2	-5.192e-03	4	7.715e-05	3	-2.705e-04	5
47	N28	max	.017	5	.006	6	.011	5	-1.543e-04	2	1.139e-03	5	4.834e-04	2
48		min	.001	3	-.003	2	0	1	-4.056e-04	6	7.715e-05	3	-2.707e-04	5
49	N29	max	.094	4	.005	6	.062	5	1.267e-03	5	1.497e-03	5	-3.764e-04	2
50		min	.012	2	-.003	2	-.063	3	-1.887e-03	3	-4.584e-04	1	-3.195e-03	4
51	N30	max	0	1	0	5	0	4	-1.588e-04	2	-3.597e-06	6	1.068e-04	2

Envelope Joint Displacements (Continued)

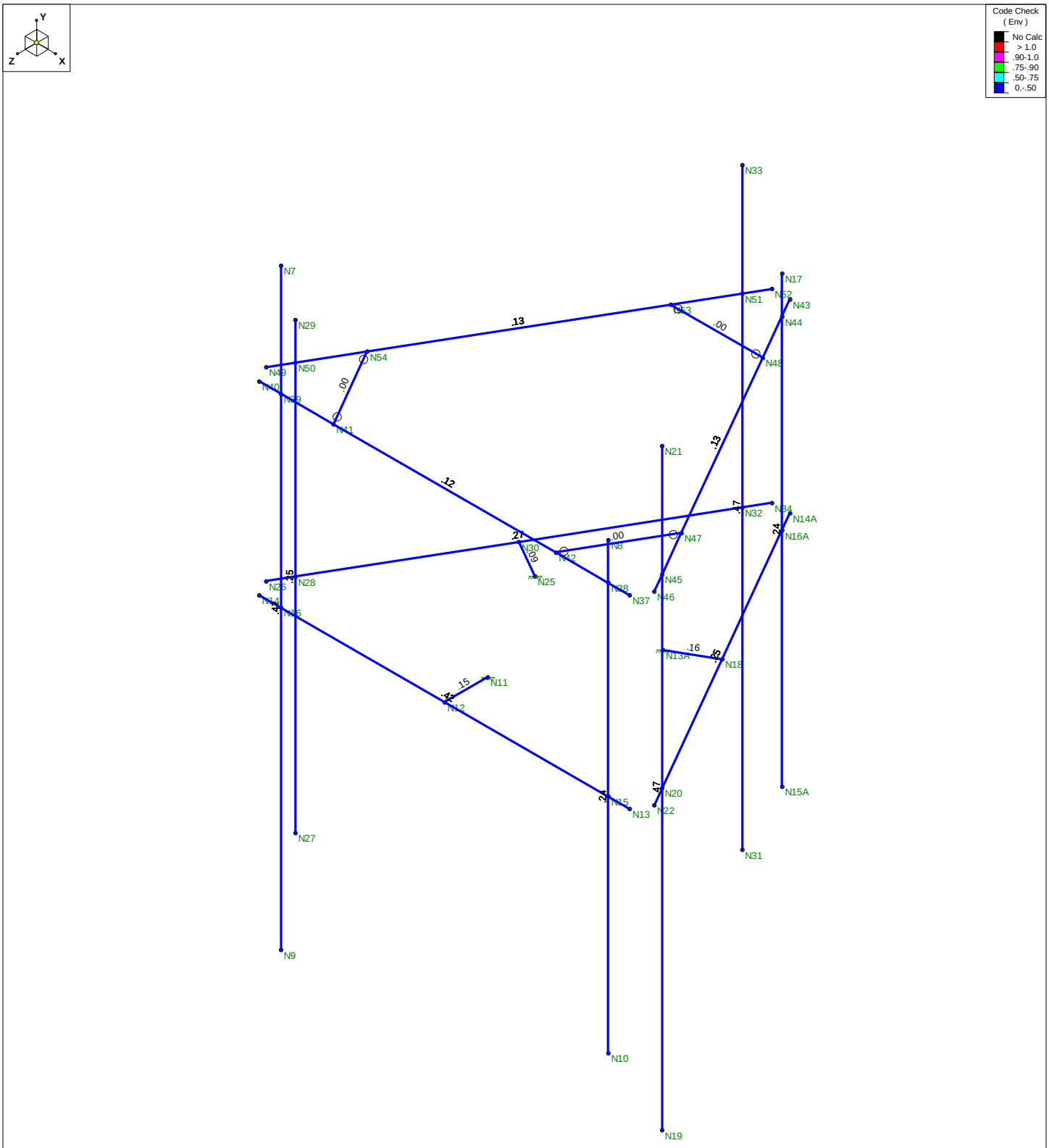
	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotation [rad]	LC
52		min	0	4	-.001	3	-.001	2	-6.53e-04	6	-3.46e-04	2	-1.823e-04	6
53	N31	max	.249	2	-.01	2	.567	4	-7.689e-04	2	-3.969e-04	6	5.369e-03	2
54		min	-.06	6	-.078	6	.059	2	-1.384e-02	4	-2.353e-03	2	-1.4e-03	6
55	N32	max	.041	2	-.009	2	.023	5	-7.701e-04	2	-3.969e-04	6	1.026e-03	2
56		min	.007	6	-.078	6	.004	6	-3.374e-03	6	-2.353e-03	2	-1.409e-03	6
57	N33	max	.061	1	-.01	2	.042	5	6.272e-04	5	1.331e-04	6	-2.017e-04	5
58		min	.035	5	-.078	6	-.069	3	-1.153e-03	3	-1.707e-03	2	-7.395e-04	3
59	N34	max	.048	2	-.01	2	.027	5	-7.701e-04	2	-3.969e-04	6	1.026e-03	2
60		min	.008	6	-.091	6	.005	6	-3.374e-03	6	-2.353e-03	2	-1.409e-03	6
61	N37	max	0	2	.014	6	.06	4	2.653e-03	4	5.862e-04	2	2.35e-03	6
62		min	-.06	6	.004	2	-.031	2	-9.341e-04	2	-4.377e-04	6	6.1e-04	2
63	N38	max	0	2	.006	6	.059	4	2.653e-03	4	5.861e-04	2	2.35e-03	6
64		min	-.06	6	.002	2	-.029	2	-9.341e-04	2	-4.379e-04	6	6.102e-04	2
65	N39	max	0	2	-.022	5	.12	4	1.178e-03	4	3.285e-03	4	1.223e-03	6
66		min	-.06	6	-.077	3	.004	2	-1.378e-04	2	3.095e-04	3	-2.915e-04	2
67	N40	max	0	2	-.023	5	.131	4	1.178e-03	4	3.285e-03	4	1.223e-03	6
68		min	-.06	6	-.081	3	.006	3	-1.378e-04	2	3.094e-04	3	-2.913e-04	2
69	N41	max	0	2	-.021	5	.095	4	7.781e-04	5	2.405e-03	4	1.154e-03	3
70		min	-.06	6	-.067	3	-.003	2	-3.904e-04	3	3.624e-04	3	2.074e-04	2
71	N42	max	0	2	-.002	5	.059	5	2.236e-03	4	4.829e-04	2	2.008e-03	3
72		min	-.06	6	-.013	3	-.025	1	-4.922e-04	2	-2.142e-04	6	7.952e-04	5
