Transcend Wireless

10 Industrial Ave,
Suite 3
Mahwah NJ 07430

Phone: 201.684.0055
Fax: 201.684.0066

October 4, 2019

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

RE: Notice of Exempt Modification
337 Sunnyside Ave. Watertown, CT 06779
Latitude: 41.592772
Longitude: -73.0668
Sprint Site#: CT33XC516 – DO Macro

Dear Ms. Bachman:

Sprint currently maintains three (3) antennas at the 110-foot level of the existing 110-foot transmission tower at 337 Sunnyside Ave. Watertown, CT. The 110-foot transmission tower is owned by The Connecticut Light & Power Company, d/b/a Eversource Energy and the property is owned by the First Assembly of God of Waterbury Inc. Sprint now intends to replace three (3) of its existing antennas with three (3) new 800/1900/2500 MHz antennas. The new antennas will be installed at the same 110-foot level of the tower.

Planned Modifications:
Tower:

Remove
N/A

Remove and Replace:
(3) RFS APXVSPP18-C antennas (Remove) - CommScope DHHTT65B-3XR antennas (Replace)
800/1900/2500 MHz

Install New:
(3) RFS KIT-FD9R6004 / 1C-DL diplexers
(3) CCI DPO-7126Y-0-T1 diplexers

Existing to Remain:
(18) 1-5/8” coax cables

Ground:

Install New: (3) RFS KIT-FD9R6004 / 1C-DL diplexers, (3) CCI DPO-7126Y-0-T1 diplexers (3) 2500 MHz RRHs

This facility was approved by the CSC for Sprint use in Petition No. 502 dated March 15, 2001. This modification complies with this approval. Please see the enclosed.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to Town Manager – Robert M. Scannell, Elected Official, and Mark Massoud, Land Use Administrator for the Town of Watertown, as well as the owners.

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

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

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

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

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

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

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

For the foregoing reasons, Sprint 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,

Jake Shappy
Transcend Wireless
Cell: 845-553-3330
Email: jshappy@transcendwireless.com

Attachments
cc: Robert M. Scannell – Town of Watertown Town Manager
Mark Massoud – Town of Watertown Land Use Administrator
First Assembly of God of Waterbury Inc – property owner
The Connecticut Light & Power Company, d/b/a Eversource Energy – tower owner

EVERSOURCE ENERGY

56 Prospect Street,
Hartford, CT 06103

P.O. Box 270
Hartford, CT 06141-0270
(860) 665-5000

August 21, 2019

Mr. Jake Shappy
Transcend Mobile
10 Industrial Ave, Suite 3
Mahwah, NJ 07430

RE: Sprint Antenna Site, CT-33XC516, Sunnyside Avenue, Watertown, CT, structure 1522

Dear Mr. Shappy:

Based on the structural report and construction drawings provided by Centek Engineering, as well as a review of the structural report by Paul J. Ford & Company, Eversource accepts the proposed modification of the subject site.

Please contact Christopher Gelinas of Eversource Real Estate at 860-665-2008 to complete the site lease amendment if needed. Please contact me at 860-728-4503 for other questions regarding this site.

Sincerely,

Joel Szarkowicz
Transmission Line Engineering

REF: 17159.12 - CT33XC516 - Structural Analysis Rev2 19.01.31
17159.12 CT33XC516 Watertown - CD REV 0 19.03.25 (S&S)

Petition No. 502
Sprint Spectrum, L.P.
Watertown, Connecticut
Staff Report
March 15, 2001

On March 12, 2001, Connecticut Siting Council (Council) member Edward Wilensky and Christina Lepage of the Council staff met with Sprint Spectrum, L.P. (Sprint) representative Julie Donaldson off of Sunnyside Lane, Watertown, Connecticut for inspection of an electric transmission structure (#1522). The property and structure is owned by Connecticut Light and Power Co. (CL&P). Sprint, with the agreement of CL&P, proposes to modify the structure by installing antennas and associated equipment for telecommunications use and is petitioning the Council for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need (Certificate) is required for the modification.

Sprint proposes the installation of nine antennas attached to a PowerMount. The antennas will extend approximately 18-feet above the existing 95-foot transmission line lattice structure (#1522). The centerline of the antennas will be at 110 feet above ground level (agl).

The proposed site is bordered by grassy fields, overgrown vegetation, and transmission line towers. The zoning designation of this site is R-30. The existing structure is situated within an area that is designated as wetlands. Sprint requested that Vanasse Hangen Brustlin, Inc. (VHB) conduct a site assessment of the area. The Professional Soil Scientist from VHB determined that the wetlands within immediate area of the structure have "little or no societal value".

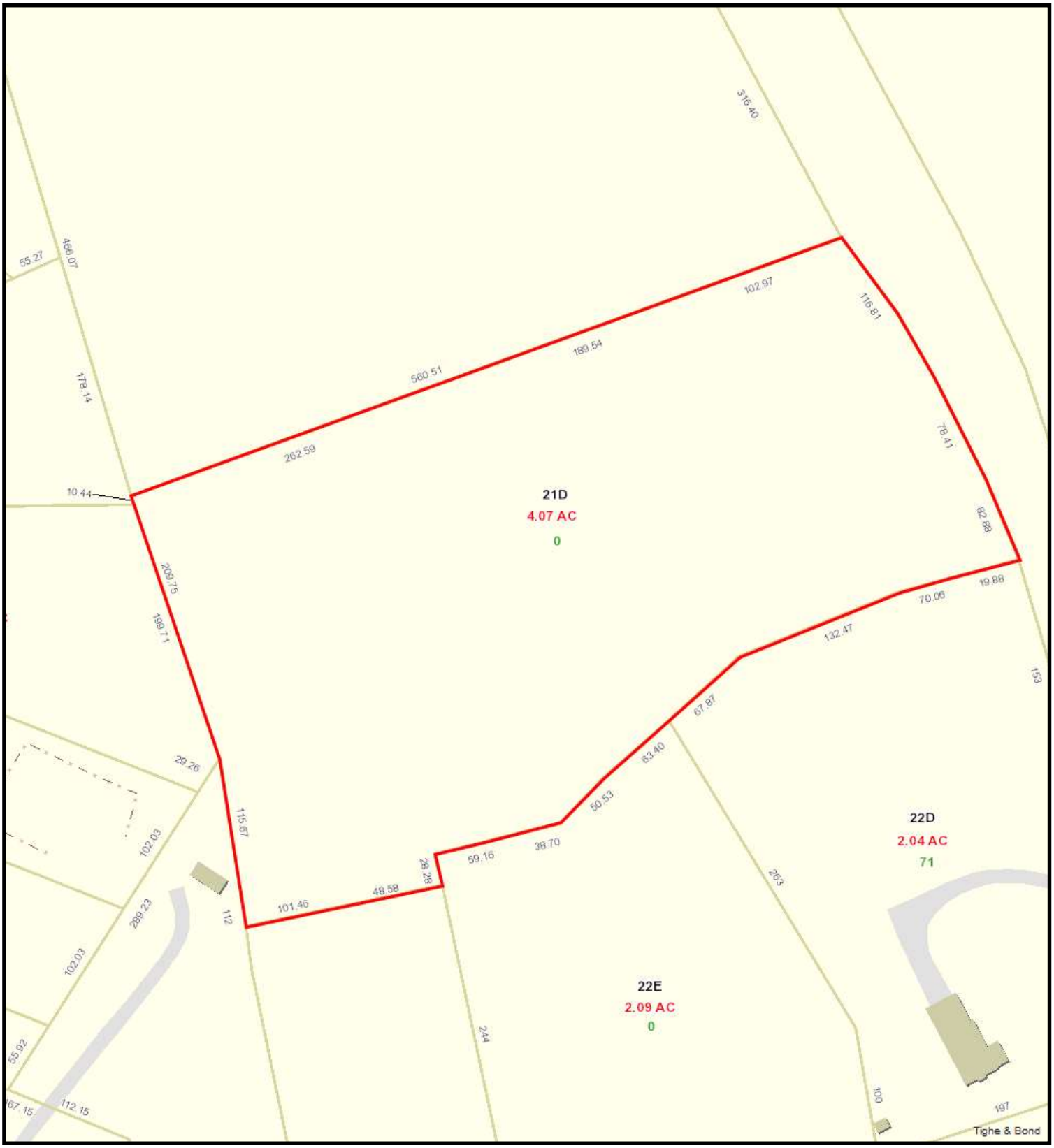
Sprint has agreed to relocate the equipment to just outside the limits of the wetland surrounding the tower. Sprint has also agreed to eliminate the 7-foot fence topped with barbed wire around the compound, and to enclose the cabinets in a 26'x13'4"x10' secure equipment shelter, which would be the minimum size that would allow the equipment to work properly. An alternative option is for Sprint can also place the equipment cabinets on a 20'x8'6" concrete pad and install a 6-foot high chain-link fence or a wooden stockade fence around the equipment cabinets. Cables from the PowerMount to the equipment cabinet will run underground. Space will be allocated on the concrete pad to place three growth cabinets. The equipment shelter will be landscaped with arbor vitae. An underground conduit will be routed from a power junction on Sunnyside Avenue along the access drive to the southern corner of the lattice structure.

The Town of Watertown has also expressed concerns regarding the impact to the inland wetlands and the use of the barbed wire fencing.

The worst-case power density for the telecommunications operations at the site has been calculated to be 8.3127% of the applicable standard for uncontrolled environments.

Sprint contends that the increase in height of this structure will not result in a substantial environmental effect and the proposed project will prevent the construction of a new tower in the area. Sprint also states that the PCS antennas will blend in with the existing transmission line structure, and the base station equipment will not be visible from Sunnyside Avenue. The relocation of the equipment cabinets will minimize any disturbance to the wetland.

Sprint submits that the proposed modification of the structure would not require a Certificate because it will reduce the need for a new telecommunications tower by utilizing an existing structure and contends that the proposed installation will not cause a substantial adverse environmental effect.



8/22/2019 9:46:09 AM

Scale: 1"=100'

Scale is approximate

The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analyses.

0 SUNNYSIDE AVE

Location	0 SUNNYSIDE AVE	**Mblu**	126/ 193A/ 21D/ /
Acct#	8757	**Owner**	FIRST ASSEMBLY OF GOD OF WATERBURY INC
PBN		**Assessment**	$27,700
Appraisal	$39,600	**PID**	8757
Building Count	1		

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$0	$39,600	$39,600
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$0	$27,700	$27,700

Owner of Record

Owner	FIRST ASSEMBLY OF GOD OF WATERBURY INC	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	1263 THOMASTON AVE WATERBURY, CT 06704	**Book & Page**	1704/ 141
		Sale Date	06/01/2010

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
FIRST ASSEMBLY OF GOD OF WATERBURY INC	$0		1704/ 141	06/01/2010
SOLID ROCK CHRISTIAN	$0		1398/ 034	06/24/2005
NEW BEGINNINGS ASSEMBLY OF GOD	$0		1011/ 209	11/27/2000
UNION CONG. CHURCH &	$0		698/3133	

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: $0

Building Percent Good:

Replacement Cost Less Depreciation: $0

Building Attributes	
Field	**Description**
Style	Vacant Land
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	

Building Photo

(http://images.vgsi.com/photos/WatertownCTPhotos//\00\00\83/

Building Layout

(http://images.vgsi.com/photos/WatertownCTPhotos//Sketches/8

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 1300
Description Res Vac Dv
Zone R30
Neighborhood 05

Land Line Valuation

Size (Acres) 4.07
Frontage
Depth
Assessed Value $27,700

Alt Land Appr Category	No	**Appraised Value**	$39,600

Outbuildings

Outbuildings	Legend
No Data for Outbuildings	

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$0	$44,000	$44,000
2015	$0	$44,000	$44,000
2014	$0	$44,000	$44,000

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$0	$30,800	$30,800
2015	$0	$30,800	$30,800
2014	$0	$30,800	$30,800

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   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the 'Find Locations' Quick link at ups.com.
   Schedule a same day or future day Pickup to have a UPS driver pickup all of your Internet Shipping packages.
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RAMSEY ,NJ 07446

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THE UPS STORE
115 FRANKLIN TPKE
MAHWAH ,NJ 07430

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

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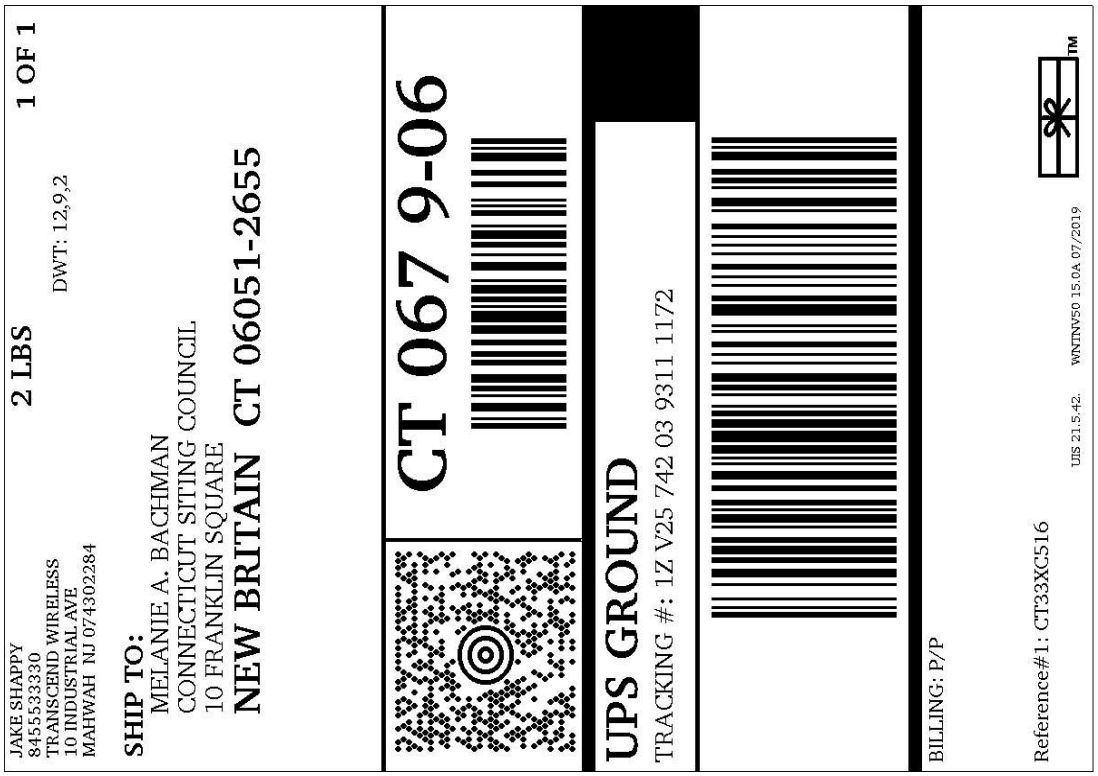

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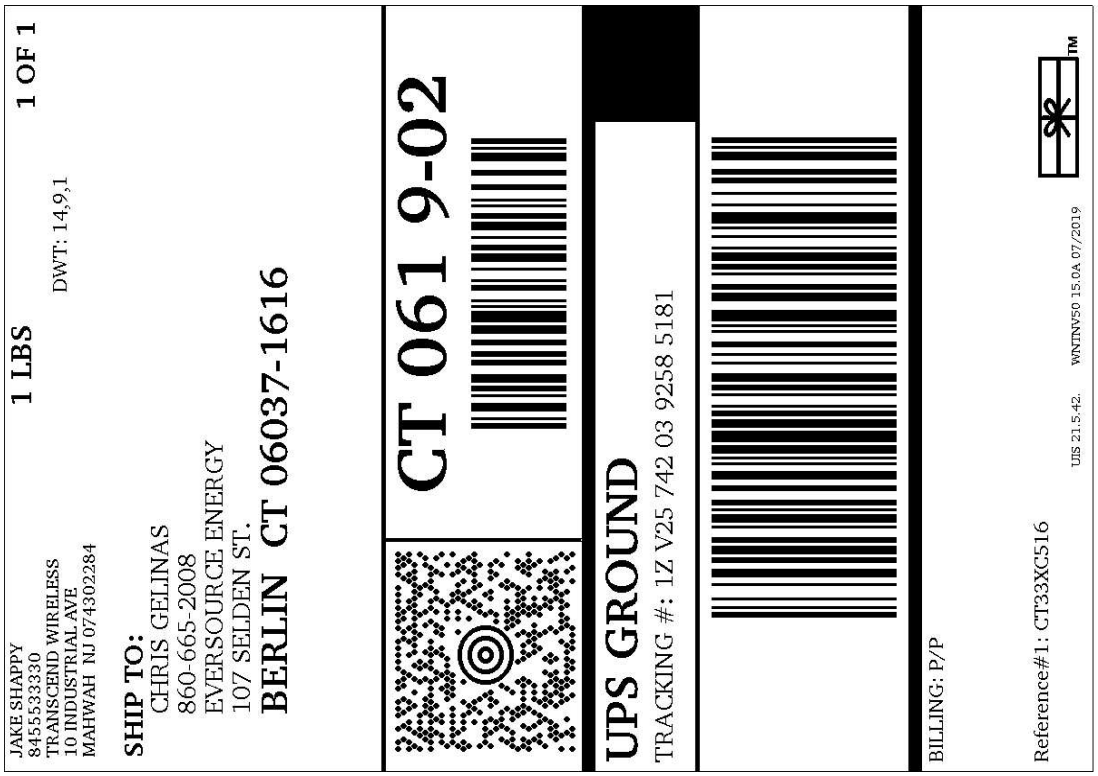

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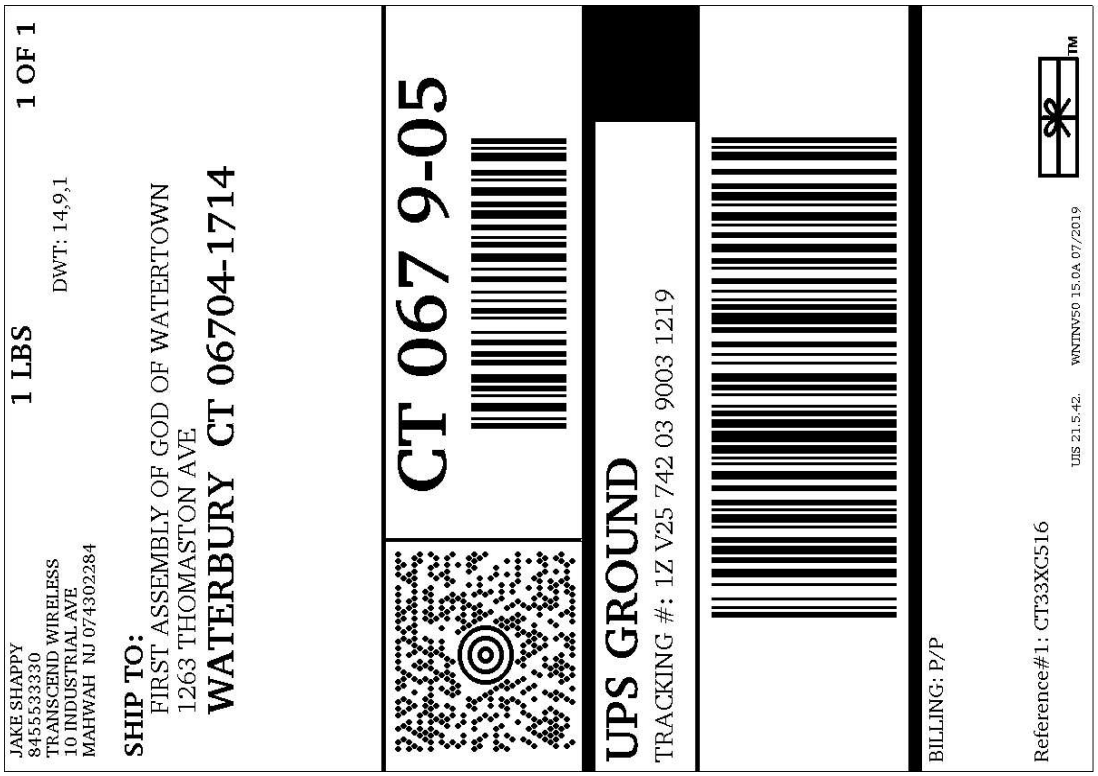

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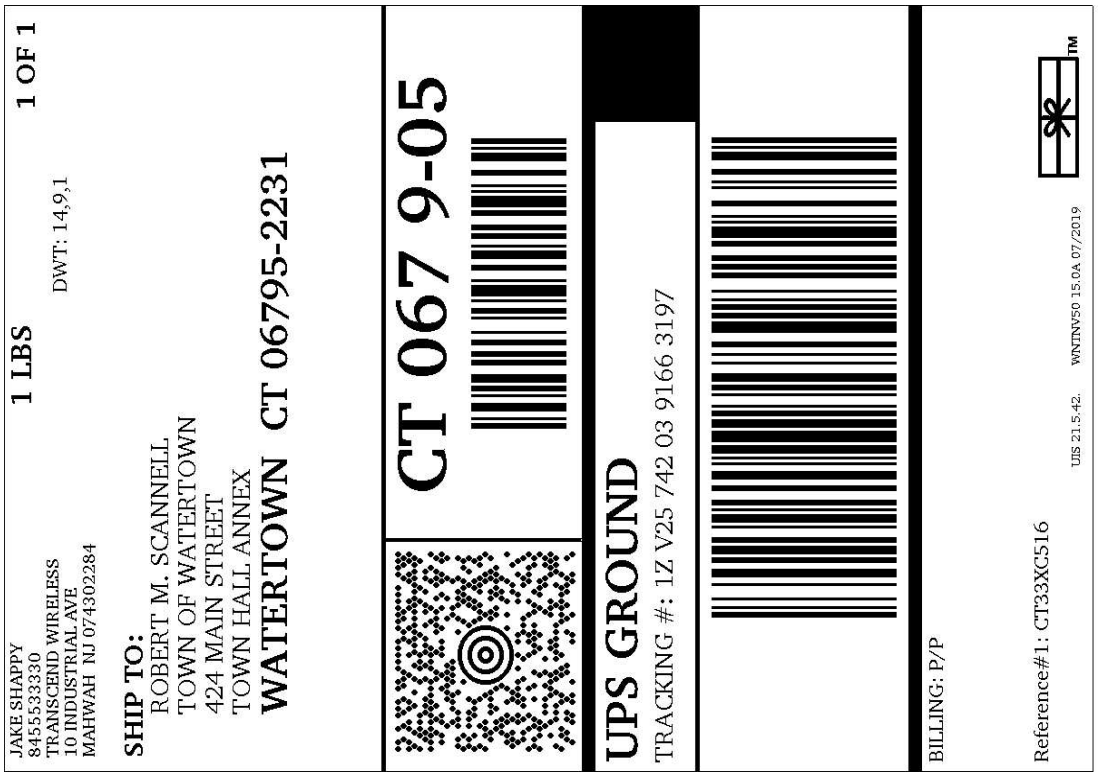

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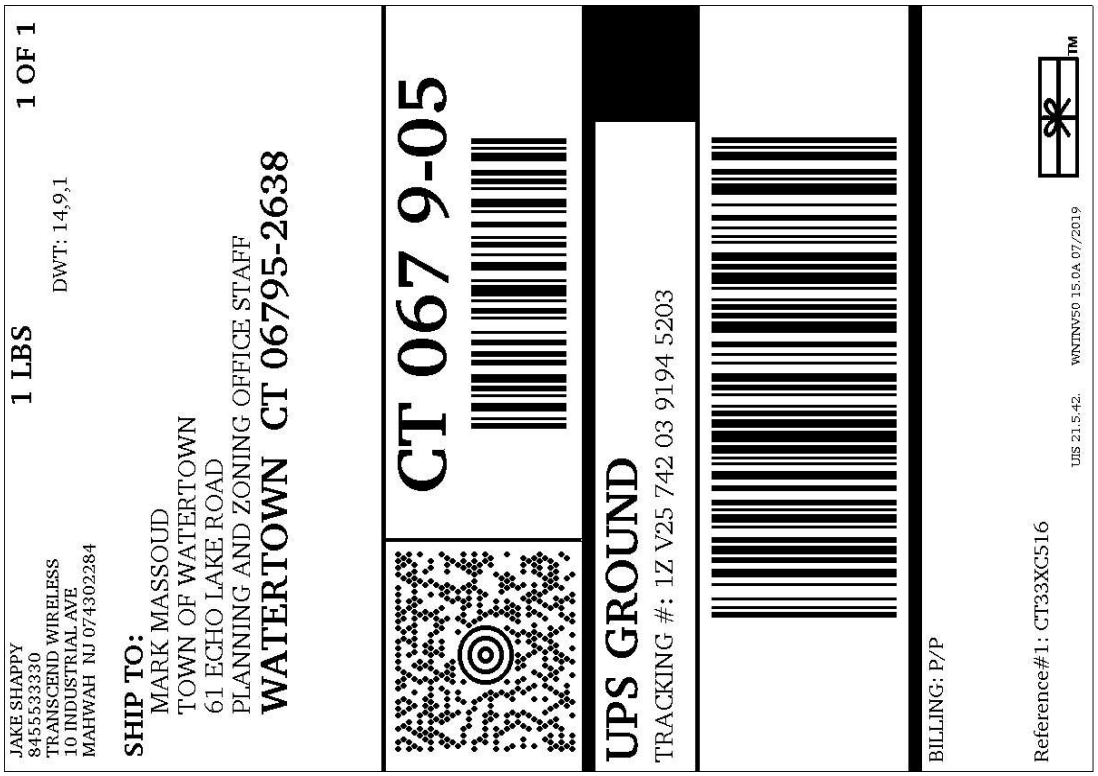


EBI Consulting

environmental | engineering | due diligence

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

Sprint Existing Facility

Site ID: CT33XC516

Eversource Struct.: 1522
337 Sunnyside Avenue
Watertown, Connecticut 06779

May 29, 2019

EBI Project Number: 6219001744

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**4.32%**

May 29, 2019

Sprint
Attn: RF Engineering Manager
1 International Boulevard, Suite 800
Mahwah, New Jersey 07495

Emissions Analysis for Site: CT33XC516 - Eversource Struct.: 1522

EBI Consulting was directed to analyze the proposed Sprint facility located at **337 Sunnyside Avenue** in **Watertown, Connecticut** for the purpose of determining whether the emissions from the Proposed Sprint Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu W/cm^2$). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits; therefore, it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed Sprint Wireless antenna facility located at 337 Sunnyside Avenue in Watertown, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Sprint is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 2 CDMA channels (800 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 50 Watts per Channel.

2) 4 PCS channels (1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 8 LTE channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

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

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

6) The antennas used in this modeling are the Commscope DHHTT65B-3XR for the 800 MHz / 1900 MHz / 2500 MHz channel(s) in Sector A, the Commscope DHHTT65B-3XR for the 800 MHz / 1900 MHz / 2500 MHz channel(s) in Sector B, the Commscope DHHTT65B-3XR for the 800 MHz / 1900 MHz / 2500 MHz channel(s) in Sector C.

7) This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antenna mounting height centerline of the proposed antennas is 110 feet above ground level (AGL).

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

10) Emissions from additional carriers were not included because emissions data for the site location are not available.

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

Sprint Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Commscope DHHTT65B-3XR	Make / Model:	Commscope DHHTT65B-3XR	Make / Model:	Commscope DHHTT65B-3XR
Frequency Bands:	800 MHz / 1900 MHz / 2500 MHz	Frequency Bands:	800 MHz / 1900 MHz / 2500 MHz	Frequency Bands:	800 MHz / 1900 MHz / 2500 MHz
Gain:	13.35 dBd / 15.25 dBd / 15.05 dBd	Gain:	13.35 dBd / 15.25 dBd / 15.05 dBd	Gain:	13.35 dBd / 15.25 dBd / 15.05 dBd
Height (AGL):	110 feet	Height (AGL):	110 feet	Height (AGL):	110 feet
Channel Count:	14	Channel Count:	14	Channel Count:	14
Total TX Power (W):	420 Watts	Total TX Power (W):	420 Watts	Total TX Power (W):	420 Watts
ERP (W):	12,640.40	ERP (W):	12,640.40	ERP (W):	12,640.40
Antenna A1 MPE %:	**4.32%**	Antenna B1 MPE %:	**4.32%**	Antenna C1 MPE %:	**4.32%**

Site Composite MPE %	
Carrier	**MPE %**
Sprint (Max at Sector A):	4.32%
Site Total MPE % :	4.32%

Sprint Sector A Total:	4.32%
Sprint Sector B Total:	4.32%
Sprint Sector C Total:	4.32%
Site Total:	4.32%

Sprint Maximum MPE Power Values (Sector A)

Sprint Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
Sprint 800 MHz CDMA	2	1081.36	110.0	6.43	800 MHz CDMA	533	1.21%
Sprint 1900 MHz PCS	4	1339.86	110.0	15.92	1900 MHz PCS	1000	1.59%
Sprint 2500 MHz LTE	8	639.78	110.0	15.21	2500 MHz LTE	1000	1.52%
						Total:	**4.32%**

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the Sprint facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

Sprint Sector	Power Density Value (%)
Sector A:	4.32%
Sector B:	4.32%
Sector C:	4.32%
Sprint Maximum MPE % (Sector A):	4.32%
Site Total:	4.32%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **4.32%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Sprint

WIRELESS COMMUNICATIONS FACILITY

EVERSOURCE STRUCT.: 1522
SITE ID: CT33XC516
337 SUNNYSIDE AVE
WATERTOWN, CT 06779

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." 2016 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 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 SPRINT 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.
19. CONTRACTOR SHALL COMPLY WITH OWNERS 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

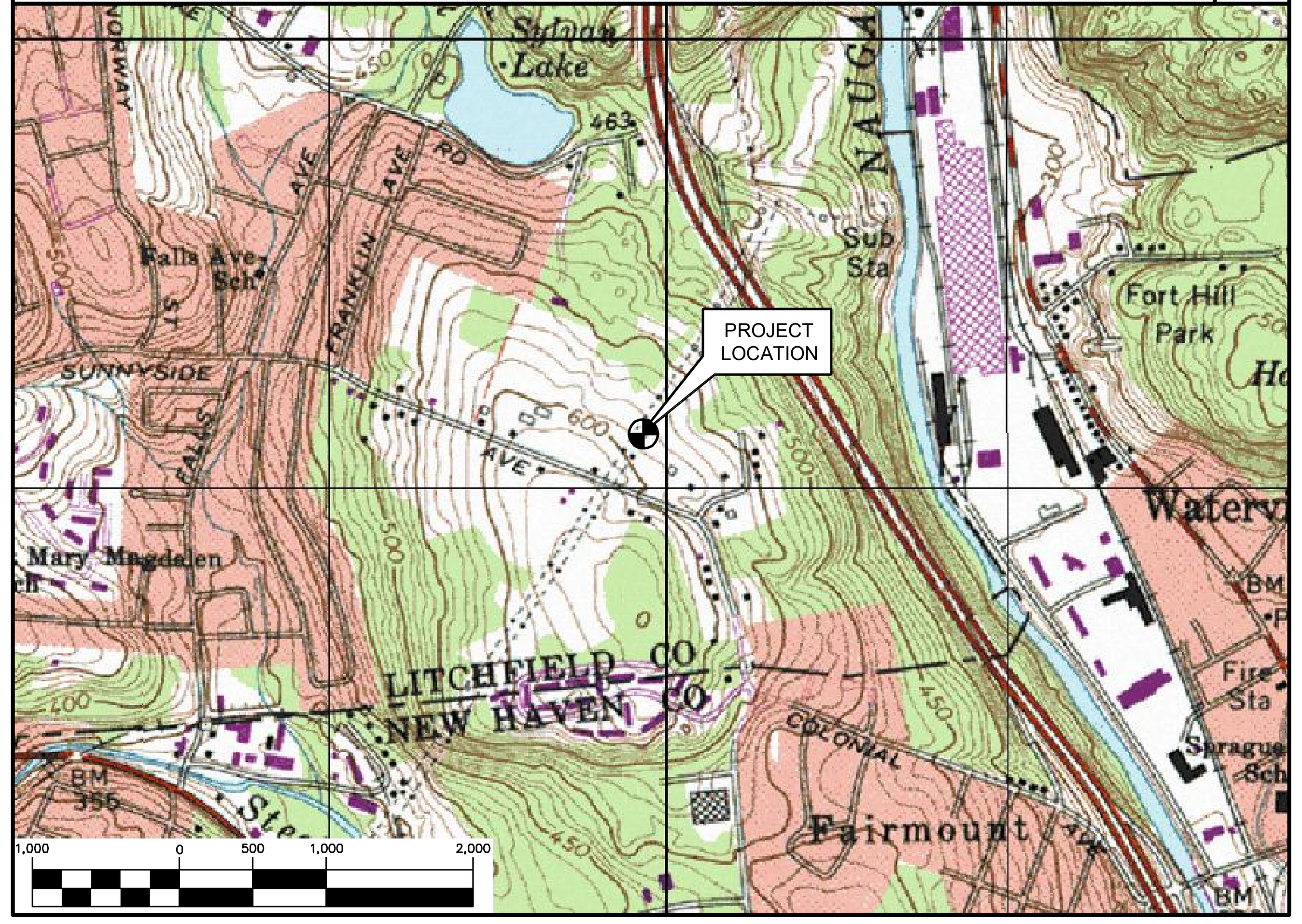
FROM: 5 WAYSIDE ROAD, BURLINGTON, MA 01803
TO: 337 SUNNYSIDE AVENUE, WATERTOWN, CT 06779

1.	START OUT GOING SOUTHWEST.	0.04 MI.
2.	TURN RIGHT.	0.04 MI.
3.	TURN SLIGHT RIGHT.	0.04 MI.
4.	TURN LEFT.	0.03 MI.
5.	TURN RIGHT ONTO WAYSIDE RD.	0.12 MI.
6.	TURN LEFT ONTO CAMBRIDGE ST/US-3 N/MA-3A.	0.27 MI.
7.	MERGE ONTO I-95 S/MA-128 S TOWARD WALTHAM/LOWELL.	12.32 MI.
8.	TAKE THE I-90/MASS PIKE EXIT, EXIT 25, TOWARD ALBANY NY/BOSTON.	0.32 MI.
9.	MERGE ONTO I-90 W TOWARD WORCESTER (PORTIONS TOLL).	44.45 MI.
10.	MERGE ONTO I-84 W VIA EXIT 9 TOWARD HARTFORD/NEW YORK CITY/US-20 (PORTIONS TOLL) (CROSSING INTO CONNECTICUT).	74.08 MI.
11.	MERGE ONTO CT-8 N VIA EXIT 20 TOWARD TORRINGTON.	2.32 MI.
12.	TAKE THE HUNTINGDON AVE EXIT, EXIT 36, TOWARD COLONIAL AVE.	0.18 MI.
13.	TURN LEFT ONTO HUNTINGDON AVE.	0.05 MI.
14.	TURN RIGHT TO STAY ON HUNTINGDON AVE.	0.11 MI.
15.	HUNTINGDON AVE BECOMES COLONIAL AVE.	0.50 MI.
16.	COLONIAL AVE BECOMES SUNNYSIDE AVE.	0.33 MI.
17.	337 SUNNYSIDE AVE, OAKVILLE, CT 06779-1444, 447 SUNNYSIDE AVE IS ON THE RIGHT.	

VICINITY MAP

SCALE: 1" = 1000'

NORTH



PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
   - A. REMOVE (3) EXISTING PANEL ANTENNAS FROM EXISTING TOWER MOUNT.
   - B. INSTALL (3) PROPOSED 10-PORT PANEL ANTENNAS, (1) PER SECTOR.
   - C. INSTALL (6) PROPOSED DIPLEXERS ON TOWER.
   - D. INSTALL (3) REMOTE RADIO UNITS WITHIN SHELTER.

PROJECT INFORMATION

SITE NAME:	EVERSOURCE STRUCT.: 1522
SITE ID:	CT33XC516
SITE ADDRESS:	337 SUNNYSIDE AVE WATERTOWN, CT 06779
APPLICANT:	SPRINT 5 WAYSIDE ROAD BURLINGTON, MA 01803
CONTACT PERSON:	DOUG TALMADGE (PROJECT MANAGER) (475) 434-4292
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405
PROJECT COORDINATES:	LATITUDE: 41° 35' 33.98"N LONGITUDE: 73° 04' 00.48"W GROUND ELEVATION: ±578' AMSL SITE COORDINATES REFERENCED AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
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N-1	DESIGN BASIS AND SITE NOTES	A
C-1	COMPOUND PLANS AND ELEVATION	A
C-2	TYPICAL DETAILS	A
C-3	COLOR CODE AND CPRI DETAILS	A

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	03/25/19	KAWJR	TJL	ISSUED FOR CONSTRUCTION

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WIRELESS COMMUNICATIONS FACILITY
EVERSOURCE STRUCT.: 1522
SITE ID: CT33XC516
337 SUNNYSIDE AVE
WATERTOWN, CT 06779

DATE:	01/03/19
SCALE:	AS NOTED
JOB NO.	17159.12

TITLE SHEET

T-1

Sheet No. 1 of 5

DESIGN BASIS:

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

1. DESIGN CRITERIA:

- WIND LOAD (UTILITY TOWER): 110 MPH (3 SECOND GUSTS) PER NESC C2–2012 SECTION 25 RULE 250C
- WIND LOAD (ANTENNA MAST): 93 MPH (Vasd) (EXPOSURE C/IMPORTANCE FACTOR 1.15 BASED ON ASCE 7–10) PER 2015 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2018 CONNECTICUT STATE BUILDING CODE.
- SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7–10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
2. 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.
3. 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.
4. DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST EXISTING FIELD CONDITIONS.
5. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
6. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS, ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
7. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
8. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING ADEQUATE SHORING, BRACING, AND BARRICADES AS MAY BE REQUIRED FOR THE PROTECTION OF EXISTING PROPERTY, CONSTRUCTION WORKERS, AND FOR PUBLIC SAFETY.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING SITE OPERATIONS, COORDINATE WORK WITH NORTHEAST UTILITIES
10. THE STRUCTURE IS DESIGNED TO BE SELF–SUPPORTING AND STABLE AFTER FOUNDATION REMEDIATION WORK IS COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, TEMPORARY BRACING, GUYS OR TIEDOWNS, WHICH MIGHT BE NECESSARY.
11. 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.
12. SHOP DRAWINGS, CONCRETE MIX DESIGNS, TEST REPORTS, AND OTHER SUBMITTALS PERTAINING TO STRUCTURAL WORK SHALL BE FORWARDED TO THE OWNER FOR REVIEW BEFORE FABRICATION AND/OR INSTALLATION IS MADE. SHOP DRAWINGS SHALL INCLUDE ERECTION DRAWINGS AND COMPLETE DETAILS OF CONNECTIONS AS WELL AS MANUFACTURER'S SPECIFICATION DATA WHERE APPROPRIATE. SHOP DRAWINGS SHALL BE CHECKED BY THE CONTRACTOR AND BEAR THE CHECKER'S INITIALS BEFORE BEING SUBMITTED FOR REVIEW.
13. NO DRILLING WELDING OR TAPING ON EVERSOURCE OWNED EQUIPMENT.
14. REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)

   A. STRUCTURAL STEEL (W SHAPES)–––ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)–––ASTM A36 (FY = 36 KSI)
   C. STRUCTURAL HSS (RECTANGULAR SHAPES)–––ASTM A500 GRADE B, (FY = 46 KSI)
   D. STRUCTURAL HSS (ROUND SHAPES)–––ASTM A500 GRADE B, (FY = 42 KSI)
   E. PIPE–––ASTM A53 (FY = 35 KSI)
   F. CONNECTION BOLTS–––ASTM A325–N
   G. U–BOLTS–––ASTM A36
   H. ANCHOR RODS–––ASTM F 1554
   I. WELDING ELECTRODE–––ASTM E 70XX

2. 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.
3. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
6. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
7. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON–GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
8. 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.
9. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT–DIP) ON IRON AND STEEL HARDWARE".
10. 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.
11. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
12. 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.
13. LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
14. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
15. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
16. FABRICATE BEAMS WITH MILL CAMBER UP.
17. 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.
18. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
19. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
20. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	03/25/19	KAW/JR	TJL	ISSUED FOR CONSTRUCTION

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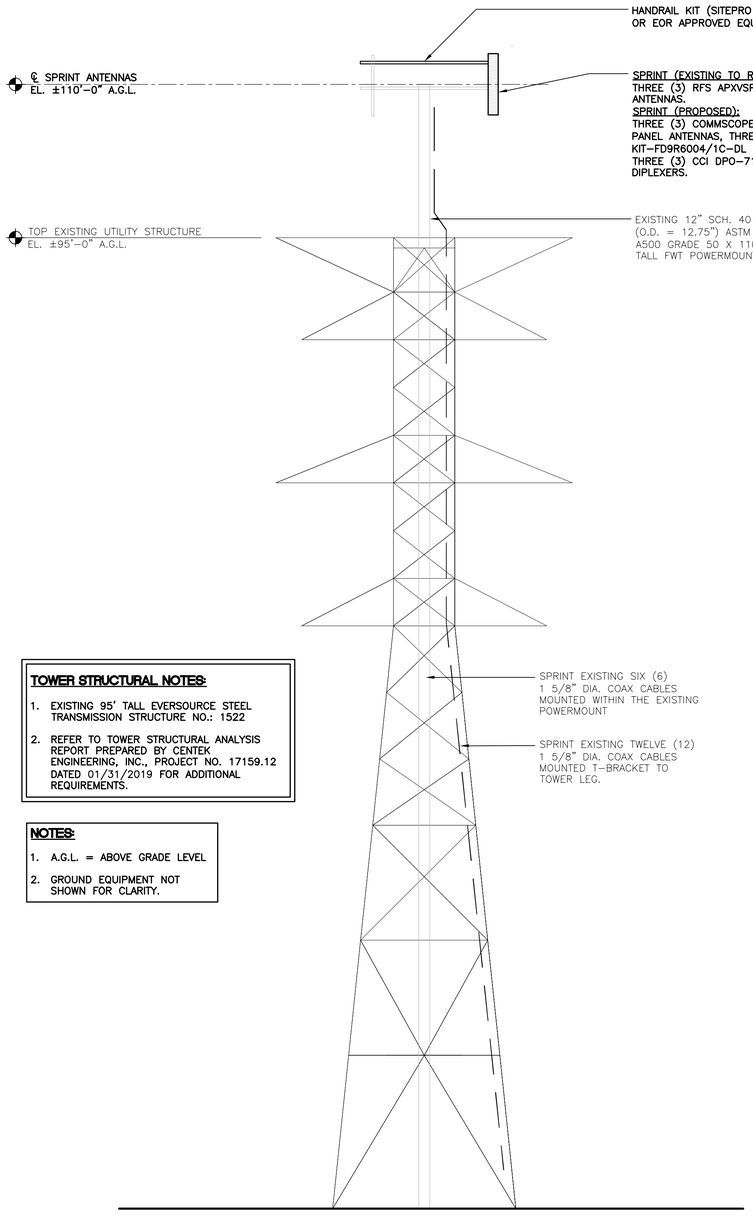
337 SUNNYSIDE AVE
WATERTOWN, CT 06779

DATE: 01/03/19
SCALE: AS NOTED
JOB NO. 17159.12

DESIGN BASIS AND SITE NOTES

N-1

Sheet No. 2 of 5



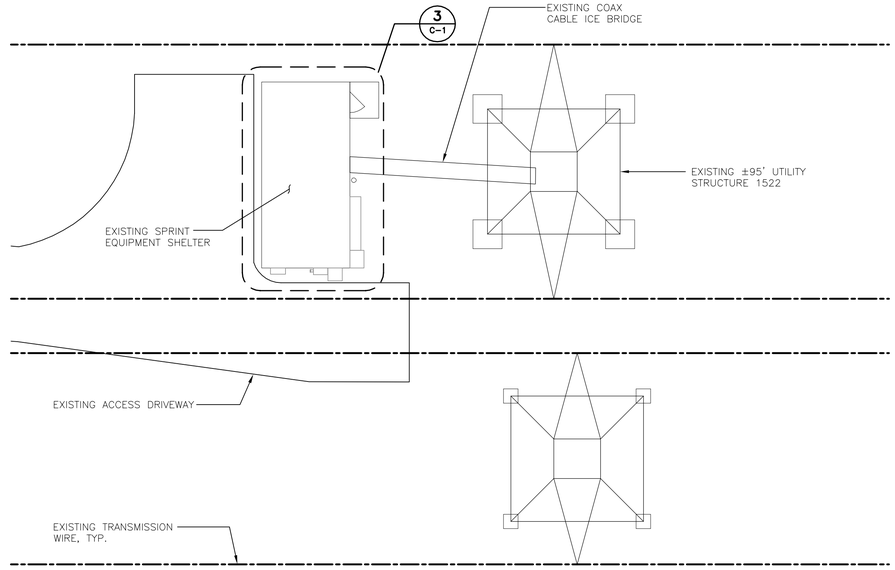
TOWER STRUCTURAL NOTES:

1. EXISTING 95' TALL EVERSOURCE STEEL TRANSMISSION STRUCTURE NO.: 1522
2. REFER TO TOWER STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING, INC., PROJECT NO. 17159.12 DATED 01/31/2019 FOR ADDITIONAL REQUIREMENTS.

NOTES:

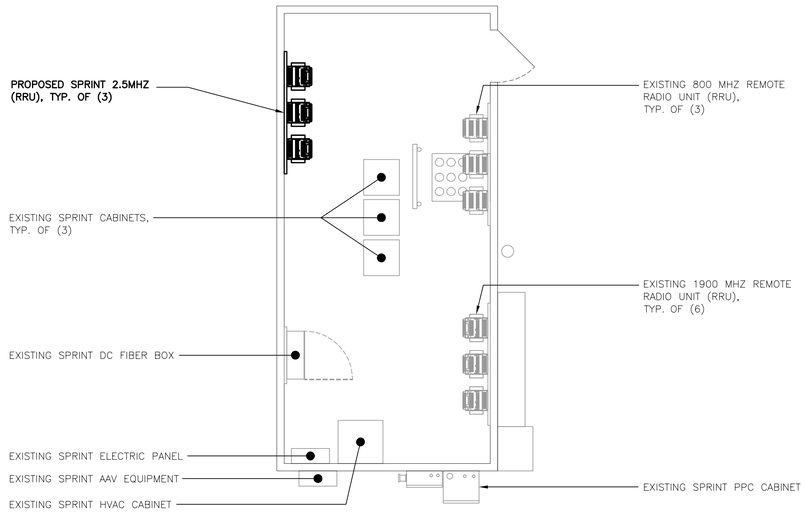
1. A.G.L. = ABOVE GRADE LEVEL
2. GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

1 / C-1 **TOWER ELEVATION**
SCALE: 1" = 7'-0"



2 / C-1 **COMPOUND PLAN**
SCALE: 1" = 10'-0"

TRUE NORTH



3 / C-1 **EQUIPMENT PLAN**
SCALE: 1/4" = 1'

TRUE NORTH

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	03/25/19	KAM/JR	TJL	ISSUED FOR CONSTRUCTION

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SCALE:	AS NOTED
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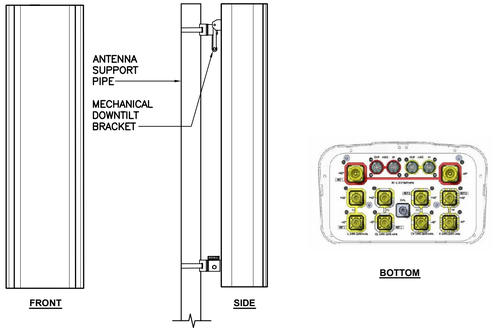
COMPOUND PLANS AND ELEVATION

C-1

Sheet No. 3 of 5

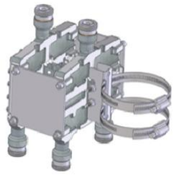


BOTTOM

ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: COMMSCOPE MODEL: DHHTT65B-3XR	72.1"L x 11.9"W x 7.1"D	46 LBS.

1 C-2 PROPOSED ANTENNA DETAIL
SCALE: 1/2" = 1'-0"

DOP-7126Y-0-T1

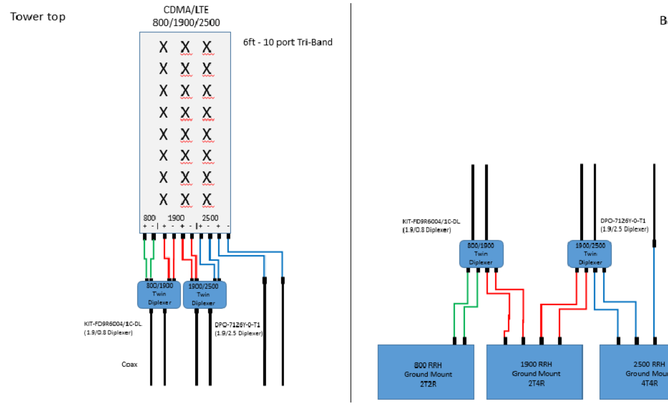


KIT-FD9R6004/1C-DL

DIPLEXERS		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: RFS MODEL: KIT-FD9R6004/1C-DL	5.8"L x 6.5"W x 4.6"D	7 LBS.
MAKE: CCI MODEL: DPO-7126Y-0-T1	6.26"L x 7.42"W x 4.07"D	8 LBS.

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

2 C-2 DIPLEXER DETAIL
SCALE: NOT TO SCALE



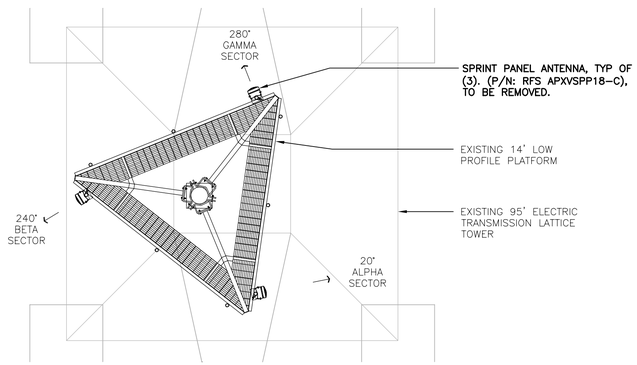
4 C-2 PLUMBING DIAGRAM
NOT TO SCALE

TD-RRH8x20-25

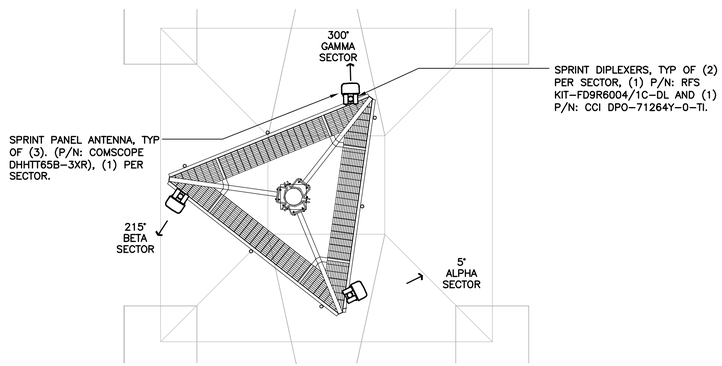
RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ALCATEL-LUCENT MODEL: TD-RRH8x20-25	25.3"L x 17.5"W x 5.7"D	66 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

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

3 C-2 REMOTE RADIO HEAD DETAIL
SCALE: NOT TO SCALE



5 C-2 EXISTING ANTENNA PLAN
SCALE: = 1/4" = 1'



6 C-2 PROPOSED ANTENNA PLAN
SCALE: = 1/4" = 1'

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	03/25/19	KAWJR	TJL	ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

STATE OF CONNECTICUT — TIMOTHY J. LAWLOR — LICENSED PROFESSIONAL ENGINEER

Sprint

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SPRINT
WIRELESS COMMUNICATIONS FACILITY
EVERSOURCE STRUCT.: 1522
SITE ID: CT33XC516
337 SUNNYSIDE AVE
WATERTOWN, CT 06779

DATE: 01/03/19
SCALE: AS NOTED
JOB NO. 17159.12

TYPICAL DETAILS

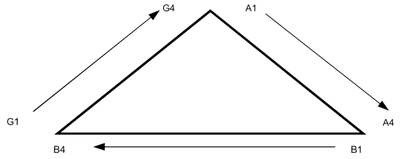
C-2
Sheet No. 4 of 5

NV CABLES				
BAND	INDICATOR		PORT	COLOR
800-1	YEL	GRN	NV-1	GRN
1900-1	YEL	RED	NV-2	BLU
1900-2	YEL	BRN	NV-3	BRN
1900-3	YEL	BLU	NV-4	WHT
1900-4	YEL	SLT	NV-5	RED
800-2	YEL	ORG	NV-6	SLT
SPARE	YEL	WHT	NV-7	PPL
2500	YEL	PPL	NV-8	ORG

HYBRID	
HYBRID	COLOR
1	GRN
2	BLU
3	BRN
4	WHT
5	RED
6	SLT
7	PPL
8	ORG

2.5 Band		
2500 Radio 1		COLOR
YEL	WHT	GRN
YEL	WHT	BLU
YEL	WHT	BRN
YEL	WHT	WHT
YEL	WHT	RED
YEL	WHT	SLT
YEL	WHT	PPL
YEL	WHT	ORG

Figure 1: Antenna Orientation



NOTES

1. All cables shall be marked at the top and bottom with 2" colored tape, stencil tag colored tape, or colored heat shrink tubing
2. Colored tape may be obtained from Graybar Electronic. UV stabilized tape or heat shrink are preferred.
3. The first ring shall be closest to the end of the cable, and there shall be a 1" space between each ring.
4. The cable color code shall be applied in accordance to Table 19-1.
   A. Table 19-1 only shows 3 sectors, but additional sectors are easily supported by adding the appropriate number of colored rings to the cable color code.
5. After the cable color code is applied, the frequency color code, Table 19-2, must be applied for the specific frequency band in use on a
   A. 2" gap shall separate the cable color code from the frequency color code.
   B. The 2" color rings for the frequency code shall be placed next to each other with no spaces.
6. Wrap 2" colored tape a minimum of 3 times around the coax, and keep the tape in the same area as much as possible. This will allow remova
7. Examples of the cable and frequency color codes are shown in Figure 19-1 and Figure 19-2.

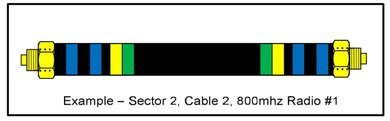
FIGURE 19.1 CABLE COLOR CODE

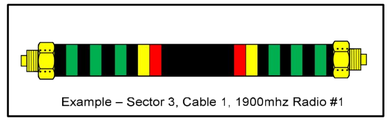
Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1	Green	No Tape	No Tape
1	2	Blue	No Tape	No Tape
1	3	Brown	No Tape	No Tape
1	4	White	No Tape	No Tape
1	5	Red	No Tape	No Tape
1	6	Grey	No Tape	No Tape
1	7	Purple	No Tape	No Tape
1	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
2	2	Blue	Blue	No Tape
2	3	Brown	Brown	No Tape
2	4	White	White	No Tape
2	5	Red	Red	No Tape
2	6	Grey	Grey	No Tape
2	7	Purple	Purple	No Tape
2	8	Orange	Orange	No Tape
3 Gamma	1	Green	Green	Green
3	2	Blue	Blue	Blue
3	3	Brown	Brown	Brown
3	4	White	White	White
3	5	Red	Red	Red
3	6	Grey	Grey	Grey
3	7	Purple	Purple	Purple
3	8	Orange	Orange	Orange

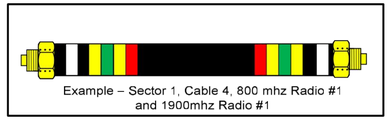
FIGURE 19.2 COLOR CODE

FREQUENC	INDICATOR	ID
800-1	YEL	GRN
1900-1	YEL	RED
1900-2	YEL	BRN
1900-3	YEL	BLU
1900-4	YEL	SLT
800-1	YEL	ORG
RESERVED	YEL	WHT
RESERVED	YEL	PPL

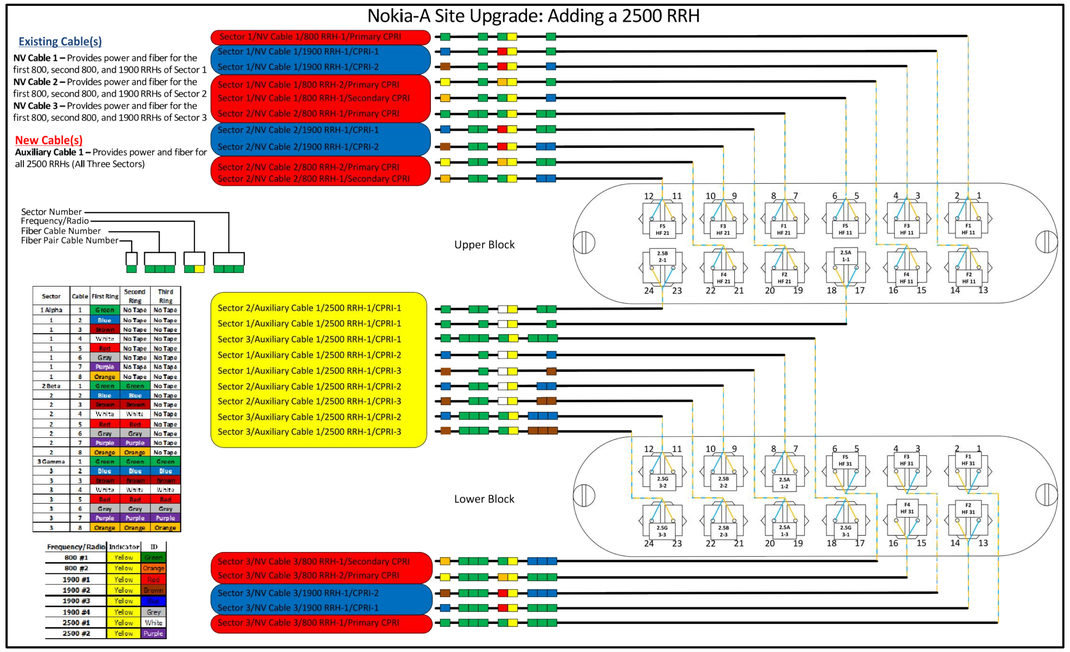
FREQUE	INDICATOR		ID
2500 -1	YEL	WHT	GRN
2500 -2	YEL	WHT	RED
2500 -3	YEL	WHT	BRN
2500 -4	YEL	WHT	BLU
2500 -5	YEL	WHT	SLT
2500 -6	YEL	WHT	ORG
2500 -7	YEL	WHT	WHT
2500 -8	YEL	WHT	PPL







1 / C-3 **COLOR CODE DIAGRAM**
NOT TO SCALE



Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1	Green	No Tape	No Tape
1	2	Blue	No Tape	No Tape
1	3	Brown	No Tape	No Tape
1	4	White	No Tape	No Tape
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1	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
2	2	Blue	Blue	No Tape
2	3	Brown	Brown	No Tape
2	4	White	White	No Tape
2	5	Red	Red	No Tape
2	6	Grey	Grey	No Tape
2	7	Purple	Purple	No Tape
2	8	Orange	Orange	No Tape
3 Gamma	1	Green	Green	Green
3	2	Blue	Blue	Blue
3	3	Brown	Brown	Brown
3	4	White	White	White
3	5	Red	Red	Red
3	6	Grey	Grey	Grey
3	7	Purple	Purple	Purple
3	8	Orange	Orange	Orange

Frequency/Radio	Indicator	ID
800 #1	Yellow	Green
800 #2	Yellow	Orange
1900 #1	Yellow	Red
1900 #2	Yellow	Brown
1900 #3	Yellow	Blue
1900 #4	Yellow	Grey
2500 #1	Yellow	White
2500 #2	Yellow	Purple

2 / C-3 **CPRI DIAGRAM**
NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	03/25/19	KAWJR	TJL	ISSUED FOR CONSTRUCTION

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COLOR CODE AND CPRI DETAILS

C-3

Sheet No. 5 of 5

CENTEK engineering

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Structural Analysis of Antenna Mast and Tower

Sprint Site Ref: CT33XC516

Eversource Structure No. 1522

95' Electric Transmission Lattice Tower

337 Sunnyside Ave
Watertown, CT

CENTEK Project No. 17159.12

~~Date: January 2, 2019~~

Rev 2: January 31, 2019

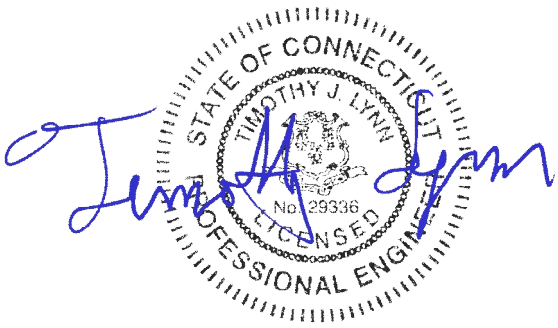

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Table of Contents

Introduction

The purpose of this report is to analyze the existing 110' FWT Powermount job no. 19641001 dated August 14, 2000 and 95' utility tower located at 337 Sunnyside Ave in Watertown, CT for the proposed antenna and equipment upgrade by Sprint.

The proposed loads consist of the following:

- SPRINT (Existing to Remain)
  Coax Cables: Six (6) 1-5/8" ∅ coax cables running on the inside of the existing powermount. Twelve (12) 1-5/8" ∅ coax cables mounted on T-Brackets running on a leg of the existing tower as indicated in section 4 of this report.
- **SPRINT (Existing to Remove)**
  Antennas: Three (3) RFS APXVSPP18-C panel antennas mounted on an existing 14-ft low profile platform to the existing powermount with a RAD center elevation of 110-ft above grade.
- **SPRINT (Proposed):**
  Antennas: Three (3) Commscope DHHTT65B-3XR panel antennas, three (3) RFS KIT-FD9R6004/1C-DL Diplexers and three (3) CCI DPO-7126Y-0-T1 Diplexers mounted on an existing 14-ft low profile platform to the existing powermount with a RAD center elevation of 110-ft above grade. (Handrail to be installed on existing platform. Refer to section 4 for details)

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 as indicated in Section 4 of this report.
- 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 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" Sch. 40 pipe connected at four elevations 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 Eversource 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 Eversource 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 C2-2012 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 C2-2012 ~ 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 C2-2012, Section25, Rule 250C: Extreme Wind Loading, 1.25 x Gust Response Factor (wind speed: 3-second gust)

- MAST ASSEMBLY ANALYSIS

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

  Load cases considered:

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

  Load Case 2:
  Wind Pressure…….. 40 mph wind pressure
  Radial Ice Thickness…….. 1.00”

R e s u l t s

- POWERMOUNT

  The existing powermount was determined to be structurally **adequate**.

