HPC Wireless Services
22 Shelter Rock Lane.
Building C
Danbury, CT, 06810
P.: 203.797.1112

HPC WIRELESS SERVICES

January 23, 2014

VIA OVERNIGHT COURIER

Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051
Attn: Ms. Melanie Bachman, Acting Executive Director

Re: Sprint Spectrum, L.P. –Exempt Modification
705 Andrews Street, Southington, Connecticut

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Sprint Spectrum, L.P. ("Sprint"). Sprint is undertaking modifications to certain existing sites in its Connecticut system in order to implement updated technology. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction that constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the Chairman of the Town Council of the Town of Southington.

Sprint plans to modify the existing wireless communications facility owned by the Connecticut Light and Power Company and located at 705 Andrews Street, Southington (coordinates 41°-37'-25.21" N, 72°-49'-59.21" W). Attached are plan and elevation drawings depicting the planned changes, and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration. Also included is a power density report reflecting the modification to Sprint's operations at the site.

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. Sprint will remove the existing six (6) CMDA antennas and add three (3) dual-band panel LTE antennas to the existing platform on existing pipe masts, at a centerline height of approximately 115' AGL, the height of the existing antennas. Sprint will also

install fiber and power cables along the existing coaxial cable run, and the existing coaxial cables will be replaced as part of the Final Configuration. The proposed modifications will not extend the height of the approximately 100' AGL structure.

2. Sprint will replace the two (2) existing cabinets with two (2) similar cabinets, add a DC Fiber/Power Distribution Box on a new H-Frame; and add six (6) RRHs (remote radio heads) on another new H-Frame, all on the existing Concrete Equipment Pad. The existing GPS antenna on the Ice Canopy will be replaced by another GPS antenna. These changes will have no effect on the site boundaries.

3. The proposed changes will not increase the noise level at the existing facility by six decibels or more. The incremental effect of the proposed changes will be negligible.

4. The changes to the facility will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site. As indicated on the attached report prepared by EBI Consulting, Sprint's operations will result in a power density of power density of approximately 31.424% for this location, as Sprint is the only carrier at this facility.

Please contact me by phone at (203) 610-1071 or by e-mail at mjhowlett@optonline.net with questions concerning this matter. Thank you for your consideration.

Respectfully yours,

Melanie J. Howlett

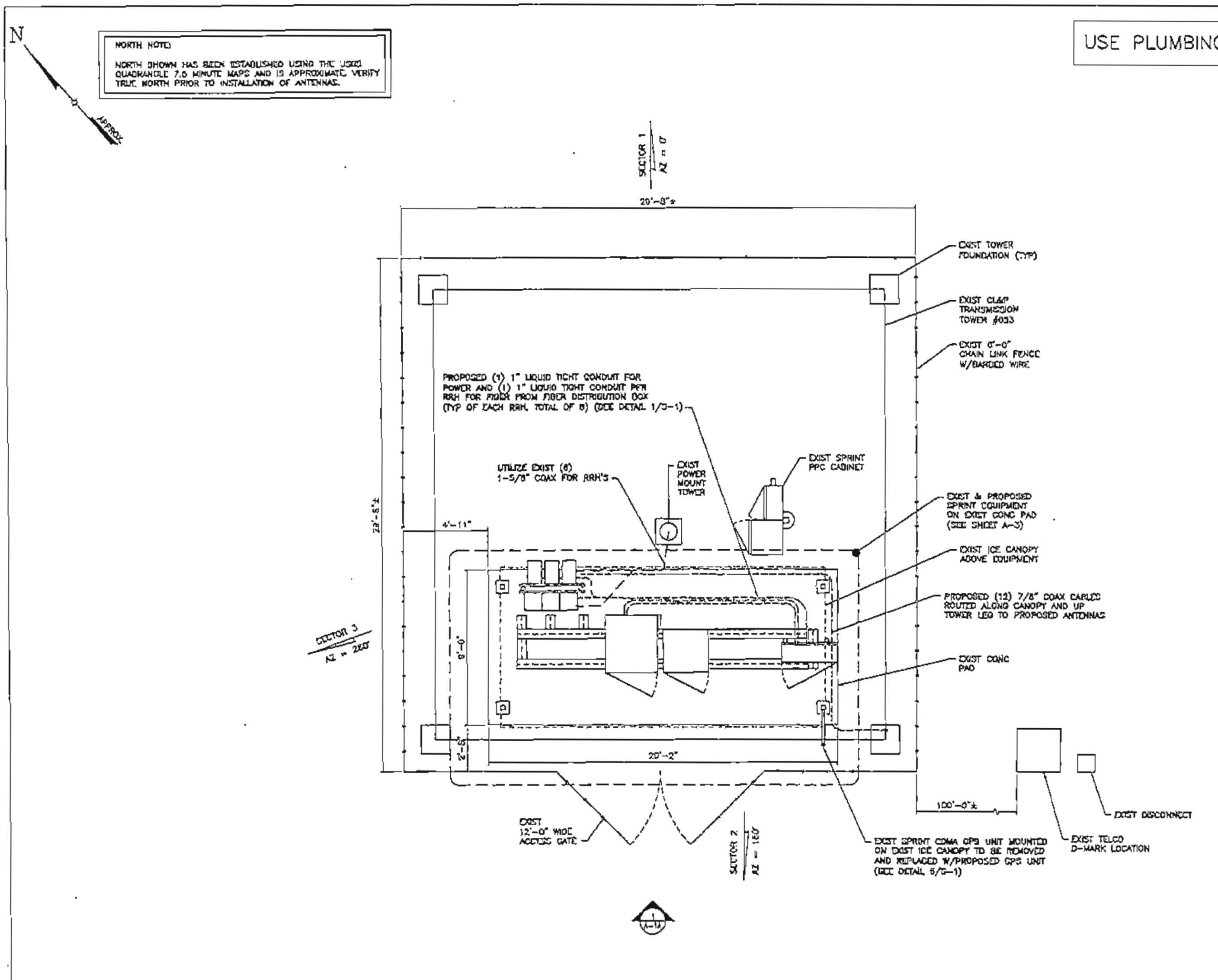
Attachments

cc: Honorable Michael Riccio, Chairman of Town Council, Town of Southington
Garry Brumback, Town Manager, Town of Southington
The Connecticut Light & Power Company (underlying property owner)

USE PLUMBING SCENARIO 124

NORTH NOTE:

NORTH SHOWN HAS BEEN ESTABLISHED USING THE USGS QUADRANGLE 7.5 MINUTE MAPS AND IS APPROXIMATE. VERIFY TRUE NORTH PRIOR TO INSTALLATION OF ANTENNAS.



SITE PLAN (1 / A-1)

SCALE: 3/8" = 1'-0"

Sprint

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SUBMITTALS

PROJECT NO: 6318.33-528

NO	DATE	DESCRIPTION	BY
0	9/28/12	FOR COMMENT	KR
1	2/8/13	PER COMMENTS	DAC
2	09/10/13	REVISED TO GMA	MP
3	10/24/13	PER COMMENTS	MP
4	1/9/14	FOR CONSTRUCTION	JT
5	1/14/14	PER COMMENTS	AS

DATE

STATE OF CONNECTICUT · ANTONIO A. GRATTERI · No. 22465 · LICENSED PROFESSIONAL ENGINEER

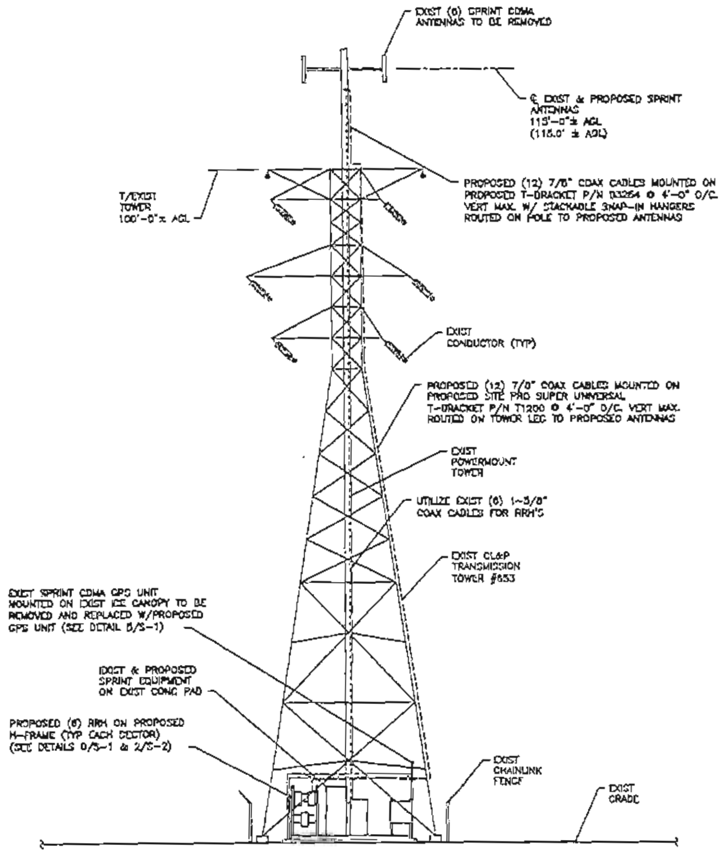
CL&P STRUCTURE: #653
SITE NUMBER:
CT33XC528
SITE NAME:
"SOUTHINGTON/ROGER'S NU"
SITE ADDRESS:
705 ANDREWS ROAD
SOUTHINGTON, CT 06489

SHEET TITLE:
SITE PLAN

SHEET NO:
A-1

THE PROPOSED INSTALLATION, ANTENNA MOUNT AND MONOPOLE SHALL BE ANALYZED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT (TO BE COORDINATED BY OTHERS).

USE PLUMBING SCENARIO 124



1/A-1A ELEVATION
SCALE: 1/8" = 1'-0"

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SUBMITTALS

PROJECT NO: 6318.33-528

NO	DATE	DESCRIPTION	BY
0	9/28/12	FOR COMMENT	KR
1	2/8/13	PER COMMENTS	DAC
2	09/10/13	REVISED TO OM4	MP
3	10/24/13	PER COMMENTS	MP
4	1/9/14	FOR CONSTRUCTION	JT
5	1/14/14	PER COMMENTS	AS

DATE

CL&P STRUCTURE #853
SITE NUMBER
CT33XC528
SITE NAME
"SOUTHINGTON/ROGER'S NO"
SITE ADDRESS
706 ANDREWS ROAD
SOUTHINGTON, CT 06496

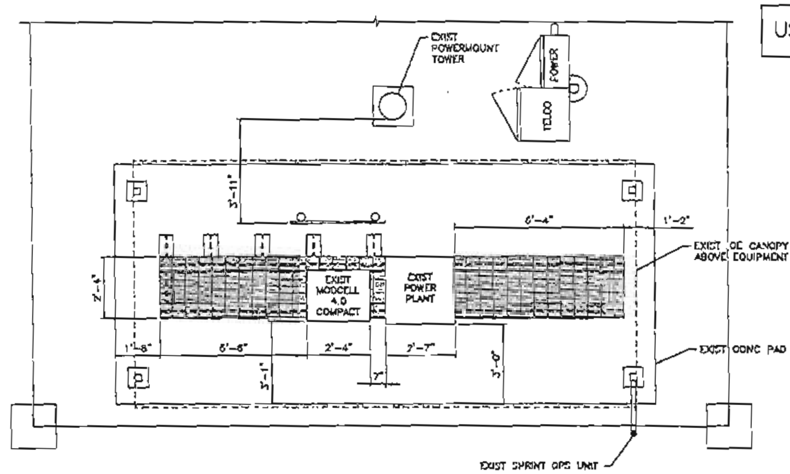
SHEET TITLE:
ELEVATION

SHEET NO:
A-1A

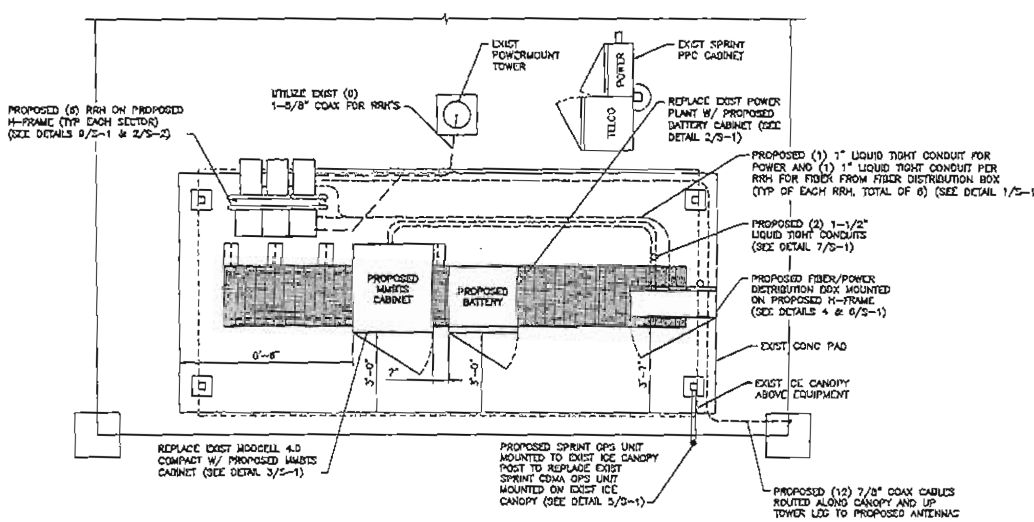
N — APPROX

NORTH NOTE:
NORTH SHOWN HAS BEEN ESTABLISHED USING THE USGS QUADRANGLE 7.5 MINUTE MAPS AND IS APPROXIMATE. VERIFY TRUE NORTH PRIOR TO INSTALLATION OF ANTENNAS.

USE PLUMBING SCENARIO 124



(1/A-3) ENLARGED EQUIPMENT LAYOUT PLAN (EXIST)
SCALE: 1/2" = 1'-0"



(2/A-3) ENLARGED EQUIPMENT LAYOUT PLAN (FINAL)
SCALE: 1/2" = 1'-0"

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Tectonic Engineering & Surveying Consultants P.C.

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SUBMITTALS
PROJECT NO: 6310.33-528

NO	DATE	DESCRIPTION	BY
0	9/28/12	FOR COMMENT	KR
1	2/8/13	PER COMMENTS	DAC
2	09/10/13	REVISED TO GMI4	MP
3	10/24/13	PER COMMENTS	MP
4	1/9/14	FOR CONSTRUCTION	JT
5	1/14/14	PER COMMENTS	AS

DATE | ISSUED BY

STATE OF CONNECTICUT — ANTONIO A. GUALTIERI — No. 25??? — LICENSED PROFESSIONAL ENGINEER

CL&P STRUCTURE #853
SITE NUMBER
CT33XC528
SITE NAME
"SOUTHINGTON/ROGER'S NU"
SITE ADDRESS
705 ANDREWS ROAD
SOUTHINGTON, CT 06489

SHEET TITLE:
ENLARGED EQUIPMENT LAYOUT PLANS

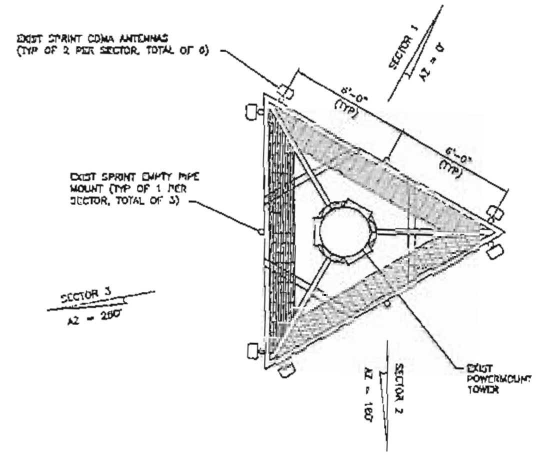
SHEET NO:
A-2

NORTH NOTE:

NORTH SHOWN HAS BEEN ESTABLISHED USING THE USGS QUADRANGLE 7.5 MINUTE MAPS AND IS APPROXIMATE. VERIFY TRUE NORTH PRIOR TO INSTALLATION OF ANTENNAS.

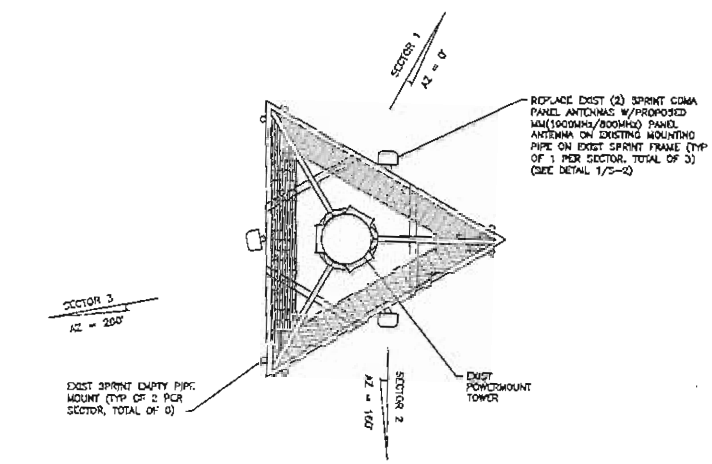
THE PROPOSED INSTALLATION, ANTENNA MOUNT AND MONOPOLE SHALL BE ANALYZED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT (TO BE COORDINATED BY OTHERS).

USE PLUMBING SCENARIO 124



1 / A-3 ANTENNA LAYOUT PLAN (EXIST)

SCALE: 3/8" = 1'-0"



2 / A-3 ANTENNA LAYOUT PLAN (FINAL)

SCALE: 3/8" = 1'-0"

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SUBMITTALS

PROJECT NO: 6316.33-528

NO	DATE	DESCRIPTION	BY
0	9/28/12	FOR COMMENT	KR
1	2/8/13	PER COMMENTS	DAC
2	09/10/13	REVISED TO GMA	MP
3	10/24/13	PER COMMENTS	MP
4	1/9/14	FOR CONSTRUCTION	JT
5	1/16/14	PER COMMENTS	AS

STATE OF CONNECTICUT · ANTONIO A. GUALTIERI · LICENSED PROFESSIONAL ENGINEER

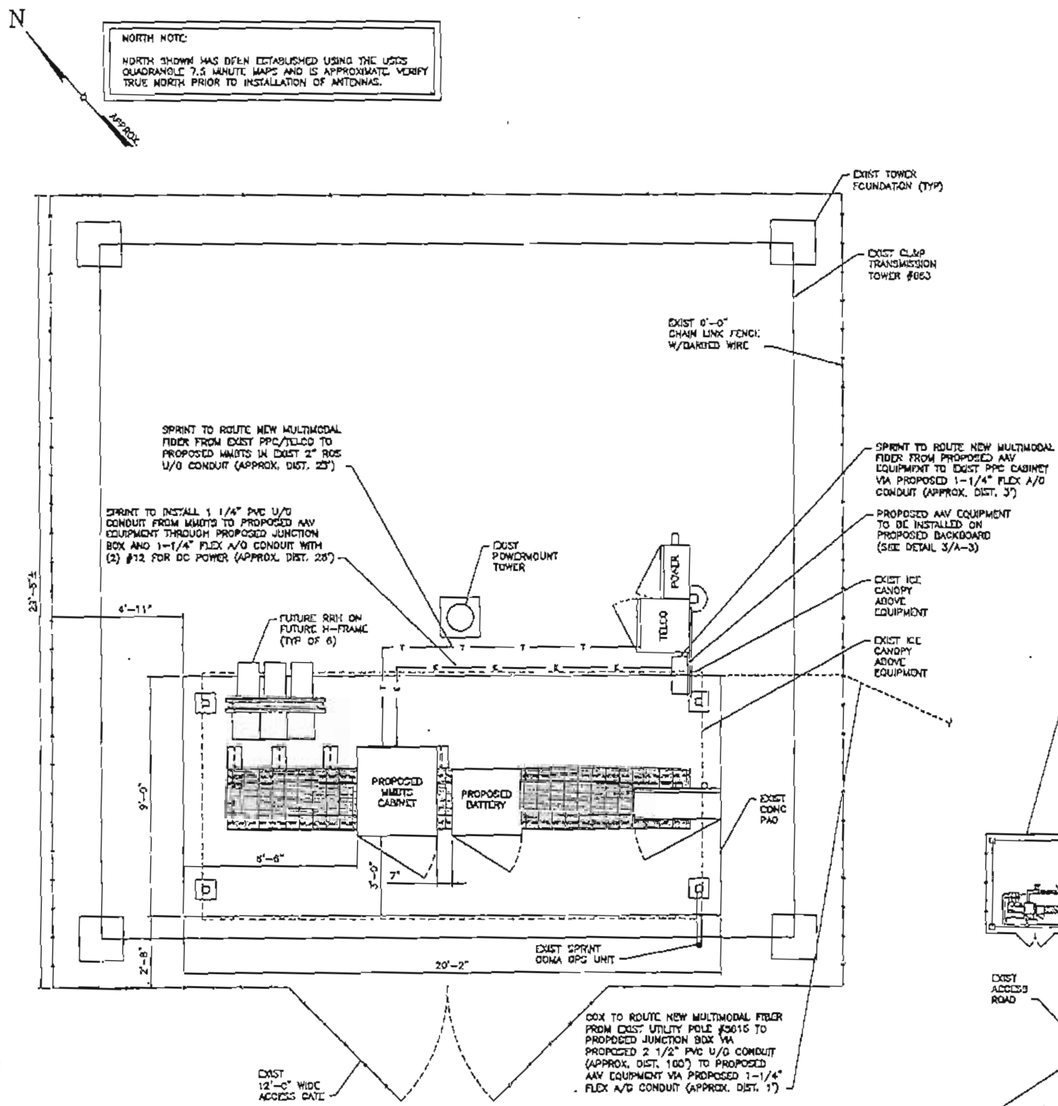
CL&P STRUCTURE: #853
SITE NUMBER:
CT33XC528
SITE NAME:
"SOUTHINGTON/ROGER'S NU"
SITE ADDRESS:
705 ANDREWS ROAD
SOUTHINGTON, CT 06489

SHEET TITLE:
ANTENNA LAYOUT PLANS

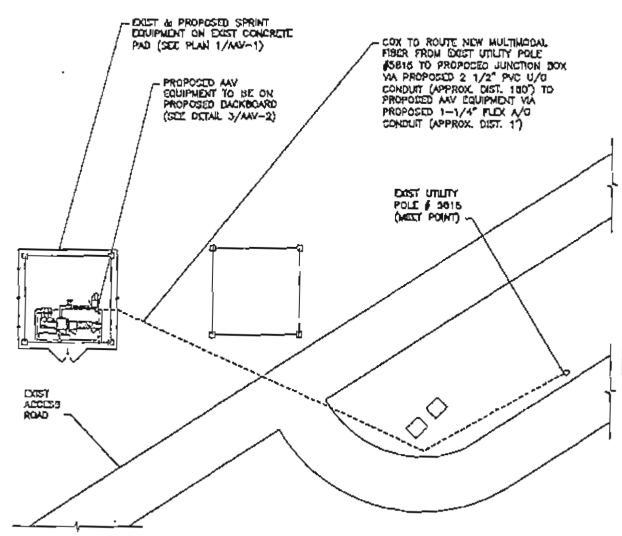
SHEET NO:
A-3

NORTH NOTE:

NORTH SHOWN HAS BEEN ESTABLISHED USING THE USGS QUADRANGLE 7.5 MINUTE MAPS AND IS APPROXIMATE. VERIFY TRUE NORTH PRIOR TO INSTALLATION OF ANTENNAS.



1 / AAV-1 SITE DETAIL PLAN
SCALE: 3/16" = 1'-0"



2 / AAV-1 SITE PLAN
SCALE: 1/16" = 1'-0"

AAV SCOPE OF WORK

1. FIBER RUN: COX TO INSTALL NEW MULTIMODAL FIBER CABLE FROM EXIST UTILITY POLE #5615 TO PROPOSED JUNCTION BOX VIA PROPOSED 2-1/2" PVC U/G CONDUIT TO NEW AAV EQUIPMENT VIA PROPOSED 1-1/4" FLEX A/G CONDUIT. SPRINT TO INSTALL CONDUIT, JUNCTION BOX AND PULL LINE. EXISTING UTILITY POLE #5615 IS CONSIDERED THE MEET POINT.
2. SPRINT TO UTILIZE EXIST CONDUIT 2" RGS U/G CONDUIT FROM THE MMBTS TO THE PPC CABINET AND PROPOSED 1-1/4" FLEX CONDUIT FROM THE PPC CABINET TO THE NEW AAV EQUIPMENT FOR ETHERNET.
3. SPRINT TO INSTALL 1 1/4" PVC U/G CONDUIT BETWEEN THE MMBTS AND PROPOSED AAV EQUIPMENT THROUGH PROPOSED JUNCTION BOX AND 1-1/4" FLEX A/C CONDUIT WITH 2 #12 CABLES FOR DC POWER FOR THE -48DC 15 AMP BREAKER) POWER SUPPLY. SPRINT TO INSTALL INLINE FUSE FOR NEW AAV EQUIPMENT.
4. SPRINT TO PROVIDE AND INSTALL (1) 1/2" EMT CONDUIT WITH (1) NEW #6 AWG GREEN SOLID WIRE ROUTED FROM THE NEAREST EXISTING MAIN GROUND BAR TO THE NEW AAV EQUIPMENT.
5. SPRINT TO INSTALL NEW BACKBOARD EXTENSION ON THE SIDE OF PPC CABINET.
6. COX TO INSTALL NEW AAV EQUIPMENT ON NEW BACKBOARD EXTENSION.
7. SPRINT TO INSTALL (2) 6"X6" J-BOXES UNDER NEW AAV EQUIPMENT WITH (2) 1" FLEX A/G CONDUIT FROM EACH J-BOX TO THE NEW AAV EQUIPMENT.
8. SPRINT TO PROVIDE 180' OF MULE TAPE.

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SUBMITTALS

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5	1/14/14	PER COMMENTS	AS

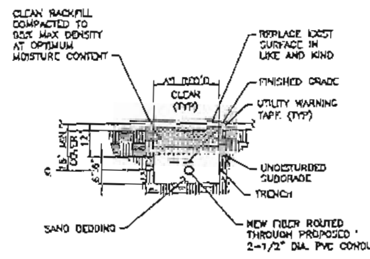
DATE:

STATE OF CONNECTICUT · ANTONIO ... · No. ... · LICENSED · PROFESSIONAL ENGINEER

CL&P STRUCTURE: #653
SITE NUMBER: CT33XC528
SITE NAME: "SOUTHINGTON/ROGER'S NU"
SITE ADDRESS: 705 ANDREWS ROAD SOUTHINGTON, CT 06489

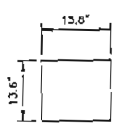
SHEET TITLE: SITE PLAN, SITE DETAIL PLAN & NOTES

SHEET NO: AAV-1



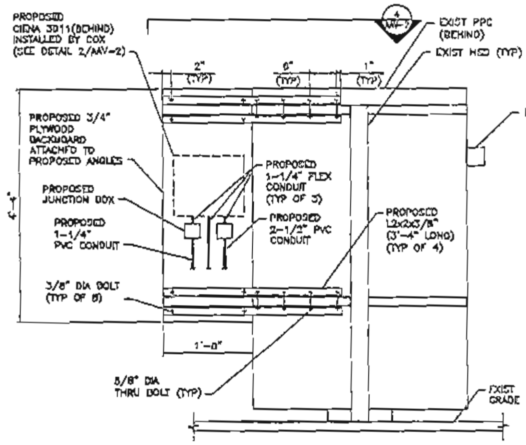
NOTE: SPRINT TO INSTALL PULL STRING

1 / AAV-2 UTILITY TRENCH DETAIL
SCALE: 1/2" = 1'-0"

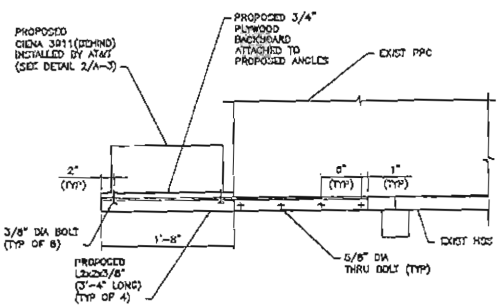


AAV EQUIPMENT SPEC. TO BE PROVIDED (MOUNT PER MANUFACTURER'S SPECS)

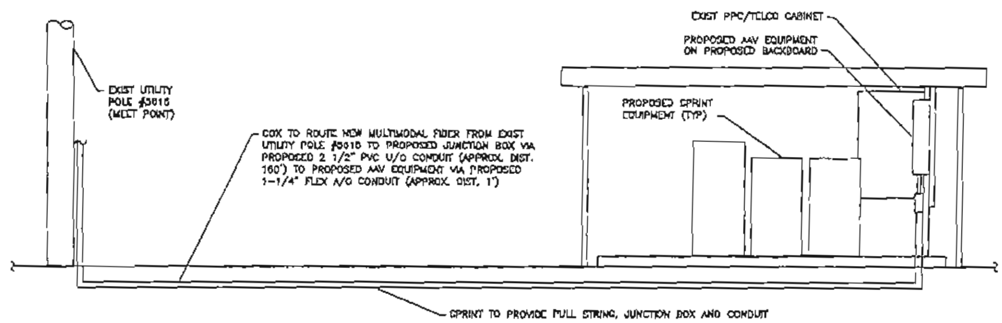
2 / AAV-2 DETAIL
SCALE: NTS



3 / AAV-2 DETAIL
SCALE: 1" = 1'-0"



4 / AAV-2 DETAIL
SCALE: 1-1/2" = 1'-0"



5 / AAV-2 ONE-LINE DIAGRAM
SCALE: NTS

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE 2003 IRC WITH 2005 CONNECTICUT SUPPLEMENT AND ALL OTHER APPLICABLE CODES AND ORDINANCES.
2. CONTRACTOR SHALL VISIT THE JOB SITE AND FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE WORK AND MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
3. PLANS ARE NOT TO BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY, UNLESS OTHERWISE NOTED. THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO EFFECT ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
4. CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING THE BEST CONSTRUCTION SKILLS AND ATTENTION. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT, UNLESS OTHERWISE NOTED.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE WORK AREA, ADJACENT AREAS, AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFORM TO ALL OSHA REQUIREMENTS.
6. CONTRACTOR SHALL COORDINATE HIS WORK AND SCHEDULE HIS ACTIVITIES AND WORKING HOURS IN ACCORDANCE WITH THE REQUIREMENTS OF THE OWNER.
7. INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.
8. MAKE NECESSARY PROVISIONS TO PROTECT EXISTING SURFACES, EQUIPMENT, IMPROVEMENTS, PIPING, ANTENNA AND ANTENNA CABLES. REPAIR ANY DAMAGE THAT OCCURS DURING CONSTRUCTION.
9. CONTRACTOR SHALL SECURE ALL NECESSARY BUILDING PERMITS AND INSPECTIONS AND PAY ALL REQUIRED FEES.
10. ALL BROCHURES, OPERATING AND MAINTENANCE MANUALS, CATALOGS, SHOP DRAWINGS AND OTHER DOCUMENTATION SHALL BE TURNED OVER TO SPRINT AT COMPLETION OF CONSTRUCTION.
11. COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF ACCEPTANCE BY SPRINT. ANY WORK, MATERIALS, OR EQUIPMENT FOUND TO BE DEFECTIVE DURING THAT PERIOD SHALL BE CORRECTED IMMEDIATELY UPON WRITTEN NOTIFICATION AT NO ADDITIONAL COST TO SPRINT.

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SUBMITTALS

PROJECT NO: 6318.33-628

NO	DATE	DESCRIPTION	BY
0	9/28/12	FOR COMMENT	KR
1	2/8/13	PER COMMENTS	DAC
2	09/10/13	REVISED TO SM4	MP
3	10/22/13	PER COMMENTS	MP
4	1/9/14	FOR CONSTRUCTION	JT
5	1/14/14	PER COMMENTS	AS

DATE

CL&P STRUCTURE #653
CT33XC528
"SOUTHINGTON/ROGER'S NU"
700 ANDREWS ROAD
SOUTHINGTON, CT 06489

SHEET TITLE:
DETAILS & NOTES

SHEET NO:
AAV-2

CENTEK engineering

Centered on Solutions℠

Structural Analysis of Powermount and CL&P Tower

Sprint Site Ref: CT33XC528

CL&P Structure No. 653

100' Electric Transmission Lattice Tower

705 Andrews Road
Southington, CT

CENTEK Project No. 13003.CO2

Date: May 10, 2013

STATE OF CONNECTICUT LICENSED PROFESSIONAL ENGINEER

Prepared for:
Sprint Nextel
8 Airline Drive, Suite 105
Albany, NY 12205

CENTEK Engineering, Inc.
Structural Analysis – 100-ft CL&P Tower # 653
Sprint Antenna Upgrade – CT33XC528
Southington, CT
May 10, 2013

Table of Contents

CENTEK Engineering, Inc.
Structural Analysis – 100-ft CL&P Tower # 653
Sprint Antenna Upgrade – CT33XC528
Southington, CT
May 10, 2013

Introduction

The purpose of this report is to analyze the existing 115' FWT Powermount job no. 22588 dated April 2, 2001 and 100' CL&P tower located at 705 Andrews Street in Southington, CT for the proposed antenna and equipment upgrade by Sprint.

The proposed loads consist of the following:

- SPRINT (Existing to Remain)
  Coax Cables: Six (6) 1-5/8" Ø coax cables mounted within the existing powermount.
  Mast: 12" Sch. 40 (O.D. = 12.75") x 115'-0" tall ASTM A500 Gr. 42 FWT powermount.
- **SPRINT (Existing to Remove)**
  Antennas: Six (6) Decibel DB980H90E-M panel antennas mounted on the existing low profile platform to the powermount with a RAD center elevation of 115-ft above grade.
- **SPRINT (Proposed):**
  Antennas: Three (3) RFS APXVSPP18-C panel antennas mounted on the existing low profile platform to the powermount with a RAD center elevation of 115-ft above grade.
  Coax Cables: Twelve (12) 1-5/8" Ø coax cables mounted on a Site Pro Super Universal T-Brackets p/n T1200 running on a leg of the existing tower as indicated in section 4 of this report.

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 12-in SCH. 40 pipe (O.D. = 12.75") connected at five 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 100-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 Northeast Utilities Design Criteria.

The CL&P tower structure, considering existing and future conductor and shield wire loading, with the existing powermount 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 NU 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

  The powermount, appurtenances and connections to the utility tower were analyzed and designed in accordance with the NU 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 NU Mast Design Criteria Exception 1.

Results

- POWERMOUNT

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

Component	Design Limit	Stress Ratio (percentage of capacity)	Result
12" Sch. 40 Pipe	Bending	51.6%	**PASS**
L2x2x3/16 Brace	Bending	45.3%	**PASS**
Connection	Shear	76.6%	**PASS**

- UTILITY TOWER

  This analysis finds that the subject utility structure is adequate to support the proposed antenna mast and related appurtenances. The tower stresses meet the requirements set forth by the ASCE Manual No. 10-97, "Design of Latticed Steel Transmission Structures", for the applied NESC Heavy and Hi-Wind load cases. The detailed analysis results are provided in Section 8 of this report. The analysis results are summarized as follows:

  A maximum usage of **94.11%** occurs in the utility structure under the **NESC Extreme** loading condition.

  TOWER SECTION:

  The utility structure was found to be within allowable limits.

Tower Member	Stress Ratio (% of capacity)	Result
Angle g55P	94.11%	**PASS**

Note 1 – Bottom two bays of diagonal bracing previously reinforced by Northeast Utilities in 1999. Refer to calculations located in section 9 of this report for reference.

- FOUNDATION AND ANCHORS

The existing foundation consists of four (4) 2.5-ft square tapering to 6-ft square reinforced concrete piers. Foundation information was obtained from NUSCO drawing # 01021-60002.

Review of the foundation design consisted of verification of applied loads obtained from the tower design calculations and comparison to original design loads:

BASE REACTIONS:

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

Load Case	Shear	Uplift	Compression
NESC Heavy Wind	16.86 kips	42.27 kips	59.06 kips
NESC Extreme Wind	18.67 kips	51.03 kips	61.53 kips

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

FOUNDATION:

The foundation was found to be within allowable limits.

Foundation	Design Limit	Allowable Limit	Proposed Loading (2)	Result
Reinforced Concrete Pier	Uplift	1.0 FS (1)	2.03 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 **is adequate** to support the proposed Sprint equipment upgrade.

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

Please feel free to call with any questions or comments.

Respectfully Submitted by:

Carlo F. Centore, PE
Principal ~ Structural Engineer

STATE OF CONNECTICUT CARLO F. CENTORE No.16834 LICENSED PROFESSIONAL ENGINEER

Prepared by:

Timothy J. Lynn, EIT
Structural Engineer

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING STRUCTURES

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

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

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

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

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

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

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ RISA-3D

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

Modeling Features:

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

Analysis Features:

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

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

Graphics Features:

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

Design Features:

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

Results Features:

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

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ PLS-TOWER

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

Modeling Features:

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

Analysis Features:

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

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

Results Features:

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

Tool for interactive angle member sizing and bolt quantity determination.

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

Introduction

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

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

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

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

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

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

Note 1: Prepared from documentation provide from Northeast Utilities.

P C S   M a s t

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

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

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

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

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

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

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

Northeast Utilities
Overhead Transmission Standards

Northeast Utilities

Attachment A

NU Design Criteria

Condition	Category	Item	Basic Wind Speed V (MPH)	Pressure Q (PSF)	Height Factor Kz	Gust Factor Gh	Load or Stress Factor	Force Coef - Shape Factor
Ice Condition	TIA/EIA	Antenna Mount	TIA	TIA (.75Wi)	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
Ice Condition	NESC Heavy	Tower/Pole Analysis with antennas extending above top of Tower/Pole (Yield Stress)	----	4	1.00	1.00	2.50	1.6 Flat Surfaces 1.3 Round Surfaces
Ice Condition	NESC Heavy	Tower/Pole Analysis with Antennas below top of Tower/Pole (on two faces)	----	4	1.00	1.00	2.50	1.6 Flat Surfaces 1.3 Round Surfaces
Ice Condition	NESC Heavy	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
High Wind Condtion	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
High Wind Condtion	NESC Extreme Wind	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
High Wind Condtion	NESC Extreme Wind	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
NESC Extreme Ice with Wind Conditon*		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
NESC Extreme Ice with Wind Conditon*		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.

(14A)

CONDUCTOR
Wire Ld

TITLE Sprint PCS, Southington, CL&P Str 8/27/99
STRUCT 653

CONDUCTOR

	AHEAD	BACK
	4/0 Cu	4/0 Cu
	4/0	4/0
	7.000 Cu	7.000 Cu
DIAM =	0.522	0.522
WEIGHT =	0.653	0.653

TENSION (LBS)	AHEAD	4,500	BACK	4,500

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	7.8	306	275	1395	-7356	532
AHEAD	7.8	306	275	1396	7356	532
TOTALS	**15.6**	**612**	**550**	**2791**	**0**	**1063**

Conductor

Wire Ld

(14B)

TITLE Sprint PCS, Southington

STRUCT 653

8/27/99

CONDUCTOR

	AHEAD	BACK
	4/0 Cu	4/0 Cu
	4/0	4/0
	7.000 Cu	7.000 Cu
DIAM =	0.522	0.522
WEIGHT =	0.653	0.653
TENSION (LBS)	AHEAD 2,908	BACK 2,908

LOADCASE	HI WIND
WIND (PSF)	20
ICE (IN)	0.00
OLF ANG	1.15
OLF WIND	1.15
OLF WT	1.15

STR	ANGLE	WIND SPAN	WGT SPAN	HI WIND H	L	V
BACK	7.8	306	275	760	-3313	207
AHEAD	7.8	306	275	760	3313	207
TOTALS	**15.6**	**612**	**550**	**1520**	**0**	**413**

Site No: CT33XC528

SHIELD
Wire Ld

(14C)

TITLE Sprint PCS, Southington 8/27/99
STRUCT 653

CONDUCTOR

	AHEAD		BACK	
	11/32 CW		11/32 CW	
	0.000		0.000	
	7 #9 Cu Weld		7 #9 Cu Weld	
DIAM =	0.343		0.343	
WEIGHT =	0.257		0.257	
TENSION (LBS)	AHEAD	3,600	BACK	3,600

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	7.8	306	275	1148	-5885	322
AHEAD	7.8	306	275	1149	5885	322
TOTALS	**15.6**	**612**	**550**	**2297**	**0**	**644**

Site No: CT33XC528

SHIELD
Wire Ld

(14D)

TITLE SPRINT PCS, SOUTHINGTON 8/27/99

STRUCT 653

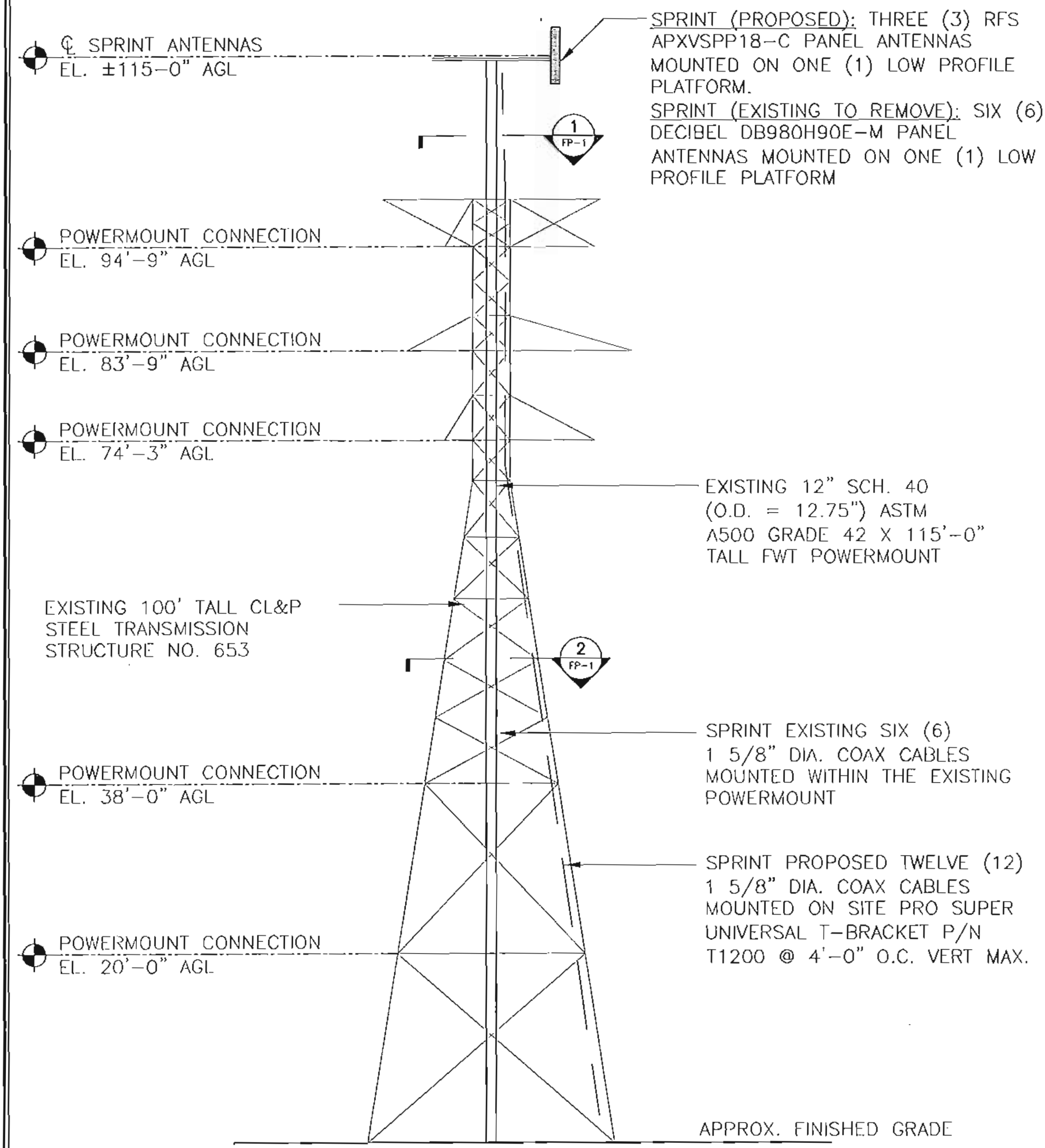
CONDUCTOR

	AHEAD		BACK	
	11/32 CW		11/32 CW	
	0.000		0.000	
	7 #9 Cu Weld		7 #9 Cu Weld	
DIAM =	0.343		0.343	
WEIGHT =	0.257		0.257	
TENSION (LBS)	AHEAD	2,136	BACK	2,136

LOADCASE	HI WIND
WIND (PSF)	20
ICE (IN)	0.00
OLF ANG	1.15
OLF WIND	1.15
OLF WT	1.15

STR	ANGLE	WIND SPAN	WGT SPAN	HI WIND H	L	V
BACK	7.8	306	275	534	-2434	81
AHEAD	7.8	306	275	535	2434	81
TOTALS	**15.6**	**612**	**550**	**1069**	**0**	**162**

Site No: CT33XC528



1 / EL-1 **TOWER & POWERMOUNT ELEVATION**

SCALE: NOT TO SCALE

REVISIONS		
00	5/9/13	ISSUED FOR NU REVIEW

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

CT33XC528
CL&P 653

705 ANDREWS ROAD
SOUTHINGTON, CT 06489

PROJECT NO:	13003.CO2
DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED
DATE:	5/9/13

TOWER AND MAST ELEVATION

EL-1

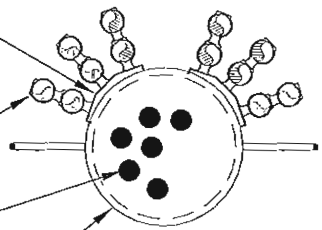
DWG. 1 OF 2

VALMONT TRANSMISSION LINE BRACKET P/N B3254 AT 4' O.C. MAX W/ STACKABLE SNAP-IN HANGERS

SPRINT PROPOSED TWELVE (12) 1-5/8" DIA. COAX CABLES

SPRINT EXISTING SIX (6) 1 5/8" DIA. COAX CABLES MOUNTED WITHIN THE EXISTING POWERMOUNT

EXISTING 12" SCH. 40 (O.D. = 12.75") ASTM A500 GRADE 42 X 115'-0" TALL FWT POWERMOUNT



ABOVE TOP OF TOWER

1 FP-1 FEEDLINE PLAN - POWERMOUNT

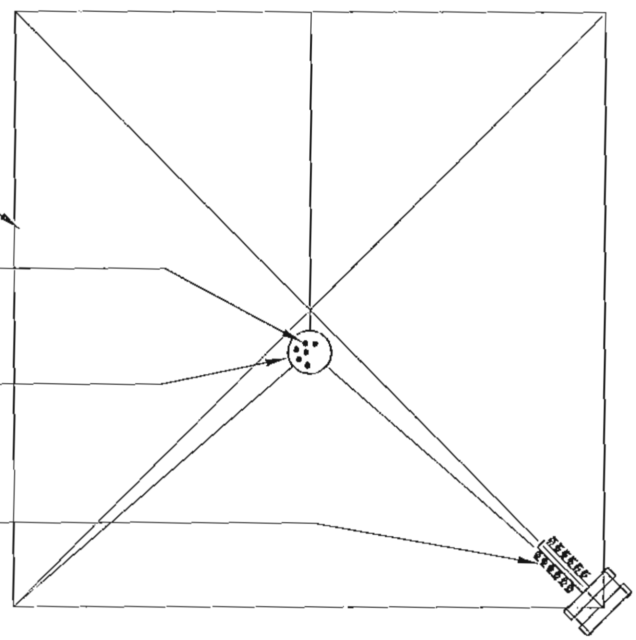
SCALE: NOT TO SCALE

EXISTING 100' TALL CL&P STEEL TRANSMISSION STRUCTURE NO. 653

SPRINT EXISTING SIX (6) 1 5/8" DIA. COAX CABLES MOUNTED WITHIN THE EXISTING POWERMOUNT

EXISTING 12" SCH. 40 (O.D. = 12.75") ASTM A500 GRADE 42 X 115'-0" TALL FWT POWERMOUNT

SPRINT PROPOSED TWELVE (12) 1 5/8" DIA. COAX CABLES MOUNTED ON SITE PRO SUPER UNIVERSAL T-BRACKET P/N T1200 @ 4'-0" O.C. VERT MAX.



APPROX. NORTH

2 FP-1 FEEDLINE PLAN - TOWER

SCALE: NOT TO SCALE

REVISIONS		
00	5/9/13	ISSUED FOR NU REVIEW

CENTEK engineering
Centered on Solutions™
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PROJECT NO.	13003.CO2
DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED
DATE:	5/9/13

FEEDLINE PLAN

FP-1

DWG. 2 OF 2

CENTEK engineering Centered on Solutions www.centekeng.com 63-2 North Branford Road P:(203) 488 0580 Branford, CT 06405 F:(203) 488 8587	Subject:	Load Analysis of Powermount on CL&P Tower # 653
	Location:	Southington, CT
	Rev. 0: 5/9/13	Prepared by: T.J.L. Checked by: C.F.C. Job No. 13003.CO2

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	$z_{pmnt1} := 102.5$	ft	(User Input)
Powermount Section 2	$z_{pmnt2} := 75$	ft	(User Input)
Powermount Section 3	$z_{pmnt3} := 45$	ft	(User Input)
Powermount Section 4	$z_{pmnt4} := 15$	ft	(User Input)
Sprint	$z_{spt} := 115$	ft	(User Input)
Coax	$z_{coax} := 107.5$	ft	(User Input)

Exposure Coefficients, kz (per TIA/EIA-222-F Section 2.3.3)

Powermount Section 1 $$Kz_{pmnt1} := \left(\frac{z_{pmnt1}}{33}\right)^{\frac{2}{7}} = 1.382$$

Powermount Section 2 $$Kz_{pmnt2} := \left(\frac{z_{pmnt2}}{33}\right)^{\frac{2}{7}} = 1.264$$

Powermount Section 3 $$Kz_{pmnt3} := \left(\frac{z_{pmnt3}}{33}\right)^{\frac{2}{7}} = 1.093$$

Powermount Section 4 $$Kz_{pmnt4} := \left(\frac{z_{pmnt4}}{33}\right)^{\frac{2}{7}} = 0.798$$

Sprint $$Kz_{spt} := \left(\frac{z_{spt}}{33}\right)^{\frac{2}{7}} = 1.429$$

Coax $$Kz_{coax} := \left(\frac{z_{coax}}{33}\right)^{\frac{2}{7}} = 1.401$$

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

Powermount Section 1 $qz_{pmnt1} := 0.00256 \cdot Kz_{pmnt1} \cdot V^2 = 25.569$

Powermount Section 2 $qz_{pmnt2} := 0.00256 \cdot Kz_{pmnt2} \cdot V^2 = 23.386$

Powermount Section 3 $qz_{pmnt3} := 0.00256 \cdot Kz_{pmnt3} \cdot V^2 = 20.21$

Powermount Section 4 $qz_{pmnt4} := 0.00256 \cdot Kz_{pmnt4} \cdot V^2 = 14.765$

Sprint $qz_{spt} := 0.00256 \cdot Kz_{spt} \cdot V^2 = 26.423$

Coax $qz_{coax} := 0.00256 \cdot Kz_{coax} \cdot V^2 = 25.919$

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

Powermount Section 1 $qzICE_{pmnt1} := 0.00256 \cdot Kz_{pmnt1} \cdot V_i^2 = 19.379$

Powermount Section 2 $qzICE_{pmnt2} := 0.00256 \cdot Kz_{pmnt2} \cdot V_i^2 = 17.725$

Powermount Section 3 $qzICE_{pmnt3} := 0.00256 \cdot Kz_{pmnt3} \cdot V_i^2 = 15.318$

Powermount Section 4 $qzICE_{pmnt4} := 0.00256 \cdot Kz_{pmnt4} \cdot V_i^2 = 11.191$

Sprint $qzICE_{spt} := 0.00256 \cdot Kz_{spt} \cdot V_i^2 = 20.027$

Coax $qzICE_{coax} := 0.00256 \cdot Kz_{coax} \cdot V_i^2 = 19.645$

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: (12" Std. Pipe)

Powermount Shape =	Round		(User Input)
Powermount Diameter =	$D_{pmnt} := 12.8$	in	(User Input)
Powermount Length =	$L_{pmnt} := 131$	ft	(User Input)
Powermount Thickness =	$t_{pmnt} := 0.375$	in	(User Input)

Velocity Coefficient = $C := \sqrt{Kz_{pmnt4}} \cdot V \cdot \frac{D_{pmnt}}{12} = 81$

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 =	$A_{pmnt} := \frac{D_{pmnt}}{12} = 1.067$	sf/ft	
Total Powermount Section 1 Wind Force =	$qz_{pmnt1} \cdot G_H \cdot CF_{pmnt} \cdot A_{pmnt} = 27$	plf	BLC 5,7
Total Powermount Section 2 Wind Force =	$qz_{pmnt2} \cdot G_H \cdot CF_{pmnt} \cdot A_{pmnt} = 25$	plf	BLC 5,7
Total Powermount Section 3 Wind Force =	$qz_{pmnt3} \cdot G_H \cdot CF_{pmnt} \cdot A_{pmnt} = 21$	plf	BLC 5,7
Total Powermount Section 4 Wind Force =	$qz_{pmnt4} \cdot G_H \cdot CF_{pmnt} \cdot A_{pmnt} = 16$	plf	BLC 5,7

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

Powermount Projected Surface Area w/ Ice =	$AICE_{pmnt} := \frac{(D_{pmnt} + 2 \cdot Ir)}{12} = 1.15$	sf/ft	
Total Powermount Section 1 Wind Force w/ Ice =	$qzICE_{pmnt1} \cdot G_H \cdot CF_{pmnt} \cdot AICE_{pmnt} = 22$	plf	BLC 4,6
Total Powermount Section 2 Wind Force w/ Ice =	$qzICE_{pmnt2} \cdot G_H \cdot CF_{pmnt} \cdot AICE_{pmnt} = 20$	plf	BLC 4,6
Total Powermount Section 3 Wind Force w/ Ice =	$qzICE_{pmnt3} \cdot G_H \cdot CF_{pmnt} \cdot AICE_{pmnt} = 18$	plf	BLC 4,6
Total Powermount Section 4 Wind Force w/ Ice =	$qzICE_{pmnt4} \cdot G_H \cdot CF_{pmnt} \cdot AICE_{pmnt} = 13$	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 =	$Ai_{pmnt} := \frac{\pi}{4}\left[(D_{pmnt} + Ir \cdot 2)^2 - D_{pmnt}^2\right] = 20.9$	sq in	
Weight of Ice on Powermount =	$W_{ICEpmnt} := Id \cdot \frac{Ai_{pmnt}}{144} = 8$	plf	BLC 3

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Location:	Southington, CT
Rev. 0: 5/9/13	Prepared by: T.J.L. Checked by: C.F.C. Job No. 13003.CO2

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

Antenna Data: (Sprint)

Antenna Model = RFS APXVSPP18-C

Antenna Shape = Flat (User Input)

Antenna Height = $L_{ant} := 72$ in (User Input)

Antenna Width = $W_{ant} := 11.8$ in (User Input)

Antenna Thickness = $T_{ant} := 7$ in (User Input)

Antenna Weight = $WT_{ant} := 57$ lbs (User Input)

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

Antenna Aspect Ratio = $Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 6.1$

Antenna Force Coefficient = $Ca_{ant} = 1.4$ (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 = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 5.9$ sf

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

Total Antenna Wind Force = $F_{ant} := qz_{spt} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 1107$ 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 = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 6.5$ sf

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

Total Antenna Wind Force w/ Ice = $Fi_{ant} := qzICE_{spt} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 922$ lbs BLC 4,6

Gravity Load (without ice)

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

Gravity Loads (ice only)

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

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1) \cdot (T_{ant} + 1) - V_{ant} = 1528$ cu in

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

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 149$ lbs BLC 3

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

Platform Data: (Sprint)

Platform Model = FWT Low Profile Platform

Platform Shape = Flat (User Input)

Platform Area = $A_{plt} := 13.07$ sq ft (User Input from FWT design calcs)

Platform Area w/ Ice = $A_{ICE.plt} := 16.4$ sq ft (User Input from FWT design calcs)

Platform Weight = $WT_{plt} := 3282$ lbs (User Input from FWT design calcs)

Platform Weight w/ Ice = $WT_{ICE.plt} := 4478$ lbs (User Input from FWT design calcs)

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

Total Platform Wind Force = $F_{plt} := qz_{spt} \cdot G_H \cdot C_a \cdot A_{plt} = 817$ lbs **BLC 5,7**

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

Total Platform Wind Force w/ Ice = $Fi_{plt} := qzICE_{spt} \cdot G_H \cdot C_a \cdot A_{ICE.plt} = 777$ lbs **BLC 4,6**

Gravity Load (without ice)

Weight of Platform = $WT_{plt} = 3282$ lbs **BLC 2**

Gravity Loads (ice only)

Weight of Ice on Platform = $WT_{ICE.plt} - WT_{plt} = 1196$ lbs **BLC 3**

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

Coax Cable Data: (Cables located inside Powermount from grade to antennas)

Coax Type = HELIAX 1-5/8" (Sprint)

Shape = Round (User Input)

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

Coax Cable Length = $L_{coax} := 115$ ft (User Input)

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

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

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

Coax aspect ratio, $Ar_{coax} := \frac{(L_{coax} \cdot 12)}{D_{coax}} = 697$

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 = $A_{coax} := 0$ (Cables within Powermount) sf/ft

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

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

Coax projected surface area w/ Ice = $AICE_{coax} := 0$ (Cables within Powermount) sf/ft

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

Gravity Loads (without ice)

Weight of all cables w/o ice $WT_{coax} := Wt_{coax} \cdot N_{coax} = 6$ plf **BLC 2**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{coax} := 0$ (Cables within Powermount) sq in

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

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

Coax Cable Data: (Cables located on exterior of Powermount above tower to antennas)

Coax Type = HELIAX 1-5/8" (Sprint)

Shape = Round (User Input)

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

Coax Cable Length = $L_{coax} := 15$ ft (User Input)

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

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

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

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

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

Total Coax Wind Force = $F_{coax} := Ca_{coax} \cdot qz_{coax} \cdot G_H \cdot A_{coax} = 35$ plf BLC 5

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

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

Total Coax Wind Force w/ Ice = $FI_{coax} := Ca_{coax} \cdot qzICE_{coax} \cdot G_H \cdot AICE_{coax} = 30$ plf BLC 4

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

Ice Weight All Coax per foot = $WTi_{coax} := N_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 18$ plf BLC 3

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Location:	Southington, CT	
Rev. 0: 5/9/13	Prepared by: T.J.L. Checked by: C.F.C. Job No. 13003.CO2	

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

Member Data: L2x2x3/16

Antenna Shape = Flat (User Input)

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

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

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

Length = $L_{mem} := 36$ in (User Input)

Member Aspect Ratio = $Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 18.0$

Member Force Coefficient = $Ca_{mem} = 1.77$ (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 = $A_{mem} := \frac{H_{mem}}{12} = 0.2$ sf/ft

Total Member Wind Force = $F_{mem} := qz_{pmnt2} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 12$ plf **BLC 5,7**

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

Member Projected Surface Area w/ Ice = $A_{ICEmem} := \frac{(H_{mem} + 2 \cdot Ir)}{12} = 0.3$ sf/ft

Total Member Wind Force w/ Ice = $Fi_{mem} := qzICE_{pmnt2} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 13$ plf **BLC 4,6**

Gravity Load (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear foot =

$$Ai_{mem} := \left[\left(H_{mem} + 2 \cdot Ir\right) + \left(W_{mem} - t_{mem}\right)\right] \cdot \left(t_{mem} + 2 \cdot Ir\right) - \left[H_{mem} + \left(W_{mem} + t_{mem}\right)\right] \cdot t_{mem} = 5$$ sq in