73	N43	max	.051	4	.013	3	.053	6	1.944e-03	6	-4.155e-04	2	-7.031e-04	5
74		min	.038	6	-.004	5	.002	2	1.352e-05	2	-1.601e-03	4	-1.49e-03	1
75	N44	max	.046	4	.005	3	.054	6	1.944e-03	6	-4.156e-04	2	-7.032e-04	5
76		min	.037	6	-.006	5	.002	2	1.364e-05	2	-1.601e-03	4	-1.49e-03	1
77	N45	max	.052	1	.008	5	.072	4	1.404e-03	4	9.976e-04	1	-7.397e-05	5
78		min	-.045	5	-.073	3	-.004	2	1.017e-04	2	-3.296e-03	5	-8.038e-04	3
79	N46	max	.055	1	.004	5	.077	4	1.405e-03	4	9.975e-04	1	-7.404e-05	5
80		min	-.055	5	-.077	3	-.005	2	1.018e-04	2	-3.296e-03	5	-8.039e-04	3
81	N47	max	.045	1	.014	5	.061	6	1.239e-03	6	7.886e-04	1	1.921e-04	5
82		min	-.024	5	-.063	3	0	2	1.732e-05	2	-2.602e-03	5	-4.062e-04	1
83	N48	max	.038	1	-.003	2	.056	6	1.313e-03	3	-2.498e-04	2	-9.088e-05	5
84		min	.033	6	-.013	6	.004	2	-4.417e-04	5	-1.427e-03	4	-1.555e-03	3
85	N49	max	.079	4	.013	6	.057	5	1.267e-03	5	1.497e-03	5	-3.736e-04	2
86		min	.009	2	-.001	2	-.052	3	-1.887e-03	3	-4.583e-04	1	-3.195e-03	4
87	N50	max	.075	4	.005	6	.055	5	1.267e-03	5	1.497e-03	5	-3.737e-04	2
88		min	.01	2	-.003	2	-.051	3	-1.887e-03	3	-4.584e-04	1	-3.195e-03	4
89	N51	max	.05	1	-.01	2	.031	5	6.272e-04	5	1.331e-04	6	-2.017e-04	5
90		min	.031	6	-.078	6	-.048	3	-1.153e-03	3	-1.707e-03	2	-7.342e-04	3
91	N52	max	.055	1	-.011	2	.031	5	6.271e-04	5	1.329e-04	6	-2.018e-04	5
92		min	.031	6	-.082	6	-.048	3	-1.153e-03	3	-1.708e-03	2	-7.343e-04	3
93	N53	max	.038	1	-.006	2	.032	5	7.423e-05	5	4.116e-04	4	-4.07e-04	2
94		min	.033	6	-.069	6	-.049	3	-7.811e-04	6	-1.317e-03	2	-1.013e-03	6
95	N54	max	.065	4	-.005	2	.049	5	2.521e-04	5	1.252e-03	5	-2.34e-04	2
96		min	.013	2	-.013	3	-.05	3	-1.757e-03	3	-4.381e-04	1	-2.479e-03	4

Envelope AISC 15th(360-16): LRFD Steel Code Checks

	Member	Shape	Code Check	Lo...	LC	She...	Lo...	Dir	...	phi*...	phi*...	phi*...	phi*...	Cb	Eqn
1	M8	PIPE_2.5	.472	4	4	.050	4		5	44.491	50.715	3.596	3.596	1.6..	H1-...
2	PS.1	PIPE_2.5	.472	4	4	.109	4		5	44.491	50.715	3.596	3.596	1.5..	H1-...