Component	Design Limit	Stress Ratio (percentage of capacity)	Result
12” Sch. 40 Pipe	Bending	33.0%	**PASS**
Brace	Bending	32.5%	**PASS**
Connection	Shear	61.3%	**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 **81.98%** occurs in the utility structure under the **NESC Extreme** loading condition.

  TOWER SECTION:

  The utility structure was found to be within allowable limits.

Tower Member	Stress Ratio (% of capacity)	Result
Angle g94xy	81.98%	**PASS**

- FOUNDATION AND ANCHORS

The existing foundation consists of four (4) 4-ft square x 10-ft long reinforced concrete piers on four (4) 12.5-ft square x 2.5-ft thick reinforced concrete pads. The base of the tower is connected to the foundation by four (4) 1-1/4" Ø anchor bolts per leg. Foundation information was obtained from NUSCO drawing # 01096-60000.

BASE REACTIONS:

From PLS-Tower analysis of structure based on NESC/NU prescribed loads.

Load Case	Shear	Uplift	Compression
NESC Heavy Wind	11.08 kips	27.17 kips	49.80 kips
NESC Extreme Wind	20.37 kips	74.46 kips	88.40 kips

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

ANCHOR BOLTS:

The anchor bolts was found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (% of capacity)	Result
Anchor Bolts	Tension	89.2%	**PASS**

FOUNDATION:

The foundation was found to be within allowable limits.

Foundation	Design Limit	Allowable Limit	Proposed Loading (2)	Result
Reinforced Conc. Pad and Pier	Uplift	1.0 FS (1)	3.78 FS (1)	**PASS**
	Bearing	1.0 FS	2.56 FS	**PASS**

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

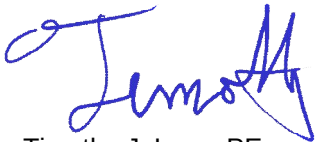
C o n c l u s i o n

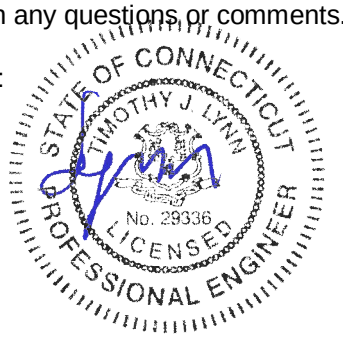
This analysis shows that the subject utility tower **is adequate** to support the proposed equipment installation.

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

Please feel free to call with any questions or comments.

Respectfully Submitted by:





Timothy J. Lynn, PE
Structural Engineer

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING STRUCTURES

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

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

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

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

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

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

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ RISA-3D

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

Modeling Features:

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

Analysis Features:

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

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

Graphics Features:

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

Design Features:

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

Results Features:

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

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ PLS-TOWER

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

Modeling Features:

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

Analysis Features:

- Automatic handling of tension-only members
- Automatic distribution of loads in 2-part suspension insulators (v-strings, horizontal vees, etc.)
- Automatic calculation of tower dead, ice, and wind loads as well as drag coefficients according to:
    - ASCE 74-1991
    - NESC 2002
    - NESC 2007
    - IEC 60826:2003
    - EN50341-1:2001 (CENELEC)
    - EN50341-3-9:2001 (UK NNA)
    - EN50341-3-17:2001 (Portugal NNA)
    - ESAA C(b)1-2003 (Australia)
    - TPNZ (New Zealand)
    - REE (Spain)
    - EIA/TIA 222-F
    - ANSI/TIA 222-G
    - CSA S37-01
- Automated microwave antenna loading as per EIA/TIA 222-F and ANSI/TIA 222-G
- Minimization of problems caused by unstable joints and mechanisms
- Automatic bandwidth minimization and ability to solve large problems
- Design checks according to (other standards can be added easily):
    - ASCE Standard 10-90

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

Results Features:

- Design summaries printed for each group of members
- Easy to interpret text, spreadsheet and graphics design summaries
- Automatic determination of allowable wind and weight spans
- Automatic determination of interaction diagrams between allowable wind and weight spans
- Capability to batch run multiple tower configurations and consolidate the results
- Automated optimum angle member size selection and bolt quantity determination

Tool for interactive angle member sizing and bolt quantity determination.

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

Introduction

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

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

ANSI Standard C2-2007 (National Electrical Safety Code) covering the design of electric transmission metal structures is based upon an ultimate strength/yield stress design approach. This approach applies a multiplier (overload capacity factor) to the loads possible from extreme weather loading conditions, and designs the structure so that it does not exceed its ultimate strength (yield stress).

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

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

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

Note 1: Prepared from documentation provide from Northeast Utilities.

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/EIA Standard 222 with two exceptions:

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

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 "NU Design Criteria". This specifies uniform loadings (different from the TIA loadings) on the each of the following components of the installed facility:

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

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

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

Attachment A
Eversource Design Criteria

		Attachment A NU 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	2.50	1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with antennas below top of Tower/Pole (on two faces)	____	4	1	1	2.50	1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor Loads Provided by NU					
High Wind Condition	TIA/EIA	Antenna Mount	85	TIA	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
	NESC Extreme Wind	Tower/Pole Analysis with antennas extending above top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250C: Extreme Wind Loading Apply a 1.25 X Gust Response Factor to all telecommunication equipment projected above top of tower/pole and apply a 1.0 x Gust Response Factor to the tower/pole structure					1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with antennas below top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250C: Extreme Wind Loading Height above ground is based on overall height to top of tower/pole					1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor Loads Provided by NU					
NESC Extreme Ice with Wind Condition *		Tower/Pole Analysis with antennas extending above top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250D: Extreme Ice with Wind Loading 4 PSF Wind Load 1.25 X Gust Response Factor Apply a 1.25 X Gust Response Factor to all telecommunication equipment projected above top of tower/pole and apply a 1.0 x Gust Response Factor to the tower/pole structure					1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with antennas below top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250D: Extreme Ice with Wind Loading 4 PSF Wind Load Height above ground is based on overall height to top of tower/pole					1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor Loads Provided by NU					
		* Only for structures installed after 2007						

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

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

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

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

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

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

c) Electric Transmission Structure

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

   ii) Shape Factor Multiplier:

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

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

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

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

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

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

Project: *Lines 1445 & 1721, Structure 1522*
Date: *10/19/2018*
Engineer: *TG*
Checked by: *JS*
Purpose *Recalculate wire loads.*

1445 Line
Conductor: *1590 Lapwing ACSR, sagged in PLS-CADD*

1721 Line
Conductor: *1590 Lapwing ACSR, sagged in PLS-CADD*

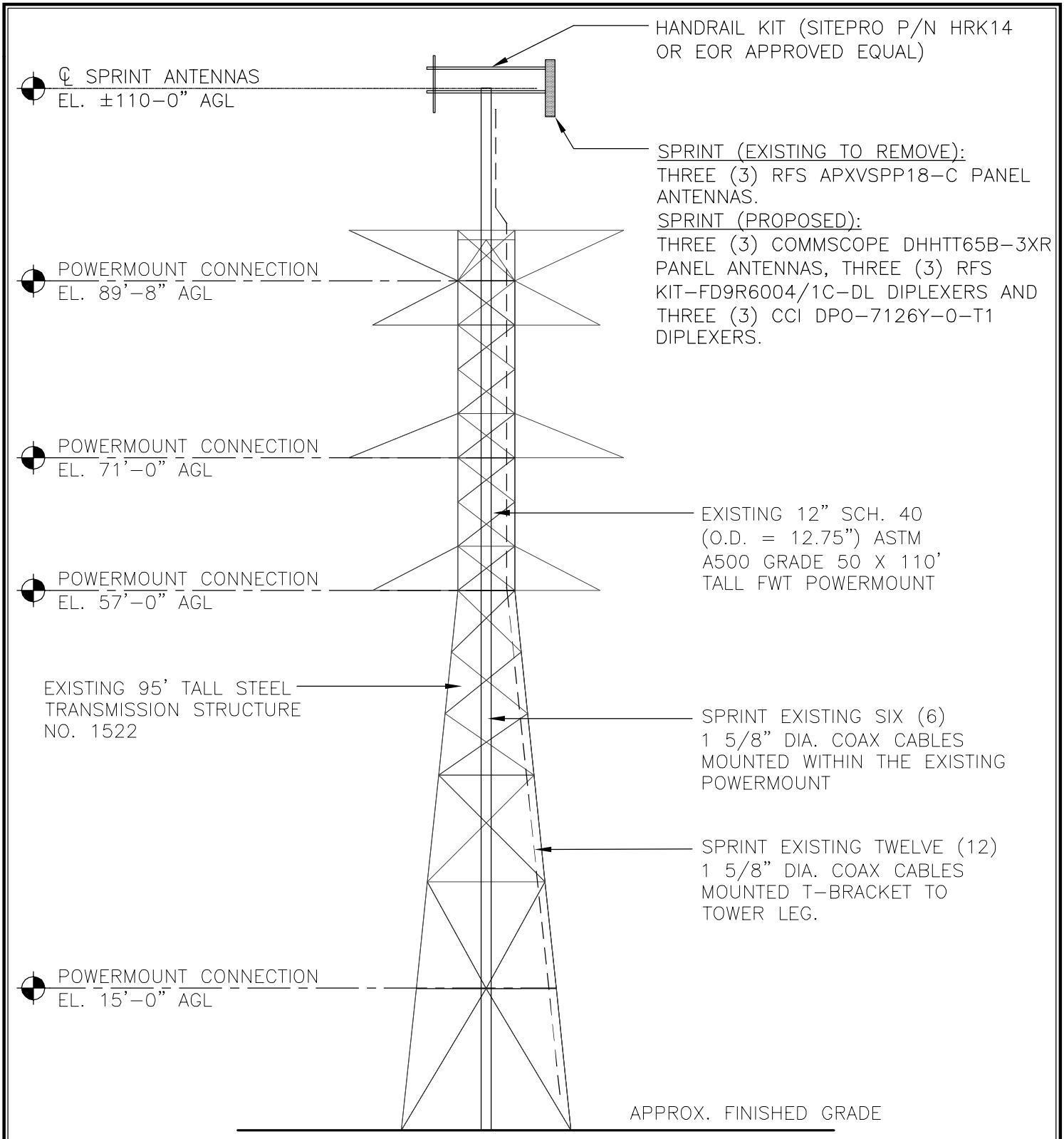
Shield Wires: *(2) 7#8 Alumoweld, sagged in PLS-CADD*

NESC 250B

	Vertical	*Transverse*	*Longitudinal*
Conductor	3047	-1336	0
Alumoweld	818	-775	0

NESC 250C

	Vertical	*Transverse*	*Longitudinal*
Conductor	1316	-2060	0
Alumoweld	237	-558	0



1 / EL–1

TOWER & POWERMOUNT ELEVATION

SCALE: NOT TO SCALE

REVISIONS		
00	1/2/19	ISSUED FOR REVIEW

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CT33XC516
EVERSOURCE 1522

337 SUNNYSIDE AVE
WATERTOWN, CT 06779

PROJECT NO:	17159.12
DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED
DATE:	1/2/19

TOWER AND MAST ELEVATION

EL-1

DWG. 1 OF 1

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Subject: Loads on Equipmnet Structure 1522

Location: Watertown, CT

Rev. 0: 1/2/19

Prepared by: T.J.L. Checked by: C.A.G.
Job No. 17159.12

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

Wind Speeds

Basic Wind Speed $V := 93$ mph (User Input - 2016 CSBC Appendix N)

Basic Wind Speed with Ice $V_i := 40$ 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 = $h := 95$ ft (User Input)

Height to Center of Antennas = $z_{ant} := 110$ ft (User Input)

Height to Center of Mast = $z_{Mast6} := 105$ 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) Mast Based on Max 20-ft Section per 2.6.9.1.3

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)

Radial Ice Thickness = $t_i := 1.00$ 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)

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

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

$$K_{iz} := \left(\frac{z_{ant}}{33}\right)^{0.1} = 1.128 \qquad t_{iz} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 2.82$$

Velocity Pressure Coefficient Antennas = $Kz_{ant} := 2.01\left(\left(\frac{z_{ant}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.291$

Velocity Pressure w/o Ice Antennas = $qz_{ant} := 0.00256 \cdot K_d \cdot Kz_{ant} \cdot V^2 \cdot I_{Wind} = 27.947$

Velocity Pressure with Ice Antennas = $qz_{ice.ant} := 0.00256 \cdot K_d \cdot Kz_{ant} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 4.496$

$$K_{izMast6} := \left(\frac{z_{Mast6}}{33}\right)^{0.1} = 1.123 \qquad t_{izMast6} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast6} \cdot K_{zt}^{0.35} = 2.807$$

Velocity Pressure Coefficient Mast = $Kz_{Mast6} := 2.01\left(\left(\frac{z_{Mast6}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.279$

Velocity Pressure w/o Ice Mast= $qz_{Mast6} := 0.00256 \cdot K_d \cdot Kz_{Mast6} \cdot V^2 \cdot I_{Wind} = 27.675$

Velocity Pressure with Ice Mast = $qz_{ice.Mast6} := 0.00256 \cdot K_d \cdot Kz_{Mast6} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 4.452$

$$K_{izMast5} := \left(\frac{z_{Mast5}}{33}\right)^{0.1} = 1.106 \qquad t_{izMast5} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast5} \cdot K_{zt}^{0.35} = 2.764$$

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= $qz_{Mast5} := 0.00256 \cdot K_d \cdot Kz_{Mast5} \cdot V^2 \cdot I_{Wind} = 26.791$

Velocity Pressure with Ice Mast = $qz_{ice.Mast5} := 0.00256 \cdot K_d \cdot Kz_{Mast5} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 4.31$

$$K_{izMast4} := \left(\frac{z_{Mast4}}{33}\right)^{0.1} = 1.078 \qquad t_{izMast4} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast4} \cdot K_{zt}^{0.35} = 2.695$$

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= $qz_{Mast4} := 0.00256 \cdot K_d \cdot Kz_{Mast4} \cdot V^2 \cdot I_{Wind} = 25.411$

Velocity Pressure with Ice Mast = $qz_{ice.Mast4} := 0.00256 \cdot K_d \cdot Kz_{Mast4} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 4.088$

$$K_{izMast3} := \left(\frac{z_{Mast3}}{33}\right)^{0.1} = 1.042 \qquad t_{izMast3} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast3} \cdot K_{zt}^{0.35} = 2.606$$

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= $qz_{Mast3} := 0.00256 \cdot K_d \cdot Kz_{Mast3} \cdot V^2 \cdot I_{Wind} = 23.673$

Velocity Pressure with Ice Mast = $qz_{ice.Mast3} := 0.00256 \cdot K_d \cdot Kz_{Mast3} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 3.808$

$$K_{izMast2} := \left(\frac{z_{Mast2}}{33}\right)^{0.1} = 0.991 \qquad t_{izMast2} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast2} \cdot K_{zt}^{0.35} = 2.476$$

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= $qz_{Mast2} := 0.00256 \cdot K_d \cdot Kz_{Mast2} \cdot V^2 \cdot I_{Wind} = 21.259$

Velocity Pressure with Ice Mast = $qz_{ice.Mast2} := 0.00256 \cdot K_d \cdot Kz_{Mast2} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 3.42$

$$K_{izMast1} := \left(\frac{z_{Mast1}}{33}\right)^{0.1} = 0.887 \qquad t_{izMast1} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast1} \cdot K_{zt}^{0.35} = 2.219$$

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= $qz_{Mast1} := 0.00256 \cdot K_d \cdot Kz_{Mast1} \cdot V^2 \cdot I_{Wind} = 16.869$

Velocity Pressure with Ice Mast = $qz_{ice.Mast1} := 0.00256 \cdot K_d \cdot Kz_{Mast1} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 2.714$

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Subject:	Loads on Equipmnet Structure 1522
Location:	Watertown, CT
Rev. 0: 1/2/19	Prepared by: T.J.L. Checked by: C.A.G. Job No. 17159.12

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 = $L_{mast} := 110$ ft (User Input)

Mast Thickness = $t_{mast} := 0.375$ in (User Input)

Velocity Coefficient = $C := \sqrt{I \cdot Kz_{Mast1}} \cdot V \cdot \frac{D_{mast}}{12} = 87$

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 =	$qz_{Mast6} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 24$	plf	BLC 5
Total Mast Wind Force =	$qz_{Mast5} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 23$	plf	BLC 5
Total Mast Wind Force =	$qz_{Mast4} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 22$	plf	BLC 5
Total Mast Wind Force =	$qz_{Mast3} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 20$	plf	BLC 5
Total Mast Wind Force =	$qz_{Mast2} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 18$	plf	BLC 5
Total Mast Wind Force =	$qz_{Mast1} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 15$	plf	BLC 5

Wind Load (with ice)

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast6})}{12} = 1.53$ sf/ft

Total Mast Wind Force w/ Ice = $qz_{ice.Mast6} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 6$ plf BLC 4

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast5})}{12} = 1.523$ sf/ft

Total Mast Wind Force w/ Ice = $qz_{ice.Mast5} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 5$ plf BLC 4

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast4})}{12} = 1.512$ sf/ft

Total Mast Wind Force w/ Ice = $qz_{ice.Mast4} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 5$ plf BLC 4

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast3})}{12} = 1.497$ sf/ft

Total Mast Wind Force w/ Ice = $qz_{ice.Mast3} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 5$ plf BLC 4

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast2})}{12} = 1.475$ sf/ft

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

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast1})}{12} = 1.432$ sf/ft

Total Mast Wind Force w/ Ice = $qz_{ice.Mast1} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 3$ 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 =	$Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + t_{izMast6}\cdot 2\right)^2 - D_{mast}^2\right] = 137.2$		sq in	
Weight of Ice on Mast =	$W_{ICEmast6} := Id\cdot\frac{Ai_{mast}}{144} = 53$		plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + t_{izMast5}\cdot 2\right)^2 - D_{mast}^2\right] = 134.7$		sq in	
Weight of Ice on Mast =	$W_{ICEmast5} := Id\cdot\frac{Ai_{mast}}{144} = 52$		plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + t_{izMast4}\cdot 2\right)^2 - D_{mast}^2\right] = 130.8$		sq in	
Weight of Ice on Mast =	$W_{ICEmast4} := Id\cdot\frac{Ai_{mast}}{144} = 51$		plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + t_{izMast3}\cdot 2\right)^2 - D_{mast}^2\right] = 125.7$		sq in	
Weight of Ice on Mast =	$W_{ICEmast3} := Id\cdot\frac{Ai_{mast}}{144} = 49$		plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + t_{izMast2}\cdot 2\right)^2 - D_{mast}^2\right] = 118.5$		sq in	
Weight of Ice on Mast =	$W_{ICEmast2} := Id\cdot\frac{Ai_{mast}}{144} = 46$		plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + t_{izMast1}\cdot 2\right)^2 - D_{mast}^2\right] = 104.3$		sq in	
Weight of Ice on Mast =	$W_{ICEmast1} := Id\cdot\frac{Ai_{mast}}{144} = 41$		plf	**BLC 3**

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Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Commscope DHHTT65B-3XR		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 72.1$	in	(User Input)
Antenna Width =	$W_{ant} := 11.9$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.1$	in	(User Input)
Antenna Weight =	$WT_{ant} := 46$	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 =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 6$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 17.9$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 916$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 9.5$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 28.4$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 234$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 138$	lbs	**BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 6092$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 1 \times 10^4$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 366$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 1097$	lbs	**BLC 3**

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

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Location:	Watertown, CT
Rev. 0: 1/2/19	Prepared by: T.J.L. Checked by: C.A.G. Job No. 17159.12

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	RFS KIT-FD9R6004/1C-DL Diplexer			
Antenna Shape =	Flat		(User Input)	
Antenna Height =	$L_{ant} := 5.8$	in	(User Input)	
Antenna Width =	$W_{ant} := 6.5$	in	(User Input)	
Antenna Thickness =	$T_{ant} := 4.6$	in	(User Input)	
Antenna Weight =	$WT_{ant} := 7$	lbs	(User Input)	
Number of Antennas =	$N_{ant} := 3$		(User Input)	
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 0.9$			
Antenna Force Coefficient =	$Ca_{ant} = 1.2$			

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.3$	sf		
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 0.8$	sf		
Total Antenna Wind Force =	$F_{ant} := qz_{ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 36$	lbs	**BLC 5**	

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 1$	sf		
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 2.9$	sf		
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 21$	lbs	**BLC 4**	

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 21$	lbs	**BLC 2**	

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 173$	cu in		
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 1249$			cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 40$	lbs		
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 121$	lbs	**BLC 3**	

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Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	CCI DPO-7126Y-0-T1 Diplexer			
Antenna Shape =	Flat		(User Input)	
Antenna Height =	$L_{ant} := 4.07$	in	(User Input)	
Antenna Width =	$W_{ant} := 7.42$	in	(User Input)	
Antenna Thickness =	$T_{ant} := 6.26$	in	(User Input)	
Antenna Weight =	$WT_{ant} := 8$	lbs	(User Input)	
Number of Antennas =	$N_{ant} := 3$		(User Input)	
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 0.5$			
Antenna Force Coefficient =	$Ca_{ant} = 1.2$			

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.2$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 0.6$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 28$	lbs	**BLC 5**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 0.9$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 2.6$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 19$	lbs	**BLC 4**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 24$	lbs	**BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 189$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 1320$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 43$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 128$	lbs	**BLC 3**

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Development of Wind & Ice Load on Antenna Mounts

Mount Data:

Mount Type:	FWT Low Profile Platform w/ Handrail		
Mount Shape =	Flat		(User Input)
Mount Projected Surface Area =	$CaAa := 21$	sf	(User Input)
Mount Projected Surface Area w/ Ice =	$CaAa_{ice} := 24$	sf	(User Input)
Mount Weight =	$WT_{mnt} := 3200$	lbs	(User Input)
Mount Weight w/ Ice =	$WT_{mnt.ice} := 4450$	lbs	

Wind Load (without ice)

Total Mount Wind Force =	$F_{mnt} := qz_{ant} \cdot G_H \cdot CaAa = 792$	lbs	**BLC 5**

Wind Load (with ice)

Total Mount Wind Force =	$Fi_{mnt} := qz_{ice.ant} \cdot G_H \cdot CaAa_{ice} = 146$	lbs	**BLC 4**

Gravity Loads (without ice)

Weight of All Mounts =	$WT_{mnt} = 3200$	lbs	**BLC 2**

Gravity Loads (ice only)

Weight of Ice on All Mounts =	$WT_{mnt.ice} - WT_{mnt} = 1250$	lbs	**BLC 3**

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Location: Watertown, CT

Rev. 0: 1/2/19

Prepared by: T.J.L. Checked by: C.A.G.
Job No. 17159.12

Development of Wind & Ice Load on Coax Cables

Coax Cable Data: (Above Top of Tower)

Coax Type =	HELIAX 1-5/8"		
Shape =	Round		(User Input)
Coax Outside Diameter =	$D_{coax} := 1.98$	in	(User Input)
Coax Cable Length =	$L_{coax} := 15$	ft	(User Input)
Weight of Coax per foot =	$Wt_{coax} := 1.04$	plf	(User Input)
Total Number of Coax =	$N_{coax} := 18$		(User Input)
Total Number of Exterior Coax =	$Ne_{coax} := 12$		(User Input)
No. of Coax Projecting Outside Face of Mast =	$NP_{coax} := 2$		(User Input)

Coax aspect ratio, $Ar_{coax} := \frac{(L_{coax} \cdot 12)}{D_{coax}} = 90.9$

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

Wind Load (without ice)

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

Total Coax Wind Force = $F_{coax} := Ca_{coax} \cdot qz_{Mast4} \cdot G_H \cdot A_{coax} = 14$ plf **BLC 5**

Wind Load (with ice)

Coax projected surface area w/ Ice = $AICE_{coax} := \frac{(NP_{coax} \cdot D_{coax} + 2 \cdot t_{iz})}{12} = 0.8$ sf/ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast4} \cdot G_H \cdot AICE_{coax} = 5$ plf **BLC 4**

Gravity Loads (without ice)

Weight of all cables w/o ice = $WT_{coax} := Wt_{coax} \cdot N_{coax} = 19$ plf **BLC 2**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{coax} := \frac{\pi}{4}\left[(D_{coax} + 2 \cdot t_{iz})^2 - D_{coax}^2\right] = 42.5$ sq in

Ice Weight All Coax per foot = $WTi_{coax} := N_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 298$ plf **BLC 3**

Development of Wind & Ice Load on Coax Cables

Coax Cable Data: (Below Top of Tower)

Coax Type =	HELIAX 1-5/8"		
Shape =	Round		(User Input)
Coax Outside Diameter =	$D_{coax} := 1.98$	in	(User Input)
Coax Cable Length =	$L_{coax} := 95$	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)
No. of Coax Projecting Outside Face of Mast =	$NP_{coax} := 0$		(User Input)
Coax aspect ratio,	$Ar_{coax} := \frac{(L_{coax} \cdot 12)}{D_{coax}} = 575.8$		
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 =	$F_{coax} := Ca_{coax} \cdot qz_{Mast4} \cdot G_H \cdot A_{coax} = 0$	plf	**BLC 5**

Wind Load (with ice)

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

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 =	$Ai_{coax} := 0$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := N_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 0$	plf	**BLC 3**

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Development of Wind & Ice Load on Brace Member

Member Data: L2x2x3/16

Antenna Shape = Flat (User Input)

Height = $H_{mem} := 2$ in (User Input)

Width = $W_{mem} := 2$ in (User Input)

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

Length = $L_{mem} := 30$ in (User Input)

Member Aspect Ratio = $Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 15.0$

Member Force Coefficient = $Ca_{mem} = 1.67$

Wind Load (without ice)

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

Total Member Wind Force = $F_{mem} := qz_{Mast4} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 10$ plf **BLC 5**

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 = $Fi_{mem} := qz_{ice.Mast4} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 6$ plf **BLC 4**

Gravity Load (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear foot =

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

Weight of Ice on Member = $W_{ICE.mem} := Id \cdot \frac{Ai_{mem}}{144} = 20$ plf **BLC 3**

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Development of Wind & Ice Load on Brace Member

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

Antenna Shape = Flat (User Input)

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

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

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

Length = $L_{mem} := 84$ in (User Input)

Member Aspect Ratio = $Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 33.6$

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

Wind Load (without ice)

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

Total Member Wind Force = $F_{mem} := qz_{Mast4} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 14$ plf **BLC 5**

Wind Load (with ice)

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

Total Member Wind Force w/ Ice = $Fi_{mem} := qz_{ice.Mast4} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 7$ plf **BLC 4**

Gravity Load (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear foot =

$$Ai_{mem} := \left[\left(H_{mem} + 2 \cdot t_{izMast5}\right) + \left(W_{mem} - t_{mem}\right)\right] \cdot \left(t_{mem} + 2 \cdot t_{izMast5}\right) - \left[H_{mem} + \left(W_{mem} + t_{mem}\right)\right] \cdot t_{mem} = 58 \text{ sq in}$$

Weight of Ice on Member = $W_{ICE.mem} := Id \cdot \frac{Ai_{mem}}{144} = 23$ plf **BLC 3**

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Development of Wind & Ice Load on Brace Member

Member Data: L3x3x3/16

Antenna Shape = Flat (User Input)

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

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

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

Length = $L_{mem} := 102$ in (User Input)

Member Aspect Ratio = $Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 34.0$

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

Wind Load (without ice)

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

Total Member Wind Force = $F_{mem} := qz_{Mast4} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 17$ plf **BLC 5**

Wind Load (with ice)

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

Total Member Wind Force w/ Ice = $Fi_{mem} := qz_{ice.Mast4} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 8$ plf **BLC 4**

Gravity Load (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear foot =

$$Ai_{mem} := \left[\left(H_{mem} + 2 \cdot t_{izMast5}\right) + \left(W_{mem} - t_{mem}\right)\right] \cdot \left(t_{mem} + 2 \cdot t_{izMast5}\right) - \left[H_{mem} + \left(W_{mem} + t_{mem}\right)\right] \cdot t_{mem} = 64 \text{ sq in}$$

Weight of Ice on Member = $W_{ICE.mem} := Id \cdot \frac{Ai_{mem}}{144} = 25$ 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	Standard 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 (\1...	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	58	1.2
3	A992	29000	11154	.3	.65	.49	50	1.1	58	1.2
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.2	58	1.1
6	A53 Gr. B	29000	11154	.3	.65	.49	35	1.5	58	1.2
7	A500 Gr. 50	29000	11154	.3	.65	.49	50	1.1	58	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Powermount	12" FWT Powermount	Column	Pipe	A500 Gr. 50	Typical	14.579	279.335	279.335	558.67
2	Brace 1	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009
3	Brace 2	L2.5x2.5x3	Beam	Single Angle	A36 Gr.36	Typical	.901	.535	.535	.011
4	Brace 3	L3X3X3	Beam	Single Angle	A36 Gr.36	Typical	1.09	.948	.948	.014

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	Powermount	110	Segment	Segment	Lbyy						Lateral
2	M2	Brace 3	4.299			Lbyy						Lateral
3	M3	Brace 3	4.299			Lbyy						Lateral
4	M4	Brace 3	6.376			Lbyy						Lateral
5	M5	Brace 3	6.376			Lbyy						Lateral
6	M6	Brace 2	3.354			Lbyy						Lateral
7	M7	Brace 2	3.354			Lbyy						Lateral
8	M8	Brace 1	1.5			Lbyy						Lateral
9	M9	Brace 2	3.354			Lbyy						Lateral
10	M10	Brace 2	3.354			Lbyy						Lateral
11	M11	Brace 1	1.5			Lbyy						Lateral
12	M15	Brace 2	3.354			Lbyy						Lateral
13	M16	Brace 1	1.5			Lbyy						Lateral
14	M17	Brace 2	3.354			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	M1	N1	N7			Powermount	Column	Pipe	A500 Gr...	Typical
2	M2	N8	N2			Brace 3	Beam	Single Angle	A36 Gr.36	Typical
3	M3	N2	N9			Brace 3	Beam	Single Angle	A36 Gr.36	Typical
4	M4	N10	N2			Brace 3	Beam	Single Angle	A36 Gr.36	Typical
5	M5	N2	N11			Brace 3	Beam	Single Angle	A36 Gr.36	Typical
6	M6	N13	N3			Brace 2	Beam	Single Angle	A36 Gr.36	Typical
7	M7	N3	N14			Brace 2	Beam	Single Angle	A36 Gr.36	Typical
8	M8	N3	N12			Brace 1	Beam	Single Angle	A36 Gr.36	Typical
9	M9	N16	N4			Brace 2	Beam	Single Angle	A36 Gr.36	Typical
10	M10	N4	N17			Brace 2	Beam	Single Angle	A36 Gr.36	Typical
11	M11	N4	N15			Brace 1	Beam	Single Angle	A36 Gr.36	Typical
12	M15	N6	N23			Brace 2	Beam	Single Angle	A36 Gr.36	Typical
13	M16	N6	N21			Brace 1	Beam	Single Angle	A36 Gr.36	Typical
14	M17	N6	N22			Brace 2	Beam	Single Angle	A36 Gr.36	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
1	N1	0	0	0	0	
2	N2	0	15	0	0	
3	N3	0	57	0	0	
4	N4	0	71	0	0	
5	N5	0	85	0	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
6	N6	0	89.67	0	0	
7	N7	0	110	0	0	
8	N8	3.696	15	2.196	0	
9	N9	-3.696	15	2.196	0	
10	N10	3.696	15	-5.196	0	
11	N11	-3.696	15	-5.196	0	
12	N12	0	57	-1.5	0	
13	N13	3	57	1.5	0	
14	N14	-3	57	1.5	0	
15	N15	0	71	-1.5	0	
16	N16	3	71	1.5	0	
17	N17	-3	71	1.5	0	
18	N21	0	89.67	-1.5	0	
19	N22	3	89.67	1.5	0	
20	N23	-3	89.67	1.5	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N2						
3	N3						
4	N4						
5	N5						
6	N6						
7	N8	Reaction	Reaction	Reaction			
8	N9	Reaction	Reaction	Reaction			
9	N10	Reaction	Reaction	Reaction			
10	N11	Reaction	Reaction	Reaction			
11	N12	Reaction	Reaction	Reaction			
12	N13	Reaction	Reaction	Reaction			
13	N15	Reaction	Reaction	Reaction			
14	N16	Reaction	Reaction	Reaction			
15	N14	Reaction	Reaction	Reaction			
16	N17	Reaction	Reaction	Reaction			
17	N22	Reaction	Reaction	Reaction			
18	N23	Reaction	Reaction	Reaction			
19	N21	Reaction	Reaction	Reaction			

Member Point Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.138	110
2	M1	Y	-.021	110
3	M1	Y	-.024	110
4	M1	Y	-3.2	110

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-1.097	110

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
2	M1	Y	-.121	110
3	M1	Y	-.128	110
4	M1	Y	-1.25	110

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.234	110
2	M1	X	.021	110
3	M1	X	.019	110
4	M1	X	.146	110

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.916	110
2	M1	X	.036	110
3	M1	X	.028	110
4	M1	X	.792	110

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	.234	110
2	M1	Z	.021	110
3	M1	Z	.019	110
4	M1	Z	.146	110

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	.916	110
2	M1	Z	.036	110
3	M1	Z	.028	110
4	M1	Z	.792	110

Member Distributed Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.006	-.006	0	95
2	M1	Y	-.019	-.019	95	110

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

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.041	-.041	0	20
2	M1	Y	-.046	-.046	20	40
3	M1	Y	-.049	-.049	40	60
4	M1	Y	-.051	-.051	60	80
5	M1	Y	-.052	-.052	80	100
6	M1	Y	-.053	-.053	100	110
7	M1	Y	-.298	-.298	95	110
8	M6	Y	-.023	-.023	0	0
9	M7	Y	-.023	-.023	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
10	M9	Y	-.023	-.023	0	0
11	M10	Y	-.023	-.023	0	0
12	M15	Y	-.023	-.023	0	0
13	M17	Y	-.023	-.023	0	0
14	M8	Y	-.02	-.02	0	0
15	M11	Y	-.02	-.02	0	0
16	M16	Y	-.02	-.02	0	0
17	M2	Y	-.025	-.025	0	0
18	M3	Y	-.025	-.025	0	0
19	M4	Y	-.025	-.025	0	0
20	M5	Y	-.025	-.025	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.003	.003	0	20
2	M1	X	.004	.004	20	40
3	M1	X	.005	.005	40	60
4	M1	X	.005	.005	60	80
5	M1	X	.005	.005	80	100
6	M1	X	.006	.006	100	110
7	M1	X	.005	.005	95	110
8	M6	X	.007	.007	0	0
9	M7	X	.007	.007	0	0
10	M9	X	.007	.007	0	0
11	M10	X	.007	.007	0	0
12	M15	X	.007	.007	0	0
13	M17	X	.007	.007	0	0
14	M8	X	.006	.006	0	0
15	M11	X	.006	.006	0	0
16	M16	X	.006	.006	0	0
17	M2	X	.008	.008	0	0
18	M3	X	.008	.008	0	0
19	M4	X	.008	.008	0	0
20	M5	X	.008	.008	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.015	.015	0	20
2	M1	X	.018	.018	20	40
3	M1	X	.02	.02	40	60
4	M1	X	.022	.022	60	80
5	M1	X	.023	.023	80	100
6	M1	X	.024	.024	100	110
7	M1	X	.014	.014	95	110
8	M6	X	.014	.014	0	0
9	M7	X	.014	.014	0	0
10	M9	X	.014	.014	0	0
11	M10	X	.014	.014	0	0
12	M15	X	.014	.014	0	0
13	M17	X	.014	.014	0	0
14	M8	X	.01	.01	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
15	M11	X	.01	.01	0	0
16	M16	X	.01	.01	0	0
17	M2	X	.017	.017	0	0
18	M3	X	.017	.017	0	0
19	M4	X	.017	.017	0	0
20	M5	X	.017	.017	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.003	.003	0	20
2	M1	Z	.004	.004	20	40
3	M1	Z	.005	.005	40	60
4	M1	Z	.005	.005	60	80
5	M1	Z	.005	.005	80	100
6	M1	Z	.006	.006	100	110
7	M1	Z	.005	.005	95	110
8	M6	Z	.007	.007	0	0
9	M7	Z	.007	.007	0	0
10	M9	Z	.007	.007	0	0
11	M10	Z	.007	.007	0	0
12	M15	Z	.007	.007	0	0
13	M17	Z	.007	.007	0	0
14	M2	Z	.008	.008	0	0
15	M3	Z	.008	.008	0	0
16	M4	Z	.008	.008	0	0
17	M5	Z	.008	.008	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.015	.015	0	20
2	M1	Z	.018	.018	20	40
3	M1	Z	.02	.02	40	60
4	M1	Z	.022	.022	60	80
5	M1	Z	.023	.023	80	100
6	M1	Z	.024	.024	100	110
7	M1	Z	.014	.014	95	110
8	M6	Z	.014	.014	0	0
9	M7	Z	.014	.014	0	0
10	M9	Z	.014	.014	0	0
11	M10	Z	.014	.014	0	0
12	M15	Z	.014	.014	0	0
13	M17	Z	.014	.014	0	0
14	M2	Z	.017	.017	0	0
15	M3	Z	.017	.017	0	0
16	M4	Z	.017	.017	0	0
17	M5	Z	.017	.017	0	0

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribu...	Area(M...	Surface...
1	Self Weight	None		-1						
2	Weight of Appurtenances	None					4	2		
3	Weight of Ice Only	None					4	20		
4	(x) TIA Wind with Ice	None					4	20		
5	(x) TIA Wind	None					4	20		
6	(z) TIA Wind with Ice	None					4	17		
7	(z) TIA Wind	None					4	17		

Load Combinations

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
1	1.2D + 1.6W (X-direction)	Yes	Y		1	1.2	2	1.2	5	1.6																
2	0.9D + 1.6W (X-direction)	Yes	Y		1	.9	2	.9	5	1.6																
3	1.2D + 1.0Di + 1.0Wi (X-...	Yes	Y		1	1.2	2	1.2	3	1	4	1														
4	1.2D + 1.6W (Z-direction)	Yes	Y		1	1.2	2	1.2	7	1.6																
5	0.9D + 1.6W (Z-direction)	Yes	Y		1	.9	2	.9	7	1.6																
6	1.2D + 1.0Di + 1.0Wi (Z-d...	Yes	Y		1	1.2	2	1.2	3	1	6	1														

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N1	max	.038	2	24.644	3	.031	5	.535	5	0	6	0	6
2		min	0	4	8.789	5	0	3	0	3	0	1	-.582	2
3	N8	max	-.063	6	.063	6	-.047	3	0	6	0	6	0	6
4		min	-.515	2	.007	2	-.276	5	0	1	0	1	0	1
5	N9	max	.367	5	.063	3	.271	2	0	6	0	6	0	6
6		min	-.515	2	.007	5	-.276	5	0	1	0	1	0	1
7	N10	max	.266	5	.094	6	.197	2	0	6	0	6	0	6
8		min	-.227	2	.011	2	-.461	5	0	1	0	1	0	1
9	N11	max	-.046	6	.094	6	-.034	3	0	6	0	6	0	6
10		min	-.266	5	.011	2	-.461	5	0	1	0	1	0	1
11	N12	max	0	6	.018	6	0	1	0	6	0	6	0	6
12		min	-.012	1	.002	2	-2.401	4	0	1	0	1	0	1
13	N13	max	-.085	6	.045	6	-.054	6	0	6	0	6	0	6
14		min	-1.501	1	.004	2	-.732	1	0	1	0	1	0	1
15	N15	max	0	6	.017	3	5.015	4	0	6	0	6	0	6
16		min	-.012	1	-.004	4	0	3	0	1	0	1	0	1
17	N16	max	3.01	1	.045	3	1.524	1	0	6	0	6	0	6
18		min	.176	6	.005	5	.076	6	0	1	0	1	0	1
19	N14	max	.536	4	.045	3	.732	1	0	6	0	6	0	6
20		min	-1.501	1	.004	5	-.306	4	0	1	0	1	0	1
21	N17	max	3.01	1	.045	6	.522	4	0	6	0	6	0	6
22		min	-1.12	4	.003	2	-1.524	1	0	1	0	1	0	1
23	N22	max	-.265	6	.044	6	-.144	6	0	6	0	6	0	6
24		min	-4.665	1	.002	2	-2.315	1	0	1	0	1	0	1
25	N23	max	1.689	4	.046	3	2.314	1	0	6	0	6	0	6
26		min	-4.666	1	.004	5	-.882	4	0	1	0	1	0	1
27	N21	max	0	6	.021	6	0	1	0	6	0	6	0	6
28		min	-.012	1	.002	2	-7.565	4	0	1	0	1	0	1
29	Totals:	max	0	6	25.279	6	0	3						

Envelope Joint Reactions (Continued)

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
30		min	-7.795	1	8.862	2	-7.723	4						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [...	LC	Y Rotation [...	LC	Z Rotation [...	LC
1	N1	max	0	6	0	6	0	6	0	6	0	6	0	6
2		min	0	1	0	1	0	1	0	1	0	1	0	1
3	N2	max	.001	2	-.004	5	.002	5	2.e-04	5	0	6	0	6
4		min	0	4	-.013	3	0	1	0	1	0	1	-2.006e-04	2
5	N3	max	.004	1	-.015	5	.003	4	3.76e-04	4	0	6	0	6
6		min	0	4	-.043	3	0	1	0	1	0	1	-3.59e-04	1
7	N4	max	0	6	-.018	5	0	3	0	3	0	6	1.886e-03	1
8		min	-.007	1	-.051	3	-.005	4	-1.883e-03	4	0	1	0	4
9	N5	max	0	6	-.02	5	0	3	2.264e-03	4	0	6	0	6
10		min	-.276	1	-.059	3	-.277	4	0	1	0	1	-2.296e-03	1
11	N6	max	.011	1	-.021	5	.008	4	8.451e-03	4	0	6	0	6
12		min	0	4	-.061	3	0	1	0	1	0	1	-8.486e-03	1
13	N7	max	4.619	1	-.023	5	4.607	4	2.376e-02	4	0	6	0	6
14		min	0	4	-.069	3	0	1	0	1	0	1	-2.38e-02	1
15	N8	max	0	6	0	6	0	6	-4.405e-05	2	9.227e-04	4	1.215e-03	6
16		min	0	1	0	1	0	1	-6.939e-04	6	-4.2e-04	2	-1.265e-04	2
17	N9	max	0	6	0	6	0	6	-1.617e-04	2	-5.582e-04	2	-4.727e-04	2
18		min	0	1	0	1	0	1	-6.939e-04	6	-9.227e-04	4	-1.215e-03	6
19	N10	max	0	6	0	6	0	6	3.189e-03	3	2.791e-03	1	2.24e-03	3
20		min	0	1	0	1	0	1	1.286e-03	5	2.e-03	5	7.729e-04	5
21	N11	max	0	6	0	6	0	6	3.081e-03	6	2.265e-03	2	4.843e-04	2
22		min	0	1	0	1	0	1	-9.628e-04	2	-2.509e-03	6	-2.172e-03	6
23	N12	max	0	6	0	6	0	6	2.506e-03	6	2.691e-04	2	0	6
24		min	0	1	0	1	0	1	7.882e-04	2	-6.853e-05	6	-3.59e-04	1
25	N13	max	0	6	0	6	0	6	-6.212e-05	5	7.048e-04	4	1.774e-03	6
26		min	0	1	0	1	0	1	-8.243e-04	3	-2.816e-04	2	1.728e-04	2
27	N14	max	0	6	0	6	0	6	-6.212e-05	5	-3.789e-04	2	-6.305e-04	2
28		min	0	1	0	1	0	1	-8.255e-04	3	-7.048e-04	4	-1.774e-03	6
29	N15	max	0	6	0	6	0	6	2.976e-03	6	-6.603e-06	5	1.886e-03	1
30		min	0	1	0	1	0	1	9.412e-04	2	-3.354e-04	1	0	4
31	N16	max	0	6	0	6	0	6	5.961e-04	2	6.338e-04	6	1.849e-03	3
32		min	0	1	0	1	0	1	-1.973e-03	4	-1.617e-04	2	3.141e-05	5
33	N17	max	0	6	0	6	0	6	-1.059e-03	2	-2.59e-04	2	-3.141e-05	5
34		min	0	1	0	1	0	1	-1.973e-03	4	-6.338e-04	6	-1.827e-03	3
35	N21	max	0	6	0	6	0	6	3.528e-03	6	6.91e-04	1	0	6
36		min	0	1	0	1	0	1	1.115e-03	2	-6.853e-05	6	-8.486e-03	1
37	N22	max	0	6	0	6	0	6	6.604e-03	5	7.139e-04	5	3.773e-03	4
38		min	0	1	0	1	0	1	-3.828e-03	1	-5.811e-04	3	-9.946e-04	2
39	N23	max	0	6	0	6	0	6	6.288e-03	5	-4.632e-04	2	-2.375e-03	2
40		min	0	1	0	1	0	1	-5.161e-04	3	-8.281e-04	4	-4.406e-03	4

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

	Member	Shape	Code Check	Lo...	LC	She...	Lo...	...	...	phi*P...	phi*P...	phi*...	phi*...	...	Eqn
1	M1	12" FWT Power...	.330	89....	1	.026	89....		4	648....	656....	215....	215....	...	H1-...
2	M2	L3X3X3	.066	2.1...	4	.006	0	y	6	22.211	35.316	1.32	2.528	...	H2-1
3	M3	L3X3X3	.066	2.1...	4	.006	0	y	6	22.211	35.316	1.32	2.528	...	H2-1
4	M4	L3X3X3	.137	3.1...	3	.009	6.3...	y	6	14.207	35.316	1.32	2.268	...	H2-1
5	M5	L3X3X3	.134	3.1...	6	.009	6.3...	y	6	14.207	35.316	1.32	2.268	...	H2-1
6	M6	L2.5x2.5x3	.097	1.5...	2	.005	3.3...	y	6	20.016	29.192	.873	1.818	...	H2-1
7	M7	L2.5x2.5x3	.075	1.7...	1	.005	3.3...	y	6	20.016	29.192	.873	1.818	...	H2-1
8	M8	L2x2x3	.104	.75	4	.002	0	y	6	20.899	23.393	.558	1.239	...	H2-1
9	M9	L2.5x2.5x3	.131	1.7...	1	.005	3.3...	y	6	20.016	29.192	.873	1.818	...	H2-1
10	M10	L2.5x2.5x3	.189	1.6...	1	.005	3.3...	y	6	20.016	29.192	.873	1.818	...	H2-1
11	M11	L2x2x3	.241	.75	4	.002	0	y	6	20.899	23.393	.558	1.239	...	H2-1
12	M15	L2.5x2.5x3	.196	1.7...	1	.005	3.3...	y	6	20.016	29.192	.873	1.818	...	H2-1
13	M16	L2x2x3	.325	.75	4	.002	0	y	6	20.899	23.393	.558	1.239	...	H2-1
14	M17	L2.5x2.5x3	.278	1.7...	1	.005	3.3...	y	6	20.016	29.192	.873	1.818	...	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	.037	11.725	0	0	0	-.579
2	1	N8	-.515	.01	-.271	0	0	0
3	1	N9	-.515	.01	.271	0	0	0
4	1	N10	-.227	.014	.197	0	0	0
5	1	N11	-.227	.014	-.197	0	0	0
6	1	N12	-.012	.002	0	0	0	0
7	1	N13	-1.501	.005	-.732	0	0	0
8	1	N15	-.012	.002	0	0	0	0
9	1	N16	3.01	.008	1.524	0	0	0
10	1	N14	-1.501	.007	.732	0	0	0
11	1	N17	3.01	.004	-1.524	0	0	0
12	1	N22	-4.665	.003	-2.315	0	0	0
13	1	N23	-4.666	.01	2.314	0	0	0
14	1	N21	-.012	.002	0	0	0	0
15	1	Totals:	-7.795	11.816	0			
16	1	COG (ft):	X: 0	Y: 74.644	Z: -.005			

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	.038	8.794	0	0	0	-.582
2	2	N8	-.515	.007	-.271	0	0	0
3	2	N9	-.515	.007	.271	0	0	0
4	2	N10	-.227	.011	.197	0	0	0
5	2	N11	-.227	.011	-.197	0	0	0
6	2	N12	-.012	.002	0	0	0	0
7	2	N13	-1.495	.004	-.729	0	0	0
8	2	N15	-.012	.002	0	0	0	0
9	2	N16	2.987	.006	1.512	0	0	0
10	2	N14	-1.495	.005	.728	0	0	0
11	2	N17	2.987	.003	-1.513	0	0	0
12	2	N22	-4.649	.002	-2.306	0	0	0
13	2	N23	-4.65	.007	2.305	0	0	0
14	2	N21	-.012	.002	0	0	0	0
15	2	Totals:	-7.795	8.862	0			
16	2	COG (ft):	X: 0	Y: 74.644	Z: -.005			

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	.007	24.644	0	0	0	-.083
2	3	N8	-.096	.063	-.047	0	0	0
3	3	N9	-.096	.063	.047	0	0	0
4	3	N10	-.05	.094	.034	0	0	0
5	3	N11	-.05	.094	-.034	0	0	0
6	3	N12	-.004	.017	0	0	0	0
7	3	N13	-.246	.044	-.117	0	0	0
8	3	N15	-.005	.017	0	0	0	0
9	3	N16	.467	.045	.239	0	0	0
10	3	N14	-.246	.045	.117	0	0	0
11	3	N17	.467	.044	-.239	0	0	0
12	3	N22	-.739	.044	-.364	0	0	0
13	3	N23	-.739	.046	.364	0	0	0
14	3	N21	-.004	.017	0	0	0	0
15	3	Totals:	-1.334	25.279	0			
16	3	COG (ft):	X: 0	Y: 78.299	Z: -.015			

Joint Reactions (By Combination)

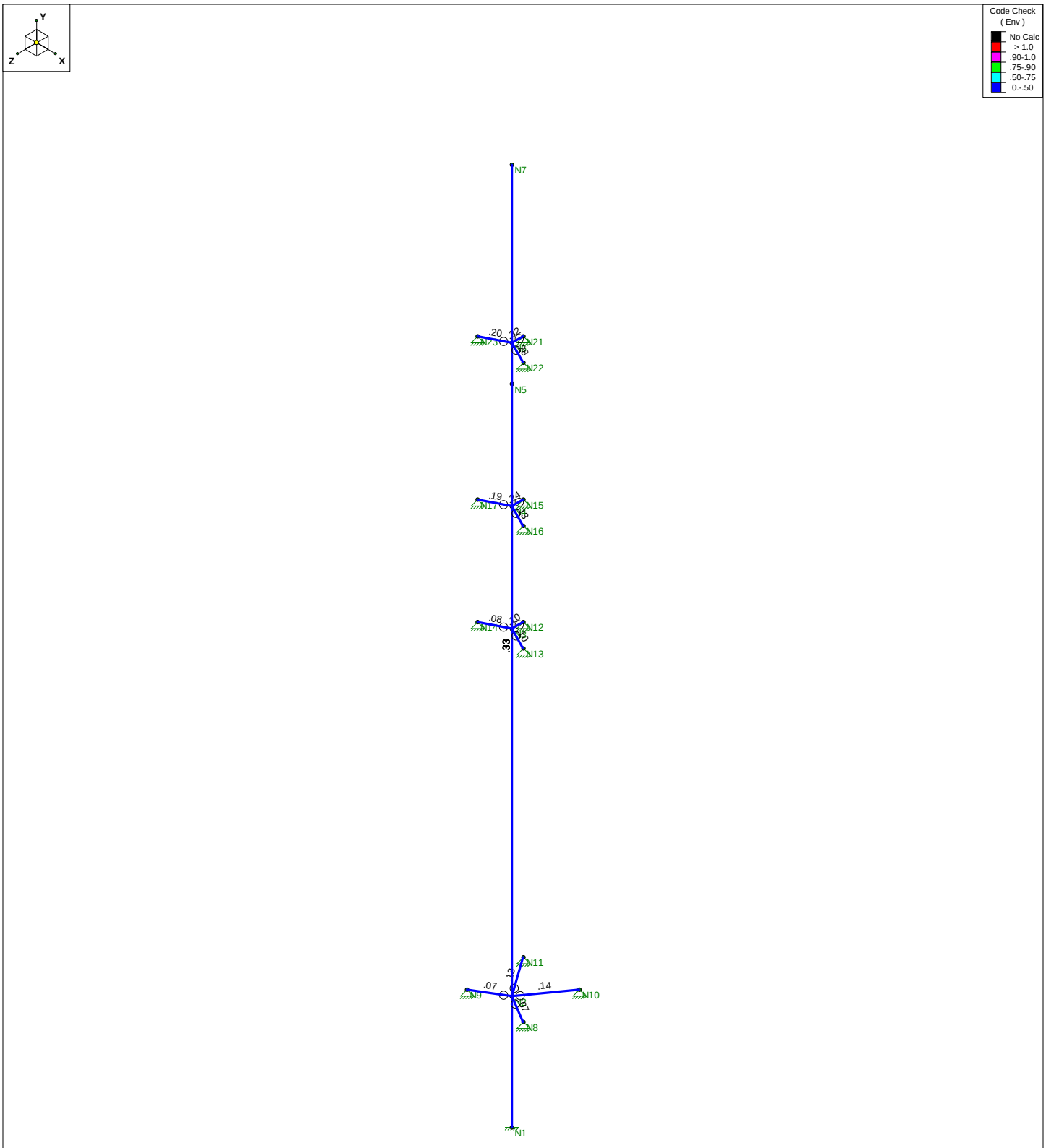
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	4	N1	0	11.719	.031	.532	0	0
2	4	N8	-.366	.01	-.276	0	0	0
3	4	N9	.366	.01	-.276	0	0	0
4	4	N10	.266	.014	-.46	0	0	0
5	4	N11	-.266	.014	-.46	0	0	0
6	4	N12	0	.005	-2.401	0	0	0
7	4	N13	-.536	.006	-.306	0	0	0
8	4	N15	0	-.004	5.015	0	0	0
9	4	N16	1.12	.007	.522	0	0	0
10	4	N14	.536	.006	-.306	0	0	0
11	4	N17	-1.12	.007	.522	0	0	0
12	4	N22	-1.689	.005	-.882	0	0	0
13	4	N23	1.689	.005	-.882	0	0	0
14	4	N21	0	.014	-7.565	0	0	0
15	4	Totals:	0	11.816	-7.723			
16	4	COG (ft):	X: 0	Y: 74.644	Z: -.005			

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	8.789	.031	.535	0	0
2	5	N8	-.367	.007	-.276	0	0	0
3	5	N9	.367	.007	-.276	0	0	0
4	5	N10	.266	.011	-.461	0	0	0
5	5	N11	-.266	.011	-.461	0	0	0
6	5	N12	0	.004	-2.391	0	0	0
7	5	N13	-.534	.004	-.304	0	0	0
8	5	N15	0	-.003	4.978	0	0	0
9	5	N16	1.111	.005	.518	0	0	0
10	5	N14	.534	.004	-.304	0	0	0
11	5	N17	-1.111	.005	.518	0	0	0
12	5	N22	-1.683	.004	-.879	0	0	0
13	5	N23	1.683	.004	-.879	0	0	0
14	5	N21	0	.01	-7.538	0	0	0
15	5	Totals:	0	8.862	-7.723			
16	5	COG (ft):	X: 0	Y: 74.644	Z: -.005			

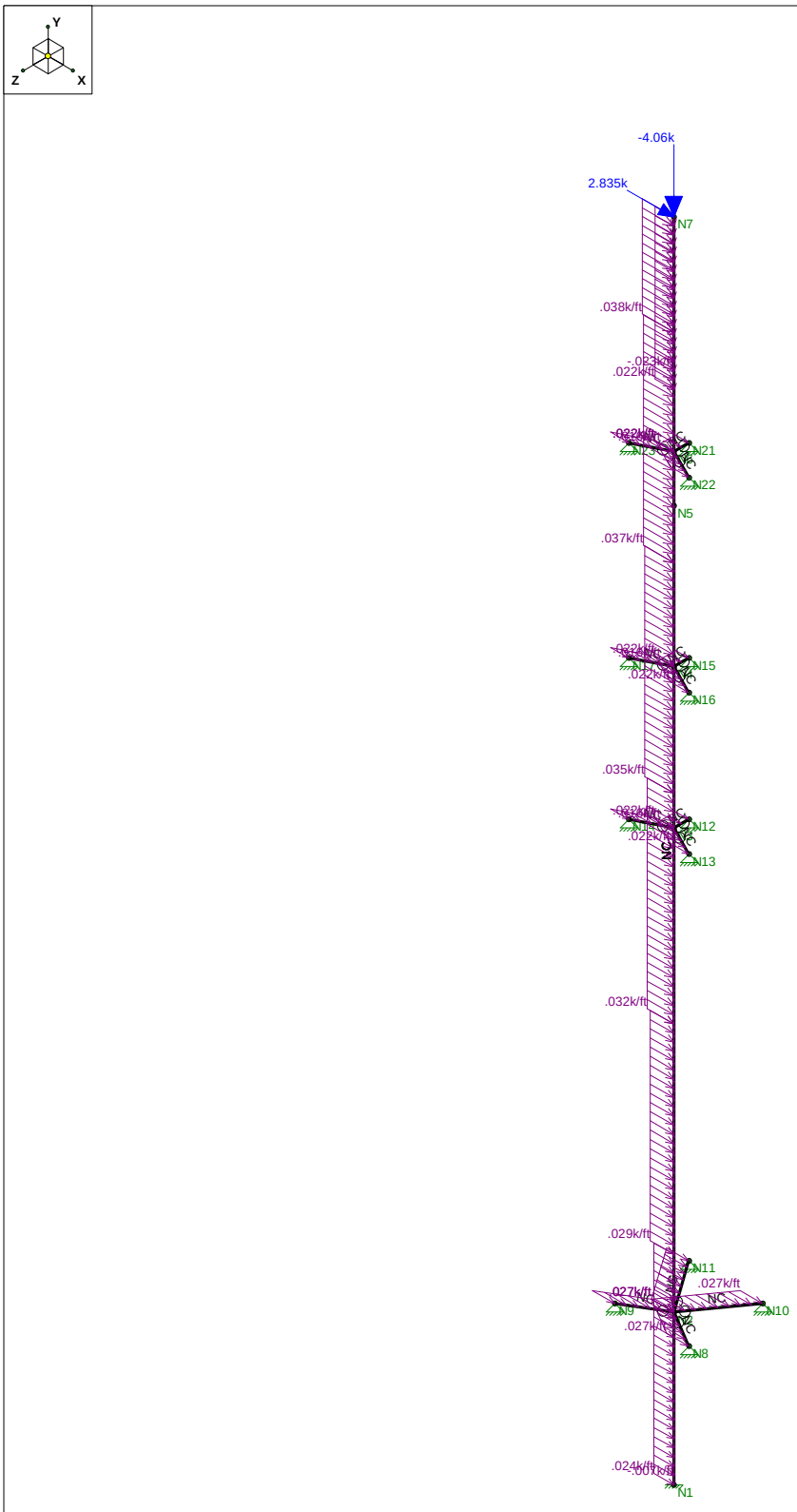
Joint Reactions (By Combination)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	6	N1	0	24.642	.006	.075	0	0
2	6	N8	-.063	.063	-.055	0	0	0
3	6	N9	.063	.063	-.055	0	0	0
4	6	N10	.046	.094	-.09	0	0	0
5	6	N11	-.046	.094	-.09	0	0	0
6	6	N12	0	.018	-.382	0	0	0
7	6	N13	-.085	.045	-.054	0	0	0
8	6	N15	0	.015	.79	0	0	0
9	6	N16	.176	.045	.076	0	0	0
10	6	N14	.085	.045	-.054	0	0	0
11	6	N17	-.176	.045	.076	0	0	0
12	6	N22	-.265	.044	-.144	0	0	0
13	6	N23	.265	.044	-.144	0	0	0
14	6	N21	0	.021	-1.187	0	0	0
15	6	Totals:	0	25.279	-1.307			
16	6	COG (ft):	X: 0	Y: 78.299	Z: -.015			