Weight of Ice on Member = $W_{ICE.mem} := Id \cdot \frac{Ai_{mem}}{144} = 2$ plf **BLC 3**

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

Member Data: L3.5x3.5x1/4

Antenna Shape = Flat (User Input)

Height = $H_{mem} := 3.5$ in (User Input)

Width = $W_{mem} := 3.5$ in (User Input)

Thickness = $t_{mem} := 0.25$ in (User Input)

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

Member Aspect Ratio = $Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 44.6$

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 = $A_{mem} := \frac{H_{mem}}{12} = 0.3$ sf/ft

Total Member Wind Force = $F_{mem} := qz_{pmnt4} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 15$ plf **BLC 5,7**

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

Member Projected Surface Area w/ Ice = $A_{ICEmem} := \frac{(H_{mem} + 2 \cdot Ir)}{12} = 0.4$ sf/ft

Total Member Wind Force w/ Ice = $Fi_{mem} := qzICE_{pmnt4} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 14$ plf **BLC 4,6**

Gravity Load (without ice)

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

Gravity Loads (ice only)

Ice Area per Linear foot =

$$Ai_{mem} := \left[\left(H_{mem} + 2 \cdot Ir\right) + \left(W_{mem} - t_{mem}\right)\right] \cdot \left(t_{mem} + 2 \cdot Ir\right) - \left[H_{mem} + \left(W_{mem} + t_{mem}\right)\right] \cdot t_{mem} = 8$$ sq in

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

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

Member Data: L4x4x1/4

Antenna Shape =	Flat		(User Input)
Height =	$H_{mem} := 4$	in	(User Input)
Width =	$W_{mem} := 4$	in	(User Input)
Thickness =	$t_{mem} := 0.25$	in	(User Input)
Length =	$L_{mem} := 132$	in	(User Input)

Member Aspect Ratio = $Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 33.0$

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 = $A_{mem} := \frac{H_{mem}}{12} = 0.3$ sf/ft

Total Member Wind Force = $F_{mem} := qz_{pmnt4} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 17$ plf **BLC 5,7**

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

Member Projected Surface Area w/ Ice = $A_{ICEmem} := \frac{(H_{mem} + 2 \cdot Ir)}{12} = 0.4$ sf/ft

Total Member Wind Force w/ Ice = $Fi_{mem} := qzICE_{pmnt4} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 16$ plf **BLC 4,6**

Gravity Load (without Ice)

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

Gravity Loads (ice only)

Ice Area per Linear foot =

$$Ai_{mem} := \left[\left(H_{mem} + 2 \cdot Ir\right) + \left(W_{mem} - t_{mem}\right)\right] \cdot \left(t_{mem} + 2 \cdot Ir\right) - \left[H_{mem} + \left(W_{mem} + t_{mem}\right)\right] \cdot t_{mem} = 9$$ sq in

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

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Subject: **Analysis of TIA/EIA Wind and Ice Loads for Analysis of Powermount Only**
Tabulated Load Cases
Location: **Southington, CT**
Date: 5/9/13 Prepared by: T.J.L. Checked by: C.F.C. Job No. 13003.CO2

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

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: **Southington, CT**
Date: 5/9/13 Prepared by: T.J.L. Checked by: C.F.C. Job No. 13003.CO2

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
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Vertical Axis	Y
Global Member Orientation Plane	XZ

Hot Rolled Steel Code	AISC 9th: 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 530-05/08: ASD
Aluminum Code	AA ADM1-05: ASD

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
Bad Framing Warnings	No
Unused Force Warnings	Yes

Seismic Code	UBC 1997
Seismic Base Elevation (ft)	Not Entered
Ct X	.035
Ct Z	.035
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	8.5
R Z	8.5
Ct Exp. X	.75
Ct Exp. Z	.75
Ca	.36
Cv	.54
Nv	1
SD1	1
SDS	1
S1	1
Occupancy Code	4
Seismic Zone	3
Use Group	I
Use Gravity Self Wt in Diaphragm Mass	Yes
Use Deck Self Wt in Diaphragm Mass	Yes
Use Lateral Self Wt in Diaphragm Mass	Yes
Seismic Detailing Code	None
Om X	1
Om Z	1
Rho X	1
Rho Z	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	58	1.2
3	A992	29000	11154	.3	.65	.49	50	1.1	58	1.2
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.2	58	1.1
6	A53 Gr. B	29000	11154	.3	.65	.49	35	1.5	58	1.2
7	A500 Gr. 50	29000	11154	.3	.65	.49	50	1.1	58	1.2

Hot Rolled Steel Design Parameters

	Label	Shape	Lengt...	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	Kyy	Kzz	Cm-...	Cm-...	Cb	y sw...	z sw...	Function
1	M1	Powerm...	115	Segment	Segment										Lateral
2	M2	Brace 2	13.403												Lateral
3	M3	Brace 3	10.964												Lateral
4	M4	Brace 2	13.403												Lateral
5	M6	Brace 3	8.097												Lateral
6	M7	Brace 2	9.356												Lateral
7	M8	Brace 2	9.356												Lateral
8	M9	Brace 1	2.236												Lateral
9	M10	Brace 1	2.236												Lateral
10	M11	Brace 1	3												Lateral
11	M12	Brace 1	2.236												Lateral
12	M13	Brace 1	2.236												Lateral
13	M14	Brace 1	3												Lateral
14	M15	Brace 1	2.236												Lateral
15	M16	Brace 1	2.236												Lateral
16	M17	Brace 1	3												Lateral

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Powermount	12" FWT Powermo...	Beam	Pipe	A500 Gr.42	Typical	14.579	279.335	279.335	558.67
2	Brace 1	L2X2X3	Beam	Single Angle	A36 Gr.36	Typical	.715	.272	.272	.009
3	Brace 2	L3.5X3.5X4	Beam	Single Angle	A36 Gr.36	Typical	1.69	2.01	2.01	.039
4	Brace 3	L4X4X4	Beam	Single Angle	A36 Gr.36	Typical	1.94	3.04	3.04	.044

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N7			Powermount	Beam	Pipe	A500 Gr.42	Typical
2	M2	N9	N2			Brace 2	Beam	Single Angle	A36 Gr.36	Typical
3	M3	N2	N10			Brace 3	Beam	Single Angle	A36 Gr.36	Typical
4	M4	N11	N2			Brace 2	Beam	Single Angle	A36 Gr.36	Typical
5	M6	N14	N3			Brace 3	Beam	Single Angle	A36 Gr.36	Typical
6	M7	N3	N15			Brace 2	Beam	Single Angle	A36 Gr.36	Typical
7	M8	N3	N13			Brace 2	Beam	Single Angle	A36 Gr.36	Typical
8	M9	N18	N4			Brace 1	Beam	Single Angle	A36 Gr.36	Typical
9	M10	N4	N19			Brace 1	Beam	Single Angle	A36 Gr.36	Typical
10	M11	N4	N17			Brace 1	Beam	Single Angle	A36 Gr.36	Typical
11	M12	N21	N5			Brace 1	Beam	Single Angle	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
12	M13	N5	N22			Brace 1	Beam	Single Angle	A36 Gr.36	Typical
13	M14	N5	N20			Brace 1	Beam	Single Angle	A36 Gr.36	Typical
14	M15	N24	N6			Brace 1	Beam	Single Angle	A36 Gr.36	Typical
15	M16	N6	N25			Brace 1	Beam	Single Angle	A36 Gr.36	Typical
16	M17	N6	N23			Brace 1	Beam	Single Angle	A36 Gr.36	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N1	0	0	0	0	
2	N2	0	20	0	0	
3	N3	0	38	0	0	
4	N4	0	74.21	0	0	
5	N5	0	83.71	0	0	
6	N6	0	94.71	0	0	
7	N7	0	115	0	0	
8	N9	9.964	20	8.964	0	
9	N10	0	20	-10.964	0	
10	N11	-9.964	20	8.964	0	
11	N13	7.097	38	6.097	0	
12	N14	0	38	-8.097	0	
13	N15	-7.097	38	6.097	0	
14	N17	0	74.21	-3	0	
15	N18	-2	74.21	1	0	
16	N19	2	74.21	1	0	
17	N20	0	83.71	-3	0	
18	N21	-2	83.71	1	0	
19	N22	2	83.71	1	0	
20	N23	0	94.71	-3	0	
21	N24	-2	94.71	1	0	
22	N25	2	94.71	1	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	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction	
2	N2							
3	N3							
4	N4							
5	N5							
6	N6							
7	N7							
8	N9	Reaction	Reaction	Reaction				
9	N10	Reaction	Reaction	Reaction				
10	N11	Reaction	Reaction	Reaction				
11	N13	Reaction	Reaction	Reaction				
12	N14	Reaction	Reaction	Reaction				
13	N15	Reaction	Reaction	Reaction				
14	N17	Reaction	Reaction	Reaction				
15	N18	Reaction	Reaction	Reaction				
16	N20	Reaction	Reaction	Reaction				
17	N21	Reaction	Reaction	Reaction				

Joint Boundary Conditions (Continued)

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]	Footing
18	N23	Reaction	Reaction	Reaction				
19	N24	Reaction	Reaction	Reaction				
20	N19	Reaction	Reaction	Reaction				
21	N22	Reaction	Reaction	Reaction				
22	N25	Reaction	Reaction	Reaction				

Joint Loads and Enforced Displacements

Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
	No Data to Print ...		

Member Point Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.171	115
2	M1	Y	-3.282	115

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.149	115
2	M1	Y	-1.196	115

Member Point Loads (BLC 4 : (X) TIA/EIA Wind with Ice on PCS)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.922	115
2	M1	X	.777	115

Member Point Loads (BLC 5 : (X) TIA/EIA Wind on PCS Structur)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	1.107	115
2	M1	X	.817	115

Member Point Loads (BLC 6 : (Z) TIA/EIA Wind with Ice on PCS)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	.922	115
2	M1	Z	.777	115

Member Point Loads (BLC 7 : (Z) TIA/EIA Wind on PCS Structur)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	1.107	115
2	M1	Z	.817	115

Member Distributed Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.006	-.006	0	0
2	M1	Y	-.012	-.012	100	115

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

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.008	-.008	0	0
2	M1	Y	-.018	-.018	110	115
3	M15	Y	-.002	-.002	0	0
4	M17	Y	-.002	-.002	0	0
5	M16	Y	-.002	-.002	0	0
6	M12	Y	-.002	-.002	0	0
7	M14	Y	-.002	-.002	0	0
8	M13	Y	-.002	-.002	0	0
9	M9	Y	-.002	-.002	0	0
10	M11	Y	-.002	-.002	0	0
11	M10	Y	-.002	-.002	0	0
12	M7	Y	-.003	-.003	0	0
13	M6	Y	-.003	-.003	0	0
14	M8	Y	-.003	-.003	0	0
15	M4	Y	-.003	-.003	0	0
16	M3	Y	-.003	-.003	0	0
17	M2	Y	-.003	-.003	0	0

Member Distributed Loads (BLC 4 : (X) TIA/EIA Wind with Ice on PCS)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.013	.013	0	30
2	M1	X	.018	.018	30	60
3	M1	X	.02	.02	60	90
4	M1	X	.022	.022	90	115
5	M1	X	.03	.03	100	115
6	M15	X	.013	.013	0	0
7	M17	X	.013	.013	0	0
8	M16	X	.013	.013	0	0
9	M12	X	.013	.013	0	0
10	M14	X	.013	.013	0	0
11	M13	X	.013	.013	0	0
12	M9	X	.013	.013	0	0
13	M11	X	.013	.013	0	0
14	M10	X	.013	.013	0	0
15	M7	X	.014	.014	0	0
16	M8	X	.014	.014	0	0
17	M4	X	.014	.014	0	0
18	M2	X	.014	.014	0	0
19	M6	X	.016	.016	0	0
20	M3	X	.016	.016	0	0

Member Distributed Loads (BLC 5 : (X) TIA/EIA Wind on PCS Structur)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.016	.016	0	30
2	M1	X	.021	.021	30	60
3	M1	X	.025	.025	60	90
4	M1	X	.027	.027	90	115
5	M1	X	.035	.035	100	115
6	M15	X	.012	.012	0	0
7	M17	X	.012	.012	0	0
8	M16	X	.012	.012	0	0
9	M12	X	.012	.012	0	0

Member Distributed Loads (BLC 5 : (X) TIA/EIA Wind on PCS Structur) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
10	M14	X	.012	.012	0	0
11	M13	X	.012	.012	0	0
12	M9	X	.012	.012	0	0
13	M11	X	.012	.012	0	0
14	M10	X	.012	.012	0	0
15	M7	X	.015	.015	0	0
16	M8	X	.015	.015	0	0
17	M4	X	.015	.015	0	0
18	M2	X	.015	.015	0	0
19	M6	X	.017	.017	0	0
20	M3	X	.017	.017	0	0

Member Distributed Loads (BLC 6 : (Z) TIA/EIA Wind with Ice on PCS)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.013	.013	0	30
2	M1	Z	.018	.018	30	60
3	M1	Z	.02	.02	60	90
4	M1	Z	.022	.022	90	115
5	M1	Z	.03	.03	100	115
6	M15	Z	.013	.013	0	0
7	M16	Z	.013	.013	0	0
8	M12	Z	.013	.013	0	0
9	M13	Z	.013	.013	0	0
10	M9	Z	.013	.013	0	0
11	M10	Z	.013	.013	0	0
12	M7	Z	.014	.014	0	0
13	M8	Z	.014	.014	0	0
14	M4	Z	.014	.014	0	0
15	M2	Z	.014	.014	0	0

Member Distributed Loads (BLC 7 : (Z) TIA/EIA Wind on PCS Structur)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/f...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.016	.016	0	30
2	M1	Z	.021	.021	30	60
3	M1	Z	.025	.025	60	90
4	M1	Z	.027	.027	90	115
5	M1	Z	.035	.035	100	115
6	M15	Z	.012	.012	0	0
7	M16	Z	.012	.012	0	0
8	M12	Z	.012	.012	0	0
9	M13	Z	.012	.012	0	0
10	M9	Z	.012	.012	0	0
11	M10	Z	.012	.012	0	0
12	M7	Z	.015	.015	0	0
13	M8	Z	.015	.015	0	0
14	M4	Z	.015	.015	0	0
15	M2	Z	.015	.015	0	0

Basic Load Cases

	BLC Description	Category	X Gr...	Y Gr...	Z Grav...	Joint	Point	Distri...	Area(...	Surfa...
1	Self Weight (Powermount)	None		-1						
2	Weight of Appurtenances	None					2	2		
3	Weight of Ice Only on PCS Struct	None					2	17		
4	(X) TIA/EIA Wind with Ice on PCS	None					2	20		
5	(X) TIA/EIA Wind on PCS Structur	None					2	20		
6	(Z) TIA/EIA Wind with Ice on PCS	None					2	15		
7	(Z) TIA/EIA Wind on PCS Structur	None					2	15		

Load Combinations

	Description	So...	PDelta	SRSS	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
1	(X) TIA/EIA Wind + Ice on P...	Yes			1	1	2	1	3	1	4	1								
2	(X) TIA/EIA Wind on PCS Str...	Yes			1	1	2	1	5	1										
3	(Z) TIA/EIA Wind + Ice on P...	Yes			1	1	2	1	3	1	6	1								
4	(Z) TIA/EIA Wind on PCS Str...	Yes			1	1	2	1	7	1										

Envelope Member Section Forces

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Momen...	LC	z-z Momen...	LC
1	M1	1	max	12.723	3	.189	2	0	1	0	1	.722	4	.76	2
2			min	10.249	2	0	3	-.186	4	0	1	0	1	0	3
3		2	max	10.725	3	0	3	.065	4	0	1	.149	4	.11	2
4			min	8.537	2	-.062	2	0	1	0	1	0	1	0	3
5		3	max	8.775	3	0	3	.061	4	0	1	0	1	0	3
6			min	6.858	2	-.068	2	0	1	0	1	-1.207	4	-1.14	2
7		4	max	6.913	1	0	3	5.643	4	0	1	2.654	4	2.239	2
8			min	5.241	2	-5.692	2	0	1	0	1	0	1	0	3
9		5	max	4.798	1	1.924	2	0	1	0	1	0	1	0	1
10			min	3.453	2	0	3	-1.924	4	0	1	0	1	0	1
11	M2	1	max	.413	2	.059	3	.075	4	0	1	0	1	0	1
12			min	.166	3	.039	2	-.067	2	0	1	0	1	0	1
13		2	max	.376	2	.029	3	.037	4	0	1	.228	3	.064	4
14			min	.135	3	.019	2	-.034	2	0	1	-.051	2	-.216	1
15		3	max	.338	2	0	1	0	1	0	1	.304	3	.086	4
16			min	.104	3	0	1	0	1	0	1	-.068	2	-.288	1
17		4	max	.301	2	-.019	2	.034	2	0	1	.228	3	.064	4
18			min	.072	3	-.029	1	-.037	4	0	1	-.051	2	-.216	1
19		5	max	.264	2	-.039	2	.067	2	0	1	0	1	0	1
20			min	.041	3	-.059	1	-.075	4	0	1	0	1	0	1
21	M3	1	max	0	1	.053	1	0	4	0	1	0	1	0	1
22			min	-.25	4	.036	2	-.093	2	0	1	0	1	0	1
23		2	max	0	1	.026	1	0	4	0	1	.077	3	-.053	4
24			min	-.25	4	.018	2	-.047	2	0	1	-.083	2	-.204	1
25		3	max	0	1	0	1	0	1	0	1	.102	3	-.07	4
26			min	-.25	4	0	1	0	1	0	1	-.11	2	-.272	1
27		4	max	0	1	-.018	4	.047	2	0	1	.077	3	-.053	4
28			min	-.25	4	-.026	3	0	4	0	1	-.083	2	-.204	1
29		5	max	0	1	-.036	2	.093	2	0	1	0	1	0	1
30			min	-.25	4	-.053	3	0	3	0	1	0	1	0	1
31	M4	1	max	.186	4	.059	3	-.063	1	0	1	0	1	0	1
32			min	-.413	2	.039	2	-.075	4	0	1	0	1	0	1

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Momen...	LC	z-z Momen...	LC
33		2	max	.153	4	.029	3	-.031	1	0	1	-.007	1	-.188	2
34			min	-.376	2	.019	2	-.037	4	0	1	-.064	4	-.228	3
35		3	max	.119	4	0	1	0	1	0	1	-.01	1	-.251	2
36			min	-.338	2	0	1	0	1	0	1	-.086	4	-.304	3
37		4	max	.086	4	-.019	2	.037	4	0	1	-.007	1	-.188	2
38			min	-.301	2	-.029	1	.031	1	0	1	-.064	4	-.228	3
39		5	max	.052	4	-.039	4	.075	4	0	1	0	1	0	1
40			min	-.264	2	-.059	1	.063	1	0	1	0	1	0	1
41	M6	1	max	0	1	.039	1	.069	2	0	1	0	1	0	1
42			min	-.452	4	.027	4	0	3	0	1	0	1	0	1
43		2	max	0	1	.019	1	.034	2	0	1	.111	1	.045	2
44			min	-.452	4	.013	4	0	4	0	1	.029	4	-.042	3
45		3	max	0	1	0	1	0	1	0	1	.148	1	.06	2
46			min	-.452	4	0	1	0	1	0	1	.038	4	-.056	3
47		4	max	0	1	-.013	2	0	3	0	1	.111	1	.045	2
48			min	-.452	4	-.019	3	-.034	2	0	1	.029	4	-.042	3
49		5	max	0	1	-.027	2	0	4	0	1	0	1	0	1
50			min	-.452	4	-.039	3	-.069	2	0	1	0	1	0	1
51	M7	1	max	.176	4	.041	1	.053	4	0	1	0	1	0	1
52			min	-.475	2	.027	4	.043	1	0	1	0	1	0	1
53		2	max	.199	4	.02	3	.027	4	0	1	.112	3	.033	4
54			min	-.501	2	.013	4	.021	1	0	1	.09	2	.002	1
55		3	max	.222	4	0	1	0	1	0	1	.15	3	.044	4
56			min	-.528	2	0	1	0	1	0	1	.12	2	.003	1
57		4	max	.245	4	-.013	2	-.021	1	0	1	.112	3	.033	4
58			min	-.555	2	-.02	3	-.027	4	0	1	.09	2	.002	1
59		5	max	.268	4	-.027	2	-.043	1	0	1	0	1	0	1
60			min	-.581	2	-.041	1	-.053	4	0	1	0	1	0	1
61	M8	1	max	.475	2	.041	1	.046	2	0	1	0	1	0	1
62			min	.149	3	.027	2	-.053	4	0	1	0	1	0	1
63		2	max	.501	2	.02	1	.023	2	0	1	.104	1	.023	2
64			min	.17	3	.013	2	-.027	4	0	1	-.033	4	-.112	3
65		3	max	.528	2	0	1	0	1	0	1	.138	1	.031	2
66			min	.192	3	0	1	0	1	0	1	-.044	4	-.15	3
67		4	max	.555	2	-.013	4	.027	4	0	1	.104	1	.023	2
68			min	.213	3	-.02	1	-.023	2	0	1	-.033	4	-.112	3
69		5	max	.581	2	-.027	4	.053	4	0	1	0	1	0	1
70			min	.234	3	-.041	1	-.046	2	0	1	0	1	0	1
71	M9	1	max	.852	4	.005	1	-.006	2	0	1	0	1	0	1
72			min	-1.279	2	.003	4	-.013	3	0	1	0	1	0	1
73		2	max	.849	4	.002	1	-.003	2	0	1	0	1	-.003	2
74			min	-1.273	2	.001	4	-.006	3	0	1	-.003	4	-.005	3
75		3	max	.846	4	0	1	0	1	0	1	0	1	-.003	2
76			min	-1.267	2	0	1	0	1	0	1	-.004	4	-.007	3
77		4	max	.843	4	-.001	2	.007	3	0	1	0	1	-.003	2
78			min	-1.261	2	-.002	3	.003	2	0	1	-.003	4	-.005	3
79		5	max	.84	4	-.003	2	.013	3	0	1	0	1	0	1
80			min	-1.255	2	-.005	3	.006	2	0	1	0	1	0	1
81	M10	1	max	1.255	2	.005	3	.007	1	0	1	0	1	0	1
82			min	.717	3	.003	2	-.013	3	0	1	0	1	0	1
83		2	max	1.261	2	.002	3	.003	1	0	1	.003	1	0	2
84			min	.72	3	.001	2	-.007	3	0	1	-.003	4	-.005	3
85		3	max	1.267	2	0	1	0	1	0	1	.005	1	.001	2

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Momen...	LC	z-z Momen...	LC
86			min	.724	3	0	1	0	1	0	1	-.004	4	-.007	3
87		4	max	1.273	2	-.001	4	.006	3	0	1	.003	1	0	2
88			min	.727	3	-.002	1	-.003	1	0	1	-.003	4	-.005	3
89		5	max	1.279	2	-.003	4	.013	3	0	1	0	1	0	1
90			min	.73	3	-.005	1	-.006	1	0	1	0	1	0	1
91	M11	1	max	0	1	.007	3	0	4	0	1	0	1	0	1
92			min	-1.41	4	.004	2	-.019	1	0	1	0	1	0	1
93		2	max	0	1	.003	3	0	4	0	1	.003	3	-.001	4
94			min	-1.41	4	.002	4	-.01	1	0	1	-.006	2	-.01	1
95		3	max	0	1	0	1	0	1	0	1	.004	3	-.002	4
96			min	-1.41	4	0	1	0	1	0	1	-.008	2	-.014	1
97		4	max	0	1	-.002	2	.01	1	0	1	.003	3	-.001	4
98			min	-1.41	4	-.003	1	0	3	0	1	-.006	2	-.01	1
99		5	max	0	1	-.004	4	.02	1	0	1	0	1	0	1
100			min	-1.41	4	-.007	1	0	3	0	1	0	1	0	1
101	M12	1	max	3.953	2	.005	3	-.006	2	0	1	0	1	0	1
102			min	-2.722	4	.003	2	-.013	3	0	1	0	1	0	1
103		2	max	3.959	2	.002	3	-.003	2	0	1	0	1	-.003	2
104			min	-2.725	4	.001	2	-.007	3	0	1	-.003	4	-.005	3
105		3	max	3.965	2	0	1	0	1	0	1	0	1	-.003	2
106			min	-2.728	4	0	1	0	1	0	1	-.004	4	-.007	3
107		4	max	3.971	2	-.001	4	.006	3	0	1	0	1	-.003	2
108			min	-2.731	4	-.002	1	.003	2	0	1	-.003	4	-.005	3
109		5	max	3.977	2	-.003	4	.013	3	0	1	0	1	0	1
110			min	-2.734	4	-.005	1	.006	2	0	1	0	1	0	1
111	M13	1	max	-2.387	3	.005	3	.006	1	0	1	0	1	0	1
112			min	-3.977	2	.003	2	-.013	3	0	1	0	1	0	1
113		2	max	-2.384	3	.002	3	.003	1	0	1	.003	1	0	2
114			min	-3.971	2	.001	2	-.006	3	0	1	-.003	4	-.005	3
115		3	max	-2.381	3	0	1	0	1	0	1	.005	1	.001	2
116			min	-3.965	2	0	1	0	1	0	1	-.004	4	-.007	3
117		4	max	-2.377	3	-.001	4	.007	3	0	1	.003	1	0	2
118			min	-3.959	2	-.002	1	-.003	1	0	1	-.003	4	-.005	3
119		5	max	-2.374	3	-.003	4	.013	3	0	1	0	1	0	1
120			min	-3.953	2	-.005	1	-.007	1	0	1	0	1	0	1
121	M14	1	max	4.546	4	.007	1	0	3	0	1	0	1	0	1
122			min	0	1	.004	4	-.02	1	0	1	0	1	0	1
123		2	max	4.546	4	.003	3	0	3	0	1	.003	3	-.001	4
124			min	0	1	.002	2	-.01	1	0	1	-.006	2	-.01	1
125		3	max	4.546	4	0	1	0	1	0	1	.004	3	-.002	4
126			min	0	1	0	1	0	1	0	1	-.008	2	-.014	1
127		4	max	4.546	4	-.002	2	.01	1	0	1	.003	3	-.001	4
128			min	0	1	-.003	1	0	4	0	1	-.006	2	-.01	1
129		5	max	4.546	4	-.004	2	.02	1	0	1	0	1	0	1
130			min	0	1	-.007	1	0	4	0	1	0	1	0	1
131	M15	1	max	3.476	4	.005	1	-.006	2	0	1	0	1	0	1
132			min	-5.018	2	.003	4	-.013	3	0	1	0	1	0	1
133		2	max	3.473	4	.002	1	-.003	2	0	1	0	1	-.003	2
134			min	-5.012	2	.001	4	-.006	3	0	1	-.003	4	-.005	3
135		3	max	3.47	4	0	1	0	1	0	1	0	1	-.003	2
136			min	-5.006	2	0	1	0	1	0	1	-.004	4	-.007	3
137		4	max	3.467	4	-.001	2	.007	3	0	1	0	1	-.003	2
138			min	-5	2	-.002	3	.003	2	0	1	-.003	4	-.005	3

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Momen...	LC	z-z Momen...	LC
139		5	max	3.464	4	-.003	2	.013	3	0	1	0	1	0	1
140			min	-4.994	2	-.005	3	.006	2	0	1	0	1	0	1
141	M16	1	max	4.994	2	.005	1	.007	1	0	1	0	1	0	1
142			min	3.012	3	.003	4	-.013	3	0	1	0	1	0	1
143		2	max	5	2	.002	1	.003	1	0	1	.003	1	0	2
144			min	3.015	3	.001	4	-.007	3	0	1	-.003	4	-.005	3
145		3	max	5.006	2	0	1	0	1	0	1	.005	1	.001	2
146			min	3.019	3	0	1	0	1	0	1	-.004	4	-.007	3
147		4	max	5.012	2	-.001	2	.006	3	0	1	.003	1	0	2
148			min	3.022	3	-.002	3	-.003	1	0	1	-.003	4	-.005	3
149		5	max	5.018	2	-.003	2	.013	3	0	1	0	1	0	1
150			min	3.025	3	-.005	3	-.006	1	0	1	0	1	0	1
151	M17	1	max	0	1	.007	3	0	3	0	1	0	1	0	1
152			min	-5.784	4	.004	2	-.019	1	0	1	0	1	0	1
153		2	max	0	1	.003	3	0	3	0	1	.003	3	-.001	4
154			min	-5.784	4	.002	2	-.01	1	0	1	-.006	2	-.01	1
155		3	max	0	1	0	1	0	1	0	1	.004	3	-.002	4
156			min	-5.784	4	0	1	0	1	0	1	-.008	2	-.014	1
157		4	max	0	1	-.002	4	.01	1	0	1	.003	3	-.001	4
158			min	-5.784	4	-.003	1	0	4	0	1	-.006	2	-.01	1
159		5	max	0	1	-.004	4	.02	1	0	1	0	1	0	1
160			min	-5.784	4	-.007	1	0	4	0	1	0	1	0	1

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	.873	3	.026	2	0	1	0	3	.208	2	.198	4	0	1
2			min	.703	2	0	3	-.026	4	-.208	2	0	3	0	1	-.198	4
3		2	max	.736	3	0	3	.009	4	0	3	.03	2	.041	4	0	1
4			min	.586	2	-.009	2	0	1	-.03	2	0	3	0	1	-.041	4
5		3	max	.602	3	0	3	.008	4	.312	2	0	3	0	1	.331	4
6			min	.47	2	-.009	2	0	1	0	3	-.312	2	-.331	4	0	1
7		4	max	.474	1	0	3	.774	4	0	3	.613	2	.727	4	0	1
8			min	.359	2	-.781	2	0	1	-.613	2	0	3	0	1	-.727	4
9		5	max	.329	1	.264	2	0	1	0	1	0	1	0	1	0	1
10			min	.237	2	0	3	-.264	4	0	1	0	1	0	1	0	1
11	M2	1	max	.244	2	.08	3	.102	4	0	1	0	1	0	1	0	1
12			min	.098	3	.053	2	-.092	2	0	1	0	1	0	1	0	1
13		2	max	.222	2	.04	3	.051	4	1.927	1	.574	4	4.019	3	1.029	2
14			min	.08	3	.026	2	-.046	2	-.574	4	-1.927	1	-.898	2	-4.603	3
15		3	max	.2	2	0	1	0	1	2.569	1	.766	4	5.359	3	1.371	2
16			min	.061	3	0	1	0	1	-.766	4	-2.569	1	-1.198	2	-6.137	3
17		4	max	.178	2	-.026	2	.046	2	1.927	1	.574	4	4.019	3	1.029	2
18			min	.043	3	-.04	1	-.051	4	-.574	4	-1.927	1	-.898	2	-4.603	3
19		5	max	.156	2	-.053	2	.092	2	0	1	0	1	0	1	0	1
20			min	.024	3	-.08	1	-.102	4	0	1	0	1	0	1	0	1
21	M3	1	max	0	1	.063	1	0	3	0	1	0	1	0	1	0	1
22			min	-.129	4	.043	2	-.112	2	0	1	0	1	0	1	0	1
23		2	max	0	1	.032	1	0	3	1.382	1	-.356	4	1.027	3	1.253	2
24			min	-.129	4	.022	2	-.056	2	.356	4	-1.382	1	-1.112	2	-1.157	3
25		3	max	0	1	0	1	0	1	1.843	1	-.475	4	1.369	3	1.671	2
26			min	-.129	4	0	1	0	1	.475	4	-1.843	1	-1.483	2	-1.543	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
27		4	max	0	1	-.022	4	.056	2	1.382	1	-.356	4	1.027	3	1.253	2
28			min	-.129	4	-.032	3	0	3	.356	4	-1.382	1	-1.112	2	-1.157	3
29		5	max	0	1	-.043	2	.112	2	0	1	0	1	0	1	0	1
30			min	-.129	4	-.063	3	0	3	0	1	0	1	0	1	0	1
31	M4	1	max	.11	4	.08	3	-.086	1	0	1	0	1	0	1	0	1
32			min	-.244	2	.053	2	-.102	4	0	1	0	1	0	1	0	1
33		2	max	.09	4	.04	3	-.043	1	2.038	3	-1.679	2	-.129	1	1.297	4
34			min	-.222	2	.026	2	-.051	4	1.679	2	-2.038	3	-1.133	4	.147	1
35		3	max	.071	4	0	1	0	1	2.717	3	-2.238	2	-.171	1	1.73	4
36			min	-.2	2	0	1	0	1	2.238	2	-2.717	3	-1.511	4	.196	1
37		4	max	.051	4	-.026	2	.051	4	2.038	3	-1.679	2	-.129	1	1.297	4
38			min	-.178	2	-.04	1	.043	1	1.679	2	-2.038	3	-1.133	4	.147	1
39		5	max	.031	4	-.053	4	.102	4	0	1	0	1	0	1	0	1
40			min	-.156	2	-.08	1	.086	1	0	1	0	1	0	1	0	1
41	M6	1	max	0	1	.047	1	.083	2	0	1	0	1	0	1	0	1
42			min	-.233	4	.032	4	0	3	0	1	0	1	0	1	0	1
43		2	max	0	1	.023	1	.041	2	.283	3	.306	2	1.493	1	-.434	4
44			min	-.233	4	.016	4	0	3	-.306	2	-.283	3	.385	4	-1.683	1
45		3	max	0	1	0	1	0	1	.377	3	.408	2	1.991	1	-.579	4
46			min	-.233	4	0	1	0	1	-.408	2	-.377	3	.513	4	-2.244	1
47		4	max	0	1	-.016	2	0	3	.283	3	.306	2	1.493	1	-.434	4
48			min	-.233	4	-.023	3	-.041	2	-.306	2	-.283	3	.385	4	-1.683	1
49		5	max	0	1	-.032	2	0	3	0	1	0	1	0	1	0	1
50			min	-.233	4	-.047	3	-.083	2	0	1	0	1	0	1	0	1
51	M7	1	max	.104	4	.056	1	.073	4	0	1	0	1	0	1	0	1
52			min	-.281	2	.037	4	.059	1	0	1	0	1	0	1	0	1
53		2	max	.118	4	.028	3	.036	4	-.019	1	.292	4	1.98	3	-1.818	2
54			min	-.297	2	.018	4	.029	1	-.292	4	.019	1	1.587	2	-2.268	3
55		3	max	.131	4	0	1	0	1	-.026	1	.389	4	2.64	3	-2.423	2
56			min	-.312	2	0	1	0	1	-.389	4	.026	1	2.116	2	-3.024	3
57		4	max	.145	4	-.018	2	-.029	1	-.019	1	.292	4	1.98	3	-1.818	2
58			min	-.328	2	-.028	3	-.036	4	-.292	4	.019	1	1.587	2	-2.268	3
59		5	max	.159	4	-.037	2	-.059	1	0	1	0	1	0	1	0	1
60			min	-.344	2	-.056	1	-.073	4	0	1	0	1	0	1	0	1
61	M8	1	max	.281	2	.056	1	.063	2	0	1	0	1	0	1	0	1
62			min	.088	3	.037	2	-.073	4	0	1	0	1	0	1	0	1
63		2	max	.297	2	.028	1	.031	2	1.004	3	.209	2	1.827	1	.659	4
64			min	.101	3	.018	2	-.036	4	-.209	2	-1.004	3	-.575	4	-2.092	1
65		3	max	.312	2	0	1	0	1	1.339	3	.278	2	2.436	1	.878	4
66			min	.113	3	0	1	0	1	-.278	2	-1.339	3	-.767	4	-2.79	1
67		4	max	.328	2	-.018	4	.036	4	1.004	3	.209	2	1.827	1	.659	4
68			min	.126	3	-.028	1	-.031	2	-.209	2	-1.004	3	-.575	4	-2.092	1
69		5	max	.344	2	-.037	4	.073	4	0	1	0	1	0	1	0	1
70			min	.139	3	-.056	1	-.063	2	0	1	0	1	0	1	0	1
71	M9	1	max	1.192	4	.016	1	-.019	2	0	1	0	1	0	1	0	1
72			min	-1.789	2	.009	4	-.042	3	0	1	0	1	0	1	0	1
73		2	max	1.187	4	.008	1	-.01	2	.199	3	-.097	2	-.033	1	.239	4
74			min	-1.781	2	.004	4	-.021	3	.097	2	-.199	3	-.201	4	.04	1
75		3	max	1.183	4	0	1	0	1	.265	3	-.129	2	-.045	1	.319	4
76			min	-1.773	2	0	1	0	1	.129	2	-.265	3	-.268	4	.053	1
77		4	max	1.179	4	-.004	2	.021	3	.199	3	-.097	2	-.033	1	.239	4
78			min	-1.764	2	-.008	3	.01	2	.097	2	-.199	3	-.201	4	.04	1
79		5	max	1.175	4	-.009	2	.042	3	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
80			min	-1.756	2	-.016	3	.019	2	0	1	0	1	0	1	0	1
81	M10	1	max	1.756	2	.016	3	.021	1	0	1	0	1	0	1	0	1
82			min	1.003	3	.009	2	-.042	3	0	1	0	1	0	1	0	1
83		2	max	1.764	2	.008	3	.01	1	.199	3	.036	2	.248	1	.239	4
84			min	1.008	3	.004	2	-.021	3	-.036	2	-.199	3	-.201	4	-.296	1
85		3	max	1.773	2	0	1	0	1	.265	3	.048	2	.331	1	.319	4
86			min	1.012	3	0	1	0	1	-.048	2	-.265	3	-.268	4	-.394	1
87		4	max	1.781	2	-.004	4	.021	3	.199	3	.036	2	.248	1	.239	4
88			min	1.017	3	-.008	1	-.01	1	-.036	2	-.199	3	-.201	4	-.296	1
89		5	max	1.789	2	-.009	4	.042	3	0	1	0	1	0	1	0	1
90			min	1.021	3	-.016	1	-.021	1	0	1	0	1	0	1	0	1
91	M11	1	max	0	1	.021	3	0	3	0	1	0	1	0	1	0	1
92			min	-1.972	4	.012	2	-.062	1	0	1	0	1	0	1	0	1
93		2	max	0	1	.011	3	0	3	.389	1	-.054	4	.193	3	.497	2
94			min	-1.972	4	.006	4	-.031	1	.054	4	-.389	1	-.417	2	-.23	3
95		3	max	0	1	0	1	0	1	.518	1	-.072	4	.258	3	.662	2
96			min	-1.972	4	0	1	0	1	.072	4	-.518	1	-.556	2	-.307	3
97		4	max	0	1	-.006	2	.031	1	.389	1	-.054	4	.193	3	.497	2
98			min	-1.972	4	-.011	1	0	3	.054	4	-.389	1	-.417	2	-.23	3
99		5	max	0	1	-.012	4	.062	1	0	1	0	1	0	1	0	1
100			min	-1.972	4	-.021	1	0	3	0	1	0	1	0	1	0	1
101	M12	1	max	5.529	2	.016	3	-.019	2	0	1	0	1	0	1	0	1
102			min	-3.807	4	.009	2	-.042	3	0	1	0	1	0	1	0	1
103		2	max	5.537	2	.008	3	-.01	2	.199	3	-.097	2	-.033	1	.239	4
104			min	-3.811	4	.004	2	-.021	3	.097	2	-.199	3	-.201	4	.04	1
105		3	max	5.546	2	0	1	0	1	.265	3	-.129	2	-.045	1	.319	4
106			min	-3.815	4	0	1	0	1	.129	2	-.265	3	-.268	4	.053	1
107		4	max	5.554	2	-.004	4	.021	3	.199	3	-.097	2	-.033	1	.239	4
108			min	-3.819	4	-.008	1	.01	2	.097	2	-.199	3	-.201	4	.04	1
109		5	max	5.562	2	-.009	4	.042	3	0	1	0	1	0	1	0	1
110			min	-3.824	4	-.016	1	.019	2	0	1	0	1	0	1	0	1
111	M13	1	max	-3.339	3	.016	3	.021	1	0	1	0	1	0	1	0	1
112			min	-5.562	2	.009	2	-.042	3	0	1	0	1	0	1	0	1
113		2	max	-3.334	3	.008	3	.01	1	.199	3	.036	2	.248	1	.239	4
114			min	-5.554	2	.004	2	-.021	3	-.036	2	-.199	3	-.201	4	-.296	1
115		3	max	-3.33	3	0	1	0	1	.265	3	.048	2	.331	1	.319	4
116			min	-5.546	2	0	1	0	1	-.048	2	-.265	3	-.268	4	-.394	1
117		4	max	-3.325	3	-.004	4	.021	3	.199	3	.036	2	.248	1	.239	4
118			min	-5.537	2	-.008	1	-.01	1	-.036	2	-.199	3	-.201	4	-.296	1
119		5	max	-3.321	3	-.009	4	.042	3	0	1	0	1	0	1	0	1
120			min	-5.529	2	-.016	1	-.021	1	0	1	0	1	0	1	0	1
121	M14	1	max	6.359	4	.021	1	0	3	0	1	0	1	0	1	0	1
122			min	0	1	.012	4	-.062	1	0	1	0	1	0	1	0	1
123		2	max	6.359	4	.011	1	0	3	.389	1	-.054	4	.193	3	.497	2
124			min	0	1	.006	2	-.031	1	.054	4	-.389	1	-.417	2	-.23	3
125		3	max	6.359	4	0	1	0	1	.518	1	-.072	4	.258	3	.662	2
126			min	0	1	0	1	0	1	.072	4	-.518	1	-.556	2	-.307	3
127		4	max	6.359	4	-.006	2	.031	1	.369	1	-.054	4	.193	3	.497	2
128			min	0	1	-.011	1	0	3	.054	4	-.389	1	-.417	2	-.23	3
129		5	max	6.359	4	-.012	2	.062	1	0	1	0	1	0	1	0	1
130			min	0	1	-.021	1	0	3	0	1	0	1	0	1	0	1
131	M15	1	max	4.862	4	.016	1	-.019	2	0	1	0	1	0	1	0	1
132			min	-7.018	2	.009	4	-.042	3	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
133		2	max	4.858	4	.008	1	-.01	2	.199	3	-.097	2	-.033	1	.239	4
134			min	-7.009	2	.004	4	-.021	3	.097	2	-.199	3	-.201	4	.04	1
135		3	max	4.853	4	0	1	0	1	.265	3	-.129	2	-.045	1	.319	4
136			min	-7.001	2	0	1	0	1	.129	2	-.265	3	-.268	4	.053	1
137		4	max	4.849	4	-.004	2	.021	3	.199	3	-.097	2	-.033	1	.239	4
138			min	-6.993	2	-.008	3	.01	2	.097	2	-.199	3	-.201	4	.04	1
139		5	max	4.845	4	-.009	2	.042	3	0	1	0	1	0	1	0	1
140			min	-6.984	2	-.016	3	.019	2	0	1	0	1	0	1	0	1
141	M16	1	max	6.984	2	.016	1	.021	1	0	1	0	1	0	1	0	1
142			min	4.213	3	.009	4	-.042	3	0	1	0	1	0	1	0	1
143		2	max	6.993	2	.008	1	.01	1	.199	3	.036	2	.248	1	.239	4
144			min	4.217	3	.004	4	-.021	3	-.036	2	-.199	3	-.201	4	-.296	1
145		3	max	7.001	2	0	1	0	1	.265	3	.048	2	.331	1	.319	4
146			min	4.222	3	0	1	0	1	-.048	2	-.265	3	-.268	4	-.394	1
147		4	max	7.009	2	-.004	2	.021	3	.199	3	.036	2	.248	1	.239	4
148			min	4.226	3	-.008	3	-.01	1	-.036	2	-.199	3	-.201	4	-.296	1
149		5	max	7.018	2	-.009	2	.042	3	0	1	0	1	0	1	0	1
150			min	4.231	3	-.016	3	-.021	1	0	1	0	1	0	1	0	1
151	M17	1	max	0	1	.021	3	0	3	0	1	0	1	0	1	0	1
152			min	-8.089	4	.012	2	-.062	1	0	1	0	1	0	1	0	1
153		2	max	0	1	.011	3	0	3	.389	1	-.054	4	.193	3	.497	2
154			min	-8.089	4	.006	2	-.031	1	.054	4	-.389	1	-.417	2	-.23	3
155		3	max	0	1	0	1	0	1	.518	1	-.072	4	.258	3	.662	2
156			min	-8.089	4	0	1	0	1	.072	4	-.518	1	-.556	2	-.307	3
157		4	max	0	1	-.006	4	.031	1	.389	1	-.054	4	.193	3	.497	2
158			min	-8.089	4	-.011	1	0	3	.054	4	-.389	1	-.417	2	-.23	3
159		5	max	0	1	-.012	4	.062	1	0	1	0	1	0	1	0	1
160			min	-8.089	4	-.021	1	0	3	0	1	0	1	0	1	0	1

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N1	max	0	3	12.723	3	0	1	0	1	0	2	.76	2
2		min	-.189	2	10.249	2	-.186	4	-.722	4	0	3	0	3
3	N9	max	-.077	3	.059	1	-.163	3	0	1	0	1	0	1
4		min	-.352	2	.039	4	-.226	2	0	1	0	1	0	1
5	N10	max	0	4	.053	1	0	1	0	1	0	1	0	1
6		min	-.093	2	.036	2	-.25	4	0	1	0	1	0	1
7	N11	max	.089	4	.059	3	.226	2	0	1	0	1	0	1
8		min	-.352	2	.039	2	-.18	4	0	1	0	1	0	1
9	N13	max	-.145	3	.041	1	-.19	3	0	1	0	1	0	1
10		min	-.471	2	.027	2	-.344	2	0	1	0	1	0	1
11	N14	max	0	3	.039	1	0	2	0	1	0	1	0	1
12		min	-.069	2	.027	2	-.452	4	0	1	0	1	0	1
13	N15	max	.169	4	.041	1	.344	2	0	1	0	1	0	1
14		min	-.471	2	.027	2	-.215	4	0	1	0	1	0	1
15	N17	max	0	4	.007	3	0	2	0	1	0	1	0	1
16		min	-.02	1	.004	4	-1.41	4	0	1	0	1	0	1
17	N18	max	.757	4	.005	3	.567	2	0	1	0	1	0	1
18		min	-1.147	2	.003	2	-.392	4	0	1	0	1	0	1
19	N20	max	0	3	.007	1	4.546	4	0	1	0	1	0	1
20		min	-.02	1	.004	4	0	1	0	1	0	1	0	1

Envelope Joint Reactions (Continued)

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
21	N21	max	3.533	2	.005	1	1.207	4	0	1	0	1	0	1
22		min	-2.44	4	.003	2	-1.773	2	0	1	0	1	0	1
23	N23	max	0	4	.007	3	0	2	0	1	0	1	0	1
24		min	-.02	1	.004	4	-5.784	4	0	1	0	1	0	1
25	N24	max	3.104	4	.005	1	2.239	2	0	1	0	1	0	1
26		min	-4.491	2	.003	2	-1.565	4	0	1	0	1	0	1
27	N19	max	-.647	3	.005	3	-.338	3	0	1	0	1	0	1
28		min	-1.147	2	.003	4	-.567	2	0	1	0	1	0	1
29	N22	max	3.533	2	.005	3	1.773	2	0	1	0	1	0	1
30		min	2.129	3	.003	2	1.05	3	0	1	0	1	0	1
31	N25	max	-2.7	3	.005	1	-1.364	3	0	1	0	1	0	1
32		min	-4.491	2	.003	2	-2.239	2	0	1	0	1	0	1
33	Totals:	max	0	3	13.064	3	0	1						
34		min	-6.26	2	10.47	2	-5.828	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	3	0	3
2		min	0	3	0	3	0	1	0	1	0	2	0	2
3	N2	max	.001	2	-.006	2	0	4	0	1	0	3	2.259e-5	2
4		min	0	3	-.007	3	0	1	-2.706e-5	4	0	2	0	3
5	N3	max	.002	2	-.01	2	0	4	1.028e-4	4	0	3	0	3
6		min	0	4	-.012	3	0	2	0	2	0	2	-9.447e-5	2
7	N4	max	.002	2	-.017	2	.002	4	5.643e-5	4	0	3	0	4
8		min	0	3	-.021	3	0	2	0	1	0	2	-8.486e-5	2
9	N5	max	0	3	-.019	2	0	1	0	1	0	3	6.907e-4	2
10		min	-.006	2	-.023	3	-.008	4	-6.888e-4	4	0	2	0	4
11	N6	max	.007	2	-.02	2	.01	4	3.143e-3	4	0	3	0	4
12		min	0	3	-.026	3	0	2	0	2	0	2	-3.088e-3	2
13	N7	max	2.186	2	-.022	2	2.202	4	1.17e-2	4	0	3	0	4
14		min	0	4	-.029	3	0	2	0	2	0	2	-1.165e-2	2
15	N9	max	0	2	0	4	0	2	4.373e-5	2	5.996e-3	3	4.285e-3	3
16		min	0	3	0	1	0	3	-3.877e-3	3	-2.544e-3	2	-2.602e-5	2
17	N10	max	0	2	0	2	0	4	1.391e-3	3	1.833e-3	2	2.259e-5	2
18		min	0	4	0	1	0	1	-4.506e-4	2	-7.98e-4	3	0	3
19	N11	max	0	2	0	2	0	4	1.884e-4	4	-1.602e-3	1	2.395e-4	4
20		min	0	4	0	3	0	2	-8.546e-4	1	-2.971e-3	4	-9.317e-4	1
21	N13	max	0	2	0	2	0	2	8.81e-5	4	1.045e-3	4	1.455e-3	1
22		min	0	3	0	1	0	3	-1.317e-3	1	-1.88e-3	1	1.706e-5	4
23	N14	max	0	2	0	2	0	4	1.202e-3	1	1.235e-3	1	0	3
24		min	0	3	0	1	0	2	4.725e-4	4	2.21e-4	4	-9.447e-5	2
25	N15	max	0	2	0	2	0	4	-9.949e-4	2	-1.733e-3	2	-1.253e-3	2
26		min	0	4	0	1	0	2	-1.305e-3	3	-2.072e-3	3	-1.619e-3	3
27	N17	max	0	1	0	4	0	4	7.362e-4	3	3.861e-4	2	0	4
28		min	0	4	0	3	0	2	3.244e-4	2	-8.296e-5	3	-8.486e-5	2
29	N18	max	0	2	0	2	0	4	-2.151e-4	4	-6.844e-5	1	-5.43e-4	4
30		min	0	4	0	3	0	2	-3.318e-4	1	-2.041e-4	4	-7.425e-4	1
31	N19	max	0	2	0	4	0	2	-2.151e-4	4	2.041e-4	4	7.915e-4	1
32		min	0	3	0	3	0	3	-4.352e-4	1	-1.371e-4	1	5.43e-4	4
33	N20	max	0	1	0	4	0	1	7.916e-4	3	1.904e-4	1	6.907e-4	2
34		min	0	3	0	1	0	4	3.668e-4	2	-8.296e-5	3	0	4

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation...	LC	Y Rotation...	LC	Z Rotation...	LC
35	N21	max	0	4	0	2	0	2	-5.805e-4	2	1.406e-4	4	-2.957e-4	4
36		min	0	2	0	1	0	4	-8.583e-4	3	4.117e-5	1	-6.723e-4	1
37	N22	max	0	3	0	2	0	3	-6.515e-5	2	6.074e-6	2	9.945e-4	1
38		min	0	2	0	3	0	2	-8.583e-4	3	-1.406e-4	4	2.957e-4	4
39	N23	max	0	1	0	4	0	4	8.499e-4	3	5.363e-4	2	0	4
40		min	0	4	0	3	0	2	4.108e-4	2	-8.296e-5	3	-3.088e-3	2
41	N24	max	0	2	0	2	0	4	2.202e-3	4	-1.473e-4	1	-1.279e-3	2
42		min	0	4	0	1	0	2	6.466e-4	1	-4.572e-4	4	-1.92e-3	3
43	N25	max	0	2	0	2	0	2	2.202e-3	4	4.572e-4	4	1.92e-3	3
44		min	0	3	0	1	0	3	-1.603e-3	2	-2.16e-4	1	1.18e-4	2

Envelope AISC ASD Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Sh...	Loc[ft]	...	...	Fa...	Ft [ksi]	Fb y-y [ksi]	Fb...	...	...	...	AS...
1	M1	12" FW...	.516	94.6...	4	.048	94.635		2	23...	25.2	27.72	27...	...	...	.6	H1...
2	M2	L3.5X3....	.088	0	2	.007	13.403	z	4	2.78	21.6	- Code check based o...					H1...
3	M3	L4X4X4	.006	0	4	.008	10.964	z	2	5....	21.6	- Code check based o...					H2...
4	M4	L3.5X3....	.040	0	4	.007	13.403	z	4	2.78	21.6	- Code check based o...					H1...
5	M6	L4X4X4	.011	0	4	.006	0	z	2	9....	21.6	- Code check based o...					H2...
6	M7	L3.5X3....	.028	9.356	4	.005	9.356	z	4	5....	21.6	- Code check based o...					H1...
7	M8	L3.5X3....	.060	9.356	2	.005	9.356	z	4	5....	21.6	- Code check based o...					H1...
8	M9	L2X2X3	.083	0	2	.003	2.236	z	3	16...	21.6	- Code check based o...					H2...
9	M10	L2X2X3	.108	2.236	2	.003	0	z	3	16...	21.6	- Code check based o...					H1...
10	M11	L2X2X3	.091	0	4	.004	3	z	1	14...	21.6	- Code check based o...					H2...
11	M12	L2X2X3	.335	2.236	2	.003	0	z	3	16...	21.6	- Code check based o...					H1...
12	M13	L2X2X3	.258	0	2	.003	2.236	z	3	16...	21.6	- Code check based o...					H2...
13	M14	L2X2X3	.453	0	4	.004	3	z	1	14...	21.6	- Code check based o...					H1...
14	M15	L2X2X3	.325	0	2	.003	2.236	z	3	16...	21.6	- Code check based o...					H2...
15	M16	L2X2X3	.422	2.236	2	.003	0	z	3	16...	21.6	- Code check based o...					H1...
16	M17	L2X2X3	.374	0	4	.004	3	z	1	14...	21.6	- Code check based o...					H2...