Envelope AISC 15th(360-16): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Check	Lo...	LC	She...	Lo...	Dir	...	phi*...	phi*...	phi*...	phi*...	Cb	Eqn
3	M12	PIPE 2.5	.471	4	4	.112	4		4	44.491	50.715	3.596	3.596	1.7..	H1-...
4	M3	PIPE 3.0	.419	2.5	4	.179	2.5		4	57.037	65.205	5.749	5.749	1.6..	H1-...
5	M10	PIPE 3.0	.265	2.5	6	.091	2.5		4	57.037	65.205	5.749	5.749	1.6..	H1-...
6	M6	PIPE 3.0	.254	2.5	3	.091	2.5		4	57.037	65.205	5.749	5.749	1.6..	H1-...
7	M11	PIPE 2.0	.252	3	4	.028	3		5	20.867	32.13	1.872	1.872	1.48	H1-...
8	M7	PIPE 2.0	.239	3	4	.054	3		4	20.867	32.13	1.872	1.872	1.7..	H1-...
9	PS.2	PIPE 2.0	.235	3	4	.037	3		5	20.867	32.13	1.872	1.872	1.6..	H1-...
10	M5	HSS4X4X4	.160	0	4	.108	0	y	3	139....	139....	16.181	16.181	1.1..	H1-...
11	M1	HSS4X4X4	.150	.583	4	.110	0	y	3	139....	139....	16.181	16.181	1.1..	H1-...
12	M19	L3X3X4	.135	.313	5	.024	4....	y	4	26.816	46.656	1.688	3.661	1.9..	H2-1
13	M18	L3X3X4	.130	.312	4	.011	.312	y	5	26.816	46.656	1.688	3.619	1.7..	H2-1
14	M17	L3X3X4	.121	.99	5	.011	1....	z	4	26.816	46.656	1.688	3.568	1.6..	H2-1
15	M9	HSS4X4X4	.086	0	1	.110	0	y	6	139....	139....	16.181	16.181	1.22	H1-...
16	M18A	L3X3X4	.003	.621	4	.017	1....	y	3	45.088	46.656	1.688	3.756	1.1..	H2-1
17	M16	L3X3X4	.003	.621	4	.022	0	y	4	45.088	46.656	1.688	3.756	1.1..	H2-1
18	M17A	L3X3X4	.002	.621	1	.020	1....	y	3	45.088	46.656	1.688	3.756	1.1..	H2-1



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek Engineering Inc.		
FJP	CT11317B - AMA	July 9, 2021 at 11:32 AM
21051.10	Unity Check	CT11317B_AMA.R3D

CENTEK engineering
Centered on Solutions℠ www.centekeng.com
63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject: Connection to Host Structure

Location: Fairfield, CT

Rev. 0: 06/24/2021

Prepared by: F.J.P; Checked by: T.J.L.
Job No. 21051.10

Existing Connection to Host Structure

Bolts Grade	A325	(User Input)
Number of Bolts =	$n_b := 4$	(User Input)
Bolt Diameter =	$d\phi := \frac{5}{8}\,in$	(User Input)
Nominal Tensile Strength=	$F_{nt} := 90\,ksi$	(User Input)
Nominal Shear Strength=	$F_{nv} := 54\,ksi$	(User Input)
Safety Factor=	$\phi := 0.75$	(User Input)
Horizontal Spacing Between Bolts=	$S := 6.0\,in$	(User Input)

Reactions at Connection:

Shear X =	$Shear_x := .698 \cdot kip$	(User Input)
Vertical=	$Vertical := 1.069\,kip$	(User Input)
Shear Z =	$Shear_z := 1.569 \cdot kip$	(User Input)
Moment X=	$M_X := .621 \cdot kip \cdot ft$	(User Input)
Moment Y=	$M_Y := 1.725 \cdot kip \cdot ft$	(User Input)
Moment Z=	$M_Z := 1.143\,kip \cdot ft$	(User Input)

Anchor Check:

Bolt Area= $a_b := \pi \cdot \left(\frac{d\phi}{2}\right)^2 = 0.307\,in^2$

Allowable Shear Strength= $R_{nv} := F_{nv} \cdot a_b \cdot \phi = 12.425\,kip$

Shear Stress per Bolt= $V_{act} := \frac{\sqrt{Shear_x^2 + Vertical^2}}{n_b} + \frac{M_Z}{S \cdot \frac{n_b}{2}} = 1.462\,kip$

