Robinson+Cole

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Also admitted in Massachusetts

June 11, 2015

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

Re: **Notice of Exempt Modification – Facility Modification**
Hebron Avenue, Glastonbury, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) wireless telecommunications antennas at the 132-foot level on an existing transmission line power-mount structure off Hebron Avenue in Glastonbury. The structure and underlying property are owned by Eversource. Cellco's use of this facility was approved by the Council in 2003 (Petition No. 618T). Cellco now intends to modify its facility by replacing all of its existing antennas with two (2) model X7C-FRO-660-VRO, 700 MHz antennas; one (1) model LNX-6513DS-VTM, 700 MHz antenna; three (3) model LNX-6513DS-VTM, 850 MHz antennas; three (3) model HBXX-6517DS-VTM, 1900 MHz antennas; and three (3) model HBXX-6517DS-VTM, 2100 MHz antennas, all at the same 132-foot level on the power-mount structure. Cellco also intends to install six (6) coaxial cable diplexers. Included in Attachment 1 are specifications for Cellco's replacement antennas and cable diplexers.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Richard J. Johnson, Town Manager for the Town of Glastonbury. A copy of this letter is also being sent to Eversource, the owner of the transmission tower.

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

1. The proposed modifications will not result in an increase in the height of the existing power-mount. Cellco's replacement antennas and diplexers will be installed on its existing antenna platform at the 132-foot level.

2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.

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

4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A General Power Density table for Cellco's modified facility is included in Attachment 2.

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

6. The tower and its foundation, with certain proposed reinforcements to be completed by AT&T and referenced in a Structural Report prepared by Centek dated December 19, 2014, can support Cellco's proposed modifications. (*See* Structural Analysis included in Attachment 3).

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

Sincerely,

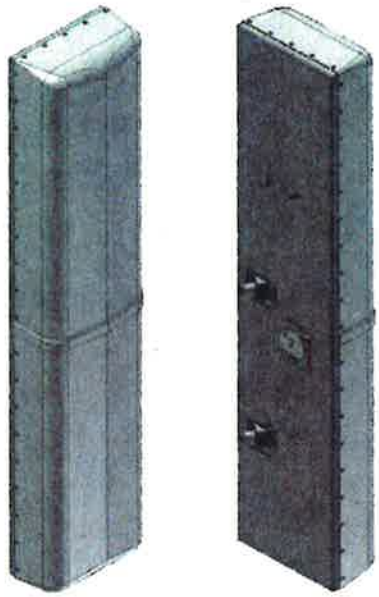
Kenneth C. Baldwin

Enclosures
Copy to:
Richard J. Johnson, Glastonbury Town Manager
Michael Greene, Eversource
Tim Parks

ATTACHMENT 1

X7C-FRO-660-V

X-Pol Antenna, 698-896MHz, Fast-Roll-Off 60° H-Beam
RET/MET



- Designed to improve SNR
- Greatly increases LTE data rates
- Broadband radiator
- Macro Cell, high gain antenna
- Suitable for LTE/CDMA/UMTS/GSM
- AISG 2.0 RET or manual MET tilt control

Electrical Specifications

Frequency Band, MHz	**698-824**	**824-896**
Horizontal Beamwidth, 3dB points	62	58
Gain, dBi	15.9	16.0
Vertical Beamwidth, 3dB points	12.0	10.5
Front-to-Back at 180°, dB	>28	
Upper Sidelobe Suppression, Typical, dB	<-18	
Polarization	+/-45°	
Electrical Downtilt	0-10° or 4-14°	
VSWR/Return Loss, dB, Maximum	1.5:1/14.0	
Isolation Between Ports, dB, Mimimum	-28	
Intermodulation (2x20w), IM3, dBc, Maximum	-150	
Impedance, ohms	50	
Maximum Power Per Connector, CW	500	

X7C-FRO-660-V

X-Pol Antenna, 698-896MHz, Fast-Roll-Off 60° H-Beam

RET/MET

Mechanical Specifications

Dimensions, Length/Width/Depth	72.0/14.6/8.0 in (1829/372/204 mm)
Connector (Quantity) Type	(2) 7-16 DIN Female
Connector Torque	220-265 lbf-in (25-30 N-m)
Connector Location	Back
Antenna Weight	35.0 lbs
Bracket Weight	13.2 lbs (6.0 kg)
Standard Bracket Kit	CSS P/N 919011
Mechanical Downtilt Range	0-12°
Radome Material	Ultra High Strength Luran, UV Stabilized, ASTM D1925
Wind Survival	150 mph (241 km/h)
Front Wind Load	205.39 lbf (913.65 N) @100mph
Equivalent Flat Plate	4.09 sq-ft (c=2) @ 100mph

RET Information

Model	CSS-RET-200
Mounting Location	Rear of Antenna
Weight	1.2 lb (0.54 kg)
Communication Standard	AISG 2.0
Control System	CSS-PCU-220

Order Information

Model	*Description*
X7C-FRO-660-VR0	Antenna with manual RET adjust electrical downtilt 0-10°
X7C-FRO-660-VR4	Antenna with manual RET adjust electrical downtilt 4-14°
X7C-FRO-660-VM0	Antenna with remote MET adjust electrical downtilt 0-10°
X7C-FRO-660-VM4	Antenna with remote MET adjust electrical downtilt 4-14°

Optional Bracket Kit

919036	Bracket Kit, 2-Point, 12 deg D-tilt, For 4.5" OD Pole

Product Specifications

COMMSCOPE®

POWERED BY ANDREW.

LNX-6513DS-VTM

Andrew® Antenna, 698–896 MHz, 65° horizontal beamwidth, RET compatible

- Extended tilt range offers better coverage
- Great solution to maximize network coverage and capacity
- Excellent gain, VSWR, front-to-back ratio, and PIM specifications for robust network performance
- Fully compatible with Andrew remote electrical tilt system for greater OpEx savings
- The RF connectors are designed for IP67 rating and the radome for IP56 rating

Electrical Specifications

Frequency Band, MHz	**698–806**	**806–896**
Gain, dBi	14.6	15.1
Beamwidth, Horizontal, degrees	65	65
Beamwidth, Horizontal Tolerance, degrees	±3	±3
Beamwidth, Vertical, degrees	16.0	14.5
Beam Tilt, degrees	0–10	0–10
USLS, typical, dB	20	20
Front-to-Back Ratio at 180°, dB	30	30
CPR at Boresight, dB	12	12
CPR at Sector, dB	10	10
Isolation, dB	30	30
VSWR | Return Loss, dB	1.4 | 15.6	1.4 | 15.6
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153
Input Power per Port, maximum, watts	400	400
Polarization	±45°	±45°
Impedance	50 ohm	50 ohm

General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol®
Band	Single band
Brand	DualPol® | Teletilt®
Operating Frequency Band	698 – 896 MHz

Mechanical Specifications

Color	Light gray
Connector Interface	7-16 DIN Female
Connector Location	Bottom
Connector Quantity, total	2
Lightning Protection	dc Ground
Radiator Material	Aluminum
Radome Material	Fiberglass, UV resistant
Wind Loading, maximum	437.9 N @ 150 km/h 98.4 lbf @ 150 km/h
Wind Speed, maximum	241.0 km/h | 149.8 mph

Dimensions

Depth	181.0 mm | 7.1 in

Product Specifications

LNX-6513DS-VTM

Length	1390.0 mm | 54.7 in
Width	301.0 mm | 11.9 in
Net Weight	14.1 kg | 31.1 lb

Remote Electrical Tilt (RET) Information

Model with Factory Installed AISG 1.1 Actuator	LNX-6513DS-R2M
Model with Factory Installed AISG 2.0 Actuator	LNX-6513DS-A1M
RET System	Teletilt®

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	Designed, manufactured and/or distributed under this quality management system

Included Products

DB380 — Pipe Mounting Kit for 2.4"-4.5" (60-115mm) OD round members on wide panel antennas. Includes 2 clamp sets and double nuts.

DB5083 — Downtilt Mounting Kit for 2.4"-4.5" (60 - 115 mm) OD round members. Includes a heavy-duty, galvanized steel downtilt mounting bracket assembly and associated hardware. This kit is compatible with the DB380 pipe mount kit for panel antennas that are equipped with two mounting brackets.

Product Specifications

COMMSCOPE®

POWERED BY ANDREW.

HBXX-6517DS-VTM

Andrew® Quad Port Antenna, 1710–2180 MHz, 65° horizontal beamwidth, RET compatible

- Superior azimuth tracking and pattern symmetry with excellent passive intermodulation suppression

Electrical Specifications

Frequency Band, MHz	**1710–1880**	**1850–1990**	**1920–2180**
Gain, dBi	19.0	19.1	19.2
Beamwidth, Horizontal, degrees	67	66	65
Beamwidth, Vertical, degrees	5.0	4.7	4.4
Beam Tilt, degrees	0–6	0–6	0–6
USLS, dB	18	18	18
Front-to-Back Ratio at 180°, dB	30	30	30
CPR at Boresight, dB	21	22	21
CPR at Sector, dB	10	11	9
Isolation, dB	30	30	30
VSWR | Return Loss, dB	1.4 | 15.6	1.4 | 15.6	1.4 | 15.6
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350
Polarization	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	**1710–1880**	**1850–1990**	**1920–2180**
Gain by all Beam Tilts, average, dBi	18.5	18.6	18.8
Gain by all Beam Tilts Tolerance, dB	±0.4	±0.3	±0.4
Gain by Beam Tilt, average, dBi	0 ° | 18.4	0 ° | 18.4	0 ° | 18.7
	3 ° | 18.7	3 ° | 18.7	3 ° | 18.9
	6 ° | 18.4	6 ° | 18.5	6 ° | 18.6
Beamwidth, Horizontal Tolerance, degrees	±2.4	±1.7	±2.9
Beamwidth, Vertical Tolerance, degrees	±0.3	±0.3	±0.3
USLS, dB	18	19	19
Front-to-Back Total Power at 180° ± 30°, dB	25	26	26
CPR at Boresight, dB	22	23	22
CPR at Sector, dB	10	10	9

* 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® quad
Band	Single band
Brand	DualPol® | Teletilt®
Operating Frequency Band	1710 – 2180 MHz

Product Specifications

HBXX-6517DS-VTM

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground
Radiator Material	Low loss circuit board
Radome Material	PVC, UV resistant
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	4
Wind Loading, maximum	668.0 N @ 150 km/h 150.2 lbf @ 150 km/h
Wind Speed, maximum	241.0 km/h | 149.8 mph

Dimensions

Depth	166.0 mm | 6.5 in
Length	1903.0 mm | 74.9 in
Width	305.0 mm | 12.0 in
Net Weight	19.5 kg | 43.0 lb

Remote Electrical Tilt (RET) Information

Model with Factory Installed AISG 2.0 Actuator	HBXX-6517DS-A2M
RET System	Teletilt®

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	Designed, manufactured and/or distributed under this quality management system

Included Products

600899A-2 — Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

Product Data Sheet FD9R6004/2C-3L

ShareLite Wideband Diplexer – In-line 698-960 MHz/1710-2200 MHz, DC pass in high frequency path

Product Description

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. 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 ready design**
- **Extremely Low Insertion Loss**
- **High level of Rejection between bands – Protection against interferences**
- **Extremely High Power Handling Capability**
- **Integrated DC block/bypass versions available**
- **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**
- **Kit available for easy dual mount**

Technical Specifications

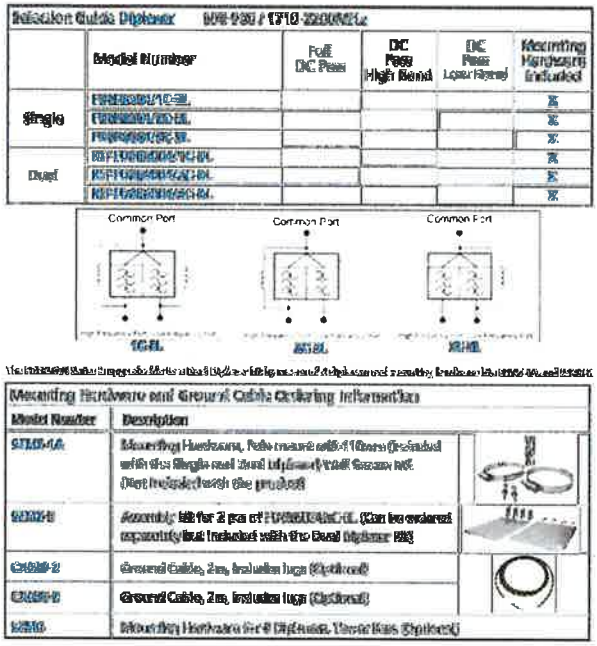
Product Type	Diplexer/Cross Band Coupler
Application	LTE700, GSM900, UMTS, GSM1800, Cellular 800, PCS
Frequency Range 1, MHz	698-960
Frequency Range 2, MHz	1710-2200
Configuration	Sharelite Single diplexer, outdoor, DC pass in the 1710-2170MHz path, with mounting hardware SEM2-1A
Mounting	Wall Mounting: With 4 screws (maximum 6mm diameter); Pole Mounting: With included clamp set 40-110mm (1.57-4.33)
Return Loss All Ports Min/Typ, dB	19/23
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, Ohms	50
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
IMP Level at the COM Port, Typ, dBm	-112 @ 2x43
DC Pass in Low Frequency Path	No
DC Pass in High Frequency Path	Yes
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
Connectors	In-line long-neck 7-16-Female
Weight, kg (lb)	1.2 (2.6)
Shipping Weight, kg (lb)	3.2 (7) for 2 * single units in 1 * box, 9.8 (21.6) for 6 * units = 3 * Boxes in 1 * overwrap
Dimensions, H x W x D, mm (in)	147 x 164 x 37 (5.8 x 6.5 x 1.5)
Shipping Dimensions, H x W x D, mm (in)	254 x 406 x 82 (10 x 16 x 3.2) for 2 * Single Units in 1 * box, 280 x 406 x 241 (11 x 16 x 9.5) for 6 * units = 3 * Boxes in 1 * overwrap
Volume, L	0.43
Housing	Aluminum

Notes

ShareLite Wideband Diplexer – In-line 698-960 MHz/1710-2200 MHz, DC pass in high frequency path

Other Documentation

FD9R6004/2C-3L Installation Instructions: Wideband_Diplexer_Installation_Rev5.pdf



	Model Number	PoE DC Pass	DC Pass High Band	DC Pass Low Band	Mounting Hardware Included
Single					X
					X
					X
Dual					X
					X
					X

Common Port Common Port Common Port

Mounting Hardware and Ground Cable Ordering Information	
Model Number	Description
	Ground Cable, 2m, Includes lugs (Optional)
	Ground Cable, 2m, Includes lugs (Optional)

ATTACHMENT 2

Site Name: E Glastonbury 3, CT
Cumulative Power Density

Operator	Operating Frequency	Number of Trans.	ERP Per Trans.	Total ERP	Distance to Target	Calculated Power Density	Maximum Permissable Exposure*	Fraction of MPE
	(MHz)		(watts)	(watts)	(feet)	(mW/cm^2)	(mW/cm^2)	(%)
VZW PCS	1970	11	426	4686.759	132	0.0967	1.0	9.67%
VZW Cellular	869	9	396	3566.617	132	0.0736	0.579333333	12.71%
VZW AWS	2145	1	1750	1750	132	0.0361	1.0	3.61%
VZW 700	746	1	1050	1050	132	0.0217	0.497333333	4.36%

Total Percentage of Maximum Permissible Exposure 30.35%

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Part 1 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992

MHz = Megahertz
mW/cm^2 = milliwatts per square centimeter
ERP = Effective Radiated Power

Absolute worst case maximum values used.

ATTACHMENT 3

CENTEK engineering

Centered on Solutions℠

Structural Analysis of Powermount and CL&P Tower

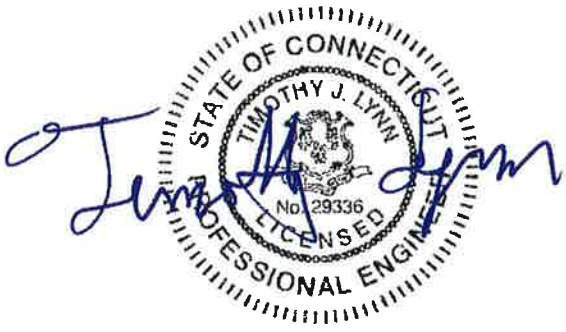
Verizon Wireless Site Ref:
East Glastonbury 3

CL&P Structure No. 12197
111' Electric Transmission Lattice Tower

Hebron Ave
Glastonbury, CT

CENTEK Project No. 15001.010

~~Date: March 3, 2015~~
Rev 1: April 9, 2015



Prepared for:
Verizon Wireless
99 East River Road, 9th Floor
East Hartford, CT 06108

63-2 North Branford Road, Branford, CT 06405 203.488.0580 Fax 203.488.8587 www.CentekEng.com

Table of Contents

Introduction

The purpose of this report is to analyze the existing powermount and 111' CL&P tower located on Hebron Ave., in Glastonbury, CT for the proposed antenna and equipment installation by AT&T Mobility.

The proposed loads consist of the following:

- VERIZON WIRELESS (Existing to Remain):

  Antennas: Six (6) RFS FD9R6004/2C-3L Diplexers mounted on a 12-ft low profile platform to the existing FWT Powermount with a RAD center elevation of 132-ft above grade.
  Coax Cables: Twelve (12) 1-5/8" ∅ coax cables running on the inside of the existing FWT Powermount.

- VERIZON WIRELESS (Existing to Remove):

  Antennas: Two (2) Swedcom SLCP 2x6014, one (1) Antel BXA-70063-4CF, four (4) Antel LPD-6513, two (2) Antel LPA-80063-4CF, two (2) Antel BXA-171063-12BF and one (1) Antel BXA-171063-8BF panel antennas mounted on a 12-ft low profile platform to the existing FWT Powermount with a RAD center elevation of 132-ft above grade.

- **VERIZON WIRELESS (Proposed):**

  Antennas: Six (6) Andrew HBXX-6517DS panel antennas, four (4) Andrew LNX-6513DS panel antennas, two (2) JMA X7C-FRO-660 panel antennas and six (6) RFS FD9R6004/2C-3L Diplexers mounted on a 12-ft low profile platform to the existing FWT Powermount with a RAD center elevation of 132-ft above grade.

- AT&T MOBILITY (Reserved):

  Antennas: Six (6) Andrew CCI HPA-65R-BUU-H8 panel antennas, three (3) Andrew CCI OPA-65R-LCUU-H8 panel antennas and eighteen (18) CCI TMABPDB7823VG12A TMA's mounted on a Site-Pro Ultra-Low Profile Platform p/n ULP12-496 with a RAD center elevation of 122-ft above grade.
  Coax Cables: Thirty-six (36) 1-5/8" ∅ coax cables running on two (2) legs of the existing tower as indicated in section 4 of this report.

Primary assumptions used in the analysis

- Allowable steel stresses are defined by AISC-ASD 9th edition for design of the Powermount and antenna supporting elements.
- ASCE Manual No. 10-97, "Design of Latticed Steel Transmission Structures", defines allowable steel stresses for evaluation of the CL&P utility tower.
- All utility tower members are adequately protected to prevent corrosion of steel members.
- All proposed antenna mounts are modeled as listed above.
- All coaxial cable will be installed within the powermount unless specified otherwise.
- Powermount 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.
- Powermount and utility tower will be in plumb condition.
- Utility tower was properly installed and maintained and all members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
- Any deviation from the analyzed loading will require a new analysis for verification of structural adequacy.

Analysis

Structural analysis of the existing powermount was independently completed using the current version of RISA-3D computer program licensed to CENTEK Engineering, Inc. The RISA-3D program contains a library of all AISC shapes and corresponding section properties are computed and applied directly within the program. The program's Steel Code Check option was also utilized.

The existing FWT powermount consisting of a 18" Std. pipe conforming to ASTM A53 Grade B (Fy = 35ksi) connected at four points to the existing tower was analyzed for its ability to resist loads prescribed by the TIA/EIA standard. Section 5 of this report details these gravity and lateral wind loads. Load cases and combinations used in RISA-3D for TIA/EIA loading are listed in report Section 6.

Structural analysis of the existing CL&P 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 111-ft tall CL&P lattice tower was analyzed for its ability to resist loads prescribed by the NESC standard. Maximum usage for the tower was calculated considering the additional forces from the powermount and associated appurtenances. Section 7 of this report details these gravity and lateral wind loads.

Design Basis

Our analysis was performed in accordance with EIA-222-F-1996, ASCE Manual No. 10-97, "Design of Latticed Steel Transmission Structures", NESC C2-2007 and Eversoucre Design Criteria.

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

- UTILITY TOWER ANALYSIS

  The purpose of this analysis is to determine the adequacy of the existing utility structure to support the proposed antenna loads. The loading and design requirements were analyzed in accordance with the EVERSOUCRE Design Criteria Table, NESC C2-2007 ~ 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 C2-2007, Section25, Rule 250C: Extreme Wind Loading, 1.25 x Gust Response Factor (wind speed: 3-second gust)

- POWERMOUNT ANALYSIS

  Powermount, appurtenances and connections to the utility tower were analyzed and designed in accordance with the EVERSOUCRE Design Criteria Table, TIA/EIA-222-F, and AISC-ASD standards.

  Load cases considered:

  Load Case 1:
  Wind Speed..... 85 mph [2]
  Radial Ice Thickness..... 0"

  Load Case 2:
  Wind Pressure..... 75% of 85 mph wind pressure
  Radial Ice Thickness..... 0.5"

  Note 2: Per EVERSOUCRE Mast Design Criteria Exception 1.

Results

- POWERMOUNT

  The existing powermount **with the proposed reinforcements per the structural report prepared by Centek for AT&T Mobility job no 14099.000 dated December 19, 2014** was found to be within allowable limits.

FWT Powermount	Stress Ratio (% of capacity)	Result
18" Std. Pipe	97.7%	**PASS**
L3x3x1/4Brace	92.9%	**PASS**
Connection Bolts	80.6%	**PASS**

- UTILITY TOWER

  This analysis finds that the subject utility structure is adequate to support the existing powermount 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:

  With the proposed reinforcements per the structural report prepared by Centek for AT&T Mobility job no 14099.000 dated December 19, 2014 a maximum usage of **98.31%** occurs in the utility tower under the **NESC Extreme** loading condition.

  TOWER SECTION:

  The utility structure **with the proposed reinforcements per the structural report prepared by Centek for AT&T Mobility job no 14099.000 dated December 19, 2014** was found to be within allowable limits.

Tower Member	Stress Ratio (% of capacity)	Result
Angle g12Y	98.31%	**PASS**

- FOUNDATION AND ANCHORS

The existing foundation consists of four (4) 6-ft square steel grillage assemblies. Foundation information was obtained from NUSCO drawing # 01164-50001.

Review of the foundation design consisted of verification of applied loads obtained from the tower design calculations and code checks of allowable stresses:

BASE REACTIONS:

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

Load Case	Shear	Uplift	Compression
NESC Heavy Wind	13.63 kips	21.19 kips	48.47 kips
NESC Extreme Wind	35.10 kips	94.23 kips	111.85 kips

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

FOUNDATION:

The foundation was found to be within allowable limits.

Foundation	Design Limit	Allowable Limit	Proposed Loading (2)	Result
Grillage	Uplift	1.0 FS (1)	1.32 FS (1)	**PASS**

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

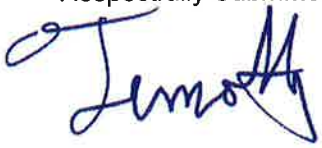
Conclusions and Recommendations

This analysis shows that the subject utility tower **with the proposed reinforcements per the structural report prepared by Centek for AT&T Mobility job no 14099.000 dated December 19, 2014 is adequate** to support the proposed AT&T equipment upgrade.

The analysis is based, in part on the information provided to this office by Eversoucre and Verizon Wireless. 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 (Rev. F) 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-222 (Rev. F) with two exceptions:

1. An 85 mph extreme wind speed shall be used for locations in all counties throughout the NU system.
2. The allowable stress increase of TIA Section 3.1.1.1 is allowed for the mast section, but is disallowed for the mast to structure connection design.

   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

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 (.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	1.00	1.00	2.50	1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with Antennas below top of Tower/Pole (on two faces)	----	4	1.00	1.00	2.50	1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor loads provided by NU					
High Wind Condtion	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	Use NESC C2-2007, Section 25, Rule 250C: Extreme Wind Loading 1.25 x Gust Response Factor Height above ground level based on top of Mast/Antenna					1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with Antennas below top of Tower/Pole	Use NESC C2-2007, Section 25, Rule 250C: Extreme Wind Loading Height above ground level based on top of Tower/Pole					1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor loads provided by NU					
NESC Extreme Ice with Wind Conditon*		Tower/Pole Analysis with antennas extending above top of Tower/Pole	Use NESC C2-2007, Section 25, Rule 250D: Extreme Ice with Wind Loading 4PSF Wind Load 1.25 x Gust Response Factor Height above ground level based on top of Mast/Antenna					1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with Antennas below top of Tower/Pole	Use NESC C2-2007, Section 25, Rule 250D: Extreme Ice with Wind Loading 4PSF Wind Load Height above ground level based on top of Tower/Pole					1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor loads provided by NU					
		* Only for Structures Installed after 2007						

Shape Factor Criteria shall be per TIA Shape Factors.

2) STEP 2 - The electric transmission structure analysis and evaluation shall be performed in accordance with NESC requirements and shall include the mast and antenna loads determined from NESC applied loading conditions (not TIA/EIA Loads) on the structure and mount as specified below, and shall include the wireless communication mast and antenna loads per NESC criteria)

The structure shall be analyzed using yield stress theory in accordance with Attachment A, "NU 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 NU).

c) Electric Transmission Structure

i) The loads from the wireless communication equipment components based on NESC and NU 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

iii) When Coaxial Cables are mounted along side 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	1.3

d) The uniform loadings and factors specified for the above components in Attachment A, "NU 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 NU will provide these loads).

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

7

TITLE Verizon, Glastonbury

STRUCT # 12196

01/21/2005

Conductor/~~Shield Wire/OPGW~~

		AHEAD	BACK	
		BLUEBIRD	BLUEBIRD	
Number of Condctors per phase	1	2156.000 84/19 ACSR	2156.000 84/19 ACSR	1
DIAM =		1.762	1.762	
WEIGHT =		2.507	2.507	
TENSION (LBS)	AHEAD	18,000	BACK 18,000	

LOADCASE	NESC HEAVY
WIND (PSF)	4
ICE (IN)	0.50
OLF ANG	1.65
OLF WIND	2.50
OLF WT	1.50

STR	ANGLE	WIND SPAN	WGT SPAN	NESC HEAVY H	L	V
BACK	0	395	224	910	-29700	1313
AHEAD	0	395	224	909	29700	1315
TOTALS	**0.00**	**790**	**448**	**1819**	**0**	**2628**

TITLE Verizon, Glastonbury

01/21/2005

STRUCT # 12196

Conductor/Shield ~~Wire/OPGW~~

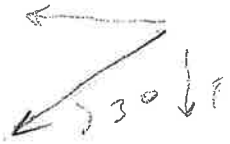
		AHEAD	BACK		
		BLUEBIRD	BLUEBIRD		
Number of Condctors per phase	1	2156.000 84/19 ACSR	2156.000 84/19 ACSR	1	Number of Condctors per phase
DIAM =		1.762	1.762		
WEIGHT =		2.507	2.507		

TENSION (LBS)	AHEAD	17,506	BACK	17,506

LOADCASE	HI WIND
WIND (mph)	110
ICE (IN)	0.00
OLF ANG	1.00
OLF WT	1.00

STR	ANGLE	WIND SPAN	WGT SPAN	HI WIND H	HI WIND L	HI WIND V
BACK	0	395	224	1532	-17506	561
AHEAD	0	395	224	1531	17506	562
TOTALS	**0.0**	**790**	**448**	**3063**	**0**	**1122**

Ahead		Back	
Velocity (mph)	110	Velocity (mph)	110
Vel. Pres Coeff.k	1.2	Vel. Pres Coeff.k	1.2 — 1.3
Gust Response	0.71	Gust Response	0.71 — .70



TITLE Verizon, Glastonbury 01/21/2005

STRUCT # 12197

~~Conductor~~/Shield Wire/~~OPGW~~

		AHEAD	BACK	
		3/8 AW	3/8 AW	
Number of Condctors per phase	1	0.000 7 #8 Al Weld	0.000 7 #8 Al Weld	1
DIAM =		0.385	0.385	
WEIGHT =		0.262	0.262	
TENSION (LBS)	AHEAD	4,200	BACK 4,200	

LOADCASE	NESC HEAVY
WIND (PSF)	4
ICE (IN)	0.50
OLF ANG	1.65
OLF WIND	2.50
OLF WT	1.50

STR	ANGLE	WIND SPAN	WGT SPAN	NESC HEAVY H	L	V
BACK	0	395	224	456	-6930	272
AHEAD	0	395	224	456	6930	273
TOTALS	**0.00**	**790**	**448**	**912**	**0**	**545**

TITLE Verizon, Glastonbury

01/21/2005

STRUCT # 12197

~~Conductor~~/Shield Wire/~~OPGW~~

		AHEAD	BACK		
		3/8 AW	3/8 AW		
Number of Condctors per phase	1	0.000 7 #8 Al Weld	0.000 7 #8 Al Weld	1	Number of Condctors per phase
DIAM =		0.385	0.385		
WEIGHT =		0.262	0.262		

TENSION (LBS)	AHEAD	3,436	BACK	3,436

LOADCASE	HI WIND
WIND (mph)	110
ICE (IN)	0.00
OLF ANG	1.00
OLF WT	1.00

STR	ANGLE	WIND SPAN	WGT SPAN	HI WIND H	HI WIND L	HI WIND V
BACK	0	395	224	335	-3436	59
AHEAD	0	395	224	334	3436	59
TOTALS	**0.0**	**790**	**448**	**669**	**0**	**117**

Ahead		Back	
Velocity (mph)	110	Velocity (mph)	110
Vel. Pres Coeff.k	1.2	Vel. Pres Coeff.k	1.2
Gust Response	0.71	Gust Response	0.71

℄ VERIZON ANTENNAS
EL. ±132'-0" AGL

℄ AT&T ANTENNAS
EL. ±122'-0" AGL

VERIZON (EXIST. TO REMAIN):
SIX (6) FD9R6004/2C-3L DIPLEXERS MOUNTED ON THE EXISTING PLATFORM
VERIZON (EXIST TO REMOVE):
TWO (2) SLCP 2X6014, ONE (1) BXA-70063-4CF, FOUR (4) LPD-6513, TWO (2) LPA-80063-4CF, TWO (2) BXA-171063-12BF AND ONE (1) ANTEL BXA-171063-8BF PANEL ANTENNAS MOUNTED ON THE EXISTING PLATFORM
VERIZON (PROPOSED):
SIX (6) HBXX-6517DS, FOUR (4) LNX-6513DS, TWO (2) X7C-FRO-660, SIX (6) FD9R6004/2C-3L DIPLEXERS MOUNTED ON THE EXISTING PLATFORM

AT&T (RESERVED): SIX (6) CCI HPA-65R-BUU-H8, THREE (3) CCI OPA-65R-LCUU-H8 PANEL ANTENNAS AND EIGHTEEN (18) CCI TMABPDB7823VG12A TMAs ON LOW PROFILE PLATFORM

AT&T RESERVED EIGHTEEN (18) 1 5/8" DIA. COAX CABLES MOUNTED ON NORTHWEST TOWER LEG

AT&T RESERVED EIGHTEEN (18) 1 5/8" DIA. COAX CABLES MOUNTED ON SOUTHWEST TOWER LEG

EXISTING 111' TALL CL&P STEEL TRANSMISSION STRUCTURE NO. 12197

EXISTING 18" SCH. 40 X 132'-0" TALL FWT POWERMOUNT

VERIZON WIRELESS EXISTING TWELVE (12) 1-5/8" DIA. COAX CABLES MOUNTED WITHIN FWT POWERMOUNT

REFER TO REINFORCEMENT DRAWINGS PREPARED FOR AT&T MOBILITY JOB NO. 14099 DATED 12.19.14

GRADE

1 / EL-1 TOWER & POWERMOUNT ELEVATION

SCALE: NOT TO SCALE

REVISIONS		
00	3/3/15	ISSUED REVIEW
01	4/9/15	CONSTRUCTION

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

EAST GLASTONBURY 3
CL&P 12197

HEBRON AVE
GLASTONBURY, CT 06033

PROJECT NO:	15001.010
DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED
DATE:	3/3/15

TOWER AND MAST ELEVATION

EL-1

DWG. 1 OF 1

CENTEK engineering
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F: (203) 488-8587

Subject:	Load Analysis of Powermount on CL&P Tower # 12197
Location:	Glastonbury, CT
Rev. 1: 4/7/15	Prepared by: T.J.L. Checked by: C.F.C. Job No. 15001.010

Development of Design Heights, Exposure Coefficients, and Velocity Pressures Per TIA/EIA

Wind Speeds

Basic Wind Speed	$V := 85$	mph	(User Input per NU Mast Design Criteria Exception 1)
Basic Wind Speed with Ice	$V_i := 74$	mph	(User Input per TIA/EIA-222-F Section 2.3.16)

Heights above ground level, z

Powermount Section 1	$z_{pmnt1} := 126$	ft	(User Input)
Powermount Section 2	$z_{pmnt2} := 105$	ft	(User Input)
Powermount Section 3	$z_{pmnt3} := 75$	ft	(User Input)
Powermount Section 4	$z_{pmnt4} := 45$	ft	(User Input)
Powermount Section 5	$z_{pmnt5} := 15$	ft	(User Input)
Verizon	$z_{vz} := 132$	ft	(User Input)
AT&T	$z_{att} := 122$	ft	(User Input)
Brace Member	$z_{mem} := 111.5$	ft	(User Input)

Exposure Coefficients, kz

(per TIA/EIA-222-F Section 2.3.3)

Powermount Section 1: $Kz_{pmnt1} := \left(\frac{z_{pmnt1}}{33}\right)^{\frac{2}{7}} = 1.466$

Powermount Section 2: $Kz_{pmnt2} := \left(\frac{z_{pmnt2}}{33}\right)^{\frac{2}{7}} = 1.392$

Powermount Section 3: $Kz_{pmnt3} := \left(\frac{z_{pmnt3}}{33}\right)^{\frac{2}{7}} = 1.264$

Powermount Section 4: $Kz_{pmnt4} := \left(\frac{z_{pmnt4}}{33}\right)^{\frac{2}{7}} = 1.093$

Powermount Section 5: $Kz_{pmnt5} := \left(\frac{z_{pmnt5}}{33}\right)^{\frac{2}{7}} = 0.798$

Verizon: $Kz_{vz} := \left(\frac{z_{vz}}{33}\right)^{\frac{2}{7}} = 1.486$

AT&T: $Kz_{att} := \left(\frac{z_{att}}{33}\right)^{\frac{2}{7}} = 1.453$

Brace Member: $Kz_{mem} := \left(\frac{z_{mem}}{33}\right)^{\frac{2}{7}} = 1.416$

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Subject:	Load Analysis of Powermount on CL&P Tower # 12197
Location:	Glastonbury, CT
Rev. 1: 4/7/15	Prepared by: T.J.L. Checked by: C.F.C. Job No. 15001.010

Velocity Pressure without Ice, qz (per TIA/EIA-222-F Section 2.3.3)

Powermount Section 1: $qz_{pmnt1} := 0.00256 \cdot Kz_{pmnt1} \cdot V^2 = 27.122$

Powermount Section 2: $qz_{pmnt2} := 0.00256 \cdot Kz_{pmnt2} \cdot V^2 = 25.745$

Powermount Section 3: $qz_{pmnt3} := 0.00256 \cdot Kz_{pmnt3} \cdot V^2 = 23.386$

Powermount Section 4: $qz_{pmnt4} := 0.00256 \cdot Kz_{pmnt4} \cdot V^2 = 20.21$

Powermount Section 5: $qz_{pmnt5} := 0.00256 \cdot Kz_{pmnt5} \cdot V^2 = 14.765$

Verizon: $qz_{vz} := 0.00256 \cdot Kz_{vz} \cdot V^2 = 27.485$

AT&T: $qz_{att} := 0.00256 \cdot Kz_{att} \cdot V^2 = 26.873$

Brace Member: $qz_{mem} := 0.00256 \cdot Kz_{mem} \cdot V^2 = 26.191$

Velocity Pressure with Ice, qzICE (per TIA/EIA-222-F Section 2.3.3)

Powermount Section 1: $qzICE_{pmnt1} := 0.00256 \cdot Kz_{pmnt1} \cdot V_i^2 = 20.556$

Powermount Section 2: $qzICE_{pmnt2} := 0.00256 \cdot Kz_{pmnt2} \cdot V_i^2 = 19.513$

Powermount Section 3: $qzICE_{pmnt3} := 0.00256 \cdot Kz_{pmnt3} \cdot V_i^2 = 17.725$

Powermount Section 4: $qzICE_{pmnt4} := 0.00256 \cdot Kz_{pmnt4} \cdot V_i^2 = 15.318$

Powermount Section 5: $qzICE_{pmnt5} := 0.00256 \cdot Kz_{pmnt5} \cdot V_i^2 = 11.191$

Verizon: $qzICE_{vz} := 0.00256 \cdot Kz_{vz} \cdot V_i^2 = 20.832$

AT&T: $qzICE_{att} := 0.00256 \cdot Kz_{att} \cdot V_i^2 = 20.368$

Brace Member: $qzICE_{mem} := 0.00256 \cdot Kz_{mem} \cdot V_i^2 = 19.851$

TIA/EIA Common Factors:

Gust Response Factor = $G_H := 1.69$ (User Input per TIA/EIA-222-F Section 2.3.4)

Gust Response Factor Multiplier = $m := 1.25$ (User Input per TIA/EIA-222-F Section 2.3.4.4)

Radial Ice Thickness = $Ir := 0.50$ in (User Input per TIA/EIA-222-F Section 2.3.1)

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

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Development of Wind & Ice Load on Powermonut (per TIA/EIA-222-F-1996 Criteria)

Powermount Data: (18" Std. Pipe)

Powermount Shape =	Round		(User Input)
Powermount Diameter =	$D_{pmnt} := 18$	in	(User Input)
Powermount Length =	$L_{pmnt} := 132$	ft	(User Input)
Powermount Thickness =	$t_{pmnt} := 0.375$	in	(User Input)
Velocity Coefficient =	$C := \sqrt{Kz_{pmnt5}} \cdot V \cdot \frac{D_{pmnt}}{12} = 114$		
Powermount Force Coefficient =	$CF_{pmnt} = 0.59$		(per TIA/EIA-222-F Table 1)

Wind Load (without Ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Powermount Projected Surface Area = $A_{pmnt} := \frac{D_{pmnt}}{12} = 1.5$

Total Powermount Section 1 Wind Force =	$qz_{pmnt1} \cdot G_H \cdot CF_{pmnt} \cdot A_{pmnt} = 41$	plf	BLC 5,7
Total Powermount Section 2 Wind Force =	$qz_{pmnt2} \cdot G_H \cdot CF_{pmnt} \cdot A_{pmnt} = 39$	plf	BLC 5,7
Total Powermount Section 3 Wind Force =	$qz_{pmnt3} \cdot G_H \cdot CF_{pmnt} \cdot A_{pmnt} = 35$	plf	BLC 5,7
Total Powermount Section 4 Wind Force =	$qz_{pmnt4} \cdot G_H \cdot CF_{pmnt} \cdot A_{pmnt} = 30$	plf	BLC 5,7
Total Powermount Section 5 Wind Force =	$qz_{pmnt5} \cdot G_H \cdot CF_{pmnt} \cdot A_{pmnt} = 22$	plf	BLC 5,7

Wind Load (with Ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Powermount Projected Surface Area w/ Ice = $AICE_{pmnt} := \frac{(D_{pmnt} + 2 \cdot Ir)}{12} = 1.583$

Total Powermount Section 1 Wind Force w/ Ice =	$qzICE_{pmnt1} \cdot G_H \cdot CF_{pmnt} \cdot AICE_{pmnt} = 32$	plf	BLC 4,6
Total Powermount Section 2 Wind Force w/ Ice =	$qzICE_{pmnt2} \cdot G_H \cdot CF_{pmnt} \cdot AICE_{pmnt} = 31$	plf	BLC 4,6
Total Powermount Section 3 Wind Force w/ Ice =	$qzICE_{pmnt3} \cdot G_H \cdot CF_{pmnt} \cdot AICE_{pmnt} = 28$	plf	BLC 4,6
Total Powermount Section 4 Wind Force w/ Ice =	$qzICE_{pmnt4} \cdot G_H \cdot CF_{pmnt} \cdot AICE_{pmnt} = 24$	plf	BLC 4,6
Total Powermount Section 5 Wind Force w/ Ice =	$qzICE_{pmnt5} \cdot G_H \cdot CF_{pmnt} \cdot AICE_{pmnt} = 18$	plf	BLC 4,6

Gravity Loads (without Ice)

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

Gravity Loads (Ice only)

Ice Area per Linear Foot = $Ai_{pmnt} := \frac{\pi}{4}\left[(D_{pmnt} + Ir \cdot 2)^2 - D_{pmnt}^2\right] = 29.1$ sq in

Weight of Ice on Powermount = $W_{ICEpmnt} := Id \cdot \frac{Ai_{pmnt}}{144} = 11$ plf BLC 3

Development of Wind & Ice Load on Antennas (per TIA/EIA-222-F-1996 Criteria)

Antenna Data:

Antenna Model =	Andrew HBXX-6517DS		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 74.9$	in	(User Input)
Antenna Width =	$W_{ant} := 12$	in	(User Input)
Antenna Thickness =	$T_{ant} := 6.5$	in	(User Input)
Antenna Weight =	$WT_{ant} := 45$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 6$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 6.2$		
Antenna Force Coefficient =	$Ca_{ant} = 1.4$		(per TIA/EIA-222-F-1996 Table 3)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 6.2$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 37.5$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{vz} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 2435$	lbs	**BLC 5,7**

Wind Load (with Ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 6.9$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 41.1$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qzICE_{vz} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 2026$	lbs	**BLC 4,6**

Gravity Load (without Ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 270$	lbs	**BLC 2**

Gravity Loads (Ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 5842$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1558$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 50$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 303$	lbs	**BLC 3**

Development of Wind & Ice Load on Antennas (per TIA/EIA-222-F-1996 Criteria)

Antenna Data:

Antenna Model =	Andrew LNX-6513DS		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 54.7$	in	(User Input)
Antenna Width =	$W_{ant} := 11.9$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.1$	in	(User Input)
Antenna Weight =	$WT_{ant} := 32$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 4$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.6$		
Antenna Force Coefficient =	$Ca_{ant} = 1.4$		(per TIA/EIA-222-F-1996 Table 3)

Wind Load (without Ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.5$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 18.1$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{vz} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 1176$	lbs	**BLC 5,7**

Wind Load (with Ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 5$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 20$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qzICE_{vz} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 984$	lbs	**BLC 4,6**

Gravity Load (without Ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 128$	lbs	**BLC 2**

Gravity Loads (Ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 4622$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1198$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 39$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 155$	lbs	**BLC 3**

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Location:	Glastonbury, CT
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Development of Wind & Ice Load on Antennas (per TIA/EIA-222-F-1996 Criteria)

Antenna Data:

Antenna Model =	JMA X7C-FRO-660			
Antenna Shape =	Flat		(User Input)	
Antenna Height =	$L_{ant} := 72$	in	(User Input)	
Antenna Width =	$W_{ant} := 14.6$	in	(User Input)	
Antenna Thickness =	$T_{ant} := 8$	in	(User Input)	
Antenna Weight =	$WT_{ant} := 33$	lbs	(User Input)	
Number of Antennas =	$N_{ant} := 2$		(User Input)	
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.9$			
Antenna Force Coefficient =	$Ca_{ant} = 1.4$		(per TIA/EIA-222-F-1996 Table 3)	

Wind Load (without Ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 7.3$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 14.6$	sf	
Total Antenna Wind Force =	**$F_{ant} := qz_{vz} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 949$**	lbs	**BLC 5,7**

Wind Load (with Ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 7.9$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 15.8$	sf	
Total Antenna Wind Force w/ Ice =	**$Fi_{ant} := qzICE_{vz} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 780$**	lbs	**BLC 4,6**

Gravity Load (without Ice)

Weight of All Antennas =	**$WT_{ant} \cdot N_{ant} = 66$**	lbs	**BLC 2**

Gravity Loads (Ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 8410$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1840$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot ld = 60$	lbs	
Weight of Ice on All Antennas =	**$W_{ICEant} \cdot N_{ant} = 119$**	lbs	**BLC 3**

Development of Wind & Ice Load on Antennas (per TIA/EIA-222-F-1996 Criteria)

Antenna Data:

Antenna Model =	RFS FD9R6004/2C-3L 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 =	$T_{ant} := 1.5$	in	(User Input)	
Antenna Weight =	$WT_{ant} := 3$	lbs	(User Input)	
Number of Antennas =	$N_{ant} := 12$		(User Input)	
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 0.9$			
Antenna Force Coefficient =	$Ca_{ant} = 1.4$		(per TIA/EIA-222-F-1996 Table 3)	

Wind Load (without Ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

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 =	$A_{ant} := SA_{ant} \cdot N_{ant} = 3.1$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{vz} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 204$	lbs	**BLC 5,7**

Wind Load (with Ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 0.4$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 4.3$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qzICE_{vz} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 209$	lbs	**BLC 4,6**

Gravity Load (without Ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 36$	lbs	**BLC 2**

Gravity Loads (Ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 57$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 71$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 2$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 28$	lbs	**BLC 3**

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Development of Wind & Ice Load on Platform

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

Platform Data:

Platform Model =	12' Low Profile Platform			
Platform Shape =	Flat		(User Input)	
Platform Area =	$CaA_{plt} := 22.27$	sq ft	(User Input)	
Platform Area w/ Ice =	$CaA_{ICE.plt} := 25.88$	sq ft	(User Input)	
Platform Weight =	$WT_{plt} := 3062$	lbs	(User Input)	
Platform Weight w/ Ice =	$WT_{ICE.plt} := 4163$	lbs	(User Input)	

Wind Load (without Ice)

(per TIA/EIA-222-F-1996 Section 2.3.2)

Total Platform Wind Force =	$F_{plt} := qz_{vz} \cdot G_H \cdot CaA_{plt} = 1034$	lbs	**BLC 5,7**

Wind Load (with Ice)

(per TIA/EIA-222-F-1996 Section 2.3.2)

Total Platform Wind Force w/ Ice =	$Fi_{plt} := qzICE_{vz} \cdot G_H \cdot CaA_{ICE.plt} = 911$	lbs	**BLC 4,6**

Gravity Load (without Ice)

Weight of Platform =	$WT_{plt} = 3062$	lbs	**BLC 2**

Gravity Loads (Ice only)

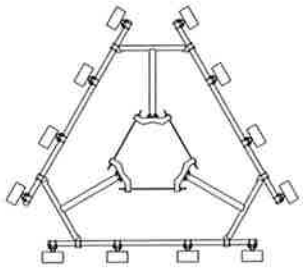
Weight of Ice on Platform =	$WT_{ICE.plt} - WT_{plt} = 1101$	lbs	**BLC 3**

Development of Wind & Ice Load on Antennas

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

Antenna Data:

Antenna Model =	CCI HPA-65R-BUU-H8			
Antenna Shape =	Flat		(User Input)	
Antenna Height =	$L_{ant} := 92.4$	in	(User Input)	
Antenna Width =	$W_{ant} := 14.8$	in	(User Input)	
Antenna Thickness =	$T_{ant} := 7.4$	in	(User Input)	
Antenna Weight =	$WT_{ant} := 75$	lbs	(User Input)	
Number of Antennas =	$N_{ant} := 6$		(User Input)	
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 6.2$			
Antenna Force Coefficient =	$Ca_{ant} = 1.4$		(per TIA/EIA-222-F-1996 Table 3)	



Wind Load (without Ice)

(per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure Applied to All Antennas Simultaneously

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 9.5$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 57$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 3623$	lbs	**BLC 5,7**

Wind Load (with Ice)

(per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure Applied to All Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 10.2$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 61.5$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qzICE_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 2963$	lbs	**BLC 4,6**

Gravity Load (without Ice)

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

Gravity Loads (Ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 1 \times 10^4$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1)(T_{ant} + 1) - V_{ant} = 2276$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 74$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 443$	lbs	**BLC 3**

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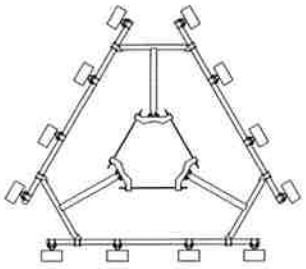
Development of Wind & Ice Load on Antennas

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

Antenna Data:



Antenna Model =	CCI OPA-65R-LCUU-H8			
Antenna Shape =	Flat		(User Input)	
Antenna Height =	$L_{ant} := 92.7$	in	(User Input)	
Antenna Width =	$W_{ant} := 14.4$	in	(User Input)	
Antenna Thickness =	$T_{ant} := 7.0$	in	(User Input)	
Antenna Weight =	$WT_{ant} := 95$	lbs	(User Input)	
Number of Antennas =	$N_{ant} := 3$		(User Input)	
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 6.4$			
Antenna Force Coefficient =	$Ca_{ant} = 1.4$		(per TIA/EIA-222-F-1996 Table 3)	

Wind Load (without ice)

(per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure Applied to All Antennas Simultaneously

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 9.3$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 27.8$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 1768$	lbs	**BLC 5,7**

Wind Load (with Ice)

(per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure Applied to All Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 10$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 30.1$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qzICE_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 1449$	lbs	**BLC 4,6**

Gravity Load (without Ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 285$	lbs	**BLC 2**

Gravity Loads (Ice only)

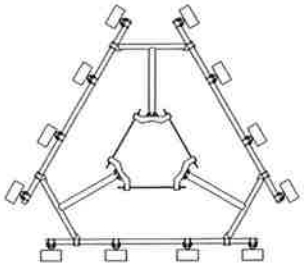
Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 9344$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1)(T_{ant} + 1) - V_{ant} = 2200$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 71$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 214$	lbs	**BLC 3**

Development of Wind & Ice Load on TMAs

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

TMA Data:

TMA Model =	CCI TMABPDB7823VG12A			
TMA Shape =	Flat		(User Input)	
TMA Height =	$L_{tma} := 14.25$	in	(User Input)	
TMA Width =	$W_{tma} := 11.03$	in	(User Input)	
TMA Thickness =	$T_{tma} := 4.11$	in	(User Input)	
TMA Weight =	$WT_{tma} := 25$	lbs	(User Input)	
Number of TMAs =	$N_{tma} := 18$		(User Input)	
TMA Aspect Ratio =	$Ar_{tma} := \frac{L_{tma}}{W_{tma}} = 1.3$			
TMA Force Coefficient =	$Ca_{tma} = 1.4$		(per TIA/EIA-222-F-1996 Table 3)	



Wind Load (without ice)

(per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure Applied to ALL TMAs Simultaneously

Surface Area for One TMA =	$SA_{tma} := \frac{L_{tma} \cdot W_{tma}}{144} = 1.1$	sf	
TMA Projected Surface Area =	$A_{tma} := SA_{tma} \cdot N_{tma} = 19.6$	sf	
Total TMA Wind Force =	$F_{tma} := qz_{att} \cdot G_H \cdot Ca_{tma} \cdot A_{tma} = 1249$	lbs	**BLC 5,7**

Wind Load (with ice)

(per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure Applied to ALL TMAs Simultaneously

Surface Area for One TMA w/ Ice =	$SA_{ICEtma} := \frac{(L_{tma} + 1) \cdot (W_{tma} + 1)}{144} = 1.3$	sf	
TMA Projected Surface Area w/ Ice =	$A_{ICEtma} := SA_{ICEtma} \cdot N_{tma} = 22.9$	sf	
Total TMA Wind Force w/ Ice =	$Fi_{tma} := qzICE_{att} \cdot G_H \cdot Ca_{tma} \cdot A_{ICEtma} = 1105$	lbs	**BLC 4,6**

Gravity Load (without ice)

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

Gravity Loads (Ice only)

Volume of Each TMA =	$V_{tma} := L_{tma} \cdot W_{tma} \cdot T_{tma} = 646$	cu in	
Volume of Ice on Each TMA =	$V_{ice} := (L_{tma} + 1)(W_{tma} + 1) \cdot (T_{tma} + 1) - V_{tma} = 291$	cu in	
Weight of Ice on Each TMA =	$W_{ICEtma} := \frac{V_{ice}}{1728} \cdot Id = 9$	lbs	
Weight of Ice on All TMAs =	$W_{ICEtma} \cdot N_{tma} = 170$	lbs	**BLC 3**

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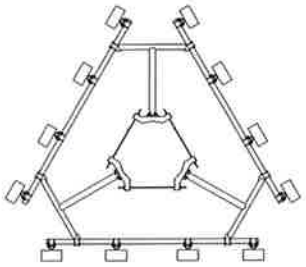
Subject:	Load Analysis of Powermount on CL&P Tower # 12197
Location:	Glastonbury, CT
Rev. 1: 4/7/15	Prepared by: T.J.L. Checked by: C.F.C. Job No. 15001.010

Development of Wind & Ice Load on Antenna Mounts (per TIA/EIA-222-F-1996 Criteria)

Mount Data:

Mount Type: Site Pro Ultra Low Profile Monopole Mount ULP12



Mount Shape =	Flat		(User Input)
Mount Area =	$CaA_{mnt} := 23.85$	sq ft	(User Input)
Mount Area w/ Ice =	$CaA_{ICEmnt} := 30.3$	sq ft	(User Input)
Mount Weight =	$WT_{mnt} := 1316$	lbs	(User Input)
Mount Weight w/ Ice =	$WT_{ICEmnt} := 1677$	lbs	(User Input)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Total Mount Wind Force = $F_{mnt} := qz_{att} \cdot G_H \cdot CaA_{mnt} = 1083$ lbs **BLC 5,7**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Total Mount Wind Force = $FI_{mnt} := qzICE_{att} \cdot G_H \cdot CaA_{ICEmnt} = 1043$ lbs **BLC 4,6**

Gravity Loads (without ice) (per TIA/EIA-222-F-1996)

Weight of All Mounts = $WT_{mnt} = 1316$ lbs **BLC 2**

Gravity Loads (ice only) (per TIA/EIA-222-F-1996)

Weight of Ice on All Mounts = $WT_{ICEmnt} - WT_{mnt} = 361$ lbs **BLC 3**

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Subject:	Load Analysis of Powermount on CL&P Tower # 12197
Location:	Glastonbury, CT
Rev. 1: 4/7/15	Prepared by: T.J.L. Checked by: C.F.C. Job No. 15001.010

Development of Wind & Ice Load on Coax Cables — per TIA/EIA-222-F-96 Criteria

Coax Cable Data:

Coax Type =	HELIAX 1-5/8"				
Shape =	Round		(User Input)		
Coax Outside Diameter =	$D_{coax} := 1.98$	in	(User Input)		
Coax Cable Length =	$L_{coax} := 132$	ft	(User Input)		
Weight of Coax per foot =	$Wt_{coax} := 1.04$	plf	(User Input)		
Total Number of Coax =	$N_{coax} := 12$		(User Input)		
No. of Coax Projecting Outside Face of PCS Mast =	$NP_{coax} := 0$		(User Input)	(Coax within Powermount)	
Coax aspect ratio,	$Ar_{coax} := \frac{(L_{coax} \cdot 12)}{D_{coax}} = 800$				
Coax Cable Force Factor Coefficient =	$Ca_{coax} = 1.2$		TIA/EIA-222-F-96 Table 3		

Wind Load (without ice) — per TIA/EIA-222-F-96 Section 2.3.2

Coax projected surface area =	$A_{coax} := 0$	ft	
Total Coax Wind Force =	$F_{coax} := 0$	plf	BLC 5,7

Wind Load (with ice) — per TIA/EIA-222-F-96 Section 2.3.2

Coax projected surface area w/ Ice =	$AICE_{coax} := 0$	ft	
Total Coax Wind Force w/ Ice =	$Fi_{coax} := 0$	plf	BLC 4,6

Gravity Loads (without ice)

Weight of all cables w/o ice	$WT_{coax} := Wt_{coax} \cdot N_{coax} = 12$	plf	BLC 2

Gravity Loads (ice only)

Ice Area per Linear Foot =	$Ai_{coax} := 0$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := Id \cdot \left(N_{coax} \cdot \frac{Ai_{coax}}{144}\right) = 0$	plf	BLC 3

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Subject:	Load Analysis of Powermount on CL&P Tower # 12197
Location:	Glastonbury, CT
Rev. 1: 4/7/15	Prepared by: T.J.L. Checked by: C.F.C. Job No. 15001.010

Development of Wind & Ice Load on Brace Member (per TIA/EIA-222-F-1996 Criteria)

Member Data: L5x5x3/8

Antenna Shape = Flat (User Input)

Height = $H_{mem} := 5$ in (User Input)

Width = $W_{mem} := 5$ in (User Input)

Length = $L_{mem} := 156$ in (User Input)

Member Aspect Ratio = $Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 31.2$

Member Force Coefficient = $Ca_{mem} = 2$ (per TIA/EIA-222-F-1996 Table 3)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Member Projected Surface Area = $A_{mem} := \frac{H_{mem}}{12} = 0.4$ plf

Total Member Wind Force = $F_{mem} := qz_{mem} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 37$ lbs **BLC 5,7**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Member Projected Surface Area w/ Ice = $A_{ICEmem} := \frac{(H_{mem} + 2 \cdot Ir)}{12} = 0.5$ plf

Total Member Wind Force w/ Ice = $Fi_{mem} := qzICE_{mem} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 34$ lbs **BLC 4,6**

Gravity Load (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear foot = $Ai_{mem} := (W_{mem} + 2 \cdot Ir) \cdot (H_{mem} + 2 \cdot Ir) - W_{mem} \cdot H_{mem} = 11$ sq in

Weight of Ice on Member = $W_{ICE.mem} := Id \cdot \frac{Ai_{mem}}{144} = 4$ plf **BLC 3**