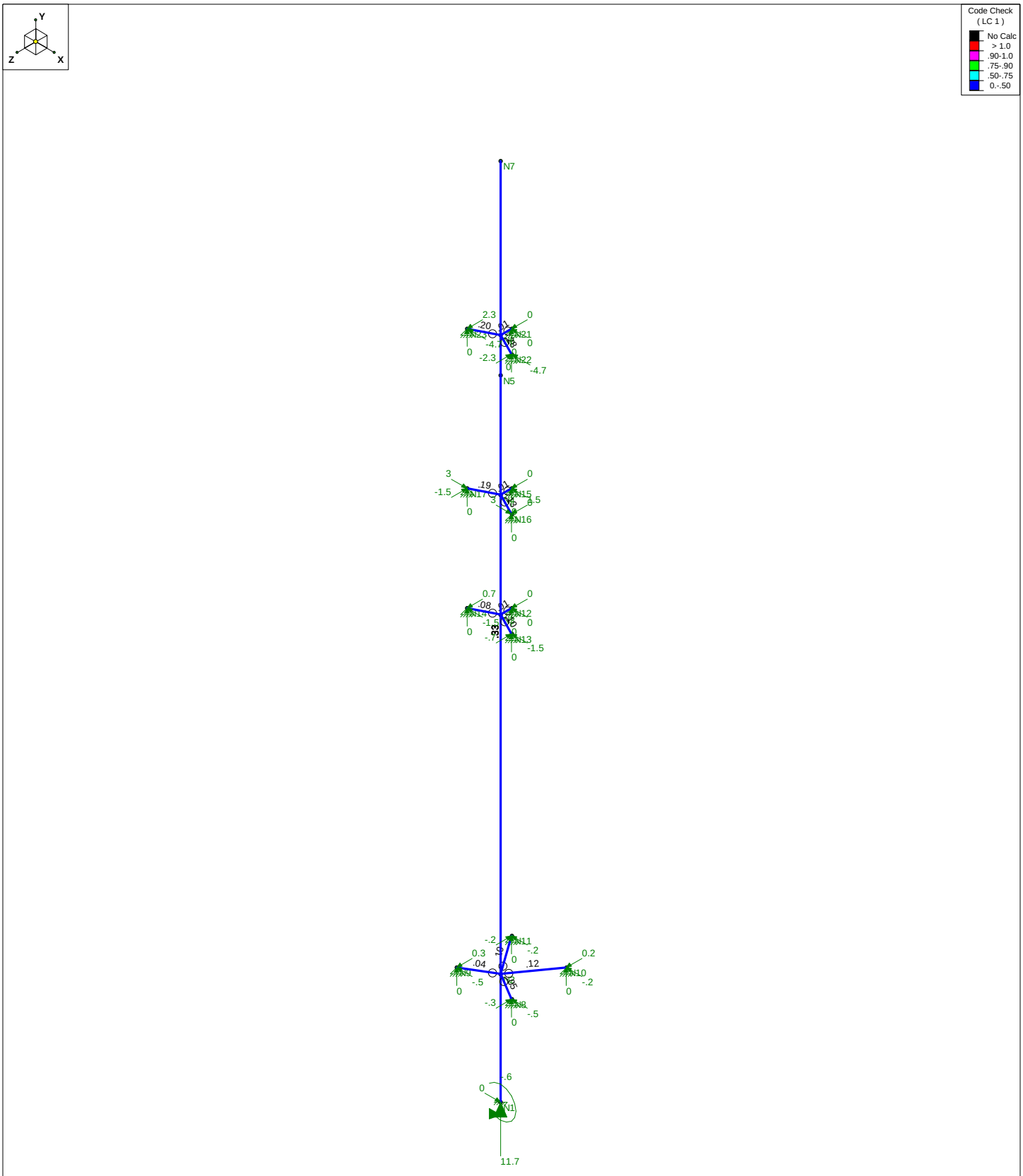
Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek		
TJL	Struct. #1522 - Powermount	Jan 29, 2019 at 4:53 PM
17159.12 - CT33XC516	Unity Check	Antenna Mast.r3d



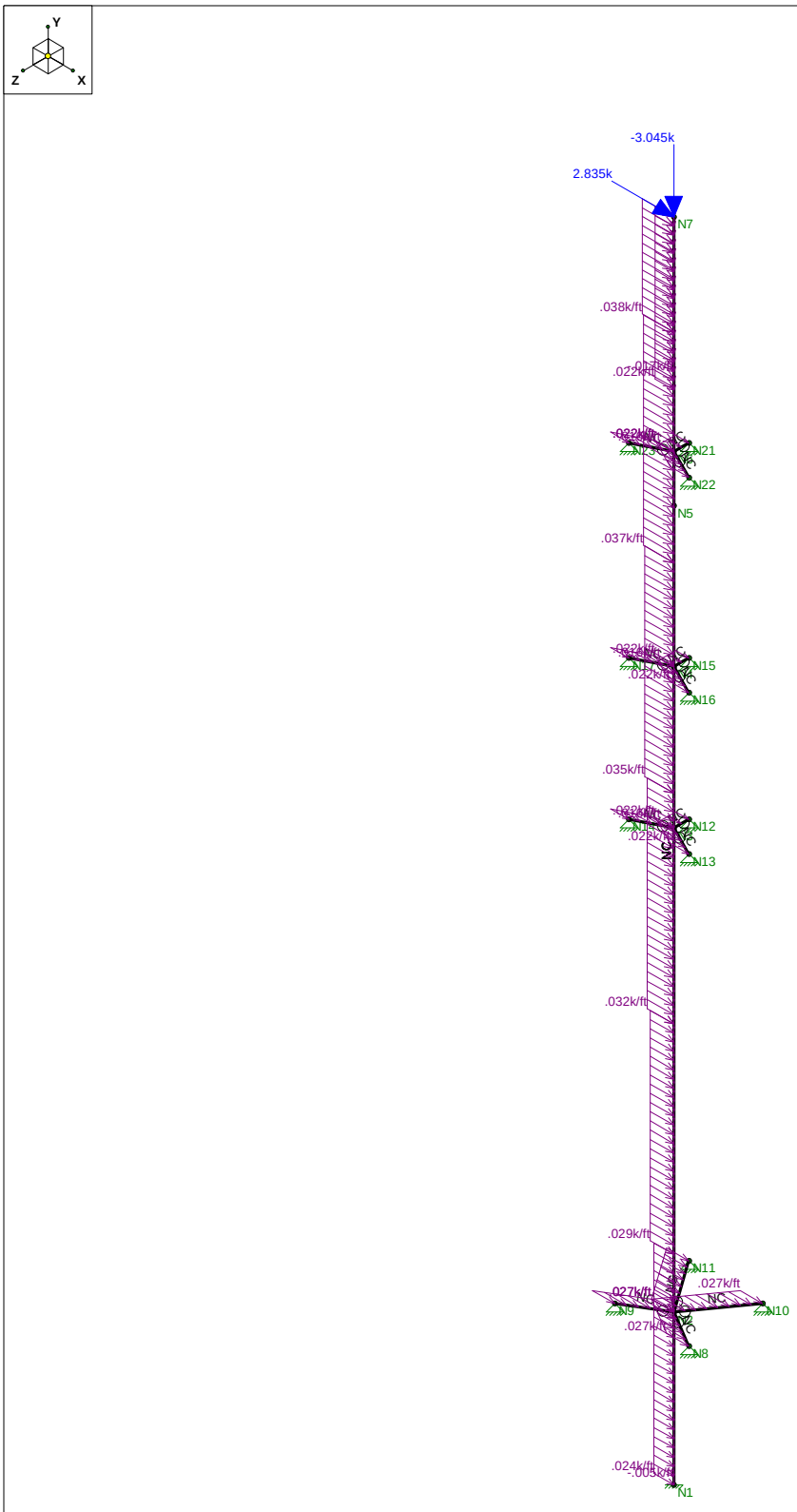
Member Code Checks Displayed
Loads: LC 1, 1.2D + 1.6W (X-direction)

Centek		
TJL	Struct. #1522 - Powermount	Jan 29, 2019 at 4:53 PM
17159.12 - CT33XC516	LC #1 Loads	Antenna Mast.r3d



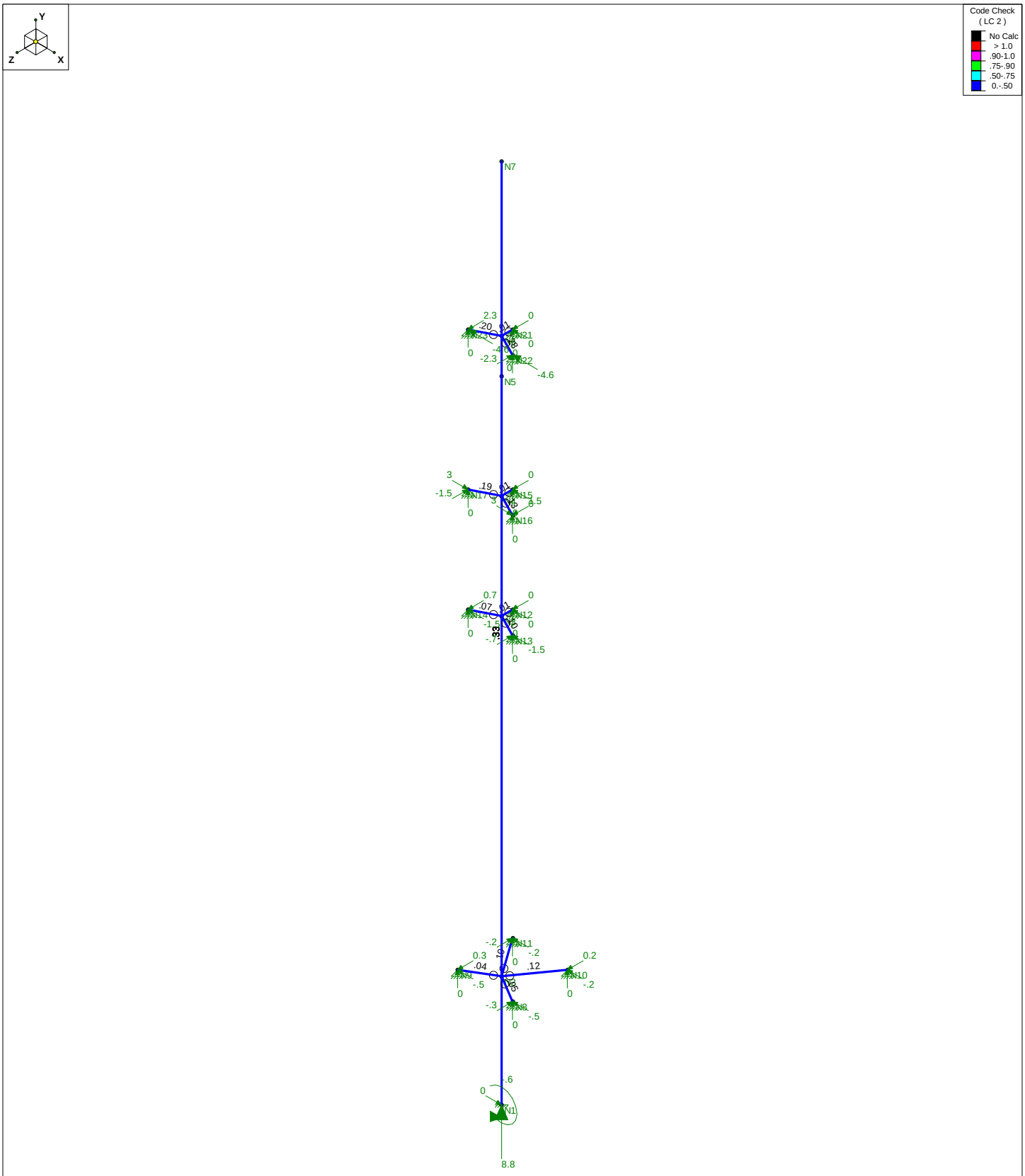
Member Code Checks Displayed
Results for LC 1, 1.2D + 1.6W (X-direction)
Reaction and Moment Units are k and k-ft

Centek		
TJL	Struct. #1522 - Powermount	Jan 29, 2019 at 4:55 PM
17159.12 - CT33XC516	LC #1 Reactions and Deflected Shape	Antenna Mast.r3d



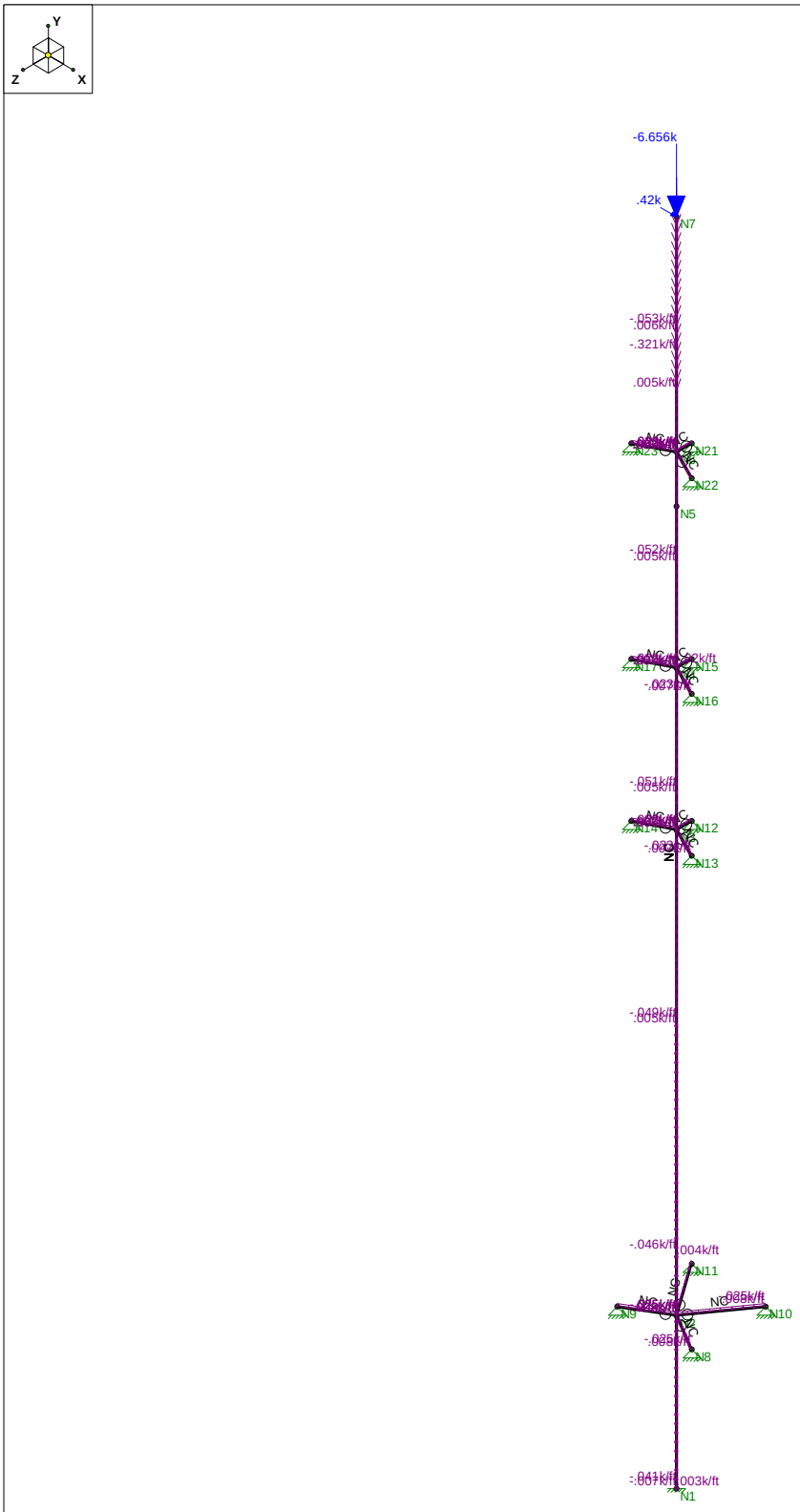
Member Code Checks Displayed
Loads: LC 2, 0.9D + 1.6W (X-direction)

Centek		
TJL	Struct. #1522 - Powermount	Jan 29, 2019 at 4:54 PM
17159.12 - CT33XC516	LC #2 Loads	Antenna Mast.r3d



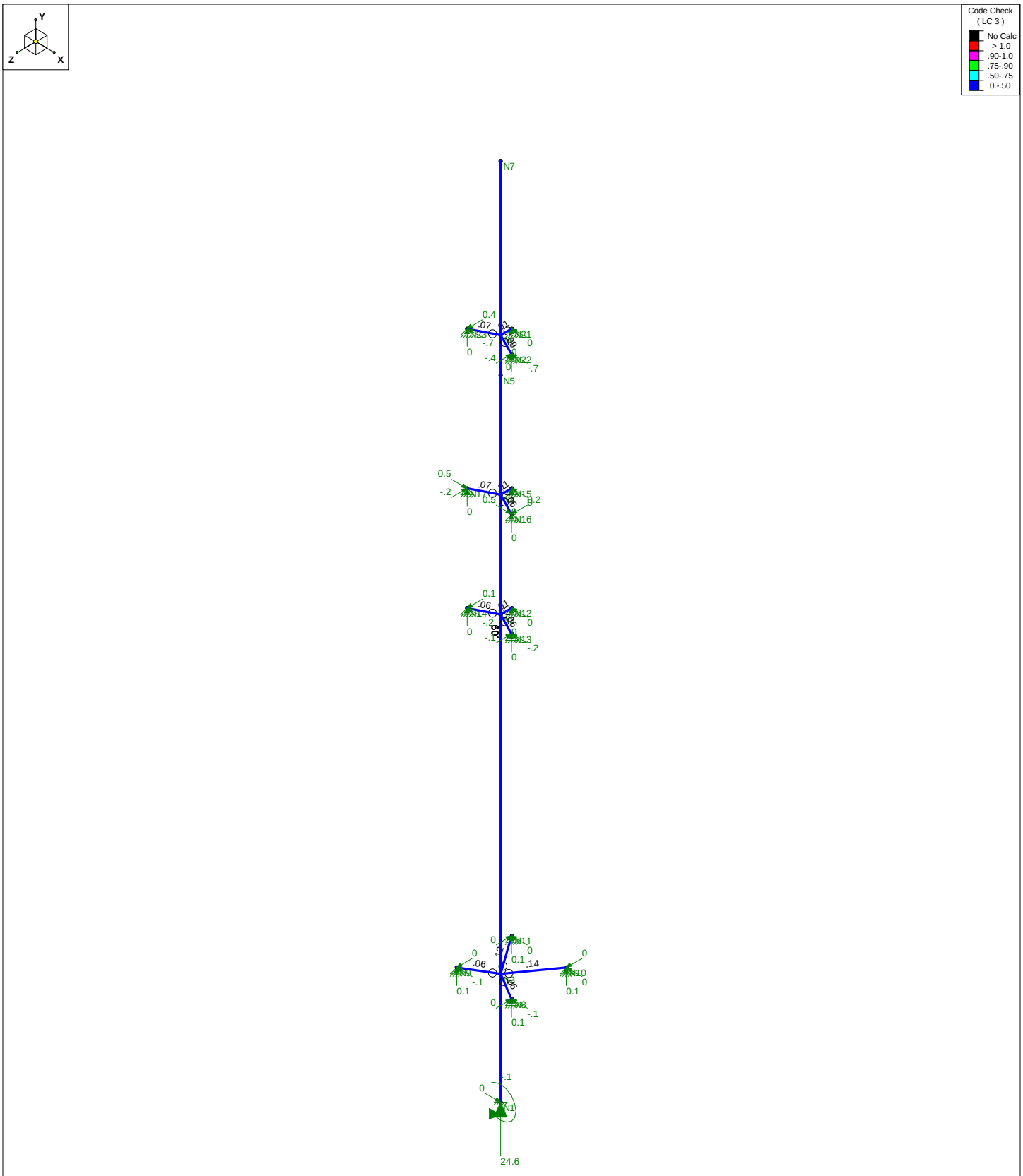
Member Code Checks Displayed
Results for LC 2, 0.9D + 1.6W (X-direction)
Reaction and Moment Units are k and k-ft

Centek		
TJL	Struct. #1522 - Powermount	Jan 29, 2019 at 4:55 PM
17159.12 - CT33XC516	LC #2 Reactions and Deflected Shape	Antenna Mast.r3d



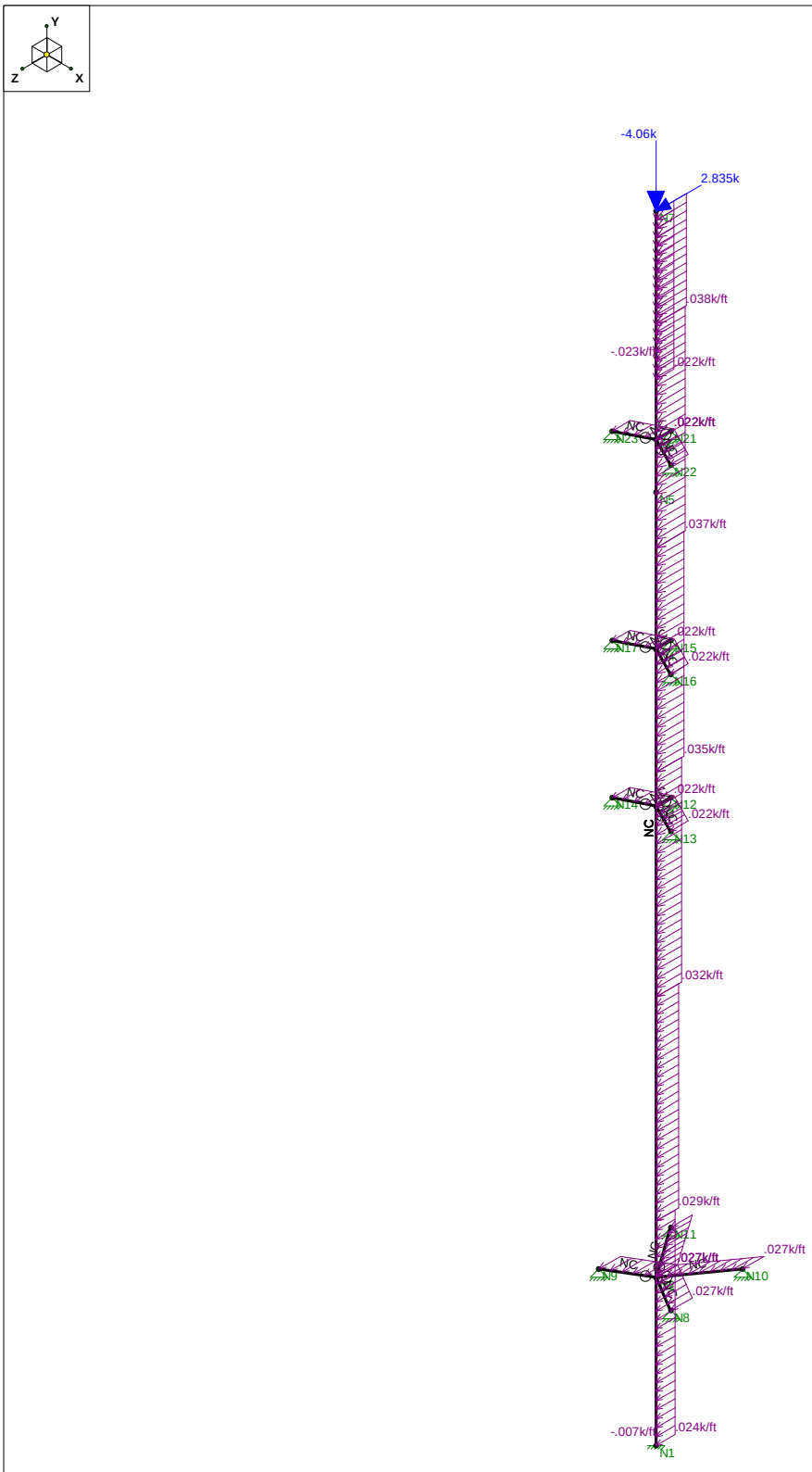
Member Code Checks Displayed
Loads: LC 3, 1.2D + 1.0Di + 1.0Wi (X-direction)

Centek		
TJL	Struct. #1522 - Powermount	Jan 29, 2019 at 4:54 PM
17159.12 - CT33XC516	LC #3 Loads	Antenna Mast.r3d



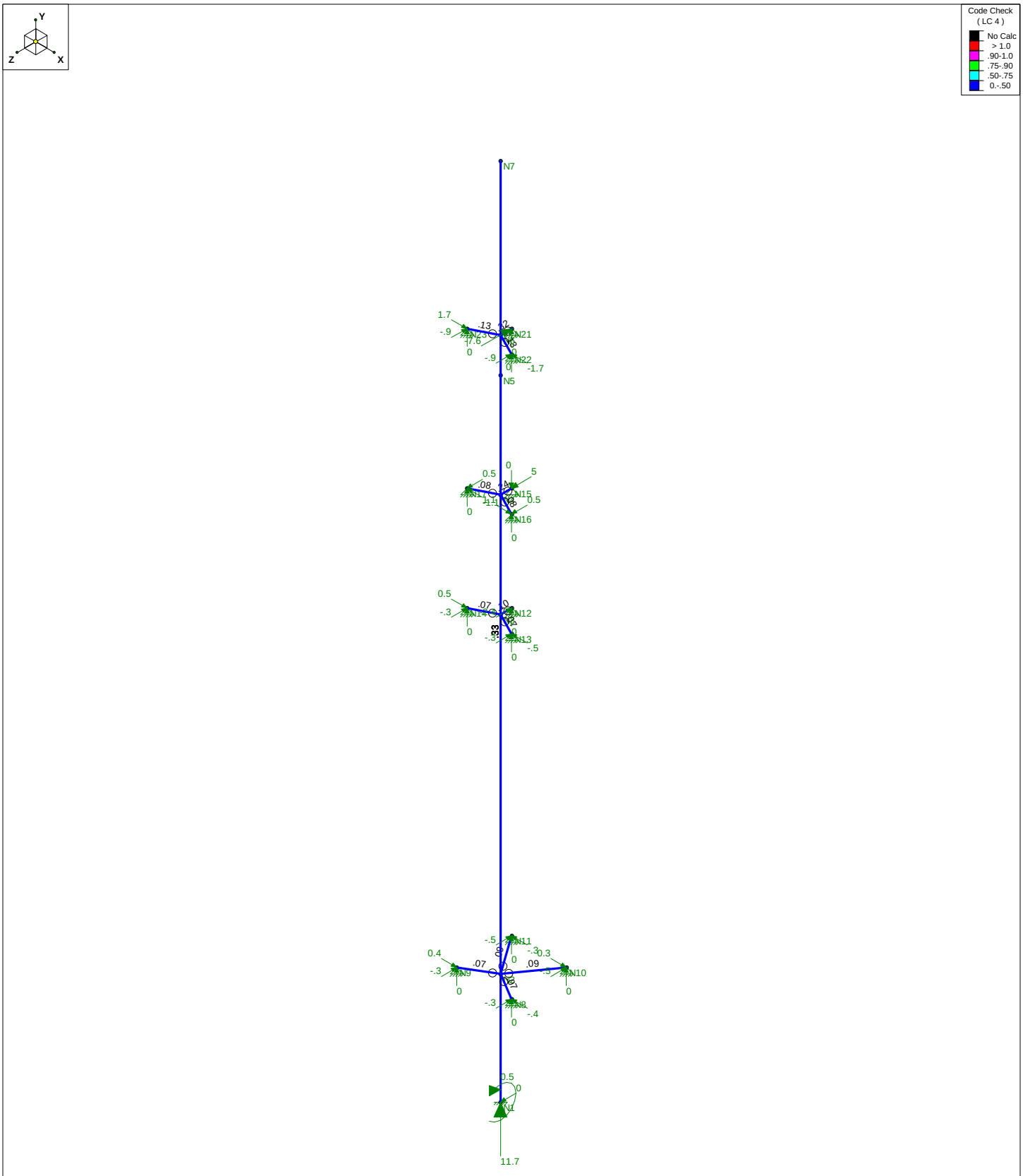
Member Code Checks Displayed
Results for LC 3, 1.2D + 1.0Di + 1.0Wi (X-direction)
Reaction and Moment Units are k and k-ft

Centek		
TJL	Struct. #1522 - Powermount	Jan 29, 2019 at 4:56 PM
17159.12 - CT33XC516	LC #3 Reactions and Deflected Shape	Antenna Mast.r3d



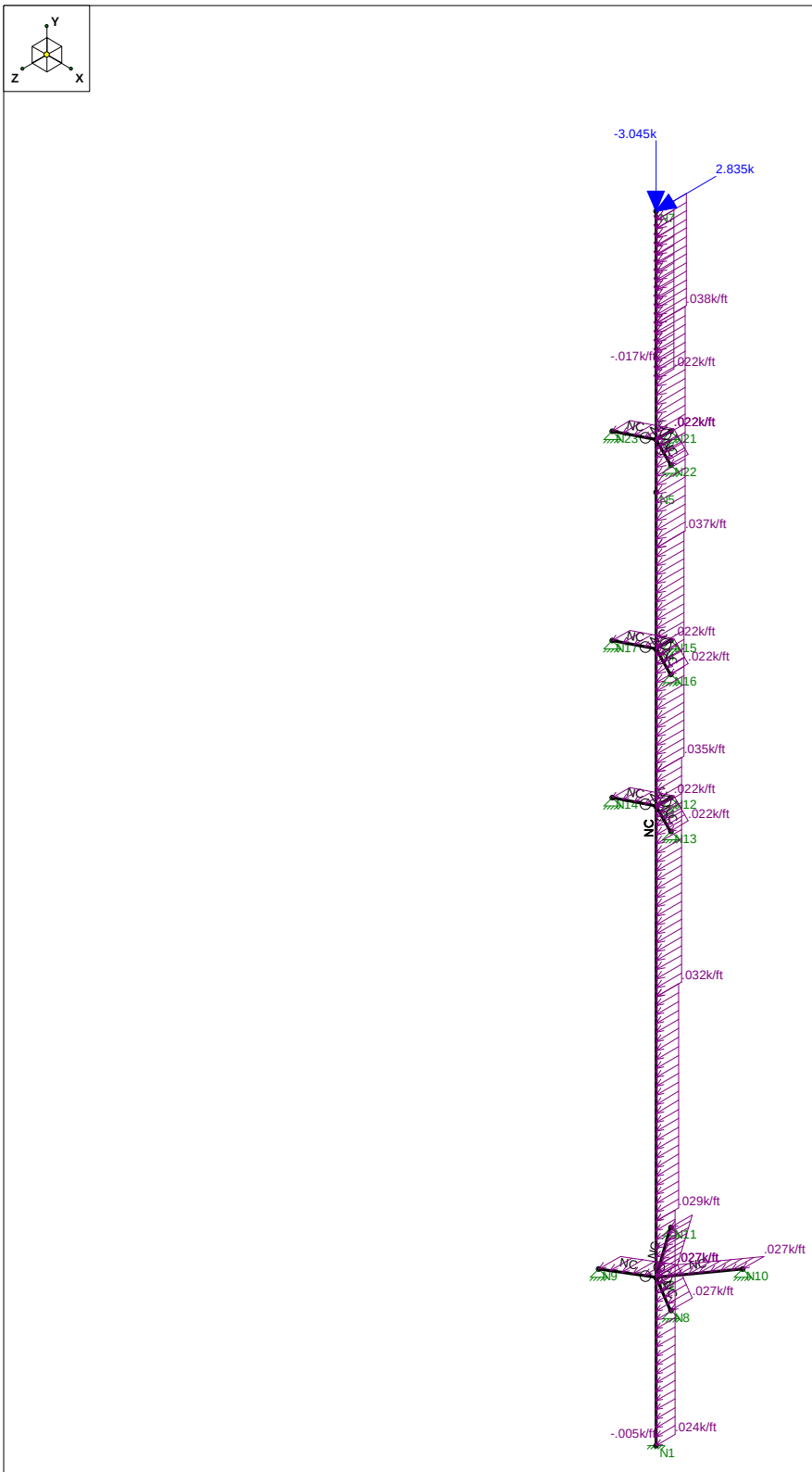
Member Code Checks Displayed
Loads: LC 4, 1.2D + 1.6W (Z-direction)

Centek		
TJL	Struct. #1522 - Powermount	Jan 29, 2019 at 4:54 PM
17159.12 - CT33XC516	LC #4 Loads	Antenna Mast.r3d



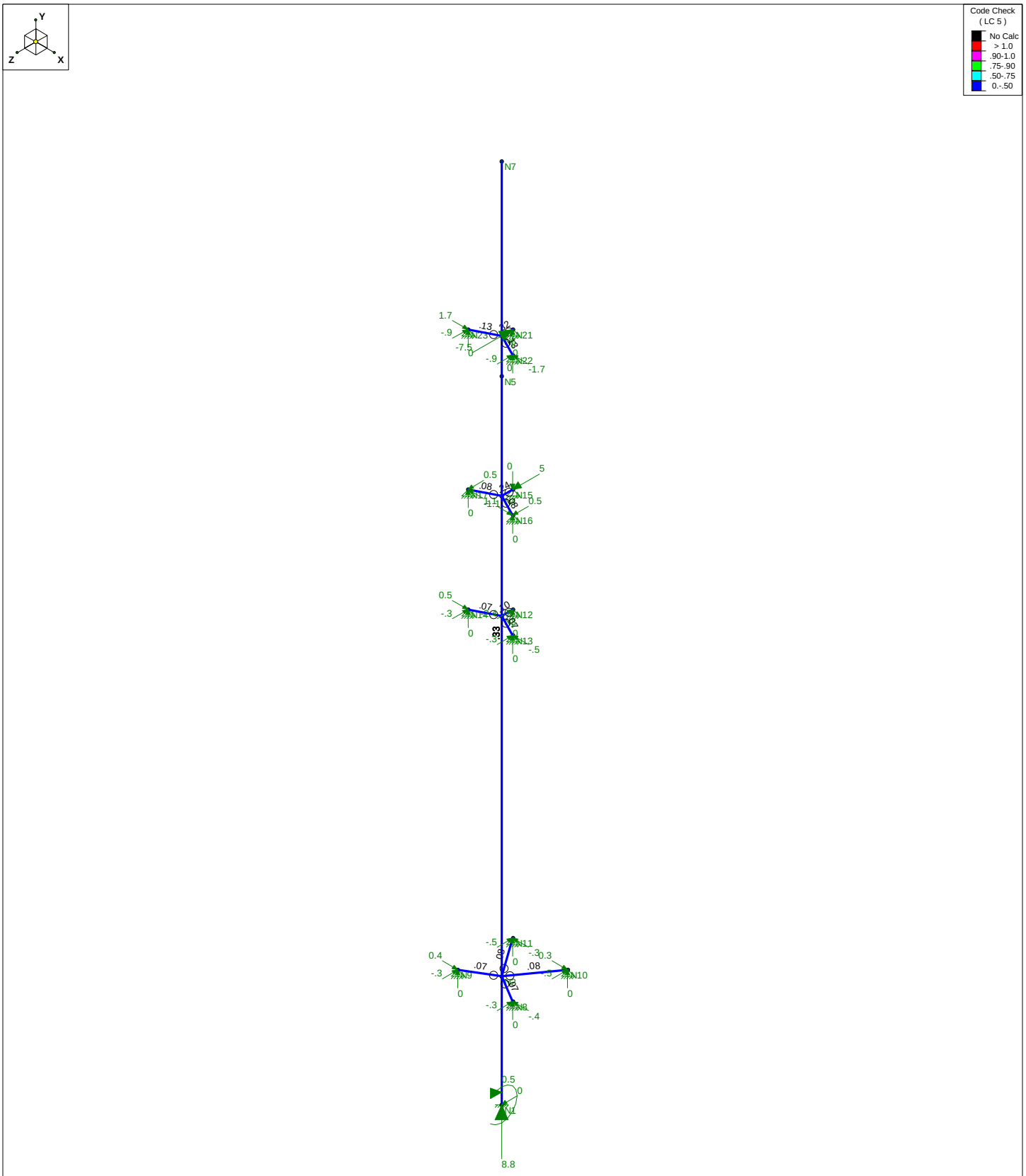
Member Code Checks Displayed
Results for LC 4, 1.2D + 1.6W (Z-direction)
Reaction and Moment Units are k and k-ft

Centek		
TJL	Struct. #1522 - Powermount	Jan 29, 2019 at 4:56 PM
17159.12 - CT33XC516	LC #4 Reactions and Deflected Shape	Antenna Mast.r3d



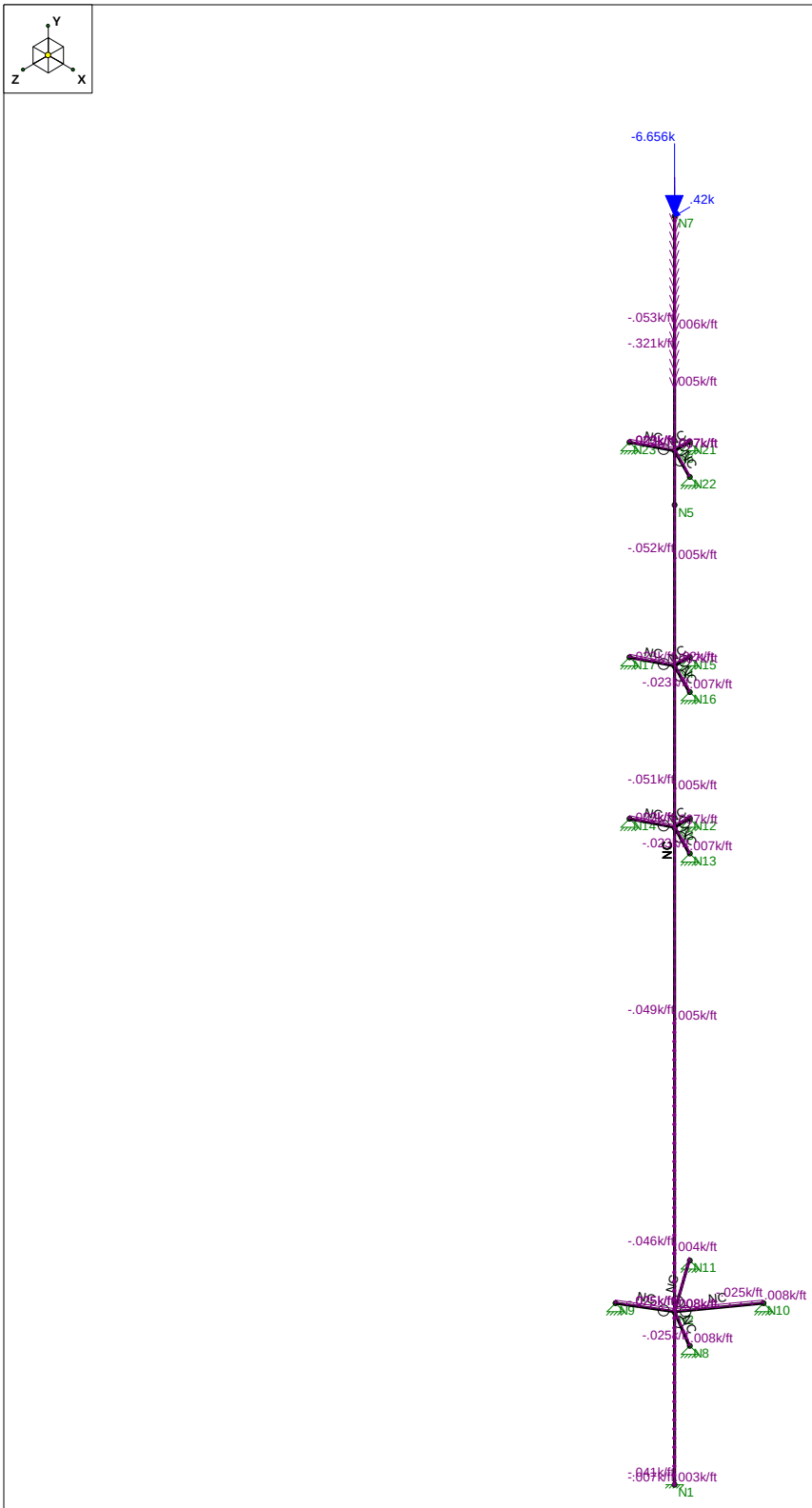
Member Code Checks Displayed
Loads: LC 5, 0.9D + 1.6W (Z-direction)

Centek		
TJL	Struct. #1522 - Powermount	Jan 29, 2019 at 4:54 PM
17159.12 - CT33XC516	LC #5 Loads	Antenna Mast.r3d



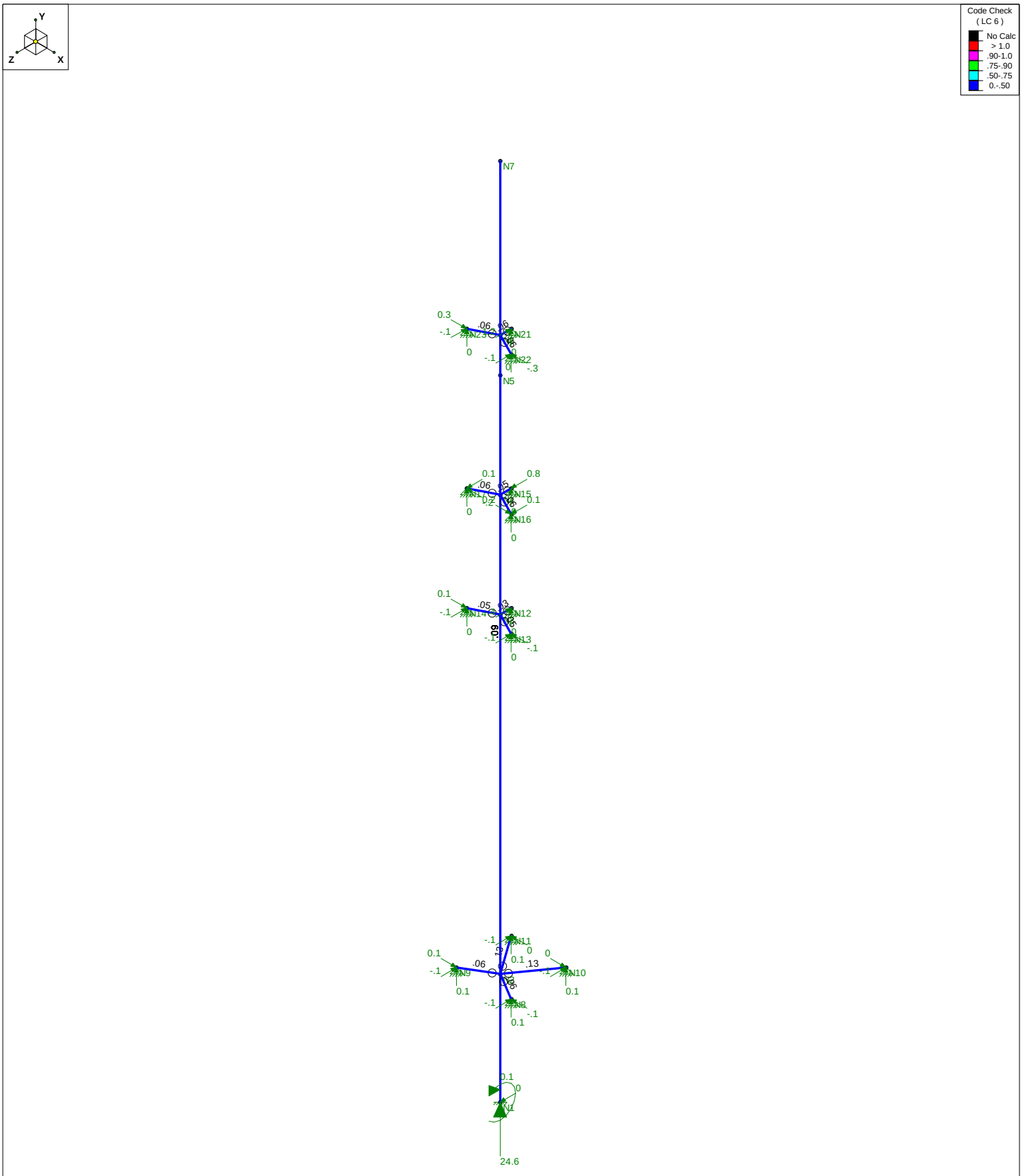
Member Code Checks Displayed
Results for LC 5, 0.9D + 1.6W (Z-direction)
Reaction and Moment Units are k and k-ft

Centek		
TJL	Struct. #1522 - Powermount	Jan 29, 2019 at 4:56 PM
17159.12 - CT33XC516	LC #5 Reactions and Deflected Shape	Antenna Mast.r3d



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

Centek		
TJL	Struct. #1522 - Powermount	Jan 29, 2019 at 4:54 PM
17159.12 - CT33XC516	LC #6 Loads	Antenna 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		
TJL	Struct. #1522 - Powermount	Jan 29, 2019 at 4:57 PM
17159.12 - CT33XC516	LC #6 Reactions and Deflected Shape	Antenna Mast.r3d

CENTEK engineering
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63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject:	Connection of Antenna Mast to Tower # 1522
Location:	Watertown, CT
Rev. 0: 1/2/19	Prepared by: T.J.L. Checked by: C.A.G. Job No. 17159.12

Antenna Mast Connection to Tower:

Pipe Collar:

Reactions:

Horz = $Horz := 9.3 \cdot kips$ (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 = $f_t := \frac{Horz}{N_b} = 2.3 \cdot kips$

Bolt Tenison % of Capacity = $\frac{f_t}{F_t} = 11.23 \cdot \%$

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 = $Fab := 7.6 \cdot kips$ (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 = $f_v := \frac{Fab}{N_b} = 7.6 \cdot kips$

Bolt Shear % of Capacity = $\frac{f_v}{F_v} = 61.29 \cdot \%$

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

Subject:	Load Analysis of Antenna Mast Structure # 1522
Location:	Watertown, CT
Rev. 0: 1/2/19	Prepared by: T.J.L Checked by: C.A.G. Job No. 17159.12

Basic Components

Heavy Wind Pressure =	p := 4.00	psf	(User Input NESC 2012 Figure 250-1 & Table 250-1)
Basic Windspeed =	V := 110	mph	(User Input NESC 2012 Figure 250-2(e))
Radial Ice Thickness =	Ir := 0.50	in	(User Input)
Radial Ice Density =	Id := 57.0	pcf	(User Input)

Factors for Extreme Wind Calculation

Elevation of Top of Mast Above Grade =	TME := 110	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 2012 Table 250-3 equation)
Importance Factor =	I := 1.0		(User Input from NESC 2012 Section 250.C.2)

Velocity Pressure Coefficient = $Kz := 2.01 \cdot \left(\frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.291$ (NESC 2012 Table 250-2)

Exposure Factor = $Es := 0.346 \left[\frac{33}{(0.67 \cdot TME)}\right]^{\frac{1}{7}} = 0.308$ (NESC 2012 Table 250-3)

Response Term = $Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.842$ (NESC 2012 Table 250-3)

Gust Response Factor = $Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.863$ (NESC 2012 Table 250-3)

Wind Pressure = $qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 34.5$ psf (NESC 2012 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 Antenna Mast Structure # 1522
Location:	Watertown, CT
Rev. 0: 1/2/19	Prepared by: T.J.L Checked by: C.A.G. Job No. 17159.12

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Commscope DHHTT65B-3XR		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 72.1$	in	(User Input)
Antenna Width =	$W_{ant} := 11.9$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.1$	in	(User Input)
Antenna Weight =	$WT_{ant} := 46$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant1} := WT_{ant} \cdot N_{ant} = 138$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 6092$ cu in

Volume of Ice on Each Antenna = $V_{ice} := \left(L_{ant} + 2 \cdot Ir\right)\left(W_{ant} + 2 \cdot Ir\right)\left(T_{ant} + 2 \cdot Ir\right) - V_{ant} = 1546$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 51$ lbs

Weight of Ice on All Antennas = $Wt_{ice.ant1} := W_{ICEant} \cdot N_{ant} = 153$ 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 = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 19.6$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant1} := p \cdot Cd_F \cdot A_{ICEant} = 126$ lbs

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 6$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 17.9$ sf

Total Antenna Wind Force = $F_{ant1} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1234$ lbs

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Subject:	Load Analysis of Antenna Mast Structure # 1522
Location:	Watertown, CT
Rev. 0: 1/2/19	Prepared by: T.J.L Checked by: C.A.G. Job No. 17159.12

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	RFS KIT-FD9R6004/1C-DL Diplexer		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 5.8$	in	(User Input)
Antenna Width =	$W_{ant} := 6.5$	in	(User Input)
Antenna Thickness =	$T_{ant} := 4.6$	in	(User Input)
Antenna Weight =	$WT_{ant} := 7$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant2} := WT_{ant} \cdot N_{ant} = 21$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 173$ cu in

Volume of Ice on Each Antenna = $V_{ice} := \left(L_{ant} + 2 \cdot Ir\right)\left(W_{ant} + 2 \cdot Ir\right)\left(T_{ant} + 2 \cdot Ir\right) - V_{ant} = 112$ cu in

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

Weight of Ice on All Antennas = $Wt_{ice.ant2} := W_{ICEant} \cdot N_{ant} = 11$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{\left(L_{ant} + 2 \cdot Ir\right) \cdot \left(W_{ant} + 2 \cdot Ir\right)}{144} = 0.4$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 1.1$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant2} := p \cdot Cd_F \cdot A_{ICEant} = 7$ lbs

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.3$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 0.8$ sf

Total Antenna Wind Force = $F_{ant2} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 54$ lbs

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Subject:	Load Analysis of Antenna Mast Structure # 1522
Location:	Watertown, CT
Rev. 0: 1/2/19	Prepared by: T.J.L Checked by: C.A.G. Job No. 17159.12

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	CCI DPO-7126Y-0-T1 Diplexer		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 4.07$	in	(User Input)
Antenna Width =	$W_{ant} := 7.42$	in	(User Input)
Antenna Thickness =	$T_{ant} := 6.26$	in	(User Input)
Antenna Weight =	$WT_{ant} := 8$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant3} := WT_{ant} \cdot N_{ant} = 24$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 189$ cu in

Volume of Ice on Each Antenna = $V_{ice} := \left(L_{ant} + 2 \cdot Ir\right)\left(W_{ant} + 2 \cdot Ir\right)\left(T_{ant} + 2 \cdot Ir\right) - V_{ant} = 121$ cu in

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

Weight of Ice on All Antennas = $Wt_{ice.ant3} := W_{ICEant} \cdot N_{ant} = 12$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{\left(L_{ant} + 2 \cdot Ir\right) \cdot \left(W_{ant} + 2 \cdot Ir\right)}{144} = 0.3$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 0.9$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant3} := p \cdot Cd_F \cdot A_{ICEant} = 6$ lbs

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.2$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 0.6$ sf

Total Antenna Wind Force = $F_{ant3} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 43$ lbs

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Subject:	Load Analysis of Antenna Mast Structure # 1522
Location:	Watertown, CT
Rev. 0: 1/2/19	Prepared by: T.J.L Checked by: C.A.G. Job No. 17159.12

Development of Wind & Ice Load on Platform

Platform Data:

Platform Model =	14' Low Profile Platform w/ Handrail		
Mount Shape =	Flat		
Mount Projected Surface Area =	$CdAa := 21$	sf	(User Input)
Mount Projected Surface Area w/ Ice =	$CdAa_{ice} := 24$	sf	(User Input)
Mount Weight =	$WT_{mnt} := 3200$	lbs	(User Input)
Mount Weight w/ Ice =	$WT_{mnt.ice} := 4450$	lbs	(User Input)

Gravity Loads (without ice)

Weight of All Mounts = $Wt_{mnt1} := WT_{mnt} = 3200$ lbs

Gravity Load (ice only)

Weight of Ice on All Mounts = $Wt_{ice.mnt1} := \left(WT_{mnt.ice} - WT_{mnt}\right) = 1250$ lbs

Wind Load (NESC Heavy)

Total Mount Wind Force w/ Ice = $Fi_{mnt1} := p \cdot CdAa_{ice} = 96$ lbs

Wind Load (NESC Extreme)

Total Mount Wind Force = $F_{mnt1} := qz \cdot CdAa \cdot m = 906$ lbs

Total Equipment Loads:

NESC Heavy Wind Vertical =

$$\left(Wt_{ant1} + Wt_{ice.ant1} + Wt_{ant2} + Wt_{ice.ant2} + Wt_{ant3} + Wt_{ice.ant3} + Wt_{mnt1} + Wt_{ice.mnt1}\right)\cdot 1.5 = 7214$$

NESC Heavy Wind Trasnsverse =

$$\left(Fi_{ant1} + Fi_{ant2} + Fi_{ant3} + Fi_{mnt1}\right)\cdot 2.5 = 586$$

NESC Extreme Wind Vertical =

$$\left(Wt_{ant1} + Wt_{ant2} + Wt_{ant3} + Wt_{mnt1}\right) = 3383$$

NESC Extreme Wind Trasnsverse =

$$\left(F_{ant1} + F_{ant2} + F_{ant3} + F_{mnt1}\right) = 2237$$

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Subject:	Coax Cable on Antenna Mast Tower # 1522
Location:	Watertown, CT
Rev. 1: 1/29/19	Prepared by: T.J.L Checked by: C.A.G. Job No. 17159.12

Coax Cable on Antenna Mast

Basic Components

Heavy Wind Pressure =	$p := 4.00 \cdot psf$		(User Input NESC 2012 Figure 250-1 & Table 250-1)
Basic Windspeed =	$V := 110$	mph	(User Input NESC 2012 Figure 250-2(e))
Radial Ice Thickness =	$Ir := 0.50in$		(User Input)
Radial Ice Density =	$Id := 57.0 \cdot pcf$		(User Input)

Factors for Extreme Wind Calculation

Elevation of Top of Pole Above Grade =	$TME := 110$	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 2012 Table 250-3 equation)
Importance Factor =	$I := 1.0$		(User Input from NESC 2012 Section 250.C.2)
Velocity Pressure Coefficient =	$Kz := 2.01 \cdot \left(\frac{0.67TME}{900}\right)^{\frac{2}{9.5}} = 1.187$		(NESC 2012 Table 250-2)
Exposure Factor =	$Es := 0.346 \left[\frac{33}{(0.67 \cdot TME)}\right]^{\frac{1}{7}} = 0.308$		(NESC 2012 Table 250-3)
Response Term =	$Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.842$		(NESC 2012 Table 250-3)
Gust Response Factor =	$Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.863$		(NESC 2012 Table 250-3)
Wind Pressure =	$qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 31.7$	psf	(NESC 2012 Section 250.C.

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 Factor for NESC Heavy Wind Transverse Load =	$OF_{HWT} := 2.5$	*(User Input)*
Overload Factor for NESC Heavy Wind Vertical Load =	$OF_{HWV} := 1.5$	*(User Input)*
Overload Factor for NESC Extreme Wind Transverse Load =	$OF_{EWT} := 1.0$	*(User Input)*
Overload Factor for NESC Extreme Wind Vertical Load =	$OF_{EWV} := 1.0$	*(User Input)*

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Below Top of Tower

Distance Between Coax Cable Attach Points =

$Coax_{Span} := \begin{pmatrix} 7.5 \\ 9.5 \\ 14 \\ 28 \\ 36 \end{pmatrix} \cdot ft$ *(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)*

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

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

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

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 = $W_{ice} := Ai_{coax} \cdot Id \cdot NX_{coax} = 0 \cdot plf$

Heavy Wind Vertical Load =

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

Heavy Wind Transverse Load =

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

$Heavy\_WInd_{Vert} = \begin{pmatrix} 70 \\ 89 \\ 131 \\ 262 \\ 337 \end{pmatrix} lb$ $Heavy\_Wind_{Trans} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}$

Extreme Wind Vertical Load =

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

Extreme Wind Transverse Load =

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

$Extreme\_Wind_{Vert} = \begin{pmatrix} 47 \\ 59 \\ 87 \\ 175 \\ 225 \end{pmatrix} lb$ $Extreme\_Wind_{Trans} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}$

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Subject:	Coax Cable on Antenna Mast Tower # 1522
Location:	Watertown, CT
Rev. 1: 1/29/19	Prepared by: T.J.L Checked by: C.A.G. Job No. 17159.12

Above Top of Tower

Distance Between Coax Cable Attach Points = $Coax_{Span} := 15 \cdot ft$ *(User Input)*

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

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

Number of Coax Cables = $N_{coax} := 18$ *(User Input)*

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

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

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

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

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

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

Heavy Wind Vertical Load =

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

Heavy Wind Transverse Load =

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

$Heavy\_WInd_{Vert} = 838lb$ $Heavy\_Wind_{Trans} = 99lb$

Extreme Wind Vertical Load =

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

Extreme Wind Transverse Load =

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

$Extreme\_Wind_{Vert} = 281lb$ $Extreme\_Wind_{Trans} = 251lb$

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Subject:	Coax Cable on Tower # 1522
Location:	Watertown, CT
Rev. 0: 1/2/19	Prepared by: T.J.L Checked by: C.A.G. Job No. 17159.12

Coax Cable on Tower

Basic Components

Heavy Wind Pressure =	p := 4.00·psf		(User Input NESC 2012 Figure 250-1 & Table 250-1)
Basic Windspeed =	V := 110	mph	(User Input NESC 2012 Figure 250-2(e))
Radial Ice Thickness =	Ir := 0.50in		(User Input)
Radial Ice Density =	Id := 57.0·pcf		(User Input)

Factors for Extreme Wind Calculation

Elevation of Top of Pole Above Grade =	TME := 110	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 2012 Table 250-3 equation)
Importance Factor =	I := 1.0		(User Input from NESC 2012 Section 250.C.2)

Velocity Pressure Coefficient = $Kz := 2.01 \cdot \left(\frac{0.67TME}{900}\right)^{\frac{2}{9.5}} = 1.187$ (NESC 2012 Table 250-2)

Exposure Factor = $Es := 0.346\left[\frac{33}{(0.67 \cdot TME)}\right]^{\frac{1}{7}} = 0.308$ (NESC 2012 Table 250-3)

Response Term = $Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.842$ (NESC 2012 Table 250-3)

Gust Response Factor = $Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.863$ (NESC 2012 Table 250-3)

Wind Pressure = $qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 31.7$ psf (NESC 2012 Section 250.C.