$Condition1 := if\left(V_{act} \le R_{nv}, \text{“OK”}, \text{“Overstressed”}\right) = \text{“OK”}$

$\frac{V_{act}}{R_{nv}} = 11.8\%$

$Condition1 = \text{“OK”}$

$f_v := \frac{V_{act}}{a_b} = 4.766\,ksi$

Tensile Stress Adjusted for Shear= $F'_{nt} := \left| \begin{array}{l} \text{if } \left(1.3\,F_{nt} - \frac{F_{nt}}{\phi \cdot F_{nv}} \cdot f_v\right) \le F_{nt} \\ \quad 1.3\,F_{nt} - \frac{F_{nt}}{\phi \cdot F_{nv}} \cdot f_v \\ \text{else} \\ \quad F_{nt} \end{array} \right| = 90\,ksi$

Allowable Tensile Strength= $R_{nt} := F'_{nt} \cdot a_b \cdot \phi = 20.709\,kip$

Tension Force Each Bolt= $T_{act} := \frac{Shear_z}{n_b} + \frac{M_Y}{S \cdot \frac{n_b}{2}} + \frac{M_X}{S \cdot \frac{n_b}{2}} = 2.738\,kip$

Tension Stress Each Bolt= $f_t := \frac{T_{act}}{a_b} = 8.925\,ksi$

$Condition2 := if\left(f_t \le F'_{nt} \cdot \phi, \text{“OK”}, \text{“Overstressed”}\right) = \text{“OK”}$

$\frac{T_{act}}{R_{nt}} = 13.2\%$

$Condition2 = \text{“OK”}$

Exhibit F

INFINIGY

Non-Ionizing Radiation Report

Compiled For: Northeast Site Solutions on behalf of T-Mobile

Site Name: CT11317B

Site ID: CT11317B

280 Morehouse Drive (Tower 876 Line 1730), Fairfield, CT 06825

Latitude: 41.209987; Longitude: -73.261539

Structure Type: Utility Lattice Tower

Report Date: July 14, 2021

Report Written By: Tim Harris

Status: T-Mobile will be compliant with FCC rules on RF Exposure.

Table of Contents

1. Executive Summary:

Northeast Site Solutions on behalf of T-Mobile has contracted Infinigy Solutions, LLC to determine whether the site CT11317B located at 280 Morehouse Drive (Tower 876 Line 1730) in Fairfield, CT Will Be Compliant with all Federal Communications Commission (FCC) rules and regulations for radio frequency (RF) exposure as indicated in **47CFR§1.1310**.

The report incorporates a theoretical RF field analysis in accordance with the FCC Rules and Regulations for all individuals classified as "Occupational or Controlled" and "General Public or Uncontrolled" (see Appendix A and B).

This document and the conclusions herein are based on information provided by Northeast Site Solutions on behalf of T-Mobile.

As a result of the analysis, **T-Mobile Will Be Compliant with FCC rules.**

T-Mobile, All Bands Cumulative Exposure %		
Uncontrolled / General Population	Exposure values at the site (mW/cm^2)	0.0242
	% Exposure	3.33 %
Controlled / Occupational	Exposure values at the site (mW/cm^2)	0.0242
	% Exposure	0.68 %

2. Site Summary:

Site Information	
Site Name: CT11317B	
Site Address: 280 Morehouse Drive (Tower 876 Line 1730), Fairfield, CT 06825	
Site Type: Utility Lattice Tower	
Compliance Status	Will Be Compliant
Mitigation Required	No
Signage Required	Yes
Barriers Required	No
Access Locked	No
Area Controlled or Uncontrolled	Uncontrolled

3. Site Compliance

This report also incorporates overview of the site information:

- Antenna Inventory Table
- Calculation Tables showing exposure for each carrier transmit frequency
- Total exposure for all carriers existing and proposed at ground level considering the centerline of all antennas and horizontal distance from the tower.
- Maximum Effective Radiated Power Assumed as Worst Case for Calculations used in this study
- Calculations based on flat ground around base of the structure

4. Site Compliance Recommendations

Infinigy recommends the following upon the installation of antennas at the site:

Base of tower

Install an RF caution sign. Note: The recommendation for alerting signage is moot if there is an RF caution, or greater already installed.