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Subject: **Analysis of TIA/EIA Wind and Ice Loads for Analysis of Powermount**
Tabulated Load Cases
Location: **Glastonbury, CT**
Date: 3/3/15 Prepared by: T.J.L. Checked by: C.F.C. Job No. 15001.010

Load Case	Description
1	Self Weight (Powermountt)
2	Weight of Appurtenances
3	Weight of Ice Only on PCS Structure
4	(x) TIA/EIA Wind with Ice on PCS Structure
5	(x) TIA/EIA Wind on PCS Structure
6	(z) TIA/EIA Wind with Ice on PCS Structure
7	(z) TIA/EIA Wind on PCS Structure

Footnotes:
(1) PCS Structure includes: Powermount and Appurtenances

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Subject: **Analysis of TIA/EIA Wind and Ice Loads for Analysis of Powermount Only Load Combinations Table**

Location: **Glastonbury, CT**

Date: 3/3/15 Prepared by: T.J.L. Checked by: C.F.C. Job No. 15001.010

Load Combination	Description	Envelope Soultion	Wind Factor	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	(x) TIA/EIA Wind + Ice on PCS Structure		1		1	1	2	1	3	1	4	1		
2	(x) TIA/EIA Wind on PCS Structure		1		1	1	2	1	5	1				
3	(z) TIA/EIA Wind + Ice on PCS Structure		1		1	1	2	1	3	1	6	1		
4	(z) TIA/EIA Wind on PCS Structure		1		1	1	2	1	7	1				

Footnotes:
(1) BLC = Basic Load Case
(2) PCS Structure includes: Powermount and Appurtenances

Global

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

Hot Rolled Steel Code	AISC 9th: ASD
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI 1999: ASD
Wood Code	AF&PA NDS-97: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-02
Masonry Code	ACI 530-05: ASD
Aluminum Code	AA ADM1-05: ASD - Building

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, Continued

Seismic Code	UBC 1997
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	No
Ct Z	.035
Ct X	.035
T Z (sec)	Not Entered
T X (sec)	Not Entered
R Z	8.5
R X	8.5
Ca	.36
Cv	.54
Nv	1
Occupancy Category	4
Seismic Zone	3
Seismic Detailing Code	ASCE 7-05
Om Z	1
Om X	1
Rho Z	1
Rho X	1

Footing Overturning Safety Factor	1.5
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	0
Footing Concrete f'c (ksi)	3
Footing Concrete Ec (ksi)	4000
Lamda	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. C 50	29000	11154	.3	.65	.49	50	1.1	58	1.2

Hot Rolled Steel Design Parameters

	Label	Shape	Leng...	Lbyy[ft]	Lbzz[ft]	Lcomp ...	Lcomp ...	Kyy	Kzz	Cm...	Cm...	Cb	y s...	z s...	Functi...
1	M1	Powermount	5.17												Lateral
2	M2	Powermount	6												Lateral
3	M3	Powermount	20												Lateral
4	M4	Powermount	20												Lateral
5	M5	Powermount	20												Lateral
6	M6	Powermount	20												Lateral
7	M7	Powermount	20												Lateral
8	M8	Powermount	20.83												Lateral
9	M9	L2.5x2.5x1/4	4.182												Lateral
10	M10	L2.5x2.5x1/4	4.182												Lateral
11	M11	L3x3x1/4	7.227												Lateral
12	M12	L3x3x1/4	7.227												Lateral
13	M13	L2.5x2.5x3/16	4.182												Lateral
14	M14	L2.5x2.5x3/16	4.182												Lateral
15	M15	L3x3x3/16	7.227												Lateral
16	M16	L3x3x3/16	7.227												Lateral
17	M17	L2.5x2.5x3/16	4.182												Lateral
18	M18	L2.5x2.5x3/16	4.182												Lateral
19	M19	L3x3x3/16	7.227												Lateral
20	M20	L3x3x3/16	7.227												Lateral
21	M21	L3.5x3.5x1/4	10.732												Lateral
22	M22	L3.5x3.5x1/4	10.732												Lateral
23	M23	L5x5x3/8	13.887												Lateral
24	M24	L5x5x3/8	13.887												Lateral

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Powermount	HSS18x0.375	Beam	Pipe	A53 Gr. B	Typical	19.4	754	754	1510
2	L5x5x3/8	L5x5x6	Beam	Single An...	A36 Gr.36	Typical	3.65	8.76	8.76	.183
3	L3.5x3.5x1/4	L3.5x3.5x4	Beam	Single An...	A36 Gr.36	Typical	1.7	2	2	.039
4	L3x3x3/16	L3x3x3	Beam	Single An...	A36 Gr.36	Typical	1.09	.948	.948	.014
5	L2.5x2.5x3/16	L2.5x2.5x3	Beam	Single An...	A36 Gr.36	Typical	.901	.535	.535	.011
6	L2.5x2.5x1/4	L2.5x2.5x4	Beam	Single An...	A36 Gr.36	Typical	1.19	.692	.692	.026
7	L3x3x1/4	L3x3x4	Beam	Single An...	A36 Gr.36	Typical	1.44	1.23	1.23	.031

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design R...
1	M1	N1	N2			Powermount	Beam	Pipe	A53 Gr. B	Typical
2	M2	N2	N3			Powermount	Beam	Pipe	A53 Gr. B	Typical
3	M3	N3	N4			Powermount	Beam	Pipe	A53 Gr. B	Typical
4	M4	N4	N5			Powermount	Beam	Pipe	A53 Gr. B	Typical
5	M5	N5	N6			Powermount	Beam	Pipe	A53 Gr. B	Typical
6	M6	N6	N7			Powermount	Beam	Pipe	A53 Gr. B	Typical
7	M7	N7	N8			Powermount	Beam	Pipe	A53 Gr. B	Typical
8	M8	N8	N9			Powermount	Beam	Pipe	A53 Gr. B	Typical
9	M9	N27	N25			L2.5x2.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
10	M10	N29	N25			L2.5x2.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
11	M11	N26	N25			L3x3x1/4	Beam	Single Angle	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design R...
12	M12	N28	N25			L3x3x1/4	Beam	Single Angle	A36 Gr.36	Typical
13	M13	N22	N20			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
14	M14	N24	N20			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
15	M15	N21	N20			L3x3x3/16	Beam	Single Angle	A36 Gr.36	Typical
16	M16	N23	N20			L3x3x3/16	Beam	Single Angle	A36 Gr.36	Typical
17	M17	N17	N15			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
18	M18	N19	N15			L2.5x2.5x3/16	Beam	Single Angle	A36 Gr.36	Typical
19	M19	N16	N15			L3x3x3/16	Beam	Single Angle	A36 Gr.36	Typical
20	M20	N18	N15			L3x3x3/16	Beam	Single Angle	A36 Gr.36	Typical
21	M21	N12	N10			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
22	M22	N14	N10			L3.5x3.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
23	M23	N11	N10			L5x5x3/8	Beam	Single Angle	A36 Gr.36	Typical
24	M24	N13	N10			L5x5x3/8	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	5.17	0	0	
3	N3	0	11.17	0	0	
4	N4	0	31.17	0	0	
5	N5	0	51.17	0	0	
6	N6	0	71.17	0	0	
7	N7	0	91.17	0	0	
8	N8	0	111.17	0	0	
9	N9	0	132	0	0	
10	N10	0	33.25	0	0	
11	N11	-8.63	33.25	10.88	0	
12	N12	-8.63	33.25	-6.38	0	
13	N13	8.63	33.25	10.88	0	
14	N14	8.63	33.25	-6.38	0	
15	N15	0	64.57	0	0	
16	N16	-3.86	64.57	6.11	0	
17	N17	-3.86	64.57	-1.61	0	
18	N18	3.86	64.57	6.11	0	
19	N19	3.86	64.57	-1.61	0	
20	N20	0	88.29	0	0	
21	N21	-3.86	88.29	6.11	0	
22	N22	-3.86	88.29	-1.61	0	
23	N23	3.86	88.29	6.11	0	
24	N24	3.86	88.29	-1.61	0	
25	N25	0	111.5	0	0	
26	N26	-3.86	111.5	6.11	0	
27	N27	-3.86	111.5	-1.61	0	
28	N28	3.86	111.5	6.11	0	
29	N29	3.86	111.5	-1.61	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]	Footing
1	N11	Reaction	Reaction	Reaction				
2	N13	Reaction	Reaction	Reaction				
3	N12	Reaction	Reaction	Reaction				
4	N14	Reaction	Reaction	Reaction				
5	N16	Reaction	Reaction	Reaction				
6	N18	Reaction	Reaction	Reaction				
7	N17	Reaction	Reaction	Reaction				
8	N19	Reaction	Reaction	Reaction				
9	N21	Reaction	Reaction	Reaction				
10	N23	Reaction	Reaction	Reaction				
11	N22	Reaction	Reaction	Reaction				
12	N24	Reaction	Reaction	Reaction				
13	N29	Reaction	Reaction	Reaction				
14	N27	Reaction	Reaction	Reaction				
15	N28	Reaction	Reaction	Reaction				
16	N26	Reaction	Reaction	Reaction				
17	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction	

Member Point Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M8	Y	-.45	10.83
2	M8	Y	-.285	10.83
3	M8	Y	-.45	10.83
4	M8	Y	-1.316	10.83

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M8	Y	-.443	10.83
2	M8	Y	-.214	10.83
3	M8	Y	-.17	10.83
4	M8	Y	-.361	10.83

Member Point Loads (BLC 4 : (x) TIA/EIA Wind with Ice on P)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M8	X	2.963	10.83
2	M8	X	1.449	10.83
3	M8	X	1.105	10.83
4	M8	X	1.043	10.83

Member Point Loads (BLC 5 : (x) TIA/EIA Wind on PCS Struct)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M8	X	3.623	10.83
2	M8	X	1.768	10.83
3	M8	X	1.249	10.83
4	M8	X	1.083	10.83

Member Point Loads (BLC 6 : (z) TIA/EIA Wind with Ice on P)

Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]

Member Point Loads (BLC 6 : (z) TIA/EIA Wind with Ice on P) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M8	Z	2.963	10.83
2	M8	Z	1.449	10.83
3	M8	Z	1.105	10.83
4	M8	Z	1.043	10.83

Member Point Loads (BLC 7 : (z) TIA/EIA Wind on PCS Struct)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M8	Z	3.623	10.83
2	M8	Z	1.768	10.83
3	M8	Z	1.249	10.83
4	M8	Z	1.083	10.83

Joint Loads and Enforced Displacements (BLC 2 : Weight of Appurtenances)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*s^2*ft)]
1	N9	L	Y	-.27
2	N9	L	Y	-.128
3	N9	L	Y	-.066
4	N9	L	Y	-.036
5	N9	L	Y	-3.062

Joint Loads and Enforced Displacements (BLC 3 : Weight of Ice Only on PCS Struct)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*s^2*ft)]
1	N9	L	Y	-.303
2	N9	L	Y	-.155
3	N9	L	Y	-.119
4	N9	L	Y	-.028
5	N9	L	Y	-1.101

Joint Loads and Enforced Displacements (BLC 4 : (x) TIA/EIA Wind with Ice on P)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*s^2*ft)]
1	N9	L	X	2.026
2	N9	L	X	.984
3	N9	L	X	.78
4	N9	L	X	.209
5	N9	L	X	.911

Joint Loads and Enforced Displacements (BLC 5 : (x) TIA/EIA Wind on PCS Struct)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*s^2*ft)]
1	N9	L	X	2.435
2	N9	L	X	1.176
3	N9	L	X	.949
4	N9	L	X	.204
5	N9	L	X	1.034

Joint Loads and Enforced Displacements (BLC 6 : (z) TIA/EIA Wind with Ice on P)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*s^2*ft)]
1	N9	L	Z	2.026
2	N9	L	Z	.984

Joint Loads and Enforced Displacements (BLC 6 : (z) TIA/EIA Wind with Ice on P) (Continued)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*s^2*ft)]
3	N9	L	Z	.78
4	N9	L	Z	.209
5	N9	L	Z	.911

Joint Loads and Enforced Displacements (BLC 7 : (z) TIA/EIA Wind on PCS Struct)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*s^2*ft)]
1	N9	L	Z	2.435
2	N9	L	Z	1.176
3	N9	L	Z	.949
4	N9	L	Z	.204
5	N9	L	Z	1.034

Member Distributed Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.012	-.012	0	0
2	M2	Y	-.012	-.012	0	0
3	M3	Y	-.012	-.012	0	0
4	M4	Y	-.012	-.012	0	0
5	M5	Y	-.012	-.012	0	0
6	M6	Y	-.012	-.012	0	0
7	M7	Y	-.012	-.012	0	0
8	M8	Y	-.012	-.012	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.011	-.011	0	0
2	M2	Y	-.011	-.011	0	0
3	M3	Y	-.011	-.011	0	0
4	M4	Y	-.011	-.011	0	0
5	M5	Y	-.011	-.011	0	0
6	M6	Y	-.011	-.011	0	0
7	M7	Y	-.011	-.011	0	0
8	M8	Y	-.011	-.011	0	0
9	M9	Y	-.004	-.004	0	0
10	M10	Y	-.004	-.004	0	0
11	M11	Y	-.004	-.004	0	0
12	M12	Y	-.004	-.004	0	0
13	M13	Y	-.004	-.004	0	0
14	M14	Y	-.004	-.004	0	0
15	M15	Y	-.004	-.004	0	0
16	M16	Y	-.004	-.004	0	0
17	M17	Y	-.004	-.004	0	0
18	M18	Y	-.004	-.004	0	0
19	M19	Y	-.004	-.004	0	0
20	M20	Y	-.004	-.004	0	0
21	M21	Y	-.004	-.004	0	0
22	M22	Y	-.004	-.004	0	0
23	M23	Y	-.004	-.004	0	0
24	M24	Y	-.004	-.004	0	0

Member Distributed Loads (BLC 4 : (x) TIA/EIA Wind with Ice on P)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.018	.018	0	0
2	M2	X	.018	.018	0	0
3	M3	X	.018	.018	0	18.83
4	M3	X	.024	.024	18.83	0
5	M4	X	.024	.024	0	0
6	M5	X	.024	.024	0	8.83
7	M5	X	.028	.028	8.83	0
8	M6	X	.028	.028	0	18.83
9	M6	X	.031	.031	18.83	0
10	M7	X	.031	.031	0	0
11	M8	X	.031	.031	0	8.83
12	M8	X	.032	.032	8.83	0
13	M9	X	.034	.034	0	0
14	M10	X	.034	.034	0	0
15	M11	X	.034	.034	0	0
16	M12	X	.034	.034	0	0
17	M13	X	.034	.034	0	0
18	M14	X	.034	.034	0	0
19	M15	X	.034	.034	0	0
20	M16	X	.034	.034	0	0
21	M17	X	.034	.034	0	0
22	M18	X	.034	.034	0	0
23	M19	X	.034	.034	0	0
24	M20	X	.034	.034	0	0
25	M21	X	.034	.034	0	0
26	M22	X	.034	.034	0	0
27	M23	X	.034	.034	0	0
28	M24	X	.034	.034	0	0

Member Distributed Loads (BLC 5 : (x) TIA/EIA Wind on PCS Struct)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.022	.022	0	0
2	M2	X	.022	.022	0	0
3	M3	X	.022	.022	0	18.83
4	M3	X	.03	.03	18.83	0
5	M4	X	.03	.03	0	0
6	M5	X	.03	.03	0	8.83
7	M5	X	.035	.035	8.83	0
8	M6	X	.035	.035	0	18.83
9	M6	X	.039	.039	18.83	0
10	M7	X	.039	.039	0	0
11	M8	X	.039	.039	0	8.83
12	M8	X	.041	.041	8.83	0
13	M9	X	.037	.037	0	0
14	M10	X	.037	.037	0	0
15	M11	X	.037	.037	0	0
16	M12	X	.037	.037	0	0
17	M13	X	.037	.037	0	0
18	M14	X	.037	.037	0	0
19	M15	X	.037	.037	0	0
20	M16	X	.037	.037	0	0

Member Distributed Loads (BLC 5 : (x) TIA/EIA Wind on PCS Struct) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
21	M17	X	.037	.037	0	0
22	M18	X	.037	.037	0	0
23	M19	X	.037	.037	0	0
24	M20	X	.037	.037	0	0
25	M21	X	.037	.037	0	0
26	M22	X	.037	.037	0	0
27	M23	X	.037	.037	0	0
28	M24	X	.037	.037	0	0

Member Distributed Loads (BLC 6 : (z) TIA/EIA Wind with Ice on P)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.018	.018	0	0
2	M2	Z	.018	.018	0	0
3	M3	Z	.018	.018	0	18.83
4	M3	Z	.024	.024	18.83	0
5	M4	Z	.024	.024	0	0
6	M5	Z	.024	.024	0	8.83
7	M5	Z	.028	.028	8.83	0
8	M6	Z	.028	.028	0	18.83
9	M6	Z	.031	.031	18.83	0
10	M7	Z	.031	.031	0	0
11	M8	Z	.031	.031	0	8.83
12	M8	Z	.032	.032	8.83	0
13	M9	Z	.034	.034	0	0
14	M10	Z	.034	.034	0	0
15	M11	Z	.034	.034	0	0
16	M12	Z	.034	.034	0	0
17	M13	Z	.034	.034	0	0
18	M14	Z	.034	.034	0	0
19	M15	Z	.034	.034	0	0
20	M16	Z	.034	.034	0	0
21	M17	Z	.034	.034	0	0
22	M18	Z	.034	.034	0	0
23	M19	Z	.034	.034	0	0
24	M20	Z	.034	.034	0	0
25	M21	Z	.034	.034	0	0
26	M22	Z	.034	.034	0	0
27	M23	Z	.034	.034	0	0
28	M24	Z	.034	.034	0	0

Member Distributed Loads (BLC 7 : (z) TIA/EIA Wind on PCS Struct)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.022	.022	0	0
2	M2	Z	.022	.022	0	0
3	M3	Z	.022	.022	0	18.83
4	M3	Z	.03	.03	18.83	0
5	M4	Z	.03	.03	0	0
6	M5	Z	.03	.03	0	8.83
7	M5	Z	.035	.035	8.83	0
8	M6	Z	.035	.035	0	18.83
9	M6	Z	.039	.039	18.83	0

Member Distributed Loads (BLC 7 : (z) TIA/EIA Wind on PCS Struct) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
10	M7	Z	.039	.039	0	0
11	M8	Z	.039	.039	0	8.83
12	M8	Z	.041	.041	8.83	0
13	M9	Z	.037	.037	0	0
14	M10	Z	.037	.037	0	0
15	M11	Z	.037	.037	0	0
16	M12	Z	.037	.037	0	0
17	M13	Z	.037	.037	0	0
18	M14	Z	.037	.037	0	0
19	M15	Z	.037	.037	0	0
20	M16	Z	.037	.037	0	0
21	M17	Z	.037	.037	0	0
22	M18	Z	.037	.037	0	0
23	M19	Z	.037	.037	0	0
24	M20	Z	.037	.037	0	0
25	M21	Z	.037	.037	0	0
26	M22	Z	.037	.037	0	0
27	M23	Z	.037	.037	0	0
28	M24	Z	.037	.037	0	0

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Grav...	Joint	Point	Distrib...	Area(...	Surfac...
1	Self Weight (Powermount)	None		-1						
2	Weight of Appurtenances	None				5	4	8		
3	Weight of Ice Only on PCS Struct	None				5	4	24		
4	(x) TIA/EIA Wind with Ice on P	None				5	4	28		
5	(x) TIA/EIA Wind on PCS Struct	None				5	4	28		
6	(z) TIA/EIA Wind with Ice on P	None				5	4	28		
7	(z) TIA/EIA Wind on PCS Struct	None				5	4	28		

Load Combinations

	Description	Solve	PD...	SR...	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	(x) TIA/EIA ...	Yes			1	1	2	1	3	1	4	1								
2	(x) TIA/EIA ...	Yes			1	1	2	1	5	1										
3	(z) TIA/EIA ...	Yes			1	1	2	1	3	1	6	1								
4	(z) TIA/EIA ...	Yes			1	1	2	1	7	1										

Envelope Member Section Forces

	Member	Sec		Axial[k]	LC	y Shear...	LC	z Shear...	LC	Torque[...	LC	y-y Mo...	LC	z-z Mo...	LC
1	M1	1	max	21.349	3	.486	2	.008	1	.339	3	3.188	4	3.384	2
2			min	16.677	2	0	3	-.469	4	-.866	2	-.089	1	.001	3
3		2	max	21.234	3	.458	2	.008	1	.339	3	2.601	4	2.774	2
4			min	16.576	2	0	3	-.44	4	-.866	2	-.078	1	.001	3
5		3	max	21.119	3	.429	2	.008	1	.339	3	2.05	4	2.201	2
6			min	16.475	2	0	3	-.412	4	-.866	2	-.068	1	.001	3
7		4	max	21.004	3	.401	2	.008	1	.339	3	1.536	4	1.664	2
8			min	16.375	2	0	3	-.383	4	-.866	2	-.057	1	0	3

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear...	LC	z Shear...	LC	Torque[...	LC	y-y Mo...	LC	z-z Mo...	LC
9		5	max	20.889	3	.373	2	.008	1	.339	3	1.059	4	1.164	2
10			min	16.274	2	0	3	-.355	4	-.866	2	-.047	1	0	3
11	M2	1	max	20.889	3	.373	2	.008	1	.339	3	1.059	4	1.164	2
12			min	16.274	2	0	3	-.355	4	-.866	2	-.047	1	0	3
13		2	max	20.755	3	.34	2	.008	1	.339	3	.552	4	.63	2
14			min	16.157	2	0	3	-.322	4	-.866	2	-.035	1	0	3
15		3	max	20.622	3	.307	2	.008	1	.339	3	.094	4	.145	2
16			min	16.04	2	0	3	-.289	4	-.866	2	-.023	1	0	3
17		4	max	20.488	3	.274	2	.008	1	.339	3	-.008	2	0	4
18			min	15.923	2	0	3	-.256	4	-.866	2	-.315	4	-.29	2
19		5	max	20.355	3	.241	2	.008	1	.339	3	.001	1	0	4
20			min	15.806	2	0	3	-.223	4	-.866	2	-.673	4	-.676	2
21	M3	1	max	20.355	3	.241	2	.008	1	.339	3	.001	1	0	4
22			min	15.806	2	0	3	-.223	4	-.866	2	-.673	4	-.676	2
23		2	max	19.91	3	.131	2	.008	1	.339	3	.042	1	0	3
24			min	15.416	2	0	3	-.113	4	-.866	2	-1.513	4	-1.603	2
25		3	max	19.465	3	.022	1	.008	1	.339	3	.082	1	-.001	3
26			min	15.025	2	0	3	-.004	3	-.866	2	-1.802	4	-1.981	2
27		4	max	19.02	3	0	4	.107	4	.339	3	.122	1	-.002	3
28			min	14.635	2	-.089	2	.006	2	-.866	2	-1.541	4	-1.809	2
29		5	max	18.575	3	0	4	.227	4	.339	3	.162	1	-.002	3
30			min	14.245	2	-.209	2	.006	2	-.866	2	-.724	4	-1.082	2
31	M4	1	max	18.575	3	0	4	.227	4	.339	3	.162	1	-.002	3
32			min	14.245	2	-.209	2	.006	2	-.866	2	-.724	4	-1.082	2
33		2	max	17.713	3	0	3	.054	3	.408	3	-.111	2	-.004	3
34			min	13.579	2	-.065	1	.005	2	-.394	2	-.633	4	-.609	2
35		3	max	17.268	3	0	3	.19	4	.408	3	-.061	4	.07	1
36			min	13.189	2	-.206	2	.005	2	-.394	2	-.113	1	0	4
37		4	max	16.823	3	0	3	.34	4	.408	3	1.262	4	1.452	2
38			min	12.799	2	-.356	2	.005	2	-.394	2	-.076	1	.003	3
39		5	max	16.378	3	0	3	.49	4	.408	3	3.335	4	3.607	2
40			min	12.409	2	-.506	2	.005	2	-.394	2	-.04	1	.006	3
41	M5	1	max	16.378	3	0	3	.49	4	.408	3	3.335	4	3.607	2
42			min	12.409	2	-.506	2	.005	2	-.394	2	-.04	1	.006	3
43		2	max	15.933	3	0	3	.64	4	.408	3	6.157	4	6.512	2
44			min	12.019	2	-.656	2	.005	2	-.394	2	-.012	2	.009	3
45		3	max	15.488	3	0	3	.795	4	.408	3	9.733	4	10.171	2
46			min	11.629	2	-.812	2	.005	2	-.394	2	.013	2	.012	3
47		4	max	14.956	3	2.98	2	0	1	.383	4	7.971	4	8.432	2
48			min	11.22	2	.002	3	-2.918	4	-.216	2	.012	1	0	3
49		5	max	14.511	3	2.805	2	0	1	.383	4	.022	2	-.007	3
50			min	10.83	2	.002	3	-2.743	4	-.216	2	-6.18	4	-6.032	2
51	M6	1	max	14.511	3	2.805	2	0	1	.383	4	.022	2	-.007	3
52			min	10.83	2	.002	3	-2.743	4	-.216	2	-6.18	4	-6.032	2
53		2	max	14.066	3	2.63	2	0	1	.383	4	.023	2	-.015	3
54			min	10.44	2	.002	3	-2.568	4	-.216	2	-19.456	4	-19.621	2
55		3	max	13.62	3	2.455	2	0	1	.383	4	.027	1	-.023	3
56			min	10.05	2	.002	3	-2.393	4	-.216	2	-31.858	4	-32.336	2
57		4	max	13.175	3	2.28	2	0	1	.383	4	.032	1	-.031	3
58			min	9.66	2	.002	3	-2.218	4	-.216	2	-43.384	4	-44.175	2
59		5	max	12.651	1	-.003	3	10.657	4	.504	4	.003	2	.003	4
60			min	9.24	4	-10.677	2	0	2	-.063	2	-17.836	4	-18.759	2

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear...	LC	z Shear...	LC	Torque[...	LC	y-y Mo...	LC	z-z Mo...	LC
61	M7	1	max	12.651	1	-.003	3	10.657	4	.504	4	.003	2	.003	4
62			min	9.24	4	-10.677	2	0	2	-.063	2	-17.836	4	-18.759	2
63		2	max	12.206	1	-.003	3	10.852	4	.504	4	35.938	4	35.115	2
64			min	8.85	4	-10.872	2	0	2	-.063	2	-.006	1	.017	3
65		3	max	11.761	1	-.003	3	11.047	4	.504	4	90.687	4	89.963	2
66			min	8.46	4	-11.067	2	0	2	-.063	2	-.006	2	.031	3
67		4	max	11.316	1	-.003	3	11.242	4	.504	4	146.411	4	145.787	2
68			min	8.07	4	-11.262	2	0	2	-.063	2	-.011	2	.045	3
69		5	max	10.871	1	-.003	3	11.437	4	.504	4	203.11	4	202.586	2
70			min	7.68	4	-11.457	2	0	2	-.063	2	-.015	2	.059	3
71	M8	1	max	10.871	1	-.003	3	11.437	4	.504	4	203.11	4	202.586	2
72			min	7.68	4	-11.457	2	0	2	-.063	2	-.015	2	.059	3
73		2	max	10.348	3	14.154	2	0	1	0	1	138.992	4	138.992	2
74			min	7.282	4	0	3	-14.154	4	0	1	0	1	0	3
75		3	max	9.884	3	13.948	2	0	1	0	1	65.815	4	65.815	2
76			min	6.876	4	0	3	-13.948	4	0	1	0	1	0	3
77		4	max	5.732	3	6.012	2	0	1	0	1	30.749	4	30.749	2
78			min	3.968	4	0	3	-6.012	4	0	1	0	1	0	3
79		5	max	5.268	3	5.798	2	0	1	0	1	0	1	0	1
80			min	3.562	4	0	3	-5.798	4	0	1	0	1	0	1
81	M9	1	max	-6.558	3	-.041	3	.13	2	0	1	0	1	0	1
82			min	-11.685	2	-.181	2	-.018	3	0	1	0	1	0	1
83		2	max	-6.544	3	-.05	3	.115	2	0	1	-.031	1	.226	2
84			min	-11.65	2	-.185	2	.014	3	0	1	-.046	4	.032	3
85		3	max	-6.531	3	-.058	3	.1	2	0	1	-.052	3	.444	2
86			min	-11.614	2	-.189	2	.047	3	0	1	-.103	2	.095	3
87		4	max	-6.517	3	-.066	3	.093	4	0	1	-.051	3	.654	2
88			min	-11.578	2	-.193	2	.067	1	0	1	-.176	2	.188	3
89		5	max	-6.503	3	-.075	3	.129	4	0	1	-.032	3	.856	2
90			min	-11.543	2	-.198	2	.053	1	0	1	-.262	2	.311	3
91	M10	1	max	11.525	2	.228	2	.119	4	0	1	0	1	0	1
92			min	-7.881	4	-.079	4	-.115	2	0	1	0	1	0	1
93		2	max	11.489	2	.224	2	.083	4	0	1	.077	2	.135	4
94			min	-7.866	4	-.084	4	-.129	2	0	1	.014	4	-.257	2
95		3	max	11.454	2	.22	2	.048	4	0	1	.14	2	.247	4
96			min	-7.851	4	-.088	4	-.144	2	0	1	0	4	-.523	2
97		4	max	11.418	2	.216	2	.012	4	0	1	.189	2	.335	4
98			min	-7.836	4	-.092	4	-.159	2	0	1	-.045	4	-.796	2
99		5	max	11.382	2	.211	2	-.024	4	0	1	.223	2	.4	4
100			min	-7.821	4	-.096	4	-.174	2	0	1	-.119	4	-1.077	2
101	M11	1	max	12.114	4	.13	4	-.053	1	0	1	0	1	0	1
102			min	-4.622	2	-.048	2	-.121	4	0	1	0	1	0	1
103		2	max	12.057	4	.121	4	.003	2	0	1	.033	3	.034	2
104			min	-4.586	2	-.056	2	-.086	4	0	1	-.099	2	-.292	4
105		3	max	12.001	4	.112	4	.059	2	0	1	.09	4	.152	2
106			min	-4.551	2	-.065	2	-.05	4	0	1	-.137	2	-.527	4
107		4	max	11.944	4	.103	4	.116	2	0	1	.186	4	.353	2
108			min	-4.515	2	-.074	2	-.014	4	0	1	-.114	2	-.706	4
109		5	max	11.888	4	.094	4	.172	2	0	1	.316	4	.637	2
110			min	-4.479	2	-.09	1	.021	4	0	1	-.032	1	-.827	4
111	M12	1	max	12.062	4	.127	4	-.004	3	0	1	0	1	0	1
112			min	4.124	1	.094	2	-.138	2	0	1	0	1	0	1

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear...	LC	z Shear...	LC	Torque[...	LC	y-y Mo...	LC	z-z Mo...	LC
113		2	max	12.005	4	.118	4	-.037	3	0	1	.122	4	-.172	3
114			min	4.091	1	.078	1	-.082	2	0	1	-.026	2	-.255	2
115		3	max	11.949	4	.109	4	-.02	1	0	1	.186	4	-.365	3
116			min	4.058	1	.062	1	-.081	4	0	1	.008	2	-.426	2
117		4	max	11.892	4	.1	4	.032	1	0	1	.194	4	-.447	1
118			min	4.025	1	.046	1	-.116	4	0	1	.091	1	-.674	4
119		5	max	11.835	4	.091	4	.088	2	0	1	.259	2	-.422	1
120			min	3.992	1	.03	1	-.152	4	0	1	.1	3	-.967	4
121	M13	1	max	5.342	2	.062	1	-.015	1	0	1	0	1	0	1
122			min	3.028	3	.024	4	-.058	4	0	1	0	1	0	1
123		2	max	5.378	2	.057	2	-.022	3	0	1	.027	1	-.047	4
124			min	3.042	3	.021	4	-.032	2	0	1	-.013	4	-.061	2
125		3	max	5.414	2	.054	2	.013	4	0	1	.038	1	-.064	4
126			min	3.055	3	.016	3	-.046	2	0	1	-.002	4	-.131	2
127		4	max	5.45	2	.05	2	.049	4	0	1	.036	2	-.053	4
128			min	3.069	3	.009	3	-.061	2	0	1	.032	3	-.209	2
129		5	max	5.485	2	.047	2	.085	4	0	1	.091	4	-.013	4
130			min	3.083	3	.002	3	-.076	2	0	1	.014	1	-.296	2
131	M14	1	max	3.606	4	.037	3	.037	4	0	1	0	1	0	1
132			min	-5.311	2	-.022	2	.027	1	0	1	0	1	0	1
133		2	max	3.621	4	.03	3	.018	2	0	1	.037	3	.036	2
134			min	-5.346	2	-.025	2	0	3	0	1	.002	2	-.012	3
135		3	max	3.635	4	.025	4	.003	2	0	1	.045	3	.063	2
136			min	-5.382	2	-.028	2	-.035	4	0	1	-.01	2	-.043	3
137		4	max	3.65	4	.022	4	-.012	2	0	1	.023	3	.082	2
138			min	-5.418	2	-.031	2	-.07	4	0	1	-.035	2	-.096	4
139		5	max	3.665	4	.019	4	-.027	2	0	1	-.028	4	.092	2
140			min	-5.453	2	-.037	1	-.106	4	0	1	-.074	2	-.176	4
141	M15	1	max	2.091	2	.038	1	-.036	3	0	1	0	1	0	1
142			min	-5.463	4	-.012	4	-.098	2	0	1	0	1	0	1
143		2	max	2.127	2	.025	1	-.002	4	0	1	-.03	3	-.006	4
144			min	-5.519	4	-.018	4	-.042	2	0	1	-.057	2	-.123	2
145		3	max	2.162	2	.016	2	.034	4	0	1	-.035	3	.041	4
146			min	-5.576	4	-.025	4	.014	1	0	1	-.052	4	-.164	2
147		4	max	2.198	2	.009	2	.071	2	0	1	.021	2	.143	4
148			min	-5.632	4	-.038	3	.062	3	0	1	-.023	4	-.125	2
149		5	max	2.234	2	.002	2	.128	2	0	1	.156	2	.3	4
150			min	-5.689	4	-.052	3	.095	3	0	1	.027	3	-.005	2
151	M16	1	max	-1.806	1	.015	1	.067	4	0	1	0	1	0	1
152			min	-5.453	4	-.01	4	-.081	2	0	1	0	1	0	1
153		2	max	-1.839	1	0	1	.031	4	0	1	.053	3	.08	4
154			min	-5.509	4	-.017	4	-.025	2	0	1	-.071	2	-.073	1
155		3	max	-1.872	1	-.012	2	.032	2	0	1	.047	3	.123	4
156			min	-5.566	4	-.024	4	-.005	3	0	1	-.078	2	-.063	1
157		4	max	-1.905	1	-.019	2	.088	2	0	1	-.016	1	.129	4
158			min	-5.622	4	-.037	3	-.04	4	0	1	-.026	4	.032	1
159		5	max	-1.937	1	-.026	2	.145	2	0	1	.099	2	.225	2
160			min	-5.679	4	-.051	3	-.076	4	0	1	-.145	3	.09	3
161	M17	1	max	-1.118	3	.016	3	.019	2	0	1	0	1	0	1
162			min	-2.026	2	.005	2	-.054	4	0	1	0	1	0	1
163		2	max	-1.105	3	.008	3	.004	2	0	1	.014	1	.006	2
164			min	-1.99	2	.001	2	-.018	4	0	1	-.023	4	-.034	3

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear...	LC	z Shear...	LC	Torque[...	LC	y-y Mo...	LC	z-z Mo...	LC
165		3	max	-1.091	3	0	3	.018	4	0	1	.013	1	.003	2
166			min	-1.955	2	-.002	2	-.012	1	0	1	-.022	4	-.039	3
167		4	max	-1.077	3	-.003	4	.053	4	0	1	.006	3	-.005	4
168			min	-1.919	2	-.008	1	-.026	2	0	1	-.008	2	-.018	1
169		5	max	-1.064	3	-.006	4	.089	4	0	1	.053	4	.051	4
170			min	-1.883	2	-.015	1	-.041	2	0	1	-.038	2	-.033	1
171	M18	1	max	2.015	2	.032	1	.058	4	0	1	0	1	0	1
172			min	-1.325	4	.004	4	.005	1	0	1	0	1	0	1
173		2	max	1.979	2	.025	1	.022	4	0	1	.033	3	.028	4
174			min	-1.31	4	0	4	-.009	2	0	1	.017	2	-.023	1
175		3	max	1.943	2	.02	2	-.014	4	0	1	.036	3	.031	4
176			min	-1.295	4	-.002	4	-.024	2	0	1	.02	2	-.051	1
177		4	max	1.908	2	.017	2	-.037	1	0	1	.012	1	.011	4
178			min	-1.28	4	-.009	3	-.049	4	0	1	.008	4	-.085	2
179		5	max	1.872	2	.013	2	-.05	1	0	1	-.013	2	-.033	4
180			min	-1.265	4	-.016	3	-.085	4	0	1	-.047	4	-.13	2
181	M19	1	max	2.102	4	.028	3	-.052	3	0	1	0	1	0	1
182			min	-.852	2	.011	2	-.088	2	0	1	0	1	0	1
183		2	max	2.045	4	.014	3	-.019	3	0	1	-.019	3	-.067	4
184			min	-.817	2	.005	2	-.032	2	0	1	-.066	2	-.092	1
185		3	max	1.989	4	.004	4	.025	2	0	1	-.014	3	-.08	4
186			min	-.781	2	-.005	1	.013	3	0	1	-.069	2	-.099	1
187		4	max	1.932	4	-.003	4	.081	2	0	1	.015	3	-.019	2
188			min	-.745	2	-.019	1	.046	3	0	1	-.009	2	-.039	4
189		5	max	1.876	4	-.01	4	.138	2	0	1	.116	2	.138	1
190			min	-.709	2	-.033	1	.079	3	0	1	.068	3	.056	4
191	M20	1	max	2.101	4	.029	1	.051	4	0	1	0	1	0	1
192			min	.74	1	.017	4	-.093	2	0	1	0	1	0	1
193		2	max	2.044	4	.015	1	.016	4	0	1	.065	3	.026	4
194			min	.708	1	.01	4	-.036	2	0	1	-.063	2	-.105	1
195		3	max	1.988	4	.005	2	.02	2	0	1	.07	3	.015	4
196			min	.675	1	0	3	-.02	4	0	1	-.062	2	-.125	1
197		4	max	1.931	4	-.001	2	.077	2	0	1	.016	4	-.033	3
198			min	.642	1	-.015	3	-.056	4	0	1	.003	2	-.064	2
199		5	max	1.875	4	-.008	2	.133	2	0	1	.131	2	.087	1
200			min	.609	1	-.028	3	-.091	4	0	1	-.098	3	-.119	4
201	M21	1	max	-.367	3	.043	1	.085	2	0	1	0	1	0	1
202			min	-.571	2	.024	4	-.12	4	0	1	0	1	0	1
203		2	max	-.313	3	.017	1	.026	2	0	1	.153	1	.069	2
204			min	-.491	2	.009	4	-.04	4	0	1	-.12	4	-.192	3
205		3	max	-.259	3	-.004	2	.04	4	0	1	.153	1	.055	2
206			min	-.411	2	-.012	3	-.033	2	0	1	-.118	4	-.194	3
207		4	max	-.205	3	-.02	2	.12	4	0	1	.006	3	-.007	4
208			min	-.332	2	-.038	3	-.092	2	0	1	-.001	2	-.041	2
209		5	max	-.15	3	-.035	2	.199	4	0	1	.252	4	.367	3
210			min	-.252	2	-.064	3	-.151	2	0	1	-.305	1	-.22	2
211	M22	1	max	.572	2	.041	1	.12	4	0	1	0	1	0	1
212			min	-.412	4	.024	4	.079	1	0	1	0	1	0	1
213		2	max	.492	2	.014	1	.04	4	0	1	.191	3	.12	4
214			min	-.353	4	.009	4	.025	1	0	1	.139	2	.046	1
215		3	max	.412	2	-.007	2	-.029	1	0	1	.193	3	.119	4
216			min	-.294	4	-.012	3	-.04	4	0	1	.137	2	.04	1

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear...	LC	z Shear...	LC	Torque[...	LC	y-y Mo...	LC	z-z Mo...	LC
217		4	max	.332	2	-.022	2	-.084	1	0	1	.007	3	-.005	4
218			min	-.235	4	-.038	3	-.12	4	0	1	-.006	2	-.02	1
219		5	max	.252	2	-.038	2	-.138	1	0	1	-.291	2	-.133	1
220			min	-.176	4	-.065	3	-.199	4	0	1	-.369	3	-.251	4
221	M23	1	max	.845	4	.094	1	-.108	3	0	1	0	1	0	1
222			min	-.688	2	.063	4	-.161	2	0	1	0	1	0	1
223		2	max	.744	4	.037	1	-.034	3	0	1	-.037	3	-.29	4
224			min	-.609	2	.019	4	-.06	2	0	1	-.144	2	-.409	1
225		3	max	.643	4	-.013	2	.043	4	0	1	-.035	3	-.278	4
226			min	-.529	2	-.03	3	.037	1	0	1	-.146	2	-.45	1
227		4	max	.543	4	-.056	2	.141	2	0	1	.008	3	.036	4
228			min	-.449	2	-.087	3	.112	3	0	1	-.008	2	-.134	2
229		5	max	.442	4	-.099	2	.242	2	0	1	.272	2	.675	3
230			min	-.369	2	-.144	3	.186	3	0	1	.091	3	.527	2
231	M24	1	max	.848	4	.09	1	.123	4	0	1	0	1	0	1
232			min	.608	1	.062	4	-.158	2	0	1	0	1	0	1
233		2	max	.747	4	.033	1	.043	4	0	1	.323	3	.104	4
234			min	.535	1	.019	4	-.057	2	0	1	-.149	2	-.392	1
235		3	max	.646	4	-.018	2	.044	2	0	1	.326	3	.117	4
236			min	.461	1	-.03	3	-.037	4	0	1	-.156	2	-.418	1
237		4	max	.546	4	-.061	2	.144	2	0	1	.009	3	.041	4
238			min	.388	1	-.087	3	-.117	4	0	1	-.022	2	-.077	2
239		5	max	.445	4	-.104	2	.245	2	0	1	.253	2	.632	1
240			min	.315	1	-.144	3	-.196	4	0	1	-.628	3	-.126	4

Envelope Member Section Stresses

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
1	M1	1	max	1.1	3	.05	2	0	1	0	3	.485	2	.457	4	.013	1
2			min	.86	2	0	3	-.048	4	-.485	2	0	3	-.013	1	-.457	4
3		2	max	1.095	3	.047	2	0	1	0	3	.397	2	.373	4	.011	1
4			min	.854	2	0	3	-.045	4	-.397	2	0	3	-.011	1	-.373	4
5		3	max	1.089	3	.044	2	0	1	0	3	.315	2	.294	4	.01	1
6			min	.849	2	0	3	-.042	4	-.315	2	0	3	-.01	1	-.294	4
7		4	max	1.083	3	.041	2	0	1	0	3	.238	2	.22	4	.008	1
8			min	.844	2	0	3	-.04	4	-.238	2	0	3	-.008	1	-.22	4
9		5	max	1.077	3	.038	2	0	1	0	3	.167	2	.152	4	.007	1
10			min	.839	2	0	3	-.037	4	-.167	2	0	3	-.007	1	-.152	4
11	M2	1	max	1.077	3	.038	2	0	1	0	3	.167	2	.152	4	.007	1
12			min	.839	2	0	3	-.037	4	-.167	2	0	3	-.007	1	-.152	4
13		2	max	1.07	3	.035	2	0	1	0	3	.09	2	.079	4	.005	1
14			min	.833	2	0	3	-.033	4	-.09	2	0	3	-.005	1	-.079	4
15		3	max	1.063	3	.032	2	0	1	0	3	.021	2	.013	4	.003	1
16			min	.827	2	0	3	-.03	4	-.021	2	0	3	-.003	1	-.013	4
17		4	max	1.056	3	.028	2	0	1	.042	2	0	4	-.001	2	.045	4
18			min	.821	2	0	3	-.026	4	0	4	-.042	2	-.045	4	.001	2
19		5	max	1.049	3	.025	2	0	1	.097	2	0	4	0	1	.096	4
20			min	.815	2	0	3	-.023	4	0	4	-.097	2	-.096	4	0	1
21	M3	1	max	1.049	3	.025	2	0	1	.097	2	0	4	0	1	.096	4
22			min	.815	2	0	3	-.023	4	0	4	-.097	2	-.096	4	0	1
23		2	max	1.026	3	.013	2	0	1	.23	2	0	3	.006	1	.217	4

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
24			min	.795	2	0	3	-.012	4	0	3	-.23	2	-.217	4	-.006	1
25		3	max	1.003	3	.002	1	0	1	.284	2	0	3	.012	1	.258	4
26			min	.775	2	0	3	0	3	0	3	-.284	2	-.258	4	-.012	1
27		4	max	.98	3	0	4	.011	4	.259	2	0	3	.017	1	.221	4
28			min	.754	2	-.009	2	0	2	0	3	-.259	2	-.221	4	-.017	1
29		5	max	.957	3	0	4	.023	4	.155	2	0	3	.023	1	.104	4
30			min	.734	2	-.022	2	0	2	0	3	-.155	2	-.104	4	-.023	1
31	M4	1	max	.957	3	0	4	.023	4	.155	2	0	3	.023	1	.104	4
32			min	.734	2	-.022	2	0	2	0	3	-.155	2	-.104	4	-.023	1
33		2	max	.913	3	0	3	.006	3	.087	2	0	3	-.016	2	.091	4
34			min	.7	2	-.007	1	0	2	0	3	-.087	2	-.091	4	.016	2
35		3	max	.89	3	0	3	.02	4	0	4	.01	1	-.009	4	.016	1
36			min	.68	2	-.021	2	0	2	-.01	1	0	4	-.016	1	.009	4
37		4	max	.867	3	0	3	.035	4	0	3	.208	2	.181	4	.011	1
38			min	.66	2	-.037	2	0	2	-.208	2	0	3	-.011	1	-.181	4
39		5	max	.844	3	0	3	.05	4	0	3	.517	2	.478	4	.006	1
40			min	.64	2	-.052	2	0	2	-.517	2	0	3	-.006	1	-.478	4
41	M5	1	max	.844	3	0	3	.05	4	0	3	.517	2	.478	4	.006	1
42			min	.64	2	-.052	2	0	2	-.517	2	0	3	-.006	1	-.478	4
43		2	max	.821	3	0	3	.066	4	-.001	3	.933	2	.882	4	.002	2
44			min	.62	2	-.068	2	0	2	-.933	2	.001	3	-.002	2	-.882	4
45		3	max	.798	3	0	3	.082	4	-.002	3	1.457	2	1.394	4	-.002	2
46			min	.599	2	-.084	2	0	2	-1.457	2	.002	3	.002	2	-1.394	4
47		4	max	.771	3	.307	2	0	1	0	3	1.208	2	1.142	4	-.002	1
48			min	.578	2	0	3	-.301	4	-1.208	2	0	3	.002	1	-1.142	4
49		5	max	.748	3	.289	2	0	1	.864	2	0	3	.003	2	.885	4
50			min	.558	2	0	3	-.283	4	0	3	-.864	2	-.885	4	-.003	2
51	M6	1	max	.748	3	.289	2	0	1	.864	2	0	3	.003	2	.885	4
52			min	.558	2	0	3	-.283	4	0	3	-.864	2	-.885	4	-.003	2
53		2	max	.725	3	.271	2	0	1	2.81	2	-.002	3	.003	2	2.787	4
54			min	.538	2	0	3	-.265	4	.002	3	-2.81	2	-2.787	4	-.003	2
55		3	max	.702	3	.253	2	0	1	4.632	2	-.003	3	.004	1	4.563	4
56			min	.518	2	0	3	-.247	4	.003	3	-4.632	2	-4.563	4	-.004	1
57		4	max	.679	3	.235	2	0	1	6.327	2	-.004	3	.005	1	6.214	4
58			min	.498	2	0	3	-.229	4	.004	3	-6.327	2	-6.214	4	-.005	1
59		5	max	.652	1	0	3	1.099	4	2.687	2	0	4	0	2	2.555	4
60			min	.476	4	-1.101	2	0	2	0	4	-2.687	2	-2.555	4	0	2
61	M7	1	max	.652	1	0	3	1.099	4	2.687	2	0	4	0	2	2.555	4
62			min	.476	4	-1.101	2	0	2	0	4	-2.687	2	-2.555	4	0	2
63		2	max	.629	1	0	3	1.119	4	-.002	3	5.03	2	5.148	4	0	1
64			min	.456	4	-1.121	2	0	2	-5.03	2	.002	3	0	1	-5.148	4
65		3	max	.606	1	0	3	1.139	4	-.004	3	12.886	2	12.99	4	0	2
66			min	.436	4	-1.141	2	0	2	-12.886	2	.004	3	0	2	-12.99	4
67		4	max	.583	1	0	3	1.159	4	-.006	3	20.882	2	20.971	4	.002	2
68			min	.416	4	-1.161	2	0	2	-20.882	2	.006	3	-.002	2	-20.971	4
69		5	max	.56	1	0	3	1.179	4	-.008	3	29.018	2	29.093	4	.002	2
70			min	.396	4	-1.181	2	0	2	-29.018	2	.008	3	-.002	2	-29.093	4
71	M8	1	max	.56	1	0	3	1.179	4	-.008	3	29.018	2	29.093	4	.002	2
72			min	.396	4	-1.181	2	0	2	-29.018	2	.008	3	-.002	2	-29.093	4
73		2	max	.533	3	1.459	2	0	1	0	3	19.909	2	19.909	4	0	1
74			min	.375	4	0	3	-1.459	4	-19.909	2	0	3	0	1	-19.909	4
75		3	max	.509	3	1.438	2	0	1	0	3	9.427	2	9.427	4	0	1

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
76			min	.354	4	0	3	-1.438	4	-9.427	2	0	3	0	1	-9.427	4
77		4	max	.295	3	.62	2	0	1	0	3	4.404	2	4.404	4	0	1
78			min	.205	4	0	3	-.62	4	-4.404	2	0	3	0	1	-4.404	4
79		5	max	.272	3	.598	2	0	1	0	1	0	1	0	1	0	1
80			min	.184	4	0	3	-.598	4	0	1	0	1	0	1	0	1
81	M9	1	max	-5.511	3	-.079	3	.25	2	0	1	0	1	0	1	0	1
82			min	-9.82	2	-.347	2	-.035	3	0	1	0	1	0	1	0	1
83		2	max	-5.499	3	-.095	3	.221	2	-.584	3	4.11	2	-1.15	1	2.009	4
84			min	-9.79	2	-.355	2	.028	3	-4.11	2	.584	3	-1.699	4	1.359	1
85		3	max	-5.488	3	-.111	3	.193	2	-1.722	3	8.077	2	-1.917	3	4.492	2
86			min	-9.76	2	-.363	2	.091	3	-8.077	2	1.722	3	-3.8	2	2.267	3
87		4	max	-5.476	3	-.127	3	.179	4	-3.416	3	11.901	2	-1.877	3	7.664	2
88			min	-9.73	2	-.371	2	.129	1	-11.901	2	3.416	3	-6.484	2	2.219	3
89		5	max	-5.465	3	-.144	3	.247	4	-5.663	3	15.581	2	-1.171	3	11.453	2
90			min	-9.7	2	-.379	2	.103	1	-15.581	2	5.663	3	-9.689	2	1.385	3
91	M10	1	max	9.685	2	.438	2	.228	4	0	1	0	1	0	1	0	1
92			min	-6.623	4	-.152	4	-.22	2	0	1	0	1	0	1	0	1
93		2	max	9.655	2	.43	2	.16	4	4.684	2	2.457	4	2.843	2	-.632	4
94			min	-6.61	4	-.161	4	-.249	2	-2.457	4	-4.684	2	.535	4	-3.361	2
95		3	max	9.625	2	.422	2	.091	4	9.512	2	4.49	4	5.165	2	.025	4
96			min	-6.598	4	-.169	4	-.277	2	-4.49	4	-9.512	2	-.021	4	-6.105	2
97		4	max	9.595	2	.414	2	.023	4	14.483	2	6.099	4	6.964	2	1.97	4
98			min	-6.585	4	-.177	4	-.306	2	-6.099	4	-14.483	2	-1.667	4	-8.231	2
99		5	max	9.565	2	.406	2	-.046	4	19.598	2	7.286	4	8.241	2	5.204	4
100			min	-6.573	4	-.185	4	-.334	2	-7.286	4	-19.598	2	-4.403	4	-9.741	2
101	M11	1	max	8.412	4	.207	4	-.084	1	0	1	0	1	0	1	0	1
102			min	-3.21	2	-.076	2	-.194	4	0	1	0	1	0	1	0	1
103		2	max	8.373	4	.193	4	.005	2	3.623	4	.422	2	.814	3	2.85	2
104			min	-3.185	2	-.09	2	-.137	4	-.422	2	-3.623	4	-2.477	2	-.937	3
105		3	max	8.334	4	.179	4	.095	2	6.541	4	1.879	2	2.24	4	3.948	2
106			min	-3.16	2	-.105	2	-.08	4	-1.879	2	-6.541	4	-3.431	2	-2.578	4
107		4	max	8.295	4	.165	4	.185	2	8.752	4	4.372	2	4.647	4	3.292	2
108			min	-3.135	2	-.119	2	-.023	4	-4.372	2	-8.752	4	-2.861	2	-5.348	4
109		5	max	8.255	4	.151	4	.276	2	10.258	4	7.901	2	7.913	4	.929	1
110			min	-3.111	2	-.143	1	.034	4	-7.901	2	-10.258	4	-.807	1	-9.106	4
111	M12	1	max	8.376	4	.202	4	-.007	3	0	1	0	1	0	1	0	1
112			min	2.864	1	.15	2	-.221	2	0	1	0	1	0	1	0	1
113		2	max	8.337	4	.188	4	-.06	3	3.156	2	-2.13	3	3.041	4	.763	2
114			min	2.841	1	.125	1	-.131	2	2.13	3	-3.156	2	-.663	2	-3.499	4
115		3	max	8.298	4	.174	4	-.033	1	5.277	2	-4.525	3	4.657	4	-.227	2
116			min	2.818	1	.099	1	-.129	4	4.525	3	-5.277	2	.198	2	-5.359	4
117		4	max	8.258	4	.16	4	.05	1	8.36	4	-5.537	1	4.85	4	-2.621	1
118			min	2.795	1	.074	1	-.186	4	5.537	1	-8.36	4	2.278	1	-5.581	4
119		5	max	8.219	4	.146	4	.141	2	11.997	4	-5.228	1	6.489	2	-2.874	3
120			min	2.772	1	.048	1	-.243	4	5.228	1	-11.997	4	2.498	3	-7.467	2
121	M13	1	max	5.929	2	.158	1	-.038	1	0	1	0	1	0	1	0	1
122			min	3.361	3	.062	4	-.149	4	0	1	0	1	0	1	0	1
123		2	max	5.969	2	.145	2	-.056	3	1.447	2	-1.104	4	1.332	1	.736	4
124			min	3.376	3	.054	4	-.081	2	1.104	4	-1.447	2	-.653	4	-1.5	1
125		3	max	6.009	2	.137	2	.034	4	3.099	2	-1.525	4	1.893	1	.134	4
126			min	3.391	3	.042	3	-.119	2	1.525	4	-3.099	2	-.119	4	-2.132	1
127		4	max	6.048	2	.129	2	.125	4	4.957	2	-1.263	4	1.768	2	-1.773	3