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 Factor for NESC Heavy Wind Transverse Load =	$OF_{HWT} := 2.5$	*(User Input)*
Overload Factor for NESC Heavy Wind Vertical Load =	$OF_{HWV} := 1.5$	*(User Input)*
Overload Factor for NESC Extreme Wind Transverse Load =	$OF_{EWT} := 1.0$	*(User Input)*
Overload Factor for NESC Extreme Wind Vertical Load =	$OF_{EWV} := 1.0$	*(User Input)*

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Distance Between Coax Cable Attach Points =

$$Coax_{Span} := \begin{pmatrix} 15 \\ 9.5 \\ 9.5 \\ 10 \\ 12 \\ 17.75 \\ 26.25 \end{pmatrix} \cdot ft \quad \textit{(User Input)}$$

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 = $NP_{coax} := 6$ *(User Input)*

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

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

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

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

Heavy Wind Vertical Load =

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

Heavy Wind Transverse Load =

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

$$Heavy\_WInd_{Vert} = \begin{pmatrix} 697 \\ 442 \\ 442 \\ 465 \\ 558 \\ 825 \\ 1220 \end{pmatrix} lb \qquad Heavy\_Wind_{Trans} = \begin{pmatrix} 258 \\ 163 \\ 163 \\ 172 \\ 206 \\ 305 \\ 451 \end{pmatrix} lb$$

Extreme Wind Vertical Load =

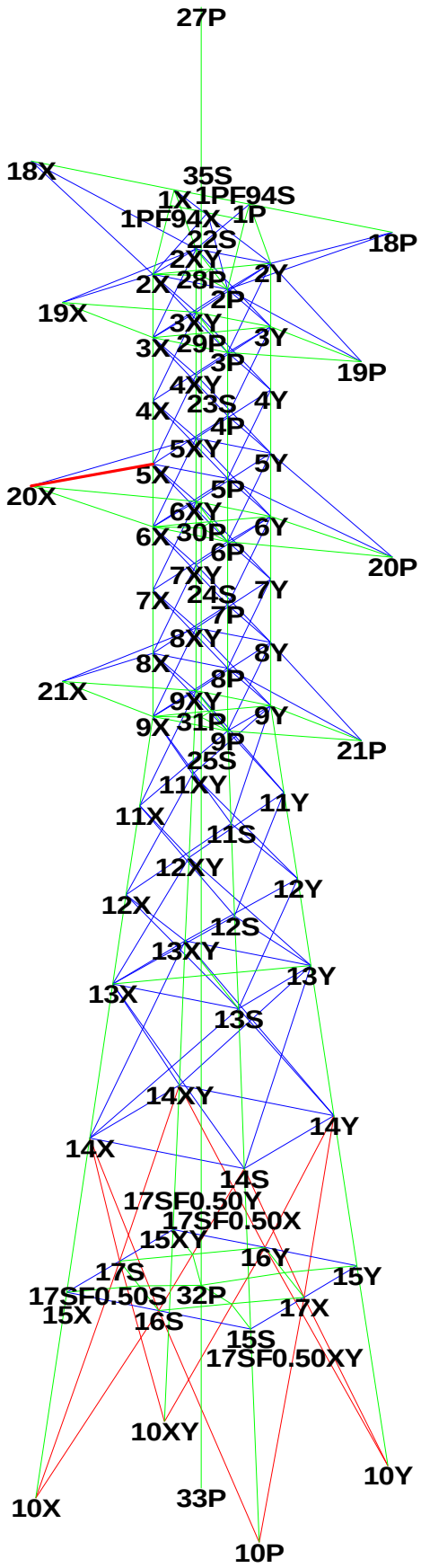
$$\overrightarrow{Extreme\_Wind_{Vert} := \left(N_{coax} \cdot W_{coax} \cdot Coax_{Span} \cdot OF_{EWV}\right)}$$

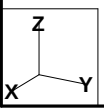
Extreme Wind Transverse Load =

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

$$Extreme\_WInd_{Vert} = \begin{pmatrix} 187 \\ 119 \\ 119 \\ 125 \\ 150 \\ 222 \\ 328 \end{pmatrix} lb \qquad Extreme\_Wind_{Trans} = \begin{pmatrix} 754 \\ 477 \\ 477 \\ 502 \\ 603 \\ 892 \\ 1319 \end{pmatrix} lb$$

Centek Engineering Inc, Project: "CL&P # 1522"
Tower Version 12.50, 12:09:26 PM Wednesday, January 02, 2019
Undeformed geometry displayed





Project Name : 17159.12 - Watertown, CT
Project Notes: Structure #1522 / Sprint - CT33XC516
Project File : J:\Jobs\1715900.WI\12_CT33XC516 Watertown\04_Structural\Calcs\Rev (2)\PLS Tower\CL&P # 1522.tow
Date run   : 11:03:18 AM Thursday, January 31, 2019
by   : Tower Version 12.50
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

KL/R value of 201.25 exceeds maximum of 200.00 for member "g36P" ??
KL/R value of 201.25 exceeds maximum of 200.00 for member "g36X" ??
KL/R value of 201.25 exceeds maximum of 200.00 for member "g36XY" ??
KL/R value of 201.25 exceeds maximum of 200.00 for member "g36Y" ??
KL/R value of 201.25 exceeds maximum of 200.00 for member "g37P" ??
KL/R value of 201.25 exceeds maximum of 200.00 for member "g37X" ??
KL/R value of 201.25 exceeds maximum of 200.00 for member "g37XY" ??
KL/R value of 201.25 exceeds maximum of 200.00 for member "g37Y" ??
KL/R value of 232.56 exceeds maximum of 200.00 for member "g47P" ??
KL/R value of 232.56 exceeds maximum of 200.00 for member "g47Y" ??
KL/R value of 232.56 exceeds maximum of 200.00 for member "g48P" ??
KL/R value of 232.56 exceeds maximum of 200.00 for member "g48Y" ??
KL/R value of 318.49 exceeds maximum of 200.00 for member "g59P" ??
KL/R value of 318.49 exceeds maximum of 200.00 for member "g59X" ??
KL/R value of 233.59 exceeds maximum of 200.00 for member "g60P" ??
KL/R value of 233.59 exceeds maximum of 200.00 for member "g60X" ??
KL/R value of 233.59 exceeds maximum of 200.00 for member "g60XY" ??
KL/R value of 233.59 exceeds maximum of 200.00 for member "g60Y" ??
KL/R value of 233.59 exceeds maximum of 200.00 for member "Fg6072P" ??
KL/R value of 233.59 exceeds maximum of 200.00 for member "Fg6072X" ??
KL/R value of 233.59 exceeds maximum of 200.00 for member "Fg6072XY" ??
KL/R value of 233.59 exceeds maximum of 200.00 for member "Fg6072Y" ??
KL/R value of 236.29 exceeds maximum of 200.00 for member "g70P" ??
KL/R value of 236.29 exceeds maximum of 200.00 for member "g70X" ??
KL/R value of 236.29 exceeds maximum of 200.00 for member "g70XY" ??
KL/R value of 236.29 exceeds maximum of 200.00 for member "g70Y" ??
KL/R value of 248.28 exceeds maximum of 200.00 for member "g71P" ??
KL/R value of 248.28 exceeds maximum of 200.00 for member "g71X" ??
KL/R value of 248.28 exceeds maximum of 200.00 for member "g71XY" ??
KL/R value of 248.28 exceeds maximum of 200.00 for member "g71Y" ??
KL/R value of 236.19 exceeds maximum of 200.00 for member "g72P" ??
KL/R value of 236.19 exceeds maximum of 200.00 for member "g72X" ??
KL/R value of 236.19 exceeds maximum of 200.00 for member "g72XY" ??
KL/R value of 236.19 exceeds maximum of 200.00 for member "g72Y" ??
KL/R value of 233.16 exceeds maximum of 200.00 for member "g94P" ??
KL/R value of 233.16 exceeds maximum of 200.00 for member "g94X" ??
KL/R value of 233.16 exceeds maximum of 200.00 for member "g94XY" ??
KL/R value of 233.16 exceeds maximum of 200.00 for member "g94Y" ??
Problem calculating gross area of transverse face for section "1": width is zero at elevation 109.50 and 95.00 (ft) ??
Unusual number of fixed joints found: 5. Towers normally have from between 1 and 4 fixed joints. ??
The model has 40 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\1715900.wi\12_ct33xc516 watertown\04_structural\calcs\rev (2)\pls tower\cl&p # 1522.lca

*** Analysis Results:

Maximum element usage is 81.98% for Angle "g94XY" in load case "NESC Extreme"
Maximum insulator usage is 17.70% for Clamp "9" in load case "NESC Heavy"

Summary of Joint Support Reactions For All Load Cases:

Load Case	Joint Label	Long. Force (kips)	Tran. Force (kips)	Vert. Force (kips)	Shear Force (kips)	Tran. Moment (ft-k)	Long. Moment (ft-k)	Bending Moment (ft-k)	Vert. Moment (ft-k)	Found. Usage %
NESC Heavy	10P	-8.54	-6.83	-48.25	10.94	-0.05	0.02	0.05	-0.02	0.00
NESC Heavy	33P	0.06	-0.23	-18.23	0.24	1.23	0.60	1.37	-0.01	0.00
NESC Heavy	10X	4.81	-3.54	27.17	5.97	-0.05	-0.04	0.06	0.00	0.00
NESC Heavy	10XY	-4.81	-3.39	26.29	5.88	-0.04	0.02	0.05	0.00	0.00
NESC Heavy	10Y	8.49	-7.12	-49.80	11.08	-0.04	-0.06	0.07	0.02	0.00
NESC Extreme	10P	-7.83	-9.82	-74.82	12.56	-0.32	-0.92	0.98	-0.11	0.00
NESC Extreme	33P	-0.72	-0.30	-7.49	0.78	2.67	-7.29	7.76	0.66	0.00
NESC Extreme	10X	9.85	-7.19	62.84	12.19	-0.35	-0.32	0.47	0.03	0.00
NESC Extreme	10XY	-13.98	-14.82	74.46	20.37	0.02	-0.15	0.15	0.07	0.00
NESC Extreme	10Y	12.68	-12.94	-88.40	18.12	0.11	-0.97	0.98	-0.04	0.00

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

Load Case	Support Joint	Origin Joint	Member Leg	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	10P	15S	g14P	49.326	3.888	3.926	3.496	1.787	-8.54	-6.83	-48.25
NESC Heavy	10X	15X	g14X	-27.742	2.070	2.088	-1.966	0.704	4.81	-3.54	27.17
NESC Heavy	10XY	15XY	g14XY	-26.856	2.141	2.159	2.063	0.637	-4.81	-3.39	26.29
NESC Heavy	10Y	15Y	g14Y	50.882	3.763	3.802	-3.284	1.916	8.49	-7.12	-49.80
NESC Extreme	10P	15S	g14P	75.843	1.981	1.992	0.011	1.992	-7.83	-9.82	-74.82
NESC Extreme	10X	15X	g14X	-63.925	3.310	3.334	-3.276	0.620	9.85	-7.19	62.84
NESC Extreme	10XY	15XY	g14XY	-76.635	9.269	9.370	6.190	7.034	-13.98	-14.82	74.46
NESC Extreme	10Y	15Y	g14Y	90.100	4.992	5.046	-3.440	3.692	12.68	-12.94	-88.40

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	109.500	57.000	54	176	0.00	6.00	215.258	0.00	24.00	637.105	Problem calculating gross area of transverse face for section "1": width is zero at elevation 109.50 and 95.00 (ft) ??
2	57.000	0.000	39	108	6.00	17.92	681.720	6.00	17.92	681.720	

*** 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	Group Angle	Angle	Steel	Max Usage	Max	Comp.	Comp.	Comp.	L/R	Comp.	Comp.	RLX	RLY	RLZ

Label	Desc.	Type	Size	Strength (ksi)	Usage %	Control	Use In Comp. %	Control Member	Force (kips)	Control Load Case	Capacity (kips)	Connect. Shear Capacity (kips)	Connect. Bearing Capacity (kips)	L/R	KL/R	Length (ft)	Curve	No. Comp. Member	No. Of Bolts
Leg1	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	36.0	10.16	Comp	10.16	g90P	-1.193	NESC Ext	11.743	36.400	40.781	1.000	1.000	1.000	148.27	148.27	6.116	4	4
Leg2	L4x4x1/4	SAE	4X4X0.25	36.0	40.28	Comp	40.28	g5P	-23.589	NESC Ext	58.567	72.800	108.750	1.000	1.000	1.000	70.34	70.34	4.660	1	8
Leg3	L4x4x7/16	SAE	4X4X0.4375	36.0	47.72	Comp	47.72	g8Y	-47.790	NESC Ext	100.146	127.400	333.046	1.000	1.000	1.000	71.24	71.24	4.660	1	14
Leg4	L5x5x7/16	SAE	5X5X0.4375	50.0	44.38	Comp	44.38	g11Y	-64.611	NESC Ext	150.630	145.600	426.562	1.000	1.000	1.000	79.97	79.97	6.571	1	16
Leg5	L6x6x3/8	SAE	6X6X0.375	50.0	45.17	Comp	45.17	g13Y	-74.160	NESC Ext	164.165	182.000	457.031	0.500	0.500	0.500	57.34	57.34	11.372	1	20
Leg6	L6x6x3/8	SAE	6X6X0.375	50.0	44.18	Comp	44.18	g14Y	-74.826	NESC Ext	169.375	182.000	457.031	0.330	0.330	0.330	50.46	50.46	15.163	1	20
Diag1	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	36.0	33.99	Comp	33.99	g16P	-3.572	NESC Ext	10.509	18.200	20.391	0.750	0.500	0.500	133.00	129.95	7.603	5	2
Diag2	L3x3x3/16	SAE	3X3X0.1875	36.0	22.86	Tens	21.84	g18X	-5.962	NESC Ext	29.813	27.300	30.586	0.750	0.500	0.500	76.54	87.41	7.603	2	3
Diag3	L3x2.5x1/4	SAU	3X2.5X0.25	36.0	25.95	Tens	25.00	g24XY	-6.825	NESC Ext	33.833	27.300	40.781	0.750	0.500	0.500	86.40	94.80	7.603	2	3
Diag4	L3x3x1/4	SAE	3X3X0.25	36.0	19.97	Tens	18.81	g28XY	-6.846	NESC Ext	39.289	36.400	54.375	0.750	0.500	0.500	77.00	87.75	7.597	2	4
Diag5	L3x3x3/16	SAE	3X3X0.1875	36.0	14.99	Comp	14.99	g34XY	-3.104	NESC Ext	20.706	27.300	30.586	0.767	0.535	0.535	123.31	122.56	11.447	5	3
Diag6	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	36.0	81.53	Comp	81.53	g37Y	-6.857	NESC Ext	8.410	36.400	54.375	0.791	0.581	0.581	226.57	201.25	15.956	5	4
Diag7	L3x2.5x1/4	SAU	3X2.5X0.25	36.0	79.32	Comp	79.32	g41P	-8.381	NESC Hea	10.567	36.400	54.375	0.386	0.750	0.386	209.67	188.37	17.543	5	4
Horz1	L2x2x3/16	SAE	2X2X0.1875	36.0	23.17	Comp	23.17	g42X	-1.671	NESC Ext	7.213	18.200	20.391	1.000	1.000	1.000	182.74	167.85	6.000	5	2
Horz2	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	36.0	8.17	Tens	4.04	g45P	-0.995	NESC Ext	24.594	27.300	40.781	1.000	1.000	1.000	132.35	129.45	6.000	5	3
Horz3	L3x2x3/16	SAU	3X2X0.1875	36.0	11.77	Tens	0.00	g46Y	0.000		10.922	18.200	20.391	1.000	1.000	1.000	164.01	153.57	6.000	5	2
Horz4	L1.75x1.25x3/16	SAU	1.75X1.25X0.1875	36.0	24.56	Tens	0.00	g48Y	0.000		2.789	18.200	20.391	1.000	1.000	1.000	267.66	232.56	6.000	5	2
Horz5	L3x2.5x3/16	SAU	3X2.5X0.1875	36.0	34.59	Tens	25.14	g50X	-4.575	NESC Ext	18.257	18.200	20.391	1.000	0.500	0.500	126.77	125.20	10.078	5	2
Horz6	L3.5x3x1/4	SAU	3.5X3X0.25	36.0	35.71	Comp	35.71	g52X	-9.292	NESC Ext	26.018	27.300	40.781	1.000	0.500	0.500	134.38	131.00	12.431	5	3
Horz7	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	36.0	20.59	Tens	17.44	g53Y	-1.651	NESC Ext	9.466	18.200	20.391	1.000	1.000	1.000	179.19	165.14	7.392	5	2
Inner1	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	36.0	71.00	Comp	71.00	Fg6072Y	-2.309	NESC Ext	3.252	9.100	10.195	2.000	1.000	1.000	233.59	233.59	5.227	4	1
Inner2	L2x2x3/16	SAE	2X2X0.1875	36.0	11.04	Comp	11.04	g57Y	-0.941	NESC Ext	8.530	18.200	20.391	2.000	1.000	1.000	165.03	154.35	4.243	5	2
ShieldAr	WT4x12	WT	WT4x12	36.0	16.30	Tens	0.00	g62P	0.000		81.514	18.200	53.287	1.000	1.000	1.000	72.07	96.04	6.000	3	2
ShArmBr	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	36.0	6.81	Comp	6.81	g69XY	-1.240	NESC Hea	19.970	18.200	27.187	1.000	0.500	0.500	143.66	143.66	13.025	4	2

TopCrArm	L5x3.5x7/16	SAU	5X3.5X0.4375	50.0	22.52	Comp	22.52	g63P	-4.099	NESC Hea	103.153	18.200	53.320	0.500	0.500	0.500	75.09	97.55	9.487	3	2
TopArmBr	L1.75X1.75x3/16	SAE	1.75X1.75X0.1875	36.0	24.08	Tens	0.00	g70Y	0.000		3.178	18.200	20.391	1.000	0.500	0.500	236.29	236.29	10.574	4	2
MidCrArm	L5x3.5x7/16	SAU	5X3.5X0.4375	50.0	27.30	Comp	27.30	g65P	-4.969	NESC Hea	88.186	18.200	53.320	0.500	0.500	0.500	94.08	107.04	11.885	3	2
MidArmBr	L2x2x3/16	SAE	2X2X0.1875	36.0	27.66	Tens	0.00	g71Y	0.000		3.297	18.200	20.391	1.000	0.500	0.500	248.28	248.28	12.766	4	2
BotCrArm	L5x3.5x7/16	SAU	5X3.5X0.4375	50.0	22.07	Comp	22.07	g67P	-4.016	NESC Hea	103.153	18.200	53.320	0.500	0.500	0.500	75.09	97.55	9.487	3	2
BotArmBr	L1.75X1.75x3/16	SAE	1.75X1.75X0.1875	36.0	23.49	Tens	0.00	g72Y	0.000		3.181	18.200	20.391	1.000	0.500	0.500	236.19	236.19	10.570	4	2
Pwmnt	12" Std. Pipe	Pwmnt	Pipe 12" Std.	50.0	5.01	Comp	5.01	g75P	-14.784	NESC Hea	295.328	0.000	0.000	1.000	1.000	1.000	114.81	114.81	42.000	1	0
PMBR1	L2x2x3/16	SAE	2X2X0.1875	36.0	4.82	Tens	2.40	g83P	-0.245	NESC Hea	20.044	16.800	10.195	1.000	1.000	1.000	45.69	82.84	1.500	3	1
PMBR2	**L2.5x2.5x3/16**	**SAE**	**2.5X2.5X0.1875**	**36.0**	**37.42**	**Tens**	**31.16**	**g84X**	**-3.177**	**NESC Ext**	**22.127**	**16.800**	**10.195**	**1.000**	**1.000**	**1.000**	**81.31**	**100.66**	**3.354**	**3**	**1 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g84P ??**
PMBR3	L3x3x3/16	SAE	3X3X0.1875	36.0	20.15	Comp	20.15	g89X	-2.055	NESC Ext	18.929	16.800	10.195	1.000	1.000	1.000	128.38	128.38	6.376	4	1
Diag8	L2x2x3/16	SAE	2X2X0.1875	36.0	10.96	Comp	10.96	g92X	-0.712	NESC Ext	6.503	16.800	10.195	1.000	1.000	1.000	176.78	176.78	5.804	4	1
Diag9	L2x2x3/16	SAE	2X2X0.1875	36.0	2.53	Tens	2.03	g93P	-0.207	NESC Ext	14.460	16.800	10.195	2.000	1.000	1.000	116.69	117.52	3.000	2	1
TopCArmA	L5x3.5x7/16	SAU	5X3.5X0.4375	36.0	13.17	Comp	13.17	g64P	-2.398	NESC Hea	80.907	18.200	47.578	1.000	1.000	1.000	94.99	107.49	6.000	3	2
MidCArmA	L5x3.5x7/16	SAU	5X3.5X0.4375	36.0	19.48	Comp	19.48	g66P	-3.546	NESC Hea	80.907	18.200	47.578	1.000	1.000	1.000	94.99	107.49	6.000	3	2
BotCArmA	L5x3.5x7/16	SAU	5X3.5X0.4375	36.0	19.49	Comp	19.49	g68Y	-3.548	NESC Hea	80.907	18.200	47.578	1.000	1.000	1.000	94.99	107.49	6.000	3	2
Inner3	**L1.75x1.25x3/16**	**SAU**	**1.75X1.25X0.1875**	**36.0**	**81.98**	**Comp**	**81.98**	**g94XY**	**-2.275**	**NESC Ext**	**2.775**	**9.100**	**10.195**	**1.000**	**1.000**	**1.000**	**233.16**	**233.16**	**5.227**	**4**	**1 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g94P g94X g94XY g94Y ??**

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Cont-rol	Max Tension Use In Tens. %	Tension Control Member	Tension Force (kips)	Tension Control Load Case	Net Section Capacity (kips)	Tension Connect. Shear Capacity (kips)	Tension Connect. Bearing Capacity (kips)	Tension Connect. Rupture Capacity (kips)	Length Tens. Member (ft)	No. Of Bolts	No. Of Holes	Hole Diameter (in)
Leg1	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	36.0	10.16	Comp	2.82	g90X	0.631	NESC Ext	22.347	36.400	40.781	33.984	6.116	4	2.000	0.75
Leg2	L4x4x1/4	SAE	4X4X0.25	36.0	40.28	Comp	33.67	g5X	18.967	NESC Ext	56.340	72.800	108.750	120.833	4.660	8	2.000	0.75
Leg3	L4x4x7/16	SAE	4X4X0.4375	36.0	47.72	Comp	41.78	g8XY	39.918	NESC Ext	95.535	127.400	333.046	370.052	4.660	14	2.000	0.75
Leg4	L5x5x7/16	SAE	5X5X0.4375	50.0	44.38	Comp	37.58	g11XY	54.722	NESC Ext	158.633	145.600	426.562	202.179	6.571	16	3.070	0.75
Leg5	L6x6x3/8	SAE	6X6X0.375	50.0	45.17	Comp	34.47	g12XY	55.753	NESC Ext	161.750	0.000	0.000	0.000	11.372	0	4.000	0.75

Leg6	L6x6x3/8	SAE	6X6X0.375	50.0	44.18	Comp	33.27	g14X	56.384NESC Ext	169.484	182.000	457.031	188.953	15.163	20	3.450	0.75
Diag1	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	36.0	33.99	Comp	28.39	g16X	3.505NESC Ext	15.532	18.200	20.391	12.347	7.603	2	1.000	0.75
Diag2	L3x3x3/16	SAE	3X3X0.1875	36.0	22.86	Tens	22.86	g20P	6.241NESC Ext	30.760	27.300	30.586	30.586	7.603	3	1.000	0.75
Diag3	L3x2.5x1/4	SAU	3X2.5X0.25	36.0	25.95	Tens	25.95	g26Y	7.086NESC Ext	32.319	27.300	40.781	40.781	7.603	3	1.000	0.75
Diag4	L3x3x1/4	SAE	3X3X0.25	36.0	19.97	Tens	19.97	g28Y	7.016NESC Ext	40.581	36.400	54.375	35.137	7.597	4	1.000	0.75
Diag5	L3x3x3/16	SAE	3X3X0.1875	36.0	14.99	Comp	12.48	g32Y	3.392NESC Ext	30.760	27.300	30.586	27.187	10.360	3	1.000	0.75
Diag6	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	36.0	81.53	Comp	16.10	g37XY	5.230NESC Ext	32.481	36.400	54.375	44.306	15.956	4	1.000	0.75
Diag7	L3x2.5x1/4	SAU	3X2.5X0.25	36.0	79.32	Comp	44.92	g40Y	15.784NESC Ext	36.369	36.400	54.375	35.137	17.543	4	1.000	0.75
Horz1	L2x2x3/16	SAE	2X2X0.1875	36.0	23.17	Comp	7.57	g42P	1.060NESC Ext	18.448	18.200	20.391	14.006	6.000	2	1.000	0.75
Horz2	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	36.0	8.17	Tens	8.17	g44P	2.230NESC Hea	40.581	27.300	40.781	27.450	6.000	3	1.000	0.75
Horz3	L3x2x3/16	SAU	3X2X0.1875	36.0	11.77	Tens	11.77	g46Y	1.648NESC Hea	18.529	18.200	20.391	14.006	6.000	2	1.000	0.75
Horz4	L1.75x1.25x3/16	SAU	1.75X1.25X0.1875	36.0	24.56	Tens	24.56	g47Y	2.819NESC Hea	12.519	18.200	20.391	11.475	6.000	2	1.000	0.75
Horz5	L3x2.5x3/16	SAU	3X2.5X0.1875	36.0	34.59	Tens	34.59	g50P	5.429NESC Ext	24.806	18.200	20.391	15.694	10.078	2	1.000	0.75
Horz6	L3.5x3x1/4	SAU	3.5X3X0.25	36.0	35.71	Comp	23.92	g52P	6.530NESC Hea	40.419	27.300	40.781	29.700	12.431	3	1.000	0.75
Horz7	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	36.0	20.59	Tens	20.59	g53XY	3.231NESC Ext	24.669	18.200	20.391	15.694	7.392	2	1.000	0.75
Inner1	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	36.0	71.00	Comp	27.98	g60XY	2.313NESC Ext	15.532	9.100	10.195	8.269	5.227	1	1.000	0.75
Inner2	L2x2x3/16	SAE	2X2X0.1875	36.0	11.04	Comp	7.44	g57P	1.042NESC Ext	18.448	18.200	20.391	14.006	4.243	2	1.000	0.75
ShieldAr	WT4x12	WT	WT4x12	36.0	16.30	Tens	16.30	g61X	2.966NESC Hea	102.789	18.200	53.287	40.756	11.500	2	2.000	0.75
ShArmBr	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	36.0	6.81	Comp	0.00	g69Y	0.000	32.481	18.200	27.187	20.925	13.025	2	1.000	0.75
TopCrArm	L5x3.5x7/16	SAU	5X3.5X0.4375	50.0	22.52	Comp	0.00	g63Y	0.000	129.319	18.200	53.320	53.320	9.487	2	2.000	0.75
TopArmBr	L1.75X1.75x3/16	SAE	1.75X1.75X0.1875	36.0	24.08	Tens	24.08	g70P	3.740NESC Hea	15.532	18.200	20.391	15.609	10.574	2	1.000	0.75
MidCrArm	L5x3.5x7/16	SAU	5X3.5X0.4375	50.0	27.30	Comp	0.00	g65Y	0.000	129.319	18.200	53.320	53.320	11.885	2	2.000	0.75
MidArmBr	L2x2x3/16	SAE	2X2X0.1875	36.0	27.66	Tens	27.66	g71P	4.551NESC Hea	18.448	18.200	20.391	16.453	12.766	2	1.000	0.75
BotCrArm	L5x3.5x7/16	SAU	5X3.5X0.4375	50.0	22.07	Comp	0.00	g67Y	0.000	129.319	18.200	53.320	53.320	9.487	2	2.000	0.75
BotArmBr	L1.75X1.75x3/16	SAE	1.75X1.75X0.1875	36.0	23.49	Tens	23.49	g72P	3.648NESC Hea	15.532	18.200	20.391	15.609	10.570	2	1.000	0.75
Pwmnt	12" Std. Pipe Pwmnt		Pipe 12" Std.	50.0	5.01	Comp	0.00	g79P	0.000	679.999	0.000	0.000	0.000	19.830	0	0.000	0
PMBR1	L2x2x3/16	SAE	2X2X0.1875	36.0	4.82	Tens	4.82	g80P	0.491NESC Hea	18.827	16.800	10.195	10.343	1.500	1	1.000	0.6875
PMBR2	**L2.5x2.5x3/16**	**SAE**	**2.5X2.5X0.1875**	**36.0**	**37.42**	**Tens**	**37.42**	**g84P**	**3.815NESC Ext**	**25.048**	**16.800**	**10.195**	**11.328**	**3.354**	**1**	**1.000**	**0.6875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g84P ??**
PMBR3	L3x3x3/16	SAE	3X3X0.1875	36.0	20.15	Comp	11.36	g89P	1.158NESC Ext	31.139	16.800	10.195	11.328	6.376	1	1.000	0.6875

Diag8	L2x2x3/16	SAE	2X2X0.1875	36.0	10.96	Comp	5.38	g92P	0.549NESC Ext	18.827	16.800	10.195	10.343	5.804	1	1.000	0.6875
Diag9	L2x2x3/16	SAE	2X2X0.1875	36.0	2.53	Tens	2.53	g93X	0.258NESC Ext	18.827	16.800	10.195	10.343	3.000	1	1.000	0.6875
TopCArmA	L5x3.5x7/16	SAU	5X3.5X0.4375	36.0	13.17	Comp	0.00	g64Y	0.000	103.741	18.200	47.578	44.494	6.000	2	1.000	0.75
MidCArmA	L5x3.5x7/16	SAU	5X3.5X0.4375	36.0	19.48	Comp	0.00	g66Y	0.000	103.741	18.200	47.578	44.494	6.000	2	1.000	0.75
BotCArmA	L5x3.5x7/16	SAU	5X3.5X0.4375	36.0	19.49	Comp	0.00	g68Y	0.000	103.741	18.200	47.578	44.494	6.000	2	1.000	0.75
Inner3	**L1.75x1.25x3/16**	**SAU**	**1.75X1.25X0.1875**	**36.0**	**81.98**	**Comp**	**21.20**	**g94Y**	**1.395NESC Ext**	**12.519**	**9.100**	**10.195**	**6.581**	**5.227**	**1**	**1.000**	**0.75**

A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g94P g94X g94XY g94Y ??

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	79.32	g41P	Angle
NESC Extreme	81.98	g94XY	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	2.56	NESC Heavy	0.0
2	Clamp	2.63	NESC Heavy	0.0
3	Clamp	7.03	NESC Heavy	0.0
4	Clamp	7.08	NESC Heavy	0.0
5	Clamp	7.13	NESC Heavy	0.0
6	Clamp	7.19	NESC Heavy	0.0
7	Clamp	7.03	NESC Heavy	0.0
8	Clamp	7.08	NESC Heavy	0.0
9	Clamp	17.70	NESC Heavy	0.0
10	Clamp	2.17	NESC Heavy	0.0
11	Clamp	1.69	NESC Heavy	0.0
12	Clamp	2.56	NESC Heavy	0.0
13	Clamp	5.40	NESC Heavy	0.0
14	Clamp	5.82	NESC Heavy	0.0
15	Clamp	2.01	NESC Extreme	0.0
16	Clamp	1.44	NESC Extreme	0.0
17	Clamp	1.61	NESC Heavy	0.0
18	Clamp	1.49	NESC Extreme	0.0
19	Clamp	2.10	NESC Extreme	0.0
20	Clamp	2.69	NESC Extreme	0.0
21	Clamp	3.57	NESC Extreme	0.0

*** Weight of structure (lbs):
Weight of Angles*Section DLF: 19543.9
Total: 19543.9

*** End of Report

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

Project Name : 17159.12 - Watertown, CT
Project Notes: Structure #1522 / Sprint - CT33XC516
Project File : J:\Jobs\1715900.WI\12_CT33XC516 Watertown\04_Structural\Calcs\Rev (2)\PLS Tower\CL&P # 1522.tow
Date run     : 11:03:18 AM Thursday, January 31, 2019
by           : Tower Version 12.50
Licensed to  : Centek Engineering Inc

Successfully performed nonlinear analysis

KL/R value of 201.25 exceeds maximum of 200.00 for member "g36P" ??
KL/R value of 201.25 exceeds maximum of 200.00 for member "g36X" ??
KL/R value of 201.25 exceeds maximum of 200.00 for member "g36XY" ??
KL/R value of 201.25 exceeds maximum of 200.00 for member "g36Y" ??
KL/R value of 201.25 exceeds maximum of 200.00 for member "g37P" ??
KL/R value of 201.25 exceeds maximum of 200.00 for member "g37X" ??
KL/R value of 201.25 exceeds maximum of 200.00 for member "g37XY" ??
KL/R value of 201.25 exceeds maximum of 200.00 for member "g37Y" ??
KL/R value of 232.56 exceeds maximum of 200.00 for member "g47P" ??
KL/R value of 232.56 exceeds maximum of 200.00 for member "g47Y" ??
KL/R value of 232.56 exceeds maximum of 200.00 for member "g48P" ??
KL/R value of 232.56 exceeds maximum of 200.00 for member "g48Y" ??
KL/R value of 318.49 exceeds maximum of 200.00 for member "g59P" ??
KL/R value of 318.49 exceeds maximum of 200.00 for member "g59X" ??
KL/R value of 233.59 exceeds maximum of 200.00 for member "g60P" ??
KL/R value of 233.59 exceeds maximum of 200.00 for member "g60X" ??
KL/R value of 233.59 exceeds maximum of 200.00 for member "g60XY" ??
KL/R value of 233.59 exceeds maximum of 200.00 for member "g60Y" ??
KL/R value of 233.59 exceeds maximum of 200.00 for member "Fg6072P" ??
KL/R value of 233.59 exceeds maximum of 200.00 for member "Fg6072X" ??
KL/R value of 233.59 exceeds maximum of 200.00 for member "Fg6072XY" ??
KL/R value of 233.59 exceeds maximum of 200.00 for member "Fg6072Y" ??
KL/R value of 236.29 exceeds maximum of 200.00 for member "g70P" ??
KL/R value of 236.29 exceeds maximum of 200.00 for member "g70X" ??
KL/R value of 236.29 exceeds maximum of 200.00 for member "g70XY" ??
KL/R value of 236.29 exceeds maximum of 200.00 for member "g70Y" ??
KL/R value of 248.28 exceeds maximum of 200.00 for member "g71P" ??
KL/R value of 248.28 exceeds maximum of 200.00 for member "g71X" ??
KL/R value of 248.28 exceeds maximum of 200.00 for member "g71XY" ??
KL/R value of 248.28 exceeds maximum of 200.00 for member "g71Y" ??
KL/R value of 236.19 exceeds maximum of 200.00 for member "g72P" ??
KL/R value of 236.19 exceeds maximum of 200.00 for member "g72X" ??
KL/R value of 236.19 exceeds maximum of 200.00 for member "g72XY" ??
KL/R value of 236.19 exceeds maximum of 200.00 for member "g72Y" ??
KL/R value of 233.16 exceeds maximum of 200.00 for member "g94P" ??
KL/R value of 233.16 exceeds maximum of 200.00 for member "g94X" ??
KL/R value of 233.16 exceeds maximum of 200.00 for member "g94XY" ??
KL/R value of 233.16 exceeds maximum of 200.00 for member "g94Y" ??
Problem calculating gross area of transverse face for section "1": width is zero at elevation 109.50 and 95.00 (ft) ??
Unusual number of fixed joints found: 5.  Towers normally have from between 1 and 4 fixed joints. ??
The model has 40 warnings.  ??
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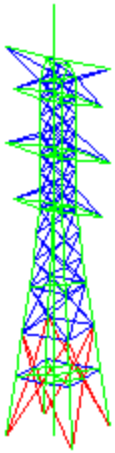

Nonlinear convergence parameters: Use Standard Parameters
Tension only member maximum compression load as a percent of compression capacity: 100%
Member check option: ASCE 10
Connection rupture check: ASCE 10
Crossing diagonal check: ASCE 10 [Alternate Unsupported RLOUT = 1]
Included angle check: None
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	X-Symmetry	0	3	95	Free	Free	Free	Free	Free	Free
2P	XY-Symmetry	3	3	89.67	Free	Free	Free	Free	Free	Free
3P	XY-Symmetry	3	3	85	Free	Free	Free	Free	Free	Free
4P	XY-Symmetry	3	3	80.33	Free	Free	Free	Free	Free	Free
5P	XY-Symmetry	3	3	75.66	Free	Free	Free	Free	Free	Free
6P	XY-Symmetry	3	3	71	Free	Free	Free	Free	Free	Free
7P	XY-Symmetry	3	3	66.33	Free	Free	Free	Free	Free	Free
8P	XY-Symmetry	3	3	61.66	Free	Free	Free	Free	Free	Free
9P	XY-Symmetry	3	3	57	Free	Free	Free	Free	Free	Free
10P	XY-Symmetry	8.96	8.96	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
18P	X-Symmetry	0	14.5	95	Free	Free	Free	Free	Free	Free
19P	X-Symmetry	0	12	85	Free	Free	Free	Free	Free	Free
20P	X-Symmetry	0	14.5	71	Free	Free	Free	Free	Free	Free
21P	X-Symmetry	0	12	57	Free	Free	Free	Free	Free	Free
27P	None	1.5	0	109.5	Free	Free	Free	Free	Free	Free
28P	None	1.5	0	89.67	Free	Free	Free	Free	Free	Free
29P	None	1.5	0	85	Free	Free	Free	Free	Free	Free
30P	None	1.5	0	71	Free	Free	Free	Free	Free	Free
31P	None	1.5	0	57	Free	Free	Free	Free	Free	Free
32P	None	1.5	0	15	Free	Free	Free	Free	Free	Free
33P	None	1.5	0	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
1X	X-Gen	0	-3	95	Free	Free	Free	Free	Free	Free

2X	X-GenXY	3	-3	89.67	Free	Free	Free	Free	Free	Free
2XY	XY-GenXY	-3	-3	89.67	Free	Free	Free	Free	Free	Free
2Y	Y-GenXY	-3	3	89.67	Free	Free	Free	Free	Free	Free
3X	X-GenXY	3	-3	85	Free	Free	Free	Free	Free	Free
3XY	XY-GenXY	-3	-3	85	Free	Free	Free	Free	Free	Free
3Y	Y-GenXY	-3	3	85	Free	Free	Free	Free	Free	Free
4X	X-GenXY	3	-3	80.33	Free	Free	Free	Free	Free	Free
4XY	XY-GenXY	-3	-3	80.33	Free	Free	Free	Free	Free	Free
4Y	Y-GenXY	-3	3	80.33	Free	Free	Free	Free	Free	Free
5X	X-GenXY	3	-3	75.66	Free	Free	Free	Free	Free	Free
5XY	XY-GenXY	-3	-3	75.66	Free	Free	Free	Free	Free	Free
5Y	Y-GenXY	-3	3	75.66	Free	Free	Free	Free	Free	Free
6X	X-GenXY	3	-3	71	Free	Free	Free	Free	Free	Free
6XY	XY-GenXY	-3	-3	71	Free	Free	Free	Free	Free	Free
6Y	Y-GenXY	-3	3	71	Free	Free	Free	Free	Free	Free
7X	X-GenXY	3	-3	66.33	Free	Free	Free	Free	Free	Free
7XY	XY-GenXY	-3	-3	66.33	Free	Free	Free	Free	Free	Free
7Y	Y-GenXY	-3	3	66.33	Free	Free	Free	Free	Free	Free
8X	X-GenXY	3	-3	61.66	Free	Free	Free	Free	Free	Free
8XY	XY-GenXY	-3	-3	61.66	Free	Free	Free	Free	Free	Free
8Y	Y-GenXY	-3	3	61.66	Free	Free	Free	Free	Free	Free
9X	X-GenXY	3	-3	57	Free	Free	Free	Free	Free	Free
9XY	XY-GenXY	-3	-3	57	Free	Free	Free	Free	Free	Free
9Y	Y-GenXY	-3	3	57	Free	Free	Free	Free	Free	Free
10X	X-GenXY	8.96	-8.96	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
10XY	XY-GenXY	-8.96	-8.96	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
10Y	Y-GenXY	-8.96	8.96	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
18X	X-Gen	0	-14.5	95	Free	Free	Free	Free	Free	Free
19X	X-Gen	0	-12	85	Free	Free	Free	Free	Free	Free
20X	X-Gen	0	-14.5	71	Free	Free	Free	Free	Free	Free
21X	X-Gen	0	-12	57	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.
11S	XY-Symmetry	9P	10P	0	50.5	Free	Free	Free	Free	Free	Free
12S	XY-Symmetry	9P	10P	0	44	Free	Free	Free	Free	Free	Free
13S	XY-Symmetry	9P	10P	0	37.5	Free	Free	Free	Free	Free	Free
14S	XY-Symmetry	9P	10P	0	26.25	Free	Free	Free	Free	Free	Free
15S	XY-Symmetry	9P	10P	0	15	Free	Free	Free	Free	Free	Free
16S	Y-Symmetry	15X	15S	0.5	0	Free	Free	Free	Free	Free	Free
17S	X-Symmetry	15X	15XY	0.5	0	Free	Free	Free	Free	Free	Free
22S	None	2X	2Y	0.5	0	Free	Free	Free	Free	Free	Free
23S	None	3X	3Y	0.5	0	Free	Free	Free	Free	Free	Free
24S	None	6X	6Y	0.5	0	Free	Free	Free	Free	Free	Free
25S	None	9X	9Y	0.5	0	Free	Free	Free	Free	Free	Free
17SF0.50S	XY-Symmetry	17S	16S	0.5	0	Free	Free	Free	Free	Free	Free
1PF94S	X-Symmetry	1P	2P	0	94	Free	Free	Free	Free	Free	Free
35S	None	1PF94S	1PF94X	0.5	0	Free	Free	Free	Free	Free	Free
11X	X-GenXY	9P	10P	0	50.5	Free	Free	Free	Free	Free	Free
11XY	XY-GenXY	9P	10P	0	50.5	Free	Free	Free	Free	Free	Free
11Y	Y-GenXY	9P	10P	0	50.5	Free	Free	Free	Free	Free	Free
12X	X-GenXY	9P	10P	0	44	Free	Free	Free	Free	Free	Free
12XY	XY-GenXY	9P	10P	0	44	Free	Free	Free	Free	Free	Free
12Y	Y-GenXY	9P	10P	0	44	Free	Free	Free	Free	Free	Free
13X	X-GenXY	9P	10P	0	37.5	Free	Free	Free	Free	Free	Free

13XY	XY-GenXY	9P	10P	0	37.5	Free	Free	Free	Free	Free	Free
13Y	Y-GenXY	9P	10P	0	37.5	Free	Free	Free	Free	Free	Free
14X	X-GenXY	9P	10P	0	26.25	Free	Free	Free	Free	Free	Free
14XY	XY-GenXY	9P	10P	0	26.25	Free	Free	Free	Free	Free	Free
14Y	Y-GenXY	9P	10P	0	26.25	Free	Free	Free	Free	Free	Free
15X	X-GenXY	9P	10P	0	15	Free	Free	Free	Free	Free	Free
15XY	XY-GenXY	9P	10P	0	15	Free	Free	Free	Free	Free	Free
15Y	Y-GenXY	9P	10P	0	15	Free	Free	Free	Free	Free	Free
16Y	Y-Gen	15X	15S	0.5	0	Free	Free	Free	Free	Free	Free
17X	X-Gen	15X	15XY	0.5	0	Free	Free	Free	Free	Free	Free
17SF0.50X	X-GenXY	17S	16S	0.5	0	Free	Free	Free	Free	Free	Free
17SF0.50XY	XY-GenXY	17S	16S	0.5	0	Free	Free	Free	Free	Free	Free
17SF0.50Y	Y-GenXY	17S	16S	0.5	0	Free	Free	Free	Free	Free	Free
1PF94X	X-Gen	1P	2P	0	94	Free	Free	Free	Free	Free	Free

The model contains 53 primary and 35 secondary joints for a total of 88 joints.

Steel Material Properties:

Steel Material Label	Modulus of Elasticity (ksi)	Yield Stress Fy (ksi)	Ultimate Stress Fu (ksi)	Member All. Stress Hyp. 1 (ksi)	Member All. Stress Hyp. 2 (ksi)	Member Rupture Hyp. 1 (ksi)	Member Rupture Hyp. 2 (ksi)	Member Bearing Hyp. 1 (ksi)	Member Bearing Hyp. 2 (ksi)
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
A500-50	2.9e+004	50	62	0	0	0	0	0	0

Bolt Properties:

Bolt Label	Bolt Diameter (in)	Hole Diameter (in)	Ultimate Shear Capacity (kips)	Default End Distance (in)	Default Bolt Spacing (in)	Shear Capacity Hyp. 1 (kips)	Shear Capacity Hyp. 2 (kips)
5/8 A394	0.625	0.75	9.1	1.125	1.5	0	0
5/8 A325	0.625	0.6875	16.8	1.25	1.5	0	0

Number Bolts Used By Type:

Bolt Type	Number Bolts
5/8 A394	874
5/8 A325	17

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	6X6X0.375	6	6	0.375	14.9	4.36	13.67	1.88	1.88	1.19	1	6	3	0	1.0000	0
SAE	5X5X0.4375	5	5	0.4375	14.3	4.18	9.29	1.55	1.55	0.986	1	5	2.5	0	1.0000	0
SAE	4X4X0.4375	4	4	0.4375	11.3	3.31	7.29	1.23	1.23	0.785	1	4	2	0	1.0000	0
SAE	4X4X0.25	4	4	0.25	6.6	1.94	13.5	1.25	1.25	0.795	1	4	2	0	1.0000	0
SAE	3X3X0.25	3	3	0.25	4.9	1.44	9.75	0.93	0.93	0.592	1	3	1.5	0	1.0000	0
SAE	3X3X0.1875	3	3	0.1875	3.71	1.09	13.33	0.939	0.939	0.596	1	3	1.5	0	1.0000	0

SAE	2.5X2.5X0.25	2.5	2.5	0.25	4.1	1.19	7.75	0.769	0.769	0.491	1	2.5	1.25	0	1.0000	0
SAE	2.5X2.5X0.1875	2.5	2.5	0.1875	3.07	0.902	10.67	0.778	0.778	0.495	1	2.5	1.25	0	1.0000	0
SAE	2X2X0.1875	2	2	0.1875	2.44	0.71	8	0.617	0.617	0.394	1	2	1	0	1.0000	0
SAE	1.75X1.75X0.1875	1.75	1.75	0.1875	2.12	0.62	6	0.537	0.537	0.343	1	1.75	0.875	0	1.0000	0
SAU	5X3.5X0.4375	5	3.5	0.4375	12	3.53	9.29	1.59	1.01	0.758	1	5	1.75	0	1.0000	0
SAU	3.5X3X0.25	3.5	3	0.25	5.4	1.56	11.25	1.11	0.914	0.631	1	3.5	1.5	0	1.0000	0
SAU	3.5X2.5X0.25	3.5	2.5	0.25	4.9	1.44	11.25	1.12	0.735	0.544	1	3.5	1.25	0	1.0000	0
SAU	3X2.5X0.25	3	2.5	0.25	4.5	1.31	9.5	0.945	0.753	0.528	1	3	1.25	0	1.0000	0
SAU	3X2.5X0.1875	3	2.5	0.1875	3.39	1	13	0.954	0.761	0.533	1	3	1.25	0	1.0000	0
SAU	3X2X0.1875	3	2	0.1875	3.07	0.9	13.33	0.966	0.583	0.439	1	3	1	0	1.0000	0
SAU	1.75X1.25X0.1875	1.75	1.25	0.1875	1.8	0.527	7.33	0.551	0.359	0.269	1	1.75	0.625	0	1.0000	0
Pwmnt	Pipe 12" Std.	12.75	12	0	49.6	13.6	1	4.39	4.39	4.39	1	12.75	0	0	0.0000	0
WT	WT4x12	6.5	3.97	0.245	12	3.54	16.32	0.999	1.61	0.999	2	4	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	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	A 36	Beam	Leg	None	0.000
Leg2	L4x4x1/4	SAE	4X4X0.25	A 36	Beam	Leg	None	0.000
Leg3	L4x4x7/16	SAE	4X4X0.4375	A 36	Beam	Leg	None	0.000
Leg4	L5x5x7/16	SAE	5X5X0.4375	A572-50	Beam	Leg	None	0.000
Leg5	L6x6x3/8	SAE	6X6X0.375	A572-50	Beam	Leg	None	0.000
Leg6	L6x6x3/8	SAE	6X6X0.375	A572-50	Beam	Leg	None	0.000
Diag1	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	A 36	Truss	Crossing Diagonal	None	0.000
Diag2	L3x3x3/16	SAE	3X3X0.1875	A 36	Truss	Crossing Diagonal	None	0.000
Diag3	L3x2.5x1/4	SAU	3X2.5X0.25	A 36	Truss	Crossing Diagonal	None	0.000
Diag4	L3x3x1/4	SAE	3X3X0.25	A 36	Truss	Crossing Diagonal	None	0.000
Diag5	L3x3x3/16	SAE	3X3X0.1875	A 36	Truss	Crossing Diagonal	None	0.000
Diag6	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	A 36	Truss	Crossing Diagonal	None	0.000
Diag7	L3x2.5x1/4	SAU	3X2.5X0.25	A 36	T-Only	Other	None	0.000
Horz1	L2x2x3/16	SAE	2X2X0.1875	A 36	Truss	Other	None	0.000
Horz2	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	A 36	Truss	Other	None	0.000
Horz3	L3x2x3/16	SAU	3X2X0.1875	A 36	Truss	Other	None	0.000
Horz4	L1.75x1.25x3/16	SAU	1.75X1.25X0.1875	A 36	Truss	Other	None	0.000
Horz5	L3x2.5x3/16	SAU	3X2.5X0.1875	A 36	Truss	Other	None	0.000
Horz6	L3.5x3x1/4	SAU	3.5X3X0.25	A 36	Truss	Other	None	0.000
Horz7	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	A 36	Truss	Other	None	0.000
Inner1	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	A 36	Beam	Other	None	0.000
Inner2	L2x2x3/16	SAE	2X2X0.1875	A 36	Beam	Other	None	0.000
ShieldAr	WT4x12	WT	WT4x12	A 36	Beam	Other	None	0.000
ShArmBr	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	A 36	Truss	Other	None	0.000
TopCrArm	L5x3.5x7/16	SAU	5X3.5X0.4375	A572-50	Beam	Other	None	0.000
TopArmBr	L1.75X1.75x3/16	SAE	1.75X1.75X0.1875	A 36	Truss	Other	None	0.000
MidCrArm	L5x3.5x7/16	SAU	5X3.5X0.4375	A572-50	Beam	Other	None	0.000
MidArmBr	L2x2x3/16	SAE	2X2X0.1875	A 36	Truss	Other	None	0.000
BotCrArm	L5x3.5x7/16	SAU	5X3.5X0.4375	A572-50	Beam	Other	None	0.000
BotArmBr	L1.75X1.75x3/16	SAE	1.75X1.75X0.1875	A 36	Truss	Other	None	0.000
Pwmnt	12" Std. Pipe	Pwmnt	Pipe 12" Std.	A500-50	Beam	Other	None	0.000
PMBR1	L2x2x3/16	SAE	2X2X0.1875	A 36	Beam	Other	None	12.000
PMBR2	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	A 36	Beam	Other	None	12.000
PMBR3	L3x3x3/16	SAE	3X3X0.1875	A 36	Beam	Other	None	12.000
Diag8	L2x2x3/16	SAE	2X2X0.1875	A 36	Truss	Other	None	0.000
Diag9	L2x2x3/16	SAE	2X2X0.1875	A 36	Beam	Other	None	0.000
TopCArmA	L5x3.5x7/16	SAU	5X3.5X0.4375	A 36	Beam	Other	None	0.000
MidCArmA	L5x3.5x7/16	SAU	5X3.5X0.4375	A 36	Beam	Other	None	0.000

BotCArmA	L5x3.5x7/16	SAU	5X3.5X0.4375	A 36	Beam	Other	None	0.000
Inner3	L1.75x1.25x3/16	SAU	1.75X1.25X0.1875	A 36	Beam	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	2.5X2.5X0.1875	A 36	103.72	86.44	318.43
SAE	4X4X0.25	A 36	74.68	99.57	492.89
SAE	4X4X0.4375	A 36	56.00	74.67	632.80
SAE	5X5X0.4375	A572-50	78.85	131.41	1127.53
SAE	6X6X0.375	A572-50	151.63	303.26	2259.30
SAE	1.75X1.75X0.1875	A 36	249.82	145.73	529.63
SAE	3X3X0.1875	A 36	378.24	378.24	1403.27
SAU	3X2.5X0.25	A 36	365.24	334.81	1643.60
SAE	3X3X0.25	A 36	135.54	135.54	664.13
SAE	2.5X2.5X0.25	A 36	127.65	106.38	523.37
SAE	2X2X0.1875	A 36	136.08	90.72	332.04
SAU	3.5X2.5X0.25	A 36	88.10	88.10	431.70
SAU	3X2X0.1875	A 36	12.00	10.00	36.84
SAU	1.75X1.25X0.1875	A 36	44.91	22.45	80.83
SAU	3X2.5X0.1875	A 36	40.31	36.95	136.66
SAU	3.5X3X0.25	A 36	49.72	53.87	268.50
WT	WT4x12	A 36	29.00	50.61	348.00
SAU	5X3.5X0.4375	A572-50	123.43	174.87	1481.21
SAU	5X3.5X0.4375	A 36	36.00	51.00	432.00
Pwmnt	Pipe 12" Std.	A500-50	109.50	451.69	5431.20

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	9P	1.000	3.200	3.200	1.000	1.000	0.000	0.000	1.000	1.000	0.000	0.000	None
2	10P	1.100	3.300	3.300	1.000	1.000	0.000	0.000	1.000	1.000	0.000	0.000	None

Angle Member Connectivity:

Member Label	Group Label	Section Label	Tension Rest. Path	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 Spacing (in)	Bolt Path (in)	End Path Coef.	Length (in)	Length (in)
g1P	Leg1		X-Symmetry	1P	1PF94S	1	4	1	1	1 5/8	A394	0	2	1		0	0	0	0	0	0	0	0

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      g1X     Leg1               X-Gen         1X     1PF94X    1     4     1     1     1 5/8 A394     0      2       1                 0      0
0       0      0       0     0
   Fg190P     Leg1              X-Symmetry     1PF94S         2P    1     4     1     1     1 5/8 A394     4      2       1       Both      1      0
0.9375      2      0       0     0
   Fg190X     Leg1               X-Gen         1PF94X         2X    1     4     1     1     1 5/8 A394     4      2       1       Both      1      0
0.9375      2      0       0     0
      g2P     Leg2              XY-Symmetry         2P         3P    1     4     1     1     1 5/8 A394     0      2       1                 0      0
0       0      0       0     0
      g2X     Leg2                 X-GenXY          2X         3X    1     4     1     1     1 5/8 A394     0      2       1                 0      0
0       0      0       0     0
     g2XY     Leg2                 XY-GenXY        2XY        3XY    1     4     1     1     1 5/8 A394     0      2       1                 0      0
0       0      0       0     0
      g2Y     Leg2                 Y-GenXY          2Y         3Y    1     4     1     1     1 5/8 A394     0      2       1                 0      0
0       0      0       0     0
      g3P     Leg2              XY-Symmetry         3P         4P    1     4     1     1     1 5/8 A394     0      2       1                 0      0
0       0      0       0     0
      g3X     Leg2                 X-GenXY          3X         4X    1     4     1     1     1 5/8 A394     0      2       1                 0      0
0       0      0       0     0
     g3XY     Leg2                 XY-GenXY        3XY        4XY    1     4     1     1     1 5/8 A394     0      2       1                 0      0
0       0      0       0     0
      g3Y     Leg2                 Y-GenXY          3Y         4Y    1     4     1     1     1 5/8 A394     0      2       1                 0      0
0       0      0       0     0
      g4P     Leg2              XY-Symmetry         4P         5P    1     4     1     1     1 5/8 A394     0      2       1                 0      0
0       0      0       0     0
      g4X     Leg2                 X-GenXY          4X         5X    1     4     1     1     1 5/8 A394     0      2       1                 0      0
0       0      0       0     0
     g4XY     Leg2                 XY-GenXY        4XY        5XY    1     4     1     1     1 5/8 A394     0      2       1                 0      0
0       0      0       0     0
      g4Y     Leg2                 Y-GenXY          4Y         5Y    1     4     1     1     1 5/8 A394     0      2       1                 0      0
0       0      0       0     0
      g5P     Leg2              XY-Symmetry         5P         6P    1     4     1     1     1 5/8 A394     8      2       1       Both      2      0
1.25        2      0       0     0
      g5X     Leg2                 X-GenXY          5X         6X    1     4     1     1     1 5/8 A394     8      2       1       Both      2      0
1.25        2      0       0     0
     g5XY     Leg2                 XY-GenXY        5XY        6XY    1     4     1     1     1 5/8 A394     8      2       1       Both      2      0
1.25        2      0       0     0
      g5Y     Leg2                 Y-GenXY          5Y         6Y    1     4     1     1     1 5/8 A394     8      2       1       Both      2      0
1.25        2      0       0     0
      g6P     Leg3              XY-Symmetry         6P         7P    1     4     1     1     1 5/8 A394     0      2       1                 0      0
0       0      0       0     0
      g6X     Leg3                 X-GenXY          6X         7X    1     4     1     1     1 5/8 A394     0      2       1                 0      0
0       0      0       0     0
     g6XY     Leg3                 XY-GenXY        6XY        7XY    1     4     1     1     1 5/8 A394     0      2       1                 0      0
0       0      0       0     0
      g6Y     Leg3                 Y-GenXY          6Y         7Y    1     4     1     1     1 5/8 A394     0      2       1                 0      0
0       0      0       0     0
      g7P     Leg3              XY-Symmetry         7P         8P    1     4     1     1     1 5/8 A394     0      2       1                 0      0
0       0      0       0     0
      g7X     Leg3                 X-GenXY          7X         8X    1     4     1     1     1 5/8 A394     0      2       1                 0      0
0       0      0       0     0
     g7XY     Leg3                 XY-GenXY        7XY        8XY    1     4     1     1     1 5/8 A394     0      2       1                 0      0
0       0      0       0     0
      g7Y     Leg3                 Y-GenXY          7Y         8Y    1     4     1     1     1 5/8 A394     0      2       1                 0      0
0       0      0       0     0
      g8P     Leg3              XY-Symmetry         8P         9P    1     4     1     1     1 5/8 A394    14      2       1       Both      2      0
1.25        2      0       0     0
      g8X     Leg3                 X-GenXY          8X         9X    1     4     1     1     1 5/8 A394    14      2       1       Both      2      0
1.25        2      0       0     0
     g8XY     Leg3                 XY-GenXY        8XY        9XY    1     4     1     1     1 5/8 A394    14      2       1       Both      2      0
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1.25       2      0       0     0
      g8Y     Leg3              Y-GenXY         8Y         9Y    1     4     1     1     1 5/8 A394    14      2       1       Both      2      0
1.25       2      0       0     0
      g9P     Leg4           XY-Symmetry        9P        11S    1     4     1     1     1 5/8 A394     0   3.07       1                 0      0
0        0      0       0     0
      g9X     Leg4              X-GenXY         9X        11X    1     4     1     1     1 5/8 A394     0   3.07       1                 0      0
0        0      0       0     0
     g9XY     Leg4             XY-GenXY        9XY       11XY    1     4     1     1     1 5/8 A394     0   3.07       1                 0      0
0        0      0       0     0
      g9Y     Leg4              Y-GenXY         9Y        11Y    1     4     1     1     1 5/8 A394     0   3.07       1                 0      0
0        0      0       0     0
     g10P     Leg4           XY-Symmetry       11S        12S    1     4     1     1     1 5/8 A394     0   3.07       1                 0      0
0        0      0       0     0
     g10X     Leg4              X-GenXY        11X        12X    1     4     1     1     1 5/8 A394     0   3.07       1                 0      0
0        0      0       0     0
    g10XY     Leg4             XY-GenXY       11XY       12XY    1     4     1     1     1 5/8 A394     0   3.07       1                 0      0
0        0      0       0     0
     g10Y     Leg4              Y-GenXY        11Y        12Y    1     4     1     1     1 5/8 A394     0   3.07       1                 0      0
0        0      0       0     0
     g11P     Leg4           XY-Symmetry       12S        13S    1     4     1     1     1 5/8 A394    16   3.07       1       Both    1.5   3.25
1.25     3.5  9.125   2.125     0
     g11X     Leg4              X-GenXY        12X        13X    1     4     1     1     1 5/8 A394    16   3.07       1       Both    1.5   3.25
1.25     3.5  9.125   2.125     0
    g11XY     Leg4             XY-GenXY       12XY       13XY    1     4     1     1     1 5/8 A394    16   3.07       1       Both    1.5   3.25
1.25     3.5  9.125   2.125     0
     g11Y     Leg4              Y-GenXY        12Y        13Y    1     4     1     1     1 5/8 A394    16   3.07       1       Both    1.5   3.25
1.25     3.5  9.125   2.125     0
     g12P     Leg5           XY-Symmetry       13S        14S    1     4   0.5   0.5   0.5 5/8 A394     0      4       1                 0      0
0        0      0       0     0
     g12X     Leg5              X-GenXY        13X        14X    1     4   0.5   0.5   0.5 5/8 A394     0      4       1                 0      0
0        0      0       0     0
    g12XY     Leg5             XY-GenXY       13XY       14XY    1     4   0.5   0.5   0.5 5/8 A394     0      4       1                 0      0
0        0      0       0     0
     g12Y     Leg5              Y-GenXY        13Y        14Y    1     4   0.5   0.5   0.5 5/8 A394     0      4       1                 0      0
0        0      0       0     0
     g13P     Leg5           XY-Symmetry       14S        15S    1     4   0.5   0.5   0.5 5/8 A394    20   3.45       1       Both 1.4375 3.9375
1.25       3  9.875  2.8125     0
     g13X     Leg5              X-GenXY        14X        15X    1     4   0.5   0.5   0.5 5/8 A394    20   3.45       1       Both 1.4375 3.9375
1.25       3  9.875  2.8125     0
    g13XY     Leg5             XY-GenXY       14XY       15XY    1     4   0.5   0.5   0.5 5/8 A394    20   3.45       1       Both 1.4375 3.9375
1.25       3  9.875  2.8125     0
     g13Y     Leg5              Y-GenXY        14Y        15Y    1     4   0.5   0.5   0.5 5/8 A394    20   3.45       1       Both 1.4375 3.9375
1.25       3  9.875  2.8125     0
     g14P     Leg6           XY-Symmetry       15S        10P    1     4  0.33  0.33  0.33 5/8 A394    20   3.45       1       Both      1    3.5
1.25       3  9.875   2.375     0
     g14X     Leg6              X-GenXY        15X        10X    1     4  0.33  0.33  0.33 5/8 A394    20   3.45       1       Both      1    3.5
1.25       3  9.875   2.375     0
    g14XY     Leg6             XY-GenXY       15XY       10XY    1     4  0.33  0.33  0.33 5/8 A394    20   3.45       1       Both      1    3.5
1.25       3  9.875   2.375     0
     g14Y     Leg6              Y-GenXY        15Y        10Y    1     4  0.33  0.33  0.33 5/8 A394    20   3.45       1       Both      1    3.5
1.25       3  9.875   2.375     0
     g15P    Diag1           X-Symmetry        1X         2Y    2     5  0.75   0.5   0.5 5/8 A394     2      1       1 Short only  0.875      0
1        2      0       0     0
     g15X    Diag1              X-Gen          1P        2XY    2     5  0.75   0.5   0.5 5/8 A394     2      1       1 Short only  0.875      0
1        2      0       0     0
     g16P    Diag1           XY-Symmetry       2X         3P    2     5  0.75   0.5   0.5 5/8 A394     2      1       1 Short only  0.875      0
1      1.5      0       0     0
     g16X    Diag1              X-GenXY        2P         3X    2     5  0.75   0.5   0.5 5/8 A394     2      1       1 Short only  0.875      0
1      1.5      0       0     0
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g16XY	Diag1		XY-GenXY	2Y	3XY	2	5	0.75	0.5	0.5	5/8 A394	2	1	1	Short only	0.875	0	1	1.5
0	0	0																	
g16Y	Diag1		Y-GenXY	2XY	3Y	2	5	0.75	0.5	0.5	5/8 A394	2	1	1	Short only	0.875	0	1	1.5
0	0	0																	
g17P	Diag1		XY-Symmetry	2P	3Y	2	5	0.75	0.5	0.5	5/8 A394	2	1	1	Short only	0.875	0	1	1.5
0	0	0																	
g17X	Diag1		X-GenXY	2X	3XY	2	5	0.75	0.5	0.5	5/8 A394	2	1	1	Short only	0.875	0	1	1.5
0	0	0																	
g17XY	Diag1		XY-GenXY	2XY	3X	2	5	0.75	0.5	0.5	5/8 A394	2	1	1	Short only	0.875	0	1	1.5
0	0	0																	
g17Y	Diag1		Y-GenXY	2Y	3P	2	5	0.75	0.5	0.5	5/8 A394	2	1	1	Short only	0.875	0	1	1.5
0	0	0																	
g18P	Diag2		XY-Symmetry	4X	3P	2	5	0.75	0.5	0.5	5/8 A394	3	1	1	Short only	1.5	0	5	1.5
0	0	0																	
g18X	Diag2		X-GenXY	4P	3X	2	5	0.75	0.5	0.5	5/8 A394	3	1	1	Short only	1.5	0	5	1.5
0	0	0																	
g18XY	Diag2		XY-GenXY	4Y	3XY	2	5	0.75	0.5	0.5	5/8 A394	3	1	1	Short only	1.5	0	5	1.5
0	0	0																	
g18Y	Diag2		Y-GenXY	4XY	3Y	2	5	0.75	0.5	0.5	5/8 A394	3	1	1	Short only	1.5	0	5	1.5
0	0	0																	
g19P	Diag2		XY-Symmetry	4P	3Y	2	5	0.75	0.5	0.5	5/8 A394	3	1	1	Short only	1.5	0	5	1.5
0	0	0																	
g19X	Diag2		X-GenXY	4X	3XY	2	5	0.75	0.5	0.5	5/8 A394	3	1	1	Short only	1.5	0	5	1.5
0	0	0																	
g19XY	Diag2		XY-GenXY	4XY	3X	2	5	0.75	0.5	0.5	5/8 A394	3	1	1	Short only	1.5	0	5	1.5
0	0	0																	
g19Y	Diag2		Y-GenXY	4Y	3P	2	5	0.75	0.5	0.5	5/8 A394	3	1	1	Short only	1.5	0	5	1.5
0	0	0																	
g20P	Diag2		XY-Symmetry	5X	4P	2	5	0.75	0.5	0.5	5/8 A394	3	1	1	Short only	1.5	0	5	1.5
0	0	0																	
g20X	Diag2		X-GenXY	5P	4X	2	5	0.75	0.5	0.5	5/8 A394	3	1	1	Short only	1.5	0	5	1.5
0	0	0																	
g20XY	Diag2		XY-GenXY	5Y	4XY	2	5	0.75	0.5	0.5	5/8 A394	3	1	1	Short only	1.5	0	5	1.5
0	0	0																	
g20Y	Diag2		Y-GenXY	5XY	4Y	2	5	0.75	0.5	0.5	5/8 A394	3	1	1	Short only	1.5	0	5	1.5
0	0	0																	
g21P	Diag2		XY-Symmetry	5P	4Y	2	5	0.75	0.5	0.5	5/8 A394	3	1	1	Short only	1.5	0	5	1.5
0	0	0																	
g21X	Diag2		X-GenXY	5X	4XY	2	5	0.75	0.5	0.5	5/8 A394	3	1	1	Short only	1.5	0	5	1.5
0	0	0																	
g21XY	Diag2		XY-GenXY	5XY	4X	2	5	0.75	0.5	0.5	5/8 A394	3	1	1	Short only	1.5	0	5	1.5
0	0	0																	
g21Y	Diag2		Y-GenXY	5Y	4P	2	5	0.75	0.5	0.5	5/8 A394	3	1	1	Short only	1.5	0	5	1.5
0	0	0																	
g22P	Diag2		XY-Symmetry	5P	6X	2	5	0.75	0.5	0.5	5/8 A394	4	1	1	Short only	1.5	0	1	1.5
0	0	0																	
g22X	Diag2		X-GenXY	5X	6P	2	5	0.75	0.5	0.5	5/8 A394	4	1	1	Short only	1.5	0	1	1.5
0	0	0																	
g22XY	Diag2		XY-GenXY	5XY	6Y	2	5	0.75	0.5	0.5	5/8 A394	4	1	1	Short only	1.5	0	1	1.5
0	0	0																	
g22Y	Diag2		Y-GenXY	5Y	6XY	2	5	0.75	0.5	0.5	5/8 A394	4	1	1	Short only	1.5	0	1	1.5
0	0	0																	
g23P	Diag2		XY-Symmetry	5P	6Y	2	5	0.75	0.5	0.5	5/8 A394	4	1	1	Short only	1.5	0	1	1.5
0	0	0																	
g23X	Diag2		X-GenXY	5X	6XY	2	5	0.75	0.5	0.5	5/8 A394	4	1	1	Short only	1.5	0	1	1.5
0	0	0																	
g23XY	Diag2		XY-GenXY	5XY	6X	2	5	0.75	0.5	0.5	5/8 A394	4	1	1	Short only	1.5	0	1	1.5
0	0	0																	
g23Y	Diag2		Y-GenXY	5Y	6P	2	5	0.75	0.5	0.5	5/8 A394	4	1	1	Short only	1.5	0	1	1.5