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N1	-.154	12.723	0	0	0	.624
2	1	N9	-.316	.059	-.2	0	0	0
3	1	N10	-.088	.053	0	0	0	0
4	1	N11	-.316	.059	.2	0	0	0
5	1	N13	-.414	.041	-.299	0	0	0
6	1	N14	-.065	.039	0	0	0	0
7	1	N15	-.414	.041	.299	0	0	0
8	1	N17	-.02	.007	0	0	0	0
9	1	N18	-.987	.005	.486	0	0	0
10	1	N20	-.02	.007	0	0	0	0
11	1	N21	3.079	.005	-1.547	0	0	0
12	1	N23	-.02	.007	0	0	0	0
13	1	N24	-3.911	.005	1.948	0	0	0
14	1	N19	-.987	.005	-.486	0	0	0
15	1	N22	3.079	.005	1.547	0	0	0
16	1	N25	-3.911	.005	-1.948	0	0	0
17	1	Totals:	-5.463	13.064	0			
18	1	COG (ft):	X: 0	Y: 78.553	Z: .048			

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	N1	-.189	10.249	0	0	0	.76
2	2	N9	-.352	.039	-.226	0	0	0
3	2	N10	-.093	.036	0	0	0	0
4	2	N11	-.352	.039	.226	0	0	0
5	2	N13	-.471	.027	-.344	0	0	0
6	2	N14	-.069	.027	0	0	0	0
7	2	N15	-.471	.027	.344	0	0	0
8	2	N17	-.018	.004	0	0	0	0
9	2	N18	-1.147	.003	.567	0	0	0
10	2	N20	-.018	.004	0	0	0	0
11	2	N21	3.533	.003	-1.773	0	0	0
12	2	N23	-.018	.004	0	0	0	0
13	2	N24	-4.491	.003	2.239	0	0	0
14	2	N19	-1.147	.003	-.567	0	0	0
15	2	N22	3.533	.003	1.773	0	0	0
16	2	N25	-4.491	.003	-2.239	0	0	0
17	2	Totals:	-6.26	10.47	0			
18	2	COG (ft):	X: 0	Y: 76.351	Z: .037			

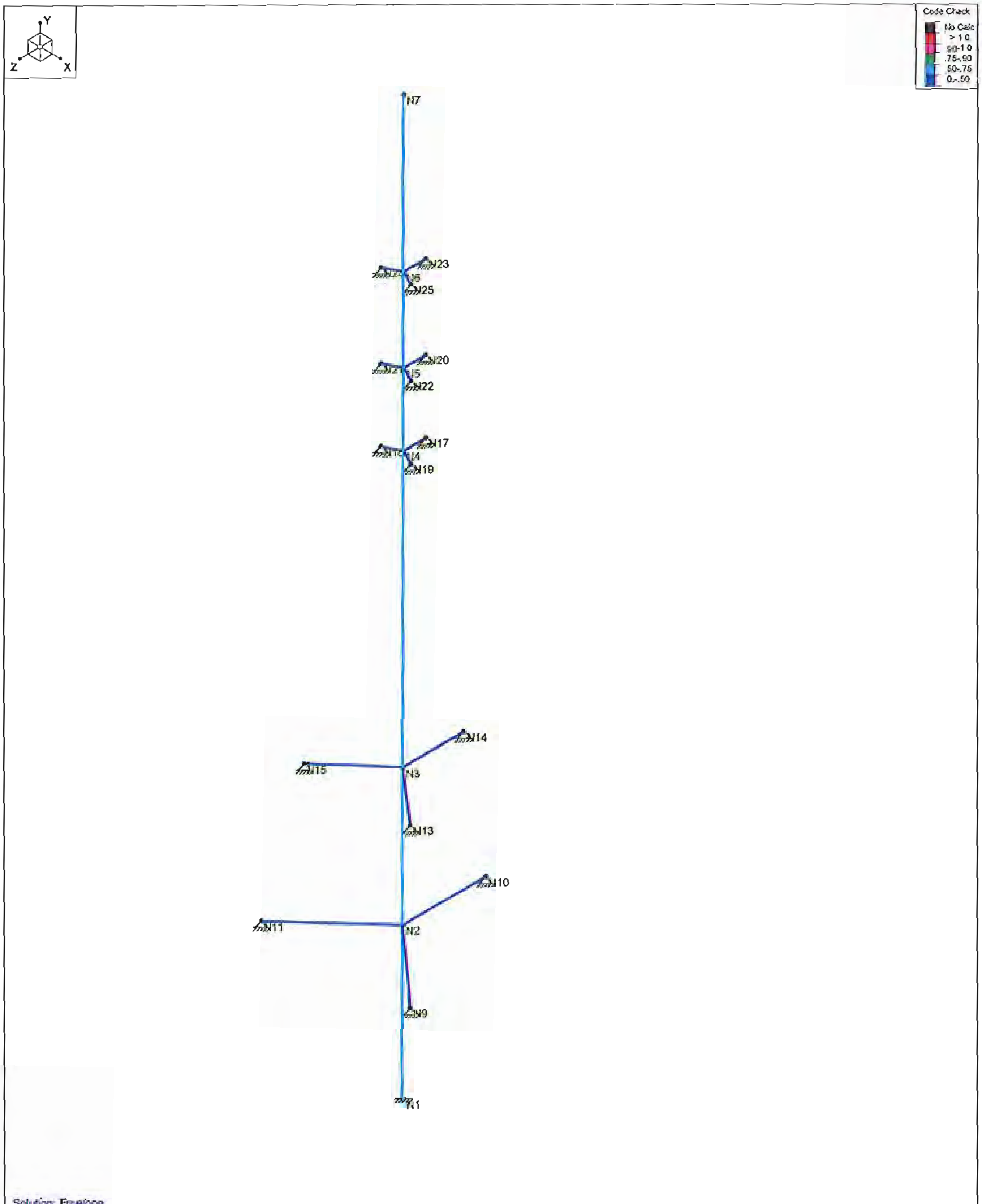
Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	3	N1	0	12.723	-.152	-.59	0	0
2	3	N9	-.077	.059	-.163	0	0	0
3	3	N10	0	.053	-.217	0	0	0
4	3	N11	.077	.059	-.163	0	0	0
5	3	N13	-.145	.041	-.19	0	0	0
6	3	N14	0	.039	-.39	0	0	0
7	3	N15	.145	.041	-.19	0	0	0
8	3	N17	0	.007	-1.206	0	0	0
9	3	N18	.647	.005	-.338	0	0	0
10	3	N20	0	.007	3.968	0	0	0
11	3	N21	-2.129	.005	1.05	0	0	0
12	3	N23	0	.007	-5.031	0	0	0
13	3	N24	2.7	.005	-1.364	0	0	0
14	3	N19	-.647	.005	-.338	0	0	0
15	3	N22	2.129	.005	1.05	0	0	0
16	3	N25	-2.7	.005	-1.364	0	0	0
17	3	Totals:	0	13.064	-5.041			
18	3	COG (ft):	X: 0	Y: 78.553	Z: .048			

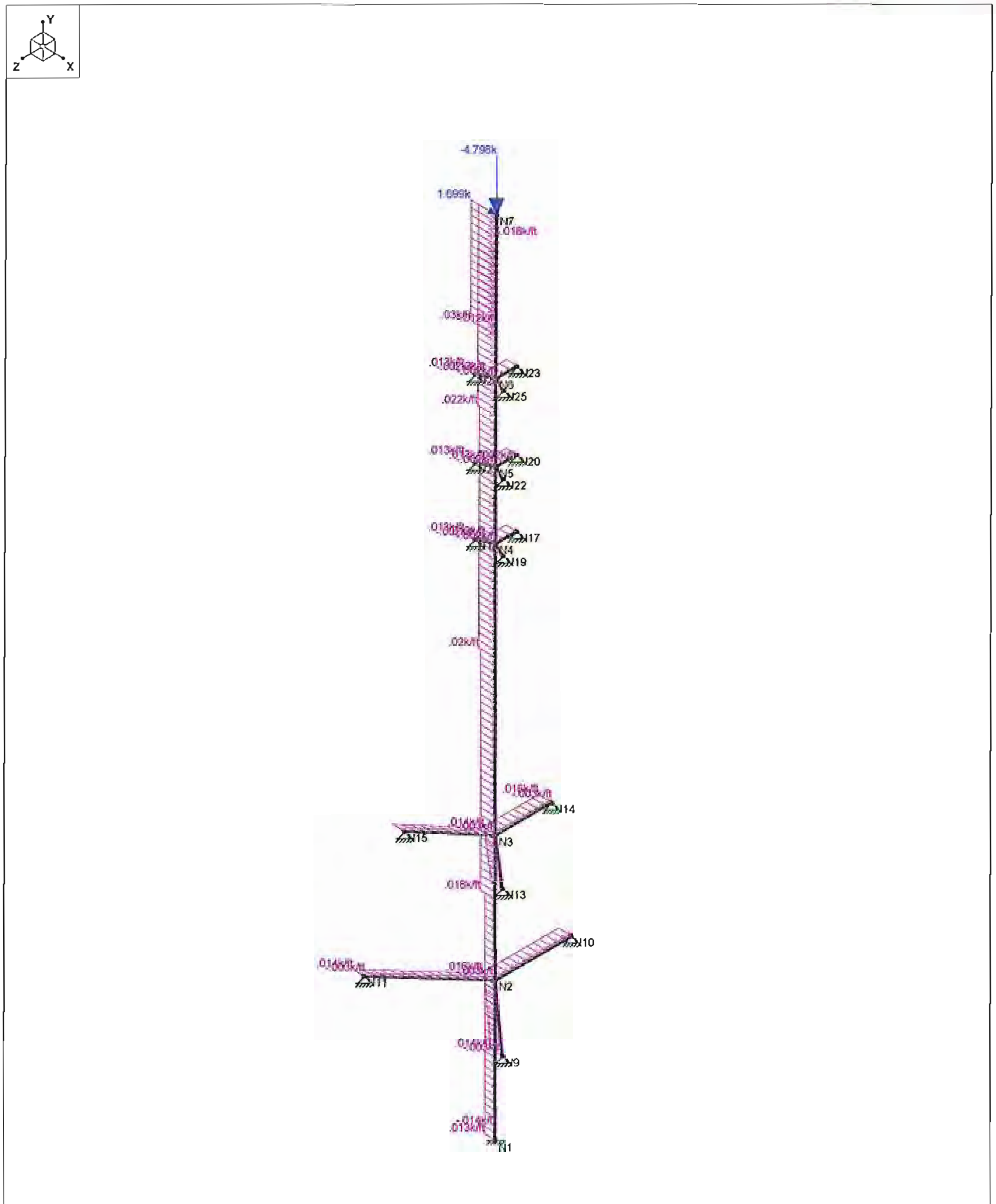
Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	4	N1	0	10.249	-.186	-.722	0	0
2	4	N9	-.089	.039	-.18	0	0	0
3	4	N10	0	.036	-.25	0	0	0
4	4	N11	.089	.039	-.18	0	0	0
5	4	N13	-.169	.027	-.215	0	0	0
6	4	N14	0	.027	-.452	0	0	0
7	4	N15	.169	.027	-.215	0	0	0
8	4	N17	0	.004	-1.41	0	0	0
9	4	N18	.757	.003	-.392	0	0	0
10	4	N20	0	.004	4.546	0	0	0
11	4	N21	-2.44	.003	1.207	0	0	0
12	4	N23	0	.004	-5.784	0	0	0
13	4	N24	3.104	.003	-1.565	0	0	0
14	4	N19	-.757	.003	-.392	0	0	0
15	4	N22	2.44	.003	1.207	0	0	0
16	4	N25	-3.104	.003	-1.565	0	0	0
17	4	Totals:	0	10.47	-5.828			
18	4	COG (ft):	X: 0	Y: 76.351	Z: .037			

Site No: CT33XC528



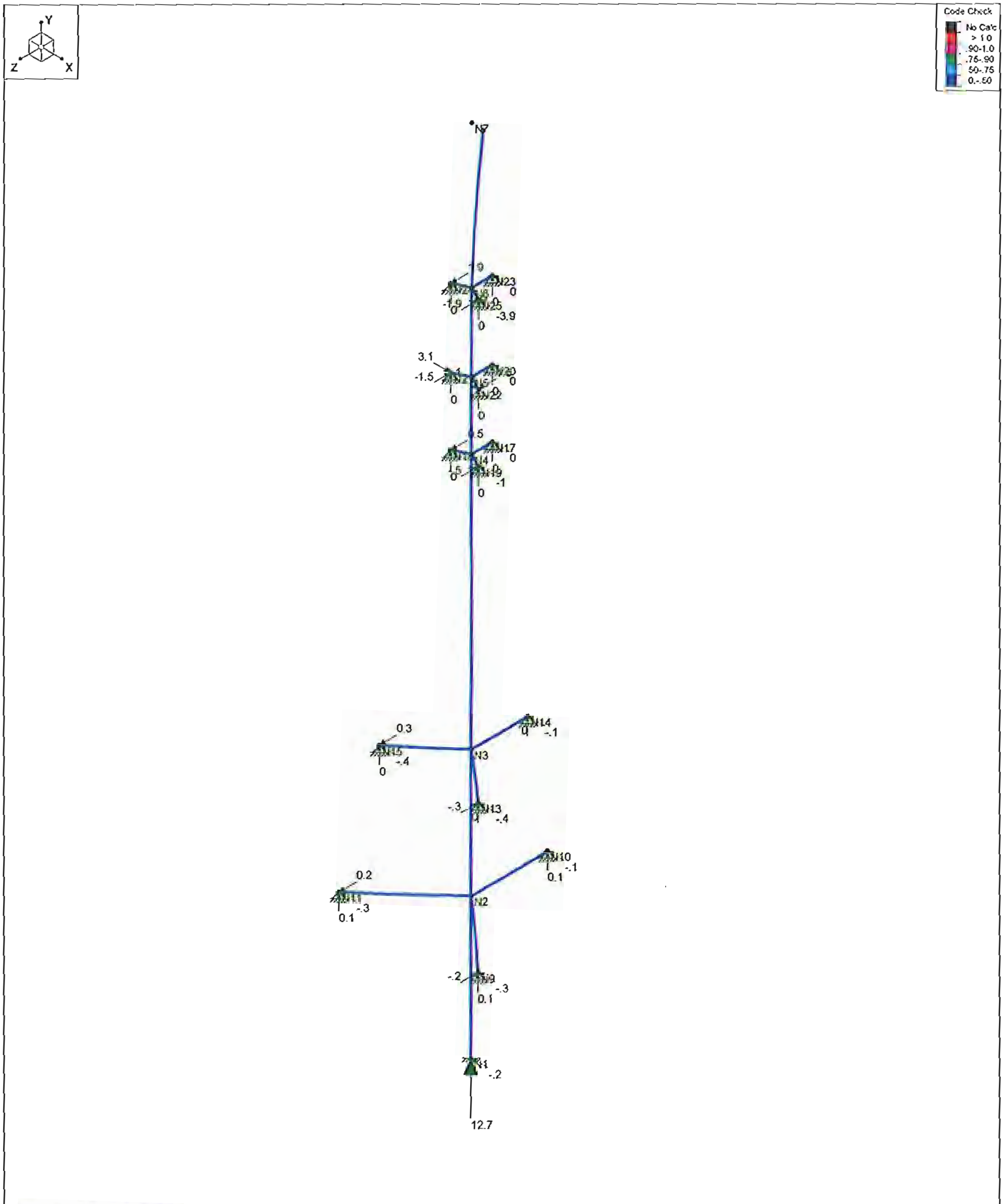
CENTEK Engineering, INC.		
tjl, cfc	CL&P Struct. #653 - Powermount	May 9, 2013 at 10:19 AM
13003.CO2 - CT33XC528	Unity Check	EIA-TIA.r3d



Loads: LC 1, (X) TIA/EIA Wind + Ice on PCS Structure

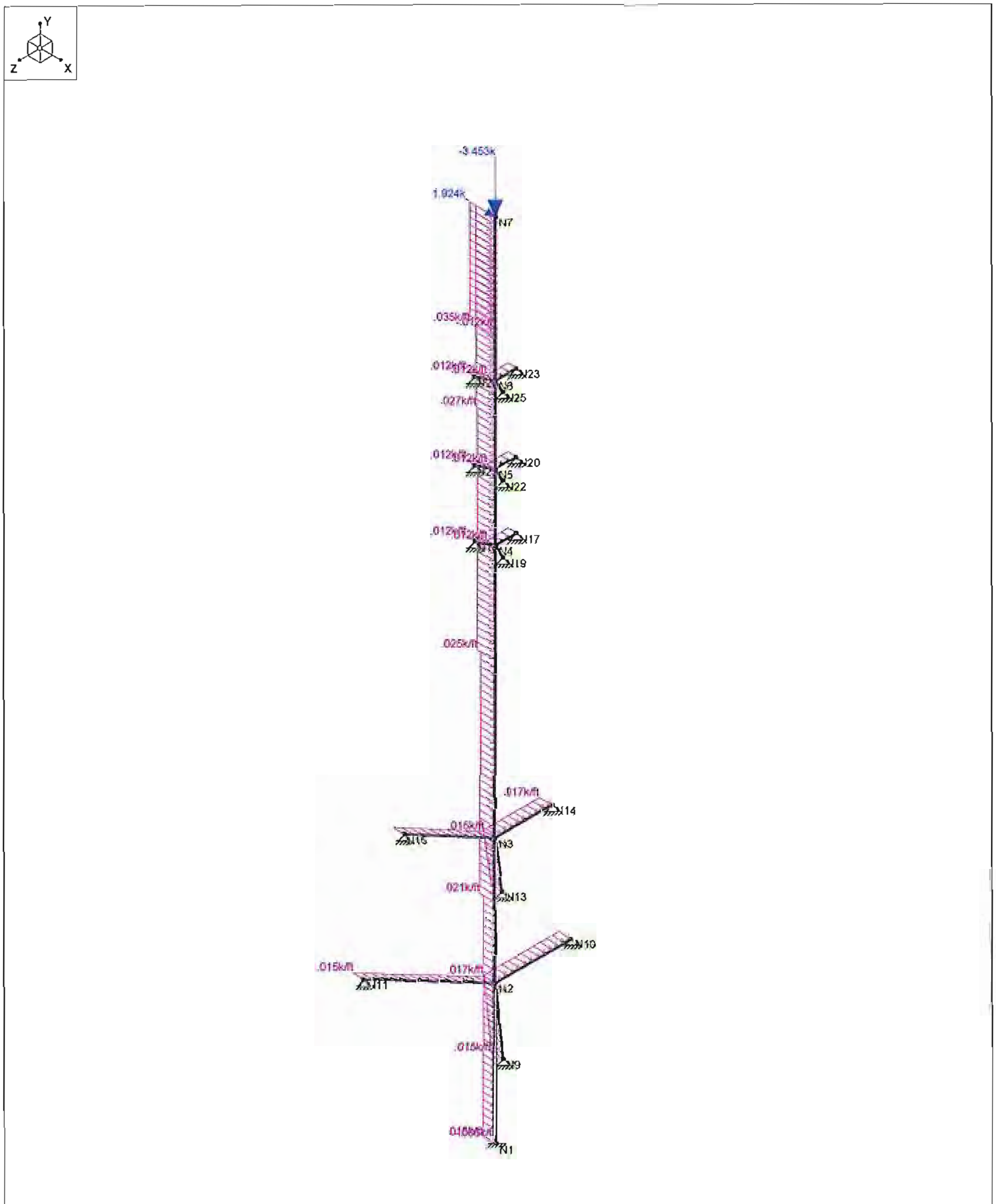
CENTEK Engineering, INC.	CL&P Struct. #653 - Powermount	
tjl, cfc		May 9, 2013 at 10:20 AM
13003.CO2 - CT33XC528	LC #1 Loads	EIA-TIA.r3d

Site No: CT33XC528



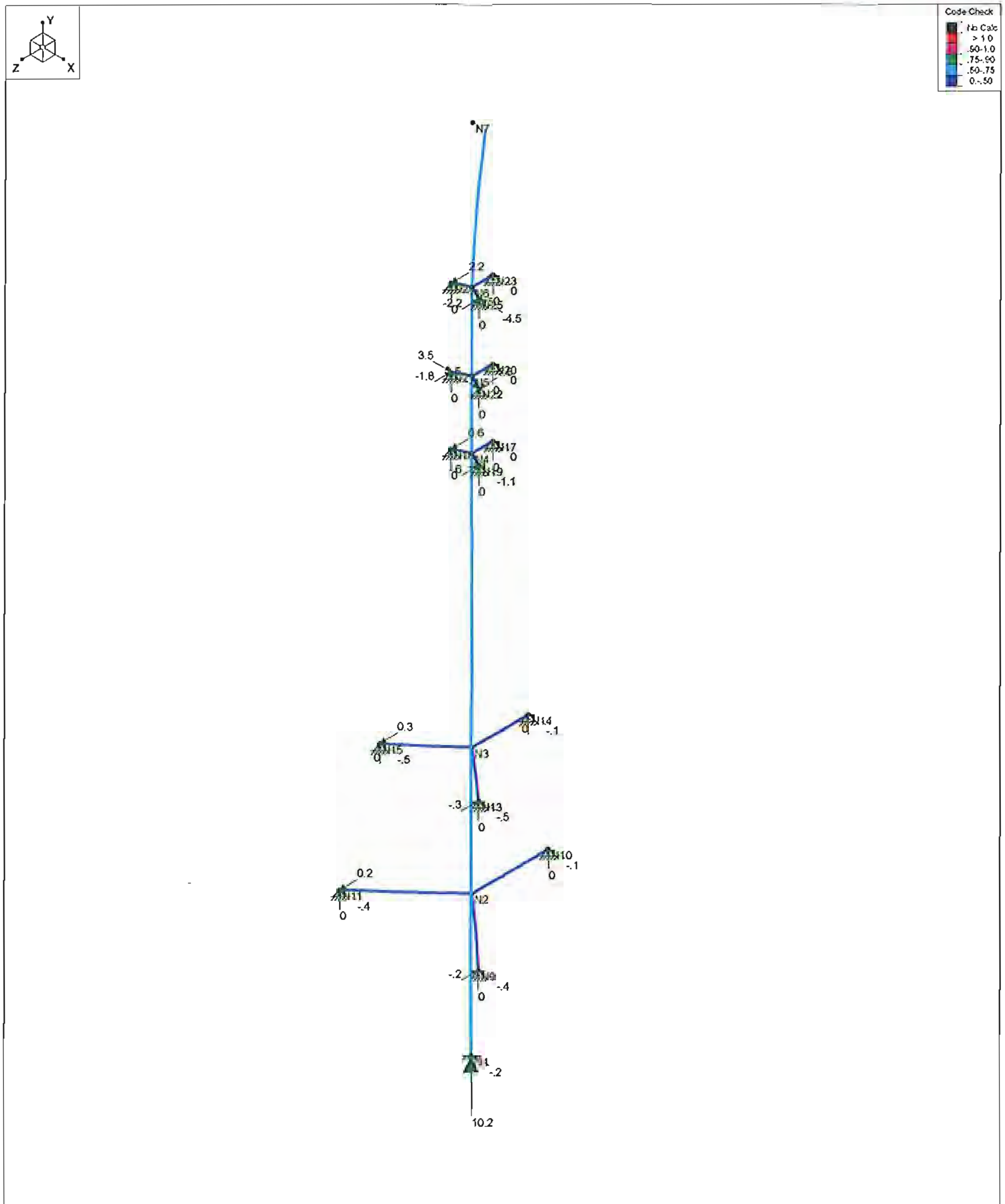
Results for LC 1, (X) TIA/EIA Wind + Ice on PCS Structure
Z-direction Reaction units are k and k-ft

CENTEK Engineering, INC.		
tjl, cfc	CL&P Struct. #653 - Powermount	May 9, 2013 at 10:22 AM
13003.CO2 - CT33XC528	LC #1 Reactions and Deflected Shape	EIA-TIA.r3d



Loads: LC 2, (X) TIA/EIA Wind on PiCS Structure

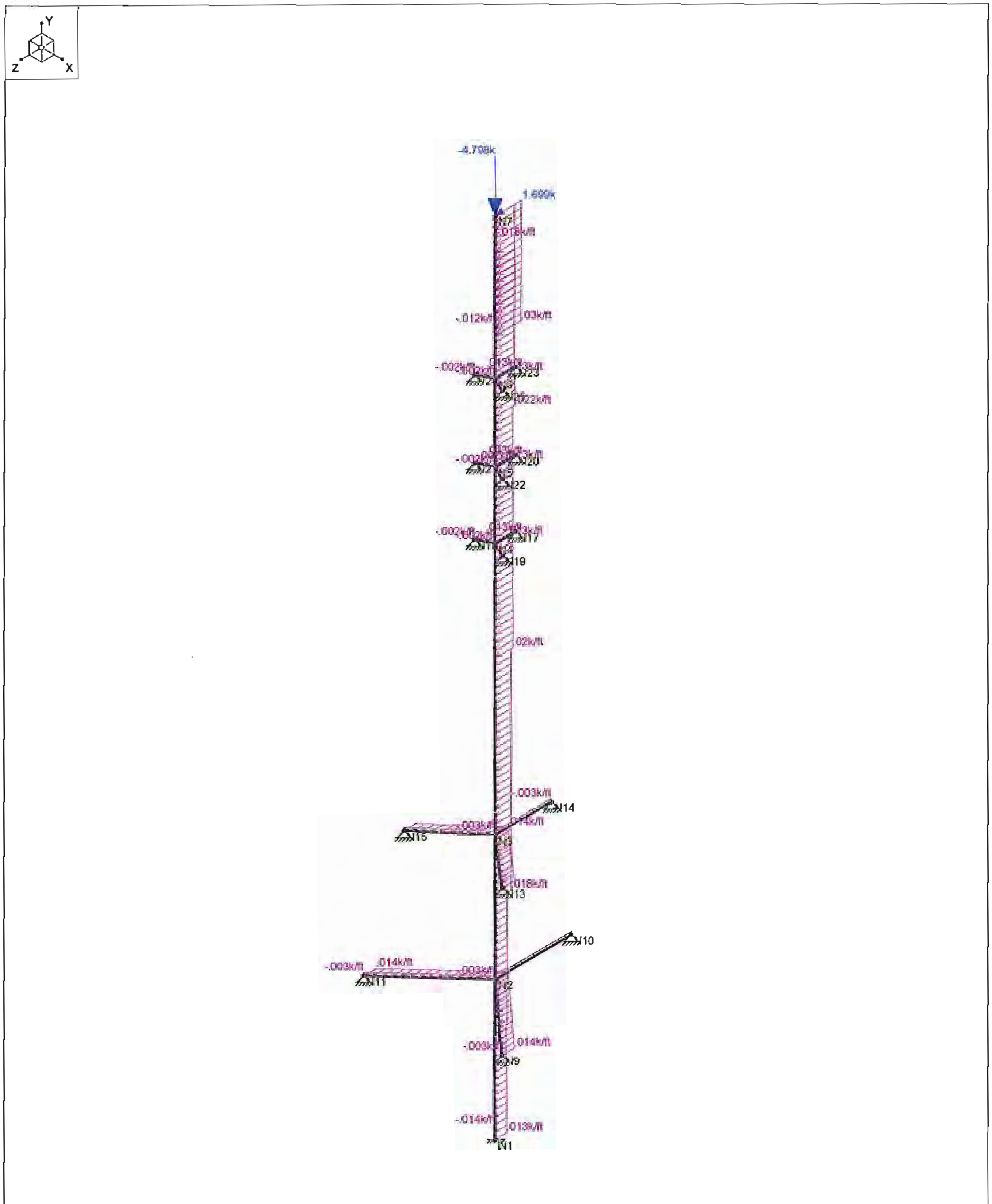
CENTEK Engineering, INC.		
tjl, cfc	CL&P Struct. #653 - Powermount	May 9, 2013 at 10:20 AM
13003.CO2 - CT33XC528	LC #2 Loads	EIA-TIA.r3d



Results for LC 2, (X) TIA/EIA Wind on PCS Structure
Z-direction Reaction units are k and k-ft

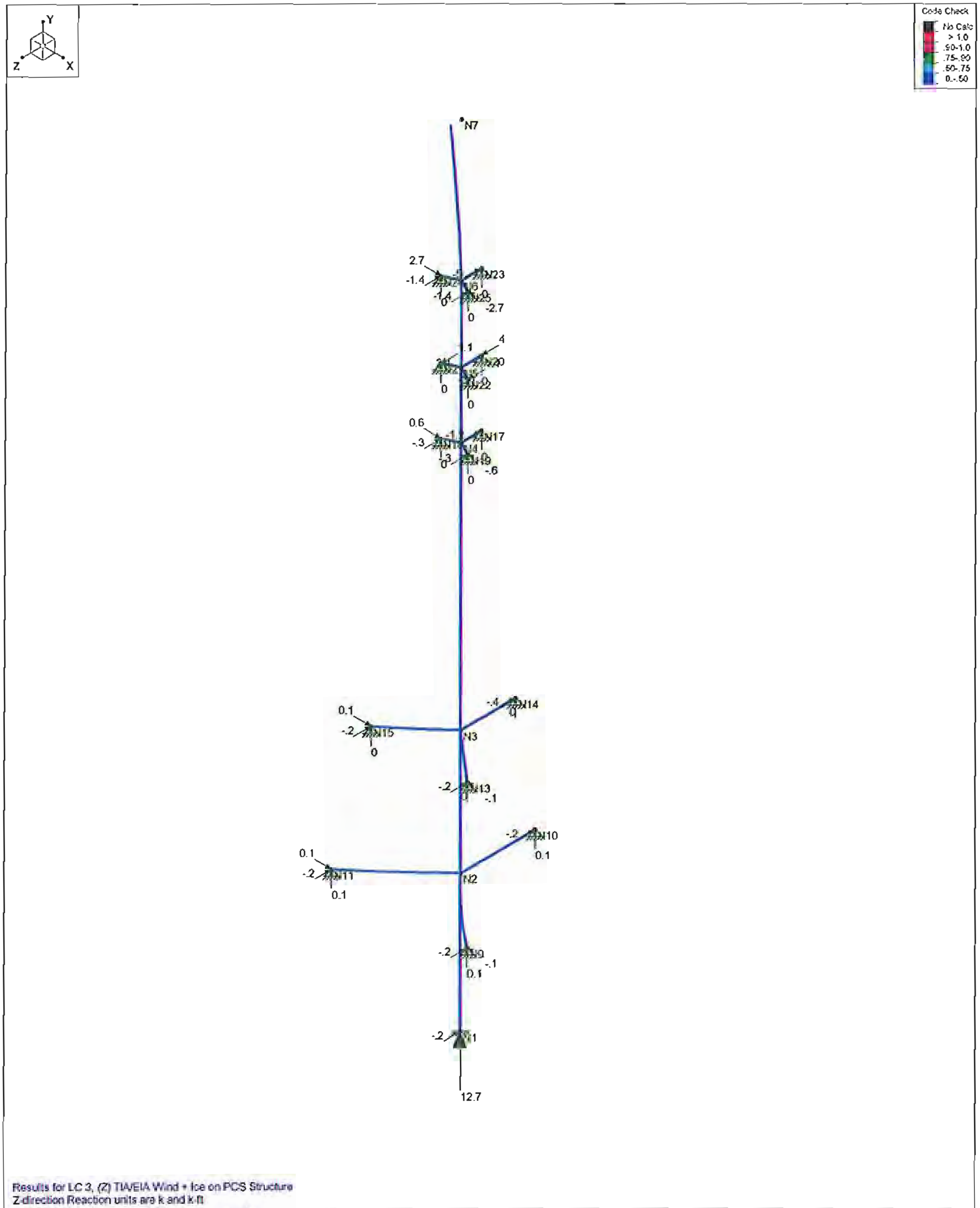
CENTEK Engineering, INC.		
tjl, cfc	CL&P Struct. #653 - Powermount	May 9, 2013 at 10:22 AM
13003.CO2 - CT33XC528	LC #2 Reactions and Deflected Shap	EIA-TIA.r3d

Site No: CT33XC528

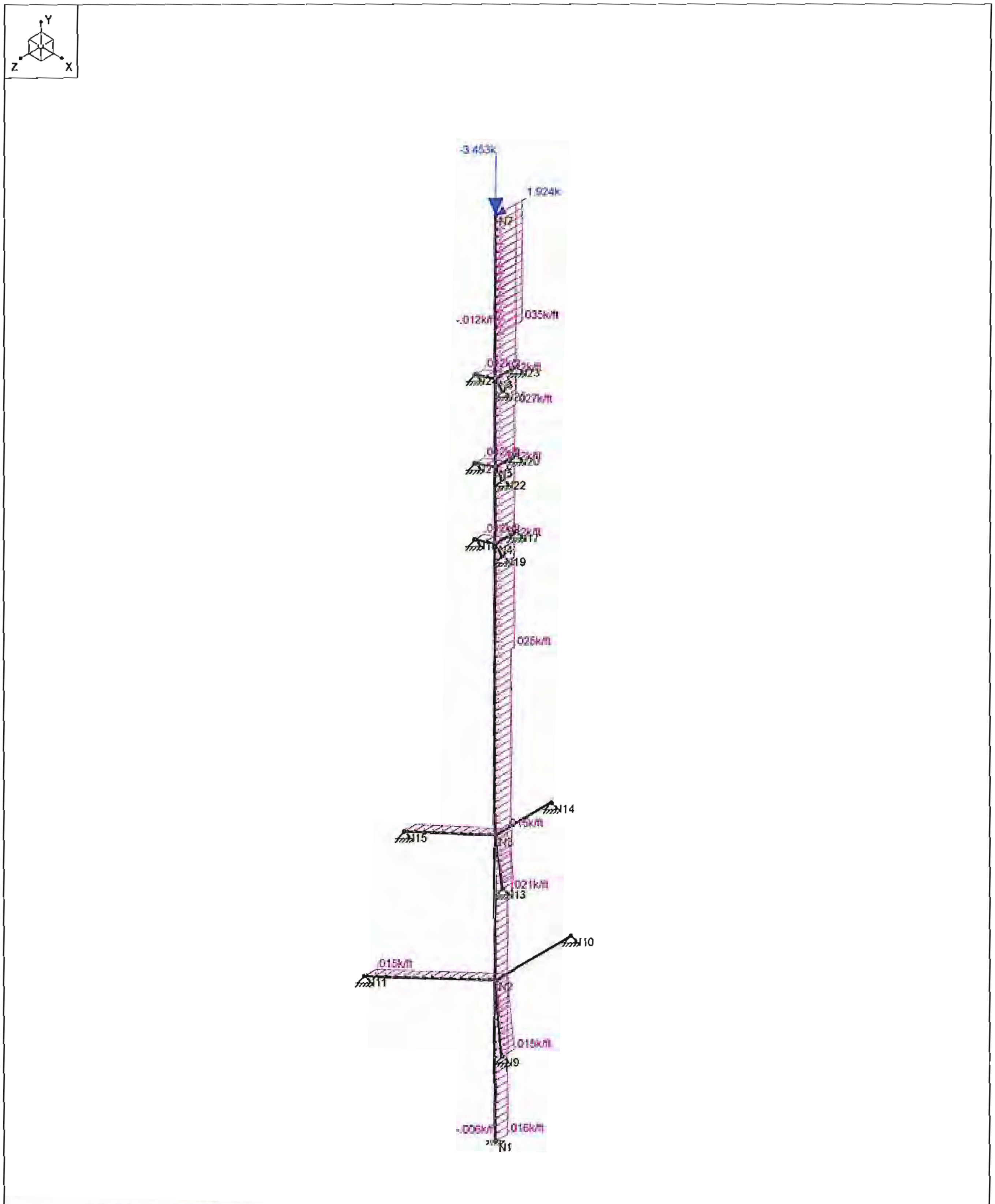


Loads: LC 3, (Z) TIA/EIA Wind + Ice on PCS Structure

CENTEK Engineering, INC.		
tjl, cfc	CL&P Struct. #653 - Powermount	May 9, 2013 at 10:20 AM
13003.CO2 - CT33XC528	LC #3 Loads	EIA-TIA.r3d



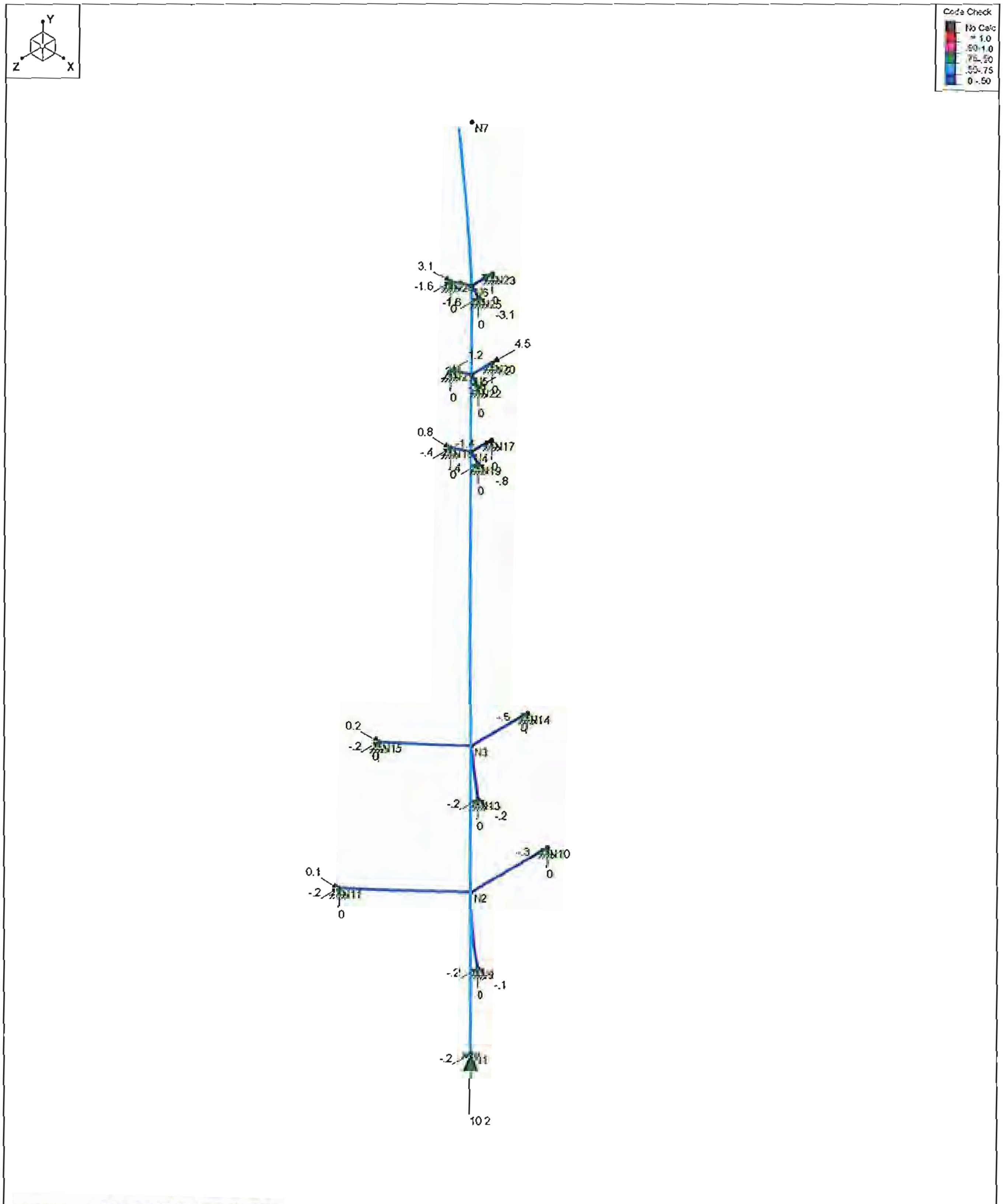
CENTEK Engineering, INC.		
tjl, cfc	CL&P Struct. #653 - Powermount	May 9, 2013 at 10:23 AM
13003.CO2 - CT33XC528	LC #3 Reactions and Deflected Shap	EIA-TIA.r3d



Loads: LC 4, (Z) TIA/EIA Wind on PCS Structure

CENTEK Engineering, INC.		
tjl, cfc	CL&P Struct. #653 - Powermount	May 9, 2013 at 10:21 AM
13003.CO2 - CT33XC528	LC #4 Loads	EIA-TIA.r3d

Site No: CT33XC528



Results for LC 4, (Z) TIA/EIA Wind on PCS Structure
Z-direction Reaction units are k and k-ft

CENTEK Engineering, INC.		
tjl, cfc	CL&P Struct. #653 - Powermount	May 9, 2013 at 10:23 AM
13003.CO2 - CT33XC528	LC #4 Reactions and Deflected Shap	EIA-TIA.r3d

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Powermount Connection to CL&P Tower:

Check Pipe Collar Bolts:

Reactions:

Tension = $Tension := 8.9 \cdot kips$ (Input From Risa-3D LC #4) (Sum of the forces in brace members)

Shear = $Shear := 8.9 \cdot kips$ (Input From Risa-3D LC #2) (Sum of the forces in brace members)

Bolt Data:

Bolt Type = ASTM A325 (User Input)

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

Number of Bolts = $N_b := 3$ (User Input)

Allowable Tensile Strength = $F_t := 13.8 \cdot kips$ (User Input)

Allowable Shear Strength = $F_v := 8.3 \cdot kips$ (User Input)

Shear Force = $f_v := \frac{Shear}{N_b} = 3 \cdot kips$

Bolt Shear % of Capacity = $\frac{f_v}{F_v} = 35.74 \cdot \%$

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

Bolt_Shear = "OK"

Tension Force = $f_t := \frac{Tension}{N_b} = 3 \cdot kips$

Bolt Tenison % of Capacity = $\frac{f_t}{F_t} = 21.5 \cdot \%$

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

Bolt_Tension = "OK"

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	Location:	Southington, CT
	Rev. 0: 5/9/13	Prepared by: T.J.L. Checked by: C.F.C. Job No. 13003.CO2

Check Pipe Collar to Angle Brace Bolts:

Reactions:

Shear = $Shear := 8.9 \cdot kips$ (Input From Risa-3D LC #4)

(Sum of the forces in brace members)

Bolt Data:

Bolt Type = ASTMA325 (User Input)

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

Totoal Number of Bolts = $N_b := 3$ (User Input)

Number of Bolts (Hole Transverse to Line of Force) = $N_{bT} := 1$ (User Input)

Number of Bolts (Hole Parallel to Line of Force) = $N_{bP} := 2$ (User Input)

Allowable Shear Strength (Hole Transverse to Line of Force) = $F_{vT} := 4.3 \cdot kips$ (User Input)

Allowable Shear Strength (Hole Parallel to Line of Force) = $F_{vP} := 3.66 \cdot kips$ (User Input)

Bolt Shear % of Capacity = $f_v := \frac{Shear}{\left(N_{bT} \cdot F_{vT} + N_{bP} \cdot F_{vP}\right)} = 76.6 \cdot \%$

Check Bolt Shear = Bolt_Shear := if($f_v \le 1.00$,"OK","Overstressed")

Bolt_Shear = "OK"

Check Angle Brace to Tower Bolts:

Reactions:

Vertical = $Vertical := 0 \cdot kips$ (Input From Risa-3D LC #4)

Horizontal x-dir = $Horizontal_x := 0 \cdot kips$ (Input From Risa-3D LC #4)

Horizontal z-dir = $Horizontal_z := 5.8 \cdot kips$ (Input From Risa-3D LC #4)

Bolt Data:

Bolt Type = ASTMA325 (User Input)

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

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

Allowable Tensile Strength = $F_t := 13.8 \cdot kips$ (User Input)

Allowable Shear Strength = $F_v := 16.6 \cdot kips$ (User Input) (Bolt is in Double Shear)

Shear Force = $f_v := \frac{\sqrt{Horizontal_z^{\,2} + Vertical^2}}{N_b} = \blacksquare \cdot kips$

Bolt Shear % of Capacity = $\frac{f_v}{F_v} = 34.94 \cdot \%$

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

Bolt_Shear = "OK"

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Subject:	Load Analysis of Powermount on CL&P Structure #653
Location:	Southington, CT
Rev. 0: 5/9/13	Prepared by: T.J.L Checked by: C.F.C. Job No. 13003.CO2

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 = $TME := 115$ 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 = $Kz := 2.01 \cdot \left(\frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.303$ (NESC 2007 Table 250-2)

Exposure Factor = $Es := 0.346 \left[\frac{33}{(0.67 \cdot TME)}\right]^{\frac{1}{7}} = 0.307$ (NESC 2007 Table 250-3)

Response Term = $Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.836$ (NESC 2007 Table 250-3)

Gust Response Factor = $Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.859$ (NESC 2007 Table 250-3)

Wind Pressure = $qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 34.7$ 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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	Location:	Southington, CT
	Rev. 0: 5/9/13	Prepared by: T.J.L Checked by: C.F.C. Job No. 13003.CO2

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model = RFS APXVSPP18-C

Antenna Shape = Flat (User Input)

Antenna Height = $L_{ant} := 72$ in (User Input)

Antenna Width = $W_{ant} := 11.8$ in (User Input)

Antenna Thickness = $T_{ant} := 7$ in (User Input)

Antenna Weight = $WT_{ant} := 57$ lbs (User Input)

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

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

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

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

Total Antenna Wind Force = $F_{ant1} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1228$ lbs **BLC 5**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant}+1) \cdot (W_{ant}+1)}{144} = 6.5$ sf

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

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

Gravity Load (without Ice)

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

Gravity Load (ice only)

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

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant}+1)(W_{ant}+1) \cdot (T_{ant}+1) - V_{ant} = 1528$ cu in

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

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

Site No: CT33XC528

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	Location:	Southington, CT
	Rev. 0: 5/9/13	Prepared by: T.J.L Checked by: C.F.C. Job No. 13003.CO2

Development of Wind & Ice Load on Platform

Platform Data: (Sprint)

Platform Model =	FWT Low Profile Platform		(User Input)
Platform Shape =	Flat		(User Input)
Platform Area =	$A_{plt} := 13.07$	sq ft	(User Input from FWT design calcs)
Platform Area w/ Ice =	$A_{ICEplt} := 16.40$	sq ft	(User Input from FWT design calcs)
Platform Weight =	$WT_{plt} := 3282$	lbs	(User Input from FWT design calcs)
Platform Weight w/ Ice =	$WT_{ICEplt} := 4478$	lbs	(User Input from FWT design calcs)

Wind Load (NESC Extreme)

Total Platform Wind Force = $F_{mnt1} := qz \cdot Cd_F \cdot A_{plt} \cdot m = 907$ lbs **BLC 5**

Wind Load (NESC Heavy)

Total Platform Wind Force w/ Ice = $Fi_{mnt1} := p \cdot Cd_F \cdot A_{ICEplt} = 105$ lbs **BLC 4**

Gravity Load (without ice)

Weight of Platform = $Wt_{mnt1} := WT_{plt} = 3282$ lbs **BLC 2**

Gravity Load (ice only)

Weight of Ice on Platform = $Wt_{ice.mnt1} := WT_{ICEplt} - WT_{plt} = 1196$ lbs **BLC 3**

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	Location:	Southington, CT
	Rev. 0: 5/9/13	Prepared by: T.J.L Checked by: C.F.C. Job No. 13003.CO2

Total Equipment Loads:

Sprint @ 115-ft AGL

NESC Heavy Wind Vertical = $\left(Wt_{ant1} + Wt_{ice.ant1} + Wt_{mnt1} + Wt_{ice.mnt1}\right)\cdot 1.5 = 7196$

NESC Heavy Wind Trasnsverse = $\left(Fi_{ant1} + Fi_{mnt1}\right)\cdot 2.5 = 574$

NESC Extreme Wind Vertical = $\left(Wt_{ant1} + Wt_{mnt1}\right) = 3453$

NESC Extreme Wind Trasnsverse = $\left(F_{ant1} + F_{mnt1}\right) = 2135$

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	Location:	Southington, CT
	Rev. 0: 5/9/13	Prepared by: T.J.L Checked by: C.F.C. Job No. 13003.CO2

Coax Cable within Powermount

Distance Between Coax Cable Attach Points = $Coax_{Span} := \begin{pmatrix} 10 \\ 15.5 \\ 10 \\ 23 \\ 27 \\ 29 \end{pmatrix} \cdot ft$ *(User Input)*

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

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

Number of Coax Cables = $N_{coax} := 6$ *(User Input)* (6 Cables inside Powermount)

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

Extreme Wind Pressure = $qz := 34.7 \cdot psf$ *(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 = $W_{ice} := 0$

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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 =

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

$$Heavy_{Vert} = \begin{pmatrix} 94 \\ 145 \\ 94 \\ 215 \\ 253 \\ 271 \end{pmatrix} lb \qquad Heavy_{Trans} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}$$

Extreme Vertical Load =

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

Extreme Transverse Load =

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

$$Extreme_{Vert} = \begin{pmatrix} 62 \\ 97 \\ 62 \\ 144 \\ 168 \\ 181 \end{pmatrix} lb \qquad Extreme_{Trans} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}$$

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Subject: Sprint Coax Cable on CL&P Tower # 653

Location: Southington, CT

Prepared by: T.J.L Checked by: C.F.C.
Job No. 13003.CO2

Rev. 0: 5/9/13

Coax Cable on CL&P Tower

Distance Between Coax Cable Attach Points =

Coax Cable Span = $Coax_{Span} := \begin{pmatrix} 25.75 \\ 10.25 \\ 13.125 \\ 18.125 \\ 18.75 \\ 29 \end{pmatrix} \cdot ft$ *(User Input)*

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

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

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

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

Extreme Wind Pressure = $qz := 34.7 \cdot psf$ *(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 = $A_{Tice} := \left(NP_{Tcoax} \cdot D_{coax} + 2 \cdot Ir\right) = 12.88 \cdot in$

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

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

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

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Subject:		Sprint Coax Cable on CL&P Tower # 653
Location:		Southington, CT
		Prepared by: T.J.L Checked by: C.F.C. Job No. 13003.CO2
Rev. 0: 5/9/13		

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 =

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

$$Heavy_{Vert} = \begin{pmatrix} 1184 \\ 471 \\ 604 \\ 834 \\ 862 \\ 1334 \end{pmatrix} lb \qquad Heavy_{Trans} = \begin{pmatrix} 442 \\ 176 \\ 225 \\ 311 \\ 322 \\ 498 \end{pmatrix} lb$$

Extreme Vertical Load =

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

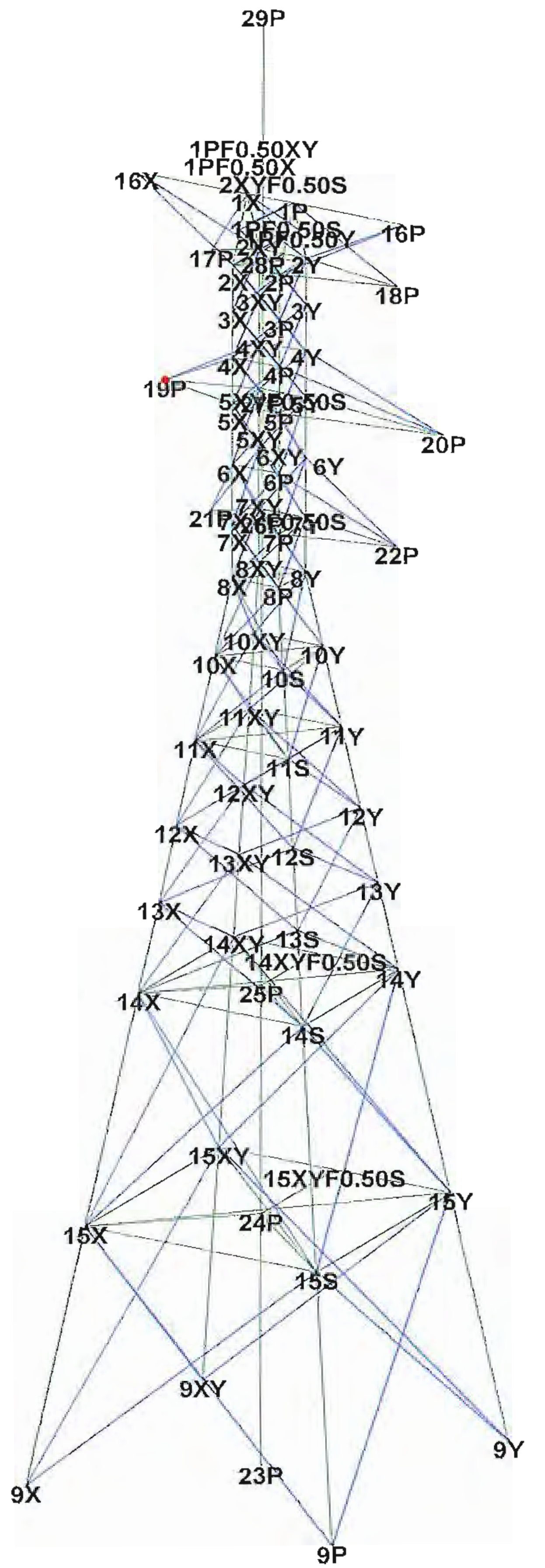
Extreme Transverse Load =

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

$$Extreme_{Vert} = \begin{pmatrix} 321 \\ 128 \\ 164 \\ 226 \\ 234 \\ 362 \end{pmatrix} lb \qquad Extreme_{Trans} = \begin{pmatrix} 1415 \\ 563 \\ 721 \\ 996 \\ 1031 \\ 1594 \end{pmatrix} lb$$

Centek Engineering Inc, Project: "CL&P # 653"
Tower Version 11.11, 3:13:51 PM Thursday, May 09, 2013
Undeformed geometry displayed

Site No: CT33XC528



Project Name : 13003.CO2 - Southington, CT
Project Notes: CL&P Structure #653 / Sprint ~ CT33XC528
Project File : J:\Jobs\1300300.WI\CO2 ~ CT33XC528 Southington\Calcs\PLS Tower\CL&P # 653.tow
Date run : 3:12:52 PM Thursday, May 09, 2013
by : Tower Version 11.11
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

Member "g6P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g6X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g6XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "g6Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Member "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. ??
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. ??
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. ??
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. ??
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 "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

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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. ??
KL/R value of 230.94 exceeds maximum of 200.00 for member "g37P" ??
KL/R value of 230.94 exceeds maximum of 200.00 for member "g37X" ??
KL/R value of 230.94 exceeds maximum of 200.00 for member "g37XY" ??
KL/R value of 230.94 exceeds maximum of 200.00 for member "g37Y" ??
KL/R value of 230.94 exceeds maximum of 200.00 for member "g38P" ??
KL/R value of 230.94 exceeds maximum of 200.00 for member "g38X" ??
KL/R value of 230.94 exceeds maximum of 200.00 for member "g38XY" ??
KL/R value of 230.94 exceeds maximum of 200.00 for member "g38Y" ??
KL/R value of 279.39 exceeds maximum of 200.00 for member "g39P" ??
KL/R value of 279.39 exceeds maximum of 200.00 for member "g39X" ??
KL/R value of 279.39 exceeds maximum of 200.00 for member "g39XY" ??
KL/R value of 279.39 exceeds maximum of 200.00 for member "g39Y" ??
KL/R value of 279.39 exceeds maximum of 200.00 for member "g40P" ??
KL/R value of 279.39 exceeds maximum of 200.00 for member "g40X" ??
KL/R value of 279.39 exceeds maximum of 200.00 for member "g40XY" ??
KL/R value of 279.39 exceeds maximum of 200.00 for member "g40Y" ??
KL/R value of 664.82 exceeds maximum of 200.00 for member "g41P" ??
KL/R value of 664.82 exceeds maximum of 200.00 for member "g41Y" ??
KL/R value of 664.82 exceeds maximum of 200.00 for member "g42P" ??
KL/R value of 664.82 exceeds maximum of 200.00 for member "g42Y" ??
KL/R value of 410.60 exceeds maximum of 200.00 for member "g62P" ??
KL/R value of 410.60 exceeds maximum of 200.00 for member "g62X" ??
KL/R value of 428.46 exceeds maximum of 200.00 for member "g63P" ??
KL/R value of 428.46 exceeds maximum of 200.00 for member "g63X" ??
Member "g71P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g71Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g72P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g72Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g73P" will not be checked for block 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 252.57 exceeds maximum of 200.00 for member "g74P" ??
KL/R value of 252.57 exceeds maximum of 200.00 for member "g74Y" ??
Member "g95P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "Fg9599P" will not be checked for block 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 231.76 exceeds maximum of 200.00 for member "g110P" ??
KL/R value of 231.76 exceeds maximum of 200.00 for member "g110X" ??
Unusual number of fixed joints found: 5.  Towers normally have from between 1 and 4 fixed joints. ??
The model has 64 warnings.  ??

Member check option: ASCE 10
Connection rupture check: ASCE 10
Crossing diagonal check: ASCE 10  [Alternate Unsupported RLOUT = 1]
Included angle check: None

Loads from file: j:\jobs\1300300.wi\co2 - ct33xc528 southington\calcs\pls tower\cl&p # 653.lca
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*** Analysis Results:

Maximum element usage is 94.11% for Angle "g55P" in load case "NESC Extreme"
Maximum insulator usage is 16.19% for Clamp "14" in load case "NESC Heavy"

Summary of Joint Support Reactions For All Load Cases:

Load Case	Joint Label	Long. Force (kips)	Tran. Force (kips)	Vert. Force (kips)	Shear Force (kips)	Tran. Moment (ft-k)	Long. Moment (ft-k)	Vert. Moment (ft-k)	Bending Moment (ft-k)	Found. Usage %
NESC Heavy	9P	-13.36	-10.29	59.06	16.86	0.07	-0.02	0.01	0.07	0.00
NESC Heavy	23P	-0.02	-0.39	18.12	0.39	2.38	-0.19	-0.03	2.39	0.00
NESC Heavy	9X	9.77	-6.73	-41.75	11.87	0.07	0.03	0.01	0.07	0.00
NESC Heavy	9XY	-9.92	-6.57	-42.27	11.90	-0.02	-0.03	0.04	0.04	0.00
NESC Heavy	9Y	13.53	-9.66	57.47	16.62	0.14	0.03	-0.04	0.14	0.00
NESC Extreme	9P	-13.93	-12.44	61.53	18.67	0.13	-0.03	0.02	0.14	0.00
NESC Extreme	23P	-0.03	-0.61	6.92	0.61	3.40	-0.30	-0.10	3.41	0.00
NESC Extreme	9X	11.63	-10.35	-51.03	15.57	0.12	0.03	0.01	0.12	0.00
NESC Extreme	9XY	-11.98	-9.53	-50.61	15.31	-0.09	-0.04	0.09	0.10	0.00
NESC Extreme	9Y	14.31	-11.94	61.20	18.63	0.30	0.03	-0.12	0.31	0.00

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

Load Case	Support Joint	Origin Joint	Leg Member	Force In Leg Dir. (kips)	Residual Shear Perpendicular To Leg (kips)	Residual Shear Horizontal To Leg - Res. (kips)	Residual Shear Horizontal To Leg - Long. (kips)	Residual Shear Horizontal To Leg - Tran. (kips)	Total Long. Force (kips)	Total Tran. Force (kips)	Total Vert. Force (kips)
NESC Heavy	9P	15S	g14P	61.294	3.981	4.051	3.954	0.880	-13.36	-10.29	59.06
NESC Heavy	9X	15X	g14X	-43.291	3.084	3.124	-3.122	0.085	9.77	-6.73	-41.75
NESC Heavy	9XY	15XY	g14XY	-43.795	3.155	3.190	3.186	-0.161	-9.92	-6.57	-42.27
NESC Heavy	9Y	15Y	g14Y	59.667	4.336	4.402	-4.373	0.509	13.53	-9.66	57.47
NESC Extreme	9P	15S	g14P	64.124	4.782	4.896	4.124	2.639	-13.93	-12.44	61.53
NESC Extreme	9X	15X	g14X	-53.197	4.056	4.152	-3.506	2.224	11.63	-10.35	-51.03
NESC Extreme	9XY	15XY	g14XY	-52.716	4.104	4.189	3.922	1.471	-11.98	-9.53	-50.61
NESC Extreme	9Y	15Y	g14Y	63.779	4.946	5.055	-4.557	2.188	14.31	-11.94	61.20

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	115.000	64.000	53	178	0.00	5.91	139.984	0.00	5.91	451.809
2	64.000	0.000	34	101	5.91	26.30	1030.766	5.91	26.30	1030.766

*** 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	Max Usage	Max Use	Comp. Control	Comp. Force	Comp. Control	L/R	Comp. Capacity	Comp. Connect.	RLX Connect.	RLY	RLZ	L/R	KL/R	Length	Curve No.