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
128			min	3.406	3	.023	3	-.157	2	1.263	4	-4.957	2	1.574	3	-1.991	2
129		5	max	6.088	2	.121	2	.216	4	7.019	2	-.32	4	4.514	4	-.794	1
130			min	3.422	3	.004	3	-.195	2	.32	4	-7.019	2	.704	1	-5.085	4
131	M14	1	max	4.002	4	.095	3	.094	4	0	1	0	1	0	1	0	1
132			min	-5.894	2	-.055	2	.069	1	0	1	0	1	0	1	0	1
133		2	max	4.018	4	.076	3	.046	2	.29	3	.853	2	1.847	3	-.087	2
134			min	-5.934	2	-.064	2	.001	3	-.853	2	-.29	3	.077	2	-2.08	3
135		3	max	4.035	4	.064	4	.008	2	1.027	3	1.501	2	2.224	3	.571	2
136			min	-5.973	2	-.072	2	-.089	4	-1.501	2	-1.027	3	-.507	2	-2.505	3
137		4	max	4.051	4	.056	4	-.03	2	2.278	4	1.944	2	1.132	3	1.974	2
138			min	-6.013	2	-.08	2	-.18	4	-1.944	2	-2.278	4	-1.753	2	-1.275	3
139		5	max	4.068	4	.048	4	-.068	2	4.178	4	2.181	2	-1.403	4	4.123	2
140			min	-6.053	2	-.094	1	-.271	4	-2.181	2	-4.178	4	-3.66	2	1.581	4
141	M15	1	max	1.918	2	.082	1	-.077	3	0	1	0	1	0	1	0	1
142			min	-5.012	4	-.025	4	-.21	2	0	1	0	1	0	1	0	1
143		2	max	1.951	2	.052	1	-.004	4	1.985	2	-.103	4	-.983	3	2.083	2
144			min	-5.063	4	-.039	4	-.089	2	.103	4	-1.985	2	-1.885	2	1.086	3
145		3	max	1.984	2	.034	2	.072	4	2.662	2	.672	4	-1.162	3	1.919	4
146			min	-5.115	4	-.053	4	.029	1	-.672	4	-2.662	2	-1.736	4	1.284	3
147		4	max	2.017	2	.019	2	.152	2	2.029	2	2.325	4	.707	2	.832	4
148			min	-5.167	4	-.081	3	.133	3	-2.325	4	-2.029	2	-.753	4	-.782	2
149		5	max	2.049	2	.005	2	.272	2	.088	2	4.856	4	5.184	2	-.984	3
150			min	-5.219	4	-.111	3	.203	3	-4.856	4	-.088	2	.89	3	-5.728	2
151	M16	1	max	-1.657	1	.031	1	.143	4	0	1	0	1	0	1	0	1
152			min	-5.003	4	-.022	4	-.174	2	0	1	0	1	0	1	0	1
153		2	max	-1.687	1	.002	1	.067	4	1.191	1	1.298	4	1.776	3	2.606	2
154			min	-5.054	4	-.036	4	-.053	2	-1.298	4	-1.191	1	-2.359	2	-1.963	3
155		3	max	-1.717	1	-.026	2	.068	2	1.018	1	1.995	4	1.563	3	2.869	2
156			min	-5.106	4	-.05	4	-.012	3	-1.995	4	-1.018	1	-2.597	2	-1.727	3
157		4	max	-1.747	1	-.041	2	.188	2	-.519	1	2.092	4	-.525	1	.965	4
158			min	-5.158	4	-.079	3	-.086	4	-2.092	4	.519	1	-.873	4	.58	1
159		5	max	-1.777	1	-.055	2	.309	2	-1.452	3	3.647	2	3.289	2	5.339	3
160			min	-5.21	4	-.108	3	-.162	4	-3.647	2	1.452	3	-4.832	3	-3.634	2
161	M17	1	max	-1.241	3	.04	3	.048	2	0	1	0	1	0	1	0	1
162			min	-2.249	2	.012	2	-.138	4	0	1	0	1	0	1	0	1
163		2	max	-1.226	3	.021	3	.01	2	.809	3	.144	2	.701	1	1.27	4
164			min	-2.209	2	.004	2	-.046	4	-.144	2	-.809	3	-1.128	4	-.79	1
165		3	max	-1.211	3	.002	3	.045	4	.913	3	.082	2	.633	1	1.202	4
166			min	-2.169	2	-.004	2	-.03	1	-.082	2	-.913	3	-1.067	4	-.713	1
167		4	max	-1.196	3	-.007	4	.136	4	.419	1	-.114	4	.32	3	.464	2
168			min	-2.13	2	-.021	1	-.066	2	.114	4	-.419	1	-.412	2	-.361	3
169		5	max	-1.18	3	-.016	4	.228	4	.78	1	1.213	4	2.617	4	2.109	2
170			min	-2.09	2	-.039	1	-.105	2	-1.213	4	-.78	1	-1.872	2	-2.948	4
171	M18	1	max	2.236	2	.083	1	.148	4	0	1	0	1	0	1	0	1
172			min	-1.47	4	.01	4	.012	1	0	1	0	1	0	1	0	1
173		2	max	2.196	2	.064	1	.057	4	.544	1	.658	4	1.631	3	-.94	2
174			min	-1.454	4	.002	4	-.024	2	-.658	4	-.544	1	.834	2	-1.838	3
175		3	max	2.157	2	.051	2	-.035	4	1.199	1	.746	4	1.793	3	-1.134	2
176			min	-1.437	4	-.006	4	-.062	2	-.746	4	-1.199	1	1.007	2	-2.02	3
177		4	max	2.117	2	.043	2	-.094	1	2.006	2	.265	4	.582	1	-.424	4
178			min	-1.42	4	-.023	3	-.126	4	-.265	4	-2.006	2	.377	4	-.655	1
179		5	max	2.077	2	.034	2	-.129	1	3.085	2	-.787	4	-.632	2	2.639	4

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
180			min	-1.404	4	-.042	3	-.218	4	.787	4	-3.085	2	-2.343	4	.712	2
181	M19	1	max	1.928	4	.059	3	-.111	3	0	1	0	1	0	1	0	1
182			min	-.782	2	.024	2	-.188	2	0	1	0	1	0	1	0	1
183		2	max	1.877	4	.029	3	-.041	3	1.485	1	-1.089	4	-.639	3	2.448	2
184			min	-.749	2	.01	2	-.068	2	1.089	4	-1.485	1	-2.215	2	.706	3
185		3	max	1.825	4	.008	4	.053	2	1.605	1	-1.3	4	-.473	3	2.553	2
186			min	-.716	2	-.01	1	.029	3	1.3	4	-1.605	1	-2.31	2	.523	3
187		4	max	1.773	4	-.006	4	.173	2	.633	4	-.304	2	.495	3	.314	2
188			min	-.684	2	-.04	1	.099	3	.304	2	-.633	4	-.284	2	-.547	3
189		5	max	1.721	4	-.021	4	.294	2	-.911	4	2.244	1	3.862	2	-2.506	3
190			min	-.651	2	-.07	1	.169	3	-2.244	1	.911	4	2.268	3	-4.267	2
191	M20	1	max	1.927	4	.063	1	.11	4	0	1	0	1	0	1	0	1
192			min	.679	1	.035	4	-.198	2	0	1	0	1	0	1	0	1
193		2	max	1.875	4	.033	1	.033	4	1.694	1	.42	4	2.168	3	2.31	2
194			min	.649	1	.021	4	-.077	2	-.42	4	-1.694	1	-2.09	2	-2.396	3
195		3	max	1.824	4	.012	2	.043	2	2.023	1	.24	4	2.347	3	2.276	2
196			min	.619	1	-.001	3	-.043	4	-.24	4	-2.023	1	-2.06	2	-2.593	3
197		4	max	1.772	4	-.003	2	.164	2	1.043	2	-.53	3	.543	4	-.101	2
198			min	.589	1	-.031	3	-.119	4	.53	3	-1.043	2	.091	2	-.6	4
199		5	max	1.72	4	-.017	2	.284	2	1.922	4	1.408	1	4.362	2	3.607	3
200			min	.559	1	-.061	3	-.195	4	-1.408	1	-1.922	4	-3.264	3	-4.82	2
201	M21	1	max	-.216	3	.059	1	.116	2	0	1	0	1	0	1	0	1
202			min	-.336	2	.034	4	-.164	4	0	1	0	1	0	1	0	1
203		2	max	-.184	3	.023	1	.035	2	1.718	3	.617	2	2.765	1	2.417	4
204			min	-.289	2	.012	4	-.055	4	-.617	2	-1.718	3	-2.175	4	-3.072	1
205		3	max	-.152	3	-.006	2	.055	4	1.742	3	.494	2	2.765	1	2.379	4
206			min	-.242	2	-.016	3	-.046	2	-.494	2	-1.742	3	-2.14	4	-3.072	1
207		4	max	-.12	3	-.027	2	.164	4	.368	2	-.067	4	.111	3	.02	2
208			min	-.195	2	-.052	3	-.126	2	.067	4	-.368	2	-.018	2	-.123	3
209		5	max	-.089	3	-.048	2	.273	4	1.97	2	3.29	3	4.555	4	6.144	1
210			min	-.148	2	-.088	3	-.207	2	-3.29	3	-1.97	2	-5.529	1	-5.061	4
211	M22	1	max	.336	2	.056	1	.164	4	0	1	0	1	0	1	0	1
212			min	-.242	4	.033	4	.109	1	0	1	0	1	0	1	0	1
213		2	max	.289	2	.02	1	.055	4	-.416	1	1.079	4	3.462	3	-2.802	2
214			min	-.208	4	.012	4	.034	1	-1.079	4	.416	1	2.521	2	-3.847	3
215		3	max	.242	2	-.009	2	-.04	1	-.357	1	1.064	4	3.502	3	-2.758	2
216			min	-.173	4	-.016	3	-.055	4	-1.064	4	.357	1	2.482	2	-3.892	3
217		4	max	.195	2	-.03	2	-.115	1	.178	1	-.044	4	.121	3	.13	2
218			min	-.138	4	-.052	3	-.164	4	.044	4	-.178	1	-.117	2	-.134	3
219		5	max	.148	2	-.052	2	-.189	1	2.246	4	-1.189	1	-5.277	2	7.425	3
220			min	-.103	4	-.088	3	-.274	4	1.189	1	-2.246	4	-6.682	3	5.864	2
221	M23	1	max	.231	4	.06	1	-.069	3	0	1	0	1	0	1	0	1
222			min	-.189	2	.04	4	-.103	2	0	1	0	1	0	1	0	1
223		2	max	.204	4	.023	1	-.022	3	1.194	1	-.847	4	-.219	3	.942	2
224			min	-.167	2	.012	4	-.038	2	.847	4	-1.194	1	-.842	2	.245	3
225		3	max	.176	4	-.008	2	.027	4	1.316	1	-.812	4	-.203	3	.959	2
226			min	-.145	2	-.019	3	.024	1	.812	4	-1.316	1	-.857	2	.228	3
227		4	max	.149	4	-.036	2	.09	2	.391	2	.105	4	.047	3	.051	2
228			min	-.123	2	-.056	3	.072	3	-.105	4	-.391	2	-.045	2	-.053	3
229		5	max	.121	4	-.064	2	.155	2	-1.542	2	1.973	3	1.592	2	-.596	3
230			min	-.101	2	-.092	3	.119	3	-1.973	3	1.542	2	.533	3	-1.783	2
231	M24	1	max	.232	4	.057	1	.079	4	0	1	0	1	0	1	0	1

Envelope Member Section Stresses (Continued)

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
232			min	.167	1	.04	4	-.101	2	0	1	0	1	0	1	0	1
233		2	max	.205	4	.021	1	.028	4	1.147	1	.303	4	1.891	3	.974	2
234			min	.146	1	.012	4	-.037	2	-.303	4	-1.147	1	-.87	2	-2.117	3
235		3	max	.177	4	-.011	2	.028	2	1.221	1	.342	4	1.908	3	1.022	2
236			min	.126	1	-.019	3	-.024	4	-.342	4	-1.221	1	-.913	2	-2.136	3
237		4	max	.15	4	-.039	2	.092	2	.226	2	.118	4	.053	3	.145	2
238			min	.106	1	-.056	3	-.075	4	-.118	4	-.226	2	-.13	2	-.059	3
239		5	max	.122	4	-.067	2	.157	2	.369	4	1.848	1	1.48	2	4.114	3
240			min	.086	1	-.092	3	-.126	4	-1.848	1	-.369	4	-3.675	3	-1.657	2

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N11	max	.433	4	.094	1	.44	2	0	1	0	1	0	1
2		min	-.554	2	.063	4	-.735	4	0	1	0	1	0	1
3	N13	max	-.378	3	.09	1	-.386	1	0	1	0	1	0	1
4		min	-.55	2	.062	4	-.741	4	0	1	0	1	0	1
5	N12	max	-.23	3	.043	1	-.239	1	0	1	0	1	0	1
6		min	-.51	2	.024	4	-.343	4	0	1	0	1	0	1
7	N14	max	.26	4	.041	1	.271	2	0	1	0	1	0	1
8		min	-.511	2	.024	4	-.341	4	0	1	0	1	0	1
9	N16	max	1.075	4	.028	3	.673	2	0	1	0	1	0	1
10		min	-.53	2	.011	2	-1.807	4	0	1	0	1	0	1
11	N18	max	-.468	1	.029	1	-.58	1	0	1	0	1	0	1
12		min	-1.079	4	.017	4	-1.803	4	0	1	0	1	0	1
13	N17	max	-1.013	3	.016	3	-.477	3	0	1	0	1	0	1
14		min	-1.877	2	.005	2	-.763	2	0	1	0	1	0	1
15	N19	max	1.2	4	.032	1	.77	2	0	1	0	1	0	1
16		min	-1.862	2	.004	4	-.563	4	0	1	0	1	0	1
17	N21	max	1.034	2	.038	1	4.598	4	0	1	0	1	0	1
18		min	-2.95	4	-.012	4	-1.82	2	0	1	0	1	0	1
19	N23	max	2.969	4	.015	1	4.574	4	0	1	0	1	0	1
20		min	.901	1	-.01	4	1.567	1	0	1	0	1	0	1
21	N22	max	4.937	2	.062	1	2.041	2	0	1	0	1	0	1
22		min	2.816	3	.024	4	1.115	3	0	1	0	1	0	1
23	N24	max	4.889	2	.037	3	1.354	4	0	1	0	1	0	1
24		min	-3.342	4	-.022	2	-2.075	2	0	1	0	1	0	1
25	N29	max	7.228	4	.228	2	4.542	2	0	1	0	1	0	1
26		min	-10.593	2	-.079	4	-3.144	4	0	1	0	1	0	1
27	N27	max	-6.046	3	-.041	3	-2.541	3	0	1	0	1	0	1
28		min	-10.835	2	-.181	2	-4.378	2	0	1	0	1	0	1
29	N28	max	-2.307	1	.127	4	-3.42	1	0	1	0	1	0	1
30		min	-6.45	4	.094	2	-10.192	4	0	1	0	1	0	1
31	N26	max	6.367	4	.13	4	3.879	2	0	1	0	1	0	1
32		min	-2.514	2	-.048	2	-10.306	4	0	1	0	1	0	1
33	N1	max	0	3	21.349	3	.008	1	.089	1	.339	3	3.384	2
34		min	-.486	2	16.677	2	-.469	4	-3.188	4	-.866	2	.001	3
35	Totals:	max	0	3	21.91	1	0	2						
36		min	-22.148	2	17.093	4	-22.148	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	2	0	2	0	4	0	4	0	2	0	3
2		min	0	3	0	3	0	1	0	1	0	3	0	2
3	N2	max	.003	2	-.002	2	.003	4	7.064e-5	4	3.83e-5	2	-3.428e-8	3
4		min	0	3	-.002	3	0	1	-2.307e-6	1	-1.499e-5	3	-7.576e-5	2
5	N3	max	.009	2	-.004	2	.009	4	7.565e-5	4	8.275e-5	2	-4.965e-8	3
6		min	0	3	-.005	3	0	1	-3.209e-6	1	-3.239e-5	3	-8.281e-5	2
7	N4	max	.005	2	-.01	2	.004	4	7.556e-6	1	2.309e-4	2	1.299e-4	2
8		min	0	3	-.013	3	0	1	-1.133e-4	4	-9.039e-5	3	8.849e-8	3
9	N5	max	0	3	-.016	2	0	1	-1.845e-6	2	3.066e-4	2	6.138e-5	2
10		min	-.03	2	-.021	3	-.026	4	-5.436e-5	4	-1.589e-4	3	1.027e-7	3
11	N6	max	.068	2	-.021	2	.067	4	7.449e-4	4	3.639e-4	2	-6.992e-7	3
12		min	0	3	-.027	3	0	2	-1.199e-6	2	-2.267e-4	3	-7.871e-4	2
13	N7	max	0	3	-.025	2	0	1	1.573e-6	2	3.971e-4	2	3.054e-3	2
14		min	-.11	2	-.033	3	-.117	4	-3.034e-3	4	-2.927e-4	3	1.636e-6	3
15	N8	max	0	3	-.029	2	0	2	8.996e-3	4	4.078e-4	2	-2.432e-6	3
16		min	-.017	2	-.038	3	-.007	4	7.384e-7	2	-3.764e-4	4	-8.881e-3	2
17	N9	max	4.293	2	-.031	2	4.333	4	2.065e-2	4	4.08e-4	2	-2.561e-6	3
18		min	0	3	-.042	3	0	2	7.051e-7	2	-3.779e-4	4	-2.054e-2	2
19	N10	max	.001	2	-.011	2	.001	4	9.892e-6	1	2.463e-4	2	1.414e-4	2
20		min	0	3	-.014	3	0	1	-1.197e-4	4	-9.643e-5	3	1.196e-7	3
21	N11	max	0	2	0	4	0	4	4.607e-6	2	-5.176e-4	3	1.389e-4	2
22		min	0	4	0	1	0	2	-2.57e-4	3	-1.193e-3	2	-1.248e-4	3
23	N12	max	0	2	0	4	0	4	1.483e-3	1	2.501e-3	1	7.702e-4	4
24		min	0	3	0	1	0	1	-6.891e-4	4	-2.589e-3	4	-1.871e-3	1
25	N13	max	0	2	0	4	0	4	2.108e-4	2	1.57e-3	3	8.897e-4	3
26		min	0	3	0	1	0	1	-1.221e-3	3	-1.194e-3	2	-1.967e-5	2
27	N14	max	0	2	0	4	0	4	1.597e-3	3	3.369e-3	4	2.295e-3	3
28		min	0	4	0	1	0	2	1.098e-3	2	2.424e-3	2	1.616e-3	2
29	N15	max	.004	2	-.019	2	.006	4	6.091e-4	4	3.517e-4	2	-7.752e-7	3
30		min	0	4	-.025	3	0	1	-2.152e-6	2	-2.056e-4	3	-6.359e-4	2
31	N16	max	0	2	0	2	0	4	9.843e-4	2	-8.284e-4	3	-1.268e-5	2
32		min	0	4	0	3	0	2	-2.245e-4	3	-2.13e-3	2	-4.689e-4	3
33	N17	max	0	2	0	2	0	2	5.866e-4	3	2.871e-4	1	1.581e-4	4
34		min	0	3	0	3	0	3	-1.655e-5	2	-8.094e-4	4	-8.559e-4	1
35	N18	max	0	4	0	4	0	4	1.247e-4	2	1.642e-3	3	1.231e-3	3
36		min	0	1	0	1	0	1	-1.433e-3	3	-2.128e-3	2	-7.16e-4	2
37	N19	max	0	2	0	4	0	4	9.182e-4	3	1.092e-3	4	1.15e-3	1
38		min	0	4	0	1	0	2	6.583e-4	2	2.42e-4	2	7.056e-4	4
39	N20	max	0	4	-.025	2	0	1	1.698e-6	1	3.955e-4	2	2.408e-3	2
40		min	-.011	2	-.032	3	-.018	4	-2.406e-3	4	-2.814e-4	3	1.606e-6	3
41	N21	max	0	4	0	4	0	2	2.59e-4	4	-6.038e-4	3	1.686e-3	4
42		min	0	2	0	1	0	4	-1.316e-3	1	-1.924e-3	2	1.191e-3	3
43	N22	max	0	3	0	4	0	3	1.662e-3	2	1.357e-4	1	-1.572e-3	2
44		min	0	2	0	1	0	2	-1.742e-3	4	-9.211e-5	4	-1.75e-3	1
45	N23	max	0	1	0	4	0	1	2.104e-3	2	1.484e-3	3	1.13e-3	1
46		min	0	4	0	1	0	4	-1.357e-3	3	-1.931e-3	2	-8.533e-4	4
47	N24	max	0	4	0	2	0	2	-5.806e-4	1	5.319e-4	3	2.51e-3	3
48		min	0	2	0	3	0	4	-1.386e-3	4	3.178e-5	2	2.611e-4	2
49	N25	max	.018	2	-.029	2	.029	4	9.441e-3	4	4.08e-4	2	-2.561e-6	3
50		min	0	4	-.038	3	0	1	7.051e-7	2	-3.779e-4	4	-9.325e-3	2
51	N26	max	0	2	0	2	0	4	6.462e-3	2	-6.69e-4	3	-4.651e-3	1

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation...	LC	Y Rotation...	LC	Z Rotation...	LC
52		min	0	4	0	4	0	2	-1.032e-3	3	-1.89e-3	2	-6.467e-3	4
53	N27	max	0	2	0	2	0	2	7.572e-3	4	2.899e-4	1	4.478e-3	4
54		min	0	3	0	3	0	3	-4.536e-3	2	-1.181e-3	4	8.522e-4	1
55	N28	max	0	4	0	2	0	4	-1.787e-3	4	1.604e-3	4	7.09e-3	4
56		min	0	1	0	4	0	1	-6.144e-3	2	-1.866e-3	2	-5.443e-3	2
57	N29	max	0	2	0	4	0	4	7.847e-3	4	1.613e-3	4	3.531e-3	2
58		min	0	4	0	2	0	2	4.728e-3	1	3.359e-4	2	-3.825e-3	4

Envelope AISC ASD Steel Code Checks

	Me...	Shape	Code Check	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	Fa ...	Ft [...	Fb y-y [ksi]	Fb ...	...	C...	C...	AS...
1	M1	HSS18x...	.052	0	1	.006	0		2	27....	27....	30.792	30....			.85	H1-2
2	M2	HSS18x...	.043	0	1	.005	0		2	27....	27....	30.792	30....			.85	H1-1
3	M3	HSS18x...	.047	8.75	1	.005	0		2	25....	27....	30.792	30....	1		.85	H1-1
4	M4	HSS18x...	.046	20	1	.005	1.875		2	25....	27....	30.792	30....			.85	H1-1
5	M5	HSS18x...	.082	13.333	2	.018	13.542		4	25....	27....	30.792	30....	1		.85	H1-2
6	M6	HSS18x...	.245	17.083	2	.061	20		4	25....	27....	30.792	30....	1		.85	H1-2
7	M7	HSS18x...	.959	20	4	.065	20		4	25....	27....	30.792	30....		.85		H1-2
8	M8	HSS18x...	.977	.434	2	.079	.434		2	24....	27....	30.792	30....	1	.6	.85	H1-2
9	M9	L2.5x2....	.341	0	2	.020	4.182	y	2	16....	28....	- Code check ba...					H2-1
10	M10	L2.5x2....	.584	0	2	.023	0	y	2	16....	28....	- Code check ba...					H1-1
11	M11	L3x3x4	.929	0	4	.014	7.227	z	2	9.0...	28....	- Code check ba...					H1-1
12	M12	L3x3x4	.925	0	4	.013	7.227	z	4	9.0...	28....	- Code check ba...					H1-1
13	M13	L2.5x2....	.370	4.182	2	.011	4.182	z	4	16....	28....	- Code check ba...					H1-1
14	M14	L2.5x2....	.247	4.182	4	.014	4.182	z	4	16....	28....	- Code check ba...					H1-1
15	M15	L3x3x3	.225	7.227	2	.014	7.227	z	2	9.0...	28....	- Code check ba...					H1-1
16	M16	L3x3x3	.181	7.227	4	.016	7.227	z	2	9.0...	28....	- Code check ba...					H2-1
17	M17	L2.5x2....	.078	0	2	.012	4.182	z	4	16....	28....	- Code check ba...					H2-1
18	M18	L2.5x2....	.136	0	2	.011	4.182	z	4	16....	28....	- Code check ba...					H1-1
19	M19	L3x3x3	.212	0	4	.015	7.227	z	2	9.0...	28....	- Code check ba...					H1-1
20	M20	L3x3x3	.212	0	4	.015	7.227	z	2	9.0...	28....	- Code check ba...					H1-1
21	M21	L3.5x3....	.012	0	2	.014	10.732	z	4	5.6...	28....	- Code check ba...					H2-1
22	M22	L3.5x3....	.059	0	2	.014	10.732	z	4	5.6...	28....	- Code check ba...					H1-1
23	M23	L5x5x6	.033	0	4	.008	13.887	z	2	6.9...	28....	- Code check ba...					H1-1
24	M24	L5x5x6	.033	0	4	.008	13.887	z	2	6.9...	28....	- Code check ba...					H1-1

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N11	-.494	.094	.386	0	0	0
2	1	N13	-.491	.09	-.386	0	0	0
3	1	N12	-.454	.043	-.239	0	0	0
4	1	N14	-.455	.041	.238	0	0	0
5	1	N16	-.455	.023	.568	0	0	0
6	1	N18	-.468	.029	-.58	0	0	0
7	1	N17	-1.59	.014	-.646	0	0	0
8	1	N19	-1.575	.032	.652	0	0	0
9	1	N21	.865	.038	-1.538	0	0	0
10	1	N23	.901	.015	1.567	0	0	0
11	1	N22	4.173	.062	1.724	0	0	0
12	1	N24	4.131	-.007	-1.752	0	0	0
13	1	N29	-8.961	.207	3.845	0	0	0
14	1	N27	-9.167	-.139	-3.706	0	0	0
15	1	N28	-2.307	.094	-3.42	0	0	0
16	1	N26	-2.134	-.025	3.279	0	0	0
17	1	N1	-.403	21.3	.008	.089	-.741	2.825
18	1	Totals:	-18.886	21.91	0			
19	1	COG (ft):	X: 0	Y: 90.871	Z: .125			

Joint Reactions

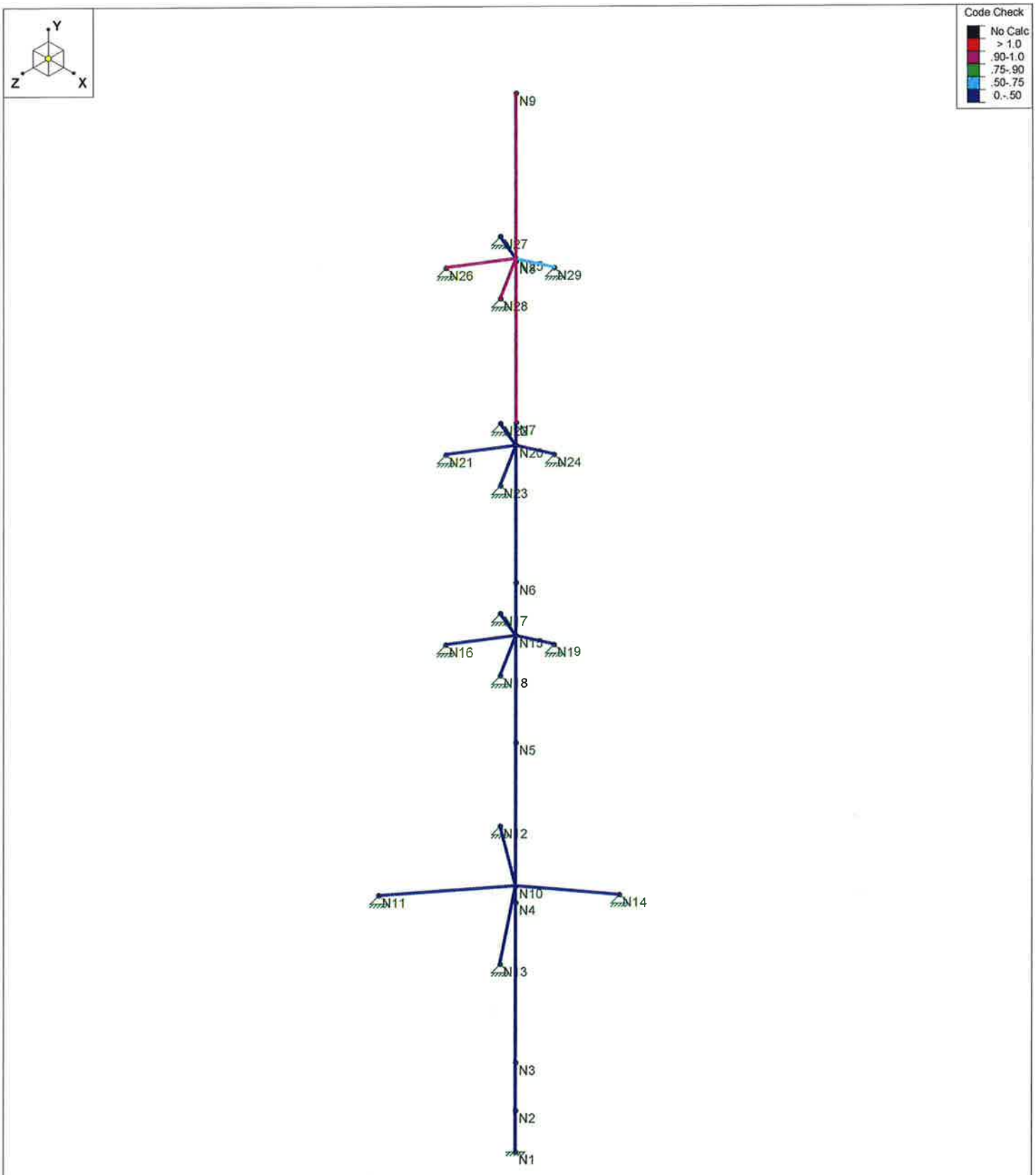
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	N11	-.554	.073	.44	0	0	0
2	2	N13	-.55	.068	-.44	0	0	0
3	2	N12	-.51	.027	-.271	0	0	0
4	2	N14	-.511	.024	.271	0	0	0
5	2	N16	-.53	.011	.673	0	0	0
6	2	N18	-.543	.019	-.686	0	0	0
7	2	N17	-1.877	.005	-.763	0	0	0
8	2	N19	-1.862	.026	.77	0	0	0
9	2	N21	1.034	.029	-1.82	0	0	0
10	2	N23	1.074	.001	1.853	0	0	0
11	2	N22	4.937	.06	2.041	0	0	0
12	2	N24	4.889	-.022	-2.075	0	0	0
13	2	N29	-10.593	.228	4.542	0	0	0
14	2	N27	-10.835	-.181	-4.378	0	0	0
15	2	N28	-2.717	.094	-4.042	0	0	0
16	2	N26	-2.514	-.048	3.879	0	0	0
17	2	N1	-.486	16.677	.006	.069	-.866	3.384
18	2	Totals:	-22.148	17.093	0			
19	2	COG (ft):	X: 0	Y: 87.424	Z: .114			

Joint Reactions

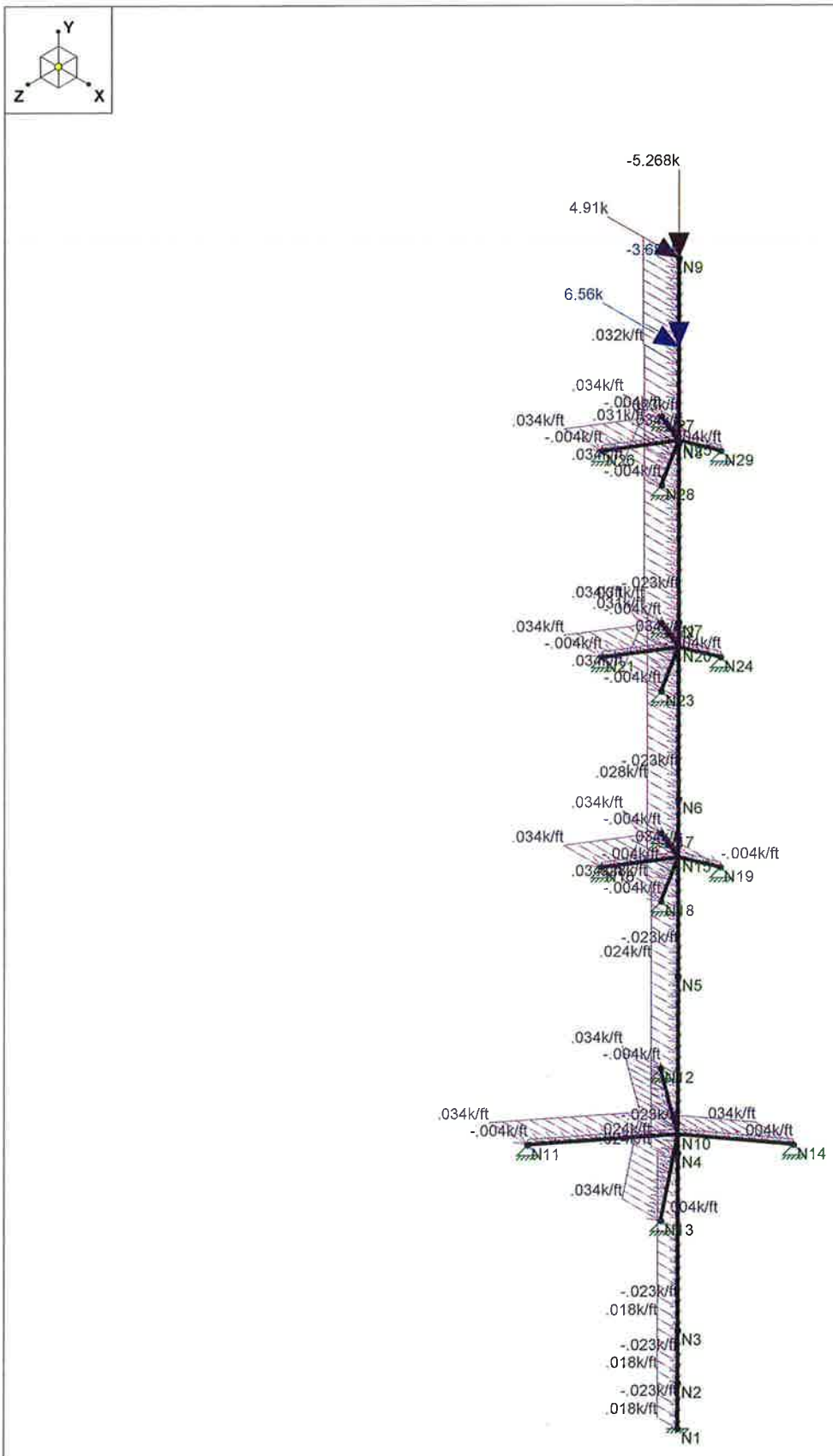
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	3	N11	.38	.084	-.653	0	0	0
2	3	N13	-.378	.084	-.658	0	0	0
3	3	N12	-.23	.041	-.307	0	0	0
4	3	N14	.228	.04	-.306	0	0	0
5	3	N16	.908	.028	-1.535	0	0	0
6	3	N18	-.912	.027	-1.532	0	0	0
7	3	N17	-1.013	.016	-.477	0	0	0
8	3	N19	1.014	.013	-.479	0	0	0
9	3	N21	-2.495	.004	3.882	0	0	0
10	3	N23	2.511	.005	3.862	0	0	0
11	3	N22	2.816	.031	1.115	0	0	0
12	3	N24	-2.827	.037	1.143	0	0	0
13	3	N29	6.114	-.054	-2.66	0	0	0
14	3	N27	-6.046	-.041	-2.541	0	0	0
15	3	N28	-5.456	.122	-8.628	0	0	0
16	3	N26	5.385	.124	-8.725	0	0	0
17	3	N1	0	21.349	-.385	-2.627	.339	.001
18	3	Totals:	0	21.91	-18.886			
19	3	COG (ft):	X: 0	Y: 90.871	Z: .125			

Joint Reactions

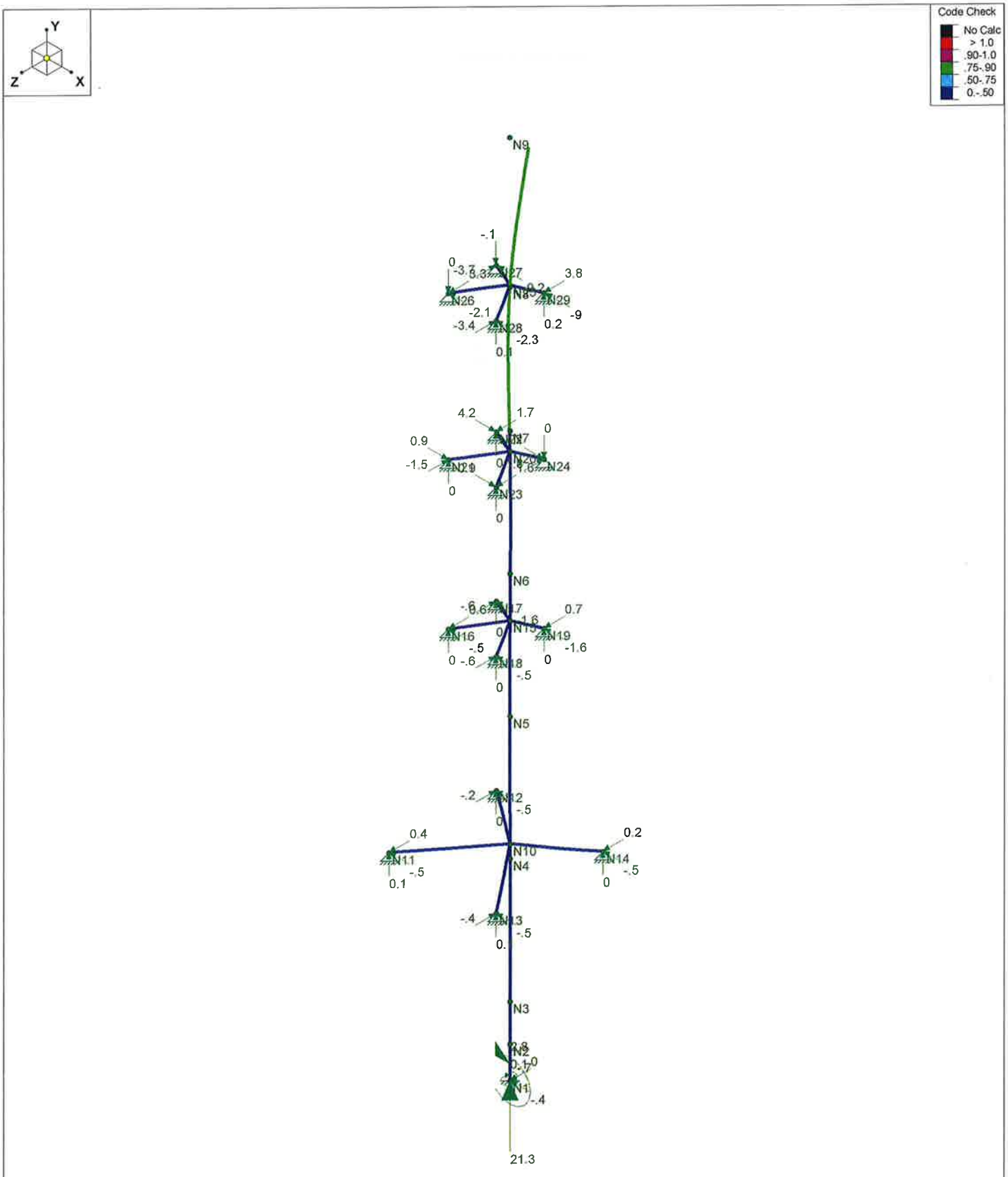
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	4	N11	.433	.063	-.735	0	0	0
2	4	N13	-.431	.062	-.741	0	0	0
3	4	N12	-.262	.024	-.343	0	0	0
4	4	N14	.26	.024	-.341	0	0	0
5	4	N16	1.075	.017	-1.807	0	0	0
6	4	N18	-1.079	.017	-1.803	0	0	0
7	4	N17	-1.199	.007	-.558	0	0	0
8	4	N19	1.2	.004	-.563	0	0	0
9	4	N21	-2.95	-.012	4.598	0	0	0
10	4	N23	2.969	-.01	4.574	0	0	0
11	4	N22	3.328	.024	1.325	0	0	0
12	4	N24	-3.342	.031	1.354	0	0	0
13	4	N29	7.228	-.079	-3.144	0	0	0
14	4	N27	-7.149	-.064	-2.997	0	0	0
15	4	N28	-6.45	.127	-10.192	0	0	0
16	4	N26	6.367	.13	-10.306	0	0	0
17	4	N1	0	16.729	-.469	-3.188	.323	.002
18	4	Totals:	0	17.093	-22.148			
19	4	COG (ft):	X: 0	Y: 87.424	Z: .114			



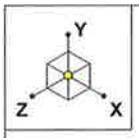
CENTEK Engineering, INC.		
tjl, cfc	CL&P # 12197 - Powermount	Apr 9, 2015 at 9:44 AM
14099 - CT3422	Unity Check	EIA-TIA - Powermount.r3d

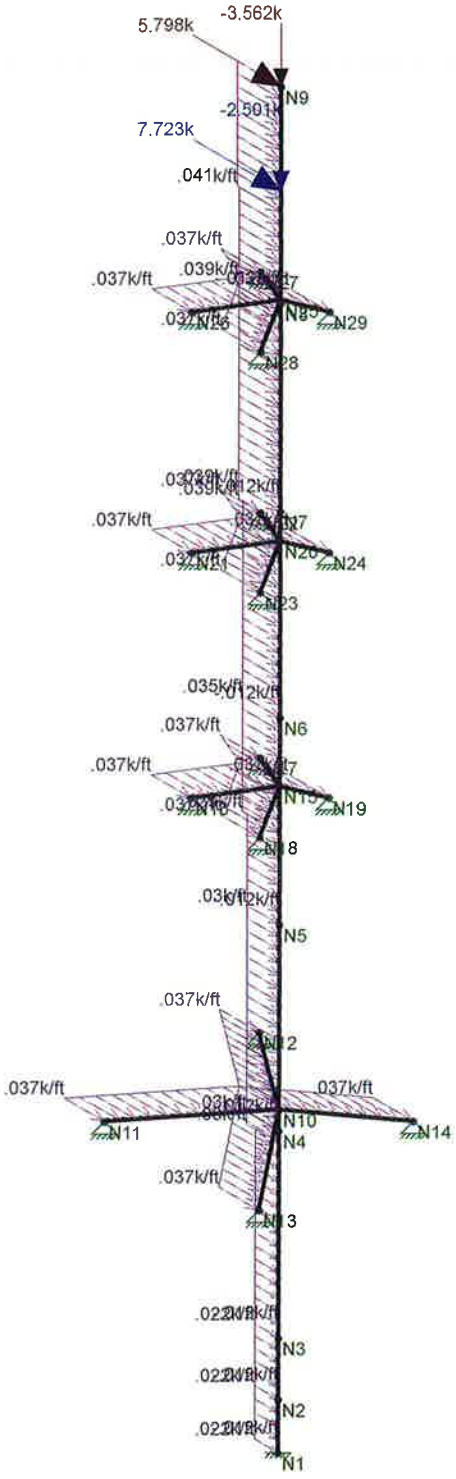


CENTEK Engineering, INC.		
tjl, cfc	CL&P # 12197 - Powermount	Apr 9, 2015 at 9:44 AM
14099 - CT3422	LC #1 Loads	EIA-TIA - Powermount.r3d

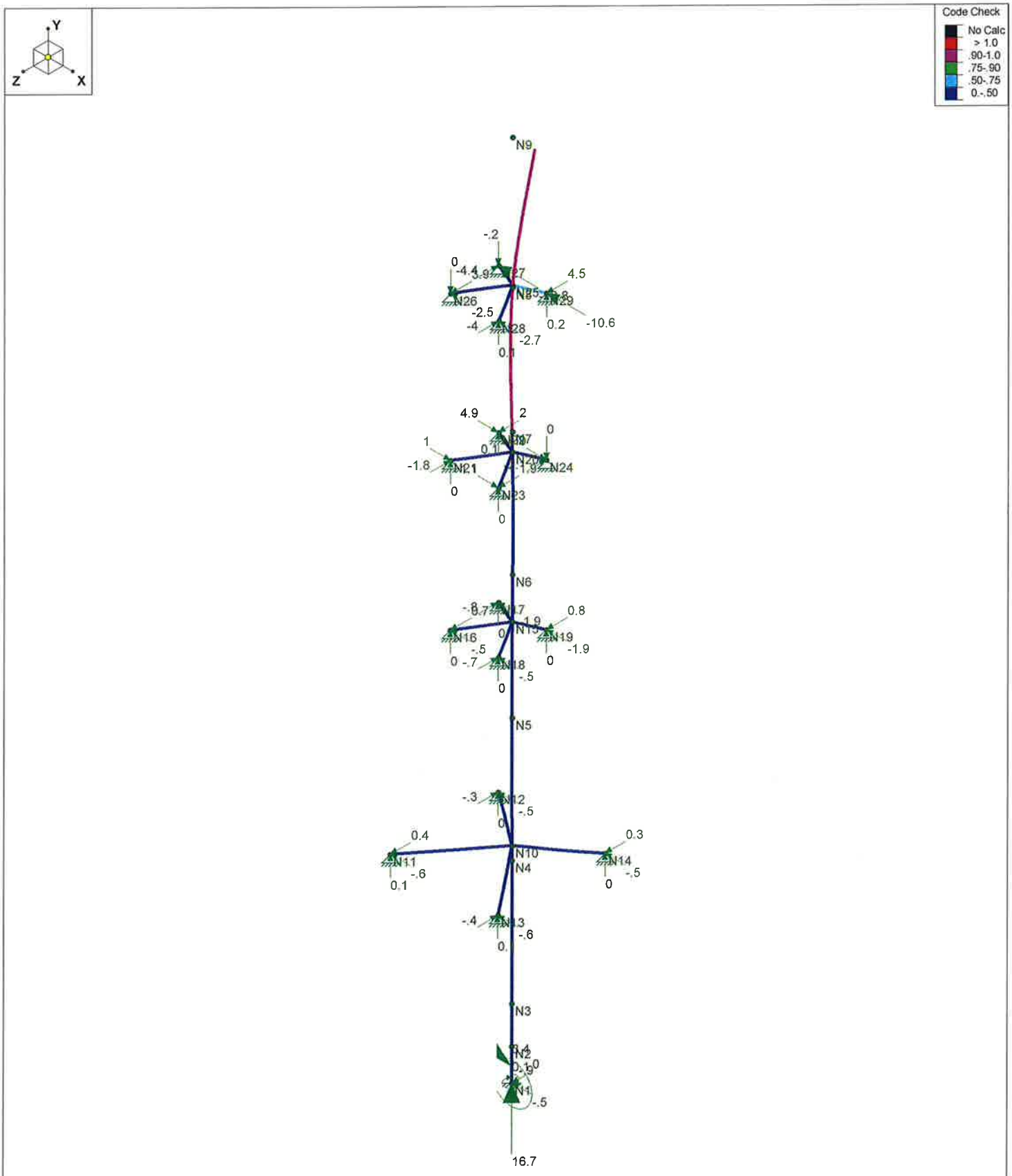


CENTEK Engineering, INC.		
tjl, cfc	CL&P # 12197 - Powermount	Apr 9, 2015 at 9:46 AM
14099 - CT3422	LC #1 Reactions and Deflected Shape	EIA-TIA - Powermount.r3d

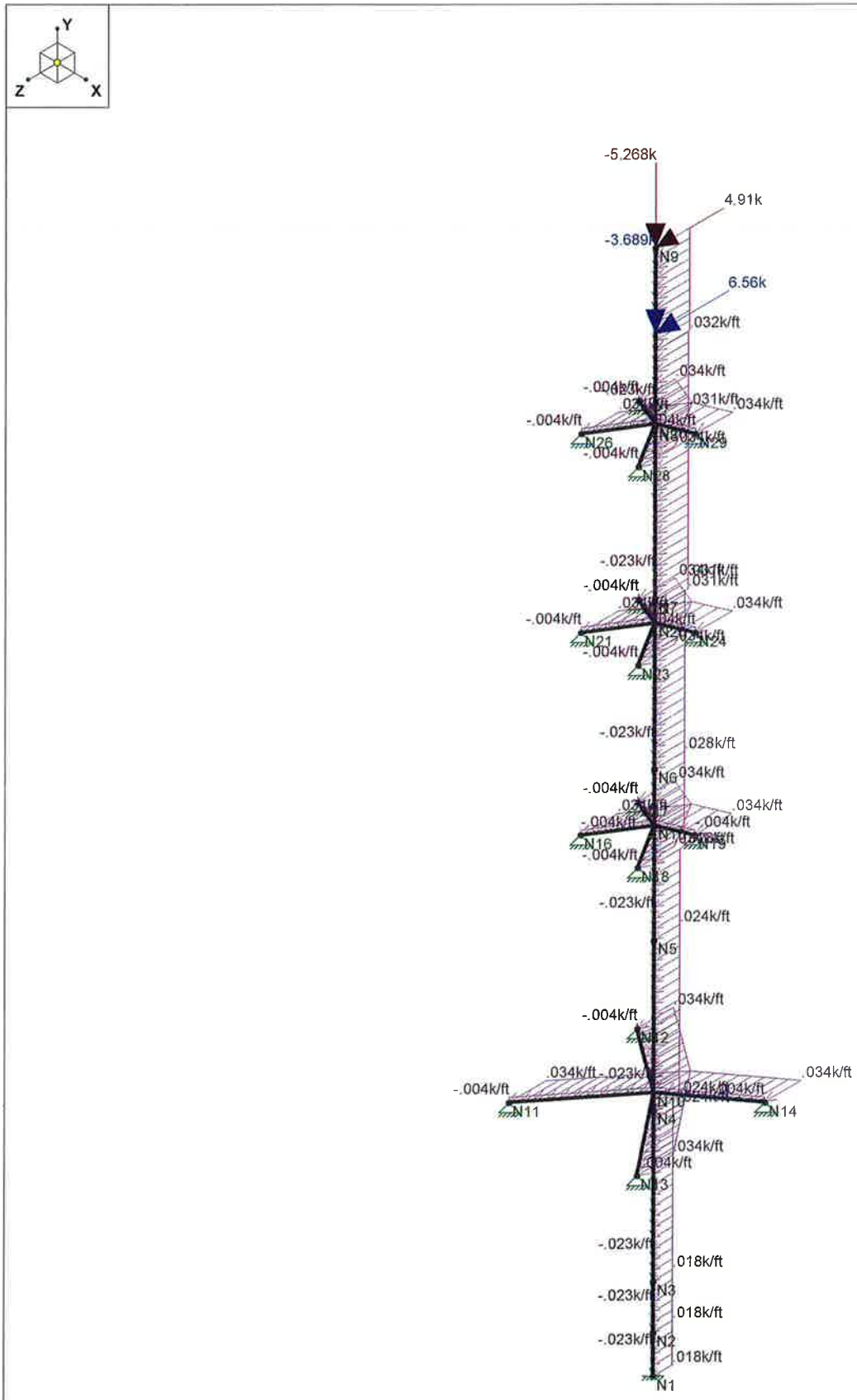




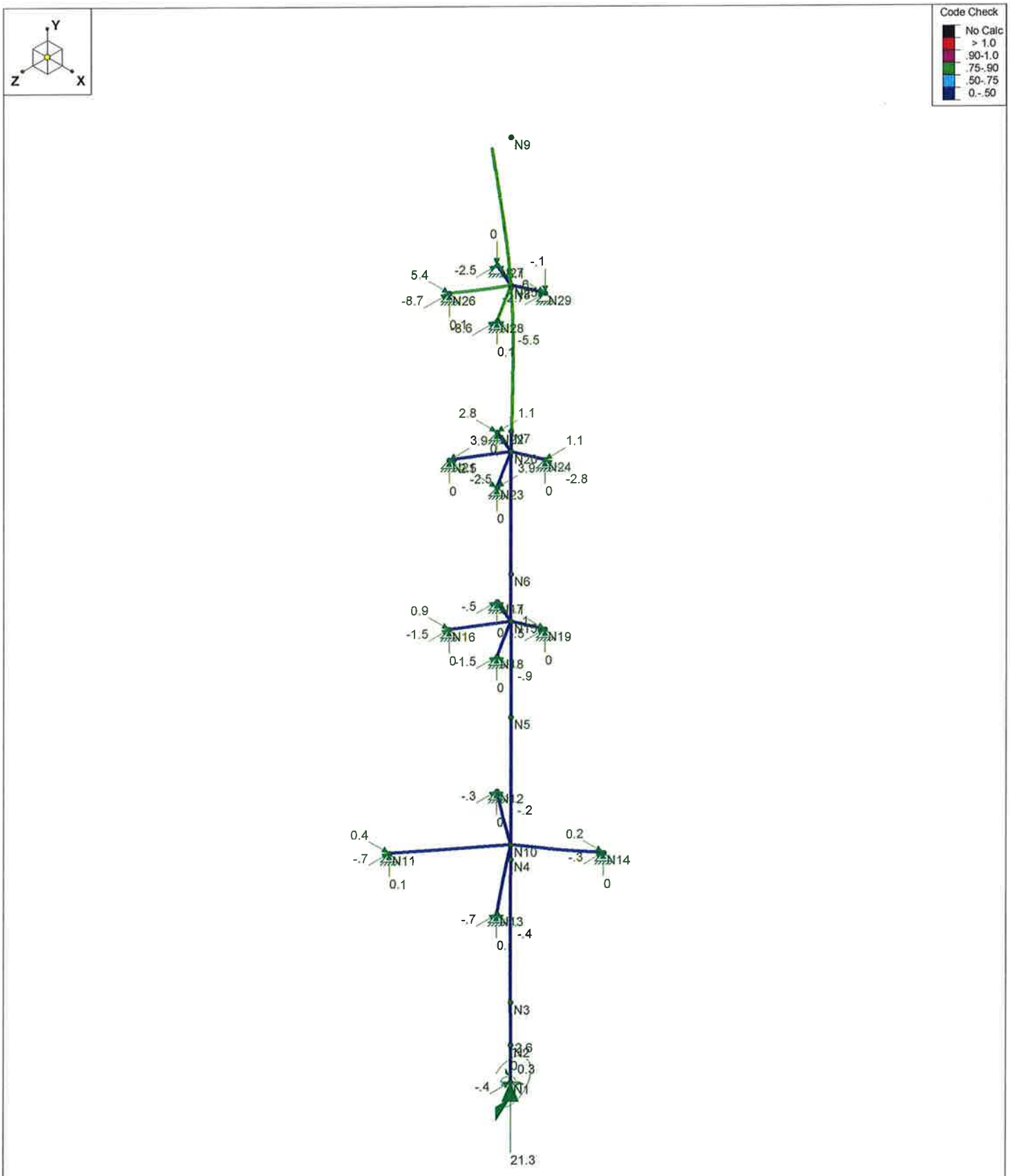
CENTEK Engineering, INC.		
tjl, cfc	CL&P # 12197 - Powermount	Apr 9, 2015 at 9:44 AM
14099 - CT3422	LC #2 Loads	EIA-TIA - Powermount.r3d



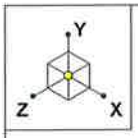
CENTEK Engineering, INC.		
tjl, cfc	CL&P # 12197 - Powermount	Apr 9, 2015 at 9:46 AM
14099 - CT3422	LC #2 Reactions and Deflected Shape	EIA-TIA - Powermount.r3d

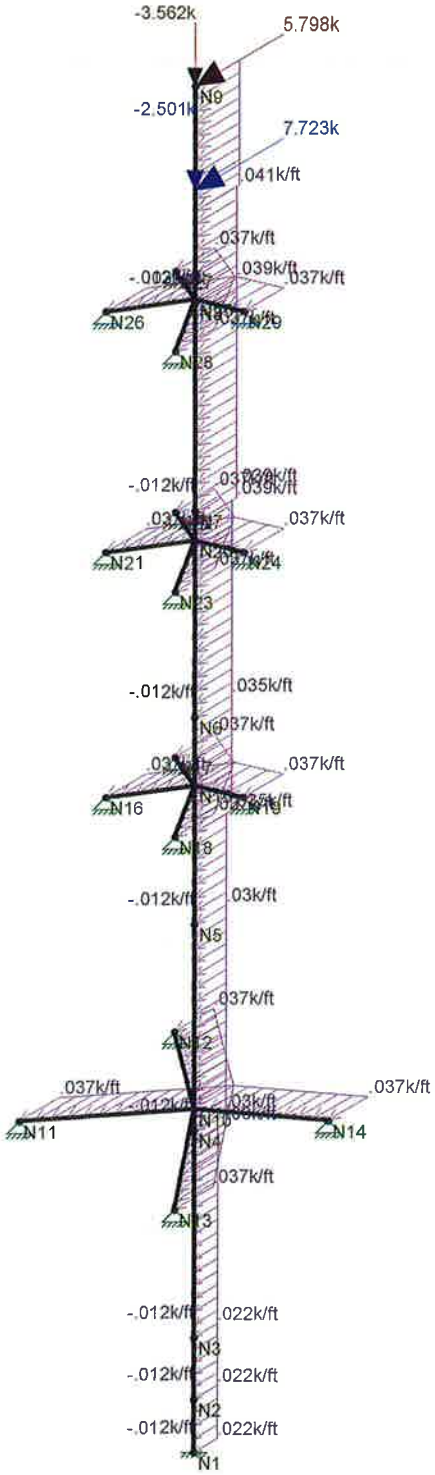


CENTEK Engineering, INC.		
tjl, cfc	CL&P # 12197 - Powermount	Apr 9, 2015 at 9:45 AM
14099 - CT3422	LC #3 Loads	EIA-TIA - Powermount.r3d

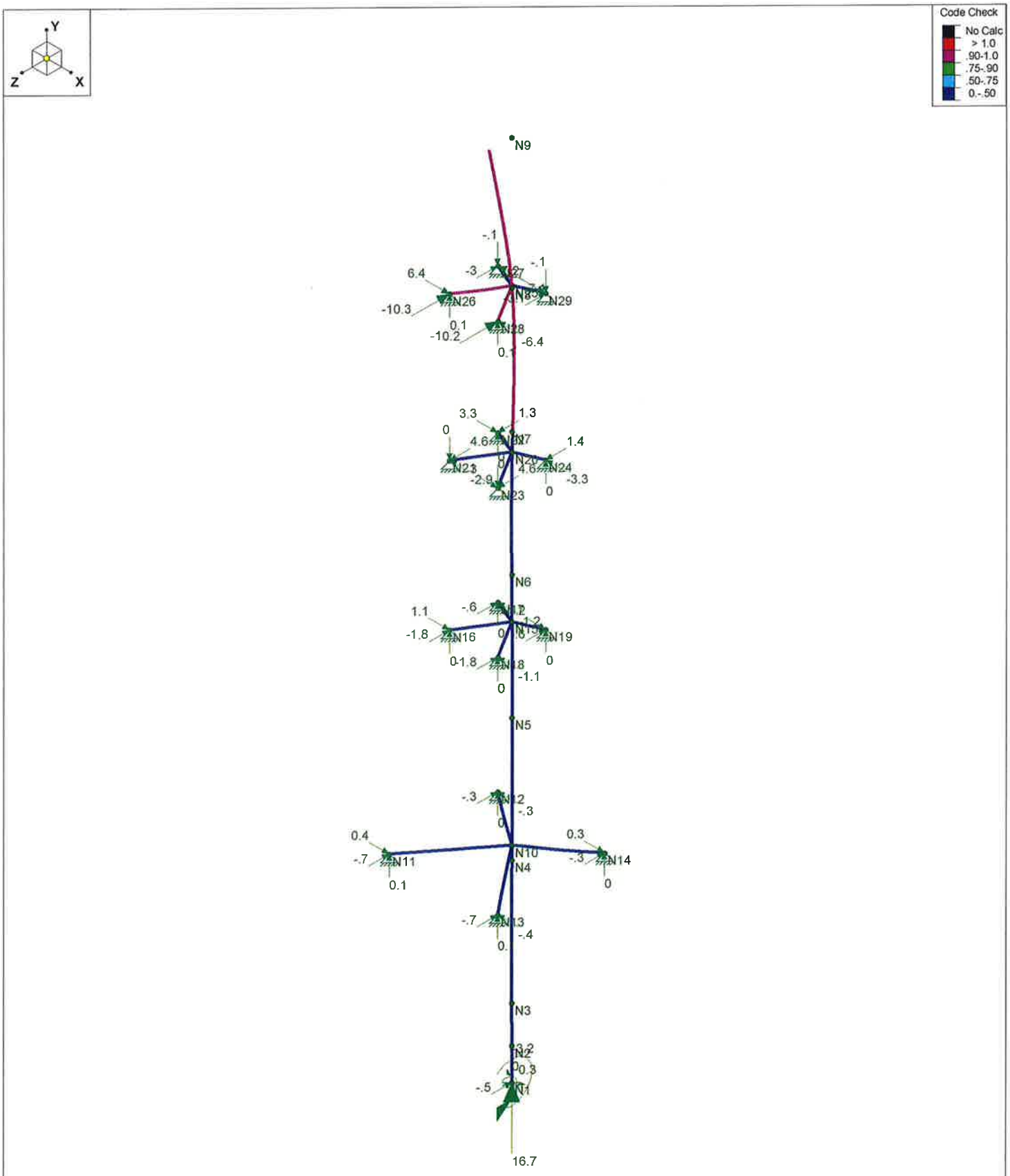


CENTEK Engineering, INC.		
tjl, cfc	CL&P # 12197 - Powermount	Apr 9, 2015 at 9:47 AM
14099 - CT3422	LC #3 Reactions and Deflected Shape	EIA-TIA - Powermount.r3d