1	1.5	0	0	0															
	g24P	Diag3		XY-Symmetry	6P	7X	2	5	0.75	0.5	0.5	5/8	A394	3	1	1	Short only	1.25	0
5	1.5	0	0	0															
	g24X	Diag3		X-GenXY	6X	7P	2	5	0.75	0.5	0.5	5/8	A394	3	1	1	Short only	1.25	0
5	1.5	0	0	0															
	g24XY	Diag3		XY-GenXY	6XY	7Y	2	5	0.75	0.5	0.5	5/8	A394	3	1	1	Short only	1.25	0
5	1.5	0	0	0															
	g24Y	Diag3		Y-GenXY	6Y	7XY	2	5	0.75	0.5	0.5	5/8	A394	3	1	1	Short only	1.25	0
5	1.5	0	0	0															
	g25P	Diag3		XY-Symmetry	6P	7Y	2	5	0.75	0.5	0.5	5/8	A394	3	1	1	Short only	1.25	0
5	1.5	0	0	0															
	g25X	Diag3		X-GenXY	6X	7XY	2	5	0.75	0.5	0.5	5/8	A394	3	1	1	Short only	1.25	0
5	1.5	0	0	0															
	g25XY	Diag3		XY-GenXY	6XY	7X	2	5	0.75	0.5	0.5	5/8	A394	3	1	1	Short only	1.25	0
5	1.5	0	0	0															
	g25Y	Diag3		Y-GenXY	6Y	7P	2	5	0.75	0.5	0.5	5/8	A394	3	1	1	Short only	1.25	0
5	1.5	0	0	0															
	g26P	Diag3		XY-Symmetry	7P	8X	2	5	0.75	0.5	0.5	5/8	A394	3	1	1	Short only	1.25	0
5	1.5	0	0	0															
	g26X	Diag3		X-GenXY	7X	8P	2	5	0.75	0.5	0.5	5/8	A394	3	1	1	Short only	1.25	0
5	1.5	0	0	0															
	g26XY	Diag3		XY-GenXY	7XY	8Y	2	5	0.75	0.5	0.5	5/8	A394	3	1	1	Short only	1.25	0
5	1.5	0	0	0															
	g26Y	Diag3		Y-GenXY	7Y	8XY	2	5	0.75	0.5	0.5	5/8	A394	3	1	1	Short only	1.25	0
5	1.5	0	0	0															
	g27P	Diag3		XY-Symmetry	7P	8Y	2	5	0.75	0.5	0.5	5/8	A394	3	1	1	Short only	1.25	0
5	1.5	0	0	0															
	g27X	Diag3		X-GenXY	7X	8XY	2	5	0.75	0.5	0.5	5/8	A394	3	1	1	Short only	1.25	0
5	1.5	0	0	0															
	g27XY	Diag3		XY-GenXY	7XY	8X	2	5	0.75	0.5	0.5	5/8	A394	3	1	1	Short only	1.25	0
5	1.5	0	0	0															
	g27Y	Diag3		Y-GenXY	7Y	8P	2	5	0.75	0.5	0.5	5/8	A394	3	1	1	Short only	1.25	0
5	1.5	0	0	0															
	g28P	Diag4		XY-Symmetry	8P	9X	2	5	0.75	0.5	0.5	5/8	A394	4	1	1	Short only	1.5	0
1	1.5	0	0	0															
	g28X	Diag4		X-GenXY	8X	9P	2	5	0.75	0.5	0.5	5/8	A394	4	1	1	Short only	1.5	0
1	1.5	0	0	0															
	g28XY	Diag4		XY-GenXY	8XY	9Y	2	5	0.75	0.5	0.5	5/8	A394	4	1	1	Short only	1.5	0
1	1.5	0	0	0															
	g28Y	Diag4		Y-GenXY	8Y	9XY	2	5	0.75	0.5	0.5	5/8	A394	4	1	1	Short only	1.5	0
1	1.5	0	0	0															
	g29P	Diag4		XY-Symmetry	8P	9Y	2	5	0.75	0.5	0.5	5/8	A394	4	1	1	Short only	1.5	0
1	1.5	0	0	0															
	g29X	Diag4		X-GenXY	8X	9XY	2	5	0.75	0.5	0.5	5/8	A394	4	1	1	Short only	1.5	0
1	1.5	0	0	0															
	g29XY	Diag4		XY-GenXY	8XY	9X	2	5	0.75	0.5	0.5	5/8	A394	4	1	1	Short only	1.5	0
1	1.5	0	0	0															
	g29Y	Diag4		Y-GenXY	8Y	9P	2	5	0.75	0.5	0.5	5/8	A394	4	1	1	Short only	1.5	0
1	1.5	0	0	0															
	g30P	Diag4		XY-Symmetry	9P	11X	2	5	0.768	0.536	0.536	5/8	A394	3	1	1	Short only	1.5	0
1	2.6875	0	0	0															
	g30X	Diag4		X-GenXY	9X	11S	2	5	0.768	0.536	0.536	5/8	A394	3	1	1	Short only	1.5	0
1	2.6875	0	0	0															
	g30XY	Diag4		XY-GenXY	9XY	11Y	2	5	0.768	0.536	0.536	5/8	A394	3	1	1	Short only	1.5	0
1	2.6875	0	0	0															
	g30Y	Diag4		Y-GenXY	9Y	11XY	2	5	0.768	0.536	0.536	5/8	A394	3	1	1	Short only	1.5	0
1	2.6875	0	0	0															
	g31P	Diag4		XY-Symmetry	9P	11Y	2	5	0.768	0.536	0.536	5/8	A394	3	1	1	Short only	1.5	0
1	2.6875	0	0	0															

g31X	Diag4		X-GenXY	9X	11XY	2	5	0.768	0.536	0.536	5/8	A394	3	1	1	Short only	1.5	0			
1 2.6875	0	0	0																		
g31XY	Diag4		XY-GenXY	9XY	11X	2	5	0.768	0.536	0.536	5/8	A394	3	1	1	Short only	1.5	0			
1 2.6875	0	0	0																		
g31Y	Diag4		Y-GenXY	9Y	11S	2	5	0.768	0.536	0.536	5/8	A394	3	1	1	Short only	1.5	0			
1 2.6875	0	0	0																		
g32P	Diag5		XY-Symmetry	11S	12X	2	5	0.788	0.577	0.577	5/8	A394	3	1	1	Short only	1.5	0			
1 2.5	0	0	0																		
g32X	Diag5		X-GenXY	11X	12S	2	5	0.788	0.577	0.577	5/8	A394	3	1	1	Short only	1.5	0			
1 2.5	0	0	0																		
g32XY	Diag5		XY-GenXY	11XY	12Y	2	5	0.788	0.577	0.577	5/8	A394	3	1	1	Short only	1.5	0			
1 2.5	0	0	0																		
g32Y	Diag5		Y-GenXY	11Y	12XY	2	5	0.788	0.577	0.577	5/8	A394	3	1	1	Short only	1.5	0			
1 2.5	0	0	0																		
g33P	Diag5		XY-Symmetry	11S	12Y	2	5	0.788	0.577	0.577	5/8	A394	3	1	1	Short only	1.5	0			
1 2.5	0	0	0																		
g33X	Diag5		X-GenXY	11X	12XY	2	5	0.788	0.577	0.577	5/8	A394	3	1	1	Short only	1.5	0			
1 2.5	0	0	0																		
g33XY	Diag5		XY-GenXY	11XY	12X	2	5	0.788	0.577	0.577	5/8	A394	3	1	1	Short only	1.5	0			
1 2.5	0	0	0																		
g33Y	Diag5		Y-GenXY	11Y	12S	2	5	0.788	0.577	0.577	5/8	A394	3	1	1	Short only	1.5	0			
1 2.5	0	0	0																		
g34P	Diag5		XY-Symmetry	12S	13X	2	5	0.767	0.535	0.535	5/8	A394	3	1	1	Short only	1.5	0			
1 1.6875	0	0	0																		
g34X	Diag5		X-GenXY	12X	13S	2	5	0.767	0.535	0.535	5/8	A394	3	1	1	Short only	1.5	0			
1 1.6875	0	0	0																		
g34XY	Diag5		XY-GenXY	12XY	13Y	2	5	0.767	0.535	0.535	5/8	A394	3	1	1	Short only	1.5	0			
1 1.6875	0	0	0																		
g34Y	Diag5		Y-GenXY	12Y	13XY	2	5	0.767	0.535	0.535	5/8	A394	3	1	1	Short only	1.5	0			
1 1.6875	0	0	0																		
g35P	Diag5		XY-Symmetry	12S	13Y	2	5	0.767	0.535	0.535	5/8	A394	3	1	1	Short only	1.5	0			
1 1.6875	0	0	0																		
g35X	Diag5		X-GenXY	12X	13XY	2	5	0.767	0.535	0.535	5/8	A394	3	1	1	Short only	1.5	0			
1 1.6875	0	0	0																		
g35XY	Diag5		XY-GenXY	12XY	13X	2	5	0.767	0.535	0.535	5/8	A394	3	1	1	Short only	1.5	0			
1 1.6875	0	0	0																		
g35Y	Diag5		Y-GenXY	12Y	13S	2	5	0.767	0.535	0.535	5/8	A394	3	1	1	Short only	1.5	0			
1 1.6875	0	0	0																		
g36P	Diag6		XY-Symmetry	13X	14S	2	5	0.791	0.581	0.581	5/8	A394	4	1	1	Short only	1.25	0			
1 1.9375	0	0	0																		
g36X	Diag6		X-GenXY	13S	14X	2	5	0.791	0.581	0.581	5/8	A394	4	1	1	Short only	1.25	0			
1 1.9375	0	0	0																		
g36XY	Diag6		XY-GenXY	13Y	14XY	2	5	0.791	0.581	0.581	5/8	A394	4	1	1	Short only	1.25	0			
1 1.9375	0	0	0																		
g36Y	Diag6		Y-GenXY	13XY	14Y	2	5	0.791	0.581	0.581	5/8	A394	4	1	1	Short only	1.25	0			
1 1.9375	0	0	0																		
g37P	Diag6		XY-Symmetry	13S	14Y	2	5	0.791	0.581	0.581	5/8	A394	4	1	1	Short only	1.25	0			
1 1.9375	0	0	0																		
g37X	Diag6		X-GenXY	13X	14XY	2	5	0.791	0.581	0.581	5/8	A394	4	1	1	Short only	1.25	0			
1 1.9375	0	0	0																		
g37XY	Diag6		XY-GenXY	13XY	14X	2	5	0.791	0.581	0.581	5/8	A394	4	1	1	Short only	1.25	0			
1 1.9375	0	0	0																		
g37Y	Diag6		Y-GenXY	13Y	14S	2	5	0.791	0.581	0.581	5/8	A394	4	1	1	Short only	1.25	0			
1 1.9375	0	0	0																		
g38P	Diag7		XY-Symmetry	14X	16S	3	5	0.5	1	0.5	5/8	A394	5	1	1	Long only	1.5	0			
1 1.5	0	0	0																		
g38X	Diag7		X-GenXY	14S	16S	3	5	0.5	1	0.5	5/8	A394	5	1	1	Long only	1.5	0			
1 1.5	0	0	0																		
g38XY	Diag7		XY-GenXY	14Y	16Y	3	5	0.5	1	0.5	5/8	A394	5	1	1	Long only	1.5	0			

1	1.5	0	0	0															
	g38Y	Diag7		Y-GenXY	14XY	16Y	3	5	0.5	1	0.5	5/8	A394	5	1	1	Long only	1.5	0
1	1.5	0	0	0															
	g39P	Diag7		XY-Symmetry	14S	17X	3	5	0.5	1	0.5	5/8	A394	5	1	1	Long only	1.5	0
1	1.5	0	0	0															
	g39X	Diag7		X-GenXY	14X	17S	3	5	0.5	1	0.5	5/8	A394	5	1	1	Long only	1.5	0
1	1.5	0	0	0															
	g39XY	Diag7		XY-GenXY	14XY	17S	3	5	0.5	1	0.5	5/8	A394	5	1	1	Long only	1.5	0
1	1.5	0	0	0															
	g39Y	Diag7		Y-GenXY	14Y	17X	3	5	0.5	1	0.5	5/8	A394	5	1	1	Long only	1.5	0
1	1.5	0	0	0															
	g40P	Diag7		XY-Symmetry	16S	10X	2	5	0.386	0.75	0.386	5/8	A394	4	1	1	Long only	1.5	0
1	1.5	0	0	0															
	g40X	Diag7		X-GenXY	16S	10P	2	5	0.386	0.75	0.386	5/8	A394	4	1	1	Long only	1.5	0
1	1.5	0	0	0															
	g40XY	Diag7		XY-GenXY	16Y	10Y	2	5	0.386	0.75	0.386	5/8	A394	4	1	1	Long only	1.5	0
1	1.5	0	0	0															
	g40Y	Diag7		Y-GenXY	16Y	10XY	2	5	0.386	0.75	0.386	5/8	A394	4	1	1	Long only	1.5	0
1	1.5	0	0	0															
	g41P	Diag7		XY-Symmetry	17X	10P	2	5	0.386	0.75	0.386	5/8	A394	4	1	1	Long only	1.5	0
1	1.5	0	0	0															
	g41X	Diag7		X-GenXY	17S	10X	2	5	0.386	0.75	0.386	5/8	A394	4	1	1	Long only	1.5	0
1	1.5	0	0	0															
	g41XY	Diag7		XY-GenXY	17S	10XY	2	5	0.386	0.75	0.386	5/8	A394	4	1	1	Long only	1.5	0
1	1.5	0	0	0															
	g41Y	Diag7		Y-GenXY	17X	10Y	2	5	0.386	0.75	0.386	5/8	A394	4	1	1	Long only	1.5	0
1	1.5	0	0	0															
	g42P	Horz1		X-Symmetry	2P	2Y	3	5	1	1	1	5/8	A394	2	1	1	Long only	0	0
0	0	0	0	0															
	g42X	Horz1		X-Gen	2X	2XY	3	5	1	1	1	5/8	A394	2	1	1	Long only	0	0
0	0	0	0	0															
	g43P	Horz2		X-Symmetry	3P	3Y	3	5	1	1	1	5/8	A394	3	1	1	Long only	0	0
0	0	0	0	0															
	g43X	Horz2		X-Gen	3X	3XY	3	5	1	1	1	5/8	A394	3	1	1	Long only	0	0
0	0	0	0	0															
	g44P	Horz2		X-Symmetry	6P	6Y	3	5	1	1	1	5/8	A394	3	1	1	Long only	0	0
0	0	0	0	0															
	g44X	Horz2		X-Gen	6X	6XY	3	5	1	1	1	5/8	A394	3	1	1	Long only	0	0
0	0	0	0	0															
	g45P	Horz2		X-Symmetry	9P	9Y	3	5	1	1	1	5/8	A394	3	1	1	Long only	0	0
0	0	0	0	0															
	g45X	Horz2		X-Gen	9X	9XY	3	5	1	1	1	5/8	A394	3	1	1	Long only	0	0
0	0	0	0	0															
	g46P	Horz3		Y-Symmetry	2X	2P	3	5	1	1	1	5/8	A394	2	1	1	Short only	0	0
0	0	0	0	0															
	g46Y	Horz3		Y-Gen	2XY	2Y	3	5	1	1	1	5/8	A394	2	1	1	Short only	0	0
0	0	0	0	0															
	g47P	Horz4		Y-Symmetry	5X	5P	3	5	1	1	1	5/8	A394	2	1	1	Long only	0	0
0	0	0	0	0															
	g47Y	Horz4		Y-Gen	5XY	5Y	3	5	1	1	1	5/8	A394	2	1	1	Long only	0	0
0	0	0	0	0															
	g48P	Horz4		Y-Symmetry	8X	8P	3	5	1	1	1	5/8	A394	2	1	1	Long only	0	0
0	0	0	0	0															
	g48Y	Horz4		Y-Gen	8XY	8Y	3	5	1	1	1	5/8	A394	2	1	1	Long only	0	0
0	0	0	0	0															
	g49P	Horz5		Y-Symmetry	13X	13S	3	5	1	0.5	0.5	5/8	A394	2	1	1	Short only	0	0
0	0	0	0	0															
	g49Y	Horz5		Y-Gen	13XY	13Y	3	5	1	0.5	0.5	5/8	A394	2	1	1	Short only	0	0
0	0	0	0	0															

g50P	Horz5		X-Symmetry	13S	13Y	3	5	1	0.5	0.5	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g50X	Horz5		X-Gen	13X	13XY	3	5	1	0.5	0.5	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g51P	Horz6		Y-Symmetry	14X	14S	3	5	1	0.5	0.5	5/8	A394	3	1	1	Short only	0	0	0
0	0	0	0	0															
g51Y	Horz6		Y-Gen	14XY	14Y	3	5	1	0.5	0.5	5/8	A394	3	1	1	Short only	0	0	0
0	0	0	0	0															
g52P	Horz6		X-Symmetry	14S	14Y	3	5	1	0.5	0.5	5/8	A394	3	1	1	Short only	0	0	0
0	0	0	0	0															
g52X	Horz6		X-Gen	14X	14XY	3	5	1	0.5	0.5	5/8	A394	3	1	1	Short only	0	0	0
0	0	0	0	0															
g53P	Horz7		XY-Symmetry	15X	16S	3	5	1	1	1	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g53X	Horz7		X-GenXY	15S	16S	3	5	1	1	1	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g53XY	Horz7		XY-GenXY	15Y	16Y	3	5	1	1	1	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g53Y	Horz7		Y-GenXY	15XY	16Y	3	5	1	1	1	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g54P	Horz7		XY-Symmetry	15S	17X	3	5	1	1	1	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g54X	Horz7		X-GenXY	15X	17S	3	5	1	1	1	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g54XY	Horz7		XY-GenXY	15XY	17S	3	5	1	1	1	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g54Y	Horz7		Y-GenXY	15Y	17X	3	5	1	1	1	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g55P	Inner1		XY-Symmetry	2X	22S	3	5	2	1	1	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g55X	Inner1		X-GenXY	2P	22S	3	5	2	1	1	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g55XY	Inner1		XY-GenXY	2Y	22S	3	5	2	1	1	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g55Y	Inner1		Y-GenXY	2XY	22S	3	5	2	1	1	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g56P	Inner2		XY-Symmetry	3X	23S	3	5	2	1	1	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g56X	Inner2		X-GenXY	3P	23S	3	5	2	1	1	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g56XY	Inner2		XY-GenXY	3Y	23S	3	5	2	1	1	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g56Y	Inner2		Y-GenXY	3XY	23S	3	5	2	1	1	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g57P	Inner2		XY-Symmetry	6X	24S	3	5	2	1	1	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g57X	Inner2		X-GenXY	6P	24S	3	5	2	1	1	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g57XY	Inner2		XY-GenXY	6Y	24S	3	5	2	1	1	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g57Y	Inner2		Y-GenXY	6XY	24S	3	5	2	1	1	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g58P	Inner2		XY-Symmetry	9X	25S	3	5	2	1	1	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g58X	Inner2		X-GenXY	9P	25S	3	5	2	1	1	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g58XY	Inner2		XY-GenXY	9Y	25S	3	5	2	1	1	5/8	A394	2	1	1	Short only	0	0	0
0	0	0	0	0															
g58Y	Inner2		Y-GenXY	9XY	25S	3	5	2	1	1	5/8	A394	2	1	1	Short only	0	0	0

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0       0      0       0     0
     g59P   Inner1           X-Symmetry        13X        13Y    3     4     1   0.5   0.5 5/8 A394     1      1       1 Short only      0      0
0       0      0       0     0
     g59X   Inner1                X-Gen        13S       13XY    3     4     1   0.5   0.5 5/8 A394     1      1       1 Short only      0      0
0       0      0       0     0
     g60P   Inner1          XY-Symmetry        17S  17SF0.50S    3     4     2     1     1 5/8 A394     1      1       1 Short only      0      0
0       0      0       0     0
     g60X   Inner1             X-GenXY        17X  17SF0.50X    3     4     2     1     1 5/8 A394     1      1       1 Short only      0      0
0       0      0       0     0
    g60XY   Inner1             XY-GenXY        17X 17SF0.50XY    3     4     2     1     1 5/8 A394     1      1       1 Short only      0      0
0       0      0       0     0
     g60Y   Inner1             Y-GenXY        17S  17SF0.50Y    3     4     2     1     1 5/8 A394     1      1       1 Short only      0      0
0       0      0       0     0
  Fg6072P   Inner1          XY-Symmetry  17SF0.50S        16S    3     4     2     1     1 5/8 A394     1      1       1 Short only      0      0
0       0      0       0     0
  Fg6072X   Inner1             X-GenXY  17SF0.50X        16S    3     4     2     1     1 5/8 A394     1      1       1 Short only      0      0
0       0      0       0     0
 Fg6072XY   Inner1             XY-GenXY 17SF0.50XY        16Y    3     4     2     1     1 5/8 A394     1      1       1 Short only      0      0
0       0      0       0     0
  Fg6072Y   Inner1             Y-GenXY  17SF0.50Y        16Y    3     4     2     1     1 5/8 A394     1      1       1 Short only      0      0
0       0      0       0     0
     g61P ShieldAr           X-Symmetry        18X         1X    3     4     1     1     1 5/8 A394     2      2       1  Long only    1.5      5
1.25       0  3.875   0.875     0
     g61X ShieldAr             X-Gen        18P         1P    3     4     1     1     1 5/8 A394     2      2       1  Long only    1.5      5
1.25       0  3.875   0.875     0
     g62P ShieldAr              None         1X         1P    3     4     1     1     1 5/8 A394     2      2       1  Long only    1.5      5
1.25       0  3.875   0.875     0
     g63P TopCrArm           XY-Symmetry        19X         3X    3     4   0.5   0.5   0.5 5/8 A394     2      2       1  Long only      0      0
0       0      0       0     0
     g63X TopCrArm             X-GenXY        19P         3P    3     4   0.5   0.5   0.5 5/8 A394     2      2       1  Long only      0      0
0       0      0       0     0
    g63XY TopCrArm             XY-GenXY        19P         3Y    3     4   0.5   0.5   0.5 5/8 A394     2      2       1  Long only      0      0
0       0      0       0     0
     g63Y TopCrArm             Y-GenXY        19X        3XY    3     4   0.5   0.5   0.5 5/8 A394     2      2       1  Long only      0      0
0       0      0       0     0
     g64P TopCArmA           Y-Symmetry         3X         3P    3     4     1     1     1 5/8 A394     2      1       1  Long only      0      0
0       0      0       0     0
     g64Y TopCArmA             Y-Gen        3XY         3Y    3     4     1     1     1 5/8 A394     2      1       1  Long only      0      0
0       0      0       0     0
     g65P MidCrArm           XY-Symmetry        20X         6X    3     4   0.5   0.5   0.5 5/8 A394     2      2       1  Long only      0      0
0       0      0       0     0
     g65X MidCrArm             X-GenXY        20P         6P    3     4   0.5   0.5   0.5 5/8 A394     2      2       1  Long only      0      0
0       0      0       0     0
    g65XY MidCrArm             XY-GenXY        20P         6Y    3     4   0.5   0.5   0.5 5/8 A394     2      2       1  Long only      0      0
0       0      0       0     0
     g65Y MidCrArm             Y-GenXY        20X        6XY    3     4   0.5   0.5   0.5 5/8 A394     2      2       1  Long only      0      0
0       0      0       0     0
     g66P MidCArmA           Y-Symmetry         6X         6P    3     4     1     1     1 5/8 A394     2      1       1  Long only      0      0
0       0      0       0     0
     g66Y MidCArmA             Y-Gen        6XY         6Y    3     4     1     1     1 5/8 A394     2      1       1  Long only      0      0
0       0      0       0     0
     g67P BotCrArm           XY-Symmetry        21X         9X    3     4   0.5   0.5   0.5 5/8 A394     2      2       1  Long only      0      0
0       0      0       0     0
     g67X BotCrArm             X-GenXY        21P         9P    3     4   0.5   0.5   0.5 5/8 A394     2      2       1  Long only      0      0
0       0      0       0     0
    g67XY BotCrArm             XY-GenXY        21P         9Y    3     4   0.5   0.5   0.5 5/8 A394     2      2       1  Long only      0      0
0       0      0       0     0
     g67Y BotCrArm             Y-GenXY        21X        9XY    3     4   0.5   0.5   0.5 5/8 A394     2      2       1  Long only      0      0
0       0      0       0     0
```

	g68P	BotCArmA		Y-Symmetry	9X	9P	3	4	1	1	1	5/8	A394	2	1	1	Long	only	0	0	0	0	0	0
	g68Y	BotCArmA		Y-Gen	9XY	9Y	3	4	1	1	1	5/8	A394	2	1	1	Long	only	0	0	0	0	0	0
	g69P	ShArmBr		XY-Symmetry	18X	2X	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short	only	0	0	0	0	0	0
	g69X	ShArmBr		X-GenXY	18P	2P	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short	only	0	0	0	0	0	0
	g69XY	ShArmBr		XY-GenXY	18P	2Y	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short	only	0	0	0	0	0	0
	g69Y	ShArmBr		Y-GenXY	18X	2XY	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short	only	0	0	0	0	0	0
	g70P	TopArmBr		XY-Symmetry	19X	2X	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short	only	0	0	1	2	0	0
	g70X	TopArmBr		X-GenXY	19P	2P	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short	only	0	0	1	2	0	0
	g70XY	TopArmBr		XY-GenXY	19P	2Y	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short	only	0	0	1	2	0	0
	g70Y	TopArmBr		Y-GenXY	19X	2XY	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short	only	0	0	1	2	0	0
	g71P	MidArmBr		XY-Symmetry	20X	5X	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short	only	0	0	1	2	0	0
	g71X	MidArmBr		X-GenXY	20P	5P	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short	only	0	0	1	2	0	0
	g71XY	MidArmBr		XY-GenXY	20P	5Y	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short	only	0	0	1	2	0	0
	g71Y	MidArmBr		Y-GenXY	20X	5XY	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short	only	0	0	1	2	0	0
	g72P	BotArmBr		XY-Symmetry	21X	8X	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short	only	0	0	1	2	0	0
	g72X	BotArmBr		X-GenXY	21P	8P	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short	only	0	0	1	2	0	0
	g72XY	BotArmBr		XY-GenXY	21P	8Y	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short	only	0	0	1	2	0	0
	g72Y	BotArmBr		Y-GenXY	21X	8XY	3	4	1	0.5	0.5	5/8	A394	2	1	1	Short	only	0	0	1	2	0	0
	g74P	Pwmnt		None	33P	32P	1	4	1	1	1			0	0	0			0	0	0	0	0	0
	g75P	Pwmnt		None	32P	31P	1	4	1	1	1			0	0	0			0	0	0	0	0	0
	g76P	Pwmnt		None	31P	30P	1	4	1	1	1			0	0	0			0	0	0	0	0	0
	g77P	Pwmnt		None	30P	29P	1	4	1	1	1			0	0	0			0	0	0	0	0	0
	g78P	Pwmnt		None	29P	28P	1	4	1	1	1			0	0	0			0	0	0	0	0	0
	g79P	Pwmnt		None	28P	27P	1	4	1	1	1			0	0	0			0	0	0	0	0	0
	g80P	PMBR1		None	22S	28P	3	4	1	1	1	5/8	A325	1	1	1	Short	only	0	0	0	0	0	0
	g82P	PMBR1		None	24S	30P	3	4	1	1	1	5/8	A325	1	1	1	Short	only	0	0	0	0	0	0
	g83P	PMBR1		None	25S	31P	3	4	1	1	1	5/8	A325	1	1	1	Short	only	0	0	0	0	0	0
	g84P	PMBR2		X-Symmetry	2X	28P	3	4	1	1	1	5/8	A325	1	1	1	Short	only	0	0	0	0	0	0
	g84X	PMBR2		X-Gen	2P	28P	3	4	1	1	1	5/8	A325	1	1	1	Short	only	0	0	0	0	0	0
	g86P	PMBR2		X-Symmetry	6X	30P	3	4	1	1	1	5/8	A325	1	1	1	Short	only	0	0				