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Comp.   No.    Of
                                                            In  Member          Load          Shear  Bearing
Member        Bolts
                                                         Comp.                  Case        Capacity Capacity
Comp.
                                                  (ksi)    %     %        (kips)        (kips)   (kips)    (kips)
(ft)
------------------------------------------------------------------------------------------------------------------
---------------------
     Leg1     L2.5x2x3/16   SAU     2.5X2X0.1875    33.0 23.78 23.78  Fg163Y  -5.307NESC Hea   22.318    0.000    0.000 1.000 1.000 1.000   75.67
75.67  2.693      1     0
     Leg2       L4x4x5/16   SAE       4X4X0.3125    33.0 77.11 73.59     g6P -49.231NESC Hea   67.346   66.900  105.469 1.000 1.000 1.000   72.06
72.06  4.750      1     6
     Leg3       L4x4x7/16   SAE       4X4X0.4375    33.0 87.90 87.90    g11P -58.805NESC Hea   81.399   66.900  147.656 1.000 1.000 1.000   94.02
94.02  6.150      1     6
     Leg4        L5x5x3/8   SAE        5X5X0.375    33.0 66.60 66.60    g13P -50.746NESC Hea   76.191   89.200  168.750 0.500 0.500 0.500 111.82
111.82 18.451      1     8
     Leg5        L5x5x3/8   SAE        6X6X0.375    33.0 62.87 62.87    g14P -56.084NESC Ext   99.568   89.200  168.750 0.500 0.500 0.500 103.37
103.37 20.501      1     8
    Diag1 L1.75x1.75x3/16   SAE 1.75X1.75X0.1875    33.0 56.54 48.50    g19X  -6.993NESC Hea   14.418   22.300   21.094 0.750 0.500 0.500   94.96
101.22  5.429      2     2
    Diag2       L3x2x1/4    SAU          3X2X0.25    33.0 29.65 29.65    g23X  -8.082NESC Hea   27.255   33.450   42.187 0.500 0.750 0.500   97.37
103.03  6.210      2     3
    Diag3    L2.5x2.5x1/4   SAE     2.5X2.5X0.25    33.0 34.27 34.27    g25X -10.753NESC Hea   31.380   33.450   42.187 0.750 0.500 0.500   71.32
83.49  5.836      2     3
    Diag4       L2x2x1/4    SAE          2X2X0.25    33.0 72.67 72.67    g28P  -9.804NESC Hea   13.492   22.300   28.125 1.000 0.599 0.599 154.49
141.21  7.840      6     2
    Diag5       L2x2x3/16   SAE        2X2X0.1875    33.0 62.89 62.89    g30P  -4.951NESC Hea    7.873   22.300   21.094 1.000 0.578 0.578 186.12
160.66  9.570      6     2
    Diag6 L2.25x2.25x3/16   SAE 2.25X2.25X0.1875    33.0 24.01 24.01    g33Y  -1.620NESC Hea    6.750   11.150   10.547 0.772 0.545 0.545 185.21
185.21 12.574      4     1
    Diag7 L2.75x2.75x3/16   SAE 2.75X2.75X0.1875    33.0 15.20 15.20    g35Y  -1.375NESC Hea    9.044   11.150   10.547 0.772 0.543 0.543 177.54
177.54 14.877      4     1
    Diag8     L2x1.5x3/16   SAU      2X1.5X0.1875    33.0  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
    Diag9     L2.5x2x1/4    SAU       2.5X2X0.25    33.0  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
    Horz1       Bar2x1/4    Bar            2x1/4    33.0  8.99  0.00    g42Y   0.000            0.324   11.150    0.000 1.000 1.000 1.000 664.82
664.82  4.000      4     1
    Horz2       L2x2x3/16   SAE        2X2X0.1875    33.0 82.12 46.91    g45X  -4.947NESC Hea   13.406   11.150   10.547 1.000 1.000 1.000 121.83
121.83  4.000      4     1
    Horz3       L3x3x1/4    SAE          3X3X0.25    33.0 75.91 68.97    g49X  -7.690NESC Hea   27.824   11.150   14.062 1.000 1.000 1.000 119.83
119.91  5.911      3     1
    Horz4       L3x2x1/4    SAU          3X2X0.25    33.0 75.60 69.20    g53X  -6.149NESC Ext    8.886   11.150   14.062 1.000 0.500 0.500 195.78
195.78 14.194      4     1 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize
moments): g92P Fg9293P  ??
    Horz5       L4x3x1/4    SAU          4X3X0.25    33.0 94.11 82.89    g55X  -9.242NESC Ext   13.858   11.150   14.062 1.000 0.500 0.500 186.83
186.83 19.929      4     1
   Inner1 L1.75x1.75x3/16   SAE 1.75X1.75X0.1875    33.0 24.11 10.95    g56P  -1.155NESC Ext   13.392   11.150   10.547 0.750 0.500 0.500   98.95
109.48  5.657      3     1
   Inner2       L3x3x1/4    SAE          3X3X0.25    33.0  2.50  0.00    g60X   0.000           33.167   11.150   14.062 0.750 0.500 0.500   84.73
102.36  8.360      3     1
   Inner3       L2x2x3/16   SAE        2X2X0.1875    33.0  2.94  0.90    g61P  -0.062NESC Ext    6.877   11.150   10.547 0.750 0.500 0.500 171.91
171.91 11.288      4     1
   Inner4     L2x1.5x3/16   SAU      2X1.5X0.1875    33.0  5.12  0.00    g62X   0.000            1.053   11.150   10.547 0.500 0.750 0.500 410.60
410.60 20.074      4     1
   Inner5     L2.5x2x1/4    SAU       2.5X2X0.25    33.0  5.27  0.00    g63X   0.000            1.653   11.150   14.062 0.500 0.750 0.500 428.46
428.46 28.183      4     1
  ShieldAr    LL2.5x2x3/16   DAL     2.5X2X0.1875    33.0 33.18  8.64    g67P  -0.963NESC Hea   22.436   11.150   21.094 1.000 1.000 1.000 143.76
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143.76  9.500      4      1
  ShArmBr    L3.5x2.5x1/4   SAU      3.5X2.5X0.25        33.0  7.21  7.21     g78P  -0.804NESC Hea   27.650    11.150    14.062 1.000 0.500 0.500 120.44
120.44 10.920      4      1
  TopArm1    L2.5x2.5x1/4   SAE      2.5X2.5X0.25        33.0  9.38  9.38     g69Y  -2.091NESC Hea   27.013    22.300    28.125 1.000 1.000 1.000  88.12
104.06  3.606      3      2
  TopArm2          C6x8.2   CHA             6x8.2        33.0  2.19  0.00     g71Y   0.000             50.816    44.600    45.000 1.000 0.500 0.500 103.01
111.51  9.220      3      4
  TopArmBr      Bar2x3/16   Bar            2x3/16        33.0 51.32  0.00     g81P   0.000             18.481    11.150    10.547 1.000 1.000 1.000 123.55
123.55 10.296      4      1
  MidArm1    L3.5x2.5x1/4   SAU      3.5X2.5X0.25        33.0  2.92  2.92     g72P  -0.651NESC Ext   27.983    22.300    28.125 0.500 1.000 0.500 118.86
119.43  7.280      3      2
  MidArm2          C6x8.2   CHA             6x8.2        33.0  7.00  7.00     g74Y  -0.754NESC Hea   10.768    44.600    45.000 0.330 1.000 0.330 293.92
252.57 13.153      5      4
  MidArmBr      Bar2x3/16   Bar            2x3/16        33.0 26.61  3.13     g82Y  -0.330NESC Ext   22.835    11.150    10.547 1.000 1.000 1.000  97.83
103.38  8.153      2      1
  BotArm1    L2.5x2.5x1/4   SAE      2.5X2.5X0.25        33.0  9.81  9.81     g75P  -2.187NESC Hea   27.013    22.300    28.125 1.000 1.000 1.000  88.12
104.06  3.606      3      2
  BotArm2          C6x8.2   CHA             6x8.2        33.0  1.13  0.00     g77Y   0.000             19.943    44.600    45.000 0.500 1.000 0.500 206.02
185.59  9.220      5      4
  BotArmBr      Bar2x3/16   Bar            2x3/16        33.0 13.90  0.00     g85Y   0.000             18.267    11.150    10.547 1.000 1.000 1.000 124.45
124.45 10.371      4      1
    Pwmnt    12" Std. Pipe Pwmnt    Pipe 12" Std.       42.0  3.45  3.45     g88P -12.625NESC Hea  365.454     0.000     0.000 1.000 1.000 1.000  99.09
99.09 36.250       1      0
    PMBR1       L2x2x3/16   SAE       2X2X0.1875         36.0 35.86 35.20    g102X  -3.589NESC Ext   18.450    16.800    10.195 1.000 1.000 1.000  68.10
94.05  2.236       3      1 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize
moments): g102P  ??
    PMBR2    L3.5x3.5x1/4   SAE      3.5X3.5X0.25        36.0  4.67  4.67    g110X  -0.421NESC Hea    9.006    16.800    13.594 1.000 1.000 1.000 231.76
231.76 13.403      4      1
    PMBR3       L4x4x1/4    SAE          4X4X0.25        36.0  0.09  0.09    g111P  -0.012NESC Ext   20.273    16.800    13.594 1.000 1.000 1.000 165.50
165.50 10.964      4      1
   Diag(R)      L4x3x1/4    SAU          4X3X0.25        36.0 35.60 35.60     g38P  -8.759NESC Ext    9.069    22.300    27.187 0.577 0.789 0.577 265.54
230.94 24.966      5      2


Group Summary (Tension Portion):

    Group            Group Angle           Angle     Steel    Max    Max Tension Tension Tension       Net  Tension  Tension  Tension Length    No.    No.
Hole
     Label            Desc.   Type           Size Strength Usage     Use Control    Force Control  Section Connect. Connect. Connect.  Tens.     Of     Of
Diameter
                                                                      In  Member               Load Capacity    Shear  Bearing  Rupture Member Bolts Holes
                                                                   Tens.                       Case         Capacity Capacity Capacity           Tens.
                                                 (ksi)       %       %            (kips)              (kips)   (kips)   (kips)   (kips)    (ft)
 (in)
-----------------------------------------------------------------------------------------------------------------------------------------------------
-------
     Leg1      L2.5x2x3/16    SAU      2.5X2X0.1875      33.0 23.78 14.00 Fg163XY    3.741NESC Hea   26.730    0.000    0.000    0.000  2.693      0 0.000
0
     Leg2        L4x4x5/16    SAE       4X4X0.3125       33.0 77.11 77.11    g6XY   44.178NESC Hea   57.292   66.900  105.469   93.750  4.750      6 3.090
0.6875
     Leg3        L4x4x7/16    SAE       4X4X0.4375       33.0 87.90 73.67   g11XY   49.283NESC Hea   89.378   66.900  147.656  172.265  6.150      6 2.000
0.6875
     Leg4         L5x5x3/8    SAE         5X5X0.375      33.0 66.60 48.98   g13XY   43.688NESC Ext  102.114   89.200  168.750  187.500 18.451      8 2.000
0.6875
     Leg5         L5x5x3/8    SAE         6X6X0.375      33.0 62.87 53.26    g14X   47.506NESC Ext  126.864   89.200  168.750  187.500 20.501      8 2.000
0.6875
    Diag1 L1.75x1.75x3/16    SAE 1.75X1.75X0.1875    33.0 56.54 56.54    g19P    7.026NESC Hea   14.585   22.300   21.094   12.428  5.429      2 1.000
0.6875
    Diag2         L3x2x1/4    SAU          3X2X0.25      33.0 29.65 24.44    g21P    6.805NESC Hea   27.839   33.450   42.187   32.812  6.210      3 1.470
```

0.6875

Diag3	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	34.27	31.09	g25P	9.400NESC Hea	30.238	33.450	42.187	32.812	5.836	3	1.000	0.6875
Diag4	L2x2x1/4	SAE	2X2X0.25	33.0	72.67	39.34	g28X	8.607NESC Hea	22.813	22.300	28.125	21.875	7.840	2	1.000	0.6875
Diag5	L2x2x3/16	SAE	2X2X0.1875	33.0	62.89	36.63	g66XY	2.801NESC Hea	17.258	11.150	10.547	7.646	4.822	1	1.000	0.6875
Diag6	L2.25x2.25x3/16	SAE	2.25X2.25X0.1875	33.0	24.01	18.89	g33XY	1.549NESC Hea	20.199	11.150	10.547	8.203	12.574	1	1.000	0.6875
Diag7	L2.75x2.75x3/16	SAE	2.75X2.75X0.1875	33.0	15.20	13.19	g35XY	1.082NESC Hea	25.753	11.150	10.547	8.203	14.877	1	1.000	0.6875
Diag8	L2x1.5x3/16	SAU	2X1.5X0.1875	33.0	0.00	0.00		0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0
Diag9	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	0.00	0.00		0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0
Horz1	Bar2x1/4	Bar	2x1/4	33.0	8.99	8.99	g42P	1.002NESC Hea	14.850	11.150	0.000	0.000	4.000	1	1.000	0.6875
Horz2	L2x2x3/16	SAE	2X2X0.1875	33.0	82.12	82.12	g45P	6.279NESC Hea	17.258	11.150	10.547	7.646	4.000	1	1.000	0.6875
Horz3	L3x3x1/4	SAE	3X3X0.25	33.0	75.91	75.91	g49P	8.303NESC Hea	37.663	11.150	14.062	10.937	5.911	1	1.000	0.6875
Horz4	L3x2x1/4	SAU	3X2X0.25	33.0	75.60	75.60	g53P	6.928NESC Hea	22.813	11.150	14.062	9.164	14.194	1	1.000	0.6875

A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g92P Fg9293P ??

Horz5	L4x3x1/4	SAU	4X3X0.25	33.0	94.11	94.11	g55P	10.293NESC Ext	37.663	11.150	14.062	10.937	19.929	1	1.000	0.6875
Inner1	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	33.0	24.11	24.11	g56X	1.470NESC Ext	14.585	11.150	10.547	6.100	5.657	1	1.000	0.6875
Inner2	L3x3x1/4	SAE	3X3X0.25	33.0	2.50	2.50	g60X	0.273NESC Hea	37.663	11.150	14.062	10.937	8.360	1	1.000	0.6875
Inner3	L2x2x3/16	SAE	2X2X0.1875	33.0	2.94	2.94	g61X	0.225NESC Ext	17.258	11.150	10.547	7.646	11.288	1	1.000	0.6875
Inner4	L2x1.5x3/16	SAU	2X1.5X0.1875	33.0	5.12	5.12	g62X	0.392NESC Hea	14.585	11.150	10.547	7.646	20.074	1	1.000	0.6875
Inner5	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	5.27	5.27	g63X	0.577NESC Ext	26.377	11.150	14.062	10.937	28.183	1	1.000	0.6875
ShieldAr	LL2.5x2x3/16	DAL	2.5X2X0.1875	33.0	33.18	33.18	g67X	3.700NESC Hea	38.717	11.150	21.094	17.121	9.500	1	1.000	0.6875
ShArmBr	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	33.0	7.21	0.00	g79Y	0.000	37.663	11.150	14.062	14.706	10.920	1	1.000	0.6875
TopArm1	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	9.38	1.63	g70P	0.338NESC Ext	30.238	22.300	28.125	20.695	4.000	2	1.000	0.6875
TopArm2	C6x8.2	CHA	6X8.2	33.0	2.19	2.19	g71Y	0.931NESC Hea	63.112	44.600	45.000	42.500	9.220	4	2.000	0.6875
TopArmBr	Bar2x3/16	Bar	2x3/16	33.0	51.32	51.32	g81P	4.357NESC Hea	25.871	11.150	10.547	8.490	10.296	1	1.000	0.6875
MidArm1	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	33.0	2.92	1.01	g72Y	0.220NESC Ext	37.663	22.300	28.125	21.875	7.280	2	1.000	0.6875
MidArm2	C6x8.2	CHA	6X8.2	33.0	7.00	0.79	g74P	0.352NESC Ext	66.788	44.600	45.000	45.000	13.153	4	1.100	0.6875
MidArmBr	Bar2x3/16	Bar	2x3/16	33.0	26.61	26.61	g83Y	2.260NESC Hea	25.871	11.150	10.547	8.490	13.655	1	1.000	0.6875
BotArm1	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	9.81	0.87	g76P	0.194NESC Ext	30.238	22.300	28.125	22.852	4.000	2	1.000	0.6875
BotArm2	C6x8.2	CHA	6X8.2	33.0	1.13	1.13	g77P	0.506NESC Ext	67.196	44.600	45.000	54.206	9.220	4	1.000	0.6875
BotArmBr	Bar2x3/16	Bar	2x3/16	33.0	13.90	13.90	g85Y	1.180NESC Hea	25.871	11.150	10.547	8.490	10.371	1	1.000	0.6875
Pwmnt	12" Std. Pipe Pwmnt		Pipe 12" Std.	42.0	3.45	0.00	g91P	0.000	571.199	0.000	0.000	0.000	20.250	0	0.000	

```
0
   PMBR1       L2x2x3/16   SAE      2X2X0.1875    36.0 35.86 35.86   g102P   3.656NESC Ext   18.827   16.800   10.195   10.343  2.236     1 1.000
0.6875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g102P  ??
   PMBR2    L3.5x3.5x1/4   SAE    3.5X3.5X0.25    36.0  4.67  3.20   g110P   0.435NESC Hea   49.187   16.800   13.594   15.104 13.403     1 1.000
0.6875
   PMBR3        L4x4x1/4   SAE        4X4X0.25    36.0  0.09  0.00   g111P   0.000           57.287   16.800   13.594   15.104 10.964     1 1.000
0.6875
  Diag(R)       L4x3x1/4   SAU        4X3X0.25    36.0 35.60 35.11    g38X   7.425NESC Ext   49.187   22.300   27.187   21.146 24.966     2 1.000
0.6875
```

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	90.83	g55P	Angle
NESC Extreme	94.11	g55P	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	4.84	NESC Heavy	0.0
2	Clamp	4.94	NESC Heavy	0.0
3	Clamp	6.04	NESC Heavy	0.0
4	Clamp	12.04	NESC Heavy	0.0
5	Clamp	0.37	NESC Extreme	0.0
6	Clamp	6.12	NESC Heavy	0.0
7	Clamp	6.07	NESC Heavy	0.0
8	Clamp	6.07	NESC Heavy	0.0
9	Clamp	4.26	NESC Heavy	0.0
10	Clamp	5.57	NESC Heavy	0.0
11	Clamp	4.44	NESC Heavy	0.0
12	Clamp	1.87	NESC Heavy	0.0
13	Clamp	2.85	NESC Heavy	0.0
14	Clamp	16.19	NESC Heavy	0.0
15	Clamp	3.24	NESC Extreme	0.0
16	Clamp	1.50	NESC Extreme	0.0
17	Clamp	1.82	NESC Extreme	0.0
18	Clamp	3.27	NESC Extreme	0.0
19	Clamp	3.34	NESC Extreme	0.0
20	Clamp	5.38	NESC Heavy	0.0

*** Weight of structure (lbs):
Weight of Angles*Section DLF: 19608.3
Total: 19608.3

*** End of Report

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

Project Name : 13003.CO2 - Southington, CT
Project Notes: CL&P Structure #653 / Sprint - CT33XC528
Project File : J:\Jobs\1300300.WI\CO2 - CT33XC528 Southington\Calcs\PLS Tower\CL&P # 653.tow
Date run     : 3:12:51 PM Thursday, May 09, 2013
by           : Tower Version 11.11
Licensed to  : Centek Engineering Inc

Successfully performed nonlinear analysis

Member "g6P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g6X" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g6XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g6Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "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. ??
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. ??
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. ??
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. ??
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 "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
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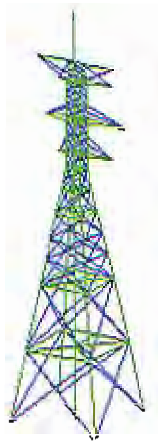
and spacing distances will be checked. ??
Member "g23XY" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g23Y" will not be checked for block shear since more than 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. ??
KL/R value of 230.94 exceeds maximum of 200.00 for member "g37P" ??
KL/R value of 230.94 exceeds maximum of 200.00 for member "g37X" ??
KL/R value of 230.94 exceeds maximum of 200.00 for member "g37XY" ??
KL/R value of 230.94 exceeds maximum of 200.00 for member "g37Y" ??
KL/R value of 230.94 exceeds maximum of 200.00 for member "g38P" ??
KL/R value of 230.94 exceeds maximum of 200.00 for member "g38X" ??
KL/R value of 230.94 exceeds maximum of 200.00 for member "g38XY" ??
KL/R value of 230.94 exceeds maximum of 200.00 for member "g38Y" ??
KL/R value of 279.39 exceeds maximum of 200.00 for member "g39P" ??
KL/R value of 279.39 exceeds maximum of 200.00 for member "g39X" ??
KL/R value of 279.39 exceeds maximum of 200.00 for member "g39XY" ??
KL/R value of 279.39 exceeds maximum of 200.00 for member "g39Y" ??
KL/R value of 279.39 exceeds maximum of 200.00 for member "g40P" ??
KL/R value of 279.39 exceeds maximum of 200.00 for member "g40X" ??
KL/R value of 279.39 exceeds maximum of 200.00 for member "g40XY" ??
KL/R value of 279.39 exceeds maximum of 200.00 for member "g40Y" ??
KL/R value of 664.82 exceeds maximum of 200.00 for member "g41P" ??
KL/R value of 664.82 exceeds maximum of 200.00 for member "g41Y" ??
KL/R value of 664.82 exceeds maximum of 200.00 for member "g42P" ??
KL/R value of 664.82 exceeds maximum of 200.00 for member "g42Y" ??
KL/R value of 410.60 exceeds maximum of 200.00 for member "g62P" ??
KL/R value of 410.60 exceeds maximum of 200.00 for member "g62X" ??
KL/R value of 428.46 exceeds maximum of 200.00 for member "g63P" ??
KL/R value of 428.46 exceeds maximum of 200.00 for member "g63X" ??
Member "g71P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g71Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g72P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g72Y" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "g73P" will not be checked for block 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 252.57 exceeds maximum of 200.00 for member "g74P" ??
KL/R value of 252.57 exceeds maximum of 200.00 for member "g74Y" ??
Member "g95P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge
and spacing distances will be checked. ??
Member "Fg9599P" will not be checked for block 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 231.76 exceeds maximum of 200.00 for member "g110P" ??
KL/R value of 231.76 exceeds maximum of 200.00 for member "g110X" ??
Unusual number of fixed joints found: 5.  Towers normally have from between 1 and 4 fixed joints. ??
The model has 64 warnings.  ??
```



Nonlinear convergence parameters: Use Standard Parameters
Member check option: ASCE 10
Connection rupture check: ASCE 10
Crossing diagonal check: ASCE 10 [Alternate Unsupported RLOUT = 1]
Included angle check: None

Joints Geometry:

Joint Label	Symmetry Code	X Coord. (ft)	Y Coord. (ft)	Z Coord. (ft)	X Disp. Rest.	Y Disp. Rest.	Z Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.
1P	X-Symmetry	0	2	99.75	Free	Free	Free	Free	Free	Free
2P	XY-Symmetry	2	2	94.75	Free	Free	Free	Free	Free	Free
3P	XY-Symmetry	2	2	91.08	Free	Free	Free	Free	Free	Free
4P	XY-Symmetry	2	2	87.42	Free	Free	Free	Free	Free	Free
5P	XY-Symmetry	2	2	83.75	Free	Free	Free	Free	Free	Free
6P	XY-Symmetry	2	2	79	Free	Free	Free	Free	Free	Free
7P	XY-Symmetry	2	2	74.25	Free	Free	Free	Free	Free	Free
8P	XY-Symmetry	2	2	70	Free	Free	Free	Free	Free	Free
9P	XY-Symmetry	13.15	13.15	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
16P	X-Symmetry	0	11.5	99.75	Free	Free	Free	Free	Free	Free
17P	None	0	-5	94.75	Free	Free	Free	Free	Free	Free
18P	None	0	11	94.75	Free	Free	Free	Free	Free	Free
19P	None	0	-9	83.75	Free	Free	Free	Free	Free	Free
20P	None	0	15	83.75	Free	Free	Free	Free	Free	Free
21P	None	0	-5	74.25	Free	Free	Free	Free	Free	Free
22P	None	0	11	74.25	Free	Free	Free	Free	Free	Free
23P	None	1	0	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
24P	None	1	0	20	Free	Free	Free	Free	Free	Free
25P	None	1	0	38	Free	Free	Free	Free	Free	Free
26P	None	1	0	74.25	Free	Free	Free	Free	Free	Free
27P	None	1	0	83.75	Free	Free	Free	Free	Free	Free
28P	None	1	0	94.75	Free	Free	Free	Free	Free	Free
29P	None	1	0	115	Free	Free	Free	Free	Free	Free
1X	X-Gen	0	-2	99.75	Free	Free	Free	Free	Free	Free
2X	X-GenXY	2	-2	94.75	Free	Free	Free	Free	Free	Free

2XY	XY-GenXY	-2	-2	94.75	Free	Free	Free	Free	Free	Free
2Y	Y-GenXY	-2	2	94.75	Free	Free	Free	Free	Free	Free
3X	X-GenXY	2	-2	91.08	Free	Free	Free	Free	Free	Free
3XY	XY-GenXY	-2	-2	91.08	Free	Free	Free	Free	Free	Free
3Y	Y-GenXY	-2	2	91.08	Free	Free	Free	Free	Free	Free
4X	X-GenXY	2	-2	87.42	Free	Free	Free	Free	Free	Free
4XY	XY-GenXY	-2	-2	87.42	Free	Free	Free	Free	Free	Free
4Y	Y-GenXY	-2	2	87.42	Free	Free	Free	Free	Free	Free
5X	X-GenXY	2	-2	83.75	Free	Free	Free	Free	Free	Free
5XY	XY-GenXY	-2	-2	83.75	Free	Free	Free	Free	Free	Free
5Y	Y-GenXY	-2	2	83.75	Free	Free	Free	Free	Free	Free
6X	X-GenXY	2	-2	79	Free	Free	Free	Free	Free	Free
6XY	XY-GenXY	-2	-2	79	Free	Free	Free	Free	Free	Free
6Y	Y-GenXY	-2	2	79	Free	Free	Free	Free	Free	Free
7X	X-GenXY	2	-2	74.25	Free	Free	Free	Free	Free	Free
7XY	XY-GenXY	-2	-2	74.25	Free	Free	Free	Free	Free	Free
7Y	Y-GenXY	-2	2	74.25	Free	Free	Free	Free	Free	Free
8X	X-GenXY	2	-2	70	Free	Free	Free	Free	Free	Free
8XY	XY-GenXY	-2	-2	70	Free	Free	Free	Free	Free	Free
8Y	Y-GenXY	-2	2	70	Free	Free	Free	Free	Free	Free
9X	X-GenXY	13.15	-13.15	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
9XY	XY-GenXY	-13.15	-13.15	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
9Y	Y-GenXY	-13.15	13.15	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
16X	X-Gen	0	-11.5	99.75	Free	Free	Free	Free	Free	Free

Secondary Joints:

Joint Label	Symmetry Code	Origin Joint	End Joint	Fraction	Elevation (ft)	X Disp. Rest.	Y Disp. Rest.	Z Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.
10S	XY-Symmetry	8P	9P	0	64	Free	Free	Free	Free	Free	Free
11S	XY-Symmetry	8P	9P	0	57.5	Free	Free	Free	Free	Free	Free
12S	XY-Symmetry	8P	9P	0	51	Free	Free	Free	Free	Free	Free
13S	XY-Symmetry	8P	9P	0	45	Free	Free	Free	Free	Free	Free
14S	XY-Symmetry	8P	9P	0	38	Free	Free	Free	Free	Free	Free
15S	XY-Symmetry	8P	9P	0	20	Free	Free	Free	Free	Free	Free
1PF0.50S	XY-Symmetry	1P	2P	0.5	0	Free	Free	Free	Free	Free	Free
14XYF0.50S	None	14XY	14Y	0.5	0	Free	Free	Free	Free	Free	Free
15XYF0.50S	None	15XY	15Y	0.5	0	Free	Free	Free	Free	Free	Free
2XYF0.50S	None	2XY	2Y	0.5	0	Free	Free	Free	Free	Free	Free
5XYF0.50S	None	5XY	5Y	0.5	0	Free	Free	Free	Free	Free	Free
7XYF0.50S	None	7XY	7Y	0.5	0	Free	Free	Free	Free	Free	Free
10X	X-GenXY	8P	9P	0	64	Free	Free	Free	Free	Free	Free
10XY	XY-GenXY	8P	9P	0	64	Free	Free	Free	Free	Free	Free
10Y	Y-GenXY	8P	9P	0	64	Free	Free	Free	Free	Free	Free
11X	X-GenXY	8P	9P	0	57.5	Free	Free	Free	Free	Free	Free
11XY	XY-GenXY	8P	9P	0	57.5	Free	Free	Free	Free	Free	Free
11Y	Y-GenXY	8P	9P	0	57.5	Free	Free	Free	Free	Free	Free
12X	X-GenXY	8P	9P	0	51	Free	Free	Free	Free	Free	Free
12XY	XY-GenXY	8P	9P	0	51	Free	Free	Free	Free	Free	Free
12Y	Y-GenXY	8P	9P	0	51	Free	Free	Free	Free	Free	Free
13X	X-GenXY	8P	9P	0	45	Free	Free	Free	Free	Free	Free
13XY	XY-GenXY	8P	9P	0	45	Free	Free	Free	Free	Free	Free
13Y	Y-GenXY	8P	9P	0	45	Free	Free	Free	Free	Free	Free
14X	X-GenXY	8P	9P	0	38	Free	Free	Free	Free	Free	Free
14XY	XY-GenXY	8P	9P	0	38	Free	Free	Free	Free	Free	Free
14Y	Y-GenXY	8P	9P	0	38	Free	Free	Free	Free	Free	Free
15X	X-GenXY	8P	9P	0	20	Free	Free	Free	Free	Free	Free

15XY	XY-GenXY	8P	9P	0	20	Free	Free	Free	Free	Free	Free
15Y	Y-GenXY	8P	9P	0	20	Free	Free	Free	Free	Free	Free
1PF0.50X	X-GenXY	1P	2P	0.5	0	Free	Free	Free	Free	Free	Free
1PF0.50XY	XY-GenXY	1P	2P	0.5	0	Free	Free	Free	Free	Free	Free
1PF0.50Y	Y-GenXY	1P	2P	0.5	0	Free	Free	Free	Free	Free	Free

The model contains 49 primary and 33 secondary joints for a total of 82 joints.

Steel Material Properties:

Steel Material Label	Modulus of Elasticity (ksi)	Yield Stress Fy (ksi)	Ultimate Stress Fu (ksi)	Member Stress All. Hyp. 1 (ksi)	Member Stress All. Hyp. 2 (ksi)	Member Rupture Hyp. 1 (ksi)	Member Rupture Hyp. 2 (ksi)	Member Bearing Hyp. 1 (ksi)	Member Bearing Hyp. 2 (ksi)
A 36	2.9e+004	36	58	0	0	0	0	0	0
A7	2.9e+004	33	60	0	0	0	0	0	0
A500-42	2.9e+004	42	58	0	0	0	0	0	0

Bolt Properties:

Bolt Label	Bolt Diameter (in)	Hole Diameter (in)	Ultimate Shear Capacity (kips)	Default End Distance (in)	Default Bolt Spacing (in)	Shear Capacity Hyp. 1 (kips)	Shear Capacity Hyp. 2 (kips)
5/8 A394 TYPEO N	0.625	0.6875	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 TYPEO N	449
5/8 A325	15

Angle Properties:

Angle Type	Angle Size	Long Leg (in)	Short Leg (in)	Thick. (in)	Unit Weight (lbs/ft)	Gross Area (in^2)	w/t Ratio	Radius of Gyration Rx (in)	Radius of Gyration Ry (in)	Radius of Gyration Rz (in)	Number of Angles	Wind Width (in)	Short Edge Dist. (in)	Long Edge Dist. (in)	Optimize Cost Factor	Section Modulus (in^3)
SAE	6X6X0.375	6	6	0.375	14.9	4.36	13.67	1.88	1.88	1.19	1	6	3	0	1.0000	0
SAE	5X5X0.375	5	5	0.375	12.3	3.61	11	1.56	1.56	0.99	1	5	2.5	0	1.0000	0
SAE	4X4X0.4375	4	4	0.4375	11.3	3.31	7.29	1.23	1.23	0.785	1	4	2	0	1.0000	0
SAE	4X4X0.3125	4	4	0.3125	8.2	2.4	10.6	1.24	1.24	0.791	1	4	2	0	1.0000	0
SAE	4X4X0.25	4	4	0.25	6.6	1.94	13.5	1.25	1.25	0.795	1	4	2	0	1.0000	0
SAE	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	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	2X2X0.25	2	2	0.25	3.19	0.94	5	0.609	0.609	0.391	1	2	1	0	1.0000	0
SAE	2X2X0.1875	2	2	0.1875	2.44	0.71	8	0.617	0.617	0.394	1	2	1	0	1.0000	0
SAE	1.75X1.75X0.1875	1.75	1.75	0.1875	2.12	0.62	6	0.537	0.537	0.343	1	1.75	0.875	0	1.0000	0
SAU	4X3X0.25	4	3	0.25	5.8	1.69	13.25	1.28	0.896	0.651	1	4	1.5	0	1.0000	0
SAU	3.5X2.5X0.25	3.5	2.5	0.25	4.9	1.44	11.25	1.12	0.735	0.544	1	3.5	1.25	0	1.0000	0
SAU	3X2X0.25	3	2	0.25	4.1	1.19	9.75	0.957	0.574	0.435	1	3	1	0	1.0000	0
SAU	2.5X2X0.25	2.5	2	0.25	3.62	1.06	7.75	0.784	0.592	0.424	1	2.5	1	0	1.0000	0

SAU	2.5X2X0.1875	2.5	2	0.1875	2.75	0.81	10.67	0.793	0.6	0.427	1	2.5	1	0	1.0000	0
SAU	2X1.5X0.1875	2	1.5	0.1875	2.12	0.62	8.33	0.632	0.44	0.322	1	2	0.75	0	1.0000	0
DAL	2.5X2X0.1875	2.5	2	0.1875	5.5	1.62	10.67	0.793	0.923	0.793	2	2.5	1	0	1.0000	0
CHA	6X8.2	6	1.9	0.2	8.2	2.4	9.1	2.34	0.537	0.537	1	6	0	0	1.0000	0
Bar	2x3/16	2	0	0.1875	1.28	1	3	1	1	1	1	2	0	0	0.0000	0
SAE	2.25X2.25X0.1875	2.25	2.25	0.1875	2.75	0.809	9.5	0.698	0.698	0.444	1	2.25	1	0	1.0000	0
SAE	2.75X2.75X0.1875	2.75	2.75	0.1875	3.39	0.996	12.33	0.859	0.859	0.546	1	2.75	1.25	0	1.0000	0
Pwmnt	Pipe 12" Std.	12.75	12	0	49.6	13.6	1	4.39	4.39	4.39	1	12.75	0	0	0.0000	0
Bar	2x1/4	2	0.25	0	1.71	0.5	8	0.0722	0.6495	0.6495	1	2	0	0	0.0000	0

Angle Groups:

Group Label	Group Description	Angle Type	Angle Size	Material Type	Element Type		Group Type	Optimize Group	Allow. Angle For Optimize	Add. Width (in)
Leg1	L2.5x2x3/16	SAU	2.5X2X0.1875	A7	Beam		Other	None		0.000
Leg2	L4x4x5/16	SAE	4X4X0.3125	A7	Beam		Leg	None		0.000
Leg3	L4x4x7/16	SAE	4X4X0.4375	A7	Beam		Leg	None		0.000
Leg4	L5x5x3/8	SAE	5X5X0.375	A7	Beam		Leg	None		0.000
Leg5	L5x5x3/8	SAE	6X6X0.375	A7	Beam		Leg	None		0.000
Diag1	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	A7	Truss	Crossing	Diagonal	None		0.000
Diag2	L3x2x1/4	SAU	3X2X0.25	A7	Truss	Crossing	Diagonal	None		0.000
Diag3	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	A7	Truss	Crossing	Diagonal	None		0.000
Diag4	L2x2x1/4	SAE	2X2X0.25	A7	Truss	Crossing	Diagonal	None		0.000
Diag5	L2x2x3/16	SAE	2X2X0.1875	A7	Truss	Crossing	Diagonal	None		0.000
Diag6	L2.25x2.25x3/16	SAE	2.25X2.25X0.1875	A7	Truss	Crossing	Diagonal	None		0.000
Diag7	L2.75x2.75x3/16	SAE	2.75X2.75X0.1875	A7	Truss	Crossing	Diagonal	None		0.000
Diag8	L2x1.5x3/16	SAU	2X1.5X0.1875	A7	T-Only		Other	None		0.000
Diag9	L2.5x2x1/4	SAU	2.5X2X0.25	A7	T-Only		Other	None		0.000
Horz1	Bar2x1/4	Bar	2x1/4	A7	Beam		Other	None		0.000
Horz2	L2x2x3/16	SAE	2X2X0.1875	A7	Beam		Other	None		0.000
Horz3	L3x3x1/4	SAE	3X3X0.25	A7	Beam		Other	None		0.000
Horz4	L3x2x1/4	SAU	3X2X0.25	A7	Beam		Other	None		0.000
Horz5	L4x3x1/4	SAU	4X3X0.25	A7	Beam		Other	None		0.000
Inner1	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	A7	Beam		Other	None		0.000
Inner2	L3x3x1/4	SAE	3X3X0.25	A7	Beam		Other	None		0.000
Inner3	L2x2x3/16	SAE	2X2X0.1875	A7	Beam		Other	None		0.000
Inner4	L2x1.5x3/16	SAU	2X1.5X0.1875	A7	Beam		Other	None		0.000
Inner5	L2.5x2x1/4	SAU	2.5X2X0.25	A7	Beam		Other	None		0.000
ShieldAr	LL2.5x2x3/16	DAL	2.5X2X0.1875	A7	Beam		Other	None		0.000
ShArmBr	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	A7	Truss		Other	None		0.000
TopArm1	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	A7	Beam		Other	None		0.000
TopArm2	C6x8.2	CHA	6X8.2	A7	Beam		Other	None		0.000
TopArmBr	Bar2x3/16	Bar	2x3/16	A7	Truss		Other	None		0.000
MidArm1	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	A7	Beam		Other	None		0.000
MidArm2	C6x8.2	CHA	6X8.2	A7	Beam		Other	None		0.000
MidArmBr	Bar2x3/16	Bar	2x3/16	A7	Truss		Other	None		0.000
BotArm1	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	A7	Beam		Other	None		0.000
BotArm2	C6x8.2	CHA	6X8.2	A7	Beam		Other	None		0.000
BotArmBr	Bar2x3/16	Bar	2x3/16	A7	Truss		Other	None		0.000
Pwmnt	12" Std. Pipe	Pwmnt	Pipe 12" Std.	A500-42	Beam		Other	None		0.000
PMBR1	L2x2x3/16	SAE	2X2X0.1875	A 36	Beam		Other	None		12.000
PMBR2	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	A 36	Beam		Other	None		12.000
PMBR3	L4x4x1/4	SAE	4X4X0.25	A 36	Beam		Other	None		12.000
Diag(R)	L4x3x1/4	SAU	4X3X0.25	A 36	Truss		Other	None		0.000

Site No: CT33XC528

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)
SAU	2.5X2X0.1875	A7	21.54	16.16	59.24
SAE	4X4X0.3125	A7	82.00	109.33	672.40
SAE	4X4X0.4375	A7	119.51	159.34	1350.42
SAE	5X5X0.375	A7	102.51	170.84	1260.82
SAE	6X6X0.375	A7	82.00	164.01	1221.87
SAE	1.75X1.75X0.1875	A7	175.49	102.37	372.03
SAU	3X2X0.25	A7	156.14	130.11	640.15
SAE	2.5X2.5X0.25	A7	77.11	64.26	316.16
SAE	2X2X0.25	A7	62.72	41.82	200.09
SAE	2X2X0.1875	A7	267.02	178.01	651.53
SAE	2.25X2.25X0.1875	A7	100.59	75.44	276.62
SAE	2.75X2.75X0.1875	A7	119.01	109.09	403.45
SAU	4X3X0.25	A 36	445.58	519.84	2584.37
Bar	2x1/4	A7	16.00	6.00	27.36
SAE	3X3X0.25	A7	72.29	72.29	354.24
SAU	4X3X0.25	A7	79.71	93.00	462.34
SAU	2X1.5X0.1875	A7	40.15	23.42	85.11
SAU	2.5X2X0.25	A7	56.37	42.27	204.05
DAL	2.5X2X0.1875	A7	23.00	17.25	126.50
CHA	6X8.2	A7	63.18	83.19	518.11
SAU	3.5X2.5X0.25	A7	66.24	66.24	324.58
Bar	2x3/16	A7	92.41	30.80	118.29
Pwmnt	Pipe 12" Std.	A500-42	115.00	474.38	5704.00
SAE	2X2X0.1875	A 36	22.42	14.94	54.70
SAE	3.5X3.5X0.25	A 36	45.52	53.11	264.01
SAE	4X4X0.25	A 36	19.06	25.42	125.81

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	10S	1.000	3.200	3.200	1.000	1.000	0.000	0.000	1.000	1.000	0.000	0.000	None
2	9P	1.100	3.400	3.400	1.000	1.000	0.000	0.000	1.000	1.000	0.000	0.000	None

Angle Member Connectivity:

Member Label	Group Label	Section Label	Symmetry Code	Origin Joint	End Joint	Ecc. Code	Rest. Code	Ratio RLX	Ratio RLY	Ratio RLZ	Bolt Type	# Bolts	# Bolt Holes	# Shear Planes	Connect Leg	Short Edge Dist. (in)	Long Edge Dist. (in)	End Edge Dist. (in)	Bolt Spacing (in)	Rest. Coef.

g1P	Leg1	XY-Symmetry	1P	1PF0.50S	1	4	1	1	1		0	0	1		0	0	0	0	0
g1X	Leg1	X-GenXY	1X	1PF0.50X	1	4	1	1	1		0	0	1		0	0	0	0	0
g1XY	Leg1	XY-GenXY	1X	1PF0.50XY	1	4	1	1	1		0	0	1		0	0	0	0	0
g1Y	Leg1	Y-GenXY	1P	1PF0.50Y	1	4	1	1	1		0	0	1		0	0	0	0	0
Fg163P	Leg1	XY-Symmetry	1PF0.50S	2P	1	4	1	1	1		0	0	1		0	0	0	0	0
Fg163X	Leg1	X-GenXY	1PF0.50X	2X	1	4	1	1	1		0	0	1		0	0	0	0	0
Fg163XY	Leg1	XY-GenXY	1PF0.50XY	2XY	1	4	1	1	1		0	0	1		0	0	0	0	0
Fg163Y	Leg1	Y-GenXY	1PF0.50Y	2Y	1	4	1	1	1		0	0	1		0	0	0	0	0
g2P	Leg2	XY-Symmetry	2P	3P	1	4	1	1	1		0	0	0		0	0	0	0	0
g2X	Leg2	X-GenXY	2X	3X	1	4	1	1	1		0	0	0		0	0	0	0	0
g2XY	Leg2	XY-GenXY	2XY	3XY	1	4	1	1	1		0	0	0		0	0	0	0	0
g2Y	Leg2	Y-GenXY	2Y	3Y	1	4	1	1	1		0	0	0		0	0	0	0	0
g3P	Leg2	XY-Symmetry	3P	4P	1	4	1	1	1		0	0	0		0	0	0	0	0
g3X	Leg2	X-GenXY	3X	4X	1	4	1	1	1		0	0	0		0	0	0	0	0
g3XY	Leg2	XY-GenXY	3XY	4XY	1	4	1	1	1		0	0	0		0	0	0	0	0
g3Y	Leg2	Y-GenXY	3Y	4Y	1	4	1	1	1		0	0	0		0	0	0	0	0
g4P	Leg2	XY-Symmetry	4P	5P	1	4	1	1	1		0	0	0		0	0	0	0	0
g4X	Leg2	X-GenXY	4X	5X	1	4	1	1	1		0	0	0		0	0	0	0	0
g4XY	Leg2	XY-GenXY	4XY	5XY	1	4	1	1	1		0	0	0		0	0	0	0	0
g4Y	Leg2	Y-GenXY	4Y	5Y	1	4	1	1	1		0	0	0		0	0	0	0	0
g5P	Leg2	XY-Symmetry	5P	6P	1	4	1	1	1		0	0	0		0	0	0	0	0
g5X	Leg2	X-GenXY	5X	6X	1	4	1	1	1		0	0	0		0	0	0	0	0
g5XY	Leg2	XY-GenXY	5XY	6XY	1	4	1	1	1		0	0	0		0	0	0	0	0
g5Y	Leg2	Y-GenXY	5Y	6Y	1	4	1	1	1		0	0	0		0	0	0	0	0
g6P	Leg2	XY-Symmetry	6P	7P	1	4	1	1	1	5/8 A394 TYPE0 N	6	3.09	1	Both	1.5	2.75	1	2.5	0
g6X	Leg2	X-GenXY	6X	7X	1	4	1	1	1	5/8 A394 TYPE0 N	6	3.09	1	Both	1.5	2.75	1	2.5	0
g6XY	Leg2	XY-GenXY	6XY	7XY	1	4	1	1	1	5/8 A394 TYPE0 N	6	3.09	1	Both	1.5	2.75	1	2.5	0
g6Y	Leg2	Y-GenXY	6Y	7Y	1	4	1	1	1	5/8 A394 TYPE0 N	6	3.09	1	Both	1.5	2.75	1	2.5	0
g7P	Leg3	XY-Symmetry	7P	8P	1	4	1	1	1		0	0	0		0	0	0	0	0
g7X	Leg3	X-GenXY	7X	8X	1	4	1	1	1		0	0	0		0				

0 0 0 0

g7XY	Leg3	XY-GenXY	7XY	8XY	1	4	1	1	1		0	0	0		0	0	0	0	0
g7Y	Leg3	Y-GenXY	7Y	8Y	1	4	1	1	1		0	0	0		0	0	0	0	0
g8P	Leg3	XY-Symmetry	8P	10S	1	4	1	1	1		0	0	0		0	0	0	0	0
g8X	Leg3	X-GenXY	8X	10X	1	4	1	1	1		0	0	0		0	0	0	0	0
g8XY	Leg3	XY-GenXY	8XY	10XY	1	4	1	1	1		0	0	0		0	0	0	0	0
g8Y	Leg3	Y-GenXY	8Y	10Y	1	4	1	1	1		0	0	0		0	0	0	0	0
g9P	Leg3	XY-Symmetry	10S	11S	1	4	1	1	1		0	0	0		0	0	0	0	0
g9X	Leg3	X-GenXY	10X	11X	1	4	1	1	1		0	0	0		0	0	0	0	0
g9XY	Leg3	XY-GenXY	10XY	11XY	1	4	1	1	1		0	0	0		0	0	0	0	0
g9Y	Leg3	Y-GenXY	10Y	11Y	1	4	1	1	1		0	0	0		0	0	0	0	0
g10P	Leg3	XY-Symmetry	11S	12S	1	4	1	1	1		0	0	0		0	0	0	0	0
g10X	Leg3	X-GenXY	11X	12X	1	4	1	1	1		0	0	0		0	0	0	0	0
g10XY	Leg3	XY-GenXY	11XY	12XY	1	4	1	1	1		0	0	0		0	0	0	0	0
g10Y	Leg3	Y-GenXY	11Y	12Y	1	4	1	1	1		0	0	0		0	0	0	0	0
g11P	Leg3	XY-Symmetry	12S	13S	1	4	1	1	1	5/8 A394 TYPE0 N	6	2	1	Both	2.125	0	1.3125	2.75	0
g11X	Leg3	X-GenXY	12X	13X	1	4	1	1	1	5/8 A394 TYPE0 N	6	2	1	Both	2.125	0	1.3125	2.75	0
g11XY	Leg3	XY-GenXY	12XY	13XY	1	4	1	1	1	5/8 A394 TYPE0 N	6	2	1	Both	2.125	0	1.3125	2.75	0
g11Y	Leg3	Y-GenXY	12Y	13Y	1	4	1	1	1	5/8 A394 TYPE0 N	6	2	1	Both	2.125	0	1.3125	2.75	0
g12P	Leg4	XY-Symmetry	13S	14S	1	4	1	1	1		0	0	0		0	0	0	0	0
g12X	Leg4	X-GenXY	13X	14X	1	4	1	1	1		0	0	0		0	0	0	0	0
g12XY	Leg4	XY-GenXY	13XY	14XY	1	4	1	1	1		0	0	0		0	0	0	0	0
g12Y	Leg4	Y-GenXY	13Y	14Y	1	4	1	1	1		0	0	0		0	0	0	0	0
g13P	Leg4	XY-Symmetry	14S	15S	1	4	0.5	0.5	0.5	5/8 A394 TYPE0 N	8	2	1	Both	1.25	2.75	1.25	5	0
g13X	Leg4	X-GenXY	14X	15X	1	4	0.5	0.5	0.5	5/8 A394 TYPE0 N	8	2	1	Both	1.25	2.75	1.25	5	0
g13XY	Leg4	XY-GenXY	14XY	15XY	1	4	0.5	0.5	0.5	5/8 A394 TYPE0 N	8	2	1	Both	1.25	2.75	1.25	5	0
g13Y	Leg4	Y-GenXY	14Y	15Y	1	4	0.5	0.5	0.5	5/8 A394 TYPE0 N	8	2	1	Both	1.25	2.75	1.25	5	0
g14P	Leg5	XY-Symmetry	15S	9P	1	4	0.5	0.5	0.5	5/8 A394 TYPE0 N	8	2	1	Both	2	3.5	1.25	5	0
g14X	Leg5	X-GenXY	15X	9X	1	4	0.5	0.5	0.5	5/8 A394 TYPE0 N	8	2	1	Both	2	3.5	1.25	5	0
g14XY	Leg5	XY-GenXY	15XY	9XY	1	4	0.5	0.5	0.5	5/8 A394 TYPE0 N	8	2	1	Both	2	3.5	1.25	5	0

g14Y	Leg5	Y-GenXY	15Y	9Y	1	4	0.5	0.5	0.5	5/8	A394	TYPE0	N	8	2	1	Both		2	3.5	1.25	5	0
g15P	Diag1	XY-Symmetry	2P	3X	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.6875	0
g15X	Diag1	X-GenXY	2X	3P	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.6875	0
g15XY	Diag1	XY-GenXY	2XY	3Y	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.6875	0
g15Y	Diag1	Y-GenXY	2Y	3XY	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.6875	0
g16P	Diag1	XY-Symmetry	2P	3Y	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.6875	0
g16X	Diag1	X-GenXY	2X	3XY	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.6875	0
g16XY	Diag1	XY-GenXY	2XY	3X	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.6875	0
g16Y	Diag1	Y-GenXY	2Y	3P	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.6875	0
g17P	Diag1	XY-Symmetry	3P	4X	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.6875	0
g17X	Diag1	X-GenXY	3X	4P	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.6875	0
g17XY	Diag1	XY-GenXY	3XY	4Y	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.6875	0
g17Y	Diag1	Y-GenXY	3Y	4XY	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.6875	0
g18P	Diag1	XY-Symmetry	3P	4Y	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.6875	0
g18X	Diag1	X-GenXY	3X	4XY	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.6875	0
g18XY	Diag1	XY-GenXY	3XY	4X	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.6875	0
g18Y	Diag1	Y-GenXY	3Y	4P	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.6875	0
g19P	Diag1	XY-Symmetry	4P	5X	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.625	0
g19X	Diag1	X-GenXY	4X	5P	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.625	0
g19XY	Diag1	XY-GenXY	4XY	5Y	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.625	0
g19Y	Diag1	Y-GenXY	4Y	5XY	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.625	0
g20P	Diag1	XY-Symmetry	4P	5Y	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.625	0
g20X	Diag1	X-GenXY	4X	5XY	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.625	0
g20XY	Diag1	XY-GenXY	4XY	5X	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.625	0
g20Y	Diag1	Y-GenXY	4Y	5P	2	5	0.75	0.5	0.5	5/8	A394	TYPE0	N	2	1	1	Short	only	0.75	0	0.875	1.625	0
g21P	Diag2	XY-Symmetry	5P	6X	2	5	0.5	0.75	0.5	5/8	A394	TYPE0	N	3	1.47	1	Long	only	0.8125	2	0.875	2.625	0
g21X	Diag2	X-GenXY	5X	6P	2	5	0.5	0.75	0.5	5/8	A394	TYPE0	N	3	1.47	1	Long	only	0.8125	2	0.875	2.625	0
g21XY	Diag2	XY-GenXY	5XY	6Y	2	5	0.5	0.75	0.5	5/8	A394	TYPE0	N	3	1.47	1	Long	only	0.8125	2	0.875	2.625	0
g21Y	Diag2	Y-GenXY	5Y	6XY	2	5	0.5	0.75	0.5	5/8	A394	TYPE0	N	3	1.47	1	Long	only	0.8125	2	0.875	2.625	0
g22P	Diag2	XY-Symmetry	5P	6Y	2	5	0.5	0.75	0.5	5/8	A394	TYPE0	N	3	1.47	1	Long	only	0.8125				

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2  0.875   2.625     0
     g22X     Diag2          X-GenXY       5X       6XY    2     5    0.5  0.75    0.5 5/8 A394 TYPE0 N     3   1.47       1  Long only 0.8125
2  0.875   2.625     0
    g22XY     Diag2         XY-GenXY      5XY        6X    2     5    0.5  0.75    0.5 5/8 A394 TYPE0 N     3   1.47       1  Long only 0.8125
2  0.875   2.625     0
     g22Y     Diag2          Y-GenXY       5Y        6P    2     5    0.5  0.75    0.5 5/8 A394 TYPE0 N     3   1.47       1  Long only 0.8125
2  0.875   2.625     0
     g23P     Diag2      XY-Symmetry       6P        7X    2     5    0.5  0.75    0.5 5/8 A394 TYPE0 N     3      1       1  Long only  0.875
2  0.875       4     0
     g23X     Diag2          X-GenXY       6X        7P    2     5    0.5  0.75    0.5 5/8 A394 TYPE0 N     3      1       1  Long only  0.875
2  0.875       4     0
    g23XY     Diag2         XY-GenXY      6XY        7Y    2     5    0.5  0.75    0.5 5/8 A394 TYPE0 N     3      1       1  Long only  0.875
2  0.875       4     0
     g23Y     Diag2          Y-GenXY       6Y       7XY    2     5    0.5  0.75    0.5 5/8 A394 TYPE0 N     3      1       1  Long only  0.875
2  0.875       4     0
     g24P     Diag2      XY-Symmetry       6P        7Y    2     5    0.5  0.75    0.5 5/8 A394 TYPE0 N     3      1       1  Long only  0.875
2  0.875       4     0
     g24X     Diag2          X-GenXY       6X       7XY    2     5    0.5  0.75    0.5 5/8 A394 TYPE0 N     3      1       1  Long only  0.875
2  0.875       4     0
    g24XY     Diag2         XY-GenXY      6XY        7X    2     5    0.5  0.75    0.5 5/8 A394 TYPE0 N     3      1       1  Long only  0.875
2  0.875       4     0
     g24Y     Diag2          Y-GenXY       6Y        7P    2     5    0.5  0.75    0.5 5/8 A394 TYPE0 N     3      1       1  Long only  0.875
2  0.875       4     0
     g25P     Diag3      XY-Symmetry       7P        8X    2     5   0.75   0.5    0.5 5/8 A394 TYPE0 N     3      1       1 Short only   1.25
0  0.875       2     0
     g25X     Diag3          X-GenXY       7X        8P    2     5   0.75   0.5    0.5 5/8 A394 TYPE0 N     3      1       1 Short only   1.25
0  0.875       2     0
    g25XY     Diag3         XY-GenXY      7XY        8Y    2     5   0.75   0.5    0.5 5/8 A394 TYPE0 N     3      1       1 Short only   1.25
0  0.875       2     0
     g25Y     Diag3          Y-GenXY       7Y       8XY    2     5   0.75   0.5    0.5 5/8 A394 TYPE0 N     3      1       1 Short only   1.25
0  0.875       2     0
     g26P     Diag3      XY-Symmetry       7P        8Y    2     5   0.75   0.5    0.5 5/8 A394 TYPE0 N     3      1       1 Short only   1.25
0  0.875       2     0
     g26X     Diag3          X-GenXY       7X       8XY    2     5   0.75   0.5    0.5 5/8 A394 TYPE0 N     3      1       1 Short only   1.25
0  0.875       2     0
    g26XY     Diag3         XY-GenXY      7XY        8X    2     5   0.75   0.5    0.5 5/8 A394 TYPE0 N     3      1       1 Short only   1.25
0  0.875       2     0
     g26Y     Diag3          Y-GenXY       7Y        8P    2     5   0.75   0.5    0.5 5/8 A394 TYPE0 N     3      1       1 Short only   1.25
0  0.875       2     0
     g27P     Diag4      XY-Symmetry       8P       10X    2     5    0.8 0.599  0.599 5/8 A394 TYPE0 N     2      1       1 Short only  0.875
0  0.875     2.5     0
     g27X     Diag4          X-GenXY       8X       10S    2     5    0.8 0.599  0.599 5/8 A394 TYPE0 N     2      1       1 Short only  0.875
0  0.875     2.5     0
    g27XY     Diag4         XY-GenXY      8XY       10Y    2     5    0.8 0.599  0.599 5/8 A394 TYPE0 N     2      1       1 Short only  0.875
0  0.875     2.5     0
     g27Y     Diag4          Y-GenXY       8Y      10XY    2     5    0.8 0.599  0.599 5/8 A394 TYPE0 N     2      1       1 Short only  0.875
0  0.875     2.5     0
     g28P     Diag4      XY-Symmetry       8P       10Y    2     5    0.8 0.599  0.599 5/8 A394 TYPE0 N     2      1       1 Short only  0.875
0  0.875     2.5     0
     g28X     Diag4          X-GenXY       8X      10XY    2     5    0.8 0.599  0.599 5/8 A394 TYPE0 N     2      1       1 Short only  0.875
0  0.875     2.5     0
    g28XY     Diag4         XY-GenXY      8XY       10X    2     5    0.8 0.599  0.599 5/8 A394 TYPE0 N     2      1       1 Short only  0.875
0  0.875     2.5     0
     g28Y     Diag4          Y-GenXY       8Y       10S    2     5    0.8 0.599  0.599 5/8 A394 TYPE0 N     2      1       1 Short only  0.875
0  0.875     2.5     0
     g29P     Diag5      XY-Symmetry      10S       11X    2     5  0.789 0.578  0.578 5/8 A394 TYPE0 N     2      1       1 Short only      1
0  0.875   2.125     0
     g29X     Diag5          X-GenXY      10X       11S    2     5  0.789 0.578  0.578 5/8 A394 TYPE0 N     2      1       1 Short only      1
0  0.875   2.125     0
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g29XY	Diag5	XY-GenXY	10XY	11Y	2	5	0.789	0.578	0.578	5/8	A394	TYPE0	N	2	1	1	Short	only	1	0	0.875	2.125	0
g29Y	Diag5	Y-GenXY	10Y	11XY	2	5	0.789	0.578	0.578	5/8	A394	TYPE0	N	2	1	1	Short	only	1	0	0.875	2.125	0
g30P	Diag5	XY-Symmetry	10S	11Y	2	5	0.789	0.578	0.578	5/8	A394	TYPE0	N	2	1	1	Short	only	1	0	0.875	2.125	0
g30X	Diag5	X-GenXY	10X	11XY	2	5	0.789	0.578	0.578	5/8	A394	TYPE0	N	2	1	1	Short	only	1	0	0.875	2.125	0
g30XY	Diag5	XY-GenXY	10XY	11X	2	5	0.789	0.578	0.578	5/8	A394	TYPE0	N	2	1	1	Short	only	1	0	0.875	2.125	0
g30Y	Diag5	Y-GenXY	10Y	11S	2	5	0.789	0.578	0.578	5/8	A394	TYPE0	N	2	1	1	Short	only	1	0	0.875	2.125	0
g31P	Diag5	XY-Symmetry	11S	12X	2	4	0.779	0.559	0.559	5/8	A394	TYPE0	N	1	1	1	Short	only	1	0	0.875	0	0
g31X	Diag5	X-GenXY	11X	12S	2	4	0.779	0.559	0.559	5/8	A394	TYPE0	N	1	1	1	Short	only	1	0	0.875	0	0
g31XY	Diag5	XY-GenXY	11XY	12Y	2	4	0.779	0.559	0.559	5/8	A394	TYPE0	N	1	1	1	Short	only	1	0	0.875	0	0
g31Y	Diag5	Y-GenXY	11Y	12XY	2	4	0.779	0.559	0.559	5/8	A394	TYPE0	N	1	1	1	Short	only	1	0	0.875	0	0
g32P	Diag5	XY-Symmetry	11S	12Y	2	4	0.779	0.559	0.559	5/8	A394	TYPE0	N	1	1	1	Short	only	1	0	0.875	0	0
g32X	Diag5	X-GenXY	11X	12XY	2	4	0.779	0.559	0.559	5/8	A394	TYPE0	N	1	1	1	Short	only	1	0	0.875	0	0
g32XY	Diag5	XY-GenXY	11XY	12X	2	4	0.779	0.559	0.559	5/8	A394	TYPE0	N	1	1	1	Short	only	1	0	0.875	0	0
g32Y	Diag5	Y-GenXY	11Y	12S	2	4	0.779	0.559	0.559	5/8	A394	TYPE0	N	1	1	1	Short	only	1	0	0.875	0	0
g33P	Diag6	XY-Symmetry	12S	13X	2	4	0.772	0.545	0.545	5/8	A394	TYPE0	N	1	1	1	Short	only	1.125	0	0.875	0	0
g33X	Diag6	X-GenXY	12X	13S	2	4	0.772	0.545	0.545	5/8	A394	TYPE0	N	1	1	1	Short	only	1.125	0	0.875	0	0
g33XY	Diag6	XY-GenXY	12XY	13Y	2	4	0.772	0.545	0.545	5/8	A394	TYPE0	N	1	1	1	Short	only	1.125	0	0.875	0	0
g33Y	Diag6	Y-GenXY	12Y	13XY	2	4	0.772	0.545	0.545	5/8	A394	TYPE0	N	1	1	1	Short	only	1.125	0	0.875	0	0
g34P	Diag6	XY-Symmetry	12S	13Y	2	4	0.772	0.545	0.545	5/8	A394	TYPE0	N	1	1	1	Short	only	1.125	0	0.875	0	0
g34X	Diag6	X-GenXY	12X	13XY	2	4	0.772	0.545	0.545	5/8	A394	TYPE0	N	1	1	1	Short	only	1.125	0	0.875	0	0
g34XY	Diag6	XY-GenXY	12XY	13X	2	4	0.772	0.545	0.545	5/8	A394	TYPE0	N	1	1	1	Short	only	1.125	0	0.875	0	0
g34Y	Diag6	Y-GenXY	12Y	13S	2	4	0.772	0.545	0.545	5/8	A394	TYPE0	N	1	1	1	Short	only	1.125	0	0.875	0	0
g35P	Diag7	XY-Symmetry	13S	14X	2	4	0.772	0.543	0.543	5/8	A394	TYPE0	N	1	1	1	Short	only	1.375	0	0.875	0	0
g35X	Diag7	X-GenXY	13X	14S	2	4	0.772	0.543	0.543	5/8	A394	TYPE0	N	1	1	1	Short	only	1.375	0	0.875	0	0
g35XY	Diag7	XY-GenXY	13XY	14Y	2	4	0.772	0.543	0.543	5/8	A394	TYPE0	N	1	1	1	Short	only	1.375	0	0.875	0	0
g35Y	Diag7	Y-GenXY	13Y	14XY	2	4	0.772	0.543	0.543	5/8	A394	TYPE0	N	1	1	1	Short	only	1.375	0	0.875	0	0
g36P	Diag7	XY-Symmetry	13S	14Y	2	4	0.772	0.543	0.543	5/8	A394	TYPE0	N	1	1	1	Short	only	1.375	0	0.875	0	0
g36X	Diag7	X-GenXY	13X	14XY	2	4	0.772	0.543	0.543	5/8	A394	TYPE0	N	1	1	1	Short	only	1.375	0	0.875	0	0
g36XY	Diag7	XY-GenXY	13XY	14X	2	4	0.772	0.543	0.543	5/8	A394	TYPE0	N	1	1	1	Short	only	1.375	0	0.875	0	0
g36Y	Diag7	Y-GenXY	13Y	14S	2	4	0.772	0.543	0.543	5/8	A394	TYPE0	N	1	1	1	Short	only	1.375				