CENTEK Engineering, INC.		
tjl, cfc	CL&P # 12197 - Powermount	Apr 9, 2015 at 9:45 AM
14099 - CT3422	LC #4 Loads	EIA-TIA - Powermount.r3d



CENTEK Engineering, INC.		
tjl, cfc	CL&P # 12197 - Powermount	Apr 9, 2015 at 9:47 AM
14099 - CT3422	LC #4 Reactions and Deflected Shape	EIA-TIA - Powermount.r3d

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Subject:	Connection of Powermount to CL&P Tower # 12197
Location:	Glastonbury, CT
Rev. 1: 4/9/15	Prepared by: T.J.L. Checked by: C.F.C. Job No. 15001.010

Powermount Connection to CL&P Tower:

Check Pipe Collar Bolts:

Reactions:

Tension = Tension := 26·kips
(Input From Risa-3D LC #4) (Sum of the forces in brace members)

Shear = Shear := 26·kips
(Input From Risa-3D LC #2) (Sum of the forces in brace members)

Bolt Data:

Bolt Type = ASTM A490 (User Input)

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

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

Allowable Tensile Strength = $F_t := 17.3 \cdot kips$ (User Input)

Allowable Shear Strength = $F_v := 10.4 \cdot kips$ (User Input)

Shear Force = $f_v := \frac{Shear}{N_b} = 6.5 \cdot kips$

Bolt Shear % of Capacity = $\frac{f_v}{F_v} = 62.5 \cdot \%$

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

Bolt_Shear = "OK"

Tension Force = $f_t := \frac{Tension}{N_b} = 6.5 \cdot kips$

Bolt Tenison % of Capacity = $\frac{f_t}{F_t} = 37.57 \cdot \%$

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

Bolt_Tension = "OK"

Check Angle Brace Bolts:

Reactions:

Vertical =	Vertical := 0·kips	(Input From Risa-3D LC #4)
Horizontal x-dir =	$Horizontal_x := 6.5 \cdot kips$	(Input From Risa-3D LC #4)
Horizontal z-dir =	$Horizontal_z := 10.2 \cdot kips$	(Input From Risa-3D LC #4)

Bolt Data:

Bolt Type =	ASTM A490	(User Input)
Bolt Diameter =	D := 0.75·in	(User Input)
Number of Bolts =	$N_b := 1$	(User Input)
Allowable Tensile Strength =	$F_t := 25.0 \cdot kips$	(User Input)
Allowable Shear Strength =	$F_v := 15.0 \cdot kips$	(User Input)

Shear Force =

$$f_v := \frac{\sqrt{Horizontal_x^2 + Horizontal_z^2}}{N_b} = 12.1 \cdot kips$$

Bolt Shear % of Capacity =

$$\frac{f_v}{F_v} = 80.63 \cdot \%$$

Check Bolt Shear =

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

Bolt_Shear = "OK"

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Subject: Load Analysis of Powermount on CL&P Structure #12197

Location: Glastonbury, CT

Rev. 1: 4/2/15

Prepared by: T.J.L Checked by: C.F.C.
Job No. 15001.010

Basic Components

Heavy Wind Pressure =	p := 4.00	psf	(User Input NESC 2007 Figure 250-1 & Table 250-1)
Basic Windspeed =	V := 110	mph	(User Input NESC 2007 Figure 250-2(e))
Radial Ice Thickness =	Ir := 0.50	in	(User Input)
Radial Ice Density =	Id := 56.0	pcf	(User Input)

Factors for Extreme Wind Calculation

Elevation of Top of PCS Mast Above Grade =	TME := 132	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 2007 Table 250-3 equation)
Importance Factor =	I := 1.0		(User Input from NESC 2007 Section 250.C.2)

Velocity Pressure Coefficient = $Kz := 2.01 \cdot \left(\frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.342$ (NESC 2007 Table 250-2)

Exposure Factor = $Es := 0.346 \left[\frac{33}{(0.67 \cdot TME)}\right]^{\frac{1}{7}} = 0.301$ (NESC 2007 Table 250-3)

Response Term = $Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.816$ (NESC 2007 Table 250-3)

Gust Response Factor = $Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.848$ (NESC 2007 Table 250-3)

Wind Pressure = $qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 35.2$ psf (NESC 2007 Section 250.C.2)

Shape Factors

NUS Design Criteria Issued April 12, 2007

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 =	$Cd_{coax} := 1.45$	(User Input)

Overload Factors

NU Design Criteria Table

Overload Factors for Wind Loads:

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

Overload Factors for Vertical Loads:

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

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Subject: Load Analysis of Powermount on CL&P Structure #12197

Location: Glastonbury, CT

Rev. 1: 4/2/15

Prepared by: T.J.L Checked by: C.F.C.
Job No. 15001.010

Development of Wind & Ice Load on Antennas

Antenna Data: (Verizon)

Antenna Model =	Andrew HBXX-6517DS		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 74.9$	in	(User Input)
Antenna Width =	$W_{ant} := 12$	in	(User Input)
Antenna Thickness =	$T_{ant} := 6.5$	in	(User Input)
Antenna Weight =	$WT_{ant} := 45$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 6$		(User Input)

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 6.2$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 37.5$	sf
Total Antenna Wind Force =	$F_{ant1} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 2639$	lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 6.9$	sf
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 41.1$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant1} := p \cdot Cd_F \cdot A_{ICEant} = 263$	lbs

Gravity Load (without Ice)

Weight of All Antennas =	$Wt_{ant1} := WT_{ant} \cdot N_{ant} = 270$	lbs

Gravity Load (Ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 5842$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1558$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot ld = 50$	lbs
Weight of Ice on All Antennas =	$Wt_{ice.ant1} := W_{ICEant} \cdot N_{ant} = 303$	lbs

Development of Wind & Ice Load on Antennas

Antenna Data: (Verizon)

Antenna Model =	Andrew LNX-6513DS		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 54.7$	in	(User Input)
Antenna Width =	$W_{ant} := 11.9$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.1$	in	(User Input)
Antenna Weight =	$WT_{ant} := 32$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 4$		(User Input)

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.5$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 18.1$	sf
Total Antenna Wind Force =	$F_{ant2} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1274$	lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 5$	sf
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 20$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant2} := p \cdot Cd_F \cdot A_{ICEant} = 128$	lbs

Gravity Load (without Ice)

Weight of All Antennas =	$Wt_{ant2} := WT_{ant} \cdot N_{ant} = 128$	lbs

Gravity Load (Ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 4622$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1198$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 39$	lbs
Weight of Ice on All Antennas =	$Wt_{ice.ant2} := W_{ICEant} \cdot N_{ant} = 155$	lbs

Development of Wind & Ice Load on Antennas

Antenna Data: (Verizon)

Antenna Model =	JMA X7C-FRO-660		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 72$	in	(User Input)
Antenna Width =	$W_{ant} := 14.6$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8$	in	(User Input)
Antenna Weight =	$WT_{ant} := 33$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 2$		(User Input)

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 7.3$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 14.6$ sf

Total Antenna Wind Force = $F_{ant3} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1029$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 7.9$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 15.8$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant3} := p \cdot Cd_F \cdot A_{ICEant} = 101$ lbs

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant3} := WT_{ant} \cdot N_{ant} = 66$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 8410$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1840$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 60$ lbs

Weight of Ice on All Antennas = $Wt_{ice.ant3} := W_{ICEant} \cdot N_{ant} = 119$ lbs

Development of Wind & Ice Load on Antennas

Antenna Data: (Verizon)

Antenna Model =	RFS FD9R6004/2C-3L		
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 =	$T_{ant} := 1.5$	in	(User Input)
Antenna Weight =	$WT_{ant} := 3$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 12$		(User Input)

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.3$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 3.1$	sf
Total Antenna Wind Force =	$F_{ant4} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 221$	lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 0.4$	sf
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 4.3$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant4} := p \cdot Cd_F \cdot A_{ICEant} = 27$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$Wt_{ant4} := WT_{ant} \cdot N_{ant} = 36$	lbs

Gravity Load (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 57$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 71$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 2$	lbs
Weight of Ice on All Antennas =	$Wt_{ice.ant4} := W_{ICEant} \cdot N_{ant} = 28$	lbs

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Subject: Load Analysis of Powermount on CL&P Structure #12197

Location: Glastonbury, CT

Rev. 1: 4/2/15

Prepared by: T.J.L Checked by: C.F.C.
Job No. 15001.010

Development of Wind & Ice Load on Platform

Platform Data:	(Verizon)		
Platform Model =	12' Low Profile Platform		
Platform Shape =	Flat		
Platform Area (Flat) =	$A_{f.plt} := 11.8$	sf	(User Input)
Platform Area (Round) =	$A_{r.plt} := 4.75$	sf	(User Input)
Platform Area Total =	$CdA_{plt} := A_{f.plt} \cdot Cd_F + A_{r.plt} \cdot Cd_R = 25.055$	sf	(User Input)
Platform Area w/ Ice (Flat) =	$A_{f.ICEplt} := 14.84$	sf	(User Input)
Platform Area w/ Ice (Round) =	$A_{r.ICEplt} := 6.75$	sf	(User Input)
Platform Area w/ Ice =	$CdA_{ICEplt} := A_{f.ICEplt} \cdot Cd_F + A_{r.ICEplt} \cdot Cd_R = 32.519$	sf	(User Input)
Platform Weight =	$WT_{plt} := 3062$	lbs	(User Input)
Platform Weight w/ Ice =	$WT_{ICEplt} := 4163$	lbs	(User Input)

Wind Load (NESC Extreme)

Total Platform Wind Force = $F_{mnt1} := qz \cdot CdA_{plt} \cdot m = 1103$ lbs

Wind Load (NESC Heavy)

Total Platform Wind Force w/ Ice = $Fi_{mnt1} := p \cdot CdA_{ICEplt} = 130$ lbs

Gravity Load (without ice)

Weight of Platform = $Wt_{mnt1} := WT_{plt} = 3062$ lbs

Gravity Load (ice only)

Weight of Ice on Platform = $Wt_{ice.mnt1} := WT_{ICEplt} - WT_{plt} = 1101$ lbs

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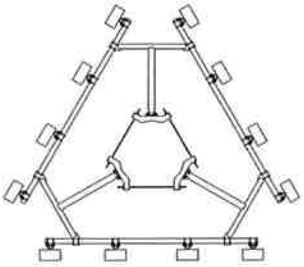
Subject:	Load Analysis of Powermount on CL&P Structure #12197
Location:	Glastonbury, CT
Rev. 1: 4/2/15	Prepared by: T.J.L Checked by: C.F.C. Job No. 15001.010

Development of Wind & Ice Load on Antennas

Antenna Data: (AT&T)

Antenna Model =	CCI HPA-65R-BUU-H8		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 92.4$	in	(User Input)
Antenna Width =	$W_{ant} := 14.8$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.4$	in	(User Input)
Antenna Weight =	$WT_{ant} := 75$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 6$		(User Input)



Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant5} := WT_{ant} \cdot N_{ant} = 450$ lbs

Gravity Load (Ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 10120$ cu in

Volume of Ice on Each Antenna = $V_{ice} := \left(L_{ant} + 2 \cdot lr\right)\left(W_{ant} + 2 \cdot lr\right)\left(T_{ant} + 2 \cdot lr\right) - V_{ant} = 2276$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot ld = 74$ lbs

Weight of Ice on All Antennas = $Wt_{ice.ant5} := W_{ICEant} \cdot N_{ant} = 443$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{\left(L_{ant} + 2 \cdot lr\right) \cdot \left(W_{ant} + 2 \cdot lr\right)}{144} = 10.2$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 61.5$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant5} := p \cdot Cd_F \cdot A_{ICEant} = 394$ lbs

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 9.5$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 57$ sf

Total Antenna Wind Force = $F_{ant5} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 4015$ lbs

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Subject: Load Analysis of Powermount on CL&P Structure #12197

Location: Glastonbury, CT

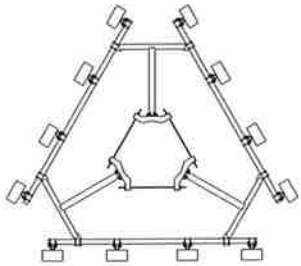
Rev. 1: 4/2/15

Prepared by: T.J.L Checked by: C.F.C.
Job No. 15001.010

Development of Wind & Ice Load on Antennas

Antenna Data: (AT&T)

Antenna Model =	CCI OPA-65R-LCUU-H8		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 92.7$	in	(User Input)
Antenna Width =	$W_{ant} := 14.4$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.0$	in	(User Input)
Antenna Weight =	$WT_{ant} := 95$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)



Gravity Load (without Ice)

Weight of All Antennas = $Wt_{ant6} := WT_{ant} \cdot N_{ant} = 285$ lbs

Gravity Load (Ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 9344$ cu in

Volume of Ice on Each Antenna = $V_{ice} := \left(L_{ant} + 2 \cdot Ir\right)\left(W_{ant} + 2 \cdot Ir\right)\left(T_{ant} + 2 \cdot Ir\right) - V_{ant} = 2200$ cu in

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

Weight of Ice on All Antennas = $Wt_{ice.ant6} := W_{ICEant} \cdot N_{ant} = 214$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{\left(L_{ant} + 2 \cdot Ir\right) \cdot \left(W_{ant} + 2 \cdot Ir\right)}{144} = 10$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 30.1$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant6} := p \cdot Cd_F \cdot A_{ICEant} = 192$ lbs

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 9.3$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 27.8$ sf

Total Antenna Wind Force = $F_{ant6} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1959$ lbs

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Subject: Load Analysis of Powermount on CL&P Structure #12197

Location: Glastonbury, CT

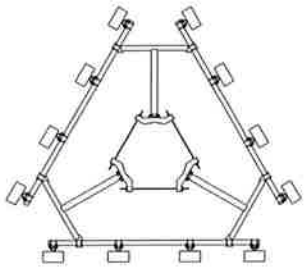
Rev. 1: 4/2/15

Prepared by: T.J.L Checked by: C.F.C.
Job No. 15001.010

Development of Wind & Ice Load on TMA's

TMA Data: (AT&T)

TMA Model = CCI TMABPDB7823VG12A



TMA Shape = Flat (User Input)

TMA Height = $L_{TMA} := 14.25$ in (User Input)

TMA Width = $W_{TMA} := 11.03$ in (User Input)

TMA Thickness = $T_{TMA} := 4.11$ in (User Input)

TMA Weight = $WT_{TMA} := 25$ lbs (User Input)

Number of TMA's = $N_{TMA} := 18$ (User Input)

Gravity Load (without ice)

Weight of All TMA's = $Wt_{TMA1} := WT_{TMA} \cdot N_{TMA} = 450$ lbs

Gravity Load (Ice only)

Volume of Each TMA = $V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 646$ cu in

Volume of Ice on Each TMA = $V_{ice} := \left(L_{TMA} + 2 \cdot Ir\right)\left(W_{TMA} + 2 \cdot Ir\right)\left(T_{TMA} + 2 \cdot Ir\right) - V_{TMA} = 291$ cu in

Weight of Ice on Each TMA = $W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 9$ lbs

Weight of Ice on All TMA's = $Wt_{ice.TMA1} := W_{ICETMA} \cdot N_{TMA} = 170$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all TMA's Simultaneously

Surface Area for One TMA w/ Ice = $SA_{ICETMA} := \frac{\left(L_{TMA} + 2 \cdot Ir\right) \cdot \left(W_{TMA} + 2 \cdot Ir\right)}{144} = 1.3$ sf

TMA Projected Surface Area w/ Ice = $A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 22.9$ sf

Total TMA Wind Force w/ Ice = $Fi_{TMA1} := p \cdot Cd_F \cdot A_{ICETMA} = 147$ lbs

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all TMA's Simultaneously

Surface Area for One TMA = $SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 1.1$ sf

TMA Projected Surface Area = $A_{TMA} := SA_{TMA} \cdot N_{TMA} = 19.6$ sf

Total TMA Wind Force = $F_{TMA1} := qz \cdot Cd_F \cdot A_{TMA} \cdot m = 1384$ lbs

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Subject: Load Analysis of Powermount on CL&P Structure #12197

Location: Glastonbury, CT

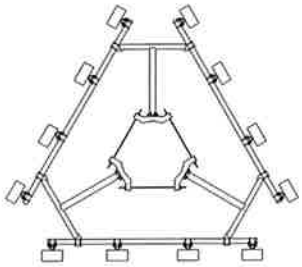
Rev. 1: 4/2/15

Prepared by: T.J.L Checked by: C.F.C.
Job No. 15001.010

Development of Wind & Ice Load on Antenna Mounts

Mount Data: (AT&T)

Mount Type:	Site Pro Ultra Low Profile Monopole Mount ULP12		
Mount Shape =	Flat		
Mount Projected Surface Area =	$CdAa := 24.2$	sf	(User Input)
Mount Projected Surface Area w/ Ice =	$CdAa_{ice} := 30.7$	sf	(User Input)
Mount Weight =	$WT_{mnt} := 1316$	lbs	(User Input)
Mount Weight w/ Ice =	$WT_{mnt.ice} := 1677$	lbs	(User Input)



Gravity Loads (without Ice)

Weight of All Mounts = $Wt_{mnt2} := WT_{mnt} = 1316$ lbs

Gravity Load (ice only)

Weight of Ice on All Mounts = $Wt_{ice.mnt2} := \left(WT_{mnt.ice} - WT_{mnt}\right) = 361$ lbs

Wind Load (NESC Heavy)

Total Mount Wind Force w/ Ice = $Fi_{mnt2} := p \cdot CdAa_{ice} = 123$ lbs

Wind Load (NESC Extreme)

Total Mount Wind Force = $F_{mnt2} := qz \cdot CdAa \cdot m = 1066$ lbs

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Subject:	Load Analysis of Powermount on CL&P Structure #12197
Location:	Glastonbury, CT
Rev. 1: 4/2/15	Prepared by: T.J.L Checked by: C.F.C. Job No. 15001.010

Total Equipment Loads:

Verizon @ 132-ft AGL

NESC Heavy Wind Vertical =

$$NESC_{HV} := \left(Wt_{ant1} + Wt_{ice.ant1} + Wt_{ant2} + Wt_{ice.ant2} + Wt_{ant3} + Wt_{ice.ant3} + Wt_{ant4} + Wt_{ice.ant4} + Wt_{mnt1} + Wt_{ice.mnt1}\right) \cdot 1.5 = 7902$$

NESC Heavy Wind Trasnsverse = $\left(Fi_{ant1} + Fi_{ant2} + Fi_{ant3} + Fi_{ant4} + Fi_{mnt1}\right) \cdot 2.5 = 1623$

NESC Extreme Wind Vertical = $\left(Wt_{ant1} + Wt_{ant2} + Wt_{ant3} + Wt_{ant4} + Wt_{mnt1}\right) = 3562$

NESC Extreme Wind Trasnsverse = $\left(F_{ant1} + F_{ant2} + F_{ant3} + F_{ant4} + F_{mnt1}\right) = 6266$

AT&T @ 122-ft AGL

NESC Heavy Wind Vertical =

$$\left(Wt_{ant5} + Wt_{ice.ant5} + Wt_{ant6} + Wt_{ice.ant6} + Wt_{TMA1} + Wt_{ice.TMA1} + Wt_{mnt2} + Wt_{ice.mnt2}\right) \cdot 1.5 = 5533$$

NESC Heavy Wind Trasnsverse = $\left(Fi_{ant5} + Fi_{ant6} + Fi_{TMA1} + Fi_{mnt2}\right) \cdot 2.5 = 2139$

NESC Extreme Wind Vertical = $\left(Wt_{ant5} + Wt_{ant6} + Wt_{TMA1} + Wt_{mnt2}\right) = 2501$

NESC Extreme Wind Trasnsverse = $\left(F_{ant5} + F_{ant6} + F_{TMA1} + F_{mnt2}\right) = 8424$

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Subject:	Coax Cable on Powermount on CL&P Tower # 12197
Location:	Glastonbury, CT
Rev. 0: 3/3/15	Prepared by: T.J.L Checked by: C.F.C. Job No. 15001.010

Coax Cable within Powermount

Distance Between Coax Cable Attach Points = $Coax_{Span} := \begin{pmatrix} 32.105 \\ 23.465 \\ 27.52 \\ 32.285 \\ 16.625 \end{pmatrix} \cdot ft$ *(User Input)*

Diameter of Coax Cable =	$D_{coax} := 1.98 \cdot in$	*(User Input)*
Weight of Coax Cable =	$W_{coax} := 1.04 \cdot plf$	*(User Input)*
Number of Coax Cables =	$N_{coax} := 12$	*(User Input)*
Number of Projected Coax Cables Transverse =	$NP_{Tcoax} := 0$	*(User Input)*
Extreme Wind Pressure =	$qz := 35.7 \cdot psf$	*(User Input)*
Heavy Wind Pressure =	$p := 4 \cdot psf$	*(User Input)*
Radial Ice Thickness =	$Ir := 0.5 \cdot in$	*(User Input)*
Radial Ice Density =	$Id := 56 \cdot pcf$	*(User Input)*
Shape Factor =	$Cd_{coax} := 1.6$	*(User Input)*
Overload Factor for NESC Heavy Wind Load =	$OF_{HW} := 2.5$	*(User Input)*
Overload Factor for NESC Extreme Wind Load =	$OF_{EW} := 1.0$	*(User Input)*
Overload Factor for NESC Heavy Vertical Load =	$OF_{HV} := 1.5$	*(User Input)*
Overload Factor for NESC Extreme Vertical Load =	$OF_{EV} := 1.0$	*(User Input)*
Wind Area with Ice Transverse =	$A_{Tice} := 0$	
Wind Area without Ice Transverse =	$A_T := 0$	
Ice Area per Liner Ft =	$Ai_{coax} := 0$	
Weight of Ice on All Coax Cables =	$W_{ice} := Ai_{coax} \cdot Id \cdot N_{coax} = 0 \cdot plf$	

Heavy Vertical Load =

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

Heavy Transverse Load =

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

$$Heavy_{Vert} = \begin{pmatrix} 601 \\ 439 \\ 515 \\ 604 \\ 311 \end{pmatrix} lb \qquad Heavy_{Trans} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}$$

Extreme Vertical Load =

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

Extreme Transverse Load =

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

$$Extreme_{Vert} = \begin{pmatrix} 401 \\ 293 \\ 343 \\ 403 \\ 207 \end{pmatrix} lb \qquad Extreme_{Trans} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}$$

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Subject:	Sprint Coax Cable on CL&P Tower # 12197
Location:	Glastonbury, CT
Rev. 0: 3/3/15	Prepared by: T.J.L Checked by: C.F.C. Job No. 15001.010

Coax Cable on CL&P Tower

Distance Between Coax Cable Attach Points =

Coax Cable Span = $Coax_{Span} := \begin{pmatrix} 12 \\ 15.4 \\ 15.845 \\ 15.92 \\ 15.66 \\ 16.255 \\ 24.8 \end{pmatrix} \cdot ft$ *(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 = $N_{coax} := 18$ *(User Input)* (Typ. of 2 Legs)

Number of Projected Coax Cables Transverse = $NP_{Tcoax} := 9$ *(User Input)*

Extreme Wind Pressure = $qz := 35.2 \cdot psf$ *(User Input)*

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

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

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

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

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

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

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

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

Wind Area with Ice Transverse = $A_{Tice} := \left(NP_{Tcoax} \cdot D_{coax} + 2 \cdot Ir\right) = 18.82 \cdot in$

Wind Area without Ice Transverse = $A_T := \left(NP_{Tcoax} \cdot D_{coax}\right) = 17.82 \cdot in$

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

Weight of Ice on All Coax Cables = $W_{ice} := Ai_{coax} \cdot Id \cdot N_{coax} = 27.269 \cdot plf$

Heavy Vertical Load =

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

Heavy Transverse Load =

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

$$Heavy_{Vert} = \begin{pmatrix} 828 \\ 1062 \\ 1093 \\ 1098 \\ 1080 \\ 1121 \\ 1711 \end{pmatrix} lb \qquad Heavy_{Trans} = \begin{pmatrix} 301 \\ 386 \\ 398 \\ 399 \\ 393 \\ 408 \\ 622 \end{pmatrix} lb$$

Extreme Vertical Load =

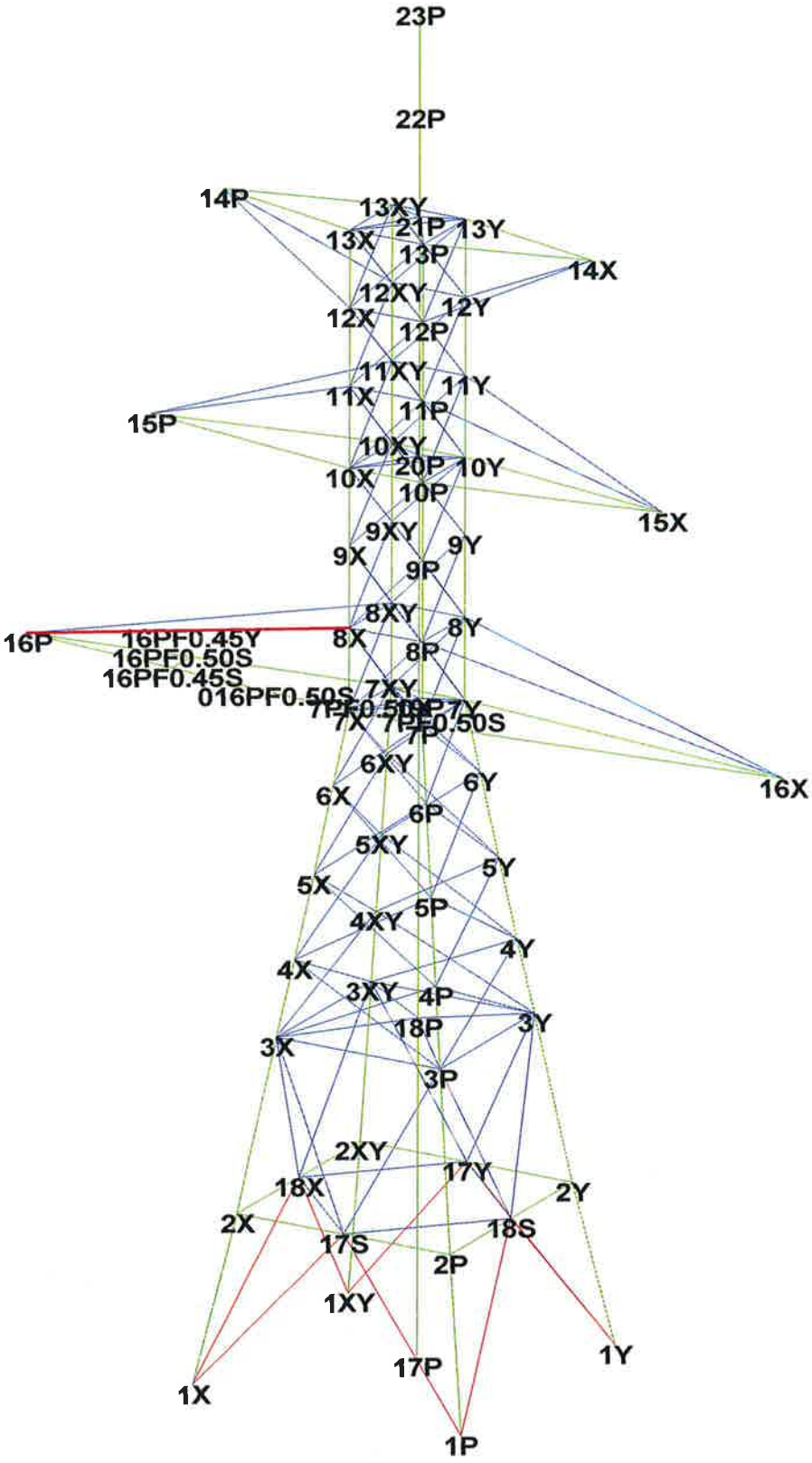
$$Extreme_{Vert} := \overrightarrow{\left[\left(N_{coax} \cdot W_{coax}\right) \cdot Coax_{Span} \cdot OF_{EV}\right]}$$

Extreme Transverse Load =

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

$$Extreme_{Vert} = \begin{pmatrix} 225 \\ 288 \\ 297 \\ 298 \\ 293 \\ 304 \\ 464 \end{pmatrix} lb \qquad Extreme_{Trans} = \begin{pmatrix} 1004 \\ 1288 \\ 1325 \\ 1331 \\ 1310 \\ 1359 \\ 2074 \end{pmatrix} lb$$

ver Version 12.50, 9:58:12 AM Thursday, April 09, 2015
deformed geometry displayed



Project Name : 15001.010 - Glastonbury, CT
Project Notes: CL&P Structure # 12197/ Verizon East Glastonbury 3
Project File : J:\Jobs\1500100.WI\010 - E Glastonbury 3 CT\Backup Documentation\Calcs\Rev (1)\PLS Tower\Reinforced\cl&p tower #12197 w_pwmt.tow
Date run : 9:57:29 AM Thursday, April 09, 2015
by : Tower Version 12.50
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

Member "g4P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g4X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g4XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g4Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g7P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g7X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g7XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g7Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g10P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g10X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
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Member "g11P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g11X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
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Member "g11Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g12P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
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Member "g12XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
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Member "g14P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge

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Member "g14X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g14XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g14Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g15P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g15X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g15XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g15Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g16P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g16X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g16XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g16Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g17P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g17X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g17XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g17Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g18P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g18X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g18XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g18Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g19P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g19X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g19XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g19Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g20P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g20X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g20XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g20Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g21P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g21X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge

and spacing distances will be checked. ??
Member "g21XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g21Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g22P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g22X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g22XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g22Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g23P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g23X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g23XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g23Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g24P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g24X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g24XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g24Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g25P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g25X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g25XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g25Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g26P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g26X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g26XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g26Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g27P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g27X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g27XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g27Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g28P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g28X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g28XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge

and spacing distances will be checked. ??
Member "g28Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g29P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g29X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g29XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g29Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g30P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g30X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g30XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g30Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g31P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g31X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g31XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g31Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g32P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g32X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g32XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g32Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g33P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g33X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g33XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g33Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g34P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g34X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g34XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g34Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g35P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g35X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g35XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g35Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge

and spacing distances will be checked. ??
Member "g36P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g36X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g36XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g36Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g37P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g37Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g38P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g38X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g41P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g41X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g42P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g42Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g44P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g44X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "Fg4478P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "Fg4478X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g47P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g47X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g47XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g47Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g48P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g48X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g48XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g48Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g53P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g53X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g53XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g53Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g55P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge

and spacing distances will be checked. ??
Member "g55X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g55XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g55Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g56P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g56Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
KL/R value of 230.84 exceeds maximum of 200.00 for member "g57P" ??
KL/R value of 230.84 exceeds maximum of 200.00 for member "g57X" ??
KL/R value of 230.84 exceeds maximum of 200.00 for member "g57XY" ??
KL/R value of 230.84 exceeds maximum of 200.00 for member "g57Y" ??
Member "g58P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g58Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "Fg5860P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "Fg5860Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g59P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g59Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g60P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g60X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g60XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g60Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g62P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "Fg6262P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g78P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g78Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Problem calculating gross area of longitudinal face for section "1": width is zero at elevation 111.50 (ft) which is not the top of the section. ??
Unusual number of fixed joints found: 5. Towers normally have from between 1 and 4 fixed joints. ??
Clamp insulator "8" has a structure attach joint "17P" that is fixed with respect to translation ??
The model has 167 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\1500100.wi\010 - e glastonbury 3 ct\backup documentation\calcs\rev (1)\pls tower\reinforced\cl&p # 12197.lca

*** Analysis Results:

Maximum element usage is 98.31% for Angle "g15XY" in load case "NESC Extreme"
Maximum insulator usage is 18.44% for Clamp "14" in load case "NESC Extreme"

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	1P	-8.08	-10.97	-45.97	13.63	0.00	0.00	0.00	0.00	0.00
NESC Heavy	17P	-0.22	-1.17	-31.12	1.19	11.33	-3.68	11.92	-0.00	0.00
NESC Heavy	1X	6.13	-2.03	18.88	6.46	0.00	0.00	0.00	0.00	0.00
NESC Heavy	1XY	-6.82	-7.51	21.19	10.14	0.00	0.00	0.00	0.00	0.00
NESC Heavy	1Y	8.99	-8.53	-48.47	12.39	0.00	0.00	0.00	0.00	0.00
NESC Extreme	1P	-19.38	-19.93	-109.35	27.80	0.00	0.00	0.00	0.00	0.00
NESC Extreme	17P	-0.10	-1.17	-10.34	1.18	23.16	-1.66	23.22	-0.00	0.00
NESC Extreme	1X	27.23	-18.29	91.91	32.80	0.00	0.00	0.00	0.00	0.00
NESC Extreme	1XY	-27.66	-21.60	94.23	35.10	0.00	0.00	0.00	0.00	0.00
NESC Extreme	1Y	19.91	-20.34	-111.85	28.46	0.00	0.00	0.00	0.00	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	1P	2P	g12P	47.865	2.750	2.789	-0.098	2.787	-8.08	-10.97	-45.97
NESC Heavy	1X	2X	g12X	-19.713	3.068	3.078	-2.775	-1.331	6.13	-2.03	18.88
NESC Heavy	1XY	2XY	g12XY	-23.025	4.679	4.823	3.045	3.740	-6.82	-7.51	21.19
NESC Heavy	1Y	2Y	g12Y	50.028	0.371	0.374	-0.362	-0.096	8.99	-8.53	-48.47
NESC Extreme	1P	2P	g12P	112.824	0.473	0.478	-0.087	0.470	-19.38	-19.93	-109.35
NESC Extreme	1X	2X	g12X	-96.983	10.818	11.042	-10.871	1.935	27.23	-18.29	91.91
NESC Extreme	1XY	2XY	g12XY	-99.880	11.602	11.915	10.891	4.833	-27.66	-21.60	94.23
NESC Extreme	1Y	2Y	g12Y	115.410	0.424	0.431	-0.006	0.431	19.91	-20.34	-111.85

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	132.000	64.570	45	146	0.00	7.74	442.573	0.00	80.00	1359.752	Problem calculating gross area of longitudinal face for section "1": width is zero at elevation 111.50 (ft) which is not the top of the section. ??
2	64.570	0.000	35	94	7.74	28.30	1141.993	7.74	28.30	1141.993	

*** 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 No.	Angle Type	Angle Size	Steel Strength	Max Usage Cont-	Max Use	Comp. Control	Comp. Force	Comp. Capacity	L/R Connect.	Comp. Connect.	RLX	RLY	RLZ	L/R KL/R	Length Comp.	Curve No.	Of

Member	Bolts					rol	In	Member	Load		Shear	Bearing				
Comp.							Comp.		Case		Capacity	Capacity				
(ft)				(ksi)	%		%		(kips)		(kips)	(kips)				
Leg1	L4x4x1/4	SAE	4X4X0.25	36.0	94.78	Tens	90.71	g4Y	-56.391	NESC Ext	62.164	66.900	81.562	0.500	0.500	0.500	57.28
57.28	7.590	1	6														
Leg2	L5x5x3/8	SAE	5X5X0.375	46.0	87.02	Comp	87.02	g7P	-98.730	NESC Ext	113.461	133.800	244.687	1.000	1.000	1.000	88.79
88.79	7.325	1	12														
Leg3	L5x5x3/8	SAE	5X5X0.375	46.0	97.38	Comp	97.38	g10P	-105.822	NESC Ext	108.675	133.800	244.687	1.000	1.000	1.000	92.74
92.74	7.651	1	12														
Leg4	L5x5x3/8	SAE	5X5X0.375	36.0	95.57	Comp	95.57	g11Y	-113.477	NESC Ext	118.743	156.100	285.468	0.250	0.250	0.250	52.39
52.39	17.289	1	14														
Leg5	L5x5x3/8	SAE	5X5X0.375	36.0	96.31	Comp	96.31	g12Y	-114.894	NESC Ext	119.293	156.100	285.468	0.250	0.250	0.250	51.09
51.09	16.860	1	14														
Diag1	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	36.0	98.31	Comp	98.31	g15XY	-15.194	NESC Ext	15.455	22.300	20.391	0.750	0.500	0.500	132.08
129.25	10.897	5	2														
Diag2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	36.0	75.45	Comp	75.45	g17XY	-14.737	NESC Ext	19.533	22.300	27.187	0.750	0.500	0.500	135.76
132.05	11.110	5	2														
Diag3	L3X3X1/4	SAE	3X3X0.25	36.0	53.30	Tens	44.78	g21XY	-13.636	NESC Ext	30.447	44.600	54.375	0.750	0.500	0.500	112.75
114.56	11.124	2	4														
Diag4	L3.5X3.5X1/4	SAE	3.5X3.5X0.25	36.0	58.13	Cross	58.13	g24Y	-18.746	NESC Ext	32.248	44.600	54.375	1.000	0.500	0.500	123.66
122.25	11.232	6	4														
Diag5	L4X4X1/4	SAE	4X4X0.25	36.0	16.08	Comp	16.08	g26Y	-5.380	NESC Ext	40.833	33.450	40.781	1.000	0.568	0.568	109.45
114.72	11.401	3	3														
Diag6	L3.5X3X1/4	SAU	3.5X3X0.25	36.0	15.75	Comp	15.75	g30Y	-2.940	NESC Ext	18.659	22.300	27.187	0.772	0.544	0.544	165.47
154.69	15.995	5	2														
Diag7	L3.5X3X1/4	SAU	3.5X3X0.25	36.0	53.15	Tens	48.75	g33P	-6.260	NESC Hea	12.841	44.600	54.375	1.000	0.500	0.500	207.18
186.47	19.164	5	4														
Diag8	L3X3X1/4	SAE	3X3X0.25	36.0	79.55	Comp	79.55	g35X	-5.547	NESC Hea	6.973	55.750	67.969	1.000	0.500	0.500	281.52
243.12	21.818	5	5														
Horz1	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	36.0	32.25	Comp	32.25	g38X	-5.814	NESC Ext	18.028	22.300	27.187	1.000	1.000	1.000	170.74
151.20	7.740	6	2														
Horz2	L4x4x1/4	SAE	4X4X0.25	36.0	1.76	Tens	0.00	g37Y	0.000		38.974	44.600	54.375	1.000	1.000	1.000	116.83
118.42	7.740	3	4														
Horz3	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	36.0	63.70	Tens	53.82	g43X	-5.321	NESC Ext	9.886	22.300	20.391	1.000	1.000	1.000	187.64
161.60	7.740	6	2														
Horz4	L5x3x1/4	SAU	5X3X0.25	36.0	68.68	Tens	1.57	g41X	-0.350	NESC Ext	31.358	22.300	27.187	1.000	1.000	1.000	140.09
132.36	7.740	6	2														
Horz5	L3.5x3x1/4	SAU	3.5X3X0.25	36.0	50.51	Comp	50.51	g46X	-8.662	NESC Ext	17.150	22.300	27.187	1.000	0.500	0.500	187.24
161.35	17.320	6	2														
Horz6	L3x3x3/16	SAE	3X3X0.1875	36.0	33.12	Comp	33.12	g48Y	-3.007	NESC Ext	9.078	22.300	20.391	1.000	1.000	1.000	226.31
185.38	11.240	6	2														
Inner1	L2x2x3/16	SAE	2X2X0.1875	36.0	18.68	Comp	18.68	g49P	-1.567	NESC Ext	8.391	22.300	20.391	0.750	0.500	0.500	166.69
155.62	10.946	5	2														
Inner2	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	36.0	3.48	Comp	3.48	g50X	-0.534	NESC Ext	15.347	22.300	20.391	0.750	0.500	0.500	132.68
129.70	10.946	5	2														
Inner3	L3x3x1/4	SAE	3X3X0.25	36.0	40.54	Cross	40.54	g51P	-9.437	NESC Ext	23.278	33.450	40.781	1.000	0.500	0.500	141.24
133.06	10.946	6	3														
Inner4	L3x2x3/16	SAU	3X2X0.1875	36.0	9.72	Comp	9.72	g52X	-0.664	NESC Hea	6.834	22.300	20.391	1.000	0.500	0.500	217.25
194.15	15.896	5	2														
TopCrArm	3.5x3.5x1.4	SAE	3.5X3.5X0.25	36.0	7.13	Tens	4.90	g53P	-1.365	NESC Ext	27.839	33.450	40.781	0.500	0.500	0.500	139.21
131.81	16.102	6	3														
TopArmBr	3.5x2.5x1/4	SAU	3.5X2.5X0.25	36.0	13.06	Comp	13.06	g54Y	-1.933	NESC Ext	14.798	22.300	27.187	0.500	0.500	0.500	196.24
166.89	17.793	6	2														
MidCrArm	5x3.5x3/8	SAU	5X3.5X0.375	36.0	17.40	Comp	17.40	g55Y	-5.821	NESC Hea	59.123	33.450	61.172	0.330	0.330	0.330	121.87

																	121.15	23.452	6	3
MidArmBr	2.5x2.5x3/16	SAE	2.5X2.5X0.1875	36.0	20.73	Tens	9.59	g57XY	-0.464	NESC Ext	4.845	33.450	30.586	0.500	0.500	0.500	300.23	230.84	24.769	6	3
BotCrArm	**6x6x5/16**	**SAE**	**6X6X0.3125**	**36.0**	**29.73**	**Comp**	**29.73**	**g58Y**	**-9.943**	**NESC Hea**	**80.349**	**33.450**	**50.976**	**0.500**	**0.500**	**0.500**	**81.76**	**100.88**	**16.352**	**3**	**3**

A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g58P g58Y Fg5860P Fg5860Y ??

BotArmBr	3.5x3x1/4	SAU	3.5X3X0.25	36.0	22.58	Tens	0.00	g60Y	0.000		12.379	55.750	67.969	0.330	0.330	0.330	233.69	189.92	37.237	6	5
M1	5x3.5x5/8	DAS	5X3.5X0.625	36.0	1.01	Comp	1.01	Fg6262P	-0.226	NESC Ext	334.426	22.300	135.937	2.000	2.000	2.000	42.18	42.18	1.742	1	2
Pwmnt 18"	Std. Pipe	Pwmnt	Pipe 18" Std.	35.0	4.86	Comp	4.86	g64P	-28.866	NESC Hea	594.129	0.000	0.000	1.000	1.000	1.000	63.94	63.94	33.250	1	0
PwmntBR1	L3x3x3/16	SAE	3X3X0.1875	36.0	37.50	Comp	37.50	g72P	-3.824	NESC Hea	14.678	16.800	10.195	1.000	1.000	1.000	145.79	145.79	7.241	4	1
PwmntBR2	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	36.0	78.75	Comp	78.75	g73X	-8.029	NESC Ext	19.925	16.800	10.195	1.000	1.000	1.000	101.71	110.85	4.195	3	1
PwmntBR3	L5x5x3/8	SAE	5X5X0.375	36.0	18.61	Comp	18.61	g70P	-3.127	NESC Ext	36.246	16.800	20.391	1.000	1.000	1.000	168.84	168.84	13.929	4	1
PwmntBR4	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	36.0	26.86	Comp	26.86	g71P	-3.652	NESC Ext	13.937	16.800	13.594	1.000	1.000	1.000	186.30	186.30	10.774	4	1
NewBR1	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	36.0	80.64	Tens	80.45	g77X	-10.936	NESC Ext	26.162	16.800	13.594	1.000	1.000	1.000	102.53	111.27	4.195	3	1
Plate	6"x3/4"	Bar	6x3/4	36.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.000	0	0
Dummy	Dummy	DUM	0.1X0.1X1	36.0	0.00		0.00	Fg8080P	-0.367	NESC Ext	0.318	0.000	0.000	1.000	1.000	1.000	1.19	60.60	9.936	3	0
NewBR2	L3x3x1/4	SAE	3X3X0.25	36.0	45.28	Tens	45.01	g76X	-6.118	NESC Ext	19.132	16.800	13.594	1.000	1.000	1.000	146.78	146.78	7.241	4	1

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Cont-rol	Max Use In Tens. %	Tension Control Member	Tension Force (kips)	Tension Control Load Case	Net Section Capacity (kips)	Tension Connect. Shear Capacity (kips)	Tension Connect. Bearing Capacity (kips)	Tension Connect. Rupture Capacity (kips)	Length Tens. Member (ft)	No. Of Bolts Tens.	No. Of Holes	Hole Diameter (in)
Leg1	L4x4x1/4	SAE	4X4X0.25	36.0	94.78	Tens	94.78	g4XY	53.401	NESC Ext	56.340	66.900	81.562	90.625	7.590	6	2.000	0.75
Leg2	L5x5x3/8	SAE	5X5X0.375	46.0	87.02	Comp	67.97	g7X	90.938	NESC Ext	137.468	133.800	244.687	255.882	7.325	12	2.210	0.75
Leg3	L5x5x3/8	SAE	5X5X0.375	46.0	97.38	Comp	68.48	g10X	91.627	NESC Ext	137.468	133.800	244.687	239.889	7.651	12	2.210	0.75
Leg4	L5x5x3/8	SAE	5X5X0.375	36.0	95.57	Comp	74.06	g11X	77.357	NESC Ext	104.445	156.100	285.468	298.529	17.289	14	2.520	0.75
Leg5	L5x5x3/8	SAE	5X5X0.375	36.0	96.31	Comp	79.03	g12X	77.020	NESC Ext	97.459	156.100	285.468	298.529	16.860	14	3.210	0.75
Diag1	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	36.0	98.31	Comp	77.97	g15Y	15.015	NESC Ext	24.669	22.300	20.391	19.258	10.897	2	1.000	0.75
Diag2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	36.0	75.45	Comp	63.26	g17Y	14.107	NESC Ext	32.481	22.300	27.187	25.677	11.110	2	1.000	0.75
Diag3	L3X3X1/4	SAE	3X3X0.25	36.0	53.30	Tens	53.30	g21Y	13.147	NESC Ext	24.664	44.600	54.375	51.354	11.124	4	3.620	0.75
Diag4	L3.5X3.5X1/4	SAE	3.5X3.5X0.25	36.0	58.13	Cross	35.00	g23Y	11.384	NESC Ext	32.521	44.600	54.375	48.333	11.232	4	3.660	

0.75																		
	Diag5	L4X4X1/4	SAE	4X4X0.25	36.0	16.08	Comp	8.07	g25Y	2.698NESC	Hea	56.781	33.450	40.781	36.250	11.401	3	1.000
0.75																		
	Diag6	L3.5X3X1/4	SAU	3.5X3X0.25	36.0	15.75	Comp	15.41	g28P	3.436NESC	Ext	40.419	22.300	27.187	24.167	14.104	2	1.000
0.75																		
	Diag7	L3.5X3X1/4	SAU	3.5X3X0.25	36.0	53.15	Tens	53.15	g34XY	18.891NESC	Ext	38.517	44.600	54.375	35.539	19.164	4	1.313
0.75																		
	Diag8	L3X3X1/4	SAE	3X3X0.25	36.0	79.55	Comp	60.20	g36XY	20.992NESC	Ext	34.870	55.750	67.969	60.417	21.818	5	1.940
0.75																		
	Horz1	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	36.0	32.25	Comp	25.82	g38P	5.505NESC	Ext	36.814	22.300	27.187	21.323	7.740	2	1.620
0.75																		
	Horz2	L4x4x1/4	SAE	4X4X0.25	36.0	1.76	Tens	1.76	g37P	0.745NESC	Hea	50.706	44.600	54.375	42.292	7.740	4	2.000
0.75																		
	Horz3	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	36.0	63.70	Tens	63.70	g43P	9.478NESC	Ext	24.669	22.300	20.391	14.878	7.740	2	1.000
0.75																		
	Horz4	L5x3x1/4	SAU	5X3X0.25	36.0	68.68	Tens	68.68	Fg4478X	15.315NESC	Hea	55.687	22.300	27.187	35.539	3.870	2	1.180
0.75																		
	Horz5	L3.5x3x1/4	SAU	3.5X3X0.25	36.0	50.51	Comp	11.40	g42P	5.068NESC	Hea	44.469	55.750	67.969	60.417	7.740	5	1.000
0.75																		
	Horz6	L3x3x3/16	SAE	3X3X0.1875	36.0	33.12	Comp	9.32	g48X	1.689NESC	Ext	30.760	22.300	20.391	18.125	11.240	2	1.000
0.75																		
	Inner1	L2x2x3/16	SAE	2X2X0.1875	36.0	18.68	Comp	10.50	g49X	1.513NESC	Ext	18.448	22.300	20.391	14.414	10.946	2	1.000
0.75																		
	Inner2	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	36.0	3.48	Comp	3.09	g50P	0.485NESC	Ext	24.669	22.300	20.391	15.722	10.946	2	1.000
0.75																		
	Inner3	L3x3x1/4	SAE	3X3X0.25	36.0	40.54	Cross	0.00	g51X	0.000		40.581	33.450	40.781	28.612	10.946	3	1.000
0.75																		
	Inner4	L3x2x3/16	SAU	3X2X0.1875	36.0	9.72	Comp	5.84	g52XY	0.911NESC	Ext	18.529	22.300	20.391	15.609	15.896	2	1.000
0.75																		
	TopCrArm	3.5x3.5x1.4	SAE	3.5X3.5X0.25	36.0	7.13	Tens	7.13	g53X	2.280NESC	Ext	42.606	33.450	40.781	31.985	16.102	3	2.000
0.75																		
	TopArmBr	3.5x2.5x1/4	SAU	3.5X2.5X0.25	36.0	13.06	Comp	4.14	g54P	0.923NESC	Ext	26.406	22.300	27.187	24.167	17.793	2	2.000
0.75																		
	MidCrArm	5x3.5x3/8	SAU	5X3.5X0.375	36.0	17.40	Comp	1.85	g55XY	0.620NESC	Ext	80.595	33.450	61.172	54.375	23.452	3	2.000
0.75																		
	MidArmBr	2.5x2.5x3/16	SAE	2.5X2.5X0.1875	36.0	20.73	Tens	20.73	g57Y	5.101NESC	Hea	24.669	33.450	30.586	24.609	24.769	3	1.000
0.75																		
	BotCrArm	**6x6x5/16**	**SAE**	**6X6X0.3125**	**36.0**	**29.73**	**Comp**	**5.35**	**g59Y**	**3.580NESC**	**Ext**	**95.479**	**66.900**	**101.953**	**106.617**	**7.740**	**6**	**3.000**
0.75 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g58P g58Y Fg5860P Fg5860Y ??																		
	BotArmBr	3.5x3x1/4	SAU	3.5X3X0.25	36.0	22.58	Tens	22.58	g60Y	9.189NESC	Hea	40.702	55.750	67.969	53.309	37.237	5	1.620
0.75																		
	M1	5x3.5x5/8	DAS	5X3.5X0.625	36.0	1.01	Comp	0.00	Fg6262P	0.000		288.441	22.300	135.937	120.833	1.742	2	2.000
0.75																		
	Pwmnt	18" Std. Pipe	Pwmnt	Pipe 18" Std.	35.0	4.86	Comp	0.00	g69P	0.000		678.999	0.000	0.000	0.000	10.000	0	0.000
0																		
	PwmntBR1	L3x3x3/16	SAE	3X3X0.1875	36.0	37.50	Comp	30.79	g74X	3.139NESC	Ext	31.139	16.800	10.195	11.328	7.241	1	1.000
0.6875																		
	PwmntBR2	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	36.0	78.75	Comp	53.35	g75X	5.439NESC	Ext	25.048	16.800	10.195	11.328	4.195	1	1.000
0.6875																		
	PwmntBR3	L5x5x3/8	SAE	5X5X0.375	36.0	18.61	Comp	0.00	g70X	0.000		108.611	16.800	20.391	22.656	13.929	1	1.000
0.6875																		
	PwmntBR4	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	36.0	26.86	Comp	0.00	g71X	0.000		49.187	16.800	13.594	15.104	10.774	1	1.000
0.6875																		
	NewBR1	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	36.0	80.64	Tens	80.64	g77P	10.961NESC	Ext	32.987	16.800	13.594	15.104	4.195	1	1.000
0.6875																		
	Plate	6"x3/4"	Bar	6x3/4	36.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000
0																		
	Dummy	Dummy	DUM	0.1X0.1X1	36.0	0.00		0.00	g80P	3.056NESC	Ext	0.360	0.000	0.000	0.000	9.936	0	0.000

0
NewBR2 L3x3x1/4 SAE 3X3X0.25 36.0 45.28 Tens 45.28 g76P 6.155NESC Ext 41.087 16.800 13.594 15.104 7.241 1 1.000
0.6875

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	79.55	g35X	Angle
NESC Extreme	98.31	g15XY	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	2.62	NESC Heavy	0.0
2	Clamp	2.45	NESC Heavy	0.0
3	Clamp	7.42	NESC Extreme	0.0
4	Clamp	0.97	NESC Extreme	0.0
5	Clamp	7.54	NESC Heavy	0.0
6	Clamp	1.97	NESC Heavy	0.0
7	Clamp	7.42	NESC Extreme	0.0
8	Clamp	4.79	NESC Heavy	0.0
9	Clamp	10.03	NESC Heavy	0.0
10	Clamp	7.79	NESC Heavy	0.0
11	Clamp	6.38	NESC Heavy	0.0
12	Clamp	5.19	NESC Heavy	0.0
13	Clamp	17.27	NESC Heavy	0.0
14	Clamp	18.44	NESC Extreme	0.0
15	Clamp	1.46	NESC Extreme	0.0
16	Clamp	1.46	NESC Extreme	0.0
17	Clamp	1.76	NESC Heavy	0.0
18	Clamp	1.58	NESC Heavy	0.0
19	Clamp	1.46	NESC Extreme	0.0
20	Clamp	1.46	NESC Extreme	0.0
21	Clamp	2.43	NESC Extreme	0.0
22	Clamp	2.43	NESC Extreme	0.0
23	Clamp	0.97	NESC Extreme	0.0
24	Clamp	0.97	NESC Extreme	0.0
25	Clamp	0.97	NESC Extreme	0.0
26	Clamp	0.97	NESC Extreme	0.0
27	Clamp	0.97	NESC Extreme	0.0
28	Clamp	0.97	NESC Extreme	0.0
29	Clamp	5.63	NESC Extreme	0.0
30	Clamp	4.34	NESC Heavy	0.0
31	Clamp	4.07	NESC Extreme	0.0
32	Clamp	5.02	NESC Extreme	0.0
33	Clamp	3.58	NESC Extreme	0.0
34	Clamp	3.51	NESC Extreme	0.0
35	Clamp	2.93	NESC Extreme	0.0

36	Clamp	5.63	NESC Extreme	0.0
37	Clamp	4.17	NESC Extreme	0.0
38	Clamp	4.07	NESC Extreme	0.0
39	Clamp	5.02	NESC Extreme	0.0
40	Clamp	3.58	NESC Extreme	0.0
41	Clamp	3.51	NESC Extreme	0.0
42	Clamp	2.93	NESC Extreme	0.0

*** Weight of structure (lbs):

Weight of Angles*Section DLF:	29747.0
Total:	29747.0

*** End of Report

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

Project Name : 15001.010 - Glastonbury, CT
Project Notes: CL&P Structure # 12197/ Verizon East Glastonbury 3
Project File : J:\Jobs\1500100.WI\010 - E Glastonbury 3 CT\Backup Documentation\Calcs\Rev (1)\PLS Tower\Reinforced\cl&p tower #12197 w_pwmt.tow
Date run     : 9:57:28 AM Thursday, April 09, 2015
by           : Tower Version 12.50
Licensed to  : Centek Engineering Inc

Successfully performed nonlinear analysis

Member "g4P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g4X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g4XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
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and spacing distances will be checked. ??
Member "g13X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
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and spacing distances will be checked. ??
Member "g13XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g13Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
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Member "g30Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
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Member "g44X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "Fg4478P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "Fg4478X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
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Member "g53Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
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Member "g55Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g56P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g56Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
KL/R value of 230.84 exceeds maximum of 200.00 for member "g57P" ??
KL/R value of 230.84 exceeds maximum of 200.00 for member "g57X" ??
KL/R value of 230.84 exceeds maximum of 200.00 for member "g57XY" ??
KL/R value of 230.84 exceeds maximum of 200.00 for member "g57Y" ??
Member "g58P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g58Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "Fg5860P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "Fg5860Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
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Member "g60P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g60X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g60XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g60Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g62P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "Fg6262P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g78P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g78Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Problem calculating gross area of longitudinal face for section "1": width is zero at elevation 111.50 (ft) which is not the top of the section. ??
Unusual number of fixed joints found: 5. Towers normally have from between 1 and 4 fixed joints. ??
Clamp insulator "8" has a structure attach joint "17P" that is fixed with respect to translation ??
The model has 167 warnings. ??