5. Antenna Inventory Table

Ant ID	Sector	Azimuth	Operator	Antenna manufacturer	Antenna Model	Operating Frequency/Technology	Rad Ctr (Ft)	Az (Deg)	Total ERP Power (Watts)
1a	Alpha	60	T-Mobile	RFS	APX16DW-16DWS	1900 MHz LTE	95	60	3052
1b	Alpha	60	T-Mobile	RFS	APX16DW-16DWS	1900 MHz GSM	95	60	3052
1c	Alpha	60	T-Mobile	RFS	APX16DW-16DWS	2100 MHz UMTS	95	60	2154
1d	Alpha	60	T-Mobile	RFS	APX16DW-16DWS	2100 MHz LTE	95	60	2154
2a	Alpha	60	T-Mobile	RFS	APXVARR24_43-C-NA20	700 MHz LTE	95	60	2256
2b	Alpha	60	T-Mobile	RFS	APXVARR24_43-C-NA20	600 MHz LTE	95	60	1128
2c	Alpha	60	T-Mobile	RFS	APXVARR24_43-C-NA20	600 MHz 5G	95	60	1128
3a	Beta	180	T-Mobile	RFS	APX16DW-16DWS	1900 MHz LTE	95	180	3052
3b	Beta	180	T-Mobile	RFS	APX16DW-16DWS	1900 MHz GSM	95	180	3052
3c	Beta	180	T-Mobile	RFS	APX16DW-16DWS	2100 MHz UMTS	95	180	2154
3d	Beta	180	T-Mobile	RFS	APX16DW-16DWS	2100 MHz LTE	95	180	2154
4a	Beta	180	T-Mobile	RFS	APXVARR24_43-C-NA20	700 MHz LTE	95	180	2256
4b	Beta	180	T-Mobile	RFS	APXVARR24_43-C-NA20	600 MHz LTE	95	180	1128
4c	Beta	180	T-Mobile	RFS	APXVARR24_43-C-NA20	600 MHz 5G	95	180	1128
5a	Gamma	300	T-Mobile	RFS	APX16DW-16DWS	1900 MHz LTE	95	300	3052
5b	Gamma	300	T-Mobile	RFS	APX16DW-16DWS	1900 MHz GSM	95	300	3052
5c	Gamma	300	T-Mobile	RFS	APX16DW-16DWS	2100 MHz UMTS	95	300	2154
5d	Gamma	300	T-Mobile	RFS	APX16DW-16DWS	2100 MHz LTE	95	300	2154
6a	Gamma	300	T-Mobile	RFS	APXVARR24_43-C-NA20	700 MHz LTE	95	300	2256
6b	Gamma	300	T-Mobile	RFS	APXVARR24_43-C-NA20	600 MHz LTE	95	300	1128
6c	Gamma	300	T-Mobile	RFS	APXVARR24_43-C-NA20	600 MHz 5G	95	300	1128

6. RF Guidelines

To ensure safety of company workers, the following points need to be taken into consideration and implemented at wireless sites in accordance with the Carriers policies:

a) Worksite: Any employee at the site should avoid working directly in front of the antenna or in areas predicted to exceed general population exposure limits by 100%. Workers should insist that the transmitters be switched off during the work period.

b) RF Safety Training and Awareness: All employees working in areas exceeding the general population limits should have a basic awareness of RF safety measures. Videos, classroom lectures and online courses are all appropriate training methods on these topics.

c) Site Access: Restricting access to transmitting antenna locations is one of the most important elements of RF safety. This can be done with:

- Locked doors/gates/ladder access
- Alarmed doors
- Restrictive barriers

d) Three-foot Buffer: There is an inverse relationship between the strength of the field and the distance from the antenna. The RF field diminishes with distance from the antenna. Workers should maintain a three-foot distance from the antennas.

e) Antennas: Workers should always assume that the antenna is transmitting and should never stop right in front of the antenna. If someone must pass by an antenna, he/she should move quickly, thus reducing RF exposure.

7. T-Mobile Exposure Analysis By Band and Technology

T-Mobile 600 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**0.4**
	Exposure values at the site (mW/cm^2)	**0.0018**
	% Exposure	**0.46%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**2.0**
	Exposure values at the site (mW/cm^2)	**0.0018**
	% Exposure	**0.09%**

T-Mobile 600 MHz 5G		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**0.4**
	Exposure values at the site (mW/cm^2)	**0.0018**
	% Exposure	**0.46%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**2.0**
	Exposure values at the site (mW/cm^2)	**0.0018**
	% Exposure	**0.09%**

T-Mobile 700 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**0.5**
	Exposure values at the site (mW/cm^2)	**0.0037**
	% Exposure	**0.73%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**2.3**
	Exposure values at the site (mW/cm^2)	**0.0037**
	% Exposure	**0.16%**

T-Mobile 1900 MHz GSM		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**1.0**
	Exposure values at the site (mW/cm^2)	**0.0049**
	% Exposure	**0.49%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**5.0**
	Exposure values at the site (mW/cm^2)	**0.0049**
	% Exposure	**0.10%**

T-Mobile 1900 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**1.0**
	Exposure values at the site (mW/cm^2)	**0.0049**
	% Exposure	**0.49%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**5.0**
	Exposure values at the site (mW/cm^2)	**0.0049**
	% Exposure	**0.10%**

T-Mobile 2100 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**1.0**
	Exposure values at the site (mW/cm^2)	**0.0035**
	% Exposure	**0.35%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**5.0**
	Exposure values at the site (mW/cm^2)	**0.0035**
	% Exposure	**0.07%**

T-Mobile 2100 MHz UMTS		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**1.0**
	Exposure values at the site (mW/cm^2)	**0.0035**
	% Exposure	**0.35%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**5.0**
	Exposure values at the site (mW/cm^2)	**0.0035**
	% Exposure	**0.07%**

8. Appendix A: FCC Guidelines

FCC Policies

The Federal Communications Commission (FCC) in 1996 implemented regulations and policies for analysis of RF propagation to evaluate RF emissions. All the analysis and results of this report are compared with FCC's (Federal Communications Commission) rules to determine whether a site is compliant for Occupational/Controlled or General Public/Uncontrolled exposure. All the analysis of RF propagation is done in terms of a percentage. The limits primarily indicate the power density and are generally expressed in terms of milliwatts per centimeter square, mW/cm^2.