																			0	0.875	0	0
g37P	Diag(R)	XY-Symmetry	14S	15X	2	5	0.577	0.789	0.577	5/8	A394	TYPE0	N	2	1	1	Long only	0.875	0	0.875	2.4375	0
g37X	Diag(R)	X-GenXY	14X	15S	2	5	0.577	0.789	0.577	5/8	A394	TYPE0	N	2	1	1	Long only	0.875	0	0.875	2.4375	0
g37XY	Diag(R)	XY-GenXY	14XY	15Y	2	5	0.577	0.789	0.577	5/8	A394	TYPE0	N	2	1	1	Long only	0.875	0	0.875	2.4375	0
g37Y	Diag(R)	Y-GenXY	14Y	15XY	2	5	0.577	0.789	0.577	5/8	A394	TYPE0	N	2	1	1	Long only	0.875	0	0.875	2.4375	0
g38P	Diag(R)	XY-Symmetry	14S	15Y	2	5	0.577	0.789	0.577	5/8	A394	TYPE0	N	2	1	1	Long only	0.875	0	0.875	2.4375	0
g38X	Diag(R)	X-GenXY	14X	15XY	2	5	0.577	0.789	0.577	5/8	A394	TYPE0	N	2	1	1	Long only	0.875	0	0.875	2.4375	0
g38XY	Diag(R)	XY-GenXY	14XY	15X	2	5	0.577	0.789	0.577	5/8	A394	TYPE0	N	2	1	1	Long only	0.875	0	0.875	2.4375	0
g38Y	Diag(R)	Y-GenXY	14Y	15S	2	5	0.577	0.789	0.577	5/8	A394	TYPE0	N	2	1	1	Long only	0.875	0	0.875	2.4375	0
g39P	Diag(R)	XY-Symmetry	15S	9X	2	5	0.581	0.79	0.581	5/8	A394	TYPE0	N	2	1	1	Long only	1	0	0.875	1.5	0
g39X	Diag(R)	X-GenXY	15X	9P	2	5	0.581	0.79	0.581	5/8	A394	TYPE0	N	2	1	1	Long only	1	0	0.875	1.5	0
g39XY	Diag(R)	XY-GenXY	15XY	9Y	2	5	0.581	0.79	0.581	5/8	A394	TYPE0	N	2	1	1	Long only	1	0	0.875	1.5	0
g39Y	Diag(R)	Y-GenXY	15Y	9XY	2	5	0.581	0.79	0.581	5/8	A394	TYPE0	N	2	1	1	Long only	1	0	0.875	1.5	0
g40P	Diag(R)	XY-Symmetry	15S	9Y	2	5	0.581	0.79	0.581	5/8	A394	TYPE0	N	2	1	1	Long only	1	0	0.875	1.5	0
g40X	Diag(R)	X-GenXY	15X	9XY	2	5	0.581	0.79	0.581	5/8	A394	TYPE0	N	2	1	1	Long only	1	0	0.875	1.5	0
g40XY	Diag(R)	XY-GenXY	15XY	9X	2	5	0.581	0.79	0.581	5/8	A394	TYPE0	N	2	1	1	Long only	1	0	0.875	1.5	0
g40Y	Diag(R)	Y-GenXY	15Y	9P	2	5	0.581	0.79	0.581	5/8	A394	TYPE0	N	2	1	1	Long only	1	0	0.875	1.5	0
g41P	Horz1	Y-Symmetry	4X	4P	3	4	1	1	1	5/8	A394	TYPE0	N	1	1	1	Long only	1	0	1	0	0
g41Y	Horz1	Y-Gen	4XY	4Y	3	4	1	1	1	5/8	A394	TYPE0	N	1	1	1	Long only	1	0	1	0	0
g42P	Horz1	Y-Symmetry	6X	6P	3	4	1	1	1	5/8	A394	TYPE0	N	1	1	1	Long only	1	0	1	0	0
g42Y	Horz1	Y-Gen	6XY	6Y	3	4	1	1	1	5/8	A394	TYPE0	N	1	1	1	Long only	1	0	1	0	0
g43P	Horz2	X-Symmetry	2P	2Y	3	5	1	1	1	5/8	A394	TYPE0	N	2	1	1	Long only	0.875	0	0.875	1.625	0
g43X	Horz2	X-Gen	2X	2XY	3	5	1	1	1	5/8	A394	TYPE0	N	2	1	1	Long only	0.875	0	0.875	1.625	0
g44P	Horz2	X-Symmetry	5P	5Y	3	4	1	1	1	5/8	A394	TYPE0	N	1	1	1	Long only	0.875	0	0.875	0	0
g44X	Horz2	X-Gen	5X	5XY	3	4	1	1	1	5/8	A394	TYPE0	N	1	1	1	Long only	0.875	0	0.875	0	0
g45P	Horz2	X-Symmetry	7P	7Y	3	4	1	1	1	5/8	A394	TYPE0	N	1	1	1	Long only	1	0	0.875	0	0
g45X	Horz2	X-Gen	7X	7XY	3	4	1	1	1	5/8	A394	TYPE0	N	1	1	1	Long only	1	0	0.875	0	0
g46P	Horz2	Y-Symmetry	8X	8P	3	4	1	1	1	5/8	A394	TYPE0	N	1	1	1	Long only	1	0	0.875	0	0
g46Y	Horz2	Y-Gen	8XY	8Y	3	4	1	1	1	5/8	A394	TYPE0	N	1	1	1	Long only	1	0	0.875	0	0
g47P	Horz2	X-Symmetry	8P	8Y	3	4	1	1	1	5/8	A394	TYPE0	N	1	1	1	Long only	1	0	0.875	0	0

	g47X	Horz2		X-Gen	8X	8XY	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Long only	1
0	0.875	0	0														
	g48P	Horz3		Y-Symmetry	10X	10S	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Long only	1.5
0	0.875	0	0														
	g48Y	Horz3		Y-Gen	10XY	10Y	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Long only	1.5
0	0.875	0	0														
	g49P	Horz3		X-Symmetry	10S	10Y	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Long only	1.5
0	0.875	0	0														
	g49X	Horz3		X-Gen	10X	10XY	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Long only	1.5
0	0.875	0	0														
	g50P	Horz3		Y-Symmetry	11X	11S	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Long only	1.5
0	0.875	0	0														
	g50Y	Horz3		Y-Gen	11XY	11Y	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Long only	1.5
0	0.875	0	0														
	g51P	Horz3		X-Symmetry	11S	11Y	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Long only	1.5
0	0.875	0	0														
	g51X	Horz3		X-Gen	11X	11XY	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Long only	1.5
0	0.875	0	0														
	g52P	Horz4		None	14X	14S	3	4	1	0.5	0.5	5/8 A394 TYPE0 N	1	1	1	Short only	0.875
0	0.875	0	0														
	g53P	Horz4		X-Symmetry	14S	14Y	3	4	1	0.5	0.5	5/8 A394 TYPE0 N	1	1	1	Short only	0.875
0	0.875	0	0														
	g53X	Horz4		X-Gen	14X	14XY	3	4	1	0.5	0.5	5/8 A394 TYPE0 N	1	1	1	Short only	0.875
0	0.875	0	0														
	g54P	Horz5		None	15X	15S	3	4	1	0.5	0.5	5/8 A394 TYPE0 N	1	1	1	Short only	1.5
0	0.875	0	0														
	g55P	Horz5		X-Symmetry	15S	15Y	3	4	1	0.5	0.5	5/8 A394 TYPE0 N	1	1	1	Short only	1.5
0	0.875	0	0														
	g55X	Horz5		X-Gen	15X	15XY	3	4	1	0.5	0.5	5/8 A394 TYPE0 N	1	1	1	Short only	1.5
0	0.875	0	0														
	g56P	Inner1		X-Symmetry	2X	2Y	3	4	0.75	0.5	0.5	5/8 A394 TYPE0 N	1	1	1	Short only	0.75
0	0.875	0	0														
	g56X	Inner1		X-Gen	2P	2XY	3	4	0.75	0.5	0.5	5/8 A394 TYPE0 N	1	1	1	Short only	0.75
0	0.875	0	0														
	g57P	Inner1		X-Symmetry	5X	5Y	3	4	0.75	0.5	0.5	5/8 A394 TYPE0 N	1	1	1	Short only	0.75
0	0.875	0	0														
	g57X	Inner1		X-Gen	5P	5XY	3	4	0.75	0.5	0.5	5/8 A394 TYPE0 N	1	1	1	Short only	0.75
0	0.875	0	0														
	g58P	Inner1		X-Symmetry	7X	7Y	3	4	0.75	0.5	0.5	5/8 A394 TYPE0 N	1	1	1	Short only	0.75
0	0.875	0	0														
	g58X	Inner1		X-Gen	7P	7XY	3	4	0.75	0.5	0.5	5/8 A394 TYPE0 N	1	1	1	Short only	0.75
0	0.875	0	0														
	g59P	Inner1		X-Symmetry	8X	8Y	3	4	0.75	0.5	0.5	5/8 A394 TYPE0 N	1	1	1	Short only	0.625
0	0.875	0	0														
	g59X	Inner1		X-Gen	8P	8XY	3	4	0.75	0.5	0.5	5/8 A394 TYPE0 N	1	1	1	Short only	0.625
0	0.875	0	0														
	g60P	Inner2		X-Symmetry	10X	10Y	3	4	0.75	0.5	0.5	5/8 A394 TYPE0 N	1	1	1	Short only	1.5
0	0.875	0	0														
	g60X	Inner2		X-Gen	10S	10XY	3	4	0.75	0.5	0.5	5/8 A394 TYPE0 N	1	1	1	Short only	1.5
0	0.875	0	0														
	g61P	Inner3		X-Symmetry	11X	11Y	3	4	0.75	0.5	0.5	5/8 A394 TYPE0 N	1	1	1	Short only	1
0	0.875	0	0														
	g61X	Inner3		X-Gen	11S	11XY	3	4	0.75	0.5	0.5	5/8 A394 TYPE0 N	1	1	1	Short only	1
0	0.875	0	0														
	g62P	Inner4		X-Symmetry	14X	14Y	3	4	0.5	0.75	0.5	5/8 A394 TYPE0 N	1	1	1	Long only	1
0	0.875	0	0														
	g62X	Inner4		X-Gen	14S	14XY	3	4	0.5	0.75	0.5	5/8 A394 TYPE0 N	1	1	1	Long only	1
0	0.875	0	0														
	g63P	Inner5		X-Symmetry	15X	15Y	3	4	0.5	0.75	0.5	5/8 A394 TYPE0 N	1	1	1	Long only	1.25

																				0	0.875	0	0
g63X	Inner5	X-Gen	15S	15XY	3	4	0.5	0.75	0.5	5/8	A394	TYPE0	N	1	1	1	Long only	1.25		0	0.875	0	0
g65P	Diag5	XY-Symmetry	2P	1PF0.50X	2	4	0.75	0.5	0.5	5/8	A394	TYPE0	N	1	1	1	Short only	1		0	0.875	0	0
g65X	Diag5	X-GenXY	2X	1PF0.50S	2	4	0.75	0.5	0.5	5/8	A394	TYPE0	N	1	1	1	Short only	1		0	0.875	0	0
g65XY	Diag5	XY-GenXY	2XY	1PF0.50Y	2	4	0.75	0.5	0.5	5/8	A394	TYPE0	N	1	1	1	Short only	1		0	0.875	0	0
g65Y	Diag5	Y-GenXY	2Y	1PF0.50XY	2	4	0.75	0.5	0.5	5/8	A394	TYPE0	N	1	1	1	Short only	1		0	0.875	0	0
g66P	Diag5	XY-Symmetry	1PF0.50S	1X	2	4	0.75	0.5	0.5	5/8	A394	TYPE0	N	1	1	1	Short only	1		0	0.875	0	0
g66X	Diag5	X-GenXY	1PF0.50X	1P	2	4	0.75	0.5	0.5	5/8	A394	TYPE0	N	1	1	1	Short only	1		0	0.875	0	0
g66XY	Diag5	XY-GenXY	1PF0.50XY	1P	2	4	0.75	0.5	0.5	5/8	A394	TYPE0	N	1	1	1	Short only	1		0	0.875	0	0
g66Y	Diag5	Y-GenXY	1PF0.50Y	1X	2	4	0.75	0.5	0.5	5/8	A394	TYPE0	N	1	1	1	Short only	1		0	0.875	0	0
g67P	ShieldAr	X-Symmetry	16X	1X	3	4	1	1	1	5/8	A394	TYPE0	N	1	1	1	Short only	0.875		0	0	0	0
g67X	ShieldAr	X-Gen	16P	1P	3	4	1	1	1	5/8	A394	TYPE0	N	1	1	1	Short only	0.875		0	0	0	0
g68P	ShieldAr	None	1X	1P	3	4	1	1	1	5/8	A394	TYPE0	N	1	1	1	Short only	0.875		0	0	0	0
g69P	TopArm1	Y-Symmetry	17P	2X	3	4	1	1	1	5/8	A394	TYPE0	N	2	1	1	Short only	1.25		0	0.9375	2	0
g69Y	TopArm1	Y-Gen	17P	2XY	3	4	1	1	1	5/8	A394	TYPE0	N	2	1	1	Short only	1.25		0	0.9375	2	0
g70P	TopArm1	None	2X	2P	3	4	1	1	1	5/8	A394	TYPE0	N	2	1	1	Short only	1.25		0	0.875	1.625	0
g71P	TopArm2	Y-Symmetry	2P	18P	3	5	1	0.5	0.5	5/8	A394	TYPE0	N	4	2	1	Long only	2		4.5	1.0625	2.5	0
g71Y	TopArm2	Y-Gen	2Y	18P	3	5	1	0.5	0.5	5/8	A394	TYPE0	N	4	2	1	Long only	2		4.5	1.0625	2.5	0
g72P	MidArm1	Y-Symmetry	19P	5X	3	5	0.5	1	0.5	5/8	A394	TYPE0	N	2	1	1	Long only	0.875		2.5	0	1.25	0
g72Y	MidArm1	Y-Gen	19P	5XY	3	5	0.5	1	0.5	5/8	A394	TYPE0	N	2	1	1	Long only	0.875		2.5	0	1.25	0
g73P	MidArm1	None	5X	5P	3	5	1	1	1	5/8	A394	TYPE0	N	2	1	1	Long only	0.875		2.5	0	1.25	0
g74P	MidArm2	Y-Symmetry	5P	20P	3	5	0.33	1	0.33	5/8	A394	TYPE0	N	4	1.1	1	Long only	1.625		3.25	0	4	0
g74Y	MidArm2	Y-Gen	5Y	20P	3	5	0.33	1	0.33	5/8	A394	TYPE0	N	4	1.1	1	Long only	1.625		3.25	0	4	0
g75P	BotArm1	Y-Symmetry	21P	7X	3	5	1	1	1	5/8	A394	TYPE0	N	2	1	1	Long only	1.375		0	0	0	0
g75Y	BotArm1	Y-Gen	21P	7XY	3	5	1	1	1	5/8	A394	TYPE0	N	2	1	1	Long only	1.375		0	0	0	0
g76P	BotArm1	None	7X	7P	3	5	1	1	1	5/8	A394	TYPE0	N	2	1	1	Long only	1.375		0	0	0	0
g77P	BotArm2	Y-Symmetry	7P	22P	3	5	0.5	1	0.5	5/8	A394	TYPE0	N	4	1	1	Long only	3		0	1.5	2	0
g77Y	BotArm2	Y-Gen	7Y	22P	3	5	0.5	1	0.5	5/8	A394	TYPE0	N	4	1	1	Long only	3		0	1.5	2	0
g78P	ShArmBr	Y-Symmetry	16X	2X	2	4	1	0.5	0.5	5/8	A394	TYPE0	N	1	1	1	Long only	1		0	2.75	0	0
g78Y	ShArmBr	Y-Gen	16X	2XY	2	4	1	0.5	0.5	5/8	A394	TYPE0	N	1	1	1	Long only	1		0	2.75	0	0

g79P	ShArmBr	Y-Symmetry	16P	2P	2	4	1	0.5	0.5	5/8 A394 TYPE0 N	1	1	1	Long only	1	0	2.875	0	0
g79Y	ShArmBr	Y-Gen	16P	2Y	2	4	1	0.5	0.5	5/8 A394 TYPE0 N	1	1	1	Long only	1	0	2.875	0	0
g80P	TopArmBr	None	17P	1X	2	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Long only	1	0	1	0	0
g81P	TopArmBr	None	18P	1P	2	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Long only	1	0	1	0	0
g82P	MidArmBr	Y-Symmetry	19P	4X	2	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Long only	1	0	1	0	0
g82Y	MidArmBr	Y-Gen	19P	. 4XY	2	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Long only	1	0	1	0	0
g83P	MidArmBr	Y-Symmetry	20P	4P	2	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Long only	1	0	1	0	0
g83Y	MidArmBr	Y-Gen	20P	4Y	2	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Long only	1	0	1	0	0
g84P	BotArmBr	Y-Symmetry	21P	6X	2	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Long only	1	0	1	0	0
g84Y	BotArmBr	Y-Gen	21P	6XY	2	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Long only	1	0	1	0	0
g85P	BotArmBr	Y-Symmetry	22P	6P	2	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Long only	1	0	1	0	0
g85Y	BotArmBr	Y-Gen	22P	6Y	2	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Long only	1	0	1	0	0
g86P	Pwmnt	None	23P	24P	1	4	1	1	1		0	0	0		0	0	0	0	0
g87P	Pwmnt	None	24P	25P	1	4	1	1	1		0	0	0		0	0	0	0	0
g88P	Pwmnt	None	25P	26P	1	4	1	1	1		0	0	0		0	0	0	0	0
g89P	Pwmnt	None	26P	27P	1	4	1	1	1		0	0	0		0	0	0	0	0
g90P	Pwmnt	None	27P	28P	1	4	1	1	1		0	0	0		0	0	0	0	0
g91P	Pwmnt	None	28P	29P	1	4	1	1	1		0	0	0		0	0	0	0	0
g92P	Horz4	None	14XY	14XYF0.50S	1	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Short only	0.875	0	0.875	0	0
Fg9293P	Horz4	None	14XYF0.50S	14Y	1	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Short only	0.875	0	0.875	0	0
g93P	Horz5	None	15XY	15XYF0.50S	1	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Short only	1.5	0	0.875	0	0
Fg9394P	Horz5	None	15XYF0.50S	15Y	1	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Short only	1.5	0	0.875	0 .	0
g94P	TopArm1	None	2XY	2XYF0.50S	1	4	1	1	1	5/8 A394 TYPE0 N	2	1	1	Short only	1.25	0	0.875	1.625	0
Fg9498P	TopArm1	None	2XYF0.50S	2Y	1	4	1	1	1	5/8 A394 TYPE0 N	2	1	1	Short only	1.25	0	0.875	1.625	0
g95P	MidArm1	None	5XY	5XYF0.50S	1	4	1	1	1	5/8 A394 TYPE0 N	2	1	1	Long only	0.875	2.5	0	1.25	0
Fg9599P	MidArm1	None	5XYF0.50S	5Y	1	4	1	1	1	5/8 A394 TYPE0 N	2	1	1	Long only	0.875	2.5	0	1.25	0
g96P	BotArm1	None	7XY	7XYF0.50S	1	4	1	1	1	5/8 A394 TYPE0 N	2	1	1	Long only	1.375	0	0	0	0
Fg96100P	BotArm1	None	7XYF0.50S	7Y	1	4	1	1	1	5/8 A394 TYPE0 N	2	1	1	Long only	1.375	0	0	0	0
g102P	PMBR1	X-Symmetry	2X	28P	3	4	1	1	1	5/8 A325	1	1	1	Short only	0	0	0	0	0
g102X	PMBR1	X-Gen	2P	28P	3	4	1	1	1	5/8 A325	1	1	1	Short only	0				

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0       0        0      0
   g103P     PMBR1                None       28P  2XYF0.50S    3     4     1     1     1          5/8 A325     1      1       1 Short only      0
0       0        0      0
   g104P     PMBR1          X-Symmetry        5X        27P    3     4     1     1     1          5/8 A325     1      1       1 Short only      0
0       0        0      0
   g104X     PMBR1               X-Gen        5P        27P    3     4     1     1     1          5/8 A325     1      1       1 Short only      0
0       0        0      0
   g105P     PMBR1                None       27P  5XYF0.50S    3     4     1     1     1          5/8 A325     1      1       1 Short only      0
0       0        0      0
   g106P     PMBR1          X-Symmetry        7X        26P    3     4     1     1     1          5/8 A325     1      1       1 Short only      0
0       0        0      0
   g106X     PMBR1               X-Gen        7P        26P    3     4     1     1     1          5/8 A325     1      1       1 Short only      0
0       0        0      0
   g107P     PMBR1                None       26P  7XYF0.50S    3     4     1     1     1          5/8 A325     1      1       1 Short only      0
0       0        0      0
   g108P     PMBR2          X-Symmetry       14X        25P    3     4     1     1     1          5/8 A325     1      1       1 Short only      0
0       0        0      0
   g108X     PMBR2               X-Gen       14S        25P    3     4     1     1     1          5/8 A325     1      1       1 Short only      0
0       0        0      0
   g109P     PMBR3                None       25P 14XYF0.50S    3     4     1     1     1          5/8 A325     1      1       1 Short only      0
0       0        0      0
   g110P     PMBR2          X-Symmetry       15X        24P    3     4     1     1     1          5/8 A325     1      1       1 Short only      0
0       0        0      0
   g110X     PMBR2               X-Gen       15S        24P    3     4     1     1     1          5/8 A325     1      1       1 Short only      0
0       0        0      0
   g111P     PMBR3                None       24P 15XYF0.50S    3     4     1     1     1          5/8 A325     1      1       1 Short only      0
0       0        0      0

Member Capacities and Overrides:

   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. Criterion            Criterion       ship
                     (kips)             (kips)                 (ft)    (kips)     (kips)     (kips)   (kips)   (kips)   (kips)   (kips)   (kips)
(kips)              (kips)
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      g1P     Leg1   22.318       L/r   26.730  Net Sect    76    2.69   22.318       0.000      0.000   26.730    0.000    0.000    0.000    0.000
0.000              0.000           Automatic
      g1X     Leg1   22.318       L/r   26.730  Net Sect    76    2.69   22.318       0.000      0.000   26.730    0.000    0.000    0.000    0.000
0.000              0.000           Automatic
     g1XY     Leg1   22.318       L/r   26.730  Net Sect    76    2.69   22.318       0.000      0.000   26.730    0.000    0.000    0.000    0.000
0.000              0.000           Automatic
      g1Y     Leg1   22.318       L/r   26.730  Net Sect    76    2.69   22.318       0.000      0.000   26.730    0.000    0.000    0.000    0.000
0.000              0.000           Automatic
   Fg163P     Leg1   22.318       L/r   26.730  Net Sect    76    2.69   22.318       0.000      0.000   26.730    0.000    0.000    0.000    0.000
0.000              0.000           Automatic
   Fg163X     Leg1   22.318       L/r   26.730  Net Sect    76    2.69   22.318       0.000      0.000   26.730    0.000    0.000    0.000    0.000
0.000              0.000           Automatic
  Fg163XY     Leg1   22.318       L/r   26.730  Net Sect    76    2.69   22.318       0.000      0.000   26.730    0.000    0.000    0.000    0.000
0.000              0.000           Automatic
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  Fg163Y     Leg1   22.318      L/r   26.730  Net Sect   76    2.69    22.318       0.000       0.000   26.730    0.000     0.000     0.000     0.000
0.000               0.000        Automatic
     g2P     Leg2   72.123      L/r   79.200  Net Sect   56    3.67    72.123       0.000       0.000   79.200    0.000     0.000     0.000     0.000
0.000               0.000        Automatic
     g2X     Leg2   72.123      L/r   79.200  Net Sect   56    3.67    72.123       0.000       0.000   79.200    0.000     0.000     0.000     0.000
0.000               0.000        Automatic
    g2XY     Leg2   72.123      L/r   79.200  Net Sect   56    3.67    72.123       0.000       0.000   79.200    0.000     0.000     0.000     0.000
0.000               0.000        Automatic
     g2Y     Leg2   72.123      L/r   79.200  Net Sect   56    3.67    72.123       0.000       0.000   79.200    0.000     0.000     0.000     0.000
0.000               0.000        Automatic
     g3P     Leg2   72.162      L/r   79.200  Net Sect   56    3.66    72.162       0.000       0.000   79.200    0.000     0.000     0.000     0.000
0.000               0.000        Automatic
     g3X     Leg2   72.162      L/r   79.200  Net Sect   56    3.66    72.162       0.000       0.000   79.200    0.000     0.000     0.000     0.000
0.000               0.000        Automatic
    g3XY     Leg2   72.162      L/r   79.200  Net Sect   56    3.66    72.162       0.000       0.000   79.200    0.000     0.000     0.000     0.000
0.000               0.000        Automatic
     g3Y     Leg2   72.162      L/r   79.200  Net Sect   56    3.66    72.162       0.000       0.000   79.200    0.000     0.000     0.000     0.000
0.000               0.000        Automatic
     g4P     Leg2   72.123      L/r   79.200  Net Sect   56    3.67    72.123       0.000       0.000   79.200    0.000     0.000     0.000     0.000
0.000               0.000        Automatic
     g4X     Leg2   72.123      L/r   79.200  Net Sect   56    3.67    72.123       0.000       0.000   79.200    0.000     0.000     0.000     0.000
0.000               0.000        Automatic
    g4XY     Leg2   72.123      L/r   79.200  Net Sect   56    3.67    72.123       0.000       0.000   79.200    0.000     0.000     0.000     0.000
0.000               0.000        Automatic
     g4Y     Leg2   72.123      L/r   79.200  Net Sect   56    3.67    72.123       0.000       0.000   79.200    0.000     0.000     0.000     0.000
0.000               0.000        Automatic
     g5P     Leg2   67.346      L/r   79.200  Net Sect   72    4.75    67.346       0.000       0.000   79.200    0.000     0.000     0.000     0.000
0.000               0.000        Automatic
     g5X     Leg2   67.346      L/r   79.200  Net Sect   72    4.75    67.346       0.000       0.000   79.200    0.000     0.000     0.000     0.000
0.000               0.000        Automatic
    g5XY     Leg2   67.346      L/r   79.200  Net Sect   72    4.75    67.346       0.000       0.000   79.200    0.000     0.000     0.000     0.000
0.000               0.000        Automatic
     g5Y     Leg2   67.346      L/r   79.200  Net Sect   72    4.75    67.346       0.000       0.000   79.200    0.000     0.000     0.000     0.000
0.000               0.000        Automatic
     g6P     Leg2   66.900     Shear   57.292  Net Sect   72    4.75    67.346      66.900     105.469   57.292   93.750     0.000     0.000     0.000
0.000               0.000        Automatic      Member "g6P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
     g6X     Leg2   66.900     Shear   57.292  Net Sect   72    4.75    67.346      66.900     105.469   57.292   93.750     0.000     0.000     0.000
0.000               0.000        Automatic      Member "g6X" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g6XY     Leg2   66.900     Shear   57.292  Net Sect   72    4.75    67.346      66.900     105.469   57.292   93.750     0.000     0.000     0.000
0.000               0.000        Automatic     Member "g6XY" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
     g6Y     Leg2   66.900     Shear   57.292  Net Sect   72    4.75    67.346      66.900     105.469   57.292   93.750     0.000     0.000     0.000
0.000               0.000        Automatic      Member "g6Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
     g7P     Leg3   95.941      L/r  109.230  Net Sect   65    4.25    95.941       0.000       0.000  109.230    0.000     0.000     0.000     0.000
0.000               0.000        Automatic
     g7X     Leg3   95.941      L/r  109.230  Net Sect   65    4.25    95.941       0.000       0.000  109.230    0.000     0.000     0.000     0.000
0.000               0.000        Automatic
    g7XY     Leg3   95.941      L/r  109.230  Net Sect   65    4.25    95.941       0.000       0.000  109.230    0.000     0.000     0.000     0.000
0.000               0.000        Automatic
     g7Y     Leg3   95.941      L/r  109.230  Net Sect   65    4.25    95.941       0.000       0.000  109.230    0.000     0.000     0.000     0.000
0.000               0.000        Automatic
     g8P     Leg3   81.399      L/r  109.230  Net Sect   94    6.15    81.399       0.000       0.000  109.230    0.000     0.000     0.000     0.000
0.000               0.000        Automatic
     g8X     Leg3   81.399      L/r  109.230  Net Sect   94    6.15    81.399       0.000       0.000  109.230    0.000     0.000     0.000     0.000
0.000               0.000        Automatic
    g8XY     Leg3   81.399      L/r  109.230  Net Sect   94    6.15    81.399       0.000       0.000  109.230    0.000     0.000     0.000     0.000
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0.000           0.000          Automatic
     g8Y    Leg3   81.399     L/r  109.230  Net Sect   94   6.15   81.399     0.000     0.000  109.230   0.000   0.000   0.000   0.000
0.000           0.000          Automatic
     g9P    Leg3   76.568     L/r  109.230  Net Sect  102   6.66   76.568     0.000     0.000  109.230   0.000   0.000   0.000   0.000
0.000           0.000          Automatic
     g9X    Leg3   76.568     L/r  109.230  Net Sect  102   6.66   76.568     0.000     0.000  109.230   0.000   0.000   0.000   0.000
0.000           0.000          Automatic
    g9XY    Leg3   76.568     L/r  109.230  Net Sect  102   6.66   76.568     0.000     0.000  109.230   0.000   0.000   0.000   0.000
0.000           0.000          Automatic
     g9Y    Leg3   76.568     L/t  109.230  Net Sect  102   6.66   76.568     0.000     0.000  109.230   0.000   0.000   0.000   0.000
0.000           0.000          Automatic
    g10P    Leg3   76.568     L/r  109.230  Net Sect  102   6.66   76.568     0.000     0.000  109.230   0.000   0.000   0.000   0.000
0.000           0.000          Automatic
    g10X    Leg3   76.568     L/r  109.230  Net Sect  102   6.66   76.568     0.000     0.000  109.230   0.000   0.000   0.000   0.000
0.000           0.000          Automatic
   g10XY    Leg3   76.568     L/r  109.230  Net Sect  102   6.66   76.568     0.000     0.000  109.230   0.000   0.000   0.000   0.000
0.000           0.000          Automatic
    g10Y    Leg3   76.568     L/r  109.230  Net Sect  102   6.66   76.568     0.000     0.000  109.230   0.000   0.000   0.000   0.000
0.000           0.000          Automatic
    g11P    Leg3   66.900   Shear   66.900     Shear   94   6.15   81.399    66.900   147.656   89.378 172.265   0.000   0.000   0.000
0.000           0.000          Automatic
    g11X    Leg3   66.900   Shear   66.900     Shear   94   6.15   81.399    66.900   147.656   89.378 172.265   0.000   0.000   0.000
0.000           0.000          Automatic
   g11XY    Leg3   66.900   Shear   66.900     Shear   94   6.15   81.399    66.900   147.656   89.378 172.265   0.000   0.000   0.000
0.000           0.000          Automatic
    g11Y    Leg3   66.900   Shear   66.900     Shear   94   6.15   81.399    66.900   147.656   89.378 172.265   0.000   0.000   0.000
0.000           0.000          Automatic
    g12P    Leg4   93.154     L/r  119.130  Net Sect   87   7.18   93.154     0.000     0.000  119.130   0.000   0.000   0.000   0.000
0.000           0.000          Automatic
    g12X    Leg4   93.154     L/r  119.130  Net Sect   87   7.18   93.154     0.000     0.000  119.130   0.000   0.000   0.000   0.000
0.000           0.000          Automatic
   g12XY    Leg4   93.154     L/r  119.130  Net Sect   87   7.18   93.154     0.000     0.000  119.130   0.000   0.000   0.000   0.000
0.000           0.000          Automatic
    g12Y    Leg4   93.154     L/r  119.130  Net Sect   87   7.18   93.154     0.000     0.000  119.130   0.000   0.000   0.000   0.000
0.000           0.000          Automatic
    g13P    Leg4   76.191     L/r   89.200     Shear  112  18.45   76.191    89.200   168.750  102.114 187.500   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    Leg4   76.191     L/r   89.200     Shear  112  18.45   76.191    89.200   168.750  102.114 187.500   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    Leg4   76.191     L/r   89.200     Shear  112  18.45   76.191    89.200   168.750  102.114 187.500   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    Leg4   76.191     L/r   89.200     Shear  112  18.45   76.191    89.200   168.750  102.114 187.500   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    Leg5   89.200   Shear   89.200     Shear  103  20.50   99.568    89.200   168.750  126.864 187.500   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    Leg5   89.200   Shear   89.200     Shear  103  20.50   99.568    89.200   168.750  126.864 187.500   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    Leg5   89.200   Shear   89.200     Shear  103  20.50   99.568    89.200   168.750  126.864 187.500   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    Leg5   89.200   Shear   89.200     Shear  103  20.50   99.568    89.200   168.750  126.864 187.500   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.  ??
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g15P	Diag1	14.418	0.000	L/r	12.850	Automatic	Rupture	95	5.43	14.418	22.300	21.094	14.585	12.850	0.000	0.000	0.000	0.000
g15X	Diag1	14.418	0.000	L/r	12.850	Automatic	Rupture	95	5.43	14.418	22.300	21.094	14.585	12.850	0.000	0.000	0.000	0.000
g15XY	Diag1	14.418	0.000	L/r	12.850	Automatic	Rupture	95	5.43	14.418	22.300	21.094	14.585	12.850	0.000	0.000	0.000	0.000
g15Y	Diag1	14.418	0.000	L/r	12.850	Automatic	Rupture	95	5.43	14.418	22.300	21.094	14.585	12.850	0.000	0.000	0.000	0.000
g16P	Diag1	14.418	0.000	L/r	12.850	Automatic	Rupture	95	5.43	14.418	22.300	21.094	14.585	12.850	0.000	0.000	0.000	0.000
g16X	Diag1	14.418	0.000	L/r	12.850	Automatic	Rupture	95	5.43	14.418	22.300	21.094	14.585	12.850	0.000	0.000	0.000	0.000
g16XY	Diag1	14.418	0.000	L/r	12.850	Automatic	Rupture	95	5.43	14.418	22.300	21.094	14.585	12.850	0.000	0.000	0.000	0.000
g16Y	Diag1	14.418	0.000	L/r	12.850	Automatic	Rupture	95	5.43	14.418	22.300	21.094	14.585	12.850	0.000	0.000	0.000	0.000
g17P	Diag1	14.428	0.000	L/r	12.850	Automatic	Rupture	95	5.42	14.428	22.300	21.094	14.585	12.850	0.000	0.000	0.000	0.000
g17X	Diag1	14.428	0.000	L/r	12.850	Automatic	Rupture	95	5.42	14.428	22.300	21.094	14.585	12.850	0.000	0.000	0.000	0.000
g17XY	Diag1	14.428	0.000	L/r	12.850	Automatic	Rupture	95	5.42	14.428	22.300	21.094	14.585	12.850	0.000	0.000	0.000	0.000
g17Y	Diag1	14.428	0.000	L/r	12.850	Automatic	Rupture	95	5.42	14.428	22.300	21.094	14.585	12.850	0.000	0.000	0.000	0.000
g18P	Diag1	14.428	0.000	L/r	12.850	Automatic	Rupture	95	5.42	14.428	22.300	21.094	14.585	12.850	0.000	0.000	0.000	0.000
g18X	Diag1	14.428	0.000	L/r	12.850	Automatic	Rupture	95	5.42	14.428	22.300	21.094	14.585	12.850	0.000	0.000	0.000	0.000
g18XY	Diag1	14.428	0.000	L/r	12.850	Automatic	Rupture	95	5.42	14.428	22.300	21.094	14.585	12.850	0.000	0.000	0.000	0.000
g18Y	Diag1	14.428	0.000	L/r	12.850	Automatic	Rupture	95	5.42	14.428	22.300	21.094	14.585	12.850	0.000	0.000	0.000	0.000
g19P	Diag1	14.418	0.000	L/r	12.428	Automatic	Rupture	95	5.43	14.418	22.300	21.094	14.585	12.428	0.000	0.000	0.000	0.000
g19X	Diag1	14.418	0.000	L/r	12.428	Automatic	Rupture	95	5.43	14.418	22.300	21.094	14.585	12.428	0.000	0.000	0.000	0.000
g19XY	Diag1	14.418	0.000	L/r	12.428	Automatic	Rupture	95	5.43	14.418	22.300	21.094	14.585	12.428	0.000	0.000	0.000	0.000
g19Y	Diag1	14.418	0.000	L/r	12.428	Automatic	Rupture	95	5.43	14.418	22.300	21.094	14.585	12.428	0.000	0.000	0.000	0.000
g20P	Diag1	14.418	0.000	L/r	12.428	Automatic	Rupture	95	5.43	14.418	22.300	21.094	14.585	12.428	0.000	0.000	0.000	0.000
g20X	Diag1	14.418	0.000	L/r	12.428	Automatic	Rupture	95	5.43	14.418	22.300	21.094	14.585	12.428	0.000	0.000	0.000	0.000
g20XY	Diag1	14.418	0.000	L/r	12.428	Automatic	Rupture	95	5.43	14.418	22.300	21.094	14.585	12.428	0.000	0.000	0.000	0.000
g20Y	Diag1	14.418	0.000	L/r	12.428	Automatic	Rupture	95	5.43	14.418	22.300	21.094	14.585	12.428	0.000	0.000	0.000	0.000
g21P	Diag2	27.255	0.000	L/r	27.839	Automatic	Net Sect	97	6.21	27.255	33.450	42.187	27.839	32.812	0.000	0.000	0.000	0.000	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	Diag2	27.255	0.000	L/r	27.839	Automatic	Net Sect	97	6.21	27.255	33.450	42.187	27.839	32.812	0.000	0.000	0.000	0.000	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	Diag2	27.255	0.000	L/r	27.839	Automatic	Net Sect	97	6.21	27.255	33.450	42.187	27.839	32.812	0.000	0.000	0.000	0.000	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	Diag2	27.255	0.000	L/r	27.839	Automatic	Net Sect	97	6.21	27.255	33.450	42.187	27.839	32.812	0.000	0.000	0.000	0.000	Member "g21Y" 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.  ??
    g22P    Diag2   27.255      L/r  27.839  Net Sect   97   6.21   27.255      33.450    42.187   27.839   32.812    0.000    0.000    0.000
0.000            0.000           Automatic    Member "g22P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
    g22X    Diag2   27.255      L/r  27.839  Net Sect   97   6.21   27.255      33.450    42.187   27.839   32.812    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    Diag2   27.255      L/r  27.839  Net Sect   97   6.21   27.255      33.450    42.187   27.839   32.812    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    Diag2   27.255      L/r  27.839  Net Sect   97   6.21   27.255      33.450    42.187   27.839   32.812    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    Diag2   27.255      L/r  30.238  Net Sect   97   6.21   27.255      33.450    42.187   30.238   32.812    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    Diag2   27.255      L/r  30.238  Net Sect   97   6.21   27.255      33.450    42.187   30.238   32.812    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    Diag2   27.255      L/r  30.238  Net Sect   97   6.21   27.255      33.450    42.187   30.238   32.812    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    Diag2   27.255      L/r  30.238  Net Sect   97   6.21   27.255      33.450    42.187   30.238   32.812    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    Diag2   27.255      L/r  30.238  Net Sect   97   6.21   27.255      33.450    42.187   30.238   32.812    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    Diag2   27.255      L/r  30.238  Net Sect   97   6.21   27.255      33.450    42.187   30.238   32.812    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    Diag2   27.255      L/r  30.238  Net Sect   97   6.21   27.255      33.450    42.187   30.238   32.812    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    Diag2   27.255      L/r  30.238  Net Sect   97   6.21   27.255      33.450    42.187   30.238   32.812    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    Diag3   31.380      L/r  30.238  Net Sect   71   5.84   31.380      33.450    42.187   30.238   32.812    0.000    0.000    0.000
0.000            0.000           Automatic
    g25X    Diag3   31.380      L/r  30.238  Net Sect   71   5.84   31.380      33.450    42.187   30.238   32.812    0.000    0.000    0.000
0.000            0.000           Automatic
   g25XY    Diag3   31.380      L/r  30.238  Net Sect   71   5.84   31.380      33.450    42.187   30.238   32.812    0.000    0.000    0.000
0.000            0.000           Automatic
    g25Y    Diag3   31.380      L/r  30.238  Net Sect   71   5.84   31.380      33.450    42.187   30.238   32.812    0.000    0.000    0.000
0.000            0.000           Automatic
    g26P    Diag3   31.380      L/r  30.238  Net Sect   71   5.84   31.380      33.450    42.187   30.238   32.812    0.000    0.000    0.000
0.000            0.000           Automatic
    g26X    Diag3   31.380      L/r  30.238  Net Sect   71   5.84   31.380      33.450    42.187   30.238   32.812    0.000    0.000    0.000
0.000            0.000           Automatic
   g26XY    Diag3   31.380      L/r  30.238  Net Sect   71   5.84   31.380      33.450    42.187   30.238   32.812    0.000    0.000    0.000
0.000            0.000           Automatic
    g26Y    Diag3   31.380      L/r  30.238  Net Sect   71   5.84   31.380      33.450    42.187   30.238   32.812    0.000    0.000    0.000
0.000            0.000           Automatic
    g27P    Diag4   14.040      L/r  21.875   Rupture  144   7.84   14.040      22.300    28.125   22.813   21.875    0.000    0.000    0.000
0.000            0.000           Automatic
    g27X    Diag4   14.040      L/r  21.875   Rupture  144   7.84   14.040      22.300    28.125   22.813   21.875    0.000    0.000    0.000
0.000            0.000           Automatic
   g27XY    Diag4   14.040      L/r  21.875   Rupture  144   7.84   14.040      22.300    28.125   22.813   21.875    0.000    0.000    0.000
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																0.000	0.000	Automatic
g27Y	Diag4	14.040	L/r	21.875	Rupture	144	7.84	14.040	22.300	28.125	22.813	21.875	0.000	0.000	0.000	0.000	0.000	Automatic
g28P	Diag4	14.040	L/r	21.875	Rupture	144	7.84	14.040	22.300	28.125	22.813	21.875	0.000	0.000	0.000	0.000	0.000	Automatic
g28X	Diag4	14.040	L/r	21.875	Rupture	144	7.84	14.040	22.300	28.125	22.813	21.875	0.000	0.000	0.000	0.000	0.000	Automatic
g28XY	Diag4	14.040	L/r	21.875	Rupture	144	7.84	14.040	22.300	28.125	22.813	21.875	0.000	0.000	0.000	0.000	0.000	Automatic
g28Y	Diag4	14.040	L/r	21.875	Rupture	144	7.84	14.040	22.300	28.125	22.813	21.875	0.000	0.000	0.000	0.000	0.000	Automatic
g29P	Diag5	8.247	L/r	16.406	Rupture	168	9.57	8.247	22.300	21.094	17.258	16.406	0.000	0.000	0.000	0.000	0.000	Automatic
g29X	Diag5	8.247	L/r	16.406	Rupture	168	9.57	8.247	22.300	21.094	17.258	16.406	0.000	0.000	0.000	0.000	0.000	Automatic
g29XY	Diag5	8.247	L/r	16.406	Rupture	168	9.57	8.247	22.300	21.094	17.258	16.406	0.000	0.000	0.000	0.000	0.000	Automatic
g29Y	Diag5	8.247	L/r	16.406	Rupture	168	9.57	8.247	22.300	21.094	17.258	16.406	0.000	0.000	0.000	0.000	0.000	Automatic
g30P	Diag5	8.247	L/r	16.406	Rupture	168	9.57	8.247	22.300	21.094	17.258	16.406	0.000	0.000	0.000	0.000	0.000	Automatic
g30X	Diag5	8.247	L/r	16.406	Rupture	168	9.57	8.247	22.300	21.094	17.258	16.406	0.000	0.000	0.000	0.000	0.000	Automatic
g30XY	Diag5	8.247	L/r	16.406	Rupture	168	9.57	8.247	22.300	21.094	17.258	16.406	0.000	0.000	0.000	0.000	0.000	Automatic
g30Y	Diag5	8.247	L/r	16.406	Rupture	168	9.57	8.247	22.300	21.094	17.258	16.406	0.000	0.000	0.000	0.000	0.000	Automatic
g31P	Diag5	5.625	L/r	7.646	Rupture	190	11.16	5.625	11.150	10.547	17.258	7.646	0.000	0.000	0.000	0.000	0.000	Automatic
g31X	Diag5	5.625	L/r	7.646	Rupture	190	11.16	5.625	11.150	10.547	17.258	7.646	0.000	0.000	0.000	0.000	0.000	Automatic
g31XY	Diag5	5.625	L/r	7.646	Rupture	190	11.16	5.625	11.150	10.547	17.258	7.646	0.000	0.000	0.000	0.000	0.000	Automatic
g31Y	Diag5	5.625	L/r	7.646	Rupture	190	11.16	5.625	11.150	10.547	17.258	7.646	0.000	0.000	0.000	0.000	0.000	Automatic
g32P	Diag5	5.625	L/r	7.646	Rupture	190	11.16	5.625	11.150	10.547	17.258	7.646	0.000	0.000	0.000	0.000	0.000	Automatic
g32X	Diag5	5.625	L/r	7.646	Rupture	190	11.16	5.625	11.150	10.547	17.258	7.646	0.000	0.000	0.000	0.000	0.000	Automatic
g32XY	Diag5	5.625	L/r	7.646	Rupture	190	11.16	5.625	11.150	10.547	17.258	7.646	0.000	0.000	0.000	0.000	0.000	Automatic
g32Y	Diag5	5.625	L/r	7.646	Rupture	190	11.16	5.625	11.150	10.547	17.258	7.646	0.000	0.000	0.000	0.000	0.000	Automatic
g33P	Diag6	6.750	L/r	8.203	Rupture	185	12.57	6.750	11.150	10.547	20.199	8.203	0.000	0.000	0.000	0.000	0.000	Automatic
g33X	Diag6	6.750	L/r	8.203	Rupture	185	12.57	6.750	11.150	10.547	20.199	8.203	0.000	0.000	0.000	0.000	0.000	Automatic
g33XY	Diag6	6.750	L/r	8.203	Rupture	185	12.57	6.750	11.150	10.547	20.199	8.203	0.000	0.000	0.000	0.000	0.000	Automatic
g33Y	Diag6	6.750	L/r	8.203	Rupture	185	12.57	6.750	11.150	10.547	20.199	8.203	0.000	0.000	0.000	0.000	0.000	Automatic
g34P	Diag6	6.750	L/r	8.203	Rupture	185	12.57	6.750	11.150	10.547	20.199	8.203	0.000	0.000	0.000	0.000	0.000	Automatic
g34X	Diag6	6.750	L/r	8.203	Rupture	185	12.57	6.750	11.150	10.547	20.199	8.203	0.000	0.000	0.000	0.000	0.000	Automatic
g34XY	Diag6	6.750	L/r	8.203	Rupture	185	12.57	6.750	11.150	10.547	20.199	8.203	0.000	0.000	0.000	0.000	0.000	Automatic
g34Y	Diag6	6.750	L/r	8.203	Rupture	185	12.57	6.750	11.150	10.547	20.199	8.203	0.000	0.000	0.000	0.000	0.000	Automatic

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     g35P     Diag7     9.044        L/r     8.203   Rupture  178  14.88    9.044    11.150    10.547   25.753    8.203    0.000    0.000    0.000
0.000              0.000              Automatic
     g35X     Diag7     9.044        L/r     8.203   Rupture  178  14.88    9.044    11.150    10.547   25.753    8.203    0.000    0.000    0.000
0.000              0.000              Automatic
     g35XY    Diag7     9.044        L/r     8.203   Rupture  178  14.88    9.044    11.150    10.547   25.753    8.203    0.000    0.000    0.000
0.000              0.000              Automatic
     g35Y     Diag7     9.044        L/r     8.203   Rupture  178  14.88    9.044    11.150    10.547   25.753    8.203    0.000    0.000    0.000
0.000              0.000              Automatic
     g36P     Diag7     9.044        L/r     8.203   Rupture  178  14.88    9.044    11.150    10.547   25.753    8.203    0.000    0.000    0.000
0.000              0.000              Automatic
     g36X     Diag7     9.044        L/r     8.203   Rupture  178  14.88    9.044    11.150    10.547   25.753    8.203    0.000    0.000    0.000
0.000              0.000              Automatic
     g36XY    Diag7     9.044        L/r     8.203   Rupture  178  14.88    9.044    11.150    10.547   25.753    8.203    0.000    0.000    0.000
0.000              0.000              Automatic
     g36Y     Diag7     9.044        L/r     8.203   Rupture  178  14.88    9.044    11.150    10.547   25.753    8.203    0.000    0.000    0.000
0.000              0.000              Automatic
     g37P   Diag(R)     9.069        L/r    21.146   Rupture  266  24.97    9.069    22.300    27.187   49.187   21.146    0.000    0.000   24.600
0.000              0.000              Automatic
KL/R value of 230.94 exceeds maximum of 200.00 for member "g37P"  ??
     g37X   Diag(R)     9.069        L/r    21.146   Rupture  266  24.97    9.069    22.300    27.187   49.187   21.146    0.000    0.000   24.600
0.000              0.000              Automatic
KL/R value of 230.94 exceeds maximum of 200.00 for member "g37X"  ??
     g37XY  Diag(R)     9.069        L/r    21.146   Rupture  266  24.97    9.069    22.300    27.187   49.187   21.146    0.000    0.000   24.600
0.000              0.000              Automatic
KL/R value of 230.94 exceeds maximum of 200.00 for member "g37XY"  ??
     g37Y   Diag(R)     9.069        L/r    21.146   Rupture  266  24.97    9.069    22.300    27.187   49.187   21.146    0.000    0.000   24.600
0.000              0.000              Automatic
KL/R value of 230.94 exceeds maximum of 200.00 for member "g37Y"  ??
     g38P   Diag(R)     9.069        L/r    21.146   Rupture  266  24.97    9.069    22.300    27.187   49.187   21.146    0.000    0.000   24.600
0.000              0.000              Automatic
KL/R value of 230.94 exceeds maximum of 200.00 for member "g38P"  ??
     g38X   Diag(R)     9.069        L/r    21.146   Rupture  266  24.97    9.069    22.300    27.187   49.187   21.146    0.000    0.000   24.600
0.000              0.000              Automatic
KL/R value of 230.94 exceeds maximum of 200.00 for member "g38X"  ??
     g38XY  Diag(R)     9.069        L/r    21.146   Rupture  266  24.97    9.069    22.300    27.187   49.187   21.146    0.000    0.000   24.600
0.000              0.000              Automatic
KL/R value of 230.94 exceeds maximum of 200.00 for member "g38XY"  ??
     g38Y   Diag(R)     9.069        L/r    21.146   Rupture  266  24.97    9.069    22.300    27.187   49.187   21.146    0.000    0.000   24.600
0.000              0.000              Automatic
KL/R value of 230.94 exceeds maximum of 200.00 for member "g38Y"  ??
     g39P   Diag(R)     6.197        L/r    17.597   Rupture  329  30.73    6.197    22.300    27.187   49.187   17.597    0.000    0.000   21.300
0.000              0.000              Automatic
KL/R value of 279.39 exceeds maximum of 200.00 for member "g39P"  ??
     g39X   Diag(R)     6.197        L/r    17.597   Rupture  329  30.73    6.197    22.300    27.187   49.187   17.597    0.000    0.000   21.300
0.000              0.000              Automatic
KL/R value of 279.39 exceeds maximum of 200.00 for member "g39X"  ??
     g39XY  Diag(R)     6.197        L/r    17.597   Rupture  329  30.73    6.197    22.300    27.187   49.187   17.597    0.000    0.000   21.300
0.000              0.000              Automatic
KL/R value of 279.39 exceeds maximum of 200.00 for member "g39XY"  ??
     g39Y   Diag(R)     6.197        L/r    17.597   Rupture  329  30.73    6.197    22.300    27.187   49.187   17.597    0.000    0.000   21.300
0.000              0.000              Automatic
KL/R value of 279.39 exceeds maximum of 200.00 for member "g39Y"  ??
     g40P   Diag(R)     6.197        L/r    17.597   Rupture  329  30.73    6.197    22.300    27.187   49.187   17.597    0.000    0.000   21.300
0.000              0.000              Automatic
KL/R value of 279.39 exceeds maximum of 200.00 for member "g40P"  ??
     g40X   Diag(R)     6.197        L/r    17.597   Rupture  329  30.73    6.197    22.300    27.187   49.187   17.597    0.000    0.000   21.300
0.000              0.000              Automatic
KL/R value of 279.39 exceeds maximum of 200.00 for member "g40X"  ??
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DIAGONAL BRACING PREVIOUSLY REINFORCED BY NU.
REFER TO CALCULATION SHEETS 18-20 DATED 10/4/99
LOCATED IN SECTION 9 OF THIS REPORT.