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

Joints Geometry:

Joint Label	Symmetry Code	X Coord. (ft)	Y Coord. (ft)	Z Coord. (ft)	X Disp. Rest.	Y Disp. Rest.	Z Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.
1P	XY-Symmetry	14.15	14.15	0	Fixed	Fixed	Fixed	Free	Free	Free
2P	XY-Symmetry	11.24	11.24	16.35	Free	Free	Free	Free	Free	Free
3P	XY-Symmetry	8.66	8.66	33.25	Free	Free	Free	Free	Free	Free
4P	XY-Symmetry	7.49	7.49	40.72	Free	Free	Free	Free	Free	Free
5P	XY-Symmetry	6.22	6.22	48.86	Free	Free	Free	Free	Free	Free
6P	XY-Symmetry	4.93	4.93	57.4	Free	Free	Free	Free	Free	Free
7P	XY-Symmetry	3.87	3.87	64.57	Free	Free	Free	Free	Free	Free
8P	XY-Symmetry	3.87	3.87	72.71	Free	Free	Free	Free	Free	Free
9P	XY-Symmetry	3.87	3.87	80.7	Free	Free	Free	Free	Free	Free
10P	XY-Symmetry	3.87	3.87	88.29	Free	Free	Free	Free	Free	Free
11P	XY-Symmetry	3.87	3.87	96.26	Free	Free	Free	Free	Free	Free
12P	XY-Symmetry	3.87	3.87	103.9	Free	Free	Free	Free	Free	Free
13P	XY-Symmetry	3.87	3.87	111.5	Free	Free	Free	Free	Free	Free
14P	X-Symmetry	0	-19.5	111.5	Free	Free	Free	Free	Free	Free
15P	X-Symmetry	0	-27	88.29	Free	Free	Free	Free	Free	Free
16P	X-Symmetry	0	-40	64.57	Free	Free	Free	Free	Free	Free
17P	None	-2.25	0	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
18P	None	-2.25	0	33.25	Free	Free	Free	Free	Free	Free
19P	None	-2.25	0	64.57	Free	Free	Free	Free	Free	Free
20P	None	-2.25	0	88.29	Free	Free	Free	Free	Free	Free
21P	None	-2.25	0	111.5	Free	Free	Free	Free	Free	Free
22P	None	-2.25	0	122	Free	Free	Free	Free	Free	Free

23P	None	-2.25	0	132	Free	Free	Free	Free	Free	Free
1X	X-GenXY	14.15	-14.15	0	Fixed	Fixed	Fixed	Free	Free	Free
1XY	XY-GenXY	-14.15	-14.15	0	Fixed	Fixed	Fixed	Free	Free	Free
1Y	Y-GenXY	-14.15	14.15	0	Fixed	Fixed	Fixed	Free	Free	Free
2X	X-GenXY	11.24	-11.24	16.35	Free	Free	Free	Free	Free	Free
2XY	XY-GenXY	-11.24	-11.24	16.35	Free	Free	Free	Free	Free	Free
2Y	Y-GenXY	-11.24	11.24	16.35	Free	Free	Free	Free	Free	Free
3X	X-GenXY	8.66	-8.66	33.25	Free	Free	Free	Free	Free	Free
3XY	XY-GenXY	-8.66	-8.66	33.25	Free	Free	Free	Free	Free	Free
3Y	Y-GenXY	-8.66	8.66	33.25	Free	Free	Free	Free	Free	Free
4X	X-GenXY	7.49	-7.49	40.72	Free	Free	Free	Free	Free	Free
4XY	XY-GenXY	-7.49	-7.49	40.72	Free	Free	Free	Free	Free	Free
4Y	Y-GenXY	-7.49	7.49	40.72	Free	Free	Free	Free	Free	Free
5X	X-GenXY	6.22	-6.22	48.86	Free	Free	Free	Free	Free	Free
5XY	XY-GenXY	-6.22	-6.22	48.86	Free	Free	Free	Free	Free	Free
5Y	Y-GenXY	-6.22	6.22	48.86	Free	Free	Free	Free	Free	Free
6X	X-GenXY	4.93	-4.93	57.4	Free	Free	Free	Free	Free	Free
6XY	XY-GenXY	-4.93	-4.93	57.4	Free	Free	Free	Free	Free	Free
6Y	Y-GenXY	-4.93	4.93	57.4	Free	Free	Free	Free	Free	Free
7X	X-GenXY	3.87	-3.87	64.57	Free	Free	Free	Free	Free	Free
7XY	XY-GenXY	-3.87	-3.87	64.57	Free	Free	Free	Free	Free	Free
7Y	Y-GenXY	-3.87	3.87	64.57	Free	Free	Free	Free	Free	Free
8X	X-GenXY	3.87	-3.87	72.71	Free	Free	Free	Free	Free	Free
8XY	XY-GenXY	-3.87	-3.87	72.71	Free	Free	Free	Free	Free	Free
8Y	Y-GenXY	-3.87	3.87	72.71	Free	Free	Free	Free	Free	Free
9X	X-GenXY	3.87	-3.87	80.7	Free	Free	Free	Free	Free	Free
9XY	XY-GenXY	-3.87	-3.87	80.7	Free	Free	Free	Free	Free	Free
9Y	Y-GenXY	-3.87	3.87	80.7	Free	Free	Free	Free	Free	Free
10X	X-GenXY	3.87	-3.87	88.29	Free	Free	Free	Free	Free	Free
10XY	XY-GenXY	-3.87	-3.87	88.29	Free	Free	Free	Free	Free	Free
10Y	Y-GenXY	-3.87	3.87	88.29	Free	Free	Free	Free	Free	Free
11X	X-GenXY	3.87	-3.87	96.26	Free	Free	Free	Free	Free	Free
11XY	XY-GenXY	-3.87	-3.87	96.26	Free	Free	Free	Free	Free	Free
11Y	Y-GenXY	-3.87	3.87	96.26	Free	Free	Free	Free	Free	Free
12X	X-GenXY	3.87	-3.87	103.9	Free	Free	Free	Free	Free	Free
12XY	XY-GenXY	-3.87	-3.87	103.9	Free	Free	Free	Free	Free	Free
12Y	Y-GenXY	-3.87	3.87	103.9	Free	Free	Free	Free	Free	Free
13X	X-GenXY	3.87	-3.87	111.5	Free	Free	Free	Free	Free	Free
13XY	XY-GenXY	-3.87	-3.87	111.5	Free	Free	Free	Free	Free	Free
13Y	Y-GenXY	-3.87	3.87	111.5	Free	Free	Free	Free	Free	Free
14X	X-Gen	0	19.5	111.5	Free	Free	Free	Free	Free	Free
15X	X-Gen	0	27	88.29	Free	Free	Free	Free	Free	Free
16X	X-Gen	0	40	64.57	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.
17S	Y-Symmetry	2P	2X	0.5	0	Free	Free	Free	Free	Free	Free
18S	X-Symmetry	2P	2Y	0.5	0	Free	Free	Free	Free	Free	Free
16PF0.45S	Y-Symmetry	16P	7X	0.45	0	Free	Free	Free	Free	Free	Free
16PF0.50S	None	16PF0.45S	16PF0.45Y	0.5	0	Free	Free	Free	Free	Free	Free
7PF0.50S	X-Symmetry	7P	7Y	0.5	0	Free	Free	Free	Free	Free	Free
016PF0.50S	None	16PF0.50S	7PF0.50X	0.5	0	Free	Free	Free	Free	Free	Free
17Y	Y-Gen	2P	2X	0.5	0	Free	Free	Free	Free	Free	Free
18X	X-Gen	2P	2Y	0.5	0	Free	Free	Free	Free	Free	Free
16PF0.45Y	Y-Gen	16P	7X	0.45	0	Free	Free	Free	Free	Free	Free

7PF0.50X	X-Gen	7P	7Y	0.5	0	Free	Free	Free	Free	Free	Free

The model contains 65 primary and 10 secondary joints for a total of 75 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
A53-GrB	2.9e+004	35	60	0	0	0	0	0	0
A440	2.9e+004	46	58	0	0	0	0	0	0

Bolt Properties:

Bolt Label	Bolt Diameter (in)	Hole Diameter (in)	Ultimate Shear Capacity (kips)	Default End Distance (in)	Default Bolt Spacing (in)	Shear Capacity Hyp. 1 (kips)	Shear Capacity Hyp. 2 (kips)
5/8 A394 TYPE0 N	0.625	0.75	11.15	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 TYPE0 N	728
5/8 A325	16

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	6X6X0.3125	6	6	0.3125	12.5	3.65	16.6	1.89	1.89	1.2	1	6	3	0	1.0000	0
SAE	5X5X0.375	5	5	0.375	12.3	3.61	11	1.56	1.56	0.99	1	5	2.5	0	1.0000	0
SAE	4X4X0.25	4	4	0.25	6.6	1.94	13.5	1.25	1.25	0.795	1	4	2	0	1.0000	0
SAE	3.5X3.5X0.25	3.5	3.5	0.25	5.8	1.69	11.5	1.09	1.09	0.694	1	3.5	1.75	0	1.0000	0
SAE	3X3X0.25	3	3	0.25	4.9	1.44	9.75	0.93	0.93	0.592	1	3	1.5	0	1.0000	0
SAE	3X3X0.1875	3	3	0.1875	3.71	1.09	13.33	0.939	0.939	0.596	1	3	1.5	0	1.0000	0
SAE	2.5X2.5X0.25	2.5	2.5	0.25	4.1	1.19	7.75	0.769	0.769	0.491	1	2.5	1.25	0	1.0000	0
SAE	2.5X2.5X0.1875	2.5	2.5	0.1875	3.07	0.902	10.67	0.778	0.778	0.495	1	2.5	1.25	0	1.0000	0
SAE	2X2X0.1875	2	2	0.1875	2.44	0.71	8	0.617	0.617	0.394	1	2	1	0	1.0000	0
SAU	5X3.5X0.375	5	3.5	0.375	10.4	3.05	11	1.6	1.02	0.762	1	5	1.75	0	1.0000	0
SAU	5X3X0.25	5	3	0.25	6.6	1.94	17	1.62	0.861	0.663	1	5	1.5	0	1.0000	0
SAU	3.5X3X0.25	3.5	3	0.25	5.4	1.56	11.25	1.11	0.914	0.631	1	3.5	1.5	0	1.0000	0
SAU	3.5X2.5X0.25	3.5	2.5	0.25	4.9	1.44	11.25	1.12	0.735	0.544	1	3.5	1.25	0	1.0000	0
SAU	3X2X0.1875	3	2	0.1875	3.07	0.9	13.33	0.966	0.583	0.439	1	3	1	0	1.0000	0
DAS	5X3.5X0.625	5	3.5	0.625	33.6	9.84	6.2	0.991	2.45	0.991	2	5	1.75	0	1.0000	0
DUM	0.1X0.1X1	0.1	0.1	1	0	0.01	2	100	100	100	1	0.1	0.05	0	1.0000	0
Bar	6x3/4	6	0.75	0	15.3	4.5	8	0.2165	1.732	1.732	1	6	0	0	0.0000	0
Pwmnt	Pipe 18" Std.	18	17.25	0	70.66	19.4	1	6.24	6.24	6.24	1	18	0	0	0.0000	0

Angle Groups:

Group Label	Group Description	Angle Type	Angle Size	Material Type	Element Type	Group Type	Optimize Group	Allow. Add. Angle Width For Optimize (in)
Leg1	L4x4x1/4	SAE	4X4X0.25	A 36	Beam	Leg	None	0.000
Leg2	L5x5x3/8	SAE	5X5X0.375	A440	Beam	Leg	None	0.000
Leg3	L5x5x3/8	SAE	5X5X0.375	A440	Beam	Leg	None	0.000
Leg4	L5x5x3/8	SAE	5X5X0.375	A 36	Beam	Leg	None	0.000
Leg5	L5x5x3/8	SAE	5X5X0.375	A 36	Beam	Leg	None	0.000
Diag1	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	A 36	Truss	Crossing Diagonal	None	0.000
Diag2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	A 36	Truss	Crossing Diagonal	None	0.000
Diag3	L3X3X1/4	SAE	3X3X0.25	A 36	Truss	Crossing Diagonal	None	0.000
Diag4	L3.5X3.5X1/4	SAE	3.5X3.5X0.25	A 36	Truss	Crossing Diagonal	None	0.000
Diag5	L4X4X1/4	SAE	4X4X0.25	A 36	Truss	Crossing Diagonal	None	0.000
Diag6	L3.5X3X1/4	SAU	3.5X3X0.25	A 36	Truss	Crossing Diagonal	None	0.000
Diag7	L3.5X3X1/4	SAU	3.5X3X0.25	A 36	Truss	Other	None	0.000
Diag8	L3X3X1/4	SAE	3X3X0.25	A 36	T-Only	Other	None	0.000
Horz1	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	A 36	Truss	Other	None	0.000
Horz2	L4x4x1/4	SAE	4X4X0.25	A 36	Truss	Other	None	0.000
Horz3	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	A 36	Truss	Other	None	0.000
Horz4	L5x3x1/4	SAU	5X3X0.25	A 36	Truss	Other	None	0.000
Horz5	L3.5x3x1/4	SAU	3.5X3X0.25	A 36	Truss	Other	None	0.000
Horz6	L3x3x3/16	SAE	3X3X0.1875	A 36	Beam	Other	None	0.000
Inner1	L2x2x3/16	SAE	2X2X0.1875	A 36	Truss	Crossing Diagonal	None	0.000
Inner2	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	A 36	Truss	Crossing Diagonal	None	0.000
Inner3	L3x3x1/4	SAE	3X3X0.25	A 36	Truss	Crossing Diagonal	None	0.000
Inner4	L3x2x3/16	SAU	3X2X0.1875	A 36	Truss	Redundant	None	0.000
TopCrArm	3.5x3.5x1.4	SAE	3.5X3.5X0.25	A 36	Beam	Other	None	0.000
TopArmBr	3.5x2.5x1/4	SAU	3.5X2.5X0.25	A 36	Truss	Other	None	0.000
MidCrArm	5x3.5x3/8	SAU	5X3.5X0.375	A 36	Beam	Other	None	0.000
MidArmBr	2.5x2.5x3/16	SAE	2.5X2.5X0.1875	A 36	Truss	Other	None	0.000
BotCrArm	6x6x5/16	SAE	6X6X0.3125	A 36	Beam	Other	None	0.000
BotArmBr	3.5x3x1/4	SAU	3.5X3X0.25	A 36	Truss	Other	None	0.000
M1	5x3.5x5/8	DAS	5X3.5X0.625	A 36	Beam	Other	None	0.000
Pwmnt	18" Std. Pipe	Pwmnt	Pipe 18" Std.	A53-GrB	Beam	Other	None	0.000
PwmntBR1	L3x3x3/16	SAE	3X3X0.1875	A 36	Truss	Other	None	0.000
PwmntBR2	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	A 36	Truss	Other	None	0.000
PwmntBR3	L5x5x3/8	SAE	5X5X0.375	A 36	Truss	Other	None	0.000
PwmntBR4	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	A 36	Truss	Other	None	0.000
NewBR1	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	A 36	Truss	Other	None	0.000
Plate	6"x3/4"	Bar	6x3/4	A 36	Beam	Other	None	0.000
Dummy	Dummy	DUM	0.1X0.1X1	A 36	Beam	Fictitious	None	0.000
NewBR2	L3x3x1/4	SAE	3X3X0.25	A 36	Truss	Other	None	0.000

Aggregate Angle Information:

Note: Estimate of surface area reported for painting purposes, not wind loading.

Angle Type	Angle Size	Material Type	Total Length (ft)	Total Surface Area (ft^2)	Total Weight (lbs)
SAE	4X4X0.25	A 36	229.88	306.51	1517.24
SAE	5X5X0.375	A440	192.70	321.16	2370.19
SAE	5X5X0.375	A 36	164.46	274.09	2022.81

SAE	2.5X2.5X0.1875	A	36	357.97	298.31	1098.98
SAE	2.5X2.5X0.25	A	36	97.27	81.06	398.80
SAE	3X3X0.25	A	36	386.63	386.63	1894.50
SAE	3.5X3.5X0.25	A	36	175.82	205.12	1019.73
SAU	3.5X3X0.25	A	36	770.47	834.68	4160.54
SAU	3.5X2.5X0.25	A	36	86.65	86.65	424.59
SAU	5X3X0.25	A	36	30.96	41.28	204.34
SAE	3X3X0.1875	A	36	118.88	118.88	441.06
SAE	2X2X0.1875	A	36	21.89	14.59	53.42
SAU	3X2X0.1875	A	36	63.58	52.99	195.20
SAU	5X3.5X0.375	A	36	109.29	154.82	1136.58
SAE	6X6X0.3125	A	36	160.83	321.65	2010.33
DAS	5X3.5X0.625	A	36	3.48	4.93	117.03
Pwmnt	Pipe 18" Std.	A53-GrB		132.00	775.50	9327.12
DUM	0.1X0.1X1	A	36	19.87	0.66	0.00

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	7P	1.000	3.200	3.200	1.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	None
2	1P	1.100	3.300	3.300	1.100	1.100	0.000	0.000	0.000	0.000	0.000	0.000	None

Angle Member Connectivity:

Member Label	Group Label	Section Bolt Label	Symmetry Tension Rest. 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)	Shear Path Length (in)	Tension Path Length (in)
g1P	Leg1		XY-Symmetry	13P	12P	1	4	1	1	1	5/8 A394 TYPE0 N	0	0	1		0	0	0	0	0
g1X	Leg1		X-GenXY	13X	12X	1	4	1	1	1	5/8 A394 TYPE0 N	0	0	1		0	0	0	0	0
g1XY	Leg1		XY-GenXY	13XY	12XY	1	4	1	1	1	5/8 A394 TYPE0 N	0	0	1		0	0	0	0	0
g1Y	Leg1		Y-GenXY	13Y	12Y	1	4	1	1	1	5/8 A394 TYPE0 N	0	0	1		0	0	0	0	0
g2P	Leg1		XY-Symmetry	12P	11P	1	4	1	1	1	5/8 A394 TYPE0 N	0	0	1		0	0	0	0	0
g2X	Leg1		X-GenXY	12X	11X	1	4	1	1	1	5/8 A394 TYPE0 N	0	0	1		0	0	0	0	0
g2XY	Leg1		XY-GenXY	12XY	11XY	1	4	1	1	1	5/8 A394 TYPE0 N	0	0	1		0	0	0	0	0
g2Y	Leg1		Y-GenXY	12Y	11Y	1	4	1	1	1	5/8 A394 TYPE0 N	0	0	1		0	0	0	0	0
g3P	Leg1		XY-Symmetry	11P	10P	1	4	0.5	0.5	0.5	5/8 A394 TYPE0 N	0	0	1		0	0	0	0	0
g3X	Leg1		X-GenXY	11X	10X	1	4	0.5	0.5	0.5	5/8 A394 TYPE0 N	0	0	1		0	0	0	0	0

```
0      0       0      0       0    0
    g3XY     Leg1            XY-GenXY       11XY       10XY    1     4   0.5    0.5    0.5 5/8 A394 TYPE0 N     0       0         1                   0
0      0       0      0       0    0
     g3Y     Leg1             Y-GenXY        11Y        10Y    1     4   0.5    0.5    0.5 5/8 A394 TYPE0 N     0       0         1                   0
0      0       0      0       0    0
     g4P     Leg1          XY-Symmetry       10P         9P    1     4   0.5    0.5    0.5 5/8 A394 TYPE0 N     6       2         1          Both  1.125
2.25   1.25       7      0       0    0
     g4X     Leg1             X-GenXY        10X         9X    1     4   0.5    0.5    0.5 5/8 A394 TYPE0 N     6       2         1          Both  1.125
2.25   1.25       7      0       0    0
    g4XY     Leg1            XY-GenXY       10XY        9XY    1     4   0.5    0.5    0.5 5/8 A394 TYPE0 N     6       2         1          Both  1.125
2.25   1.25       7      0       0    0
     g4Y     Leg1             Y-GenXY        10Y         9Y    1     4   0.5    0.5    0.5 5/8 A394 TYPE0 N     6       2         1          Both  1.125
2.25   1.25       7      0       0    0
     g5P     Leg2          XY-Symmetry        9P         8P    1     4     1      1      1 5/8 A394 TYPE0 N     0       0         1                   0
0      0       0      0       0    0
     g5X     Leg2             X-GenXY         9X         8X    1     4     1      1      1 5/8 A394 TYPE0 N     0       0         1                   0
0      0       0      0       0    0
    g5XY     Leg2            XY-GenXY        9XY        8XY    1     4     1      1      1 5/8 A394 TYPE0 N     0       0         1                   0
0      0       0      0       0    0
     g5Y     Leg2             Y-GenXY         9Y         8Y    1     4     1      1      1 5/8 A394 TYPE0 N     0       0         1                   0
0      0       0      0       0    0
     g6P     Leg2          XY-Symmetry        8P         7P    1     4     1      1      1 5/8 A394 TYPE0 N     0       0         1                   0
0      0       0      0       0    0
     g6X     Leg2             X-GenXY         8X         7X    1     4     1      1      1 5/8 A394 TYPE0 N     0       0         1                   0
0      0       0      0       0    0
    g6XY     Leg2            XY-GenXY        8XY        7XY    1     4     1      1      1 5/8 A394 TYPE0 N     0       0         1                   0
0      0       0      0       0    0
     g6Y     Leg2             Y-GenXY         8Y         7Y    1     4     1      1      1 5/8 A394 TYPE0 N     0       0         1                   0
0      0       0      0       0    0
     g7P     Leg2          XY-Symmetry        7P         6P    1     4     1      1      1 5/8 A394 TYPE0 N    12    2.21         1          Both      1
2.625 1.3125       4      0       0    0
     g7X     Leg2             X-GenXY         7X         6X    1     4     1      1      1 5/8 A394 TYPE0 N    12    2.21         1          Both      1
2.625 1.3125       4      0       0    0
    g7XY     Leg2            XY-GenXY        7XY        6XY    1     4     1      1      1 5/8 A394 TYPE0 N    12    2.21         1          Both      1
2.625 1.3125       4      0       0    0
     g7Y     Leg2             Y-GenXY         7Y         6Y    1     4     1      1      1 5/8 A394 TYPE0 N    12    2.21         1          Both      1
2.625 1.3125       4      0       0    0
     g8P     Leg3          XY-Symmetry        6P         5P    1     4   0.5    0.5    0.5 5/8 A394 TYPE0 N     0       0         1                   0
0      0       0      0       0    0
     g8X     Leg3             X-GenXY         6X         5X    1     4   0.5    0.5    0.5 5/8 A394 TYPE0 N     0       0         1                   0
0      0       0      0       0    0
    g8XY     Leg3            XY-GenXY        6XY        5XY    1     4   0.5    0.5    0.5 5/8 A394 TYPE0 N     0       0         1                   0
0      0       0      0       0    0
     g8Y     Leg3             Y-GenXY         6Y         5Y    1     4   0.5    0.5    0.5 5/8 A394 TYPE0 N     0       0         1                   0
0      0       0      0       0    0
     g9P     Leg3          XY-Symmetry        5P         4P    1     4   0.5    0.5    0.5 5/8 A394 TYPE0 N     0       0         1                   0
0      0       0      0       0    0
     g9X     Leg3             X-GenXY         5X         4X    1     4   0.5    0.5    0.5 5/8 A394 TYPE0 N     0       0         1                   0
0      0       0      0       0    0
    g9XY     Leg3            XY-GenXY        5XY        4XY    1     4   0.5    0.5    0.5 5/8 A394 TYPE0 N     0       0         1                   0
0      0       0      0       0    0
     g9Y     Leg3             Y-GenXY         5Y         4Y    1     4   0.5    0.5    0.5 5/8 A394 TYPE0 N     0       0         1                   0
0      0       0      0       0    0
    g10P     Leg3          XY-Symmetry        4P         3P    1     4     1      1      1 5/8 A394 TYPE0 N    12    2.21         1          Both 0.9375
2.5625   1.25       4      0       0    0
    g10X     Leg3             X-GenXY         4X         3X    1     4     1      1      1 5/8 A394 TYPE0 N    12    2.21         1          Both 0.9375
2.5625   1.25       4      0       0    0
   g10XY     Leg3            XY-GenXY        4XY        3XY    1     4     1      1      1 5/8 A394 TYPE0 N    12    2.21         1          Both 0.9375
2.5625   1.25       4      0       0    0
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g10Y	Leg3		Y-GenXY		4Y	3Y	1	4	1	1	1	5/8	A394	TYPE0	N	12	2.21	1	Both	0.9375	
2.5625	1.25	4	0	0	0																
g11P	Leg4		XY-Symmetry		3P	2P	1	4	0.25	0.25	0.25	5/8	A394	TYPE0	N	14	2.52	1	Both	1	
2.5	1.25	3.5	C	0	0																
g11X	Leg4		X-GenXY		3X	2X	1	4	0.25	0.25	0.25	5/8	A394	TYPE0	N	14	2.52	1	Both	1	
2.5	1.25	3.5	C	0	0																
g11XY	Leg4		XY-GenXY		3XY	2XY	1	4	0.25	0.25	0.25	5/8	A394	TYPE0	N	14	2.52	1	Both	1	
2.5	1.25	3.5	C	0	0																
g11Y	Leg4		Y-GenXY		3Y	2Y	1	4	0.25	0.25	0.25	5/8	A394	TYPE0	N	14	2.52	1	Both	1	
2.5	1.25	3.5	C	0	0																
g12P	Leg5		XY-Symmetry		2P	1P	1	4	0.25	0.25	0.25	5/8	A394	TYPE0	N	14	3.21	1	Both	1	
2.5625	1.1875	2.5	0	0	0																
g12X	Leg5		X-GenXY		2X	1X	1	4	0.25	0.25	0.25	5/8	A394	TYPE0	N	14	3.21	1	Both	1	
2.5625	1.1875	2.5	0	0	0																
g12XY	Leg5		XY-GenXY		2XY	1XY	1	4	0.25	0.25	0.25	5/8	A394	TYPE0	N	14	3.21	1	Both	1	
2.5625	1.1875	2.5	0	0	0																
g12Y	Leg5		Y-GenXY		2Y	1Y	1	4	0.25	0.25	0.25	5/8	A394	TYPE0	N	14	3.21	1	Both	1	
2.5625	1.1875	2.5	0	0	0																
g13P	Diag1		XY-Symmetry		13P	12X	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.375	
0.75	1.0625	4.875	0	0	0																
g13X	Diag1		X-GenXY		13X	12P	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.375	
0.75	1.0625	4.875	0	0	0																
g13XY	Diag1		XY-GenXY		13XY	12Y	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.375	
0.75	1.0625	4.875	0	0	0																
g13Y	Diag1		Y-GenXY		13Y	12XY	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.375	
0.75	1.0625	4.875	0	0	0																
g14P	Diag1		XY-Symmetry		13P	12Y	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.375	
0.75	1.0625	4.875	0	0	0																
g14X	Diag1		X-GenXY		13X	12XY	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.375	
0.75	1.0625	4.875	0	0	0																
g14XY	Diag1		XY-GenXY		13XY	12X	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.375	
0.75	1.0625	4.875	0	0	0																
g14Y	Diag1		Y-GenXY		13Y	12P	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.375	
0.75	1.0625	4.875	0	0	0																
g15P	Diag1		XY-Symmetry		12P	11X	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.375	
0.75	1.0625	5.125	0	0	0																
g15X	Diag1		X-GenXY		12X	11P	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.375	
0.75	1.0625	5.125	0	0	0																
g15XY	Diag1		XY-GenXY		12XY	11Y	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.375	
0.75	1.0625	5.125	0	0	0																
g15Y	Diag1		Y-GenXY		12Y	11XY	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.375	
0.75	1.0625	5.125	0	0	0																
g16P	Diag1		XY-Symmetry		12P	11Y	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.375	
0.75	1.0625	5.125	0	0	0																
g16X	Diag1		X-GenXY		12X	11XY	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.375	
0.75	1.0625	5.125	0	0	0																
g16XY	Diag1		XY-GenXY		12XY	11X	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.375	
0.75	1.0625	5.125	0	0	0																
g16Y	Diag1		Y-GenXY		12Y	11P	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.375	
0.75	1.0625	5.125	0	0	0																
g17P	Diag2		XY-Symmetry		11P	10X	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.375	
0.75	1.0625	5.125	0	0	0																
g17X	Diag2		X-GenXY		11X	10P	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.375	
0.75	1.0625	5.125	0	0	0																
g17XY	Diag2		XY-GenXY		11XY	10Y	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.375	
0.75	1.0625	5.125	0	0	0																
g17Y	Diag2		Y-GenXY		11Y	10XY	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.375	
0.75	1.0625	5.125	0	0	0																
g18P	Diag2		XY-Symmetry		11P	10Y	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.375	

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0.75 1.0625   5.125      0       0     0
   g18X    Diag2              X-GenXY        11X       10XY    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     2      1       1 Short only  1.375
0.75 1.0625   5.125      0       0     0
  g18XY    Diag2             XY-GenXY       11XY        10X    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     2      1       1 Short only  1.375
0.75 1.0625   5.125      0       0     0
   g18Y    Diag2              Y-GenXY        11Y        10P    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     2      1       1 Short only  1.375
0.75 1.0625   5.125      0       0     0
   g19P    Diag3           XY-Symmetry        10P         9X    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.62       1 Short only       2
0.9375 1.0625   2.125      0       0     0
   g19X    Diag3              X-GenXY        10X         9P    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.62       1 Short only       2
0.9375 1.0625   2.125      0       0     0
  g19XY    Diag3             XY-GenXY       10XY         9Y    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.62       1 Short only       2
0.9375 1.0625   2.125      0       0     0
   g19Y    Diag3              Y-GenXY        10Y        9XY    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.62       1 Short only       2
0.9375 1.0625   2.125      0       0     0
   g20P    Diag3           XY-Symmetry        10P         9Y    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.62       1 Short only       2
0.9375 1.0625   2.125      0       0     0
   g20X    Diag3              X-GenXY        10X        9XY    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.62       1 Short only       2
0.9375 1.0625   2.125      0       0     0
  g20XY    Diag3             XY-GenXY       10XY         9X    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.62       1 Short only       2
0.9375 1.0625   2.125      0       0     0
   g20Y    Diag3              Y-GenXY        10Y         9P    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.62       1 Short only       2
0.9375 1.0625   2.125      0       0     0
   g21P    Diag3           XY-Symmetry         9P         8X    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.62       1 Short only  1.9375
0.875 1.0625   2.125      0       0     0
   g21X    Diag3              X-GenXY         9X         8P    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.62       1 Short only  1.9375
0.875 1.0625   2.125      0       0     0
  g21XY    Diag3             XY-GenXY        9XY         8Y    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.62       1 Short only  1.9375
0.875 1.0625   2.125      0       0     0
   g21Y    Diag3              Y-GenXY         9Y        8XY    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.62       1 Short only  1.9375
0.875 1.0625   2.125      0       0     0
   g22P    Diag3           XY-Symmetry         9P         8Y    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.62       1 Short only  1.9375
0.875 1.0625   2.125      0       0     0
   g22X    Diag3              X-GenXY         9X        8XY    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.62       1 Short only  1.9375
0.875 1.0625   2.125      0       0     0
  g22XY    Diag3             XY-GenXY        9XY         8X    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.62       1 Short only  1.9375
0.875 1.0625   2.125      0       0     0
   g22Y    Diag3              Y-GenXY         9Y         8P    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.62       1 Short only  1.9375
0.875 1.0625   2.125      0       0     0
   g23P    Diag4           XY-Symmetry         8P         7X    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.66       1 Short only  2.4375
1.375      1       2      0       0     0
   g23X    Diag4              X-GenXY         8X         7P    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.66       1 Short only  2.4375
1.375      1       2      0       0     0
  g23XY    Diag4             XY-GenXY        8XY         7Y    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.66       1 Short only  2.4375
1.375      1       2      0       0     0
   g23Y    Diag4              Y-GenXY         8Y        7XY    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.66       1 Short only  2.4375
1.375      1       2      0       0     0
   g24P    Diag4           XY-Symmetry         8P         7Y    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.62       1 Short only  2.4375
1.375 1.0625   2.125      0       0     0
   g24X    Diag4              X-GenXY         8X        7XY    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.62       1 Short only  2.4375
1.375 1.0625   2.125      0       0     0
  g24XY    Diag4             XY-GenXY        8XY         7X    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.62       1 Short only  2.4375
1.375 1.0625   2.125      0       0     0
   g24Y    Diag4              Y-GenXY         8Y         7P    2     5  0.75   0.5    0.5 5/8 A394 TYPE0 N     4   3.62       1 Short only  2.4375
1.375 1.0625   2.125      0       0     0
   g25P    Diag5           XY-Symmetry         7P         6X    2     5 0.784 0.568  0.568 5/8 A394 TYPE0 N     3      1       1 Short only  2.875
1.75       1   4.375      0       0     0
   g25X    Diag5              X-GenXY         7X         6P    2     5 0.784 0.568  0.568 5/8 A394 TYPE0 N     3      1       1 Short only  2.875
1.75       1   4.375      0       0     0
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  g25XY   Diag5            XY-GenXY       7XY       6Y   2     5 0.784 0.568 0.568 5/8 A394 TYPE0 N    3     1     1 Short only  2.875
1.75    1   4.375     0        0      0
  g25Y    Diag5             Y-GenXY        7Y      6XY   2     5 0.784 0.568 0.568 5/8 A394 TYPE0 N    3     1     1 Short only  2.875
1.75    1   4.375     0        0      0
  g26P    Diag5           XY-Symmetry      7P       6Y   2     5 0.784 0.568 0.568 5/8 A394 TYPE0 N    3     1     1 Short only  2.875
1.75    1   4.375     0        0      0
  g26X    Diag5             X-GenXY        7X      6XY   2     5 0.784 0.568 0.568 5/8 A394 TYPE0 N    3     1     1 Short only  2.875
1.75    1   4.375     0        0      0
  g26XY   Diag5            XY-GenXY       7XY       6X   2     5 0.784 0.568 0.568 5/8 A394 TYPE0 N    3     1     1 Short only  2.875
1.75    1   4.375     0        0      0
  g26Y    Diag5             Y-GenXY        7Y       6P   2     5 0.784 0.568 0.568 5/8 A394 TYPE0 N    3     1     1 Short only  2.875
1.75    1   4.375     0        0      0
  g27P    Diag6           XY-Symmetry      6P       5X   2     5 0.778 0.556 0.556 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
0.875     1   7.125     0        0      0
  g27X    Diag6             X-GenXY        6X       5P   2     5 0.778 0.556 0.556 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
0.875     1   7.125     0        0      0
  g27XY   Diag6            XY-GenXY       6XY       5Y   2     5 0.778 0.556 0.556 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
0.875     1   7.125     0        0      0
  g27Y    Diag6             Y-GenXY        6Y      5XY   2     5 0.778 0.556 0.556 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
0.875     1   7.125     0        0      0
  g28P    Diag6           XY-Symmetry      6P       5Y   2     5 0.778 0.556 0.556 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
0.875     1   7.125     0        0      0
  g28X    Diag6             X-GenXY        6X      5XY   2     5 0.778 0.556 0.556 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
0.875     1   7.125     0        0      0
  g28XY   Diag6            XY-GenXY       6XY       5X   2     5 0.778 0.556 0.556 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
0.875     1   7.125     0        0      0
  g28Y    Diag6             Y-GenXY        6Y       5P   2     5 0.778 0.556 0.556 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
0.875     1   7.125     0        0      0
  g29P    Diag6           XY-Symmetry      5P       4X   2     5 0.772 0.544 0.544 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
0.875     1     6.5     0        0      0
  g29X    Diag6             X-GenXY        5X       4P   2     5 0.772 0.544 0.544 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
0.875     1     6.5     0        0      0
  g29XY   Diag6            XY-GenXY       5XY       4Y   2     5 0.772 0.544 0.544 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
0.875     1     6.5     0        0      0
  g29Y    Diag6             Y-GenXY        5Y      4XY   2     5 0.772 0.544 0.544 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
0.875     1     6.5     0        0      0
  g30P    Diag6           XY-Symmetry      5P       4Y   2     5 0.772 0.544 0.544 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
0.875     1     6.5     0        0      0
  g30X    Diag6             X-GenXY        5X      4XY   2     5 0.772 0.544 0.544 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
0.875     1     6.5     0        0      0
  g30XY   Diag6            XY-GenXY       5XY       4X   2     5 0.772 0.544 0.544 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
0.875     1     6.5     0        0      0
  g30Y    Diag6             Y-GenXY        5Y       4P   2     5 0.772 0.544 0.544 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
0.875     1     6.5     0        0      0
  g31P    Diag6           XY-Symmetry      4P       3X   2     5 0.769 0.537 0.537 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
0.875     1   6.125     0        0      0
  g31X    Diag6             X-GenXY        4X       3P   2     5 0.769 0.537 0.537 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
0.875     1   6.125     0        0      0
  g31XY   Diag6            XY-GenXY       4XY       3Y   2     5 0.769 0.537 0.537 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
0.875     1   6.125     0        0      0
  g31Y    Diag6             Y-GenXY        4Y      3XY   2     5 0.769 0.537 0.537 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
0.875     1   6.125     0        0      0
  g32P    Diag6           XY-Symmetry      4P       3Y   2     5 0.769 0.537 0.537 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
0.875     1   6.125     0        0      0
  g32X    Diag6             X-GenXY        4X      3XY   2     5 0.769 0.537 0.537 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
0.875     1   6.125     0        0      0
  g32XY   Diag6            XY-GenXY       4XY       3X   2     5 0.769 0.537 0.537 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
0.875     1   6.125     0        0      0
  g32Y    Diag6             Y-GenXY        4Y       3P   2     5 0.769 0.537 0.537 5/8 A394 TYPE0 N    2     1     1 Short only   1.75
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0.875      1   6.125       0       0      0
    g33P    Diag7           XY-Symmetry          3X        17S    2    5    1   0.5   0.5 5/8 A394 TYPE0 N    4  1.313       1 Short only  0.625
1.625      1    2.75       0       0      0
    g33X    Diag7                X-GenXY         3P        17S    2    5    1   0.5   0.5 5/8 A394 TYPE0 N    4  1.313       1 Short only  0.625
1.625      1    2.75       0       0      0
   g33XY    Diag7              XY-GenXY          3Y        17Y    2    5    1   0.5   0.5 5/8 A394 TYPE0 N    4  1.313       1 Short only  0.625
1.625      1    2.75       0       0      0
    g33Y    Diag7                Y-GenXY         3XY       17Y    2    5    1   0.5   0.5 5/8 A394 TYPE0 N    4  1.313       1 Short only  0.625
1.625      1    2.75       0       0      0
    g34P    Diag7           XY-Symmetry          3P        18S    2    5    1   0.5   0.5 5/8 A394 TYPE0 N    4  1.313       1 Short only  0.625
1.625      1    2.75       0       0      0
    g34X    Diag7                X-GenXY         3X        18X    2    5    1   0.5   0.5 5/8 A394 TYPE0 N    4  1.313       1 Short only  0.625
1.625      1    2.75       0       0      0
   g34XY    Diag7              XY-GenXY          3XY       18X    2    5    1   0.5   0.5 5/8 A394 TYPE0 N    4  1.313       1 Short only  0.625
1.625      1    2.75       0       0      0
    g34Y    Diag7                Y-GenXY         3Y        18S    2    5    1   0.5   0.5 5/8 A394 TYPE0 N    4  1.313       1 Short only  0.625
1.625      1    2.75       0       0      0
    g35P    Diag8           XY-Symmetry          1X        17S    2    5    1   0.5   0.5 5/8 A394 TYPE0 N    5   1.94       1 Short only  2.125
0.6875     1    1.75       0       0      0
    g35X    Diag8                X-GenXY         1P        17S    2    5    1   0.5   0.5 5/8 A394 TYPE0 N    5   1.94       1 Short only  2.125
0.6875     1    1.75       0       0      0
   g35XY    Diag8              XY-GenXY          1Y        17Y    2    5    1   0.5   0.5 5/8 A394 TYPE0 N    5   1.94       1 Short only  2.125
0.6875     1    1.75       0       0      0
    g35Y    Diag8                Y-GenXY         1XY       17Y    2    5    1   0.5   0.5 5/8 A394 TYPE0 N    5   1.94       1 Short only  2.125
0.6875     1    1.75       0       0      0
    g36P    Diag8           XY-Symmetry          1P        18S    2    5    1   0.5   0.5 5/8 A394 TYPE0 N    5   1.94       1 Short only  2.125
0.6875     1    1.75       0       0      0
    g36X    Diag8                X-GenXY         1X        18X    2    5    1   0.5   0.5 5/8 A394 TYPE0 N    5   1.94       1 Short only  2.125
0.6875     1    1.75       0       0      0
   g36XY    Diag8              XY-GenXY          1XY       18X    2    5    1   0.5   0.5 5/8 A394 TYPE0 N    5   1.94       1 Short only  2.125
0.6875     1    1.75       0       0      0
    g36Y    Diag8                Y-GenXY         1Y        18S    2    5    1   0.5   0.5 5/8 A394 TYPE0 N    5   1.94       1 Short only  2.125
0.6875     1    1.75       0       0      0
    g37P    Horz2             Y-Symmetry         13X       13P    3    6    1     1     1 5/8 A394 TYPE0 N    4      2       1 Short only   1.25
2.75  0.875     1.5       0       0      0
    g37Y    Horz2                  Y-Gen         13XY      13Y    3    6    1     1     1 5/8 A394 TYPE0 N    4      2       1 Short only   1.25
2.75  0.875     1.5       0       0      0
    g38P    Horz1             X-Symmetry         13P       13Y    3    6    1     1     1 5/8 A394 TYPE0 N    2   1.62       1  Long only   0.75
2.25 3.9375     2.75      0       0      0
    g38X    Horz1                  X-Gen         13X       13XY   3    6    1     1     1 5/8 A394 TYPE0 N    2   1.62       1  Long only   0.75
2.25 3.9375     2.75      0       0      0
    g39P    Horz3             Y-Symmetry         12X       12P    3    6    1     1     1 5/8 A394 TYPE0 N    2      1       1 Short only      1
0       1       2       0       0      0
    g39Y    Horz3                  Y-Gen         12XY      12Y    3    6    1     1     1 5/8 A394 TYPE0 N    2      1       1 Short only      1
0       1       2       0       0      0
    g40P    Horz3             Y-Symmetry         11X       11P    3    6    1     1     1 5/8 A394 TYPE0 N    3      1       1 Short only      1
0   1.125       2       0       0      0
    g40Y    Horz3                  Y-Gen         11XY      11Y    3    6    1     1     1 5/8 A394 TYPE0 N    3      1       1 Short only      1
0   1.125       2       0       0      0
    g41P    Horz4             X-Symmetry         10P       10Y    3    6    1     1     1 5/8 A394 TYPE0 N    2   1.66       1  Long only   1.25
3.25 3.9375     2.75      0       0      0
    g41X    Horz4                  X-Gen         10X       10XY   3    6    1     1     1 5/8 A394 TYPE0 N    2   1.66       1  Long only   1.25
3.25 3.9375     2.75      0       0      0
    g42P    Horz5             Y-Symmetry          8X        8P    3    6    1     1     1 5/8 A394 TYPE0 N    5      1       1  Long only  1.375
2       1     3.5       0       0      0
    g42Y    Horz5                  Y-Gen          8XY       8Y    3    6    1     1     1 5/8 A394 TYPE0 N    5      1       1  Long only  1.375
2       1     3.5       0       0      0
    g43P    Horz3             X-Symmetry          8P        8Y    3    6    1     1     1 5/8 A394 TYPE0 N    2      1       1 Short only   1.25
0       1     1.5       0       0      0
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g43X	Horz3			X-Gen		8X	8XY	3	6	1	1	1	5/8	A394	TYPE0	N	2	1	1	Short only	1.25			
0	1	1.5	0	0	0																			
g44P	Horz4			X-Symmetry		7P	7PF0.50S	1	4	1	1	1	5/8	A394	TYPE0	N	2	1.18	1	Long only	1.25			
3.25	4.5	4.25	0	0	0																			
g44X	Horz4			X-Gen		7X	7PF0.50X	1	4	1	1	1	5/8	A394	TYPE0	N	2	1.18	1	Long only	1.25			
3.25	4.5	4.25	0	0	0																			
Fg4478P	Horz4			X-Symmetry	7PF0.50S		7Y	1	4	1	1	1	5/8	A394	TYPE0	N	2	1.18	1	Long only	1.25			
3.25	4.5	4.25	0	0	0																			
Fg4478X	Horz4			X-Gen	7PF0.50X		7XY	1	4	1	1	1	5/8	A394	TYPE0	N	2	1.18	1	Long only	1.25			
3.25	4.5	4.25	0	0	0																			
g45P	Horz5			Y-Symmetry		3X	3P	3	6	1	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.5			
0	1	2	0	0	0																			
g45Y	Horz5			Y-Gen		3XY	3Y	3	6	1	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.5			
0	1	2	0	0	0																			
g46P	Horz5			X-Symmetry		3P	3Y	3	6	1	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.5			
0	1	2	0	0	0																			
g46X	Horz5			X-Gen		3X	3XY	3	6	1	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.5			
0	1	2	0	0	0																			
g47P	Horz6			XY-Symmetry		2X	17S	3	6	1	1	1	5/8	A394	TYPE0	N	2	1	1	Short only	1.75			
1.25	1	4.125	0	0	0																			
g47X	Horz6			X-GenXY		2P	17S	3	6	1	1	1	5/8	A394	TYPE0	N	2	1	1	Short only	1.75			
1.25	1	4.125	0	0	0																			
g47XY	Horz6			XY-GenXY		2Y	17Y	3	6	1	1	1	5/8	A394	TYPE0	N	2	1	1	Short only	1.75			
1.25	1	4.125	0	0	0																			
g47Y	Horz6			Y-GenXY		2XY	17Y	3	6	1	1	1	5/8	A394	TYPE0	N	2	1	1	Short only	1.75			
1.25	1	4.125	0	0	0																			
g48P	Horz6			XY-Symmetry		2P	18S	3	6	1	1	1	5/8	A394	TYPE0	N	2	1	1	Short only	1.75			
1.25	1	4.125	0	0	0																			
g48X	Horz6			X-GenXY		2X	18X	3	6	1	1	1	5/8	A394	TYPE0	N	2	1	1	Short only	1.75			
1.25	1	4.125	0	0	0																			
g48XY	Horz6			XY-GenXY		2XY	18X	3	6	1	1	1	5/8	A394	TYPE0	N	2	1	1	Short only	1.75			
1.25	1	4.125	0	0	0																			
g48Y	Horz6			Y-GenXY		2Y	18S	3	6	1	1	1	5/8	A394	TYPE0	N	2	1	1	Short only	1.75			
1.25	1	4.125	0	0	0																			
g49P	Inner1			X-Symmetry		13P	13XY	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1			
0	1	1.6875	0	0	0																			
g49X	Inner1			X-Gen		13X	13Y	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1			
0	1	1.6875	0	0	0																			
g50P	Inner2			X-Symmetry		10P	10XY	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.375			
0	1	1.5	0	0	0																			
g50X	Inner2			X-Gen		10X	10Y	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	1.375			
0	1	1.5	0	0	0																			
g51P	Inner3			X-Symmetry		7P	7XY	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	3	1	1	Short only	1.5			
0	1	1.5	0	0	0																			
g51X	Inner3			X-Gen		7X	7Y	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	3	1	1	Short only	1.5			
0	1	1.5	0	0	0																			
g52P	Inner4			XY-Symmetry		18X	17S	2	5	1	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	0.875			
0	1	2	0	0	0																			
g52X	Inner4			X-GenXY		18S	17S	2	5	1	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	0.875			
0	1	2	0	0	0																			
g52XY	Inner4			XY-GenXY		18S	17Y	2	5	1	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	0.875			
0	1	2	0	0	0																			
g52Y	Inner4			Y-GenXY		18X	17Y	2	5	1	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short only	0.875			
0	1	2	0	0	0																			
g53P	TopCrArm			XY-Symmetry		13X	14P	3	6	0.5	0.5	0.5	5/8	A394	TYPE0	N	3	2	1	Short only	0.75			
2.25	1	1.5	0	0	0																			
g53X	TopCrArm			X-GenXY		13P	14X	3	6	0.5	0.5	0.5	5/8	A394	TYPE0	N	3	2	1	Short only	0.75			
2.25	1	1.5	0	0	0																			
g53XY	TopCrArm			XY-GenXY		13Y	14X	3	6	0.5	0.5	0.5	5/8	A394	TYPE0	N	3	2	1	Short only	0.75			

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2.25      1     1.5       0        0     0
    g53Y TopCrArm               Y-GenXY        13XY         14P    3     6   0.5   0.5   0.5 5/8 A394 TYPE0 N     3      2       1 Short only   0.75
2.25      1     1.5       0        0     0
    g54P TopArmBr             XY-Symmetry        14P         12X    2     6   0.5   0.5   0.5 5/8 A394 TYPE0 N     2      2       1 Short only   1.25
0       1       2       0        0     0
    g54X TopArmBr               X-GenXY          14X         12P    2     6   0.5   0.5   0.5 5/8 A394 TYPE0 N     2      2       1 Short only   1.25
0       1       2       0        0     0
   g54XY TopArmBr               XY-GenXY         14X         12Y    2     6   0.5   0.5   0.5 5/8 A394 TYPE0 N     2      2       1 Short only   1.25
0       1       2       0        0     0
    g54Y TopArmBr               Y-GenXY          14P        12XY    2     6   0.5   0.5   0.5 5/8 A394 TYPE0 N     2      2       1 Short only   1.25
0       1       2       0        0     0
    g55P MidCrArm             XY-Symmetry        15P         10X    3     6  0.33  0.33  0.33 5/8 A394 TYPE0 N     3      2       1  Long only      3
1.5     1       4       0        0     0
    g55X MidCrArm               X-GenXY          15X         10P    3     6  0.33  0.33  0.33 5/8 A394 TYPE0 N     3      2       1  Long only      3
1.5     1       4       0        0     0
   g55XY MidCrArm               XY-GenXY         15X         10Y    3     6  0.33  0.33  0.33 5/8 A394 TYPE0 N     3      2       1  Long only      3
1.5     1       4       0        0     0
    g55Y MidCrArm               Y-GenXY          15P        10XY    3     6  0.33  0.33  0.33 5/8 A394 TYPE0 N     3      2       1  Long only      3
1.5     1       4       0        0     0
    g56P MidCrArm             Y-Symmetry         10X         10P    3     6     1     1     1 5/8 A394 TYPE0 N     4      2       1  Long only      1
3  1.125     1.5       0        0     0
    g56Y MidCrArm                 Y-Gen          10XY         10Y    3     6     1     1     1 5/8 A394 TYPE0 N     4      2       1  Long only      1
3  1.125     1.5       0        0     0
    g57P MidArmBr             XY-Symmetry        15P         11X    3     6   0.5   0.5   0.5 5/8 A394 TYPE0 N     3      1       1 Short only      1
0       1       2       0        0     0
    g57X MidArmBr               X-GenXY          15X         11P    3     6   0.5   0.5   0.5 5/8 A394 TYPE0 N     3      1       1 Short only      1
0       1       2       0        0     0
   g57XY MidArmBr               XY-GenXY         15X         11Y    3     6   0.5   0.5   0.5 5/8 A394 TYPE0 N     3      1       1 Short only      1
0       1       2       0        0     0
    g57Y MidArmBr               Y-GenXY          15P        11XY    3     6   0.5   0.5   0.5 5/8 A394 TYPE0 N     3      1       1 Short only      1
0       1       2       0        0     0
    g58P BotCrArm             Y-Symmetry         16P   16PF0.45S    3     6   0.5   0.5   0.5 5/8 A394 TYPE0 N     3      1       1  Long only   1.75
3.75      1       5       0        0     0
    g58Y BotCrArm                 Y-Gen          16P   16PF0.45Y    3     6   0.5   0.5   0.5 5/8 A394 TYPE0 N     3      1       1  Long only   1.75
3.75      1       5       0        0     0
 Fg5860P BotCrArm             Y-Symmetry   16PF0.45S         7X    3     6   0.5   0.5   0.5 5/8 A394 TYPE0 N     5      3       1  Long only   1.75
3.75      1       3       0        0     0
 Fg5860Y BotCrArm                 Y-Gen   16PF0.45Y         7XY   3     6   0.5   0.5   0.5 5/8 A394 TYPE0 N     5      3       1  Long only   1.75
3.75      1       3       0        0     0
    g59P BotCrArm             Y-Symmetry          7X          7P    3     6     1     1     1 5/8 A394 TYPE0 N     6      3       1  Long only      1
4.5   2.375   2.125       0        0     0
    g59Y BotCrArm                 Y-Gen          7XY          7Y    3     6     1     1     1 5/8 A394 TYPE0 N     6      3       1  Long only      1
4.5   2.375   2.125       0        0     0
    g60P BotArmBr             XY-Symmetry        16P          8X    3     6  0.33  0.33  0.33 5/8 A394 TYPE0 N     5   1.62       1  Long only   0.75
2.25      1     2.5       0        0     0
    g60X BotArmBr               X-GenXY          16X          8P    3     6  0.33  0.33  0.33 5/8 A394 TYPE0 N     5   1.62       1  Long only   0.75
2.25      1     2.5       0        0     0
   g60XY BotArmBr               XY-GenXY         16X          8Y    3     6  0.33  0.33  0.33 5/8 A394 TYPE0 N     5   1.62       1  Long only   0.75
2.25      1     2.5       0        0     0
    g60Y BotArmBr               Y-GenXY          16P         8XY    3     6  0.33  0.33  0.33 5/8 A394 TYPE0 N     5   1.62       1  Long only   0.75
2.25      1     2.5       0        0     0
    g62P       M1                 None   16PF0.45S   16PF0.50S    1     4     2     2     2 5/8 A394 TYPE0 N     2      2       1  Long only      1
3.25      1       0       0        0     0
 Fg6262P       M1                 None   16PF0.50S   16PF0.45Y    1     4     2     2     2 5/8 A394 TYPE0 N     2      2       1  Long only      1
3.25      1       0       0        0     0
    g64P    Pwmnt                 None         17P         18P    1     4     1     1     1                      0      0       0                 0
0       0       0       0        0     0
    g65P    Pwmnt                 None         18P         19P    1     4     1     1     1                      0      0       0                 0
0       0       0       0        0     0
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   g66P    Pwmnt                None      19P      20P   1    4    1    1    1                        0     0     0                  0
0     0       0      0       0    0
   g67P    Pwmnt                None      20P      21P   1    4    1    1    1                        0     0     0                  0
0     0       0      0       0    0
   g68P    Pwmnt                None      21P      22P   1    4    1    1    1                        0     0     0                  0
0     0       0      0       0    0
   g69P    Pwmnt                None      22P      23P   1    4    1    1    1                        0     0     0                  0
0     0       0      0       0    0
   g70P PwmntBR3           X-Symmetry     18P       3X   3    4    1    1    1         5/8 A325       1     1     1 Short only       0
0     0       0      0       0    0
   g70X PwmntBR3                X-Gen     18P       3P   3    4    1    1    1         5/8 A325       1     1     1 Short only       0
0     0       0      0       0    0
   g71P PwmntBR4           X-Symmetry     18P      3XY   3    4    1    1    1         5/8 A325       1     1     1 Short only       0
0     0       0      0       0    0
   g71X PwmntBR4                X-Gen     18P       3Y   3    4    1    1    1         5/8 A325       1     1     1 Short only       0
0     0       0      0       0    0
   g72P PwmntBR1           X-Symmetry     19P       7X   3    4    1    1    1         5/8 A325       1     1     1 Short only       0
0     0       0      0       0    0
   g72X PwmntBR1                X-Gen     19P       7P   3    4    1    1    1         5/8 A325       1     1     1 Short only       0
0     0       0      0       0    0
   g73P PwmntBR2           X-Symmetry     19P      7XY   3    4    1    1    1         5/8 A325       1     1     1 Short only       0
0     0       0      0       0    0
   g73X PwmntBR2                X-Gen     19P       7Y   3    4    1    1    1         5/8 A325       1     1     1 Short only       0
0     0       0      0       0    0
   g74P PwmntBR1           X-Symmetry     20P      10X   3    4    1    1    1         5/8 A325       1     1     1 Short only       0
0     0       0      0       0    0
   g74X PwmntBR1                X-Gen     20P      10P   3    4    1    1    1         5/8 A325       1     1     1 Short only       0
0     0       0      0       0    0
   g75P PwmntBR2           X-Symmetry     20P     10XY   3    4    1    1    1         5/8 A325       1     1     1 Short only       0
0     0       0      0       0    0
   g75X PwmntBR2                X-Gen     20P      10Y   3    4    1    1    1         5/8 A325       1     1     1 Short only       0
0     0       0      0       0    0
   g76P   NewBR2           X-Symmetry     21P      13X   3    4    1    1    1         5/8 A325       1     1     1 Short only       0
0     0       0      0       0    0
   g76X   NewBR2                X-Gen     21P      13P   3    4    1    1    1         5/8 A325       1     1     1 Short only       0
0     0       0      0       0    0
   g77P   NewBR1           X-Symmetry     21P     13XY   3    4    1    1    1         5/8 A325       1     1     1 Short only       0
0     0       0      0       0    0
   g77X   NewBR1                X-Gen     21P      13Y   3    4    1    1    1         5/8 A325       1     1     1 Short only       0
0     0       0      0       0    0
   g78P BotCrArm           Y-Symmetry      7P      16X   3    5 0.25 0.25 0.25 5/8 A394 TYPE0 N    5     3     1  Long only    1.75
3.75    1       3      0       0    0
   g78Y BotCrArm                Y-Gen      7Y      16X   3    5 0.25 0.25 0.25 5/8 A394 TYPE0 N    5     3     1  Long only    1.75
3.75    1       3      0       0    0
   g80P    Dummy                None 16PF0.50S 016PF0.50S 3   5    1    1    1                        0     0     1                  0
0     0       0      0       0    0
 Fg8080P   Dummy                None 016PF0.50S 7PF0.50X  3   6    1    1    1                        0     0     1                  0
0     0       0      0       0    0
```

Member Capacities and Overrides:

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  Member    Group  Design    Comp.   Design  Tension  L/r Length     L/r Connection Connection      Net  Rupture  RTE End RTE Edge Override
Override Override Override Override Override
Warnings
   Label    Label    Comp.  Control Tension  Control                Comp.      Shear    Bearing  Section  Tension    Dist.    Dist.    Comp.
Comp.    Comp.  Tension  Tension    Face
or Errors
                  Capacity Criterion Capacity Criterion          Capacity   Capacity   Capacity  Tension Capacity  Tension  Tension Capacity
Capacity   Control Capacity  Control    Member
```

										Capacity		Capacity	Capacity	
Unsup. (kips)	Criterion	Criterion (kips)	ship (kips)			(ft)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)
g1P	Leg1	41.059	L/r Automatic	69.840	Net Sect	114	7.57	41.059	0.000	0.000	69.840	0.000	0.000	0.000	0.000
0.000		0.000													
g1X	Leg1	41.059	L/r Automatic	69.840	Net Sect	114	7.57	41.059	0.000	0.000	69.840	0.000	0.000	0.000	0.000
0.000		0.000													
g1XY	Leg1	41.059	L/r Automatic	69.840	Net Sect	114	7.57	41.059	0.000	0.000	69.840	0.000	0.000	0.000	0.000
0.000		0.000													
g1Y	Leg1	41.059	L/r Automatic	69.840	Net Sect	114	7.57	41.059	0.000	0.000	69.840	0.000	0.000	0.000	0.000
0.000		0.000													
g2P	Leg1	40.310	L/r Automatic	69.840	Net Sect	116	7.67	40.310	0.000	0.000	69.840	0.000	0.000	0.000	0.000
0.000		0.000													
g2X	Leg1	40.310	L/r Automatic	69.840	Net Sect	116	7.67	40.310	0.000	0.000	69.840	0.000	0.000	0.000	0.000
0.000		0.000													
g2XY	Leg1	40.310	L/r Automatic	69.840	Net Sect	116	7.67	40.310	0.000	0.000	69.840	0.000	0.000	0.000	0.000
0.000		0.000													
g2Y	Leg1	40.310	L/r Automatic	69.840	Net Sect	116	7.67	40.310	0.000	0.000	69.840	0.000	0.000	0.000	0.000
0.000		0.000													
g3P	Leg1	61.437	L/r Automatic	69.840	Net Sect	60	7.97	61.437	0.000	0.000	69.840	0.000	0.000	0.000	0.000
0.000		0.000													
g3X	Leg1	61.437	L/r Automatic	69.840	Net Sect	60	7.97	61.437	0.000	0.000	69.840	0.000	0.000	0.000	0.000
0.000		0.000													
g3XY	Leg1	61.437	L/r Automatic	69.840	Net Sect	60	7.97	61.437	0.000	0.000	69.840	0.000	0.000	0.000	0.000
0.000		0.000													
g3Y	Leg1	61.437	L/r Automatic	69.840	Net Sect	60	7.97	61.437	0.000	0.000	69.840	0.000	0.000	0.000	0.000
0.000		0.000													
g4P	**Leg1**	**62.164**	**L/r Automatic**	**56.340**	**Net Sect**	**57**	**7.59**	**62.164**	**66.900**	**81.562**	**56.340**	**90.625**	**0.000**	**0.000**	**0.000**
0.000		0.000													
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g4X	Leg1	62.164	L/r Automatic	56.340	Net Sect	57	7.59	62.164	66.900	81.562	56.340	90.625	0.000	0.000	0.000
0.000		0.000													
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g4XY	Leg1	62.164	L/r Automatic	56.340	Net Sect	57	7.59	62.164	66.900	81.562	56.340	90.625	0.000	0.000	0.000
0.000		0.000													
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g4Y	Leg1	62.164	L/r Automatic	56.340	Net Sect	57	7.59	62.164	66.900	81.562	56.340	90.625	0.000	0.000	0.000
0.000		0.000													
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g5P	Leg2	103.478	L/r Automatic	166.060	Net Sect	97	7.99	103.478	0.000	0.000	166.060	0.000	0.000	0.000	0.000
0.000		0.000													
g5X	Leg2	103.478	L/r Automatic	166.060	Net Sect	97	7.99	103.478	0.000	0.000	166.060	0.000	0.000	0.000	0.000
0.000		0.000													
g5XY	Leg2	103.478	L/r Automatic	166.060	Net Sect	97	7.99	103.478	0.000	0.000	166.060	0.000	0.000	0.000	0.000
0.000		0.000													
g5Y	Leg2	103.478	L/r Automatic	166.060	Net Sect	97	7.99	103.478	0.000	0.000	166.060	0.000	0.000	0.000	0.000
0.000		0.000													
g6P	Leg2	101.106	L/r Automatic	166.060	Net Sect	99	8.14	101.106	0.000	0.000	166.060	0.000	0.000	0.000	0.000
0.000		0.000													
g6X	Leg2	101.106	L/r Automatic	166.060	Net Sect	99	8.14	101.106	0.000	0.000	166.060	0.000	0.000	0.000	0.000
0.000		0.000													
g6XY	Leg2	101.106	L/r Automatic	166.060	Net Sect	99	8.14	101.106	0.000	0.000	166.060	0.000	0.000	0.000	0.000
0.000		0.000													
g6Y	Leg2	101.106	L/r Automatic	166.060	Net Sect	99	8.14	101.106	0.000	0.000	166.060	0.000	0.000	0.000	0.000
0.000		0.000													

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    g7P     Leg2  113.461       L/r  133.800     Shear   89   7.33  113.461    133.800    244.687  137.468  255.882    0.000    0.000    0.000
0.000               0.000         Automatic     Member "g7P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g7X     Leg2  113.461       L/r  133.800     Shear   89   7.33  113.461    133.800    244.687  137.468  255.882    0.000    0.000    0.000
0.000               0.000         Automatic     Member "g7X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g7XY     Leg2  113.461       L/r  133.800     Shear   89   7.33  113.461    133.800    244.687  137.468  255.882    0.000    0.000    0.000
0.000               0.000         Automatic     Member "g7XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g7Y     Leg2  113.461       L/r  133.800     Shear   89   7.33  113.461    133.800    244.687  137.468  255.882    0.000    0.000    0.000
0.000               0.000         Automatic     Member "g7Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g8P     Leg3  147.370       L/r  166.060  Net Sect   53   8.73  147.370      0.000      0.000  166.060    0.000    0.000    0.000    0.000
0.000               0.000         Automatic
    g8X     Leg3  147.370       L/r  166.060  Net Sect   53   8.73  147.370      0.000      0.000  166.060    0.000    0.000    0.000    0.000
0.000               0.000         Automatic
   g8XY     Leg3  147.370       L/r  166.060  Net Sect   53   8.73  147.370      0.000      0.000  166.060    0.000    0.000    0.000    0.000
0.000               0.000         Automatic
    g8Y     Leg3  147.370       L/r  166.060  Net Sect   53   8.73  147.370      0.000      0.000  166.060    0.000    0.000    0.000    0.000
0.000               0.000         Automatic
    g9P     Leg3  149.031       L/r  166.060  Net Sect   51   8.34  149.031      0.000      0.000  166.060    0.000    0.000    0.000    0.000
0.000               0.000         Automatic
    g9X     Leg3  149.031       L/r  166.060  Net Sect   51   8.34  149.031      0.000      0.000  166.060    0.000    0.000    0.000    0.000
0.000               0.000         Automatic
   g9XY     Leg3  149.031       L/r  166.060  Net Sect   51   8.34  149.031      0.000      0.000  166.060    0.000    0.000    0.000    0.000
0.000               0.000         Automatic
    g9Y     Leg3  149.031       L/r  166.060  Net Sect   51   8.34  149.031      0.000      0.000  166.060    0.000    0.000    0.000    0.000
0.000               0.000         Automatic
   g10P     Leg3  108.675       L/r  133.800     Shear   93   7.65  108.675    133.800    244.687  137.468  239.889    0.000    0.000    0.000
0.000               0.000         Automatic     Member "g10P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g10X     Leg3  108.675       L/r  133.800     Shear   93   7.65  108.675    133.800    244.687  137.468  239.889    0.000    0.000    0.000
0.000               0.000         Automatic     Member "g10X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
  g10XY     Leg3  108.675       L/r  133.800     Shear   93   7.65  108.675    133.800    244.687  137.468  239.889    0.000    0.000    0.000
0.000               0.000         Automatic     Member "g10XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g10Y     Leg3  108.675       L/r  133.800     Shear   93   7.65  108.675    133.800    244.687  137.468  239.889    0.000    0.000    0.000
0.000               0.000         Automatic     Member "g10Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g11P     Leg4  118.743       L/r  104.445  Net Sect   52  17.29  118.743    156.100    285.468  104.445  298.529    0.000    0.000    0.000
0.000               0.000         Automatic     Member "g11P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g11X     Leg4  118.743       L/r  104.445  Net Sect   52  17.29  118.743    156.100    285.468  104.445  298.529    0.000    0.000    0.000
0.000               0.000         Automatic     Member "g11X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
  g11XY     Leg4  118.743       L/r  104.445  Net Sect   52  17.29  118.743    156.100    285.468  104.445  298.529    0.000    0.000    0.000
0.000               0.000         Automatic     Member "g11XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g11Y     Leg4  118.743       L/r  104.445  Net Sect   52  17.29  118.743    156.100    285.468  104.445  298.529    0.000    0.000    0.000
0.000               0.000         Automatic     Member "g11Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g12P     Leg5  119.293       L/r   97.459  Net Sect   51  16.86  119.293    156.100    285.468   97.459  298.529    0.000    0.000    0.000
0.000               0.000         Automatic     Member "g12P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g12X     Leg5  119.293       L/r   97.459  Net Sect   51  16.86  119.293    156.100    285.468   97.459  298.529    0.000    0.000    0.000
0.000               0.000         Automatic     Member "g12X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
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   g12XY     Leg5  119.293       L/r   97.459  Net Sect   51  16.86  119.293    156.100    285.468   97.459  298.529    0.000    0.000    0.000
0.000             0.000           Automatic   Member "g12XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g12Y     Leg5  119.293       L/r   97.459  Net Sect   51  16.86  119.293    156.100    285.468   97.459  298.529    0.000    0.000    0.000
0.000             0.000           Automatic    Member "g12Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g13P    Diag1   15.611       L/r   19.258   Rupture  131  10.83   15.611     22.300     20.391   24.669   19.258    0.000    0.000    0.000
0.000             0.000           Automatic    Member "g13P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g13X    Diag1   15.611       L/r   19.258   Rupture  131  10.83   15.611     22.300     20.391   24.669   19.258    0.000    0.000    0.000
0.000             0.000           Automatic    Member "g13X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g13XY    Diag1   15.611       L/r   19.258   Rupture  131  10.83   15.611     22.300     20.391   24.669   19.258    0.000    0.000    0.000
0.000             0.000           Automatic   Member "g13XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g13Y    Diag1   15.611       L/r   19.258   Rupture  131  10.83   15.611     22.300     20.391   24.669   19.258    0.000    0.000    0.000
0.000             0.000           Automatic    Member "g13Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g14P    Diag1   15.611       L/r   19.258   Rupture  131  10.83   15.611     22.300     20.391   24.669   19.258    0.000    0.000    0.000
0.000             0.000           Automatic    Member "g14P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g14X    Diag1   15.611       L/r   19.258   Rupture  131  10.83   15.611     22.300     20.391   24.669   19.258    0.000    0.000    0.000
0.000             0.000           Automatic    Member "g14X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g14XY    Diag1   15.611       L/r   19.258   Rupture  131  10.83   15.611     22.300     20.391   24.669   19.258    0.000    0.000    0.000
0.000             0.000           Automatic   Member "g14XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g14Y    Diag1   15.611       L/r   19.258   Rupture  131  10.83   15.611     22.300     20.391   24.669   19.258    0.000    0.000    0.000
0.000             0.000           Automatic    Member "g14Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g15P    Diag1   15.455       L/r   19.258   Rupture  132  10.90   15.455     22.300     20.391   24.669   19.258    0.000    0.000    0.000
0.000             0.000           Automatic    Member "g15P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g15X    Diag1   15.455       L/r   19.258   Rupture  132  10.90   15.455     22.300     20.391   24.669   19.258    0.000    0.000    0.000
0.000             0.000           Automatic    Member "g15X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g15XY    Diag1   15.455       L/r   19.258   Rupture  132  10.90   15.455     22.300     20.391   24.669   19.258    0.000    0.000    0.000
0.000             0.000           Automatic   Member "g15XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g15Y    Diag1   15.455       L/r   19.258   Rupture  132  10.90   15.455     22.300     20.391   24.669   19.258    0.000    0.000    0.000
0.000             0.000           Automatic    Member "g15Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g16P    Diag1   15.455       L/r   19.258   Rupture  132  10.90   15.455     22.300     20.391   24.669   19.258    0.000    0.000    0.000
0.000             0.000           Automatic    Member "g16P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g16X    Diag1   15.455       L/r   19.258   Rupture  132  10.90   15.455     22.300     20.391   24.669   19.258    0.000    0.000    0.000
0.000             0.000           Automatic    Member "g16X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g16XY    Diag1   15.455       L/r   19.258   Rupture  132  10.90   15.455     22.300     20.391   24.669   19.258    0.000    0.000    0.000
0.000             0.000           Automatic   Member "g16XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g16Y    Diag1   15.455       L/r   19.258   Rupture  132  10.90   15.455     22.300     20.391   24.669   19.258    0.000    0.000    0.000
0.000             0.000           Automatic    Member "g16Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g17P    Diag2   19.533       L/r   22.300     Shear  136  11.11   19.533     22.300     27.187   32.481   25.677    0.000    0.000    0.000
0.000             0.000           Automatic    Member "g17P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g17X    Diag2   19.533       L/r   22.300     Shear  136  11.11   19.533     22.300     27.187   32.481   25.677    0.000    0.000    0.000
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0.000              0.000            Automatic    Member "g17X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g17XY    Diag2   19.533       L/r   22.300     Shear  136  11.11   19.533     22.300     27.187   32.481   25.677    0.000    0.000    0.000
0.000              0.000            Automatic   Member "g17XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g17Y    Diag2   19.533       L/r   22.300     Shear  136  11.11   19.533     22.300     27.187   32.481   25.677    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g17Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g18P    Diag2   19.533       L/r   22.300     Shear  136  11.11   19.533     22.300     27.187   32.481   25.677    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g18P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g18X    Diag2   19.533       L/r   22.300     Shear  136  11.11   19.533     22.300     27.187   32.481   25.677    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g18X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g18XY    Diag2   19.533       L/r   22.300     Shear  136  11.11   19.533     22.300     27.187   32.481   25.677    0.000    0.000    0.000
0.000              0.000            Automatic   Member "g18XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g18Y    Diag2   19.533       L/r   22.300     Shear  136  11.11   19.533     22.300     27.187   32.481   25.677    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g18Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g19P    Diag3   31.245       L/r   24.664  Net Sect  110  10.84   31.245     44.600     54.375   24.664   51.354    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g19P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g19X    Diag3   31.245       L/r   24.664  Net Sect  110  10.84   31.245     44.600     54.375   24.664   51.354    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g19X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g19XY    Diag3   31.245       L/r   24.664  Net Sect  110  10.84   31.245     44.600     54.375   24.664   51.354    0.000    0.000    0.000
0.000              0.000            Automatic   Member "g19XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g19Y    Diag3   31.245       L/r   24.664  Net Sect  110  10.84   31.245     44.600     54.375   24.664   51.354    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g19Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g20P    Diag3   31.245       L/r   24.664  Net Sect  110  10.84   31.245     44.600     54.375   24.664   51.354    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g20P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g20X    Diag3   31.245       L/r   24.664  Net Sect  110  10.84   31.245     44.600     54.375   24.664   51.354    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g20X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g20XY    Diag3   31.245       L/r   24.664  Net Sect  110  10.84   31.245     44.600     54.375   24.664   51.354    0.000    0.000    0.000
0.000              0.000            Automatic   Member "g20XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g20Y    Diag3   31.245       L/r   24.664  Net Sect  110  10.84   31.245     44.600     54.375   24.664   51.354    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g20Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g21P    Diag3   30.447       L/r   24.664  Net Sect  113  11.12   30.447     44.600     54.375   24.664   51.354    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g21P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g21X    Diag3   30.447       L/r   24.664  Net Sect  113  11.12   30.447     44.600     54.375   24.664   51.354    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g21X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g21XY    Diag3   30.447       L/r   24.664  Net Sect  113  11.12   30.447     44.600     54.375   24.664   51.354    0.000    0.000    0.000
0.000              0.000            Automatic   Member "g21XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g21Y    Diag3   30.447       L/r   24.664  Net Sect  113  11.12   30.447     44.600     54.375   24.664   51.354    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g21Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g22P    Diag3   30.447       L/r   24.664  Net Sect  113  11.12   30.447     44.600     54.375   24.664   51.354    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g22P" will not be checked for block shear since more than one gage line exists (long edge
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distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g22X    Diag3   30.447       L/r   24.664  Net Sect  113  11.12   30.447     44.600     54.375   24.664   51.354    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g22X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g22XY    Diag3   30.447       L/r   24.664  Net Sect  113  11.12   30.447     44.600     54.375   24.664   51.354    0.000    0.000    0.000
0.000               0.000          Automatic   Member "g22XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g22Y    Diag3   30.447       L/r   24.664  Net Sect  113  11.12   30.447     44.600     54.375   24.664   51.354    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g22Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g23P    Diag4   40.610       L/r   32.521  Net Sect   97  11.23   40.610     44.600     54.375   32.521   48.333    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g23P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g23X    Diag4   40.610       L/r   32.521  Net Sect   97  11.23   40.610     44.600     54.375   32.521   48.333    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g23X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g23XY    Diag4   40.610       L/r   32.521  Net Sect   97  11.23   40.610     44.600     54.375   32.521   48.333    0.000    0.000    0.000
0.000               0.000          Automatic   Member "g23XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g23Y    Diag4   40.610       L/r   32.521  Net Sect   97  11.23   40.610     44.600     54.375   32.521   48.333    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g23Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g24P    Diag4   40.610       L/r   32.764  Net Sect   97  11.23   40.610     44.600     54.375   32.764   51.354    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g24P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g24X    Diag4   40.610       L/r   32.764  Net Sect   97  11.23   40.610     44.600     54.375   32.764   51.354    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g24X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g24XY    Diag4   40.610       L/r   32.764  Net Sect   97  11.23   40.610     44.600     54.375   32.764   51.354    0.000    0.000    0.000
0.000               0.000          Automatic   Member "g24XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g24Y    Diag4   40.610       L/r   32.764  Net Sect   97  11.23   40.610     44.600     54.375   32.764   51.354    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g24Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g25P    Diag5   33.450     Shear   33.450     Shear   98  11.40   46.206     33.450     40.781   56.781   36.250    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g25P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g25X    Diag5   33.450     Shear   33.450     Shear   98  11.40   46.206     33.450     40.781   56.781   36.250    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g25X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g25XY    Diag5   33.450     Shear   33.450     Shear   98  11.40   46.206     33.450     40.781   56.781   36.250    0.000    0.000    0.000
0.000               0.000          Automatic   Member "g25XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g25Y    Diag5   33.450     Shear   33.450     Shear   98  11.40   46.206     33.450     40.781   56.781   36.250    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g25Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g26P    Diag5   33.450     Shear   33.450     Shear   98  11.40   46.206     33.450     40.781   56.781   36.250    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g26P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g26X    Diag5   33.450     Shear   33.450     Shear   98  11.40   46.206     33.450     40.781   56.781   36.250    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g26X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g26XY    Diag5   33.450     Shear   33.450     Shear   98  11.40   46.206     33.450     40.781   56.781   36.250    0.000    0.000    0.000
0.000               0.000          Automatic   Member "g26XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g26Y    Diag5   33.450     Shear   33.450     Shear   98  11.40   46.206     33.450     40.781   56.781   36.250    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g26Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
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    g27P    Diag6   22.070       L/r   22.300     Shear  149  14.10   22.070     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g27P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g27X    Diag6   22.070       L/r   22.300     Shear  149  14.10   22.070     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g27X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g27XY    Diag6   22.070       L/r   22.300     Shear  149  14.10   22.070     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g27XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g27Y    Diag6   22.070       L/r   22.300     Shear  149  14.10   22.070     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g27Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g28P    Diag6   22.070       L/r   22.300     Shear  149  14.10   22.070     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g28P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g28X    Diag6   22.070       L/r   22.300     Shear  149  14.10   22.070     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g28X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g28XY    Diag6   22.070       L/r   22.300     Shear  149  14.10   22.070     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g28XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g28Y    Diag6   22.070       L/r   22.300     Shear  149  14.10   22.070     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g28Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g29P    Diag6   18.659       L/r   22.300     Shear  165  15.99   18.659     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g29P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g29X    Diag6   18.659       L/r   22.300     Shear  165  15.99   18.659     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g29X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g29XY    Diag6   18.659       L/r   22.300     Shear  165  15.99   18.659     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g29XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g29Y    Diag6   18.659       L/r   22.300     Shear  165  15.99   18.659     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g29Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g30P    Diag6   18.659       L/r   22.300     Shear  165  15.99   18.659     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g30P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g30X    Diag6   18.659       L/r   22.300     Shear  165  15.99   18.659     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g30X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g30XY    Diag6   18.659       L/r   22.300     Shear  165  15.99   18.659     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g30XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g30Y    Diag6   18.659       L/r   22.300     Shear  165  15.99   18.659     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g30Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g31P    Diag6   15.940       L/r   22.300     Shear  182  17.83   15.940     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g31P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g31X    Diag6   15.940       L/r   22.300     Shear  182  17.83   15.940     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g31X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g31XY    Diag6   15.940       L/r   22.300     Shear  182  17.83   15.940     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g31XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g31Y    Diag6   15.940       L/r   22.300     Shear  182  17.83   15.940     22.300     27.187   40.419   24.167    0.000    0.000    0.000
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0.000              0.000            Automatic    Member "g31Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g32P    Diag6   15.940       L/r   22.300     Shear  182  17.83   15.940     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g32P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g32X    Diag6   15.940       L/r   22.300     Shear  182  17.83   15.940     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g32X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g32XY    Diag6   15.940       L/r   22.300     Shear  182  17.83   15.940     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000              0.000            Automatic   Member "g32XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g32Y    Diag6   15.940       L/r   22.300     Shear  182  17.83   15.940     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g32Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g33P    Diag7   12.841       L/r   35.539   Rupture  207  19.16   12.841     44.600     54.375   38.517   35.539    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g33P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g33X    Diag7   12.841       L/r   35.539   Rupture  207  19.16   12.841     44.600     54.375   38.517   35.539    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g33X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g33XY    Diag7   12.841       L/r   35.539   Rupture  207  19.16   12.841     44.600     54.375   38.517   35.539    0.000    0.000    0.000
0.000              0.000            Automatic   Member "g33XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g33Y    Diag7   12.841       L/r   35.539   Rupture  207  19.16   12.841     44.600     54.375   38.517   35.539    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g33Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g34P    Diag7   12.841       L/r   35.539   Rupture  207  19.16   12.841     44.600     54.375   38.517   35.539    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g34P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g34X    Diag7   12.841       L/r   35.539   Rupture  207  19.16   12.841     44.600     54.375   38.517   35.539    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g34X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g34XY    Diag7   12.841       L/r   35.539   Rupture  207  19.16   12.841     44.600     54.375   38.517   35.539    0.000    0.000    0.000
0.000              0.000            Automatic   Member "g34XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g34Y    Diag7   12.841       L/r   35.539   Rupture  207  19.16   12.841     44.600     54.375   38.517   35.539    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g34Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g35P    Diag8    6.973       L/r   34.870  Net Sect  282  21.82    6.973     55.750     67.969   34.870   60.417    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g35P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g35X    Diag8    6.973       L/r   34.870  Net Sect  282  21.82    6.973     55.750     67.969   34.870   60.417    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g35X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g35XY    Diag8    6.973       L/r   34.870  Net Sect  282  21.82    6.973     55.750     67.969   34.870   60.417    0.000    0.000    0.000
0.000              0.000            Automatic   Member "g35XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g35Y    Diag8    6.973       L/r   34.870  Net Sect  282  21.82    6.973     55.750     67.969   34.870   60.417    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g35Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g36P    Diag8    6.973       L/r   34.870  Net Sect  282  21.82    6.973     55.750     67.969   34.870   60.417    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g36P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g36X    Diag8    6.973       L/r   34.870  Net Sect  282  21.82    6.973     55.750     67.969   34.870   60.417    0.000    0.000    0.000
0.000              0.000            Automatic    Member "g36X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g36XY    Diag8    6.973       L/r   34.870  Net Sect  282  21.82    6.973     55.750     67.969   34.870   60.417    0.000    0.000    0.000
0.000              0.000            Automatic   Member "g36XY" will not be checked for block shear since more than one gage line exists (long edge
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distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g36Y    Diag8    6.973       L/r   34.870  Net Sect  282  21.82    6.973     55.750     67.969   34.870   60.417    0.000    0.000    0.000
0.000             0.000            Automatic    Member "g36Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g37P    Horz2   38.974       L/r   42.292   Rupture  117   7.74   38.974     44.600     54.375   50.706   42.292    0.000    0.000    0.000
0.000             0.000            Automatic    Member "g37P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g37Y    Horz2   38.974       L/r   42.292   Rupture  117   7.74   38.974     44.600     54.375   50.706   42.292    0.000    0.000    0.000
0.000             0.000            Automatic    Member "g37Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g38P    Horz1   18.028       L/r   21.323   Rupture  171   7.74   18.028     22.300     27.187   36.814   21.323    0.000    0.000    0.000
0.000             0.000            Automatic    Member "g38P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g38X    Horz1   18.028       L/r   21.323   Rupture  171   7.74   18.028     22.300     27.187   36.814   21.323    0.000    0.000    0.000
0.000             0.000            Automatic    Member "g38X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g39P    Horz3    9.886       L/r   16.453   Rupture  188   7.74    9.886     22.300     20.391   24.669   16.453    0.000    0.000    0.000
0.000             0.000            Automatic
    g39Y    Horz3    9.886       L/r   16.453   Rupture  188   7.74    9.886     22.300     20.391   24.669   16.453    0.000    0.000    0.000
0.000             0.000            Automatic
    g40P    Horz3    9.886       L/r   24.669  Net Sect  188   7.74    9.886     33.450     30.586   24.669   25.425    0.000    0.000    0.000
0.000             0.000            Automatic
    g40Y    Horz3    9.886       L/r   24.669  Net Sect  188   7.74    9.886     33.450     30.586   24.669   25.425    0.000    0.000    0.000
0.000             0.000            Automatic
    g41P    Horz4   22.300     Shear   22.300     Shear  140   7.74   31.358     22.300     27.187   52.771   35.539    0.000    0.000    0.000
0.000             0.000            Automatic    Member "g41P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g41X    Horz4   22.300     Shear   22.300     Shear  140   7.74   31.358     22.300     27.187   52.771   35.539    0.000    0.000    0.000
0.000             0.000            Automatic    Member "g41X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g42P    Horz5   23.885       L/r   44.469  Net Sect  147   7.74   23.885     55.750     67.969   44.469   60.417    0.000    0.000    0.000
0.000             0.000            Automatic    Member "g42P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g42Y    Horz5   23.885       L/r   44.469  Net Sect  147   7.74   23.885     55.750     67.969   44.469   60.417    0.000    0.000    0.000
0.000             0.000            Automatic    Member "g42Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g43P    Horz3    9.886       L/r   14.878   Rupture  188   7.74    9.886     22.300     20.391   24.669   14.878    0.000    0.000    0.000
0.000             0.000            Automatic
    g43X    Horz3    9.886       L/r   14.878   Rupture  188   7.74    9.886     22.300     20.391   24.669   14.878    0.000    0.000    0.000
0.000             0.000            Automatic
    g44P    Horz4   22.300     Shear   22.300     Shear   70   3.87   49.701     22.300     27.187   55.687   35.539    0.000    0.000    0.000
0.000             0.000            Automatic    Member "g44P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g44X    Horz4   22.300     Shear   22.300     Shear   70   3.87   49.701     22.300     27.187   55.687   35.539    0.000    0.000    0.000
0.000             0.000            Automatic    Member "g44X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
 Fg4478P    Horz4   22.300     Shear   22.300     Shear   70   3.87   49.701     22.300     27.187   55.687   35.539    0.000    0.000    0.000
0.000             0.000            Automatic Member "Fg4478P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
 Fg4478X    Horz4   22.300     Shear   22.300     Shear   70   3.87   49.701     22.300     27.187   55.687   35.539    0.000    0.000    0.000
0.000             0.000            Automatic Member "Fg4478X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g45P    Horz5   17.150       L/r   22.300     Shear  187  17.32   17.150     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000             0.000            Automatic
    g45Y    Horz5   17.150       L/r   22.300     Shear  187  17.32   17.150     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000             0.000            Automatic
    g46P    Horz5   17.150       L/r   22.300     Shear  187  17.32   17.150     22.300     27.187   40.419   24.167    0.000    0.000    0.000
0.000             0.000            Automatic
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g46X	Horz5	17.150	L/r	22.300	Shear	187	17.32	17.150	22.300	27.187	40.419	24.167	0.000	0.000	0.000
0.000		0.000		Automatic											
g47P	Horz6	9.078	L/r	18.125	Rupture	226	11.24	9.078	22.300	20.391	30.760	18.125	0.000	0.000	0.000
0.000		0.000		Automatic	Member "g47P" will not be checked for block shear since more than one gage line exists (long edge										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g47X	Horz6	9.078	L/r	18.125	Rupture	226	11.24	9.078	22.300	20.391	30.760	18.125	0.000	0.000	0.000
0.000		0.000		Automatic	Member "g47X" will not be checked for block shear since more than one gage line exists (long edge										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g47XY	Horz6	9.078	L/r	18.125	Rupture	226	11.24	9.078	22.300	20.391	30.760	18.125	0.000	0.000	0.000
0.000		0.000		Automatic	Member "g47XY" will not be checked for block shear since more than one gage line exists (long edge										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g47Y	Horz6	9.078	L/r	18.125	Rupture	226	11.24	9.078	22.300	20.391	30.760	18.125	0.000	0.000	0.000
0.000		0.000		Automatic	Member "g47Y" will not be checked for block shear since more than one gage line exists (long edge										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g48P	Horz6	9.078	L/r	18.125	Rupture	226	11.24	9.078	22.300	20.391	30.760	18.125	0.000	0.000	0.000
0.000		0.000		Automatic	Member "g48P" will not be checked for block shear since more than one gage line exists (long edge										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g48X	Horz6	9.078	L/r	18.125	Rupture	226	11.24	9.078	22.300	20.391	30.760	18.125	0.000	0.000	0.000
0.000		0.000		Automatic	Member "g48X" will not be checked for block shear since more than one gage line exists (long edge										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g48XY	Horz6	9.078	L/r	18.125	Rupture	226	11.24	9.078	22.300	20.391	30.760	18.125	0.000	0.000	0.000
0.000		0.000		Automatic	Member "g48XY" will not be checked for block shear since more than one gage line exists (long edge										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g48Y	Horz6	9.078	L/r	18.125	Rupture	226	11.24	9.078	22.300	20.391	30.760	18.125	0.000	0.000	0.000
0.000		0.000		Automatic	Member "g48Y" will not be checked for block shear since more than one gage line exists (long edge										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g49P	Inner1	8.391	L/r	14.414	Rupture	167	10.95	8.391	22.300	20.391	18.448	14.414	0.000	0.000	0.000
0.000		0.000		Automatic											
g49X	Inner1	8.391	L/r	14.414	Rupture	167	10.95	8.391	22.300	20.391	18.448	14.414	0.000	0.000	0.000
0.000		0.000		Automatic											
g50P	Inner2	15.347	L/r	15.722	Rupture	133	10.95	15.347	22.300	20.391	24.669	15.722	0.000	0.000	0.000
0.000		0.000		Automatic											
g50X	Inner2	15.347	L/r	15.722	Rupture	133	10.95	15.347	22.300	20.391	24.669	15.722	0.000	0.000	0.000
0.000		0.000		Automatic											
g51P	Inner3	30.950	L/r	28.612	Rupture	111	10.95	30.950	33.450	40.781	40.581	28.612	0.000	0.000	0.000
0.000		0.000		Automatic											
g51X	Inner3	30.950	L/r	28.612	Rupture	111	10.95	30.950	33.450	40.781	40.581	28.612	0.000	0.000	0.000
0.000		0.000		Automatic											
g52P	Inner4	6.834	L/r	15.609	Rupture	217	15.90	6.834	22.300	20.391	18.529	15.609	0.000	0.000	0.000
0.000		0.000		Automatic											
g52X	Inner4	6.834	L/r	15.609	Rupture	217	15.90	6.834	22.300	20.391	18.529	15.609	0.000	0.000	0.000
0.000		0.000		Automatic											
g52XY	Inner4	6.834	L/r	15.609	Rupture	217	15.90	6.834	22.300	20.391	18.529	15.609	0.000	0.000	0.000
0.000		0.000		Automatic											
g52Y	Inner4	6.834	L/r	15.609	Rupture	217	15.90	6.834	22.300	20.391	18.529	15.609	0.000	0.000	0.000
0.000		0.000		Automatic											
g53P	TopCrArm	27.839	L/r	31.985	Rupture	139	16.10	27.839	33.450	40.781	42.606	31.985	0.000	0.000	0.000
0.000		0.000		Automatic	Member "g53P" will not be checked for block shear since more than one gage line exists (long edge										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g53X	TopCrArm	27.839	L/r	31.985	Rupture	139	16.10	27.839	33.450	40.781	42.606	31.985	0.000	0.000	0.000
0.000		0.000		Automatic	Member "g53X" will not be checked for block shear since more than one gage line exists (long edge										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g53XY	TopCrArm	27.839	L/r	31.985	Rupture	139	16.10	27.839	33.450	40.781	42.606	31.985	0.000	0.000	0.000
0.000		0.000		Automatic	Member "g53XY" will not be checked for block shear since more than one gage line exists (long edge										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															
g53Y	TopCrArm	27.839	L/r	31.985	Rupture	139	16.10	27.839	33.450	40.781	42.606	31.985	0.000	0.000	0.000
0.000		0.000		Automatic	Member "g53Y" will not be checked for block shear since more than one gage line exists (long edge										
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??															

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    g54P TopArmBr   14.798       L/r   22.300     Shear  196  17.79   14.798     22.300     27.187   26.406   24.167    0.000    0.000    0.000
0.000               0.000          Automatic
    g54X TopArmBr   14.798       L/r   22.300     Shear  196  17.79   14.798     22.300     27.187   26.406   24.167    0.000    0.000    0.000
0.000               0.000          Automatic
   g54XY TopArmBr   14.798       L/r   22.300     Shear  196  17.79   14.798     22.300     27.187   26.406   24.167    0.000    0.000    0.000
0.000               0.000          Automatic
    g54Y TopArmBr   14.798       L/r   22.300     Shear  196  17.79   14.798     22.300     27.187   26.406   24.167    0.000    0.000    0.000
0.000               0.000          Automatic
    g55P MidCrArm   33.450     Shear   33.450      Shear  122  23.45   59.123     33.450     61.172   80.595   54.375    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g55P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g55X MidCrArm   33.450     Shear   33.450      Shear  122  23.45   59.123     33.450     61.172   80.595   54.375    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g55X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
   g55XY MidCrArm   33.450     Shear   33.450      Shear  122  23.45   59.123     33.450     61.172   80.595   54.375    0.000    0.000    0.000
0.000               0.000          Automatic   Member "g55XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g55Y MidCrArm   33.450     Shear   33.450      Shear  122  23.45   59.123     33.450     61.172   80.595   54.375    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g55Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g56P MidCrArm   44.600     Shear   44.600      Shear  122   7.74   59.115     44.600     81.562   80.595   81.562    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g56P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g56Y MidCrArm   44.600     Shear   44.600      Shear  122   7.74   59.115     44.600     81.562   80.595   81.562    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g56Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g57P MidArmBr    4.845       L/r   24.609    Rupture  300  24.77    4.845     33.450     30.586   24.669   24.609    0.000    0.000    0.000
0.000               0.000          Automatic
KL/R value of 230.84 exceeds maximum of 200.00 for member "g57P"  ??
    g57X MidArmBr    4.845       L/r   24.609    Rupture  300  24.77    4.845     33.450     30.586   24.669   24.609    0.000    0.000    0.000
0.000               0.000          Automatic
KL/R value of 230.84 exceeds maximum of 200.00 for member "g57X"  ??
   g57XY MidArmBr    4.845       L/r   24.609    Rupture  300  24.77    4.845     33.450     30.586   24.669   24.609    0.000    0.000    0.000
0.000               0.000          Automatic
KL/R value of 230.84 exceeds maximum of 200.00 for member "g57XY"  ??
    g57Y MidArmBr    4.845       L/r   24.609    Rupture  300  24.77    4.845     33.450     30.586   24.669   24.609    0.000    0.000    0.000
0.000               0.000          Automatic
KL/R value of 230.84 exceeds maximum of 200.00 for member "g57Y"  ??
    g58P BotCrArm   33.450     Shear   33.450      Shear   82  16.35   80.349     33.450     50.976  110.666   45.312    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g58P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g58Y BotCrArm   33.450     Shear   33.450      Shear   82  16.35   80.349     33.450     50.976  110.666   45.312    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g58Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
 Fg5860P BotCrArm   55.750     Shear   55.750      Shear  100  19.99   74.843     55.750     84.961   95.479   75.521    0.000    0.000    0.000
0.000               0.000          Automatic Member "Fg5860P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
 Fg5860Y BotCrArm   55.750     Shear   55.750      Shear  100  19.99   74.843     55.750     84.961   95.479   75.521    0.000    0.000    0.000
0.000               0.000          Automatic Member "Fg5860Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g59P BotCrArm   66.900     Shear   66.900      Shear   77   7.74   81.599     66.900    101.953   95.479  106.617    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g59P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g59Y BotCrArm   66.900     Shear   66.900      Shear   77   7.74   81.599     66.900    101.953   95.479  106.617    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g59Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g60P BotArmBr   12.379       L/r   40.702  Net Sect  234  37.24   12.379     55.750     67.969   40.702   53.309    0.000    0.000    0.000
0.000               0.000          Automatic    Member "g60P" will not be checked for block shear since more than one gage line exists (long edge
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distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g60X BotArmBr 12.379 L/r 40.702 Net Sect 234 37.24 12.379 55.750 67.969 40.702 53.309 0.000 0.000 0.000
0.000 0.000 Automatic Member "g60X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g60XY BotArmBr 12.379 L/r 40.702 Net Sect 234 37.24 12.379 55.750 67.969 40.702 53.309 0.000 0.000 0.000
0.000 0.000 Automatic Member "g60XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g60Y BotArmBr 12.379 L/r 40.702 Net Sect 234 37.24 12.379 55.750 67.969 40.702 53.309 0.000 0.000 0.000
0.000 0.000 Automatic Member "g60Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g62P M1 22.300 Shear 22.300 Shear 42 1.74 334.426 22.300 135.937 288.441 120.833 0.000 0.000 0.000
0.000 0.000 Automatic Member "g62P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Fg6262P M1 22.300 Shear 22.300 Shear 42 1.74 334.426 22.300 135.937 288.441 120.833 0.000 0.000 0.000
0.000 0.000 Automatic Member "Fg6262P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g64P Pwmnt 594.129 L/r 678.999 Net Sect 64 33.25 594.129 0.000 0.000 678.999 0.000 0.000 0.000 0.000
0.000 0.000 Automatic
g65P Pwmnt 603.695 L/r 678.999 Net Sect 60 31.32 603.695 0.000 0.000 678.999 0.000 0.000 0.000 0.000
0.000 0.000 Automatic
g66P Pwmnt 635.807 L/r 678.999 Net Sect 46 23.72 635.807 0.000 0.000 678.999 0.000 0.000 0.000 0.000
0.000 0.000 Automatic
g67P Pwmnt 637.644 L/r 678.999 Net Sect 45 23.21 637.644 0.000 0.000 678.999 0.000 0.000 0.000 0.000
0.000 0.000 Automatic
g68P Pwmnt 670.535 L/r 678.999 Net Sect 20 10.50 670.535 0.000 0.000 678.999 0.000 0.000 0.000 0.000
0.000 0.000 Automatic
g69P Pwmnt 671.322 L/r 678.999 Net Sect 19 10.00 671.322 0.000 0.000 678.999 0.000 0.000 0.000 0.000
0.000 0.000 Automatic
g70P PwmntBR3 16.800 Shear 16.800 Shear 169 13.93 36.246 16.800 20.391 108.611 22.656 0.000 0.000 0.000
0.000 0.000 Automatic
g70X PwmntBR3 16.800 Shear 16.800 Shear 169 13.93 36.246 16.800 20.391 108.611 22.656 0.000 0.000 0.000
0.000 0.000 Automatic
g71P PwmntBR4 13.594 Bearing 13.594 Bearing 186 10.77 13.937 16.800 13.594 49.187 15.104 0.000 0.000 0.000
0.000 0.000 Automatic
g71X PwmntBR4 13.594 Bearing 13.594 Bearing 186 10.77 13.937 16.800 13.594 49.187 15.104 0.000 0.000 0.000
0.000 0.000 Automatic
g72P PwmntBR1 10.195 Bearing 10.195 Bearing 146 7.24 14.678 16.800 10.195 31.139 11.328 0.000 0.000 0.000
0.000 0.000 Automatic
g72X PwmntBR1 10.195 Bearing 10.195 Bearing 146 7.24 14.678 16.800 10.195 31.139 11.328 0.000 0.000 0.000
0.000 0.000 Automatic
g73P PwmntBR2 10.195 Bearing 10.195 Bearing 102 4.20 19.925 16.800 10.195 25.048 11.328 0.000 0.000 0.000
0.000 0.000 Automatic
g73X PwmntBR2 10.195 Bearing 10.195 Bearing 102 4.20 19.925 16.800 10.195 25.048 11.328 0.000 0.000 0.000
0.000 0.000 Automatic
g74P PwmntBR1 10.195 Bearing 10.195 Bearing 146 7.24 14.678 16.800 10.195 31.139 11.328 0.000 0.000 0.000
0.000 0.000 Automatic
g74X PwmntBR1 10.195 Bearing 10.195 Bearing 146 7.24 14.678 16.800 10.195 31.139 11.328 0.000 0.000 0.000
0.000 0.000 Automatic
g75P PwmntBR2 10.195 Bearing 10.195 Bearing 102 4.20 19.925 16.800 10.195 25.048 11.328 0.000 0.000 0.000
0.000 0.000 Automatic
g75X PwmntBR2 10.195 Bearing 10.195 Bearing 102 4.20 19.925 16.800 10.195 25.048 11.328 0.000 0.000 0.000
0.000 0.000 Automatic
g76P NewBR2 13.594 Bearing 13.594 Bearing 147 7.24 19.132 16.800 13.594 41.087 15.104 0.000 0.000 0.000
0.000 0.000 Automatic
g76X NewBR2 13.594 Bearing 13.594 Bearing 147 7.24 19.132 16.800 13.594 41.087 15.104 0.000 0.000 0.000
0.000 0.000 Automatic
g77P NewBR1 13.594 Bearing 13.594 Bearing 103 4.20 26.162 16.800 13.594 32.987 15.104 0.000 0.000 0.000
0.000 0.000 Automatic
g77X NewBR1 13.594 Bearing 13.594 Bearing 103 4.20 26.162 16.800 13.594 32.987 15.104 0.000 0.000 0.000