FCC guidelines incorporate two separate tiers of exposure limits that are dependent on the scenario/ situation in which that exposure takes place or the status of the individuals who are subjected to that exposure. The decision as to which tier is applied to a scenario is based on the following definitions:

Occupational / Controlled

These limits apply in situations when someone is exposed to RF energy through his/her occupation, is fully aware of the harmful effects of the RF exposure and has an ability to exercise control over this exposure. Occupational / controlled exposure limits also apply when exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means. limits for Occupational/Controlled exposure can be found on Table 1(A).

General Population / Uncontrolled

These limits apply to situations in which the general public may be exposed or in which persons who are exposed because of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure to RF. Therefore, members of the general public would always be considered under this category, for example, in the case of a telecommunications tower that exposes people in a nearby residential area. Exposure limits for General Population/Uncontrolled can be found on Table 1(B).

Table 1. LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

(A) Limits for Occupational/Controlled Exposure

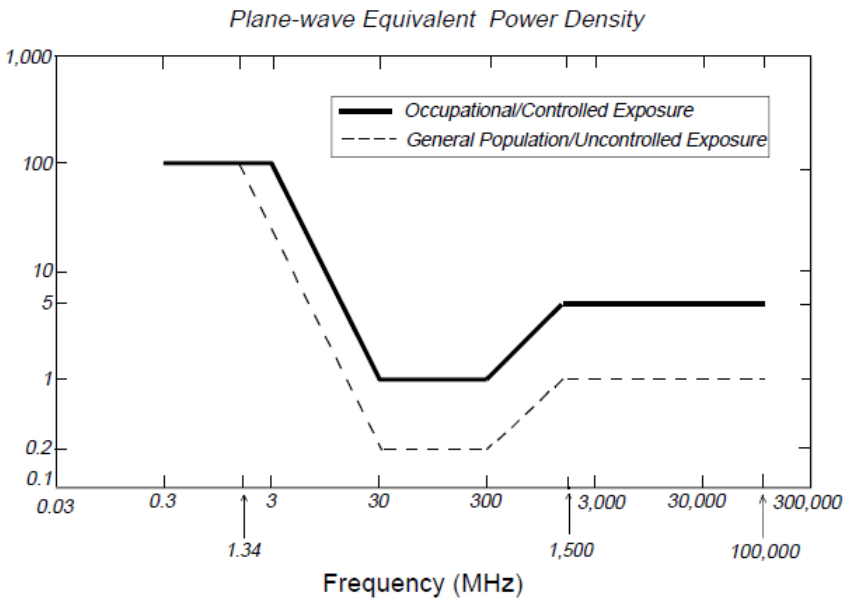
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $|E|^2$, $|H|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6

(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $|E|^2$, $|H|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz *Plane-wave equivalent power density

Figure 1. *FCC Limits for Maximum Permissible Exposure (MPE)*



OSHA Statement:

The objective of the OSHA Act is to ensure the safety and health of the working men and women by enforcing certain standards. The act also assists and encourages the states in their efforts to ensure safe and healthy working conditions through means of research, information, education and training in the field of occupational safety and health and for other purposes.

According to OSHA Act section 5, important duties to be considered are:

(a) Each employer

1) Shall furnish to each of his employees' employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious harm to his employees
2) Shall comply with occupational safety and health standards promulgated under this act.

(b) Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to his own actions and conduct.

9. Preparer Certification

I, Tim Harris, preparer of this report, certify that I am fully trained and aware of the rules and regulations of both the Federal Communications Commission and the Occupational Safety and Heath Administration regarding Human Exposure to Radio Frequency Radiation. In addition, I have been trained in RF safety practices, rules, and regulations.

I certify that the information contained in this report is true and correct to the best of my knowledge.