```
0       0      0       0     0
     g86X    PMBR2                X-Gen         6P        30P    3     4     1     1     1 5/8 A325     1      1       1 Short only      0      0
0       0      0       0     0
     g87P    PMBR2           X-Symmetry         9X        31P    3     4     1     1     1 5/8 A325     1      1       1 Short only      0      0
0       0      0       0     0
     g87X    PMBR2                X-Gen         9P        31P    3     4     1     1     1 5/8 A325     1      1       1 Short only      0      0
0       0      0       0     0
     g88P    PMBR3           X-Symmetry  17SF0.50S        32P    3     4     1     1     1 5/8 A325     1      1       1 Short only      0      0
0       0      0       0     0
     g88X    PMBR3                X-Gen  17SF0.50X        32P    3     4     1     1     1 5/8 A325     1      1       1 Short only      0      0
0       0      0       0     0
     g89P    PMBR3           X-Symmetry        32P  17SF0.50Y    3     4     1     1     1 5/8 A325     1      1       1 Short only      0      0
0       0      0       0     0
     g89X    PMBR3                X-Gen        32P 17SF0.50XY    3     4     1     1     1 5/8 A325     1      1       1 Short only      0      0
0       0      0       0     0
     g90P     Leg1           X-Symmetry         1P         2Y    1     4     1     1     1 5/8 A394     4      2       1       Both      1      0
0.9375       2      0       0     0
     g90X     Leg1                X-Gen         1X        2XY    1     4     1     1     1 5/8 A394     4      2       1       Both      1      0
0.9375       2      0       0     0
     g92P    Diag8           X-Symmetry         2X        35S    2     4     1     1     1 5/8 A325     1      1       1 Short only      0      0
0       0      0       0     0
     g92X    Diag8                X-Gen         2P        35S    2     4     1     1     1 5/8 A325     1      1       1 Short only      0      0
0       0      0       0     0
     g93P    Diag9           X-Symmetry     1PF94X        35S    2     4     2     1     1 5/8 A325     1      1       1 Short only      0      0
0       0      0       0     0
     g93X    Diag9                X-Gen     1PF94S        35S    2     4     2     1     1 5/8 A325     1      1       1 Short only      0      0
0       0      0       0     0
     g94P   Inner3          XY-Symmetry        15X  17SF0.50S    3     4     1     1     1 5/8 A394     1      1       1  Long only      0      0
0       0      0       0     0
     g94X   Inner3             X-GenXY        15S  17SF0.50X    3     4     1     1     1 5/8 A394     1      1       1  Long only      0      0
0       0      0       0     0
    g94XY   Inner3            XY-GenXY        15Y 17SF0.50XY    3     4     1     1     1 5/8 A394     1      1       1  Long only      0      0
0       0      0       0     0
     g94Y   Inner3              Y-GenXY       15XY  17SF0.50Y    3     4     1     1     1 5/8 A394     1      1       1  Long only      0      0
0       0      0       0     0
```

Member Capacities and Overrides:

Member Label	Group Override Label	Design Override Comp. Capacity	Comp. Override Control Criterion	Design Override Tension Capacity	Tension Override Control Criterion	L/r Length Unsup. (ft)	L/r Comp. Capacity (kips)	Connection Shear Capacity (kips)	Connection Bearing Capacity (kips)	Net Section Tension Capacity (kips)	Rupture Warnings or Errors Tension Capacity (kips)	RTE End Dist. Tension Capacity (kips)	RTE Edge Dist. Tension Capacity (kips)	Override Comp. Capacity (kips)
g1P	Leg1	31.682	L/r Automatic	22.347	Net Sect	28	1.15	31.682	0.000	0.000	22.347	0.000	0.000	0.000	0.000
g1X	Leg1	31.682	L/r Automatic	22.347	Net Sect	28	1.15	31.682	0.000	0.000	22.347	0.000	0.000	0.000	0.000
Fg190P	Leg1	17.657	L/r Automatic	22.347	Net Sect	120	4.97	17.657	36.400	40.781	22.347	33.984	0.000	0.000	0.000
Fg190X	Leg1	17.657	L/r Automatic	22.347	Net Sect	120	4.97	17.657	36.400	40.781	22.347	33.984	0.000	0.000	0.000
g2P	Leg2	58.521	L/r	56.340	Net Sect	70	4.67	58.521	0.000	0.000	56.340	0.000	0.000	0.000	0.000

0.000		0.000	Automatic													
g2X	Leg2	58.521	L/r	56.340	Net Sect	70	4.67	58.521	0.000	0.000	56.340	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g2XY	Leg2	58.521	L/r	56.340	Net Sect	70	4.67	58.521	0.000	0.000	56.340	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g2Y	Leg2	58.521	L/r	56.340	Net Sect	70	4.67	58.521	0.000	0.000	56.340	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g3P	Leg2	58.521	L/r	56.340	Net Sect	70	4.67	58.521	0.000	0.000	56.340	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g3X	Leg2	58.521	L/r	56.340	Net Sect	70	4.67	58.521	0.000	0.000	56.340	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g3XY	Leg2	58.521	L/r	56.340	Net Sect	70	4.67	58.521	0.000	0.000	56.340	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g3Y	Leg2	58.521	L/r	56.340	Net Sect	70	4.67	58.521	0.000	0.000	56.340	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g4P	Leg2	58.521	L/r	56.340	Net Sect	70	4.67	58.521	0.000	0.000	56.340	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g4X	Leg2	58.521	L/r	56.340	Net Sect	70	4.67	58.521	0.000	0.000	56.340	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g4XY	Leg2	58.521	L/r	56.340	Net Sect	70	4.67	58.521	0.000	0.000	56.340	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g4Y	Leg2	58.521	L/r	56.340	Net Sect	70	4.67	58.521	0.000	0.000	56.340	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g5P	Leg2	58.567	L/r	56.340	Net Sect	70	4.66	58.567	72.800	108.750	56.340	120.833	0.000	0.000	0.000	
0.000		0.000	Automatic													
g5X	Leg2	58.567	L/r	56.340	Net Sect	70	4.66	58.567	72.800	108.750	56.340	120.833	0.000	0.000	0.000	
0.000		0.000	Automatic													
g5XY	Leg2	58.567	L/r	56.340	Net Sect	70	4.66	58.567	72.800	108.750	56.340	120.833	0.000	0.000	0.000	
0.000		0.000	Automatic													
g5Y	Leg2	58.567	L/r	56.340	Net Sect	70	4.66	58.567	72.800	108.750	56.340	120.833	0.000	0.000	0.000	
0.000		0.000	Automatic													
g6P	Leg3	100.064	L/r	95.535	Net Sect	71	4.67	100.064	0.000	0.000	95.535	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g6X	Leg3	100.064	L/r	95.535	Net Sect	71	4.67	100.064	0.000	0.000	95.535	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g6XY	Leg3	100.064	L/r	95.535	Net Sect	71	4.67	100.064	0.000	0.000	95.535	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g6Y	Leg3	100.064	L/r	95.535	Net Sect	71	4.67	100.064	0.000	0.000	95.535	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g7P	Leg3	100.064	L/r	95.535	Net Sect	71	4.67	100.064	0.000	0.000	95.535	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g7X	Leg3	100.064	L/r	95.535	Net Sect	71	4.67	100.064	0.000	0.000	95.535	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g7XY	Leg3	100.064	L/r	95.535	Net Sect	71	4.67	100.064	0.000	0.000	95.535	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g7Y	Leg3	100.064	L/r	95.535	Net Sect	71	4.67	100.064	0.000	0.000	95.535	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g8P	Leg3	100.146	L/r	95.535	Net Sect	71	4.66	100.146	127.400	333.046	95.535	370.052	0.000	0.000	0.000	
0.000		0.000	Automatic													
g8X	Leg3	100.146	L/r	95.535	Net Sect	71	4.66	100.146	127.400	333.046	95.535	370.052	0.000	0.000	0.000	
0.000		0.000	Automatic													
g8XY	Leg3	100.146	L/r	95.535	Net Sect	71	4.66	100.146	127.400	333.046	95.535	370.052	0.000	0.000	0.000	
0.000		0.000	Automatic													
g8Y	Leg3	100.146	L/r	95.535	Net Sect	71	4.66	100.146	127.400	333.046	95.535	370.052	0.000	0.000	0.000	
0.000		0.000	Automatic													
g9P	Leg4	150.630	L/r	158.633	Net Sect	80	6.57	150.630	0.000	0.000	158.633	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													
g9X	Leg4	150.630	L/r	158.633	Net Sect	80	6.57	150.630	0.000	0.000	158.633	0.000	0.000	0.000	0.000	
0.000		0.000	Automatic													

g9XY	Leg4	150.630	L/r	158.633	Net Sect	80	6.57	150.630	0.000	0.000	158.633	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g9Y	Leg4	150.630	L/r	158.633	Net Sect	80	6.57	150.630	0.000	0.000	158.633	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g10P	Leg4	150.630	L/r	158.633	Net Sect	80	6.57	150.630	0.000	0.000	158.633	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g10X	Leg4	150.630	L/r	158.633	Net Sect	80	6.57	150.630	0.000	0.000	158.633	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g10XY	Leg4	150.630	L/r	158.633	Net Sect	80	6.57	150.630	0.000	0.000	158.633	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g10Y	Leg4	150.630	L/r	158.633	Net Sect	80	6.57	150.630	0.000	0.000	158.633	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g11P	Leg4	145.600	Shear	145.600	Shear	80	6.57	150.630	145.600	426.562	158.633	202.179	0.000	0.000	0.000	0.000	0.000	Automatic
g11X	Leg4	145.600	Shear	145.600	Shear	80	6.57	150.630	145.600	426.562	158.633	202.179	0.000	0.000	0.000	0.000	0.000	Automatic
g11XY	Leg4	145.600	Shear	145.600	Shear	80	6.57	150.630	145.600	426.562	158.633	202.179	0.000	0.000	0.000	0.000	0.000	Automatic
g11Y	Leg4	145.600	Shear	145.600	Shear	80	6.57	150.630	145.600	426.562	158.633	202.179	0.000	0.000	0.000	0.000	0.000	Automatic
g12P	Leg5	164.165	L/r	161.750	Net Sect	57	11.37	164.165	0.000	0.000	161.750	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g12X	Leg5	164.165	L/r	161.750	Net Sect	57	11.37	164.165	0.000	0.000	161.750	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g12XY	Leg5	164.165	L/r	161.750	Net Sect	57	11.37	164.165	0.000	0.000	161.750	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g12Y	Leg5	164.165	L/r	161.750	Net Sect	57	11.37	164.165	0.000	0.000	161.750	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g13P	Leg5	164.165	L/r	169.484	Net Sect	57	11.37	164.165	182.000	457.031	169.484	197.156	0.000	0.000	0.000	0.000	0.000	Automatic
g13X	Leg5	164.165	L/r	169.484	Net Sect	57	11.37	164.165	182.000	457.031	169.484	197.156	0.000	0.000	0.000	0.000	0.000	Automatic
g13XY	Leg5	164.165	L/r	169.484	Net Sect	57	11.37	164.165	182.000	457.031	169.484	197.156	0.000	0.000	0.000	0.000	0.000	Automatic
g13Y	Leg5	164.165	L/r	169.484	Net Sect	57	11.37	164.165	182.000	457.031	169.484	197.156	0.000	0.000	0.000	0.000	0.000	Automatic
g14P	Leg6	169.375	L/r	169.484	Net Sect	50	15.16	169.375	182.000	457.031	169.484	188.953	0.000	0.000	0.000	0.000	0.000	Automatic
g14X	Leg6	169.375	L/r	169.484	Net Sect	50	15.16	169.375	182.000	457.031	169.484	188.953	0.000	0.000	0.000	0.000	0.000	Automatic
g14XY	Leg6	169.375	L/r	169.484	Net Sect	50	15.16	169.375	182.000	457.031	169.484	188.953	0.000	0.000	0.000	0.000	0.000	Automatic
g14Y	Leg6	169.375	L/r	169.484	Net Sect	50	15.16	169.375	182.000	457.031	169.484	188.953	0.000	0.000	0.000	0.000	0.000	Automatic
g15P	Diag1	8.702	L/r	15.532	Net Sect	150	8.57	8.702	18.200	20.391	15.532	15.609	0.000	0.000	0.000	0.000	0.000	Automatic
g15X	Diag1	8.702	L/r	15.532	Net Sect	150	8.57	8.702	18.200	20.391	15.532	15.609	0.000	0.000	0.000	0.000	0.000	Automatic
g16P	Diag1	10.509	L/r	12.347	Rupture	133	7.60	10.509	18.200	20.391	15.532	12.347	0.000	0.000	0.000	0.000	0.000	Automatic
g16X	Diag1	10.509	L/r	12.347	Rupture	133	7.60	10.509	18.200	20.391	15.532	12.347	0.000	0.000	0.000	0.000	0.000	Automatic
g16XY	Diag1	10.509	L/r	12.347	Rupture	133	7.60	10.509	18.200	20.391	15.532	12.347	0.000	0.000	0.000	0.000	0.000	Automatic
g16Y	Diag1	10.509	L/r	12.347	Rupture	133	7.60	10.509	18.200	20.391	15.532	12.347	0.000	0.000	0.000	0.000	0.000	Automatic
g17P	Diag1	10.509	L/r	12.347	Rupture	133	7.60	10.509	18.200	20.391	15.532	12.347	0.000	0.000	0.000	0.000	0.000	Automatic
g17X	Diag1	10.509	L/r	12.347	Rupture	133	7.60	10.509	18.200	20.391	15.532	12.347	0.000	0.000	0.000	0.000	0.000	Automatic

0.000		0.000	Automatic												
g17XY	Diag1	10.509	L/r	12.347	Rupture	133	7.60	10.509	18.200	20.391	15.532	12.347	0.000	0.000	0.000
0.000		0.000	Automatic												
g17Y	Diag1	10.509	L/r	12.347	Rupture	133	7.60	10.509	18.200	20.391	15.532	12.347	0.000	0.000	0.000
0.000		0.000	Automatic												
g18P	Diag2	27.300	Shear	27.300	Shear	77	7.60	29.813	27.300	30.586	30.760	30.586	0.000	0.000	0.000
0.000		0.000	Automatic												
g18X	Diag2	27.300	Shear	27.300	Shear	77	7.60	29.813	27.300	30.586	30.760	30.586	0.000	0.000	0.000
0.000		0.000	Automatic												
g18XY	Diag2	27.300	Shear	27.300	Shear	77	7.60	29.813	27.300	30.586	30.760	30.586	0.000	0.000	0.000
0.000		0.000	Automatic												
g18Y	Diag2	27.300	Shear	27.300	Shear	77	7.60	29.813	27.300	30.586	30.760	30.586	0.000	0.000	0.000
0.000		0.000	Automatic												
g19P	Diag2	27.300	Shear	27.300	Shear	77	7.60	29.813	27.300	30.586	30.760	30.586	0.000	0.000	0.000
0.000		0.000	Automatic												
g19X	Diag2	27.300	Shear	27.300	Shear	77	7.60	29.813	27.300	30.586	30.760	30.586	0.000	0.000	0.000
0.000		0.000	Automatic												
g19XY	Diag2	27.300	Shear	27.300	Shear	77	7.60	29.813	27.300	30.586	30.760	30.586	0.000	0.000	0.000
0.000		0.000	Automatic												
g19Y	Diag2	27.300	Shear	27.300	Shear	77	7.60	29.813	27.300	30.586	30.760	30.586	0.000	0.000	0.000
0.000		0.000	Automatic												
g20P	Diag2	27.300	Shear	27.300	Shear	77	7.60	29.813	27.300	30.586	30.760	30.586	0.000	0.000	0.000
0.000		0.000	Automatic												
g20X	Diag2	27.300	Shear	27.300	Shear	77	7.60	29.813	27.300	30.586	30.760	30.586	0.000	0.000	0.000
0.000		0.000	Automatic												
g20XY	Diag2	27.300	Shear	27.300	Shear	77	7.60	29.813	27.300	30.586	30.760	30.586	0.000	0.000	0.000
0.000		0.000	Automatic												
g20Y	Diag2	27.300	Shear	27.300	Shear	77	7.60	29.813	27.300	30.586	30.760	30.586	0.000	0.000	0.000
0.000		0.000	Automatic												
g21P	Diag2	27.300	Shear	27.300	Shear	77	7.60	29.813	27.300	30.586	30.760	30.586	0.000	0.000	0.000
0.000		0.000	Automatic												
g21X	Diag2	27.300	Shear	27.300	Shear	77	7.60	29.813	27.300	30.586	30.760	30.586	0.000	0.000	0.000
0.000		0.000	Automatic												
g21XY	Diag2	27.300	Shear	27.300	Shear	77	7.60	29.813	27.300	30.586	30.760	30.586	0.000	0.000	0.000
0.000		0.000	Automatic												
g21Y	Diag2	27.300	Shear	27.300	Shear	77	7.60	29.813	27.300	30.586	30.760	30.586	0.000	0.000	0.000
0.000		0.000	Automatic												
g22P	Diag2	29.823	L/r	26.353	Rupture	76	7.60	29.823	36.400	40.781	30.760	26.353	0.000	0.000	0.000
0.000		0.000	Automatic												
g22X	Diag2	29.823	L/r	26.353	Rupture	76	7.60	29.823	36.400	40.781	30.760	26.353	0.000	0.000	0.000
0.000		0.000	Automatic												
g22XY	Diag2	29.823	L/r	26.353	Rupture	76	7.60	29.823	36.400	40.781	30.760	26.353	0.000	0.000	0.000
0.000		0.000	Automatic												
g22Y	Diag2	29.823	L/r	26.353	Rupture	76	7.60	29.823	36.400	40.781	30.760	26.353	0.000	0.000	0.000
0.000		0.000	Automatic												
g23P	Diag2	29.823	L/r	26.353	Rupture	76	7.60	29.823	36.400	40.781	30.760	26.353	0.000	0.000	0.000
0.000		0.000	Automatic												
g23X	Diag2	29.823	L/r	26.353	Rupture	76	7.60	29.823	36.400	40.781	30.760	26.353	0.000	0.000	0.000
0.000		0.000	Automatic												
g23XY	Diag2	29.823	L/r	26.353	Rupture	76	7.60	29.823	36.400	40.781	30.760	26.353	0.000	0.000	0.000
0.000		0.000	Automatic												
g23Y	Diag2	29.823	L/r	26.353	Rupture	76	7.60	29.823	36.400	40.781	30.760	26.353	0.000	0.000	0.000
0.000		0.000	Automatic												
g24P	Diag3	27.300	Shear	27.300	Shear	86	7.60	33.833	27.300	40.781	32.319	40.781	0.000	0.000	0.000
0.000		0.000	Automatic												
g24X	Diag3	27.300	Shear	27.300	Shear	86	7.60	33.833	27.300	40.781	32.319	40.781	0.000	0.000	0.000
0.000		0.000	Automatic												
g24XY	Diag3	27.300	Shear	27.300	Shear	86	7.60	33.833	27.300	40.781	32.319	40.781	0.000	0.000	0.000
0.000		0.000	Automatic												

g24Y	Diag3	27.300	Shear	27.300	Shear	86	7.60	33.833	27.300	40.781	32.319	40.781	0.000	0.000	0.000
0.000		0.000		Automatic											
g25P	Diag3	27.300	Shear	27.300	Shear	86	7.60	33.833	27.300	40.781	32.319	40.781	0.000	0.000	0.000
0.000		0.000		Automatic											
g25X	Diag3	27.300	Shear	27.300	Shear	86	7.60	33.833	27.300	40.781	32.319	40.781	0.000	0.000	0.000
0.000		0.000		Automatic											
g25XY	Diag3	27.300	Shear	27.300	Shear	86	7.60	33.833	27.300	40.781	32.319	40.781	0.000	0.000	0.000
0.000		0.000		Automatic											
g25Y	Diag3	27.300	Shear	27.300	Shear	86	7.60	33.833	27.300	40.781	32.319	40.781	0.000	0.000	0.000
0.000		0.000		Automatic											
g26P	Diag3	27.300	Shear	27.300	Shear	86	7.60	33.833	27.300	40.781	32.319	40.781	0.000	0.000	0.000
0.000		0.000		Automatic											
g26X	Diag3	27.300	Shear	27.300	Shear	86	7.60	33.833	27.300	40.781	32.319	40.781	0.000	0.000	0.000
0.000		0.000		Automatic											
g26XY	Diag3	27.300	Shear	27.300	Shear	86	7.60	33.833	27.300	40.781	32.319	40.781	0.000	0.000	0.000
0.000		0.000		Automatic											
g26Y	Diag3	27.300	Shear	27.300	Shear	86	7.60	33.833	27.300	40.781	32.319	40.781	0.000	0.000	0.000
0.000		0.000		Automatic											
g27P	Diag3	27.300	Shear	27.300	Shear	86	7.60	33.833	27.300	40.781	32.319	40.781	0.000	0.000	0.000
0.000		0.000		Automatic											
g27X	Diag3	27.300	Shear	27.300	Shear	86	7.60	33.833	27.300	40.781	32.319	40.781	0.000	0.000	0.000
0.000		0.000		Automatic											
g27XY	Diag3	27.300	Shear	27.300	Shear	86	7.60	33.833	27.300	40.781	32.319	40.781	0.000	0.000	0.000
0.000		0.000		Automatic											
g27Y	Diag3	27.300	Shear	27.300	Shear	86	7.60	33.833	27.300	40.781	32.319	40.781	0.000	0.000	0.000
0.000		0.000		Automatic											
g28P	Diag4	36.400	Shear	35.137	Rupture	77	7.60	39.289	36.400	54.375	40.581	35.137	0.000	0.000	0.000
0.000		0.000		Automatic											
g28X	Diag4	36.400	Shear	35.137	Rupture	77	7.60	39.289	36.400	54.375	40.581	35.137	0.000	0.000	0.000
0.000		0.000		Automatic											
g28XY	Diag4	36.400	Shear	35.137	Rupture	77	7.60	39.289	36.400	54.375	40.581	35.137	0.000	0.000	0.000
0.000		0.000		Automatic											
g28Y	Diag4	36.400	Shear	35.137	Rupture	77	7.60	39.289	36.400	54.375	40.581	35.137	0.000	0.000	0.000
0.000		0.000		Automatic											
g29P	Diag4	36.400	Shear	35.137	Rupture	77	7.60	39.289	36.400	54.375	40.581	35.137	0.000	0.000	0.000
0.000		0.000		Automatic											
g29X	Diag4	36.400	Shear	35.137	Rupture	77	7.60	39.289	36.400	54.375	40.581	35.137	0.000	0.000	0.000
0.000		0.000		Automatic											
g29XY	Diag4	36.400	Shear	35.137	Rupture	77	7.60	39.289	36.400	54.375	40.581	35.137	0.000	0.000	0.000
0.000		0.000		Automatic											
g29Y	Diag4	36.400	Shear	35.137	Rupture	77	7.60	39.289	36.400	54.375	40.581	35.137	0.000	0.000	0.000
0.000		0.000		Automatic											
g30P	Diag4	27.300	Shear	27.300	Shear	102	9.35	33.473	27.300	40.781	40.581	36.250	0.000	0.000	0.000
0.000		0.000		Automatic											
g30X	Diag4	27.300	Shear	27.300	Shear	102	9.35	33.473	27.300	40.781	40.581	36.250	0.000	0.000	0.000
0.000		0.000		Automatic											
g30XY	Diag4	27.300	Shear	27.300	Shear	102	9.35	33.473	27.300	40.781	40.581	36.250	0.000	0.000	0.000
0.000		0.000		Automatic											
g30Y	Diag4	27.300	Shear	27.300	Shear	102	9.35	33.473	27.300	40.781	40.581	36.250	0.000	0.000	0.000
0.000		0.000		Automatic											
g31P	Diag4	27.300	Shear	27.300	Shear	102	9.35	33.473	27.300	40.781	40.581	36.250	0.000	0.000	0.000
0.000		0.000		Automatic											
g31X	Diag4	27.300	Shear	27.300	Shear	102	9.35	33.473	27.300	40.781	40.581	36.250	0.000	0.000	0.000
0.000		0.000		Automatic											
g31XY	Diag4	27.300	Shear	27.300	Shear	102	9.35	33.473	27.300	40.781	40.581	36.250	0.000	0.000	0.000
0.000		0.000		Automatic											
g31Y	Diag4	27.300	Shear	27.300	Shear	102	9.35	33.473	27.300	40.781	40.581	36.250	0.000	0.000	0.000
0.000		0.000		Automatic											
g32P	Diag5	21.379	L/r	27.187	Rupture	120	10.36	21.379	27.300	30.586	30.760	27.187	0.000	0.000	0.000

0.000		0.000	Automatic												
g32X	Diag5	21.379	L/r	27.187	Rupture	120	10.36	21.379	27.300	30.586	30.760	27.187	0.000	0.000	0.000
0.000		0.000	Automatic												
g32XY	Diag5	21.379	L/r	27.187	Rupture	120	10.36	21.379	27.300	30.586	30.760	27.187	0.000	0.000	0.000
0.000		0.000	Automatic												
g32Y	Diag5	21.379	L/r	27.187	Rupture	120	10.36	21.379	27.300	30.586	30.760	27.187	0.000	0.000	0.000
0.000		0.000	Automatic												
g33P	Diag5	21.379	L/r	27.187	Rupture	120	10.36	21.379	27.300	30.586	30.760	27.187	0.000	0.000	0.000
0.000		0.000	Automatic												
g33X	Diag5	21.379	L/r	27.187	Rupture	120	10.36	21.379	27.300	30.586	30.760	27.187	0.000	0.000	0.000
0.000		0.000	Automatic												
g33XY	Diag5	21.379	L/r	27.187	Rupture	120	10.36	21.379	27.300	30.586	30.760	27.187	0.000	0.000	0.000
0.000		0.000	Automatic												
g33Y	Diag5	21.379	L/r	27.187	Rupture	120	10.36	21.379	27.300	30.586	30.760	27.187	0.000	0.000	0.000
0.000		0.000	Automatic												
g34P	Diag5	20.706	L/r	23.906	Rupture	123	11.45	20.706	27.300	30.586	30.760	23.906	0.000	0.000	0.000
0.000		0.000	Automatic												
g34X	Diag5	20.706	L/r	23.906	Rupture	123	11.45	20.706	27.300	30.586	30.760	23.906	0.000	0.000	0.000
0.000		0.000	Automatic												
g34XY	Diag5	20.706	L/r	23.906	Rupture	123	11.45	20.706	27.300	30.586	30.760	23.906	0.000	0.000	0.000
0.000		0.000	Automatic												
g34Y	Diag5	20.706	L/r	23.906	Rupture	123	11.45	20.706	27.300	30.586	30.760	23.906	0.000	0.000	0.000
0.000		0.000	Automatic												
g35P	Diag5	20.706	L/r	23.906	Rupture	123	11.45	20.706	27.300	30.586	30.760	23.906	0.000	0.000	0.000
0.000		0.000	Automatic												
g35X	Diag5	20.706	L/r	23.906	Rupture	123	11.45	20.706	27.300	30.586	30.760	23.906	0.000	0.000	0.000
0.000		0.000	Automatic												
g35XY	Diag5	20.706	L/r	23.906	Rupture	123	11.45	20.706	27.300	30.586	30.760	23.906	0.000	0.000	0.000
0.000		0.000	Automatic												
g35Y	Diag5	20.706	L/r	23.906	Rupture	123	11.45	20.706	27.300	30.586	30.760	23.906	0.000	0.000	0.000
0.000		0.000	Automatic												
g36P	**Diag6**	**8.410**	**L/r**	**32.481**	**Net Sect**	**227**	**15.96**	**8.410**	**36.400**	**54.375**	**32.481**	**44.306**	**0.000**	**0.000**	**0.000**
0.000		**0.000**	**Automatic**	**KL/R value of 201.25 exceeds maximum of 200.00 for member "g36P" ??**											
g36X	**Diag6**	**8.410**	**L/r**	**32.481**	**Net Sect**	**227**	**15.96**	**8.410**	**36.400**	**54.375**	**32.481**	**44.306**	**0.000**	**0.000**	**0.000**
0.000		**0.000**	**Automatic**	**KL/R value of 201.25 exceeds maximum of 200.00 for member "g36X" ??**											
g36XY	**Diag6**	**8.410**	**L/r**	**32.481**	**Net Sect**	**227**	**15.96**	**8.410**	**36.400**	**54.375**	**32.481**	**44.306**	**0.000**	**0.000**	**0.000**
0.000		**0.000**	**Automatic**	**KL/R value of 201.25 exceeds maximum of 200.00 for member "g36XY" ??**											
g36Y	**Diag6**	**8.410**	**L/r**	**32.481**	**Net Sect**	**227**	**15.96**	**8.410**	**36.400**	**54.375**	**32.481**	**44.306**	**0.000**	**0.000**	**0.000**
0.000		**0.000**	**Automatic**	**KL/R value of 201.25 exceeds maximum of 200.00 for member "g36Y" ??**											
g37P	**Diag6**	**8.410**	**L/r**	**32.481**	**Net Sect**	**227**	**15.96**	**8.410**	**36.400**	**54.375**	**32.481**	**44.306**	**0.000**	**0.000**	**0.000**
0.000		**0.000**	**Automatic**	**KL/R value of 201.25 exceeds maximum of 200.00 for member "g37P" ??**											
g37X	**Diag6**	**8.410**	**L/r**	**32.481**	**Net Sect**	**227**	**15.96**	**8.410**	**36.400**	**54.375**	**32.481**	**44.306**	**0.000**	**0.000**	**0.000**
0.000		**0.000**	**Automatic**	**KL/R value of 201.25 exceeds maximum of 200.00 for member "g37X" ??**											
g37XY	**Diag6**	**8.410**	**L/r**	**32.481**	**Net Sect**	**227**	**15.96**	**8.410**	**36.400**	**54.375**	**32.481**	**44.306**	**0.000**	**0.000**	**0.000**
0.000		**0.000**	**Automatic**	**KL/R value of 201.25 exceeds maximum of 200.00 for member "g37XY" ??**											
g37Y	**Diag6**	**8.410**	**L/r**	**32.481**	**Net Sect**	**227**	**15.96**	**8.410**	**36.400**	**54.375**	**32.481**	**44.306**	**0.000**	**0.000**	**0.000**
0.000		**0.000**	**Automatic**	**KL/R value of 201.25 exceeds maximum of 200.00 for member "g37Y" ??**											
g38P	Diag7	10.917	L/r	36.369	Net Sect	206	12.91	10.917	45.500	67.969	36.369	41.662	0.000	0.000	0.000
0.000		0.000	Automatic												
g38X	Diag7	10.917	L/r	36.369	Net Sect	206	12.91	10.917	45.500	67.969	36.369	41.662	0.000	0.000	0.000
0.000		0.000	Automatic												
g38XY	Diag7	10.917	L/r	36.369	Net Sect	206	12.91	10.917	45.500	67.969	36.369	41.662	0.000	0.000	0.000
0.000		0.000	Automatic												
g38Y	Diag7	10.917	L/r	36.369	Net Sect	206	12.91	10.917	45.500	67.969	36.369	41.662	0.000	0.000	0.000
0.000		0.000	Automatic												
g39P	Diag7	10.917	L/r	36.369	Net Sect	206	12.91	10.917	45.500	67.969	36.369	41.662	0.000	0.000	0.000
0.000		0.000	Automatic												
g39X	Diag7	10.917	L/r	36.369	Net Sect	206	12.91	10.917	45.500	67.969	36.369	41.662	0.000	0.000	0.000
0.000		0.000	Automatic												

g39XY	Diag7	10.917	L/r	36.369	Net Sect	206	12.91	10.917	45.500	67.969	36.369	41.662	0.000	0.000	0.000
0.000		0.000	Automatic												
g39Y	Diag7	10.917	L/r	36.369	Net Sect	206	12.91	10.917	45.500	67.969	36.369	41.662	0.000	0.000	0.000
0.000		0.000	Automatic												
g40P	Diag7	10.567	L/r	35.137	Rupture	210	17.54	10.567	36.400	54.375	36.369	35.137	0.000	0.000	0.000
0.000		0.000	Automatic												
g40X	Diag7	10.567	L/r	35.137	Rupture	210	17.54	10.567	36.400	54.375	36.369	35.137	0.000	0.000	0.000
0.000		0.000	Automatic												
g40XY	Diag7	10.567	L/r	35.137	Rupture	210	17.54	10.567	36.400	54.375	36.369	35.137	0.000	0.000	0.000
0.000		0.000	Automatic												
g40Y	Diag7	10.567	L/r	35.137	Rupture	210	17.54	10.567	36.400	54.375	36.369	35.137	0.000	0.000	0.000
0.000		0.000	Automatic												
g41P	Diag7	10.567	L/r	35.137	Rupture	210	17.54	10.567	36.400	54.375	36.369	35.137	0.000	0.000	0.000
0.000		0.000	Automatic												
g41X	Diag7	10.567	L/r	35.137	Rupture	210	17.54	10.567	36.400	54.375	36.369	35.137	0.000	0.000	0.000
0.000		0.000	Automatic												
g41XY	Diag7	10.567	L/r	35.137	Rupture	210	17.54	10.567	36.400	54.375	36.369	35.137	0.000	0.000	0.000
0.000		0.000	Automatic												
g41Y	Diag7	10.567	L/r	35.137	Rupture	210	17.54	10.567	36.400	54.375	36.369	35.137	0.000	0.000	0.000
0.000		0.000	Automatic												
g42P	Horz1	7.213	L/r	14.006	Rupture	183	6.00	7.213	18.200	20.391	18.448	14.006	0.000	0.000	0.000
0.000		0.000	Automatic												
g42X	Horz1	7.213	L/r	14.006	Rupture	183	6.00	7.213	18.200	20.391	18.448	14.006	0.000	0.000	0.000
0.000		0.000	Automatic												
g43P	Horz2	24.594	L/r	27.300	Shear	132	6.00	24.594	27.300	40.781	40.581	27.450	0.000	0.000	0.000
0.000		0.000	Automatic												
g43X	Horz2	24.594	L/r	27.300	Shear	132	6.00	24.594	27.300	40.781	40.581	27.450	0.000	0.000	0.000
0.000		0.000	Automatic												
g44P	Horz2	24.594	L/r	27.300	Shear	132	6.00	24.594	27.300	40.781	40.581	27.450	0.000	0.000	0.000
0.000		0.000	Automatic												
g44X	Horz2	24.594	L/r	27.300	Shear	132	6.00	24.594	27.300	40.781	40.581	27.450	0.000	0.000	0.000
0.000		0.000	Automatic												
g45P	Horz2	24.594	L/r	27.300	Shear	132	6.00	24.594	27.300	40.781	40.581	27.450	0.000	0.000	0.000
0.000		0.000	Automatic												
g45X	Horz2	24.594	L/r	27.300	Shear	132	6.00	24.594	27.300	40.781	40.581	27.450	0.000	0.000	0.000
0.000		0.000	Automatic												
g46P	Horz3	10.922	L/r	14.006	Rupture	164	6.00	10.922	18.200	20.391	18.529	14.006	0.000	0.000	0.000
0.000		0.000	Automatic												
g46Y	Horz3	10.922	L/r	14.006	Rupture	164	6.00	10.922	18.200	20.391	18.529	14.006	0.000	0.000	0.000
0.000		0.000	Automatic												
g47P	**Horz4**	**2.789**	**L/r**	**11.475**	**Rupture**	**268**	**6.00**	**2.789**	**18.200**	**20.391**	**12.519**	**11.475**	**0.000**	**0.000**	**0.000**
0.000		**0.000**	**Automatic**		**KL/R value of 232.56 exceeds maximum of 200.00 for member "g47P" ??**										
g47Y	**Horz4**	**2.789**	**L/r**	**11.475**	**Rupture**	**268**	**6.00**	**2.789**	**18.200**	**20.391**	**12.519**	**11.475**	**0.000**	**0.000**	**0.000**
0.000		**0.000**	**Automatic**		**KL/R value of 232.56 exceeds maximum of 200.00 for member "g47Y" ??**										
g48P	**Horz4**	**2.789**	**L/r**	**11.475**	**Rupture**	**268**	**6.00**	**2.789**	**18.200**	**20.391**	**12.519**	**11.475**	**0.000**	**0.000**	**0.000**
0.000		**0.000**	**Automatic**		**KL/R value of 232.56 exceeds maximum of 200.00 for member "g48P" ??**										
g48Y	**Horz4**	**2.789**	**L/r**	**11.475**	**Rupture**	**268**	**6.00**	**2.789**	**18.200**	**20.391**	**12.519**	**11.475**	**0.000**	**0.000**	**0.000**
0.000		**0.000**	**Automatic**		**KL/R value of 232.56 exceeds maximum of 200.00 for member "g48Y" ??**										
g49P	Horz5	18.200	Shear	15.694	Rupture	127	10.08	18.257	18.200	20.391	24.806	15.694	0.000	0.000	0.000
0.000		0.000	Automatic												
g49Y	Horz5	18.200	Shear	15.694	Rupture	127	10.08	18.257	18.200	20.391	24.806	15.694	0.000	0.000	0.000
0.000		0.000	Automatic												
g50P	Horz5	18.200	Shear	15.694	Rupture	127	10.08	18.257	18.200	20.391	24.806	15.694	0.000	0.000	0.000
0.000		0.000	Automatic												
g50X	Horz5	18.200	Shear	15.694	Rupture	127	10.08	18.257	18.200	20.391	24.806	15.694	0.000	0.000	0.000
0.000		0.000	Automatic												
g51P	Horz6	26.018	L/r	27.300	Shear	134	12.43	26.018	27.300	40.781	40.419	29.700	0.000	0.000	0.000
0.000		0.000	Automatic												
g51Y	Horz6	26.018	L/r	27.300	Shear	134	12.43	26.018	27.300	40.781	40.419	29.700	0.000	0.000	0.000

0.000		0.000	Automatic													
g52P	Horz6	26.018	L/r	27.300	Shear	134	12.43	26.018	27.300	40.781	40.419	29.700	0.000	0.000	0.000	
0.000		0.000	Automatic													
g52X	Horz6	26.018	L/r	27.300	Shear	134	12.43	26.018	27.300	40.781	40.419	29.700	0.000	0.000	0.000	
0.000		0.000	Automatic													
g53P	Horz7	9.466	L/r	15.694	Rupture	179	7.39	9.466	18.200	20.391	24.669	15.694	0.000	0.000	0.000	
0.000		0.000	Automatic													
g53X	Horz7	9.466	L/r	15.694	Rupture	179	7.39	9.466	18.200	20.391	24.669	15.694	0.000	0.000	0.000	
0.000		0.000	Automatic													
g53XY	Horz7	9.466	L/r	15.694	Rupture	179	7.39	9.466	18.200	20.391	24.669	15.694	0.000	0.000	0.000	
0.000		0.000	Automatic													
g53Y	Horz7	9.466	L/r	15.694	Rupture	179	7.39	9.466	18.200	20.391	24.669	15.694	0.000	0.000	0.000	
0.000		0.000	Automatic													
g54P	Horz7	9.466	L/r	15.694	Rupture	179	7.39	9.466	18.200	20.391	24.669	15.694	0.000	0.000	0.000	
0.000		0.000	Automatic													
g54X	Horz7	9.466	L/r	15.694	Rupture	179	7.39	9.466	18.200	20.391	24.669	15.694	0.000	0.000	0.000	
0.000		0.000	Automatic													
g54XY	Horz7	9.466	L/r	15.694	Rupture	179	7.39	9.466	18.200	20.391	24.669	15.694	0.000	0.000	0.000	
0.000		0.000	Automatic													
g54Y	Horz7	9.466	L/r	15.694	Rupture	179	7.39	9.466	18.200	20.391	24.669	15.694	0.000	0.000	0.000	
0.000		0.000	Automatic													
g55P	Inner1	5.923	L/r	13.162	Rupture	190	4.24	5.923	18.200	20.391	15.532	13.162	0.000	0.000	0.000	
0.000		0.000	Automatic													
g55X	Inner1	5.923	L/r	13.162	Rupture	190	4.24	5.923	18.200	20.391	15.532	13.162	0.000	0.000	0.000	
0.000		0.000	Automatic													
g55XY	Inner1	5.923	L/r	13.162	Rupture	190	4.24	5.923	18.200	20.391	15.532	13.162	0.000	0.000	0.000	
0.000		0.000	Automatic													
g55Y	Inner1	5.923	L/r	13.162	Rupture	190	4.24	5.923	18.200	20.391	15.532	13.162	0.000	0.000	0.000	
0.000		0.000	Automatic													
g56P	Inner2	8.530	L/r	14.006	Rupture	165	4.24	8.530	18.200	20.391	18.448	14.006	0.000	0.000	0.000	
0.000		0.000	Automatic													
g56X	Inner2	8.530	L/r	14.006	Rupture	165	4.24	8.530	18.200	20.391	18.448	14.006	0.000	0.000	0.000	
0.000		0.000	Automatic													
g56XY	Inner2	8.530	L/r	14.006	Rupture	165	4.24	8.530	18.200	20.391	18.448	14.006	0.000	0.000	0.000	
0.000		0.000	Automatic													
g56Y	Inner2	8.530	L/r	14.006	Rupture	165	4.24	8.530	18.200	20.391	18.448	14.006	0.000	0.000	0.000	
0.000		0.000	Automatic													
g57P	Inner2	8.530	L/r	14.006	Rupture	165	4.24	8.530	18.200	20.391	18.448	14.006	0.000	0.000	0.000	
0.000		0.000	Automatic													
g57X	Inner2	8.530	L/r	14.006	Rupture	165	4.24	8.530	18.200	20.391	18.448	14.006	0.000	0.000	0.000	
0.000		0.000	Automatic													
g57XY	Inner2	8.530	L/r	14.006	Rupture	165	4.24	8.530	18.200	20.391	18.448	14.006	0.000	0.000	0.000	
0.000		0.000	Automatic													
g57Y	Inner2	8.530	L/r	14.006	Rupture	165	4.24	8.530	18.200	20.391	18.448	14.006	0.000	0.000	0.000	
0.000		0.000	Automatic													
g58P	Inner2	8.530	L/r	14.006	Rupture	165	4.24	8.530	18.200	20.391	18.448	14.006	0.000	0.000	0.000	
0.000		0.000	Automatic													
g58X	Inner2	8.530	L/r	14.006	Rupture	165	4.24	8.530	18.200	20.391	18.448	14.006	0.000	0.000	0.000	
0.000		0.000	Automatic													
g58XY	Inner2	8.530	L/r	14.006	Rupture	165	4.24	8.530	18.200	20.391	18.448	14.006	0.000	0.000	0.000	
0.000		0.000	Automatic													
g58Y	Inner2	8.530	L/r	14.006	Rupture	165	4.24	8.530	18.200	20.391	18.448	14.006	0.000	0.000	0.000	
0.000		0.000	Automatic													
g59P	**Inner1**	**1.749**	**L/r**	**8.269**	**Rupture**	**318**	**14.25**	**1.749**	**9.100**	**10.195**	**15.532**	**8.269**	**0.000**	**0.000**	**0.000**	
0.000		**0.000**	**Automatic**		**KL/R value of 318.49 exceeds maximum of 200.00 for member "g59P" ??**											
g59X	**Inner1**	**1.749**	**L/r**	**8.269**	**Rupture**	**318**	**14.25**	**1.749**	**9.100**	**10.195**	**15.532**	**8.269**	**0.000**	**0.000**	**0.000**	
0.000		**0.000**	**Automatic**		**KL/R value of 318.49 exceeds maximum of 200.00 for member "g59X" ??**											
g60P	**Inner1**	**3.252**	**L/r**	**8.269**	**Rupture**	**234**	**5.23**	**3.252**	**9.100**	**10.195**	**15.532**	**8.269**	**0.000**	**0.000**	**0.000**	
0.000		**0.000**	**Automatic**		**KL/R value of 233.59 exceeds maximum of 200.00 for member "g60P" ??**											

g60X	Inner1	3.252	L/r	8.269	Rupture	234	5.23	3.252	9.100	10.195	15.532	8.269	0.000	0.000	0.000
0.000		0.000	Automatic		KL/R value of 233.59 exceeds maximum of 200.00 for member "g60X" ??										
g60XY	Inner1	3.252	L/r	8.269	Rupture	234	5.23	3.252	9.100	10.195	15.532	8.269	0.000	0.000	0.000
0.000		0.000	Automatic		KL/R value of 233.59 exceeds maximum of 200.00 for member "g60XY" ??										
g60Y	Inner1	3.252	L/r	8.269	Rupture	234	5.23	3.252	9.100	10.195	15.532	8.269	0.000	0.000	0.000
0.000		0.000	Automatic		KL/R value of 233.59 exceeds maximum of 200.00 for member "g60Y" ??										
Fg6072P	Inner1	3.252	L/r	8.269	Rupture	234	5.23	3.252	9.100	10.195	15.532	8.269	0.000	0.000	0.000
0.000		0.000	Automatic		KL/R value of 233.59 exceeds maximum of 200.00 for member "Fg6072P" ??										
Fg6072X	Inner1	3.252	L/r	8.269	Rupture	234	5.23	3.252	9.100	10.195	15.532	8.269	0.000	0.000	0.000
0.000		0.000	Automatic		KL/R value of 233.59 exceeds maximum of 200.00 for member "Fg6072X" ??										
Fg6072XY	Inner1	3.252	L/r	8.269	Rupture	234	5.23	3.252	9.100	10.195	15.532	8.269	0.000	0.000	0.000
0.000		0.000	Automatic		KL/R value of 233.59 exceeds maximum of 200.00 for member "Fg6072XY" ??										
Fg6072Y	Inner1	3.252	L/r	8.269	Rupture	234	5.23	3.252	9.100	10.195	15.532	8.269	0.000	0.000	0.000
0.000		0.000	Automatic		KL/R value of 233.59 exceeds maximum of 200.00 for member "Fg6072Y" ??										
g61P	ShieldAr	18.200	Shear	18.200	Shear	138	11.50	53.097	18.200	53.287	102.789	40.756	0.000	0.000	0.000
0.000		0.000	Automatic												
g61X	ShieldAr	18.200	Shear	18.200	Shear	138	11.50	53.097	18.200	53.287	102.789	40.756	0.000	0.000	0.000
0.000		0.000	Automatic												
g62P	ShieldAr	18.200	Shear	18.200	Shear	72	6.00	81.514	18.200	53.287	102.789	40.756	0.000	0.000	0.000
0.000		0.000	Automatic												
g63P	TopCrArm	18.200	Shear	18.200	Shear	75	9.49	103.153	18.200	53.320	129.319	53.320	0.000	0.000	0.000
0.000		0.000	Automatic												
g63X	TopCrArm	18.200	Shear	18.200	Shear	75	9.49	103.153	18.200	53.320	129.319	53.320	0.000	0.000	0.000
0.000		0.000	Automatic												
g63XY	TopCrArm	18.200	Shear	18.200	Shear	75	9.49	103.153	18.200	53.320	129.319	53.320	0.000	0.000	0.000
0.000		0.000	Automatic												
g63Y	TopCrArm	18.200	Shear	18.200	Shear	75	9.49	103.153	18.200	53.320	129.319	53.320	0.000	0.000	0.000
0.000		0.000	Automatic												
g64P	TopCArmA	18.200	Shear	18.200	Shear	95	6.00	80.907	18.200	47.578	103.741	44.494	0.000	0.000	0.000
0.000		0.000	Automatic												
g64Y	TopCArmA	18.200	Shear	18.200	Shear	95	6.00	80.907	18.200	47.578	103.741	44.494	0.000	0.000	0.000
0.000		0.000	Automatic												
g65P	MidCrArm	18.200	Shear	18.200	Shear	94	11.88	88.186	18.200	53.320	129.319	53.320	0.000	0.000	0.000
0.000		0.000	Automatic												
g65X	MidCrArm	18.200	Shear	18.200	Shear	94	11.88	88.186	18.200	53.320	129.319	53.320	0.000	0.000	0.000
0.000		0.000	Automatic												
g65XY	MidCrArm	18.200	Shear	18.200	Shear	94	11.88	88.186	18.200	53.320	129.319	53.320	0.000	0.000	0.000
0.000		0.000	Automatic												
g65Y	MidCrArm	18.200	Shear	18.200	Shear	94	11.88	88.186	18.200	53.320	129.319	53.320	0.000	0.000	0.000
0.000		0.000	Automatic												
g66P	MidCArmA	18.200	Shear	18.200	Shear	95	6.00	80.907	18.200	47.578	103.741	44.494	0.000	0.000	0.000
0.000		0.000	Automatic												
g66Y	MidCArmA	18.200	Shear	18.200	Shear	95	6.00	80.907	18.200	47.578	103.741	44.494	0.000	0.000	0.000
0.000		0.000	Automatic												
g67P	BotCrArm	18.200	Shear	18.200	Shear	75	9.49	103.153	18.200	53.320	129.319	53.320	0.000	0.000	0.000
0.000		0.000	Automatic												
g67X	BotCrArm	18.200	Shear	18.200	Shear	75	9.49	103.153	18.200	53.320	129.319	53.320	0.000	0.000	0.000
0.000		0.000	Automatic												
g67XY	BotCrArm	18.200	Shear	18.200	Shear	75	9.49	103.153	18.200	53.320	129.319	53.320	0.000	0.000	0.000
0.000		0.000	Automatic												
g67Y	BotCrArm	18.200	Shear	18.200	Shear	75	9.49	103.153	18.200	53.320	129.319	53.320	0.000	0.000	0.000
0.000		0.000	Automatic												
g68P	BotCArmA	18.200	Shear	18.200	Shear	95	6.00	80.907	18.200	47.578	103.741	44.494	0.000	0.000	0.000
0.000		0.000	Automatic												
g68Y	BotCArmA	18.200	Shear	18.200	Shear	95	6.00	80.907	18.200	47.578	103.741	44.494	0.000	0.000	0.000
0.000		0.000	Automatic												
g69P	ShArmBr	18.200	Shear	18.200	Shear	144	13.03	19.970	18.200	27.187	32.481	20.925	0.000	0.000	0.000
0.000		0.000	Automatic												
g69X	ShArmBr	18.200	Shear	18.200	Shear	144	13.03	19.970	18.200	27.187	32.481	20.925	0.000	0.000	0.000

0.000		0.000		Automatic												
	g69XY	ShArmBr	18.200	Shear	18.200	Shear	144	13.03	19.970	18.200	27.187	32.481	20.925	0.000	0.000	0.000
0.000		0.000		Automatic												
	g69Y	ShArmBr	18.200	Shear	18.200	Shear	144	13.03	19.970	18.200	27.187	32.481	20.925	0.000	0.000	0.000
0.000		0.000		Automatic												
	g70P	**TopArmBr**	**3.178**	**L/r**	**15.532**	**Net Sect**	**236**	**10.57**	**3.178**	**18.200**	**20.391**	**15.532**	**15.609**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**		**KL/R value of 236.29 exceeds maximum of 200.00 for member "g70P" ??**										
	g70X	**TopArmBr**	**3.178**	**L/r**	**15.532**	**Net Sect**	**236**	**10.57**	**3.178**	**18.200**	**20.391**	**15.532**	**15.609**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**		**KL/R value of 236.29 exceeds maximum of 200.00 for member "g70X" ??**										
	g70XY	**TopArmBr**	**3.178**	**L/r**	**15.532**	**Net Sect**	**236**	**10.57**	**3.178**	**18.200**	**20.391**	**15.532**	**15.609**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**		**KL/R value of 236.29 exceeds maximum of 200.00 for member "g70XY" ??**										
	g70Y	**TopArmBr**	**3.178**	**L/r**	**15.532**	**Net Sect**	**236**	**10.57**	**3.178**	**18.200**	**20.391**	**15.532**	**15.609**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**		**KL/R value of 236.29 exceeds maximum of 200.00 for member "g70Y" ??**										
	g71P	**MidArmBr**	**3.297**	**L/r**	**16.453**	**Rupture**	**248**	**12.77**	**3.297**	**18.200**	**20.391**	**18.448**	**16.453**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**		**KL/R value of 248.28 exceeds maximum of 200.00 for member "g71P" ??**										
	g71X	**MidArmBr**	**3.297**	**L/r**	**16.453**	**Rupture**	**248**	**12.77**	**3.297**	**18.200**	**20.391**	**18.448**	**16.453**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**		**KL/R value of 248.28 exceeds maximum of 200.00 for member "g71X" ??**										
	g71XY	**MidArmBr**	**3.297**	**L/r**	**16.453**	**Rupture**	**248**	**12.77**	**3.297**	**18.200**	**20.391**	**18.448**	**16.453**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**		**KL/R value of 248.28 exceeds maximum of 200.00 for member "g71XY" ??**										
	g71Y	**MidArmBr**	**3.297**	**L/r**	**16.453**	**Rupture**	**248**	**12.77**	**3.297**	**18.200**	**20.391**	**18.448**	**16.453**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**		**KL/R value of 248.28 exceeds maximum of 200.00 for member "g71Y" ??**										
	g72P	**BotArmBr**	**3.181**	**L/r**	**15.532**	**Net Sect**	**236**	**10.57**	**3.181**	**18.200**	**20.391**	**15.532**	**15.609**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**		**KL/R value of 236.19 exceeds maximum of 200.00 for member "g72P" ??**										
	g72X	**BotArmBr**	**3.181**	**L/r**	**15.532**	**Net Sect**	**236**	**10.57**	**3.181**	**18.200**	**20.391**	**15.532**	**15.609**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**		**KL/R value of 236.19 exceeds maximum of 200.00 for member "g72X" ??**										
	g72XY	**BotArmBr**	**3.181**	**L/r**	**15.532**	**Net Sect**	**236**	**10.57**	**3.181**	**18.200**	**20.391**	**15.532**	**15.609**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**		**KL/R value of 236.19 exceeds maximum of 200.00 for member "g72XY" ??**										
	g72Y	**BotArmBr**	**3.181**	**L/r**	**15.532**	**Net Sect**	**236**	**10.57**	**3.181**	**18.200**	**20.391**	**15.532**	**15.609**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**		**KL/R value of 236.19 exceeds maximum of 200.00 for member "g72Y" ??**										
	g74P	Pwmnt	630.072	L/r	679.999	Net Sect	41	15.00	630.072	0.000	0.000	679.999	0.000	0.000	0.000	0.000
0.000		0.000		Automatic												
	g75P	Pwmnt	295.328	L/r	679.999	Net Sect	115	42.00	295.328	0.000	0.000	679.999	0.000	0.000	0.000	0.000
0.000		0.000		Automatic												
	g76P	Pwmnt	636.507	L/r	679.999	Net Sect	38	14.00	636.507	0.000	0.000	679.999	0.000	0.000	0.000	0.000
0.000		0.000		Automatic												
	g77P	Pwmnt	636.507	L/r	679.999	Net Sect	38	14.00	636.507	0.000	0.000	679.999	0.000	0.000	0.000	0.000
0.000		0.000		Automatic												
	g78P	Pwmnt	675.160	L/r	679.999	Net Sect	13	4.67	675.160	0.000	0.000	679.999	0.000	0.000	0.000	0.000
0.000		0.000		Automatic												
	g79P	Pwmnt	592.742	L/r	679.999	Net Sect	54	19.83	592.742	0.000	0.000	679.999	0.000	0.000	0.000	0.000
0.000		0.000		Automatic												
	g80P	PMBR1	10.195	Bearing	10.195	Bearing	46	1.50	20.044	16.800	10.195	18.827	10.343	0.000	0.000	0.000
0.000		0.000		Automatic												
	g82P	PMBR1	10.195	Bearing	10.195	Bearing	46	1.50	20.044	16.800	10.195	18.827	10.343	0.000	0.000	0.000
0.000		0.000		Automatic												
	g83P	PMBR1	10.195	Bearing	10.195	Bearing	46	1.50	20.044	16.800	10.195	18.827	10.343	0.000	0.000	0.000
0.000		0.000		Automatic												
	g84P	PMBR2	10.195	Bearing	10.195	Bearing	81	3.35	22.127	16.800	10.195	25.048	11.328	0.000	0.000	0.000
0.000		0.000		Automatic												
	g84X	PMBR2	10.195	Bearing	10.195	Bearing	81	3.35	22.127	16.800	10.195	25.048	11.328	0.000	0.000	0.000
0.000		0.000		Automatic												
	g86P	PMBR2	10.195	Bearing	10.195	Bearing	81	3.35	22.127	16.800	10.195	25.048	11.328	0.000	0.000	0.000
0.000		0.000		Automatic												
	g86X	PMBR2	10.195	Bearing	10.195	Bearing	81	3.35	22.127	16.800	10.195	25.048	11.328	0.000	0.000	0.000
0.000		0.000		Automatic												
	g87P	PMBR2	10.195	Bearing	10.195	Bearing	81	3.35	22.127	16.800	10.195	25.048	11.328	0.000	0.000	0.000
0.000		0.000		Automatic												
	g87X	PMBR2	10.195	Bearing	10.195	Bearing	81	3.35	22.127	16.800	10.195	25.048	11.328	0.000	0.000	0.000
0.000		0.000		Automatic												

g88P	PMBR3	10.195	Bearing	10.195	Bearing	87	4.30	26.079	16.800	10.195	31.139	11.328	0.000	0.000	0.000
0.000		0.000		Automatic											
g88X	PMBR3	10.195	Bearing	10.195	Bearing	87	4.30	26.079	16.800	10.195	31.139	11.328	0.000	0.000	0.000
0.000		0.000		Automatic											
g89P	PMBR3	10.195	Bearing	10.195	Bearing	128	6.38	18.929	16.800	10.195	31.139	11.328	0.000	0.000	0.000
0.000		0.000		Automatic											
g89X	PMBR3	10.195	Bearing	10.195	Bearing	128	6.38	18.929	16.800	10.195	31.139	11.328	0.000	0.000	0.000
0.000		0.000		Automatic											
g90P	Leg1	11.743	L/r	22.347	Net Sect	148	6.12	11.743	36.400	40.781	22.347	33.984	0.000	0.000	0.000
0.000		0.000		Automatic											
g90X	Leg1	11.743	L/r	22.347	Net Sect	148	6.12	11.743	36.400	40.781	22.347	33.984	0.000	0.000	0.000
0.000		0.000		Automatic											
g92P	Diag8	6.503	L/r	10.195	Bearing	177	5.80	6.503	16.800	10.195	18.827	10.343	0.000	0.000	0.000
0.000		0.000		Automatic											
g92X	Diag8	6.503	L/r	10.195	Bearing	177	5.80	6.503	16.800	10.195	18.827	10.343	0.000	0.000	0.000
0.000		0.000		Automatic											
g93P	Diag9	10.195	Bearing	10.195	Bearing	117	3.00	14.460	16.800	10.195	18.827	10.343	0.000	0.000	0.000
0.000		0.000		Automatic											
g93X	Diag9	10.195	Bearing	10.195	Bearing	117	3.00	14.460	16.800	10.195	18.827	10.343	0.000	0.000	0.000
0.000		0.000		Automatic											
g94P	**Inner3**	**2.775**	**L/r**	**6.581**	**Rupture**	**233**	**5.23**	**2.775**	**9.100**	**10.195**	**12.519**	**6.581**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**KL/R value of 233.16 exceeds maximum of 200.00 for member "g94P" ??**										
g94X	**Inner3**	**2.775**	**L/r**	**6.581**	**Rupture**	**233**	**5.23**	**2.775**	**9.100**	**10.195**	**12.519**	**6.581**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**KL/R value of 233.16 exceeds maximum of 200.00 for member "g94X" ??**										
g94XY	**Inner3**	**2.775**	**L/r**	**6.581**	**Rupture**	**233**	**5.23**	**2.775**	**9.100**	**10.195**	**12.519**	**6.581**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**KL/R value of 233.16 exceeds maximum of 200.00 for member "g94XY" ??**										
g94Y	**Inner3**	**2.775**	**L/r**	**6.581**	**Rupture**	**233**	**5.23**	**2.775**	**9.100**	**10.195**	**12.519**	**6.581**	**0.000**	**0.000**	**0.000**
0.000		**0.000**		**Automatic**	**KL/R value of 233.16 exceeds maximum of 200.00 for member "g94Y" ??**										

The model contains 284 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	0.125	4.161	1.203
2P	0.116	6.432	4.777
3P	0.188	7.361	5.736
4P	0.0872	4.625	4.625
5P	0.108	6.093	5.083
6P	0.236	8.830	6.528
7P	0.121	4.625	4.625
8P	0.141	5.798	5.025
9P	0.274	9.340	7.559
10P	0.192	7.840	7.840
18P	0.133	5.614	1.784
19P	0.136	5.229	2.059
20P	0.174	6.860	2.174
21P	0.136	5.228	2.058
27P	0.492	10.535	10.535
28P	0.62	13.641	13.453
29P	0.463	9.918	9.918
30P	0.707	15.500	15.313
31P	1.4	30.375	30.188
32P	1.45	32.129	32.129
33P	0.372	7.969	7.969
1X	0.125	4.161	1.203

2X	0.116	6.432	4.777
2XY	0.114	6.370	4.772
2Y	0.114	6.370	4.772
3X	0.188	7.361	5.736
3XY	0.188	7.361	5.736
3Y	0.188	7.361	5.736
4X	0.0872	4.625	4.625
4XY	0.0872	4.625	4.625
4Y	0.0872	4.625	4.625
5X	0.108	6.093	5.083
5XY	0.108	6.093	5.083
5Y	0.108	6.093	5.083
6X	0.236	8.830	6.528
6XY	0.231	8.517	6.371
6Y	0.231	8.517	6.371
7X	0.121	4.625	4.625
7XY	0.121	4.625	4.625
7Y	0.121	4.625	4.625
8X	0.141	5.798	5.025
8XY	0.141	5.798	5.025
8Y	0.141	5.798	5.025
9X	0.274	9.340	7.559
9XY	0.269	9.027	7.402
9Y	0.269	9.027	7.402
10X	0.192	7.840	7.840
10XY	0.192	7.840	7.840
10Y	0.192	7.840	7.840
18X	0.133	5.614	1.784
19X	0.136	5.229	2.059
20X	0.174	6.860	2.174
21X	0.136	5.228	2.058
11S	0.178	6.814	6.814
12S	0.175	7.078	7.078
13S	0.289	11.265	11.265
14S	0.36	13.325	13.325
15S	0.225	7.638	7.638
16S	0.171	9.660	7.137
17S	0.171	7.137	9.660
22S	0.0198	0.875	1.000
23S	0.0207	1.000	1.000
24S	0.0225	1.000	1.125
25S	0.0225	1.000	1.125
17SF0.50S	0.0238	1.270	1.083
1PF94S	0.013	0.805	0.637
35S	0.0215	1.378	0.828
11X	0.178	6.814	6.814
11XY	0.178	6.814	6.814
11Y	0.178	6.814	6.814
12X	0.175	7.078	7.078
12XY	0.175	7.078	7.078
12Y	0.175	7.078	7.078
13X	0.289	11.265	11.265
13XY	0.289	11.265	11.265
13Y	0.289	11.265	11.265
14X	0.36	13.325	13.325
14XY	0.36	13.325	13.325
14Y	0.36	13.325	13.325
15X	0.225	7.638	7.638
15XY	0.225	7.638	7.638

15Y	0.225	7.638	7.638
16Y	0.171	9.660	7.137
17X	0.171	7.137	9.660
17SF0.50X	0.0238	1.270	1.083
17SF0.50XY	0.0276	1.270	1.458
17SF0.50Y	0.0276	1.270	1.458
1PF94X	0.013	0.805	0.637
Total	18.6	646.664	574.119

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	8.874	316.366	243.821	113.806	119.733
2	9.700	330.298	330.298	100.603	161.166
Total	18.574	646.664	574.119	214.409	280.899

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	8.874	8.874	1323.364	1323.364
2	9.700	10.670	1416.744	1558.419
Total	18.574	19.544	2740.108	2881.783

Section Joint Information:

Section Label	Joint Label	Joint Elevation (ft)
1	1P	95.000
1	1PF94S	94.000
1	1X	95.000
1	1PF94X	94.000
1	2P	89.670
1	2X	89.670
1	3P	85.000
1	3X	85.000
1	2XY	89.670
1	3XY	85.000
1	2Y	89.670
1	3Y	85.000
1	4P	80.330
1	4X	80.330
1	4XY	80.330
1	4Y	80.330
1	5P	75.660
1	5X	75.660
1	5XY	75.660
1	5Y	75.660
1	6P	71.000
1	6X	71.000
1	6XY	71.000
1	6Y	71.000

1	7P	66.330
1	7X	66.330
1	7XY	66.330
1	7Y	66.330
1	8P	61.660
1	8X	61.660
1	8XY	61.660
1	8Y	61.660
1	9P	57.000
1	9X	57.000
1	9XY	57.000
1	9Y	57.000
1	22S	89.670
1	23S	85.000
1	24S	71.000
1	25S	57.000
1	18X	95.000
1	18P	95.000
1	19X	85.000
1	19P	85.000
1	20X	71.000
1	20P	71.000
1	21X	57.000
1	21P	57.000
1	31P	57.000
1	30P	71.000
1	29P	85.000
1	28P	89.670
1	27P	109.500
1	35S	94.000
2	9P	57.000
2	11S	50.500
2	9X	57.000
2	11X	50.500
2	9XY	57.000
2	11XY	50.500
2	9Y	57.000
2	11Y	50.500
2	12S	44.000
2	12X	44.000
2	12XY	44.000
2	12Y	44.000
2	13S	37.500
2	13X	37.500
2	13XY	37.500
2	13Y	37.500
2	14S	26.250
2	14X	26.250
2	14XY	26.250
2	14Y	26.250
2	15S	15.000
2	15X	15.000
2	15XY	15.000
2	15Y	15.000
2	10P	0.000
2	10X	0.000
2	10XY	0.000
2	10Y	0.000
2	16S	15.000

2	16Y	15.000
2	17X	15.000
2	17S	15.000
2	17SF0.50S	15.000
2	17SF0.50X	15.000
2	17SF0.50XY	15.000
2	17SF0.50Y	15.000
2	33P	0.000
2	32P	15.000
2	31P	57.000

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	**109.500**	**57.000**	**54**	**176**	**0.00**	**6.00**	**215.258**	**0.00**	**24.00**	**637.105**	**Problem calculating gross area of transverse face for section "1": width is zero at elevation 109.50 and 95.00 (ft) ??**
2	57.000	0.000	39	108	6.00	17.92	681.720	6.00	17.92	681.720	

*** Insulator Data

Clamp Properties:

Label	Stock Number	Holding Capacity (lbs)
C-EX1		5e+004

Clamp Insulator Connectivity:

Clamp Label	Structure And Tip Attach	Property Set	Min. Required Vertical Load (uplift) (lbs)
1	18P	C-EX1	No Limit
2	18X	C-EX1	No Limit
3	19P	C-EX1	No Limit
4	19X	C-EX1	No Limit
5	20P	C-EX1	No Limit
6	20X	C-EX1	No Limit
7	21P	C-EX1	No Limit
8	21X	C-EX1	No Limit
9	27P	C-EX1	No Limit
10	28P	C-EX1	No Limit
11	29P	C-EX1	No Limit
12	30P	C-EX1	No Limit
13	31P	C-EX1	No Limit
14	32P	C-EX1	No Limit
15	2Y	C-EX1	No Limit
16	4Y	C-EX1	No Limit
17	6Y	C-EX1	No Limit
18	8Y	C-EX1	No Limit
19	11Y	C-EX1	No Limit
20	13Y	C-EX1	No Limit
21	15Y	C-EX1	No Limit

*** Loads Data

Loads from file: j:\jobs\1715900.wi\12_ct33xc516 watertown\04_structural\calcs\rev (2)\pls tower\cl&p # 1522.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) 109.50 (ft)
  Structure height 109.50 (ft)
  Structure height above ground 109.50 (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 and Tubular Arms and Towers	SF for Guys and Cables	SF for Insuls.	SF For Found.	Point Loads	Wind/Ice Model	Trans. Wind Pressure (psf)	Longit. Wind Pressure (psf)	Ice Thick. (in)	Ice Density (lbs/ft^3)	Temperature (deg F)	Joint Displ.
NESC Heavy	1.5000	2.5000	1.00000	1.0000	1.0000	1.0000	22 loads	Wind on Face	4	0	0.000	0.000	0.0	
NESC Extreme	1.0000	1.0000	1.00000	1.0000	1.0000	1.0000	22 loads	NESC 2012	31	0	0.000	0.000	0.0	

Point Loads for Load Case "NESC Heavy":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
18P	818	775	0	Shield Wire
18X	818	775	0	Shield Wire
19P	3047	1336	0	Conductor
19X	3047	1336	0	Conductor
20P	3047	1336	0	Conductor
20X	3047	1336	0	Conductor
21P	3047	1336	0	Conductor
21X	3047	1336	0	Conductor
27P	7214	586	0	Sprint Antennas
27P	838	99	0	Coax Cables on/in Powermount
28P	70	0	0	Coax Cables in Powermount
29P	89	0	0	Coax Cables in Powermount
30P	131	0	0	Coax Cables in Powermount
31P	262	0	0	Coax Cables in Powermount
32P	337	0	0	Coax Cables in Powermount
2Y	697	258	0	Coax Cables on Tower
4Y	442	163	0	Coax Cables on Tower
6Y	442	163	0	Coax Cables on Tower
8Y	465	172	0	Coax Cables on Tower
11Y	558	206	0	Coax Cables on Tower

13Y	825	305	0	Coax Cables on Tower
15Y	1220	451	0	Coax Cables on Tower

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

Section Label	Z of Top (ft)	Z of Bottom (ft)	Ave. Elev. Above Ground (ft)	Res. Adj. Wind Pres. (psf)	Tran Adj. Wind Pres. (psf)	Tran Drag Coef	Tran Wind Load (lbs)	Long Adj. Wind Pres. (psf)	Long Drag Coef	Long Wind Load (lbs)	Ice Weight (lbs)	Total Weight (lbs)
1	109.50	57.00	83.25	10.00	10.00	3.200	3831.4	0.00	3.200	0.0	0	13311
2	57.00	0.00	28.50	10.00	10.00	3.300	5318.5	0.00	3.300	0.0	0	16005

Point Loads for Load Case "NESC Extreme":

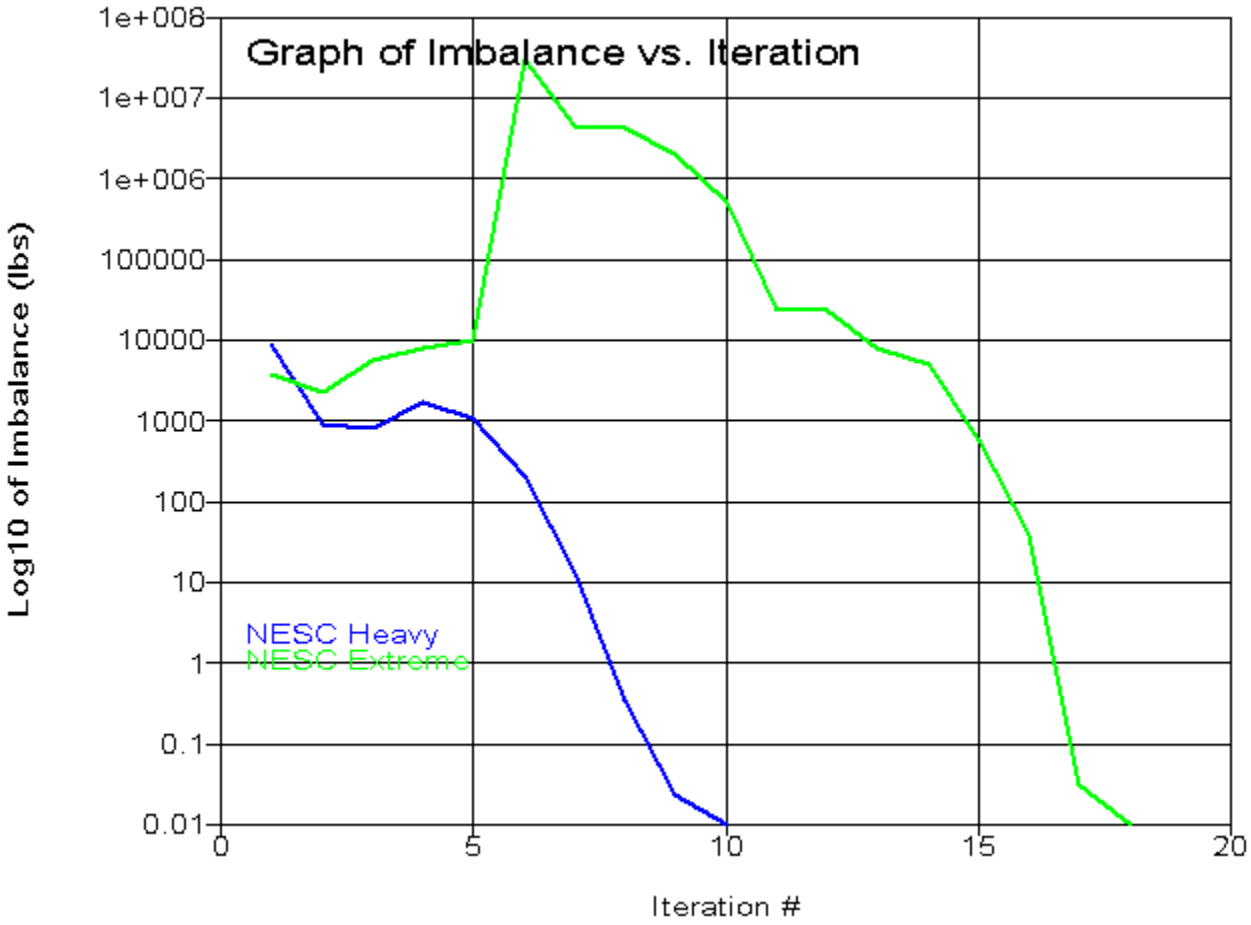
Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
18P	237	558	0	Shield Wire
18X	237	558	0	Shield Wire
19P	1316	2060	0	Conductor
19X	1316	2060	0	Conductor
20P	1316	2060	0	Conductor
20X	1316	2060	0	Conductor
21P	1316	2060	0	Conductor
21X	1316	2060	0	Conductor
27P	3383	2237	0	Sprint Antennas
27P	281	251	0	Coax Cables in Powermount
28P	47	0	0	Coax Cables in Powermount
29P	59	0	0	Coax Cables in Powermount
30P	87	0	0	Coax Cables in Powermount
31P	175	0	0	Coax Cables in Powermount
32P	225	0	0	Coax Cables in Powermount
2Y	187	754	0	Coax Cables on Tower
4Y	119	477	0	Coax Cables on Tower
6Y	119	477	0	Coax Cables on Tower
8Y	125	502	0	Coax Cables on Tower
11Y	150	603	0	Coax Cables on Tower
13Y	222	892	0	Coax Cables on Tower
15Y	328	1319	0	Coax Cables on Tower

Section Load Case Information (Code) for "NESC Extreme":

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 (lbs)
1	109.50	57.00	83.25	31.70	31.70	63.95	55.78	215.26	0.556	3.200	2.000	10023.5	0.00	113.81	0.00	637.11	0.179	3.200	2.000	0.0	0	8874
2	57.00	0.00	28.50	31.70	31.70	100.60	60.56	681.72	0.236	3.200	2.000	14044.4	0.00	100.60	0.00	681.72	0.148	3.200	2.000	0.0	0	10670

*** Analysis Results:

Maximum element usage is 81.98% for Angle "g94XY" in load case "NESC Extreme"
Maximum insulator usage is 17.70% for Clamp "9" in load case "NESC Heavy"



Angle Forces For All Load Cases:
Positive for tension - negative for compression

Group Label	Angle Label	Max. Usage For All LC %	Max. Tens. For All LC (kips)	Max. Comp. For All LC (kips)	LC 1 (kips)	LC 2 (kips)
Leg1	g1P	0.47	0.000	-0.149	-0.149	-0.057
Leg1	g1X	0.17	0.000	-0.055	-0.055	-0.033
Leg1	Fg190P	1.15	0.000	-0.203	-0.177	-0.203
Leg1	Fg190X	0.98	0.000	-0.173	-0.065	-0.173

Leg2	g2P	6.66	0.000	-3.899	-3.563	-3.899
Leg2	g2X	3.05	1.719	-0.595	-0.595	1.719
Leg2	g2XY	4.16	2.346	-0.149	-0.149	2.346
Leg2	g2Y	8.24	0.000	-4.824	-4.780	-4.824
Leg2	g3P	15.60	0.000	-9.130	-6.384	-9.130
Leg2	g3X	11.72	6.603	0.000	1.832	6.603
Leg2	g3XY	11.27	6.352	0.000	1.648	6.352
Leg2	g3Y	15.99	0.000	-9.358	-7.060	-9.358
Leg2	g4P	29.53	0.000	-17.279	-11.129	-17.279
Leg2	g4X	24.47	13.786	0.000	4.950	13.786
Leg2	g4XY	23.02	12.968	0.000	4.338	12.968
Leg2	g4Y	29.12	0.000	-17.041	-11.785	-17.041
Leg2	g5P	40.28	0.000	-23.589	-15.255	-23.589
Leg2	g5X	33.67	18.967	0.000	6.601	18.967
Leg2	g5XY	32.08	18.072	0.000	5.807	18.072
Leg2	g5Y	39.41	0.000	-23.083	-15.560	-23.083
Leg3	g6P	30.35	0.000	-30.371	-19.036	-30.371
Leg3	g6X	26.92	25.713	0.000	10.070	25.713
Leg3	g6XY	26.09	24.927	0.000	9.099	24.927
Leg3	g6Y	30.36	0.000	-30.379	-19.762	-30.379
Leg3	g7P	40.30	0.000	-40.324	-25.179	-40.324
Leg3	g7X	36.30	34.683	0.000	14.383	34.683
Leg3	g7XY	35.96	34.358	0.000	13.431	34.358
Leg3	g7Y	41.03	0.000	-41.058	-25.967	-41.058
Leg3	g8P	46.21	0.000	-46.275	-29.337	-46.275
Leg3	g8X	41.51	39.657	0.000	16.346	39.657
Leg3	g8XY	41.78	39.918	0.000	15.573	39.918
Leg3	g8Y	47.72	0.000	-47.790	-30.554	-47.790
Leg4	g9P	35.05	0.000	-52.789	-33.132	-52.789
Leg4	g9X	28.69	45.506	0.000	19.449	45.506
Leg4	g9XY	29.00	46.000	0.000	18.446	46.000
Leg4	g9Y	36.55	0.000	-55.052	-34.200	-55.052
Leg4	g10P	39.98	0.000	-60.224	-38.012	-60.224
Leg4	g10X	32.39	51.374	0.000	21.946	51.374
Leg4	g10XY	33.14	52.572	0.000	20.742	52.572
Leg4	g10Y	41.65	0.000	-62.733	-39.095	-62.733
Leg4	g11P	42.49	0.000	-61.860	-38.704	-61.860
Leg4	g11X	36.27	52.814	0.000	22.814	52.814
Leg4	g11XY	37.58	54.722	0.000	21.583	54.722
Leg4	g11Y	44.38	0.000	-64.611	-39.342	-64.611
Leg5	g12P	38.43	0.000	-63.091	-38.743	-63.091
Leg5	g12X	33.81	54.689	0.000	23.397	54.689
Leg5	g12XY	34.47	55.753	0.000	22.203	55.753
Leg5	g12Y	39.32	0.000	-64.542	-39.833	-64.542