```
0.000              0.000          Automatic
    g78P BotCrArm   55.750     Shear   55.750     Shear   91  36.34   77.656     55.750     84.961   95.479   75.521    0.000    0.000    0.000
0.000              0.000          Automatic    Member "g78P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g78Y BotCrArm   55.750     Shear   55.750     Shear   91  36.34   77.656     55.750     84.961   95.479   75.521    0.000    0.000    0.000
0.000              0.000          Automatic    Member "g78Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g80P    Dummy    0.318       L/r    0.360  Net Sect    1   9.94    0.318      0.000      0.000    0.360    0.000    0.000    0.000    0.000
0.000              0.000          Automatic
 Fg8080P    Dummy    0.318       L/r    0.360  Net Sect    1   9.94    0.318      0.000      0.000    0.360    0.000    0.000    0.000    0.000
0.000              0.000          Automatic
```

The model contains 240 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	0.211	8.238	8.238
2P	0.252	8.426	8.426
3P	0.532	18.427	18.896
4P	0.281	10.516	10.516
5P	0.268	10.350	10.350
6P	0.25	9.717	9.717
7P	0.564	21.550	12.637
8P	0.352	15.105	10.695
9P	0.182	7.623	7.623
10P	0.368	14.606	10.875
11P	0.181	9.883	7.451
12P	0.172	9.729	7.630
13P	0.181	7.876	6.281
14P	0.181	9.624	3.608
15P	0.32	14.734	3.458
16P	0.405	18.931	3.500
17P	1.17	24.938	24.938
18P	2.52	54.562	54.843
19P	1.98	43.054	43.148
20P	1.7	36.971	37.065
21P	1.24	27.056	27.150
22P	0.724	15.375	15.375
23P	0.353	7.500	7.500
1X	0.211	8.238	8.238
1XY	0.211	8.238	8.238
1Y	0.211	8.238	8.238
2X	0.252	8.426	8.426
2XY	0.252	8.426	8.426
2Y	0.252	8.426	8.426
3X	0.532	18.427	18.896
3XY	0.478	17.886	17.558
3Y	0.478	17.886	17.558
4X	0.281	10.516	10.516
4XY	0.281	10.516	10.516
4Y	0.281	10.516	10.516
5X	0.268	10.350	10.350
5XY	0.268	10.350	10.350
5Y	0.268	10.350	10.350
6X	0.25	9.717	9.717

6XY	0.25	9.717	9.717
6Y	0.25	9.717	9.717
7X	0.462	17.485	12.202
7XY	0.455	17.404	11.605
7Y	0.557	21.469	12.041
8X	0.352	15.105	10.695
8XY	0.352	15.105	10.695
8Y	0.352	15.105	10.695
9X	0.182	7.623	7.623
9XY	0.182	7.623	7.623
9Y	0.182	7.623	7.623
10X	0.368	14.606	10.875
10XY	0.361	14.525	10.278
10Y	0.361	14.525	10.278
11X	0.181	9.883	7.451
11XY	0.181	9.883	7.451
11Y	0.181	9.883	7.451
12X	0.172	9.729	7.630
12XY	0.172	9.729	7.630
12Y	0.172	9.729	7.630
13X	0.181	7.876	6.281
13XY	0.171	7.795	5.685
13Y	0.171	7.795	5.685
14X	0.181	9.624	3.608
15X	0.32	14.734	3.458
16X	0.655	28.867	4.564
17S	0.301	16.564	11.948
18S	0.301	11.948	16.564
16PF0.45S	0.256	9.033	1.330
16PF0.50S	0.0585	0.041	0.726
7PF0.50S	0.0255	0.000	1.613
016PF0.50S	0	0.083	0.000
17Y	0.301	16.564	11.948
18X	0.301	11.948	16.564
16PF0.45Y	0.256	9.033	1.330
7PF0.50X	0.0255	0.041	1.613
Total	28.4	979.712	806.069

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	14.847	539.643	365.437	287.943	191.209
2	13.546	440.069	440.632	219.345	219.345
Total	28.392	979.712	806.069	507.289	410.554

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	14.847	14.847	2213.328	2213.328
2	13.546	14.900	1912.741	2104.015
Total	28.392	29.747	4126.068	4317.343

Section Joint Information:

Section Label	Joint Label	Joint Elevation (ft)
1	13P	111.500
1	12P	103.930
1	13X	111.500
1	12X	103.930
1	13XY	111.500
1	12XY	103.930
1	13Y	111.500
1	12Y	103.930
1	11P	96.260
1	11X	96.260
1	11XY	96.260
1	11Y	96.260
1	10P	88.290
1	10X	88.290
1	10XY	88.290
1	10Y	88.290
1	9P	80.700
1	9X	80.700
1	9XY	80.700
1	9Y	80.700
1	8P	72.710
1	8X	72.710
1	8XY	72.710
1	8Y	72.710
1	7P	64.570
1	7X	64.570
1	7XY	64.570
1	7Y	64.570
1	7PF0.50S	64.570
1	7PF0.50X	64.570
1	14P	111.500
1	14X	111.500
1	15P	88.290
1	15X	88.290
1	16P	64.570
1	16PF0.45S	64.570
1	16PF0.45Y	64.570
1	16X	64.570
1	16PF0.50S	64.570
1	19P	64.570
1	20P	88.290
1	21P	111.500
1	22P	122.000
1	23P	132.000
1	016PF0.50S	64.570
2	7P	64.570
2	6P	57.400
2	7X	64.570
2	6X	57.400
2	7XY	64.570
2	6XY	57.400
2	7Y	64.570
2	6Y	57.400
2	5P	48.860

2	5X	48.860
2	5XY	48.860
2	5Y	48.860
2	4P	40.720
2	4X	40.720
2	4XY	40.720
2	4Y	40.720
2	3P	33.250
2	3X	33.250
2	3XY	33.250
2	3Y	33.250
2	2P	16.350
2	2X	16.350
2	2XY	16.350
2	2Y	16.350
2	1P	0.000
2	1X	0.000
2	1XY	0.000
2	1Y	0.000
2	17S	16.350
2	17Y	16.350
2	18S	16.350
2	18X	16.350
2	17P	0.000
2	18P	33.250
2	19P	64.570

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	132.000	64.570	45	146	0.00	7.74	442.573	0.00	80.00	1359.752	Problem calculating gross area of longitudinal face for section "1": width is zero at elevation 111.50 (ft) which is not the top of the section. ??
2	64.570	0.000	35	94	7.74	28.30	1141.993	7.74	28.30	1141.993	

*** 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	14P	C-EX1	No Limit
2	14X	C-EX1	No Limit
3	15P	C-EX1	No Limit
4	15X	C-EX1	No Limit
5	16P	C-EX1	No Limit

6	16X	C-EX1	No Limit
7	016PF0.50S	C-EX1	No Limit
8	17P	C-EX1	No Limit
9	18P	C-EX1	No Limit
10	19P	C-EX1	No Limit
11	20P	C-EX1	No Limit
12	21P	C-EX1	No Limit
13	23P	C-EX1	No Limit
14	22P	C-EX1	No Limit
15	2P	C-EX1	No Limit
16	2Y	C-EX1	No Limit
17	3P	C-EX1	No Limit
18	3Y	C-EX1	No Limit
19	5P	C-EX1	No Limit
20	5Y	C-EX1	No Limit
21	7P	C-EX1	No Limit
22	7Y	C-EX1	No Limit
23	9P	C-EX1	No Limit
24	9Y	C-EX1	No Limit
25	11P	C-EX1	No Limit
26	11Y	C-EX1	No Limit
27	13P	C-EX1	No Limit
28	13Y	C-EX1	No Limit
29	2X	C-EX1	No Limit
30	3X	C-EX1	No Limit
31	5X	C-EX1	No Limit
32	7X	C-EX1	No Limit
33	9X	C-EX1	No Limit
34	11X	C-EX1	No Limit
35	13X	C-EX1	No Limit
36	2XY	C-EX1	No Limit
37	3XY	C-EX1	No Limit
38	5XY	C-EX1	No Limit
39	7XY	C-EX1	No Limit
40	9XY	C-EX1	No Limit
41	11XY	C-EX1	No Limit
42	13XY	C-EX1	No Limit

*** Loads Data

Loads from file: j:\jobs\1500100.wi\010 - e glastonbury 3 ct\backup documentation\calcs\rev (1)\pls tower\reinforced\cl&p # 12197.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)	132.00	(ft)	
Structure height	132.00	(ft)	
Structure height above ground	132.00	(ft)	
Tower Shape	Rectangular		

Load distributed evenly among joints in section for section based load cases

Vector Load Cases:

Load Case Description	Dead Load Factor	Wind Area Factor	SF for Steel Tubular Poles 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	26 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	26 loads	NESC 2007	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
14P	545	912	0	Shield Wire
14X	545	912	0	Shield Wire
15P	2628	1819	0	Conductor
16P	2628	1819	0	Conductor
016PF0.50S	2628	1819	0	Conductor
21P	601	0	0	(Verizon)Coax Cables in Powermount
20P	439	0	0	(Verizon)Coax Cables in Powermount
19P	515	0	0	(Verizon)Coax Cables in Powermount
18P	604	0	0	(Verizon)Coax Cables in Powermount
17P	311	0	0	(Verizon)Coax Cables in Powermount
23P	7902	1623	0	Verizon Antennas
22P	5533	2139	0	AT&T Antennas
13X	828	301	0	(AT&T) Coax Cables on Tower
11X	1062	386	0	(AT&T) Coax Cables on Tower
9X	1093	398	0	(AT&T) Coax Cables on Tower
7X	1098	399	0	(AT&T) Coax Cables on Tower
5X	1080	393	0	(AT&T) Coax Cables on Tower
3X	1121	408	0	(AT&T) Coax Cables on Tower
2X	1711	622	0	(AT&T) Coax Cables on Tower
13XY	828	301	0	(AT&T) Coax Cables on Tower

11XY	1062	386	0	(AT&T) Coax Cables on Tower
9XY	1093	398	0	(AT&T) Coax Cables on Tower
7XY	1098	399	0	(AT&T) Coax Cables on Tower
5XY	1080	393	0	(AT&T) Coax Cables on Tower
3XY	1121	408	0	(AT&T) Coax Cables on Tower
2XY	1711	622	0	(AT&T) 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	132.00	64.57	98.28	10.00	10.00	3.200	6118.7	0.00	3.200	0.0	0	22270
2	64.57	0.00	32.28	10.00	10.00	3.300	7238.4	0.00	3.300	0.0	0	22350

Point Loads for Load Case "NESC Extreme":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
14P	117	669	0	Shield Wire
14X	117	669	0	Shield Wire
15P	1122	3063	0	Conductor
16P	1122	3063	0	Conductor
016PF0.50S	1122	3063	0	Conductor
21P	401	0	0	(Verizon)Coax Cables in Powermount
20P	293	0	0	(Verizon)Coax Cables in Powermount
19P	343	0	0	(Verizon)Coax Cables in Powermount
18P	403	0	0	(Verizon)Coax Cables in Powermount
17P	207	0	0	(Verizon)Coax Cables in Powermount
23P	3562	6266	0	Verizon Antennas
22P	2501	8424	0	AT&T Antennas
13X	225	1004	0	(AT&T) Coax Cables on Tower
11X	288	1288	0	(AT&T) Coax Cables on Tower
9X	297	1325	0	(AT&T) Coax Cables on Tower
7X	298	1331	0	(AT&T) Coax Cables on Tower
5X	293	1310	0	(AT&T) Coax Cables on Tower
3X	304	1359	0	(AT&T) Coax Cables on Tower
2X	464	2074	0	(AT&T) Coax Cables on Tower
13XY	225	1004	0	(AT&T) Coax Cables on Tower
11XY	288	1288	0	(AT&T) Coax Cables on Tower
9XY	297	1325	0	(AT&T) Coax Cables on Tower
7XY	298	1331	0	(AT&T) Coax Cables on Tower
5XY	293	1310	0	(AT&T) Coax Cables on Tower
3XY	304	1359	0	(AT&T) Coax Cables on Tower
2XY	464	2074	0	(AT&T) Coax Cables on Tower

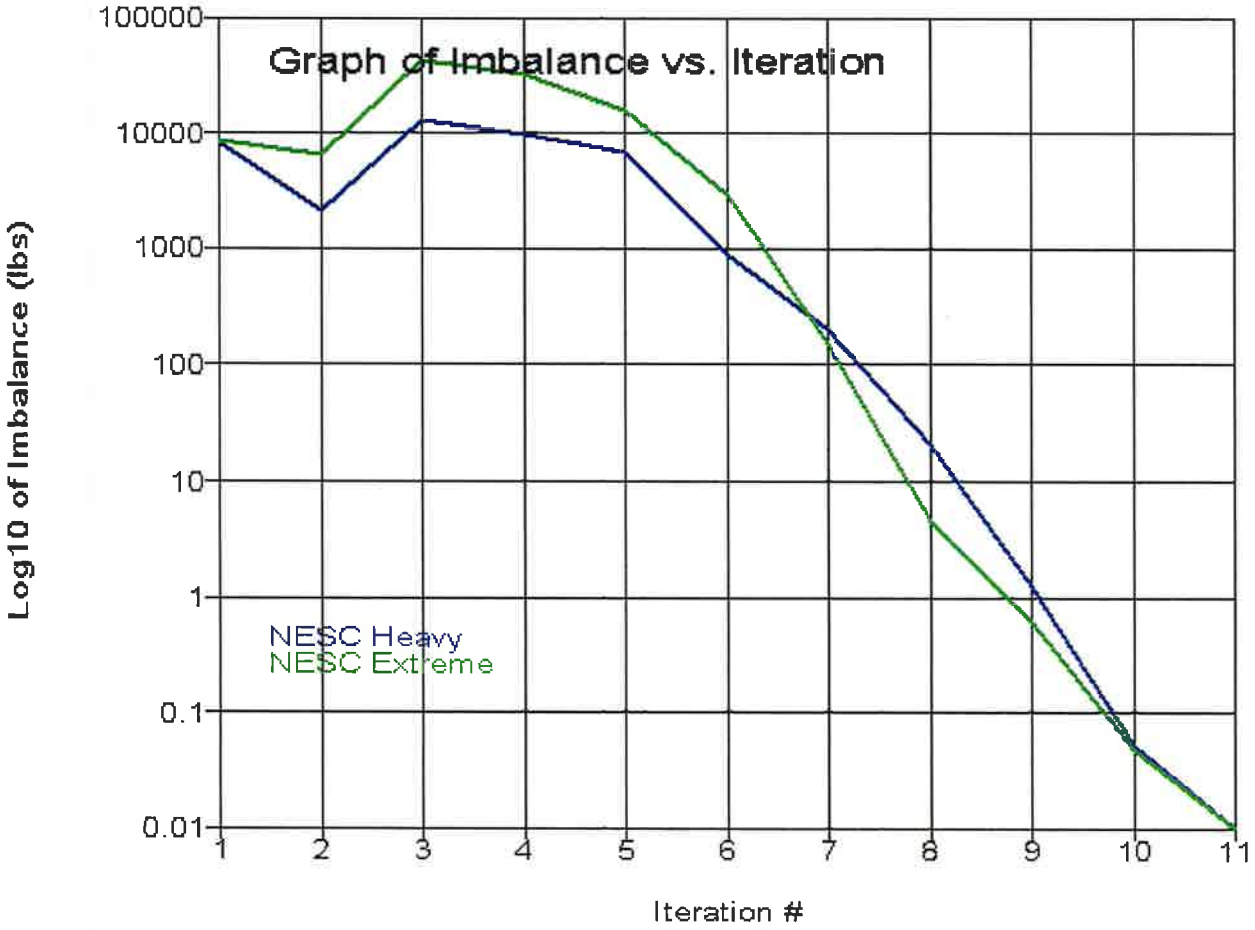
Section Load Case Information (Code) for "NESC Extreme":

Section Label	Z of Top	Z of Bottom	Ave. Elev. Above Ground	Res. Adj. Wind Pres.	Tran Adj. Wind Pres.	Tran Angle Face Area	Tran Round Face Area	Tran Gross Area	Tran Soli- dity Ratio	Tran Angle Drag Coef	Tran Round Drag Coef	Tran Wind Load	Long Adj. Wind Pres.	Long Angle Face Area	Long Round Face Area	Long Gross Area	Long Soli- dity Ratio	Long Angle Drag Coef	Long Round Drag Coef	Long Wind Load	Ice Weight	Total Weight

	(ft)	(ft)	(ft)	(psf)	(psf)	(ft^2)	(ft^2)	(ft^2)				(lbs)	(psf)	(ft^2)	(ft^2)	(ft^2)				(lbs)	(lbs)
1	132.00	64.57	98.28	32.38	32.38	90.06	101.15	442.57	0.432	3.200	2.000	15879.7	0.00	186.80	101.15	1359.75	0.212	3.200	2.000	0.0	0
2	64.57	0.00	32.28	32.38	32.38	134.74	106.54	1141.99	0.211	3.200	2.000	20857.5	0.00	134.74	106.54	1141.99	0.211	3.200	2.000	0.0	0

*** Analysis Results:

Maximum element usage is 98.31% for Angle "g15XY" in load case "NESC Extreme"
Maximum insulator usage is 18.44% for Clamp "14" in load case "NESC Extreme"



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	17.70	0.000	-7.267	-2.752	-7.267
Leg1	g1X	9.34	6.521	0.000	1.427	6.521
Leg1	g1XY	8.81	6.150	0.000	1.353	6.150
Leg1	g1Y	16.83	0.000	-6.912	-2.627	-6.912

Leg1	g2P	65.38	0.000	-26.354	-9.861	-26.354
Leg1	g2X	35.08	24.502	0.000	6.979	24.502
Leg1	g2XY	34.37	24.007	0.000	6.907	24.007
Leg1	g2Y	64.26	0.000	-25.903	-9.737	-25.903
Leg1	g3P	66.38	0.000	-40.782	-13.306	-40.782
Leg1	g3X	54.30	37.923	0.000	8.457	37.923
Leg1	g3XY	54.88	38.330	0.000	8.731	38.330
Leg1	g3Y	67.18	0.000	-41.274	-13.537	-41.274
Leg1	g4P	89.72	0.000	-55.771	-17.707	-55.771
Leg1	g4X	94.05	52.989	0.000	12.123	52.989
Leg1	g4XY	94.78	53.401	0.000	12.366	53.401
Leg1	g4Y	90.71	0.000	-56.391	-17.987	-56.391
Leg2	g5P	74.63	0.000	-77.225	-26.521	-77.225
Leg2	g5X	43.23	71.783	0.000	16.823	71.783
Leg2	g5XY	43.45	72.155	0.000	16.897	72.155
Leg2	g5Y	75.34	0.000	-77.962	-26.804	-77.962
Leg2	g6P	78.10	0.000	-78.962	-27.212	-78.962
Leg2	g6X	46.48	77.185	0.000	20.232	77.185
Leg2	g6XY	46.23	76.768	0.000	19.758	76.768
Leg2	g6Y	78.55	0.000	-79.414	-27.459	-79.414
Leg2	g7P	87.02	0.000	-98.730	-32.248	-98.730
Leg2	g7X	67.97	90.938	0.000	18.928	90.938
Leg2	g7XY	67.36	90.129	0.000	18.151	90.129
Leg2	g7Y	86.97	0.000	-98.675	-32.411	-98.675
Leg3	g8P	69.87	0.000	-102.963	-35.967	-102.963
Leg3	g8X	54.65	90.757	0.000	17.085	90.757
Leg3	g8XY	54.32	90.204	0.000	16.938	90.204
Leg3	g8Y	69.61	0.000	-102.591	-35.539	-102.591
Leg3	g9P	68.58	0.000	-102.199	-38.412	-102.199
Leg3	g9X	54.85	91.088	0.000	20.085	91.088
Leg3	g9XY	54.49	90.483	0.000	19.722	90.483
Leg3	g9Y	68.34	0.000	-101.852	-38.240	-101.852
Leg3	g10P	97.38	0.000	-105.822	-40.826	-105.822
Leg3	g10X	68.48	91.627	0.000	19.503	91.627
Leg3	g10XY	68.11	91.134	0.000	19.466	91.134
Leg3	g10Y	96.94	0.000	-105.352	-40.354	-105.352
Leg4	g11P	93.42	0.000	-110.925	-41.974	-110.925
Leg4	g11X	74.06	77.357	0.000	20.200	77.357
Leg4	g11XY	72.27	75.479	0.000	14.638	75.479
Leg4	g11Y	95.57	0.000	-113.477	-48.211	-113.477
Leg5	g12P	94.14	0.000	-112.308	-42.748	-112.308
Leg5	g12X	79.03	77.020	0.000	18.161	77.020
Leg5	g12XY	77.10	75.136	0.000	12.559	75.136
Leg5	g12Y	96.31	0.000	-114.894	-49.046	-114.894
Diag1	g13P	50.00	9.628	0.000	3.211	9.628
Diag1	g13X	63.63	0.000	-9.933	-3.738	-9.933
Diag1	g13XY	82.77	0.000	-12.922	-4.715	-12.922
Diag1	g13Y	65.52	12.618	0.000	4.172	12.618
Diag1	g14P	1.74	0.335	0.000	0.335	0.290
Diag1	g14X	0.93	0.131	-0.146	0.131	-0.146
Diag1	g14XY	17.63	3.394	0.000	1.237	3.394
Diag1	g14Y	27.64	0.000	-3.219	-0.789	-3.219
Diag1	g15P	44.20	8.512	0.000	3.134	8.512
Diag1	g15X	56.10	0.000	-8.670	-2.992	-8.670
Diag1	g15XY	98.31	0.000	-15.194	-5.092	-15.194
Diag1	g15Y	77.97	15.015	0.000	5.237	15.015
Diag1	g16P	20.32	3.913	0.000	1.252	3.913
Diag1	g16X	33.31	0.000	-3.845	-1.141	-3.845
Diag1	g16XY	2.99	0.576	0.000	0.253	0.576

Diag1	g16Y	3.23	0.000	-0.499	-0.157	-0.499
Diag2	g17P	44.66	9.959	0.000	0.994	9.959
Diag2	g17X	54.19	0.000	-10.584	-1.428	-10.584
Diag2	g17XY	75.45	0.000	-14.737	-2.774	-14.737
Diag2	g17Y	63.26	14.107	0.000	2.378	14.107
Diag2	g18P	0.82	0.065	-0.120	-0.120	0.065
Diag2	g18X	8.19	0.000	-1.194	-1.194	-0.618
Diag2	g18XY	15.56	3.471	0.000	0.097	3.471
Diag2	g18Y	27.55	0.000	-4.018	-1.427	-4.018
Diag3	g19P	32.42	7.995	0.000	2.770	7.995
Diag3	g19X	31.33	0.000	-9.789	-4.675	-9.789
Diag3	g19XY	39.94	0.000	-12.481	-5.790	-12.481
Diag3	g19Y	43.39	10.701	0.000	3.922	10.701
Diag3	g20P	9.19	0.000	-2.165	-0.218	-2.165
Diag3	g20X	6.80	1.677	-0.218	-0.218	1.677
Diag3	g20XY	17.88	4.410	0.000	1.053	4.410
Diag3	g20Y	20.28	0.000	-4.780	-1.330	-4.780
Diag3	g21P	42.08	10.379	0.000	4.735	10.379
Diag3	g21X	35.64	0.000	-10.851	-3.830	-10.851
Diag3	g21XY	44.78	0.000	-13.636	-5.016	-13.636
Diag3	g21Y	53.30	13.147	0.000	5.881	13.147
Diag3	g22P	19.57	4.827	0.000	1.302	4.827
Diag3	g22X	17.89	0.000	-4.077	-0.889	-4.077
Diag3	g22XY	5.59	0.418	-1.273	0.418	-1.273
Diag3	g22Y	8.67	2.137	0.000	0.157	2.137
Diag4	g23P	27.98	9.098	-0.082	-0.082	9.098
Diag4	g23X	20.07	0.616	-8.152	0.616	-8.152
Diag4	g23XY	24.68	0.000	-10.021	-0.144	-10.021
Diag4	g23Y	35.00	11.384	0.000	0.994	11.384
Diag4	g24P	49.91	0.000	-16.095	-4.030	-16.095
Diag4	g24X	24.16	7.917	-3.664	-3.664	7.917
Diag4	g24XY	32.51	10.653	-2.384	-2.384	10.653
Diag4	g24Y	58.13	0.000	-18.746	-5.165	-18.746
Diag5	g25P	4.48	0.888	-1.498	0.888	-1.498
Diag5	g25X	6.37	1.682	-2.132	-2.132	1.682
Diag5	g25XY	9.37	0.000	-3.134	-3.134	-1.267
Diag5	g25Y	8.07	2.698	0.000	2.698	1.785
Diag5	g26P	6.38	0.436	-2.133	0.436	-2.133
Diag5	g26X	11.86	0.000	-3.967	-3.967	-1.718
Diag5	g26XY	8.10	1.331	-2.709	-2.709	1.331
Diag5	g26Y	16.08	0.000	-5.380	-1.092	-5.380
Diag6	g27P	6.35	1.282	-1.402	1.282	-1.402
Diag6	g27X	7.26	0.161	-1.601	-1.601	0.161
Diag6	g27XY	13.68	0.000	-3.020	-3.020	-2.367
Diag6	g27Y	9.17	2.045	0.000	2.045	0.893
Diag6	g28P	15.41	3.436	0.000	0.602	3.436
Diag6	g28X	8.30	1.852	-0.705	1.852	-0.705
Diag6	g28XY	12.63	2.817	0.000	2.817	1.640
Diag6	g28Y	4.17	0.930	-0.573	-0.573	0.930
Diag6	g29P	4.21	0.939	-0.189	0.939	-0.189
Diag6	g29X	8.99	0.000	-1.677	-1.677	-0.623
Diag6	g29XY	12.56	0.000	-2.344	-2.216	-2.344
Diag6	g29Y	9.09	2.028	0.000	2.028	1.695
Diag6	g30P	5.72	0.215	-1.068	0.215	-1.068
Diag6	g30X	11.01	0.000	-2.054	-2.054	-0.857
Diag6	g30XY	7.14	0.893	-1.333	-1.333	0.893
Diag6	g30Y	15.75	0.000	-2.940	-0.667	-2.940
Diag6	g31P	5.63	1.255	0.000	1.255	0.922
Diag6	g31X	7.24	0.000	-1.153	-1.153	-0.683

Diag6	g31XY	13.71	0.000	-2.186	-2.059	-2.186
Diag6	g31Y	10.33	2.303	0.000	1.647	2.303
Diag6	g32P	9.28	2.070	0.000	0.386	2.070
Diag6	g32X	4.90	0.864	-0.782	0.864	-0.782
Diag6	g32XY	6.48	1.445	0.000	1.445	0.621
Diag6	g32Y	2.63	0.586	-0.291	-0.291	0.586
Diag7	g33P	48.75	0.000	-6.260	-6.260	-1.719
Diag7	g33X	12.20	4.336	-0.529	-0.529	4.336
Diag7	g33XY	25.50	9.064	0.000	7.344	9.064
Diag7	g33Y	13.49	0.000	-1.733	-1.098	-1.733
Diag7	g34P	2.58	0.918	0.000	0.171	0.918
Diag7	g34X	48.83	17.354	0.000	4.489	17.354
Diag7	g34XY	53.15	18.891	0.000	5.464	18.891
Diag7	g34Y	3.71	0.000	-0.476	-0.273	-0.476
Diag8	g35P	44.54	2.531	-3.106	-3.106	2.531
Diag8	g35X	79.55	0.000	-5.547	-5.547	0.000
Diag8	g35XY	0.00	0.000	0.000	0.000	0.000
Diag8	g35Y	23.17	8.081	0.000	6.689	8.081
Diag8	g36P	0.00	0.000	0.000	0.000	0.000
Diag8	g36X	60.20	20.992	0.000	5.257	20.992
Diag8	g36XY	60.20	20.992	0.000	5.810	20.992
Diag8	g36Y	10.75	0.000	-0.750	-0.750	0.000
Horz2	g37P	1.76	0.745	0.000	0.745	0.060
Horz2	g37Y	1.50	0.635	0.000	0.635	0.059
Horz1	g38P	25.82	5.505	0.000	1.271	5.505
Horz1	g38X	32.25	0.000	-5.814	-2.144	-5.814
Horz3	g39P	7.96	0.000	-0.787	-0.787	-0.282
Horz3	g39Y	7.99	0.000	-0.790	-0.790	-0.270
Horz3	g40P	9.67	2.386	0.000	2.386	0.841
Horz3	g40Y	9.63	2.375	0.000	2.375	0.843
Horz4	g41P	7.36	1.642	0.000	0.871	1.642
Horz4	g41X	6.70	1.494	-0.350	1.494	-0.350
Horz5	g42P	11.40	5.068	0.000	5.068	2.472
Horz5	g42Y	11.33	5.039	0.000	5.039	2.418
Horz3	g43P	63.70	9.478	0.000	2.434	9.478
Horz3	g43X	53.82	1.030	-5.321	1.030	-5.321
Horz4	g44P	41.00	9.144	0.000	5.383	9.144
Horz4	g44X	68.68	15.315	0.000	15.315	15.028
Horz4	Fg4478P	41.00	9.143	0.000	5.383	9.143
Horz4	Fg4478X	68.68	15.315	0.000	15.315	15.027
Horz5	g45P	8.00	1.785	-0.123	1.785	-0.123
Horz5	g45Y	7.07	0.000	-1.212	-1.212	-0.281
Horz5	g46P	3.84	0.856	0.000	0.856	0.639
Horz5	g46X	50.51	0.000	-8.662	-3.723	-8.662
Horz6	g47P	12.13	0.000	-1.101	-0.847	-1.101
Horz6	g47X	26.70	0.000	-2.424	-1.156	-2.424
Horz6	g47XY	27.09	0.000	-2.460	-1.296	-2.460
Horz6	g47Y	12.18	0.000	-1.106	-0.949	-1.106
Horz6	g48P	31.25	0.000	-2.837	-1.070	-2.837
Horz6	g48X	9.32	1.689	0.000	0.131	1.689
Horz6	g48XY	9.16	1.659	0.000	0.006	1.659
Horz6	g48Y	33.12	0.000	-3.007	-1.281	-3.007
Inner1	g49P	18.68	0.000	-1.567	-0.463	-1.567
Inner1	g49X	10.50	1.513	0.000	0.500	1.513
Inner2	g50P	3.09	0.485	0.000	0.048	0.485
Inner2	g50X	3.48	0.000	-0.534	-0.144	-0.534
Inner3	g51P	40.54	0.000	-9.437	-8.597	-9.437
Inner3	g51X	28.79	0.000	-6.702	-4.789	-6.702
Inner4	g52P	2.03	0.318	0.000	0.318	0.300

Inner4	g52X	9.72	0.000	-0.664	-0.664	-0.225	
Inner4	g52XY	5.84	0.911	0.000	0.602	0.911	
Inner4	g52Y	9.46	0.000	-0.647	-0.634	-0.647	
TopCrArm	g53P	4.90	0.000	-1.365	-0.085	-1.365	
TopCrArm	g53X	7.13	2.280	0.000	1.748	2.280	
TopCrArm	g53XY	2.88	0.921	-0.303	0.921	-0.303	
TopCrArm	g53Y	3.81	1.219	0.000	0.747	1.219	
TopArmBr	g54P	4.14	0.923	-0.491	-0.491	0.923	
TopArmBr	g54X	13.01	0.000	-1.926	-1.406	-1.926	
TopArmBr	g54XY	4.09	0.913	-0.501	-0.501	0.913	
TopArmBr	g54Y	13.06	0.000	-1.933	-1.415	-1.933	
MidCrArm	g55P	15.69	0.000	-5.249	-5.249	-2.936	
MidCrArm	g55X	3.43	0.000	-1.148	-0.969	-1.148	
MidCrArm	g55XY	1.85	0.620	-0.422	-0.422	0.620	
MidCrArm	g55Y	17.40	0.000	-5.821	-5.821	-4.722	
MidCrArm	g56P	5.07	0.000	-2.261	-2.261	-1.219	
MidCrArm	g56Y	4.72	0.000	-2.103	-2.103	-1.141	
MidArmBr	g57P	18.34	4.513	0.000	4.513	1.272	
MidArmBr	g57X	5.71	1.405	0.000	1.024	1.405	
MidArmBr	g57XY	9.59	0.446	-0.464	0.446	-0.464	
MidArmBr	g57Y	20.73	5.101	0.000	5.101	3.137	
BotCrArm	g58P	28.93	0.000	-9.678	-9.678	-5.998	
BotCrArm	g58Y	29.73	0.000	-9.943	-9.943	-6.596	
BotCrArm	Fg5860P	18.76	0.000	-10.460	-10.460	-8.063	
BotCrArm	Fg5860Y	19.23	0.000	-10.719	-10.719	-8.671	
BotCrArm	g59P	2.41	0.583	-1.611	-1.611	0.583	
BotCrArm	g59Y	5.35	3.580	0.000	0.707	3.580	
BotArmBr	g60P	21.97	8.940	0.000	8.940	4.391	
BotArmBr	g60X	5.67	2.309	0.000	2.309	0.938	
BotArmBr	g60XY	5.39	2.192	0.000	2.192	0.512	
BotArmBr	g60Y	22.58	9.189	0.000	9.189	4.988	
M1	g62P	1.00	0.000	-0.223	-0.113	-0.223	
M1	Fg6262P	1.01	0.000	-0.226	-0.116	-0.226	
Pwmnt	g64P	4.86	0.000	-28.866	-28.866	-9.702	
Pwmnt	g65P	3.99	0.000	-24.115	-24.115	-8.883	
Pwmnt	g66P	3.22	0.000	-20.475	-20.475	-7.811	
Pwmnt	g67P	2.74	0.000	-17.496	-17.496	-7.216	
Pwmnt	g68P	2.24	0.000	-15.008	-15.008	-6.214	
Pwmnt	g69P	1.25	0.000	-8.411	-8.411	-3.635	
PwmntBR3	g70P	18.61	0.000	-3.127	-0.593	-3.127	
PwmntBR3	g70X	9.72	0.000	-1.633	-0.831	-1.633	
PwmntBR4	g71P	26.86	0.000	-3.652	-0.885	-3.652	
PwmntBR4	g71X	21.64	0.000	-2.942	-1.651	-2.942	
PwmntBR1	g72P	37.50	0.000	-3.824	-3.824	-2.389	
PwmntBR1	g72X	24.39	0.000	-2.487	-0.505	-2.487	
PwmntBR2	g73P	22.01	0.000	-2.244	-2.039	-2.244	
PwmntBR2	g73X	78.75	0.000	-8.029	-6.742	-8.029	
PwmntBR1	g74P	30.75	0.000	-3.135	-0.610	-3.135	
PwmntBR1	g74X	30.79	3.139	0.000	0.537	3.139	
PwmntBR2	g75P	55.33	0.000	-5.641	-1.464	-5.641	
PwmntBR2	g75X	53.35	5.439	0.000	0.993	5.439	
NewBR2	g76P	45.28	6.155	0.000	2.042	6.155	
NewBR2	g76X	45.01	0.000	-6.118	-1.903	-6.118	
NewBR1	g77P	80.64	10.961	0.000	3.673	10.961	
NewBR1	g77X	80.45	0.000	-10.936	-3.336	-10.936	
BotCrArm	g78P	4.03	0.000	-2.246	-2.246	-0.729	
BotCrArm	g78Y	3.85	0.000	-2.144	-2.144	-0.326	
Dummy	**g80P**	**0.00**	**3.056**	**0.000**	**1.500**	**3.056**	**Axial force too large for fictitious member ??**
Dummy	**Fg8080P**	**0.00**	**0.000**	**-0.367**	**-0.309**	**-0.367**	**Axial force too large for fictitious member ??**

*** Analysis Results for Load Case No. 1 "NESC Heavy" - Number of iterations in SAPS 11

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	0	0	-0.0314	0.0201	0.2728	14.15	14.15	0
2P	0.01494	0.0005049	-0.004357	-0.0719	-0.0382	0.2553	11.25	11.24	16.35
3P	0.01031	0.01838	-0.009436	-0.0806	-0.0393	0.1508	8.67	8.678	33.24
4P	0.009037	0.02592	-0.01151	-0.0767	-0.0361	0.1060	7.499	7.516	40.71
5P	0.005985	0.03698	-0.0134	-0.0975	-0.0276	0.0541	6.226	6.257	48.85
6P	0.004397	0.0516	-0.01452	-0.0923	-0.0208	0.0036	4.934	4.982	57.39
7P	0.0009775	0.06615	-0.01519	-0.1610	-0.0274	-0.0514	3.871	3.936	64.55
8P	-0.0004906	0.08541	-0.01733	-0.1422	0.0019	-0.0523	3.87	3.955	72.69
9P	-0.0002696	0.1089	-0.01939	-0.1832	-0.0072	-0.0531	3.87	3.979	80.68
10P	-0.003627	0.1347	-0.02182	-0.2075	-0.0159	-0.0555	3.866	4.005	88.27
11P	-0.003558	0.1652	-0.02376	-0.2314	-0.0065	-0.0601	3.866	4.035	96.24
12P	-0.006234	0.1976	-0.02518	-0.2522	-0.0197	-0.0644	3.864	4.068	103.9
13P	-0.007509	0.2319	-0.02563	-0.2638	-0.0058	-0.0688	3.862	4.102	111.5
14P	-0.03699	0.2368	0.07554	-0.2525	-0.0133	-0.0740	-0.03699	-19.26	111.6
15P	-0.03438	0.1403	0.07333	-0.1566	-0.0134	-0.0574	-0.03438	-26.86	88.36
16P	-0.03678	0.07653	0.01864	-1.4333	-0.0145	-0.0512	-0.03678	-39.92	64.59
17P	0	0	0	0.0000	0.0000	0.0000	-2.25	0	0
18P	0.004248	0.0262	-0.001717	-0.0642	-0.0012	0.0000	-2.246	0.0262	33.25
19P	-0.003044	0.07275	-0.003095	-0.1339	-0.0145	0.0000	-2.253	0.07275	64.57
20P	-0.007469	0.1405	-0.004055	-0.1652	-0.0103	-0.0000	-2.257	0.1405	88.29
21P	-0.01248	0.2404	-0.004992	-0.4376	-0.0135	-0.0001	-2.262	0.2404	111.5
22P	-0.01497	0.3396	-0.005742	-0.6112	-0.0137	-0.0001	-2.265	0.3396	122
23P	-0.01735	0.4507	-0.006508	-0.6480	-0.0137	-0.0001	-2.267	0.4507	132
1X	0	0	0	0.0702	-0.0532	-0.3210	14.15	-14.15	0
1XY	0	0	0	-0.0069	0.0468	0.2517	-14.15	-14.15	0
1Y	0	0	0	-0.1071	0.1363	-0.3035	-14.15	14.15	0
2X	0.0001472	0.001406	0.002792	0.0228	-0.0596	-0.3283	11.24	-11.24	16.35
2XY	0.0002838	0.01571	-0.0007679	-0.0129	0.0412	0.2538	-11.24	-11.22	16.35
2Y	0.01597	0.01472	-0.008382	-0.0918	0.0734	-0.3174	-11.22	11.25	16.34
3X	-0.002604	0.0177	0.003289	-0.0204	-0.0323	-0.2532	8.657	-8.642	33.25
3XY	-0.001174	0.03046	-0.0003301	-0.0134	0.0049	0.1692	-8.661	-8.63	33.25
3Y	0.009986	0.02998	-0.01329	-0.0868	0.0060	-0.2306	-8.65	8.69	33.24
4X	-0.002248	0.0258	0.003533	-0.0345	-0.0477	-0.2149	7.488	-7.464	40.72
4XY	-0.003156	0.03633	0.0005156	-0.0373	0.0223	0.1301	-7.493	-7.454	40.72
4Y	0.006666	0.03722	-0.01466	-0.0818	0.0164	-0.1865	-7.483	7.527	40.71
5X	-0.005487	0.03658	0.002975	-0.0423	-0.0262	-0.1779	6.215	-6.183	48.86
5XY	-0.001684	0.04628	0.0003347	-0.0482	-0.0001	0.0918	-6.222	-6.174	48.86
5Y	0.004737	0.04626	-0.01607	-0.0972	0.0050	-0.1387	-6.215	6.266	48.84
6X	-0.003224	0.05096	0.002591	-0.1393	-0.0294	-0.1490	4.927	-4.879	57.4
6XY	-0.00589	0.05894	0.0004928	-0.1411	0.0029	0.0600	-4.936	-4.871	57.4
6Y	0.001197	0.05967	-0.01655	-0.0979	-0.0005	-0.0900	-4.929	4.99	57.38
7X	-0.008174	0.06629	0.0009265	0.0634	-0.0583	-0.0786	3.862	-3.804	64.57
7XY	-0.002585	0.07292	-0.0007792	0.0630	0.0311	-0.0123	-3.873	-3.797	64.57
7Y	0.0002892	0.07295	-0.01679	-0.1608	0.0051	-0.0385	-3.87	3.943	64.55
8X	-0.007241	0.08457	0.002479	-0.1990	0.0065	-0.0744	3.863	-3.785	72.71
8XY	-0.007542	0.09147	0.0007343	-0.2014	-0.0358	-0.0213	-3.878	-3.779	72.71
8Y	-0.001208	0.0923	-0.01894	-0.1438	-0.0226	-0.0424	-3.871	3.962	72.69
9X	-0.01099	0.1087	0.003726	-0.1700	-0.0313	-0.0701	3.859	-3.761	80.7
9XY	-0.007846	0.1159	0.001987	-0.1726	0.0017	-0.0300	-3.878	-3.754	80.7
9Y	-0.004305	0.1161	-0.02103	-0.1862	-0.0139	-0.0463	-3.874	3.986	80.68

10X	-0.01121	0.1349	0.005316	-0.1982	-0.0112	-0.0589	3.859	-3.735	88.3
10XY	-0.01142	0.1425	0.003608	-0.1987	-0.0168	-0.0538	-3.881	-3.728	88.29
10Y	-0.003743	0.1422	-0.0235	-0.2081	-0.0069	-0.0570	-3.874	4.012	88.27
11X	-0.01494	0.1645	0.006458	-0.2331	-0.0163	-0.0621	3.855	-3.705	96.27
11XY	-0.01171	0.1728	0.004787	-0.2415	-0.0144	-0.0592	-3.882	-3.697	96.26
11Y	-0.006634	0.1734	-0.02548	-0.2398	-0.0130	-0.0611	-3.877	4.043	96.23
12X	-0.01495	0.1979	0.007337	-0.2570	-0.0045	-0.0652	3.855	-3.672	103.9
12XY	-0.01577	0.2074	0.005649	-0.2647	-0.0264	-0.0644	-3.886	-3.663	103.9
12Y	-0.006438	0.2071	-0.02688	-0.2599	0.0001	-0.0650	-3.876	4.077	103.9
13X	-0.01749	0.2318	0.007452	-0.2564	-0.0264	-0.0681	3.853	-3.638	111.5
13XY	-0.01709	0.2419	0.005753	-0.2581	-0.0030	-0.0697	-3.887	-3.628	111.5
13Y	-0.007738	0.2419	-0.02731	-0.2655	-0.0152	-0.0688	-3.878	4.112	111.5
14X	0.01205	0.2371	-0.09929	-0.2689	-0.0117	-0.0739	0.01205	19.74	111.4
15X	0.01941	0.138	-0.1161	-0.2427	-0.0118	-0.0576	0.01941	27.14	88.17
16X	0.03256	0.0686	-0.1157	-0.1555	-0.0112	-0.0534	0.03256	40.07	64.45
17S	0.05237	0.0009832	0.006219	-0.0151	-0.0489	-0.0383	11.29	0.0009832	16.36
18S	0.01539	-0.03672	-0.02044	-0.0814	-0.0241	-0.0389	0.01539	11.2	16.33
16PF0.45S	-0.02227	0.07132	-0.2455	0.0708	-0.0619	-0.0532	1.719	-23.67	64.32
16PF0.50S	-0.02227	0.07291	-0.2468	0.0668	-0.0161	-0.0501	-0.02227	-23.67	64.32
7PF0.50S	0.0006362	0.06955	-0.02976	0.0000	0.0000	0.0000	0.0006362	3.94	64.54
016PF0.50S	-0.01377	0.1238	-0.3449	0.2418	-0.0162	-0.0496	-0.01377	-13.68	64.23
17Y	-0.0369	0.01531	-0.002066	-0.0029	0.0569	-0.0441	-11.28	0.01531	16.35
18X	0.0002227	0.0531	-0.00568	0.0051	-0.0090	-0.0360	0.0002227	-11.19	16.34
16PF0.45Y	-0.02227	0.07437	-0.2464	0.0712	0.0300	-0.0472	-1.764	-23.67	64.32
7PF0.50X	-0.005306	0.1116	-0.1673	0.4229	-0.0164	-0.0495	-0.005306	-3.758	64.4

Joint Support Reactions for Load Case "NESC Heavy":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	H-Bend-M Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
1P	-8.08	0.0	-10.97	0.0	0.0	-45.97	0.0	0.0	47.94	0.0	0.00	0.0	0.0	0.0	0.0	0.00	0.0	0.0
17P	-0.22	0.0	-1.17	0.0	0.0	-31.12	0.0	0.0	31.14	0.0	11.33	0.0	-3.7	0.0	0.0	-0.00	0.0	0.0
1X	6.13	0.0	-2.03	0.0	0.0	18.88	0.0	0.0	19.95	0.0	0.00	0.0	0.0	0.0	0.0	0.00	0.0	0.0
1XY	-6.82	0.0	-7.51	0.0	0.0	21.19	0.0	0.0	23.50	0.0	0.00	0.0	0.0	0.0	0.0	0.00	0.0	0.0
1Y	8.99	0.0	-8.53	0.0	0.0	-48.47	0.0	0.0	50.03	0.0	0.00	0.0	0.0	0.0	0.0	0.00	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	-0.3475	8.0830	10.9686	-45.6194	0.0000	0.0000	0.0000
2P	0.0000	0.0000	-0.4153	0.0000	0.0000	0.4153	0.0149	0.0005	-0.0044
3P	0.0000	0.0000	-0.8784	-0.0000	0.0000	0.8784	0.0103	0.0184	-0.0094
4P	0.0000	0.0000	-0.4636	-0.0000	-0.0000	0.4636	0.0090	0.0259	-0.0115
5P	0.0000	0.0000	-0.4414	-0.0000	-0.0000	0.4414	0.0060	0.0370	-0.0134
6P	0.0000	0.0000	-0.4128	-0.0000	-0.0000	0.4128	0.0044	0.0516	-0.0145
7P	0.0000	0.0000	-0.8640	0.0000	0.0000	0.8640	0.0010	0.0661	-0.0152
8P	0.0000	0.0000	-0.5283	-0.0000	0.0000	0.5283	-0.0005	0.0854	-0.0173
9P	0.0000	0.0000	-0.2727	-0.0000	0.0000	0.2727	-0.0003	0.1089	-0.0194
10P	0.0000	0.0000	-0.5520	0.0000	0.0000	0.5520	-0.0036	0.1347	-0.0218
11P	0.0000	0.0000	-0.2708	-0.0000	0.0000	0.2708	-0.0036	0.1652	-0.0238
12P	0.0000	0.0000	-0.2587	-0.0000	0.0000	0.2587	-0.0062	0.1976	-0.0252
13P	0.0000	0.0000	-0.2708	-0.0000	0.0000	0.2708	-0.0075	0.2319	-0.0256
14P	0.0000	1.0275	-0.8159	-0.0000	-1.0275	0.8159	-0.0370	0.2368	0.0755

15P	0.0000	1.9297	-3.1079	-0.0000	-1.9297	3.1079	-0.0344	0.1403	0.0733
16P	0.0000	1.9310	-3.2362	-0.0000	-1.9310	3.2362	-0.0368	0.0765	0.0186
17P	0.0000	0.8229	-2.2493	0.2235	0.3508	-28.8666	0.0000	0.0000	0.0000
18P	0.0000	1.5981	-4.7539	-0.0000	-1.5981	4.7539	0.0042	0.0262	-0.0017
19P	0.0000	1.3444	-3.6574	-0.0000	-1.3444	3.6574	-0.0030	0.0728	-0.0031
20P	0.0000	1.1263	-2.9857	-0.0000	-1.1263	2.9857	-0.0075	0.1405	-0.0041
21P	0.0000	0.8090	-2.4665	-0.0000	-0.8090	2.4665	-0.0125	0.2404	-0.0050
22P	0.0000	2.6310	-6.6194	0.0000	-2.6310	6.6194	-0.0150	0.3396	-0.0057
23P	0.0000	1.8630	-8.4320	0.0000	-1.8630	8.4320	-0.0174	0.4507	-0.0065
1X	0.0000	0.2034	-0.3475	-6.1348	1.8246	19.2227	0.0000	0.0000	0.0000
1XY	0.0000	0.2034	-0.3475	6.8171	7.3090	21.5401	0.0000	0.0000	0.0000
1Y	0.0000	0.0000	-0.3475	-8.9886	8.5313	-48.1231	0.0000	0.0000	0.0000
2X	0.0000	0.9001	-2.1263	0.0000	-0.9001	2.1263	0.0001	0.0014	0.0028
2XY	0.0000	0.9001	-2.1263	-0.0000	-0.9001	2.1263	0.0003	0.0157	-0.0008
2Y	0.0000	0.0000	-0.4153	-0.0000	0.0000	0.4153	0.0160	0.0147	-0.0084
3X	0.0000	0.8379	-1.9994	0.0000	-0.8379	1.9994	-0.0026	0.0177	0.0033
3XY	0.0000	0.8379	-1.9096	-0.0000	-0.8379	1.9096	-0.0012	0.0305	-0.0003
3Y	0.0000	0.0000	-0.7886	0.0000	-0.0000	0.7886	0.0100	0.0300	-0.0133
4X	0.0000	0.2710	-0.4636	0.0000	-0.2710	0.4636	-0.0022	0.0258	0.0035
4XY	0.0000	0.2710	-0.4636	-0.0000	-0.2710	0.4636	-0.0032	0.0363	0.0005
4Y	0.0000	0.0000	-0.4636	0.0000	0.0000	0.4636	0.0067	0.0372	-0.0147
5X	0.0000	0.6533	-1.5214	0.0000	-0.6533	1.5214	-0.0055	0.0366	0.0030
5XY	0.0000	0.6533	-1.5214	-0.0000	-0.6533	1.5214	-0.0017	0.0463	0.0003
5Y	0.0000	0.0000	-0.4414	0.0000	0.0000	0.4414	0.0047	0.0463	-0.0161
6X	0.0000	0.2392	-0.4128	0.0000	-0.2392	0.4128	-0.0032	0.0510	0.0026
6XY	0.0000	0.2392	-0.4128	-0.0000	-0.2392	0.4128	-0.0059	0.0589	0.0005
6Y	0.0000	0.0000	-0.4128	0.0000	0.0000	0.4128	0.0012	0.0597	-0.0166
7X	0.0000	0.6350	-1.8088	-0.0000	-0.6350	1.8088	-0.0082	0.0663	0.0009
7XY	0.0000	0.6350	-1.7983	0.0000	-0.6350	1.7983	-0.0026	0.0729	-0.0008
7Y	0.0000	0.0000	-0.8536	-0.0000	0.0000	0.8536	0.0003	0.0729	-0.0168
8X	0.0000	0.2723	-0.5283	0.0000	-0.2723	0.5283	-0.0072	0.0846	0.0025
8XY	0.0000	0.2723	-0.5283	-0.0000	-0.2723	0.5283	-0.0075	0.0915	0.0007
8Y	0.0000	0.0000	-0.5283	-0.0000	0.0000	0.5283	-0.0012	0.0923	-0.0189
9X	0.0000	0.5796	-1.3657	0.0000	-0.5796	1.3657	-0.0110	0.1087	0.0037
9XY	0.0000	0.5796	-1.3657	-0.0000	-0.5796	1.3657	-0.0078	0.1159	0.0020
9Y	0.0000	0.0000	-0.2727	0.0000	0.0000	0.2727	-0.0043	0.1161	-0.0210
10X	0.0000	0.1892	-0.5520	-0.0000	-0.1892	0.5520	-0.0112	0.1349	0.0053
10XY	0.0000	0.1892	-0.5415	-0.0000	-0.1892	0.5415	-0.0114	0.1425	0.0036
10Y	0.0000	0.0000	-0.5415	-0.0000	0.0000	0.5415	-0.0037	0.1422	-0.0235
11X	0.0000	0.5723	-1.3328	-0.0000	-0.5723	1.3328	-0.0149	0.1645	0.0065
11XY	0.0000	0.5723	-1.3328	-0.0000	-0.5723	1.3328	-0.0117	0.1728	0.0048
11Y	0.0000	0.0000	-0.2708	-0.0000	0.0000	0.2708	-0.0066	0.1734	-0.0255
12X	0.0000	0.1934	-0.2587	-0.0000	-0.1934	0.2587	-0.0149	0.1979	0.0073
12XY	0.0000	0.1934	-0.2587	-0.0000	-0.1934	0.2587	-0.0158	0.2074	0.0056
12Y	0.0000	0.0000	-0.2587	-0.0000	0.0000	0.2587	-0.0064	0.2071	-0.0269
13X	0.0000	0.3955	-1.0988	-0.0000	-0.3955	1.0988	-0.0175	0.2318	0.0075
13XY	0.0000	0.3955	-1.0851	-0.0000	-0.3955	1.0851	-0.0171	0.2419	0.0058
13Y	0.0000	0.0000	-0.2571	-0.0000	0.0000	0.2571	-0.0077	0.2419	-0.0273
14X	0.0000	0.9120	-0.8159	-0.0000	-0.9120	0.8159	0.0121	0.2371	-0.0993
15X	0.0000	0.0000	-0.4799	-0.0000	0.0000	0.4799	0.0194	0.1380	-0.1161
16X	0.0000	0.0000	-0.9829	-0.0000	0.0000	0.9829	0.0326	0.0686	-0.1157
17S	0.0000	0.0000	-0.4965	0.0000	0.0000	0.4965	0.0524	0.0010	0.0062
18S	0.0000	0.0000	-0.4965	-0.0000	-0.0000	0.4965	0.0154	-0.0367	-0.0204
16PF0.45S	0.0000	0.0310	-0.3845	0.0000	-0.0310	0.3845	-0.0223	0.0713	-0.2455
16PF0.50S	0.0000	0.0000	-0.0878	-0.0000	0.0000	0.0878	-0.0223	0.0729	-0.2468
7PF0.50S	0.0000	0.0000	-0.0383	-0.0000	0.0000	0.0383	0.0006	0.0695	-0.0298
016PF0.50S	0.0000	1.8190	-2.6280	-0.0000	-1.8190	2.6280	-0.0138	0.1238	-0.3449
17Y	0.0000	0.0000	-0.4965	-0.0000	0.0000	0.4965	-0.0369	0.0153	-0.0021
18X	0.0000	0.4539	-0.4965	-0.0000	-0.4539	0.4965	0.0002	0.0531	-0.0057

16PF0.45Y	0.0000	0.0310	-0.3845	0.0000	-0.0310	0.3845	-0.0223	0.0744	-0.2464
7PF0.50X	0.0000	0.0000	-0.0383	-0.0000	0.0000	0.0383	-0.0053	0.1116	-0.1673

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	L/R	KL/R	Curve No.	Alternate Unsupported L/R Cap. (kips)	RLOUT	L/R	KL/R	Curve No.
g18P	g18Y	Short only	-0.12	-1.43	19.53	0.750	0.500	0.500	135.76	132.05	5	14.58	1.000	173.37	152.82	6
g18X	g18XY	Short only	-1.19	0.10	19.53	0.750	0.500	0.500	135.76	132.05	5	14.58	1.000	173.37	152.82	6
g18Y	g18P	Short only	-1.43	-0.12	19.53	0.750	0.500	0.500	135.76	132.05	5	14.58	1.000	173.37	152.82	6
g20P	g20Y	Short only	-0.22	-1.33	31.25	0.750	0.500	0.500	109.87	112.40	2	23.57	1.000	139.88	132.22	6
g20Y	g20P	Short only	-1.33	-0.22	31.25	0.750	0.500	0.500	109.87	112.40	2	23.57	1.000	139.88	132.22	6
g24P	g24Y	Short only	-4.03	-5.17	40.61	0.750	0.500	0.500	97.11	102.83	2	32.25	1.000	123.66	122.25	6
g24X	g24XY	Short only	-3.66	-2.38	40.61	0.750	0.500	0.500	97.11	102.83	2	32.25	1.000	123.66	122.25	6
g24XY	g24X	Short only	-2.38	-3.66	40.61	0.750	0.500	0.500	97.11	102.83	2	32.25	1.000	123.66	122.25	6
g24Y	g24P	Short only	-5.17	-4.03	40.61	0.750	0.500	0.500	97.11	102.83	2	32.25	1.000	123.66	122.25	6
g26X	g26XY	Short only	-3.97	-2.71	46.21	0.784	0.568	0.568	97.74	103.31	2	40.83	1.000	109.45	114.72	3
g26XY	g26X	Short only	-2.71	-3.97	46.21	0.784	0.568	0.568	97.74	103.31	2	40.83	1.000	109.45	114.72	3
g51P	g51X	Short only	-8.60	-4.79	30.95	0.750	0.500	0.500	110.94	113.20	2	23.28	1.000	141.24	133.06	6
g51X	g51P	Short only	-4.79	-8.60	30.95	0.750	0.500	0.500	110.94	113.20	2	23.28	1.000	141.24	133.06	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	1.312	50.00	50.00	2.62
2	1.224	50.00	50.00	2.45
3	3.658	50.00	50.00	7.32
4	0.480	50.00	50.00	0.96
5	3.769	50.00	50.00	7.54
6	0.983	50.00	50.00	1.97
7	3.196	50.00	50.00	6.39
8	2.395	50.00	50.00	4.79
9	5.015	50.00	50.00	10.03
10	3.897	50.00	50.00	7.79
11	3.191	50.00	50.00	6.38
12	2.596	50.00	50.00	5.19
13	8.635	50.00	50.00	17.27
14	7.123	50.00	50.00	14.25
15	0.415	50.00	50.00	0.83
16	0.415	50.00	50.00	0.83
17	0.878	50.00	50.00	1.76
18	0.789	50.00	50.00	1.58
19	0.441	50.00	50.00	0.88
20	0.441	50.00	50.00	0.88
21	0.864	50.00	50.00	1.73
22	0.854	50.00	50.00	1.71
23	0.273	50.00	50.00	0.55
24	0.273	50.00	50.00	0.55
25	0.271	50.00	50.00	0.54

26	0.271	50.00	50.00	0.54
27	0.271	50.00	50.00	0.54
28	0.257	50.00	50.00	0.51
29	2.309	50.00	50.00	4.62
30	2.168	50.00	50.00	4.34
31	1.656	50.00	50.00	3.31
32	1.917	50.00	50.00	3.83
33	1.484	50.00	50.00	2.97
34	1.450	50.00	50.00	2.90
35	1.168	50.00	50.00	2.34
36	2.309	50.00	50.00	4.62
37	2.085	50.00	50.00	4.17
38	1.656	50.00	50.00	3.31
39	1.907	50.00	50.00	3.81
40	1.484	50.00	50.00	2.97
41	1.450	50.00	50.00	2.90
42	1.155	50.00	50.00	2.31

*** Analysis Results for Load Case No. 2 "NESC Extreme" - Number of iterations in SAPS 11

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	0	0	0.0872	0.0912	-0.3335	14.15	14.15	0
2P	0.006416	0.006576	-0.01634	-0.0276	0.0354	-0.3638	11.25	11.25	16.33
3P	0.005661	0.05514	-0.02785	-0.1359	0.0554	-0.2410	8.666	8.715	33.22
4P	0.008488	0.07876	-0.03166	-0.1565	0.0074	-0.1916	7.498	7.569	40.69
5P	0.004246	0.1117	-0.03559	-0.2422	0.0218	-0.1377	6.224	6.332	48.82
6P	0.009029	0.1577	-0.03681	-0.3159	-0.0151	-0.0852	4.939	5.088	57.36
7P	0.001098	0.2066	-0.03798	-0.4693	-0.0406	-0.0551	3.871	4.077	64.53
8P	0.002979	0.2785	-0.04443	-0.5531	0.0426	-0.0574	3.873	4.148	72.67
9P	0.007423	0.3619	-0.05076	-0.6340	0.0015	-0.0586	3.877	4.232	80.65
10P	0.001241	0.4536	-0.05884	-0.7409	-0.0136	-0.0632	3.871	4.324	88.23
11P	0.006197	0.5647	-0.0654	-0.8418	0.0067	-0.0756	3.876	4.435	96.19
12P	0.001316	0.6807	-0.06987	-0.8909	-0.0313	-0.0870	3.871	4.551	103.9
13P	0.002545	0.8004	-0.07179	-0.9147	0.0237	-0.0996	3.873	4.67	111.4
14P	-0.04216	0.811	0.2921	-0.9048	-0.0101	-0.1145	-0.04216	-18.69	111.8
15P	-0.03204	0.4615	0.3564	-0.8117	-0.0081	-0.0622	-0.03204	-26.54	88.65
16P	-0.0291	0.215	0.3083	-1.5121	-0.0120	-0.0429	-0.0291	-39.78	64.88
17P	0	0	0	0.0000	0.0000	0.0000	-2.25	0	0
18P	0.001825	0.06037	-0.0006282	-0.1666	-0.0010	0.0000	-2.248	0.06037	33.25
19P	-0.001546	0.2121	-0.00149	-0.4802	-0.0056	-0.0000	-2.252	0.2121	64.57
20P	-0.002948	0.4593	-0.003108	-0.6066	-0.0037	-0.0000	-2.253	0.4593	88.29
21P	-0.005185	0.8152	-0.006135	-1.5249	-0.0065	-0.0001	-2.255	0.8152	111.5
22P	-0.006371	1.159	-0.0119	-2.1164	-0.0065	-0.0002	-2.256	1.159	122
23P	-0.007504	1.544	-0.01935	-2.2438	-0.0065	-0.0002	-2.258	1.544	132
1X	0	0	0	-0.0525	0.0809	0.3634	14.15	-14.15	0
1XY	0	0	0	-0.0892	-0.0861	-0.4030	-14.15	-14.15	0
1Y	0	0	0	0.0532	-0.0134	0.3104	-14.15	14.15	0
2X	0.0004667	0.008146	0.01142	-0.1497	0.0578	0.3502	11.24	-11.23	16.36
2XY	-0.0004203	0.01481	0.009911	-0.1684	-0.0684	-0.3921	-11.24	-11.23	16.36
2Y	0.008804	0.01322	-0.0183	-0.0427	-0.0152	0.3272	-11.23	11.25	16.33
3X	-0.002786	0.05525	0.01674	-0.1970	0.0356	0.2143	8.657	-8.605	33.27
3XY	0.0005318	0.06234	0.0152	-0.2028	-0.0520	-0.2683	-8.659	-8.598	33.27
3Y	0.005417	0.06217	-0.02955	-0.1422	-0.0660	0.1876	-8.655	8.722	33.22
4X	-0.003148	0.07826	0.01991	-0.2181	0.0259	0.1540	7.487	-7.412	40.74
4XY	-4.615e-005	0.08505	0.01852	-0.2248	-0.0422	-0.2127	-7.49	-7.405	40.74
4Y	0.0008089	0.08557	-0.03308	-0.1639	-0.0112	0.1346	-7.489	7.576	40.69
5X	-0.004835	0.1121	0.02172	-0.2661	0.0078	0.0855	6.215	-6.108	48.88
5XY	0.0006284	0.1185	0.02051	-0.2735	-0.0253	-0.1492	-6.219	-6.102	48.88
5Y	0.003102	0.1181	-0.03673	-0.2483	-0.0265	0.0750	-6.217	6.338	48.82
6X	-0.005654	0.1574	0.02238	-0.3736	0.0115	0.0017	4.924	-4.773	57.42
6XY	0.0002924	0.1635	0.02135	-0.3813	-0.0300	-0.0707	-4.93	-4.767	57.42
6Y	-0.003635	0.1637	-0.0377	-0.3246	0.0118	0.0175	-4.934	5.094	57.36
7X	-0.005552	0.2068	0.02142	-0.3156	-0.0194	-0.0419	3.864	-3.663	64.59
7XY	-0.0007065	0.2122	0.02058	-0.3159	0.0019	-0.0330	-3.871	-3.658	64.59
7Y	0.002544	0.2122	-0.03866	-0.4708	0.0342	-0.0188	-3.867	4.082	64.53
8X	-0.005233	0.2784	0.02711	-0.5947	-0.0219	-0.0457	3.865	-3.592	72.74
8XY	-0.003656	0.2844	0.02622	-0.6009	0.0012	-0.0392	-3.874	-3.586	72.74
8Y	0.000177	0.2845	-0.04515	-0.5579	-0.0463	-0.0266	-3.87	4.154	72.66
9X	-0.01173	0.3625	0.03214	-0.6239	-0.0306	-0.0496	3.858	-3.507	80.73
9XY	9.533e-005	0.3694	0.03128	-0.6315	0.0092	-0.0449	-3.87	-3.501	80.73
9Y	-0.004654	0.3688	-0.05155	-0.6423	-0.0062	-0.0353	-3.875	4.239	80.65

10X	-0.007081	0.4543	0.03874	-0.7361	0.0022	-0.0607	3.863	-3.416	88.33
10XY	-0.007029	0.4622	0.03791	-0.7385	-0.0226	-0.0605	-3.877	-3.408	88.33
10Y	0.001019	0.4615	-0.05973	-0.7435	0.0052	-0.0579	-3.869	4.331	88.23
11X	-0.01359	0.5652	0.04333	-0.8425	-0.0214	-0.0724	3.856	-3.305	96.3
11XY	-0.003822	0.5751	0.04254	-0.8690	-0.0110	-0.0750	-3.874	-3.295	96.3
11Y	-0.003709	0.5746	-0.06638	-0.8684	-0.0042	-0.0721	-3.874	4.445	96.19
12X	-0.01003	0.6816	0.04579	-0.8926	0.0156	-0.0842	3.86	-3.188	104
12XY	-0.01131	0.6955	0.04487	-0.9166	-0.0493	-0.0886	-3.881	-3.175	104
12Y	0.002178	0.6945	-0.07085	-0.9147	0.0330	-0.0861	-3.868	4.565	103.9
13X	-0.01295	0.8013	0.04572	-0.9122	-0.0425	-0.0945	3.857	-3.069	111.5
13XY	-0.01186	0.8169	0.04472	-0.9171	0.0130	-0.1034	-3.882	-3.053	111.5
13Y	0.001541	0.816	-0.07276	-0.9204	-0.0268	-0.0985	-3.868	4.686	111.4
14X	0.0318	0.8064	-0.3211	-0.9141	-0.0050	-0.1145	0.0318	20.31	111.2
15X	0.02612	0.4551	-0.3899	-0.8557	-0.0053	-0.0623	0.02612	27.46	87.9
16X	0.02846	0.2078	-0.3671	-0.5441	-0.0036	-0.0448	0.02846	40.21	64.2
17S	-0.05326	0.007597	-0.01438	-0.0618	0.0463	-0.0194	11.19	0.007597	16.34
18S	0.007598	0.06792	-0.02732	-0.0367	-0.0125	-0.0163	0.007598	11.31	16.32
16PF0.45S	-0.01705	0.2096	-0.01388	-0.3852	-0.0434	-0.0503	1.724	-23.53	64.56
16PF0.50S	-0.01705	0.2111	-0.01487	-0.3841	-0.0130	-0.0407	-0.01705	-23.53	64.56
7PF0.50S	0.001881	0.2841	-0.1082	0.0000	0.0000	0.0000	0.001881	4.154	64.46
016PF0.50S	-0.0101	0.315	-0.1398	-0.2826	-0.0131	-0.0405	-0.0101	-13.49	64.43
17Y	0.06078	0.01422	-0.01762	-0.0551	-0.0414	-0.0190	-11.18	0.01422	16.33
18X	1.311e-007	-0.04561	0.02268	-0.1593	-0.0030	-0.0150	1.311e-007	-11.29	16.37
16PF0.45Y	-0.01705	0.2121	-0.01468	-0.3847	0.0178	-0.0314	-1.759	-23.53	64.56
7PF0.50X	-0.00305	0.3024	-0.1136	-0.1822	-0.0132	-0.0406	-0.00305	-3.568	64.46

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 %	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 %
1P	-19.38	0.0	-19.93	0.0	0.0	-109.35	0.0	0.0	112.82	0.0	0.00	0.0	0.0	0.0	0.0	0.00	0.0	0.0
17P	-0.10	0.0	-1.17	0.0	0.0	-10.34	0.0	0.0	10.40	0.0	23.16	0.0	-1.7	0.0	0.0	-0.00	0.0	0.0
1X	27.23	0.0	-18.29	0.0	0.0	91.91	0.0	0.0	97.58	0.0	0.00	0.0	0.0	0.0	0.0	0.00	0.0	0.0
1XY	-27.66	0.0	-21.60	0.0	0.0	94.23	0.0	0.0	100.55	0.0	0.00	0.0	0.0	0.0	0.0	0.00	0.0	0.0
1Y	19.91	0.0	-20.34	0.0	0.0	-111.85	0.0	0.0	115.41	0.0	0.00	0.0	0.0	0.0	0.0	0.00	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	0.5959	-0.4257	19.3751	19.3358	-108.9212	0.0000	0.0000	0.0000