Timothy A. Harris *7/14/2021*

Signature Date

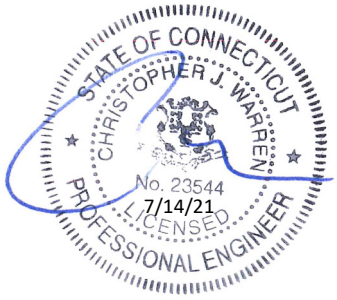
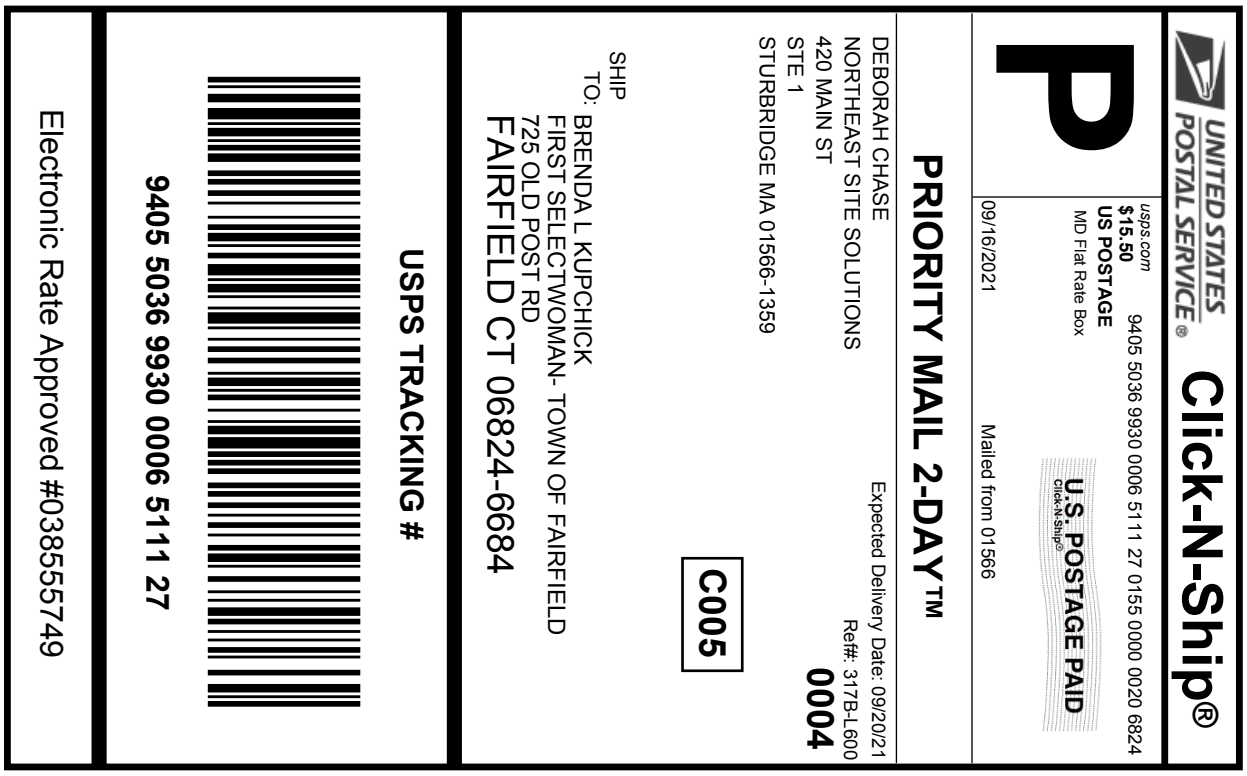


Exhibit G



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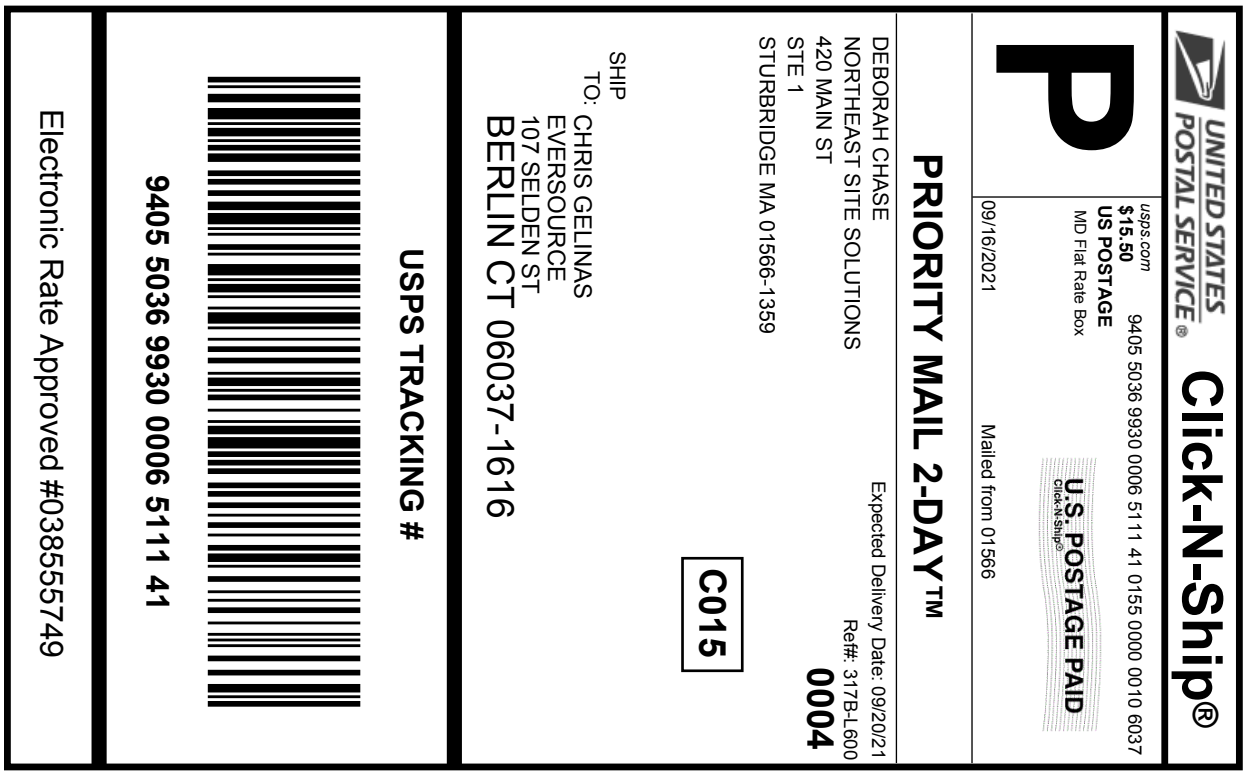