Leg5	g13P	43.52	0.000	-71.440	-37.043	-71.440
Leg5	g13X	33.49	56.755	0.000	23.189	56.755
Leg5	g13XY	29.33	49.718	0.000	22.251	49.718
Leg5	g13Y	45.17	0.000	-74.160	-37.535	-74.160
Leg6	g14P	42.38	0.000	-71.790	-37.423	-71.790
Leg6	g14X	33.27	56.384	0.000	22.798	56.384
Leg6	g14XY	29.11	49.330	0.000	21.855	49.330
Leg6	g14Y	44.18	0.000	-74.826	-39.154	-74.826
Diag1	g15P	13.32	0.000	-1.159	-0.659	-1.159
Diag1	g15X	8.87	1.378	0.000	1.170	1.378
Diag1	g16P	33.99	0.000	-3.572	-1.856	-3.572
Diag1	g16X	28.39	3.505	0.000	1.734	3.505
Diag1	g16XY	23.08	2.850	0.000	1.230	2.850
Diag1	g16Y	26.96	0.000	-2.833	-1.378	-2.833
Diag1	g17P	4.20	0.000	-0.329	-0.329	-0.192

Diag1	g17X	4.26	0.000	-0.333	-0.333	-0.152
Diag1	g17XY	4.08	0.000	-0.319	-0.319	-0.220
Diag1	g17Y	4.45	0.000	-0.347	-0.347	-0.087
Diag2	g18P	18.85	5.146	0.000	1.881	5.146
Diag2	g18X	21.84	0.000	-5.962	-3.792	-5.962
Diag2	g18XY	17.20	0.000	-4.697	-3.139	-4.697
Diag2	g18Y	15.40	4.203	0.000	1.351	4.203
Diag2	g19P	1.51	0.059	-0.374	0.059	-0.374
Diag2	g19X	2.52	0.687	0.000	0.679	0.687
Diag2	g19XY	4.24	1.157	0.000	0.852	1.157
Diag2	g19Y	3.50	0.000	-0.864	-0.117	-0.864
Diag2	g20P	22.86	6.241	0.000	3.822	6.241
Diag2	g20X	19.80	0.000	-5.404	-2.024	-5.404
Diag2	g20XY	16.37	0.000	-4.470	-1.500	-4.470
Diag2	g20Y	20.37	5.562	0.000	3.368	5.562
Diag2	g21P	3.41	0.931	0.000	0.137	0.931
Diag2	g21X	4.89	0.000	-1.208	-0.889	-1.208
Diag2	g21XY	2.93	0.000	-0.723	-0.705	-0.723
Diag2	g21Y	1.55	0.423	-0.044	-0.044	0.423
Diag2	g22P	22.81	6.010	0.000	3.428	6.010
Diag2	g22X	18.90	0.000	-5.638	-2.341	-5.638
Diag2	g22XY	17.29	0.000	-5.156	-2.089	-5.156
Diag2	g22Y	20.63	5.437	0.000	2.993	5.437
Diag2	g23P	6.24	0.000	-1.540	-1.462	-1.540
Diag2	g23X	2.60	0.685	-0.392	-0.392	0.685
Diag2	g23XY	2.17	0.269	-0.536	-0.536	0.269
Diag2	g23Y	5.36	0.000	-1.323	-1.323	-1.128
Diag3	g24P	20.16	5.503	0.000	2.401	5.503
Diag3	g24X	23.53	0.000	-6.423	-4.410	-6.423
Diag3	g24XY	25.00	0.000	-6.825	-4.355	-6.825
Diag3	g24Y	21.50	5.868	0.000	2.300	5.868
Diag3	g25P	5.69	0.000	-1.555	-0.528	-1.555
Diag3	g25X	6.38	1.740	0.000	1.243	1.740
Diag3	g25XY	6.26	1.709	0.000	1.113	1.709
Diag3	g25Y	5.13	0.000	-1.399	-0.436	-1.399
Diag3	g26P	24.33	6.643	0.000	4.383	6.643
Diag3	g26X	21.36	0.000	-5.833	-2.619	-5.833
Diag3	g26XY	22.62	0.000	-6.177	-2.505	-6.177
Diag3	g26Y	25.95	7.086	0.000	4.341	7.086
Diag3	g27P	5.39	1.471	0.000	0.474	1.471
Diag3	g27X	6.70	0.000	-1.829	-1.184	-1.829
Diag3	g27XY	6.74	0.000	-1.839	-1.300	-1.839
Diag3	g27Y	6.05	1.653	0.000	0.582	1.653
Diag4	g28P	18.62	6.542	0.000	3.804	6.542
Diag4	g28X	17.38	0.000	-6.325	-3.250	-6.325
Diag4	g28XY	18.81	0.000	-6.846	-3.338	-6.846
Diag4	g28Y	19.97	7.016	0.000	3.689	7.016
Diag4	g29P	7.71	0.000	-2.503	-2.005	-2.503
Diag4	g29X	4.47	1.572	0.000	0.165	1.572
Diag4	g29XY	4.25	1.493	0.000	0.038	1.493
Diag4	g29Y	6.92	0.000	-2.248	-1.880	-2.248
Diag4	g30P	10.15	2.771	0.000	1.250	2.771
Diag4	g30X	12.49	0.000	-3.410	-2.458	-3.410
Diag4	g30XY	11.72	0.000	-3.200	-1.977	-3.200
Diag4	g30Y	11.42	3.118	0.000	0.840	3.118
Diag4	g31P	9.26	0.000	-2.529	-1.520	-2.529
Diag4	g31X	9.05	2.470	0.000	1.216	2.470
Diag4	g31XY	8.17	2.230	0.000	0.971	2.230
Diag4	g31Y	9.52	0.000	-2.599	-1.556	-2.599

Diag5	g32P	10.59	2.878	0.000	1.717	2.878
Diag5	g32X	12.42	0.000	-2.656	-1.301	-2.656
Diag5	g32XY	13.80	0.000	-2.950	-0.985	-2.950
Diag5	g32Y	12.48	3.392	0.000	1.515	3.392
Diag5	g33P	6.26	1.701	0.000	1.026	1.701
Diag5	g33X	7.63	0.000	-1.461	-0.638	-1.461
Diag5	g33XY	8.49	0.000	-1.627	-0.817	-1.627
Diag5	g33Y	6.06	1.646	0.000	0.934	1.646
Diag5	g34P	10.29	2.460	0.000	1.021	2.460
Diag5	g34X	13.36	0.000	-2.766	-1.583	-2.766
Diag5	g34XY	14.99	0.000	-3.104	-1.414	-3.104
Diag5	g34Y	11.28	2.697	0.000	0.777	2.697
Diag5	g35P	7.08	0.000	-1.192	-0.719	-1.192
Diag5	g35X	4.73	1.132	0.000	0.550	1.132
Diag5	g35XY	4.16	0.994	0.000	0.403	0.994
Diag5	g35Y	7.60	0.000	-1.278	-0.798	-1.278
Diag6	g36P	49.56	0.000	-4.168	-2.245	-4.168
Diag6	g36X	10.64	3.456	0.000	0.734	3.456
Diag6	g36XY	8.02	2.604	0.000	0.592	2.604
Diag6	g36Y	47.70	0.000	-4.011	-2.244	-4.011
Diag6	g37P	64.03	0.000	-5.385	-3.276	-5.385
Diag6	g37X	12.06	3.918	0.000	1.894	3.918
Diag6	g37XY	16.10	5.230	0.000	1.761	5.230
Diag6	g37Y	81.53	0.000	-6.857	-3.467	-6.857
Diag7	g38P	56.06	0.000	-6.119	-3.290	-6.119
Diag7	g38X	8.58	3.121	0.000	0.461	3.121
Diag7	g38XY	21.58	7.847	0.000	0.162	7.847
Diag7	g38Y	31.47	0.000	-3.436	-3.436	0.000
Diag7	g39P	70.53	0.000	-7.699	-7.699	-2.882
Diag7	g39X	28.88	10.503	0.000	4.868	10.503
Diag7	g39XY	32.55	11.838	0.000	4.715	11.838
Diag7	g39Y	72.59	0.000	-7.925	-7.925	-4.871
Diag7	g40P	3.31	1.163	0.000	1.163	0.708
Diag7	g40X	41.48	0.000	-4.384	-4.384	-4.125
Diag7	g40XY	77.61	0.000	-8.201	-4.688	-8.201
Diag7	g40Y	44.92	15.784	0.000	1.004	15.784
Diag7	g41P	79.32	0.000	-8.381	-8.381	0.000
Diag7	g41X	22.35	7.853	0.000	4.604	7.853
Diag7	g41XY	41.41	14.549	0.000	4.827	14.549
Diag7	g41Y	78.40	0.000	-8.284	-7.886	-8.284
Horz1	g42P	7.57	1.060	0.000	0.071	1.060
Horz1	g42X	23.17	0.000	-1.671	-1.475	-1.671
Horz2	g43P	3.98	1.086	0.000	1.086	0.731
Horz2	g43X	3.28	0.894	0.000	0.894	0.172
Horz2	g44P	8.17	2.230	0.000	2.230	1.896
Horz2	g44X	3.02	0.825	-0.524	0.825	-0.524
Horz2	g45P	4.04	0.436	-0.995	0.436	-0.995
Horz2	g45X	7.20	1.967	0.000	1.946	1.967
Horz3	g46P	10.67	1.495	0.000	1.495	0.737
Horz3	g46Y	11.77	1.648	0.000	1.648	1.038
Horz4	g47P	24.32	2.790	0.000	2.790	1.280
Horz4	g47Y	24.56	2.819	0.000	2.819	1.231
Horz4	g48P	18.17	2.085	0.000	2.085	0.982
Horz4	g48Y	18.96	2.176	0.000	2.176	1.138
Horz5	g49P	2.48	0.389	0.000	0.389	0.125
Horz5	g49Y	5.30	0.832	0.000	0.580	0.832
Horz5	g50P	34.59	5.429	0.000	2.901	5.429
Horz5	g50X	25.14	0.000	-4.575	-2.023	-4.575
Horz6	g51P	3.81	1.040	0.000	1.040	1.023

Horz6	g51Y	6.87	1.211	-1.789	1.211	-1.789
Horz6	g52P	23.92	6.530	0.000	6.530	6.053
Horz6	g52X	35.71	0.000	-9.292	-3.953	-9.292
Horz7	g53P	2.80	0.000	-0.265	-0.265	-0.219
Horz7	g53X	3.72	0.583	-0.129	0.583	-0.129
Horz7	g53XY	20.59	3.231	0.000	0.637	3.231
Horz7	g53Y	17.44	0.000	-1.651	-0.356	-1.651
Horz7	g54P	6.39	0.577	-0.605	0.577	-0.605
Horz7	g54X	1.90	0.298	0.000	0.036	0.298
Horz7	g54XY	10.27	0.000	-0.972	-0.055	-0.972
Horz7	g54Y	10.53	1.653	0.000	0.186	1.653
Inner1	g55P	10.59	0.000	-0.627	-0.132	-0.627
Inner1	g55X	5.91	0.778	0.000	0.258	0.778
Inner1	g55XY	9.91	0.194	-0.587	0.194	-0.587
Inner1	g55Y	8.61	1.133	0.000	0.627	1.133
Inner2	g56P	0.93	0.000	-0.080	-0.080	-0.074
Inner2	g56X	0.68	0.095	0.000	0.088	0.095
Inner2	g56XY	2.41	0.000	-0.205	-0.080	-0.205
Inner2	g56Y	1.61	0.226	0.000	0.089	0.226
Inner2	g57P	7.44	1.042	0.000	0.321	1.042
Inner2	g57X	10.49	0.000	-0.895	-0.146	-0.895
Inner2	g57XY	6.46	0.904	0.000	0.211	0.904
Inner2	g57Y	11.04	0.000	-0.941	-0.289	-0.941
Inner2	g58P	4.32	0.000	-0.369	-0.234	-0.369
Inner2	g58X	2.10	0.294	0.000	0.294	0.263
Inner2	g58XY	5.59	0.000	-0.476	-0.426	-0.476
Inner2	g58Y	2.84	0.398	0.000	0.140	0.398
Inner1	g59P	13.01	1.076	0.000	0.291	1.076
Inner1	g59X	29.43	0.282	-0.515	0.282	-0.515
Inner1	g60P	20.42	1.688	-0.259	-0.259	1.688
Inner1	g60X	56.77	0.000	-1.846	-0.197	-1.846
Inner1	g60XY	27.98	2.313	0.000	0.154	2.313
Inner1	g60Y	69.68	0.000	-2.266	-0.185	-2.266
Inner1	Fg6072P	20.39	1.686	-0.162	-0.162	1.686
Inner1	Fg6072X	53.65	0.094	-1.745	0.094	-1.745
Inner1	Fg6072XY	27.05	2.236	0.000	0.100	2.236
Inner1	Fg6072Y	71.00	0.000	-2.309	-0.160	-2.309
ShieldAr	g61P	7.41	1.348	0.000	1.348	0.107
ShieldAr	g61X	16.30	2.966	0.000	2.966	1.596
ShieldAr	g62P	10.77	1.960	0.000	1.960	0.756
TopCrArm	g63P	22.52	0.000	-4.099	-4.099	-2.934
TopCrArm	g63X	13.42	0.000	-2.442	-2.442	-0.012
TopCrArm	g63XY	14.20	0.000	-2.585	-2.585	-0.464
TopCrArm	g63Y	21.42	0.000	-3.898	-3.898	-2.412
TopCArmA	g64P	13.17	0.000	-2.398	-2.398	-1.097
TopCArmA	g64Y	13.06	0.000	-2.377	-2.377	-1.180
MidCrArm	g65P	27.30	0.000	-4.969	-4.969	-3.157
MidCrArm	g65X	18.52	0.000	-3.370	-3.370	-0.493
MidCrArm	g65XY	19.09	0.000	-3.474	-3.474	-0.753
MidCrArm	g65Y	26.56	0.000	-4.835	-4.835	-2.952
MidCArmA	g66P	19.48	0.000	-3.546	-3.546	-1.550
MidCArmA	g66Y	19.10	0.000	-3.476	-3.476	-1.268
BotCrArm	g67P	22.07	0.000	-4.016	-4.016	-2.657
BotCrArm	g67X	13.89	0.000	-2.528	-2.528	-0.311
BotCrArm	g67XY	13.45	0.000	-2.448	-2.448	-0.095
BotCrArm	g67Y	22.06	0.000	-4.015	-4.015	-2.787
BotCArmA	g68P	18.80	0.000	-3.422	-3.422	-1.444
BotCArmA	g68Y	19.49	0.000	-3.548	-3.548	-1.855
ShArmBr	g69P	6.81	0.000	-1.240	-1.240	-0.484

ShArmBr	g69X	6.79	0.000	-1.237	-1.237	-0.483
ShArmBr	g69XY	6.81	0.000	-1.240	-1.240	-0.480
ShArmBr	g69Y	6.78	0.000	-1.235	-1.235	-0.483
TopArmBr	g70P	24.08	3.740	0.000	3.740	1.951
TopArmBr	g70X	22.63	3.515	0.000	3.515	1.342
TopArmBr	g70XY	23.67	3.676	0.000	3.676	1.841
TopArmBr	g70Y	22.62	3.513	0.000	3.513	1.355
MidArmBr	g71P	27.66	4.551	0.000	4.551	2.141
MidArmBr	g71X	26.57	4.371	0.000	4.371	1.793
MidArmBr	g71XY	27.23	4.481	0.000	4.481	2.050
MidArmBr	g71Y	26.80	4.409	0.000	4.409	1.916
BotArmBr	g72P	23.49	3.648	0.000	3.648	1.642
BotArmBr	g72X	23.20	3.604	0.000	3.604	1.674
BotArmBr	g72XY	22.66	3.520	0.000	3.520	1.424
BotArmBr	g72Y	23.47	3.645	0.000	3.645	1.777
Pwmnt	g74P	2.80	0.000	-17.614	-17.614	-7.220
Pwmnt	g75P	5.01	0.000	-14.784	-14.784	-6.100
Pwmnt	g76P	1.90	0.000	-12.125	-12.125	-5.176
Pwmnt	g77P	1.69	0.000	-10.772	-10.772	-4.612
Pwmnt	g78P	1.48	0.000	-9.993	-9.993	-4.407
Pwmnt	g79P	1.48	0.000	-8.780	-8.780	-3.773
PMBR1	g80P	4.82	0.491	0.000	0.491	0.279
PMBR1	g82P	1.75	0.000	-0.179	-0.179	-0.130
PMBR1	g83P	2.40	0.020	-0.245	-0.245	0.020
PMBR2	g84P	37.42	3.815	0.000	2.198	3.815
PMBR2	g84X	31.16	0.000	-3.177	-1.094	-3.177
PMBR2	g86P	22.90	0.000	-2.335	-0.878	-2.335
PMBR2	g86X	22.10	2.253	0.000	0.429	2.253
PMBR2	g87P	7.90	0.805	0.000	0.571	0.805
PMBR2	g87X	11.79	0.000	-1.202	-1.081	-1.202
PMBR3	g88P	8.87	0.000	-0.905	-0.140	-0.905
PMBR3	g88X	9.18	0.936	-0.899	-0.899	0.936
PMBR3	g89P	11.36	1.158	0.000	0.015	1.158
PMBR3	g89X	20.15	0.000	-2.055	-0.479	-2.055
Leg1	g90P	10.16	0.000	-1.193	-0.952	-1.193
Leg1	g90X	2.82	0.631	0.000	0.340	0.631
Diag8	g92P	5.38	0.549	0.000	0.337	0.549
Diag8	g92X	10.96	0.000	-0.712	-0.364	-0.712
Diag9	g93P	2.03	0.000	-0.207	-0.157	-0.207
Diag9	g93X	2.53	0.258	0.000	0.205	0.258
Inner3	g94P	22.28	0.000	-0.618	-0.122	-0.618
Inner3	g94X	30.76	0.671	-0.854	-0.854	0.671
Inner3	g94XY	81.98	0.000	-2.275	-0.473	-2.275
Inner3	g94Y	21.20	1.395	0.000	0.013	1.395

*** Analysis Results for Load Case No. 1 "NESC Heavy" - Number of iterations in SAPS 10

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

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
1P	-0.004548	0.2049	-0.01836	-0.2480	-0.0023	0.0063	-0.004548	3.205	94.98
2P	-0.003722	0.1827	-0.01781	-0.2449	-0.0069	0.0091	2.996	3.183	89.65
3P	-0.003147	0.1626	-0.01747	-0.2462	-0.0129	0.0055	2.997	3.163	84.98
4P	-0.002399	0.1432	-0.0169	-0.2276	-0.0075	0.0041	2.998	3.143	80.31
5P	-0.001904	0.1252	-0.01594	-0.2213	-0.0025	0.0028	2.998	3.125	75.64
6P	-0.001753	0.1072	-0.01464	-0.2156	-0.0059	0.0015	2.998	3.107	70.99
7P	-0.001096	0.09116	-0.01369	-0.1830	-0.0103	0.0018	2.999	3.091	66.32
8P	-0.0005599	0.0767	-0.01244	-0.1746	0.0034	0.0021	2.999	3.077	61.65
9P	-0.0008779	0.06304	-0.01099	-0.1549	-0.0116	0.0024	2.999	3.063	56.99
10P	0	0	0	0.0000	0.0000	0.0000	8.96	8.96	0
18P	-0.005646	0.2051	-0.06851	-0.2508	-0.0023	0.0051	-0.005646	14.71	94.93
19P	-0.004017	0.162	-0.06201	-0.2969	-0.0058	0.0052	-0.004017	12.16	84.94
20P	-0.002178	0.1065	-0.0689	-0.2952	-0.0032	0.0010	-0.002178	14.61	70.93
21P	-0.001224	0.06262	-0.04387	-0.2320	-0.0025	0.0030	-0.001224	12.06	56.96
27P	-0.005071	0.3626	-0.004705	-0.5977	-0.0049	0.0023	1.495	0.3626	109.5
28P	-0.003373	0.1827	-0.003447	-0.3626	-0.0048	0.0023	1.497	0.1827	89.67
29P	-0.002978	0.1572	-0.003259	-0.2721	-0.0049	0.0022	1.497	0.1572	85
30P	-0.001812	0.1072	-0.002787	-0.1800	-0.0045	0.0018	1.498	0.1072	71
31P	-0.0009232	0.06323	-0.002288	-0.1623	-0.0021	0.0017	1.499	0.06323	57
32P	-0.0006791	0.002925	-0.0006702	-0.0235	-0.0029	0.0002	1.499	0.002925	15
33P	0	0	0	0.0000	0.0000	0.0000	1.5	0	0
1X	-0.003551	0.2049	0.00645	-0.2431	-0.0018	0.0079	-0.003551	-2.795	95.01
2X	-0.003398	0.1824	0.006601	-0.2236	0.0086	-0.0011	2.997	-2.818	89.68
2XY	-0.002968	0.1817	0.006081	-0.2436	-0.0064	0.0069	-3.003	-2.818	89.68
2Y	-0.003742	0.182	-0.01851	-0.2442	-0.0093	0.0029	-3.004	3.182	89.65
3X	-0.002694	0.1628	0.006691	-0.2270	-0.0152	0.0032	2.997	-2.837	85.01
3XY	-0.002823	0.1623	0.006134	-0.2244	0.0018	0.0055	-3.003	-2.838	85.01
3Y	-0.003303	0.1621	-0.01807	-0.2461	0.0014	0.0040	-3.003	3.162	84.98
4X	-0.002299	0.1434	0.006579	-0.2429	0.0041	0.0028	2.998	-2.857	80.34
4XY	-0.002412	0.143	0.006037	-0.2415	-0.0127	0.0050	-3.002	-2.857	80.34
4Y	-0.003094	0.1429	-0.01745	-0.2249	-0.0036	0.0035	-3.003	3.143	80.31
5X	-0.00258	0.1241	0.006208	-0.2244	-0.0056	0.0025	2.997	-2.876	75.67
5XY	-0.00138	0.1239	0.005716	-0.2216	-0.0038	0.0044	-3.001	-2.876	75.67
5Y	-0.002718	0.125	-0.01643	-0.2207	-0.0082	0.0029	-3.003	3.125	75.64
6X	-0.001585	0.1074	0.005692	-0.1853	-0.0078	0.0021	2.998	-2.893	71.01
6XY	-0.001704	0.1073	0.005265	-0.1877	0.0020	0.0039	-3.002	-2.893	71.01
6Y	-0.002074	0.107	-0.01511	-0.2135	-0.0010	0.0023	-3.002	3.107	70.98
7X	-0.00147	0.09116	0.00523	-0.2004	0.0060	0.0009	2.999	-2.909	66.34
7XY	-0.001224	0.09098	0.004851	-0.2004	-0.0132	0.0041	-3.001	-2.909	66.33
7Y	-0.002	0.09104	-0.01412	-0.1835	0.0012	0.0008	-3.002	3.091	66.32
8X	-0.001802	0.0759	0.004555	-0.1728	-0.0082	-0.0002	2.998	-2.924	61.66
8XY	-0.0003659	0.07571	0.004222	-0.1726	0.0019	0.0042	-3	-2.924	61.66
8Y	-0.00186	0.07654	-0.01284	-0.1757	-0.0116	-0.0007	-3.002	3.077	61.65
9X	-0.0007146	0.06326	0.003779	-0.1359	-0.0009	-0.0014	2.999	-2.937	57
9XY	-0.0009942	0.06305	0.003484	-0.1379	-0.0027	0.0043	-3.001	-2.937	57
9Y	-0.0009406	0.06282	-0.01133	-0.1535	0.0063	-0.0023	-3.001	3.063	56.99
10X	0	0	0	0.0000	0.0000	0.0000	8.96	-8.96	0
10XY	0	0	0	0.0000	0.0000	0.0000	-8.96	-8.96	0
10Y	0	0	0	0.0000	0.0000	0.0000	-8.96	8.96	0
18X	-0.002293	0.2048	0.05431	-0.2362	-0.0018	0.0055	-0.002293	-14.3	95.05

19X	-0.001954	0.163	0.03825	-0.1933	-0.0069	0.0055	-0.001954	-11.84	85.04
20X	-0.001364	0.108	0.03766	-0.1484	-0.0025	0.0006	-0.001364	-14.39	71.04
21X	-0.0005381	0.06361	0.02266	-0.1134	-0.0016	0.0023	-0.0005381	-11.94	57.02
11S	0.0008188	0.04839	-0.01052	-0.1149	-0.0087	0.0045	3.68	3.728	50.49
12S	0.0002621	0.03567	-0.00981	-0.1020	0.0035	0.0047	4.36	4.395	43.99
13S	0.0003357	0.02556	-0.008731	-0.0726	-0.0066	0.0043	5.039	5.065	37.49
14S	0.0009586	0.01308	-0.006441	-0.0591	-0.0019	0.0038	6.216	6.228	26.24
15S	0.0003856	0.00267	-0.004217	-0.0326	0.0004	0.0044	7.392	7.394	15
16S	0.004466	0.002507	-0.0004033	-0.0239	-0.0291	-0.0031	7.396	0.002507	15
17S	0.0001008	0.00705	0.001808	-0.0676	-0.0175	-0.0100	0.0001008	-7.385	15
22S	-0.003409	0.1824	-0.004001	-0.2673	-0.0330	0.0139	-0.003409	0.1824	89.67
23S	-0.002992	0.1625	-0.006518	-0.2286	-0.0051	0.0048	-0.002992	0.1625	84.99
24S	-0.001799	0.1073	-0.003509	-0.1895	-0.0227	-0.0022	-0.001799	0.1073	71
25S	-0.0009052	0.06299	-0.002876	-0.1465	-0.0196	0.0061	-0.0009052	0.06299	57
17SF0.50S	0.002314	0.004727	-0.001042	0.0028	0.0091	0.0379	3.698	-3.691	15
1PF94S	-0.00448	0.2002	-0.01831	-0.2598	-0.0045	-0.0082	0.5584	3.2	93.98
35S	-0.004357	0.2002	-0.006211	-0.2242	-0.0029	0.0155	0.5585	0.2002	93.99
11X	-0.001498	0.04777	0.00427	-0.1238	0.0025	-0.0029	3.678	-3.632	50.5
11XY	0.0003328	0.04757	0.003971	-0.1220	-0.0069	0.0050	-3.679	-3.632	50.5
11Y	-0.002029	0.04835	-0.01084	-0.1140	0.0039	-0.0042	-3.682	3.728	50.49
12X	-0.0006549	0.03546	0.004454	-0.0962	-0.0061	-0.0015	4.359	-4.324	44
12XY	-8.596e-005	0.03545	0.004157	-0.0951	0.0031	0.0029	-4.359	-4.324	44
12Y	-0.0009993	0.03563	-0.01013	-0.1015	-0.0074	-0.0043	-4.36	4.395	43.99
13X	-0.0005597	0.02543	0.00427	-0.0744	0.0026	-0.0026	5.038	-5.014	37.5
13XY	0.0001432	0.02544	0.004004	-0.0744	-0.0048	0.0035	-5.039	-5.014	37.5
13Y	-0.0006725	0.02564	-0.009041	-0.0718	0.0039	-0.0038	-5.04	5.065	37.49
14X	-0.000565	0.0128	0.00347	-0.0584	-0.0017	-0.0035	6.215	-6.202	26.25
14XY	0.0005212	0.01283	0.003272	-0.0579	-0.0001	0.0037	-6.215	-6.202	26.25
14Y	-0.0008355	0.01316	-0.006701	-0.0592	-0.0010	-0.0032	-6.216	6.228	26.24
15X	0.0001096	0.002584	0.002505	-0.0325	-0.0014	-0.0037	7.392	-7.389	15
15XY	0.0001176	0.002675	0.002357	-0.0330	0.0016	0.0033	-7.391	-7.389	15
15Y	0.0001727	0.002751	-0.004477	-0.0322	0.0002	-0.0034	-7.391	7.394	15
16Y	-0.004227	0.002573	-0.0005533	-0.0243	0.0824	0.0019	-7.396	0.002573	15
17X	0.000224	-0.001782	-0.004579	0.0165	-0.0181	0.0113	0.000224	7.39	15
17SF0.50X	0.002696	0.0007734	-0.004144	-0.0518	0.0089	-0.0457	3.698	3.697	15
17SF0.50XY	-0.002214	0.0005948	-0.006521	-0.0419	-0.0261	0.0053	-3.698	3.696	14.99
17SF0.50Y	-0.002037	0.004831	-0.003375	-0.0078	-0.0258	-0.0021	-3.698	-3.691	15
1PF94X	-0.003541	0.2003	0.006469	-0.2632	-0.0015	-0.0001	0.5593	-2.8	94.01

Joint Support Reactions for Load Case "NESC Heavy":

Joint Label	X Force (kips)	X Usage %(kips)	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Uplift 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 %
10P	-8.54	0.0	-6.83	0.0	0.0	-48.25	0.0	0.0	49.48	0.0	-0.05	0.0	0.0	0.0	0.0	-0.02	0.0	0.0
33P	0.06	0.0	-0.23	0.0	0.0	-18.23	0.0	0.0	18.23	0.0	1.23	0.0	0.6	0.0	0.0	-0.01	0.0	0.0
10X	4.81	0.0	-3.54	0.0	0.0	27.17	0.0	0.0	27.82	0.0	-0.05	0.0	-0.0	0.0	0.0	0.00	0.0	0.0
10XY	-4.81	0.0	-3.39	0.0	0.0	26.29	0.0	0.0	26.94	0.0	-0.04	0.0	0.0	0.0	0.0	0.00	0.0	0.0
10Y	8.49	0.0	-7.12	0.0	0.0	-49.80	0.0	0.0	51.02	0.0	-0.04	0.0	-0.1	0.0	0.0	0.02	0.0	0.0

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

Joint Label	X External Load (kips)	Y External Load (kips)	Z External Load (kips)	X Member Force (kips)	Y Member Force (kips)	Z Member Force (kips)	X Disp. (ft)	Y Disp. (ft)	Z Disp. (ft)
1P	0.0000	0.0000	-0.1878	0.0000	0.0000	0.1878	-0.0045	0.2049	-0.0184

2P	0.0000	0.0000	-0.1733	-0.0000	0.0000	0.1733	-0.0037	0.1827	-0.0178
3P	0.0000	0.0000	-0.2819	0.0000	0.0000	0.2819	-0.0031	0.1626	-0.0175
4P	0.0000	0.0000	-0.1309	-0.0000	0.0000	0.1309	-0.0024	0.1432	-0.0169
5P	0.0000	0.0000	-0.1622	-0.0000	0.0000	0.1622	-0.0019	0.1252	-0.0159
6P	0.0000	0.0000	-0.3547	0.0000	0.0000	0.3547	-0.0018	0.1072	-0.0146
7P	0.0000	0.0000	-0.1818	-0.0000	0.0000	0.1818	-0.0011	0.0912	-0.0137
8P	0.0000	0.0000	-0.2111	-0.0000	0.0000	0.2111	-0.0006	0.0767	-0.0124
9P	0.0000	0.0000	-0.4253	0.0000	0.0000	0.4253	-0.0009	0.0630	-0.0110
10P	0.0000	0.0000	-0.3166	8.5415	6.8330	-47.9379	0.0000	0.0000	0.0000
18P	0.0000	0.7750	-1.0172	-0.0000	-0.7750	1.0172	-0.0056	0.2051	-0.0685
19P	0.0000	1.3360	-3.2514	-0.0000	-1.3360	3.2514	-0.0040	0.1620	-0.0620
20P	0.0000	1.3360	-3.3077	-0.0000	-1.3360	3.3077	-0.0022	0.1065	-0.0689
21P	0.0000	1.3360	-3.2514	-0.0000	-1.3360	3.2514	-0.0012	0.0626	-0.0439
27P	0.0000	1.0221	-8.7897	-0.0000	-1.0221	8.7897	-0.0051	0.3626	-0.0047
28P	0.0000	0.4165	-0.9996	-0.0000	-0.4165	0.9996	-0.0034	0.1827	-0.0034
29P	0.0000	0.3174	-0.7835	0.0000	-0.3174	0.7835	-0.0030	0.1572	-0.0033
30P	0.0000	0.4760	-1.1908	-0.0000	-0.4760	1.1908	-0.0018	0.1072	-0.0028
31P	0.0000	0.9743	-2.5196	-0.0000	-0.9743	2.5196	-0.0009	0.0632	-0.0023
32P	0.0000	0.9993	-2.7348	0.0000	-0.9993	2.7348	-0.0007	0.0029	-0.0007
33P	0.0000	0.2630	-0.6138	-0.0552	-0.0315	-17.6140	0.0000	0.0000	0.0000
1X	0.0000	0.0000	-0.1878	0.0000	0.0000	0.1878	-0.0036	0.2049	0.0065
2X	0.0000	0.1001	-0.1733	0.0000	-0.1001	0.1733	-0.0034	0.1824	0.0066
2XY	0.0000	0.1001	-0.1712	-0.0000	-0.1001	0.1712	-0.0030	0.1817	0.0061
2Y	0.0000	0.2580	-0.8682	-0.0000	-0.2580	0.8682	-0.0037	0.1820	-0.0185
3X	0.0000	0.1180	-0.2819	-0.0000	-0.1180	0.2819	-0.0027	0.1628	0.0067
3XY	0.0000	0.1180	-0.2819	0.0000	-0.1180	0.2819	-0.0028	0.1623	0.0061
3Y	0.0000	0.0000	-0.2819	-0.0000	0.0000	0.2819	-0.0033	0.1621	-0.0181
4X	0.0000	0.1106	-0.1309	-0.0000	-0.1106	0.1309	-0.0023	0.1434	0.0066
4XY	0.0000	0.1106	-0.1309	-0.0000	-0.1106	0.1309	-0.0024	0.1430	0.0060
4Y	0.0000	0.1630	-0.5729	-0.0000	-0.1630	0.5729	-0.0031	0.1429	-0.0174
5X	0.0000	0.1253	-0.1622	-0.0000	-0.1253	0.1622	-0.0026	0.1241	0.0062
5XY	0.0000	0.1253	-0.1622	-0.0000	-0.1253	0.1622	-0.0014	0.1239	0.0057
5Y	0.0000	0.0000	-0.1622	-0.0000	0.0000	0.1622	-0.0027	0.1250	-0.0164
6X	0.0000	0.1306	-0.3547	0.0000	-0.1306	0.3547	-0.0016	0.1074	0.0057
6XY	0.0000	0.1306	-0.3470	-0.0000	-0.1306	0.3470	-0.0017	0.1073	0.0053
6Y	0.0000	0.1630	-0.7890	-0.0000	-0.1630	0.7890	-0.0021	0.1070	-0.0151
7X	0.0000	0.1106	-0.1818	-0.0000	-0.1106	0.1818	-0.0015	0.0912	0.0052
7XY	0.0000	0.1106	-0.1818	-0.0000	-0.1106	0.1818	-0.0012	0.0910	0.0049
7Y	0.0000	0.0000	-0.1818	-0.0000	0.0000	0.1818	-0.0020	0.0910	-0.0141
8X	0.0000	0.1235	-0.2111	-0.0000	-0.1235	0.2111	-0.0018	0.0759	0.0046
8XY	0.0000	0.1235	-0.2111	0.0000	-0.1235	0.2111	-0.0004	0.0757	0.0042
8Y	0.0000	0.1720	-0.6761	-0.0000	-0.1720	0.6761	-0.0019	0.0765	-0.0128
9X	0.0000	0.1586	-0.4253	0.0000	-0.1586	0.4253	-0.0007	0.0633	0.0038
9XY	0.0000	0.1586	-0.4176	0.0000	-0.1586	0.4176	-0.0010	0.0630	0.0035
9Y	0.0000	0.0000	-0.4176	-0.0000	0.0000	0.4176	-0.0009	0.0628	-0.0113
10X	0.0000	0.1965	-0.3166	-4.8070	3.3481	27.4869	0.0000	0.0000	0.0000
10XY	0.0000	0.1965	-0.3166	4.8116	3.1897	26.6079	0.0000	0.0000	0.0000
10Y	0.0000	0.0000	-0.3166	-8.4910	7.1236	-49.4863	0.0000	0.0000	0.0000
18X	0.0000	0.8321	-1.0172	-0.0000	-0.8321	1.0172	-0.0023	0.2048	0.0543
19X	0.0000	1.4019	-3.2514	-0.0000	-1.4019	3.2514	-0.0020	0.1630	0.0382
20X	0.0000	1.4056	-3.3077	-0.0000	-1.4056	3.3077	-0.0014	0.1080	0.0377
21X	0.0000	1.4019	-3.2514	0.0000	-1.4019	3.2514	-0.0005	0.0636	0.0227
11S	0.0000	0.0000	-0.2940	-0.0000	0.0000	0.2940	0.0008	0.0484	-0.0105
12S	0.0000	0.0000	-0.2885	0.0000	0.0000	0.2885	0.0003	0.0357	-0.0098
13S	0.0000	0.0000	-0.4766	0.0000	0.0000	0.4766	0.0003	0.0256	-0.0087
14S	0.0000	0.0000	-0.5941	0.0000	0.0000	0.5941	0.0010	0.0131	-0.0064
15S	0.0000	0.0000	-0.3714	0.0000	0.0000	0.3714	0.0004	0.0027	-0.0042
16S	0.0000	0.0000	-0.2818	0.0000	0.0000	0.2818	0.0045	0.0025	-0.0004
17S	0.0000	0.3010	-0.2818	0.0000	-0.3010	0.2818	0.0001	0.0070	0.0018

22S	0.0000	0.0000	-0.0297	-0.0000	0.0000	0.0297	-0.0034	0.1824	-0.0040
23S	0.0000	0.0000	-0.0311	-0.0000	0.0000	0.0311	-0.0030	0.1625	-0.0065
24S	0.0000	0.0000	-0.0338	-0.0000	0.0000	0.0338	-0.0018	0.1073	-0.0035
25S	0.0000	0.0000	-0.0338	-0.0000	0.0000	0.0338	-0.0009	0.0630	-0.0029
17SF0.50S	0.0000	0.0000	-0.0392	0.0000	0.0000	0.0392	0.0023	0.0047	-0.0010
1PF94S	0.0000	0.0000	-0.0196	-0.0000	0.0000	0.0196	-0.0045	0.2002	-0.0183
35S	0.0000	0.0000	-0.0322	-0.0000	0.0000	0.0322	-0.0044	0.2002	-0.0062
11X	0.0000	0.1710	-0.2940	-0.0000	-0.1710	0.2940	-0.0015	0.0478	0.0043
11XY	0.0000	0.1710	-0.2940	0.0000	-0.1710	0.2940	0.0003	0.0476	0.0040
11Y	0.0000	0.2060	-0.8520	-0.0000	-0.2060	0.8520	-0.0020	0.0484	-0.0108
12X	0.0000	0.1796	-0.2885	-0.0000	-0.1796	0.2885	-0.0007	0.0355	0.0045
12XY	0.0000	0.1796	-0.2885	-0.0000	-0.1796	0.2885	-0.0001	0.0354	0.0042
12Y	0.0000	0.0000	-0.2885	-0.0000	0.0000	0.2885	-0.0010	0.0356	-0.0101
13X	0.0000	0.2817	-0.4766	0.0000	-0.2817	0.4766	-0.0006	0.0254	0.0043
13XY	0.0000	0.2817	-0.4766	-0.0000	-0.2817	0.4766	0.0001	0.0254	0.0040
13Y	0.0000	0.3050	-1.3016	-0.0000	-0.3050	1.3016	-0.0007	0.0256	-0.0090
14X	0.0000	0.3542	-0.5941	-0.0000	-0.3542	0.5941	-0.0006	0.0128	0.0035
14XY	0.0000	0.3542	-0.5941	0.0000	-0.3542	0.5941	0.0005	0.0128	0.0033
14Y	0.0000	0.0000	-0.5941	-0.0000	0.0000	0.5941	-0.0008	0.0132	-0.0067
15X	0.0000	0.2432	-0.3714	0.0000	-0.2432	0.3714	0.0001	0.0026	0.0025
15XY	0.0000	0.2432	-0.3714	-0.0000	-0.2432	0.3714	0.0001	0.0027	0.0024
15Y	0.0000	0.4510	-1.5914	-0.0000	-0.4510	1.5914	0.0002	0.0028	-0.0045
16Y	0.0000	0.0000	-0.2818	-0.0000	0.0000	0.2818	-0.0042	0.0026	-0.0006
17X	0.0000	0.0000	-0.2818	-0.0000	-0.0000	0.2818	0.0002	-0.0018	-0.0046
17SF0.50X	0.0000	0.0000	-0.0392	0.0000	0.0000	0.0392	0.0027	0.0008	-0.0041
17SF0.50XY	0.0000	0.0000	-0.0456	-0.0000	0.0000	0.0456	-0.0022	0.0006	-0.0065
17SF0.50Y	0.0000	0.0000	-0.0456	-0.0000	0.0000	0.0456	-0.0020	0.0048	-0.0034
1PF94X	0.0000	0.0000	-0.0196	-0.0000	0.0000	0.0196	-0.0035	0.2003	0.0065

Crossing Diagonal Check for Load Case "NESC Heavy" (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	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.
g17P	g17Y	Short only	-0.33	-0.35	10.51	0.750	0.500	0.500	133.00	129.95	5	7.81	1.000	169.90	150.69	6
g17X	g17XY	Short only	-0.33	-0.32	10.51	0.750	0.500	0.500	133.00	129.95	5	7.81	1.000	169.90	150.69	6
g17XY	g17X	Short only	-0.32	-0.33	10.51	0.750	0.500	0.500	133.00	129.95	5	7.81	1.000	169.90	150.69	6
g17Y	g17P	Short only	-0.35	-0.33	10.51	0.750	0.500	0.500	133.00	129.95	5	7.81	1.000	169.90	150.69	6
g21X	g21XY	Short only	-0.89	-0.71	29.81	0.750	0.500	0.500	76.54	87.41	2	24.69	1.000	97.17	108.58	3
g21XY	g21X	Short only	-0.71	-0.89	29.81	0.750	0.500	0.500	76.54	87.41	2	24.69	1.000	97.17	108.58	3
g23P	g23Y	Short only	-1.46	-1.32	29.82	0.750	0.500	0.500	76.48	87.36	2	24.70	1.000	97.09	108.54	3
g23X	g23XY	Short only	-0.39	-0.54	29.82	0.750	0.500	0.500	76.48	87.36	2	24.70	1.000	97.09	108.54	3
g23XY	g23X	Short only	-0.54	-0.39	29.82	0.750	0.500	0.500	76.48	87.36	2	24.70	1.000	97.09	108.54	3
g23Y	g23P	Short only	-1.32	-1.46	29.82	0.750	0.500	0.500	76.48	87.36	2	24.70	1.000	97.09	108.54	3
g25P	g25Y	Short only	-0.53	-0.44	33.83	0.750	0.500	0.500	86.40	94.80	2	29.78	1.000	96.55	108.27	3
g25Y	g25P	Short only	-0.44	-0.53	33.83	0.750	0.500	0.500	86.40	94.80	2	29.78	1.000	96.55	108.27	3
g27X	g27XY	Short only	-1.18	-1.30	33.83	0.750	0.500	0.500	86.40	94.80	2	29.78	1.000	96.55	108.27	3
g27XY	g27X	Short only	-1.30	-1.18	33.83	0.750	0.500	0.500	86.40	94.80	2	29.78	1.000	96.55	108.27	3
g29P	g29Y	Short only	-2.01	-1.88	39.29	0.750	0.500	0.500	77.00	87.75	2	32.47	1.000	98.03	109.01	3
g29Y	g29P	Short only	-1.88	-2.01	39.29	0.750	0.500	0.500	77.00	87.75	2	32.47	1.000	98.03	109.01	3
g31P	g31Y	Short only	-1.52	-1.56	33.47	0.768	0.536	0.536	101.53	106.15	2	28.23	1.000	120.58	120.36	6
g31Y	g31P	Short only	-1.56	-1.52	33.47	0.768	0.536	0.536	101.53	106.15	2	28.23	1.000	120.58	120.36	6
g33X	g33XY	Short only	-0.64	-0.82	21.38	0.788	0.577	0.577	120.36	120.31	5	19.15	1.000	132.40	127.63	6
g33XY	g33X	Short only	-0.82	-0.64	21.38	0.788	0.577	0.577	120.36	120.31	5	19.15	1.000	132.40	127.63	6
g35P	g35Y	Short only	-0.72	-0.80	20.71	0.767	0.535	0.535	123.31	122.56	5	16.83	1.000	146.29	136.17	6
g35Y	g35P	Short only	-0.80	-0.72	20.71	0.767	0.535	0.535	123.31	122.56	5	16.83	1.000	146.29	136.17	6

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
1	1.279	50.00	50.00	2.56
2	1.314	50.00	50.00	2.63
3	3.515	50.00	50.00	7.03
4	3.541	50.00	50.00	7.08
5	3.567	50.00	50.00	7.13
6	3.594	50.00	50.00	7.19
7	3.515	50.00	50.00	7.03
8	3.541	50.00	50.00	7.08
9	8.849	50.00	50.00	17.70
10	1.083	50.00	50.00	2.17
11	0.845	50.00	50.00	1.69
12	1.282	50.00	50.00	2.56
13	2.701	50.00	50.00	5.40
14	2.912	50.00	50.00	5.82
15	0.906	50.00	50.00	1.81
16	0.596	50.00	50.00	1.19
17	0.806	50.00	50.00	1.61
18	0.698	50.00	50.00	1.40
19	0.877	50.00	50.00	1.75
20	1.337	50.00	50.00	2.67
21	1.654	50.00	50.00	3.31

*** Analysis Results for Load Case No. 2 "NESC Extreme" - Number of iterations in SAPS 18

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

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
1P	-0.004954	0.4015	-0.02913	-0.4538	0.0238	-0.0611	-0.004954	3.401	94.97
2P	-0.003304	0.356	-0.02796	-0.4617	-0.0278	-0.0702	2.997	3.356	89.64
3P	-0.002308	0.3178	-0.02748	-0.4552	-0.0181	-0.0629	2.998	3.318	84.97
4P	-0.0008973	0.2806	-0.02657	-0.4488	-0.0221	-0.0643	2.999	3.281	80.3
5P	0.0008176	0.245	-0.025	-0.4269	-0.0111	-0.0658	3.001	3.245	75.64
6P	0.001117	0.2114	-0.02292	-0.3926	-0.0101	-0.0672	3.001	3.211	70.98
7P	0.00272	0.1807	-0.02135	-0.3601	-0.0287	-0.0666	3.003	3.181	66.31
8P	0.004471	0.1526	-0.0193	-0.3316	-0.0009	-0.0663	3.004	3.153	61.64
9P	0.00416	0.1273	-0.01698	-0.2844	-0.0232	-0.0657	3.004	3.127	56.98
10P	0	0	0	0.0000	0.0000	0.0000	8.96	8.96	0
18P	0.006836	0.4013	-0.1214	-0.4624	0.0239	-0.0579	0.006836	14.9	94.88
19P	0.007197	0.3206	-0.1039	-0.4945	-0.0114	-0.0601	0.007197	12.32	84.9
20P	0.01497	0.2146	-0.1113	-0.4593	-0.0113	-0.0716	0.01497	14.71	70.89
21P	0.01447	0.1305	-0.07031	-0.3575	-0.0109	-0.0648	0.01447	12.13	56.93
27P	-0.01146	0.7627	-0.006681	-1.3634	-0.0148	-0.0464	1.489	0.7627	109.5
28P	-0.006677	0.3582	-0.002365	-0.7763	-0.0146	-0.0463	1.493	0.3582	89.67
29P	-0.005548	0.305	-0.002009	-0.5468	-0.0141	-0.0458	1.494	0.305	85
30P	-0.002431	0.2129	-0.001542	-0.3239	-0.0118	-0.0444	1.498	0.2129	71
31P	0.0007224	0.1292	-0.001108	-0.3194	-0.0181	-0.0390	1.501	0.1292	57
32P	0.007887	0.006333	-0.000278	-0.0510	0.0302	-0.0139	1.508	0.006333	15
33P	0	0	0	0.0000	0.0000	0.0000	1.5	0	0
1X	-0.01104	0.4016	0.01812	-0.4551	0.0227	-0.0567	-0.01104	-2.598	95.02
2X	-0.01021	0.356	0.01882	-0.4310	0.0101	-0.0744	2.99	-2.644	89.69
2XY	-0.009723	0.362	0.01736	-0.4651	-0.0188	-0.0604	-3.01	-2.638	89.69
2Y	-0.00361	0.362	-0.02942	-0.4677	-0.0198	-0.0627	-3.004	3.362	89.64
3X	-0.008852	0.318	0.01883	-0.4528	-0.0259	-0.0633	2.991	-2.682	85.02
3XY	-0.008873	0.3244	0.01731	-0.4467	-0.0068	-0.0613	-3.009	-2.676	85.02
3Y	-0.00241	0.3242	-0.02886	-0.4526	-0.0063	-0.0616	-3.002	3.324	84.97
4X	-0.00795	0.2807	0.01843	-0.4540	0.0000	-0.0646	2.992	-2.719	80.35
4XY	-0.007646	0.2875	0.01693	-0.4497	-0.0251	-0.0620	-3.008	-2.712	80.35
4Y	-0.001606	0.2875	-0.02794	-0.4430	-0.0067	-0.0624	-3.002	3.287	80.3
5X	-0.00778	0.2447	0.01743	-0.4293	-0.0165	-0.0657	2.992	-2.755	75.68
5XY	-0.005758	0.2518	0.01599	-0.4247	-0.0098	-0.0628	-3.006	-2.748	75.68
5Y	-0.001095	0.2522	-0.02639	-0.4254	-0.0181	-0.0632	-3.001	3.252	75.63
6X	-0.005823	0.2116	0.01597	-0.3750	-0.0147	-0.0668	2.994	-2.788	71.02
6XY	-0.005743	0.2189	0.01461	-0.3787	-0.0084	-0.0636	-3.006	-2.781	71.01
6Y	0.0008487	0.2187	-0.02436	-0.3896	-0.0137	-0.0641	-2.999	3.219	70.98
7X	-0.005263	0.1808	0.01482	-0.3688	0.0022	-0.0672	2.995	-2.819	66.34
7XY	-0.004291	0.188	0.0135	-0.3710	-0.0280	-0.0633	-3.004	-2.812	66.34
7Y	0.001446	0.1879	-0.02278	-0.3630	-0.0001	-0.0648	-2.999	3.188	66.31
8X	-0.005077	0.1523	0.01322	-0.3313	-0.0243	-0.0673	2.995	-2.848	61.67
8XY	-0.002496	0.1592	0.01192	-0.3326	-0.0013	-0.0632	-3.002	-2.841	61.67
8Y	0.001881	0.1596	-0.0207	-0.3347	-0.0266	-0.0652	-2.998	3.16	61.64
9X	-0.002664	0.1274	0.01137	-0.2724	-0.0029	-0.0675	2.997	-2.873	57.01
9XY	-0.002942	0.1342	0.01005	-0.2766	-0.0190	-0.0629	-3.003	-2.866	57.01
9Y	0.004307	0.1341	-0.01831	-0.2818	-0.0008	-0.0659	-2.996	3.134	56.98
10X	0	0	0	0.0000	0.0000	0.0000	8.96	-8.96	0
10XY	0	0	0	0.0000	0.0000	0.0000	-8.96	-8.96	0
10Y	0	0	0	0.0000	0.0000	0.0000	-8.96	8.96	0
18X	-0.02264	0.402	0.1097	-0.4566	0.0227	-0.0586	-0.02264	-14.1	95.11

19X	-0.01841	0.3218	0.08816	-0.4464	-0.0174	-0.0599	-0.01841	-11.68	85.09
20X	-0.01974	0.2159	0.09326	-0.3947	-0.0106	-0.0717	-0.01974	-14.28	71.09
21X	-0.01307	0.1313	0.05709	-0.3037	-0.0100	-0.0653	-0.01307	-11.87	57.06
11S	0.008718	0.09782	-0.01662	-0.2273	-0.0225	-0.0552	3.688	3.777	50.48
12S	0.009214	0.07278	-0.01584	-0.1961	-0.0040	-0.0457	4.369	4.432	43.98
13S	0.01112	0.05222	-0.01437	-0.1474	-0.0156	-0.0374	5.05	5.091	37.49
14S	0.01358	0.02541	-0.01115	-0.1306	-0.0183	-0.0290	6.229	6.241	26.24
15S	0.01483	0.002144	-0.006935	-0.0595	0.0297	-0.0097	7.406	7.394	14.99
16S	0.01208	0.002185	0.0003354	-0.0527	-0.1996	-0.0355	7.404	0.002185	15
17S	0.003028	0.009906	0.00501	-0.3664	-0.0913	-0.0427	0.003028	-7.382	15.01
22S	-0.006697	0.3592	-0.003337	-0.5333	-0.0915	-0.0445	-0.006697	0.3592	89.67
23S	-0.005609	0.3211	-0.009944	-0.4373	-0.0127	-0.0613	-0.005609	0.3211	84.99
24S	-0.002418	0.2153	-0.003594	-0.3589	-0.0616	-0.0859	-0.002418	0.2153	71
25S	0.000723	0.1307	-0.003027	-0.2826	-0.0623	-0.0656	0.000723	0.1307	57
17SF0.50S	0.007394	0.006197	-0.01037	0.1105	0.0826	-0.0233	3.703	-3.69	14.99
1PF94S	-0.005219	0.3928	-0.02924	-0.4421	0.0171	-0.0924	0.5576	3.393	93.97
35S	-0.01058	0.3929	-0.00697	-0.4451	0.0165	-0.0596	0.5523	0.3929	93.99
11X	-0.004278	0.09757	0.01189	-0.2327	-0.0024	-0.0591	3.675	-3.582	50.51
11XY	-0.0001325	0.1059	0.01026	-0.2278	-0.0219	-0.0546	-3.68	-3.574	50.51
11Y	0.003935	0.1064	-0.01808	-0.2254	-0.0018	-0.0592	-3.676	3.786	50.48
12X	-0.002344	0.07268	0.01193	-0.1927	-0.0200	-0.0487	4.357	-4.287	44.01
12XY	-0.0007864	0.08288	0.009892	-0.1899	-0.0022	-0.0477	-4.36	-4.276	44.01
12Y	0.0074	0.08276	-0.01744	-0.1931	-0.0220	-0.0519	-4.352	4.442	43.98
13X	-0.001655	0.05222	0.01128	-0.1489	-0.0033	-0.0416	5.037	-4.987	37.51
13XY	-5.828e-005	0.06401	0.008817	-0.1324	-0.0191	-0.0388	-5.039	-4.975	37.51
13Y	0.009236	0.06427	-0.016	-0.1314	-0.0008	-0.0434	-5.03	5.103	37.48
14X	-0.0002602	0.02515	0.009315	-0.1286	-0.0174	-0.0314	6.215	-6.19	26.26
14XY	0.002304	0.04146	0.005881	-0.1374	-0.0174	-0.0219	-6.213	-6.174	26.26
14Y	0.01193	0.04095	-0.01283	-0.1402	-0.0213	-0.0286	-6.203	6.256	26.24
15X	0.003108	0.002255	0.006924	-0.0644	-0.0039	-0.0195	7.395	-7.389	15.01
15XY	0.003303	0.01131	0.004448	-0.1220	0.0074	-0.0096	-7.388	-7.38	15
15Y	0.01454	0.01174	-0.009375	-0.1086	0.0414	-0.0096	-7.377	7.403	14.99
16Y	0.006024	0.01084	0.001414	-0.0256	0.4848	-0.0244	-7.386	0.01084	15
17X	0.015	0.003586	-0.01307	0.1714	-0.0709	-0.0331	0.015	7.395	14.99
17SF0.50X	0.01366	0.003005	-0.01759	-0.2305	0.0755	-0.0945	3.709	3.699	14.98
17SF0.50XY	0.009661	0.008012	-0.02736	-0.1716	-0.1401	-0.0457	-3.686	3.704	14.97
17SF0.50Y	0.004673	0.01052	-0.02232	0.0600	-0.1672	-0.0447	-3.691	-3.685	14.98
1PF94X	-0.01163	0.393	0.01783	-0.4738	0.0159	-0.0375	0.5512	-2.607	94.02

Joint Support Reactions for Load Case "NESC Extreme":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Uplift Usage %	Result. 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 %
10P	-7.83	0.0	-9.82	0.0	0.0	-74.82	0.0	0.0	75.87	0.0	-0.32	0.0	-0.9	0.0	0.0	-0.11	0.0	0.0
33P	-0.72	0.0	-0.30	0.0	0.0	-7.49	0.0	0.0	7.53	0.0	2.67	0.0	-7.3	0.0	0.0	0.66	0.0	0.0
10X	9.85	0.0	-7.19	0.0	0.0	62.84	0.0	0.0	64.01	0.0	-0.35	0.0	-0.3	0.0	0.0	0.03	0.0	0.0
10XY	-13.98	0.0	-14.82	0.0	0.0	74.46	0.0	0.0	77.19	0.0	0.02	0.0	-0.2	0.0	0.0	0.07	0.0	0.0
10Y	12.68	0.0	-12.94	0.0	0.0	-88.40	0.0	0.0	90.24	0.0	0.11	0.0	-1.0	0.0	0.0	-0.04	0.0	0.0

Joint Displacements, Loads and Member Forces on Joints for Load Case "NESC Extreme":

Joint Label	X External Load (kips)	Y External Load (kips)	Z External Load (kips)	X Member Force (kips)	Y Member Force (kips)	Z Member Force (kips)	X Disp. (ft)	Y Disp. (ft)	Z Disp. (ft)
1P	0.0000	0.1856	-0.1643	-0.0000	-0.1856	0.1643	-0.0050	0.4015	-0.0291

2P	0.0000	0.1856	-0.1643	0.0000	-0.1856	0.1643	-0.0033	0.3560	-0.0280
3P	0.0000	0.1856	-0.1643	-0.0000	-0.1856	0.1643	-0.0023	0.3178	-0.0275
4P	0.0000	0.1856	-0.1643	-0.0000	-0.1856	0.1643	-0.0009	0.2806	-0.0266
5P	0.0000	0.1856	-0.1643	-0.0000	-0.1856	0.1643	0.0008	0.2450	-0.0250
6P	0.0000	0.1856	-0.1643	0.0000	-0.1856	0.1643	0.0011	0.2114	-0.0229
7P	0.0000	0.1856	-0.1643	-0.0000	-0.1856	0.1643	0.0027	0.1807	-0.0213
8P	0.0000	0.1856	-0.1643	-0.0000	-0.1856	0.1643	0.0045	0.1526	-0.0193
9P	0.0000	0.5457	-0.4379	-0.0000	-0.5457	0.4379	0.0042	0.1273	-0.0170
10P	0.0000	0.3601	-0.2736	7.8343	9.4554	-74.5488	0.0000	0.0000	0.0000
18P	0.0000	0.7436	-0.4013	-0.0000	-0.7436	0.4013	0.0068	0.4013	-0.1214
19P	0.0000	2.2456	-1.4803	-0.0000	-2.2456	1.4803	0.0072	0.3206	-0.1039
20P	0.0000	2.2456	-1.4803	0.0000	-2.2456	1.4803	0.0150	0.2146	-0.1113
21P	0.0000	2.2456	-1.4803	-0.0000	-2.2456	1.4803	0.0145	0.1305	-0.0703
27P	0.0000	2.6736	-3.8283	-0.0000	-2.6736	3.8283	-0.0115	0.7627	-0.0067
28P	0.0000	0.1856	-0.2113	-0.0000	-0.1856	0.2113	-0.0067	0.3582	-0.0024
29P	0.0000	0.1856	-0.2233	0.0000	-0.1856	0.2233	-0.0055	0.3050	-0.0020
30P	0.0000	0.1856	-0.2513	0.0000	-0.1856	0.2513	-0.0024	0.2129	-0.0015
31P	0.0000	0.5457	-0.6129	0.0000	-0.5457	0.6129	0.0007	0.1292	-0.0011
32P	0.0000	0.3601	-0.4986	0.0000	-0.3601	0.4986	0.0079	0.0063	-0.0003
33P	0.0000	0.3601	-0.2736	0.7201	-0.0650	-7.2203	0.0000	0.0000	0.0000
1X	0.0000	0.1856	-0.1643	-0.0000	-0.1856	0.1643	-0.0110	0.4016	0.0181
2X	0.0000	0.1856	-0.1643	0.0000	-0.1856	0.1643	-0.0102	0.3560	0.0188
2XY	0.0000	0.1856	-0.1643	-0.0000	-0.1856	0.1643	-0.0097	0.3620	0.0174
2Y	0.0000	0.9396	-0.3513	-0.0000	-0.9396	0.3513	-0.0036	0.3620	-0.0294
3X	0.0000	0.1856	-0.1643	-0.0000	-0.1856	0.1643	-0.0089	0.3180	0.0188
3XY	0.0000	0.1856	-0.1643	0.0000	-0.1856	0.1643	-0.0089	0.3244	0.0173
3Y	0.0000	0.1856	-0.1643	0.0000	-0.1856	0.1643	-0.0024	0.3242	-0.0289
4X	0.0000	0.1856	-0.1643	-0.0000	-0.1856	0.1643	-0.0079	0.2807	0.0184
4XY	0.0000	0.1856	-0.1643	-0.0000	-0.1856	0.1643	-0.0076	0.2875	0.0169
4Y	0.0000	0.6626	-0.2833	-0.0000	-0.6626	0.2833	-0.0016	0.2875	-0.0279
5X	0.0000	0.1856	-0.1643	-0.0000	-0.1856	0.1643	-0.0078	0.2447	0.0174
5XY	0.0000	0.1856	-0.1643	-0.0000	-0.1856	0.1643	-0.0058	0.2518	0.0160
5Y	0.0000	0.1856	-0.1643	-0.0000	-0.1856	0.1643	-0.0011	0.2522	-0.0264
6X	0.0000	0.1856	-0.1643	0.0000	-0.1856	0.1643	-0.0058	0.2116	0.0160
6XY	0.0000	0.1856	-0.1643	-0.0000	-0.1856	0.1643	-0.0057	0.2189	0.0146
6Y	0.0000	0.6626	-0.2833	0.0000	-0.6626	0.2833	0.0008	0.2187	-0.0244
7X	0.0000	0.1856	-0.1643	-0.0000	-0.1856	0.1643	-0.0053	0.1808	0.0148
7XY	0.0000	0.1856	-0.1643	0.0000	-0.1856	0.1643	-0.0043	0.1880	0.0135
7Y	0.0000	0.1856	-0.1643	-0.0000	-0.1856	0.1643	0.0014	0.1879	-0.0228
8X	0.0000	0.1856	-0.1643	-0.0000	-0.1856	0.1643	-0.0051	0.1523	0.0132
8XY	0.0000	0.1856	-0.1643	0.0000	-0.1856	0.1643	-0.0025	0.1592	0.0119
8Y	0.0000	0.6876	-0.2893	-0.0000	-0.6876	0.2893	0.0019	0.1596	-0.0207
9X	0.0000	0.5457	-0.4379	-0.0000	-0.5457	0.4379	-0.0027	0.1274	0.0114
9XY	0.0000	0.5457	-0.4379	-0.0000	-0.5457	0.4379	-0.0029	0.1342	0.0100
9Y	0.0000	0.5457	-0.4379	-0.0000	-0.5457	0.4379	0.0043	0.1341	-0.0183
10X	0.0000	0.3601	-0.2736	-9.8465	6.8300	63.1119	0.0000	0.0000	0.0000
10XY	0.0000	0.3601	-0.2736	13.9752	14.4594	74.7313	0.0000	0.0000	0.0000
10Y	0.0000	0.3601	-0.2736	-12.6831	12.5754	-88.1271	0.0000	0.0000	0.0000
18X	0.0000	0.7436	-0.4013	0.0000	-0.7436	0.4013	-0.0226	0.4020	0.1097
19X	0.0000	2.2456	-1.4803	-0.0000	-2.2456	1.4803	-0.0184	0.3218	0.0882
20X	0.0000	2.2456	-1.4803	0.0000	-2.2456	1.4803	-0.0197	0.2159	0.0933
21X	0.0000	2.2456	-1.4803	-0.0000	-2.2456	1.4803	-0.0131	0.1313	0.0571
11S	0.0000	0.3601	-0.2736	-0.0000	-0.3601	0.2736	0.0087	0.0978	-0.0166
12S	0.0000	0.3601	-0.2736	-0.0000	-0.3601	0.2736	0.0092	0.0728	-0.0158
13S	0.0000	0.3601	-0.2736	0.0000	-0.3601	0.2736	0.0111	0.0522	-0.0144
14S	0.0000	0.3601	-0.2736	0.0000	-0.3601	0.2736	0.0136	0.0254	-0.0112
15S	0.0000	0.3601	-0.2736	-0.0000	-0.3601	0.2736	0.0148	0.0021	-0.0069
16S	0.0000	0.3601	-0.2736	-0.0000	-0.3601	0.2736	0.0121	0.0022	0.0003
17S	0.0000	0.3601	-0.2736	-0.0000	-0.3601	0.2736	0.0030	0.0099	0.0050

22S	0.0000	0.1856	-0.1643	-0.0000	-0.1856	0.1643	-0.0067	0.3592	-0.0033
23S	0.0000	0.1856	-0.1643	-0.0000	-0.1856	0.1643	-0.0056	0.3211	-0.0099
24S	0.0000	0.1856	-0.1643	0.0000	-0.1856	0.1643	-0.0024	0.2153	-0.0036
25S	0.0000	0.1856	-0.1643	-0.0000	-0.1856	0.1643	0.0007	0.1307	-0.0030
17SF0.50S	0.0000	0.3601	-0.2736	0.0000	-0.3601	0.2736	0.0074	0.0062	-0.0104
1PF94S	0.0000	0.1856	-0.1643	0.0000	-0.1856	0.1643	-0.0052	0.3928	-0.0292
35S	0.0000	0.1856	-0.1643	0.0000	-0.1856	0.1643	-0.0106	0.3929	-0.0070
11X	0.0000	0.3601	-0.2736	0.0000	-0.3601	0.2736	-0.0043	0.0976	0.0119
11XY	0.0000	0.3601	-0.2736	0.0000	-0.3601	0.2736	-0.0001	0.1059	0.0103
11Y	0.0000	0.9631	-0.4236	0.0000	-0.9631	0.4236	0.0039	0.1064	-0.0181
12X	0.0000	0.3601	-0.2736	0.0000	-0.3601	0.2736	-0.0023	0.0727	0.0119
12XY	0.0000	0.3601	-0.2736	0.0000	-0.3601	0.2736	-0.0008	0.0829	0.0099
12Y	0.0000	0.3601	-0.2736	0.0000	-0.3601	0.2736	0.0074	0.0828	-0.0174
13X	0.0000	0.3601	-0.2736	0.0000	-0.3601	0.2736	-0.0017	0.0522	0.0113
13XY	0.0000	0.3601	-0.2736	0.0000	-0.3601	0.2736	-0.0001	0.0640	0.0088
13Y	0.0000	1.2521	-0.4956	0.0000	-1.2521	0.4956	0.0092	0.0643	-0.0160
14X	0.0000	0.3601	-0.2736	-0.0000	-0.3601	0.2736	-0.0003	0.0252	0.0093
14XY	0.0000	0.3601	-0.2736	0.0000	-0.3601	0.2736	0.0023	0.0415	0.0059
14Y	0.0000	0.3601	-0.2736	0.0000	-0.3601	0.2736	0.0119	0.0409	-0.0128
15X	0.0000	0.3601	-0.2736	0.0000	-0.3601	0.2736	0.0031	0.0023	0.0069
15XY	0.0000	0.3601	-0.2736	0.0000	-0.3601	0.2736	0.0033	0.0113	0.0044
15Y	0.0000	1.6791	-0.6016	-0.0000	-1.6791	0.6016	0.0145	0.0117	-0.0094
16Y	0.0000	0.3601	-0.2736	-0.0000	-0.3601	0.2736	0.0060	0.0108	0.0014
17X	0.0000	0.3601	-0.2736	0.0000	-0.3601	0.2736	0.0150	0.0036	-0.0131
17SF0.50X	0.0000	0.3601	-0.2736	-0.0000	-0.3601	0.2736	0.0137	0.0030	-0.0176
17SF0.50XY	0.0000	0.3601	-0.2736	-0.0000	-0.3601	0.2736	0.0097	0.0080	-0.0274
17SF0.50Y	0.0000	0.3601	-0.2736	0.0000	-0.3601	0.2736	0.0047	0.0105	-0.0223
1PF94X	0.0000	0.1856	-0.1643	0.0000	-0.1856	0.1643	-0.0116	0.3930	0.0178

Crossing Diagonal Check for Load Case "NESC Extreme" (RLOUT controls):

Comp. Member Label	Tens. Member Label	Connect Leg for Comp. Member	Force In Comp. Member (kips)	Force In Tens. Member (kips)	Original Supported L/R Cap. (kips)	RLX	RLY	RLZ	L/R	KL/R	Curve No.	Alternate Unsupported L/R Cap. (kips)	RLOUT	L/R	KL/R	Curve No.
g17P	g17Y	Short only	-0.19	-0.09	10.51	0.750	0.500	0.500	133.00	129.95	5	7.81	1.000	169.90	150.69	6
g17X	g17XY	Short only	-0.15	-0.22	10.51	0.750	0.500	0.500	133.00	129.95	5	7.81	1.000	169.90	150.69	6
g17XY	g17X	Short only	-0.22	-0.15	10.51	0.750	0.500	0.500	133.00	129.95	5	7.81	1.000	169.90	150.69	6
g17Y	g17P	Short only	-0.09	-0.19	10.51	0.750	0.500	0.500	133.00	129.95	5	7.81	1.000	169.90	150.69	6
g19P	g19Y	Short only	-0.37	-0.86	29.81	0.750	0.500	0.500	76.54	87.41	2	24.69	1.000	97.17	108.58	3
g19Y	g19P	Short only	-0.86	-0.37	29.81	0.750	0.500	0.500	76.54	87.41	2	24.69	1.000	97.17	108.58	3
g21X	g21XY	Short only	-1.21	-0.72	29.81	0.750	0.500	0.500	76.54	87.41	2	24.69	1.000	97.17	108.58	3
g21XY	g21X	Short only	-0.72	-1.21	29.81	0.750	0.500	0.500	76.54	87.41	2	24.69	1.000	97.17	108.58	3
g23P	g23Y	Short only	-1.54	-1.13	29.82	0.750	0.500	0.500	76.48	87.36	2	24.70	1.000	97.09	108.54	3
g23Y	g23P	Short only	-1.13	-1.54	29.82	0.750	0.500	0.500	76.48	87.36	2	24.70	1.000	97.09	108.54	3
g25P	g25Y	Short only	-1.55	-1.40	33.83	0.750	0.500	0.500	86.40	94.80	2	29.78	1.000	96.55	108.27	3
g25Y	g25P	Short only	-1.40	-1.55	33.83	0.750	0.500	0.500	86.40	94.80	2	29.78	1.000	96.55	108.27	3
g27X	g27XY	Short only	-1.83	-1.84	33.83	0.750	0.500	0.500	86.40	94.80	2	29.78	1.000	96.55	108.27	3
g27XY	g27X	Short only	-1.84	-1.83	33.83	0.750	0.500	0.500	86.40	94.80	2	29.78	1.000	96.55	108.27	3
g29P	g29Y	Short only	-2.50	-2.25	39.29	0.750	0.500	0.500	77.00	87.75	2	32.47	1.000	98.03	109.01	3
g29Y	g29P	Short only	-2.25	-2.50	39.29	0.750	0.500	0.500	77.00	87.75	2	32.47	1.000	98.03	109.01	3
g31P	g31Y	Short only	-2.53	-2.60	33.47	0.768	0.536	0.536	101.53	106.15	2	28.23	1.000	120.58	120.36	6
g31Y	g31P	Short only	-2.60	-2.53	33.47	0.768	0.536	0.536	101.53	106.15	2	28.23	1.000	120.58	120.36	6
g33X	g33XY	Short only	-1.46	-1.63	21.38	0.788	0.577	0.577	120.36	120.31	5	19.15	1.000	132.40	127.63	6
g33XY	g33X	Short only	-1.63	-1.46	21.38	0.788	0.577	0.577	120.36	120.31	5	19.15	1.000	132.40	127.63	6
g35P	g35Y	Short only	-1.19	-1.28	20.71	0.767	0.535	0.535	123.31	122.56	5	16.83	1.000	146.29	136.17	6
g35Y	g35P	Short only	-1.28	-1.19	20.71	0.767	0.535	0.535	123.31	122.56	5	16.83	1.000	146.29	136.17	6

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
1	0.845	50.00	50.00	1.69
2	0.845	50.00	50.00	1.69
3	2.690	50.00	50.00	5.38
4	2.690	50.00	50.00	5.38
5	2.690	50.00	50.00	5.38
6	2.690	50.00	50.00	5.38
7	2.690	50.00	50.00	5.38
8	2.690	50.00	50.00	5.38
9	4.670	50.00	50.00	9.34
10	0.281	50.00	50.00	0.56
11	0.290	50.00	50.00	0.58
12	0.312	50.00	50.00	0.62
13	0.821	50.00	50.00	1.64
14	0.615	50.00	50.00	1.23
15	1.003	50.00	50.00	2.01
16	0.721	50.00	50.00	1.44
17	0.721	50.00	50.00	1.44
18	0.746	50.00	50.00	1.49
19	1.052	50.00	50.00	2.10
20	1.347	50.00	50.00	2.69
21	1.784	50.00	50.00	3.57

*** 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 Curve	Angle No.	Angle Size	Steel Strength	Max Usage	Usage Control	Max Use In Comp.	Comp. Control Member	Comp. Force	Comp. Control Load Case	L/R Capacity	Comp. Connect. Shear Capacity	Comp. Connect. Bearing Capacity	RLX	RLY	RLZ	L/R	KL/R	Length	Comp. No. Of Bolts	Member Comp.
					(ksi)	%		%		(kips)		(kips)	(kips)	(kips)								(ft)
Leg1	L2.5x2.5x3/16	SAE	4	2.5X2.5X0.1875	36.0	10.16	Comp	10.16	g90P	-1.193	NESC Ext	11.743	36.400	40.781	1.000	1.000	1.000	148.27	148.27	6.116	4	4
Leg2	L4x4x1/4	SAE		4X4X0.25	36.0	40.28	Comp	40.28	g5P	-23.589	NESC Ext	58.567	72.800	108.750	1.000	1.000	1.000	70.34	70.34	4.660	1	8
Leg3	L4x4x7/16	SAE		4X4X0.4375	36.0	47.72	Comp	47.72	g8Y	-47.790	NESC Ext	100.146	127.400	333.046	1.000	1.000	1.000	71.24	71.24	4.660	1	14
Leg4	L5x5x7/16	SAE		5X5X0.4375	50.0	44.38	Comp	44.38	g11Y	-64.611	NESC Ext	150.630	145.600	426.562	1.000	1.000	1.000	79.97	79.97	6.571	1	16
Leg5	L6x6x3/8	SAE		6X6X0.375	50.0	45.17	Comp	45.17	g13Y	-74.160	NESC Ext	164.165	182.000	457.031	0.500	0.500	0.500	57.34	57.34	11.372	1	20
Leg6	L6x6x3/8	SAE		6X6X0.375	50.0	44.18	Comp	44.18	g14Y	-74.826	NESC Ext	169.375	182.000	457.031	0.330	0.330	0.330	50.46	50.46	15.163	1	20
Diag1	L1.75x1.75x3/16	SAE		1.75X1.75X0.1875	36.0	33.99	Comp	33.99	g16P	-3.572	NESC Ext	10.509	18.200	20.391	0.750	0.500	0.500	133.00	129.95	7.603	5	2
Diag2	L3x3x3/16	SAE		3X3X0.1875	36.0	22.86	Tens	21.84	g18X	-5.962	NESC Ext	29.813	27.300	30.586	0.750	0.500	0.500	76.54	87.41	7.603	2	3
Diag3	L3x2.5x1/4	SAU		3X2.5X0.25	36.0	25.95	Tens	25.00	g24XY	-6.825	NESC Ext	33.833	27.300	40.781	0.750	0.500	0.500	86.40	94.80	7.603	2	3
Diag4	L3x3x1/4	SAE		3X3X0.25	36.0	19.97	Tens	18.81	g28XY	-6.846	NESC Ext	39.289	36.400	54.375	0.750	0.500	0.500	77.00	87.75	7.597	2	4
Diag5	L3x3x3/16	SAE		3X3X0.1875	36.0	14.99	Comp	14.99	g34XY	-3.104	NESC Ext	20.706	27.300	30.586	0.767	0.535	0.535	123.31	122.56	11.447	5	3
Diag6	L2.5x2.5x1/4	SAE		2.5X2.5X0.25	36.0	81.53	Comp	81.53	g37Y	-6.857	NESC Ext	8.410	36.400	54.375	0.791	0.581	0.581	226.57	201.25	15.956	5	4
Diag7	L3x2.5x1/4	SAU		3X2.5X0.25	36.0	79.32	Comp	79.32	g41P	-8.381	NESC Hea	10.567	36.400	54.375	0.386	0.750	0.386	209.67	188.37	17.543	5	4
Horz1	L2x2x3/16	SAE		2X2X0.1875	36.0	23.17	Comp	23.17	g42X	-1.671	NESC Ext	7.213	18.200	20.391	1.000	1.000	1.000	182.74	167.85	6.000	5	2
Horz2	L3.5x2.5x1/4	SAU		3.5X2.5X0.25	36.0	8.17	Tens	4.04	g45P	-0.995	NESC Ext	24.594	27.300	40.781	1.000	1.000	1.000	132.35	129.45	6.000	5	3
Horz3	L3x2x3/16	SAU		3X2X0.1875	36.0	11.77	Tens	0.00	g46Y	0.000		10.922	18.200	20.391	1.000	1.000	1.000	164.01	153.57	6.000	5	2
Horz4	L1.75x1.25x3/16	SAU		1.75X1.25X0.1875	36.0	24.56	Tens	0.00	g48Y	0.000		2.789	18.200	20.391	1.000	1.000	1.000	267.66	232.56	6.000	5	2
Horz5	L3x2.5x3/16	SAU		3X2.5X0.1875	36.0	34.59	Tens	25.14	g50X	-4.575	NESC Ext	18.257	18.200	20.391	1.000	0.500	0.500	126.77	125.20	10.078	5	2
Horz6	L3.5x3x1/4	SAU		3.5X3X0.25	36.0	35.71	Comp	35.71	g52X	-9.292	NESC Ext	26.018	27.300	40.781	1.000	0.500	0.500					

134.38 131.00 12.431 5 3
Horz7 L2.5x2.5x3/16 SAE 2.5X2.5X0.1875 36.0 20.59 Tens 17.44 g53Y -1.651NESC Ext 9.466 18.200 20.391 1.000 1.000 1.000
179.19 165.14 7.392 5 2
Inner1 L1.75x1.75x3/16 SAE 1.75X1.75X0.1875 36.0 71.00 Comp 71.00 Fg6072Y -2.309NESC Ext 3.252 9.100 10.195 2.000 1.000 1.000
233.59 233.59 5.227 4 1
Inner2 L2x2x3/16 SAE 2X2X0.1875 36.0 11.04 Comp 11.04 g57Y -0.941NESC Ext 8.530 18.200 20.391 2.000 1.000 1.000
165.03 154.35 4.243 5 2
ShieldAr WT4x12 WT WT4x12 36.0 16.30 Tens 0.00 g62P 0.000 81.514 18.200 53.287 1.000 1.000 1.000
72.07 96.04 6.000 3 2
ShArmBr L3.5x2.5x1/4 SAU 3.5X2.5X0.25 36.0 6.81 Comp 6.81 g69XY -1.240NESC Hea 19.970 18.200 27.187 1.000 0.500 0.500
143.66 143.66 13.025 4 2
TopCrArm L5x3.5x7/16 SAU 5X3.5X0.4375 50.0 22.52 Comp 22.52 g63P -4.099NESC Hea 103.153 18.200 53.320 0.500 0.500 0.500
75.09 97.55 9.487 3 2
TopArmBr L1.75X1.75x3/16 SAE 1.75X1.75X0.1875 36.0 24.08 Tens 0.00 g70Y 0.000 3.178 18.200 20.391 1.000 0.500 0.500
236.29 236.29 10.574 4 2
MidCrArm L5x3.5x7/16 SAU 5X3.5X0.4375 50.0 27.30 Comp 27.30 g65P -4.969NESC Hea 88.186 18.200 53.320 0.500 0.500 0.500
94.08 107.04 11.885 3 2
MidArmBr L2x2x3/16 SAE 2X2X0.1875 36.0 27.66 Tens 0.00 g71Y 0.000 3.297 18.200 20.391 1.000 0.500 0.500
248.28 248.28 12.766 4 2
BotCrArm L5x3.5x7/16 SAU 5X3.5X0.4375 50.0 22.07 Comp 22.07 g67P -4.016NESC Hea 103.153 18.200 53.320 0.500 0.500 0.500
75.09 97.55 9.487 3 2
BotArmBr L1.75X1.75x3/16 SAE 1.75X1.75X0.1875 36.0 23.49 Tens 0.00 g72Y 0.000 3.181 18.200 20.391 1.000 0.500 0.500
236.19 236.19 10.570 4 2
Pwmnt 12" Std. Pipe Pwmnt Pipe 12" Std. 50.0 5.01 Comp 5.01 g75P -14.784NESC Hea 295.328 0.000 0.000 1.000 1.000 1.000
114.81 114.81 42.000 1 0
PMBR1 L2x2x3/16 SAE 2X2X0.1875 36.0 4.82 Tens 2.40 g83P -0.245NESC Hea 20.044 16.800 10.195 1.000 1.000 1.000
45.69 82.84 1.500 3 1
PMBR2 L2.5x2.5x3/16 SAE 2.5X2.5X0.1875 36.0 37.42 Tens 31.16 g84X -3.177NESC Ext 22.127 16.800 10.195 1.000 1.000 1.000
81.31 100.66 3.354 3 1 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g84P ??
PMBR3 L3x3x3/16 SAE 3X3X0.1875 36.0 20.15 Comp 20.15 g89X -2.055NESC Ext 18.929 16.800 10.195 1.000 1.000 1.000
128.38 128.38 6.376 4 1
Diag8 L2x2x3/16 SAE 2X2X0.1875 36.0 10.96 Comp 10.96 g92X -0.712NESC Ext 6.503 16.800 10.195 1.000 1.000 1.000
176.78 176.78 5.804 4 1
Diag9 L2x2x3/16 SAE 2X2X0.1875 36.0 2.53 Tens 2.03 g93P -0.207NESC Ext 14.460 16.800 10.195 2.000 1.000 1.000
116.69 117.52 3.000 2 1
TopCArmA L5x3.5x7/16 SAU 5X3.5X0.4375 36.0 13.17 Comp 13.17 g64P -2.398NESC Hea 80.907 18.200 47.578 1.000 1.000 1.000
94.99 107.49 6.000 3 2
MidCArmA L5x3.5x7/16 SAU 5X3.5X0.4375 36.0 19.48 Comp 19.48 g66P -3.546NESC Hea 80.907 18.200 47.578 1.000 1.000 1.000
94.99 107.49 6.000 3 2
BotCArmA L5x3.5x7/16 SAU 5X3.5X0.4375 36.0 19.49 Comp 19.49 g68Y -3.548NESC Hea 80.907 18.200 47.578 1.000 1.000 1.000
94.99 107.49 6.000 3 2
Inner3 L1.75x1.25x3/16 SAU 1.75X1.25X0.1875 36.0 81.98 Comp 81.98 g94XY -2.275NESC Ext 2.775 9.100 10.195 1.000 1.000 1.000
233.16 233.16 5.227 4 1 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g94P g94X g94XY g94Y ??

Group Summary (Tension Portion):

Group No.	Group Label	Angle Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Max Tension Usage Control In 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)	Tension Member Length (ft)	No. Of Bolts Tens.	Hole Diameter (in)

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     Leg1   L2.5x2.5x3/16   SAE   2.5X2.5X0.1875     36.0 10.16  Comp  2.82    g90X   0.631NESC Ext   22.347   36.400   40.781   33.984  6.116     4
2.000     0.75
     Leg2        L4x4x1/4   SAE         4X4X0.25     36.0 40.28  Comp 33.67     g5X  18.967NESC Ext   56.340   72.800  108.750  120.833  4.660     8
2.000     0.75
     Leg3       L4x4x7/16   SAE        4X4X0.4375    36.0 47.72  Comp 41.78    g8XY  39.918NESC Ext   95.535  127.400  333.046  370.052  4.660    14
2.000     0.75
     Leg4       L5x5x7/16   SAE        5X5X0.4375    50.0 44.38  Comp 37.58   g11XY  54.722NESC Ext  158.633  145.600  426.562  202.179  6.571    16
3.070     0.75
     Leg5        L6x6x3/8   SAE         6X6X0.375    50.0 45.17  Comp 34.47   g12XY  55.753NESC Ext  161.750    0.000    0.000    0.000 11.372     0
4.000     0.75
     Leg6        L6x6x3/8   SAE         6X6X0.375    50.0 44.18  Comp 33.27    g14X  56.384NESC Ext  169.484  182.000  457.031  188.953 15.163    20
3.450     0.75
    Diag1 L1.75x1.75x3/16   SAE 1.75X1.75X0.1875     36.0 33.99  Comp 28.39    g16X   3.505NESC Ext   15.532   18.200   20.391   12.347  7.603     2
1.000     0.75
    Diag2       L3x3x3/16   SAE        3X3X0.1875    36.0 22.86  Tens 22.86    g20P   6.241NESC Ext   30.760   27.300   30.586   30.586  7.603     3
1.000     0.75
    Diag3      L3x2.5x1/4   SAU        3X2.5X0.25    36.0 25.95  Tens 25.95    g26Y   7.086NESC Ext   32.319   27.300   40.781   40.781  7.603     3
1.000     0.75
    Diag4        L3x3x1/4   SAE         3X3X0.25     36.0 19.97  Tens 19.97    g28Y   7.016NESC Ext   40.581   36.400   54.375   35.137  7.597     4
1.000     0.75
    Diag5       L3x3x3/16   SAE        3X3X0.1875    36.0 14.99  Comp 12.48    g32Y   3.392NESC Ext   30.760   27.300   30.586   27.187 10.360     3
1.000     0.75
    Diag6    L2.5x2.5x1/4   SAE     2.5X2.5X0.25     36.0 81.53  Comp 16.10   g37XY   5.230NESC Ext   32.481   36.400   54.375   44.306 15.956     4
1.000     0.75
    Diag7      L3x2.5x1/4   SAU        3X2.5X0.25    36.0 79.32  Comp 44.92    g40Y  15.784NESC Ext   36.369   36.400   54.375   35.137 17.543     4
1.000     0.75
    Horz1       L2x2x3/16   SAE        2X2X0.1875    36.0 23.17  Comp  7.57    g42P   1.060NESC Ext   18.448   18.200   20.391   14.006  6.000     2
1.000     0.75
    Horz2    L3.5x2.5x1/4   SAU     3.5X2.5X0.25     36.0  8.17  Tens  8.17    g44P   2.230NESC Hea   40.581   27.300   40.781   27.450  6.000     3
1.000     0.75
    Horz3       L3x2x3/16   SAU        3X2X0.1875    36.0 11.77  Tens 11.77    g46Y   1.648NESC Hea   18.529   18.200   20.391   14.006  6.000     2
1.000     0.75
    Horz4 L1.75x1.25x3/16   SAU 1.75X1.25X0.1875     36.0 24.56  Tens 24.56    g47Y   2.819NESC Hea   12.519   18.200   20.391   11.475  6.000     2
1.000     0.75
    Horz5     L3x2.5x3/16   SAU     3X2.5X0.1875     36.0 34.59  Tens 34.59    g50P   5.429NESC Ext   24.806   18.200   20.391   15.694 10.078     2
1.000     0.75
    Horz6      L3.5x3x1/4   SAU        3.5X3X0.25    36.0 35.71  Comp 23.92    g52P   6.530NESC Hea   40.419   27.300   40.781   29.700 12.431     3
1.000     0.75
    Horz7   L2.5x2.5x3/16   SAE   2.5X2.5X0.1875     36.0 20.59  Tens 20.59   g53XY   3.231NESC Ext   24.669   18.200   20.391   15.694  7.392     2
1.000     0.75
   Inner1 L1.75x1.75x3/16   SAE 1.75X1.75X0.1875     36.0 71.00  Comp 27.98   g60XY   2.313NESC Ext   15.532    9.100   10.195    8.269  5.227     1
1.000     0.75
   Inner2       L2x2x3/16   SAE        2X2X0.1875    36.0 11.04  Comp  7.44    g57P   1.042NESC Ext   18.448   18.200   20.391   14.006  4.243     2
1.000     0.75
 ShieldAr          WT4x12    WT           WT4x12     36.0 16.30  Tens 16.30    g61X   2.966NESC Hea  102.789   18.200   53.287   40.756 11.500     2
2.000     0.75
  ShArmBr    L3.5x2.5x1/4   SAU     3.5X2.5X0.25     36.0  6.81  Comp  0.00    g69Y   0.000           32.481   18.200   27.187   20.925 13.025     2
1.000     0.75
 TopCrArm     L5x3.5x7/16   SAU     5X3.5X0.4375     50.0 22.52  Comp  0.00    g63Y   0.000          129.319   18.200   53.320   53.320  9.487     2
2.000     0.75
 TopArmBr L1.75X1.75x3/16   SAE 1.75X1.75X0.1875     36.0 24.08  Tens 24.08    g70P   3.740NESC Hea   15.532   18.200   20.391   15.609 10.574     2
1.000     0.75
 MidCrArm     L5x3.5x7/16   SAU     5X3.5X0.4375     50.0 27.30  Comp  0.00    g65Y   0.000          129.319   18.200   53.320   53.320 11.885     2
2.000     0.75
 MidArmBr       L2x2x3/16   SAE        2X2X0.1875    36.0 27.66  Tens 27.66    g71P   4.551NESC Hea   18.448   18.200   20.391   16.453 12.766     2
1.000     0.75
 BotCrArm     L5x3.5x7/16   SAU     5X3.5X0.4375     50.0 22.07  Comp  0.00    g67Y   0.000          129.319   18.200   53.320   53.320  9.487     2
2.000     0.75
```

```
 BotArmBr L1.75X1.75x3/16   SAE 1.75X1.75X0.1875     36.0 23.49  Tens 23.49    g72P   3.648NESC Hea   15.532   18.200   20.391   15.609 10.570     2
1.000     0.75
    Pwmnt   12" Std. Pipe Pwmnt    Pipe 12" Std.     50.0  5.01  Comp  0.00    g79P   0.000          679.999    0.000    0.000    0.000 19.830     0
0.000        0
    PMBR1       L2x2x3/16   SAE       2X2X0.1875     36.0  4.82  Tens  4.82    g80P   0.491NESC Hea   18.827   16.800   10.195   10.343  1.500     1
1.000   0.6875
    PMBR2   L2.5x2.5x3/16   SAE   2.5X2.5X0.1875     36.0 37.42  Tens 37.42    g84P   3.815NESC Ext   25.048   16.800   10.195   11.328  3.354     1
1.000   0.6875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g84P
??
    PMBR3       L3x3x3/16   SAE       3X3X0.1875     36.0 20.15  Comp 11.36    g89P   1.158NESC Ext   31.139   16.800   10.195   11.328  6.376     1
1.000   0.6875
    Diag8       L2x2x3/16   SAE       2X2X0.1875     36.0 10.96  Comp  5.38    g92P   0.549NESC Ext   18.827   16.800   10.195   10.343  5.804     1
1.000   0.6875
    Diag9       L2x2x3/16   SAE       2X2X0.1875     36.0  2.53  Tens  2.53    g93X   0.258NESC Ext   18.827   16.800   10.195   10.343  3.000     1
1.000   0.6875
 TopCArmA     L5x3.5x7/16   SAU     5X3.5X0.4375     36.0 13.17  Comp  0.00    g64Y   0.000          103.741   18.200   47.578   44.494  6.000     2
1.000     0.75
 MidCArmA     L5x3.5x7/16   SAU     5X3.5X0.4375     36.0 19.48  Comp  0.00    g66Y   0.000          103.741   18.200   47.578   44.494  6.000     2
1.000     0.75
 BotCArmA     L5x3.5x7/16   SAU     5X3.5X0.4375     36.0 19.49  Comp  0.00    g68Y   0.000          103.741   18.200   47.578   44.494  6.000     2
1.000     0.75
   Inner3 L1.75x1.25x3/16   SAU 1.75X1.25X0.1875     36.0 81.98  Comp 21.20    g94Y   1.395NESC Ext   12.519    9.100   10.195    6.581  5.227     1
1.000     0.75 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g94P
g94X g94XY g94Y  ??
```