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    g40XY  Diag(R)    6.197        L/r   17.597   Rupture  329  30.73    6.197     22.300     27.187   49.187   17.597    0.000    0.000   21.300
0.000              0.000            Automatic
KL/R value of 279.39 exceeds maximum of 200.00 for member "g40XY"  ??
     g40Y  Diag(R)    6.197        L/r   17.597   Rupture  329  30.73    6.197     22.300     27.187   49.187   17.597    0.000    0.000   21.300
0.000              0.000            Automatic
KL/R value of 279.39 exceeds maximum of 200.00 for member "g40Y"  ??
     g41P    Horz1    0.324        L/r   11.150     Shear  665   4.00    0.324     11.150      0.000   14.850    0.000    0.000    0.000    0.000
0.000              0.000            Automatic
KL/R value of 664.82 exceeds maximum of 200.00 for member "g41P"  ??
     g41Y    Horz1    0.324        L/r   11.150     Shear  665   4.00    0.324     11.150      0.000   14.850    0.000    0.000    0.000    0.000
0.000              0.000            Automatic
KL/R value of 664.82 exceeds maximum of 200.00 for member "g41Y"  ??
     g42P    Horz1    0.324        L/r   11.150     Shear  665   4.00    0.324     11.150      0.000   14.850    0.000    0.000    0.000    0.000
0.000              0.000            Automatic
KL/R value of 664.82 exceeds maximum of 200.00 for member "g42P"  ??
     g42Y    Horz1    0.324        L/r   11.150     Shear  665   4.00    0.324     11.150      0.000   14.850    0.000    0.000    0.000    0.000
0.000              0.000            Automatic
KL/R value of 664.82 exceeds maximum of 200.00 for member "g42Y"  ??
     g43P    Horz2   13.471        L/r   13.201   Rupture  122   4.00   13.471     22.300     21.094   17.258   13.201    0.000    0.000    0.000
0.000              0.000            Automatic
     g43X    Horz2   13.471        L/r   13.201   Rupture  122   4.00   13.471     22.300     21.094   17.258   13.201    0.000    0.000    0.000
0.000              0.000            Automatic
     g44P    Horz2   10.547    Bearing    6.873   Rupture  122   4.00   13.406     11.150     10.547   17.258    6.873    0.000    0.000    0.000
0.000              0.000            Automatic
     g44X    Horz2   10.547    Bearing    6.873   Rupture  122   4.00   13.406     11.150     10.547   17.258    6.873    0.000    0.000    0.000
0.000              0.000            Automatic
     g45P    Horz2   10.547    Bearing    7.646   Rupture  122   4.00   13.406     11.150     10.547   17.258    7.646    0.000    0.000    0.000
0.000              0.000            Automatic
     g45X    Horz2   10.547    Bearing    7.646   Rupture  122   4.00   13.406     11.150     10.547   17.258    7.646    0.000    0.000    0.000
0.000              0.000            Automatic
     g46P    Horz2   10.547    Bearing    7.646   Rupture  122   4.00   13.406     11.150     10.547   17.258    7.646    0.000    0.000    0.000
0.000              0.000            Automatic
     g46Y    Horz2   10.547    Bearing    7.646   Rupture  122   4.00   13.406     11.150     10.547   17.258    7.646    0.000    0.000    0.000
0.000              0.000            Automatic
     g47P    Horz2   10.547    Bearing    7.646   Rupture  122   4.00   13.406     11.150     10.547   17.258    7.646    0.000    0.000    0.000
0.000              0.000            Automatic
     g47X    Horz2   10.547    Bearing    7.646   Rupture  122   4.00   13.406     11.150     10.547   17.258    7.646    0.000    0.000    0.000
0.000              0.000            Automatic
     g48P    Horz3   11.150      Shear   10.937   Rupture  120   5.91   27.824     11.150     14.062   37.663   10.937    0.000    0.000    0.000
0.000              0.000            Automatic
     g48Y    Horz3   11.150      Shear   10.937   Rupture  120   5.91   27.824     11.150     14.062   37.663   10.937    0.000    0.000    0.000
0.000              0.000            Automatic
     g49P    Horz3   11.150      Shear   10.937   Rupture  120   5.91   27.824     11.150     14.062   37.663   10.937    0.000    0.000    0.000
0.000              0.000            Automatic
     g49X    Horz3   11.150      Shear   10.937   Rupture  120   5.91   27.824     11.150     14.062   37.663   10.937    0.000    0.000    0.000
0.000              0.000            Automatic
     g50P    Horz3   11.150      Shear   10.937   Rupture  162   7.98   15.744     11.150     14.062   37.663   10.937    0.000    0.000    0.000
0.000              0.000            Automatic
     g50Y    Horz3   11.150      Shear   10.937   Rupture  162   7.98   15.744     11.150     14.062   37.663   10.937    0.000    0.000    0.000
0.000              0.000            Automatic
     g51P    Horz3   11.150      Shear   10.937   Rupture  162   7.98   15.744     11.150     14.062   37.663   10.937    0.000    0.000    0.000
0.000              0.000            Automatic
     g51X    Horz3   11.150      Shear   10.937   Rupture  162   7.98   15.744     11.150     14.062   37.663   10.937    0.000    0.000    0.000
0.000              0.000            Automatic
     g52P    Horz4    8.886        L/r    9.164   Rupture  196  14.19    8.886     11.150     14.062   22.813    9.164    0.000    0.000    0.000
0.000              0.000            Automatic
     g53P    Horz4    8.886        L/r    9.164   Rupture  196  14.19    8.886     11.150     14.062   22.813    9.164    0.000    0.000    0.000
0.000              0.000            Automatic
     g53X    Horz4    8.886        L/r    9.164   Rupture  196  14.19    8.886     11.150     14.062   22.813    9.164    0.000    0.000    0.000
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0.000          0.000          Automatic
    g54P   Horz5   11.150     Shear   10.937   Rupture  187  19.93   13.858    11.150    14.062   37.663   10.937    0.000    0.000    0.000
0.000          0.000          Automatic
    g55P   Horz5   11.150     Shear   10.937   Rupture  187  19.93   13.858    11.150    14.062   37.663   10.937    0.000    0.000    0.000
0.000          0.000          Automatic
    g55X   Horz5   11.150     Shear   10.937   Rupture  187  19.93   13.858    11.150    14.062   37.663   10.937    0.000    0.000    0.000
0.000          0.000          Automatic
    g56P  Inner1   10.547   Bearing    6.100   Rupture   99   5.66   13.392    11.150    10.547   14.585    6.100    0.000    0.000    0.000
0.000          0.000          Automatic
    g56X  Inner1   10.547   Bearing    6.100   Rupture   99   5.66   13.392    11.150    10.547   14.585    6.100    0.000    0.000    0.000
0.000          0.000          Automatic
    g57P  Inner1   10.547   Bearing    6.100   Rupture   99   5.66   13.392    11.150    10.547   14.585    6.100    0.000    0.000    0.000
0.000          0.000          Automatic
    g57X  Inner1   10.547   Bearing    6.100   Rupture   99   5.66   13.392    11.150    10.547   14.585    6.100    0.000    0.000    0.000
0.000          0.000          Automatic
    g58P  Inner1   10.547   Bearing    6.100   Rupture   99   5.66   13.392    11.150    10.547   14.585    6.100    0.000    0.000    0.000
0.000          0.000          Automatic
    g58X  Inner1   10.547   Bearing    6.100   Rupture   99   5.66   13.392    11.150    10.547   14.585    6.100    0.000    0.000    0.000
0.000          0.000          Automatic
    g59P  Inner1   10.547   Bearing    5.326   Rupture   99   5.66   13.392    11.150    10.547   14.585    5.326    0.000    0.000    0.000
0.000          0.000          Automatic
    g59X  Inner1   10.547   Bearing    5.326   Rupture   99   5.66   13.392    11.150    10.547   14.585    5.326    0.000    0.000    0.000
0.000          0.000          Automatic
    g60P  Inner2   11.150     Shear   10.937   Rupture   85   8.36   33.167    11.150    14.062   37.663   10.937    0.000    0.000    0.000
0.000          0.000          Automatic
    g60X  Inner2   11.150     Shear   10.937   Rupture   85   8.36   33.167    11.150    14.062   37.663   10.937    0.000    0.000    0.000
0.000          0.000          Automatic
    g61P  Inner3    6.877       L/r    7.646   Rupture  172  11.29    6.877    11.150    10.547   17.258    7.646    0.000    0.000    0.000
0.000          0.000          Automatic
    g61X  Inner3    6.877       L/r    7.646   Rupture  172  11.29    6.877    11.150    10.547   17.258    7.646    0.000    0.000    0.000
0.000          0.000          Automatic
    g62P  Inner4    1.053       L/r    7.646   Rupture  411  20.07    1.053    11.150    10.547   14.585    7.646    0.000    0.000    0.000
0.000          0.000          Automatic
KL/R value of 410.60 exceeds maximum of 200.00 for member "g62P"  ??
    g62X  Inner4    1.053       L/r    7.646   Rupture  411  20.07    1.053    11.150    10.547   14.585    7.646    0.000    0.000    0.000
0.000          0.000          Automatic
KL/R value of 410.60 exceeds maximum of 200.00 for member "g62X"  ??
    g63P  Inner5    1.653       L/r   10.937   Rupture  428  28.18    1.653    11.150    14.062   26.377   10.937    0.000    0.000    0.000
0.000          0.000          Automatic
KL/R value of 428.46 exceeds maximum of 200.00 for member "g63P"  ??
    g63X  Inner5    1.653       L/r   10.937   Rupture  428  28.18    1.653    11.150    14.062   26.377   10.937    0.000    0.000    0.000
0.000          0.000          Automatic
KL/R value of 428.46 exceeds maximum of 200.00 for member "g63X"  ??
    g65P   Diag5   10.547   Bearing    7.646   Rupture   73   4.82   18.542    11.150    10.547   17.258    7.646    0.000    0.000    0.000
0.000          0.000          Automatic
    g65X   Diag5   10.547   Bearing    7.646   Rupture   73   4.82   18.542    11.150    10.547   17.258    7.646    0.000    0.000    0.000
0.000          0.000          Automatic
   g65XY   Diag5   10.547   Bearing    7.646   Rupture   73   4.82   18.542    11.150    10.547   17.258    7.646    0.000    0.000    0.000
0.000          0.000          Automatic
    g65Y   Diag5   10.547   Bearing    7.646   Rupture   73   4.82   18.542    11.150    10.547   17.258    7.646    0.000    0.000    0.000
0.000          0.000          Automatic
    g66P   Diag5   10.547   Bearing    7.646   Rupture   73   4.82   18.542    11.150    10.547   17.258    7.646    0.000    0.000    0.000
0.000          0.000          Automatic
    g66X   Diag5   10.547   Bearing    7.646   Rupture   73   4.82   18.542    11.150    10.547   17.258    7.646    0.000    0.000    0.000
0.000          0.000          Automatic
   g66XY   Diag5   10.547   Bearing    7.646   Rupture   73   4.82   18.542    11.150    10.547   17.258    7.646    0.000    0.000    0.000
0.000          0.000          Automatic
    g66Y   Diag5   10.547   Bearing    7.646   Rupture   73   4.82   18.542    11.150    10.547   17.258    7.646    0.000    0.000    0.000
0.000          0.000          Automatic
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     g67P ShieldAr   11.150      Shear   11.150      Shear  144    9.50   22.436      11.150      21.094   38.717   17.121    0.000     0.000     0.000
0.000              0.000           Automatic
     g67X ShieldAr   11.150      Shear   11.150      Shear  144    9.50   22.436      11.150      21.094   38.717   17.121    0.000     0.000     0.000
0.000              0.000           Automatic
     g68P ShieldAr   11.150      Shear   11.150      Shear   61    4.00   40.905      11.150      21.094   38.717   17.121    0.000     0.000     0.000
0.000              0.000           Automatic
     g69P  TopArm1   22.300      Shear   22.300      Shear   88    3.61   27.013      22.300      28.125   30.238   23.437    0.000     0.000     0.000
0.000              0.000           Automatic
     g69Y  TopArm1   22.300      Shear   22.300      Shear   88    3.61   27.013      22.300      28.125   30.238   23.437    0.000     0.000     0.000
0.000              0.000           Automatic
     g70P  TopArm1   22.300      Shear   20.695    Rupture   98    4.00   25.851      22.300      28.125   30.238   20.695    0.000     0.000     0.000
0.000              0.000           Automatic
     g71P  TopArm2   44.600      Shear   42.500    Rupture  103    9.22   50.816      44.600      45.000   63.112   42.500    0.000     0.000     0.000
0.000              0.000           Automatic    Member "g71P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
     g71Y  TopArm2   44.600      Shear   42.500    Rupture  103    9.22   50.816      44.600      45.000   63.112   42.500    0.000     0.000     0.000
0.000              0.000           Automatic    Member "g71Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
     g72P  MidArm1   22.300      Shear   21.875    Rupture  119    7.28   27.983      22.300      28.125   37.663   21.875    0.000     0.000     0.000
0.000              0.000           Automatic    Member "g72P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
     g72Y  MidArm1   22.300      Shear   21.875    Rupture  119    7.28   27.983      22.300      28.125   37.663   21.875    0.000     0.000     0.000
0.000              0.000           Automatic    Member "g72Y" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
     g73P  MidArm1   22.300      Shear   21.875    Rupture   88    4.00   32.671      22.300      28.125   37.663   21.875    0.000     0.000     0.000
0.000              0.000           Automatic    Member "g73P" will not be checked for block shear since more than one gage line exists (long edge
distance (g) greater than zero); however, end, edge and spacing distances will be checked.  ??
     g74P  MidArm2   10.768        L/r   44.600      Shear  294   13.15   10.768      44.600      45.000   66.788   45.000    0.000     0.000     0.000
0.000              0.000           Automatic
KL/R value of 252.57 exceeds maximum of 200.00 for member "g74P"  ??
     g74Y  MidArm2   10.768        L/r   44.600      Shear  294   13.15   10.768      44.600      45.000   66.788   45.000    0.000     0.000     0.000
0.000              0.000           Automatic
KL/R value of 252.57 exceeds maximum of 200.00 for member "g74Y"  ??
     g75P  BotArm1   22.300      Shear   22.300      Shear   88    3.61   27.013      22.300      28.125   30.238   22.852    0.000     0.000     0.000
0.000              0.000           Automatic
     g75Y  BotArm1   22.300      Shear   22.300      Shear   88    3.61   27.013      22.300      28.125   30.238   22.852    0.000     0.000     0.000
0.000              0.000           Automatic
     g76P  BotArm1   22.300      Shear   22.300      Shear   98    4.00   25.851      22.300      28.125   30.238   22.852    0.000     0.000     0.000
0.000              0.000           Automatic
     g77P  BotArm2   19.943        L/r   44.600      Shear  206    9.22   19.943      44.600      45.000   67.196   54.206    0.000     0.000     0.000
0.000              0.000           Automatic
     g77Y  BotArm2   19.943        L/r   44.600      Shear  206    9.22   19.943      44.600      45.000   67.196   54.206    0.000     0.000     0.000
0.000              0.000           Automatic
     g78P  ShArmBr   11.150      Shear   11.150      Shear  120   10.92   27.650      11.150      14.062   37.663   14.706    0.000     0.000     0.000
0.000              0.000           Automatic
     g78Y  ShArmBr   11.150      Shear   11.150      Shear  120   10.92   27.650      11.150      14.062   37.663   14.706    0.000     0.000     0.000
0.000              0.000           Automatic
     g79P  ShArmBr   11.150      Shear   11.150      Shear  120   10.92   27.650      11.150      14.062   37.663   14.706    0.000     0.000     0.000
0.000              0.000           Automatic
     g79Y  ShArmBr   11.150      Shear   11.150      Shear  120   10.92   27.650      11.150      14.062   37.663   14.706    0.000     0.000     0.000
0.000              0.000           Automatic
     g80P TopArmBr   10.547    Bearing    8.490    Rupture   70    5.83   26.529      11.150      10.547   25.871    8.490    0.000     0.000     0.000
0.000              0.000           Automatic
     g81P TopArmBr   10.547    Bearing    8.490    Rupture  124   10.30   18.481      11.150      10.547   25.871    8.490    0.000     0.000     0.000
0.000              0.000           Automatic
     g82P MidArmBr   10.547    Bearing    8.490    Rupture   98    8.15   22.835      11.150      10.547   25.871    8.490    0.000     0.000     0.000
0.000              0.000           Automatic
     g82Y MidArmBr   10.547    Bearing    8.490    Rupture   98    8.15   22.835      11.150      10.547   25.871    8.490    0.000     0.000     0.000
0.000              0.000           Automatic
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g83P	MidArmBr	10.547	Bearing	8.490	Rupture	164	13.66	10.659	11.150	10.547	25.871	8.490	0.000	0.000	0.000	0.000	0.000	Automatic
g83Y	MidArmBr	10.547	Bearing	8.490	Rupture	164	13.66	10.659	11.150	10.547	25.871	8.490	0.000	0.000	0.000	0.000	0.000	Automatic
g84P	BotArmBr	10.547	Bearing	8.490	Rupture	72	5.96	26.341	11.150	10.547	25.871	8.490	0.000	0.000	0.000	0.000	0.000	Automatic
g84Y	BotArmBr	10.547	Bearing	8.490	Rupture	72	5.96	26.341	11.150	10.547	25.871	8.490	0.000	0.000	0.000	0.000	0.000	Automatic
g85P	BotArmBr	10.547	Bearing	8.490	Rupture	124	10.37	18.267	11.150	10.547	25.871	8.490	0.000	0.000	0.000	0.000	0.000	Automatic
g85Y	BotArmBr	10.547	Bearing	8.490	Rupture	124	10.37	18.267	11.150	10.547	25.871	8.490	0.000	0.000	0.000	0.000	0.000	Automatic
g86P	Pwmnt	508.571	L/r	571.199	Net Sect	55	20.00	508.571	0.000	0.000	571.199	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g87P	Pwmnt	520.470	L/r	571.199	Net Sect	49	18.00	520.470	0.000	0.000	571.199	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g88P	Pwmnt	365.454	L/r	571.199	Net Sect	99	36.25	365.454	0.000	0.000	571.199	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g89P	Pwmnt	557.069	L/r	571.199	Net Sect	26	9.50	557.069	0.000	0.000	571.199	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g90P	Pwmnt	552.254	L/r	571.199	Net Sect	30	11.00	552.254	0.000	0.000	571.199	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g91P	Pwmnt	506.995	L/r	571.199	Net Sect	55	20.25	506.995	0.000	0.000	571.199	0.000	0.000	0.000	0.000	0.000	0.000	Automatic
g92P	Horz4	8.886	L/r	9.164	Rupture	196	7.10	8.886	11.150	14.062	22.813	9.164	0.000	0.000	0.000	0.000	0.000	Automatic
Fg9293P	Horz4	8.886	L/r	9.164	Rupture	196	7.10	8.886	11.150	14.062	22.813	9.164	0.000	0.000	0.000	0.000	0.000	Automatic
g93P	Horz5	11.150	Shear	10.937	Rupture	184	9.96	14.338	11.150	14.062	37.663	10.937	0.000	0.000	0.000	0.000	0.000	Automatic
Fg9394P	Horz5	11.150	Shear	10.937	Rupture	184	9.96	14.338	11.150	14.062	37.663	10.937	0.000	0.000	0.000	0.000	0.000	Automatic
g94P	TopArm1	22.300	Shear	20.695	Rupture	49	2.00	36.566	22.300	28.125	30.238	20.695	0.000	0.000	0.000	0.000	0.000	Automatic
Fg9498P	TopArm1	22.300	Shear	20.695	Rupture	49	2.00	36.566	22.300	28.125	30.238	20.695	0.000	0.000	0.000	0.000	0.000	Automatic
g95P	MidArm1	22.300	Shear	21.875	Rupture	44	2.00	44.854	22.300	28.125	37.663	21.875	0.000	0.000	0.000	0.000	0.000	Automatic Member "g95P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
Fg9599P	MidArm1	22.300	Shear	21.875	Rupture	44	2.00	44.854	22.300	28.125	37.663	21.875	0.000	0.000	0.000	0.000	0.000	Automatic Member "Fg9599P" will not be checked for block shear since more than one gage line exists (long edge distance (g) greater than zero); however, end, edge and spacing distances will be checked. ??
g96P	BotArm1	22.300	Shear	22.300	Shear	49	2.00	36.566	22.300	28.125	30.238	22.852	0.000	0.000	0.000	0.000	0.000	Automatic
Fg96100P	BotArm1	22.300	Shear	22.300	Shear	49	2.00	36.566	22.300	28.125	30.238	22.852	0.000	0.000	0.000	0.000	0.000	Automatic
g102P	PMBR1	10.195	Bearing	10.195	Bearing	68	2.24	18.450	16.800	10.195	18.827	10.343	0.000	0.000	0.000	0.000	0.000	Automatic
g102X	PMBR1	10.195	Bearing	10.195	Bearing	68	2.24	18.450	16.800	10.195	18.827	10.343	0.000	0.000	0.000	0.000	0.000	Automatic
g103P	PMBR1	10.195	Bearing	10.195	Bearing	91	3.00	16.583	16.800	10.195	18.827	10.343	0.000	0.000	0.000	0.000	0.000	Automatic
g104P	PMBR1	10.195	Bearing	10.195	Bearing	68	2.24	18.450	16.800	10.195	18.827	10.343	0.000	0.000	0.000	0.000	0.000	Automatic
g104X	PMBR1	10.195	Bearing	10.195	Bearing	68	2.24	18.450	16.800	10.195	18.827	10.343	0.000	0.000	0.000	0.000	0.000	Automatic
g105P	PMBR1	10.195	Bearing	10.195	Bearing	91	3.00	16.583	16.800	10.195	18.827	10.343	0.000	0.000	0.000	0.000	0.000	Automatic
g106P	PMBR1	10.195	Bearing	10.195	Bearing	68	2.24	18.450	16.800	10.195	18.827	10.343	0.000	0.000	0.000			

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0.000            0.000          Automatic
   g106X    PMBR1   10.195   Bearing   10.195   Bearing   68    2.24   18.450    16.800    10.195   18.827   10.343   0.000   0.000   0.000
0.000            0.000          Automatic
   g107P    PMBR1   10.195   Bearing   10.195   Bearing   91    3.00   16.583    16.800    10.195   18.827   10.343   0.000   0.000   0.000
0.000            0.000          Automatic
   g108P    PMBR2   13.594   Bearing   13.594   Bearing  162    9.36   18.480    16.800    13.594   49.187   15.104   0.000   0.000   0.000
0.000            0.000          Automatic
   g108X    PMBR2   13.594   Bearing   13.594   Bearing  162    9.36   18.480    16.800    13.594   49.187   15.104   0.000   0.000   0.000
0.000            0.000          Automatic
   g109P    PMBR3   13.594   Bearing   13.594   Bearing  122    8.10   36.997    16.800    13.594   57.287   15.104   0.000   0.000   0.000
0.000            0.000          Automatic
   g110P    PMBR2    9.006       L/r   13.594   Bearing  232   13.40    9.006    16.800    13.594   49.187   15.104   0.000   0.000   0.000
0.000            0.000          Automatic
KL/R value of 231.76 exceeds maximum of 200.00 for member "g110P"  ??
   g110X    PMBR2    9.006       L/r   13.594   Bearing  232   13.40    9.006    16.800    13.594   49.187   15.104   0.000   0.000   0.000
0.000            0.000          Automatic
KL/R value of 231.76 exceeds maximum of 200.00 for member "g110X"  ??
   g111P    PMBR3   13.594   Bearing   13.594   Bearing  165   10.96   20.273    16.800    13.594   57.287   15.104   0.000   0.000   0.000
0.000            0.000          Automatic
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The model contains 279 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	0.0629	3.571	1.426
2P	0.122	6.619	3.774
3P	0.0531	2.547	2.547
4P	0.0652	4.006	2.896
5P	0.149	7.728	4.645
6P	0.0999	5.505	4.753
7P	0.152	7.046	5.129
8P	0.123	4.551	4.551
9P	0.331	13.533	13.533
16P	0.0796	4.121	1.571
17P	0.0185	1.111	0.833
18P	0.0822	5.358	1.417
19P	0.0461	3.359	1.280
20P	0.125	8.751	1.697
21P	0.0224	1.561	1.276
22P	0.0889	6.196	1.859
23P	0.496	10.625	10.625
24P	1.06	23.094	24.629
25P	1.43	30.890	31.948
26P	1.14	24.638	24.721
27P	0.518	11.224	11.307
28P	0.784	16.935	17.018
29P	0.502	10.758	10.758
1X	0.06	3.199	1.426
2X	0.0921	4.682	3.482
2XY	0.0853	4.307	3.399
2Y	0.116	6.244	3.690
3X	0.0531	2.547	2.547
3XY	0.0531	2.547	2.547
3Y	0.0531	2.547	2.547
4X	0.0617	3.539	2.896

4XY	0.0617	3.539	2.896
4Y	0.0652	4.006	2.896
5X	0.113	5.499	4.437
5XY	0.105	5.041	4.353
5Y	0.141	7.270	4.562
6X	0.0971	5.125	4.753
6XY	0.0971	5.125	4.753
6Y	0.0999	5.505	4.753
7X	0.122	5.108	4.837
7XY	0.115	4.733	4.754
7Y	0.146	6.671	5.046
8X	0.123	4.551	4.551
8XY	0.123	4.551	4.551
8Y	0.123	4.551	4.551
9X	0.331	13.533	13.533
9XY	0.331	13.533	13.533
9Y	0.331	13.533	13.533
16X	0.0796	4.121	1.571
10S	0.17	6.084	6.084
11S	0.179	6.673	6.673
12S	0.134	5.329	5.329
13S	0.164	6.746	6.746
14S	0.459	18.949	18.804
15S	0.795	31.352	31.206
1PF0.50S	0.0192	1.307	1.010
14XYF0.50S	0.0558	1.774	1.350
15XYF0.50S	0.094	3.321	1.827
2XYF0.50S	0.0119	0.417	0.250
5XYF0.50S	0.0135	0.583	0.250
7XYF0.50S	0.0119	0.417	0.250
10X	0.17	6.084	6.084
10XY	0.17	6.084	6.084
10Y	0.17	6.084	6.084
11X	0.179	6.673	6.673
11XY	0.179	6.673	6.673
11Y	0.179	6.673	6.673
12X	0.134	5.329	5.329
12XY	0.134	5.329	5.329
12Y	0.134	5.329	5.329
13X	0.164	6.746	6.746
13XY	0.164	6.746	6.746
13Y	0.164	6.746	6.746
14X	0.459	18.949	18.804
14XY	0.418	17.027	17.914
14Y	0.418	17.027	17.914
15X	0.795	31.352	31.206
15XY	0.727	28.238	29.899
15Y	0.727	28.238	29.899
1PF0.50X	0.0192	1.307	1.010
1PF0.50XY	0.0192	1.307	1.010
1PF0.50Y	0.0192	1.307	1.010
Total	18.4	661.539	613.530

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	6.078	242.564	189.368	86.808	91.895
2	12.301	418.974	424.162	121.650	200.541
Total	18.378	661.539	613.530	208.458	292.435

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	6.078	6.078	919.400	919.400
2	12.301	13.531	1833.039	2016.343
Total	18.378	19.608	2752.439	2935.743

Section Joint Information:

Section Label	Joint Label	Joint Elevation (ft)
1	1P	99.750
1	1PF0.50S	97.250
1	1X	99.750
1	1PF0.50X	97.250
1	1PF0.50XY	97.250
1	1PF0.50Y	97.250
1	2P	94.750
1	2X	94.750
1	2XY	94.750
1	2Y	94.750
1	3P	91.080
1	3X	91.080
1	3XY	91.080
1	3Y	91.080
1	4P	87.420
1	4X	87.420
1	4XY	87.420
1	4Y	87.420
1	5P	83.750
1	5X	83.750
1	5XY	83.750
1	5Y	83.750
1	6P	79.000
1	6X	79.000
1	6XY	79.000
1	6Y	79.000
1	7P	74.250
1	7X	74.250
1	7XY	74.250
1	7Y	74.250
1	8P	70.000
1	8X	70.000
1	8XY	70.000
1	8Y	70.000
1	10S	64.000
1	10X	64.000
1	10XY	64.000
1	10Y	64.000
1	16X	99.750

1	16P	99.750
1	17P	94.750
1	18P	94.750
1	19P	83.750
1	20P	83.750
1	21P	74.250
1	22P	74.250
1	26P	74.250
1	27P	83.750
1	28P	94.750
1	29P	115.000
1	2XYF0.50S	94.750
1	5XYF0.50S	83.750
1	7XYF0.50S	74.250
2	10S	64.000
2	11S	57.500
2	10X	64.000
2	11X	57.500
2	10XY	64.000
2	11XY	57.500
2	10Y	64.000
2	11Y	57.500
2	12S	51.000
2	12X	51.000
2	12XY	51.000
2	12Y	51.000
2	13S	45.000
2	13X	45.000
2	13XY	45.000
2	13Y	45.000
2	14S	38.000
2	14X	38.000
2	14XY	38.000
2	14Y	38.000
2	15S	20.000
2	15X	20.000
2	15XY	20.000
2	15Y	20.000
2	9P	0.000
2	9X	0.000
2	9XY	0.000
2	9Y	0.000
2	23P	0.000
2	24P	20.000
2	25P	38.000
2	26P	74.250
2	14XYF0.50S	38.000
2	15XYF0.50S	20.000

Sections Information:

Section Label	Top Z (ft)	Bottom Z (ft)	Joint Count	Member Count	Tran. Face Top Width (ft)	Tran. Face Bot Width (ft)	Tran. Face Gross Area (ft^2)	Long. Face Top Width (ft)	Long. Face Bot Width (ft)	Long. Face Gross Area (ft^2)
1	115.000	64.000	53	178	0.00	5.91	139.984	0.00	5.91	451.809
2	64.000	0.000	34	101	5.91	26.30	1030.766	5.91	26.30	1030.766

*** 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	16P	C-EX1	No Limit
2	16X	C-EX1	No Limit
3	17P	C-EX1	No Limit
4	18P	C-EX1	No Limit
5	19P	C-EX1	No Limit
6	20P	C-EX1	No Limit
7	21P	C-EX1	No Limit
8	22P	C-EX1	No Limit
9	24P	C-EX1	No Limit
10	25P	C-EX1	No Limit
11	26P	C-EX1	No Limit
12	27P	C-EX1	No Limit
13	28P	C-EX1	No Limit
14	29P	C-EX1	No Limit
15	2P	C-EX1	No Limit
16	5P	C-EX1	No Limit
17	7P	C-EX1	No Limit
18	11S	C-EX1	No Limit
19	14S	C-EX1	No Limit
20	15S	C-EX1	No Limit

*** Loads Data

Loads from file: j:\jobs\1300300.wi\co2 - ct33xc528 southington\calcs\pls tower\cl&p # 653.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)	115.00 (ft)	
Structure height	115.00 (ft)	
Structure height above ground	115.00 (ft)	
Tower Shape	Rectangular	

Vector Load Cases:

Load Case Description	Dead Load Factor	Wind Area Factor	SF for Steel Poles Tubular Arms and Towers	SF for Guys and Cables	SF for Insuls.	SF For Found.	Point Loads	Wind/Ice Model	Trans. Wind Pressure (psf)	Longit. Wind Pressure (psf)	Ice Thick. (in)	Ice Density (lbs/ft^3)	Temperature (deg F)	Joint Displ.
NESC Heavy	1.5000	2.5000	1.00000	1.0000	1.0000	1.0000	21 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	21 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
16P	644	2297	0	Shield Wire
16X	644	2297	0	Shield Wire
17P	1063	2791	0	Conductor
18P	1063	2791	0	Conductor
18P	1063	2791	0	Conductor
20P	1063	2791	0	Conductor
21P	1063	2791	0	Conductor
22P	1063	2791	0	Conductor
29P	7196	574	0	Sprint Antennas
29P	94	0	0	Coax Cable on Powermount
28P	145	0	0	Coax Cable on Powermount
27P	94	0	0	Coax Cable on Powermount
26P	215	0	0	Coax Cable on Powermount
25P	253	0	0	Coax Cable on Powermount
24P	271	0	0	Coax Cable on Powermount
2P	1184	442	0	Coax Cable on Tower
5P	471	176	0	Coax Cable on Tower
7P	604	225	0	Coax Cable on Tower
11S	834	311	0	Coax Cable on Tower
14S	862	322	0	Coax Cable on Tower
15S	1334	498	0	Coax Cable on Tower

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

Section Label	Z of Top (ft)	Z of Bottom (ft)	Ave. Elev. Above Ground (ft)	Res. Adj. Wind Pres. (psf)	Tran Adj. Wind Pres. (psf)	Tran Drag Coef	Tran Wind Load (lbs)	Long Adj. Wind Pres. (psf)	Long Drag Coef	Long Wind Load (lbs)	Ice Weight (lbs)	Total Weight (lbs)
1	115.00	64.00	89.50	10.00	10.00	3.200	2940.6	0.00	3.200	0.0	0	9116
2	64.00	0.00	32.00	10.00	10.00	3.400	6818.4	0.00	3.400	0.0	0	20296

Point Loads for Load Case "NESC Extreme":

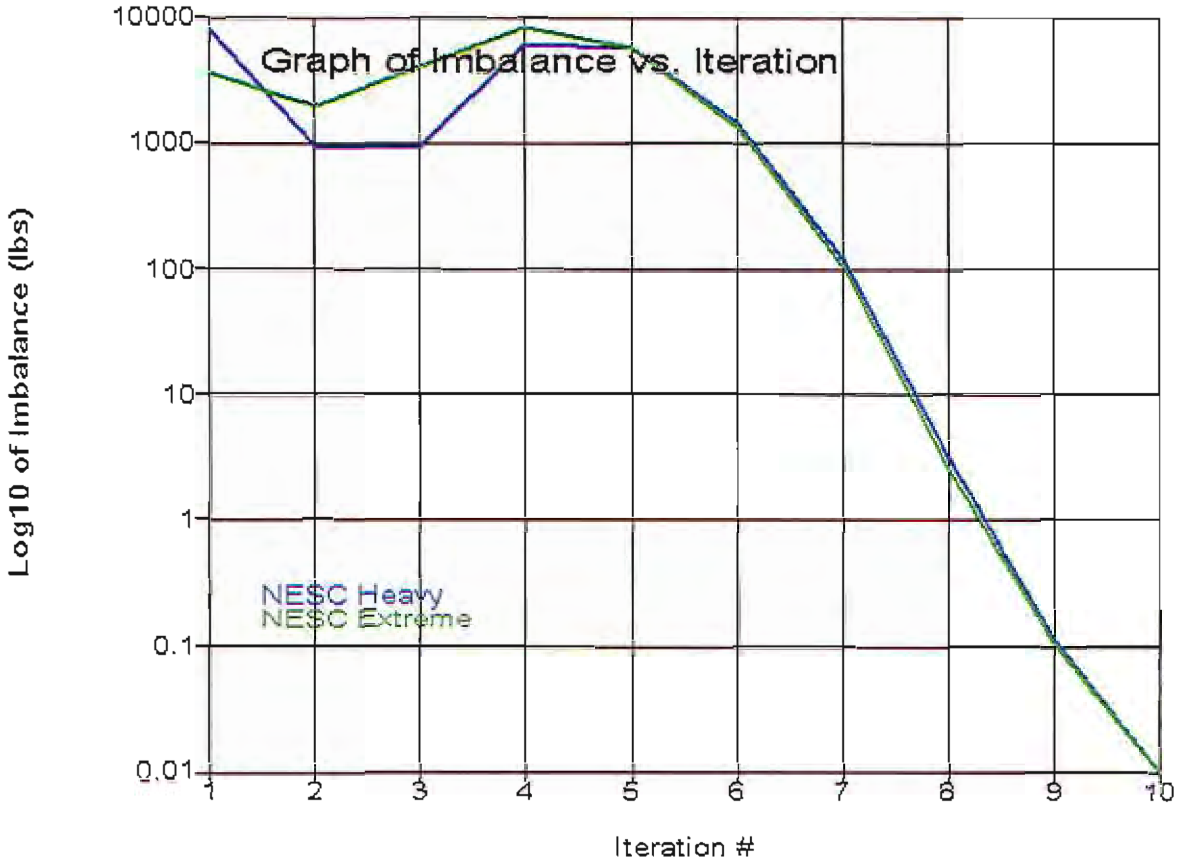
Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
16P	162	1069	0	Shield Wire
16X	162	1069	0	Shield Wire
17P	413	1520	0	Conductor
18P	413	1520	0	Conductor
18P	413	1520	0	Conductor
20P	413	1520	0	Conductor
21P	413	1520	0	Conductor
22P	413	1520	0	Conductor
29P	3453	2135	0	Sprint Antennas
29P	62	0	0	Coax Cable on Powermount
28P	97	0	0	Coax Cable on Powermount
27P	62	0	0	Coax Cable on Powermount
26P	144	0	0	Coax Cable on Powermount
25P	168	0	0	Coax Cable on Powermount
24P	181	0	0	Coax Cable on Powermount
2P	321	1415	0	Coax Cable on Tower
5P	128	563	0	Coax Cable on Tower
7P	164	721	0	Coax Cable on Tower
11S	226	996	0	Coax Cable on Tower
14S	234	1031	0	Coax Cable on Tower
15S	362	1594	0	Coax Cable on Tower

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

Section Label	Z of Top (ft)	Z of Bottom (ft)	Ave. Elev. Above Ground (ft)	Res. Adj. Wind Pres. (psf)	Tran Adj. Wind Pres. (psf)	Tran Angle Face Area (ft^2)	Tran Round Face Area (ft^2)	Tran Gross Area (ft^2)	Tran Solidity Ratio	Tran Angle Drag Coef	Tran Round Drag Coef	Tran Wind Load (lbs)	Long Adj. Wind Pres. (psf)	Long Angle Face Area (ft^2)	Long Round Face Area (ft^2)	Long Gross Area (ft^2)	Long Solidity Ratio	Long Angle Drag Coef	Long Round Drag Coef	Long Wind Load (lbs)	Ice Weight (lbs)	Total Weight (lbs)
1	115.00	64.00	89.50	31.88	31.88	48.60	43.30	139.98	0.656	3.200	2.000	7717.6	0.00	86.81	0.00	451.81	0.192	3.200	2.000	0.0	0	6078
2	64.00	0.00	32.00	31.88	31.88	121.65	78.89	1030.77	0.195	3.200	2.000	17438.5	0.00	121.65	0.00	1030.77	0.118	3.200	2.000	0.0	0	13531

*** Analysis Results:

Maximum element usage is 94.11% for Angle "g55P" in load case "NESC Extreme"
Maximum insulator usage is 16.19% for Clamp "14" in load case "NESC Heavy"



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

Group Label	Angle Label	Max. Usage For All LC %	Max. Tens. For All LC (kips)	Max. Comp. For All LC (kips)	LC 1 (kips)	LC 2 (kips)
Leg1	g1P	11.52	0.000	-2.571	-2.571	-1.081
Leg1	g1X	1.69	0.452	0.000	0.452	0.107
Leg1	g1XY	2.36	0.631	0.000	0.631	0.453
Leg1	g1Y	12.40	0.000	-2.767	-2.767	-1.483

Leg1	Fg163P	21.33	0.000	-4.761	-4.761	-2.197
Leg1	Fg163X	11.88	3.175	0.000	3.175	1.163
Leg1	Fg163XY	14.00	3.741	0.000	3.741	2.310
Leg1	Fg163Y	23.78	0.000	-5.307	-5.307	-3.276
Leg2	g2P	15.43	0.000	-11.129	-11.129	-7.282
Leg2	g2X	9.44	7.475	0.000	7.475	5.681
Leg2	g2XY	9.98	7.904	0.000	7.904	6.262
Leg2	g2Y	14.51	0.000	-10.464	-10.464	-7.765
Leg2	g3P	26.82	0.000	-19.351	-19.351	-16.131
Leg2	g3X	19.23	15.234	0.000	15.234	14.224
Leg2	g3XY	19.45	15.401	0.000	15.401	13.701
Leg2	g3Y	25.55	0.000	-18.436	-18.436	-15.562
Leg2	g4P	38.07	0.000	-27.460	-27.460	-24.237
Leg2	g4X	28.71	22.740	0.000	22.740	21.782
Leg2	g4XY	28.96	22.937	0.000	22.937	21.070
Leg2	g4Y	36.82	0.000	-26.555	-26.555	-23.240
Leg2	g5P	57.58	0.000	-38.780	-38.780	-33.975
Leg2	g5X	42.63	33.765	0.000	33.765	31.548
Leg2	g5XY	43.15	34.173	0.000	34.173	31.047
Leg2	g5Y	56.21	0.000	-37.856	-37.856	-33.398
Leg2	g6P	73.59	0.000	-49.231	-49.231	-42.727
Leg2	g6X	75.11	43.031	0.000	43.031	39.598
Leg2	g6XY	77.11	44.178	0.000	44.178	40.268
Leg2	g6Y	73.21	0.000	-48.977	-48.977	-43.145
Leg3	g7P	60.26	0.000	-57.813	-57.813	-49.705
Leg3	g7X	46.82	51.146	0.000	51.146	46.601
Leg3	g7XY	47.83	52.241	0.000	52.241	47.080
Leg3	g7Y	59.41	0.000	-57.000	-57.000	-50.060
Leg3	g8P	75.32	0.000	-61.307	-61.307	-53.038
Leg3	g8X	49.87	54.470	0.000	54.470	49.810
Leg3	g8XY	50.53	55.196	0.000	55.196	49.725
Leg3	g8Y	74.24	0.000	-60.429	-60.429	-52.918
Leg3	g9P	77.54	0.000	-59.373	-59.373	-52.251
Leg3	g9X	47.15	51.498	0.000	51.498	47.645
Leg3	g9XY	47.81	52.224	0.000	52.224	47.672
Leg3	g9Y	76.89	0.000	-58.876	-58.876	-52.193
Leg3	g10P	77.68	0.000	-59.475	-59.475	-53.331
Leg3	g10X	45.51	49.711	0.000	49.711	47.329
Leg3	g10XY	46.25	50.518	0.000	50.518	47.469
Leg3	g10Y	76.48	0.000	-58.559	-58.559	-53.220
Leg3	g11P	87.90	0.000	-58.805	-58.805	-54.451
Leg3	g11X	72.34	48.395	0.000	48.395	47.543
Leg3	g11XY	73.67	49.283	0.000	49.283	47.665
Leg3	g11Y	87.10	0.000	-58.272	-58.272	-54.458
Leg4	g12P	61.11	0.000	-56.924	-56.924	-54.609
Leg4	g12X	39.42	46.960	0.000	46.317	46.960
Leg4	g12XY	39.67	47.255	0.000	47.255	47.158
Leg4	g12Y	60.83	0.000	-56.662	-56.662	-54.607
Leg4	g13P	66.60	0.000	-50.746	-50.746	-50.575
Leg4	g13X	48.70	43.442	0.000	40.463	43.442
Leg4	g13XY	48.98	43.688	0.000	41.392	43.688
Leg4	g13Y	66.27	0.000	-50.491	-50.064	-50.491
Leg5	g14P	62.87	0.000	-56.084	-54.813	-56.084
Leg5	g14X	53.26	47.506	0.000	40.602	47.506
Leg5	g14XY	53.13	47.389	0.000	41.306	47.389
Leg5	g14Y	62.55	0.000	-55.793	-53.145	-55.793
Diag1	g15P	50.37	6.472	0.000	5.562	6.472
Diag1	g15X	45.85	0.000	-6.610	-6.071	-6.610
Diag1	g15XY	37.56	0.000	-5.415	-5.415	-4.782

Diag1	g15Y	38.30	4.921	0.000	4.921	4.618
Diag1	g16P	4.71	0.000	-0.679	-0.337	-0.679
Diag1	g16X	5.70	0.733	0.000	0.495	0.733
Diag1	g16XY	2.64	0.000	-0.380	0.000	-0.380
Diag1	g16Y	3.20	0.411	0.000	0.158	0.411
Diag1	g17P	53.91	6.927	0.000	6.089	6.927
Diag1	g17X	47.58	0.000	-6.864	-5.830	-6.864
Diag1	g17XY	35.50	0.000	-5.123	-5.123	-4.903
Diag1	g17Y	42.05	5.404	0.000	5.404	5.038
Diag1	g18P	1.36	0.048	-0.196	0.048	-0.196
Diag1	g18X	1.79	0.140	-0.212	-0.212	0.140
Diag1	g18XY	7.82	0.000	-0.928	-0.677	-0.928
Diag1	g18Y	6.81	0.875	0.000	0.524	0.875
Diag1	g19P	56.54	7.026	0.000	7.026	6.963
Diag1	g19X	48.50	0.000	-6.993	-6.993	-6.893
Diag1	g19XY	46.18	0.000	-6.659	-6.659	-6.024
Diag1	g19Y	54.25	6.742	0.000	6.742	6.020
Diag1	g20P	11.20	0.000	-1.328	-1.277	-1.328
Diag1	g20X	8.91	1.108	0.000	0.964	1.108
Diag1	g20XY	4.85	0.603	0.000	0.603	0.345
Diag1	g20Y	7.15	0.000	-0.848	-0.848	-0.398
Diag2	g21P	24.44	6.805	0.000	6.805	6.244
Diag2	g21X	27.03	0.000	-7.368	-7.368	-6.470
Diag2	g21XY	25.98	0.000	-7.082	-7.082	-5.962
Diag2	g21Y	24.21	6.741	0.000	6.741	5.699
Diag2	g22P	1.48	0.000	-0.403	-0.077	-0.403
Diag2	g22X	1.09	0.304	-0.205	-0.205	0.304
Diag2	g22XY	3.66	0.000	-0.792	-0.778	-0.792
Diag2	g22Y	2.37	0.659	0.000	0.482	0.659
Diag2	g23P	23.86	7.215	0.000	7.215	6.477
Diag2	g23X	29.65	0.000	-8.082	-8.082	-6.866
Diag2	g23XY	29.02	0.000	-7.910	-7.910	-6.564
Diag2	g23Y	23.91	7.229	0.000	7.229	6.128
Diag2	g24P	6.09	0.000	-1.297	-1.297	-1.236
Diag2	g24X	3.55	1.075	0.000	0.994	1.075
Diag2	g24XY	1.52	0.459	0.000	0.459	0.143
Diag2	g24Y	3.57	0.000	-0.759	-0.759	-0.201
Diag3	g25P	31.09	9.400	0.000	9.400	9.078
Diag3	g25X	34.27	0.000	-10.753	-10.753	-9.640
Diag3	g25XY	30.53	0.000	-9.580	-9.580	-7.911
Diag3	g25Y	28.01	8.468	0.000	8.468	7.279
Diag3	g26P	31.19	0.000	-8.315	-8.315	-7.490
Diag3	g26X	25.62	7.748	0.000	7.748	7.167
Diag3	g26XY	23.44	7.089	0.000	7.089	6.073
Diag3	g26Y	28.74	0.000	-7.662	-7.662	-6.397
Diag4	g27P	38.11	0.000	-5.350	-5.350	-4.027
Diag4	g27X	19.12	4.183	0.000	4.183	3.437
Diag4	g27XY	23.05	5.042	0.000	5.042	4.774
Diag4	g27Y	42.42	0.000	-5.956	-5.956	-5.334
Diag4	g28P	72.67	0.000	-9.804	-9.804	-8.718
Diag4	g28X	39.34	8.607	0.000	8.607	8.181
Diag4	g28XY	36.55	7.994	0.000	7.994	6.911
Diag4	g28Y	64.91	0.000	-8.758	-8.758	-7.416
Diag5	g29P	40.31	0.000	-3.325	-3.325	-1.815
Diag5	g29X	15.95	2.617	0.000	2.617	1.473
Diag5	g29XY	18.58	3.048	0.000	3.048	2.145
Diag5	g29Y	44.68	0.000	-3.685	-3.685	-2.579
Diag5	g30P	62.89	0.000	-4.951	-4.951	-4.513
Diag5	g30X	25.46	4.178	0.000	4.178	4.085

Diag5	g30XY	22.88	3.753	0.000	3.753	3.213
Diag5	g30Y	54.05	0.000	-4.255	-4.255	-3.621
Diag5	g31P	36.55	0.000	-2.056	-2.056	-0.193
Diag5	g31X	22.46	1.717	0.000	1.717	0.082
Diag5	g31XY	26.49	2.026	0.000	2.026	0.843
Diag5	g31Y	41.62	0.000	-2.341	-2.341	-1.033
Diag5	g32P	36.78	0.000	-1.585	-1.585	-1.544
Diag5	g32X	17.71	1.354	0.000	1.216	1.354
Diag5	g32XY	11.08	0.847	0.000	0.847	0.531
Diag5	g32Y	20.51	0.000	-0.884	-0.884	-0.666
Diag6	g33P	20.66	0.361	-1.394	-1.394	0.361
Diag6	g33X	16.22	1.331	-0.486	1.331	-0.486
Diag6	g33XY	18.89	1.549	0.000	1.549	0.162
Diag6	g33Y	24.01	0.000	-1.620	-1.620	-0.199
Diag6	g34P	6.48	0.532	0.000	0.532	0.344
Diag6	g34X	11.02	0.000	-0.546	-0.546	-0.343
Diag6	g34XY	19.51	0.000	-0.967	-0.826	-0.967
Diag6	g34Y	12.96	1.063	0.000	1.063	1.007
Diag7	g35P	13.00	0.860	-1.175	-1.175	0.860
Diag7	g35X	10.99	0.902	-0.929	0.902	-0.929
Diag7	g35XY	13.19	1.082	-0.520	1.082	-0.520
Diag7	g35Y	15.20	0.255	-1.375	-1.375	0.255
Diag7	g36P	12.87	0.000	-0.849	-0.849	-0.829
Diag7	g36X	7.80	0.640	0.000	0.538	0.640
Diag7	g36XY	3.76	0.308	0.000	0.308	0.124
Diag7	g36Y	6.23	0.000	-0.411	-0.411	-0.277
Diag(R)	g37P	7.76	1.640	-1.536	-1.536	1.640
Diag(R)	g37X	10.50	0.000	-2.583	-0.483	-2.583
Diag(R)	g37XY	8.89	0.000	-2.187	-0.110	-2.187
Diag(R)	g37Y	7.07	0.757	-1.740	-1.740	0.757
Diag(R)	g38P	35.60	0.000	-8.759	-8.745	-8.759
Diag(R)	g38X	35.11	7.425	0.000	6.772	7.425
Diag(R)	g38XY	31.68	6.700	0.000	6.487	6.700
Diag(R)	g38Y	32.73	0.000	-8.052	-8.052	-7.978
Diag(R)	g39P	14.25	2.508	-0.550	-0.550	2.508
Diag(R)	g39X	16.00	0.000	-3.407	-1.517	-3.407
Diag(R)	g39XY	12.50	0.000	-2.663	-0.924	-2.663
Diag(R)	g39Y	7.96	1.400	-0.908	-0.908	1.400
Diag(R)	g40P	33.47	0.000	-7.128	-6.877	-7.128
Diag(R)	g40X	33.75	5.939	0.000	4.772	5.939
Diag(R)	g40XY	30.14	5.304	0.000	4.676	5.304
Diag(R)	g40Y	30.30	0.000	-6.455	-6.230	-6.455
Horz1	g41P	8.61	0.960	0.000	0.960	0.494
Horz1	g41Y	8.01	0.893	0.000	0.893	0.385
Horz1	g42P	8.99	1.002	0.000	1.002	0.459
Horz1	g42Y	7.95	0.886	0.000	0.886	0.446
Horz2	g43P	19.50	2.574	0.000	2.574	1.920
Horz2	g43X	9.12	0.000	-1.229	-0.999	-1.229
Horz2	g44P	12.10	0.831	0.000	0.831	0.167
Horz2	g44X	3.78	0.000	-0.399	-0.399	-0.034
Horz2	g45P	82.12	6.279	0.000	6.279	5.438
Horz2	g45X	46.91	0.000	-4.947	-4.947	-4.796
Horz2	g46P	0.66	0.000	-0.070	-0.037	-0.070
Horz2	g46Y	0.42	0.000	-0.044	-0.044	-0.037
Horz2	g47P	15.99	1.223	0.000	1.223	1.077
Horz2	g47X	11.83	0.000	-1.248	-1.248	-1.076
Horz3	g48P	2.12	0.232	0.000	0.232	0.075
Horz3	g48Y	1.26	0.138	0.000	0.138	0.102
Horz3	g49P	75.91	8.303	0.000	8.303	7.293

Horz3	g49X	68.97	0.000	-7.690	-7.690	-6.994
Horz3	g50P	4.37	0.478	0.000	0.228	0.478
Horz3	g50Y	0.93	0.102	0.000	0.102	0.055
Horz3	g51P	35.19	3.849	0.000	3.849	3.426
Horz3	g51X	31.89	0.000	-3.556	-3.556	-3.297
Horz4	g52P	6.93	0.635	0.000	0.463	0.635
Horz4	g53P	75.60	6.928	0.000	6.928	6.870
Horz4	g53X	69.20	0.000	-6.149	-5.966	-6.149
Horz5	g54P	9.62	1.053	0.000	0.699	1.053
Horz5	g55P	94.11	10.293	0.000	9.934	10.293
Horz5	g55X	82.89	0.000	-9.242	-8.438	-9.242
Inner1	g56P	10.95	0.000	-1.155	-0.357	-1.155
Inner1	g56X	24.11	1.470	0.000	0.674	1.470
Inner1	g57P	17.09	1.042	0.000	0.329	1.042
Inner1	g57X	9.09	0.000	-0.959	-0.267	-0.959
Inner1	g58P	3.01	0.000	-0.317	-0.213	-0.317
Inner1	g58X	11.16	0.681	0.000	0.681	0.633
Inner1	g59P	1.71	0.000	-0.181	-0.139	-0.181
Inner1	g59X	2.52	0.134	0.000	0.092	0.134
Inner2	g60P	1.99	0.217	0.000	0.217	0.065
Inner2	g60X	2.50	0.273	0.000	0.273	0.172
Inner3	g61P	0.90	0.028	-0.062	0.028	-0.062
Inner3	g61X	2.94	0.225	0.000	0.125	0.225
Inner4	g62P	1.06	0.081	0.000	0.060	0.081
Inner4	g62X	5.12	0.392	0.000	0.392	0.337
Inner5	g63P	2.30	0.252	0.000	0.252	0.190
Inner5	g63X	5.27	0.577	0.000	0.557	0.577
Diag5	g65P	23.39	0.000	-2.467	-2.467	-1.130
Diag5	g65X	25.52	1.952	0.000	1.952	1.004
Diag5	g65XY	29.63	2.265	0.000	2.265	1.608
Diag5	g65Y	26.71	0.000	-2.817	-2.817	-1.852
Diag5	g66P	18.22	0.000	-1.922	-1.922	-0.807
Diag5	g66X	32.13	2.457	0.000	2.457	0.949
Diag5	g66XY	36.63	2.801	0.000	2.801	1.660
Diag5	g66Y	21.19	0.000	-2.235	-2.235	-1.415
ShieldAr	g67P	8.64	0.000	-0.963	-0.963	-0.718
ShieldAr	g67X	33.18	3.700	0.000	3.700	1.716
ShieldAr	g68P	28.04	3.126	0.000	3.126	1.292
TopArm1	g69P	9.37	0.000	-2.089	-2.089	-1.187
TopArm1	g69Y	9.38	0.000	-2.091	-2.091	-1.197
TopArm1	g70P	2.76	0.338	-0.615	-0.615	0.338
TopArm2	g71P	2.15	0.915	0.000	0.915	0.805
TopArm2	g71Y	2.19	0.931	0.000	0.931	0.825
MidArm1	g72P	2.92	0.000	-0.651	-0.277	-0.651
MidArm1	g72Y	1.01	0.220	0.000	0.040	0.220
MidArm1	g73P	0.98	0.132	-0.218	-0.218	0.132
MidArm2	g74P	4.78	0.352	-0.514	-0.514	0.352
MidArm2	g74Y	7.00	0.000	-0.754	-0.754	-0.297
BotArm1	g75P	9.81	0.000	-2.187	-2.187	-1.344
BotArm1	g75Y	9.59	0.000	-2.138	-2.138	-1.147
BotArm1	g76P	0.87	0.194	-0.091	-0.091	0.194
BotArm2	g77P	1.13	0.506	0.000	0.461	0.506
BotArm2	g77Y	0.94	0.418	0.000	0.390	0.418
ShArmBr	g78P	7.21	0.000	-0.804	-0.804	-0.290
ShArmBr	g78Y	7.16	0.000	-0.798	-0.798	-0.284
ShArmBr	g79P	7.21	0.000	-0.804	-0.804	-0.291
ShArmBr	g79Y	7.15	0.000	-0.797	-0.797	-0.283
TopArmBr	g80P	14.66	1.245	0.000	1.245	0.594
TopArmBr	g81P	51.32	4.357	0.000	4.357	1.836

MidArmBr	g82P	7.54	0.640	0.000	0.285	0.640
MidArmBr	g82Y	3.13	0.000	-0.330	-0.069	-0.330
MidArmBr	g83P	23.62	2.005	0.000	2.005	0.511
MidArmBr	g83Y	26.61	2.260	0.000	2.260	1.188
BotArmBr	g84P	9.08	0.771	0.000	0.771	0.541
BotArmBr	g84Y	8.03	0.682	0.000	0.682	0.206
BotArmBr	g85P	12.88	1.093	0.000	1.093	0.391
BotArmBr	g85Y	13.90	1.180	0.000	1.180	0.496
Pwmnt	g86P	3.40	0.000	-17.298	-17.298	-6.523
Pwmnt	g87P	2.93	0.000	-15.258	-15.258	-5.878
Pwmnt	g88P	3.45	0.000	-12.625	-12.625	-5.205
Pwmnt	g89P	1.88	0.000	-10.467	-10.467	-4.389
Pwmnt	g90P	1.72	0.000	-9.489	-9.489	-4.050
Pwmnt	g91P	1.58	0.000	-8.027	-8.027	-3.581
Horz4	g92P	7.29	0.668	0.000	0.320	0.668
Horz4	Fg9293P	3.43	0.315	0.000	0.315	0.152
Horz5	g93P	7.31	0.799	0.000	0.418	0.799
Horz5	Fg9394P	3.80	0.415	0.000	0.415	0.284
TopArm1	g94P	3.58	0.000	-0.799	-0.799	-0.192
TopArm1	Fg9498P	3.66	0.000	-0.816	-0.816	-0.377
MidArm1	g95P	1.66	0.055	-0.370	-0.370	0.055
MidArm1	Fg9599P	1.67	0.000	-0.373	-0.373	-0.085
BotArm1	g96P	1.52	0.019	-0.339	-0.339	0.019
BotArm1	Fg96100P	1.55	0.000	-0.347	-0.347	-0.137
PMBR1	g102P	35.86	3.656	0.000	1.492	3.656
PMBR1	g102X	35.20	0.000	-3.589	-1.436	-3.589
PMBR1	g103P	0.21	0.021	0.000	0.016	0.021
PMBR1	g104P	29.75	0.000	-3.033	-1.019	-3.033
PMBR1	g104X	29.45	3.003	0.000	0.989	3.003
PMBR1	g105P	0.02	0.000	-0.002	-0.002	-0.000
PMBR1	g106P	14.55	1.483	0.000	1.318	1.483
PMBR1	g106X	13.66	0.000	-1.393	-1.260	-1.393
PMBR1	g107P	0.15	0.015	0.000	0.015	0.005
PMBR2	g108P	2.18	0.296	0.000	0.296	0.067
PMBR2	g108X	2.09	0.000	-0.285	-0.285	-0.040
PMBR3	g109P	0.08	0.000	-0.011	-0.002	-0.011
PMBR2	g110P	3.20	0.435	0.000	0.435	0.249
PMBR2	g110X	4.67	0.000	-0.421	-0.421	-0.270
PMBR3	g111P	0.09	0.000	-0.012	-0.003	-0.012

Moments for Angles Modeled as Beams For All Load Cases

Load Case	Angle Label	Torsion (ft-lbs)	Origin X Moment (ft-lbs)	Origin Y Moment (ft-lbs)	End X Moment (ft-lbs)	End Y Moment (ft-lbs)	X Shear (lbs)	Y Shear (lbs)
NESC Heavy	g1P	0.33	-1.24	13.24	8.93	14.68	2.86	10.37
NESC Heavy	g1X	1.23	15.35	10.60	5.61	6.60	7.79	6.39
NESC Heavy	g1XY	-0.10	15.72	-14.06	7.62	-9.48	8.67	-8.75
NESC Heavy	g1Y	0.07	-1.61	-15.20	7.15	-15.33	2.06	-11.34
NESC Heavy	Fg163P	0.33	-8.93	-14.68	-14.19	-23.25	-8.59	-14.09
NESC Heavy	Fg163X	1.23	-5.61	-6.60	-3.46	1.96	-3.37	-1.72
NESC Heavy	Fg163XY	-0.10	-7.63	9.48	1.39	2.43	-2.32	4.42
NESC Heavy	Fg163Y	0.07	-7.15	15.33	-17.67	22.18	-9.22	13.93
NESC Heavy	g2P	13.84	57.37	93.30	-83.11	128.12	-7.01	60.34
NESC Heavy	g2X	14.16	-227.68	-89.70	-147.24	-118.05	-102.15	-56.60
NESC Heavy	g2XY	-3.17	-108.78	43.38	-116.43	108.21	-61.36	41.30
NESC Heavy	g2Y	-2.20	121.01	-61.44	-69.97	-114.77	13.91	-48.02

NESC	Heavy	g3P	13.81	83.10	-128.13	-34.04	-223.12	13.40	-95.99
NESC	Heavy	g3X	14.18	147.24	118.05	-20.33	234.65	34.67	96.35
NESC	Heavy	g3XY	-3.19	116.43	-108.21	-23.88	-224.73	25.28	-90.95
NESC	Heavy	g3Y	-2.17	69.97	114.77	-24.06	226.20	12.55	93.18
NESC	Heavy	g4P	-0.86	33.45	223.97	-236.70	380.12	-55.40	164.67
NESC	Heavy	g4X	-1.15	19.73	-235.52	-399.82	-388.60	-103.53	-170.01
NESC	Heavy	g4XY	11.73	23.33	225.97	-351.98	381.78	-89.51	165.55
NESC	Heavy	g4Y	11.38	23.51	-227.41	-224.78	-380.38	-54.87	-165.67
NESC	Heavy	g5P	43.92	346.83	-385.75	-212.57	-432.69	28.25	-172.38
NESC	Heavy	g5X	40.03	138.70	371.18	-256.41	429.70	-24.74	168.54
NESC	Heavy	g5XY	-26.85	159.69	-376.69	-255.99	-420.65	-20.24	-167.79
NESC	Heavy	g5Y	-31.33	343.00	380.73	-213.26	434.09	27.31	171.62
NESC	Heavy	g6P	-23.57	212.38	431.75	-33.85	306.63	37.60	155.56
NESC	Heavy	g6X	-29.16	256.17	-428.83	-180.60	-294.82	15.91	-152.26
NESC	Heavy	g6XY	42.25	255.79	420.02	-158.07	283.42	20.58	148.01
NESC	Heavy	g6Y	35.22	213.07	-433.43	-34.21	-296.94	37.66	-153.87
NESC	Heavy	g7P	-31.38	358.54	-99.07	-693.10	103.42	-78.77	1.00
NESC	Heavy	g7X	-26.63	28.51	123.98	-757.81	-80.87	-171.51	10.11
NESC	Heavy	g7XY	36.14	117.68	-155.35	-736.24	79.81	-145.46	-17.73
NESC	Heavy	g7Y	46.90	414.73	112.21	-675.89	-77.85	-61.49	8.13
NESC	Heavy	g8P	54.52	-570.76	-409.17	-58.90	92.92	-102.44	-51.45
NESC	Heavy	g8X	64.62	597.00	-465.86	62.60	79.51	107.19	-62.79
NESC	Heavy	g8XY	-48.28	585.09	464.94	58.41	-70.30	104.57	64.13
NESC	Heavy	g8Y	-38.91	-543.67	428.81	-52.70	-82.77	-97.02	56.30
NESC	Heavy	g9P	25.73	-115.26	-176.38	158.72	-0.59	6.53	-26.58
NESC	Heavy	g9X	26.67	110.49	-167.56	-135.37	9.03	-3.73	-23.78
NESC	Heavy	g9XY	-12.79	114.32	177.67	-136.23	-1.15	-3.29	26.48
NESC	Heavy	g9Y	-17.28	-114.47	189.33	153.97	5.75	5.93	29.30
NESC	Heavy	g10P	23.64	-235.12	-17.42	-89.04	200.91	-48.68	27.56
NESC	Heavy	g10X	25.10	204.74	-28.67	47.66	194.89	37.87	24.93
NESC	Heavy	g10XY	-4.54	205.55	33.58	48.07	-187.62	38.05	-23.11
NESC	Heavy	g10Y	-22.19	-224.83	26.76	-82.10	-202.19	-46.09	-26.35
NESC	Heavy	g11P	23.74	89.03	-200.91	232.28	-45.00	52.27	-40.01
NESC	Heavy	g11X	25.02	-47.68	-194.89	-189.64	-39.82	-38.57	-38.14
NESC	Heavy	g11XY	-4.46	-48.08	187.62	-195.32	30.85	-39.55	35.50
NESC	Heavy	g11Y	-22.28	82.08	202.18	215.24	54.20	48.37	41.72
NESC	Heavy	g12P	23.68	-232.28	45.02	-12.66	112.57	-34.15	21.98
NESC	Heavy	g12X	25.07	189.64	39.80	-15.77	114.26	24.22	21.46
NESC	Heavy	g12XY	-4.51	195.32	-30.85	-13.99	-72.12	25.26	-14.34
NESC	Heavy	g12Y	-22.22	-215.24	-54.21	59.28	-142.01	-21.75	-27.36
NESC	Heavy	g13P	11.10	-76.28	-109.44	32.95	59.66	-2.35	-2.70
NESC	Heavy	g13X	9.84	73.89	-111.72	-36.42	58.50	2.03	-2.88
NESC	Heavy	g13XY	-9.94	111.46	167.63	31.42	31.97	7.74	10.81
NESC	Heavy	g13Y	-11.37	-8.33	53.12	116.88	-159.63	5.89	-5.77
NESC	Heavy	g14P	-4.01	-56.45	-78.45	62.52	33.43	0.30	-2.20
NESC	Heavy	g14X	-2.78	55.23	-87.83	-66.02	28.27	-0.53	-2.90
NESC	Heavy	g14XY	-29.33	170.67	218.59	-4.81	44.91	8.09	12.85
NESC	Heavy	g14Y	24.71	53.48	-47.54	115.37	-84.83	8.24	-6.46
NESC	Heavy	g41P	0.86	-0.60	15.21	-0.59	14.74	-0.30	7.49
NESC	Heavy	g41Y	-1.22	-0.55	-14.83	-0.54	-13.61	-0.27	-7.11
NESC	Heavy	g42P	-0.90	-0.24	68.86	-0.19	67.82	-0.11	34.17
NESC	Heavy	g42Y	0.64	-0.22	-68.77	-0.18	-66.87	-0.10	-33.91
NESC	Heavy	g43P	0.04	-4.09	-5.40	-2.97	-1.62	-1.76	-1.76
NESC	Heavy	g43X	0.85	6.14	-5.45	3.72	-4.15	2.47	-2.40
NESC	Heavy	g44P	-0.10	-7.96	0.39	5.99	7.61	-0.49	2.00
NESC	Heavy	g44X	0.41	9.12	0.32	-4.73	5.43	1.10	1.44
NESC	Heavy	g45P	-0.03	7.13	-9.26	-10.37	1.63	-0.81	-1.91
NESC	Heavy	g45X	0.49	-6.40	-7.38	12.26	-3.29	1.46	-2.67
NESC	Heavy	g46P	-2.60	-4.30	9.84	-0.52	7.89	-1.21	4.43