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Total:	**$15.50**

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STURBRIDGE MA 01566-1359

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To: CHRIS GELINAS
EVERSOURCE
107 SELDEN ST
BERLIN CT 06037-1616

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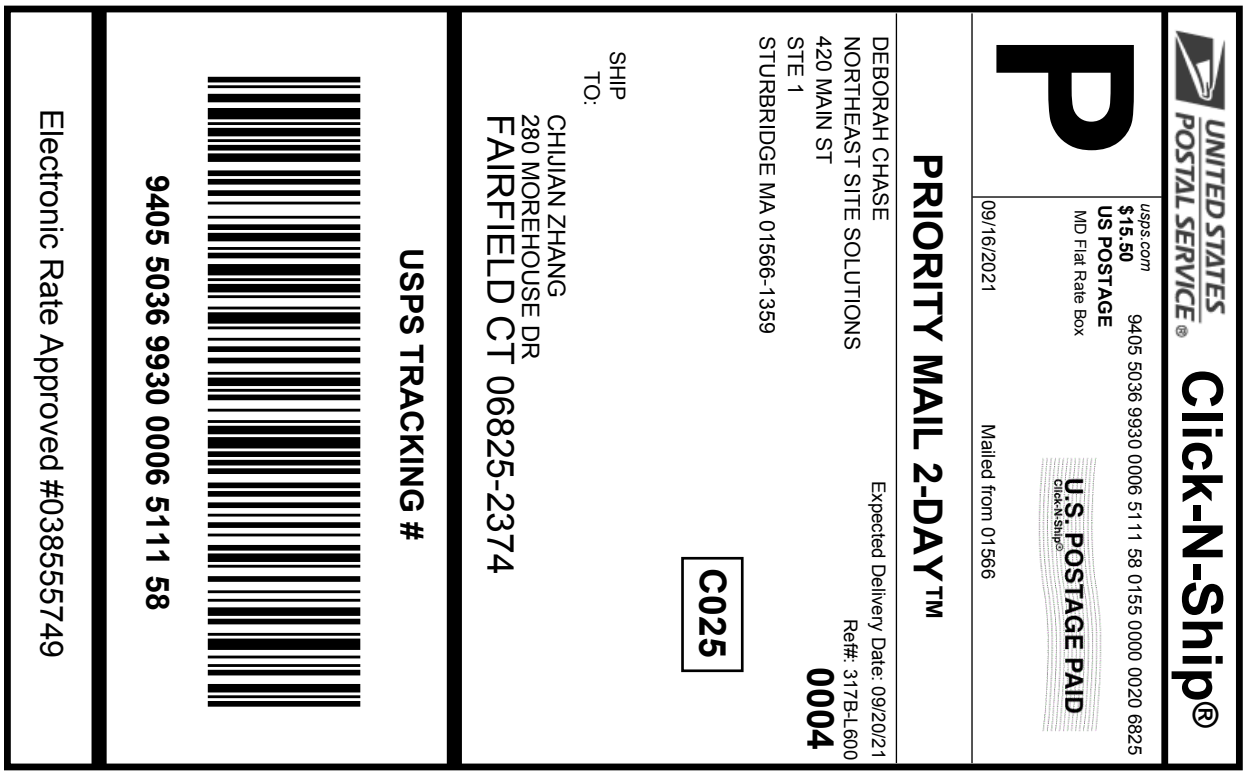

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Ship Date:	09/16/2021
Expected Delivery Date:	09/20/2021

Priority Mail® Postage:	**$15.50**
Total:	**$15.50**

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NORTHEAST SITE SOLUTIONS
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STE 1
STURBRIDGE MA 01566-1359

Ref#: 317B-L600

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280 MOREHOUSE DR
FAIRFIELD CT 06825-2374

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Product	Qty	Unit Price	Price
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Prepaid Mail Berlin, CT 06037 Weight: 3 lb 2.00 oz Acceptance Date: Fri 09/17/2021 Tracking #: 9405 5036 9930 0006 5111 41	1		$0.00
Prepaid Mail Fairfield, CT 06824 Weight: 3 lb 1.40 oz Acceptance Date: Fri 09/17/2021 Tracking #: 9405 5036 9930 0006 5111 34	1		$0.00
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