2P	0.0000	0.5959	-0.4257	0.0000	-0.5959	0.4257	0.0064	0.0066	-0.0163
3P	0.0000	0.5959	-0.4257	0.0000	-0.5959	0.4257	0.0057	0.0551	-0.0278
4P	0.0000	0.5959	-0.4257	0.0000	-0.5959	0.4257	0.0085	0.0788	-0.0317
5P	0.0000	0.5959	-0.4257	0.0000	-0.5959	0.4257	0.0042	0.1117	-0.0356
6P	0.0000	0.5959	-0.4257	0.0000	-0.5959	0.4257	0.0090	0.1577	-0.0368
7P	0.0000	0.9488	-0.7556	-0.0000	-0.9488	0.7556	0.0011	0.2066	-0.0380
8P	0.0000	0.3529	-0.3299	0.0000	-0.3529	0.3299	0.0030	0.2785	-0.0444
9P	0.0000	0.3529	-0.3299	0.0000	-0.3529	0.3299	0.0074	0.3619	-0.0508
10P	0.0000	0.3529	-0.3299	-0.0000	-0.3529	0.3299	0.0012	0.4536	-0.0588
11P	0.0000	0.3529	-0.3299	0.0000	-0.3529	0.3299	0.0062	0.5647	-0.0654
12P	0.0000	0.3529	-0.3299	0.0000	-0.3529	0.3299	0.0013	0.6807	-0.0699
13P	0.0000	0.3529	-0.3299	-0.0000	-0.3529	0.3299	0.0025	0.8004	-0.0718
14P	0.0000	1.0219	-0.4469	-0.0000	-1.0219	0.4469	-0.0422	0.8110	0.2921

15P	0.0000	3.4159	-1.4519	-0.0000	-3.4159	1.4519	-0.0320	0.4615	0.3564
16P	0.0000	3.4159	-1.4519	-0.0000	-3.4159	1.4519	-0.0291	0.2150	0.3083
17P	0.0000	0.5959	-0.6327	0.1042	0.5754	-9.7027	0.0000	0.0000	0.0000
18P	0.0000	0.5959	-0.8287	-0.0000	-0.5959	0.8287	0.0018	0.0604	-0.0006
19P	0.0000	0.9488	-1.0986	-0.0000	-0.9488	1.0986	-0.0015	0.2121	-0.0015
20P	0.0000	0.3529	-0.6229	-0.0000	-0.3529	0.6229	-0.0029	0.4593	-0.0031
21P	0.0000	0.3529	-0.7309	-0.0000	-0.3529	0.7309	-0.0052	0.8152	-0.0061
22P	0.0000	8.7769	-2.8309	0.0000	-8.7769	2.8309	-0.0064	1.1594	-0.0119
23P	0.0000	6.6189	-3.8919	0.0000	-6.6189	3.8919	-0.0075	1.5439	-0.0194
1X	0.0000	0.5959	-0.4257	-27.2286	17.6966	92.3320	0.0000	0.0000	0.0000
1XY	0.0000	0.5959	-0.4257	27.6618	21.0077	94.6524	0.0000	0.0000	0.0000
1Y	0.0000	0.5959	-0.4257	-19.9126	19.7412	-111.4200	0.0000	0.0000	0.0000
2X	0.0000	2.6699	-0.8897	0.0000	-2.6699	0.8897	0.0005	0.0081	0.0114
2XY	0.0000	2.6699	-0.8897	-0.0000	-2.6699	0.8897	-0.0004	0.0148	0.0099
2Y	0.0000	0.5959	-0.4257	-0.0000	-0.5959	0.4257	0.0088	0.0132	-0.0183
3X	0.0000	1.9549	-0.7297	-0.0000	-1.9549	0.7297	-0.0028	0.0552	0.0167
3XY	0.0000	1.9549	-0.7297	0.0000	-1.9549	0.7297	0.0005	0.0623	0.0152
3Y	0.0000	0.5959	-0.4257	-0.0000	-0.5959	0.4257	0.0054	0.0622	-0.0295
4X	0.0000	0.5959	-0.4257	-0.0000	-0.5959	0.4257	-0.0031	0.0783	0.0199
4XY	0.0000	0.5959	-0.4257	0.0000	-0.5959	0.4257	-0.0000	0.0851	0.0185
4Y	0.0000	0.5959	-0.4257	-0.0000	-0.5959	0.4257	0.0008	0.0856	-0.0331
5X	0.0000	1.9059	-0.7187	-0.0000	-1.9059	0.7187	-0.0048	0.1121	0.0217
5XY	0.0000	1.9059	-0.7187	0.0000	-1.9059	0.7187	0.0006	0.1185	0.0205
5Y	0.0000	0.5959	-0.4257	-0.0000	-0.5959	0.4257	0.0031	0.1181	-0.0367
6X	0.0000	0.5959	-0.4257	-0.0000	-0.5959	0.4257	-0.0057	0.1574	0.0224
6XY	0.0000	0.5959	-0.4257	0.0000	-0.5959	0.4257	0.0003	0.1635	0.0214
6Y	0.0000	0.5959	-0.4257	-0.0000	-0.5959	0.4257	-0.0036	0.1637	-0.0377
7X	0.0000	2.2798	-1.0536	0.0000	-2.2798	1.0536	-0.0056	0.2068	0.0214
7XY	0.0000	2.2798	-1.0536	-0.0000	-2.2798	1.0536	-0.0007	0.2122	0.0206
7Y	0.0000	0.9488	-0.7556	0.0000	-0.9488	0.7556	0.0025	0.2122	-0.0387
8X	0.0000	0.3529	-0.3299	-0.0000	-0.3529	0.3299	-0.0052	0.2784	0.0271
8XY	0.0000	0.3529	-0.3299	0.0000	-0.3529	0.3299	-0.0037	0.2844	0.0262
8Y	0.0000	0.3529	-0.3299	-0.0000	-0.3529	0.3299	0.0002	0.2845	-0.0452
9X	0.0000	1.6779	-0.6269	-0.0000	-1.6779	0.6269	-0.0117	0.3625	0.0321
9XY	0.0000	1.6779	-0.6269	0.0000	-1.6779	0.6269	0.0001	0.3694	0.0313
9Y	0.0000	0.3529	-0.3299	-0.0000	-0.3529	0.3299	-0.0047	0.3688	-0.0516
10X	0.0000	0.3529	-0.3299	0.0000	-0.3529	0.3299	-0.0071	0.4543	0.0387
10XY	0.0000	0.3529	-0.3299	-0.0000	-0.3529	0.3299	-0.0070	0.4622	0.0379
10Y	0.0000	0.3529	-0.3299	0.0000	-0.3529	0.3299	0.0010	0.4615	-0.0597
11X	0.0000	1.6409	-0.6179	-0.0000	-1.6409	0.6179	-0.0136	0.5652	0.0433
11XY	0.0000	1.6409	-0.6179	0.0000	-1.6409	0.6179	-0.0038	0.5751	0.0425
11Y	0.0000	0.3529	-0.3299	-0.0000	-0.3529	0.3299	-0.0037	0.5746	-0.0664
12X	0.0000	0.3529	-0.3299	0.0000	-0.3529	0.3299	-0.0100	0.6816	0.0458
12XY	0.0000	0.3529	-0.3299	0.0000	-0.3529	0.3299	-0.0113	0.6955	0.0449
12Y	0.0000	0.3529	-0.3299	0.0000	-0.3529	0.3299	0.0022	0.6945	-0.0709
13X	0.0000	1.3569	-0.5549	-0.0000	-1.3569	0.5549	-0.0130	0.8013	0.0457
13XY	0.0000	1.3569	-0.5549	-0.0000	-1.3569	0.5549	-0.0119	0.8169	0.0447
13Y	0.0000	0.3529	-0.3299	-0.0000	-0.3529	0.3299	0.0015	0.8160	-0.0728
14X	0.0000	1.0219	-0.4469	-0.0000	-1.0219	0.4469	0.0318	0.8064	-0.3211
15X	0.0000	0.3529	-0.3299	0.0000	-0.3529	0.3299	0.0261	0.4551	-0.3899
16X	0.0000	0.3529	-0.3299	0.0000	-0.3529	0.3299	0.0285	0.2078	-0.3671
17S	0.0000	0.5959	-0.4257	-0.0000	-0.5959	0.4257	-0.0533	0.0076	-0.0144
18S	0.0000	0.5959	-0.4257	0.0000	-0.5959	0.4257	0.0076	0.0679	-0.0273
16PF0.45S	0.0000	0.3529	-0.3299	-0.0000	-0.3529	0.3299	-0.0171	0.2096	-0.0139
16PF0.50S	0.0000	0.3529	-0.3299	-0.0000	-0.3529	0.3299	-0.0171	0.2111	-0.0149
7PF0.50S	0.0000	0.3529	-0.3299	-0.0000	-0.3529	0.3299	0.0019	0.2841	-0.1082
016PF0.50S	0.0000	3.4159	-1.4519	0.0000	-3.4159	1.4519	-0.0101	0.3150	-0.1398
17Y	0.0000	0.5959	-0.4257	0.0000	-0.5959	0.4257	0.0608	0.0142	-0.0176
18X	0.0000	0.5959	-0.4257	-0.0000	-0.5959	0.4257	0.0000	-0.0456	0.0227

16PF0.45Y	0.0000	0.3529	-0.3299	0.0000	-0.3529	0.3299	-0.0170	0.2121 -0.0147
7PF0.50X	0.0000	0.3529	-0.3299	-0.0000	-0.3529	0.3299	-0.0031	0.3024 -0.1136

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.
g14Y	g14P	Short only	-3.22	0.29	15.61	0.750	0.500	0.500	131.23	128.60	5	11.64	1.000	166.99	148.90	6
g16X	g16XY	Short only	-3.84	0.58	15.46	0.750	0.500	0.500	132.08	129.25	5	11.54	1.000	168.07	149.56	6
g18Y	g18P	Short only	-4.02	0.06	19.53	0.750	0.500	0.500	135.76	132.05	5	14.58	1.000	173.37	152.82	6
g20P	g20Y	Short only	-2.17	-4.78	31.25	0.750	0.500	0.500	109.87	112.40	2	23.57	1.000	139.88	132.22	6
g20Y	g20P	Short only	-4.78	-2.17	31.25	0.750	0.500	0.500	109.87	112.40	2	23.57	1.000	139.88	132.22	6
g22X	g22XY	Short only	-4.08	-1.27	30.45	0.750	0.500	0.500	112.75	114.56	2	22.79	1.000	143.54	134.48	6
g22XY	g22X	Short only	-1.27	-4.08	30.45	0.750	0.500	0.500	112.75	114.56	2	22.79	1.000	143.54	134.48	6
g24P	g24Y	Short only	-16.09	-18.75	40.61	0.750	0.500	0.500	97.11	102.83	2	32.25	1.000	123.66	122.25	6
g24Y	g24P	Short only	-18.75	-16.09	40.61	0.750	0.500	0.500	97.11	102.83	2	32.25	1.000	123.66	122.25	6
g26P	g26Y	Short only	-2.13	-5.38	46.21	0.784	0.568	0.568	97.74	103.31	2	40.83	1.000	109.45	114.72	3
g26Y	g26P	Short only	-5.38	-2.13	46.21	0.784	0.568	0.568	97.74	103.31	2	40.83	1.000	109.45	114.72	3
g51P	g51X	Short only	-9.44	-6.70	30.95	0.750	0.500	0.500	110.94	113.20	2	23.28	1.000	141.24	133.06	6
g51X	g51P	Short only	-6.70	-9.44	30.95	0.750	0.500	0.500	110.94	113.20	2	23.28	1.000	141.24	133.06	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	1.115	50.00	50.00	2.23
2	1.115	50.00	50.00	2.23
3	3.712	50.00	50.00	7.42
4	0.483	50.00	50.00	0.97
5	3.712	50.00	50.00	7.42
6	0.483	50.00	50.00	0.97
7	3.712	50.00	50.00	7.42
8	0.869	50.00	50.00	1.74
9	1.021	50.00	50.00	2.04
10	1.452	50.00	50.00	2.90
11	0.716	50.00	50.00	1.43
12	0.812	50.00	50.00	1.62
13	7.678	50.00	50.00	15.36
14	9.222	50.00	50.00	18.44
15	0.732	50.00	50.00	1.46
16	0.732	50.00	50.00	1.46
17	0.732	50.00	50.00	1.46
18	0.732	50.00	50.00	1.46
19	0.732	50.00	50.00	1.46
20	0.732	50.00	50.00	1.46
21	1.213	50.00	50.00	2.43
22	1.213	50.00	50.00	2.43
23	0.483	50.00	50.00	0.97
24	0.483	50.00	50.00	0.97
25	0.483	50.00	50.00	0.97

26	0.483	50.00	50.00	0.97
27	0.483	50.00	50.00	0.97
28	0.483	50.00	50.00	0.97
29	2.814	50.00	50.00	5.63
30	2.087	50.00	50.00	4.17
31	2.037	50.00	50.00	4.07
32	2.512	50.00	50.00	5.02
33	1.791	50.00	50.00	3.58
34	1.753	50.00	50.00	3.51
35	1.466	50.00	50.00	2.93
36	2.814	50.00	50.00	5.63
37	2.087	50.00	50.00	4.17
38	2.037	50.00	50.00	4.07
39	2.512	50.00	50.00	5.02
40	1.791	50.00	50.00	3.58
41	1.753	50.00	50.00	3.51
42	1.466	50.00	50.00	2.93

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

Group Summary (Compression Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Control	Max Comp. Use %	Comp. Control Member	Comp. Force (kips)	Comp. Control Load Case	L/R Capacity (kips)	Comp. Connect. Shear Capacity (kips)	Comp. Connect. Bearing Capacity (kips)	RLX	RLY	RLZ	L/R Comp. No.	No. Of Bolts	Member Comp. (ft)
Leg1	L4x4x1/4	SAE	4X4X0.25	36.0	94.78	Tens	90.71	g4Y	-56.391	NESC Ext	62.164	66.900	81.562	0.500	0.500	0.500	57.28	1	57.28 7.590
Leg2	L5x5x3/8	SAE	5X5X0.375	46.0	87.02	Comp	87.02	g7P	-98.730	NESC Ext	113.461	133.800	244.687	1.000	1.000	1.000	88.79	1	88.79 7.325
Leg3	L5x5x3/8	SAE	5X5X0.375	46.0	97.38	Comp	97.38	g10P	-105.822	NESC Ext	108.675	133.800	244.687	1.000	1.000	1.000	92.74	1	92.74 7.651
Leg4	L5x5x3/8	SAE	5X5X0.375	36.0	95.57	Comp	95.57	g11Y	-113.477	NESC Ext	118.743	156.100	285.468	0.250	0.250	0.250	52.39	1	52.39 17.289
Leg5	L5x5x3/8	SAE	5X5X0.375	36.0	96.31	Comp	96.31	g12Y	-114.894	NESC Ext	119.293	156.100	285.468	0.250	0.250	0.250	51.09	1	51.09 16.860
Diag1	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	36.0	98.31	Comp	98.31	g15XY	-15.194	NESC Ext	15.455	22.300	20.391	0.750	0.500	0.500	132.08	2	129.25 10.897
Diag2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	36.0	75.45	Comp	75.45	g17XY	-14.737	NESC Ext	19.533	22.300	27.187	0.750	0.500	0.500	135.76	2	132.05 11.110
Diag3	L3X3X1/4	SAE	3X3X0.25	36.0	53.30	Tens	44.78	g21XY	-13.636	NESC Ext	30.447	44.600	54.375	0.750	0.500	0.500	112.75	4	114.56 11.124
Diag4	L3.5X3.5X1/4	SAE	3.5X3.5X0.25	36.0	58.13	Cross	58.13	g24Y	-18.746	NESC Ext	32.248	44.600	54.375	1.000	0.500	0.500	123.66	4	122.25 11.232
Diag5	L4X4X1/4	SAE	4X4X0.25	36.0	16.08	Comp	16.08	g26Y	-5.380	NESC Ext	40.833	33.450	40.781	1.000	0.568	0.568	109.45	3	114.72 11.401
Diag6	L3.5X3X1/4	SAU	3.5X3X0.25	36.0	15.75	Comp	15.75	g30Y	-2.940	NESC Ext	18.659	22.300	27.187	0.772	0.544	0.544	165.47	2	154.69 15.995
Diag7	L3.5X3X1/4	SAU	3.5X3X0.25	36.0	53.15	Tens	48.75	g33P	-6.260	NESC Hea	12.841	44.600	54.375	1.000	0.500	0.500	207.18	4	186.47 19.164
Diag8	L3X3X1/4	SAE	3X3X0.25	36.0	79.55	Comp	79.55	g35X	-5.547	NESC Hea	6.973	55.750	67.969	1.000	0.500	0.500	281.52	5	243.12 21.818
Horz1	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	36.0	32.25	Comp	32.25	g38X	-5.814	NESC Ext	18.028	22.300	27.187	1.000	1.000	1.000	170.74	2	151.20 7.740
Horz2	L4x4x1/4	SAE	4X4X0.25	36.0	1.76	Tens	0.00	g37Y	0.000		38.974	44.600	54.375	1.000	1.000	1.000	116.83	4	118.42 7.740
Horz3	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	36.0	63.70	Tens	53.82	g43X	-5.321	NESC Ext	9.886	22.300	20.391	1.000	1.000	1.000	187.64	2	161.60 7.740
Horz4	L5x3x1/4	SAU	5X3X0.25	36.0	68.68	Tens	1.57	g41X	-0.350	NESC Ext	31.358	22.300	27.187	1.000	1.000	1.000	140.09	2	132.36 7.740
Horz5	L3.5x3x1/4	SAU	3.5X3X0.25	36.0	50.51	Comp	50.51	g46X	-8.662	NESC Ext	17.150	22.300	27.187	1.000	0.500	0.500	187.24	2	161.35 17.320
Horz6	L3x3x3/16	SAE	3X3X0.1875	36.0	33.12	Comp	33.12	g48Y	-3.007	NESC Ext	9.078	22.300	20.391	1.000	1.000	1.000	226.31		

185.38 11.240 6 2
Inner1 L2x2x3/16 SAE 2X2X0.1875 36.0 18.68 Comp 18.68 g49P -1.567NESC Ext 8.391 22.300 20.391 0.750 0.500 0.500 166.69
155.62 10.946 5 2
Inner2 L2.5x2.5x3/16 SAE 2.5X2.5X0.1875 36.0 3.48 Comp 3.48 g50X -0.534NESC Ext 15.347 22.300 20.391 0.750 0.500 0.500 132.68
129.70 10.946 5 2
Inner3 L3x3x1/4 SAE 3X3X0.25 36.0 40.54 Cross 40.54 g51P -9.437NESC Ext 23.278 33.450 40.781 1.000 0.500 0.500 141.24
133.06 10.946 6 3
Inner4 L3x2x3/16 SAU 3X2X0.1875 36.0 9.72 Comp 9.72 g52X -0.664NESC Hea 6.834 22.300 20.391 1.000 0.500 0.500 217.25
194.15 15.896 5 2
TopCrArm 3.5x3.5x1.4 SAE 3.5X3.5X0.25 36.0 7.13 Tens 4.90 g53P -1.365NESC Ext 27.839 33.450 40.781 0.500 0.500 0.500 139.21
131.81 16.102 6 3
TopArmBr 3.5x2.5x1/4 SAU 3.5X2.5X0.25 36.0 13.06 Comp 13.06 g54Y -1.933NESC Ext 14.798 22.300 27.187 0.500 0.500 0.500 196.24
166.89 17.793 6 2
MidCrArm 5x3.5x3/8 SAU 5X3.5X0.375 36.0 17.40 Comp 17.40 g55Y -5.821NESC Hea 59.123 33.450 61.172 0.330 0.330 0.330 121.87
121.15 23.452 6 3
MidArmBr 2.5x2.5x3/16 SAE 2.5X2.5X0.1875 36.0 20.73 Tens 9.59 g57XY -0.464NESC Ext 4.845 33.450 30.586 0.500 0.500 0.500 300.23
230.84 24.769 6 3
BotCrArm 6x6x5/16 SAE 6X6X0.3125 36.0 29.73 Comp 29.73 g58Y -9.943NESC Hea 80.349 33.450 50.976 0.500 0.500 0.500 81.76
100.88 16.352 3 3 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g58P g58Y Fg5860P Fg5860Y ??
BotArmBr 3.5x3x1/4 SAU 3.5X3X0.25 36.0 22.58 Tens 0.00 g60Y 0.000 12.379 55.750 67.969 0.330 0.330 0.330 233.69
189.92 37.237 6 5
M1 5x3.5x5/8 DAS 5X3.5X0.625 36.0 1.01 Comp 1.01 Fg6262P -0.226NESC Ext 334.426 22.300 135.937 2.000 2.000 2.000 42.18
42.18 1.742 1 2
Pwmnt 18" Std. Pipe Pwmnt Pipe 18" Std. 35.0 4.86 Comp 4.86 g64P -28.866NESC Hea 594.129 0.000 0.000 1.000 1.000 1.000 63.94
63.94 33.250 1 0
PwmntBR1 L3x3x3/16 SAE 3X3X0.1875 36.0 37.50 Comp 37.50 g72P -3.824NESC Hea 14.678 16.800 10.195 1.000 1.000 1.000 145.79
145.79 7.241 4 1
PwmntBR2 L2.5x2.5x3/16 SAE 2.5X2.5X0.1875 36.0 78.75 Comp 78.75 g73X -8.029NESC Ext 19.925 16.800 10.195 1.000 1.000 1.000 101.71
110.85 4.195 3 1
PwmntBR3 L5x5x3/8 SAE 5X5X0.375 36.0 18.61 Comp 18.61 g70P -3.127NESC Ext 36.246 16.800 20.391 1.000 1.000 1.000 168.84
168.84 13.929 4 1
PwmntBR4 L3.5x3.5x1/4 SAE 3.5X3.5X0.25 36.0 26.86 Comp 26.86 g71P -3.652NESC Ext 13.937 16.800 13.594 1.000 1.000 1.000 186.30
186.30 10.774 4 1
NewBR1 L2.5x2.5x1/4 SAE 2.5X2.5X0.25 36.0 80.64 Tens 80.45 g77X -10.936NESC Ext 26.162 16.800 13.594 1.000 1.000 1.000 102.53
111.27 4.195 3 1
Plate 6"x3/4" Bar 6x3/4 36.0 0.00 0.00 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.00
0.00 0.000 0 0
Dummy Dummy DUM 0.1X0.1X1 36.0 0.00 0.00 Fg8080P -0.367NESC Ext 0.318 0.000 0.000 1.000 1.000 1.000 1.19
60.60 9.936 3 0
NewBR2 L3x3x1/4 SAE 3X3X0.25 36.0 45.28 Tens 45.01 g76X -6.118NESC Ext 19.132 16.800 13.594 1.000 1.000 1.000 146.78
146.78 7.241 4 1

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Control	Max Tension Use %	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	L4x4x1/4	SAE	4X4X0.25	36.0	94.78	Tens	94.78	g4XY	53.401NESC Ext		56.340	66.900	81.562	90.625	7.590	6	2.000	0.75
Leg2	L5x5x3/8	SAE	5X5X0.375	46.0	87.02	Comp	67.97	g7X	90.938NESC Ext		137.468	133.800	244.687	255.882	7.325	12	2.210	

0.75																		
	Leg3	L5x5x3/8	SAE	5X5X0.375	46.0	97.38	Comp	68.48	g10X	91.627NESC	Ext	137.468	133.800	244.687	239.889	7.651	12	2.210
0.75																		
	Leg4	L5x5x3/8	SAE	5X5X0.375	36.0	95.57	Comp	74.06	g11X	77.357NESC	Ext	104.445	156.100	285.468	298.529	17.289	14	2.520
0.75																		
	Leg5	L5x5x3/8	SAE	5X5X0.375	36.0	96.31	Comp	79.03	g12X	77.020NESC	Ext	97.459	156.100	285.468	298.529	16.860	14	3.210
0.75																		
	Diag1	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	36.0	98.31	Comp	77.97	g15Y	15.015NESC	Ext	24.669	22.300	20.391	19.258	10.897	2	1.000
0.75																		
	Diag2	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	36.0	75.45	Comp	63.26	g17Y	14.107NESC	Ext	32.481	22.300	27.187	25.677	11.110	2	1.000
0.75																		
	Diag3	L3X3X1/4	SAE	3X3X0.25	36.0	53.30	Tens	53.30	g21Y	13.147NESC	Ext	24.664	44.600	54.375	51.354	11.124	4	3.620
0.75																		
	Diag4	L3.5X3.5X1/4	SAE	3.5X3.5X0.25	36.0	58.13	Cross	35.00	g23Y	11.384NESC	Ext	32.521	44.600	54.375	48.333	11.232	4	3.660
0.75																		
	Diag5	L4X4X1/4	SAE	4X4X0.25	36.0	16.08	Comp	8.07	g25Y	2.698NESC	Hea	56.781	33.450	40.781	36.250	11.401	3	1.000
0.75																		
	Diag6	L3.5X3X1/4	SAU	3.5X3X0.25	36.0	15.75	Comp	15.41	g28P	3.436NESC	Ext	40.419	22.300	27.187	24.167	14.104	2	1.000
0.75																		
	Diag7	L3.5X3X1/4	SAU	3.5X3X0.25	36.0	53.15	Tens	53.15	g34XY	18.891NESC	Ext	38.517	44.600	54.375	35.539	19.164	4	1.313
0.75																		
	Diag8	L3X3X1/4	SAE	3X3X0.25	36.0	79.55	Comp	60.20	g36XY	20.992NESC	Ext	34.870	55.750	67.969	60.417	21.818	5	1.940
0.75																		
	Horz1	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	36.0	32.25	Comp	25.82	g38P	5.505NESC	Ext	36.814	22.300	27.187	21.323	7.740	2	1.620
0.75																		
	Horz2	L4x4x1/4	SAE	4X4X0.25	36.0	1.76	Tens	1.76	g37P	0.745NESC	Hea	50.706	44.600	54.375	42.292	7.740	4	2.000
0.75																		
	Horz3	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	36.0	63.70	Tens	63.70	g43P	9.478NESC	Ext	24.669	22.300	20.391	14.878	7.740	2	1.000
0.75																		
	Horz4	L5x3x1/4	SAU	5X3X0.25	36.0	68.68	Tens	68.68	Fg4478X	15.315NESC	Hea	55.687	22.300	27.187	35.539	3.870	2	1.180
0.75																		
	Horz5	L3.5x3x1/4	SAU	3.5X3X0.25	36.0	50.51	Comp	11.40	g42P	5.068NESC	Hea	44.469	55.750	67.969	60.417	7.740	5	1.000
0.75																		
	Horz6	L3x3x3/16	SAE	3X3X0.1875	36.0	33.12	Comp	9.32	g48X	1.689NESC	Ext	30.760	22.300	20.391	18.125	11.240	2	1.000
0.75																		
	Inner1	L2x2x3/16	SAE	2X2X0.1875	36.0	18.68	Comp	10.50	g49X	1.513NESC	Ext	18.448	22.300	20.391	14.414	10.946	2	1.000
0.75																		
	Inner2	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	36.0	3.48	Comp	3.09	g50P	0.485NESC	Ext	24.669	22.300	20.391	15.722	10.946	2	1.000
0.75																		
	Inner3	L3x3x1/4	SAE	3X3X0.25	36.0	40.54	Cross	0.00	g51X	0.000		40.581	33.450	40.781	28.612	10.946	3	1.000
0.75																		
	Inner4	L3x2x3/16	SAU	3X2X0.1875	36.0	9.72	Comp	5.84	g52XY	0.911NESC	Ext	18.529	22.300	20.391	15.609	15.896	2	1.000
0.75																		
	TopCrArm	3.5x3.5x1.4	SAE	3.5X3.5X0.25	36.0	7.13	Tens	7.13	g53X	2.280NESC	Ext	42.606	33.450	40.781	31.985	16.102	3	2.000
0.75																		
	TopArmBr	3.5x2.5x1/4	SAU	3.5X2.5X0.25	36.0	13.06	Comp	4.14	g54P	0.923NESC	Ext	26.406	22.300	27.187	24.167	17.793	2	2.000
0.75																		
	MidCrArm	5x3.5x3/8	SAU	5X3.5X0.375	36.0	17.40	Comp	1.85	g55XY	0.620NESC	Ext	80.595	33.450	61.172	54.375	23.452	3	2.000
0.75																		
	MidArmBr	2.5x2.5x3/16	SAE	2.5X2.5X0.1875	36.0	20.73	Tens	20.73	g57Y	5.101NESC	Hea	24.669	33.450	30.586	24.609	24.769	3	1.000
0.75																		
BotCrArm		**6x6x5/16**	**SAE**	**6X6X0.3125**	**36.0**	**29.73**	**Comp**	**5.35**	**g59Y**	**3.580NESC**	**Ext**	**95.479**	**66.900**	**101.953**	**106.617**	**7.740**	**6**	**3.000**
0.75 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g58P g58Y Fg5860P Fg5860Y ??																		
	BotArmBr	3.5x3x1/4	SAU	3.5X3X0.25	36.0	22.58	Tens	22.58	g60Y	9.189NESC	Hea	40.702	55.750	67.969	53.309	37.237	5	1.620
0.75																		
	M1	5x3.5x5/8	DAS	5X3.5X0.625	36.0	1.01	Comp	0.00	Fg6262P	0.000		288.441	22.300	135.937	120.833	1.742	2	2.000
0.75																		
	Pwmnt	18" Std. Pipe	Pwmnt	Pipe 18" Std.	35.0	4.86	Comp	0.00	g69P	0.000		678.999	0.000	0.000	0.000	10.000	0	0.000

PwmntBR1	L3x3x3/16	SAE	3X3X0.1875	36.0	37.50	Comp	30.79	g74X	3.139NESC Ext	31.139	16.800	10.195	11.328	7.241	1	1.000
0.6875																
PwmntBR2	L2.5x2.5x3/16	SAE	2.5X2.5X0.1875	36.0	78.75	Comp	53.35	g75X	5.439NESC Ext	25.048	16.800	10.195	11.328	4.195	1	1.000
0.6875																
PwmntBR3	L5x5x3/8	SAE	5X5X0.375	36.0	18.61	Comp	0.00	g70X	0.000	108.611	16.800	20.391	22.656	13.929	1	1.000
0.6875																
PwmntBR4	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	36.0	26.86	Comp	0.00	g71X	0.000	49.187	16.800	13.594	15.104	10.774	1	1.000
0.6875																
NewBR1	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	36.0	80.64	Tens	80.64	g77P	10.961NESC Ext	32.987	16.800	13.594	15.104	4.195	1	1.000
0.6875																
Plate	6"x3/4"	Bar	6x3/4	36.0	0.00		0.00		0.000	0.000	0.000	0.000	0.000	0.000	0	0.000
0																
Dummy	Dummy	DUM	0.1X0.1X1	36.0	0.00		0.00	g80P	3.056NESC Ext	0.360	0.000	0.000	0.000	9.936	0	0.000
0																
NewBR2	L3x3x1/4	SAE	3X3X0.25	36.0	45.28	Tens	45.28	g76P	6.155NESC Ext	41.087	16.800	13.594	15.104	7.241	1	1.000
0.6875																

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	79.55	g35X	Angle
NESC Extreme	98.31	g15XY	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	2.62	NESC Heavy	0.0
2	Clamp	2.45	NESC Heavy	0.0
3	Clamp	7.42	NESC Extreme	0.0
4	Clamp	0.97	NESC Extreme	0.0
5	Clamp	7.54	NESC Heavy	0.0
6	Clamp	1.97	NESC Heavy	0.0
7	Clamp	7.42	NESC Extreme	0.0
8	Clamp	4.79	NESC Heavy	0.0
9	Clamp	10.03	NESC Heavy	0.0
10	Clamp	7.79	NESC Heavy	0.0
11	Clamp	6.38	NESC Heavy	0.0
12	Clamp	5.19	NESC Heavy	0.0
13	Clamp	17.27	NESC Heavy	0.0
14	Clamp	18.44	NESC Extreme	0.0
15	Clamp	1.46	NESC Extreme	0.0
16	Clamp	1.46	NESC Extreme	0.0
17	Clamp	1.76	NESC Heavy	0.0
18	Clamp	1.58	NESC Heavy	0.0
19	Clamp	1.46	NESC Extreme	0.0
20	Clamp	1.46	NESC Extreme	0.0
21	Clamp	2.43	NESC Extreme	0.0

22	Clamp	2.43	NESC Extreme	0.0
23	Clamp	0.97	NESC Extreme	0.0
24	Clamp	0.97	NESC Extreme	0.0
25	Clamp	0.97	NESC Extreme	0.0
26	Clamp	0.97	NESC Extreme	0.0
27	Clamp	0.97	NESC Extreme	0.0
28	Clamp	0.97	NESC Extreme	0.0
29	Clamp	5.63	NESC Extreme	0.0
30	Clamp	4.34	NESC Heavy	0.0
31	Clamp	4.07	NESC Extreme	0.0
32	Clamp	5.02	NESC Extreme	0.0
33	Clamp	3.58	NESC Extreme	0.0
34	Clamp	3.51	NESC Extreme	0.0
35	Clamp	2.93	NESC Extreme	0.0
36	Clamp	5.63	NESC Extreme	0.0
37	Clamp	4.17	NESC Extreme	0.0
38	Clamp	4.07	NESC Extreme	0.0
39	Clamp	5.02	NESC Extreme	0.0
40	Clamp	3.58	NESC Extreme	0.0
41	Clamp	3.51	NESC Extreme	0.0
42	Clamp	2.93	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	14P	0.000	1.027	0.816	1.312
NESC Heavy	2	Clamp	14X	0.000	0.912	0.816	1.224
NESC Heavy	3	Clamp	15P	0.000	1.930	3.108	3.658
NESC Heavy	4	Clamp	15X	0.000	0.000	0.480	0.480
NESC Heavy	5	Clamp	16P	0.000	1.931	3.236	3.769
NESC Heavy	6	Clamp	16X	0.000	0.000	0.983	0.983
NESC Heavy	7	Clamp	016PF0.50S	0.000	1.819	2.628	3.196
NESC Heavy	8	Clamp	17P	0.000	0.823	2.249	2.395
NESC Heavy	9	Clamp	18P	0.000	1.598	4.754	5.015
NESC Heavy	10	Clamp	19P	0.000	1.344	3.657	3.897
NESC Heavy	11	Clamp	20P	0.000	1.126	2.986	3.191
NESC Heavy	12	Clamp	21P	0.000	0.809	2.466	2.596
NESC Heavy	13	Clamp	23P	0.000	1.863	8.432	8.635
NESC Heavy	14	Clamp	22P	0.000	2.631	6.619	7.123
NESC Heavy	15	Clamp	2P	0.000	0.000	0.415	0.415
NESC Heavy	16	Clamp	2Y	0.000	0.000	0.415	0.415
NESC Heavy	17	Clamp	3P	0.000	0.000	0.878	0.878
NESC Heavy	18	Clamp	3Y	0.000	0.000	0.789	0.789
NESC Heavy	19	Clamp	5P	0.000	0.000	0.441	0.441
NESC Heavy	20	Clamp	5Y	0.000	0.000	0.441	0.441
NESC Heavy	21	Clamp	7P	0.000	0.000	0.864	0.864
NESC Heavy	22	Clamp	7Y	0.000	0.000	0.854	0.854
NESC Heavy	23	Clamp	9P	0.000	0.000	0.273	0.273
NESC Heavy	24	Clamp	9Y	0.000	0.000	0.273	0.273
NESC Heavy	25	Clamp	11P	0.000	0.000	0.271	0.271
NESC Heavy	26	Clamp	11Y	0.000	0.000	0.271	0.271
NESC Heavy	27	Clamp	13P	0.000	0.000	0.271	0.271
NESC Heavy	28	Clamp	13Y	0.000	0.000	0.257	0.257
NESC Heavy	29	Clamp	2X	0.000	0.900	2.126	2.309
NESC Heavy	30	Clamp	3X	0.000	0.838	1.999	2.168

NESC Heavy	31	Clamp	5X	0.000	0.653	1.521	1.656
NESC Heavy	32	Clamp	7X	0.000	0.635	1.809	1.917
NESC Heavy	33	Clamp	9X	0.000	0.580	1.366	1.484
NESC Heavy	34	Clamp	11X	0.000	0.572	1.333	1.450
NESC Heavy	35	Clamp	13X	0.000	0.396	1.099	1.168
NESC Heavy	36	Clamp	2XY	0.000	0.900	2.126	2.309
NESC Heavy	37	Clamp	3XY	0.000	0.838	1.910	2.085
NESC Heavy	38	Clamp	5XY	0.000	0.653	1.521	1.656
NESC Heavy	39	Clamp	7XY	0.000	0.635	1.798	1.907
NESC Heavy	40	Clamp	9XY	0.000	0.580	1.366	1.484
NESC Heavy	41	Clamp	11XY	0.000	0.572	1.333	1.450
NESC Heavy	42	Clamp	13XY	0.000	0.396	1.085	1.155
NESC Extreme	1	Clamp	14P	0.000	1.022	0.447	1.115
NESC Extreme	2	Clamp	14X	0.000	1.022	0.447	1.115
NESC Extreme	3	Clamp	15P	0.000	3.416	1.452	3.712
NESC Extreme	4	Clamp	15X	0.000	0.353	0.330	0.483
NESC Extreme	5	Clamp	16P	0.000	3.416	1.452	3.712
NESC Extreme	6	Clamp	16X	0.000	0.353	0.330	0.483
NESC Extreme	7	Clamp	016PF0.50S	0.000	3.416	1.452	3.712
NESC Extreme	8	Clamp	17P	0.000	0.596	0.633	0.869
NESC Extreme	9	Clamp	18P	0.000	0.596	0.829	1.021
NESC Extreme	10	Clamp	19P	0.000	0.949	1.099	1.452
NESC Extreme	11	Clamp	20P	0.000	0.353	0.623	0.716
NESC Extreme	12	Clamp	21P	0.000	0.353	0.731	0.812
NESC Extreme	13	Clamp	23P	0.000	6.619	3.892	7.678
NESC Extreme	14	Clamp	22P	0.000	8.777	2.831	9.222
NESC Extreme	15	Clamp	2P	0.000	0.596	0.426	0.732
NESC Extreme	16	Clamp	2Y	0.000	0.596	0.426	0.732
NESC Extreme	17	Clamp	3P	0.000	0.596	0.426	0.732
NESC Extreme	18	Clamp	3Y	0.000	0.596	0.426	0.732
NESC Extreme	19	Clamp	5P	0.000	0.596	0.426	0.732
NESC Extreme	20	Clamp	5Y	0.000	0.596	0.426	0.732
NESC Extreme	21	Clamp	7P	0.000	0.949	0.756	1.213
NESC Extreme	22	Clamp	7Y	0.000	0.949	0.756	1.213
NESC Extreme	23	Clamp	9P	0.000	0.353	0.330	0.483
NESC Extreme	24	Clamp	9Y	0.000	0.353	0.330	0.483
NESC Extreme	25	Clamp	11P	0.000	0.353	0.330	0.483
NESC Extreme	26	Clamp	11Y	0.000	0.353	0.330	0.483
NESC Extreme	27	Clamp	13P	0.000	0.353	0.330	0.483
NESC Extreme	28	Clamp	13Y	0.000	0.353	0.330	0.483
NESC Extreme	29	Clamp	2X	0.000	2.670	0.890	2.814
NESC Extreme	30	Clamp	3X	0.000	1.955	0.730	2.087
NESC Extreme	31	Clamp	5X	0.000	1.906	0.719	2.037
NESC Extreme	32	Clamp	7X	0.000	2.280	1.054	2.512
NESC Extreme	33	Clamp	9X	0.000	1.678	0.627	1.791
NESC Extreme	34	Clamp	11X	0.000	1.641	0.618	1.753
NESC Extreme	35	Clamp	13X	0.000	1.357	0.555	1.466
NESC Extreme	36	Clamp	2XY	0.000	2.670	0.890	2.814
NESC Extreme	37	Clamp	3XY	0.000	1.955	0.730	2.087
NESC Extreme	38	Clamp	5XY	0.000	1.906	0.719	2.037
NESC Extreme	39	Clamp	7XY	0.000	2.280	1.054	2.512
NESC Extreme	40	Clamp	9XY	0.000	1.678	0.627	1.791
NESC Extreme	41	Clamp	11XY	0.000	1.641	0.618	1.753
NESC Extreme	42	Clamp	13XY	0.000	1.357	0.555	1.466

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	16.857	0.000	40.865	1101.892	-35.786	-8.464
NESC Extreme	44.599	0.000	15.648	3695.239	-17.347	-33.052

*** Weight of structure (lbs):
Weight of Angles*Section DLF: 29747.0
Total: 29747.0

*** End of Report

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Subject: Foundation Analysis CL&P Tower # 12197

Location: Glastonbury, CT

Rev. 1: 4/9/15

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 15001.010

Foundation Analysis

Input Data:

Max. Reactions at Tower Leg:

Shear = $Shear := 35.10 \cdot 1.1 \cdot kips = 38.6 \cdot kips$ (User Input)

Compression = $Comp := 111.85 \cdot 1.1 \cdot kips = 123 \cdot kips$ (User Input)

Uplift = $Uplift := 94.23 \cdot 1.1 \cdot kips = 103.7 \cdot kips$ (User Input)

Tower Properties:

Tower Height = $H_t := 111 \cdot ft$ (User Input)

Foundation Properties:

Depth to Steel Grillage = $D_{sg} := 6.5 \cdot ft$ (User Input)

Foundation Width = $W_{mat} := 12 \cdot ft$ (User Input)

Foundation Thickness = $T_{mat} := 4 \cdot ft$ (User Input)

Subgrade Properties:

Soil Unit Weight = $\gamma s := 100 \cdot pcf$ (User Input)

Concrete Unit Weight = $\gamma c := 150 \cdot pcf$ (User Input)

Uplift Angle = $\psi := 30.0 \cdot deg$ (User Input)

Calculated Data:

Resisting Pyramid Base 1 = $B_1 := W_{mat}^2 = 144 ft^2$

Resisting Pyramid Base 2 = $B_2 := \left[2 \cdot \tan(\psi) \cdot \left(D_{sg} - T_{mat}\right) + W_{mat}\right]^2 = 222 ft^2$

Volume of Concrete = $V_{conc} := W_{mat}^2 \cdot T_{mat} = 576 \cdot ft^3$

Mass of Concrete = $Mass_{conc} := V_{conc} \cdot \gamma c = 86 \cdot kips$

Volume of Soil = $V_{soil} := \left[\frac{\left(D_{sg} - T_{mat}\right)}{3} \cdot \left(B_1 + B_2 + \sqrt{B_1 \cdot B_2}\right)\right] = 454 \cdot ft^3$

Mass of Soil = $Mass_{Soil} := V_{soil} \cdot \gamma s = 45 \cdot kips$

Total Mass = $Mass_{tot} := Mass_{Soil} + Mass_{conc} = 132 \cdot kips$

Check Uplift:

Required Factor of Safety = $F_S := 1.0$

$ActualFS := \frac{Mass_{tot}}{Uplift} = 1.27$

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

$Uplift\_Check = "OK"$

SITE NAME	E GLASTONBURY 3 CT	ECP & CELL #	8	0019
Note: AWS Add (Root Metric Site), Diplex LTE 700 & AWS and use existing main cable. Will need home runs for variable titl.		LATITUDE	41-43-02.40 N	
		LONGITUDE	72-33-11.30 W	
		STRUCTURE TYPE	Power mount	

AWS - LTE ANTENNA ADD	ALPHA	BETA	GAMMA
EQUIPMENT TYPE	2100 MHz BBU	2100 MHz BBU	2100 MHz BBU
ANTENNA TYPE	HBXX-6517DS-A2M	HBXX-6517DS-A2M	HBXX-6517DS-A2M
QTY OF ANTENNAS PER FACE	1	1	1
ORIENTATION (DEG)	30	120	240
DOWN TILT (MECH/ELEC)	0/2	0/2	0/2
RAD CTR (FT AGL)	132	132	132
TMA - QTY / MODEL			
DIPLEXER - QTY / MODEL			
RRH - QTY/MODEL			
SECTOR DISTRIBUTION BOX			
MAIN DISTRIBUTION BOX			
700 LTE - CURRENT CONFIG	**ALPHA**	**BETA**	**GAMMA**
EQUIPMENT TYPE	700 eNodeB	700 eNodeB	700 eNodeB
ANTENNA TYPE	SLCP 2X6014	SLCP 2X6014	BXA-70063-4CF-5-750MHZ
QTY OF ANTENNAS PER FACE	1	1	1
ORIENTATION (DEG)	30	120	240
DOWN TILT (MECH/DEG)	0	0	2
RAD CTR (FT AGL)	132	132	132
TMA - QTY / MODEL			
DIPLEXER - QTY / MODEL			
700 Mhz - LTE Future Config	**ALPHA**	**BETA**	**GAMMA**
EQUIPMENT TYPE	700 eNodeB	700 eNodeB	700 eNodeB
ANTENNA TYPE	X7C-FRO-660-VR0	X7C-FRO-660-V	LNX-6513DS-A1M
QTY OF ANTENNAS PER FACE	1	1	1
ORIENTATION (DEG)	30	120	240
DOWN TILT (MECH/DEG)	0	0	5 electrical
RAD CTR (FT AGL)	132	132	132
TMA - QTY / MODEL			
DIPLEXER - QTY / MODEL	2 x FD9R6004/2C-3L	2 x FD9R6004/2C-3L	2 x FD9R6004/2C-3L
RRH - QTY/MODEL			
850 CELLULAR - CURRENT CONFIG	**ALPHA**	**BETA**	**GAMMA**
EQUIPMENT TYPE	Cellular Mod 4.0B	Cellular Mod 4.0B	Cellular Mod 4.0B
ANTENNA TYPE	LPD-6513	LPD-6513	LPA-80063-4CF-EDIN-4
QTY OF ANTENNAS PER FACE	2	2	2
ORIENTATION (DEG)	30	120	240
DOWN TILT (MECH/DEG)	0	0	2
RAD CTR (FT AGL)	132	132	132
TMA - QTY / MODEL			
DIPLEXER - QTY / MODEL	2 x FD9R6004/2C-3L	2 x FD9R6004/2C-3L	2 x FD9R6004/2C-3L
850 CELLULAR - FUTURE CONFIG	**ALPHA**	**BETA**	**GAMMA**
EQUIPMENT TYPE	Cellular Mod 4.0B	Cellular Mod 4.0B	Cellular Mod 4.0B
ANTENNA TYPE	LNX-6513DS-A1M	LNX-6513DS-A1M	LNX-6513DS-A1M
QTY OF ANTENNAS PER FACE	1	1	1
ORIENTATION (DEG)	30	120	240
DOWN TILT (MECH/ELEC)	0/0	0/0	0/4
RAD CTR (FT AGL)	132	132	132
TMA - QTY / MODEL			
DIPLEXER - QTY / MODEL	2 x FD9R6004/2C-3L	2 x FD9R6004/2C-3L	2 x FD9R6004/2C-3L
DIPLEX WITH LTE CABLE			
1900 PCS - CURRENT CONFIG	**ALPHA**	**BETA**	**GAMMA**
EQUIPMENT TYPE	PCS Mod 4.0B	PCS Mod 4.0B	PCS Mod 4.0B
ANTENNA TYPE	BXA-171063-12BF-EDIN-2	BXA-171063-12BF-EDIN-2	BXA-171063-8BF-EDIN-2
QTY OF ANTENNAS PER FACE	1	1	1
ORIENTATION (DEG)	30	120	240
DOWN TILT (MECH/DEG)	0	0	0
RAD CTR (FT AGL)	132	132	132
TMA - QTY / MODEL			
DIPLEX WITH CELLULAR CABLE	YES	YES	YES
1900 PCS - FUTURE CONFIG	**ALPHA**	**BETA**	**GAMMA**
EQUIPMENT TYPE	PCS Mod 4.0B	PCS Mod 4.0B	PCS Mod 4.0B
ANTENNA TYPE	HBXX-6517DS-A2M	HBXX-6517DS-A2M	HBXX-6517DS-A2M
QTY OF ANTENNAS PER FACE	1	1	1
ORIENTATION (DEG)	30	120	240
DOWN TILT (MECH/ELEC)	0/2	0/2	0/2
RAD CTR (FT AGL)	132	132	132
TMA - QTY / MODEL			
DIPLEX WITH CELLULAR CABLE	YES	YES	YES

NUMBER OF CABLES NEEDED					FIBER LINES MODEL NUMBER				
TOTAL # FIBER LINES	0	TOTAL # OF MAINLINES	12		FIBER LINE MODEL #			HB158-1-08U8-S8J18	
TOTAL # TOP JUMPERS	0	TOTAL # OF TOP JUMPERS	24		FIBER TOP JUMPER MODEL #			HB114-1-08U4-S4J18	
EQUIPMENT CABLE ORDERING		MAIN CABLE #	12		+	0	TOP JUMPER #	18	+ 6

TX / RX FREQUENCIES			TX POWER OUTPUT	
Cellular-A Band	PCS-F/AWS Band	700 MHz C-Block	Cellular (Watts)	20
TX: 869-880/890-891.5 MHz	TX: 1970-1975/2145-2155 MHz	TX: 746-757 MHz	PCS (Watts)	16
RX: 824-835/845-846.5 MHz	RX: 1890-1895/1745-1755 MHz	RX: 776-787 MHz	LTE/AWS (Watts)	40

ALPHA				BETA				GAMMA			
Ant.	Freq.	Func.	Color Code	Ant.	Freq.	Func.	Color Code	Ant.	Freq.	Func.	Color Code
A1-A	800	Tx1/Rx0	RED	A5-A	800	Tx2/Rx0	BLUE	A9-A	800	Tx3/Rx0	GREEN
A1-B	1900	Tx1/Rx0	RED/WHITE	A5-B	1900	Tx2/Rx0	BLUE/ WHITE	A9-B	1900	Tx3/Rx0	GREEN/WHITE
A2	700	Tx1/Rx0	RED/ORANGE	A6	700	Tx2/Rx0	BLUE/ ORANGE	A10	700	Tx3/Rx0	GREEN/ORANGE
A3	700	Tx4/Rx1	RED/RED/ORANGE	A7	700	Tx5/Rx1	BLUE/BLUE/ORANGE	A11	700	Tx6/Rx1	GREEN/GREEN/ORANGE
A4-B	1900	Tx4/Rx1	RED/RED/WHITE	A8-B	1900	Tx5/Rx1	BLUE/BLUE/WHITE	A12-B	1900	Tx6/Rx1	GREEN/GREEN/WHITE
A4-A	800	Tx4/Rx1	RED/RED	A8-A	800	Tx5/Rx1	BLUE/BLUE	A12-A	800	Tx6/Rx1	GREEN/GREEN
F1-A	1700	Tx/Rx	RED/BROWN	F1-B	1700	Tx/Rx	BLUE/BROWN	F1-C	1700	Tx/Rx	GREEN/BROWN
F1-D	1700	Tx/Rx	RED/RED/BROWN	F1-E	1700	Tx/Rx	BLUE/BLUE/BROWN	F1-F	1700	Tx/Rx	GREEN/GREEN/BROWN

RF ENGINEER	RF MANAGER	INITIALS	DATE
Prepared by: Mark Brauer	Robert Hesselbach	MB	1/14/2015

Product Specifications

COMMSCOPE®

POWERED BY ANDREW.

HBXX-6517DS-VTM

Andrew® Quad Port Teletilt® Antenna, 1710–2180 MHz, 65° horizontal beamwidth, RET compatible

- Superior azimuth tracking and pattern symmetry with excellent passive intermodulation suppression
- The values presented on this datasheet have been calculated based on N-P-BASTA White Paper version 9.6 by the NGMN Alliance

Electrical Specifications

Frequency Band, MHz	**1710–1880**	**1850–1990**	**1920–2180**
Gain by all Beam Tilts, average, dBi	18.5	18.6	18.8
Gain by all Beam Tilts Tolerance, dB	±0.4	±0.3	±0.4
Gain by Beam Tilt, average, dBi	0 ° | 18.4 3 ° | 18.7 6 ° | 18.4	0 ° | 18.4 3 ° | 18.7 6 ° | 18.5	0 ° | 18.7 3 ° | 18.9 6 ° | 18.6
Beamwidth, Horizontal, degrees	67	66	65
Beamwidth, Horizontal Tolerance, degrees	±2.4	±1.7	±2.9
Beamwidth, Vertical, degrees	5.0	4.7	4.4
Beamwidth, Vertical Tolerance, degrees	±0.3	±0.3	±0.3
Beam Tilt, degrees	0–6	0–6	0–6
USLS, dB	18	19	19
Front-to-Back Total Power at 180° ± 30°, dB	25	26	26
CPR at Boresight, dB	22	23	22
CPR at Sector, dB	10	10	9
Isolation, dB	30	30	30
VSWR | Return Loss, dB	1.4 | 15.6	1.4 | 15.6	1.4 | 15.6
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350
Polarization	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm

General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol® single band, quad
Band	Single band
Brand	DualPol® | Teletilt®
Operating Frequency Band	1710 – 2180 MHz
Number of Ports, all types	4

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground
Radiator Material	Low loss circuit board
Radome Material	PVC, UV resistant
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom

Product Specifications

HBXX-6517DS-VTM

RF Connector Quantity, total	4
Wind Loading, maximum	668.0 N @ 150 km/h 150.2 lbf @ 150 km/h
Wind Speed, maximum	241.0 km/h | 149.8 mph

Dimensions

Depth	166.0 mm | 6.5 in
Length	1903.0 mm | 74.9 in
Width	305.0 mm | 12.0 in
Net Weight	19.5 kg | 43.0 lb

Remote Electrical Tilt (RET) Information

Model with Factory Installed AISG 1.1 Actuator	HBXX-6517DS-R2M
Model with Factory Installed AISG 2.0 Actuator	HBXX-6517DS-A2M
RET System	Teletilt®

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	Designed, manufactured and/or distributed under this quality management system

Included Products

600899A-2 — Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

Product Specifications

COMMSCOPE®

POWERED BY ANDREW.

LNX-6513DS-VTM

Andrew® Antenna, 698–896 MHz, 65° horizontal beamwidth, RET compatible

- Extended tilt range offers better coverage
- Great solution to maximize network coverage and capacity
- Excellent gain, VSWR, front-to-back ratio, and PIM specifications for robust network performance
- Fully compatible with Andrew remote electrical tilt system for greater OpEx savings
- The RF connectors are designed for IP67 rating and the radome for IP56 rating

Electrical Specifications

Frequency Band, MHz	**698–806**	**806–896**
Gain, dBi	14.6	15.1
Beamwidth, Horizontal, degrees	65	65
Beamwidth, Horizontal Tolerance, degrees	±3	±3
Beamwidth, Vertical, degrees	16.0	14.5
Beam Tilt, degrees	0–10	0–10
USLS, typical, dB	20	20
Front-to-Back Ratio at 180°, dB	30	30
CPR at Boresight, dB	12	12
CPR at Sector, dB	10	10
Isolation, dB	30	30
VSWR | Return Loss, dB	1.4 | 15.6	1.4 | 15.6
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153
Input Power per Port, maximum, watts	400	400
Polarization	±45°	±45°
Impedance	50 ohm	50 ohm

General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol®
Band	Single band
Brand	DualPol® | Teletilt®
Operating Frequency Band	698 – 896 MHz

Mechanical Specifications

Color	Light gray
Connector Interface	7-16 DIN Female
Connector Location	Bottom
Connector Quantity, total	2
Lightning Protection	dc Ground
Radiator Material	Aluminum
Radome Material	Fiberglass, UV resistant
Wind Loading, maximum	437.9 N @ 150 km/h 98.4 lbf @ 150 km/h
Wind Speed, maximum	241.0 km/h | 149.8 mph

Dimensions

Depth	181.0 mm | 7.1 in

Product Specifications

LNX-6513DS-VTM

Length	1390.0 mm | 54.7 in
Width	301.0 mm | 11.9 in
Net Weight	14.1 kg | 31.1 lb

Remote Electrical Tilt (RET) Information

Model with Factory Installed AISG 1.1 Actuator	LNX-6513DS-R2M
Model with Factory Installed AISG 2.0 Actuator	LNX-6513DS-A1M
RET System	Teletilt®

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	Designed, manufactured and/or distributed under this quality management system

Included Products

DB380 — Pipe Mounting Kit for 2.4"-4.5" (60-115mm) OD round members on wide panel antennas. Includes 2 clamp sets and double nuts.

DB5083 — Downtilt Mounting Kit for 2.4"-4.5" (60 - 115 mm) OD round members. Includes a heavy-duty, galvanized steel downtilt mounting bracket assembly and associated hardware. This kit is compatible with the DB380 pipe mount kit for panel antennas that are equipped with two mounting brackets.

JMA WIRELESS

X7C-FRO-660

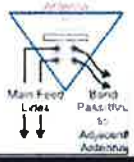
X-Pol, 698-896 MHz, Fast-Roll-Off 58° H-Beam

- Macro Cell Antenna
- Fast Roll Off (FRO)
- Suitable for LTE/CDMA/UMTS/GSM
- Optional Internal Diplexers

Available with Integrated Diplexers

Reduces mainline cables

Eliminates External Tower Devices



ELECTRICAL SPECIFICATIONS

Frequency Band, MHz	**698-824**	**824-896**
Horizontal Beamwidth, 3dB points	58°	58°
Gain, dBi	16.6	17.2
Vertical Beamwidth, 3dB points	11°	11°
Front-to-Back at 180°, dB	>30 dB	>30 dB
Upper Sidelobe Suppression, Typical, dB	<-18 dB	<-18 dB
Polarization	+/-45°	
Electrical Downtilt	0-10°	
VSWR/Return Loss, dB, Maximum	1.35:1/16.5	
VSWR/Return Loss w/ip dB, Maximum	1.5:1/14.1	
Isolation Between Ports, dB, Minimum	<-27	
Intermodulation (2x20w), IM3, dBc	<-150	
Impedance, ohms	50	
Maximum Power Per Connector, CW (w)	500	
Lightning Protection	DC Ground	

MECHANICAL SPECIFICATIONS

Dimensions, Length/Width/Depth	72.0/14.6/8.0 in (1829/372/204 mm)
Connector (Quantity) Type	(2) or (4) 7-16 DIN Female
Connector Torque	220-265 lbf-in (23-30 N-m)
Connector Location	Back or Bottom
Antenna Weight	32.2 lbs
Bracket Weight	13.2 lb (6.0 kg)
Standard Bracket Kit	P/N 919011 (Included)
Mechanical Downtilt Range	0-12°
Radome Material	High Strength Luran, UV Stabilized, ASTM D1925
Wind Survival	150 mph (241 km/h)
Front Wind Load	208.0 lbf (925.2 N) @100mph
Equivalent Flat Plate	4.23 sq-ft (c=2) @ 100mph

ORDER INFORMATION

MODEL	DESCRIPTION
X7C-FRO-660-x	X-Pol antenna with two(2) back DIN connectors, x placeholder for electrical downtilt
X7C-FRO-660-x-ip	X-Pol antenna with two(4) back DIN connectors, w/int. diplexers, X placeholder for electrical d
X7C-FRO-660-x-bot	X-Pol antenna with two(2) bottom DIN connectors, x placeholder for electrical downtilt
X7C-FRO-660-x-ip-bot	X-Pol antenna with four(4) bottom DIN connectors w/ int. diplexers, x placeholder for electrical downtilt
919036	Optional Bracket Kit, 2-Point, 12deg D-tilt, For 4.5" OD Pole

Product Data Sheet FD9R6004/2C-3L

ShareLite Wideband Diplexer – In-line 698-960 MHz/1710-2200 MHz, DC pass in high frequency path

Product Description

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. 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 ready design**
- **Extremely Low Insertion Loss**
- **High level of Rejection between bands – Protection against interferences**
- **Extremely High Power Handling Capability**
- **Integrated DC block/bypass versions available**
- **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)**
- **Mounting hardware for Wall and Pole mount provided (P/N SEM2-1A)**
- **Grounding already provided through the mounting bracket**
- **Kit available for easy dual mount**

Technical Specifications

Product Type	Diplexer/Cross Band Coupler
Frequency Band, MHz	698-2200
Configuration	Sharelite Single diplexer, outdoor, DC pass in the 1710 - 2170 MHz path, with mounting hardware SEM2-1A
Mounting	Wall, pole
Frequency Range Low Frequency Path, MHz	698-960
Frequency Range High Frequency Path, MHz	1710-2200
Return Loss All Ports, Min, dB	19
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, Ohms	50
Insertion Loss 698-960 MHz Path, Typ, dB	0.07
Insertion Loss 1710-2200MHz path, Typ, dB	0.13
Rejection Between Bands Min/Typ, dB	58/64@698-960MHz; 60/70@1710-2200MHz
Rejection between Bands, Min, dB	60
IMP Level at the COM Port, Typ, dBm	-112 @ 2x43
DC Pass in Low Frequency Path	No
DC Pass in High Frequency Path	Yes
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
Connectors	In-line long-neck 7-16-Female
Weight, kg (lb)	1.2 (2.6)
Shipping Weight, kg (lb)	3.2 (7) for 2 * single units in 1 * box, 9.8 (21.6) for 6 * units = 3 * Boxes in 1 * overwrap
Application	LTE 700MHz, GSM900/3G/UMTS, GSM900/GSM1800, Cellular 800/PCS
Dimensions, H x W x D, mm (in)	147 x 164 x 37 (5.8 x 6.5 x 1.5)
Shipping Dimensions, H x W x D, mm (in)	254 x 406 x 82 (10 x 16 x 3.2) for 2 * Single Units in 1 * box, 280 x 406 x 241 (11 x 16 x 9.5) for 6 * units = 3 * Boxes in 1 * overwrap
Volume, L	0.43
Housing	Aluminum

Notes