NESC	Heavy	g46Y	1.87	2.57	-11.11	6.06	-8.62	2.15	-4.93
NESC	Heavy	g47P	-0.89	-4.33	-0.85	0.80	-1.61	-0.88	-0.61
NESC	Heavy	g47X	-1.00	4.95	0.72	-1.56	-4.57	0.85	-0.96
NESC	Heavy	g48P	-5.06	127.90	51.44	126.76	49.62	43.08	17.10
NESC	Heavy	g48Y	2.11	136.22	-51.58	135.36	-48.67	45.94	-16.96
NESC	Heavy	g49P	-1.33	-12.18	-0.30	-3.78	0.86	-2.70	0.10
NESC	Heavy	g49X	-1.22	10.03	1.15	-0.21	-2.49	1.66	-0.23
NESC	Heavy	g50P	-12.00	55.76	10.11	58.84	9.33	14.36	2.44
NESC	Heavy	g50Y	9.93	61.32	-12.23	64.36	-8.03	15.74	-2.54
NESC	Heavy	g51P	-0.83	-21.51	-2.40	9.18	4.67	-1.55	0.29
NESC	Heavy	g51X	-0.84	16.02	-4.32	-10.32	-2.42	0.71	-0.84
NESC	Heavy	g52P	-3.27	8.59	-0.20	9.27	-0.08	1.26	-0.02
NESC	Heavy	g53P	-0.92	-7.09	-1.45	6.35	4.00	-0.05	0.18
NESC	Heavy	g53X	0.53	3.49	-6.24	-10.19	-5.39	-0.47	-0.82
NESC	Heavy	g54P	0.81	21.31	5.50	22.24	5.30	2.19	0.54
NESC	Heavy	g55P	-5.31	-4.04	-1.84	-10.81	7.73	-0.74	0.30
NESC	Heavy	g55X	4.82	-5.13	-10.61	-5.26	-10.94	-0.52	-1.08
NESC	Heavy	g56P	0.96	-10.11	-0.37	-14.70	1.06	-4.38	0.12
NESC	Heavy	g56X	-1.31	15.32	-2.43	13.15	-1.54	5.03	-0.70
NESC	Heavy	g57P	0.99	-6.53	0.99	-9.87	4.07	-2.90	0.90
NESC	Heavy	g57X	-1.19	10.51	-1.84	8.25	0.80	3.32	-0.18
NESC	Heavy	g58P	1.33	-27.41	-0.82	-31.46	2.99	-10.41	0.38
NESC	Heavy	g58X	-1.55	31.95	-5.03	29.27	-1.88	10.82	-1.22
NESC	Heavy	g59P	-0.98	2.42	2.16	3.90	0.88	1.12	0.54
NESC	Heavy	g59X	0.12	-3.61	-1.72	-3.14	-3.26	-1.19	-0.88
NESC	Heavy	g60P	-1.36	72.89	3.67	71.66	3.18	17.29	0.82
NESC	Heavy	g60X	-1.39	-73.24	-2.79	-73.93	-4.05	-17.60	-0.82
NESC	Heavy	g61P	-0.24	10.73	0.13	11.25	1.08	1.95	0.11
NESC	Heavy	g61X	-0.17	-11.67	-1.02	-11.04	-0.60	-2.01	-0.14
NESC	Heavy	g62P	-0.11	3.41	-0.28	4.00	0.92	0.37	0.03
NESC	Heavy	g62X	0.13	-3.27	-1.25	-3.10	-1.09	-0.32	-0.12
NESC	Heavy	g63P	-0.83	3.54	-0.18	5.37	1.63	0.32	0.05
NESC	Heavy	g63X	0.74	-0.57	-2.07	1.16	-2.09	0.02	-0.15
NESC	Heavy	g67P	0.00	0.00	0.00	-0.28	-0.78	-0.03	-0.08
NESC	Heavy	g67X	-0.00	-0.00	0.00	-7.29	-0.98	-0.77	-0.10
NESC	Heavy	g68P	0.37	-22.12	1.02	-33.60	1.34	-13.93	0.59
NESC	Heavy	g69P	7.20	1.33	-9.19	17.90	-18.11	5.33	-7.57
NESC	Heavy	g69Y	-4.00	6.14	9.19	20.65	4.35	7.43	3.76
NESC	Heavy	g70P	-4.28	-87.23	10.89	-114.85	9.32	-50.52	5.05
NESC	Heavy	g71P	16.81	260.64	-6.48	-7.00	-2.58	27.51	-0.98
NESC	Heavy	g71Y	-12.26	283.57	2.78	13.46	2.58	32.22	0.58
NESC	Heavy	g72P	14.91	3.64	-7.54	100.50	-10.31	14.30	-2.46
NESC	Heavy	g72Y	-14.58	4.79	7.54	97.91	13.33	14.11	2.87
NESC	Heavy	g73P	-27.79	-272.19	-16.50	-333.53	-17.66	-151.43	-8.59
NESC	Heavy	g74P	35.74	452.61	-3.87	2.06	-2.41	34.57	-0.48
NESC	Heavy	g74Y	-34.71	463.90	6.37	8.78	2.41	35.94	0.67
NESC	Heavy	g75P	22.33	12.83	-39.72	145.41	-53.91	43.88	-26.00
NESC	Heavy	g75Y	-20.45	15.65	39.72	147.09	38.28	45.13	21.66
NESC	Heavy	g76P	16.63	-145.43	30.99	-175.24	23.56	-80.16	13.66
NESC	Heavy	g77P	-10.14	588.21	-19.46	-8.03	-11.20	62.93	-3.33
NESC	Heavy	g77Y	12.59	603.64	15.06	2.98	11.20	65.80	2.85
NESC	Heavy	g86P	26.47	2381.83	194.38	-1667.07	167.67	35.74	18.10
NESC	Heavy	g87P	51.48	1680.29	35.82	-1633.76	75.45	2.59	6.18
NESC	Heavy	g88P	82.79	1508.19	64.66	-19316.46	-138.75	-491.28	-2.00
NESC	Heavy	g89P	110.93	19462.30	121.13	-9204.52	-170.00	1079.79	-5.12
NESC	Heavy	g90P	58.34	9264.05	153.94	-20974.08	-28.35	-1064.57	11.45
NESC	Heavy	g91P	-0.00	21352.13	21.44	0.00	0.00	1054.45	1.06
NESC	Heavy	g92P	-10.23	134.08	-9.20	133.95	-0.79	37.77	-1.40
NESC	Heavy	Fg9293P	17.87	-115.45	3.01	-102.86	3.98	-30.76	1.00

NESC Heavy	g93P	-37.84	324.93	-23.06	337.37	-1.33	66.47	-2.41
NESC Heavy	Fg9394P	35.65	-338.80	3.43	-278.67	0.95	-61.97	0.47
NESC Heavy	g94P	-19.93	-116.74	3.51	-32.52	19.74	-74.63	11.62
NESC Heavy	Fg9498P	18.47	1.89	-1.49	-126.72	-8.22	-62.42	-4.83
NESC Heavy	g95P	9.76	-285.03	18.77	-29.08	0.83	-157.06	9.80
NESC Heavy	Fg9599P	36.90	22.87	-0.92	-337.98	24.95	-157.55	12.07
NESC Heavy	g96P	-29.47	-154.00	-27.26	-17.25	14.32	-85.63	-6.47
NESC Heavy	Fg96100P	-9.65	6.41	-12.02	-182.85	-31.24	-88.22	-21.65
NESC Heavy	g102P	12.38	-180.59	-0.69	-256.00	-13.79	-195.24	-6.40
NESC Heavy	g102X	9.88	63.84	0.10	121.29	-11.06	82.80	-4.93
NESC Heavy	g103P	-30.63	51.22	-33.40	38.40	-18.26	29.89	-17.19
NESC Heavy	g104P	-6.59	-93.04	-15.43	-89.65	-20.20	-81.70	-15.95
NESC Heavy	g104X	-9.22	-3.80	-22.11	-22.14	-26.26	-11.59	-21.63
NESC Heavy	g105P	-6.20	31.78	-6.30	27.15	0.08	19.64	-2.07
NESC Heavy	g106P	3.93	-138.43	28.86	-125.64	26.96	-118.09	24.97
NESC Heavy	g106X	0.41	54.22	17.88	23.12	20.91	34.59	17.35
NESC Heavy	g107P	-10.84	25.61	-19.58	19.82	-2.31	15.14	-7.29
NESC Heavy	g108P	-10.64	42.80	21.01	47.70	39.04	9.67	6.42
NESC Heavy	g108X	-9.98	-71.88	14.37	-75.75	31.44	-15.78	4.89
NESC Heavy	g109P	18.50	159.11	-39.29	28.12	-2.22	23.12	-5.13
NESC Heavy	g110P	3.93	1.20	24.05	-7.71	31.32	-0.49	4.13
NESC Heavy	g110X	4.12	-8.89	17.49	0.91	25.20	-0.60	3.18
NESC Heavy	g111P	-1.43	208.20	-31.47	73.53	-2.09	25.69	-3.06
NESC Extreme	g1P	0.38	22.13	6.43	29.47	8.98	19.16	5.72
NESC Extreme	g1X	1.09	34.72	2.74	25.85	1.83	22.50	1.70
NESC Extreme	g1XY	1.56	34.26	-9.70	29.79	-7.39	23.79	-6.35
NESC Extreme	g1Y	0.63	22.59	-8.95	27.24	-7.94	18.51	-6.28
NESC Extreme	Fg163P	0.38	-29.47	-8.98	-33.30	-20.61	-23.31	-10.99
NESC Extreme	Fg163X	1.09	-25.85	-1.82	-26.49	-2.17	-19.44	-1.48
NESC Extreme	Fg163XY	1.56	-29.79	7.39	-18.74	8.70	-18.02	5.97
NESC Extreme	Fg163Y	0.63	-27.24	7.94	-37.88	11.67	-24.19	7.28
NESC Extreme	g2P	22.71	-169.74	89.26	-111.44	138.75	-76.62	62.14
NESC Extreme	g2X	23.03	-311.75	-110.19	-134.41	-139.63	-121.57	-68.06
NESC Extreme	g2XY	5.42	-82.28	42.46	-92.33	123.19	-47.57	45.13
NESC Extreme	g2Y	7.62	-42.62	-49.34	-80.50	-129.29	-33.55	-48.68
NESC Extreme	g3P	22.69	111.44	-138.76	-52.93	-230.38	15.98	-100.88
NESC Extreme	g3X	23.04	134.42	139.63	-31.57	244.73	28.11	105.00
NESC Extreme	g3XY	5.40	92.33	-123.19	-20.28	-232.75	19.68	-97.23
NESC Extreme	g3Y	7.64	80.50	129.29	-27.40	236.75	14.51	100.03
NESC Extreme	g4P	6.07	52.31	230.81	-242.93	340.45	-51.95	155.71
NESC Extreme	g4X	6.19	30.92	-245.20	-399.39	-372.97	-100.37	-168.38
NESC Extreme	g4XY	20.95	19.78	234.04	-307.98	370.99	-78.49	164.82
NESC Extreme	g4Y	21.63	26.90	-238.04	-231.04	-363.94	-55.66	-164.08
NESC Extreme	g5P	47.78	292.07	-376.46	-208.72	-397.96	17.52	-163.10
NESC Extreme	g5X	43.02	148.62	353.70	-216.85	395.29	-14.33	157.63
NESC Extreme	g5XY	-19.57	181.40	-351.56	-216.47	-387.24	-7.37	-155.47
NESC Extreme	g5Y	-22.59	270.63	366.13	-204.64	397.39	13.88	160.81
NESC Extreme	g6P	-14.01	208.57	396.78	-18.18	268.54	40.10	140.15
NESC Extreme	g6X	-20.03	216.63	-394.18	-171.15	-271.06	9.58	-139.98
NESC Extreme	g6XY	43.32	216.31	386.74	-133.56	258.70	17.43	135.81
NESC Extreme	g6Y	38.06	204.48	-396.88	-40.08	-271.32	34.61	-140.76
NESC Extreme	g7P	-20.61	283.33	-106.98	-619.93	81.58	-79.24	-6.00
NESC Extreme	g7X	-15.42	9.56	101.12	-674.48	-85.23	-156.37	3.72
NESC Extreme	g7XY	39.76	145.33	-130.29	-644.19	71.33	-117.32	-13.83
NESC Extreme	g7Y	48.01	332.57	112.03	-609.12	-68.08	-65.11	10.38
NESC Extreme	g8P	56.73	-500.99	-367.89	-54.67	77.45	-90.39	-47.25
NESC Extreme	g8X	63.36	540.05	-399.45	68.14	68.00	98.84	-53.87
NESC Extreme	g8XY	-34.03	513.30	412.27	61.35	-51.68	93.39	58.60
NESC Extreme	g8Y	-29.79	-488.81	391.72	-57.08	-58.20	-88.80	54.26

NESC	Extreme	g9P	28.39	-87.73	-139.13	138.93	-3.35	7.69	-21.40
NESC	Extreme	g9X	26.85	78.02	-129.73	-130.40	7.10	-7.86	-18.39
NESC	Extreme	g9XY	-0.14	79.06	150.24	-131.79	1.89	-7.91	22.82
NESC	Extreme	g9Y	-18.70	-82.84	153.22	141.65	6.45	8.83	23.98
NESC	Extreme	g10P	25.79	-191.55	6.38	-76.92	188.38	-40.31	29.25
NESC	Extreme	g10X	26.57	179.46	-3.84	51.29	183.12	34.62	26.89
NESC	Extreme	g10XY	18.98	180.32	22.25	58.26	-166.50	35.79	-21.64
NESC	Extreme	g10Y	-40.33	-191.97	12.76	-67.76	-190.55	-38.99	-26.70
NESC	Extreme	g11P	25.86	76.90	-188.38	215.42	-42.74	47.55	-37.61
NESC	Extreme	g11X	26.51	-51.31	-183.13	-177.66	-44.74	-37.21	-37.03
NESC	Extreme	g11XY	19.05	-58.25	166.50	-214.73	0.20	-44.36	27.10
NESC	Extreme	g11Y	-40.40	67.73	190.54	170.64	87.58	38.77	45.26
NESC	Extreme	g12P	25.81	-215.42	42.75	7.19	123.91	-29.03	23.24
NESC	Extreme	g12X	26.55	177.65	44.73	-48.76	126.94	17.96	23.91
NESC	Extreme	g12XY	19.03	214.73	-0.21	108.09	84.59	44.97	11.75
NESC	Extreme	g12Y	-40.32	-170.65	-87.61	209.21	-312.77	5.39	-55.82
NESC	Extreme	g13P	12.87	-77.02	-108.85	33.84	62.33	-2.34	-2.52
NESC	Extreme	g13X	11.04	71.74	-114.85	-41.16	56.40	1.66	-3.17
NESC	Extreme	g13XY	-19.88	227.53	308.07	165.59	191.88	21.29	27.09
NESC	Extreme	g13Y	3.24	99.62	-87.34	249.38	-325.72	18.92	-22.40
NESC	Extreme	g14P	-5.06	-29.59	-61.88	113.06	79.69	4.07	0.87
NESC	Extreme	g14X	0.08	40.26	-78.10	-104.42	68.17	-3.13	-0.48
NESC	Extreme	g14XY	-69.33	314.40	414.02	34.18	115.29	16.99	25.81
NESC	Extreme	g14Y	69.96	224.63	-255.28	233.89	-217.68	22.37	-23.09
NESC	Extreme	g41P	0.45	-0.64	16.73	-0.62	16.71	-0.31	8.36
NESC	Extreme	g41Y	-1.30	-0.50	-15.46	-0.50	-14.06	-0.25	-7.38
NESC	Extreme	g42P	-1.14	-0.21	62.77	-0.17	62.06	-0.10	31.21
NESC	Extreme	g42Y	0.50	-0.17	-62.62	-0.15	-60.92	-0.08	-30.88
NESC	Extreme	g43P	-0.63	-4.44	-10.39	-5.32	-7.72	-2.44	-4.53
NESC	Extreme	g43X	1.42	9.87	-11.19	8.84	-11.10	4.68	-5.57
NESC	Extreme	g44P	-0.69	-6.10	8.35	4.19	13.55	-0.48	5.48
NESC	Extreme	g44X	0.60	9.51	6.99	-2.36	10.65	1.79	4.41
NESC	Extreme	g45P	-0.44	6.50	-8.84	-9.87	0.46	-0.84	-2.09
NESC	Extreme	g45X	0.79	-4.51	-6.95	12.23	-3.46	1.93	-2.60
NESC	Extreme	g46P	-2.75	-6.40	8.81	-3.55	7.26	-2.49	4.02
NESC	Extreme	g46Y	1.22	4.75	-9.98	6.93	-7.77	2.92	-4.44
NESC	Extreme	g47P	-1.28	-4.99	-0.89	-0.12	-1.80	-1.28	-0.67
NESC	Extreme	g47X	-1.54	6.34	0.03	0.89	-4.71	1.81	-1.17
NESC	Extreme	g48P	-5.73	100.51	45.41	100.08	43.74	33.93	15.08
NESC	Extreme	g48Y	0.69	116.00	-45.63	116.14	-40.75	39.27	-14.61
NESC	Extreme	g49P	-2.21	-12.99	0.97	-6.30	3.90	-3.26	0.82
NESC	Extreme	g49X	-1.98	15.34	-0.51	5.32	-4.20	3.49	-0.80
NESC	Extreme	g50P	-12.01	28.42	7.39	30.76	5.40	7.41	1.60
NESC	Extreme	g50Y	8.22	40.76	-11.77	44.19	1.60	10.64	-1.28
NESC	Extreme	g51P	-1.80	-21.50	-1.48	5.18	12.56	-2.05	1.39
NESC	Extreme	g51X	-1.38	18.97	-8.73	-6.95	-10.23	1.51	-2.38
NESC	Extreme	g52P	-3.52	-1.93	-0.85	-1.12	-1.02	-0.21	-0.13
NESC	Extreme	g53P	-3.68	-10.40	3.47	-0.73	15.10	-0.78	1.31
NESC	Extreme	g53X	3.15	2.45	-11.03	-15.07	-14.80	-0.89	-1.82
NESC	Extreme	g54P	0.35	5.47	4.76	6.72	3.67	0.61	0.42
NESC	Extreme	g55P	-12.93	-9.06	3.84	-21.26	23.14	-1.52	1.35
NESC	Extreme	g55X	12.13	-7.10	-18.09	-13.43	-25.19	-1.03	-2.17
NESC	Extreme	g56P	-0.14	-6.08	-0.76	-9.56	0.44	-2.76	-0.06
NESC	Extreme	g56X	-0.83	12.23	-3.74	12.66	-3.66	4.40	-1.31
NESC	Extreme	g57P	0.38	-5.55	2.75	-8.34	5.19	-2.46	1.40
NESC	Extreme	g57X	-0.90	10.42	0.25	8.84	1.93	3.41	0.39
NESC	Extreme	g58P	0.84	-23.53	-0.50	-27.04	2.73	-8.94	0.39
NESC	Extreme	g58X	-1.28	28.55	-4.85	26.80	-2.13	9.78	-1.23
NESC	Extreme	g59P	-1.08	2.08	1.72	3.37	0.56	0.96	0.40

NESC	Extreme	g59X	-0.36	-2.86	-1.47	-2.68	-2.94	-0.98	-0.78
NESC	Extreme	g60P	-2.60	61.63	4.21	60.18	5.07	14.57	1.11
NESC	Extreme	g60X	-2.01	-59.92	-3.42	-60.28	-4.82	-14.38	-0.99
NESC	Extreme	g61P	-0.48	8.04	0.94	8.31	2.77	1.45	0.33
NESC	Extreme	g61X	-0.27	-8.45	-2.10	-8.01	-2.01	-1.46	-0.36
NESC	Extreme	g62P	-0.61	3.25	0.93	4.51	3.42	0.39	0.22
NESC	Extreme	g62X	0.55	-1.28	-2.47	-0.28	-3.24	-0.08	-0.28
NESC	Extreme	g63P	-2.04	4.59	1.41	8.76	4.94	0.47	0.23
NESC	Extreme	g63X	1.82	3.64	-3.96	7.88	-5.12	0.41	-0.32
NESC	Extreme	g67P	0.00	0.00	0.00	1.45	-1.38	0.15	-0.15
NESC	Extreme	g67X	-0.00	-0.00	0.00	-3.22	-2.36	-0.34	-0.25
NESC	Extreme	g68P	-0.46	-13.18	1.51	-17.59	2.36	-7.69	0.97
NESC	Extreme	g69P	3.73	-3.99	-11.12	-2.58	-27.46	-1.82	-10.70
NESC	Extreme	g69Y	2.25	4.98	11.12	3.96	-4.93	2.48	1.72
NESC	Extreme	g70P	-4.95	-64.75	15.57	-81.19	15.44	-36.49	7.75
NESC	Extreme	g71P	6.55	4.85	-8.28	-26.73	-1.83	-2.37	-1.10
NESC	Extreme	g71Y	5.39	106.95	-1.66	26.99	1.83	14.53	0.02
NESC	Extreme	g72P	13.50	2.73	-5.18	94.02	-3.61	13.29	-1.21
NESC	Extreme	g72Y	-12.90	4.82	5.19	90.82	12.96	13.14	2.50
NESC	Extreme	g73P	-23.93	-249.13	-15.61	-299.24	-15.10	-137.09	-7.71
NESC	Extreme	g74P	28.03	315.39	-0.02	-8.37	-1.41	23.34	-0.11
NESC	Extreme	g74Y	-24.22	369.90	6.71	16.41	1.41	29.37	0.62
NESC	Extreme	g75P	21.53	11.66	-40.97	135.76	-54.47	40.88	-26.50
NESC	Extreme	g75Y	-19.05	15.37	40.97	136.73	38.39	42.18	22.04
NESC	Extreme	g76P	14.37	-128.10	29.88	-153.44	23.38	-70.38	13.34
NESC	Extreme	g77P	-10.50	468.86	-17.29	-15.61	-9.65	49.16	-2.92
NESC	Extreme	g77Y	16.12	524.88	12.39	9.69	9.65	57.98	2.39
NESC	Extreme	g86P	99.39	3398.28	297.63	-1420.83	322.77	98.87	31.02
NESC	Extreme	g87P	134.24	1460.65	199.54	-1762.19	422.75	-16.75	34.58
NESC	Extreme	g88P	191.17	1672.90	216.51	-17081.16	57.46	-425.06	7.64
NESC	Extreme	g89P	205.86	17231.88	-81.01	-2647.43	-91.78	1535.22	-18.18
NESC	Extreme	g90P	126.97	2631.00	65.05	-47034.28	-20.51	-4036.70	4.20
NESC	Extreme	g91P	0.00	47713.95	18.03	0.00	0.00	2356.27	0.89
NESC	Extreme	g92P	-54.95	517.60	-30.16	545.75	-13.45	149.83	-5.88
NESC	Extreme	Fg9293P	62.12	-534.20	13.45	-508.49	26.68	-146.90	5.93
NESC	Extreme	g93P	-95.02	784.10	-54.35	860.63	-19.02	165.06	-7.11
NESC	Extreme	Fg9394P	92.31	-867.85	19.99	-766.92	34.35	-164.05	5.67
NESC	Extreme	g94P	-38.77	-65.89	12.48	1.87	36.73	-32.02	24.61
NESC	Extreme	Fg9498P	29.18	-55.83	8.65	-128.75	-2.45	-92.29	3.13
NESC	Extreme	g95P	-2.36	-211.24	14.75	28.90	-5.04	-91.17	4.86
NESC	Extreme	Fg9599P	35.97	-28.73	-9.33	-324.22	19.00	-176.47	4.89
NESC	Extreme	g96P	-36.36	-93.70	-29.44	29.14	9.84	-32.29	-9.79
NESC	Extreme	Fg96100P	-1.17	-40.22	-4.90	-197.11	-25.43	-118.66	-15.17
NESC	Extreme	g102P	27.50	-284.64	2.66	-440.84	-24.10	-324.40	-9.29
NESC	Extreme	g102X	26.56	86.91	-7.75	231.65	-32.38	142.47	-18.09
NESC	Extreme	g103P	-53.99	90.74	-70.53	67.92	-45.38	52.95	-38.55
NESC	Extreme	g104P	-9.58	-98.85	-27.13	-77.79	-37.98	-79.00	-29.14
NESC	Extreme	g104X	-11.05	-51.49	-35.45	-85.64	-46.85	-61.30	-36.82
NESC	Extreme	g105P	0.18	45.42	5.80	38.33	14.36	27.92	6.72
NESC	Extreme	g106P	4.37	-162.18	27.65	-156.63	23.43	-142.56	22.86
NESC	Extreme	g106X	1.51	17.83	14.09	-3.45	14.24	6.43	12.67
NESC	Extreme	g107P	-11.08	46.49	-22.54	35.19	-4.95	27.23	-9.15
NESC	Extreme	g108P	-12.32	13.75	23.41	16.35	46.26	3.22	7.45
NESC	Extreme	g108X	-9.53	-61.54	9.34	-67.38	33.49	-13.78	4.58
NESC	Extreme	g109P	11.55	675.12	-23.23	117.19	0.00	97.85	-2.87
NESC	Extreme	g110P	3.74	-12.49	27.38	-23.35	36.69	-2.67	4.78
NESC	Extreme	g110X	4.48	2.15	13.86	13.08	25.57	1.14	2.94
NESC	Extreme	g111P	-7.22	529.79	-27.36	187.51	-0.97	65.42	-2.58

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

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

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
1P	0.002897	0.4619	-0.03174	-0.7323	0.0071	0.0272	0.002897	2.462	99.72
2P	0.002639	0.3989	-0.03054	-0.7404	0.0034	0.0222	2.003	2.399	94.72
3P	0.002285	0.3521	-0.02966	-0.7205	-0.0015	0.0172	2.002	2.352	91.05
4P	0.002534	0.3067	-0.02836	-0.7040	0.0119	0.0120	2.003	2.307	87.39
5P	0.001552	0.2625	-0.02664	-0.6658	-0.0102	0.0125	2.002	2.263	83.72
6P	0.004228	0.2119	-0.02373	-0.5633	-0.0016	-0.0084	2.004	2.212	78.98
7P	0.001477	0.1676	-0.02016	-0.5182	0.0213	0.0026	2.001	2.168	74.23
8P	0.0007737	0.1334	-0.01746	-0.3913	-0.0031	0.0126	2.001	2.133	69.98
9P	0	0	0	0.0000	0.0000	0.0000	13.15	13.15	0
16P	-0.001732	0.4618	-0.1542	-0.7420	0.0072	0.0281	-0.001732	11.96	99.6
17P	0.00563	0.3987	0.05696	-0.7357	0.0078	0.0299	0.00563	-4.601	94.81
18P	-0.002105	0.3972	-0.1496	-0.7682	0.0058	0.0297	-0.002105	11.4	94.6
19P	0.004963	0.2627	0.1014	-0.7084	0.0071	0.0170	0.004963	-8.737	83.85
20P	-0.002568	0.2608	-0.1879	-0.7330	0.0049	0.0166	-0.002568	15.26	83.56
21P	0.0027	0.1673	0.04174	-0.5980	0.0049	0.0184	0.0027	-4.833	74.29
22P	-0.001809	0.1665	-0.1072	-0.5752	0.0037	0.0184	-0.001809	11.17	74.14
23P	0	0	0	0.0000	0.0000	0.0000	1	0	0
24P	0.0002815	0.008126	-0.0008788	-0.0439	0.0003	0.0007	1	0.008126	20
25P	0.0003684	0.02704	-0.001585	-0.0763	-0.0001	0.0021	1	0.02704	38
26P	0.001397	0.1679	-0.003019	-0.4860	0.0039	0.0063	1.001	0.1679	74.25
27P	0.002137	0.2622	-0.00374	-0.6338	0.0054	0.0078	1.002	0.2622	83.75
28P	0.003267	0.3989	-0.004854	-0.8144	0.0064	0.0087	1.003	0.3989	94.75
29P	0.005529	0.7422	-0.008175	-1.0490	0.0066	0.0087	1.006	0.7422	115
1X	0.004785	0.4619	0.01879	-0.7259	0.0067	0.0271	0.004785	-1.538	99.77
2X	0.00405	0.3993	0.01845	-0.7180	0.0124	0.0235	2.004	-1.601	94.77
2XY	0.004245	0.3973	0.01889	-0.7227	0.0074	0.0263	-1.996	-1.603	94.77
2Y	0.002139	0.3969	-0.03002	-0.7406	0.0059	0.0302	-1.998	2.397	94.72
3X	0.003499	0.3523	0.01835	-0.7294	0.0164	0.0182	2.003	-1.648	91.1
3XY	0.003846	0.3507	0.01877	-0.7216	-0.0018	0.0276	-1.996	-1.649	91.1
3Y	0.001814	0.3504	-0.02917	-0.7136	0.0134	0.0309	-1.998	2.35	91.05
4X	0.002474	0.3067	0.01784	-0.7058	-0.0000	0.0132	2.002	-1.693	87.44
4XY	0.003965	0.3054	0.01824	-0.7018	0.0146	0.0286	-1.996	-1.695	87.44
4Y	0.0009537	0.3054	-0.02793	-0.7003	-0.0023	0.0318	-1.999	2.305	87.39
5X	0.002755	0.2628	0.0169	-0.6464	0.0217	0.0134	2.003	-1.737	83.77
5XY	0.002833	0.2616	0.01729	-0.6487	-0.0074	0.0245	-1.997	-1.738	83.77
5Y	0.001391	0.2613	-0.02626	-0.6652	0.0194	0.0274	-1.999	2.261	83.72
6X	-0.0005725	0.2119	0.01487	-0.5741	0.0109	-0.0056	1.999	-1.788	79.01
6XY	0.005132	0.2107	0.01523	-0.5726	0.0007	0.0372	-1.995	-1.789	79.02
6Y	-0.001932	0.2108	-0.02341	-0.5633	0.0097	0.0424	-2.002	2.211	78.98
7X	0.001352	0.1677	0.01214	-0.4941	-0.0136	0.0086	2.001	-1.832	74.26
7XY	0.002313	0.1666	0.01242	-0.4968	0.0258	0.0168	-1.998	-1.833	74.26
7Y	0.0002568	0.1664	-0.01986	-0.5180	-0.0153	0.0258	-2	2.166	74.23
8X	0.001362	0.1335	0.01001	-0.3992	0.0112	0.0167	2.001	-1.867	70.01
8XY	0.001605	0.1326	0.01024	-0.3937	-0.0026	0.0057	-1.998	-1.867	70.01
8Y	0.0005363	0.1325	-0.0172	-0.3864	0.0077	0.0109	-1.999	2.133	69.98
9X	0	0	0	0.0000	0.0000	0.0000	13.15	-13.15	0
9XY	0	0	0	0.0000	0.0000	0.0000	-13.15	-13.15	0
9Y	0	0	0	0.0000	0.0000	0.0000	-13.15	13.15	0
16X	0.009369	0.4629	0.1391	-0.7255	0.0067	0.0278	0.009369	-11.04	99.89
10S	0.0009817	0.1007	-0.01852	-0.2637	-0.0018	0.0078	2.957	3.056	63.98

11S	0.0005746	0.07414	-0.01854	-0.2021	-0.0136	0.0028	3.992	4.065	57.48
12S	0.002151	0.05378	-0.01727	-0.1522	-0.0026	0.0005	5.029	5.08	50.98
13S	0.0005017	0.03908	-0.01599	-0.1141	0.0000	-0.0040	5.983	6.021	44.98
14S	0.001416	0.02606	-0.01391	-0.0895	-0.0115	-0.0093	7.099	7.123	37.99
15S	0.001888	0.006523	-0.007771	-0.0302	0.0016	-0.0066	9.966	9.971	19.99
1PF0.50S	0.00269	0.4302	-0.03131	-0.7302	-0.0005	0.0272	1.003	2.43	97.22
14XYF0.50S	0.0003706	0.02537	-0.006805	-0.0946	-0.0499	0.0162	-7.097	0.02537	37.99
15XYF0.50S	0.000288	0.005968	-0.01209	-0.0420	-0.0690	0.0159	-9.964	0.005968	19.99
2XYF0.50S	0.003265	0.3971	-0.005378	-0.6886	-0.0135	0.0329	-1.997	0.3971	94.74
5XYF0.50S	0.002138	0.2615	-0.004342	-0.6084	-0.0018	0.0179	-1.998	0.2615	83.75
7XYF0.50S	0.001395	0.1665	-0.003538	-0.4415	-0.0051	0.0336	-1.999	0.1665	74.25
10X	0.0006675	0.1008	0.01162	-0.2629	0.0071	0.0090	2.956	-2.855	64.01
10XY	0.001756	0.09997	0.01188	-0.2607	0.0001	0.0066	-2.954	-2.856	64.01
10Y	-0.0001936	0.09991	-0.01822	-0.2613	0.0038	0.0085	-2.956	3.056	63.98
11X	0.0005977	0.07415	0.01224	-0.2049	0.0149	0.0035	3.992	-3.917	57.51
11XY	0.001277	0.0734	0.01253	-0.2029	-0.0091	0.0053	-3.99	-3.918	57.51
11Y	-0.0001611	0.07336	-0.01821	-0.2001	0.0144	0.0091	-3.991	4.064	57.48
12X	-0.001009	0.05357	0.01176	-0.1528	0.0049	0.0007	5.025	-4.973	51.01
12XY	0.00238	0.05289	0.01206	-0.1526	-0.0010	-0.0017	-5.024	-4.974	51.01
12Y	-0.001887	0.05306	-0.01697	-0.1494	0.0019	0.0103	-5.028	5.079	50.98
13X	0.0001373	0.03905	0.01109	-0.1148	0.0019	-0.0044	5.982	-5.943	45.01
13XY	0.0008547	0.0384	0.01139	-0.1152	0.0000	-0.0058	-5.981	-5.944	45.01
13Y	-0.0003502	0.03843	-0.0157	-0.1136	-0.0010	0.0145	-5.982	6.021	44.98
14X	-0.0008978	0.02589	0.009781	-0.0907	0.0117	-0.0099	7.096	-7.071	38.01
14XY	0.001556	0.02532	0.01005	-0.0945	-0.0137	-0.0055	-7.096	-7.072	38.01
14Y	-0.001434	0.02543	-0.01361	-0.0829	0.0135	0.0188	-7.099	7.123	37.99
15X	-0.001636	0.006244	0.005492	-0.0312	-0.0013	-0.0062	9.963	-9.958	20.01
15XY	0.001795	0.005898	0.005639	-0.0484	-0.0014	-0.0069	-9.962	-9.958	20.01
15Y	-0.002151	0.006051	-0.007527	-0.0113	-0.0053	0.0134	-9.966	9.97	19.99
1PF0.50X	0.004341	0.4304	0.01876	-0.7296	0.0140	0.0222	1.004	-1.57	97.27
1PF0.50XY	0.00467	0.4294	0.01897	-0.7314	0.0006	0.0296	-0.9953	-1.571	97.27
1PF0.50Y	0.002533	0.4291	-0.03104	-0.7322	0.0137	0.0269	-0.9975	2.429	97.22

Joint Support Reactions for Load Case "NESC Heavy":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y 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 %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
9P	-13.36	0.0	-10.29	0.0	59.06	0.0	0.0	61.42	0.0	0.07	0.0	-0.0	0.0	0.01	0.0	0.0
23P	-0.02	0.0	-0.39	0.0	18.12	0.0	0.0	18.12	0.0	2.38	0.0	-0.2	0.0	-0.03	0.0	0.0
9X	9.77	0.0	-6.73	0.0	-41.75	0.0	0.0	43.40	0.0	0.07	0.0	0.0	0.0	0.01	0.0	0.0
9XY	-9.92	0.0	-6.57	0.0	-42.27	0.0	0.0	43.91	0.0	-0.02	0.0	-0.0	0.0	0.04	0.0	0.0
9Y	13.53	0.0	-9.66	0.0	57.47	0.0	0.0	59.82	0.0	0.14	0.0	0.0	0.0	-0.04	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	-0.0943	0.0000	0.0000	0.0943	0.0029	0.4619	-0.0317
2P	0.0000	0.4420	-1.3677	0.0000	-0.4420	1.3678	0.0026	0.3989	-0.0305
3P	0.0000	0.0000	-0.0796	-0.0000	0.0000	0.0796	0.0023	0.3521	-0.0297
4P	0.0000	0.0000	-0.0978	0.0000	0.0000	0.0978	0.0025	0.3067	-0.0284
5P	0.0000	0.1760	-0.6942	-0.0000	-0.1760	0.6942	0.0016	0.2625	-0.0266
6P	0.0000	0.0000	-0.1499	0.0000	0.0000	0.1499	0.0042	0.2119	-0.0237
7P	0.0000	0.2250	-0.8327	0.0000	-0.2250	0.8327	0.0015	0.1676	-0.0202

8P	0.0000	0.0000	-0.1852	-0.0000	0.0000	0.1852	0.0008	0.1334	-0.0175
9P	0.0000	0.0000	-0.5461	13.3623	10.2878	-58.5169	0.0000	0.0000	0.0000
16P	0.0000	2.2970	-0.7635	-0.0000	-2.2970	0.7634	-0.0017	0.4618	-0.1542
17P	0.0000	2.8177	-1.0908	0.0000	-2.8177	1.0908	0.0056	0.3987	0.0570
18P	0.0000	5.5820	-2.2493	-0.0000	-5.5820	2.2493	-0.0021	0.3972	-0.1496
19P	0.0000	0.0410	-0.0692	0.0000	-0.0410	0.0692	0.0050	0.2627	0.1014
20P	0.0000	2.7910	-1.2510	0.0000	-2.7910	1.2510	-0.0026	0.2608	-0.1879
21P	0.0000	2.8318	-1.0966	0.0000	-2.8318	1.0966	0.0027	0.1673	0.0417
22P	0.0000	2.7910	-1.1963	0.0000	-2.7910	1.1963	-0.0018	0.1665	-0.1072
23P	0.0000	0.3612	-0.8184	0.0179	0.0287	-17.2980	0.0000	0.0000	0.0000
24P	0.0000	0.6864	-2.0139	0.0000	-0.6864	2.0139	0.0003	0.0081	-0.0009
25P	0.0000	0.9799	-2.6065	0.0000	-0.9799	2.6065	0.0004	0.0270	-0.0016
26P	0.0000	0.8163	-2.0654	0.0000	-0.8163	2.0654	0.0014	0.1679	-0.0030
27P	0.0000	0.3485	-0.8703	-0.0000	-0.3485	0.8703	0.0021	0.2622	-0.0037
28P	0.0000	0.5312	-1.3212	-0.0000	-0.5312	1.3212	0.0033	0.3989	-0.0049
29P	0.0000	0.9182	-8.0433	-0.0000	-0.9182	8.0433	0.0055	0.7422	-0.0082
1X	0.0000	0.0133	-0.0900	-0.0000	-0.0133	0.0900	0.0048	0.4619	0.0188
2X	0.0000	0.0640	-0.1381	0.0000	-0.0640	0.1381	0.0041	0.3993	0.0184
2XY	0.0000	0.0640	-0.1279	-0.0000	-0.0640	0.1279	0.0042	0.3973	0.0189
2Y	0.0000	0.0000	-0.1735	-0.0000	0.0000	0.1735	0.0021	0.3969	-0.0300
3X	0.0000	0.0644	-0.0796	0.0000	-0.0644	0.0796	0.0035	0.3523	0.0184
3XY	0.0000	0.0644	-0.0796	-0.0000	-0.0644	0.0796	0.0038	0.3507	0.0188
3Y	0.0000	0.0000	-0.0796	0.0000	0.0000	0.0796	0.0018	0.3504	-0.0292
4X	0.0000	0.0756	-0.0925	0.0000	-0.0756	0.0925	0.0025	0.3067	0.0178
4XY	0.0000	0.0756	-0.0925	-0.0000	-0.0756	0.0925	0.0040	0.3054	0.0182
4Y	0.0000	0.0000	-0.0978	-0.0000	0.0000	0.0978	0.0010	0.3054	-0.0279
5X	0.0000	0.0917	-0.1691	0.0000	-0.0917	0.1691	0.0028	0.2628	0.0169
5XY	0.0000	0.0917	-0.1577	-0.0000	-0.0917	0.1577	0.0028	0.2616	0.0173
5Y	0.0000	0.0000	-0.2118	0.0000	0.0000	0.2118	0.0014	0.2613	-0.0263
6X	0.0000	0.1141	-0.1457	0.0000	-0.1141	0.1457	-0.0006	0.2119	0.0149
6XY	0.0000	0.1141	-0.1457	-0.0000	-0.1141	0.1457	0.0051	0.2107	0.0152
6Y	0.0000	0.0000	-0.1499	-0.0000	0.0000	0.1499	-0.0019	0.2108	-0.0234
7X	0.0000	0.0990	-0.1831	0.0000	-0.0990	0.1831	0.0014	0.1677	0.0121
7XY	0.0000	0.0990	-0.1729	0.0000	-0.0990	0.1729	0.0023	0.1666	0.0124
7Y	0.0000	0.0000	-0.2185	-0.0000	0.0000	0.2185	0.0003	0.1664	-0.0199
8X	0.0000	0.1059	-0.1852	-0.0000	-0.1059	0.1852	0.0014	0.1335	0.0100
8XY	0.0000	0.1059	-0.1852	0.0000	-0.1059	0.1852	0.0016	0.1326	0.0102
8Y	0.0000	0.0000	-0.1852	0.0000	0.0000	0.1852	0.0005	0.1325	-0.0172
9X	0.0000	0.3453	-0.5461	-9.7721	6.3896	42.2929	0.0000	0.0000	0.0000
9XY	0.0000	0.3453	-0.5461	9.9183	6.2263	42.8116	0.0000	0.0000	0.0000
9Y	0.0000	0.0000	-0.5461	-13.5265	9.6625	-56.9222	0.0000	0.0000	0.0000
16X	0.0000	2.3473	-0.7635	0.0000	-2.3473	0.7635	0.0094	0.4629	0.1391
10S	0.0000	0.0000	-0.2645	0.0000	0.0000	0.2645	0.0010	0.1007	-0.0185
11S	0.0000	0.3110	-1.1290	0.0000	-0.3110	1.1290	0.0006	0.0741	-0.0185
12S	0.0000	0.0000	-0.2215	0.0000	0.0000	0.2215	0.0022	0.0538	-0.0173
13S	0.0000	0.0000	-0.2704	0.0000	0.0000	0.2704	0.0005	0.0391	-0.0160
14S	0.0000	0.3220	-1.6201	0.0000	-0.3220	1.6201	0.0014	0.0261	-0.0139
15S	0.0000	0.4980	-2.6453	0.0000	-0.4980	2.6453	0.0019	0.0065	-0.0078
1PF0.50S	0.0000	0.0000	-0.0288	-0.0000	0.0000	0.0288	0.0027	0.4302	-0.0313
14XYF0.50S	0.0000	0.0000	-0.0921	0.0000	0.0000	0.0921	0.0004	0.0254	-0.0068
15XYF0.50S	0.0000	0.0000	-0.1551	0.0000	0.0000	0.1551	0.0003	0.0060	-0.0121
2XYF0.50S	0.0000	0.0000	-0.0178	0.0000	0.0000	0.0178	0.0033	0.3971	-0.0054
5XYF0.50S	0.0000	0.0000	-0.0202	0.0000	0.0000	0.0202	0.0021	0.2615	-0.0043
7XYF0.50S	0.0000	0.0000	-0.0178	-0.0000	0.0000	0.0178	0.0014	0.1665	-0.0035
10X	0.0000	0.1411	-0.2645	0.0000	-0.1411	0.2645	0.0007	0.1008	0.0116
10XY	0.0000	0.1411	-0.2645	-0.0000	-0.1411	0.2645	0.0018	0.1000	0.0119
10Y	0.0000	0.0000	-0.2645	-0.0000	0.0000	0.2645	-0.0002	0.0999	-0.0182
11X	0.0000	0.1670	-0.2950	0.0000	-0.1670	0.2950	0.0006	0.0742	0.0122
11XY	0.0000	0.1670	-0.2950	-0.0000	-0.1670	0.2950	0.0013	0.0734	0.0125

11Y	0.0000	0.0000	-0.2950	-0.0000	0.0000	0.2950	-0.0002	0.0734	-0.0182
12X	0.0000	0.1432	-0.2215	-0.0000	-0.1432	0.2215	-0.0010	0.0536	0.0118
12XY	0.0000	0.1432	-0.2215	0.0000	-0.1432	0.2215	0.0024	0.0529	0.0121
12Y	0.0000	0.0000	-0.2215	0.0000	0.0000	0.2215	-0.0019	0.0531	-0.0170
13X	0.0000	0.1824	-0.2704	0.0000	-0.1824	0.2704	0.0001	0.0391	0.0111
13XY	0.0000	0.1824	-0.2704	-0.0000	-0.1824	0.2704	0.0009	0.0384	0.0114
13Y	0.0000	0.0000	-0.2704	-0.0000	0.0000	0.2704	-0.0004	0.0384	-0.0157
14X	0.0000	0.4380	-0.7581	0.0000	-0.4380	0.7581	-0.0009	0.0259	0.0098
14XY	0.0000	0.4380	-0.6893	-0.0000	-0.4380	0.6893	0.0016	0.0253	0.0101
14Y	0.0000	0.0000	-0.6893	-0.0000	0.0000	0.6893	-0.0014	0.0254	-0.0136
15X	0.0000	0.7279	-1.3113	-0.0000	-0.7279	1.3113	-0.0016	0.0062	0.0055
15XY	0.0000	0.7279	-1.1995	0.0000	-0.7279	1.1995	0.0018	0.0059	0.0056
15Y	0.0000	0.0000	-1.1995	-0.0000	0.0000	1.1995	-0.0022	0.0061	-0.0075
1PF0.50X	0.0000	0.0000	-0.0288	-0.0000	0.0000	0.0288	0.0043	0.4304	0.0188
1PF0.50XY	0.0000	0.0000	-0.0288	0.0000	0.0000	0.0288	0.0047	0.4294	0.0190
1PF0.50Y	0.0000	0.0000	-0.0288	0.0000	0.0000	0.0288	0.0025	0.4291	-0.0310

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.
g18X	g18XY	Short only	-0.21	-0.68	14.43	0.750	0.500	0.500	94.84	101.13	2	11.87	1.000	121.16	120.71	6
g18XY	g18X	Short only	-0.68	-0.21	14.43	0.750	0.500	0.500	94.84	101.13	2	11.87	1.000	121.16	120.71	6
g20P	g20Y	Short only	-1.28	-0.85	14.42	0.750	0.500	0.500	94.96	101.22	2	11.85	1.000	121.31	120.80	6
g20Y	g20P	Short only	-0.85	-1.28	14.42	0.750	0.500	0.500	94.96	101.22	2	11.85	1.000	121.31	120.80	6
g22X	g22XY	Long only	-0.20	-0.78	27.26	0.500	0.750	0.500	97.37	103.03	2	21.29	1.000	129.82	126.04	6
g22XY	g22X	Long only	-0.78	-0.20	27.26	0.500	0.750	0.500	97.37	103.03	2	21.29	1.000	129.82	126.04	6
g24P	g24Y	Long only	-1.30	-0.76	27.26	0.500	0.750	0.500	97.37	103.03	2	21.29	1.000	129.82	126.04	6
g24Y	g24P	Long only	-0.76	-1.30	27.26	0.500	0.750	0.500	97.37	103.03	2	21.29	1.000	129.82	126.04	6
g26P	g26Y	Short only	-8.31	-7.66	31.38	0.750	0.500	0.500	71.32	83.49	2	26.66	1.000	91.07	105.54	3
g26Y	g26P	Short only	-7.66	-8.31	31.38	0.750	0.500	0.500	71.32	83.49	2	26.66	1.000	91.07	105.54	3
g28P	g28Y	Short only	-9.80	-8.76	14.04	0.800	0.599	0.599	144.14	138.43	5	13.49	1.000	154.49	141.21	6
g28Y	g28P	Short only	-8.76	-9.80	14.04	0.800	0.599	0.599	144.14	138.43	5	13.49	1.000	154.49	141.21	6
g30P	g30Y	Short only	-4.95	-4.25	8.25	0.789	0.578	0.578	168.47	156.97	5	7.87	1.000	186.12	160.66	6
g30Y	g30P	Short only	-4.25	-4.95	8.25	0.789	0.578	0.578	168.47	156.97	5	7.87	1.000	186.12	160.66	6
g32P	g32Y	Short only	-1.59	-0.88	5.62	0.779	0.559	0.559	190.07	190.07	4	4.31	1.000	217.13	217.13	4
g32Y	g32P	Short only	-0.88	-1.59	5.62	0.779	0.559	0.559	190.07	190.07	4	4.31	1.000	217.13	217.13	4
g34X	g34XY	Short only	-0.55	-0.83	6.75	0.772	0.545	0.545	185.21	185.21	4	4.96	1.000	216.17	216.17	4
g34XY	g34X	Short only	-0.83	-0.55	6.75	0.772	0.545	0.545	185.21	185.21	4	4.96	1.000	216.17	216.17	4
g36P	g36Y	Short only	-0.85	-0.41	9.04	0.772	0.543	0.543	177.54	177.54	4	6.60	1.000	207.82	207.82	4
g36Y	g36P	Short only	-0.41	-0.85	9.04	0.772	0.543	0.543	177.54	177.54	4	6.60	1.000	207.82	207.82	4

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

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
1	2.421	50.00	50.00	4.84
2	2.468	50.00	50.00	4.94
3	3.021	50.00	50.00	6.04
4	6.018	50.00	50.00	12.04

5	0.080	50.00	50.00	0.16
6	3.059	50.00	50.00	6.12
7	3.037	50.00	50.00	6.07
8	3.037	50.00	50.00	6.07
9	2.128	50.00	50.00	4.26
10	2.785	50.00	50.00	5.57
11	2.221	50.00	50.00	4.44
12	0.937	50.00	50.00	1.87
13	1.424	50.00	50.00	2.85
14	8.096	50.00	50.00	16.19
15	1.437	50.00	50.00	2.87
16	0.716	50.00	50.00	1.43
17	0.863	50.00	50.00	1.73
18	1.171	50.00	50.00	2.34
19	1.652	50.00	50.00	3.30
20	2.692	50.00	50.00	5.38

*** Analysis Results for Load Case No. 2 "NESC Extreme" - Number of iterations in SAPS 10

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	-0.001647	0.4365	-0.02724	-0.6527	0.0007	0.0570	-0.001647	2.436	99.72
2P	-0.001317	0.3816	-0.0264	-0.6630	-0.0020	0.0508	1.999	2.382	94.72
3P	-0.00123	0.3384	-0.02576	-0.6713	-0.0090	0.0425	1.999	2.338	91.05
4P	-0.0004259	0.2964	-0.02467	-0.6481	0.0039	0.0341	2	2.296	87.4
5P	-0.001032	0.2559	-0.02317	-0.6063	-0.0115	0.0320	1.999	2.256	83.73
6P	0.001856	0.2097	-0.02063	-0.5146	-0.0076	0.0093	2.002	2.21	78.98
7P	-0.0002095	0.1692	-0.01754	-0.4731	0.0159	0.0157	2	2.169	74.23
8P	-0.0005146	0.1377	-0.01522	-0.3641	-0.0068	0.0223	1.999	2.138	69.98
9P	0	0	0	0.0000	0.0000	0.0000	13.15	13.15	0
16P	-0.01135	0.4362	-0.1359	-0.6569	0.0007	0.0593	-0.01135	11.94	99.61
17P	0.005146	0.38	0.05234	-0.6545	0.0032	0.0628	0.005146	-4.62	94.8
18P	-0.01091	0.3789	-0.1308	-0.6668	0.0006	0.0630	-0.01091	11.38	94.62
19P	0.005327	0.2555	0.09375	-0.6486	0.0031	0.0294	0.005327	-8.744	83.84
20P	-0.00817	0.2541	-0.1681	-0.6549	0.0009	0.0283	-0.00817	15.25	83.58
21P	0.002526	0.1683	0.03924	-0.5505	0.0020	0.0304	0.002526	-4.832	74.29
22P	-0.005255	0.1678	-0.0964	-0.5192	0.0005	0.0303	-0.005255	11.17	74.15
23P	0	0	0	0.0000	0.0000	0.0000	1	0	0
24P	0.0003477	0.01039	-0.0003335	-0.0523	-0.0003	0.0028	1	0.01039	20
25P	0.0002384	0.03161	-0.0006143	-0.0838	-0.0025	0.0062	1	0.03161	38
26P	0.000191	0.1693	-0.001354	-0.4528	0.0006	0.0160	1	0.1693	74.25
27P	0.0002288	0.255	-0.001847	-0.5553	0.0006	0.0187	1	0.255	83.75
28P	0.0003443	0.3813	-0.002685	-0.8518	0.0010	0.0207	1	0.3813	94.75
29P	0.0005546	0.8062	-0.007326	-1.3762	0.0010	0.0207	1.001	0.8062	115
1X	0.002301	0.4366	0.01804	-0.6502	0.0013	0.0566	0.002301	-1.563	99.77
2X	0.001942	0.3818	0.01804	-0.6498	0.0084	0.0509	2.002	-1.618	94.77
2XY	0.002182	0.3777	0.01809	-0.6575	0.0062	0.0511	-1.998	-1.622	94.77
2Y	-0.001688	0.3774	-0.02629	-0.6596	-0.0038	0.0564	-2.002	2.377	94.72
3X	0.001745	0.3387	0.01799	-0.6748	0.0126	0.0424	2.002	-1.661	91.1
3XY	0.001941	0.3353	0.01801	-0.6561	-0.0052	0.0493	-1.998	-1.665	91.1
3Y	-0.001474	0.3351	-0.02563	-0.6543	0.0075	0.0535	-2.001	2.335	91.05
4X	0.0008986	0.2964	0.01749	-0.6514	-0.0022	0.0341	2.001	-1.704	87.44
4XY	0.002371	0.294	0.01752	-0.6402	0.0103	0.0471	-1.998	-1.706	87.44
4Y	-0.001982	0.2939	-0.02458	-0.6390	-0.0076	0.0509	-2.002	2.294	87.4
5X	0.001454	0.2561	0.01656	-0.5905	0.0159	0.0316	2.001	-1.744	83.77
5XY	0.001461	0.254	0.01663	-0.5938	-0.0090	0.0396	-1.999	-1.746	83.77
5Y	-0.001064	0.2538	-0.02314	-0.6025	0.0102	0.0427	-2.001	2.254	83.73
6X	-0.001371	0.2097	0.01464	-0.5236	0.0083	0.0112	1.999	-1.79	79.01
6XY	0.003834	0.2077	0.01473	-0.5210	-0.0024	0.0489	-1.996	-1.792	79.01
6Y	-0.003641	0.2077	-0.02063	-0.5155	0.0046	0.0535	-2.004	2.208	78.98
7X	0.0005665	0.1693	0.01211	-0.4526	-0.0143	0.0210	2.001	-1.831	74.26
7XY	0.001499	0.1674	0.01216	-0.4569	0.0210	0.0280	-1.999	-1.833	74.26
7Y	-0.001265	0.1673	-0.01752	-0.4707	-0.0184	0.0356	-2.001	2.167	74.23
8X	0.0007644	0.1378	0.01016	-0.3701	0.0063	0.0256	2.001	-1.862	70.01
8XY	0.0009738	0.1362	0.01019	-0.3616	-0.0033	0.0157	-1.999	-1.864	70.01
8Y	-0.0007235	0.1361	-0.01519	-0.3570	0.0034	0.0204	-2.001	2.136	69.98
9X	0	0	0	0.0000	0.0000	0.0000	13.15	-13.15	0
9XY	0	0	0	0.0000	0.0000	0.0000	-13.15	-13.15	0
9Y	0	0	0	0.0000	0.0000	0.0000	-13.15	13.15	0
16X	0.01184	0.4374	0.1261	-0.6521	0.0013	0.0580	0.01184	-11.06	99.88
10S	-0.0001419	0.1071	-0.01647	-0.2512	-0.0041	0.0143	2.956	3.063	63.98

11S	-0.0003016	0.08135	-0.01684	-0.2010	-0.0145	0.0064	3.991	4.072	57.48
12S	0.001324	0.06055	-0.01606	-0.1599	-0.0041	0.0016	5.028	5.087	50.98
13S	-2.105e-005	0.04504	-0.01515	-0.1234	-0.0019	-0.0043	5.982	6.027	44.98
14S	0.001051	0.03089	-0.01338	-0.0974	-0.0124	-0.0098	7.098	7.128	37.99
15S	0.001864	0.008925	-0.007604	-0.0372	0.0010	-0.0083	9.966	9.973	19.99
1PF0.50S	-0.001805	0.4089	-0.02702	-0.6492	-0.0048	0.0574	0.9982	2.409	97.22
14XYF0.50S	0.0002713	0.02983	-0.02307	-0.0952	-0.2144	0.0154	-7.097	0.02983	37.98
15XYF0.50S	0.0003879	0.008042	-0.02904	-0.0426	-0.1764	0.0165	-9.964	0.008042	19.97
2XYF0.50S	0.0003439	0.3775	-0.004224	-0.6301	-0.0344	0.0609	-2	0.3775	94.75
5XYF0.50S	0.0002293	0.2539	-0.003264	-0.5560	-0.0104	0.0324	-2	0.2539	83.75
7XYF0.50S	0.0001912	0.1673	-0.002769	-0.4073	-0.0170	0.0439	-2	0.1673	74.25
10X	0.0003551	0.1072	0.01178	-0.2509	0.0059	0.0155	2.956	-2.849	64.01
10XY	0.001345	0.1057	0.01181	-0.2475	-0.0009	0.0130	-2.954	-2.85	64.01
10Y	-0.001174	0.1056	-0.01643	-0.2474	0.0004	0.0163	-2.957	3.061	63.98
11X	0.0004451	0.08131	0.01257	-0.2031	0.0139	0.0082	3.992	-3.91	57.51
11XY	0.001076	0.07985	0.01262	-0.1999	-0.0097	0.0069	-3.99	-3.911	57.51
11Y	-0.0009564	0.07981	-0.01681	-0.1967	0.0098	0.0191	-3.992	4.071	57.48
12X	-0.001031	0.06044	0.01233	-0.1595	0.0047	0.0033	5.025	-4.966	51.01
12XY	0.002241	0.05916	0.01239	-0.1603	-0.0029	-0.0100	-5.024	-4.967	51.01
12Y	-0.002347	0.0593	-0.01603	-0.1505	-0.0032	0.0300	-5.029	5.086	50.98
13X	0.0001274	0.04506	0.01186	-0.1254	0.0017	-0.0032	5.982	-5.937	45.01
13XY	0.0008453	0.04395	0.01192	-0.1223	-0.0035	-0.0249	-5.981	-5.938	45.01
13Y	-0.0008255	0.04395	-0.01513	-0.1225	-0.0057	0.0440	-5.983	6.026	44.98
14X	-0.0008708	0.03065	0.01071	-0.0989	0.0125	-0.0089	7.096	-7.066	38.01
14XY	0.001658	0.02978	0.01075	-0.1212	-0.0200	-0.0283	-7.095	-7.067	38.01
14Y	-0.001775	0.02986	-0.01337	-0.0714	0.0056	0.0501	-7.099	7.127	37.99
15X	-0.001654	0.008502	0.006277	-0.0385	-0.0003	-0.0060	9.963	-9.956	20.01
15XY	0.002104	0.007942	0.006275	-0.0818	-0.0068	-0.0209	-9.962	-9.956	20.01
15Y	-0.002321	0.008076	-0.007618	0.0090	-0.0115	0.0320	-9.967	9.972	19.99
1PF0.50X	0.001863	0.4092	0.018	-0.6503	0.0079	0.0536	1.002	-1.591	97.27
1PF0.50XY	0.00265	0.407	0.01802	-0.6545	-0.0021	0.0542	-0.9973	-1.593	97.27
1PF0.50Y	-0.001434	0.4068	-0.02697	-0.6545	0.0042	0.0560	-1.001	2.407	97.22