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	79.32	g41P	Angle
NESC Extreme	81.98	g94XY	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	2.56	NESC Heavy	0.0
2	Clamp	2.63	NESC Heavy	0.0
3	Clamp	7.03	NESC Heavy	0.0
4	Clamp	7.08	NESC Heavy	0.0
5	Clamp	7.13	NESC Heavy	0.0
6	Clamp	7.19	NESC Heavy	0.0
7	Clamp	7.03	NESC Heavy	0.0
8	Clamp	7.08	NESC Heavy	0.0
9	Clamp	17.70	NESC Heavy	0.0
10	Clamp	2.17	NESC Heavy	0.0
11	Clamp	1.69	NESC Heavy	0.0
12	Clamp	2.56	NESC Heavy	0.0
13	Clamp	5.40	NESC Heavy	0.0
14	Clamp	5.82	NESC Heavy	0.0

15	Clamp	2.01	NESC Extreme	0.0
16	Clamp	1.44	NESC Extreme	0.0
17	Clamp	1.61	NESC Heavy	0.0
18	Clamp	1.49	NESC Extreme	0.0
19	Clamp	2.10	NESC Extreme	0.0
20	Clamp	2.69	NESC Extreme	0.0
21	Clamp	3.57	NESC Extreme	0.0

Loads At Insulator Attachments For All Load Cases:

Load Case	Insulator Label	Insulator Type	Structure Attach Label	Structure Attach Load X (kips)	Structure Attach Load Y (kips)	Structure Attach Load Z (kips)	Structure Attach Load Res. (kips)
NESC Heavy	1	Clamp	18P	0.000	0.775	1.017	1.279
NESC Heavy	2	Clamp	18X	0.000	0.832	1.017	1.314
NESC Heavy	3	Clamp	19P	0.000	1.336	3.251	3.515
NESC Heavy	4	Clamp	19X	0.000	1.402	3.251	3.541
NESC Heavy	5	Clamp	20P	0.000	1.336	3.308	3.567
NESC Heavy	6	Clamp	20X	0.000	1.406	3.308	3.594
NESC Heavy	7	Clamp	21P	0.000	1.336	3.251	3.515
NESC Heavy	8	Clamp	21X	0.000	1.402	3.251	3.541
NESC Heavy	9	Clamp	27P	0.000	1.022	8.790	8.849
NESC Heavy	10	Clamp	28P	0.000	0.416	1.000	1.083
NESC Heavy	11	Clamp	29P	0.000	0.317	0.784	0.845
NESC Heavy	12	Clamp	30P	0.000	0.476	1.191	1.282
NESC Heavy	13	Clamp	31P	0.000	0.974	2.520	2.701
NESC Heavy	14	Clamp	32P	0.000	0.999	2.735	2.912
NESC Heavy	15	Clamp	2Y	0.000	0.258	0.868	0.906
NESC Heavy	16	Clamp	4Y	0.000	0.163	0.573	0.596
NESC Heavy	17	Clamp	6Y	0.000	0.163	0.789	0.806
NESC Heavy	18	Clamp	8Y	0.000	0.172	0.676	0.698
NESC Heavy	19	Clamp	11Y	0.000	0.206	0.852	0.877
NESC Heavy	20	Clamp	13Y	0.000	0.305	1.302	1.337
NESC Heavy	21	Clamp	15Y	0.000	0.451	1.591	1.654
NESC Extreme	1	Clamp	18P	0.000	0.744	0.401	0.845
NESC Extreme	2	Clamp	18X	0.000	0.744	0.401	0.845
NESC Extreme	3	Clamp	19P	0.000	2.246	1.480	2.690
NESC Extreme	4	Clamp	19X	0.000	2.246	1.480	2.690
NESC Extreme	5	Clamp	20P	0.000	2.246	1.480	2.690
NESC Extreme	6	Clamp	20X	0.000	2.246	1.480	2.690
NESC Extreme	7	Clamp	21P	0.000	2.246	1.480	2.690
NESC Extreme	8	Clamp	21X	0.000	2.246	1.480	2.690
NESC Extreme	9	Clamp	27P	0.000	2.674	3.828	4.670
NESC Extreme	10	Clamp	28P	0.000	0.186	0.211	0.281
NESC Extreme	11	Clamp	29P	0.000	0.186	0.223	0.290
NESC Extreme	12	Clamp	30P	0.000	0.186	0.251	0.312
NESC Extreme	13	Clamp	31P	0.000	0.546	0.613	0.821
NESC Extreme	14	Clamp	32P	0.000	0.360	0.499	0.615
NESC Extreme	15	Clamp	2Y	0.000	0.940	0.351	1.003
NESC Extreme	16	Clamp	4Y	0.000	0.663	0.283	0.721
NESC Extreme	17	Clamp	6Y	0.000	0.663	0.283	0.721
NESC Extreme	18	Clamp	8Y	0.000	0.688	0.289	0.746
NESC Extreme	19	Clamp	11Y	0.000	0.963	0.424	1.052
NESC Extreme	20	Clamp	13Y	0.000	1.252	0.496	1.347
NESC Extreme	21	Clamp	15Y	0.000	1.679	0.602	1.784

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	11.969	0.000	33.508	899.772	-7.955	-6.869
NESC Extreme	20.988	0.000	13.877	1516.196	0.640	-19.361

*** Weight of structure (lbs):

Weight of Angles*Section DLF:	19543.9
Total:	19543.9

*** End of Report

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63-2 North Branford Road P: (203) 488-0580
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Subject: Anchor Bolt Analysis for Tower #1522

Location: Watertown, CT

Rev. 1: 1/29/19

Prepared by: T.J.L. Checked by: C.A.G.
Job No. 17159.12

Tower Anchor Bolt Analysis

Max Leg Reactions:

Uplift = $Uplift := 74.5 \cdot kips$ (User Input)

Shear = $Shear := 20.4 \cdot kips$ (User Input)

Compression = $Compression := 88.4 \cdot kips$ (User Input)

Anchor Bolt Data:

Use AST MA36 (Assumed Conservative Value - Actual Grade Unknown)

Number of Anchor Bolts = $N := 4$ (User Input)

Bolt Ultimate Strength = $F_u := 58ksi$ (User Input)

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

Diameter of Bolts = $D := 1.25in$ (User Input)

Threads per Inch = $n := 6$ (User Input)

Coefficient of Friction = $\mu := 0.55$ (User Input)

Anchor Bolt Area:

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n} \right)^2 = 0.929 \cdot in^2$ (AISC 13th Ed. pg. 7-83)

Check Anchor Bolt Area:

Based on the ASCE 10-97 Design of Latticed Steel Transmission Structures

Required Area = $A_{s1} := \frac{Uplift}{F_y} + \frac{Shear}{\mu \cdot .85 \cdot F_y} = 3.3 \cdot in^2$

$A_{s2} := \left[\frac{Shear - (0.3 \cdot Compression)}{\mu \cdot .85 \cdot F_y} \right] = -0.364 \cdot in^2$

Provided Area = $A_{sprovided} := A_n \cdot N = 3.7 \cdot in^2$

$Condition1 := if\left(\frac{A_{s1}}{A_{sprovided}} \le 1.00, "OK", "Overstressed" \right)$

Condition1 = "OK"

$Condition2 := if\left(\frac{A_{s2}}{A_{sprovided}} \le 1.00, "OK", "Overstressed" \right)$

Condition2 = "OK"

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

Subject:	Foundation Analysis Tower # 1522
Location:	Watertown, CT
Rev. 1: 1/29/19	Prepared by: T.J.L. Checked by: C.A.G. Job No. 17159.12

Foundation Analysis

Input Data:

Max. Reactions at Tower Leg:

Shear (Compression Leg) = $Shear_{comp} := 18.12 \cdot 1.1 \cdot kips = 19.9 \cdot kips$ (User Input from PLS Tower)

Shear (Uplift Leg) = $Shear_{up} := 20.37 \cdot 1.1 \cdot kips = 22.4 \cdot kips$ (User Input from PLS Tower)

Compression = $Comp := 88.4 \cdot 1.1 \cdot kips = 97.2 \cdot kips$ (User Input from PLS Tower)

Uplift = $Uplift := 74.46 \cdot 1.1 \cdot kips = 81.9 \cdot kips$ (User Input from PLS Tower)

Tower Properties:

Tower Height = $H_t := 95 \cdot ft$ (User Input)

Foundation Properties: (Refer to NUSCO drawing 01096-60000 sheet 5)

Pier Height = $P_H := 10.0 \cdot ft$ (User Input)

Pier Width Top = $P_{w1} := 4 \cdot ft$ (User Input)

Pier Width Botttom = $P_{w2} := 4 \cdot ft$ (User Input)

Pier Projection Above Grade = $P_P := 2.5 \cdot ft$ (User Input)

Pad Width = $Pd_w := 12.5 \cdot ft$ (User Input)

Pad Thickness = $Pd_t := 2.5 \cdot ft$ (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 = $\phi := 30.0 \cdot deg$ (User Input)

Soil Bearing Capacity = $BC_{soil} := 4000 \cdot psf$ (User Input)

Coefficient of Friction = $\mu := 0.45$ (User Input)

Coefficient of Lateral Soil Pressure = $K_p := \frac{1 + \sin(\phi)}{1 - \sin(\phi)} = 3$

Calculated Data:

Volume of the Concrete Pad = $V_{pad} := Pd_w^2 \cdot Pd_t = 390.625 \cdot ft^3$

Volume of the Concrete Pier = $V_{pier} := \frac{(P_H)}{3} \cdot \left(P_{w1}^2 + P_{w2}^2 + \sqrt{P_{w1}^2 \cdot P_{w2}^2}\right) = 160 \cdot ft^3$

Resisting Pyramid Base 1 = $B_1 := Pd_w^2 = 156.25 ft^2$

Resisting Pyramid Base 2 = $B_2 := \left[2 \cdot \tan(\phi) \cdot (P_H - P_P) + Pd_w\right]^2 = 448 ft^2$

Volume of Soil = $V_{soil} := \left[\frac{(P_H - P_P)}{3} \cdot \left(B_1 + B_2 + \sqrt{B_1 \cdot B_2}\right)\right] - P_{w1}^2 \cdot (P_H - P_P) = 2051 \cdot ft^3$

Total Vdlume ofConcrete = $V_{Conc} := V_{pad} + V_{pier} = 551 \cdot ft^3$

Mass of Concrete = $Mass_{Conc} := V_{Conc} \cdot \gamma c = 82.6 \cdot kips$

Mass of Soil = $Mass_{Soil} := V_{soil} \cdot \gamma s = 205 \cdot kips$

Total Mass = $Mass_{tot} := Mass_{Conc} + Mass_{Soil} = 288 \cdot kips$

Check Uplift:

Required Factor of Safety = $F_S := 1.0$

$ActualFS := \frac{Mass_{tot}}{Uplift} = 3.51$

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

Uplift_Check = "OK"

Check Bearing:

Cross Sectional Area of Pad = $A_{pad} := Pd_w^2 = 156 ft^2$

Section Modulus of Pad = $S_{pad} := \frac{(Pd_w)^3}{6} = 326 \cdot ft^3$

Residual Mass of Concrete = $Mass_{Concr} := V_{Conc} \cdot (\gamma c - \gamma s) = 27.5 \cdot kips$

$Bearing := \frac{Comp + Mass_{Concr}}{A_{pad}} + \frac{\left[Shear_{comp} \cdot (P_H + Pd_t)\right]}{S_{pad}} = 1.56 \cdot ksf$

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

Bearing_Check = "OK"

$ActualFS := \frac{BC_{soil}}{Bearing} = 2.56$

Check Sliding:

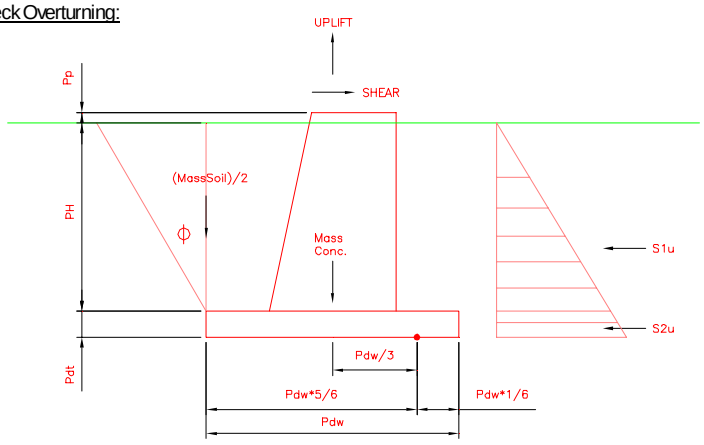
Sliding Resistance = $S_R := \mu \cdot (Mass_{Conc} + Comp) = 80.925 \cdot kips$

$Sliding\_Check := if(Shear_{comp} \leq S_R, "OK", "No Good")$

Sliding_Check = "OK"

$ActualFS := \frac{S_R}{Shear_{comp}} = 4.06$

Check Overturning:



Passive Pressure (on pier) =

$P1_{top} := K_p \cdot \gamma s \cdot 0 = 0 \cdot ksf$

$P1_{bot} := K_p \cdot \gamma s \cdot (P_H - P_P) = 2.25 \cdot ksf$

$P1_{ave} := \frac{P1_{top} + P1_{bot}}{2} = 1.125 \cdot ksf$

$A_1 := (P_H - P_P) \cdot \left[\frac{(P_{w1} + P_{w2})}{2} \right] = 30\,ft^2$

Ultimate Shear =

$S1_u := P1_{ave} \cdot A_1 = 33.75 \cdot kip$

Passive Pressure (on pad) =

$P2_{top} := K_p \cdot \gamma s \cdot (P_H - P_P) = 2.25 \cdot ksf$

$P2_{bot} := K_p \cdot \gamma s \cdot (P_H + Pd_t - P_P) = 3 \cdot ksf$

$P2_{ave} := \frac{P2_{top} + P2_{bot}}{2} = 2.625 \cdot ksf$

$A_2 := Pd_t \cdot Pd_w = 31.25\,ft^2$

Ultimate Shear =

$S2_u := P2_{ave} \cdot A_2 = 82.031 \cdot kip$

Overturning Moment =

$OM := Uplift \cdot \frac{Pd_w}{3} + Shear_{up} \cdot (P_H + Pd_t) = 621.4 \cdot k \cdot ft$

Resisting Moment =

$RM := Mass_{Conc} \cdot \left(\frac{Pd_w}{3} \right) + \frac{Mass_{Soil}}{2} \cdot \left(\frac{5 \cdot Pd_w}{6} \right) + S1_u \cdot \left[Pd_t + \frac{1}{3} \cdot (P_H - P_P) \right] + S2_u \cdot \left(\frac{1}{3} \cdot Pd_t \right) = 1649.6 \cdot k \cdot ft$

$ActualFS := \frac{RM}{OM} = 2.65$

$Overturning\_Check := if\left(\frac{RM}{OM} \geq F_S, "OK", "No Good" \right)$

Overturning_Check = "OK"

Augment ID: CT33XC516Q17.1

RFDS ID: 111262

SprintVision

RF Design Sheet

Site Identification	
Cascade	CT33XC516
SMS Schedule ID	12456351
SMS Schedule Name	DO Macro Upgrade
PID	
RRU OEM	ALU
Switch OEM	Alcatel Lucent
RFDS Issue Date	2017-08-15 00:00:00.0
RFDS Revision Date	2017-10-25 00:00:00.0
RFDS Revision	4

Filter Analysis Complete	YES
RFDS - Issue Date	08/15/2017
Design Status	Complete
Project Description	DO Macro Upgrade - Add 2500 MHz

Battery Backup Cabinet Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	

Junction Box Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	
Junction Boxes needed at site	

BTS #2 Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	
Needed at site	

Contact Information	
Engineer Email	Bill.M.Hastings@sprint.com
Sprint Badged RF Engineer	Bill Hastings
RF Engineer Email	Bill.M.Hastings@sprint.com
RF Engineer Phone	978-590-9700
RF Manager	Jonathan Hull
RF Manager Email	Jonathan.B.Hull@Sprint.com
RF Manager Phone	617-233-2920

Carrier Count	
2500 LTE	3
1900 LTE	1
1900 EVDO	
1900 Voice	1
800 LTE	1
800 Voice	1

UE Relay Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
UE Relay Azimuth	
Manufacturer	
UE Relay CL Height (meters)	

ALU Top Hat Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	
Top Hat Quantity	

Power Protection Cabinet Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	
Power Protection Cabinet	

Location Details	
Latitude	41.59277222
Longitude	-73.06680277
Market	Southern Connecticut
Region	Northeast
City	Watertown
State	CT
Zip Code	CT/06795
County	Litchfield

2500MHz	3
1900MHz	3
800MHz	3

GPS Antenna Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	
GPS Antenna needed at site	

Repeater Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	

Growth Cabinet Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	

BTS #1 Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	
Number of BTS #1	

A&E Drawing Requirements

10/18/2017 (WR): RFDS revised to replace existing NV dual band antenna with Commscope 10 port tri-band antenna and add 6 twin diplexers for ground mount 1900/800/2500 RRUs.

Additional RF Notes Special Construction Requirements

10/18/2017 (WR): RFDS revised to replace existing NV dual band antenna with Commscope 10 port tri-band antenna and add 6 twin diplexers for ground mount 1900/800/2500 RRUs.

Additional RF Notes

Keep Existing NV Antenna for 800/1900 and add 1 800/2500 antenna for LTE2.5 8T8R and enhance 2R for 800 MHz

SprintVision

RF Design Sheet

Band: 2500	**Alpha**	**Beta**	**Gamma**	**Delta**	**Epsilon**	**Zeta**
Radio Model						
Model Number	TD-RRH8x20-25	TD-RRH8x20-25	TD-RRH8x20-25	N/A	N/A	N/A
Weight (lbs)	76.2	76.2	76.2	N/A	N/A	N/A
Dimensions	26 x 18.6 x 6.7	26 x 18.6 x 6.7	26 x 18.6 x 6.7	N/A	N/A	N/A
Manufacturer	ALU	ALU	ALU	N/A	N/A	N/A
Number of RRUs needed	1	1	1	0	0	0
Filter Model						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Filter Model 2						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A		N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Filter Model 3						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions		N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Trunk Cable 1						
Model Number	Hybriflex	N/A	N/A	N/A	N/A	N/A
Weight (Lbs.)	1	N/A	N/A	N/A	N/A	N/A
Dimensions (In.)	1.54	N/A	N/A	N/A	N/A	N/A
Manufacturer	ALU	N/A	N/A	N/A	N/A	N/A
Trunk Cable 1 Qty						
Power Junction Cylinder Model						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (Lbs.)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions (In.)	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Power Junction Cylinder Qty	0	0	0	0	0	0
Optical Junction Cylinder Qty needed						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (Lbs.)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions (In.)	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Optical Junction Cylinder Qty needed	0	0	0	0	0	0

Band: 1900	**Alpha**	**Beta**	**Gamma**	**Delta**	**Epsilon**	**Zeta**
Radio Model						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Number of RRUs needed	0	0	0	0	0	0
Filter Model						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Filter Model 2						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A		N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Filter Model 3						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions		N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Trunk Cable 1						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (Lbs.)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions (In.)	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Trunk Cable 1 Qty						
Power Junction Cylinder Model						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (Lbs.)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions (In.)	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Power Junction Cylinder Qty	0	0	0	0	0	0
Optical Junction Cylinder Qty needed						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (Lbs.)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions (In.)	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Optical Junction Cylinder Qty needed	0	0	0	0	0	0

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RF Design Sheet

Band: 800	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Radio Model						
Model Number	RRH-2x50-800	RRH-2x50-800	RRH-2x50-800	N/A	N/A	N/A
Weight (lbs)	69.1	69.1	69.1	N/A	N/A	N/A
Dimensions	16 x 13 x 10	16 x 13 x 10	16 x 13 x 10	N/A	N/A	N/A
Manufacturer	ALU	ALU	ALU	N/A	N/A	N/A
Number of RRUs needed	1	1	1	0	0	0
Filter Model						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Filter Model 2						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A		N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Filter Model 3						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions		N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Trunk Cable 1						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (Lbs.)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions (In.)	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Trunk Cable 1 Qty						
Power Junction Cylinder Model						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (Lbs.)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions (In.)	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Power Junction Cylinder Qty	0	0	0	0	0	0
Optical Junction Cylinder Qty needed						
Model Number	N/A	N/A	N/A	N/A	N/A	N/A
Weight (Lbs.)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions (In.)	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Optical Junction Cylinder Qty needed	0	0	0	0	0	0

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RF Design Sheet

Band: 2500	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1						
Model Number	Antenna assigned on a different band	Antenna assigned on a different band	Antenna assigned on a different band			
Weight (lbs)	0	0	0	N/A	N/A	N/A
Dimensions	0 x 0 x 0	0 x 0 x 0	0 x 0 x 0	N/A	N/A	N/A
Manufacturer	-	-	-	N/A	N/A	N/A
Ant1 Top Jumper Make/Mode/Qtyl	2.5 Jumper 8	2.5 Jumper 8	2.5 Jumper 8	N/A 0	N/A 0	N/A 0
Ant 1 RF requested Diameter	1/2"	1/2"	1/2"	N/A	N/A	N/A
Ant 1 RF requested Top Jumper Length(ft)	8	8	8	N/A	N/A	N/A
Antenna 1 Azimuth	5	215	300	N/A	N/A	N/A
Antenna 1 Mechanical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Center Line (ft)	110.0065652	110.0065652	110.0065652	N/A	N/A	N/A
Antenna 1 Electrical DT	2	2	2	N/A	N/A	N/A
Antenna 1 Electrical DT 2	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Electrical DT 3	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Twist	N/A	N/A	N/A	N/A	N/A	N/A
Antenna2						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Ant2 Top Jumper Make/Mode/Qtyl	N/A 0	N/A 0	N/A 0	N/A 0	N/A 0	N/A 0
Ant 2 RF Top Jumper Diameter	N/A	N/A	N/A	N/A	N/A	N/A
Ant 2 RF Top Jumper Length(ft)	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Azimuth	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Mechanical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Center Line (ft)	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Electrical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Electrical DT 2	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Electrical DT 3	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Twist	N/A	N/A	N/A	N/A	N/A	N/A

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RF Design Sheet

Band: 1900	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1						
Model Number	DHHTT65B-3XR	DHHTT65B-3XR	DHHTT65B-3XR			
Weight (lbs)	48.5	48.5	48.5	N/A	N/A	N/A
Dimensions	72 x 12 x 7.1	72 x 12 x 7.1	72 x 12 x 7.1	N/A	N/A	N/A
Manufacturer	CommScope	CommScope	CommScope	N/A	N/A	N/A
Ant1 Top Jumper Make/Mode/Qtyl	800/1900 Jumper 8	800/1900 Jumper 8	800/1900 Jumper 8	N/A 0	N/A 0	N/A 0
Ant 1 RF requested Diameter	N/A	N/A	N/A	N/A	N/A	N/A
Ant 1 RF requested Top Jumper Length(ft)	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Azimuth	5	215	300	N/A	N/A	N/A
Antenna 1 Mechanical DT	0	0	0	N/A	N/A	N/A
Antenna 1 Center Line (ft)	110.0065652	110.0065652	110.0065652	N/A	N/A	N/A
Antenna 1 Electrical DT	3	3	3	N/A	N/A	N/A
Antenna 1 Electrical DT 2	0	0	0	N/A	N/A	N/A
Antenna 1 Electrical DT 3	0	0	0	N/A	N/A	N/A
Antenna 1 Twist	N/A	N/A	N/A	N/A	N/A	N/A
Antenna2						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	
Ant2 Top Jumper Make/Mode/Qtyl	N/A 0	N/A 0	N/A 0	N/A 0	N/A 0	N/A
Ant 2 RF Top Jumper Diameter	N/A	N/A	N/A	N/A	N/A	N/A
Ant 2 RF Top Jumper Length(ft)	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Azimuth	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Mechanical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Center Line (ft)	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Electrical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Electrical DT 2	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Electrical DT 3	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Twist	N/A	N/A	N/A	N/A	N/A	N/A

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RF Design Sheet

Band: 800	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1						
Model Number	Antenna assigned on a different band	Antenna assigned on a different band	Antenna assigned on a different band			
Weight (lbs)	0	0	0	N/A	N/A	N/A
Dimensions	0 x 0 x 0	0 x 0 x 0	0 x 0 x 0	N/A	N/A	N/A
Manufacturer	-	-	-	N/A	N/A	N/A
Ant1 Top Jumper Make/Mode/Qtyl	800/1900 Jumper 4	800/1900 Jumper 4	800/1900 Jumper 4	N/A 0	N/A 0	N/A 0
Ant 1 RF requested Diameter	1/2"	1/2"	1/2"	N/A	N/A	N/A
Ant 1 RF requested Top Jumper Length(ft)	8	8	8	N/A	N/A	N/A
Antenna 1 Azimuth	5	215	300	N/A	N/A	N/A
Antenna 1 Mechanical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Center Line (ft)	110.0065652	110.0065652	110.0065652	N/A	N/A	N/A
Antenna 1 Electrical DT	5	5	5	N/A	N/A	N/A
Antenna 1 Electrical DT 2	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Electrical DT 3	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Twist	N/A	N/A	N/A	N/A	N/A	N/A
Antenna2						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	
Ant2 Top Jumper Make/Mode/Qtyl	N/A 0	N/A 0	N/A 0	N/A 0	N/A 0	N/A
Ant 2 RF Top Jumper Diameter	N/A	N/A	N/A	N/A	N/A	N/A
Ant 2 RF Top Jumper Length(ft)	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Azimuth	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Mechanical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Center Line (ft)	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Electrical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Electrical DT 2	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Electrical DT 3	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 Twist	N/A	N/A	N/A	N/A	N/A	N/A

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RF Design Sheet

Band: 2500	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1 Split						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Accept Proposed Ant1 Model Change?	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 band combined with	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Upper Passive Component Model						
Model Number	DPO-7126Y-0-T1 (1.9/2.5 4:2 Diplexer)	DPO-7126Y-0-T1 (1.9/2.5 4:2 Diplexer)	DPO-7126Y-0-T1 (1.9/2.5 4:2 Diplexer)			
Weight (lbs)	7.3	7.3	7.3	N/A	N/A	N/A
Dimensions	6.26 x 4.07 x 7.42	6.26 x 4.07 x 7.42	6.26 x 4.07 x 7.42	N/A	N/A	N/A
Manufacturer	CCI	CCI	CCI	N/A	N/A	N/A
Ant1 Upper Passive Comp Qty needed	1	1	1	0	0	0
Ant1 Upper Pass Comp band combi with	1900MHz	1900MHz	1900MHz			
Antenna 1 Lower Passive Component Model						
Model Number	DPO-7126Y-0-T1 (1.9/2.5 4:2 Diplexer)	DPO-7126Y-0-T1 (1.9/2.5 4:2 Diplexer)	DPO-7126Y-0-T1 (1.9/2.5 4:2 Diplexer)			
Weight (lbs)	7.3	7.3	7.3	N/A	N/A	N/A
Dimensions	6.26 x 4.07 x 7.42	6.26 x 4.07 x 7.42	6.26 x 4.07 x 7.42	N/A	N/A	N/A
Manufacturer	CCI	CCI	CCI	N/A	N/A	N/A
Ant1 Lower Passive Comp Qty needed	1	1	1	0	0	0
Ant1 Low Pass Comp band comb with	1900MHz	1900MHz	1900MHz			
Position Ant 1						
Antenna2 Split						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Accept Proposed Ant2 Model Change?	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 band combined with						
Antenna 2 Upper Passive Component Model						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Ant2 Upper Passive Comp Qty needed	0	0	0	0	0	0
Antenna 2 Lower Passive Component Model						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Ant1 Lower Passive Comp Qty needed	0	0	0	0	0	0
Ant1 Lower Passive Component band combined with						
Position Ant 2						

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RF Design Sheet

Band: 1900	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1 Split						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Accept Proposed Ant1 Model Change?	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 band combined with	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Upper Passive Component Model						
Model Number	KIT-FD9R6004/1C-DL	KIT-FD9R6004/1C-DL	KIT-FD9R6004/1C-DL			
Weight (lbs)	6.4	6.4	6.4	N/A	N/A	N/A
Dimensions	5.8 x 6.5 x 4.6	5.8 x 6.5 x 4.6	5.8 x 6.5 x 4.6	N/A	N/A	N/A
Manufacturer	RFS	RFS	RFS	N/A	N/A	N/A
Ant1 Upper Passive Comp Qty needed	1	1	1	0	0	0
Ant1 Upper Pass Comp band combi with	800MHz	800MHz	800MHz			
Antenna 1 Lower Passive Component Model						
Model Number	KIT-FD9R6004/1C-DL	KIT-FD9R6004/1C-DL	KIT-FD9R6004/1C-DL			
Weight (lbs)	6.4	6.4	6.4	N/A	N/A	N/A
Dimensions	5.8 x 6.5 x 4.6	5.8 x 6.5 x 4.6	5.8 x 6.5 x 4.6	N/A	N/A	N/A
Manufacturer	RFS	RFS	RFS	N/A	N/A	N/A
Ant1 Lower Passive Comp Qty needed	1	1	1	0	0	0
Ant1 Low Pass Comp band comb with	800MHz	800MHz	800MHz			
Position Ant 1						
Antenna2 Split						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Accept Proposed Ant2 Model Change?	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 band combined with						
Antenna 2 Upper Passive Component Model						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Ant2 Upper Passive Comp Qty needed	0	0	0	0	0	0
Antenna 2 Lower Passive Component Model						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Ant1 Lower Passive Comp Qty needed	0	0	0	0	0	0
Ant1 Lower Passive Component band combined with						
Position Ant 2						

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RF Design Sheet

Band: 800	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1 Split						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Accept Proposed Ant1 Model Change?	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 band combined with	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Upper Passive Component Model						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Ant1 Upper Passive Comp Qty needed	0	0	0	0	0	0
Ant1 Upper Pass Comp band combi with						
Antenna 1 Lower Passive Component Model						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Ant1 Lower Passive Comp Qty needed	0	0	0	0	0	0
Ant1 Low Pass Comp band comb with						
Position Ant 1						
Antenna2 Split						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Accept Proposed Ant2 Model Change?	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 2 band combined with						
Antenna 2 Upper Passive Component Model						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Ant2 Upper Passive Comp Qty needed	0	0	0	0	0	0
Antenna 2 Lower Passive Component Model						
Model Number						
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Ant1 Lower Passive Comp Qty needed	0	0	0	0	0	0
Ant1 Lower Passive Component band combined with						
Position Ant 2						

Product Specifications

DHHTT65B-3XR

Multiband Antenna, 790–960, 2 x 1710–2180 and 2 x 2490-2690 MHz, 65° horizontal beamwidth, internal electrical tilt with individual tilt available for the 850 MHz band, 1900 MHz bands and 2500 MHz bands.

Electrical Specifications

Frequency Band, MHz	790–896	870–960	1710–1880	1850–1990	1920–2180	2490–2690
Connector Interface	7-16 DIN Female	7-16 DIN Female	7-16 DIN Female	7-16 DIN Female	7-16 DIN Female	4.1-9.5 DIN Female
Connector Location	Bottom	Bottom	Bottom	Bottom	Bottom	Bottom
Gain, dBi	15.5	15.5	17.3	17.4	17.5	17.2
Beamwidth, Horizontal, degrees	64	63	71	69	66	60
Beamwidth, Vertical, degrees	11.2	10.3	5.6	5.4	5.1	4.3
Beam Tilt, degrees	0–10	0–10	0–8	0–8	0–8	0–8
USLS (First Lobe), dB	15	16	15	16	15	18
Front-to-Back Ratio at 180°, dB	28	31	31	29	25	26
CPR at Boresight, dB	20	19	20	20	18	16
CPR at Sector, dB	9	9	9	9	7	4
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-150
Input Power per Port, maximum, watts	350	350	300	300	300	250
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	790–896	870–960	1710–1880	1850–1990	1920–2180	2490–2690
Gain by all Beam Tilts, average, dBi	15.0	15.1	17.0	17.1	17.1	17.1
Gain by all Beam Tilts Tolerance, dB	±0.4	±0.3	±0.3	±0.3	±0.3	±0.6
Gain by Beam Tilt, average, dBi	0 ° | 15.0	0 ° | 15.0	0 ° | 16.8	0 ° | 17.0	0 ° | 17.0	0 ° | 17.1
	5 ° | 15.1	5 ° | 15.1	4 ° | 17.0	4 ° | 17.1	4 ° | 17.1	4 ° | 17.2
	10 ° | 15.0	10 ° | 15.0	8 ° | 17.0	8 ° | 17.1	8 ° | 17.1	8 ° | 17.0
Beamwidth, Horizontal Tolerance, degrees	±2.5	±1.8	±3.2	±2.7	±5	±6.6
Beamwidth, Vertical Tolerance, degrees	±0.8	±0.6	±0.2	±0.2	±0.4	±0.3
USLS, beampeak to 20° above beampeak, dB	16	17	16	17	16	19
Front-to-Back Total Power at 180° ± 30°, dB	24	26	26	25	23	23
CPR at Boresight, dB	21	20	22	22	21	16
CPR at Sector, dB	9	10	13	10	8	5

* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, download the whitepaper Time to Raise the Bar on BSAs.

General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol® multiband with internal RET
Band	Multiband
Brand	DualPol®

Product Specifications

DHHTT65B-3XR

Operating Frequency Band	1710 – 2180 MHz | 2490 – 2690 MHz | 790 – 960 MHz
Performance Note	Outdoor usage

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground
Radiator Material	Copper | Low loss circuit board
Radome Material	ASA, UV stabilized
Reflector Material	Aluminum
RF Connector Interface	4.1-9.5 DIN Female | 7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	10
Wind Loading, frontal	618.0 N @ 150 km/h 138.9 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Dimensions

Depth	181.0 mm | 7.1 in
Length	1832.0 mm | 72.1 in
Width	301.0 mm | 11.9 in
Net Weight	20.6 kg | 45.4 lb

Remote Electrical Tilt (RET) Information

Input Voltage	10–30 Vdc
Power Consumption, idle state, maximum	2.0 W
Power Consumption, normal conditions, maximum	13.0 W
Protocol	3GPP/AISG 2.0 (Multi-RET)
RET Interface	8-pin DIN Female | 8-pin DIN Male
RET Interface, quantity	1 female | 1 male

Packed Dimensions

Depth	299.0 mm | 11.8 in
Length	1954.0 mm | 76.9 in
Width	409.0 mm | 16.1 in
Shipping Weight	33.2 kg | 73.2 lb

Regulatory Compliance/Certifications

Agency	Classification
RoHS 2011/65/EU	Compliant by Exemption
China RoHS SJ/T 11364-2006	Above Maximum Concentration Value (MCV)
ISO 9001:2008	

DATA SHEET

Outdoor Diplexer

DPO-7126Y-0x1

- Combines the frequencies covering PCS/AWS (1695-2180 MHz) with BRS (2496-2690 MHz)
- High power 250 W per port with low insertion loss in a small, lightweight enclosure
- Low intermodulation with isolation of >50 dB port to port
- High reliability of >500K Hours MTBF and multi-strike lightning protection
- Designed and produced to ISO 9001:2008 certification standards
- Weatherproof enclosure (IP67) with available outdoor pole or wall mounting options

Overview

The CCI Outdoor Diplexer passes the PCS and AWS bands covering 1695-2180 MHz on its low band input port and the full BRS band which covers 2496-2690 MHz on its high band input port. The Diplexer combines the low band and high band signals on to a common port and is specifically intended for use in multi-band systems with limited feeder lines. The Diplexer facilitates the addition of new technologies including LTE and new spectrum to existing sites while providing a high degree of isolation between systems. Decreasing the number of feeder lines lowers tower loading, leasing and installation expenditures and significantly reduces the total cost to upgrade a site.
The CCI Outdoor Diplexer provides full band performance for each band with low insertion loss, low Intermodulation, and high 250 W per port power handling. Excellent return loss performance delivers the best match to the antennas and base station, saving precious transmit power. The CCI Diplexer is available in a single, twin or quad unit configuration.

Technical Description:

The CCI Outdoor Diplexer consists of multiple filters and can be used as either a splitter or combiner to aggregate the PCS/AWS with the BRS bands on to a common feeder line. The fully weatherproof tower mount Diplexer has internal multi-strike lightning protection using a multi-stage surge protection circuit.
The unit has been designed to minimize insertion loss while maximizing isolation. Particular attention has been given to the intermodulation performance of the Diplexer to minimize any passive intermodulation products from occurring. The Diplexer housing is constructed from die cast aluminum and consists of an IP67 moisture proof enclosure, with IP68 immersion proof connectors suited to long-life masthead mounting. The Diplexer can be pole or wall mounted with the included bracket. The RF ports are configured with DIN 7-16.
CCI filter and combiner products are designed and produced to ISO 9001:2008 certification standards for reliability and quality at our state-of-the-art engineering and manufacturing facilities.

SPECIFICATIONS

Outdoor Diplexer

DPO-7126Y-0x1

Electrical

RF Parameters	Ports	Frequency(MHz)	Specification
Return Loss	COMMON	1695 - 2180	18 dB minimum, 20 dB typical
		2496 - 2690	18 dB minimum, 20 dB typical
	PCS/AWS	1695 - 2180	18 dB minimum, 20 dB typical
	BRS	2496 - 2690	18 dB minimum, 20 dB typical
Insertion Loss	COMMON to PCS/AWS	1695 - 2180	0.2 dB typical, 0.25 dB maximum
	COMMON to BRS	2496 - 2690	0.2 dB typical, 0.25 dB maximum
Rejection	COMMON to PCS/AWS	2496 - 2690	50 dB minimum
	COMMON to BRS	1695 - 2180	50 dB minimum
Isolation	PCS/AWS to BRS	1695 - 2180	50 dB minimum
	BRS to PCS/AWS	2496 - 2690	50 dB minimum

General Characteristics	
General Impedance	50 ohms
Continuous Average Power	250 W maximum (input ports), 500 W maximum (Common port)
Peak Envelope Power	1 kW maximum (input ports), 3 kW maximum (Common port)
Intermodulation Performance	<-117 dBm (-160 dBc) at 2 × +43 dBm tones all bands

Environmental

Operating Temperature	-40˚C to +65˚C
Enclosure	Enclosure IP67, Connectors IP68
MTBF	>500,000 hours
Lightning Protection	8/20us, ±20KA maximum, 10 strikes per IEC61000-4-5

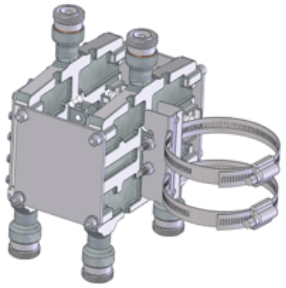
Mechanical

Model	DPO-7126Y-0-S1	DPO-7126Y-0-T1	DPO-7126Y-0-Q1
Modularity	Single	Twin	Quad
Weight with brackets	3.7 lbs (1.6 Kg)	7.3 lbs (3.3 Kg)	14.4 lbs (6.6 Kg)
Dimensions with brackets	6.26 x 7.42 x 2.02 in. (159 x 188.5 x 51.4 mm)	6.26 x 7.42 x 4.07 in. (159 x 188.5 x 103.4 mm)	6.26x 7.42 x 8.17 in. (159 x 188.5 x 207.4 mm)
Dimensions enclosure only	2.95 x 7.42 x 1.95 in. (75 x 188.5 x 48.8 mm)		
Connectors	3 x 7-16 DIN female long neck		
Mounting	Pole/Wall mounting bracket		

RADIO FREQUENCY SYSTEMS
The Clear Choice®

ShareLite™ Wideband Diplexer Kit – In-line 698-960 MHz/1710-2200 MHz, full DC/AISG pass

The ShareLite FD9R6004 Series of diplexers are designed to enable feeder sharing between systems in the 698-960 MHz range and in the 1710-2200 MHz range, including all the new AWS-3 paired spectrum blocks (G, H, I, J).. The diplexer is equipped with in-line connector placement so it can be installed in the BTS cabinet or at the tower top. This is especially valuable in crowded sites or when the feeders are not easily accessible. Due to its wideband design, the FD9R6004 Series can accommodate many combining solutions between 698-960 MHz and 1710-2200 MHz systems such as LTE 700 MHz, Cellular 800 MHz with PCS, GSM900 with GSM1800, or GSM900 with UMTS. This diplexer features a highly selective filter. It provides a high level of isolation between ports, while keeping the insertion loss on both paths at an extremely low level. The FD9R6004 diplexers are available with various DC pass options, helpful in configurations with or without the Tower Mount Amplifiers installed.



FEATURES / BENEFITS

- LTE and AWS-3 ready design
- Extremely Low Insertion Loss
- High level of Rejection between bands – Protection against interferences
- Extremely High Power Handling Capability
- DC/AISG 1.1/2.0 pass through all ports
- Very compact & small size design – Easy installation and reduced tower load
- In-line long-neck connectors for easy connection & waterproofing
- Exceptional reliability & environmental protection (IP 67)
- Equipped with 1 * Breathable Vent – Prevent any humidity inside the product
- Mounting hardware for Wall and Pole mount provided (P/N SEM2-1A)
- Grounding already provided through the mounting bracket

Technical Features

GENERAL SPECIFICATIONS		
Product Type		Diplexer/Cross Band Combiner
Application		LTE700, GSM900, UMTS, GSM1800, Cellular 800, PCS, AWS-1, AWS-3
Configuration		ShareLite Kit consisting of (2) in-line long neck connector diplexers (Full DC Pass), (1) mounting hardware SEM2-1A, & (1) assembly kit SEM2-3 disassembled
ELECTRICAL SPECIFICATIONS		
Frequency Range 1	MHz	698 - 960
Frequency Range 2	MHz	1710 - 2200
Return Loss All Ports	dB	19 Min/23 Typ.
Power Handling Continuous, Max	W	1250 at common port; 750 in low frequency path & 500 in high frequency path
Power Handling Peak, Max	W	15000 in low frequency path & 8000 in high frequency path
Impedance	Ω	50.0
Insertion Loss, Path 1	dB	0.07 typ.
Insertion Loss, Path 2	dB	0.13 typ.
Rejection Between Bands Min/Typ	dB	58/64@698-960MHz 57/70@1710-2200MHz
Group Delay, Path 1	ns	3 Max.
Group Delay, Path 2	ns	3 Max.
IMP Level at the COM Port	dBm (dBc)	-112 (-155) @2x43 typ.
DC Pass in Path 1		Yes
DC Pass in Path 2		Yes

MECHANICAL SPECIFICATIONS		
Mounting		Wall Mounting: With 4 screws (maximum 6mm diameter) Pole Mounting: With included clamp set 40-110mm (1.57-4.33)
RF Connectors		In-line long-neck 7-16-Female
Weight	kg (lb)	2.9 (6.4)
Dimensions, H x W x D	mm (in)	147 x 164 x 118 (5.8 x 6.5 x 4.6)
Shipping Dimensions, H x W x D	mm (in)	254 x 406 x 82 (10 x 16 x 3.2) for 1 * Dual unit in 1 * box, 280 x 406 x 241 (11 x 16 x 9.5) for 3 * Dual units = 3 * Boxes in 1 * overwrap
Housing		Aluminum
TESTING AND ENVIRONMENTAL		
Temperature Range	°C (°F)	-40 to 60 (-40 to 140)
Environmental		ETSI 300-019-2-4 Class 4.1E
Ingress Protection		IP 67
Lightning Protection		EN/IEC61000-4-5 Level 4

External Document Links

RFS Diplexer Field Test Procedure□□

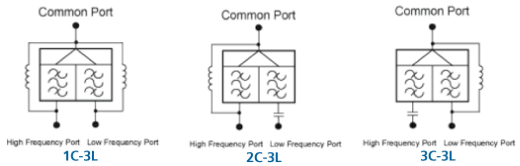
KIT-FD9R6004/1C-DL Installation Instructions

Notes

RADIO FREQUENCY SYSTEMS
The Clear Choice®

ShareLite™ Wideband Diplexer Kit – In-line 698-960 MHz/1710-2200 MHz, full DC/AISG pass

Selection Guide Diplexer 698-960 / 1710-2200MHz					
	Model Number	Full DC Pass	DC Pass High Band	DC Pass Low Band	Mounting Hardware Included
Single	FD9R6004/1C-3L				X
	FD9R6004/2C-3L				X
	FD9R6004/3C-3L				X
Dual	KIT-FD9R6004/1C-DL				X
	KIT-FD9R6004/2C-DL				X
	KIT-FD9R6004/3C-DL				X



The FD9R6004 Series is upgradeable to a Dual Diplexer kit by means of 2 diplexers and mounting hardware kits SEM2-1A and SEM2-3

Mounting Hardware and Ground Cable Ordering Information		
Model Number	**Description**	
SEM2-1A	Mounting Hardware, Pole mount ø40-110mm (Included with the Single and Dual Diplexer) Wall Screws M6 (Not included with the product)	
SEM2-3	Assembly kit for 2 pcs of FD9R6004/xC-3L (Can be ordered separately but included with the Dual Diplexer Kit)	
CA020-2	Ground Cable, 2m, includes lugs (Optional)	
CA030-2	Ground Cable, 3m, includes lugs (Optional)	
SEM6	Mounting Hardware for 6 Diplexers, Tower Base (Optional)	