Joint Support Reactions for Load Case "NESC Extreme":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y 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 %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
9P	-13.93	0.0	-12.44	0.0	61.53	0.0	0.0	64.30	0.0	0.13	0.0	-0.0	0.0	0.02	0.0	0.0
23P	-0.03	0.0	-0.61	0.0	6.92	0.0	0.0	6.95	0.0	3.40	0.0	-0.3	0.0	-0.10	0.0	0.0
9X	11.63	0.0	-10.35	0.0	-51.03	0.0	0.0	53.35	0.0	0.12	0.0	0.0	0.0	0.01	0.0	0.0
9XY	-11.98	0.0	-9.53	0.0	-50.61	0.0	0.0	52.88	0.0	-0.09	0.0	-0.0	0.0	0.09	0.0	0.0
9Y	14.31	0.0	-11.94	0.0	61.20	0.0	0.0	63.97	0.0	0.30	0.0	0.0	0.0	-0.12	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	0.1456	-0.1147	0.0000	-0.1456	0.1147	-0.0016	0.4365	-0.0272
2P	0.0000	1.5606	-0.4357	0.0000	-1.5606	0.4357	-0.0013	0.3816	-0.0264
3P	0.0000	0.1456	-0.1147	-0.0000	-0.1456	0.1147	-0.0012	0.3384	-0.0258
4P	0.0000	0.1456	-0.1147	0.0000	-0.1456	0.1147	-0.0004	0.2964	-0.0247
5P	0.0000	0.7086	-0.2427	-0.0000	-0.7086	0.2427	-0.0010	0.2559	-0.0232
6P	0.0000	0.1456	-0.1147	0.0000	-0.1456	0.1147	0.0019	0.2097	-0.0206
7P	0.0000	0.8666	-0.2787	0.0000	-0.8666	0.2787	-0.0002	0.1692	-0.0175

8P	0.0000	0.1456	-0.1147	-0.0000	-0.1456	0.1147	-0.0005	0.1377	-0.0152
9P	0.0000	0.5129	-0.3980	13.9254	11.9271	-61.1331	0.0000	0.0000	0.0000
16P	0.0000	1.2146	-0.2767	-0.0000	-1.2146	0.2767	-0.0114	0.4362	-0.1359
17P	0.0000	1.6656	-0.5277	0.0000	-1.6656	0.5277	0.0051	0.3800	0.0523
18P	0.0000	3.1856	-0.9407	-0.0000	-3.1856	0.9407	-0.0109	0.3789	-0.1308
19P	0.0000	0.1456	-0.1147	-0.0000	-0.1456	0.1147	0.0053	0.2555	0.0937
20P	0.0000	1.6656	-0.5277	-0.0000	-1.6656	0.5277	-0.0082	0.2541	-0.1681
21P	0.0000	1.6656	-0.5277	0.0000	-1.6656	0.5277	0.0025	0.1683	0.0392
22P	0.0000	1.6656	-0.5277	-0.0000	-1.6656	0.5277	-0.0053	0.1678	-0.0964
23P	0.0000	0.5129	-0.3980	0.0309	0.0955	-6.5233	0.0000	0.0000	0.0000
24P	0.0000	0.5129	-0.5790	0.0000	-0.5129	0.5790	0.0003	0.0104	-0.0003
25P	0.0000	0.5129	-0.5660	0.0000	-0.5129	0.5660	0.0002	0.0316	-0.0006
26P	0.0000	0.6585	-0.6566	0.0000	-0.6585	0.6566	0.0002	0.1693	-0.0014
27P	0.0000	0.1456	-0.1767	-0.0000	-0.1456	0.1767	0.0002	0.2550	-0.0018
28P	0.0000	0.1456	-0.2117	-0.0000	-0.1456	0.2117	0.0003	0.3813	-0.0027
29P	0.0000	2.2806	-3.6297	-0.0000	-2.2806	3.6297	0.0006	0.8062	-0.0073
1X	0.0000	0.1456	-0.1147	-0.0000	-0.1456	0.1147	0.0023	0.4366	0.0180
2X	0.0000	0.1456	-0.1147	0.0000	-0.1456	0.1147	0.0019	0.3818	0.0180
2XY	0.0000	0.1456	-0.1147	-0.0000	-0.1456	0.1147	0.0022	0.3777	0.0181
2Y	0.0000	0.1456	-0.1147	-0.0000	-0.1456	0.1147	-0.0017	0.3774	-0.0263
3X	0.0000	0.1456	-0.1147	0.0000	-0.1456	0.1147	0.0017	0.3387	0.0180
3XY	0.0000	0.1456	-0.1147	-0.0000	-0.1456	0.1147	0.0019	0.3353	0.0180
3Y	0.0000	0.1456	-0.1147	0.0000	-0.1456	0.1147	-0.0015	0.3351	-0.0256
4X	0.0000	0.1456	-0.1147	0.0000	-0.1456	0.1147	0.0009	0.2964	0.0175
4XY	0.0000	0.1456	-0.1147	-0.0000	-0.1456	0.1147	0.0024	0.2940	0.0175
4Y	0.0000	0.1456	-0.1147	-0.0000	-0.1456	0.1147	-0.0020	0.2939	-0.0246
5X	0.0000	0.1456	-0.1147	0.0000	-0.1456	0.1147	0.0015	0.2561	0.0166
5XY	0.0000	0.1456	-0.1147	-0.0000	-0.1456	0.1147	0.0015	0.2540	0.0166
5Y	0.0000	0.1456	-0.1147	0.0000	-0.1456	0.1147	-0.0011	0.2538	-0.0231
6X	0.0000	0.1456	-0.1147	0.0000	-0.1456	0.1147	-0.0014	0.2097	0.0146
6XY	0.0000	0.1456	-0.1147	-0.0000	-0.1456	0.1147	0.0038	0.2077	0.0147
6Y	0.0000	0.1456	-0.1147	-0.0000	-0.1456	0.1147	-0.0036	0.2077	-0.0206
7X	0.0000	0.1456	-0.1147	0.0000	-0.1456	0.1147	0.0006	0.1693	0.0121
7XY	0.0000	0.1456	-0.1147	0.0000	-0.1456	0.1147	0.0015	0.1674	0.0122
7Y	0.0000	0.1456	-0.1147	-0.0000	-0.1456	0.1147	-0.0013	0.1673	-0.0175
8X	0.0000	0.1456	-0.1147	-0.0000	-0.1456	0.1147	0.0008	0.1378	0.0102
8XY	0.0000	0.1456	-0.1147	0.0000	-0.1456	0.1147	0.0010	0.1362	0.0102
8Y	0.0000	0.1456	-0.1147	0.0000	-0.1456	0.1147	-0.0007	0.1361	-0.0152
9X	0.0000	0.5129	-0.3980	-11.6343	9.8390	51.4257	0.0000	0.0000	0.0000
9XY	0.0000	0.5129	-0.3980	11.9833	9.0200	51.0077	0.0000	0.0000	0.0000
9Y	0.0000	0.5129	-0.3980	-14.3053	11.4229	-60.7995	0.0000	0.0000	0.0000
16X	0.0000	1.2146	-0.2767	0.0000	-1.2146	0.2767	0.0118	0.4374	0.1261
10S	0.0000	0.6585	-0.5126	0.0000	-0.6585	0.5126	-0.0001	0.1071	-0.0165
11S	0.0000	1.5089	-0.6240	0.0000	-1.5089	0.6240	-0.0003	0.0813	-0.0168
12S	0.0000	0.5129	-0.3980	0.0000	-0.5129	0.3980	0.0013	0.0606	-0.0161
13S	0.0000	0.5129	-0.3980	0.0000	-0.5129	0.3980	-0.0000	0.0450	-0.0152
14S	0.0000	1.5439	-0.6320	0.0000	-1.5439	0.6320	0.0011	0.0309	-0.0134
15S	0.0000	2.1069	-0.7600	0.0000	-2.1069	0.7600	0.0019	0.0089	-0.0076
1PF0.50S	0.0000	0.1456	-0.1147	-0.0000	-0.1456	0.1147	-0.0018	0.4089	-0.0270
14XYF0.50S	0.0000	0.5129	-0.3980	0.0000	-0.5129	0.3980	0.0003	0.0298	-0.0231
15XYF0.50S	0.0000	0.5129	-0.3980	-0.0000	-0.5129	0.3980	0.0004	0.0080	-0.0290
2XYF0.50S	0.0000	0.1456	-0.1147	-0.0000	-0.1456	0.1147	0.0003	0.3775	-0.0042
5XYF0.50S	0.0000	0.1456	-0.1147	0.0000	-0.1456	0.1147	0.0002	0.2539	-0.0033
7XYF0.50S	0.0000	0.1456	-0.1147	-0.0000	-0.1456	0.1147	0.0002	0.1673	-0.0028
10X	0.0000	0.6585	-0.5126	0.0000	-0.6585	0.5126	0.0004	0.1072	0.0118
10XY	0.0000	0.6585	-0.5126	-0.0000	-0.6585	0.5126	0.0013	0.1057	0.0118
10Y	0.0000	0.6585	-0.5126	-0.0000	-0.6585	0.5126	-0.0012	0.1056	-0.0164
11X	0.0000	0.5129	-0.3980	0.0000	-0.5129	0.3980	0.0004	0.0813	0.0126
11XY	0.0000	0.5129	-0.3980	-0.0000	-0.5129	0.3980	0.0011	0.0798	0.0126

11Y	0.0000	0.5129	-0.3980	-0.0000	-0.5129	0.3980	-0.0010	0.0798	-0.0168
12X	0.0000	0.5129	-0.3980	-0.0000	-0.5129	0.3980	-0.0010	0.0604	0.0123
12XY	0.0000	0.5129	-0.3980	0.0000	-0.5129	0.3980	0.0022	0.0592	0.0124
12Y	0.0000	0.5129	-0.3980	-0.0000	-0.5129	0.3980	-0.0023	0.0593	-0.0160
13X	0.0000	0.5129	-0.3980	0.0000	-0.5129	0.3980	0.0001	0.0451	0.0119
13XY	0.0000	0.5129	-0.3980	-0.0000	-0.5129	0.3980	0.0008	0.0440	0.0119
13Y	0.0000	0.5129	-0.3980	-0.0000	-0.5129	0.3980	-0.0008	0.0440	-0.0151
14X	0.0000	0.5129	-0.3980	0.0000	-0.5129	0.3980	-0.0009	0.0307	0.0107
14XY	0.0000	0.5129	-0.3980	-0.0000	-0.5129	0.3980	0.0017	0.0298	0.0107
14Y	0.0000	0.5129	-0.3980	0.0000	-0.5129	0.3980	-0.0018	0.0299	-0.0134
15X	0.0000	0.5129	-0.3980	-0.0000	-0.5129	0.3980	-0.0017	0.0085	0.0063
15XY	0.0000	0.5129	-0.3980	0.0000	-0.5129	0.3980	0.0021	0.0079	0.0063
15Y	0.0000	0.5129	-0.3980	-0.0000	-0.5129	0.3980	-0.0023	0.0081	-0.0076
1PF0.50X	0.0000	0.1456	-0.1147	-0.0000	-0.1456	0.1147	0.0019	0.4092	0.0180
1PF0.50XY	0.0000	0.1456	-0.1147	0.0000	-0.1456	0.1147	0.0027	0.4070	0.0180
1PF0.50Y	0.0000	0.1456	-0.1147	0.0000	-0.1456	0.1147	-0.0014	0.4068	-0.0270

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.
g18XY	g18X	Short only	-0.93	0.14	14.43	0.750	0.500	0.500	94.84	101.13	2	11.87	1.000	121.16	120.71	6
g20P	g20Y	Short only	-1.33	-0.40	14.42	0.750	0.500	0.500	94.96	101.22	2	11.85	1.000	121.31	120.80	6
g20Y	g20P	Short only	-0.40	-1.33	14.42	0.750	0.500	0.500	94.96	101.22	2	11.85	1.000	121.31	120.80	6
g24P	g24Y	Long only	-1.24	-0.20	27.26	0.500	0.750	0.500	97.37	103.03	2	21.29	1.000	129.82	126.04	6
g24Y	g24P	Long only	-0.20	-1.24	27.26	0.500	0.750	0.500	97.37	103.03	2	21.29	1.000	129.82	126.04	6
g26P	g26Y	Short only	-7.49	-6.40	31.38	0.750	0.500	0.500	71.32	83.49	2	26.66	1.000	91.07	105.54	3
g26Y	g26P	Short only	-6.40	-7.49	31.38	0.750	0.500	0.500	71.32	83.49	2	26.66	1.000	91.07	105.54	3
g28P	g28Y	Short only	-8.72	-7.42	14.04	0.800	0.599	0.599	144.14	138.43	5	13.49	1.000	154.49	141.21	6
g28Y	g28P	Short only	-7.42	-8.72	14.04	0.800	0.599	0.599	144.14	138.43	5	13.49	1.000	154.49	141.21	6
g30P	g30Y	Short only	-4.51	-3.62	8.25	0.789	0.578	0.578	168.47	156.97	5	7.87	1.000	186.12	160.66	6
g30Y	g30P	Short only	-3.62	-4.51	8.25	0.789	0.578	0.578	168.47	156.97	5	7.87	1.000	186.12	160.66	6
g32P	g32Y	Short only	-1.54	-0.67	5.62	0.779	0.559	0.559	190.07	190.07	4	4.31	1.000	217.13	217.13	4
g32Y	g32P	Short only	-0.67	-1.54	5.62	0.779	0.559	0.559	190.07	190.07	4	4.31	1.000	217.13	217.13	4
g34X	g34XY	Short only	-0.34	-0.97	6.75	0.772	0.545	0.545	185.21	185.21	4	4.96	1.000	216.17	216.17	4
g34XY	g34X	Short only	-0.97	-0.34	6.75	0.772	0.545	0.545	185.21	185.21	4	4.96	1.000	216.17	216.17	4
g36P	g36Y	Short only	-0.83	-0.28	9.04	0.772	0.543	0.543	177.54	177.54	4	6.60	1.000	207.82	207.82	4
g36Y	g36P	Short only	-0.28	-0.83	9.04	0.772	0.543	0.543	177.54	177.54	4	6.60	1.000	207.82	207.82	4

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	1.246	50.00	50.00	2.49
2	1.246	50.00	50.00	2.49
3	1.747	50.00	50.00	3.49
4	3.322	50.00	50.00	6.64
5	0.185	50.00	50.00	0.37
6	1.747	50.00	50.00	3.49
7	1.747	50.00	50.00	3.49

8	1.747	50.00	50.00	3.49
9	0.773	50.00	50.00	1.55
10	0.764	50.00	50.00	1.53
11	0.930	50.00	50.00	1.86
12	0.229	50.00	50.00	0.46
13	0.257	50.00	50.00	0.51
14	4.287	50.00	50.00	8.57
15	1.620	50.00	50.00	3.24
16	0.749	50.00	50.00	1.50
17	0.910	50.00	50.00	1.82
18	1.633	50.00	50.00	3.27
19	1.668	50.00	50.00	3.34
20	2.240	50.00	50.00	4.48

*** 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 %	Max Use In Comp. %	Comp. Control Member	Comp. Force (kips)	Comp. Control Load Case	L/R Capacity (kips)	Comp. Connect. Shear Capacity (kips)	Comp. Connect. Bearing Capacity (kips)	RLX	RLY	RLZ	L/R	KL/R	Length Comp. Member (ft)	Curve No.	No. Of Bolts
Leg1	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	23.78	23.78	Fg163Y	-5.307	NESC Hea	22.318	0.000	0.000	1.000	1.000	1.000	75.67	75.67	2.693	1	0
Leg2	L4x4x5/16	SAE	4X4X0.3125	33.0	77.11	73.59	g6P	-49.231	NESC Hea	67.346	66.900	105.469	1.000	1.000	1.000	72.06	72.06	4.750	1	6
Leg3	L4x4x7/16	SAE	4X4X0.4375	33.0	87.90	87.90	g11P	-58.805	NESC Hea	81.399	66.900	147.656	1.000	1.000	1.000	94.02	94.02	6.150	1	6
Leg4	L5x5x3/8	SAE	5X5X0.375	33.0	66.60	66.60	g13P	-50.746	NESC Hea	76.191	89.200	168.750	0.500	0.500	0.500	111.82	111.82	18.451	1	8
Leg5	L5x5x3/8	SAE	6X6X0.375	33.0	62.87	62.87	g14P	-56.084	NESC Ext	99.568	89.200	168.750	0.500	0.500	0.500	103.37	103.37	20.501	1	8
Diag1	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	33.0	56.54	48.50	g19X	-6.993	NESC Hea	14.418	22.300	21.094	0.750	0.500	0.500	94.96	101.22	5.429	2	2
Diag2	L3x2x1/4	SAU	3X2X0.25	33.0	29.65	29.65	g23X	-8.082	NESC Hea	27.255	33.450	42.187	0.500	0.750	0.500	97.37	103.03	6.210	2	3
Diag3	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	34.27	34.27	g25X	-10.753	NESC Hea	31.380	33.450	42.187	0.750	0.500	0.500	71.32	83.49	5.836	2	3
Diag4	L2x2x1/4	SAE	2X2X0.25	33.0	72.67	72.67	g28P	-9.804	NESC Hea	13.492	22.300	28.125	1.000	0.599	0.599	154.49	141.21	7.840	6	2
Diag5	L2x2x3/16	SAE	2X2X0.1875	33.0	62.89	62.89	g30P	-4.951	NESC Hea	7.873	22.300	21.094	1.000	0.578	0.578	186.12	160.66	9.570	6	2
Diag6	L2.25x2.25x3/16	SAE	2.25X2.25X0.1875	33.0	24.01	24.01	g33Y	-1.620	NESC Hea	6.750	11.150	10.547	0.772	0.545	0.545	185.21	185.21	12.574	4	1
Diag7	L2.75x2.75x3/16	SAE	2.75X2.75X0.1875	33.0	15.20	15.20	g35Y	-1.375	NESC Hea	9.044	11.150	10.547	0.772	0.543	0.543	177.54	177.54	14.877	4	1
Diag8	L2x1.5x3/16	SAU	2X1.5X0.1875	33.0	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
Diag9	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	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
Horz1	Bar2x1/4	Bar	2x1/4	33.0	8.99	0.00	g42Y	0.000		0.324	11.150	0.000	1.000	1.000	1.000	664.82	664.82	4.000	4	1
Horz2	L2x2x3/16	SAE	2X2X0.1875	33.0	82.12	46.91	g45X	-4.947	NESC Hea	13.406	11.150	10.547	1.000	1.000	1.000	121.83	121.83	4.000	4	1
Horz3	L3x3x1/4	SAE	3X3X0.25	33.0	75.91	68.97	g49X	-7.690	NESC Hea	27.824	11.150	14.062	1.000	1.000	1.000	119.83	119.91	5.911	3	1
Horz4	**L3x2x1/4**	**SAU**	**3X2X0.25**	**33.0**	**75.60**	**69.20**	**g53X**	**-6.149**	**NESC Ext**	**8.886**	**11.150**	**14.062**	**1.000**	**0.500**	**0.500**	**195.78**	**195.78**	**14.194**	**4**	**1**

A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g92P Fg9293P ??

Horz5	L4x3x1/4	SAU	4X3X0.25	33.0	94.11	82.89	g55X	-9.242	NESC	Ext	13.858	11.150	14.062	1.000	0.500	0.500	186.83	186.83	19.929	4	1
Inner1	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	33.0	24.11	10.95	g56P	-1.155	NESC	Ext	13.392	11.150	10.547	0.750	0.500	0.500	98.95	109.48	5.657	3	1
Inner2	L3x3x1/4	SAE	3X3X0.25	33.0	2.50	0.00	g60X	0.000			33.167	11.150	14.062	0.750	0.500	0.500	84.73	102.36	8.360	3	1
Inner3	L2x2x3/16	SAE	2X2X0.1875	33.0	2.94	0.90	g61P	-0.062	NESC	Ext	6.877	11.150	10.547	0.750	0.500	0.500	171.91	171.91	11.288	4	1
Inner4	L2x1.5x3/16	SAU	2X1.5X0.1875	33.0	5.12	0.00	g62X	0.000			1.053	11.150	10.547	0.500	0.750	0.500	410.60	410.60	20.074	4	1
Inner5	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	5.27	0.00	g63X	0.000			1.653	11.150	14.062	0.500	0.750	0.500	428.46	428.46	28.183	4	1
ShieldAr	LL2.5x2x3/16	DAL	2.5X2X0.1875	33.0	33.18	8.64	g67P	-0.963	NESC	Hea	22.436	11.150	21.094	1.000	1.000	1.000	143.76	143.76	9.500	4	1
ShArmBr	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	33.0	7.21	7.21	g78P	-0.804	NESC	Hea	27.650	11.150	14.062	1.000	0.500	0.500	120.44	120.44	10.920	4	1
TopArm1	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	9.38	9.38	g69Y	-2.091	NESC	Hea	27.013	22.300	28.125	1.000	1.000	1.000	88.12	104.06	3.606	3	2
TopArm2	C6x8.2	CHA	6X8.2	33.0	2.19	0.00	g71Y	0.000			50.816	44.600	45.000	1.000	0.500	0.500	103.01	111.51	9.220	3	4
TopArmBr	Bar2x3/16	Bar	2x3/16	33.0	51.32	0.00	g81P	0.000			18.481	11.150	10.547	1.000	1.000	1.000	123.55	123.55	10.296	4	1
MidArm1	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	33.0	2.92	2.92	g72P	-0.651	NESC	Ext	27.983	22.300	28.125	0.500	1.000	0.500	118.86	119.43	7.280	3	2
MidArm2	C6x8.2	CHA	6X8.2	33.0	7.00	7.00	g74Y	-0.754	NESC	Hea	10.768	44.600	45.000	0.330	1.000	0.330	293.92	252.57	13.153	5	4
MidArmBr	Bar2x3/16	Bar	2x3/16	33.0	26.61	3.13	g82Y	-0.330	NESC	Ext	22.835	11.150	10.547	1.000	1.000	1.000	97.83	103.38	8.153	2	1
BotArm1	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	9.81	9.81	g75P	-2.187	NESC	Hea	27.013	22.300	28.125	1.000	1.000	1.000	88.12	104.06	3.606	3	2
BotArm2	C6x8.2	CHA	6X8.2	33.0	1.13	0.00	g77Y	0.000			19.943	44.600	45.000	0.500	1.000	0.500	206.02	185.59	9.220	5	4
BotArmBr	Bar2x3/16	Bar	2x3/16	33.0	13.90	0.00	g85Y	0.000			18.267	11.150	10.547	1.000	1.000	1.000	124.45	124.45	10.371	4	1
Pwmnt	12" Std. Pipe	Pwmnt	Pipe 12" Std.	42.0	3.45	3.45	g88P	-12.625	NESC	Hea	365.454	0.000	0.000	1.000	1.000	1.000	99.09	99.09	36.250	1	0
PMBR1	L2x2x3/16	SAE	2X2X0.1875	36.0	35.86	35.20	g102X	-3.589	NESC	Ext	18.450	16.800	10.195	1.000	1.000	1.000	68.10	94.05	2.236	3	1

A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g102P ??

PMBR2	L3.5x3.5x1/4	SAE	3.5X3.5X0.25	36.0	4.67	4.67	g110X	-0.421	NESC	Hea	9.006	16.800	13.594	1.000	1.000	1.000	231.76	231.76	13.403	4	1
PMBR3	L4x4x1/4	SAE	4X4X0.25	36.0	0.09	0.09	g111P	-0.012	NESC	Ext	20.273	16.800	13.594	1.000	1.000	1.000	165.50	165.50	10.964	4	1
Diag(R)	L4x3x1/4	SAU	4X3X0.25	36.0	35.60	35.60	g38P	-8.759	NESC	Ext	9.069	22.300	27.187	0.577	0.789	0.577	265.54	230.94	24.966	5	2

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	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	L2.5x2x3/16	SAU	2.5X2X0.1875	33.0	23.78	14.00	Fg163XY	3.741NESC	Hea	26.730	0.000	0.000	0.000	2.693	0	0.000	0
Leg2	L4x4x5/16	SAE	4X4X0.3125	33.0	77.11	77.11	g6XY	44.178NESC	Hea	57.292	66.900	105.469	93.750	4.750	6	3.090	0.6875
Leg3	L4x4x7/16	SAE	4X4X0.4375	33.0	87.90	73.67	g11XY	49.283NESC	Hea	89.378	66.900	147.656	172.265	6.150	6	2.000	0.6875
Leg4	L5x5x3/8	SAE	5X5X0.375	33.0	66.60	48.98	g13XY	43.688NESC	Ext	102.114	89.200	168.750	187.500	18.451	8	2.000	0.6875
Leg5	L5x5x3/8	SAE	6X6X0.375	33.0	62.87	53.26	g14X	47.506NESC	Ext	126.864	89.200	168.750	187.500	20.501	8	2.000	0.6875
Diag1	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	33.0	56.54	56.54	g19P	7.026NESC	Hea	14.585	22.300	21.094	12.428	5.429	2	1.000	0.6875
Diag2	L3x2x1/4	SAU	3X2X0.25	33.0	29.65	24.44	g21P	6.805NESC	Hea	27.839	33.450	42.187	32.812	6.210	3	1.470	0.6875
Diag3	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	34.27	31.09	g25P	9.400NESC	Hea	30.238	33.450	42.187	32.812	5.836	3	1.000	0.6875
Diag4	L2x2x1/4	SAE	2X2X0.25	33.0	72.67	39.34	g28X	8.607NESC	Hea	22.813	22.300	28.125	21.875	7.840	2	1.000	0.6875
Diag5	L2x2x3/16	SAE	2X2X0.1875	33.0	62.89	36.63	g66XY	2.801NESC	Hea	17.258	11.150	10.547	7.646	4.822	1	1.000	0.6875
Diag6	L2.25x2.25x3/16	SAE	2.25X2.25X0.1875	33.0	24.01	18.89	g33XY	1.549NESC	Hea	20.199	11.150	10.547	8.203	12.574	1	1.000	0.6875
Diag7	L2.75x2.75x3/16	SAE	2.75X2.75X0.1875	33.0	15.20	13.19	g35XY	1.082NESC	Hea	25.753	11.150	10.547	8.203	14.877	1	1.000	0.6875
Diag8	L2x1.5x3/16	SAU	2X1.5X0.1875	33.0	0.00	0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0
Diag9	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	0.00	0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0
Horz1	Bar2x1/4	Bar	2x1/4	33.0	8.99	8.99	g42P	1.002NESC	Hea	14.850	11.150	0.000	0.000	4.000	1	1.000	0.6875
Horz2	L2x2x3/16	SAE	2X2X0.1875	33.0	82.12	82.12	g45P	6.279NESC	Hea	17.258	11.150	10.547	7.646	4.000	1	1.000	0.6875
Horz3	L3x3x1/4	SAE	3X3X0.25	33.0	75.91	75.91	g49P	8.303NESC	Hea	37.663	11.150	14.062	10.937	5.911	1	1.000	0.6875
Horz4	L3x2x1/4	SAU	3X2X0.25	33.0	75.60	75.60	g53P	6.928NESC	Hea	22.813	11.150	14.062	9.164	14.194	1	1.000	0.6875

A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g92P Fg9293P ??

Horz5	L4x3x1/4	SAU	4X3X0.25	33.0	94.11	94.11	g55P	10.293NESC	Ext	37.663	11.150	14.062	10.937	19.929	1	1.000	0.6875
Inner1	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	33.0	24.11	24.11	g56X	1.470NESC	Ext	14.585	11.150	10.547	6.100	5.657	1	1.000	0.6875
Inner2	L3x3x1/4	SAE	3X3X0.25	33.0	2.50	2.50	g60X	0.273NESC	Hea	37.663	11.150	14.062	10.937	8.360	1	1.000	0.6875
Inner3	L2x2x3/16	SAE	2X2X0.1875	33.0	2.94	2.94	g61X	0.225NESC	Ext	17.258	11.150	10.547	7.646	11.288	1	1.000	0.6875
Inner4	L2x1.5x3/16	SAU	2X1.5X0.1875	33.0	5.12	5.12	g62X	0.392NESC	Hea	14.585	11.150	10.547	7.646	20.074	1	1.000	0.6875
Inner5	L2.5x2x1/4	SAU	2.5X2X0.25	33.0	5.27	5.27	g63X	0.577NESC	Ext	26.377	11.150	14.062	10.937	28.183	1	1.000	0.6875
ShieldAr	LL2.5x2x3/16	DAL	2.5X2X0.1875	33.0	33.18	33.18	g67X	3.700NESC	Hea	38.717	11.150	21.094	17.121	9.500	1	1.000	0.6875
ShArmBr	L3.5x2.5x1/4	SAU	3.5X2.5X0.25	33.0	7.21	0.00	g79Y	0.000		37.663	11.150	14.062	14.706	10.920	1	1.000	0.6875
TopArm1	L2.5x2.5x1/4	SAE	2.5X2.5X0.25	33.0	9.38	1.63	g70P	0.338NESC	Ext	30.238	22.300	28.125	20.695	4.000	2	1.000	0.6875
TopArm2	C6x8.2	CHA	6X8.2	33.0	2.19	2.19	g71Y	0.931NESC	Hea	63.112	44.600	45.000	42.500	9.220	4	2.000	0.6875
TopArmBr	Bar2x3/16	Bar	2x3/16	33.0	51.32	51.32	g81P	4.357NESC	Hea	25.871	11.150	10.547	8.490	10.296	1	1.000	0.6875

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 MidArm1    L3.5x2.5x1/4    SAU     3.5X2.5X0.25     33.0  2.92  1.01    g72Y   0.220NESC Ext  37.663   22.300   28.125   21.875  7.280     2 1.000
0.6875
 MidArm2          C6x8.2    CHA            6X8.2     33.0  7.00  0.79    g74P   0.352NESC Ext  66.788   44.600   45.000   45.000 13.153     4 1.100
0.6875
 MidArmBr      Bar2x3/16    Bar           2x3/16     33.0 26.61 26.61    g83Y   2.260NESC Hea  25.871   11.150   10.547    8.490 13.655     1 1.000
0.6875
 BotArm1    L2.5x2.5x1/4    SAE     2.5X2.5X0.25     33.0  9.81  0.87    g76P   0.194NESC Ext  30.238   22.300   28.125   22.852  4.000     2 1.000
0.6875
 BotArm2          C6x8.2    CHA            6X8.2     33.0  1.13  1.13    g77P   0.506NESC Ext  67.196   44.600   45.000   54.206  9.220     4 1.000
0.6875
 BotArmBr      Bar2x3/16    Bar           2x3/16     33.0 13.90 13.90    g85Y   1.180NESC Hea  25.871   11.150   10.547    8.490 10.371     1 1.000
0.6875
    Pwmnt  12" Std. Pipe Pwmnt   Pipe 12" Std.     42.0  3.45  0.00    g91P   0.000         571.199    0.000    0.000    0.000 20.250     0 0.000
0
    PMBR1      L2x2x3/16    SAE      2X2X0.1875     36.0 35.86 35.86    g102P  3.656NESC Ext  18.827   16.800   10.195   10.343  2.236     1 1.000
0.6875 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g102P  ??
    PMBR2   L3.5x3.5x1/4    SAE     3.5X3.5X0.25     36.0  4.67  3.20    g110P  0.435NESC Hea  49.187   16.800   13.594   15.104 13.403     1 1.000
0.6875
    PMBR3       L4x4x1/4    SAE        4X4X0.25     36.0  0.09  0.00    g111P  0.000          57.287   16.800   13.594   15.104 10.964     1 1.000
0.6875
  Diag(R)       L4x3x1/4    SAU        4X3X0.25     36.0 35.60 35.11    g38X   7.425NESC Ext  49.187   22.300   27.187   21.146 24.966     2 1.000
0.6875
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*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	90.83	g55P	Angle
NESC Extreme	94.11	g55P	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	4.84	NESC Heavy	0.0
2	Clamp	4.94	NESC Heavy	0.0
3	Clamp	6.04	NESC Heavy	0.0
4	Clamp	12.04	NESC Heavy	0.0
5	Clamp	0.37	NESC Extreme	0.0
6	Clamp	6.12	NESC Heavy	0.0
7	Clamp	6.07	NESC Heavy	0.0
8	Clamp	6.07	NESC Heavy	0.0
9	Clamp	4.26	NESC Heavy	0.0
10	Clamp	5.57	NESC Heavy	0.0
11	Clamp	4.44	NESC Heavy	0.0
12	Clamp	1.87	NESC Heavy	0.0
13	Clamp	2.85	NESC Heavy	0.0
14	Clamp	16.19	NESC Heavy	0.0
15	Clamp	3.24	NESC Extreme	0.0
16	Clamp	1.50	NESC Extreme	0.0

17	Clamp	1.82	NESC Extreme	0.0
18	Clamp	3.27	NESC Extreme	0.0
19	Clamp	3.34	NESC Extreme	0.0
20	Clamp	5.38	NESC Heavy	0.0

Loads At Insulator Attachments For All Load Cases:

Load Case	Insulator Label	Insulator Type	Structure Attach Label	Structure Attach Load X (kips)	Structure Attach Load Y (kips)	Structure Attach Load Z (kips)	Structure Attach Load Res. (kips)
NESC Heavy	1	Clamp	16P	0.000	2.297	0.763	2.421
NESC Heavy	2	Clamp	16X	0.000	2.347	0.763	2.468
NESC Heavy	3	Clamp	17P	0.000	2.818	1.091	3.021
NESC Heavy	4	Clamp	18P	0.000	5.582	2.249	6.018
NESC Heavy	5	Clamp	19P	0.000	0.041	0.069	0.080
NESC Heavy	6	Clamp	20P	0.000	2.791	1.251	3.059
NESC Heavy	7	Clamp	21P	0.000	2.832	1.097	3.037
NESC Heavy	8	Clamp	22P	0.000	2.791	1.196	3.037
NESC Heavy	9	Clamp	24P	0.000	0.686	2.014	2.128
NESC Heavy	10	Clamp	25P	0.000	0.980	2.607	2.785
NESC Heavy	11	Clamp	26P	0.000	0.816	2.065	2.221
NESC Heavy	12	Clamp	27P	0.000	0.348	0.870	0.937
NESC Heavy	13	Clamp	28P	0.000	0.531	1.321	1.424
NESC Heavy	14	Clamp	29P	0.000	0.918	8.043	8.096
NESC Heavy	15	Clamp	2P	0.000	0.442	1.368	1.437
NESC Heavy	16	Clamp	5P	0.000	0.176	0.694	0.716
NESC Heavy	17	Clamp	7P	0.000	0.225	0.833	0.863
NESC Heavy	18	Clamp	11S	0.000	0.311	1.129	1.171
NESC Heavy	19	Clamp	14S	0.000	0.322	1.620	1.652
NESC Heavy	20	Clamp	15S	0.000	0.498	2.645	2.692
NESC Extreme	1	Clamp	16P	0.000	1.215	0.277	1.246
NESC Extreme	2	Clamp	16X	0.000	1.215	0.277	1.246
NESC Extreme	3	Clamp	17P	0.000	1.666	0.528	1.747
NESC Extreme	4	Clamp	18P	0.000	3.186	0.941	3.322
NESC Extreme	5	Clamp	19P	0.000	0.146	0.115	0.185
NESC Extreme	6	Clamp	20P	0.000	1.666	0.528	1.747
NESC Extreme	7	Clamp	21P	0.000	1.666	0.528	1.747
NESC Extreme	8	Clamp	22P	0.000	1.666	0.528	1.747
NESC Extreme	9	Clamp	24P	0.000	0.513	0.579	0.773
NESC Extreme	10	Clamp	25P	0.000	0.513	0.566	0.764
NESC Extreme	11	Clamp	26P	0.000	0.659	0.657	0.930
NESC Extreme	12	Clamp	27P	0.000	0.146	0.177	0.229
NESC Extreme	13	Clamp	28P	0.000	0.146	0.212	0.257
NESC Extreme	14	Clamp	29P	0.000	2.281	3.630	4.287
NESC Extreme	15	Clamp	2P	0.000	1.561	0.436	1.620
NESC Extreme	16	Clamp	5P	0.000	0.709	0.243	0.749
NESC Extreme	17	Clamp	7P	0.000	0.867	0.279	0.910
NESC Extreme	18	Clamp	11S	0.000	1.509	0.624	1.633
NESC Extreme	19	Clamp	14S	0.000	1.544	0.632	1.668
NESC Extreme	20	Clamp	15S	0.000	2.107	0.760	2.240

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.	Total Long.	Total Vert.	Transverse Overturning	Longitudinal Overturning

	Load (kips)	Load (kips)	Load (kips)	Moment (ft-k)	Moment (ft-k)
NESC Heavy	23.888	0.000	21.223	2146.868	35.525
NESC Extreme	19.713	0.000	8.404	1630.045	11.563

```
*** Weight of structure (lbs):
    Weight of Angles*Section DLF:     19608.3
    Total:                            19608.3

*** End of Report
```

CENTEK engineering
Centered on Solutions™ www.centekeng.com
63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject:	Foundation Analysis CL&P Tower # 653	
Location:	Southington, CT	
Rev. 0: 5/9/13	Prepared by: T.J.L. Checked by: C.F.C. Job No. 13003.CO2	

Foundation Analysis

Input Data:

Max. Reactions at Tower Leg:

Shear (Compression Leg) =	$Shear_{comp} := 18.7 \cdot 1.1 \cdot kips = 20.6 \cdot kips$	(User Input)
Shear (Uplift Leg) =	$Shear_{up} := 15.6 \cdot 1.1 \cdot kips = 17.2 \cdot kips$	(User Input)
Compression =	$Comp := 61.5 \cdot 1.1 \cdot kips = 67.7 \cdot kips$	(User Input)
Uplift =	$Uplift := 51.0 \cdot 1.1 \cdot kips = 56.1 \cdot kips$	(User Input)

Tower Properties:

Tower Height =	$H_t := 100 \cdot ft$	(User Input)

Foundation Properties: (Refer to NUSCO drawing 01021-60002)

Pier Height =	$P_H := 4.0 \cdot ft$	(User Input)
Pier Width Top =	$P_{w1} := 2.5 \cdot ft$	(User Input)
Pier Width Bottom =	$P_{w2} := 2.5 \cdot ft$	(User Input)
Pier Projection Above Grade =	$P_P := 0.5 \cdot ft$	(User Input)
Pad Width Top =	$Pd_{w1} := 2.5 \cdot ft$	(User Input)
Pad Width Bottom =	$Pd_{w2} := 6 \cdot ft$	(User Input)
Pad Thickness =	$Pd_t := 5 \cdot ft$	(User Input)

Subgrade Properties:

Concrete Unit Weight =	$\gamma c := 150 \cdot pcf$	(User Input)
Water Unit Weight =	$\gamma w := 62.4 \cdot pcf$	(User Input)
Soil Unit Weight =	$\gamma s := 100 \cdot pcf$	(User Input)
Uplift Angle =	$\phi := 30.0 \cdot deg$	(User Input)
Ultimate Soil Bearing Capacity =	$BC_{soil} := 8000 \cdot psf$	(User Input)
Coefficient of Friction =	$\mu := 0.45$	(User Input)

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

CENTEK engineering Centered on Solutions www.centekeng.com 63-2 North Branford Road P: (203) 488-0580 Branford, CT 06405 F: (203) 488-8587	Subject:	Foundation Analysis CL&P Tower # 653
	Location:	Southington, CT
	Rev. 0: 5/9/13	Prepared by: T.J.L. Checked by: C.F.C. Job No. 13003.CO2

Calculated Data:

Volume of the Concrete Pad = $V_{pad} := \frac{(Pd_t)}{3} \cdot \left(Pd_{w1}^2 + Pd_{w2}^2 + \sqrt{Pd_{w1}^2 \cdot Pd_{w2}^2}\right) = 95.417 \cdot ft^3$

Volume of the Concrete Pier = $V_{pier} := \frac{(P_H)}{3} \cdot \left(P_{w1}^2 + P_{w2}^2 + \sqrt{P_{w1}^2 \cdot P_{w2}^2}\right) = 25 \cdot ft^3$

Resisting Pyramid Base 1 = $B_1 := Pd_{w2}^2 = 36 ft^2$

Resisting Pyramid Base 2 = $B_2 := \left[2 \cdot \tan(\phi) \cdot (P_H - P_P + Pd_t) + Pd_{w2}\right]^2 = 250 ft^2$

Volume of Soil = $V_{soil} := \left[\frac{(P_H - P_P + Pd_t)}{3} \cdot \left(B_1 + B_2 + \sqrt{B_1 \cdot B_2}\right)\right] - (V_{pier} + V_{pad}) = 959 \cdot ft^3$

Total Volume of Concrete = $V_{Conc} := V_{pad} + V_{pier} = 120 \cdot ft^3$

Mass of Concrete = $Mass_{Conc} := V_{Conc} \cdot \gamma c = 18.1 \cdot kips$

Mass of Soil = $Mass_{Soil} := V_{soil} \cdot \gamma s = 96 \cdot kips$

Total Mass = $Mass_{tot} := Mass_{Conc} + Mass_{Soil} = 114 \cdot kips$

Check Uplift:

Required Factor of Safety = $F_S := 1.0$

$ActualFS := \frac{Mass_{tot}}{Uplift} = 2.03$

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

Uplift_Check = "OK"

Check Bearing:

Cross Sectional Area of Pad = $A_{pad} := Pd_{w2}^2 = 36 ft^2$

Section Modulus of Pad = $S_{pad} := \frac{(Pd_{w2})^3}{6} = 36 \cdot ft^3$

Residual Mass of Concrete = $Mass_{Concr} := V_{Conc} \cdot (\gamma c - \gamma s) = 6 \cdot kips$

$Bearing := \frac{Comp + Mass_{Concr}}{A_{pad}} + \frac{\left[Shear_{comp} \cdot (P_H + Pd_t)\right]}{S_{pad}} = 7.19 \cdot ksf$

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

Bearing_Check = "OK"

Check Sliding:

Sliding Resistance = $S_R := \mu \cdot (Mass_{Conc} + Comp) = 38.571 \cdot kips$

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

Sliding_Check = "OK"

Site No: CT33XC528

	Market	Northern Connecticut		
	Cascade ID	CT33XC528		
		Sector 1	Sector 2	Sector 3
1900	1900MHz_Azimuth	0	180	260
1900	1900MHz_No_of_Antennas	1	1	1
1900	1900MHz_RADCenter(ft)	115	115	115
1900	1900MHz_Antenna Make	RFS	RFS	RFS
1900	1900MHz_Antenna Model	APXV9ERR18-C-A20	APXVSPP18-C-A20	APXVSPP18-C-A20
1900	1900MHz_Horizontal_Beamwidth	80	65	65
1900	1900MHz_Vertical_Beamwidth	5.5	5.5	5.5
1900	1900MHz_AntennaHeight (ft)	6	6	6
1900	1900MHz_AntennaGain(dBd)	14.9	15.9	15.9
1900	1900MHz_E_Tilt	0	0	0
1900	1900MHz _M_Tilt	-2	-2	-2
1900	1900_Effective_Tilt	-2	-2	-2
1900	1900MHz_Carrier_Forecast_Year_2013	4	4	4
1900	1900MHz_RRH Manufacturer	ALU	ALU	ALU
1900	1900MHz_RRH Model	RRH 1900 4X45 65MHz	RRH 1900 4X45 65MHz	RRH 1900 4X45 65MHz
1900	1900MHz_RRH Count	1	1	1
1900	1900MHz_RRH Location	On the Ground	On the Ground	On the Ground
1900	1900MHz Combiner Model	No Combiner Required	No Combiner Required	No Combiner Required
1900	1900MHz Power Split Ratio (Main/Split)			
1900	1900MHz Splitter Manufacturer			
1900	1900MHz Splitter Model			
1900	1900MHz Number of Splitters			
1900	1900MHz_Top_Jumper #1_Length (RRH or Combiner-to-Antenna for TT or Main Coax to Antenna for Ground Mount, ft)	N/A	N/A	N/A
1900	1900MHz_Top_Jumper #1_Cable_Model (RRH or Combiner-to-Antenna for TT or Main Coax to Antenna for Ground Mount)	N/A	N/A	N/A
1900	1900MHz_Top_Jumper #2_Length (RRH to Combiner for TT if applicable, ft)	N/A	N/A	N/A
1900	1900MHz_Top_Jumper #2_Cable_Model (RRH to Combiner for TT if applicable)	N/A	N/A	N/A
1900	1900MHz_Main_Coax_Cable_Length (ft)	125	125	125
1900	1900MHz_Main_Coax_Cable_Model	UCF78-50JA-A	UCF78-50JA-A	UCF78-50JA-A
1900	1900MHz_Bottom_Jumper #1_Length (Ground based RRH to Combiner-OR-Main Coax, ft)	N/A	N/A	N/A
1900	1900MHz_Bottom_Jumper #1_Cable_Model (Ground based RRH to Combiner-OR-Main Coax)	N/A	N/A	N/A
1900	1900MHz_Bottom_Jumper #2_Length (Ground based-Combiner to Main Coax, ft)	N/A	N/A	N/A
1900	1900MHz_Bottom_Jumper #2_Cable_Model (Ground based-Combiner to Main Coax)	N/A	N/A	N/A
800	800MHz_Azimuth	0	180	260
800	800MHz_No_of_Antennas	0	0	0
800	800MHz_RADCenter(ft)	115	115	115
800	800MHz_AntennaMake	RFS	RFS	RFS
800	800MHz_AntennaModel	APXV9ERR18-C-A20 (Shared w/1900)	APXVSPP18-C-A20 (Shared w/1900)	APXVSPP18-C-A20 (Shared w/1900)
800	800MHz_Horizontal_Beamwidth	80	65	65
800	800MHz_Vertical_Beamwidth	10.5	11.5	11.5
800	800MHz_AntennaHeight (ft)	6	6	6
800	800MHz_AntennaGain (dBd)	11.9	13.4	13.4
800	800MHz_E_Tilt	-7	-8	-7
800	800MHz_M_Tilt	-2	-2	-2
800	800 MHz_Effective Tilt (degrees)	-9	-10	-9
800	800MHz_RRH Manufacturer	ALU	ALU	ALU
800	800_Combiner_Model	N/A	N/A	N/A
800	800MHz_RRH Model	800 MHz RRH 2x50W	800 MHz RRH 2x50W	800 MHz RRH 2x50W
800	800MHz_RRH Count	1	1	1
800	800MHz_RRH Location	On the Ground	On the Ground	On the Ground
800	800MHz Power Split Ratio (Main/Split)			
800	800MHz Splitter Manufacturer			
800	800MHz Splitter Model			
800	800MHz Number of Splitters	0	0	0
800	800_Top_Jumper #1_Length (RRH to Antenna for TT or Main Coax to Antenna for GM)	N/A	N/A	N/A
800	800_Top_Jumper_Cable_Model (RRH to Antenna for TT or Main Coax to Antenna for GM)	N/A	N/A	N/A
800	800MHz_Main_Coax_Cable_Length (ft)	125	125	125
800	800MHz_Main_Coax_Cable_Model	UCF78-50JA-A	UCF78-50JA-A	UCF78-50JA-A
800	800_Bottom_Jumper #1_Length (Ground based RRH to Main Coax)	N/A	N/A	N/A
800	800_Bottom_Jumper #1_Cable_Model (Ground based RRH to Main Coax)	N/A	N/A	N/A
	Plumbing Scenario *	124	124	124
Comments	* If plumbing scenario does not match the material received, please contact your Construction Manager GM6 coax With 800 with LTE 2/4/2013			

Product Data Sheet APXVSPP18-C

Triple Band Dual Polarized Antenna, 806-1995, 65deg, 16-18dBi, 1.8m, VET, 0-10deg, 0.5m AISG Cable

RFS

Product Description

This antenna is an ideal choice for dual band site upgrade for high traffic areas. It features 4 ports in 1900 MHz and 2 ports in 800 MHz.

Features/Benefits

- Variable electrical downtilt – provides enhanced precision in controlling intercell interference. The tilt is infield adjustable 0-10 deg.
- High suppression of all upper sidelobes (Typically < 18 dB)
- Independent control of electrical downtilt for 800 and PCS bands
- Remote tilt – AISG compatible
- Low profile for low visual impact
- Quick and easy to adjust
- High front-to-back ratio

Technical Specifications

Electrical Specifications

Frequency Range, MHz	806-869	1850-1995	1850-1995
Horizontal Beamwidth, deg	65	65	65
Vertical Beamwidth, deg	11.5	5.5	5.5
Electrical Downtilt, deg		0-10	
Gain, dBi (dBd)	15.5 (13.4)	18.0 (15.9)	18.0 (15.9)
1st Upper Sidelobe Suppression, dB, typ. @ T0° & T8°		>18	
Front-To-Back Ratio, dB, @ 180° ± 15°	>30	>27	>27
Polarization		Dual pol +/-45°	
Return Loss, dB		> 14	
Isolation between Ports, dB		>28	
3rd Order IMP @ 2 x 43 dBm, @ 2 min. duration		>110	
Cross Polar Discrimination (XPD) 0°, dB	>15	>20	>20
Cross Polar Discrimination (XPD) ± 60°, dB	>9.5	>11	>11
HBW Squint accross same band ports, °		±5	
Impedance, Ohms		50	
Maximum Power Input, W		250	
Lightning Protection		Direct Ground	
Connector Type		(6) 7-16 DIN Female	

Mechanical Specifications

Dimensions - HxWxD, mm (in)	1829 x 302 x 178 (72.0 x 11.8 x 7)
Weight w/o Mtg Hardware, kg (lb)	25.8 (57)
Radome Material	ASA
Radome Color	Light Grey RAL7035
Mounting Hardware Material	Diecasted Aluminum and Galvanized Steel

Ordering Information

Mounting Hardware	APM40-2 Downtilt Kit
AISG System Cable	0.5 m, included
Mounting Pipe Diameter, mm (in)	60-120 (2.4-4.7)
Mounting Hardware Weight, kg (lb)	3.4 (7.5)

Site No: CT33XC528

ED4297 REV. 3–94

NORTHEAST UTILITIES SERVICE COMPANY

SUBJECT	BY	DATE
SPRINT PCS SOUTHINGTON #653	RM	10/4/99
	CHECKED BY	DATE
	CAL. NO.	REV.
	SHEET NO. 18	OF 20

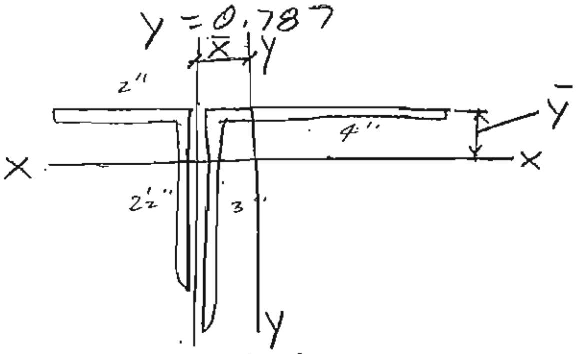
STRENGTHEN BRACING

SEE SHTS. 3+4 OF THESE CALCS.
THE LOWER 2 SETS OF X-BRACING NEED TO TAKE COMPRESSIVE LOADS –

$\angle 2\frac{1}{2} \times 2 \times \frac{1}{4}$: $A = 1.06$, $I_X = 0.654$, $I_Y = 0.372$, $X = 0.537$, $Y = 0.787$

ADD $\angle 4 \times 3 \times \frac{1}{4}$: $A = 1.69$, $I_X = 1.36$, $I_Y = 2.77$, $X = 1.24$, $Y = 0.736$

$\frac{w}{t} = 13.25 < 13.9$ ok ✓



$$\bar{X} = \frac{1.69 \times 1.24 - 1.06 \times 0.537}{1.69 + 1.06} = 0.555''$$

$$\bar{Y} = \frac{1.69 \times 0.736 + 1.06 \times 0.787}{2.75} = 0.756''$$

$$I_x = \underbrace{\left[0.654 + 1.06(0.787 - 0.756)^2\right]}_{\angle 2\frac{1}{2} \times 2} + \underbrace{\left[1.36 + 1.69(0.756 - 0.736)^2\right]}_{\angle 4 \times 3}$$

$$I_x = 2.016\,in^4;\ r_x = \sqrt{\frac{2.016}{2.75}} = 0.856''$$

$$I_y = \left[0.372 + 1.06(0.537 + 0.555)^2\right] + \left[2.77 + 1.69(1.24 - 0.555)^2\right]$$

$$I_y = 5.199\,in^4,\ r_y = \sqrt{\frac{5.199}{2.75}} = 1.375''$$

$$\frac{L}{r_x} = \frac{16.95 \times 12}{0.856} = 237.6 < 250,\ \frac{KL}{r_x} = 237.6 \times 0.615 + 46.2 = 192.3$$

$$\frac{L}{r_y} = \frac{(16.95 + 0.5 \times 12.23)12}{1.375} = 201.3 \qquad F_a = \frac{286{,}000}{(192.3)^2} = 7.73\,ksi$$

ED4297 REV. 3-94

NORTHEAST UTILITIES SERVICE COMPANY

SUBJECT	BY	DATE
SPRINT PCS	RMD	10/4/99
SOUTHINGTON #653	CHECKED BY	DATE
	CAL. NO.	REV.
	SHEET NO. 19 OF 20	

$C_A = 7.73 \times 2.75 = 21.3^k$

$T_A = 26.4^k$ (SHT. 3)

2 BOLTS $= 16^k$

STITCH BOLTS –

$L_z = 237.6 \times 0.75 \times 0.424 = 75.6''$ (6'-4")

$\frac{16.95}{3} = 5.65'$ $\quad \frac{L}{r_z} = \frac{5.65 \times 12}{0.424} = 159.9$

$F_a = 11.2$, $C_A = 11.2 \times 1.06 = 11.9^k$

$T_A = 16^k > +3.29^k$

$C_A = 11.9 > -4.05^k$ OK

∠ 2 x 1½ x 3/16

A = 0.62

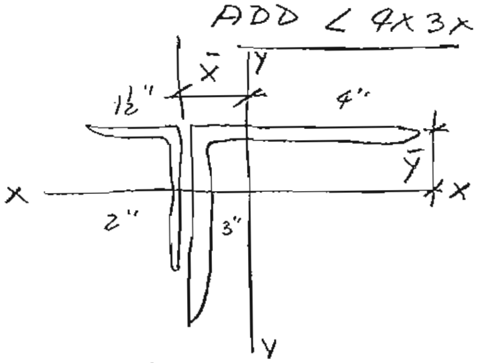
IX = 0.25

IY = 0.12

X = 0.39

Y = 0.64

ADD ∠ 4 x 3 x ¼



$\bar{X} = \frac{1.69 \times 1.24 - 0.62 \times 0.39}{1.69 + 0.62} = 0.803$

$\bar{Y} = \frac{1.69 \times 0.736 + 0.62 \times 0.64}{2.31} = 0.710$

$I_x = [0.25 + 0.62(0.710 - 0.64)^2] + [1.36 + 1.69(0.736 - 0.710)^2]$

$I_x = 1.614$, $r_x = 0.836$

$I_y = [0.12 + 0.62(0.803 + 0.39)^2] + [2.77 + 1.69(1.24 - 0.803)^2]$

$I_y = 4.10$, $r_y = 1.33$

Site No: CT33XC528

ED4297 REV. 3-94

NORTHEAST UTILITIES SERVICE COMPANY

SUBJECT	BY	DATE
SPRINT PCS	RM	10/5/99
SOUTHINGTON #653	CHECKED BY	DATE
	CAL. NO.	REV.
	SHEET NO. 20 OF 20	

$\frac{L}{r_x} = \frac{13.34 \times 12}{0.836} = 191.5; \frac{KL}{r_x} = 191.5 \times 0.615 + 46.2 = 164 > C_c$

$\frac{L}{r_y} = \frac{(13.34 + 0.5 \times 9.80)12}{1.33} = 164.6$

$F_a = 10.6, \; C_A = 24.6^k$

$T_A = 14.6^k$ (SHT. 4)

2 BOLTS = 13.4^k

STITCH BOLTS —

$L_z = 191.5 \times 0.75 \times 0.32 = 46''$ (3'-10")

$L_z = \frac{13.34}{4} = 3.34', \; \frac{L}{r_z} = \frac{3.34 \times 12}{0.32} = 125.3 = \frac{KL}{r}$

$F_a = 18.1, \; C_A = 18.1 \times 0.62 = 11.2^k$

$\therefore T_A = 13.4 > +2.71$

$C_A = 11.2 > -3.25$ ok

Northeast Utilities System

107 Selden Street, Berlin, CT 06037

Northeast Utilities Service Company
P.O. Box 270
Hartford, CT 06141-0270
(203) 665-5000

January 15, 2014

Ms. Jennifer Gaudet
HPC Development

Sprint,
1 International Blvd.
Suite 300
Mahwah NJ
07495

RE: Sprint Antenna Site, CT-33XC528, 705 Andres Rd., Southington CT, structure 653.

Dear Ms. Gaudet:

Based on our reviews of the site drawings, the structural analysis and foundation review provided by Centek Engineering, along with a third party review performed by Commonwealth Associates we have reviewed for acceptance this modification.

Since there are no outstanding structural issues to resolve at this time please contact Mr. O'Brien (860-665-6987) to resolve any lease issues; once the lease amendment is secured you may then contact Mr. John Landry directly (860-665-5425) to begin the construction arrangements.

Sincerely,

Robert Gray
Transmission Line Engineering

REF: NV_CT33XC528_FinalCD_VER2_01.14.14.pdf
13003.CO2 - CT33XC528.pdf

EBI Consulting
environmental | engineering | due diligence

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

Sprint Existing Facility

Site ID: CT33XC528

Southington / Rogers NU
705 Andrews Road
Southington, CT 06485

October 29, 2012

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

October 29, 2012

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

Re: Emissions Values for Site: **CT33XC528 – Southington / Rogers NU**

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 705 Andrews Road, Southington, CT, for the purpose of determining whether the emissions from the proposed Sprint equipment upgrades on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of μW/cm2 calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the cellular band is approximately 567 $\mu W/cm^2$, and the general population exposure limit for the PCS band is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed upgrades to the existing Sprint Wireless antenna facility located at 705 Andrews Road, Southington, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario. Actual values seen from this site will be dramatically less than those shown in this report. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

For all calculations, all emissions were calculated using the following assumptions:

1) 4 CDMA Carriers (1900 MHz) were considered for each sector of the proposed installation.
2) 1 CDMA Carrier (850 MHz) was considered for each sector of the proposed installation
3) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
4) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
5) The antenna used in this modeling is the APXVSPP18-C-A20. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 15.9 dBd gain value at its main lobe at 1900 MHz and 13.4 dBd at its main lobe for 850 MHz. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario.

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6) The antenna mounting height centerline of the proposed antennas is **115 feet** above ground level (AGL)
7) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculation were done with respect to uncontrolled / general public threshold limits

Site ID	CT33XC528 - Southington / Rogers NU
Site Addresss	705 Andrews Road, Southington, CT, 06485
Site Type	Utility Transmission Pole

Sector 1

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	4	80	15.9	115	109	1/2 "	0.5	0	2773.8948	83.93498	8.39350%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	115	109	1/2 "	0.5	0	389.96892	11.80003	2.08113%
												Sector total Power Density Value:			10.475%		

Sector 2

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
2a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	4	80	15.9	115	109	1/2 "	0.5	0	2773.8948	83.93498	8.39350%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	115	109	1/2 "	0.5	0	389.96892	11.80003	2.08113%
												Sector total Power Density Value:			10.475%		

Sector 3

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
3a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	4	80	15.9	115	109	1/2 "	0.5	0	2773.8948	83.93498	8.39350%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	115	109	1/2 "	0.5	0	389.96892	11.80003	2.08113%
												Sector total Power Density Value:			10.475%		

Site Composite MPE %

Carrier	MPE %
Sprint	31.424%
Total Site MPE %	31.424%

Summary

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

The anticipated Maximum Composite contributions from the Sprint facility are **31.424% (10.475% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **31.424%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions

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

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